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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 2, 1985 Volume 1053 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 24/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	no charge

Feb. 4, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Mar. 30, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,321,708 through 4,322,857

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Board of Appeals Decisions Rendered in the Month of Feb. 1985

Affirmed	164
Affirmed in part	35
Reversed	71
Total	270

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,289,880, Re. S.N. 701,047, Filed Feb. 12, 1985, Cl. 544/103, CATIONIC OXAZINE DYES, Peter Moser, Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.,* Attorney or Agent: Karl F. Jorda, et al., Ex. Gp.: 129

4,373,793, Re. S.N. 701,780, Filed Feb. 13, 1985, Cl. 354/415, LIGHT MEASURING DEVICE FOR FLASH PHOTOGRAPHY, Nobuyuki Taniguchi, et al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Harold L. Jackson, et al., Ex. Gp.: 211

4,402,517, Re. S.N. 622,958, Filed June 21, 1984, Cl. 277/34, WELL PACKER VALVE ARRANGEMENT, Edward T. Wood, et al., Owner of Record: *Completion Tool Co., Houston, Tex.,* Attorney or Agent: Donald H. Fidler, Ex. Gp.: 246

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,743,581, Reexam. No. 90/000,724, Requested: Feb. 15, 1985, Cl. 435/34, MICROBIOLOGICAL DETECTION APPARATUS, Paxton Cady, et al., Owner of Record: *Bactomatic, Inc., Palo Alto, Calif.,* Attorney or Agent: Leonard Phillips, Ex. Gp.: 128, Requester: Malthus Instruments, Washington, D.C.

4,076,698, Reexam. No. 90/000,729, Requested: Feb. 26, 1985, Cl. 526/34.6, HYDROCARBON INTERPOLYMERS COMPOSITIONS, Arthur W. Anderson, et al., Owner of Record: *E.I. DuPont de Nemours & Co., Wilmington, Del.,* Attorney or Agent: Roger Hines, Ex. Gp.: 150, Requester: Phillips Petroleum Co., Bartlesville, Okla.

4,180,536, Reexam. No. 90/000,731, Requested: Feb. 25, 1985, Cl. 525/214, PROCESSIBLE AND VULCANIZABLE POLAR POLYMERS, Dominic Alia, Owner of Record: *Dominic Alia, Williamsport, Pa.,* Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 150, Requester: Dow Chemical Co., Midland, Mich.

4,309,962, Reexam. No. 90/000,733, Requested: Mar. 5, 1985, Cl. 119/73, LIVESTOCK WATERING STATION, John D. Boozer, Owner of Record: *John D. Boozer, Ocala, Fla.,* Attorney or Agent: R. J. Lasker, Ex. Gp.: 330, Requester: Clear Waterers, Inc., Churchville, Md.

4,349,601, Reexam. No. 90/000,732, Requested: Mar. 1, 1985, Cl. 428/323, PROTECTIVE SKIN ON INTRICATELY MOLDED PRODUCT, Walter H. Brueggemann, et al., Owner of Record: *Ferro Corp., Cleveland, Ohio,* Attorney or Agent: Milton L. Simmons, Ex. Gp.: 154, Requester: Naamloze Vennootschap DSM & Stamicarbon B.V., Washington, D.C.

Marks Published for Opposition

The Apr. issues of the Official Gazette (Trademark Section) will present marks published for opposition in two separate sections.

Each section will contain both multiple class and single class applications. The first section will be printed at the beginning of the Official Gazette and the second section will be printed at the end of the Official Gazette, after the Index of Registrants.

The second section will be numbered separately from the first section, and each page will bear the notation Ap.

Jan. 10, 1985.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-236,084 (4,477,384). PREPARATION OF A-SUBSTITUTED ACRYLIC ACIDS.

SN 6-311,702 (4,479,286). APPARATUS TO EXTRACT FINE TRASH AND DUST DURING HIGH-VELOCITY DISCHARGING OF COTTON FROM OPENER CLEANER.

SN 6-327,296 (4,480,040). SENSITIVE AND RAPID DIAGNOSIS OF VIROID DISEASES AND VIRUSES.

SN 6-333,945 (4,478,328). AUTOMATIC HIDE PROCESSING APPARATUS.

SN 6-370,020 (4,482,728). POLYBUTYLBENZYLPHENOLS AND BENZYL-3,4-METHYLENEDIOXBENZENES IN INSECT POPULATION CONTROL.

SN 6-382,903 (4,478,859). METHOD OF MAKING STABLE EMULSIFIED MEAT PRODUCTS.

SN 6-436,542 (4,477,389). POLYHALOGENATED PHENYL ISOCYANATE SYNTHESIS WITH EXCESS PHOSGENE AND EITHER TRIETHYLAMINE OR TETRAMETHYLUREA.

SN 6-509,091 (4,478,096). SHIELDED SNIFFING DEVICE.

SN 6-543,730 (4,478,728). PROCESS AND COMPOSITIONS FOR PRESERVING FRESH HIDES AND SKINS.

SN 6-650,737. METHOD AND APPARATUS TO CONTROL SOIL MOISTURE MATRIC POTENTIAL.

DEPARTMENT OF COMMERCE

SN 6-665,875. SHALE OIL DEARSENATION PROCESS.

SN 6-666,594. PHASED ANTENNA ARRAY FOR WIND PROFILING APPLICATIONS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-396,055 (4,476,870). FIBER OPTIC PO_2 PROBE.

SN 6-571,911. DEOXYRIBONUCLEIC ACID MOLECULES USEFUL AS PROBES FOR DETECTING

DELETERIOUS GENES INCORPORATED INTO CHROMOSOMAL DNA.
SN 6-574,173. PSEUDOMONAS EXOTOXIN CONJUGATE IMMUNOTOXINS.
SN 6-664,972. PRODUCTION OF HUMAN T-CELL LEUKEMIA (LYMPHOTROPIC) RETROVIRUS (HTLV-I) ENVELOPE PROTEIN FRAGMENTS IN BACTERIA AND USE IN SEROEPIDEMIOLOGICAL SURVEY OF HUMAN LYMPHOID MALIGNANCIES.
SN 6-665,400. SCREENING TEST FOR REVERSE TRANSCRIPTASE CONTAINING VIRUS.

DEPARTMENT OF THE AIR FORCE

SN 6-171,913 (4,468,624). PROGRAMMABLE SYNCHRONOUS DIGITAL DELAY LINE.
SN 6-260,878 (4,472,726). TWO CARRIER DUAL INJECTOR APPARATUS.
SN 6-272,861 (4,465,392). THERMALLY ISOLATED STRUCTURAL SUPPORT LINK.
SN 6-289,660 (4,472,807). RF LASER ARRAY DRIVER APPARATUS.
SN 6-320,893 (4,466,662). POWERED ARTICULATED HEADREST SYSTEM.
SN 6-324,907 (4,472,679). DIAGNOSTIC APPARATUS FOR RADAR PULSE REPETITION FREQUENCY CONTROL CIRCUIT CARD.
SN 6-339,204 (4,467,429). AIRCRAFT THRUST CONTROL SCHEME FOR TERRAIN FOLLOWING SYSTEM.
SN 6-343,041 (4,467,186). MIRROR ACTUATOR CONTROL SYSTEM.
SN 6-343,136 (4,472,356). GAS CONTAMINATION DETECTION DEVICE.
SN 6-353,981 (4,477,909). UNSTABLE OPTICAL RESONATOR WITH CANCELLING EDGE WAVES.
SN 6-353,983 (4,465,985). HARDWIRE MISSILE RECEIVER COUPLER.
SN 6-368,787 (4,465,940). ELECTRO-OPTICAL TARGET DETECTION.
SN 6-372,364 (4,479,222). DIFFUSION BARRIER FOR LONG WAVELENGTH LASER DIODES.
SN 6-375,622 (4,465,332). HOLOGRAPHIC DIRECTIONAL COUPLER FOR FIBER OPTIC SYSTEMS.
SN 6-382,068 (4,477,152). REDUCTION OF SIGNAL MODULATION CAUSED BY POLARIZATION IN VISIBLE OPTICAL SCANNING SYSTEMS.
SN 6-382,324 (4,466,100). DELTA WING NOZZLE ASSEMBLY FOR CHEMICAL LASERS.
SN 6-394,945 (4,465,068). METALLIC AID AND TECHNIQUE IN FITTING VOICE PROSTHESIS.
SN 6-403,214 (4,469,961). FAST SWITCHING DRIVER FOR INDUCTIVE LOAD, SUCH AS A PHASE SHIFTER.
SN 6-404,096 (4,477,814). DUAL MODE RADIO FREQUENCY-INFRARED FREQUENCY SYSTEM.
SN 6-411,946 (4,471,683). VOICE COMMAND WEAPONS LAUNCHING SYSTEM.
SN 6-413,297 (4,476,806). WET FILM APPLICATOR.
SN 6-418,867 (4,465,953). RIPPLED-FIELD MAGNETRON APPARATUS.
SN 6-422,429 (4,465,372). TURBULENCE MEASUREMENT INTERFEROMETER APPARATUS.
SN 6-431,435 (4,477,222). MOUNTING CONSTRUCTION FOR TURBINE VANE ASSEMBLY.
SN 6-434,647 (4,471,623). COMBUSTION CHAMBER FLOATWALL PANEL ATTACHMENT ARRANGEMENT.
SN 6-441,814 (4,465,347). HELMET MOUNTED TELESCOPE.
SN 6-441,816 (4,465,988). SLOW WAVE CIRCUIT WITH SHAPED DIELECTRIC SUBSTRATE.
SN 6-449,922 (4,477,043). BIODYNAMIC RESISTANT CONTROL STICK.
SN 6-459,159 (4,477,787). DUAL MODE DIRECTIONALLY COUPLED BAND REJECT FILTER APPARATUS.
SN 6-465,230 (4,465,250). WINDBLAST LEG PROTECTOR ASSEMBLY.
SN 6-469,369 (4,476,710). DETONATION TRANSFER EVALUATION TECHNIQUE.
SN 6-475,665 (4,464,972). LATERAL SUPPORT SYSTEM FOR CANISTER-LAUNCHED MISSILE.
SN 6-482,375 (4,477,024). CARBON/CARBON ROCKET MOTOR EXIT CONE REINFORCEMENT.
SN 6-482,754 (4,476,718). RAIN RATE METER.
SN 6-486,598 (4,465,253). FLEXIBLE LINE SUPPORT ASSEMBLY.
SN 6-504,183 (4,464,702). EMI FILTER CAPACITOR UNIT.
SN 6-518,590 (4,476,161). METHOD OF PRODUCING A BURIED LONG PERIOD GRATING.
SN 6-533,276 (4,467,474). HALOGEN MASS FLOW RATE DETECTION SYSTEM.
SN 6-534,030 (4,476,337). METHOD FOR INTRODUCING FLUORINE INTO AN AROMATIC RING.
SN 6-629,865. BATTERY CONTROL AND FAULT DETECTION METHOD.
SN 6-640,624. MATRIX DISPLAY SIMULATION.
SN 6-640,902. TRACKING SERVO COMPENSATOR WITH RATE AIDING.
SN 6-640,904. PARALLEL PROCESSOR CONFIGURATION FOR ADAPTIVE ANTENNA ARRAYS.
SN 6-640,916. METHOD FOR MAKING ALLOY ADDITIONS TO BASE METALS HAVING HIGHER MELTING POINTS.
SN 6-643,139. BURIED JUNCTION ENHANCED SCHOTTKY BARRIER DEVICE.
SN 6-643,140. EROSION-RESISTANT NOSETIP CONSTRUCTION.
SN 6-645,389. CRYOGENIC GLASS-TO-METAL SEAL.
SN 6-645,390. RANDOM PATTERN TRACKING ACCELERATION TOLERANCE TESTER.
SN 6-645,468. LOW NOISE MULTIPLE CRYSTAL-CONTROLLED OSCILLATOR.
SN 6-647,781. ELECTROMECHANICAL SWITCH.
SN 6-647,782. DYNAMIC POLYMER PRESSURE TRANSDUCER WITH TEMPERATURE COMPENSATION.
SN 6-649,565. BOMB AND BOMB LINER.

DEPARTMENT OF THE ARMY

SN 6-248,622 (4,434,168). NARCOTIC ANTAGONISTS IN THE THERAPY OF SHOCK.
SN 6-284,279 (4,368,194). PHARMACOLOGICALLY ACTIVE AMINE BORANES.
SN 6-328,638 (4,431,807) 4-METHYL-5-(UNSUBSTITUTED AND SUBSTITUTED PHENOXY)-6-(AMINOALKYLAMINO)QUINOLINES.
SN 6-546,076 (4,473,496). INTRAMOLECULARLY CROSSLINKED HEMOGLOBIN.
SN 6-637,250. VEHICLE-TO-VEHICLE CONNECTION MECHANISM.
SN 6-647,324. TORQUE SENSOR.
SN 6-653,116. HIGH CAPACITY INORGANIC OXYHALIDE ELECTROCHEMICAL CELL.
SN 6-655,114. RECHARGEABLE LITHIUM CELL.
SN 6-664,267. MICROWAVE RESONATOR USING LATERAL EXCITATION.

DEPARTMENT OF THE INTERIOR

SN 6-574,499. FORMATION OF TUNGSTEN MONOCARBIDE FROM A MOLTEN TUNGSTATE HALIDE PHASE BY GAS SPARGING.

ENVIRONMENTAL PROTECTION AGENCY

SN 6-518,172 (4,479,877). REMOVAL OF NITRATE FROM WATER SUPPLIES USING A TRIBUTYL

AMINE STRONG BANSE ANION EXCHANGE RESIN.

Errata

"All reference to Patent No. D. 277,271 to Denny B. Law of Calif. for 'TRAILER' appearing in the Official Gazette of Jan. 22, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,483,542 to Joseph H. Hynes, et al. of Tex. for 'ANNULAR PACKING UNIT AND INSERT' appearing in the Official Gazette of Nov. 20, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,488,095 to Thomas E. Berg, et al. of Colo. for 'TWO AXIS LINEAR MOTOR FOR OPTICAL FOCUSING AND TRACKING SYSTEM IN OPTICAL RECORDING' appearing in the Official Gazette of Dec. 11, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,488,225 to Shunsuke Furukawa, et al. of Japan for 'DATA TRANSFER APPARATUS FOR A MICROCOMPUTER SYSTEM' appearing in the Official Gazette of Dec. 11, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,495,406 to Yoshio Saka i, et al. of Japan for 'HEATING SHEET' appearing in the Official Gazette of Jan. 22, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,497,680 to Edmond A. Richards of N.J. for 'APPARATUS FOR CONVEYING A SEMICONDUCTOR WAFER' appearing in the Official Gazette of Feb. 5, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,499,411 to Donald L. Hornback of Mich. for 'AUTOMATIC ANTENNA POSITIONING SYSTEM' appearing in the Official Gazette of Feb. 12, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,501,395 to Marold H. Lohrenz, et al. of Okla. for 'TAPE DECK HAVING IMPROVED TAPE PATH' appearing in the Official Gazette of Feb. 26, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,501,789 to Pravinchandra K. Shah, et al. of Ohio for 'LATEX CONTAINING ODOR INHIBITOR' appearing in the Official Gazette of Feb. 26, 1985, should be deleted since no patent was granted."

Restriction Practice Survey II

This notice is intended to inform the public of the results of a follow-up survey of applications containing a written restriction requirement. The results of the first survey were reported in the Official Gazette on Sept. 4, 1984 (1046 OG 2; Restriction Policy and Practice). Survey II involved 319 applications selected at random in the Patent Examining Groups from those in which a restriction only action had been credited to an examiner in the period of July—Sept. 1984. This period was after the Corps Management Meeting on June 5, 1984 in which restriction policy and practice were reviewed with all SPEs and Directors, and followed the distribution of review materials to all examiners. The results of Survey II showed significant improvements over the results of Survey I, but the results were still not considered satisfactory in several aspects.

Survey Procedure: The selection of applications was generally proportioned among the Groups to correspond to the relative proportion of restriction only actions that were completed in each Group in the last quarter of FY 84. A minimum of ten applications were surveyed from each Group. The distribution was as follows:

110 - 16	210 - 11	310 - 10
120 - 37	220 - 10	320 - 18
130 - 33	230 - 10	330 - 24
150 - 47	240 - 30	340 - 30
	250 - 13	350 - 20
	260 - 10	
TOTALS 133	84	102

The survey team consisted of the same people who conducted the first survey. One person from the survey team reviewed each selected application file and completed the survey form regarding the restriction requirement(s) in the file. The same survey form was used in each survey.

In the event an application file could not be located or was not readily available, a different application was selected for the survey. In general, the substitute application was selected from those requirements completed by the same examiner assigned to the original application.

The survey did not include any design applications.

Survey Results: Statistical results of the survey are set forth on the survey form used in the Appendix including summaries on a Corps and discipline level. References in this notice to "Item _____" refer to the numbered items indicated on the survey form. These results indicate an improvement in all areas which were identified as acute problems in the first survey. We did not do a telephone survey to determine whether applicant's representative had been called prior to writing the requirement.

In addition to the survey, the statistics on restriction requirements before and after the training effort following the first survey are of interest. Statistics show that the number of restriction only actions has decreased 36% Corps-wide (52% in Group 120 which had the highest volume in the first survey) following our training effort. These statistics are shown below.

Quarter	Total First Actions	Total Corps Restriction Requirements	Group 120 Restriction Requirements
Apr–Jun 1984	32,035	2,771	514
Jul–Sep 1984	32,216	1,939	220
Oct–Dec 1984	28,158	1,522	212
	(32,358)*	(1,775)*	(247)*
Oct–Dec vs Apr–Jun		−36%	−52%.

*Figures adjusted (7/6 of actual) to reflect a 7 pay period quarter for comparison with the Apr.–June and July–Sept. quarters which included 7 pay periods.

In addition, 24% of the applications in the second survey contained a specific reference to a telephone call that was made by the examiner, but did not result in an election being made. It was also apparent that some of the requirements were sufficiently complex to warrant a written communication.

The applications reviewed in the second survey resulted in the conclusion that 9% of the requirements that were made were not reasonable on the record that was reviewed (Item 10 - 30/319). This compares to 19% (61/320) in the first survey. Of the 30 cases in which a conclusion of unreasonableness was made, the requirement was traversed in 22 (73%) of those cases, not traversed in 7 cases (23%), and no response was filed in 1 case. In the 22 cases where the unreasonable requirement was traversed, the requirement was withdrawn in 10 cases, not withdrawn in 8 cases, and no subsequent action had been made in 4 cases. In the first survey, 11 unreasonable requirements were withdrawn out of 61 made. The survey form on each of the unreasonable requirements in the second survey was returned and discussed with the Group Director.

In our opinion, the reasons provided by the examiner for insisting upon restriction were not proper (either non-existent or based on the wrong criteria) in 18%

(Item 5j - 57/319) of the applications surveyed — compared to 35% in the first survey. In many of these cases, the reviewer determined that the requirement was justified, but for reasons which the examiner did not set forth in the requirement.

Our second survey revealed that applicant had traversed the requirements in 134 cases (Item 7c), and that where the examiner had given another action in those cases (Item 8 - 98), the reasons in the traverse had not been responded to in 30% (Item 8b - 30/98) of the cases. This represents a very modest improvement of the results in the first survey where 41% (53/128) had not responded to the arguments presented in applicants traverse.

In addition to the statistical results, the survey team met to discuss some of the problems observed during the survey. Several members of the team again observed that problems were more likely to arise where complex requirements involving a large number of claims and/or inventions are encountered, and where the claim schedule required the application of combination—subcombination criteria to show patentable distinctness (MPEP 806.05c - two-way distinctness). Where three or more inventions are presented in a single application, it was observed that the examiner rarely showed distinctness among all of the combinations of groups (e.g. I–II, II–III, I–III). Another observation that was frequently made was that many of the problems with incomplete requirements could have been avoided by the use of the form paragraphs and associated instructions.

Further Action: While the second survey indicated that significant improvements have been realized in our pursuit of uniformity in restriction practice, we have not achieved an acceptable level of performance in several areas. The same types of problems predominated in each survey, but are now at a reduced level. There is clearly a continuing need for supervisory review.

Supervisors will take the opportunity to emphasize the following points to examiners in their Art Units:

(1) Use of telephone when appropriate to minimize pendency time;
(2) Reasons to support the requirement (to satisfy the criteria for independence of patentable distinctness) *and* reasons for insisting upon restriction should be given in each written requirement. Mere conclusions are not sufficient;
(3) The substance of arguments contained in applicant's traverse should be responded to in the Office action following the traverse;
(4) A showing of two-way distinctness is required in situations where combination-subcombination criteria are applicable (MPEP 806.05c); and
(5) Use of appropriate form paragraphs should be encouraged.

In addition, each Group will review all restriction requirements made in the Group in a pay period at least once every six months.

Finally, review of restriction practice will not be made a component part of the Quality Review Program on an ongoing basis because of the desirability of identifying problems of this type before prosecution is over and the desirability of maintaining their focus on substantive issues. Of course, the Quality Review Staff will continue to bring problems with restriction requirements to the attention of the Director when they are encountered in the course of their review procedures.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Restriction Practice Survey—Feb. 1985 **CORPS**

Serial No._____ Art Unit_____ Reviewer_____

Indicate type of Restriction or other requirement by checking box(s). Explain any deficiencies in Comments (Item 11).

	1.	Telephone	76 Yes	193 No	
77	2.	Generic Claim, Election of Species			
15	2a.	Markush-Type, Plurality of Patentably Distinct Inventions			
22	3.	No Generic Claim Present, Election of Species			
	4a.	Were the inventions properly grouped?	262 Yes	36 No	
	4b.	Were linking claims properly identified and grouped?	48 Yes	17 No	232 N/A
	5.	Reasons for Separate and Distinct Inventions			
	16	a. Intermediate- Final Product			
	37	b. Combination- Subcombination			
	21	c. Subcombination, Useable Together			
	60	d. Process and Apparatus			
	81	e. Product and Process of Making			
	5	f. Apparatus and Product Made			
	31	g. Product and Process of Using			
	2	h. Product, Process of Using and Process of Making			
		i. Conclusion to all Restriction Requirements proper?	286 Yes	19 No	
		j. Were Examiner's reasons reasonable?	260 Yes	57 No	
	6.	Requirement, When Mailed			
	A.	Was election required?	305 Yes	13 No	
	B.	30 day period set?	303 Yes	15 No	
		If other than 30 day period indicate_____			
	7A.	Was there a response to the requirement?	301 Yes	17 No	
	B.	Was an election made?	297 Yes	3 No	
	C.	Was requirement traversed?	134 Yes	160 No	
	D.	Was traversal based on allegation that:			
	2	1. PTO policy is wrong			
	99	2. Examiner reasoning is wrong			
	52	3. No burden on examiner			
	9	4. Other_____			
	8.	Further action by Examiner			
	A.	Did Examiner rebut applicant's traversal?	68 Yes	30 No	140 N/A
	B.	Did Examiner Make requirement final?	60 Yes	39 No	139 N/A
	C.	Modified?	15 Yes	78 No	
	D.	Withdrawn?	15 Yes	73 No	
	9.	Other			
	10.	Based on the record is the restriction requirement prima facie reasonable?	289 Yes	30 No	(10)*
	11.	Comments:			

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*( ) withdrawn

Restriction Practice Survey—Feb. 1985

CHEMICAL

Serial No._____ Art Unit_____ Reviewer_____

Indicate type of Restriction or other requirement by checking box(s). Explain any deficiencies in Comments (Item 11).

	1.	Telephone	38 Yes	44 No	
12	2.	Generic Claim, Election of Species			
15	2a.	Markush-Type, Plurality of Patentably Distinct Inventions			
5	3.	No Generic Claim Present, Election of Species			
	4a.	Were the inventions properly grouped?	112 Yes	14 No	
	4b.	Were linking claims properly identified and grouped?	7 Yes	5 No	114 N/A
	5.	Reasons for Separate and Distinct Inventions			
	15	a. Intermediate- Final Product			
	6	b. Combination- Subcombination			
	2	c. Subcombination, Useable Together			
	36	d. Process and Apparatus			
	35	e. Product and Process of Making			
	1	f. Apparatus and Product Made			
	27	g. Product and Process of Using			
	1	h. Product, Process of Using and Process of Making			
		i. Conclusion to all Restriction Requirements proper?	119 Yes	14 No	
		j. Were Examiner's reasons reasonable?	112 Yes	21 No	
	6.	Requirement, When Mailed			
	A.	Was election required?	127 Yes	6 No	
	B.	30 day period set?	128 Yes	5 No	
		If other than 30 day period indicate_____			
	7A.	Was there a response to the requirement?	128 Yes	4 No	
	B.	Was an election made?	126 Yes	2 No	
	C.	Was requirement traversed?	69 Yes	59 No	
	D.	Was traversal based on allegation that:			
	2	1. PTO policy is wrong			
	51	2. Examiner reasoning is wrong			
	24	3. No burden on examiner			
	3	4. Other_____			
	8.	Further action by Examiner			
	A.	Did Examiner rebut applicant's traversal?	39 Yes	9 No	52 N/A
	B.	Did Examiner Make requirement final?	37 Yes	14 No	44 N/A
	C.	Modified?	8 Yes	34 No	
	D.	Withdrawn?	2 Yes	39 No	
	9.	Other			
	10.	Based on the record is the restriction requirement prima facie reasonable?	121 Yes	12 No	(2)*
	11.	Comments:			

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*( )withdrawn

Restriction Practice Survey—Feb. 1985 **ELECTRICAL**

Serial No._____ Art Unit_____ Reviewer_____

Indicate type of Restriction or other requirement by checking box(s). Explain any deficiencies in Comments (Item 11).

	1.	Telephone	17 Yes	67 No	
22	2.	Generic Claim, Election of Species			
–	2a.	Markush-Type, Plurality of Patentably Distinct Inventions			
5	3.	No Generic Claim Present, Election of Species			
	4a.	Were the inventions properly grouped?	68 Yes	12 No	
	4b.	Were linking claims properly identified and grouped?	5 Yes	6 No	72 N/A
	5.	Reasons for Separate and Distinct Inventions			
	1	a. Intermediate- Final Product			
	12	b. Combination- Subcombination			
	9	c. Subcombination, Useable Together			
	9	d. Process and Apparatus			
	28	e. Product and Process of Making			
	2	f. Apparatus and Product Made			
	4	g. Product and Process of Using			
	1	h. Product, Process of Using and Process of Making			
		i. Conclusion to all Restriction Requirements proper?	79 Yes	5 No	
		j. Were Examiner's reasons reasonable?	62 Yes	22 No	
	6.	Requirement, When Mailed			
	A.	Was election required?	82 Yes	1 No	
	B.	30 day period set?	80 Yes	3 No	
		If other than 30 day period indicate_____			
	7A.	Was there a response to the requirement?	75 Yes	9 No	
	B.	Was an election made?	73 Yes	1 No	
	C.	Was requirement traversed?	26 Yes	43 No	
	D.	Was traversal based on allegation that:			
–		1. PTO policy is wrong			
22		2. Examiner reasoning is wrong			
11		3. No burden on examiner			
4		4. Other_____			
	8.	Further action by Examiner			
	A.	Did Examiner rebut applicant's traversal?	11 Yes	12 No	52 N/A
	B.	Did Examiner Make requirement final?	9 Yes	15 No	55 N/A
	C.	Modified?	3 Yes	11 No	
	D.	Withdrawn?	8 Yes	7 No	
	9.	Other			
	10.	Based on the record is the restriction requirement prima facie reasonable?	73 Yes	11 No	(5)*
	11.	Comments:			

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*( ) withdrawn

Restriction Practice Survey—Feb. 1985

MECHANICAL

Serial No._____ Art Unit_____ Reviewer_____

Indicate type of Restriction or other requirement by checking box(s). Explain any deficiencies in Comments (Item 11).

	1.	Telephone	21 Yes	82 No	
43	2.	Generic Claim, Election of Species			
–	2a.	Markush-Type, Plurality of Patentably Distinct Inventions			
12	3.	No Generic Claim Present, Election of Species			
	4a.	Were the inventions properly grouped?	82 Yes	10 No	
	4b.	Were linking claims properly identified and grouped?	36 Yes	6 No	46 N/A
	5.	Reasons for Separate and Distinct Inventions			
–		a. Intermediate- Final Product			
19		b. Combination- Subcombination			
10		c. Subcombination, Useable Together			
15		d. Process and Apparatus			
18		e. Product and Process of Making			
2		f. Apparatus and Product Made			
–		g. Product and Process of Using			
–		h. Product, Process of Using and Process of Making			
		i. Conclusion to all Restriction Requirements proper?	88 Yes	– No	
		j. Were Examiner's reasons reasonable?	86 Yes	14 No	
	6.	Requirement, When Mailed			
	A.	Was election required?	96 Yes	6 No	
	B.	30 day period set?	95 Yes	7 No	
		If other than 30 day period indicate_____			
	7A.	Was there a response to the requirement?	98 Yes	4 No	
	B.	Was an election made?	98 Yes	– No	
	C.	Was requirement traversed?	39 Yes	58 No	
	D.	Was traversal based on allegation that:			
–		1. PTO policy is wrong			
26		2. Examiner reasoning is wrong			
17		3. No burden on examiner			
2		4. Other_____			
	8.	Further action by Examiner			
	A.	Did Examiner rebut applicant's traversal?	18 Yes	9 No	36 N/A
	B.	Did Examiner Make requirement final?	14 Yes	10 No	40 N/A
	C.	Modified?	4 Yes	33 No	
	D.	Withdrawn?	5 Yes	27 No	
	9.	Other			
	10.	Based on the record is the restriction requirement prima facie reasonable?	95 Yes	7 No	(3)*
	11.	Comments:			

*( ) withdrawn

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket no. 41269–5018]
Final Rules for Miscellaneous Patent Provisions

Agency: Patent and Trademark Office, Commerce
Action: Notice of final rulemaking
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the miscellaneous patent provisions enacted into law by Public Laws 98–620 and 98–622, on Nov. 8, 1984, in which statutory invention registrations, changes in appeals to the courts, prior art and joint inventor provisions and PCT international application filing and processing procedures were established or amended. The rulemaking provides specific rules and procedures for the new and amended provisions.
Effective Date: May 8, 1985
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to establish a set of rules and procedures for the various requirements of Public Laws 98–620 and 98–622 concerning appeals to the courts, statutory invention registrations, rejections based on prior art and double patenting, and filing of international applications under the Patent Cooperation Treaty. The proposed rules were published on Jan. 25, 1985 in Volume 50 of the Federal Register, pages 3712 through 3725. A public hearing was held on the proposed rule changes on Feb. 8, 1985.
Background Information: Most of the rule changes contained herein are necessary as a result of Public Laws 98–620 or 98–622, both of which were signed by President Reagan on Nov. 8, 1984. The following is a summary of the purposes of the various statutory amendments.

Amended 35 U.S.C. 103 - Unpublished knowledge of prior art.

Public Law 98–622 changes a complex body of case law which discourages communication among members of research teams working in corporations, universities or other organizations. It amended 35 U.S.C. section 103 by adding a new sentence which provides that subject matter developed by another which qualifies as "prior art" only under subsections 102(f) or (g) of 35 U.S.C. is not to be considered when determining whether an invention sought to be patented is obvious under 35 U.S.C. 103, provided the subject matter and the claimed

invention were commonly owned at the time the invention was made.

"Prior art" is the existing body of technical information against which the patentability of an invention is judged. Publicly known information is always considered in determining whether an invention would have been obvious. However, under *In re Bass*, 474 F. 2d 1276, 177 USPQ 178 (CCPA 1973), and *In re Clemens*, 622 F.2d 1029, 206 USPQ 289 (CCPA 1980), an earlier invention which is not public could have been treated under 35 U.S.C. 102(g), and possibly under 102(f), as prior art with respect to a later invention made by another employee of the same organization.

New technology often is developed by using background scientific or technical information known within an organization but unknown to the public. Public Law 98–622, by disqualifying such background information from prior art, encourages communication among members of research teams, and leads to more public dissemination through patents of the results of team research.

The subject matter that is disqualified as prior art under 35 U.S.C. 103 is strictly limited to subject matter that qualifies as prior art only under 35 U.S.C. 102(f) or 102(g). If the subject matter qualifies as prior art under any other subsection—e.g., subsection 102(a), 102(b) or 102(e)—it will not be disqualified as prior art under the amendment to section 103.

The contents of a patent of the same or different ownership as an application, continues to be available as prior art against the application under section 103 by virtue of section 102(e) as of the application filing date of the patent. If subject matter becomes potential prior art under section 102 (e) because a patent application is filed on such subject matter before a commonly owned claimed invention is made the subject matter of a later application the two applications may be combined (under amended §§116 and 120) into a single application and such subject matter (with the abandonment of the two applications) would no longer constitute potential prior art under section 102(e) or under section 103 since it would not be "described in a patent granted on an application for patent by another."

It is important to recognize that the amendment to the law applies only to consideration of prior art for purposes of section 103. It does not apply to or affect subject matter which qualifies as prior art under section 102. A patent applicant urging that subject matter is disqualified has the burden of establishing that it was commonly owned at the time the claimed invention was made.

Public Law 98–622 was not intended to permit anyone other than the inventors to be named in a patent application or patent. Also, the amendment was not intended to enable appropriation of the invention of another.

The Patent and Trademark Office has withdrawn the Commissioner's Notice of Jan. 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967), to the extent that it does not authorize a double patenting rejection where different inventive entities are present. See the Commissioner's Notice of Dec. 11, 1984, "Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120", 1050 O.G. 316 (Jan. 8, 1985). The Office is reinstituting, in appropriate circumstances, the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. See 130 Cong. Rec. H 10527, column 3 (daily ed. Oct. 1, 1984) (statement of Rep. Kastenmeier); *In re Rogers*, 394 F.2d 566, 567 n. 4, 157 USPQ 569, 570 n. 4 (CCPA 1964). This is in accordance with existing case law and prevents an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See *In re Zickendraht*, 319 F.2d 225, 138 USPQ 22 (CCPA 1963) ("The doctrine is well established that claims in different applications need be more than merely different in form or content; and that *patentable distinction* must exist to entitle applicants to a second patent") and *In re Christensen*, 330 F.2d 652, 141 USPQ 295 (CCPA 1964) (". . . the correct procedure for double patenting cases is to analyze the claims to determine the inventions defined therein, and then decide whether such inventions, as claimed are *patentably distinct* and therefore qualified to be claimed in separate patents"). In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming, pursuant to the existing provisions of 37 CFR 1.321, the terminal portion of the term of the later patent and including in the disclaimer a provision that the patent shall be enforceable only for and during the period the patent is commonly owned with the application or patent which formed the basis for the rejection, thereby eliminating the problem of extending patent life.

Information learned from or transmitted to persons outside the organization is not disqualified as prior art.

The term "subject matter" will be construed broadly, in the same manner the term is construed in the remainder of §103. The term "another" as used in §103 means any inventive entity other than the inventor and would include the inventor and any other persons. The term "developed" is to be read broadly and is not limited by the manner in which the development occurred. The term "commonly owned" means wholly owned by the same person, persons, or organization at the time the invention was made.

Amended 35 U.S.C. 116 - Joint inventor filing

35 U.S.C. 116 as amended by Public Law 98–622 recognizes the realities of modern team research. A research project may include many inventions. Some inventions may have contributions made by individuals who are not involved in other, related inventions.

Amended 35 U.S.C. 116 allows inventors to apply for a patent jointly even though (i) they did not physically work together or at the same time, (ii) each did not make the same type or amount of contribution, or (iii) each did not make a contribution to the subject matter of every claim of the patent. Items (i) and (ii) adopt the rationale stated in decisions such as *Monsanto* v. *Kamp*, 269 F. Supp. 818, 154 USPQ 259 (D.D.C. 1967). Item (iii) adopts the rationale of cases such as *SAB Industries AB* v. *Bendix Corp.*, 199 USPQ 95 (E.D. Va. 1978).

Like other patent applications, jointly-filed applications are subject to the requirements of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application complying with 35 U.S.C. 120 would be entitled to the benefit of the earlier filing date of the original application.

It is possible that different claims of an application or patent may have different dates of invention even though the patent covers only one independent and distinct invention within the meaning of 35 U.S.C. 121. When necessary, the Patent and Trademark Office or a court may inquire of the patent application or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Amended 35 U.S.C. 120 - Benefit of prior U.S. application

35 U.S.C. 120 was amended by Public Law 98–622 to provide that an application can obtain the benefit of the filing date of an earlier application when not all inventors named in the joint application are the same as those named in the earlier application. This amendment permits greater latitude in filing "divisional" applications. For example, if the previously filed application named inventors A and B as the inventors, a later application by either A or B could be filed during the pendency of the previously filed application and claim benefit of the previously filed application. In order for a claim to be entitled to the benefit of an earlier pending application, the subject matter of the claim of the later application would have to be disclosed in the earlier application.

Similarly, if inventor A filed an application on an in-

vention and during the pendency of that application made an improvement on the subject matter of the application as a joint inventor with inventor B, the joint application filed on behalf of inventors A and B could claim the benefit of A's previously filed sole application to the extent that the later filed joint application contained claims directed solely to A's subject matter which was disclosed in the earlier filed pending application in the manner provided by the first paragraph of section 112 of title 35, U.S.C.

Likewise, an application filed by inventors A and C could claim the benefit of an earlier filed pending application of inventors A and B, to the extent that the requirements of section 120 could be met.

Like other patent applications, jointly-filed applications will continue to be subject to the requirement of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application would be entitled to the benefit of the earlier filing date of the original application.

New 35 U.S.C. 157 - Statutory Invention Registration (SIR)

This section which is effective on May 8, 1985, establishes an optional procedure by which an inventor may secure protection which is strictly defensive in nature.

Under current law, there is no simple, practical method by which an inventor can protect his or her ability to exploit the invention without obtaining a patent. The new procedure confers on an inventor the same defensive rights that a patent provides to prevent others from patenting the invention. However, it does not permit the holder to exclude others from making, using or selling the invention.

Due to the fact that a SIR does not grant an exclusive right to an inventor, it is not necessary to subject a SIR to the lengthy examination process required for the granting of a patent. Such an examination is necessary if the SIR is subject to an interference proceeding to determine priority of invention. In all other instances, the Patent and Trademark Office will only review the application for adherence to formal printing and fee payment requirements and to ensure that the requirements of 35 U.S.C. 112 are satisfied.

An applicant desiring to have a SIR published will be required to file a regular complete application for a patent and to execute a request including a waiver of enforcement of patent rights. This waiver of the claimed invention will be effective at the time of publication. The original application can be abandoned in favor of a continuing application for a patent, claiming the filing date of the earlier filed application, by filing an express abandonment of the original application and a timely request or petition to withdraw the request for a SIR prior to publication of the SIR, thereby providing the applicant with flexibility during the pendency period of the application. Until the SIR is published the application remains an application for a patent. However, the holder of a SIR will not be able to file a reissue application to recapture the rights to exclusive use that were waived by the initial publication of the SIR.

The waiver of the right to receive a patent, required of all applicants electing to receive a SIR, applies to those remedies provided for the enforcement of a patent under section 183 and sections 271 through 289 of title 35, United States Code. The waiver also applies to remedies under other titles of the United States Code including sections 1337 and 1337a of title 19, section 2356 of title 22, and section 1498 of title 28. This waiver of enforcement applies only to the claimed subject matter of the SIR and not to any foreign patent arising from an application which might have served as the basis of a priority claim under the Paris Convention for the Protection of Industrial Property. Likewise, the waiver does not prevent the holder of a SIR from asserting any defenses provided in sections 271 through 289 of title 35, U.S.C. with respect to a charge of infringement of any other patent.

The Commissioner of Patents and Trademarks can refuse to accept the waiver in certain cases. For example, the waiver could not be accepted if the waiver is not a waiver of all the previously mentioned rights. The Commissioner also has discretion, which has not been exercised at this time, to set time limits on the waiver. This would allow the Commissioner to limit the ability of an inventor to keep inventions secret through a series of continuing patent applications followed by a conversion to a SIR.

The waiver of patent rights in the SIR to the subject matter claimed therein may affect the patentability of a claim in other related applications, particularly divisional applications, since the waiver of patent rights would be effective for all inventions claimed in the SIR and would be effective as a waiver of the right of the inventor to obtain a patent on the invention claimed in the same application or any other application, but not in any patent issued before the date the SIR is published. Where an application containing generic claims is published as a SIR, the waiver in that application applies to any other related applications, including divisions, continuations, and continuations-in-part, to the extent that the same invention claimed in the SIR is also claimed in the other related application.

The Patent and Trademark Office will apply standards similar to those which it applies in making determinations of "same invention" double patenting for purposes of determining whether or not a waiver by an inventor to claims in a SIR precludes patenting by the same inventor to subject matter in any other related application.

Therefore, the waiver would preclude patenting of an invention claimed by an inventor in a related application which is the same as the invention claimed by the same inventor in the SIR. When making this determination it is the claimed subject matter of the related application. Where the subject matter claimed in the related application is the same as the subject matter waived in the SIR, i.e., the "same invention" in the double patenting sense, the claims of the related application will be rejected as being precluded by the waiver in the SIR and cannot be overcome by a terminal disclaimer. The limitation of the scope of the waiver to the claimed invention would not affect the application of existing §1.658(c) should the SIR become involved in an interference. If a divisional application is filed and published as a SIR claiming only a method, publication thereof will not normally effect a waiver on an application for a patent claiming only an apparatus. The waiver in a SIR would not affect any rights in a patent which issued prior to the date of publication of the SIR, but would preclude an already issued patent from being broadened by reissue if the rights to the subject matter to which broadened claims relate have been waived by publication of the SIR. The waiver applies to any rights of the same inventor in any application pending when the SIR is published even if the inventor is a joint applicant in the pending application and was a sole applicant in the application published as a SIR. The waiver would not affect the rights of any other inventor even though those rights are commonly owned by the same person.

The holder of a SIR containing the required waiver will be left without the offensive rights associated with a patent. In other respects a SIR will be the same as a patent, including the application which is published as a SIR serving as the basis for a priority claim in a foreign application under the Paris Convention. A SIR will be treated the same as a U.S. patent for all defensive purposes. The application, and the SIR published therefrom, could become involved in an interference; the SIR would be a "constructive reduction to practice" under 35 U.S.C. 102(g); it will be "prior art" under all applicable sections of 35 U.S.C. 102 including section 102(e); and it will be classified, cross-referenced and placed

in the search files, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the *Official Gazette* of the Patent and Trademark Office. A published SIR is intended to be a fully viable publication for defensive purposes, usable as a reference as of its filing date in the same manner as a patent. A SIR will also serve as a basis to initiate or participate in an interference or priority proceeding under 35 U.S.C. 291 in a manner similar to a patent and can be used as a reference in defense of an infringement suit.

A SIR is based on a regularly filed application for a patent. Therefore, the filing date of the application will be a sufficient basis for a priority claim in a foreign application. Article 4, section A(3) of the Paris Convention states:

> "By a regular national filing is meant any filing that is adequate to establish the date on which the application was filed in the country concerned, whatever may be the subsequent fate of the application."

After a SIR is published, markings such as "patent pending" are improper under section 292 of title 35 of the United States Code.

The SIR will serve as a replacement for the current "defensive publication program" which was established by regulation under 37 CFR 1.139. Although publication under the "defensive publication program" was intended to provide rights similar to those of the SIR, publication under that program has been held not to be available as evidence of prior knowledge as of its filing date under section 102(a) of title 35, U.S.C. (*Ex parte Osmond*, 191 USPQ 334 (P.T.O. Bd. App. 1976)). The use of a "defensive publication" as a reference to prevent a patent from issuing on a subsequent application is therefore limited. A SIR, on the other hand, will have a clear statutory basis in title 35, U.S.C. The SIR will be "prior art" and a "constructive reduction to practice" under section 102(a) and section 102(g), respectively, as of the filing date of the application on which it is based.

A SIR will not be subject to reexamination under sections 302 to 307 of title 35, United States Code.

The Commissioner is authorized to issue SIRs for defensive purposes, but is not required to do so. The Commissioner has discretion in determining whether or not a SIR should be issued on a particular application. In circumstances where the subject matter is obviously not an invention, is too informal to print, and so forth, the Commissioner has the right to refuse to publish the SIR.

SIRs will be published sooner than patents because no substantive examination will normally be required for SIRs. To the extent that examination is required, it will be conducted in the same manner as in any other patent application. Maintenance fees will not be charged for SIRs.

Since the fees set by the Commissioner for the new SIR procedure under section 157 of title 35, U.S.C. are not established under section 41(a) or (b) of that title, they are not subject to reduction if the applicant has small entity status.

If the fee for requesting publication is not paid at the time of filing of the waiver of the right to receive a patent, the Commissioner may set a period within which the fee must be paid to prevent abandonment of the application. Such a period would be subject to petitions and fees for extensions of time. If abandonment should occur, the application may be revived.

In the final analysis, the SIR procedures set forth in the law should give inventors defensive protection more cheaply than they could get by obtaining a patent. The procedure will allow the government and the private sector to make inventions public knowledge. Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new, less expensive alternative to the traditional patenting of inventions.

Amended 35 U.S.C. 361, 366, 371, 372 and 376 - Miscellaneous provisions relating to the applications under the Patent Cooperation Treaty.

Section 361(d) of title 35, United States Code, was amended effective May 8, 1985, to provide a one-month grace period from the date of filing an international application for payment of the basic international fee and the transmittal and search fees.

Section 366 of title 35, United States Code, was amended, effective May 8, 1985, to clarify the effect of withdrawal of an international application on claims for the benefit of its filing date. The withdrawal of an international application designating the United States will not deprive an applicant of the right to claim the benefit of the filing date of such an international application in a later filed application, provided the claim for benefit is made before that international application is withdrawn. Stated otherwise, this clarifies that withdrawing the designation of the United States in an international application is comparable to abandoning a national application as far as a claim for an earlier filing date is concerned.

National Stage

As a general proposition, the amendments made to 35 U.S.C. 371 set forth a legislative scheme, effective May 8, 1985, to provide greater flexibility in the Patent and Trademark Office for the handling of international applications. In addition, by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, the amendments give international applicants benefits similar to those given national applications by section 111, 35 U.S.C. as amended by Public Law 97-247 with respect to the time for filing the national fee and oath or declaration.

Section 372(b) of title 35, United States Code, is amended, effective May 8, 1985, to authorize the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases is necessary since subsection (c)(2) of section 371 was amended to remove the requirement that the translation be verified in all cases.

Section 372(c) of title 35, United States Code, was deleted thereby discontinuing the requirement for payment of a special fee to maintain claims in an international application which were not searched by an international searching authority. This deletion was made to place international applications processed in the national stage on the same footing as purely national applications.

Section 376(a) of title 35, United States Code, was also amended by Public Law 98-622 to delete mention of the special fee in order to conform with the amendment of section 372(c).

Discussion of Specific Rules

Section 1.11 is amended as proposed to add a reference to published statutory invention registrations in paragraph (a) to indicate that they are available to the public. The portion of present §1.11(a) which deals with interferences is transferred to a new paragraph (e) and rewritten.

The amendment to paragraph (b) deletes reference to §1.139, which is being deleted in favor of the SIR, and inserts language which covers opening to the public defensive publications published under §1.139 as well as other applications laid open to the public such as the previously published abstracts and abbreviatures.

Section 1.11 is amended as proposed to delete the word "general" before public as unnecessary.

New paragraph (e) of §1.11 is added to cover the availability to the public of all interferences, including those which involved a statutory invention registration. This paragraph applies to interferences declared under the new rules which became effective on Feb. 11, 1985, 49 F.R. 48416, (Dec. 12, 1984) as well as the rules formerly in effect. The term "award of priority" is intended to refer to those decisions of the Board of Patent Interferences, or Board of Patent Appeals and Inter-

ferences, awarding priority in interferences conducted under the former rules. The term "judgment" refers to judgments entered by the Board of Patent Appeals and Interferences in interferences conducted under the new rules. The language of the proposed rule has been slightly modified for clarity in the final rule.

Section 1.14 is amended as proposed to delete reference to §1.139 since that section is being removed.

Section 1.17 paragraph (h) is amended as proposed to include the petition fee required by new §1.295.

Section 1.17 is amended to add new paragraphs (n) and (o) to establish fees for requesting publication of statutory invention registrations. Paragraph (n) establishes a $400.00 fee for requesting publication of a statutory invention registration where no first examiner's action pursuant to §1.104 has been issued in the application. The amount paid for basic filing fees under §1.16(a), (f) or (g) will be credited against this amount. For example, if a $300.00 filing fee was paid, only $100.00 additional would be required for requesting publication of a statutory invention registration.

The addition of paragraph (o) to §1.17 is similar to the addition of paragraph (n) but establishes a fee for requesting publication of applications, which have received any examiner's action pursuant to §1.104, as a statutory invention registration. The higher fee of $800.00 set in paragraph (o) is necessary in view of the expenditure of additional Office resources in examining the application prior to the filing of the request for a statutory invention registration.

Section 1.19 is amended as proposed to provide in paragraph (a)(1) a reference to the cost of a printed copy of a statutory invention registration and in paragraph (e) to provide reference to statutory invention registrations listed by subclass.

Section 1.20 is amended as proposed to delete the requirement to pay maintenance fees in all plant patents in view of the amendment in Public Law 98-622. Paragraph 1.20(m) is amended as proposed to provide that non-timely payment of maintenance fees may be accepted in patents based on applications filed prior to Aug. 27, 1982, in accordance with Public Law 98-622.

Public Law 98-622 provides that no maintenance fees are charged for plant patents, regardless of when filed. Without this provision that no maintenance fees be charged for plant patents, plant patent owners whose applications were filed between the dates of enactment of Public Law 96-517 and Public Law 97-247 (Dec. 12, 1980 to Aug. 27, 1982) would be subject to payment of maintenance fees, while plant patent owners whose applications were filed outside those dates would not be subject to such fees. Public Law 98-622 eliminates that inconsistency.

Section 1.45 is amended as proposed to reflect the change made by Public Law 98-622 in 35 U.S.C. 116. The previously existing paragraph is designated as paragraph (a). New paragraph (b) incorporates the wording added to 35 U.S.C. 116 by Public Law 98-622. New paragraph (c) indicates that each named inventor listed in an application must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and that the application will be considered to be a joint application under 35 U.S.C. 116.

Section 1.48 is amended to add new paragraphs (b) and (c). New paragraph (b) provides for deleting the names of persons originally properly included as inventors, but whose invention is no longer being claimed in the application. Such a situation would arise where claims have been amended or deleted because they are unpatentable or as a result of a requirement for restriction of the application to one invention, or for other reasons. Public Law 98-622 and §1.48(b) change the result reached in *Ex parte Lyon*, 146 USPQ 222, 1965 Dec. Comm'r. Pat. 362 (Bd. App. 1964). The final rule has fewer requirements than the proposed rule for correction of inventorship in this situation. The proposed rule would have required, in addition to the requirements of the final rule, an oath or declaration by each actual inventor or inventors as required by §1.63 and the written consent of any assignee. The final rule requires only a petition and fee with the petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application. The amendment would have to be diligently made under paragraph (b).

The final rule adds a paragraph (c) in response to a comment to provide for the situation where an application discloses unclaimed subject matter by an inventor or inventors not named in the application as filed. In such a situation, the application may be amended pursuant to paragraph (a) of §1.48 to add claims to the subject matter and also to name the correct inventors for the application. The claims would be added by an amendment and, in addition, an amendment pursuant to paragraph (a) of §1.48 would be required to correct the inventors named in the application. Any claims added to the application must be supported by the disclosure as filed and cannot add new matter.

Section 1.60 is amended to include wording which would permit an application to be filed under this section only if it named as inventors the same or less than all the inventors who were named and signed the oath or declaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98-622, which permit continuing applications to be filed by different inventors. Under §1.60 additional inventors are not permitted to be named since the oath or declaration from the prior application is relied upon.

Section 1.61 is amended as proposed to incorporate the ability to file the translation, oath or declaration, and national fee after the 20 month deadline set forth in PCT Article 22(1) for entering the national phase in the United States Patent and Trademark Office.

Public Law 98-622 amended 35 U.S.C. 371(a) to provide greater flexibility for the PTO handling international applications. Also, 35 U.S.C. 371(a), by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, gives international applicants benefits similar to those given national applicants under 35 U.S.C. 111 by P.L. 97-247 with respect to the time for filing the national fee and oath or declaration.

Paragraph (b) of §1.61 is amended to delete the 2 month time period to conform with the decision concerning PCT Article 22(2) adopted by the Assembly of the International Patent Cooperation Union (PCT Union) on Feb. 3, 1984. The amendment to the Article took effect on Jan. 1, 1985.

PCT Article 22(2) as amended, reads as follows:

> "Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be the same as that provided in paragraph (1)."

The additional wording to paragraph (b) of §1.61 sets forth the ability to comply with the requirements for entering the national phase before the Patent and Trademark Office as a Designated Office within 22 months of the priority date. If the national fee or oath or declaration is submitted later than 20 months after the priority date, a surcharge as set in §1.445(a) (5) is required to be paid. If a required English translation of the international application is filed later than 20 months after the priority date, a processing fee as set in §1.445(a) (6) is required to be paid.

New paragraph (c) of §1.61 provides that any amendments under PCT Article 19 which are not received along with any necessary English translation by the end of 20 months from the priority date will be considered as cancelled. This change is required in view of amended §371(d) of 35 U.S.C.

Paragraph (d) is added as proposed to §1.61 in view of §372(b) of title 35, United States Code, as amended by Public Law 98-622, which authorizes the Commissioner to require a verification of the translation of an international application or any other document pertain-

ing thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases was necessary since subsection (c) (2) of 35 U.S.C. 371 was amended to remove the requirement that the translation be verified in all cases.

Section 1.62 is amended by revising paragraphs (a), (c), and (h) to include wording which would permit a continuing application to be filed under this section by the same or less than all the same inventors who filed and signed the oath or delcaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98–622, which permit continuing applications to be filed by different inventors. Under §1.62, additional inventors may be added only in applications in which a new oath or declaration is required because additional subject matter is being claimed. Paragraph (h) has been amended to also request applicants to furnish the title of the invention and the names of the applicants in the continuing application to permit the Office to enter this information in its records in the Application Branch.

Section 1.78 is amended to provide in paragraph (a) that the inventorship in the continuing application may be different from the inventorship in the prior copending application and that the prior application must disclose the invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. The requirement that at least one claim be fully supported in the prior application to be entitled to priority benefit is not new, but is included to serve as a reminder that information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the later application is available as prior art where the claims of the continuation-in-part application are not fully supported by the disclosure of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120. See *In re Ruscetta,* 255 F. 2d 687, 118 USPQ 101 (CCPA 1958); *In re van Langenhoven,* 458 F. 2d 132, 173 USPQ 426 (CCPA 1972), and *Chromalloy American Corp.* v. *Alloy Surfaces Co., Inc.,* 339 F. Suppl. 859, 173 USPQ 295 (D. Del. 1972).

Paragraph (c) as amended provides for the reply to an examiner's inquiry as to first inventor of conflicting claims in commonly owned applications or an application and a patent to be either (1) a statement that the inventions were both commonly owned at the time the later invention was made or (2) an indication of the first inventor. Paragraph (c) has been changed from that proposed in response to comments to clarify that common ownership or an obligation of assignment to the same person has to exist at the time the later invention was made. New paragraph (d) provides for making a double patenting rejection where an application claims an invention which is not patentably distinct from an invention claimed in a commonly-owned patent with the same or different inventive entities. An obviousness-type double patenting rejection could be overcome by the assignee by submitting a terminal disclaimer complying with §1.321(b).

Section 1.101 is amended as proposed to delete reference to applications filed under §1.139 since this section is being removed.

Section 1.103 is amended as proposed to refer in paragraph (d) to a request "for a defensive publication" rather than a request "filed under §1.139" since §1.139 is being removed. Paragraph (d) is amended as proposed to also refer to "patent interference proceedings under Subpart E" rather than to "proceedings under §1.201(b)" since §1.201(b) has been removed.

Section 1.104 is amended as proposed to add a new paragraph (e) to specify the nature of the showing necessary before the examiner would consider co-pending applications to be owned by, or subject to an obligation of assignment to, the same person for purposes of 35 U.S.C. 102(f)/103, 102(g)/103, and paragraph (d) of §1.106. The rule permits the necessary showing to be made in different alternative ways. The necessary showing will be considered by the examiner to be present if the application files refer to assignments which are recorded in the Patent and Trademark Office in accordance with §1.331 as long as the assignments conveyed the entire rights in the applications to the same person or organization. A second alternative which can be used, if assignments have not been recorded, permits the examiner to consider copies of unrecorded assignments filed in each of the applications by the applicants as long as the unrecorded assignments convey the entire rights in the applications to the same person or organization. A third alternative permits an affidavit or declaration to be filed by the common owner stating that there is common ownership and stating facts which explain why the affiant or declarant believes there is common ownership. Under this alternative, sufficient facts will have to be presented in order to enable the examiner to conclude that a prima facie case of common ownership exists. The fourth alternative permits other evidence to be used which would establish common ownership of the applications, e.g., a court decision determining the owner. The terms "person" and "organization" in the rule would include circumstances where the ownership resided in more than one person and/or organization as long as the applications are owned jointly by the same owners. Paragraph (e) also provides that where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization who is empowered to act on behalf of the corporation or organization. A mere power of attorney to prosecute a patent application will not make an individual an official of the corporation or organization or empower the individual to act on behalf of the corporation or organization.

The wording of §1.106(d) amends the rule to reflect the change in 35 U.S.C. 103 and refers to the "entire" rights to the subject matter and the claimed invention to make it clear that the term "commonly owned" means wholly owned by the same person, persons, or organization.

If the person, persons, or organization owned less than 100 percent of the subject matter which would otherwise be prior art to the claimed invention, or less than 100 percent of the claimed invention, then common ownership would not exist. Common ownership requires that the person, persons, or organization own 100 percent of the subject matter and 100 percent of the claimed invention. As long as principal ownership rights to either the subject matter or the claimed invention reside in different persons or organizations common ownership does not exist. A license of the claimed invention to another by the owner where basic ownership rights are retained would not defeat ownership. The requirement for common ownership at the time the claimed invention was made is intended to preclude obtaining ownership of subject matter after the claimed invention was made in order to disqualify that subject matter as prior art against the claimed invention. The question of whether common ownership exists at the time the claimed invention was made is to be determined on the basis of the evidence presented and the facts of the particular case in question. Actual ownership of the subject matter and the claimed invention by the same individual or organization or a legal obligation to assign both the subject matter and the claimed invention to the same individual or organization must be in existence at the time the claimed invention was made in order for the subject matter to be disqualified as prior art. A moral or unenforceable obligation would not evidence common ownership.

The burden of establishing that subject matter is disqualified as prior art under the section is intended to be placed and reside upon the person or persons urging that the subject matter is disqualified. For example, the examiner would normally make what appears to be a proper 35 U.S.C. 102(f)/103 or 102(g)/103 rejection and the burden would be on the patent applicant to establish

that subject matter is disqualified as prior art because it was commonly owned at the time the claimed invention was made. To place the burden upon the patent examiner would not be appropriate since evidence as to common ownership at the time the claimed invention was made might not be available to the patent examiner, but such evidence, if it exists, should be readily available to the patent applicant or the patentee.

The invention is made for purposes of the amendment to §103 when the conception is complete as defined in *Mergenthaler* v. *Scudder,* 11 App. D.C. 264, 1897 C.D. 724 (C.A.D.C. 1897), and in *In re Tansel,* 117 USPQ 188 (CCPA 1958).

> "The conception of the invention consists in the complete performance of the mental part of the inventive act. All that remains to be accomplished in order to perfect the act or instrument belongs to the department of construction, not invention. It is, therefore, the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice that constitutes an available conception within the meaning of the patent law."

Mergenthaler v. *Scudder,* supra, at page 731.

Paragraph (e) of §1.106 has been added in response to a comment that the rulemaking should leave no doubt as to the standard to be applied in determining the effect of a statutory invention registration waiver in one application on a related application. Paragraph (e) of §1.106 provides that the claims in any original application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the same subject matter is claimed in the application and the statutory invention registration. Paragraph (e) of §1.106 also provides that the claims in any reissue application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the reissue application seeks to claim subject matter which was not covered by claims issued in the patent prior to the date of publication of the statutory invention registration and which was the same subject matter waived in the statutory invention registration.

Section 1.108 is amended as proposed to delete the reference to filing a request under §1.139, which is being removed, and insert in its place a reference to a defensive publication.

A new section 1.110 is added as proposed to allow the examiner or other Office official to make inquiry as to the invention date, inventors and ownership at the time the invention was made when necessary for purposes of an Office proceeding.

Section 1.131 is amended to require that affidavits to overcome a rejection of a claim on a cited patent or publication be by the inventor or inventors of the subject matter of that claim. Section 1.131 has also been amended in response to a comment to permit the person qualified under §§1.42, 1.43, or 1.47 to make the required oath or declaration in appropriate circumstances.

Section 1.139 is being removed in view of the new statutory invention registration. The proposed rules made clear the intent to remove this section which established the defensive publication program although the section per se was not published as being removed. The defensive publication program is being replaced by the ability to obtain a statutory invention registration.

Section 1.193 is amended as proposed to change from twenty days to one month the time for filing a reply brief in response to an examiner's answer which raises new points of argument. This amendment is intended to simplify the docketing of this time period and make it consistent with the time period fixed for requesting an oral hearing in §1.194(b).

Section 1.293 is added to provide who may file a request for a statutory invention registration (SIR) and the requirements of such a request in accordance with 35 U.S.C. 157 added by Public Law 98-622. Paragraph (a) of §1.293 indicates that a request for publication of a statutory invention registration in a complete pending patent application for an original patent may be filed and be signed by the applicant, and any assignee of record, or the attorney or agent of record in the application. Paragraph (b) sets forth the requirements for a request for a statutory invention registration. Such a request must include:

(1) a waiver of the applicant's right to receive a patent. This waiver will become effective upon the date of publication. Therefore, it will be possible to petition to withdraw a request for publication of a statutory invention registration until such time that publication can not be terminated;
(2) payment of the fee for requesting publication of a statutory invention registration as set forth in §1.17(n) or (o). The fee is set at two levels to reflect the amount of resources used by the Patent and Trademark Office;
(3) a statement that the application meets the disclosure requirements of 35 U.S.C. 112. This provision is considered desirable in order to prevent publication of defective and insufficient disclosures; and
(4) a statement that the application complies with the formal requirements of the rules of practice relating to printing. This provision is required in order to provide the printer with drawings and specification which are suitable for printing in substantially the same format as a patent.

A suggested format for use in filing a request for a statutory invention registration is as follows:

Request for Statutory Invention Registration

Application Serial No. or [ ] Attached hereto
Filed:
Titled:
Applicants:

A. In the above identified patent application, I hereby
1. request and authorize the Commissioner of Patents and Trademarks to publish the above identified regularly filed patent application as a Statutory Invention Registration. (35 U.S.C. 157)
2. waive the right to receive a United States patent on the same invention claimed in the above identified patent application. These rights, which are waived, include those specified in 35 U.S.C. §183 and §§271 through 289 as well as all attributes specified for patents in any other provision of law other than title 35 United States Code. The waiver includes, but is not limited to, the remedies under 19 U.S.C. 1337 and 1337a, 22 U.S.C. 2356 and 28 U.S.C. 1498. (35 U.S.C. 157(c))
3. understand that the above waiver will be effective pursuant to 37 CFR 1.293 upon publication of the Statutory Invention Registration to waive the inventor's right to receive a United States patent on the invention claimed in the Statutory Invention Registration. (37 CFR 1.293(b) (1))
4. state that, in my opinion, the disclosure and claims of the above identified patent application meet the requirements of 35 U.S.C. 112. (37 CFR 1.293(b) (3))
5. state that, in my opinion, the above identified application complies with the requirements for printing as set forth in the Rules of Practice for Patent Cases, 37 CFR Part 1. (37 CFR 1.293(b) (4))
6. enclose the fee set forth in 37 CFR 1.17(n) or (o) for requesting publication of a Statutory Invention Registration.

[ ] A first examiner's action *has not* been mailed in the above application, 37 CFR 1.17(n) — $400.00 or
[ ] A first examiner's action *has* been mailed in the above application, 37 CFR 1.17(o) — $800.00
$_____

Minus Basic Filing Fee, if previously paid

	Small entity	Large entity
Basic filing fee for utility patent application set forth in 37 CFR 1.16(a)	[ ] $150.00	[ ] $300.00
Basic filing fee for design patent application set forth in 37 CFR 1.16(f)	[ ] $62.50	[ ] $125.00
Basic filing fee for plant patent application set forth in 37 CFR 1.16(g)	[ ] $100.00	[ ] $200.00

MINUS: $_____
Amount Due $_____

[ ] Amount enclosed by check or money order _____.

[ ] Please charge Deposit Account No. _____in the amount of _____.

[ ] If payment of any additional fee is required for publication of the Statutory Invention Registration, charge such payment to Deposit Account No. _____.

B. For printing on the Statutory Invention Registration front page list below the name(s) of not more than 3 registered patent attorneys or agents OR alternatively, the name of the firm having as a member a registered patent attorney or agent. If no name is listed below, no name will be printed. _____

C. Name of assignee, if any, for printing on the Statutory Invention Registration _____

Address (City and State or Country) _____
State of incorporation, if assignee is a corporation _____

(signature(s) (37 CFR 1.293(a))
[ ] applicant(s) and any assignee
[ ] attorney or agent of record

Paragraph (c) of §1.293 is added to define the effects of a waiver filed with a request for a statutory invention registration. The waiver is effective, upon publication of the SIR, to waive the inventor's right to receive a patent on the invention claimed in the SIR in any application for an original patent which is pending on, or filed after, the date of publication of the SIR. The waiver will affect pending or later applications the inventor filed as a joint inventor with others, but will not affect an application of another person, even if the application and the SIR were commonly owned. The waiver will affect a reissue application of an earlier patent of the inventor only to the extent that the reissue application seeks to enlarge the scope of the claims. Paragraph (c) of §1.293 has been modified from the proposal by inclusion of a reference to §1.106(e).

Section 1.294 is added as proposed to provide in paragraph (a) for a review of the request for publication of a statutory invention registration and the patent application to which it is directed. The request will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 are met. Under 35 U.S.C. 157, the Commissioner is authorized to publish a statutory invention registration, but is not required to do so. Thus, the Commissioner has discretion in determining whether or not a statutory invention registration should be issued on a particular patent. In circumstances where the subject matter was obviously not a patentable invention, was too informal to print, and so forth, the request to publish the statutory invention registration will be refused.

Paragraph (b) of §1.294 provides for notifying applicant of the results of the examination of the request for publication of the statutory invention registration. Paragraph (c) of §1.294 provides for the issuance of a notice of the intent to publish a statutory invention registration once the request has been examined and approved.

Section 1.295 is added to provide for the review of a final refusal to publish a statutory invention registration. The review would be by petition to the Commissioner for matters other than those arising from a rejection pursuant to 35 U.S.C. 112 and by appeal for a rejection pursuant to 35 U.S.C. 112. The language of the final rule is slightly different from that proposed to emphasize that the Board either affirms or reverses decisions rather than rejections. Paragraph (a) also differs from the proposal by including, in response to a comment, a provision for requesting return of the petition fee if the necessity for the petition resulted from an error by the Patent and Trademark Office.

Section 1.296 has been modified from the proposal to provide a specific period during which a request for a statutory invention registration may be withdrawn. Under §1.296, as modified, a request for a statutory invention registration may be withdrawn, at applicant's option, prior to the date of the notice of intent to publish a statutory invention registraiton issued pursuant to §1.294(c) by filing a request to withdraw the request for publication of a statutory invention registration. An applicant filing such a request to withdraw may also, under §1.296, request a refund of any amount paid in excess of the application filing fee and a handling fee of $100.00 which will be retained by the Office. Any request to withdraw the request for publication of a statutory invention registration filed on or after the date of the notice of intent to publish pursuant to §1.294(c) must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).

Section 1.297 is added to provide for the publication of the statutory invention registration and of the notice of its publication in the *Official Gazette*. In response to a comment, §1.297 has been modified so that the statement on the statutory invention registration will specifically state that the statutory invention registration is not a patent.

Sections 1.301, 1.302 and 1.304 are amended as proposed to delete the requirement to give reasons for appeal when filing an appeal to the Court of Appeals for the Federal Circuit in accordance with §414(a) of Public Law 98-620 which amended 35 U.S.C. 142, 143 and 144.

Section 1.378 is amended as proposed to delete from paragraph (a) the limitation that only applications filed on or after Aug. 27, 1982 may have the maintenance fee accepted after expiration of the patent. This change follows the change made by §404(b) of Public Law 98-622.

Section 1.431 is amended as proposed to provide for the later payment directly to the Receiving Office of the basic fee portion of the international fee and the transmittal and search fees within one month of the filing of an international application. The rule follows §361(d) of title 35 U.S.C. as amended by Public Law 98-622, to provide a one-month grace period from the date of filing of an international application for the payment of the basic international fee and the transmittal and search fees.

It should be noted that the designation fees continue to be required by 12 months after the priority date and that no subsequent grace period is provided in the Receiving Office for designation fees.

New paragraphs 1.431(d) and (e) incorporate into the regulations the provisions of PCT Rule 16 bis. Under these provisions the Receiving Office will charge any unpaid or insufficient fees to a deposit account maintained by the International Bureau. The applicant will then be notified by the International Bureau and be given one month to reimburse the amount charged plus a surcharge of 50%. The surcharge would not be less than 248 Swiss francs or more than 624 Swiss francs under the current fee schedule.

Section 1.445 is amended as proposed to clarify paragraph (a) (4) to clearly indicate that the national fee is

credited by an amount of $250 only one time where a $500 search fee has been paid to the Patent and Trademark Office to act as an international searching authority. This is consistent with current practice. The special fee provisions in paragraph (a) (5) are being deleted in view of §402(g) of Public Law 98-622 which deleted the fee in 35 U.S.C. 376(a) (5). The wording of §1.445(a) (5) sets forth the surcharge required for filing of a national fee or oath or declaration later than 20 months from the priority date. Paragraph (a) (6) of §1.445 is added to require a fee of $20.00 for filing an English translation of an international application later than 20 months after the priority date. This makes the practice in international applications consistent with that in national applications where a fee of $20.00 is charged under §1.17(k) for processing an application filed with a specification in a non-English language.

Section 1.446 is amended as proposed to clarify the refund of a portion of the $500 search fee toward payment of the national fee.

Section 1.451 is amended as proposed to correct a rule citation in paragraph (b) and to amend paragraph (c) to provide for supplying a copy of the priority document to the Receiving Office in conformance with revised PCT Rule 17.1.

Section 1.461 is amended as proposed to delete provisions which relate to the applicant transmitting the record copy to the International Bureau. Provisions for such alternative transmittal were deleted from PCT Rule 22, effective Jan. 1, 1985. Accordingly, since the PCT rules no longer provide for such transmittal, the provisions therefor in the U.S. rules are also being deleted.

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Six letters submitting written comments were received. Oral testimony was presented by four persons at the public hearing conducted on Feb. 8, 1985 and the oral testimony of two of these persons (representing the American Intellectual Property Law Association and Intellectual Property Owners, Inc.) was supplemented by written statements. All of the written and oral comments were considered in adopting the changes set forth herein. Comments suggesting modifications to the proposed rules appear below with responses thereto.

Comment One Comment suggested that 37 CFR 1.11 be amended to create a waiver of secrecy of an application as of the date of filing of a notice of appeal to the Court of Appeals for the Federal Circuit. The comment suggests that secrecy could be maintained upon request by the appellant in such a situation.

Reply The change was not published in the proposed rulemaking and is considered to be too substantial a change to be adopted without publication as a proposal to allow public comment. Further, if the suggestion were adopted appellants might simply include a request for secrecy with every notice of appeal.

Comment One comment suggested that the $120.00 petition fee under §1.17(h) for review of a refusal to publish a statutory invention registration under §1.295 be returned to the petitioner if the refusal to publish is found to have occurred only through an administrative error of the PTO.

Reply This suggestion has been adopted by an additional sentence being added to §1.295(a).

Comment Three comments suggested that the proposed fees for a statutory invention registration were too high. One comment suggested the elimination of the fee proposed in §1.17(o).

Reply Although lower fees would certainly be preferred by the public, the Office must recover its costs of processing and publishing statutory invention registrations. The two levels of fees permit an applicant whose application has not had a first Office action mailed to pay a minimum amount while those filing a request for a statutory invention registration later would share the average additional costs. The amounts proposed are the current estimates of expected costs and cannot be reduced. This will become apparent when it is realized that about $250.00 of the $400.00 fee which has been established for requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to §1.104 is the cost of printing the statutory invention registration and does not include in-house publication staff costs. The remainder of the fee is used to cover the administrative processing costs and the limited examination which is required to be given pursuant to 35 U.S.C. 157. The higher fee of $800.00 which has been established is necessary to cover the additional costs to the Office when an applicant requests publication of a statutory invention registration after the office has begun examination of the application on which the applicant is requesting publication of a statutory invention registration. Since the rules permit the request to be filed at any time during the examination process substantial additional examination costs, including possibly appeal costs, may have been incurred in a particular application prior to the date on which the request for publication is made. Accordingly, the additional $400.00 is required to cover the extra costs to the Office where the applicant belatedly requests publication of a statutory invention registration. Applicants can avoid the higher costs to themselves and the Office by requesting publication of the statutory invention registration in a timely fashion prior to the mailing of the first examiner's action pursuant to §1.104. The possibility of reducing fees below costs to the Office does not exist since the legislative history of 35 U.S.C. 157 does not reflect any intent that other Office fees or appropriations be used to defer the costs of statutory invention registrations. Further, most of the comments received urged that the fees be set as low as possible, but not below the level necessary to recover costs.

Comment One comment suggested that the Patent and Trademark Office should investigate less expensive procedures for printing statutory invention registrations to reduce the costs and thereby lower the fees.

Reply If the registrations are not printed by a system using computer tape, the subject matter of the registrations would not be easily searchable in paper form and would not be fully available for searching under the planned automated "paperless" system. Further, the "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H. R. 6286 on the floor of the House stated that the statutory invention registration "would be classified and cross-referenced, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the *Official Gazette* of the PTO." (130 Cong. Rec. H 10526 (1984), column 3). These uses of the statutory invention registrations preclude use of any informal method of printing which would be different from the method used for the printing of patents.

Comment A number of comments were received concerning §1.48(b). The comments related to (1) the propriety of the fee required, (2) the incorporation of paragraph (b) into current §1.48, (3) the inclusion in the rules of a fixed and definite time period to correct inventorship, (4) the inclusion in the rules of a provision to add inventors claiming previously disclosed but unclaimed subject matter, and (5) a suggestion that the change in inventorship be simplified and possibly effected by a statement by applicant's attorney.

Reply Each comment will be treated separately in order. (1) The fee of $120.00 to accompany a petition for correction of inventorship is considered appropriate since the consideration of such a petition and correction of Office records takes additional resources. Such a fee should also act as a discouragement to grouping marginal inventions and loosely related inventions into the same application. (2) Whether paragraph (b) is made part of §1.48 or established as a separate rule does not appear to be a substantive matter. Paragraph (b) is being made part of §1.48 to place all rules relating to correction of inventorship in applications in a single rule. (3)

No specific time period for correction of inventorship was indicated in the proposed rules. The rule requires that the correction must be made diligently. Since the examiner will not normally be aware of when inventorship correction is required, the responsibility of making such a correction diligently must rest with the applicant. The time of the correction will vary from case to case. (4) The addition of claims to previously disclosed but unclaimed subject matter of additional inventors is considered to be an error in the application and is therefore corrected under §1.48(a). A new paragraph (c) has been added to §1.48 to make this clear. Such a correction must always include a new oath or declaration. (5) The correction of inventorship has been simplified from that proposed. Final §1.48(b) does not require a new oath or declaration of each actual inventor or written consent of any assignee as originally proposed. The final rule requires a petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application, and the fee set forth in §1.17(h). The petition could be signed by applicant's attorney who would then take full responsibility for ensuring that the inventor is not being improperly deleted from the application.

Comment One comment suggested that proposed §§1.60 and 1.62 should be modified to permit the filing of such continuing applications with different inventive entities from the prior application.

Reply The procedures under §§1.60 and 1.62 were developed to allow continuing applications to be filed without the necessity of again obtaining an inventor's signature to a declaration. The proposed rule wording has been modified in the final rule to permit inventors to be deleted in the continuing application. The addition of inventors is now permitted where a new oath or declaration would be required because of claims in the continuing application being drawn to additional subject matter.

Comment One comment suggested that §§1.77 and 1.78 be modified to change the placement in a patent application of the information regarding cross-reference to related applications. It was suggested to require this information to be placed immediately after the Abstract, following the claims, so that the cross-reference information could be easily removed when filing the application outside the United States.

Reply These changes were not included in the proposed rulemaking and therefore the public has not had an opportunity to comment on the suggestion. Accordingly, the suggestion has not been adopted.

Comment One comment suggested that proposed §1.78(c) be modified to permit a statement that the claimed inventions were subject to an obligation of assignment to the same person at the time the inventions were made.

Reply The suggestion has been adopted.

Comment One comment suggested that the application of double patenting rejections to applications of different inventive entities which are commonly owned as set out in proposed §1.78(d) not be made until the effective date of this rulemaking.

Reply The Commissioner's Notice of Dec. 11, 1984, "Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120", 1050 O.G. 316 (Jan. 8, 1985), changed the practice in accordance with the intention of Congress in enacting Public Law 98–622. See 130 Cong. Rec. H 10527, column 3 (daily ed. Oct. 1, 1984) (statement of Rep. Kastenmeier) wherein the following statement appears:

> "The Committee expects that the Patent and Trademark Office will reinstitute in appropriate circumstances the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. This will be necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming the terminal portion of the term of the later patent, thereby eliminating the problem of extending patent life."

Since the provisions of Public Law 98–622 became effective on Nov. 8, 1984, it was not appropriate to delay the change in practice.

Comment One comment suggested that the policy of rejecting commonly-owned applications of different inventive entities on the grounds of double patenting, as set forth in proposed §1.78(d), was unnecessary in view of 35 U.S.C. 102(e).

Reply The provisions of 35 U.S.C. 102(e) will not be effective to preclude double patenting in situations where the applicants of the later filed application can use the provisions of 37 CFR 1.131 to antedate the filing date of the earlier filed application or patent. Accordingly, the application of the prohibitions against double patenting is necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See 130 Cong. Rec. H 10527, supra.

Comment One comment suggested that proposed §1.78(c) was broader than required by statute and capable of being construed to conflict with proposed §1.106(d) by referring to common ownership at "the time the inventions were made" rather than at the time the later invention was made.

Reply The wording of §1.78(c) has been revised from the proposal to clarify the problem spoken to in the comment.

Comment One comment suggested that the proposed amendment to §1.131 not be made so that the "applicant" can make affidavits or declarations to overcome rejections. The comment suggested that the proposed rule provides no remedy in situations where the inventor is dead, insane, legally incapacitated, cannot be reached or refuses to join in the application.

Reply The final rule has been changed in response to the comment to permit the person qualified under §§1.42, 1.43, or 1.47 to make the required oath or declaration in appropriate circumstances.

Comment Two comments suggested that the scope of the waiver in a statutory invention registration be limited to the subject matter of the claims of the statutory invention registration and not to any obvious modifications thereof. Another comment suggested that the statutory invention registration applicant should be able to waive the right to a patent on all of the subject matter disclosed in the application if he wishes to do so. One comment suggested that the rulemaking should leave no doubt as to the standard to be applied in determining the effect of a statutory invention registration waiver in one application on a related application.

Reply A new paragraph (e) has been added to §1.106 to clarify the standard to be applied in determining the effect of a statutory invention registration waiver. The suggestion that the scope of the waiver be limited to the subject matter of the claims of the statutory invention registration and not to any obvious modifications thereof has been adopted.

Comment Three comments suggested that since a statutory invention registration is prior art as of its effective filing date, the time permitted between the effective filing date and the publication of the statutory invention registration should be limited. Several different approaches were suggested. One comment suggested that there was no problem in this regard. Another comment suggested that the organization is studying the question and will have recommendations in several months.

Reply The statute makes it clear that the Commissioner is not required to publish a statutory invention registration in response to a request therefor. The case-by-case consideration of requests for publication of a statutory invention registration should safeguard the public without unduly placing limits on patent applicants. The Office will await further recommendations on this ques-

tion and will observe actual experience prior to placing any time limitations on the use of statutory invention registrations.

Comment Two comments suggested that §1.293 be modified to eliminate the requirement for a statement in the request for publication of a statutory invention registration that the application meets the requirements of 35 U.S.C. 112. One of these comments also suggested the elimination of the statement that the application meets formal requirements for printing. One comment suggested that if there is a requirement for a statement in the request for publication of a statutory invention registration that the application meets the requirements of 35 U.S.C. 112, there will not be a great necessity for the Office to spend a lot of time examining the application, although there has to be some examination.

Reply The reason for the statements in §1.293 regarding compliance with 35 U.S.C. 112 and the formal requirements for printing as a patent was to reduce the cost of statutory invention registrations to the applicants and to the Office. The level of fees which have been established assumes that applicants will include the statements required by §1.293 in their requests and that the statements will accurately reflect the condition of the applications to which the requests are directed.

Comment One comment suggested that the rules should include a fixed and definite time period in which an authorized party can withdraw a statutory invention registration after its approval and before its publication.

Reply The suggestion has been adopted. Section 1.296 has been modified to permit a request to withdraw the request for publication of a statutory invention registration to be filed at any time prior to the date of the notice of intent to publish the statutory invention registration. After the date of the notice of intent to publish the statutory invention registration, any request to withdraw the request for publication of the statutory invention registration must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).

Comment One comment suggested that the statement to be printed on statutory invention registrations as set out in proposed §1.297(b) be modified to be easily understood by lay people.

Reply The statement has been modified to specifically state that the statutory invention registration is not a patent.

Environmental, Energy, and Other Considerations: The final rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). In fact, the rule change will benefit small entities since the statutory invention registration procedures will provide a new, less expensive alternative to the traditional patenting of inventions in appropriate circumstances. Further, the ability to join multiple inventors in a single application in appropriate circumstances will be of particular benefit to small entities. Other changes, such as the elimination of the reasons for appeal, will also be beneficial to all inventors. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H.R. 6286 on the floor of the House in which the following statement appears (130 Cong. Rec. H 1057 (1984), column 1):

> "Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new less expensive alternative to the traditional patenting of inventions."

These rules, therefore, will have no significant adverse economic impact on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirements contained in these rules were submitted to the Office of Management and Budget (OMB) at the time of the proposed rulemaking for review under Section 3504(h) of the Paperwork Reduction Act. OMB has approved the information collection requirements and has assigned OMB control number 0651–0018 thereto.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 98–620 and 98–622, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

1. Section 1.11 is amended by revising paragraphs (a) and (b) and adding new paragraph (e) to read as follows:

§1.11 Files open to the public.

(a) After a patent has been issued or a statutory invention registration has been published, the specification, drawings and all papers relating to the case in the file of the patent or statutory invention registration are open to inspection by the public, and copies may be obtained upon paying the fee therefor. See §2.27 for trademark files.

(b) All reissue applications, all applications in which the Office has accepted a request to open the complete application to inspection by the public, and related papers in the application file, are open to inspection by the public, and copies may be furnished upon paying the fee therefor. The filing of reissue applications will be announced in the *Official Gazette*. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.

* * * * *

(e) The file of any interference involving a patent, a statutory invention registration, or an application on which a patent has issued or which has been published as a statutory invention registration, is open to inspection by the public, and copies may be obtained upon paying the fee therefor, if: (1) the interference has terminated, or (2) an award of priority or judgment has been entered as to all parties and all counts.

2. Section 1.14 is amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application in which the applicant has filed an authorization to open the complete applica-

tion to the public, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant.

* * * * *

3. Section 1.17 is amended by revising paragraph (h) and by adding new paragraphs (n) and (o) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $120.00

§1.47 — for filing by other than all the inventors or a person not the inventor
§1.48 — for correction of inventorship
§1.182 — for decision on questions not specifically provided for
§1.183 — to suspend the rules
§1.295 — for review of refusal to publish a statutory invention registration
§1.377 — for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent
§1.378(e) — for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent
§1.644(e) — for petition in an interference
§1.644(f) — for request for reconsideration of a decision on petition in an interference
§1.666(c) — for late filing of interference settlement agreement
§§5.12, 5.13, & 5.14 — for expedited handling of foreign filing license
§5.15 — for changing the scope of a license
§5.25 — for retroactive license

* * * * *

(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's acton pursuant to §1.104 ..... $400.00 reduced by the amount of the application basic filing fee paid

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to §1.104 ..... $800.00 reduced by the amount of the application basic filing fee paid

4. Section 1.19 is amended by revising paragraphs (a) and (e) to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:
(1) Printed copy of a patent, including a design patent, statutory invention registration, or defensive publication document, except color plant patent $1.00

* * * * *

(e) List of patents in subclass:
(1) For list of all United States patents and statutory invention registrations in a subclass, per 100 numbers or fraction thereof 2.00
(2) For list of United States patents and statutory invention registrations in a subclass limited by date or number, per 50 numbers or fraction thereof 2.00

5. Section 1.20 is amended by revising paragraphs (e), (f), (g) and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant $200.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant 400.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant 600.00

* * * * *

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable 500.00

6. Section 1.45 is revised by labeling the existing paragraph as (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

(a) * * * * *

(b) Inventors may apply for a patent jointly even though
(1) they did not physically work together or at the same time,
(2) each inventor did not make the same type or amount of contribution, or
(3) each inventor did not make a contribution to the subject matter of every claim of the application.

(c) If multiple inventors are named in an application, each named inventor must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and the application will be considered to be a joint application under 35 U.S.C. 116.

7. Section 1.48 is amended by labeling the current paragraph as paragraph (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.48 Correction of inventorship.

(a)

* * * * *

(b) If the correct inventors are named in the application when filed and the prosecution of the application re-

sults in the amendment or cancellation of claims so that less than all of the originally named inventors are the actual inventors of the invention being claimed in the application, an amendment shall be filed deleting the names of the person or persons who are not inventors of the invention being claimed. The amendment must be diligently made and shall be accompanied by:

(1) a petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application, and

(2) the fee set forth in §1.17(h).

(c) If an application discloses unclaimed subject matter by an inventor or inventors not named in the application, the application may be amended pursuant to paragraph (a) of this section to add claims to the subject matter and name the correct inventors for the application. [OMB Control No. 0651–0018].

8. Section 1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), naming as inventors the same or less than all the inventors named in a prior application and which discloses and claims only subject matter disclosed in the prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a), (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application, and (3) the inventors named in the continuation or divisional application are the same or less than all the inventors named in the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date. If the continuation or divisional application is filed by less than all the inventors named in the prior application a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation or divisional application.

9. Section 1.61 is amended by revising the section heading and paragraphs (a) and (b) and adding paragraphs (c) and (d) to read as follows:

§1.61 Filing of applications in the United States of America as a Designated Office.

(a) To maintain the benefit of the international filing date and obtain an examination as to the patentability of the invention in the United States, the applicant shall furnish to the U.S. Patent and Trademark Office not later than the expiration of 20 months from the priority date: (1) a copy of the international application with any amendments under PCT Article 19, unless it has been previously communicated by the International Bureau or unless it was originally filed in the U.S. Patent and Trademark Office; (2) a translation of the international application and a translation of any amendments under PCT Article 19 into the English language, if originally filed in another language; (3) the national fee (see §1.445(a)(4)); and (4) an oath or declaration of the inventor (see §1.70).

(b) If the translation of the international application, oath or declaration, and national fee have not been submitted by the applicant within twenty (20) months from the priority date, such requirements may be met within twenty-two (22) months from the priority date. The payment of the surcharge set forth in §1.445(a)(5) is required as a condition for accepting the national fee or the oath or declaration later than 20 months after the priority date. The payment of the processing fee set forth in §1.445(a)(6) is required for acceptance of an English translation later than 20 months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of §1.136 do not apply to the 22 month period of this section.

(c) If a copy of the amendments under PCT Article 19 is not communicated by the International Bureau or a copy thereof and any necessary English translation thereof is not received by the end of 20 months from the priority date, such failure will be regarded as cancellation of the amendments under PCT Article 19 in the international application.

(d) Verification of the translation of the international application or any other document pertaining to an international application may be required where it is considered necessary, if the international application or other document was filed in a language other than English.

10. Section 1.62 is amended by revising paragraphs (a), (c) and (h) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) which is to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application. If the continuation, continuation-in-part, or divisional application is filed by less than all the inventors named in the prior application a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation, continuation-in-part, or divisional application.

* * * * *

(c) In the case of a continuation-in-part application which adds and claims additional disclosure by amendment, an oath or declaration as required by §1.63 must also be filed. In those situations where a new oath or declaration is required due to additional subject matter being claimed, additional inventors may be named in the continuing application. In a continuation or divisional application which discloses and claims only subject matter dislcosed in a prior application, no additional oath or declaration is required and the application must name as inventors the same or less than all the inventors named in the prior application.

* * * * *

(h) The applicant is urged to furnish the following information relating to the prior and continuing applications to the best of his or her ability:

* * * * *

(5) The title of the invention and names of the applicants to be named in the continuing application.

* * * * *

11. Section 1.78 is amended by revising paragraphs (a) and (c) and by adding a new paragraph (d) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in a prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must name as an inventor at least one inventor named in the later filed application and dislcose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior application must be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(1) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

(c) Where two or more applications, or an application and a patent naming different inventors and owned by the same party contain conflicting claims, and there is no statement of record indicating that the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, the assignee may be called upon to state whether the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, and if not, indicate which named inventor is the prior inventor. In addition to making said statement, the assignee may also explain why an interference should or should not be declared.

(d) Where an application claims an invention which is not patentably distinct from an invention claimed in a commonly owned patent with the same or a different inventive entity, a double patenting rejection will be made in the application. An obviousness-type double patenting rejection may be obviated by filing a terminal disclaimer in accordance with §1.321(b).

12. Section 1.101 is amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

13. Section 1.103 is amended by revising paragraph (d) to read as follows:

§1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request to publish a defensive publication will be suspended for the entire pendency of these applications except for purposes relating to patent interference proceedings under Subpart E.

14. Section 1.104 is amended by adding a new paragraph (e) immediately following the Note to paragraph (d) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

(e) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (1) the application files refer to assignments recorded in the Patent and Trademark Office in accordance with §1.331 which convey the entire rights in the applications to the same person or organization; or (2) copies of unrecorded assignments which convey the entire rights in the applications to the same person or organization are filed in each of the applications; or (3) an affidavit or declaration by the common owner is filed which states that there is common ownership and states facts which explain why the affiant or declarant believes there is common ownership; or (4) other evidence is submitted which establishes common ownership of the applications. In circumstances where the common owner is a corporation or other organization an affidavit or declaration may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.

15. Section 1.106 is amended by adding new paragraphs (d) and (e) to read as follows:

§1.106 Rejection of claims.

* * * * *

(d) Subject matter which is developed by another person which qualifies as prior art only under 35 U.S.C. 102 (f) or (g) may be used as prior art under 35 U.S.C. 103 against a claimed invention unless the entire rights to the subject matter and the claimed invention were commonly owned by the same person or organization or subject to an obligation of assignment to the same person or organization at the time the claimed invention was made.

(e) The claims in any original application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the same subject matter is claimed in the application and the statutory invention registration. The claims in any reissue applica-

tion naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the reissue application seeks to claim subject matter (1) which was not covered by claims issued in the patent prior to the date of publication of the statutory invention registration and (2) which was the same subject matter waived in the statutory invention registration.

16. Section 1.108 is revised to read as follows:

§1.108 Abandoned applications not cited.

Abandoned applications as such will not be cited as references except those which have been opened to inspection by the public following a defensive publication.

17. Section 1.110 is added to read as follows:

§1.110 Inventorship and date of invention of the subject matter of individual claims.

When more than one inventor is named in an application or patent, the Patent and Trademark Office, when necessary for purposes of an Office proceeding, may require an applicant, patentee, or owner to identify the inventive entity of the subject matter of each claim in the application or patent. Where appropriate, the invention dates of the subject matter of each claim and the ownership of the subject matter on the date of invention may be required of the applicant, patentee or owner. See also §§1.78(c) and (d). [OMB Control No. 0651-0018].

18. Section 1.131 is amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the person qualified under §§1.42, 1.43 or 1.47, shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the inventor or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.

* * * * *

§1.139 [removed]

19. Section 1.139 is removed.

20. Section 1.193 is amended by revising paragraph (b) to read as follows:

§1.193 Examiner's answer.

* * * * *

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within one month from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within two months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

* * * * *

21. A new section 1.293 is added to read as follows:

§1.293 Statutory invention registration.

(a) An applicant for an original patent may request, at any time during the pendency of applicant's pending complete application, that the specification and drawings be published as a statutory invention registration. Any such request must be signed by (1) the applicant and any assignee of record or (2) an attorney or agent of record in the application.

(b) Any request for publication of a statutory invention registration must include the following parts:
(1) a waiver of the applicant's right to receive a patent on the invention claimed effective upon the date of publication of the statutory invention registration;
(2) the required fee for filing a request for publication of a statutory invention registration as provided for in §1.17(n) or (o);
(3) a statement that, in the opinion of the requester, the application to which the request is directed meets the requirements of 35 U.S.C. 112; and
(4) a statement that, in the opinion of the requester, the application to which the request is directed complies with the formal requirements of this part for printing as a patent.

(c) A waiver filed with a request for a statutory invention registration will be effective, upon publication of the statutory invention registration, to waive the inventor's right to receive a patent on the invention claimed in the statutory invention registration, in any application for an original patent which is pending on, or filed after, the date of publication of the statutory invention registration. A waiver filed with a request for a statutory invention registration will not affect the rights of any other inventor even if the subject matter of the statutory invention registration and an application of another inventor are commonly owned. A waiver filed with a request for a statutory invention registration will not affect any rights in a patent to the inventor which issued prior to the date of publication of the statutory invention registration unless a reissue application is filed seeking to enlarge the scope of the claims of the patent. See also §1.106(e). [OMB Control No. 0651-0018].

22. A new section 1.294 is added to read as follows:

§1.294 Examination of request for publication of a statutory invention registration and patent application to which the request is directed.

(a) Any request for a statutory invention registration will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 of this part are met.

(b) Applicant will be notified of the results of the examination set forth in paragraph (a) of this section. If the requirements of §1.293 and this section are not met by the request filed, the notification to applicant will set a period of time within which to comply with the requirements in order to avoid abandonment of the application. If the application does not meet the requirements of 35 U.S.C. 112, the notification to applicant will include a rejection under the appropriate provisions of 35 U.S.C. 112. The periods for response established pursuant to this section are subject to the extension of time provisions of §1.136. After response by the applicant, the application will again be considered for publication of a statutory invention registration. If the requirements of §1.293 and this section are not timely met, the refusal to publish will be made final. If the requirements of 35

U.S.C. 112 are not met, the rejection pursuant to 35 U.S.C. 112 will be made final.

(c) If the examination pursuant to this section results in approval of the request for a statutory invention registration the applicant will be notified of the intent to publish a statutory invention registration.

23. A new section 1.295 is added to read as follows:

§1.295 Review of decision finally refusing to publish a statutory invention registration.

(a) Any requester who is dissatisfied with the final refusal to publish a statutory invention registration for reasons other than compliance with 35 U.S.C. 112 may obtain review of the refusal to publish the statutory invention registration by filing a petition to the Commissioner accompanied by the fee set forth in §1.17(h) within one month or such other time as is set in the decision refusing publication. Any such petition should comply with the requirements of §1.181(b). The petition may include a request that the petition fee be refunded if the final refusal to publish a statutory invention registration for reasons other than compliance with 35 U.S.C. 112 is determined to result from an error by the Patent and Trademark Office.

(b) Any requester who is dissatisfied with a decision finally rejecting claims pursuant to 35 U.S.C. 112 may obtain review of the decision by filing an appeal to the Board of Patent Appeals and Interferences pursuant to §1.191. If the decision rejecting claims pursuant to 35 U.S.C. 112 is reversed, the request for a statutory invention registration will be approved and the registration published if all of the other provisions of §1.293 and this section are met. [OMB Control No. 0651-0018].

24. A new section 1.296 is added to read as follows:

§1.296 Withdrawal of request for publication of statutory invention registration.

A request for a statutory invention registration, which has been filed, may be withdrawn prior to the date of the notice of the intent to publish a statutory invention registration issued pursuant to §1.294(c) by filing a request to withdraw the request for publication of a statutory invention registration. The request to withdraw may also include a request for a refund of any amount paid in excess of the application filing fee and a handling fee of $100 which will be retained. Any request to withdraw the request for publication of a statutory invention registration filed on or after the date of the notice of intent to publish issued pursuant to §1.294(c) must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h). [OMB Control No. 0651-0018].

25. A new section 1.297 is added to read as follows:

§1.297 Publication of statutory invention registration.

(a) If the request for a statutory invention registration is approved the statutory invention registration will be published. The statutory invention registration will be mailed to the requester at the correspondence address as provided for in §1.33(a). A notice of the publication of each statutory invention registration will be published in the *Official Gazette.*

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:
A statutory invention registration published pursuant to 35 U.S.C. 157 is not a patent but it has all of the attributes specified for patents in title 35, United States Code, except those specified in 35 U.S.C. 183 and sections 271 through 289. A statutory invention registration does not have any of the attributes specified for patents in any other provision of law other than title 35, United States Code. The invention with respect to which a statutory invention registration is published is not a patented invention for purposes of the marking provisions of 35 U.S.C. 292.

26. Section 1.301 is revised to read as follows:

§1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party to an interference dissatisfied with the decision of the Board of Patent Appeals and Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office file a written notice of appeal directed to the Commissioner (see §§1.302 and 1.304); and (b) in the Court, file a copy of the notice of appeal and pay the fee for appeal, as provided by the rules of the Court. The certified list of documents and any original or certified copies of such documents required by the Court will be transmitted to the Court by the Patent and Trademark Office.

27. Section 1.302 is revised to read as follows:

§1.302 Notice of appeal.

(a) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof to the Commissioner within the time specified in §1.304.

(b) In interferences, the notice must be served as provided in §1.646.

28. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action

(a) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under §1.197(b) or §1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of §1.136. See §1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See §1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

29. Section 1.378 is amended by revising the section heading and paragraph (a) to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as a condition of accepting payment of the maintenance fee.

If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

* * * * *

30. Section 1.431 is amended by revising paragraphs (b)(3)(iii) and (c) and by adding new paragraphs (d) and (e) to read as follows:

§1.431 International application requirements.

* * * * *

(b)(3) * * *

(iii) The name of the applicant, as prescribed (note §§1.421-1.424);

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§1.445) may be made in full at the time international application papers required by paragraph (b) of this section are deposited or within one month thereafter. Failure to make full payment within one month of the deposit of the international application papers required by paragraph (b) of this section will result in the fees being charged to the International Bureau under the provisions of paragraph (d) of this section and PCT Rule 16 bis.

(d) The United States Receiving Office will charge to the International Bureau in accordance with PCT Rule 16 bis and will consider as having been timely paid:

(1) the transmittal fee, the basic fee portion of the international fee, or the search fee where these fees have not been fully paid by the applicant within one month of the date of deposit of the international application, and

(2) the destination fee, or the amount necessary to cover all the designations made in the request which have not been paid by the applicant within one year from the priority date.

(e) The International Bureau will notify applicant of any amount charged under paragraph (d) of this section and invite the applicant to pay directly to the International Bureau within one month from the date of the notification, the amount charged, augmented by a surcharge of 50%, provided the surcharge will not be less and will not be more, than the amounts indicated in the Schedule of Fees appended to the PCT Rules. If the payment needed to cover the transmittal fees, the basic fee, the search fee, one designation fee and the surcharge is not timely made to the International Bureau, the International Bureau will notify the Receiving Office which will declare the international application withdrawn under PCT Article 14(3)(a). If the applicant makes timely payment of the fees referred to in the previous sentence, but the amount paid is not sufficient to cover all the designation fees, the Receiving Office will declare any designations not paid withdrawn under PCT Article 14(3)(b) in accordance with PCT Rule 16 bis. 2(c).

31. Section 1.445 is amended by revising paragraphs (a)(4) and (5) and adding paragraph (a)(6) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited one time only by an amount of $250 where an international search fee of $500.00 has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single $500.00 international search fee.

(5) Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date $100.00

(6) For filing an English translation of an international application later than 20 months after the priority date (§1.61(b)).. $20.00

* * * * *

32. Section 1.446 is amended by revising the section heading and paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee toward payment of the national fee may be made one time to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee provided that a $500 search fee has been paid.

* * * * *

33. Section 1.451 is amended by revising paragraphs (b) and (c) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office or in a separate letter filed in the Receiving Office not later than 16 months after the priority date, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Article 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)(3) and (b)(1).

(c) If a certified copy of the priority document is not submitted together with the international application on filing, or, if the priority application was filed in the United States and a request and appropriate payment for preparation of such a certified copy do not accompany the international application on filing or are not filed within 16 months of the priority date, the certified copy of the priority document must be furnished by the applicant to the International Bureau or to the United States Receiving Office within the time limit specified in PCT Rule 17.1(a).

34. Section 1.461 is amended by deleting paragraph (b) and by revising paragraph (a) to read as follows:

§1.461 Procedures for transmittal of record copy to the International Bureau.

(a) Transmittal of the record copy of the international application to the International Bureau shall be made by the United States Receiving Office.

(b) (reserved)

* * * * *

Feb. 14, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 2, 1985

Re. 31,235	4,438,029	4,461,446	4,472,451
Re. 31,502	4,438,577	4,461,669	4,472,485
D. 271,404	4,439,561	4,461,757	4,472,704
D. 276,441	4,439,616	4,462,860	4,472,853
3,748,225	4,439,959	4,462,910	4,473,051
3,963,986	4,440,597	4,463,337	4,473,058
4,281,391	4,440,921	4,464,238	4,473,210
4,327,271	4,440,937	4,464,292	4,473,321
4,336,589	4,440,958	4,464,373	4,473,738
4,342,756	4,441,952	4,464,397	4,473,864
4,352,726	4,442,402	4,464,754	4,473,894
4,358,374	4,443,449	4,464,882	4,474,653
4,358,814	4,444,673	4,465,203	4,474,704
4,363,472	4,445,168	4,465,895	4,474,923
4,370,255	4,447,368	4,466,108	4,475,385
4,370,452	4,447,435	4,466,242	4,475,440
4,371,240	4,448,671	4,466,522	4,475,802
4,386,493	4,450,081	4,467,146	4,476,468
4,390,661	4,450,155	4,467,673	4,477,420
4,394,769	4,451,149	4,467,998	4,477,687
4,395,417	4,453,092	4,468,500	4,477,698
4,399,474	4,453,595	4,468,588	4,478,043
4,400,585	4,453,637	4,469,499	4,478,998
4,401,427	4,453,902	4,469,668	4,479,164
4,404,414	4,454,103	4,469,682	4,479,189
4,404,730	4,454,463	4,469,728	4,479,197
4,404,872	4,455,556	4,470,143	4,479,755
4,409,996	4,456,185	4,470,171	4,479,932
4,410,265	4,456,485	4,470,252	4,480,407
4,413,153	4,456,513	4,470,359	4,480,497
4,415,498	4,456,532	4,470,683	4,480,710
4,415,558	4,456,616	4,471,015	4,480,740
4,416,288	4,456,688	4,471,095	4,480,771
4,421,796	4,456,700	4,471,146	4,480,977
4,423,528	4,457,235	4,471,170	4,481,020
4,424,909	4,457,289	4,471,192	4,481,193
4,425,371	4,458,035	4,471,445	4,481,446
4,425,442	4,458,291	4,471,483	4,481,602
4,426,852	4,458,589	4,471,492	4,482,696
4,428,806	4,458,712	4,471,649	4,483,422
4,429,106	4,460,308	4,471,654	4,483,674
4,429,934	4,460,645	4,471,800	4,483,677
4,430,723	4,460,745	4,472,153	4,484,268
4,437,379	4,460,778	4,472,356	4,485,123

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4277
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 2, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	7-25-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-05-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	1-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	8-01-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-30-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-07-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	7-19-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	10-25-68
DESIGN, GROUP 290—K. L. CAGE, Director	9-17-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	3-19-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	10-29-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	12-21-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-15-82

Expiration of patents: The patents within the range of numbers indicated below expire during February 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,366,970 to 3,371,350, inclusive

Plant Patents ..... Numbers 2,784 to 2,793 inclusive

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REEXAMINATIONS

APRIL 2, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,472,714 (326th)

METHOD OF REBUILDING PREVIOUSLY USED TIRES

Bradley E. Ragan, Spruce Pine, N.C., assignor to Brad Ragan Inc., Spruce Pine, N.C.

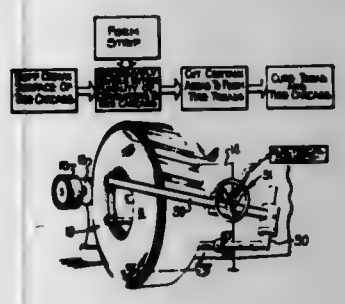
Reexamination Request No. 90/000,507, Feb. 22, 1984.

Reexamination Certificate for Patent No. 3,472,714, issued Oct. 14, 1969, Ser. No. 587,599, Oct. 18, 1966.

Filed Feb. 22, 1984, Ser. No. 587,599

Int. Cl.[3] B29H *17/40, 17/36*

U.S. Cl. 156—96



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–6 is confirmed.

1. A method of rebuilding a previously used heavy-duty pneumatic tire comprising the steps of:

forming a smooth surface on the periphery of a previously used tire carcass,

supplying uncured rubber stock in an indeterminate length, uniform thickness strip having a generally rectangular cross-sectional configuration and predetermined width substantially greater than the thickness thereof and substantially equal to the width of the peripheral surface of the tire carcass, then

severing from the stock strip and winding about the smoothed peripheral surface a plurality of convolutions of the uncured rubber stock while stitching and adhering the convolutions together and to the tire carcass, then

passing a heated tool through some of the adhered together convolutions and removing therefrom circumferentially spaced apart, transversely extending portions while maintaining the innermost convolution immediately adjacent and directly adhered to the peripheral surface of the tire carcass unsevered so as to define on the tire carcass a lugged tread in which lugs projecting radially outwardly at and extending transversely across the periphery of the rebuilt tire are formed by adhered together sector portions of the convolutions through which the heated tool passed and so as to retain adhesion of the sector portions and innermost convolution to the tire carcass and each other, and then

curing the rubber stock by heating the entire rebuilt tire.

B1 3,523,464 (327th)

STEERING WHEEL WITH PLASTIC FOAM SHEATHING

Henri P. M. Quillery, La Garenne-Colombes, France and Georges Gonzalez, 10 rue de Bellechasse, Paris, France, assignor to Societe Quillery, La Garenne-Colombes, France; part interest

Reexamination Request No. 90/000,448, Sep. 22, 1983.

Reexamination Certificate for Patent No. 3,523,464, issued Aug. 11, 1970, Ser. No. 632,233, Apr. 20, 1967.

Continuation-in-part of Ser. No. 619,189, Feb. 28, 1967, which is a continuation-in-part of Ser. No. 473,838, Jul. 21, 1965.

Claims priority, application France, Apr. 26, 1966, 59.079

Int. Cl.[3] B62D *1/04*

U.S. Cl. 74—552



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1 and 2 is confirmed.

Claim 3 is cancelled.

1. A steering wheel having a rim core, a hub, and arms at least said rim core being covered at least to a partial extent with a sheath which constitutes the external gripping surface of the rim, said sheath comprising at the surface a substantially non-expanded elastomer layer which is both compact and impervious and, internally, a flexible and elastic cellular mass forming a protective padding which provides isolation against shocks and vibrations, said mass being secured to said layer,

and said steering wheel being further characterized in that said rim sheath is provided with appendages which extend to the arms extremities of the steering-wheel core and cover said extremities,

said appendages of the rim sheath are covered by the extremities of the removable arm-sheath.

B1 4,167,585 (328th)

METHOD FOR HEATING AND COOKING FOODS IN A CLOSED TREATMENT CHAMBER BY MAINTAINING THE TEMPERATURE AND MOISTURE CONTENT

Andrew A. Caridis, Foster City, and Clark K. Benson, Millbrae, both of Calif., assignors to Heat and Control, Inc., San Francisco, Calif.

Reexamination Request No. 90/000,545, Apr. 18, 1984.

Reexamination Certificate for Patent No. 4,167,585, issued Sep. 11, 1979, Ser. No. 853,503, Nov. 21, 1977.

Continuation of Ser. No. 662,512, Mar. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 544,393, Jan. 27, 1975, Pat. No. 3,947,241, which is a continuation of Ser. No. 328,925, Feb. 2, 1973, abandoned.

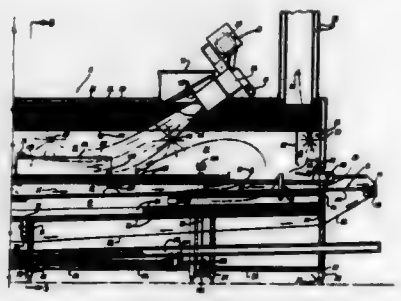
Int. Cl.[3] A22C *17/00, 25/00;* F27B *9/00, 9/14*

U.S. Cl. 426—233

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–13 is confirmed.

1. In a rapid continuous process for heating and cooking foods, the steps of forming a treating zone within a substantially closed treatmment chamber, said chamber having inlet and outlet openings, introducing food to said chamber in the form of solid discrete pieces, said food moving through said chamber along a pathway extending through said inlet opening and said treating zone and exiting through said outlet opening, generating a gaseous process vapor within said treatment chamber and rapidly and continuously circulating the same along the pathway in said treating zone in a direction concurrent to the direction of movement of said food, heating said rapidly circulating process vapor to continuously maintain the temperature thereof within the range from 165° to 600° F., the temperature of said rapidly circulating process vapor bearing a relationship to the entering food such that a substantial temperature differential exists between the food and process vapor ranging to as much as 295° to 560° F., said food being moved in a concurrent direction with said rapidly circulating process vapor at a rate and for a distance to effect heating and cooking



thereof for a period of time sufficient to raise the center temperature of said discrete pieces of food to within the range from 140° to 195° F., intermittently releasing saturated steam into said rapidly circulating and heated process vapor to raise the moisture content thereof continuously removing external air from adjacent the inlet and outlet openings of said treatment chamber to thereby substantially prevent the entry of external air to said treating zone, such exclusion of air serving to limit the proportion of air within the process vapor continuously and rapidly circulating within said treatment chamber and through said treating zone, continuously monitoring the moisture content of said rapidly circulating process vapor to determine variations in the moisture content and continuously using the variations in moisture content so determined to control said intermittent release of saturated steam to the process vapor being rapidly circulated within said treatment chamber, thereby to provide a rapidly and continuously circulating process vapor of controlled temperature and moisture content as needed and desired for heating and cooking particular foods undergoing treatment.

B1 4,190,801 (329th)

DIGITAL ENCODING CIRCUITRY

Richard E. DeFreitas, Westford, Mass., assignor to DeltaLab Research, Inc., Chelmsford, Mass.

Reexamination Request No. 90/000,604, Aug. 8, 1984.
Reexamination Certificate for Patent No. 4,190,801, issued Feb. 26, 1980, Ser. No. 875,336, Feb. 6, 1978.
Int. Cl.³ H03K *13/22*; H04B *12/04*
U.S. Cl. 375—30

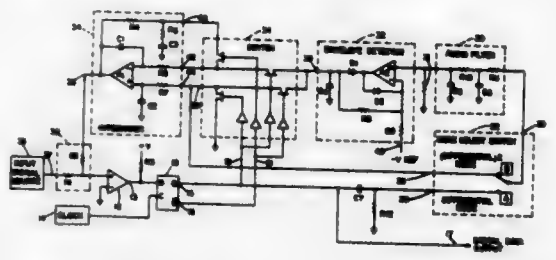
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–24** is confirmed.

23. In an electrical system of the type in which a digitally encoded signal is determined at least in part by the difference between a present value of an input signal and a reference signal representative of a past value of said input signal, improved circuitry for generating said reference signal, comprising

extraction means including a filter for extracting from the pattern of bits in said digitally encoded signal information relating to the time derivative of said present value to provide a corresponding control signal, and

integrating means responsive to said control signal to provide said reference signal, wherein



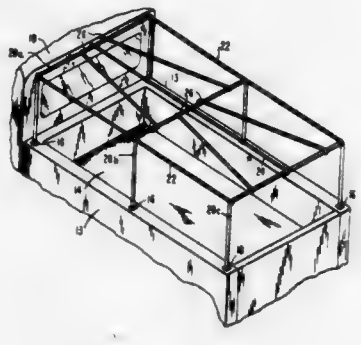
said integrating means comprises integrating circuitry to provide said reference signal, said integrating circuitry having positive and negative slope control inputs controlling the direction and rate of change of said reference signal, and switching means is provided for selectively providing said control signal to said slope control inputs.

B1 4,272,119 (330th)

VEHICLE COVER ASSEMBLY

Robert M. Adams, 41241 Orange Pl., Hemet, Calif. 92343

Reexamination Request No. 90/000,559, May 18, 1984.
Reexamination Certificate for Patent No. 4,272,119, issued Jun. 9, 1981, Ser. No. 912,070, Jun. 5, 1978.
Continuation-in-part of Ser. No. 665,654, Mar. 10, 1976, Pat. No. 4,093,302, which is a continuation-in-part of Ser. No. 654,623, Feb. 2, 1976, abandoned. This application May 18, 1984, Ser. No. 912,070
Int. Cl.³ B60P *3/34*
U.S. Cl. 296—100



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–27** is confirmed.

23. A vehicle cargo area comprising upstanding sidewalls forming a cargo area;

a unitary cover member formed of flexible sheet material having a front edge, a rear edge, and two side edges adapted to fit over respective sidewalls of said cargo area;

means for securing the respective side edges of said cover member to said respective sidewalls of the cargo area of the vehicle to hold said side edges to said sidewalls with the cover being tautly held therebetween; and

each of said means for securing said side edges including a separable fastener of the hook and loop type having a first part with a plurality of upstanding hook or loop type members extending therefrom and a complementary part having a plurality of complementary upstanding hook or loop type members extending therefrom for interengagement with the upstanding members of said first part along

a plane of interengagement, said first part being disengageable from said complementary part when peeled away to effect pulling of hook and loop type members substantially perpendicularly to the plane of interengagement and said first part resisting disengagement when subjected to forces parallel to the plane of interengagement, said first part being secured to said cover member adjacent to a said side edge and said complementary part being secured to a said sidewall of the cargo area for releasable engagement with said first part and said first part of said separable fastener being located relative to the side edge of said cover member for maintaining said cover member in a taut disposition over said cargo area whereby said first member is releasably secured to said complementary part by pressing said first part into engagement with said complementary part to effect interengagement of upstanding members and prevent inadvertent disengagement of said first part and said complementary part.

B1 4,289,903 (331st)

PARA-PHENYLALKOXY PHENYLUREA AND THIOUREA COMPOUNDS AND HERBICIDAL USE THEREOF

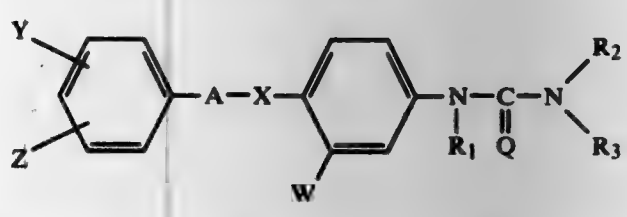
David M. Spatz, Trenton, and Barrington Cross, Rocky Hill, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Reexamination Request No. 90/000,474, Nov. 30, 1983.
Reexamination Certificate for Patent No. 4,289,903, issued Sep. 15, 1981, Ser. No. 51,584, Jun. 25, 1979,
Int. Cl.[3] **C07C** *127/15, 127/17;* **A01N** *7/00, 17/08*
U.S. Cl. 564—20

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–18 are cancelled.

[1. A compound of the formula:



wherein X is selected from the group consisting of O,S, and SO_2; Q is O; R_1 is H or CHO; R_2 is H or C_1–C_4 alkyl; W is selected from the group consisting of H, halogen, C_1–C_4 alkyl, CF_3, OCH_3, and NO_2; R_3 is selected from the group consisting of H, C_1–C_4 alkyl, C_1–C_4 alkyl monosubstituted with either C_1–C_3 alkoxy or halogen, C_3–C_5 alkenyl, C_3–C_5 alkynyl and CHO; A represents C_2–C_3 alkyl; Y is selected from the group consisting of H, halogen, C_1–C_4 alkyl, OCH_3 and CF_3; Z represents H, halogen, C_1–C_4 alkoxy.]

B1 4,313,448 (332nd)

MYOCARDIAL SUTURELESS LEAD

Kenneth B. Stokes, Brooklyn Park, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Reexamination Request No. 90/000,568, Jun. 6, 1984.
Reexamination Certificate for Patent No. 4,313,448, issued Feb. 2, 1982, Ser. No. 115,966, Jan. 28, 1980.
Int. Cl.[3] **A61N** *1/04*
U.S. Cl. 128—785



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 is confirmed.

Claims 8 and 9 are cancelled.

New claims 10–12 are added and determined to be patentable.

1. A body implantable lead comprising:
a conductor having a distal end;
an insulating sheath covering said conductor; means attached to said conductor near said distal end for affixing said body implantable lead to body tissue; and
flexible base means attached to said conductor near said distal end which in a relaxed state is disposed over said fixation means from at least one direction and which upon application of a small amount of force may be bent back exposing said fixation means from said at least one direction.

B1 4,357,256 (333rd)

SODIUM HYDROSULFITE COMPOSITION

Takaaki Yamaguchi, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Reexamination Request No. 90/000,547, Apr. 20, 1984.
Reexamination Certificate for Patent No. 4,357,256, issued Nov. 2, 1982, Ser. No. 128,098, Mar. 7, 1980.
Claims priority, application Japan, Mar. 13, 1979, 54-29186
Int. Cl.[3] **C09K** *3/00*
U.S. Cl. 252—188.24

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–6 are cancelled.

[1. A bleaching sodium hydrosulfite composition which minimizes H_2S generation in use and which comprises sodium hydrosulfite, 3 to 15% by weight of hexamethylenetetramine and 5 to 15% by weight of a water-soluble sulfite selected from the group consisting of sodium sulfite, ammonium sulfite and potassium sulfite.]

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DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 2, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T105,301
PROCESS FOR THE PRODUCTION OF SOLID UREA-NITRIC PHOSPHATE FERTILIZER PRODUCTS

Jack M. Sullivan, 106 Patsy Dr.; Yong K. Kim, 230 Roxie Dr., both of Florence, Ala. 35630, and Kjell R. Waerstad, Rte. 3, Colbert Heights, Tuscumbia, Ala. 35674

Filed May 21, 1984, Ser. No. 612,162
Int. Cl.[3] C05C *9/00*; C05B *11/06*
U.S. Cl. 71—39
1 Sheets Drawing. 42 Pages Specification

The present invention relates to the reaction of phosphate rock with nitric acid and urea to produce nitrogen-phosphorus containing slurries, which slurries may be granulated and dried to produce solid N-P fertilizer products with agronomically advantageous low pHs (1.1-4.0). Products with optimum physical and chemical properties were discovered by investigating the characteristics of each individual material as a function of the nitric acid acidulation ratio (mole ratio HNO_3:CaO) and the mole ratio urea:CaO present in each product. Acidulation ratios ranged from 1.2 to 2.1 while ratios urea:CaO ranged from 1.6 to 4.0. Selected products with optimum physicochemical properties are tabulated below:

Acidulation Ratio HNO_3:CaO, M/M	Ratio Urea:CaO, M/M	Grade	Melting Pt, °C.
1.2	2.2	23.8—11.7—0	137–139
1.4	2.4	25.0—11.0—0	136
1.6	2.8	25.9—9.9—0	133–137
1.8	3.0	26.4—9.2—0	134–135
2.0	3.3	27.2—8.7—0	130
2.1	3.2	36.6—8.8—0	125–130

Acidulation Ratio	P_2O_5 Solubility, %		pH of 1%	Critical Relative Humidity
HNO_3:CaO, M/M	Water	Citrate	solution	at 25° C., %
1.2	69.2	82.1	2.5	59.3
1.4	81.8	90.0	2.4	60.9
1.6	88.9	91.9	2.3	60.1
1.8	96.7	98.9	2.1	59.9
2.1	99.0	100	2.1	60.0

-continued

2.1	100	100	2.1	59.5

The products have excellent storage characteristics. The improved properties of these products result partially from the formation of a new compound

$$Ca(H_2PO_4)(NO_3),\ CO(NH_2)_2,$$

which was discovered during the course of the investigation that led to the instant invention.

T105,302
TAMPER-RESISTANT CONTAINER

Joseph E. Hoffman, Jr., P.O. Box 300, Morrisville, N.C. 27560

Continuation of Ser. No. 477,996, Mar. 23, 1983, abandoned.
This application May 16, 1984, Ser. No. 611,375
Int. Cl.[3] B65D *85/56, 83/04, 81/20, 17/32*
U.S. Cl. 206—524.8
1 Sheets Drawing. 10 Pages Specification



A tamper-resistant container containing a pharmaceutical preparation, wherein the container is a removable full-panel easy-open metal top end closure having an opening tab for irreversibly removing said end closure, whereby once the end closure is opened, that fact will be readily ascertainable from the appearance of the container.

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REISSUES

APRIL 2, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,857

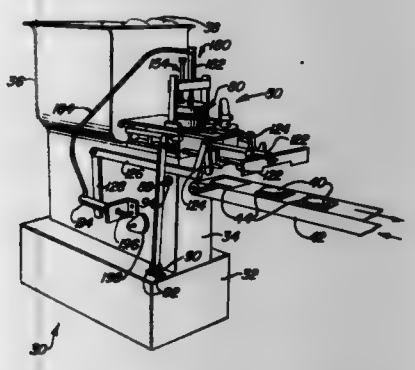
METHOD FOR MAKING FOOD PATTY

Harry H. Holly, Boca Raton, Fla., assignor to Holly Systems, Inc., Boca Raton, Fla.

Original No. 4,272,864, dated Jun. 16, 1981, Ser. No. 25,031, Mar. 29, 1979. Application for reissue Jun. 15, 1983, Ser. No. 504,661

Int. Cl.[3] **A22C** *7/00*

U.S. Cl. 17—45 **22 Claims**



16. A process for making a patty of plastic food material containing tissue fibers by the steps of forcing said plastic food material from a bulk supply of said food material into a mold cavity under pressure and then removing the formed patty from the mold cavity, said method characterized by the following steps:

(a) providing a foraminous member having an array of apertures for use in said process;

(b) forcing said food material from said bulk supply under pressure to a location adjacent said foraminous member;

(c) providing mold parts to define said mold cavity and disposing said mold parts directly adjacent said foraminous member with a mold opening at the interface of said foraminous member and said mold cavity for permitting passage of said food material from said foraminous member directly into said mold cavity in the absence of mixing instrumentalities at said interface;

(d) forcing said food material at least into said foraminous member apertures and then out of said apertures as discrete extrudate masses into said mold cavity with at least some of said extrudate masses being forced against said mold parts of said mold cavity until said mold cavity is substantially filled with said extrudate masses to form said patty completely surrounded by said mold parts except for said mold opening adjacent said foraminous member;

(e) before, during, or after step (d), effecting multidirectional movement of said food material at the apertures in said foraminous member to prevent clogging of said apertures with tissue fibers;

(f) moving said mold parts together and/or relative to each other to permit access to said formed patty; and

(g) removing said formed patty from said moved mold parts.

Re. 31,858

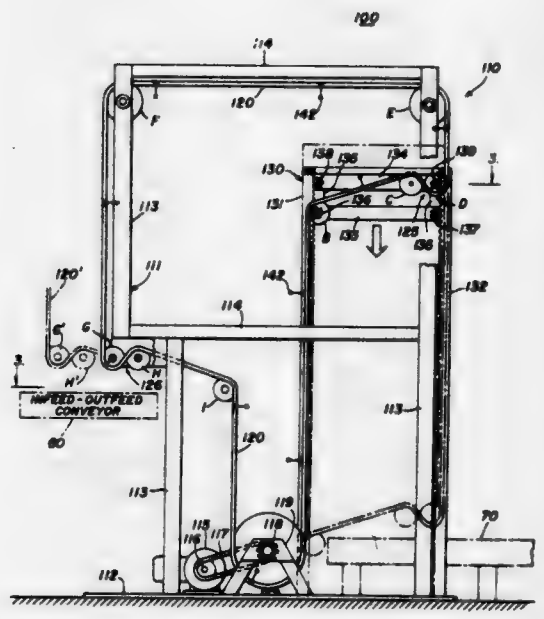
CONTINUOUS CHAIN STACKER/UNSTACKER

Maynard R. Euverard, Williamsburg, Va.; Henry A. Heide, Addison, and James J. Diver, South Holland, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

Original No. 4,303,365, dated Dec. 1, 1981, Ser. No. 839,456, Oct. 5, 1977. Application for reissue Jun. 7, 1982, Ser. No. 385,851

Int. Cl.[3] **B65G** *57/02, 59/02*

U.S. Cl. 414—37 **22 Claims**



15. A machine for moving articles to and from a support at an operation location, said machine comprising a continuous conveyor for conveying articles to the operation location and away from the operation location, said conveyor comprising two laterally spaced-apart parallel endless conveyor members each having a pivot fixed thereon for movement therewith, said conveyor members being respectively movable along parallel paths including transfer portions respectively defining arcs of equal parallel circles, the axes of said pivots being spaced apart and parallel so as to define a plane which remains in a predetermined fixed orientation with respect to the horizontal and the vertical as said conveyor members move along the paths, said axes being parallel to the axes of said circles and respectively spaced from said conveyor member paths a distance equal to the radii of said circles in directions so as to be respectively coaxial with said circles when the adjacent parts of said conveyor members are in said transfer portions of said paths, and a rigid article carrier supported solely by and interconnecting said conveyor members for pivotal movement only with respect to the pivot axes, said carrier including support means for supporting an associated article thereon beneath said plane, said transfer portions of said conveyor member paths being disposed adjacent to the operation location and said paths being arranged so that as the parts of said conveyor members adjacent to said carrier move to, through and from said transfer portions of said paths said carrier and any article supported thereby are conveyed to the support at the operation location, remain stationary in a transfer position at the operation location and are conveyed from the support while being prevented from passing through the support, said conveyor member paths being arranged so that the portion of said plane between said pivot axes does not intersect the associated support, and means for effecting transfer of the associated article from said carrier to the associated support or from the associated support to said carrier when said carrier is in the transfer position, whereby said carrier is stably held in a fixed position with respect to said plane for only translational movement with respect to said conveyor members along the paths.

Re. 31,859

ALIGN BORING MACHINE

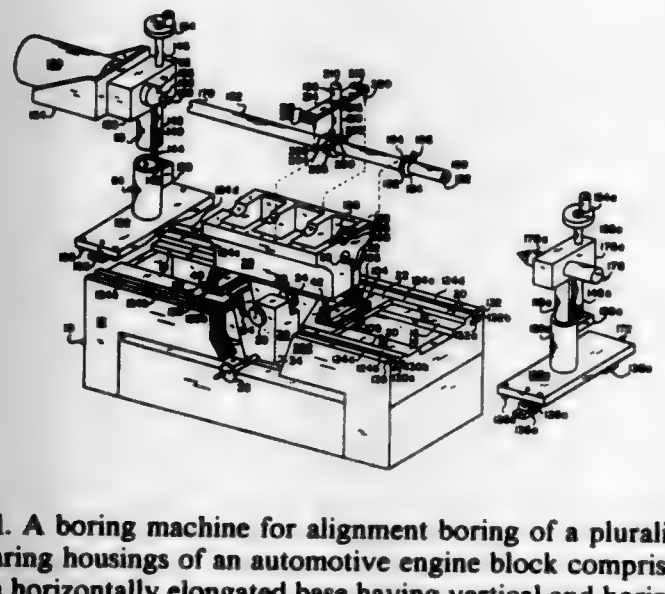
R. Warren Aldridge, Jr., Huntsville, Ala., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Original No. 4,213,721, dated Jul. 22, 1980, Ser. No. 972,975, Dec. 26, 1978. Continuation-in-part of Ser. No. 875,985, Feb. 8, 1978, Pat. No. 4,132,494. Application for reissue Jun. 1, 1982, Ser. No. 383,931

Int. Cl.[3] B23B *41/12*

U.S. Cl. 408—54

9 Claims



1. A boring machine for alignment boring of a plurality of bearing housings of an automotive engine block comprising:

a horizontally elongated base having vertical and horizontal longitudinally extending machine ways;

a first vertically adjustable-in-height support positioned on one end region of said elongated base and engageable and alignable with said machine ways, and a second vertically adjustable-in-height support positioned on an opposite end region of said elongated base and engageable and alignable with said machine ways;

an elongated horizontal track on said base between said supports, which track defines a longitudinal axis and horizontal reference plane in alignment with said vertical and horizontal machine ways;

a table adapted to be supported by and be longitudinally movable along said track,

feed means for selectively moving said table along said track;

a boring bar;

bearing support means for horizontally and rotably supporting ends of said boring bar on and between said first and second supports and along a line in a first plane parallel with the plane of said vertical machine ways and coincident in a second plane parallel with the plane of said horizontal machine ways;

drive means coupled to one end of said boring bar for rotating said boring bar;

engine block support means for rigidly supporting an engine block on said table with said boring bar through bearing housings with said bar concentrically positioned with respect to the center of a desired bore through said bearing housings; and

at least one cutting tool mounted on said boring bar, whereby bearing housings of an engine block may be bored by moving said table longitudinally by operation of said feed means.

Re. 31,860

HARVESTING MACHINES

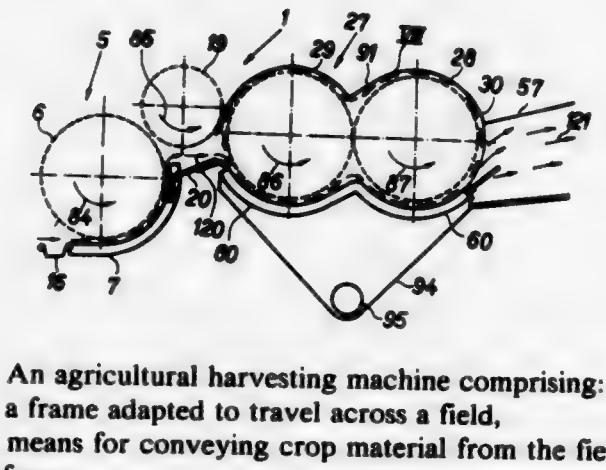
Frans J. G. C. Decoene, Zedelgem, and Cornelis G. M. Muija, Sint-Kruis Brugge, both of Belgium, assignors to Sperry Corporation, New Holland, Pa.

Original No. 3,946,746, dated Mar. 30, 1976, Ser. No. 482,929, Jun. 25, 1974. Application for reissue Sep. 30, 1982, Ser. No. 432,165

Int. Cl.[3] A01F *12/20, 12/44*

U.S. Cl. 130—27 P

9 Claims



4. An agricultural harvesting machine comprising:

a. a frame adapted to travel across a field,

b. means for conveying crop material from the field to the frame,

c. means transversely mounted to said frame rearwardly of the conveying means for threshing grain from the crop material,

d. a separator casing mounted to said frame rearwardly of the threshing means and disposed substantially parallel thereto for receiving said crop material from the threshing means over a width substantially corresponding to the width of the threshing means, the casing having ends extending over substantially equal distances laterally beyond the respective ends of said threshing means and comprising concaves mounted to said frame to enable separated grain to pass therethrough, said casing further including a forwardly facing opening having a width substantially corresponding to the width of the threshing means and adapted to receive crop material from said threshing means, said casing also including rearwardly facing discharge openings positioned at either end of said casing and tranversely offset relative to the infeed opening for discharging crop material from said casing, and

e. means rotatably mounted within said casing and operably associated therewith to spirally convey crop material laterally in layers of substantially half the width of the threshing means towards each of its ends while submitting said layers of material to a separating action *the rotatably mounted means comprising two transversely extending rotors having crop treating and crop conveying elements, the rotors being arranged in parallel relationship and driven in the same direction.*

PLANT PATENTS

GRANTED APRIL 2, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,424

MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Aug. 22, 1983, Ser. No. 525,454

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant named 'POPS' of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by its abundance of deep pink blooms of exhibition quality, usually borne singly or in sprays of 3 to 5 or more, which may be propagated from cuttings, and grows well outdoors or in the green house.

5,425

ROSE PLANT

Shafner R. Rodgers, Dallas, Tex., assignor to Neiman-Marcus Company, Dallas, Tex.

Filed Jun. 20, 1983, Ser. No. 505,802

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by a very vigorous plant with abundant, glossy, dark green foliage producing many large, cup-shaped pink blend flowers one to a stem on substantial stems.

5,426

ROSE PLANT 'MACHADEN'

Samuel D. McGredy, 130 B Beach Rd., Castor Bay, Auckland 9, New Zealand

Filed Jul. 28, 1983, Ser. No. 518,088

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described, characterized particularly by relatively large, heavily petaled currant red flowers borne one to a stem on a vigorous, tall growing plant.

5,427

ROSE PLANT 'DACSHANA'

Samuel D. McGredy, 130 B Beach Rd., Castor Bay, Auckland 9, New Zealand

Filed Jul. 28, 1983, Ser. No. 518,092

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by small clusters of lemon yellow flowers larger than average for miniatures, upright growing and quick repeating flower habit ideal for pot forcing.

5,428

ROSE PLANT 'MACNEWYE'

Samuel D. McGredy, 130 B Beach Rd., Castor Bay, Auckland 9, New Zealand

Filed Jul. 28, 1983, Ser. No. 518,093

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by unusual Spanish orange flowers borne singly and in small clusters beautifully contrasting with deep green foliage.

5,429

ROSE PLANT 'MACWAIKE'

Samuel D. McGredy, 130 B Beach Rd., Castor Bay, Auckland 9, New Zealand

Filed Jul. 28, 1983, Ser. No. 518,100

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by excellent floribunda inflorescence with laterals all comparable, flowers of unusual azalea pink and orient pink coloring, vigorous plant of excellent disease resistance, and quick repeating flowering habit.

PATENTS

GRANTED APR. 2, 1985

ERRATA

For CLASS	See PATENT NO.
128–673	4,508,103
108–009	4,508,305
384–510	4,508,397
514–019	4,508,710
514–011	4,508,711
514–011	4,508,712
514–060	4,508,713
514–280	4,508,715
514–220	4,508,716
514–203	4,508,717
514–236	4,508,719
514–247	4,508,720
514–252	4,508,721
514–353	4,508,722
514–195	4,508,723
514–317	4,508,724
514–362	4,508,725
514–220	4,508,726
514–398	4,508,727
514–400	4,508,728
514–419	4,508,729
514–218	4,508,730
514–472	4,508,731
514–466	4,508,732
514–578	4,508,733
514–594	4,508,734
514–616	4,508,735
252–301.21	4,508,784
260–544 D	4,508,857
548–156	4,508,903
378–101	4,509,175

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PATENTS

GRANTED APRIL 2, 1985

GENERAL AND MECHANICAL

4,507,801
PROTECTIVE GARMENT
Frank J. Kavanagh; James D. Plunkett, and Bernard F. DePalma, all of Ithaca, N.Y., assignors to Doc-K Protective Equipment, Inc., Ithaca, N.Y.
Filed Sep. 7, 1982, Ser. No. 415,678
Int. Cl.[3] A41D *13/00*
U.S. Cl. 2—2 **9 Claims**



1. A protective garment for protecting at least the upper part of the body of an athlete comprising:

a. tightly fitting body-covering means made of stretchable material;

b. plurality of pockets affixed to the body covering means;

c. said pockets being located in the portion of the body-means covering the body portion to be protected;

d. a plurality of impact-absorbing pad means for protecting a body portion adapted to fit in the pocket means covering the body portion to be protected;

e. each pad means being shaped to conform to the contours of the wearer's body at the portion to be protected, whereby the pad means, fitting into the pocket means, protects a portion of the body by closely conforming to the body, held accurately in place by stretching of body covering means;

f. the garment having pocket means and pad means for insertion therein to cover and protect at least the acromio-clavicular joint of the shoulder;

g. said pocket means and pad means protecting the said acromio-clavicular joint of the shoulder extending downward to the wearer's pectoral and upper trapezius muscles, such that the pad means is bridged over the acromio-clavicular joint of the shoulder, leaving a gap between the top of the wearer's shoulder and the pad means, whereby impact forces are transferred to the pectoral and trapezius muscles, while allowing free movement of the shoulder.

4,507,802
ADAPTIVE BALLISTIC PANEL CARRYING GARMENT
Irvin L. Small, Nashville, Tenn., assignor to Horace Small Manufacturing Company, Nashville, Tenn.
Filed May 3, 1983, Ser. No. 491,077
Int. Cl.[3] F41H *1/02*
U.S. Cl. 2—2.5 **6 Claims**

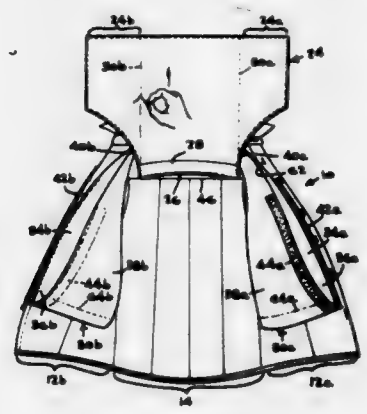
1. A ballistic panel carrier garment adaptive to receive ballistic panels of varying configurations and sizes corresponding to the size of the garment's wearer, said garment comprising:

(a) a front portion and a back portion;

(b) a back pocket-like receptacle having an opening for receiving a back ballistic panel, said back receptacle being attached to said back portion;

(c) a front pocket-like receptacle having an opening for receiving a front ballistic panel, said front receptacle being attached to said front portion; and

(d) each of said front and back receptacles being of a configuration and of a size closely matching the configuration and size of its corresponding ballistic panel to insure that the front and back ballistic panels are supported accurately without shifting to protect the vital parts of the garment's wearer, wherein the improvement comprises at least one of said front and back receptacles comprising means for adapting said one receptacle to receive in a first mode a ballistic panel of a first configuration and in a second mode for receiving a ballistic panel of a second, different configuration.



4,507,803
RIDING MITTENS
Harriet E. Ryan, and Linda A. Ryan, both of 20803 Behrendt, Warren, Mich. 48091
Filed May 19, 1983, Ser. No. 495,975
Int. Cl.[3] A41D *13/08*
U.S. Cl. 2—16 **3 Claims**



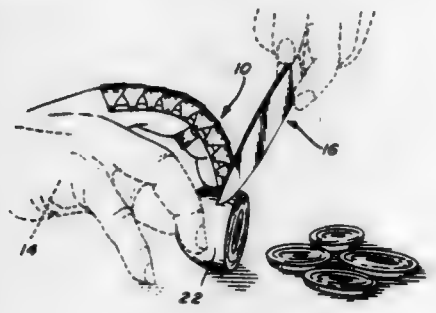
1. A riding mitten manufactured of a material condusive to providing warmth, comprised of a cuff section and an adjoining body section having a thumb pocket, inset on the palmside, a second pocket for the index, middle and ring fingers, and a third pocket for the little finger, positioned midway up the bodyside opposite the thumb, extending independently parallel to said second pocket with which it mutually employs a seamless, deep inner crotch, all said pockets being tapered to an oval and closed at their ends leaving one opening at the end of the cuff section for said mitten to be drawn on and off the hand, and reinforcement material stitched onto the palmside of said second pocket, said reinforcement material extending from a point below the fingertips, down to a point below the base of the fingers, and curling around both sides of said second pocket to a point extending partially onto the backhand side of said second pocket.

4,507,804

FINGER-GUARD

Claude Consigny, 4160 - 3rd Ave. - Apartment 16, Charlesbourg, Quebec G1H 6E1, Canada

Filed Nov. 28, 1983, Ser. No. 555,598
Int. Cl.³ A41D *13/08*
U.S. Cl. 2—21 **4 Claims**



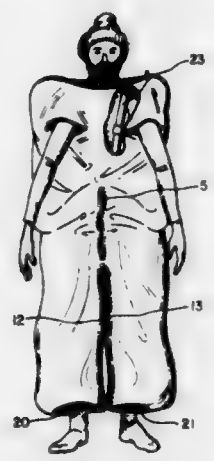
1. A finger-guard for protection against injuries by a knife or the like tool, comprising: two resilient stems adapted to extend along opposite sides of an operator finger, a multiplicity of spaced-apart, elongated lamellae, each longitudinally curved into about half a circle, extending transversely of said stems and having their ends pivotally connected to the two stems, said lamellae adapted to extend along the back hand face of the operator finger with a given upper lamella having a lower portion overlying the upper portion of the corresponding lower lamella, whereby should the blade of a knife hit the lamellae, the blade will slide downwardly successively from upper to lower lamellae in a smooth fashion, said stems longitudinally curved, and, when in non-stressed condition, applying said lamellae against a bent operator finger, said stems being straighthened out by said lamellae when said finger is unbent, and strap means attached to said stems at an intermediate portion thereof and extending from said stems in a direction opposite said lamellae to surround the front hand face of the finger and to retain said lamellae and stems on said finger.

4,507,805

AMBULATORY SLEEPING BAG

Nicolae I. Calutoiu, 1923 N. Carmen Ave., Los Angeles, Calif. 90068

Continuation-in-part of Ser. No. 521,593, Aug. 9, 1983, abandoned. This application Dec. 15, 1983, Ser. No. 562,034
Int. Cl.³ A41D *15/04*
U.S. Cl. 2—69.5 **5 Claims**



1. A convertible sleeping bag for use as a sleeping bag and an ambulatory garment having integral upper torso and lower torso portions,

said upper torso portion having a front and back and at least two closeable openings, each having two sides when open and extending generally vertically of the bag and provided with closure elements on each side of said opening which can selectively open each vertical opening and engage another vertical opening closure element so as to be capable of closing each vertical opening to form at least one separate closed arm shaped portion in said upper torso portion;

said lower torso portion having at least two closeable openings, each having two sides when open and extending vertically of the bag and provided with closure elements on each side of said opening which can selectively open each vertical opening and engage the other open vertical opening closure element to close each vertical opening in a manner to leave an opening from said front to said back of said sleeping bag while forming two closed generally leg shaped portions in said lower torso portion of said sleeping bag; and

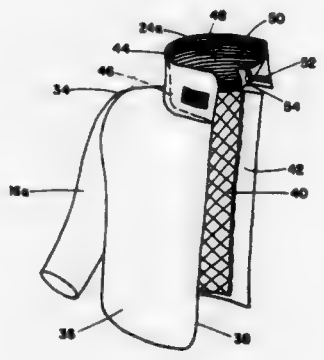
at least two separate closeable openings each at the lower extremities of said leg shaped portions for receiving each of the feet of the user of the sleeping bag.

4,507,806

PROTECTIVE GARMENT

Christopher E. Coombs, Boonton Township, Morris County, N.J., assignor to Cairns & Brother, Inc., Clifton, N.J.

Filed Feb. 28, 1983, Ser. No. 470,462
Int. Cl.³ A41D *3/02, 1/00*
U.S. Cl. 2—85 **10 Claims**



1. A multilayered protective overcoat for firefighters comprising:

a outer protective shell having an openable body portion, said openable body portion defining a neck opening;

an inner lining constructed of a thermal insulation layer; said inner lining having an openable body portion;

a moisture barrier layer;

a first collar secured to said inner lining, said first collar having a moisture impervious layer and a circumferential flap, said first collar defining a neck opening coincident with said neck opening of said outer protective shell, said collar extending through and beyond said neck opening of said outer protective shell to form a readily observable exterior collar of the assemblage of said outer protective shell and said inner lining; and

a fastening means for removably securing said inner lining to said outer protective shell proximate to said first collar of said inner lining, said fastening means being disposed beneath said circumferential flap and protected by said circumferential flap.

4,507,807

WORK GLOVE FINGER STRUCTURE

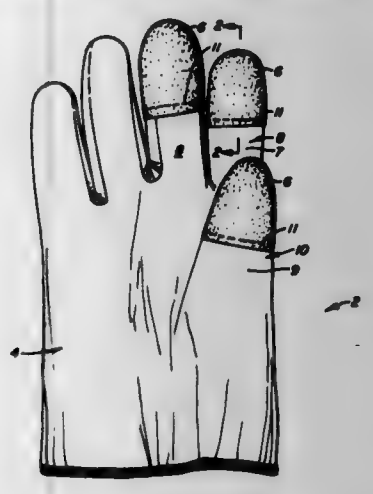
Kip M. Karkanen, 256 Castle Glen Rd., Walnut Creek, Calif. 94595

Filed Apr. 18, 1983, Ser. No. 485,696
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 R **12 Claims**

1. A glove of the type having a glove body including a relatively loose fitting palm covering portion and at least one glove finger with an inside surface the improvement comprising:

a band of high-friction material applied to said inside glove

finger surface to allow at least the tip of said glove finger to be frictionally retained and tightly drawn over a user's



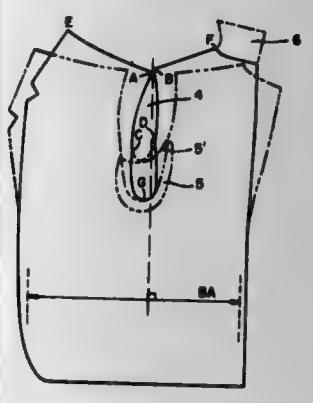
finger inserted therein while allowing the remainder of said glove body to be relatively loose fitting.

4,507,808

METHOD OF MANUFACTURING CLOTHING

Antonelli Montalto, 48 Rues deBerry, Paris, France

Filed Dec. 5, 1983, Ser. No. 558,264
Claims priority, application France, Dec. 8, 1982, 82 20566
Int. Cl.[3] A41D *27/10;* A41B *1/08*
U.S. Cl. 2—243 B 6 Claims



1. A method for constructing fabric panels for use in garments having armholes comprising the steps of:

providing fabric from which a main panel forming one half of a garment is to be constructed, said main panel having an upper chest portion containing an armhole area and a lower waist portion having a width determined by the hip size of a garment to be constructed;

defining a rectangular area on said fabric, the width of the rectangle being equal to the sum of the width determined for said lower waist portion plus an allowance for a back seam and an allowance for buttoning the garment;

cutting said main panel from within said rectangular area in accordance with a predetermined pattern, said pattern including a narrow partial armhole cut-out portion of insufficient width to form a useful armhole and an auxiliary cut-out portion extending from the bottom of said partial armhole cut-out portion;

spreading the edges of said partial armhole cut-out portion apart to enlarge the width thereof to a useful size;

providing an auxiliary fabric panel having an upper edge shaped to form the bottom of a useful armhole, and

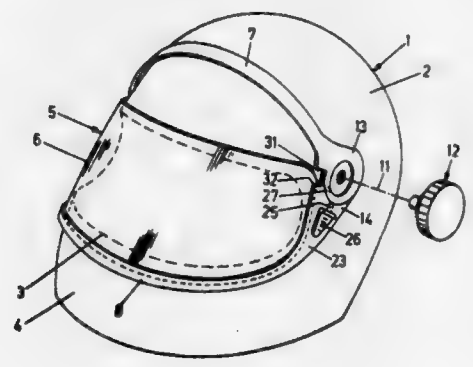
sewing or otherwise fixing said auxiliary fabric panel to said main panel to cover said auxiliary cut-out portion with the upper edge of said auxiliary fabric panel cooperating with the spread edges of said partial armhole cut-out portion to maintain said edges in said spread condition and form a completed armhole cut-out portion.

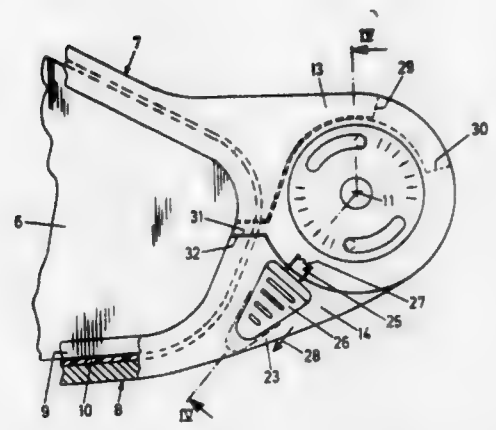
4,507,809

VISOR FOR A PROTECTIVE HELMET

Walter Stepan, Allersberg, Fed. Rep. of Germany, assignor to Uvex Winter Optik GmbH, Fürth, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,754
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 8137527[U]
Int. Cl.[3] A42B *3/02*
U.S. Cl. 2—424 3 Claims





1. In combination with a motorcycle protective helmet including a head-covering shell, a visor having at least one transparent panel and a frame with a groove, recess or the like all around for receiving the panel, comprising:

said frame including at least two pivotably interconnected frame parts and means for securely locking said frame parts together when the frame is in a panel retaining position,

at least one frame part being pivotably mounted, relative to, and into overlying relationship with, said helmet shell, so that said transparent panel can be removed from the groove, recess or the like,

said frame parts each including lateral portions having pivot bearing means resting against one another and pivotable relative to one another, and

a locking bar slidably supported by one frame part in the area of one pivot bearing means and slidable into a recess in the other pivot bearing means.

4,507,810

IMPLANTABLE BREAST PROSTHESES

Lennart O. Bartholdson, Umea, Sweden, assignor to Polar-Plastik HB, Umea, Sweden

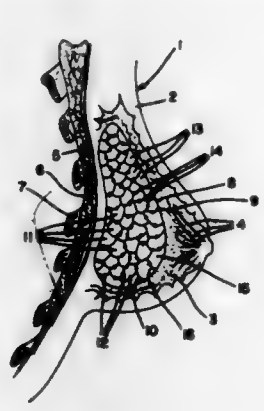
Continuation-in-part of Ser. No. 122,767, Feb. 19, 1980, abandoned. This application Jan. 29, 1982, Ser. No. 343,930
Claims priority, application Sweden, Feb. 19, 1979, 7901424
Int. Cl.[3] A61F *1/00*
U.S. Cl. 3—36 4 Claims

1. An implantable breast prosthesis comprising:

a flexible shell formed of bio-compatible material;

a plurality of individual, irregularly shaped cells of different sizes defined by cell walls and encompassed within and completely filling said shell, with adjacent cells having walls in contact and attached with each other, each cell

containing a liquid material and having at least one passageway formed in the cell wall and in direct communication with a passageway formed in the cell wall of an adjacent cell to provide fluid communication between adjacent cells; and



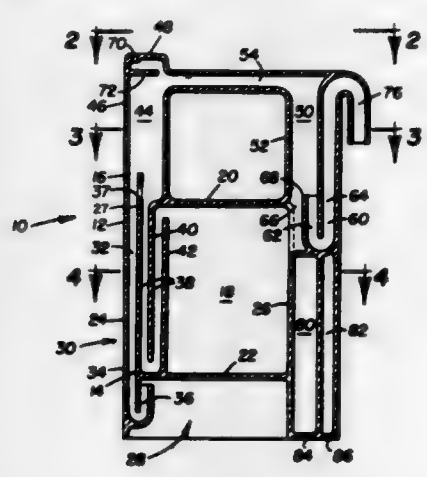
a liquid partially filling said shell and cells, said passageways formed in the cell walls permitting movement of the liquid from one cell to an adjacent cell so that the liquid flows between the cells to simulate natural breast movements.

4,507,811

TOILET BOWL DISPENSER

Jack Buelow, Danville, and Michael A. Darland, Hayward, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Jul. 7, 1981, Ser. No. 281,152
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—225 **20 Claims**



1. A toilet bowl cleaner dispenser for dispensing a preselected amount of saturated solution after each flushing of a toilet bowl comprising,

a reservoir constructed for disposing within a toilet tank and for holding a chemical agent to be discharged,

measuring means for holding a preselected measured, discrete quantity of solution to be dispensed,

fill means for filling said measuring means from said reservoir upon flooding of the reservoir,

air pressurizing means for providing pressurized air in response to rising ambient tank water for discharging solution from the measuring means,

combined water inlet and air conduit means for flooding the reservoir with toilet tank water between flushes, and for communicating a surge or air pressure from the air pressurizing means to said measuring means, prior to said flooding and

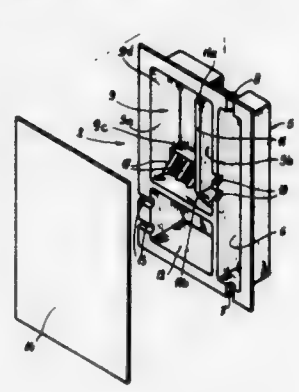
discharge means connecting the measuring means for discharging solution from the measuring means.

4,507,812

DISPENSER FOR A TOILET

Jean Dubois, Montmorency; Alain Lacroix, Jouy-en-Josas; Lucienne Forestier, Paris, and Jean-Pierre Steiner, Versailles, all of France, assignors to Lesieur-Cotelle, Boulogne-Billancourt, France

Filed Jul. 5, 1983, Ser. No. 510,920
Claims priority, application France, Jul. 5, 1982, 82 12037
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 **20 Claims**



1. A dispenser for discharging a solid substance into a tank of a toilet comprising a receptacle of generally parallelepipedal configuration adapted to be positioned vertically in the tank, said receptacle comprising a base and a cover applied to said base, said base and said cover defining a first relatively long and narrow cell formed with upper and lower openings adapted to communicate with the tank, a second cell provided with a partition subdividing it into a first compartment and a second compartment, said first compartment communicating with said first cell by a pair of orifices spaced vertically along the longitudinal dimension of said cell and with said second compartment by passages at opposite ends of said partition, said second compartment having a deep portion positioned at an elevation lower than one of said passages and higher than the other of said passages; and

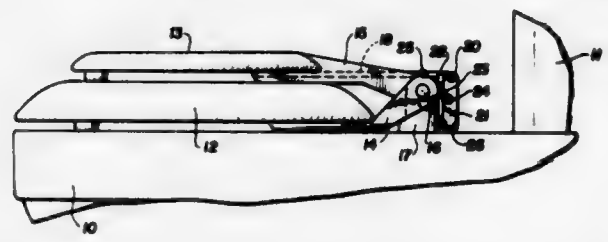
a body of said substance solidified in situ in said deep portion.

4,507,813

TOILET SEAT AND LID LOCK

William J. Lawson, R.D. 1, Box 299E, Milton, Del. 19968, and William L. Gunter, 1904 Kingswood Dr., Salisbury, Md. 21801

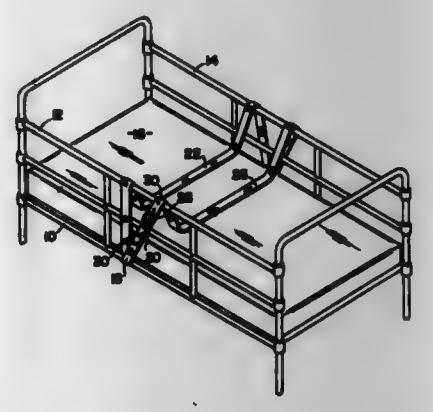
Filed Aug. 22, 1983, Ser. No. 525,441
Int. Cl.³ A47K *13/00*
U.S. Cl. 4—253 **5 Claims**



5. A toilet seat lid lock comprising in combination with a toilet seat lid which is pivotally mounted on a first transverse pivot axis somewhat above the top surface of a toilet bowl with which said lid is associated, an elongated mounting bar fixed on said lid longitudinally and extending rearwardly of the lid to a location somewhat rearwardly of said first transverse pivot axis when the lid is in a closed substantially level position, a locking arm pivotally attached to the rear end of said mounting arm and being disposed rearwardly of said first transverse pivot axis on a second parallel transverse pivot axis, a stop surface for the locking arm on the mounting bar somewhat forwardly of said second transverse pivot axis and limiting pivotal movement of the locking arm in one direction when the

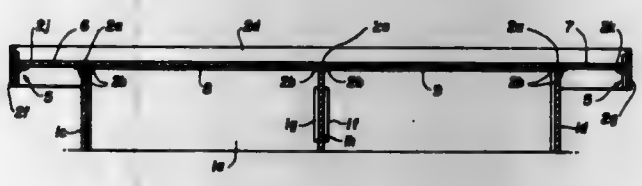
locking arm is in depending substantially perpendicular relationship to said mounting bar, said locking arm having an end face adapted to abut the top surface of a toilet bowl with which said lid is associated to block raising of the lid on said first transverse pivot axis, and a spring connected between the locking arm and mounting bar and biasing the locking arm toward engagement with said stop surface, said spring yielding to allow rotation of said locking arm on said second transverse pivot axis to an angular position whereby said lid may be raised.

4,507,814
PATIENT LIFT
Leonard C. Zyki, Jr., 8204 Greenshire Dr., Tampa, Fla. 33614
Filed Jun. 16, 1983, Ser. No. 504,898
Int. Cl.³ A61G *7/10*
U.S. Cl. 5—84 **5 Claims**



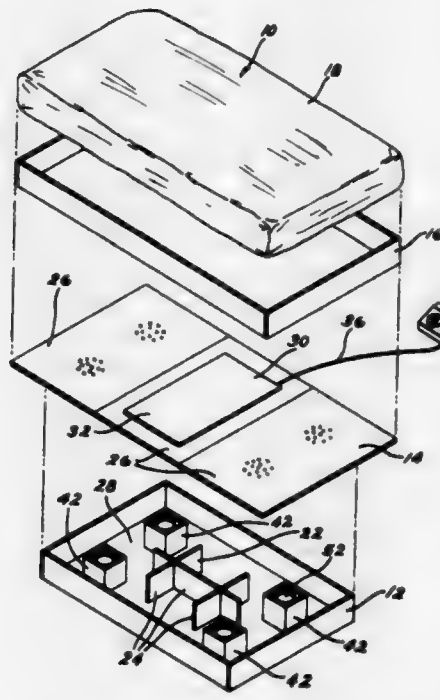
1. A patient lift of the type primarily intended for use in combination with a bed frame having opposing side rails and a mattress therebetween, said patient lift comprising: a strap means defined by a length of web material having first and second ends; said first end depending downwardly over the outside of a first bed side rail; a first segment of said strap means depending downwardly over the inside of the first bed side rail, across the mattress, and then upwardly and over the second bed side rail and downwardly therefrom; a loop formed in said strap means to define the beginning of a second segment of said strap means; said second segment extending upwardly from said loop, over said second bed side rail, across the mattress, and then upwardly and over the first bed side rail and downwardly therefrom to said second end; means for fixing said first and second ends to the bed frame; and stirrup means movably mounted on said strap means at said loop, whereby a patient reclining across said first and second segments on the mattress may be lifted therefrom by applying a downward force to said stirrup means, said stirrup means comprising a foot ring having an eye formed therewith and a hook mounted on the bed frame, whereby the patient may be held in an elevated position by engaging said hook in said eye after stepping downwardly on said foot ring.

4,507,815
PLATFORM BED AND CORNER CONNECTOR
Peter Danko, Alexandria, Va., assignor to The Bed Store, Alexandria, Va.
Filed Aug. 9, 1982, Ser. No. 406,161
Int. Cl.³ A47C *19/00*; B25G *3/36*
U.S. Cl. 5—400 **13 Claims**



1. A platform bed comprising a pedestal portion, a platform portion supported by said pedestal portion and a mattress assembly supported by said platform portion; said pedestal portion comprising a pair of spaced, parallel, longitudinally extending side frame members, a pair of spaced, parallel, transversely extending end frame members, corner fastening means connecting adjacent ends of said side and end frame members, partition means positioned intermediate the end frame members and extending between the side frame members, means connecting the opposite end of said partition means to a respective side frame member; said platform means comprising a pair of spaced, parallel, longitudinally extending side frame members, a pair of spaced, parallel, transversely extending end frame members, corner fastening means connecting adjacent ends of said platform side and end frame members, said fastening means having a body portion including a pair of arms disposed at a right angle to each other to conform to the inside corner platform portion formed by the side and end frames, a pair of divergent fingers formed on the outer edges of each arm, the major axis of said divergent fingers extending normal to the longitudinal axis of the respective arms, groves formed in the platform side and end frame members, said divergent fingers being slidably received in said groves and frictionaly retained therein, panel support means connected to the pedestal end frame members, the partition, the platform side and end frame members, and panel means mounted on said support means forming a horizontal surface, said mattress assembly being supported on said panel means.

4,507,816
WATERBED WITH SOUND WAVE SYSTEM
Gray H. Smith, Jr., 1257 Cherokee Rd., Louisville, Ky. 40204
Filed Dec. 21, 1983, Ser. No. 564,110
Int. Cl.³ A47C *31/00, 27/08*
U.S. Cl. 5—451 **2 Claims**



1. In combination with a waterbed having a floor pedestal of open frame construction including a separate internal pedestal support of vertical partitions both supporting a planar deck which, in turn, supports a second open frame construction within which a water-filled bladder mattress is confined; the invention comprising:

a. a waterbed sound system having four loudspeaker housings that are each adapted to be located in one of the four quadrants of the floor pedestal measured from head to foot of the pedestal as well as from left to right thereof;

b. each loudspeaker housing being of vertical tubular construction having a height substantially equal to the height of the said pedestal frame, the sides and bottom of the

tubular housing including layers of acoustic insulation, a loudspeaker positioned in the upper portion of the tubular housing and facing in an upward direction;

c. a plurality of openings formed through the deck in the area that is aligned with the top portion of each loudspeaker housing;

d. said loudspeakers being wired to an external balance control box having a first volume control as well as a left and right hand as well as head and foot speaker volume control capability;

e. said external balance control box being wired to a stereo amplifier means of a stereo radio sound system;

f. wherein each loudspeaker housing is positioned near the center of one of the four quadrants of the floor pedestal, where the loudspeaker housings are surrounded by dead-air space within the floor pedestal, and extra acoustic insulation is positioned in the bottom portion of each loudspeaker housing to reduce the possibility of sound traveling down through the floor supporting the waterbed.

4,507,817

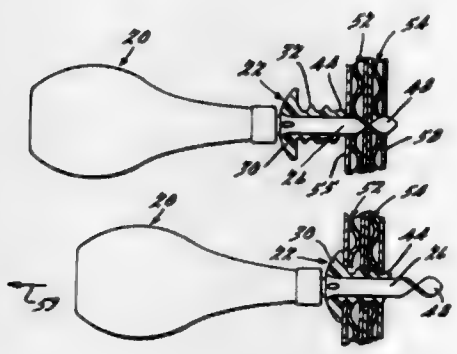
CONNECTOR AND INSERTION TOOL

Stanley E. Staffeld, 1621 Woodsboro, Royal Oak, Mich. 48067

Filed Oct. 8, 1981, Ser. No. 309,912

Int. Cl.³ B25F *1/00*

U.S. Cl. 7—158 **18 Claims**



1. A system for essentially monomanually fastening together at least two plies of relatively soft material such as corrugated board, said system comprising an insertion tool and at least one connector, the insertion tool comprising a handle and an elongated penetration shaft attached to said handle, said penetration shaft including flat ribbon helix portion at the distal end thereof and an overall length which is greater than that of the connector, said connector having a head and body with a passageway therethrough for mounting on said shaft, whereby when the connector is mounted on insertion tool, at least an operative portion of the flat ribbon helix portion extends ahead of the body of the connector to be turned through the material in a controlled fashion thereby allowing the shaft of the tool with the connector thereon to be inserted through the plies of material, the connector to be fixed in place holding the plies together, and the insertion tool to be axially withdrawn leaving the connector in place.

4,507,818

COLLAPSIBLE HAIRBRUSH

Antonio L. Perdiz, c/o Mrs. Manuella Gilmore, 912 Bellmore Rd., North Bellmore, N.Y. 11710

Filed Jul. 28, 1982, Ser. No. 402,508

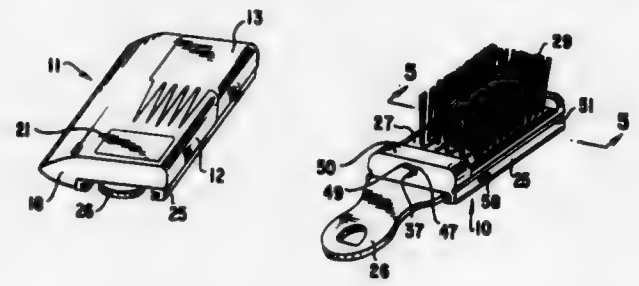
Int. Cl.³ A46B *9/10*

U.S. Cl. 15—203 **6 Claims**

1. A collapsible hairbrush comprising,

a base plate including a rectangular base member, first and second end walls situated at the longitudinal ends, said end walls extending upwardly from the base member, said first end wall having a plurality of depressions at the inner side of the base member, said second end wall having a curved opening with locking depressions at both ends thereof, a supporting wall adjacent and parallel to the second end wall, said supporting wall having a plurality of notches, number of which corresponds to the number of depression at the first end wall, a space being formed between the supporting wall and the second end wall, two outer grooves provided along the longitudinal outer sides of the base member, and two side margins extending downwardly from the longitudinal outer sides of the base member, said side margins having two inner grooves at the respective inner sides thereof and at least two groove openings provided at the respective inner grooves,

a plurality of bristle supporting plates, number of which corresponds to the number of the depressions of the first end wall and the notches of the supporting wall, each bristle supporting plate having a main member, a first end shaft attached to an end of the main member and rotationally situated in the depression of the first end wall, a second end shaft attached to the end of the main member opposite to the first end shaft and rotationally situated in the notch of the supporting wall, and a biased shaft connected to the second end shaft so that the biased shaft is located in the space between the supporting wall and the second end wall, said main member having an upper surface, an upper edge situated along one longitudinal side of the main member and a lower edge situated along the other longitudinal side of the main member so that when the biased shafts are moved, the main members rotate between a usable position that the upper surfaces of the main members are oriented parallel to the base member of the base plate in which the upper edges of the main members are located on the lower edges of the adjacent main



members to thereby support the edges of the main members with each other and a folding position that the upper surfaces are oriented perpendicular to the base member,

a plurality of bristles attached to said bristle supporting plates to extend substantially upwardly from the upper surface of the main member,

collapsible means situated in the space between the supporting wall and the second end wall, said collapsible means including a shifting plate having a plurality of openings for receiving the biased shafts of the bristle supporting plates, and at least one shifting projection connected to the shifting plate, said shifting projection extending through the curved opening of the second end wall so that when the shifting projecting is moved along the curved opening, the shifting plate moves to thereby rotate the bristle supporting plates between the usable position and the folding position, said shifting plate, when the shifting projection is disposed in the locking depressions, being locked in one of the usable position and the folding position,

a space cover for covering the space between the supporting wall and the second end wall so that the shifting plate can be kept inside the space cover,

a cover having side edges along the longitudinal edges thereof, said side edges being engageable with the outer grooves of the base plate so that when the hairbrush is folded, the bristles and the base plate can be covered, and

a grip having flexible tail ends with projections extending outwardly from the tail ends, and side edges engaging the inner grooves of the side margins of the base plate, said grip being held between the side margins when the hair-

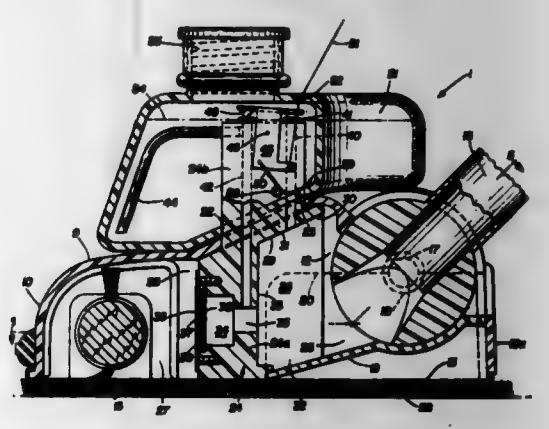
brush is folded and being extended from the side margins when the hairbrush is used so that the projections are engaged with the groove openings.

4,507,819

POWER NOZZLE SUDSER FOR CANISTER TYPE VACUUM CLEANER

Eugene F. Martinec, East Cleveland, Ohio, assignor to Health-Mor, Inc., Chicago, Ill.

Filed Feb. 16, 1984, Ser. No. 580,737
Int. Cl.[3] A47L *11/34*
U.S. Cl. 15—321 **11 Claims**



1. In a power nozzle for a canister vacuum cleaner of a type in which the canister power unit housing has spaced blower and suction outlets, in which the power nozzle has a nozzle housing and a power driven brush operative through a brush opening in the nozzle bottom plate to brush floor areas engaged by said nozzle, and in which said nozzle communicates through a tubular manipulating wand and a flexible hose with a housing outlet, wherein the improvement comprises a construction wherein

(a) the nozzle housing has housing top and side walls and a flat bottom plate adapted for sliding engagement with a floor area being cleaned, and said housing walls and bottom plate form a compartment;

(b) a suds solution-containing tank mounted on the housing top wall;

(c) suds control means having a partition portion located in said compartment dividing said compartment into a pressure section, and a brush section in which said power driven brush is located;

(d) said control means having a mounting portion extending from said partition portion through said housing top wall into the tank;

(e) first passage means formed in said mounting portion communicating between said compartment pressure section and the interior of the tank;

(f) the control means partition portion being formed with an air-fluid chamber having a screen-contained discharge outlet, and an inlet communicating with said pressure section;

(g) second passage means extending through said mounting and partition portions from a zone adjacent the bottom of the tank to said chamber inlet;

(h) said control means also including first and second valves, respectively, for said first and second passage means;

(i) a valve actuator movably mounted in the tank on said mounting portion having first and second valve closure members, respectively, for said first and second valves;

(j) said actuator being biased normally to a valve control closed position in which the first closure member closes said first valve and said second valve is open;

(k) said control means also including a control member connected with said movable valve actuator and extending to a location outside the tank accessible at a handle portion of the manipulating wand, for moving said valve actuator from said normal valve control closed position to a desired degree of opening of said first valve; and

(l) the nozzle hose being connected with the blower outlet of said canister power unit housing;

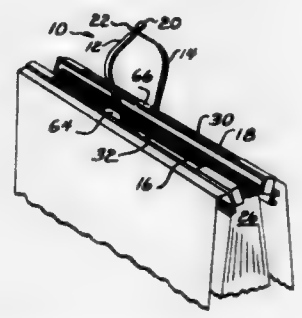
(m) whereby valve actuator is moved out of valve closed position when the canister power unit is energized, air under pressure is blown from the canister blower outlet into said pressure section through said first passage means into said tank establishing pressure on suds solution in the tank forcing solution in said tank to flow through said second passage into said air-fluid chamber inlet into air under pressure passing from said pressure section through said inlet and into said air-fluid chamber where said suds solution and air are mixed and blown through said screen contained discharge outlet to form suds in said housing brush section which are discharged through the bottom plate brush opening around the brush operating through said brush opening to suds-scrub floor covering on the floor area along which the nozzle is slidably moved back and forth for suds-cleaning.

4,507,820

CONCEALABLE HANDLE WITH A SLIDABLE PIVOT

Dale M. Purcocks, 27 Beechwood Close, Boghall Rd. Bray, Wicklow, Ireland

Filed Jul. 7, 1983, Ser. No. 511,523
Int. Cl.[3] B65D *25/32*; E05D *11/08, 13/08*
U.S. Cl. 16—125 **4 Claims**



1. A concealable handle for carrying an article having parallel first and second elongated channels with a U-shaped cross-section, each channel having two elongated lips, one projecting from each side of the U-shaped cross-section toward the opposite side, the handle comprising:

a first strap means having a first end, a second end, a pivot near the first end, a fitted portion near the pivot, and an attachment means near the second end, the first strap means proportioned to fit in the first channel and being slidable in said first channel when the first strap means lies parallel to said first channel;

a second strap means having a first end, a second end, a pivot near the first end, a fitted portion near the pivot and an attachment means near the second end, the second strap means proportioned to fit in the second channel and being slidable in said second channel when the second strap means lies parallel to said second channel;

wherein the pivots are substantially rectangular with longitudinal dimensions approximately equal to the inner dimension of the channel from the bottom of the channel to the inside edge of the lip whereby movement of the strap means past the position at which the pivot is wedged between said bottom and said lip is restricted; and

wherein the pivots have widened sections proportioned to fit in the channels such that the pivots are restricted from escaping past the channel lips;

wherein the fitted portions have a width approximately equal to the distances between the lips of each channel.

4,507,821

PLASTIC HANDLE ASSEMBLY

Helge D. Jorgensen, Copenhagen, Denmark, assignor to Superfos Emballage A/S, Vipperod, Denmark

Filed Aug. 9, 1982, Ser. No. 406,476
Claims priority, application Denmark, Aug. 11, 1981, 3565/81
Int. Cl.[3] B65D *25/32*
U.S. Cl. 16—126 2 Claims



1. A bucket handle comprising:
(a) an elongated handle member having an aperture adjacent each end thereof; and
(b) a pair of fastening knobs for attaching the handle member to a bucket, each fastening knob including
(i) a shank axially aligned with an aperture for movement therethrough;
(ii) breakable fin means connecting a first end of the shank to the handle member adjacent said aperture, and
(iii) barb-like anchoring means attached to the shank adjacent the first end thereof, said anchoring means facing toward a second end of said shank and having a size larger than said aperture,
(iv) the second end of each shank being free for attachment to said bucket, and
(v) said barb being of elastically resilient construction to facilitate pressing said barb through said aperture with said shank after the second end of the shank has been connected to the bucket for securing the end of the handle member on the shank between the bucket and barb,
the elongated handle member is constructed of molded plastic;
the barbs are integrally molded to the handle member by way of said fin means;
each shank is of smaller outside dimension than the adjacent aperture, said shank acting as a fixed pivot for rotatably mounting the handle member on the shank.

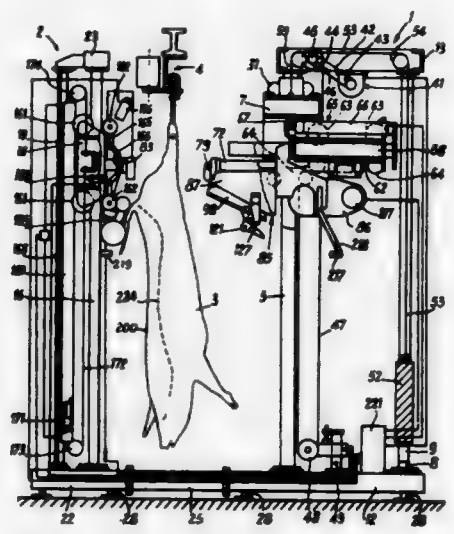
4,507,822

AUTOMATIC MACHINE FOR SPLITTING BUTCHERY ANIMALS, NOTABLY PIGS

Jean-Frédéric Herubel, Guebwiller, France, assignor to N. Schlumberger and Cie, Guebwiller, France

Filed Nov. 14, 1983, Ser. No. 551,314
Claims priority, application France, Nov. 15, 1982, 82 19057
Int. Cl.[3] A22B *5/20*
U.S. Cl. 17—23 3 Claims

1. An automatic machine for splitting butchery animals, notably pigs, characterized in that it comprises: a first fixed column (1), a second fixed column (2) providing, between itself and the first fixed column, a receiving interval for an animal to be split (3); a vertical splitting carrier (7) mobile along the first fixed column; a horizontal splitting carrier (62) mobile horizontally on the vertical splitting carrier so as to move toward and away from the second column; a splitting head (85) rigidly connected to the horizontal splitting carrier; a splitting blade (98) mounted on the splitting head and imparted, in its own plane, with an oscillating motion having horizontal and vertical components; a dorsal guiding carrier (18) for the animal to be split, vertically mobile on the second fixed column; a dorsal guide (185) mobile on the dorsal guiding carrier, in the direction of the first fixed column; two horizontal arms (71, 72) for laterally encompassing the animal to be split, rigidly connected to the horizontal splitting carrier and the distal ends of which carry end-pieces (78, 79) adapted for engaging respectively two recesses (82) having a shape matching that of said end-pieces, formed into pads (83, 84) rigidly connected to the dorsal guiding carrier; inner guiding means (21) of the spine of the animal to be split, carried by the splitting head; control means (66) for the movements of the horizontal splitting carrier (62); control means (41 through 48) for the working downward stroke of the vertical splitting carrier (7) and for the rapid off-load return stroke of said carrier; means (168) for the rapid return upward stroke of the dorsal guiding carrier (18); resil-



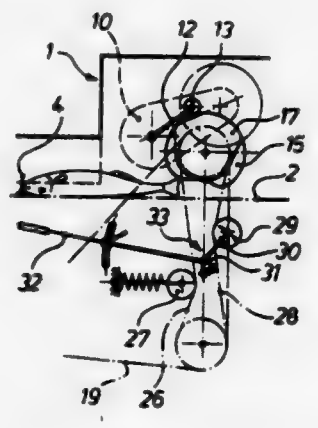
ient means (196) for controlling the application of the dorsal guide (185) against the back of the animal to be split; means (4) adapted for bringing in the aforementioned interval between the two fixed columns (1, 2) an animal to be split and hung by its rear legs, and for carrying it away; means (217, 219, 221) for determining the effective stroke length of the vertical splitting carrier (7); and a programmer (221) for the sequential activation of all the aforementioned control means for carrying out the successive splitting cycles.

4,507,823

FISH PROCESSING MACHINE WITH CONTROLLING MEANS FOR THE PROCESSING TOOLS

Hermann Wulff, Müllergrund 4a, 2400 Lübeck 16, Fed. Rep. of Germany

Filed Jan. 17, 1983, Ser. No. 458,176
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202140
Int. Cl.[3] A22C *25/14*
U.S. Cl. 17—55 6 Claims



1. A fish processing machine comprising at least one processing tool,
means mounting said processing tool for movement into and out of engagement with the fish to be processed,
cam means for controlling the the processing startpoint and the working course of said processing tool, said cam means including a main cam rotatably mounted on a main cam axis and having a cam surface coupled to said processing tool for controlling movement of the latter, and a cam segment mounted immediately adjacent to said main

cam for independent turning movement relative to said main cam,

intermediate drive means for rotating said main cam and said cam segment,

first belt drive means connecting said intermediate drive means to said main cam, and second belt drive means connecting said intermediate drive means to said cam segment for normal synchronous rotation of said cam segment with said main cam, without relative movement therebetween, said second belt drive means having a pushing run and a pulling run, and

selectively-movable tensioning means for applying tension upon a run of said second belt means, whereby to cause relative movement between said cam segment and said main cam and vary the cam surface of the latter.

4,507,824

DEVICE FOR FILLETING BEHEADED FISH

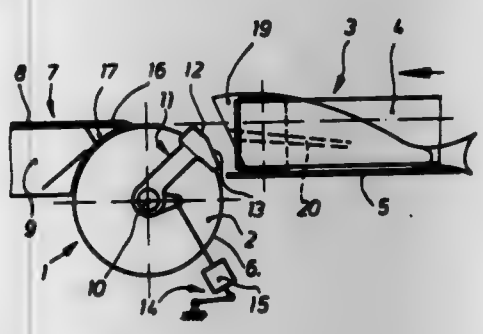
Axel Sawusch, Pelzerstrasse 13, 2400 Lübeck, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,322

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206274

Int. Cl.³ A22C *25/08, 25/16*

U.S. Cl. 17—61 **9 Claims**



1. A device for filleting beheaded fish having belly spokes and led to a filleting apparatus in a moving direction and in their swimming position with their beheaded end leading and belly downward, said device comprising

(a) tool means including circular knive means having cutting edge means for cutting free said belly spokes,

(b) guide means for supporting said belly of said fish via supporting edges,

(c) transfer element means associated with said circular knife means and including guiding edge means, said transfer element means being mounted for movement between a basic position covering at least an area of said cutting edge means facing said fish at its arrival, to a working position in said moving direction of said fish to set free said area of said cutting edge means, in which working position said guiding edges of said transfer element lie flush with said supporting edges of said guide means as a continuation thereof, and

(d) surface means on said transfer element means located in said basic position to be engaged by the beheaded end of said fish travelling in said moving direction, whereby said fish moves said transfer element to its working position with said circular knife means opening the belly cavity of the fish and the transfer element means penetrating the belly cavity and engaging and raising the spinal column of the fish to the level of said supporting edges.

4,507,825

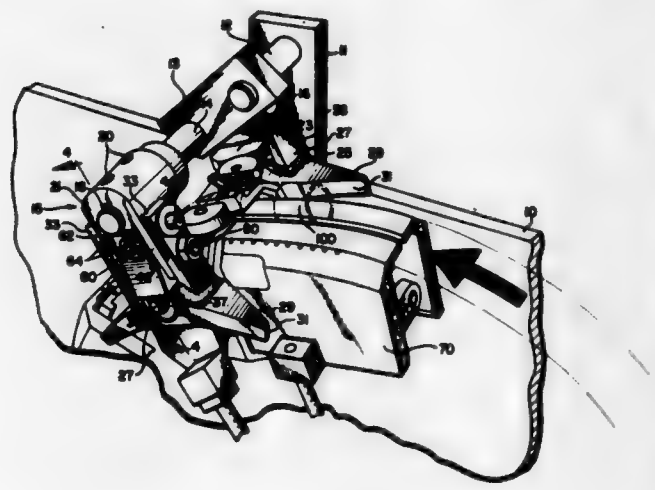
SELF-ADJUSTING TAIL BREAKER MEANS

Edmund D. Betts, Libertyville, and Jon T. Keith, Wheeling, both of Ill., assignors to Gregor Jonsson Associates, Inc., Highland Park, Ill.

Filed Aug. 25, 1983, Ser. No. 526,460

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—73 **16 Claims**



1. A shrimp processing apparatus having a tail breaking station where the main portion of a shrimp shell is fractured from the shrimp tail without removing the tail, said apparatus comprising:

holder means for gripping and ultimately moving shrimp to be processed through and tail breaking station;

said holder means including at least a first and second clutch means each having tines adapted to enter a shrimp shell disposed in said holder means;

said first clutch means being adapted to pivot relative to said second clutch means to effect a stroke between said first and second clutch means;

a first cam follower adapted to act against a first cam means to cause said first and second clutch means to pivot relative to each other;

a second cam follower adapted to act against a second cam means to cause said first and second clutch means to move toward or away from a shrimp being processed;

a first fixed cam means adapted to contact said first cam follower; and,

a second cam means pivotable about said first cam member and adapted to contact with second cam follower whereby different size shrimp can be accommodated in said apparatus and said second cam means can pivot outwardly away from said holder means as the size of said shrimp increases.

4,507,826

METHOD AND APPARATUS FOR OPENING FIBER BALES

Alex J. Keller, 75 Ridgeport Rd., Clover, S.C. 29710, and Akiva Pinto, 525 Eastwood Dr., Gastonia, N.C. 28052

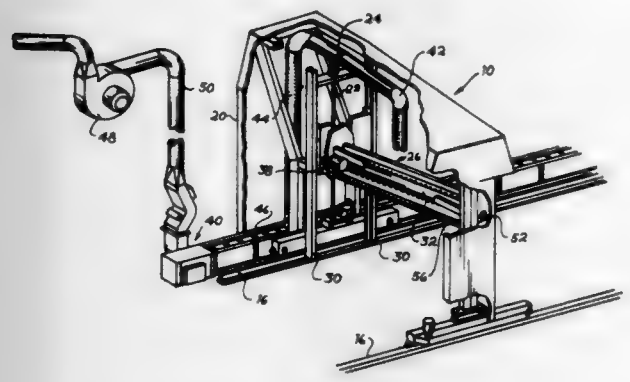
Filed Oct. 13, 1982, Ser. No. 434,010

Int. Cl.³ D01G *7/04*

U.S. Cl. 19—80 R **24 Claims**

1. Apparatus for removing fiber from a plurality of fiber bales arranged adjacent one another in a predetermined alignment, said apparatus including carriage means movable in a direction along said aligned bales, and head means supported by said carriage for movement therewith and selectively movable in a vertical direction for making contact with the top of said bales, said head means including a rotatable member formed with fiber engaging means for engaging and removing said fiber from the top of said bales during movement of said carriage means along said bales, said rotatable member being

mounted in said head means with the axis of rotation of said rotatable member at an acute angle with respect to said direc-



tion of movement of said carriage means along said aligned bales.

4,507,827

CLEANING MACHINE FOR FIBER MATERIAL

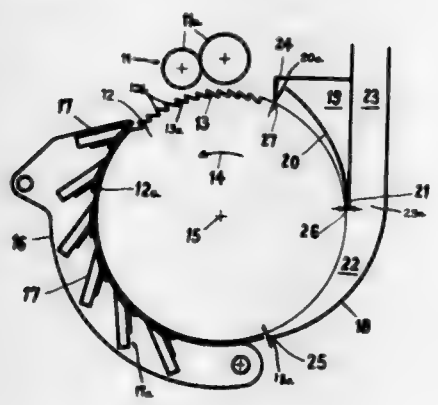
Urs Staehli, Turbenthal, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Oct. 24, 1983, Ser. No. 544,860

Claims priority, application Switzerland, Nov. 5, 1982, 6445/82

Int. Cl.³ D01B *3/00*

U.S. Cl. 19—200 **8 Claims**



1. A cleaning machine for fiber material comprising:
an opening roller rotatable about an axis of rotation thereof and having a roller envelope;
clothing having points and provided for said opening roller;
said roller envelope containing the points of the clothing;
a feed device for infeeding of the fiber material to the opening roller;
a grating formed of bars cooperating with the opening roller;
a suction chamber cooperating with the opening roller;
a screening member cooperating with the opening roller;
said feed device, said grating, said suction chamber and said screening member being successively arranged around said opening roller and extending substantially over the length of the opening roller in the direction of the axis of rotation of said opening roller;
a nose member provided for said screening member;
a suction duct leading away from the suction chamber and in flow communication therewith;
said suction duct having an entry opening;
said nose member forming part of said entry opening of said suction duct;
said screening member having a screening wall extending away from the nose member in the direction of rotation of the opening roller over a part of said roller envelope containing the points of the clothing;
said screening wall having a rear end; and
the screening wall and roller envelope possessing a mutual spacing from one another which increases in the direction of rotation of the opening roller from the nose member to the rear end of the screening wall.

4,507,828

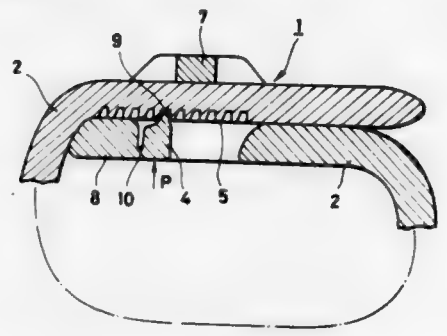
BUNDLING BELT DEVICE

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Filed Jul. 18, 1983, Ser. No. 514,753

Int. Cl.³ B65D *63/00*

U.S. Cl. 24—16 PB **8 Claims**



1. A bundling belt device comprising a head having first and second ends and projecting in a first direction intermediate said first and second ends, said head having an opening, and a belt member defining an axis extending along the length thereof coupled to and extending from said first end of said head, said opening in said head including a first opening portion extending in the axial direction of said belt member for passing said belt member therethrough and a second opening portion opening in a direction opposite to said first direction in which said head projects and communicating with said first opening portion, said head having a stopper member rockably formed in a portion of the area in which said first and said second opening portions communicate with each other, said stopper member having a tooth projecting toward said first opening portion in said first direction in which said head projects, said belt member being formed with serrations on the surface thereof facing a second direction opposite to said first direction in which said head projects, said stopper member being movable in said first and second directions so that when said belt member is inserted through said first opening in a fastened condition in use of the device applied to bundle objects, said tooth of said stopper member is acted upon by a reaction force exerted by the objects being bundled so that said tooth is firmly engaged with a portion of said serrations on said belt member.

4,507,829

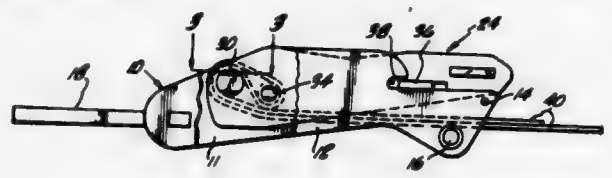
LIGHT WEIGHT TENSIONABLE BUCKLE

Robert Looker, 1509 E. El Segundo, El Segundo, Calif. 90245

Filed Apr. 21, 1983, Ser. No. 487,451

Int. Cl.³ A44B *11/12, 21/00*

U.S. Cl. 24—68 CD **2 Claims**



1. An over-center tensionable buckle for use with wide, flat straps and the like, comprising:
a. a body member having two parallel elongate side plates defining a void space therebetween;
b. a handle member having two parallel elongate side panels which define a void space therebetween to accommodate the strap, said handle member rotatable relative to said body member from an open position to a closed position about a journal pin which extends across said void space and is rotatably attached to and extends through said side

panels and is there fixedly and non-rotatably attached to said side plates, around which journal pin the strap is to be looped; and

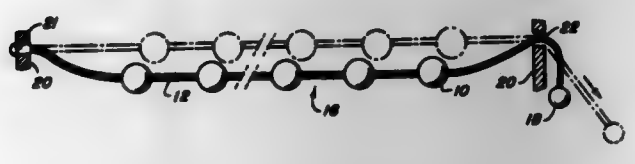
c. a load pin fixedly and non-rotatably attached to and extending between said side panels of said handle member such that said load pin contacts and pulls the slack out of the strap upon rotation of said handle member from its open position to its closed position.

4,507,830

HOLDER FOR SHEET-LIKE OBJECTS

Israel Dahan, 307/46 Gilo, Jerusalem, Israel

Filed Jun. 21, 1983, Ser. No. 506,329
Claims priority, application Israel, Jul. 2, 1982, 66218
Int. Cl.³ A44B *21/00*; A47F *7/16*
U.S. Cl. 24—527 **7 Claims**



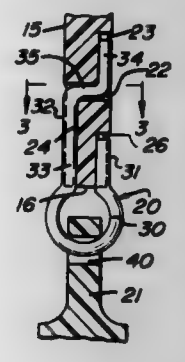
1. A rapid-action holder for sheet-like objects, comprising a profiled rail mountable on a wall or the like, said rail having in the position of mounting a substantially inverted-U-shaped cross section, the two flanges of which include with one another a relatively small angle in such a way that the inside of said U-shaped cross section is narrowest at the mouth portion thereof and is widening towards the web portion thereof, a plurality of beads linked to one another to form a coherent chain, said beads being too large to pass said narrowest portion of said U-shaped cross section, yet being small enough to freely move in the wider portion thereof, one end of said chain of beads being fixedly attached to one end of said rail, the other end of said chain of beads being pullably attached to the other end of said rail, said points of attachment at said rail ends being located at such a distance from said mouth portion that, whereas in the non-pulled state of said other end of said chain of beads at least some of said beads are resting within he mouth portion of said cross section touching both flanges, in the pulled state of said other end said chain of beads is tightened and said resting beads thereby lifted until none of said beads touches more than one of said flanges.

4,507,831

SPRING CLIP FOR TILTER WORM SHAFT

David K. McClure, Muncy, Pa., assignor to Marathon Manufacturing Company, Houston, Tex.

Filed Nov. 22, 1982, Ser. No. 443,579
Int. Cl.³ A44B *13/00*
U.S. Cl. 24—590 **8 Claims**



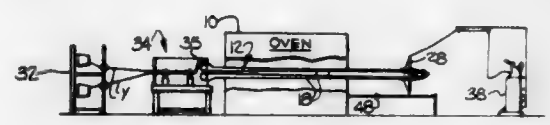
1. A spring clip connection comprising a shaft terminating outwardly in a shaft end, said shaft having a transverse through hole spaced inwardly from said shaft end, a body for connection to said shaft, a leg extending from said body, said leg having a proximate leg portion adjacent to said body and a distal leg portion remote from said body and offset laterally from said proximate leg portion, said leg having a transverse intermediate leg portion extending between adjacent regions of said distal and proximate leg portions, said leg being sized for insertion through said hole to locate said transverse intermediate leg portion rotatably in said hole with said distal and proximate leg portions on opposite sides of said shaft, and an arm extending from said body longitudinally of and spaced laterally from said proximate leg portion for location on the opposite side of said shaft as said proximate leg portion, said shaft having elongate recesses extending in opposite directions from opposite ends of said hole for respectively receiving said distal and proximate leg portions longitudinally in said recesses when said intermediate leg portion is in said hole, and said leg and arm being resiliently displaceable away from each other for snap engagement into said recesses and firm resilient clamping engagement with said shaft on angular displacement of said leg and arm about the axis of said intermediate portion on rotation of the latter in said hole.

4,507,832

METHOD AND APPARATUS FOR THE CONTINUOUS TREATMENT OF YARN

Erwin Steiner, Clover, S.C., and Peter H. Stahlecker, Charlotte, N.C., assignors to Technology Consulting Corporation, Charlotte, N.C.

Filed Sep. 23, 1982, Ser. No. 421,865
Int. Cl.³ D02G *1/20*
U.S. Cl. 28—248 **13 Claims**



1. A method of continuously treating a running yarn, and characterized by the ability to insure a substantially uniform treatment of all portions of the yarn and thereby avoid the production of off-standard yarn, and comprising the continuous steps of

forming a running yarn into helical loops,

conveying the thus formed loops at a predetermined speed through a treatment chamber and along an accumulation zone positioned downstream of the chamber,

withdrawing the loops from the accumulation zone,

monitoring the number of loops in the treatment chamber and accumulation zone,

providing a control signal upon the monitored number of loops exceeding a predetermined maximum, and also upon the monitored number of loops being less than a predetermined minimum, whereby the control signal will indicate a condition wherein the loops may remain in the treatment chamber for either an unduly long or an unduly short residence time,

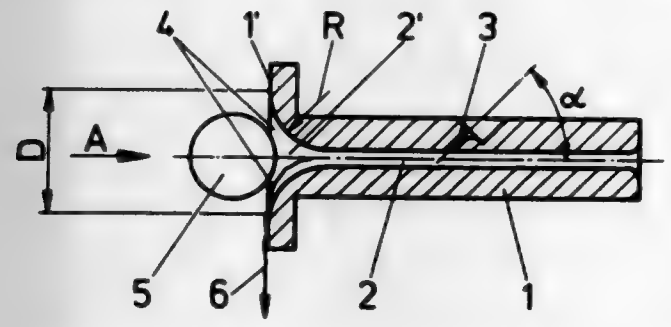
physically blocking the further advance of the loops at the downstream end of the aceumulation zone, whereby the loops tend to gather and accumulate in a reverse direction along the accumulation zone in the event the withdrawing step is at an inadequate speed, and

selecting said predetermined maximum and said predetermined minimum number of loops so that the loops then present in the treatment chamber will pass through the treatment chamber in a predetermined residence time.

4,507,833
JET TEXTURING NOZZLE

Christian Simmen, Lichtensteig, Switzerland, assignor to Heberlein Maschinenfabrik AG, Wattwil, Switzerland

Filed Feb. 25, 1983, Ser. No. 469,683
Claims priority, application Switzerland, Mar. 10, 1982, 1472/82
Int. Cl.³ D02G *1/16*
U.S. Cl. 28—254
15 Claims

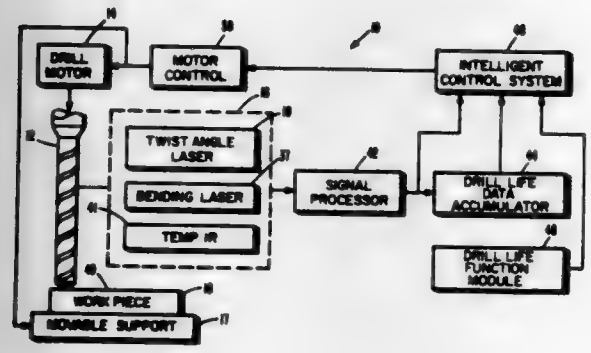


1. In a device for texturing at least one endless yarn consisting of a plurality of filaments, with a nozzle (1) supplied with a pressure medium, containing a yarn guide duct (2), at least one feed means (3) for the pressure medium terminating in the duct, an outwardly flaring, convexly curved outlet opening (2') of the duct (2), and a spherical or semispherical guide element (5) extending into the outlet opening and forming therewith an annular gap (4); the improvement in which the outer diameter (D) of the convexly curved outlet opening (2') of the duct (2) is at least equal to four times the diameter (d_1) of the duct and at least equal to 0.5 times the diameter (d_2) of the spherical or semispherical guide element (5).

4,507,834
DRILLING MONITOR

Tsu F. Chen, Dresher, and Edwin R. Phillips, Rosemont, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed May 27, 1983, Ser. No. 499,053
Int. Cl.³ B23Q *15/00*; B23B *49/00*
U.S. Cl. 29—26 R
5 Claims



1. A drilling monitor comprising:

means associated with a drill bit for measuring twist angle, including a first laser beam directed at a first reference point on said drill bit reflected to a first sensor, and a second laser beam directed at a second reference point on the drill bit reflected to a second sensor;

image measuring means associated with said drill bit for measuring bending including a third laser beam on a first side of said drill bit directed by a fiber optic bundle at a sensor on a second side of said drill bit, opposite said first side, whereby said drill bit interrupts a portion of said third beam;

means for measuring said drill bit temperature including an IR sensor directed at an intersection formed between said drill bit and a surface of an associated workpiece;

signal processing means coupled for receiving instantaneous measurements of twist angle, bending and temperature of said drill bit;

drill life data accumulator means coupled for receiving and accumulating instantaneous measurements from said signal processing means;

means for controlling motor power for driving said drill bit;

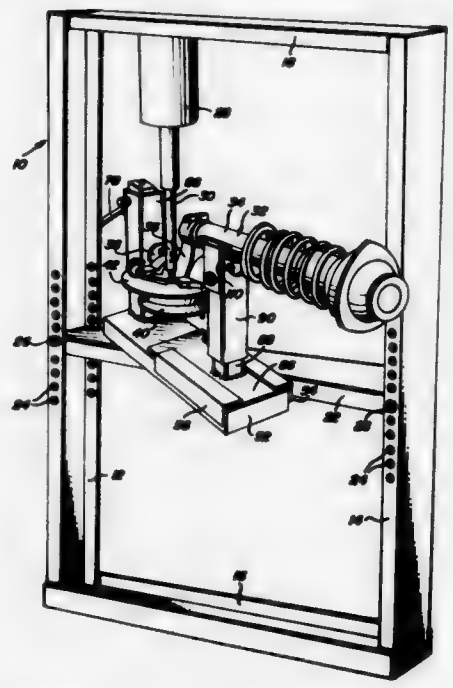
a drill life function module having preselected data therein;

an intelligent control system coupled for receiving said instantaneous measurements from said signal processor, said accumulated measurements from said accumulator and said preselected data from said drill life function module and for comparing said measurements and data and for responsively generating instructions to said motor control means.

4,507,835
ADJUSTABLE PRESS JIG FOR FRONT WHEEL STRUT ASSEMBLY

Robert L. Nankervis, 219 Holland Rd., Holmdel, N.J. 07733

Continuation-in-part of Ser. No. 306,144, Sep. 28, 1981, abandoned. This application Mar. 30, 1983, Ser. No. 480,451
Int. Cl.³ B25B *1/22*; B30B *15/06*
U.S. Cl. 29—251
10 Claims



1. In combination with a force member advanceable along a predetermined path and stationary base means toward which said force member is movable along said path, said base means including a pair of supports spaced apart on opposite sides of said path, one of said supports including a mount supported therefrom for angular displacement about an axis transverse to a plane containing said path and said supports, said mount including a mounting shank supported therefrom disposed and swingable in said plane during angular displacement of said mount about said axis, the other of said supports including cradle means supported therefrom for angular displacement about an axis transverse to said plane and laterally adjustable along a path substantially paralleling the first mentioned path, said cradle means being adapted to cradle the main strut portion of a McPherson strut assembly and said mounting shank being securable through a ball joint mounting bore formed in a mounting portion of the knuckle carried by one end of said main strut portion with said mounting shank and cradle means being adjustable about the first mentioned axis and along the second mentioned path, respectively, for positioning the knuckle of said strut assembly in position with the wheel of bearing seats of said knuckle aligned with the first mentioned path.

4,507,836

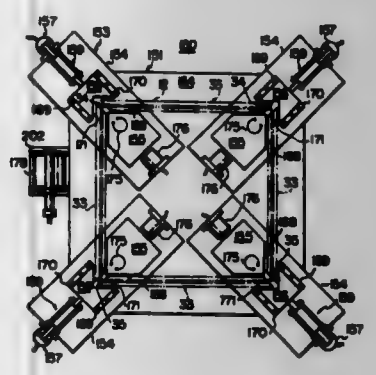
ACCESS DOOR AND FRAMING APPARATUS FOR THE ACCESS DOOR'S FRAMEWORK

Naka Hiromitsu, c/o Tokyo Kenkyusho of Kabushiki Kaisha Naka Gijutsu Kenkyusho, No. 39, Oaza, Shinmachi, Yashio-shi, Saitama-ken, Japan

Division of Ser. No. 283,541, Jul. 14, 1981, Pat. No. 4,443,973. This application May 19, 1983, Ser. No. 497,256

Int. Cl.³ B25B *5/14*

U.S. Cl. 29—252 **8 Claims**



1. A framing apparatus for making a door frame from four framework elements having insertion grooves at least at the ends thereof and four corner members having locking holes therein, insertable into insertion grooves for holding the four framework elements together in square to form a temporary framework so as to have four inside corners and four respectively corresponding outside corners, the apparatus comprising:

a table for vertically supporting the temporary framework;

four inside blocks disposed on said table so as to be surrounded by the temporary framework, each of said inside blocks having an outside surface engagable with the temporary framework at a corresponding one of the four inside corners, said inside blocks having respective bores formed therethrough for extending toward the corresponding ones of the inside corners;

four outside blocks movably mounted on said table so as to be outside the temporary framework, each of said four outside blocks being opposed to and spaced from a corresponding one of said four inside blocks and having an inside surface for engaging the temporary framework at a corresponding one of the outside corners;

first pressing means, including first fluid pressure operated cylinders, for pressing said four outside blocks against the temporary framework so as to press the framework elements at the insertion grooves to fix the corner members therein; and

second pressing means, including press members, movably fitted in said bores in said inside blocks so as to be projectable outwardly of said outside surface of said inside blocks toward said inside surfaces of said outside blocks, said press members having respective pairs of projections for pressing portions of the framework elements with said pairs of projections so as to deform the portions and press the portions into the locking holes of the corner members while the inside and outside corners are respectively engaged by the inside and outside blocks.

4,507,837

EXTRACTOR TOOL

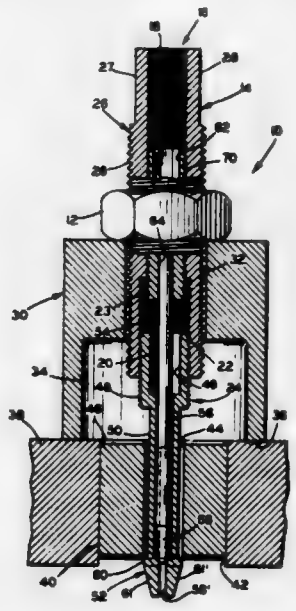
Donald H. Hinkle, Reading, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 11, 1983, Ser. No. 512,305

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—262 **1 Claim**

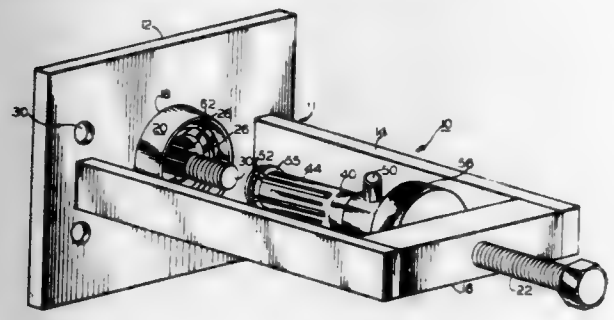
1. An extractor tool for extracting an annular element, having an annular bore therein, outwardly from the top of a receiving opening in a supporting member, which receiving opening is surrounded by an upper supporting surface of the supporting member, comprising, a spacer member having a radially extending base with an axially extending opening in said base and from which base depends axially extending shoulder means, said shoulder means defining a space large enough to receive the annular element between the shoulder means and said base and with the lower end of said shoulder means being engageable with the upper surface of the supporting member at locations radially outwardly of the annular element, an axially elongated extractor sleeve slidably received in said axially extending opening in said base, said sleeve having a central threaded bore extending axially therethrough and said bore having an upper and a lower portion with the threads in said upper bore portion of said extractor sleeve being of an opposite hand from said threads in said lower bore portion thereof, threads on the outer surface of said extractor sleeve being of the same hand as the threads in said upper portion in said bore of said sleeve, a hollow extractor member with a threaded upper end threaded in said lower bore portion, said extractor member having an elongated lower end with a pair of expandible legs and said lower end being adapted to be received within the axial bore of the annular element, an expansion member having an upper threaded portion threaded in the upper bore portion of said sleeve and having an elongated depending portion extending into said hollow extracting element, said expansion member including means on its lower end for expanding the lower end of said extractor member radially outwardly upon said expanding member being threaded axially



into said sleeve, sao that when said lower end of said extractor member is within the bore of the annular element, said expander member can be operated for causing engagement therebetween, and forcing moving means operable between said extractor sleeve and said spacer member for moving said extractor sleeve axially outwardly relative to said spacer member to withdraw the annular element from the supporting member, said moving means comprising threads on the outer surface of said extractor sleeve, a nut means threaded on said outer surface of said extractor sleeve, with the lower surface of said nut means engaging the upper surface of said base of said spacer member, and means on said sleeve for cooperating with a holding means to prevent rotation of said sleeve, whereby upon rotation of said nut means while said extractor sleeve is held against rotation, outward movement of said sleeve relative to said spacer member occurs, said threads on the outer surface of said extractor sleeve are the same hand as the threads in said upper portion of said bore of said sleeve whereby if rotation of said nut means to cause outward rotation of said sleeve causes rotation of said sleeve, said expander is further tightened in said sleeve, said elongated lower end of said extractor member comprises a cylindrical portion secured to and extending downwardly from said threaded upper end of said extractor member and a knob means on the lower end of said cylindrical portion, said cylindrical portion being smaller in diameter than the bore in the annular element and said knob

means being slightly larger in diameter than the bore in the annular element, said extractor element being long enough whereby said knob means will project below the annular element when the tool is mounted thereon, and upon expansion of said lower end of said extractor member, said knob means engages the lower surface of the annular member, said extractor member has concentric bores in said threaded upper end and elongated lower end thereof, said bore in said knob means of said lower end being of smaller diameter than said bore in the remainder of the cylindrical portion thereof, said expandible legs are formed by a pair of axial slots formed in said elongated lower end and extending up through the knob means and partially up the cylindrical portion, and said elongated depending portion terminates at its lower end in a rounded conical end which expands said extractor member upon entering the junction of the bores in said knob means and cylindrical portion.

4,507,838
TOOL FOR REMOVING AND REPLACING WHEELBEARINGS
Karl M. Hacker, 1921 Dover La., Castleton, N.Y. 12033
Filed Apr. 9, 1982, Ser. No. 366,865
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—263 **7 Claims**



1. A tool for removing or replacing a ring-shaped automotive-type wheelbearing from the bearing housing after removal of the hub, but without having to remove the axle or bearing housing and without applying pressure to the axle comprising:

an extractor member having an expandable end portion, and being operable between an advanced and a retracted position, said advanced position being such that the expandable end of the extractor member extends into the bearing housing past the bearing, said retracted position being such that the entire extractor member is without the bearing housing,

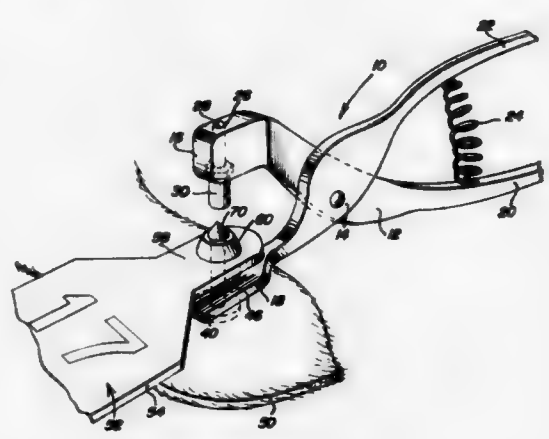
said extractor member including a cylindrical outer tube having a base and a plurality of fingers, said fingers having enlarged ends extending in one direction from the base and arranged in a spaced apart relationship with one another in an annular configuration around a common axis, and said fingers being biased in a normally collapsed state in which they can be inserted through the space between the central opening of the bearing and the axle and withdrawn therefrom without engaging the bearing, and

a cylindrical inner tube having a second base portion on one end and a flange located on the opposite end, said flange having an outer circumference which is larger than the circumference of the inner tube, wherein the inner tube is concentrically associated with the outer tube for spreading the fingers radially outwardly from their collapsed state to an expanded state so that they cannot pass through the bearing without engaging it and for returning their ends to their collapsed state, and the inner tube having a hollow portion adapted to receive the axle;

said extractor member including a means for thrusting a replacement wheelbearing into the bearing housing upon the movement of the extractor from its retracted to its advanced position; and

a frame member which is adapted to be rigidly secured to the automobile in a positon outside the bearing housing such that the extractor member is movably connected thereto and can be inserted into the housing to engage the bearing, said frame adapted to exert an outward extracting force on the bearing as the extractor is withdrawn from the housing, while simultaneously exerting an inward force on the bearing housing.

4,507,839
TWO-PIECE EAR TAG REMOVING TOOL
Floyd H. Simpson, 44680 Belmont-Centerville Rd., Belmont, Ohio 43718
Filed Aug. 2, 1983, Ser. No. 519,230
Int. Cl.³ B23P *19/04*; B25B *7/00*
U.S. Cl. 29—268 **7 Claims**



1. An ear tag removing tool including a pair of opposing jaws, means mounting said jaws for relative movement toward and away from each other, one of said jaws including an elongated stud supported therefrom including a free end projecting toward the other jaw, the other jaw defining a pair of laterally spaced generally parallel tongues having one pair of spaced apart ends and defining an open ended elongated slot therebetween opening endwise outwardly between said one pair of ends of said tongues, said free end of said stud being of a transverse dimension to be snugly lengthwise received through said slot upon movement of said jaws toward each other, said free end of said stud including an endwise outwardly opening recess formed therein for receiving the tapered enlarged tip of the male stud part of an animal ear tag therein, the surfaces of said tongues facing said one jaw being laterally inclined toward said slot and away from said one jaw, said recess comprising a conical recess.

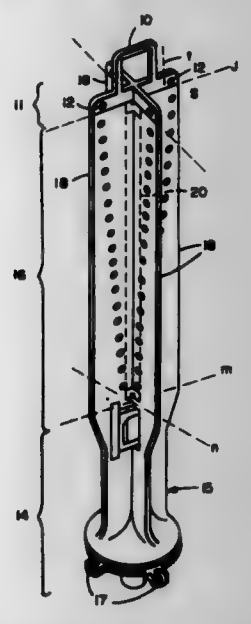
4,507,840
METHOD FOR COMPACTING NUCLEAR REACTOR COMPONENTS
Leopold A. Steinert, and Richard W. Perry, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.
Filed Apr. 19, 1983, Ser. No. 486,524
Int. Cl.³ B23P *7/00*
U.S. Cl. 29—401.1 **15 Claims**

1. A method of compacting used control rod blades and fuel channels of the type employed in a boiling water reactor, each of said control rod blades comprising an elongate main blade structure of substantially uniform, cruciform cross section to define four quadrants, each control rod blade further including upper and lower portions at opposite ends of said main blade structure which depart from said cruciform cross section, each of said fuel channels including an elongate, hollow structure having a substantially square, uniform cross section throughout its length defined by identical, planar panels integrally joined at the rounded corner edges of the channel;

said method comprising the steps of:

removing said upper and lower portions from each of said control rod blades to retain said main blade structure;

sectioning each of said fuel channels into a plurality of elongate channel members; and



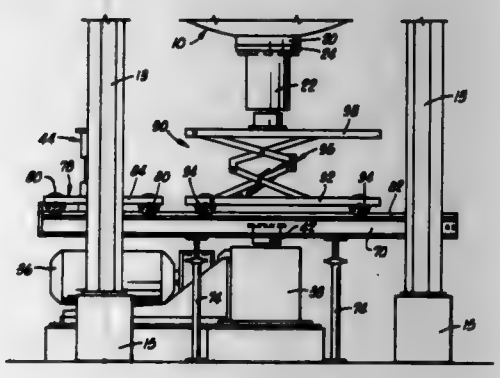
stacking said channel members so as to position them within the respective quadrants of said retained main blade structure substantially parallel to the long axis of said structure.

4,507,841

REMOVAL AND REINSTALLATION OF BOTTOM ENTERING AGITATOR SEALS

Robert E. Rickert, Aberdeen, Miss., assignor to Vista Polymers Inc., Houston, Tex.

Filed May 17, 1984, Ser. No. 611,511
Int. Cl.³ B23P *7/00*
U.S. Cl. 29—402.08 **7 Claims**



1. In a method of removing a seal unit from a process vessel bottom entering agitator assembly and reinstalling a seal unit therein wherein the assembly icludes an agitator positioned within the vessel, an agitator shaft connected to the agitator having a connector at the bottom end thereof adapted to be connected to a support collar which is in turn adapted to be connected to the vessel, a seal unit having upper and lower shafts extending therefrom, the upper seal unit shaft being connected to the connector at the bottom end of the agitator shaft within the vessel and extending through a flanged opening in the vessel, the seal unit being positioned outside the vessel and connected to the flanged opening in the vessel and a coupling shaft connected to the lower seal unit shaft and to a rotary drive means, wherein the seal unit is removed by removing the coupling shaft from the assembly, disconnecting the seal unit from the flanged opening of the vessel, lowering the seal unit, agitator shaft and agitator connected thereto whereby the connection between the upper seal unit shaft and the agitator shaft is moved to a position outside the vessel, connecting the support collar to the connector at the bottom end of the agitator shaft, raising the seal unit, agitator shaft and agitator whereby the support collar is positioned adjacent the vessel, connecting the support collar to the vessel and then disconnecting the upper seal unit shaft from the agitator shaft whereby the seal unit is removed from the assembly and wherein a seal unit is reinstalled by carrying out the above steps in reverse order, the improvement which comprises:

removably installing a first pair of elongated horizontally positioned parallel rails beneath said vessel, one on each side of said coupling shaft with a selectively elevatable table movably mounted thereon;

utilizing said elevatable table in the lowering and raising of said seal units during the removal and reinstallation thereof and in the movement of said seal unit between said assembly and one end of said rails; and then

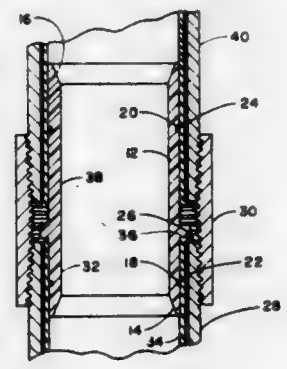
removing said rails and elevatable table from beneath said vessel.

4,507,842

METHOD OF SEALING AND PROTECTING A PLASTIC LINED PIPE JOINT

John Werner, Box 14, Independence, Kans. 67301

Filed Aug. 19, 1983, Ser. No. 524,760
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—451 **1 Claim**



1. An improved method for sealing and protecting a plastic lined pipe joint from corrosive fluid passing through the plastic lined pipe comprising the steps of:

(a) providing a first and second section of plastic lined pipe having externally threaded ends such that an internally threaded collar can be employed to form the pipe joint holding said pipe segments together;

(b) threading an internally threaded collar onto one end of the first of said plastic lined pipe sections;

(c) providing a hollow, open ended, cylindrical plastic collar seal presized to concentrically fit within the plastic liner of said sections of plastic lined pipe with minimum concentric tolerance and wherein said open ends of said plastic collar seal are internally beveled and wherein said plastic collar seal is equipped with external O-ring grooves and O-rings at each of said ends and wherein said collar seal is further provided with an external ledge means molded concentrically to said collar seal between said O-rings, and wherein said ledge means is adapted to fit within said internally threaded collar and rest on the end of said lined pipe and wherein said ledge means is positioned such that the distance from at least one end of said collar seal to the ledge means exceeds the length of said internally threaded collar;

(d) placing said plastic collar seal within said plastic lined pipe and threaded collar such that one end of said collar seal extends out of said collar threaded on said first section of plastic lined pipe and said ledge means rests on the end of said first section of plastic lined pipe; and

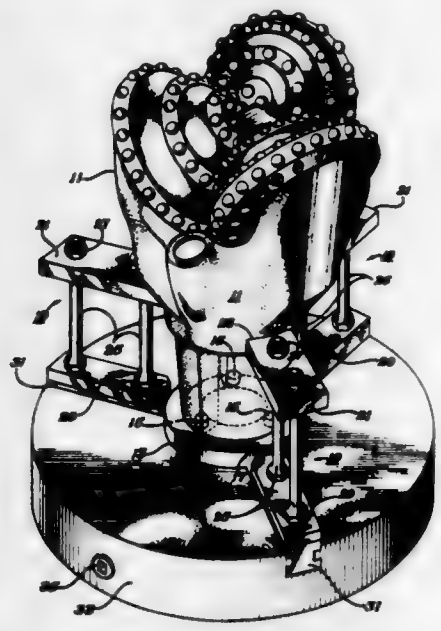
(e) threading said second section of plastic lined pipe into said internally threaded collar thus forming a tight pipe joint with said collar seal within said joint.

4,507,843

CLAMPING ASSEMBLY

Gerald O. Atkinson, Pasadena, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 10, 1982, Ser. No. 448,671
Int. Cl.[3] B23B *31/16*; B23K *9/00*
U.S. Cl. 29—466 5 Claims



4. A method for securing a rock bit section during welding, comprising the steps of:

providing a base;

attaching a pair of resilient rods at one end to the base;

attaching engaging means to the rods to form a rectangular structure for engaging the rock bit section; and

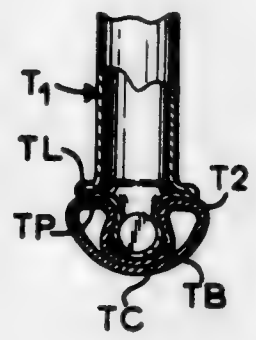
moving the base toward the rock bit section until the engaging means engages the rock bit section, deforming the rectangular structure to a generally parallelogram configuration.

4,507,844

T-ASSEMBLY AND METHOD OF OBTAINING SAME

Maurice Renaud, 66 Chemin des Bretoux, 95320 Saint Leu la Foret, France, assignor to Maurice Renaud, France

Filed Sep. 17, 1981, Ser. No. 303,038
Claims priority, application France, Oct. 6, 1980, 80 21307; Jun. 30, 1981, 81 12817
Int. Cl.[3] B23P *11/02*
U.S. Cl. 29—522 R 4 Claims



1. A method of assembling two tubes to form a T-assembly which rigidly interconnects the two tubes, comprising the steps of: initially deforming a first wall portion of a first hollow cylindrical tube laterally toward a diametrically opposed wall portion of said first tube, said diametrically opposed wall portion being sufficiently supported during deformation of said first wall portion to maintain the shape of said diametrically opposed wall portion; said first wall portion being deformed along a generally linear portion thereof in a direction parallel to the longitudinal axis of said first tube thereby forming an elongated groove; during forming of said elongated groove, said first wall portion being deformed without breaking continuity thereof into a shape conforming to and in contact with an interior surface of said diametrically opposed wall portion along a predetermined distance; said predetermined distance being sufficiently less than one-half the circumferential length of said first hollow cylindrical tube that a neck is formed by regions adjacent said first wall portion of said first hollow cylindrical tube on either side thereof, said neck being formed to have a predetermined minimum width which is sufficiently less than said predetermined distance of contact so as to form a generally dove-tail shape with neck walls being sufficiently spaced away from any other tube wall surfaces to enable said neck walls to be resiliently flexed away from one another without permanent deformation of said neck during forcible insertion through said neck of a tongue having a predetermined maximum width sufficiently large to cause separation of said neck walls during insertion of said tongue member between said neck walls;

said tongue member being formed by deforming opposing side wall portions of a free end of a second hollow cylindrical tube toward one another without breaking continuity of said wall portions to form a pair of generally linear lips having a predetermined length; said lips being connected together at either edge thereof by portions of said second hollow cylindrical tube, said lips being adapted to be received in said elongated groove; said lips being spaced apart a predetermined distance at said free end of said second hollow cylindrical tube, said lips extending axially along said second hollow cylindrical tube a predetermined distance approximately equal to a depth of said elongated groove as measured from said neck to said first wall portion in contact with said interior surface; said lips converging toward one another generally smoothly axially along said predetermined distance approximately equal to said depth of said elongated groove and then diverging generally smoothly to an undeformed portion of said second hollow cylindrical tube; said lips having a predetermined minimum width generally equal to said predetermined minimum width of said neck of said groove in said first hollow cylindrical tube; and placing a rod in said groove, said rod having a predetermined diameter larger than said predetermined spacing of said lips at said end of said second hollow cylindrical tube; said rod being sufficiently strong to deform said lips apart when sufficient force is applied between said rod and said lips; said rod having an axial length less than said predetermined length of said lips so that said lips, upon application of sufficient axial force along said second hollow cylindrical tube against said groove can be deformed about said rod;

orienting a longitudinal axis of said second hollow cylindrical tube generally perpendicularly to a longitudinal axis of said first hollow cylindrical tube; inserting said lips at said free end of said second hollow cylindrical tube into said groove by application of sufficient force to urge said second hollow cylindrical tube along said longitudinal axis of said second hollow cylindrical tube toward said groove until said lips deform said neck walls outwardly and pass to penetrate into said groove to meet said rod; and applying sufficient force to said second tube along its said longitudinal axis to deform said lips outwardly against said rod; said lips being deformed outwardly such that said lips are spaced apart a greater distance than said neck, interior surfaces of said lips being in mating contact with said rod, and exterior surfaces of said lips being in mating engagement with said neck walls and being in contact with said first wall portion at a base of said groove; said neck walls resiliently returning toward said predetermined minimum width, such that said lips and said groove form a strong joint.

4,507,845

METHOD OF MAKING FIELD EFFECT TRANSISTORS WITH OPPOSED SOURCE AND GATE REGIONS

George W. McIver, Redondo Beach; Kenichi Nakano, North Hollywood, and John J. Berenz, Lawndale, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 12, 1983, Ser. No. 531,548
Int. Cl.[3] H01L *29/80, 21/283*
U.S. Cl. 29—571 9 Claims





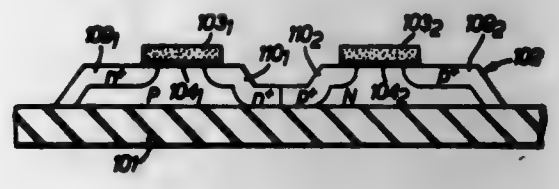
1. A method for fabricating a field-effect transistor (FET) capable of operation at extremely high frequencies, said method comprising the steps of:
forming a semiconductor channel region on a first face of a substrate;
forming a via hole from the opposite face of the substrate;
metalizing the via hole to form an FET source;
determining the location of the source from a back-scattered electron image obtained by scanning the first face of the substrate with an electron beam;
forming drain areas on the channel region; and
forming a gate on the channel region opposite the FET source.

4,507,846

METHOD FOR MAKING COMPLEMENTARY MOS SEMICONDUCTOR DEVICES

Junichi Ohno, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 20, 1983, Ser. No. 543,971
Claims priority, application Japan, Oct. 27, 1982, 57-188620
Int. Cl.[3] H01L *21/265*
U.S. Cl. 29—571 7 Claims



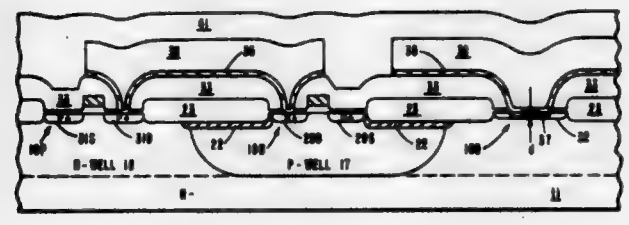
1. A process for making a complementary metal oxide semiconductor (CMOS) with a high impurity density contact region between elements at a boundary between respective drain regions of a p-channel metal oxide semiconductor (MOS) transistor and an n-channel MOS transistor comprising:
forming at least two gate electrodes over an oxide layer on a semiconductive layer;
removing a portion of the semiconductive layer between the gate electrodes so that the thickness of the portion of the semiconductive layer between the gate electrodes is less than that of the semiconductor layer under the gate electrodes; and
doping n type and p type impurities in respective predetermined portions of the semiconductive layer to form drain and source regions for the respective n-channel and p-channel MOS transistors constructed using the gate electrodes as masks so that the respective drain regions extend to the substrate under where said portion of the semiconductor layer was removed.

4,507,847

METHOD OF MAKING CMOS BY TWIN-TUB PROCESS INTEGRATED WITH A VERTICAL BIPOLAR TRANSISTOR

Paul A. Sullivan, Fort Collins, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 22, 1982, Ser. No. 391,068
Int. Cl.[3] H01L *21/265;* B01J *17/00*
U.S. Cl. 29—576 B 6 Claims



1. A process for forming complementary metal oxide semiconductor devices and vertical bipolar junction transistors in the same wafer comprising:
forming opposite conductivity-type, n-type and p-type, surface-adjacent regions in the wafer;
forming an isolation oxide on the wafer to define locations for n-channel, p-channel and bipolar transistor devices;
forming self-aligned, silicon gate, n-channel and p-channel MOS devices within the opposite conductivity-type, surface-adjacent regions of the wafer;
forming a bipolar junction transistor base of one conductivity type in a surface-adjacent region of opposite conductivity type by imparting a low dose, blanket implant to the wafer, the dose being less than 10% of that of the implant dose used for the source and drain regions of the MOS devices;
forming on the wafer an interlayer dielectric layer having openings to selected contact regions including a defined emitter window over the bipolar junction transistor base and including openings to the doped substrate regions associated with the MOS devices;
forming a silicon layer on the wafer of 0.05 microns to 0.5 microns thickness, the layer making contact with the selected contact regions and the contact area thereof with the base delineating an emitter region of the bipolar junction transistor;
selectively implanting with a dopant, of opposite conductivity type to that of the base region, the contact-associated regions of the emitter and selected underlying contact regions of the same conductivity type as the emitter;
diffusing the base and emitter regions to predetermined junction depths;
depositing a layer of metal on the silicon;
selectively patterning the dual-layer of metal-silicon to form interconnections therefrom; and
forming a passivation layer over the wafer.

4,507,848

CONTROL OF SUBSTRATE INJECTION IN LATERAL BIPOLAR TRANSISTORS

Peter R. Smith, San Jose, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

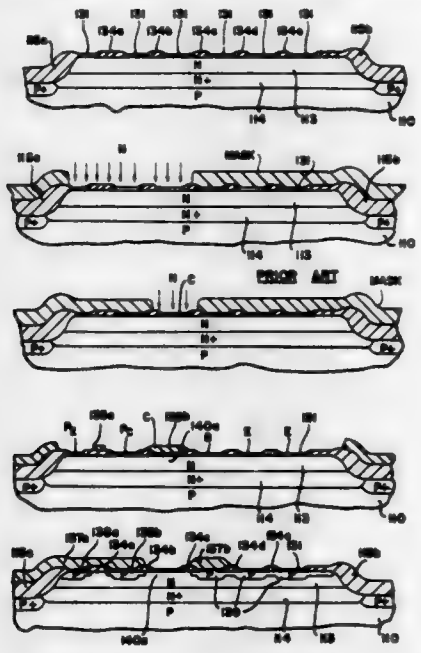
Filed Nov. 22, 1982, Ser. No. 443,846
Int. Cl.[3] H01L *21/265, 21/74*
U.S. Cl. 29—576 B 9 Claims

1. A method for fabricating a semiconductor structure which reduces vertical current injection from lateral bipolar transistors formed in said structure, said method comprising:
(a) forming a buried layer of a first conductivity type in a selected region of a semiconductor substrate of a second

conductivity type, the second conductivity type being opposite the first conductivity type,

(b) forming an epitaxial layer of the first conductivity type such that at least a portion of the epitaxial layer overlies the buried layer,

(c) forming isolation oxide regions in said epitaxial layer



which regions extend to the substrate to define an electrically isolated island of epitaxial material,

(d) introducing a selected impurity of the first conductivity type into substantially the entire portion of the epitaxial layer beneath a to-be-formed lateral bipolar transistor, and

(e) forming the lateral bipolar transistor in the epitaxial layer.

4,507,849

METHOD OF MAKING ISOLATION GROOVES BY OVER-FILLING WITH POLYCRYSTALLINE SILICON HAVING A DIFFERENCE IN IMPURITY CONCENTRATION INSIDE THE GROOVES FOLLOWED BY ETCHING OFF THE OVERFILL BASED UPON THIS DIFFERENCE

Satoshi Shinozaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 285,507, Jul. 21, 1981, abandoned. This application Jun. 24, 1983, Ser. No. 507,557

Claims priority, application Japan, Jul. 28, 1980, 55-103341; Dec. 12, 1980, 55-175292; Dec. 12, 1980, 55-175293; Mar. 5, 1981, 56-31602

Int. Cl.[3] **H01L** *21/20, 21/306*

U.S. Cl. 29—576 W **18 Claims**

1. A method of manufacturing a semiconductor circuit comprising the steps in the order mentioned below of:

(a) forming a groove on one main surface of a semiconductor substrate such that an island region is defined by said groove;

(b) oxidizing said main surface of said substrate including at least the surface of said groove to form an oxide film;

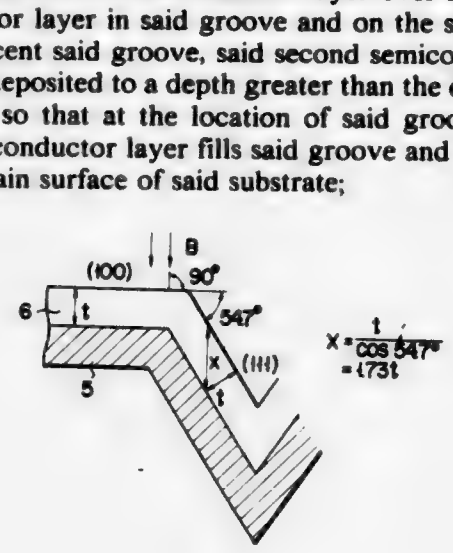
(c) depositing a first semiconductor layer on said oxide film formed in step (b);

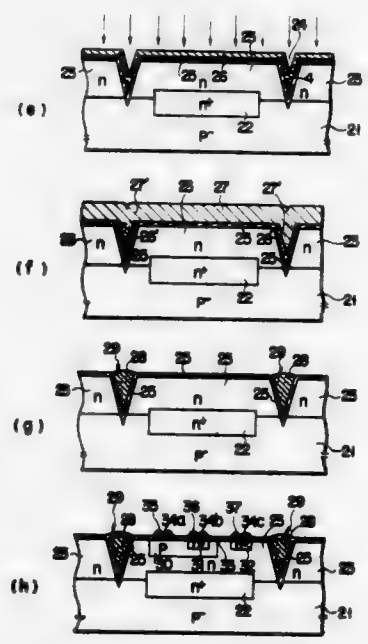
(d) implanting an impurity by ion implantation such that said first semiconductor layer within said groove alone is doped with said impurity, thereby creating a difference between the impurity concentration of said first semiconductor layer within said groove and the impurity concentration of said first semiconductor layer above and adjacent said groove, said implanting being accomplished by use of an ion implantation voltage such that said impurity remains in said first semiconductor layer within said groove alone and passes through said first semiconductor layer above and adjacent said groove;

(e) heating said first semiconductor layer;

(f) selectively removing the first semiconductor layer above and adjacent said groove by utilizing said difference in impurity concentration;

(g) depositing a second semiconductor layer over said first semiconductor layer in said groove and on the substrate surface adjacent said groove, said second semiconductor layer being deposited to a depth greater than the depth of said groove so that at the location of said groove said second semiconductor layer fills said groove and extends above the main surface of said substrate;





(h) introducing said impurity from said first semiconductor layer into said second semiconductor layer whereby the impurity concentration of said second semiconductor layer within the groove is substantially different from the impurity concentration of said second semiconductor layer above and adjacent said groove; and

(i) selectively removing said second semiconductor layer above and adjacent said groove by utilizing the difference in impurity concentration so as to allow the second semiconductor layer to remain only within the groove and, thus, to provide a region for separating two adjacent island regions.

4,507,850

BORING BAR ADJUSTING APPARATUS

Ervin J. Kielma, West Allis, Wis., assignor to Kearney & Trecker Corporation, Milwaukee, Wis.

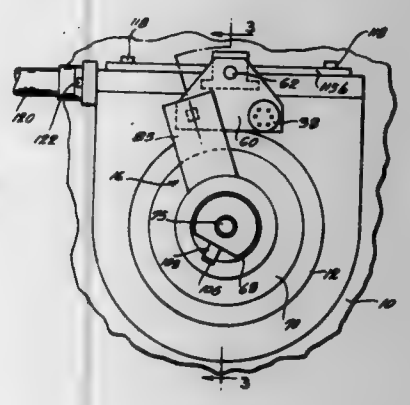
Filed Dec. 19, 1983, Ser. No. 563,110

Int. Cl.[3] **B23Q** *3/157, 15/22*

U.S. Cl. 29—568 **3 Claims**

1. In a boring bar adjusting mechanism for a machine tool that is controlled by a numerical control circuit and which is provided with a rotary spindle for receiving cutters and operating them in a machining operation; mounting means in said spindle for receiving cutters and securing them for the performance of a machining operation; a measuring instrument adapted to be received by said mounting means; positioning

means for positioning said measuring instrument in the bore of a workpiece while said measuring instrument is carried by the spindle; means in said measuring instrument adapted to produce a signal representing the diameter of the bore, a connector mounted on said measuring instrument and electrically connected thereto for supplying energy and for receiving said signal, a yoke movably mounted on the machine tool, a jack carried by said yoke and electrically connected to the numerical control circuit of the machine; shifting means for shifting said yoke for coupling said jack to said connector for electrically connecting said measuring instrument to the numerical control circuit, recording means in the numerical control circuit for reducing said signal; a boring bar adapted to be received by said mounting means in said spindle for performing a machining operation; a cutting element mounted in said boring bar for performing cutting operations; adjusting means in said boring bar for adjusting the position of said cutting element in said boring bar to vary the diameter of the bore produced by the operation of the boring bar, an actuator carried by said bore bar and connected to actuate said adjusting mechanism; a driver carried by said yoke in position to move with said yoke into and out of engagement with said actuator; and power means connected to operate said driver for actuating said adjusting mechanism through said actuator, said power means being regulated by said numerical control circuit for operation in response to said signal for precisely setting said cutting element to cut the desired diameter bore.

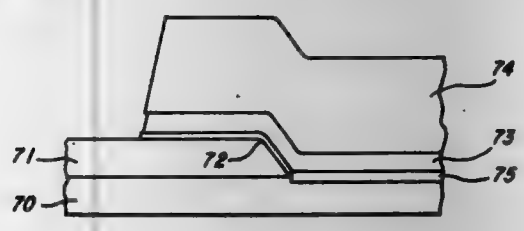


4,507,851

PROCESS FOR FORMING AN ELECTRICAL INTERCONNECTION SYSTEM ON A SEMICONDUCTOR

Keith A. Joyner, Richardson, and Ronald B. Foster, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1982, Ser. No. 373,778
Int. Cl.³ C23C *15/00;* H01L *21/443*
U.S. Cl. 29—590 **4 Claims**



1. A process for forming an electrical interconnection system on a semiconductor comprising the steps of:

a. providing a silicon substrate;

b. forming on the surface of said substrate, a layer of silicon dioxide or silicon nitride;

c. defining contact openings on said substrate through said oxide or said nitride;

d. sputter etching to remove a surface layer from the silicon oxide or nitride and the silicon substrate;

e. depositing a layer of platinum over the entire semiconductor surface including the oxide or nitride;

f. depositing a layer of barrier metal on said platinum layer;

g. depositing a layer of conducting metal on said barrier metal layer;

h. defining said metal interconnection system;

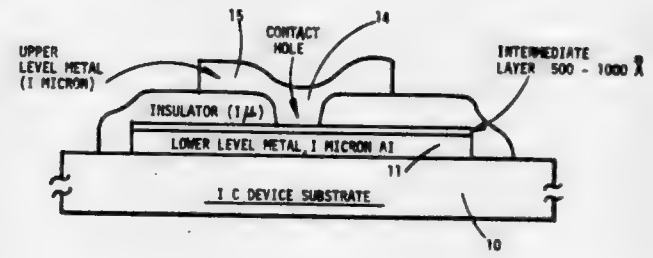
i. heating the substrate for annealing and to form platinum silicide in the contact openings.

4,507,852

METHOD FOR MAKING A RELIABLE OHMIC CONTACT BETWEEN TWO LAYERS OF INTEGRATED CIRCUIT METALLIZATIONS

Pramod C. Karulkar, Diamond Bar, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 12, 1983, Ser. No. 531,529
Int. Cl.³ H01L *21/90*
U.S. Cl. 29—590 **2 Claims**



1. A method of fabricating a semiconductor integrated circuit comprising the steps of:

providing a semiconductor body having a major surface;

depositing a first aluminum layer on said major surface of said semiconductor body;

depositing a layer of a refractory silicide selected from the group of silicides of tungsten, titanium, tantalum, and molybdenum on said first layer of conductive material;

masking portions of said refractory silicide layer to define a first pattern thereon;

etching said silicide layer down to said first aluminum layer in order to produce the pattern defined by said masking step;

masking portions of said body to define a second pattern thereon;

etching said first aluminum layer in said second masking pattern;

sintering the semiconductor body to stabilize the contact between said first aluminum layer and said layer of refractory silicide;

depositing a layer of dielectric material on said body;

masking portions of said dielectric material to define a third pattern thereon;

etching through said dielectric material to said silicide layer in accordance with the third pattern;

depositing a second aluminum layer on said body; and

sintering said body in order to stabilize the contact between said second conductive layer and said silicide layer.

4,507,853

METALLIZATION PROCESS FOR INTEGRATED CIRCUITS

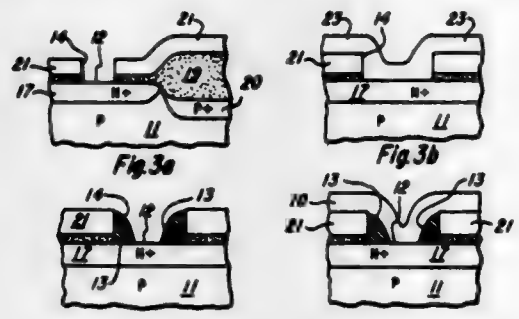
James M. McDavid, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 23, 1982, Ser. No. 410,755
Int. Cl.³ H01L *21/285*
U.S. Cl. 29—591 **10 Claims**

1. A method of making contact to a face of a semiconductor body through an aperture in an insulating layer on said face, comprising the steps of:

(a) depositing a layer of conductive material on said face to cover the semiconductor body within said aperture and also to cover the insulating layer and the sidewalls of the aperture,

(b) selectively removing said layer of conductive material from said face over said insulating layer but leaving said layer in place on said sidewalls,



(c) thereafter depositing additional conductive material on said face to extend continuously from above the insulator and down the sidewall into the aperture and to make physical and electrical contact to the semiconductor body in said aperture.

4,507,854

METHOD OF MANUFACTURING TEMPERATURE-SENSITIVE INSTRUMENTS

Ingvar J. M. Hansson, Staffanstorp; Hakan B. Hakansson, Lund; Magnus G. K. Igefjord, and Berth-Ove G. Wall, both of Bjärred, all of Sweden, assignors to Gambro Crafon AB, Sweden

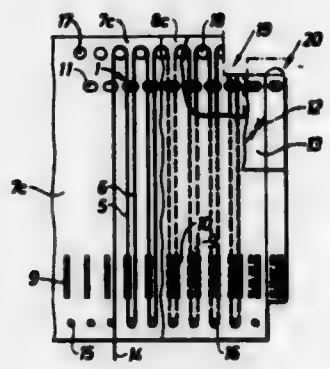
Division of Ser. No. 196,079, filed as a PCT SE 79/00018, Jan. 25, 1979, published as WO 80/01608, Aug. 7, 1980, § 102(e) date Jun. 1, 1979, Pat. No. 4,382,246.

This application Dec. 6, 1982, Ser. No. 447,176

Int. Cl.³ H01C *7/00*

U.S. Cl. 29—612 **11 Claims**





1. A method of manufacturing temperature-sensitive instruments, comprising the steps of:

supplying first and second webs of insulated material in synchronism with each other to a work station, said first web having a series of first holes formed therein offset from a series of second holes formed in said second web;

disposing a conductor transversely between said first and second webs such that said conductor forms pairs of conducting lines, one line of each pair being in register with a corresponding one of said first holes and the other line of each pair being in register with a corresponding one of said second holes;

connecting a temperature-sensitive sensor to each of said pairs of conducting lines; and

cutting said first and second webs at spaced intervals between adjacent pairs of conducting lines to form a plurality of temperature-sensitive instruments.

4,507,855

LEAD ACID ELECTRIC STORAGE CELL AND A POSITIVE ELECTRODE THEREFOR

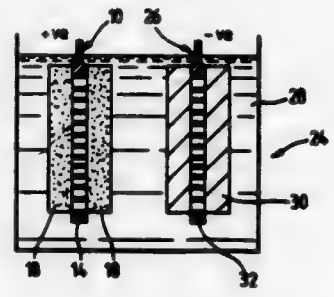
Patrick T. Moseley, Chilton, and Nevill J. Bridger, Hermitage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 22, 1983, Ser. No. 477,776

Claims priority, application United Kingdom, Aug. 6, 1982, 8222739; Dec. 20, 1982, 8236203

Int. Cl.³ H01M *10/12*

U.S. Cl. 29—623.1 **17 Claims**



1. A method of making a charged lead acid electric storage cell comprising the steps of

(i) making a first electrode by chemically preparing particulate beta lead dioxide and supporting the beta lead dioxide with a carrier;

(ii) making a second electrode by compacting fine lead metal about a carrier therefor;

(iii) assembling a charged lead acid electric storage cell comprising a positive electrode constituted by said first electrode, a negative electrode constituted by said second electrode, and an electrolyte for the cell.

4,507,856

METHOD OF ASSEMBLING MULTICELL ELECTRIC STORAGE BATTERIES

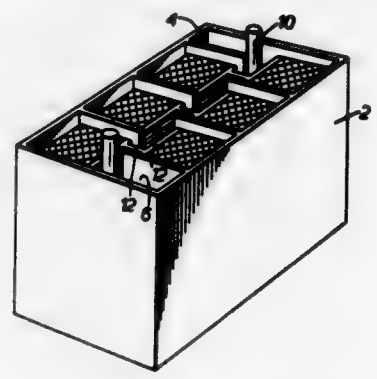
Ernest J. Pearson, Swinton, England, assignor to Chloride Group Public Limited Company, London, England

Filed Oct. 31, 1983, Ser. No. 547,234

Claims priority, application United Kingdom, Oct. 29, 1982, 8230958

Int. Cl.³ H01M *6/00*

U.S. Cl. 29—623.1 **37 Claims**



1. A method of assembling a multicell electric storage battery having a plurality of cells, including two electrical end cells, electrically connected in series with each plate in each cell being substantially coplanar with one plate in every other cell comprising forming a laminated structure from a plurality of superposed substantially planar plate arrays, each array comprising both positive and negative plates and each plate

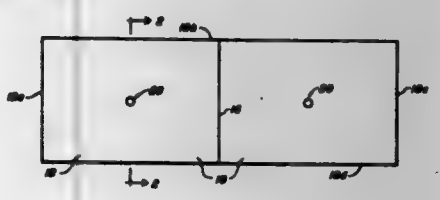
being connected to at least one further plate in the same array by at least one link, the arrays being superposed in the laminated structure so that the plates of each array are in registry with those in each adjacent array and the superposed plates of adjacent arrays are of opposite polarity and separated by a separator material, and severing selected links to thereby form a battery element having a plurality of stacks of plates of alternating polarity, which stacks constitute the individual cells of the battery element and in which each plate, with the exception of every other plate in the stack of plates in the two electrical end cells, is electrically connected by an unsevered link to only a plate of opposite polarity in the same array, whereby the unsevered links connect the cells in series in the finished battery, and every alternate plate in the stacks of plates in the two electrical end cells is connected to no other plate.

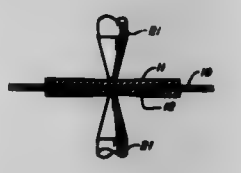
4,507,857

ELECTROCHEMICAL CELL

James Epstein, Sharon, and Nikola Marincic, Winchester, both of Mass., assignors to Battery Engineering Inc., Hyde Park, Mass.

Filed Jun. 22, 1983, Ser. No. 506,786
Int. Cl.³ H01M *6/04*
U.S. Cl. 29—623.2 **7 Claims**





1. A method for assemblying an electrochemical cell comprising the steps of
(a) forming a pair of through-holes in a sheet of thin resilient non-metallic material;
(b) placing each through-hole between a respective pair of overlying electrically conductive members;
(c) sealing the members of each pair of conductive members to the non-metallic material surrounding the through-hole;
(d) electrically coupling the members of each pair through the interjacent through-hole;
(e) electrically coupling an anode and a cathode respectively to the electrically conductive member of a different member pair on one side of the non-metallic sheet;
(f) forming the non-metallic material into a pouch;
(g) providing for minimal separation of the anode and cathode;
(h) adding electrolyte in electrochemical contact with the anode and cathode; and
(i) sealing the pouch.

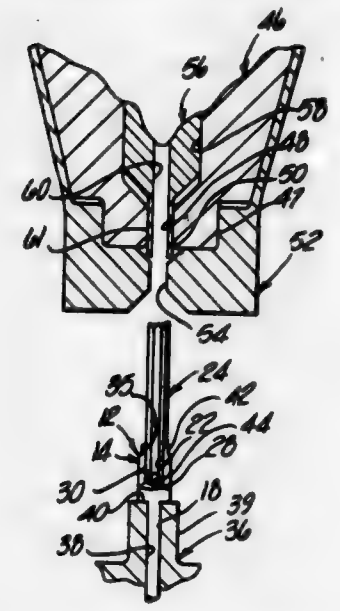
4,507,858

APPARATUS FOR MAKING AN ELECTRICAL CONTACT

Leroy W. Fairbairn, Sidney, and Clifford R. Waldron, Niverville, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 324,714, Nov. 24, 1981, Pat. No. 4,433,482, which is a continuation of Ser. No. 84,959, Nov. 15, 1979, abandoned. This application Oct. 24, 1983, Ser. No. 544,349
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—747 **3 Claims**

1. In an apparatus for simultaneously forming a radial collar medially of an axial electrical contact of the type having a forward portion and a rearward portion coaxially disposed, the apparatus characterized by:
a generally cylindrical male member having an action surface and a cylindrical hole extending inwardly from the action surface, said hole being sized to receive said rearward portion so that said forward portion extends forwardly of the action surface;
a receiving member including a collar portion having a generally cylindrical aperture extending axially inward from a face thereof, said aperture being sized to receive the forward portion and having a diameter slightly less than a dimension defining the outer cross-section of said forward portion, said receiving member being disposed in



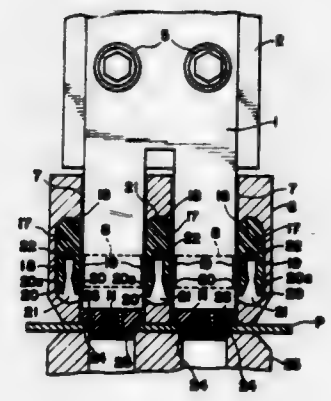
spaced apart relation to said male member, the axis of said hole being generally coaxial with the axis of said aperture and one of said members being adapted to be moved axially towards the other of said members; and
means for positioning said members so that said hole and said aperture have their axes coaxially aligned whereby as the male member is moved towards the receiving member, said forward portion advances into the aperture, whereupon the walls defining the aperture engage the forward portion of the contact, further advance of the members squeezing some of the outer wall of the forward portion radially inward and pushing other of the outer wall axially rearward and radially outward to form a medial collar.

4,507,859

SELF-PIERCING NUT HOLDING DEVICE

Katsumi Shinjo, Osaka, Japan, assignor to VE-Wissenschaftlich-Technischer Betrieb Keramik, Meissen, German Democratic Rep.

Filed Feb. 24, 1983, Ser. No. 469,485
Claims priority, application Japan, Mar. 4, 1982, 57-30928[U]
Int. Cl.³ B23P *10/00, 11/00*
U.S. Cl. 29—798 **5 Claims**



1. A nut holding device adapted to be attached to an assembling machine for consecutively receiving and holding nuts therein to apply the nuts to work pieces by means of the assembling machine, comprising;

a nut holder having at least one passageway to allow the assembling machine to reciprocatingly move therethrough, a nut delivery hole communicating with the passageway to deliver the nuts to the passageway one by one, at least two recesses situated along two opposed sides of the passageway and extending beyond the nut delivery hole, and at least two pins situated inside the recesses parallel to the opposed sides of the passageway, and

at least two elastic members situated in the recesses of the nut holder, each elastic member including a body portion, two leg portions extending from the body portion parallel to each other, a crotch portion between the two leg portions, and two foot portions at forward ends of the leg portions, said foot portions having bent corners and being slighly oriented outwardly from the bent corners to incline relative to the parallel leg portions, each elastic member being located in the recess and supported by the pin situated at the crotch portion thereof so that when the nut is disposed in the passageway outside the nut delivery hole, the leg portions of the two elastic members are located substantially adjacent to the nut and the nut is substantially supported by the foot portions of the two elastic members, whereby when the nut is pushed outwardly by means of the assembling machine, the leg portions of the elastic members bend toward the recesses to thereby allow the nut to move out of the passageway without selectively imparting stress to the elastic members.

4,507,860

PRODUCTION LINE FOR GRAPHITE NIPPLES

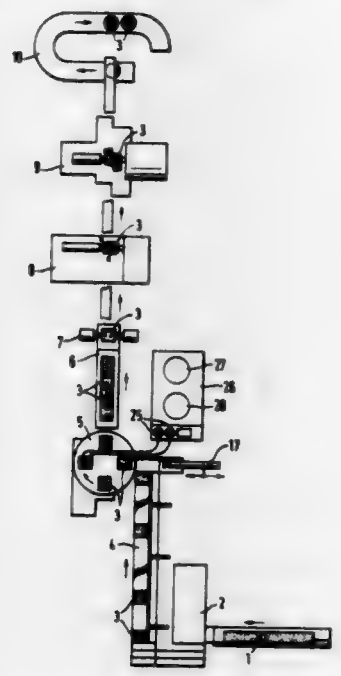
Adolf Sigmund, Meitingen, Fed. Rep. of Germany, assignor to Sigri Elektrographit GmbH, Meitingen bei Augsburg, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,252

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147793

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—825 **10 Claims**



1. Production line for manufacturing tapered thread nipples of cylindrical graphite sections, through which the graphite sections are moved, comprising a support means, cutting means located on said support means for cutting to length a graphite rod into cylindrical graphite sections, means on said support means located downstream from said cutting means, for facing off a curved surface layer of each of the graphite sections for cutting free binder filled holes, drilling means located on said support means and downstream from said facing off means to form storage holes in the graphite section, thermoplastic binder means located on said support means and operatively connected to said storage holes for filling the storage holes with thermoplastic binder, and threading means located downstream from said thermoplastic binder means for forming a screw thread in the surface of the graphite section, in combination with a rotary-cycle machine located on said support and having a plurality of stations and a turntable rotatable at a predetermined rate movable from one station to another station, prismatic guides radially connected to the turntable for receiving the graphite sections and respective stops movable in the radial direction of said turntable, a push rod located on said support means and operatively associated with a first station of said rotary-cycle machine, said rod periodically acting in the radial direction of said machine to transfer a graphite section onto one of the prismatic guides at the first station, clamping levers linked to the turntable to act on graphite sections supported in the prismatic guides in a region of a second station and a third station of said machine, a boring mill supported on said support means and operatively associated with the second station, said boring mill having at least two drilling spindles which can be moved relative to one another and can be moved in a vertical direction for drilling blind holes into the graphite sections, at least two filling nozzles supported on said support means and located above a third station of said machine, movable relative to each other and in a vertical direction for filling the blind holes with the binder each of said nozzles being connectable to a heatable pipe line with said pipe line being controllable by a control dosing pump with said dosing pump being operatively associated with a heatable binder supply tank, a tie rod supported on said support means and operatively associated with a fourth station of said machine which periodically engages said fourth and is movable in the radial direction of said machine to remove the graphite section from the prismatic guide at the fourth station of the turntable, a turning means supported on support means operatively associated with said machine and located in the production line after removal of the graphite section from the turntable for cutting free the binder filled holes.

4,507,861

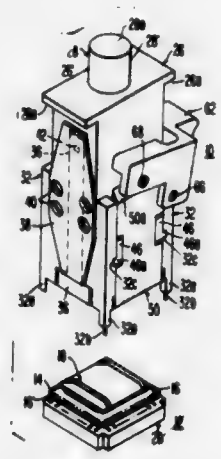
INSERTION DEVICE FOR AN ELECTRONIC CIRCUIT PACKAGE ASSEMBLY

George J. Sprenkle, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 12, 1983, Ser. No. 560,864

Int. Cl.³ H05K *3/30, 13/04*

U.S. Cl. 29—741 **10 Claims**



1. A tool for receiving an electronic circuit package assembly which includes a lead-type package and a multi-apertured block for protecting the package leads, and for inserting said leads into a printed circuit board, comprising:

a body member of substantially rectangular cross section and having a central longitudinal aperture therein,

a pair of side plates immovably affixed to a respective first pair of opposite sides of said body member and extending longitudinally therebeyond, said side plates having respective longitudinal grooves therein, a pair of ejector rods slidably disposed in said grooves,

a shaft slidably disposed in said aperture of said body member, a coaxial spring member situated in said aperture and enclosing a portion of said shaft, means coupling said ejector rods to said shaft,

a generally "H" shaped support member immovably affixed between said plates, a pair of substantially planar gripper members pivotably coupled to said support member and disposed adjacent the respective second pair of opposite sides of said support member, said gripper members having respective jaw-like sections at the extremities thereof, said jaw-like sections being normally biased to a closed condition, means for opening said jaw-like sections whereby said tool is preset to receive said package assembly, means coupled to said support member and responsive to contact with said package assembly for causing said jaw-like sections to close upon opposed edges of said lead-type package,

the application of an external force to said shaft in the direction of said package assembly causing movement of said shaft in opposition to said coaxial spring member and concomitant movement of said ejector rods, the latter removing said multi-apertured block from said package leads in preparation for the insertion of the latter into said printed circuit board.

4,507,862

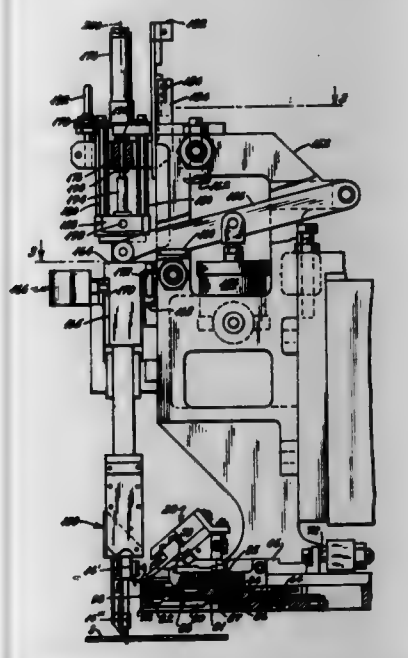
METHOD AND APPARATUS FOR HIGH SPEED TRANSFER AND INSERTION OF ELECTRICAL COMPONENTS

John A. Kukowski, Johnson City, N.Y.; Henry J. Soth, Brackney, Pa., and William H. Gay, Endicott, N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,727

Int. Cl.[3] H05K *3/30;* B23P *19/00;* B65H *1/00;* B65G *00/00*

U.S. Cl. 29—837 14 Claims



1. A method of automated processing of components each having a body and leads depending from said body, said processing comprising transferring individual components sequentially from an unload station to a load station for subsequent populating of a circuit board by inserting said leads into holes of a circuit board with an inserter, said method for each component comprising the steps of:

presenting said component to said unload station by a clip means for releasably holding said component by leads at said unload station, at least two of said leads being generally parallel and generally defining a lead plane;

clamping at least two of said leads at said unload station by a loader during holding of said leads by said holding means;

transferring said loader in a direction generally perpendicular to said lead plane during said clamping to effect releasing of said leads and unloading of said component from said holding means and presenting of said component to said load station;

engaging at least two of said leads with said inserter at said load station during clamping of said leads by said loader; and

unclamping said leads while driving at least two of said leads into an interference fit with said inserter to effect loading of said inserter.

8. An apparatus for automated processing of electrical components, each of said components having a body and leads depending from said body, said processing comprising transferring individual components sequentially from an unload station to a load station for subsequent populating of a circuit board by inserting said leads into holes of a circuit board with an inserter, said apparatus comprising:

clip means for presenting each component to said unload station and releasably holding said component by at least two of said leads at said unload station, at least two of said leads being generally parallel and generally defining a lead plane;

loader means, operatively associated with said presenting means, for clamping at least two of said leads at said unload station during holding of said leads by said presenting means;

transfer means, operatively associated with said loader means, for transferring said loader means in a direction generally perpendicular to said lead plane, during said clamping, in order to effect releasing of said leads and unloading of said component from said presenting means and presenting of said component to said load station;

means, operatively associated with said loader means, for engaging at least two of said leads with said inserter at said load station during clamping of said leads by said loader means; and

means, operatively associated with said loader means, for unclamping said leads and driving said leads into an interference fit with said inserter to effect loading of said inserter.

4,507,863

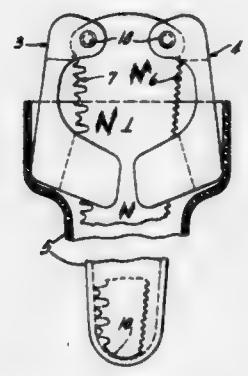
PACKSAW

Jerry D. Rowe, P.O. Box 733, Dubois, Wyo. 82513

Filed Aug. 12, 1982, Ser. No. 407,639

Int. Cl.[3] B27B *21/00*

U.S. Cl. 30—166 R 5 Claims



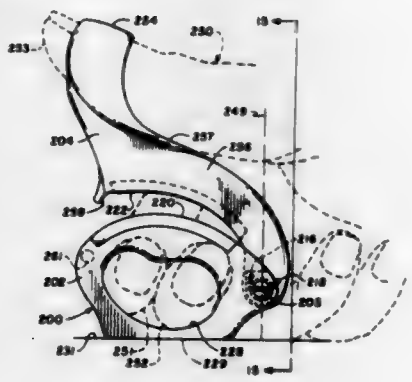
1. A packsaw adapted to be housed in an open top protective carrying sheath comprising an elongated blade having teeth extended at least along one edge, a multiple part handle secured to one end of said blade, said handle including first and second handle members, each of said handle member being similarly formed and having a first end pivotally secured to the blade and movable between an extended position defining an operating handle, each of said handle members having an outer end enlargement portion which extends laterally outwardly and in the extended position of said handle members defines a substantially T-shaped hand-gripping portion, each of said outer end enlargement portions having outer edge slots adapted to telescope over said blade and thereby provide for pivoting of the handle members onto the adjacent end of said blade in a storage position, each of said handle members being substantially shorter than said blade and thereby telescoped over substantially less than one-half the blade for protecting

the exposed end portion when in said storage position for location in said sheath.

4,507,864
CUTTING SHEARS

Martin N. Leibowitz, 1155 Hillsboro Mile, Suite 602, Hillsboro Beach, Fla. 33062

Continuation-in-part of Ser. No. 392,958, Jun. 28, 1982, abandoned. This application Jul. 30, 1982, Ser. No. 403,294
Int. Cl.[3] B26B *13/06, 17/02, 13/20, 13/12*
U.S. Cl. 30—248 **6 Claims**

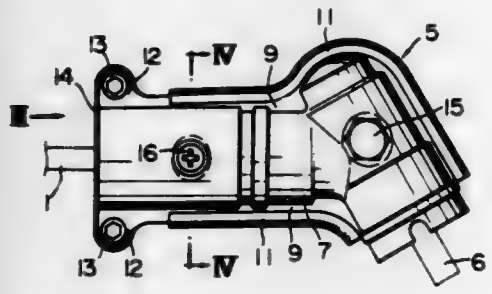


1. Manicuring scissors and the like comprising a pair of pivotally connected blade members, each of said blade members including means forming a cutting edge cooperable with the cutting edge of the other blade member for cutting fingernails and the like, one of said blade members including means forming a flat support surface thereon for supporting said scissors on a surface, said blade members each including handle means adapted to be engaged by at least one finger and the thumb of a hand, respectively, said handle means of said one blade member comprising an opening formed in said one blade member for receiving at least the index and middle fingers of said hand, said handle means of the other blade member including a support pad portion and a stirrup for receiving the thumb of said hand and disposed directly above said one blade member for actuating said blade members between blade open and closed positions when said one blade member is supported by said support surface on a horizontal surface, said handle means being arranged such that at least in the closed position of said scissors wherein said cutting edges lie ajacent to each other said blade members and said handle means lie substantially in a quadrant in a place perpendicular to the pivot axis of said blade member, said quadrant being delimited by a first line coincident with said support surface and a second line perpendicular to said first line and passing through said pivot axis.

4,507,865
GRASS TRIMMER

Hisashi Inaga, Tokyo, and Kozi Ohtagawa, Hachioji, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,652
Claims priority, application Japan, Dec. 16, 1982, 57-189219[U]
Int. Cl.[3] A01D *55/18*
U.S. Cl. 30—276 **1 Claim**

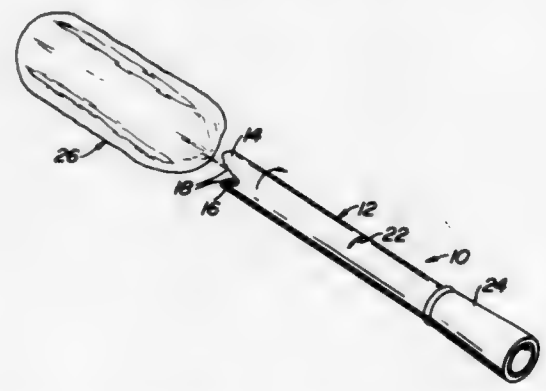


1. A grass trimmer having an elongated operation rod, a prime mover mounted on one end of said operation rod, a transmission shaft extended through said operation rod, a gear box connected at its one end to the other end of said operation rod, and a cutting blade member connected to a blade driving shaft projected from the other end of said gear box, said transmission shaft and said blade driving shaft being drivingly connected to each other through gears within said gear box, wherein the improvement comprises that said gear box **5** is composed of a plurality of steel sheets **7,8** which are shaped beforehand to define, when assembled together, a hollow **17** of a circular cross-section and to have longitudinal flanges **9,9** and **10,10**, said steel sheets being jointed to each other to form said gear box in one body by hemming along said flanges **9,9** and **10,10** such that said flanges **9,9** and **10,10** are superposed and folded back one on the other to form fold-back portions **11,11** along the length of the gear box.

4,507,866
DEVICE FOR REMOVING PORTION OF A ROLL AND METHOD OF USING SAME

Paul Rimmeir, The Claridge, 201 S. 18th St., Apt. 2219, Philadelphia, Pa. 19103

Filed Apr. 21, 1983, Ser. No. 487,438
Int. Cl.[3] B26B *3/00, 3/04*
U.S. Cl. 30—316 **5 Claims**

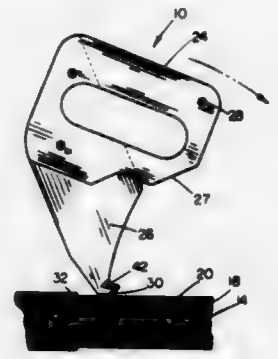


1. A device for removing a portion of a roll, comprising an elongated tubular shaft, said shaft having a free end including at least one notch therein defining a pair of spaced jaws, each of said jaws being a tapered extension of said tubular shaft and having sharpened edges, the end of one of said jaws projecting forwardly of the end of the other of said jaws whereby said device may be inserted into a roll, rotated, and tilted with respect to said roll to thereby sever a portion of the interior of the roll from the roll.

4,507,867
CABLE SHEATH CUTTER KNIFE

Anton J. Haas, Jr., 6602 Spencer, Omaha, Nebr. 68104

Filed Jul. 14, 1983, Ser. No. 513,420
Int. Cl.[3] B26B *3/08*
U.S. Cl. 30—90.4 **5 Claims**



1. A cable sheath cutter knife, comprising, a handle portion,

a blade portion secured to said handle portion and extending downwardly therefrom,

said blade portion having rearward and forward sides and an elongated end portion extended between said rearward and forward sides,

said blade portion having a forwardly directed pointed tip portion on said end portion at the forward end thereof,

said blade portion having a first notch formed therein extending rearwardly into the forward side thereof adjacent said pointed tip portion such that said pointed tip portion partially defines said first notch,

said blade portion having a second notch formed therein extending forwardly into the rearward side thereof defining a leading end portion at the rearward end of said end portion, and

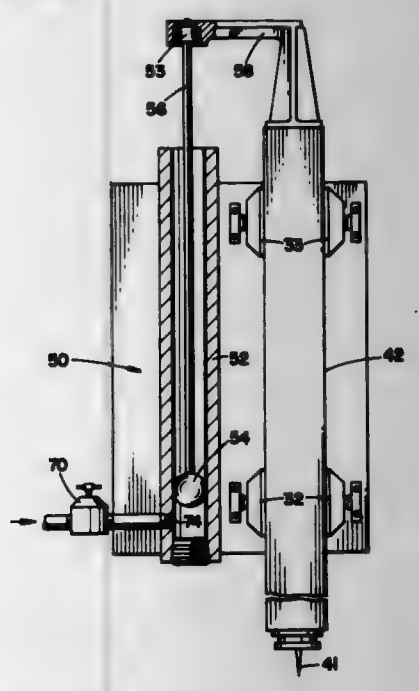
said end portion being tapered to a sharpened edge whereby, upon penetration of a cable sheath by said pointed tip portion and upon downward and forward rotation of said handle about said tip portion, said sharpened end portion is operative to cut through the sheath to position the sheath in the second notch for slicing the sheath in response to rearward movement of the knife along the cable.

4,507,868

COORDINATE MEASURING MACHINE WITH A SELF ALIGNING PNEUMATIC COUNTERBALANCE

John J. Tuss, Englewood, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Aug. 30, 1982, Ser. No. 413,099
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—1 M **6 Claims**



1. In a coordinate measuring machine (10), including a base (20), a carriage (30) for movement relative thereto and a probe (41) disposed at the free end of a vertically extending probe arm (42) supported for vertical movement on said carriage for engaging features on an article to be measured, characterized by:

a precision adjustable air pressure regulator (70) having an inlet adapted to be connected to a pressurized pneumatic supply and an outlet;

a cylinder (52) mounted in said carriage alongside said probe and extending parallel thereto, said cylinder having an internal bore, with one closed end of said bore connected to the outlet of said precision adjustable air pressure regulator (70) and the other end of said bore vented to atmosphere;

a spherical piston (54) disposed within the bore of said cylinder (52) for relative movement therein and sized to have a clearance therebetween to permit pressurized air to leak around said piston;

an elongated piston rod (56) connected to said spherical piston (54) and extending within said cylinder;

a rigid bracket (58) secured to said probe arm (42); and,

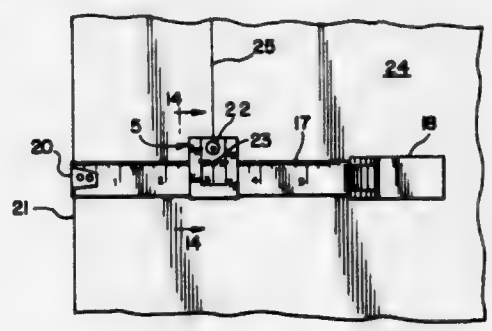
a spherical bearing (53) connecting said rod (56) to said rigid bracket (58), whereby as said probe arm moves vertically, counterbalanced with pressurized air in said cylinder, misalignments between said cylinder and said probe shaft are accommodated by said spherical piston and bearing to eliminate forces otherwise acting on said probe arm as a result of said misalignments.

4,507,869

MARKER ATTACHMENT FOR RULES

Michael E. Stude, 1020 S. Grove La., Barrington, Ill.

Filed Apr. 14, 1983, Ser. No. 484,974
Int. Cl.³ B43L *13/02*
U.S. Cl. 33—42 **8 Claims**



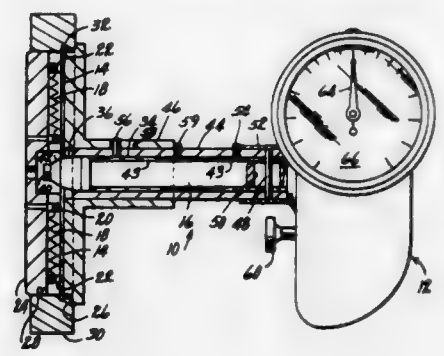
1. A marker attachment for an elongated rule or tape comprising a piece of flexible plastic sheet material formed into at least two panels integrally hinged along a hinge line and foldable over opposite sides of an elongated rule, said panels having integral tab-like projections on their distal ends with registering pencil-point receiving holes therein, and hook means integrally formed on the distal end of one of said panels for retaining said panels in their folded condition with said holes in registration, at least one of said panels having a window therein for viewing markings on said rule or tape.

4,507,870

INDICATOR GAGE ASSEMBLY FOR MEASURING INTERNAL ENLARGEMENTS

Franklin Meyer, Jr., P.O. Box 1, Forestdale, R.I. 02824

Filed Mar. 4, 1983, Ser. No. 472,068
Int. Cl.³ G01B *3/26, 5/12*
U.S. Cl. 33—147 K **11 Claims**



1. A gage assembly for measuring the diameter of an internal enlargement of a bore in a workpiece comprising an amplifying and indicating mechanism including a display upon which deviations from basic size are indicated, and also comprising a gage head insertable into the bore and including a pilot adapted to fit the bore closely adjacent the enlargement, a pair of radially slidable blades and means including an axially slidable plunger coupling the blades to the mechanism for indication of deviations on the display and the plunger being formed with a working taper for translating the radial movement of the blades into an axial movement of the plunger, a reduced diameter in engagement with the inner ends of the blades when the blades are retracted within the pilot for insertion of the pilot into and withdrawal from the bore while the inner ends of the blades remain in contact with the plunger and means for urging

the blades outwardly to enter the enlargement after the pilot has been inserted into the bore including a tapered portion on the plunger between the reduced diameter and the working taper having a steeper taper angle than that of the working taper.

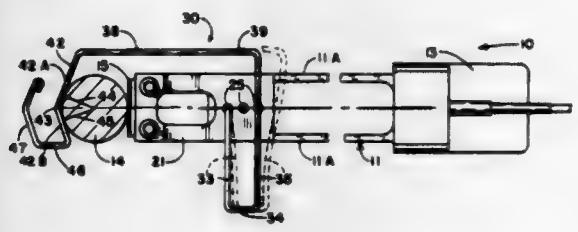
7. A gage head adapted to be coupled to an amplifying and indicating device for measuring the diameter of an enlargement in a bore in a workpiece, comprising a body including a cylindrical pilot portion adapted to fit closely into the bore and an elongated hollow shank, a pair of blades mounted in the body for opposite radial sliding motion, a plunger axially slidable in the shank and having one end adapted for releasable coupling to the device and its opposite end portion engaging the inner ends of the blades including a working taper engaging the blades and urging them into the enlargement, a reduced diameter allowing retraction of the blades from the enlargement when the reduced diameter is aligned with the inner ends of the blades and a tapered portion between the reduced diameter and the working taper having a steeper taper angle than the working taper.

4,507,871

QUICK ATTACH RETAINER FOR EXTENSOMETER

Richard A. Meyer, Carver, and Harry R. Meline, Minnetonka, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed May 5, 1983, Ser. No. 491,865
Int. Cl.³ G01N *3/04*
U.S. Cl. 33—148 D **17 Claims**



1. A spring clip for coupling an extensometer arm to a specimen to be tested with the extensometer arm extending generally laterally from the specimen and engaging a surface of the specimen on one side;

said clip comprising:

a continuous bent spring wire having a formed spring section comprising a pair of spaced spring legs joined at first ends thereof and defining a first plane;

means at a second end of a first leg of the spring section for pivotally mounting the spring section about a pivot axis perpendicular to the first plane, a second plane being defined by the pivot axis perpendicular to the first plane and to the axis of said first leg;

a second end of the second leg of the spring section extending laterally from the means to pivotally mount in opposite direction from the first end beyond the second plane;

a link leg joining the second leg of the spring section and extending generally parallel to the second plane in direction toward the means for pivotally mounting and said second leg extending in such direction substantially beyond the means for pivotally mounting; and

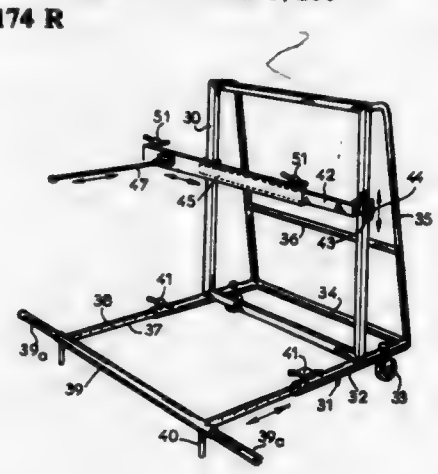
a spring force reaction member joined to the opposite end of the link leg from the second leg and extending laterally of the link leg through the second plane to define a space between the means for pivotally mounting and the spring force reaction member, to engage a specimen positioned between the spring force reaction member and the means for pivotally mounted and being of size to exert a force when the spring force reaction member is engaged with such specimen and the means for pivotally mounting is mounted on an extensometer so that the spring section resiliently resists separation of the means for pivotally mounting and the spring force reaction member.

4,507,872

METHOD FOR MEASURING THE STATE OF DAMAGE OF AN AUTOMOBILE VEHICLE AND MEASURING APPARATUS FOR CARRYING OUT SAID METHOD

Maurice Schermann, Tigeaux, France, assignor to Garages Mutualistes Francais, France

PCT No. PCT/FR82/00011, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02943, PCT Pub. Date Sep. 2, 1982
PCT Filed Jan. 20, 1982, Ser. No. 432,932
Claims priority, application France, Feb. 23, 1981, 81 03515
Int. Cl.³ G01B *5/255*
U.S. Cl. 33—174 R **13 Claims**



1. A method for measuring the damaged state of an automobile vehicle comprising employing means for ascertaining the deterioration of the vehicle as a function of the degree of the dent produced by impact and the nature and number of the damaged parts, said method comprising employing an apparatus having a variable vertical and horizontal position; determining and reading with the aid of said apparatus on a first side of the vehicle in respect of the lateral part thereof, measurements of data including the height and the degree of the dent due to the impact and the position of the dent relative to a median axis of the track of the vehicle; determining and reading with the aid of said apparatus on a second side of the vehicle the same data so as to determine the differences between the two data; using said apparatus for determining and reading with the aid of said apparatus, measurements including the height and the degree of the dent due to the impact undergone by the front or rear part of the vehicle and the position of the impact relative to a median axis of the vehicle so as to determine, by comparison with the original measurements of the same vehicle when new which were read off by means of said apparatus, the degee of a vector of deformation; assigning to said measurements repairing or replacement codes and combining said codes with damage zone codes so as to determine an "accident code" which, by comparison with similar accidents which were previously repaired and calculated and perform the function of standards and are recorded in a compilation of times, permits establishing the time required for reconditioning and permits listing the parts to be repaired or replaced, said "accident code" comprising a succession of zones in which are inscribed numbers having at least one figure advantageously identifying the make and the type of the vehicle and revealing the region of the impact, the identification of the parts to be repaired or replaced and the assessment of the situation and of the seriousness of the impact ascertained by said apparatus.

4,507,873

APPARATUS FOR ACCURATELY ESTABLISHING THE SEALING LENGTH OF CRT ENVELOPES

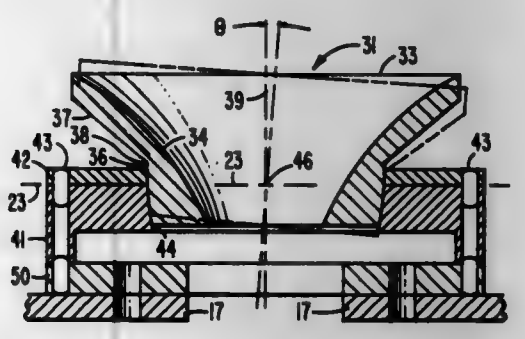
Randal L. Berardi, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,391
Int. Cl.³ H01J *9/18*
U.S. Cl. 33—180 R **4 Claims**

1. Apparatus for accurately establishing a preselected sealing

length between a sealing plane and reference plane within a contoured neck area of a funnel-shaped envelope comprising:

a support member having an internal contour configured to conform with and extending coextensive with said contoured neck area whereby said internal contour engages a major portion of said contoured neck area, said support member having an external convex bearing surface in the proximity of said neck area;



base means defining said reference plane spaced said preselected sealing length from said sealing plane, said base means including a concave bearing surface in the proximity of said reference plane, said concave and convex bearing surfaces being configured whereby said bearing surfaces contiguously engage to pivotably retain said support member said preselected sealing length from said sealing plane.

4,507,874

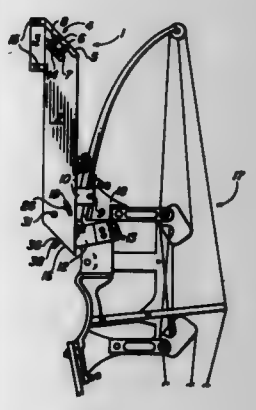
BOW SIGHT

Dewey E. Brown, Rte. 4, Box 126, Bastrop, La. 71220

Filed Jul. 11, 1983, Ser. No. 512,355

Int. Cl.[3] F41G *1/46*

U.S. Cl. 33—265 20 Claims



1. A bow sight comprising a housing; a first opening in one end of said housing and a top mirror adjustably positioned in said one end of said housing and facing said first opening; a second opening in the opposite end of said housing and facing opposite said first opening and a bottom mirror in said opposite end of said housing facing said second opening and disposed in generally parallel relationship with respect to said top mirror; and a third opening in said housing between said first opening and said second opening and facing opposite said second opening and a compensating mirror adjustably positioned in said housing and facing said third opening, whereby a target image received by said top mirror and reflected to said bottom mirror is reflected by said bottom mirror to a viewer and the target image is simultaneously reflected by said compensating mirror to said bottom mirror and to the viewer for comparison and correction of an arrow trajectory.

4,507,875

APPARATUS FOR DETERMINING THE CONCENTRATION OF VAPORS IN A FLOWING GAS STREAM

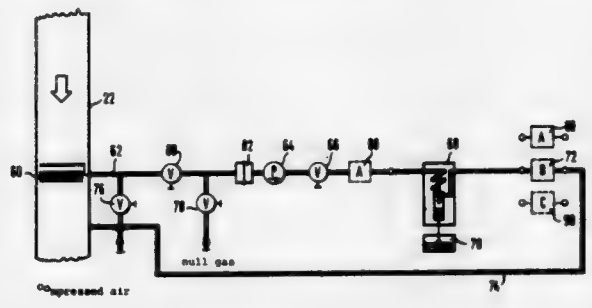
Werner Hirsch, Celle, and Uwe Ehling, Elmshorn, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,870

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224506

Int. Cl.[3] F26B *21/06*

U.S. Cl. 34—44 12 Claims



1. A device for determining the concentration of condensable vapor in a flowing gas stream comprising

(a) a gas evacuation conduit for receiving a sample of gas from the stream;

(b) a gas condenser in the evacuation conduit for condensing out essentially all of the condensable vapors in the sample;

(c) a gas flowmeter connected to the gas discharge of the gas condenser for determining the flow of the dry gas sample exiting the condenser;

(d) means for withdrawing a sample of gas from the flowing gas stream and for conveying this sample at a constant, known volumetric flow through the gas evacuation conduit and to the gas condenser and the flowmeter; and

(e) control means operatively connected to the flowmeter that determines the condensable vapor concentration by comparing the flow of the dry gas sample through the flowmeter with the known volumetric flow fed to the condenser.

4,507,876

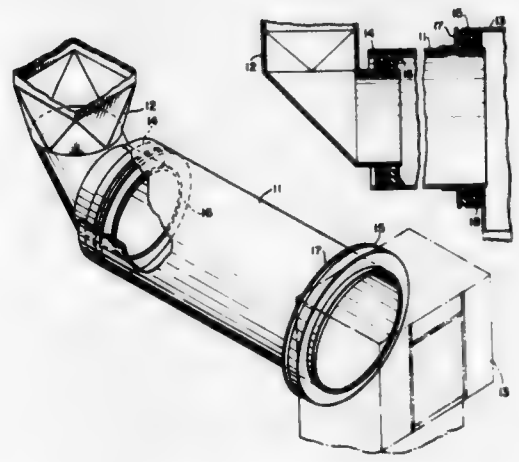
END SEAL FOR ROTARY TREATING DRUM

Lucas J. Conrad, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed May 23, 1983, Ser. No. 497,009

Int. Cl.[3] F26B *25/08*

U.S. Cl. 34—242 2 Claims



1. An end seal for a cylindrical rotary treating drum comprising a flange attached to said drum at an end thereof in a plane perpendicular to the axis of rotation of said drum; a washer mounted on a housing adjacent said flange concentric with said axis; means for introducing gas between said washer

and said flange; and urging means adapted to urge said washer toward said flange, said urging means comprising resilient sponge material enclosed on three sides within a mounting ring of U-shaped cross-section with the fourth side of said material in urging relationship to said washer.

4,507,877

HEATER DEVICE, PARTICULARLY FOR SKI BOOTS

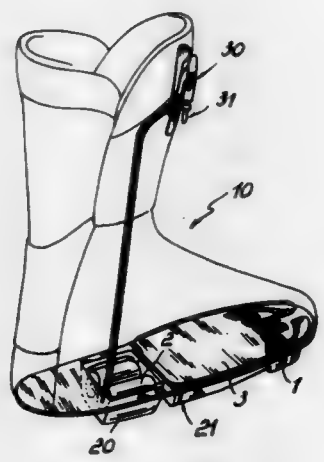
Franco Vaccari, Montebelluna, and Renzo Balbinot, Vittorio Veneto, both of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Filed Jan. 17, 1983, Ser. No. 458,676

Claims priority, application Italy, Jan. 22, 1982, 20611/82[U]; Apr. 28, 1982, 21707/82[U]

Int. Cl.³ A43B *7/02, 7/04;* H05B *1/00*

U.S. Cl. 36—2.6 6 Claims



1. A heater device for ski boots comprising:
an electric resistance heater located on an inner shoe of a ski boot and positioned at a user's foot;
at least one storage battery accomodated in a seat defined in said inner shoe;
said storage battery is electrically connected with said electric resistance heater;
an electric storage battery recharging socket located at the top portion of said inner shoe;
said electric storage battery recharging socket is connected to said storage battery;
an electric switch provided between said storage battery and said electric resistance heater;
a foil to radiate the heat toward the interior of said inner shoe and to provide thermal insulation to prevent heat loss from therein;
a lower portion of said electric resistance heater arranged to contact with said foil;
an insole associated with an uppers of said inner shoe and supporting said foil.

4,507,878

FASTENING MECHANISM

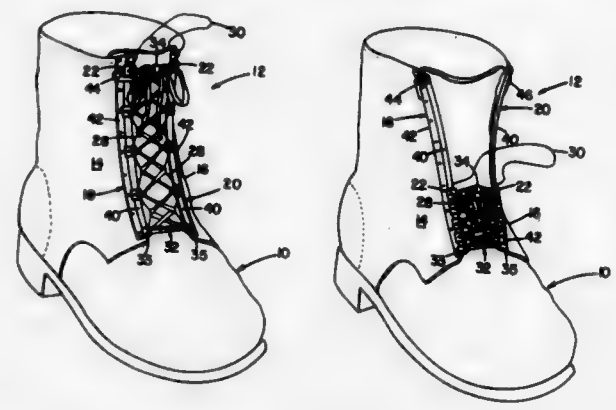
Hertzl Semouha, 280 Lindenshire, Exeter, N.H. 03833

Filed Dec. 20, 1982, Ser. No. 451,472

Int. Cl.³ A43B *11/00;* A43C *1/00, 3/00*

U.S. Cl. 36—50 18 Claims

1. A fastener for joining together two separable portions of an article, said fastener comprising
a pair of tracks, each said track for being attached to a said separable portion and for being spaced from the track on the other said portion,
lace securing means connected to said tracks comprising
pairs of sliders, each slider of a pair being slidably mounted on a said track, and
flexible tension-bearing substantially-inelastic cord-type bridge connectors attached between adjacent said sliders on the same said track such that they space said sliders along said track when the end sliders of said track are pulled away from each other,
said bridge connectors being substantially inelastic along the directions of sliding along said tracks,
said bridge connectors being free to move away from said tracks when said sliders are moving together,
said bridge connectors being adapted to move without friction as said sliders move along said tracks, and



adjustable lace means connected between said lace securing means on said sliders such that movement of said sliders together along said tracks permits said two separable portions to separate, and movement of said sliders away from adjacent sliders along said tracks causes said separable pieces to move together,
said lacing means being adjustable to vary the distance between said separable portions when said sliders are spaced apart.

4,507,879

ATHLETIC SHOE SOLE, PARTICULARLY A SOCCER SHOE, WITH A SPRINGY-ELASTIC SOLE

Armin Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to PUMA-Sportschuhfabriken Rudolk Dassler KG, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,289

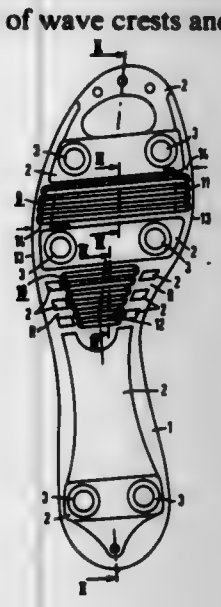
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1982, 3206305

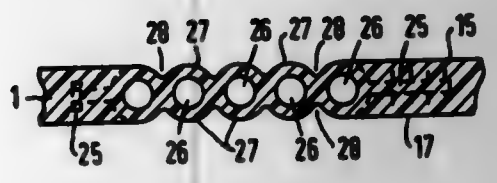
Int. Cl.³ A43B *13/18, 5/00*

U.S. Cl. 36—102 25 Claims

1. Athletic shoe sole with an insole and springy-elastic outer sole made of a plastic material, such as a polyamide, to which traction fittings in the form of at least one of studs, claws and spikes are attached and which is provided, in a ball area of the outer sole, with a flexible zone comprised of parallel ribs extending transversly across the outer sole, wherein said ribs are formed, on a ground contacting side of the outer sole, as well

as on a side thereof directed toward the insole, as a continuous undulating band of wave crests and valleys which rise and fall





relative to both said ground contacting side and the insole directed side thereof.

4,507,880

BOOT CONTAINING VENTILATION MEANS

Kazuo Ohashi, Tokyo, Japan, assignor to Kabushiki Kaisha Patine Shokai, Tokyo, Japan

Filed Jan. 18, 1983, Ser. No. 458,961

Claims priority, application Japan, Sep. 9, 1982, 57-135963[U]; Oct. 26, 1982, 57-186725

Int. Cl.³ A43B *5/16*

U.S. Cl. 36—115 **8 Claims**



1. A boot comprising:

an air permeable boot-shaped substrate having a sole portion and being made of a soft pliable material;

an outer sheath made of a synthetic material integrally formed with said substrate and covering the outside thereof, said outer sheath having a sole part in registration with said sole portion of said substrate;

separate air permeable means provided in at least a portion of the sole part of the outer sheath and comprising a plurality of ventilation holes for ventilation between the inside and outside of said outer sheath; and

at least one waterproof air-permeable layer made of a synthetic material provided between said substrate and the outer sheath in at least the portion of the sole part of the outer sheath containing said air permeable means.

4,507,881

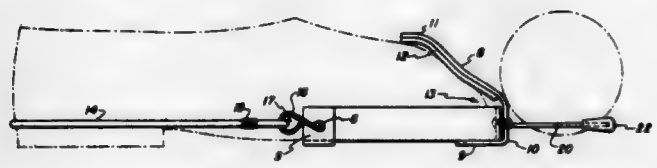
DEVICE FOR RETRIEVAL OF GOLF BALLS

Guiseppe Fossa, 1019 Russell Dr., Highland Beach, Fla. 33431

Filed Jul. 18, 1983, Ser. No. 514,934

Int. Cl.³ A43C *11/00*

U.S. Cl. 36—132 **5 Claims**



1. A device for retrieval of golf balls or similarly shaped objects from the ground comprising resilient flexible means having a shape substantially corresponding to the outer perimeter of a golf ball and normally of a dimension slightly smaller than the diameter of a golf ball, said means being formed of a material and so constructed and arranged that application of manual pressure to said means when in contact with a golf ball effects flexure therewith and results in frictional gripping of the golf ball thereby permitting removal of a golf ball from the ground and means supporting said flexible means wherein said means supporting said flexible means is so structured to engage the sole of a golf shoe or similarly shaped shoe and means for releasably retaining said means supporting said flexible means on the shoe, wherein said supporting means comprises an inverted U-shaped flexible strap having free ends and so shaped for engaging the opposed sides of a shoe, means secured to the free ends and the intermediate portion of said strap for engagement with the sole of a shoe, said means secured to said intermediate portion of said strap further including means constructed and so shaped for engaging the top surface of a shoe, and stretchable means secured to the free ends of said strap for frictionally engaging the heel area of a shoe thereby permitting said support means to be removably secured to a shoe.

4,507,882

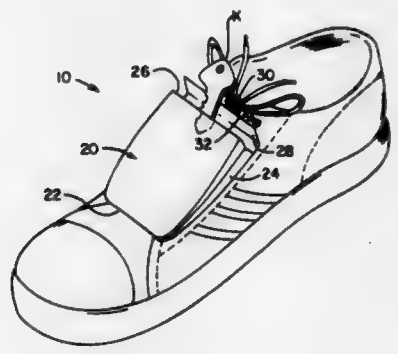
DETACHABLE SHOE-POCKET SYSTEM

Bruce W. Harrell, 3402 Auchentoroly Ter., Baltimore, Md. 21217

Filed Jun. 16, 1983, Ser. No. 504,888

Int. Cl.³ A41B *3/16*

U.S. Cl. 36—136 **7 Claims**

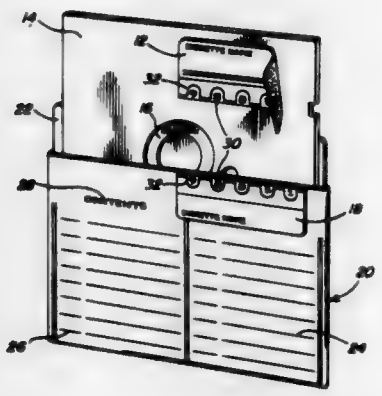


1. A shoe pocket system comprising: a body including a sheath with a closed bottom and sides and an open top, and means for mounting the sheath on the instep of a lace-type shoe, said means for mounting including a tongue having perforations at an upper end thereof; said tongue attached at said closed bottom and proportioned for extending freely to said perforate upper end; a perforate upward extension of said body above said open top, and said perforations of the tongue and perforate upward extension being in alignment for shoe lace passage therethrough and tying for securing the shoe pocket system on shoe instep.

4,507,883
THREE PART DISKETTE LABELING SYSTEM

Thomas G. Tarrant, P.O. Box 199, Hunt, Tex. 78024

Filed Jan. 18, 1983, Ser. No. 458,778
Int. Cl.[3] A44C *3/00*
U.S. Cl. 40—2 R 2 Claims

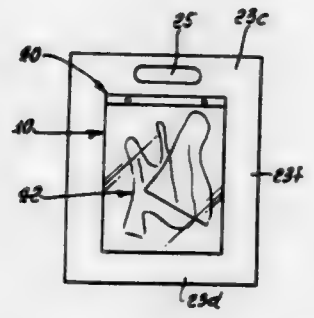


1. In combination with a flexible diskette having information magnetically recorded thereon in a plurality of tracks, a non-removable protective carrier enclosing the diskette but enabling the information thereon to be recorded and retrieved, a storage envelope for the protective carrier and diskette therein, that improvement comprising a three part labeling system including a two part label comprising a first label part mounted on the front panel of the storage envelope adjacent the upper edge thereof and a second label part mounted on the protective carrier adjacent to but above the upper edge of the front panel of the storage envelope and in alignment with and in registry with said first label part mounted on the envelope when the protective carrier is completely inserted into the envelope with a portion of the protective carrier projecting above the upper edge of the front panel of the envelope, each label part including indicia, the label part on the envelope having the indicia along the upper edge of the label part and the label part on the protective carrier having the indicia along the lower edge of the label part and adjacent to and in registry with the indicia on the label part on the envelope when the protective carrier is inserted into the envelope, said storage envelope having indicia thereon spaced from the second label part and relating to the information recorded on the diskette with the indicia on the envelope forming a third label part.

4,507,884
PICTURE DISPLAY ASSEMBLY

Harout Kazanjian, 11456 W. Washington Blvd., Los Angeles, Calif. 90066

Filed Feb. 6, 1984, Ser. No. 576,933
Int. Cl.[3] G09F *13/00*
U.S. Cl. 40—152.2 9 Claims

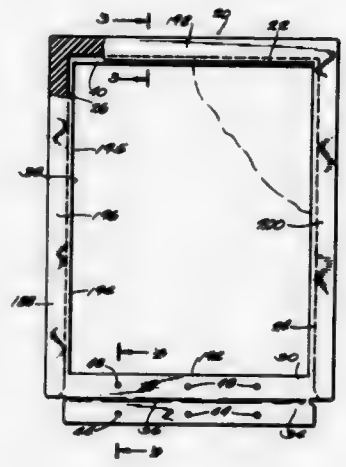


1. A picture display assembly, comprising
(a) a rectangular, upright base frame having front and back sides,
(b) means on the base from which it is connectible to a wall,
(c) first horizontal ledge structure on the base frame and exposed at the front side thereof, the first ledge structure having at least one upwardly projecting, horizontally elongated tongue,
(d) an upright picture display plate having front and back sides, and a transparent medial section adapted to register with said base frame,
(e) means on the plate for supporting at least one translucent picture sheet to hang at the front side of said medial section of the plate,
(f) and second horizontal ledge structure on and exposed at the rear side of the plate, the second ledge structure having at least one downwardly projecting, horizontally elongated tongue sized to removably and downwardly seat over the first ledge structure tongue for removably supporting the plate on the base frame and at the front side thereof.

4,507,885
ALBUM ASSEMBLY

Wolcott S. Kinnard, 5822 W. Fon Du Lac Ave., Milwaukee, Wis. 53218

Filed Apr. 5, 1982, Ser. No. 365,935
Int. Cl.[3] G09F *11/06*
U.S. Cl. 40—405 8 Claims



1. A one piece molded album page for displaying a flat object, comprising:
A. a rectangular frame comprising four edge members;
B. a track in the inside edge of three of the edge members, said track defining a space into which a leading, and side edges of a flat object to be displayed are received and retained;
C. a slot in the remaining edge member, coplanar with and in communication with said track, said slot dividing said remaining edge member into first and second opposing lips, said slot defining a space into which a trailing edge of a flat object to be displayed is received and retained;
D. a flap, extending outwardly from and generally parallel to the said remaining edge member, said flap secured to said first opposing lip by a flexible integral hinge, and;
E. means for fastening said flap onto a second opposing lip of another album page, said flap including a first fastening means and said second opposing lip of another page including a second fastening means.

4,507,886
DISPLAY SIGN

Bert E. Streeter; Mary M. Streeter, both of 4057 Concord Ave., Eugene, Oreg. 97402, and Larry G. Robinson, 660 "E" St., Springfield, Oreg. 97477

Filed Mar. 6, 1984, Ser. No. 586,854
Int. Cl.[3] G09F *3/04*
U.S. Cl. 40—447 5 Claims

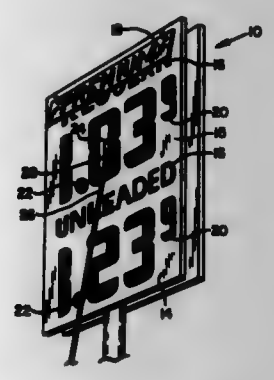
1. A sign for displaying numerical information including a changeable numeral character, comprising:
(a) a foundation member having a front side and a rear side and defining a background area of a background color on

said front side and a plurality of apertures extending therethrough from said rear side to said front side;

(b) a plurality of flaps, each attached to said foundation member on said front side thereof in a respective location, and each having a first face of said background color and second face of a second color different from said background color;

(c) means for attaching each of said flaps to said foundation member within said background area, said means for attaching including at least one retainer portion associated with each said flap and a respective spring clip extending through one of said apertures defined in said foundation member and around each retainer portion of said flap, resiliently urging said retainer portion of said flap toward a position in which said retainer portion is adjacent said front side parallel with said background area;

(d) each said spring clip including a central section, a pair of rearwardly-extending legs connected with said central



section and extending approximately perpendicularly rearwardly therefrom, each having an outer end remote from said central section and an outwardly extending leg attached thereto and extending divergently forward alongside said rearwardly-extending leg, each said spring clip having said central section located on said front side of said foundation member and said outwardly extending legs located on said rear side thereof and resiliently pressing against said rear side;

(e) a plurality of areas of said second color, each corresponding to a respective one of said flaps and located on said foundation member where a respective one of said flaps covers said area when said first face of said respective one of said flaps is exposed and exposes said area when said second face of said flap is exposed; and

(f) a pair of corner areas of said second color located on said front side within said background area, defining upper and lower right corners of said changeable numeral character.

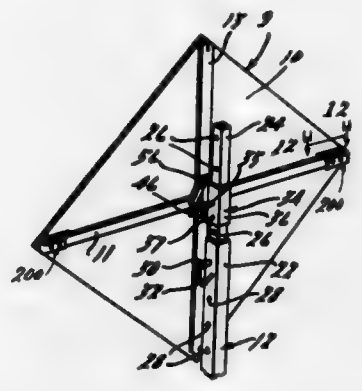
4,507,887

SIGN AND ATTACHMENT APPARATUS

James R. Seely, Rochester, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 498,804, May 27, 1983, abandoned. This application Jun. 22, 1984, Ser. No. 623,622
Int. Cl.[3] G09F *15/00*
U.S. Cl. 40—606 27 Claims

1. In a sign assembly including a generally planar sign panel and at least one support member for supporting said panel in said generally planar configuration, the improvement comprising mounting means for releasably mounting said sign panel on said support member, said mounting means including at least one strap member secured to said sign panel and being positionable over at least a portion of said support member and releasable fastener means for releasably attaching said strap member to said support member, said releasable fastener having means being a pair of mutually engagable portions disposed between said strap member and said support member when said strap member is attached to said support member, said fastener being subjected primarily to shear loading when said sign panel is subjected to wind forces exerted generally in a



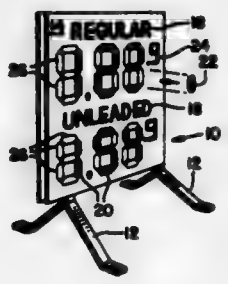
direction such that said wind forces tend to separate said sign panel from said support member.

4,507,888

MAGNETIC DIGITAL DISPLAY SIGN

Larry G. Robinson, Springfield, and Edward C. King, Eugene, both of Oreg., assignors to King Design, Inc., Eugene, Oreg.

Filed May 12, 1983, Ser. No. 493,970
Int. Cl.[3] G09F *7/04*
U.S. Cl. 40—621 15 Claims



1. A sign for displaying information including numerals, comprising:

a background member of a first color;

a plurality of character elements having an appearance contrasting with that of the background member;

the background material and the character elements including magnetic means for attaching removably each character element to said background member in a location relative to at least one other of said plurality of character elements so as to form selectively any desired digit;

a permanently applied label on said background member; and

at least one alternative label including magnetic retention means for removably attaching said alternative label to said background member so as to obscure said permanently applied label.

4,507,889

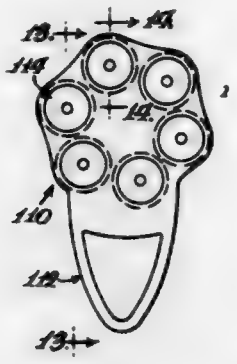
SPEED LOADER

Dillis V. Allen, 240 Lincolnshire Ct., Schaumburg, Ill. 60193

Continuation-in-part of Ser. No. 262,224, May 11, 1981, abandoned. This application Jan. 7, 1983, Ser. No. 456,360
Int. Cl.[3] F42B *39/04*
U.S. Cl. 42—89 17 Claims

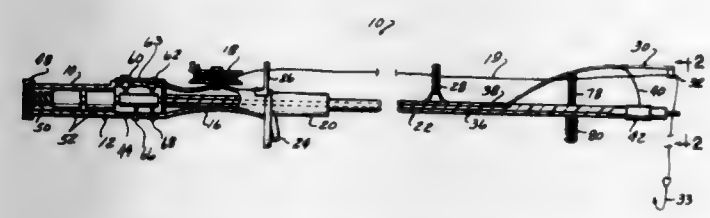
1. A speed loader for loading cartridges into a revolver having annularly arrayed chambers in a cylinder, comprising; a generally planar one-piece flexible body member, having an outer and an inner surface spaced therefrom, constructed of a flexible elastomeric material, said member having a central generally circular portion with a plurality of annularly arrayed apertures therein extending substantially completely therethrough, each adapted to receive one cartridge, each of said apertures having a cylindrical guide portion engagable with

the cartridge of sufficient length to hold the cartridge substantially perpendicular to the planar body member, each of said apertures having a rim engaging portion discontinuous with the outer surface of the planar body member to facilitate the release of the rim and the cartridge from the aperture, and an integral projection extending from the central portion, said



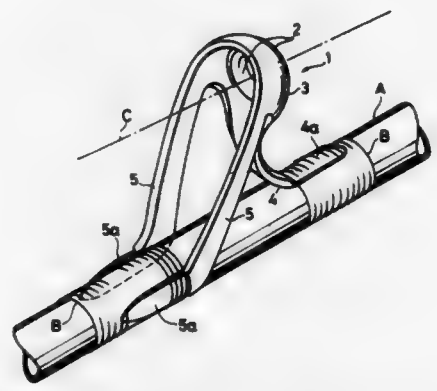
planar body member having sufficient resiliency so that the cartridges loaded in the body member may be simultaneously loaded in the revolver chambers with the shooter's thumb placed on the outer surface of the body member and one of his fingers placed under the projection raising the body member over the rims of all the cartridges substantially simultaneously to release the cartridges in the revolver chambers.

4,507,890
FISHING ROD INDICATOR
Keith Thorne, 7110 North Milford Rd., Holly, Mich. 48442
Filed Nov. 21, 1983, Ser. No. 553,377
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **1 Claim**



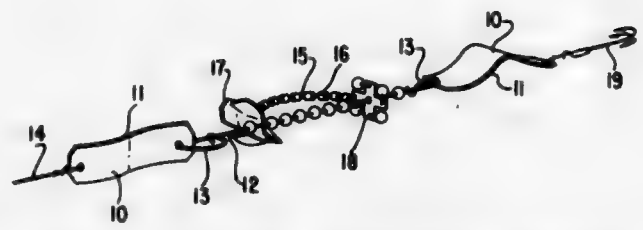
1. A fishing rod indicator comprising:
a handle;
a rod portion having one end carried by said handle, said rod portion having a fixed line guide at its other end;
said rod portion further having a movable member affixed at said other end, said movable member being positioned vertically above said other end of said rod portion and carrying a movable line guide spaced from said fixed line guide;
a reel having a line carried thereby, said reel being mounted on said handle, said line passing from said reel and respectively through said movable and fixed line guides, said movable member and movable line guide being brought from a first, spaced position to a second position which is nearer to said fixed guide when a tension is exerted on said line;
a first electrical contact means carried by said movable member and movable therewith;
a second electrical contact carried by said rod and being engaged by said first movable contact when said movable member is moved toward said fixed guide;
said first electrical contact means being formed of a flexible material such that its configuration can be altered so as to adjustably vary the spacing between said first and second contact means when said movable member is in said first position, whereby the distance traveled by said movable member before contact is made between said electrical contacts can be selectively varied;
a pair of electrical conductors extending through said rod portion and said movable portion and terminating in said first and second electrical contact means;
signal means carried by said handle and connected to said electrical conductors, said signal means adapted to be energized in response to said contact between said first and second electrical contact means; and
means disposed between said movable member and said handle for selectively varying said first spaced position whereby the amount of tension required to cause said movable contact to engage said fixed contact is variable.

4,507,891
LINE GUIDE
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Japan
Filed Mar. 10, 1983, Ser. No. 473,942
Claims priority, application Japan, Mar. 17, 1982, 57-41974
Int. Cl.³ A01K *87/04*
U.S. Cl. 43—24 **5 Claims**



1. A fishing line guide comprising a line guide ring, a frame for supporting said ring, legs extending from the edge of said frame and adapted to be fixed over the surface of a fishing rod, said frame being formed into a substantial truncated cone that tapers to said guide ring thereby dispersing the force of any external impact on the guide away from the guide ring and into the legs.

4,507,892
SPINNER TYPE FISHING LURE
Joe A. Ochs, 405 South Summit Ave., Sioux Falls, S. Dak. 57104
Filed Aug. 22, 1983, Ser. No. 525,437
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.18 **5 Claims**



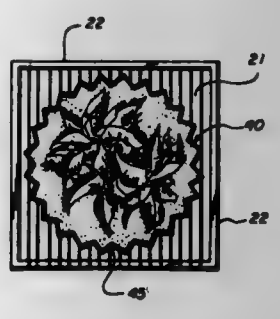
1. A fishing lure comprising a pair of plates, said plates being each formed with a curve in said plate, wire means attached to each plate adapted to hold said plates in substantially perpendicular relationship to each other, the axis of curvature of the curve in each plate being perpendicular to the axis of said wire means, and fish attracting means disposed on said wire means.

4,507,893

CABINET

Ronald W. Smith, 2300 Lazy Hollow #343-D, Houston, Tex. 77063

Division of Ser. No. 222,248, Jan. 2, 1981, Pat. No. 4,341,040, which is a division of Ser. No. 53,071, Jun. 28, 1979, Pat. No. 4,260,206. This application May 5, 1982, Ser. No. 375,000
The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.
Int. Cl.[3] A01G *9/02*
U.S. Cl. 47—74 2 Claims



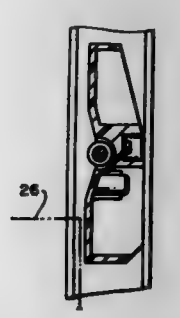
1. A plant container comprising: A unitary member of biodegradeable material having a bottom and side portion said bottom and side portion including uniformly spaced ridges with apertures intermediate said ridges, said side portion further including means for manually dividing adjacent portions of said side portion, whereby a plant contained therein may easily be removed.

4,507,894

WINDOW STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.

Division of Ser. No. 50,818, Jun. 21, 1979, Pat. No. 4,398,372.
This application Aug. 16, 1983, Ser. No. 523,831
Int. Cl.[3] E05D *13/04*
U.S. Cl. 49—449 6 Claims



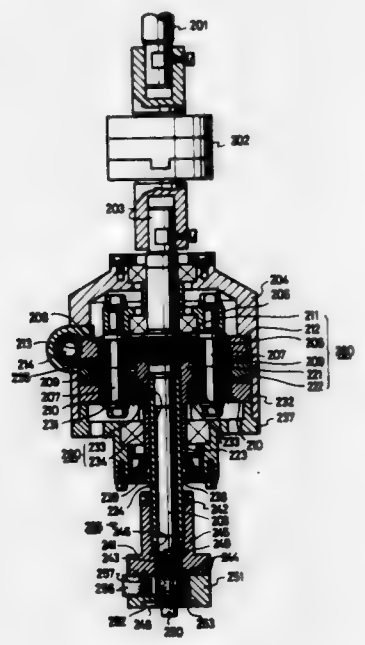
1. Window structure comprising a frame having jamb members and at least one sash within the frame movable within the plane of the frame and pivot lock structure movable between two limiting positions thereof for securing the sash in one position of the sash within the frame in one limiting position of the pivot lock structure and for permitting movement of the sash within the plane of the frame in another limiting position thereof which pivot lock structure includes a lever, pivot means mounting the lever centrally thereof to one jamb adjacent the sash in the one position of the sash, said lever having a back forming an obtuse angle of greater than 180° with the apex of the angle substantially at the pivot means, said lever being mounted on the jamb by the pivot means in relation to the sash so that one end of the lever extends into the path of movement of the sash in the plane of the frame with the back of the other end of the lever in flush, surface to surface engagement with the jamb with the lever in one limiting position thereof and with the lever pivoted in the opposite direction to place the lever in the opposite limiting position the back of the one end of the lever is in flush, surface to surface engagement with the jamb and the front surface of the lever is substantially parallel to the plane of the frame and the entire lever is out of the path of movement of the sash in the plane of the frame.

4,507,895

RADIALLY ADJUSTABLE INTERNAL GRINDER

Hideo Sakata, and Tokuzo Nakaoki, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co. Ltd., Tokyo, Japan

PCT No. PCT/JP82/00097, § 371 Date Nov. 15, 1982, § 102(e) Date Nov. 15, 1982, PCT Pub. No. WO82/03354, PCT Pub. Date Oct. 14, 1982
PCT Filed Apr. 2, 1982, Ser. No. 444,397
Claims priority, application Japan, Apr. 8, 1981, 56-52734; Apr. 10, 1981, 56-54659; Apr. 10, 1981, 56-54660; Nov. 4, 1981, 56-176925; Nov. 4, 1981, 56-176926; Nov. 16, 1981, 56-183500
Int. Cl.[3] B24B *5/08, 33/00*
U.S. Cl. 51—98 R 7 Claims



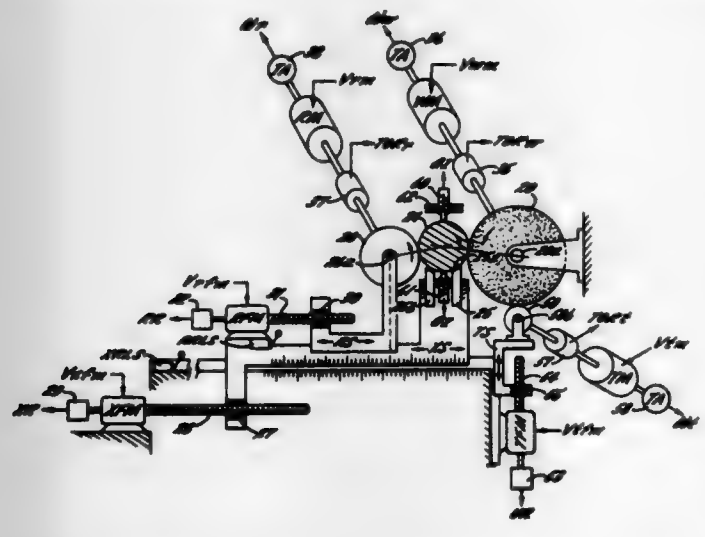
1. An internal grinder, comprising:
a grind stone head;
a plurality of grind stones arranged circumferentially on said grind stone head, the radial projection values of the grind stones being adjustable during rotation of said grind stone head, said grind stone head including a grind stone holding member having radial guides to guide the grind stones, said grind stone holding member being affixed to one end of a spindle;
a projection value adjusting member affixed to one end of a shank coupled onto said spindle, said projection value adjusting member having a projection value adjusting guide formed as an Archimedean spiral with its origin positioned on the axial line of said spindle, said projection value adjusting guide having slidably inserted therein adjusting pins affixed to said grind stones to thereby engage said projection value adjusting guide with said grind stones;
a differential mechanism including a motive power gear fixed to said spindle, a differential internal gear connected to a finger grip means carried on the outer peripheral portion of a case member, and at least two planet gears;
a linear movement causing mechanism having a linear movement causing gear rotatable alternatively in synchronism with and relative to said spindle;
said linear movement causing mechanism further having means responsive to rotation of said linear movement causing gear relative to said spindle for axially moving said shank with respect to said spindle even during rotation of the spindle, for allowing the adjustment of said radial projection values, said means for axially moving including slidably coupled members fixed on said shank and linear movement causing gear, said slidably coupled members being a spiral groove and a projection slidably coupled in said spiral groove;
a mount having work fixing means; and
a moving mechanism for moving said grind stone head relative to the mount in the axial direction of said spindle.

4,507,896

CENTERLESS GRINDING SYSTEMS

Roderick L. Smith, Rockford, Ill., assignor to Energy Adaptive Grinding, Inc., Rockford, Ill.

Filed Nov. 30, 1982, Ser. No. 445,689
Int. Cl.³ B24B 49/16
U.S. Cl. 51—165.92 20 Claims



1. A centerless grinding system comprising

a driven grinding wheel, a driven regulating wheel, and a work rest blade for centerless grinding of a workpiece supported by said work rest blade between said grinding wheel and said regulating wheel,

means for determining the rate of reduction of the workpiece radius while it is being ground, and

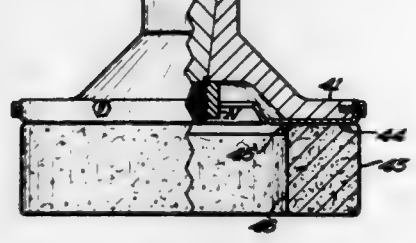
means responsive to said rate of reduction of the workpiece radius for controlling the ratio of the power consumed in removing workpiece material to the rate of removal of workpiece material by the grinding wheel.

4,507,897

GRINDING HEAD ASSEMBLY

Robert G. Vieau, Plymouth, and William D. Klempke, Brooklyn Park, both of Minn., assignors to Loram Maintenance of Way, Inc., Hamel, Minn.

Filed Dec. 20, 1982, Ser. No. 450,913
Int. Cl.³ B24B 45/00; B24D 7/02
U.S. Cl. 51—209 R 4 Claims



1. A grinding head assembly comprising:

a. a backing plate holder adapted to be drivingly connected for rotation with a drive shaft, said backing plate holder having a downwardly facing annular plane surface substantially perpendicular to the axis of rotation of said drive shaft and an outermost peripheral edge symmetrically oriented about said axis;

b. an annular backing plate having an upwardly facing annular plane surface and an outer flange extending upwardly from said backing plate annular plane surface, said outer flange having an exposed outer sidewall and an internal sidewall defining an upwardly facing backing plate holder receiving cavity; said outer flange having a plurality of upwardly facing notches disposed thereon

c. an annular grinding wheel permanently mounted to an underside of said plane surface of said backing plate and having an inner wall; and

d. means for fastening said outer flange of said backing plate to said peripheral edge of said backing plate holder including threaded securing means abuttable against said backing plate flange exposed outer sidewall extending through said upwardly facing notches and securable to said peripheral edge of said backng plate holder for urging said backing plate flange internal sidewall into tight frictional engagement with said backing plate holder outer peripheral edge,

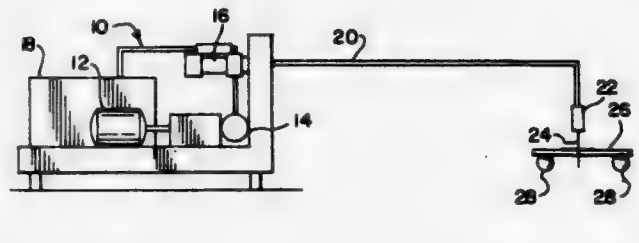
e. said backing plate holder being received within said backing plate holder receiving cavity in a tight fit whereby said backing plate is inherently centered by said holder relative to said axis of rotation.

4,507,898

ABRASIVE LIQUID JET CUTTING APPARATUS

Peter H. Hofer, Barrington, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 253,440, Apr. 13, 1981, Pat. No. 4,380,138.
This application Sep. 28, 1982, Ser. No. 424,939
Int. Cl.³ B24C 3/00
U.S. Cl. 51—410 13 Claims



1. Apparatus for generating abrasive liquid cutting jet comprising:

a nozzle;

means for generating a high velocity, relatively thin liquid jet from said nozzle; and

an abrasive particle carrier comprising a thin solid layer of material having a plurality of abrasive particles bonded to a surface thereof, said carrier being disposed for penetration by said liquid jet such that said abrasive particles are at least momentarily entrained with said liquid jet.

4,507,899

UNDERGROUND SHELTER

Manfred Janitzky, Konigstrasse 10, 4053 Juchen 5, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 422,559
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1981, 3144141
Int. Cl.³ E02D 27/00
U.S. Cl. 52—169.6 12 Claims

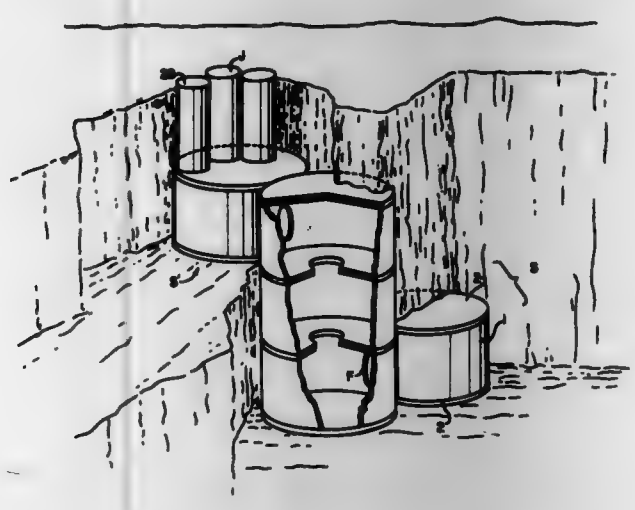
1. An underground protective shelter, comprising:

a plurality of connected protective cells hermetically sealed with one another and held together by clamping elements, each protective cell having an inner protective chamber and at least one opening for entrance to said inner chamber, the cells being formed from prefinished building components of steel-reinforced concrete and including a substantially circular disk forming at least one of an upper covering, an intermediate ceiling, and a lower closure, and a cylinder ring disposed against said disk;

one of the cells being an entrance cell and comprising an inner passageway connected to an outer entrance passageway, the inner passageway having an access to the inner protective chamber of the entrance cell and the outer entrance passageway having an access above the entrance cell in an above ground area, the connection of the passageways and the accesses being formed by hermetically sealable doors, the outer entrance passageway having a

further door which opens to a below ground entrance tunnel;

a two stage air filter, a first stage of said filter being located outside the cells, and a second stage being located in the inner passageway and having a replaceable filter element; and,



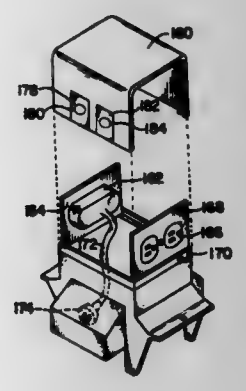
means for maintaining the protective shelter at an air pressure in excess of atmospheric pressure, including a pressure-openable exhaust valve vented to the outside, whereby exhaust air coming from the inner chambers of the cells and flowing through the inner passageway and the outer entrance passageway is continuously pushed to the outside.

4,507,900

ELECTRICAL DISTRIBUTION FOR METAL DECK CONSTRUCTION

Donald H. Landis, Pittsburgh, Pa., assignor to Epic Metals Corporation, Rankin, Pa.

Filed Feb. 22, 1983, Ser. No. 468,492
Int. Cl.³ E04B *5/48*
U.S. Cl. 52—221 **25 Claims**



1. A metal raceway structure adapted for use in concrete-metal composite construction comprising

an elongated metal deck having alternating ribs and valleys,

means underlying and cooperating with said metal deck to define a plurality of cells,

said metal deck having first and second spaced ribs of generally equal height,

a third rib interposed between the first and second ribs,

said ribs having a top wall and depending side walls,

said first and second ribs having side wall openings in side walls generally facing said third rib,

housing means having at least a portion disposed in overlying relationship with respect to said third rib,

said housing means having an interior chamber and a mouth disposed at the upper end of said housing,

a first housing electrical receptacle disposed within said housing having socket means facing the interior of said housing means,

said third rib having at least one top wall opening,

at least one remote electrical receptacle disposed in generally overlying relationship with respect to said housing chamber,

electrical wire means electrically connecting said first housing receptacle to said remote receptacle,

said electrical wire means having a plug removably extending into said first housing receptacle, and

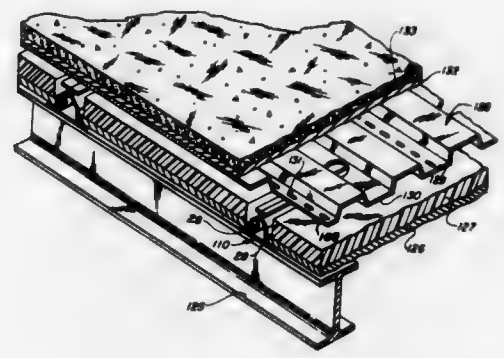
said electrical wire means being of sufficient length to permit said remote electrical receptacle to extend upwardly beyond said housing mouth when said plug is engaged with said first housing receptacle, whereby said remote receptacle may have its sockets facing in a generally horizontal direction or in a generally vertical direction without loss of electrical continuity.

4,507,901

SHEET METAL STRUCTURAL SHAPE AND USE IN BUILDING STRUCTURES

Frank E. Carroll, 237 Maple Rd., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 762,778, Jan. 25, 1977, Pat. No. 4,114,335, which is a continuation-in-part of Ser. No. 648,500, Jan. 12, 1976, Pat. No. 4,048,777, which is a continuation-in-part of Ser. No. 457,996, Apr. 4, 1974, Pat. No. 3,965,641. This application Sep. 19, 1978, Ser. No. 943,866
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.³ E04B *5/10*
U.S. Cl. 52—302 **9 Claims**



1. In an insulated deck structure the components comprising:

a spaced series of parallel sheet metal structural shapes which are symmetrical about a bisecting plane through a central web having a central web, two diagonal legs projecting downwardly from one end of said web forming an included angle of about 30° to about 90° between said legs and having its vertex at the bottom of the web, said diagonal legs having a vertical height of about 1½ to about 10 inches, each diagonal leg having a leg projecting downward at its extremity in a plane substantially parallel to said web, said legs being substantially parallel, each of said parallel legs having flanges extending outwardly at their extremity, a closure side extending between the extremities of said flanges enclosing the area formed by said diagonal sides, said parallel sides and said closure side, and a stiffening member at the other end of said web, said stiffening member being narrower than said flanges and substantially less height than the height of said diagonal legs;

insulation resting on said flanges and extending between adjacent structural shapes; and

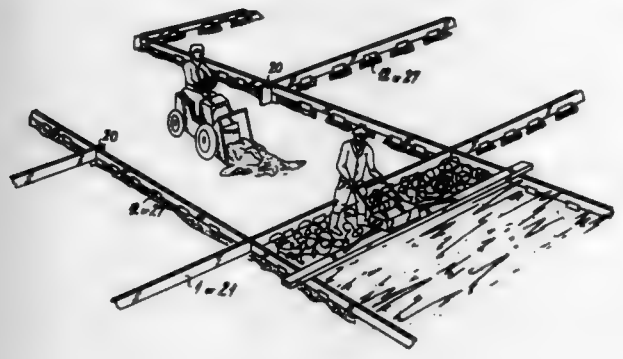
corrugated synthetic polymeric decking above and fastened to the stiffening member of said structural shape.

4,507,902

DEVICE FOR THE FORMATION OF A JOINT FOR AN INDUSTRIAL TYPE FLOORING

Jean-Claude Lucas, 6, Allée Gaston Buy, F-35400 Saint-Malo, France

Filed Jun. 10, 1982, Ser. No. 386,894
Int. Cl.[3] E04B 2/00
U.S. Cl. 52—370 10 Claims



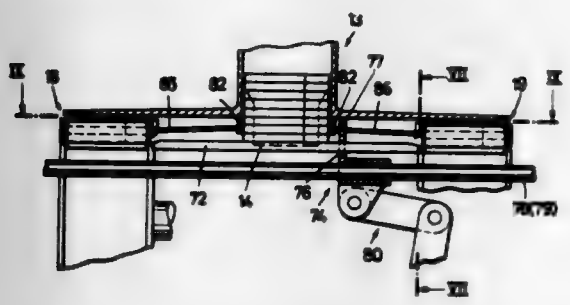
1. A joint for use in a concrete deposit, said joint being made of a plurality of spaced vertical supports, each of said supports being an integral structure having two oblique anchoring legs and an upwardly extending lug portion with hollowed sections on opposite sides of the lugs, an elongated unitary joint body having a downwardly oriented U-shaped cross section forming two spaced vertical flange legs for straddling and completely covering said lug portions of said spaced vertical supports, the tips of the U-shaped cross sections fitting into the hollowed sections, each of the outside faces of said vertical flange having outwardly projecting spurs for hooking into the concrete.

4,507,903

PACKING CIGARETTES

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Pfuhl, Fed. Rep. of Germany

Continuation of Ser. No. 585,413, Jun. 9, 1975, Pat. No. 4,079,575. This application Dec. 22, 1977, Ser. No. 863,559
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1974, 2428168
The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.
Int. Cl.[3] B65B 19/10
U.S. Cl. 53—151 6 Claims



1. Apparatus for packaging cigarettes which are ejected in groups from a magazine, comprising:

(a) a magazine having a plurality of magazines chutes in lower portions thereof, each chute receiving a vertical row of cigarettes;

(b) reinforcement support rods at the lower end of walls of said chutes which abut the respective bottom cigarettes within each magazine chute;

(c) slit-like openings formed between the support rods the width of which is smaller than the diameter of one cigarette;

(d) a common, reciprocating slide having a number of fingers corresponding to the number of magazine chutes to be emptied which enter the magazine chutes and engages a plurality of layers of cigarettes stacked one above the other so as to eject cigarette groups corresponding to one package from the magazine alternatively to either one or the other side;

(e) each finger having a portion which passes through the slit-like openings;

(f) first and second conveyor means arranged one on opposite sides of said magazine, said conveyor means having compartments of a size for receiving assembled cigarette groups corresponding to one package ejected from said magazine; and

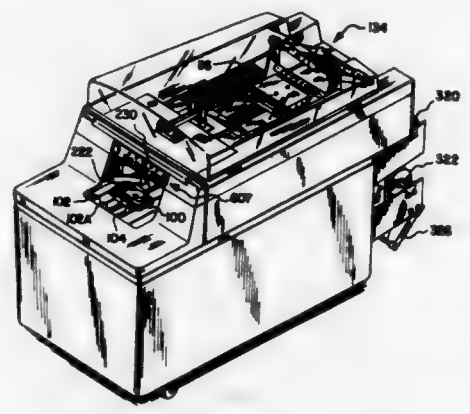
(g) first and second guide elements for the cigarette groups having sidewalls for holding the cigarette groups arranged on opposite sides of the magazine for guiding the assembled cigarette groups to the compartments of the conveyors, the guide element laterally gathering together the cigarettes of each group to close the gap between horizontally adjacent cigarettes.

4,507,904

FILM AND PACKAGE HANDLING APPARATUS FOR WRAPPING MACHINE

Fritz F. Treiber, Centerville, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Apr. 26, 1982, Ser. No. 371,686
Int. Cl.[3] B65B 7/28
U.S. Cl. 53—203 10 Claims



1. In a film wrapping machine wherein packages are wrapped by folding a stretchable, heat sealable film to the underside of the packages, film feeding and package sealing-/conveying apparatus comprising:

film feeding means for providing a source of continuous stretchable film to be drawn into said wrapping machine for wrapping packages;

package sealing/conveying means for heat sealing the film folded on the underside of wrapped packages and for conveying wrapped packages from said machine, said package sealing/conveying means being positioned in close physical proximity above said film feeding means; and

package sealing holddown means positioned over said package sealing/conveying means for forcing wrapped packages into firm contact with said package sealing/conveying means, said package sealing holddown means and said package sealing/conveying means being hingedly mounted to said machine to permit upward pivotal movement in line with said machine and away from said film feeding means, and including latching means for interlocking said package sealing holddown means with said package sealing/conveying means in a raised position to facilitate access to said film feeding means.

4,507,905
GUIDE FINGER MOUNTING FOR CASE PACKER ASSEMBLY HEADS

Daniel L. Goodell, Tallmadge, Ohio, assignor to Figgie International Inc., Willoughby, Ohio

Filed Feb. 16, 1982, Ser. No. 349,264
Int. Cl.[3] B65B *39/02*
U.S. Cl. 53—262 7 Claims



1. A guide finger mounting apparatus for case packers having article assembly heads including partition plate means extending the length of one dimension of the assembly head and wherein means feed streams of abutted articles onto the assembly head in rows between pairs of adjacent partition plate means, the mounting apparatus comprising:

a positioning member having at least one continuous flat outer surface extending longitudinally of the member,

a spring drop finger means positioned on said flat surface of said positioning member; and

a clip means slidably engaging said finger means and said positioning member to press said finger means into operative position on said positioning member and retain it in position against movement downwardly of said member,

said spring drop finger means including a plastic spring finger having an enlarged head that is positioned above and protrudes over the end of said clip means.

4,507,906
HINGED BAG TOP FOLDER

James A. Meyer, Deronda, Wis., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Filed Sep. 27, 1982, Ser. No. 423,552
Int. Cl.[3] B65B *7/16*
U.S. Cl. 53—371 16 Claims

1. In a bag sealing machine of the type having conveyer means mounted on a frame for transporting a bag to be sealed along a straight line path of travel from an infeed point to a discharge point with the top portion of the bag extending vertically upward from said conveyer means, a bag top folder disposed in said path to engage said top portion of the bag in its course of travel comprising:

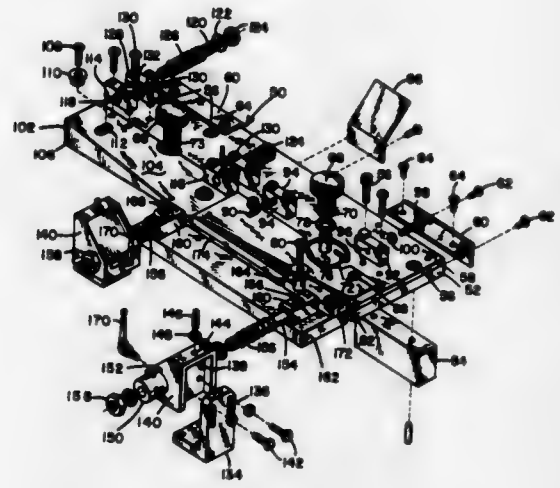
(a) a stationary base plate affixed to said frame with one vertical edge thereof disposed above said conveyer and generally aligned with a vertical plane containing the center line of said conveyer;

(b) movable top plate means disposed on said base plate;

(c) first folder means attached to said top plate means and having a working edge extending at a predetermined angle to and intersecting said vertical plane containing said center line, said working edge having a chamfer;

(d) second folder means mounted on said top plate with a portion thereof overlaying said path of travel and having a working edge sloping downwardly toward said discharge point; and

(e) movable front blade means having a working edge dis-

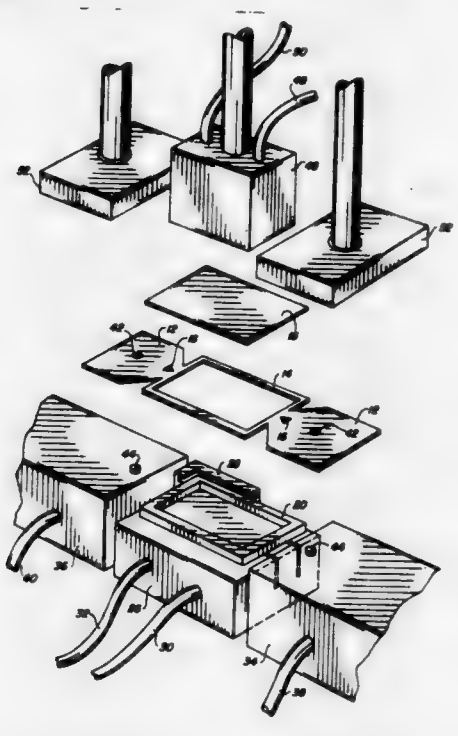


posed in a parallel, non-contacting relationship with respect to said vertical edge of said base plate to allow the top of said bag to pass between said vertical edge of said base plate and said working edge of said movable front blade means.

4,507,907
EXPENDABLE HEATER SEALING PROCESS

Sumner H. Wolfson, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.

Filed Sep. 2, 1981, Ser. No. 298,786
Int. Cl.[3] B65B *7/28, 51/10, 51/22*
U.S. Cl. 53—478 7 Claims



1. A method of hermetically sealing a package containing electronic components to a lid, said package and said lid having sealing surfaces, comprising the steps of:

coating the sealing surfaces of said package and said lid with a layer of glass;

placing a metallic heating element between the sealing surfaces of said package and said lid, said heating element being coated with a layer of glass and having an area and shape corresponding substantially to the sealing surfaces of said package and said lid to reduce the amount of heat needed to effect a seal; and

heating said heating element to melt the glass on said pack-

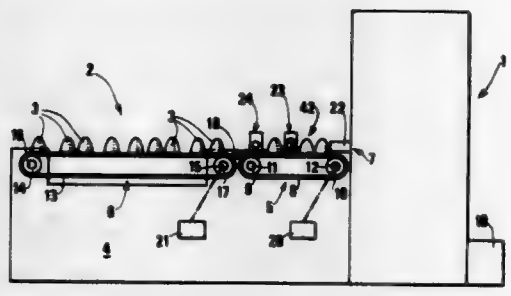
age and said lid and on said heating element to effect a seal between said package and said lid, said heating element becoming a permanent part of said seal.

4,507,908

APPARATUS FOR FEEDING AND WRAPPING PRODUCTS

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azione, Bologna, Italy

Filed Feb. 10, 1982, Ser. No. 347,635
Claims priority, application Italy, Feb. 25, 1981, 3345 A/81
Int. Cl.³ B65B *35/00*
U.S. Cl. 53—498 **5 Claims**



1. In an apparatus for feeding and wrapping products comprising a wrapping machine having means for operating said wrapping machine and a device for feeding products to said wrapping machine which device includes a first belt conveyor for receiving products from a dispensary apparatus, a second belt conveyor connecting said first conveyor to said wrapping machine, a stop element located on and at the end of said second conveyor adjacent said wrapping machine, and first and second control means selectively positioned along said second conveyor at increased spacing, respectively, from said wrapping machine, said first and second control means each having sensing means for sensing the absence or presence of products on said second conveyor, the improvement which comprises:

first drive means for driving said first conveyor at either a high speed or a low speed;

second drive means for driving said second conveyor at a continuous speed in the same direction as said first conveyor;

switch means connected between said first control means and said operating means for said wrapping machine to deactivate said operating means when said first control means senses the absence of products on said second conveyor; and

control circuitry connected between said second control means and said first drive means for controlling the driving speed of said first drive means in response to the output from said second control means, wherein said control circuitry causes said first drive means to operate at high speed when said second control means senses the absence of products on said second conveyor and causes said first drive means to operate at low speed when said second control means senses the presence of products on said second conveyor.

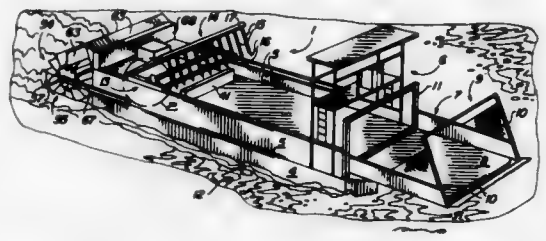
4,507,909

COMPACTOR AND PADDLE WHEEL FOR AQUATIC HARVESTER

Thomas G. Kelpin, Sr., Shreveport, La., assignor to Abraham C. Kottothara, Loudonville, Ohio

Filed Dec. 12, 1983, Ser. No. 560,380
Int. Cl.³ A01D *44/00*
U.S. Cl. 56—9 **20 Claims**

1. In an aquatic harvester having a deck, pontoons disposed beneath the deck, a loading apron provided on one end of the deck and an aquatic vegetation cutter in cooperation with the loading apron, wherein the improvement comprises a carriage characterized by a frame; wheels carried by said frame; rail means extending longitudinally along the deck in spaced relationship and receiving said wheels; and drive means carried by said frame, whereby said wheels are selectively caused to traverse said rail means in a forward and reverse direction along the deck; and rake means pivotally carried by said frame



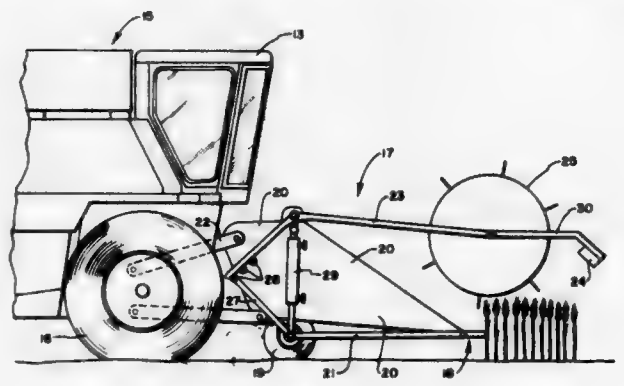
and adapted for sequential engagment of aquatic vegetation deposited on the deck by the loading apron and selectively redistributing and compacting the aquatic vegetation on the deck responsive to controlled traversal of the deck by said carriage.

4,507,910

AUTOMATIC SONAR ACTIVATED HEIGHT CONTROL FOR A HEADER

W. Ray Thornley, Hyde Park; James G. Wiser, and E. Cordell Lundahl, both of Logan, all of Utah, assignors to Ezra C. Lundahl, Inc., Logan, Utah

Filed Nov. 21, 1983, Ser. No. 553,840
Int. Cl.³ A01D *41/00, 41/12, 45/00*
U.S. Cl. 56—10.2 **11 Claims**



1. In a header height control system for a mobile farm implement having a body carrying a mounted header, an automatic control system for continuously controlling the operating height of the header, said control system comprising:

a sonar sensor means mounted on the header and positioned so as to be spaced just ahead of the front, leading end of the header, said sonar sensor means being adapted to generate and transmit ultrasonic waves toward the top of the crop in the vicinity immediately ahead of the header in the transport direction of the farm implement and to receive reflected, ultrasonic, echo waves reflected from said top of the crop back to said sonar sensor means, said sonar sensor means further being adapted to generate an electronic output corresponding to said reflected ultrasonic echo waves;

amplifying means for amplifying the electronic output of the sonar sensor means;

verifying means for verifying that said electronic output represents true, reflected, ultrasonic, echo waves from the top of the crop;

drive logic means adapted to analyze said electronic output which has been amplified and verified, and to generate a drive output corresponding to the distance between the sonar sensor means and the top of said crop as determined from the analysis of the amplified and verified electronic output of the sonar sensor means;

and

power lift means for raising and lowering the header; and

means for activiating the power lift means of said header to continuously and automatically control the positioning of said header in accordance with the drive output of said drive logic means.

4,507,911

APPARATUS FOR HARVESTING AND SEPARATION OF PRODUCE

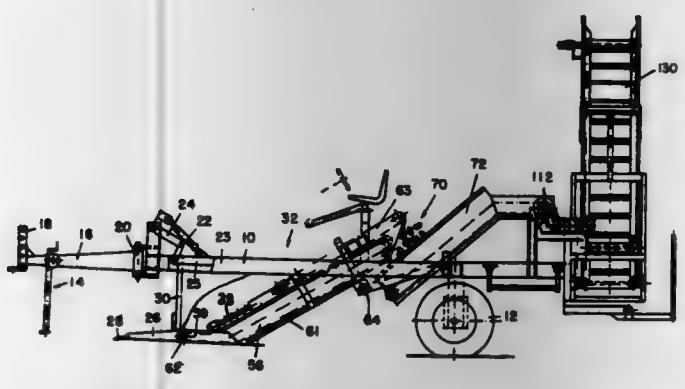
Isaac Wolf, Herzlia, and Yekutiel Alper, Rishon Le Zion, both of Israel, assignors to State of Israel, Ministry of Agriculture, Beit Dagan, Israel

Filed Sep. 13, 1982, Ser. No. 417,610

Claims priority, application Israel, Sep. 14, 1981, 63818

Int. Cl.[3] **A01D** *46/00*

U.S. Cl. 56—327 R **14 Claims**



1. Harvesting apparatus for produce comprising:

a chassis;

a pick-up and primary separation assembly mounted on said chassis and including first and second helical elements between which plants will pass, each first and second elements including an elongate helical portion and a tip portion;

side conveyors for raising produce separated by said pick-up and primary separation assembly; and

separation means including rollers for grasping at least a portion of a plant raised by said pick-up and primary separation assembly and adjacent rotating apparatus for engaging the produce thereon for separation thereof from the plant,

said rotating apparatus comprising first and second pairs of rotating bar assemblies, each of said rotating bar assemblies comprising an axle defining a rotational axis, first and second elongate side bars arranged in spaced orientation along a transverse axis perpendicular to said rotational axis,

one of the rotating bar assemblies in each of said first and second pairs being arranged for 90° out of rotational phase relative to the second rotating bar assembly;

each of said first and second pairs of rotating bar assemblies being arranged to receive between the bar assemblies of the pair at least a portion of the plant for engaging the produce thereon.

4,507,912

PNEUMATIC YARN SPLICING APPARATUS

Kazuyoshi Noguchi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 26, 1982, Ser. No. 436,776

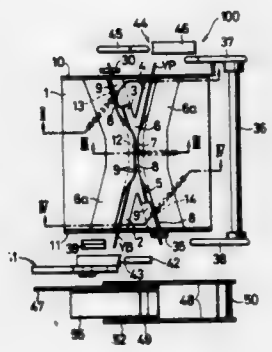
Claims priority, application Japan, Oct. 27, 1981, 56-171583; Oct. 27, 1981, 56-171584

Int. Cl.[3] **B65H** *69/06;* **D01H** *15/00;* **D02J** *1/08*

U.S. Cl. 57—22 **14 Claims**

1. An apparatus for splicing spun yarns including a nozzle block having opposed sides and means for applying a jet fluid stream to the overlapped, untwisted yarn ends which are introduced from the opposite sides of said block, characterized in that a generally X-shaped guide groove is formed in the nozzle block, the guide groove comprising a first yarn end introducing groove, a first yarn end untwisting groove having an untwisting zone, a second yarn end introducing groove, a second yarn end untwisting groove having an untwisting zone and a splicing groove having an intertwining zone for splicing the overlapped, untwisted yarn ends, the intertwining zone being positioned at the intersecting portion of the X-shaped guide groove, the untwisting and splicing grooves positioning and supporting the yarn ends to be spliced and being provided in a common plane.

10. An apparatus for splicing spun yarns comprising a nozzle block including:



means for untwisting yarn ends to be spliced,

means for intertwining untwisted yarn ends, and

first, second and third grooves for positioning and supporting yarns to be spliced in a common plane, the first and second grooves communicating with the third groove, the first groove having a zone where untwisting of the free end of a yarn to be spliced occurs, the second groove having a zone where untwisting of the free end of another yarn to be spliced occurs, the third groove having a zone where intertwining of untwisted free yarn ends occurs.

4,507,913

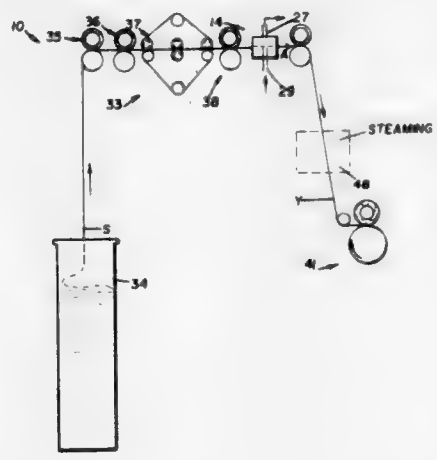
VACUUM SPINNING

Elbert F. Morrison, Clarksville, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 7, 1982, Ser. No. 386,078

Int. Cl.[3] **D01H** *5/28, 1/12, 1/13;* **D02G** *1/04*

U.S. Cl. 57—328 **16 Claims**



1. Apparatus for forming yarn, comprising:

a hollow shaft, at least a portion of the entire circumference of which is perforated;

means for mounting said shaft for rotation about an axis;

means for rotating said shaft about its axis;

means for passing textile fibers through the interior of said shaft linearly, generally along the axis of rotation thereof, the fibers being fed into a first end thereof;

means for applying a vacuum to the exterior of said shaft so that at least some of the fibers or free ends of fibers passing through said shaft will draw toward the shaft perforations,

and will be caused to rotate with said shaft as said fibers move linearly generally along the axis of rotation; and

means for withdrawing formed yarn from a second end of said shaft, opposite said first end thereof.

12. A method of spinning yarn comprising the steps of:

feeding a plurality of free fibers having a staple length of about one inch to 6 inches in a linear direction A, in a fiber mass;

passing the fiber mass into the interior of a hollow shaft rotatable about an axis generally coincident with the direction A, the shaft having perforations along the entire circumference of at least a portion thereof;

applying a vacuum to the exterior of the perforated portion of the shaft circumference sufficient to attract the fiber mass inside the shaft toward the shaft interior surface; and

rotating the shaft at high speed so that the fibers interior of the shaft rotate with the shaft as they are moving in the direction A, the rotation fully controlling fiber interengagement to produce a final yarn.

4,507,914

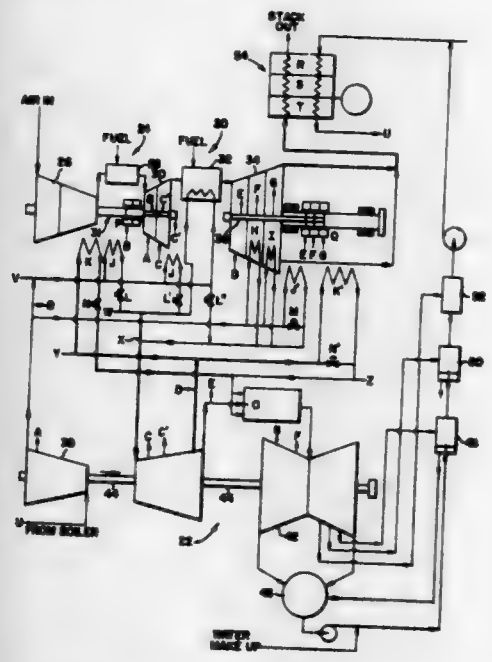
STEAM COOLED GAS GENERATOR

Ivan G. Rice, P.O. Box 233, Spring, Tex. 77373

Continuation-in-part of Ser. No. 224,496, Jan. 13, 1981, Pat. No. 4,438,625, and Ser. No. 274,660, Jun. 17, 1981, Pat. No. 4,384,452, which is a division of Ser. No. 47,571, Jun. 11, 1979, Pat. No. 4,314,442, said Ser. No. 224,496, is a division of Ser. No. 954,832, Oct. 26, 1978, Pat. No. 4,272,953. This application Sep. 9, 1982, Ser. No. 416,275

Int. Cl.³ F02C *7/16*

U.S. Cl. 60—39.17 **58 Claims**



1. A gas generator comprising; a means to compress ambient air including a plurality of rotating blades, a combustor communicating with and downstream from said compressor means for igniting a combustible fuel in the presence of said compressed air to form a first heated gas, a gas turbine communicating with and downstream from said combustor, said gas turbine comprising a rotating shaft and associated turbine blading to turn said shaft upon contact of said first heated gas with said turbine blading, said compressor means containing a compressor shell which confines said ambient air and said plurality of rotating blades, said compressor shell comprising an inner casing in contact with said ambient air and an outer casing annularly spaced from said inner casing, and a plurality of radial support struts positioned circumferentially around the surface of said outer casing and spaced along the length of said compressor shell, said radial support struts extending radially from a location adjacent to said inner casing to a point beyond said outer casing, said outer casing containing therein a hollow steam chamber, each of said radial support struts containing an elongated steam chamber, a source of steam, means to control a supply of steam from said source through said hollow steam chambers contained in said outer casing and to said elongated steam chambers in said radial support struts so as to effect heat exchange between said compressor shell and said steam and control the tip clearance between said rotating blades within the compressor shell and said inner casing.

4,507,915

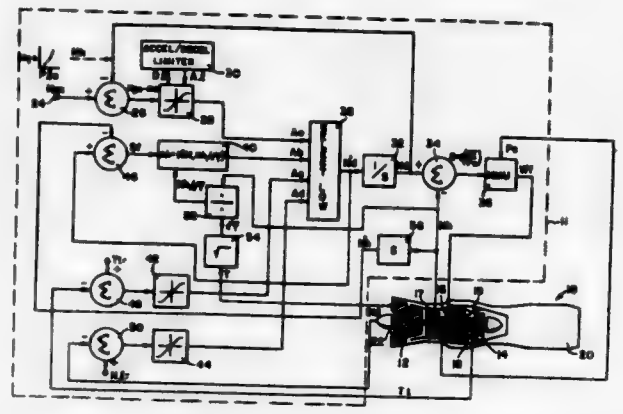
STALL DETECTOR AND SURGE PREVENTION FEATURE FOR A GAS TURBINE ENGINE

Rowland M. Evans, Terrasse Vaudreuil, Canada, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 259,317, Apr. 30, 1981, Pat. No. 4,449,360. This application Jan. 25, 1984, Ser. No. 573,542

Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.281 **12 Claims**



1. A fuel control system for a gas turbine engine comprising:

means for generating an actual speed signal proportional to the actual turbine speed of the gas turbine engine;

means for generating a scheduled speed signal proportional to a desired output power;

means for generating a demanded speed signal proportional to the time integral of a difference signal;

means for generating said difference signal proportional to the difference between said scheduled speed signal and said demanded speed signal;

means for generating an error signal proportional to the difference between said demanded speed signal and said actual speed signal;

means for controlling the fuel flow to the gas turbine engine as a function of said error signal;

means responsive to the actual speed signal and the demanded speed signal for generating a stall factor as a function of the difference between actual speed signal and the demanded speed signal and indicative of the degree of stall the engine is experiencing; and

means, responsive to the stall factor, to further control fuel flow to the gas turbine engine.

4,507,916

WIND GENERATING MEANS

Max F. Anderson, R.R. #1, Stewardson, Ill. 62463

Continuation-in-part of Ser. No. 53,828, Jul. 2, 1979, Pat. No. 4,442,887, and a continuation-in-part of Ser. No. 547,479, Oct. 31, 1983,. This application Apr. 9, 1984, Ser. No. 598,383

Int. Cl.³ F03G *7/00*

U.S. Cl. 60—641.1 **10 Claims**

1. In a system for obtaining air movement, the combination comprising,

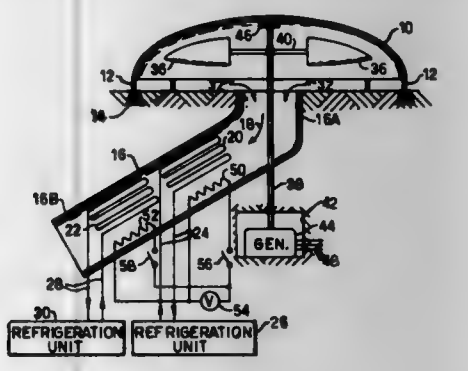
a dome,

means for supporting the dome on the earth,

air inlet means for providing air from a location outside said system to a location beneath the dome,

a passage or tunnel in the earth having an air inlet beneath the dome and an air outlet outside the dome at a level beneath the level of the tunnel or passage air inlet, and

refrigeration means including a cooling element for cooling air in said passage or tunnel and providing for gravity



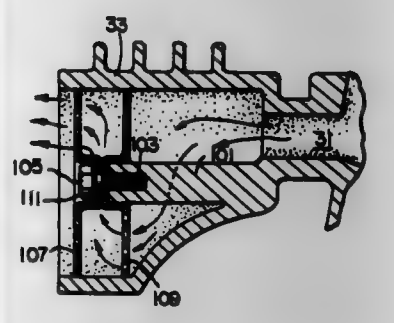
flow of cooled air down the passage or tunnel from the inlet to the outlet thereof.

4,507,917

ECONOMICAL ENGINE CONSTRUCTION HAVING INTEGRALLY CAST MUFFLER

William C. Kandler, New Holstein, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 188,135, Sep. 17, 1980, Pat. No. 4,380,216.
This application Sep. 27, 1982, Ser. No. 423,800
Int. Cl.³ F01N *7/10*
U.S. Cl. 60—323 **4 Claims**



1. An internal combustion engine comprising: a cast block including an exhaust passage cast integrally with the block and extending from a combustion cylinder of the engine, a muffler comprising a plurality of baffle plates and a muffler shell positioned at an end of said exhaust passage and being cast integrally with said exhaust passage and block, said shell defining an enlarged cavity enclosing all of said baffle plates, said integrally cast shell being substantially closed on all sides except an inlet side communicating with said passage and an exhaust side through which exhaust gasses escape to the atmosphere, and fastener means connected to said cast muffler shell for connecting said baffle plates to said shell, wherein said shell further includes a boss integrally cast with the shell and being within the cavity terminating near an open end of the cavity, and said fastener means is connected to the boss.

4,507,918

RECIPROCATING PISTON COMPRESSED FLUID ENGINE HAVING RADIAL CYLINDERS AND TRIGGERABLE VALVES

John E. Holleyman, 3402 Polk St., Monroe, La. 71201

Filed Oct. 13, 1983, Ser. No. 541,533
Int. Cl.³ F16D *31/02;* F01B *13/06*
U.S. Cl. 60—370 **2 Claims**

1. A multiple piston and cylinder type engine driven by a compressed fluid, comprising in combination,

a crankshaft,

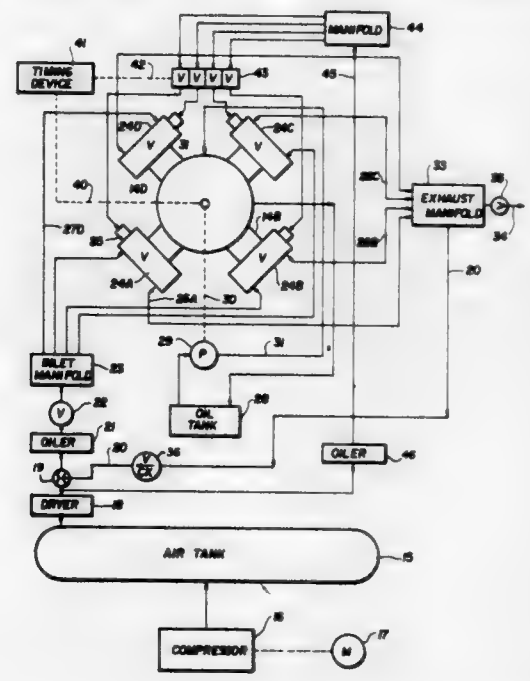
a rotatable plate assembly mounted to rotate the crankshaft,

a set of reciprocatable pistons moving in cylinders arranged generally radially about the crankshaft and connected to the rotatable plate by piston rods for rotating it and thereby the crankshaft,

a fluid source for supplying fluid under pressure,

a set of triggerable valves connected for control of fluid to and from said cylinders, resident in an exhaust position and movable to an intake position admitting said fluid under pressure from said source by a fluid pressure triggering force,

rotary distributor means synchronously driven by the crankshaft for coupling fluid pressure from said source to trigger said valves into the intake position in a sequence and



timing to convert the fluid source pressure into crankshaft rotation power,

a venturi connector in a motive fluid supply line leading to the cylinders thereby to produce temporarily a lower energy mixing region for merging exhaust fluid into the motive fluid flow path at a transit point of substantially equalized pressure and returning the pressure to substantially that of the source fluid for driving said pistons,

and a feedback conduit coupled through a check valve to recirculate a part of the exhaust fluids passing through the valves at the pressure of the mixing region into the fluid flow path to supplement the fluid from said source.

4,507,919

FAIL SAFE ACTUATOR

Russell G. Smith, 2805 Digby Ave., Cincinnati, Ohio 45220

Continuation of Ser. No. 120,055, Feb. 11, 1980, abandoned.
This application May 17, 1982, Ser. No. 379,068
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.³ F15B *1/06, 11/15, 13/042*
U.S. Cl. 60—404 **5 Claims**

1. A fail safe actuator, comprising:

(a) encapsulating means for providing an air-tight chamber isolated from the external environment, said air-tight chamber containing a pressurized fluid isolated from ambient pressure;

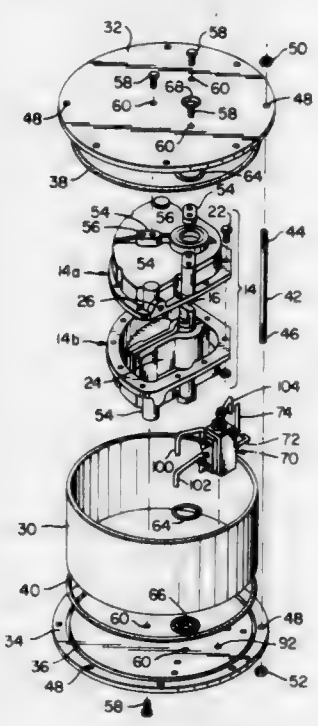
(b) an actuator housing completely disposed within said air-tight chamber, said housing having first and second ports, each of said first and second ports selectively communicating with both the air-tight chamber and the ambient environment;

(c) an actuating element movably disposed within said actuator housing, said actuating element being movable to a first position in response to the introduction of a pressurized fluid media into said first actuator housing port and movable to a second position in response to the introduction of pressurized fluid media into said second actuator housing port;

(d) a rotary drive shaft extending between the air-tight chamber and the ambient environment through said encapsulating means, said drive shaft being interconnected to said actuating element and being rotatably movable in response to movement thereof;

(e) a rotary seal between said rotary drive shaft and said encapsulating means, said rotary seal being operative to maintain a pressure differential between the air-tight chamber and the ambient pressure;

(f) a four-way control valve disposed within said air-tight chamber, said control valve being movable between a first valve position establishing fluid communication between said first port and the air-tight chamber and a second valve position establishing fluid communcation between the second port and the air-tight chamber, said control valve establishing fluid communication between one of said first and second actuator housing ports and the ambient environment whenever the other of said first and second actuator ports is in fluid communication with the air-tight chamber;



(g) means for biasing said control valve toward said first valve position;

(h) unidirectional flow means for permitting flow of pressurized fluid media to said air-tight chamber; and

(i) means for directing a pressurized fluid media to both the control valve and the unidirectional flow means, said directing means serving to pressurize the air-tight chamber and to move the control valve to the second position against the resilient biasing means whenever the pressurized fluid media exceeds a predetermined pressure, the control valve being movable to said first position only when the pressurized fluid media falls below the predetermined level, whereby the entire actuator housing and control valve are protected in the air-tight chamber from impact and environmental damage and the control valve is cyclicly movable in response to pressure fluctuations in a pressurized fluid media above and below the predetermined pressure to control the position of the drive shaft.

4,507,920

STEERING CONTROL APPARATUS

Jim L. Rau, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed May 19, 1982, Ser. No. 379,968
Int. Cl.[3] F16D *33/00, 33/02*
U.S. Cl. 60—443 **10 Claims**

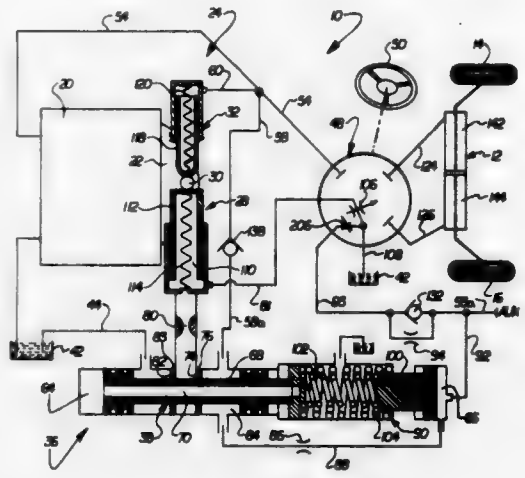
1. An apparatus for effecting operation of a steering motor to turn a steerable vehicle wheel, said apparatus comprising

a variable displacement pump,

fluid pressure responsive motor means connected with said pump for varying the displacement of said pump in response to variations in fluid pressure conducted to said motor means,

valve means connected in fluid communication with said motor means and operable to vary the fluid pressure conducted to said motor means during a steering operation to effect variations in the displacement of said pump,

steering controller means for controlling operation of the steering motor and for varying the fluid pressure conducted to said motor means independently of operation of said valve means upon initiation of a steering operation to thereby increase the displacement of said pump,



said fluid pressure responsive motor means including a variable volume chamber,

conduit means for conducting a pilot flow of fluid from said variable volume chamber to said steering controller means, and

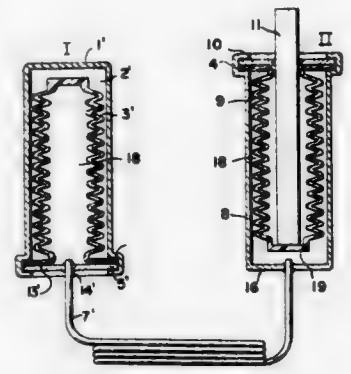
said steering controller means including means for restricting the pilot flow from said variable volume chamber upon initiation of a steering operation to thereby increase fluid pressure in said variable volume chamber to provide for increase in the displacement of said pump in response to the initiation of the steering operation.

4,507,921

THERMOSTATIC SENSOR AND METHOD OF MAKING SAME

Gosta Hammarstedt, Alstermo-SE, Sweden, assignor to Arcu Armaturindustri AB, Alstermo, Sweden

Continuation-in-part of Ser. No. 186,409, Sep. 11, 1980, abandoned. This application May 19, 1983, Ser. No. 496,181
Claims priority, application Sweden, Sep. 17, 1979, 7907684
Int. Cl.[3] F03G *7/06*
U.S. Cl. 60—527 **3 Claims**



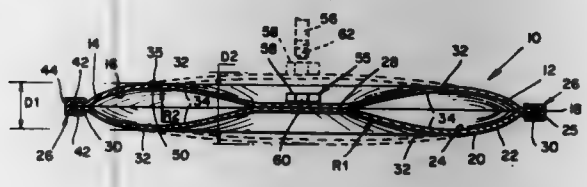
1. A thermostatic sensor for use for remote control in a preselected temperature range, comprising a sensor section and an actuator section, each of said sections comprising a substantially non-elastic cup-like vessel with a compressible bellows

consisting of a blow-molded plastic, and operable to be moved between expanded and collapsed limits, said blow-molded plastic bellows having a series of inner and outer folds connected by conical walls, said inner folds being radially and axially offset from the outer folds, the plastic in said conical walls being of greater thickness than the plastic in said folds, a washer with a gasket to hermetically seal the space between the vessel and the bellows in the sensor section and to close the space between the vessel and the bellows in the actuator section, and displaceable means displaced in response to movement of said bellows in the actuator section for the accomplishment of governing movements in a mechanical device, said hermetically-sealed space being filled with a medium with high coefficient of thermal expansion, said medium being a wax or a composite wax of a selected type which changes state within said preselected temperature range, the inner space of the bellows in the sensor section being filled with a transfer fluid, a capillary tube communicating said inner space with the closed space between bellows and vessel in the actuator section, said displaceable means comprising a piston in the actuator section inside of its bellows and extending outwardly through its washer.

4,507,922
THERMOSTATIC ASSEMBLY

Stanley Kolt, Mamaroneck, N.Y., assignor to Leonard W. Suroff, Jericho, N.Y., a part interest

Filed Nov. 30, 1981, Ser. No. 325,659
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—531 **28 Claims**



1. An assembly having a heat expansible fluid therein and capable of expanding and contracting in response to temperature changes between predetermined limits, said assembly comprising:

A. a first member having a front surface and a rear surface with said surfaces terminating in a free end,

B. a second member having a front surface and a rear surface with said surfaces terminating in a free end,

C. sealing means to provide a fluid tight connection of said members at said free ends thereof so as to permit the expansion of the fluid therein such that said first member expands to generate a force in response to temperature changes of the assembly, and

D. said sealing means including

(1) a ring circumferentially extending around said free ends of said members and in partially overlapping relationship to said outer surface of each one of said members, and

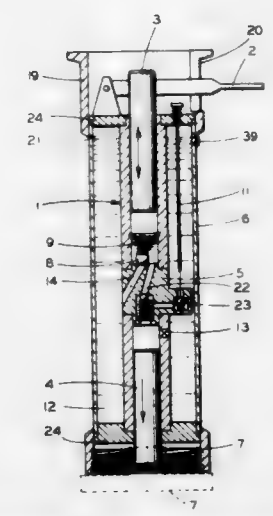
(2) a sealent extending intermediate said ring and said members so as to maintain the fluid tight seal therebetween.

4,507,923
HYDRAULIC DEVICE

Thomas D. Trabbic, Fuerstenberger Strasse 231, 6 Frankfurt-/Main, Fed. Rep. of Germany

Continuation of Ser. No. 215,703, Mar. 19, 1981, abandoned. This application Jun. 17, 1983, Ser. No. 504,849
Int. Cl.³ F15B *7/00*
U.S. Cl. 60—583 **14 Claims**

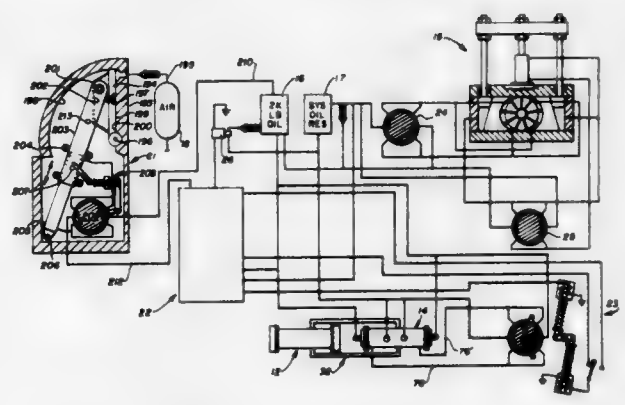
1. A hand held hydraulic drive unit comprising, in combination, an outer elongate casing, a fixed inner elongate casing disposed within said outer casing, said inner casing defining first and second chambers, a pair of opposed end means extending between said inner and said outer casings for defining a fluid reservoir, a first piston slidably disposed within said first chamber, pivot means disposed on one of said pair of opposed end means, lever means coupled to said pivot means and said first piston for manually reciprocating said first piston, first check valve means for providing unidirectional fluid flow from said fluid reservoir to said first chamber, a second piston slidably disposed within said second chamber, said second piston extendible beyond the other of said pair of opposed end means, second check valve means for providing unidirectional fluid flow from said first chamber to said second chamber, and return valve means activated by said lever means for selectively establishing communication between said second chamber and said reservoir.



4,507,924
SYSTEM FOR EFFICIENTLY CONVERTING HYDROCARBONS INTO POWER

Charles W. Hemphill, 1106 Green Valley La., Duncanville, Tex. 75116

Filed Apr. 15, 1982, Ser. No. 368,541
Int. Cl.³ F02B *71/04*
U.S. Cl. 60—595 **44 Claims**



1. A system for efficiently converting hydrocarbons into work comprising the combination of an internal combustion engine, a hydraulic pump, and a hydraulic motor;

means by which said internal combustion engine is connected to drive said hydraulic pump;

a system oil reservoir; a power oil accumulator; said hydraulic motor having a power oil inlet connected to said power oil accumulator and a power oil outlet connected to said system oil reservoir;

an auxiliary hydraulic pump means connected to said accumulator for increasing the pressure therein to a predetermined value, when the pressure is reduced below said value; and means connected to said power oil accumulator, said system oil reservoir, and said auxiliary hydraulic pump for cycling said engine into position for delivering a

power stroke, whenever said engine fails to deliver a power stroke upon demand;

said hydraulic motor having a rotor journaled for axial rotation within a housing, vanes reciprocatingly received within and radiating from the rotor; means by which said power oil inlet and said power oil outlet convey power oil to and from the interior of the housing; and a variable enclosure means circumferentially positioned about said vanes;

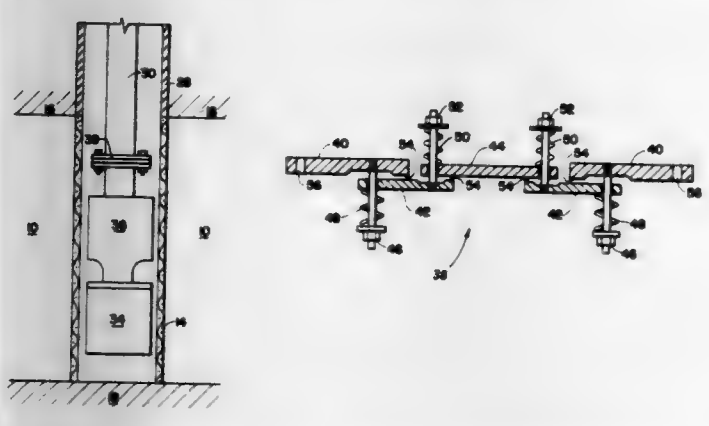
said variable enclosure means froms a peripheral wall surface against which the outer ends of the vanes bear, and which is movable from a low power cylindrical configuration into a high power elliptical configuration.

4,507,925

METHOD FOR AND THERMAL ENERGY INJECTION WITHDRAWAL SYSTEM FOR AQUIFERS

Walter J. Schaetzle, P. O. Box 1523, Tuscaloosa, Ala. 35403; C. Everett Brett, 93 Canyon Rd., Tuscaloosa, Ala. 35406, and Jasem M. Al-Ansari, Dhahran International Airport, P.O. Box 144, Dhahran, Saudi Arabia

Filed May 7, 1981, Ser. No. 261,650
Int. Cl.³ F03G *7/00*
U.S. Cl. 60—641.4 **15 Claims**



8. An apparatus for the control of water injection into said withdrawal of water from an aquifer via at least one well, comprising:

means for injecting thermal energy into and withdrawing thermal energy from said aquifer via said at least one well under water pressure; and

means for controlling said water pressure at a point of injection as a function of flow rate and a normal predetermined pressure of said aquifer so as to reduce the water pressure at said point of injection to a value equal to the static pressure of said aquifer plus a predetermined pressure required to inject water at a predetermined rate of flow into the aquifer wherein said means for injecting thermal energy into and withdrawing thermal energy from said aquifer further comprises one-way valve means mounted in said at least one well for water withdrawal with a relatively low pressure loss and second valve means mounted in said at least one well and operatively associated with said one-way valve means for throttling the water pressure during injection of water into the aquifer and for preventing cavitation.

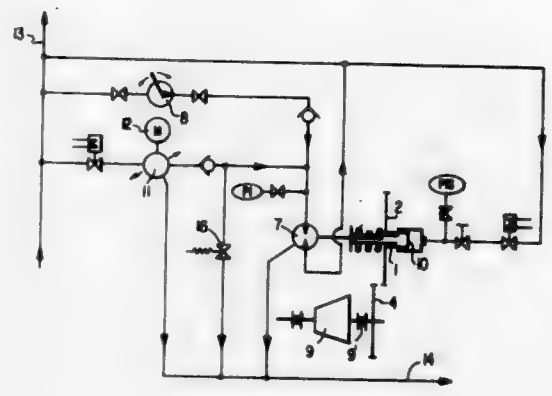
4,507,926

ROTOR ROTATING DEVICE FOR DRIVING OR DRIVEN MACHINES

Hermann Teckentrup, Oberasbach, and Wilhelm Hoffmann, Nuremberg, both of Fed. Rep. of Germany, assignors to AEG-Kanis Turbinenfabrik GmbH, Nuremberg, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,238
Int. Cl.³ F01K *25/08*
U.S. Cl. 60—656 **8 Claims**

1. Rotor rotating device connected to an oil supply system, for turning the rotor of a rotary machine, which rotor is fitted with a gear wheel, said device comprising: a hydraulic motor; a hub mounted to be rotated by said motor; a pinion mounted on said hub and dimensioned to mesh with the gear wheel; a screw shift drive operatively associated with said pinion for permitting movement of said pinion in the direction of the axis of rotation of said hub between a first position in which said



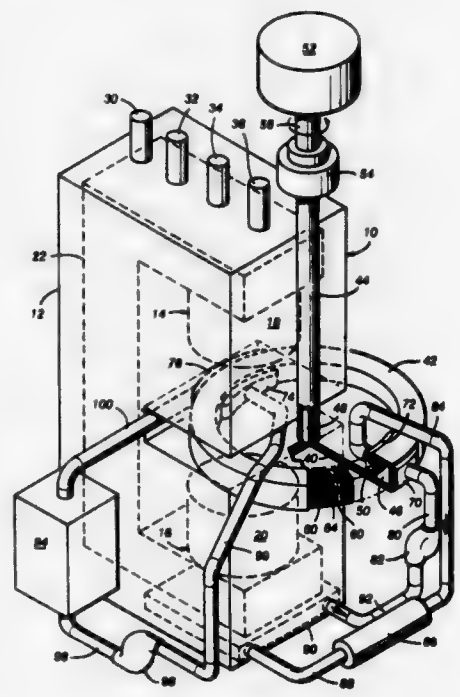
pinion is disengaged from the gear wheel and a second position in which said pinion meshes with the gear wheel; a compression spring disposed to urge said pinion toward said first position; and a piston connected to said pinion and arranged to be actuated by oil under pressure from the oil supply system for moving said pinion into said second position.

4,507,927

LOW-TEMPERATURE MAGNETIC REFRIGERATOR

John A. Barclay, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 26, 1983, Ser. No. 498,434
Int. Cl.³ F25B *5/00*
U.S. Cl. 62—3 **17 Claims**



1. An about 4 to about 20 K. refrigeration apparatus comprising:

a generally U-shaped housing having a base and two arms, said housing comprising electromagnets on the insides of the tips of the arms, said electromagnets being spaced opposed to one another;

a hermetically sealed container, said container comprising a wheel-shaped part and a rotatable driveshaft enclosing drive post shield perpendicular thereto at the center thereof, said wheel-shaped part comprising a rotatable rim portion, said rim portion containing a ring of fluid contactable magnetic material disposed therein, said driveshaft

and said ring being substantially frictionlessly rotatable within said container;

means for affixing said driveshaft within said drive post shield to said ring of magnetic material;

means for rotating said driveshaft and thereby rotating said ring of magnetic material at a selected speed;

first means for heat exchange comprising means for contacting a first fluid with a first portion of said ring of magnetic material disposed substantially outside a magnetic field produced by said electromagnets; and

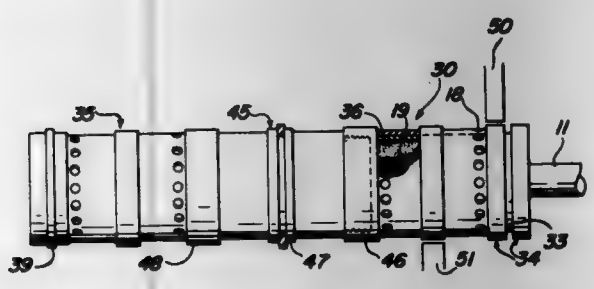
second means for heat exchange comprising means for contacting a second fluid with a second portion of said ring of magnetic material disposed inside said magnetic field.

4,507,928

RECIPROCATING MAGNETIC REFRIGERATOR EMPLOYING TANDEM POROUS MATRICES WITHIN A RECIPROCATING DISPLACER

Dean L. Johnson, Arcadia, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 9, 1984, Ser. No. 588,164
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 **18 Claims**



1. A method of operating a magnetic refrigerator having an object to be cooled at one temperature extreme in heat transfer relationship to a fluid medium, a heat sink adapted for heat transfer with a fluid medium at a second and higher temperature extreme, and a magnetic coil for producing a localized magnetic field, the method comprising the steps of:

coaxially aligning at least a pair of spaced paramagnetic substances on a movable displacer;

warming one of the paramagnetic substances by placing it in a constantly energized magnetic field while cooling the other paramagnetic substance to a lower temperature than the first by locating it outside the localized magnetic field; and

simultaneously flowing two separate fluid medium streams through both of the paramagnetic substances for achieving a heat exchange at both of said temperature extremes.

4,507,929

METHOD AND INSTALLATION FOR MONITORING THE TEMPERATURE IN A GREENHOUSE

José J. Dozier, Montigny-Le-Tilleul, Belgium, assignor to Delta Recherche et Developpement, Sion, Switzerland

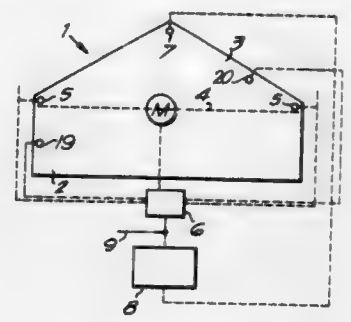
PCT No. PCT/BE82/00001, § 371 Date Oct. 20, 1982, § 102(e) Date Oct. 20, 1982, PCT Pub. No. WO82/02816, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 12, 1982, Ser. No. 438,854
Int. Cl.³ F25B *27/02;* A01G *9/00*
U.S. Cl. 62—79 **9 Claims**

1. A method for regulating the temperature in a greenhouse by insufflation of cooled air into the upper portion of the greenhouse, and by heating of the lower portion of the greenhouse, comprising the steps of:

(a) aspirating warm air from the upper portion of the greenhouse;

(b) cooling the aspirated air by about 5° to 15° C. by means of a heat pump provided with a thermal reservoir for the storage of the energy removed from said warm air;

(c) mixing the cooled air with fresh air and returning it to a different point in the upper portion of the greenhouse; and



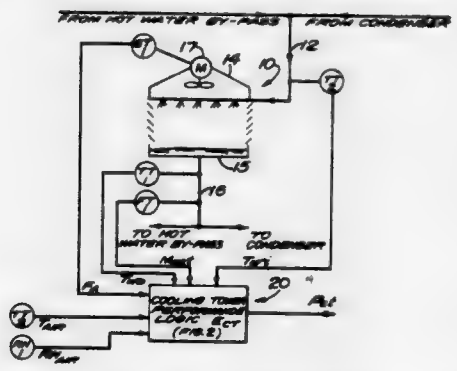
(d) circulating warm fluid from the thermal reservoir through at least one low temperature heating circuit located within said greenhouse.

4,507,930

COOLING TOWER MONITOR

Azmi Kaya, Akron, and Alan C. Sommer, Mentor, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 23, 1984, Ser. No. 592,504
Int. Cl.³ G01K *13/00*
U.S. Cl. 62—129 **4 Claims**



1. A cooling tower monitor for determining the performance of a cooling tower having a hot water inlet, a cold water outlet and airflow means for producing an air flow through the tower, comprising:

wet bulb temperature means for determining the wet bulb temperature of air outside the tower;

available water flow means connected to said wet bulb temperature means for calculating available flow of water from the tower as a function of a rating factor and tower unit at standard conditions as well as cold water outlet temperature, hot water inlet temperature and air flow through the tower;

a first temperature transmitter connected to said available water flow means for supplying a signal corresponding to the cold water outlet temperature;

a second temperature transmitter connected to said available water flow means for supplying a hot water inlet temperature;

an air flow transmitter connected to said available water flow means for supplying an air flow value;

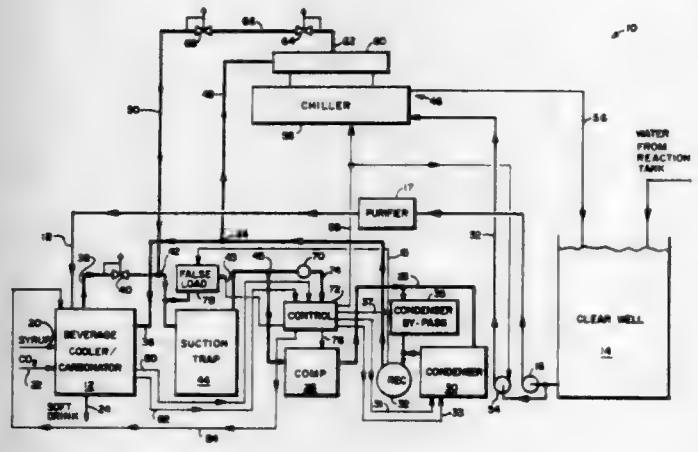
a water flow transmitter for generating a signal corresponding to an actual flow of water out of the tower; and

a performance value generator connected to said available water flow means and said water flow transmitter for calculating a performance value of the cooling tower as a function of the available and actual water flow out of the tower.

4,507,931
BOTTLING PLANT COOLING SYSTEMS

Billy E. Barrow, Sharpsburg; William E. Barrow, Newnan, and Michael A. Barrow, Senoia, all of Ga., assignors to Barrow Systems, Inc., Sharpsburg, Ga.

Filed Jun. 29, 1984, Ser. No. 625,993
Int. Cl.[3] B01F *3/04*; F25B *41/04*
U.S. Cl. 62—175 1 Claim



1. A refrigeration system comprising:

(a) compressor units individually controllable and each connected to a high pressure manifold and a suction manifold;

(b) cooler means connected to the high pressure manifold and connected via a constant pressure cooler regulator to the suction manifold;

(c) chiller means connected to the high pressure manifold and connected via a constant pressure chiller regulator and a constant pressure manifold regulator to the suction manifold;

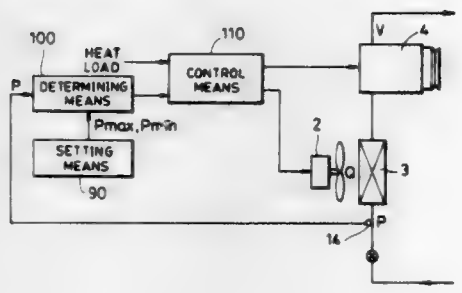
(d) means for supplying water from a common reservoir to the cooler means and the chiller means and for returning water from the chiller means to the common reservoir;

(e) control means for monitoring suction pressure in the suction manifold and turning on or turning off individual compressor units in response thereto.

4,507,932
CONTROL SYSTEM FOR AIR CONDITIONING SYSTEMS

Nobuhiko Suzuki; Shinji Sutoh, and Masaya Sasaki, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,137
Claims priority, application Japan, Feb. 14, 1983, 58-22525
Int. Cl.[3] F25D *17/00*
U.S. Cl. 62—180 9 Claims



1. In a control system for an air conditioning system of the type including a compressor variable in capacity, blower means variable in air quantity to be supplied therefrom, an evaporator for cooling and dehumidifying air supplied from said blower means, said evaporator having a boiling pressure thereof variable in response to the capacity of said compressor and an air quantity supplied from said blower means, said control system being adapted to control the boiling pressure of said evaporator and having sensor means for detecting the boiling pressure of said evaporator, setting means for setting an upper limit and a lower limit defining a predetermined range of the boiling pressure of said evaporator, and determining means for determining whether or not the boiling pressure of said evaporator has reached either said upper limit of said predetermined range or said lower limit thereof;

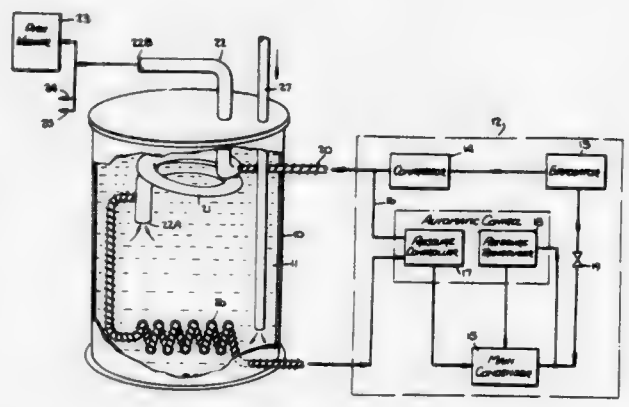
the improvement comprising:

control means operable to control the capacity of said compressor over a maximum variable range thereof and simultaneously control the air quantity supplied from said blower means so that the boiling pressure of said evaporator is maintained at one of said upper limit of said predetermined range and said lower limit thereof, when it is determined by said determining means that a value of the boiling pressure of said evaporator detected by said sensor means has reached said one of said upper limit of said predetermined range and said lower limit thereof.

4,507,933
SYSTEM COMBINING WATER HEATER AND REFRIGERATION UNIT

Roman Chapa, 93 Greenhaven Rd., Rye, N.Y. 10580, and Ronald Baumgarten, New York, N.Y., assignors to Roman Chapa, Rye, N.Y.

Filed May 5, 1980, Ser. No. 147,265
Int. Cl.[3] F25B *39/04*
U.S. Cl. 62—184 1 Claim



1. A thermally-integrated system comprising:

A. a compressor-type refrigeration unit including an internal line conducting a refrigerant in hot vapor form from a compressor to a normally-inactive main condenser, the refrigerant from the main condenser going through an expansion valve into an evaporator which returns the refrigerant to the compressor:

B. a water heater tank including an inlet pipe feeding relatively cool incoming water into the lower region of the tank, and on outlet pipe drawing heated water from the upper region of the tank;

C. an external line functioning as an auxiliary condenser, said external line running from the compressor to the main condenser through the water tank, the external line entering the tank in the upper region thereof where it passes through a water jacket interposed in the outlet pipe to serve as a heat booster, the external line then going to the lower region where it is coiled to define a heater exchanger to heat the water and condense the hot vapor; and

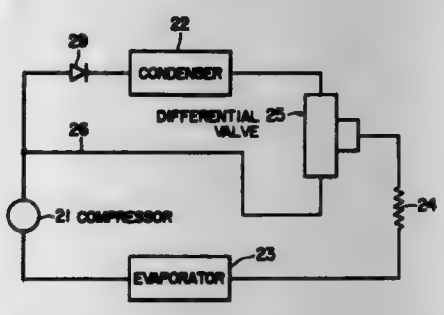
D. means to render said main condenser active when the water temperature in the tank is too high to effect condensation of the hot vapor by the auxiliary condenser, said means including a pressure-responsive transducer coupled to the output of the main condenser to produce a control signal when the tank water temperature exceeds a predetermined level and a motor-driven fan responsive to said control signal to activate said main condenser.

4,507,934

REFRIGERATING SYSTEMS HAVING DIFFERENTIAL VALVE TO CONTROL CONDENSER OUTFLOW

Tatsuo Tanaka, Fuji, and Toshiaki Kawamura, Shimizu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 11, 1983, Ser. No. 493,766
Claims priority, application Japan, May 26, 1982, 57-89267
Int. Cl.[3] F25B *41/04*
U.S. Cl. 62—210 5 Claims



1. A refrigerating system comprising a compressor, a condenser, a capillary tube, and an evaporator, which are connected in series for circulating a refrigerant therethrough, said refrigerating system further comprising:

a check valve provided on an inlet side of said condenser for preventing a reverse flow of the refrigerant from said condenser to said compressor; and

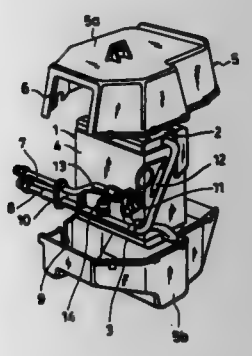
a differential valve having a first port connected with a delivery side of the condenser, a second port connected with an inlet side of said capillary tube, a third port connected with a delivery side of said compressor, and means for interrupting flow of the refrigerant from said first port to said second port when a pressure of the refrigerant at the first port is higher than that of the refrigerant at the third port.

4,507,935

OVERHEAT DETECTING DEVICE OF AN AIR CONDITIONING SYSTEM FOR AUTOMOTIVE VEHICLES

Michimasa Madarame, and Kaichi Ueda, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Apr. 22, 1983, Ser. No. 487,520
Claims priority, application Japan, Apr. 24, 1982, 57-59814[U]
Int. Cl.[3] F25B *49/00*
U.S. Cl. 62—227 9 Claims



1. An air conditioning system for an automotive vehicle, comprising:

an evaporator installed in the passenger compartment of the vehicle;

an evaporator case accommodating said evaporator, said evaporator case having side surfaces thereof which have an air inlet opening and an air outlet opening formed therein;

said evaporator having an upstream side at which it receives air introduced into said evaporator case through said air inlet opening and a downstream side at which it delivers air from said evaporator case through said air outlet opening;

an inlet pipe connected to said evaporator for feeding refrigerant to said evaporator;

an outlet pipe connected to said evaporator for discharge or refrigerant from said evaporator, said outlet pipe extending along said upstream side of said evaporator and defining a detecting space interior of said outlet pipe, at least a portion of said outlet pipe being interior of said evaporator case; and

an overheat detecting device adapted to detect overheating of the refrigerant, said overheat detecting device being coupled to said outlet pipe on said upstream side of said evaporator and being accommodated within said evaporator case, said overheat detecting device being arranged oppósite said air inlet opening said evaporator case, and said overheat detecting device comprising means defining a diaphragm chamber, a diaphragm disposed in said diaphragm chamber, said diaphragm having an exterior facing the inside of said diaphragm chamber and an oppositely disposed interior, a thermosensitive means arranged in said detecting space interior of said outlet pipe for detecting overheating of the refrigerant in said outlet pipe and communicating with said interior of said diaphragm, an enclosed space being defined by an interior portion of said thermosensitive means and said interior of said diaphragm, said enclosed space extending between said diaphragm chamber and said detecting space interior of said outlet pipe, and said diaphragm chamber communicating with said detecting space interior of said outlet pipe, said diaphragm having a displaceable portion which is displaceable in response to the difference between pressure in said enclosed space and pressure in said diaphragm chamber;

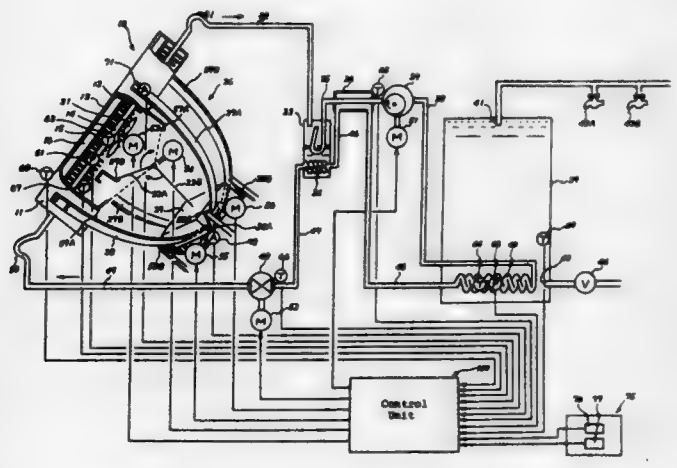
whereby said overheat detecting device is free from radiant heat emitted from the engine of said automotive vehicle, and is exposed to the air introduced into said evaporator case through said air inlet opening.

4,507,936

INTEGRAL SOLAR AND HEAT PUMP WATER HEATING SYSTEM

Hozo Yoshino, Tokyo, Japan, assignor to System Homes Company Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,669
Int. Cl.[3] F25B *27/00*
U.S. Cl. 62—235.1 28 Claims



1. A water heating system utilizing a condenser, comprising:

a solar evaporator including a heat collection chamber, first heat transfer means for receiving and transferring solar radiation heat, second heat transfer means receiving and transferring heat of ambient air, and an evaporator coil for passing refrigerant therethrough to perform heat ex-

change between said refrigerant and said first and second heat transfer means, thereby evaporating said refrigerant, said first and second heat transfer means and said evaporator coil being integrally incorporated in said heat collection chamber;

an accumulator with an accumulator coil by which the liquid refrigerant from said condenser rejects heat to the liquid refrigerant accumulated in said accumulator;

a compressor inlet heat exchanger for performing heat exchange between the liquid refrigerant from said condenser and the vapor refrigerant from said accumulator;

a variable speed pump/compressor connected to said solar evaporator for selectively circulating or compressing the vapor refrigerant from said evaporator;

a water storage tank for storing water;

said condenser being disposed on a bottom side in said water storage tank for passing the vapor refrigerant from said pump/compressor and for performing heat exchange between the water contained in said water storage tank and said vapor refrigerant and thus condensing said vapor refrigerant to liquid refrigerant;

a variable opening pressure regulating valve for selectively allowing passage or adiabatic expansion of the liquified refrigerant and supplying the refrigerant to said solar evaporator;

first and second pressure measuring means for measuring the saturated vapor pressure of the refrigerant passing through said solar evaporator and said in-tank condenser, respectively;

first, second, third, fourth and fifth temperature measuring means for measuring a suction side temperature of said pump/compressor, an inlet side temperature of said pressure regulating valve, a heat collection chamber temperature, an ambient air temperature and tank water temperature, respectively; and

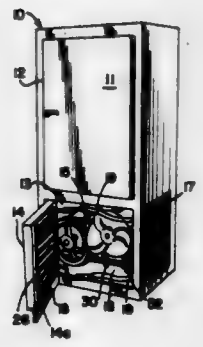
control means for controlling rotational speed of said pump-/compressor and opening of said pressure regulating valve so as to satisfy load demand and at least substantially maximize a coefficient of performance of the refrigeration cycle including said solar evaporator, said pump/compressor, said in-tank condenser and said pressure regulating valve, in response to pressures and temperatures measured by said first and second pressure measuring means and said first, second, third, fourth and fifth temperature measuring means.

4,507,937

VEHICLE REFRIGERATION UNIT AND MOUNTING ASSEMBLY

Frank E. Bretz, Elmhurst, Ill., assignor to Ajax Consolidated Co., Chicago, Ill.

Filed Jul. 11, 1983, Ser. No. 512,664
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—298 **28 Claims**



1. An improved stationary refrigeration unit adapted to be installed in vehicles, the unit being of the type having a cooling compartment and a service compartment, comprising in combination:

a compartment for cooling articles stored therein below ambient temperature, said compartment having a door to gain access thereto;

a service compartment sharing a common wall with said cooling compartment and having a service compartment access opening along the same side of the unit as the cooling compartment access door, said service compartment including a motor and components driven thereby for cooling said cooling compartment to a temperature below ambient temperature, said motor having a drive shaft that is generally transverse to said service compartment access opening;

an adjustable mounting assembly rigidly mounted within said service compartment, said mounting assembly including a stationary carriage and a mounting member, said mounting member being slidably mounted to said stationary carriage, and at least one of said components is secured to said mounting member; and

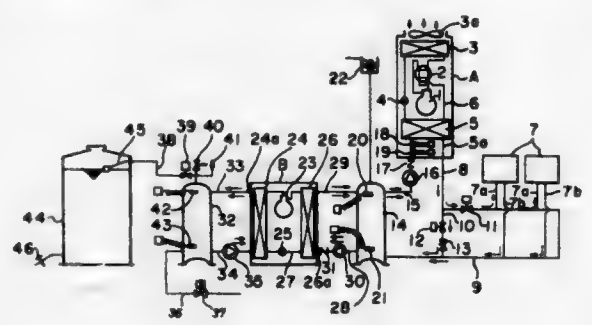
said adjustable mounting assembly includes means for longitudinally moving said mounting member and said component attached thereto relative to said stationary carriage, said moving means including a first shaft in driving engagement with said mounting member and a second shaft horizontally offset from said first shaft, said first shaft being in operative engagement with said second shaft whereby rotation of said second shaft rotates said first shaft and longitudinally moves said mounting member and said component attached thereto.

4,507,938

SYSTEM FOR AIR-CONDITIONING AND HOT WATER SUPPLYING

Hiroaki Hama, and Toshiro Abe, both of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1983, Ser. No. 530,354
Claims priority, application Japan, Sep. 10, 1982, 57-159163
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—324.1 **11 Claims**



1. An air-conditioning and hot water supply system, which comprises:

(a) a reversible heat pump type refrigerating device at the primary side having a user side heat-exchanger and a heat source side heat-exchanger with a coolant of excellent low temperature characteristic being filled in both of said user side heat exchanger and said heat source side heat exchanger;

(b) a refrigerating device at the secondary side having a user side condenser for heating water for hot water supply and a heat source side evaporator with a coolant of excellent high temperature characteristic being filled in both of said user side condenser and said heat source side evaporator;

(c) a circuit for air-conditioning, through which cold or warm water is caused to circulate between said user side heat exchanger of said primary side heat pump and said heat source side evaporator of said secondary side refrigerating device;

(d) a fan coil unit for air-conditioning communicatively connected with said circuit for air-conditioning,

(e) means for transporting said water in said circuit for air-conditioning from said user side heat exchanger of said

primary side heat pump to said fan coil unit and thereafter to said heat source side evaporator of said secondary side refrigerating device; and

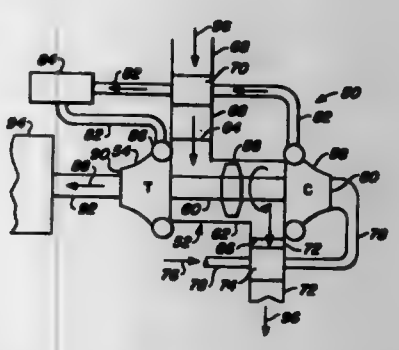
(f) circulating means for causing the circulation of said water in said circuit for air-conditioning.

4,507,939

THREE WHEEL CENTER FAN COOLING TURBINE APPARATUS AND ASSOCIATED METHODS

Kurt H. Wieland, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 16, 1983, Ser. No. 562,488
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—402 **14 Claims**



1. An air cycle cooling machine comprising:

(a) shaft means;

(b) compressor means drivably secured to a first end portion of said shaft means;

(c) fan means drivably secured to a central portion of said shaft means;

(d) turbine means secured to a second end portion of said shaft means, said turbine means being rotationally drivable in response to passage therethrough of pressurized air from a source thereof to thereby rotationally drive said compressor means and said fan means;

(e) gas foil bearing means for supporting said shaft means; and

(f) means for utilizing a portion of the pressurized air flowing through said turbine means to continuously lubricate said gas foil bearing means,

said turbine means including a turbine housing, and said means (f) including means defining a flow path extending from within said turbine housing, through said gas foil bearing means, and into said fan means,

said bearing means including a gas foil thrust bearing axially supporting said shaft means, and a gas foil journal bearing rotationally supporting said shaft means, said thrust and journal bearings having communicating clearance spaces which together define a portion of said flow path.

4,507,940

AIR CONDITIONING APPARATUS OF THE TYPE EMBEDDED WITHIN A CEILING

Mineo Sato; Tadaaki Kawaguchi; Yukinori Okawachi, all of Wakayama, and Yasuyuki Funahashi, Kainan, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,263
Claims priority, application Japan, Jul. 6, 1981, 56/101022
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—407 **4 Claims**

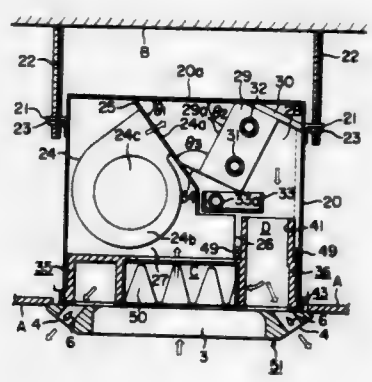
1. An air conditioning apparatus of the type for being embedded within a ceiling of a room, comprising:

a main body adapted to be mounted within a ceiling and having a horizontal top wall and substantially vertical side walls;

a partition means in the upper part of said main body dividing said upper part into a suction passage in the center and on one side of said main body and a single discharge passage on the other side of said main body;

a blower means contained in said suction passage and having the discharge thereof opening through said partition means, the discharge being angled upwardly with the plane across the end of the discharge being at an angle to said top wall;

a heat exchanger means contained in said discharge passage and positioned laterally in a horizontal direction from said blower means, the intake side thereof facing diagonally upwardly toward said blower means and forming a V with said plane across the end of said discharge of said blower means;



an annular chamber around the periphery of the lower part of said main body having the central opening thereof in communication with said suction passage and having the chamber in communication with said single discharge passage; and

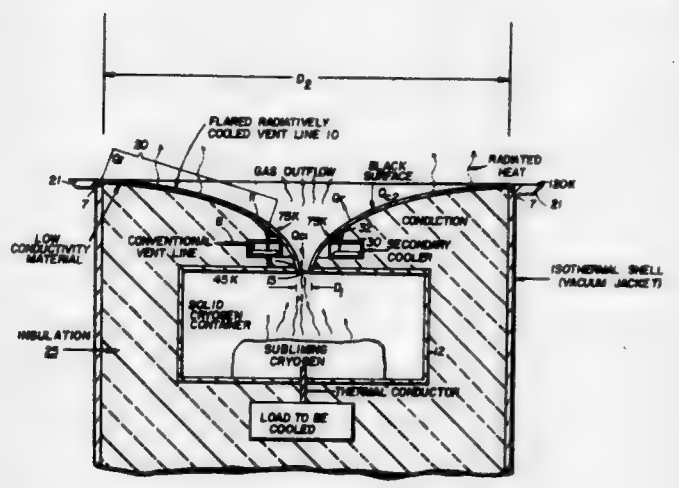
an exposed ceiling panel on the bottom of said annular passage having suction orifices at the middle thereof in communication with said central opening and discharge openings in communication with said annular chamber.

4,507,941

SOLID SUBLIMING COOLER WITH RADIATIVELY-COOLED VENT LINE

James M. Lester, Boulder; Richard P. Reinker, Arvada, and Douglas E. Regenbrecht, Boulder, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Apr. 22, 1983, Ser. No. 487,692
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **20 Claims**



1. A solid subliming cooler for use in space comprising:

a cryogen container having a cryogen vapor venting aperture therein;

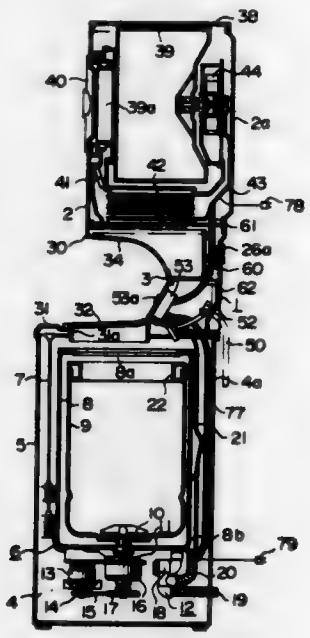
a radiatively-cooled vent line means having a vapor flow passageway connected to said vapor venting aperture for radiating heat from an outwardly directed surface into space and away from the vent line means and away from said cooler as it is being conducted therealong towards said cryogen container; and

insulation means disposed on an inwardly directed side of said vent line means, opposite said outwardly directed surface, for reducing inwardly directed heat transfer.

4,507,942
WASHING MACHINE WITH DRIER

Etsuro Hirose; Kimio Takahashi, both of Hitachi; Toshiro Mori, Katsuta, and Haruyuki Kaito, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 3, 1981, Ser. No. 317,844
Claims priority, application Japan, Nov. 5, 1980, 55-154678
Int. Cl.[3] D06F *29/02*
U.S. Cl. 68—20 3 Claims

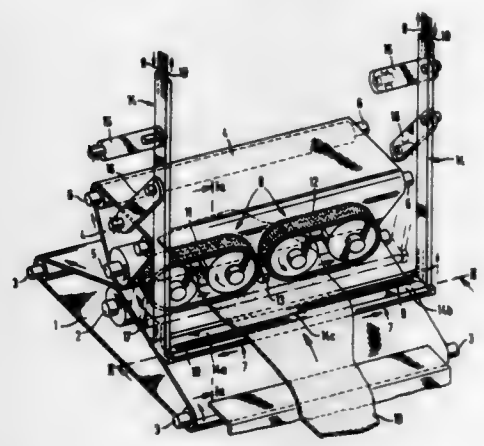


1. A washing and drying arrangement including a washing machine, a drier having a drier body, and a drier carrier mounted on said washing machine body for carrying the drier body, wherein substantially a whole portion of a front surface of said drier carrier is concaved rearwardly to form a concaved curved front surface, said concaved curved front surface having an opening formed in a lower front surface thereof for enabling clothes to be put in and removed from the washing machine body, a control panel means disposed rearwardly of the opening for operating at least some control means associated with the washing and drying arrangement, an upper front surface of said drier carrier and a front surface of said drier body are rearwardly offset from the lower front surface of said drier carrier, and a rear surface of said drier body is rearwardly offset from a rear surface of said washing machine body.

4,507,943
DRYING PRESS FOR HIDES

Antti K. Viljanmaa, Pirkantie 15, 34800 Virrat, Finland

Filed Sep. 2, 1982, Ser. No. 414,446
Claims priority, application Finland, Sep. 4, 1981, 812743
Int. Cl.[3] C14B *1/02, 1/30, 17/06*
U.S. Cl. 69—41 10 Claims

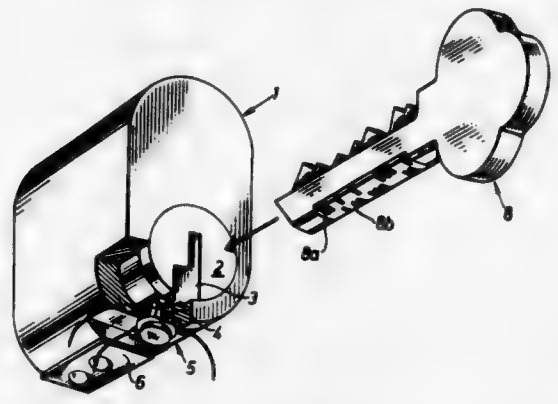


1. A drying press for hides, comprising an upper and a lower endless drying felt passed over rolls and pressed against each other by a pair of press rolls to form a drying press gap for hides which are passed therethrough, the lower drying felt extending upstream of the drying press gap, and hide stretching means positioned upstream of the gap and above the lower felt, said hide stretching means including a lower stretcher extending transversely relative to the lower drying felt, said lower stretcher being displaceable in the downstream direction, said lower stretcher serving to lift hides off the lower drying felt, and an upper stretcher which in the final position of the downstream displacement of said lower stretcher is located above the lower stretcher such that the upper and lower stretchers may grip hides therebetween and stretch hides in opposite transverse directions relative to the direction of feed of the hides.

4,507,944
CYLINDER LOCK COMBINATION, A LOCK CYLINDER AND A KEY FOR SUCH A COMBINATION

Bo Widén, Torshälla, and Björn Rubensson, Eskilstuna, both of Sweden, assignors to GKN-Stenman AB, Eskilstuna, Sweden

PCT No. PCT/SE81/00150, § 371 Date Dec. 30, 1981, § 102(e) Date Dec. 30, 1981, PCT Pub. No. WO81/03355, PCT Pub. Date Nov. 26, 1981
PCT Filed May 19, 1981, Ser. No. 336,383
Claims priority, application Sweden, May 20, 1980, 8003772
Int. Cl.[3] E05B *47/00*
U.S. Cl. 70—276 10 Claims



1. A cylinder lock-key combination comprising a cylinder housing (1) in which there is arranged a rotatable cylinder plug (2) having a key slot (3) for the key (8), and an electronic evaluating circuit (11–18) for establishing proper actuation of the cylinder, whereat the key (8) constitutes a carrier of coded information (8*a*, 8*b*) which can be read-off through a sensing means disposed proximate the cylinder housing and plug and connected to the electronic circuit, characterized in

that arranged proximate the cylinder lock is a magnetic body (5*k*) arranged to generate a magnetic flux which passes the key slot (3);

that the coded information on the key (8) is incorporated at locations or regions (8*a*, 8*b*, 8*c*) of mutually different magnetic permeability and positioned one after the other in the longitudinal direction of the key, said locations or regions causing variations in said magnetic flux when the key is moved longitudinally relative to the housing;

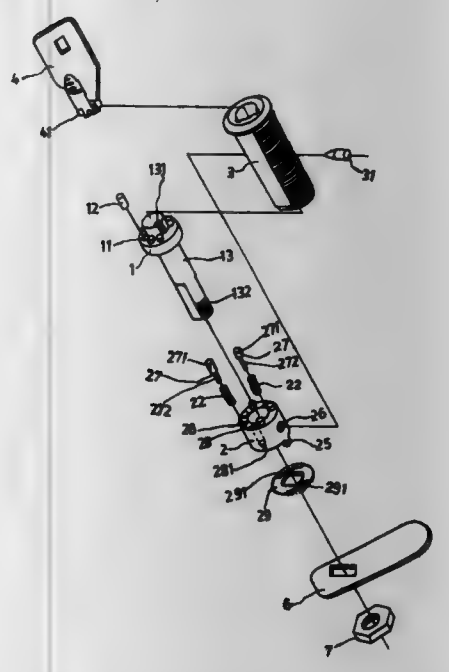
that the sensing means includes means (5) incorporated in an electric circuit containing a bridge coupling and supplied with an operational voltage, said means (5) being arranged to convert said magnetic flux variations to momentary changes in resistance, said changes causing such imbalance of the bridge coupling that there is generated in said circuit an electric pulse train corresponding to said coded information; and

that connected to the circuit is a means, for example a data processing device (11), arranged to sense and evaluate said pulse train.

4,507,945
QUINCUNX-SHAPED LOCK DEVICE

Shih M. Hwang, P.O. Box 7-369, Taipei, 106, Taiwan

Filed Nov. 3, 1982, Ser. No. 438,727
Int. Cl.[3] E05B *15/14, 27/08*
U.S. Cl. 70—363 2 Claims



1. An improved quincunx-shaped lock device comprising a lower pin seat, said lower pin seat having a plurality of lower pin holes therein, a plurality of lower lock pins springingly disposed in a respective said lower lock pin hole, the number of said lower lock pins corresponding in number to the number of said lower pin holes, said lower lock pins each including a pin head and a pin tail, each said lower lock pin having a differing length and differing cross-sectional diameter, the lower pin holes in said lower pin seat being furnished with pin-tail-through holes, a check ring, said check ring having notches therein such that when said lower lock pins are pushed downwardly, said pin tails penetrate either through just the pin-tail-through holes or through the notches in said check ring, while some of said pin tails touch said check ring and stop there.

4,507,946
METHOD AND SYSTEM FOR CONTROLLING AN INTERSTAND TENSION IN A CONTINUOUS ROLLING MILL

Toshihiro Koyama, Koganei; Yoshiharu Anbe, Kodaira, and Takuo Funahashi, Hino, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 19, 1983, Ser. No. 486,354
Claims priority, application Japan, Apr. 23, 1982, 57-68276
Int. Cl.[3] B21B *37/00*
U.S. Cl. 72—17 2 Claims

1. A method for controlling an interstand tension in a continuous rolling mill having a looper provided between a pair of successive rolling stands and driven by a looper drive motor, said method comprising the steps of:

detecting the operating angle of the looper;

detecting the interstand tension;

determining, in accordance with a detected deviation of said detected operating angle from an angle target value, and in accordance with a detected deviation of said detected tension from a tension target value, a correction to a speed target value for speed feedback control of the looper drive motor and a correction to a speed target value for a roll drive motor driving one of the rolling stands between which the looper is provided;

the step of determination of a correction to the speed target value for the looper drive motor comprising the steps of:

determining a first correction from the deviation of the detected angle,

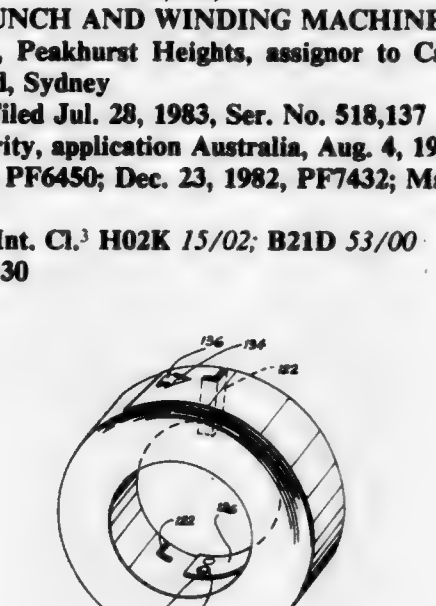
determining a second correction from the deviation of the detected tension, and

adding the first correction and the second correction to produce the correction to the speed target value for the looper drive motor;

the step of determination of the correction to the speed target value for the roll drive motor comprising the steps of:

determining a third correction from the deviation of the detected tension,

determining a fourth correction from the deviation of the detected angle, and



adding the third correction and the fourth correction to produce the correction to the speed target value for the roll drive motor;

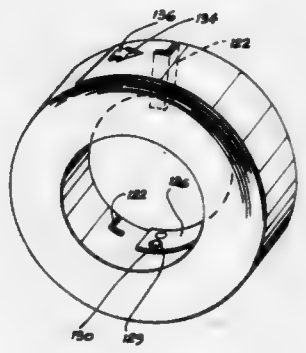
the fourth correction being determined to be a value contributing to a variation in the speed of the roll drive motor cancelling the variation in the tension due to the variation in the angle due to the first correction; and

the second correction being determined to be a value contributing to a variation in the speed of the looper drive motor cancelling the variation in the angle due to the variation in the tension due to the third correction.

4,507,947
PUNCH AND WINDING MACHINE

Louis Stanley, Peakhurst Heights, assignor to Card-O-Matic Pty. Limited, Sydney

Filed Jul. 28, 1983, Ser. No. 518,137
Claims priority, application Australia, Aug. 4, 1982, PF5208; Oct. 21, 1982, PF6450; Dec. 23, 1982, PF7432; Mar. 31, 1983, PF8709
Int. Cl.[3] H02K *15/02;* B21D *53/00*
U.S. Cl. 72—130 7 Claims



1. A punch and winding machine to manufacture a core for a rotor or stator of an axial flux induction electric machine, said core being formed of metal strip punched at longitudinally

spaced locations and wound about a central axis extending transverse of the strip so that holes punched in the strip form radially extending slots in a radial face of the core, said punch and winding machine comprising a frame, a punching assembly mounted on the frame to receive said strip and punch holes therein at predetermined intervals along the strip as the strip is drawn therethrough, a winding assembly to receive the punched strip and wind the strip to form a core, said punching assembly including punch means to punch a first and then a second deformation in a trailing portion of the strip, which trailing portion forms a last coil of the core, said first deformation being a first securing tab and said second deformation being a first securing hole, control means coordinating said punch assembly and winding assembly so that the slot holes in said strip form radially extending slots in said core and actuation of said first punching means so that the first and second deformations are longitudinally spaced along said strip by a predetermined distance to thereby radially align said securing tab with said securing hole so as to pass therethrough, and securing tab deformation means to engage said securing tab as it projects through said securing hole, to bend said securing tab back along the strip to thereby bind together the two radially outer coils of the core to inhibit relative movement therebetween.

4,507,948

METHOD AND APPARATUS FOR CUTTING CORRUGATED STRIP

Bernard J. Wallis, 25315 Kean Ave., Dearborn, Mich. 48124

Filed Nov. 4, 1983, Ser. No. 548,711
Int. Cl.³ B21D *53/02*
U.S. Cl. 72—185 **16 Claims**



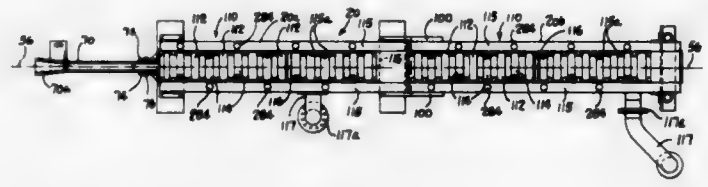
1. In a machine wherein metal ribbon stock is corrugated transversely by feeding it lengthwise between a pair of toothed corrugating rolls and the corrugated strip is advanced to a rotary driven tooth feed roll in a lengthwise compacted condition wherein the number of convolutions per unit length is greater than desired in the finished strip, said feed roll being adapted to engage the strip between the crests of the successive corrugation and advance it lengthwise in a downstream direction, the improvement which comprises a rotary driven unpacking roll located downstream from the feed roll in the path of travel of the corrugated strip, said unpacking roll having regularly spaced teeth around its outer periphery adapted to engage between the crests of the convolutions of the corrugated strip to advance the strip further in a downstream direction, means permitting rotary adjustment of the unpacking roll relative to the feed roll while the latter is stationary to stretch the section of the corrugated strip engaged by and extending between the two rolls so that the number of convolutions per unit length in said stretched section is less than the number of convolutions per unit length in the portion of the corrugated strip upstream from said feed roll and means for locking the unpacking roll in said rotatably-adjusted position relative to the feed roll.

4,507,949

APPARATUS FOR COOLING A HOT-ROLLED PRODUCT

Daniel E. Killilea, Canton, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Feb. 12, 1982, Ser. No. 348,079
Int. Cl.³ B21B *45/02, 43/00*
U.S. Cl. 72—201 **15 Claims**



1. A cooling box for cooling product in a continuous hot-roll mill, comprising:

(a) a source of coolant under pressure;

(b) structure defining a frame defining a plurality of spaced, cartridge receiving slots;

(c) a plurality of guide cartridges and spray cartridges removably disposed in the slots in said frame;

(d) each guide cartridge comprising a housing engageable by one of said slots supporting a repositionable tapered guide element for guiding product through said cooling box;

(e) each spray cartridge comprising a spray housing engageable by one of said slots defining a spray passage therethrough and further comprising spray means communicating with a coolant chamber defined by said spray housing and operative to spray coolant onto product passing through said spray passage; and

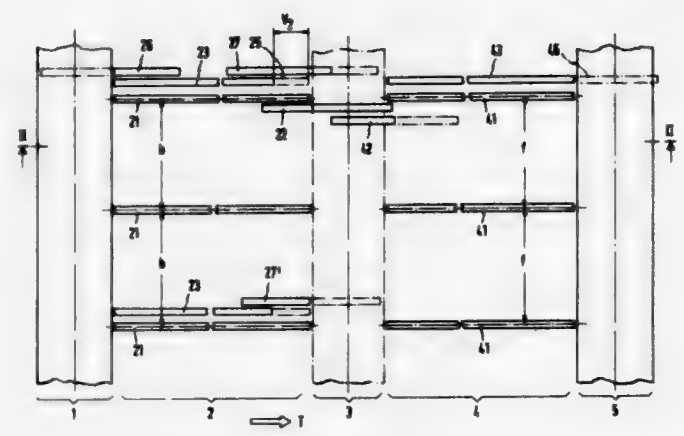
(f) conduit means for communicating said source of coolant under pressure with said spray cartridge.

4,507,950

CONVEYING MEANS FOR EXTRUSION PROFILES

Friedrich W. Elhaus, Dorfstr. 21, 7761 Moos, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 96,681, Nov. 23, 1979, abandoned. This application Mar. 29, 1982, Ser. No. 362,660
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933260
Int. Cl.³ B21C *35/00*; B65G *25/04*
U.S. Cl. 72—257 **11 Claims**



1. Conveying apparatus for conveying extrusion profiles (S) from the runout conveyor (1) of an extrusion press in a horizontal transfer direction (T) normal to the longitudinal extrusion axis of the press, comprising

(a) a cooling table station (2) including a plurality of coplanar parallel horizontally spaced fixed beams (21) arranged normal to the runout conveyor; and

(b) means for transferring an extrusion profile from said runout conveyor to said cooling station fixed beams, including

(1) a plurality of parallel transfer beam means (23) arranged

parallel with and between said fixed beams, each of said transfer beam means including

(a) a horizontal lift member (**24**);

(b) a transfer member (**25**) mounted for horizontal longitudinal displacement on said lift member;

(c) elevating means (**61–69**) including a pressure fluid cylinder (**60**) for vertically displacing said lift member through a given vertical stroke (H_2) relative to said fixed beams; and

(d) first drive means (**38, 39; 71, 73**) for longitudinally displacing said transfer member through a given horizontal stroke (V_2) relative to said lift member; and

(2) lifter means for transferring an extrusion profile from the runout conveyor to said transfer member, said lifter means including

(a) a lifter member (**26**) connected with said lift member for longitudinal displacement through a given horizontal stroke (V_{26}) between retracted and extended positions relative to said lift member, said lifter member being positioned, when extended, beneath said runout conveyor when said lift member is in its lowered position; and

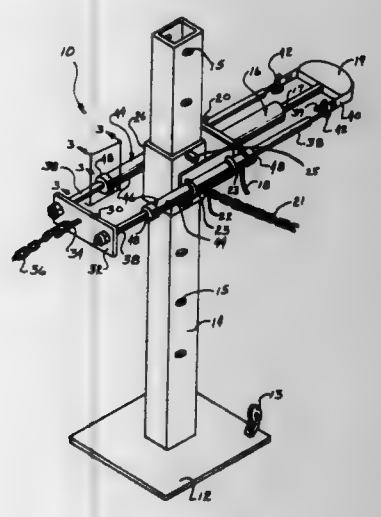
(b) second drive means (**31**) for displacing said lifter member between its extended and retracted positions relative to said transfer member.

4,507,951

FORCE PRODUCING AND TRANSMITTING APPARATUS

John V. Hultquist, 12861 Western Ave., Unit K, Garden Grove, Calif. 92641

Filed May 9, 1983, Ser. No. 492,895
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—431 **17 Claims**



1. Force producing and transmitting apparatus adapted for use in body and frame straightening and shaping, said apparatus comprising:

(a) a base member,

(b) an upright member supported by said base member,

(c) force-producing means,

(d) carriage means adapted to operably connect said force-producing means to said upright member,

(e) attachment means adapted to engage a working element,

(f) resilient, plastic force-transmitting means adapted to transmit pulling force from said force-producing means to said attachment means; and

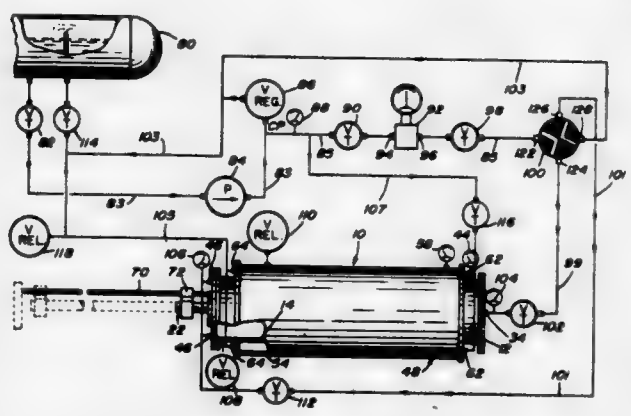
(g) damping means operably connected between said attachment means and said force transmitting means.

4,507,952

APPARATUS FOR TESTING FLOW METERS

Jean-Paul Mathieu, Longueuil, Canada, assignor to ICG Gasbec Inc., Ville Ste-Catherine, Canada

Filed Sep. 14, 1982, Ser. No. 418,058
Int. Cl.³ G01F *25/00*
U.S. Cl. 73—3 **2 Claims**



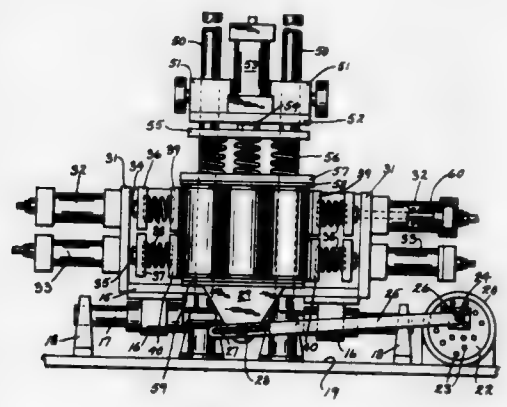
1. An apparatus for proving a flow meter comprising a measuring cylinder and a measuring piston traveling in the cylinder, first port means at one end of the cylinder, second port means at the other end of the cylinder, an indicator rod fixed to the piston and extending axially of the cylinder and through one end thereof, a calibrated scale fixed to said one of end ends of the cylinder and extending parallel and adjacent the path of the indicator rod, a jacket surrounding said cylinder, an inlet port and an outlet port communicating with said jacket, means for alternately communicating a meter to be proved in series with said cylinder ports, means for passing a liquid under pressure for proving the meter, firstly through the jacket for equalizing the temperature of the elements of the prover and then through the meter to be proved and one of the ports in the cylinder on one side of the piston, thus displacing the piston a distance in the cylinder for comparing the indicated calibration on the scale and the reading on the meter, wherein second valve means are provided for selectively circulating the liquid after the pressure has been increased through said jacket, and port means are provided on the jacket communicating with a line returning directly to a reservoir.

4,507,953

ABRASION TESTING MACHINE

Gaston A. Vandermeerssche, 9240 N. Sleepy Hollow La., Milwaukee, Wis. 53217

Filed Aug. 26, 1982, Ser. No. 411,673
Int. Cl.³ G01N *3/56*
U.S. Cl. 73—7 **16 Claims**



1. A testing apparatus, comprising:

a horizontal platform adapted to support a test specimen;

horizontal force applying means adapted to engage the sides of the test specimen and simultaneously apply continuous pressure to at least two said sides;

vertical force applying means adapted to engage the top of the test specimen and apply pressure thereto; and

means for vibrating one of said platform and vertical force applying means relative to the other.

4,507,954

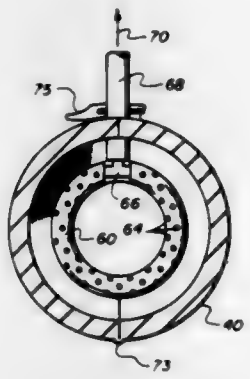
WRAPAROUND USED FOR TESTING TUBING WITH PREMIXED GASES

Johnie R. Boutwell, Houma, La., assignor to Tubing Testors, Inc., Houma, La.

Filed Jun. 27, 1983, Ser. No. 507,688

Int. Cl.³ G01M *3/22*

U.S. Cl. 73—40.7 **6 Claims**



1. A pipe joint testing device for testing the joint integrity of two connected pipe sections, each having a bore pressurized with a test gas which is lighter than air at the joint during testing comprising:

a. an annular envelope having means for affixing the envelope to the annular external joint of two pipe sections being tested;

b. an annular header positioned within the envelope and above the joint being tested during operation and having gas inlet openings which are radially spaced about the joint being tested so that the openings can communicated circumferentially with the envelope above the joint to receive gas leaking from the joint at any radial position of the joint; and

c. suction connection means for drawing gas from the envelope through the openings into the header so that test gas leaking from any radial position of the external annular pipe joint will rise and enter the header.

4,507,955

PIPETTE FOR CARRYING OUT AND DETERMINING SEDIMENTATION RATES, IN PARTICULAR THAT OF BLOOD

Walter Haase, Gelliehäuser Strasse 6, D-3407 Gleichen-Benniehausen, Fed. Rep. of Germany

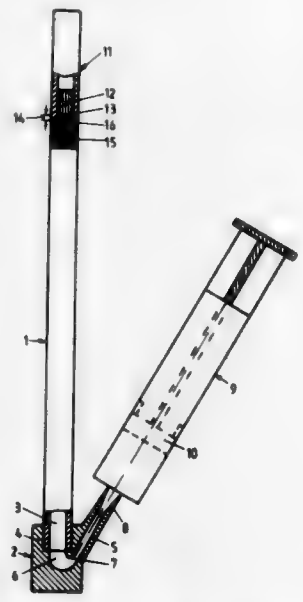
Filed May 4, 1983, Ser. No. 491,272

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217123

Int. Cl.³ G01N *15/04*

U.S. Cl. 73—61.4 **7 Claims**

1. A pipette for carrying out and determining sedimentation processes, in particular blood sedimentation, including a normally upright transparent tube including at its lower end portion means for receiving a syringe containing the material to be introduced and sedimented, said tube having inside, in the region of its upper end, a filter insert, characterized in that, for filing the tube without a meniscus, said filter is permeable to gas and to the liquid in the material to be sedimented, said filter



insert substantially filling the entire free cross-sectional area of the tube.

4,507,956

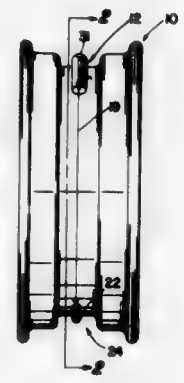
CIRCUIT MOUNTING APPARATUS

Lawrence Schlesinger, Durham; Dale F. German, Semora, and Donald L. Richards, Durham, all of N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 9, 1983, Ser. No. 530,558

Int. Cl.³ G01L *19/00*; B60C *23/00*

U.S. Cl. 73—146.5 **9 Claims**



1. Apparatus for mounting a tire condition monitoring element within a tire mounted on a wheel comprising a cylindrical housing formed into an arcuate shape having an inside radius substantially corresponding to the radius of the drop center portion of the wheel, and means for mounting said element to said housing, said housing including resilient means encircling said wheel and applying a sufficient tensile force to said housing to normally maintain it in contact with the surface of said drop center portion while permitting radial and lateral displacement of said housing within said drop center portion when engaged by an object inserted into the drop center portion.

4,507,957

APPARATUS FOR TESTING EARTH FORMATIONS

Marshall N. Montgomery, and John M. Michaels, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 16, 1983, Ser. No. 495,313

Int. Cl.³ E21B *49/10, 47/00*

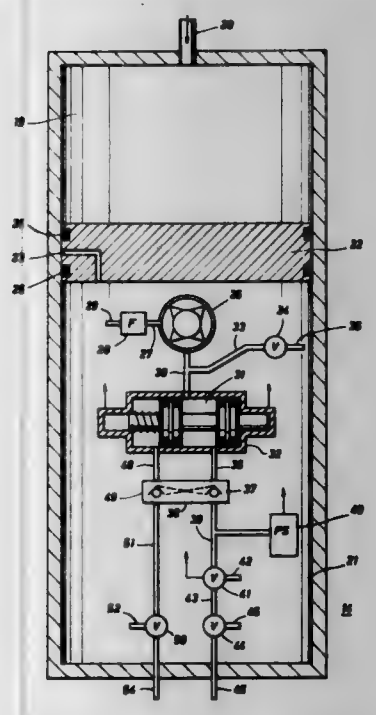
U.S. Cl. 73—151 **16 Claims**

12. Apparatus for collecting samples of the fluid content of earth formations traversed by a borehole, said apparatus in-

cluding an elongated body member adapted to traverse said borehole, comprising:

fluid sample collecting means cooperatively arranged on said body member for receiving a sample of said fluid content;

probe means cooperatively arranged on said body member



for fluidly connecting said body member with said earth formations;

a fluid passage connecting said probe means with said sample collecting means; and

means for controlling the flow pressure level within said fluid passage to at least a predetermined proportional relation to hydrostatic pressure.

4,507,958

SURVEYING OF A BOREHOLE FOR POSITION DETERMINATION

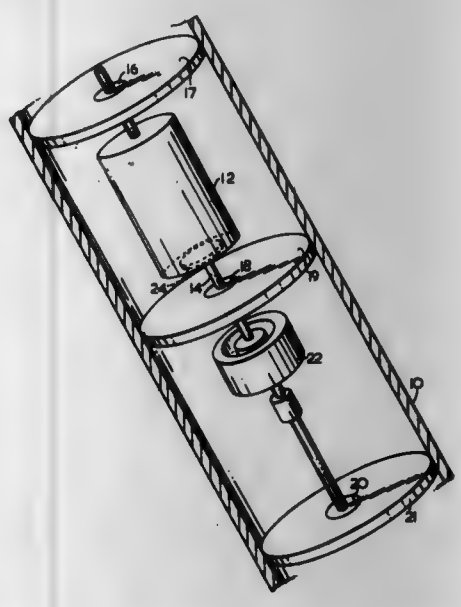
Anthony W. Russell, and Michael K. Russell, both of Cheltenham, England, assignors to NL Sperry-Sun, Inc., Stafford, Tex.

Filed Sep. 8, 1983, Ser. No. 530,184

Claims priority, application United Kingdom, Sep. 11, 1982, 8225968

Int. Cl.³ E21B *47/022*

U.S. Cl. 73—151 **12 Claims**



1. A method of surveying a borehole comprising positioning at the mouth of the borehole a survey instrument having a casing and a three-axis rate gyroscope unit mounted within the casing; sensing at least two components of gravity in at least two mutually transverse directions with respect to the survey instrument by means of a gravity sensor unit; moving the survey instrument along the borehole with the start and finish of the run being at the mouth of the borehole or at some known reference along the path of the borehole; sensing the rates of rotation about three non-coplanar axes at a series of locations along the length of the borehole by means of the rate gyroscope unit; and calculating the position of the borehole at each measuring location by determining an initial set of direction cosines from the gravity components sensed at the mouth of the borehole and an assumed initial value of the azimuth angle, and incrementing these values using the rates of rotation sensed by the rate gyroscope unit to obtain the sets of direction cosines at subsequent measuring locations.

4,507,959

AIRCRAFT INSTRUMENTS

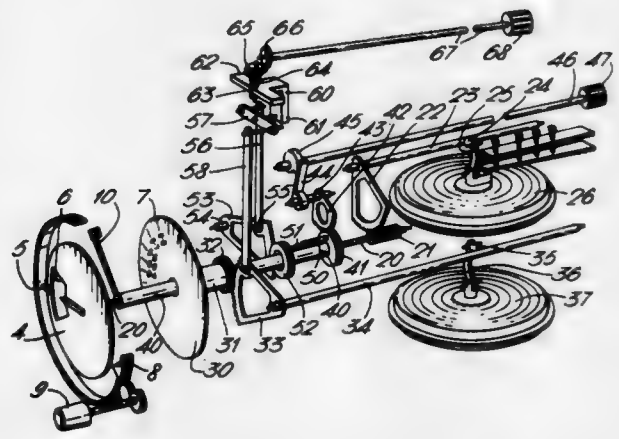
David J. Brazener, Cheltenham, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Nov. 8, 1982, Ser. No. 440,159

Claims priority, application United Kingdom, Nov. 24, 1981, 8135358

Int. Cl.³ G01P *5/16*

U.S. Cl. 73—182 **7 Claims**



1. An instrument having first and second scales, an indicator member mounted for movement along said first and second scales in accordance with a first input variable, said second scale being mounted for displacement with respect to said first scale in accordance with a second input variable, said instrument including: marker means that is settable manually along at least said second scale to represent a reference value against which said indicator member is movable, a first engagement member, means connecting said first engagement member with said marker means such that the disposition of said marker means changes with change in disposition of said first engagement member, a second engagement member, means coupling said second engagement member with said second scale such that said second engagement member is displaced in accordance with said second scale, said second engagement member being arranged to contact said first engagement member and thereby displace said marker means only for values of said second input variable beyond a predetermined value, said second engagement member being free for displacement without contacting said first engagement member for other values of said second input variable, manual adjustment means, and means coupling said manual adjustment means with said second engagement member such that the disposition of said second engagement member relative to said second scale is readily adjustable manually so as thereby to alter the relative disposition of said first and second engagement members and hence the said predetermined value beyond which movement of said second engagement member causes movement of said first engagement member, said manual adjustment means comprising a mechanical linkage, means coupling one end of said mechanical linkage with said second engagement member, means coupling the other end of said mechanical linkage with

said second scale; said mechanical linkage including means for displacing the said one end without displacing the said other end, said mechanical linkage including two links, means coupling one of said links to said second engagement member and the other of said links to the displaceable scale, said two links extending substantially parallel to one another, a transverse arm, means pivotally connecting said arm with said links, a mounting member, means pivotally mounting said transverse arm intermediate its ends with said mounting member, and means mounting said mounting member for manual displacement in a direction substantially parallel to said two links.

4,507,960

SPEED INDICATOR

Walter Hufnagel, Glasshütten, and Alois Kreuz, Schmitten, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

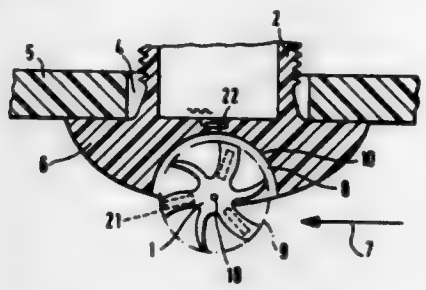
Filed Oct. 11, 1983, Ser. No. 540,470

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 3238433

Int. Cl.³ G01C *21/12*

U.S. Cl. 73—187

19 Claims



19. In a speed indicator for water vehicles comprising a vane wheel transducer, and a vane wheel rotatably mounted on a journal and exposed to the extent of one half thereof to flow of the water, the improvement wherein

the vane wheel has vanes, the vanes entering the flow defining flow incoming sides and flow outgoing sides,

the vanes of the vane wheel being formed completely over said flow outgoing sides with the profile of a convex, streamlined airplane wing surface.

4,507,961

LEVEL GAUGE FOR LIQUEFIED GAS TANKS, WITH DIAL-AND-HAND INDICATOR ACTUATED BY AN AXIALLY MOVABLE DRIVE COUPLED WITH A SINGLE INTERNAL MAGNET

Fabio Stradella, 1/8 Via J. Ruffini, 16032 Camogli (Genova), Italy

Filed Dec. 7, 1982, Ser. No. 447,514

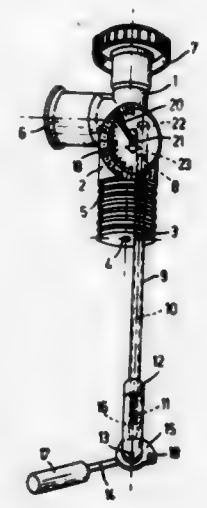
Claims priority, application Italy, Dec. 7, 1981, 12701 A/81

Int. Cl.³ G01F *23/12*

U.S. Cl. 73—317

6 Claims

1. A gauge for monitoring the level of a liquid, which comprises a housing; rod means mounted for vertical movement within said housing and operable to move as the level of the liquid changes; a vertically disposed, elongated magnet fixedly mounted at an upper end of said rod means; a spindle supported by said housing and mounted for rotation about a horizontal axis, said horizontal axis being spaced from said rod means; an indicator means operatively connected to said spindle; and operating means movable between first and second positions for rotating said spindle in response to movement of said rod means, said operating means comprising an elongated nonmagnetic ferrous member, and an arm connecting said spindle to said ferrous member; said magnet being operable to hold said ferrous member by magnetic attraction and thereby move said



operating means between said positions in accordance with said movement of said rod means to thereby rotate said spindle.

4,507,962

DIGITAL BAROMETRIC ALTIMETER

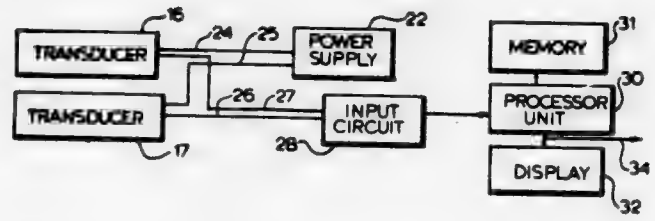
Gerard J. Hitt, Glendale Heights; Victor A. Nowakowski, Lake Zurich, and Walter R. Warren, Elmhurst, all of Ill., assignors to AAR Corp., Elk Grove Village, Ill.

Filed Sep. 8, 1981, Ser. No. 300,230

Int. Cl.³ G01L *7/00*

U.S. Cl. 73—384

14 Claims



1. A digital altimeter comprising a pressure transducer for developing an electrical signal in response to air pressure, said transducer being supported on an exterior air frame wall and connected to a pitot tube mounted in a housing supported on the exterior side of said air frame wall, filter means connected to said transducer for filtering noise from the electrical signal developed by said transducer, said filter means comprising a recursive adaptive stochastic filter, an analog-to-digital converter for converting said signal to digital form, and a processor unit connected to said analog-to-digital converter for developing a digital signal representative of the altitude corresponding to the pressure sensed by said transducer, said transducer being located in direct proximity to a pitostatic port.

4,507,963

TACHOGRAPH COVER DOOR ASSEMBLY

Bernd Donner, Villingen-Schwenningen, and Roland Siefert, Bad Dürrheim, both of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,557

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142677

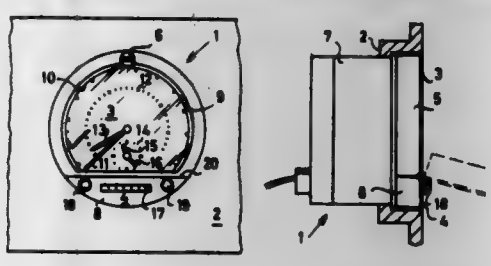
Int. Cl.³ G01D *11/24, 15/00*; E05D *7/00, 11/10*

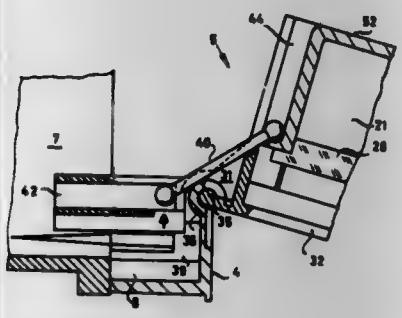
U.S. Cl. 73—431

4 Claims

1. A tachograph assembly comprising: casing means; a cover member pivotally supported on said casing means for movement between an open and a closed position, said cover member comprising a first part adapted to engage said casing means to effect centering of said cover member relative to said casing means and a second part which is connected to said first part; operative recording means physically located in both said

casing means and said cover member arranged to be placed in cooperative connection when said cover member is in the closed position; a casing extension connected with said casing means; first pivotal bearing means formed on said first part of said cover member; second pivotal bearing means formed on said casing extension; said second pivotal bearing means having an outer radius corresponding to the inner radius of said





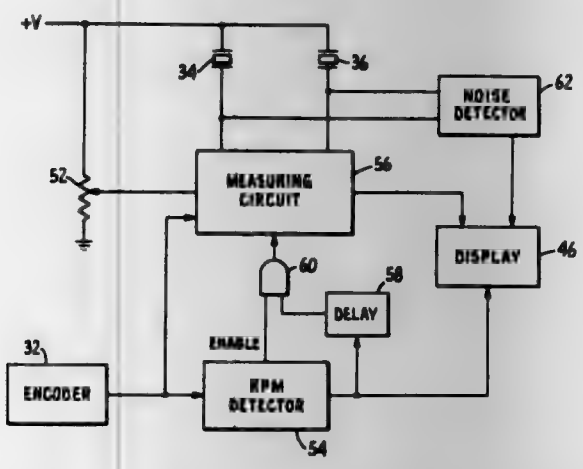
first pivotal bearing means; and bearing spindle means formed on said second part of said cover member cooperatively engaging said second pivotal bearing means for enabling pivotal motion of said cover member relative to said casing means; said first and said second pivotal bearing means being adapted to be placed in cooperative relationship with each other prior to placement of said second part of said cover member in said assembly.

4,507,964

SLOW SPEED DYNAMIC WHEEL BALANCER

Willy Borner, 21096 Grenola Dr., Cupertino, Calif. 95014, and Bernie F. Jackson, 23485 Summit Rd., Los Gatos, Calif. 95030

Filed Nov. 29, 1982, Ser. No. 444,885
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **37 Claims**



1. A method for dynamically determining the imbalance of a combined wheel and tire for a motor vehicle, comprising the steps of:

mounting the wheel on a rotatable shaft;

manually effecting rotation to the wheel and the shaft to inpart a velocity no greater than 180 rpm;

allowing wheel and shaft to coast and slow down;

measuring forces transmitted by the shaft while said shaft and wheel are coasting at a measuring velocity no greater than 180 rpm;

determining imbalance data related to the measured forces; and

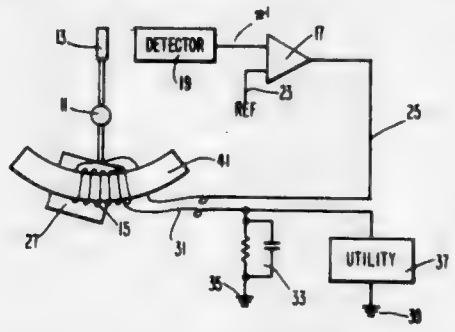
displaying the imbalance data.

4,507,965

DETECTOR FOR DETERMINING BOTH FORCES ON AND POSITIONS OF A HOST DEVICE

Leo M. Stratton, West Chester; Kenneth J. Sipple, Chester Heights, both of Pa., and Mario B. Tatonetti, Voorhees, N.J., assignors to Columbia Research Laboratories, Woodlyn, Pa.

Filed Sep. 24, 1982, Ser. No. 422,749
Int. Cl.³ G01P *15/13*; G01C *9/12*
U.S. Cl. 73—517 B **4 Claims**



1. A detector means for use in determining information about forces applied to, and alternatively positions of, a device with which said detector means is used comprising in combination: mass member means having length, width and depth dimensions; first and second magnetic flux generating means disposed to have a gap therebetween; magnetic flux conducting means disposed within said gap; electrical coil means formed to be movable within said gap and formed to surround said magnetic flux conducting means when moved within said gap; shaft means having first and second protrusions and formed to hold said electrical coil so that its longitudinal axis is substantially perpendicular to said first and second protrusions and formed to hold said mass member means so that its depth dimension is substantially perpendicular to said protrusions, said shaft means further formed to hold said electrical coil means and said mass member means at opposite ends of said shaft means and for rotational movement around said protrusions; first and second ball bearing assemblies formed to fit respectively over said first and second protrusions and formed so that while each of said protrusions is held in substantial lateral and vertical restraint, each of said protrusions is free for rotational movement within minimal frictional restraint, said first and second ball bearing assemblies disposed to hold said shaft means at said protrusions so that said electrical coil means will be rotationally moved through at least a part of said magnetic flux in response to any positioning of said mass member means; and detection means formed and disposed to respond to every position of said mass member means to provide electrical current to said electrical coil to effect positioning said mass member means and to detect said electrical current as a measure of force applied to, and alternatively positions of, a device with which said detector means is used.

4,507,966

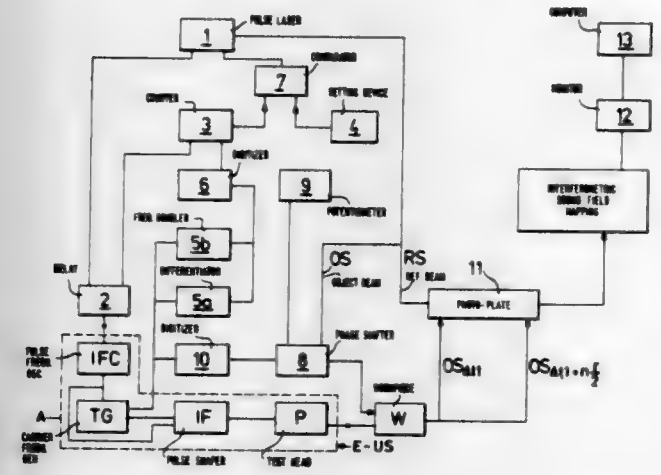
METHOD AND MEANS FOR IMAGING SOUND WAVES

Horst-Artur Crostack, Beringweg 2, D 5860 Iserlohn, Fed. Rep. of Germany

Filed Oct. 3, 1982, Ser. No. 438,958
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143811; Nov. 4, 1981, 8132276[U]
Int. Cl.³ G03H *3/00*
U.S. Cl. 73—603 **22 Claims**

1. A method for imaging sound fields using optical holographic interferometery, comprising; applying sound pulses to an object to be imaged to form sound fields, illuminating the

sound fields with laser pulses of periods shorter than the periods of the sound pulses to form object beams, forming reference beams for interference with the object beams, holographically superimposing two object beams which originate at different moments in time from the object to be mapped into an interferogram, the step of illuminating occurring for two



pulses of the sound field to be imaged at a minimum value and a maximum value, at different moments in time, and changing the relative phase of the laser pulse and the reference beam which interferes with the illumination between the individual illuminations by a preselectable amount which deviates from π and which suppresses the optical or acoustical noise in the resulting interferogram.

4,507,967

METHOD AND APPARATUS FOR THE NON-DESTRUCTIVE TESTING OF MATERIALS BY THE USE OF ULTRA-SONIC WAVES

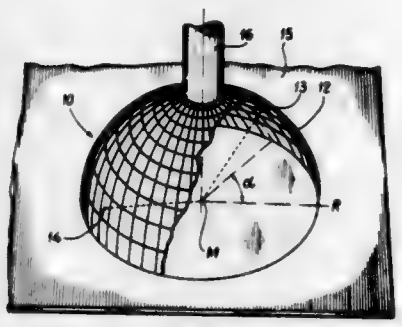
Robert J. Schliekelmann, Amstelveen, Netherlands, assignor to Fokker BV, Schiphol-Oost, Netherlands

Filed Feb. 16, 1983, Ser. No. 467,136

Claims priority, application Netherlands, Feb. 16, 1982, 8200589

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—621 **5 Claims**



1. A method for the non-destructive, qualitative testing of the properties of materials by the use of ultrasonic waves, comprising the steps of:

a. transmitting ultrasonic waves towards the material to be tested at varying angles of incidence and from different directions by means of a plurality of transmitters;

b. receiving the transmitted waves reflected by the material by means of a plurality of receivers; and

c. varying the angle and direction of incidence of the ultrasonic waves by activating the transmitters and receivers in a predetermined way;

said transmitters and receivers being positioned in a semi-spherical arrangement relative to the material, the center of said semi-spherical arrangement coinciding with the point of incidence of the ultrasonic waves on the material to be tested.

4,507,968

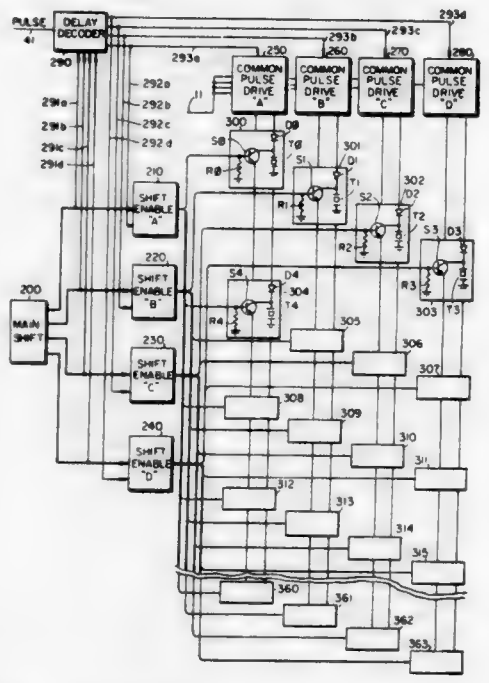
ULTRASOUND VISUALIZATION SYSTEMS

Michael K. Roberts, Arvada; Richard A. Ottosen, Denver, and Matthew L. McConnell, Boulder, all of Colo., assignors to Bion Corporation, Westminster, Colo.

Division of Ser. No. 204,589, Nov. 6, 1980, Pat. No. 4,381,675. This application Apr. 4, 1983, Ser. No. 481,816

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—626 **6 Claims**



1. Ultrasonic visualization head circuitry comprising:

(a) a linear array of transducers, said array including n sub-arrays periodically arranged within said array such that for every transducer in each sub-array, the next transducer in that sub-array is the nth next transducer in said array;

(b) n shift enable means for enabling a transducer in one of said sub-arrays, and for sequentially shifting the enabled transducer to the next transducer in said sub-array, each of said n shift enable means corresponding to each of said n sub-arrays;

(c) mean shift means for sequentially activating shifts by said n shift enable means; said main shift means activating each of said shift enable means in a periodic fashion such that at any time the n transducers enabled by said shift enable means are adjacent; and

(d) n pulse driver means for exciting enabled transducers in one of said sub-arrays; each of said pulse driver means corresponding to each of said sub-arrays.

4,507,969

ULTRASONIC LIQUID JET PROBE

Borislav B. Djordjevic, Columbia, and Stephen C. Traugott, Glen Arm, both of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 15, 1983, Ser. No. 475,583

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—644 **8 Claims**

1. An ultrasonic liquid jet probe for coupling transducer-emitted ultrasonic waves with a structure comprising:

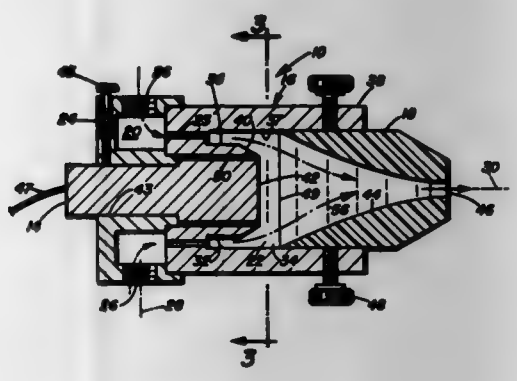
a housing disposed about said transducer, said transducer having an emitting/receiving end, and said housing comprising:

(a) inlet means comprising at least two inlet ducts spaced symmetrically about said housing for receiving liquid under pressure from a source thereof;

(b) first and second chambers defined in the interior of said housing and in fluid communication with each other through a plurality of circumferentially spaced conduits, said first chamber being arranged to receive said liquid from said inlet ducts, said conduits being disposed up-

stream of said emitting/receiving end of said transducer and being aligned parallel to said liquid jet column and elongated sufficiently and of sufficient number for imparting a substantially laminar flow to said liquid flowing from said first to said second chambers; and,

(c) a nozzle configured for receiving said liquid flowing through said second chamber, shaping the flow of said liquid into a liquid jet column to be discharged from said



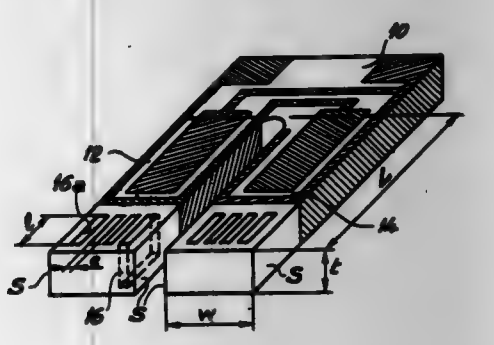
nozzle and guiding said ultrasonic waves between said transducer and said liquid jet column, said nozzle being disposed sufficiently close to said emitting/receiving end of said transducer for providing an obstruction-free ultrasonic path between said emitting/receiving end of said transducer and said nozzle and enabling said ultrasonic waves emitted by said transducer to be guided to said liquid jet column by only said nozzle.

4,507,970

PRESSURE SENSITIVE ELEMENT AND A SENSOR COMPRISING SUCH AN ELEMENT

Rudolf Dinger, St-Aubin, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Jul. 13, 1983, Ser. No. 513,520
Claims priority, application France, Jul. 13, 1982, 82 12532
Int. Cl.³ G01L *7/00;* H01L *41/10*
U.S. Cl. 73—702 **3 Claims**



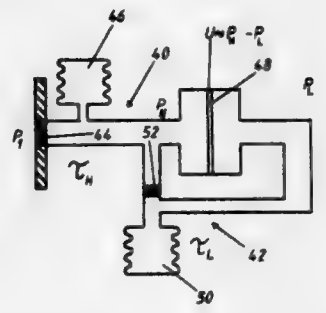
1. A sensitive element for use in a pressure sensor, comprising a tuning-fork of piezoelectric material having a pair of arms, each arm having a pair of parallel flanks, said tuning fork being provided with electrodes to vibrate said arms in the flexion mode in a direction substantially at right angles to said flanks, wherein the free end portion of each arm is provided with at least one elongated slot extending parallel to said flank such that the lateral surfaces thereof will also be substantially at right angles to the direction of motion of said arms, said slot extending right through the thickness of the arms.

4,507,971

HYDRAULIC FILTER FOR ELIMINATING SLOW PRESSURE FLUCTUATIONS

Josef Vachek, Überlingen-Hödingen, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Bodensee, Fed. Rep. of Germany

Continuation of Ser. No. 287,937, Jul. 29, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 593,425
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028657
Int. Cl.³ G01L *7/08, 9/00*
U.S. Cl. 73—707 **4 Claims**



1. An apparatus for measuring a range of pressure fluctuations in a liquid subjected to pressure fluctuations within said range and outside of said range comprising,

a differential pressure transmitter,

a first low-pass hydraulic filter including a first hydraulic accumulator and a first restrictor, said accumulator communicating with one side of said transmitter and through said first restrictor to the liquid subjected to pressure fluctuations, said first filter blocking the passage of pressure fluctuations to said transmitter above a predetermined frequency,

a second low-pass hydraulic filter including a second hydraulic accumulator and a second restrictor, said accumulator communicating directly with the other side of said transmitter, and with said one side of said transmitter and said first accumulator through said second restrictor, and second filter blocking the passage of pressure fluctuations to said transmitter below a predetermined frequency lower than that of said first filter,

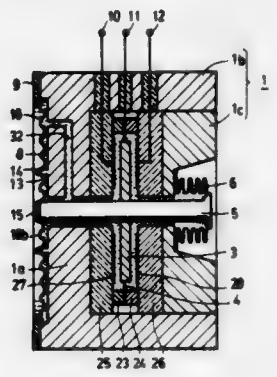
wherein said transmitter measures the range of pressure fluctuations between the frequencies of said filters and suppresses fluctuations above and below said range.

4,507,972

PRESSURE GAUGE

Saichiro Morita, Tokyo, Japan, assignor to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,699
Claims priority, application Japan, Aug. 5, 1980, 55-106725
Int. Cl.³ G01L *19/04, 9/12*
U.S. Cl. 73—708 **9 Claims**



1. A pressure gauge comprising:

a tubular body;

a pressure receiving element attached to one end of said

body for isolating the interior thereof from the outside and for receiving an external pressure;

an end plate covering the other end of said tubular body, said end plate having a through hole formed centrally therein, and said end plate also having an outwardly protruding flat-topped circular ridge formed on the outer surface thereof concentrically with said through hole;

a temperature compensating diaphragm for isolating the interior of said tubular body from the outside, said diaphragm having a marginal portion which is welded to the other end of said body such that the region of said diaphragm radially inward of said marginal portion is spaced from the outer surface of said end plate, said diaphragm having a central flat portion surrounded by a plurality of concentric circle corrugations, the crests of a plurality of said concentric circle corrugations being formed flat, only one of said plurality of flat crests being welded to the flat top of said circular ridge of said end plate thereby to fix the position of said one flat crest relative to the outer surface of said end plates, and the others of said flat crests being free to move relative to said outer surface of said end plate;

a coupling shaft disposed in said body and extending through said through hole, one end of said shaft being coupled to said pressure receiving element and the other end of said shaft being affixed to said central flat portion of said diaphragm;

detecting means coupled to said shaft for providing a signal in response to the displacement of or a force received by said coupling shaft; and

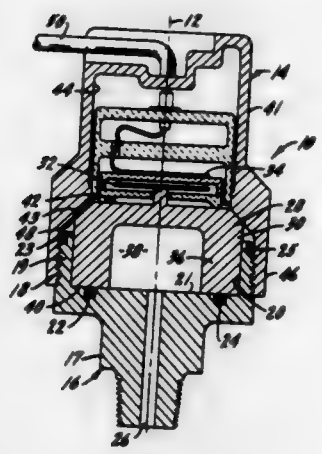
a liquid sealed in said tubular body.

4,507,973

HOUSING FOR CAPACITIVE PRESSURE SENSOR

Rodney E. Barr, Cary, N.C., and George E. Kochanek, Glen Ellyn, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 31, 1983, Ser. No. 528,281
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—724 **7 Claims**



1. A housing for a capacitive sensor used in the measurement of pressure in a fluid, which capacitive sensor includes:

a flexible ceramic diaphragm including a reference surface, a bottom surface, sidewalls, and a chamfered shoulder between said reference surface and sidewalls, and a pressure chamber open at the bottom surface, the reference surface being deflectable in response to a force acting in said pressure chamber;

a capacitive sensor positioned so that its capacitance is varied as the diaphragm reference surface is deflected;

wherein said housing comprises a lower member and an upper member connected to each other and enclosing the sensor;

said housing lower member defining a recess for receiving the diaphragm sidewalls, and further defining a channel communicating with the diaphragm pressure chamber; and

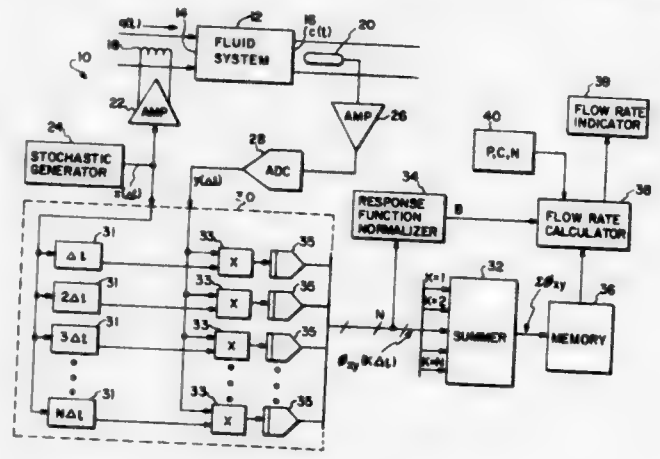
said housing upper member defines first and second portions of different diameters, and a shoulder between the first and second portions of different diameters, which shoulder abuts the chamfered shoulder of said flexible diaphragm.

4,507,974

METHOD AND APPARATUS FOR MEASURING FLOW

Mark L. Yelderman, Menlo Park, Calif., assignor to The Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Filed Apr. 21, 1983, Ser. No. 487,334
Int. Cl.³ G01F *1/70, 1/68*
U.S. Cl. 73—861.06 **20 Claims**



1. A method for measuring flow of a fluid between a system entry point and a system exit point comprising:

applying an indicator in the form of a known simulated or actual stochastic excitation signal to said fluid at said system entry point;

sensing time-dependent response of said fluid to said excitation signal at said system exit point to obtain a response signal;

cross-correlating said excitation signal with said response signal to construct a cross-correlation function signal;

extracting a signal representative of said flow rate from said cross-correlation function signal and a knowledge of indicator quantity of said excitation signal; and

presenting said flow representative signal to a signal utilization means.

4,507,975

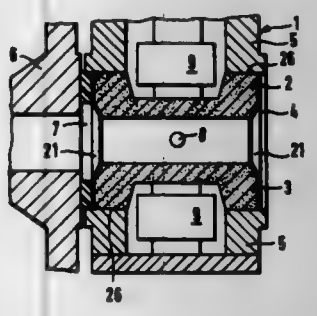
MEASURED-VALUE SENSORS FOR MAGNETIC-INDUCTIVE FLOWMETERS

Franz Bittner, Moers, Fed. Rep. of Germany; Boudewijn J. Poortman, Dordrecht, Netherlands; Kristian Rademacher-Dubbick, Duisburg, Fed. Rep. of Germany; Abram K. Roskam, Sleeuwijk, Netherlands; Udo Stevens, Duisburg, Fed. Rep. of Germany, Wouter T. Tromp, Sliedrecht, Netherlands; Walter Beisler, Benshein; Seigfried Bock; Hermann Bertsch, both of Mannheim, all of Fed. of Germany, assignors to Rheometron AG, Basel, Switzerland

Continuation-in-part of Ser. No. 432,955, Sep. 28, 1982, abandoned. This application Dec. 29, 1982, Ser. No. 454,156
Claims priority, application European Pat. Off., Nov. 27, 1981, 81201316.7
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **16 Claims**

1. In a measured-value sensor for a magnetic-inductive flowmeter, comprising an electrically insulating ceramic measuring tube which is arranged inside a steel housing and provided on two opposite sides with measuring electrodes which pass radially through the wall of the measuring tube and with magnet

coils arranged on the wall, the improvement wherein said measuring tube is composed of a tight burnt ceramic material



into which shafts of the measuring electrodes are sintered in a leakproof manner.

4,507,976

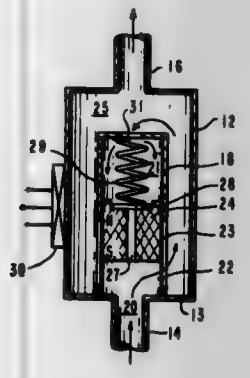
FLOW METER WITH HALL EFFECT SENSOR AND METHOD

William Banko, Bronx, N.Y., assignor to Morris Shamos, Bronx and Henry E. Allen, Mamaroneck, both of, N.Y.

Filed Jul. 14, 1982, Ser. No. 398,215

Int. Cl.³ G01F *1/24*

U.S. Cl. 73—861.54 **6 Claims**



1. A fluid flow meter comprising:

a fluid tight housing, including an inlet and an outlet;

a hollow liner mounted within said housing including at least one slot, said slot for receiving fluid from said inlet and communicating said fluid to said outlet;

a magnetic piston slidably positioned within said liner for movement in response to the flow of fluid from said inlet through said slot independent of gravity and spatial orientation; and

transducer means mounted on said housing in substantially side-by-side relation to said piston for producing an electrical signal corresponding to the position of said piston in said liner.

4,507,977

LIQUID METERING AND TRANSFER VALVE ASSEMBLY

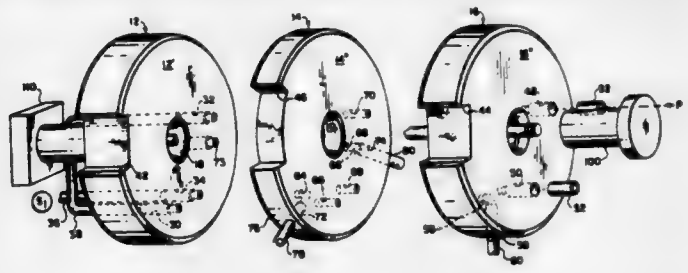
Pedro P. Cabrera, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 312,218, Oct. 19, 1981, Pat. No. 4,445,391. This application Jun. 9, 1983, Ser. No. 502,672

Int. Cl.³ B01L *3/02*

U.S. Cl. 73—864.12 **10 Claims**

1. A liquid metering and transfer valve assembly for use in providing at least a pair of segmented precise samples from a single liquid sample source, the volume of one segmented sample being different than the volume of the other segmented sample of said pair, said valve assembly being operable between a load and a delivery condition and comprising a pair of spaced outer valve elements and a movable inner valve element sandwiched between said outer valve elements, said inner valve element having opposite faces sealingly frictionally engaged with adjacent faces of said outer valve elements, said inner and outer valve elements having first and second segmenting passageway means formed therein for receiving liquid sample therein from a source thereof, the contents of said first and second segmenting passageway means being isolatable one from the other and each respectively combined with a predetermined volume of diluent and delivered with said volume respectively to different preselected exterior locations, at least one of said outer valve elements being stationary, an aspirator probe coupled to the other of said outer valve elements, move-



ment of said inner valve element effecting the segmenting of the liquid sample, the other of said outer valve elements is movable independently relative to the inner valve element and a second aspirator probe is coupled to said other of said outer valve elements spaced angularly from said first aspirator probe, said other of said outer valve elements being selectively movable for placement of one of said first and second aspirator probes in communication with said first and second segmenting passageway means.

4,507,978

STARTER

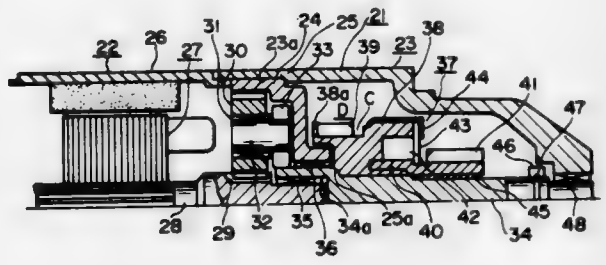
Toshinori Tanaka, and Akira Morishita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,189

Claims priority, application Japan, Oct. 30, 1981, 56-163437[U]

Int. Cl.³ F02N *11/00*; F16H *1/28, 3/44*

U.S. Cl. 74—7 E **6 Claims**



1. A starter having a motor (21) and a planetary gear deceleration means (30), comprising:

a rotary shaft (28) rotated by said motor;

an output rotary member (34);

first bearing means (35) for supporting said rotary shaft;

second bearing means (36) for supporting said output rotary member, said second bearing means being disposed so as to overlap said first bearing means along a radial direction of said rotary shaft;

an overrunning clutch (37) having an engaging portion (C); and

a shift lever (39) located in said engaging portion, said shift lever and said engaging portion being disposed in a space at an outer periphery of said first and second bearing means so as to at least partially overlap said first and second bearing means along said radial direction of said rotary shaft.

4,507,979

ARRANGEMENT FOR ROTATING THE SHAFT OF AN ELECTRICAL COMPONENT

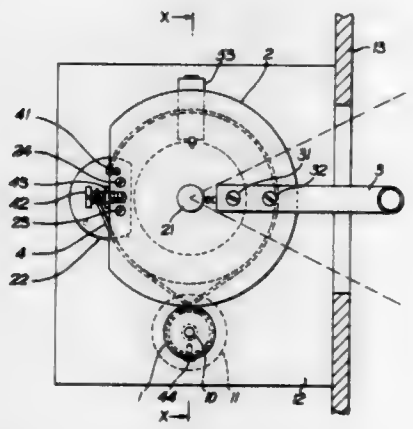
Tadeusz Zebrowski, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,489

Claims priority, application United Kingdom, Mar. 25, 1981, 8109380; Nov. 20, 1981, 8134985

Int. Cl.[3] **F16H** *27/02, 21/44;* **G05G** *1/08*

U.S. Cl. 74—89.22 **15 Claims**



1. An arrangement for frictionally coupling a driving shaft to a parallel driven shaft, comprising

a frame,

first and second shafts,

means for mounting said shafts in a laterally fixed relationship with respect to said frame for rotation about parallel axes spaced a given distance apart,

first and second pulleys respectively mounted to said first and second shafts, said first pulley having a rim having a first rim radius and a circumferential groove having a first groove radius, said second pulley having a rim having a second rim radius and a circumferential groove having a second groove radius, and

a tensioned cord arranged around said grooves in a figure of eight formation wherein said cord is a single cord which is passed fully around at least one of said pulleys and is fixedly secured to the other pulley,

characterized in that the sum of the radii of said rims equals said given distance,

the tension of said cord biases said rims toward each other so that they are in rolling friction engagement, and

the ratio of said groove radii equals the ratio of the respective rim radii,

whereby said thrusts on said shafts resulting from the coupling is reduced.

4,507,980

LOW VIBRATION-LEVEL REMOTE CONTROL GEARSHIFT LINKAGE FOR MANUAL TRANSMISSION

Taichiro Nishiyama, Musashimurayama, and Shinsaku Tsuji, Atsugi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 30, 1982, Ser. No. 454,614

Claims priority, application Japan, Mar. 1, 1982, 57-30499

Int. Cl.[3] **G05G** *9/16;* **F16M** *13/00*

U.S. Cl. 74—473 R **4 Claims**

1. A remote control gear shift linkage system for a manual type vehicular transmission, comprising:

a manually operable control lever having upper and lower ends,

a support member for supporting said control lever at an intermediate portion thereof between said upper and lower ends so that said control lever is swingable at said intermediate portion,

means for resiliently mounting said support member to a vehicle body,

a control rod connected between said lower end of said control lever and the transmission, for transmitting movement of said control lever to the transmission to effect a gear change of the transmission, a support rod



connected between said support member and a case of the transmission, and

mass means fastened to a portion of said support rod for altering the resonant frequency of said support rod.

4,507,981

TRANSMISSION SHIFT CONTROL MECHANISM

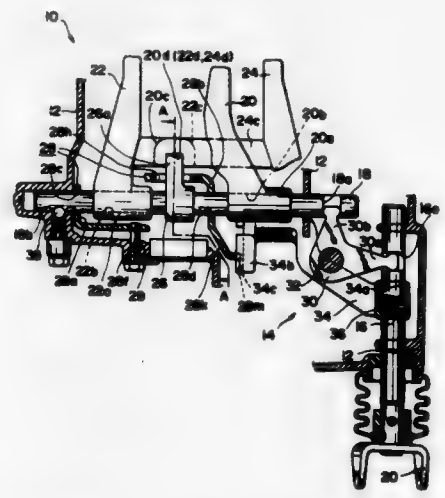
Kazuyoshi Hiraiwa, Atsugi, and Saburou Yamasaki, Sagamihara, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed May 28, 1982, Ser. No. 383,257

Claims priority, application Japan, Jun. 1, 1981, 56-82546

Int. Cl.[3] **G05G** *5/10, 9/16*

U.S. Cl. 74—477 **9 Claims**



1. A transmission shift control mechanism comprising a housing, a control input shaft rotatable and slidable in a wall of said housing, a fork shaft substantially normal to said control input shaft and rotatable and slidable in the wall of said housing, a plurality of shift forks movable between predetermined neutral and shifting positions and having slots arranged side-by-side in a predetermined array when said shift forks are in the neutral positions thereof, a selector lever secured to said fork shaft to move together therewith and having a selector finger movable in said slots in response to rotary movement of said fork shaft in response to rotary movement of said fork shaft so as to selectively engage in one of said slots, said selector lever being operable to shift a selected one of said shift forks into the corresponding shifting position through movement along the axis of said fork shaft together with same, an interlock member for preventing simultaneous shifting of two of said shift forks, said interlock member being mounted on said fork shaft and drivingly connected to said selector lever for rotation with said selector lever but held axially stationary of said fork shaft relative to said housing while allowing axial movement of said selector lever relative to said interlock member, a control arm having a hub portion at one end thereof mounted on said control input shaft for rotation therewith and

an opposite end directly attached to an arm of said interlock member for translating rotary movement of said control input shaft into rotary movement of said selector lever and said fork shaft, and means for translating axial movement of said control input shaft into axial movement of said fork shaft and said selector lever, said control arm being operable to rotate the selector shaft in response to rotation of the control input shaft.

4,507,982

STEERING COLUMN ASSEMBLY

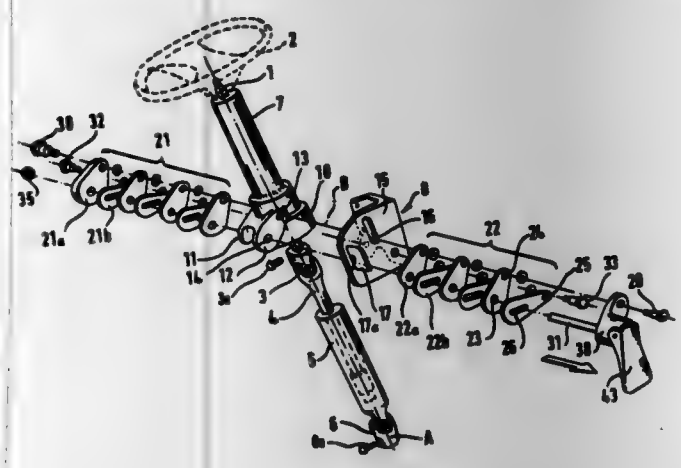
Robert Turner, Rayleigh, and Robert A. Seabrook, Billericay, both of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 11, 1982, Ser. No. 348,115

Claims priority, application United Kingdom, Feb. 13, 1981, 8104541

Int. Cl.³ B62D *1/18;* G05G *5/16*

U.S. Cl. 74—493 7 Claims



1. A steering column assembly comprising a column part, a support rotatably carrying the column part, a bracket carrying the support and adapted to be secured to a fixed member, means securing the support to the bracket to permit relative movement thereof and a lock for fixing the bracket and the support in a desired relative configuration, characterized in that the means securing the support to the bracket comprises a sliding connection which permits relative movement thereof along an axis and about a pivot axis perpendicular thereto, and a guide defining the limits of the range of relative movement of the bracket and the support, wherein the lock comprises (i) a plurality of friction surfaces movable over each other when the support is moved relative to the bracket, (ii) a locking element movable into and out of a locking position to vary the frictional force between the friction surfaces, comprising a link movable relative to a mounting fixed to the bracket and an operating lever pivotably mounted on the mounting and contacting the link, and (iii) means for biasing the locking element into the locking position comprising a spring acting between the link and the mounting, and wherein one friction surface is provided by a first friction plate fixed relative to either one of the support or the bracket, and another friction surface is provided by a second friction plate pivotably connected to the first friction plate and to the other of the support or the bracket, the pivotable connection of the second friction plate allowing relative radial sliding movement of the friction plates.

4,507,983

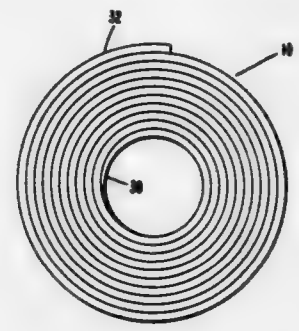
ENERGY STORAGE FLYWHEEL USING LIQUID CRYSTALLINE POLYMER TAPE

Gabor D. Kiss, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,165

Int. Cl.³ F16F *15/30;* B32B *31/30*

U.S. Cl. 74—572 19 Claims



1. A flywheel comprising a diametrically wound unitary tape of a thermotropic liquid crystalline polymer.

4,507,984

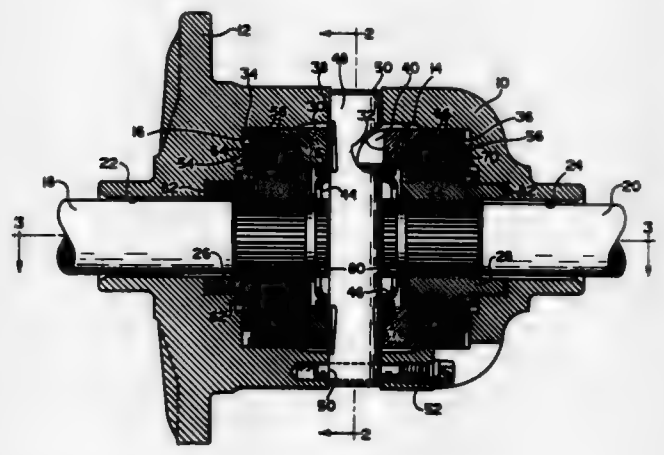
SINGLE SHAFT POSITIVE DRIVE

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1982, Ser. No. 355,971

Int. Cl.³ F16H *35/04*

U.S. Cl. 74—650 22 Claims



1. A positive drive comprising:

(a) an input member adapted to be rotated by driving torque transmitted from a power source to rotate a pair of spaced output members defining an axis of rotation;

(b) a single-piece housing operatively associated with said input member and surrounding both of said output members;

(c) first clutch means having an engaged mode which locks in a predetermined rotational relationship said input member to one of said output members when said one output member is rotating at an angular velocity in the direction of torque transmittal that is equal to or less than a predetermined angular velocity of said other output member and having a disengaged mode which allows said one output member to rotate relative to said input member when said one output member is rotating at an angular velocity in the direction of torque transmittal that is greater than said predetermined angular velocity of said other output member;

(d) second clutch means spaced from said first clutch means and having an engaged mode which locks in a predetermined rotational relationship said input member to said output member when said other output member is rotating at an angular velocity in the direction of torque transmittal that is equal to or less than a predetermined angular veloc-

ity of said one output member and having a disengaged mode which allows said other output member to rotate relative to said input member when said other output member is rotating at an angular velocity in the direction of torque transmittal that is greater than said predetermined angular velocity of said one output member;

(e) a shaft extending through said single-piece housing, oriented approximately perpendicular to said axis of rotation, and located between said first and second clutch means;

(f) first cam means located between said shaft and said first clutch means for moving said first clutch means from said disengaged mode to said engaged mode; and

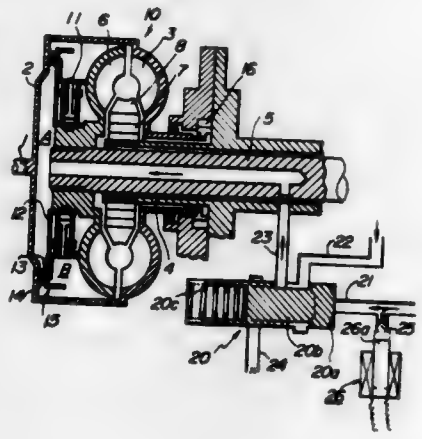
(g) second cam means located between said shaft and said second clutch means for moving said second clutch means from said disengaged mode to said engaged mode.

4,507,985

APPARATUS FOR CONTROLLING A DIRECT DRIVE CLUTCH FOR A VEHICLE AUTOMATIC TRANSMISSION

Yoshiro Morimoto, Yokohama, and Norimasa Kishi, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 31, 1980, Ser. No. 173,884
Claims priority, application Japan, Aug. 4, 1979, 54-99123
Int. Cl.³ B60K *41/06*; F16H *47/00*
U.S. Cl. 74—866 **5 Claims**



1. An automatic transmission comprising:

a torque converter;

a direct drive clutch adapted to directly connect input and output members of the torque converter;

at least one planetary gear unit connected with the output member of the torque converter;

a plurality of frictional elements which effect a changeover of a power transmission path in the planetary gear unit to provide a plurality of shift positions;

hydraulic circuit means having a pressurized oil source, a pressure regulator valve regulating oil pressure supplied from the oil source, a plurality of shift valves selectively supplying the regulated oil pressure to the frictional elements based on a predetermined first relation between vehicle speed and engine torque, and a direct drive clutch control valve selectively supplying the regulated oil pressure to the direct drive clutch,

said direct drive clutch control valve including a valve body controlling a supply of the oil pressure to the direct drive clutch, a hydraulic chamber applying the oil pressure onto the valve body and an oil conduit supplying said regulated oil pressure to the hydraulic chamber through at least one of said shift valves and at least one of said frictional elements, said conduit having a first orifice between said one of the shift valves and said one of the frictional elements, a second orifice between said one of the frictional elements and said hydraulic chamber, and a third drain orifice between said second orifice and said hydraulic chamber, and further comprising an electromagnetic valve which opens or closes said third drain orifice in response to said signal actuating said direct drive clutch control valve; and

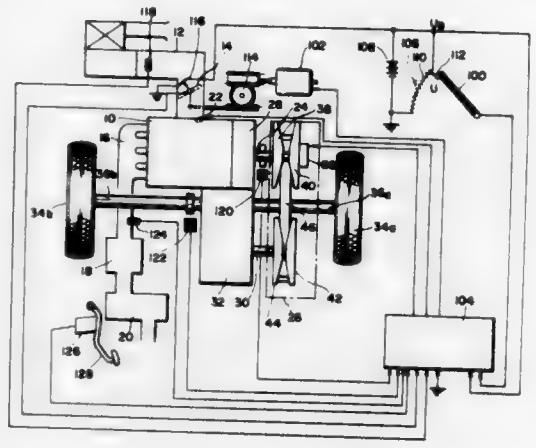
a direct drive clutch operation discriminating circuit which receives a signal corresponding to the vehicle speed and a signal corresponding to the engine torque and produces a signal actuating said drive drive clutch control valve based on a predetermined second relation between the vehicle speed and the engine torque.

4,507,986

CONTROL SYSTEM FOR MOTOR VEHICLE

Kenji Okamura, Yokosuka; Hatsuo Nagaishi, Zushi; Tsuyoshi Kitahara, Yokohama; Kohki Sone, Tokyo, and Koyo Nakamura, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 22, 1982, Ser. No. 351,266
Claims priority, application Japan, Feb. 24, 1981, 56-24968
Int. Cl.³ B60K *41/18, 41/12*
U.S. Cl. 74—866 **11 Claims**



1. A control system for a motor vehicle having an accelerator pedal and an internal combustion engine having a throttle valve, said control system comprising:

means for detecting a depression degree of the accelerator pedal and generating an accelerator position signal indicative of the detected depression degree of the accelerator pedal;

means for detecting a vehicle speed of the motor vehicle and generating a vehicle speed signal indicative of the detected vehicle speed;

means for detecting an engine speed of the engine and generating an actual engine speed signal indicative of the detected engine speed;

means for adjusting an open position of the throttle valve in response to at least the detected depression degree of the accelerator pedal when the depression degree of the accelerator pedal is smaller than a predetermined depression degree, but keeping the throttle valve in a fully open position thereof irrespective of the depression degree of the accelerator pedal when the depression degree of the accelerator pedal is larger than a predetermined depression degree;

means responsive to said accelerator depression degree signal and said vehicle speed signal for determining a target engine speed predetermined for the detected position of the accelerator pedal and the detected vehicle speed and generating a target engine speed signal indicative of the determined target engine speed;

a continuously variable transmission operatively connected to the engine to be driven thereby; and

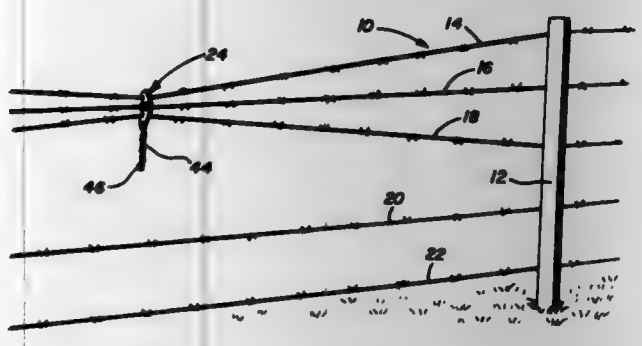
means responsive to said target engine speed signal and said actual engine speed signal for adjusting a drive ratio of said continuously variable transmission.

4,507,987

WIRE FENCE STRAND SPREADER

Otto E. vonBergen, 1204 5th St., Columbus, Nebr. 68601

Filed May 31, 1983, Ser. No. 501,064
Int. Cl.[3] B25B *25/00*
U.S. Cl. 81—485 7 Claims



1. A wire fence strand spreader including an elongated body defining opposite end hooks opening longitudinally of said body toward each other in directions inclined slightly outwardly of one side of said body, a longitudinal mid-portion of said body spaced between said hooks including an opening formed transversely therethrough and in which a user's first finger may be received to provide an anti-slip anchoring of said finger to said body, the side of said body opposite said one side including oppositely inclined opposite end abutment surfaces extending longitudinally therealong each, selectively, engageable by the thumb of a hand having the first finger thereof engaged through said opening, said abutment surfaces defining an included angle opening toward said opening, said hooks being spaced apart longitudinally of said body on remote sides of said opening.

4,507,988

BEVERAGE RECEPTACLE OPENER

Joseph S. LoFaso; Mardi I. LoFaso, both of 4232 Miguel View Dr., La Mesa, Calif. 92041, and Kenneth R. Gold, 6450 Via Arboles, Anaheim, Calif. 92087

Filed Nov. 18, 1982, Ser. No. 442,729
Int. Cl.[3] B67B *7/00*
U.S. Cl. 81—3.09 5 Claims



1. An opener for actuating the tab of a beverage can of the type having a pull-up tab that opens a scored closure segment of the can lid and has a recessed central section, said opener comprising:

an elongated rearward body;

elongated forward tab actuating structure extending generally longitudinally from said body, said tab actuating structure comprising spaced-apart, generally longitudinally arranged lower and upper jaws, said upper jaw having a generally downwardly-facing lower surface and said lower jaw having an opposed, generally upwardly-facing upper surface, said opposed surfaces defining between them a forwardly opening slot which is substantially open-sided; and

an elongated, longitudinally arranged, substantially transversely centered rib on said upper jaw extending downwardly from said lower surface of the upper jaw toward said upper surface of the lower jaw, said rib and said upper surface of the lower jaw defining a tab-gripping notch therebetween;

said rib being engageable within said recessed central section of said tab so as to interlock said tab-actuating structure and said tab in the transverse direction;

said rib having a forward edge extending rearwardly and downwardly from said lower surface of the upper jaw so as to define a lead-in ramp for guiding said pull-up tab into said tab-gripping notch;

said rib having a rearward edge defining the upper surface of said tab-gripping notch; and

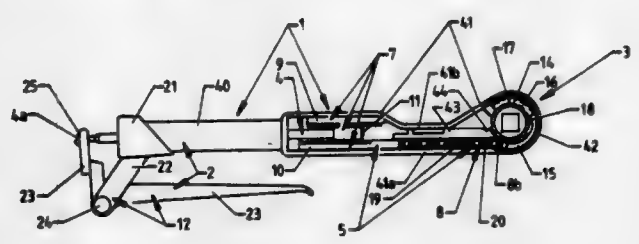
said rib having a generally triangular side profile, said forward and rearward edges of said rib meeting at an apex that is engageable within said recessed central section of said tab.

4,507,989

RATCHET TOOL

Rodney W. Baker, 60 Oranga St., New Plymouth, New Zealand

Filed Nov. 3, 1982, Ser. No. 438,966
Claims priority, application New Zealand, Nov. 3, 1981, 198861; Jan. 29, 1982, 199602
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—57.39 6 Claims



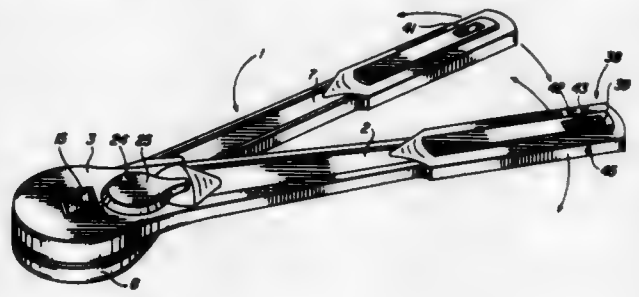
1. A ratchet tool comprising a tubular body having a handle at one end and a ratchet drive at the other end, a plunger disposed within the body, a drive mechanism connecting the plunger with the ratchet drive, return bias means arranged to apply a return bias to the plunger of the drive mechanism, said drive mechanism comprising a flexible member having one end connected to the ratchet drive and the other end connected to a gear mechanism which includes a fixed rack mounted within the body, a slidable rack fixed as aforesaid to the flexible member and a pinion mounted for rotation on one end of the plunger, the arrangement being such upon reciprocation of said plunger the linear motion of the plunger is translated into rotational motion of said ratchet drive.

4,507,990

RATCHET WRENCH

Larry H. Lack, Bossier City, La., assignor to Frank M. Auer; C. J. Auer and Paul B. Lindenmayer, all of Shreveport, La.

Continuation-in-part of Ser. No. 352,182, Feb. 25, 1982, Pat. No. 4,426,895. This application Jan. 19, 1984, Ser. No. 571,196
The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—57.39 17 Claims



1. A ratchet wrench comprising:

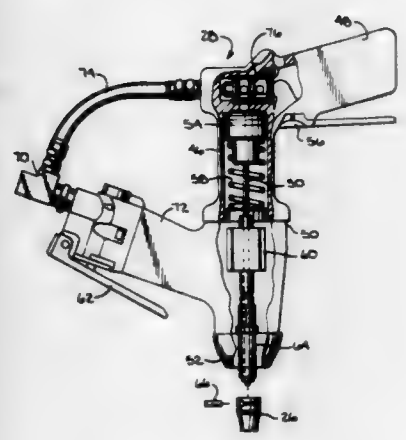
(a) a top housing and a top handle carried by said top housing;
(b) a bottom housing in rotatable cooperation with said top housing and a bottom handle carried by said bottom housing;
(c) a ratchet drum having a hollow interior and open at both ends, said ratchet drum rotatably located inside said top housing and said botton housing and drum teeth provided on the external surface of said ratchet drum;
(d) a shaft fixedly spanning an inside diameter of said ratchet drum and a pair of drum bevel gears rotatably mounted on said shaft in oppositely-disposed relationship;
(e) a top bevel gear removably disposed in said top housing and engaging said drum bevel gears;
(f) a drive bevel gear rotatably deployed in said bottom housing opposite and spaced from said top bevel gear and engaging said drum bevel gears and a socket drive carried by said drive bevel gear and extending through said bottom housing; and
(g) first ratchet means carried by said top housing and said top handle and second ratchet means carried by said bottom housing and said bottom handle, said first ratchet means and said second ratchet means selectively cooperating with said drum teeth in said ratchet drum, whereby engagement of said drum teeth in a selected orientation by said first ratchet means and said second ratchet means causes rotation of said ratchet drum in a selected direction and rotation of said top bevel gear and selective rotation of said drum bevel gears to drive said drive bevel gear responsive to rotatable manipulation of said top handle and said bottom handle.

4,507,991

APPARATUS FOR INSTALLING FASTENERS

Stuart H. Lemke, Rte. 2, Box 288C, Mukwonago, Wis. 53149

Filed Mar. 28, 1983, Ser. No. 479,456
Int. Cl.³ B25B *19/00*
U.S. Cl. 81—463 **10 Claims**



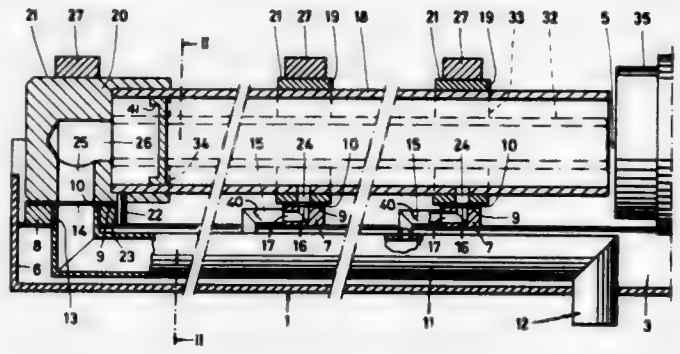
1. A tool for installing a threaded fastening device wherein the fastening device includes an internal channel extending substantially the entire length of the fastening device and terminating in an opening in the head of the fastening device; a barb assembly contained in the channel and sidewall openings in the tip of the fastening device to allow the barb to exit from the channel, the tool comprising:
a casing having a handle portion, a body portion and a tip portion,
fastening device engaging means disposed adjacent said tip portion,
rotating means operably connected to said fastening device engaging means for rotating said fastening device engaging means and in turn rotating the threaded fastening device to screw the fastening device into the materials to be joined,
barb assembly engaging means extendable from said casing out through said tip portion for contacting the barb assembly and forcing the barb downwardly and out through the sidewall openings, and
extension means connected to said barb asesmbly engaging means for extending said barb assembly engaging means from said casing and into contact with the barb assembly.

4,507,992

BAR-GUIDANCE EQUIPMENT FOR AN AUTOMATIC LATHE

Claude A. Vandevoir, La Neuveville, and Markus Geiser, Péry, both of Switzerland, assignors to Sameca S.A., Bienne, Switzerland

PCT No. PCT/CH81/00084, § 371 Date Mar. 17, 1982, § 102(e) Date Mar. 17, 1982, PCT Pub. No. WO82/00262, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 20, 1981, Ser. No. 361,919
Claims priority, application Switzerland, Jul. 18, 1980, 5499/80
Int. Cl.³ B23B *13/08*
U.S. Cl. 82—2.7 **10 Claims**



1. A device for guiding the various workpiece bars which can be machined in an automatic lathe, comprising:
at least two interchangeable guidance tubes of different diameters, each being alignable with the lathe headstock spindle to support that part of a workpiece bar which extends to the rear of the lathe;
fastening members disposed at at least three points distributed along the guidance tubes for rigidly connecting the tubes to a reinforcing element extending along the entire length of the tubes.

4,507,993

MACHINE TOOL WITH TWO SPEED TURRET INDEXING

Martin L. Silverman, South Euclid, and Donald P. Shook, Cleveland Heights, both of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Mar. 24, 1983, Ser. No. 478,405
Int. Cl.³ B23B *29/24, 3/16, 7/04*; B23Q *17/00*
U.S. Cl. 82—36 A **8 Claims**

1. A turning machine, comprising:
(a) a numerical control for controlling operation of the machine;
(b) a turret which is indexible about the center axis thereof to various work stations for bringing tools, supported on the turret, into position for machining a workpiece that is mounted on the machine;
(c) an elongated turret bar secured to the turret for unitary axial and rotational movement therewith, the bar extending from the turret and having a longitudinal axis which coincides with the center axis of the turret;
(d) means associated with the turret for shifting the turret and attached bar axially between an unclamped position, where the turret can be indexed by rotating it about the center axis, and a clamped position, where the turret is held against rotation and indexing, the means including:
(I) a first cam and a second cam secured to the bar in spaced relation from the turret for unitary axial and

rotational movement therewith, the cams being spaced longitudinally apart on the bar a distance which is correlated to the axial distance which the bar and turret shift between the clamped and unclamped positions;

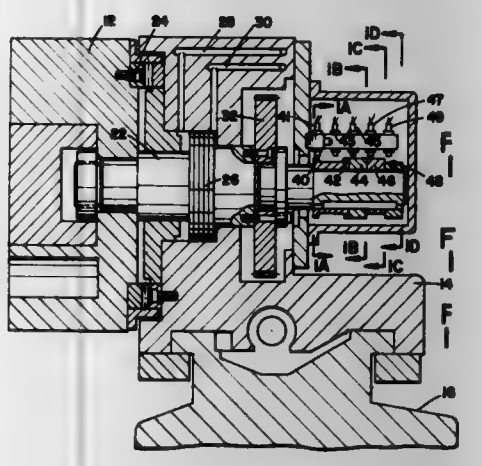
(II) a first sensor and a second sensor fixedly disposed adjacent the cams in spaced relation along the longitudinal axis of the bar, such that the first sensor senses the first cam when the turret is in the clamped position and the second sensor senses the second cam when the turret is in the unclamped position, the sensors designed to sense the cams and, accordingly, send signals to the control.

(e) means coacting with the bar for rotating the turret from one work station to another, when the turret is in the unclamped position, the turret rotating means including:

(III) means operatively connected to the bar for rotating the turret from a work station at a predetermined speed;

(IV) means operatively coupled to the bar for slowing down rotation of the turret to a slower speed when the turret reaches a predetermined distance from the work station to which the turret is being rotated;

(V) a plurality of indexing cams secured to the bar, adjacent the first and second cams, for unitary axial and rotational movement with the bar and turret, the indexing cams being shaped in correlated relation to the rotary positions of the turret in relation to the work stations to which the turret is indexed;



(VI) a separate indexing sensor associated with each of the indexing cams and fixed disposed adjacent thereto to sense the rotary positions of the indexing cams, the size of the indexing cams and associated sensors being correlated, such that the indexing sensors will be in sensing relationship with the indexing cams when the turret is in the clamped and unclamped positions and is moving therebetween;

(VII) a final positioning cam operatively connected to the bar and rotatable therewith at a predetermined multiple of the speed at which the bar and turret rotate;

(VIII) means associated with the final positioning cam for sensing a feature of the final positioning cam and sending a corresponding signal to the control to halt indexing of the turret in a position suitable for clamping; and

(f) means coacting with the bar for clamping the turret against rotation and indexing when the turret is in the clamped position.

4,507,994

DEVICE FOR MONITORING A CYLINDER-PISTON ASSEMBLY

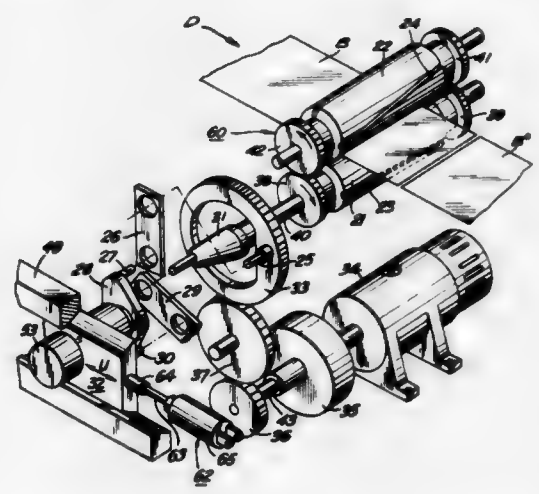
Wolfgang Meurer, Buderich, Fed. Rep. of Germany, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 164,447, Jun. 30, 1980, abandoned, which is a continuation of Ser. No. 029,164, Apr. 11, 1979, abandoned. This application May 9, 1983, Ser. No. 492,770

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1978, 2815489

Int. Cl.³ B26D *1/62, 7/24*

U.S. Cl. 83—58 **7 Claims**



1. In a web crosscutter having two blade drums, means for linking the two drums for adjusting the angular velocity thereof including a positionable slide and means for clamping the slide in a selected position including levers, a cylinder piston assembly for exerting the requisite clamping force on the levers, the improvement comprising means for monitoring the clamping force generated by the cylinder-piston assembly comprising spring means mounted between the cylinder-piston assembly and the levers to transmit the force generated by the cylinder-piston assembly to effect movement of a first portion thereof with respect to a second portion and actuatable switching means comprising a first switching element mounted for movement with said first portion of the spring means and a second switching element fixedly mounted to the second portion of the spring means, the two switching elements configured to actuate the switching means when a predetermined path of travel of the first portion of the spring means is exceeded to effect a stopping of the drive of the crosscutter blade drums.

4,507,995

ARRANGEMENT FOR REMOVING WORKPIECES FROM A CUTTING PRESS

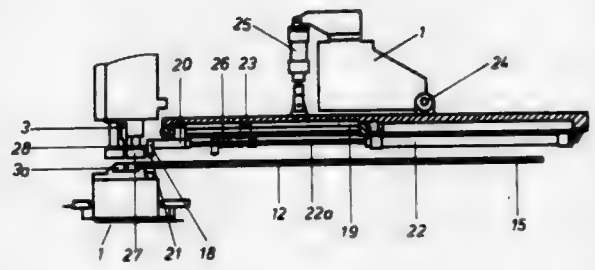
Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,208

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042717

Int. Cl.³ B26D *7/18*

U.S. Cl. 83—153 **8 Claims**



1. An arrangement for removing plateshaped workpieces

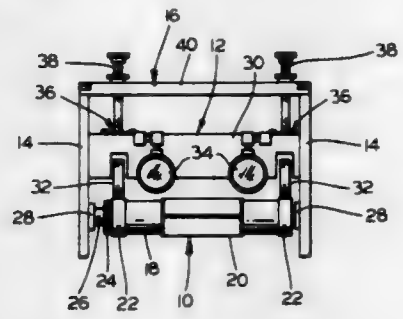
from a cutting press including a frame, a support table mounted on the frame and having a support surface for the workpieces extending along the plane and operative for advancing the workpieces along the support surface toward machining a severing zones of the support table, and machining and severing devices respectively arranged at the machining and severing zones, comprising means for entraining the respective workpiece at the severing zone outside of the operating range of the severing device and for transporting the entrained workpiece in a predetermined direction away from the severing zone, said entraining means being mounted on the machine frame upwardly of the support surface of the support table for movement toward and away from said plane between a rest position and an entraining position in which it transports the respective workpiece in the predetermined direction while being always completely disposed above said plane, said entraining means including a rocking member mounted on the frame for pivoting about an axis normal to said predetermined direction; means for pivoting said rocking member about said axis; an adjusting member mounted on said rocking member for movement in and opposite to said predetermined direction; means for moving said adjusting member relative to said rocking member mounted on the latter; an elongated entraining member mounted on said adjusting member for movement therewith and extending to above the zone of the support surface which supports the respective workpiece after the termination of the severing operation; and conveyor means arranged along the path of transportation of the workpieces downstream of said entraining means and operative for removing the workpieces out of the range of operation of said entraining means.

4,507,996

DEVICE FOR TRANSFERRING AND MONITORING LOAD TO DIE ROLL

Martin Kesten, West Hartford, Conn., assignor to Preston Engravers, Inc., Windsor, Conn.

Filed Nov. 15, 1982, Ser. No. 441,638
Int. Cl.³ B26D *1/42*
U.S. Cl. 83—344 **7 Claims**



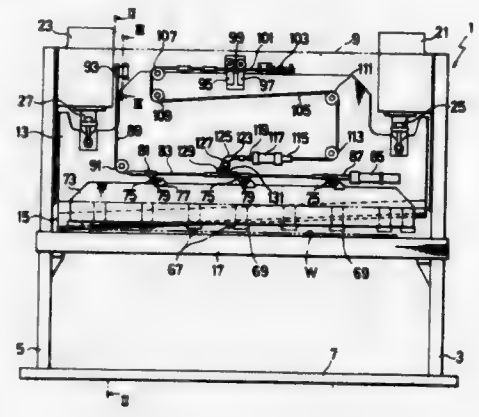
1. A device for transferring and monitoring the load applied to a die cutting roll in a press, comprising an elongated body dimensioned and configured for mounting between the frame portions of the press across the die cutting station thereof, and having load-bearing and pressure-indicating means therein, said means including a pair of load-bearing members disposed adjacent the opposite ends of said body and on one side thereof for contact by force-applying means of the press, and a pair of pressure indicators, one operatively connected to each of said load-bearing members, said body also having means for transferring the applied force to a die cutting roll mounted in the press to the opposite side of said body, whereby said body is adapted to receive a two-point load and to enable balancing of the forces transferred therethrough.

4,507,997

SHEARING MACHINE

Hidekatsu Ikeda, Hatano, Japan, assignor to Amada Company, Limited, Japan

Filed Jan. 26, 1982, Ser. No. 342,923
Claims priority, application Japan, Jan. 30, 1981, 56-011086; Feb. 10, 1981, 56-017517; Feb. 10, 1981, 56-017518
Int. Cl.³ B26D *7/26*
U.S. Cl. 83—368 **9 Claims**



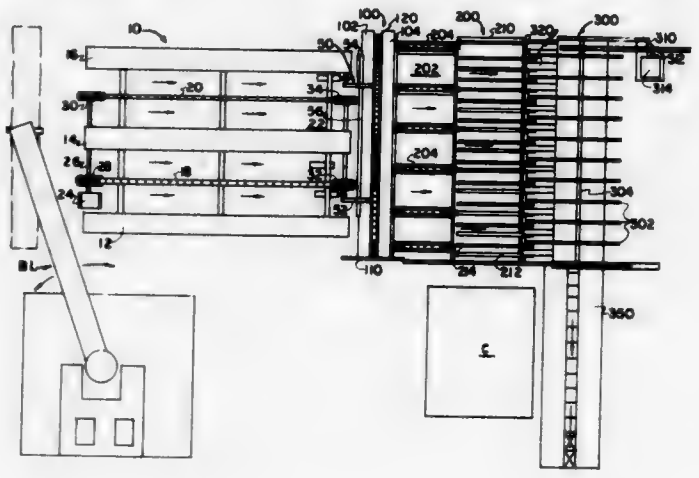
1. A shearing machine comprising a detecting means for detecting the thickness of a workpiece placed on a work-table, a clearance adjusting means for moving at least one of the upper and lower blades toward and away from the other to adjust the clearance therebetween, a shear angle adjusting means for adjusting the inclination of the blades with respect to each other, controlling means for controlling the adjustment of both adjusting means according to the thickness of the workpiece detected by the said detecting means, and means connected between said shear angle adjusting means and the controlling means for disengaging the shear angle adjusting means from the controlling means, whereby when the shear angle adjusting means is disengaged, the controlling means controls only the clearance between the blades and the shear angle inclination of the blades remains unchanged.

4,507,998

FIREWOOD SAWING APPARATUS

Johnny H. Lambert, Meadows of Dan, Va.; Didier Primat, Collonge-Bellerive, Switzerland; William H. Edmiston; Johnny J. Edmiston, both of Lenoir, N.C., and James H. Edmiston, Boomer, N.C., assignors to Primlumber, Inc., Meadows of Dan, Va.

Filed Sep. 2, 1982, Ser. No. 414,096
Int. Cl.³ B27B *7/00*
U.S. Cl. 83—419 **10 Claims**



1. A firewood sawing apparatus comprising:
(a) a loading deck having an upper surface onto which logs are initially placed in parallel arrangement and means for advancing said logs in a direction transverse to the longitudinal axis thereof to a discharge end;

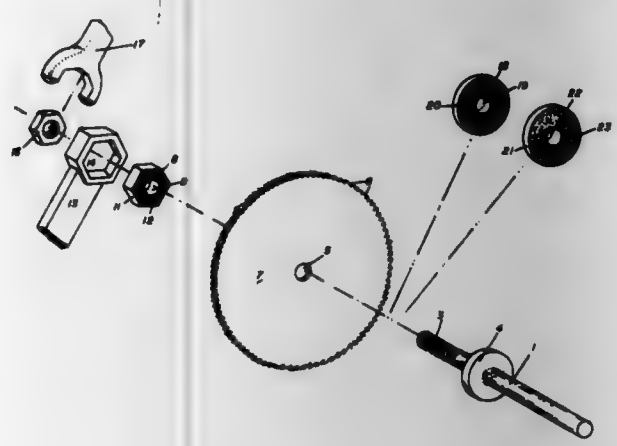
(b) a feed conveyor means positioned adjacent the discharge end of said loading deck for receiving logs deposited thereon and advancing means for moving logs in a serially spaced arrangement in a direction transverse to the longitudinal axis thereof to a feed conveyor discharge end;
(c) an aligning trough positioned between said loading deck and said feed conveyor for shifting all logs deposited in said aligning trough against a bumper at one end thereof; and means for depositing said logs one at a time from said loading deck onto said aligning trough; whereby one end of all logs proceed through said feed conveyor and said sawing means in a common longitudinal plane such that the initial end of the log cut by the first saw will be substantially of the same length from all logs;
(d) sawing means adjacent said feed conveyor discharge end for receiving logs discharged therefrom, said sawing means comprising a plurality of longitudinally spaced, circular saws mounted along a common axis extending parallel to the longitudinal axis of said logs being discharged;
(e) whereby logs are presented one at a time to the sawing means and a single log is cut simultaneously into a plurality of firewood pieces.

4,507,999

SAW RETAINING ARRANGEMENT

Morris L. Dezern, 10609 Harrison, Fairdale, Ky. 40218

Filed Jul. 26, 1982, Ser. No. 402,088
Int. Cl.³ B26D *1/12*; B23D *45/16*
U.S. Cl. 83—665 **5 Claims**



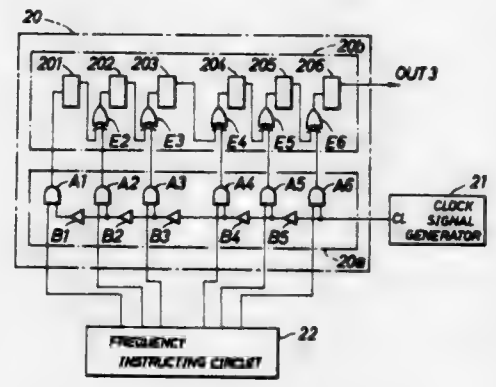
1. A circular saw retaining arrangement including a circular saw blade with a central aperture, a driven arbor shaft including an arbor plate located a selected distance from the end of the arbor shaft where a first portion of arbor shaft between the arbor plate and the end of the arbor shaft is threaded to receive an arbor nut, collar means of selected periphery thereof and having generally planar first and second surfaces on opposite sides thereof with a central aperture therein to receive said first portion of said arbor shaft for location of the collar between the arbor nut and the saw blade and wherein said first planar surface of said collar means is adapted to be urged against the saw blade with the arbor nut threaded on the arbor shaft and the arbor nut tightened against said second surface of said collar opposite said first surface and wherein said first surface of the collar means is roughened to restrict relative movement between said first surface and said circular saw blade.

4,508,000

FREQUENCY-SELECTABLE SIGNAL GENERATOR

Fuminori Suzuki, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,422
Claims priority, application Japan, Apr. 23, 1982, 57-68447; May 28, 1982, 57-89737
Int. Cl.³ G10H *5/06*
U.S. Cl. 84—1.01 **4 Claims**



1. A frequency-selectable signal generator comprising:
reference signal generator means for generating clock signals;
frequency instructing means for supplying parallel numeric datum pertaining to a given frequency to be generated; and
accumulator means having first input terminal means for receiving said parallel numeric datum and second input terminal means for receiving the clock signals from said reference signal generator means, which are used to enable the accumulator means to accumulate said parallel numeric datum, said accumulator means including a binary counter composed of a series alternation of flip-flops and exclusive OR gates, and a drive circuit connected to said exclusive OR gates via bus conductors, thus enabling said drive circuit to drive said binary counter via said bus conductors synchronously with said clock signals,
whereby when said parallel numeric datum is supplied to said first input terminal means of said accumulator means and when said clock signals are supplied to said second input terminal means of said accumulator means, said accumulator means performing addition of the number represented by said parallel numeric datum for every one clock pulse, thus outputting an overflow signal whose frequency is proportional to the number represented by said parallel numeric datum.

4,508,001

ELECTRONIC MUSICAL INSTRUMENT USING LARGE-CAPACITY RECORDING MEDIUM

Hideo Suzuki, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

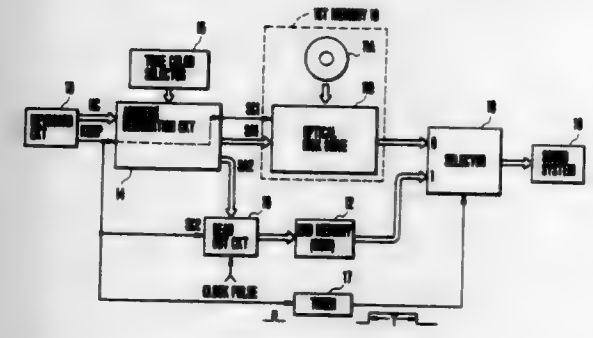
Filed Jul. 24, 1984, Ser. No. 633,940
Claims priority, application Japan, Jul. 29, 1983, 58/137575
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **16 Claims**

1. An electronic musical instrument comprising:
first memory means having a large capacity and of a low-speed access type for storing first waveform data corresponding to a first portion from a first point to a second point of a tone waveshape of a tone to be produced;
second memory means, which is smaller in capacity and faster in access than those of said first memory, for storing second waveform data corresponding to a second portion form a third point to a fourth point of said tone waveshape, said third point, said fourth point, said first point and said second point being in this order on time series and time length corresponding to said second portion being equal to or longer than an access time required to indepen-

dently read out data corresponding to said first point from said first memory;

read out means for reading out said second waveform data and said first waveform data from said second memory means and said first memory means respectively;

control means for generating a control signal relating to said time length corresponding to said second portion;



delivering means connected to said second memory means, said first memory means and said control means, for delivering said second waveform data firstly and then for delivering said first waveform data in accordance with said control signal; and

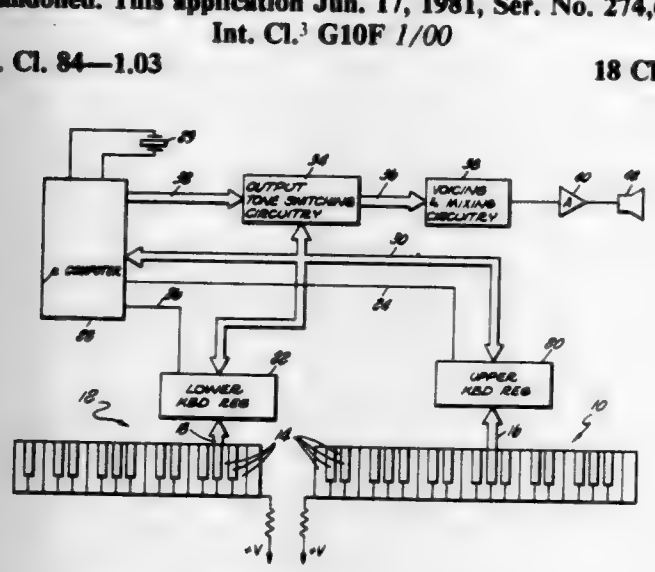
tone production means for producing a tone in accordance with said selected second waveform data and said delivered first waveform data.

4,508,002

METHOD AND APPARATUS FOR IMPROVED AUTOMATIC HARMONIZATION

George R. Hall, Sherman Oaks; Robert J. Hall, Chatsworth, and Jack C. Cookerly, Saugus, all of Calif., assignors to Norlin Industries, White Plaines, N.Y.

Continuation-in-part of Ser. No. 3,584, Jan. 15, 1979, abandoned. This application Jun. 17, 1981, Ser. No. 274,606
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03
18 Claims



1. A method for embellishing a melody represented by the actuation during a time frame of one or more playing keys of a musical instrument keyboard, which instrument is capable of sounding at least one chord selected during the time frame, said method comprising the steps, accomplished by the instrument itself, of:

recognizing at least one note of the melody during the time frame;

recognizing a chord selected during the time frame;

deriving, for at least one note of the melody, at least one accompaniment note which is not a tone of the recognized chord and yet is harmonically related to said melody note and the recognized chord; and

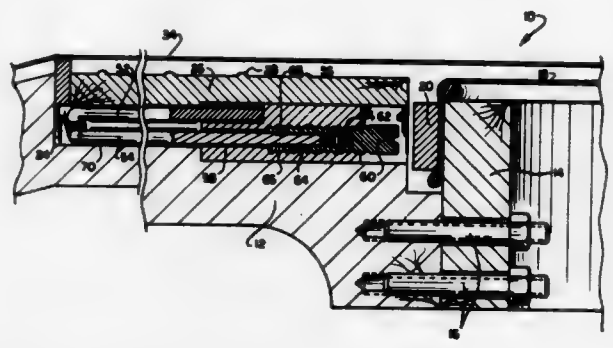
sounding said melody note and said at least one accompaniment note to produce an embellished melody.

4,508,003

TRUSS ROD APPARATUS

Peter H. Smakula, 2077 Cornell Rd., Cleveland, Ohio 44106

Filed Sep. 30, 1982, Ser. No. 428,625
Int. Cl.³ G10D *3/00*
U.S. Cl. 84—293
13 Claims



1. An apparatus for adjusting neck curvature in a stringed musical instrument, comprising:

(a) a first elongate member having a first end and a second end;

(b) a second elongate member positioned adjacent to and parallel to said first elongate member, the second elongate member having a first end and a second end, the first end of the second elongate member being fixedly connected to the first end of the first elongate member;

(c) anchoring means to which the second end of the first elongate member is fixedly attached, the anchoring means being positioned at one end of the musical instrument neck; and

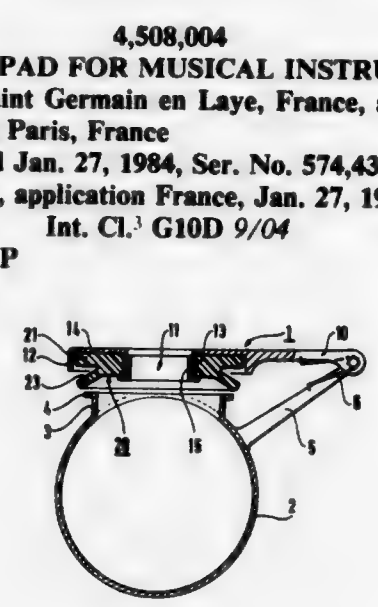
(d) rod length adjusting means threadedly engaged to said anchoring means and said second end of said second elongate member, so that upon movement of said rod length adjusting means in one direction or another, said rod length adjusting means applies a tension force or a compressive force, respectively, to said second elongate member.

4,508,004

SEALING PAD FOR MUSICAL INSTRUMENT

Gérard Pages, Saint Germain en Laye, France, assignor to Le Joint Francais, Paris, France

Filed Jan. 27, 1984, Ser. No. 574,430
Claims priority, application France, Jan. 27, 1983, 83 01213
Int. Cl.³ G10D *9/04*
U.S. Cl. 84—385 P
8 Claims



1. A sealing pad for a key of a woodwind or like musical instrument, said instrument comprising a hollow body pierced by circular tone holes, respective finger-actuated keys pivotably mounted to said body, said keys including a disc overlying a respective tone hole for movement towards said body for closing of said tone hole, said keys being optionally pierced by further respective holes, said pad comprising a first annular portion for fixedly mounting to said key beneath said disc and an annular lip underlying said first annular portion of said pad being free of said first annular portion and being flexible and movable relative to said first annular portion, and wherein said disc, said first annular portion and said annular lip being of a

diameter in excess of the diameter of said tone hole such that said movable annular lip is capable of being pinched between said first annular portion of said pad and the rim of said tone hole when said key is pivoted towards said body, and said tone hole is closed by said pad.

4,508,005

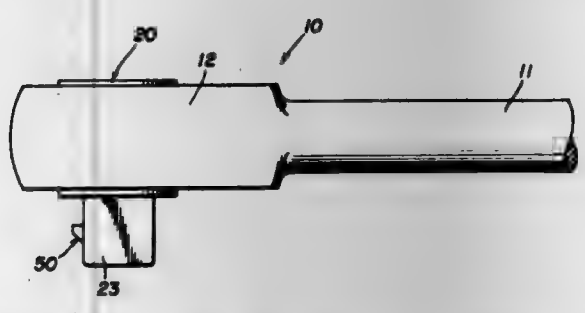
QUICK RELEASE MECHANISM FOR RATCHET WRENCH

Timm R. Herman, and Frank Mikic, both of Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Dec. 19, 1983, Ser. No. 563,196

Int. Cl.³ B25B *13/00*

U.S. Cl. 81—177 G **18 Claims**



1. Mechanism for locking and releasing an elongated socket having a side hole, comprising a generally cylindrical body, a non-annular stud extending from said body and being coaxial therewith, said body and said stud having an axially extending first bore therein, an abutment in said first bore, a formed-spring actuator slidable in said first bore and having first and second end portions and an intermediate portion, said intermediate portion at rest lying against said abutment, said first end portion being oriented so as to be movable by a person's finger, said stud having a second bore therein extending substantially normal to said first bore, a pin slidably located in said second bore and movable between locking and release positions, said second end portion engaging said pin, said pin being biased toward its locking position, said pin having a portion transversely protruding from said stud in said locking position, said protruding portion having locking and camming surfaces, a socket being applied to said mechanism by pushing the socket against said camming surface to move said pin to its release position and then pushing the socket until said pin snaps to its locking position and into the socket side hole, the socket being removed from said mechanism by depressing said first end portion to cause said intermediate portion to ride along said abutment and carry said pin to its release position, thereby withdrawing said pin from the socket side hole to enable the socket to slip off of said stud.

4,508,006

DEVICE FOR QUICKLY STOPPING A REMOTE CONTROLLED AUTOMATIC CANNON

Lothar Post, Düsseldorf, and Bernhard Schneider, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 371,965

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1981, 3116541

Int. Cl.³ F41F *11/04*

U.S. Cl. 89—24 **6 Claims**

1. A device for quickly stopping a remote controlled automatic cannon having a breech block which can be moved by means of an endless control groove in an essentially rotationally symmetrical control roller, wherein each region of the control groove is associated with a respective function step within the firing cycle of the cannon, said device comprising in combination:

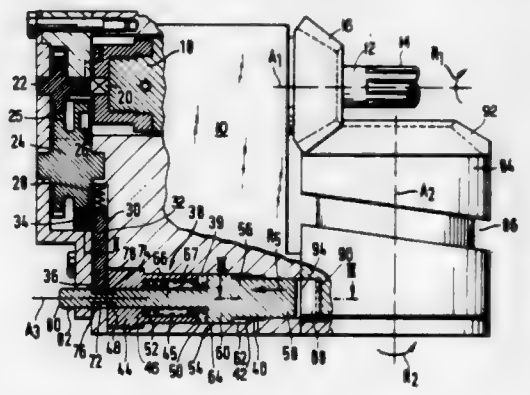
an element which rotates in dependence on the rotation of said control roller, said element being provided with a stop abutment which is associated with a particular region of said control groove in said control roller;

a control piston having a first free end and a second free end, said piston being mounted adjacent said element such that its said first free end can be axially moved into and out of the circular path of movement of said stop abutment;

means, including a drive shaft, for driving said control roller;

means for applying an axial force on said piston to normally move said first free end into said path of movement and thus into a blocking position with respect to said stop abutment;

means for applying propellant gases developed during firing of the cannon to said piston to move said first free end out



of said path of movement of said stop abutment and thus into a release position with respect to said stop abutment; and

means for holding said control piston in said release position for a defined period during a firing cycle, said means for holding said control piston in said release position including, a recess formed in the peripheral surface of said second free end of said control piston, a control member, means for mounting said control member so that it is movable transversely to the longitudinal axis of said piston into and out of said recess, and means for moving said control member in dependence on the rotary movement of the drive shaft for said control roller.

4,508,007

LOCKING ARRANGEMENT FOR THE ELEVATING MECHANISM OF A GUN BARREL

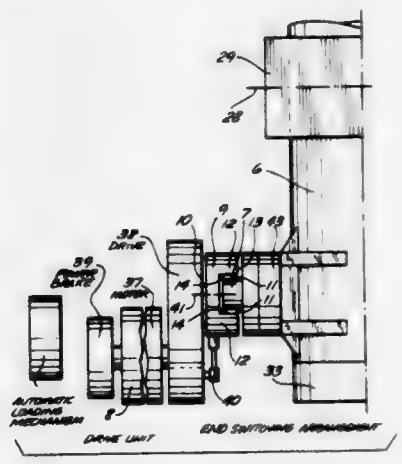
Marold Elspass, Kaast, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,688

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204721

Int. Cl.³ F41F *21/00*

U.S. Cl. 89—37.11 **9 Claims**



1. An improved weapon having a gun barrel and a gun elevating and gun traversing mechanism respectively operatively connected to said gun barrel, a separate fully automatic

loading mechanism also being operatively mounted in said weapon, the improvement comprising in combination,

a locking arrangement operatively connected to said gun elevating mechanism and to said gun traversing mechanism,

said gun barrel being mounted in said gun elevating mechanism and being adapted to be precisely maintained in a predetermined index position during loading by said locking arrangement,

wherein said gun elevating mechanism includes a gun barrel support, a bolt rigidly secured to said gun barrel support, a drive and brake unit operatively connected to said gun traversing mechanism, a claw being operatively connected to said drive and brake unit, said claw and bolt forming part of said locking arrangement and said index position being maintained by the claw lockingly clamping said bolt.

4,508,008

HYDRAULIC BRAKE BOOSTER

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

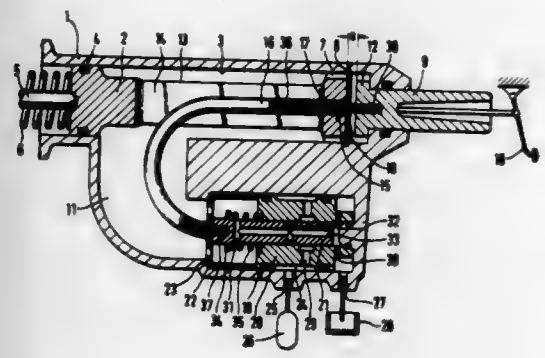
Filed May 5, 1982, Ser. No. 375,256

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128317

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—372

6 Claims



1. In a hydraulic booster, especially for use in actuating a master cylinder arrangement of a vehicle braking system, a combination comprising:

a main housing defining an elongated bore;

a booster piston received in said bore for longitudinal displacement;

an operating element mounted partially in said bore for selective translation relative to said housing between a rest position and a plurality of operating positions;

means for defining a pressure chamber, said pressure chamber bounded at one end by a face of said operating element disposed in said bore, and bounded at the other end by a face of said booster piston;

means for supplying a fluid at a controllable pressure into said pressure chamber, including:

a control valve including a valve housing and a valve member movable therein, said valve housing having an elongated internal passage and at least one outlet and one inlet port communicating with said passage,

means for admitting the fluid to one of said ports at a control pressure which differs by a predetermined amount from a nominal reference pressure at said other port,

said control valve member accommodated in said passage for movement longitudinally thereof between an inactive position in which it establishes communication only between said outlet port and said pressure chamber and a plurality of active positions in which it establishes communication between said inlet port and said pressure chamber, and

means for moving said control valve member between said inactive and active positions thereof relative to said control valve housing in dependence on the position of said operating element relative to said booster piston, said moving means including

an elongated tubular element having two longitudinally spaced portions respectively secured to said booster piston and to a stationary guide within said main housing, and

a deformable elongated force-transmitting body of substantilly constant length at least partially received in said tubular element for displacement relative thereto and operatively connected to said operating element and to said control valve member for joint movement therewith such that said control valve member is in said inactive position when said operating element is in said rest position.

4,508,009

BRAKE POWER SERVO BOOSTER

Morihiko Shimamura, and Shintaro Uyama, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

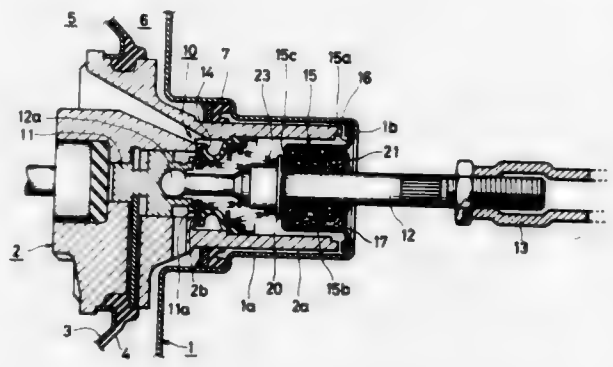
Filed Jul. 20, 1983, Ser. No. 515,424

Claims priority, application Japan, Jul. 20, 1982, 57-109864[U]

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—376 R

10 Claims



1. In a brake power servo booster including a stationary stop provided on a cylindrical projection of a rear shell, and a movable stop provided on an input shaft connected between a brake pedal and a valve mechanism, and operationally associated with said stationary stop to restrict a retracted position of said input shaft, the improvement which comprises an intermediate stop member disposed in said cylindrical projection to be slidable relative to said cylindrical member in the axial direction of said shaft during operation of said shaft, and having its retraction restricted by said stationary stop, said input shaft extending slidably through said intermediate stop member, said movable stop being adapted for abutment on said intermediate stop member to restrict said retracted position of said input shaft.

4,508,010

HYDRAULIC MOTOR

Rudolf Bock, Palmerstrasse 9, 7031 Holzgerlingen, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,235

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220492

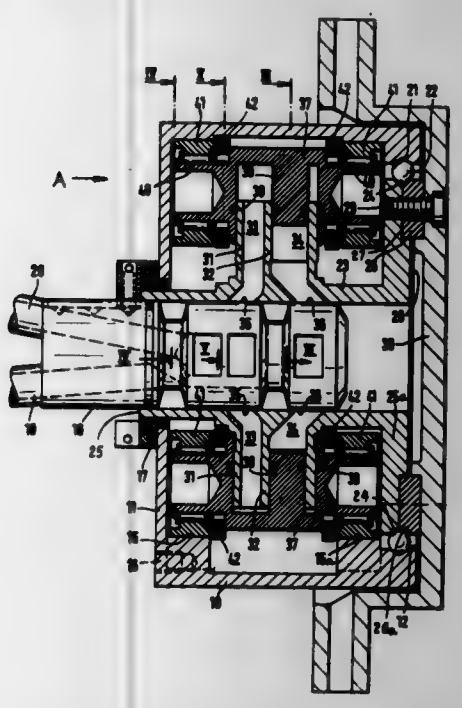
Int. Cl.³ F01B *1/06, 13/06;* F04B *1/10*

U.S. Cl. 91—474

6 Claims

1. A multi-piston hydraulic motor, comprising a stationary housing; a rotor having a central axis of rotation and mounted in said housing, said rotor having a plurality of hollow radially extending pistons spaced from each other in a circumferential direction; a plurality of cup-shaped cylinders located in said housing and spaced from each other in the circumferential direction, each cylinder being mounted on and displaceable over the respective piston, said housing having two cam tracks spaced from each other in an axial direction of the rotor, each of said cylinders having two journals extending oppositely in

said axial direction, each of said journals having axes and carrying a control roller abutting against the respective cam track and cooperating therewith; a central control shaft concentrically mounted in said rotor and conveying a pressure fluid, said control shaft communicating with said hollow pistons to feed the pressure fluid to said hollow pistons, said rotor having a flange portion on a driven side thereof, said flange



portion being coaxial with said central axis; said rotor being mounted in said stationary housing by a single roller bearing formed as a four-point ball bearing to absorb radial forces and axial forces in both axial directions exerted on said rotor in operation, said bearing being positioned between said flange portion and said housing and being radially outwardly offset at a greater distance from said central axis than the axes of said journals.

4,508,011

HYDRAULIC AXIAL PISTON MACHINE

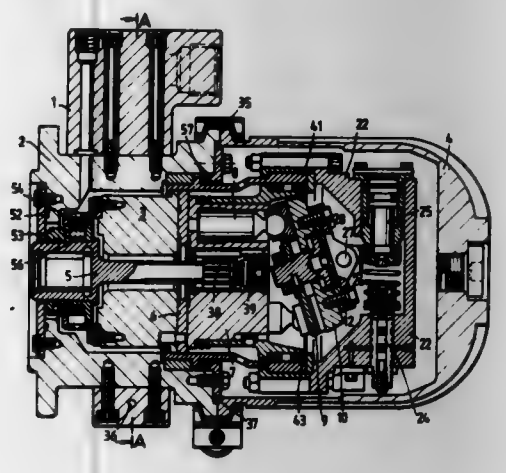
Wilhelm Nolden, Wiesbaden, Fed. Rep. of Germany, assignor to Abex Corporation, Stamford, Conn.

Filed Mar. 29, 1983, Ser. No. 480,167

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3212402; Apr. 2, 1983, 3212374; Apr. 2, 1983, 3212429

Int. Cl.³ F01B *3/00, 13/04;* F04B *1/26*

U.S. Cl. 91—506 **12 Claims**



1. A hydraulic, axial piston machine comprising: a housing, a barrel, means for rotatably mounting the barrel in the housing, a port plate engaged by one end of the barrel, a plurality of equally spaced circumferentially arranged piston bores in the barrel, a plurality of pistons of which one is mounted in each piston bore, a swash plate, wherein one end of each piston is engaged with the swash plate, a yoke, means for mounting the swash plate on the yoke, a pair of trunnions anchored in the housing, means for connecting the yoke to the trunnions, a control base in the housing, means mounted in the control base for pivoting the yoke about the axis of the trunnions, wherein the yoke pivots between a first position of minimum fluid displacement in which the plane of the swash plate is perpendicular to the axis of the barrel and the pistons do not reciprocate when the barrel is rotated and a second position of maximum fluid displacement in which the plane of the swash plate is at a maximum angle with respect to the axis of the barrel and the pistons move a maximum distance when the barrel is rotated, roller bearing means supported in the control base, a rigid disc mounted on the bearing means, a curved surface formed on the rear of the yoke wherein the curved rear surface of the yoke is supported on the disc such that the disc moves linearly as the yoke is pivoted and the load on the swash plate is transmitted through the yoke and the disc to the bearing means.

4,508,012

HIGH PRESSURE HYDRAULIC SYSTEMS

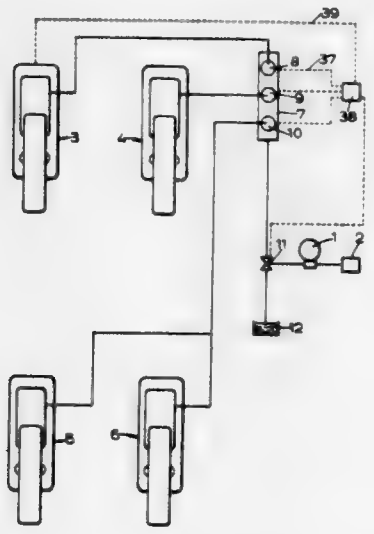
Desmond H. J. Reynolds, and Phillip A. Taft, both of West Midlands, England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Nov. 14, 1983, Ser. No. 551,122

Claims priority, application United Kingdom, Nov. 24, 1982, 8233554

Int. Cl.³ F15B *13/044, 13/06*

U.S. Cl. 91—512 **15 Claims**



1. A high pressure hydraulic system comprising a source of hydraulic pressure, a control valve assembly and a slave unit, fluid under pressure being supplied to said slave unit from said source through said control valve assembly, said control valve assembly comprising a housing provided with first and second ports, said first port communicating with said source and said second port communicating with said slave unit, and valve means controlling fluid flow between said ports, said valve means being movable to close either said first port or said second port or to permit communication between said ports, said valve means comprising first and second relatively movable valve members, first and second biassing means, means for applying a pressure differential across each said valve member, and a solenoid means, said first valve member controlling flow through said first port, and being operated by forces produced by said first biassing means, said solenoid means and said pressure differential applying means, said first biassing force urging the first valve member to close said first port, and being less than said solenoid force urging said first valve member to open said first port, said solenoid force being of a predetermined value such that if said first biassing force and said pressure differential force together oppose and exceed said predetermined solenoid force, said solenoid means is unable to move said first valve member to open said first port; and said second valve member controlling flow through said second port, said

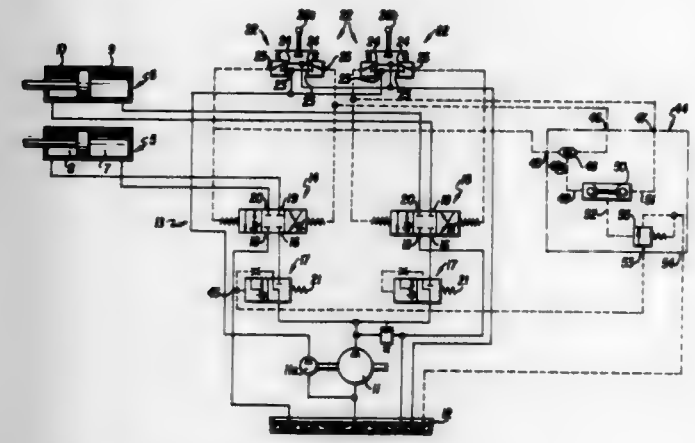
second valve member being operated by said first valve member, and by forces produced by said pressure differential applying means and said second biassing means, said second biassing force urging said second valve member to close said second port, and said control valve assembly incorporates elastomeric sealing means to provide a substantially leakproof seal when said first port is closed.

4,508,013

REMOTE CONTROLLED HYDRAULIC CIRCUIT HAVING SELECTOR MEANS FOR ESTABLISHING PRIORITY THEREIN

Rino O. Barbagli, Borgaretto, Italy, assignor to Fiatallis Europe, S.p.A., Lecce, Italy

Filed Apr. 27, 1983, Ser. No. 489,051
Claims priority, application Italy, Jun. 14, 1982, 67764 A/82
Int. Cl.³ F15B *11/00*
U.S. Cl. 91—516 **3 Claims**



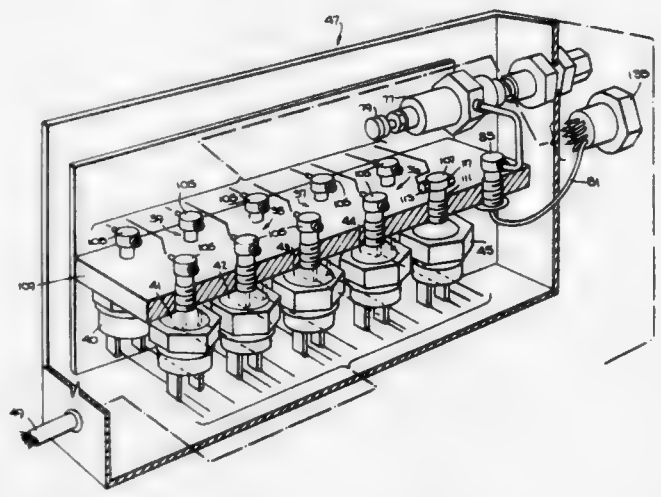
1. A hydraulic circuit including:
a source of pressurized fluid;
a plurality of hydraulic motors connectible to the source of pressurized fluid, and
control means for connecting the source of pressurized fluid to the hydraulic motors, the control means being remotely piloted by a series of pressure signals each of which corresponds to the opening of the connection between the source of pressurized fluid and a respective hydraulic motor,
selector means for the priority supply of pressurized fluid to one or more preferential hydraulic motor chambers, the selector means being intended to detect, when they are active, the pressure signals corresponding to the supply of pressurized fluid to the preferential hydraulic motors and, in this condition, to render inoperative the control means associated with the other hydraulic motors, should they already have been activated to effect the supply of the other hydraulic motors, said selector means including a main selector valve comprising:
a first inlet which, when at least one of the pressure signals corresponding to the supply of pressurized fluid to the preferential hydraulic motors is active, receives this pressure signal;
a second inlet which, when at least one of the pressure signals corresponding to the supply of pressurized fluid into the non-preferential hydraulic motors is active, receives this pressure signal;
an outlet which is supplied with pressurized fluid when the first inlet and the second inlet receive a pressure signal,
actuator means which is activated by the pressurized fluid from said outlet, a first outlet communicating with a drain tank and a second outlet connected to the control means associated with non-preferential hydraulic motors, and in that the actuator means comprises piston means that puts the first outlet into communication with the second outlet when the outlet of the main selector valve is supplied with pressurized fluid.

4,508,014

REMOTE CONTROL APPARATUS FOR A MACHINE SUCH AS A CRANE

Bernell D. Shoff, Windsor, Pa., assignor to U.S. Truck Cranes, Inc., York, Pa.

Filed Jun. 8, 1982, Ser. No. 386,270
Int. Cl.³ F15B *13/08*
U.S. Cl. 91—527 **8 Claims**



5. A control apparatus for a machine having a plurality of machine functions operated hydraulically from pressure derived from a hydraulic line comprising:
(a) a source of pressurized air;
(b) a pneumatic to electric converter assembly comprising:
a plurality of normally open electrical pressure switches each adapted to be activated by air pressure at an inlet thereof, and
a normally closed electrical pressure switch adapted to be activated by air pressure at an inlet thereof;
(c) a remote control apparatus comprising:
a plurality of three position pneumatic switches connected in sequence to receive pressurized air from said air source via a main tube, each pneumatic switch having an inlet and two active outlets,
actuation of any of said three position pneumatic switches into a first or second active position causing pressurized air to be provided at a corresponding first or second outlet port of said three position pneumatic switch, and
a two position pneumatic switch having an inlet and an outlet connected in said sequence to receive pressurized air at its inlet;
(d) a pneumatic valve having an inlet port, an outlet port and an exhaust port, said outlet port being connected to the inlet of said normally-closed pressure switch and said exhaust port venting air pressure at the inlet of said normally closed pressure switch in response to a reduction in air pressure at said inlet port of said valve;
(e) a tube assembly extending between said converter assembly and said remote control apparatus, said tube assembly comprising:
(i) said main tube which is essentialy electrically non-conducting,
(ii) a plurality of essentially electrically non-conducting secondary tubes for transmitting air pressure from a respective outlet of said pneumatic switches to an inlet of respective pressure switches, and
(iii) an additional essentially electrically non-conducting secondary tube for transmitting air pressure from the outlet of said two position pneumatic switch to the inlet of said normally-closed electrical pressure switch;
(f) an electrical switch apparatus comprising:
(i) a plurality of electric switches connected in parallel with corresponding pressure switches and coupled to respective electrically operated function valves,
(ii) an electric switch connected in parallel with said normally-closed pressure switch and coupled so that operation of

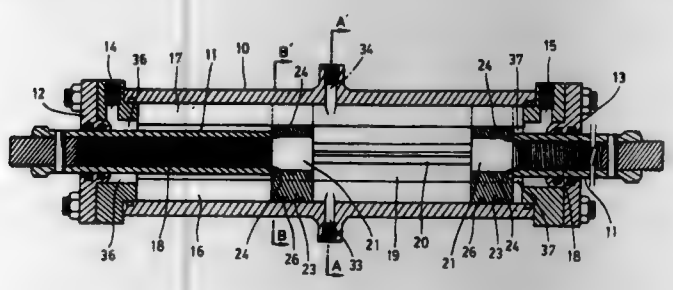
said electric switch dumps the pressure from the main hydraulic line.

4,508,015

HYDRAULIC CYLINDER

Weihwang Lin, No. 33, Lane 199, Kung Yuan 2 Rd., Kaohsiung, Taiwan

Filed Jul. 29, 1983, Ser. No. 518,460
Int. Cl.³ F01B *21/04;* F01C *9/00*
U.S. Cl. 92—2 **5 Claims**



1. A hydraulic cylinder comprising:
a cylinder having two closed ends for receiving a hydraulic fluid;
a rotor mounted for rotation about the axis of said cylinder;
two circular piston members respectively sleeved onto two ends of said rotor and having their peripheries sealingly engaged with an inner surface of said cylinder, said piston members bounding a first fluid tight arcuate chamber with the peripheral surface of said rotor and the inner surface of said cylinder, each of said piston members bounding, a second fluid tight chamber at one side of said first chamber, with the inner surface of said cylinder and one of said closed ends;
vane means provided on said rotor and sealingly engaged with the inner surface of said cylinder;
barrier means provided in said first arcuate chamber, whereby said first arcuate chamber is divided by said barrier means and vane means into at least two variable volume regions of segmented arcuate shapes;
at least one piston rod attached to one end of said rotor in a coaxial relationship and slidably mounted through one of said closed ends in fluid tight relationship;
first port means for admitting and returning the hydraulic fluid respectively communicated with said second chambers; and
second port means for admitting and returning the hydraulic fluid respectively communicated with said two regions of said first arcuate chamber;
said vane means includes one vane member, and said barrier means includes one barrier member, said vane member and said barrier member dividing said first arcuate chamber into two regions of variable volume, said barrier member extending through said piston members and up to said closed ends of said cylinder, and in which each of said piston members includes a lateral notch for receiving said barrier member.

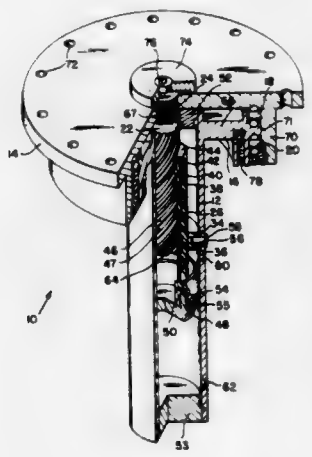
4,508,016

ROTARY ACTUATED SUPPORT

Paul P. Weyer, 48811 28th Ave. Southeast, Enumclaw, Wash. 98022

Filed Sep. 9, 1983, Ser. No. 530,977
Int. Cl.³ F01B *3/08*
U.S. Cl. 92—33 **10 Claims**

1. A fluid-powered, rotary actuated support for a crane or other device, comprising:
an elongated cylindricl body having ports for introducing pressurized fluid therein;
a platform concentric with said cylindrical body and rotatable relative thereto;
a radially extending bearing support joined to said cylindrical body and confronting said platform;
load-carrying bearing means disposed between said bearing support and said platform for allowng relative rotary motion between said platform and said bearing support, said bearing means being external to said body and not subject to said pressurized fluid therein, one of said platform or bearing support being subjected to bending loads disposed in a generally vertical plane from the weight of the crane or other device and its load;
an output shaft rotatably disposed within said body and having a drive end for providing rotational drive between said body and said platform;



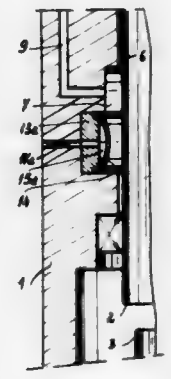
flexible coupling means coupling said drive end of said output shaft to said platform for transferring rotational torque between said body and said platform without causing bending of said output shaft from said bending loads of said crane, said drive end being radially movable under said bending loads; and
linear-to-rotary transmission means disposed within said body and operable to provide relative rotational movement between said body and said output shaft, said transmission means being operable while said output shaft drive end is subjected to said radial movement.

4,508,017

FLUID-CONTROL SYSTEM FOR A HYDRAULIC PERCUSSION INSTRUMENT

Roger Montabert, Lyons, France, assignor to Etablissements Montabert, Saint-Priest, France

Filed Jul. 14, 1982, Ser. No. 398,237
Claims priority, application France, Jul. 17, 1981, 81 14304
Int. Cl.³ B25D *9/06;* F16F *9/19*
U.S. Cl. 92—85 B **8 Claims**



1. In a hydraulic percussion implement having a body with a cylindrical bore centered on a generally vertical axis, a ram reciprocable in said bore and provided with a piston head received in an enlargement of said bore connectable to a source of hydraulic liquid under pressure, said body forming a seat for a tool at a lower end of said bore to be impacted by said ram in

a bottom position thereof, and seal means in said bore engaging a lower extremity of said ram, said bore being annularly recessed to form a hydraulically ineffectual drainage chamber at a level below said enlargement but above said seal means for collecting liquid leaking down alongside said ram, said drainage chamber having an outlet connected via a check valve to a low-pressure region,

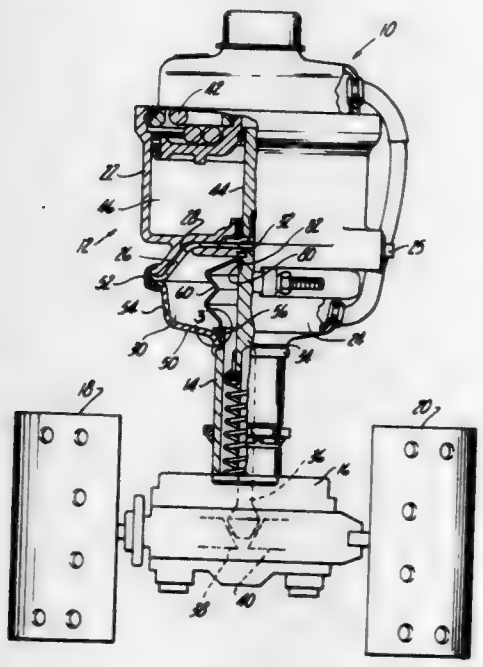
the combination therewith of a pneumatic buffer disposed in said body substantially at the level of and in communication with said drainage chamber in the vicinity thereof for absorbing hydraulic shocks generated by the impact of said ram upon said tool, said buffer comprising a flexible membrane forming at least part of an enclosure for a volume of gas and separating said volume from said drainage chamber.

4,508,018

BOOT ASSEMBLY FOR BRAKE ACTUATOR

Graydon J. Choinski, Utica, and Dave W. Brooks, Royal Oak, both of Mich., assignors to Thyssen-Bornemisza, Inc., New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,344
Int. Cl.³ F16J *15/18*
U.S. Cl. 92—128 **9 Claims**



1. In a brake actuator having a service section chamber housing connected to a second housing by means of a mounting tube extending at one end thereof a short distance into said service section chamber housing and including a piston assembly extending through said mounting tube movable therein for cooperation with mechanisms in the second housing to generate braking forces, the improvement comprising:

an annular groove formed in the outer peripheral surface of said one tube end within said chamber housing;

a flexible boot connected at one end to said piston assembly and including a sleeve portion at the other end fitted telescopically over said one tube end and having an axial length greater than the axial length of said groove, said sleeve portion having a generally smooth cylindrical outer wall and a generally smooth cylindrical inner wall extending, with uniform diameter, from said other boot end throughout the axial length of said sleeve portion, the diameter of said inner wall in the relaxed condition of said boot being at least as great as the outer diameter of said one tube end so as to facilitate fitting said sleeve portion over said one tube end; and

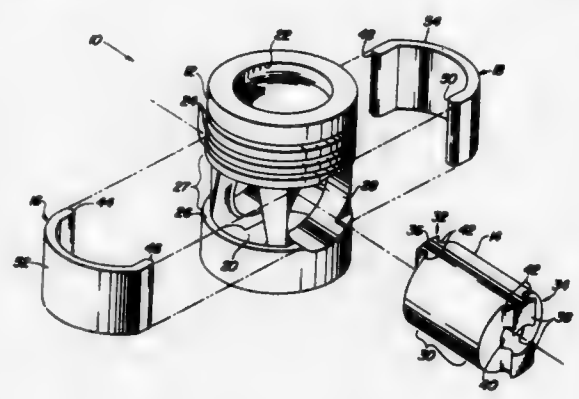
a rigid annular retainer ring surrounding said sleeve portion in the area of said annular groove having an axial length greater than the axial length of said groove and having an inner diameter less than the relaxed outer diameter of said sleeve portion but greater than the outer diameter of said one tibe end, said ring and said sleeve portion of said boot axially overlapping said groove entirely including both axial ends of said groove in the assembled relation of said ring, said boot and said one tube end so that said ring compressingly extrudes a portion of the inner wall of said sleeve portion into said annular groove to form an extruded inner bead axially filling said groove to preclude axial movement of said boot relative to said groove and thereby secure said boot to said one tube end.

4,508,019

REDUCED IMPACT PISTON ASSEMBLY

Dennis F. Kabele, Cedar Falls, and Herbert J. Hauser, Jr., Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 29, 1982, Ser. No. 362,816
Int. Cl.³ F01B *31/10*
U.S. Cl. 92—158 **12 Claims**



1. A reduced impact piston assembly comprising:

(a) a hollow cylindrical body having a piston pin bore formed therethrough and having an annular groove formed about its outer circumference which is centered relative to the axis of said cross-bore;

(b) a piston pin received in said piston pin bore and having an exposed intermediate portion for attachment of a connecting rod thereto, said piston pin further having first and second annular grooves formed distal first and second ends thereof; and

(c) a pair of C-shaped inserts positioned in said annular groove and adapted for constant engagement with a cylinder wall, the ends of said inserts engaging said annular grooves formed in said piston pin to prevent axial movement of said piston pin within said piston pin bore and to form a closed loop having a circumferential length which is greater than the circumferential length of said cylindrical body.

4,508,020

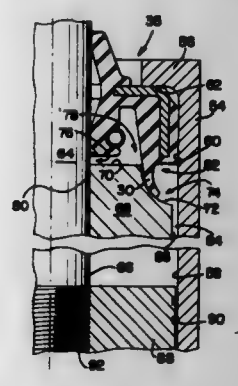
MULTI-FUNCTION FLUID SEAL FOR DAMPERS AND THE LIKE

Peter Szcupak, Park Ridge, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Feb. 18, 1983, Ser. No. 467,597
Int. Cl.³ F16J *15/18*
U.S. Cl. 92—168 **9 Claims**

1. A fluid seal unit for use in retaining fluids within an associated sealed mechanism having first and second relatively movable parts defining at least one of a pair of fluid-receiving and retaining regions within said mechanism, said seal unit, and a first elastomeric seal body bonded to a portion of said casing unit, said first elastomeric seal body being of generally annular form, and having portions defining a primary fluid lip portion and a secondary excluder lip portion, with said primary lip portion having air and oil side frusto-conical surfaces meeting along a generally circular locus to define a seal band adapted to engage one of said first and second parts forming parts of said associated sealed mechanism in snug sealing engagement, said

oil side frusto-conical surface being directed in part toward the first of said pair of fluid-retaining sealed regions within said mechanism, and a second, relief valve seal body also bonded to said casing unit at and being defined at least in part by a generally radially outwardly facing annular surface, an at least partially radially inwardly facing surface and a radially extending end face surface joined at its edges to axially inner margins of said outwardly and inwardly facing annular surfaces, said relief valve seal body being adapted to cooperate with a contoured



relief valve seating surface forming a portion of said associated sealed mechanism, with said relief valve seal body surface and said seating surface being dimensioned so that said relief valve seal body surface is urged against said seating surface portion by the inherent resiliency of said relief valve seal body, said secondary excluder lip portion also including at least one annular surface adapted to define, in cooperation with one of said first and second movable parts of said sealed mechanism, a generally circular, radially inwardly acting excluder seal band.

4,508,021

VENTILATING ARRANGEMENT

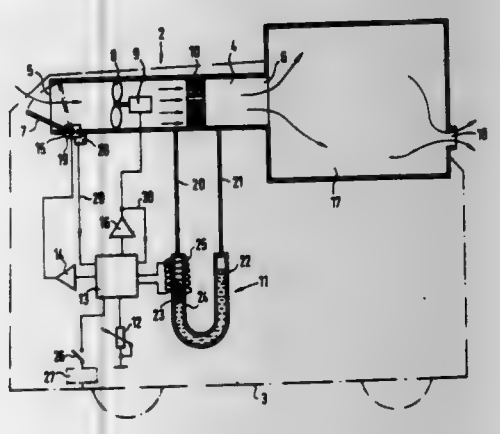
Helmut Steinmann, Höllhäuserweg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 503,722

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235162

Int. Cl.³ B60H *1/26*

U.S. Cl. 98—2.01 **7 Claims**



1. A ventilating arrangement, particularly an air conditioning arrangement for a vehicle having a cabin, comprising

an air passage extending from outside into a vehicle cabin;

an adjustable flow regulating flap associated with said air passage;

an impeller rotatable in said passage with a variable number of revolutions;

a flow resistance part provided in said air passage;

a nominal value setter for adjusting a nominal value of air throughput; and

a pressure measuring element arranged to act onto said flow regulating flap and to change the rotary speed of said impeller so that despite differing travel speeds an air throughput adjusted on said nominal value setter remains substantially the same, said pressure measuring element being formed as a differential pressure meter and having two connecting members arranged so that one of said connecting members is connected with said air passage upstream of said flow resistance part, whereas the other of said connecting members is connected with said air passage downstream of said flow resistance part.

4,508,022

CEILING AIR OUTLET

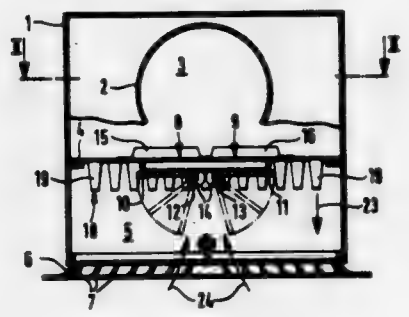
Wolfgang Finkelstein, Neukirchen-Vluyn, and Hans Riegel, Geldern, both of Fed. Rep. of Germany, assignors to Gebrueder Trox GmbH, Neukirchen-Vluyn, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,166

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147224

Int. Cl.³ F24F *13/075*

U.S. Cl. 98—40.12 **20 Claims**



1. A ceiling air outlet, in particular for air conditioned rooms, comprising:

(a) a housing;

(b) means associated with said housing for connecting said housing to a supply air duct;

(c) partition means mounted in said housing separating said housing into an upper housing and a lower housing and said means associated with said upper housing for thereto providing supply air;

(d) an outlet grid mounted to said housing parallel to and below said partition means and cooperating therewith for defining an induction space;

(e) at least a first outlet disposed in said partition means;

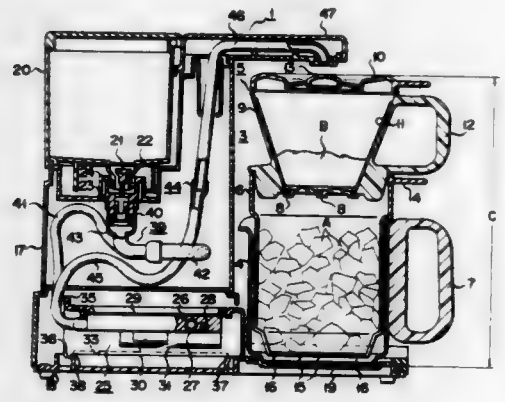
(f) adjustable baffle means connected to said partition means for adjustably opening and closing said at least a first outlet in response to fluctuations in the volume of supply air; and,

(g) a plurality of apertured nozzle means mounted to said partition means disposed about said at least a first outlet projecting into said induction space and communicating with said upper housing so that supply air issuing through said nozzle means creates a vacuum in said induction space causing areal air in the room to be drawn through said outlet grid into said induction space and therewith to mix with the supply air and to therewith issue through said outlet grid so that total amount of air issuing from said outlet grid into the room remains constant and whereby opening and closing of said baffle means in response to the volume fluctuations in supply air proportionately regulates the amount of areal air drawn into said induction space.

4,508,023
EXTRACT GENERATING DEVICE

Masaru Naya, Tama, and Tsuneichi Ikeda, Ibaraki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Kanazawa Industries, Asakusabashi, both of, Japan

Filed Jan. 31, 1984, Ser. No. 575,684
Claims priority, application Japan, Feb. 28, 1983, 58-32041
Int. Cl.[3] A47J *31/57*
U.S. Cl. 99—279 10 Claims

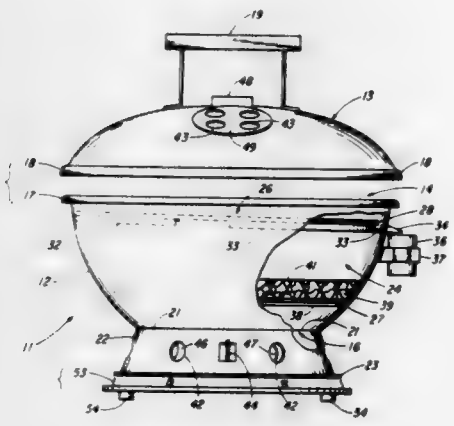


1. A device for producing an extract comprising:
a hot drink extractor including a jug and a filtering device;
a cooling vessel removably disposed between the jug and the filtering device and which is to be filled with ice, the cooling vessel, the jug and the filtering device forming a cold drink extractor;
hot water means for producing hot water and discharging the hot water into said filtering device; and
a movable stand, attached to the hot water means for movement between a first position in which the hot drink extractor can be freely placed on or removed from said movable stand and a second, retracted position in which said cold drink extractor can be positioned to receive hot water from hot water means, said movable stand including means for keeping the jug hot when said movable stand is in said first position.

4,508,024
INDOOR-OUTDOOR CONVERTIBLE COOKER

Gary M. Perkins, 3196 Boeing Rd., Cameron Park, Calif. 95682

Filed Apr. 9, 1984, Ser. No. 597,906
Int. Cl.[3] A47J *37/07*
U.S. Cl. 99—340 10 Claims

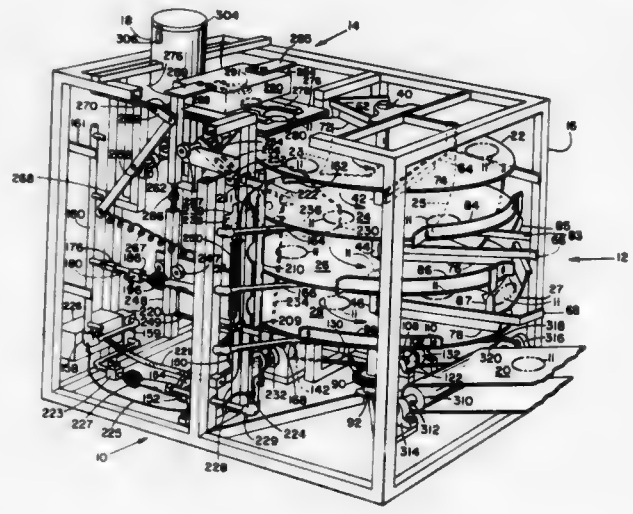


1. A convertible cooking apparatus, using a combustible material as a source of heat for outdoor cooking and a stove burner element as a source of heat adaptable for heating heat retentive material for indoor cooking, comprising:
a. a walled container defining a cooking chamber, said container having an open top defined by an upper edge and an open bottom defined by a lower edge, said lower edge being adapted to surround at least a portion of the stove burner element;
b. a cooking grill disposed within the upper portion of said cooking chamber;
c. a heating grate disposed within the lower portion of said cooking chamber, said heating grate being adapted to support the combustible material during outdoor cooking and to support a layer of heat retentive material during indoor cooking;
d. a removable top cover having a lower edge conforming to said upper edge of said container; and,
e. a removable base cover, attached to the lower edge of said container and enclosing said open bottom during outdoor cooking, said base cover being detached from said lower edge during indoor cooking.

4,508,025
TORTILLA PRESS AND OVEN UNIT

George A. Schultz, 176 Ohio Ave., New Braunfels, Tex. 78130

Filed Jun. 16, 1983, Ser. No. 504,871
Int. Cl.[3] A47J *37/00*
U.S. Cl. 99—353 10 Claims



1. An oven for toasting a bakery product, comprising:
a first disc rotatable in a horizontal plane through a complete revolution for toasting a first side of said bakery product thereon;
a second disc rotatable in a horizontal plane through a complete revolution adjacent to and in vertical alignment with said first disc for toasting a second side of said bakery product thereon;
means for rotating said first disc and said second disc, said rotating means including a vertical shaft extending through approximately a center of and in operative engagement with said first disc and said second disc;
means for heating said first disc and said second disc; and
means for translating said bakery product from said first disc to said second disc upon rotation of said first disc, thereby to sequentially toast said first and second sides of said bakery product.

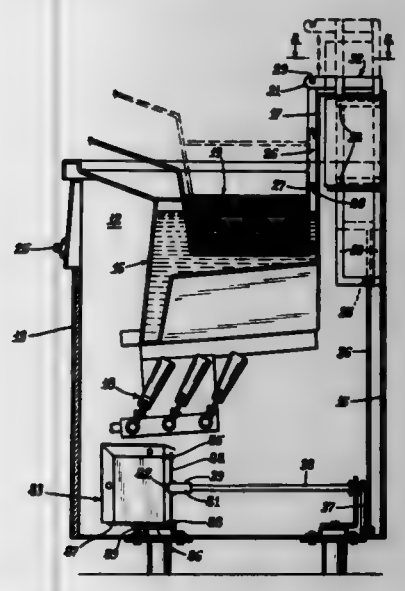
4,508,026
BASKET MOVING MECHANISM FOR DEEP FAT FRYER

Richard J. Anetsberger, and John A. Anetsberger, both of North Brook, Ill., assignors to Anetsberger Brothers, Inc., Northbrook, Ill.

Filed Jul. 25, 1983, Ser. No. 516,632
Int. Cl.[3] A47J *37/12*
U.S. Cl. 99—407 5 Claims

1. In a deep fat fryer having a kettle mounted in an outer casing, and food-supporting basket means for immersing food into, and removing the same from, said kettle; basket lowering and lifting means, comprising vertically slidable basket support means mounted at the rear of said casing, crank means rotatably mounted adjacent the lower end of said basket support

means for moving the latter vertically, shaft means secured to said crank means for rotating the same and extending forwardly therefrom, motor means mounted in the lower front



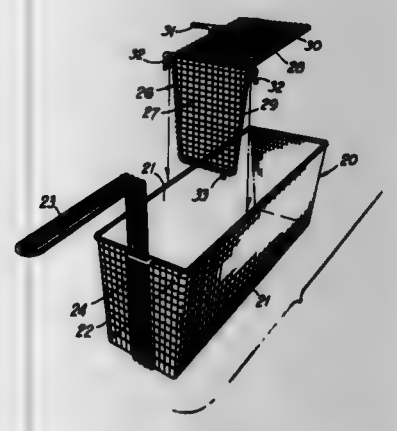
portion of said casing and connected to the forward end of said shaft means for rotating the same, and switch control means for said motor means mounted directly adjacent the latter.

4,508,027

PORTION DIVIDING FRYING BASKET

Frederick B. McCord, 5121 Pinefield Dr., Macon, Ga. 31206

Filed Dec. 19, 1983, Ser. No. 563,081
Int. Cl.³ A47J *37/12*
U.S. Cl. 99—416 **15 Claims**



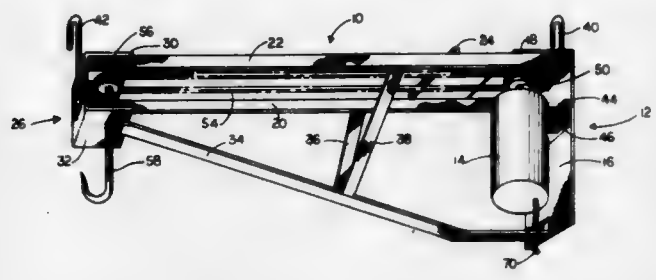
1. A partition unit for use with a food frying basket of the type having foraminous upstanding sides and ends, a foraminous bottom and open at its top, so that the partition separates premeasured individual food servings being cooked in the basket for retaining one serving in the basket while an adjacent cooked serving is being dumped from the basket, said partition unit comprising an L-shaped unit consisting of substantially right angular, rigidly connected panels formed of foraminous material, one of said panels being of dimensions to be removably received in said basket for extending between said sides, spaced from and generally parallel to the ends of said basket, the other of said panels being of dimensions to extend across a portion of said open top of said basket for arresting food in a part of said basket when the basket is inverted, a lifting handle fixed on the partition unit to facilitate placing it in cooperative relationship with a frying basket and means for removably connecting a perimeteral portion of one of said panels to the said basket for arresting such partition unit when the basket is inverted.

4,508,028

COOKING APPARATUS FOR VERTICALLY SUSPENDING AND ROTATING MEAT

James D. Booker, Jr., P.O. Box 355, Marksville, La. 71351

Filed Nov. 14, 1983, Ser. No. 551,328
Int. Cl.³ A47J *37/04*
U.S. Cl. 99—421 V **15 Claims**



1. A portable cooking apparatus for suspending and rotating food in close proximity to a heat source, comprising:

a. portable frame means adapted to be suspended from an elongated horizontal support member, said portable frame means having a first end plate and a second end plate, said first end plate and said second end plate being parallel;

b. hook means for suspending food to be cooked, said hook means being rotatably connected to said frame means, said hook means being rotatable about a vertical axis;

c. electric motor means rigidly connected to said frame means for rotating said hook means, said motor means being located on said frame means at a distance from said hook means and said heat source sufficient to prevent damage to said electric motor means from said heat source, said electric motor means being connected to said first end plate, and

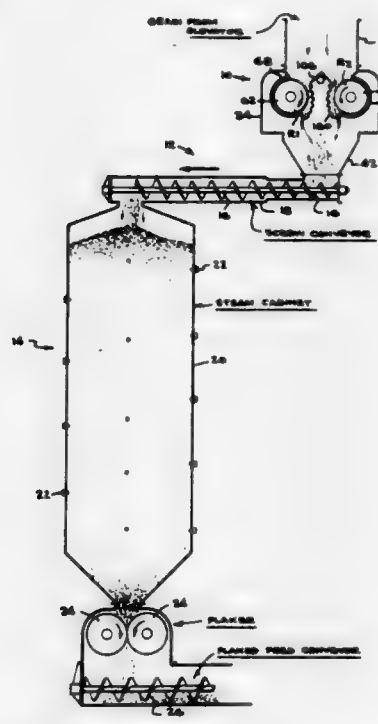
d. drive means for connecting said electric motor means to said hook means for causing said hook means to rotate.

4,508,029

APPARATUS FOR PREPARING FEED GRAIN

Thomas J. Malone, Lubbock, Tex., assignor to Nutri-Developers, Inc., Lubbock, Tex.

Filed May 3, 1983, Ser. No. 491,856
Int. Cl.³ B02B *1/00*; B02C *4/00*
U.S. Cl. 99—516 **55 Claims**



1. Apparatus for treating grain comprising:

a steam flaker having an inlet;

grain scratcher-moisturizer including housing;

roll means of cylindrical configuration mounted for rotation in said housing;

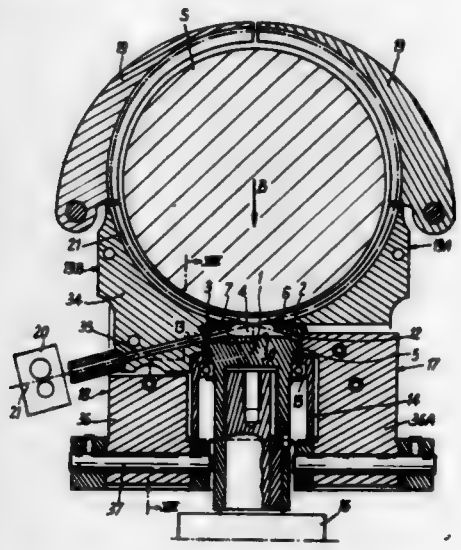
drive means for drivingly rotating said roll means;
a plurality of teeth extending in a general radial direction from said roll means;
feed means for directing grain onto said roll means when said roll means is being driven so that one or more of said teeth strike and scratch the surface of the grain and hurl it away from the roll means;
deflector means spaced from and facing the roll means for deflecting grain hurled from the teeth on the roll means back into striking contact with the teeth on the roll means whereby the grain surface is scarified on its outer surface;
spray means for applying moisture to the scratched grain; and
discharge means for discharging the scratched grain from the housing into said steam flaker inlet.

4,508,030

METAL BINDING WIRE TWISTING DEVICE

René Grenon, Victor Hugo St., 21, 77181 Courtry, France

PCT No. PCT/FR82/00057, § 371 Date Nov. 3, 1982, § 102(e) Date Nov. 3, 1982, PCT Pub. No. WO82/03368, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 23, 1982, Ser. No. 441,534
Claims priority, application France, Mar. 26, 1981, 81 06106
Int. Cl.³ B65B *13/28*
U.S. Cl. 100—26 **12 Claims**



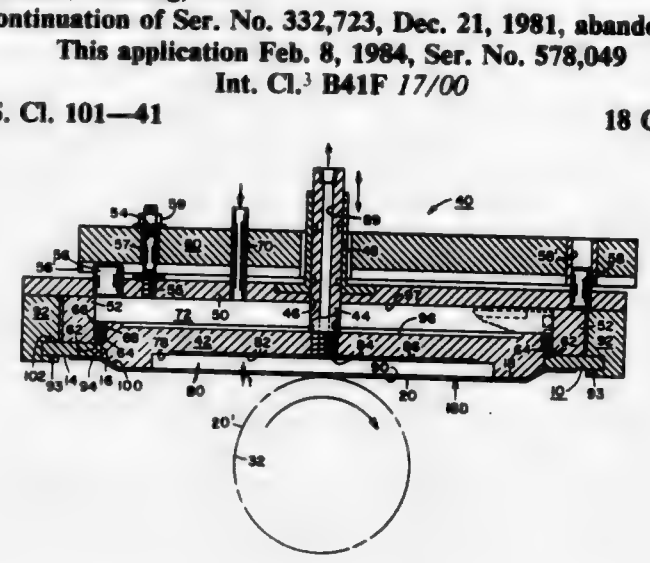
1. A device for twisting together the two ends (23,24) of a wire (21) binding an object (S) comprising a wire guide (19) with a groove (35) and a fixed part (19A,19B) containing a rotatable twisting head (1) having a central recess (4) with two oppositely-disposed inclined passages (2,3) and aligned with the groove (35) when the head (1) is in a stopped position, wherein two oppositely disposed clamps (17,18) are adapted to immobilize respective ends of the wire (21) in the wire guide (19) close to the head (1), said clamps (17,18) each gripping said wire (21) between the head (1) and the object (S), and the oppositely-disposed inclined passages (2,3) are cylindrical passages opening in a lateral surface of the head, an abutment member (12) is disposed opposite the external opening of one passage (2) and cutting means (13) are disposed in correspondence with an external opening of the opposite passage (3) to cooperate with said external opening for cutting the wire.

4,508,031

FLEXIBLE MEMBRANE PRINTING APPARATUS FOR A DECORATING MACHINE

Lawrence S. Rajnik, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 332,723, Dec. 21, 1981, abandoned. This application Feb. 8, 1984, Ser. No. 578,049
Int. Cl.³ B41F *17/00*
U.S. Cl. 101—41 **18 Claims**



1. Apparatus for printing an article utilizing a design carrying working surface comprising:
a frame having an aperture therein, a flexible elastic membrane carried by said frame, said flexible membrane having a working surface forming a portion of said membrane and disposed over said aperture;
means for supporting the flexible working surface of the membrane for application of a separable design thereon including a housing, and a porous plate mounted within said housing having a free face for engaging an opposed rearward facing portion of said flexible working surface; and means coupled to said housing for supplying reduced air pressure relative to atmospheric pressure for establishing a reduced air pressure relative to ambient atmosphere at the free face of said porous plate, and for drawing said rearward facing portion of the flexible working surface against said free face of the porous plate to secure said membrane in close contact therewith;
flexible actuator means having a deformable solid preshaped face engagable with said flexible membrane opposite the design carrying working surface thereof for deforming said membrane into conformance with said preshaped face of the flexible actuator means; means for positioning the article adjacent the deformed membrane;
means for driving the actuator means and for moving said deformed membrane having the shape of said pre-shaped face into engagement with the article in a nonslip simulated rolling contact, from a center area thereof to an outer peripheral edge, at a selected contact angle of between 5° and 50°, for separating the design portion from the membrane and transferring the same to the article; and said membrane having a selected affinity for the design portion less than that of the article so that upon contact with said article the design portion transfers to the article.

4,508,032

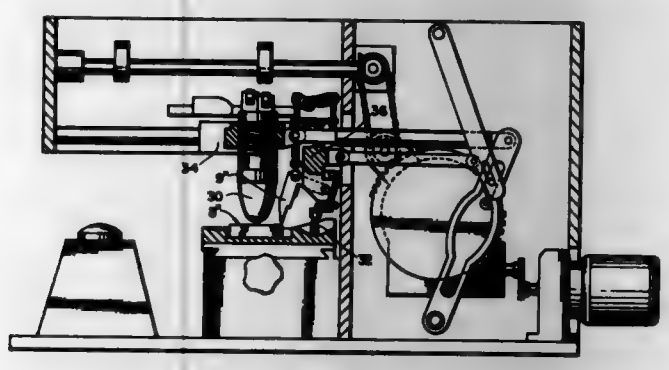
GRAVURE PRESS

Wilfred Philipp, Lenbach Strasse 8, D 7014 Kornwestheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 122,996, Feb. 20, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 393,778
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906902; Apr. 12, 1979, 2914878
Int. Cl.³ B41F *1/16;* B41M *1/40*
U.S. Cl. 101—163 **7 Claims**

1. A gravure press for use in indirect gravure printing having a gravure plate seated on a mounting plate, an inking device for applying ink to the plate, a doctor blade for wiping the inked plate, a silicon rubber pad for transferring the ink to the mate-

rial to be printed, and a drive mechanism for the silicon rubber pad, the inking device and the doctor blade, said drive mechanism being provided with a dovetailed groove having threaded guide sections, said guide sections containing a screw on which are mounted a flanged sleeve and a disk, said mounting plate being level and having a micro-finished smooth flat surface, said gravure plate comprising a thin sheet of uniform thickness coated with a light sensitive plastic containing a design in the form of washed out dots or lines, and having a thickness equal



to the depths of said washed out dots or lines, said doctor blade being rigid, resistant to bending and having a straight-edge for wiping said gravure plate, and means mounting said doctor blade on said drive mechanism for securing and maintaining the straight edge of said doctor blade parallel to the flat surface of said gravure plate on contact of said doctor blade therewith, said means mounting the rigid doctor blade comprising a resilient support pad being held on and between said sleeve and said disk, the edge of said doctor blade opposite said straigth edge being seated in said support pad.

4,508,033

TRAVELING PAPER WEB CAPTURING APPARATUS FOR USE WITH A ROTARY PRINTING MACHINE

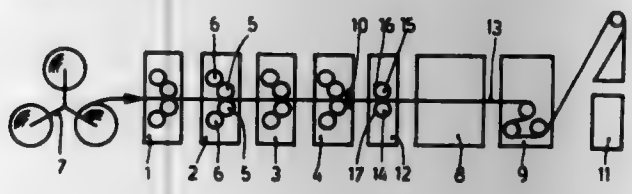
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,661

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309558

Int. Cl.³ B65H *25/00;* B41F *13/54*

U.S. Cl. 101—217 **4 Claims**



1. In a rotary printing machine system having at least one printing station (1, 2, 3, 4), each including at least one rotary printing cylinder (5) and a counter cylinder, for printing subject matter on a side of a substrate web;

apparatus to prevent damage to the printing cylinder or the counter cylinder, respectively, upon tearing of the web, located downstream—in the direction of travel of the web—of at least one printing station, having

two paper capturing cylinders or rollers (14, 15) located at opposite sides of the web (13),

wherein

the paper capturing cylinders or rollers (14, 15) are in a continuous resilient engagement, with the web (13) interposed therebetween both during normal printing by the at least one printing system as well as upon tearing of the web;

both rollers (14, 15) are driven with a circumferential speed which is at least approximately equal to the linear speed of the web;

at least that one of the capturing cylinder or roller which faces the printed subject matter has the same diameter as the printing cylinder;

and wherein that one of the capturing cylinder or roller which is in engagement with the side of the web which has received printed information at the at least one printing station has a surface which is ink-and-printed-information-accepting.

4,508,034

CONTROL MECHANISM TO DISABLE DRIVEN INK METERING ELEMENTS IN ROTARY PRINTING MACHINES

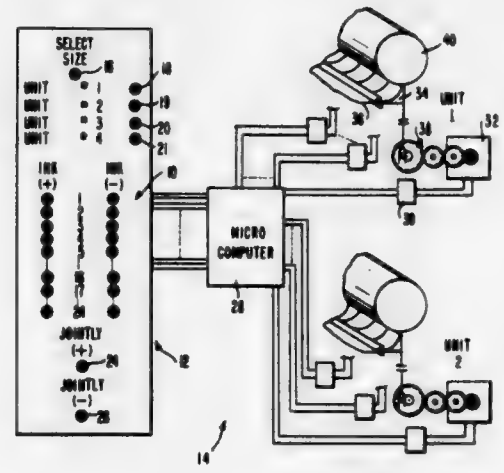
Claus A. Bolza-Schünemann, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Continuation of Ser. No. 300,854, Sep. 10, 1981, abandoned. This application Feb. 2, 1984, Ser. No. 575,726

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3034417

Int. Cl.³ B41F *31/30*

U.S. Cl. 101—365 **7 Claims**



1. In a control mechanism for disabling selected driven ink metering elements in rotary printing machines from a remote control station, which metering elements cooperate with an ink fountain roller, comprising:

at least one ink fountain roller having an ink fountain;

a plurality of ink metering elements for said ink fountain, said ink metering elements being individually adjustable to control the flow of ink from said fountain to said roller;

a plurality of drive motors, each drive motor being connected to drive an individual corresponding ink metering element in response to a motor control command signal;

a program-controllable micro computer having control inputs and output means providing command output signals;

a remote control panel having selectable command control means including a "Reduce Ink" command push button and an "Increase Ink" command push button for each ink metering element, an "Inking Unit" command push button for each ink fountain roller in the rotary printing machine for selecting an inking unit to be controlled, a "Select Size" command push button, a "Jointly-Reduce Ink" command push button, and a "Jointly-Increase Ink" command push button;

means connecting said push buttons to corresponding control inputs to said micro computer;

means connecting said output means of said micro computer to corresponding drive motors, to provide selectable motor control command signals to said drive motors, said micro computer being operable selectively to position individual metering elements in response to operation of corresponding push buttons, whereby after operating said "Select Size" push button and a selected "Inking Unit" push button and subsequently operating a "Reduce Ink" push button for at least one selected adjustable metering

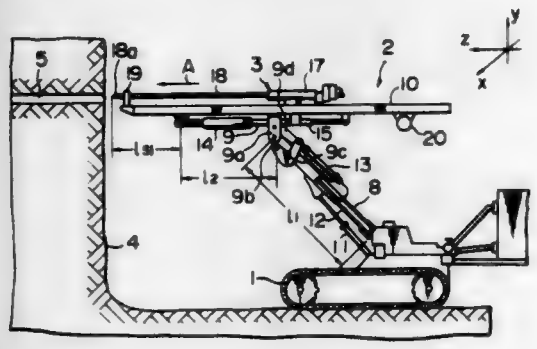
element, all selected metering elements are adjusted to a zero gap position with respect to their corresponding ink fountain roller, wherein ink metering elements adjusted into a zero position are placed in an inactive status with respect to any subsequent operation of said "Increase Ink", "Reduce Ink", "Jointly-Increase Ink", and "Jointly-Reduce Ink" push buttons, unless said inactive status is released by subsequent operation of said "Select Size" push button.

4,508,035

EXPLOSIVE CHARGING APPARATUS FOR ROCK DRILLING

Tohru Mashimo, and Osamu Satoh, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 18, 1983, Ser. No. 467,837
Claims priority, application Japan, Feb. 19, 1982, 57-26461
Int. Cl.³ F42B *3/00*
U.S. Cl. 102—313 **7 Claims**



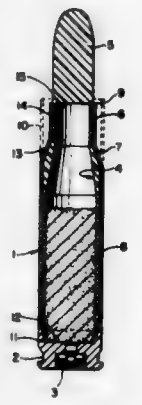
1. An explosive charging apparatus for charging controlled amount of explosives sequentially to bores drilled in a rock surface, said charging apparatus including explosive charging means having explosive outlet means, boom means carrying said explosive outlet means of the explosive charging means, boom actuating means for actuating said boom means so that the explosive outlet means of the explosive charging means is moved to a desired position, control circuit means for controlling said boom actuating means and said explosive charging means, said control circuit means including memory means having memories concerning locations, directions and depths of bores drilled in a rock surface, means for addressing memories of one of the bores in said memory means, transducing means for converting the addressed memories in said memory means to values of movements of said boom actuating means, servo control means for receiving outputs from said transducing means and controlling operations of said boom actuating means to locate said explosive outlet means against one of the bores drilled in the rock surface, charge depth setting means for setting a desired depth of explosive charging, charge control means operable upon completion of operation of said servo control means for controlling said explosive charging means so that explosives are charged to the desired depth in accordance with outputs of said charge depth setting means and applying a signal to said addressing means upon completion of explosive charging operation so that memories on another bore are addressed to perform another cycle of operation. said memory means including memories of bottom positions of the bores as the memories concerning the depths of the bores, the charge depth setting means including bore depth operation means for performing operations based on the memories in the memory means to obtain actual bore depths, void depth setting means for setting lengths in the bores where the explosives are not to be charged and charge depth operation means for performing operations based on actual bore depth signals from the bore depth operation means and void depth signals from the void depth setting means to determine charge depths.

4,508,036

TRAINING CARTRIDGE WITH SYNTHETIC RESIN PROJECTILE OR DUMMY PROJECTILE

Ernst Jensen; Jürgen Knappworst, and Rudolf Stahlmann, all of Fürth, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Oct. 17, 1983, Ser. No. 542,585
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238268
Int. Cl.³ F42B *00/00*
U.S. Cl. 102—444 **6 Claims**



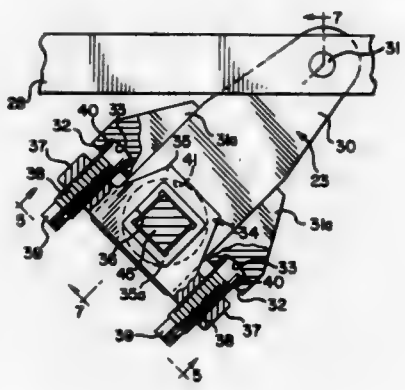
1. A training cartridge equipped with a synthetic resin projectile comprising a cylindrical cartridge case made of metal which is open at a front end and closed at a bottom end and a synthetic resin solid projectile integrally formed on a synthetic resin sleeve open at its rear end; said sleeve being inserted in the cartridge case and being held therein by means of a frontal zone of the cartridge case; said frontal zone comprising a conical case shoulder and an at least substantially cylindrical case neck that has an opening formed at the open front end of the cartridge case, the cartridge case being extended in the forward direction up to and flush with a rear end of the solid projectile and, after insertion of the synthetic resin sleeve, being drawn inwards in the frontal zone to form said conical case shoulder and said at least substantially cylindrical case neck, whereby the shoulder and neck encompass the synthetic resin sleeve in close contact therewith and clean separation of the solid projectile takes place at the open front end of the cartridge case upon firing of the cartridge.

4,508,037

DOOR LEVER ADJUSTING DEVICE FOR HOPPER CAR DOORS

George L. Rousseau, Homosassa, Fla., assignor to Pullman Standard, Inc., Chicago, Ill.

Filed May 24, 1982, Ser. No. 381,476
Int. Cl.³ B61D *7/18, 7/26, 7/28*
U.S. Cl. 105—290 **25 Claims**



1. A railway hopper car including a hopper structure having a discharge opening,

a frame supporting said hopper structure,

a door assembly connected to said hopper structure for opening and closing discharge opening,

a door operator supported on said frame including a movable thrust member,
lever means connected to said thrust member,
an actuating member projecting from the end of said lever means and being adjustably rotatable in the end of said lever means into a plurality of locked adjusted positions,
linkage means connected to said actuating member and said door assembly for closing and opening the same during rotation of said lever means, and
adjusting means engageable with said lever, and associated with said actuating member for rotating the same relative to said lever thereby adjusting the positioning of the linkage means of said door assembly relative to said door operator.

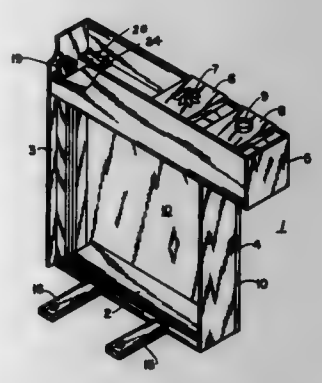
16. A railway hopper car including a hopper structure having a discharge opening,
a frame supporting said hopper structure,
a door assembly connected to said hopper structure for opening and closing said discharge opening,
a door operator supported on said frame including a movable thrust member,
lever means connected to said thrust member,
an actuating member projecting from said lever means,
linkage means connected to said actuating member and said door assembly for closing and opening the same during rotation of said lever means, and
adjusting means engaging said lever and being associated with said actuating member for rotating the actuating member relative to said lever in the assembled condition of said lever means with said actuating member, thereby adjusting the position of the linkage means of said door assembly relative to said door operator.

4,508,038

COLLAPSIBLE END TABLE

William Tulenko, Jr., 8530 Wittner Rd., Pittsburgh, Pa. 15237

Filed Jun. 21, 1983, Ser. No. 506,507
Int. Cl.³ A47B *3/00*
U.S. Cl. 108—135 **4 Claims**



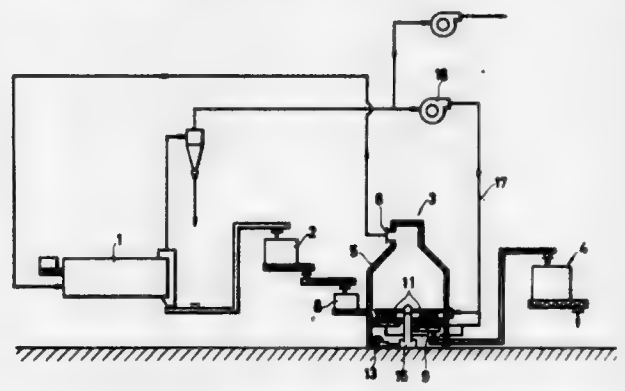
1. A free standing collapsible table unit which is completely separate from and useful alongside any sofa or chair, said unit comprising a vertically mounted solid table that has opposite edges which are relatively slidable inwardly or outwardly of said unit, a pivot extendible outwardly of the upper edge of said table, a supporting panel into the edge of which said pivot extends, a knob attached to said supporting panel, so that by pulling the knob laterally of said unit, the table may be selectively slid inwardly or outwardly of said unit along said edges, a leg of said table which is pivotally mounted at one end of the table edge, means for temporarily holding said leg in place along the edge of said table, located at the other end of said table edge when said table is collapsed, whereby said table when pushed outwardly of said unit, may be selectively swung on said pivot into a horizontal plane so as to extend horizontally outwardly of said unit, either from the front of the unit or from the rear of the unit while supported on said leg when the leg is pivotally swung to the vertical position, and means for detachably fastening said unit to the underframe of a sofa or chair and constituting the sole means for attaching said unit thereto.

4,508,039

METHOD OF AND SYSTEM FOR INCINERATING SLUDGE

Tetsuo Noguchi, and Kanji Kuwabara, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Okawara Seisakusho, Shizuoka, Japan

Filed Apr. 16, 1984, Ser. No. 600,470
Claims priority, application Japan, Apr. 22, 1983, 58-71645
Int. Cl.³ F23G *5/00*
U.S. Cl. 110—258 **5 Claims**



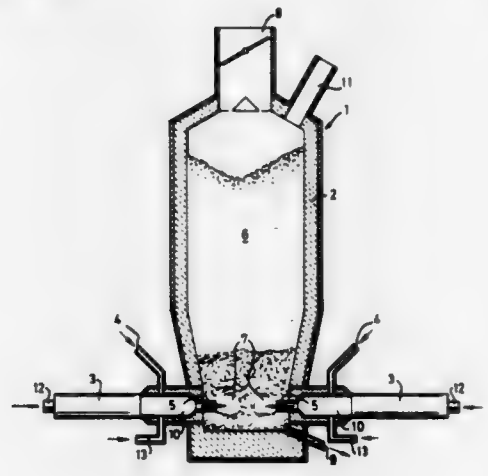
1. A method of incinerating sludge, comprising the steps of:
(a) predrying the sludge in a dryer;
(b) introducing the predried sludge into an incinerator;
(c) stirring the introduced sludge in the incinerator by at least one stirring arm; and
(d) concurrently with said stirring, blowing an amount of air, ranging from a half to one times as much as a theoretical amount of air needed for combustion of the sludge, from said stirring arm to the sludge to burn the latter gently, and
(e) further blowing an exhaust gas of high humidity and low oxygen concentration to the sludge in the incinerator for being mixed with a reducible exhaust gas, which is produced during an initial combustion in the incinerator, to thereby burn the sludge at a temperature below 1,200° C.

4,508,040

METHOD AND PLANT FOR CONVERSION OF WASTE MATERIAL TO STABLE FINAL PRODUCTS

Sven Santén, and Jan Thörnblom, both of Hofors, Sweden, assignors to SKF Steel Engineering Aktiebolag, Sweden

Filed Aug. 2, 1982, Ser. No. 404,404
Claims priority, application Sweden, Jan. 18, 1982, 8200228
Int. Cl.³ F23D *1/00*; C07C *31/04*
U.S. Cl. 110—347 **16 Claims**



1. A method of converting waste material at least partially

comprising thermally disintegratable chemical substances to stable final products such as CO_2, H_2O and HCl, comprising the steps of:

(a) bringing such waste material as may be present in solid form into feedable form by dissolving, suspending or crushing such material;

(b) at least partially disintegrating the waste material in a plasma gas of high temperature generated in a plasma generator by introducing the plasma gas, with at least one of the waste materials and the disintegration products thereof, into a prereaction chamber between the plasma generator and a reaction chamber, and subjecting said plasma gas and said at least one of said waste material and disintegration products to intense turbulence therein;

(c) thereafter feeding the at least partially disintegrated waste material in feedable form together with an oxygen-containing gas into a reaction zone heated to at least 2000° C., said reaction zone consisting of a cavity in a gas-permeable carbonaceous filling material in piece form arranged in a reaction chamber, said cavity being formed by directing the plasma jet from the plasma generator towards and projecting into said filling material in the reaction chamber;

(d) in said reaction zone maintaining the oxygen potential such that substantially completely all the at least partially converted waste material is converted into stable final products;

(e) removing the stable final products from the reaction zone by permitting gaseous products to flow upwardly through the gas-permeable filling material and molten or soild products to fall into the bottom of the reaction chamber; and

(f) binding substantially all of such chlorine and hydrogen chloride as may be contained in said gaseous products by rapid cooling and washing.

4,508,041

PROCESS FOR THE COMBUSTION OF COKE PRESENT ON SOLID PARTICLES AND FOR THE PRODUCTION OF RECOVERABLE HEAT FROM HYDROCARBON-BEARING SOLID PARTICLES AND APPARATUS THEREFOR

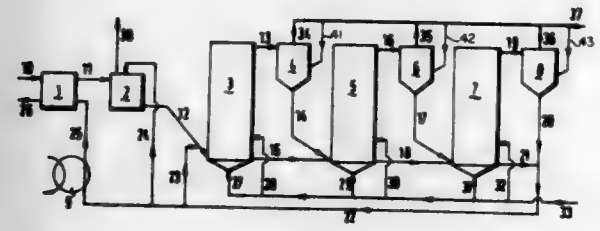
Heinz Voetter; Richard C. Darton; Hubrecht C. A. Van Meurs, and Rajamani Krishna, all of The Hague, Netherlands, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Sep. 8, 1983, Ser. No. 530,442

Claims priority, application United Kingdom, Oct. 21, 1982, 8230131

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **26 Claims**



1. Process for the combustion of coke present on solid particles from which hydrocarbons have been substantially removed by heating, in a series of at least two combustion stages under entrainment conditions, comprising the following steps:

(a) feeding all the solid particles into the first combustion stage of the series, through an inlet near its bottom;

(b) introducing an oxygen-containing gas into the bottom of each combustion stage, whereby at least part of the particles are entrained towards an upper outlet and at least part of the coke on the particles is combusted, yielding a flue gas;

(c) passing the particles and the flue gas from the upper outlet of each combustion stage into a separation stage, following each combustion stage;

(d) separating the flue gas from the particles in each separation stage, discharging the flue gas at the top of the said stage and withdrawing the particles at the bottom thereof; and

(e) introducing at least a part of the withdrawn particles into the next combustion stage subsequent to the separation stage through an inlet near its bottom, thereby starting a new sequence essentially the same as in (a) through (d), at least a part of the particles withdrawn from the last separation stage being discharged.

4,508,042

NEEDLE CLAMP FOR A SEWING MACHINE

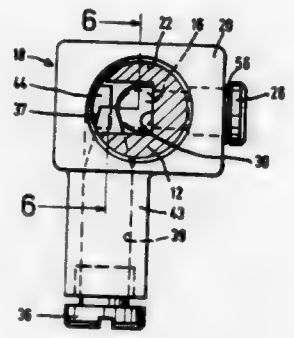
Nereo Bianchi, Pavia, Italy, assignor to NECCHI Societa per Azioni, Pavia, Italy

Filed Jul. 1, 1982, Ser. No. 393,887

Claims priority, application Italy, Jul. 13, 1981, 42913 A/81

Int. Cl.³ D05B *55/02*

U.S. Cl. 112—226 **1 Claim**



1. A needle clamp for a sewing machine for fastening the shank portion of a needle in a predetermined position to a bottom portion of a needle bar, a separate guide member attached to a lower portion of said needle clamp and including a top surface with a cylindrical opening through which passes a grooved bottom portion of said needle bar, said guide member having a bottom surface with a hole therein through which passes said needle shank to lie within said needle bar groove, wherein said hole has substantially the same shape as a transverse section of the needle shank, and a tooth means extending into said cylindrical opening and engaging said needle bar groove to ensure correct alignment of said guide member with said needle clamp.

4,508,043

PRESSER FOOT DEVICE ON A SEWING MACHINE

Kurt Vollmar, Weilerbach, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Nov. 9, 1983, Ser. No. 550,194

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242509

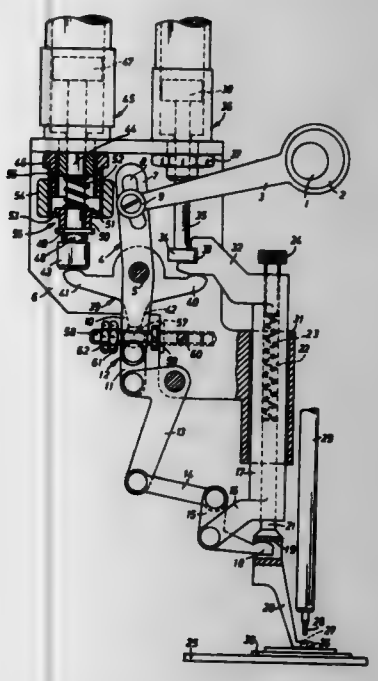
Int. Cl.³ D05B *29/02*

U.S. Cl. 112—235 **8 Claims**

1. A presser foot device on a sewing machine having a reciprocating presser foot, an oscillating drive for said presser foot which includes a toggle mechanism having an output member connected to the presser foot for moving it downwardly and upwardly to engage and disengage from the material to be sewn and which is connected to the presser foot for effecting vertical oscillations synchronously with the stitch formation, and wherein the presser foot is movable by a first compressed air cylinder and piston combination between an inoperative and an operative position, comprising a second air cylinder and piston combination adjacent the presser foot, a movable abutment element carried on said machine which is engaged by said second compressed air cylinder and piston combination for adjusting the lowered position of the foot, said

abutment element comprising a lever engaged with the piston rods of said first and second piston and cylinder combinations which is pivotally mounted and acts on said presser foot for varying the height postion of the output element of the oscillating drive, said second compressed air cylinder and piston combination comprising an double-action cylinder, and spring means holding said piston of said second piston and cylinder combination in intermediate position when said second cylinder is vented.

4. In a sewing machine which includes a reciprocating needle adapted to move into and out of engagement with a work-



piece and which includes a presser foot which reciprocates outwardly into and out of engagement with the workpiece to be sewn and a drive member which is oscillated by the sewing machine drive which is connected through an angle lever of a toggle mechanism to the presser foot for moving it, the improvement comprising a control member movably mounted adjaceent said presser foot and engageable with said presser foot and being movable to shift said presser foot to adjust the lower dead center position of said presser foot and to move the presser foot between an operative and inoperative position, and fluid pressure means acting on said control member for varying the position thereof.

4,508,044

REBUILT PILLOW AND METHOD OF MANUFACTURING THE SAME

Robert E. Downey, and Claudine K. Downey, both of 1902 E. Fir St., Mt. Vernon, Wash.

Filed Jun. 14, 1983, Ser. No. 504,068
Int. Cl.[3] D05B *97/00*
U.S. Cl. 112—262.2 **17 Claims**

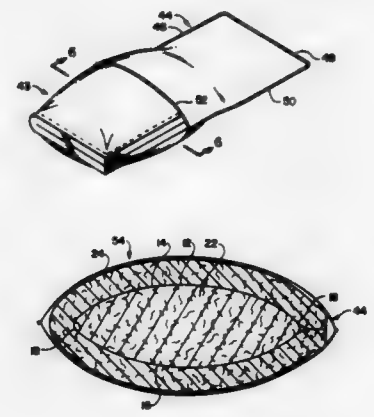
1. A method of making a rebuilt pillow, said method comprising:

(a) providing an existing pillow comprising a tick and a stuffing enclosed within said tick, said stuffing having sufficient bulk to occupy a substantial portion of an interior area of said tick, but which provides less than adequate cushioning support;

(b) providing an envelope having an overall configuration and overall dimensions corresponding to said existing pillow, said envelope defining a cavity to receive said existing pillow, said envelope being made of a yielding, cushioning material having a wall thickness sufficient to mask irregularities in the stuffing of the existing pillow;

(c) inserting the existing pillow into the cavity of said envelope;

(d) providing a second tick having an opening and inserting into the second tick the envelope with the existing pillow therein;



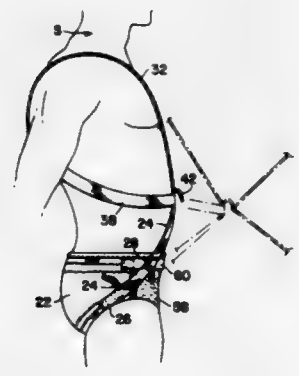
(e) closing the opening of the second tick to form said rebuilt pillow.

4,508,045

SAILBOARD HARNESS

Barry Spanier, Paia, Hi., assignor to Maui Harness Corporation, Kahului, Hi.

Filed Jan. 11, 1983, Ser. No. 457,193
Int. Cl.[3] B63B *35/72;* **B63H** *9/10*
U.S. Cl. 114—39 **12 Claims**



1. A sailing harness adapted to be worn by a sailor and fastened to the sail assembly of a sailboard for supporting the sailor during sailing and reducing fatigue, comprising:

buttock-engaging means adapted to surround the sailor's buttocks, including a projecting flexible load-bearing portion which is movable between an unloaded position close to the sailor's torso and a loaded position extending upwardly and forwardly of the sailor's hips;

a coupling member connected to said load-bearing portion and adapted to be fastened to the sail assembly, said coupling member movable between an unloaded position close to the sailor's torso and a loaded position forwardly of the sailor's hips; and

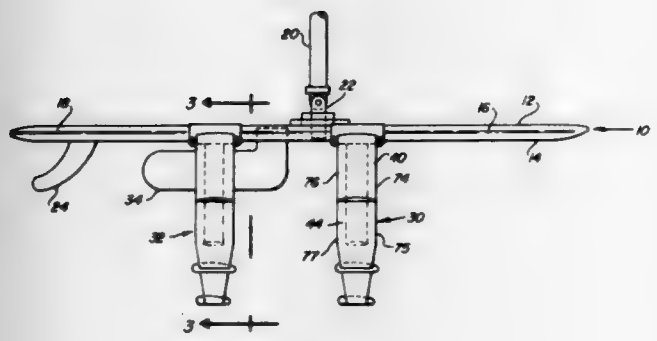
elastic retaining means adapted to be fastened to the upper torso of the sailor for keeping said coupling member close to the sailor's torso when no load is applied to said coupling member, and stretching to permit said coupling member to move away from the sailor's torso when load is applied to said coupling member, without transmitting substantially any of said load to the sailor's upper torso, whereby substantially all of the load transmitted through said coupling member is transferred through saidbuttock-engaging means to the sailor's hips.

4,508,046

WIND SURFING HYDROFOIL APPARATUS

James C. Coulter, Birmingham, Mich., and Michael P. Shannon, 2609 N. Lakeshore Dr., Holland, Mich. 49423, assignors to Michael P. Shannon, Holland, Mich.

Continuation of Ser. No. 895,114, Apr. 10, 1978, abandoned.
This application Feb. 8, 1984, Ser. No. 578,170
Int. Cl.[3] B63B *1/26*
U.S. Cl. 114—39 77 Claims



1. Wind surfing hydrofoil apparatus for enabling hydroplaning of a wind surfing board having a mast mounted centrally thereon between a front end portion and a rear end portion of the board, and comprising:

a front hydrofoil means for being mounted below the bottom surface of the board on the side edges of the board in juxtaposition to the mast for hydroplaning support of the board;

a rear hydrofoil means for being mounted below the bottom surface of the board on the side edges of the board rearwardly of the mast for hydroplaning support of the board; and

each of the front and rear hydrofoil means comprises:

a pair of inclined lift-out wing members of surface piercing and board lifting cross-sectional configuration extending outwardly and downwardly from and relative to the board beyond the side surfaces of the board;

a pair of inclined flying wing members of surface piercing and board lifting cross-sectional configuration extending downwardly and inwardly relative to and from the lift-out wing members with outermost uppermost portions located outwardly beyond the side surfaces of the board and with innermost lowermost portions located inwardly beyond the side surfaces and below the bottom surface of the board;

each flying wing member having an upper elongated portion of uniform cross-sectional size approximately equal to the cross-sectional size of said lift-out wing members and a lower elongated tapered portion of uniformly downwardly inwardly varying cross-sectional size terminating in a lower end portion of lesser cross-sectional size than said upper elongated portion;

a generally vertically extending support strut member fixedly mounted inboard of each of said pair of flying wing members and each of the associated ones of said pair of lift-out wing members and having a lower end portion thereof fixedly supportively connected to each of the associated ones of said flying wing members and having an upper end portion thereof fixedly supportively associated with the board; and

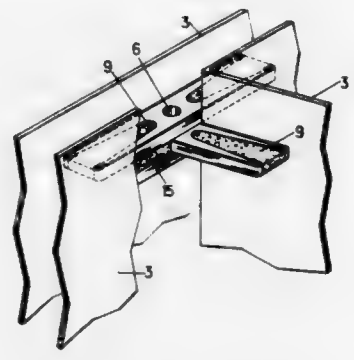
mounting means for rigid attachment of the hydrofoil means to the side edge surfaces of the board.

4,508,047

CONNECTIONS BETWEEN DIVIDING WALLS, PARTICULARLY FOR THE CONSTRUCTION OF BOAT HULLS

Andre J. E. Bordat, Rueil Malmaison, France, assignor to Constructions Mecaniques de Normandie, Paris, France

Filed Apr. 19, 1983, Ser. No. 486,596
Claims priority, application France, Apr. 21, 1982, 82 06875
Int. Cl.[3] B63B *3/00, 3/48, 3/56, 5/24*
U.S. Cl. 114—355 11 Claims



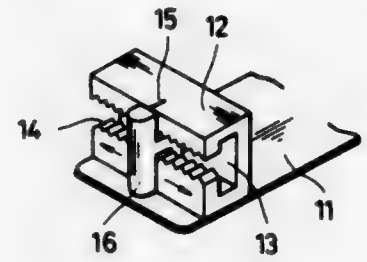
1. A connection between at least two dividing walls whose mean surfaces intersect along an axis L, said connection being formed by a plurality of fastenings each extending radially in at least one direction from a pivot, the pivots of said fastenings being stacked axially along the axis L, the contiguous fastenings of the stack being oriented so that they extend alternately parallelly to the mean surfaces of the dividing walls, each fastening having two flat lateral faces parallel to each other and to axis L, said lateral faces of each fastening being covered with fabric ribbon having threads extending perpendicularly to axis L and each dividing wall being limited by two sheets parallel to each other and to axis L and bonded to the ribbons covering the corresponding fastenings.

4,508,048

POINTER MECHANISM

Hideo Wada, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,730
Claims priority, application Japan, Aug. 31, 1981, 56-128788[U]
Int. Cl.[3] H03J *1/04, 1/02*
U.S. Cl. 116—291 1 Claim



1. A pointer mechanism for a tuner which comprises:

an elongated pointer board mounted for lateral movement relative to said tuner in response to a tuning manipulation, said pointer board having an edge portion at one longitudinal end thereof;

an elongated pointer mounting member fixedly mounted on said edge portion of said pointer board and extending laterally thereon, said pointer mounting member having an elongated groove of substantially T-shaped cross section extending laterally therein, said T-shaped groove defining an opening through the outer surface of said pointer mounting member, said opening being narrower than the remainder of said groove, said pointer mounting member having opposed spaced-apart walls defining the opposite sides of the stem of said T-shaped groove, both of

said walls being serrated to define a lengthwise row of indentations extending along said walls; and

a pointer member having a pointer disposed in front of the outer surface of said pointer mounting member and having a substantially T-shaped fitting portion extending rearwardly therefrom and extending into and substantially filling the T-shaped cross section of said groove whereby said fitting portion is engaged within said groove so as to prevent removal of said pointer member from said pointer mounting member by outward movement of said pointer member relative to said pointer mounting member, said fitting portion having oppositely projecting protrusions on opposite sides of the stem of said fitting portion, which protrusions are in releasable, resilient engagement with indentations on said walls, whereby said pointer member is releasably fixed to said pointer mounting member and can be moved laterally along said fitting groove to adjust the position thereof.

4,508,049

METHOD AND A DEVICE FOR THE PRODUCTION OF ELECTRICAL COMPONENTS, IN PARTICULAR LAMINATED CAPACITORS

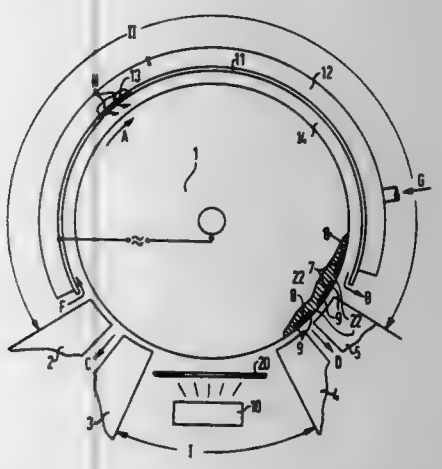
Reinhard Behn; Hermann Heywang, both of Munich, and Horst Pachonik, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,413

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847602

Int. Cl.³ B05D *3/06*

U.S. Cl. 118—50.1 **6 Claims**



1. Apparatus for producing electrical components which have at least one metal coating and at least one polymer coating carried one on top of another on a carrier, comprising:

a rotatable drum including a peripheral surface and a plurality of recesses in said surface;

retaining means for retaining a plurality of carriers in said recesses;

said drum adapted for connection to one pole of an a.c. voltage source;

a counter electrode spaced from and extending about a first portion of said drum defining a polymerization chamber, said counterelectrode adapted for connection to another pole of the a.c. voltage source and including first supply means communicating with the space between said counterelectrode and said drum for attachment to a monomer gas supply, said polymerization chamber operable to apply a polymer coating on the electrical component structure traveling therethrough;

first and second air-locks at respective circumferential ends of said counterelectrode, each of said air-locks including a port communicating with said polymerization chamber for the evacuation of residual monomer gas;

a metallization chamber extending circumferentially about a portion of said drum between said first and second air-locks; and

metallization means in said metallization chamber for applying a metal coating to the electrical component structure traveling therethrough.

4,508,050

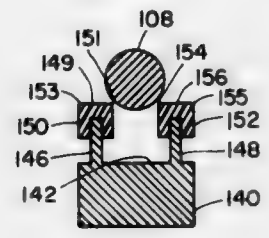
DOCTOR APPARATUS FOR COATING MACHINE

Frederick R. Tittmann, 1075 Oakland Ave., Plainfield, N.J. 07060

Filed Dec. 22, 1983, Ser. No. 564,382

Int. Cl.³ B05C *11/02*

U.S. Cl. 118—118 **9 Claims**



1. Doctor apparatus for use in a coating machine comprising

a support base for a doctor rod,

a pair of spaced-apart support members removably secured to said support base and having portions providing two horizontal support surfaces,

said support surfaces having facing edges, and

a doctor rod seated on the facing edges of said support surfaces provided by said spaced-apart support members,

said support members being throwaway strips of simple construction and of a synthetic resinous material.

4,508,051

APPARATUS FOR APPLYING VISCOUS SUBSTANCES PARTICULARLY ADHESIVES

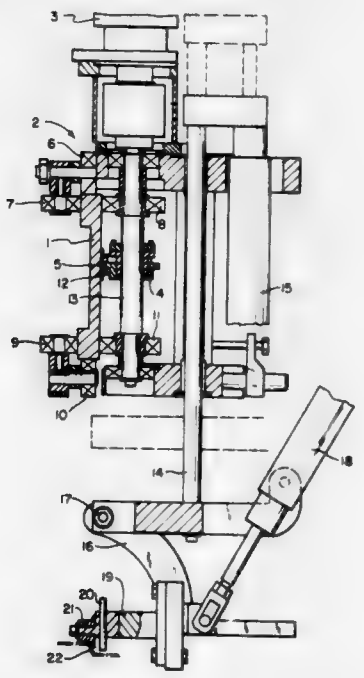
Wilhelm Bast, Mucke-Nieder-Ohmen, Fed. Rep. of Germany, assignor to Faust-Fertigungstechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,979

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141112

Int. Cl.³ B05C *5/02*

U.S. Cl. 118—410 **5 Claims**



1. Apparatus for applying viscous substances, for example adhesives, to the frame flanges of window openings in motor

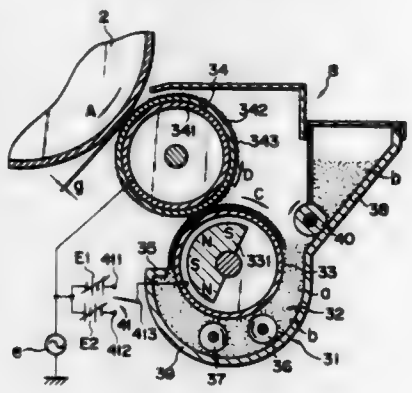
vehicles, said apparatus comprising an all-round rail shaped in accordance with a window opening to the frame of which said viscous substances are to be applied, a carriage displaceably arranged on said rail, and a discharge nozzle and a scanning unit mounted on said carriage, said scanning unit being engageable with the frame flange of said window opening to follow the same and having limited mobility with respect to said carriage, wherein the discharge nozzle is held by a bracket arm which is outwardly pivotable with respect to the all-round rail, said bracket arm is mounted on a guide column displaceable at right angles with respect to the plane of said rail and held by said carriage, and said scanning unit comprises a scanning wheel mounted on said bracket arm for scanning the window opening contour.

4,508,052

DEVELOPING DEVICE

Mitsuaki Kohyama, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 9, 1983, Ser. No. 521,642
Claims priority, application Japan, Aug. 16, 1982, 57-141940
Int. Cl.³ G03G *15/06*
U.S. Cl. 118—651 **8 Claims**



1. A developing device adapted to develop an electrostatic latent image on an electrostatic latent image-forming surface of an image carrier by jumping a nonmagnetic toner onto the image-forming surface, comprising:

a casing containing a mixture of the nonmagnetic toner and a magnetic carrier;

a hollow cylindrical body formed of a nonmagnetic material and rotatable in a position such that part of the hollow cylindrical body is buried in said mixture in said casing;

magnet means, contained within said hollow cylindrical body, for forming a magnetic brush comprised of said mixture on an outer peripheral surface of said hollow cylindrical body by the magnetic force of the magnet means when said hollow cylindrical body is rotated;

a rotatable developing roller positioned between said outer peripheral surface of the hollow cylindrical body and said electrostatic latent image-forming surface of the image carrier so as to be adjacent to but separated from the electrostatic latent image-forming surface and so as to be in contact with said formed magnetic brush; and

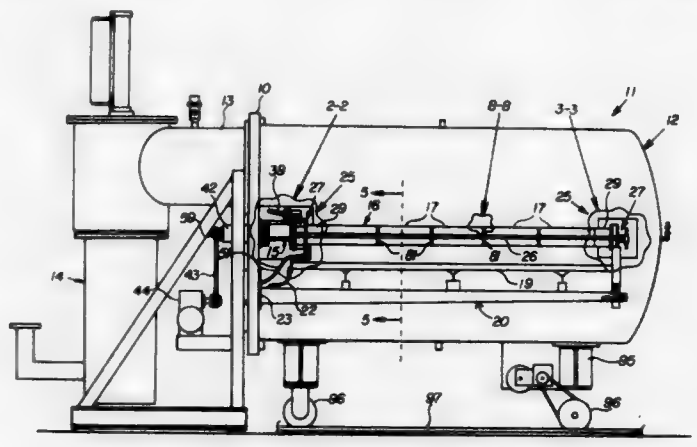
voltage impressing means, electrically connected to the developing roller and the hollow cylindrical body, for generating an electric field between said roller and said body so as to transfer with a predetermined electrostatic charge the nonmagnetic toner portion of said mixture formed on the outer peripheral surface of the hollow cylindrical body onto an outer peripheral surface of the developing roller, whereby said nonmagnetic toner transferred onto the outer peripheral surface of the developing roller is jumped onto the electrostatic latent image-forming surface as the developing roller rotates by virtue of the electrostatic charge imparted to said transferred nonmagnetic toner by said voltage impressing means interacting with the electrostatic charge of said latent image to thereby develop said latent image.

4,508,053

VACUUM DEPOSITION APPARATUS FOR MANUFACTURING SELENIUM PHOTORECEPTORS

Richard C. Eriksson, Kingston, Mass., assignor to XIS, Incorporated, W. Groton, Mass.

Filed Jan. 5, 1983, Ser. No. 455,828
Int. Cl.³ C23C *13/12*
U.S. Cl. 118—712 **18 Claims**



1. Vacuum deposition apparatus comprising:

a vacuum chamber;

vacuum pump means for reducing the pressure in said chamber;

mandrel means disposed within said chamber and adapted to support and electrically isolate from each other a plurality of hollow cylindrical substrate electrode units to be coated;

electrical coupling means for connection to said electrode units;

power supply means connected to said electrical coupling means and adapted to establish between said hollow electrode units potential gradients that produce a glow discharge externally and internally thereof and resultant heating thereof; and

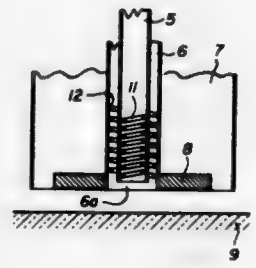
a source means for providing an evaporative coating for deposition on the heated electrode units.

4,508,054

DEVICE FOR DEPOSITING A MINERAL OXIDE COATING ON A SUBSTRATE

Otto Baumberger, Carouge, and Reinhard Kalbskopf, Vordenwald, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Division of Ser. No. 440,225, Nov. 3, 1982,. This application Dec. 21, 1983, Ser. No. 550,938
Claims priority, application Switzerland, Mar. 6, 1981, 1520/81
Int. Cl.³ C23C *13/10*
U.S. Cl. 118—718 **5 Claims**



1. A device for coating a substrate with a layer of mineral material which comprises:

means for moving a high-temperature substrate past a coating location; and

a set of parallel nozzles for dispersing at least one reagent

onto said substrate at said location, each of said nozzles comprising:

a first central pipe for conveying a first gaseous flow,

a second pipe coaxial with said first pipe for conveying a second gaseous flow, said reagent being present in a mixture of said flows,

baffles formed in at least one of said pipes over at least part of the length thereof, said baffles acting in different directions to one another for imparting to said gaseous flows a counter-rotational movement with respect to one another such that said gaseous flows meet at the mouth of said nozzle at an angle of at least 60° for inducing an impact meeting of the two flows, whereby said flows are mixed substantially instantaneously, and

an annular deflector formed on said second pipe cencentrically therewith at the mouth of said nozzle for spreading out reaction gases between said nozzle and said substrate.

4,508,055

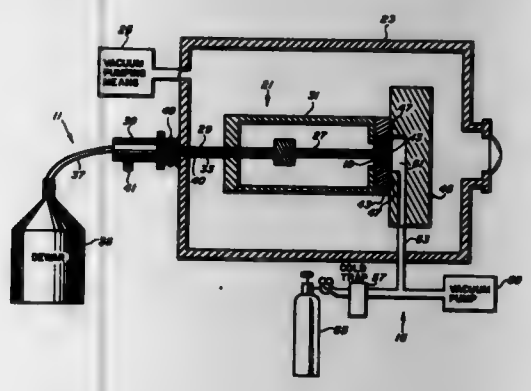
DEVICE FOR CRYOGENICALLY FABRICATING SOURCE MATERIAL FOR PLASMA X-RAY LASERS

Raymond C. Elton, Potomac; Robert H. Dixon, Bowie, and James L. Ford, Upper Marlboro, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1983, Ser. No. 500,725

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—724 **11 Claims**



1. A device for fabricating a target of a pump material and a lasing material for lasing at X-ray wavelengths, wherein one of the materials is normally solid and the other material is normally gaseous, comprising:

cooling means for cooling a substrate of the normally-solid material below the freezing point of the normally-gaseous material, including a thermally conducting block having a bottom face, a side wall, and a top face, the top face including a recess for mounting a substrate of the normally solid material; and

supply means for supplying a continual source of gaseous atmosphere of the normally-gaseous material to the cooled substrate so that a frozen layer of the normally gaseous material condenses onto the substrate to form the target.

4,508,056

TARGET HOLDER WITH MECHANICAL SCANNING

Michel Bruel, Veurey; Jean Escaron, Sassenage, and Joseph Labartino, Voreppe, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 16, 1983, Ser. No. 504,875

Claims priority, application France, Jun. 24, 1982, 82 11077

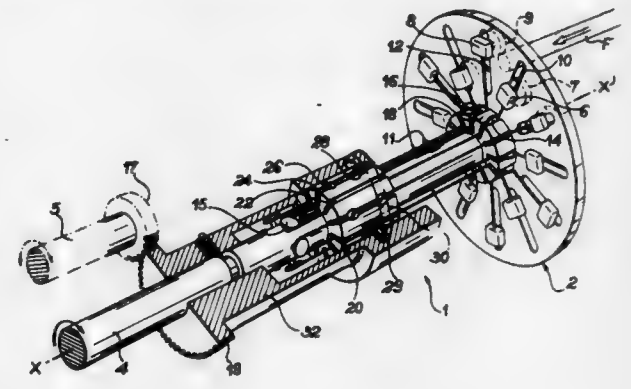
Int. Cl.³ H01L *21/265*

U.S. Cl. 118—730 **13 Claims**

1. A target holder of the type comprising:

several target supports mounted on a plate rotatable with respect to an axis in order that said supports in turn pass in front of a high energy beam at a predetermined angular position with respect to the plate rotation axis, and

means for displacement of each support relative to the plate between two end positions in a direction having a radial component, said displacement means being constructed such that a radial component displacement increment of



each said support between any two moments corresponding to any two consecutive passages of said support in front of said predetermined angular position is constant for said movement of said support between said end positions and such that each said support always has the same orientation relative to the plate at each passage in front of said predetermined angular position.

4,508,057

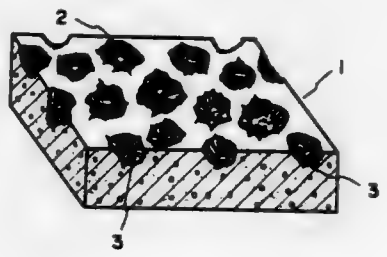
ALGAL CULTURING REEF UNIT, ARTIFICIAL REEF UNIT AND ARTIFICIAL CULTURING AND FISHING FIELD UNIT

Tetsuo Suzuki, Sabae, Japan, assignor to Tokyu Musashi Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 533,024

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—3 **9 Claims**



4. An artificial reef unit comprising one or more concrete blocks presenting a plurality of curved surfaces each provided with a multiplicity of recesses adapted for habitation by sea urchin and shellfish, wherein each curved surface is provided with a layer consisting of a mixture of acid, fine powders of iron oxide and a concrete penetrant in turn consisting essentially of a surfactant, said layer penetrating well into the body of the concrete.

4,508,058

MILKING METHOD AND AN APPARATUS THEREFOR

Sten Jakobson, Södertälje, Sweden, and Karl Rabold, Schwäbisch Hall, Fed. Rep. of Germany, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 30, 1983, Ser. No. 480,575

Claims priority, application Sweden, Apr. 8, 1982, 8202278

Int. Cl.³ A01J *5/00*; A01K *1/12*

U.S. Cl. 119—14.02 **10 Claims**

1. A method of milking cows which are permitted to go loose and find their way individually to one or more stalls constructed for feeding, in which the cows are automatically identified and fed with the aid of a computer connected to the

identification and feeding means used, wherein the computer is utilized, on one hand, to record the points of time at which every cow is milked and, on the other hand, to activate—in connection with the identification of a cow arriving at a feed-



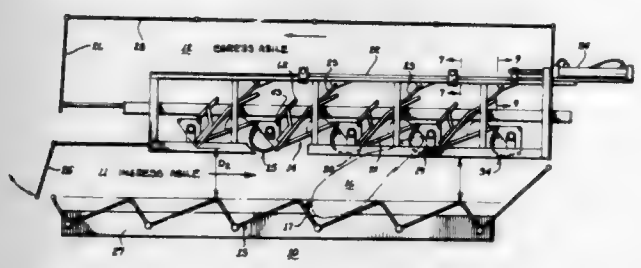
ing stall to eat, and provided that a predetermined time has passed after the cow in question was last milked—a device for automatic application of milking means to the udder of the cow and for starting a milking operation, while the cow is prevented from leaving the stall during milking.

4,508,059

MILKING BARN

Bernard O. Anderson, Glendale, Ariz., assignor to Nielsen Industries, Inc., Phoenix, Ariz.

Filed Feb. 10, 1984, Ser. No. 578,960
Int. Cl.³ A01K *1/12*
U.S. Cl. 119—14.03 **10 Claims**



1. In a stall at least one pair of adjacent cow stations comprising, a tail assembly for receiving the rear portions of at least two adjacent cows,

a vertical feedbowl framework rotatably mounted on a fixed axis at the head portion of each adjacent cow station for rotation between ingress, milk, and egress positions,

each of said feedbowl frameworks cooperating with a respective one of said adjacent rear portions to form an individual cow stall,

the space between the line of said feedbowl frameworks and said rear portions defining an ingress aisle and direction for cows,

the space on the opposite side of said line of feedbowl frameworks from said rear portions defining an egress aisle and direction,

gate means associated with each of two adjacent feedbowl frameworks for opening and closing the passageways between said ingress and egress aisles for each particular station,

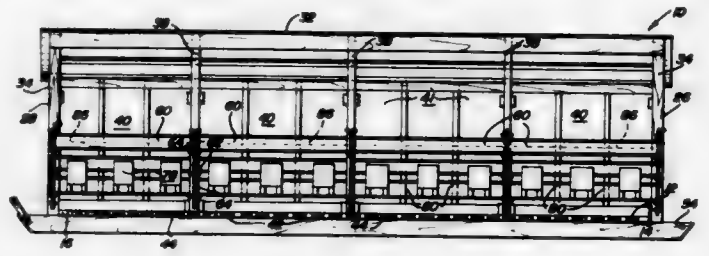
and means forming part of each of said feed bowl frameworks for increasing the width of said ingress aisle in the ingress positions of said feedbowl frameworks and decreasing the width of said ingress aisle in the milk positions of said feedbowl frameworks.

4,508,060

SKID MOUNTED MULTIPLE WEANING CALF ENCLOSURE

Jan J. Schulte, Rte. 1, Dorchester, Iowa 52140

Filed Jan. 12, 1984, Ser. No. 570,240
Int. Cl.³ A01K *1/00*
U.S. Cl. 119—16 **8 Claims**



1. A skid mounted multiple weaning animal enclosure, said enclosure including an elongated floor structure having opposite end and front and rear marginal portions, a pair of elongated ground skids supported beneath and extending along said front and rear marginal portions and projecting outwardly beyond said end marginal portions, opposite end walls extending across and projecting upwardly from said end marginal portions and a rear wall extending along and projecting upwardly from said rear marginal portion and joining the rear ends of said end walls, a roof structure extending between and interconnecting the upper marginal portions of said rear and end walls, a plurality of upstanding posts spaced along said front marginal portion and between said end walls and supporting corresponding marginal portions of said roof structure from said front marginal portion, a front-to-rear extending upstanding partition extending between each of said posts and a corresponding portion of said rear wall, horizontally swingable gate means removably closing the forward end of each area disposed between adjacent partitions and each end wall and the adjacent partition each of said areas including a plurality of front-to-rear extending supplemental partitions dividing each area into a plurality of individual animal stalls, whereby each gate means removably closes the forward ends of a plurality of individual animal stalls, said floor structure defining front-to-rear extending slots therein of sufficient width to allow substantial amounts of manure to fall through said slots, at least one set of corresponding ends of said ground skids including means for anchoring one or more tow members thereto preparatory to skidding said enclosure lengthwise over the ground a distance at least equal to the length of said enclosure, and further wherein each of said gate means includes upstanding free-swinging and hinged edge portions, said hinged edge portions being defined by upstanding rod members, adjacent gate means being disposed with the rod members thereof in closely spaced side-by-side relation, each pair of closely spaced rod members being pivotally supported from a corresponding post by staples driven into the post and rotatably receiving the rod members therethrough.

4,508,061

NIPPLE FEEDER FOR DISPENSING DRY FEED

David Swearingin, R.R. 5, Carrollton, Mo. 64633

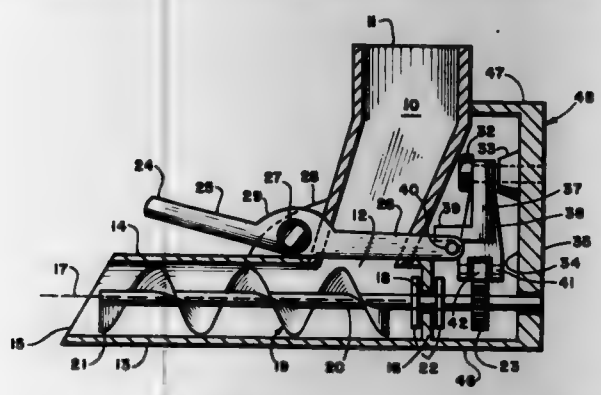
Filed Nov. 15, 1983, Ser. No. 551,938
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—51 R **4 Claims**

1. An improved hog-feeding apparatus comprising:

(a) a supply conduit adapted to receive solid granular feed at an open upper extremity, and discharge said feed at a lower extremity,

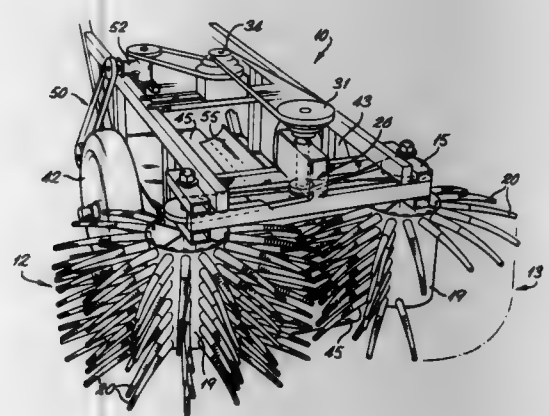
(b) an elongated feed tube communicating with the lower extremity of said supply conduit and disposed in a substantially horizontal position, said tube having a substantially closed rearward extremity and a forwardly directed outlet extremity,

(c) auger means rotatively positioned within said tube in coaxial alignment therewith,
(d) means to prevent axial movement of said auger means within said tube,
(e) a shaft associated with said auger means and coaxially disposed therewith,
(f) means for rotating said shaft, and
(g) a spring-biased lever adapted for pivotal movement in a



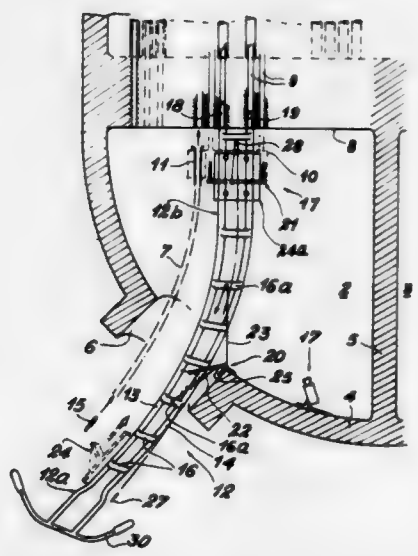
vertical plane, having a forward extremity disposed in sufficiently close juxtaposition to the forward extremity of said feed tube to permit engulfment of said juxtaposed forward extremities by a hog's mouth, and having a rearward extremity mechanically coupled to said means for rotating said shaft, whereby
(h) forceful depression of the forward extremity of said lever by a hog's mouth activates said means for rotating said shaft.

4,508,062
POULTRY-HARVESTING ASSEMBLY
Paul S. Berry, Bromham; Peter J. Kettlewell, Didsbury, and Michael J. B. Turner, Clophill, all of England, assignors to National Research Development Corporation, London, England
Filed Oct. 25, 1983, Ser. No. 545,260
Claims priority, application United Kingdom, Oct. 29, 1982, 8230964
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—82 **14 Claims**



1. A poultry-harvester, comprising: a mobile support;
two rotors arranged side by side for rotation about substantially vertical axes; means for mounting said rotors to said support;
a continuous array of radially-extending flexible guide elements provided on each rotor, said guide elements of one rotor extending towards the guide elements of the other rotor in close proximity therewith defining a bird-accepting region between the two rotors; and
drive means for contra-rotating said two rotors about said substantially vertical axes whereby poulty in said bird-accepting region are moved rearwardly of the harvester.

4,508,063
MOBILE POSITIONING BODY INTRODUCTION DEVICE
Maxime Monne, Paris, France, assignor to INTERCONTROLE Société Anonyme, France
Filed May 16, 1983, Ser. No. 494,935
Claims priority, application France, May 19, 1982, 82 08787
Int. Cl.³ F22B *37/42*
U.S. Cl. 122—504 **5 Claims**



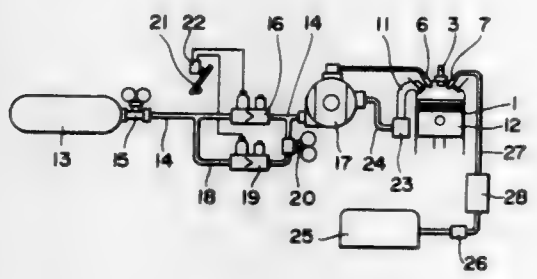
1. A device for introducing a mobile positioning body for a member onto a tube plate of a steam generator, said generator comprising a water box having a wall provided with a manhole, said device comprising:
a structure defined by two substantially parallel rails joined by crosspieces, each of said rails having an upper end and a lower end and said structure also having an upper end and a lower end and being substantially shaped like a curved angle plate,
means for provisionally fixing said structure to the tube plate,
means for provisionally fixing said structure in the vicinity of the manhole comprising a lever having two ends, one end of which is pivotally fixed to said structure, a pedal mounted at the other end of said lever, a spring having two ends, one end of which is fixed to said structure and the other end of which is fixed to said lever, and means for pivotally moving said lever operable from outside the water box and behind the manhole comprising a cable having two ends, one end of which is fixed to said lever and the other end of which is outside the water box, and
means for moving the mobile positioning body along the rails.

4,508,064
INTERNAL COMBUSTION ENGINE OF HYDROGEN GAS
Kenji Watanabe, Kagoshima, Japan, assignor to Katsuji BABA, Kagoshima, Japan, a part interest
Filed Sep. 28, 1982, Ser. No. 425,915
Claims priority, application Japan, Nov. 12, 1981, 56-180409; Feb. 3, 1982, 57-14819; Feb. 3, 1982, 57-14820
Int. Cl.³ F02B *75/12*
U.S. Cl. 123—1 A **7 Claims**

1. In a hydrogen gas fueled internal combustion engine, the improvement comprising:
a hydrogen gas jet nozzle provided in a combustion chamber of the engine to directly jet hydrogen gas as fuel into the combustion chamber;
a source of water at ambient or room temperature; and
a water spray jet nozzle coupled to said water source, said water spray jet nozzle being provided in said combustion chamber, separately and independently of said hydrogen gas jet nozzle, to directly jet a spray of said ambient or

room temperature water into said combustion chamber substantially simultaneously with the jetting in of the hydrogen gas;

the air in said combustion chamber being compressed so that the water sprayed into said combustion chamber is in-



stantly vaporized to steam by igniting of the hydrogen gas jetted into said combustion chamber, thereby utilizing the combustion/explosion energy of the hydrogen gas and the steam energy generated from the vaporization of the steam in combination to obtain mechanical dynamic energy.

4,508,065

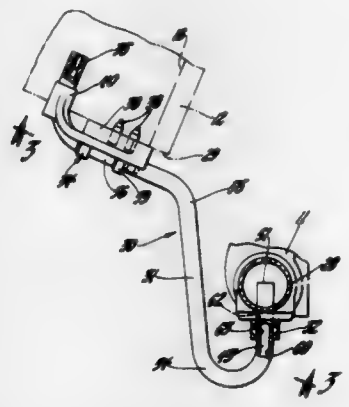
PISTON COOLING OIL DELIVERY TUBE ASSEMBLY

Jagan N. Suchdev, Woodridge, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1983, Ser. No. 476,988

Int. Cl.³ F01P *3/08*

U.S. Cl. 123—41.35 **4 Claims**



1. A piston cooling oil delivery tube assembly for an internal combustion engine having a crankcase supporting a removable cylinder liner with a hollow piston carried for reciprocation therein and having inlet means to receive cooling oil within the hollow piston, an oil distribution manifold carried in the crankcase near an open end of the cylinder liner and connected with a source of pressurized cooling oil, wherein said tube assembly includes

passage defining means including a tube having two ends, one connectable with said manifold, and a nozzle at the other of said ends, and

support means including a bracket attached near the nozzle end of the tube for fixing said tube to the cylinder liner with the nozzle in alignment with the piston cooling oil inlet means and a flange near said one end of the tube for securing said one end to said manifold,

the portion of said tube extending between said bracket and said flange including a return bend and having a length sufficient to permit limited resilient flexure to accommodate minor relative movement and dimensional variations between the manifold and cylinder mounting locations,

and the improvement wherein

said bracket forms a portion of said passage defining means having a curved passage portion connected between said tube other end and said nozzle, said tube and nozzle being separately formed and individually connected with said bracket,

said nozzle being preformed as a short stiff member and assembled to said bracket to provide, at assembly, a fixed alignment with the piston cooling oil inlet means not requiring gaging or adjustment of the nozzle position after assembly, while said tube maintains limited flexibility between the bracket and flange.

4,508,066

CERAMIC HEAD FOR INTERNAL COMBUSTION ENGINE

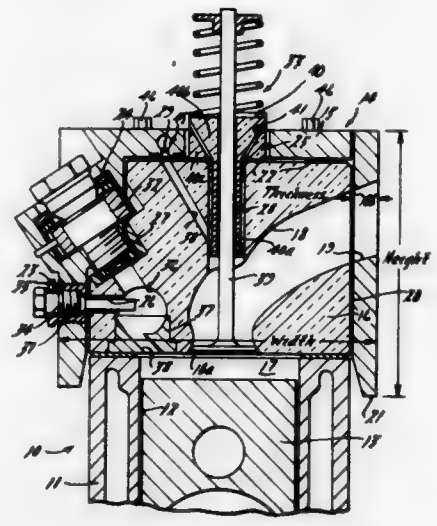
Dale L. Hartsock, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/02042, § 371 Date Dec. 27, 1983, § 102(e) Date Dec. 27, 1983

PCT Filed Dec. 27, 1983, Ser. No. 571,655

Int. Cl.³ F02B *75/08*

U.S. Cl. 123—41.71 **10 Claims**



1. An insulating head assembly for an internal combustion engine having a cylinder block with walls defining at least one bore opening in each of which a piston reciprocates, said assembly comprising:

(a) entirely a case ceramic body having a side wall and another wall fitting over said cylinder block to define with said piston and cylinder block a combustion chamber, said ceramic body having passage means through said body providing for flow of inducted combustion gases and compressed exhaust gases between said combustion chamber and said body side wall, said ceramic body being comprised of a material with a coefficient of thermal expansion less than 1.0×10^{-6} in/in/°F.; and

(b) shell means enveloping and spaced from said body via compliant members and being effective to trap heat within said combustion chamber and passage means sealingly clamping said ceramic body to said cylinder block and supportably carrying means extending into said body for controlling the flow of gases through said body, said shell means carrying at least part of the compressive loading imposed by said clamping.

4,508,067

TAPPET AND A CAM CONTACT MEMBER THEREFOR

Wolfgang Fuhrmann, Nuremberg, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg AG, Nuremberg, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,677

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308550

Int. Cl.³ F01L *1/14*

U.S. Cl. 123—90.49 **16 Claims**

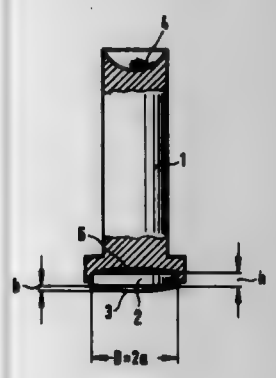
1. A tappet for cam operation, comprising:

a tappet-body shank for tappet operation from one end;

a generally-spherical, convex, cam-contacting surface on the

other end of the shank for contacting the cam in the cam operation; and

a cavity between the cam-contacting surface and the facing portion of the shank, the cavity being sufficiently close to the cam-contacting surface relative to the material thereof



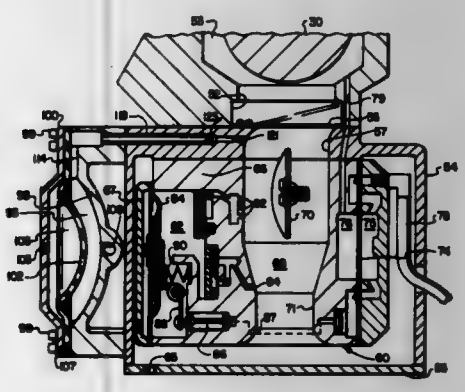
for the cam-contacting surface to be deflected theretoward by each maximum cam-contact force of the cam operation thereon equally to the sphericity of the cam-contacting surface, whereby the wear from the cam contact is reduced.

4,508,068

FUEL MIXTURE ENRICHMENT SYSTEM FOR INTERNAL COMBUSTION ENGINE

Lloyd H. Tuggle, Shreveport, and Michael J. Ferlito, Bossier City, both of La., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 9, 1983, Ser. No. 502,474
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—187.5 R **46 Claims**



1. A fuel-air mixture enriching system for starting an internal combustion engine, said engine including a carburetor having air flow passage means therein, and a throttle valve disposed for throttling air flow through said carburetor, and further passage means interconnecting said carburetor air flow passage means with a combustion chamber of said engine, a source of liquid fuel, and means interconnecting said fuel source with said carburetor, said mixture enriching system comprising:

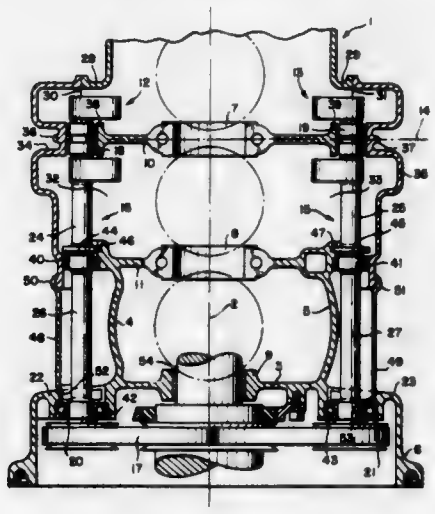
means forming a reservoir chamber having a predetermined volume in communication between said fuel source and one of said plurality of passage means, pump means for delivering fuel to said reservoir chamber prior to cranking of the engine, and conduit means for conducting fuel from said reservoir chamber into said one passage means responsive to a lower pressure developed in said air passage means by reciprocation of the piston to provide an enriched fuel-air mixture for induction into said combustion chamber during a starting cycle of said engine.

4,508,069

INTERNAL COMBUSTION ENGINE BALANCE SHAFT BEARING ARRANGEMENT AT THE CRANKCASE

Helmut Dobler, Esslingen; Rolf Zeller, Burgstetten, and Helmut Seitz, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,008
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314801
Int. Cl.³ F16F *15/26*
U.S. Cl. 123—192 B **19 Claims**



1. A bearing arrangement for balance shafts running parallel to a crankshaft on both side walls of a crankcase of an internal combustion engine for balancing of second order inertia forces, driven ends of the balance shafts being held approximately in a plane of a crankcase end face and ends of the balance shafts lying in the region of the transverse central plane of the crankshaft, the balance shaft carrying balance weights held by bearings on the crankcase, the bearings supporting the balance weights consisting of journal bearings connected to a lubricant circuit of the internal combustion engine, wherein the journal bearings are located within the crankcase and the bearings present at the driven ends of the balance shafts comprise rolling bearings with permanent lubrication located outside the crankcase.

4,508,070

ARRANGEMENT IN THE COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Peter O. Buggert, Stockholm, Sweden, assignor to Oktan Aktiebolag, Stockholm, Sweden

Filed Apr. 4, 1983, Ser. No. 481,885
Claims priority, application Sweden, Apr. 19, 1982, 8202442
Int. Cl.³ F02F *7/00*; F16J *11/00*
U.S. Cl. 123—193 CP **8 Claims**



1. In an internal combustion engine having at least one combustion chamber with a piston operable therein, the combustion chamber being supplied with preferably lead-containing petrol or the like and having electric ignition, the improvemtent wherein an area of at least one of a surface of the combustion chamber and a head surface of the piston has means for

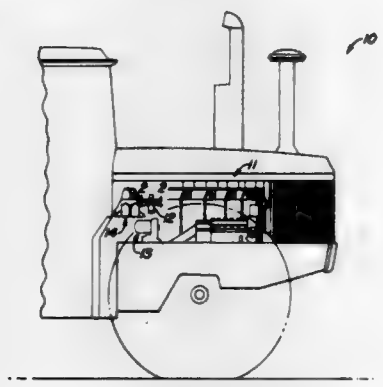
reducing the octane number requirements of the engine, said means being constituted by a very fine surface structure comprising depressions, such as a plurality of grooves, said depressions being distributed throughout said area and each having a width up to about 3 microns and a depth up to about 1 micron.

4,508,071

CANISTER RETAINER ASSEMBLY

David D. Drenner, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 172,365, Jul. 25, 1980, Pat. No. 4,386,588.
This application Dec. 17, 1982, Ser. No. 450,593
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—198 A **8 Claims**



1. A canister retainer assembly capable of holding an aerosol canister in an upright position against an electric solenoid valve associated with an engine and of sealing said electric solenoid valve from outside air when no canister is present, said electric solenoid valve including an inlet opening, a rubberized gasket surrounding said inlet opening, a plunger movably positioned within said inlet opening, and means for activating said plunger to contact an outlet valve located in the top of said aerosol canister to release pressurized fluid from said aerosol canister, said assembly comprising:

(a) a collar-shaped adapter secured to said electric solenoid valve which has an end surface with an opening therein, said adapter further having threads formed on an inner circumferential surface approximate said open end; and

(b) a canister holder having a hollow cylindrical body which is opened at one end and closed at a second end, and further having first and second spaced apart helical threads formed on the outer circumference thereof such that said first threads are located adjacent to said open end and said second threads are located adjacent to said closed end, said first threads being engageable with said threads formed on said adapter to position said holder in a first position wherein said holder is capable of retaining said aerosol canister in an upright position against said electric solenoid valve and said second threads being engageable with said threads formed on said adapter to position said holder in a second position wherein said holder is inverted 180 degrees to seal said electric solenoid valve from contamination when no aerosol canister is present.

4,508,072

SEALING DEVICE FOR TIMING BELT COVER AND ENGINE MOUNT BRACKET

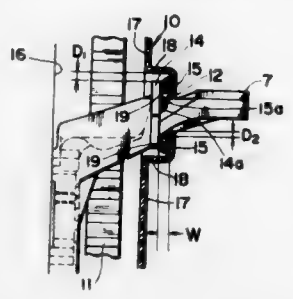
Toshihiro Takami, and Masahiro Isobe, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 29, 1983, Ser. No. 490,201
Claims priority, application Japan, Feb. 12, 1983, 58-018096[U]
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—195 C **16 Claims**

1. A sealing device for a timing belt cover and an engine mount bracket, said timing belt cover being provided with an opening and said engine mount bracket penetrating through said opening, said sealing device comprising:

a rib formed on said engine mount bracket, said rib being situated apart from a portion of the timing belt cover surrounding the opening and being opposite to said portion of the timing belt cover surrounding the opening; and

a gasket made of an elastic material interposed between said rib and said portion of the timing belt cover surrounding



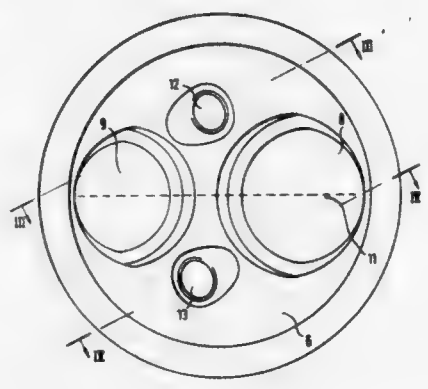
the opening, said gasket having a lip of C-shaped section and a fixed portion continuous from said lip of C-shaped section and extending along said portion of the timing belt cover surrounding the opening, and said fixed portion of the gasket being fixed to said portion of the timing belt cover surrounding the opening, and said lip of C-shaped section of the gasket being in contact with said rib of the engine mount bracket.

4,508,073

COMBUSTION SPACE OF A PISTON DRIVEN INTERNAL COMBUSTION ENGINE

August Hofbauer, Pforzheim, and Michael Beer, Leonberg, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,820
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224337
Int. Cl.³ F02F *3/24*
U.S. Cl. 123—307 **13 Claims**



1. A combustion space of a reciprocating piston internal combustion engine having piston means and cylinder head means for delimiting a combustion space, said combustion space being located in part within the piston means and in part within the cylinder head means, recess means centrally disposed in an end surface of said piston means and an upwardly arched wall in said cylinder head means together forming a substantially axially symmetrical combustion space, said upwardly arched wall including an inlet valve and an exhaust valve and means for causing ignition, said piston means with said recess means and said cylinder head means cooperating to form an endless vortex flow from an outer potential flow and an inner concentric rotary flow in the combustion space by dimensioning and coordination to the inlet valve and exhaust valve, the axes of the inlet valve and the exhaust valve each being disposed at an acute angle to the piston axis, the means for ignition including at least two spark plugs with ignition

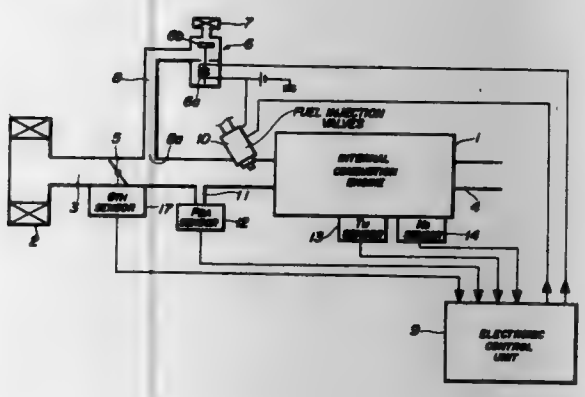
electrodes protruding into the combustion space, one of said at least two spark plugs being disposed on an opposite side of a plane passing through the axes of the intake and exhaust valves from another of said at least two spark plugs, and ignition electrodes of said opposed spark plugs being disposed at different distances from the piston axis such that when the middle diameter of a mixing zone of high fuel concentration formed between the rotary flow and the potential flow increases with decreasing engine rotational speed the mixing zone moves such that one of the opposed ignition electrodes is in the mixing zone and when the middle diameter of the mixing zone decreases, another of the opposed ignition electrodes is in the mixing zone.

4,508,074

INTAKE AIR QUANTITY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES AT TERMINATION OF FUEL CUT OPERATION

Akihiro Yamato, Shiki, and Makoto Hashiguchi, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1984, Ser. No. 615,057
Claims priority, application Japan, Jun. 16, 1983, 58-108239
Int. Cl.³ F02D *9/06*
U.S. Cl. 123—327 **2 Claims**



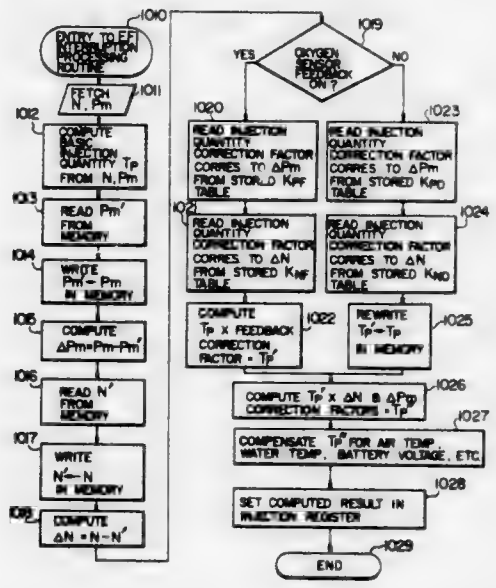
1. A method of controlling the quantity of intake air being supplied to an internal combustion engine, said engine having means for increasing the quantity of intake air being supplied to said engine by a required amount in response to operating conditions of said engine, said method comprising the steps of: (a) detecting the rotational speed of said engine when said engine is decelerating in a condition wherein the fuel supply to said engine is interrupted; (b) comparing the detected value of the rotational speed of said engine with a second predetermined rotational speed value which is higher than a first predetermined rotational speed value below which the interruption of the fuel supply to said engine should be terminated; (c) detecting the rate of decrease in the rotational speed of said engine when the detected value of the rotational speed of said engine decreases across said second predetermined rotational speed value; (d) determining whether or not the detected rate of decrease is larger than a predetermined value; and (e) actuating said intake air quantity increasing means when the detected rate of decrease in the rotational speed of said engine is larger than said predetermined value, for a predetermined period of time from the time the detected value of the rotational speed of said engine has decreased across said second predetermined rotational speed, to thereby increase the quantity of intake air.

4,508,075

METHOD AND APPARATUS FOR CONTROLLING INTERNAL COMBUSTION ENGINES

Mitsunori Takao, Kariya, and Toshiaki Mizuno, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 14, 1981, Ser. No. 311,395
Claims priority, application Japan, Oct. 17, 1980, 55-145402
Int. Cl.³ F02P *3/04*; F02B *3/00*
U.S. Cl. 123—339 **14 Claims**



1. An apparatus for controlling an internal combustion engine of the type having an electronically controlled fuel injection system effecting air-fuel ratio feedback compensation by using an oxygen sensor for sensing an oxygen content of an exhaust gas from said engine, in which at least one of a plurality of control variables of said engine is corrected in accordance with at least one of a plurality of operating parameters of said engine to stabilize at rotational speed of said engine, said apparatus comprising:

a sensor for detecting said one operating parameter; and

computing means comprising input/output means for receiving an output signal of said sensor, an interruption command unit, memory means, a computing unit and output means of said computing means, whereby in accordance with the determination as to whether said air-fuel ratio feedback compensation by using the oxygen sensor is effected or not by said electronically controlled fuel injection system and in accordance with data related to an amount of change of said one operating parameter obtained at intervals of a predetermined period, correction values for said control variable are computed, said control variable is corrected in accordance with said correction values, and a signal indicative of said corrected control variable is output from said output means,

wherein said computing means has an interruption processing control program stored in said memory means thereby to perform said determination, computation, correction and outputting in response to an interruption command signal generated from said interruption command unit, and

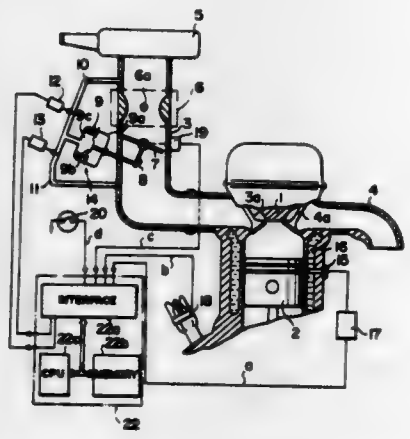
wherein said memory means stores therein two different data maps to be used separately in dependence on whether said air-fuel ratio feedback compensation by using the oxygen sensor is effected or not, each of said data maps determining the relationship between the amount of change of said operating parameter and correction factors for computing correction values of said control variable, and wherein said interruption processing control program includes processing steps whereby correction factors for said control variable corresponding to the amount of change of said one operating parameter are read from a corresponding one of said data maps depending on whether said air-fuel ratio feedback compensation by using the oxygen sensor is effected or not.

4,508,076

IDLING SPEEDING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tatsuro Oda; Hideki Tanaka; Sadashichi Yoshioka, and Katsuhiko Yokooku, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Aug. 11, 1983, Ser. No. 522,220
Claims priority, application Japan, Aug. 16, 1982, 57-141979
Int. Cl.[3] F02M *3/00*
U.S. Cl. 123—339 7 Claims



1. An idling speed control system for an internal combustion engine having an intake system and a control valve disposed therein to control the amount of intake air fed to the engine, comprising

a rotational speed detecting means for generating a rotational speed signal representing the rotational speed of the engine,

an operating condition detecting means for generating an operating condition signal representing the operating condition of the engine,

a valve actuator which receives a valve driving signal and controls the position of said control valve,

a desired idling speed determining means for determining a desired idling speed taking into account the operating condition of the engine represented by the operating condition signal fed thereto,

a first value determining means which determines a first value according to the desired idling speed determined by the desired idling speed determining means, the first value being for moving said control valve to a temporary target position which is expected to be suitable to obtain the desired idling speed,

a second value determining means which determines a second value according to the difference between the actual rotational speed of the engine represented by the rotational speed signal fed from the rotational speed detecting means and the desired idling speed determined by the desired idling speed determining means, the second value being for correcting the position of the control valve to a final target position so that the actual rotational speed converges to the desired idling speed,

a driving signal generating means which generates the valve driving signal according to a third value which is derived from the first and second values respectively determined by the first value determining means and the second value determining means and feeds it to the valve actuator,

a first detecting means which detects that the actual rotational speed of the engine is equalized to the desired idling speed and generates a detecting signal;

a second detecting means which detects said third value at the moment when the first detecting means generates the detecting signal,

an averaging means for averaging a plurality of values detected by the second detecting means, and

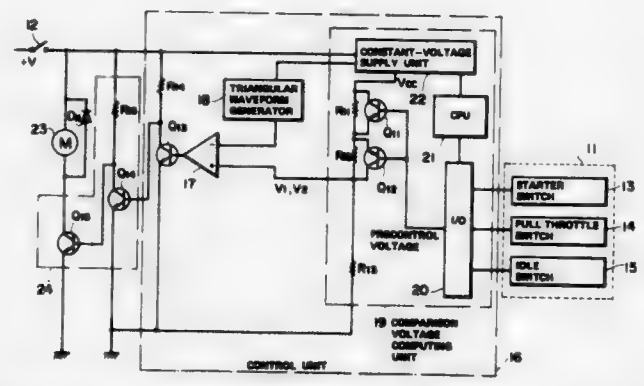
a value correcting means which acts on the first value determining means to cause it to adopt the averaged value obtained by the averaging means as the first value.

4,508,077

FUEL PUMP CONTROL APPARATUS

Hiroyuki Shimbara, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 7, 1983, Ser. No. 501,798
Claims priority, application Japan, Jun. 14, 1982, 57-102497
Int. Cl.[3] F02D *31/00*
U.S. Cl. 123—357 18 Claims



1. Apparatus for control of a fuel pump for an internal combustion engine of a vehicle, comprising:

means for sensing the operating state of the engine to produce a state signal indicative thereof;

means for computing an optimal precontrol voltage value in accordance with the state signal;

at least two series connected resistors connected between a source of voltage and ground;

means responsive to the optimal precontrol voltage value for short-circuiting at least one of said resistors in order to produce the comparison signal;

means for generating a reference signal having a predetermined frequency and waveform;

means for comparing the comparison signal to the reference signal to produce a control pulse, the width of which is equal to the interval during which the magnitude of the comparison signal exceeds that of the reference signal; and

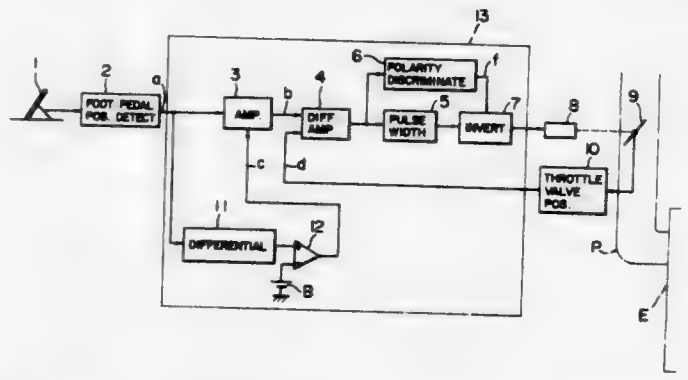
means for driving the fuel pump in accordance with the control pulse.

4,508,078

ELECTRICALLY OPERATED ENGINE THROTTLE VALVE ACTUATING DEVICE

Nobuo Takeuchi; Tadashi Kaneko; Tadataka Nakazumi, and Katsuhiko Yokooku, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 8, 1983, Ser. No. 511,983
Claims priority, application Japan, Jul. 9, 1982, 57-120391
Int. Cl.[3] F02D *9/00*
U.S. Cl. 123—399 5 Claims



1. Engine throttle valve operating means comprising:

a first detecting means for detecting the position of an engine throttle valve operating member and producing a first position signal corresponding to the position of the operation member;

a rate detecting means connected with said first detecting

means for receiving said first position signal therefrom and producing a rate signal corresponding to a rate of change per unit time of the position of the operation member;

a throttle valve actuating means for actuating the engine throttle valve means;

a throttle valve driving signal generating means responsive to said first position signal and said rate signal to produce a first drive signal for operating the actuating means in accordance with said first position signal when the rate of change per unit time of the position of the operating member is smaller than a predetermined value and generating a second drive signal for operating the actuating means in accordance with said first position signal by a greater extent than under said first drive signal when the rate of change per unit time of the position of the operating member is greater than the predetermined value.

4,508,079

KNOCKING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

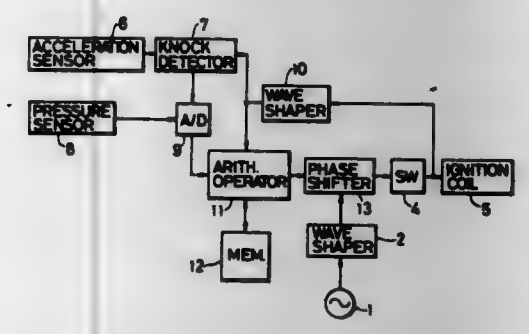
Satoshi Komurasaki; Atsushi Ueda; Yoshinobu Morimoto, and Youichi Kadota, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1983, Ser. No. 480,647

Claims priority, application Japan, Mar. 31, 1982, 57-55846; May 27, 1982, 57-91657; Jun. 14, 1982, 57-103646; Jun. 19, 1982, 57-106403; Jun. 19, 1982, 57-106429

Int. Cl.[3] **F02P** *5/14, 11/02;* **F02M** *59/20;* **F02D** *5/04*

U.S. Cl. 123—425 **20 Claims**



1. A knocking control system for an internal combustion engine, comprising; means for detecting a vibratory acceleration of said internal combustion engine to produce a vibratory output signal; knock detector means for removing noise components from said vibratory output signal to produce a knock signal whose signal level corresponds to the intensity of knocking; means for detecting a load condition of said internal combustion engine and producing a load output signal; means for receiving said knock signal and said load output signal and producing a digital output of detected load condition; means for detecting a speed of said internal combustion engine and producing a speed output to said knock detector means; means for storing a reference control value for supressing knocking; said reference control value corresponding to the detected load condition and the detected engine speed; means for producing a control output signal from said knock signal and said reference control value for controlling engine ignition, and

means for resetting said knock detector means at an interval corresponding to the ignition interval of said engine.

4,508,080

INJECTION QUANTITY CORRECTING DEVICE FOR DISTRIBUTION TYPE FUEL INJECTION PUMP

Hisashi Nakamura, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

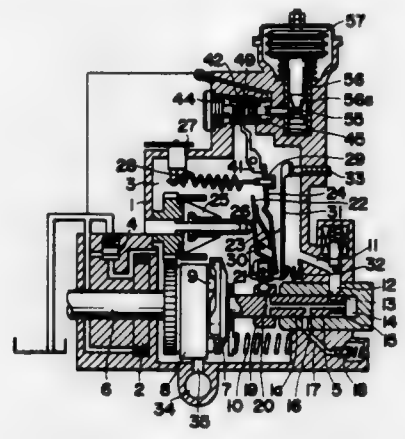
Filed Sep. 13, 1983, Ser. No. 531,641

Claims priority, application Japan, Sep. 24, 1982, 57-167124

Int. Cl.[3] **F02M** *39/00*

U.S. Cl. 123—449 **6 Claims**

1. In a distribution type fuel injection pump comprising a plunger that reciprocates and rotates simultaneously, a control sleeve adapted to shift on the plunger and changes the time of opening a cut off port, and a tension lever for adjusting the position of the control sleeve by receiving the action of a servo spring and a centrifugal governor; an injection quantity correcting device for the distribution type fuel injection pump comprising a piston connected to a lever for determining the maximum shifting position of the tension lever and being housed in a sliding hole and having a high pressure chamber



and a low pressure chamber at its both ends, a return spring for energizing this piston in the direction of the high pressure chamber, a servo valve provided in the piston and controls the pressure in the high pressure chamber by the pressing force of a servo spring and the pressure in the opposed pump chamber, and a pressure responding member for changing the setting force of the servo spring that applies the pressure to the servo valve.

4,508,081

FUEL INJECTION PUMP

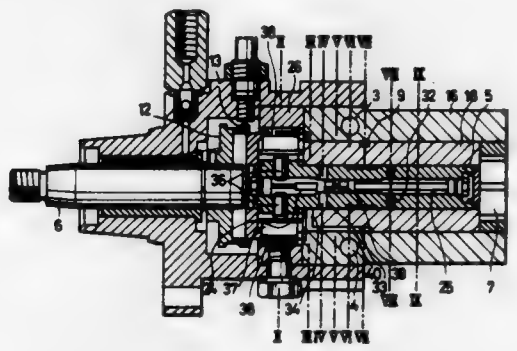
Yoshiya Takano, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 516,911

Claims priority, application Japan, Jul. 26, 1982, 57-128931

Int. Cl.[3] **F02M** *39/00*

U.S. Cl. 123—450 **5 Claims**



1. A fuel injection pump for an internal combustion engine comprising:

a rotor disposed in a housing and being rotatable according to rotation of the engine;

a pressure chamber formed in said rotor;

a first free piston slidably inserted in said pressure chamber, and dividing said pressure chamber into a first pump chamber and a second pump chamber, said first pump chamber being communicable with the interior of the engine through delivery passages and said second pump chamber being communicable with discharge passages for discharging the fuel therein;

means for pressurizing fuel in said pressure chamber according to the rotation of said rotor thereby delivering fuel to the engine;

a pair of preparatory chambers for metering and supplying fuel into said pressure chamber, each of said preparatory chambers being provided with a second free piston which

divides its preparatory chamber into first and second preparatory chambers; and

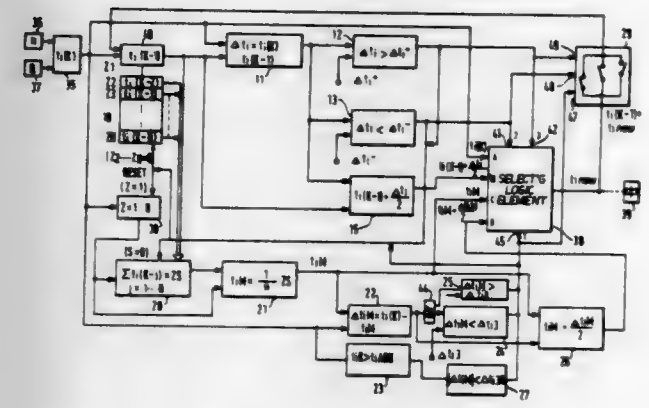
a pair of electromagnetic valves for controlling feeding of fuel to respective ones said first preparatory chambers, wherein said electromagnetic valves are arranged to communicate directly with respective ones of said first preparatory chambers for supplying fuel thereto without intervening valves.

4,508,082

ELECTRONICALLY CONTROLLED FUEL METERING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Wolfram Becker, Eberdingen, and Helmut Denz, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 326,089, Nov. 30, 1981, abandoned.
This application Mar. 6, 1984, Ser. No. 602,622
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046863
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—478 **8 Claims**



1. An electronically controlled fuel metering system for an internal combustion engine having a metering signal generating circuit for forming a basic metering signal comprising:

means for generating an output signal ti_{new},

said output signal generating means forming at least two of the following signals in dependence upon engine conditions: (1) an up-to-date load signal ti(K); (2) an average value load signal ti(M); (3) a signal indicating engine overrun during slow load reduction according to $ti(K-1)+\Delta ti/2$; and (4) form an approximate load signal according to $tiM=\Delta tiM/2$, wherein ti=load signal, K=present value and M=average value,

means selecting one of the above signals as said output signal, and wherein

said generated output signal ti_{new} controls fuel metering in accordance with at least one of ti(K) and tiM.

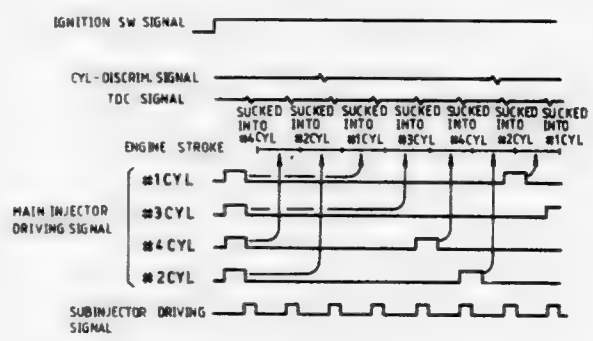
4,508,083

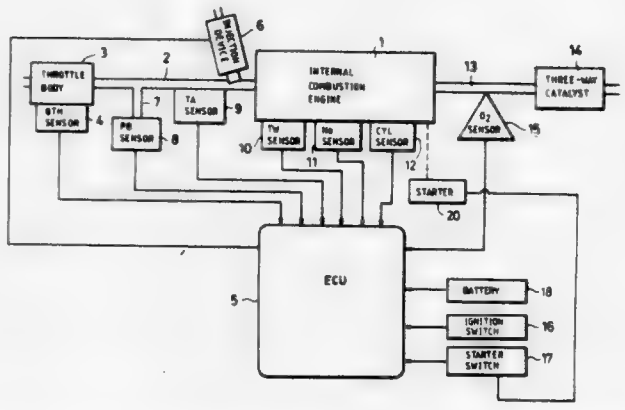
ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

Shumpei Hasegawa, Niiza, and Akihiro Yamato, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of, Japan

Filed Nov. 18, 1982, Ser. No. 442,620
Claims priority, application Japan, Nov. 24, 1981, 56-187982
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—491 **7 Claims**

1. An electronic fuel injection control system for electronically controlling the quantity of fuel being supplied to an internal combustion engine having a pluraity of cylinders, an output shaft, an ignition device, and an ignition switch adapted to energize said ignition device when closed, comprising: a sensor for detecting at least one predetermined angular position of said output shaft of said engine to generate a signal indicative of a detected angular position; a plurality of fuel injection valves corresponding in number to said cylinders, each provided for each of said cylinders; and a control circuit adapted to cause opening of said fuel injection valves in synchronism with generation of said angular position signal, for supplying a controlled amount of fuel into said cylinders, said control circuit being operable to cause opening of all said fuel injection valves at the same time to supply fuel into respective ones of said cylinders for one predetermined time interval immediately upon closing of said ignition switch, keep closing





of all said fuel injection valves until after all said cylinders have pistons thereof complete respective first suction strokes thereof after said closing of said ignition switch, and upon completion of said first suction strokes of all said cylinders, cause successive opening of said fuel injection valves in predetermined sequence in synchronism with subsequent generation of said angular position signal occurring after the completion of said first suction strokes of all said cylinders to supply fuel to respective ones of said cylinders.

4,508,084

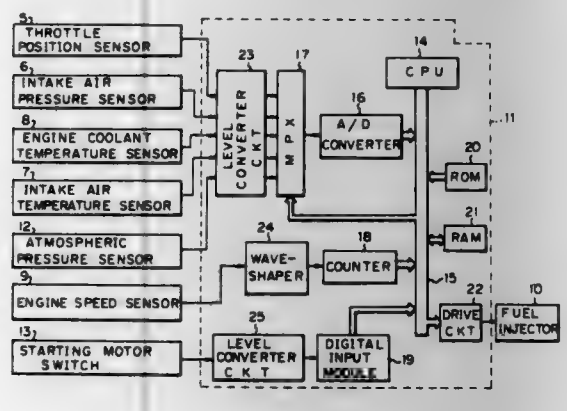
METHOD FOR CONTROLLING A FUEL METERING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Akihiro Yamato, Shiki, and Akihiko Koike, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,301
Claims priority, application Japan, Aug. 16, 1982, 57-141824
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—492 **5 Claims**

1. A method for controlling a fuel metering system of an internal combustion engine, comprising a sequence of calculation steps for calculating a quantity of fuel to be delivered to power cylinders of said engine in response to engine operating conditions determined in accordance with a plurality of parameters, including a first step for calculating a first value indicative of an increment of fuel supply responsive to one of said operating conditions, a second step for calculating a second value indicative of an increment of fuel supply responsive to

another one of said operating conditions, and a step for comparing said first and second values and selecting the larger one



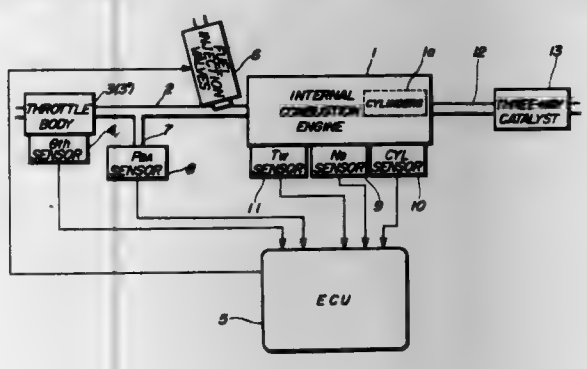
of said first and second values for said calculation of the quantity of fuel.

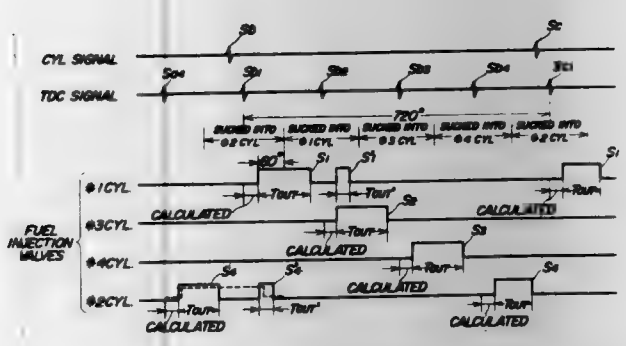
4,508,085

FUEL INJECTION CONTROL METHOD FOR MULTI CYLINDER INTERNAL COMBUSTION ENGINES OF SEQUENTIAL INJECTION TYPE AT ACCELERATION

Akihiro Yamato, Shiki, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,681
Claims priority, application Japan, Jun. 15, 1983, 58-107547
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—492 **6 Claims**





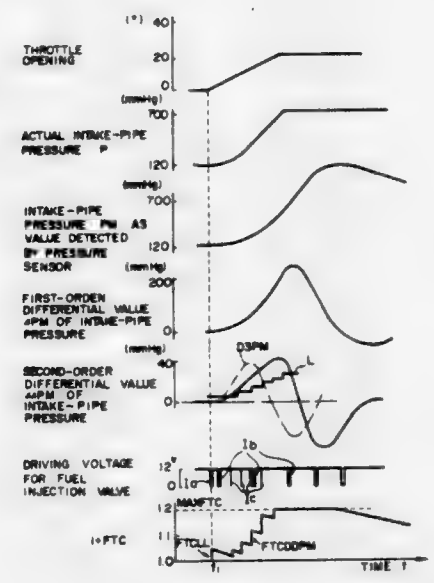
1. A method of controlling the supply of fuel to an internal combustion engine having a plurality of cylinders at acceleration thereof, wherein operating conditions of said engine are detected, the quantity of fuel being supplied to said engine is set to a value appropriate to the detected operating condition of said engine upon generation of each pulse of a trigger signal, and sequential injections of the set quantity of fuel are effected into said cylinders in predetermined sequence in synchronism with generation of pulses of said trigger signal, the method comprising the steps of: (1) determining whether or not said engine is operating in an accelerating condition; (2) setting an acceleration fuel increment at the time of generation of a present pulse of said trigger signal, when it is determined that said engine is operating in said accelerating condition; and (3) effecting an additional injection of fuel at the time of generation of said present pulse of said trigger signal, in a quantity corresponding to the set acceleration fuel increment into one of said cylinders into which one of said sequential injections was effected at the time of generation of a preceding pulse of said trigger signal.

4,508,086

METHOD OF ELECTRONICALLY CONTROLLING FUEL INJECTION FOR INTERNAL COMBUSTION ENGINE

Toshimitsu Ito, and Kazuhiko Norota, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 4, 1984, Ser. No. 607,307
Claims priority, application Japan, May 9, 1983, 58-80622; May 9, 1983, 58-80623; May 9, 1983, 58-80624; May 9, 1983, 58-80625
Int. Cl.³ F02B *3/00, 33/00*
U.S. Cl. 123—492 **16 Claims**



13. A method of electronically controlling a fuel injection for an internal combustion engine wherein fuel is injected in asynchronism with a crank angle when a throttle valve is open and the rate of change of an engine load takes a positive value, comprising the steps of:

obtaining a second-order differential value of the engine load with respect to time which is defined as the rate of change of a change rate of the engine load, and a third-order differential value of the engine load with respect to time which is defined as the rate of change of said second-order differential value;

injecting a first quantity of fuel during a period from a point of time when the throttle valve at fully closed position is opened until a predetermined period of time has elapsed and when said second-order differential value is not less than a first reference value and said third-order differential value is not negative; and

injecting a second quantity of fuel after said predetermined period of time has elapsed and when said second-order differential value is not less than a second reference value and said third-order differential value is not negative.

4,508,087

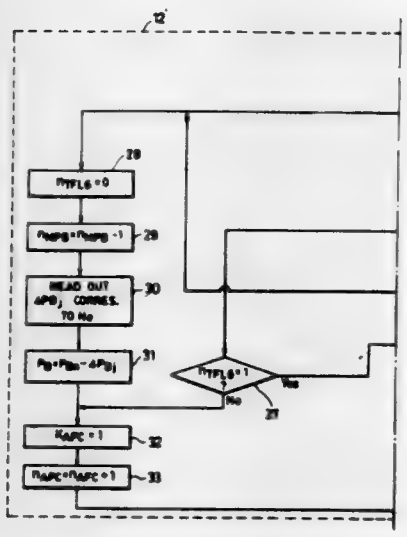
METHOD FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE AFTER TERMINATION OF FUEL CUT

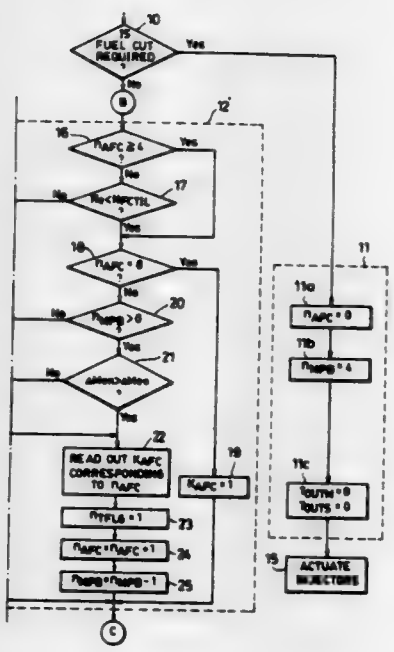
Akimasa Yasuoka, Tokyo, and Yutaka Otobe, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,672
Claims priority, application Japan, Jun. 23, 1982, 57-107952
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—493 **6 Claims**

1. A method for controlling the quantity of fuel being supplied to an internal combustion engine, to a required quantity,

by increasing the fuel quantity by an increment which is set in synchronism with generation of pulses of a predetermined control signal generated at a predetermined crank angle of said engine, after termination of a fuel cut operation which is effected when said engine is operating in a predetermined operating condition while it is decelerating, the method comprising the steps of: (1) detecting a transition of the operative state of said engine from said predetermined operating condition wherein the fuel supply to said engine is to be cut off to another operating condition wherein the fuel supply is to be effected; (2) detecting the magnitude of a variation in the rotational speed of said engine and determining whether or not said detected magnitude of variation is larger than a predetermined value; and (3) effecting said increase of the fuel quantity for a period of time after said transition has been detected and before a predetermined number of pulses of said predetermined control signal are generated, so long as it is determined in said step (2) that said detected magnitude of variation is larger than said predetermined value.



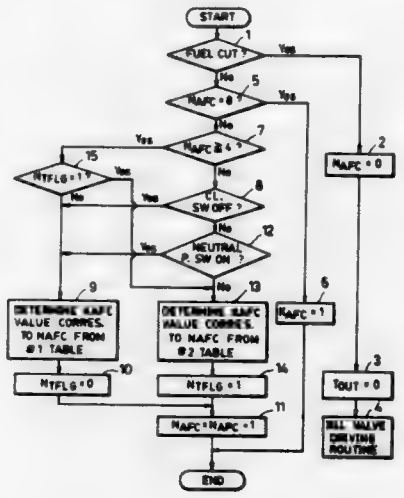


4,508,088

METHOD FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE AFTER TERMINATION OF FUEL CUT

Shumpei Hasegawa, Niiza, and Noriyuki Kishi, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,680
Claims priority, application Japan, Aug. 20, 1982, 57-143457
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—493 **6 Claims**



1. A method of controlling the quantity of fuel being supplied to an internal combustion engine for a vehicle having wheels and a power transmission means for transmitting torque from said engine to said wheels of said vehicle, after termination of a fuel cut operation of said engine which is effected at deceleration of said engine, to desired values by increasing the fuel quantity by the use of fuel increments set in synchronism with generation of pulses of a predetermined control signal which are generated at predetermined crank angle positions of said engine, the method comprising the steps of: (1) setting beforehand a plurality of groups of fuel increments which have different fuel quantity increasing characteristics from each other; (2) determining whether or not there occurs a transition of the operative state of said engine from said fuel cut operation wherein fuel supply is cut off to a normal operation wherein fuel supply is effected; (3) determining whether said power transmission means is in a first state enabling transmission of torque from said engine to said wheels of said vehicle or in a second state disabling said transmission, for a period of time after the occurrence of said transition has been determined and before a predetermined number of said pulses of said predetermined control signal are generated; (4) selecting one of said plurality of groups of fuel increments corresponding to a state of said power transmission means determined in said step (3); and (5) effecting said increasing of the fuel quantity by the use of the selected group of fuel increments.

4,508,089

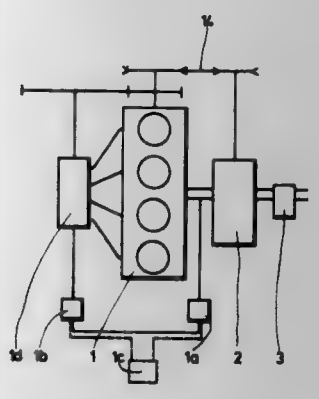
METHOD OF REGULATING THE CHARGE OF COMBUSTION GAS DELIVERED TO AN INTERNAL COMBUSTION ENGINE

Hans Baumgartner, Viersen, and Rainer Südbeck, Duisburg, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,551
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144712
Int. Cl.³ F02D *23/02*; F02B *33/36*
U.S. Cl. 123—559 **3 Claims**

1. A method of regulating the supply of combustion fluid to an internal combustion engine from a positive displacement device capable of operating as a fluid motor or a fluid compressor, varying the rate of flow of the combustion fluid depending

on the desired change of load in the internal combustion engine, utilizing a control device for the positive displacement device operating as a fluid motor for varying the rate of flow, coupling the internal combustion engine in a force-locking manner with the positive displacement device, feeding fluid to the positive displacement device in unthrottled suction lines and subsequently, at least partially, displacing the fluid in an



unthrottled connecting line to the internal combustion engine, wherein the improvement comprises in the partial load range of the combustion engine feeding the fluid to the positive displacement device operating as a fluid motor in the unthrottled suction lines at a higher pressure than the displacing pressure out of the positive displacement device in the unthrottled connecting line for flow into the internal combustion engine.

4,508,090

METHOD AND APPARATUS FOR CONTROLLING THE SUPERCHARGER OF AN INTERNAL COMBUSTION ENGINE

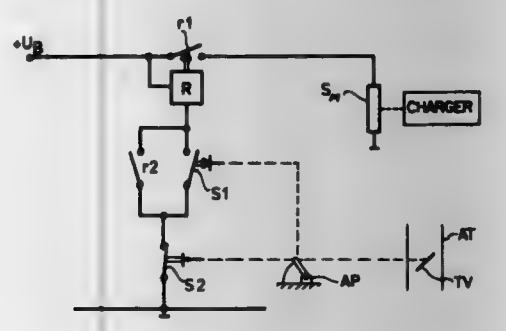
Helmut Rembold, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,185

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241024

Int. Cl.³ F02D *23/00*

U.S. Cl. 123—564 **10 Claims**



1. Method of controlling the charger of an internal combustion engine of a motor vehicle as required wherein the engine has a first characteristic curve of torque vs. rotational speed (rpm) indicative of full-load engine operation with the charger switched out and a second characteristic curve of torque vs. rotational speed (rpm) defining the condition at which the charger is about to be switched out, the method comprising the steps of:

switching in the charger when the engine is operating at full-load to increase the torque delivered by the engine beyond that indicated by said first characteristic curve;

holding the charger in its switched-in condition while simultaneously reducing the torque delivered by the engine to a lower value of torque where said second characteristic curve and said first characteristic curve correspond to each other within at least a range of higher values of rpm; and,

switching out said charger directly after the torque has been reduced to said lower value thereof so that the engine again operates without the charger.

5. Apparatus for controlling the charger of an internal combustion engine of a motor vehicle as required by the operator of the vehicle, the engine having a first characteristic curve of torque vs. rotational speed (rpm) indicative of full-load engine operation with charger switched out and a second characteristic curve of torque vs. rotational speed (rpm) defining the condition at which the charger is about to be switched out, the apparatus comprising:

charger actuating means coupled to said charger for switching the charger in and out of the air supply system of the internal combustion engine;

first switch means for energizing said actuating means and switching in the charger when the engine is operating at full-load to increase the torque delivered by the engine beyond that indicated by said first characteristic curve;

torque adjustment means for reducing the torque delivered by the engine to a lower value of torque whereat said first and second characteristic curves correspond to each other at least within a range of higher values of rpm;

self-holding means for holding said actuating means in the energized condition while reducing the torque delivered by the engine to said lower value thereof; and,

second switch means connected to said torque adjustment means so as to be actuable when said lower value of torque is reached for releasing said self-holding means thereby causing said actuating means to become deenergized to switch out the charger.

4,508,091

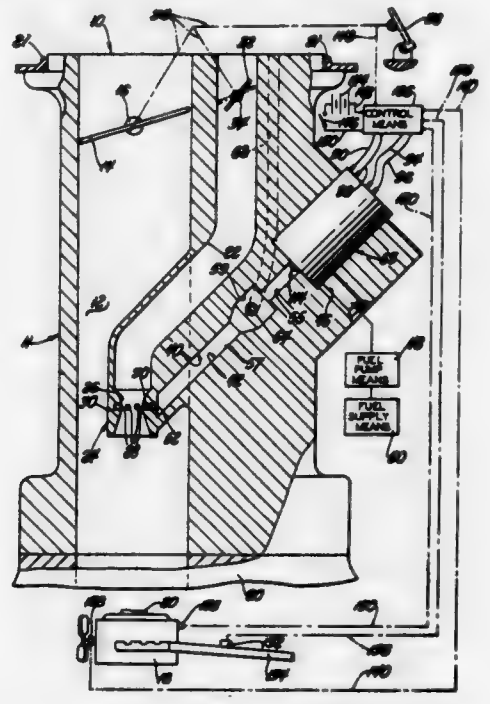
FUEL METERING APPARATUS WITH MULTI-STAGE FUEL METERING VALVE ASSEMBLY

Russell J. Wakeman, Novi, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Division of Ser. No. 88,361, Oct. 26, 1979, Pat. No. 4,342,443. This application Mar. 4, 1982, Ser. No. 354,876

Int. Cl.³ F02M *51/06*; B05B *1/30*

U.S. Cl. 123—586 **5 Claims**



1. Fuel metering apparatus for supplying metered rates of fuel flow to a combustion engine, comprising body means, induction passage means formed through said body means for supplying motive fluid to said engine, said induction passage means comprising primary induction passage means and main induction passage means, said main induction passage means comprising first inlet means for permitting the inlet of air and first outlet means for discharging motive fluid to said engine, main throttle valve means for variably controlling the rate of flow of air into said first inlet means and through said main

induction passage means, said primary induction passage means comprising second inlet means for permitting the inlet of air and second outlet means for discharging motive fluid to said engine, primary throttle valve means for variably controlling the flow of air through said primary induction passage means, said second outlet means comprising sonic venturi discharge nozzle means situated generally in said main induction passage means downstream of said main throttle valve means, a metering valving assembly for metering liquid fuel in response to engine demands and indicia of engine operation, and metered fuel conduit means communicating between said metering valving assembly and said sonic venturi discharge nozzle means, said metering valving assembly comprising metering orifice means, a cooperating metering valve member, first solenoid coil means effective upon being energized and de-energized to cause said metering valve member to move away from and toward said metering orifice means, movable abutment means, and second solenoid coil means, said second solenoid coil means being effective upon being energized to move said abutment means to a selected position to limit the movement of said metering valve member away from said metering orifice means, and a contoured extension of said metering valve member extending into said metering orifice means as to define an effective metering area therebetween, said contoured extension occupying more space within said metering orifice means the lesser the distance said metering valve member travels away from said metering orifice means.

4,508,092

MAGNETIC SENSOR FOR DISTRIBUTORLESS IGNITION SYSTEM AND POSITION SENSING

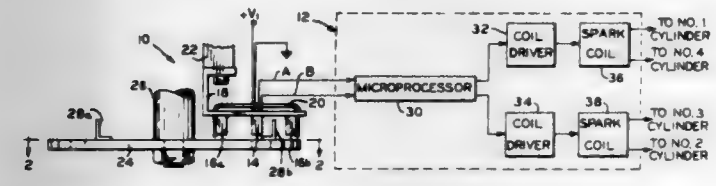
Ronald J. Kiess, Decatur, and Gary R. Nichols, Woodburn, both of Ind., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Continuation of Ser. No. 223,778, Jan. 9, 1981, Pat. No. 4,406,272, which is a continuation-in-part of Ser. No. 105,697, Dec. 20, 1979, abandoned. This application May 16, 1983, Ser. No. 492,947

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.[3] **F02P** *3/06, 1/00, 3/02;* **G08B** *21/00*

U.S. Cl. 123—617 **11 Claims**



1. Apparatus for use in a system having first and second parts that are movable relative one another comprising:

magnetic means having north and south poles for providing a magnetic flux path between said north and south poles;

sensor means comprising first and second sensors for sensing the magnetic flux in said path and for providing a signal corresponding to the sensed magnetic flux;

mounting means for mounting said magnetic means and said first and second sensors in substantially rectilinear alignment; said magnetic means being between said first and second sensors; said first and second sensors being intersected by a line through said north and south poles; said line being substantially parallel to said flux path at said north and south poles; said first sensor being linearly spaced on said line from said magnetic means south pole to form a first open region linearly defined along said line between said first sensor and said magnetic means south pole; said second sensor being linearly spaced on said line from said magnetic means north pole to form a second open region linearly defined along said line between said magnetic means north pole and said second sensor; whereby there is provided a predetermined flux concentration in said first and second open regions and whereby said first and second open regions provide dual information sensing regions.

4,508,093

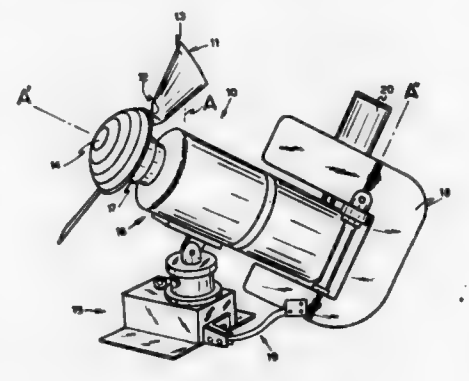
TARGET-PIGEON LAUNCHER

Millo Bertini, 679 Garden St., Trumbull, Conn. 06611

Continuation-in-part of Ser. No. 129,259, Mar. 11, 1980, abandoned. This application Mar. 3, 1981, Ser. No. 239,972

Int. Cl.[3] **F41B** *15/00*

U.S. Cl. 124—1 **23 Claims**



1. In combination with a target pigeon having a hub and a pair of propeller-type wings extending oppositely from said hub, a launcher comprising:

a drive unit including a motor and having an output shaft rotatable about a shaft axis;

a base underneath said unit and provided with mounting means for securing said unit to said base for permitting swiveling of said unit on said base about an upright swivel axis with said shaft axis transverse to said swivel axis;

a head fixed on said shaft and fittable with said hub;

retaining means for releasably securing said hub to said head with said wings extending radially from said shaft axis;

control means connected to said unit and to said retaining means for energizing said unit with said pigeon retained on said head for spinning said pigeon and thereby generating an axially backwardly flowing airstream;

a vane on said unit axially behind said head in said stream and pivotal about an upright vane axis between one end position inclined in one direction across said airstream and deflecting same to one side and another position inclined oppositely across said airstream and deflecting same to the opposite side, whereby when said vane is inclined in said one direction to said airstream said unit is urged rotationally about said swivel axis on said base in one rotational sense and when said vane is oppositely inclined said unit is urged in the opposite rotational sense; and

means on said motor and on said base for reversing the inclination of said vane relative to said stream when said unit swivels on said base into either of two angularly offset reversing positions, whereby said unit with said pigeon will oscillate between said reversing positions.

4,508,094

CONVERTIBLE COOKING UNIT

Paul W. Hait, Saratoga, Calif., assignor to Pyromid, Inc., Los Gatos, Calif.

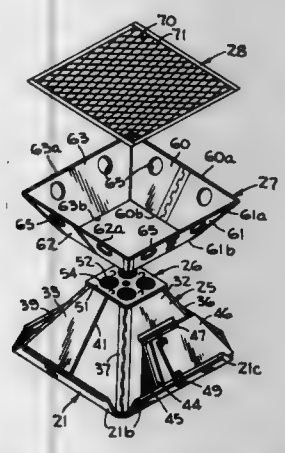
Filed Nov. 12, 1982, Ser. No. 440,984

Int. Cl.[3] **F24C** *1/16*

U.S. Cl. 126—9 R **14 Claims**

1. A cooking unit comprising an open-ended support member of truncated pyramidal configuration, an open-ended firebox of truncated pyramidal configuration disposed in axial alignment with said support member and having the smaller end of said firebox projecting through the opening in the smaller end of said support member, at times said support member is inverted and is positionable over said firebox with the smaller end of said firebox projecting through the opening in the smaller end of said support member, said support mem-

ber and said firebox being formed with a larger end, said support member and said firebox being of a configuration and dimensions for overlapping support, and a grill positionable over the larger upper end of said support member when the unit is oriented with said support member above said firebox, and said grill being positionable over the larger upper end of said firebox when the unit is oriented with said firebox disposed above said support member, said support member comprising panels having trapezoidal configurations and adjacent, non-parallel edges of said panels being hingedly connected for folding and extending said support member, and wherein said firebox comprises panels having trapezoidal configurations and adjacent, non-parallel edges of said panels of said firebox being hingedly connected for folding and extending said firebox.

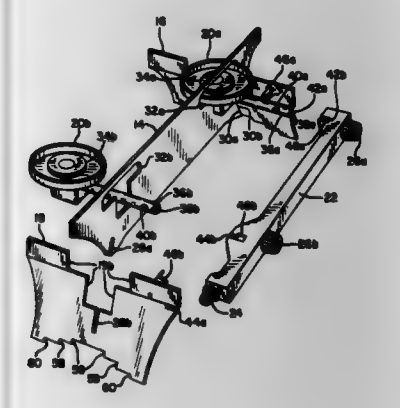


4,508,095

COLLAPSIBLE PORTABLE STOVE AND CARRYING CASE THEREFOR

Bradley A. Bloechel, 6326 SE. 67th Ave., Portland, Oreg. 97206

Filed May 17, 1983, Ser. No. 495,507
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—9 R **10 Claims**



3. A collapsible stove having burner means and having fuel distribution means arranged to be connected between said burner means and a source of fuel, said burner means having a first cross-section and a second cross-section, said second cross-section being at a more-or-less substantial angle to said first cross-section and said fuel distribution means incorporating fuel control means for said burner means, consisting essentially of:

a. a first member having a first upper edge, said first member incorporating therein an aperture corresponding more-or-less to said first cross-section, and having a first assembly slot extending partially transversely therethrough toward said first upper edge;

b. a second member having a second upper edge and having therein a second assembly slot adapted to be matingly received by said first assembly slot and extending partially transversely therethrough away from said second edge, said second member having in said second upper edge a shaped cutout corresponding more-or-less to said second cross-section;

c. portions of said first upper edge and said second upper edge defining a plane when said first member and said second member are matingly assembled; and

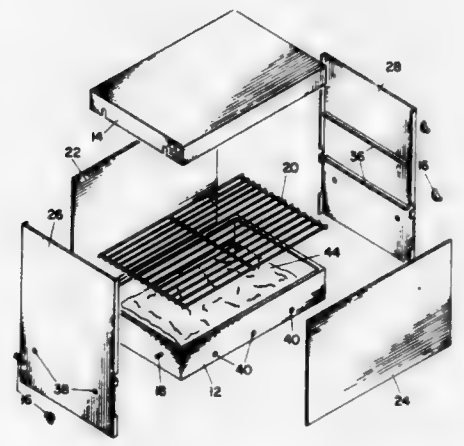
d. assembly means on said first and said second upper edges being adapted to receive said fuel distribution means and maintain same in spaced relationship with said burner means when said first and said second members are matingly assembled.

4,508,096

COMPACT VERSATILE PORTABLE COOKER

Walter T. Slattery, 3439-½ Altura Ave., La Crescenta, Calif. 91214

Filed Aug. 22, 1983, Ser. No. 525,561
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—9 R **6 Claims**



1. A compact versatile portable cooker comprising:

a fire pan of rectangular configuration and having a bottom and four sides;

a cover;

a pair of supporting end plates, said end plates being small enough to fit into said fire pan;

an open rectangular grill member;

means for alternatively securing said cover or said end plates to said fire pan, to provide with said cover a closed container for containing and storing all of the parts of the portable cooker; and to provide with said end plates a support for said grill above the fire pan and with the fire pan raised above the ground or other supporting surface; and

said end plates including means for supporting said grill member at several different cooking levels above said fire pan, and said end support plates further including inturned flanges for holding said front and rear side plates in place.

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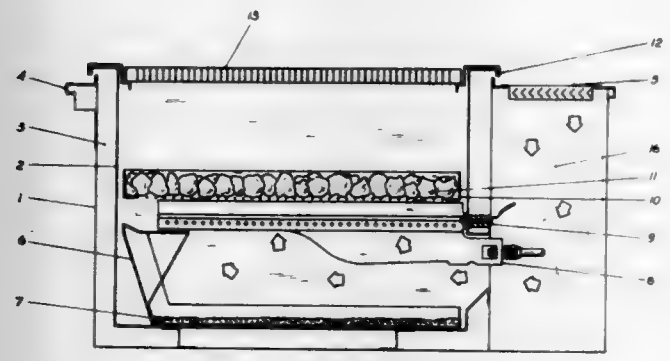
SELF CLEANING INDOOR BARBECUE GRILLER

Keith E. Berg, 42 Weir Crescent, Lurnea NSW 2170, Australia

PCT No. PCT/AU82/00057, § 371 Date Dec. 8, 1982, § 102(e) Date Dec. 8, 1982, PCT Pub. No. WO82/03544, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 13, 1982, Ser. No. 448,899
Claims priority, application Australia, Apr. 10, 1981, PE8409
Int. Cl.³ F24C *3/00*
U.S. Cl. 126—41 R **14 Claims**

4. A cooking appliance comprising an outer casing, an enclosure spaced inwardly of said outer casing, a layer of thermal insulation sandwiched between said outer casing and said enclosure, a horizontal cooking surface forming the top of said enclosure and having at least one vent therein, radiant heating means spanning across said enclosure at a level beneath said cooking surface, said heating means including means porous to liquid fat dropping thereon from the cooking surface, a tray

supported beneath said heating means and towards which liquid fat drops when falling from the heating means, a layer of fat-absorbent and substantially heat-impervious material on said tray, and an inlet permitting combustion air to enter said



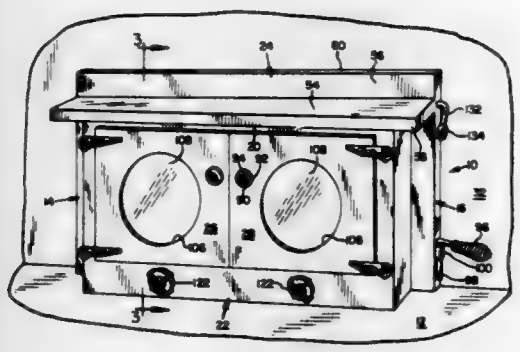
enclosure beneath the heating means, said appliance operating by generating sufficient heat within the vicinity of the absorbent layer to vaporize and combust food material deposited thereon.

4,508,098

FIREPLACE CAP

Philip E. Scheler, Rte. 1, Western Heights, #12, Baker, Oreg. 97814

Filed Dec. 21, 1982, Ser. No. 452,025
Int. Cl.³ F24C *15/04*
U.S. Cl. 126—139 **16 Claims**



1. A fireplace cap for a fireplace with a fire box and fireplace opening leading to the fire box comprising:

an upright, rectangular frame means including first and second plural stepped side rail members, a lower damper section, and an upper header section, said frame means defining a fireplace cap opening and being adapted for mounting to the front of a fireplace so as to permit insertion of fuel through the cap and fireplace openings and into the fire box of the fireplace, each of said side rail members including a first step adjacent to the fireplace opening and a second step adjacent to the first step, the first step being of shallower depth than the second step;

at least one hinged door mounted to said frame means and movable from a first position closing the cap opening to second positions opening the cap opening; and

latching means for holding said door in a closed position.

5. A fireplace cap for a fireplace with a damper, a fire box, and a fireplace opening leading to the fire box comprising:

an upright, rectangular frame means including first and second side rail members, a lower damper section, and an upper header section, said frame means defining a fireplace cap opening and being adapted for mounting to the front of the fireplace so as to permit insertion of fuel through the cap and fireplace openings and into the fire box of the fireplace;

at least one hinged door mounted to said frame means and movable from a first position closing the cap opening to a second position opening the cap opening; and

latching means for holding said door in a closed position, said latching means including actuator means pivotally mounted to said door at a location above the center of the door, a first latching arm means eccentrically mounted to said actuator means and extending upwardly therefrom, a second latching arm means eccentrically mounted to said actuator means and extending downwardly therefrom, said second latching arm means being longer than said first latching arm means first guide means for receiving and guiding the motion of said first latching arm means, second guide means for receiving and guiding the motion of said second latching arm means, said header section defining an upper latching arm receiving opening, said damper section defining a lower latching arm receiving opening; and

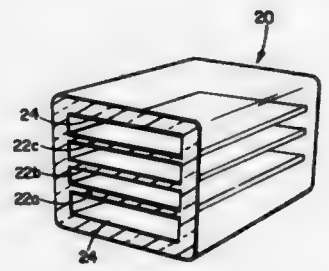
handle means for pivoting said actuator means in a first direction to extend said first latching arm means into the upper latching arm receiving opening and said second latching arm means into the lower latching arm receiving opening so as to latch the door in a closed position, and for pivoting the latching arms in a second direction to retract the latching arms from the respective latching arm receiving opening and permit the door to open.

4,508,099

SOLAR FURNACE

Philippe A. Clavier, 1880 Century Park East, Suite 500, Los Angeles, Calif. 90067

Filed Feb. 22, 1982, Ser. No. 351,018
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—400 **1 Claim**



1. An insulating element including:

walls of an insulating material defining an evacuated interior space,

a plurality of reflective panels having an uncovered surface with reflective properties extending entirely across the interior space, and

a plurality of black body panels having an uncovered surface with black body properties extending entirely across the interior space, generally parallel to the reflective panels, said reflective panels and surfaces and said black body panels and surfaces alternating within the interior space, and being spaced apart from one another except where they are attached to said wall.

4,508,100

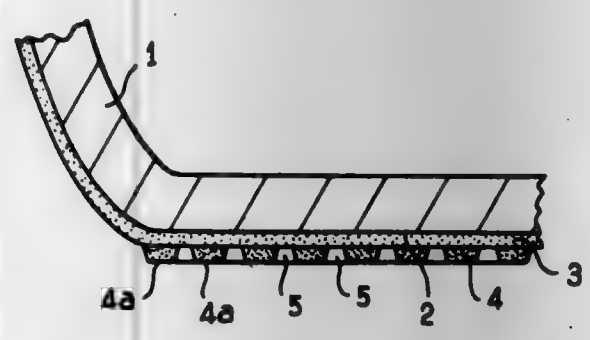
METHOD FOR ENAMELING THE BOTTOM FACE OF A CULINARY VESSEL OF ALUMINUM OR ALUMINUM ALLOY AND A CULINARY VESSEL OBTAINED IN ACCORDANCE WITH SAID METHOD

Jean-Pierre Deville, La Balme de Sillingy, France, assignor to Seb S.A., Selongey, France

Filed Jun. 10, 1983, Ser. No. 502,952
Claims priority, application France, Apr. 15, 1983, 83 06178
Int. Cl.³ A47J *27/00*
U.S. Cl. 126—390 **3 Claims**

1. A method for enameling the bottom face of a culinary vessel of aluminum or aluminum alloy which comprises apply-

ing on said bottom face an enamel slip coating of a conventional type for aluminum or aluminum alloy, heating said layer of enamel slip to a temperature within the range of 50° to 95° C. during a sufficient period of time to reduce the moisture content to a value within the range of 0.5 to 10% by weight,



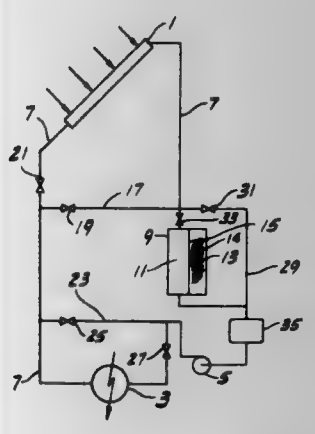
applying a second layer of enamel slip containing between 15 to 40% by weight of hardening agents in the form of fine particles on the first layer of enamel slip before the temperature of said first layer has fallen to a value below about 45° C., and firing said two layers in order to sinter the enamels contained in said layers.

4,508,101

THERMAL ENERGY STORAGE SYSTEM

Don E. Carter, and Henry K. Yuen, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 9, 1982, Ser. No. 366,794
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—436 **41 Claims**



40. A composition adapted for use in active or passive thermal energy storage system comprising a phase change material and a nucleating agent therefor, said phase change material being selected from the group consisting of aliphatic diamines having the general formula

$$H_2N—(CH_2)_n—NH_2,$$

where n is an integer between 4 and 14 inclusive, bis(hexamethylene)triamine, 3-aminobutylcyclohexylamine, p-phenylenediamine, mixtures of said amines with each other, mixtures containing at least one of said amines and water and mixtures containing at least one of said amines and an agent for lowering the melting point thereof.

4,508,102

HEAT COLLECTION, DISSIPATION AND STORAGE

Ira V. Hager, P.O. Box 5845, Hilton Head Island, S.C. 29928

Filed Sep. 5, 1980, Ser. No. 184,194
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—437 **2 Claims**

1. A roofing system comprising:

a support sheet;

an edge means surrounding said support sheet around the circumference thereof, and upstanding from said support sheet;

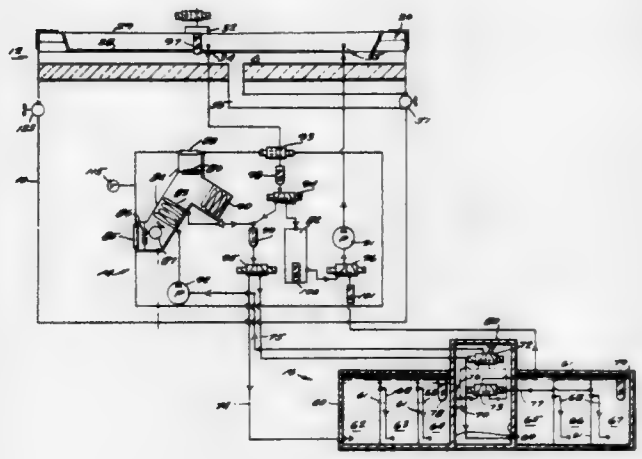
means for defining a substantially water and air-tight volume within the volume defined by said support sheet and upstanding edge means, said volume-defining means consisting of: a first water and air impermeable membrane abutting said support sheet and said edge means, and overlapping said edge means; a second water and air impermeable membrane disposed above said first membrane, generally coextensive therewith; and means for affixing overlapping portions of said first and second membranes to said edge means around the outer periphery thereof to define a substantially liquid and air-tight volume between said membranes;

valve means for providing exhausting of air from between said membranes during filling of the volume between said membranes with liquid;

means defining a liquid outlet from the volume between said membranes;

means defining a liquid inlet into the volume between said membranes;

underlying building components for supporting said support sheet so that it has a slight slope inwardly from said edge means to define a low drain point adjacent the center of said support sheet;



said means defining an inlet to between said membranes is located outwardly spaced from said low drain point, adjacent a portion of said edge means; and

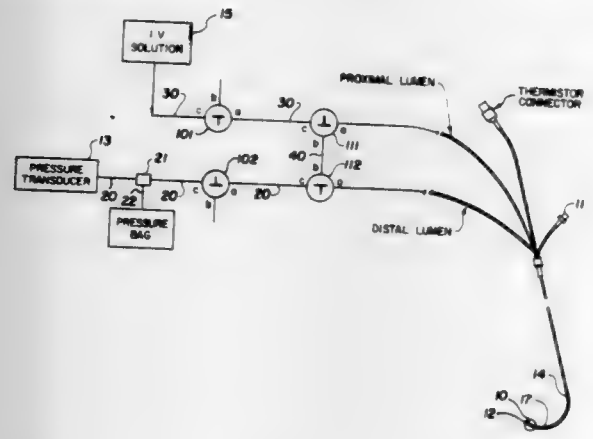
in combination with a building on which said roofing system is mounted, and including liquid conduit and circuitry means cooperating with said inlet and said outlet for supplying liquid to and draining liquid from the volume between said membranes, said liquid conduit and circuitry means comprising: a main liquid storage tank; a secondary liquid storage tank; heat exchange means for providing for heat exchange between liquid circulating in said conduit and circuitry means to ambient air in the building; pipe means interconnecting said inlet, outlet, tanks, and heat exchange means; sensor means for sensing the temperature in the volume between said membranes, said storage tanks, said outlet, and the ambient air in the building; first pump means for pumping liquid through said heat exchange means from said main storage tank; second pump means for pumping liquid from one of said tanks into said inlet between said membranes; valve means disposed in said pipe means between said inlet, outlet, tanks, pump means, and heat exchange means, for valving liquid flow to various of the components; and electrical control means for controlling said pump means and valve means in response to the temperature of the sensed liquid within the various volumes being sensed, and depending upon the sensed air temperature within the building.

4,508,103

PRESSURE MONITORING INTERCONNECT SYSTEM

Constance M. Calisi, 5518 Martel, Dallas, Tex. 75206

Filed Sep. 6, 1983, Ser. No. 529,382
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—673 **6 Claims**



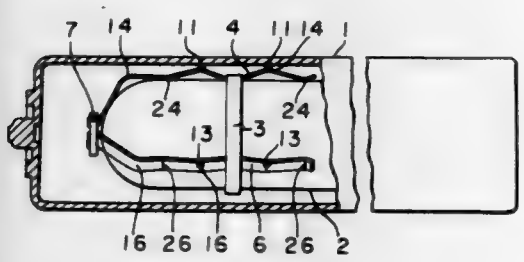
1. Fluid pressure monitoring apparatus comprising:
(a) a catheter including at least a first lumen having an opening at a first location and a second lumen having an opening at a second spaced apart location on said catheter;
(b) pressure measuring means;
(c) first conduit means connecting said pressure-measuring means with said first lumen;
(d) solution injection means;
(e) second conduit means connecting said solution injection means and said second lumen; and
(f) valve and bypass means interconnected between said first and second conduit means operable to selectively interconnect said pressure-measuring means in fluid communication with said second lumen through said valve and bypass means while isolating said first lumen and said solution injection means.

4,508,104

RETAINING DEVICE FOR AN INNER TUBE OF AN EVACUATED DOUBLE-TUBING TYPE SOLAR HEAT COLLECTOR

Hirosato Takeuchi, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 422,142
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **3 Claims**



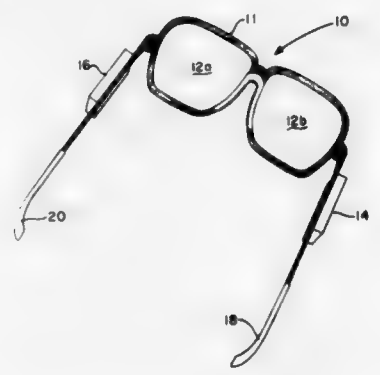
1. A retaining device for an inner tube of an evacuated double-tubing type solar heat collector comprising:
a ring having an inner diameter approximately equal to the outer diameter of the inner tube and adapted to be positioned around the outer periphery of the inner tube; and
at least three leaf springs extending generally longitudinally of the inner and outer tubes of the collector and circumferentially equally spaced apart from each other, each of the leaf springs being made of a narrow metal strip bent into a corrugated or gentle sawtooth shape and having first portions for contacting the inner surface of the outer tube formed at the bent crest portions and second portions for contacting the outer surface of the inner tube formed at the bent trough portions, each of the leaf springs being fixed adjacent one of its trough portions to said ring at right angles relative to the diameter of the ring, and said leaf springs being bent adjacent one end inwardly toward the center of the inner tube and convergingly toward each other and being formed at said one end with hooked portions which cooperate to define a holder for an annular ring of getter metal.

4,508,105

SHADOW GENERATING APPARATUS

Glen A. Whitten, and Lech Pisarski, both of 353 N. Oak St., Inglewood, Calif. 90302

Filed Feb. 8, 1983, Ser. No. 464,970
Int. Cl.³ A61M *21/00*
U.S. Cl. 128—1 C **8 Claims**



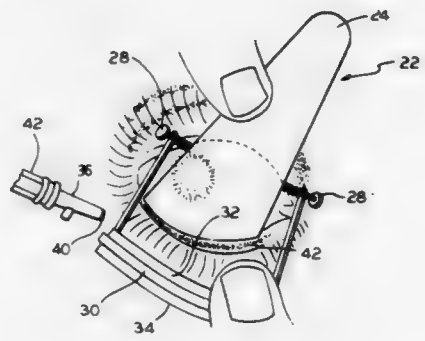
1. A shadow generating apparatus, comprising:
a viewing apparatus;
at least a lens fitted to said viewing apparatus, each said lens having disposed therein a liquid crystal display;
a timing mechanism connected to said liquid crystal; and
a power source for said timing mechanism; wherein said timing mechanism intermittently activates and deactivates said liquid crystal.

4,508,106

MICROSURGICAL METHOD FOR APPLYING PERMANENT EYELID LINER

Giora G. Angres, North Las Vegas, Nev., assignor to Angres Clinic, Ltd., North Las Vegas, Nev.

Continuation-in-part of Ser. No. 454,176, Feb. 14, 1983, abandoned. This application Oct. 24, 1983, Ser. No. 545,114
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—1 R **7 Claims**

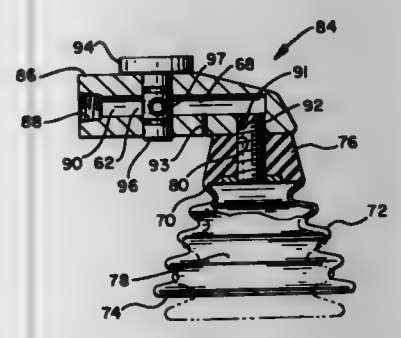


1. A method of applying a permanent cosmetic liner to the edge of an eye lid comprising the steps of anesthetizing the portion of the eye lid in the area adjacent the edge of said eye lid; stabilizing the portion of the eye lid to which said liner is to be applied; penetrating the skin with pigment solution along a line on the eye lid defining the intended location of said liner.

4,508,107
PNEUMATIC PERCUSSOR

Larry O. Strom, Fort Davis, and Betty S. Guex, Dallas, both of Tex., assignors to Strom Corporation, Dallas, Tex.

Filed Sep. 13, 1982, Ser. No. 417,602
Int. Cl.[3] A61H *7/00*
U.S. Cl. 128—54 3 Claims



1. An apparatus for stimulating expectoration of mucus from the lungs, comprising:

a sealed chamber having expandable resilient side and bottom walls to facilitate expansion, said chamber having an orifice in the surface thereof, and said chamber including rigid supporting structure disposed to constrain said side wall at an end thereof such that said side and bottom walls are uniformly free to flex in response to changes in air pressure within the chamber;

a pressurized air source;

means for regulating the air flow through the orifice in said chamber;

an air tube having one end connected to said means for regulating;

means for periodically connecting and disconnecting said pressurized air source to the other end of said air tube;

means for exhausting the air from said air tube such that said means for exhausting reduces the pressure within said air tube when said pressurized air source is connected and exhausting air within said chamber when said pressurized air source is not connected wherein said sealed chamber expands and contracts thereby producing a rhythmic movement to the lungs; and

said means for periodically connecting comprising:

a pneumatically operated toggle valve controlled from said pressurized air source for toggling a linkage; and

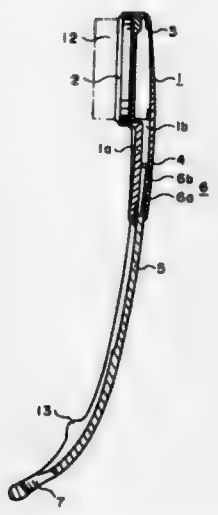
a three-way valve controlled by said linkage having the input thereof connected to said pressurized air source, one output thereof connected to said air tube and the other output thereof connected to a muffler.

4,508,108
ADJUSTABLE BODY BRUSH AND MASSAGER

Eikichi Miyaoka, 1-12-3 Nakajujo, Kita-ku, Tokyo 114, Japan

Filed Sep. 24, 1982, Ser. No. 423,235
Claims priority, application Japan, Sep. 28, 1981, 56-142533[U]
Int. Cl.[3] A61H *9/00*
U.S. Cl. 128—65 10 Claims

1. A brush-massager device comprising a detachable disc support unit and a movably connecting handle means, said disc support unit having an internal tunnel running longitudinally through substantially the length of said unit, said tunnel adapted to receive and lock with said handle means, said tunnel having apertures at its upper and lower portions, said handle means having a spring-loaded button at substantially it supper terminal portion wherein said spring loaded button locks with said upper aperture in a first position and with said lower aperture in a second position, said disc support further comprising a face having raised flexible projections interspersed

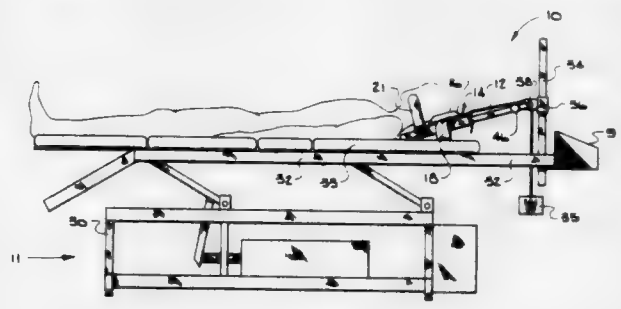


with a plurality of bristles, and said handle means adapted to slide into and out said tunnel in said disc support.

4,508,109
CERVICAL TRACTION DEVICE

Harold D. Saunders, 7116 Courtly Rd., Woodbury, Minn. 55125

Filed Jan. 11, 1982, Ser. No. 338,479
Int. Cl.[3] A61H *1/02*
U.S. Cl. 128—75 10 Claims



1. A cervical traction device for use on conventional traction tables with a dynamic traction mechanism including weights, ropes and pulleys anchored to one end of the table comprising:

a track means positioned longitudinally on the traction table and attached at one end to the traction mechanism;

a carriage slidably mounted on the track means including a head support pad and lateral extensions positioned below the support pad, the ropes of the traction mechanism being attached to the carriage whereby varying loads are applied to said carriage;

a pair of upwardly extending outwardly canted arms mounted on the lateral extensions of the carriage and adjustable laterally along said extensions and adapted to purchase on the occipital bone of a patient's head; and

a head band means attached to the carriage for holding the patient's head against the support pad of the carriage.

4,508,110
BODY JACKET

Michael D. Modglin, 3229 Timberline, Winter Haven, Fla. 33881

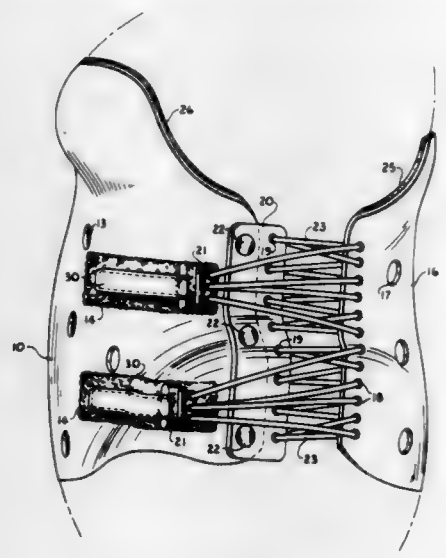
Filed Sep. 14, 1983, Ser. No. 531,847
Int. Cl.[3] A61F *5/02*
U.S. Cl. 128—78 8 Claims

1. A rigid orthosis for limiting motion in the thoracic or lumbosacral areas of a human patient which can be easily donned and doffed by the patient comprising:

a substantially rigid body jacket having a patient-fitting anterior section, the lateral edges of which terminate in

the left and right anterolateral regions of the torso and a patient-fitting posterior section, the lateral edges of which terminate in the left and right posterolateral regions of the torso in spaced, opposing relationship to said anterior section lateral edges

a pair of elongate panels, each having attachment means for



selectively removably attaching one of said panels to each of the lateral edges of said anterior section;

lacing means for connecting each of said panels to a lateral edge of said posterior section; and

adjusting and attaching means for directly securing said lacing means to said anterior section during donning of said orthosis.

4,508,111

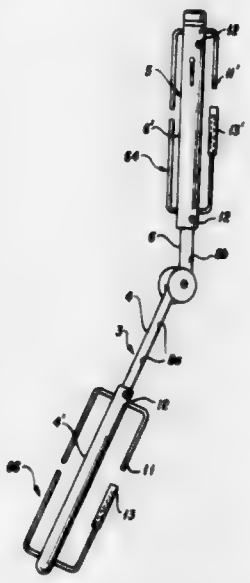
ADJUSTABLE SPLINT

George R. Hepburn, Severna Park, Md., assignor to Dynasplint Systems, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 286,161, Jul. 23, 1981, Pat. No. 4,397,308, which is a continuation-in-part of Ser. No. 367,598, Apr. 12, 1982,. This application Apr. 13, 1983, Ser. No. 484,439

Int. Cl.[3] A61F *3/00*

U.S. Cl. 128—87 R **24 Claims**



1. An adjustable splint assembly comprising a lower strut and an upper strut pivotably connected to said lower strut, adjustable means for rotating one of said pivotably-connected struts relative to the other and for applying a quantifiable force tending to align or approximate said upper and lower struts, at least one of the struts being comprised of outer and inner telescoping portions, the outer telescoping portion being provided with a wire assembly for facilitating attachment of the splint assembly to the limb, said wire assembly comprising an upper wire portion and a lower wire portion, each of which extends subtantially the length of and is attaced to said outer telescoping portion, means for fixedly securing together said telescoping portions and means for securing said splint assembly to a limb.

4,508,112

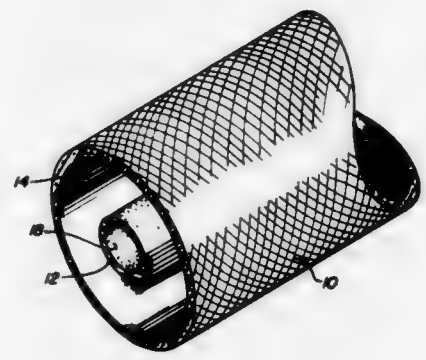
FLUID PRESSURE ACTUATED IMMOBILIZING STRUCTURE

C. Oliver Seeler, P.O. Box 246, Albion, Calif. 95410

Filed Jul. 1, 1983, Ser. No. 510,462

Int. Cl.[3] A61F *5/04*

U.S. Cl. 128—89 R **10 Claims**



1. A fluid pressure actuated immobilizing structure comprising:

a flexible, substantially nonexpandable outer container;

a pressure sensitive matrix material situated within said outer container, said matrix material adapted to permit relatively unhindered relative movement among the elements comprising said matrix material under normal conditions and to substantially inhibit relative movement among the matrix elements when the matrix elements are squeezed together; and

fluid pressurization means for squeezing said pressure sensitive matrix material thereby compressing said matrix material to lock the immobilizing structure into the shape existing immediately before pressurization.

4,508,113

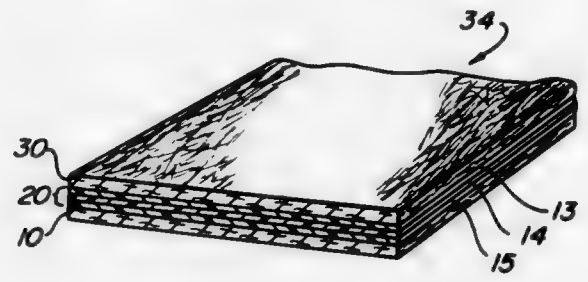
MICROFINE FIBER LAMINATE

Frank E. Malaney, Warren, N.J., assignor to Chicopee, New Brunswick, N.J.

Filed Mar. 9, 1984, Ser. No. 588,038

Int. Cl.[3] A61F *13/00*; A61M *15/08*; B32B *27/00*; D04H *1/04*

U.S. Cl. 128—132 D **14 Claims**



1. A water impervious laminated material comprising an inner hydrophobic microfine fiber structure sandwiched between two layers of conjugate fibers, each of said layers of conjugate fibers having a first face and an opposite face, said conjugate fibers being composed of a lower melting component and a higher melting component, wherein a substantial proportion of the surfaces of said fibers comprises said lower melting component, said hydrophobic microfine fiber structure comprising a three-ply structure having an inner ply sandwiched between and bonded to two outer plies, each ply comprising a web of microfine fibers having a fiber diameter of up to 10 microns, said inner ply of said hydrophobic microfine

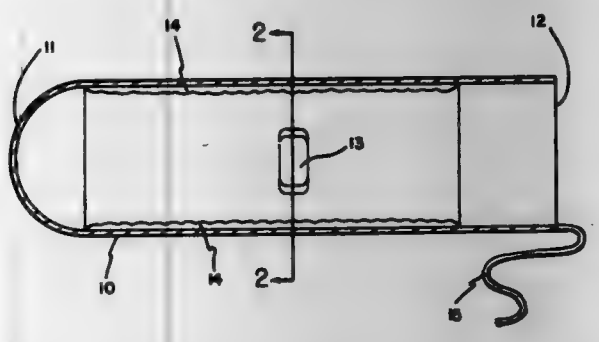
fiber structure having a melt temperature higher than the melt temperatures of each of said outer plies of said hydrophobic microfine fiber structure, said lower melting components of both layers of said conjugate fibers which lie on said first face having been fuse bonded to the adjacent outer plies of said hydrophobic microfine fiber structure at a temperature below the melt temperature of said higher melting component of said conjugate fibers, so that the latter component retains its initial fiber-like integrity.

4,508,114

ANTI-RAPE DEVICE

Anna G. Pennystone, 8150 Reading Rd., Cincinnati, Ohio 45237

Filed Sep. 8, 1983, Ser. No. 530,418
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—138 R **10 Claims**



1. An anti-rape device adapted to be worn in the vaginal cavity of a human female, comprising:

(a) a hollow housing dimensioned to be releasably received within the vagina, said housing being closed at one end and open at the other end; said housing being semi-pliable, but rigid enough not to collapse upon itself

(b) adhesive means on the inside walls of the hollow housing for securely adhering to the penis of a rapist during penetration of a vagina containing the anti-rape device; and

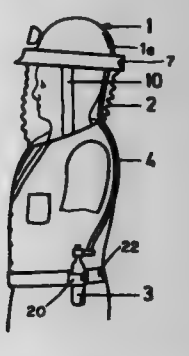
(c) an irritant-containing pouch positioned within the hollow housing, said pouch being made of a material which will rupture upon forceful contact with the rapist thereby releasing its contents.

4,508,115

PROTECTIVE BREATHING HOOD FOR ESCAPE PURPOSES

Ernst Warncke, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,567
Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220458
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—201.23 **13 Claims**



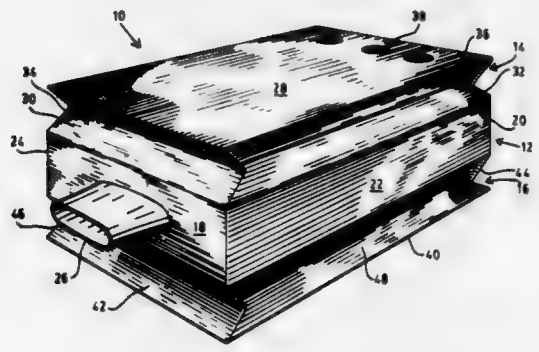
1. A protective breathing hood for escape purposes, comprising a head covering helmet having a periphery and an annular brim, extending laterally from said helmet periphery and terminating in an annular periphery a skirt portion extending downwardly from the annular periphery of said brim, an annular hood having an upper end connected to said helmet adjacent said helmet periphery and a remaining portion folded within the confines of said brim and said skirt portion around the wearer's head and below said brim, an annular cover disposed beneath and supporting said hood, and detachably connected to said skirt portion and means associated with said helmet hood to remove said cover and extend said hood downwardly to encircle the head of the wearer.

4,508,116

CARBON DIOXIDE REBREATHING APPARATUS

David T. Duncan; David M. Lipscomb, both of Knoxville; John McElligott, Oliver Springs, and Charles W. Williams, Powell, all of Tenn., assignors to Products for Health and Industry, Knoxville, Tenn.

Filed Dec. 28, 1982, Ser. No. 454,036
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—203.28 **17 Claims**



1. A rebreathing device for increasing the carbon dioxide concentration of air inhaled by a user, which comprises:

a first rectangular prism-shaped chamber of a selected volume defined by planar non-collapsible enclosure walls, and having side walls adjoined to a first end wall and a further end wall, and provided with a mouthpiece communicating therewith at said first end wall;

a second rectangular prism-shaped chamber, having a selected volume relative to said volume of said first chamber, defined by planar enclosure walls including side walls adjoined to a first and a further end wall and a common side wall with said first chamber, said common wall being provided with opening means adjacent said further end walls of said first and second chambers communicating between said first and second chambers;

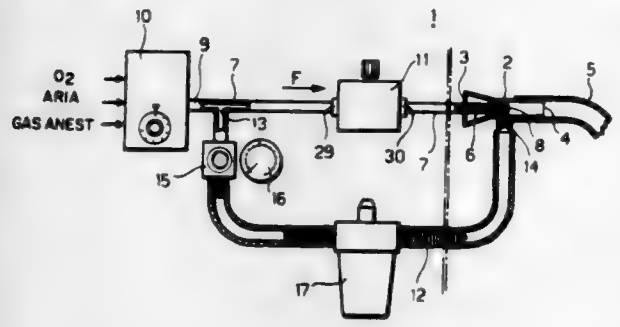
a third rectangular prism-shaped chamber adapted for collapse when said device is not in use, having a selected volume relative to said first and second chambers, defined by planar collapsible and non-collapsible walls including collapsible opposed side walls adjoined to first and further collapsible end walls, and a common non-collapsible side wall with said second chamber and a non-collapsible wall opposed to said common wall, said common wall being provided with opening means adjacent said first end walls of said second and third chambers communicating between said second and third chambers, and said opposed non-collapsible wall being provided with opening means communicating with the atmosphere surrounding said device;

whereby said first, second and third chambers, and said openings communicating between said chambers, produce an extended restricted flow path along the additive lengths of said first, second and third chambers between said mouthpiece and said opening to the atmosphere thereby producing an accumulation of breath of a user with a corresponding accumulation of carbon dioxide in the device and in air inhaled by said user.

4,508,117
APPARATUS FOR ARTIFICIAL PULMONARY VENTILATION DURING ANAESTHESIA AND RESUSCITATION

Gianpiero S. Rodari, Bussero, Italy, assignor to Soxil S.p.A., Milan, Italy

Filed Sep. 13, 1982, Ser. No. 417,478
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.21 **2 Claims**



1. Apparatus for effecting gaseous transfer by diffusion for artificial pulmonary ventilation during anaesthesia and resuscitation, comprising:

a supply line for supplying air to the lungs; an alternately openable and closable valve in said supply line for intermittently stopping and permitting flow of air through said supply line for generating pressure fluctuations in said air;

said valve comprising a valve body having two parts rotatably attached to each other about a central axis, a shutter seat defined across said two parts, an inlet port in one of said two body parts open to said shutter seat and connected to said supply line for supplying air to said valve, and an outlet port in the other of said two body parts and open to said shutter seat for releasing air from said valve;

a shutter rotatably mounted in said valve body about said central axis and sealingly engaged with said two parts across said shutter seat for closing said inlet and outlet ports;

a variable speed electric motor including means for rotating said shutter over said seat;

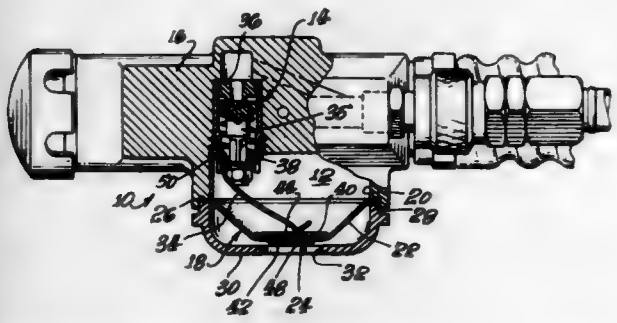
at least one duct in said shutter for intermittently connecting said inlet and outlet ports for permitting flow of air through said valve; and

means for adjusting the relative angular positions of said first and second body parts and said inlet and outlet ports about the axis of rotation of said shutter for adjusting the frequency of said fluctuations and the period during which air is permitted to flow through said valve to the lungs.

4,508,118
DIAPHRAGM ASSEMBLY FOR SCUBA DIVING REGULATOR

Douglas J. Toth, Long Beach, Calif., assignor to Under Sea Industries, Inc., Rancho Dominguez, Calif.

Filed May 4, 1983, Ser. No. 491,373
Int. Cl.³ A62B *7/04*
U.S. Cl. 128—204.26 **1 Claim**



1. For a second stage scuba regulator having a body defining a breathing chamber having outlet means from which the scuba diver can draw air and an opening, said regulator including a demand valve in said body provided with an actuator arm movable in said breathing chamber in a direction having a component normal to and inwardly of the central region of said opening in the regulator body to open said demand valve, the improvement comprising:

(a) a diaphragm assembly including a diaphragm and a contact member;

(b) said diaphragm closing said regulator body opening and having a circular aperture at its central portion;

(c) means clamping the edge of said diaphragm to said body about said opening;

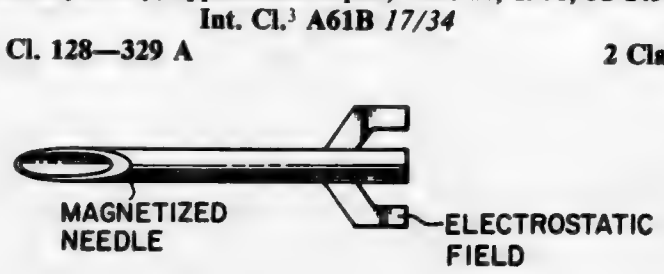
(d) said contact member having a configuration substantially as an axially thin spool made of low friction material, said spool having a circular neck fitting said circular aperture of said diaphragm, and having a contact plate on the inside of the diaphragm providing a flat surface along which the end of said actuator arm slides for continuous contact therewith as the diaphragm moves inwardly and outwardly of the breathing chamber in accordance with changes in gas pressure in the breathing chamber relative to the fluid pressure on the outside of said diaphragm;

(e) said contact member having an end plate attached to the neck on the outside of the diaphragm to hold the contact member in assembled relationship to the diaphragm at the aperture of said diaphragm, said neck having an axial length just slightly greater than the nominal thickness of the corresponding portion of the diaphragm, the fit between the contact member and the diaphragm being the sole means for maintaining them assembled whereby said diaphragm is free to creep to avoid localized stresses on said diaphragm and whereby the line of contact of the actuator arm with said flat surface changes when said creep occurs.

4,508,119
NEEDLE

Kenkichi Tukamoto, No. 462-1, Ohaza taki, Fujiwara-machi, Shioya-gun, Tochigi-ken, Japan

Continuation of Ser. No. 162,832, Jun. 25, 1980, abandoned, which is a continuation of Ser. No. 857,914, Dec. 6, 1977, abandoned. This application Nov. 2, 1981, Ser. No. 317,267
Claims priority, application Japan, Dec. 11, 1976, 51-149008
Int. Cl.³ A61B *17/34*
U.S. Cl. 128—329 A **2 Claims**



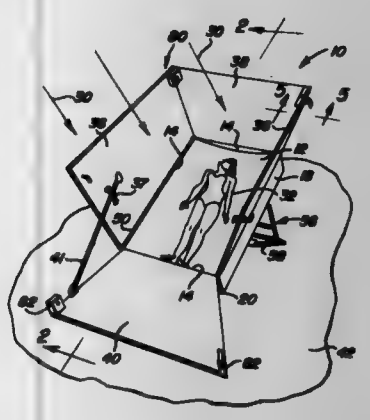
1. A needle for acupuncture provided with both a structure in which a magnetic field is formed around the needle and a structure in which an electrostatic field is formed around the needle, a magnet is used as the material for forming the magnetic field and a combination of a corpuscular ray-emissive nuclide and a semiconductor substance is used as the material which is capable of inducing the electrostatic field, said magnet, nuclide and semiconductor substance being fixed at the head of the needle and said nuclide and semiconductor substance being masked in such a manner that the corpuscular ray does not leak out and wherein the masking is made by coating said corpuscular ray-emissive nuclide and said semiconductor substance with a plastic material selected from nylon, rayon, acetate, acryl, polyethylene, teflon and polyvinyl chloride.

4,508,120

SUNTAN BOOTH

Steve A. Hammond, Walnut Park Mobile Estates #5, Spearfish, S. Dak. 57783

Filed Sep. 15, 1982, Ser. No. 418,376
Int. Cl.³ A61H *33/06*
U.S. Cl. 128—372 **5 Claims**



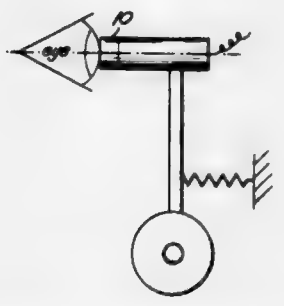
1. A collapsible solar energy suntan booth including a closed hollow enclosure of generally rectangular plan shape including opposite longitudinal side walls, opposite transverse end walls, a bottom wall extending and connected between the lower marginal portions of the side and end walls and a top wall defining solar energy absorbent collector plate extending and connected between the upper marginal portions of said side and end walls a pair of panel-shaped side extensions forming upward extensions of and hingedly supported from the upper marginal portions of said side walls for swinging between operative upwardly and outwardly inclined positions and collapsed positions closely overlying each other and said collector plate, a panel-shaped head end wall extension forming an upward extension of and hingedly supported from the upper marginal edge of one of said end walls enclosure for swinging between an operative upwardly projecting position extending between the adjacent ends of said side extensions when the latter are in their operative positions and a collapsed position closely overlying the adjacent ends of said side extensions when the latter are in the collapsed positions, and a panel-shaped foot and extension hingedly supported from the upper marginal portion of the other end wall of said enclosure for adjustable angular displacement between a lowered outwardly projecting position forming an endwise outward extension of said other end of said enclosure, an operative upwardly projecting position and a collapsed position closely overlying the adjacent ends of said side extensions when the latter are in their collapsed positions, releasable latch means connected between said side extensions and said head and foot end extensions operative to support said head and foot end extensions in the operative positions thereof when said side extensions are in their operative positions, said side extensions and foot and head end extensions, when in the operative position thereof, peripherally closing a dead air space therebetween above said enclosure, the surfaces of said extensions facing inwardly of said air space being of a dark solar energy absorbing color, said booth including base means underlying said enclosure and anchored relative thereto for supporting the latter in an inclined position from a generally horizontal surface and with said head end side uppermost, said foot end side, when in the lowered position thereof, defining a ramp leading upwardly into the interior of said booth, said foot end extension having one end of an elongated rod-type handle anchored relative thereto, one of said side extensions including guide means from which the other end of said handle is slidingly guided, said handle being operative by a person within said air space to selectively fully raise and lower said foot end extension, said latch means including a pair of coacting latch components mounted from each pair of adjacent side and end extension marginal edge portions and manually actuatable and releasable from both the inside and outside of said dead air space.

4,508,121

APPARATUS FOR MEASUREMENT OF CORNEAL THICKNESS

George H. Myers, Maplewood, N.J., assignor to Medsys, Inc., Rutherford, N.J.

Filed Aug. 8, 1983, Ser. No. 521,132
Int. Cl.³ G01N *29/00;* A61B *5/04*
U.S. Cl. 128—639 **6 Claims**



1. Apparatus for the measurement of the thickness of the cornea comprising:

a piezo-electric transducer having a plurality of independent arcuate segments arranged in a circle to form a ring;

insulation means for electrically isolating each of said plurality of segments from the other;

acoustic means for acoustically isolating each of said plurality of segments from the other;

respective lead means connected to each of said plurality of segments for transmission of electrical signals;

a transmitter connected to said lead means for applying an electric signal to said plurality of segments to produce respective sound pulses;

respective receiver means connected to each of said lead means for converting the signal received from the associated segment into a distance measurement;

averaging means connected to all of said receiver means to average the distance measurements to thus indicate the distance measured at the center of said transducer; and

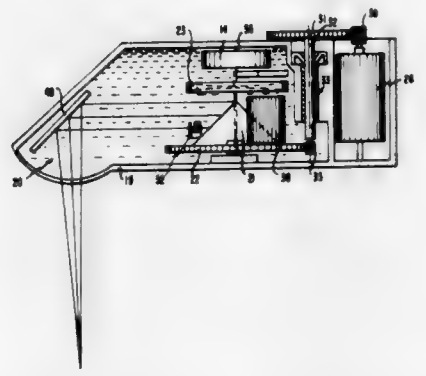
display means for displaying the average distance.

4,508,122

ULTRASONIC SCANNING APPARATUS AND TECHNIQUES

Bayard Gardineer, Skillman, and David Vilkomerson, Princeton, both of N.J., assignors to Ultramed, Inc., Princeton, N.J.

Filed Nov. 22, 1982, Ser. No. 443,488
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **19 Claims**



1. An ultrasonic scanner apparatus for directing ultrasonic energy towards a body under investigation such as the body of a person, for producing scan image data indicative of the interior of said person's body, comprising;

a focussed ultrasonic transducer means for radiating a beam of ultrasonic energy in a given direction,

a rotating reflector having at least two different surfaces each of which intercepts a portion of said beam to reflect

said intercepted energy in opposite directions said reflector rotating about an axis whereby said unidirectional rotation is manifested by no translational movement,

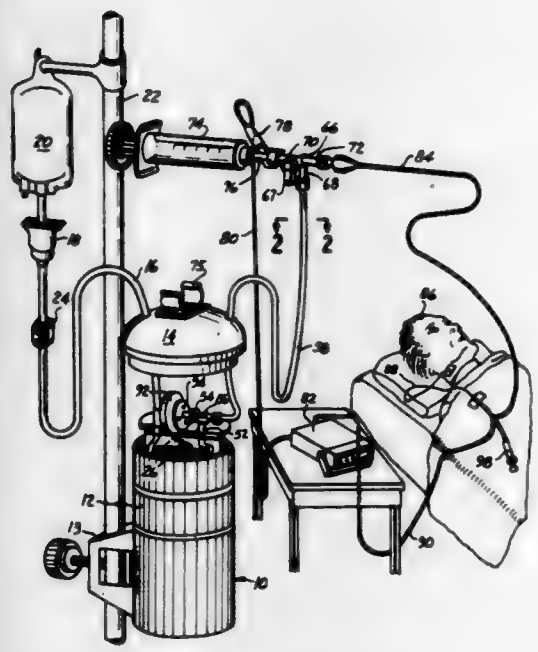
means responsive to one of said reflected beams for scanning the said body under investigation whereby image data of the interior of said body as scanned is provided.

4,508,123

THERMODILUTION INJECTATE ASSEMBLY

Philip W. Wyatt, La Canada; Allen L. Newsome, Jr., Culver City; William G. Bloom, Northridge; Bernard Siegel, Los Angeles, and Michael Lubov, Arcadia, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 1, 1983, Ser. No. 499,938
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—692 **39 Claims**



1. An assembly for use in a thermodilution technique for measuring cardiac output, the assembly comprising:

(a) fluid introductory means for connecting the assembly to a source for fluid to be cooled and administered to a patient;

(b) an insulated container means for holding a heat exchange medium which can exchange heat with the fluid flowing through the assembly;

(c) a heat exchanger means positioned in the insulated container means having an inlet port in fluid-flow communication with the fluid introductory means and an outlet port with a closed fluid-flow path means extending between the inlet port and outlet port for providing a pathway for the fluid to be administered to the patient in heat exchange relationship with the heat exchange medium;

(d) a dual directional valve means in fluid-flow communication with the outlet port of the heat exchanger means for directing fluid to the patient or returning fluid to the fluid introductory means;

(e) a three-ported stopcock in fluid-flow communication with the dual directional valve means through one of the three ports;

(f) a syringe connected to one of the ports on the three-ported stopcock; and

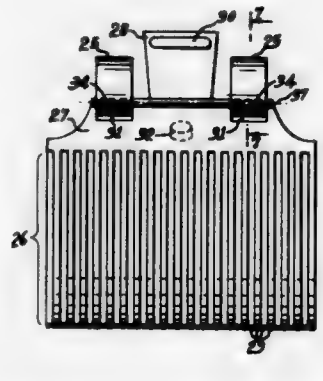
(g) fluid delivery means connected to a port on the three-ported stopcock for delivering fluid to a patient by connecting such fluid delivery means to a catheter which can be inserted in a patient for introducing fluid to the patient, which catheter includes temperature monitoring means for monitoring temperature in the circulatory system of the patient.

4,508,124

HAIR CURLING SPOOL HOLDER

Peter L. Franzino, 2556 Stein St., Jacksonville, Fla. 32216

Filed Aug. 24, 1983, Ser. No. 525,976
Int. Cl.³ A45D *2/26*
U.S. Cl. 132—41 R **14 Claims**



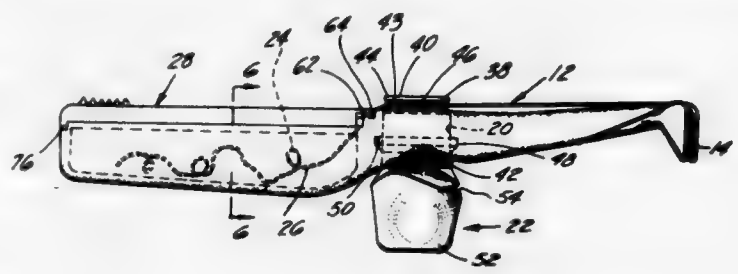
1. A hair curling spool holder for releasable attachment about a heatable cylindrical spool having a longitudinal axis and onto which hair is wrapped therearound with upstanding hair engaging nibs on its outer surface and an outwardly extending flange at each end, the improvement comprising a pair of identical mating half sections each having a finger grip portion, a body portion for encircling at least one-half of a spool, and an intermediate portion joining said body portion to said finger grip portion, said half sections being pivotal along a pivotal axis adjacent said finger grip portions to open and close said body portions along a longitudinal line parallel to a spool longitudinal axis to be respectively removed from or closely encircle a spool, said longitudinal line being closed adjacent an outer surface of a spool, said pivotal axis being parallel to said longitudinal line and a longitudinal axis of a spool and being spaced remote from an outer surface of a spool, each said section having a plurality of spaced, curved, flexible teeth extending from said longitudinal line to said intermediate portion, said sections when mated having said spaced teeth in interlocking relationship to provide lateral engagement therebetween to close said holder around a spool and to engage hair of a user without damage thereto whereby a spool with hair wrapped thereon is engaged by said holder and maintained in position on a head of a user.

4,508,125

DENTAL FLOSS APPLICATOR

Robert J. Loubier, 5122 Chippewa Ct., Fort Wayne, Ind. 46804

Filed Oct. 20, 1982, Ser. No. 435,619
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 R **5 Claims**



1. An improved dental floss applicator for use in dispensing and supporting a strand of dental floss under tension for cleaning teeth comprising an elongated supporting frame having on one end two laterally spaced furcations, tips on said furcations having floss-guiding portions by means of which a floss-strand may be tensioned therebetween, a handle portion on the other end of said frame, a cylindrically shaped capstan device mounted for rotation on said frame with supply and takeup capstan portions axially spaced thereon, the axis of said capstan device extending transversely to the longitudinal axis of said

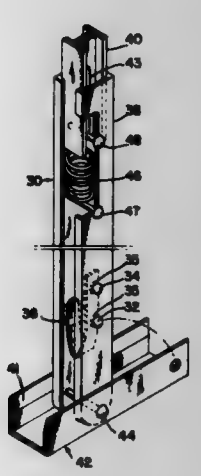
frame, said capstan device being disposed intermediate the opposite ends and said supply and takeup portions being on opposite sides, respectively, of said frame, said handle portion having a chamber therein which opens through the same side of said frame as said supply capstan portion, a cover mounted on said handle portion in covering relation with the opening of said chamber and slidable in opposite directions parallel to said longitudinal axis to open and close said opening, detent means interposed between said chamber and said capstan device for detachably securing said cover in closed position when said cover is moved in one longitudinal direction toward said capstan device, a supply of floss-strand in said chamber, said strand being threaded through said detent means, about said supply capstan portion, across said furcations, about said takeup capstan portion and then secured to said capstan device, said detent means retaining said cover in a chamber closing position and frictionally gripping said strand with sufficient force to resist without preventing strand movement through the detent so as to maintain the floss-strand on the supply capstan taut, and said threading being in a direction that as said capstan device is rotated in one direction said strand is tensed from said detent means, about said supply captan portion, across said furcations and about said takeup capstan portion.

4,508,126

RETRACTABLE AWNING FOR MOBILE DWELLINGS

Lloyd D. Everard, Kent, Wash., assignor to Valley Industries, Inc., Lodi, Calif.

Filed Jun. 1, 1982, Ser. No. 384,010
Int. Cl.³ E04F *10/06*
U.S. Cl. 135—89 **2 Claims**



2. An improved rafter bar for a retractable awning comprising:

a U-shaped channel having upstanding sides and outer and inner ends, said outer end pivotally mounted to the awning;

a box channel pivotally connected to said inner end of said U-shaped channel at a pivot position to move between extended and retracted relative orientations;

a dual button latching mechanism mounted to said box channel, said latching mechanism including a common spring to which a locking button and a releasing button are mounted at spaced apart positions, said buttons being at least partially external of said box channel; and

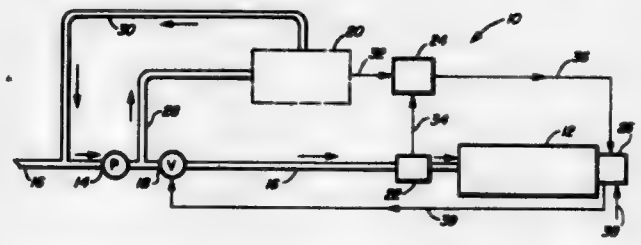
said buttons positioned so when said U-shaped channel and said box channel are in said extended relative orientation, said locking button engages a complementary locking recess in said U-shaped channel and said releasing button is free of overlying material so said releasing button is accessible by a user, whereby depressing said releasing button deflects said common spring to disengage said locking button from said locking recess to allow said U-shaped channel to be pivoted from said extended relative orientation toward said retracted relative orientation.

4,508,127

FUEL MASS FLOW MEASUREMENT AND CONTROL SYSTEM

John F. Thurston, Mesa, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 30, 1983, Ser. No. 480,554
Int. Cl.³ G05D *7/00;* G01F *1/90;* G01N *9/00*
U.S. Cl. 137—8 **16 Claims**



1. Apparatus for accurately measuring the density of a flowing fluid comprising:

(a) fluidic oscillator means having:

(1) power nozzle means for receiving a flow of fluid and converting the received fluid to a fluid jet, and

(2) means for utilizing the jet to create a pulsating pressure signal having a frequency indicative of the density of the received fluid; and

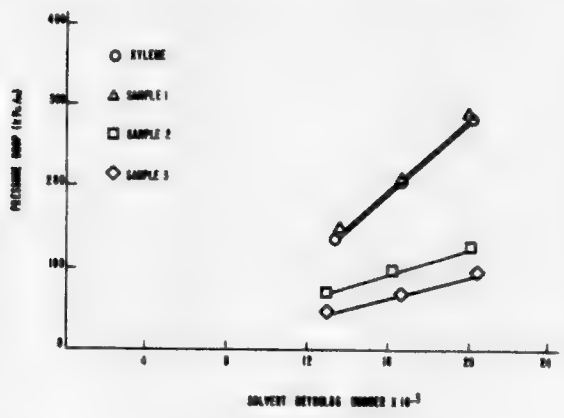
(b) means for maintaining the pressure drop across said power nozzle means essentially constant despite variations in the pressure of fluid received by said power nozzle means, whereby the frequency of said pulsating pressure signal is rendered substantially independent of the temperature, pressure and viscosity of the received fluid.

4,508,128

DRAG REDUCTION AGENT FOR HYDROCARBON LIQUID

Ralph M. Kowalik, Bridgewater; Ilan Duvdevani, Leonia; Dennis G. Peiffer, East Brunswick, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 2, 1983, Ser. No. 547,909
Int. Cl.³ C08L *79/04, 81/08;* F17D *1/17*
U.S. Cl. 137—13 **2 Claims**



1. A process for decreasing the frictional drag of a hydrocarbon liquid flowing through a pipe or conduit having a continuous bore therethrough, which comprises the step of adding a polymer complex of an anionic polymer and a cationic polymer to said hydrocarbon liquid at a concentration level of about 0.001 to about 1.0 gram per 100 ml. of said hydrocarbon liquid, said cationic polymer being a styrene vinyl pyridine copolymer, said styrene vinyl pyridine copolymer containing about 0.5 to about 50 weight percent of vinyl pyridine, said anionic polymer being a neutralized sulfonated polymer having about 0.1 to about 25 mole percent sulfonate groups, said sulfonate groups being at least 50% neutralized with a transition metal ion, said sulfonated polymer having a molecular weight as measured by GPC of about 1,000 to about 10,000,000

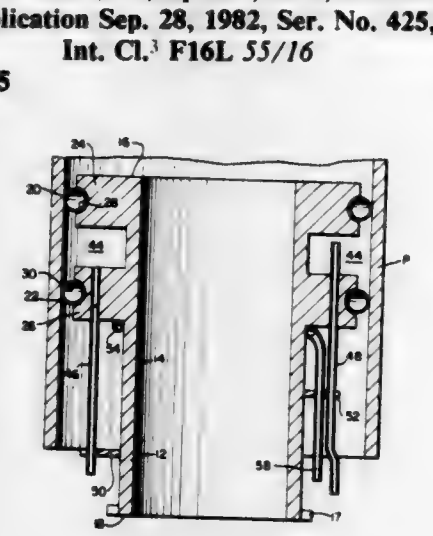
and said sulfonated polymer having a polymeric backbone selected from the group consisting of polystyrene, t-butylstyrene, ethylene propylene terpolymers, polyisobutylene, ethylene and polyisoprene.

4,508,129

PIPE REPAIR BYPASS SYSTEM

George T. Brown, P.O. Box 412, 255 Edge Ave., Valparaiso, Fla. 32580

Division of Ser. No. 253,906, Apr. 14, 1981, Pat. No. 4,413,655.
This application Sep. 28, 1982, Ser. No. 425,616
Int. Cl.³ F16L *55/16*
U.S. Cl. 137—15 **7 Claims**



1. A method of welding a pipe joint in a pipe system for conveying a fluid, comprising the steps of:

locating a pipe repair bypass device, having a housing with a central passageway therethrough along a longitudinal axis and opening on opposite ends of the housing, within a pipe adjacent and upstream of an area to be worked;

coupling a conduit to a downstream end of the housing in fluid communication with the passageway;

expanding a first seal mounted on an exterior surface of the housing to form a first seal between the housing and pipe;

welding the pipe at a location downstream of the device; and

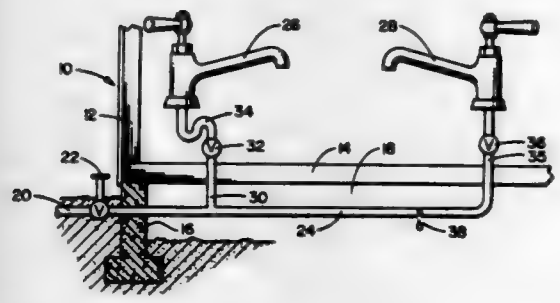
passing the pipe fluid through the passageway and conduit during welding of the pipe joint.

4,508,130

METHOD AND APPARATUS FOR REPAIRING WATER LEAKS

Robert L. Studer, and William E. Schourup, both of 16116 NE. 87th, Redmond, Wash. 98052

Filed Aug. 31, 1983, Ser. No. 528,721
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—15 **15 Claims**



1. A method of repairing a leak in a water distribution network of a plumbing system where there is:

(a) a distribution pipe having an upstream end and a downstream outlet end, and also having an outside surface of a predetermined outside diameter and an inside surface defining a passageway having a predetermined passageway diameter and passageway cross-sectional area;

(b) an existing shutoff valve located upstream of the upstream end of the distribution pipe;

said method comprising:

(a) determining a leak location of said leak;

(b) operating said existing shutoff valve to stop flow of water to said leak;

(c) selecting an intermediate isolation location in said distribution pipe downstream of said existing shutoff valve and upstream of said leak;

(d) cutting said distribution pipe at said isolation location to form first and second pipe end portions, both of which are substantially undistorted and provide substantially uninterrupted through passageway portions, without enclosing said isolation location in a watertight containment and with said isolation location being open to the surrounding environment;

(e) providing an isolation valve assembly comprising:

1. an isolation valve comprising:

(i) a main body portion defining a central through passageway section having a cross-sectional area at least as great as that of the pipe passageway;

(ii) a valve closure member having a first position closing said central through passageway section and a second position where said central through passageway section is substantially unobstructed;

(iii) a first connecting portion having an interior surface configured to engage an exterior surface of said first pipe portion in connecting relationship, and an exterior threaded surface portion;

(iv) a second connecting portion having an interior surface configured to engage an exterior surface of said second pipe portion in connecting relationship, and an exterior threaded surface portion;

(2) first and second compression nuts, each having an annular integral structure, with an inner threaded surface to engage the threaded surface portion of a related one of said connecting portions, and having a through opening to receive a related one of said pipe portions;

(3) first and second annular compression seal members, each adapted to be positioned around a related pipe portion in sealing engagement between a related one of said compression nuts and a related one of said connecting portions;

(f) inserting said isolation valve at said selected isolating location, with said first and second compression nuts and said first and second seal members being placed over said first and second pipe portions, respectively, and with said first and second connecting portions being around and in connecting engagement with said first and second pipe portions, respectively, and threading said nuts onto their respective connecting portions to bring said seal members in sealing relationship with the first and second pipe portions;

(g) closing said isolation valve;

(h) opening said existing shutoff valve;

(i) repairing said leak;

(j) opening said isolation valve to permit flow of water to said leak location.

4,508,131

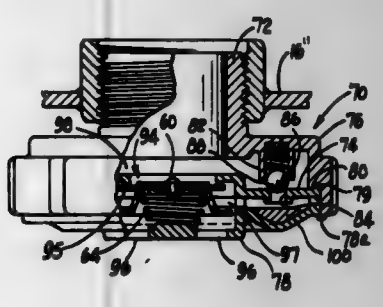
SAFETY VALVING FOR CARGO TANKS USED FOR BULK TRANSPORTATION OF HAZARDOUS COMMODITIES

Joseph H. DeFrees, deceased, late of Warren, Pa. (by Charles W. S. DeFrees, Barbara B. DeFrees, executors), assignor to Allegheny Valve Company, Warren, Pa.

Filed Dec. 13, 1982, Ser. No. 448,963
Int. Cl.³ F16K *17/36*
U.S. Cl. 137—43 **7 Claims**

1. Safety valving for cargo tanks used for bulk transportation of hazardous commodities, such as for instance flammables, said valving providing automatic differential pressure relief as well as overturn protection comprising, a housing adapted for attachment to the upper portion of the tank, port means and in said housing adapted for communicating the interior of the

associated tank with the exterior, said differential pressure relief including first closure means coacting with certain of said port means and biased to closed condition but being operable to provide automatic differential pressure relief between the interior and exterior of said tank, and said overturn protection including angle responsive closure means responsive to predetermined angular orientation of said valving relative to the vertical and operative to close said valving against inadvertent escape of the tank's contents when the associated tank is in at least partially overturned position, said angle responsive closure means including downwardly converging side wall means on said housing adapted for guiding coaction with a movable closure member coacting with said side wall means and having side wall surfaces formed generally complementary to said side wall means, whereby said closure member is urged by gravity into closed postion relative to confronting of said port means if said valving is displaced into said predeter-



mined angular orientation relative to said vertical, said differential pressure relief means comprising poppet valve means displaceable to open position when the differential fluid pressure between the interior and exterior of the associated tank exceeds a predetermined value, and wherein said valving includes a threaded head section for threading the valving into supporting structure of the tank, said housing including a plurality of circumferentially spaced wells receiving therein spring means and said first closure means including a plurality of ball elements coacting with a respective of said spring means and adapted for reciprocal movement in an associated of said wells, said spring means urging the associated ball element into closed condition with respect to the respective seat of the port means, but being compressible by fluid pressure interiorly of the tank acting on the associated ball element so as to force the ball element into the well against the resistance to compression of the associated spring, said wells guiding the inward movement of the ball element away from its respective seat.

4,508,132

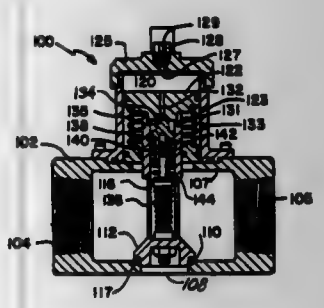
TEMPERATURE CONTROLLED VALVE MECHANISM AND METHOD

John M. Mayfield, Jr., Ukiah, and Vernon Haselswerdt, Willits, both of Calif., assignors to Microphor, Inc., Willits, Calif.

Division of Ser. No. 73,941, Sep. 10, 1979, Pat. No. 4,356,833. This application Jun. 28, 1982, Ser. No. 393,104

Int. Cl.[3] **G05D** *23/275;* **F16K** *31/122*

U.S. Cl. 137—62 **18 Claims**



1. A temperature controlled valve mechanism comprising: a valve housing, a plurality of valve inlets in said housing for connection with a circulating fluid system having a fluid continuously circulating therethrough, a flow through conduit in said housing extending between said valve inlets, a valve outlet in said housing for draining fluid from said flow through conduit, a valve closure member supported for movement toward and away from said valve outlet between closed and open positions, said valve closure member blocking and closing said valve outlet when in said closed position, means forming an expansion chamber in said housing, said expansion chamber including a movable wall, said valve closure member being coupled to said movable wall and being movable to increase the volume of said expansion chamber when in said closed position and decrease the volume of said expansion chamber when in said open position, biasing means for urging said valve closure member away from said closed position, means for supplying a pressurized medium other than the fluid of said fluid system to said expansion chamber to exert a force counteracting said biasing means to move said valve closure member to said closed position, and temperature activated venting means for venting and depressurizing said expansion chamber upon occurrence of a predetermined circulating fluid temperature, the venting of said expansion chamber causing said biasing means to rapidly move said valve closure member from said closed position.

4,508,133

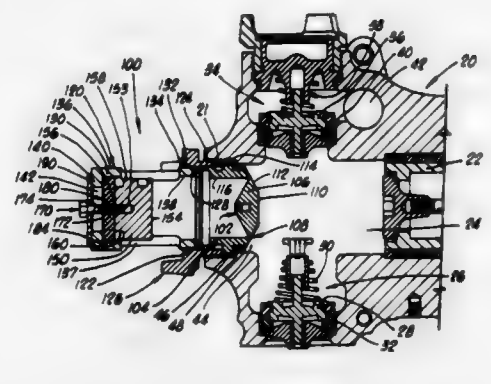
PROTECTIVE COVER RETAINER

Syed Hamid, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 31, 1984, Ser. No. 575,633

Int. Cl.[3] **F16K** *13/04;* **F04B** *39/12*

U.S. Cl. 137—68 R **9 Claims**



1. A retainer assembly adapted for use with a protective cover for a fluid end of a plunger-type pump adapted to relieve pressure in a cylinder of said pump when said pressure exceeds a predetermined limit, said cover being in fluid communication with said cylinder, said cover including an outer portion; an inner portion circumferentially surrounded by said outer portion; and a boundary comprising an area of reduced wall thickness between said inner and outer portions and adapted to fail above a predetermined pressure in said fluid end; said retainer assembly comprising:

means for securing said retainer to said fluid end; and

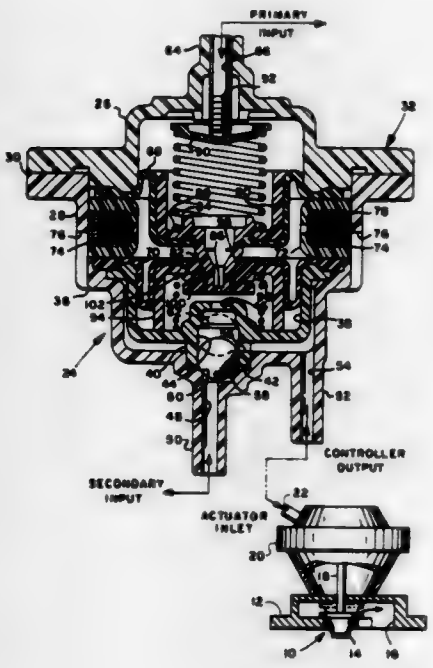
catcher means adapted to catch said shear disc upon failure of said boundary, said catcher means being cup-shaped and substantially coaxially aligned with said inner portion, the mouth of said cup facing said inner portion and said cup bottom having an aperture therethrough, said catcher further including impact receiving means disposed in said cup proximate said aperture, and shear plug means disposed between said impact receiving means and said inner portion.

4,508,134

CONTROLLING EGR IN AN INTERNAL COMBUSTION ENGINE AND FLUID PRESSURE SIGNAL CONTROLLER THEREFOR

William W. Kelly, Battle Creek, and Cyril E. Bradshaw, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 379,844, May 20, 1982,. This application Jun. 8, 1984, Ser. No. 618,709
Int. Cl.[3] F02M *25/06*
U.S. Cl. 137—103 7 Claims



1. A fluid pressure signal controller comprising:

(a) housing means defining a fluid pressure chamber and having structure defining a primary inlet port thereto adapted for connection to a primary variable source of subatmospheric fluid pressure, said housing means including means defining a passage communicating said primary inlet port with said chamber;

(b) said housing means including structure defining a secondary fluid inlet port communicating with said chamber and adapted for connection to a secondary variable source of subatmospheric fluid pressure;

(c) said housing means including structure defining a signal outlet port communicating with said chamber;

(d) pressure responsive valve means disposed in said chamber and operative in response to the differences between the pressure in said passage and the pressure in said secondary port to move between a first position isolating said passage from said chamber and a second position isolating said secondary supply port from communicating with said chamber and permitting said passage to communicate with said chamber;

(e) said housing means including structure defining an atmospheric vent port communicating with said passage; and,

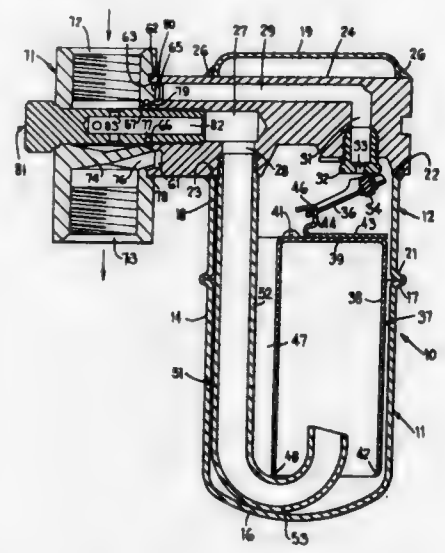
(f) pressure responsive bleed means operative to modulate venting of said passage to said vent port in response to changes in pressure in said primary port and said passage, wherein said bleed means modulates said primary input port vacuum to provide a control signal in said chamber for said output port and said valve means switches between said first and second positions in response to one of the primary or secondary supply ports having the higher absolute pressure, for controlling the signal to said outlet port.

4,508,135

COMBINED INLET AND OUTLET FITTING

Ronald D. Schlesch, Three Rivers, and Robert F. Lyons, Nottawa Township, Saint Joseph County, both of Mich., assignors to Armstrong International, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 217,491, Dec. 17, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,495
Int. Cl.[3] F16T *1/30*
U.S. Cl. 137—185 26 Claims



1. A combined inlet and outlet fitting for a fluid handling mechanism, comprising:

an elongated block having an inlet passage and an outlet passage extending lengthwise through said block, said inlet passage and said outlet passage having corresponding one ends adapted to be connected to the fluid handling mechanism in order to supply fluid to and to remove fluid from the mechanism, respectively, the opposite ends of said inlet passage and said outlet passage extending through the same one longitudinal end of said block; a coupling having one side attached to said one end of said block, said coupling having an inlet port adapted to be connected to a fluid supply conduit and a substantially oppositely directed outlet port adapted to be connected to a fluid discharge conduit, said coupling being interengaged at its said one side with said one end of said block so that said coupling can be moved arcuately about an axis extending lengthwise of said block so that said inlet and outlet ports can be located at selectable angular positions relative to said elongated block while remaining in fluid flow communication with said inlet and outlet passages, respectively; and fastening means for releasably securing said coupling in fluid-tight sealed relationship with said block, wherein the improvement comprises a fixed imperforate wall extending transversely across the coupling to commonly close the inner ends of said ports, said one end of said block being of circular cross section with a peripheral wall coaxial with said axis, said block being generally cylindrical from end to end to facilitate its lengthwise insertion into said mechanism, said coupling having a circular but shallow recess means in its said one side of diameter larger than said ports and into which slightly projects said one end of said block, lateral through openings of diameter less than said ports extending closely along the opposite side of said transverse wall from the inner ends of the respective inlet and outlet ports through said one side of said coupling, one said passage and said lateral through opening at the inner end of one said port together forming a straight through continuous elongate hole containing said axis of arcuate movement therein, said one end of said block having an annular groove therein loosely surrounding said hole and communicating with the other said passage in said block and with said lateral through opening at the inner end of the other said port, said recess means in said coupling and the circular cross section end of said block projecting thereinto having

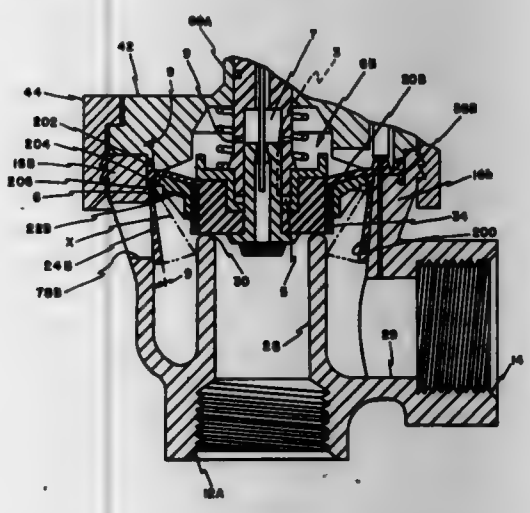
opposed fluid sealing faces, said fastening means extending in a direction away from said block through said coupling and having a portion accessible from the end of said coupling remote from the block for releasing said coupling from said block.

4,508,136

ANTI-SYPHON FLOW CONTROL VALVE

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Filed Sep. 29, 1982, Ser. No. 426,375
Int. Cl.³ F16K *24/02, 31/385*
U.S. Cl. 137—218 **1 Claim**



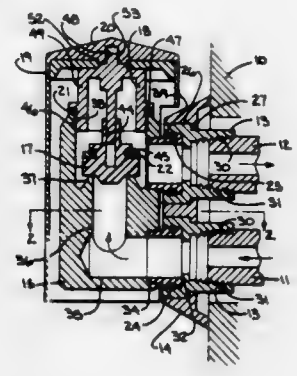
1. A flow control valve having a housing including an inlet and an outlet, a liquid valve means between the inlet and the outlet, said liquid valve means comprising a valve seat and a valve plug means for engaging said valve seat, a pressure responsive diaphragm mounted in said housing above said plug means, said plug means being connected to said pressure responsive diaphragm for movement therewith, said plug means being moved between an open and closed position by forces acting on opposite sides of said pressure responsive diaphragm, a first chamber being formed above said pressure responsive diaphragm with said housing, a second chamber being formed below said pressure responsive diaphragm with said housing, a diaphragm support ring being positioned in said second chamber to support said diaphragm when said liquid valve means has its valve plug means in its closed position, said valve seat opening into said second chamber, a first conduit means connecting said valve seat to said inlet, a second conduit means connecting said second chamber to said outlet, opening means connecting the exterior of said housing to said second chamber, anti-syphon valve means cooperating with said opening means to connect the exterior of said housing to said second chamber and valve seat when a suction occurs in said inlet, said anti-syphon valve means having valve flap means extending downwardly into said second chamber, said flap means cooperating with said opening means in said housing to normally close said opening means, said flap means being pulled inwardly into said second chamber when a suction occurs, said flap means contacting the first conduit means in their innermost position to block a reverse flow from the outlet to the inlet, said diaphragm support ring being position on projections extending inwardly from said housing, each projection extending between a pair of adjacent flaps, said flaps having notches to receive said projections, said flap notches engaging the sides of said cooperating projections when said flaps have been pulled inwardly.

4,508,137

WALL MOUNTABLE VACUUM BREAKER

Edwin F. Bolgert, Kohler, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Feb. 28, 1983, Ser. No. 470,272
Int. Cl.³ F16K *24/04*
U.S. Cl. 137—218 **4 Claims**



1. In a vacuum breaker connectable to a fluid supply pipe and a fluid outlet pipe, ends of both of the pipes being in substantial alignment with respect to each other and being positioned adjacent to an opening in a substantially vertical wall, the combination comprising:

an escutcheon mountable against the wall, the escutcheon having an inlet hole which is alignable with the fluid supply pipe, and an outlet hole which is alignable with the fluid outlet pipe;

two coupling members, one of the coupling members being alignable with the inlet hole in the escutcheon so as to be connectable to the fluid supply pipe, and the other coupling member being alignable with the outlet hole in the escutcheon so as to be connectable with the fluid outlet pipe;

at least one of the coupling members abutting against the outer surface of the escutcheon so as to be able to hold the escutcheon against the wall, and both of the coupling members having a through bore to allow the flow of fluid through the coupling members;

a vacuum breaker valve body having an inlet port coupled to one coupling member and an outlet port coupled to the other coupling member, the vacuum breaker valve body also having a channel that connects the inlet port to the outlet port and a vacuum breaker valve in that channel; and

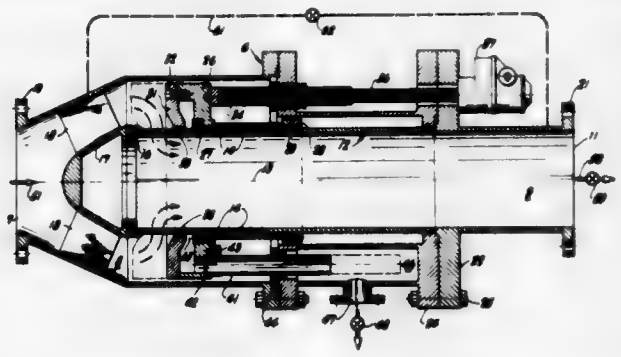
means for retaining the vacuum breaker valve body in a coupled relation with the coupling members.

4,508,138

POLYJET VALVE WITH BACKWASH

Robert W. Dixon, Concord, Calif., assignor to Chas. M. Bailey Co., Inc., Emeryville, Calif.

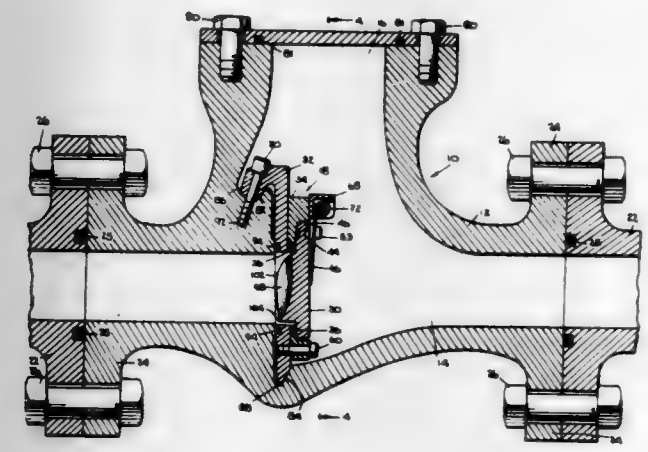
Filed Aug. 5, 1983, Ser. No. 520,639
Int. Cl.³ F16K *3/26, 11/07*
U.S. Cl. 137—239 **8 Claims**



1. A valve comprising a body including means defining an inlet chamber disposed about an axis; means defining an outlet

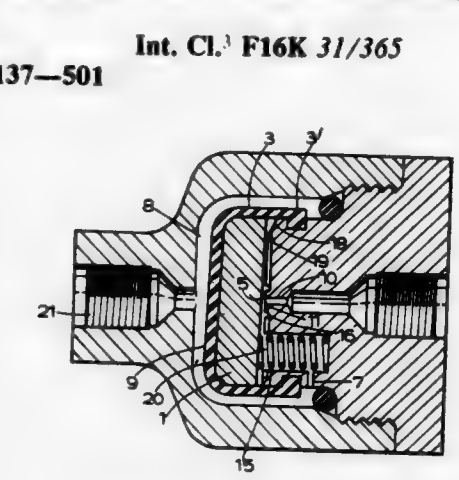
chamber disposed about said axis and adapted to communicate with said inlet chamber; a cylindrical polyjet sleeve disposed between said chambers and extending along said axis and having a plurality of radially extending, circumferentially arranged, axially spaced discrete openings therethrough and adapted to communicate with said inlet chamber and said outlet chamber, each of said openings having a predetermined axial length; a ring coaxial with and engaging said sleeve and defining an annular groove open to said sleeve and of substantially said predetermined axial length; means for moving said polyjet sleeve and said ring relative to each other along said axis for moving individual ones only of said openings progressively into registry with said annular groove regardless of the position of said ring; means for substantially blocking outflow from said outlet chamber; means for providing a drain from said annular groove; and means for circulating wash fluid from said inlet chamber into said outlet chamber and through successive individual ones only of said openings into said annular groove regardless of the position of said ring and into and through said drain.

4,508,139
TOP-ENTRY CHECK VALVE
Henry E. Teumer, 5308 Woodline Dr. S., Mobile, Ala. 36609
Filed Apr. 30, 1984, Ser. No. 605,051
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **10 Claims**



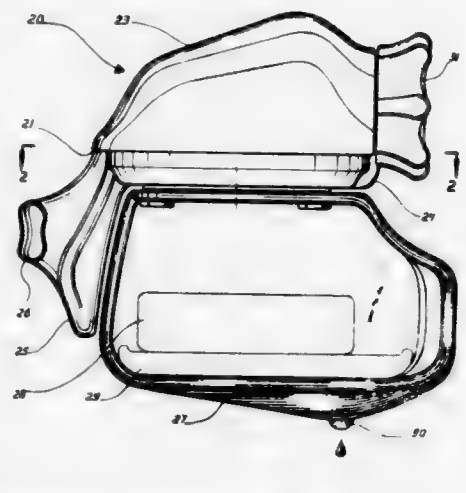
1. A removable valve seat for a check valve that has a pivotably mounted valving member movable between open and closed positions, the check valve comprising a check valve body and a valve seat having a first section and a second section, which sections are separable from one another and from the check valve body but which sections are normally attached to one another and to the check valve body, the check valve body and each section having a bore for the flow of fluid therethrough; a portion of the first section normally being next to a portion of the check valve body, a portion of the second section normally being next to a portion of the first section, a portion of the valving member being rotatably connected to a portion of the second section, and the bores of the check valve body, first section, and second section being aligned when the check valve is in fluid-flow operative condition; the first section having a circumferential lip around the bore, the lip having an outer annular face generally parallel to the axis of the bore; the bore of the second section being of greater diameter than the diameter of the outer annular face of the lip of the first section and having an inner face generally parallel to the axis of the bore; said inner and outer faces of the first and second sections being spaced sufficiently from one another and one or both faces being bevelled to contain and wedge between them sealing means that contacts the valving member when the valving member is in a closed position to effect a fluid-tight seal between the valving member and the valve seat.

4,508,140
HYDRAULIC FLOW CONTROL VALVES
Anthony W. Harrison, Birmingham, England, assignor to Lucas Industries public limited company, Birmingham, England
Filed Mar. 12, 1984, Ser. No. 588,381
Claims priority, application United Kingdom, Mar. 12, 1983, 8306852
Int. Cl.³ F16K *31/365*
U.S. Cl. 137—501 **9 Claims**



1. A regulator valve comprising first and second opposing rigid walls, portions of said walls having a rocking engagement with each other, a sealing membrane sealingly connecting together said walls around their peripheries and permitting relative rocking movement of said walls, confronting inner faces of said walls together with said sealing membrane bounding a first chamber, an outer face of said first wall bounding a second chamber, a first restriction of predetermined size connecting said first and second chambers, said second wall being formed with a transfer passage spaced from said rocking engagement, said inner face of said second wall being provided with a valve seat portion surrounding the end of said transfer passage adjacent to said first wall, a valve member portion of said inner face of said first wall defining with said valve seat portion a second restriction of variable size, and resilient means acting between said walls in the direction to increase the size of said second restriction, whereby an increase in the pressure in said second chamber relative to the pressure in said transfer passage brings about a reduction in the size of said second restriction.

4,508,141
SHOWER VALVE
Mikhail E. Tsipov, 120 Ruth Ellen, Cleveland, Ohio 44143
Filed Mar. 10, 1983, Ser. No. 474,204
Int. Cl.³ F16K *19/00, 31/60*
U.S. Cl. 137—560 **7 Claims**



1. A valve for interrupting the flow of water between a source and a showerhead comprising: a valve body; means within the valve body for interrupting water flow through the valve body; and actuating means for imposing the interrupting means into the water flow thereby terminating water flow

through the valve body, the actuating means including a receptacle configured to receive a soap product and being moveable between a closed position and a position whereby soap can be retrieved from the receptacle, the actuator means being configured whereby with the receptacle in the closed position water flow through the valve body is unimpaired by the interrupting means and with the receptacle in the retrieval position water flow through the valve is interrupted by the interrupting means.

4,508,142

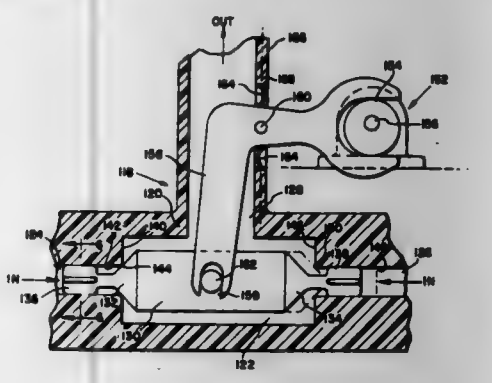
ZERO DISPLACEMENT LOW-SHEAR VALVE

William H. Eburn, Jr., Sudbury, Mass., and Stephen P. Kalenik, Merrimack, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 108,699, Dec. 31, 1979, abandoned. This application Oct. 28, 1981, Ser. No. 315,661

Int. Cl.³ F16K *41/12, 1/38, 11/06*

U.S. Cl. 137—625.4 **6 Claims**



1. A valve for controlling the flow of a fluid, comprising:

a housing for enclosing a particular volume of fluid, said housing having an inlet and an outlet for the passage of a fluid therebetween;

a movable member within said housing, movable between first and second positions for alternately blocking and unblocking fluid flow within said housing between said housing inlet and outlet, without changing the said fluid volume enclosed by said valve housing;

an elongated force coupling member projecting through an opening in a wall of said housing; and

a resilient, generally planar diaphragm that provides a fluid-tight seal between said elongated member and that portion of said housing wall through which said elongated member projects with a portion of said diaphragm being sealingly attached to said elongated member for movement therewith and with said elongated member being pivotally supported external of said resilient diaphragm and being pivotable about an axis within the plane of said generally planar diaphragm, about which neutral fluid-moving diaphragm movement of said particular volume of fluid occurs, when said elongated member is so pivoted.

4,508,143

DRAIN DISCHARGING APPARATUS

Yoshinari Ogasawara, Aichi, Japan, assignor to CKD Corporation, Aichi, Japan

Filed Sep. 30, 1982, Ser. No. 431,079

Claims priority, application Japan, Oct. 28, 1981, 56-172607

Int. Cl.³ F16K *31/05, 31/524*

U.S. Cl. 137—636.1 **2 Claims**

1. A drain discharging apparatus for automatically draining drainage from a compressed air source, said apparatus comprising:

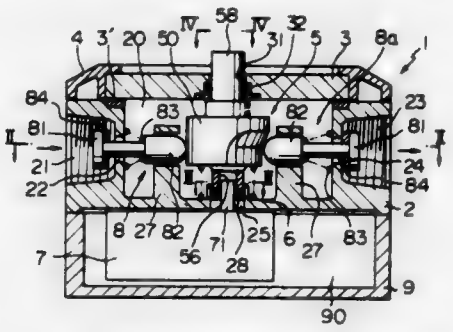
a body having therein a drain reservoir chamber, an inlet port adapted to be connected to a source of compressed air and drainage, an outlet port adapted to be connected with a drain, and first and second valve ports respectively connecting said inlet and outlet ports to said chamber for respectively introducing compressed air and drainage from said inlet port into said chamber and discharging compressed air and drainage from said chamber through said outlet port, said valve ports opening into said chamber at an inner periphery thereof;

first and second poppet valves positioned in said body, each said valve including a valve body urged by a respective spring into a first position closing communication through a respective said valve port;

a cam mounted in said body for rotation about an axis;

said cam having first surface means for urging said valve bodies against said respective springs to second positions opening communication through said respective valve ports;

motor means for continuously rotating said cam about said axis such that said first surface means alternately moves said valve bodies of said first and second poppet valves



from said first positions thereof to said second positions thereof without simultaneously moving both said valve bodies from said first positions thereof;

means for mounting said cam for movement with respect to said body along said axis;

spring means for urging said cam in a first axial direction to position said first surface means adjacent said valve bodies; and

said cam having second surface means for, upon movement of said cam in a second axial direction against said spring means, moving one of said valve bodies which is in said first position thereof to said second position thereof, while maintaining at all times during said movement said first surface against the other said valve body in said second position to thereby open both of said poppet valves to discharge said compressed air and said drainage.

4,508,144

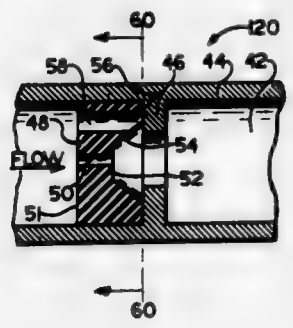
FLOW CONTROL DEVICE

Thomas B. Bernett, Arlington Heights, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 28, 1983, Ser. No. 555,853

Int. Cl.³ F15D *1/02*

U.S. Cl. 138—45 **11 Claims**



1. A flow control device for providing a substantially constant rate of fluid flow under varying pressure through a passageway in a housing, said device comprising a resilient member having spaced-apart upstream and downstream sides and dimensionally adapted to enable the member to be removably received within the housing with said downstream side having an intermediate region surrounded by a substantially flat pe-

ripheral surface facing in the downstream direction that is adapted to engage a seat in the passageway directly while assuring that the intermediate region remains in fluid communication with the downstream side of the passageway, said member having at least one flow control orifice extending therethrough between the upstream side and the downstream side within the intermediate region, said member having a plurality of bypass channels extending therethrough between the upstream side and downstream peripheral surface in the direction of fluid flow through the passageway in the housing, said plurality of bypass channels being in a spaced-apart array about the orifice, said orifice adapted to constrict and relax to maintain a substantially constant rate of fluid flow therethrough in response to compression and relaxation of the member against the seat in response to respective increases and decreases in the fluid pressure differential across the member, and said member having reduced tendency to flutter and improved resistance to fatigue failure arising from the repeated relaxation and compression thereof under varying fluid pressure differentials across the member as a result of said channels being positioned so that at least a portion of each intersects the intermediate region, the peripheral surface, and an intersection between the intermediate region and the peripheral surface to the extent necessary to enable compression and relaxation of the intermediate region adjacent the peripheral surface to control the flow of the fluid through the channels in response to respective increases and decreases in the fluid pressure differential across the member.

4,508,145

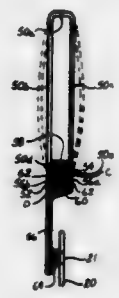
HEDDLE FRAME AND COMPOSITE FRAME SLAT CONSTRUCTION

James B. Bowen, and Charles F. Kramer, both of Greenville, S.C., assignors to Steel Heddle Mfg. Co., Greenville, S.C.

Filed Jul. 6, 1982, Ser. No. 395,736

Int. Cl.³ D03C 9/06

U.S. Cl. 139—92 **13 Claims**







1. A heddle frame for a loom in which is carried a number of heddles which are supported on heddle rods across the frame through which warp yarn ends are threaded and raised and lowered to define a shed across the loom through which a weft yarn is inserted as said heddle frame is reciprocated by a heddle frame drive during weaving, said heddle frame comprising:

a pair of spaced frame sides;

a top frame slat carried between said frame sides;

a bottom frame slat spaced below said top frame slat in said frame;

said bottom frame slat consisting of an elongated hollow steel tubular member having connector means carried therein for making drive connection with a heddle frame drive;

a flange means carried by said bottom frame slat;

an integral heddle support rod carried by said flange means for supporting the lower ends of said heddles;

said top frame slat including a first portion formed from a steel tubular element and a second portion formed from an extrusion of lighter material so that the total weight of said top frame slat is less than the weight of said bottom frame slat in said heddle frame; and

said second portion of said top frame slat including an integral flange means, and an upper heddle support rod carried by said flange means for supporting the upper ends of said heddles in said frame.

4,508,146

GRIPPER PROJECTILE FOR A WEAVING MACHINE

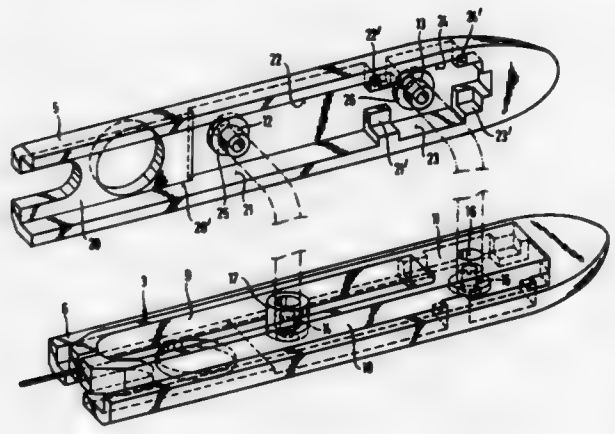
Otto Hintsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 16, 1983, Ser. No. 523,416

Claims priority, application Switzerland, Sep. 14, 1982, 5438/82

Int. Cl.³ D03J 5/06

U.S. Cl. 139—196.2 **19 Claims**



1. A gripper projectile for a weaving machine comprising

a gripper for gripping weft yarn at one end;

a housing having said gripper mounted therein, said housing being divided in the plane of said gripper; and

a hollow stud of oval shape on one housing half and a groove in the other housing half receiving said oval-shaped stud in mating relation.

4,508,147

METHOD OF MANUFACTURING A POSITIVE ELECTRODE FOR A LEAD ACID ELECTRIC STORAGE CELL

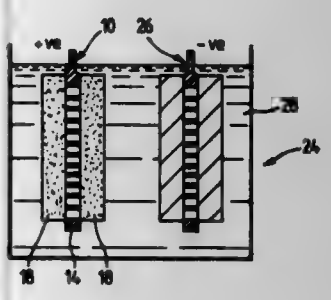
Patrick T. Moseley, Chilton, and Michael R. H. Hill, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 22, 1983, Ser. No. 477,777

Claims priority, application United Kingdom, Mar. 22, 1982, 8208326

Int. Cl.³ H01M *4/38*

U.S. Cl. 141—1.1 9 Claims



1. A method of making a lead acid electric storage cell comprising the steps of

(i) chemically preparing particulate beta lead dioxide;

(ii) fabricating the beta lead dioxide into an electrode for a lead acid electric storage cell; and

(iii) assembling a lead acid electric storage cell comprising a positive electrode constituted by said beta lead dioxide electrode, a negative electrode constituted by a second electrode, and an electrolyte for the cell.

2. A method as claimed in claim 1, wherein step (ii) is carried out by mixing the beta lead dioxide with a relatively low proportion of a binder, and applying the mixture to a perforated electrically conductive support structure.

4,508,148

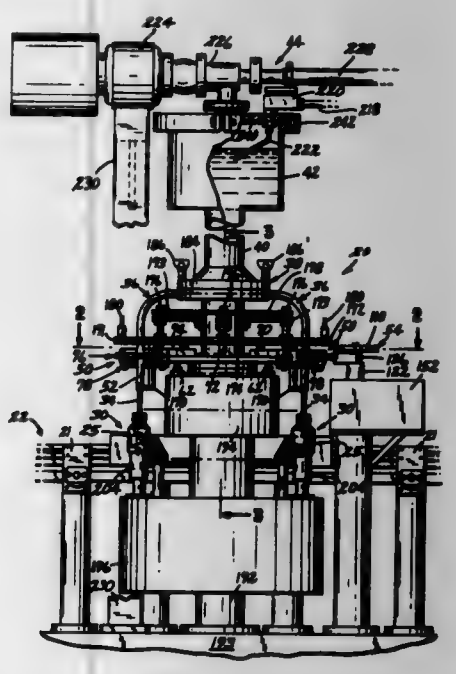
PHARMACEUTICAL FILLER APPARATUS

Hans W. Trechsel, Rockford; Allan B. Larson, Eden Prairie, and John A. Ryerse, Maple Grove, all of Minn., assignors to TL Systems Corporation, Minneapolis, Minn.

Filed May 6, 1983, Ser. No. 492,222

Int. Cl.³ B65B *43/50*

U.S. Cl. 141—147 18 Claims



1. A fluid dispensing and metering assembly comprising:

(a) a conveyor for conveying containers, first detection means for detecting movement of said conveyor past a first predetermined location;

(b) positioning means cooperating with said conveyor for positioning each of said containers proximate a fluid delivery conduit for receipt of fluid from said fluid delivery conduit;

(c) a reservor of fluid positioned above said containers at a predetermined height, said reservoir including means for maintaining a constant fluid level in said reservoir, said fluid delivery conduit being interconnected to said reservoir to provide a fluid flow path from said reservoir to said container positioned for receipt of fluid from said fluid delivery conduit; said fluid delivery conduit including a fixed orifice of substantially less diameter than the inside diameter of said fluid delivery conduit, said fixed orifice being positioned closer to the point of fluid discharge into the container than to said fluid reservoir;

(d) quick acting pinch valve means associated with said fluid delivery conduit for opening and closing said fluid delivery conduit, said pinch valve means having first and second positions, said valve means interacting with an elastic portion of said fluid delivery conduit, said elastic portion of said fluid delivery conduit being pinched shut by said valve means when said valve means is in said first position, said elastic portion of said fluid delivery conduit being fully opened when said valve means is in said second position, said valve means including biasing means for biasing said valve means towards the first position and further including releasable retention means for retaining said valve means in said second position, said valve means returning substantially simultaneously to said first position upon release by said retention means, said valve means including a first pivotal member having first and second ends, said first pivotal member being pivotal about a generally vertical axis positioned between said first and second ends, a spring means being interconnected to said first pivotal member for biasing said first pivotal member into a first position, an edge portion of said first pivotal member between said first end and said vertical pivot axis cooperating with a stationary member to pinch shut said elastic portion of said fluid delivery conduit when in said first position, said retention means including said first pivotal member cooperating with a second pivotal member to retain said first pivotal member in said second position, said second pivotal member being pivotal about a generally horizontal axis, said second pivotal member further being biased by biasing means in a vertical direction towards said first pivotal member;

(e) cam actuator means positioned downstream from said first detection means for positioning said valve means in said second position;

(f) first timing means for monitoring movement of said containers after being detected by said first detection means, said first timing means activating said cam actuator means when one of said containers and its associated valve means are suitably positioned adjacent said cam actuator means, said cam actuator means positioning said valve means in said second position upon being activated by said first timing means;

(g) second detection means for detecting the positioning of said valve means in said second position;

(h) second timing means for monitoring the amount of fluid delivered into said containers;

(i) release means activated by said second timing means for releasing said retention means; and

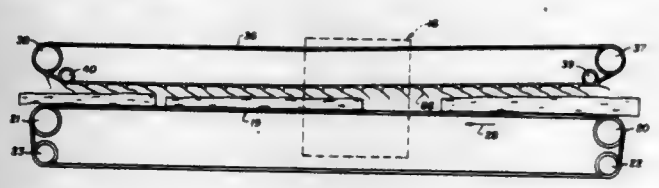
(j) said positioning means including a rotary apparatus rotating about a vertical axis offset from said conveyor, said rotary apparatus including a plurality of stations each adapted for receipt of one of said containers, each of said containers including one of said delivery conduits, one of said pinch valves, and one of said release means operatively interconnected to dispense and meter a predetermined amount of fluid into said associated container.

4,508,149

LOG CONVEYING APPARATUS

William R. Carroll, 2332 Bellevue Ave., West, Vancouver, B.C., Canada V7V 1T4

Filed Oct. 12, 1982, Ser. No. 433,742
Int. Cl.³ B27B *31/00*
U.S. Cl. 144—245 A **9 Claims**



6. Apparatus for conveying logs to processing equipment in a sawmill comprising:

an elongated framework intersected by the processing equipment,

a main conveyor extending through the elongated framework, said main conveyor having an endless chain including a substantially horizontal upper run for seating a longitudinally extending log,

a top hold-down conveyor having an endless chain provided with longitudinally spaced spring flight means flexed into gripping engagement with the surface of the log for engaging and locating a log seated on the upper run of the main conveyor, said endless chain of the top hold-down conveyor having a lower run spaced from and normally adapted to extend parallel to the upper run of the main conveyor,

an infeed frame supporting a first portion of the hold-down conveyor in advance of the processing equipment,

an outfeed frame supporting a second portion of the hold-down conveyor beyond the processing equipment,

hoisting means suspending the infeed and outfeed frames from the elongated framework and operable to separately raise and lower the first and second portion of the hold-down conveyor whereby to vary the spacing between the upper and lower runs and to incline the upper run at the first and second portions with respect to the lower run of the main conveyor; and

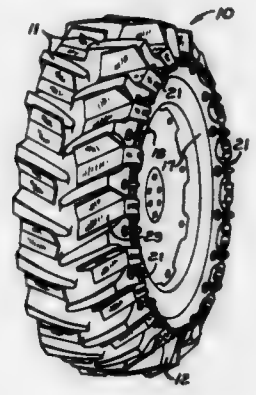
means for driving the main and hold-down conveyors to advance the upper and lower run in unison and move the log endwise into feeding engagement with the processing equipment.

4,508,150

RETRACTABLE TRACTION INTENSIFYING MEANS FOR AGRICULTURAL TRACTORS AND THE LIKE

Thorvald G. Granryd, Lake Forest, Ill., assignor to TG Strips, Inc., Lake Forest, Ill.

Filed Jan. 3, 1984, Ser. No. 567,625
Int. Cl.³ B60C *27/20, 27/10, 27/08*
U.S. Cl. 152—169 **13 Claims**



1. Traction intensifying means for a rubber tired vehicle having a power driven tire, including side walls, under-tread faces and tire lugs, each of the tire lugs having a lug height, a lug length, a leading lug side, a lug angle and a shoulder, said traction intensifying means comprising

a series of ground engaging spades for mounting on such a tire in a position to be movable between ground engaging and ground avoiding contact, each of said ground engaging spades having a lug portion, a sole portion, a base portion and a spade angle related to the lug angle of the tire,

a series of anchor means, each one of said series being secured to a shoulder of a tire lug of the tire,

at least two lengths of wire rope, each one of said lengths being mounted upon said series of anchor means for rotational movement relative thereto, and

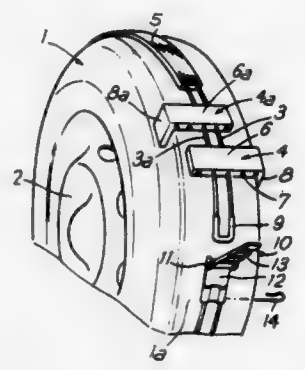
coupling means for fixedly securing said base portion of each of said ground engaging spades onto said lengths of wire rope, such that rotational movement of said wire ropes will move said ground engaging spades between said ground engaging and ground avoiding contact.

4,508,151

NON-SKID DEVICE FOR MOTOR-VEHICLE TIRES

Jean Sepheriades, 33, rue Bayen, 75017 Paris, and Joël Lecharpy, 40, rue de Mauregard, 78690 Levis-Saint-Nom, both of France

Filed Feb. 8, 1984, Ser. No. 578,012
Claims priority, application France, Feb. 16, 1983, 83 02527
Int. Cl.³ B60C *27/06*
U.S. Cl. 152—213 A **7 Claims**



1. A non-skid device for pneumatic tires of motor-vehicles, wherein said device comprises at least two strands of cable joined at their ends by fastening means and on which are adjustably threaded a plurality of pairs of half-brackets, forming clamps, separated one from the other by cross-pieces in contact with the tread of the tire, said half-brackets being symmetrically placed and having one branch which rests against the tire tread and another branch which rests, for one of the half-bracket, against one of the flanks of the tire, and for the other half-bracket, against the other flank of the tire.

4,508,152

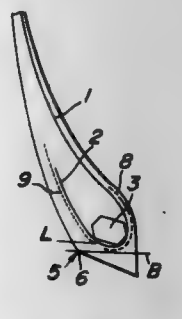
PNEUMATIC RADIAL TIRES HAVING AN IMPROVED BEAD PORTION DURABILITY

Shigehisa Sano, Akigawa; Isao Seto, Kodaira; Hiroyuki Koseki, Ohmiya, and Mana Minomura, Mitaka, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jan. 18, 1984, Ser. No. 571,881
Claims priority, application Japan, May 24, 1983, 58-90060
Int. Cl.³ B60C *15/00, 9/02*
U.S. Cl. 152—356 R **5 Claims**

1. A pneumatic radial tire having an improved bead portion durability, which comprises a main tire body reinforcement comprising a carcass of at least one ply containing metal cords arranged in the radial direction of the tire, and a bead portion reinforcement comprising a layer of metal cords obliquely arranged along the turnup portion of said carcass which is wound around a bead core in each of the bead portions from the inside to the outside with respect to the cords of said turnup

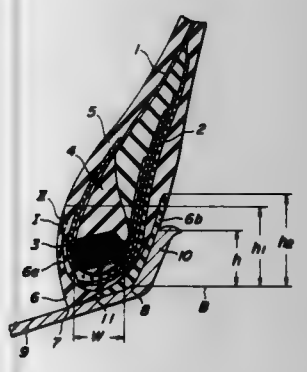
portion, characterized in that said bead portion reinforcement is composed of a support reinforcing layer and a turnup-end protecting layer independently arranged on the lateral inside and lateral outside of the bead core respectively, and said turnup-end protecting layer has a modulus of elasticity at 1% elongation in cord direction smaller than that of said support reinforcing layer and is disposed over an area extending from an intermediate level between the radial inner and radial outer diameters of said bead core to a level radially outward of the upper end of said turnup portion.



4,508,153
PNEUMATIC TIRES

Tsutomu Tanaka, Kodaira; Mitsuhisa Yahagi, Sayama, and Shuichi Watanabe, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 25, 1984, Ser. No. 613,998
Claims priority, application Japan, May 26, 1983, 58-91520
Int. Cl.³ B60C *15/06, 15/04*
U.S. Cl. 152—362 CS **4 Claims**



1. A pneumatic tire comprising a carcass composed of at least one cord ply extending between a pair of bead portions, an inner liner adhered to the inner surface of the carcass, and a rubber reinforcing layer made of a rubber composition different from and having a Shore A hardness higher than that of the inner liner and disposed at a lower part of the bead portion including a bead toe portion and a bead heel portion to form an outermost bead rubber at least at that region of the bead portion which comes into contact with a rim;

said rubber reinforcing layer being divided into an axially inside portion inclusive of the bead toe portion and an axially outside portion extending from a boundary surface located in an area between the bead toe portion and a position corresponding to ½ of a height of a rim flange,

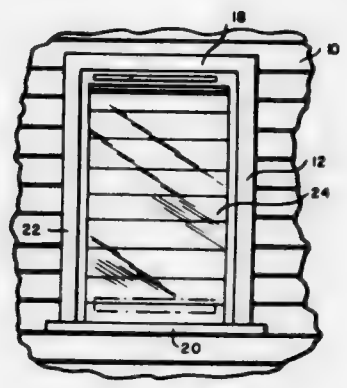
said axially outside portion being extended over the height of the rim flange outwardly in the radial direction of the tire, and

rubber of said axially inside portion being small in the Shore A hardness and abrasion resistance index and high in the breaking energy after heat deterioration as compared with that of said axially outside portion.

4,508,154
WINDOW CASEMENT

Everett T. Wheeler, 293 Mt. Vernon St., Lawrence, Mass. 01843

Filed Dec. 2, 1983, Ser. No. 557,328
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Int. Cl.³ E06B *3/32*
U.S. Cl. 160—98 **16 Claims**

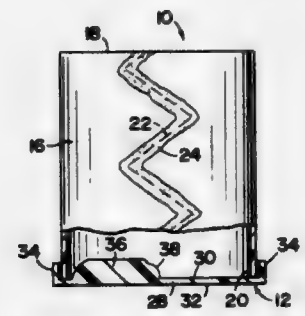


1. A window casement, structured to be set into a wall opening and to be permanently attached to the studding peripherally of the opening comprising a frame defined by rectangularly arranged space parallel top, bottom and side members, spaced parallel front and back panels mounted in said frame defining with the top, bottom and side members a closed chamber, said front and back panels being light transmitting and said back panel containing at the top and bottom narrow transversely arranged openings providing communication with the interior of the building within which the casing is installed and means within the chamber for one the one hand absorbing heat from light entering the front panel, and transmitting it throught said narrow openings into the building and on the other hand to reflect heat entering the front panel.

4,508,155
APPARATUS FOR AND METHOD OF OBTAINING IMPROVED DENTAL CASTINGS

Carl H. Rousseau, 2648 South Dr., Clearwater, Fla. 33519

Filed Jun. 4, 1982, Ser. No. 385,025
Int. Cl.³ B22C *7/02, 9/04, 21/00*
U.S. Cl. 164—35 **10 Claims**



1. An apparatus for the preparation of a dental casting from a dental pattern utilizing a curable investment material which undergoes an exothermic reaction and expansion upon curing; comprising:

a resilient expandable investment ring means being comprised of a substantially columnar tube which is open at both ends and having a fracture extending along the entire longitudinal dimension thereof;

said resilient expandable investment ring means being biased by said resiliency thereof to substantially close said fracture;

a base means defined by a plate having a top and a bottom surface with a substantially circular lip extending from said top surface;

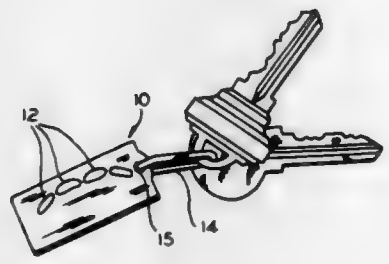
said circular lip having an inside diameter which is greater than the outside diameter of said investment ring means;
a sprue former disposed on said base means;
a runner bar means having a proximal end portion and a distal end portion with said proximal end portion forming an angle with respect to said distal end portion;
said proximal end portion being operatively disposed on said sprue former and with said distal end portion receiving the dental pattern; and
said investment ring means being disposed on said top surface of said base means and being disposed about said runner bar means by placing one of the open ends of said columnar tube on said top surface of said base means enabling said columnar tube to expand at said fracture against said bias of said investment ring means to open said fracture to accommodate for the expansion of the investment material upon the exothermic reaction of the investment material.

4,508,156

PERSONALIZED ITEMS AND PROCESS FOR MAKING THEM

Julia G. Banks, and William Ficho, both of Chicago, Ill., assignors to Vasilia Ltd., Chicago, Ill.

Filed Sep. 28, 1982, Ser. No. 425,384
Int. Cl.³ B22C 9/02; A44C 25/00
U.S. Cl. 164—35 **5 Claims**



1. A process using a mailer kit for making a do-it-yourself impression of human teeth in order to create an item in the form of a metal charm with personalization, said process comprising the steps of:
a. forming an impression blank comprising a layer of wax which takes an impression of teeth responsive to a bite on said blank at room temperatures, said wax layer being formed as an overlay on a layer of cardboard, said layer of wax having a uniform thickness across the surface of said cardboard substantially equal to the tip ends of the biting edges of human teeth, whereby said cardboard precludes anymore than said tip ends from making an impression in said wax;
b. biting into the top of said wax layer as far as said cardboard in order to create impressions of the tip biting edges of teeth while using the cardboard to establish and to limit the depth of a bite and to preclude embossing the bottom of said wax layer with opposing teeth; and
c. casting the impression of the wax layer into a metal charm.
5. A metal charm made by the process as defined in claim 1.

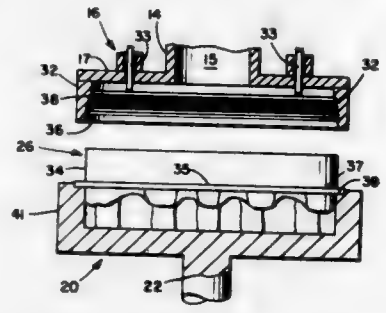
4,508,157

SELF-TAPPING SUPPORT FOR SHELL MOLDS

Dennis A. Belliveau, Manchester, and Eugene W. Thomas, Amherst, both of N.H., assignors to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Filed Apr. 15, 1983, Ser. No. 485,196
Int. Cl.³ B22D 27/16
U.S. Cl. 164—63 **7 Claims**

1. In a method of casting metal in a low temperature bonded sand grain, gas permeable, mold, by applying a reduced pressure to an external upper mold surface to draw molten metal into cavity means in the mold, that improvement comprising,
providing a mold having a peripheral, generally cylindrical, exterior side surface portion
providing a vacuum chamber having a downwardly facing opening defined by a downwardly extending wall with an internally threaded generally cylindrical engagement surface portion sized and shaped to snugly engage said exterior side surface portion of said mold,



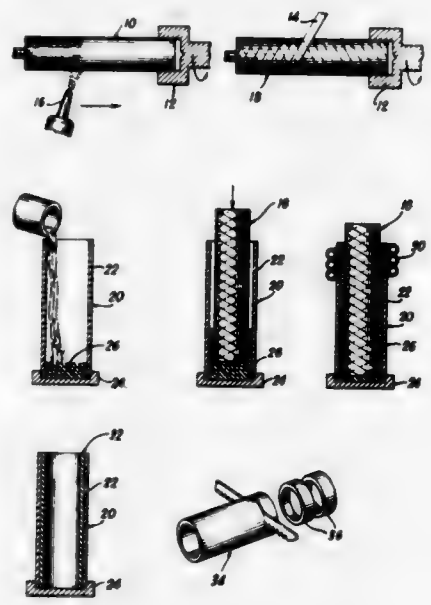
engaging said mold with said chamber internally threaded engagement surface portion by moving said upper mold surface into said chamber opening while simultaneously causing relative rotation of said mold and said chamber engagement surface portion, whereby said threads engage said side mold surface portion.

4,508,158

GRAPHITE-METAL MATRIX BEARINGS AND METHODS OF MANUFACTURING

Maurice F. Amateau, Hinsdale, and Keith R. Karasek, Villa Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 22, 1983, Ser. No. 468,532
Int. Cl.³ B22D 19/02
U.S. Cl. 164—110 **8 Claims**



1. A method of manufacturing a graphite fiber metal matrix material comprising:
winding graphite fiber around an outer surface of a removable metal mandrel having a cylindrical outer surface to form a graphite fiber-wrapped mandrel;
sealing a first open end of a tubular mold with a cap member;
pouring molten metal into the interior of said tubular mold;
plunging said graphite fiber-wrapped mandrel into said tubular mold to force said molten metal toward a second open tubular mold end within a space defined between an outer surface of the fiber wrapped mandrel and an inner surface of said tubular mold;
solidifying an upper portion of said molten metal to form a molten metal seal between said outer mandrel surface and said inner tube surface and then forcing said fiber-wrapped mandrel further into said tubular mold to in-

crease the hydrostatic pressure on a remaining liquid portion of the molten metal and force the molten metal between said graphite fiber and said mandrel;

solidifying the remainder of said molten metal while said molten metal is in intimate contact with said graphite-fibers to adhere said bearing metal to said inner mold surface and to embed said graphite fiber within said bearing metal;

removing said mandrel from said mold to provide a graphite fiber metal matrix material including a tubular mold having a compliant metal tenaciously adhered to its inner surface, and having graphite fiber embedded within said compliant metal.

4,508,159

MOLD WITH FEEDER CHANNEL FOR THE CASTING OF METALS, IN PARTICULAR, FOR LOW-PRESSURE CASTING

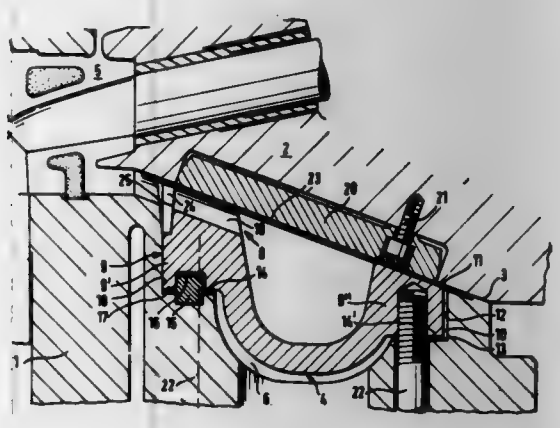
Reinhard Woltmann, Gröbenzell, and Karl Sixt, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,299

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117408

Int. Cl.³ B22D *17/06*

U.S. Cl. 164—306 **20 Claims**



1. Mold defining a mold cavity for the casting of metals, in particular, for low-pressure casting, comprising at least two mold parts which are joinable with one another along a parting plane, and a trough-shaped feeder channel which extends through one of the mold parts while defining an intermediate space therebetween, said feeder channel communicating with the mold cavity by at least one inlet channel, wherein the trough-shaped feeder channel is clamped between the two mold parts at an attachment flange means thereof, a top edge of said flange means being approximately parallel to said parting plane, a side edge of said flange arranged for positively engaging one of the two mold parts in at least the area of said inlet channel to form a seal and, at least the opposite side edge of said flange in another area, being connected in a manner for permitting thermal expansion of the trough-shaped feed channel with respect to said mold parts in a direction parallel to said parting plane.

4,508,160

PROCESS FOR COOLING IN INGOT DURING CONTINUOUS CASTING

Raoul Sautebin, Sierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,593

Claims priority, application Switzerland, Nov. 20, 1981, 7448/81

Int. Cl.³ B22D *11/124*

U.S. Cl. 164—467 **14 Claims**

1. A process which comprises: casting an ingot in a mold; providing a coolant having added thereto a substance which is soluble in the coolant and which releases gas as a decomposition product on striking a hot ingot surface; and applying said coolant-substance mixture to the surface of the ingot as it emerges from the mold, thereby decomposing said substance, releasing a gas as a decomposition product, to form an insulating film on the ingot surface and reducing the rate of heat extraction.

4,508,161

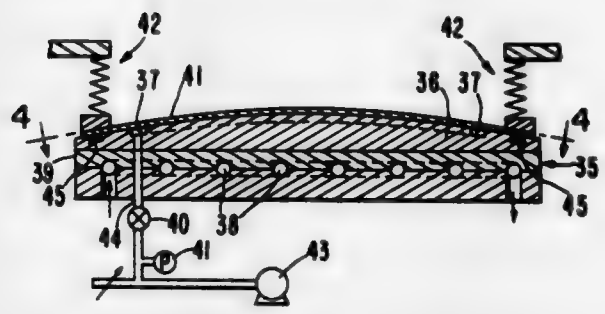
METHOD FOR GAS-ASSISTED, SOLID-TO-SOLID THERMAL TRANSFER WITH A SEMICONDUCTOR WAFER

Scott C. Holden, Manchester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 381,669, May 25, 1982, Pat. No. 4,457,359. This application Mar. 2, 1984, Ser. No. 585,819

Int. Cl.³ F28F *13/00*

U.S. Cl. 165—1 **9 Claims**



1. A method for thermal transfer with a thin flexible workpiece in vacuum, comprising the steps of:

providing a platen having a nonplanar surface for receiving said workpiece and forming a solid-to-solid contact with the back side of said workpiece;

clamping said workpiece at its periphery against said planten surface to produce a platen-to-workpiece preloading contact pressure; and

introducing a gas into microscopic voids between said workpiece and said platen surface at a predetermined pressure above the level sufficient to cause bowing and reduced thermal transfer with a workpiece which is not preloaded, said predetermined gas pressure being less than said preloading contact pressure.

4,508,162

DOUBLE FLOOR

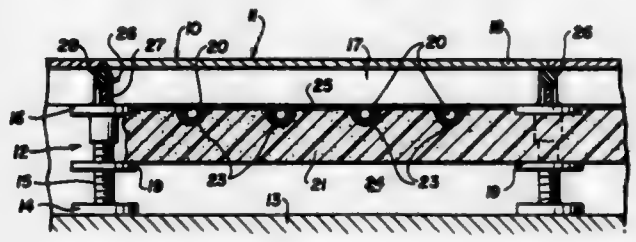
Manfred Radtke, Margetschochheim, Fed. Rep. of Germany, assignor to Mero-Werke Dr.-Ing. Max Mengeringhausen GmbH & Co., Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,193

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137410

Int. Cl.³ F24H *9/08*

U.S. Cl. 165—56 **12 Claims**



1. In a double floor with framed floor plates of a heat conductive or heat storage material, the improvement comprising a system of pipes for carrying a heating or cooling medium, holding and fixation elements supporting said pipes, and up-

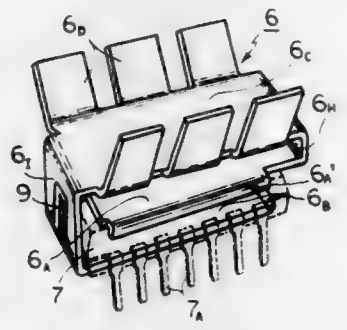
right bearings supporting the floor plates and also supporting said holding and fixation elements to maintain said system of pipes in heat-conductive contact with the bottom surfaces of the floor plates, said upright bearings having support plates movably mounted thereon for vertical adjustment, and said holding and fixation elements being mounted on said support plates, whereby the height of said holding and fixation elements can be adjusted to vary the force of contact of said pipes with the bottom surfaces of the floor plates.

4,508,163

HEAT SINKS FOR INTEGRATED CIRCUIT MODULES

Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.

Filed Jan. 18, 1983, Ser. No. 458,833
Int. Cl.³ H01L *23/02, 23/48*
U.S. Cl. 165—80 B **2 Claims**



1. One-piece heat-sink apparatus for an electronics package the body of which has the general form of a thin elongated rectangular parallelepiped, comprising first, second and third elongated elements integrally connected in series by first and second connection means, all of said elements and connection means being formed of thin sheet metal, said first and second elements being held in substantially parallel spaced alignment with another and with said third element adjacent one side thereof by said connection means, said first connection means holding said first element in a cantilevered relation to one end of said third element at substantially a first distance therefrom, said second connection means holding said second element in a cantilevered relation to said third element at substantially a second distance therefrom which is less than said first distance, said third element being exposed to the ambient environment and being shaped for release thereto of heat conducted to it from the package independently from said first and second elements, said first element being substantially flat and proportioned to about closely and substantially coextensively with one surface of the package, and elongated stiffening means stamped as part of said first connection means and imparting to the cantilevered combination of said first element and said first connection means a stiffening which tends to approach that of the cantilevered combination of said second element and said second connection means, whereby, upon insertion of such a package between said first and second elements they tend to flex cooperatively and allow said first element to clasp itself in close abutting relationship with the nearby surface of the package.

4,508,164

DASH POT BASKET FOR HEAT EXCHANGER TUBE CLEANING ELEMENT

Walter J. Baron, Milwaukee, Wis., assignor to Water Services of America, Inc., Milwaukee, Wis.

Filed Sep. 16, 1983, Ser. No. 533,144
Int. Cl.³ F28G *1/12*
U.S. Cl. 165—95 **4 Claims**

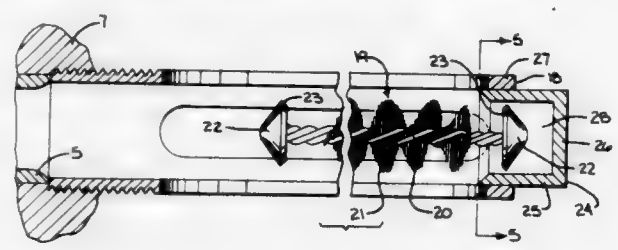
1. For use in a heat exchanger having a housing containing a plurality of fluid flow tubes arranged with exposed open ends, the combination comprising:

(a) an elongated basket adapted to capture a tube cleaning element which includes an elongated brush terminating in cap means and which is propelled through the tube by fluid,

(b) the outer end portion of said basket having stop means thereon for engagement by a said cleaning element,

(c) and means on said basket for decelerating said cleaning element before the latter reaches said stop means,

(d) said cleaning element decelerating means comprising dash pot means disposed at the outer end of said basket for forming a hydraulic cushion for said cleaning element,



(e) said dash pot means forming a recess for receiving said cleaning element and with said recess including said stop means,

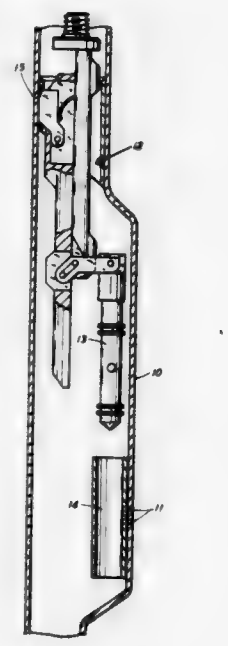
(f) said dash pot means and said cap means forming a restricted circumferential passage through which fluid escapes from said recess into said basket as said cap means approaches said stop means.

4,508,165

KICKOVER TOOL

Tommy C. Foust, Watauga, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 349,441, Feb. 17, 1982, Pat. No. 4,442,893. This application Nov. 8, 1982, Ser. No. 439,859
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—117.5 **14 Claims**



1. A kickover tool comprising,

an elongate body having a first side and connector at its upper end,

an elongate actuator having a second side and locator key at its upper end,

means slidably interconnecting the first and second sides of said body and actuator in confronting relationship,

an arm pivoted to one of said body and actuator adjacent its lower end,

said arm having a support section,

a tool carrier pivoted to the free end of said support section of said arm,

means between said arm and the other of said body and actuator moving said arm between a position substantially

coaxial with said body and a position transverse thereof, and

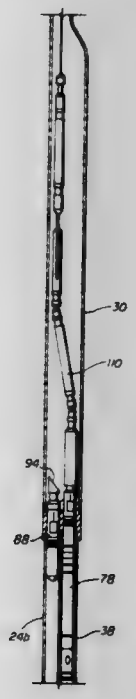
means releasably holding said body and actuator together in a first position with said support section extending substantially aligned with said body and in a second position with said support section extending transverse of said body.

4,508,166

SUBSURFACE SAFETY SYSTEM

Billy G. Becker, and Charles V. Swafford, both of Ventura, Calif., assignors to BST Lift Systems, Inc., Ventura, Calif.

Filed Apr. 6, 1983, Ser. No. 482,584
Int. Cl.³ E21B *23/03*
U.S. Cl. 166—117.5 **7 Claims**



1. A subsurface safety system, which comprises:

an elongated entry mandrel having at one end thereof an outlet including means for interconnecting with a production tubing string to the surface and at the other end thereof primary inlet and a secondary inlet laterally spaced apart from said primary inlet;

a full bore primary tubing connected at one end to and extending from said primary inlet, the other end of said primary tubing including means for interconnecting with a production tubing string to a formation;

a full bore secondary tubing connected at one end to and extending from said secondary inlet generally parallel to said primary tubing, the other end of said secondary tubing string being open;

a packer surrounding said primary tubing string and said secondary tubing between the respective ends thereof;

wireline removable means for plugging said secondary inlet to prevent communication between said entry mandrel and said secondary string;

means positioned between said packer and said entry mandrel for venting said secondary string;

a primary tubing retrievable subsurface safety valve positioned in said primary tubing;

a secondary tubing retrievable subsurface safety valve positioned in said secondary tubing valve between said means for venting said secondary tubing and said open end;

means for deflecting well tools toward said primary inlet including a diverter shoe formed in said entry mandrel having a surface sloping toward said primary inlet;

means for temporarily plugging said primary inlet including a whipstock plug insertable in said primary inlet, said whipstock plug having a sloping upper surface positionable to deflect well tools toward said secondary inlet;

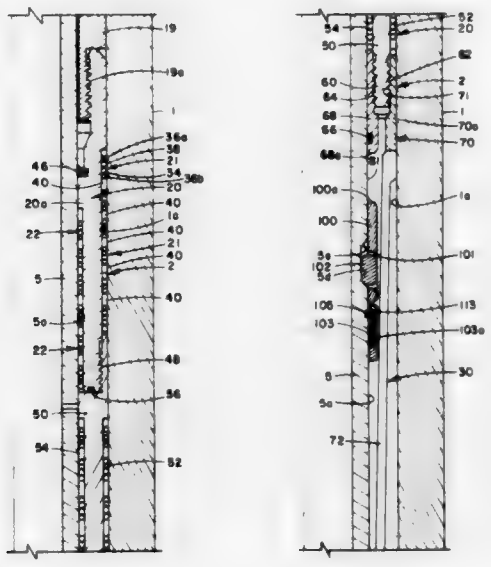
and means for aligning well tools with respect to said primary and secondary inlets including a guide shoe positioned in said entry mandrel below said outlet, said guide shoe including an annular shoulder facing said outlet, said shoulder having complimentary flanks sloping away from said outlet toward a keyway.

4,508,167

SELECTIVE CASING BORE RECEPTACLE

Roger A. Weinberg, Houston, and Mark C. Glaser, Bellaire, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Aug. 1, 1983, Ser. No. 519,392
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—120 **29 Claims**



1. A packoff assembly for cooperation with a selected one of a plurality of polished bore receptacles incorporated in spaced relationship in a well casing string, each receptacle having a polished bore and upwardly and downwardly facing shoulders respectively above and below the polished bore; a tubular mandrel connectable to a tubular conduit extending to the well surface; a tubular body assemblage surrounding said mandrel and releasably connected thereto; seal means on said tubular body assemblage for establishing sealing integrity between the exterior of said mandrel and the polished bore of a selected receptacle; a first normally contracted, radially expansible abutment element mounted on the upper portion of said tubular body assemblage; means on said tubular body assemblage for radially expanding said first abutment element to engage the upwardly facing shoulder on the selected polished bore receptacle; a second normally contracted radially expansible abutment element on the lower portion of said tubular body assemblage; and means responsive to axial movement of said mandrel for radially expanding said second abutment element to engage the downwardly facing surface on the selected polished bore receptacle; thereby anchoring said tubular body assemblage to the selected polished bore receptacle independently of said mandrel and permitting axial movements of said mandrel relative to the polished bore receptacle while sealing the annulus between said mandrel and the polished bore receptacle.

4,508,168

RF APPLICATOR FOR IN SITU HEATING

Vernon L. Heeren, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.

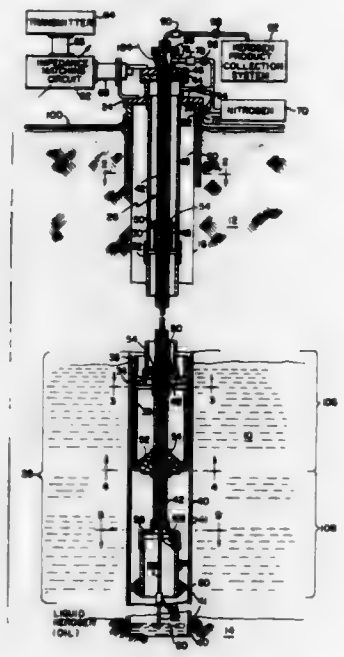
Continuation of Ser. No. 164,723, Jun. 30, 1980, abandoned. This application Nov. 20, 1981, Ser. No. 323,212
Int. Cl.³ E21B *43/25*
U.S. Cl. 166—248 **19 Claims**

1. The method of producing organic products from a body of oil shale beneath an overburden comprising:

generating electrical energy in the frequency range between 100 kilohertz and 100 megahertz;

transmitting said energy via a first transmission line having a

first characteristic impedance through a first impedance transformation structure to a second transmission line which has a second characteristic impedance and which extends through said overburden and which is coupled to a radiating structure through a second impedance trans-



formation structure positioned in said body of oil shale and substantially impedance matched to said transmission line; and

varying the impedance matching of said first impedance transformation structure to compensate for changes in temperature of said oil shale body.

4,508,169

METHOD FOR DETERMINING CONNATE WATER SATURATION AND SALINITY IN RESERVOIRS

Alan D. Mut, and Harry A. Deans, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Dec. 10, 1982, Ser. No. 448,867

Int. Cl.³ E21B *49/08*

U.S. Cl. 166—250 **11 Claims**

1. A method for determining the connate water saturation and salinity of an oil-bearing reservoir penetrated by a wellbore comprising:

(a) injecting a known volume of fluid into said reservoir through said wellbore wherein said fluid is miscible with said oil and has the ability to dissolve a limited amount of said water and wherein the solubility of said water in said fluid depends on the salinity of said water;

(b) producing said wellbore while taking samples of the produced fluids until oil breakthrough occurs;

(c) analyzing the water content of said samples;

(d) plotting the data from said analyzation as a function of the volume of produced fluids, said plot showing a hump-type deviation from a plateau-type water peak; and

(e) comparing said plot to mathematically-simulated type curves having known saturation and salinity values.

4,508,170

METHOD OF INCREASING THE YIELD OF HYDROCARBONS FROM A SUBTERRANEAN FORMATION

Wolfgang Littmann, Bleichenstrasse 32, D-3050 Wunstorf 2 (Steinhude), Fed. Rep. of Germany

Filed Jan. 27, 1983, Ser. No. 461,668

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202492

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—272 **7 Claims**

1. A process for increasing the yield of hydrocarbons from a subterranean formation consisting essentially of:

(a) passing either hot water without additives or steam into the formation, thereby heating said formation to a temperature of 100° to 250° C., and

(b) subsequently flooding the formation with a cold aqueous solution containing a polymer additive which increases its viscosity.

4,508,171

OIL RECOVERY METHOD

James E. Shaw, c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Apr. 13, 1984, Ser. No. 599,862

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—273 **14 Claims**

1. A process for the recovery of oil from an oil bearing subterranean formation penetrated by at least one injection well and at least one production well which comprises:

(a) injecting a slug of an aqueous alkaline solution containing a water-soluble sulfite and a water-soluble aldehyde through an injection well under conditions to cause sulfoalkylation of oil in the formation and produce a surfactant in situ;

(b) causing the so-injected slug to move from the injection well towards one or more production wells displacing oil present in said formation, and

(c) recovering displaced oil from at least one of said production wells.

4,508,172

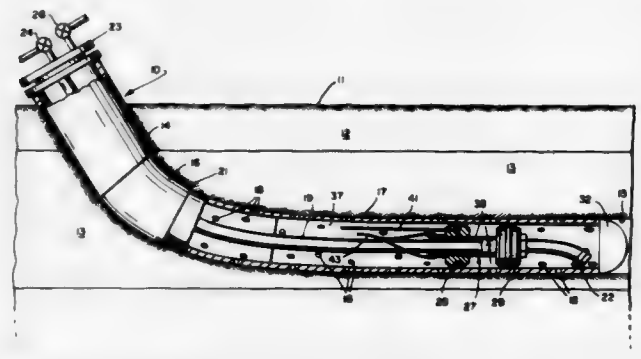
TAR SAND PRODUCTION USING THERMAL STIMULATION

Donald S. Mims, and Richard S. Allen, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 9, 1983, Ser. No. 492,865

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—303 **4 Claims**



1. Well completion for producing bitumen emulsion from a subterranean tar sand layer in which the bitumen is releasably held, which completion includes:

an elongated, perforated liner which is disposed in a wellbore, the latter being in substantial horizontal alignment with respect to the tar sand layer having an upper end, and terminating at a remote injection end,

a conductor extending longitudinally of said liner having at least one discharge port adjacent to the liner remote end, and communicated at the other end to a pressurized

source of a hot stimulating fluid whereby said fluid can be conducted through said conductor and injected into the substrate adjacent to said liner,

a well head at the upper end of the respective liner and the conductor,

flow diverter means within said liner operably registered in the conductor to be moved longitudinally therealong, said flow diverter means being actuable to engage the liner walls and form an annular seal thereby to segregate the liner into discrete injection and producing segments respectively,

means for displacing said flow diverter through said liner whereby to concurrently adjust the length of the respective injection and producing segments,

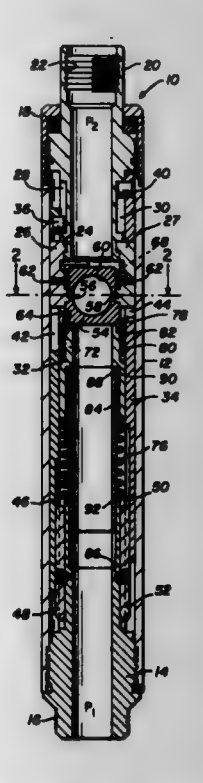
and a conductor positioning bracket engaging said conductor and liner respectively, to fixedly position the conductor at the liner remote injection end.

4,508,173

FLOW CONTROL VALVE FOR USE ON OIL AND GAS WELLS OR THE LIKE

Norman W. Read, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 26, 1983, Ser. No. 536,465
Int. Cl.³ E21B *34/12*
U.S. Cl. 166—330 **9 Claims**



1. A flow control valve for use in oil and gas wells and the like, said valve comprising:

a tubular housing member having first and second ends;

rotatable means connected for rotation to said first end and adapted to be connected to a tubing string positioned in said well;

a valve member having a flow passageway extending therethrough pivotally supported in said tubular housing member for movement between open and closed positions;

first and second valve actuators each having one end operably connected to said rotatable means and located in said housing member, and being movable therein linearly and in opposite directions simultaneously upon rotation of said rotatable means; and,

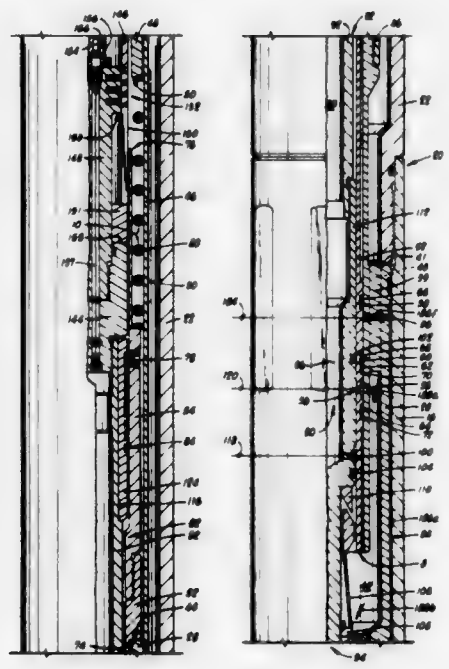
groove and pin means for connecting between the other ends of said valve actuators and said valve member on opposite sides thereof and forming a force couple to pivot said valve member between said positions when rotating said rotatable means regardless of the linear directions of travel of said actuators.

4,508,174

DOWNHOLE TOOL AND METHOD OF USING THE SAME

Neal G. Skinner, and David S. Wesson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 31, 1983, Ser. No. 480,981
Int. Cl.³ E21B *34/14, 49/00*
U.S. Cl. 166—373 **15 Claims**



1. A tool for sensing, with a sensor device, a condition in a well having a fluid, said tool comprising:

a slidable valve member having a first port defined therein;

an inwardly directed member associated with said valve member;

biasing means for exerting a biasing force on said valve member;

support means having a top end and a bottom end, for supporting said valve member and said biasing means, said support means including a second port for receiving said fluid from said well;

housing means having a cavity defined therein for receiving said sensor device and further having a third port defined therein in communication with said cavity; and

connector means, disposed on said housing, for engaging and moving said valve member relative to said second port when said housing is disposed within said support means, said first and third ports are in fluid communication, and an opposing force greater than said biasing force is applied to said housing in opposition to said biasing force, said connector means including a collar rotatably mounted on said housing means, said collar having defined therein:

first channel means for receiving and engaging said inwardly directed member when said housing means is moved a first distance into said support means toward said bottom end;

second channel means for receiving and engaging said inwardly directed member when said housing means is moved a second distance away from said bottom end, after having been moved said first distance;

third channel means for receiving and engaging said inwardly directed member when said housing means is moved a third distance, toward said bottom end, after having been moved said first and second distances; and

fourth channel means for receiving and disengaging said inwardly directed member when said housing means is moved a fourth distance, away from said bottom end, after having been moved said first, second, and third distances.

8. A method of operating a wireline-connected housing having a first port which is to be brought into fluid communication with a second port of a sliding sleeve valve and a third port of a valve body, which sliding sleeve valve and said valve body are disposed in a pipe string in a well, and which sliding

sleeve valve is biased by a biasing force to maintain said second and third ports in fluid-tight separation, said housing having a connector means associated therewith for locking with said sliding sleeve valve, said method comprising the steps of:

lowering said housing with said wireline into said well until said first port is below said second port;

lifting said housing with said wireline until said first port is substantially aligned with said second port and said connector means locks with said sliding sleeve valve; and

tensioning said wireline with a force greater than said biasing force so that said housing and said engaged sliding sleeve valve are moved upward until said first, second and third ports are in fluid communication.

4,508,175

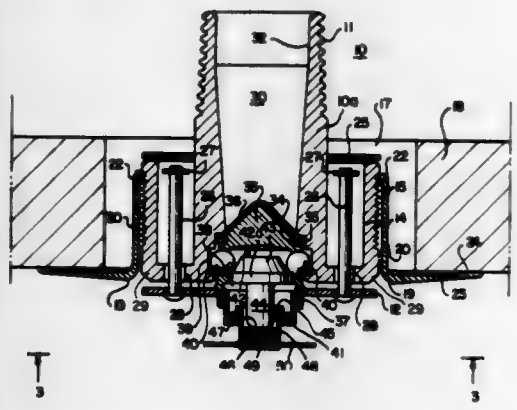
FLUSH PENDANT OR FLUSH HORIZONTAL AUTOMATIC SPRINKLER HEAD

George S. Pieczykolan, North Wales, Pa., assignor to Central Sprinkler Corporation, Lansdale, Pa.

Continuation-in-part of Ser. No. 440,539, Nov. 10, 1982,. This application Jan. 24, 1983, Ser. No. 460,289

Int. Cl.[3] A62C *37/00*

U.S. Cl. 169—38 12 Claims



1. An automatic sprinkler head comprising:

a hollow body portion having an inlet at a first end for receiving a fluid and further having an outlet at a second end; said outlet having a seat;

a hollow valve plug having a plurality of balls therein and a plurality of slots through which the balls may travel, said plug engaging said seat in one position of said plug;

a housing having at least one fin, the housing being engaged with the valve plug for movement therewith;

a plunger disposed within the valve plug and the housing, said plunger contacting said balls;

a fusible metal element disposed within the housing and upon which the plunger rests; said balls preventing movement of said plug away from said seat until said element melts;

a deflector plate engaged with the valve plug for movement therewith;

a restraining guide means having at least one guide for guiding movement of the valve plug and the housing as a unit in relation to the seat of the hollow body portion without disengaging from the hollow body portion;

whereby melting of the fusible element permits said valve plug to move away from said seat thus permitting fluid to flow from said inlet to said outlet for discharge and deflection off said deflector plate.

4,508,176

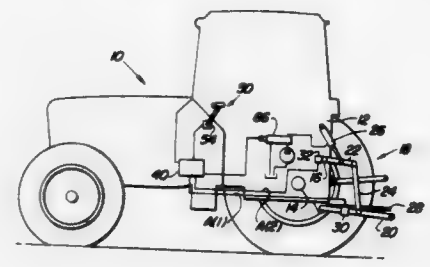
VEHICLE WITH CONTROL SYSTEM HAVING OPERATOR-ACTUABLE SWITCH FOR STORING PARAMETER SIGNAL VALUE TO CONTROL VEHICLE-CONNECTED IMPLEMENT RAISING AND LOWERING STRUCTURE

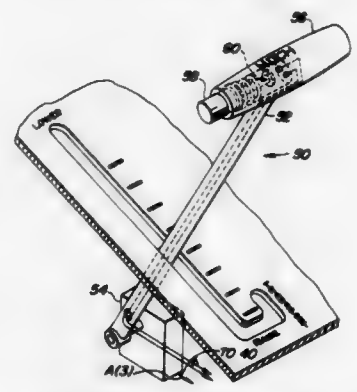
Gordon K. Wiegardt; Thomas W. Hanks, both of Cedar Falls, and Kenneth E. Murphy, Reinbeck, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 22, 1982, Ser. No. 443,415

Int. Cl.[3] A01B *63/112*

U.S. Cl. 172—7 14 Claims





1. In a vehicle having connecting means for coupling a ground-penetrating implement thereto and actuating means for raising and lowering the connecting means to vary implement ground penetration in response to signals applied to an input thereof, a control system comprising:

a parameter sensing means for generating a parameter signal representing a sensed operating parameter of a machine system comprised of the vehicle and the implement;

an operator-actuatable switch means;

a signal processing unit coupled to the parameter sensor and to the switch means, the signal processing unit comprising means responsive to actuation of the switch means for storing a selected value of said parameter signal for use as a parameter set point value, means for generating a parameter error signal derived from at least a difference between the parameter signal and the parameter set point value, and

means for converting at least the parameter error signal to a control signal and for applying the control signal to the input of the actuating means, the actuating means raising and lowering the connecting means in response to changes in the control signal and at a rate proportional to the magnitude of the control signal.

4,508,177

SOIL PITTING AND DAMMING IMPLEMENT AND PROCESS

Thayne B. Wiser, 236 Hillview Dr., Richland, Wash. 99362

Filed Apr. 29, 1983, Ser. No. 489,803

Int. Cl.[3] A01B *35/16, 49/00, 39/12*

U.S. Cl. 172—177 11 Claims

1. A tractor drawn soil pitting and damming implement, comprising:

a frame adapted for attachment behind a tractor in transverse orientation thereto:

a series of cultivator shanks transversely spaced along the frame;

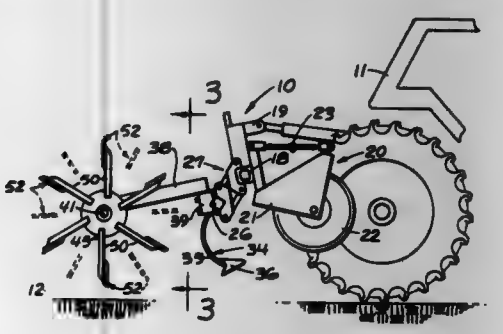
a shaft mounted to the frame behind the cultivator shanks for

free rotation about a transverse axis in relation to the tractor;

spider wheels affixed to the shaft for rotation therewith behind and substantially aligned with the cultivator shanks, having arms extending substantially radially outward to ends;

individual blades mounted to each of the spider wheel arm ends for successive engagement along the ground as the spider wheels rotate in response to motion of the tractor;

wherein the arms of the spider wheel are equiangularly spaced to position the blades angularly apart such that each blade may engage and penetrate the ground behind a



cultivator shank to form a series of longitudinally spaced pits therein in response to forward motion of the tractor;

wherein each blade includes a ground penetrating cutting edge and parallel planar front and back faces, the back face lying in a radial plane passing through the transverse axis to lift and deposit soil rearward of the pits, forming mounds of soil directly behind the pits;

wherein the spider wheels are angularly offset from one another about the shaft axis in succession along the shaft such that the shaft will transfer maximum weight of the spider wheels, shaft and blades carried above the ground surface to a minimum number of blades engaging the ground surface at any given time.

4,508,178

TRACTOR LINKAGE WITH PITCH ALTITUDE CONTROL CONNECTED TO SENSOR RAM

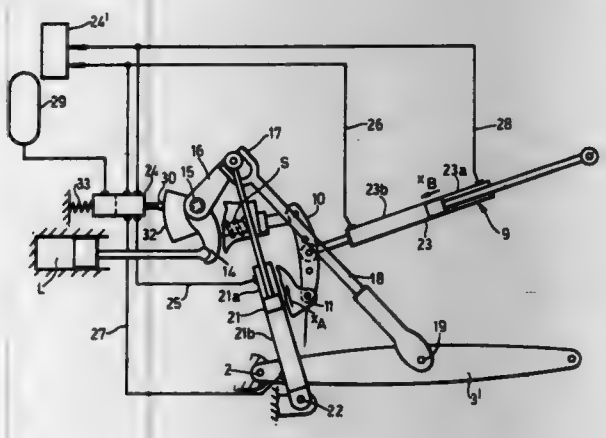
Peter A. Cowell, 41 Chalfont Rd., Oxford, and Paul F. Herbert, 12 Anderson Ave., Rugby, Warwickshire CV22 5PE, both of England

Filed Sep. 27, 1982, Ser. No. 424,302

Claims priority, application United Kingdom, Sep. 28, 1981, 8129222

Int. Cl.³ A01B *63/111*

U.S. Cl. 172—239 **8 Claims**



1. A tractor linkage for coupling a soil-engaging implement to a tractor comprising:

a three-point hitch comprising top and bottom links for towing said implement behind the tractor;

an hydraulic lift ram connected to the links for pivotally raising and lowering the hitch relative to the tractor;

hydraulic control ram means connected to one of said top and bottom links for varying the pitch attitude of said implement relative to said tractor by varying the length of said one link;

hydraulic sensor ram means connected to said hitch and operable in response to forces exerted between said implement and said tractor to detect changes in the pivot angle of said hitch relative to a reference plane on said tractor to produce a displacement of hydraulic fluid; and

hydraulic lines connecting said sensor ram means to said control ram means to feed hydraulic fluid displaced from said sensor ram means to said control ram means thereby to produce said variation in the pitch attitude of said implement.

4,508,179

SOIL CULTIVATING IMPLEMENTS

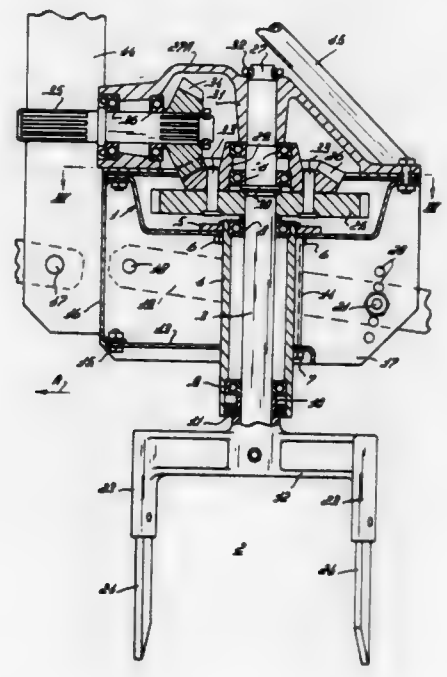
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Jun. 10, 1983, Ser. No. 503,019

Claims priority, application Netherlands, Jun. 11, 1982, 8202359

Int. Cl.³ A01B *33/08*

U.S. Cl. 172—49.5 **21 Claims**



8. An agricultural implement comprising a shaft rotating in bearing means, a rotating tool connected to one end of said shaft, normally outwardly extending means rigidly connected to the other end of said shaft, a bevel pinion connected to said outwardly extending means so that its axis of rotation is substantially coincident with the axis of rotation of said shaft, a gearbox for said bevel pinion secured in a fixed position relative to said bearing means, said gearbox holding a further shaft which is substantially aligned with said first mentioned shaft, said bevel pinion having a central bearing which is arranged to receive said further shaft so that said bevel pinion's axis of rotation is determined by said further shaft, said gearbox being located on top of a frame portion of the implement which accommodates a plurality of intermeshing pinions, the bottom of said gearbox being open and communicating through an opening in the top of the hollow frame portion with the interior of that frame in which said intermeshing pinions are disposed.

4,508,180

CYLINDRICAL GUIDE MEMBER FOR AN IMPACTING MECHANISM IN A HAMMER DRILL

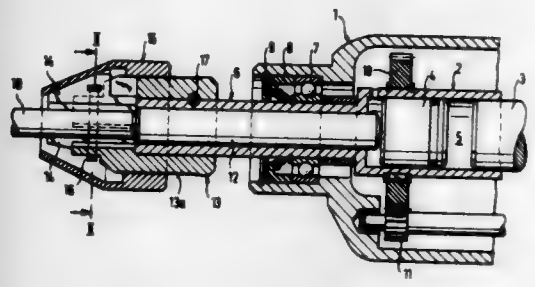
Wilhelm Klueber, Königsbrunn, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Aug. 13, 1982, Ser. No. 407,730

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132450

Int. Cl.³ B25D *9/04*

U.S. Cl. 173—104 **7 Claims**



1. Hammer drill comprising an axially extending cylindrical guide member having a front end and a rear end spaced apart in the axial direction, an impacting mechanism axially displaceable within said cylindrical guide member, a tubular guide member extending axially outwardly from the front end of said cylindrical guide member, a tool holder mounted on said tubular guide member and arranged to hold the shank of a tool and to impart rotational movement to the tool, an anvil axially movably displaceably located within said tubular guide member and having a rear end and a front end spaced apart in the axial direction with the rear end in engagement with said impacting mechanism for transmitting impacting force from said impacting mechanism via the front end to the tool held in the tool holder, wherein the improvement comprises that said tool holder includes means for securing the shank of the tool within said tool holder for securing the shanks of tools having a range of diameter dimensions, said means comprises a plurality of radially displaceable clamping jaws for holding the shank of the tool inserted into said tool holder, said jaws having radially outer surfaces and radially inner surfaces extending in the axial direction of said cylindrical guide member and radially extending rear ends located at the front end of said anvil, said tool holder includes an axially displaceable sleeve having a conically shaped surface in bearing contact with the radially outer surfaces of said clamping jaws so that axial displacement of said sleeve effects the radial displacement of said clamping jaws, the rear ends of said clamping jaws in position clamping a tool are located in the path of said anvil so that said clamping jaws extending inwardly into the path of the front end of said anvil are contacted by said anvil for displacement in the axial direction of said anvil under the impacting force of said impacting mechanism.

4,508,181

DRIVING HEAD FOR PNEUMATIC PILE DRIVERS

Gustav Jenne, Schmachtenberg Strasse 183, 4300 Essen-Kettwig, Fed. Rep. of Germany

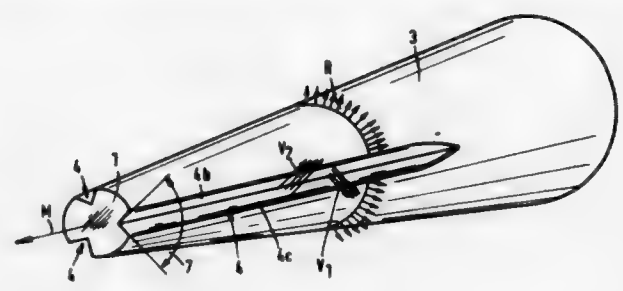
Filed Jul. 15, 1983, Ser. No. 514,181

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226568

Int. Cl.³ E21B *11/02*

U.S. Cl. 175—19 **6 Claims**

1. A driving head which can be used for pneumatic pile drivers, and which can serve as an attachment head for rods and pipes which are to be driven in by a pile driver; said driving head comprising an essentially circular front end, and a surface which essentially expands conically from said front end and which is provided with a plurality of longitudinal grooves that start from said front end, that have a V-shaped opening cross section, and that are uniformly distributed over the periphery of said surface; said surface of said driving head being formed of a plurality of conical sections which are offset from one another in the manner of steps as a consequence of jumps in the diameter of said surface, with end faces being formed thereby between respective conical sections, said end faces extending in a circular manner around said surface, being



interrupted only by said longitudinal grooves; said end faces furthermore being disposed at an angle in a range of from 45°–90° relative to the longitudinal center line of said driving head.

4,508,182

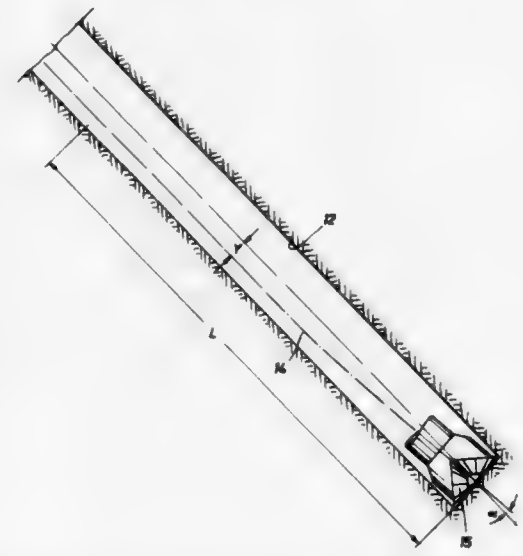
METHOD AND APPARATUS FOR CONTROLLING AZIMUTHAL DRIFT OF A DRILL BIT

Edward O. Anders, Houston, Tex., assignor to Dailey Petroleum Services Corp., Conroe, Tex.

Filed Jul. 20, 1983, Ser. No. 515,199

Int. Cl.³ E21B *7/04*

U.S. Cl. 175—61 **9 Claims**



1. A method of controlling the lateral drift of a drill bit as it drills a well bore comprising the steps of calculating the angle the drill bit will make with the longitudinal axis of the well bore in the horizontal plane caused by deflection of the drill collars from gravitational and axial forces and torsional forces produced by a preselected torque from the drill bit, and prestressing the drill collars in torsion to change the angle in the horizontal plane that the bit makes with the longitudinal axis of the well bore to the desired angle when the drill collars are subjected to the preselected torque from the drill bit.

4,508,183

METHOD AND APPARATUS FOR LUBRICATING A DRILL BIT

Donald D. Drummond, Jasper; Walter F. Johnsey, and Roy W. Wood, both of Birmingham, all of Ala., assignors to Drumco, Birmingham, Ala.

Filed Apr. 7, 1983, Ser. No. 482,907

Int. Cl.³ E21B *21/14*

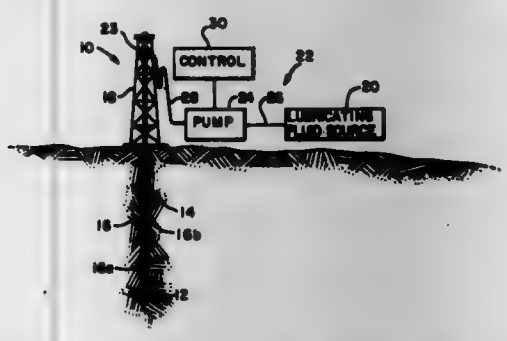
U.S. Cl. 175—69 **18 Claims**

13. A method for providing a flow of lubricating fluid to a rotary drill bit from a surface-mounted lubricating fluid source through a rotatable drill pipe, the drill pipe having a central

conduit for receiving pressurized gaseous fluid from a pressurized gaseous fluid source, the lubricating fluid being conveyed from the drill pipe to rotary cutting cones supported on an adapter subassembly drilling in an underground formation, the adapter subassembly having a plenum chamber therein for receiving gaseous fluid from the central conduit in the drill pipe, comprising:

pumping a flow of lubricating fluid from the lubricating fluid source to the drill pipe;

directing the lubricating fluid through a drill pipe conduit



means separate from the central conduit, and extending along the length of the drill pipe and into conduit means provided in the adapter subassembly;

providing a passageway between the plenum chamber and the conduit means in the adapter subassembly such that gaseous fluid from the plenum chamber enters the conduit means and combines with the lubricating fluid; and

directing the mixture of lubricating fluid and gaseous fluid through a distribution conduit means at the drill bit to the rotary cutting cones of the drill bit for the lubrication of the cutting cones.

4,508,184

ROLLER REAMER/STABILIZER

Michael S. Hansen, 4694 Lemonwood Circle, West Valley City, Utah 84120

Filed May 27, 1983, Ser. No. 498,868
Int. Cl.³ E21B *10/20, 10/30*
U.S. Cl. 175—346 **19 Claims**



1. A roller reamer/stabilizer apparatus for use on a drill string assembly, said apparatus comprising:

a reamer body having a plurality of pockets formed therein;

a plurality of cutter assemblies, each cutter assembly being adapted for placement into a corresponding pocket of said reamer body, and each cutter assembly comprising a pair of bearing blocks, a reamer cutter, a bearing pin, and means for mounting said bearing blocks and said reamer cutter onto said bearing pin prior to placement of the entire mounted cutter assembly into said corresponding pocket of said reamer body, said means for mounting said bearing blocks and said reamer cutter onto said bearing pin comprising a first pair of pins, said bearing blocks and said bearing pin having receiving means formed therein for receiving said first pair of pins, said first pair of pins being capable of engaging the receiving means of said bearing pin through the receiving means of said bearing blocks, the walls of said reamer body defining said pocket substantially preventing movement of said first pair of pins outside of said bearing blocks when said entire mounted cutter assembly is placed within said pocket; and

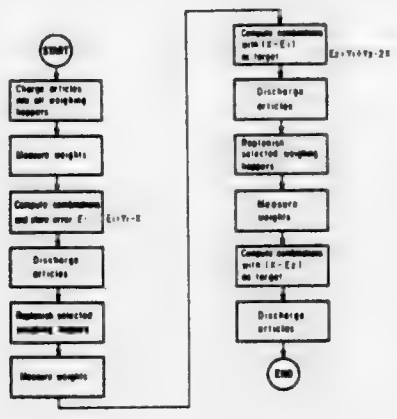
means for removably securing each said bearing block in said corresponding pocket after said entire mounted cutter assembly is placed in said corresponding pocket of said reamer body, said means for removably securing each said bearing block in said corresponding pocket corresponding one or more second pins for insertion through said reamer body and said bearing blocks so as to lock each said bearing block in said pocket of the reamer body.

4,508,185

COMBINATORIAL WEIGHING METHOD

Kazukiyo Minamida, Kouga; Setsuo Haze, Gamou, and Seiji Yamada, Kyoto, all of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusuo, Kyoto, Japan

Filed Sep. 3, 1982, Ser. No. 414,647
Claims priority, application Japan, Sep. 4, 1981, 56-139981
Int. Cl.³ G01G *19/22, 13/02*
U.S. Cl. 177—1 **6 Claims**



1. A combinatorial weighing method in which the weights of groups of articles charged into a plurality of weighing machines having weighing hoppers, are measured to obtain measured weight values, combinations of the measured weight values are formed, the combination whose total weight value is equal to a target weight value or closest to the target weight value within preset allowable limits is selected, and the groups of articles specified by the selected combination are discharged from the corresponding weighing hoppers, said method comprising the steps of:

a. dividing the target weight value into a plurality of divided target values Xi (i=1, 2, . . .);

b. executing processing for the formation of combinations on the basis of the measured weight values with respect to each of the divided target values Xi (i=1, 2, . . .), with groups of articles selected with respect to each of the divided target values not including groups of articles selected with respect to the other divided target values; and

c. discharging the selected groups of articles from the corresponding weighing hoppers after completion of processing for the formation of combinations with respect to all of the divided target values, and charging groups of articles afresh into the weighing machines that have discharged their articles;

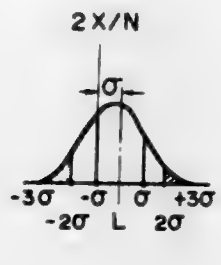
said step b) including the step of computing an error Ej (where j is an integer) between the total weight value of the combination of the groups of articles selected by the j-th processing step for the formation of combinations, and the divided target value Xi serving as the divided target value for said processing step, and the step of adding the error Ej to the divided target value Xi+1 and utilizing the resulting sum as the (j+1)-th divided target value.

4,508,186

WEIGHING METHOD AND APPARATUS THEREFOR

Takashi Sashiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jan. 21, 1983, Ser. No. 459,940
Claims priority, application Japan, Jan. 22, 1982, 57-8376
Int. Cl.[3] G01G *19/00, 19/22, 19/52*
U.S. Cl. 177—1 18 Claims



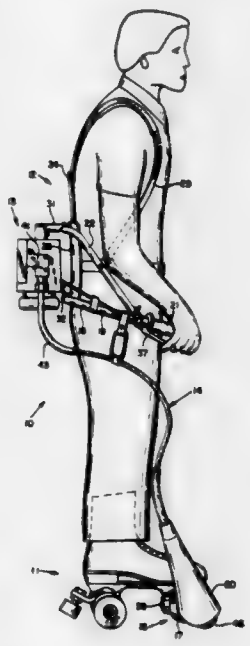
1. A weighing method comprising the steps of:
(a) charging articles to be weighed into a plurality of weighing hoppers;
(b) measuring the weight of each batch of articles received in the respective weighing hoppers;
(c) selecting, based on the measured weights, a combination of article batches giving a total weight value closest to a target weight value within preset limits; and
(d) discharging the selected article batches from the respective weighing hoppers to obtain a collection of articles the weight of which corresponds to the total weight value closest to the target weight value within preset limits;
said step (a) including controlling the charging of the articles into the weighing hoppers on the basis of a target charge quantity, obtained from the number of weighing hoppers and the target weight value, which serves as a target for the charging operation, said step (a) also including charging the articles into each of the weighing hoppers with a weight value of 2X/N serving as the target charge quantity when N is even, and with a weight value of $2X/(N\pm1)$ as the target charge quantity when N is odd, where N is the number of weighing hoppers and X is the target weight value.

4,508,187

POWERED ROLLER SKATES

William B. Wenzel, 343 Maitland Dr., Alameda, Calif. 94501

Filed Jul. 12, 1982, Ser. No. 397,504
Int. Cl.[3] A63C *17/12*
U.S. Cl. 180—181 3 Claims



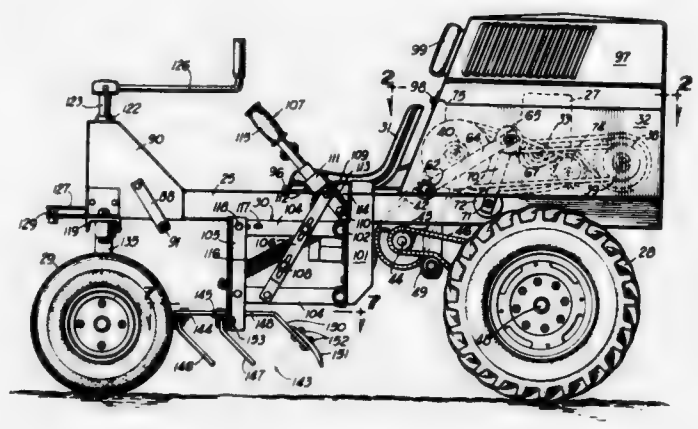
1. A powered roller skate device, comprising:
a motor and means for supporting the motor on a user's body;
a front wheel truck for a two-axel roller skate, with a pair of wheels, and means for removably mounting the front wheel truck on a standard roller skate, interchangeably with a standard two-axel front wheel truck;
flexible drive means extending between the motor and the front wheel truck, having an upper end at the motor and a lower end at the front wheel truck;
clutch means for selectively engaging the motor with the flexible drive means;
gear reduction means at at least one end of the flexible drive means;
drive direction-changing means between the lower end of the flexible drive means and the front wheel truck, for converting rotation about a generally downwardly oriented axis in the flexible drive means into rotation about a horizontal axis at the wheel truck;
wheel drive means connected to the direction-changing means, for directly engaging one wheel of the front truck from its outer side, to drive the one wheel directly at the rate of rotation of the direction-changing means when power is applied from the motor;
the front wheel truck including a rigid bar between the wheels and supporting the wheels for rotation with respect to the bar, means affixed to the rigid bar for supporting the removable mounting means, and strut means secured to the rigid bar and extending laterally outwardly, around the one driven wheel, to a supporting connection with the direction-changing means, positioning the horizontal output axis of the direction-changing means generally coextensively with the axis of the one driven wheel;
ratchet means associated with the wheel drive means, for driving the one wheel when power is applied but for permitting free-wheeling coasting of the one wheel without resistance from the motor when power is cut; and
motor control means for regulating the speed of the motor.

4,508,188

GARDEN AND LAWN TRACTOR

George B. Duke, 252 Kingsale Rd., Suffolk, Va. 23437

Filed May 27, 1982, Ser. No. 383,104
Int. Cl.[3] B62D *61/06*
U.S. Cl. 180—210 2 Claims



1. A garden and lawn tractor comprising a main frame including a single high ground clearance center horizontal longitudinal frame bar and a single transverse axis frame bar secured to the longitudinal bar at right angles thereto and extending horizontally on opposite sides of the longitudinal bar, a single center traction wheel assembly beneath and supporting the rear end portion of the longitudinal frame bar, an engine and engine driven drive gearing mounted on top of the rear end portion of said longitudinal frame bar and being disposed above the traction wheel assembly and being drivingly connected with the rear traction wheel assembly, a driver-controlled variable forward and reverse friction belt drive connected in said drive gearing and being operable for selectively drive said traction wheel assembly in forward and reverse

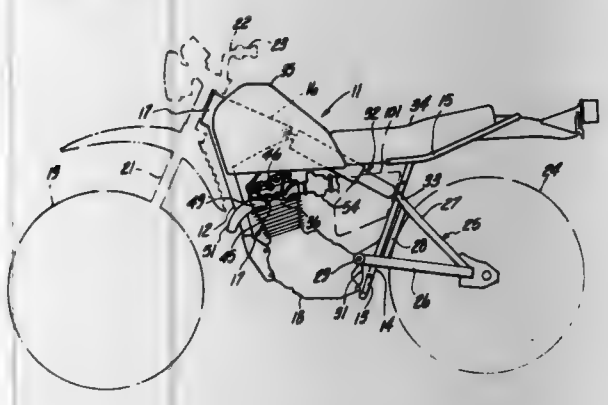
modes at different speeds, a driver's seat on said longitudinal bar immediately forwardly of said engine and drive gearing and near the longitudinal center of the longitudinal bar, a parallelogram mount andlift for diverse implements secured to said transverse axis frame bar and including a driver-operated lever adjacent to one side of said seat to raise and lower said parallelogram mount and lift, said mount and lift being disposed substantially bodily below the elevation of the horizontal longitudinal and transverse frame bars and substantially below said seat, and a pair of front wide stance independently laterally adjustable steering wheels and steering wheel support structure connected with and arranged below and supporting the forward end of said longitudinal frame bar and including a manual steering member in ready reach of a driver occupying said seat.

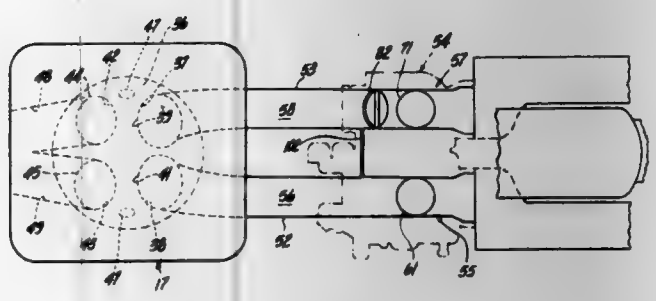
4,508,189

MOTORCYCLE

Hiromi Kato, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Aug. 2, 1982, Ser. No. 403,927
Claims priority, application Japan, Aug. 3, 1981, 56-121734
Int. Cl.³ B62D *61/02*
U.S. Cl. 180—219 **9 Claims**





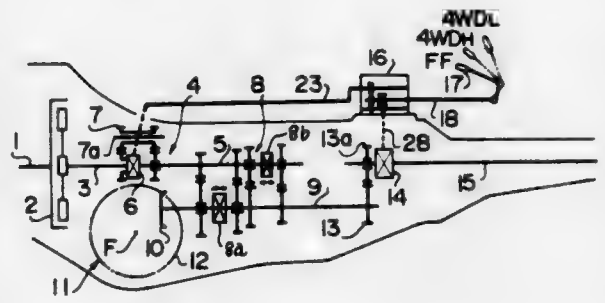
1. In a motorcycle having a rear wheel, a suspension for supporting said rear wheel for relative movement including a single suspension element extending generally in the longitudinal center plane of said motorcycle, a seat supported at least in part above said suspension element, and an engine having a combustion chamber and disposed forwardly of said rear wheel, the improvement comprising said engine having a pair of induction passages serving said combustion chamber, said induction passages lying in side-by-side relationship and extending rearwardly from said engine toward said rear wheel and lying at least in part on opposite sides of said single suspension element, charge forming means for delivering a fuel/air mixture to said induction passages, first and second throttle valves means in respective of said induction passages, and a crossover passage extending between said induction passages downstream of said throttle valves.

4,508,190

SHIFT DEVICE FOR OPERATING A TRANSMISSION FOR A FOUR-WHEEL DRIVE VEHICLE

Shintaro Uchiyama, Fuchu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,823
Claims priority, application Japan, Jun. 9, 1981, 56-88587
Int. Cl.³ B60K *23/08, 41/22;* **F16H** *57/06;* **G05G** *9/08*
U.S. Cl. 180—247 **13 Claims**



1. In a device for operating a transmission for a four-wheel drive vehicle having a first main drive shaft connected to a crankshaft of an engine through a first clutch, an auxiliary transmission provided adjacent to said first main drive shaft, a second main drive shaft provided adjacent said auxiliary transmission, said auxiliary transmission including reduction gear trains and a first shift fork manually operable to select transmitting speeds for transmitting the output of said first main drive shaft to said second main drive shaft, an output shaft provided in parallel with said second main drive shaft, a main transmission provided on said second main drive shaft and said output shaft, two transmitting systems comprising means for transmitting the output of said output shaft to front wheels and rear wheels, respectively, of the vehicle, a second clutch in one of said two transmitting systems for connecting or disconnecting said one transmitting system, a shift rail axially slidably disposed for actuating said first shift fork for said auxiliary transmission, the improvement comprising:

an actuating rail slidably disposed in parallel with said shift rail and rotatably mounted;

a fixed rail disposed in parallel with said shift rail and said actuating rail;

a shift lever operatively connected to said actuating rail and movable in a path having a first path portion so as to slide said actuating rail in a first moving range and in a second moving range and a second path portion so as to rotate said actuating rail between said first and second moving ranges, said second path portion constituting a change of direction with respect to said first path portion;

a second shift fork slidably mounted on said actuating rail and said fixed rail, said second shift fork being operatively connected to said second clutch;

an arm secured to said shift rail and slidably engaged with said actuating rail and said fixed rail;

first interlock means provided between said actuating rail and said second shift fork and the fixed rail for causing said actuating rail and said second shift fork to come into fixed engagement relation to each other within said first moving range of said actuating rail when said shift lever is moved in one part of said first path portion, thereby to shift the second shift fork by operating said shift lever, and for causing said second shift fork and the fixed rail to engage with each other within said second moving range of said actuating rail when said shift lever is moved in another part of said first path portion;

second interlock means between said actuating rail and said arm and said fixed rail for causing said actuating rail and said arm to come into fixed engagement relation to each other within the second moving range of said actuating rail adjacent said first moving range thereby to shift said shift rail, and for causing said arm and said fixed rail to

engage with each other within said first moving range of said actuating rail;

means disposed between said second shift fork and the arm on said actuating rail for moving said second shift fork and said arm respectively, and;

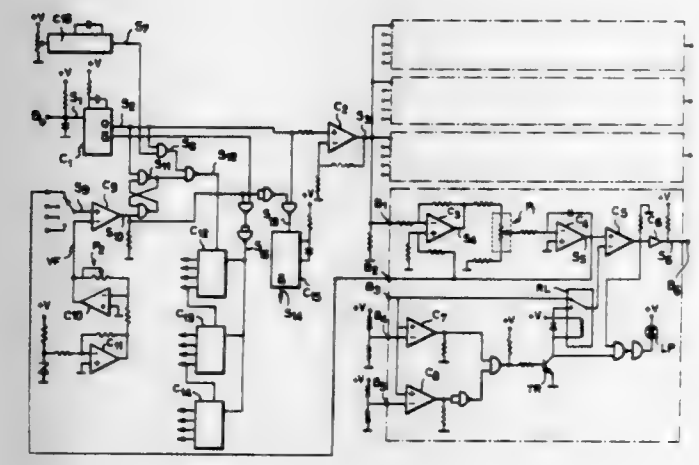
said arm and said second shift fork constitute members, said first and second interlock means being coordinated to said actuating rail such that between said moving ranges one of said interlock means remains effective as in one of said moving ranges, respectively, so as to keep one of said members engaged with said fixed rail until release thereof upon rotation of the actuating rail by operating said shift lever in said second path portion.

4,508,191

METHOD AND DEVICE FOR INITIATING AN UNDERWATER IMPLOSIVE SEISMIC SOURCE

Michel Manin, Sainte-Mesme, France, assignor to Compagnie Generale de Geophysique, Massy, France

Filed Aug. 26, 1983, Ser. No. 526,829
Claims priority, application France, Aug. 30, 1982, 82 14771
Int. Cl.³ G01V *1/00, 1/04, 1/38*
U.S. Cl. 181—107 **6 Claims**



1. A method of initiating an implosive seismic source under the surface of a body of water by creating a shock wave having an implosion peak resulting from an implosion of a cavity of which the internal pressure is less than the hydrostatic pressure, comprising the steps of:

(a) measuring the instantaneous pressure P at the source;

(b) determining, from the measured pressure, a bubble period which will separate a firing signal from the implosion peak;

(c) initiating said source with a compensating time period ΔT equal to a difference between the bubble period corresponding to the instantaneous pressure P and a bubble period corresponding to the mean pressure Po at the source, wherein the compensating period ΔT is determined by the relationship:

$$\Delta T = k \cdot \left(\frac{1}{P_o^{5/6}} - \frac{1}{P^{5/6}} \right)$$

k being a constant independent of the pressure.

4,508,192

MICROPHONE DIAPHRAGM

Werner Fidi, Baden; Richard Pribyl, Vienna, and Konrad Wolf, Bad Vöslau, all of Austria, assignors to AKG Akustische u.Kino-geräte gesellschaft mbH, Austria

Filed Mar. 28, 1983, Ser. No. 479,143
Claims priority, application Austria, Apr. 8, 1982, 1402/82
Int. Cl.³ H04R *7/06*
U.S. Cl. 181—158 **7 Claims**



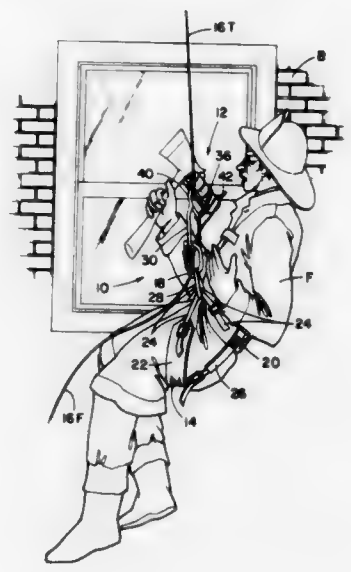
1. A diaphragm for electrostatic and electrodynamic microphones which has a distinct directional pattern, comprising a prestressed diaphragm having a thickness of less than 8 microns and a diameter of less than 10 millimeters and being made of an elastically extensible rubber-base material having a natural frequency in the range of from 1,200 to 1,500 Hz.

4,508,193

FRICTION-TYPE DESCENT CONTROL DEVICE

William E. Forrest, Denver, Colo., assignor to Charles I. Brown, Evergreen, Colo., a part interest

Filed Feb. 22, 1984, Ser. No. 582,266
Int. Cl.³ A62B *1/16*
U.S. Cl. 182—5 **10 Claims**



1. A descent control device for use with a load-carrying harness suspended therefrom to lower a load on a rope from an elevated position where one end is anchored down to a relatively lower position reached by its free end which comprises: a friction drum of a length adapted to receive a plurality of turns of rope wrapped therearound, said drum having two ends, an arm attached adjacent one of said two ends hanging down beneath the drum and cooperating therewith to define a first rope retaining means effective to prevent the anchored end of the rope from unwinding off said one end when tensioned from above, gated means carried by said arm for connecting same to the load-carrying harness and for receiving and releasably retaining a medial section of the rope without accessing the end thereof; and abutment-forming means positioned adjacent the other of the two drum ends spaced from the arm so as to leave a medial section therebetween to receive the plurality of turns, said abutment-forming means defining a

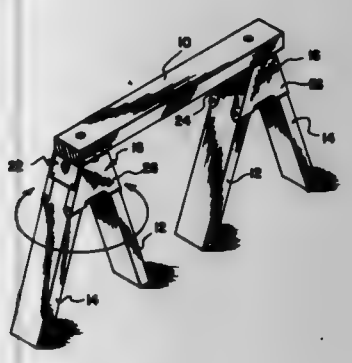
second rope retaining means effective to prevent the free end of the rope hanging therebeneath from unwinding off said other end, and said drum and arm and abutment-forming means all cooperating when supporting a load to leave said other drum end open and permit a slack portion of the rope intermediate its ends to be used to add or subtract turns from said drum while one or more of the turns to remain are squeezed thereagainst tightly enough to prevent slippage.

4,508,194

SAWHORSE AND BRACKET THEREFOR

Wayne L. Freewalt, St. Marys, and Joseph L. Ziegler, Wapakoneta, both of Ohio, assignors to E-Z Buck, Inc., St. Marys, Ohio

Filed Nov. 3, 1983, Ser. No. 548,266
Int. Cl.³ F16M *11/00*
U.S. Cl. 182—153 **15 Claims**



1. For use with a sawhorse of the type having a cross beam and at least two pairs of legs extending downwardly therefrom in supporting relation, an improved sawhorse bracket comprising:

a bracket body;

means for attaching a pair of sawhorse legs to said body in a splayed configuration; and

means for pivotally attaching said body to a cross beam such that said body may be pivoted about a substantially vertical axis relative to an attached cross beam whereby splayed legs attached to said body may be rotated to a storage configuration or to a supporting configuration.

4,508,195

OIL CHANGING AND LUBRICATING APPARATUS

Serge D. Millet, 40 Rongail St., Nepean, Ontario, Canada K2G 0K4

Filed Jun. 2, 1983, Ser. No. 500,459
Claims priority, application Canada, Apr. 22, 1983, 426504
Int. Cl.³ F01M *11/04;* F16N *25/00*
U.S. Cl. 184—1.5 **1 Claim**

1. An oil draining and lubricating system adapted for connection as an accessory to a vehicle having an engine with an oil reservoir and an oil reservoir drain opening and points on said vehicle requiring lubrication, said system comprising:

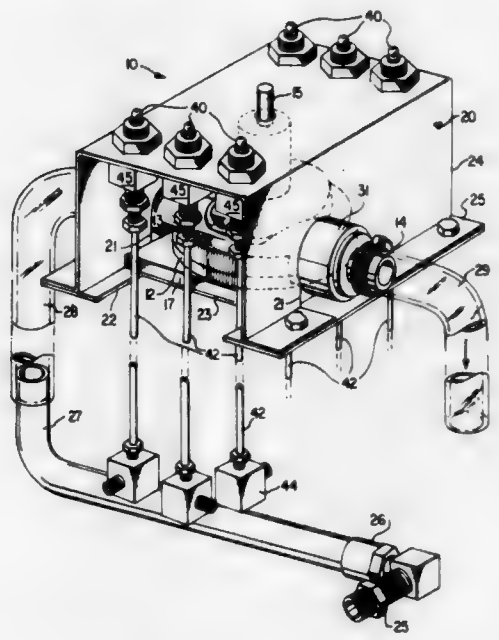
a drill pump having an intake and an outlet and an outwardly extending spindle adapted for engagement and rotation by a hand-held tool to actuate said drill pump;

a housing including a cowling and a base plate enclosing said drill pump therebetween, said cowling having an upper surface with an aperture through which said spindle extends, a first side surface with an opening through which said intake extends and a second side surface with an opening through which said outlet extends, said base plate and cowling being connected together by means of threaded fasteners;

a resilient pad disposed within said housing between said base plate and said drill pump for supporting said drill pump and securely biasing the same between said base plate and cowling;

tubing means connected at one end to the intake of said drill pump and at the other end to said oil reservoir drain opening to permit oil to be pumped from said reservoir, said tubing means comprising a length of flexible tubing leading from said intake and a length of rigid tubing connected at one end to said flexible tubing and adapted at the other end for threaded connection to said drain opening;

a flexible hose leading away from the outlet of said drill pump for disposing of oil drained from said oil reservoir;



a plurality of grease nipples mounted on said upper surface of said cowling; and

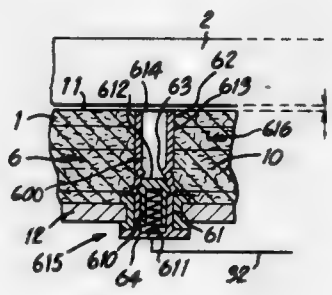
a high pressure flexible tube leading from each of said grease nipples for connection to respective ones of said points on said vehicle requiring lubrication to permit the delivery of lubricant thereto.

4,508,196

WEAR AND LICKING ALARM FOR CROWN OR DISK BRAKE

Jacques Jamon, Cébazat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jan. 3, 1983, Ser. No. 455,304
Claims priority, application France, Jan. 18, 1982, 82 00939
Int. Cl.³ F16D *63/00;* G01D *21/02;* B60Q *1/00*
U.S. Cl. 188—1.11 **8 Claims**



1. A monitoring and alarm device for crown or disk brakes, which brakes have a metal crown or disk which is firmly attached to a rotating assembly, for instance a vehicle wheel, and on opposite sides of the crown or disk at least one lining having a friction surface of a material of high coefficient of friction intended to rub on the crown or disk, this device comprising a first electrically conductive feeler arranged in each brake lining with one end thereof intended to come into contact with the crown or disk at a level of maximum wear of the lining and with an other end connected by a line to one pole of an alarm circuit, characterized

by the fact that the first feeler is contained in a first cavity in the lining and comprises a spring exerting its pressure in the direction towards the crown or disk;

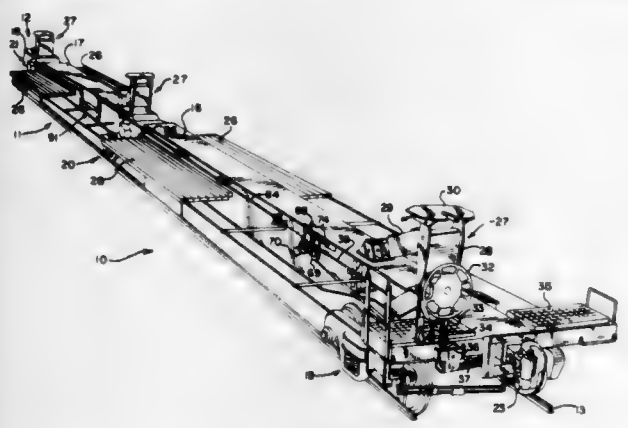
by the fact that the end of the first feeler, which is intended to come into contact with the crown or disk at the level of maximum wear of the lining, is immobilized at said level;
by the fact that a second cavity, which extends from the level of maximum wear of the lining to the friction surface of the lining intended to rub against the crown or disk, contains a second electrically conductive feeler electrically connected to and superposed on the first feeler, the second feeler wearing down like the material of high coefficient of friction of the lining; and
by the fact that the line connecting the first feeler to the alarm circuit is provided with a switch which is kept open upon each braking maneuver and is closed at times other than during the braking maneuvers.

4,508,197

HANDBRAKE SYSTEM FOR RAILWAY CAR

Robert A. Biegel, Dolton, Ill., assignor to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed Sep. 30, 1983, Ser. No. 537,799
Int. Cl.³ B61H *13/00*
U.S. Cl. 188—47 **14 Claims**



1. A handbrake system for a railway car including at least first, second and third trucks and each truck including a brake mechanism, said handbrake system comprising:
(a) a handbrake with a handwheel;
(b) a force distributor including an input branch, a first output branch and a second output branch;
(c) a first link connecting said handwheel to said input branch for moving said input branch and first and second output branches when said handwheel is moved;
(d) a second link connected to said first output branch and adapted to be connected to the brake mechanism of the first truck;
(e) an automatic slack adjuster;
(f) a third link connected to said second output branch and to said slack adjuster;
(g) a fourth link connected to said slack adjuster and adapted to be connected to the brake mechanism of the second truck; and
(h) a fifth link connected to said slack adjuster and adapted to be connected to the brake mechanism of the third truck;
(i) whereby movement of said handwheel operates through said force distributor to separately operate the brake mechanisms.

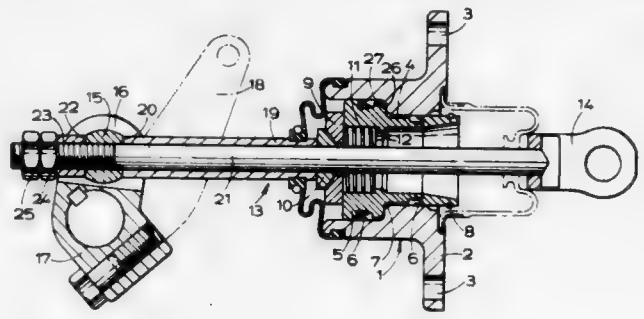
4,508,198

SPREADING TYPE DISC BRAKES FOR VEHICLES

Graham J. Gornall, Sutton Coldfield; Anthony G. Price, Birmingham, and David Parry, Solihull, all of England, assignors to Lucas Industries, Birmingham, England

Filed Apr. 29, 1983, Ser. No. 490,199
Claims priority, application United Kingdom, Apr. 30, 1982, 8212585; Nov. 11, 1982, 8232269
Int. Cl.³ F16D *55/18*
U.S. Cl. 188—71.4 **5 Claims**

1. A disc brake for vehicles comprising a housing having a relatively stationary surface, at least one friction disc rotatable within said stationary housing and adapted to be moved into engagement with said relatively stationary surface, and actuating means for moving said disc into engagement with the said surface to apply the brake, said actuating means comprising at least one pressure plate which is located in said housing adjacent to said disc, a reaction member, and balls housed in recesses in said pressure plate and an adjacent face of said reaction member, actuating movement of said pressure plate relative to said reaction member in the plane of said pressure plate being accompanied by axial movement of said pressure plate to urge the friction disc into engagement with said stationary surface, an hydraulic actuator for effecting actuating movement of the pressure plate hydraulically, said hydraulic actuator comprising a cylinder and piston assembly of which the axis is substantially normal to that of the brake and of which one component is fixed relative to said housing and the other is movable, and a spherical rocking thrust coupling through which said movable component acts, a pull-rod passing through the actuator with a substantial clearance and with which said rocking coupling is associated, and said pull-rod is adapted for connection to a manually-operable brake applying device by means of



which said pull-rod can be moved in a brake-applying direction and relative to said cylinder and piston assembly, wherein said movable component has a thrust transmitting face, and said spherical rocking thrust coupling comprises a collar member, and a thrust member disposed between said movable component and said collar member, said thrust member being engageable with said thrust transmitting face on said movable component for sliding movement in a transverse direction with respect to the axis of said piston and cylinder assembly, and a compression spring being provided for biassing said thrust member and said collar member towards each other so that said thrust member is restrained from moving radially with respect to said collar member when brake application is effected by said manually-operable brake applying device, and wherein one of said components has a first spring abutment face, and one of said members has a second spring abutment face which is located adjacent to and spaced from said first spring abutment face, and said compression spring is located between the said one component and the said one member with opposite ends of said spring in abutment with said first and second abutment faces.

4,508,199

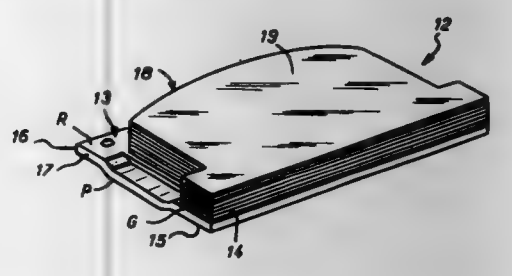
BRAKE SHOE

Jean Herbulot, Franconville, and Bernard Jumel, Pierrefitte, both of France, assignors to Valeo, Paris, France

Filed Oct. 21, 1982, Ser. No. 436,196
Claims priority, application France, Oct. 30, 1981, 81 20442
Int. Cl.³ F16D *65/08*
U.S. Cl. 188—250 B **11 Claims**

1. A brake shoe comprising a support having opposite faces and a contour including two opposite lateral sides, a friction lining fixed to one of said faces of said support, said friction lining being adapted to cooperate frictionally with a braking surface in response to a force exerted on the other face of said support, each of said lateral sides of said support being adapted to abut against a lateral shoulder, said support having a marginal region extending substantially the full length of each of

said lateral sides of said support, there being a protuberance in each of said marginal regions and protruding beyond the other of said faces of said support, said protuberances extending



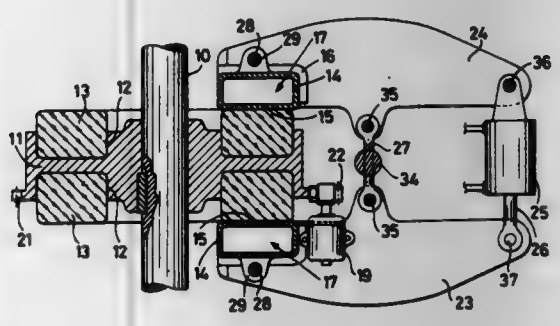
along only a portion of their respective marginal regions, said portions of said marginal regions being devoid of said friction lining, and at least part of the remainder of said marginal regions being covered with said friction lining.

4,508,200

HIGH PERFORMANCE DISC BRAKE

Silvio Cigognini, Milan, Italy, assignor to Socimi, S.p.A., Milan, Italy

Filed Mar. 4, 1983, Ser. No. 472,410
Claims priority, application Italy, Mar. 10, 1982, 20081 A/82
Int. Cl.³ F16D *65/853*
U.S. Cl. 188—264 P **14 Claims**



1. A disc brake to be mounted on a motor vehicle, said disc brake comprising:

(a) a rotating part, which comprises:

a shaft;

a disc, having a seat in at least one of its faces, mounted on said shaft;

an annular friction pad fixed in and projecting from said seat; and

(b) a stationary braking part which comprises:

at least one metal braking head of a high coefficient of thermal conductivity;

a caliper including pivotal members attached to said metal braking head; and

cooling fluid;

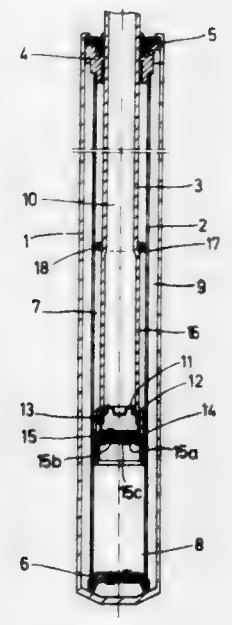
said metal braking head having at least one cavity or duct for the passage of said cooling fluid, said cavity or duct being connected into a cooling circuit communicating with said cavity or ducts, said cooling circuit including a circulation pump fixed on one of said pivotal members, said pump having a pump shaft, and a heater within the interior of the vehicle, said brake disc being provided with peripheral toothing into which a pinion fixed on said pump shaft engages to drive said pump, heat from said metal braking head being dissipated to said cooling fluid located in said cavity or ducts, said cooling fluid circulating within said cooling circuit, said cooling circuit also including a means for directing at least a portion of said coolant fluid into said heater wherein heat from said fluid is dissipated through said heater to the interior of said motor vehicle.

4,508,201

PISTON ROD WITH AN INTEGRAL PISTON FOR A SHOCK ABSORBER

Ludwig Axthammer, Hambach, and Felix Wössner, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 382,368
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123575
Int. Cl.³ F16F *9/34, 9/36*
U.S. Cl. 188—322.19 **12 Claims**



1. In a cylinder piston device comprising a cylinder member having an axis and two end walls comprising a first end wall and a second end wall, a cavity being defined within said cylinder member between said two end walls;

a piston rod axially movable with respect to said cylinder member and extending through said first end wall;

a piston unit provided on said piston rod within said cavity, said piston unit separating said cavity into two working chambers comprising a first working chamber adjacent said first end wall and a second working chamber adjacent said second end wall, said first working chamber being an annular working chamber radially extending between a radially outer surface of said piston rod and a radially inner surface of said cylinder member;

fluid passage means extending between said first and said second working chambers across said piston unit;

the improvement comprising

said piston rod and said piston unit being integrally formed by a piston rod tube;

said piston rod tube comprising a first section close to said second end wall of said cylinder member, having a maximum outside diameter along at least part of its axial length and carrying at least one guiding ring engaging said radially inner surface of said cylinder member;

said piston rod tube further comprising a second section adjacent said first section towards the first end wall of said cylinder member, said second section having a diameter smaller than said maximum diameter, a first shoulder axially directed towards said second end wall being established by the transition from said first section to said second section;

said piston rod tube further comprising a third section adjacent said second section towards said first end wall of said cylinder member, said third section having a diameter smaller than said second section, a second shoulder axially directed towards said second end wall being established by the transition from said second section to said third section;

a partition being axially supported by said second shoulder through an annular sealing member;

a damping member being axially supported by said first shoulder;

said damping member comprising at least one damping passage therethrough;

said second section of said piston rod tube comprising at least one substantially radially directed bore at a location axially between said damping member and said partition, said damping member being preassembled together with said partition into a damping plate-partition unit, said damping plate-partition unit being housed within said piston rod tube, a central passage chamber being defined between said partition and said damping member, said central passage chamber being in fluid connection with said second working chamber by said at least one damping passage and being in fluid connection with said first working chamber by said substantially radially directed bore of said second section.

4,508,202

FULL-STRAP ASSEMBLY FOR TOWING A WHEELED SUITCASE

Günter Siegert, Iserlohn, and Ulf Rasch, Altena, both of Fed. Rep. of Germany, assignors to SUDHAUS Schloss- und Beschlagtechnik GmbH & Co., Iserlohn, Fed. Rep. of Germany

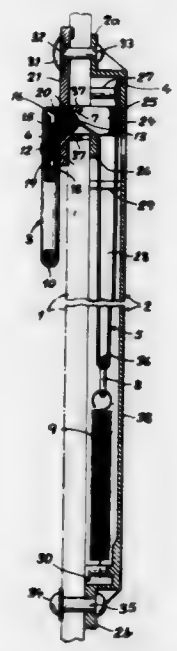
Filed May 5, 1983, Ser. No. 491,971

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 8300286[U]

Int. Cl.³ A45C *5/14, 13/26*

U.S. Cl. 190—115

19 Claims



1. In a suitcase having a wheel base and an end wall provided with a horizontal slit near an upper edge thereof, the combination therewith of a towing device comprising:

a housing extending vertically along an inner surface of said end wall with an opening facing said slit;

a contractile coil spring is said housing anchored to a lower end thereof;

s strap passing through said slit and said opening, said strap being coupled inside said housing to a free end of said spring at a location between said lower end and said slit; and

a handgrip secured to an outer extremity of said strap, said handgrip being integral with a backing plate disposed behind said outer extremity and provided with at least one forwardly projecting pin, said outer extremity having a hole traversed by said pin, further comprising a front flap covering said outer extremity and engaging said backing plate to clamp said strap therebetween.

4,508,203

PLASTIC BOBBIN FOR ELECTROMAGNETIC CLUTCH

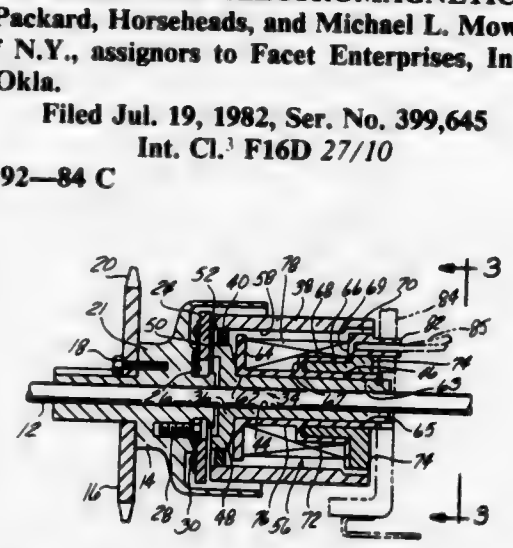
Gary R. Packard, Horseheads, and Michael L. Mower, Elmira, both of N.Y., assignors to Facet Enterprises, Incorporated, Tulsa, Okla.

Filed Jul. 19, 1982, Ser. No. 399,645

Int. Cl.³ F16D *27/10*

U.S. Cl. 192—84 C

5 Claims



1. A bobbin for an electromagnetic clutch having a rotating ferromagnetic inner body having a radially flanged and grooved cylindrical outer surface, a coil, and a magnet body, comprising:

a non-magnetic, molded plastic, cylindrical bobbin having a bore slip-fitting upon the cylindrical outer surface of the inner body, an integrally molded radial thrust flange at one end of the bobbin slip-fitting against the radial flange of the inner body and defining an annular coil recess, and integrally molded slip finger means at the other end of the bobbin and projecting inwardly of the bobbin bore and slip-fitting within the groove of the inner body to enable rotation of the inner body relative the bobbin while retaining the bobbin axially relative the inner body; and

said bobbin further comprising an integral extension extending axially away from said annular coil recess and adapted to be mounted to a stationary housing structure.

4,508,204

GRAVITY FEED CHUTE

David MacWilliams, Purbrook, and Leonard J. Rigbey, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

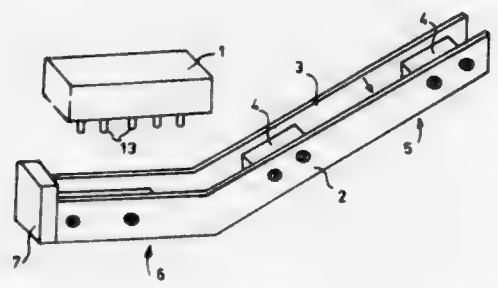
Filed Nov. 14, 1983, Ser. No. 551,227

Claims priority, application European Pat. Off., Nov. 30, 1982, 82306349.0

Int. Cl.³ B65G *11/20*

U.S. Cl. 193—40

1 Claim



1. A system comprising a plurality of like electrical components and a chute for gravity feeding of said electrical components to a pick-up station for subsequent access and removal by a pick-up mechanism, said electrical components each having a generally cuboid shape and predetermined size and having leading and trailing edges and electrical connection pins (**13**) extending downwardly from one surface thereof, said chute comprising a downwardly inclined first straight section (**5**) having a bottom surface, the lower end of said downwardly inclined first straight section leading with an abrupt change in direction into a second straight section (**6**) serving as a pick-up station from which said electrical components are removed by the pick-up mechanism and having a bottom surface, said

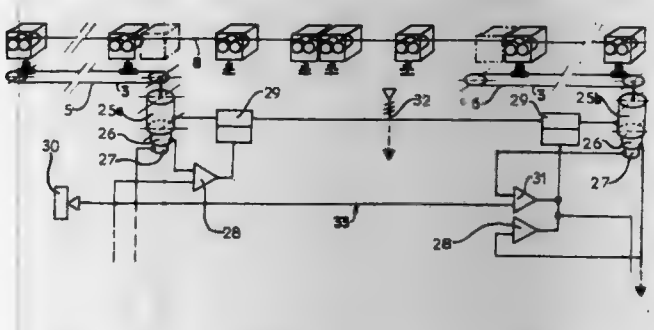
second straight section being closely sized to accommodate only one of said electrical components of predetermined size at a time and said chute further having two identical spaced apart parallel guide rails (2,3) extending upwardly from the bottom surfaces of said first and second straight sections of said chute, said guide rails being chamfered on the upper edges thereof to provide low friction surfaces to support said electrical components and shaped to provide a downwardly inclined straight track (5) within said first straight section adapted to receive at its upper end electrical components fed thereto, said track (5) leading abruptly into a horizontal straight track (6) within said second straight section, the second straight section (6) further having an end stop the electrical components feeding closely adjacent one another throughout the length of the chute and the tangential relationship of the first straight section with respect to the second straight section of the chute establishing a condition wherein the leading edge of any electrical component in the chute next in line to enter the second straight section overlaps the trailing edge of any electrical component in the second straight section, the construction and arrangement of the parallel guide rails being such that they are sufficiently spaced to receive therebetween the pins (13) of electrical components supplied thereto but sufficiently close to each other to support the edges of the surface of the electrical component from which the pins extend, whereby the sliding contact between the pins and guide rails provides lateral restraint and registration for the electrical components as they slide in succession down the chute and into the second straight section and whereby access and removal of an electrical component from the second straight section by the pick-up mechanism by virtue of the overlapping of edges of an electrical component next in line and the constraints on lateral movement established due to the close size relationship of the second straight section and an electrical component in the second straight section imparts a lifting action of the electrical component next in line and aids its free movement into the second straight section.

4,508,205

DOUBLE CABLE FUNICULAR TRANSPORT DEVICE, LOOPED ON ITSELF AND WITH SPEED VARIATION

Michel Aulagner, Paraboin-St Ferreol le Chateau, Near Pont Salomon (Haute Loire), and Jean-Paul Jour, La Merlee, 173 Route d'Andrezieux, St Just St Rambert (Loire), both of France

Filed Dec. 4, 1981, Ser. No. 327,333
Int. Cl.³ B65G *23/00*
U.S. Cl. 198—334 **12 Claims**



1. A funicular type transportation device comprising:

stationary rail means defining a first continuous loop;

a variation chain comprising a plurality of variation links of variable length, said plurality of variation links being interconnected with each other in a series which is looped back on itself, said variation chain being mounted to said stationary rail means such as to be movable about said first continuous loop;

variation link control means disposed in first predetermined locations relative to said stationary rail means, said variation link control means controlling the length of each variation link of said plurality of variation links in said first predetermined locations such that said variation link control means define a rule of speed for said plurality of variation links on said variation chain as said variation chain travels about said first continuous loop, said variation link control means defining at least one high speed zone of said first continuous loop;

tractor means disposed adjacent said at least one high speed zone of said first continuous loop, said tractor means comprising at least one cable forming a second continuous loop, a portion of said at least one cable being disposed adjacent said at least one high speed zone;

drive means driving said tractor means at a predetermined speed around said second continuous loop;

a plurality of mobile components spaced along said variation chain, each mobile component of said plurality of mobile components being interconnected with at least one variation link of said plurality of variation links, the spacing of adjacent mobile components of said plurality of mobile components along said variation chain being determined by the various lengths of said plurality of variation links, such that the instantaneous velocity of any one mobile component of said plurality of mobile components relative to an adjacent mobile component of said plurality of mobile components is determined by said rule of speed;

a plurality of controllably operable interconnection means for interconnecting said plurality of mobile components with said tractor means, each interconnection means of said plurality of controllably operable interconnection means being controllably operable for interconnecting an associated mobile component of said plurality of mobile components with said at least one cable such that said associated mobile component is driven by said at least one cable;

actuation means disposed in at least one second predetermined location relative to said stationary rail means, said at least one second predetermined location being at an upstream end of said at least one high speed zone, said actuation means being controllably operable for actuating each interconnection means of said plurality of controllably operable interconnection means when the associated mobile component associated therewith passes said at least one second predetermined location as said variation chain travels along said first continuous loop, such that said interconnection means of said associated mobile component interconnects said associated mobile component with said at least one cable as said associated mobile component passes said at least one second predetermined location;

deactuation means disposed in at least one third predetermined location relative to said stationary rail means, said at least one third predetermined location being located at a downstream end of said at least one high speed zone, said deactuation means being controllably operable for deactuating each interconnection means of said plurality of controllably operable interconnection means when said associated mobile component passes said at least one third predetermined location as said variation chain travels along said first continuous loop, such that said interconnection means of said associated mobile component disconnects said associated mobile component with said at least one cable as said associated mobile component passes said at least one third predetermined location;

sensor means measuring the force of said variation link control means on said variation chain; and

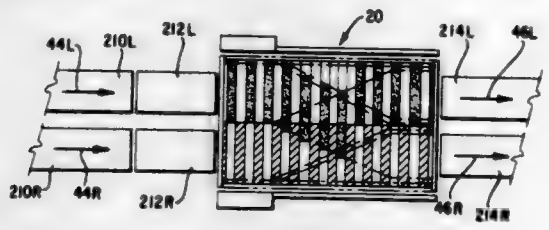
control means responsive to said sensor means such as to control said drive means in a manner to maintain said force of said variation link control means on said variation chain below a predetermined maximum level.

4,508,206

CONVEYOR AND SORTING SWITCH

John W. Moore, Dallas, and William M. Thomas, Garland, both of Tex., assignors to Stewart Systems, Inc., Plano, Tex.

Filed Nov. 29, 1982, Ser. No. 445,015
Int. Cl.[3] B65G *47/46*
U.S. Cl. 198—365 13 Claims



11. In a sorting switch of the type including a plurality of pallets each mounted for movement around a closed course and for transverse movement relative to the course to effect article sorting, wherein said closed course includes an upper article sorting portion and a lower pallet return portion, the improvement comprising:

a plurality of tubular pallet support members;

each pair of said pallet support members individually supporting one of said pallets for movement around said course and for transverse movement relative to said course;

means supporting said pallet support members for sequential movement around said closed course;

said pallets normally being positioned in alternating sequence in alignment with adjacent first and second article conveying paths at the outset of movement through said upper article sorting portion of said closed course of movement, wherein at least two successive pallets of each of said first and second article conveying paths support each article introduced to their respective conveying path, such that the carrying capacity of said sorting switch, in terms of the number of articles carried through each of said conveying paths, is maximized by allowing the simultaneous transport of articles ordered in a close-packed random sequence on each of said first and second article conveying paths and such that said sorting switch is suitable for application with articles having widely differing sizes, shapes and lengths; and

means for selectively moving each pallet on its respective pallet support members in a direction transverse relative to said upper article sorting portion of said closed course of movement and into alignment with the adjacent article conveying path and into alignment with the adjacent article conveying path during passage thereof through said upper article sorting portion.

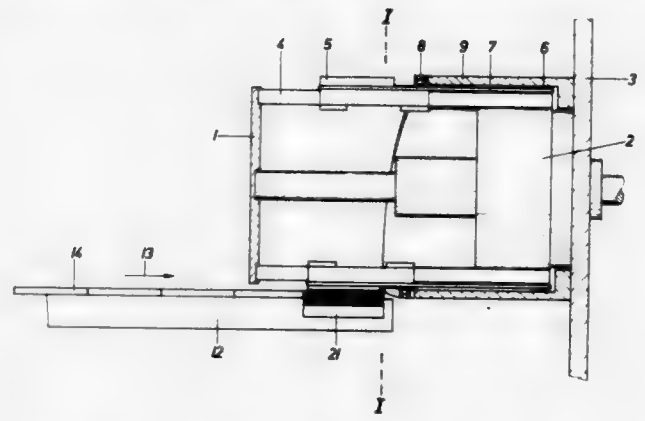
4,508,207

CIGARETTE HANDLING APPARATUSES

Manfred Oberdorf, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Continuation of Ser. No. 962,257, Nov. 20, 1978, abandoned.
This application Nov. 24, 1980, Ser. No. 209,358
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751760
Int. Cl.[3] B65G *29/00*
U.S. Cl. 198—478 9 Claims

1. Cigarette handling apparatus for transferring cigarettes from a first stream, in which they move at a first speed one after the other in a first direction substantially parallel to their axes, to a second stream, in which they move at a second speed one after the other in a second direction substantially at right angles to their axes, the apparatus comprising a transfer drum mounted to be rotatable at a constant speed about an axis of rotation parallel to said first direction; a plurality of cigarette carrier elements each slidably mounted around the periphery of said drum for reciprocating movement parallel to said axis of rotation and each movable rotationally by the drum between a first position for lateral entrainment by suction of at least one cigarette from said first stream and a second position for delivery of said entrained cigarette to said second stream; roller cam follower means mounted on each of said carrier elements; and a cam mounted to be stationary relative to said drum and having means defining an endless cam track extending around the periphery of said drum intermediate the axial ends thereof; said cam track being so arranged as to impart to each said carrier element by way of said roller cam follower means one reciprocation parallel to said axis of rotation in each revolution of said drum and the configuration of said cam



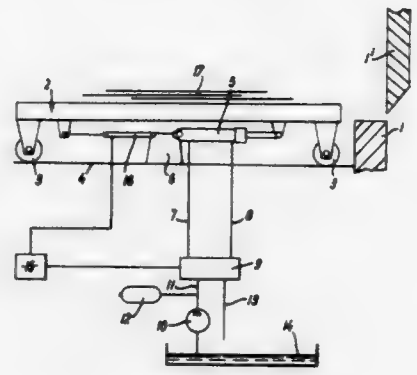
profile being such that during rotation of said drum at said constant speed each of said carrier elements, when at said first position, is slidably displaced along the drum in a direction parallel to said first direction and at a speed which is at least approximately equal to said first speed, and said slidable displacement of each carrier element being thereafter so progressively decelerated as to be at a speed substantially less than said first speed when the carrier element is at said second position, whereby said transfer of the cigarettes from said first stream to said second stream is carried out in such a manner that the speed of each cigarette in its axial direction is subject to progressive deceleration during the deceleration of said carrier elements.

4,508,208

APPARATUS AND METHOD FOR MOVING MATERIALS

John R. Preedy, Derby, England, assignor to Thos. Hill & Company Limited, Derby, England

Filed May 5, 1982, Ser. No. 375,259
Claims priority, application United Kingdom, May 12, 1981, 8114464
Int. Cl.[3] B65G *25/00*
U.S. Cl. 198—751 8 Claims



1. Material moving apparatus including:

a conveyor for carrying material;

reversible hydraulic means for moving the conveyor in forward and reverse directions;

control means for controlling the supply of operating fluid to the reversible hydraulic means;

a position sensor for providing signals representative of the position of the conveyor with respect to a fixed point; and

electronic processing means for receiving and storing information relevant to the material on the conveyor, and responsive to signals from said position sensor and to said information for operating the control means,

whereby the positive or negative acceleration of the conveyor is controlled to cause, as desired, controlled relative movement between the material on the conveyor and the conveyor.

4,508,209

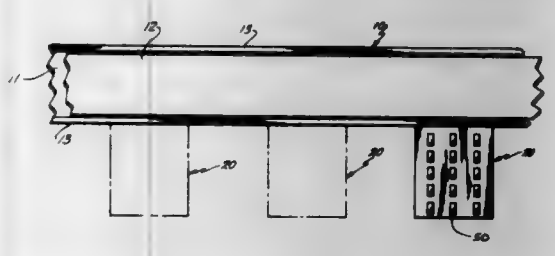
ACCESSORY ATTACHMENT FOR CONVEYORS

Bruce Whitman, Lowell, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Oct. 11, 1983, Ser. No. 540,316

Int. Cl.³ B65G *21/06*

U.S. Cl. 198—583 **12 Claims**



1. An attachment for detachably mounting an accessory to the side rail of a conveyor, the side rail having a vertical web and the accessory having a vertical flange adapted to seat against the web, a vertically elongated aperture in said side rail; means secured to said flange having upper and lower stops spaced the vertical length of said aperture, a resilient member secured to the lower stop and flange and projecting below said lower stop and spaced from the flange to receive and clamp said web between it and said flange; the accessory projecting outwardly from said rail and having an element spaced from the rail supporting the outer end thereof when said stops are seated in said aperture and the lower one thereof is seated on the web at the lower end of said aperture.

4,508,210

APPARATUS FOR TRANSPORTING PAPER STACKS OR THE LIKE

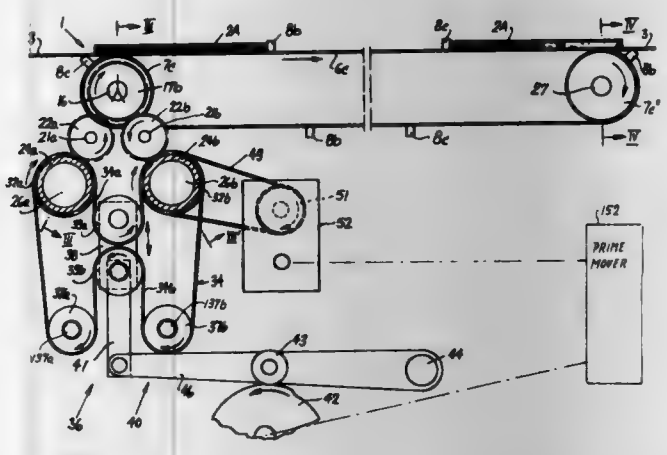
Bernd Ramcke, Hamburg, and Günther Stahl, Rellingen, both of Fed. Rep. of Germany, assignors to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,855

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205138

Int. Cl.³ B65G *15/14*

U.S. Cl. 198—627 **12 Claims**



1. Apparatus for stepwise transport of several files of discrete commodities in a predetermined direction and along a predetermined path, particularly for transporting stacks of paper sheets or the like, comprising a housing; a battery of neighboring transporting units each including a self-sustaining frame mounted in said housing, more than two endless parallel conveyors each having at least one projection arranged to extend into and from said path in response to movement of the respective conveyor in said direction, said conveyors including a first group having at least one conveyor whose projection is located ahead of and a second group having at least one conveyor whose projection is located behind a commodity in said path, first and second rotary elements for each of said conveyors and each conveyor being trained over the respective rotary elements, and first and second shaft means mounted in the frame and rotatably supporting the first and second rotary elements; and common drive means for said conveyors including first and second gear means for respectively rotating the rotary elements for said first and second groups of conveyors, first and second driver gears respectively meshing with the first and second gear means of said units, and means for intermittently rotating said driver gears including a third shaft arranged to drive said fist gear means via said first driver gear, a fourth shaft arranged to drive said second gear means via said second driver gear, stepping motor means arranged to intermittently rotate said third and fourth shafts, and transmission means interposed between said motor means and said third and fourth shafts, said transmission means including means for intermittently changing the angular position of one of said third and fourth shafts with reference to the other of said third and fourth shafts to thereby change the spacing between the projection of each conveyor in one of said groups and the projection of each conveyor in the other of said groups so that the projections of the conveyors of said groups are spread apart or moved nearer to each other to thus permit delivery of commodities into and predictable transport of commodities along said path, the axes of said rotary elements, said gear means and said driver gears being normal to said direction and the entire frame of at least one of said units being adjustable with reference to said housing in parallelism with said axes, the axial length of said driver gears being such that the first and second gear means of said one unit remain in mesh with the corresponding driver gears in all positions of adjustment of the frame of said one unit.

4,508,211

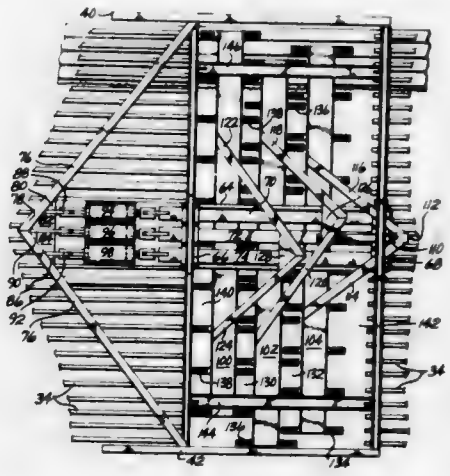
RECIPROCATING FLOOR CONVEYOR APPARATUS AND METHOD

R. Keith Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Feb. 8, 1982, Ser. No. 346,864

Int. Cl.³ B65G *25/04*

U.S. Cl. 198—750 **13 Claims**



1. A modular drive unit for a reciprocating floor conveyor, comprising:

a frame;

a plurality of longitudinal drive beams mounted on said frame for longitudinal reciprocation;

a plurality of transverse drive beams, one for each longitudinal drive beam, said transverse drive beams extending

across the longitudinal drive beams, and each being connected to a related one of the longitudinal drive beams where the two of them cross;

a source of drive power for each longitudinal drive beam, interconnecting such drive beam with the frame;

connector means on upper portions of each transverse drive beam for securing thereto a plurality of elongated floor members; and

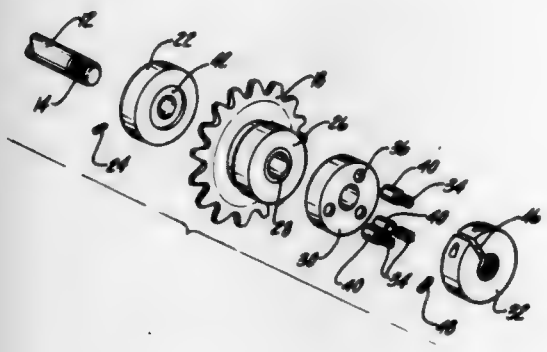
a generally horizontal reinforcing truss interconnected between each transverse drive beam and its longitudinal drive beam below the drive unit, each said truss comprising a pair of diagonal beams having inner ends which are connected to the longitudinal drive beam and outer ends which are connected to the associated transverse drive beam, at locations spaced laterally outwardly from the longitudinal drive beam, on opposite sides thereof.

4,508,212

ADJUSTABLE TORQUE CONVEYOR ROLLER DRIVE

Fred Bolle, Pontiac; John R. Herronen, Linden, and Joseph M. Wright, Fenton, all of Mich., assignors to Tek-Matik, Inc., Howell, Mich.

Filed Sep. 30, 1982, Ser. No. 430,548
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 **10 Claims**



1. In a roller conveyor apparatus of the type including an axle shaft having a threaded end, a roller on the shaft and rotating therewith, a drive sprocket slidably mounted directly on the shaft and variably frictionally couplable to the shaft by way of a thrust pad and a back-up pad non-slidably mounted directly on the shaft and abutting axially opposite faces of the sprocket, and a nut threaded on the shaft end to control the frictional coupling between the sprocket and pads according to the axial position of the nut, the improvement which comprises:

a plurality of compression springs operatively disposed in uniformily circumferentially spaced relation axially between the nut and the adjacent thrust pad at a radially outwardly predetermined distance from the axis thereof to apply compression force to urge the thrust pad against the sprocket according to the axial position of the nut on the threaded shaft end.

4,508,213

HYDRAULIC TAKE-UP DEVICE

Hugh D. Kelley, 56 Mayfair Dr., Bella Vista, Ark. 72712

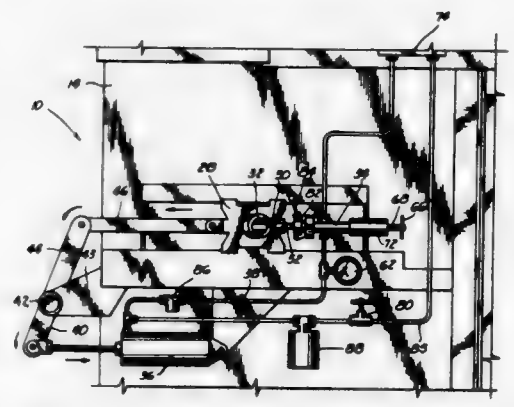
Filed Aug. 1, 1983, Ser. No. 519,034
Int. Cl.³ B65G *23/44*
U.S. Cl. 198—813 **6 Claims**

1. A hydraulic take-up device for applying constant and adjustable pressure on a pair of bearing housings having a take-up bearing mounted on the ends of a take-up shaft, the shaft receiving one end of an endless conveyor belt or chain thereon, the device comprising:

an eccentric mounted on one end of the take-up shaft:

a hydraulic pump having a piston, the piston biased against the eccentric and driven thereby as the take-up shaft rotates;

a hydraulic cylinder operated by the hydraulic pump through a hydraulic fluid supply line; and



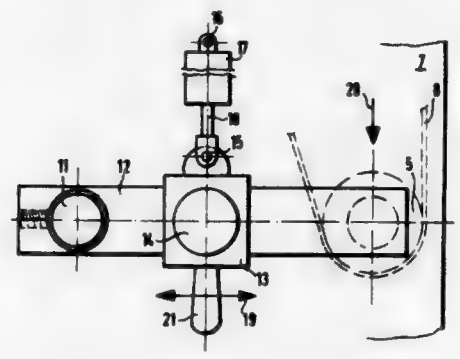
linkage means connected to the hydraulic cylinder and the bearing housings for applying tension on the bearing housing.

4,508,214

TIGHTENING MEANS FOR AT LEAST ONE PRESSER BELT ASSOCIATED WITH A TAIL PULLEY OF A CONTINUOUS SHEET FEEDER

Emil Klenk, and Karl-Fritz Heina, both of Murrhardt, Fed. Rep. of Germany, assignors to Maschinenbau Oppenweiler Binder GmbH & Co., Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,440
Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218566
Int. Cl.³ B65G *23/44*
U.S. Cl. 198—833 **4 Claims**



1. A tightening means for at least one presser belt associated with a tail pulley of a continuous sheet feeder comprising:

a tension roller for the presser belt,

at least one support-lever pivotally connected at one end to the tension roller,

the tension roller being unattached to the feeder frame and being supported only by the support-lever,

a swivelling shaft rigidly connected to the other end of the support-lever,

the swivelling shaft further being pivotally mounted adjacent each end to opposite walls of a feeder frame,

a spring connected at one end to the feeder frame,

the spring being connected at the other end to a tension lever by a holding member slidably arranged on the tension lever,

the tension lever being rigidly connected at one end to the swivelling shaft outside the feeder frame,

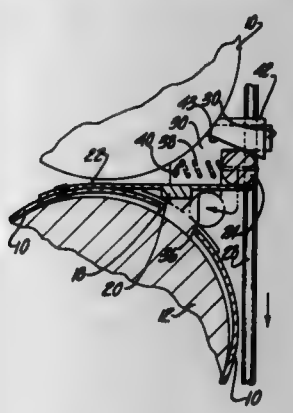
whereby the holding member can be placed at variable distances from the swivelling shaft to vary the tightening force on the presser belt as desired.

4,508,215

AMMUNITION LOCKING MECHANISM

Richard L. Swarthout, Wayne, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 15, 1983, Ser. No. 485,358
Int. Cl.[3] F42B *37/00*
U.S. Cl. 206—3 3 Claims



1. In combination, parallel rows of tubes for storing individual rounds of ammunition therein;

a clamp structure associated with each tube for movement between a first position retaining the associated round in the tube, and a second position releasing the associated round for removal from the tube;

a stationary guide means (30) associated with each clamp structure, each stationary guide means terminating in a latch structure (34, 36);

each clamp structure comprising a spring leaf attached at one end thereof to an ammunition storage tube, a round-engagement pad carried by the leaf spring, a manually operable arm extending approximately parallel to the tube axis in crossing relation to the associated leaf spring, said arm being swingably mounted for motion along the associated guide means to and from a captured position engaged with the latch structure, and tension spring means (38) connected to each swingable arm for pulling said arm against the guide means and into the latch structure; said arm having pressure contact with the leaf spring so that when the arm is engaged with the latch structure the associated pad is in its round-retaining position; said leaf spring having a pre-stress therein which causes said leaf spring to move the associated pad to a round-released position when the swingable arm is disengaged from the latch structure;

and reciprocatable gang type actuator means for operating the clamp structures in each row of tubes to their round-retaining positions; each gang type actuator means being movable from a first standby position in which all clamp structures in the row are permitted to be in their round-released positions to a second locked position in which all clamp structures in the row are in their round-retaining positions;

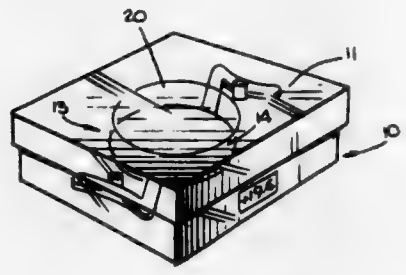
each gang type actuator means comprising an elongated bar extending between two rows of ammunition storage tubes for longitudinal motion normal to the storage tube axes, and multiple cams carried by the bar at spaced points along the bar length, each cam defining a cam surface obliquely angled to the bar longitudinal axis; each cam having a motion path passing through an associated swingable arm, whereby motion of the elongated bar in one direction enables the cam to move the associated arm along the aforementioned guide means and into its captured position engaged with the latch structure, said cams being disengagable from the associated arms whereby motion of the elongated bar in the opposite direction frees said arms for manual motion out of their captured positions engaged with the latch structure.

4,508,216

HOUSING FOR AN INTRAOCULAR LENS AND METHOD OF USING THE SAME

Charles D. Kelman, The Empire State Bldg., 350 Fifth Ave., New York, N.Y. 10118

Filed Jul. 14, 1983, Ser. No. 513,682
Int. Cl.[3] A61F *1/16, 1/18;* B65D *25/54;* G01F *23/00;* G02B *27/00*
U.S. Cl. 206—5.1 14 Claims



1. A housing for an intraocular lens having an optic comprising:

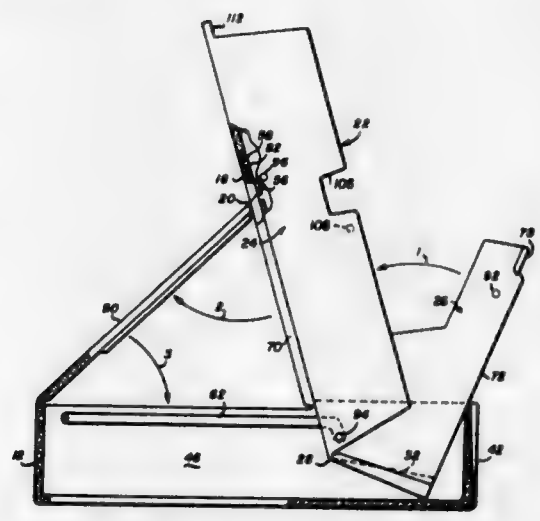
at least a pair of opposed walls adapted to enclose the lens within the housing, said walls comprising lens means having an optical power which is substantially of the same magnitude as but opposite in sign to the optical power of the lens intended to be housed and said lens means being positioned substantially to coincide with the optic of the housed lens when viewed along the optical axis thereof so that a viewer can see through said lens means of the housing and through the lens housed therein without substantial distortion if the intended lens is in the housing.

4,508,217

STORAGE CONTAINER AND DISPLAY DEVICE

Jerry M. Long, Scotts Valley, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.

Filed Nov. 19, 1981, Ser. No. 322,968
Int. Cl.[3] B65D *85/57*
U.S. Cl. 206—45.18 7 Claims



1. A storage and display unit for floppy diskettes and the like, comprising, in combination:

(a) a base portion including receptacle forming means for providing a receptacle having an open top defining a center, a lower region and an upper periphery, said receptacle forming means provided with a support portion hingedly attached to said upper periphery and arranged for extending toward said center of said receptacle means, said support portion including an elongated portion extending from said receptacle forming means and terminating in a locking means, a living hinge formed in said support portion immediately adjacent said locking means for

hingedly separating same from said elongated portion; said locking means including a transverse bar portion having spaced ends provided thereon with a pair of locking tabs, and a lip extending from said bar portion and away from said elongated portion;

(b) an upper part including a first portion provided with a pair of adjacent apertures, a transversely extending bar disposed separating said pair of apertures, said apertures being arranged to receive said locking means, said bar portion of said locking means being receivable in one of said pair of apertures with said lip being retainable in the other of said pair of apertures, said locking tabs retaining said bar in an associated one of said pair of apertures, said first portion being hingedly attached to said support portion of said receptacle forming means at a point thereon spaced from the upper periphery of said receptacle forming means, a second portion of said upper part being hingedly attached to said first portion at a point spaced from the point of attachment of said first portion to said receptacle forming means and arranged for rotation between a position common to said first portion and a position extending away from said first portion, said upper part being arranged for rotation relative to and in cooperation with said support portion between a position within said receptacle forming means and a position extending away from said receptacle forming means; and

(c) guide means associated with said receptacle forming means and said upper part and formed integrally therewith for directing movement of said upper part relative to said receptacle forming means between said position within said receptacle forming means and said position extending away from said receptacle forming means.

4,508,218

SOFT CIGARETTE PACK

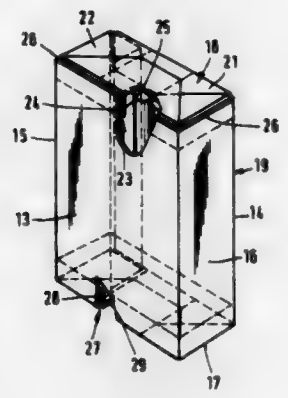
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 383,072, May 28, 1982,. This application Jul. 15, 1983, Ser. No. 513,958

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124118

Int. Cl.³ B65D *85/10*

U.S. Cl. 206—271 **8 Claims**



1. A package made of a foldable packaging material, comprising; at least one main blank forming front, rear and side walls and bottom and end walls, said main blank being transversely wrapped and being provided with reinforcement portions comprising Z-folds extending along upper and lower edge portions of said front, rear and side walls, said Z-folds being disposed on the inside of the package and terminating at upper and lower edges flush with respective upper and lower edges of a package envelope formed by said front rear and side walls, portions of said blank extending directly from termination lines of said Z-folds extending over upper and lower faces of said package.

4,508,219

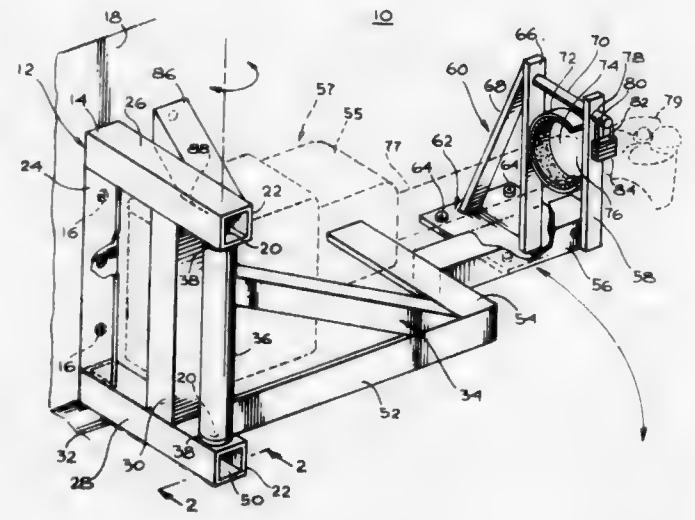
SECURITY SAFETY CRADLE

Hector C. O'Neill, 9900 Jovita Ave., Chatsworth, Calif. 91311

Filed Jun. 9, 1983, Ser. No. 502,557

Int. Cl.³ B65D *85/68*

U.S. Cl. 206—319 **6 Claims**



1. An improved security safety cradle for outboard motors and the like, said cradle comprising, in combination:

a. a transversely extending upright pivot brace securable at one end thereof to a support structure and bearing pivot points adjacent the opposite end thereof, said pivot brace comprising an upright member and a pair of transverse members secured to opposite ends of said upright member, said transverse members bearing aligned pivot points at their free ends;

b. an elongated support arm having a motor-securing portion, said support arm comprising an upright front pivot bar, a side support member connected to said pivot bar, a bottom portion connected to said side support member, and an upright post secured to the end of said arm which is remote from said pivot bar, said arm being pivotally secured to said pivot brace by said pivot bar at said pivot points and rotatable around said pivot brace between a forward secured position and a rearward release position;

c. a stop and lock bracket securable to a support structure in front of said pivot brace and engageable with said pivot arm at about the forwardmost position on said pivot arm, for releasable securing of an outboard motor enclosed by said pivot arm, said bracket comprising an upright member, a transverse bar connected at one end thereof to said upright member and a transverse C-shaped member connected to said upright member below said transverse bar, said C-shaped member having an opening adapted to receive the drive shaft of an outboard motor, said transverse bar extending through an opening in said upright post of said support arm when said support arm is in its forwardmost position, said upright post being alignable with said bracket; and,

d. means for securing said brace and bracket to a support structure.

4,508,220

U-CLIP ASSEMBLY AND METHOD OF PRODUCING AND UTILIZING THE SAME

Kenneth C. Pearson, Glenview, Ill., assignor to Hartco Company, Skokie, Ill.

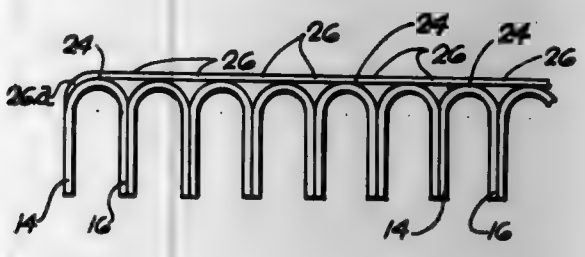
Continuation-in-part of Ser. No. 366,790, Apr. 9, 1982,. This application Mar. 6, 1984, Ser. No. 586,669

Int. Cl.³ B65D *71/00*

U.S. Cl. 206—343 **5 Claims**

1. A clip assembly for use with a clinching tool capable at high speeds of sequentially severing and wrapping a clip on overlying wire members employed in the manufacture of furniture, bed springs, and the like, to secure the members together,

comprising: a plurality of generally U-shaped sheet metal clips having an arcuate crown portion and depending leg portions integrally joined in spaced relation to one another to the transverse margins of the crown portion, the clips being arranged in abutting, or near abutting, aligned relation to one another with the transverse axis of the crown portions substantially normal to the longitudinal axis of the clip assembly; and a pair of metal wires for maintaining the clips in positive, fixed abutting, or near abutting, aligned relation to one another, said pair of metal wires being positioned in spaced relation to one another



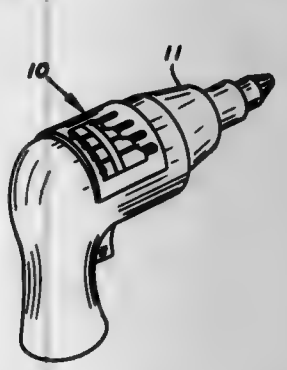
and being secured in point contact with and substantially tangential to the crown portion of each of the clips of the assembly by a metal-to-metal bond in a manner both to prevent the disruption of the positive, fixed, aligned relation of the clips when the clips are subjected to a pulling or tension force and to provide severable clip spanning portions which freely extend between the metal-to-metal bond formed by said pair of metal wires with the crown portion of each clip to enable each clip to be sequentially severed and wrapped by a clinching tool on overlying wire members of a workpiece.

4,508,221

TOOL CADDY

David V. Olson, 324 IDS Tower, Minneapolis, Minn. 55402

Filed Sep. 21, 1981, Ser. No. 303,887
Int. Cl.[3] B65D *5/28*
U.S. Cl. 206—379 6 Claims



1. A tool caddy for holding a plurality of small tools of varying sizes, said caddy comprising:

(A) a flat base sheet of flexible material,

(B) a flexible corrugated sheet of resilient material on the upper surface of said base sheet, said corrugated sheet having alternating parallel ridges and furrows, the ridges of which form a plurality of open-ended parallel spaced apart longitudinal tool-receiving pockets and the bottom surfaces of the furrows of which are sealed to the top surface of said base sheet, and

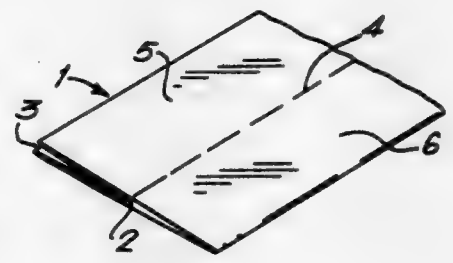
(C) means for securing said tool caddy to the housing of a portable hand power tool.

4,508,222

PLASTIC BAGS

Francis S. O. Choe, Singapore, Singapore, assignor to 501 Lamipak Industries (Europe) Ltd., London, England

Filed Mar. 5, 1984, Ser. No. 586,338
Claims priority, application United Kingdom, Mar. 16, 1983, 8307213
Int. Cl.[3] B65D *30/10, 33/00*
U.S. Cl. 206—390 12 Claims



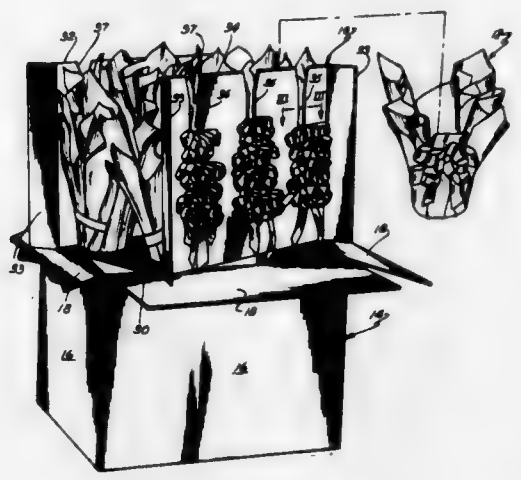
1. A thermoplastic bag having a gusset on one side only, the gusseted and ungusseted sides being completely or partially folded over one another along a longitudinal axis and sealed together across the bottom of the bag.

4,508,223

PREFORMED POT COVER PACKAGE

Joel Catrambone, Rancho Cucamonga, Calif., assignor to A. J. Sparks & Company, Grand Rapids, Mich.

Filed Nov. 14, 1983, Ser. No. 551,108
Int. Cl.[3] B65D *85/50, 85/52*
U.S. Cl. 206—423 3 Claims



1. In a package supporting a plurality of preformed pot covers nested in vertical columns, each of said pot covers having a body portion with a bow attached thereto, said package comprising:

a container having a floor, sides and a cover;

at least one panel for positioning in said container, wherein said panel includes a floor member and two side members attached thereto and extending upwardly from opposite sides thereof, said panel further including a plurality of elongated, spaced, parallel, vertically extending slots located in said side members thereof, said slots receiving the bow on one side thereof and the body on the other side thereof, whereby each of said slots support a vertical column of nested pot covers and said panel supports a plurality of vertically extending columns of nested pot covers in spaced relationship along said floor member; and

spacing means connected to said panel for positioning said side members a predetermined distance from the sides of said container.

4,508,224

CONTAINER FOR PHOTOGRAPHIC FILMS AND PRINTS

Klaus Weber, Leverkusen; Friedrich Hujer, Grünwald, and Ferdinand Schaner, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaret Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 885,115, Mar. 10, 1978, abandoned. This application Sep. 28, 1981, Ser. No. 306,391

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2716011; Jul. 31, 1981, 3130375

Int. Cl.³ B65D *27/08, 27/10*

U.S. Cl. 206—455 **17 Claims**

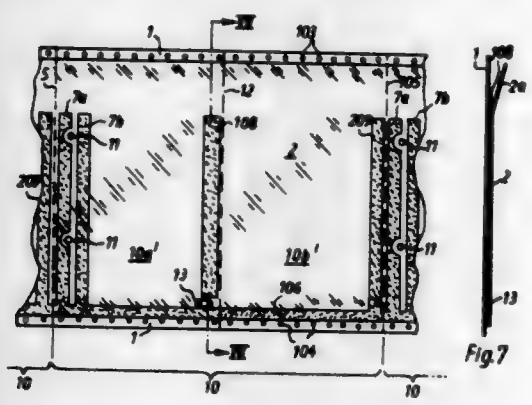


Fig.7

1. An elongated strip comprising a plurality of containers, each container having at least two open and distinct compartments, one for developed film and the other for prints of a customer order, said strip being constituted by two superimposed elongated sheets each having two marginal portions and generally uniform width, each of said compartments having four marginal edges, three of said marginal edges being formed by securing the two sheets together, the fourth marginal edge of each compartment being open and being disposed at one side of said strip so that the film and the prints can be inserted in appropriate compartments from said one side, two of said three marginal edges being adjacent said open fourth marginal edge and terminating short of said fourth marginal edge and said strip further having a tear line between each of said containers and the next adjacent container, said tear lines extending across the width of the two sheets, as considered transversely of said marginal portions, and said strip also having a fold line extending across each of said containers, said containers being foldable over each other along the tear lines for handling and then separable along such tear lines into individual containers, each such individual container being in turn foldable along the respective fold line to provide a plural-compartment wallet, one of said sheets having along and in at least one of its marginal portions a row of equidistant perforations and the width of the other sheet being less than that of said one sheet to leave exposed at least one marginal portion of the one sheet at said open fourth marginal edges of said compartments.

4,508,225

CONTAINER DISPLAY PACKAGE

Luigi M. Ferrari, Douglaston Hills, N.Y., assignor to Del Laboratories, Inc., Del.

Filed Dec. 9, 1983, Ser. No. 559,940

Int. Cl.³ B65D *73/00*

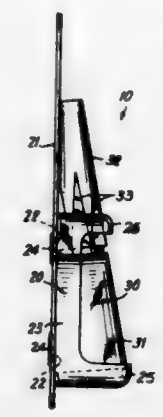
U.S. Cl. 206—461 **8 Claims**

1. A display package for a container having a central axis and including a receptacle having axially spaced closed and open ends, and a cap removably mounted on the open end to close the same and having at a region of its periphery which is close to the receptacle at least one retaining formation that is spaced a different radial distance from the central axis than the remainder of the periphery and moves in a predetermined trajectory during attempted removal of the cap from the receptacle, comprising:

a substantially sheet-shaped backing element; and

means for mounting the container in a predetermined position on the backing element, including

a substantially cup-shaped first mounting part secured to said backing element and so embracing and accommodating the closed end of the receptacle as to prevent movement of the container radially and in one of its axial directions in which the closed end would lead, and



a substantially annular second mounting part secured to said backing element at a distance from said first mounting part to embrace the cap and having a locking surface that extends into the predetermined trajectory of movement of the formation of the cap, said locking surface and the formation together preventing unnoticeable removal of the cap from the receptacle while the container is mounted on said backing element.

4,508,226

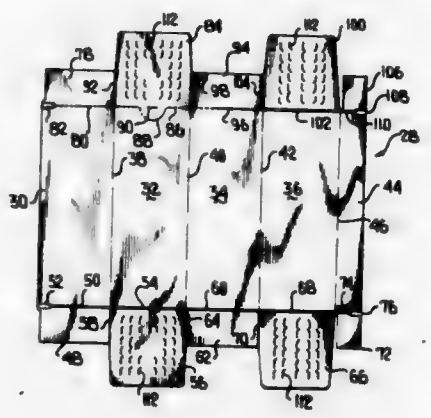
SEALED CARTON WITH TAMPER INDICATING FEATURES

Robert E. Davis, Nutley; Patrick S. Maio, Ringwood, both of N.J., and Lawrence J. Growney, Pearl River, N.Y., assignors to Federal Paper Board Company, Incorporated, Montvale, N.J.

Continuation-in-part of Ser. No. 443,754, Nov. 22, 1982,. This application Jul. 18, 1983, Ser. No. 514,947

Int. Cl.³ B65D *5/54*

U.S. Cl. 206—620 **19 Claims**



1. A carton having a body defined by body panels and two opposite ends defined by closure flaps, said closure flaps being bonded together to resist separation, at least certain of said closure flaps of one of said ends being connected to respective ones of said body panels by rupturable connections for the at least partial tearing of said one end from said carton body as a unit, and said body including a connecting panel carried by one endmost one of said body panels and overlapping and bonded to another endmost one of said body panels, and a terminal flap carried by said connecting panel at an end thereof and bonded to an innermost one of said closure flaps at said one end, said terminal flap being connected to said connecting panel along a fold line which is aligned with and overlaps a portion of a fold line extending between said another endmost body panel and a respective one of said closure flaps, said overlapped fold line

portions being jointly weakened wherein between said two overlapped fold line portions there is a total of approximately only one fold line portion or less which is unweakened whereby tampering with said carton along the connection between said connecting panel and said another endmost body panel to gain entry will result in the separation of said terminal flap from said connecting panel.

4,508,227

COP PREPARATION PLANT

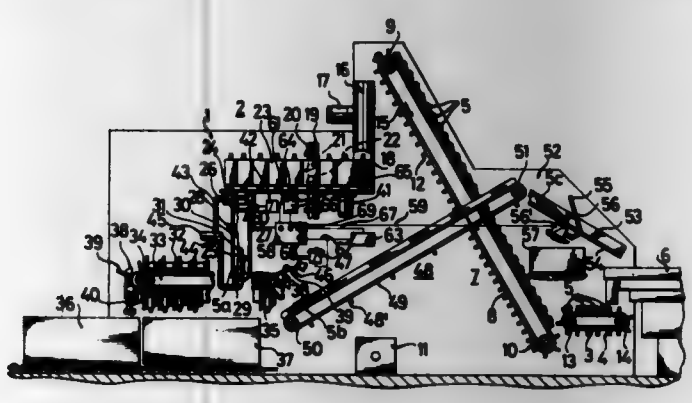
Wilhelm Küpper, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Continuation of Ser. No. 327,040, Dec. 3, 1981,. This application Mar. 12, 1984, Ser. No. 587,861

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045825

Int. Cl.³ B07C *5/00*; B26D *7/06, 5/28*; B65H *59/00*

U.S. Cl. 209—927 **7 Claims**



1. Cop preparation plant for supplying cops with thread ends of a suitable length to be transported to a winding machine, comprising a cycle including first and second cop separating devices, means for removing cops from said first cop separating device, a device disposed down stream of said removing means for locating, drawing off and cutting to length thread ends of a spinning cop, said second cop separating device being disposed down stream of said locating, drawing off and cutting device in travel direction of the cops, for separating spinning cops having thread ends of a substandard length from other spinning cops, and a device disposed down stream of said second separating device for retracting the separated cops into said first cop separating device, each cop being circulated between said first and second cop separating devices until a thread end of a desired length is loosened from the cop and the cop is transported from the cycle to a winding machine.

4,508,228

CARD FRAMES

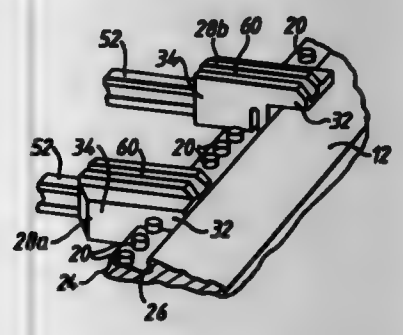
David P. Erlam, Winchester, England, assignor to Rittal-CSM Limited, Hampshire, England

Filed Jun. 25, 1982, Ser. No. 392,165

Claims priority, application United Kingdom, Jun. 29, 1981, 8119939

Int. Cl.³ H02B *1/02*

U.S. Cl. 211—41 **9 Claims**



1. A card frame having a front side, a rear side, a top side and a bottom side, and comprising a front cross rail, a rear cross rail and a card guide engageable with said front and rear cross rails, wherein:

said card guide comprises a pair of end elements each engageable with a respective one of said front or rear cross rails;

each said end element is engageable with its associated cross rail in a first position and in a second position, said first and second positions being mutually spaced in both the top to bottom and front to rear directions of the card frame; and

said card guide further comprises a shank formed separately from said end elements and assembled with the end elements, whereby when the card guide is assembled the end elements will engage with the cross rails in their first positions or in their second positions, in accordance with whether the shank is of a first or second length, each said end element having at least one engagement means at a first location and at least one further, like engagement means at a second location spaced from said first location in both the top-to-bottom and front-to-rear directions of the card frame, and each said cross rail having engagement means complementary with said engagement means of said end elements and which can be engaged with the engagement means of an end element at either said first or second location.

4,508,229

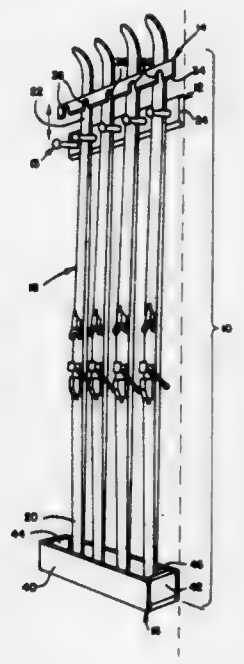
SKI RACK

William G. Yost, Jr., 10440 Six Mile Rd., N.E., Rockford, Mich.

Filed May 12, 1983, Ser. No. 493,987

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—70.5 **15 Claims**



1. A ski-storage device comprising:

a peg board to be secured to a vertical support surface, said peg board including a base and a plurality of generally linearly aligned peg members extending in generally a common direction away from said base, at least two of said peg members each including a shaft portion and an enlarged head portion extending from said shaft portion generally opposite said base, said peg members being horizontally spaced to receive vertically oriented skis therebetween; and

a keeper bar removably supported on said pegs, said keeper bar being completely unattached with respect to said peg board so as to be entirely removable from said peg board to permit ready access to said peg board, said keeper bar defining a plurality of downwardly facing openings to receive said shaft portions when said keeper bar is sup-

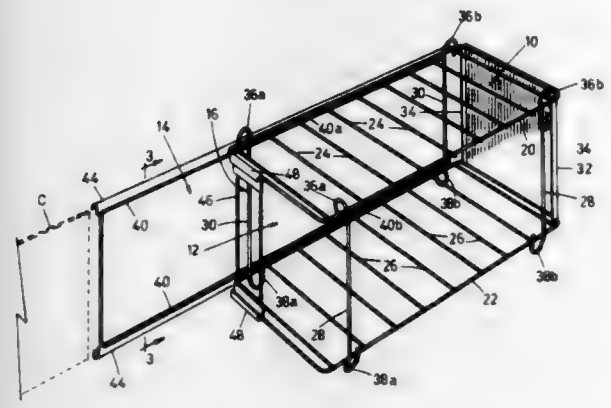
ported thereon, said openings having a width wider than said shaft portion and more narrow than said head portion, whereby when said keeper bar is supported on said pegs to secure skis between said keeper bar and said base, said keeper bar cannot pass axially beyond said peg heads.

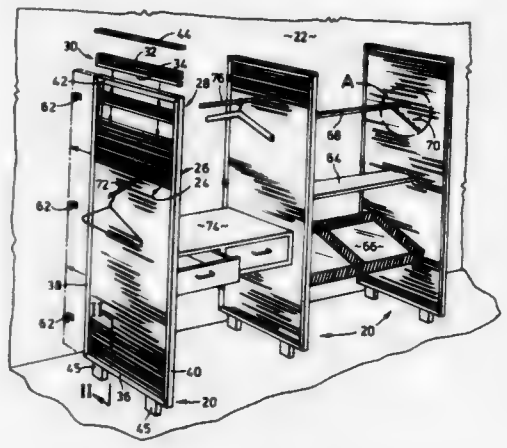
4,508,230

REVERSIBLE ANGLE DISPLAY

Richard D. A. Ashton, Terra Cotta, Canada, assignor to North American Decorative Products Inc., Bramalea, Canada

Filed Jan. 26, 1983, Ser. No. 440,720
Int. Cl.³ A47F *5/14*
U.S. Cl. 211—181 **9 Claims**





1. A modular display unit for the combined storage and display of products for sale and comprising:

upper and lower panel means formed of wire rod construction;

side panel means formed of wire rod construction;

rear end panel means, the front of such unit being open, thereby defining a generally rectangular bin open at one end for storing products therein;

upper tongue means formed by wire loops extending upwardly and inwardly from said upper panel means extending on predetermined first axes;

lower tongue means formed by wire loops extending downwardly and inwardly from said lower panel means, extending on predetermined second axes offset from said first axes whereby said upper and lower tongue means are interengageable with adjacent said units for vertical stacking of such units to form stacks of such bins, whereby said lower panel means of one said unit rests generally square against said upper panel means of an adjacent lower said unit;

display panel support means extending forwardly form one of said sides of said unit, and adapted to receive a product display panel therein for a display related to product stored in such bin, and,

product information display support means attached to said unit, and adapted to receive a product information panel related to such product stored in such bin.

4,508,231

WALL UNIT

Reuben Honickman, 66 Collier St., Suite 4B, Toronto, Ontario, Canada M4W 1L9

Filed Mar. 4, 1981, Ser. No. 240,515
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—199 **8 Claims**

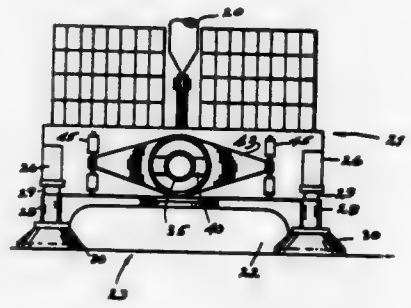
1. A wall unit having a frame including a pair of frame members arranged in generally vertical positions at opposite sides of the unit and defining respective channels which face one another; a stack of elongate members extending transversely of the unit between said frame members with opposite end portions of each said elongate member received within the channels of the respective frame members and dimensioned to permit free sliding movement of the elongate member along the frame member channels, each elongate member having parallel upper and lower surfaces and the elongate members being arranged in superposed relationship and resting on top of one another under the effect of gravity with the lower surface of an upper member supported on the upper surface of member below, wherein each said elongate member comprises a solid one-piece extrusion of uniform cross-sectional shape throughout its length having parallel upper and lower surfaces, the extrusion having a cross-sectional shape formed by respective top and bottom webs defining said upper and lower surfaces, a central web extending between the top and bottom webs generally centrally thereof and disposed generally normal to said upper and lower surfaces, respective intermediate webs which extend outwardly from said central web generally centrally thereof and which having respective upper and lower lips at their outer ends, said lower web including similar upwardly extending lips at its outer ends, whereby the webs define four laterally directed channels two at each side of said member and each of which has a lip extending along its lower edge so that an article supporting element to be fitted to the unit can be engaged in any of the channels defined by the elongate elements of the unit and can be engaged over the lip of the relevant channel and thereby retained in the channel at any of an infinite number of positions spaced therealong.

4,508,232

COUNTERBALANCED CRANE STRUCTURE

Neil F. Lampson, Kennewick, Wash., assignor to Riggers Manufacturing Co., Kennewick, Wash.

Filed Dec. 10, 1981, Ser. No. 329,193
Int. Cl.³ B66C *23/08*
U.S. Cl. 212—178 **6 Claims**



1. A counterbalanced crane structure, for operational use in lifting load requiring mobility; comprising:

first and second ground-supported mobile platforms;

an upwardly directed crane boom mounted to one of said first and second platforms;

counterbalance means mounted on the remaining one of said first and second platforms;

a rigid stinger having a longitudinal stinger axis;

means operably connected between one end of the stinger and the first ground-supported mobile platform for con-

joint pivotal movement of the stinger and said first platform about the longitudinal stinger axis;

means operably connected between the remaining end of the stinger and the second ground-supported mobile platform for eliminating undesirable loading or binding between the first and second platforms and the stinger by permitting free relative pivotal movement between the stinger and second platform about the longitudinal stinger axis during operational use of the counterbalanced crane structure;

at least one stinger arm rigidly connected to said remaining end of the stinger and extending therefrom;

and releasable, adjustable locking means mounted on said second platform for adjustably and securely engaging said stinger arm to prevent relative pivotal movement between the stinger and second platform about the longitudinal stinger axis.

4,508,233

COMPACT HEAVY DUTY LIFTING CRANE

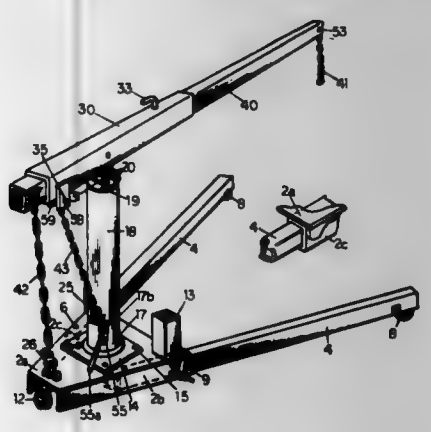
Thomas G. Helms, 19036 Napa St., Northridge, Calif. 91324

PCT No. PCT/US81/00691, § 371 Date Jan. 18, 1983, § 102(e) Date Jan. 18, 1983

PCT Filed May 21, 1981, Ser. No. 479,866

Int. Cl.³ B66C *23/26*; B60P *1/00*; B65G *7/08*

U.S. Cl. 212—182 **11 Claims**



1. A Compact Heavy Duty Lifting Crane (CHDLC) comprising:

(a) a base assembly;

(b) a removable pylon plate attached to said base assembly;

(c) A stationary pylon cylinder means including an upper and a lower cylinder portions attached to said pylon plate, a vertically extending slot located in said upper cylinder portion, said lower cylinder portion including a plate mounted at the top thereof with an opening therein and a second opening located on the side thereof;

(d) a lifting jack mounted within said stationary pylon cylinder a jack control handle extending through said second opening in said stationary pylon cylinder;

(e) a telescoping pylon cylinder revolvingly positioned over said upper cylinder portion of said stationary pylon cylinder means so that it can be raised vertically by said lifting jack and having a locking hole at the lower end thereof and a cover rigidly attached to its top end, said cover having outward clevis members thereon with each member having a concentric hole therein;

(f) a releasable locking means for locking said telescoping pylon cylinder to said stationary pylon cylinder means to prevent radial movement relative thereto with respect to said stationary pylon;

(g) a hollow stationary boom having attached to its lower side a left and a right mounting plate with each plate having concentric holes that correspond to the holes in the mounting plates attached to said telescoping pylon cylinder;

(h) a clevis pin inserted through the set of corresponding holes in said mounting plates and clevis members whereby said stationary boom can be displaced about said pin in a vertical direction;

(i) a telescoping boom slideingly inserted into the hollow opening of said stationary boom whereby said telescoping boom can be displaced relative to said stationary boom;

(j) a locking means for locking said telescoping boom to said stationary boom to prevent movement of said telescoping boom with respect to said stationary boom;

(k) means for attaching a lifting chain and hook assembly to the front end of said telescoping boom;

(l) means for attaching a respective end of a first boom control chain and a second boom control chain to the back end of said stationary boom;

(m) means for selectively attaching an opposite end of said first boom control chain to said telescoping pylon cylinder;

(n) means for selectively attaching an opposite end of said second boom control chain to said base assembly;

(o) a first and a second channel section rigidly attached on opposite sides to the underside of said base assembly;

(p) a first removable leg and a second removable leg each sized to slidable fit into their respective said first and second channel sections;

(q) means for locking said first and said second removable legs into said first and said second channel sections, respectively;

(r) a first wheel and a second wheel rotatably attached to said first and said second removable legs;

(s) a third wheel and fourth wheel rotatably attached to said base assembly, means for retracting said third and fourth wheels when said CHDLC is in use, and extending said wheels when said CHDLC is in the storage mode.

(t) a caster wheel rotatably attached to the underside of said base; and

(u) a first and second leg storage receptacle consisting of a channel section sized to receive said removable legs and where each storage receptacle is mounted vertically to the top side of said base whereby said removable legs can be removed from their functional position and inserted into said storage receptacles for storage.

4,508,234

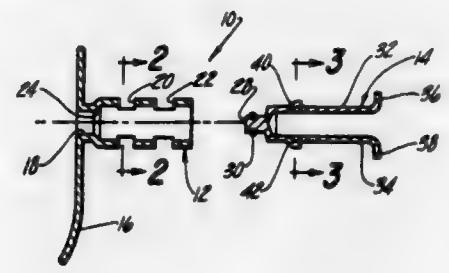
MANUALLY RELEASABLE DRAINPORT CLOSURE APPARATUS

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Filed Aug. 17, 1983, Ser. No. 523,847

Int. Cl.³ B65J *55/02*

U.S. Cl. 215—206 **5 Claims**



1. A drainport closure for a fluid containing vessel comprising:

a housing communicated to said vessel,

a plug slidably received by said housing, said plug having a pair of legs one or more of which when deflected permit said plug to be moved between a first position within said housing preventing fluid drainage from said vessel to a second position within said housing allowing fluid drainage from said vessel, said legs having a portion engagable with said housing and disposable within said housing and a free end portion removed from said engagable portion and having seal means at one end of said plug preventing

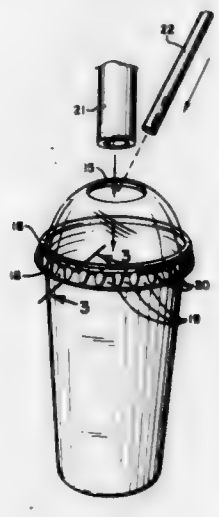
flow from said vessel when said plug is in said first position, said seal means allowing fluid drainage from said vessel when said plug is moved to said second position.

4,508,235

BEVERAGE CUP COVER

Edward J. Steele, Mission Viejo, and Rodney N. Sexton, Laguna Hills, both of Calif., assignors to Runglin Co. Inc., Culver City, Calif.

Filed Dec. 7, 1983, Ser. No. 558,805
Int. Cl.³ B65D *51/16*
U.S. Cl. 215—307 **4 Claims**



1. A beverage cup and cover combination in which:
(a) said cup has an upper rim in the form of an integral bead extending radially beyond the top edge of the cup wall to define an annular underledge; and
(b) said cover is of hemispherical shape whose height is substantially one half its base including a top opening of diameter less than one half the diameter of the cup opening; the base of said hemispherical shape flaring radially outwardly to define an annular surface for seating on the top edge of said cup opening, and thence downwardly; to define a skirt dimensioned to overlie said bead; the side wall of said skirt having a series of uniformly circumferentially spaced inward radially directed indentations over 360°; said indentations defining upwardly facing segments for engaging under said annular underledge of said bead upon forcing the cover skirt over said annular bead to deform the indentations until they snap over the bead to said upwardly facing segments are free to engage under said annular underledge upon return of the indentations to their original form so that the cover is secured in plcae on said cup.

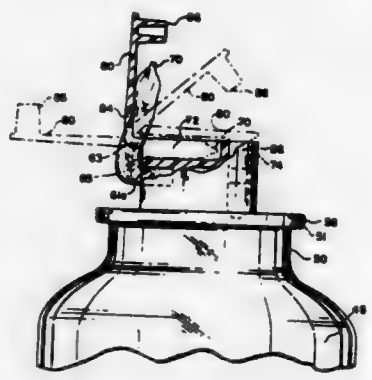
4,508,236

CONTAINER AND ASSOCIATED CAP ASSEMBLY FOR PLASMA COLLECTION AND THE LIKE

Michael R. Keilman, Mundelein, Ill., and Richard West, Salem, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 417,728, Sep. 13, 1982,. This application Jul. 31, 1984, Ser. No. 636,075
Int. Cl.³ B65D *51/16*
U.S. Cl. 215—308 **1 Claim**

1. A container assembly in which a parenteral fluid has been collected comprising
a container having an interior in which the parenteral fluid is carried and a port communicating with the interior, and
a cap including
a body engaged with said container port,
means for defining in said body a normally open vent passage which includes therein filter means for permitting the passage of air and for preventing the passage of bacteria,
means for defining a fluid path through said body having one end communicating with the atmosphere and an oppositely spaced end communicating with said container interior,
wall means for defining in said body the confines of an elongated pocket which extends parallel to said fluid path and which includes an open end disposed adjacent to said one fluid path end,
flexible tubing attached to said one fluid path end, said tubing having had an initial length when the parenteral fluids were introduced into said container interior and now having been sealed and severed in close proximity to said one fluid path end to form a sealed length which is shorter than said intial length,
one portion of said sealed length of tubing extending in tight overlying engagement against said cap body from said one fluid path end through said open end of said pocket to form a crimp in said tubing length at said open



pocket end, the remaining portion of said sealed length of tubing extending from said crimped portion into said confines of said pocket,
said pocket wall means being further operative for frictionally retaining said remaining portion of tubing within said confines of said pocket and for shielding said remaining portion of tubing from contact within said confines of said pocket, and
cover means attached to said cap body for movement between a normally biased first position spaced away from said vent passage to open said vent passage and allow the introduction of parenteral fluid into said container interior and a second position in said vent passage to hermetically close said vent passage and, together with said crimped sealed length of tubing retained in said pocket, hermetically seal the parenteral fluid within said container interior.

4,508,237

COLLAPSIBLE CONTAINER

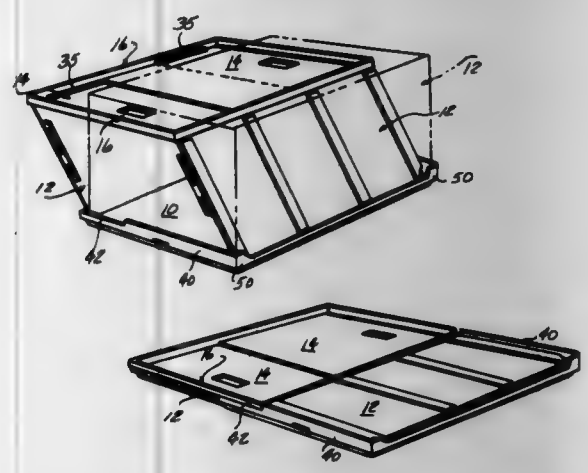
Elsmer W. Kreeger, Allegan, and Edward L. Stahl, Brighton both of Mich., assignors to Pinckney Molded Plastics, Inc., Pinckney, Mich.

Continuation of Ser. No. 366,879, Apr. 9, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 570,762
Int. Cl.³ B65D *6/18, 21/02*
U.S. Cl. 220—6 **3 Claims**

1. In a collapsible container having a flat horizontal rectangular bottom, stacking rail means projecting downwardly from the underside of said bottom in parallel relationship to the ends and sides of said bottom, a rigid rectangular upper peripheral rim dimensioned to receive the stacking rail means of a like container to support said like container upon said rim while retaining said like container against horizontal displacement relative to said rim, a pair of opposed side walls, first hinge means coupling the lower edges of each of said side walls to said bottom along the respective opposite side edges thereof, second hinge means coupling the upper edges of said side walls to the underside of said rim along the respective side edges thereof, a pair of end walls, the length of said end walls exceeding the height of said side walls, third hinge means coupling the

upper edges of said end walls to the underside of said rim along the respective end edges thereof, said hinge means accommodating movement of said bottom, side walls, end walls and rim relative to each other between an erected position wherein said side and end walls extend vertically upwardly from said bottom and a collapsed position wherein said end walls project horizontally inwardly from said end edges of said rim and said side walls are disposed in horizontal positions wherein one of said side walls lies upon said bottom and the other side wall projects horizontally outwardly from its associated side of said bottom;

the improvement comprising stop means on said bottom engageable with said one of said side walls when said one of said side walls is in its erected position to prevent hinging movement of said one of said side walls outwardly



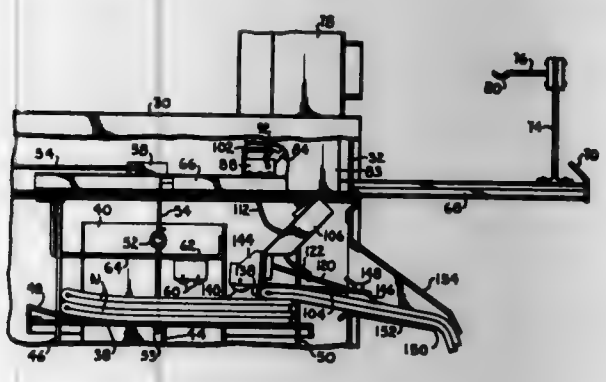
from said bottom, a pair of first vertical web means, each having an elevated section, extending along the respective ends of said bottom from that side of said bottom at which said one of said side walls is located for a distance substantially equal to, but less than, the height of the side wall, and a lower section extending from the end of said elevated section to the opposite side of said bottom, said first web means being respectively located outwardly of the opposite ends of said one of said side walls to receive said one of said side walls therebetween when in its collapsed position and said elevated sections having a height above said lower sections equal to the vertical thickness of said rim whereby the end edges of said rim rest upon said lower sections and define an extension of said elevated sections when said side and end walls are in their collapsed positions.

4,508,238

NEWSPAPER VENDING MACHINE

Nathan D. Johnson, 9808 Knox, Overland Park, Kans. 66212; James D. Sampson, 435 Camden, and Darwin L. Sampson, 1701 Upper Mill Ter., both of Salina, Kans. 67401

Filed Jul. 14, 1982, Ser. No. 398,098
Int. Cl.³ G07F *11/12*
U.S. Cl. 221—107 **14 Claims**



1. A newspaper vending machine comprising:

a housing defining an enclosed interior and having a front portion presenting an outlet slot for dispensing newspapers one at a time;

a tray in said housing adapted to receive a stack of newspapers, said tray being supported within the housing for generally vertical movement;

a normally locked door on said housing providing access to the housing interior when open to permit a stack of newspapers to be deposited on said tray;

a slide arm supported on the housing for fore and aft sliding movement lengthwise of the arm between an extended position and a retracted position, said arm having an accessible front end projecting forwardly of said front portion of the housing and a handle on said front end for pulling the arm forwardly to the extended position;

means for biasing said slide arm toward the retracted position;

a carriage overlying said tray for feeding the newspapers one at a time to said outlet slot;

link means for flexibly suspending said carriage from said slide arm in a manner to move the carriage fore and aft in response to fore and aft movement of said arm, said link means including a link having an upper end pivotally coupled with said slide arm and a lower end coupled with said carriage;

yieldable means for urging said tray upwardly to maintain contact between said carriage and the top newspaper in the stack on said tray; and

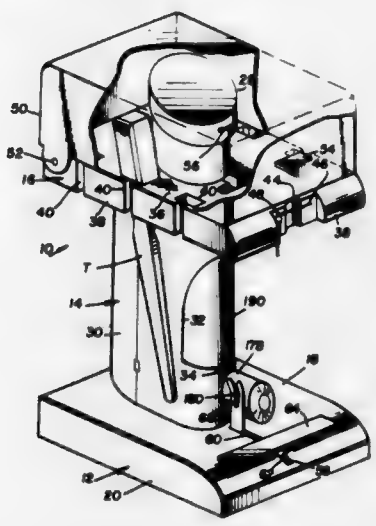
gripping means on said carriage for gripping the upper surface of the top newspaper in the stack in a manner to separate the top newspaper and feed the same to said slot in response to forward movement of the carriage effected by pulling of said slide arm from the retracted position to the extended position, whereby the top newspaper in the stack is delivered to said slot each time said slide arm is pulled to the extended position.

4,508,239

TOOTHPASTE DISPENSER

David L. Rozzen, 750 Lincoln Rd., No. 67, Yuba City, Calif. 95991

Filed Mar. 1, 1983, Ser. No. 471,052
Int. Cl.³ B67D *5/32*; B65D *35/28*
U.S. Cl. 222—39 **24 Claims**



1. Apparatus for dispensing toothpaste from an elongated container of toothpaste which includes a tubular neck at one end, said neck having a mouth, said apparatus comprising:

a stiff pressurization tube which is relatively slender compared to said neck and mouth;

an inflater head mounted on one end of said pressurization tube and having at least one outlet opening through which pressurized fluid injected into said pressurization tube may issue;

a balloon sleeved over said inflater head and having a balloon neck circumferentially sealed relative to the external

periphery of said pressurization tube, so that as pressurized fluid issues from said at least one outlet opening of said inflater head, such pressurized fluid will pressurize and tend to inflate said balloon;

a dispenser cap for said container neck including cooperative securement means for securing said dispenser cap on said container neck;

said dispenser cap including an openable/closeable valve which, only when in an open condition, allows toothpaste to flow out through said mouth of said container neck, under motivation provided by superatmospheric pressure within said balloon due to pressurization of said balloon by injection of pressurized fluid thereinto via said pressurization tube and inflater when said balloon is disposed within said container on said inflater head;

said pressurization tube having an inlet end;

said dispenser cap including an opening having an annular gasket sealingly fitted therein; said pressurization tube near said inlet end thereof being circumferentially sealingly received in said annular gasket so that said pressurization tube may be supplied with pressurized fluid through said inlet end from externally of the toothpaste container while said dispenser cap remains in place on said neck;

the dispenser cap including an internally threaded skirt as said cooperative securement means; a tubular coaxial extension of said skirt, and an axially outer end wall; a tubular side outlet communicating laterally through the tubular coaxial extension with the interior of the cap; said openable/closeable valve being provided on said tubular side outlet distally of said tubular coaxial extension;

said opening of said dispenser cap in which said annular gasket is fitted being provided in said axially outer end wall of said dispenser cap;

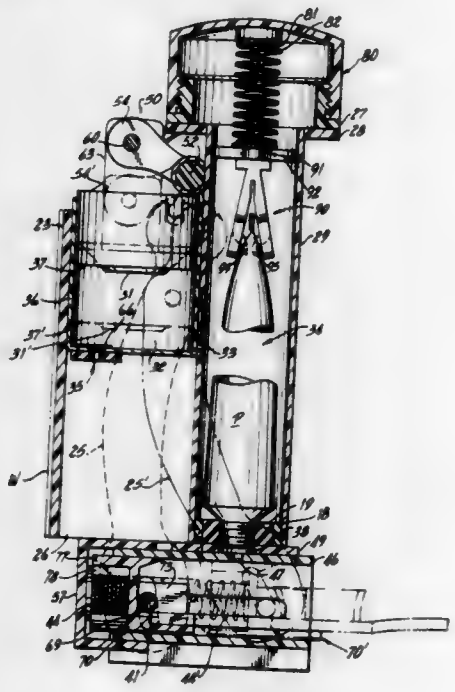
said annular gasket further including an annular boss located externally of said outer end wall of said dispenser cap for facilitating connection of a source of pressurizing fluid to said inlet end of said pressurization tube from externally of said dispenser cap, said pressurization tube, from externally of said dispenser cap being constructed and arranged for connection with a source of pressurizing fluid.

4,508,240

DEVICE FOR EXTRACTING PASTE FROM A TUBE

Aurelio Arango, Miami, Fla., assignor to Miguel Angel Arango, Miami, Fla.

Filed Jan. 20, 1983, Ser. No. 459,390
Int. Cl.³ B65D *35/54*
U.S. Cl. 222—96 **3 Claims**



1. A dispenser of toothpaste from a tube manually operated by a user by inserting a toothbrush comprising, in operative combination:

A. a housing;

B. an air-tight chamber mounted within said housing and adapted to receive said tube and further comprising a removable cap having a puncture assembly adapted to puncture said toothpaste tube so that the increased air pressure built up within said chamber facilitates the extraction of the paste from said tube;

C. pneumatic means for compressing air mounted within said housing and connected to said chamber, including a cylinder, a piston snuggly fitted within said cylinder, a one-way valve mounted on the bottom of said cylinder and an opening connected to said chamber so that air from the atmosphere may be admitted through said valve and compressed in said cylinder by said piston and injected into said chamber thereby increasing its relative air pressure;

D. carrier means slidably mounted on said housing and adapted to receive said toothbrush; and

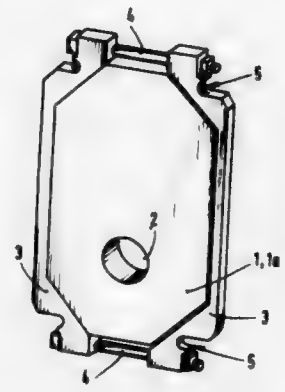
E. linkage means for transmitting the motion of said carrier means to actuate said pneumatic means.

4,508,241

SLIDABLE CLOSURE ELEMENT FOR SLIDE CLOSURES OF METALLURGICAL VESSELS

Gerhard Bauer, Moers; Eckart Hees, Dinslaken-Hiesfeld, and Karl-Dieter Beckers, Neunkirchen-Seelscheid, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte, Duisburg and Martin & Pagenstecher GmbH, Cologne, both of, Fed. Rep. of Germany

Continuation of Ser. No. 263,714, May 14, 1981, abandoned.
This application Aug. 26, 1983, Ser. No. 526,915
Claims priority, application Fed. Rep. of Germany, May 17, 1980, 8013402
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—600 **26 Claims**



1. A slidable closure element for slide closures of metallurgical vessels having pouring openings, comprising:

a refractory plate having two transversely longitudinal spaced edges and connecting transverse edges, said refractory plate having a greater longitudinal dimension than transverse dimension;

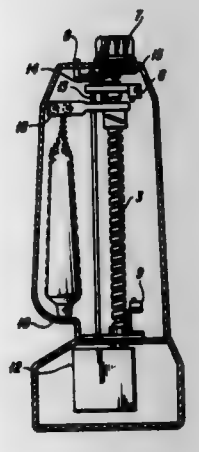
a pair of equally formed frame members for clamping therebetween longitudinal edges, said frame members being positioned and lying against opposite edges of said plate, a portion of the length of the transverse edges being unengaged by said frame members said frame members engaging tightly at least the opposed longitudinal edges of said plate, said frame members being positioned axially symmetrically when clamped relative to said plate; tensioning screws releasably connecting said frame members and drawing them into tight engagement with at least said longitudinal edges, said tensioning screws extending over said portion of said length of said transverse edges which are unengaged by said frame members.

4,508,242

TOOTHPASTE EXTRACTOR

Edward B. Wolfe, 500 Fairview Ave., Hyde Villa, Reading, Pa. 19605

Filed Oct. 21, 1982, Ser. No. 435,570
Int. Cl.[3] B65D *35/28*
U.S. Cl. 222—102 2 Claims



1. An apparatus for dispensing toothpaste or like contents from one of a multiplicity of collapsible tubes onto a toothbrush or other object which comprises:

a housing;

reversible motor means located within said housing for selectively rotating a threaded output shaft means in a clockwise or counterclockwise manner;

means for powering said motor means located within said housing;

threaded output shaft means directly associated with said motor means for moving a rotatable roller means linearly in a first direction and a second direction on said threaded output shaft means, as said shaft means moves in a clockwise and counterclockwise manner;

rotatable roller means associated with said shaft means so as to move on said shaft means as said shaft means rotates;

outlet means associated with said housing through which said paste from said collapsible tube is expelled;

closure member movable across said outlet means and reciprocally movable across said outlet means between a first position where said outlet is closed to a second position where said outlet is open;

first switch means associated with said motor means for actuating said motor means by said power means so as to rotate said shaft means;

a toothbrush for moving said closure member from said first position to said second position wherein said closure member directly engages said first switch means so as to actuate said motor means such that said roller means moves on said shaft means and said toothpaste is applied to said toothbrush;

second switch means associated with said motor means for actuating said motor means by said power means so as to selectively rotate said shaft means in a clockwise and counterclockwise manner upon actuation of said motor means such that said roller means moves in a first direction and a second direction on said shaft means;

third switch means associated with said power means and actuated by said roller means for reversing the polarity of said motor means when said roller means has moved in said first direction so as to completely dispense the contents of said collapsible tube;

fourth switch means associated with said power means and actuated by said roller means for reversing the polarity of said motor means when said roller means has moved in said second direction so as to be at the extremity of its starting position;

a multiplicity of tube holding means located within said housing;

a selector means to rotate said roller means to the appropriate position to operate on a particular tube holding means;

an indicator means to inform the operator when said roller means has been moved by said selector means to said appropriate position to operate on a particular tube holding means;

a connector means to provide linkage between said selector means and said roller means only when said roller means is at the extremity of its starting position;

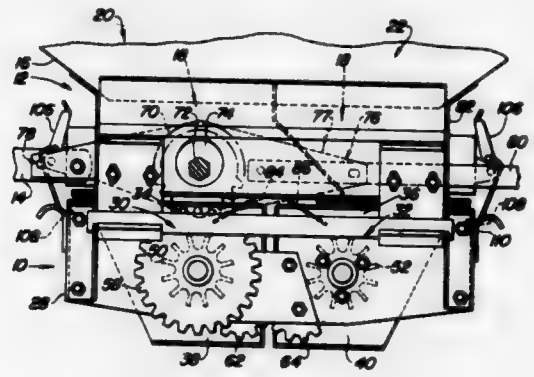
a bearings means which allows said roller means to be rotated without turning said shaft means.

4,508,243

SEED METER ASSEMBLY

Timothy A. Deutsch, Newton, and Howard C. Hadley, Urbandale, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 3, 1983, Ser. No. 463,175
Int. Cl.[3] B67D *5/52*
U.S. Cl. 222—142 21 Claims



1. In an agricultural implement having a frame and a material hopper opening into a discharge area, a meter assembly comprising:

a housing having first and second ends and defining material input and output sections;

metering structure journalled for rotation in the housing between the input and output sections;

means hingedly connecting the first end of the housing to the frame for permitting the housing to swing between an operating position wherein the input section of the housing is closely adjacent the hopper discharge area, and a service position wherein the input section is removed from the discharge area, said means hingedly connecting including horizontal pivot means offset from the hopper discharge area for supporting the housing in a horizontal attitude in the operating position and a vertical attitude in the service position, wherein in the service position the housing is suppported from the frame at a location offset with respect to the hopper discharge area and opens generally outwardly for substantially unencumbered access to the metering structure;

means for releasably securing the housing in the operating position; and

drive means operable when the housing is in the operating position to rotate the metering structure for metering material from the discharge area to the output section, said drive means comprising a driven gear journalled for rotation in, and swingable with, the housing, and a drive gear journalled for rotation on the frame between the horizontal pivot means and the hopper discharge area, said gears so located that when the housing is in the operating position, the drive and driven gears are in driving relationship with each other, and as the housing is swung away from the operating position the driven gear moves to a non-driving relationship with respect to the drive gear.

4,508,244

PRESSURE CAN FOR APPLICATION OF MOUNTING FOAMS, IN PARTICULAR, SINGLE-COMPONENT POLYURETHANE FOAMS

Emil Plaschka, Marbella, Spain; Mathias Pauls, Haltern, Fed. Rep. of Germany, and Guido Niggli, Balgach, Switzerland, assignors to Polypag A.G., Switzerland

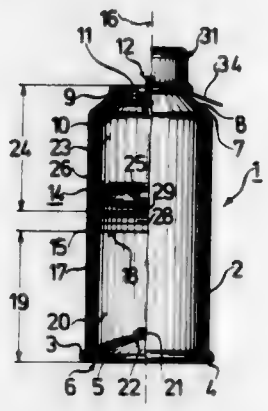
Filed Nov. 5, 1982, Ser. No. 439,418

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1981, 3144094; Nov. 27, 1981, 3147004; Nov. 27, 1981, 3147006

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—153

14 Claims



1. A pressure can for dispensing polyurethane foams, comprising: a cylindrical body, a dome-like upper part having an opening therethrough; a closure member sealingly disposed across said opening; a valve body inset in said closure member for dispensing the contents of the can; a can bottom closing the end of said body opposite from said upper part; a piston slideably disposed in said cylinder intermediate its ends for dividing said cylinder into a foam-former filling space between said piston and closure member and a propellant space between said piston and said can bottom; said piston having a circumferential skirt depending therefrom toward said can bottom, and means for permitting a small amount of propellant to pass from said propellant space to said foam-former filling space while substantially preventing said foam-former from passing from said foam-former space to said propellant space, whereby said foam-former filling will have a small fraction of propellant dissolved therein while under pressure in the can, which fraction will flash from solution when said filling is dispensed from said can at atmospheric pressure, creating bubbles in said dispensed foam-former filling for enhancing its foaming.

4,508,245

DISPENSERS FOR FLOWABLE COMPOSITIONS

Kenneth Houlbrook, Huddersfield, and Paul A. Thornton, Barnsley, both of England, assignors to Clantex Limited, W. Yorks, England

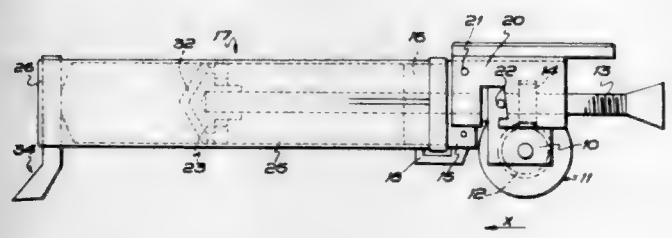
Continuation of Ser. No. 350,830, Feb. 22, 1982, abandoned. This application Jan. 26, 1984, Ser. No. 574,046

Claims priority, application United Kingdom, Feb. 24, 1981, 8105793

Int. Cl.³ B65D *88/54*

U.S. Cl. 222—327

9 Claims



8. A cartridge for flowable composition comprising:

(a) an elongate body portion having a cylindrical interior bore for receiving a slideable piston;

(b) a nozzle end portion which closes one end of the body portion and has a passage which lies transverse to the said interior bore and intersects said bore, said passage being for receiving in friction fitting fashion a nozzle tube so that an end of such tube will project laterally from the cartridge;

(c) the said body portion being sufficiently open at the other end of the cartridge to receive a pusher whereby a piston in the bore can be displaced along the bore to expel composition in said bore out of a nozzle tube in the passage;

(d) the said bore intersecting the passage at a single zone of intersection, which in the direction transverse to the axis of the bore is of less dimension than the width of the bore,

(e) said bore having a portion of non-circular section for engagement with a portion of a nozzle tube of similar section to facilitate positioning of the nozzle tube when inserted in said bore.

4,508,246

CHECK MEANS FOR A WATER DISPENSER

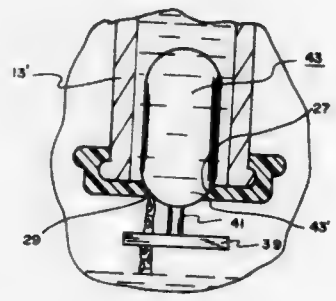
James F. Grenn, Rte. 2, Box 169, Bogue Chitto, Miss. 39629

Filed Sep. 19, 1983, Ser. No. 533,767

Int. Cl.³ B65D *47/00*

U.S. Cl. 222—477

9 Claims



1. A check means in combination with an invertible water bottle and a water dispenser for checking any spillage of water from the mouth of the water bottle when the water bottle is inverted for placement on the water dispenser, said check means comprising:

(a) a cap member for secure attachment over the mouth of the water bottle, said cap member having an aperture therethrough for allowing the water to freely pass from the water bottle when the water bottle is inverted; and

(b) float means for momentarily closing said aperture in said cap means when the water bottle is first inverted and for subsequently floating away from said aperture to allow the water to freely flow through said aperture.

4,508,247

STOPPER SUPPORT MECHANISM FOR CASTING CONTAINERS

Stephen D. Mills, 36 Grassington Rd., Beechwood Estate, and Charles D. Brown, 24 Easson St., Grove Hill, both of Middlesbrough, Cleveland, England

Filed Jan. 17, 1983, Ser. No. 458,647

Claims priority, application United Kingdom, Jan. 18, 1982, 8201305

Int. Cl.³ B22D *41/10*

U.S. Cl. 222—598

5 Claims

1. A stopper and support mechanism for a casting machine of the type including:

a container having an outlet nozzle in its base;

a substantially upright support shaft located externally of the container and guided for axial movement;

a transverse connecting arm extending laterally from an upper end of said support shaft; and,

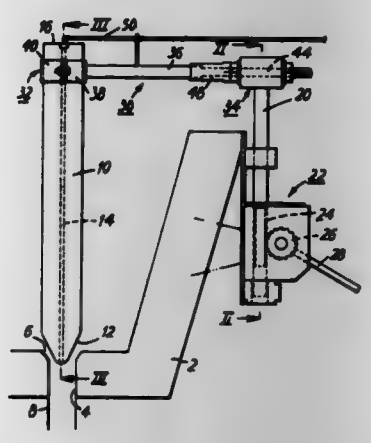
an elongate stopper carried by said transverse connecting arm and supported within said container in substantially upright position in axial alignment with said nozzle:

the improvement comprising:

said stopper being of one piece and being comprised exclu-

sively of a hollow rod of a refractory material having a gas transfer passage extending therethrough between its respective ends;

clamp means rigidly supported by said transverse arm and clampingly engaged with the external periphery of said



stopper adjacent an upper end of said stopper, said clamp means providing the sole support for said stopper; and,

adjustment means interposed between said transverse arm and said support shaft permitting orientation of the longitudinal axis of said elongate stopper relative to the longitudinal axis of said outlet nozzle.

4,508,248

WHEELED APPLICATOR FOR LIQUIDS

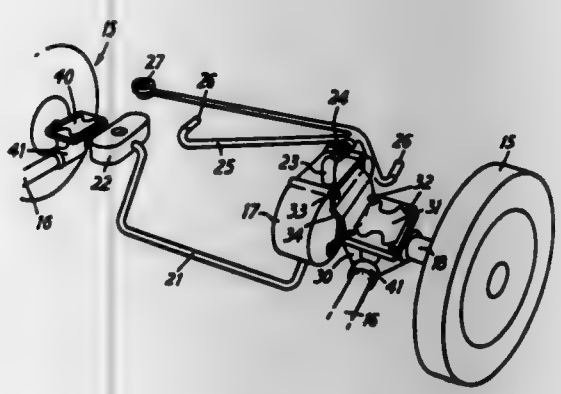
Paul W. Ridgeon, Haslingfield, England, assignor to Walkover Limited, Cambridgeshire, England

Filed Jul. 29, 1982, Ser. No. 402,894

Claims priority, application United Kingdom, Aug. 1, 1981, 8123634

Int. Cl.³ A01C *23/04*; B05B *3/18*

U.S. Cl. 222—623 **8 Claims**



1. An applicator comprising a chassis, wheel members supporting the chassis and on which it can be moved over the ground, the wheel members having axes of rotation, a container for liquid or other material arranged to be supported on the chassis, a rotary displacement pump having a rotor mounted on a pump drive shaft for rotation in a pump housing, having an inlet and an outlet for material to be pumped, connection means arranged to connect the pump inlet to the container, the pump drive shaft being common with the shaft on which one of said wheel members is mounted so that as the wheel member rotates the pump supplies material from the container under pressure through its outlet, and including a bearing for the drive shaft located in a bearing housing, means securing the bearing housing to the chassis, and mounting means mounting the pump housing to the bearing housing such that the pump is only secured to the chassis through the bearing housing, so that loads transmitted between the wheel members and the chassis are not transmitted through the pump.

4,508,249

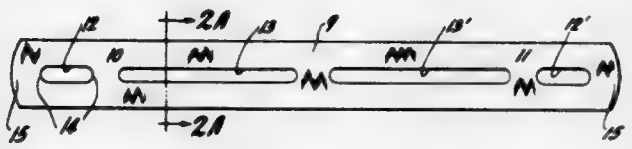
FLASHLIGHT HOLDER

Alan W. Kotchy, 628 Garrison Ave., Nekoosa, Wis. 54457

Filed Sep. 30, 1982, Ser. No. 429,015

Int. Cl.³ A45F *5/00*

U.S. Cl. 224—219 **11 Claims**



1. A flashlight holder including first and second straps, each of said straps comprising a single piece strap of a resilient material having a thickness substantially less than the width of the strap, said strap having first and second openings located respectively in opposite longitudinal halves of said strap, a first of said openings defining an opening adapted to stretch over flashlight whereby said straps are connected to opposite end portions of the flashlight, said second of said openings being larger than said first openings and being adapted to stretch over a forearm, each of said straps including spaced enlargements connected by a connection portion, and said first openings have a length of approximately one inch, and said second openings have a length of approximately three inches.

4,508,250

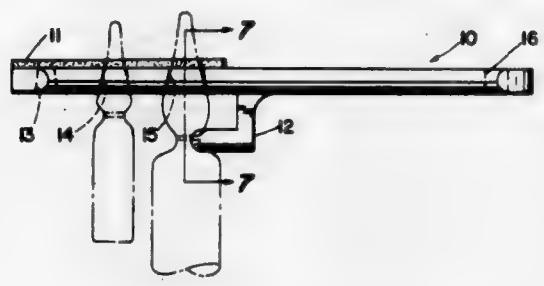
AMPOULE BREAKER TOOL

Kathleen Punchak, 13512 Mohawk Trail, Middleburg Hts., Ohio 44130

Filed Apr. 11, 1983, Ser. No. 483,763

Int. Cl.³ G26F *3/00*

U.S. Cl. 225—97 **9 Claims**



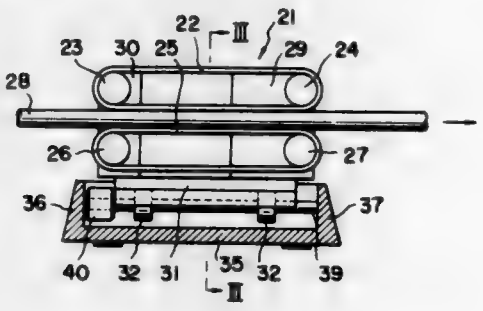
1. An ampoule breaking tool for opening an ampoule having a lower body, an upper bulb portion with an uppermost sealed tip, and a restricted narrowed neck portion interposed between the lower body and the upper bulb, the tool comprising:

an elongated rigid lever having a leverage end and a remote gripping end, the leverage end including at least one through-hole having a frustrum shaped inner wall adapted to engage the mid-section of the bulb portion of the ampoule above the narrowed neck, at least one of the through-holes being a large through-hole to accomodate a large ampoule, and said tool having secured thereto a depending member having a laterally directed pressing arm adapted to engage the neck portion of the large ampoule secured within the large through-hole, whereby manual leverage force applied to the mid-section of the ampoule bulb severs the bulb from the ampoule, the leverage end of the tool contains a plurality of variable size through-holes adapted to engage variable size ampoules.

4,508,251
CABLE PULLING/FEEDING APPARATUS

Kazuhiro Harada, Mito; Yuzoh Tsuchiya, Yokohama; Nobuo Sekiguchi, and Toshio Ishikawa, both of Sagamihara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corp., Tokyo and Showa Electric Wire & Cable Co., Kanagawa, both of, Japan

Filed Oct. 26, 1982, Ser. No. 436,856
Int. Cl.[3] B65H *17/42, 25/22*
U.S. Cl. 226—25 4 Claims

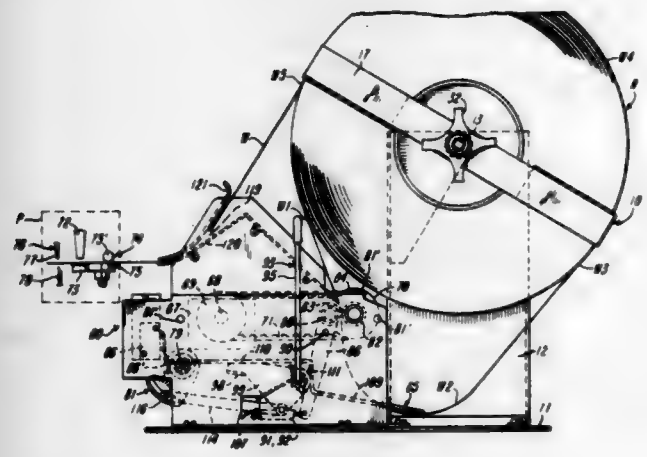


1. A cable pulling/feeding apparatus comprising:
a stationary base;
a carriage mounted through bearings on at least one stationary guide shaft mounted on said base for reciprocating movement and a pair of endless belts for frictionally engaging a straight run of the cable therebetween and cooperating to pull or feed the cable linearly therethrough, said endless belts being rotatably mounted on said carriage allowing reciprocating linear movement of said endless belts relative to said base, in the direction of the travel of the cable; and
a load cell slidably mounted on said guide shaft between said carriage and said base, for producing an electric signal which varies in accordance with pressure applied on said load cell.

4,508,252
WEB FEEDING METHOD AND APPARATUS FOR A PRINTER

Raymond L. Kirby, Jr., Vandalia, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 152,057, May 20, 1980, Pat. No. 4,331,302. This application Sep. 21, 1981, Ser. No. 304,214
Int. Cl.[3] B65H *25/32, 17/20*
U.S. Cl. 226—44 4 Claims

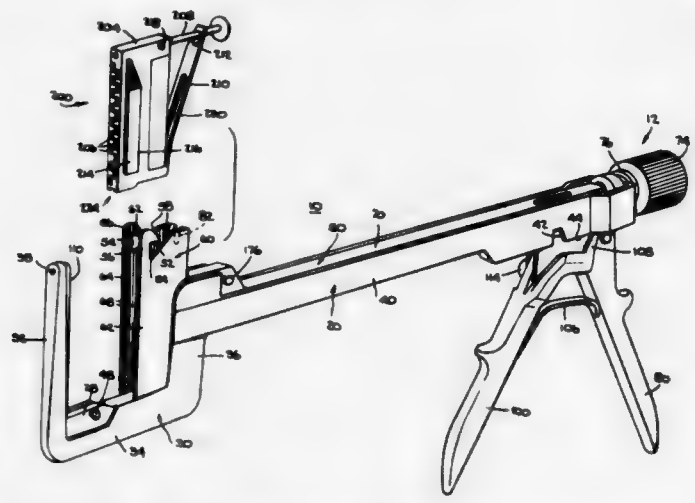


1. Web feeding apparatus, comprising: a pair of cooperable rolls for feeding a web, means including an electric motor for driving one of the rolls, means including a manually actuatable member for separating the rolls, means for sensing a taut condition in the web, and means responsive to either a taut condition in the web or actuation of the manually actuatable member for operating the driving means, wherein the operating means includes a movable member connected to both the sensing means and to the manually actuatable member for alternately actuating and deactuating the electric motor.

4,508,253
SURGICAL FASTENER APPLYING APPARATUS

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 4, 1983, Ser. No. 538,931
Int. Cl.[3] A61B *17/04*
U.S. Cl. 227—19 19 Claims

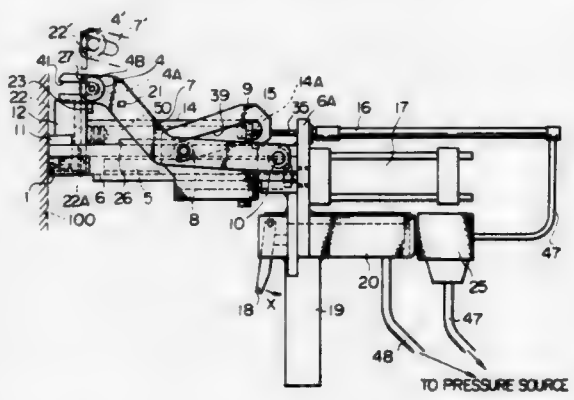


1. Surgical fastener applying apparatus comprising:
a frame having a U-shaped distal portion;
anvil means mounted on the distal leg of the U;
cartridge holder means disposed in the U for linear reciprocal motion toward and away from the anvil means;
cartridge means removably insertable in the cartridge holder means along an axis transverse to the distal leg of the U;
first means associated with the cartridge means and the cartridge holder means for urging the cartridge means into parallel alignment with the anvil means when the cartridge holder means is reciprocated toward the anvil means; and
second means associated with the cartridge means and the frame for causing the cartridge means to move in a direction substantially parallel to the distal leg of the U to bring the cartridge means into registration with the anvil means when the cartridge means is urged into parallel alignment with the anvil means.

4,508,254
ADHERING GUN FOR FASTENERS

Kousyun Fujiwara, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Dec. 29, 1982, Ser. No. 454,088
Int. Cl.[3] B25C *5/02;* B27F *7/00;* B32B *31/00;* B44C *7/00*
U.S. Cl. 227—116 10 Claims



1. A fastener gun for successive adhesion of adhesive-backed fasteners, comprising
a body having a handle,

a slide adapted for slide movement fitting slidably in the body,
an actuator for effecting the slide movement of the slide, said actuator having an operating trigger,
a fastener loading station having link arms rotatably pivoted to said body,
a fastener preadhering station mounted below the fastener loading station and in front of the slide for positioning fasteners such that the actuator pushes said slide against said fasteners,
means for feeding fasteners loaded in the fastener loading station into the fastener preadhering station one by one,
a fastener exiting station mounted adjacent to the fastener preadhering station at a location such that when said slide pushes fasteners located at the fastener preadhering station from the gun, said fasteners leave through the fastener exiting station,
means for transmitting the movement of said slide to the fastener feeding means, said transmitting means including cam plates connected to said slide so as to move therewith, said fastener loading station link arms being pivotably moved along said cam plates, and
a separator connected to said link arms to move with the pivotable movement of the link arms, said separator separating the fasteners from one another and for carrying the separated fasteners to the fastener preadhering station when said slide is moved to a position opposite to the fastener exiting station.

4,508,255

APPARATUS FOR MANUFACTURING WHEEL RIM BLANKS

Horst Lorenz, Solingen, and Richard Schulte, Wuppertal, both of Fed. Rep. of Germany, assignors to Th. Kieserling & Albrecht, Solingen, Fed. Rep. of Germany

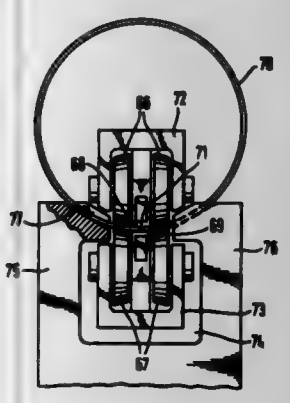
PCT No. PCT/DE81/00166, § 371 Date Jan. 25, 1982, § 102(e) Date Jan. 25, 1982, PCT Pub. No. WO82/01142, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 3, 1981, Ser. No. 342,327

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037614

Int. Cl.³ B23K *5/22*

U.S. Cl. 228—5.1 **12 Claims**



1. Apparatus for manufacturing cylindrical rings from flat strips of metal with each ring having a longitudinal axis and opposed ends welded together at a joint, said apparatus comprising: a plurality of work stations including a strip feed station, a ring forming station, a joint orientation station, a welding station for welding said joint and finishing stations for finishing said joint, said ring forming, joint orientation and welding stations being arranged in direct succession for processing a ring moving generally along said ring longitudinal axis through a first transfer path, said strip feed station being positioned for feeding strip to said ring forming station in a direction transverse to said ring longitudinal axis and said first transfer path, and said finishing stations being positioned for receiving rings moving thereto from said welding station in a second transfer path which is oriented transversely of said longitudinal axis of said ring and said first transfer path, said finishing stations having finishing tools working on said ring along a path transverse to said second transfer path and parallel to said axis each said ring has a predetermined width parallel to said longitudinal axis thereof, at least said finishing stations having finishing tools each movable parallel to said axis to finish the joint and stationary U-shaped support means comprising a pair of upwardly open generally U-shaped ring supports of a width approximately the same as said ring predetermined width, said pair of ring supports being respectively on opposite sides of the finishing tool and, said U-shaped ring member supports having web portions spaced apart to engage spaced apart peripheral portions of and center the cylindrical ring member and each said U-shaped ring member having upstanding rigid stationary legs to respectively engage opposite axial ends of the ring member to resist tool forces parallel to said axis.

4,508,256

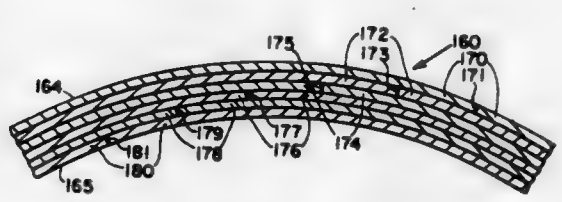
METHOD OF CONSTRUCTING A THREE DIMENSIONAL TUBULAR MEMBER

Clifford J. Radel, Cheviot, and Hugh A. Thompson, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 370,443, Apr. 21, 1982, abandoned, which is a division of Ser. No. 206,410, Nov. 13, 1980, Pat. No. 4,342,314, which is a continuation-in-part of Ser. No. 17,506, Mar. 5, 1979, abandoned. This application Dec. 20, 1983, Ser. No. 563,337

Int. Cl.³ B23K *1/16;* B29C *17/04*

U.S. Cl. 228—152 **7 Claims**



1. A method for constructing a three-dimensional tubular member for continuously imparting a three-dimensional appearance and tactile impression to a plastic web brought in contact with its peripheral surface, said method comprising:
(a) forming patterns of apertures in a multiplicity of planar sheets;
(b) superposing said sheets containing said aperture patterns on one another to form a stack exhibiting a three-dimensional continuum of capillary networks from the uppermost surface to the lowermost surface thereof;
(c) bonding said superposed stack of sheets to one another at contact points to form an integral laminate structure without destroying said continuum of capillary networks;
(d) causing the uppermost surface of said laminate structure to assume a radius of curvature greater than that of said lowermost surface of said laminate structure without causing delamination thereof, thereby causing said laminate structure to assume a substantially tubular shape; and
(e) securing the opposing free edges of said tubular shaped laminate structure to one another while maintaining substantial continuity of said three-dimensional continuum of capillary networks about the entire periphery of the tubular member thus formed.

4,508,257

METHOD OF BRAZING WITH NICKEL BASED ALLOY

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 470,403, Feb. 28, 1983, Pat. No. 4,448,618.
This application Mar. 7, 1984, Ser. No. 587,324
Int. Cl.[3] B23K *35/30, 35/14*
U.S. Cl. 228—263.13 7 Claims



Photomicrograph of AISI 316 stainless steel joint brazed with Sample No. 1 alloy of the present invention (Magnification 400 X).

1. A process for fabricating homogeneous ductile foil having a composition consisting essentially of 25 to 35 atom percent palladium and 15 to 20 atom percent silicon, the balance being nickel and incidental impurities, which process comprises forming a melt of the composition and quenching the melt on a moving chill surface at a rate of at least about 10^5° C./sec.

4. A process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

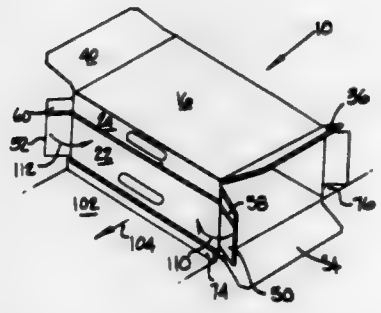
(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous nickel based foil having a composition consisting essentially of 25 to 35 atom percent palladium and 15 to 20 atom percent silicon, the balance being nickel and incidental impurities.

4,508,258

SLEEVE-STYLE BEVERAGE CARTON

Earl J. Graser, Monroe, La., assignor to Manville Service Corporation, Denver, Colo.

Filed May 10, 1982, Ser. No. 376,855
Int. Cl.[3] B65D *5/46*
U.S. Cl. 229—38 2 Claims



1. A paperboard sleeve-style beverage carton for use on a carton filling machine having traveling flight bars, comprising:

(a) a bottom panel;

(b) a pair of side panels, hingedly connected to opposite sides of the bottom panel;

(c) a first top panel and a second top panel hingedly connected to opposite sides of the side panels, the top panels being overlapped and adhesively secured together, and the top panels having handle means for lifting the carton;

(d) a pair of end panels hingedly connected to opposite ends of each of the side panels, each end panel having an upper and a lower cutout whereby the heights of the end panels are less than the heights of the side panels and the upper and lower edges of each end panel are spaced from the top and bottom panels respectively;

(e) a pair of bottom panel dust flaps hingedly connected to opposite ends of the bottom panel, each bottom panel dust flap having a first bottom panel dust flap cutout on one side and a second bottom panel dust flap cutout on the other side with the first bottom panel dust flap cutouts being larger than the second bottom panel dust flap cutouts whereby the widths of the bottom panel dust flaps are less than the width of the bottom panel, the side edges of the bottom panel dust flaps are spaced from the side panels and the dust flaps can be revolved to extend outwardly from the bottom panel during the filling operation;

(f) a pair of first top panel dust flaps hingedly connected to opposite ends of the first top panel, each first top panel dust flap having a cutout on a side adjacent the side panel, the cutouts being substantially the same size as the first bottom panel dust flap cutouts whereby the widths of the first top panel dust flaps are less than the width of the first top panel, the side edges of the first top panel dust flaps are spaced from the side panels and the first top panel dust flaps can be revolved to extend outwardly from the first top panel during the filling operation;

(g) a pair of second top panel dust flaps hingedly connected to opposite ends of the second top panel, each second top panel dust flap having a cutout on a side adjacent the side panel, the cutouts being substantially the same size as the second bottom panel dust flap cutouts whereby the widths of the second top panel dust flaps are less than the width of the second top panel and the side edges of the second top panel dust flaps are spaced from the side panels; and

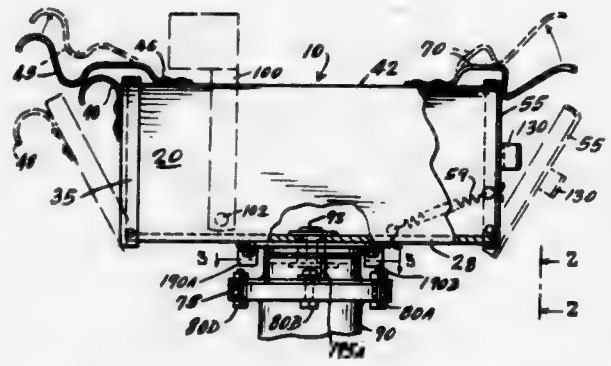
(h) relief means on the hinged connections between at least one of the first and second top panel dust flaps and the respective top panel to aid in the folding of the first and second top panel dust flaps.

4,508,259

VARIABLE ACCESS PARCEL AND MAIL RECEPTACLE

Robert R. Hicks, 1384 Shoop Ave, Wauseon, Ohio 43567

Filed Mar. 14, 1983, Ser. No. 474,880
Int. Cl.[3] B65D *91/00*
U.S. Cl. 232—17 2 Claims



1. A box member apparatus with a hollow interior, and with a bottom undersurface, having a top and bottom portion, for receiving and holding temporarily mailing materials for eventual withdrawal of such materials from said box member, comprising:

(a) a hollow housing member having a bottom undersurface and having interior walls and a frontal end and a posterior end, said box having a frontal entranceway on the frontal end of said housing, with a pivotable doorway adapted to close or open access to the said frontal entranceway;

(b) pivotable secondary entranceway and doorway means

appended to the posterior end of said housing member, said secondary doorway means having means to bias the secondary doorway means from being opened from within the interior of the housing member, and wherein said secondary doorway means has an inner wall and wherein said retaining means comprises a spring member connected between a portion of the interior wall of said housing member and a portion of the inner wall of said secondary doorway means;

(c) vertical support means connected to the bottom undersurface of said box member apparatus and adapted to hold said housing member in a position above the ground, said vertical support means having a vertical central axis;

(d) first movement means integrally connected on the bottom undersurface of said housing member for allowing movement of said housing member around the vertical central axis of said vertical support means from a first horizontal position to a horizontal position an arcuate distance of one hundred and eighty degrees around said vertical axis to a second horizontal position;

(e) second movement means interconnected to said first movement means on the bottom undersurface of said housing member to permit tilting movement of said housing member about a horizontal axis which is perpendicular to the vertical central axis of said vertical support means.

4,508,260

PORTABLE CONTAINER FOR VALUABLE ARTICLES

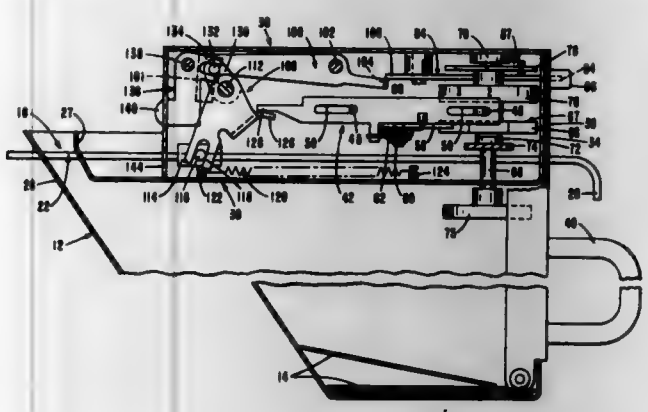
Grant G. H. Keir; John A. Peebles; Jonas K. McNab, and Ian N. Campbell, all of Dundee, Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 30, 1983, Ser. No. 509,488

Claims priority, application United Kingdom, Feb. 3, 1983, 8302932

Int. Cl.³ G08B *13/08*; E05B *39/04*

U.S. Cl. 232—43.1 **15 Claims**



1. A container for articles, comprising:

locking means arranged to permit the deposit of said articles in said container when in an unlocked condition and to prevent deposit of said articles in said container when in a locked condition; and

resettable indicator means for indicating the number of times said locking means has been unlocked after a resetting of said indicator means;

said resettable indicator means comprising an indicator member arranged to be sequentially moved from one to another of a predetermined number of possible positions each time an unlocking and locking cycle of operation of said locking means takes place; and said container further comprising a container opening means, separate from said locking means, for gaining access to the interior of the container for the purpose of removing said articles held in the container and for resetting said indicator member to an initial position.

4,508,261

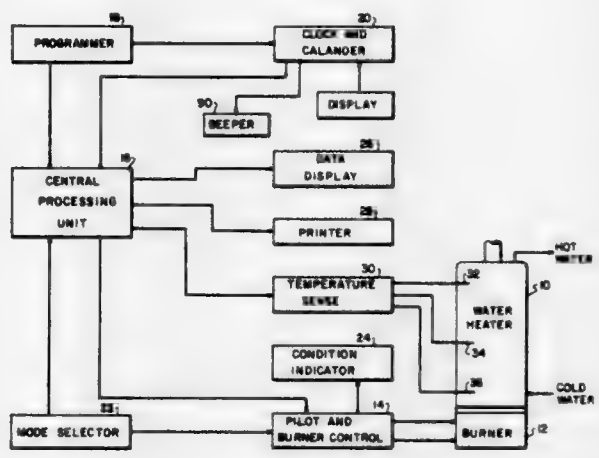
HOT WATER CONTROL AND MANAGEMENT SYSTEM

Gerald Blank, 702 Forward St., La Jolla, Calif. 92037

Filed Jan. 28, 1982, Ser. No. 343,532

Int. Cl.³ F23N *1/08*; F24H *1/00*

U.S. Cl. 236—20 R **19 Claims**



1. A hot water control system, said system comprising:

a water reservoir for containing a predetermined quantity of water,

a heat source for heating the water in said reservoir to a predetermined temperature, and

control means including programmable means for selectively programming said heat source for heating, at a preselected rate, water contained in said reservoir to a preselected temperature at at least one preselected time to meet demand for a given quantity of heated water during a predetermined peak period of time subsequent to said preselected times and preselected times occurring over a given time interval, and

means for sensing the temperature of water in said reservoir, and means for determining, from said temperatures, and the temperature of an available cold water supply, and the capacity of said reservoir, the currently available supply of hot water and, means for visually indicating the currently available supply of hot water of a selected temperature equal to or less than the temperature of said water in said reservoir.

4,508,262

THERMOSTAT ATTACHMENT FOR A VALVE

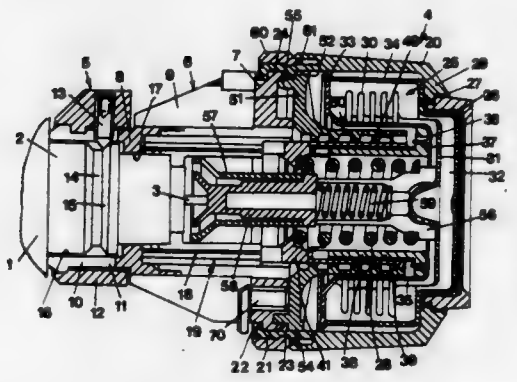
Svend P. Pedersen; Jens J. Molbaek, and Allan H. Hansen, all of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Sep. 12, 1983, Ser. No. 531,412

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1982, 3236372

Int. Cl.³ F24F *11/06*

U.S. Cl. 236—42 **12 Claims**



1. A thermostatic valve assembly, comprising a base member, a cup shaped knob mounted in rotatable relation and axial

fixed relation to said base, said knob having an end wall, an expansible working element having a rigid outer shell with first plate means at one end thereof which frictionally engages said knob end wall, and an axially flexible inner shell with second plate means at one end thereof in adjustable spaced relation to said first plate means, said inner and outer shells forming an interior space for a liquid-vapor filling and said inner shell being a corrugated tube having one end connected to the second plate means and an opposite end connected to the end of the outer shell opposite the first plate means, a coupling member attached to said knob and having a first tube portion nested in said corrugated tube, a setting element connected to said second plate means, spring means biasing said second plate means toward said first plate means, axially movably supporting bearing means for said spring means that includes a second tube portion, said base member having axial guide means for said supporting bearing means, and thread means between said knob and said supporting bearing means to adjust the compression of said spring means upon turning said knob, said thread means being between said first and second tube portions.

4,508,263

THERMOSTATIC VALVE

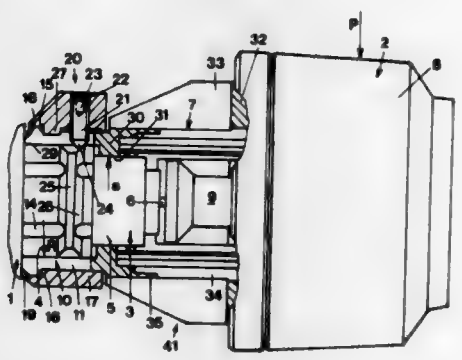
Svend P. Pedersen, Nordborg; Soren N. Wrang, Sonderborg, and Jens J. Molbaek, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Sep. 12, 1983, Ser. No. 531,510

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3236371

Int. Cl.³ F24F *11/02*

U.S. Cl. 236—42 **13 Claims**



1. A thermostatic valve assembly, comprising, a stationary valve housing having a projecting portion with first and second cylindrical supporting surfaces, a base unit fixedly connected to said projecting portion, a regulating knob mounted in rotatable relation to and axially fixed relation to said base unit, said base unit having a slotted foot portion with a first annular bearing surface pushed over said first cylindrical supporting surface, said base unit having a second annular bearing surface outwardly from said first annular surface engaging said second cylindrical supporting surface, a ring member surrounding said slotted foot portion for securing said base unit to said housing, said ring member and said slotted foot portion having abutting surfaces for maintaining said ring member in a fixed axial position relative to said slotted foot portion, and adjusting means for said base unit which includes annular groove means in said housing projecting portion and wedge means connected to said ring member, said wedge means being cooperable with said groove means to effect axial movement of said base unit relative to said housing projecting portion.

4,508,264

HEATER COOLANT CIRCULATION SYSTEM FOR VEHICLE PROVIDING MATCHED HEATING FOR INTAKE SYSTEM AND PASSENGER COMPARTMENT

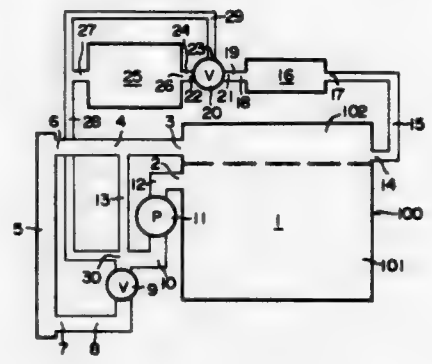
Keisou Takeda, and Toshiyuki Hirata, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 22, 1983, Ser. No. 516,333

Claims priority, application Japan, Aug. 20, 1982, 57-145075

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 B **3 Claims**



1. A heater coolant circulation system for a vehicle comprising a passenger compartment and an engine which has a combustion air intake passage with a wall and a cooling system through which coolant is circulated, comprising:

a first heat exchanger system for exchanging heat between coolant flowing therethrough and said wall of said intake passage;

a second heat exchanger system having a coolant flow resistance for exchanging heat between coolant flowing therethrough and the interior of said passenger compartment;

a bypass conduit system having a coolant flow resistance which is larger than that of said second heat exchanger system; and

a changeover system which provides selectively either a first connection in which said first heat exchanger system and said second heat exchanger system are connected in series between a point in said cooling system of said engine at which relatively hot coolant is available at relatively high pressure and another point in said cooling system of said engine at which the coolant is at relatively low pressure without including said bypass conduit, or a second connection in which said first heat exchanger system and said bypass conduit system are connected in series between a point in said cooling system of said engine at which relatively hot coolant is available at relatively high pressure and another point in said cooling system of said engine at which the coolant is at relatively low pressure, without including said second heat exchanger system.

4,508,265

METHOD FOR SPRAY COMBINATION OF LIQUIDS AND APPARATUS THEREFOR

Morio Jido, Tokyo, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 356,086

Claims priority, application Japan, Jun. 18, 1981, 56-94157

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ B05B *5/02*

U.S. Cl. 239—3 **7 Claims**

4. An apparatus for the spray combination of a first liquid having a low dielectric constant and a second liquid having a high dielectric constant, which comprises:

a first flow path disposed at the center of a spray nozzle and adapted to permit said first liquid to flow,

a first electrode disposed inside said first flow path and formed so as to generate corona discharge and an electric field through which said liquid passes, thereby causing

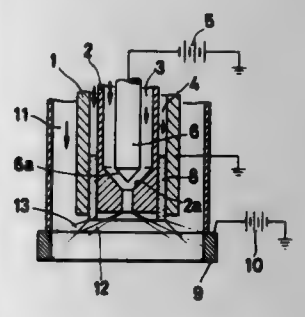
said first liquid to be ejected from the open end of said first flow path in the form of dispersed finely divided particles charged to one polarity,

a power source for applying a high potential of said one polarity to said first electrode,

an annular second flow path formed concentrically around said first flow path and adapted to allow said second liquid to flow,

a porous member disposed at the open end of said annular second flow path to finely divide the second liquid flowing therethrough,

an annular electrode disposed so as to surround the open end



of said annular second flow path at the leading end of said spray nozzle, and

a power source for applying to said second electrode a high potential of the polarity opposite that applied to said first electrode,

so as to subject the finely divided particles of said second liquid leaving said porous member to secondary splitting to establish much finer particles;

whereby finely divided particles of the first liquid charged to one polarity and finely divided particles of the second liquid charged to the polarity opposite that of said first liquid are electrostatically combined with each other and electrically neutralized.

4,508,266

METHOD OF CHANGING COLOR OF PAINTS FOR AN ELECTROSTATIC COATING MACHINE

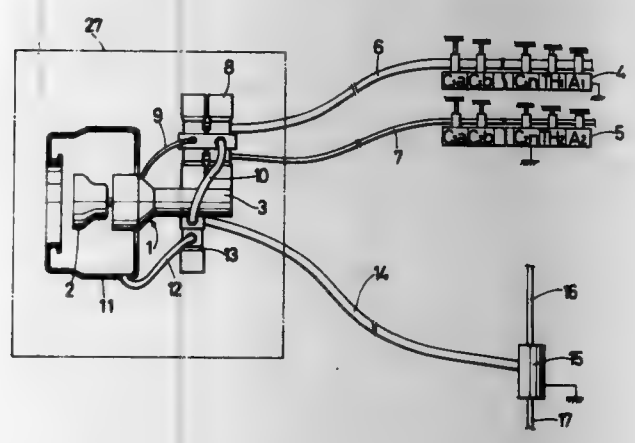
Eiiji Saito, Kamakura; Shoji Aizawa; Michio Mitsui, both of Yokohama; Tomohiko Miyata, Tokyo, and Masayuki Kuroda, Kawasaki, all of Japan, assignors to Ransburg Japan, Ltd., Tokyo, Japan

Division of Ser. No. 287,818, Jul. 28, 1981, Pat. No. 4,422,576. This application Jun. 10, 1983, Ser. No. 503,170

Claims priority, application Japan, Aug. 4, 1980, 55-106955

Int. Cl.³ B05B *5/02*

U.S. Cl. 239—3 **2 Claims**



1. A method of changing color of paints to change between the paint of a preceeding color for coating a preceeding article and the paint of succeeding color for coating a succeeding article by using an electrostatic coating machine having a rotary atomizing head which is applied with a high voltage, a cleaning shroud reciprocatingly provided to move between a position surrounding said rotary atomizing head and retracted therefrom, a plurality of color change valve mechanisms for feeding paints and cleaning fluids to said rotary atomizing head, a first change-over valve provided at a position close to said rotary atomizing head, paint feed passages each of which consists of a major portion respectively connected to each of said color change valve mechanisms and to said change-over valve, and of a minor portion selectively communicated between said rotary atomizing head and said each major portion of said paint feed passages by way of said first change-over valve, a drain passage for recovering drainage from said cleaning shroud and said first change-over valve, a discharging section for forcively discharging the drainage from said drain passage, and a second change-over valve provided in the midway of said drain passage communicating from said cleaning shroud to said discharging section, which comprises:

a first cleaning step comprising interrupting the high voltage after the coating has been completed for the paint of the preceeding color, feeding the cleaning fluid at a high pressure and a great flow rate to the major portion of the paint feed passage and discharging the drainage of said cleaning fluid without flowing into the cleaning shroud;

a second cleaning step comprising feeding the cleaning fluid at a low pressure and in a low flow rate to the minor portion of the paint feed passage and the rotary atomizing head and discharging the drainage of said cleaning fluid by way of the cleaning shroud;

a first coating preparation step comprising feeding the paint of the succeeding color to said major portion of the paint feed passage and discharging a surplus of said paint without flowing into the cleaning shroud;

a second coating preparation step comprising feeding the paint of the succeeding color to the minor portion of the paint feed passage and the rotary atomizing head and discharging the surplus of said paint by way of the cleaning shroud; and

a third cleaning step comprising cleaning a portion of the drain passage at a high pressure and in a great flow rate in order to prevent metal bridging from occuring in the drain passage owing to an electro-conductivity of the surplus of said paint of the succeeding color upon application of a high voltage to the rotary atomizing head.

4,508,267

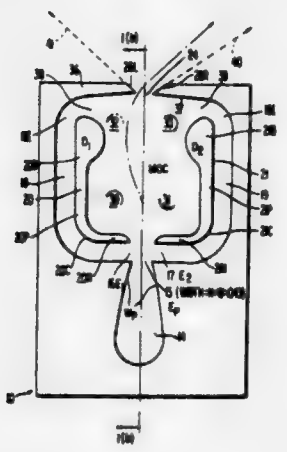
LIQUID OSCILLATOR DEVICE

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.

Continuation-in-part of Ser. No. 112,248, Jan. 14, 1980, abandoned, and a continuation-in-part of Ser. No. 218,247, Dec. 19, 1980, abandoned. This application Apr. 5, 1983, Ser. No. 482,349

Int. Cl.³ B05B *1/08*

U.S. Cl. 239—11 **19 Claims**



1. In a liquid oscillator having an oscillation chamber, a power nozzle for introducing a liquid power jet into said chamber, an outlet throat downstream of said power nozzle and a

pair of passages having inlet openings to the respective sides of said oulet throat and exit openings adjacent said power nozzle,

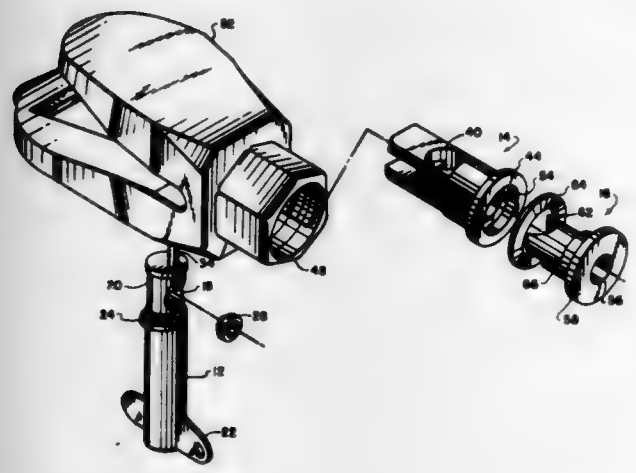
the improvement wherein said oscillation chamber includes a pair of mirror image wall surfaces beginning immediately downstream of said exit openings and extending to downstream therefrom and defining vortex forming chambers, the downstream end of each said wall surface being shaped to permit vortices formed in said vortex forming chambers to move thereover into said inlet openings, respectively, whereby said liquid power jet is caused to oscillate back and forth in said oscillation chamber.

4,508,268

REVERSIBLE SPRAY TIP

John D. Geberth, Jr., 10 Goose Cove La., Ramsey, N.J. 07446

Filed Dec. 21, 1982, Ser. No. 451,926
Int. Cl.[3] B05B *15/02*
U.S. Cl. 239—119 28 Claims



1. A spray nozzle for use with a spray device adapted for hydraulically atomizing and spraying liquids, the spray device having a fluid passageway communicating with conduit means connected to a source of liquid under pressure, said spray nozzle including:

a. a housing, having a first axial bore therethrough and a second cylindrically shaped bore transverse thereto;

b. a cylindrical member transversely mounted for rotational movement in said cylindrically shaped transverse bore of said housing, said cylindrical member having a diametric bore therethrough terminating in a spray opening;

c. a sealing member in said first axial bore of said housing having an axial fluid bore therethrough communicating between the fluid passageway of said spray device and the diametric bore in said cylindrical member, the outlet end of said sealing member having a shape complimentary to and in abutting relationship with said cylindrical member;

d. means engaging said sealing member with said cylindrical member to prevent transverse movement of said cylindrical member in said housing;

e. means for securing said nozzle to said spray device and effecting sealing therebetween; and

f. means for rotating said cylindrical member.

4,508,269

CORNER WATERING SYSTEM FOR CENTER PIVOT IRRIGATION MACHINES

John E. Davis, Hebron; Terry L. Zielke, Deshler, and Ronald J. Coash, Hebron, all of Nebr., assignors to Reinke Manufacturing Co., Inc., Deshler, Nebr.

Division of Ser. No. 363,275, Mar. 29, 1983,. This application Nov. 14, 1983, Ser. No. 550,979
Int. Cl.[3] B05B *3/12*
U.S. Cl. 239—177.2 3 Claims

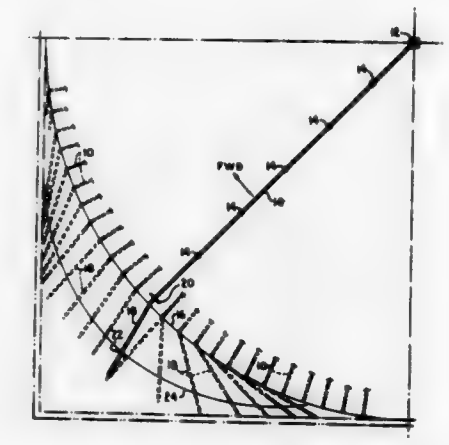
1. In a center pivot irrigation machine having a main boom supported to pivot about one end and mounted on a plurality of mobile support units, an extension boom pivotally coupled with the opposite end of the main boom for irrigating corner areas of the field, a wheeled tower supporting said extension boom thereon, means for guiding said tower along a preselected path effecting pivotal extension of the extension boom into the corner areas approached by the main boom and pivotal retraction of the extension boom out of the corner areas as the main boom departs therefrom, first drive means for propelling said mobile support units, and second drive means for propelling said tower, the improvement comprising:

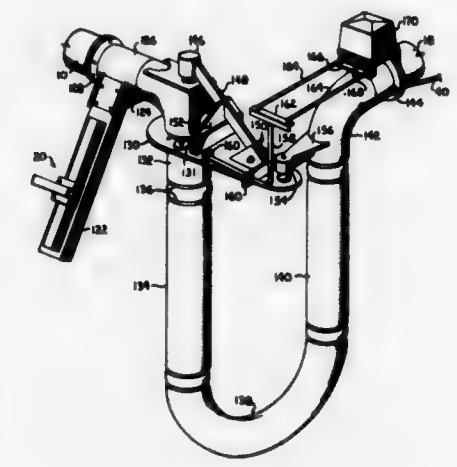
a double hinge structure interconnecting said main and extension booms;

a first generally vertical hinge axis on said double hinge structure about which the extension boom can pivot relative to the main boom during extension into the corner areas and retraction out of the corner areas;

a second generally vertical hinge axis on said double hinge structure offset from said first hinge axis and cooperating therewith to permit relative linear movement between the extension boom and said opposite end of the main boom; and

means for controlling said first and second drive means in accordance with the angular orientation of said extension boom about said second hinge axis in a manner to maintain said tower on said preselected path.





4,508,270

APPARATUS FOR ROLLING AND GUIDING A DIRECTABLE JET NOZZLE

Raymond J. M. Joubert, Savigny sur Orge, France, assignor to S.N.E.C.M.A., Paris, France

Filed Mar. 12, 1982, Ser. No. 357,766
Claims priority, application France, Mar. 13, 1981, 81 05460
Int. Cl.[3] B64C *15/00*
U.S. Cl. 239—265.35 17 Claims

1. A rolling and guiding apparatus for a directable jet propulsion nozzle, comprising:

a fixed part of said nozzle;

a cylindrical movable part of said nozzle movable with respect to said fixed part;

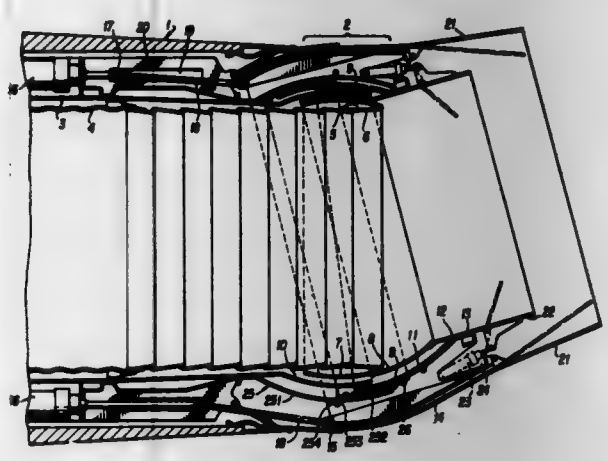
an exterior spherical structure fixed to said movable part of said nozzle;

control means connected between said fixed part and said exterior movable structure for activating the movement of said exterior movable structure;

guidance means disposed between said fixed part and said exterior movable structure for guiding the movement of said exterior movable structure;

a fixed interior spherical race fixed to an end of said fixed part of said nozzle;

a movable exterior spherical race fixed to said cylindrical movable part, said movable spherical race being concentric with, and exterior to, said interior fixed spherical race, said fixed interior race and said movable exterior race



being spaced from one another such that said movable exterior race is not supported by said fixed interior race;

sealing means fixed between said interior fixed and said movable spherical races; and

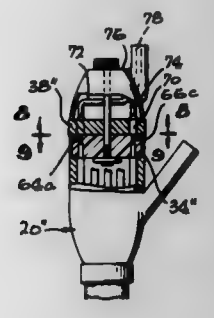
means for transmitting jet propulsion-generated loads from said cylindrical movable part of said nozzle to said fixed part of said nozzle, said means for transmitting comprising a fixed exterior spherical race fixed to said fixed part of said nozzle and extending coaxial with said fixed interior spherical race and exterior of said movable exterior spherical race, said means for transmitting further comprising rolling bearing means disposed between said fixed exterior spherical race and said movable exterior spherical race, said movable exterior race being supported by said fixed exterior race.

4,508,271

AIRBRUSH ASSEMBLY

Ronald A. Gress, 6921 Clinton, Hollywood, Calif. 90036

Filed May 3, 1982, Ser. No. 374,088
Int. Cl.[3] A62C *31/00;* B05B *12/14*
U.S. Cl. 239—305 7 Claims



1. A variable colorant blender for use with a painting apparatus for discharging colorant; said colorant blender comprising:

a plurality of discrete supply containers that contain respective different individual colorants;

means defining a plurality of supply paths connected to receive the individual colorants from the plurality of supply containers, respectively, the supply paths having respective supply-outlet openings that are disposed in a mechanical sequence;

colorant-pickup means that define a common pathway to the painting apparatus and that have an inlet end; and

adjustable means for moving the inlet end relative to the openings, along the mechanical sequence, to selectively align the inlet end to receive such colorant either from one of the supply-outlet openings or from any two adjacent supply-outlet openings, for supply to such painting apparatus;

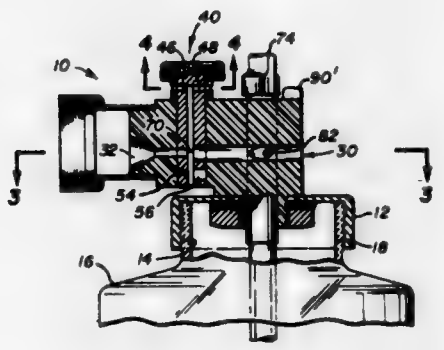
the inlet end and the supply-outlet openings being mutually configured to provide a generally gradual gradation of colorant flow from any of the supply-outlet openings to the inlet end when the adjustable inlet-moving means are adjusted to move the inlet end toward, past, and beyond that particular supply-outlet opening.

4,508,272

HOSE END SPRAY NOZZLE

Lincoln Thompson, 26 Carriage Rd., Cheshire, Conn. 06410

Filed Sep. 28, 1982, Ser. No. 425,503
Int. Cl.[3] B05B *7/30*
U.S. Cl. 239—318 11 Claims



1. Apparatus for selectively mixing fluids comprising:

a body, said body defining a first fluid passage which extends therethrough, said first fluid passage including a converging portion and a first constant diameter portion located downstream of said converging portion;

coupling means for connecting a source of first pressurized fluid to said body, said coupling means delivering the pressurized fluid to said first fluid passage whereby the velocity of said first fluid will be increased during flow through said converging portion prior to flow through said first constant diameter portion; and

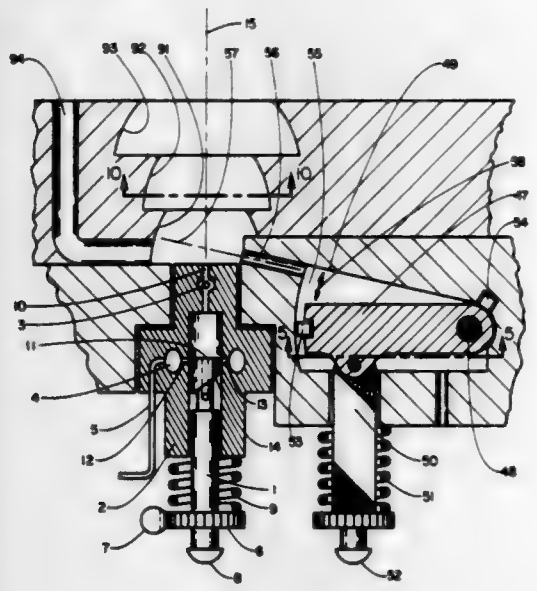
tube means rotatably mounted within said body, said tube means being closed at a first end and extending outwardly from said body to an open second end, said tube means intersecting said first constant diameter portion of said first fluid passage and extending partially into said constant diameter passage portion from a side thereof, said tube means thus forming a restriction in said first fluid passage, a low pressure area being created downstream of said restriction, said tube means being provided with a port extending through the wall thereof to establish communication between said first fluid passage and the interior of said tube means whereby the low pressure area downstream of said tube means may be placed in communication with the second end of said tube means to thereby establish a flow of a second fluid through said tube means into said first fluid passage for mixing with said first fluid, the rate of flow of the second fluid being controllable by rotation of said tube means to vary the area of said port which is in communication with said first fluid passage.

4,508,273

CROSSED PULSE LIQUID ATOMIZER

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115

Filed Sep. 22, 1982, Ser. No. 425,122
Int. Cl.[3] B05B 7/08; F23C 11/04
U.S. Cl. 239—427 6 Claims



1. A liquid atomizer comprising:

at least one means for creating more than one liquid pulse and for directing each said liquid pulse to travel along a trajectory, said liquid pulser means comprising; means for controlling the quantity of liquid in each liquid pulse, and means for controlling the number of liquid pulses per unit of time;

at least one means for creating more than one gas pulse and for directing each said gas pulse to travel along a trajectory whose centerline intersects but does not coincide with the centerline of at least one of said liquid pulse trajectories, said gas pulser means comprising means for controlling the number of gas pulses per unit of time;

means for driving and timing said liquid pulser means and said gas pulser means so that each of said liquid pulses is impacted while traveling along said liquid pulse trajectory by at least one of said gas pulses while traveling along said gas pulse trajectories;

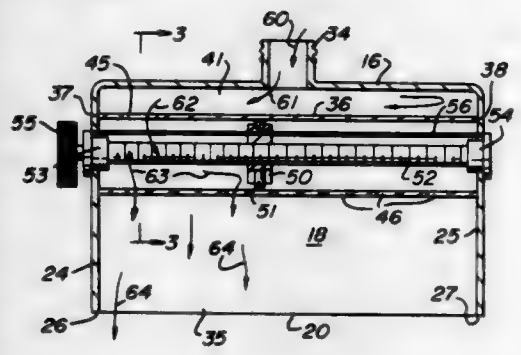
a cavity means for reflecting said gas pulses comprising solid gas pulse reflector surfaces which partially enclose the cavity of said cavity means so that, each of said gas pulses impacts liquid pulses at least twice and each of said liquid pulses is impacted by gas pulses at least twice and so that liquid pulses do not strike said reflector surfaces.

4,508,274

ADJUSTABLE FLOW COOLANT NOZZLE

Timothy J. Eichfeld, and Horace C. Disston, both of 217 S. Hurffville Rd., Deptford, N.J. 08096

Filed Nov. 15, 1983, Ser. No. 551,890
Int. Cl.[3] B24B 55/02; B05B 1/20
U.S. Cl. 239—455 8 Claims



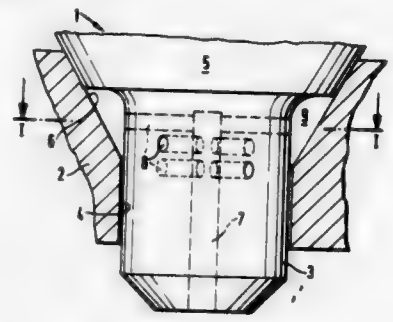
1. A coolant nozzle of variable width stream for a grinding wheel or the like, said nozzle comprising a hollow housing for location extending laterally across the working surface of a grinding wheel, a coolant inlet in an upper region of said housing, a coolant outlet extending laterally in a lower region of said housing between opposite sides thereof, a laterally extending elongate tubular formation in said housing, coolant receiving port means adjacent to one end of said tubular formation in fluid communication with said coolant inlet, coolant discharging port means extending longitudinally along a lower region of said tubular formation and communicating with said coolant outlet, said receiving and discharging port means being in direct fluid communication with each other, a control element shiftable in said tubular formation to close fluid communication between said receiving port means and a selected length of said discharge port means, the remaining length of said discharge port means communicating with said receiving port means to pass a coolant stream of selected width through said outlet, and control element positioning means for selectively positioning said control element in said tubular formation to obtain the desired stream width.

4,508,275

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Karl Hofmann, Remseck, and Werner Banzhaf, Sindelfingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,724
Int. Cl.[3] F02M 61/10
U.S. Cl. 239—533.3 4 Claims



1. A fuel injection nozzle for internal combustion engines having:

a nozzle body having an injection port;

an inwardly opening valve needle;

a valve seat on which the valve needle rests;

a valve needle head arranged to protrude through the injection port; and

an annular chamber defined by the valve needle and the nozzle body downstream of the valve seat; wherein the valve needle includes:

a longitudinal bore which opens to the valve needle head;

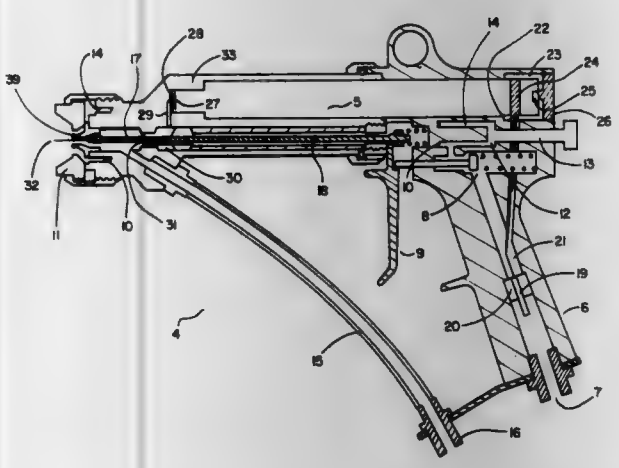
at least two connecting channels which branch from the longitudinal bore to the annular chamber, and which extend substantially transverse to the valve needle longitudinal axis, wherein the total cross sectional area of the at least two connecting channels is greater than the cross sectional area of the longitudinal bore to prevent throttling of fuel toward the injection port, and wherein at least one dimension of each of the at least two connecting channels is less than the longitudinal bore diameter to prevent foreign matter from entering the longitudinal bore from the annular chamber.

4,508,276

CURRENT LIMITED ELECTROSTATIC SPRAY GUN SYSTEM WITH POSITIVE FEEDBACK CONTROLLED CONSTANT VOLTAGE OUTPUT

David H. Malcolm, Randolph, N.J., assignor to Titan Tool Inc., Oakland, N.J.

Filed Sep. 29, 1982, Ser. No. 428,024
Int. Cl.³ B05B *5/00;* H02H *3/00*
U.S. Cl. 239—691 **13 Claims**



1. In an electrostatic spray coating system wherein an electrode element is disposed adjacent the locus of coating material emission and said electrode element is subject to a desired magnitude of high voltage application thereto and to a load current flow therethrough dependent upon the physical parameters extant intermediate said locus of coating material emission and a workpiece being coated with said coating material,

an improved power supply for the high voltage charging of said electrode element, comprising

means for generating a low power, low voltage, high frequency alternating output,

transformer and voltage multiplying means for providing a high voltage d.c. output for application to said electrode element, and

power amplifying and control means disposed intermediate said generating means and said transformer and voltage multiplying means including means for varying the level of power output of said amplifier means for application to said transformer means in accord with the magnitude of the load current drawn through said electrode element to maintain the high voltage applied to said electrode substantially constant and independent of load for a predetermined range of load current values drawn therefrom.

4,508,277

APPARATUS FOR RECLAIMING FOUNDRY SAND

Robert S. L. Andrews, 7712 Incline Ter., Fort Worth, Tex. 76179

Continuation-in-part of Ser. No. 185,206, Sep. 8, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,235
Int. Cl.³ B02C *19/12;* B22C *5/18*
U.S. Cl. 241—65 **3 Claims**

1. An apparatus for reclaiming foundry sand, comprising:

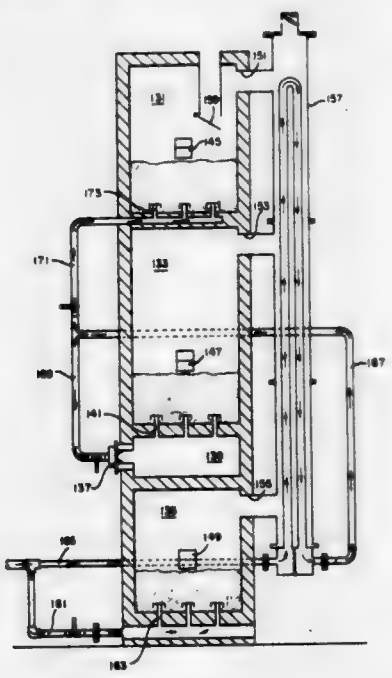
a preheat chamber having sidewalls, a floor, and an opening for receiving sand to be reclaimed;

a calcining chamber having sidewalls and a floor located directly beneath the floor of said preheat chamber in vertical fashion, said calcining chamber being connected to said preheat chamber by an external chute having a continuously open passageway for allowing the flow of sand downwardly between said preheat and calcining chambers;

a cooling chamber having sidewalls and a floor located beneath said calcining chamber in vertical fashion and being connected to said calcining chamber by an external chute having a continuously open passageway which allows the flow of sand downwardly between said calcining and cooling chambers;

vent means in the floors of said preheat chamber and cooling chamber for passing air upwardly through said chambers;

a firebox having a floor, sidewalls and a roof located immediately above said cooling chamber and immediately below said calcining chamber, said firebox having vent means in the roof thereof which is also the floor of said calcining chamber;



burner means mounted in said firebox for producing combustion within said firebox, the products of combustion in said firebox being vented through said firebox vent means into said calcining chamber to thereby generate excess heat in said calcining chamber; and

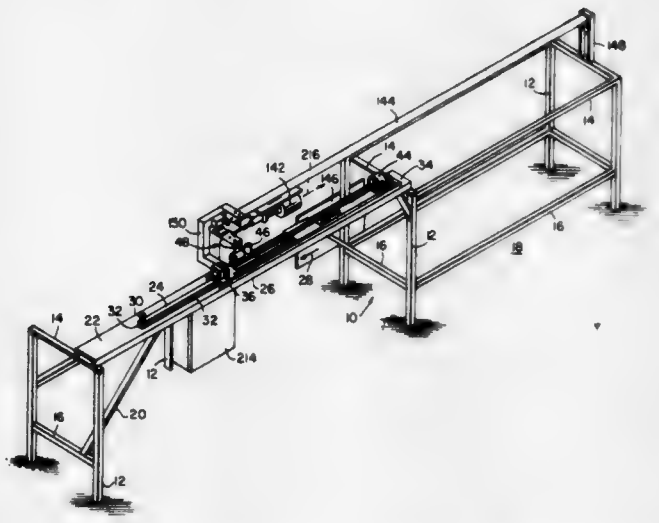
a blower unit for introducing air into the vent means of said preheat chambers and cooling chambers, as well as into said firebox, whereby sand is moved through said external passageways successively downwardly between said preheat calcining and cooling chambers.

4,508,278

TANDEM STRIPPING AND REVERSING APPARATUS

Robert N. Harris, Athens, Ga., and Michael E. McGuire, Olathe, Kans., assignors to Ericsson, Inc., Greenwich, Conn.

Filed Aug. 15, 1983, Ser. No. 523,065
Int. Cl.³ B65H *54/00;* B29C *17/02*
U.S. Cl. 242—1 **14 Claims**



1. A method winding a cord to a coiled configuration having a coil tighter than the coil of said cord when disposed in a lay of winding on an elongated, rodlike element comprising continuously stripping said cord from said element while moving

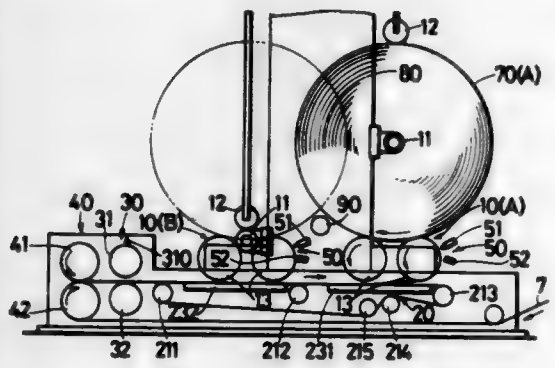
said element along a first path to a pay-off position, said cord after it is stripped being moved along a path of movement generally perpendicular to said first path, driving said cord along a second path from a fixed transition point while substantially simultaneously immobilizing said cord against rotation at said transition point, gripping an end of said cord, and reverse winding continuously the increasing increments of lengths of said cord between said gripped end and transition point in a direction opposite said initial direction of winding.

4,508,279

SURFACE WINDER

Masateru Tokuno, Nishinomiya, and Tetsuya Sawata, Nishigyou, both of Japan, assignors to Rengo Co., Ltd., Osaka, Japan

Filed Feb. 24, 1983, Ser. No. 469,276
Claims priority, application Japan, Feb. 24, 1982, 57-29600
Int. Cl.³ B65H *19/20, 17/08*
U.S. Cl. 242—56 R **9 Claims**



1. A surface winder having plural winding devices for winding rolls from a web of sheet material, each winding device including a pair of spaced supporters for supporting a winding core rotatably, a rider roll for pressing a wound roll during winding and a pair of rotatable drums for supporting and rotating the wound roll during winding, characterized by

(a) one drum of said pair of drums of each winding device being capable of attracting a portion of the web to its circumferential surface by suction,

(b) web guide means disposed below the winding devices operative to direct the web selectively to the drums of one or the other of said winding devices,

(c) a cutting device disposed upstream of said web guide means to sever the web periodically, thereby producing a cut web having a leading end portion,

(d) web feeding means operative to deliver the web, after it has been severed, to said web guide means and

(e) adhesive application means disposed adjacent each drum capable of attracting the web by suction,

(f) said adhesive application means being operative to form an adhesive layer on the leading end portion of the web when said end portion is on said drum.

4,508,280

TAPE DECK WITH TAKE-UP REEL ROTATION SENSOR CONFIGURED TO PREVENT TAPE WINDUP ON THE CAPSTAN OR PINCH ROLLER

Robert J. Hayosh; Robert H. Lewis, both of Farmington Hills, and Frederick A. Simon, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/01768, § 371 Date Nov. 9, 1983, § 102(e) Date Nov. 9, 1983
PCT Filed Nov. 9, 1983, Ser. No. 565,768
Int. Cl.³ B65H *59/38;* G03B *1/02;* G11B *15/13*
U.S. Cl. 242—191 **8 Claims**

8. A mechanism for transporting a length of tape material from a supply reel to a take-up reel including:

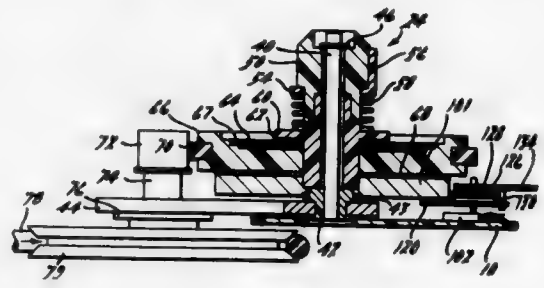
means defining a mounting platform;

a supply reel spindle and a take-up reel spindle rotationally mounted on said platform means and positioned for accepting respective supply and take-up reels;

means connected to said platform means for driving said take-up reel spindle in a first predetermined rotational direction;

multipolar magnetic field producing means mounted to rotate with said take-up reel spindle;

means adjacent said magnetic field producing means for



sensing changes in magnetic field caused by the rotation of said magnetic field producing means;

means connected to said sensing means for enabling said driving means as long as said rotation is sensed; and

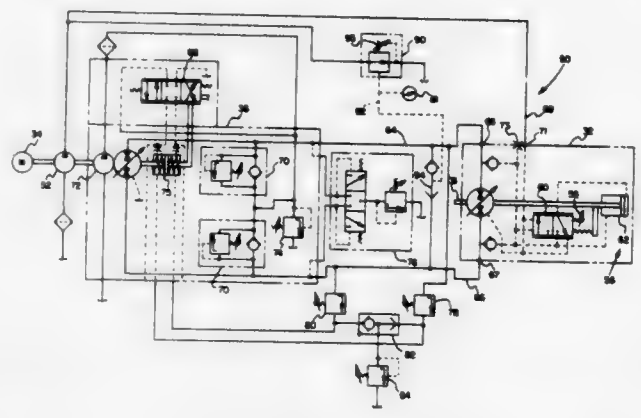
means between said magnetic field producing means and said sensing means for blocking the magnetic field from said sensing means when said take-up reel spindle and said magnetic field producing means are rotated in a direction opposite to said first predetermined rotational direction.

4,508,281

HYDRAULIC DRIVE SYSTEM FOR CABLE STRINGING APPARATUS

Robert J. Plater, Shreveport, La., assignor to TSE International, Shreveport, La.

Filed Aug. 15, 1983, Ser. No. 523,649
Int. Cl.³ B65H *59/38;* B66D *1/50*
U.S. Cl. 242—54 R **9 Claims**



1. Apparatus for stringing aerial electrical cables and the like at relatively constant predetermined tension, said apparatus comprising:

a rotary drum rotatably mounted on means for supporting said drum, said drum including a core on which a flexible line such as a messenger line or cable is wound in coils of increasing radius with respect to an axis of rotaion of said drum, and a hydraulic drive system including:

(a) a variable displacement hydraulic motor drivably connected to said drum, said motor including a pressure responsive controller for increasing motor output torque in response to sensing increasing pressure of fluid supplied to said motor from a given supply pressure

(b) a pump for supplying pressure fluid to said motor and means for selectively varying the pressure of said fluid delivered to said motor by said pump; and

(c) control means for controlling said motor to rotate said drum to increase the driving torque on said drum as said line is wound thereon to maintain said predetermined

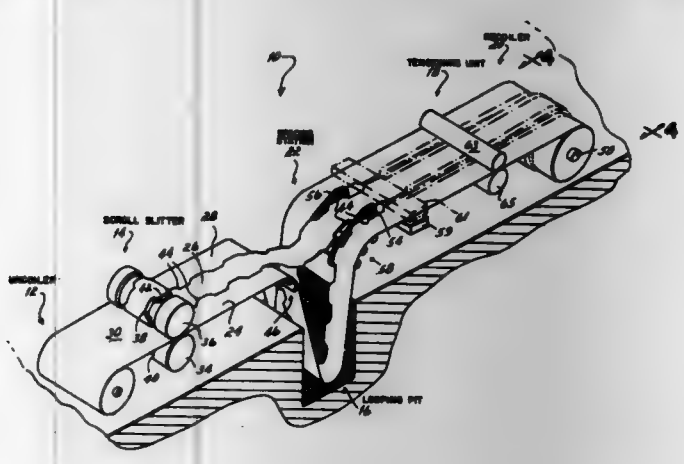
tension on said line, said control means including means for supplying pilot pressure fluid at a preselected pressure to said controller to decrease the pressure set point at which motor torque is increased in response to a tendency to increase said supply pressure of fluid supplied to said motor, said means for supplying pilot pressure fluid including a proportional pressure relief valve operable to sense increasing fluid supply pressure to said motor and reduce the pressure of said pilot pressure fluid signal to said controller in accordance with the increase in said fluid supply pressure to said motor.

4,508,282

SCROLL SLITTING AND REWIND APPARATUS

John R. Eiting, Minster, Ohio, assignor to Precision Strip, Inc., Minster, Ohio

Filed Mar. 25, 1983, Ser. No. 478,984
Int. Cl.[3] B65H *23/10, 35/02*
U.S. Cl. 242—56.2 2 Claims



1. A scroll cutting line for cutting a single web of sheet stock material into multiple scroll cut strips, said line comprising,

an uncoiler station including means for supporting an arbor having a web of sheet stock material wound thereon,

a scroll cutting station including rotary cutter means for driving the web and for converting said single web of sheet stock material into multiple strips, each of said strips having at least one serpentine shaped scroll cut edge,

a recoiling station located downstream from said cutting station, said recoiling station including means for supporting a single rewind arbor and means for driving said rewind arbor in rotation to rewind all of the scroll slit strips of said web of stock material onto said single arbor without any overlap of said strips on said single arbor,

a tensioning station located upstream of said recoiling station and including means for applying a tension to said strips as said strips are wound upon said rewind arbor,

a looping pit located between said cutting station and said tensioning station, said looping pit being open at the top and extending downwardly a substantial distance below the floor level of said cutting line so as to provide for substantial slack in said strips between said cutting station and said tensioning station, and

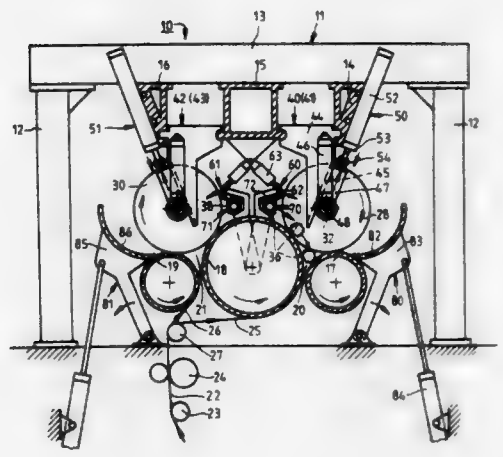
spacing means located between said strips of scroll slit material upstream of said tensioning means for fanning said strips apart and establishing a gap between said strips before said strips enter said tensioning means, said gap being at least equal to the amplitude of the serpentine shaped edge of said strips so that said strips do not overlap when wound onto said single rewind arbor.

4,508,283

WINDING MACHINE FOR WINDING A WEB SLIT LENGTHWISE

Rudolf Beisswanger, Steinheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 551,954
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243994
Int. Cl.[3] B65H *17/12, 19/06*
U.S. Cl. 242—56.4 15 Claims



1. A winding machine adapted simultaneously to wind strips of web onto at least two winding rolls formed on at least two core tubes, respectively, the strips being slit lengthwise from a web and offset relative to each other, said winding machine including a frame having three generally horizontally disposed supporting rollers therein, the longitudinal axes of said supporting rollers being generally parallel to each other, each two adjacent ones of said supporting rollers forming a winding bed therebetween; at least two holding assemblies adapted to engage the ends of the respective core tubes; and at least two removal means adapted to remove the respective rolls, characterized in that:

said three supporting rollers are adjacently disposed such that each said winding bed extends above the common center axis plane of its said adjacent rollers, wherein the web strips are supplied from below and into respective said winding beds and against one of said supporting rollers forming their respective said winding beds,

at least two ejection means are disposed above the center one of said supporting rollers and adapted to move generally simultaneously the rolls from their respective said winding beds and over the adjoining one of the two outermost ones of said supporting rollers,

said at least two removal means are disposed adjacent to respective outermost ones of said supporting rollers,

at least two inserting means are disposed above said three supporting rollers and adapted to insert new core tubes into respective said winding beds,

severing means adapted to sever the web strip when rolled, and

at least two attaching means adapted to attach new web strips to the new core tubes.

4,508,284

APPARATUS FOR CONTROLLING WINDING TENSION

Hiroshi Kataoka, Iyo-mishima, Japan, assignor to Kataoka Machine Product Co., Ltd., Ehime, Japan

Continuation of Ser. No. 416,917, Sep. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 174,579, Aug. 4, 1980, abandoned, which is a division of Ser. No. 41,410, May 22, 1979, Pat. No. 4,238,084, which is a continuation of Ser. No. 660,632, Feb. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 485,618, Jul. 3, 1974, abandoned. This application Jan. 12, 1984, Ser. No. 569,940

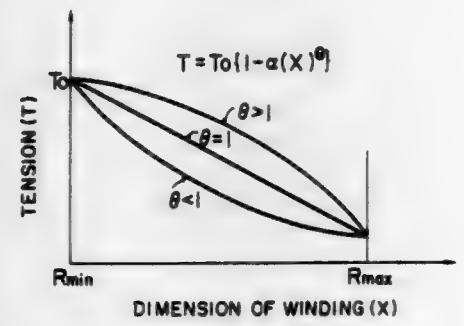
Claims priority, application Japan, Jul. 6, 1973, 48-76396

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.[3] B65H *23/20*

U.S. Cl. 242—75.51

1 Claim



1. A sheet winding control device for a winder of a center drive type having a structure for adjusting the sheet winding torque of a core of a winding roll, said device comprising:

means for detecting the winding length of the sheet; means for evaluating the desired winding tension of the sheet from the detected winding length of the sheet and for producing a tension signal by generating a signal proportional to the intial winding tension, generating a signal proportional to the actual winding length, dividing said last mentioned signal by a signal proportional to the total winding length to obtain a signal representing a variable (x), multiplying the signal representing the variable (x) by the signal representing the initial winding tension and by a constant predetermined signal representing the rate of change of the tension, and subtracting the resulting signal from the signal representing the initial tension;

means for detecting a winding radius of the sheet on the winding roll and producing a winding radius signal;

torque calculating means for multiplying the tension signal by the winding radius signal to convert thereby the tension signal into a torque control signal; and

means for driving a torque actuator according to the torque control signal from said torque calculating means.

4,508,285

CABLE BRAKE

Robert E. McMillan, 171 Orange Rd., Montclair, N.J. 07042

Continuation-in-part of Ser. No. 129,230, Mar. 11, 1980, Pat. No. 4,317,507. This application Jan. 7, 1982, Ser. No. 337,870

Int. Cl.[3] B65H *59/02*

U.S. Cl. 242—99

15 Claims

1. A cable brake system comprising:

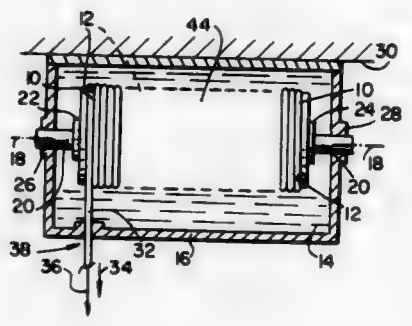
(a) a generally closed container means;

(b) reel axle means coupled to said container means at opposite ends thereof and having a longitudinal axis;

(c) a reel, said reel having an axis, said axis of said reel being co-extensive with the axis of said reel axle means, said reel being carried by said axle means and rotatable about said axle means axis but not displaceable along said reel axle means;

(d) a flexible cable means, said cable means being wound about said reel; and

(e) a viscous fluid filling said container means immersing said reel and associated cable means in said viscous fluid, so that the unwinding of said reel causes said reel to turn



about said axle means axis in said viscous fluid, thereby producing resistance to motion and a braking action.

4,508,286

DEFLECTION DEVICE FOR SAFETY BELTS

Helmut Seifert, and Karl Möndel, both of Schwäbisch Gmünd, Fed. Rep. of Germany, assignors to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

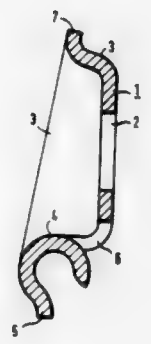
Filed May 11, 1979, Ser. No. 38,326

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 7814486[U]

Int. Cl.[3] B65H *75/48;* A62B *35/00*

U.S. Cl. 242—107

6 Claims



1. Deflection device for a safety belt in a motor vehicle in which one end of the safety belt is rolled up on an automatic winder in an end region and the other end of the belt is adapted for locking engagement with a lock, a belt portion between the automatic winder and the lock routed over a fixed rounded deflection bar, said deflection device having said rounded deflection bar and a flat mounting plate which are surrounded by a closed frame formed in a continuous arch, said deflection device formed by a metal stamping with an opening in said flat plate for securing the device to the motor vehicle and a second opening formed by stamping out a portion of said plate and through which said belt passes and by shaping the end of the metal stamping and constituting said deflection crossbar having a rounded surface in the contact area with the belt, said deflection crossbar in the contact area with the belt having a cross section in the form of an open curve having an uninterrupted surface continuing through said second opening for contact with the belt and with both ends of said open curve extending downwardly.

4,508,287

WINDING ATTACHMENT FOR SAFETY BELTS IN VEHICLES

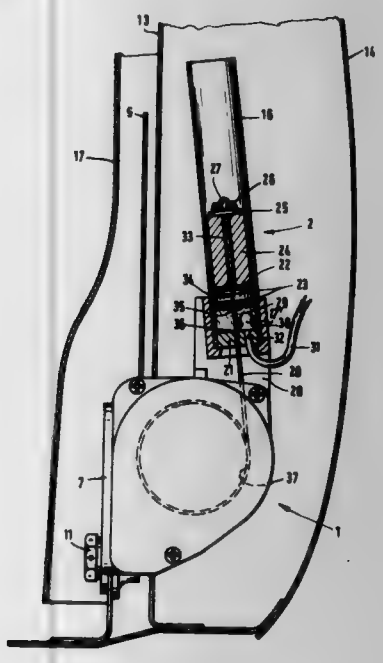
Karl E. Nilsson, Ottobrunn, Fed. Rep. of Germany, assignor to Bayern-Chemie Gesellschaft für flugchemische Antriebe mit beschränkter Haftung, Fed. Rep. of Germany

Filed Apr. 27, 1983, Ser. No. 489,054

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215926

Int. Cl.[3] **A62B** *35/02;* **B65H** *75/48*

U.S. Cl. 242—107 **7 Claims**



1. A winding attachment for passenger safety belts in vehicles, comprising an automatic takeup roller over which the belt is entrained, a roller shaft connected to said takeup roller for rotation therewith, and at least one clutch disc connected to said shaft and being rotatable to drive said shaft in a direction to cause the roller to rotate and retighten the seat belt, at least one cylinder having a closed end and an opposite end, a piston movable in said cylinder, a pyrotechnical charge in said cylinder, means for igniting said charge to generate propellant gases to move said piston toward and out of the open end of said cylinder, a tension member having one end connected to said piston and being engaged around said clutch disc, said piston being movable with said tension member to cause said clutch to drive said takeup roll in a direction to tighten the seat belt, and an additional weight of a size selected in accordance with the kinetic energy necessary to tighten the seat belt connected to said piston for movement with said piston out of said cylinder open end, the length of the cylinder being selected so that the piston and weight will leave the cylinder when the charge is ignited.

4,508,288

WINDING ATTACHMENT FOR BELTS

Karl E. Nilsson, Ottobrunn, Fed. Rep. of Germany, assignor to Bayern-Chemie Gesellschaft für flugchemische Antriebe mit beschränkter Haftung, Fed. Rep. of Germany

Filed Apr. 27, 1983, Ser. No. 489,078

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215928

Int. Cl.[3] **A62B** *35/02;* **B65H** *75/48*

U.S. Cl. 242—107 **6 Claims**

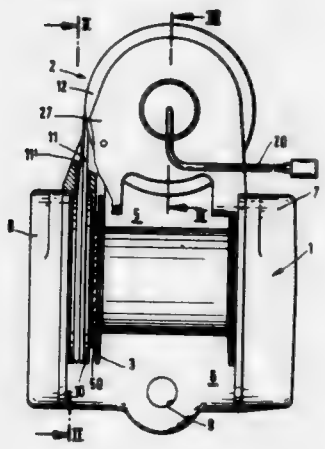
1. A winding attachment for passenger seat belts for use with a windable take-up roller over which the seat belt is wound and which includes a roller shaft, and a rotatable clutch disc connected to the roller shaft when the disc is rotated in a belt winding direction, comprising:

a frame;

a piston shaft rotatably mounted to said frame, said piston shaft having a plurality of piston vanes fixed thereto and evenly distributed around said piston shaft;

a cylinder rotatably mounted to said frame and defining a space, said cylinder having a plurality of cylinder vanes fixed thereto and extending into said space, a number of cylinder vanes equalling a number of piston vanes and said piston vanes movable in said space and interleaved between said cylinder vanes, said cylinder vanes being evenly distributed around said cylinder and each defining a chamber with an adjacent piston vane;

a pyrotechnic charge in said piston shaft, with passages defined to each chamber for supplying expanding gas to



each chamber with ignition of said pyrotechnic charge; and

an overriding clutch connected between said piston shaft and said frame for permitting rotation of said piston shaft on a winding direction only and blocking rotation of said piston shaft in an unwinding direction for the seat belt on the take-up roller whereby upon ignition of said pyrotechnic charge, said cylinder rotates in a winding direction to wind the seat belt on the take-up roller until said cylinder vanes meet said piston vane, and thereafter said piston shaft and said cylinder rotate together in the winding direction so that kinetic energy of the cylinder is provided to the piston shaft.

4,508,289

ROLL-UP DEVICE FOR SAFETY BELTS

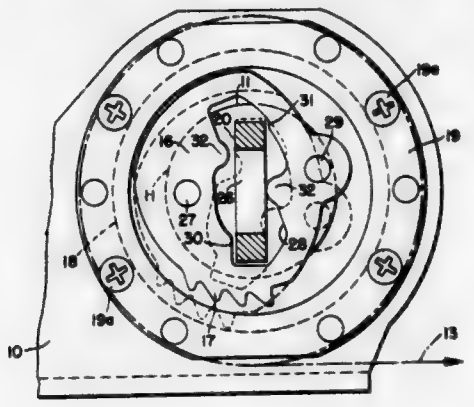
Klaus-Peter Singer, Hamburg, and Klaus Butenop, Herzhorn, both of Fed. Rep. of Germany, assignors to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Dec. 31, 1981, Ser. No. 336,177

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049564

Int. Cl.[3] **A62B** *35/02;* **B65H** *75/48, 75/42;* **B60R** *21/10*

U.S. Cl. 242—107.4 B **18 Claims**



1. A roll-up device for a safety belt, said device providing automatic blocking of a belt winding spindle in the event acceleration exceeding a threshold value acts on the belt and-/or on a support for the roll-up device, said device comprising:

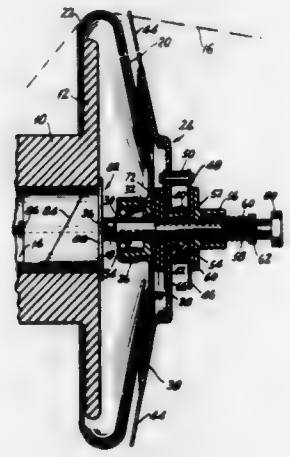
a housing, notches being associated with said housing;
a belt winding spindle having two ends and being mounted in said housing in such a way as to be rotatable relative thereto, said belt being wound on and unwound from said belt winding spindle;
a projection provided on one end of said belt winding spindle and having a free end remote from said spindle;
a radially deflectable locking member operatively associated with said belt winding spindle via said projection thereof, said locking member and said projection cooperating to permit said spindle to assume at least two different operating positions, namely a blocked position, and a rest position which permits said winding and unwinding of said belt; said locking member being provided with at least one detent for engaging said notches of said housing to thereby lock said locking member in a blocking position and hence effect said blocking of said belt winding spindle in its blocked position; and
at least one radially overlapping arrangement operatively associated with, and radially provided between, said locking member and said projection of said spindle, said radially overlapping arrangement acting at least temporarily in said blocked position of said belt winding spindle as to prevent movement of said locking member out of its intended position in the axial direction of said spindle, said projection of said belt winding spindle being provided with an opening of elongate rectangular construction, with the long sides of said opening extending at right angles to the axis of said spindle.

4,508,290

CAP ASSEMBLY WITH FRICTION DRAG ON TENSION BRUSH

Gordon L. Bauer, Shelton, Conn., assignor to Wyrepak Industries, Inc., Bridgeport, Conn.

Filed Feb. 6, 1984, Ser. No. 577,440
Int. Cl.³ B65H *49/00, 59/00*
U.S. Cl. 242—128 **18 Claims**



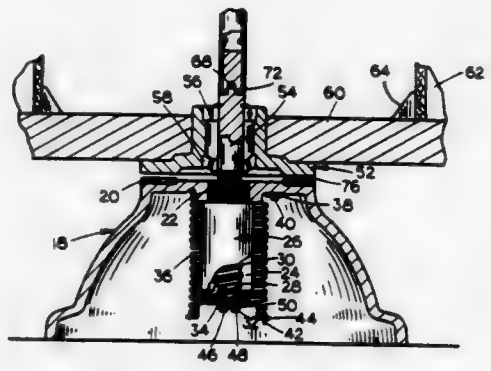
1. A cap assembly for facilitating pay-off of wire past one end flange of a spool, comprising in combination:
(a) a shaft,
(b) means mounting the shaft at one of the spool ends,
(c) a non-powered turnable wheel on the shaft, said wheel having a peripheral portion extending adjacent the periphery of the said one end flange of the spool,
(d) a bearing mounting the wheel for free rotation with respect to the shaft, to enable wire being payed off the said one spool end flange to engage the wheel and impart rotation thereto,
(e) a tension brush assembly comprising a hub rotatable on said shaft and a brush body carried by the hub, said brush body having a plurality of radially extending, flexible and resilient tines disposed adjacent the periphery of the wheel, said tines being adapted to be brushed by the strand of wire as it passes over the wheel periphery,
(f) means mounting the brush assembly at the said one end flange of the spool, for rotation under the influence of the strand brushing past the tines, and
(g) means for imparting an adjustable braking force to the brush assembly so as to slow its rotation whereby the circumferential velocity of the tines can be adjusted to a value less than the orbital speed of the strand of wire past the periphery of the spool flange.

4,508,291

WELDING WIRE DISPENSER

Delmar D. Kosch, 1730 Woodland Dr., Columbus, Nebr. 68601

Filed Sep. 27, 1984, Ser. No. 655,230
Int. Cl.³ B65H *59/04*
U.S. Cl. 242—156.2 **3 Claims**



1. A welding wire dispenser for dispensing wire to a wire feeder,
a support means having a horizontally disposed annular portion at its upper end,
a ball screw assembly comprising an outer housing portion rigidly secured to said support means, a vertically disposed, rotatable screw mounted in said outer housing portion and extending upwardly therefrom,
a vertically disposed and vertically movable shaft secured to the upper end of said screw and extending upwardly therefrom,
a coil support means rotatably mounted on the upper end of said shaft above said support means and vertically movable with said shaft, said coil support means having a horizontally disposed annular portion at its lower end adapted to frictionally engage said annular portion on said support means to limit the rotation of said coil support means when said annular portions are in frictional engagement with each other, said coil support means adapted to support a coil of welding wire thereon,
an arm means removably secured to the upper end of said shaft and having an outer end portion disposed laterally of the coil of wire on the coil support means,
and a pulley rotatably mounted about a vertical axis on the outer end portion of the arm means adapted to have the welding wire on the coil extending therearound,
said screw moving upwardly relative to said outer housing portion and said support means thereby vertically moving said shaft so that said annular portions will not be in frictional engagement with each other so that said coil support means may freely rotate when said arm means is moved toward the wire feeder.

4,508,292

TAPE LOOP SENSING ARM AND TAPE GUIDE FOR MAGNETIC TAPE RECORDING AND PLAYBACK MACHINES

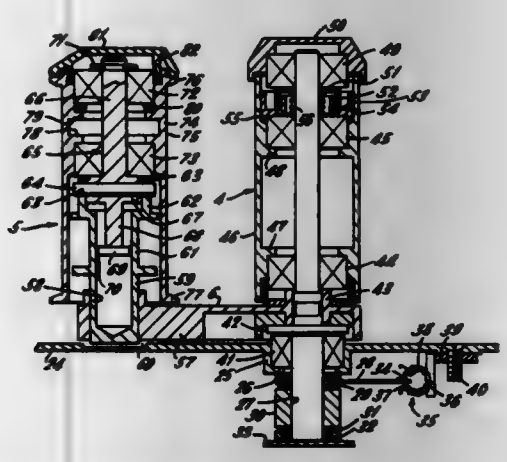
Stefan Kudelski, Le Mont-sur-Lausanne, Switzerland, assignor to Ampex Corp., Redwood City, Calif. and Kudelski, S.A., Lausanne, Switzerland

Filed Sep. 15, 1983, Ser. No. 533,093

Claims priority, application United Kingdom, Sep. 17, 1982, 8226575

Int. Cl.³ B65H *59/38;* G11B *15/32*

U.S. Cl. 242—190 **8 Claims**



1. A tape loop sensing arm for guiding tape and for pivotal movement in response to alteration of a tape loop, said arm comprising:

pivot means defining a pivot axis;

an arm member disposed on said pivot means for rotation about a first axis;

a cylindrical tape-engaging guide member;

support means comprising a spindle defining said rotary axis;

bearing means mounting said guide member for rotation about said spindle;

means for mounting said spindle for pivotal movement about said pivot axis;

said support means mounting said guide member on said arm member for rotary tape guiding movement about a rotary axis generally parallel to said first axis, and

permitting pivoting of the guide member about a pivot axis normal to said first axis without significant alteration of the effective sensing length of the arm.

4,508,293

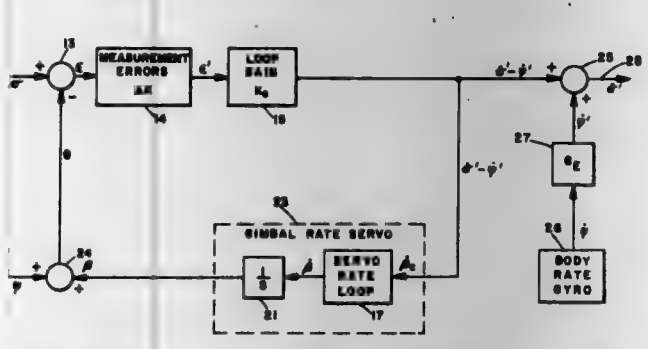
SEEKER-BODY DECOUPLING SYSTEM

Richard W. Jones, La Verne, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 12, 1982, Ser. No. 397,255

Int. Cl.³ F41G *7/22*

U.S. Cl. 244—3.15 **8 Claims**



1. A method for body motion decoupling of a body gimballed antenna in a proportional navigation missile guidance system for a missile airframe, said guidance system comprising a track loop, a guidance/control section and a body rate gyro having a body rate output ψ, said track loop having inputs representing body angle ψ and LOS angle δ and deriving antenna angle θ, said track loop including a loop gain K_ϵ and measurement errors which together comprise a receiver, said method comprising the steps of:

combining angles δ and θ at a first combining point to provide an output signal ϵ representing the antenna pointing error;

multiplying the angle ϵ by said measurement errors and said loop gain to provide a first measured LOS rate σ' at the output of said receiver;

combining LOS rate σ' and body rate ψ' at a second combining point to provide antenna command signal $\beta_c=\sigma'-\psi'$;

applying said command signal to a gimbal rate servo to position said antenna, the output of said gimbal rate servo being the antenna position with respect to the airframe or look angle β where $\beta=\sigma''-\psi'$;

coupling said body angle ψ and said look angle β at a third combining point to provide said antenna angle θ;

differentiating said look angle β to provide $\sigma''-\psi'$; and

combining said body rate ψ' with $\sigma''-\psi'$ at a fourth combining point to provide a refined second LOS rate σ'' for use by said guidance/control section of said guidance system.

4,508,294

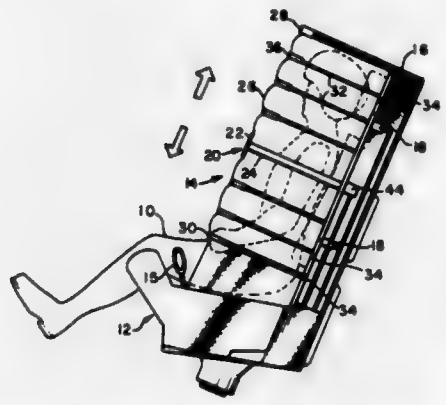
AIR BAG RESTRAINT SYSTEM

Daniel L. Lorch, Holland, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1983, Ser. No. 490,827

Int. Cl.³ B64D *25/04*

U.S. Cl. 244—122 AG **7 Claims**



1. A restraint system for protecting an occupant during ejection from a high-performance aircraft, comprising:

an ejection seat;

support means releasably mounted to said seat and extended transversely about the chest of the occupant for confining the occupant in a predetermined envelope during all flight maneuvers;

an inflatable member, attached along the center portion of its forward-facing surface to the chest side of the transverse extension of said support means, normally stored uninflated and tightly folded adjacent to said support means, said inflatable member encapsulating the head, arms and torso of the occupant when inflated;

a plurality of positioning members coupled at their ends to said support means and coextending transversely about the chest of the occupant, contiguously attached at spaced intervals about the forward-facing surface of said inflatable member, for guiding and restraining the deployment of said inflatable member from the stowed position to the encapsulating position; and

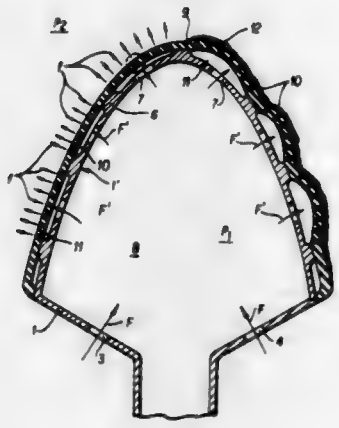
inflating means operatively connected to said inflatable member for deployment thereof from the stowed position to the encapsulating position.

4,508,295

DEVICE FOR DETECTING AND PREVENTING THE FORMATION OF ICE ON CONTOURED SURFACES

Christian J. Cattaneo, Lissy; Patrick R. J. Derouet, Soignolles en Brie, and Michel C. F. Laroche, Le Mee sur Seine, all of France, assignors to S.N.E.C.M.A., Paris, France

Filed Jun. 9, 1983, Ser. No. 502,701
Claims priority, application France, Jun. 9, 1982, 82 10004
Int. Cl.[3] B64D *15/04, 15/18, 15/22*
U.S. Cl. 244—134 A 15 Claims



1. A device for detecting and preventing the formation of ice on contoured surfaces, comprising:

a rigid hollow support structure including a contoured surface;

a deformable wall covering said contoured surface;

means for providing an airtight securement between said support structure and said deformable wall along a plurality of lines of contact, whereby a plurality of elementary chambers are defined by said support structure, said deformable wall and said means for providing an airtight securement;

at least one first opening between the interior of said support structure and each of said elementary chambers;

at least one opening in said deformable wall at each said elementary chamber; and

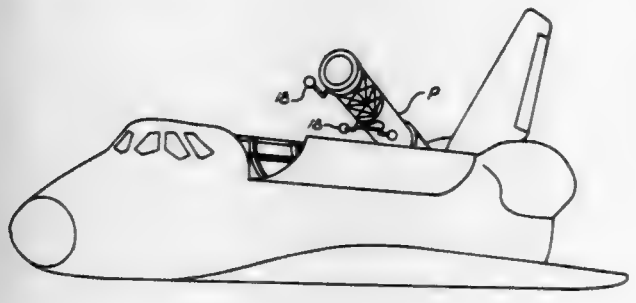
means for feeding hot gas to said interior of said support structure.

4,508,296

HEMISPHERICAL LATCHING APPARATUS

Keith H. Clark, Decatur, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 23, 1982, Ser. No. 401,282
Int. Cl.[3] B60P *7/08;* B61D *45/00;* B64G *1/00*
U.S. Cl. 244—158 R 9 Claims



1. A payload retention system for securing and retaining a gimballed payload in a fixed docked position on a platform in a cargo bay of a space vehicle for flight in outer space which payload is shiftable to an extended position comprising:

a plurality of latching members;

a plurality of latching assemblies carried by said platform each of said latching assemblies including one of said latching members;

a plurality of payload latching elements carried by said payload;

a first of said latching elements being carried in interlatching alignment with a first latching member of a first of said latching assemblies defining a first latch coupling along a first coupling axis;

a second of said payload latching elements being carried in interlatching alignment with a second latching member of a second of said latching assemblies defining a second latch coupling along a second coupling axis;

a third of said payload latching elements being carried in interlatching alignment with a third latching member of a third of said latching assemblies defining a third latch coupling along a third coupling axis:

each said latch member including a contoured spherical latch element;

each said payload latching element including a complementary contoured spherical payload latch element;

one said spherical latch elements having a convex latching surface and the other of said spherical elements having a concave latching surface, said concave and convex latching surfaces mating and coupling with one another along a respective coupling axis in said interlatching alignment;

said spherical latch elements having their axes aligned with one another when coupled in said interlatching alignment wherein said payload is retained in said fixed docked position;

said spherical latch elements allowing free rotation about their respective coupling axis while limiting movement along the axes;

said spherical latch elements being arranged on said platform and payload so that engagement and axial coupling of the spherical elements of one of said latch couplings due to movement of said payload to said storage position gradually forces alignment of the coupling axes and coupling of the spherical latch elements of the remaining latch couplings and

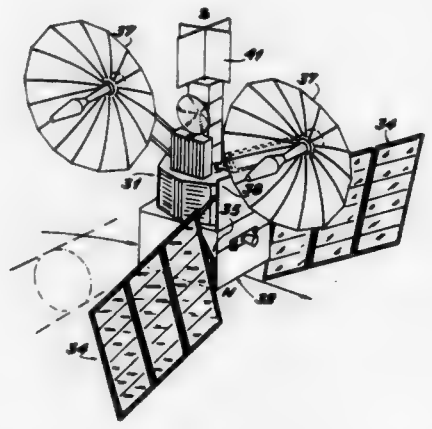
said first latch member exerting a latching force on said first latch coupling opposing the latching forces exerted by said second and third latch members of said second and third latch couplings so that said payload is retained in said storage position.

4,508,297

SATELLITE ON AN EQUATORIAL ORBIT WITH IMPROVED SOLAR MEANS

Guy G. Mouilhayrat, Ramonville; Paul A. J. Duchon, Venerque; Jean M. A. M. Guilbert, Montgiscard, and André A. Rolfo, Castanet, all of France, assignors to Centre National d'Etudes Spatiales, Paris, France

Filed Feb. 24, 1983, Ser. No. 469,317
Claims priority, application France, Mar. 2, 1982, 82 03412
Int. Cl.[3] B64G *1/44*
U.S. Cl. 244—173 2 Claims



1. An equatorial orbit satellite comprising a platform having

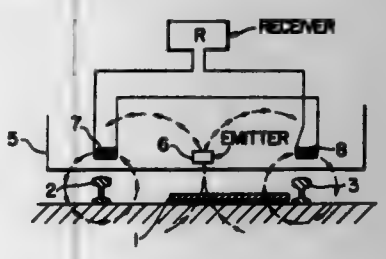
two axes located in the orbital plane of the satellite and an axis perpendicular to said plane, said platform having an antisolar face; a payload; means fixed to the platform for orienting the platform axis perpendicular to the orbital plane in the North-South direction; a solar sensor also fixed to the platform and directed towards the sun; two solar panels formed by two blades symmetrically connected to the platform, said blades each having a medium line inclined by a certain angle relative to the equatorial plane; actuation means located in the platform; communication antennas integral with the payload; and means fixed to the payload for orienting one axis of the payload in the direction of the earth.

4,508,298

APPARATUS FOR LOCALIZING OF A TRAIN

Jean P. Salmon, Aulnay sous Bois, France, assignor to Jeumont-Schneider, France

Filed Jun. 10, 1982, Ser. No. 387,173
Claims priority, application France, Jun. 10, 1981, 81 11371
Int. Cl.³ B61L *3/00*
U.S. Cl. 246—167 R **5 Claims**



1. Apparatus for localization of a train circulating on a two-rail steel track, having, in combination, on board the train, radio-frequency emitter means tuned to a predetermined radio frequency and receiver means tuned to the same frequency and provided with two detectors situated above said rails, respectively, and, on the ground, a passive radio-frequency circuit tuned to the same frequency and positioned to receive a radio-frequency signal from said emitter means, said apparatus having means for preventing said emitter means from producing an output in said receiver means except when said emitter means induces a signal in said passive radio-frequency circuit, said radio-frequency circuit being more closely coupled to one of said detectors than to the other such that a signal induced in said circuit from said emitter means induces a signal in said one detector and thereby produces an output in said receiver means.

4,508,299

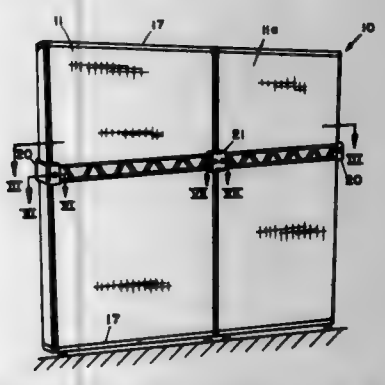
Patent Not Issued For This Number

4,508,300

SUPPORT BRACKET FOR ACCESSORY BEAM

Harold N. Minick, Tryon, N.C., assignor to Wolff Wire Corporation, Ludington, Mich.

Filed Sep. 23, 1982, Ser. No. 422,220
Int. Cl.³ A47B *96/06*
U.S. Cl. 248—216.1 **2 Claims**



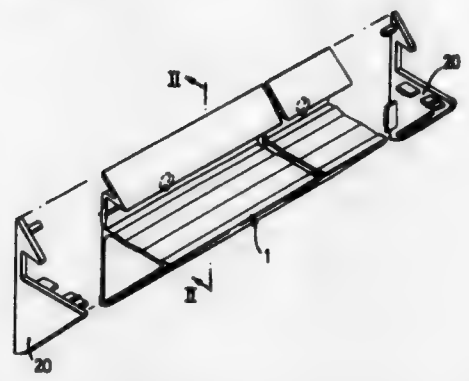
1. An accessory support bracket and accessory mounting beam for use on movable panel walls consisting of panels joined together in edge-to-edge relationship, said panels having a rigid penetratable core member covered on each face with decorative fabric, said bracket characterized in that it has inner and outer anchor members, said inner anchor member having a leg to seat against an edge of a panel, a vertically elongated first flange on one end extending normal to the plane of said leg and adapted to seat against the inner face of the panel; needle-like teeth on the end of said first flange for penetrating the inner face of the panel; a second flange forming a head portion on the outer end of said inner anchor member, said outer anchor member including a cap portion seated over the head portion of said inner anchor member and said cap portion having a pair of parallel flanges extending in the same direction as said leg; needle-like teeth on the inner ends of said flanges directed toward said teeth on said inner bracket for penetrating and gripping the panel; a portion of an accessory mounting beam being seated between said inner and outer anchor members; a fastener connecting said inner and outer anchor members for drawing them together to clamp both said panel and said beam between them.

4,508,301

SHELF SUPPORT

Timothy J. H. Nicholson, Rectory Cottage, Sulhamstead Abbots, Reading, Berkshire; Andrew L. Lee, 10, Brunswick Rd., Kingston-upon-Thames, Surrey, and Clifford Roberts, 11, Bathurst Ave., Merton Park, London SW 19, all of England

Filed Dec. 28, 1983, Ser. No. 566,286
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 8328175[U]
Int. Cl.³ A47G *29/02*; E04G *3/08*
U.S. Cl. 248—250 **15 Claims**



1. A shelf support for engaging a rear portion of a rectangular section shelf having an underside and a top and holding said shelf as a cantilever, said shelf support being formed as an elongate member so that the support can extend along a substantial part of the length of a rear portion of said shelf, said shelf support comprising:

mounting means for mounting said shelf support on an upright surface, said mounting means having a rear surface for engaging said upright surfaces;

support means carried by said mounting means and comprising first and second support parts at substantially the same level for engaging a rear portion of said underside of said shelf, said second support part being spaced behind said first support part whereby said second support part is nearer said mounting means rear surface than is said first support part;

retaining means carried by said mounting means for engaging a rear portion of said top of said shelf, said retaining means having a downwardly extending lowermost retaining part which is spaced above said first and second support parts and positioned nearer said mounting means rear surface than said first support part but further from said mounting means rear surface than said second support part, said retaining part being movable upwards with respect to said support means by the application of only substantial vertical upwards force to said retaining part,

said retaining means and said support means defining a gap for receiving and frictionally engaging said rear portion of said shelf; and

wedge means having a wedge surface inclined forwardly at a small angle to the horizontal portion for engagement by said rear of said shelf, the vertical distance between the end of said wedge surface which is furthest from said mounting means rear surface and the opposite side of said gap being greater than the vertical distance between said retaining part and said first support part or said second support part, whereby when said shelf is pushed generally horizontally back towards said upright surface, wedging action of said wedge surface causes said retaining part to move upwardly with respect to said support means.

4,508,302

FURNITURE FITTING

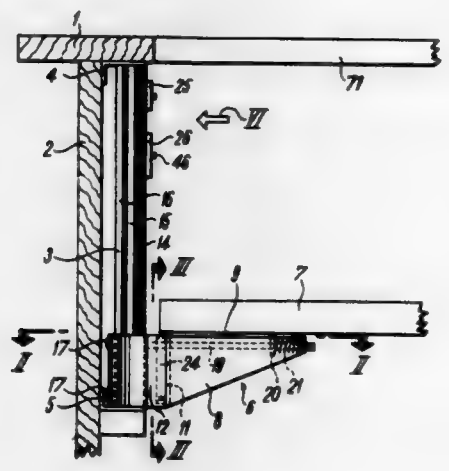
Horst Häusser, Rudersberg, Fed. Rep. of Germany, assignor to Horst Häusser Metallwaren GmbH, Rudersberg, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 421,980

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1981, 3151986

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—297.3 **7 Claims**



1. Device in the form of a furniture fitting for guiding an equipment supporting plate in a generally vertical direction and locking it in at least two positions at different heights, in which one of the two parts, namely plate and column, moving relative to each other during vertical motion is provided with a pin and the other is provided with a grooved generally loop-shaped guideway having two branches, for admitting the end of the pin, the equipment carrying plate in at least one upper locking position being supported from below by the pin and the side portion of a guide surface, and means for preventing the pin from entering into at least one of the two grooved guideway branches from the undesired direction, characterized in that in the sections (28, 35, 40, 29, 51, 52, 48) of the grooved guideway steps are provided having steeply rising surfaces (33, 38, 41, 43, 53), that the pin end (32) moving in the grooved guideway is urged against the bottom of the groove by spring means (21, 62), and that the rising surfaces of the steps form stops for the pin end (32) in one direction of movement.

4,508,303

HOLDER FOR CONTAINERS

Frank S. Beckerer, Jr., 40 Dock Rd., Milford, Conn. 06460

Filed Apr. 10, 1980, Ser. No. 138,964

Int. Cl.³ A47K *1/08*

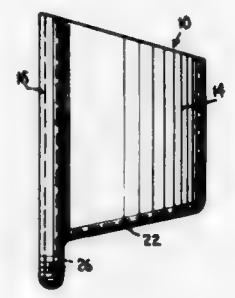
U.S. Cl. 248—311.2 **20 Claims**

1. A one-piece holder of resilient molded plastic substance for supporting a container on a supporting surface of a vehicle, boat, or pier, comprising in combination:

(a) an open-top vertical body having side walls adapted to encircle the container, and having means at the bottom, engageable with the container to support the same,

(b) said side walls including a mounting portion for engagement with and securement to said supporting surface,

(c) said side walls at one level constituting a continuous and unbroken cross section and at all levels having means enabling them to be radially expansible so as to accommodate containers of varying girths,



(d) said container support means comprising an expansive bottom wall disposed transverse to said side walls, and

(e) means providing a sump for collecting liquid resulting from rain water, splashes, or spillage onto the surface of said bottom wall,

(f) said sump being disposed adjacent to the mounting portion of said body wall.

4,508,304

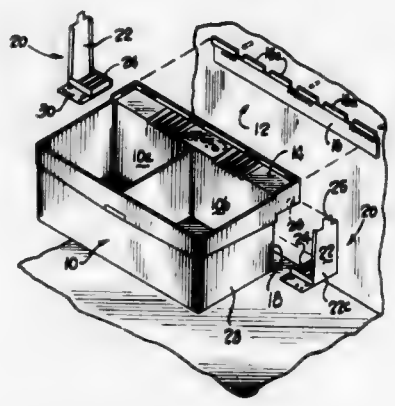
LAUNDRY TUB MOUNTING APPARATUS

Robert J. Mustee, Middleburg Heights, Ohio, assignor to E. L. Mustee & Sons, Inc., Cleveland, Ohio

Filed Feb. 28, 1983, Ser. No. 470,062

Int. Cl.³ A47K *1/04*

U.S. Cl. 248—311.2 **13 Claims**



1. A one-piece plastic side filler for a laundry tub, comprising:

(a) structure defining a cover portion and a load bearing portion interconnected by a line of weakness along which said filler is bent to position said cover and load bearing portions in an installed orientation;

(b) said cover portion defined by a substantially planar member that is sized to extend between a rear of the tub and a tub mounting surface;

(c) said cover portion including structure engageable with said tub to maintain said cover portion in its operative position;

(d) said load bearing portion including a plurality of reinforcing ribs extending between a lower portion of said tub and the tub mounting surface and operative to maintain a spatial relationship between said lower portion and said support surface;

(e) said cover portion including rigidizing structure for receiving and coacting with cooperating structure on said load bearing portion, said rigidizing structure receiving said cooperating structure when said cover and load bearing portions are bent into said installed orientation;

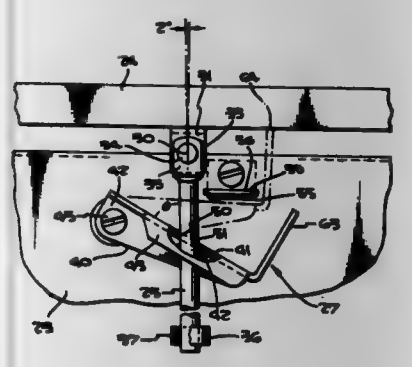
(f) said rigidizing structure comprising spaced recesses located near said line of weakness and said cooperating structure comprising corners of spaced abutment walls which enter said recesses when said side filler is bent.

4,508,305

TILT LOCK MEANS FOR A DRAFTING TABLE

Sigurd A. Johnson, Mission Viejo; Frank S. Avella, Irvine, and Robert I. Jones, Norco, all of Calif., assignors to Plan Hold Corporation, Irvine, Calif.

Filed May 6, 1983, Ser. No. 492,229
Int. Cl.³ A47F 5/12
U.S. Cl. 208—455 **16 Claims**



1. A tilt lock device for infinitely varying the inclination of a drawing board mounted about a hinge axis along one edge to a base structure between a maximum tilt angle and a minimum tilt angle comprising in combination:

a lock rod pivotally connected at one end to said drawing board and extending downwardly alongside said base structure

a lock member pivotally mounted on said base structure and having a plate portion lying in a plane transverse and inclined to the axis of said rod,

said plate portion haing a hole therein greater than the cross sectional area of said rod;

said hole having a configuration providing locking 50% contact with the rod surface in relative angular positions of the rod axis and the inclined plane of the plate portion;

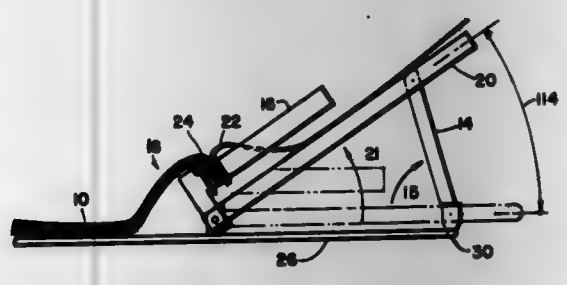
and cooperable means on said base structure and on said lock member to hold said pivotally mounted lock member in a position for free relative movement of said rod with respect to said lock member.

4,508,306

COMPUTER READ-OUT BOOK STAND

Kermit H. Kemmerer, Jr., R.D. #1, Box 1049, Stroudsburg, Pa. 18360

Filed Oct. 17, 1983, Ser. No. 542,745
Int. Cl.³ F16M 13/00
U.S. Cl. 248—454 **11 Claims**



1. A computer read-out stand comprising:

(a) a generally rectangular base having a proximal end, a distal end and longitudinally extended sides connecting said ends, said sides including triangular extensions to receive a book support;

(b) a generally rectangular adjustable book support having proximal and distal ends and longitudinal sides, said book support movably connected on its proximal end to said base's longitudinal sides proximate said sides' midpoints, said support including a bar attached at its ends, one each to each of said longitudinal sides and parallel to and approximate said proximal end;

(c) at least one U-shaped book support elevator, each of said elevators' legs being rotatably attached to said base's distal end by a bar across open end of largest of said elevators, said elevators' bights being adapted to removably fit in a retaining means;

(d) retaining means on said book support's distal end to receive and hold a bight of one of said elevators in position for use;

(e) a pair of L-shaped posts attached to said book support, said posts' upright arms extending parallel to said book support's longitudinal sides, and said L's short arms attached at their ends to said support end and side intersections, so that said L's short arms form extensions of said support edges to provide receiving means for book spine holders;

(f) at least one book spine holder adapted to slidably mount on said posts,

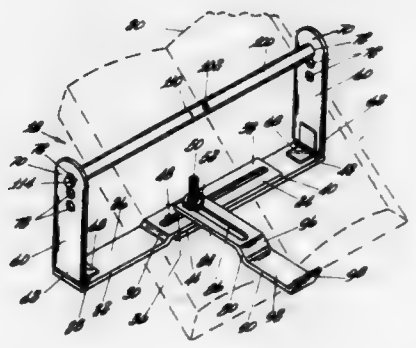
whereby, when said retaining means is engaged, said book spine holder may be inserted into a book spine, and said holder may be slidably overfitted onto said posts, thereby supporting said book at a predetermined angle.

4,508,307

FOLDABLE, SELF-SUPPORTING, ADJUSTABLE BOOK HOLDER

Liborio D. Morales, 815 Marilla St., Santa Barbara, Calif. 93101

Filed Jun. 22, 1984, Ser. No. 623,249
Int. Cl.³ A47B 97/04
U.S. Cl. 248—460 **7 Claims**



1. A foldable, self-supporting, adjustable book holder comprising:

a first base member having an elongated base section which extends a predetermined distance from a first end to a bend wherein the remaining portion of the elongated base section defines an elevated, substantially parallel elongated support section ending in a second end, said elongated support section having a length at least equal to said predetermined distance and having located along the axis thereof an elongated slot which extends from about the bend to about the second end of the elongated base section and which is adapted to slidably receive therein an elevated boss which is movable within and along said elongated slot;

a second base member having an elongated planar support member which extends between a first end and a second end a distance which is at least equal to said predetermined distance, said second end of said second base member having formed therein an elevated boss which is adapted to be positioned in and movable within said elongated slot to vary the distance between said first end of said first base member and the first end of said second base member, said second end further including means defining

the elongated fastening means which is located adjacent elongated boss and toward said second end of said second base member;

a pair of side members, one of each of which has one end thereof pivotally connected to said first end of said first base member and said first end of said second base member so as to be movable between an unfolded position, wherein said side members are positioned in a substantially parallel, spaced, opposed relationship to each other, into a folded position wherein each side member is rotated around this pivotal axis toward each other and toward said first base member and said second base member into a common plane with each other and which is substantially parallel to the plane defined by said first base member and said second base member, said side members each terminating at one end thereof opposite to said end which is pivotally connected to said first base member and said second base member, having at least one opening formed therein which extends therethrough which is in axial alignment with the opening formed in the opposite side member when the side members are positioned in the unfolded position;

an elongated, adjustable rod member which is adapted to be adjustable in length along its axial axis and adjustable a distance in excess of the greatest distance between said first end of said first base member and the first end of said second base member, said elongated adjustable rod member having a cross-sectional dimension such that the end thereof will pass through said opening in each of said side members and which has sufficient rigidity when passing therethrough to support a book; and

an elongated holding and support member having a first extended portion which has the elongated slot therein to cooperate with said fastening means to prevent said elongated holding and support means to be located at a substantially normal position relative to said first base member and said second base member, said elongated holding and support member having its other end formed into a protruding lip which extends in a direction away from said first base member and said second base member, said first extended portion of said elongated holding and support member being rotatable around said fastening means and adapted to have such fastening means slide within its elongated slot such that the elongated holding and support member is positioned above said side members and in a plane substantially parallel thereto when said elongated holding and support member is moved into a folded position, said elongated adjustable rod member and said protruding lip, when located in an unfolded position, providing a three-point support system which is adapted to receive and support a book at a selected reading angle which is determined by the relative position of the elongated, adjustable rod member within the opening as defined in said side members and the distance said protruding lip is located away from said first base member and said second base member.

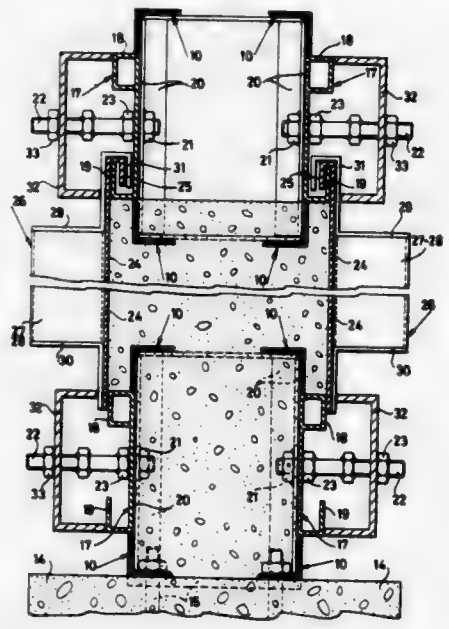
4,508,308

REINFORCEMENT STRUCTURE FOR REINFORCED-CONCRETE BUILDINGS

Ineo Rossin, Minerbe, and Francesco Zanella, Verona, both of Italy, assignors to Edilvelox S.R.L., Verona, Italy

Filed May 4, 1982, Ser. No. 374,794
Claims priority, application Italy, May 7, 1981, 21571 A/81
Int. Cl.³ E04G *11/02*
U.S. Cl. 249—19 **12 Claims**

1. A reinforcement structure for use in forming reinforced cast concrete buildings, said reinforcement structure comprising a servicing portion and a structural portion; said structural portion being in the form of reinforcing frames for cast concrete beams and columns with said frames being interconnectable to form a structural arrangement and being intended to remain in the cast concrete, each of said frames being formed of a plurality of elongated structural members and interconnecting members to form a rigid structural component; and said servicing portion including spacer elements and sidewall elements, and removable members for releasably directly latching said sidewall elements and said spacer elements to at least certain of said frames to form molds directly mounted on said frames for the casting of concrete in association with said frames, said spacer elements are each in the form of planar



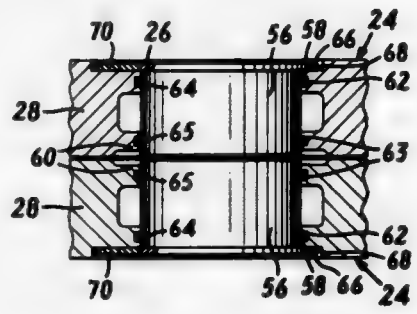
sections which on one side have at one end a projecting spacer portion and at the other end a projecting hook extension, the height of such planar sections being such as to permit the insertion thereof between two ones of said structural members of one of said frames with outer surfaces of the projecting portion and the hook portion being coplanar in a plane parallel to the plane of said planar section.

4,508,309

FAST THERMAL RESPONSE MOLD

Robert A. Brown, Mattapoisett, Mass., assignor to Acushnet Company, New Bedford, Mass.

Filed Jun. 14, 1982, Ser. No. 387,956
Int. Cl.³ B22D *27/04*
U.S. Cl. 249—81 **14 Claims**



1. A mold frame for receiving a plurality of half molds comprising:

(a) a frame plate member;

(b) said plate member having a plurality of cavities therein, each cavity for receiving a replaceable half mold, each said half mold when received in said cavity defining a space between itself and the walls of the cavity;

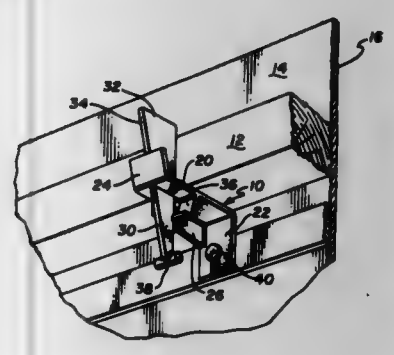
(c) said space surrounding said half mold; and

(d) means operative to provide serpentine fluid communication between the spaces surrounding said half molds in said cavities, said fluid directly contacting each of said half molds.

4,508,310
WALER BRACKET

Allan A. Schultz, Rte. 2, Box 79, New Richland, Minn. 56072

Continuation of Ser. No. 389,859, Jun. 18, 1982, abandoned.
This application Sep. 20, 1983, Ser. No. 534,123
Int. Cl.[3] E04G *17/06*
U.S. Cl. 249—189 1 Claim



1. In combination with a plurality of vertical panels arranged in a side-by-side edge abutting array, said panels interconnected by joining means mounted on studs projecting from the face of adjoining panels, a plurality of waler bracket clamps for securing a waler to the faces of said panels and aligning the faces of said panels into a common plane, each of said brackets comprising, in combination:

frame means having a first substantially vertical portion constructed and arranged to releasably engage at least one stud projecting from the face of one of said panels, and a substantially horizontal central portion constructed and arranged for supporting a waler and a second substantially vertical portion on the opposite side of said central portion from said first vertical portion, said central portion including a slot therein disposed from said first substantially vertical portion, said central portion of said frame means including a flanged means mounted below said slot for receiving a keeper bar attached to a wedge means while permitting said wedge means to be readily moved from said flanged means in a non-engaging movement to an operable position in which the wedge means engages the waler; and said wedge means having a narrow portion inserted into said slot for forcing the waler flush against the face of the panel thereby aligning the face of the panel with the edge of the waler, said keeper bar attached to said narrow portion of said wedge means transversely to said slot for retaining said wedge means in said slot.

4,508,311
ANNULAR BLOWOUT PREVENTER

Friedrich E. Just, and Bolie C. Williams, III, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Nov. 12, 1982, Ser. No. 441,056
Int. Cl.[3] E21B *33/06*
U.S. Cl. 251—1 B 4 Claims

1. An annular blowout preventer comprising

a body having a central bore therethrough with an annular packer recess surrounding and opening onto said bore

an annular packer positioned in said packer recess, and

means for axially loading said annular packer,

said annular packer including

a resilient annulus,

a plurality of insert plates embedded in the upper surface of said annulus,

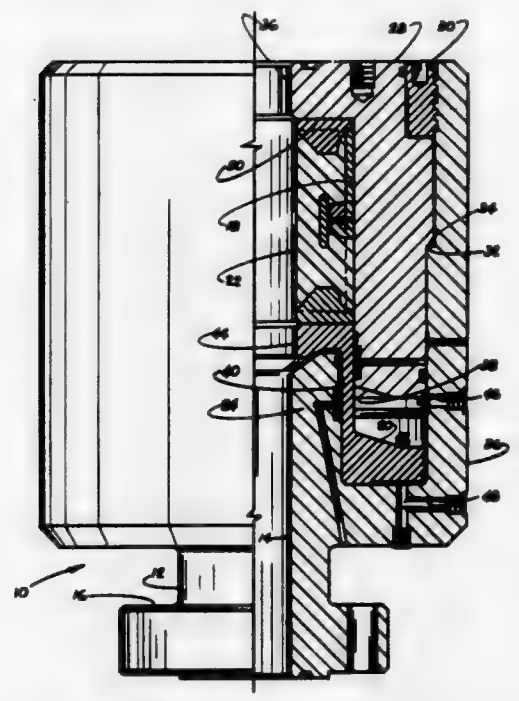
a plurality of insert plates embedded in the lower surface of said annulus,

a sleeve embedded in said annulus at a position spaced inward from the outer periphery thereof and having its upper end spaced from the underside of said upper insert plates and its lower end spaced substantially the same distance above the upper surface of the lower insert plates,

a first ring embedded in said annulus surrounding said sleeve at a position above its mid point,

a second ring embedded in said annulus surrounding said sleeve at a position below its mid point,

means coacting with said upper ring to move it upward with respect to said sleeve as said packer is compressed, and

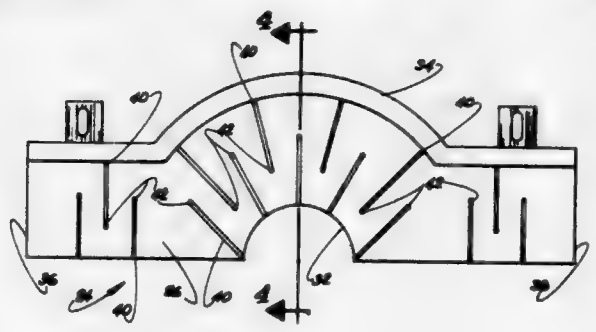


means coacting with said lower ring to move it downward with respect to said sleeve as said packer is compressed.

4,508,312
RAM-TYPE BLOWOUT PREVENTER

William M. Taylor, and Bolie C. Williams, III, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 8, 1983, Ser. No. 502,313
Int. Cl.[3] E21B *33/06*
U.S. Cl. 251—1 A 9 Claims



6. A ram packer for a ram-type blowout preventer comprising

an upper plate,

a lower plate, and

packing between the plates,

said plates having sufficient flexibility to flex about the axis of the housing bore when the rams are closed on a drill or pipe string and move into close proximity with a string therein while having sufficient transverse rigidity to prevent extrusion of said packing.

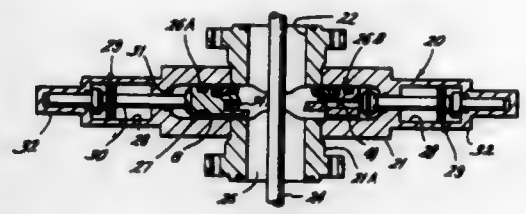
4,508,313
VALVES

Marvin R. Jones, Houston, Tex., assignor to Koomey Blowout Preventers, Inc., Brookshire, Tex.

Division of Ser. No. 446,390, Dec. 2, 1982,. This application Dec. 27, 1983, Ser. No. 565,766
Int. Cl.[3] E21B *33/06*
U.S. Cl. 251—1 A 2 Claims

1. A blowout preventer, comprising a housing having a bore therethrough and opposed guideways which intersect the bore, rams reciprocable within the guideways between bore

opening and closing positions, means for sealing between the inner ends of the rams and between each ram and its guideways when the rams are closed, means connecting the bore of the housing beneath the closed rams with chambers in the housing behind the closed rams so that fluid in the bore urges the rams closed, means including a passageway through only one ram



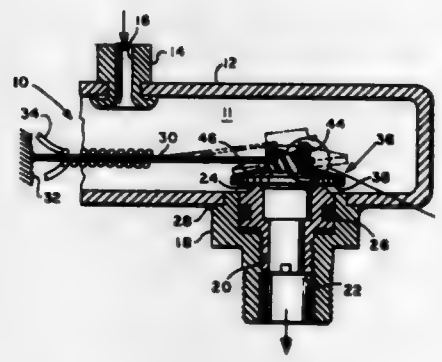
connecting the chamber behind said one ram with the bore of the housing above the closed rams, and means for reciprocating the rams between opened and closed positions including means for closing the passageway as the one ram is moved inwardly and opening the passageway as it is moved outwardly.

4,508,314

GAS VALVE

Wilbur F. Hemme, Carol Stream, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 18, 1984, Ser. No. 571,769
Int. Cl.³ F16K *31/00*
U.S. Cl. 251—11 **5 Claims**



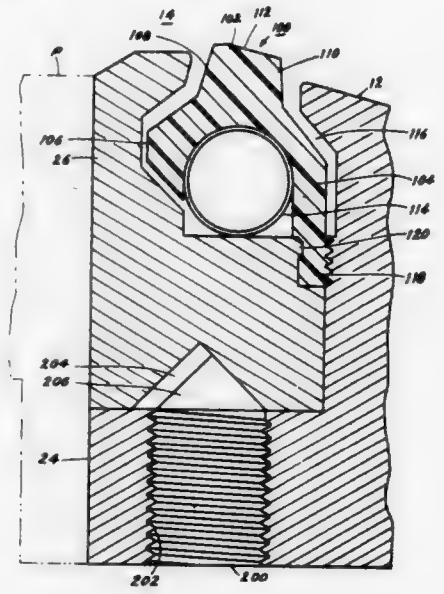
1. An electrically actuated valve assembly comprising:
(a) housing means defining a valving chamber having a fluid inlet port and a fluid outlet port and including means defining a valve seat in the flow path between said inlet and outlet port;
(b) a thermally responsive means mounted on said body means and disposed in said valving chamber and having an arm member having an end portion thereof disposed adjacent said valve seat and operative in response to electrically energized heating, to provide movement of said portion with respect to said valve seat; and,
(c) poppet means received through said portion of said member, said poppet means formed integrally of resilient elastomeric material and having,
(i) a flange portin disposed on one side of said arm member,
(ii) a neck portion extending from said flange and received through said arm member,
(iii) a valve head extending from said neck and disposed on a second side of said arm opposite said one side and having a valving face thereon for contacting said valve seat, to permit and prevent fluid flow thereover, said valve head having
supporting means including co-operating surface portions of said arm second side, and said poppet means said supporting means being disposed about said neck for providing at least one contact surface for said arm against said poppet means upon said arm being biased in a direction tending to urge said valving face into contact with said valve seat, said supporting means being spaced radially outwardly from said neck thereby providing a groove at the juncture of the supporting means and said neck,
(iv) said neck portion configured to have the distance from said flange to said supporting means greater than the thickness of said arm portion from said one side of said second side, wherein said neck portion permits a predetermined amount of lost-motion movement on said poppet means upon electrical heating of said arm for movement of said arm portion in a direction away from said valve seat.

4,508,315

BIDIRECTIONAL VALVE SEAL

Carl F. Livorsi, Warwick; Joseph A. Wucik, Jr.; Philip J. Dorrian, both of Westerly, and Lawrence F. Struzik, Weekapaug, all of R.I., assignors to Edison International Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 267,956, May 28, 1981, abandoned. This application Aug. 2, 1983, Ser. No. 519,617
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—173 **2 Claims**



1. A valve seal for a valve having an annular valve body which defines an axially extending valve chamber, a valve closure member which is movable in the valve chamber between open and closed positions, and an annular retaining ring which is secured to said valve body and which defines therewith an annular slot having a circumferential inwardly-facing axially-extending shoulder, the valve seal comprising:
an annular fluoroplastic valve seating member having a generally U-shaped cross-section defining generally radially outwardly extending first and second legs which are connected by a generally inwardly-facing axially-extending bight portion of circular cross-section, said bight portion including a radially disposed inwardly facing annular sealing surface for sealing cooperation with the valve closure member in the form of an interference fit;
anchor means, extending radially outward from said first leg, for flexibly and rotatably anchoring said seating member between the valve body and the retaining ring and in the annular slot, said seating member having an axial cross-section relative to the axial cross-section of the slot so as to divide the slot into first and second axial sides each in fluid pressure communication with the valve chamber, whereby said seating member is free to rotate about said anchor means relative to the axial limits of said slot, said legs and bight portion of said valve seating member defining an open annular generally circular circumferential groove which is bounded generally axially by said first and second legs and generally radially inwardly by said bight portion, said annular groove being open generally radially outwardly to the shoulder in the slot and in flow

communication with said first axial side of said valve chamber, whereby when said valve is closed fluid pressure on said first axial side in excess of the fluid pressure on said second axial side urges said sealing surface into engagement with said valve closure member; and

a plurality of generally circular spaced apart resilient elastically deformable elements which are connected together in the form of an open helix whose ends are connected together so as to form a circle and whose circumference is generally equal to the circumference of said groove such that it neither compresses said seating member inwardly nor applies an outwardly directed force to said shoulder, said elements being disposed within said groove in substantial radial alignment with said sealing surface, each of said resilient elements having a sufficiently large circumference so as to have peripheral sectors which simultaneously bear against said first leg and said second leg and said bight portion and said shouder, each of said resilient elements being formed from a coil of flat wire having a generally rectangular cross-section and being disposed within said groove with the longer side of said rectangular cross-section bearing against the interior surfaces of said groove,

whereby that sector of any one resilient element which bears against said bight portion of said seating member resists outward displacement of said seating member, urges said sealing surface against the closure member, when said valve is closed, and when displaced outwardly produces an expansive reaction force in adjacent resilent elements which is directed generally inwardly towards said seating member.

4,508,316

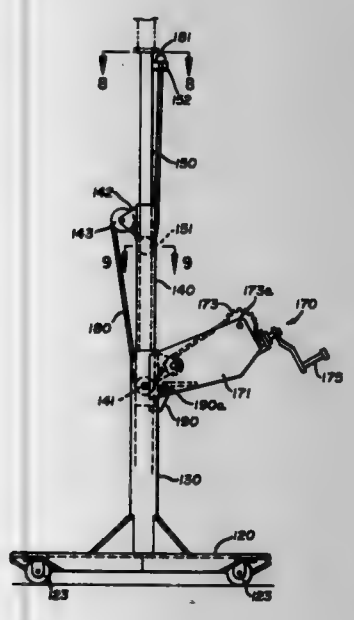
CABLE DRIVEN JACK

Ralph A. Millard, 119 W. Waterloo Rd., Akron, Ohio 44319

Continuation-in-part of Ser. No. 275,887, Jun. 22, 1981, abandoned. This application Apr. 25, 1983, Ser. No. 488,099

Int. Cl.³ B66F *7/02*

U.S. Cl. 254—4 R **5 Claims**



1. A jack, comprising:

(A) a base;

(B) a hollow upright member secured to and projecting from said base;

(C) a first support tube telescoped within said upright member;

(D) a second support tube telescoped within said first support tube;

(E) drive means carried by said upright and selectively engaging said first and second support tubes to move said tubes between retracted and extended positions with respect to said upright member at different speeds; and

(F) said drive means including

(1) a winch mounted on said upright member and

(2) a cable having one end secured to said winch; and

(3) attachment means carried by said first and second support tubes for releasably and selectively engaging the opposed end of said cable.

4,508,317

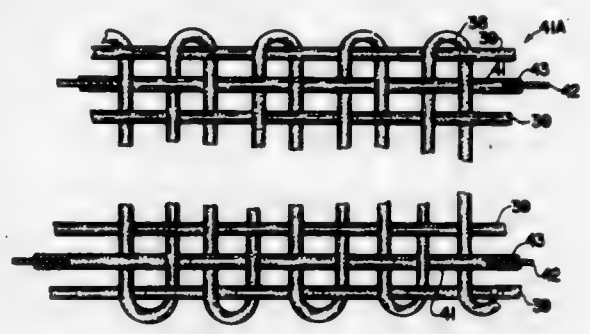
TAPE AND METHOD FOR MEASURING AND/OR PULLING CABLE

Allen C. Conti, 5294 E. 117th St., Garfield Heights, Ohio 44125

Continuation-in-part of Ser. No. 346,385, Feb. 5, 1982, abandoned. This application Aug. 5, 1982, Ser. No. 405,317

Int. Cl.³ H02G *1/08*

U.S. Cl. 254—134.3 FT **12 Claims**



5. A method for installing cable along a course of travel in a duct, said method comprising the steps of selecting a tape having a break strength in excess of 750 pounds of pull force and comprising between 20 and 50 parallel warp threads which essentially include filaments of aromatic polyamide fibers joined by a crossed interlocking weave of weft thread to hold the warp threads together in the form of a web having a weight of between 2.8 and 7 pounds per 1000 feet of said tape, said tape having an elongation of about 5% at least at said break strength to minimize stored kinetic energy in said tape for controlling tension on said cable during advancement along said duct for placement therein, pulling said tape along said course of travel in the duct essentially only by applying tension to the leading end of the tape, coupling an end of said tape to an end of said cable, and pulling said cable in said duct while controlling the tension imposed on said cable by said tape.

4,508,318

ELECTRIC HOIST

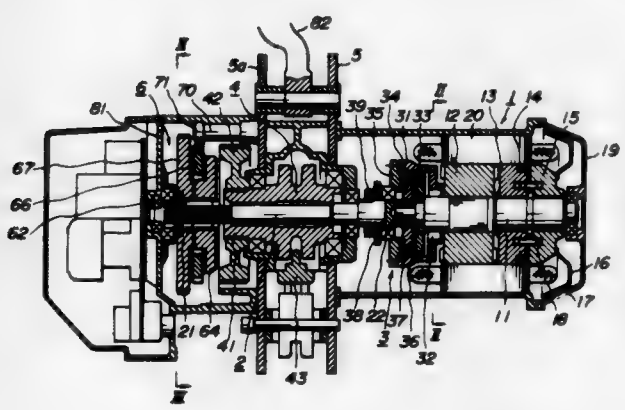
Kazuo Maeda, Yokohama, Japan, assignor to Kabushiki Kaisha Kito, Yamanashi, Japan

Filed Aug. 19, 1983, Ser. No. 524,634

Claims priority, application Japan, Aug. 25, 1982, 57-146211

Int. Cl.³ B66D *1/14*; F16D *7/00*

U.S. Cl. 254—350 **4 Claims**



1. An electric hoist including an electric motor, a driving shaft connected to a rotor shaft of said electric motor, a reduction gear train for transmitting rotation of said driving shaft to a load sheave, and a mechanical brake assembly in said reduction gear train, comprising an overload safety device arranged in a connection between said driving shaft and said rotor shaft

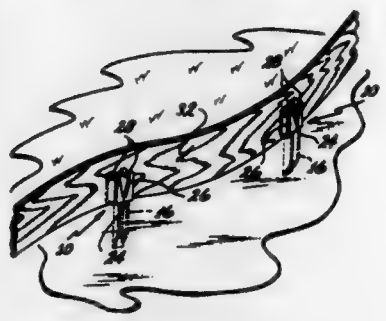
of said motor, said overload safety device comprising a casing fitted through a one-way clutch onto said rotor shaft, a first support member fixed to said rotor shaft, a second support member slidably fitted on said driving shaft, a retainer member fixed to said casing, friction plates respectively arranged between said first and second support members and between said second support member and said retainer member, and urging means for urging said retainer member toward said first support member.

4,508,319

BENDER BOARD MOUNTING SYSTEM

R. Warner Tappan, and Pam R. Tappan, both of 27265 Calle Anejo, Capistrano Beach, Calif. 97624

Continuation-in-part of Ser. No. 470,966, Mar. 1, 1983, abandoned. This application Nov. 21, 1983, Ser. No. 553,588
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—19 **12 Claims**



1. In a device for holding boards or the like in generally fixed relation to the ground, the combination comprising:

(a) a stake member configured for insertion into the ground, said stake member including slot means adjacent one end thereof; and

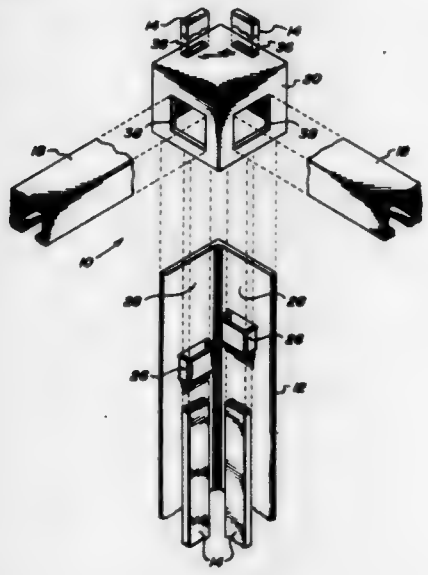
(b) a generally U-shaped channel member having a bight portion configured for attachment to said stake member and a pair of generally resilient, generally vertical leg portions for receiving and holding a board or the like therebetween, the bight portion of said channel member being slotted for engagement with said slot means for separably interconnecting the two parts.

4,508,320

FENCE SYSTEM

Bernard L. Hegarty, 3746 Oakland Rd., Bethlehem, Pa. 18017

Filed Nov. 19, 1981, Ser. No. 323,088
Int. Cl.³ B21F *27/00*
U.S. Cl. 256—47 **7 Claims**



1. A fence system comprising:

(a) A sheet metal angle bar suitable as a gate or terminal post, said post including a generally right angle bend to form two faces, said post further including horizontally disposed staples spaced linearly along the longitudinal axis of at least one of said faces, said staples adapted to receive a slide-in tension bar;

(b) a rigid tension bar of generally the same longitudinal length as said post, said tension bar having a shape in cross section adapted to allow the bar to simultaneously slide into and be retained by said post staples, and to slide into and retain a fence wire mesh, whereby said mesh is connected to said post; and,

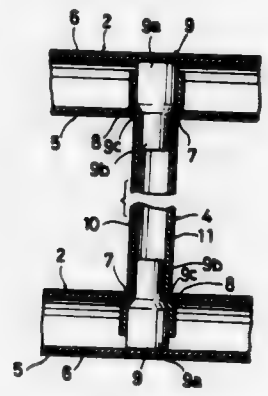
(c) a post cap adapted to overfit said post end and said cap top is slotted to receive said tension bar(s) end, and further including at least one aperture to receive a top rail.

4,508,321

LATTICED TUBULAR FENCE AND METHOD OF MAKING SAME

Tsuyoshi Morimoto, Osaka, Japan, assignor to Totoku Co., Ltd., Osaka, Japan

Filed Feb. 2, 1983, Ser. No. 463,284
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—65 **3 Claims**



1. A tubular fence comprising a horizontal tube comprising a clad tube having an inner iron tube and an outer overlying stainless layer, said horizontal tube having a lateral opening of predetermined diameter in said iron tube, a flange of said outer stainless layer extending inward through said opening and covering the edge of the opening in the iron tube, a vertical tube extending through said flange in contacting relation therewith into said horizontal tube, and an expanding pin press fitted in the end of said vertical tube and expanding the end thereof into said contacting relation with said flange.

4,508,322

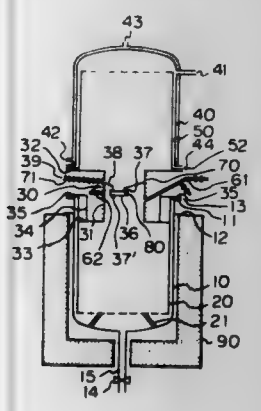
APPARATUS FOR PREPARING HIGH MELTING POINT HIGH TOUGHNESS METALS

Etsuji Kimura; Katsumi Ogi, and Kazusuke Sato, all of Saitama, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,743
Claims priority, application Japan, Apr. 27, 1983, 58-072926
Int. Cl.³ F27B *5/04*
U.S. Cl. 266—149 **10 Claims**

1. In a hermetically closable and evacuable apparatus for preparing high melting point high toughness metals by reduction of a chloride of said metals comprising a heatable reaction chamber and a coolable condensation chamber provided above the reaction chamber and communicating with the condensation chamber through an intermediate connecting section, the improved apparatus characterized in that said intermediate connecting section is provided with a seal pot closing means comprising an upright funnel body which has an opening of a substantial size and is supported by the internal wall of the intermediate connecting section at its periphery; a pan which can receive a fusible material therein and is pivotable around a

rotation shaft secured thereto at one end thereof between a receiving position and a pouring position and receives the



lower pipe of the funnel body when it is at the receiving position; and a heating means for heating the seal pot.

4,508,323

RUNNER FOR MOLTEN METAL

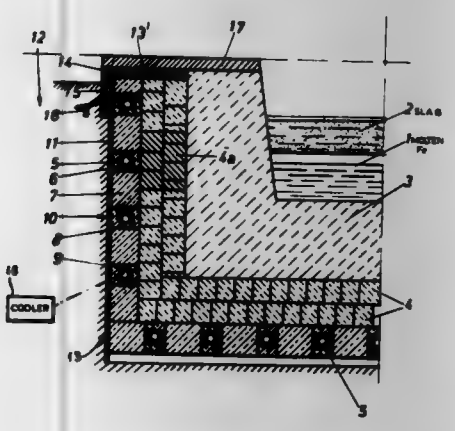
Georges Fleming, Esch, Luxembourg, assignor to ARBED S.A., Luxembourg, Luxembourg

Filed Mar. 23, 1983, Ser. No. 478,064

Claims priority, application Luxembourg, Mar. 26, 1982, 84042

Int. Cl.³ C21B *7/14*

U.S. Cl. 266—191 **7 Claims**



1. A runner for conducting molten metal from a furnace, the runner comprising:

a support trough;

a trough-shaped temperature-equalizing layer received in and lining the trough;

means for circulating a liquid coolant through the equalizing layer for cooling the layer to a uniform temperature of about 100° C.;

a permanent refractory outer lining of bricks received in and lining the layer; and

a renewable packed refractory inner lining received in and lining the outer lining for directly contacting molten metal when the latter is in the runner, the temperature-equalizing layer being more thermally conductive than the linings, said means for cooling the layer including conduits in heat-conducting engagement with the layer and means for circulating a coolant through the conduits, said layer having a coefficient of thermal conductivity greater than 10Kcal/m·°C.·h and being composed of at least one material selected from the group which consists of silicon carbide, semigraphite or graphite.

4,508,324

FASTENING MEANS FOR A CLOSURE PLATE ON A SLIDING SHUTTER OUTLET IN A VESSEL WHICH CONTAINS MOLTEN METAL

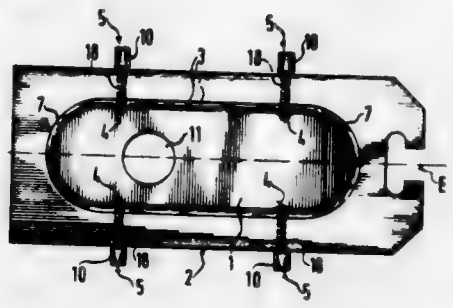
Ernst Lührsen, Bad Schwalbach; Siegfried Pohl, Wiesbaden-Medenbach, and Jürgen Plath, Wiesbaden, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 502,948

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223181

Int. Cl.³ B22D *41/08*

U.S. Cl. 266—236 **27 Claims**



1. A securing device for removably mounting a closure plate to a supporting frame member, said closure plate being adaptable for receiving valving means of said supporting frame member when said closure plate is mounted on a vessel for containing molten metal, said securing means comprising in combination:

a closure plate with a removable band-like metal sheath adapted to completely encircle at least the periphery around the edge thereof;

said sheathed closure plate being adapted to be removably received and retained in said supporting frame member;

adjustable tightening and securing means for tightening said metal sheath to grip said closure plate and for fastening said closure plate within said supporting frame wherein said closure plate includes at least one recess in its periphery, and said tightening and securing means comprises an adjustable fastening member supported by said frame member and having at least one end section which, in assembly, tends to extend into said at least one recess by deforming and forcing a portion said band-like sheath adjacent said at least one recess into said at least one recess thereby removably securing said sheath about the entire periphery of said closure plate.

4,508,325

COMPOSITE LEAF SPRINGS

Barry J. Marsh, Penkridge, England, assignor to GKN Technology Limited, England

Filed Apr. 4, 1983, Ser. No. 481,807

Claims priority, application United Kingdom, Apr. 21, 1982, 8211553; Sep. 14, 1982, 8226139

Int. Cl.³ F16F *1/26*

U.S. Cl. 267—47 **13 Claims**

1. An assembly comprising:

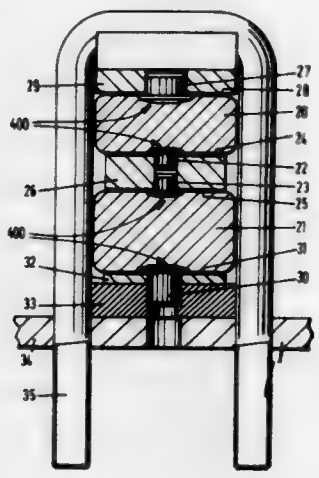
a leaf spring of composite material comprising fibres embedded in a resin,

a clamping means engaging said spring and also engaging a first member to secure said member to the spring,

a locating element having a head portion and a body portion, said head portion extending into a depression defined in a surface of said spring and said body portion engaging said member to determine the position of said member relative to said spring,

said depression being shallow relative to the thickness of the spring, having sloping walls and having been formed in

the spring during manufacture thereof in a moulding process whereby fibres adjacent said depression remain



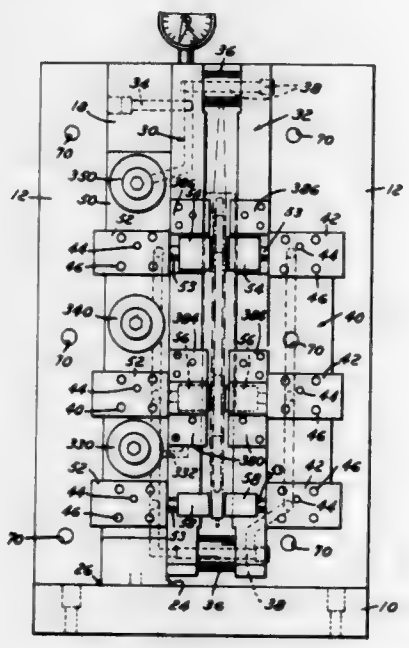
substantially undisplaced by the formation of said depression.

4,508,326

PRESSURE CHUCK FOR IRREGULAR ARTICLES

Eugene R. Andre, 26405 Hendrie, Huntington Woods, Mich. 48070

Filed Jan. 11, 1983, Ser. No. 457,154
Int. Cl.[3] B23K *19/00*; B25B *1/24*
U.S. Cl. 269—22 7 Claims



1. A workpiece holder for securing a workpiece in a predetermined location to prevent movement or vibration during a metal removing operation which comprises:

(a) means forming a recess to receive the workpiece,

(b) initial fixed locator members to orient the workpiece in the said recess, and

(c) a plurality of spaced pressure discs adjacent said recess operable to contact and secure the workpiece in said recess upon pressure actuation of said discs,

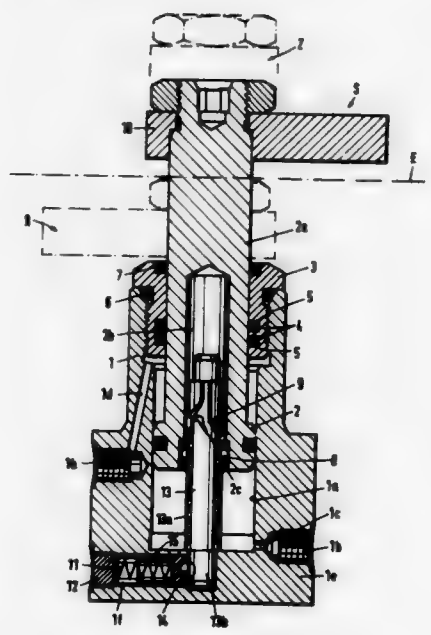
(d) said means forming said workpiece recess comprising a base, spaced parallel plates mounted on said base, rod means securing said plates in spaced relation, hydraulic pressure developing means in one of said plates, and means forming pressure passages in said plates and said rods to conduct fluid pressure to said spaced pressure discs.

4,508,327

SWING CLAMP

Metin Ersoy, Hilchenbach, Fed. Rep. of Germany, assignor to Maschinenfabrik HILMA GmbH, Hilchenbach, Fed. Rep. of Germany

Filed Jan. 7, 1983, Ser. No. 456,477
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201013
Int. Cl.[3] B23Q *3/08*
U.S. Cl. 269—23 14 Claims



14. In a hydraulically actuatable swing clamp, particularly for the clamping of objects such as workpieces, tools and fixtures on a machine, having a single piston which is arranged in a housing, the piston having a piston rod which extends in sealed manner out of the housing, carries a clamping arm for clamping the object at a clamping position and carrying out, in addition to an axial clamping movement, a rotary movement corresponding to a guide device, the rotary movement effecting a swinging of the clamping arm, the guide device including a control bolt normally non-rotatable with respect to the housing and extending into the piston, and at least one cam groove provided in a guide surface between the control bolt and the piston, the cam groove having a helical section for the swinging and simultaneous stroke movement of the clamping arm and an axial section for pure clamping movement of the clamping arm, and guide means arranged on the piston or control bolt for engaging the cam groove, the improvement wherein

said cam groove constitutes means for swinging said clamping arm to and from an intermediate position above a clamping plane, said intermediate position being rotated by a predetermined angle relative to said clamping position, and to and from a rest position below said clamping plane, said rest position being rotated relative to said clamping position by a second angle.

4,508,328

VICE FOR FISHHOOK

Satoru Kojima, Nagano, Japan, assignor to Coret & Company, Ltd. and Machine Engineering Co., Ltd., both of, Japan

Filed May 10, 1984, Ser. No. 608,822
Int. Cl.[3] B25B *1/08*
U.S. Cl. 269—236 5 Claims

1. A vice for a fishhook comprising:

a cam;

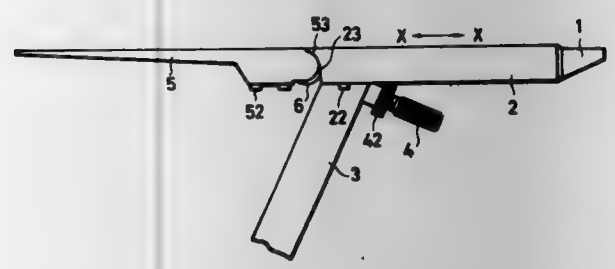
a main body;

a pair of jaws defining chuck means at front ends thereof, each jaw having a tapered portion, said jaws being positioned opposite one another to form a space therebetween at rear ends thereof, said space having said cam and a portion of said main body received therein;

a shaft at an axis of rotation of said cam passing through said jaws and said cam;

an operating lever integral with said cam, said cam and said lever being rotatable around said shaft;

an adjusting screw threadedly engaged with said main body and having a forward end in abutment with said cam;



a spring provided between said pair of jaws and said main body for urging said adjusting screw into abutment with said cam;

cam means integral with said main body for varying a distance between abutting tapered surfaces of said chuck means; and

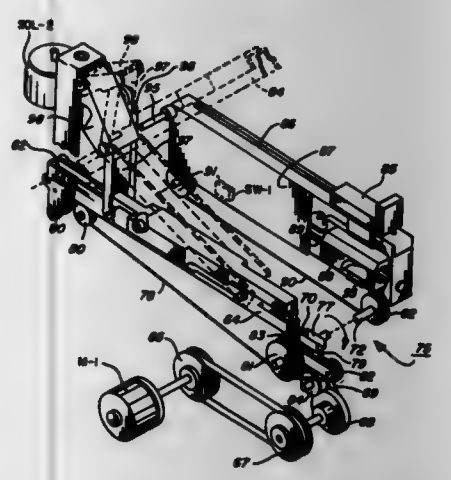
a cover for encasing at least said cam means and portions of said pair of jaws.

4,508,329

HIGH SPEED DUPLICATOR WITH STAPLER AND STAPLE LOADING ARRANGEMENT

Lawrence C. Hubler, Fairport; Joseph J. Ferrara, Webster; Roger N. Albright, Fairport, and Raymond C. Bassett, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1983, Ser. No. 563,735
Int. Cl.³ B42B *1/02*
U.S. Cl. 270—53 **4 Claims**



1. In a stapling apparatus having a clamping/stapling position whereat a plurality of sheets to be stapled are clamped preparatory to the application of a staple thereat, a magazine for holding one or more sticks of staples, and a staple follower within the magazine for contacting the end of a stick, the improvement comprising:

drive means engageable with the follower and adapted when in its release mode to provide a force thereon in a direction to force the staples toward the clamping/stapling position,

means for retracting the follower out of the magazine for permitting loading thereof with sticks of staples,

said means for retracting the follower being operatively connected to said drive means for conditioning the same to its release mode, and

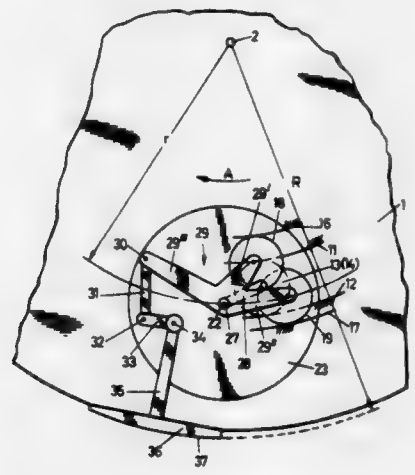
means for selectively controlling said drive means between its non-release mode and its release mode.

4,508,330

PICK-UP AND TRANSFER MECHANISM FOR LABELS OR THE LIKE

Norbert Jörss, Neutraubling, Fed. Rep. of Germany, assignor to Pirzer Co., Neutraubling, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 470,340
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206704
Int. Cl.³ B65C *9/12, 9/16*
U.S. Cl. 271—33 **19 Claims**



1. A pick-up and transfer mechanism for labels or the like, comprising,

an intermediate carrier,

at least one pick-up element mounted on the carrier for pivotal movement about a first axis,

a carrying element,

the intermediate carrier being mounted on the carrying element for rotation about a second axis which is offset relative to the first axis,

frame means, said carrying element being mounted on the frame means for rotation about a third axis offset from said first and second axes,

at least one first guiding means mounted on the intermediate carrier,

first control cam means disposed on the frame means and engaged by the one first guiding means whereby said intermediate carrier will be rotated about said second axis in a predetermined manner as said carrying element rotates to move the one first guiding means on the first control cam means,

a lever means pivotally mounted on the intermediate carrier and about the second axis,

at least one second guiding means disposed on the lever means,

a second control cam means disposed on the frame means and engageable by the second guiding means,

linkage means for coupling the lever means to the pick-up element whereby the pick-up element will be pivoted in a predetermined manner as said carrying element is rotated to move the first and second guiding means on said first and second control cam means, respectively.

4,508,331

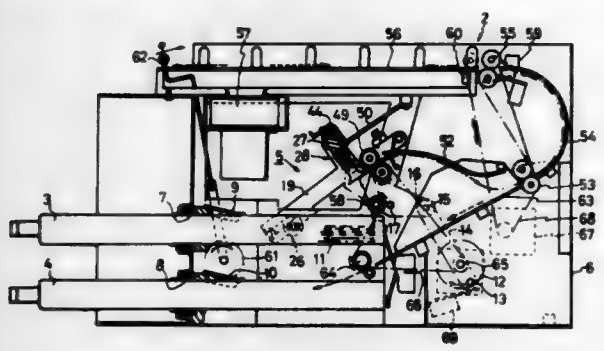
SHEET FEEDER

Atumi Kashiwagi, Osaka, Japan, assignor to Fujimoto Photo Industrial Co., Ltd., Osaka, Japan

Filed Mar. 2, 1983, Ser. No. 471,262
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—107 **11 Claims**

1. A sheet feeder for forwardly dispensing stacked rectangular sheets one by one from the uppermost position comprising a connecting rod **14** having one end connected to a crank pin **13** revolvable in one direction; an intermediate arm **16** having a front end pivoted to the other end of the rod **14** and an intermediate portion supported by a pivot **17** on a fixed frame,

the arm **16** being pivotally movable upward and downward; a pivotal arm **19** having a front end coupled to the rear end of the arm **16** by a front connection **21** provided by a pin **20** and a slit **18** and a rear end positioned to the rear of the front end of the stack of sheets **11** and below the front connection **21** and coupled to the fixed frame by a rear connection **26** provided by a pin **25** and a slit **24**; and sheet attracting means **28** disposed at



the front end of the pivotal arm **19** and movable about the pivot **17** when in a raised position away from the top of the stack of sheets **11**, by the pivotal movement of the pivotal arm **19** effected by the revolution of the crank pin **13** through the connecting rod **14** and the intermediate arm **16**, the sheet attracting means **28** being movable about the pin **25** of the rear connection **26** when in a lowered position close to the top of the stack of sheets **11**.

4,508,332

SHEET FEEDER FOR COPYING MACHINES

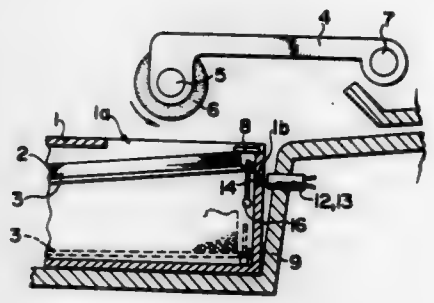
Tadashi Nishio, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Nov. 9, 1982, Ser. No. 440,290

Claims priority, application Japan, Dec. 5, 1981, 56-195120

Int. Cl.³ B65H *3/06*

U.S. Cl. 271—118 **33 Claims**



1. A sheet feeder including a cassette having a bottom plate which has one end urged to move upward and adapted to receive a stack of sheets thereon, and a feed roller responsive to a feed signal to rock into its operative position where it contacts an uppermost one of the sheets in the stack within the cassette to feed the sheets, one by one, out of the cassette; characterized by:

means for detecting the height of said stack of sheets and for generating an output signal as a function thereof; and

means responsive to said output signal for varying the instant at which the feed signal is produced as a function of the height of the sheets in the stack.

4,508,333

SHEET STACKING APPARATUS

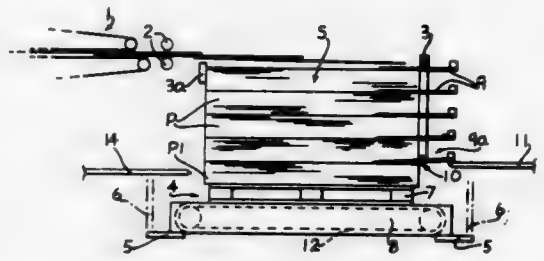
Graham A. B. Byrt, Thrissell Works, Easton Rd., Bristol BS5 0HE, England

Continuation of Ser. No. 237,162, Feb. 13, 1981,. This application Sep. 29, 1982, Ser. No. 426,521

Claims priority, application United Kingdom, Jun. 13, 1979, 7920581; Jun. 13, 1980, PCT/GB80/102

Int. Cl.³ B65H *29/34*

U.S. Cl. 271—218 **7 Claims**



1. A method of feeding sheets to form a stack having a plurality of uniform portions each portion staggered with respect to adjacent portion comprising the steps of:

a. continuously feeding sheets generally horizontally in succession to a location wherein they are arrested and form a first portion of a stack with aligned edges,

b. continuing the feeding of sheets to form a second portion above the first portion while displacing the first portion vertically so that it is separated from the second portion,

c. moving the first portion after it has been displaced, then recombining the first and second portions so that the first portion is staggered with respect to the second portion,

d. continuing the feeding of sheets to form a third portion above the second portion while displacing the first and second portions vertically so that they are separated from the third portion, moving the first and second portions as a unit after they have been displaced, then recombining the first and second portions with the third portion so that the second portion is staggered with respect to each of the first and third portions.

4,508,334

SYSTEM FOR SEPARATING TRANSFER-PRINTING SHEET

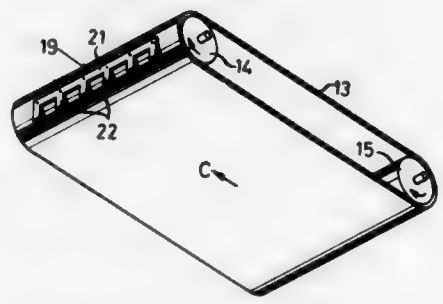
Yoshiharu Iwanaga, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 3, 1982, Ser. No. 446,679

Claims priority, application Japan, Dec. 7, 1981, 56-182384[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 271—308 **3 Claims**



1. In a copying apparatus comprising a photosensitive member in the form of a endless belt trained over a plurality of rollers for movement along a predetermined path for forming an image on a surface of said belt on which a transfer-printing sheet is superposed to print the image thereon, a system for separating the transfer-printing sheet from the photosensitive

member and ejecting same from the copying apparatus following a transfer-printing operation, comprising:

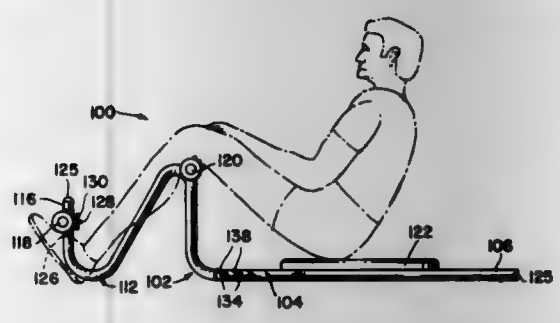
separating means mounted on the surface of said photosensitive member in the form of an endless belt in a receiving position in which the separating means lies flush with said belt, said separating means having a free end which lies beneath a leading edge of the transfer-printing sheet in said receiving position.

4,508,335

SIT-UP EXERCISER

Robert C. Kelley, and Ira J. Silberman, both of Opelika, Ala., assignors to Diversified Products Corporation, Opelika, Ala.

Filed Feb. 9, 1983, Ser. No. 465,151
Int. Cl.³ A01B *23/02*
U.S. Cl. 272—145 **13 Claims**



1. A sit-up exerciser comprising:

a frame having a generally flat, horizontal, bifuricated floor-engaging rear frame portion with two rearwardly extending side members which are contiguous with the floor over substantially their entire length, the front ends of said side members converging at the front of said rear frame portion, and a longitudinally extending front frame portion with a central longitudinal member having an upturned front end and a rear end which is joined to the converging front ends of said side members;

a low horizontal seat adjacent the floor attached to said rear frame portion substantially at the level of said side members; and

ankle-engaging means attached to said upturned front end of said front frame portion at an elevated position above the floor for engaging the tops of a user's ankles.

4,508,336

GAME DEVICE

Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Dec. 22, 1983, Ser. No. 565,012
Claims priority, application Japan, Dec. 31, 1982, 57-201863
Int. Cl.³ A63F *7/02, 7/30*
U.S. Cl. 273—1 L **2 Claims**

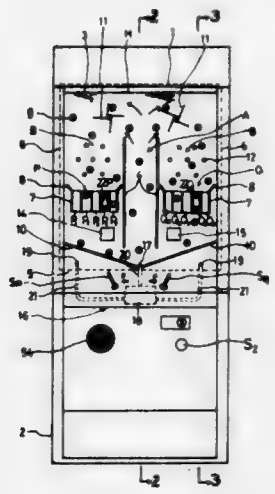
1. A game device including a water tank which contains balls having a specific gravity of slightly larger than that of the liquid in the water tank, said game device being characterized in that it is provided with:

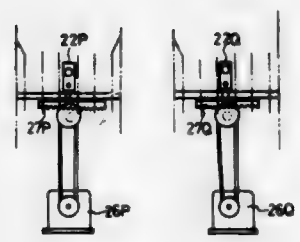
a rising passage at the central part of the water tank and a pair of descending passages on both sides of the rising passage by a vertical partition wall;

a rising water current generator below the rising passage;

a scoring zone comprising a plurality of scoring passages for each of the pair of descending passages;

a pair of ball passing detecting devices to determine an effective scoring passage among a plurality of scoring passages and a pair of control means for controlling the





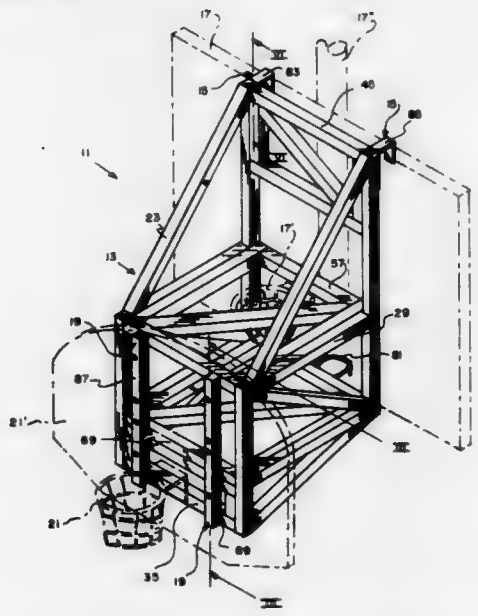
movement of the ball passing detecting device to make the effective scoring passage changeable.

4,508,337

BASKETBALL GOAL HEIGHT REDUCING FRAME

C. Earl Gillespie, Jr., 2114 Rock Ridge, Memphis, Tenn. 38134

Filed Mar. 23, 1984, Ser. No. 592,561
Int. Cl.³ A63B *63/08*
U.S. Cl. 273—1.5 R **4 Claims**



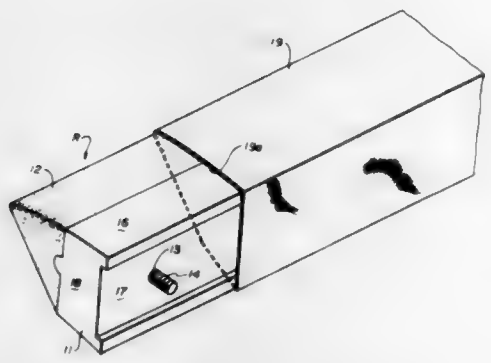
1. A basketball goal height reducing frame for securing an auxiliary basketball goal/backboard assembly at a lower height with respect to a primary basketball goal/backboard assembly, said frame comprising:

(a) support means for being securely attached to the backside of the backboard of the auxiliary basketball goal/backboard assembly;

(b) hanger means for being securely attached to the backboard of the primary basketball goal/backboard assembly; and

(c) linkage means for linking said support means and said hanger means with said support means located beneath said hanger means; said linkage means including a first side truss having first and second ends, a second side truss having first and second ends, a first end truss having first and second sides, and a second end truss having first and second sides; said first side of said first end truss being rigidly attached to said first end of said first side truss; said second side of said first end truss being rigidly attached to said first end of said second side truss; said first side of said second end truss being rigidly attached to said second end of said first side truss; said second side of said second end truss being rigidly attached to said second end of said second side truss; said first and second ends of said first and second side trusses having lower and upper ends; said upper ends of said first ends of said first and second side trusses being lower than said upper ends of said second ends of said first and second side trusses; said lower ends of said first ends of said first and second side trusses being lower than said lower ends of said second ends of said first and second side trusses.

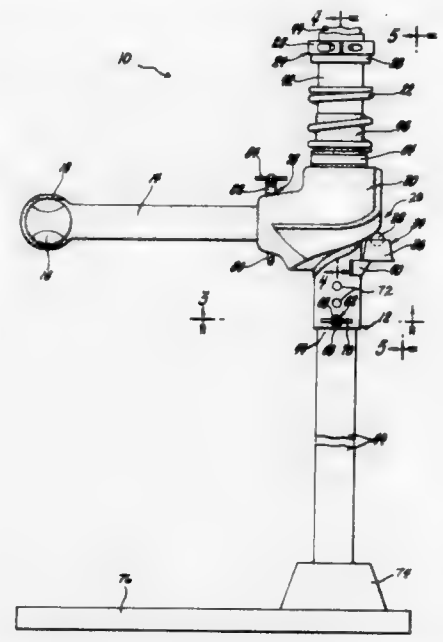
4,508,338
BUMPER RAIL COVER AND METHOD OF INSTALLING THE SAME
Jacob Kremski, 10440 S. State Rd., Goodrich, Mich. 48438
Filed Dec. 1, 1980, Ser. No. 211,755
Int. Cl.[3] A63D *15/06*
U.S. Cl. 273—9 2 Claims



1. A cover for the bumper rail of a pool table or the like, the bumper rail having a contoured outer surface including a resilient cushion on a front surface, a rear surface and end walls comprising, in combination, a sleeve of textile sheet material having open ends and a length corresponding substantially to the length of the bumper rail, at least a portion of said sleeve being formed of elastic textile material to allow said sleeve to be diametrically expanded for accommodating the bumper rail therein and for contraction of said sleeve into an installed position in overlying, tight-fitting engagement with the outer surface of the bumper rail and elastically deformable with the resilient cushion, wherein said sleeve has a length defining end portions extending outwardly beyond the bumper rail end walls and means for attaching said sleeve end portions to the rail rear surface with said sleeve end portions in overlying relationship with the bumper rail end walls.

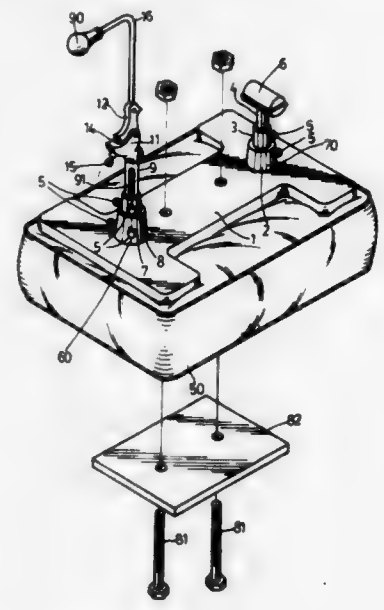
4,508,339
EYE-HAND COORDINATOR
Link W. Llewellyn, Flint, Mich., assignor to Chi Rho Corporation, Flint, Mich.
Filed May 30, 1984, Ser. No. 615,165
Int. Cl.[3] A63B *69/40*
U.S. Cl. 273—26 E 13 Claims

1. An eye-hand coordinator assembly (10) comprising; support means (12) having a longitudinal axis, a ball-supporting arm (14) having a ball (16) disposed at a distal end (18) thereof, cam means (20) operatively supporting said ball-supporting arm (14) on said support means (12) for allowing said arm (14) and said ball (16) to be displaceable from an initial rest position angularly about said longitudinal axis in response to an impact of said ball (16) while axially shifting along said longitudinal axis, said assembly characterized by energy dissipation means



(20, 22, 24) for dissipating the energy imparted to said arm (14) upon impact of said ball (16) after a predetermined amount of free movement of said arm (14) from said initial rest position.

4,508,340
BATTING AID WITH PIVOTALLY SUPPORTED BALL
Leon Liao, No. 85-3, Yu Min St., Changhwa City, Taiwan
Filed Jul. 11, 1984, Ser. No. 629,589
Int. Cl.[3] A63B *69/40*
U.S. Cl. 273—26 E 3 Claims



1. A batting aid comprising:
a base member;
a main support member including
a collar fastened on said base member,
a tubular member disposed within said collar and fixed thereto by two set screws,
a rod member disposed within said tubular member and fixed thereto by two set screws,
a seat member provided on the top of said rod member, said seat member having a slot therein,
an eccentric disc pivotally mounted in said slot, and
an elongated rod extending from the top of said eccentric disc, said elongated rod having threaded portion at its free end;
ball fixing means threadedly engaged with said elongated rod and secured thereto by a nut, said ball fixing means

having a housing, a threaded portion provided at the end thereof and a fixing plate formed integrally with the housing in a way such that an annular space is formed between the fixing plate and the housing,

a ball member attached to said fixing plate of said ball fixing means in a manner that a part of said ball member is within the annular space; and

an auxiliary support member including

a sleeve fastened on said base member,

a tubular member disposed within said sleeve,

a rod disposed within said tubular member, and

a resilient rubber member secured on the top of said rod.

4,508,341

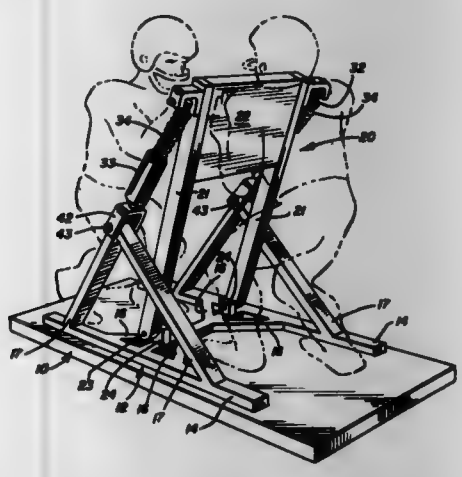
PASS-BLOCKING SLED

Michael R. Carrington, 2943 S. Parnell, Chicago, Ill. 60616

Filed Sep. 28, 1982, Ser. No. 425,633

Int. Cl.[3] A63B *67/00*

U.S. Cl. 273—55 R **7 Claims**



1. A football pass block training sled comprising, in combination, stationary frame means, pivotally mounted arm means carried by said frame means for rotating motion in the vertical direction, means on said arm means positioned for engagement with the body of a player while practicing pass blocking said arm means being constrained for rotation about 30 degrees from either side of a 90 degree overcenter position, and resilient means for resisting movement by a person of said arm means from a static position on the first side of the overcenter position toward the 90 degree overcenter position and controllably thereafter moving the arm to a static position on the second side of the overcenter position and for also resisting movement by a person of said arm means from a static position on the second side of the overcenter position toward the 90 degree overcenter position and controllably thereafter moving the arm to a static position on the first side of the overcenter position.

4,508,342

GOLF PUTTER

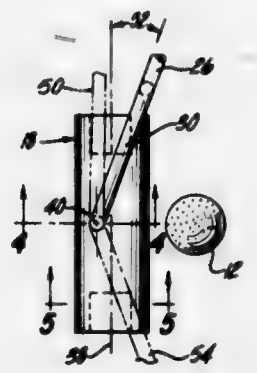
Robert C. Drake, 37971 Huron Point Dr., Mt. Clemens, Mich. 48043

Filed Mar. 28, 1983, Ser. No. 479,564

Int. Cl.[3] A63B *53/02, 53/14*

U.S. Cl. 273—80 C **16 Claims**

1. A putter golf club comprising a head constructed and arranged so that when oriented to hit a golf ball such head is elongated generally horizontally and the longitudinal axis of such head extends generally horizontally, a front face on said head for striking a golf ball, said front face extending substantially parallel to said longitudinal axis, a shaft having an elongate shank portion, an elongate offset portion extending generally transversely of and fixed to such shank portion adjacent the lower end of such shank portion, and a depending portion fixed to and extending from said offset portion at a point remote from the connection of said offset portion of said shank, said depending portion being generally transverse to the longitudinal axis and connected to said head at the top of said head at a point on said head intermediate the longitudinally elongate extent of said head, said head being fixed to said depending



portion, and said elongate offset portion being inclined toward said front face at an acute included angle to said longitudinal axis of said head in the range of 10° to 30°.

4,508,343

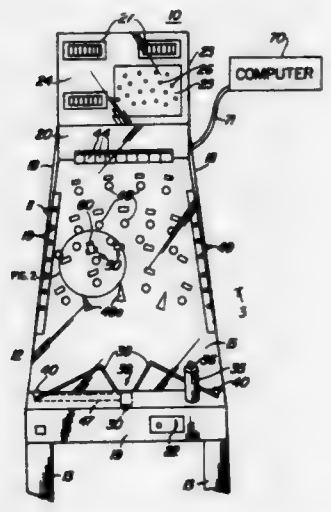
PINBALL GAME WITH RANDOMLY OPERABLE DROP TARGETS

Albin Peters, Chicago, and Zeilik Fainzilberg, Lincolnwood, both of Ill., assignors to Wico Corporation, Niles, Ill.

Filed Oct. 22, 1982, Ser. No. 435,978

Int. Cl.[3] A63F *7/00*

U.S. Cl. 273—119 A **8 Claims**



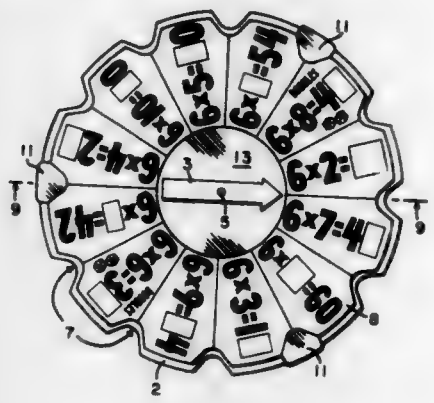
1. In a pinball game including a playfield board and one or more pinballs, the improvement comprising: means for propelling a pinball into rolling engagement with the playfield board along a variable propulsion axis, said propelling means including socket means for receiving a pinball in a set position from which it is propelled; a plurality of target assemblies mounted on said playfield board, each of said target assemblies including a single target member movable between a playing condition disposed for engagement by a pinball rolling along the playfield board and a retracted condition disposed out of the path of pinballs rolling along the playfield board, means responsive to engagement of said target member by a rolling pinball when said target member is in its playing condition for moving said target member to the retracted condition thereof, and drive means for effecting movement of said target member to the playing condition thereof independently of the target members of the others of said target assemblies; control means coupled to each of said drive means for controlling the operation thereof independently of one another automatically to control the sequence in which said target members are moved to the playing conditions thereof; guide means for returning a pinball from the playfield board to said socket means; and means for manually varying the direction of said propulsion axis.

4,508,344

SPINNER DEVICE

Kris K. Krogh, 6518 Madrid Rd. #7, Santa Barbara, Calif. 93117

Filed May 12, 1983, Ser. No. 494,063
Int. Cl.[3] A63B 71/06
U.S. Cl. 273—141 R 12 Claims



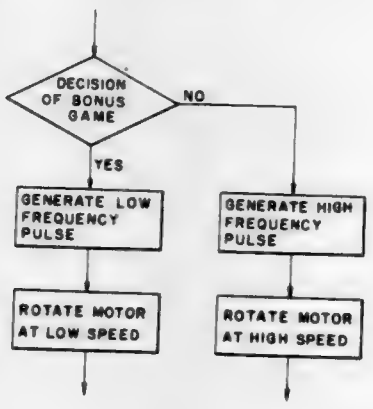
1. A spinner comprising a base, an upper section mounted pivotally on the base by means of a central member which protrudes through a hole in the base, a pointer mounted revolvably on the upper section by means of a fastener seated in the central member, and a set of interchangeable indicia-bearing cards having holes in their centers large enough to accomodate the spinner's pointer and having a symmetric shape which is capable of mating with raised areas on the upper section when placed on the upper section in a multiplicity of orientations, thus holding the cards in place with respect to the upper section.

4,508,345

SLOT MACHINE WITH PLAYER-FRIENDLY BONUS GAME

Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Apr. 20, 1983, Ser. No. 488,533
Claims priority, application Japan, Apr. 26, 1982, 57-68641
Int. Cl.[3] A63F 5/04
U.S. Cl. 273—143 R 2 Claims



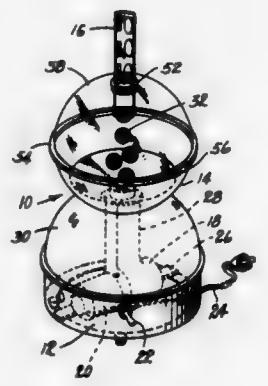
1. In a slot machine having a plurality of rotatable reels arranged in side-by-side relationship, a plurality of stop switches associated with each of said reels for causing said reels individually to stop, each reel having an annular series of symbols on the peripheral surface thereof, and motors one individual to each said reel for rotating said reels; the improvement comprising means for the detection of the occurrence of a predetermined symbol or combination of symbols on said reels in the stopped position of said reels in the course of an original game and for emitting a bonus game signal responsive to a said detection to entitle a player to a bonus game immediately following said original game, motor control circuits driving said motors at high speed in a said original game, and means responsive to a said bonus game signal automatically to cause said motor control circuits to drive said motors at low speed in a said bonus game.

4,508,346

RANDOM NUMBER SELECTION METHOD AND APPARATUS

Lucio P. Salvucci, 746 Commercial St., Weymouth, Mass. 02189

Continuation-in-part of Ser. No. 369,418, Apr. 19, 1982, abandoned, and a continuation-in-part of Ser. No. 462,426, Jan. 31, 1983, abandoned. This application Jan. 23, 1984, Ser. No. 573,024
Int. Cl.[3] A63F 9/00
U.S. Cl. 273—144 B 5 Claims



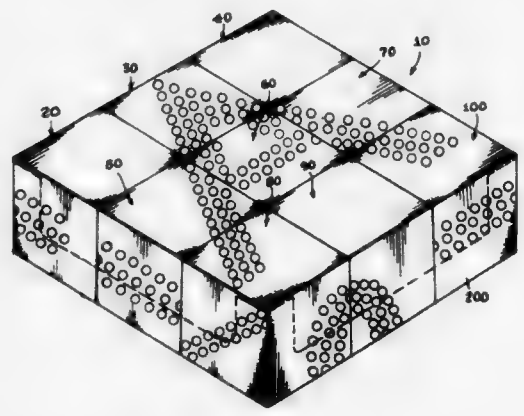
1. Apparatus for selecting and displaying random indicia comprising means defining a chamber, a plurality of elements adapted to be introduced into the chamber and each bearing one of the indicia, an open-ended vertical tube slightly larger than the elements, formed with a series of spaced apart perforations through its wall and in communication with the upper end of the chamber, means in communication with the lower end of the chamber for causing air to impinge upon the elements and entrain them into the tube, and releasable means for retaining at least one of the elements in the tube.

4,508,347

ALPHABET BLOCKS

Carol A. Shettler, 11977 E. Yale Ave., Aurora, Colo. 80014

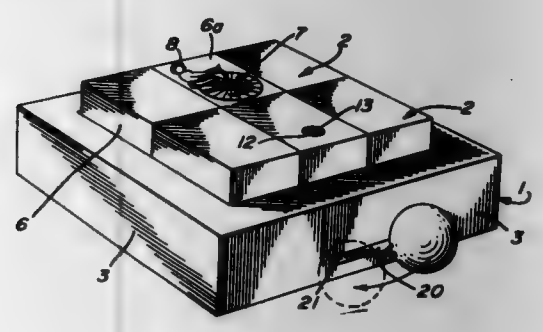
Filed Aug. 24, 1983, Ser. No. 525,918
Int. Cl.[3] A63F 9/12
U.S. Cl. 273—157 R 30 Claims



1. An educational puzzle comprising nine individual blocks, adapted to be arranged into a grid pattern of three blocks down and three blocks across, and each individual block having six faces, wherein at least five of the six faces of each block are provided with indicia, that may be selectively arranged in the grid pattern, to form all twenty-six of the individual letters of the alphabet, on the combined top surfaces of the nine blocks; wherein each individual letter as represented by the upwardly

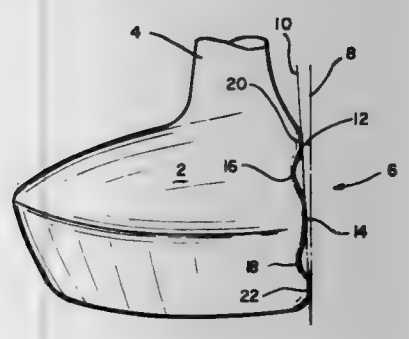
turned faces of the nine blocks is devoid of portions of any other letter outside of the contiguous form of the letter being represented.

4,508,348
ANIMATED PUZZLE BLOCK GAME
Wildy Lapointe, 398 Bellevue St., Roberval, Canada (G8H 2R8)
Filed Mar. 8, 1984, Ser. No. 587,688
Int. Cl.[3] A63F *9/08*
U.S. Cl. 273—157 R **8 Claims**



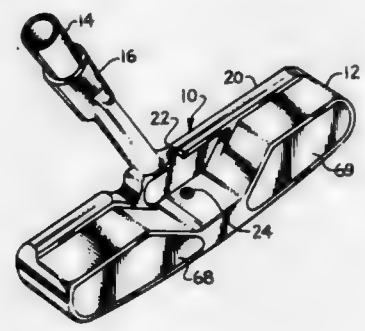
1. An animated block game, comprising:
(a) an open-top box, including side walls and at least one floor;
(b) a plurality of similar regularly-shaped blocks, designed to be removably contained by said box; at least one of said blocks including a rotatable part, embedded therewithin; all of said blocks defining a number of faces each adapted to carry parts of an image such that at least two different composite images may be formed by suitably positioning and orienting the blocks and wherein said rotatable part includes a top movable portion exposed at and occupying a restricted portion of one of said faces of said at least one block, to constitute an animatable portion of one of said images; said one face and animatable portion adapted to carry complementary parts of said one image;
(c) means for driving said rotatable part carried by said box; and
(d) a disconnectable coupling means between said driving means and said rotatable part to allow removal of said one block from said box.

4,508,349
GOLF CLUB
Paul W. Gebauer, 4999 Kahala Ave. #345, Honolulu, Hi. 96816, and Smith Choi, 1317 Laukaki St., Honolulu, Hi. 96821
Filed Nov. 15, 1983, Ser. No. 552,082
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—175 **8 Claims**



1. A golf club comprising a head having a face for making contact with a golf ball, wherein said face includes a curved surface extending along a central region of said face from a location near the heel in a direction toward the toe of said club, and said fall also includes first and second substantially flat surfaces extending substantially parallel to said direction, said first and second substantially flat surfaces being respectively above and below said curved surface.

4,508,350
GOLF CLUB HEAD
Clovis R. Duclos, 6327 Marina Pacifica Dr., Long Beach, Calif. 90803
Filed Sep. 29, 1982, Ser. No. 428,122
Int. Cl.[3] A63B *69/36, 53/04*
U.S. Cl. 273—183 D **3 Claims**



1. A golf club head including:
a body casting constructed from material having a first predetermined density, said body casting having:
a front golf ball striking surface;
a heel cavity having cast and adhesively bonded therein a predetermined amount of a material having a second predetermined density substantially more dense than said first predetermined density; and
a toe cavity having cast and adhesively bonded therein a predetermined amount of a material having said second predetermined density whereby said head has a high polar moment of inertia to resist turning forces applied to said face; and
a back surface through which said heel and toe cavities open, said heel and toe cavities each including:
a peripheral flange formed adjacent said back surface, and said head further including:
a heel plate connected to said heel flange to close said heel cavity at said back surface; and
a toe plate connected to said toe flange to close said toe cavity at said back surface, wherein said body further includes:
a sole surface intersecting said front golf ball striking surface; and
a center of gravity, said front golf ball striking surface having:
a golf ball striking spot thereon about a golf ball radius above said sole surface, said golf ball striking spot being above said center of gravity.

4,508,351
GAME WITH INDIVIDUAL TWO PART BOARDS
Marilyn Fitzgerald, 117 Matawan Rd., Old Bridge, N.J. 08857
Filed Jun. 13, 1983, Ser. No. 503,543
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—248 **5 Claims**

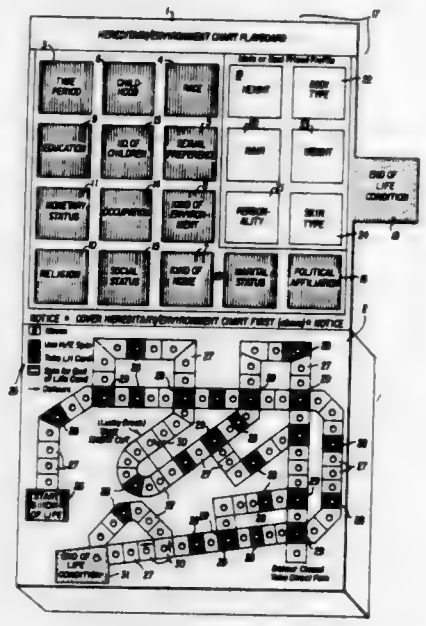
1. A reincarnational, karmic board game apparatus comprising:
a plurality of individual, two-part playing boards consisting of:
a first playing section containing separate categorical playing spaces within, whereby said spaces have to be covered with playing pieces;
a second playing section having paths marked thereon, characteristically divided into spaces that have a central concavity, whereby, certain of said spaces provide a starting area, an ending area, blank areas, single arrowed detour areas, colored multi-arrowed decision making areas and further colored obsticle areas, whereupon all of the previously mentioned said spaces unite to form a mazed means to take a simulated reincarnational, karmic life journey;
a supplementary game board providing playing and storage areas for supportive ingredients used in cooperation with

the said individual, two-part playing boards, whereby, said ingredients consist of:

sets of unique, playing markers and their storage areas thereof, whereupon, said markers are used to cover separate categorical spaces of said first playing section of said individual, two-part playing boards;

a plurality of categorical spinner playing devices, providing the referenced indicia and instructions therein, for said markers and their placement thereinafter;

sets of cards and their storage areas thereof, whereby said card sets, being correlated with certain said spaces of



said second playing section, are printed with indicia, information and directions, whereas, said indicia, information or directions could alter movements of a playing position;

a plurality of protuberant playing pieces and their storage areas therein, having the shapes of the astrology signs of zodiac, whereby said playing pieces are used as a means to advance along said paths of said concaved spaces;

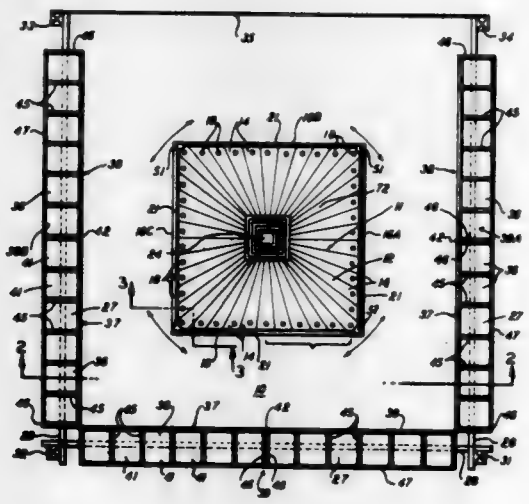
a spinner device printed with numerals used for the purpose of advancing regular movements of said playing pieces along said paths.

4,508,352

MOUSE TRAP GAME

William C. Johnson, 743 N. Grand Ave., Glendora, Calif. 91740

Filed Sep. 6, 1983, Ser. No. 529,390
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—274 **5 Claims**



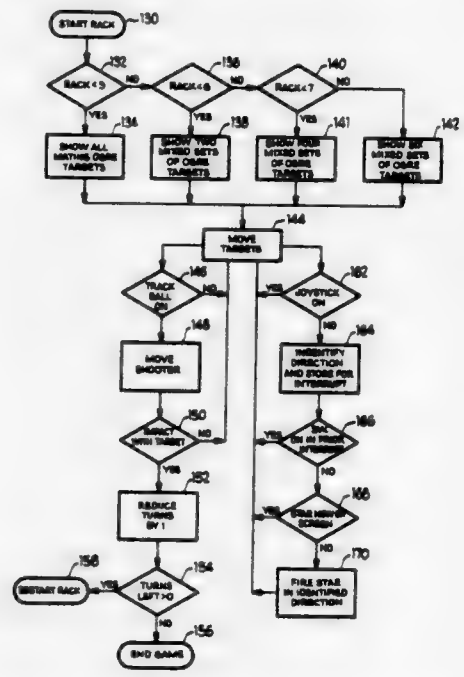
1. In a game of chance for a plurality of participants and employing a live small animal the combination comprising a selector arena, vertical transparent fences on the periphery of said arena, stable means supporting said selector arena, a multiplicity of peripheral selector apertures, a trap cup beneath each selector aperture, means releasably securing each cup, a central release area defined on said arena, a color distinct zone extending from said central release area to each peripheral selector aperture, a plurality of participant choice boards each having a color segment matching one of the color zones on the selector arena, transparent hoods movably secured above each choice board, and means for displacing said transparent hoods from above said choice board to afford access thereto by a participant.

4,508,353

IMAGE MATCHING VIDEO GAME

Steven M. Meyer, Chicago; Wayne A. Kuna, Oak Park; Robert S. Morrison, Vernon Hills; Howard J. Morrison, Deerfield; Richard A. Ditton, and Elaine A. Ditton, both of Arlington Heights, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 22, 1982, Ser. No. 452,390
Int. Cl.³ A63F *9/22*
U.S. Cl. 273—313 **29 Claims**



1. A game involving the elimination of images in matching sets comprising:

means for displaying a plurality of sets of matching images;

each of the images having separable mating components;

player controllable means for selecting one image at a time;

means for retaining a first selected image for a perceptible predetermined time interval;

means for comparing a second selected image with the first selected image;

means for eliminating matching first and second selected images;

means for producing a mixed image of exchanged components of the first and the second images if they do not match; and

means for terminating the predetermined time interval upon player selecting the second image.

4,508,354

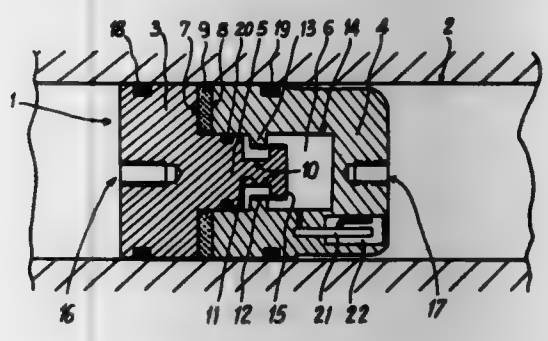
MOVING PISTON WITH SELF-TIGHTENING SEALING RING

Flavien Lazarre, Pau, France, assignor to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Mar. 19, 1984, Ser. No. 590,860
Claims priority, application France, Mar. 21, 1983, 83 04570
Int. Cl.³ F16J *1/06*
U.S. Cl. 277—27 **4 Claims**

1. Packing or sealing device moving in a hollow cylinder comprising two elements of cylindrical external outlines of

dimensions slightly smaller than those of the hollow cylinder, wherein in order that a cylindrical rod extending the first element slides in a cylindrical chamber delimited inside the second element and facing the first element, each of these two



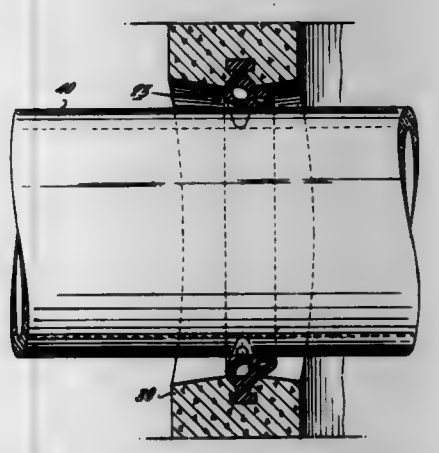
elements are in contact through an annular part with the annular packing or sealing ring, made of Teflon or analog, through which passes the cylindrical rod, this annular packing having substantially the same external diameter as the said elements, when it is not subjected to compression stress.

4,508,355

GASKET SUITABLE FOR USE IN SEALING EXTERIOR OF SEWER PIPE TO OPENING IN MANHOLE, AND METHOD AND SYSTEM EMPLOYING SAME

John Ditcher, Langhorne, Pa., assignor to A-Lok Products Corporation, Trenton, N.J.

Filed Mar. 7, 1983, Ser. No. 472,620
Int. Cl.³ F16L *21/02;* F16J *15/32*
U.S. Cl. 277—189 **1 Claim**



1. In a manhole system comprising a manhole having a generally circular wall opening surrounding the outer surface of a generally cylindrical pipe extending through said opening, and a gnerally circular gasket ring of elastomeric material having a uniform cross-section along its circumferential length and comprising a radially-outward foot portion embedded in the wall of said manhole surrounding said opening, a head portion radially inward of said foot portion and bearing against the exterior of said pipe, and a neck portion between said head and foot portions of lesser width than either of them and also embedded in said wall, the radially inward tip of said head portion when undeflected defining a circle of lesser radius than that of the outer surface of said pipe so that when said pipe is inserted into said opening said gasket is deflected axially of said pipe and the side surface of said head portion bears sealingly against said outer surface of said pipe, said head portion tapering from a greater lateral thickness near said neck portion to a smaller thickness near said tip:

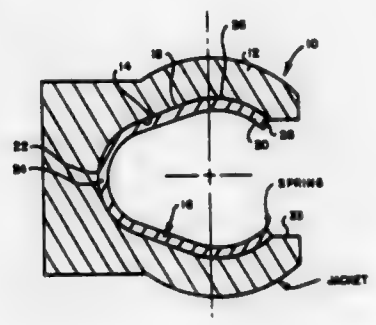
the improvement wherein said head portion contains a first cavity and a second cavity each of circular cross-section and spaced radially from each other to define a transverse wall between them, each of said cavities extending completely around the circumference of said gasket, said first cavity being nearer said neck portion and a larger cross-sectional diameter than said second cavity.

4,508,356

MODIFIED C-SHAPED MECHANICAL SPRING SEAL

Robert Janian, 3845 Ballina Canyon Rd., Encino, Calif. 91436

Filed Jun. 6, 1984, Ser. No. 617,621
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—205 **16 Claims**



1. A resilient spring element for insertion in a jacket having a generally C-shaped cavity comprising:

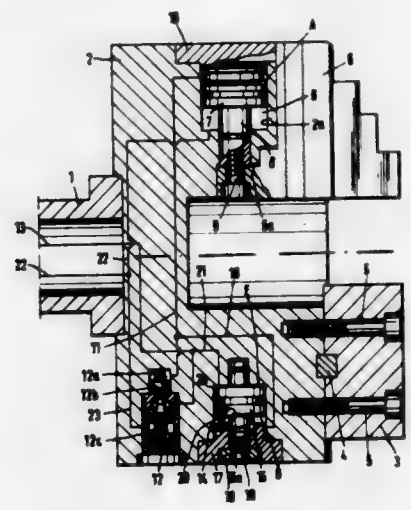
an elongated member of substantially constant cross section having a sinuous longitudinal configuration, wherein the cross section of the member comprises a modified C-shaped outline having at least two different curvatures, the member including cantilever arm portions of relatively large radius of curvature between the base thereof and a region of greatest width of the member, and terminal portions from the region of greatest width on each side to the tips being of smaller radius of curvature than the cantilever arm portions.

4,508,357

POWER-OPERATED CHUCK FOR TURNING MACHINES

Kurt Reich, Düsseldorf, Fed. Rep. of Germany, assignor to Paul Forkardt GmbH & Co. KG, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 505,063
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222751
Int. Cl.³ B23B *31/14*
U.S. Cl. 279—1 C **5 Claims**



1. A power-operated chuck for turning machines, said chuck comprising:

a chuck body;

at least one movable jaw which is radially guided in said chuck body;

a pressure medium cylinder which is provided with a working chamber, and a pressure medium piston which is movably guided in said chuck body; said pressure medium

piston being operatively associated with said at least one movable jaw for actuating same;

a source of pressure medium;

a releasable check valve, with said working chamber of said pressure medium cylinder being connected to said source of pressure medium via said check valve; and

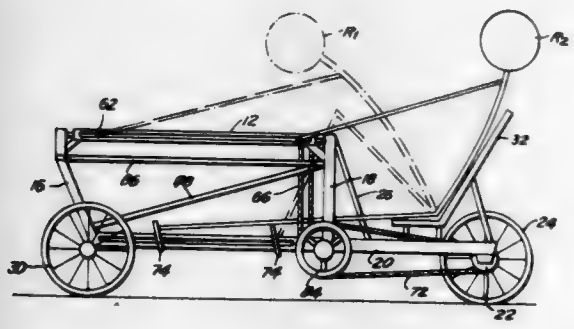
a centrifugal force compensating cylinder having a pressure chamber which communicates with said working chamber of said pressure medium cylinder; said centrifugal force compensating cylinder being provided with a compensating piston which is designed as a centrifugal weight, and which is radially movable within said chuck body; said compensating piston having a radially outer end which projects into said pressure chamber of said centrifugal force compensating cylinder, said centrifugal force compensating cylinder also having a relief chamber; and a short-circuit line for directly connecting said relief chamber with said source of pressure medium; said compensating piston having a radially inner end which projects into said relief chamber of said centrifugal force compensating cylinder.

4,508,358

APPARATUS FOR USE AS PHYSICAL EXERCISER AND MEANS OF LOCOMOTION

David Erel, Kings B/22, Regent St., Bedford View 2008, South Africa

Filed Jun. 25, 1982, Ser. No. 392,254
Claims priority, application Israel, Jul. 15, 1981, 63320
Int. Cl.[3] B62M *1/12*
U.S. Cl. 280—234 29 Claims



1. Physical exercise apparatus comprising a plural wheel vehicle having a chassis, at least one of the wheels being adapted to be positively driven, a stationary seat for a rider on the vehicle, two linearly reciprocable drive members on the vehicle forward of said seats, a link for transmitting the linear movement of each said drive member to the driven wheel while transforming said linear movement to rotatory movement of the driven wheel, and each of said linearly reciprocable drive members is provided at a different level on the vehicle.

4,508,359

AUTOMATIC LATCH FOR DRAFT MEMBER OF BALE HANDLER

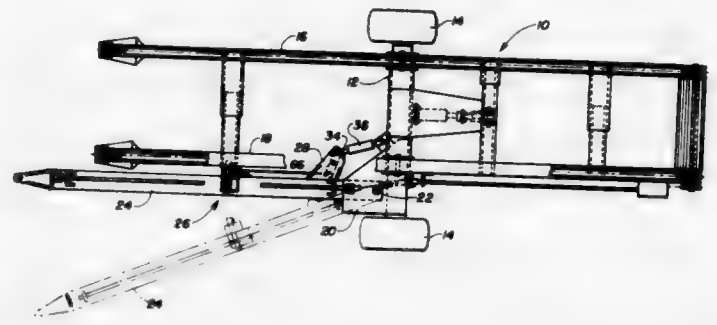
Willis R. Campbell, Ephrata, Pa.; Larry J. Hunt, Novi, Mich., and T. William Waldrop, New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 18, 1983, Ser. No. 485,938
Int. Cl.[3] B60D *1/00*
U.S. Cl. 280—463 11 Claims

8. In a mobile transport unit for handling bales of crop material, said mobile transport unit having an elongated frame with a pair of side rails for supporting said bales of crop material, a draft member pivotally connected to said elongated frame and adapted for connection to a towing vehicle, said draft member being movable between a transport position adjacent one of said side rails and a field position extending outwardly from said one side rail, fluid-operated cylinder means interconnected between said draft member and said elongated frame for moving said draft member between said field and transport positions, the improvement comprising:

latch means arranged for securing said draft member against horizontal movement away from said one of said side rails when in said transport position;

means for releasing said latch means in response to initial actuation of said fluid-operated cylinder means to move said draft member from said transport position toward



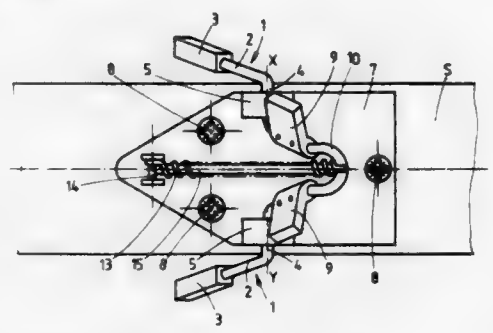
said field position, and one end of a piston rod of said cylinder means is pivotally connected thereto with limited amount of lost motion, whereby the initial movement of said piston rod in a direction to move said draft member away from said side rail actuates said means operable to move said latch member to said retracted position, whereby continued pressure by said cylinder mens against said draft member moves said draft member toward said field position and maintains it therein.

4,508,360

SKI BRAKE

Jean Beyl; Jean Bernard, both of Nevers; René Guérreau, Montmarault; Daniel le Faou, Varennes Vauzelles, and Henri Peyre, Nevers, all of France, assignors to Ste LOOK, Nevers, France

Filed Jan. 4, 1983, Ser. No. 455,579
Claims priority, application France, Jan. 26, 1982, 82 01146
Int. Cl.[3] A63C *7/10*
U.S. Cl. 280—605 2 Claims



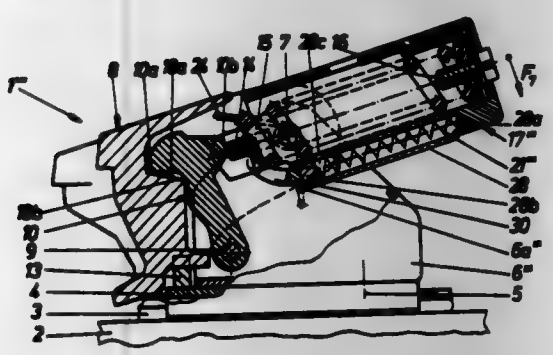
1. In a ski brake comprising two braking arms placed on each side of the ski, each braking arm being elbowed so as to form a bottom section which is adapted to carry a braking shoe, an intermediate section pivotally mounted on the ski with a predetermined degree of play in a transverse bearing fixed on the ski and a top section subjected to the pressure of the ski boot when said boot is in position; the improvement comprising a pivotal control flap carried by the top section of each braking arm, and a top arcuate connecting member having two legs one of which legs is connected to each of said flaps, each said flap having two separate bores which are inclined at an angle with respect to each other and serve as swivel-bearings respectively for said top section of the corresponding braking arm and for the respective leg of said top arcuate connecting member.

4,508,361

SAFETY SKI BINDING

Josef Svoboda, Schwechat; Theodor Nitschko, and Heinz Wittmann, both of Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Nov. 12, 1982, Ser. No. 441,148
Claims priority, application Austria, Nov. 12, 1981, 4854/81
Int. Cl.[3] A63C 9/08
U.S. Cl. 280—628 11 Claims



1. A safety ski binding, comprising: a support member; a sole holder supported for pivotal movement around a swivel axis on said support member between release and downhill skiing positions; locking means for releasably holding said sole holder in said downhill skiing position, said locking means permitting said sole holder to move away from said downhill skiing position only after predetermined release forces are exceeded, said locking means including a locking part provided on a pivotally supported locking lever, said locking lever having on a side remote from said locking part a control surface which is slidably engaged by a slide member which is biased toward said control surface by a release spring supported on a spring housing, said spring housing being supported in a manually operable release lever which is pivotally supported for movement about a swivel axis wherein said slide member is, in every position of said locking lever when said sole holder is in said downhill skiing position, substantially normal to said control surface; and centering means cooperable with said release lever and said spring housing for yieldably resisting pivotal movement thereof away from an initial positon, said centering means including a leaf spring having one end secured on said spring housing and having section adjacent said one end which is supported, in said downhill skiing position, on a surface of said sole holder, wherein said leaf spring is secured on a part of said spring housing which covers said release spring from above, engages an inner surface of said sole holder which faces said locking lever, and is arranged to extend between two support pins which are secured on said support member, which are parallel to the swivel axis of said spring housing, and which are offset with respect to one another in a direction longitudinally of the ski and also in a direction normal to the upper side of the ski.

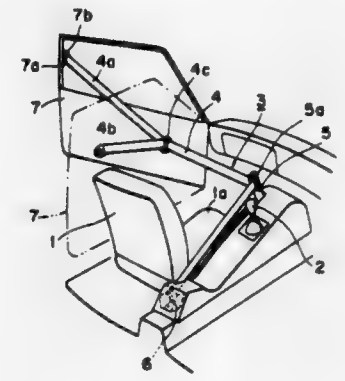
4,508,362

PASSIVE SEAT BELT DEVICE

Kazuo Higuchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1983, Ser. No. 495,250
Claims priority, application Japan, May 19, 1982, 57-84287
Int. Cl.[3] B60R 21/10
U.S. Cl. 280—804 7 Claims

1. A passive seat belt device for a vehicle having a seat belt with both ends fixed by means to the vehicle body, at least one of said both ends being connected to a seat belt retractor means, a guide member which guides said seat belt in the longitudinal direction of the vehicle body and a drive means for driving said guide member, the loading and release of said seat belt for a person in the seat being effected by the longitudinal movement of said guide member driven by said drive means, the improvement comprising, a switch means provided for controlling the drive means and stopping the movement of said guide member at a predetermined position upon the condition that another vehicle member is interposed in the forwardly moving path of said guide member.

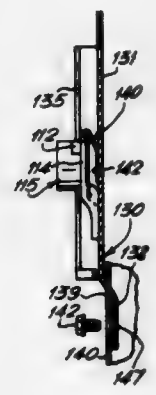


4,508,363

ADJUSTABLE SEAT BELT ANCHORAGE

John D. Temple, Carlisle, England, assignor to ASE (UK) Limited, Cumbria, England

Filed Feb. 10, 1983, Ser. No. 465,610
Claims priority, application United Kingdom, Feb. 11, 1982, 8203979
Int. Cl.[3] A62B 35/02
U.S. Cl. 280—808 10 Claims



1. Anchorage means for a belt of a seat belt system, said anchorage means comprising:

carriage means having support means for said belt,

track means for guiding said carriage means for movement therealong,

locking means for locking said carriage means against said movement along said track means,

said locking means comprising a first locking element on said carriage means and a series of second locking elements spaced along said track means,

said carriage means being rockable between a first position in which said first locking element is in engagement with a selected second locking position to lock said carriage means at a selected position on said track means and against said movement along said track means from said selected position and a second position in which said first locking element is released from said second locking element to permit said movement of said carriage means along said track means to a different selected position on said track means, and

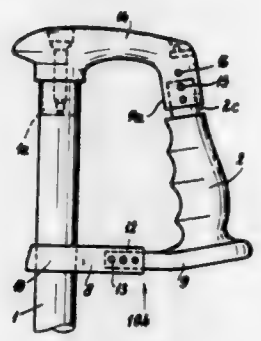
resilient biassing means biassing said carriage means into said first position.

4,508,364

SKI POLE

Claude Joseph, Sallanches, France, assignor to Kerma, Sallanches, France

Filed Dec. 1, 1982, Ser. No. 445,977
Claims priority, application France, Dec. 3, 1981, 81 22967
Int. Cl.³ A63C 11/22
U.S. Cl. 280—821 5 Claims



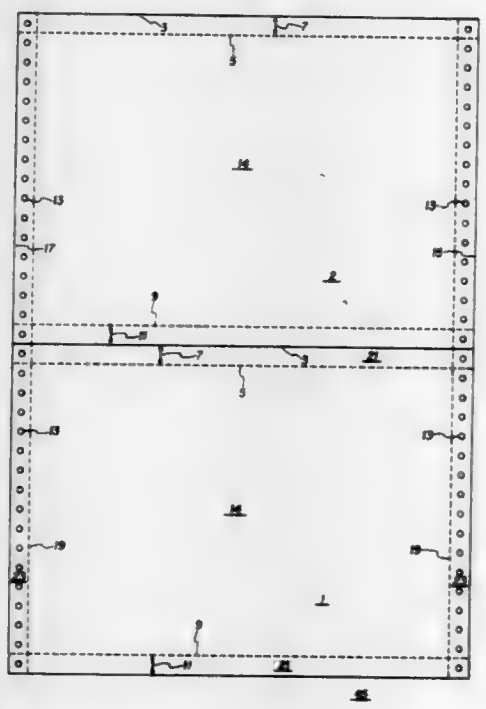
1. A ski pole comprising:
a shaft having an upper end and a lower end;
a grip mounted on said upper end; and
means for fixing said grip to said shaft so that the axis of said grip is rearwardly offset from the axis of said shaft, said grip being located at the level of the upper end of said shaft and oblique thereto, said means for fixing said grip to said shaft including adjustment means for varying the angle of the axis of said grip relative to the axis of said shaft, said means for fixing said grip to said shaft being formed by an upper arm connecting the upper portion of said grip with the upper end of said shaft and a lower arm connecting a lower portion of said grip with said shaft, means being provided on at least one of said arms for adjusting the effective length thereof.

4,508,365

CONTINUOUS FORM PAPER WITH PULL TABS FOR EASIER SEPARATION

Debra K. Hawes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 21, 1983, Ser. No. 477,582
Int. Cl.³ B42D 15/00; B41L 1/20; B65D 27/10
U.S. Cl. 281—2 7 Claims



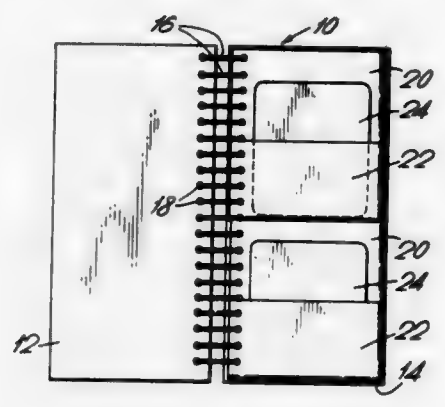
1. A material construction which facilitates continuous form feed comprising:
a plurality of rectangular sheets of material, each sheet being identical in configuration to the other sheets and having top and bottom edges extending parallel to one another and first and second side edges extending between said top and bottom edges and parallel to one another, said sheets being coupled to one another along a fold line defined between an interconnection of said bottom edge of one sheet with the top edge of the next successive sheet of said plurality of sheets, said sheets folding at said fold line to enable stacking of said sheets one upon the other to form a bundle having the same rectangular configuration as a sheet;
a top tear line extending parallel to the top edge of each sheet between the first and second side edges of a sheet across the entire width of each sheet, said first tear line being spaced from said top edge by a predetermined distance; and
a bottom tear line extending parallel to the bottom edge of each sheet between the first and second side edges of a sheet across the entire width of each sheet, said second tear line being spaced from said bottom edge by a predetermined distance, said predetermined distance between the bottom tear line and the bottom edge of one sheet being equal to said predetermined distance between the top tear line and the top edge of the next succeeding sheet such that when said sheets are folded to form a stack, the sheets forming said stack may be separated by tearing along a single line adjacent said top edges and a single line adjacent said bottom edges of said sheets formed by the stacked alignment of the bottom tear line of one sheet with the top tear line of the next successive sheet.

4,508,366

HOLDERS FOR COMPUTER DISKS AND THE LIKE

Robert J. Brindle, Witney, England, assignor to James Burn International Limited, England

Filed Nov. 4, 1982, Ser. No. 439,075
Claims priority, application United Kingdom, Nov. 23, 1981, 8135239; Jan. 12, 1982, 8200752
Int. Cl.³ B42D 3/12, 3/18; B65D 85/57; B42F 5/00
U.S. Cl. 281—36 8 Claims



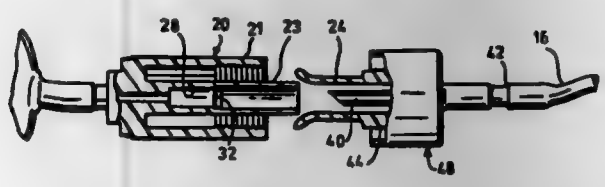
1. A disk holder of book-like configuration, said holder comprising
a plurality of finished pages, at least one of said finished pages being formed from an unfolded page having a width twice the width of said finished page, said unfolded page also having a length greater than the length of said finished page,
at least one pocket formed on each of the front and back faces of that one of said finished pages made from said unfolded page, each of said pockets being closed along a bottom edge by folding the excess length of said unfolded page relative to the length of said finished page, and each of said pockets being closed along one longitudinal side edge by folding said unfolded page along a longitudinal median line of said unfolded page, each pocket being sized to receive a disk therein, and
a binding element that binds together the opposite side edges of said unfolded page after said unfolded page has been

folded into finished page configuration with front and back face pockets formed thereon, each of said pockets being closed along another longitudinal side edge by said binding element, and said binding element serving to bind together all finished pages with or without pockets thereon, thereby forming said disk holder.

4,508,367
CONNECTOR

Dimitrios G. Oreopoulos, 10 Ladywood Dr., Rexdale, Ontario; Gabor Zellerman, deceased, late of Ottawa, both of Canada, and by Robert G. Price, administrator, 1801 - 20 Driveway, Box 1565, Stn. B, Ottawa, Ontario, Canada (K1P 5R5)

Continuation-in-part of Ser. No. 111,264, Jan. 11, 1980, abandoned. This application Nov. 17, 1982, Ser. No. 442,457
Claims priority, application Canada, Jan. 15, 1979, 319367
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—3 **10 Claims**



1. A coupler comprising a first part, said first part having a first cupped member integral therewith, said first cupped member having a bottom and an open end, said first cupped member having an exterior cylindrical wall extending rearwardly of the open end to said bottom and formed integral therewith and a flow opening extending through the bottom of said first cupped member;

a second part, said second part having a second cupped member integral therewith, said second cupped member having a bottom and an open end, said second cupped member having an interior cylindrical wall extending from the open end to said bottom and formed integrally therewith and a flow opening extending through the bottom of said second cupped member;

the said interior cylindrical wall of the second cupped member and said exterior cylindrical wall of the first cupped member having diameters for sliding relation with respect to each other whereby the two cupped members can be telescoped with respect to each other along an axis common to the cylindrical axis of their said respective cylindrical walls when the cylindrical axes of their respective cylindrical walls are aligned and their open ends are opposed whereby said first part and a second part are telescopical with respect to each other;

a connector for each of said cupped members for joining fluid flow between the flow openings of said cupped members, said connector in each of said cupped members being spaced inwardly from the open end of its respective cupped member, said connectors being aligned in their respective cupped members and adapted to connect together in fluid flow relation within the first cupped member as the cupped members are telescoped together;

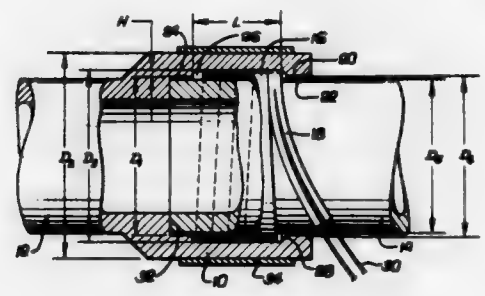
an end portion of the inside cylindrical wall of said second cupped member being flared outwardly adjacent its open end to a diameter greater than the outside diameter of said first cupped member whereby to cooperate therewith and guide said cupped members into axial alignment when they are telescoped together;

the said cupped members when fully telescoped together to dispose the interior cylindrical wall of the second cupped member and the exterior cylindrical wall of the first cupped member in fully telescoped relation being adapted to cooperate and support said connectors connected in fluid flow relation and means for holding said connectors connected.

4,508,368
PLASTIC PIPE JOINT

James J. Blumenkranz, Hollywood, Calif., assignor to R & G Sloane Mfg. Co., Inc., Sun Valley, Calif.

Filed Mar. 1, 1982, Ser. No. 353,157
Int. Cl.³ F16L *47/02*
U.S. Cl. 285—21 **10 Claims**



1. A bonding sleeve assembly for thermally bonding a first thermoplastic article to a second thermoplastic article, comprising:

an enlarged generally cylindrical extension formed on one end of the first article having an opening for receiving one end of the second article;

an internal annular recess formed within said enlarged extension and spaced axially a short distance from the one end of the first article to define a first internal annular land and between said recess and the one end of the first article;

a second internal annular land spaced axially from the first land and separated therefrom by said recess;

a spiral welding coil formed from thermoplastic material surrounding a heating element for insertion into said recess, said coil having an outside diameter generally corresponding with the inside diameter of said recess and an inside diameter generally corresponding with the inside diameter of the first land, said coil being manually compressible to a reduced diametric size to fit past the first land and having sufficient elasticity to return substantially to its original diametric size when positioned in said recess, the thermoplastic material being fusible when electrical current is passed through the heating element to bond the first and second articles with respect to each other; and

means for compressing said first and second lands against the second article and constraining the expansion of the thermoplastic material within said recess when heated by the heating element, thereby increasing the pressure within said recess.

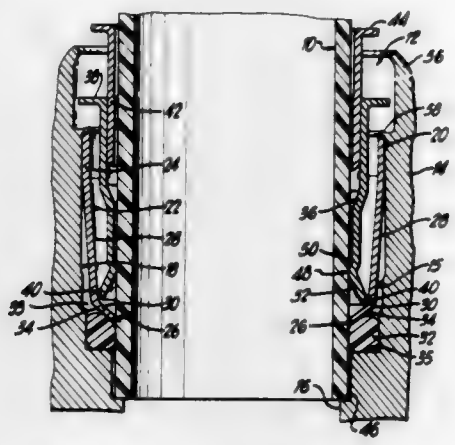
4,508,369
RELEASABLE COUPLING DEVICE

Paul Mode, Westfield, N.J., assignor to Nycoil Corporation, Fanwood, N.J.

Continuation-in-part of Ser. No. 912,003, Jun. 2, 1978, Pat. No. 4,440,424. This application Jan. 4, 1980, Ser. No. 109,680
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—39 **10 Claims**

1. A releasable coupling device for a tube of the type including a fitting having a bore therein and an opening into the bore through which the tube is to be inserted, the internal diameter of said opening being greater than the diameter of said bore, and said opening having a first end adjacent said bore and a second end opened to the exterior of said fitting; a retaining ring in said opening having a plurality of axially extending, inwardly biased fingers adapted to engage said tube when said tube is inserted into said fitting towards said bore so that said tube is restrained against axial movement out of said fitting; unlocking means for forcing said plurality of fingers radially outward to cause disengagement of said fingers from said tube; annular sealing means positioned in said opening for sealing said tube and said fitting when said tube is inserted therethrough, the improvement comprising;

each of said fingers having gripping portions at the ends thereof for engaging said tube, said gripping portions having opposing substantially planar surfaces, said fingers along their entire length having a substantially rectangular



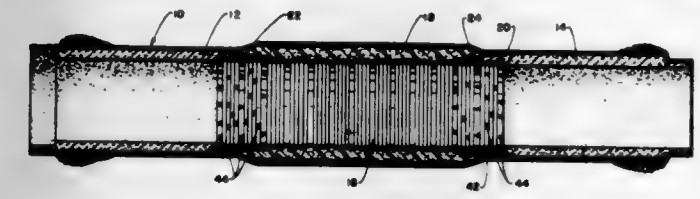
cross-section, and said retaining ring being comprised of a multi-sided web portion having a plurality of sides in which adjacent sides define a plurality of corners, each of said fingers depending from one of said sides of said multi-sided web portion.

4,508,370

RIGID DUCT WITH BENDABLE ELBOW

Clifford A. Schroeder, 4011 E. Skelton Canyon Cir., Westlake Village, Calif. 91316

Division of Ser. No. 317,194, Nov. 2, 1981, Pat. No. 4,400,863.
This application Aug. 1, 1983, Ser. No. 518,943
Int. Cl.³ F16L *21/00*
U.S. Cl. 285—53 **4 Claims**



1. A fiberglass duct assembly having an integral bendable tubular elbow comprising;

a bendable metal foil tubular elbow;

a first section of rigid tubular fiberglass duct overlapping one end of said bendable elbow;

a second section of rigid tubular fiberglass duct overlapping the other end of said bendable elbow;

said overlapping portions of said first and second rigid tubular fiberglass being bonded to said ends of said bendable elbow by compression against the ends of said bendable elbow during curing;

insulating material wrapped around the bendable elbow between said overlapping ends; and

a flexible tubular jacket covering said first and second rigid fiberglass tubular ducts and said bendable elbow.

4,508,371

EASY ACCESS PULLEY BOX

William Maier, 465 Gulf St., Milford, Conn. 06460

Filed Feb. 1, 1983, Ser. No. 462,998
Int. Cl.³ F16L *45/00*
U.S. Cl. 285—121 **7 Claims**

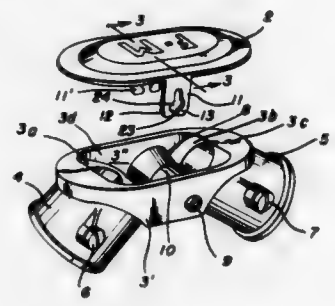
1. A conduit coupler comprising a hollow housing body having opposed outer side walls, an access opening into the interior of said body, mechanism within said body and a removable cover plate which covers said access opening, the improvement comprising means facilitating easy and quick assembly and disassembly of said cover plate and housing body, said means comprising:

boss elements projecting from said opposed outer body side walls;

pairs of split ear elements extending normal from the cover plate and each element pair defining a slot means which, in assembly of the cover plate and housing body, is aligned with and adapted to receive a said boss element;

the free ends of each slot defining ear structure being divergent, whereby to facilitate reception of said boss element;

each slot defining ear structure having opposed cut-out arcuate portions adapted to accommodate said received boss element and



each slot defining structure being dimensioned relative to the boss element to be received, so as to provide a snap fit for the boss element into the slot and arcuate portion thereof to thereby positively fasten the cover plate to said housing body and yet permit easy and quick cover plate removal without the use of tools,

a shaft disposed within said housing in operative association with said mechanism,

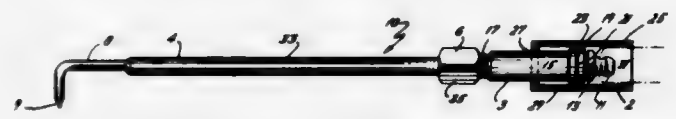
said shaft extending through apertures in said opposed body side walls and the thus extended shaft ends providing said boss elements which are received and snap fit in the arcuate portions of said slots.

4,508,372

GREASE GUN EXTENSION ASSEMBLY

Frank L. White, 870 Bridge St., Philadelphia, Pa. 19124

Filed Jun. 5, 1981, Ser. No. 270,700
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—175 **10 Claims**



1. A grease gun extension apparatus capable of coupling to a grease gun fitting, comprising;

a ball type grease fitting having a threaded end and a bore therethrough capable of coupling to said grease gun fitting;

an extension nipple having a bore therethrough and connected to one end thereof to said threaded end of said ball type grease fitting and having a threaded portion on the opposite end thereof;

a hollow tube having a longitudinal axis and an annular compression ring about its outer surface at a first end thereof, said first end abutting said opposite end of said extension nipple and having a tapered tip at the other end thereof, said tapered tip being defined by two tapered regions, the first tapered region being spaced from the end of the tip and being at a greater angle relative to the longitudinal axis than the second tapered region which extends from the end of the tip to said first tapered region and

a compression nut having an internal tapered surface for compressively engaging said annular compression ring, said compression nut threadedly engaging said threaded opposite end of said extension nipple by deforming said

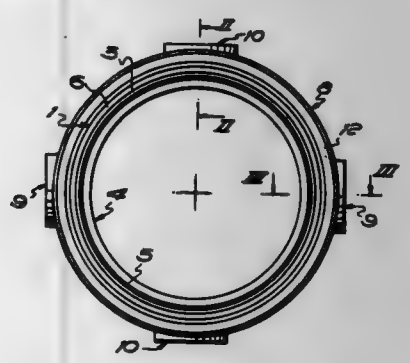
compression ring into sealing engagement with said hollow body, compression nut and opposite end of the extension nipple as said nut is tightened for sealingly holding said hollow tube to said extension nipple.

4,508,373

UNIVERSAL JOINT

Leslie M. Ward, Horton Rd., Ashley Heath, Ringwood, Dorset, England

Filed Oct. 25, 1982, Ser. No. 436,580
Int. Cl.³ F16L *27/00*
U.S. Cl. 285—226 **15 Claims**



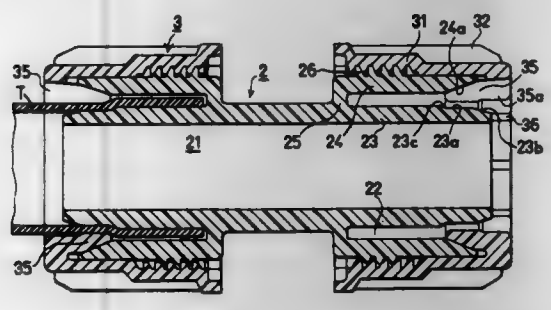
1. A universal joint for a fluid conduit comprising a pair of tubular connectors with cylindrical end portions adapted to be sealingly secured to two adjacent parts of the conduit, a bellows with respective cylindrical ends sealingly secured within the cylindrical end portions of the tubular connectors, which are also formed with spherically shaped portions fitting one within the other outside the bellows, a spherically shaped load transmitting sleeve having recesses within which there are pivoted two pairs of diametrically opposed pivots disposed in the plane of the equator of said sleeve at right angles to each other, with one pair of pivots connecting the sleeve and the outer spherically shaped connector portion, and with the other pair of pivots connecting the sleeve and the inner spherically shaped connector portion.

4,508,374

TUBE CONNECTION FITTINGS

Itzhak Kantor, Menashe, Israel, assignor to Plasson Maagan Michael Industries Ltd., Menashe, Israel

Filed Sep. 30, 1982, Ser. No. 431,013
Claims priority, application Israel, Nov. 26, 1981, 64379
Int. Cl.³ F16L *19/00*
U.S. Cl. 285—319 **7 Claims**



1. A connection fitting for effecting a connection to a tube, comprising:

a body member formed with an annular recess extending axially inwardly of one end of the body member to define an inner tubular portion and an outer sleeve portion integrally joined to the tubular portion at its inner end and spaced therefrom at its outer end for receiving an end of the tube to be connected thereby;

a cap threaded onto said body member and including an end wall formed with an opening circumscribed by a plurality of fingers adapted to engage the end of the tube received within said recess;

each of said fingers including a flexible juncture to said cap and an axial extension extending inwardly in said space between the inner tubular portion and outer sleeve portion of the body member defined by said annular recess;

the thickness and diameter of said annular recess throughout its length being at least as large as the thickness and diameter of the tube to be connected thereto;

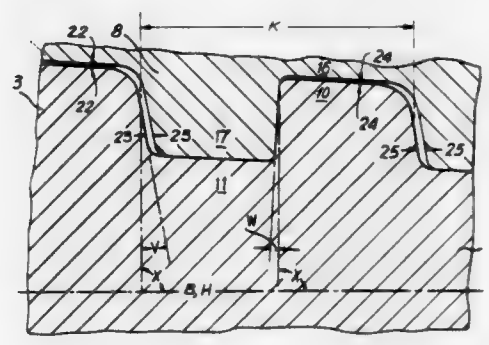
the outer end of said annular recess being shaped such that the outer face of said tubular portion of said body member is inwardly stepped, and the inner face of said sleeve portion being inwardly tapered from its outer edge, whereby said outer shaped end of the annular recess is effective, upon receiving the fingers of the threaded cap, to accommodate slightly different-sized tubes within said annular recess, to securely lock the tube within said recess, and to effectively seal the tube within said recess.

4,508,375

TUBULAR CONNECTION

Billy R. Patterson, Diana, and Warren P. Schneider, Dallas, both of Tex., assignors to Lone Star Steel Company, Dallas, Tex.

Filed Sep. 20, 1982, Ser. No. 420,475
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—334 **4 Claims**



1. A joint for heavy wall, high performance tubulars comprising:

a male member and a female member having engagable threads disposed on respective first and second substantially matching tapers of about 1.750 inches per foot on diameter,

said first taper having a tolerance of from +0.000 inch per inch to −0.003 inch per inch on diameter, said second taper having a tolerance of from +0.0045 inch per inch to −0.000 inch per inch on diameter, the plus and minus tolerances of the first and second tapers being such that the taper on the male member is less than the taper on the female member,

said threads on the first taper having a substantially rectangular form with rounded corners and parallel crests and roots, said crests and roots being parallel to the plane of the first taper, a 0.200 inch thread pitch, a 3° load flank, a 10° trailing flank, and a 0.062 inch thread height with a tolerance of from +0.001 inch to −0.001 inch, said first taper thread crests having a length of 0.099 inch with a tolerance of from +0.000 inch to −0.001 inch, the rounded crest corner on the load flank end having a radius of 0.008 inch with a tolerance of from +0.002 inch to −0.000 inch, and the rounded crest corner on the trailing flank end having a radius of 0.030 inch with a tolerance of from +0.002 inch to −0.000 inch, said first taper thread roots having a length of 0.101 inch with a tolerance of from +0.001 inch to −0.000 inch, the rounded root corners on the load and the trailing flank ends having a radius of 0.008 inch with a tolerance of from +0.000 inch to −0.002 inch,

said threads on the second taper having a substantially rect-

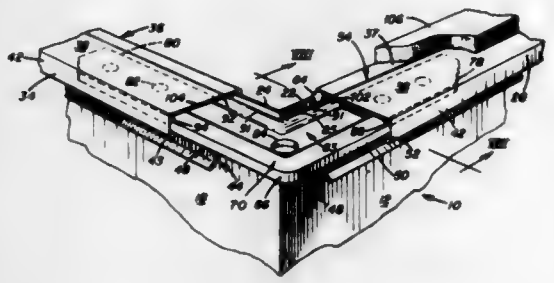
angular form with rounded corners and parallel crests and roots, said crests and roots being parallel to the plane of the second taper, a 0.200 inch thread pitch, a 3° load flank, a 10° trailing flank, and a 0.062 inch thread height with a tolerance of from +0.001 inch to −0.001 inch, said second taper thread crests having a length of 0.099 inch with a tolerance of +0.000 inch to −0.001 inch, the rounded crest corners on the load and the trailing flank ends having a radius of 0.008 inch with a tolerance of from +0.002 inch to −0.000 inch, said second taper thread roots having a length of 0.101 inch with a tolerance of from +0.001 inch to −0.000 inch, the rounded root corner on the load flank end having a radius of 0.008 inch with a tolerance of from +0.000 inch to −0.002 inch, and the rounded root corner on the trailing flank end having a radius of 0.030 inch with a tolerance of from +0.000 inch to −0.002 inch, whereby, as compared with the joint of API Standard 5B an improved joint is provided having an advantageous taper mismatch providing higher bearing pressure and sealing within the made-up joint adjacent the narrow end of the male member, a reduced maximum mated thread clearance, less imperfect thread length with an increase in overall thread length to provide a greatly increased leakage path, increased wall thickness of the female member at the narrow end of the second taper, deeper stabbing, and reduced male member-in-female member position tolerance.

4,508,376

FLANGE TYPE DUCT JOINT ASSEMBLY AND SEAL ARRANGEMENT THEREFOR

Peter J. Arnoldt, Puce, Canada, assignor to Ductmate Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 933,179, Aug. 14, 1978, , which is a continuation-in-part of Ser. No. 872,644, Jan. 26, 1978, Pat. No. 4,218,079. This application Dec. 7, 1981, Ser. No. 327,934
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—363 **7 Claims**



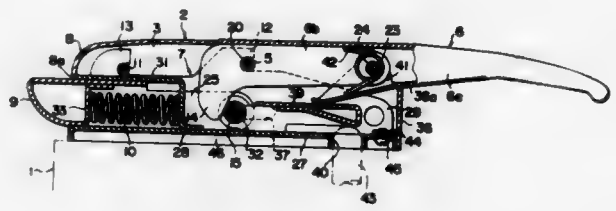
1. A flange type duct joint assembly to connect end portions of generally rectangular duct sections comprising,
duct sections having a generally rectangular configuration with end portions,
said duct section end portions having corner portions with corner edge portions,
a plurality of duct connecting flanges,
said duct connecting flanges each having an upstanding corner piece receiving portion with a front wall, a rear wall and a corner piece receiving opening therebetween,
said duct connecting flanges each having a duct receiving portion with a top wall and a bottom wall,
said duct connecting flange upstanding corner piece receiving portion front wall intersecting said duct receiving portion bottom wall,
a plurality of corner pieces for connecting adjacent duct connecting flanges,
said corner pieces each having a corner section and a pair of legs extending angularly from said corner section, said corner piece corner section and said legs having a common front planar surface portion and a common rear planar surface portion,
said corner piece legs arranged to extend into said duct connecting flange upstanding corner piece receiving opening to connect adjacent duct connecting flanges and form a generally rectangular frame,
said duct section end portions arranged to extend into said duct connecting flange duct receiving portions between said top wall and said bottom wall and into substantially abutting relation with said duct connecting flange upstanding corner piece receiving portion front wall,
external gasket means positioned in overlying relation with said duct connecting flange front wall and a portion of said corner piece corner section,
said corner piece corner section having an offset corner portion displaced rearwardly from said front planar surface,
said corner piece offset corner portion positioned externally of said corner piece receiving openings in said adjacent duct connecting flange upstanding corner piece receiving portions, and
said corner piece corner section offset corner portion displaced rearwardly relative to said corner piece front planar surface and above said duct connecting flange duct receiving portion bottom wall so that said duct section corner edge portion, between adjacent duct connecting flange portions, projects beyond said corner piece offset portion into abutting relation with said external gasket means positioned on said corner piece corner section to provide a seal for said duct corner edge portion between adjacent duct connecting flange portions.

4,508,377

DOOR HANDLE UNIT

Kunihiko Takasaki, Tokyo, Japan, assignor to Takigen Zeizous Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1983, Ser. No. 475,867
Claims priority, application Japan, Apr. 8, 1982, 57-49897[U]
Int. Cl.³ E05C *1/14*
U.S. Cl. 292—166 **8 Claims**



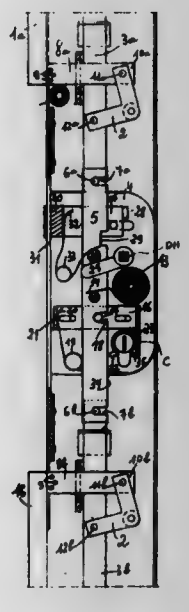
1. A door handle unit comprising:
a unit body to be secured to a door;
a lever type handle pivoted to said body by means of a main shaft mounted between upper and lower side walls of said body;
a latch case fitted into said body from its rear side;
a latch housed in said latch case so as to protrude and retreat from a left side wall of said body;
a spring pressedly fitted between a receiving plate and a latch head portion of said latch case, for urging said latch to slide leftward relative to said latch case;
a strike shaft mounted between the upper and lower side walls of said body;
hook portions formed to project from the front portions of said latch case and opened rightward, in which said hook portions are engaged with said main shaft and said strike shaft respectively;
and an actuating projection formed at the left end portion of said handle which is brought into pressure-contact with the left side face of a receiving portion formed at the right end of said latch, thereby to urge said latch case to move rightward with respect to said body and said spring.

4,508,378

DOOR LOCKING DEVICE

Zvi H. Rochman, 21 Brodetski St., Netanya, Israel

Filed Mar. 9, 1983, Ser. No. 473,637
Claims priority, application Israel, Jul. 7, 1982, 66249
Int. Cl.³ E05C *9/02*
U.S. Cl. 292—333 **14 Claims**



1. A door locking device, comprising:

a locking bolt movable to a retracted position to release the door for opening and closing movements within a door frame, or to a projected position to lock the door in its closed position within the door frame;

a coupling member coupled to said locking bolt and biased from an unlocking position retracting said bolt, to a locking position projecting said bolt to lock the door in its closed position within the door frame;

a manually-operated mechanism including a first latching pin manually movable to a first position for latching said coupling member in its locking position, or to a second position for unlatching said coupling member and permitting same to move under its bias to its locking position;

a feeler member biased to a projected position to project past the door and engageable with the door frame when the door is in its closed position so as to be moved to a retracted position;

and a second latching pin coupled to said feeler member such that when the feeler member is in its projected position said second latching pin also latches said coupling member in its locked position but is effective, when the feeler member engages the door frame in the closed position of the door, to automatically unlatch said coupling member permitting same to move under its bias to its locking position and to move said locking bolt to its projected position locking the door in its closed position within the door frame.

4,508,379

LOCKING DEVICE OF AN AUTOMOTIVE DOOR

Haruo Mochida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jul. 15, 1982, Ser. No. 398,660
Claims priority, application Japan, Aug. 19, 1981, 56-130606
Int. Cl.³ E05B *3/00*
U.S. Cl. 292—336.3 **11 Claims**

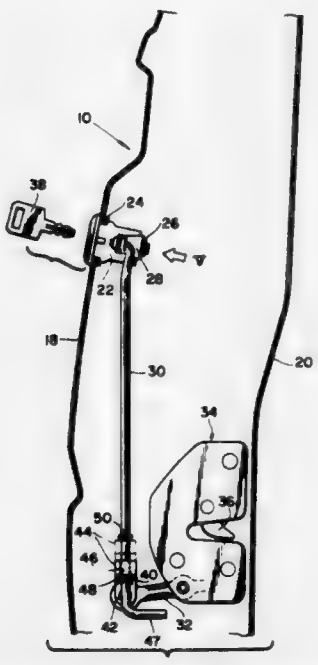
1. A locking device of an automotive door, comprising:

a catching device mounted in said door and including a hook member and a lever member, said hook member being locked when said lever member moves in a first direction and unlocked when said lever member moves in a second direction;

a key cylinder rotatably mounted to said door, said key cylinder being rotatable about an axis thereof relative to said door only when handled by a specified key inserted in said key cylinder;

an arm securely connected to an end of said key cylinder and extending radially outward therefrom;

a rod pivotally connected to said arm and extending therefrom toward said lever member, so that rotation of the key cylinder about the axis thereof induces an axial movement of the rod;



a play providing device including a pair of spaced stoppers interposed between an extending end of said rod and said lever member, so that play is provided between said rod and said lever upon relative movement therebetween; and

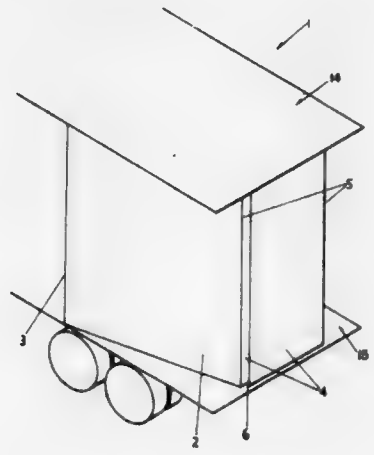
a deflector spaced from said pair of spaced stoppers and connected to said rod to move therewith, said deflector having at least a portion extending along said lever of said catching device to prevent tampering with said catching device.

4,508,380

TRUCK AFTERBODY DRAG REDUCING DEVICE

Mithra M. K. V. Sankrithi, 417 Bellevue Way SE. #400, Bellevue, Wash. 98004

Filed Aug. 20, 1982, Ser. No. 409,938
Int. Cl.³ B62D *35/00*; B60P *1/00*
U.S. Cl. 296—1 S **20 Claims**



1. An improved cargo containing truck afterbody of the type which includes in combination a fixed roof and a fixed floor on the top and bottom of the interior region of said truck afterbody, fixed front side panels on the front sides of said interior region, and rear closure members to the rear of said interior region, wherein the improvement comprises:

movable rear side panels attached at their leading edges to

said fixed front side panels and at their trailing edges to said rear closure members;

the cargo containing afterbody volume partially bounded by said rear side panels;

and means for permitting said rear side panels and said rear closure members to be repositioned in such a manner that the equivalent aerodynamic blunt base area of said truck afterbody is reduced and the aerodynamic drag coefficient attributable to said truck afterbody is reduced, wherein in the repositioned configuration of the rear side panels and rear closure members the truck afterbody length is not increased.

4,508,381

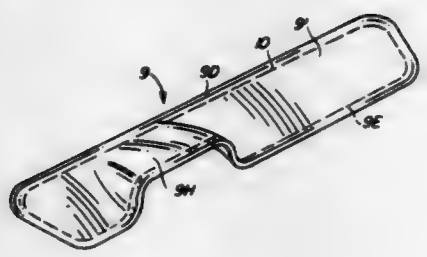
SNAP-ON PLASTIC COVER FOR SUN-DAMAGED VINYL COVERED DASHBOARD PADS AND METHOD OF MAKING

Asa Herring, 2201 W. Potter, Phoenix, Ariz. 85027

Filed Dec. 6, 1982, Ser. No. 447,146

Int. Cl.[3] **B60R** *27/00*

U.S. Cl. 296—70 **4 Claims**



1. A rigid snap-on cover for covering a curved vinyl-covered dashboard pad installed on a dashboard substructure in an automobile, said vinyl-covered dashboard pad having predetermined contours of its upper surface and a rounded peripheral back draft portion that meets the automobile's dashboard substructure, said snap-on cover being composed of thermoplastic and including an upper portion having a shape that conforms precisely to the curved shape of said vinyl-covered dashboard pad, said thermoplastic cover also having a rounded peripheral back draft portion that conforms to the shape of said peripheral back draft portion of said vinyl-covered dashboard pad, said rounded peripheral back draft portion of said snap-on cover extending inwardly to grip the round peripheral back draft portion of said vinyl covered dashboard pad, said rounded peripheral back draft portion extending around the entire periphery of said snap-on cover, wherein said rounded peripheral back draft portion extends inwardly sufficiently little to allow snap-on installation of said snap-on cover onto said dashboard pad without loosening or removing said dashboard pad from said dashboard substructure.

4,508,382

GUTTER STRUCTURE FOR A VEHICLE BODY

Akio Tsumoto, Tokyo, and Hisae Kano, Tokorozawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 327,969, Dec. 7, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,442

Claims priority, application Japan, Dec. 12, 1980, 55-174687

Int. Cl.[3] **B62D** *25/06*

U.S. Cl. 296—213 **3 Claims**

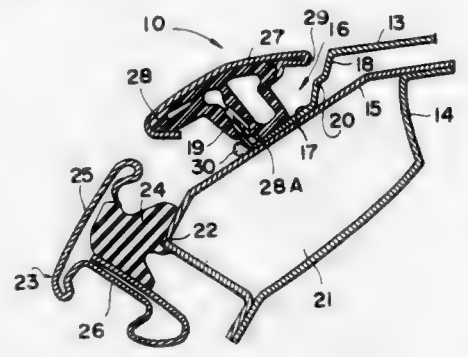
1. A vehicle body structure comprising:

(a) a roof edge rail having an inclined outer panel with an outer edge, and a corner positioned at said outer edge;

(b) a roof panel having a side bent downward, said side extending to the outer panel and then extending adjacent and parallel to the outer panel and finally being bent generally upward away from the outer panel, whereby the roof panel side forms a gutter channel, the parallel portions of the roof panel side and the outer panel being fixed to each other;

(c) a door sash movable relative to the roof edge rail into and out of a closed position;

(d) a weather strip attached to the door sash and engaging the corner of the roof edge rail when the door sash is in the closed position;



(e) a molding, extending from a position near the downward bend of the roof panel to another position near an upper edge of the door sash in its closed position, for covering a recess between the downward portion of the roof panel side and the door sash in the closed position, the outer surfaces of the roof panel, the door sash, and the molding forming a smooth convex contour; and

(f) a clip attaching the molding to the upward portion of the roof panel side.

4,508,383

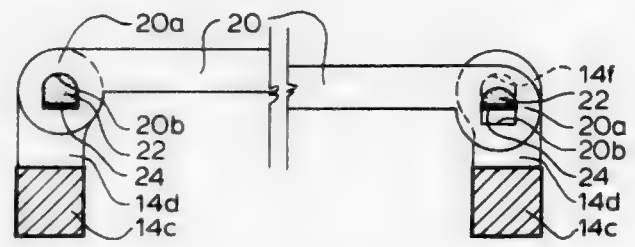
RESILIENT BLADDER TYPE SUSPENSION SYSTEM FOR A SUPPORT STRUCTURE SUCH AS A CHAIR, BED, OR THE LIKE

Karl S. Gaskins, 117 W. Park Dr., Raleigh, N.C. 27605

Filed Aug. 30, 1982, Ser. No. 412,399

Int. Cl.[3] **A47C** *7/14, 7/46*

U.S. Cl. 297—284 **8 Claims**



1. A body support structure such as a chair, bed or the like provided with a fluid bladder type suspension system comprising: a main frame structure having a load bearing area and an elongated bladder holding area; body support means incorporated into said body support structure and extending adjacent said main frame structure and including bladder receiving means; a fluid receiving elongated inflatable bladder adapted to contain air interposed between said load bearing area of said main frame structure and said body support means providing a fluid cushion type support for said body support means and which enables said body support means when under load to move in a floating fashion with respect to said main frame structure; said elongated inflatable bladder being held by the bladder holding area of said main frame structure and said bladder receiving means of said body support means such that said elongated bladder tends to connect said body support means with said main frame; said bladder holding area of said main frame structure being formed by a plurality of spaced apart bladder holding arms with respective bladder holding arms of said main frame structure including an opening formed therein for receiving said elongated inflatable bladder; and wherein said body support means including a plurality of independent support members with each of said support mem-

bers including a bladder holding arm with an opening formed therein and wherein said bladder holding arms of said main frame structure and wherein said elongated inflatable bladder is threaded through the openings of said bladder holding arms of both said main frame structure and said plurality of independent support members.

4,508,384

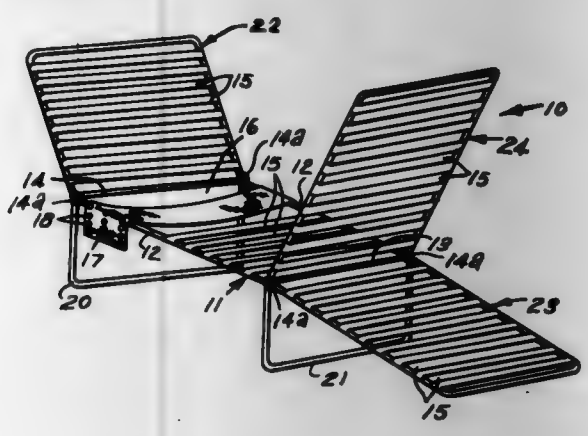
PREGNANCY-SUPPORTING LOUNGE CHAIR

Lawrence E. Castelot, and Linda A. Castelot, both of 168 Glendale Ave., Bridgeport, Conn. 06606

Filed Sep. 27, 1982, Ser. No. 424,402

Int. Cl.³ A47C *1/024*

U.S. Cl. 297—284 **3 Claims**



1. A pregnancy-supporting lounge chair, comprising, in combination, a first seat frame including support legs connected thereto, a second seat frame pivotally connected to one end of said first seat frame, a combination head and backrest frame pivotally secured to the other end of said first seat frame, a footrest frame connected to said one end of said first seat frame, body support means mounted on each of said first seat frame, said second seat frame, said combination head and backrest frame and said footrest frame, the body support means on said first seat frame being discontinuous, thereby forming an opening, and a stretch band secured to said first seat frame to span said opening, whereby when said second seat frame is in a first position overlying the footrest frame, said stretch band supports a pregnant woman's stomach area comfortably when she lies in a face-down prone position upon said first seat frame, said combination head and backrest frame and said footrest frame, and said second seat frame can be pivoted to a second position overlying said first seat frame to support the woman comfortably in a sitting position.

4,508,385

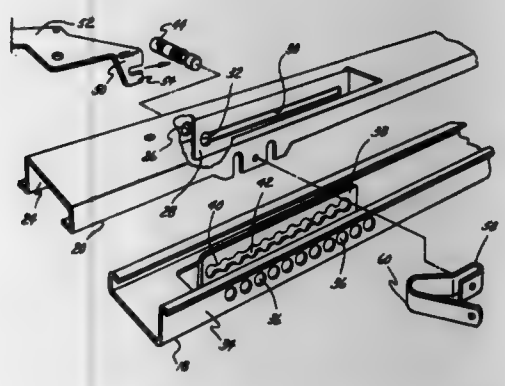
SEAT TRACK ASSEMBLY

James A. Bowman, Georgetown, Ky., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Apr. 7, 1982, Ser. No. 366,451

Int. Cl.³ B60N *1/04*

U.S. Cl. 297—341 **5 Claims**



1. A seat track assembly comprising an upper frame member adapted to be secured to a vehicle seat, a lower frame member adapted to be secured to the vehicle floor, said upper frame member being supported on said lower frame member for relative movement fore and aft of the vehicle, a first bracket on said upper frame member having a slot formed therein and an opening at one end of said slot, a second bracket on said lower frame member having a slot formed therein and a plurality of longitudinally spaced openings along said slot, said openings in said brackets having diameters substantially greater than the width of said slots, and a seat position control member supported on said frame members for movement in transverse directions between a locked position in which said seat position control member is secured to both said upper and lower frame members to prevent relative movement thereof, an indexing position in which said seat position control member is secured to said upper frame member but not to said lower frame member for relative movement to discrete positions with respect to said lower frame member, and a slide position in which said seat position control member is secured to said bottom frame member but not to said top frame member for relative movement of said top frame member on said bottom frame member within specified limits, said seat position control member having large diameter sections and small diameter sections, said large diameter sections being adapted to fit into said openings but not said slots, so that when said seat position control member is in said locked position, large diameter sections are received into openings on both said first and second bracket member, when said seat position control member is in said indexing position, a large diameter section is received into the opening on said first bracket member and a small diameter section is received into said slot on said second bracket member, and when said seat position control member is in said slide position, a large diameter section is received into one of the openings on said second bracket member and a small diameter section is received into the slot on said first bracket member.

4,508,386

ADJUSTABLE SEAT ASSEMBLY FOR MOTOR VEHICLES

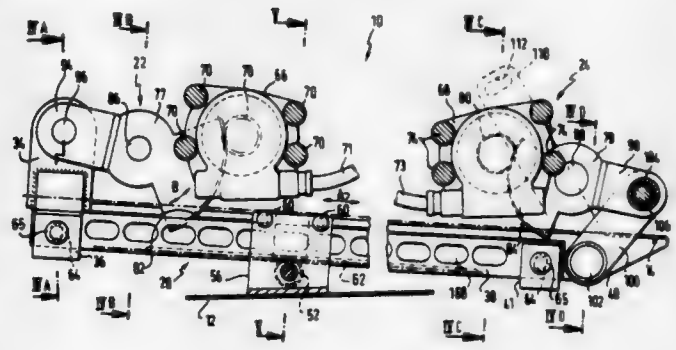
Hans-Otto Hofmann, Niederfüllbach, Fed. Rep. of Germany, assignor to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft, Coburg, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,316

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132235

Int. Cl.³ B60N *1/02*

U.S. Cl. 297—346 **14 Claims**



1. A seat assembly particularly for a motor vehicle including a vehicle frame and a vehicle seat comprising longitudinal seat adjustment means for adjustably moving said seat in longitudinal directions relative to said vehicle, tilt adjusting means for effecting height adjustment of said vehicle seat, and pin locking means operatively interposed between said vehicle frame and at least one of said longitudinal seat adjustment means and said tilt adjustment means capable of being selectively actuated to a locking position for locking said at least one of said longitudinal seat adjustment means and said tilt adjustment means, said longitudinal seat adjustment means comprising a longitudinally movable part having pin recesses therein, said pin

said fixed front side panels and at their trailing edges to said rear closure members;

the cargo containing afterbody volume partially bounded by said rear side panels;

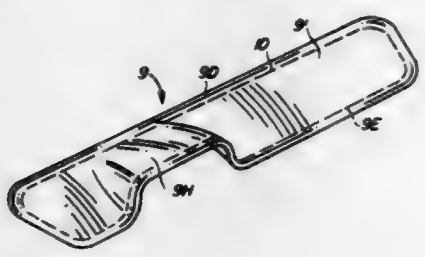
and means for permitting said rear side panels and said rear closure members to be repositioned in such a manner that the equivalent aerodynamic blunt base area of said truck afterbody is reduced and the aerodynamic drag coefficient attributable to said truck afterbody is reduced, wherein in the repositioned configuration of the rear side panels and rear closure members the truck afterbody length is not increased.

4,508,381

SNAP-ON PLASTIC COVER FOR SUN-DAMAGED VINYL COVERED DASHBOARD PADS AND METHOD OF MAKING

Asa Herring, 2201 W. Potter, Phoenix, Ariz. 85027

Filed Dec. 6, 1982, Ser. No. 447,146
Int. Cl.³ B60R *27/00*
U.S. Cl. 296—70 **4 Claims**



1. A rigid snap-on cover for covering a curved vinyl-covered dashboard pad installed on a dashboard substructure in an automobile, said vinyl-covered dashboard pad having predetermined contours of its upper surface and a rounded peripheral back draft portion that meets the automobile's dashboard substructure, said snap-on cover being composed of thermoplastic and including an upper portion having a shape that conforms precisely to the curved shape of said vinyl-covered dashboard pad, said thermoplastic cover also having a rounded peripheral back draft portion that conforms to the shape of said peripheral back draft portion of said vinyl-covered dashboard pad, said rounded peripheral back draft portion of said snap-on cover extending inwardly to grip the round peripheral back draft portion of said vinyl covered dashboard pad, said rounded peripheral back draft portion extending around the entire periphery of said snap-on cover, wherein said rounded peripheral back draft portion extends inwardly sufficiently little to allow snap-on installation of said snap-on cover onto said dashboard pad without loosening or removing said dashboard pad from said dashboard substructure.

4,508,382

GUTTER STRUCTURE FOR A VEHICLE BODY

Akio Tsumoto, Tokyo, and Hisae Kano, Tokorozawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 327,969, Dec. 7, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,442
Claims priority, application Japan, Dec. 12, 1980, 55-174687
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—213 **3 Claims**

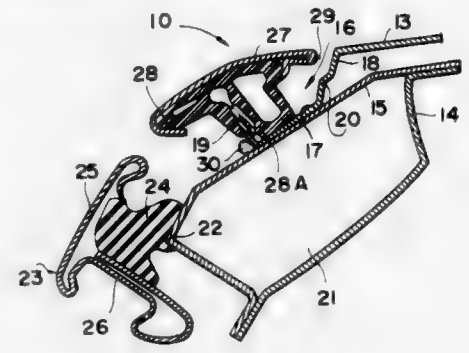
1. A vehicle body structure comprising:

(a) a roof edge rail having an inclined outer panel with an outer edge, and a corner positioned at said outer edge;

(b) a roof panel having a side bent downward, said side extending to the outer panel and then extending adjacent and parallel to the outer panel and finally being bent generally upward away from the outer panel, whereby the roof panel side forms a gutter channel, the parallel portions of the roof panel side and the outer panel being fixed to each other;

(c) a door sash movable relative to the roof edge rail into and out of a closed position;

(d) a weather strip attached to the door sash and engaging the corner of the roof edge rail when the door sash is in the closed position;



(e) a molding, extending from a position near the downward bend of the roof panel to another position near an upper edge of the door sash in its closed position, for covering a recess between the downward portion of the roof panel side and the door sash in the closed position, the outer surfaces of the roof panel, the door sash, and the molding forming a smooth convex contour; and

(f) a clip attaching the molding to the upward portion of the roof panel side.

4,508,383

RESILIENT BLADDER TYPE SUSPENSION SYSTEM FOR A SUPPORT STRUCTURE SUCH AS A CHAIR, BED, OR THE LIKE

Karl S. Gaskins, 117 W. Park Dr., Raleigh, N.C. 27605

Filed Aug. 30, 1982, Ser. No. 412,399
Int. Cl.³ A47C *7/14, 7/46*
U.S. Cl. 297—284 **8 Claims**



1. A body support structure such as a chair, bed or the like provided with a fluid bladder type suspension system comprising: a main frame structure having a load bearing area and an elongated bladder holding area; body support means incorporated into said body support structure and extending adjacent said main frame structure and including bladder receiving means; a fluid receiving elongated inflatable bladder adapted to contain air interposed between said load bearing area of said main frame structure and said body support means providing a fluid cushion type support for said body support means and which enables said body support means when under load to move in a floating fashion with respect to said main frame structure; said elongated inflatable bladder being held by the bladder holding area of said main frame structure and said bladder receiving means of said body support means such that said elongated bladder tends to connect said body support means with said main frame; said bladder holding area of said main frame structure being formed by a plurality of spaced apart bladder holding arms with respective bladder holding arms of said main frame structure including an opening formed therein for receiving said elongated inflatable bladder; and wherein said body support means including a plurality of independent support members with each of said support mem-

bers including a bladder holding arm with an opening formed therein and wherein said bladder holding arms of said main frame structure and wherein said elongated inflatable bladder is threaded through the openings of said bladder holding arms of both said main frame structure and said plurality of independent support members.

4,508,384

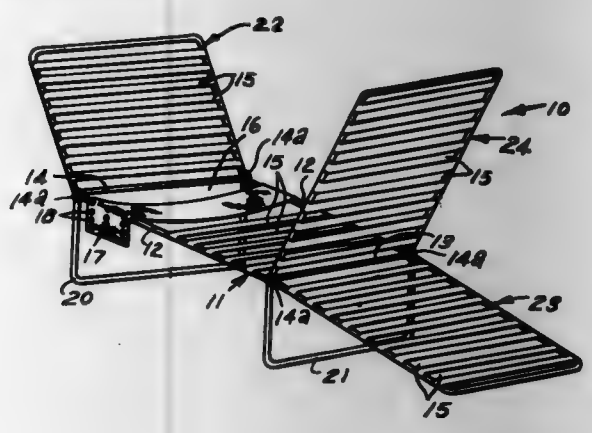
PREGNANCY-SUPPORTING LOUNGE CHAIR

Lawrence E. Castelot, and Linda A. Castelot, both of 168 Glendale Ave., Bridgeport, Conn. 06606

Filed Sep. 27, 1982, Ser. No. 424,402

Int. Cl.³ A47C *1/024*

U.S. Cl. 297—284 **3 Claims**



1. A pregnancy-supporting lounge chair, comprising, in combination, a first seat frame including support legs connected thereto, a second seat frame pivotally connected to one end of said first seat frame, a combination head and backrest frame pivotally secured to the other end of said first seat frame, a footrest frame connected to said one end of said first seat frame, body support means mounted on each of said first seat frame, said second seat frame, said combination head and backrest frame and said footrest frame, the body support means on said first seat frame being discontinuous, thereby forming an opening, and a stretch band secured to said first seat frame to span said opening, whereby when said second seat frame is in a first position overlying the footrest frame, said stretch band supports a pregnant woman's stomach area comfortably when she lies in a face-down prone position upon said first seat frame, said combination head and backrest frame and said footrest frame, and said second seat frame can be pivoted to a second position overlying said first seat frame to support the woman comfortably in a sitting position.

4,508,385

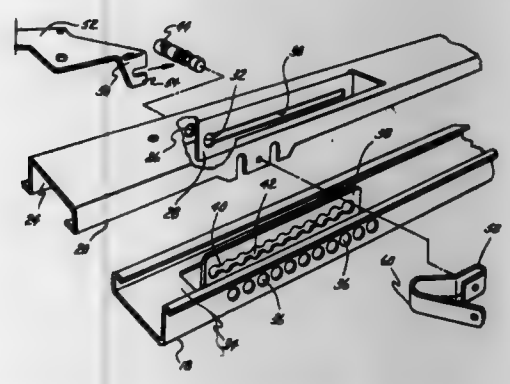
SEAT TRACK ASSEMBLY

James A. Bowman, Georgetown, Ky., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Apr. 7, 1982, Ser. No. 366,451

Int. Cl.³ B60N *1/04*

U.S. Cl. 297—341 **5 Claims**



1. A seat track assembly comprising an upper frame member adapted to be secured to a vehicle seat, a lower frame member adapted to be secured to the vehicle floor, said upper frame member being supported on said lower frame member for relative movement fore and aft of the vehicle, a first bracket on said upper frame member having a slot formed therein and an opening at one end of said slot, a second bracket on said lower frame member having a slot formed therein and a plurality of longitudinally spaced openings along said slot, said openings in said brackets having diameters substantially greater than the width of said slots, and a seat position control member supported on said frame members for movement in transverse directions between a locked position in which said seat position control member is secured to both said upper and lower frame members to prevent relative movement thereof, an indexing position in which said seat position control member is secured to said upper frame member but not to said lower frame member for relative movement to discrete positions with respect to said lower frame member, and a slide position in which said seat position control member is secured to said bottom frame member but not to said top frame member for relative movement of said top frame member on said bottom frame member within specified limits, said seat position control member having large diameter sections and small diameter sections, said large diameter sections being adapted to fit into said openings but not said slots, so that when said seat position control member is in said locked position, large diameter sections are received into openings on both said first and second bracket member, when said seat position control member is in said indexing position, a large diameter section is received into the opening on said first bracket member and a small diameter section is received into said slot on said second bracket member, and when said seat position control member is in said slide position, a large diameter section is received into one of the openings on said second bracket member and a small diameter section is received into the slot on said first bracket member.

4,508,386

ADJUSTABLE SEAT ASSEMBLY FOR MOTOR VEHICLES

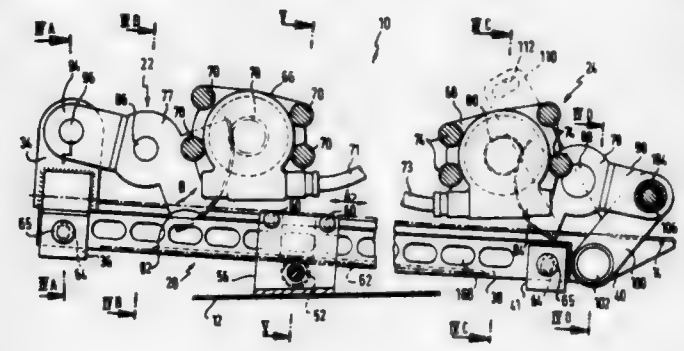
Hans-Otto Hofmann, Niederfüllbach, Fed. Rep. of Germany, assignor to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft, Coburg, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,316

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132235

Int. Cl.³ B60N *1/02*

U.S. Cl. 297—346 **14 Claims**



1. A seat assembly particularly for a motor vehicle including a vehicle frame and a vehicle seat comprising longitudinal seat adjustment means for adjustably moving said seat in longitudinal directions relative to said vehicle, tilt adjusting means for effecting height adjustment of said vehicle seat, and pin locking means operatively interposed between said vehicle frame and at least one of said longitudinal seat adjustment means and said tilt adjustment means capable of being selectively actuated to a locking position for locking said at least one of said longitudinal seat adjustment means and said tilt adjustment means, said longitudinal seat adjustment means comprising a longitudinally movable part having pin recesses therein, said pin

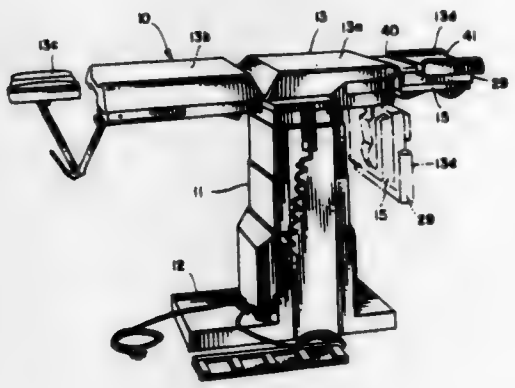
locking means including a plurality of pins arranged adjacent each other in the direction of movement of said moving part, said recesses having a width taken in said direction of movement which is equal to the sum of the respective width of two of said pins and one-third of the distance between the axial centers of said pins, the distance between the centers of adjacent recesses being equal to two-thirds of the distance between the pin axes.

4,508,387

LEG AND FOOT SUPPORT ASSEMBLY FOR MEDICAL EXAMINATION TABLE

Wilbur E. Gilbert; Robert E. Martin, and Donald P. Belonger, all of Two Rivers, Wis., assignors to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Sep. 29, 1983, Ser. No. 537,341
Int. Cl.³ A47C *7/50*
U.S. Cl. 297—429 **35 Claims**



1. A leg and foot support assembly for an adjustable table/-chair having a vertical movable seat section, said assembly comprising a frame having a proximal end adapted to be hingedly connected to the seat section of a table/chair for movement between raised and lowered positions; said frame including at least one vertical and longitudinal wall having first and second longitudinally-extending guide rails defining an elongated guide channel therebetween; a footrest extension having a member extending along said wall; said member having a pair of bearing elements adjacent the proximal end of said extension; one of said bearing elements being slidably retained in said guide channel for slidable and pivotal engagement with the inwardly-facing longitudinal surfaces of said rails defining said channel and the other of said bearing elements being slidably engagable with the outwardly-facing surfaces of said guide rails; and stop means blocking said guide channel at the proximal end thereof for limiting the extent of sliding movement of said one bearing element in a proximal direction and for permitting pivotal movement of said footrest extension to shift said second bearing element from sliding engagement with the outwardly-facing surface of one of said guide rails into sliding engagement with the outwardly-facing surface of the other of said guide rails.

4,508,388

HOIST CONTROL VALVE INTERLOCK SYSTEM FOR TROLLEY-ASSISTED DUMP TRUCKS

Teruo Minami, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,287
Claims priority, application Japan, May 27, 1982, 57-088908
Int. Cl.³ B60P *1/16*
U.S. Cl. 298—22 C **1 Claim**

1. A hoist control valve interlock system for use in a trolley-assisted dump truck, characterized in that said system comprises:

(a) a pantagraph power contactor which is installed in a main drive circuit of the dump truck and which is rendered ON when the trolley mode switch is turned on so as to drive the truck in a trolley mode condition;

(b) a generator power contactor which is installed in the main drive circuit and which is rendered OFF when said trolley mode switch is turned on;

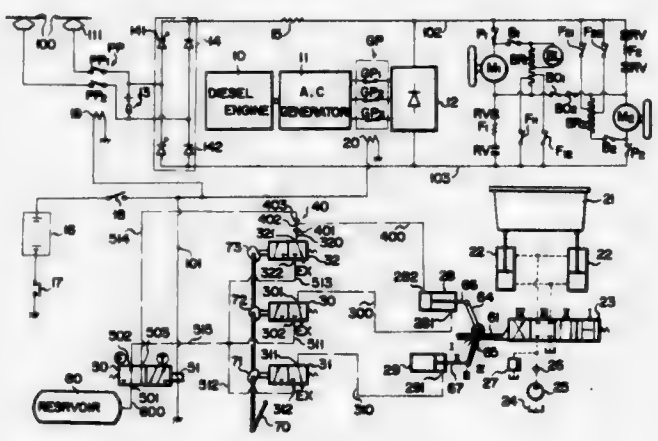
(c) a first air cylinder adapted to controllingly actuate a hoist control valve to both a floating position and a lowering position thereof, said hoist control valve being adapted to actuate hoist cylinders for a dump vessel;

(d) a second air cylinder adapted to controllingly actuate said hoist control valve to a raising position;

(e) an air reservoir for supplying compressed air into said air cylinders;

(f) a first air valve connected through a conduit with a lowering port of said first air cylinder to make the supply and discharge of the compressed air from said air reservoir;

(g) a second air valve connected through another conduit with a raising port of said second air cylinder to make the supply and discharge of the compressed air from said air reservoir;



(h) a shuttle valve which is provided in a conduit connected between the floating port of said first air cylinder and said air reservoir;

(i) a third air valve connected through the shuttle valve with the floating port of said first air cylinder;

(j) a trolley mode interlock valve which is provided in the conduit connected between said air reservoir and said valves and between said air reservoir and said shuttle valve, said trolley mode interlock valve being adapted to be switched from an engine mode position over to a trolley mode position; and

(k) a hoist control lever for controlling said first, second and third air valves; the arrangement being made such that when said trolley mode interlock valve is switched over to the trolley mode position, the compressed air from said air reservoir is supplied through said shuttle valve into the floating port of said first air cylinder irrespective of the position of said hoist control lever so that said hoist control valve is interlocked into the floating position thereof.

4,508,389

APPARATUS AND METHOD FOR HYDRAULICALLY MINING UNCONSOLIDATED SUBTERRANEAN MINERAL FORMATIONS

Everett L. Hodges, 49 Royal St. George, Newport Beach, Calif. 92660

Division of Ser. No. 243,819, Mar. 16, 1981, Pat. No. 4,405,176.
This application Sep. 12, 1983, Ser. No. 531,013
Int. Cl.³ E21C *45/00*
U.S. Cl. 299—17 **13 Claims**

1. An improved hydraulic mining tool apparatus for recovering minerals from a subterranean deposit comprising:

a drill string positionable within a bore hole extending from ground surface into said subterranean deposit;

a mining tool mounted to said drill string and adapted to rotate within said subterranean deposit;

hydraulic cutting jet means located on said mining tool for dislodging said minerals from said subterranean deposit and forming a mineral bearing slurry;

pump means located on said mining tool for transporting said mineral bearing slurry to ground surface;

means carried by said mining tool for agitating said mineral bearing slurry to maintain said dislodged minerals in suspension witin said mineral bearing slurry, said agitating means comprising plural arm members extensible in a radial direction from said mining tool to be disposed in said mineral bearing slurry during rotation of said mining tool; and

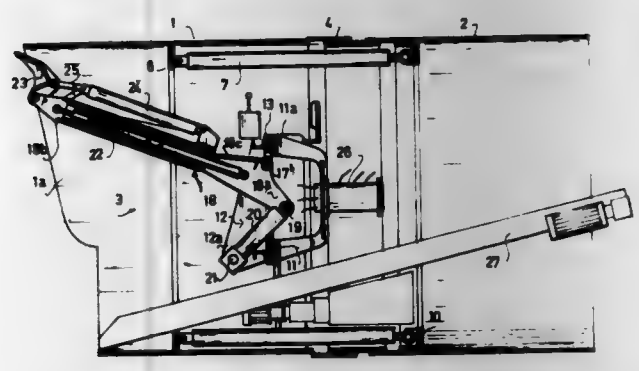
means for rotating said plural arm members about their respective longitudinal axes.

4,508,390

MACHINE FOR MAKING UNDERGROUND GALLERIES

Michel Bessac, Realmont, France, assignor to Foncages et Forages Bessac, S.A., Realmont, France

Filed Jun. 1, 1983, Ser. No. 500,413
Claims priority, application France, Jun. 2, 1982, 82 09835
Int. Cl.³ E21D *9/08*
U.S. Cl. 299—33 **12 Claims**



1. A machine for making underground galleries comprising a hydraulic shield provided with a thrust ring (10) and a hydraulic thrust system (7), said shield comprising a knife casing (1) and an assembly skirt (2), each having a longitudinal axis and being moveable with respect to said each other, a digging device (3) housed within said knife casing, and slack fastener means (4, 5, 8, 9) for connecting said knife casing and said assembly skirt in such a manner as to permit pivotal motion of said knife casing and said assemly skirt about an axis orthogonal to said longitudinal axes whereby said longitudinal axes may form an adjustable angle therebetween.

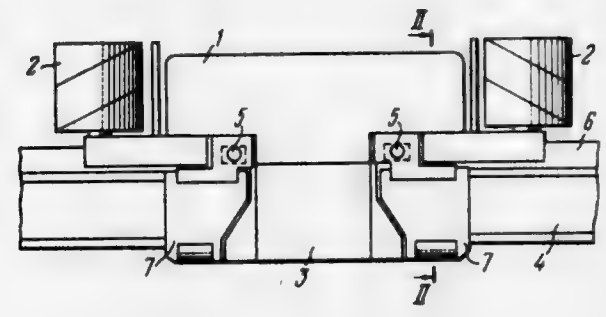
3. A machine as in claim 1, and wherein said slack fastener means comprises a plurality of coupling lugs (9) and traction studs (5) distributed around the shield, said lugs being linked to the front of said assembly skirt (2) and said studs being attached to the rear of the knife casing (1), each traction stud entering an aperture (9*a*) of a coupling lug (9) with a clearance designed to allow said relative pivoting motion between said knife casing and said assembly skirt.

4,508,391

MINING MACHINE FOR EXTRACTION OF MINERALS

Jury N. Spektor; Valery M. Gaponov, and Felix Z. Masovich, all of Moscow, U.S.S.R., assignors to Gosudarstvenny Proektno-Konstruktorsky I Experimentalny Institut Ugolnogo Mashinostroenia, Moscow, U.S.S.R.

Filed Oct. 19, 1982, Ser. No. 435,315
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—43 **1 Claim**



1. A mining machine for extraction of minerals from a face wherein a conveyor is installed, said machine comprising:

a body defining a first end and a second end;

a first and a second drum-type cutting head, each head mounted on one of said first and second ends of said body, respectively, said first and second drum-type cutting heads adapted for winning a seam of minerals and set to rotary motion;

a gantry mounted on said body above said conveyor;

two supports slidably mounted in said body for mounting the mining machine on the conveyor, each support having an adjustable hydraulic jack, each jack attached at one end to said body and slidably mounted in said support;

two grippers for coupling the mining machine to said conveyor and to retain said mining machine in place above the conveyor;

a first and a second set of levers, each set connecting one of said grippers to said body, and each set comprising two levers parallel to each other and positioned in such a way that one lever is located above the other lever, with both levers adapted to move the mining machine vertically in relation to said conveyor;

hinge joints, each hinge joint positioned for coupling said levers to said grippers and for coupling said levers to said body; and

a first link and a second link, one end of each link being rigidly connected to a different respectvie top lever and the other end of each link being rigidly connected to a different respective support to form a rigid linkage, including said body, levers and grippers, for locking the body of the mining machine in a vertical position, parallel to an original position, upon adjustment of said hydraulic jacks.

4,508,392

WHEEL HUB INCLUDING STRUCTURE FOR ATTACHMENT OF ACCESSORIES

Charles E. LeBlond, and Henri LeBlond, both of St. Bruno, Canada, assignors to Hamelin Industries, Inc., Boucherville, Canada

Filed Jun. 28, 1982, Ser. No. 393,069
Int. Cl.³ B60B *3/06, 5/02*
U.S. Cl. 301—63 PW **21 Claims**

1. A one-piece integrally formed wheel hub including an improved structure integrally formed therewith for mounting at least one accessory having a portion of given outer diameter thereto, said improved structure comprising: radially acting coupling means including a plurality of axially directed alternating recesses and ridges about a periphery of said wheel hub for receiving complementary slots and projections on said

accessory for coupling said wheel hub and said accessory for rotation in unison and axially acting coupling means on said



wheel hub for holding said accessory substantially against axial movement relative to said wheel hub.

4,508,393

BRAKE-FORCE CONTROL FOR AT LEAST ONE AXLE OF A VEHICLE EQUIPPED WITH AN ANTI-LOCKING SYSTEM

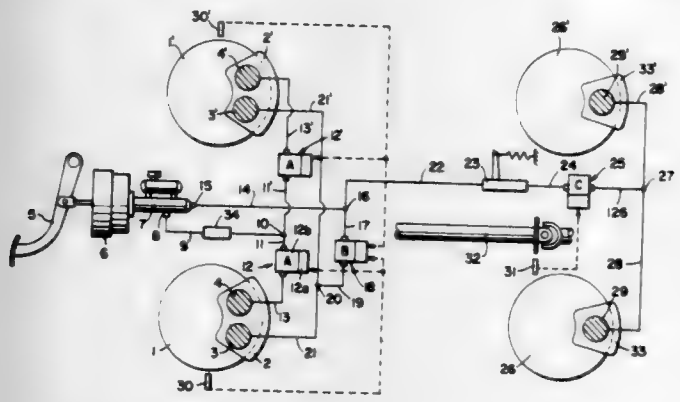
Klaus Drometer, Ostfildern, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jan. 14, 1983, Ser. No. 458,049

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201047

Int. Cl.³ B60T *8/04*

U.S. Cl. 303—111 **20 Claims**



1. A brake-force control for a vehicle equipped with an anti-locking system having at least a first axle with at least two wheels, first and second brake circuit means for each of said wheels of said first axle for controlling separate brake cylinders therefor, a first control channel means for controlling said first brake circuit means of each of said wheels as a function of the movement behaviour of said each wheel independent of movement of other wheels, further comprising:

a second control channel means for controlling in common said second brake circuit of each of said wheels of said first axle as a function of the movement behaviour of the said wheels of said first axle.

4,508,394

DRAWER GUIDE ASSEMBLY

Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Feb. 17, 1983, Ser. No. 467,224

Claims priority, application Austria, Feb. 17, 1982, 601/82

Int. Cl.³ F16C *29/04*; A47B *88/00*

U.S. Cl. 308—3.8 **4 Claims**

1. A drawer guide assembly for use on each of opposite sides of an article of furniture of the type wherein a drawer is slidably insertable into and removable from a furniture body, said assembly comprising:

a drawer side wall having therein a guide groove;

a roller carrier supporting rollers directly guided for longitudinal movement in said groove;

a support rail to be attached to a side of a furniture body into which is inserted the drawer, said support rail having a vertical flange and a horizontal flange extending from said vertical flange into said roller carrier and on which run said rollers;

whereby said roller carrier is longitudinally movable with respect to said groove and said support rail during movement of the drawer into and from the furniture body;



said groove having at an inner end thereof stop means for retaining said roller carrier in said groove upon complete removal of the drawer from the furniture body; and

said support rail having an inner end including means for preventing said roller carrier from moving therebeyond, said preventing means comprising a first stop bent outwardly and extending upwardly from said horizontal flange at a position to abut a first stop surface at a rear end of said roller carrier and a second stop bent outwardly and extending laterally from said vertical flange at a position to abut a second stop surface at said rear end of said roller carrier.

4,508,395

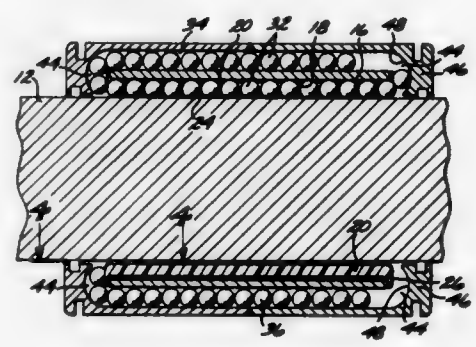
HIGH CAPACITY LINEAR ROTARY BEARING

Otto R. Heine, Poway, Calif., assignor to R&H Technology, Inc., Minneapolis, Minn.

Filed May 25, 1984, Ser. No. 614,262

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **20 Claims**



1. A linear rotary bearing, adapted to be mounted on a shaft, the bearing comprising:

a bearing race adapted to be mounted on the shaft in a concentric spaced relationship relative to said shaft;

a ball retainer mounted in a space formed between the bearing race and the shaft, the ball retainer forming a plurality of longitudinal ball channels substantially aligned with the longitudinal axis of the shaft;

a plurality of balls, and

an outer bearing housing fixedly mounted on the exterior of the bearing race, the housing in combination with the bearing race forming a plurality of longitudinal ball return channels substantially aligned with the longitudinal axis of

the shaft, the housing in combination with the bearing race further forming a substantially annular chamber at each end of the bearing, said annular chamber comprising means for the balls to pass from the ball return channels to the ball channels and from the ball channels to the ball return channels, the balls being disposed in the ball channels, in the ball return channels, and in the annular chamber, the number of the balls being such that a void space is available in the ball channels, ball return channels, and annular chamber, whereby during longitudinal movement of the bearing on the shaft the balls pass from the ball return channels to the ball channels and from the ball channels to the ball return channels in a substantially random manner to fill available space.

4,508,396

METHOD OF PRODUCING BEARING COMPONENT

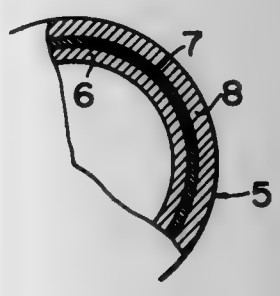
Motomichi Doi; Kinpei Okano; Katsutoshi Nii, all of Hitachi, and Yoshiharu Yokota, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,172

Claims priority, application Japan, May 22, 1981, 56-76607

Int. Cl.³ F16C *33/66, 33/00, 33/32;* C25D *5/50*

U.S. Cl. 384—463 **6 Claims**



1. A method of producing bearing components such as an inner ring, an outer ring, a rolling element and a shaft having a solid lubricant at a frictional surface part of a metal substrate constituting a bearing component, said method comprising the steps of:

providing an intermediate coating layer of a material having a substantially uniform thickness on the frictional surface part of said metal substrate by electroplating, the solubility of said material in the substrate metal and in the solid lubricant being higher than the mutual solubility between the substrate metal and the solid lubricant,

electroplating on a surface part of said intermediate coating layer a solid lubricant which has a substantially uniform thickness of 0.2–0.6 μm and which consists of an elemental metal having a lower solubility in said substrate metal, and

maintaining under a reducing atmosphere said solid lubricant, said coating layer and said metal substrate for a predetermined period of time at a predetermined temperature of below the lower one of the maximum operating temperature of the bearing component and the melting point of the solid lubricant to ensure that the elemental metal exists at a surface part of the solid lubricant layer and to induce mutal diffusion between the substrate metal, the coating material and the solid lubricant so that a part of the lubricant layer other than the surface part and the intermediate coating layer are alloyed with each other by said mutual diffusion, thereby increasing the bonding strength between the substrate metal, the coating material and the solid lubricant, the total thickness of the intermediate coating layer and the solid lubricant layer being 0.4–1.0 μm; and the heat treatment for diffusion being conducted with the bearing components assembled and with a powder of a nonmetallic solid lubricant placed between said assembled bearing components.

4,508,397

ANTI-FRICTION BEARING WITH ASSEMBLY FEATURE

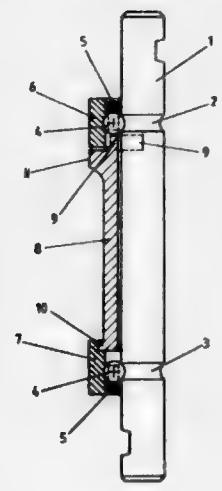
Heinrich Hofmann, Schweinfurt, and Dieter Treutlein, Grafenrheinfeld, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,889

Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218546

Int. Cl.³ F16C *19/02, 43/06*

U.S. Cl. 384—510 **12 Claims**



1. An anti-friction bearing comprising:

a shaft; two axially spaced apart raceways formed in the shaft; a respective outer race positioned proximate to and radially outside each raceway; the shaft being normally concentric with the outer races and being shiftable to be eccentric with respect to at least one outer race, whereby an enlarged space is opened between the one outer race and one lateral side of the shaft when the shaft is eccentric; a plurality of balls between each of the raceways and the respective outer race;

a bushing positioned between the two outer races; a shoulder having a wall portion formed on at least one end of the bushing and extending near the balls at that raceway at the one end of the bushing; the shoulder wrapping partially around the bushing; the shoulder being shaped and dimensioned for supporting the balls at the associated raceway and for preventing the balls from falling away from the raceway when the shaft is eccentric to the associated outer race and the shoulder is positioned beneath the enlarged space.

4,508,398

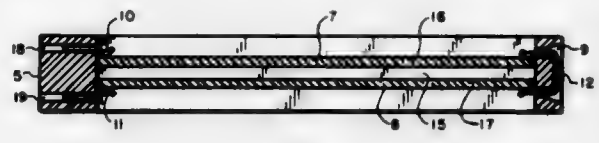
PRINTED CIRCUIT CONNECTING DEVICE

William E. Stepan, Clarendon Hills; Wayne E. Neese, Hoffman Estates; Thomas D. Belanger, Jr., Hinsdale, and Robert F. Janninck, Elmhurst, all of Ill., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Sep. 26, 1983, Ser. No. 536,074

Int. Cl.³ H01R *23/68*

U.S. Cl. 339—17 LM **4 Claims**



1. A device for mounting, interconnecting and terminating printed circuits comprising:

a frame of insulating material including first and second major sides and first and second minor sides;

mounting means integrally joined to an inner face of said first major side and said second major side, said mounting

means including a first planar surface arranged to accept and rest on said first planar surface a first removable component mounting surface having printed circuits affixed thereon and a second planar mounting surface arranged to accept and rest on said second planar surface a second removable component mounting surface having printed circuits affixed thereon;

a first plurality of terminal means each including a terminal connector engaging portion on an outer face of said first minor side for connecting to a source of input/output signals and contact portions extending from an opposite face of said first minor side, each of said contact portions communicating with an associated circuit of said first removable component mounting surface;

a second plurality of terminal means each including a terminal connector engaging portion on an outer face of said first minor side for connecting to a source of input/output signals and contact portions extending from an opposite face of said first minor side, each of said contact portions communicating with an associated printed circuit of said second removable component mounting surface;

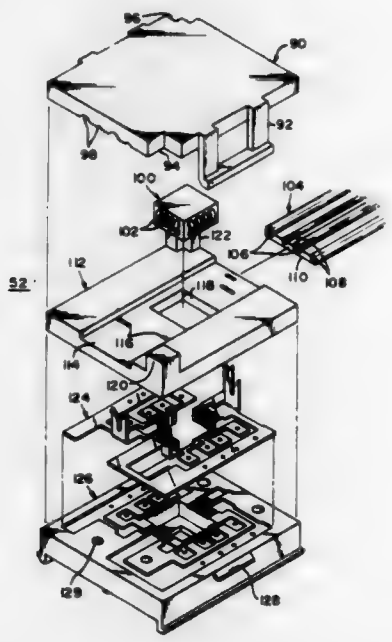
a plurality of openings extending through said second minor side, said openings arranged to accept a plurality of electrically conductive U-shaped members, each U-shaped member arranged to be accepted within one of said second minor side openings with a first leg of said U-shaped member contacting a printed circuit of said first removable component mounting surface and a second leg contacting a printed circuit of said second removable component mounting surface whereby, said U-shaped members electrically connect the printed circuits of said first removable component mounting surface to the printed circuits of said second removable component mounting surface and mechanically retain said first and second removable component mounting surfaces to said frame.

4,508,399

POLARIZED RIBBON CABLE CONNECTOR HAVING CIRCUIT COMPONENTS THEREIN

Edward C. Dowling, Harrisburg, and Jon A. Fortuna, New Cumberland, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 3, 1984, Ser. No. 567,458
Int. Cl.[3] H05K *1/00*
U.S. Cl. 339—17 CF 9 Claims



1. A cable connector having circuit components therein, comprising:

a housing top assembly having a profiled area to receive an electrical cable and having at least two latch members attached thereto;

an electrical cable having a plurality of wires therein disposed adjacent to said profiled area;

a housing intermediate assembly adjacent the top assembly and having a cable receiving channel therein, said channel in opposing relationship to said profiled area in said top assembly, said intermediate assembly further having contact receiving apertures therethrough;

a logic package having electrical components contained therein and conductive pads disposed on the outside thereof wherein said pads are electrically connected to said components;

a connector carrier strip adjacent to said intermediate assembly, said strip being characterized in that: said strip has a plurality of terminals bent up from the plane defined by said strip, said terminals cooperating with said apertures in said intermediate assembly and extending therethrough so as to have each of said terminals engage a wire in said cable, further characterized in that a plurality of contact legs are bent down from the plane defined by said strip, said legs facilitating electrical communication with said logic package and being further characterized in that pin apertures are disposed in said strip which allow for electrically conductive pins to be disposed therethrough and thereby in electrical communication with said logic package and/or said wires in said cable; and

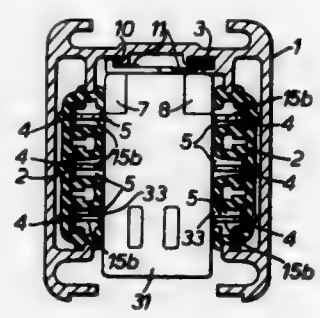
a housing lower assembly adjacent to said strip, profiled to receive said strip and having a lower assembly aperture therein profiled to receive said contact legs and said logic package, said lower assembly having lower assembly pin apertures therethrough which are aligned and cooperate with said pin apertures in said strip and said electrically conductive pins and further having retaining tabs cooperable with said latch members contained on said top assembly thereby fixedly holding said upper, intermediate and lower assemblies along with said strip and said cable together, thereby forming an active connector assembly.

4,508,400

ELECTRICAL SUPPLY CONNECTOR FOR CONTINUOUS OUTLET TRACK

Tony E. G. Herbert, East Sussex, England, assignor to Rotaflex p.l.c., London, England

Filed Oct. 18, 1982, Ser. No. 434,732
Int. Cl.[3] H01R *25/14*
U.S. Cl. 339—22 R 11 Claims



1. A supply connector for connecting to a source of electrical current the conductors of a current distribution track member having an elongate channel housing a plurality of conductors extending longitudinally of the channel, the connector comprising a generally rectangular housing, a plurality of terminals mounted in the housing for connection of electric current supply leads, a plurality of resilient elongate electrical contacts mounted to extend generally in parallel and longitudinally of the housing, each contact having one end connected to one of the terminals and the other end arranged to protrude laterally through an opening in a side wall of the housing for engaging a respective conductor of the track member, and each contact being mounted in cantilever manner adjacent said one end to enable the other free end thereof to move between a retracted position within the housing and an operative posi-

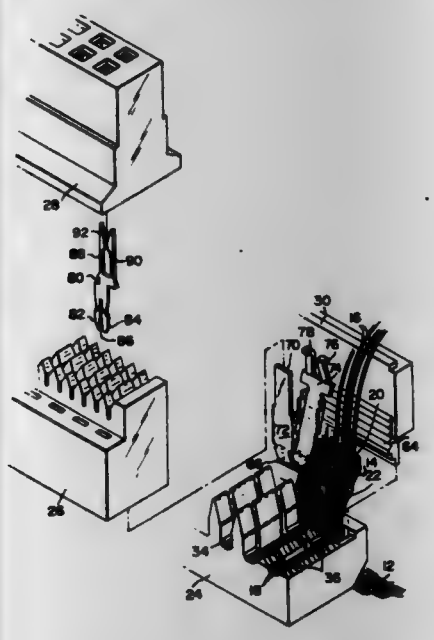
tion projecting through the housing opening, said free ends being yieldably urged toward said operative position by the resilience of said contacts, said one end of each said contact being mounted in closer proximity to said side wall than to the opposite housing side wall, a cam member slidable longitudinally in the housing and arranged to cooperate with the contacts for shifting said free ends of said contacts from said operative to said retracted position, and drive means coupled to the cam member for displacing the cam member longitudinally of the housing and the contacts, said drive means including an operating member movably mounted to the housing and operable either to retract the contacts, thereby to enable the connector to be inserted into the track channel through the mouth thereof, or to release the contacts into their operative positions for engaging the track conductors, the connector being supported by and accommodated substantially within the track member with the longitudinal axes of the track member and housing being substantially parallel when the contacts are engaged with the track conductors.

4,508,401

WOVEN CABLE CONNECTOR

Albert Casciotti, Hershey; Earl W. McCleerey, and Pete Cosmos, both of Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 18, 1983, Ser. No. 495,879
Int. Cl.[3] H01R *4/66, 11/20, 43/04*
U.S. Cl. 339—14 R 16 Claims



1. A method for terminating multi-conductor woven cable in an electrical connector of the type wherein a plurality of ground and signal conductors are secured in parallel spaced relationship in a patterned array in a woven cloth base, portions of the cable being so formed as to have the conductors loose from one or both sides of the base, said method comprising the steps of:

feeding a free end of the cable to a base member of said electrical connector and disposing said ground conductors in respective ones of a plurality of channels of said base member;

applying a plurality of first terminals to said base member, each said first terminal engaging and securing at least one ground conductor in a respective channel, each of said first terminals having arms which can be selectively bent;

applying intermediate member having a first face engaging said base member and a profiled oppositely directed second face; disposing said signal conductors on the profile face of said intermediate member; and

applying to said sub-assembly of said base and intermediate member a mating member carrying a plurality of second terminals which selectively make contact with respective signal conductors and the arms of said first terminals whereby both said signal conductors and ground conductors are terminated and ground of the connector is programmed.

5. An electrical connector for terminating multi-conductor woven cable of the type wherein a plurality of ground and signal conductors are secured in parallel spaced relationship in a patterned array in a woven cloth base, portions of the cable being so formed as to have the conductors loose from one or both sides of the base, said connector comprising:

an elongated base member of rigid insulative material defining an elongated cable receiving slot and a plurality of ground wire receiving channels extending normal to said slot along a first surface, and at least one terminal receiving recess in said base member intersecting each said channel;

an elongated intermediate member having oppositely directed profiled first and second surfaces and a plurality of terminal passages extending between said surfaces;

an elongated mating member of rigid insulative material having a mating face and an oppositely directed surface with a plurality of terminal passages extending between said face and said surface;

at least one first terminal received in said terminal receiving recess of said base member and engaging and securing at least one ground conductor in each said channel each said at least one first terminal having an integral deformable extension; and

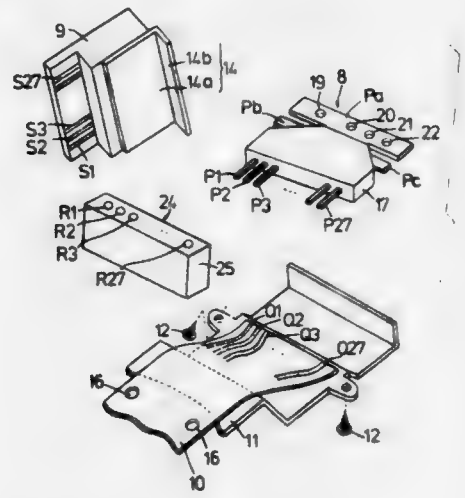
a plurality of second terminals each received in a respective passage of said mating member with a mating portion directed toward said mating face and a signal conductor engaging portion depending from said surface to engage a signal conductor on said intermediate member and said deformable extension of said at least one first terminal being bent to selectively engage a second terminal thereby programming ground for said connector.

4,508,402

INTEGRATED CIRCUIT PACKAGE AND DISPLAY PANEL

Tadashi Tomino, Yamatokoriyama, and Masayuki Higuchi, Ueno, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1982, Ser. No. 349,925
Claims priority, application Japan, Feb. 27, 1981, 56-29250; Apr. 9, 1981, 56-54066; Sep. 30, 1981, 56-157151
Int. Cl.[3] H05K *11/00*
U.S. Cl. 339—17 CF 2 Claims



1. A calculator assembly comprising:

an integrated circuit element having a power terminal at one periphery thereof including a plurality of positioning apertures therein and a plurality of signal terminals opposite said power terminal at a second periphery thereof;

a circuit board having a plurality of terminals to be electrically connected respectively to said terminals of said

integrated circuit element and having a plurality of positioning apertures therein;

a casing within which said integrated circuit element and said circuit board are securely fixed, said casing having a plurality of positioning projections to be received by said positioning apertures in said integrated circuit element and a plurality of positioning projections to be received by said positioning apertures in said circuit board, for determining the relative position of said integrated circuit element and said circuit board with respect to said casing;

a display panel having a plurality of terminals to be electrically connected to said terminals of said integrated circuit element and held between said integrated circuit element and said casing; and

a keyboard having key conductors disposed on said circuit board and actuators held in said casing, said keyboard having a plurality of terminals to be connected to said terminals of said integrated circuit element,

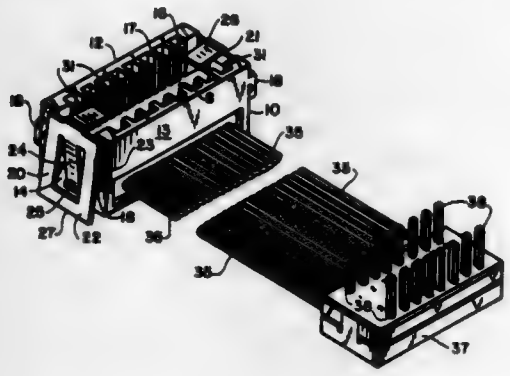
such that said terminals of said integrated circuit element are electrically connected to said terminals on said circuit board, said terminals of said display panel and said terminals of said keyboard and are prevented from shifting from said connections by said projections received within said apertures in said integrated circuit element and said apertures in said circuit board said terminals of said display panel being electrically connected to said terminals of said integrated circuit element by an elastic body around which one end of said circuit board is wound.

4,508,403

LOW PROFILE IC TEST CLIP

David Weltman, Millwood, and Pyotr Tsipenyuk, Bronx, both of N.Y., assignors to O.K. Industries Inc., New York, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,853
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—28 **13 Claims**



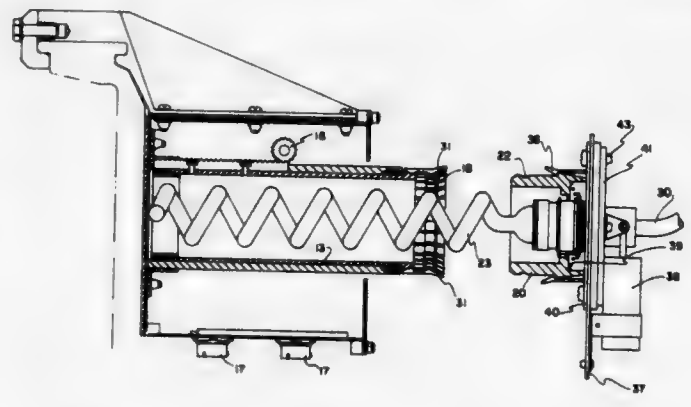
1. A test clip for removable attachment to an IC package having protruding pins for mounting on a PCB, for providing electrical access via the test clip to the IC pins for electrical testing of the IC while mounted on the PCB and in service, comprising a shallow body comprised of electrically insulating material and having side surfaces and at a bottom surface a cavity dimensioned to fit over the IC package while mounted on the PCB, a plurality of substantially fixed clip contact pins of spring metal extending through the body and having lower ends exposed within the cavity and positioned to make respective electrical contact with the IC pins when the clip is slid over and attached to the IC package, user-actuable means mounted on the body and separated from the clip contact pins for selectively locking and unlocking the clip to and from the IC package, said locking means being positioned to avoid contact with the IC pins when the clip is attached to the IC, and a flat multi-conductor cable connected to and extending laterally outwardly from a side surface of the body and having its conductors connected within the body to respective clip contact pins, said cable having at its free end means by which electrical access may be had to the IC pins via the cable conductors and clip contacts.

4,508,404

REMOTE CONNECT AND DISCONNECT ASSEMBLY WITH ENERGY ISOLATION

Norman E. Frawley, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Nov. 23, 1981, Ser. No. 323,850
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—45 M **14 Claims**



7. An apparatus for providing electrical connection, disconnection, and reconnection between two proximate but spaced apart bodies, while minimizing the transfer of energy from one body to the other, comprising:

an extendable and retractable member comprising a first tube fixed to one of said bodies, a second tube, slideably mounted to said first tube in telescoping fashion, and a rack and pinion drive between said first tube and said second tube for extending and retracting said second tube in said telescoping fashion;

a detachable receptacle carried by and held to said second tube by a biased retaining means, said detachable receptacle and said second tube being disengageable from one another upon application of sufficient force and movement apart along the longitudinal axis of said second tube;

a fixed receptacle, mateable with said detachable receptacle, and located on the other of said bodies;

a flexible cable attached between said one of said bodies and said detachable receptacle; and

a locking means associated with said fixed receptacle for locking said detachable receptacle when in making contact with said fixed receptacle and upon command, for unlocking said detachable receptacle wherein said locking means is a plurality of spaced apart, circularly located, spring pawls which lock with like spaced apart stepped surfaces on said detachable receptacle, said spring pawls being commonly mounted to a rotatable base for unlocking whereby upon extension of said second tube said detachable receptacle will be carried and locked into mating contact with said fixed receptacle, said biased retaining means allowing retraction of said second tube thereby leaving said first and second body in electrical connection through said flexible cable, and upon reextension of said second tube and upon rotation of said rotatable base, said detachable receptacle may be disconnected from said fixed receptacle by reengagement of said detachable receptacle with said second tube through said biased retaining means and retraction of said second tube.

4,508,405

ELECTRONIC SOCKET HAVING SPRING PROBE CONTACTS

Neil F. Damon, Ft. Pierce, Fla., and Frank C. Rydwansky, Jr., Quincy, Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Apr. 29, 1982, Ser. No. 373,215
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—75 MP **14 Claims**

1. An electronic component socket comprising:

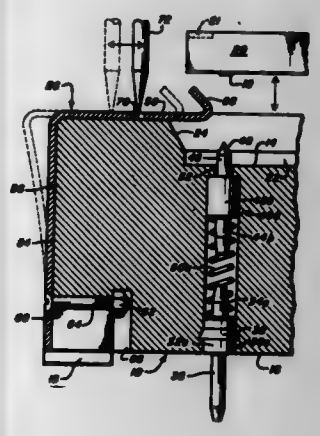
a body of electrically insulative material having first and second opposed surfaces, with said second surface having a recess adapted to receive said electronic component;

said body having an array of parallel passages of a first diameter extending from the first surface into the body and having an array of openings of a second diameter extending from the second surface into the body corresponding ones of which are communicating with a respective passage and being of smaller second diameter than the first diameter of the respective passage;

means adjacent the recess of the second surface of the body defining locating surfaces operative to laterally position the component received in the recess of the second surface;

a plurality of spring probe assemblies individually disposed in a respective passage and its communicating opening and each including:

a first electrically conductive member having means for



retaining the member in the corresponding passage, and a lead outwardly extending from the first surface of the body;

a second electrically conductive member slidably disposed in the passage and having a contact portion confronting a corresponding one of said openings;

an electrically conductive coil spring connected between the first and second conductive members and operative to urge the second member to an outer position with the contact portion in alignment with the corresponding opening;

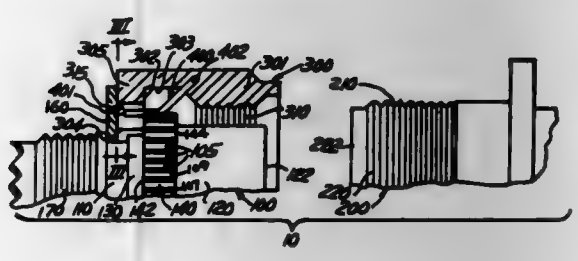
retaining means attached to the body and being movable to an open position to permit reception of the electronic component in the recess of the second surface and being moveable to a closed position to removably retain the component received on the second surface of the body.

4,508,406

ELECTRICAL CONNECTOR ASSEMBLY HAVING AN ANTI-DECOUPLING DEVICE

Robert W. Brush, Sr., Unadilla, and Dee A. Werth, Afton, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed Sep. 30, 1982, Ser. No. 431,971
Int. Cl.³ H01R *13/623*
U.S. Cl. 339—89 M **13 Claims**



1. An electrical connector assembly having an anti-decoupling device comprising: first and second shells, one of said shells including on an outside portion thereof a plurality of radially extending ratchet teeth, said ratchet teeth forming a contiguous succession of peaks and valleys between, respectively, first and second cam faces; a coupling nut mounted for rotation to the first shell for connecting to the second shell and coupling the first and second shells together; and an anti-decoupling device for retarding rotational movement of the coupling nut relative to the first and second shells, said anti-decoupling device characterized by:

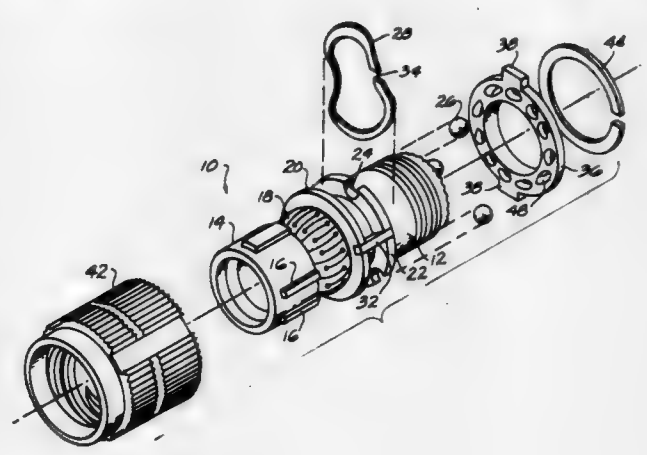
an elongated spring arm having its axis extending generally in the direction of the connector axis one end thereof being secured to the inside of the coupling nut and its other end extending therefrom and disposed in one said valley, said spring arm being constrained to rotate with said coupling nut and resiliently deflectable in a radial direction relative to its securement and said other end being adapted to radially deflect and advance from one to another of said valleys, rotation of the coupling nut forcing the other end of the spring arm against one of said cam faces, the cam face camming the other end radially upwardly from the one valley and over the peak associated therewith and into the next successive valley, rotational engagement of the spring arm with the ratchet teeth faces retarding rotational movement.

4,508,407

SELF-LOCKING CONNECTOR

David J. Ball, Encino, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,120
Int. Cl.³ H01R *13/54*
U.S. Cl. 339—89 R **8 Claims**



1. A plug connector member adapted to mate with a receptacle connector member comprising:

a barrel having a coupling ring rotatable thereon;

locking means operative between said coupling ring and said barrel to prevent relative rotation thereof;

said locking means comprising an annular element having a plurality of circumferentially spaced detent recesses therein and a locking element having a plurality of detent projections thereon facing said recesses;

one of said elements being fixed against rotation on said barrel and the other element being rotatable with said coupling ring;

means biasing said projections and recesses toward each other; and

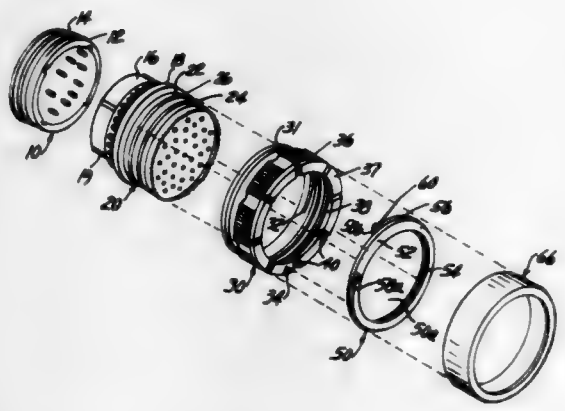
said recesses and projections being arranged whereby only one projection may engage a recess at any given relative position of said annular and locking elements so that a large number of locking positions is provided.

4,508,408

ANTI-DECOUPLING MECHANISM FOR AN ELECTRICAL CONNECTOR ASSEMBLY

Eric F. Shepler, Sidney, and Anthony W. Knapp, Laurens, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed May 11, 1983, Ser. No. 493,496
Int. Cl.[3] H01R *13/623*
U.S. Cl. 339—89 M 5 Claims



1. An anti-decoupling mechanism for an electrical connector assembly, the connector assembly having a primary axis and comprising a pair of connector members and a coupling nut including a radial flange rotatably mounted to one of said connector members for coupling to the other connector member, said one connector member including an annular groove having a forwardly facing end wall and said radial flange having a rearwardly facing outer end wall, said anti-decoupling mechanism being adapted to resist both coupling and uncoupling rotation of the coupling nut and characterized by:

a plurality of detents disposed around said outer end wall, each said detent including a pair of angularly spaced sidewalls with one of said sidewalls being generally radially disposed and the other of said sidewalls being skewed and acutely-angled relative to a radius drawn through the primary axis; and

a radially expansible/contractible annular spring interference fit within said annular groove and including a locking tab releasably disposed within one of said detents, the spring annulus being adapted to expand/contract, respectively, upon application of an external torque, the interference fitment between the spring annulus and the annular groove providing frictional forces of an amount sufficient to resist unwanted relative rotation therebetween, application of an external coupling/uncoupling torque to the coupling nut driving one and the other said sidewall, respectively, against the tab and causing the spring annulus to radially expand or contract, the radial expansion reducing the frictional interference forces and allowing the spring to slide relative to the annular groove, and the radial contraction initially increasing the frictional interference forces preventing relative rotation until sufficient external torque cams the tab radially upward on the sidewall and outward of its detent and the spring annulus expands whereby the coupling nut rotates and advances the next successive detent into engagement with the tab whereupon the spring radially contracts into its interference fit within the annular groove.

4,508,409

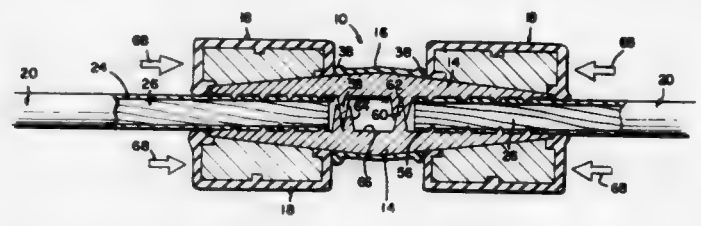
INSULATION PIERCING COAXIAL GRIP SPLICE DEVICE

Hitesh Cherry, Harrisburg, and Walter M. Werner, Downington, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 28, 1983, Ser. No. 508,648
Int. Cl.[3] H01R *11/20, 4/50*
U.S. Cl. 339—97 R 5 Claims

1. An insulation piercing, coaxial grip splice device comprising:

a. an elongated body having a tapered outer surface converging from a common midpoint toward each end, a passage therethrough with insulation piercing teeth positioned on the walls defining the passage and extending inwardly, said teeth being adapted to be driven into insulation covered cable which may be positioned in the passage, said body being formed from a pair of elongated shells having concave surfaces cooperating to form the passage when mated with one concave surface having a



rib positioned normal to the longitudinal axis and midway between the ends and the other concave surface having a groove positioned to receive the rib to frictionally hold the assembled shells together in a predetermined, spaced-apart relation; and

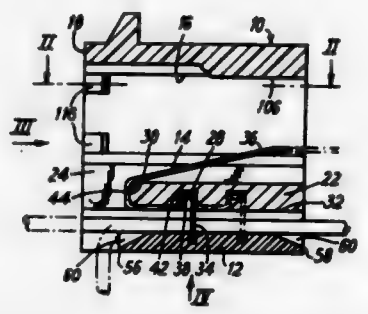
b. collars having a tapered passage therethrough slidably mounted on each end of the assembled, spaced-apart shells and adapted to compress the shells towards each other by being driven up the tapered outer surface.

4,508,410

ELECTRICAL TERMINATION SYSTEM AND CONNECTOR MEMBER

Kevin Canham, Newmarket, England, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 17, 1982, Ser. No. 442,335
Claims priority, application United Kingdom, Dec. 1, 1981, 8136246
Int. Cl.[3] H01R *13/38*
U.S. Cl. 339—99 R 13 Claims



1. A termination system for electrical conductors comprising:

a first insulative member including a wall member having a first surface, said first surface having recesses adjacent an edge of the wall member;

a plurality of conductive insulation—displacement contacts extending away from said first surface, each insulation displacement contact being provided at the first end portion of a respective contact member which is formed from a strip or sheet or conductive material, said contact member further comprising:

at a second end portion a flexible contact for making disconnectable sliding contact with another contact member of another connector member;

a first bent portion adjacent said first end portion and bent to be accommodated in a respective one of said recesses in said wall member; and

a second bent portion between said first bent portion and said second end portion, said second bent portion being bent through an angle of between 90° and 180° and closely conforming around said edge of said wall member;

a second insulative member adapted to be opposed against said first surface on said first insulative member;

a second surface on said second insulative member and facing said first surface when said members are opposed to each other;

said first and second members being relatively moveable towards one another such that conductors located across said second surface on said second member can be forced into said insulation-displacement contacts on said first member; and

means provided on said second member on opposed edge portions of said second surface and being capable of receiving, gripping and retaining conductors lying across said second surface prior to engagement with said contacts.

4,508,411

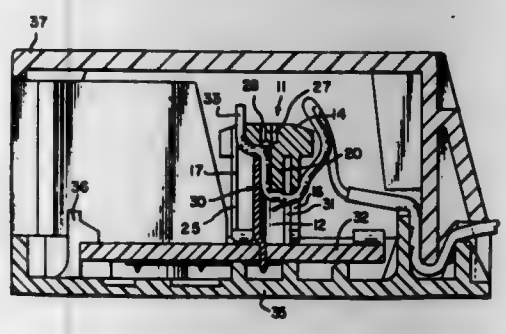
WIRE STUFFING COVER

Richard L. Hughes, and Ned A. Sigmon, both of Clemmons, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 29, 1983, Ser. No. 480,044

Int. Cl.³ H01R *11/20, 13/58*

U.S. Cl. 339—99 R **9 Claims**



1. A molded one piece resilient plastic cover for a tubular terminal having but one axially extending wire receiving slot comprises a socket profiled to closely receive the terminal, the socket having a blind end adjacent a first face of the cover and an opposed open end at a second, terminal receiving face of the cover, the cover having opposed front and rear faces extending between the first and second faces, an axially extending wire gripping slot in a socket wall at the front face and opening on the terminal receiving face, and a stuffer extending axially from the blind end of the socket for engagement with a wire when the cover is applied to a terminal, characterized by

a second axially extending wire gripping slot formed in a socket wall at the rear face of the cover and opening on the terminal receiving face, the slot extending above the terminal when the cover is fully applied thereto,

a wire lead-out opening communicating between the blind end of the socket behind the stuffer and the second axially extending wire gripping slot where it extends above the terminal when the cover is fully applied,

the stuffer being profiled to permit the wire to be drawn into the terminal behind the stuffer as the cover is applied to the terminal to force the wire into the wire receiving slot thereof, whereby

the wire will extend through the lead-out opening and out of the second wire gripping slot when the cover is fully applied.

4,508,412

FUSE HOLDER

Charles W. Daggett, Mt. Prospect, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

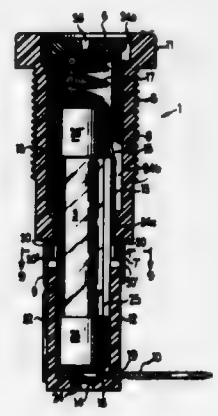
Filed Mar. 8, 1982, Ser. No. 355,907

Int. Cl.³ H01R *13/68;* H02B *1/02*

U.S. Cl. 339—126 R **25 Claims**

8. In a fuse holder for cartridge type electrical fuses having end terminals and comprising an insulated fuse holder body having a central first passage for accepting an inserted fuse, end terminal contacting means disposed at the rear or interior end of said passage for making an electrical contact to the inserted first end of said fuse and providing a conducting path therefrom for lead attachment outside said fuse holder body, a knob assembly comprising an insulating knob carrying a conducting sleeve therein configured to engage and electrically contact the front or opposite end of said fuse, said knob, said sleeve and said first passage configured such that said sleeve and portions of said knob can be insertingly accepted by said body to capture said fuse between said sleeve and said end contacting terminal means, and retention means for holding said knob assembly in place after the insertion of said sleeve and said fuse in said first passage, the improvement comprising:

an electrically conducting one-piece side terminal mounted



on the outside of said body, said body being configured with unitary complementary anchoring portions to secure said side terminal to said body by snap-in engagement thereof, said fuse holder body having at least a pair of side passages oppositely disposed about the axis of said first passage and passing from the outside of said fuse holder body to said first passage, said side terminal being configured with at least a pair of inwardly projecting contacting means disposed to project inwardly into said side passagese, and said sleeve includes at least a pair of engaging means disposed to pressingly contact said inwardly projecting contacting means through said side passages when said sleeve of said knob assembly is inserted into said body, and retained by said retention means.

4,508,413

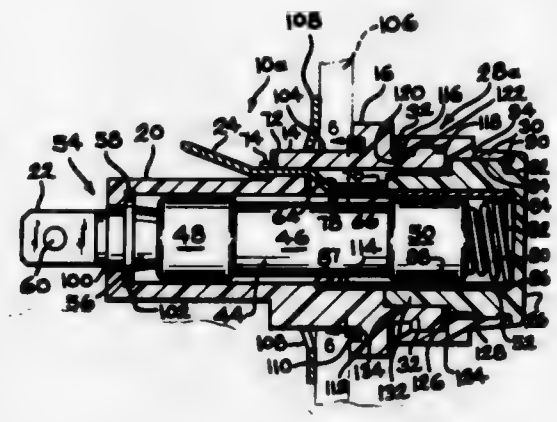
CONNECTOR

William R. Bailey, Villa Park, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 12, 1982, Ser. No. 367,651

Int. Cl.³ H01H *85/50;* H01R *13/68*

U.S. Cl. 339—129 **7 Claims**



1. A fuseholder, comprising:

a body portion, said body portion being adapted to contain at least a portion of a generally cylindrical fuse member, said fuse member having a body portion and first and second end cap portions at opposite ends thereof;

said body portion including at a first end thereof a contact member adapted to contact said first end cap portion of

said fuse member, said contact member extending the exterior of said first end of said body portion and including a connection portion adapted to receive an electrical connection thereto;

a cap portion for retaining said fuse member in said fuseholder, said cap portion including means for retaining said second end cap portion of said fuse member and resilient means adapted to contact said second end cap portion to urge said fuse member towards said contact member when said cap portion is joined to said body portion

said means for retaining said second end cap portion being a tubular member protruding from an end thereof and adapted to be inserted into said body portion;

said body portion including a second contact portion adapted to frictionally received said tubular member and to establish electrical connection thereto, said second contact postion including a generally ring-shaped portion adapted to receive said tubular portion and a second connection portion extending to the exterior of said body portion and adapted to receive an electrical connection thereto;

said cap member having a joining member for joining said cap portion to said body portion, said joining portion being freely rotatably mounted to said cap member;

said joining member being freely rotatably mounted to said cap member by a plurality of resilient mounting fingers integral with said joining member and adapted to cooperate with a circumferential groove of said cap member, said cap member defining said groove in an outer surface thereof;

said body portion including means adapted to cooperate with said joining member for joining said cap portion to said body portion, and establishing an electrical current path from said second end cap portion through said tubular member and said resilient means to said generally ring-shaped portion and said second connection portion.

4,508,414

SHIELDED CABLE-CONNECTOR ASSEMBLY

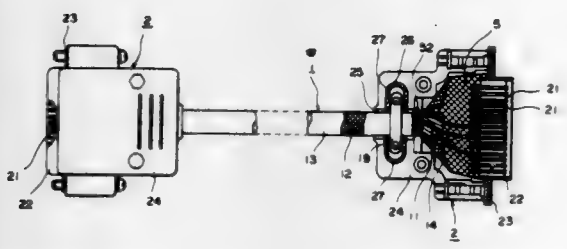
Akio Kusui; Shuji Morita; Toshio Kudoh, all of Hyogo; Yasuo Tanaka, Saitama, and Hirotaka Itoh, Osaka, all of Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki, Japan

Filed Oct. 18, 1982, Ser. No. 434,866

Claims priority, application Japan, Oct. 30, 1981, 56-175089; Dec. 29, 1981, 56-211630

Int. Cl.³ H01R *13/658*

U.S. Cl. 339—143 R **7 Claims**



1. A shielded cable-connector assembly, comprising: a multicore cable (1) including a plurality of conductor cores (11) and a shielding member (12) enclosing said cable conductor cores in a shielding manner, a connector (2) including a plurality of mutually insulated contact elements (21) and a metallic contact cover (22) enclosing said plurality of contact elements in an electrically insulating manner, each of said cable conductor cores of said multicore cable being electrically connected to its respective contact element of said plurality of contact elements in a connecting portion, shielding means comprising an initially flexible thin sheet of expanded metal having fine apertures and surrounding said connecting zone in an insulating manner, means electrically connecting said thin sheet of expanded metal to said metallic contact cover (22) and to said shielding member (12) of said multicore cable, and molded protective outer cover means (9, 24) made of a moldable material integrally molded onto said initially flexible thin sheet of expanded metal in a molding operation causing said moldable material to enter into said fine apertures of said initially flexible thin sheet of expanded metal, whereby said initially flexible thin sheet of expanded metal is reinforced by said moldable material when the moldable material has hardened and filled said fine apertures, said protective outer cover means covering an end portion of said multicore cable at its connector side.

4,508,415

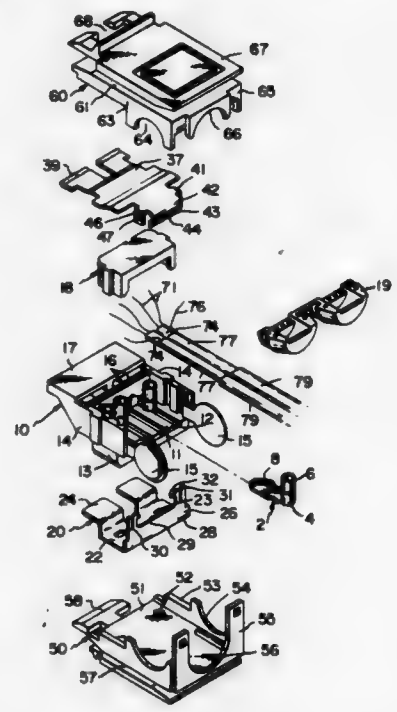
SHIELDED ELECTRICAL CONNECTOR FOR FLAT CABLE

Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 29, 1983, Ser. No. 518,503

Int. Cl.³ H01R *13/648*

U.S. Cl. 339—143 R **4 Claims**

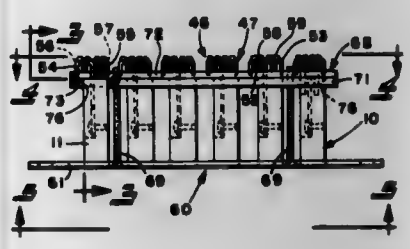


1. An electrical connector for shielded multiconductor flat cable having a drain wire associated with the cable shield, said connector being of the type comprising an insulating housing having a mating face, an opposed conductor receiving face, a plurality of terminals in the housing with resilient contact portions toward the mating face and wire connecting portions toward the wire receiving face, and a connector shield having a cable gripping portion and a contact portion, characterized in that said connector is adapted for use with a flat multiconductor cable having a planar array of shielded signal conductors, said connector shield comprising a bottom shield member assembled to said connector before terminating said signal conductors and a top shield member assembled to said connector after terminating said signal conductors, each said shield member being stamped and formed from one piece with a panel substantially parallel to the cable, a contact portion at the end of the panel toward the mating face, and a cable gripping portion toward the conductor receiving face, said cable gripping portion comprising a flange extending obliquely of said panel and contacting the portion of said cable adjacent said flange, said shield members having cooperating latching means so that the top shield member can be latched to the bottom shield member with the connector shield substantially surrounding a flat cable with said portion of said cable sandwiched between the opposed flanges, said latching means on said bottom shield member comprising an upstanding tab adjacent said cable, said tab having a slot therein profiled to receive said drain wire.

4,508,416
MULTIPLE THERMOCOUPLE CONNECTOR PANEL

Glen F. Oftedahl, Antioch, Ill., assignor to Pneumo Corporation, Boston, Mass.

Filed Apr. 2, 1982, Ser. No. 364,995
Int. Cl.[3] H01R *13/50*
U.S. Cl. 339—176 M 11 Claims



1. A multiple connector panel assembly comprising a faceplate, a plurality of connectors each of the type including a housing of insulating material having two longitudinally extending sockets, and two terminals respectively received in said sockets, each terminal having its front end adapted for electrical contact with a corresponding terminal of a mating connector and its rear end extending short of the rear of said housing, mounting means for mounting said connectors to the rear of said faceplate in generally parallel, laterally disposed relationship, and a terminal extender for each terminal, said terminal extender being connected at its front end to the rear end of the respective terminal and extending beyond the rear of said housing to provide for connection of a lead wire thereto, said mounting means including a mounting plate spaced from said faceplate, and means for securing said mounting plate to said faceplate with said connector housings held therebetween and said terminal extenders extending beyond the rear of said mounting plate, said mounting plate having a plurality of openings, and each terminal extender of said connectors extending through a respective one of said openings beyond the rear of said mounting plate, each terminal extender having a rear end closely accommodated in and transversely located by the respective one of said openings in said mounting plate, said mounting plate being made of insulating material and having portions mutually insulating the rear ends of adjacent terminal extenders, each terminal extender having a flat main portion bent transversely at its rear end to form a web portion and then forwardly to form a side flange, said side flange and the coextensive part of said main portion engaging opposite sides of the respective one of said openings to transversely locate the rear end of the terminal extender.

4,508,417
PLUG-IN WIRE TERMINAL SYSTEM

F. Wolfgang Bienwald, Melville, N.Y., assignor to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,794
Int. Cl.[3] H01R *17/04*
U.S. Cl. 339—176 L 7 Claims

1. A plug-in terminal system, in combination, comprising:

a body forming an approximately cylindrical socket having an end wall and an opposed open side, said end wall forming first and second passages extending between the inner and outer surfaces of said end wall,

screw shell means mounted in said socket for receiving the base of an incandescent lamp and for providing an electrical connection to said base,

bushing means mounted in said first passage,

first and second insulated wire conductors having respective first and second leads,

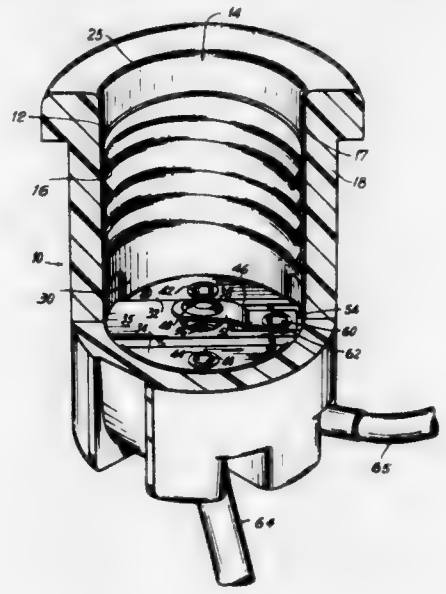
terminal means positoned in said bushing means, said bushing means being for permanently receiving and permanently holding said terminal means when said terminal means is plugged into said bushing means, said terminal means being for gripping said first lead and electrically connecting said first lead to said bushing means, said bushing means also being for electrically connecting said terminal means to said shell means, and

electrical contact means in association with said second passage for providing an electrical connection between said second lead and said base of said base of said lamp,

said first passage being counterboard from said outer surface of said end wall forming an annular stop ledge within said first passage, said bushing means including a bushing body having an external annular flange stop, said bushing body being positioned within said first passage, said flange stop being in contact with said ledge,

said bushing body forming a central hollow core having an inner and an outer rim; and wherein said shell means includes a shell flange coextensive with a portion of said inner surface of said end wall, said shell flange forming a hole coextensive with said first passage, said inner rim of said core being engaged with said shell flange at said hole, whereby an electrical connection is made between said shell means and said bushing,

said inner rim including an annular flared head having an annular edge in pressing contact with said shell flange, whereby said bushing is locked from moving outwardly in



said first passage, and whereby said annular edge is in electrical connection with said shell flange,

said hollow core of said bushing body including an inner core portion associated with said inner rim, said inner core portion having an inner diameter, a middle core portion having an inner diameter, a middle core portion connected to said inner core portion having a middle diameter, and an outer core portion connected to said middle core portion having an outer diameter, said middle diameter being smaller than said inner and outer diameters, an annular, shoulder being formed between said inner and middle core portion, and an annular sloped guide being formed between said middle and outer core portions,

said terminal means including a terminal element permanently positioned within said hollow core of said bushing body,

said terminal element including an elongated spine having opposed end portions, said terminal element including a first sleeve connected to one of said portions and a second sleeve connected to said spine spaced proximate to said first sleeve, the insulation of said first lead being positioned within and gripped by said first sleeve and the wire of said first lead being positioned within and gripped by said second sleeve,

said terminal element further including a substantially annular contact portion connected to said spine proximate to

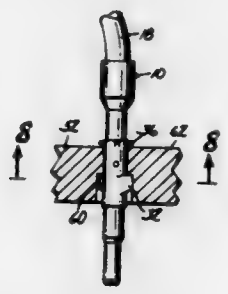
said second sleeve, said contact portion being movable from an outward unbiased position to an inward biased position, said contact portion being positioned in biased contact with the inner surface of said middle core portion of said bushing body; whereby said contact portion is moved between said unbiased position to said biased position during the movement of said contact portion from said outer core portion along said sloped guide to said middle core portion, electrical contact is made between said terminal element and said bushing body, and said contact portion inhibits the movement of said terminal body inwardly toward said socket.

4,508,418

RELEASABLE POSITION-LOCKING CONNECTOR ASSEMBLY

Donald J. Gagne, St. Paul, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Aug. 15, 1983, Ser. No. 523,519
Int. Cl.³ H01R *4/48*
U.S. Cl. 339—253 R **3 Claims**



1. A connector assembly comprising a male pin connector and a matable female receptacle connector,

said male connector having a shank having an axis, and lock means supported by said shank including a plurality of compressible tongues extending generally radially outwardly of said shank, said tongues having an upper surface and a lower sloped surface,

said female connector comprising a body having a surface, and axial bore in said body for receiving said shank, said bore forming a lip at said surface, a recess in said bore remote from said surface for receiving said tongues and forming a shoulder and a flange in said recess, whereby said pin connector may be assembled to said receptacle connector by relatively rotating said connectors causing said lower sloped surface of said tongues to react against said lip causing said tongues to compress to fit within said bore and relative axial movement of said connectors permits said tongues to be received in said recess so that said tongues expand and said upper surface of said tongues react against said shoulder to lock the connectors together, and whereby said pin connector may be disassembled from said receptacle connector by relatively rotating said connectors causing said tongues to react against said flange to thereby compress said tongues to fit within said bore.

4,508,419

HYPODERMIC NEEDLE CONNECTOR

Anibal Galindo, 6500 Caballero Blvd., Coral Gables, Fla. 33146

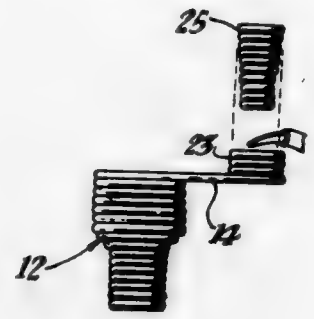
Filed Sep. 30, 1982, Ser. No. 429,168
Int. Cl.³ H01R *4/48*
U.S. Cl. 339—256 S **6 Claims**

1. A hypodermic needle connector comprising:

a wire connector including a needle holder, a link and connector, and

said needle holder including a needle portion for releasably holding a hypodermic needle, said link connected to said needle portion,

said connector including a mating portion connected to said link and another mating portion connected to said mating portion of said wire connector portion for releasably connecting and securing a nerve electro finder lead wire



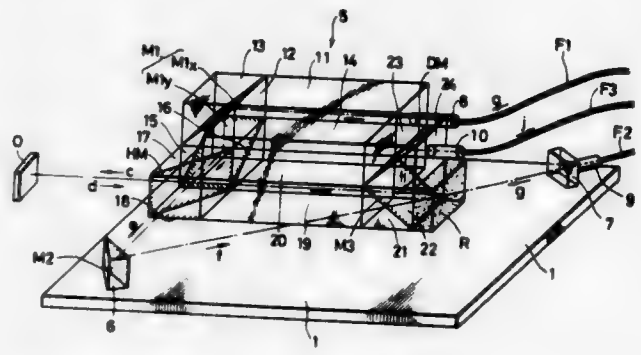
to said hypodermic needle connector for transmitting current to the hypodermic needle.

4,508,420

OPTICAL SYSTEM

Yoshikazu Nishiwaki, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 27, 1982, Ser. No. 453,546
Claims priority, application Japan, Dec. 28, 1981, 56-212574; Jan. 27, 1982, 57-11185
Int. Cl.³ G03H *1/04*
U.S. Cl. 350—3.6 **16 Claims**



1. An optical system, comprising

a plurality of multi-surfaced transparent unit blocks, at least one of said unit blocks having light reflective material deposited on a surface thereof and at least another of said unit blocks being composed of a photosensitive material;

bonding means for securing together at least two of said unit blocks in a predetermined fashion; and

mounting means for mounting said unit blocks.

4,508,421

HOLOGRAPHIC SCANNING SYSTEM UTILIZING A SCAN LINEARIZATION LENS

Robert P. Herloski, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1983, Ser. No. 517,610
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—3.71 **1 Claim**

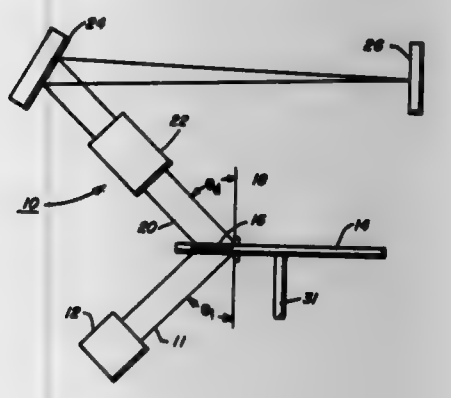
1. An optical scanning system including a spinner having formed thereon at least one plane linear diffraction grating having a constant grating period d,

a reconstruction light source of wavelength λ, which provides a beam of light directed at an angle of incidence θ_i to illuminate said grating,

means for rotating said spinner so that said grating rotates through a rotation angle ψ and diffracts a portion of the incident light at a cross-scan diffraction angle θ_d, and a scan angle θ_s and an optical lens positioned so as to intercept and focus said diffracted beam onto an image plane from the optical axis to produce a scan line thereon,

said optical lens having a third order coefficient of distortion

σ_5 and a fifth order coefficient of distortion β_9 defined by the following equations:



$$\delta_5 = -f\left[\frac{3A^2 - 1}{6A^2}\right]\theta_{s\,max}^3 \text{ and}$$

$$\beta_9 = -f\left[\frac{15A^4 + 10A^2 - 9}{120A^4}\right]\theta_{s\,max}^5 \text{ where}$$

f is the paraxial focal length of the lens and

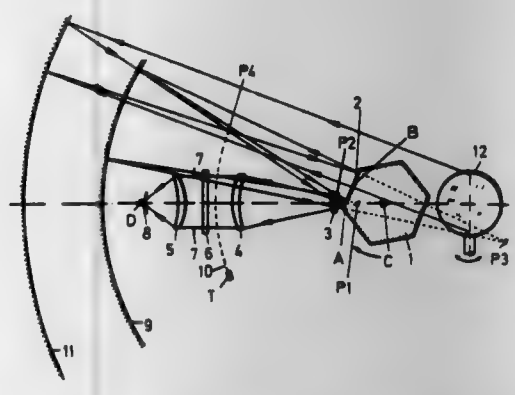
$$A = \frac{n(\text{diffraction order number})\lambda}{d}$$

4,508,422

OPTICAL SCANNING SYSTEM

Lars Karlsson, Täby, Sweden, assignor to Pharos AB, Lidingo, Sweden

Filed Mar. 3, 1983, Ser. No. 471,843
Claims priority, application Sweden, Mar. 3, 1982, 8201306
Int. Cl.³ G02B *27/17;* H04N *3/08*
U.S. Cl. 350—6.8 **18 Claims**



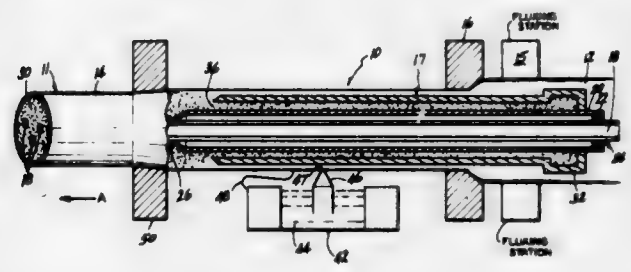
1. A scanning system for optical scanning of a scene in at least one dimension, including a multi-faceted reflective scanning rotor, optical beam converging means disposed in the beam path between the scene and the rotor for forming a primary image of the scene between the beam converging means and the rotor, a first substantially spherical mirror disposed in the beam path of the system between first and second areas of reflection on the rotor, both areas being disposed in a non-collimated beam path, a radiation detecting or emitting means disposed at the end of the beam path in the system, a beam converging optical element disposed in the beam path between the first substantially spherical mirror and the second area of reflection, and means for forming a real image of the radiation detecting or emitting means in the beam path at a position between the first substantially spherical mirror and a location so close to the beam converging optical element that the element serves as a field element for said location of said real image.

4,508,423

METHOD AND APPARATUS FOR ASSEMBLING AN OPTICAL FIBER COMMUNICATION CABLE

Joseph Winter, New Haven, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 324,242, Nov. 23, 1981,. This application Sep. 1, 1982, Ser. No. 413,846
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **47 Claims**



1. An apparatus for assembling an optical fiber communication cable, said apparatus comprising:

die means for forming a tubular member having a substantially downwardly facing seam from a strip of metal or metal alloy;

means for soldering said substantially downwardly facing tubular member seam to provide a sealed tubular member; and

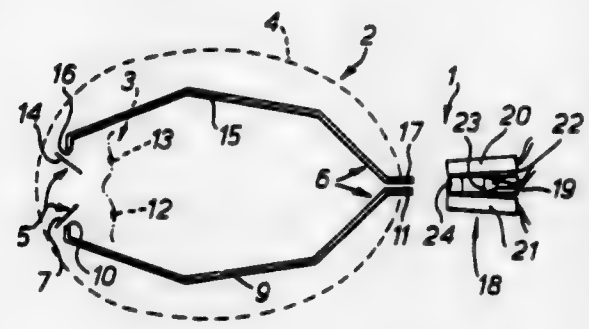
means for depositing at least one optical fiber into said sealed tubular member after said seam has been soldered, said depositing means protecting said at least one optical fiber during said soldering.

4,508,424

BINOCULAR DISPLAY OF INFORMATION WITH TWO COMBINER MEANS

Nils I. A. Ruder, The Potteries, Wickham Rd., Fareham, Hampshire, England

PCT No. PCT/GB82/00138, § 371 Date Dec. 28, 1982, § 102(e) Date Dec. 28, 1982, PCT Pub. No. WO82/03923, PCT Pub. Date Nov. 11, 1982
PCT Filed May 7, 1982, Ser. No. 457,072
Claims priority, application United Kingdom, May 8, 1981, 8114177
Int. Cl.³ G02B *27/10*
U.S. Cl. 350—174 **8 Claims**



1. Apparatus for use by an observer together with a physically separate collimated information source display to transmit a binocular display at infinity of the information source display to each eye of the observer from a location generally behind the observer, comprising a support to be worn on the observer's head, two combiner means positioned on said support, one of each of the said combiner means being within the field of view of each of the said observer's eyes, input means mounted on the said support means and generally diametrically

opposite said combiner means so as to be located in the area of the back of the observer's head in use of the apparatus and with the collimated information source display within the field of view of the input means, and two endoscope means arranged to receive and transmit the same image of said collimated information source from said input means to each of said combiner means, the optical center axes of each of said combiner means being parallel to the optical center axis of the said input means, the apparatus being constructed and arranged such that in use, with the collimated information source display being located behind and physically separate from said observer, an identical image of said collimated information source display is transmitted via said input means and said endoscope means to each of said combiner means thereby providing the same but separate images of the information source display projected at infinity within the field of eachof the observer's eyes.

4,508,425

MIRRORS AND METHOD OF MANUFACTURING THE SAME

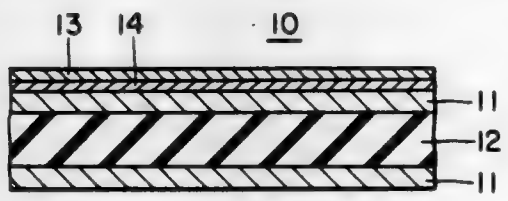
Hiroshi Tanaka, Yokohama, and Yoshitaka Iwata, Zama, both of Japan, assignors to Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 201,627, Oct. 28, 1980, abandoned. This application Nov. 18, 1982, Ser. No. 442,717

Claims priority, application Japan, Oct. 30, 1979, 54-140238; Jan. 16, 1980, 55-3411; Jan. 16, 1980, 55-3410

Int. Cl.³ G02B *5/08*

U.S. Cl. 350—641 **10 Claims**



1. A mirror, comprising:

a sheet of synthetic resin, an aluminum sheet bonded to each surface of said synthetic resin sheet, and an electroplated nickel layer and an electroplated chromium layer which are sequentially formed on one of said aluminum sheets.

4,508,426

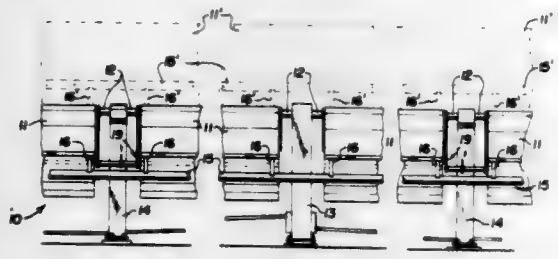
LOCKING MEANS FOR SOLAR COLLECTOR

Joseph A. Hutchison, 3300 Century Cir., Irving, Tex. 75060

Filed May 12, 1983, Ser. No. 494,047

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—614 **12 Claims**



1. In a maneuverable solar collector array wherein a plurality of concave trough-like reflectors are rotatably supported between support pylon structures by rotation axle means, a latching system for holding said reflectors in a protected position, said latching system having at least one latching device comprising:

mounting plate means affixed to each reflector of an adjacent pair of reflectors and extending generally toward the lines of focus of said reflectors,

locking bar means mounted between said mounting plate means positioned intermediate said lines of focus and said rotation axles, said mounting plate means and said locking bar means rotating with said reflectors,

latching means mounted on said support pylon positioned to engage and hold said locking bar means when said reflectors are rotated to a protected position, said latching means comprising lever means mounted for limited pivotal movement, spring bias means maintaining said lever means at one limit of its pivotal movement, said lever means having a cam surface edge and a notch edge positioned such that when contacted by said locking bar said lever is moved away from said one limit allowing said locking bar to pass by said cam edge and to be received and held in said notch under influence of said spring bias means thereby locking each reflector in a protected position.

4,508,427

LIQUID CRYSTAL DISPLAY DEVICE

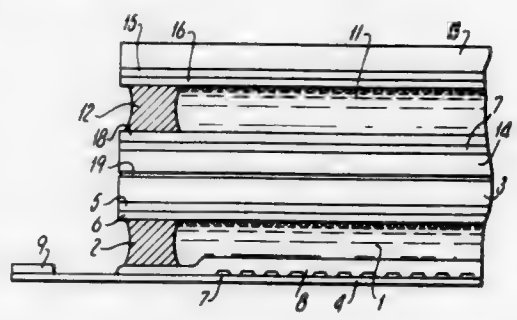
Peter W. Ross, Stansted, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,466

Claims priority, application United Kingdom, Oct. 22, 1982, 8230259

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—335 **5 Claims**



5. A liquid crystal display device having a tandem arrangement including a rear cell and a front cell, the rear cell being a silicon matrix backed dyed nematic cell with 180° twist cell for overriding grey scale representations, the front cell being a dyed nematic cell oriented to act as a variable density polariser for absorbing the weakly absorbed plane of the rear cell.

4,508,428

INK PROJECTIONS ON THE POLARIZER OF AN ELECTRO-OPTIC DISPLAY

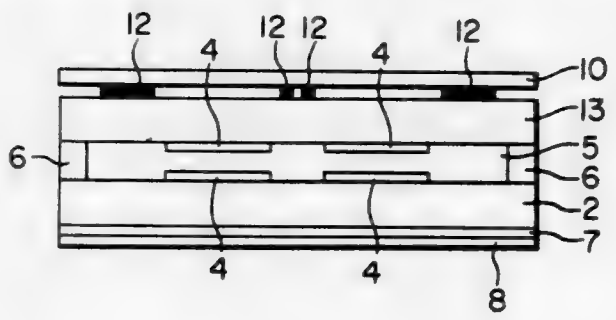
Yuji Harada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1982, Ser. No. 345,667

Claims priority, application Japan, Feb. 16, 1981, 56-21124

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—337 **6 Claims**



1. An electro-optic device comprising:

(a) a liquid crystal cell including first and second substrates, each having an electrode, defining a gap therebetween, the periphery of said gap being sealed with a sealing member, and said gap is filled with a liquid crystal material;

(b) a first polarizing means placed at the front side of said first substrate; and

(c) a second polarizing means placed at the back side of said second substrate, characterized in that a printing ink layer is formed between said first substrate and said first polarizing means at least within an effective display region of said liquid crystal cell.

4,508,429

METHOD FOR DRIVING LIQUID CRYSTAL ELEMENT EMPLOYING FERROELECTRIC LIQUID CRYSTAL

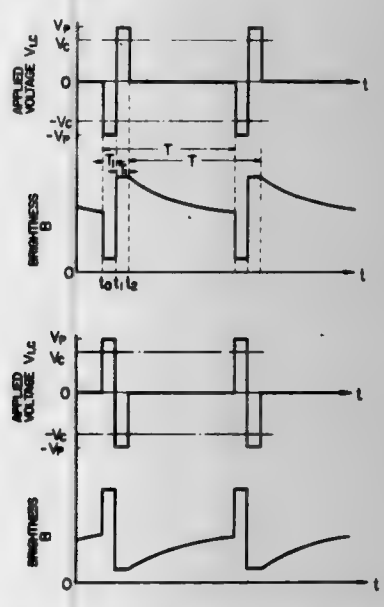
Yoshiharu Nagae; Masato Isogai, both of Hitachi; Hideaki Kawakami, Mito, and Fumio Nakano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,462

Claims priority, application Japan, Apr. 16, 1982, 57-62325

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—350 S 9 Claims



1. A method for driving a liquid crystal element including a ferroelectric liquid crystal interposed between a pair of substrates which have electrodes on their confronting surfaces, said method comprising:

a first step of applying to said ferroelectric liquid crystal a pulse voltage which defines the light transmitting state of said liquid crystal element; and

a second step of applying to said ferroelectric liquid crystal before and/or after said first step a voltage signal which renders the average value of voltages applied to said ferroelectric liquid crystal equal to zero.

4,508,430

ELECTROCHROMIC DISPLAY CELL I

Helmut Freller, Röthenbach; Friedrich Hörauf, Nuremberg; Hans-Peter Lorenz, Schwarzenbruck, and Konrad Mund, Uttenreuth, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

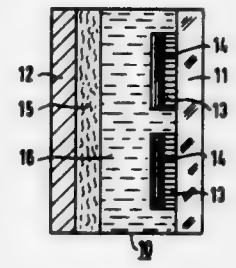
Filed Sep. 21, 1982, Ser. No. 420,926

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138705

Int. Cl.³ G02F *1/23*

U.S. Cl. 350—351 19 Claims

1. An electrochromic display cell comprising a front electrode having a tungsten trioxide layer and an outer support surface, a rear electrode having a porous titanium nitride layer



and an outer support surface, and an electrolyte contacting the tungsten trioxide and porous titanium nitride layers.

4,508,431

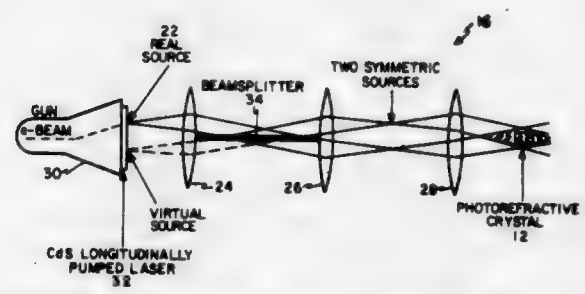
PHOTOREFRACTIVE LASER BEAMSTEERING DEVICE

Philip D. Henshaw, Carlisle, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 11, 1982, Ser. No. 338,466

Int. Cl.³ G02F *1/29*

U.S. Cl. 350—354 16 Claims



1. Apparatus for steering a principal beam of electromagnetic radiation comprising:

A. a photorefractive material situated such that said principal beam passes therethrough, said photorefractive material being photoconductive and having an index of refraction that is variable in response to transverse electro-optical effects, and

B. variable writing means for irradiating said photorefractive material with at least two beams which intersect one another and which are each transverse to the principal beam so as to write a diffraction grating in said photorefractive material and thereby vary the index of refraction of said photorefractive material, wherein the angle at which said two beams intersect is variable such that for a desired angle of deflection said diffraction grating is formed at about an angle set by Bragg's law so as to optimize steering efficiency.

4,508,432

ELECTROCHROMIC DISPLAY CELL II

Helmut Freller, Röthenbach, and Konrad Mund, Uttenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,928

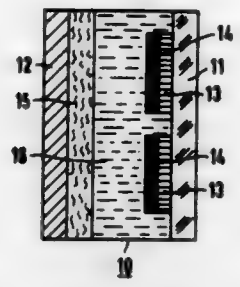
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138760

Int. Cl.³ G02F *1/23*

U.S. Cl. 350—357 14 Claims

1. An electrochromic display cell comprising a front elec-

trode having an electrochromic layer and an outer support surface, a rear electrode having an activated vitreous carbon



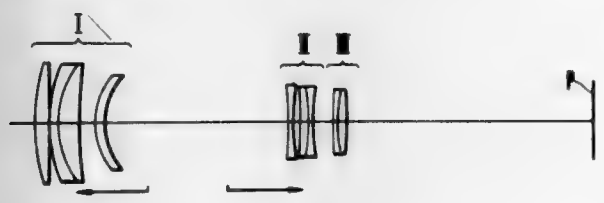
layer and an outer support surface, and an electrolyte contacting the electrochromic and activated vitreous carbon layers.

4,508,433

TELEPHOTO OBJECTIVE

Nozomu Kitagishi, and Sadahiko Tsuji, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 139,764, Apr. 14, 1980, abandoned.
This application May 2, 1983, Ser. No. 489,393
Claims priority, application Japan, Apr. 20, 1979, 54-48658
Int. Cl.³ G02B *13/02, 9/62, 9/64*
U.S. Cl. 350—454 **13 Claims**



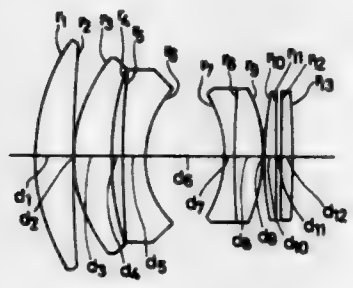
1. A telephoto objective comprising:
a first axially movable lens group having a positive refractive power;
a second axially movable lens group positioned on the image side of said movable first lens group and having a negative refractive power; and
a fixed lens group positioned on the image side of said movable second lens group and having a positive refractive power;
said first and said second movable lens groups being arranged to be moved simultaneously in opposite axial directions to focus the telephoto objective on an object and when focused at an infinite distance the distance between the first axially movable lens group and the second axially movable lens group being smaller than the distance between the second axially movable lens group and the fixed lens group.

4,508,434

BRIGHT MEDIUM-RANGE TELEPHOTO LENS

Ryota Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,570
Int. Cl.³ G02B *9/62, 13/02*
U.S. Cl. 350—454 **5 Claims**



1. A bright medium-range telephoto lens comprising, in order from an object, a first positive lens having a stronger positive power toward the object, a second positive-meniscus lens having a stronger positive power toward the object, a third negative-meniscus lens having a stronger negative power toward an image, a compound lens spaced from the third lens with an aperture interposed therebetween and having a fourth negative lens having a stronger negative power toward the object and a fifth positive lens having a stronger positive power toward the image, a sixth positive lens, and a seventh positive lens having a weak power, the bright medium-range telephoto lens meeting the following conditions:

$$1.65 < (n_1 + n_2)/2 < 1.8 \quad (1)$$
$$50 < (\nu_1 + \nu_2)/2 \quad (2)$$
$$0.8 < f/f_{1,2} < 1.2 \quad (3)$$
$$1.65 < f/f_{1,4} < 1.95 \quad (4)$$
$$0.4f < r_3 < 0.55f \quad (5)$$
$$-0.65 < \left(\frac{n_3 - 1}{r_5} - \frac{n_2 - 1}{r_4}\right) f < -0.35 \quad (6)$$
$$0.35 < f/f_{1,6} < 0.55 \quad (7)$$
$$1.65 < n_3 < 1.8 \quad (8)$$
$$\nu_3 < 35 \quad (9)$$
$$0.25f < d_1 + d_2 + d_3 + d_4 + d_5 < 0.4f \quad (10)$$
$$0.2f < d_6 < 0.3f \quad (11)$$
$$0.1 < n_5 - n_4 \quad (12)$$
$$0.09f < d_7 + d_8 < 0.15f \quad (13)$$
$$0.05f < r_7 - r_9 < 0.12f \quad (14)$$
$$5 < \nu_5 - \nu_4 < 15 \quad (15)$$
$$0.45 < f/f_{1,9} < 0.65 \quad (16)$$
$$0.85 < f/f_{1,11} < 0.95 \quad (17)$$

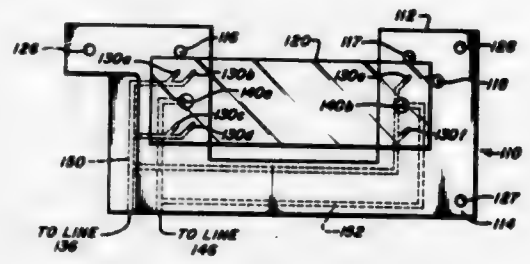
where
ri: the radius of curvature of the ith surface,
di: the thickness of inter-lens distance of the ith lens,
ni: the refractive index of the ith lens at d-line,
νi: the Abbe number of the ith lens, and
$f_{1,i}$: the focal length from the first surface to the ith surface.

4,508,435

AIR VACUUM CHUCK FOR A MICROSCOPE

Marshall D. Graham, Framingham; Dudley D. Cook, Jr., Acton; Donald L. Gecks, Bedford, and Robert Shaw, Concord, all of Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jun. 18, 1982, Ser. No. 390,049
Int. Cl.³ G02B *21/24*
U.S. Cl. 350—529 **11 Claims**



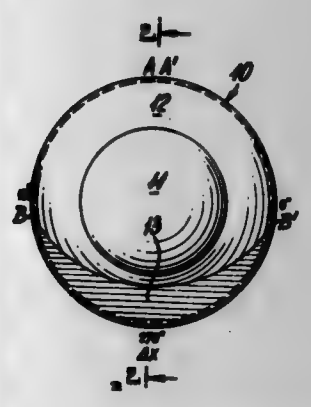
1. A chuck system for selectively aligning and supporting an object-bearing planar surface of a microscope slide comprising:
A. a body member having a substantially planar slide-supporting surface, and
B. a plurality of stop members adapted to interferingly engage a slide adjacent to said slide-supporting surface with a predetermined orientation
wherein said body member includes a plurality of alignment air ports and vacuum ports in said slide-supporting surface and associated internal passageways, at least one of said air ports being adapted to direct an airflow therefrom having an alignment component directed towards at least one of said stop members.

4,508,436

SOFT TORIC CONTACT LENS

George Sitterle, Jacksonville, Fla., assignor to Frontier Contact Lenses of Florida, Inc., Jacksonville, Fla.

Filed Sep. 28, 1981, Ser. No. 306,438
Int. Cl.[3] G02C *7/04*
U.S. Cl. 351—160 H 8 Claims



1. A soft toric contact lens of spherocylindrical power having a concave inner surface, a convex outer surface, a horizontal axis and a vertical axis;

said outer surface having a central optical zone and a peripheral lenticular zone;

said lens including a prism ballast in the vertical axis, the degree of prism being greater than about 1.0 diopter;

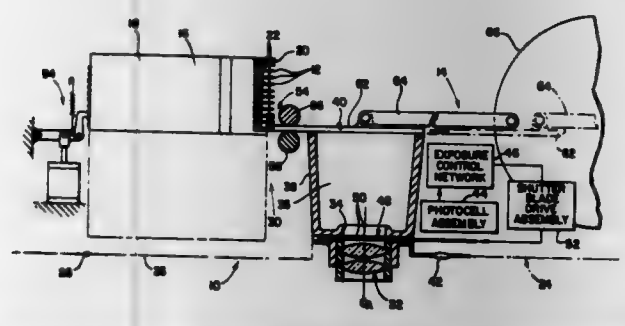
the outer surface of said lens having a smoothly beveled, tapered-off region in the lenticular zone in the area of maximum ballast, the edge of said lens having a substantially uniform thickness in said tapered-off region.

4,508,437

METHOD AND APPARATUS FOR EXPOSING AND VIEWING AT SAME STATION

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 1, 1983, Ser. No. 519,085
Int. Cl.[3] G03B *17/52*
U.S. Cl. 354—78 11 Claims



1. A photographic apparatus for use in automatically exposing film units having a photosensitive area at a focal plane and for allowing processed ones of these units to be viewed at the same focal plane comprising:

means for directing image forming light rays from a scene to be photographed to the focal plane;

means for storing film units before and after exposure of the units;

means operable for causing distribution of processing fluid over the photosensitive area of the film unit prior to viewing of the film unit;

means for controlling passage of scene light to the focal plane for exposing the photosensitive area at the focal plane;

optical means for optically permitting viewing of the scene images prior to exposure and for permitting viewing of the film units at the same focal plane following exposure; and,

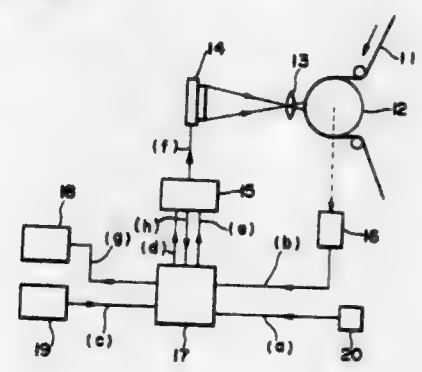
film handling means operable in response to initiation of a cycle for advancing an unexposed one of the stored units to the focal plane and for selectively exposing the unit at the focal plane, said film handling means including means being operable for presenting the film unit at the focal plane for viewing.

4,508,438

SIDE PRINTING METHOD AND APPARATUS THEREFOR

Takeshi Kanaoka, and Shigehisa Shimizu, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 13, 1983, Ser. No. 503,581
Claims priority, application Japan, Jun. 15, 1982, 57-102384
Int. Cl.[3] G03B *17/24*
U.S. Cl. 354—105 12 Claims



1. A side printing apparatus for photographically exposing marks onto a moving strip of photosensitive material, said apparatus comprising:

means for continuously advancing said strip of photosensitive material lengthwise;

multi-element luminous display means with a two-dimensional matrix of light emitting elements for displaying a mark to be photographically exposed onto said moving photosensitive material;

means for generating synchronizing signals under the influence of which a mark exposing cycle starts;

means for generating position signals corresponding to the advanced length of said moving photosensitive material;

means for generating signals indicating a desired type of mark to be photographically exposed onto said moving photosensitive material;

main controlling means for generating signals representing said desired type of mark upon the reception of said synchronizing signal, said position signal and said indicating signal;

means for driving said multi-element luminous display means at predetermined time intervals by signals from said main controlling means while said strip is moving to illuminate simultaneously a plurality of said light emitting elements in a pattern unique to said mark; and

a lens system for forming a reduced image of said mark displayed on said multi-element luminous display means on said moving photosensitive material.

4,508,439

SINGLE LENS REFLEX CAMERA

Tsunemasa Ohara, Tokyo; Masayuki Suzuki, and Masayoshi Yamamichi, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,406
Claims priority, application Japan, Oct. 6, 1981, 56-159183
Int. Cl.[3] G03B *19/12*
U.S. Cl. 354—154 6 Claims

1. A single lens reflex camera comprising:

(A) a picture taking lens system defining a picture taking optical path;

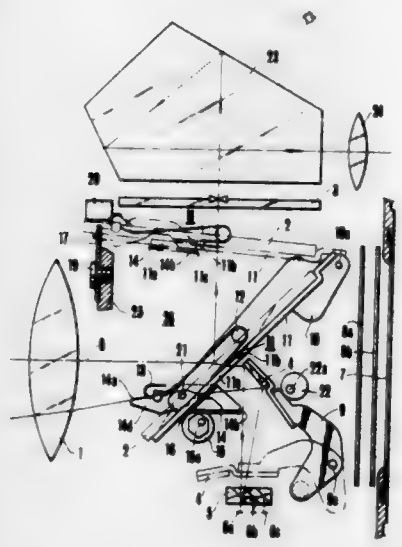
(B) a first mirror having a portion for allowing passage of a light therethrough;

(C) supporting means for supporting the first mirror, said

supporting means having a portion for allowing passage of the light coming through the light passage allowing portion of the first mirror and being movable to position the first mirror in said picture taking optical path and to retract the first mirror out of said picture taking optical path;

(D) photoelectric means sensitive to light;

(E) a second mirror for reflecting the light coming through the light passage allowing portion of said supporting means;



(F) first light shielding means movable relative to said light passage allowing portion of said supporting means, said first light shielding means closing below said light passage allowing portion of said supporting means when the first mirror is retracted out of the picture taking optical path by the supporting means; and

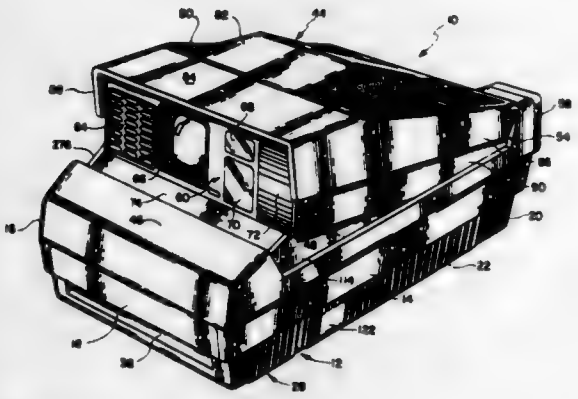
(G) a second light shielding means for preventing the reflected light from an edge of said allowing portion of said supporting means from entering said photoelectric means, and wherein said second shielding means includes a mask made of opaque thin film.

4,508,440

BELLOWS SHIELDING STRUCTURE

Peter F. Costa, Winthrop, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 22, 1983, Ser. No. 534,824
Int. Cl.³ G03B *17/04*
U.S. Cl. 354—187 **4 Claims**



1. A folding camera comprising:

a first housing having a leading end wall, a trailing end wall, and a pair of laterally spaced side walls interconnecting the lateral ends of said leading end and trailing end walls so as to define a chamber therebetween;

a second housing having a leading end, a trailing end, and first and second laterally spaced side walls;

a module including a lens and shutter assembly fixedly supported at said leading end of said second housing;

a flexible bellows interconnecting said first and second housings;

means for pivotally coupling said trailing end of said second housing to said first housing at a point adjacent said trailing end wall for pivotal movement between a folded inoperative position wherein substantial portions of said first and second side walls of said second housing and said module are located within said chamber, and an erected operative position wherein said module is spaced from said leading end wall of said first housing, and said side walls of said first and second housings define triangular shaped openings on each side of said camera adjacent sides of said bellows;

first and second laterally spaced skirts fixedly secured to said second housing so as to close off said triangular shaped openings when said second housing is in said erected position; and

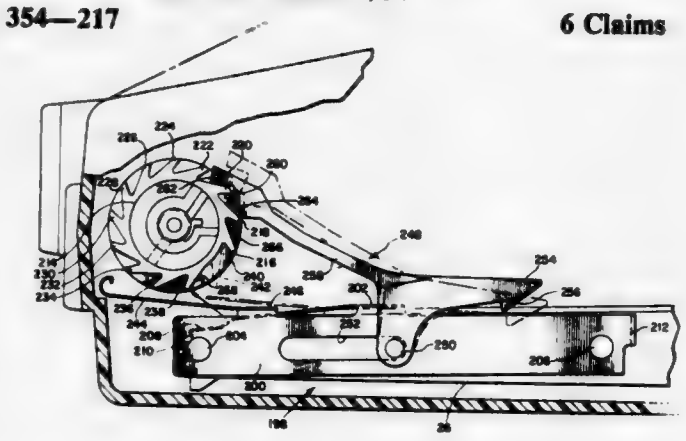
a plate having one end pivotally coupled to said first housing and an opposite second end located in enagement with a lower surface of said module when said second housing is in said erected position, said plate having a width substantially equal to the lateral distance between said first skirt and one of said side walls of said first housing to thereby close off the space between said leading end wall and said module, whereby said bellows is shielded from the ambient light and from contact by the user of said camera.

4,508,441

FILM COUNTER

Kenneth J. Launie, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 22, 1983, Ser. No. 534,825
Int. Cl.³ G03B *17/36*
U.S. Cl. 354—217 **6 Claims**



1. A camera comprising:

means for defining a chamber adapted to receive a film cassette containing a plurality of film units and an opaque dark slide;

means for removing the dark slide and the film units sequentially from the film cassette in response to specific acts by a user of said camera;

a film counter for presenting sequentially changeable characters to a viewing window in a wall of said camera, the characters representing a starting position, an end position, and the number of film units remaining within the film cassette between the starting and end positions, said film counter including a plurality of indexable members, said indexable members including first and second indexable members which are spaced from each other by a distance greater than that between the remaining indexable members;

means for sequentially engaging said indexable members so as to index said film counter in a first direction against the bias of a return spring; and

means for limiting movement of said film counter in a second direction, generally opposite to said first direction, said limiting means includes a first surface adapted to be sequentially engaged by all of said indexable members dur-

ing movement of said film counter in said second direction to thereby maintain said film counter in each newly indexed position, and a second surface which is adapted to be engaged only by said first indexable member.

4,508,442

ELECTROMAGNETICALLY DRIVEN SHUTTER CAMERA HAVING AUTOMATIC FOCUSING DEVICE

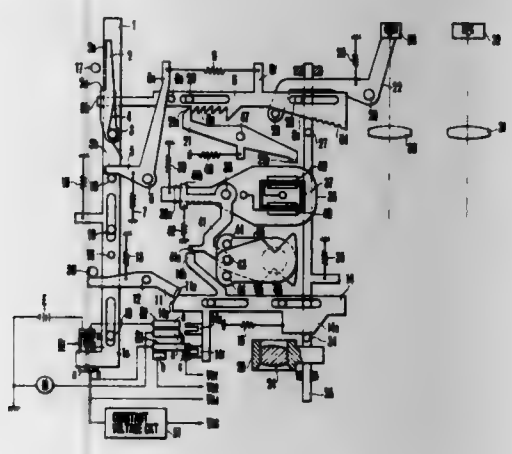
Michio Hirohata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1982, Ser. No. 413,464

Claims priority, application Japan, Sep. 8, 1981, 56-141534; Sep. 9, 1981, 56-142816

Int. Cl.³ G03B *3/10, 9/14*

U.S. Cl. 354—400 **12 Claims**



1. Camera including:

(a) a coil arranged in a magnetic field, said coil responsive to a current supply moving from an initial position and responsive to a termination of the current supply returning to the initial position;

(b) latching means arranged to make a round trip when said coil moves and returns;

(c) control means for controlling a focus adjusting operation, said control means upon movement in a predetermined direction performing the focus adjusting operation and upon engagement with said latching means being hindered from movement, and said control means having a plurality of teeth each engageable with said latching means;

(d) signal generating means for producing a pulse-shaped electrical signal so as to repeat cyclic current supplies to said coil, said signal generating means controlling the current supply to said coil in such a manner that one pulse of the electrical signal allows for said latching means to engage the next tooth of said control means;

(e) blade members for performing an exposure operation; and

(f) transmitting means for transmitting the round trip of said coil to said blade members to open and to close said blade members, said transmitting means being displaceable independently of said coil when said coil moves forwards, and displacing as a unit with said coil when said coil returns.

4,508,443

LENS BARREL

Minoru Matsuzaki; Akihiko Hachimoto; Takashi Inoue, all of Hachioji; Hitoshi Shirai, Sagamihara; Akira Watanabe, Fuchu, and Ikuo Tofukuji, Okaya, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,671

Claims priority, application Japan, Oct. 5, 1982, 56/175181

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—402 **15 Claims**

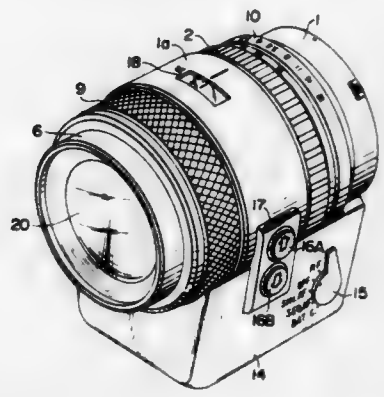
8. A lens barrel comprising

a motor for moving a taking lens;

distance measuring means for measuring a distance to an object being photographed;

automatic focus adjusting means operable in an "auto-focus" mode to cause the motor to move the taking lens into an in-focus position in response to an output from the distance measuring means;

mode changing means for selecting a sequence "auto-focus" mode which enables the automatic focus adjusting means to operate continuously to adjust the focus and a single



"auto-focus" mode in which a single focus adjustment is made;

and an operating member used in common in both modes, the operating member being operable to initiate a movement of the taking lens into the in-focus position under the drive from the motor during both the sequence and the single "auto-focus" mode.

4,508,444

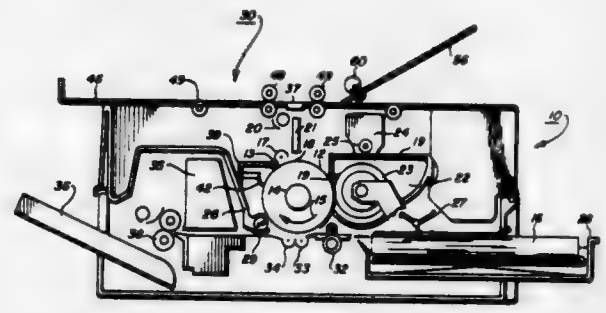
MULTIMODE DOCUMENT HANDLING APPARATUS AND REPRODUCING APPARATUS CONTAINING SAME

Joseph N. May, Fairport, and Joseph M. Wing, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1982, Ser. No. 403,602

Int. Cl.³ B65H *5/06, 9/06, 3/44, 5/02*

U.S. Cl. 355—3 R **23 Claims**



1. A multimode document handling apparatus comprising an upper frame portion pivotally mounted along its rear edge to a lower base frame portion to thereby provide open and closed positions of said upper frame portion relative to said lower base frame portion,

said lower base frame portion comprising a substantially horizontal imaging platen over which a document to be reproduced may be transported, document transport means to transport a document in a forward direction over said imaging platen, means to reverse the direction of document transport, means to transport a document in a reverse direction back across said imaging platen preparatory to again being transported in a forward direction across said imaging platen to make an additional copy of said document,

said upper frame portion comprising a document loading chute which when said upper frame portion is in the closed position is inclined to the horizontal, the lower exit portion of said chute being in operative communication with said means to transport a document over said imaging platen and positioned upstream of said imaging platen, said document loading chute including gate means to permit loading a subsequent document in the chute pre-

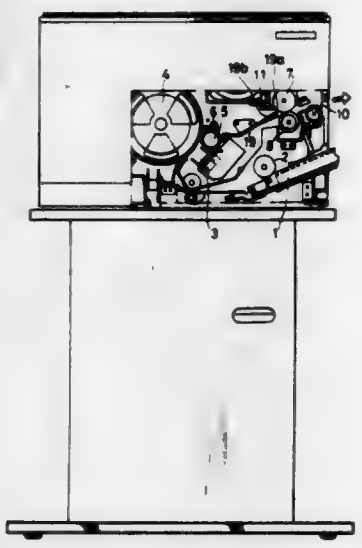
paratory to copying while preventing it from being fed while the preceeding document is being copied whereby said apparatus provides multimode reproducing capabilities including the making of multiple copies of a document by transporting the document forward across the imaging platen, reversing the direction and transporting the document back across the imaging platen preparatory to being transported in a forward direction across the imaging platen to make a subsequent copy; stream feeding of successive documents without a subsequent document overlapping a previous document and the capability to copy from a book when said upper frame portion is in the open position by placing a book on the document transport and manually applying sufficient pressure to the book so that the document transport transports the book across the imaging platen.

4,508,445

SHEET CONVEYING DEVICE FOR A COPYING MACHINE

Hirotaka Izumi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,013
Claims priority, application Japan, Aug. 31, 1982, 57-151183
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **2 Claims**



1. A sheet conveying device for a copying machine having a toner image transfer section and a fixing section comprising a substantially flat sheet guide chute adapted to be disposed between said toner image transfer section and said fixing section with the opposite edges of said chute at the end thereof adapted to be disposed adjacent said fixing section being turned downwardly to prevent the middle portion of the sheet being conveyed through the fixing section from floating off the surface of said chute.

4,508,446

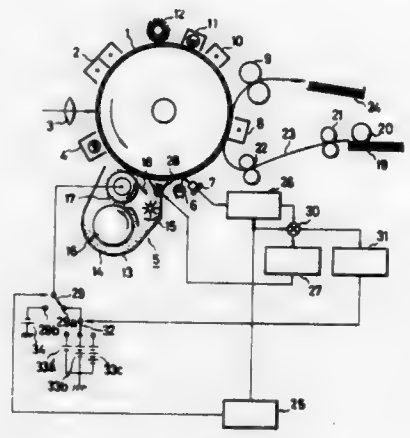
REPRODUCTION PROCESS CONTROL METHOD

Chikara Imai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 9, 1983, Ser. No. 465,327
Claims priority, application Japan, Feb. 9, 1982, 57-19220; Jun. 18, 1982, 57-104873; Jun. 18, 1982, 57-104874
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **5 Claims**

1. A method for controlling a copying process, which uses a photosensitive member and includes at least the steps of uniformly charging said photosensitive member, exposing an image to the thus charged photosensitive member to form an electrostatic latent image thereon and developing the latent image, by changing process variables regarding said copying process depending upon the temperature of said photosensitive member, said process variables to be changed including at least the amount of uniform charging, the amount of exposure and the level of developing bias voltage and a reference temperature being predetermined for said photosensitive member, said method comprising the steps of:

detecting the temperature of said photosensitive member to determine whether the detected temperature is higher or lower than said predetermined reference temperature; and



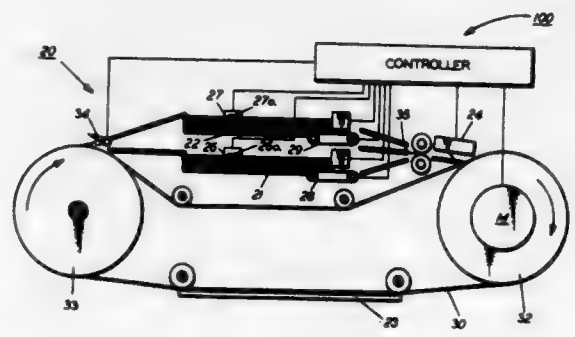
changing a first group of process variables when the detected temperature has been found to be higher than said reference temperature; whereas, changing a second group of process variables different in combination from said first group of process variables when the detected temperature has been found to be lower than said reference temperature.

4,508,447

ALTERNATIVE FEEDING DOCUMENT RECIRCULATION

Michael S. Doery, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 21, 1983, Ser. No. 487,404
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH **17 Claims**



1. In an automatic document handling system for recirculating a set of document sheets seriatim in a page order to and from the imaging station of a copier for making precollated copy sheet sets, said document handling system having control means and two document trays, the improvement for higher speed document recirculation for copying on a copier having a high copying rate at said high copying rate comprising:

automatic document sheet separating means controlled by said control means for automatically, during the first circulation of the set of document sheets, separating the set of document sheets into two half-sets of alternate page document sheets and restacking said half-sets respectively in said two document trays;

automatic alternate document sheet cooperative feeding means actuated automatically by said control means on the second and subsequent copying circulations of the document set to feed document sheets alternately from said two document sheet half-sets in said two document trays so as to feed document sheets at said high copying rate and in page seriatim order directly to be copied on said copier;

and wherein said automatic document sheet separating means in said second and subsequent, but not the last, copying circulations is controlled by said control means to reseparate said document sheets after they are copied and return them to said two document trays.

4,508,448

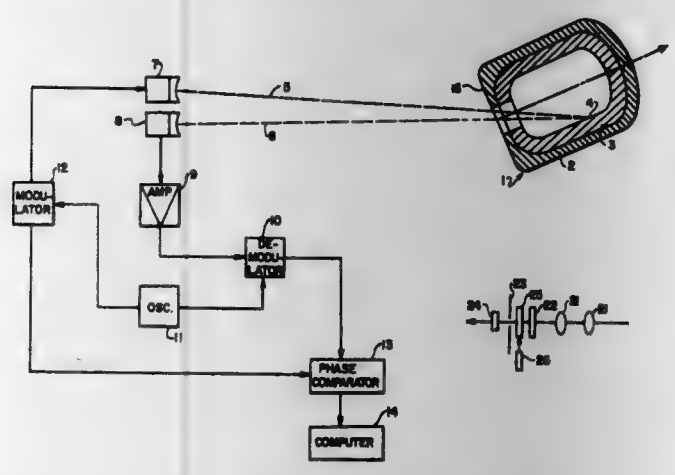
APPARATUS FOR MEASURING THE DISTANCE TO A POINT ON THE INNER WALL OF A HOT FURNACE

Ragnar Scholdstrom; Holger Marcus, and Lennart Nordstrom, all of Lidingo, Sweden, assignors to Geotronics AB, Sweden

Continuation of Ser. No. 142,430, Apr. 21, 1980, abandoned, which is a continuation of Ser. No. 788,346, Apr. 18, 1977, Pat. No. 4,227,802, which is a continuation-in-part of Ser. No. 635,081, Nov. 25, 1975, abandoned. This application Sep. 30, 1982, Ser. No. 430,592

Int. Cl.³ G01C *3/08;* G02B *5/28, 5/22*

U.S. Cl. 356—5 **15 Claims**



1. A method for measuring the distance to a point on a light frequency, self-radiating inner wall of a lined vessel having a temperature of at least about 500° C., the method comprising the steps of:

providing an electro-optical distance measuring instrument having the capability of transmitting a modulated radiation signal within a narrow frequency band, receiving a reflected transmitted signal, and determining by phase comparison methods the distance from the electro-optical measuring instrument to the point of reflection;

providing an optical filter aligned in the receiving path of said electro-optical distance measuring instrument to filter out all radiation other than said narrow frequency band of transmitted radiation, said optical filter comprising the combination of an interference filter and a Fabry-Perot filter in which the central passband of the Fabry-Perot filter lies within the passband of the interference filter and the side bands of the Fabry-Perot filtering lie outside the passband of the interference filter;

focusing said modulated radiation signal of said electro-optical distance measuring instrument on a point of the inner wall of said light frequency, self-radiating lined vessel;

receiving the reflected transmitted signal from said point through said optical filter; and

determining by phase comparison methods the distance from the electro-optical distance measuring instrument to said point on said light frequency, self-radiating inner wall of said lined vessel.

4,508,449

APPARATUS FOR MEASURING DIAMOND COLORS

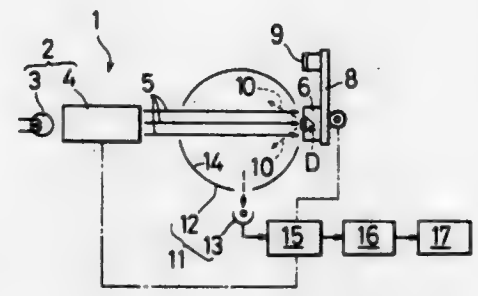
Nobuo Okazaki, Nagaokakyo, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jun. 18, 1982, Ser. No. 389,977

Claims priority, application Japan, Jun. 25, 1981, 56-99228

Int. Cl.³ G01J *3/50*

U.S. Cl. 356—30 **3 Claims**



1. An apparatus for measuring the color of a brilliant cut diamond comprising:

a light source for providing a measuring light;

a rotatable diamond holder comprising a rotatable base, a holder mounted on said base and including a conical recess defined in said holder for receiving the pavillion of a diamond to be measured and a suction hole extending from said recess, a motor operable for driving said rotatable base, and a vacuum pump, said base having a cavity communicating with said holder suction hole and said vacuum pump so that the pavillion of a diamond received in said conical recess is retained on said operatively rotatable holder under suction generated by said vacuum pump;

a photodetector including a monochromator and a photosensor for detecting a beam of light from the diamond as monochromatic light;

an integrating sphere in one of said light source and said photodetector;

a measurement unit for controlling the monochromator and the photosensor to obtain a spectrum of said detected light; and

an arithmetic unit for deriving tristimulus values X, Y and Z from the measured spectrum.

4,508,450

SYSTEM FOR CHECKING DEFECTS ON A FLAT SURFACE OF AN OBJECT

Ken Ohshima, and Masaharu Sakamoto, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,621

Claims priority, application Japan, Mar. 31, 1981, 56-48004

Int. Cl.³ G01N *21/88*

U.S. Cl. 356—237 **5 Claims**

1. A checking system for checking defects on a flat surface of an object to be checked, comprising:

means for generating laser beams;

means for projecting the laser beams onto the surface of the object and for directing the laser beam reflected from the surface of said object in a given direction;

means for scanning the surface of the object with the laser beam;

means for detecting the laser beam reflected from the projecting means and converting it to an electric signal;

means for comparing the level of an electric signal from the detecting means with a reference level to produce a defect signal corresponding to a defect on the surface of the object;

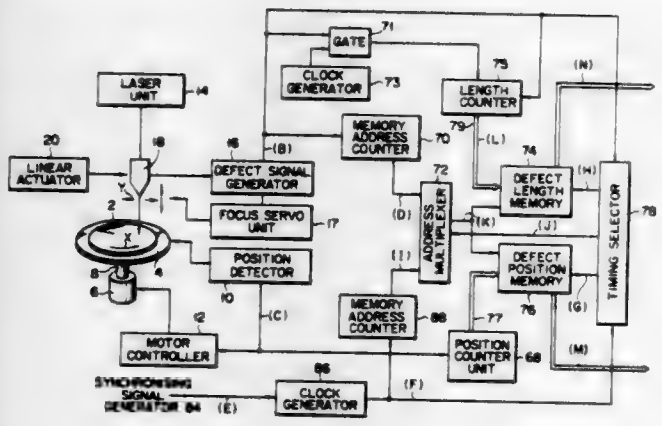
generating means for sequentially generating a position signal associated with a position on the object scanned with the laser beam;

first means for storing the position signal, received from said

generating means, as defect start position data in response to the defect signal;

second means for storing data corresponding to the length of the detected defect which in turn corresponds to the length of the defect signal as defect length data;

means for providing said detect start position data on a predetermined portion of the surface area of the object which is less than the whole surface area of the object, and said defect length data associated with said defect start position data corresponding to said predetermined surface area portion;



picture element converting means for converting said defect start position data and said defect length data, provided by said providing means, to picture element data;

third means for storing said picture element data;

read out means for reading said picture element data out of said third means; and

means for displaying a defect image of said predetermined surface area portion of the object by using the picture element data read out by said read out means.

4,508,451

ATOMIC ABSORPTION SPECTROPHOTOMETER

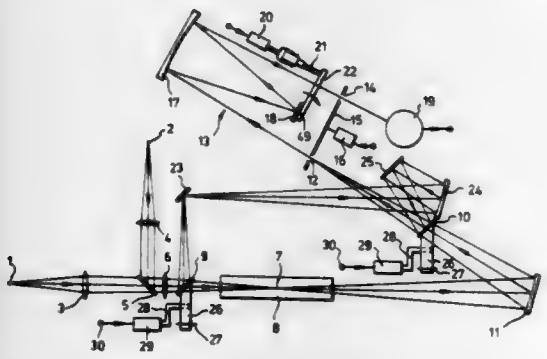
Trevor J. Stockdale, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1982, Ser. No. 450,489

Claims priority, application United Kingdom, Jan. 19, 1982, 8201371

Int. Cl.³ G01J *3/42*; G01N *21/72*

U.S. Cl. 356—315 **13 Claims**



1. An atomic absorption spectrophotometer comprising

a flame atomizer,

means for alternatively providing sample and reference paths,

said sample path including said flame atomizer, and said reference path excluding said flame atomizer,

detector means for detecting resonance line radiation characteristics of atomic elements,

circuitry means for providing command signals representative of control of the spectrophotometer,

signal processing means for processing signals from said detector means and for processing said command signals,

wherein when one of said command signals indicates a required measurement of a blank sample, said signal processing means responds to an output signal from said detector means, said output signal being representative of said sample path for a given measurement time to set a baseline,

wherein said detector means provides repeated and compared measurements from said reference path to update said baseline in said signal processing means, and

wherein when one of said command signals indicates a required measurement of a sample to be analyzed, said signal processing means responds to a detector output representative of said sample path for a given sample measurement time to quantitatively determine at least one atomic element of said sample to be analyzed with respect to the updated baseline, and

control means for determining periods for which said sample and reference paths are provided, said control means being responsive to said command signals,

such that said sample path is provided uninterrupted for the entire period of each sample measurement time.

4,508,452

ARRANGEMENT FOR SENSING THE CHARACTERISTICS OF A SURFACE AND DETERMINING THE POSITION OF POINTS THEREON

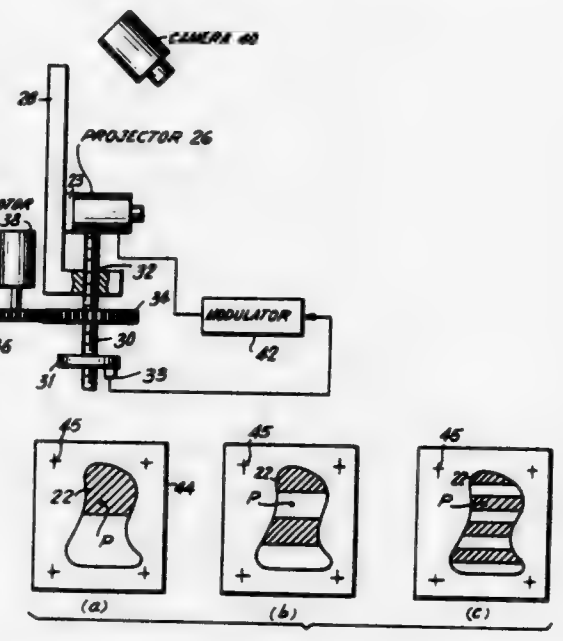
Paul L. DiMatteo, Huntington; Joseph A. Ross, Fort Salonga, and Howard K. Stern, Greenlawn, all of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Continuation of Ser. No. 608,266, Aug. 27, 1975, Pat. No. 4,185,918. This application Jun. 1, 1979, Ser. No. 44,642

The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.

Int. Cl.³ G01B *11/24*; G01C *11/02*; G01B *11/00*

U.S. Cl. 356—375 **12 Claims**



1. A method for sensing and locating points on a surface comprising the steps of: generating a projection field directed onto a surface; applying relative motion between said projection field and said surface in at least one direction parallel to a coordinate axis applied to the surface; subdividing said projection field into a number of selected sections during said relative motion and irradiating said surface with different variations of said subdivided projection field so that each section is illuminated at least once; recording within a field of view images of said surface as irradiated by the subdivided projection field; recording a calibrated reference surface and correlating said recorded images in relation to said reference surface to define the location of a predetermined point on said surface first-mentioned and appearing within said field of view.

4,508,453

PATTERN DETECTION SYSTEM

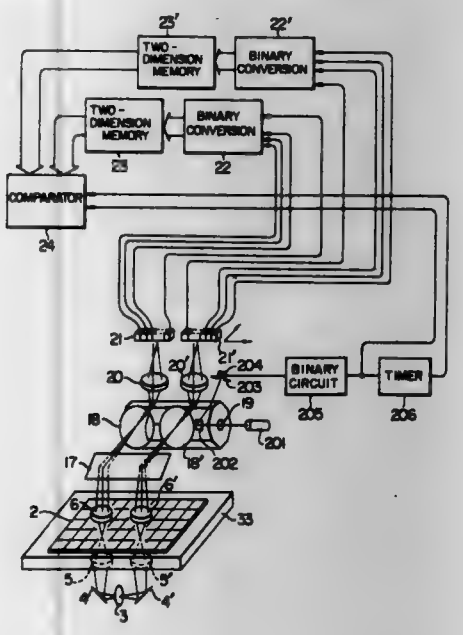
Yasuhiko Hara; Nobuyuki Akiyama; Satoru Fushimi; Yoshimasa Oshima, and Nobuhiko Aoki, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,900

Claims priority, application Japan, Jul. 14, 1981, 56-108885; Oct. 19, 1981, 56-165744; Nov. 6, 1981, 56-177161

Int. Cl.³ H06N *7/18*

U.S. Cl. 356—394 **11 Claims**



1. A pattern detection system comprising:

illumination means;

first means for linearly moving objects to be measured in a first direction so that said objects are illuminated by lights from said illumination means;

an optical system for imaging the objects to be measured;

second means including a rotary multi-faced mirror for repeatedly scanning the objects to be measured in a second direction intersected at a predetermined angle with respect to the direction of the objects moved by said first means;

a plurality of photosensor means each including a photosensor array arranged in a direction perpendicular to the direction of images scanned by said second means, on the surface of which said images are formed through said optical system, and for generating respective outputs in a multiplexed manner;

wherein said first means includes means for constantly advancing the objects in said first direction at a speed such that the objects will move through a distance corresponding to the optical length of a photosensor array during one scanning period of the rotary mirror while the rotary mirror is scanning so that resulting skew scan of the objects is effected to thereby detect optical images of the objects in said photosensor arrays.

4,508,454

EXTRUDER

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 498,170

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1982, 3221472

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—80 **5 Claims**

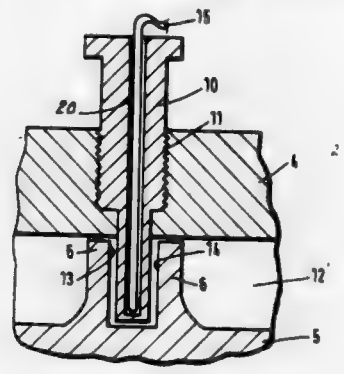
1. An extruder for processing material, comprising:

(a) an extruder cylinder,

(b) an extruding screw mounted for rotation in said cylinder, said screw being formed with a helical land on the periphery thereof, said land being formed with circumferential grooves at predetermined locations longitudinally of the land,

(c) drive means for rotating said screw,

(d) a plurality of pins extending radially through said cylinder toward the axis of said screw, said pins being located on said cylinder so as to be received with clearance in said grooves formed in the helical land of said screw,



(e) each of said pins being formed with an axial blind bore closed at the radially inner end of the pin,

(f) means disposed in each of said blind bores for signalling breakage of said pin, and

(g) means connected to said signalling means for disconnecting said drive means for said screw thereby preventing damage due to the breakage of said pin.

4,508,455

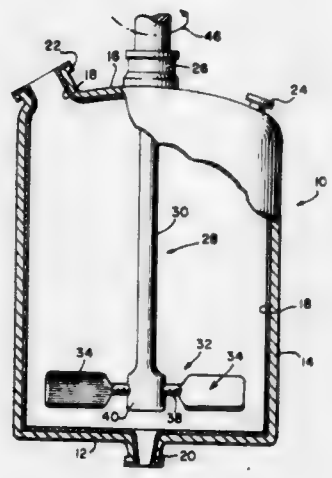
AGITATOR INCLUDING IMPELLER ASSEMBLY AND SHAFT HAVING INTERFERENCE FIT

Michael J. Lerman, Edison, N.J.; Richard Koehl, Niederbronn les Bains, France; Anthony A. Chiarella, Middletown, and William Zamory, Somerville, both of N.J., assignors to De Dietrich (USA), Inc., Union, N.J.

Filed Nov. 21, 1983, Ser. No. 552,992

Int. Cl.³ B01F *7/22*

U.S. Cl. 366—247 **22 Claims**



1. An agitator for use in stirring, agitating, mixing, and so forth materials such as reactants and reaction products within a vessel comprising:

(a) a shaft adapted to be supported by said vessel at a proximal end for supporting an impeller assembly within a region extending from the distal end;

(b) an impeller assembly including

(1) at least one axial tier of blade members,

(2) at least one blade member in each tier having a a blade portion and an arm extending from said blade portion provided with a surface having a constant taper away from said blade portion, and

(3) a coating of corrosion resistant material covering the entire surface of each said blade member;

(c) support means for supporting each blade member in each axial tier of blade members, said support means including

a bore in said shaft within said region extending toward the longitudinal axis of said shaft, with each bore having a constant tapered surface complementary to the tapered surface of said arm whereby said tapered surfaces may be received together telescopically and moved relative to one another under an assembling force; and

(d) a coating of a corrosive resistant material covering the surface of said shaft as shall extend within said vessel and the surface along each bore so that said relative movement results in an interference fitted connection between coated surfaces of said shaft and impeller assembly.

4,508,456

STRIKING CLOCK WITH DEVICE FOR DISCONNECTING THE STRIKING MECHANISM

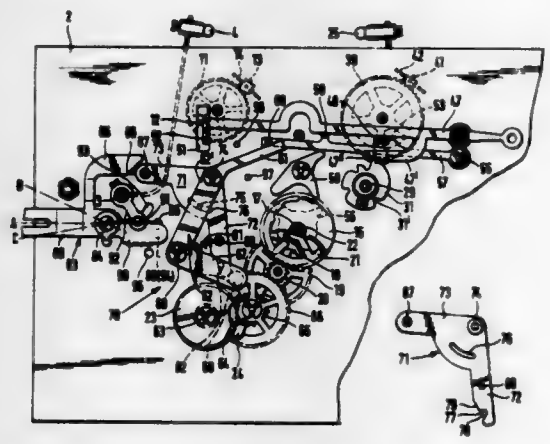
Rolf Hepfer, Bad Dürrheim, and Jürgen Rünzler, Spaichingen, both of Fed. Rep. of Germany, assignors to Joseph Kieninger Uhrenfabrik GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,495

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323420

Int. Cl.³ G04B *23/00*

U.S. Cl. 368—262 **10 Claims**



1. In a striking clock having at least one striking mechanism, at least one release lever for releasing the striking mechanism to cause striking of the clock and for retaining the striking mechanism to prevent striking of the clock, a barrel cam associated with the release lever for moving the release lever to release and retain the striking mechanism, a clockwork for rotating the barrel cam and a lock disk (23) driven one revolution in 24 hours by the clockwork, the lock disk having a sector type lock cam (24), a device for disconnecting the striking mechanism at any time, comprising:

a feeler lever (67) engaged with the lock disk and movable between a first released position and a second stop position when said feeler lever contacts the sector type lock cam;

a lock lever (62) couplable with said feeler lever and engagable with the release lever for moving the release lever to retain the striking mechanism when said feeler lever is in its stop position;

a coupling lever (71) associated with said lock and feeler levers and moveable from a coupling position to couple said feeler lever to said lock lever and an uncoupling position for uncoupling said feeler lever from said lock lever; and

a manually movable switch lever (83) engageable with said coupling lever at any time for moving said coupling lever to its uncoupling position to uncouple said feeler lever from said lock lever to permit release of the striking mechanism.

4,508,457

ELECTRONIC TIMEPIECE WITH RECORD/PLAYBACK CIRCUITS

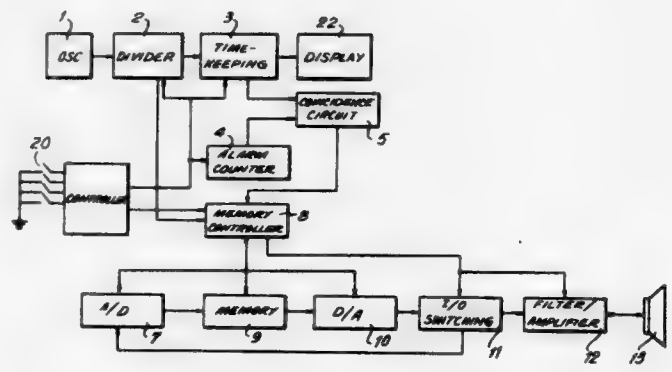
Hitomi Aizawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Japan

Filed Nov. 24, 1982, Ser. No. 444,294

Claims priority, application Japan, Nov. 27, 1981, 56-191221; Sep. 8, 1982, 57-156099

Int. Cl.³ G04B *21/08*; G11C *13/00*

U.S. Cl. 368—63 **38 Claims**



1. In an electronic timepiece including an oscillator generating a high frequency standard signal, a divider network dividing down said standard signal to lower frequency signals, timekeeping means for accumulating said lower frequency signals as timekeeping data, a display for displaying at least a portion of said timekeeping data, the improvement therein comprising:

memory means for storing digital data therein at a plurality of addresses;

a digital/analog converter for receiving digital data from said memory addresses in sequence and outputting analog signals corresponding to said digital data;

output means for converting said analog signals into audible sound;

memory control means for selecting said memory addresses in said sequence for readout to said digital/analog converter, said memory control means being adapted to select said addresses at at least two rates, said rates being dependent upon signals to said memory control means derived from said divider network;

external control means for inputing signals to said memory control means for selecting a rate for address selection, onestate of said external control means producing a first address selection rate, another state of said external control means producing a second address selection rate, the time for complete reading of said memory addresses being less at the higher address selection rate than at the lower address selection rate;

input means for receiving externally generated audible sounds and generating analog signals corresponding thereto;

an analog/digital converter for receiving said analog signals and outputting digital data corresponding thereto; and

switch means for selecting between reading data from said memory addresses or writing data into said memory addresses, said switch means in one state directing said input analog signal to said analog/digital converter, and in another state directing the output of said digital/analog converter to said output means for converting analog signals into audible sound, said analog/digital converter inputting data to said memory addresses selected by said memory control means at one of said rates of said memory control means for selecting memory addresses, said external control means being adapted to determine the state of said switch means for either input or output.

4,508,458

ELECTRIC CLOCK MOVEMENT, PARTICULARLY A QUARTZ CLOCK MOVEMENT

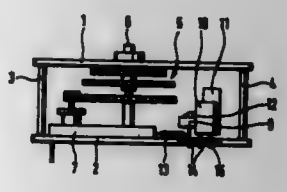
Horst Schlick, Schwalbach; Paul Höfert, Frankfurt am Main, and Rudolf Caramel, Hofheim-Diedenbergen, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

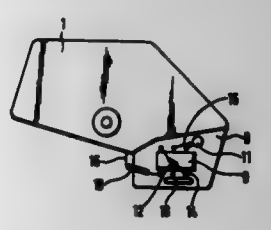
Filed Jan. 21, 1983, Ser. No. 459,869

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207616

Int. Cl.³ G04B *19/00*

U.S. Cl. 368—76 4 Claims





1. In an electric clock movement, particularly a quartz clock movement, having a gear train which is driven by an electric motor and arranged bertween two plates, at least one of which consists of plastic, as well as an electric circuit containing electronic components for the time-dependent driving of the motor, the improvement comprising

an extension developed on only one of the plastic plates extending beyond the other plate, and wherein

said electronic components have their connection leads connected directly to each other, so as to form the electric circuit, and connected to said extension wherein;

said extension is formed with an array of holes located for receiving the connection leads, the leads being inserted into said holes for their connection to each other and connection with said extension; and wherein

the diameter of each said holes is of such a size that said connection leads which are brought together within a given said hole are held with a clamped fit therein, said holes constituting sole means for supporting and connecting said electrical components without any additional mechanical and electrical connecting and supporting means.

4,508,459

CLOCK HAVING A ROTATIONALLY DISPLACEABLE CLOCK MOVEMENT

Masao Hashimoto, and Katsumi Kato, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,709

Claims priority, application Japan, Aug. 4, 1981, 56-116070[U]

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—276 8 Claims

1. A clock comprising: a clock unit having means for keeping and displaying time; a case having front and rear case portions connected together to define an integral case structure; means mounting the clock unit in the case to undergo angular displacement relative to the case about an axis which extends generally transversely of the front and rear case portions to enable the case to be angularly displaced relative to the clock unit about the aforesaid axis to different positions of use corresponding to different modes of use of the clock; and a plate member pivotably attached to the case and coacting

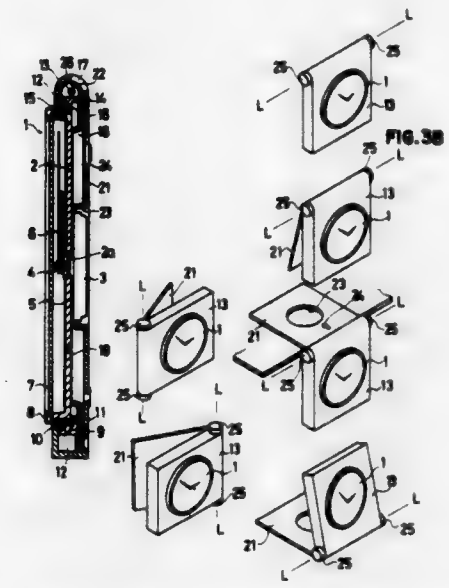


FIG.3B

therewith to help support the case in different positions of use corresponding to different modes of use of the clock.

4,508,460

PROCESS AND APPARATUS FOR CONTINUOUS MEASUREMENT OF THE POUR POINT OF OIL

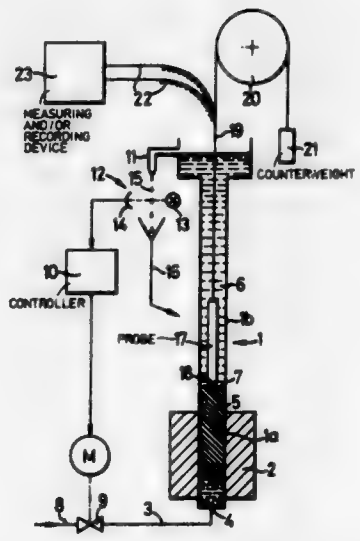
Robert J. Croo, Dubkerque, France, assignor to The British Petroleum Company p.l.c., London, England

Filed Feb. 9, 1983, Ser. No. 465,355

Claims priority, application France, Feb. 11, 1982, 82 02261

Int. Cl.³ G01N *25/04*

U.S. Cl. 374—16 7 Claims



1. A process for continuously measuring the pour point of oil comprising

A. introducing a continuous flow of an oil sample into a substantially vertical tube, which tube has smooth internal surfaces and a substantially constant bore, the liquid oil being introduced in the lower portion of the tube at a pressure which is sufficient to cause the oil in the tube to move upwards through the tube and out via an outlet in the upper portion of the tube;

B. cooling the oil as it moves upwards through the lower portion of the tube, by cooling means associated with the lower portion of the tube, to a temperature below the pour point of the oil so that the oil solidifies;

C. increasing the temperature of the oil as it moves upwards through the upper portion of the tube to a temperature sufficiently above the pour point of the oil so that the solidified oil becomes liquid again thereby forming a solid/liquid interface in the tube;

D. positioning a temperature sensing means at the solid/liq-

uid interface to provide a continuous signal, representing the pour point of the oil sample at the interface, to a measuring and/or recording device and

E. providing means for moving the temperature sensing means within the tube so that it remains at the solid/liquid interface.

4,508,461

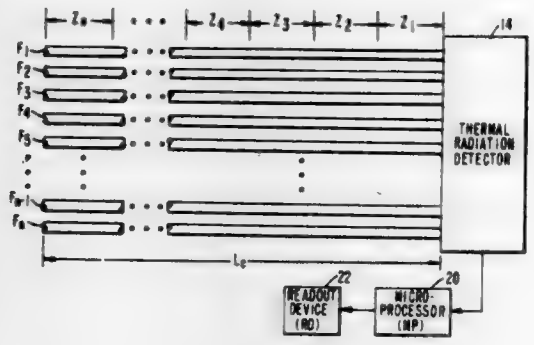
DISTRIBUTED FIBER OPTIC TEMPERATURE MONITORING APPARATUS AND METHOD

James L. Lambert, Shaler Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 22, 1981, Ser. No. 304,761

Int. Cl.[3] **G01J** *5/01, 5/10*

U.S. Cl. 374—161 **8 Claims**



1. An apparatus for determining the temperature distribution of an environment adjacent said apparatus, comprising:

a plurality of optical fibers associated in a cable arrangement having a first and a second end, each of said fibers extending an essentially identical distance between said first end and any preselected location on said cable, each of said fibers responding to said temperature of said environment by emitting thermal radiation independent of external light sources, each of said fibers selected to have an absorption constant which is measurably distinct from every other fiber in said cable;

means, operatively coupled to said first cable end, for measuring said thermal radiation generated by said fibers; and

means for mathematically deriving said temperature distribution by solving a plurality of simultaneous equations which are related to said measured thermal radiations emitted by said fibers.

4,508,462

PRINTING APPARATUS WITH COMPUTER CONTROL OF IMPRESSING A PRINT SETTING MARK ON A RECORDING SHEET FOR REALIGNMENT

Kazuyoshi Haruhara, Futsusa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 402,762, Jul. 28, 1982, abandoned. This application Mar. 8, 1984, Ser. No. 587,388

Claims priority, application Japan, Sep. 25, 1981, 56-142249[U]

Int. Cl.[3] **B41J** *3/42*

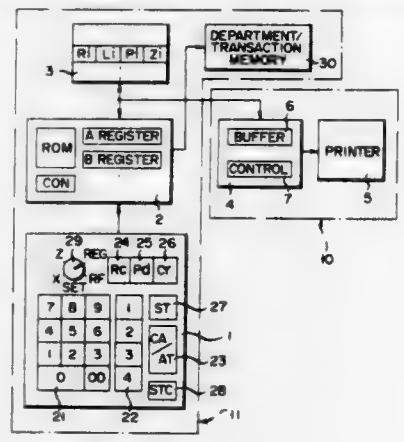
U.S. Cl. 400—70 **7 Claims**

1. A printing apparatus for enabling a setting mark to be impressed on a recording sheet, comprising:

keyboard means including at least numerical keys for inputting numerical data, and a subtotal-closing key for indicating the end of the input of the numerical data;

a central processing unit connected to the keyboard means and including first memory means for storing the numerical data entered by operation of said numerical keys, and second memory means for storing a first instruction for feeding the recording sheet a pre-determined distance after numerical data is transferred from said first memory means and in response to operation of said subtotal-closing key, and a second instruction for printing a setting mark on the recording sheet only after the recording sheet is fed said pre-determined distance; and

printing means connected to the central processing unit, said printing means including a printer for imprinting the numerical data and the setting mark on the recording sheet, buffer means for storing the numerical data transmitted



from said central processing unit, and control means for controlling said printer to print the numerical data and for causing the setting mark to be printed in response to said first instruction after the recording sheet is fed said pre-determined distance relative to said printer in response to said second instruction.

4,508,463

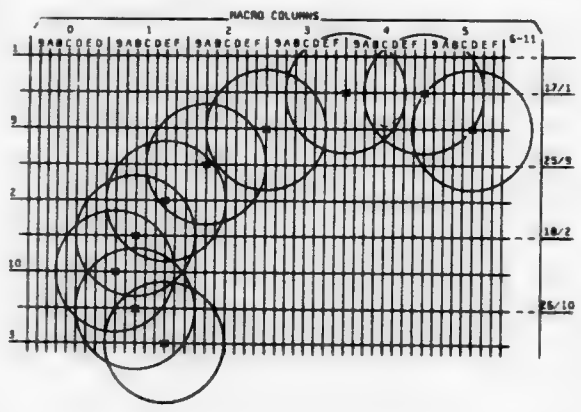
HIGH DENSITY DOT MATRIX PRINTER

An Wang, Lincoln, and Phillip P. Brown, Lawrence, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Nov. 1, 1982, Ser. No. 438,184

Int. Cl.[3] **B41J** *3/10*

U.S. Cl. 400—124 **8 Claims**



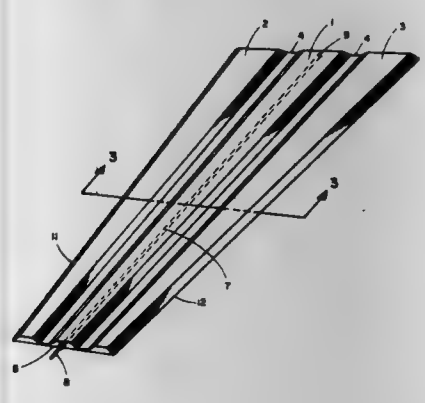
1. A method for printing a sequence of characters using a compacted character code for controlling the operation of the print pins of a dot matrix printer print head to print characters on a piece of material, where each print pin is actuated in sequence to print dots along an individual row and collectively the dots printed by all print pins of the print head print characters in character blocks while the print head and material are moved relative to each other, said character blocks being divided into rows and columns of dot positions in selected ones of which dots are printed by said print head to print a character, and comprising the steps of:

(a) generating a first sequence of codes each specifying a different number of macro columns that are not to have a dot printed therein;

(b) generating a second sequence of codes each specifying a different one of the micro columns within a macro column at which a dot is to be printed, where in each row of dots in each character block a predetermined number of adjacent dots are grouped to create said macro columns, and each dot in one of said macro columns falls in a micro column; and

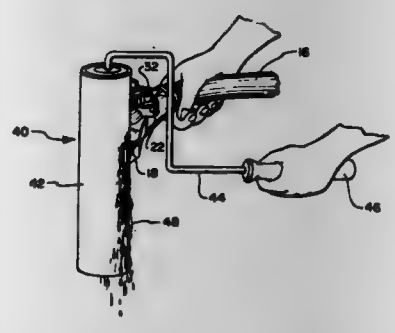
(c) specifying a combination of ones of said first sequence of codes and ones of said second sequence of codes for each print pin of said print head, where the code combinations for all print pins define the dots used to print a character, and the combination of codes for all print pins is used to control the operation of said print head pins to print dots defining a character.

4,508,464
FOLDABLE PEN
Michael F. Money, 85 Homestead Ave., Bridgeport, Conn. 06605
Filed Mar. 14, 1983, Ser. No. 450,911
Int. Cl.³ B43K *19/00, 7/00*
U.S. Cl. 401—6 **8 Claims**



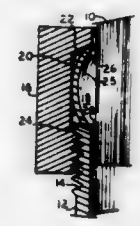
1. A foldable pen comprising,
(a) a substantially flat material of substantially quadrilateral shape, molded such that there are formed two longitudinal depressions in said material, said depressions defining three panels and said depressions acting as hinges between said panels, such that the pen may assume two distinct shapes, either a virtually flat substantially quadrilateral object, or, when folded at its hinges, a prism;
(b) a hollow reservoir for storing and dispensing ink located in one of the panels, and
(c) a pen tip extending into the reservoir for dispensing the ink.

4,508,465
APPARATUS FOR CLEANING PAINT ROLLERS
J. Berkeley Orton, R.R. #1, Heyburn, Id. 83336
Filed Jan. 28, 1983, Ser. No. 461,961
Int. Cl.³ A46B *17/06;* B08B *3/02*
U.S. Cl. 401—11 **14 Claims**



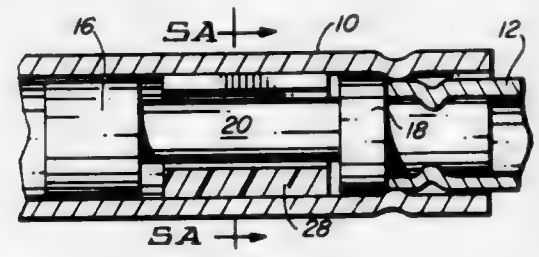
1. An apparatus attachable to an end of a hose for cleaning a paint roller and the like, said apparatus comprising:
a body, said body having an inlet formed in one end thereof and having means for connecting said inlet to said hose;
a first outlet formed in said body in fluid communication with said inlet, said first outlet comprising means for circumferentially engaging a portion of said paint roller and means for soaking and scraping said portion of the paint roller;
a second outlet formed in said body in fluid communication with said inlet, said second outlet comprising a nozzle for delivering a high pressure jet of water; and
means for controlling the flow of water from said hose through said first and second outlets.

4,508,466
LOCKABLE TELESCOPIC JOINT
Victor S. Dennis, 13342 Mango Dr., Del Mar, Calif. 92014
Filed Feb. 7, 1983, Ser. No. 464,626
Int. Cl.³ F16B *7/10*
U.S. Cl. 403—104 **2 Claims**



1. A rotationally adjustable lock nut assembly for locking the end of an outer tube to a telescoping inner tube to resist relative axial movement between the tubes while allowing relative rotational movement, comprising:
a nut having means to secure itself on the end of said outer tube;
said nut having a relieved interior defining a thread-free, smooth seating surface and an annular seating space adjacent said inner tube;
said seating space having one side defined by an inturned lip of said nut and another side defined by the end of said outer tube;
an annular bearing having a C-shaped longitudinal cross-section seated in said seating space and defining two sharp axially spaced annular edges at the end of the C directed toward and gripping said inner tube, and an outer rounded bearing side tangentially contacting and sliding against said seating surface when said tubes mutually rotate.

4,508,467
TELESCOPICALLY EXTENDABLE POLE
Justin C. Choffin, 211 El Nopal, Green Valley, Ariz. 85614
Filed Mar. 17, 1983, Ser. No. 476,213
Int. Cl.³ F16B *7/14;* A01K *97/00*
U.S. Cl. 403—104 **1 Claim**



1. A telescopically extendable pole comprising:
a. a first hollow cylindrical tube having an inner diameter;
b. a second cylindrical tube having a first end and an outer diameter smaller than the inner diameter of said first tube to permit telescopic displacements of said second tube within said first tube; and
c. means for selectively locking said first and second tubes together at a fixed relative position including:
i. a locking member including first and second cylindrical

end sections having aligned longitudinal axes and a diameter substantially equal to the inner diameter of said first tube to continuously frictionally engage the inner wall of said first tube along said end sections to thereby serve as a load bearing extension of said second tube within said first tube, said second end section being rigidly coupled to the first end of said second tube to transfer loads from said first tube to said second tube, said locking member further comprising a reduced diameter cylindrical center section positioned between said first and second end sections and having a longitudinal axis offset from the longitudinal axis of said first and second end sections to cause said center section to function as a first camming surface as said first tube is rotationally displaced with respect to said second tube; and

ii. a second camming member fabricated from a plastic material having a substantially cylindrical outer wall, a longitudinal axis aligned with the longitudinal axis of the first and second end sections of said locking member, and a substantially cylindrical inner wall with a longitudinal axis offset from the longitudinal axis of said outer wall, said inner wall having a second camming surface surrounding the center section of said locking member, said second camming member including an outer diameter substantially equal to the inner diameter of said first tube, said inner wall exceeding the diameter of said first camming surface to provide a low friction interface between said first and second camming surfaces, and a lengthwise notch located in the thinnest section of the wall of said second camming surface and extending along the entire length of said second camming surface, the outer wall of said second camming member being spring biased against the inner wall of said first tube to provide a circumferentially continuous high friction interface between the outer wall of said second camming member and the inner wall of said first tube;

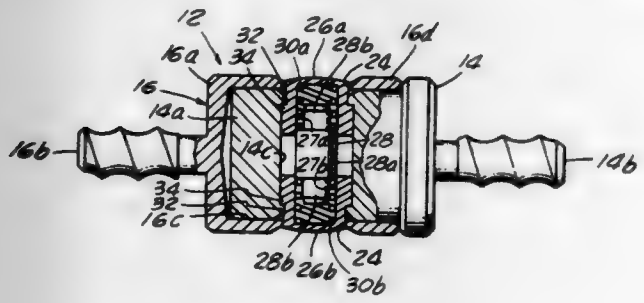
whereby rotational displacements of said first tube with respect to said second tube causes said first camming surface to immediately engage said second camming surface and said outer wall of said second camming member to further apply pressure to said friction interface with the inner surface of said first tube to lock said first and second tubes into a fixed relative longitudinal position.

4,508,468

LOCKING COUPLING

Lawrence F. Irwin, 12869 San Fernando Rd., Sylmar, Calif. 91342

Filed Sep. 28, 1982, Ser. No. 425,671
Int. Cl.³ F16B *12/20*
U.S. Cl. 403—328 **2 Claims**



1. A coupling for releasably interconnecting two elements such as sections of coiled spring, rod, or the like comprising:

(a) a first member having a cylindrical portion and an end portion formed to permit the attachment thereof to one of the elements to be interconnected, said cylindrical portion having a transverse bore extending therethrough;

(b) a second member having a cylindrical portion and an end portion formed to permit the attachment thereof to the other of the elements to be interconnected, said cylindrical portion having a cylindrical bore extending axially thereof defining a thin outer wall substantially annular shaped in cross-section along the length of said cylindrical portion, said outer wall having diametrically opposed apertures formed therein intermediate its length, said cylindrical bore being adapted to closely receive said cylindrical portion of said first member;

(c) first and second locking buttons partially carried within said transverse bore of said first member and being movable axially thereof, each of said first and second buttons having an axially extending bore, said buttons being located so as to be receivable within the apertures formed in the outer wall of said second member, when said cylindrical portion of said first member is inserted into the cylindrical bore formed in said second member;

(d) reinforcing means carried within said transverse bore of said first member in engagement with said first and second buttons for resisting axial separation of said first and second members when said members are mated with said buttons received within the apertures formed in the outer wall of said second member, said reinforcing means comprising a generally cylindrically shaped reinforcing element having a body portion and reduced diameter end portions, defining first and second shoulders, one of said end portions being receivable within the axial bore of said first button and the other of said end portions being receivable within the axial bore of said second button;

(e) a first coiled spring disposed between said reinforcing means and said first button for urging separation therebetween;

(f) a second coiled spring disposed between said reinforcing means and said second button for urging separation therebetween; and

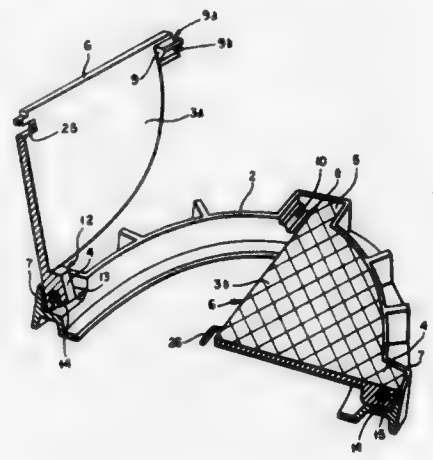
(g) interengaging means associated with said first member for limiting the extent of separation between said first and second buttons and said reinforcing means whereby the outer ends of the buttons are within the peripheral limit of the outer member in the general area of said opening therein, said parts of said coupling being so constructed and arranged as to allow the fingers of a hand to simultaneously depress said first and second buttons.

4,508,469

MANHOLE WITH ARTICULATED COVER MEMBERS

Robert Dumortier, 9 rue Duchartre, 34500 Beziers, France

Filed Jan. 11, 1983, Ser. No. 457,147
Claims priority, application France, Jan. 14, 1982, 82 00769
Int. Cl.³ E02D *29/14*
U.S. Cl. 404—25 **3 Claims**



1. A manhole structure comprising:

a circular frame formed with a pair of diametrically opposite inwardly and upwardly open pivot recesses and a pair of diametrically opposite upwardly and inwardly open support recesses at right angles to said pivot recesses, each of

said pivot recesses being spanned by a respective pivot pin; and

a pair of semicircular cover halves each having a rectilinear edge adjoining the rectilinear edge of the other cover half in a closed position of said covers, a radially projecting pivot lug received in the respective pivot recess and formed with a pocket traversed by the respective pin, and a slot of a width narrower than said pocket and narrower than at least a portion of the respective pin communicating with the respective pocket and enabling the respective pin to pass through the respective slot into the respective pocket in a selected angular position of the respective cover half and the respective pin, each of said cover halves being further formed with a pair of support lugs projecting along the respective edge and receivable in the respective support recesses, each of said lugs being provided with downwardly divergent inclined resting flanks and each of said recesses being provided with upwardly divergent inclined supporting flanks engageable with the resting flanks of a respective lug in a closed position of the respective cover half and supporting the three lugs of each cover half so that the respective pin is out of contact with the wall of the respective pocket, the pocket, the pin received therein and the pivot recess thereof being shaped so that each pocket forms a cam guiding the respective pivot lug along the respective wall at least during opening of each cover half so that each cover half is retained in a stable partially rearwardly inclined open position with said wall bearing against said pin and the respective pivot lug resting against the respective edge of the respective pivot recess in an open position of the respective cover half, said cam inducing radial displacement of each cover half relative to the frame during the opening of each cover half and the said pivot lug of each cover half being the sole pivot lug thereof.

4,508,470

MANHOLE/ACCESS COVER AND FRAME ASSEMBLIES

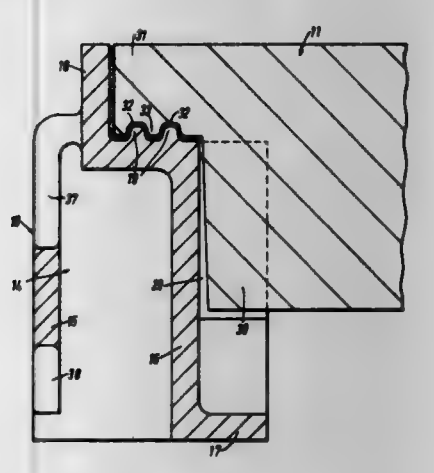
Derek Ferns, Monmouth, Wales, assignor to Selflevel Covers (Jersey) Limited, Jersey, Channel Islands

Filed Jan. 19, 1983, Ser. No. 459,096

Claims priority, application United Kingdom, Jan. 20, 1982, 8201582

Int. Cl.³ E02D *29/14*

U.S. Cl. 404—25 **4 Claims**



1. A cast iron frame, for a manhole/access cover and frame assembly, comprising outer peripheral portions which are generally of inverted U-shape in cross-section so as to provide inner and outer downwardly extending limbs, the outer limb of the U-shape being formed with a plurality of apertures which open in a direction away from the vertical and which constitute a major portion of the area of said outer limb so that the portions of the limb between the apertures form tangs which act as holding down lugs for the frame.

4,508,471

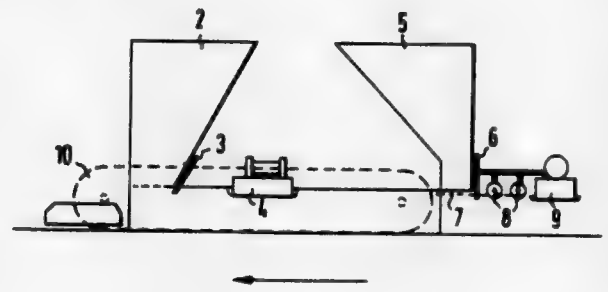
METHOD AND MACHINE FOR THE LAYERED PLACING OF CORE MATERIAL AND OF THE ADJACENT TRANSITIONAL MATERIAL FOR DAMS

Gerardus L. M. Mulders, 'S-Hertogenbosch, and Jacobus G. J. M. Hermans, Hedel, both of Netherlands, assignors to Bitumarin B.V., Netherlands

Filed Mar. 19, 1982, Ser. No. 360,084

Int. Cl.³ E02B *7/02*

U.S. Cl. 405—109 **6 Claims**



1. A method for the layered placing of upright or sloping dam cores for dams such as barrage dams, wherein the core material is bound with bitumen and/or plastic and/or a natural binder in a constant or upward-tapering thickness, comprising the steps of:

placing the core material and compacting the placed core material both vertically and laterally to effect pre-compaction of the core material;

placing transitional material against each lateral side of the placed and compacted core material; and

further compacting the core material and simultaneously compacting the transitional material.

4,508,472

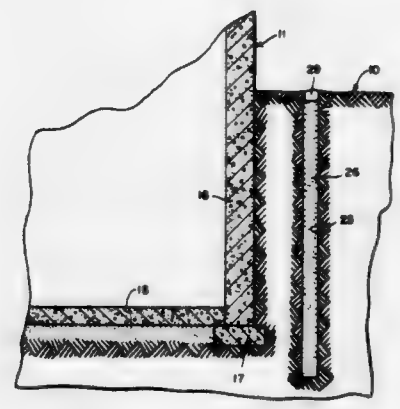
METHOD FOR CONTROLLING MOISTURE-EXPANSIVE CLAY SUPPORTING BUILDING FOUNDATIONS

Richard L. Handy, Ames, and James A. Murray, Des Moines, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Nov. 3, 1982, Ser. No. 438,782

Int. Cl.³ E02D *3/12, 31/10*

U.S. Cl. 405—229 **16 Claims**



1. A method for preventing or reducing the heaving of a floor slab and other damage to an existing building foundation that might result from the swelling of moisture-expansive clay beneath and about such foundation, comprising the steps of trenching along the sides of said foundation to form a vertical trench having a depth extending substantially below the floor slab of said foundation; and then substantially filling said trench with a mixture of hydrated lime and water to (a) help stabilize the moisture-expansive clay beneath and about said foundation and (b) provide a yieldable mass capable of upward displacement within said trench to accommodate horizontal expansion of the clay beneath and about said foundation,

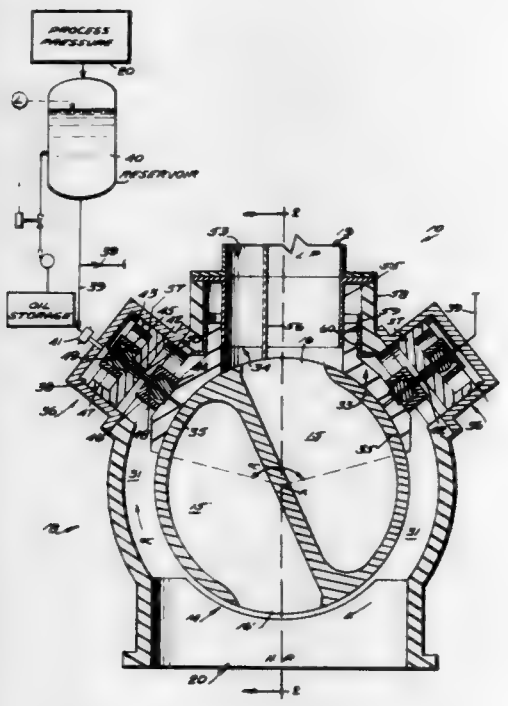
thereby allowing lateral expansion of the clay below said floor slab and reducing upward pressure on said slab.

4,508,473

SIMPLE DRY FEEDER

Ole J. Richter, Karlstad, Sweden, and Erwin D. Funk, Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,674
Int. Cl.³ B65G *53/46*
U.S. Cl. 406—64 **11 Claims**



11. A low pressure feeder comprising: a rotor containing at least one pocket having a single access opening thereto, said rotor rotatable about an axis; a housing enclosing said rotor, said housing having an exterior periphery with an inlet port and an outlet port, each of said ports for registry with said access opening to said at least one pocket; means for mounting said rotor in said housing for rotation with respect to said ports about said given axis of rotation, and in a given direction; a large clearance volume being provided between said rotor and said housing; and sealing means disposed in said large clearance volume between said rotor and said housing; said sealing means consisting essentially of a single shoe means disposed between said rotor and said housing and having an opening communicating with said inlet port and in sealed engagement therewith; and means for biasing said shoe means into engagement with said rotor, comprising means for applying a force to said shoe means proportional to the fluid pressure adjacent the outlet port, which comprise at least one pressure compensator including a piston movable in a cylinder operatively attached to said housing, and operatively disposed between said housing and said shoe means, and operatively connected to a source of fluid under pressure; and connection means between said piston and said shoe means for providing continued operation of said pressure compensator as said shoe means wears, comprising a pair of balls, one sealingly rotatable with respect to each of said shoe means and said piston, and a tube interconnecting said balls.

4,508,474

AIR CONVEYOR FOR PARTICULATE MATERIAL

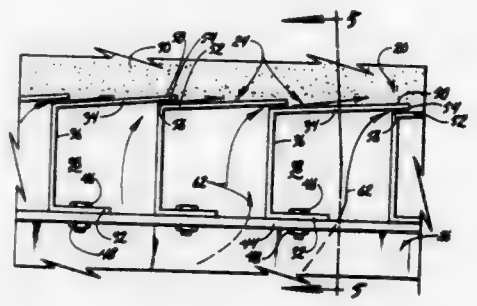
Charles V. Frederick, Rte. #5, New Virginia, Iowa 50219

Filed Jan. 21, 1983, Ser. No. 459,717
Int. Cl.³ B65G *53/16*
U.S. Cl. 406—88 **4 Claims**

1. An air conveyor for particulate material comprising: elongated parallel conveyor support members,

a plurality of channel shaped air deflectors mounted in juxtaposition on said support members, each of said air deflectors being in overlapping engagement with the next adjacent air deflector,

each of said air deflectors having a short lower flange adapted to be secured to said support members, an upper



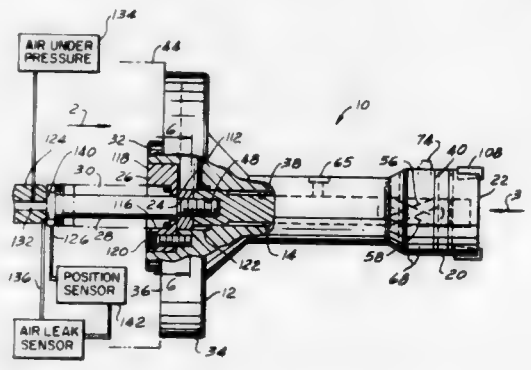
flange generally parallel to and extending further in the same direction as said lower flange, and a web integrally interconnecting said upper and lower flanges to form a channel.

4,508,475

BORING AND GROOVING TOOL STRUCTURE AND METHOD

Bruce G. Peuterbaugh, Mt. Clemens, Mich., assignor to J. P. Tool, Mich.

Filed Oct. 1, 1981, Ser. No. 307,388
Int. Cl.³ B23B *7/00*
U.S. Cl. 408—153 **6 Claims**



1. A boring and grooving tool comprising a body member having a multiple diameter bore therethrough, a boring and grooving tool actuating member positioned within the bore, slides positioned in the body member across one end of the bore therethrough, means operable between one end of the boring and grooving tool actuating member and slides for moving the slides radially on axial movement of the boring and grooving tool actuating member within the bore, a washer having a diameter larger than the diameter of the boring and grooving tool actuating member secured to the actuating member in the other end of the bore within one diameter of the bore cooperable with a radially extending surface within the bore to limit the movement of the boring and grooving tool actuating member within the bore in one direction, an end plate secured over said other end of the bore through said body member engageable with said washer to limit axial movement of the boring and grooving tool actuating member in the other direction, a recess in the end plate in the side thereof opposite the washer, a headed bolt extending through the end plate and washer and into the other end of the boring and grooving tool actuating member having an annular abuttment thereon engaged with the washer to secure the washer to the other end of the boring and grooving tool actuating member and resilient means positioned between the head of the bolt and the end plate within the recess therein for urging the washer into engagement with the end plate, the tool actuating member toward the other end of the bore therethrough and the slides into an extended position whereby the tool may be mounted

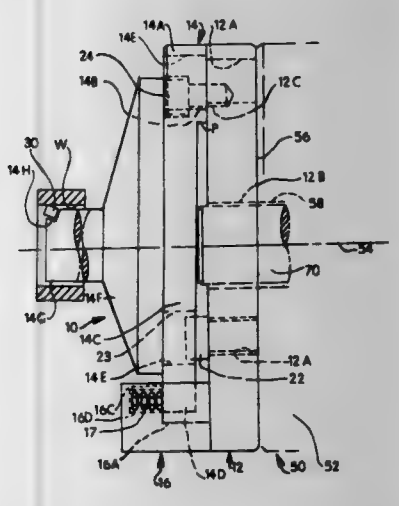
flush on a spindle of a machine tool and the head of the bolt engaged with a machine tool actuating member to move the slides radially outwardly on movement of the machine tool actuating member away from the bolt to move the washer toward the end plate.

4,508,476

ADJUSTABLE BORING TOOL

Shivdas A. Kalokhe, Clinton, Canada, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Apr. 19, 1982, Ser. No. 369,855
Int. Cl.³ B23B *29/034*
U.S. Cl. 408—156 **10 Claims**



1. A boring tool attachable to a rotary spindle having a spindle axis and drawbar means movable toward and away from the spindle along the spindle axis, said boring tool being characterized as having a resilient tool-carrying member and means for attaching the tool-carrying member to the spindle, said tool-carrying member extending transversely of the spindle axis in cantilever fashion in the path of the drawbar means for direct engagement thereby to resiliently deflect said tool-carrying member away from the spindle to position a tool thereon in a radial workpiece-engaging position relative to the spindle axis terminating in a transversely extending tab movable therewith out of the path of the drawbar means, said tool-carrying member positioning the tool thereon in a radial retracted position closer to the spindle axis when deflecting engagement is released by virtue of the resiliency of said tool-carrying member causing movement thereof toward the spindle, said boring tool further having stop means fixedly positioned out of the path of the drawbar means including a stop wall disposed axially a preselected distance from the tool-carrying member on a side thereof oppositely disposed from said spindle and against which stop wall said tab abuts when said tool-carrying member is deflected for controlling deflection of said tool-carrying member.

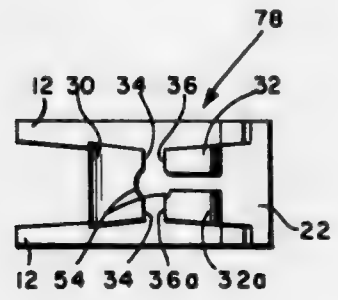
4,508,477

FASTENING DEVICE

Donald N. Oehlke, Troy, Mich.; Ralph A. MacRae, Burlington, Canada; James Crammond, Hamilton, Canada, and Hans R. Rattmann, Burlington, Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 30, 1982, Ser. No. 430,449
Int. Cl.³ F16B *37/04*
U.S. Cl. 411—174 **13 Claims**

1. An improved fastening device (**70**, **72**, **74**, **76**, **78**) for securement with an externally threaded member ("S"), said device of the type having a base member (**12**), an aperture (**40**) through the base member for receiving the threaded member, thread engaging means defined by marginal portions (**16**, **16*a***) of the aperture which extend outwardly from the base member for engagement with a lower surface (**62**, **62*a***) of a thread of the threaded member when initially inserted through the aperture, a pair of resilient finger portions (**30**, **32**) made integral with and extending upwardly and angularly inwardly from the base member on opposite sides of the aperture, said finger portions extending radially inwardly towards one another in overhanging relationship relative to the thread engaging means and having free-ends (**34**, **36**) respectively thereof that are spaced-apart from each other along an axis ("y—y") defined therebetween and are axially off-set relative to one another such that the free-end of the one of the finger portions is higher than the free-end of the other finger portion relative to the base member, said thread engaging means including an upwardly projecting generally frusto-conical projection (**14**) defining upper and lower generally helical edges (**16**, **16*a***) separated by a slot portion (**38**) formed radially relative to the aperture in the base member, said space between the finger portion free-ends and said base member aperture edges dimensionally adapted so that, upon turning the threaded member through the aperture, a force is imparted by the threaded member to intially draw the edges downwardly and axially



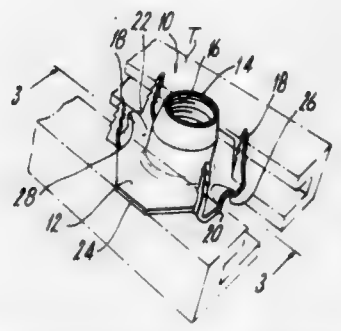
into engagement with the lower thread surface and pivot the finger portions radially inwardly into engagement with an upper surface (**60**, **60*a***) of the threaded member so that a counter-force is imparted by the threaded member to pivot the finger portions in generally opposite directions and draw the edges downwardly and axially inwardly to urge the finger portions and the edges into tight gripping engagement with the root portions of the threaded member with the axial distance between corresponding axially aligned on the edges and the free-ends of the finger portions substantially greater than in the intially installed position thereof, said improvement characterized by the slot portion extending radially outwardly from the aperture along the base member and thence along the finger portion having the higher free-end relative the base member in a direction that is substantially transverse to the axis defined between the finger portion free-ends to provide the device with improved ability to receive and effectively secure the threaded-member without cocking or cross-threadably engaging the threads thereof.

4,508,478

TEE NUT FASTENER MEMBER

Herbert E. Leistner, Toronto, Canada, assignor to Sigma Tool & Machine Limited, Scarborough, Canada

Filed Jul. 11, 1983, Ser. No. 512,620
Int. Cl.³ F16B *39/00*
U.S. Cl. 411—176 **4 Claims**



1. A fastener member for use in an automatic fastener mem-

ber setting machine having a feed track, such fastener member comprising;

a base flange;

an integrally formed central sleeve perpendicular to such base flange, and having internal threads formed therein for reception of threaded fastening means;

a plurality of fastening teeth and extending generally normally from said base flange for reception in a wooden work piece, said base flange defining a forward feed edge and a rearward feed edge, and side feed edges, such side feed edges being adapted to be received in opposite sides of a feed track, with such forward feed edge of one such fastener member in engagement with the rearward feed edge of the next adjacent fastener member in such track, and,

abutment means formed in said base flange adjacent said forward feed edge and spaced apart from said fastening teeth, and further abutment means formed in such base flange adjacent such rear edge and spaced apart from said fastening teeth, such abutment means in one of said forward and rear feed edges being adapted to inter-engage with the abutment means or the feed edge of the other of such forward and rear feed edges of the next adjacent fastener members in such track, whereby to prevent such feed edges from overriding one another.

4,508,479

DEVICE FOR PULLING TOGETHER

Georg Mez, Gartenstrasse 30A, 7416 Reutlingen Gonningen, Fed. Rep. of Germany

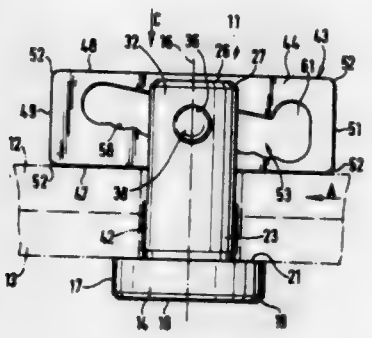
Filed Sep. 8, 1981, Ser. No. 299,731

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126670

Int. Cl.³ F16B *19/00*

U.S. Cl. 411—340

28 Claims



1. In a fastener designed to be placed through two lined-up holes in members to be forced and held together, the fastener having:

a stem to be inserted through said holes, a head on said stem, said head being wider than said stem and having a shoulder adapted to rest against one of said members, said stem being coaxial with said head and made in one piece therewith, the shape of said stem being compatible with the shape of said holes in said members, and

a gripping keeper movably connected to said stem and having a working face turnable towards said shoulder on said head, said gripping keeper being movable in relation to said head for forcing said members together; the improvement wherein:

said stem has an opening extending therealong and a crosspiece running across said opening;

said gripping keeper comprising an elongated member projecting through said opening out to each side of said stem;

said gripping keeper having two generally parallel side faces, both of said faces comprising turnable working faces of said gripping keeper, and a narrow cutout extending along said gripping keeper, both sides of said cutout being at a small angle to said working faces and having a row of rest waves extending therealong;

said crosspiece in said stem being arranged to run through said cutout in said gripping keeper to hold said gripping keeper in position in said opening of said stem.

4,508,480

MANUFACTURE OF TINPLATE AND TINPLATE CONTAINERS

Dietmar F. E. Salm, Bulli, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Australia

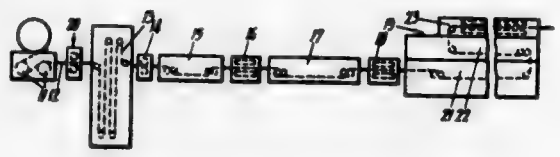
Division of Ser. No. 228,375, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 13,917, Feb. 22, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,186

Claims priority, application Australia, Mar. 29, 1978, PD3490

Int. Cl.³ B21D *51/26*

U.S. Cl. 413—1

12 Claims



1. In a method of producing a tinplate container comprising forming an annular container body from tinplate stock, flanging the container body at at least one end thereof and applying a container end to said flanged end, the improvement comprising using, as said tinplate stock, a steel sheet coated on at least one side, wherein the coating consists essentially of an electrolytic unreflowed tin coating having a coating mass of at least about 0.95 and less than 2.5 g/m^2.

4,508,481

PROCESS FOR PREPARATION OF METAL VESSELS

Kazuhisa Ishibashi, Tokyo; Hideo Kurashima, Yokosuka; Hisakazu Yasumuro, Yokohama; Michio Watanabe, Yokohama; Tsuneo Imatani, Yokosuka; Kazuo Taira, Tokyo; Seishichi Kobayashi, Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

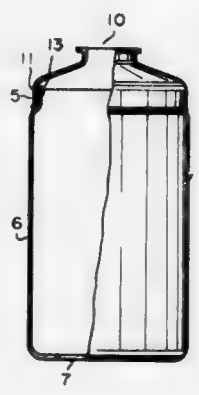
Filed Sep. 28, 1982, Ser. No. 426,241

Claims priority, application Japan, Oct. 26, 1981, 56-170200

Int. Cl.³ B23P *11/02*

U.S. Cl. 413—1

7 Claims



1. A process for preparation of metal vessels, which comprises lap-bonding circumferential open end portions of outer and inner members, each consisting of a formed seamless metal cup, to each other through an adhesive, said process being characterized by fitting both the outer and inner members to each other through an adhesive layer interposed between the open end portions of both the members, heating the fitted portions of both the outer and inner members so as to melt the adhesive layer, and cooling the fitted portions so that the temperatures of the fitted portions of both the outer and inner members are substantially equal to each other just before solid-

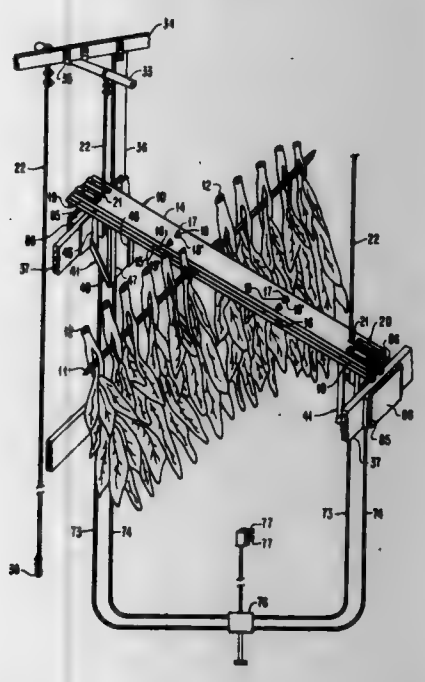
ification of the adhesive layer and the adhesive is filled between both the open end portions.

4,508,482

METHOD AND APPARATUS FOR HARVESTING TOBACCO

George A. Duncan, Lexington, Ky., assignor to University of Kentucky Research Foundation, Lexington, Ky.

Filed Feb. 25, 1983, Ser. No. 469,704
Int. Cl.[3] A24B *1/08*
U.S. Cl. 414—26 6 Claims



4. A hoist for use in raising and lowering a support beam having tobacco sticks supported thereby with the tobacco sticks having tobacco thereon including:

frame means;

a drum rotatably supported by said frame means;

said drum having attachment means for attachment to the lower end of a cable attached in the upper end of a barn and passing through the support beam;

said frame means having means for engaging the support beam to raise and lower the support beam after said attachment means is attached to the cable passing through the support beam;

rotating means to rotate said drum in either direction, said frame means supporting said rotating means;

said frame means having its bottom end formed at an angle to clear any rail support during raising and lowering of the support beam;

said engaging means of said frame means including means to allow the cable to pass therethrough for attachment to said attachment means of said drum;

said engaging means of said frame means including a plate;

and said allowing means of said engaging means being an opening in said plate.

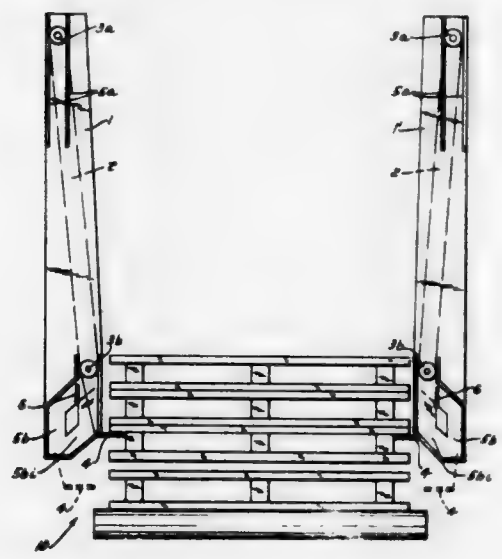
4,508,483

LIFTING DEVICE FOR A MAGAZINE FOR EMPTY PALLETS IN AN AUTOMATIC PALLETIZING MACHINE

Heinz W. Hessling, Beckum, and Gottfried J. Weykam, Hesslerstrasse 14, 4700 Hamm 1, both of Fed. Rep. of Germany, assignors to Gottfried J. Weykam, Hamm, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,075
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210547
Int. Cl.[3] B65G *59/06*
U.S. Cl. 414—127 2 Claims

1. A lifting device for a magazine for empty pallets stacked therein, formed with two opposite walls, and comprising two frames each mounted in a respective opposite wall of the magazine and vertically movable upwardly and downwardly to lift overlying pallets from a lowermost pallet in the magazine; each of said frames having an upper end and a lower end in the region of the pallets contained in said magazine and being provided with an upper roller at the upper end thereof and a lower roller at the lower end thereof and with a gripper engageable with a pallet in said magazine when said frames are moved upwardly; two opposite upper rails each being rigidly secured to one of the opposite walls and guiding the respective upper roller during the upward and downward movement of said frames; two opposite lower rails each being rigidly secured to one of the opposite walls and guiding the respective



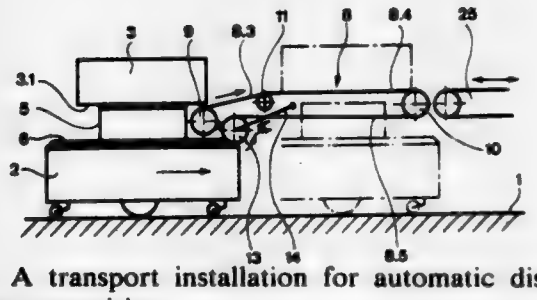
lower roller during the upward and downward movement of said frames, each of said lower rails including a bend forming a curved track for the respective lower roller, the tracks of the lower rails positioned on said opposite walls being inclined in opposite directions with respect to the pallets in said magazine; and switch means provided in each bend in an upper region thereof for guiding the respective lower roller along the respective track in said upward and downward movement such that in said downward movement of said frames said grippers are disengaged from the pallets and moved laterally away therefrom and in said upward movement of said grippers engage a second lowermost pallet from below and lift the underlying pallets from the lowermost pallet in said magazine.

4,508,484

INSTALLATION FOR THE AUTOMATIC REMOVAL AND RECEPTION OF LOADS THROUGH THE INTERMEDIARY OF TRANSPORT VEHICLES

Ulrich Heiz, Säriswil, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

PCT No. PCT/CH81/00109, § 371 Date Jun. 1, 1982, § 102(e) Date Jun. 1, 1982
PCT Filed Sep. 30, 1981, Ser. No. 387,844
Claims priority, application Switzerland, Oct. 21, 1980, 7830/80
Int. Cl.[3] B65G *67/00*
U.S. Cl. 414—337 16 Claims



1. A transport installation for automatic displacement of loads, comprising:

at least one driveable transport vehicle;
at least one reception station defining a load transfer side;
said at least one transport vehicle being driveable for substantially horizontal displacement in two opposing directions for load transfer at said at least one reception station;
said at least one driveable transport vehicle being equipped with load support means defining a substantially horizontal plane for a load to be transported by said driveable transport vehicle;
said at least one transport vehicle comprising a conveyor drive element extending thereat in the direction of said substantially horizontal displacement;
said at least one reception station comprising a stationary frame and an endless conveyor supported at said stationary frame;
said endless conveyor comprising a substantially horizontally extending load bearing portion and a downwardly inclined load transfer portion on said load transfer side of said at least one reception station;
said load transfer portion extending below said horizontal plane defined by said support means at said at least one driveable transport vehicle; whereby said load may be lifted off said support means when said vehicle travels in a first horizontal direction or delivered onto said support means when the vehicle travels in a second horizontal direction opposite the first;
said at least one reception station further comprising conveyor drive means;
said conveyor drive means defining a first end which is drivingly connected to said endless conveyor and a second end which is drivingly connectable to said conveyor drive element at said at least one driveable transport vehicle; and
said conveyor drive element at said at least one driveable transport vehicle being drivingly connected to said second end of said conveyor drive means during the load transfer at said at least one reception station in a preselected one of said two opposing directions of substantially horizontal displacement of said at least one driveable transport vehicle in order to drive said load transfer portion and said load bearing portion of said endless conveyor at said at least one reception station in the same direction and at the same speed as said at least one transport vehicle is driven.

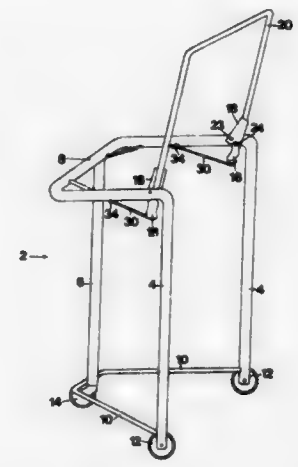
4,508,485

LIFTING DEVICE

Jerry Mlinaric, 8 Highland Ct., Dandenong, Victoria; William Leary, Sheldon Padonstor Rd., Emerald, Victoria, and Robert J. Mummery, Noble Park, all of Australia, assignors to Jerry Mlinaric, Dandenong and William Leary, Emerald, both of, Australia

PCT No. PCT/AU81/00050, § 371 Date Jun. 29, 1983, § 102(e) Date Jun. 29, 1983, PCT Pub. No. WO81/03310, PCT Pub. Date Nov. 26, 1981
PCT Filed May 6, 1981, Ser. No. 339,457
Claims priority, application Australia, May 21, 1980, PE3665
Int. Cl.³ B62B *3/04, 3/06*
U.S. Cl. 414—458 **14 Claims**

1. A device for lifting an article, said device comprising:
(a) a mobile frame (2) having two forward uprights (4) connected at their upper ends by an upper support bar (8) and at their lower ends by a lower support bar (10), said support bars being generally U-shaped so that said two forward uprights define an open face adapted in use to receive the article;
(b) a pair of engagement members adapted to engage the article to be lifted;
(c) an actuator (18) having a U-shaped handle (20), the actuator being pivotally connected to said upper support bar of the frame about a first axis located near said forward uprights, said engagement members being connected to said actuator for pivotal movement relative thereto about a second axis, said actuator being rotatable by the handle between a first position where the article is not engaged and a second position where the article is in use engaged in which, in the first position, said engagement members are at a first level relative to the frame and said second axis is located at a first lateral position relative to said first



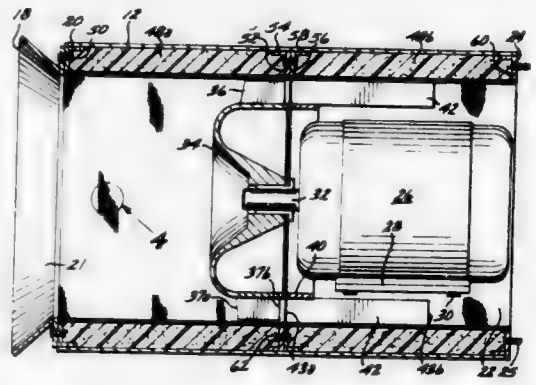
axis, said second lateral position being on the opposite side of said second axis to said first lateral position, said handle extending in a generally upright plane in the first position and a generally horizontal plane in the second position; and
(d) abutment means (8) to restrain movement of said actuator beyond its second position, and wherein in use, an article is supported by said engagement members and the weight thereof tends to rotate said actuator into engagement with said abutment means.

4,508,486

VENTILATION FAN WITH NOISE-ATTENUATING HOUSING

Charles L. Tinker, Dover, Ohio, assignor to Peabody ABC Corporation, Warsaw, Ind.

Filed May 28, 1982, Ser. No. 383,112
Int. Cl.³ F01D *5/26*
U.S. Cl. 415—119 **5 Claims**



1. In a ventilation fan, of the type having a rotor with circumferentially spaced blades and means for driving said rotor, an improved housing structure, comprising:
a substantially cylindrical, perforated inner casing some of whose perforations said rotor and drive means therefor spaced radially from the distal ends of said blades;
a substantially cylindrical, substantially continuous outer casing concentrically surrounding said inner casing so as to define a substantially annular intercasing space between said inner and outer casings;
a porous, sound-absorbing medium substantially filling said intercasing space along substantially the entire length

thereof for exposure to air moving through said space near said distal ends of said blades; and

relatively thin annular barrier means intermediate the ends of said casings within said space adjacent said inner casing and in abutting relation to said sound-absorbing means on either side thereof, said barrier means extending from said inner casing to said outer casing to block the flow of air parallel to the length of said fan through said space adjacent said distal blade ends while enabling said sound-absorbing medium in abutting relation thereto to engage air flowing radially through said perforated inner casing from said blades.

4,508,487

AUTOMATIC LOAD SEEKING CONTROL FOR A PUMPJACK MOTOR

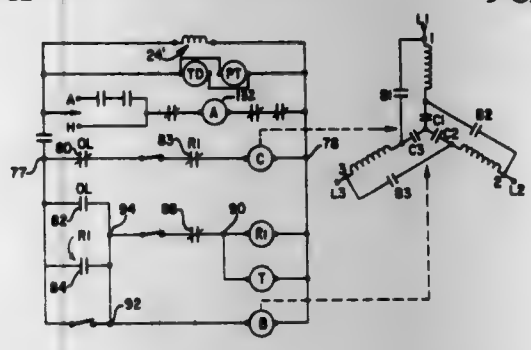
Noel R. Taylor, and Paul A. Taylor, both of Odessa, Tex., assignors to CMD Enterprises, Inc., Tex.

Continuation of Ser. No. 156,740, Jun. 5, 1980, Pat. No. 4,446,415, which is a continuation of Ser. No. 27,798, Apr. 6, 1979, Pat. No. 4,200,440, which is a continuation-in-part of Ser. No. 854,389, Nov. 23, 1977, abandoned. This application Oct. 26, 1983, Ser. No. 545,758

The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.

Int. Cl.[3] **F04B** *49/06, 35/04*

U.S. Cl. 417—12 **9 Claims**



1. A motor control unit for automatically controlling the torque output of a high slip motor powering a pump jack unit for stroking a downhole pump, said motor including motor starter means connected to motor stater windings and circuit means for altering the electrical configuration of said stater windings, said motor control unit comprising:

sensor means for detecting the magnitude of the average current flow through said starter windings during a multiplicity of pump strokes;

said stater windings being electrically connected in a first electrical configuration for a relatively lower motor torque output;

first overload means responsive to said sensor means for automatically altering the electrical configuration of said motor windings from said first electrical configuration to a second electric configuration when said average current flow exceeds a first preselected value to increase said motor torque output;

first timing means for sensing the time period said stater windings are connected in said second electrical configuration and automatically altering said motor stater windings from said second electrical configuration to another electrical configuration to reduce said motor torque output after a preselected period of time.

4,508,488

WELL PUMP CONTROLLER

Richard G. Pikna, Mineral City, Ohio, assignor to Logan Industries & Services, Inc., New Philadelphia, Ohio

Filed Jan. 4, 1984, Ser. No. 568,098

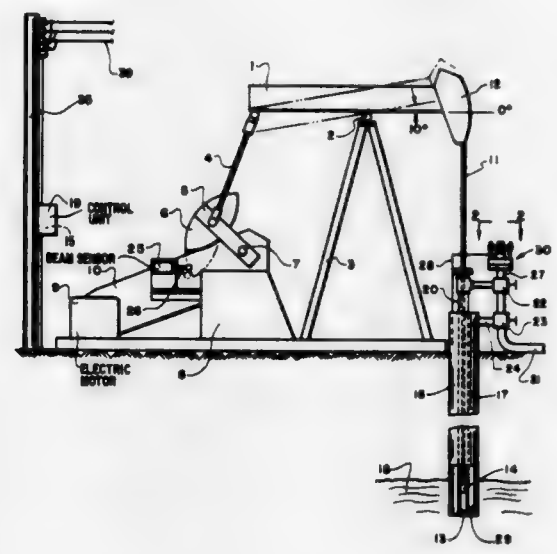
Int. Cl.[3] **F04B** *49/00*

U.S. Cl. 417—12 **14 Claims**

1. A well pump controller for a well of the type having a well casing and a positive displacement pump located within a delivery tube within said well casing, and in which the displacement pump is actuated by a power driven walking beam, said controller including:

(a) position sensing means for sensing the walking beam when at a predetermined position of its pumping stroke;

(b) first signal means generated by the position sensing means upon the walking beam reaching the predetermined position;



(c) pressure differential sensing means for sensing a predetermined pressure differential between the casing pressure and delivery tube pressure;

(d) second signal means generated by the pressure differential sensing means upon the pressure differential reaching a predetermined amount; and

(e) control means responsive to said first and second signal means for maintaining the walking beam energized to continue the pumping operation.

4,508,489

FUEL INJECTION PUMPS

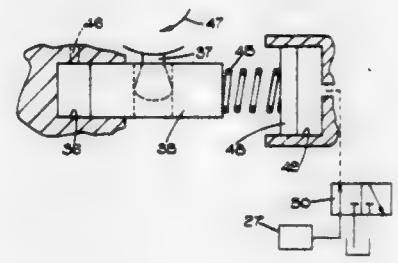
Peter Howes, Gerrards Cross, England, assignor to Lucas Industries public limited company, Birmingham, England

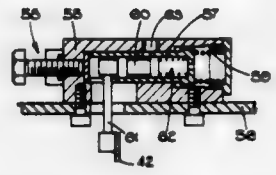
Filed Dec. 20, 1983, Ser. No. 563,377

Claims priority, application United Kingdom, Jan. 11, 1983, 8300638

Int. Cl.[3] **F04B** *19/02, 49/00;* **F02M** *59/20*

U.S. Cl. 417—221 **2 Claims**





1. A rotary distributor type fuel injection pump for supplying fuel to compression ignition engines and including a pumping plunger slidable in a bore, a cam for effecting inward movement of the plunger thereby to displace fuel from the

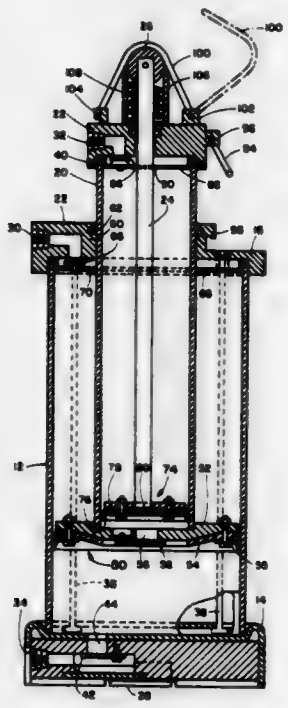
bore to an outlet, throttle means for controlling the admission of fuel to the bore, said throttle means including an angularly adjustable throttle member, a fluid pressure operable timing piston coupled to said cam for varying the timing of fuel delivery by the pump through said outlet, a fluid pressure operable control piston which in its operative position has the effect at least at low engine speeds, of causing said timing piston to effect advance of the timing of fuel delivery, valve means for controlling the application of fluid pressure to said control piston, governor means for controlling the setting of said throttle member, said governor means comprising a centrifugal weight which is driven at a speed proportional to the speed of the associated engine, a linkage connecting said weight to said throttle means so that as the weight moves with increasing speed the throttle member will be moved to reduce the amount of fuel supplied to said bore, resilient means connected to said linkage and acting to oppose the movement of the weight as the speed of the associated engine increases, operator adjustable means for adjusting the force exerted by said resilient means, said valve means comprising a housing part to be secured to the exterior of a pump housing, a sleeve located in the housing part, a spool slidable in said sleeve, a pair of lands on said spool having an annular space therebetween in communication with said control piston, a pair of ports in said sleeve, said ports and annular space being connected in a flow path to said control piston, one of said lands during movement of the spool in one direction closing said flow path, and an arm connected to said spool, said arm projecting into the pump housing and engaging with a part of said linkage, whereby the application of fluid pressure to said control piston will depend upon the setting of said throttle member.

4,508,490

TWO STAGE MANUAL AIR PUMP

Joe D. Ramirez; Steven E. Gorin, both of Panama City, and William A. Garnett, Panama City Beach, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1984, Ser. No. 569,646
Int. Cl.[3] F04B *21/04, 25/02*
U.S. Cl. 417—234 **1 Claim**



1. A selective volume hand pump operable alternatively as a low pressure pump and as a high pressure pump, said pump comprising:

a large diameter pump cylinder having a large diameter end cap;

a small diameter cylinder having a small diameter end cap, said small diameter cylinder being reciprocable in said large diameter cylinder and carrying a large diameter plunger;

a small diameter plunger reciprocable in said small diameter cylinder; and

a handle and shaft attached to said small diameter plunger, said shaft extending through said small diameter end cap; and

operation selecting means for causing said small diameter cylinder and large diameter plunger to reciprocate with said handle relative to said large diameter cylinder during operation as a low pressure pump and for securing said small diameter cylinder and large diameter plunger against reciprocation in said large diameter cylinder during operation of said pump as a high pressure pump, said operation selecting means comprising first latch means operable between said small diameter cylinder and said handle for releasably connecting said handle and said small diameter cylinder together, second latch means operable between said small diameter cylinder and said large diameter cylinder for releasably connecting thereof together,

said first and second latch means comprising first and second wire bail elements, respectively,

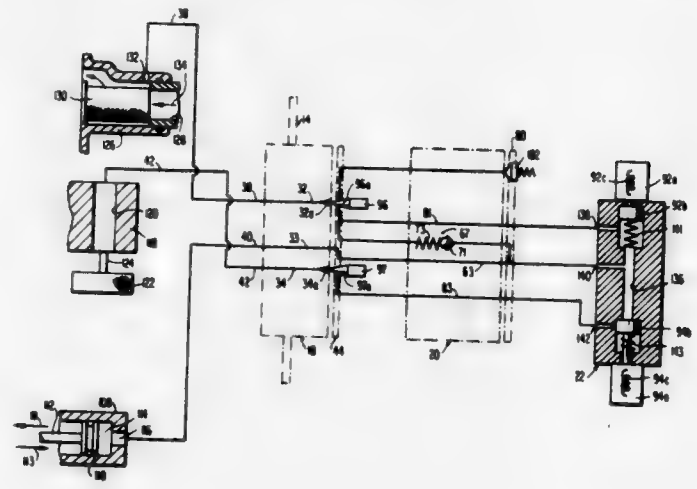
said first latch means comprising a first wire bail element pivoted on said small diameter end cap for swinging movement over said handle into and out of a handle securing position, a first hook member projecting from said small diameter end cap and engagable by said first wire wire bail element when in said handle securing position, said second latch means comprising a second wire bail element pivoted on said small diameter end cap and a second hook member projecting from said large diameter end cap and engagable by said second wire bail element.

4,508,491

MODULAR UNLOAD SLIDE VALVE CONTROL ASSEMBLY FOR A HELICAL SCREW ROTARY COMPRESSOR

Donald D. Schaefer, Farmington, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Dec. 22, 1982, Ser. No. 452,231
Int. Cl.[3] F04B *49/08*
U.S. Cl. 417—310 **6 Claims**



1. In combination, a hermetic helical screw rotary compressor for a closed loop refrigeration system or the like, having refrigerant circulating therein, said compressor comprising:

a hermetic outer casing receiving the discharge of the compressor,

an inner casing defining with a pair of intermeshed helical screw rotors rotatably mounted therein, a compressor compression chamber,

a suction port within said inner casing opening to said compression chamber,

a capacity control slide valve hydraulic cylinder mounted to

said inner casing and including a piston for shifting a slide valve slidably and sealably mounted within said hydraulic cylinder and defining with said cylinder a closed chamber,

a compressor suction tube connected to the closed loop system for supplying refrigerant in vapor form to the suction port of the compressor,

oil for lubricating and sealing purposes within the outer compressor casing and being subject to the discharge pressure of the compressed refrigerant vapor,

a first tube in communication with the oil within compressor outer casing sump for providing a supply of oil as hydraulic fluid at discharge pressure and partially forming a first line,

a second tube connected to said hydraulic cylinder for supplying said hydraulic fluid to said cylinder and for removing said hydraulic fluid therefrom and partially forming a second line,

a third tube connected to the compressor suction tube for returning working fluid to the suction port of the compressor and partially forming a third line,

an unload rate needle valve within said third line,

a load rate needle valve within said first line, and

solenoid valve means selectively connecting or disconnecting ones of said first and second and third lines,

the improvement comprising:

a modular, multi-block unloading control valve assembly, said assembly comprising:

a compressor block fixedly and sealably mounted within the hermetic compressor outer casing and having internal and external faces,

said compressor block including holes extending through the same forming parts of said first, second and third lines and being connected to ends of said first, second and third tubes respectively so as to maintain the exposed tubes internally of said hermetic compressor outr casing.

a needle valve block fixedly mounted to the external face of the compressor block,

said needle valve block including passages extending therethrough, one of said passages carrying a pressure relief valve and others said unload rate needle valve and said load rate needle valve, respectively,

and said solenoid valve means comprising a solenoid valve block fixedly mounted in face abutting position on said needle valve block, forming a three way solenoid valve and comprising a normally open unload plunger, a normally closed load plunger and passages opening to said plungers and connected to respective passages carried by said needle valve block,

and means for removably, sealably fixing said blocks in a stacked array in end facing position includig means for fluid connecting respective passages of said blocks at their interfaces, such that said fluid passages internal of said compressor block, said needle valve block and said solenoid valve block insure minimum viscosity to the oil carried thereby as a result of compressor shut down for insured prompt proper slide valve operation at compressor start up.

4,508,492

MOTOR DRIVEN FUEL PUMP

Yukio Kusakawa; Toshiaki Nakamura, both of Anjo; Yoshifumi Ina, Okazaki, and Takashi Inbe, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 29, 1982, Ser. No. 445,222

Claims priority, application Japan, Dec. 11, 1981, 56-200680; Jan. 12, 1982, 57-3956

Int. Cl.³ F04B *17/00;* F04D *5/00*

U.S. Cl. 417—366 **4 Claims**

1. A motor driven fuel pump comprising:

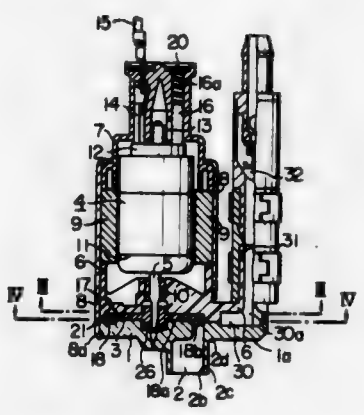
a cylindrical motor housing made of metal;

a motor armature rotatably disposed in said motor housing;

a pump housing secured to an end of said motor housing and defining a pump chamber;

an impeller of regenerative pump type disposed in said pump chamber and rotatably journalled by said pump housing, said impeller being drivingly connected to said motor armature and having an outer peripheral section cooperating with a radially outer peripheral section of the inner surface of said pump chamber to define a fuel pressurizing passage extending in the circumferential direction of said impeller;

said pump housing being formed therein with a suction port having an axis substantially parallel to the axis of said motor armature and communicated with said fuel pressurizing passage adjacent to one end thereof;



said pump housing being further formed therein with a discharge port communicated with said fuel pressurizing passage at the other end thereof and extending therefrom substantially tangentially thereto, said discharge port having a cross-sectional area which increases from its upstream end toward the downstream end; and

a discharge pipe connected to the downstream end of said discharge port and having an axis substantially parallel to the axis of said motor armature;

said impeller having a central section;

said impeller central section, said suction port and the downstream end of said discharge port being disposed on a substantially straight line; wherein

said motor housing has a plurality of circumferentially spaced tabs bent radially inwardly over said pump housing to secure the same to said motor housing.

4,508,493

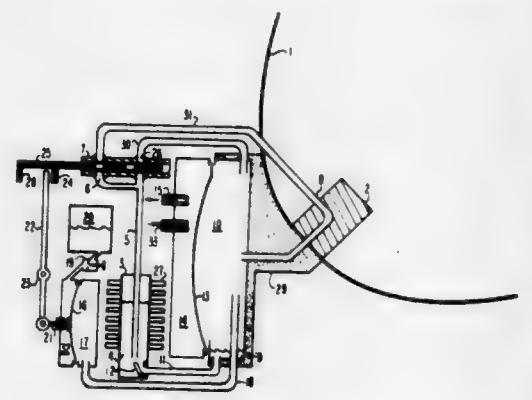
SELF ACTUATING DIAPHRAGM PUMP

Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526

Filed Feb. 28, 1983, Ser. No. 476,024

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—379 **10 Claims**



1. A self actuating diaphragm pump comprising:

(1) A vapor pressure to fluid flow conversion means in the form of multiple enclosed chambers having a common side which is in the form of a diaphragm capable of enlarging the volume of either one of the chambers while con-

tracting the volume of the other by expansion from the direction of the enlarging chamber and extension into the contracting chamber, one of said chambers being a pump chamber with two check valves for receiving and expelling the fluid being pumped and the second of said chambers having multiple inlet and exit ports, one port being capable of admitting heated vapor, another of admitting cool fluid for vapor condensation, and a third of exiting condensed and cooling liquids, and in addition said second chamber being capable of providing pressurization and vacuum conditions, and (2) fluid flow heating and vaporization means in the form of heat transfer ducting extending through strongly heated thermal mass, and (3) fluid flow cooling means in the form of a cooling duct connected to and extending through a cooler, and (4) internal liquid circulation means in the form of a pressurized liquid storage tank capable of receiving liquid under pressure through ducting connected to a liquid exit port at the bottom of said second chamber of the vapor pressure to fluid flow conversion means and of thereby compressing a gas above the liquid level and of subsequently exiting liquid under pressure from below the liquid level in the liquid storage tank through ducting connected to said storage tank below the liquid level thereof and of delivering said liquid under pressure to an (5) alternating fluid flow communication means in the form of valving and ducting capable of providing fluid flow communication between said second chamber of the vapor pressure to fluid flow conversion means, said cooling means and said circulation means in one time period and then between said second chamber of the vapor pressure to fluid flow conversion means, said heating means and said circulation means in an alternate period.

4,508,494

TWO STAGE ROTARY VANE PUMP

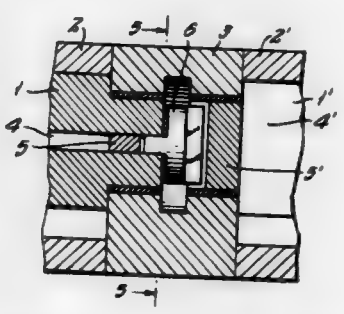
Erich Bachmann, Asslar; Ludwig Fabel, Wetzlar; Roland Fischer, Wetzlar; Werner Peter, Wetzlar; Bernd Scheiter, Vollnkirchen, and Werner Wenzel, Schöffengrund, all of Fed. Rep. of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,201

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139232

Int. Cl.³ F04C *23/00*

U.S. Cl. 418—13 **2 Claims**



1. A rotor arrangement for use in a two-stage rotary vane pump, having a first rotor of one stage and a second rotor of the other stage, and a coupling element located between said first and second rotors and in driving relationship therewith, said element forming between engagements on opposed faces of the two rotors a connection which permits two degrees of freedom between the two rotors in the plane perpendicular to the rotor axis, a groove in a face of one of the rotors, in which the coupling element engages, is formed by the axial ends of the vane slits in said one rotor.

4,508,495

ROTARY SHAFT FOR COMPRESSOR

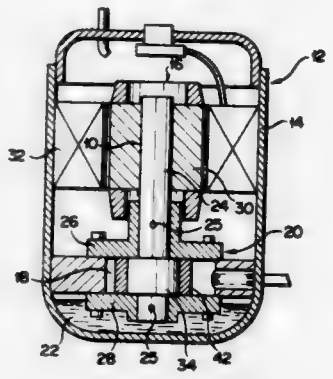
Tsuneo Monden, Tokyo; Masao Ozu, Fuji, and Satoshi Ikegami, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 30, 1983, Ser. No. 567,345

Claims priority, application Japan, Jan. 18, 1983, 58-6411

Int. Cl.³ F04C *2/00*; B23K *26/00*

U.S. Cl. 418—63 **4 Claims**



1. A rotary shaft for a compressor which includes an outer box, driving means arranged within the outer box to drive the rotary shaft, and a compression section arranged within the outer box and having a compression chamber, comprising:

a cylindrical shaft body rotatably arranged within the outer box and connected to the driving means at one end portion thereof;

a cylindrical eccentric member having a through-hole extending along the axis thereof and formed eccentric thereto, and also having a groove extending from one end face to the other end face of the eccentric member to form a passage for lubrication oil, being provided with a bottom face adjacent to the shaft body, the shaft body being inserted into the through-hole and the eccentric member being secured to the other end portion of the shaft body by laser-welding the bottom of the groove to the shaft body, and being housed within the compression chamber; and

an annular eccentric roller arranged within the compression chamber and rotatably fitted onto the eccentric member to compress coolant within the compression chamber in accordance with the rotation of the shaft body.

4,508,496

ROTARY, POSITIVE-DISPLACEMENT MACHINE, OF THE HELICAL-ROTOR TYPE, AND ROTORS THEREFOR

James L. Bowman, Mooresville, N.C., assignor to Ingersoll-Rand Co., Woodcliff Lake, N.J.

Filed Jan. 16, 1984, Ser. No. 571,109

Int. Cl.³ F01C *1/16*

U.S. Cl. 418—201 **22 Claims**

1. A rotor, having helical lobes, and intervening, helical grooves, rotatable about a given axis within a machine housing, for coacting, meshing engagement with a cooperating rotor also having helical lobes, and intervening, helical grooves, in order that fluid admitted into such housing will be received in said grooves and, due to coacting, meshing engagement and rotation of said rotors, will have the pressure thereof altered, wherein:

said rotor has an axial center;

each of said grooves of said rotor has, in cross-section, a pair of generally concave surfaces, and a first, radially innermost point intermediate said pair of surfaces;

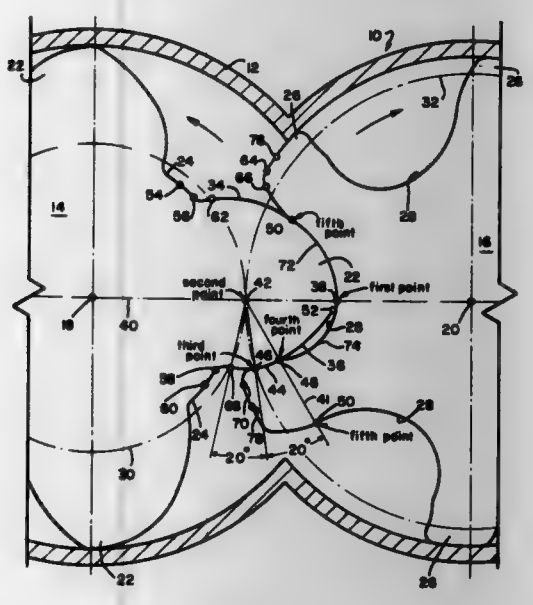
and

said rotor has a pitch circle; wherein

a line traversing said axial center and said first point further traverses a second, given point on said pitch circle;

only a minor portion of one of said concave surfaces is defined by a circular arc which (a) traverses said pitch

circle, and (b) has a given radius originating at said second point; and



said minor portion is bounded by a third point which is located on said pitch circle whereat said arc traverses, and a fourth point which is at a prescribed distance inward of said pitch circle.

4,508,497

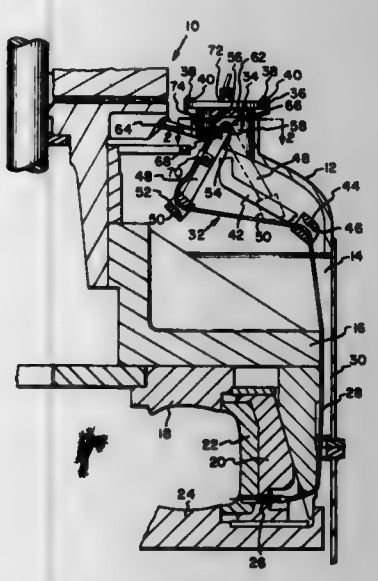
CABLE TAKE-UP FOR TIRE VULCANIZER

Arthur W. Beres, Springfield Township, Summit County, and Joseph P. Verderico, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 20, 1983, Ser. No. 543,875

Int. Cl.³ B29H *5/02*

U.S. Cl. 425—28 R **13 Claims**



1. A take-up apparatus for maintaining tension in an elongated flexible cable member in a space on one side of a wall having an opening for said cable member comprising a supporting member, a support arm mounted on said supporting member, said support arm including a support arm guide for guiding said cable member, a pivot arm mounted on said supporting member for swinging movement between a retracted position adjacent said support arm and an extended position spaced from said support arm, said pivot arm including a pivot arm guide for guiding said cable member, and means for urging said pivot arm away from said retracted position toward said extended position to maintain tension in said cable member.

4,508,498

SPACER DEVICE FOR A TIRE PROCESSING MACHINE

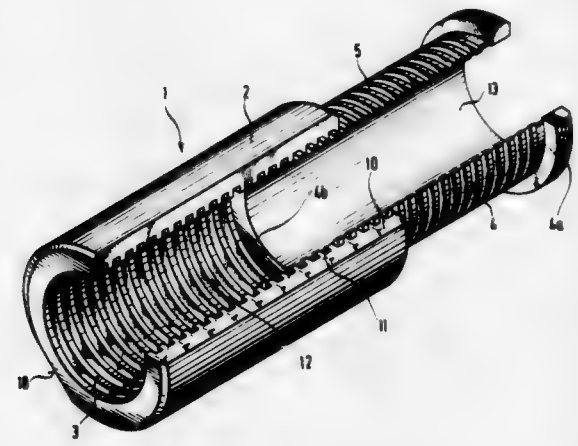
Wilhelm Collmann, Auf der Höhe 25, 2400 Lübeck, Fed. Rep. of Germany

Filed Apr. 2, 1984, Ser. No. 595,911

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312618

Int. Cl.³ B29H *5/02*

U.S. Cl. 425—58 **5 Claims**



1. A spacer device for setting the distance between two mutually opposed tire holding means of a tire processing machine, in which at least one of the tire holding means is displaceably mounted for axial displacement into the operating position by means of a connecting rod or of an axial member, the device comprising a spacing element axially screwed into a threaded member, and adapted to act as a stop for establishing the operating position in question, the threaded member and the spacing element being constructed substantially as sleeves, each having a longitudinally extending open ended slot, the slots having widths corresponding at least to the diameter of the connecting rod or axial member, whereby the sleeves may be relatively rotated to place the slots in coincidence to allow lateral mounting of the device on the rod or axial member through the slots.

4,508,499

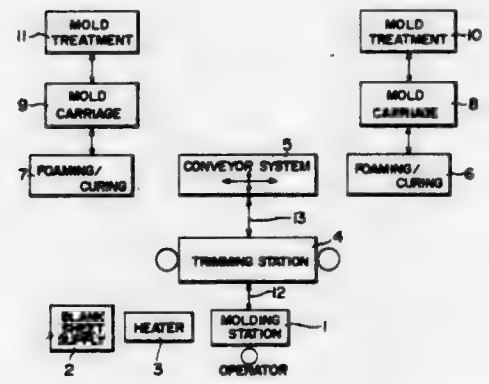
SYSTEM FOR MANUFACTURING THREE-DIMENSIONAL WORK PIECES

Ernst M. Spengler, Heusenstamm by Ffm., Fed. Rep. of Germany, assignor to Stanztechnik GmbH R & S, Frankfurt, Fed. Rep. of Germany

Filed Jun. 8, 1983, Ser. No. 502,284

Int. Cl.³ B26F *1/44*

U.S. Cl. 425—88 **19 Claims**



1. A system for manufacturing three-dimensional work pieces, comprising a number of work stations including tool means operatively carried by said work stations, primary mold means, primary mold support means arranged for cooperation with a work station for carrying said primary mold means, secondary mold means arranged for cooperation with said primary mold means and with said tool means carried by said

work station, hinging means operatively arranged between said work station and said secondary mold means for engaging said secondary mold means when the secondary mold means are to be tilted from a first position in which said secondary mold means cooperate with said primary mold means into a second position in which said secondary mold means cooperate with said tool means and vice versa, and tilting drive means operatively connectable to said hinging means for tilting said secondary mold means from said first position for cooperating with said primary mold means into said second position for cooperating with said tool means carried by one of said work stations and vice versa.

4,508,500

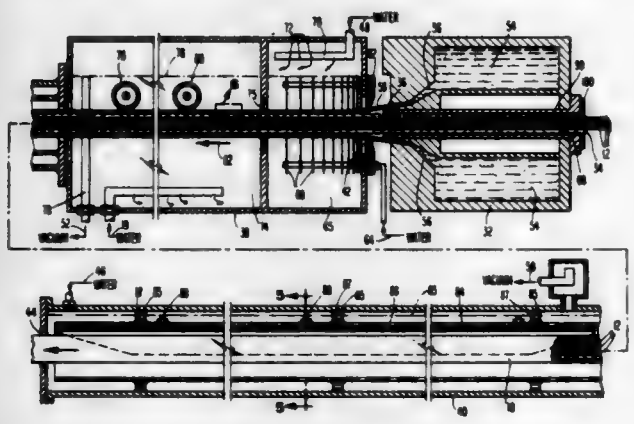
ELECTRICAL DUCT EXTRUSION APPARATUS

Terry M. French, Cressona, Pa., assignor to Tamaqua Cable Products Corporation, Schuylkill Haven, Pa.

Filed Nov. 3, 1983, Ser. No. 548,503

Int. Cl.³ B29C *17/00*; B29F *3/08*

U.S. Cl. 425—388 **17 Claims**



1. A differential pressure calibrating tank for sizing and cooling just-extruded duct having cable extending therethrough comprising:

a duct inlet opening to the tank for receiving just-extruded duct from an adjacent extrusion die;

a calibrator head adjacent the inlet opening for sizing the just-extruded duct;

a cooling water inlet to the tank, the cooling water partially filling the tank and submersing the just-extruded duct;

a vacuum source to the tank for creating a differential pressure across the walls of the duct;

a duct exit from the tank through which sized and cooled duct passes;

a means for restraining the duct submersed in the water as the duct travels from the duct inlet to the exit; and

a flexible conduit having one end fixed relative to said extrusion die in a manner such as to permit extrusion of said duct about said conduit and a portion of said flexible conduit extending within the duct inlet opening of the tank, said flexible conduit being movable relative to said tank for precluding contact between the duct and the cable before the duct has cooled.

4,508,501

METHOD OF MONITORING FURNACE INSTALLATIONS

Friedhelm Kühn, Mülheim, Fed. Rep. of Germany, assignor to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 8, 1983, Ser. No. 473,370

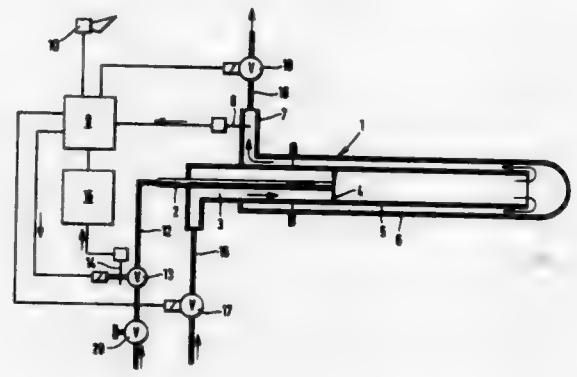
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208765

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—2 **6 Claims**

1. In a burner system containing at least one radiant heating tube to which combustible gas is fed through a gas feed line and combustion air is fed through an air feed line, wherein a safety circuit comprising a gas shut-off means and end position feedback means for confirming the open and closed positions of the gas shut-off means is associated with the gas feed line, a process for the surveillance of the combustion conditions in the radiant heating tube and for the detection of leakage of the gas shut-off means, said process containing the following steps:

(a) measuring the O_2 partial pressure in the exhaust gas stream at low exhaust gas temperature using a detector which responds to the O_2 partial pressure in the exhaust gas and produces an electrical output signal in accordance with the O_2 partial pressure,



(b) closing the gas shut-off means and confirming the closed position by the end position feedback means,

(c) producing a reference signal in accordance with the process step (b),

(d) comparing the actual level of the detector output signal with a bottom limit value which is derived from the said reference signal, and

(e) producing an alarm signal if the actual level of the detector output signal is above said bottom limit with the gas shut-off means closed.

4,508,502

INFRARED GAS BURNER PLATE

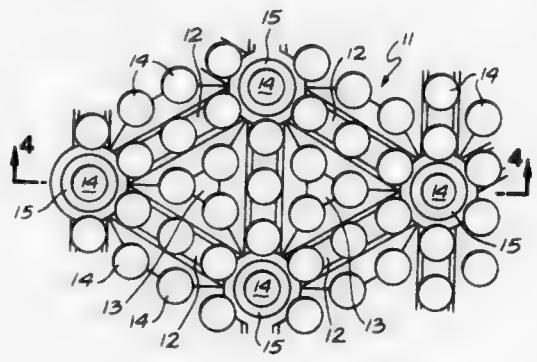
Jiro Itoh, Nishi-Karaso, Japan, assignor to Rinnai Corporation, Nagoya, Japan

Filed May 6, 1983, Ser. No. 492,323

Claims priority, application Japan, Jun. 14, 1982, 57-88450[U]

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—328 **2 Claims**



1. In an infrared gas burner plate of the type in which a sintered plate body formed of a heat resisting material is provided at its front surface with a plurality of grooves crossing one another to define a plurality of intersecting portions and a plurality of first convex portions, the plate body being additionally provided with a plurality of burner holes therethrough between the front and rear surfaces thereof and distributed over the grooves and the first convex portions, characterized in that each of said intersecting groove portions is provided with a small convex portion having said burner hole at its center, said small convex portions being coplanar with said first convex portions.

4,508,503

INTAKE ASSEMBLY FOR ROTARY DRUMS

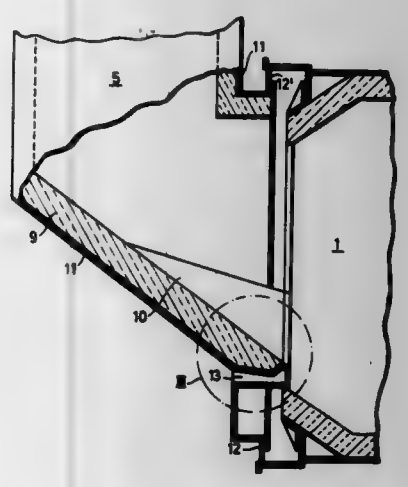
Hubert Ramesohl; Fritz Seelen; Ralf Filges, all of Bergisch Gladbach; Karlheinz Schröder, and Elmar Veiser, both of Cologne, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 546,107

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1982, 3245702

Int. Cl.³ F27B 7/36, 7/02

U.S. Cl. 432—109 6 Claims



1. An intake assembly for introducing materials into a rotary drum which includes:

a housing arranged to discharge into an intake opening of said rotary drum,

a chute forming the discharge end of said housing, said chute including a metal jacket and a refractory lining on said jacket,

said jacket including a double-walled collar composed of individual support segments and restraining said lining from downward sliding movement, said collar having a closed end facing the rotary drum and having at least a partially open end toward the outside of said chute,

webs subdividing said double-walled collar into separate chambers,

holding meand confining said support segments, and

clamping means for securing said holding means to said jacket.

4,508,504

BLAST HEATING APPARATUS FOR BLAST FURNACES

Friedrich Eschmann, Ginsheim-Gustavsburg; Günter Gelsdorf, Nordenstadt; Peter Nold, Rümmelsheim; Gotthard Staats, Rehlingen, and Gerhard Subat, St. Augustin, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 492,001

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218126

Int. Cl.³ F27B 14/08

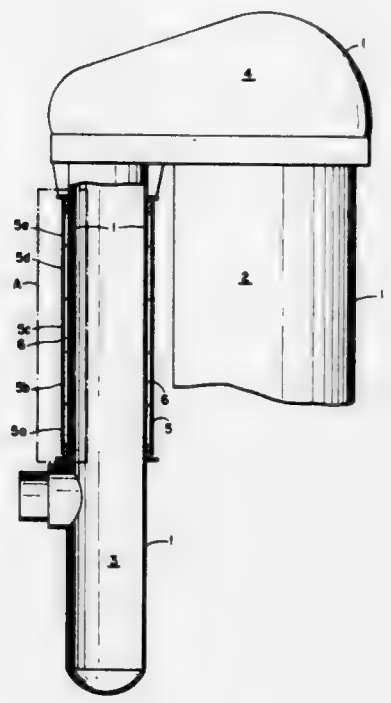
U.S. Cl. 432—217 10 Claims

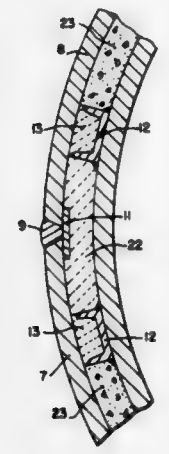
1. In a blast heating apparatus, particularly for blast furnaces, of the type including an inner metal shell having therein a refractory lining, the improvement comprising:

an outer metal shell surrounding at least a portion of said inner metal shell and defining therewith a couble shell structure;

spacers positioned between said outer and inner metal shells and defining therebetween a gap; and

at least a portion of said gap being filled with a pourable dry material having a grain size of up to 8 mm and a heat conductivity of at least approximately 1.5 W/Km, said pourable dry material comprising a dry mass consisting





essentially of 80% by weight of a SiC-graphite mixture, 5% by weight MgO, and 15% by weight $BaSO_4$.

4,508,505

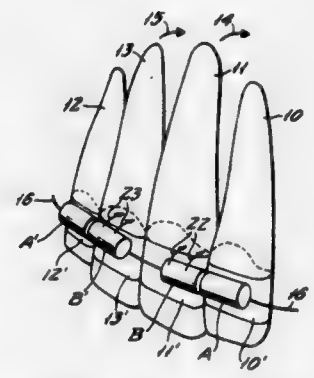
MAGNETIC ORTHODONTIC TORQUING APPLIANCE

Harry Smiley, White Plains, and Abraham Blechman, Tappan, both of N.Y., assignors to Medical Magnetics, Inc., Ramsey, N.J.

Continuation-in-part of Ser. No. 322,423, Nov. 18, 1981, Pat. No. 4,424,030, which is a continuation of Ser. No. 19,427, Mar. 12, 1979, abandoned. This application Nov. 4, 1983, Ser. No. 548,616

Int. Cl.³ A61C 7/00

U.S. Cl. 433—18 13 Claims



1. Orthodontic torquing means, comprising a pair of permanently polarized elongate cylindrical magnet elements, each magnet element being oppositely polarized at the respective

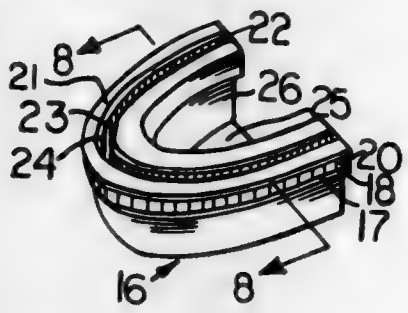
diametral intercepts of a geometric plane which includes the cylindrical axis of the element, whereby a circular end face of the element is characterized by a polarization diameter normal to the cylindrical axis, one magnet element being adapted for fixation to an exposed face of one tooth and the other magnet element being adapted for fixation to the exposed face of an adjacent tooth, (a) with their cylindrical axes in substantial alignment and (b) with a gap between said magnet elements and (c) with the polarization diameters of adjacent end faces of said magnet elements at orientations which differ by at least 45 degrees, whereby in reaction to their polarized orientation a unidirectional torque about the cylindrical axes may be continuously applied to one of said teeth with respect to the other of said teeth, and bio-compatible non-magnetic means encasing each of said magnet elements.

4,508,506

PROCESS AND APPARATUS FOR THE PREPARATION OF DENTAL MODELS

Robert M. Jackson, 308 S. Washington St., Clinton, Ky. 42031

Filed Oct. 31, 1983, Ser. No. 547,090
Int. Cl.³ A61C *19/00*
U.S. Cl. 433—74 **9 Claims**



1. A two-piece device for use in dental reconstruction work in the production of cast dental models from dental stone which comprises:

A. a reusable U-shaped base member including:

1. exterior walls containing accurately-spaced indicia;
2. a top planar surface;
3. a negative cavity in said top planar surface, conforming generally to the shape of a dental arch and having interior walls containing vertically-disposed ridges and grooves;

B. a complementary disposable U-shaped member in the form of a horizontally-disposed plate having exterior side walls and including:

1. a series of cast solid dowel-like members in the form of a simulated dental arch depending from one surface of said plate;
   a. said dowel-like members being formed by alternate vertical ridges and grooves,
   b. said vertical ridges and grooves of said dowel-like members slidably mating with the vertically-disposed ridges and grooves of the negative cavity of said reusable U-shaped base member, and
   c. said horizontally-disposed surface of said plate snugly fitting against the planar surface of said base member;
2. anchoring means on the other surface of said horizontally-disposed plate for positively bonding of said plate with the unset stone of said cast dental model; and
3. accurately-spaced indicia on said side walls, which match the indicia of the side walls of said base member.

4,508,507

MAGNETIC DENTURE RETENTION APPARATUS

Thomas R. Jackson, 146 Renfro St., Mount Airy, N.C. 27030

Filed Oct. 3, 1983, Ser. No. 538,753
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—189 **6 Claims**

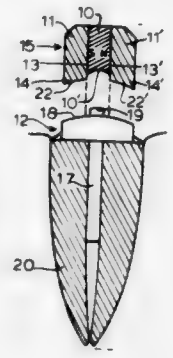
1. A denture comprising:

(a) a base member having at least one artificial tooth mounted therein;

(b) a magnetic assembly embedded in said base member and comprising:

(i) a singular bar magnet having opposed, laterally spaced apart, side pole faces and opposed end surfaces; and

(ii) a pair of magnetic flux transmitting pole members rigidly secured to said magnet on opposite sides thereof and sandwiching said magnet therebetween with said magnet side pole faces in abutting relation to respective conforming surfaces of said pole members so as not to define any space therebetween, said pole members each having end portions extending outwardly from one end surface of said magnet in a form enabling said magnet to be completely embedded in said base member with said



pole member end portions protruding therefrom, said pole member end portions terminating with at least portions thereof formed with surfaces of selected curvature; and

(c) a magnetic flux transmitting keeper element formed in a manner enabling said keeper element to be secured to mouth structure mating said base member when said denture is in place, said keeper element being formed with a selected number of curved surfaces mating said pole member surfaces in a slidable relation and being shaped for operative relation with said pole members such that during occlusion loading of said base member said assembly may rotate at least slightly with respect to said keeper without creating an air gap between the engaging mated curved surfaces of said keeper and pole members.

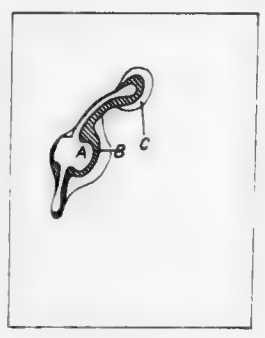
4,508,508

FIREARM TRAINING SYSTEM

Paris Theodore, 115 E. 62nd St., New York, N.Y. 10021

Filed Sep. 26, 1983, Ser. No. 535,416
Int. Cl.³ F41G *3/26*; F41J *1/00*
U.S. Cl. 434—19 **9 Claims**





1. A target for firearms training which comprises:

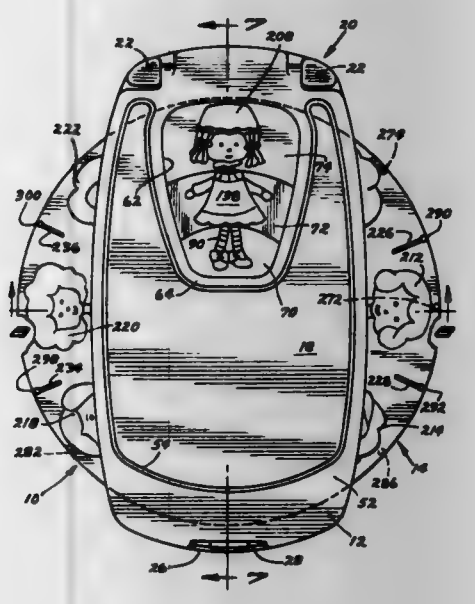
a planar sheet material having on the forward surface indicia that represents a targeted subject and on the reverse surface indicia that corresponds to the human or animal anatomical zone that is coextensive with the area which extends longitudinally from the cranial cavity to the base of the spine and laterally to both sides of the spinal column and to the area surrounding the kidneys of said targeted subject which appears on said forward surface.

4,508,509

DEVICE FOR MAKING PRESELECTED COMPOSITE DESIGNS

Charles A. Cummings, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 4, 1983, Ser. No. 464,083
Int. Cl.[3] B43L *13/00*
U.S. Cl. 434—88 5 Claims



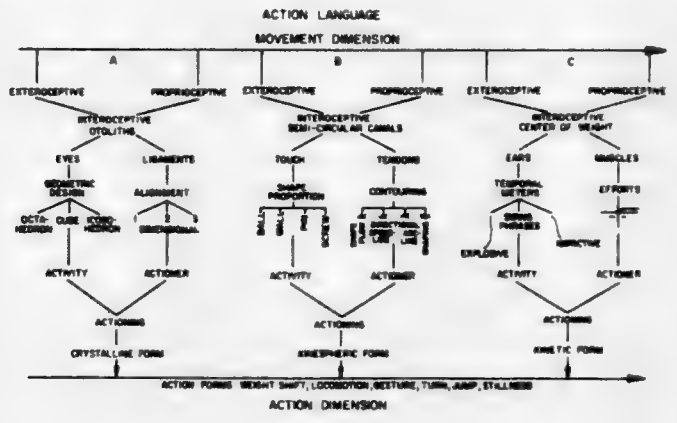
1. A device for making reselected composite designs comprising a tray having a panel therein and a cylindrical post extending upwardly from said panel, an inner ring member having raised design portions on the upper and lower sides thereof and having a central circular opening of a size to fit over said post, an intermediate ring member having a plurality of raised design portions on the upper and lower sides thereof and a central opening of a size to fit over the periphery of said inner ring member, an outer ring member having a plurality of raised design portions on the upper and lower sides thereof and a central opening of a size to fit over the periphery of said intermediate ring member, whereby said ring members can be individually rotated relative to said post to angularly position selected design portions in radial alignment with each other and with said panel so that a composite design can be formed, the design portions on the lower sides of said ring members being angularly displaced with respect to the design portions on the upper sides of said ring members, a cover having an open window therein, said cover being hingedly connected to said tray at one end so that said cover can be lowered onto said tray after said ring members have been relatively rotated to form a preselected design, said window being in alignment with said panel and located so as to provide access to said preselected design, a downwardly projecting detent pin on the lower side of each of said ring members aligned with the particular design portion thereabove, an upwardly projecting detent pin on the upper side of each of said ring members aligned with the particular design portion there below, the angular spacing of said detent pins on the upper sides of said ring members and the angular spacing of said pins on the lower sides of said ring members being greater than the width of said window, and said panel having a detent hole for each ring member for receiving therein any one of said detent pins to maintain said ring members in a fixed relationship after said composite design has been preselected by individually rotating said ring members about said post to angularly position selected design portions in radial alignment with each other, said composite design being formed irrespective of when any one of said ring members is reversed as to its upper and lower sides.

4,508,510

METHOD FOR PSYCHOMOTOR TRAINING OF PHYSICAL SKILLS

Mona Clifford, 2186 A1A 2B, Indian Harbour Beach, Fla. 32937

Filed Dec. 7, 1983, Ser. No. 559,049
Int. Cl.[3] A63B *69/00*
U.S. Cl. 434—247 16 Claims



1. A method of training a person to perform a physical task comprising the steps of:

(a) monitoring the patterning of the person's body parts as the person executes movement;

(b) identifying a prescribed actioning modality with which the person is associated on the basis of the patterning of the person's body parts as monitored in step (a);

(c) establishing a sequence of action forms to be carried out by said person in the course of performing said task in accordance with the actioning modality of said person as identified in step (b); and

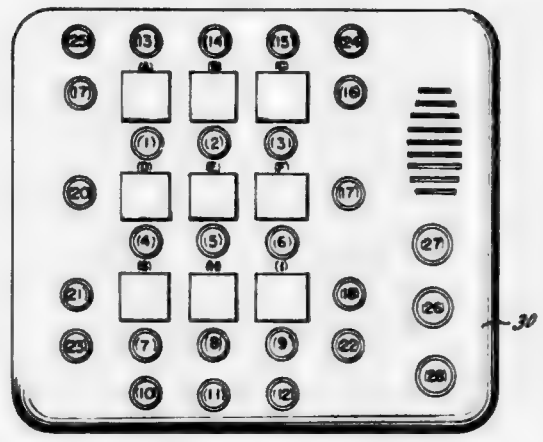
(d) causing the person to perform said task by executing the component movements thereof in accordance with the sequence of action forms established in step (c).

4,508,511

EDUCATIONAL BABY TOY WITH LIGHTS

Wayne F. McQueen, 110 E. Lauderdale St., Tullahoma, Tenn. 37388

Filed May 8, 1984, Ser. No. 608,123
Int. Cl.[3] G09B *5/00*
U.S. Cl. 434—258 10 Claims



1. An elongated baby toy comprising:

a housing;

a plurality of different colored lamps arranged in a pattern of transverse columns and rows mounted on an upper surface of said housing;

a plurality of manually actuable buttons in number greater than the number of said lamps and mounted on said upper surface, each of said lamps being associated with an adjacent button which, when actuated, causes illumination for a fixed time of the adjacent lamp and each of said rows and columns and each of the diagonals of said rows and col-

umns being associated with an adjacent button which, when actuated, causes illumination for a fixed time of each of the lights of that row, column or diagonal sequentially;

means for supplying electrical energy to illuminate said lamps; and

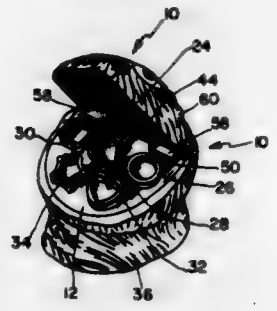
computer means within said housing for controlling illumination of said lamps in response to manual button actuation.

4,508,512

SHAPE-MATCHING TOY APPARATUS WITH SAFETY HINGE

B. J. Maria Girsch; Charles W. Girsch, both of St. Paul, Minn., and Thomas C. McCarthy, Lincoln, R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Oct. 25, 1982, Ser. No. 436,719
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—259 **7 Claims**



2. A toy apparatus comprising:

a. a first plate having a plurality of apertures of different configurations therein;

b. means for supporting said plate in spaced relation above a supporting surface;

c. a plurality of three-dimensional block elements corresponding in configuration to said apertures and receivable in corresponding apertures;

d. retaining means for resiliently retaining said block elements in their corresponding apertures, so that they project upwardly at least slightly from the upper surface of said plate, said retaining means being resiliently deflectable to allow said block elements to pass through the corresponding apertures upon the application of appropriately directed force to said block elements;

e. a second plate; and

f. means hingedly connecting said second plate to said first plate so that it is movable between a first open position wherein said second plate is hinged upwardly relative to said first plate and a second closed position wherein said second plate is in adjacent, substantially parallel relation to said first plate, whereby when said block elements are disposed in their corresponding apertures and said second plate is moved to said closed position thereof, said second plate engages said block elements to resiliently deflect said retaining means so that said block elements pass through their corresponding apertures.

4,508,513

GAME CARD DEVICE

John Donovan, Hatfield Peverel, England, assignor to Don Marketing Ltd., Essex, England

Filed Dec. 27, 1983, Ser. No. 565,610
Claims priority, application United Kingdom, Jan. 7, 1983, 8300440; Jul. 20, 1983, 8319631
Int. Cl.³ G09B *3/08*
U.S. Cl. 434—346 **11 Claims**

1. A game card device, for participating in a game of skill comprising:

(i) first indicia applied thereto;

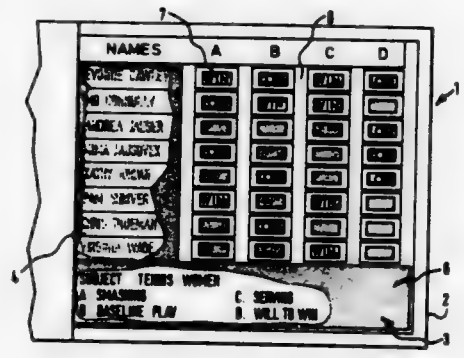
(ii) second indicia applied thereto;

(iii) third indicia applied thereto;

(iv) the first indicia identifying a category or field of activity;

(v) the second indicia identifying a number of different integers associated with the first indicia;

(vi) the third indicia providing a plurality of separate options associated with an association of the first and second indicia;



(vii) an opaque layer camouflaging all of said first, second and third indicia;

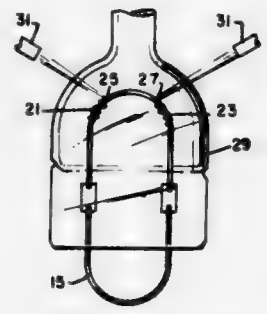
(viii) said layer being removable from said first, second and third indicia individually whereby to reveal selected parts thereof.

4,508,514

SINGLE-ENDED METAL HALIDE DISCHARGE LAMP ARC GAP FABRICATING PROCESS

George J. English, Reading, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 19, 1983, Ser. No. 533,718
Int. Cl.³ H01J *9/14*
U.S. Cl. 445—26 **19 Claims**



1. A metal halide discharge lamp fabricating process comprising the steps of:

sealing an electrically conductive rod into a quartz envelope;

focusing a laser beam onto said rod to sever said conductive rod and provide an arc gap having a given dimensional length;

filling said quartz envelope with a fill gas; and

sealing said gas filled envelope to provide a metal halide discharge lamp.

4,508,515

BOOK WITH PUPPET

Joel B. Skolnick, 600 5th St., Brooklyn, N.Y. 11215

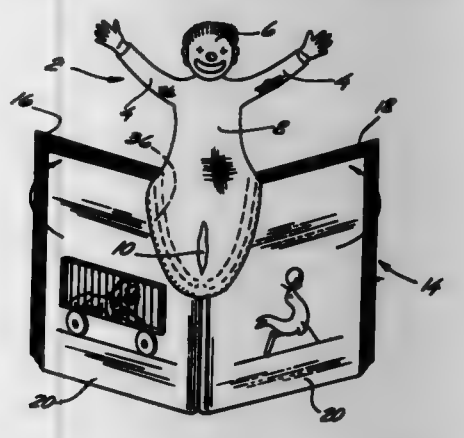
Filed Oct. 13, 1981, Ser. No. 310,983
Int. Cl.³ A63H *33/38*
U.S. Cl. 446—148 **2 Claims**

1. In combination:

a hollow puppet having an opening through which a user can introduce a hand to manipulate said puppet within an interior thereof; and

a book having two covers wherein said covers have respective edges which jointly define a central gap bounded by

a peripheral region wherein said puppet is secured to said peripheral region said book having a pluarlity of pages



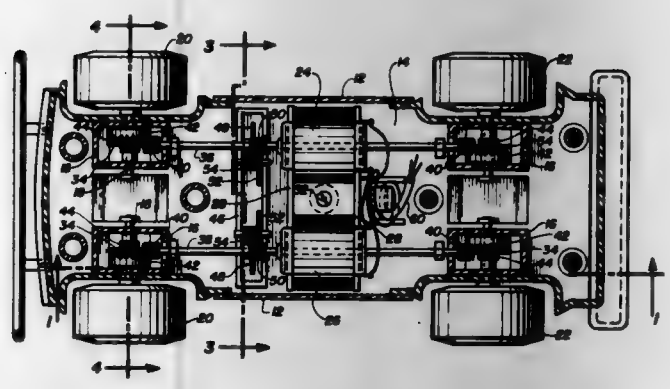
which are all notched to conform with said central gap when said book is opened.

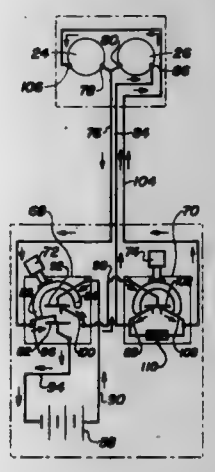
4,508,516

STEERING SYSTEM AND REVERSIBLE DRIVE FOR TOY VEHICLES

Bruce M. D'Andrade, Whitehouse Station, N.J., and Johnny Y. Sing Chuen, Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Aug. 3, 1983, Ser. No. 519,819
Int. Cl.³ A63H *29/00*
U.S. Cl. 446—443 **4 Claims**





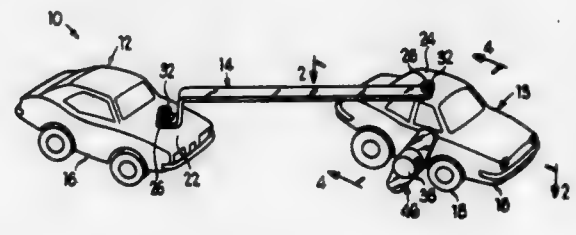
1. A toy vehicle having a chassis supporting a pair of wheels respectively adjacent opposite ends, a pair of electric motors of reversible polarity supported by said chassis, drive means connected respectively between said motors and each wheel of at least one of said pairs of wheels, a portable battery source of electric energy, electric circuit means connecting said source of energy respectively to each of said motors, a first multi-pole direction control switch means in said circuit means having a switch lever movable in opposite directions and operable selectively to deliver electric current to said motors for forward or reverse driving of said vehicle, electric resistance means in said circuit connectable by a second multi-pole speed control switch means having a switch lever movable in opposite directions and selectively operable in said circuit to connect said resistance means in the circuit to one or the other of said motors to drive at least one wheel of said one of said pairs of motors slower than the other and thereby cause said vehicle to turn in one direction or the opposite direction depending upon the reversible setting of said speed control, and said source of electric energy and said first and second switch means being remote from said vehicle and connected thereto by a flexible circuit conduit, said circuit and switch means being further characterized by comprising a first circuit conduit extending commonly from one pole of each motor to a movable contact of said direction control switch, a neutral conduit between the other pole of a first motor and a first movable contact of the speed control switch; a second conduit extending between the other pole of the second motor and a second movable contact of the speed control switch, a third conduit between one pole of said battery and a first fixed contact of said direction control switch, a fourth conduit between a second fixed contact of said direction control switch and the other pole of said battery, and a fifth conduit between a second movable contact of said direction control switch and a fixed contact of said speed control switch, whereby when the motors are in the stop mode, said first and second movable contacts of said direction control switch are in contact with said first fixed contact thereof and the first and second movable contacts of said speed control switch are in contact with the fixed contact of said speed control switch and said electric resistance means being connected between said neutral and second conduits where they are connected to said first and second movable contacts of said speed control switch.

4,508,517

PIVOTABLY LINKED TOY VEHICLES, ONE SELF-PROPELLED

Ralph J. Kulesza, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 1, 1983, Ser. No. 462,753
Int. Cl.³ A63H *29/00*
U.S. Cl. 446—464 **6 Claims**



1. A toy vehicle device comprising:

a pair of vehicles each supported on a surface by spaced apart rotatable wheels, and including a forward hood end, and a generally central roof that is higher than the hood end with respect to the supporting surface;

means including an L-shaped elongated bar connecting one side of the roof of one of the vehicles to generally the center of the front hood of the other of the vehicles for pivotal movement of each of the vehicles relative to the bar about a generally vertical axis while permitting some pivotal movement of the bar about a horizontal axis with respect to each of the vehicles;

means on one of the vehicles for propelling the vehicles over a supporting surface by driving at least one of the wheels of the one vehicle; and

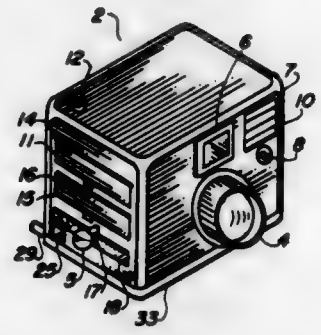
means mounted on said one vehicle for periodically contacting the supporting surface laterally spaced from the one driven wheel for causing the one vehicle to turn about the contact and swing the other vehicle about the one vehicle.

4,508,518

TOY CAMERA THAT PRODUCES SIMULATED PHOTO

Amador G. Exevea, 6609 Thornberry Crescent, Windsor, Ontario, Canada (N8T 3A6)

Filed Dec. 31, 1981, Ser. No. 336,508
Int. Cl.[3] A63H *33/30*
U.S. Cl. 446—475 7 Claims



1. A toy camera including a simulated camera housing comprising:

a. picture-producing means in said housing including plate means for imparting an impression of a desired form,

b. sheet means within said housing for receiving said impression,

c. ink means within said housing for printing said impression,

d. pressure means mounted in said housing for pressing said plate means and ink means against said sheet means,

e. graspable means connected to said pressure means and extending outside said housing for manual operation of said pressure means, and,

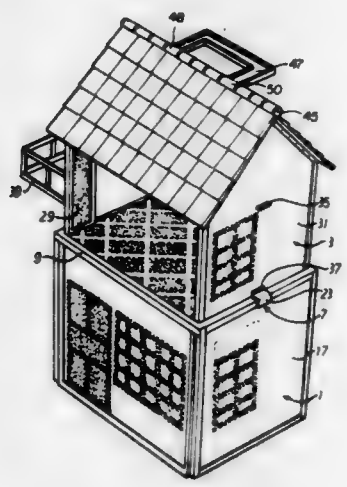
f. said housing including access means whereby said sheet means, after said impression has been received thereon may be removed from within said housing in a manner of a photograph being removed from a real camera.

4,508,519

TOY BUILDING

James R. Becker, 303 E. 57th St., New York, N.Y. 10022

Filed Jan. 4, 1983, Ser. No. 455,469
Claims priority, application United Kingdom, Aug. 1, 1982, 8200482
Int. Cl.[3] A63H *3/52*
U.S. Cl. 446—478 26 Claims



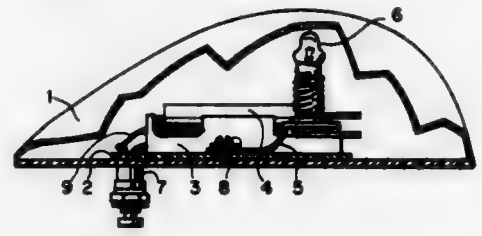
1. A multi-story toy building which is vertically expandable comprising at least first and second parts which are vertically slidably received one within the other, each of said parts comprising at least one story of the building and when extended forms a multi-story building, and catch means for securing the said parts in the extended and collapsed position comprising a lug slidably received on a rail of one of the parts and adapted to be cooperable with an abutment of the other part.

4,508,520

HEART-SHAPED LIGHT-EMITTING NOVELTY

Richard K. Sellers, and Elisabeth A. Sellers, both of 100 Robie St., Buffalo, N.Y. 14214

Filed Oct. 7, 1981, Ser. No. 309,690
Int. Cl.[3] A63H *33/26*
U.S. Cl. 446—485 1 Claim



1. A heart-shaped light-emitting novelty device comprising:

(a) a heart-shaped hollow housing having a front convex-concave light transmitting cover and a flat rear cover;

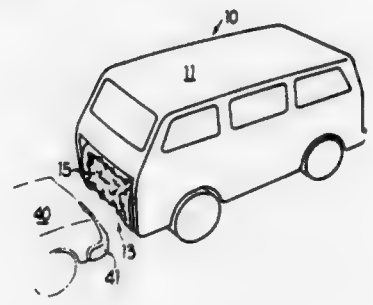
(b) an electric circuit housed in said hollow housing and mounted on said rear cover, said electric circuit comprising wire means connecting an electric lamp, a battery, and a switch in a series circuit; said switch being a momentary switch and is mounted on said rear cover through an opening thereon, whereby a portion of said switch is located outside of said housing to allow manual activation of said switch to close said electric circuit to thereby turn-on said electric lamp as long as said switch is manually activated and to turn-off said electric lamp as said manual activation is discontinued.

4,508,521

IMPACT RESPONSIVE TOY

Randall J. Klimpert, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 21, 1982, Ser. No. 435,555
Int. Cl.[3] A63H *3/12*
U.S. Cl. 446—486 10 Claims



1. An impact responsive toy comprising:

an incomplete body member;

a part mounted on the body member;

the part having a periphery divided into a number of sections;

each of the sections having a different appearance;

means mounting the part for movement relative to the body member and to selectively expose to view and accessibility one of the sections to complete the body member while obscuring each section other than the one section;

means moving the part in response to impact upon the part itself to obscure the one section and expose a previously obscured section to change the appearance of the body member without removing the part from the body member;

the part having opposed axle ends and revolving around the axis extending between the axle ends;

the mounting means providing for linear movement of at least one of the axle ends relative to the mounting means in a direction transverse to the axis of revolution in response to impact upon the exposed section;

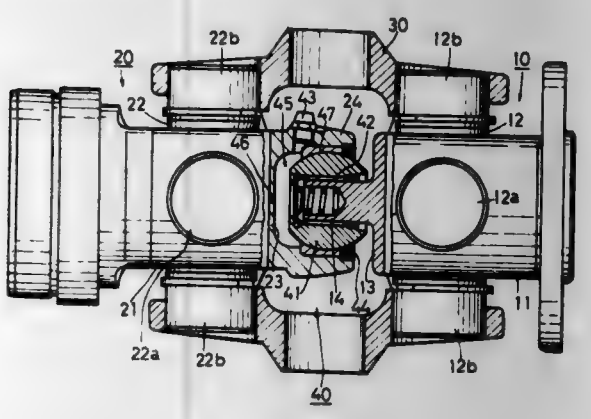
biasing means urging revolution of the part;
releasable latch means restraining revolution of the part; and
impact upon the exposed section moving the part transverse to the axis of revolution effecting release of the latch means.

4,508,522

DOUBLE CARDAN UNIVERSAL JOINT

Akio Numazawa, Nagoya; Ichio Sakai, Toyota; Tadanobu Kumagai, Toyota, and Seiichi Nishikawa, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 109,221, Jan. 3, 1980, abandoned. This application Mar. 30, 1983, Ser. No. 478,815
Claims priority, application Japan, Jan. 10, 1979, 54-1754[U]
Int. Cl.³ F16D *3/26*
U.S. Cl. 464—11 **1 Claim**



1. A valve for a double Cardan universal joint having a pair of spiders connected by a ring-shaped coupling member, a pair of yoke members angularly movably connected with each other by said spiders, a centering assembly for aligning said yoke members with each other and defining a reservoir for grease within a bridge forming a part of one of said yoke members and a breather hole formed in said bridge for allowing said reservoir to communicate with atmosphere, comprising:

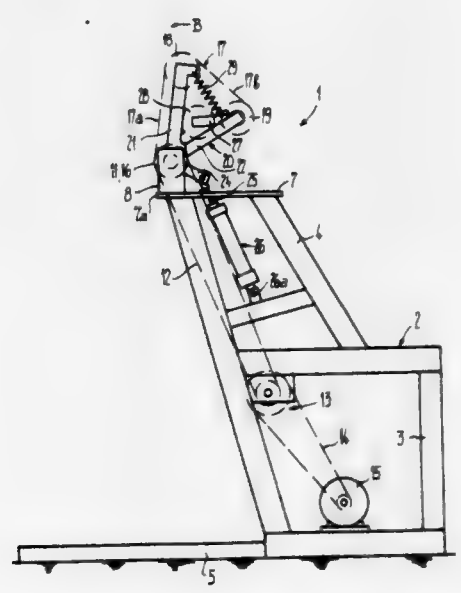
an elastic one-piece valve member disposed in said breather hole, said valve member having a pressured movable portion for elastically blockading said communication of said reservoir with the atmosphere when internal pressure of said reservoir is below a predetermined amount and for being elastically deformed to allow said reservoir to communicate with the atmosphere when said internal pressure reaches or exceeds said predetermined amount wherein said valve member further comprises a stem solid throughout its entire cross-section inserted in said breather hole to define an annular clearance therebetween, a base portion connected to a first end of said stem to closely contact with the inner surface of said bridge and a conical top portions having a semicircularly shaped void in cross section formed therein in communication with said annular clearance, said conical top portion being of a thickness which is smaller than that of said bridge and connected to a second end of said stem to define a ring-shaped clearance between the inner surface thereof and the outer surface of said bridge communicating with said annular clearance, said pressured movable portion forming the outer periphery of said top portion to enclose said ring-shaped clearance and said semicirculary shaped void, wherein said base portion further comprises means for allowing said clearance defined within said breather hole to communicate with said reservoir, and wherein said means for allowing said clearance to communicate with said reservoir further comprises not greater than a first and second slit provided in said base portion from a radially outer surface thereof.

4,508,523

DRIVE MEANS FOR THE SHAFT OF A MOBILE APPARATUS

Willy Leu, Pfäffikon, Switzerland, assignor to Ferag Ag, Hinwil, Switzerland

Filed Apr. 14, 1983, Ser. No. 484,841
Claims priority, application Switzerland, Apr. 20, 1982, 2381/82
Int. Cl.³ F16H *7/14, 7/24*
U.S. Cl. 474—115 **16 Claims**



1. A drive mechanism for driving a shaft of a mobile apparatus, comprising:

a drive unit releasably engageable with the shaft for driving the latter;

said drive unit comprising:

a drive chain having an inner side and an outer side;

three sprocket wheels for guiding said drive chain at said inner side thereof;

one of said three sprocket wheels defining a driven sprocket wheel;

a further sprocket wheel mounted on said shaft to be driven;

said drive chain being engageable on said outer side thereof with said further sprocket wheel in order to extend around part of the circumference thereof and being disengageable therefrom;

tensioning means for maintaining said drive chain in a tensioned state when out of engagement with said further sprocket wheel mounted on said shaft to be driven;

said tensioning means comprising a tension wheel coacting with a return run of said drive chain; and

said tensioning wheel being arranged on said outer side of said drive chain.

4,508,524

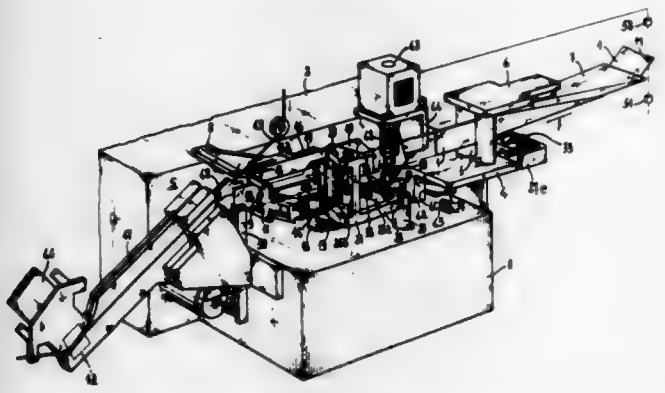
DEVICE FOR CENTERING THE PRINTING OF STRIP MATERIAL FOR THE AUTOMATIC PRODUCTION OF SMALL FILTER BAGS FOR INFUSION PRODUCTS

Andrea Romagnoli, San Lazzaro di Savena, Italy, assignor to IMA - Industria Macchine Automatiche S.p.A., Ozzano Emilia, Italy

Filed Sep. 21, 1982, Ser. No. 420,785
Claims priority, application Italy, Sep. 29, 1981, 3537 A/81
Int. Cl.³ B32B *31/00*
U.S. Cl. 493—11 **3 Claims**

1. Device for centering the printing of strip material, especially in apparatuses for the feeding of such strip in the form of V-shaped labels capable of being associated with a continuous thread for use in machines for the automatic production of small filter bags for infusion products, said strip with printed motifs possessing, between saidprinted motifs, a recurring motif at spacings corresponding to the length of the labels

which are to be produced and said feed apparatus for said strip comprising means for folding the same strip into said upwardly open V-form, means for intermittently feeding said V-folded strip in correspondence with a cutting station for cutting the same strip into single, successive labels and means for reading and/or detecting the position of said recurring motif between the printed motifs of the strip and therefore of the cut labels at a precise position from said cutting station, characterized in that said means for intermittently feeding said V-folded strip in correspondence with said cutting station are constituted of two counterrotating rollers having vertical axes, of which one is a



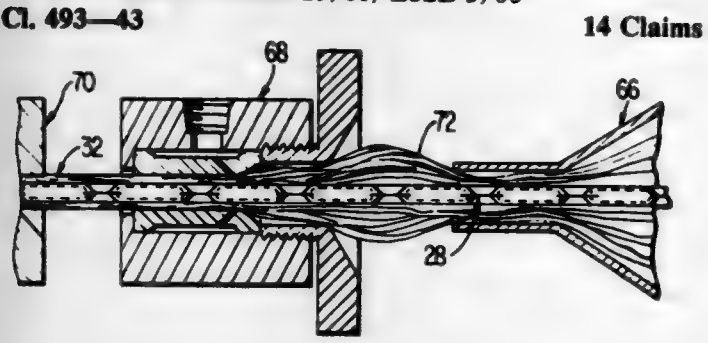
following roller of resilient material and the other a driving roller of hard material having a driving surface of circular sector form for contact with the first roller, said driving roller of circular sector form being rotatably mounted at the end of one of the arms of a two-armed lever pivoting about a vertical axis, with the other arm of said pivoting two-armed lever encountering, under an elastic action, the free end of a screw-mounted locating element governed by the action of electromagnetic control means subject to the control of the aforementioned means for reading and/or detecting the position of said recurring motifs between the printed motifs of the strip and therefore of said cut labels.

4,508,525

METHOD AND APPARATUS FOR PRODUCING TOBACCO SMOKE FILTER HAVING IMPROVED TAR/CARBON MONOXIDE RATIO

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 153,560, May 27, 1980,. This application Jul. 22, 1982, Ser. No. 400,907
Int. Cl.³ B31B *23/01;* B32B *3/00*
U.S. Cl. 493—43 **14 Claims**



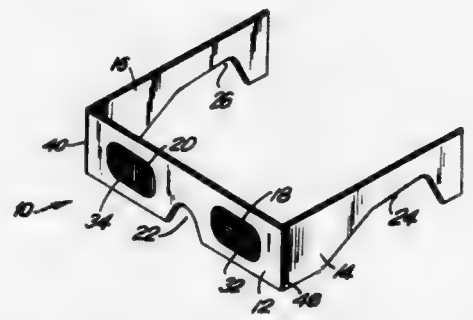
1. A method of making smoke filters comprising the steps of:
(a) providing an axially elongated inner member of a material which is impermeable to the passage of smoke;
(b) providing a filtering material including a multiplicity of fibrous elements;
(c) continuously passing said inner member through an elongated bonding zone and defining an annular space around said inner member in said bonding zone;
(d) continuously passing said filtering material into and through said annular space and, intermediate the passage of said filtering material through said bonding zone, contacting same with a bond activating agent to bond said fibrous elements of said filtering material to each other at spaced contact points, thereby forming an elongated, smoke-permeable outer member defining a tortuous path for passage of smoke therethrough; and
(e) transversely severing the resulting product at selected locations to form filter elements.

4,508,526

3-D GLASSES AND METHOD FOR PRODUCING SAME

Daniel P. Dutcher, White Bear Lake, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 14, 1983, Ser. No. 458,168
Int. Cl.³ B05B *1/14*
U.S. Cl. 493—346 **9 Claims**



1. A process for producing a plurality of 3-D eyeglasses comprising:
cutting a sheet of material to provide at least one series of eyeglass cutouts therein, said series of eyeglass cutouts comprising a column of first ear cutouts, a column of first eye cutouts, a column of nose cutouts, a column of second eye cutouts and a column of second ear cutouts consecutively arranged in parallel columns, each said eyeglass cutout having opposed top and bottom sides, with said eyeglass cutouts in said series being alternately oriented such that the top side of each said eyeglass cutout is adjacent the top side of one said eyeglass cutout adjacent thereto and such that the bottom side of each said eyeglass cutout is adjacent the bottom side of one said eyeglass cutout adjacent thereto;
adhesively attaching a continuous strip of red film to the column of first eye cutouts and adhesively attaching a continuous strip of blue film to the column of second eye cutouts; and
separating the eyeglass cutouts from one another along lines extending generally perpendicular to said columns and intermediate adjacent eyeglass cutouts in said series.

4,508,527

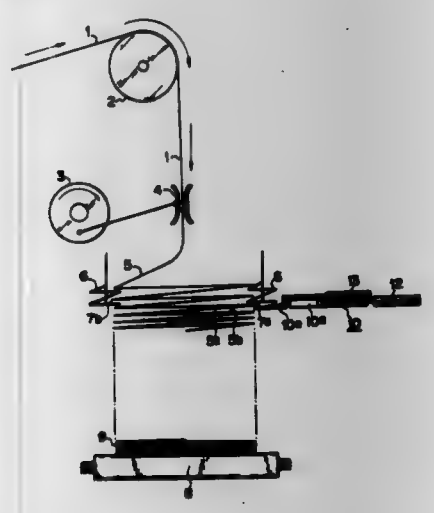
METHOD AND APPARATUS FOR QUANTITATIVELY DIVIDING ZIGZAG FOLDED SHEET OF PAPER

Tadao Uno, 1-81, Matsugaoka 1-chome, Chigasaki-shi, Kanagawa-ken, and Hiroshi Uno, 3189-7, Samukawa-cho Okada, Kohza-gun, Kanagawa-ken, both of Japan

Filed Sep. 12, 1983, Ser. No. 531,469
Claims priority, application Japan, Sep. 20, 1982, 57-163694
Int. Cl.³ B65H *45/20, 45/28*
U.S. Cl. 493—357 **3 Claims**

1. A method for quantitatively dividing a zigzag folded sheet of paper, which comprises the steps of:
continuously folding a sheet of paper, which has a plurality of linear perforations bored therein in its width direction and disposed at regular intervals in its lengthwise direction, at positions of said plurality of linear perforations to obtain a zigzag folded sheet of paper having a plurality of divisions connected to one another through said plurality of linear perforations,
continuously accumulating said plurality of divisions one on top of another in the longitudinal direction below a fold processing portion by utilization of their own weights,

inserting a separator carrying a cutting edge protruding beyond said separator and mounted for advancing or retreating movement relative to said separator, when the continuous longitudinal accumulation of said plurality of divisions constitutes a first unit composed of a prescribed number of divisions, between the uppermost division of said first unit drawn out immediately below said fold processing portion and the division directly connected to the uppermost division of said first unit and becoming the lowermost division of a second unit to be subsequently constituted from one end side of the zigzag folded sheet of paper, thereby partitioning said first unit of the zigzag folded sheet of paper,



lowering both said first unit and said separator so as to thereby longitudinally accumulate on said separator the divisions continuously drawn out from said fold processing portion and, at the same time, advancing said separator immediately before a fold between the uppermost division of said first unit and the lowermost division of said second unit, which fold is disposed on the other side of the zigzag folded sheet of paper, and

advancing said cutting edge relative to said separator to cut off said fold from the inside of said fold, whereby units each composed of a prescribed number of divisions are sequentially divided from the zigzag folded sheet of paper during the course of the continuous longitudinal accumulation of said plurality of divisions

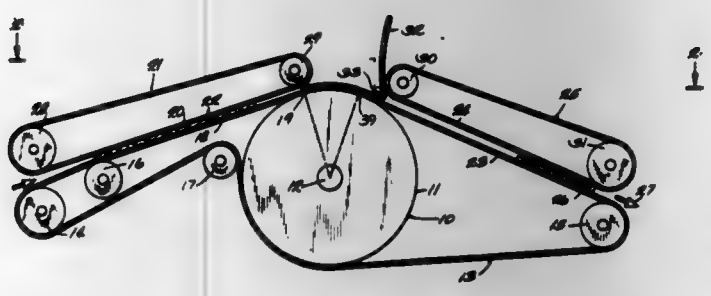
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4,508,528

PAD-CROSS FOLDER

John L. Hirsch, and Gene A. VanVoorst, both of Sheboygan Falls, Wis., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Dec. 29, 1982, Ser. No. 454,406
Int. Cl.³ B31F *1/08, 1/10*
U.S. Cl. 493—426 **4 Claims**



1. Apparatus for cross-folding pads such as diapers, comprising:

a drum for being driven rotationally,

a first conveyor belt having a portion running toward the drum to a first line of tangency therewith and a portion running away from the drum from a second line of tangency therewith, and a portion between said lines of tangency in contact with a segment of the periphery of the drum,

a second conveyor belt running in parallelism with the portion of the first belt running toward the first line of tangency with the drum for engaging an unfolded pad between them and transporting it tangentially to the drum,

a third conveyor belt in parallelism with the portion of the first belt running away from the second line of tangency for engaging a folded pad between them and engaging and transporting it away from the drum,

guide means at each end of the drum and mounted for rotation with the drum and a slide member mounted for sliding on the respective guide means radially of the drum,

means for reciprocating said slide members alternately radially inwardly and outwardly in response to drum rotation,

a lever mounted for pivoting on each said slide member and a finger extending from each lever toward the drum,

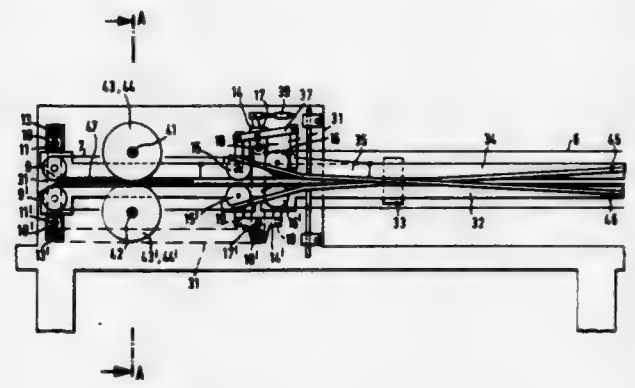
means for guiding said levers and the fingers to pivot axially away from said drum and to move radially outwardly when the slide members are moving radially outwardly of the drum to thereby permit an unfolded pad to pass clear of the fingers for the leading end of the pad to extend tangentially from the drum and for guiding said levers to pivot axially toward the drum and to move radially inwardly when said slide members are moving radially inwardly to thereby cause said fingers to press said pad in opposite directions along its fold line at a time when the trailing end of the pad is still held between the first and second conveyor belts whereupon continued rotation of said drum will cause said pad to fold over, said slide members then moving radially outwardly again to release the fingers from the folded pad after the pad has been engaged for transportation between said third conveyor belt and the portion of the first belt that runs away from said second line of tangency.

4,508,529

APPARATUS FOR FOLDING PAPER SACKS TO Z SHAPE

Richard Feldkämper, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,889
Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216505
Int. Cl.³ B31F *1/00*
U.S. Cl. 493—438 **5 Claims**



1. Apparatus for placing continuously transversely fed flat articles into Z folds, preferably tube sections or cross-bottom sacks of paper, characterised in that, on both sides of the conveying plane of an inlet double belt conveyor consisting of individual double conveyor belts disposed at the respective ends of the articles, co-operating scoring wheels are provided at transverse spacings corresponding to the desired spacings of the folded edges of the Z folds on pairs of shafts parallel to the roller shafts of the inlet double belt conveyor, that one of the individual belts adjoins a double conveyor belt which extends obliquely to the other and which is extended by a straight

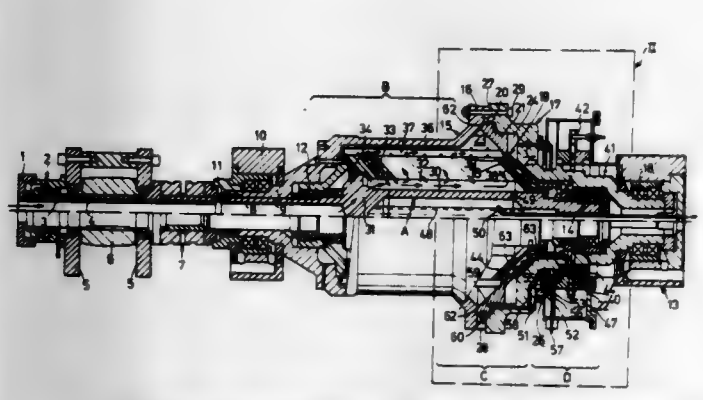
individual double conveyor belt which, in relation to the inlet double belt conveyor, is closer to the other individual double conveyor belt by a distance equal to the shortening of the articles caused by the Z folding, that the end direction-changing rollers of the upper and lower belt of the oblique double conveyor belt with the adjacent direction-changing or drive rollers of the straight conveyor belts can be alternately raised from the direction-changing rollers of the associated double conveyor belt so that each passing article is clamped by only one pair of rollers, and that over substantially the length of the oblique double conveyor belt a folding bar is provided above and another below the conveying planes, which bars extend in the conveying direction from a position beyond the scored zones of the articles, pass through the conveying plane in opposite senses, also intersect in a vertical plane and terminate at a spacing from each other substantially in a horizontal plane.

4,508,530

ENERGY RECUPERATION CENTRIFUGE

Raymond F. Schlegel, Colombes; René P. Bourassin, Neauphle-le-Chateau, and Michel A. Lapautre, Ville D'Avray, all of France, assignors to Bertin & Cie, Plaisir, France

Filed Aug. 17, 1983, Ser. No. 523,949
Claims priority, application France, Aug. 27, 1982, 82 14702
Int. Cl.³ B04B *1/00*
U.S. Cl. 494—49 **14 Claims**



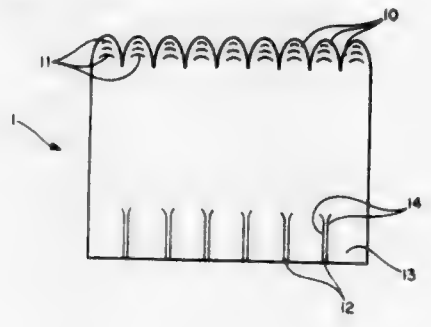
1. High-output industrial centrifuge with improved energy efficiency, for purifying a liquid containing denser solid particles in suspension and/or droplets of a less dense fluid in emulsion, of the type comprising a rotor essentially comprising a stack of centrifuging dishes rotating at high speed between two coaxial cylindrical drums, means for continuously introducing and discharging the liquid, and means for the selective extraction of the separated impurities, characterized in that in the space between an outer cylindrical drum (B) and an inner drum (A), which drums are independently driven in coaxial rotation and are respectively provided with means for the discharge of the separated phases, is disposed a stack of dishes (33) which rotates with the inner drum and which is fed with liquid to be purified through an axial inlet followed by a centrifugal wheel; in that the purified liquid passes out of the said space through an oulet wheel composed of blade (39) fastened to the inner drum (A) and forming a centripetal turbine, and then through tangential ejectors (40) fastened to the outer drum, (B), and in that a reaction turnstile is formed arranged in such a manner that the absolute exit speed of the purified liquid will be substantially zero, so that the said turbine and the said turnstile restore in the form of driving torque the major part of the kinetic moment imparted to the liquid, and that in consequence the driving power required under continuous operating conditions is limited to compensation for frictional losses.

4,508,531

CONVOLUTELY WOUND PAPER TAMPON TUBE

Howard A. Whitehead, Outagamie County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 6, 1982, Ser. No. 446,838
Int. Cl.³ A61F *15/00*
U.S. Cl. 604—14 **1 Claim**



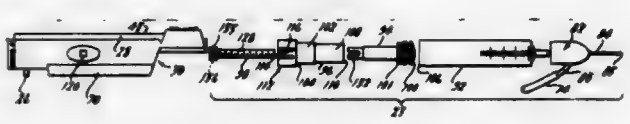
1. Convolutely wound flexible paper tampon tube designed to surround a tampon pledget with said tube having a hemispherical edge with a thermosensitive coating, a gripping end and insertion end; said insertion end comprising a plurality of nonoverlapping, multi-layered aligned arcuate lobes, each of said lobes scored near its base to increase flexibility, said lobes collectively deformable to form a hemispherical profile and cover said hemispherical leading edge of said tampon.

4,508,532

OPHTHALMIC ASPIRATOR/IRRIGATOR AND CYSTOTOME

Robert C. Drews; Danny D. Meyer; Tadmor Shalon, and Eliezer Pasternak, all of St. Louis, Mo., assignors to Ninetronix, Inc., St. Louis, Mo.

Filed Sep. 9, 1983, Ser. No. 530,730
Int. Cl.³ A61B *17/32*
U.S. Cl. 604—22 **16 Claims**



1. An ophthalmic irrigator-aspirator comprising; a handpiece, a bidirectional motor means disposed within said handpiece, a drive shaft coupled to said motor means, syringe means having a tube and an opening in one end thereof, a piston internally disposed within said tube, said piston having means cooperating with said drive shaft such that said piston is translatable within said tube in a direction causing aspiration through said tube opening as said motor means is rotated in one direction, and causing irrigation through said tube opening when said motor means is rotated in an opposite direction, and manually actuable means on said handpiece for causing rotation of said motor means in either rotational direction.

4,508,533

SURGICAL DRAIN

Daniel Abramson, 7671 San Mateo Dr., E., Boca Raton, Fla.

Filed Jul. 14, 1980, Ser. No. 167,905
Int. Cl.³ A61M *27/00*
U.S. Cl. 604—35 **20 Claims**

20. A sump drain comprising:

(a) an integral extruded catheter having distal and proximal ends and comprising:

(i) a first lumen for the drainage of body fluids by suction;

(ii) a second lumen for the passage of filtered air;

(iii) a third lumen for the passage of irrigation fluid, said first, second and third lumens extending parallel to each other along the major portion of the longitudinal length of the catheter;

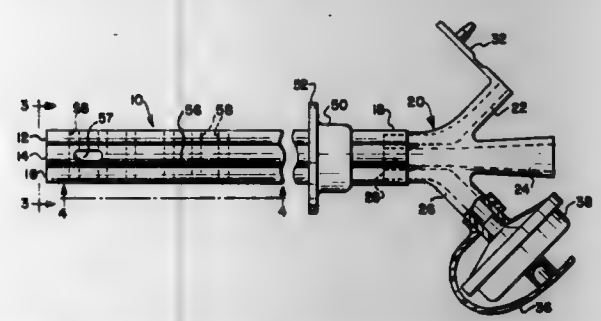
(iv) a funnel portion at its proximal end, said funnel por-

tion having a connector receiving port extending from the first lumen, a filtered air intake port extending from the second lumen, and an irrigation port extending from the third lumen;

(v) holes at its distal end, said holes connecting each of the first, second, and third lumens to the exterior of the catheter;

(b) means for closing the irrigation port;

(c) a connector, said connector being arranged and constructed so that fluid may pass from the first lumen



through the connector, said connector having a proximal end including a suction port;

(d) means for closing the suction port of the connector;

(e) a bacteria filter, said bacteria filter having means for filtering bacteria from air and being arranged and constructed so that air may pass through the bacteria filter and into the second lumen, said bacteria filter having a bacteria filter air intake port for the intake of air;

(f) means for closing the bacteria filter air intake port; and

(g) a collar slidably disposed about the catheter.

4,508,534

ASSEMBLY EMPLOYING A BREAKABLE THERMAL BOND WHICH IS NOT SUBSTANTIALLY EFFECTED BY PROLONGED HEAT EXPOSURE

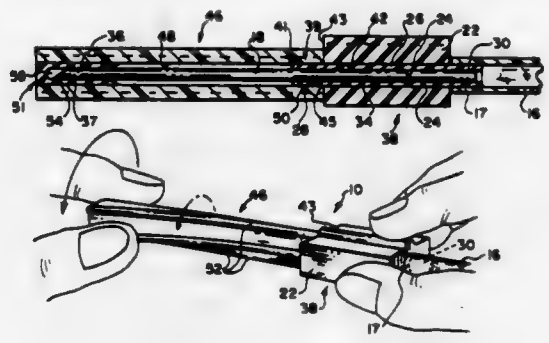
Edward B. Garver, Sr., Lindenhurst, and Kenneth D. Zabielski, McHenry, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 326,737, Dec. 2, 1981, Pat. No. 4,402,682. This application May 16, 1983, Ser. No. 495,281

Int. Cl.³ A61M *5/32*

U.S. Cl. 604—111 **1 Claim**

1. An assembly comprising two members which are releasably secured together by a thermal bond which is selectively breakable in response to the application of a force which does not cause permanent deformation of either member, regardless or prolonged exposure of said assembly to heat, the composition of one of said members comprising an autoclavable polyester material, and the composition of the other one of said members consisting essentially of between approximately 72% and 77% by weight of a vinyl material, approximately 3% by



weight of a silicone material, and the remainder comprising calcium carbonate.

4,508,535

CANNULA

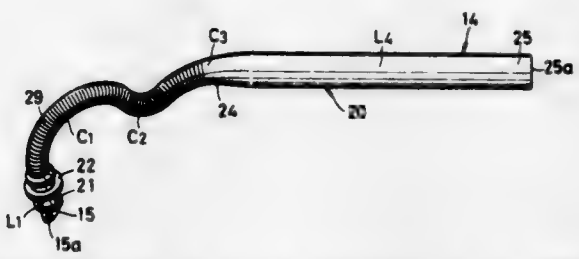
Yasushi Joh; Noriaki Kaneko, both of Yokohama, and Toshio Nagase, Houjōshinmachi, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,138

Claims priority, application Japan, Apr. 10, 1982, 57-59913; Apr. 10, 1982, 57-59918

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—282 **20 Claims**

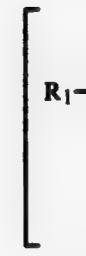


1. A tubular cannula for use as connected to an artificial heart compensating for partial or entire functioning of a heart function, wherein an axis of a tubular portion of said cannula has a three-dimensional configuration by being bent at least twice in different directions between an insertion distal end tip for insertion into a heart and a connection proximal end tip for connection with the artificial heart, said tubular portion comprising a first bent portion of an arcuated shape, located in the vicinity of said insertion distal end tip; a second bent portion of an arcuated shape located between said first bent portion and said connection proximal end tip; and a third bent portion of an arcuate shape, located between said first bent portion and said second bent portion; wherein an angle is formed by a first imaginary plane including an axis of said first bent portion and a second imaginary plane including an axis of said second bent portion, said angle being within a range of 5° to 85° and preferably within a range of 10° to 45°, and wherein, said third and second bent portions form an overall S-shape, and said first and third bent portions form an overall inverted S-shape, such that the combination of said first through third bent portions forms a meandering configuration.

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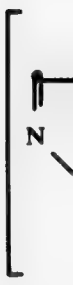
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4,508,536

SOLID DYE MIXTURES FOR DYEING POLYACRYLONITRILE NAVY BLUE TO BLACK

Paul Erzinger, Liestal, and Arnulf R. Läpple, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

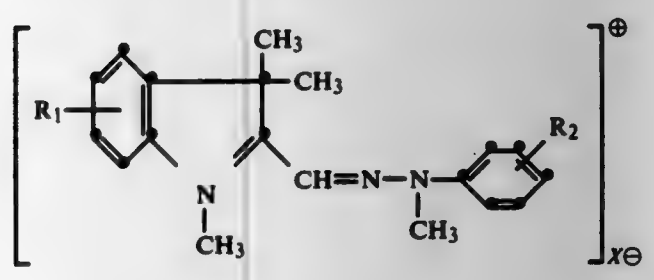
Filed Nov. 14, 1983, Ser. No. 551,393

Claims priority, application Switzerland, Nov. 16, 1982, 6668/82

Int. Cl.[3] D06P *67/02*; C09B *26/04*

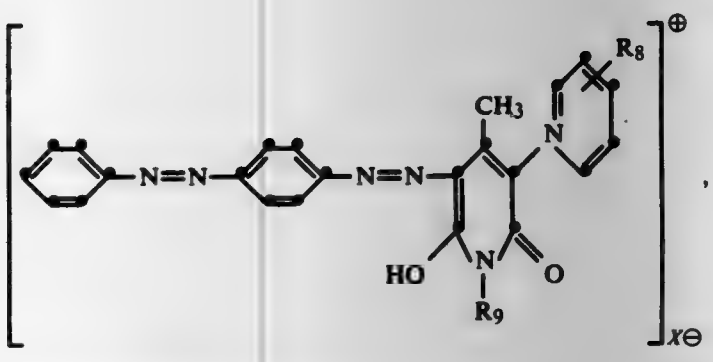
U.S. Cl. 8—639 10 Claims

1. A solid, navy blue to black preparation consisting essentially of a cationic yellow component of the formula



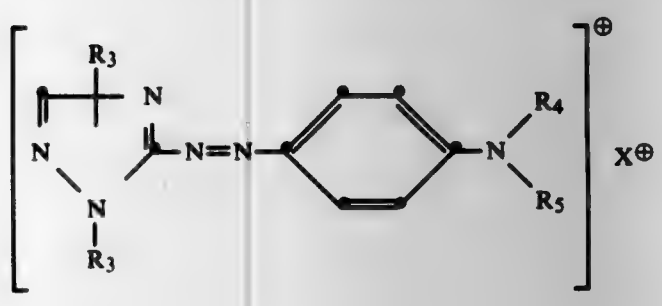
(I)

or



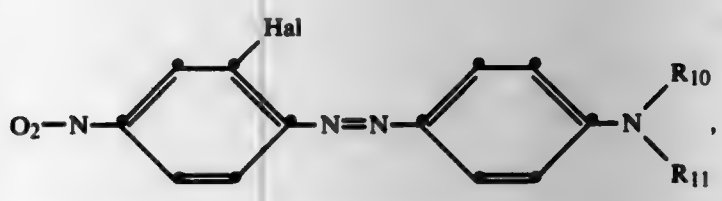
(Ia)

a cationic red component of the formula



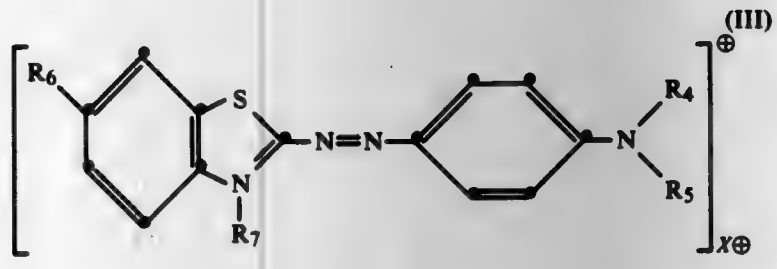
(II)

or



(IIa)

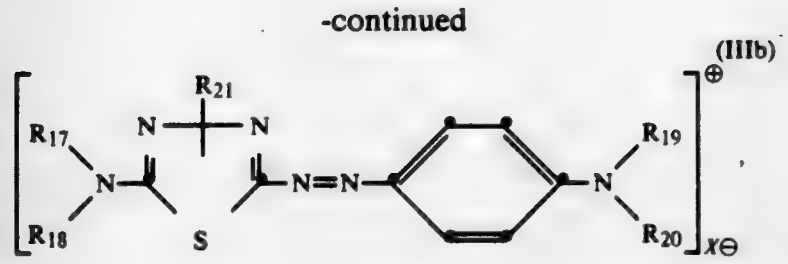
and a cationic blue component of the formula



(III)

or

-continued



(IIIb)

or mixtures thereof, in which formulae the symbols have the following meanings;

R_1 and R_2 independently of one another are each hydrogen, halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_3 is C_1–C_4-alkyl,

R_4 and R_5 independently of one another are each unsubstituted or substituted C_1–C_4-alkyl,

R_6 is C_1–C_4-alkoxy or acylamino,

R_7 is C_1–C_4-alkyl,

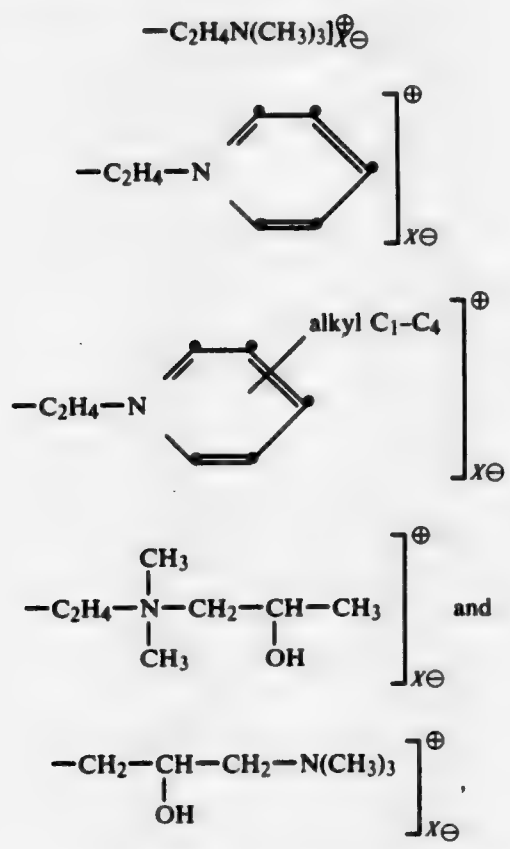
R_8 is hydrogen or methyl,

R_9 is hydrogen or unsubstituted or substituted C_1–C_6-alkyl, or is phenyl or cyclohexyl,

Hal is chlorine or bromine,

R_{10} is C_1–C_4-alkyl,

R_{11} is a radical of any one of the formulae



R_{17}, R_{18}, R_{19} and R_{20} independently of one another are each unsubstituted or substituted C_1–C_6-alkyl, or R_{17} forms with R_{18}, with the inclusion of the N atom and optionally further hetero atoms, a heterocyclic 5- or 6-membered ring,

R_{21} is unsubstituted or substituted C_1–C_3-alkyl, and

X is an anionic radical, and optionally further additives.

4,508,537

METHOD FOR REMOVING ELEMENTAL SULFUR PARTICLES FROM THE AQUEOUS WASHING SOLUTION OF A HYDROGEN SULFIDE REMOVAL PROCESS

Donald M. Fenton, Anaheim; Dennis D. Delaney, Placentia, and F. Emmett Bingham, Mission Viejo, all of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Dec. 27, 1982, Ser. No. 453,501

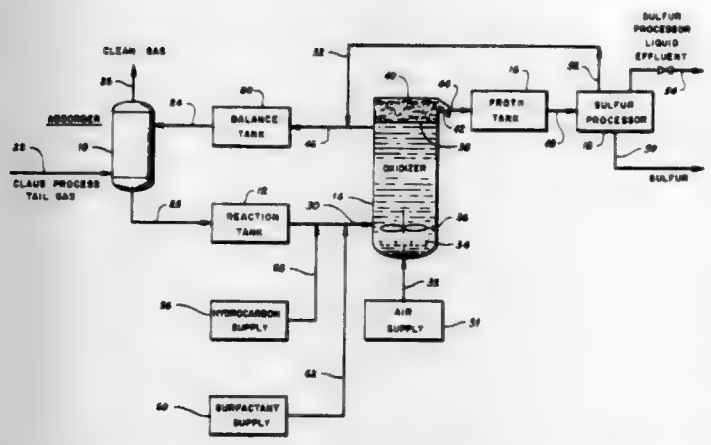
Int. Cl.[3] C01B *17/04*

U.S. Cl. 23—293 S 26 Claims

1. In a method for removing particles of elemental sulfur

from a hydrogen sulfide removal system which employs a regenerable aqueous washing solution, wherein said washing solution is circulated through an oxidizer vessel and therein an oxygen-containing gas is bubbled through said washing solution causing elemental sulfur particles within said washing solution to form an upwardly rising froth above the liquid surface of said washing solution, the improvement comprising:

(a) admixing said washing solution within said oxidizer vessel with a hydrocarbon consisting essentially of carbon and hydrogen atoms, having a distillation curve with a 90



percent point less than about 680° F. and having a flash point greater than about 100° F.; and

(b) admixing said washing solution within said oxidizer vessel with a surfactant which is essentially nonionic and has a first functional component which is partially soluble in water and a second functional component which is partially soluble in said hydrocarbon;

wherein the volumetric ratio of said surfactant to said hydrocarbon within said oxidizer vessel is between about 7:1 and about 1:7.

4,508,538

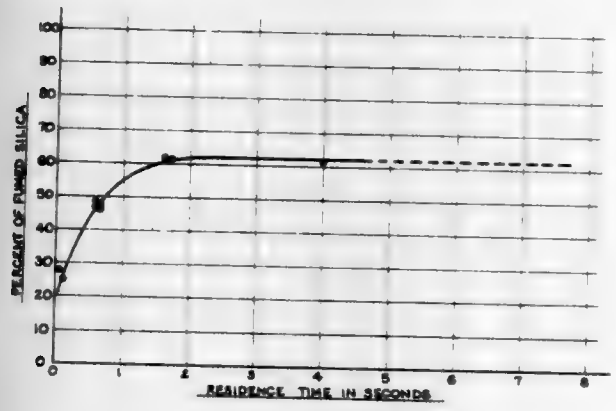
RECOVERY OF FUMED SiO_2

Joel F. M. Leathers, and Donald W. Calvin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 761,558, Jan. 24, 1977, abandoned. This application Dec. 4, 1980, Ser. No. 212,762

Int. Cl.³ C01B *33/12*

U.S. Cl. 23—313 R **10 Claims**



1. A method for collecting fumed hydrophobic silica formed in a combustion chamber by the flame hydrolysis of a ternary azeotrope comprising about 36% H_2SiF_6, about 10% HF and about 54% H_2O in which the hot product stream leaving the combustion chamber carries the fumed hydrophobic silica as an ultra-fine dispersoid at a concentration of less than about 1.5% by weight, the said method comprising,

passing the hot product stream immediately after it leaves the combustion chamber through a non-classifying agglomerator for a travel time in the agglomerator of from about 1.5 to about 4.0 seconds during which travel time the temperature of the product stream drops to not less than about 150° C., and

collecting the agglomerated, fumed, hydrophobic silica in a dispersoid-collecting device while allowing the remainder of the product stream to flow through.

4,508,539

PROCESS FOR IMPROVING LOW QUALITY COAL

Masayuki Nakai, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 466,835

Claims priority, application Japan, Mar. 4, 1982, 57-32983

Int. Cl.³ C10L *5/08*

U.S. Cl. 44—10 D **15 Claims**

1. A process for treating coal having a high water content to obtain coal having a lower water content, said process comprising subjecting a coal having a high water content in crushed form to a press treatment at ambient temperature whereby said water-containing coal is pressed without heating and then heating said pressed coal at a temperature of from 250°° C. to 500° C. for between 1 and 10 minutes.

2. The process of claim 1, wherein the diameter of the crushed coal is up to 50 millimeters.

3. The process of claim 1, wherein the amount of pressure applied during the press treatment is from 30 to 200 megapascals.

4. The process of claim 1, wherein the low quality coal is selected from the group consisting of brown coal, lignite and a mixture thereof.

5. The process of claim 1, wherein the step of heating is performed for between 1 and 5 minutes.

4,508,540

ALCOHOL BASED FUELS

Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1981, Ser. No. 317,567

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 **13 Claims**

1. A liquid fuel for use in internal combustion engines, said fuel comprising a major amount of a monohydroxy alkanol having from 1 to about 5 carbon atoms, and a corrosion inhibiting amount of an aliphatic dicarboxylic acid selected from the group consisting of oxalic acid, sebacic acid and azelaic acid.

4,508,541

MANNICH REACTION PRODUCT AND A MOTOR FUEL COMPOSITION CONTAINING SAME

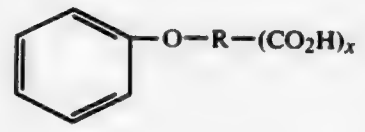
Benjamin J. Kaufman, Wappingers Falls, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,487

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—71 **20 Claims**

1. A material comprising a reaction product of an aldehyde, a phenoxy acid and a mono- or diamine, wherein said aldehyde comprises a hydrocarbon radical having from 1 to about 10 carbon atoms, said phenoxy acid has the following formula:



wherein R is any hydrocarbon radical or oxygen-containing hydrocarbon radical of from 1 to about 36 carbon atoms with the carbon atom adjacent to the carboxylic acid functional group having at least one active hydrogen atom, and x varies from 1 to 3, said monoamine has the formula:

$$X-N-X^1$$
$$\quad\quad |$$
$$\quad\quad X^2$$

wherein X, X^1, and X^2 can be any hydrocarbon radical having from about 6 to about 36 carbon atoms and wherein X^1 and X^2 can be a hydrogen atom, said diamine has the following formula:

$$NH_2-(C_zH_{2z})N-R^1$$
$$\quad\quad\quad\quad\quad\quad\quad\quad |$$
$$\quad\quad\quad\quad\quad\quad\quad\quad R^2$$

wherein z varies from about 1 to 3, R^1 is any hydrocarbon radical or oxygen substituted hydrocarbon radical having from about 1 to 36 carbon atoms and R^2 is a hydrogen or a methyl group.

4,508,542

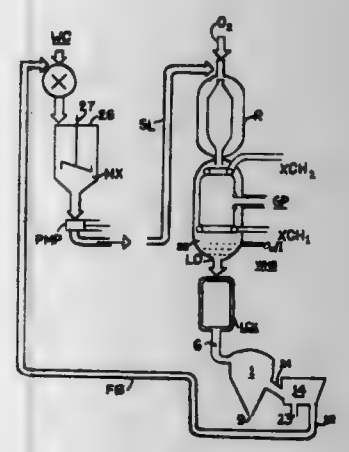
SLAG SEPARATOR FOR A COAL GASIFICATION INSTALLATION

Joseph Langhoff, Kleinbergerhof 10, 4220 Dinslaken; Erwin Althoff, An der Dorndelle 7, 4619 Bergkamen; Wolfgang Kolodzey, Koloniestr. 57, 4100 Duisburg, and Ulrich Gerhardus, Im Terfreen 4, 4200 Oberhausen, all of Fed. Rep. of Germany

Continuation of Ser. No. 230,741, Feb. 2, 1981, abandoned. This application Dec. 16, 1983, Ser. No. 562,042

Int. Cl.³ C10J *3/52*

U.S. Cl. 48—77 **3 Claims**



1. In a coal gasification installation having a gasifier reactor and a water bath below the reactor for collecting slag from the reactor wherein a mixture of water and slag particles is derived from said water bath,

a slag separator connected for sorting said water and slag mixture into heavier, non-floating, slag particles and lighter, floating slag particles,

said separator comprising a container to be filled with said water and slag mixture for receiving under pressure said water and slag mixture from an upper inlet, said container having:

at least one water discharging side outlet,

a lighter slag particle discharging side outlet, and

a heavier slag particle discharging lower end outlet,

partition means disposed in said container and extending in operation in water and separating said at least one water discharging side outlet and said floating particle discharging side outlet for separating said floating slag particles from the water, substantially clean water being discharged through said water discharging side outlet, wherein separated floating slag particles are discharged at least in part through said lighter slag particle discharging side outlet,

said partition means forming a compartment in said container for accumulating said floating particles,

said partition means including a dam, said partition means being disposed to allow said substantially clean water, during operation, to flow over said dam of said partition means and out through said at least one water discharging side outlet, and also to retain said lighter floating slag particles within said compartment,

said upper inlet being disposed to admit said slag and water mixture flow into said water from above,

at least a conduit connecting said upper inlet to said water bath,

said inlet connected to a tube extending into said container,

a wall being disposed in said tube for guiding said heavier slag particles downwardly toward said heavier slag particle discharging lower end outlet and also for guiding said lighter, floating, slag particles underneath said wall into said compartment for accumulating said floating particles for discharge through said lighter slag particle discharging side outlet, and

feedback means for feeding back said lighter slag particles into said gasifier reactor.

4,508,543

PROCESS FOR THE CATALYTIC GASIFICATION OF SOLID FLUIDS WITH STEAM

Siegfried Peter, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,719

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1978, 2817835

Int. Cl.³ C10J *3/00*

U.S. Cl. 48—197 R **11 Claims**

1. In a process of a catalytic gasification of solid carbon fuels with steam employing steam volatile catalysts at high temperature and pressure, the improvement which comprises the steps of:

1. forming a supersaturated solution of the catalyst in steam under supercritical conditions of temperature and pressure;
2. reducing the pressure to a value below supercritical; and
3. contacting resulting catalyst containing steam with the carbon fuel to be gasified thereby accelerating the reaction between the coal and steam.

4,508,544

CONVERTING A FUEL TO COMBUSTIBLE GAS

Gerald Moss, Wantage, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 360,411, Mar. 22, 1982, Pat. No. 4,459,133. This application Dec. 12, 1983, Ser. No. 560,241

Claims priority, application United Kingdom, Mar. 24, 1981, 8109230; Mar. 24, 1981, 8109231

Int. Cl.³ C10J *3/00, 3/54*

U.S. Cl. 48—197 R **8 Claims**

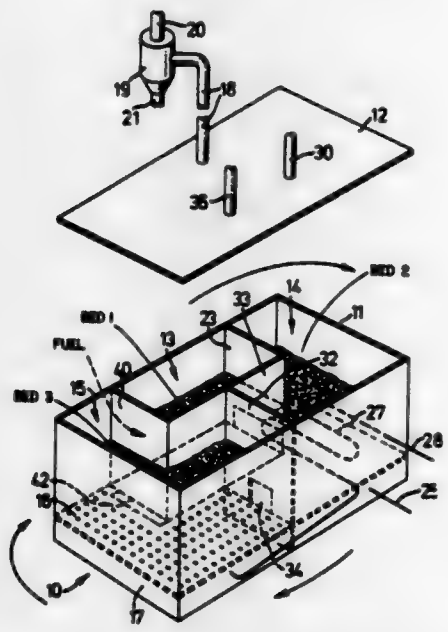
1. A process using an apparatus comprising a unitary vessel comprising a substantially vertical peripheral wall and a roof, the interior of the vessel being divided into at least three horizontally-successive compartments by substantially vertical internal walls extending downwardly from the roof, each compartment having a respective distributor at its base which distributes a respective fluidizing gas from a respective space beneath the distributor into the bottom of each compartment and into a bed of solid particles supported on the top of the respective distributor thereby maintaining said particles in a respective dense phase fluidized bed, each dense phase fluidized bed having a substantially distinct top surface at a respective top level within the respective compartment, the roof over each compartment having a respective outlet for the exit of gas from the compartment, each compartment having an internal wall defining an underflow weir below the said top level and thereby providing communication between a lower region of the downstream end of one compartment on one side of the internal wall and a lower region of the upstream end of an adjacent compartment on the other side of the wall, and in which process, particles circulate from the lower region of the

downstream end of the fluidized bed in one compartment to the lower region of the upstream end of the adjacent fluidized bed in the adjacent compartment, and wherein said process comprises:

a. passing a gas substantially free of diluents and which contains an oxygen-transfer mediator into a first compartment containing a first dense phase fluidized bed containing particles comprising chemically reactive $CaSO_4$ at a temperature in the range of from 850° to 1150° C.;

b. passing an oxygen-containing gas into the second compartment containing a second dense phase fluidized bed of particles of chemically reactive CaS at such a rate as to convert some, but not all, of the CaS in the second dense phase fluidized bed to $CaSO_4$ with substantially no liberation of the sulfur moiety therefrom and such that the gas leaving the second compartment via the respective outlet in the roof contains substantially no sulfur moiety and no more than 5 vol% of molecular oxygen;

c. passing an oxygen-containing gas into the third compartment containing a third dense phase fluidized bed of particles comprising chemically reactive CaS at a temperature higher than the temperature in the first bed at such a rate that substantially all chemically-reactive CaS is exothermically converted to $CaSO_4$ with substantially no liberation of sulfur moiety and the gas leaving the third compartment via the respective outlet in the roof is substantially free of sulfur moiety and contains no more than 5 vol% of molecular oxygen, and wherein particles circulate through all the compartments of the apparatus in one sense from the bottom region of one bed in one compartment to the bottom region of the adjacent bed in the adjacent compartment so that particles circulate through all the beds in succession, and wherein a hydrocarbon and/or carbonaceous fuel is passed into the first compartment in contact with the particles of the first dense phase bed to convert the fuel to combustible gas and to reduce chemically reactive $CaSO_4$ to CaS with substantially no liberation of sulfur moiety as a result of the presence of the oxygen-transfer mediator.



4,508,545

CLOSED LOOP WATER TREATING SYSTEM AND METHOD

Walter W. DeLoach, 818 Cattlemen Rd., Sarasota, Fla. 33582

Continuation-in-part of Ser. No. 533,216, Sep. 19, 1983,. This application Nov. 7, 1983, Ser. No. 549,139

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—53 **20 Claims**

19. The method for treating water comprising the steps of:

(a) flowing water into a first chamber through spray heads in a conduit therein;

(b) flowing said water over a plurality of slat trays or plastic packing media disposed beneath said conduit;

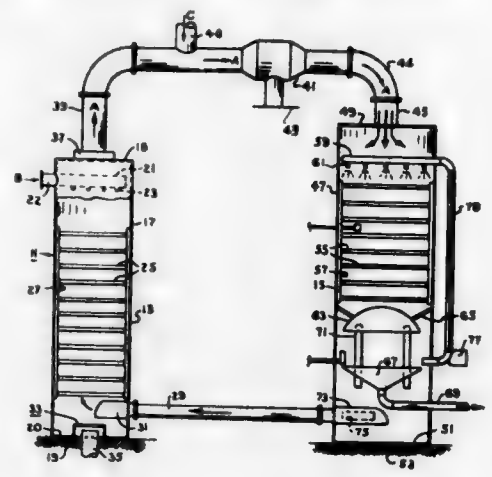
(c) releasing entrained gases from said water and creating thereby product water;

(d) flowing said product water into the bottom of said first chamber;

(e) creating in the bottom of said first chamber means for preventing said released gases from flowing through said means with said product water;

(f) flowing said product water from said first chamber;

(g) flowing said released gases from said first chamber through a demister into a second chamber;



(h) flowing said released gases downwardly in said second chamber and contacting said released gases with an iron salt solution in said second chamber;

(i) flowing said iron salt treated gases over slat trays or plastic packing media and forming a sludge that precipitates;

(j) collecting and removing said sludge from said second chamber;

(k) flowing said iron salt treated gases from said second chamber into said first chamber; and

(l) introducing make-up ambient air into said second chamber as required.

4,508,546

MECHANICAL FOAM BREAKERS AND A PROCESS FOR MECHANICAL FOAM-BREAKING

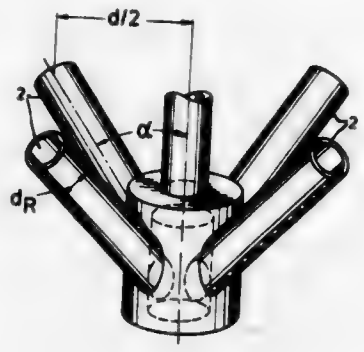
Marko Zlokarnik, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 236,485

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008589

Int. Cl.³ B01D *19/02*

U.S. Cl. 55—87 **6 Claims**



1. A process for mechanical foam breaking, comprising: drawing foam into a rotating suction tube of which at least 3 channels branch radially upwardly and outwardly at an angle α of approx. 30° to approx. 60°, and throwing the foam outwardly through these channels at a cover disposed immediately thereabove.

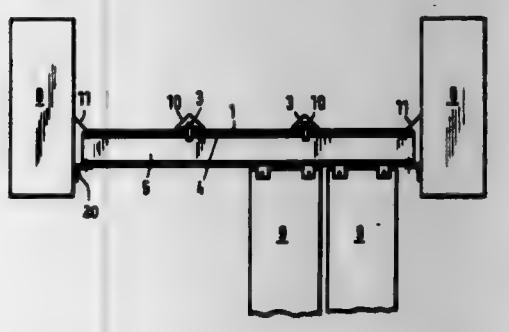
6. A mechanical foam breaker comprising:
a housing including a cover;
a vertical tube within the housing having a lower end receptive of foam to be broken and an upper end connected to a source of suction;
a plurality of channels extending radially upwardly and outwardly from the suction tube at an acute angle to the longitudinal axis of the suction tube and opening towards said cover at an obtuse angle and immediately beneath same;
means for rotating the suction tube and channels about the longitudinal axis of the suction tube at a sufficient speed to compress foam drawn up through the suction tube and into the channels and to throw the compressed foam at the cover.

4,508,547

ELECTROSTATIC PRECIPITATOR HAVING A SEALING COVER OR ROOF

Josef J. Seufert, Rüsselsheim, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,295
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1982, 3221718
Int. Cl.³ B03C *3/82*
U.S. Cl. 55—101 **3 Claims**



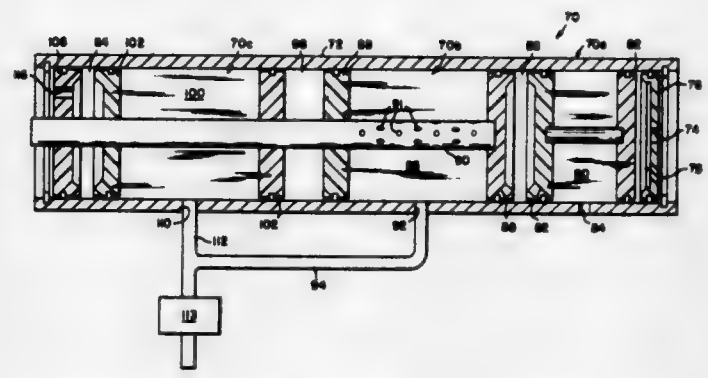
1. In an electrostatic precipitator, a sealing cover assembly which comprises:
a plurality of transversely spaced mutually parallel beams extending in a gas flow direction of said precipitator and formed with upper flanges;
a plurality of sheet metal cover sheets overlying said beams and having interstices between juxtaposed edges of successive sheets extending transverse to said direction;
a multiplicity of clips for securing said sheets to said flanges, each of said clips engaging over an edge of a respective flange and having a head overlying and clamping juxtaposed edges of a respective pair of sheets against the respective flange; and
strips welded to said sheets and sealing said interstices, each of said clips comprising a "C" shaped body having an upper arm formed as said head and a lower arm engaged beneath the respective flange, said body being spread slightly upon application of said flange and the respective sheets whereby said sheets are retained against said flanges by the intrinsic resiliency of said clips, each of said heads being formed by a bar welded to an upper arm of the respective body and overlying juxtaposed edges of a pair of respective sheets.

4,508,548

AIR OXYGEN AND NITROGEN CONCENTRATION DEVICE

Scott A. Manatt, Granada Hills, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 4, 1981, Ser. No. 289,861
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 **2 Claims**



1. A system for producing oxygen enriched gas and oxygen depleted gas, said system comprising:
a source of pressurized air;
a tubular housing having an opening at one end to receive pressurized air from said source;
a first plurality of hollow fibers disposed in said housing and having a fixed short length to receive pressurized air from the opening at one end of said housing to produce a high pressure rapid flow of air therethrough for a high rate of oxygen permeation thereacross without significant permeation of nitrogen, said tubular housing including an opening therein to remove the permeated oxygen enriched gas from said housing;
a second plurality of hollow fibers disposed in said housing downstream of said first plurality of hollow fibers to receive oxygen depleted pressurized air therefrom and permeate oxygen therethrough, said second plurality of hollow fibers having a fixed length substantially greater than the fixed short length of said first plurality of hollow fibers to expose the oxygen depleted pressurized air to permeation in the hollow fibers for a greater period of time; and
a perforated tube disposed amongst the second plurality of hollow fibers to wash the hollow fibers with ambient air to remove oxygen permeated therethrough and reduce the pressure at the exterior of the hollow fibers to enhance permeation therethrough, said tubular housing including openings to remove the mixture of permeated oxygen enriched gas and air from the perforated tube from said housing and to remove the oxygen depleted gas from the second plurality of hollow fibers.

4,508,549

PRESSURE REDUCTION APPARATUS FOR SOLID PARTICLE-CONTAINING HIGH PRESSURE LIQUIDS

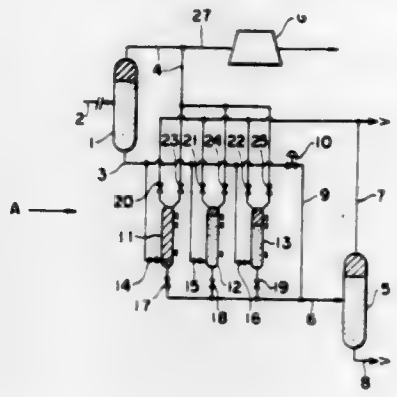
Kohichi Beppu, Nishinomiya, and Shigezo Kawakami, Kobe, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 22, 1983, Ser. No. 516,283
Claims priority, application Japan, Jul. 24, 1982, 57-129164; Mar. 7, 1983, 57-37170; May 25, 1983, 58-93245
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—165 **14 Claims**

1. A pressure reduction apparatus for solid particle-containing high pressure liquids comprising:
a gas and liquid pressure reduction tower having a gas phase zone and a liquid phase zone;
a high pressure gas and liquid separation tower having a gas phase zone connected to the gas phase zone of said gas and liquid pressure reduction tower through a first line provided with a high pressure gas charge or discharge valve,

and a liquid phase zone connected to the liquid phase zone of said gas and liquid pressure reduction tower through a second line having a feed valve for liquid being reduced; and

a lower pressure gas and liquid separation tower having a gas phase zone connected to the gas phase zone of said gas and liquid pressure reduction tower through a third line having a low pressure gas charge or discharge valve, and



a liquid phase zone connected to the liquid phase zone of said gas and liquid pressure reduction tower through a fourth line having a valve through which a pressure reduced liquid is discharged, wherein prior to opening of the feed valve or the pressure-reduced liquid discharge valve, the higher pressure gas charge or discharge valve, or the lower pressure gas charge or discharge valve is opened so as to increase or decrease a pressure within a corresponding gas and liquid separation tower.

4,508,550

AIR FLOW RESPONSIVE OUTLET FROM TANK OF VACUUM CLEANER

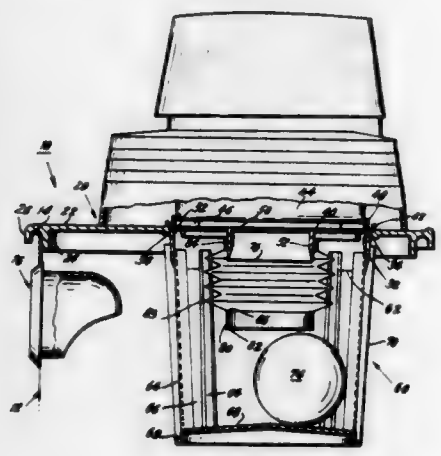
Robert C. Berfield, Jersey Shore; Robert L. Crevling, Jr., Williamsport, and Lonnie B. Lawson, Jr., Linden, all of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Apr. 28, 1983, Ser. No. 489,369

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—216

14 Claims



1. A vacuum cleaner with an air flow responsive air exit, comprising:

a collecting tank for collecting suctioned material; an inlet to the tank for air, liquid and particulate material; an air exit from the tank; suction means communicating with the air exit for drawing air out of the tank through the air exit and for thereby creating suction at the air inlet;

a floatable element capable of floating on liquid, and a guide supporting the floatable element beneath the air exit for guiding and enabling the element to float up toward the air exit as the level of liquid in the tank rises and the liquid floats the element up toward the air exit;

means attached to the air exit including means selectively movable downwardly into the tank and toward the floatable element and upwardly in the tank and away from the floatable element; that means including the entrance port into the air exit; that means being movable responsive to the velocity and amount of air flow through the air exit caused by the suction means, such that the means moves downwardly on reduced air velocity or reduced air flow and upwardly on increased air velocity or increased air flow.

4,508,551

STEAM DISTRIBUTOR

Erwin Ruoss, Münchenstein, and Kurt Sieber, Ettingen, both of Switzerland, assignors to Condair AG, Munchenstein, Switzerland

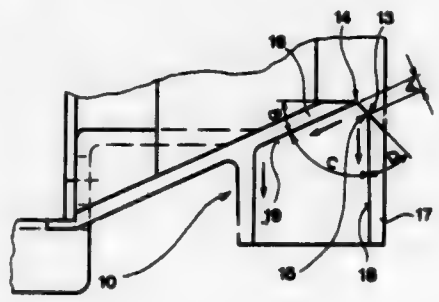
Filed Oct. 17, 1983, Ser. No. 542,365

Claims priority, application Switzerland, Oct. 25, 1982, 6212/82

Int. Cl.³ F24F *6/18*

U.S. Cl. 55—263

5 Claims



1. A steam distributor, in an air humidification system, with a fan for generating an air stream and with at least one steam nozzle located in the effective range of this air stream and connected to a steam source, wherein the steam nozzle has at least one elongate slit, the longitudinal axis of which lies at least approximately transversely to the air flow, the longitudinally extending limiting edges of this slit each ending at an acute angle, and forming sharp edges for the purpose of preventing water drops from adhering in the region of the slit.

4,508,552

SELF-LOCKING MIST ELIMINATOR

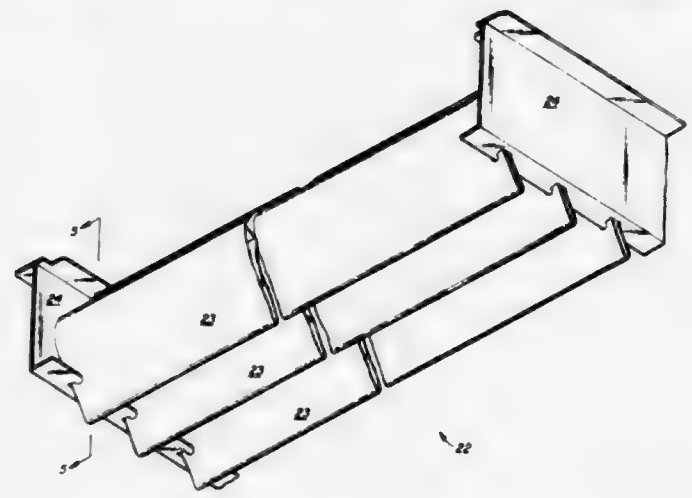
John C. Ovard, 3465 Ridgeview Dr., Santa Rosa, Calif. 95404

Filed Feb. 2, 1981, Ser. No. 230,903

Int. Cl.³ B01D *45/16*

U.S. Cl. 55—440

3 Claims



1. In a self-locking mist eliminator for removing droplets of liquid entrained in a gas stream having a plurality of longitudinally extending eliminator blades positioned in side-by-side spaced apart relation for passing a gas stream transversely through the space between adjacent blades from an inlet to an

outlet, each blade having a front surface and a back surface, and a pair of end plates for supporting the opposite ends of said blades with each of said end plates having at least one notched flange extending longitudinally of the end plate and transversely of the blades and projecting toward the opposite end plate, the improvement comprising:

said notched flange of each of said end plates having a series of notched openings for receiving a portion of each of said blades,

each notched opening being enlarged in at least one direction longitudinally of the flange to provide an integral pin member adjacent the free edge of the flange and extending longitudinally of the flange,

each of said blades having at each end thereof at least one opening in the surfaces thereof,

said blade opening spaced from the end of the blade between said inlet and outlet edges of said blades for receiving one of said pin members with said pin members extending transversely of said blades for engagement between each blade and each end flange whereby each end of each blade is mechanically interconnected with one of said end plates.

2. A self-locking mist eliminator structure for removing droplets of fluid entrained in a gas stream comprising:

a plurality of longitudinally extending substantially hollow eliminator blades for positioning in side-by-side spaced apart relation for passing a gas stream transversely through the space between adjacent blades from an inlet to an outlet,

each blade having a front surface and a back surface and at least a pair of spaced-apart openings in the blade surfaces spaced inwardly from each end thereof, and

a pair of end plates for supporting the opposite ends of said blades,

each of said end plates having a pair of spaced-apart flanges projecting from one side thereof longitudinally thereof,

each of said flanges of said pair of plates having a series of notched openings for receiving a portion of each of said blades,

each said notched opening being enlarged in at least one direction lengthwise of the flange to provide an integral pin member extending lengthwise of the flange for engagement in one of said spaced-apart openings in said blade surfaces,

the entrance corners into each of said notched openings being chamfered whereby each end of each of said blades can be pressed toward an adjacent end plate and the hollow blade will deflect as the end enters one of said notched openings until the pin member adjacent thereto engages the blade opening transversely of the blade whereby each end of each blade is mechanically interlocked with one of said end plates.

4,508,553

PROCESS FOR COUNTERCURRENT CRYSTALLIZATION WITH RECIRCULATION

Henricus A. C. Thijssen, Son, and Bernardus G. M. van der Malen, Hagestein, both of Netherlands, assignors to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel N.V., Utrecht, Netherlands

Filed Jul. 20, 1981, Ser. No. 284,947

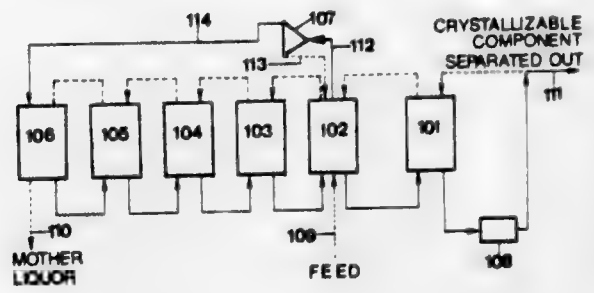
Claims priority, application United Kingdom, Jul. 24, 1980, 8024186

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ B01D *9/02*

U.S. Cl. 62—541 **12 Claims**

1. A process for separating one crystallizable component from a liquid containing a plurality of components, which comprises passing a stream of said liquid successively through at least part of a series of zones of successively lower temperatures including the zone of lowest temperature, so as to induce the formation of crystals of said one component in each of said zones, passing the crystals formed in each of said zones in a direction countercurrent to the direction of the stream of liquid through at least part of said zones, including the zone of highest temperature, separating the crystals present in the zone of highest temperature from their mother liquid and recovering at least part of these crystals, separating the crystals in the zone of



lowest temperature from their mother liquid and recovering that mother liquid, and introducing in one zone a portion of the crystals formed in a preceding zone other than the immediately preceding zone, said portion having a mean crystal size larger than the mean crystal size of the crystals formed in said one zone without said introduction of said portion.

4,508,554

PLASMA PROCESS FOR THE PRODUCTION OF A DIELECTRIC ROD

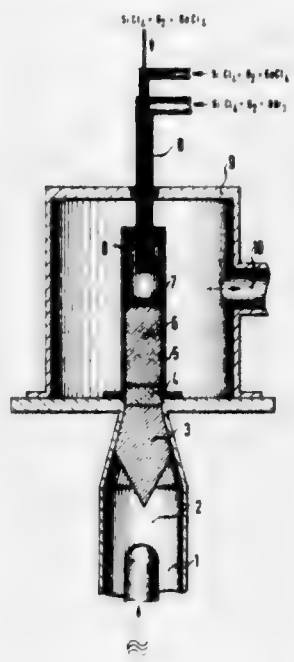
Hans Beerwald, Kall-Sistig; Guenter Boehm, and Guenter Glomski, both of Bochum, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,844

Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217839

Int. Cl.³ C03B *37/01*

U.S. Cl. 65—3.1 **16 Claims**



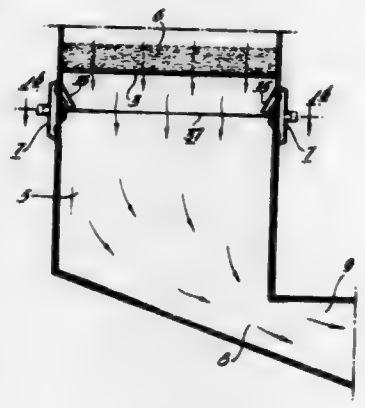
1. A plasma-based process for growing a dielectric rod from its corresponding gaseous starting materials, said process comprising conducting microwave energy in vacuo through the rod or a starting member for the rod to the end face of the rod or starting member, wherein said energy is effective to maintain a gaseous discharge at said end face, and simultaneously flowing said gaseous materials as a gaseous jet into the gaseous discharge by means of at least one nozzle, whereby said gaseous materials react with said end face to form a growing dielectric rod.

4,508,555

METHOD AND APPARATUS FOR SCRUBBING EFFLUENT GASES FROM MINERAL FIBER PRODUCTION

Guy M. Baduel, Terrasson, France, assignor to Isover Saint-Gobain, Paris, France

Continuation of Ser. No. 366,556, Apr. 8, 1982, abandoned. This application Mar. 1, 1984, Ser. No. 583,795
Int. Cl.³ C03C *25/02*; C03B *37/06*
U.S. Cl. 65—3.43 21 Claims



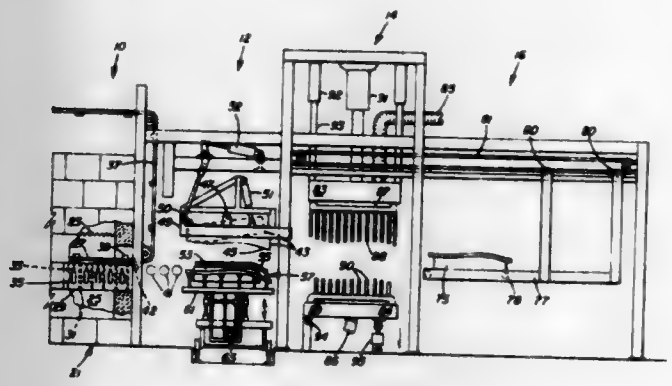
1. A process for the manufacture of mineral fiber material comprising the steps of attenuating mineral fibers; coating the fibers with a finely divided liquid binder composition; entraining the coated fibers in a downwardly directed gaseous current in a forming hood having a foraminous conveyor in a lower region thereof movable transversely across the fiber-laden current; collecting fibers in the form of a blanket on the conveyor; directing the gaseous current passing through the conveyor into a gas receiving chamber below the conveyor having a width substantially equal to the width of the conveyor; providing a plurality of pairs of convergent jets of a scrubbing liquid in said gas receiving chamber to produce a substantially planar sheet of atomized scrubbing liquid coextensive with the cross-sectional area of said gas receiving chamber and disposed immediately beneath said conveyor and parallel thereto to intercept the gaseous current flowing downwardly therethrough; and accelerating the flow of the gaseous current following its passage through the atomized scrubbing liquid by directing said current into an off-take passage having a cross-sectional flow area substantially smaller than that of said gas receiving chamber.

4,508,556

METHOD AND APPARATUS FOR BENDING GLASS SHEETS TO COMPLICATED SHAPES INCLUDING AN S-SHAPED TRANSVERSE BEND

Terry A. Bennett, Verona; George R. Claassen, New Kensington, and William B. Zimmerman, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 4, 1984, Ser. No. 616,764
Int. Cl.³ C03B *23/035*
U.S. Cl. 65—25.4 15 Claims



1. Apparatus for shaping a hot glass sheet to a complicated shape comprising a longitudinal component of bend containing a concave element in elevation about a transverse axis of bending combined with a transverse component of bend of generally S-shaped configuration containing both convex and concave elements of bending to one side of the longitudinal axis of bending comprising

a shaping station including an upper vacuum shaping mold and a lower shaping mold having complementary shaping surfaces conforming to the shape desired for a heat-softened glass sheet,

a gaseous hearth bed having an upper surface below said upper vacuum shaping mold for supporting an arriving glass sheet thereover

means to provide motion in an essentially vertical direction to said lower shaping mold between a retracted position below said upper surface of said gaseous hearth bed and a glass sheet engaging position above said upper surface,

a ring-like member movable in an essentially horizontal direction between a downstream position beyond said shaping station and an upstream position between said upper vacuum mold and said upper surface of said gaseous hearth bed when said lower mold is in said retracted position, and

conveyor means for conveying said glass sheet into said shaping station along a path from a position upstream of said shaping station when said lower mold is retracted and said ring-like member is located downstream of said shaping station,

characterized by said upper vacuum mold having a downwardly facing surface curved in concave elevation transverse to said path and provided with a downwardly curved end portion in the downstream direction of said path, and

said upper surface of said gaseous hearth bed having a downwardly curved end portion in the downstream direction of said path permitting the downstream end portion of said glass sheet to flow downward as it arrives in position over said gaseous hearth bed.

11. A method of shaping a glass sheet having a longitudinal axis and a transverse axis to a complicated shape comprising, a longitudinal component of bend containing a concave element in elevation about a transverse axis of bending combined with a transverse bend including a component of bend of generally S-shape configuration about a longitudinal axis of bending containing both concave and convex elements of bending to one side of the center line of the glass sheet comprising,

orienting said glass sheet with its longitudinal axis extending transversely of a path of movement and with its portion destined to develop said component of bend of generally S-shape configuration disposed as the leading edge portion of said glass sheet,

conveying said sheet while so oriented along a path through a tunnel-like furnace and onto a gaseous hearth bed having a downwardly curved end portion downstream of said path such that the glass sheet is heated to its deformation temperature with its leading edge slightly hotter than its trailing edge en route to said downwardly curved end portion whereby said leading edge flows downwardly to sag toward said downwardly curved end portion,

supporting a vacuum mold having a downwardly curved downstream end portion superimposed over said downwardly curved end portion of said gaseous hearth bed in sufficiently spaced relation over said gaseous hearth bed to provide clearance for entry of said glass sheet between said vacuum mold and said gaseous hearth bed,

lifting said glass sheet on an outline shaping mold above said gaseous hearth bed and toward said vacuum mold with the sagged downstream end portion of the glass sheet supported on a rail portion of said outline shaping mold having an upper surface of S-shaped configuration in elevation about an axis extending transverse to said path,

applying vacuum to said vacuum mold when said lifted glass sheet nears the vicinity of said vacuum mold to engage said glass sheet by vacuum against said vacuum mold,

lowering said outline shaping mold while continuing to apply vacuum to engage said glass sheet by vacuum against said vacuum mold,

shuttling a ring-like member into position below said vacuum mold when said outline shaping mold is lowered sufficiently to provide clearance for said ring-like member,

discontinuing said vacuum to deposit said glass sheet onto said ring-like member, and

removing said glass sheet from below said vacuum mold while supported by said outline shaping mold.

4,508,557

DEAD PLATE ARRANGEMENT OF A GLASSWARE FORMING MACHINE

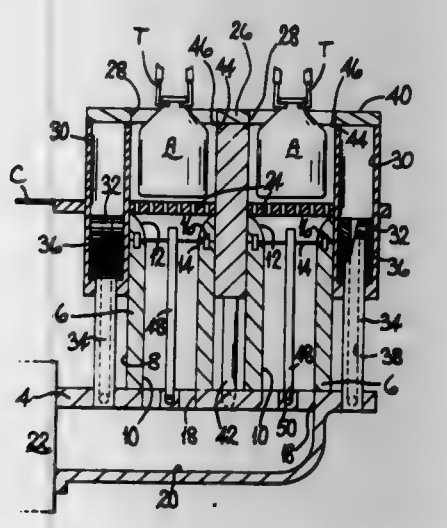
Frank A. Fenton, Wheatley, England, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Jul. 5, 1983, Ser. No. 510,865

Claims priority, application United Kingdom, Jul. 9, 1982, 8219987

Int. Cl.³ C03B *35/12*

U.S. Cl. 65—348 **11 Claims**



1. A dead-plate arrangement for receiving a newly-molded glassware article in a glassware forming machine, cooling the article, and transferring the article to an exit assembly, comprising:

a dead-plate having a plurality of apertures;

a cooling assembly for drawing air downwardly through the apertures of said dead-plate;

an air-impervious shroud mounted relative to said dead-plate to move between operative and out-of-the-way positions, wherein in its operative position said shroud substantially surrounds the entire sidewall of the article while the latter is supported over the dead-plate, whereby air flows downwardly past the article's exterior walls through the dead-plate apertures; and

means for subsequently transferring the article to an exit assembly while the shroud is in its out-of-the-way position.

4,508,558

COMPOSITIONS CONTAINING UREA, AMMONIA, AND WATER

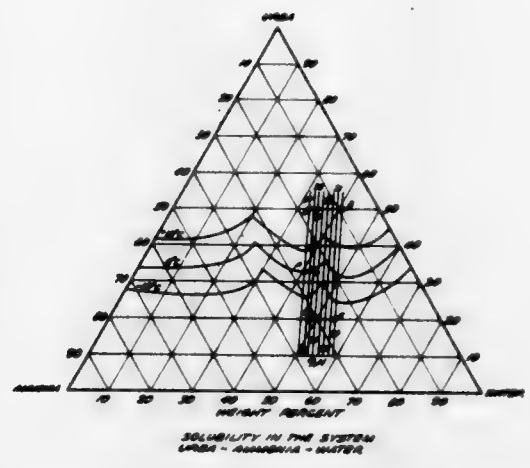
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 14, 1982, Ser. No. 398,389

Int. Cl.³ C05C *9/00, 13/00*

U.S. Cl. 71—30 **45 Claims**

30. A fertilizing method for growing plants comprising distributing upon a soil an essentially completely liquid composition comprising urea, ammonia, and water wherein the total



nitrogen content due to dissolved urea and ammonia exclusively is between about 30 and 37 weight percent.

4,508,559

HERBICIDAL COMPOSITIONS

Garald E. Kollman, Libertyville, Ill., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 99,769, Dec. 3, 1979, abandoned, which is a continuation of Ser. No. 732,621, Oct. 15, 1976, abandoned. This application Jun. 20, 1983, Ser. No. 505,119

Int. Cl.³ A01N *37/48*

U.S. Cl. 71—83 **10 Claims**

1. A herbicidal composition comprising (a) a herbicide selected from the group consisting of 2-chloro-alpha, alpha, alpha-trifluoro-p-tolyl-3-carboxy-4-nitrophenyl ether and agronomically-acceptable salts thereof and (b) at least one water-soluble alkali metal, alkaline earth metal or ammonium salt of an acid selected from the group consisting of acetic acid, benzoic acid, oxalic acid, phosphoric acid, sulfuric acid, nitric acid, perchloric acid, carbonic acid, hydrobromic acid, and hydrochloric acid wherein the weight ratio of the herbicide to the water-soluble salt is about 3:1 to about 1:100.

10. In a process of combatting weeds in an agronomic crop locus, the improvement of spraying said weeds with an aqueous composition containing a combination of (a) 2-chloro-alpha,alpha,alpha-trifluoro-p-tolyl-3-carboxy-4-nitrophenyl ether, or an agronomically acceptable salt thereof, and (b) at least one water-soluble alkali metal, alkaline earth metal or ammonium salt of phosphoric acid, sulfuric acid, nitric acid, acetic acid or hydrochloric acid wherein the weight ratio of the herbicide to the water-soluble salt is about 3:1 to about 1:100, said aqueous composition being sprayed at about 5 to about 50 gallons of water per acre, the composition being applied at a rate of about 0.1 to about 12 pounds of the diphenyl ether herbicide per acre, the rate being sufficient to control the growth of the weeds.

4,508,560

CERTAIN PYRIDYLACETYLENE COMPOUNDS, COMPOSITIONS CONTAINING SAME AND HERBICIDAL METHODS OF USE

Hans-Georg Brunner, Lausen; Rolf Schurter, Binningen, and Henry Szczepanski, Wallbach, all of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

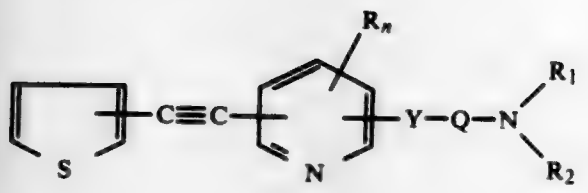
Filed Nov. 5, 1982, Ser. No. 439,456

Claims priority, application Switzerland, Nov. 11, 1981, 7257/81

Int. Cl.³ C07D *409/06;* A01N *43/40*

U.S. Cl. 71—94 **14 Claims**

1. A compound of the formula



wherein

R is cyano, C_1–C_4-alkoxy, di-(C_1–C_6-alkyl) amino, halogen or C_1–C_4-alkyl,

n is 0, 1 or 2,

Y is oxygen or sulfur,

Q is straight-chain or branched-chain C_2–C_6-alkylene,

each of R_1 and R_2 is C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl or C_3–C_8-cycloalkyl.

12. A method of controlling weeds, which method comprises applying thereto or to the locus thereof a herbicidally effective amount of a compound according to claim 1.

4,508,561

1-PHENYLETHYL SULFONE DERIVATIVES OF 2-PYRIDYL-N-OXIDES AND HERBICIDAL COMPOSITIONS CONTAINING SAME

Gozyo Sakata; Tatsuo Numata; Kenzi Makino; Takuya Kakuta; Kazuya Kusano, all of Funabashi; Takasi Ikai, and Tosihiko Oguti, both of Shiraoka, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

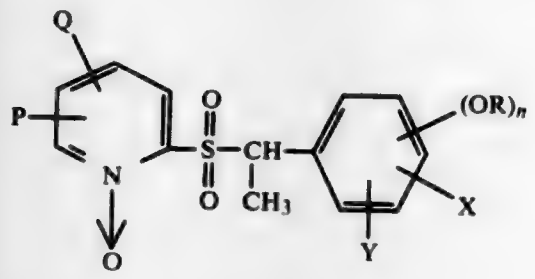
Filed Jan. 12, 1983, Ser. No. 457,381

Claims priority, application Japan, Jan. 22, 1982, 57-8702

Int. Cl.³ C07D *213/60*; A01N *43/40*

U.S. Cl. 71—94 **6 Claims**

1. A 1-Phenylethyl sulfone substituted by a halogenated alkyloxy group, represented by the formula



wherein

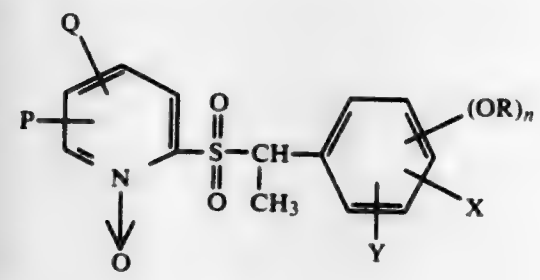
R is lower alkyl substituted by halogen,

n is 1 or 2,

each of P and Q is a hydrogen atom or lower alkyl and each of X and Y is hydrogen, lower alkyl or halogen.

2. A herbicidal composition comprising:

(a) an herbicidally effective amount of a 1-phenylethyl sulfone substituted by a halogenated alkyloxyl group, of the formula



wherein

R is lower alkyl susbstituted by halogen,

n is 1 or 2,

each of P and Q is hydrogen or lower alkyl, and

each of X and Y is hydrogen, lower alkyl or halogen; and

(b) a herbicidally acceptable carrier.

4,508,562

BENZYLSULFINYL PYRIDINE-N-OXIDES AND THEIR HERBICIDAL METHOD OF USE

Koji Nakayama, Osaka; Ryo Yoshida, Hyogo, and Hiroshi Matsumoto, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

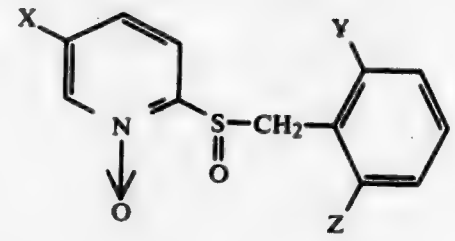
Filed May 27, 1983, Ser. No. 498,990

Claims priority, application Japan, May 28, 1982, 57-91929; Nov. 24, 1982, 57-206310

Int. Cl.³ C07D *213/71*; A01N *43/40*

U.S. Cl. 71—94 **4 Claims**

1. A compound of the formula:



wherein X is a chlorine atom or a bromine atom; and Y and Z, which may be the same or different, are each a chlorine atom or a fluorine atom.

4. A method for controlling weeds which comprises applying a herbicidally effective amount of the compound according to claim 1 to the field for cultivating soybeans, cotton, barley or rice.

4,508,563

REDUCING THE OXYGEN CONTENT OF TANTALUM

Walter J. Bernard, and Richard J. Millard, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 19, 1984, Ser. No. 591,293

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 BB **16 Claims**

1. A process for reducing the oxygen content of tantalum to obtain a high CV product for electrolytic capacitors comprising intimately contacting said tantalum with an alkali metal halide, reacting said metal halide with said tantalum oxide out of contact with an oxygenated medium at a temperature of at most 1200° C. to form a corresponding alkali metal oxide, and then increasing said temperature to at most 1400° C. for at most 10 minutes to volatilize and expel any excess alkali metal halide.

4,508,564

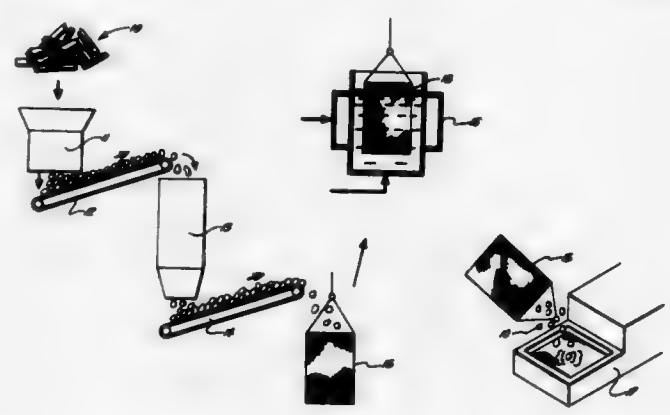
SCRAP METAL RECLAIMING PROCESS

James A. Kennedy, Newnan, Ga., assignor to The William L. Bonnell Company, Newnan, Ga.

Filed May 17, 1984, Ser. No. 611,138

Int. Cl.³ C22B *21/00*

U.S. Cl. 75—65 R **16 Claims**



1. A method for recycling aluminum scrap containing thermal barrier material, said method comprising the steps of:

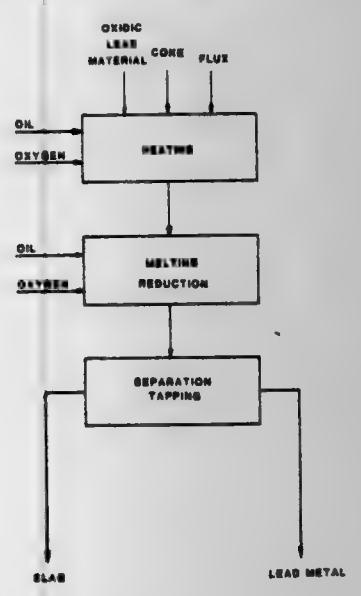
(a) comminuting said aluminum scrap to pieces less than about 24 inches in length thereby preparing a relatively uniformly sized aluminum scrap product;
(b) conveying said comminuted aluminum scrap product to a storage hopper;
(c) conveying the comminuted aluminum scrap product from said storage hopper to a fluidized bed furnace scrap container;
(d) transferring said fluidized bed furnace scrap container with said comminuted scrap product therein to a fluidized bed furnace;
(e) heating said aluminum scrap product in said fluidized bed furnace scrap container in said fluidized bed furnace to a temperature of about 600° to 1000° F. for a period sufficiently to substantially completely remove said thermal barrier material from said aluminum scrap product as combustible gas and cinder thereby producing a satisfactory aluminum melt furnace feed product in said fluidized bed furnace scrap container; and
(f) removing said fluidized bed furnace scrap container with said aluminum melt furnace feed product therein from said fluidized bed furnace; and
(g) transferring said aluminum melt furnace feed product from said fluidized bed furnace scrap container to an aluminum melt furnace for melting.

4,508,565

METHOD FOR PRODUCING LEAD FROM OXIDIC LEAD RAW MATERIALS WHICH CONTAIN SULPHUR

Johan S. Leirnes, Skelleftehamn; Malkolm S. Lundström, Skelleftea; Martin L. Hedlund, Ursviken, and Kurt J. A. Burén, Skelleftehamn, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Apr. 30, 1984, Ser. No. 605,660
Claims priority, application Sweden, May 2, 1983, 8302486
Int. Cl.³ C22B *13/00*
U.S. Cl. 75—77 **12 Claims**



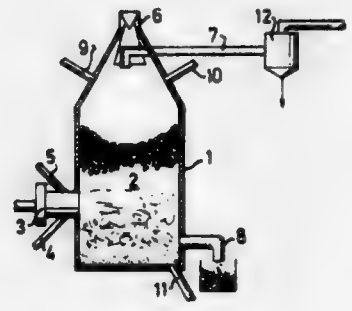
1. A method for producing lead having a sulphur content of less than about 2% from a sulphur-containing lead raw material contaminated with at least one of zinc and other oxidizable elements by smelting the material in a furnace in which the contents thereof can be agitated, said method comprising:
(a) introducing the lead raw material into the furnace together with an iron-containing flux and a solid reducing agent, said reducing agent being in an amount at least sufficient to reduce the lead content of the furnace to lead metal;
(b) heating and agitating the contents of the furnace whereby the lead raw material is reduced to lead having a sulphur content of less than about 2% and whereby a low lead content slag is formed composed of iron and zinc in a total amount of from 30 to 40%, SiO_2 in an amount of from 15 to 25% and CaO and MgO in a total amount of from 15 to 25%; and
(c) recovering the lead and the slag.

4,508,566

METHOD OF CLEANING A GAS FLOW CONTAINING ZINC VAPOR

Sune Eriksson; Sven Santén, both of Hofors, and Gotthard Björling, Djursholm, all of Sweden, assignors to SKF Steel Engineering Aktiebolag, Sweden

Filed Jan. 24, 1983, Ser. No. 460,500
Claims priority, application Sweden, Jun. 21, 1982, 8203831
Int. Cl.³ C22B *19/04*
U.S. Cl. 75—88 **5 Claims**



1. A method of purifying and cooling a superheated gas mixture containing zinc vapor together with vapor of at least one metal having a boiling point higher than zinc, said gas mixture being obtained from reduction in a reduction shaft of material containing zinc oxide, comprising the steps of reducing the zinc oxide in the reduction shaft so as to obtain said superheated gas mixture, passing the gas mixture upwardly through said reduction shaft, contacting said gas mixture with a countercurrent flow of cooling metal droplets or particles by injecting said cooling metal droplets or particles into the top of the shaft, said material containing zinc oxide at least partially not comprising said metal droplets or particles, and thereby condensing the vapor of said at least one metal having a boiling point higher than zinc and cooling the zinc containing gas to almost the saturation temperature of the zinc vapor in said gas, passing the condensed metal downwardly through the shaft and passing the cooled zinc vapor to a condensor outside the shaft and condensing said vapor.

4,508,567

PRESS-MOLDING PROCESS FOR PREPARING A POWDER COMPACT

Shigeru Mizuno; Masahiko Suzuki; Haruki Mizuno, and Masutaro Katsu, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 24, 1982, Ser. No. 391,879
Claims priority, application Japan, Jul. 2, 1981, 56-103767
Int. Cl.³ B22F *1/00*
U.S. Cl. 75—231 **9 Claims**

1. A flux-path forming member of a motor made of a compacted and cured mixture mass and having high radial crushing strength and density, said flux-path forming member being prepared by a process comprising:
a first step of preparing a mixture mass by evenly mixing not less than 0.2 percent by weight of thermosetting resin binder and not less than 0.1 percent by weight of molybdenum disulfide with not less than 96 percent by weight of a major portion of said mixture mass, said major portion being a member selected from the group consisting of metal powder, fibrous metal, and a combination thereof, the total content of said thermosetting resin and said molybdenum disulfide being not more than 4 percent by weight;
a second step of compacting in a mold under pressure said mixture mass into a predetermined shape; and

a third step of heating, concurrently with or subsequently to said second step, said mass to an elevated temperature to cure the binder portion thereof.

4,508,568

BIOCIDAL WOOD PRESERVATIVE COMPOSITION AND METHOD

Richard C. Fox, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 200,812, Oct. 27, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,558

Int. Cl.³ C09D *5/20*

U.S. Cl. 106—2 **12 Claims**

1. A preservative composition which comprises at least about 25% by weight of a petrolatum wax having an oil content equal to or greater than about 10 weight percent of the wax and an effective amount of a biocide.

4,508,569

SEALING COMPOUND FOR CANS

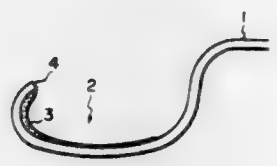
Hideo Kumasaka, Yokosuka, and Kazuo Fujisawa, Kawasaki, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

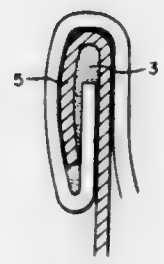
Division of Ser. No. 354,547, Mar. 4, 1982, abandoned. This application Oct. 6, 1983, Ser. No. 539,224

Claims priority, application Japan, Mar. 10, 1981, 56-33137

Int. Cl.³ C04B *9/02*

U.S. Cl. 106—14.12 **9 Claims**





1. In a can end formed from a surface-treated steel plate having an annular groove at the periphery thereof which comprises a gasket layer formed in the annular groove to seal the double-seamed portion between the can end and a can body, the improvement wherein said gasket layer is formed by lining a sealing compound in the annular groove, said sealing compound comprising as a base component an aqueous latex of a styrene-butadiene rubber which contains styrene and butadiene at a weight ratio of from 28/72 to 55/45, said latex containing as a particle size-adjusting agent an alkali metal carbonate or an alkali metal salt of a phosphorus oxyacid in an amount of 0.3 to 2.0 parts by weight per 100 parts by weight of solids of the styrene-butadiene rubber wherein the number average particle size of particles of the styrene-butadiene rubber is 1,600 to 3,000 Å.

8. A method for preventing rusting on the cut edge of a can end formed from a surfacetreated steel plate having an annular groove at the periphery thereof which comprises lining a sealing compound comprising as a base component an aqueous latex of a styrene-butadiene rubber which contains styrene and butadiene at a weight ratio of from 28/72 to 55/45, said latex containing as a particle size-adjusting agent an alkali metal carbonate or an alkali metal salt of a phosphorus oxyacid in an amount of 0.3 to 2.0 parts by weight per 100 parts by weight of solids of the styrene-butadiene rubber wherein the number average particle size of particles of the styrene-butadiene rubber is 1,600 to 3,000 Å in the annular groove and double-seaming the can end member to a can body whereby the sealing compound forms a gasket layer in the annular groove to seal the double-seamed portion between the can end and the can body.

4,508,570

AQUEOUS INK FOR INK-JET PRINTING

Tadashi Fujii, Yokohama; Tomoyuki Yamaguchi, Chiba; Kakuji Murakami, Kawasaki; Tomiko Kawakami, and Hiroko Uenozono, both of Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 434,779

Claims priority, application Japan, Oct. 21, 1981, 56-167267; Oct. 29, 1981, 56-172053

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—20 **22 Claims**

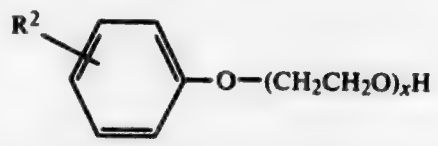
1. An aqueous ink for ink-jet printing comprising (i) a water-soluble dye, (ii) a wetting agent selected from the group consisting of a polyhydric alcohol, an alkyl ether of a polyhydric alcohol, and mixtures thereof, (iii) water, and (iv) at least one water-soluble non-ionic surface active agent selected from the group consisting of:

compounds of the formula (I):

$$R^1-N\begin{matrix}-(CH_2CH_2O)_mH\\ \diagdown\\ (CH_2CH_2O)_nH\end{matrix} \quad (I)$$

wherein R^1 is a chain hydrocarbon group having 16 to 19 carbon atoms, m is an integer of from 0 to 18, and n is an integer of from 0 to 18, wherein m+n equals 8 to 18;

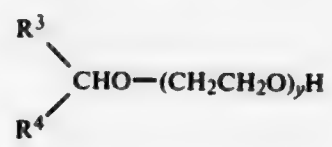
compounds of the formula (II):



(II)

wherein R^2 is an alkyl group having 7 to 12 carbon atoms, and x is an integer of from 12 to 20; and

compounds of the formula (III):



(III)

wherein R^3 and R^4 each is an alkyl group having 6 to 8 carbon atoms, and y is an integer of from 10 to 15, and mixtures thereof.

4,508,571

MOLD ADDITIVES FOR USE IN CONTINUOUS CASTING

Hakaru Nakato; Toshikazu Sakuraya; Yasuhiro Habu; Toshihiko Emi, all of Chiba; Masanori Kodama, Kurashiki; Takao Koshikawa, Chiba; Yoshimitsu Yoshida, and Fumitaka Shimokawa, both of Kobe, all of Japan, assignors to Kawasaki Steel Corporation and Sakai Chemical Industry Co., Ltd, both of Kobe, Japan

Filed Mar. 19, 1984, Ser. No. 591,030

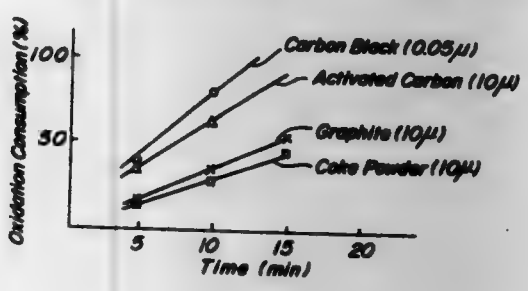
Claims priority, application Japan, Aug. 10, 1983, 58-145102

Int. Cl.³ B28B *7/34*

U.S. Cl. 106—38.28 **5 Claims**

1. In a mold additive for use in a continuous casting, which comprises a base material for slag having a chemical composition of $CaO—SiO_2—Al_2O_3$ system, a flux composed of at least one substance selected from the group consisting of fluorides and carbonates of alkali metals and alkaline earth metals, and a

carbonaceous aggregate as a melting rate adjuster the improvement comprising, as said carbonaceous aggregate, carbon black and activated carbon having an average particle size of



not more than 10 μm and in amounts of 0.5–2.0% by weight and 1–4% by weight, respectively, wherein the bulk density of the mold additive is not more than 0.9 g/cm^3.

4,508,572

CEMENT COMPOSITION FOR LAYING UNDERWATER

Masaharu Sakuta, Tokyo; Soichi Kiya, Hachioji; Iwao Uchizaki, Tokyo; Yasuhiko Yoshioka, Mitaka; Koichi Ito, Tokyo; Tadahiro Kaya, Kanagawa; Tsunetoshi Shioya; Yoshifumi Shimoyama, both of Fujisawa, and Hiroyuki Yamakawa, Yamato, all of Japan, assignors to Takenaka Komuten Co., Ltd., Osaka; Takenaka Doboku Co., Ltd. and Sankyo Chemical Industries Ltd., both of Tokyo, all of, Japan

Filed Jun. 23, 1983, Ser. No. 506,971

Claims priority, application Japan, Jul. 30, 1982, 57-131904

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—90 **8 Claims**

1. A cement composition for laying underwater, comprising cement and a polyacrylamide compound, wherein said polyacrylamide compound is present in an amount ranging from 0.1 to 3% by weight of said cement, and a dialdehyde.

4,508,573

CO-PRODUCTION OF CEMENTITIOUS PRODUCTS

Philip H. Harris, Arlington, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 326,614, Dec. 2, 1981,. This application Mar. 9, 1983, Ser. No. 473,535

Int. Cl.^{3} C04B *7/44*

U.S. Cl. 106—100 **10 Claims**

1. A method of reducing sulfur containing contaminants in emission gases from a coal burning furnace comprising

(a) forming an intimate mixture of coal and reactant material containing calcareous and aluminous materials by intergrinding coal with said reactant material wherein said interground intimate mixture has a majority of particles less than 100 mesh (U.S. Sieve), said reactant material being added in sufficient quantity to provide a stoichiometric ratio of reactant material to sulfur dioxide combustion contaminants of coal of from about 0.5 to about 3;

(b) suspending said integround mixture in an oxygen-containing gas stream and passing said stream to a flame maintained at about 2000° F. to about 3000° F. by coal combustion within said furnace; and

(c) burning said coal in said oxygen-containing gas stream thereby releasing sulfur dioxide combustion contaminant from coal which reacts with reactant material to form a thermally stable compound in the lime-alumino-sulfate series.

4,508,574

PROCESS FOR IMPROVING THE FLUIDITY AND CONVEYABILITY OF MOIST CALCIUM SULFATE PRECIPITATES

Hans-Friedrich Kurandt, Luenburg, and Karl-Heinz Kampner, Embsen, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Ag, Marl, Fed. Rep. of Germany

Filed Oct. 25, 1983, Ser. No. 545,241

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239768

Int. Cl.^{3} C04B *11/10*

U.S. Cl. 106—109 **7 Claims**

1. A process for preparing a fluid and conveyable moist calcium sulfate precipitate from calcium sulfate precipitates, having a free water content of more than about 5% by weight, which comprises adding quicklime (CaO) burned dolomite (CaO+MgO) or a mixture thereof, in finely ground form to said water-containing calcium sulfate precipitate in the amount of about 15–60 percent by weight, based upon the calcium sulfate content, to form a homogeneous mixture of the same; and wherein about 0.5 to 0.9 moles of finely ground quicklime, burned dolomite or a mixture thereof are added per mole of free water in said moist calcium sulfate precipitate.

4,508,575

PROCESS FOR PRODUCING IVORYLIKE MATERIAL FOR KEYS OF MUSICAL INSTRUMENTS

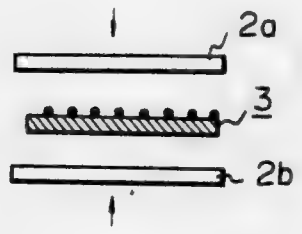
Yutaka Oshima, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Sep. 20, 1983, Ser. No. 533,879

Claims priority, application Japan, Sep. 20, 1982, 57-163544

Int. Cl.^{3} C08L *89/00*

U.S. Cl. 106—148 **28 Claims**



1. A process for producing ivorylike material for keys for musical instruments, comprising the steps of providing a first casein composition of a first color comprising a filler, coloring agent and water; providing a second casein composition having a second color different from the first color, said second casein composition comprising filler, coloring agent and water and being in the form of a sheet; extruding said first casein composition through a dye to form thin linear bodies on said sheet arranged in a predetermined orientation so as to simulate the surface of ivory; and heat pressing said oriented sheet so as to form a heat pressed oriented sheet; and impregnating said heat pressed oriented sheet with formalin for hardening.

4,508,576

HOT-WATER DISPERSIBLE CORN STARCH HAVING HIGH PASTE VISCOSITY

John P. Mudde, Oak Lawn, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 18, 1983, Ser. No. 542,952

Int. Cl.^{3} C13L *1/08;* C08L *3/00*

U.S. Cl. 106—213 **10 Claims**

1. A process for the treatment of corn starch which comprises the steps of

(a) mixing

(i) a starch component comprising granular corn starch,

(ii) a surfactant component comprising at least one surfactant containing a fatty acid moiety, and

(iii) water in the amount of about 43% to about 50% by

weight of the combined mixture, any portion of which water may be present as the natural moisture content of said starch component, to form a uniform mixture;

(b) heating the mixture of Step (a) at a temperature from about 50° C. to about 85° C. for at least 1 hour in a closed container; and

(c) subjecting the product of Step (b) to microwave radiation in an open container until the moisture content of the mixture is reduced to below about 15% by weight;

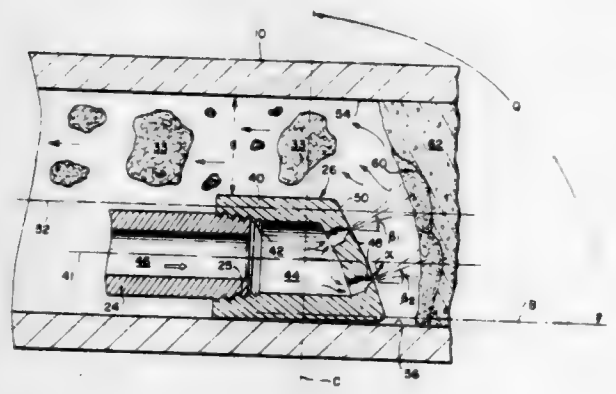
to produce a starch product having substantially complete hot-water dispersibility capable of forming a 5% dispersion when added to boiling water, said dispersion having a viscosity of at least about 2000 centipoises when measured at 70° C.

4,508,577

FLUID JET APPARATUS AND METHOD FOR CLEANING TUBULAR COMPONENTS

Andrew F. Conn, Baltimore; William T. Lindenmuth, Columbia, and Gary S. Frederick, Reisterstown, all of Md., assignors to Tracor Hydronautics, Inc., Laurel, Md.

Filed Apr. 29, 1983, Ser. No. 489,771
Int. Cl.³ B08B 9/02
U.S. Cl. 134—1 **35 Claims**



14. A method for cleaning material from the inside of a tubular component with high velocity fluid jets comprising:

positioning a nozzle body adjacent to one wall of the tubular component so that the body is offset relative to the axis of the component, the nozzle body having at least two fluid jet forming means mounted on its forward end for directing a plurality of angled high pressure fluid cutting jets in a direction forward of the nozzle body, the angle of the jets being such that they are only directed toward the wall of the tubular component opposite said one wall and the nozzle body being located so that the cutting jet of at least one of the jet forming means will be directed across the axis of the tubular component;

providing high pressure fluid to the jet forming means;

moving the tubular component and the nozzle body so that the nozzle body moves around and remains adjacent to the inside wall of the tubular component; and

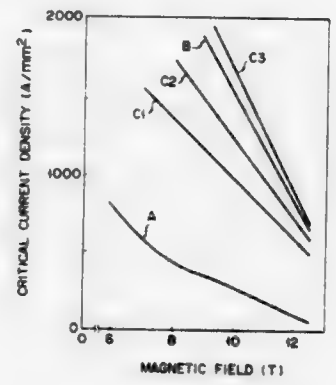
advancing the nozzle body into the tubular component as the material is eroded whereby the fluid jets form an asymmetric cutting pattern on the surface of the material being eroded and the counterthrust of the fluid jets keeps the nozzle body offset relative to the axis of the tubular component and against said one wall of the tubular component to provide passage for removal of the eroded material and spent fluid out of the end of the tubular component.

4,508,578

METHOD OF MANUFACTURING FINE FILAMENTARY NB-TI BASED ALLOY SUPERCONDUCTING WIRE

Hitoshi Wada, Toride; Kyoji Tachikawa, Tokyo; Yutaka Yamada, Kawasaki, and Satoru Murase, Yokohama, all of Japan, assignors to National Research Institute, Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Nov. 29, 1983, Ser. No. 556,099
Claims priority, application Japan, Nov. 29, 1982, 57-207642
Int. Cl.³ H01L 39/12
U.S. Cl. 148—11.5 F **12 Claims**



1. A method of manufacturing a fine multifilamentary Nb-Ti based superconducting wire comprising:

a first step of processing an alloy consisting essentially of 10 to 50 atomic % of niobium, 40 to 75 atomic % of titanium and no higher than 30 atomic % of at least one element selected from a group consisting of hafnium, tantalum and tungsten to form an alloy wire;

a second step of covering said alloy wire with a stabilizer, cold drawing the resultant wire, bundling a plurality of stabilizer-clad wires thus obtained, covering the bundle of wires with a stabilizer, and extruding and cold drawing the resultant bundled wires to thereby form a multifilamentary wire; and

a third step of thermally treating said multifilamentary wire at a temperature of 250° to 600° C. and drawing the resultant treated filamentary wire to a reduction rate of 30 to 99.9%,

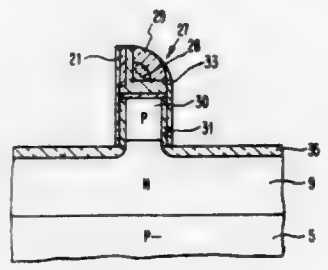
said third step being carried out more than once.

4,508,579

LATERAL DEVICE STRUCTURES USING SELF-ALIGNED FABRICATION TECHNIQUES

George R. Goth, Poughkeepsie, and Shashi D. Malaviya, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,918
Int. Cl.³ H01L 21/20, 21/28
U.S. Cl. 148—175 **9 Claims**



1. A process for forming a semiconductor pedestal structure of tightly controlled width, comprising the steps of:

providing a body of semiconductive material;

providing a first insulating layer on said body of semiconductive material;

providing a first polysilicon layer over a first portion of said insulating layer leaving a second portion of said insulating

layer exposed, said first polysilicon having a substantially vertical surface extending between said first and second portions;

providing a second insulating layer conformally over said first polysilicon layer including said vertical surface thereof and said exposed second portion of the first insulating layer, said second insulating layer over said vertical surface serving as a sidewall;

providing a second polysilicon layer conformally over said second insulating layer;

anisotropically etching said conformal second polysilicon layer forming a stud of said second polysilicon abutting said sidewall with the width of said polysilicon stud defined by the thickness of said conformal second polysilicon layer;

thermally oxidizing said polysilicon stud to convert said polysilicon stud into an essentially silicon dioxide stud;

removing said first polysilicon layer and the second insulating layer provided thereover to leave said oxide stud self-supporting and flanked on one side by said second insulating layer sidewall; and

forming a protrusion of said semiconductive material on a pedestal thereof with the width of said protrusion defined by the width of said self-supporting stud by anisotropically etching said body of the semiconductive material surrounding said self-supporting stud using said self-supporting stud as a mask

whereby a semiconductor pedestal structure of tightly controlled width is formed.

4,508,580

INCENDIARY MIXTURE CONSTITUTED OF METALS

Martin Klöber, Nuremberg, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,708

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245907

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.91 **12 Claims**

1. In an incendiary mixture containing metals with at least one oxygen-supplying metal oxide and an organic binder; and a nitrate, chlorate, perchlorate or peroxide selected from the group consisting of sodium, potassium, lithium, strontium, and ammonium and the chlorate, perchlorate or peroxide of barium comprising the improvement where the oxygen-supplying component consists of at least one oxygen-yielding compound selected from a member of the group consisting of barium nitrate, lead-IV-oxide and iron-III-oxide and mixtures thereof; at least one pyrophoric component selected from the group consisting of magnesium alloys, aluminum alloys or zirconium; and a castable acrylic synthetic resin binder.

4,508,581

METHOD FOR PRODUCING LINING PANELS WHICH ARE CAST INTO CONCRETE AS AN INTEGRAL LINING

Ernst Rohringer, Hilgert, Fed. Rep. of Germany, assignor to Steuler-Industriewerke GmbH, Grenzhausen, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,469

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108972

Int. Cl.³ B29C *27/08*

U.S. Cl. 156—73.1 **7 Claims**

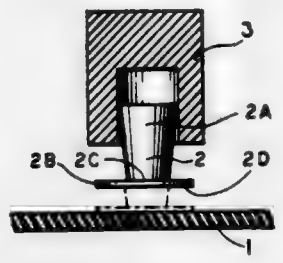
1. A method of producing large area lining panels for poured concrete structures, the method comprising the steps of:

providing a sheet-like panel composed of thermoplastic material, each panel having a front face and a rear face;

providing a plurality of affixing knobs composed of thermoplastic material, each affixing knob having a body with a first end and a second end and an attachment portion integrally formed at the first end of the body, the attachment portion having a contact surface with an area substantially larger than the cross-sectional area of the first end of the body;

placing the contact surface of the attachment portion of each affixing knob in contact with the rear face of the panel in predetermined spaced relation to other ones of the plurality of knobs; and

effecting frictional heating of the immediate region of contact between each affixing knob and the panel sufficient to fuse the contact surface of the knob and the contacted surface of the panel to weld the affixing knobs to the panel, whereby the enlarged attachment portion of each knob is adapted to distribute shear and tension forces exerted between the knob and the panel, when the knob is embedded in a poured concrete structure abutting the rear face of the panel, over a weld area greater than the cross-sectional area of the first end of the knob.



4,508,582

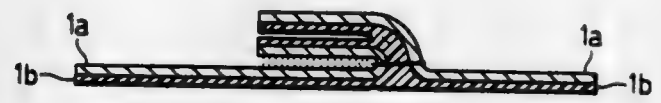
PROCESS FOR JOINING POLYURETHANE COATED FABRICS

Hans Fink, Möhlin, Switzerland, assignor to Bata Schuh AG., Möhlin, Switzerland

Filed Feb. 6, 1984, Ser. No. 577,024

Int. Cl.³ B32B *31/16, 7/08*

U.S. Cl. 156—93 **2 Claims**



1. A process for forming a pressure-tight and tension-proof joint between fabric substrate comprising the steps of

coating one side of each substrate with a layer of polyurethane,

placing the substrates adjacent each other with the polyurethane layers together,

applying pressure to a selected region near an edge of the adjacent fabric substrates and inductively heating the selected region so that the polyurethane material in the selected region is welded together,

sewing a seam along the region so that the stitching passes through the weld thus formed,

folding over and adhering the material of the welded substrates along the welded region so that a portion of one of the substrates along the selected edge lies against and is bonded to itself, and

separating and spreading out the remainder of the coated fabric substrates.

4,508,583

METHOD OF RECLAIMING ELECTRIC MOTOR LAMINATIONS

John A. Beavers, and Willard F. North, both of Claremore, Okla., assignors to Hughes Tool Company, Houston, Tex.

Filed May 23, 1984, Ser. No. 612,974

Int. Cl.³ B32B *35/00*

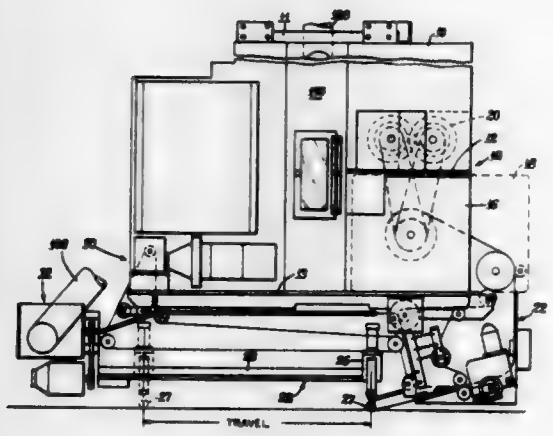
U.S. Cl. 156—94 **5 Claims**

1. For an elongated electric motor of the type having a stator stationarily mounted in a housing and composed of laminations

having slots containing windings and filled with a liquid filler which hardens to encapsulate the windings, an improved method of reclaiming the laminations for reuse, comprising in combination:

(a) removing the stator from the housing;

(b) securing portions of the stator with two grippers, one of which is movable relative to the other;



(c) moving one of the grippers apart from the other, separating a section of the stator from the remaining portions of the stator and pulling windings from the separated section; then

(d) resecuring the stator and repeating step (c) to provide a plurality of sections free of windings; and

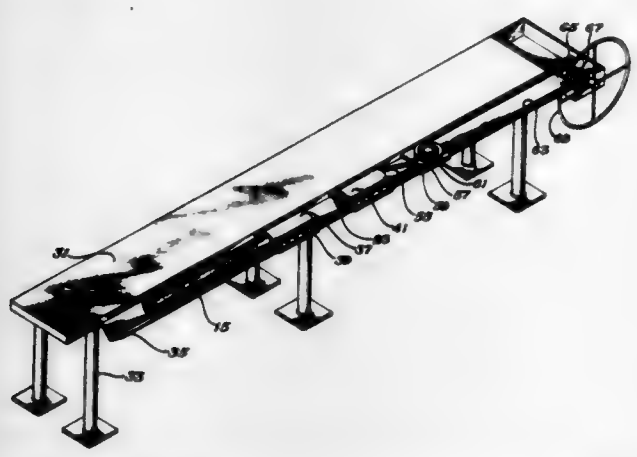
(e) removing residual filler from the sections and separating the sections into individual laminations.

4,508,584

TAPE-LAYING HEAD

Paul A. S. Charles, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Dec. 1, 1983, Ser. No. 556,922
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—353 **7 Claims**



1. In a machine head for laying a tape of composite material from a two-ply tape consisting of a layer of said composite material laminated to a strippable backing tape,

said machine head being adapted for suspension from the movable carriage of a gantry or the like which provides controlled linear movement of the carriage above, and along three rectilinear axes with respect to, a laying surface positioned to receive the composite material from said machine head and which provides controlled rotation of a portion of the carriage about a vertical axis,

said machine head comprising

a frame adapted to be secured in suspension from the rotatable portion of said movable carriage,

a tape supply mechanism mounted on the frame and comprising a power-driven restraining spindle removably engageable with the hub of a supply reel of said two-ply tape,

a tape guide for conducting said two-ply tape from the supply reel,

a flying shear disposed along said tape guide and operable to sever the composite material transversely of the two-ply without severing the backing tape,

a tape-laying mechanism for laying a severed length of the composite material upon said surface,

a take-up mechanism for conveying the backing tape away from the tape-laying mechanism, and

a control mechanism for synchronizing the operations of said gantry carriage, said tape-supply mechanism, said shear, said tape-laying mechanism and said take-up mechanism to effect the laying of a predetermined length of composite material in tape form upon a laying surface between two points on said surface,

the improvement wherein the tape-laying mechanism comprises

a subcarriage reciprocable along a horizontal track on the frame of the machine head from and to a normal position adjacent the delivery end of the tape guide,

a yoke vertically reciprocable on said subcarriage, a tape presser roll journalled in said yoke and about which the backing tape is trained between the tape guide and the take-up mechanism,

power-operated means for urging said yoke resiliently toward said laying surface to implant the composite material of said two-ply tape upon said surface, said yoke being normally raised on the subcarriage to maintain the presser roll and entrained tape above said laying surface,

a power-operated tape clamp on said subcarriage engagement with said presser roll in its normal raised position to secure the backing tape thereto,

a power-driven mechanism for advancing and retracting said subcarriage through a variable measured distance between selected points along said track,

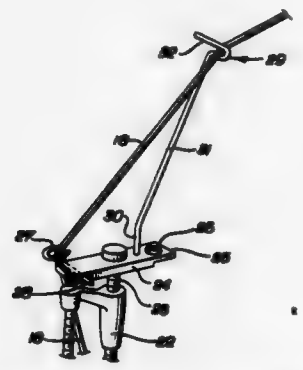
said control means synchronizing the operations of said subcarriage, flying shear, tape clamp, roll yoke and take-up mechanism to maintain the engagement of the tape clamp with the presser roll as the subcarriage advances thereby to draw a measured length of the two-ply tape from the tape guide and a corresponding length of backing tape from the take-up mechanism, to release the clamp and to cause the presser roll to implant the end of a severed length of the composite material upon said laying surface, and then to roll back over the two-ply tape to press said severed length to the laying surface while simultaneously removing the backing tape from the laid composite material and from the laying site.

4,508,585

APPARATUS FOR FABRICATING COAXIAL CABLE

David L. Frakes, 18382 Gothard, Huntington Beach, Calif. 92648

Filed Feb. 25, 1983, Ser. No. 469,794
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—393 **2 Claims**



1. For use with a carrier device for braiding the conductive

sheath of coaxial cable, an improved apparatus for positioning a plurality of planetary, flattened, conductive strands, the improvement comprising:

(a) a plurality of mounting shafts coupled to the carrier device;

(b) a pair of cylindrical pins each projecting from one of said mounting shafts;

(c) a horizontal flange rotatably coupled to each of said mounting shafts, said horizontal flange having at one end thereof positioning means for deflecting the position of the flattened conductive strand upwardly from said horizontal flange said positioning means comprising a positioned shaft perpendicular to said horizontal flange and said mounting shaft and being rotatable about an axis, said positioned shaft depending into a directional positioner adapted to receive the flattend conductive strand; and

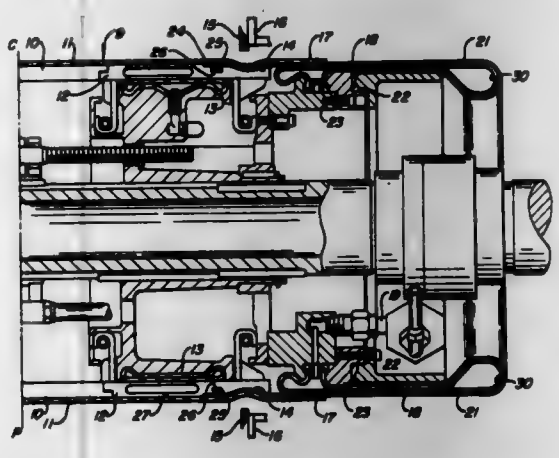
(d) a planetary braiding guide coupled to said horizontal flange on the opposide side of said mounting shaft as said positioning means and extending upwardly from said horizontal flange opposite to said mounting shaft, said braiding guide including means for positioning the flattened conductive strand adjacent the coaxial cable whereby a conductive strand is consecutively disposed about said cylindrical pins through said positioning means and adjacent said braiding guide.

4,508,586

TIRE BEAD TURN-UP DEVICE

Robert L. Brown, Akron; William A. Jones, Mogadore, and Daryl E. Anderson, Akron, all of Ohio, assignors to GenCorp Inc., Akron, Ohio

Filed Sep. 9, 1983, Ser. No. 530,799
Int. Cl.³ B29H *17/22*
U.S. Cl. 156—401 **9 Claims**



1. A tire building drum, comprising:

(a) a cylindrical outer shell on which at least one carcass ply of unvulcanized rubber material is layered, the shell having a pair of opposing ends adjacent which lay the opposing ply endings of a carcass ply when layered on the shell which also has a longitudinal center axis and a center plane which divides the shell in half longitudinally;

(b) a pair of annular, inflatable turn-up bladders adjacent the opposing ends of the shell, the bladders each having a reversely bent inboard end which is at least partially covered by the ply endings and a reversely bent outboard end which is farther from the centerplane of the shell than the inboard end;

(c) a plurality of bead lock segments adjacent each of the opposing ends of the shell, the segments being simultaneously movable in radial directions from the center axis of the shell and designed to move a tensioning means of the play endings and the adjacent juxtaposed ply endings into compressive engagement with a pair of tire bead rings when said rings are positioned around the shell axially inwardly of the ply endings, each of the bead lock segments including a bead seat which is in radial alignment with the tire bead rings when the rings are in position around the shell, and each of the bead seats being a curved depression which extends inwardly of the segments in the direction of the center axis of the shell;

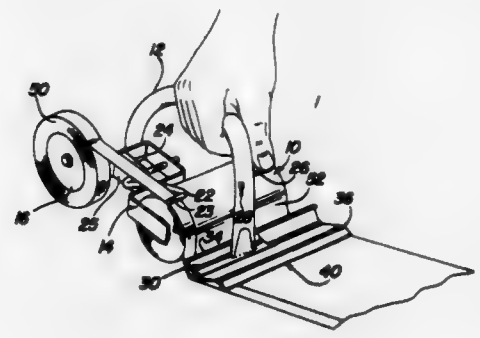
(d) a tensioning means interposed between the ply endings and bladders and separate from the bladders, including a separate carrier at each of the opposing ends of the shell, each carrier being a piece of material which is inextensible at least longitudinally of the shell and which has (i) an annular inboard end anchored to the drum axially inwardly of the bead seats, and (ii) an annular outboard end anchored to the drum axially outwardly of the bead seats, the carriers being sized and shaped to cover the adjacent bead seats and snugly fit around the outboard ends of the bladders as well as at least a portion of the outer exposed surfaces of the bladders between the inboard and outboard reversely bent portions thereof.

4,508,587

MASKING PAPER AND TAPE DISPENSER

Travis L. Hunter, 652 Juniper, Upland, Calif. 91786

Filed Oct. 27, 1983, Ser. No. 546,362
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—527 **5 Claims**



1. A masking paper and tape dispensing machine comprising:

an elongated tubular frame member having a first end and a second end, the tubular frame member being curved and of such a dimension to directly provide a central handgrip consisting of a portion of the frame between the first and second ends;

a roller mounting bracket attached to the first end of the frame;

a paper roller drum having an axis of rotation attached to the mounting bracket and extending into the opening between the first and second ends of the frame;

a tape roller drum having an axis of rotation attached to the mounting bracket with the axis of rotation aligned with the axis of rotation of the paper roller and positioned such that the dispensing path of a roll of tape mounted on the tape roller drum is aligned with generally one end of the paper roller drum;

a blade mounting bracket attached to the second end of the frame; and

a blade mounted on the blade mounting bracket and having a blade edge aligned with the axis of the paper roller drum.

4,508,588

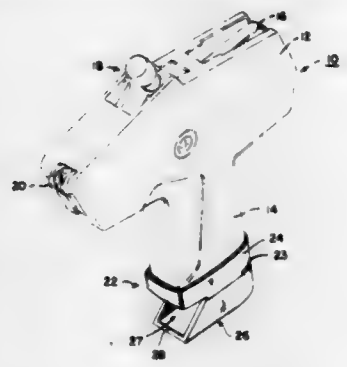
SCRAPER FOR REMOVING LABELS OR THE LIKE

John T. Parrish, 14244 NE. 124th St., A-103, Kirkland, Wash. 98003

Filed Aug. 15, 1983, Ser. No. 523,647
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—584 **8 Claims**

6. A labeling gun of the type comprising a main body portion which houses and dispenses labels and a handle portion which depends therefrom, the improvement comprising: a scraper

mounted to the lower portion of the handle, the scraper including a blade positioned on the leading edge thereof to enable the



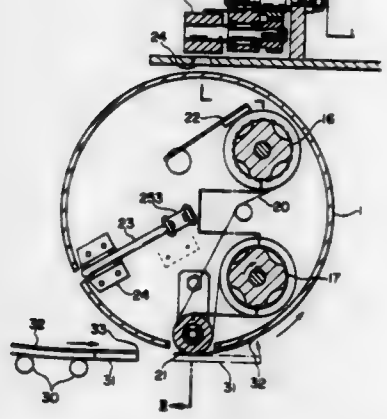
user of the gun to apply and remove labels with a two stroke motion.

4,508,589

PROTECTIVE COATING STRIPPING APPARATUS

Yuichi Tarui, and Toshio Obayashi, both of Hyogo, Japan, assignors to Marusho Industrial Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,615
Claims priority, application Japan, Dec. 8, 1982, 57-214011
Int. Cl.³ B32B *31/16*
U.S. Cl. 156—584 **5 Claims**



1. An apparatus for stripping a protective coating from a substrate comprising: a rotatable roller; adhesive means disposed at a peripheral portion of said rotatable roller; means for feeding a substrate carrying a protective coating toward said rotatable roller at a position such that an edge of said protective coating is contacted with said adhesive means; separating means mounted on said rotatable roller, behind, in a direction of rotation of said rotatable roller, said adhesive means, for separating a protective coating taken up onto an outer surface of said rotatable roller from said outer surface of said rotatable roller; and discharge means disposed adjacent said rotatable roller for receiving said protective coating from said separating means.

4,508,590

METHOD FOR THE DEPOSITION OF HIGH-QUALITY CRYSTAL EPITAXIAL FILMS OF IRON

Raphael Kaplan, 2347 N. Quantico St., Arlington, Va. 22205, and Nicholas Bottka, 5642 Mt. Burnside Way, Burke, Va. 22015

Filed Sep. 16, 1983, Ser. No. 532,938
Int. Cl.³ C30B *23/02*
U.S. Cl. 156—601 **15 Claims**

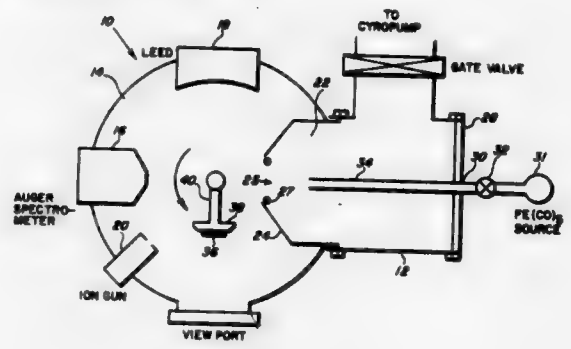
1. A method for forming a single crystal epitaxial film on the surface of a substrate, said method comprising the steps of:

positioning said substrate in an ultra-high vacuum (UHV) chamber wherein an ultra-high vacuum environment is maintained;

selecting a metalorganic vapor including ions of a first metal, said vapor having a deposition temperature T_D;

positioning a surface of said substrate at an entrance, within said UHV chamber, to a growth chamber, to approximately seal said entrance;

heating said substrate to about T_D;



exposing the surface of said heated substrate to said metalorganic vapor in said growth chamber to deposit a single crystal epitaxial film of said first metal upon the surface of said substrate while maintaining the ultra-high vacuum in said UHV chamber; and

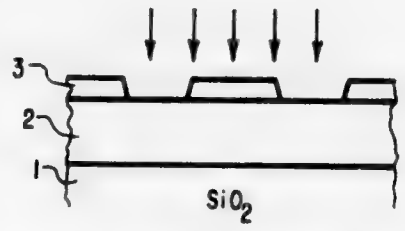
positioning said exposed surface of said substrate within said UHV chamber but away from said growth chamber entrance to facilitate examination in an ultra-high vacuum environment.

4,508,591

POLYMETHYL METHACRYLATE COMPATIBLE SILICON DIOXIDE COMPLEXING AGENT

Keith G. Bartlett, and Mary A. Caolo, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 8, 1984, Ser. No. 587,348
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—659.1 **4 Claims**



2. A method of dissolving silicon dioxide, which comprises the step of exposing the silicon dioxide to an etchant solution comprising:

an aqueous solution of ammonium fluoride from about 1% to about 20% by volume; and

citric acid from about 10 to about 200 grams per liter of aqueous solution.

4,508,592

ELASTOMER EXTRUSION DRYING WITH GAS INJECTION

Ronald C. Kowalski, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 59,901, Jul. 23, 1979, abandoned, which is a continuation of Ser. No. 711,588, Aug. 4, 1976, abandoned. This application Dec. 7, 1982, Ser. No. 447,713
Int. Cl.³ B01D *1/28, 1/00*
U.S. Cl. 159—2.1 **18 Claims**

1. In the process for removing water from water-wet polymer particles by extruder explosion drying wherein said wet polymer particles containing about 0.5% to 16% by weight

water are obtained from a polymerization process in the form of an aqueous slurry and are introduced and moved through said extruder so that both temperature and pressure are progressively increased in a high compression zone and said polymer is brought to a maximum temperature just ahead of a restriction zone against which said pressure is applied and through which said polymer is explosively discharged, the improvement comprising producing exploded polymer particles containing less than about 0.3 weight % water by:

(a) maintaining the polymer particles in said compression zone under sufficient pressure to increase the temperature thereof to about 300° to 400° F.; and

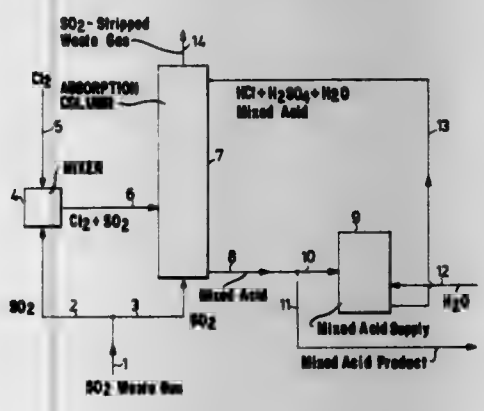
(b) injecting 0.004 to 0.04 pound-moles of an inert gas per 100 pounds of polymeric material at one or more injection sites located along said compression zone, said inert gas being injected at a pressure in excess of the pressure in said compression zone and being capable of remaining in the gaseous state at pressures up to about 2000 psi and temperatures up to about 450° F.

4,508,593

PROCESS FOR RECOVERY OF SULFUR DIOXIDE LIBERATED IN THE CHEMICAL PULPING OF LIGNOCELLULOSIC MATERIAL

John R. Bergstrom, Domsjo, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jun. 21, 1982, Ser. No. 390,584
Claims priority, application Sweden, Jun. 22, 1981, 8103892
Int. Cl.³ D21C *11/00, 11/06*
U.S. Cl. 162—29 **9 Claims**



1. A process for the recovery of sulfur dioxide liberated in the chemical pulping of lignocellulosic material, which comprises

(1) collecting sulfur dioxide-containing gas emitted during the pulping and separating it into at least two portions;

(2) contacting at least one portion with chlorine gas, thereby forming a gaseous mixture comprising sulfur dioxide and chlorine;

(3) effecting reaction of said sulfur dioxide, said chlorine, and water to form hydrochloric acid and sulfuric acid while forming an intimate dispersion in said gaseous mixture of an aqueous mixed acid solution comprising hydrochloric acid and sulfuric acid;

(4) dissolving said hydrochloric acid and said sulfuric acid in said aqueous mixed acid solution;

(5) recovering said aqueous mixed acid solution and separating it from substantially sulfur dioxide-free residual gas;

(6) washing the other portion of the sulfur dioxide-containing gas with the said aqueous mixed acid solution; and then

(7) combining said other portion with the gaseous mixture containing sulfur dioxide and chlorine and washing both with said aqueous mixed acid solution, while effecting the reaction of sulfur dioxide and chlorine.

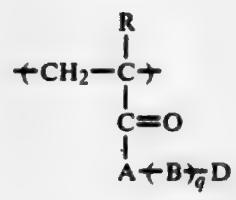
4,508,594

POLYALDEHYDE/POLYACETAL COMPOSITIONS

Roger H. Jansma, Park Forest, and Karen R. Sandberg, West Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 28, 1984, Ser. No. 625,421
Int. Cl.³ D21H *3/38*
U.S. Cl. 162—135 **3 Claims**

1. A paper composition which comprises cellulosic fibers combined with an amount of a water-soluble polymer sufficient to increase the strength of the paper said water soluble polymer contains at least two mole percent of a monomer represented by the chemical structure:

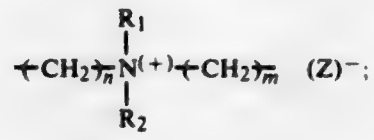


wherein

R is —H, —CH_3, or —C_2H_5; and

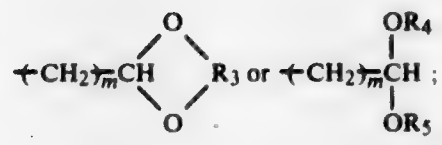
A is O, or N(R_1); and

B is CH_2, CH_2CH_2O, —$CH_2)_nN(R_1)(CH_2)_m$,



and

D is



and

wherein R_1 is —H, —CH_3, —C_2H_5, $(CH_2CH_2O)_nH$, or $(B)_qD$, and wherein q is from 1–6, except when B contains nitrogen in which case q is always one; and wherein R_2 is —H, —CH_3, —C_2H_5, or $(CH_2CH_2O)_nH$; and wherein R_3 is



and wherein R_4 and R_5 may be the same or different and are, for each individual occurance, —H, —CH_3, or —C_2H_5; and wherein Z is from the group Cl, Br, I, NO_3, SO_4 and the like; and wherein m ranges from 0–6; and wherein n is from 1–6.

4,508,595

PROCESS FOR MANUFACTURING OF FORMED PRODUCTS

Stein Gasland, Dreyersvej 29, 2960 Rungsted Kyst, Denmark

Continuation of Ser. No. 245,753, Mar. 20, 1981, Pat. No. 4,377,440, which is a continuation of Ser. No. 42,222, May 24, 1979, abandoned. This application Mar. 21, 1983, Ser. No. 477,332
Claims priority, application Sweden, May 25, 1978, 78056934
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.
Int. Cl.³ D21H *3/02*
U.S. Cl. 162—158 **2 Claims**

1. A method of making a shaped cellulosic paper or paper-

board article from a dilute aqueous suspension of cellulosic fibers, comprising the steps of:

(a) diluting cellulosic fibers with water to form a dilute aqueous suspension of less than 10 percent by weight cellulosic fibers;

(b) then agitating the dilute aqueous suspension of cellulosic fibers until the fibers become separated from each other and swollen;

(c) then dewatering the aqueous suspension to obtain an aqueous suspension of at least 20 percent weight cellulosic fibers;

(d) then preparing a homogenous, plastically formable material by adding to the suspension sufficient hydrocolloid to bind substantially all of the water in the material to prevent the water from bleeding out during subsequent shaping and to prevent the fibers from flocculating, and by kneading the material, said material containing water in the range of from about 50 to about 90 percent, fibers in the range of from about 8 to 49 percent, and hydrocolloid in the range of from about 1 to about 20 percent, by weight;

(e) shaping the material into the desired shape by extrusion, injection molding, rolling, pressing or drawing, and

(f) bonding the solids of the material by drying the shaped material.

4,508,596

APPARATUS FOR DRY COOLING OF COKE

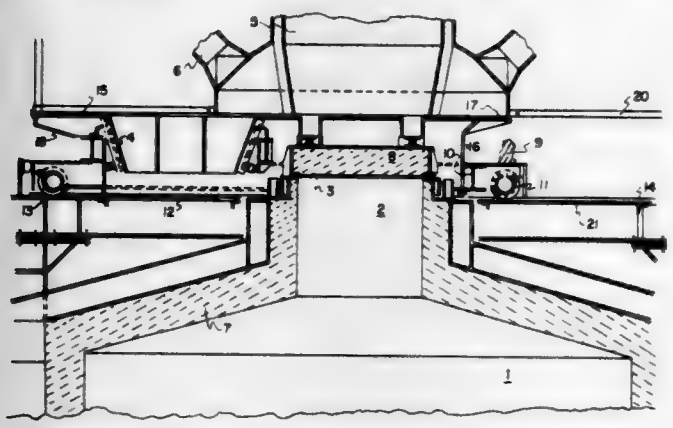
Heinrich Weber, Recklinghausen; Kürt Lorenz, Hattingen; Horst Dungs, Herne; Engelbert Brüns, Recklinghausen, and Gerd Osterholt, Dorsten, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 17, 1983, Ser. No. 458,269

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202645

Int. Cl.³ C10B *39/00, 39/16, 45/00*

U.S. Cl. 202—227 **8 Claims**



1. In combination with a transfer hopper associated with a housing cover, and a coke cooling pit having a charging hole and associated with a housing bottom spaced from said housing cover, a device for transferring hot coke from said transfer hopper to said charging hole, comprising:

rail means spaced from said charging hole and defining a lateral path;

a frame mounted for movement between said housing cover and said housing bottom for movement along said lateral path;

a plurality of connected side walls connected to said frame and movable with said frame along said lateral path, said side walls defining a housing space spanning a distance between said housing cover and said housing bottom for substantially closing said housing space and maintaining said hosing space closed with movement of said frame on said lateral path;

a charging hole closing shutter mounted to said frame and in said housing space;

shutter drive means connected between said frame and said shutter for moving said shutter upwardly and downwardly with respect to said frame;

an intermediate coke guide piece connected to said frame and disposed in said housing space for spanning a distance between said transfer hopper and said charging hole for guiding hot coke from said transfer hopper to said charging hole, said guide piece spaced lateraly of said shutter along said lateral path; and

a plurality of wheels rotatably mounted to said frame outside said housing space and engaged with said rail means for permitting movement of said frame along said lateral path, whereby said shutter drive means are operable to raise said shutter from said charging hole to permit movement of said frame along said lateral path to bring said guide piece into a position of alignment between said transfer hopper and said charging hole.

4,508,597

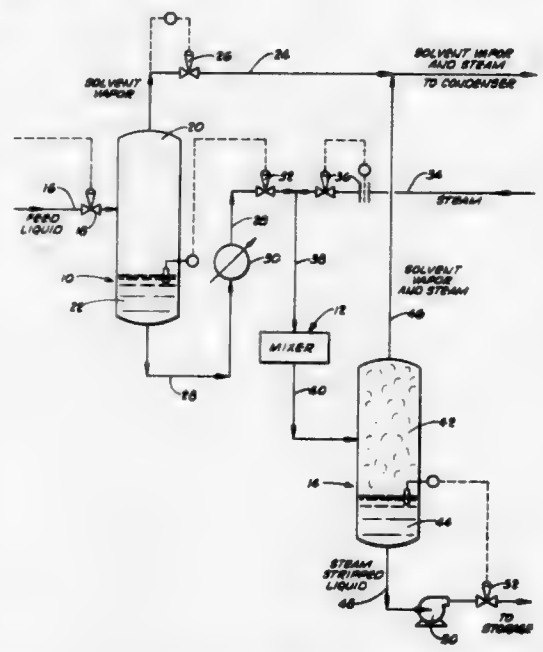
RECOVERY OF ORGANIC SOLVENTS FROM LIQUID MIXTURES

Jack W. Roach, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed Apr. 5, 1982, Ser. No. 366,040

Int. Cl.³ B01D *3/38*

U.S. Cl. 203—79 **15 Claims**



1. A method of recovering light organic solvent from a liquid mixture containing the light organic solvent and a high molecular weight product material of supercritical solvent extraction processes, comprising:

treating the solvent-product material mixture in a first solvent separation zone to separate a first vapor phase rich in solvent and a first liquid phase rich in high molecular weight product material;

recovering solvent from the first vapor phase;

intimately contacting the first liquid phase with steam, under shearing conditions sufficient to provide a separation of solvent approaching up to one theoretical tray, in a mixing zone to produce a steam-liqud phase mixture;

treating the steam-liquid phase mixture in a second solvent separation zone to separate a second vapor phase rich in steam and solvent and a second liquid phase rich in high molecular weight product material; and

recovering solvent from the second vapor phase.

4,508,598

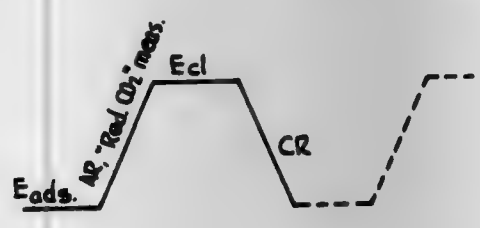
GAS SENSOR AND METHOD OF USING SAME

Jose D. Giner, Brookline, Mass., assignor to Giner, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 377,143, May 11, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 430,688

Int. Cl.[3] G01N *27/26, 27/42*

U.S. Cl. 204—1 T 16 Claims



1. Method of quantitatively determining gas concentration in a fluid by (A) transforming gas from the fluid onto an electrode surface in contact with electrolyte as an adsorbed species; and (B) electrochemically determining quantitatively the amount of said adsorbed species.

4,508,599

METHOD AND APPARATUS FOR REGENERATION OF A COPPER-CONTAINING ETCHING SOLUTION

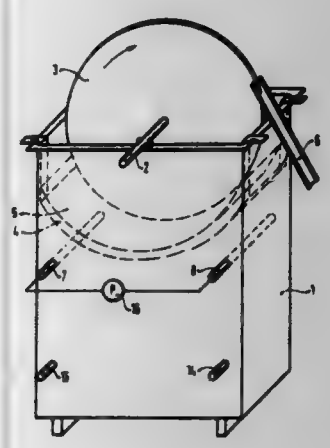
Rudi Ott, Markgroningen, and Heribert Reith, Stuttgart, both of Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 575,043

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303594

Int. Cl.[3] C25C *1/12*

U.S. Cl. 204—10 12 Claims



1. A method of regenerating a copper containing etching solution comprising copper (II) chloride and an alkali chloride as a sequestering agent from a spent etching solution containing copper (I) chloride comprising:

(a) passing said spent etching solution through an electrolytic reaction vessel containing an anode and cathode, said anode and cathode being separated by a porous diaphragm;

(b) operating said cathode at a current density of 40–400 A/dm^2 and said anode at current density of 1–100 A/dm^2, whereby chlorine is produced at said anode and metallic copper is deposited on said cathode, said chlorine reacting with said copper (I) chloride to form copper (II) chloride; and

(c) removing said deposited metallic copper from said cathode.

4,508,600

PROCESS FOR PREPARING ZN-NI-ALLOY-ELECTROPLATED STEEL SHEETS WITH EXCELLENT ADHERENCE OF THE PLATED LAYER

Taisuke Irie; Yoshitaka Nakagawa; Masayoshi Tatano, all of Osaka; Koichi Watanabe, Amagasaki, and Eiji Watanabe, Osaka, All of Japan, assignors to Nisshin Steel Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,601

Int. Cl.[3] C25D *3/56, 5/10, 7/00*

U.S. Cl. 204—27 3 Claims

1. A process for preparing Zn-Ni-alloy plated steel sheets with excellent adhesion of the plated layer comprising pre-plating a steel sheet in an acidic plating bath containing 7–38 g/l Zn and 41–88 g/l Ni whereby the concentration ratio $[Ni^{2+}]/([Zn^{2+}]+[Ni^{2+}])$ is 0.70–0.85 with an electric current density of 2–20 A/dm^2 at a temperature between 55° and 80 ° C. so that the resulting Zn-Ni pre-plated layer contains 12–87 wt % Ni; and electroplating said pre-plated steel sheet in an acidic electroplating bath containing 25–33 g/l Zn, 41–88 g/l Ni, 0.2–10 g/l titanium and 0.1–5 g/l aluminum or 0.2–4 g/l magnesium, the pH of which is 1.5–2.5.

4,508,601

PROCESS FOR PRODUCING A THIN TIN AND ZINC PLATED STEEL SHEET

Tadashi Nemoto, Kudamatsu; Ryoichi Fukumoto, Yamaguchi; Hiroaki Kawamura; Yoshikazu Kondo, both of Kudamatsu, and Tsuneo Inui, Tokuyama, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,885

Int. Cl.[3] C25D *5/48, 5/50*

U.S. Cl. 204—38.5 21 Claims

1. A process for producing a thin tin and zinc plated steel sheet having 0.005–0.2 g/m^2 of zinc and 0.05–1.0 g/m^2 of tin which comprises:

(a) electroplating zinc on a substantially clean steel sheet in an aqueous electroplating bath containing zinc ions with or without additives,

(b) tinplating the zinc plated sheet of step (a) by immersion or by immersion followed by electroplating in an aqueous, acidic tin plating bath containing stannous ions, whereby zinc ions from the zinc plated steel sheet replace the stannous ions in the tinplating solution during the immersion tinplating and

(c) recycling the resultant solution from step (b), which contains zinc ions, to make up the zinc electroplating bath of step (a).

4,508,602

PROCESS FOR PRODUCING CONCENTRATED SOLUTIONS CONTAINING ALKALI METAL CHLORATES AND ALKALI METAL CHLORIDES

Jerry J. Kaczur, Cleveland, Tenn.; Steven A. Iacoviello, Naugatuck, and Edward G. Miller, Hamden, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 382,524, May 27, 1982, Pat. No. 4,434,033. This application Feb. 23, 1984, Ser. No. 582,653

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

Int. Cl.[3] C25B *1/26*

U.S. Cl. 204—95 13 Claims

1. A process for producing a concentrated aqueous solution comprised of an alkali metal chlorate and an alkali metal chloride, the process which comprises:

conducting an electric current at an initial power load from a power controlling zone to a rectifying zone;

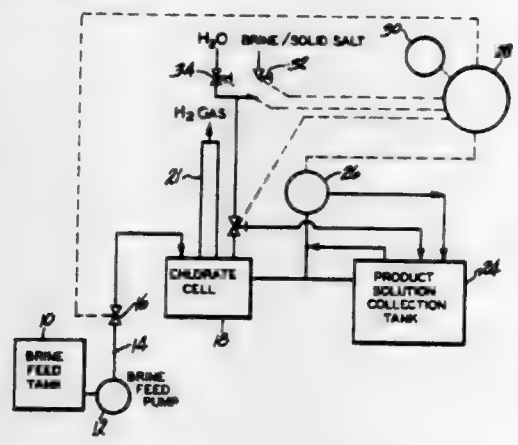
feeding an aqueous alkali metal chloride solution to an electrolysis zone;

supplying an electric current from said rectifying zone to said electrolysis zone at an initial current load to electrolyze said aqueous alkali metal chloride to produce a con-

centrated chlorate solution comprised of an alkali metal chlorate and the alkali metal chloride;

feeding a portion of said concentrated chlorate solution to an analysis zone;

analyzing said concentrated chlorate solution to measure the ratio of the concentration of the chlorate ion to the concentration of the chloride ion;



comparing in a processing zone said measured ratio with a predetermined value range for said ratio, and where said measured ratio falls outside of the predetermined value range for the ratio, altering the initial current load to said electrolysis zone; and

recovering said concentrated alkali metal chlorate solution.

4,508,603

FLUORINATED CATION EXCHANGE MEMBRANE AND USE THEREOF IN ELECTROLYSIS OF AN ALKALI METAL HALIDE

Hiroshi Ukihashi, Tokyo; Tatsuro Asawa, Yokohama; Masaaki Yamabe, Machida, and Haruhisa Miyake, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 718,424, Aug. 22, 1976, abandoned. This application Nov. 3, 1978, Ser. No. 957,453

Int. Cl.³ C25B *1/34, 13/08*

U.S. Cl. 204—98 **16 Claims**

1. A fluorinated cation exchange membrane comprising a copolymer of fluorovinyl ether (I) or a hydrolyzed copolymer thereof having the formula

$$CF_2{=}CF{-}O{-}CF_2{-}CFXOCF_2)_l(CFX')_m(CF_2OCFX'')_n\ A$$

wherein l is 0 to 3; m is 2 to 6; m is 0 to 4 and one of l and n is not zero; X,X' and X'' are the same or different and each respectively is —F, or —CF_3; A is —CN,—COF, —COOH-,—COOR,—COOM or $CONR_2R_3$; R_1 is a $C_{1\text{-}10}$ alkyl group; R_2 and R_3 each respectively is hydrogen or a $C_{1\text{-}10}$ alkyl group; and M is an alkali metal or a quaternary ammonium salt; and a fluorinated olefin (II).

4,508,604

TRAVELING-WIRE EDM METHOD

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 18, 1983, Ser. No. 476,522

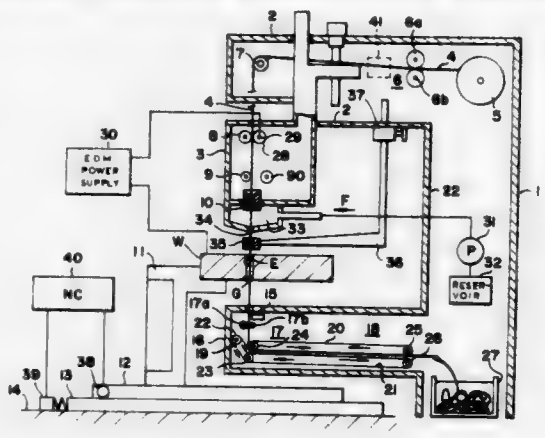
Claims priority, application Japan, Mar. 28, 1982, 57-48442

Int. Cl.³ C25F *3/02;* B23P *1/12*

U.S. Cl. 204—129.5 **13 Claims**

1. A method of machining a workpiece wherein an electrically conductive, continuous elongate element is axially transported from a supply side to a takeup side to form a traveling-wire machining electrode traveling continuously while being spanned taut across said sides and juxtaposed with the workpiece across a machining gap, an aqueous fluid medium is supplied to said gap, a machining voltage is intermittently applied across the traveling electrode and the workpiece to effect through the gap a succession of electrical discharges which electroerosively remove stock from the workpiece and cause decomposition of at least a portion of said aqueous fluid medium to form gases of oxygen and hydrogen in said gap, and said workpiece is displaced relative to the traveling-wire electrode transversely to the axis thereof along a predetermined path to machine the workpiece, the method including the steps of:

(a) attaching a polymeric substance to said electrically conductive, continuous elongate element so as to partially cover the surface thereof; and



(b) subjecting said elongate element traveling in machining juxtaposition with said workpiece to said electrical discharges to thermally decompose said polymeric substance, at least partly to form carbon and causing at least a portion of said gaseous oxygen and hydrogen to be chemically combined therewith to control the amount of these gaseous components in said machining gap.

4,508,605

NONAROMATIC DIANHYDRIDE AND POLYIMIDES FROM TRICYCLO[4.2.1.$0^{2,5}$] NONANE-3,4-DIMETHYL-3,4,7,8-TETRACARBOXYLIC ACID DIANHYDRIDE

Tayseer S. Nimry, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 294,347, Aug. 19, 1981, Pat. No. 4,358,582. This application Jun. 10, 1982, Ser. No. 386,890

Int. Cl.³ C07D *307/77*

U.S. Cl. 204—158 R **1 Claim**

1. A process for the manufacture of tricyclo[4.2.1.$0^{2,5}$]nonane-3,4-dimethyl-3,4,7,8-tetracarboxylic acid dianhydride which comprises reacting equimolar amounts of dimethylmaleic anhydride and 5-norbornene-2,3-dicarboxylic anhydride in the presence of toluene solvent wherein the reaction is irradiated by light.

4,508,606

PROCESS FOR TREATING POLYMER SURFACES TO REDUCE THEIR FRICTION RESISTANCE CHARACTERISTICS WHEN IN CONTACT WITH NON-POLAR LIQUID, AND RESULTING PRODUCTS

Joseph D. Andrade, 2059 Merrill Eng. Bldg. Univ. of Utah, Salt Lake City, Utah 84112; Philip M. Triolo, 1164 E. South Temple, Salt Lake City, Utah 84012; Lee M. Smith, Bldg, 518 Dept, Bio Eng. Univ. of Utah, and Frank J. Miller, 1C 402 Med. Center Univ. of Utah, both of Salt Lake City, Utah 84112

Continuation-in-part of Ser. No. 239,089, Feb. 27, 1983, abandoned. This application May 16, 1983, Ser. No. 495,209

Int. Cl.³ C07C *3/24*

U.S. Cl. 204—169 **12 Claims**

1. In a process wherein a hydrophobic polymer in contact with a layer of a non-polar liquid moves over the said non-polar liquid while it lays on another solid surface, the improve-

ment for reducing the friction reresistance accompanying such movement which comprises using as the hydrophobic polymer a hydrophobic polymer which has been, at least on the surface in contact with the non-polar liquid, subjected to an oxidation treatment so as to reduce the air-water contact angle of the surface below 50°.

4,508,607

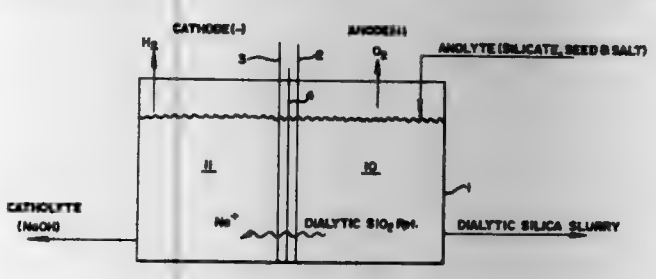
PARTICULATE DIALYTIC SILICA

Milton E. Winyall, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 434,764, Oct. 18, 1982, abandoned. This application Sep. 20, 1983, Ser. No. 533,206

Int. Cl.³ B01D *57/02*; C25B *1/00*

U.S. Cl. 204—180 P **15 Claims**



1. The process for preparing precipitated dialytic silica by electrodialysis which comprises:

(a) preparing an aqueous anolyte which contains a salt, and silica-containing seeds having a particle size of below 100 millimicrons;

(b) adding alkali metal silicate to the anolyte and subjecting said anolyte to electrodialysis to remove alkali metal ions at a pH of from about 5 to 10.5 and cause precipitation of silica; and

(c) recovering precipitated dialytic silica from said anolyte.

4,508,608

METHOD FOR MAKING CHALCOGENIDE CATHODES

David N. Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1983, Ser. No. 487,157

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 C **6 Claims**

1. A method for making a high porosity chalcogenide cathode which comprises sputtering molecules of an intercalatable layered transition metal chalcogenide cathode active material onto and into a high porosity current collector substrate having a porosity of from about 10 to about 1000 pores per square inch to produce a coating of from about 0.5 to about 3 mils thickness by impinging a primary beam of argon ions onto a workpiece of said material at approximately 25–30 kiloelectron volts under a vacuum of 10^{-6} to 10^{-7} torr and directing a secondary beam of sputtered molecules of said material at said substrate.

4,508,609

METHOD FOR SPUTTERING A PIN MICROCRYSTALLINE/AMORPHOUS SILICON SEMICONDUCTOR DEVICE WITH THE P AND N-LAYERS SPUTTERED FROM BORON AND PHOSPHOROUS HEAVILY DOPED TARGETS

Theodore D. Moustakas, and H. Paul Maruska, both of Annandale, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 26, 1983, Ser. No. 535,902

Int. Cl.³ C23C *15/00*; H01L *31/18*

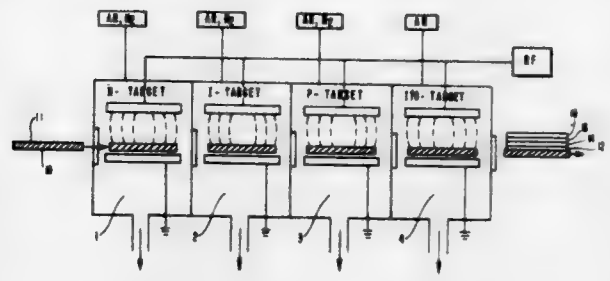
U.S. Cl. 204—192 S **25 Claims**

1. A metod for producing a hydrogenated silicon PIN semiconductor device comprising:

providing a substrate having at least a surface region including an electroconductive material which forms an ohmic contact to doped silicon;

reactively sputtering a layer of microcrystalline silicon doped with one type of charge carrier from a doped silicon target onto at least said surface region of the substrate in a total pressure of argon plus hydrogen >20 mTorr and $H_2/Ar >> 1$;

reactively sputtering a layer of amorphous intrinsic, I, silicon from an undoped silicon target onto said layer of silicon doped with said one type of charge carrier;



reactively sputtering a layer of microcrystalline silicon doped with the other type of charge carrier from a doped silicon target onto said I layer in a total pressure of argon plus hydrogen >20 mTorr and $H_2/Ar >> 1$;

sputtering an electroconductive material onto at least a region of said layer of silicon doped with said other type of charge carrier, which material forms an ohmic contact thereto.

4,508,610

METHOD FOR MAKING THIN FILM ELECTROLUMINESCENT RARE EARTH ACTIVATED ZINC SULFIDE PHOSPHORS

Eva C. Freeman, Lincoln, and Donald H. Baird, Newton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 27, 1984, Ser. No. 584,178

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 P **10 Claims**

1. A method of making a zinc sulfide electroluminescent thin film phosphor comprising the steps of:

(A) evacuating a sputtering chamber to a pressure suitable for sputtering, said sputtering chamber containing a substrate, a zinc sulfide sputtering target, and a rare earth sputtering target;

(B) adding to said sputtering chamber from step (A) a fill gas comprising an inert gas and hydrogen, said hydrogen being from about one to about 40 volume percent of said fill gas, said fill gas being held at a pressure from about 7×10^{-3} to about 10^{-2} Torr;

(C) co-sputtering from said zinc sulfide sputtering target and from said rare earth sputtering target in said fill gas held at said pressure to form a thin film zinc sulfide electroluminescent phosphor on said substrate.

4,508,611

APPARATUS FOR ELECTROPLATING AND CHEMICALLY TREATING THE CONTACT ELEMENTS OF ENCAPSULATED ELECTRONIC COMPONENTS AND LIKE DEVICES

Frank Johnson, San Jose; Dieter Reese, Simi Valley, and Louis Hirbour, Anaheim, all of Calif., assignors to Technic, Inc., Cranston, R.I.

Filed Jan. 31, 1983, Ser. No. 462,387

Int. Cl.³ C25D *17/06, 17/28*

U.S. Cl. 204—202 **15 Claims**

1. Improved apparatus for electroplating projecting contact elements of encapsulated electronic components, and their like, comprising:

a continuous, flexible conveyor belt of electrically conductive material;

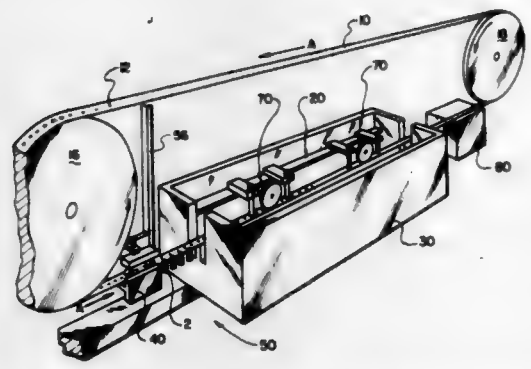
guide means for said conveyor belt, constraining the motion thereof into a closed loop defined by a substantially verti-

cal plane, with the web of said conveyor belt in substantially horizontal alignment;

passive engagement means defined by wedge-shaped edges of said conveyor belt for the frictionally-secured reception of portions of said components thereon;

drive means for said conveyor belt;

at least one tank for liquid electrolyte disposed along the path of said conveyor belt, said tank being provided with



weirs in its upper edge adapted to pass the conveyor belt and components engaged thereon inwardly and outwardly of the liquid mass contained in said tank; and

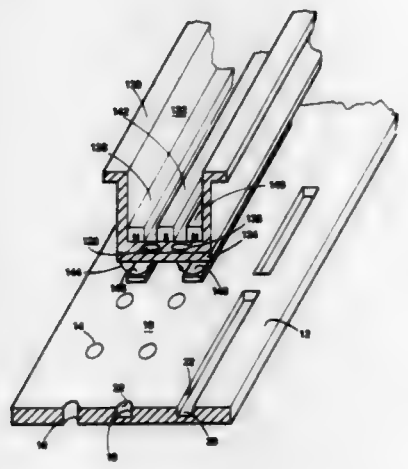
electroplating current supply means, including at least one electrode disposed within the liquid volume of said container and at least one current transfer brush in contact with said conveyor belt, for supplying plating current for the deposition of a metallic substance from said electrolyte onto said contact elements.

4,508,612

SHIELD FOR IMPROVED MAGNETRON SPUTTER DEPOSITION INTO SURFACE RECESSES

Kim J. Blackwell, Owego; Russell T. White, Jr., Binghamton, and James W. Wilson, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1984, Ser. No. 587,098
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **18 Claims**



1. A system for vacuum depositing a material onto a sample having a surface recess therein comprising:

(a) a vacuum chamber capable of attaining a high vacuum;

(b) a vacuum deposition source disposed in said vacuum chamber for emitting atoms;

(c) an energy source operatively connected to said vacuum deposition source to initiate emission of said atoms therefrom;

(d) a sample having an upper surface disposed in said vacuum chamber opposite said vacuum deposition source for receiving said atoms emitted therefrom, said sample having a surface recess therein with a wall substantially perpendicular to the plane of said sample; and

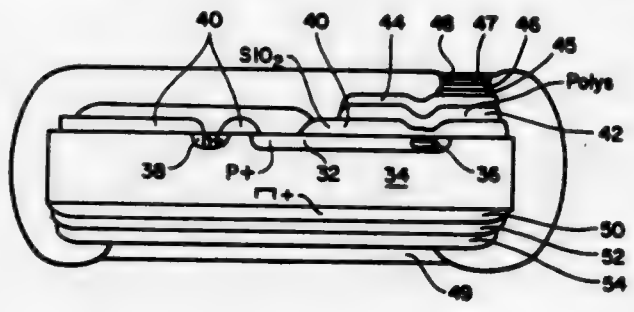
(e) means for eliminating undesirable depositing angles of said atoms, said means disposed intermediate said vacuum deposition source and said sample to improve the ratio of wall to surface deposition.

4,508,613

MINIATURIZED POTASSIUM ION SENSOR

Heinz H. Busta, Park Ridge; Kuey-Yeou Tsao, Barrington, both of Ill.; Wayne D. White, Vista, Calif., and Peter V. Loeppert, Hoffman Estates, Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 19, 1983, Ser. No. 562,642
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—418 **8 Claims**



1. A chemically sensitive device for monitoring chemical properties, comprising:

a semiconductor substrate formed from material being slightly doped toward a first polarity;

a depletion-mode field-effect transistor on said substrate, said field-effect transistor having source and drain regions oppositely doped with respect to said substrate with a lightly doped gate region thereinbetween also oppositely doped with respect to said substrate;

a first highly doped region on said substrate of the same polarity of said substrate in electrical contact with said source of said field-effect transistor;

a reference electrode having a reference membrane on said substrate, said reference electrode providing a first potential to said source through said first highly doped region;

a chemically sensitive electrode having a chemically sensitive membrane on said substrate, said chemically sensitive membrane having an increased sensitivity to said chemical property to be monitored relative to said reference membrane, said chemically sensitive electrode being electrically connected to said gate to provide a chemically dependent potential to said gate; and

means for monitoring the current between said source and said drain.

4,508,614

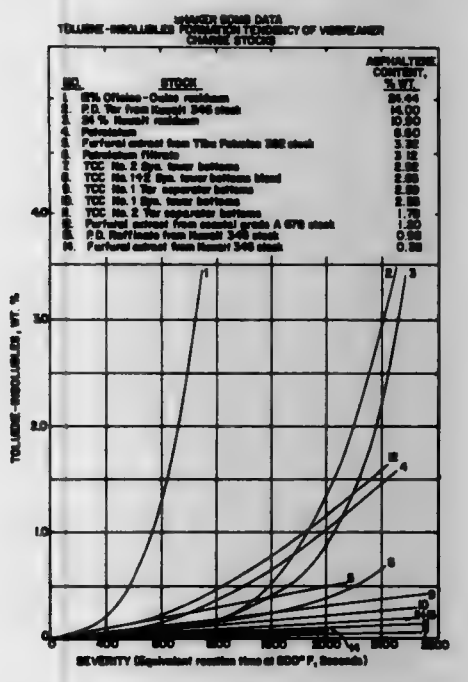
VISBREAKER PERFORMANCE FOR PRODUCTION OF HEATING OIL

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 439,662, Nov. 8, 1982, abandoned. This application May 29, 1984, Ser. No. 614,711
Int. Cl.³ C10G *9/14, 53/16*
U.S. Cl. 208—78 **5 Claims**

1. A process for increasing the conversion of heavy oil to stable heating oil by improving visbreaker performance in steps which comprise (1) selecting at least two heavy oil feedstocks from the group consisting of atmospheric residuum, vacuum residuum, furfural-extract, propane-deasphalted tar and catalytic cracker bottoms, wherein at least 75 weight percent of the constituents of each feedstock have a boiling point above about 700° F.; (2) visbreaking each heavy oil feedstock individually at the highest Severity that yields not more than about 0.5 weight percent toluene-insolubles formation as determined by Shaker Bomb test, wherein the highest Severity for at least two of the heavy oil feedstocks differ

relatively by more than about 100 seconds, as expressed in equivalent reaction time at 800° F.; and (3) recovering the



individual visbroken effluents and blending them to provide a product comprising heating oil.

4,508,615

MULTI-STAGE PROCESS FOR DEMETALATION, DESULFURIZATION AND DEWAXING OF PETROLEUM OILS

Stephen M. Oleck, Moorestown, and Robert C. Wilson, Jr., Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 16, 1984, Ser. No. 580,578
Int. Cl.³ C10G *65/02, 45/64*
U.S. Cl. 208—89 **12 Claims**

1. A multi-stage process for demetalation, desulfurization and dewaxing of residual oil which comprises:

(1) contacting a residual oil under demetalation and desulfurization reaction conditions at a temperature of about 500° to about 1000° F., and a pressure of about 300 to about 3000 psig, with a catalyst comprising about 1 to about 10 weight percent of an iron group metal and about 5 to about 25 weight percent of a Group VIB metal, said metals based on the total catalyst, and being present as the oxides or sulfides, on a support comprising at least 85 weight percent alumina, said catalyst having at least 65 percent of its pore volume in the 150 to 300 Angstroms diameter range or at least 60 percent of its pore volume in the 100–200 Angstroms diameter range,

(2) contacting the product of step (1), under desulfurization and dewaxing reaction conditions at a temperature of about 500° to about 1000° F., and a pressure of about 300 to about 3000 psig, with a catalyst comprising about 1 to about 10 weight percent of an iron group metal and about 5 to about 25 weight percent of a Group VIB metal, said metals based on the total catalyst, and being present as the oxides or sulfides on a support comprising a composite of alumina and about 5 to about 25 weight percent of a ZSM-5 crystalline zeolite based on the total composite, said catalyst having at least 60 percent of its pore volume in the 50 to 200 Angstroms diameter range.

4,508,616

HYDROCRACKING WITH TREATED BAUXITE OR LATERITE

José M. Larrauri; Beairit C. Arias, and Roberto E. Galiasso, all of Los Teques, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 525,624, Aug. 23, 1983, Pat. No. 4,465,784, which is a continuation-in-part of Ser. No. 394,840, Jul. 2, 1982, abandoned. This application May 23, 1984, Ser. No. 613,358
Int. Cl.³ C10G *47/04*
U.S. Cl. 208—111 **2 Claims**

1. A process for the hydrocracking and hydrodemetallization of a heavy hydrocarbon feedstock containing a high level of metals and asphaltenes comprising providing a catalyst prepared from a natural occurring material characterized by an elemental composition comprising aluminum, iron, silicon, magnesium and titanium by the thermal and chemical treatment of said natural occurring material with air and steam at a temperature within 300° to 900° C. and a subsequent treatment with H_2+H_2S at a temperature within 200° to 500° C., said catalyst having the following physical properties:

Surface Area, m^2g	50 to 500
Porous Volume cc/g	0.20 to 0.60
Mean Pore Radius, Å	20 to 200

Porous Volume Distribution:

PV with R 10 Å, %	0 to 100
PV with 10 Å R 100 Å, %	0 to 100
PV with R 100 Å, %	0 to 100

and a surface chemical composition of from about
0.1 to 50 wt.% Al
1 to 50 wt.% Fe
0.1 to 30 wt.% Si
0.1 to 30 wt.% Mg
0.1 to 10 wt.% Ti
3 to 40 wt.% S
and contacting said heavy hydrocarbon feedstock in the presence of hydrogen with said catalyst in a hydrotreatment zone so as to convert said heavy hydrocarbon feedstock into the greatest possible quantity of light hydrocarbons without a significant production of pitch.

4,508,617

DETECTION OF CATALYST BY-PASSING IN FIXED BED NAPHTHA REFORMER

Dean P. Montgomery, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 18, 1984, Ser. No. 611,654
Int. Cl.³ C10G *35/04*
U.S. Cl. 208—134 **15 Claims**

1. In a process of endothermic conversion of a naphtha stream by means of a catalytic reforming process, the steps which comprise:

(a) monitoring the effluent stream temperature, monitoring the inlet feed stream temperature, and determining the difference thereof as a negative ΔT; and

(b) periodically reducing the inlet feed stream flow rate and observing again the ΔT, wherein a change of negative ΔT to a positive ΔT indicates by-passing of the catalyst reactor bed.

4,508,618

INCREASING THE OCTANE NUMBER OF NATURAL GASOLINE WITH TRIFLUOROMETHANESULFONIC ACID

George A. Olah, Beverly Hills, Calif., assignor to El Paso Products Company, Odessa, Tex.

Filed Jun. 4, 1984, Ser. No. 616,636
Int. Cl.[3] C10G *35/06*; C07C *2/54*
U.S. Cl. 208—134 5 Claims

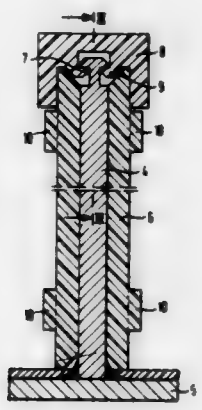
1. A process for upgrading an aromatics-containing natural gasoline of low octane value derived from natural gas which comprises contacting said gasoline containing about 5 wt. % or less aromatics in the absence of added olefin under reaction conditions comprising a temperature in the range between about 100° C. and about 120° C. and a contact time between about 10 minutes and about 4 hours with a catalyst consisting essentially of trifluoromethanesulfonic acid and thereafter recovering an upgraded natural gasoline product of higher octane value.

4,508,619

PROCEDURE FOR PROVIDING THE VANES OF THE STATOR OF A FLOTATION MACHINE WITH A COVER AND FOR FIXING THE COVER

Timo U. Niitti, and Alvar M. Niskala, both of Espoo, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed May 19, 1983, Ser. No. 496,185
Claims priority, application Finland, Jun. 3, 1982, 821977
Int. Cl.[3] B03D *1/14*; B23P *11/02*
U.S. Cl. 209—169 11 Claims



8. A flotation machine having at least one stator vane, and a cover secured to the vane, said cover being formed by a sleeve cover member of elastic material within which the vane extends, and a locking cap member securing the cover member to the vane, said locking cap member being removable to permit removal of the cover member from the vane.

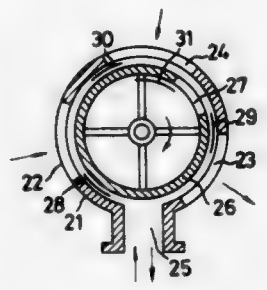
4,508,620

METHOD OF AND APPARATUS FOR FEEDING AND DISCHARGING AIR FOR PNEUMATIC JIGS

Tetsuo Najima; Setsuya Tetsuta; Yukitaka Sawata, and Masahiro Yamagishi, all of Yokohama, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed May 3, 1982, Ser. No. 374,513
Claims priority, application Japan, Nov. 10, 1980, 55-157846; Jan. 12, 1982, 57-2156[U]
Int. Cl.[3] B03B *5/24*
U.S. Cl. 209—500 9 Claims

1. A method of feeding and discharging air for pneumatic jigs to separate a pulverulent body in the jig, having the steps of feeding and discharging pressure air to and from air chambers, which are opened at their respective lower ends, and which are formed in water-filled tanks, to vertically vibrate water in the water tanks, and thereby separate the pulverulent body, comprising a plurality of steps of feeding air of different pressure to said air chambers during one cycle of operation, said plurality of feeding steps comprising an initial high pressure feeding step followed by at least one lower pressure feeding step, and a single step of discharging feed air from said air chambers during said one cycle, said air feeding steps being carried out at the same frequency and said air discharging step



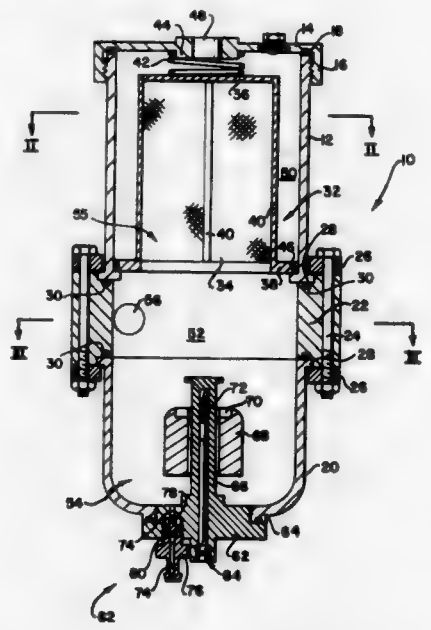
and air feeding steps being carried out repeatedly for a plurality of said one cycle so that a water level in each water tank rises rapidly and falls gradually for each cycle.

4,508,621

FILTRATION AND SEPARATION DEVICE

Henry D. Jackson, 6 Glenora Mews, Andalusia Ave., Somerset W., Cape Province, South Africa

Continuation-in-part of Ser. No. 312,918, Oct. 19, 1981, abandoned. This application Sep. 28, 1983, Ser. No. 536,451
Int. Cl.[3] B01D *35/14*
U.S. Cl. 210—86 19 Claims



1. A filtration and separation device for use in separating a foreign liquid and particulate matter contained in a supply liquid, the foreign liquid having a specific gravity greater than that of the supply liquid, wherein said device provides an unobstructed settling chamber which is of maximum volume relative to the overall dimensions of the device, said device comprising:

a generally cylindrical housing having side walls and a top and bottom wall at the respective ends thereof; a cylindrical filter screen member mounted coaxially within said housing, said filter screen member being open at the lower end and having a top wall and foraminous side walls; a mounting means adjacent the lower end of said filter screen member for mounting said filter screen member in a spaced relationship with respect to the walls of said housing, said mounting means providing a fluid tight seal between said housing and said filter screen member adjacent the lower end of said filter screen member; said filter screen member together with said housing defining a settling chamber and an outlet chamber within said housing, said settling chamber extending from the bottom wall of the housing upwardly through the interior of the filter screen member to the top wall thereof, said outlet cham-

ber including the interior portion of the housing located exterior to said filter screen and above said mounting means; means defining an inlet attached in tangential relation to said housing at a location below said filter screen member and leading into said settling chamber; means defining an outlet in the top wall of said housing; said housing being unobstructed across the width of said housing from one wall of the housing to the other in proximity to the horizontal plane of the tangential inlet, said settling chamber being unobstructed across the width thereof upwardly of said horizontal plane of the tangential inlet, means defining a settling zone formed from a substantial portion of the volume of said settling chamber and located below the horizontal plane of the tangential inlet, to permit settling of said particulate matter and said foreign liquid having a specific gravity greater than that of the supply liquid, the larger drops of foreign liquid being allowed to fall directly into the settling zone without being broken up against any internal obstruction.

14. A filtration and separation device for use in separating a foreign liquid contained in a supply liquid, wherein the foreign liquid has a specific gravity greater than that of the supply liquid, said device having a float warnng mechanism for detecting the presence of a predetermined level of said foreign liquid in the lower interior portion of said device, comprising:

a generally cylindrical housing having side walls and a top and bottom wall at the respective ends thereof; said housing having an inlet mounted in tangential relation thereto and an outlet mounted therein and filter means mounted in the flow path between said inlet and outlet; an upwardly extending central column mounted in said bottom wall in coaxial alignment with the vertical axis of said housing; a float member mounted on the exterior of said column, said float member being freely movable in a vertical direction on said column and being freely rotatable about the vertical axis of said column; said float member having a specific gravity which is greater than that of the supply liquid but less than that of the foreign liquid; said float member being provided with a pair of magnets located on opposite sides of the column; and switch means mounted on said column, said switch means being responsive to the magnets so that said switch means closes when the float member is raised to a predetermined level, while said float member is in a rotating or non-rotating condition, said housing being unobstructed across the width of said housing from one wall of the housing to the other in proximity to the horizontal plane of the tangential inlet, means defining a settling zone formed from a substantial portion of the volume of said housing and located below the horizontal plane of the tangential inlet to permit settling of said foreign liquid, said float member being located in said settling zone and out of the flow path between said inlet and outlet.

4,508,622

DIALYSIS APPARATUS WITH REGULATED MIXING OF THE DIALYSIS SOLUTION

Hans-Dietrich Polaschegg, Oberursel, and Dieter Husar, Bad Homburg, both of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 506,154

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1982, 3223051

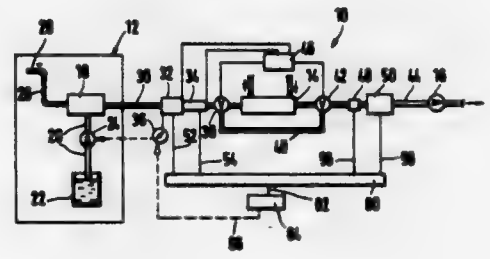
Int. Cl.³ B01D *13/00, 31/00*

U.S. Cl. 210—96.2 **17 Claims**

1. A dialysis apparatus with a unit for the production of a dialysis solution from a concentrate and water, the apparatus having a concentrate tank, a mixing unit, a pump for feeding concentrate from the concentrate tank into the mixing unit and a water connection connected to the mixing unit, the apparatus having a dialyzer for producing a treated liquid, said dialyzer being connected with said mixing unit, said dialyzer being equipped with two dialyzer chambers separated by a membrane, the first dialyzer chamber being adapted to be filled with blood, the apparatus further having pumps to route blood and untreated dialysis liquid through the dialyzer, and an ultrafiltration device to produced ultrafiltrate for withdrawal characterized in that:

an evaluation unit is provided at least for observation of a comparison of a representation of electrolyte contents of untreated liquid and treated liquid directed through said dialyzer;

at least one first detector is provided which is connected to receive untreated liquid upstream of said dialyzer and



which is connected with said evaluation unit, said first detector being operative for determining and conveying to said evaluation unit a representation of the electrolyte contents of untreated liquid upstream of said dialyzer; and

at least one second detector is provided which is connected to receive treated liquid downstream of said dialyzer and which is connected with said evaluation unit, said second detector being operative for determining and conveying to said evaluation unit a representation of the electrolyte contents of treated liquid downstream of said dialyzer.

4,508,623

SNAP-TOGETHER FILTER-PLATE ASSEMBLY

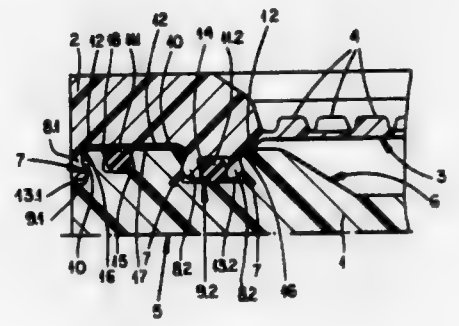
Franz Heckl, Senden, and Herbert Herget, Staig-Steinberg, both of Fed. Rep. of Germany, assignors to Lenser Verwaltungs-GmbH, Senden, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,378

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220487

Int. Cl.³ B01D *25/12*

U.S. Cl. 220—229 **11 Claims**



1. A filter-plate assembly for a filter press, the assembly comprising:

a substantially rigid support plate having a plate face formed of a central region and an outer periphery bounding the region;

a substantially rigid annular frame having an annular frame face at least closely confronting the plate face at the periphery;

a generally planar and elastically deformable central filter panel formed integrally with the frame and forming with the central region and within the periphery a pressurizable chamber, whereby pressurization of the chamber can press a filter cloth lying on the filter panel toward another such filter cloth of an adjacent such assembly;

an annular groove formed at the outer periphery in one of the faces, of increasing width away from the one face,

having a flat floor spaced from the other face, and open toward the other face;

an annular ridge formed on and projecting from the other face, having a planar outer end parallel to the one face, and of increasing thickness away from the other face so as to be snap-fittable in the groove; and

respective annular plate and frame seals recessed in the plate and frame and projecting oppositely therefrom at the outer periphery, the plate seal engaging the frame face and the frame seal engaging the plate face, the seals projecting in uncompressed condition from the faces of the plate and frame, whereby the seals are compressed when the plate and frame faces are engaged with each other.

4,508,624

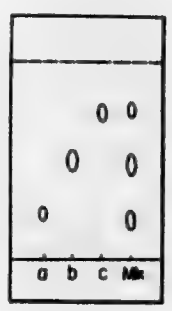
CERAMIC BODY FOR CHROMATOGRAPHY AND PROCESS FOR PREPARATION THEREOF

Koichi Nagata, Sendai, Japan, assignor to Kyoto Ceramic Co., Ltd., Kyoto, Japan

Division of Ser. No. 191,388, Sep. 29, 1980, abandoned. This application Nov. 26, 1982, Ser. No. 445,020

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—658 **4 Claims**



1. A chromatographic process which comprises a sample comprising unknown components in a liquid phase on one end of a solid stationary phase, dipping the end of the solid stationary phase in a developer to separate said unknown components, and analyzing said unknown components, wherein said solid stationary phase is a self-supporting calcined molded porous plate of alumina particles in which the pore size distribution range is from 0.1 to 10μ, and further wherein said plate consists essentially of a mixture of alumina particles containing more than fifty percent weight of α-alumina and less than fifty percent by weight γ-alumina.

4,508,625

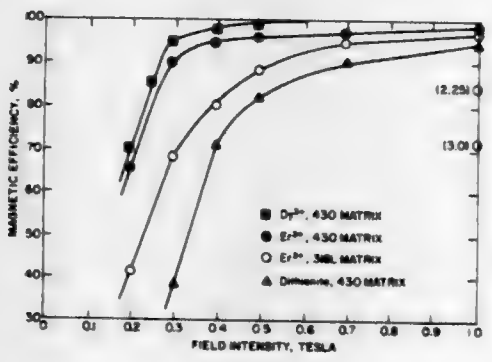
MAGNETIC SEPARATION USING CHELATED MAGNETIC IONS

Marshall D. Graham, 6 Temple St., Framingham, Mass.

Continuation-in-part of Ser. No. 435,015, Oct. 18, 1982, abandoned. This application Oct. 6, 1983, Ser. No. 539,542

Int. Cl.³ B03C *1/00*

U.S. Cl. 210—695 **34 Claims**



1. A process for separating particles having a negative surface charge from a carrier liquid, said process comprising the steps of:

A. contacting said particles with an amount of a chelated paramagnetic metal ion sufficient to develop a magnetic susceptibility associated with the particles greater than the magnetic susceptibility of said carrier liquid; and

B. applying a magnetic field to said particles and carrier liquid to separate at least a portion of said particles from said carrier liquid.

4,508,626

OIL REMOVAL FROM WATER SUSPENSIONS USING IONIC DOMAIN POLYMERS

Everett J. Fuller, Gillette, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 333,129, Dec. 21, 1981, abandoned. This application Jan. 28, 1983, Ser. No. 462,119

Int. Cl.³ C02F *1/54*

U.S. Cl. 210—708 **3 Claims**

1. A process for the purification of water containing emulsified oil particles which consists of the steps of (a) adding a sufficient amount of a neutralized sulfonated polymer to a dispersion of said water containing said emulsified oil particles, to have said neutralized sulfonated polymer interact with said oil particles, said neutralized sulfonated polymer is derived from a polymer selected from the group consisting of Butyl Rubber, EPDM terpolymer, and polystyrene, said neutralized sulfonated polymer having about 5 to about 50 meq. of sulfonate groups per 100 grams of said sulfonated polymer; (b) adding to said dispersion about 0.1 to about 2.0 grams of an aliphatic alcohol per one gram of said neutralized sulfonated polymer, said aliphatic alcohol being selected from the group consisting of n-hexanol and n-heptanol; (c) mixing said sulfonated polymer and said dispersion for a sufficient period of time until the emulsified oil interacts with said neutralized sulfonated polymer, said oil and said neutralized polymer forming a distinct layer from a layer of said water; and (d) mechanical separating said oil and said neutralized sulfonated polymer layer from said water layer.

4,508,627

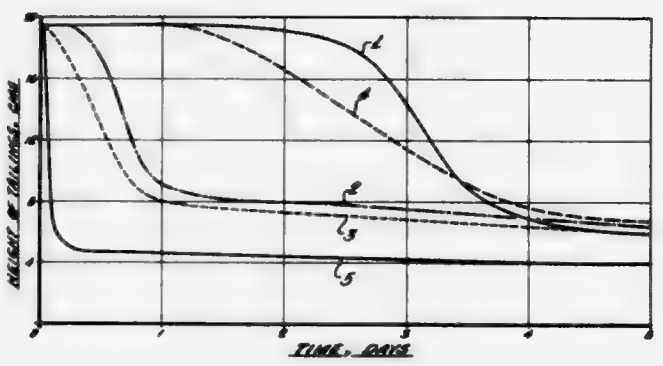
PROCESS FOR MAKING STARCH FLOCCULANTS OF IMPROVED EFFICIENCY

Raymond N. Yong, and Amar J. Sethi, both of Beaconsfield, Canada, assignors to Suncor, Inc., Toronto, Canada

Continuation of Ser. No. 327,850, Dec. 7, 1981, abandoned. This application Sep. 15, 1983, Ser. No. 532,256

Int. Cl.³ C02F *1/54*

U.S. Cl. 210—728 **17 Claims**



1. A process for making an improved starch flocculant wherein an aqueous dispersion is prepared, said dispersion being comprised of starch, lime and alum, containing from about 4 to about 12 gm per 100 ml of water of starch solids concentration, and having alum present in an amount of from about 5% to about 15% of said starch, and said dispersion is heated until the dispersion reaches maximum viscosity, and when the viscosity begins to fall, a phosphate salt is immedi-

ately added in an amount from about 50% to about 100% of the stoichiometric amount based on said lime sufficient to subsequently form a calcium alumino phosphate insoluble salt and hydrolysis is then effected by continued heating to hydrolyze said starch and form said calcium salt, said lime being present in said aqueous dispersion in an amount sufficient to form with said alum and said added metal salt from about 10 to 30 grams of insoluble calcium alumino salt per 100 grams of starch.

10. In the process of flocculating tailing pond water with hydrolyzed starch flocculant, the improvement of using a starch flocculant obtained by the process wherein an aqueous dispersion is prepared, said dispersion being comprised of starch, lime and alum, containing from about 4 to about 12 gm per 100 ml of water of starch solids concentration, and having said alum present in an amount of from about 5% to about 15% of said starch, and said dispersion is heated until the dispersion reaches maximum viscosity, and when the viscosity begins to fall a phosphate salt is immediately added in an amount from about 50% to about 100% of the stoichiometric amount based on said lime sufficient to subsequently form a calcium alumino insoluble salt, and hydrolysis is then effected by continued heating to hydrolyze said starch and form said calcium alumino insoluble salt, said lime being present in said aqueous dispersion in an amount sufficient to form with said alum and said added metal salt from about 10 to 30 grams of insoluble calcium alumino salt per 100 grams of starch.

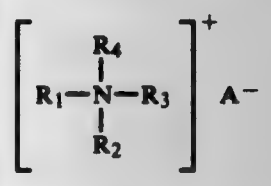
4,508,628

FAST DRILLING INVERT EMULSION DRILLING FLUIDS

Thad O. Walker, Humble; Jay P. Simpson, Houston, and Harry L. Dearing, Sugarland, all of Tex., assignors to O'Brien-Goins-Simpson & Associates, Houston, Tex.

Filed May 19, 1983, Ser. No. 441,418
Int. Cl.³ C09K *7/06*
U.S. Cl. 252—8.5 P **8 Claims**

1. A fast drilling invert oil emulsion drilling fluid having enhanced stability at elevated temperatures which comprises oil, water, a water-in-oil emulsifier, a weighting agent, a suspending agent, and a temperature stabilizing additive, wherein said oil is a refined petroleum oil fraction containing primarily straight chain paraffinic hydrocarbons and less than 1% by volume of aromatic hydrocarbons, having a viscosity less than 1.5 centipoises at 25° C., a flash point of at least 60° C., and an aniline point of at least 80° C.; wherein said water contains up to a saturation amount of NaCl or $CaCl_2$; wherein said suspending agent is an organophilic clay which comprises the reaction product of a clay selected from the group consisting of attapulgite, bentonite, hectorite, saponite, and sepiolite, and a quaternary ammonium salt having the structural formula:



wherein R_1, R_2, R_3, and R_4 are independently selected from the group consisting of $C_aH_{2a+1-x}B_x$, $C_bH_{2b-1-x}B_x$, $C_6H_{5-x}B_xCH_2$, and mixtures thereof, $1 \leqq a \leqq 30$, $3 \leqq b \leqq 30$, $0 \leqq x \leqq 2$, B is a radical selected from the group consisting of OH, Cl, Br, C_6H_5, and mixtures thereof, and A is a charge balancing anion, provided that at least one R contains at least 12 carbon atoms, and R_1, R_2, R_3, and R_4 collectively contain at least 20 carbon atoms; and wherein said temperature stabilizing additive contains from 2 to 6 carbon atoms and from 2 to 4 polar groups selected from the group consisting of OH, NH_2, and mixtures thereof, per molecule.

4,508,629

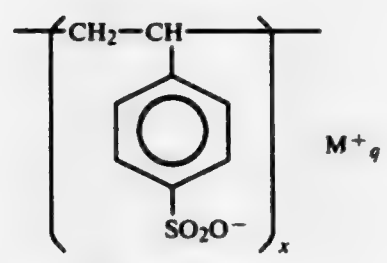
METHOD OF VISCOSIFYING AQUEOUS FLUIDS AND PROCESS FOR RECOVERY OF HYDROCARBONS FROM SUBTERRANEAN FORMATIONS

John K. Borchardt, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

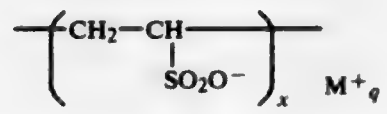
Filed Apr. 8, 1983, Ser. No. 483,356
Int. Cl.³ C09K *7/02*; E21B *43/22*
U.S. Cl. 252—8.55 D **4 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-containing formation penetrated by at least one injection well and at least one production well comprising:

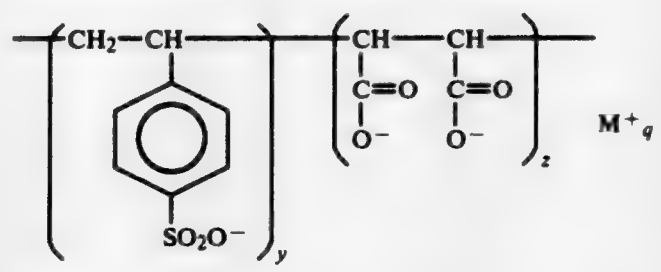
injecting into said formation through said injection well a viscosified aqueous fluid comprising as aqueous fluid having dissolved therein a sufficient quantity of a viscosifying composition to provide a concentration of at least about 300 ppm, said viscosifying composition comprising xanthan gun and at least one member selected from the group consisting of ammonium, hydrogen and alkali metal salts of a polystyrene sulfonate having the formula



a polyvinyl sulfonate having the formula



a hydrolyzed copolymer of styrene sulfonate and maleic anhydride



wherein x has a valve in the range of from about 250 to about 50,000, y has a value of at least about 250, the sum of y+z is in the range of from about 250 to about 50,000 and y comprises at least 30 percent of y+z, M comprises at least one member selected from the group consisting of hydrogen, ammonium and alkali metals and q is an integer equal to the number of cations required to maintain electrical neutrality, the ratio of said xanthan gum to said member selected from the salts of said polystyrene sulfonate, polyvinyl sulfonate, hydrolyzed copolymer of styrene sulfonate and maleic anhydride or a mixture thereof in said viscosifying composition being in the range of from about 1 to 10 to about 15 to 1;

forcing said viscosified aqueous fluid through said formation; and

recovering hydrocarbons from said production well.

4,508,630

OIL SOLUBLE SULFUR FREE OXYMOLYBDENUM ORGANIC COMPOUNDS HAVING FRICTION REDUCING ANTIWEAR PROPERTIES IN LUBRICANT COMPOSITIONS, PROCESS OF MANUFACTURE, AND LUBRICANT COMPOSITIONS

Frederic A. Litt, University Heights, and Thomas R. Czernicki, Euclid, both of Ohio, assignors to The Elco Corporation, Cleveland, Ohio

Continuation of Ser. No. 340,498, Jan. 18, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 552,860

Int. Cl.[3] C10M *1/46, 1/54*

U.S. Cl. 252—32.5 17 Claims

1. Hydrocarbon-soluble sulfur free oxymolybdenum compounds represented by the formula

$$[(RO)_n(HO)_{3-n}PO]\ (MoO_3)x$$

where n=1 to 2; x=1.18 to 9 except when n=2, then x=not more than 6, and when n=1.5 then x=not more than 7.5, and R is selected from the group consisting of alkyl, substituted alkyl, aryl, aralkyl, cycloalkyl or alkaryl, including polar substituted embodiments thereof.

4,508,631

DEHYDRATING REFRIGERANT

Joseph J. Packo, 30 Pelican Isle, Ft. Lauderdale, Fla., and Donald L. Bailey, Traverse City, Mich., assignors to Joseph J. Packo, Ft. Lauderdale, Fla.

Filed Aug. 2, 1983, Ser. No. 519,623

The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.

Int. Cl.[3] C09K *5/00*

U.S. Cl. 252—68 14 Claims

1. A moisture removing refrigeration fluid composition for refrigeration and air-conditioning units, comprising:

(a) a material selected from the group consisting of a refrigerant fluid, a lubricating fluid and a mixture thereof; and

(b) a liquid organosilane hydrolyzable dehydrant for removing moisture from the interior of the refrigeration or air-conditioning circuit, said liquid hydrolyzable organosilane or mixture thereof being reactable with moisture to form a liquid, being compatible with said refrigerant fluid both before and after hydrolysis, said organosilane further being one which does not substantially interfere with the properties of the refrigerant fluid, which exists as a liquid in the liquid portion of the circuit, and which is substantially inert to the material from which the circuit is made.

4,508,632

HEAT STORAGE MATERIALS

Takeshi Takeda, Kawasaki; Yasuhiko Machida; Yasuo Kudoh, both of Yokohama, and Kazutoshi Ikegaya, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 15, 1983, Ser. No. 504,601

Claims priority, application Japan, Jun. 15, 1982, 57-103214; Aug. 24, 1982, 57-147110

Int. Cl.[3] C09K *5/06*

U.S. Cl. 252—70 5 Claims

1. A heat storage material for use in solar heating systems which consists essentially of a mixture of a sodium salt selected from the group consisting of sodium sulfate decahydrate and sodium thiosulfate pentahydrate, and urea, provided that a mixing ratio by mole of said sodium sulfate decahydrate to said urea is in the range of 1:1 to 1:3 and a mixing ratio by mole of said sodium thiosulfate pentahydrate to said urea is in the range of 1:2 to 1.8.

4,508,633

SCOURING POWDER

Hans-Jurgen Strempel, Rodgau; Manfred Diehl, Frankfurt, and Roland Bergmann, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 8, 1982, Ser. No. 440,166

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144298

Int. Cl.[3] C11D *17/06*

U.S. Cl. 252—135 5 Claims

1. A process of scouring comprising scouring with scouring powder containing crystalline zeolite powder of Type A as the sole mechanical cleaning component, said zeolite having the following particle spectrum:

Fractions (μ)	Proportions (Weight %)
<3	<15
<5	<35
<10	<82
<15	<96
<20	up to 100

and at least 99.5% by weight of the particles have a diameter below 45 microns.

4,508,634

AQUEOUS SKIN CLEANER COMPOSITION COMPRISING PROPYLENE CARBONATE

Normita P. Elepaño, St. Paul, Minn.; William H. Schnur, Balsam Lake, Wis., and Jens L. Jorgensen, Ham Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1983, Ser. No. 551,880

Int. Cl.[3] B08B *3/08;* C09D *9/02;* C11D *7/50;* C23G *5/02*

U.S. Cl. 252—163 4 Claims

1. A composition useful for removing paint, primer grease, dirt from the surface of skin comprising:

(a) from about 10% to about 40% by weight propylene carbonate,

(b) from about 10% to about 50% by weight water,

(c) from about 1% to about 30% by weight at least one cosolvent,

(d) from about 0.5% to about 12% by weight at least one surfactant,

(e) from about 0.1% to about 5% by weight at least one thickening agent,

(f) from about 0.01% to about 1% by weight at least one buffering agent, and

(g) from 0% to about 15% by weight at least one abrasive material.

4,508,635

GENERAL-PURPOSE CLEANING COMPOSITION COMPRISING NONIONIC SURFACTANT AND ALCOHOL ESTERIFIED RESIN COPOLYMER

David E. Clarke, Bromborough, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 378,658, May 17, 1982,. This application Feb. 15, 1984, Ser. No. 580,499

Claims priority, application United Kingdom, May 29, 1981, 8116439

Int. Cl.[3] C11D *1/66, 15/04*

U.S. Cl. 252—174.23 9 Claims

1. A liquid general-purpose cleaning composition with improved non-streak and cleaning properties, comprising: (a) 0.01–98% by weight of a nonionic surfactant, having an HLB-value of between 10 and 15, (b) 0.005–20% by weight of an at least 5% alcohol esterified resin copolymer formed from an unsaturated monomer and an unsaturated dicarboxylic acid or anhydride, and (c) 1–99.985% of a compatible liquid medium.

4,508,636

RADIATION IMAGE STORAGE PANEL

Takeji Ochiai, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Nov. 15, 1982, Ser. No. 441,744
Claims priority, application Japan, Nov. 20, 1981, 56-187501
Int. Cl.[3] C09K *11/02*
U.S. Cl. 252—301.36 3 Claims

1. A radiation image storage panel comprising a substrate and a fluorescent layer provided on said substrate, said fluorescent layer consisting essentially of a binder and a stimulable phosphor dispersed therein, wherein said binder comprises (a) linear polyester resin, obtained by a polycondensation reaction of dihydroxy compound with dibasic acid or by polyaddition reaction of oxyacid, and (b) nitrocellulose.

4,508,637

MIXTURES OF ALKYL AND ALKENYL SUCCINIC ACIDS AND POLYMER ACIDS

William J. Heintzelman, and Richard L. Godar, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 28, 1980, Ser. No. 125,726
Int. Cl.[3] C09K *3/00;* C10L *1/18;* C23F *11/12*
U.S. Cl. 252—396 6 Claims

1. A composition comprising
(1) predominately trimer polymer acid, and
(2) an alkenyl or alkyl succinic acid or the anhydride thereof, the weight ratio of (1) to (2) being about 2 to 1 or less.

4,508,638

AGENT AND METHOD FOR THE STABILIZATION OF POLYVINYL CHLORIDE AGAINST HEAT AND LIGHT

Joachim von Seyerl, Seeon, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 480,175
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212336
Int. Cl.[3] C09K *15/16*
U.S. Cl. 252—401 5 Claims

1. An improved agent of the type containing dicyandiamide for stabilizing polyvinyl chloride against degradation by heat and light, wherein the improvement comprises water means to provide 0.5 to 7 equivalents of water based on the dicyandiamide and said water means is a compound capable of reacting with HCl to form water and chloride.

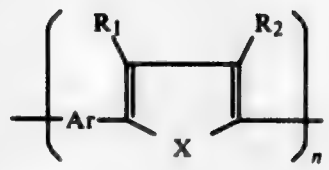
4,508,639

POLYMERS CONTAINING HETEROCYCLES AND AROMATIC NUCLEI, AND CONDUCTIVE ORGANIC MATERIALS MADE FROM SUCH POLYMERS

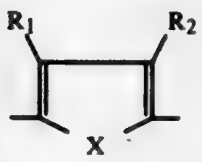
Marcel Camps, St. Etienne; Alain Douillard, Rives-de-Gier; Jean-Claude Dubois; Maryse Gazard, both of Paris; Jean-Pierre Monthéard; Thierry Pascal, both of St. Etienne, and Gérard Seytre, Tassin-la-Demi-Lune, all of France, assignors to Thomson-CSF, Paris, France

Filed May 23, 1983, Ser. No. 497,234
Claims priority, application France, May 25, 1982, 82 09049
Int. Cl.[3] C08G *75/00, 83/00*
U.S. Cl. 252—500 6 Claims

1. A polymer material made from two different monomer units, wherein said first monomer unit includes at least one aromatic nucleus and said second monomer unit is a five membered conjugated heterocyclic ring, said polymer material having the following formula:



in which:
Ar represents said first monomer unit, which is chosen from the group consisting of p-phenylene, m-phenylene, biphenylene, anthracene, fluorene and phenanthrene, and wherein



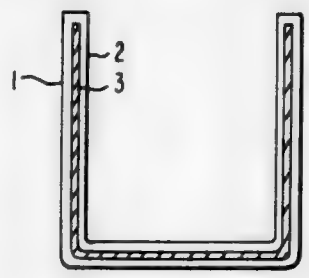
represents said second monomer unit;
wherein X represents the group consisting of sulfur and selenium;
R_1 and R_2 are chosen from the group consisting of hydrogen, and alkyl, alkoxyl, and hydroxyl groups; and
n is the degree of polymerisation.

4,508,640

ELECTROMAGNETIC WAVE-SHIELDING MATERIALS

Masahiro Kanda, Kanagawa; Tetsuya Hatakeyama, Saitama, and Yusuke Morito, Kanagawa, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1982, Ser. No. 444,026
Claims priority, application Japan, Nov. 24, 1981, 56-186825; Dec. 9, 1981, 56-196985; Jan. 7, 1982, 57-602; Apr. 15, 1982, 57-61687; Apr. 15, 1982, 57-61688; Jun. 2, 1982, 57-93002; Sep. 3, 1982, 57-152734; Sep. 14, 1982, 57-158831; Sep. 14, 1982, 57-158832; Nov. 15, 1982, 57-199050
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—503 12 Claims



1. An electromagnetic wave-shielding material comprising:
(1) an electromagnetic wave-shielding layer comprised of:
(A) a thermoplastic resin;
(B) an aluminum or aluminum alloy; and
(C) electrically conductive carbon black; and
(2) a surface layer comprised of a thermoplastic resin, wherein:
(a) the thermoplastic resin (A) is selected from the group consisting of:
(i) polyolefins modified with unsaturated carboxylic acids or derivatives of unsaturated carboxylic acids;
(ii) copolymers of ethylene and unsaturated carboxylic acids and/or anhydrides thereof;
(iii) copolymers of ethylene and an alkyl acrylate and/or an alkyl methacrylate;
(iv) styrene-based resins;
(v) vinyl chloride-based resins;
(vi) polyamide resins;
(vii) polycarbonate resins; and
(viii) polyolefins,
(b) the aluminum or aluminum alloy is in the form of: (i)

particles having a mean size of 250 to 20 mesh; (ii) a fiberous aluminum or a fiberous aluminum alloy having a diameter of from 0.002 to 0.05 mm and a length of 10 mm or less; or (iii) a flake having a surface area of from 0.1×0.1 mm to 5×5 mm,

(c) the electrically conductive carbon black has a specific surface area of from 20 to 1,800 m^2/g, and

(d) the proportions of the electrically conductive carbon black and the aluminum or aluminum alloy in the electromagnetic wave-shielding layer are from 5 to 50% by volume, respectively, provided that the total proportion of the carbon black and the aluminum or aluminum alloy is from 10 to 60% by volume, and the difference in solubility parameter between the thermoplastic resin of the surface layer and the thermoplastic resin (A) of the electromagnetic wave-shielding layer is 3.0 or less.

4,508,641

PROCESS FOR THE DECONTAMINATION OF STEEL SURFACES AND DISPOSAL OF RADIOACTIVE WASTE

Jozef Hanulik, Zurich, Switzerland, assignor to Gesellschaft zur Förderung der industrieorientierten, Bern, Switzerland

Filed Aug. 27, 1982, Ser. No. 412,375

Claims priority, application Switzerland, Sep. 1, 1981, 5611/81

Int. Cl.³ G21F *9/28;* C23G *1/08*

U.S. Cl. 252—626 **16 Claims**

1. A process for the decontamination of steel surfaces by removal of the contaminated surface layer with an aqueous decontaminating solution in a recirculation loop and for final treating the used aqueous solution after removal of the surface layer for waste disposal, which process comprises:

(i) in the recirculation loop the steps of:

(a^1) contacting the steel surfaces with an aqueous decontaminating solution comprising at least one acid selected from the group consisting of formic acid and acetic acid, and at least one reducing agent selected from the group consisting of formaldehyde and acetaldehyde, in a concentration to hold dissolved Fe^{2+}-ions stably in the solution;

(b^1) monitoring the concentration of dissolved Fe^{2+}-ions, acid and aldehyde of the decontaminating solution during the dissolution process;

(c^1) treating the used decontaminating solution to precipitate iron values dissolved therein in the form of iron hydroxide or in the form of water-insoluble iron (III) compounds, and separating precipitated iron compounds from the liquid by filtering; and

(d^1) treating the aqueous solution remaining after said precipitation to obtain a regenerated decontaminating solution having the desired content of acid and aldehyde, and recircuate it for a new dissolution cycle; and

(ii) in the final treatment for waste disposal the steps of:

(e^1) treating the used decontaminating solution to precipitate iron values dissolved therein in the form of iron hydroxide or in the form of water-insoluble iron (III)-compounds and separating precipitated iron compounds from the liquid by filtering;

(f^1) decomposing the precipitated iron compounds of steps (c^1) and (e^1) thermally and/or catalytically into iron oxide-containing radioactive materials- and into radioactivity-free gaseous decomposition products, and subjecting the iron oxide to nuclear waste disposal by mixing it with cement; and

(g^1) oxidizing the radioactivity-free solution of step (e^1) with an oxidizing agent and decomposing therein dissolved formate or acetate salts.

4,508,642

METHOD OF OBTAINING GREATER LIFETIME DURATION FROM CHEMILUMINESCENT SYSTEMS

Victor B. World, 92 N. Elmwood Ave., Glenolden, Pa. 19036

Filed Apr. 21, 1983, Ser. No. 487,317

Int. Cl.³ C09K *11/06*

U.S. Cl. 252—700 **12 Claims**



1. A chemiluminescent composition essentially consisting of liquid solution in organic solvent of a bis-ester of oxalic acid, an organic fluorescent compound, hydrogen peroxide, and a catalyst, present in relative proportions to produce chemiluminescent light, and a specific C_{13} alkyl ester selected from the group consisting of ditridecyl phthalate and ditridecyl adipate present in the composition in a quantity ranging from about 0.1% to about 1000% (by volume) of the other ingredients of the chemiluminescent, composition said bis-ester having the formula: in which P represents a phenyl group substituted by (1) at least one carbalkoxy group of the formula



in which R is a lower alkyl group, or a substituted lower alkyl group, where said substituents are selected from the group consisting of fluoro, chloro, trifluoromethyl, lower alkoxy, cyano, lower carbalkoxy, and phenyl; or (2) the phenyl group, P, is substituted by at least two additional substituents selected from the group consisting of fluoro, chloro, bromo, cyano, trifluoromethyl, lower carbalkoxy, nitro, lower alkoxy, lower alkoxymethyl and alkyl.

4,508,643

RAT ANTIBODY TO HCG

Edward G. Calamai, Lexington, and Martha A. Daigle, Brookline, both of Mass., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 8, 1983, Ser. No. 464,953

Int. Cl.³ C07G *7/00;* A61K *39/44, 39/395*

U.S. Cl. 260—112 B **8 Claims**

1. The method of raising anti-hCG antibody of high sensitivity and low cross-reactivity with LH which comprises administering whole hCG or β-subunit thereof to a rat, and harvesting anti-hCG antibody from said rat.

4,508,644

CHROMOGENIC COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Helmut Heber, Marburg; Reinhard Eberle, Lahntal, and Volker Teetz, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Fed. Rep. of Germany

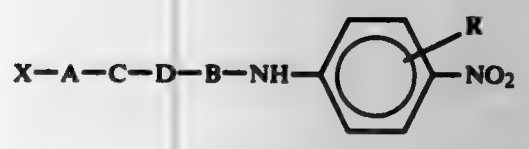
Filed Nov. 25, 1983, Ser. No. 554,942

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3244030

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **5 Claims**

1. A chromogenic compound of the formula I



I

in which

X denotes a hydrogen atom, a protective group customarily used in peptide chemistry or a group which irreversibly blocks the terminal amino group,

A denotes an amino acid, the side-chain group of which can be unsubstituted or substituted, selected from the group consisting of Ala, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Phe, Pro, Pyr, Thr, Tyr and Val,

C denotes a bond or an amino acid, the side-chain group of which can be unsubstituted or substituted, selected from the group consisting of Ala, Asp, Glu, Gly, Leu, Lys, Ser and Val,

D denotes an amino acid, the side-chain group of which can be unsubstituted or substituted, selected from the group consisting of Ala, Asp, Glu, Gly, His, Leu, Phe, Pip, Pro, Ser, Thr, Tyr and Val,

B denotes L-arginine, L-homoarginine, L-Lysine, L-homolysine, L-ornithine or L-histidine, and

R denotes $COOR_1$, $CONR_2R_3$, $CONH—(CH_2)_n—N(CH_3)_2$, $CO—Y—OR_1$ and $CO—Y—NR_2R_3$ in the 3-position or OR_1 in the 2-position of the 4-nitroaniline, in which R_1 denotes an aliphatic hydrocarbon radical having 1 to 6 carbon atoms, an aromatic hydrocarbon radical having 6 to 10 carbon atoms, an araliphatic hydrocarbon radical having 7 to 11 carbon atoms or an alicyclic hydrocarbon radical having 3 to 8 carbon atoms,

R_2 denotes a hydrogen atom or a radical defined under R_1,

R_3 denotes an aliphatic hydrocarbon radical having 1 to 10 carbon atoms, an aromatic hydrocarbon radical having 6 to 10 carbon atoms, an araliphatic hydrocarbon radical having 7 to 11 carbon atoms or an alicyclic hydrocarbon radical having 3 to 8 carbon atoms,

Y denotes an alpha-, beta- or gamma-amino acid, the side-chain group of which can be unsubstituted or substituted, selected from the group consisting of Ala, Asn, Asp, β-Ala, γ-But, Cys, Glu, Gly, Ile, Leu, Lys, Met, Arg, Phe, Pro, Ser, Thr, Tyr and Val,

n denotes 1 to 10,

and its acid addition salts.

4,508,645

ANALOGS OF NEUROHYPOPHYSIAL HORMONES WITH INHIBITION EFFECTS

Petr Simek, Prague; Tomislav Barth, Roztoky; Frantisek Brtnik, Prague; Karel Jost, Prague; Alena Machova, Prague; Linda Servítová, Prague, and Jirina Slantinová, Prague, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

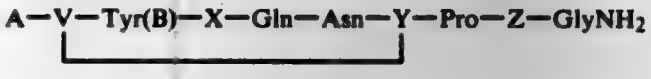
Filed Jun. 3, 1983, Ser. No. 500,773

Claims priority, application Czechoslovakia, Jun. 3, 1982, 4128-82; Aug. 26, 1982, 6206-82

Int. Cl.³ C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 R **10 Claims**

1. Analog of neurohypophysial hormones evidencing inhibition characteristics of the formula:



wherein

(a) A is selected from the group consisting of CH_3CO and H,

(b) V and Y are residues both selected from the group consisting of penicillamine and cysteine, at least one of which is penicillamine,

(c) B is selected from the groups consisting of CH_3 and H,

(d) X is a residue selected from the group consisting of isoleucine and phenylalanine, and

(e) Z is a residue selected from the group consisting of leucine and lysine.

4,508,646

PROCESS FOR THE PREPARATION OF A CATALYST USEFUL FOR ANIONIC LACTAM POLYMERIZATION

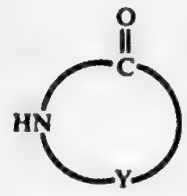
Robert B. Hodek, Gibsonia, and Jerome A. Seiner, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1984, Ser. No. 575,089

Int. Cl.³ C07D *223/10*

U.S. Cl. 260—239.3 R **9 Claims**

1. In a process for the preparation of a lactam-magnesium compound comprising reacting lactam monomer with an organomagnesium-containing material, the improvement comprises bringing lactam monomer represented by the following structural formula:



wherein Y is an alkylene group having from 3 to 12 carbon atoms, in particulate form, into intimate admixture with the organomagnesium-containing material at a temperature below the melting point of the lactam monomer but at a temperature sufficient to convert at least a portion of the lactam monomer to said lactam-magnesium compound in pulverulent form.

4,508,647

ANTITUMOR ANTIBIOTICS BBM-2040A AND BBM-2040B

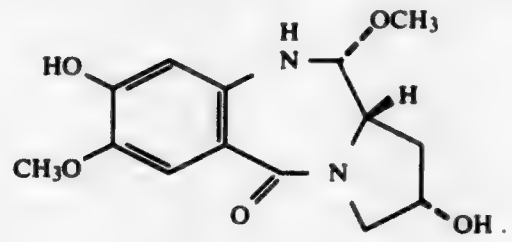
Masami Hatori, Yokosuka; Hiroaki Ohkuma, Tokyo; Masataka Konishi, Kawasaki; Takeo Miyaki, Yokohama, and Hiroshi Kawaguchi, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 401,469, Jul. 26, 1982, Pat. No. 4,464,467. This application May 10, 1984, Ser. No. 608,736

Int. Cl.³ C07D *487/04;* C12P *17/18;* C12N *1/20;* C12R *1/465*

U.S. Cl. 260—239.3 T **2 Claims**

1. The antibiotic BBM-2040A having the formula



4,508,648

PHOSPHORIC ESTER OF ANTIBIOTIC OA-6129

Katsuro Kubo, Fujisawa; Takeo Yoshioka, Ayase; Mitsuyasu Okabe, Fujisawa; Yasuo Fukagawa, Kamakura, and Tomoyuki Ishikura, Chigasaki, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

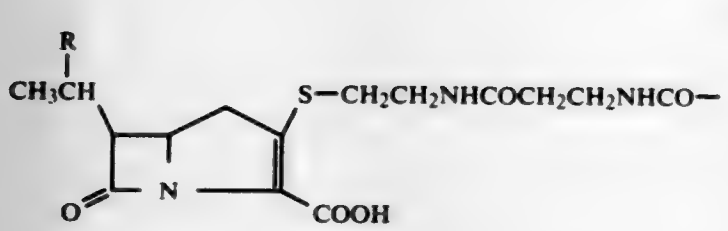
Filed Sep. 24, 1982, Ser. No. 422,378

Claims priority, application Japan, Oct. 2, 1981, 56-156133

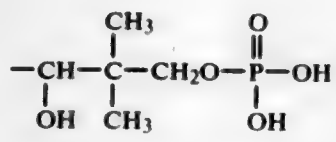
Int. Cl.³ C07D *487/04;* A61K *31/40*

U.S. Cl. 260—245.2 T **1 Claim**

1. Compounds presented by the formula



(I)



wherein

R is a hydrogen atom, hydroxyl or hydroxysulfonyloxy, and non-toxic pharmaceutically acceptable salts thereof.

4,508,649

PROCESS FOR PREPARING OPTICALLY ACTIVE PENEMS

Marco Alpegiani; Carlo Battistini; Angelo Bedeschi; Giovanni Franceschi; Maurizio Foglio, and Franco Zarini, all of Milan, Italy, assignors to Farmitalia Carlo Erba, Milano, Italy

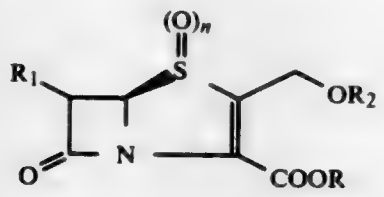
Filed Dec. 6, 1982, Ser. No. 447,187

Claims priority, application United Kingdom, Dec. 11, 1981, 8137513

Int. Cl.[3] **C07D** *499/00;* **A61K** *31/425*

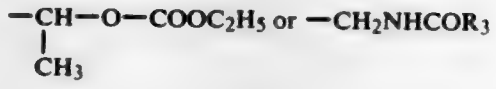
U.S. Cl. 260—245.2 R **2 Claims**

1. A method for preparing a compound of formula



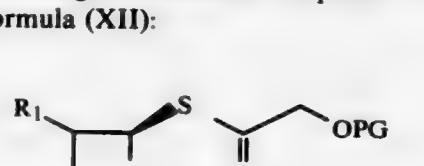
(I)

wherein n is 0 or 1; and wherein R is a hydrogen atom, a lower alkyl, 2,2,2-trichloroethyl, acetonyl, allyl, benzyl, p-nitrobenzyl, p-methoxybenzyl, phenyl, o-nitrophenyl, benzhydryl, 1-phenoxyethyl, acetoxymethyl, pivaloylmethyl or pthalidyl group or a group of the formula:



in which R_3 is an alkyl group having from 1 to 5 carbon atoms or an aryl group; R_1 is a hydrogen atom, a lower alkyl, lower alkoxy, cyclopentyl, cyclohexyl, or hydroxyalkyl group, wherein the hydroxyalkyl group has an unblocked alcohol group or an alcohol group which is blocked by a protective group selected from the group consisting of p-nitrobenzyloxycarbonyl, dimethyl-t-butylsilyl, diphenyl-t-butylsilyl, 2,2,2-trichloroethoxycarbonyl, trimethylsilyl, benzyl, p-bromophenacyl, triphenylmethyl or pyranyl groups; and R_2 is a hydrogen atom, an alkyl group having from 1 to 5 carbon atoms, a carbamoyl or N-C_1–C_4 alkyl substituted carbamoyl group, an alkanoyl group having from 2 to 6 carbon atoms, a C_4–C_7 cycloalkylcarbonyl group or an arylcarbonyl group selected from the group of unsubstituted phenylcarbonyl or phenyl carbonyl having the phenyl group substituted with a halogen, hydroxy, amino, cyano, nitro, lower alkyl or lower alkoxy group; and pharmaceutically acceptable salts thereof, said method consisting of:

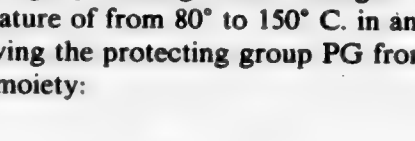
(i) reacting a compound of the formula (V)



(V)

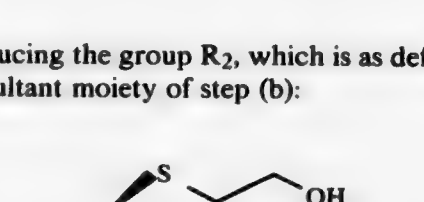
wherein R_1 is as defined above and PG is a protecting group as defined above; with a compound of the formula CHOCOOR, wherein R is as defined above at a temperature of from 70° to 100° C.,

(ii) chlorinating the resultant compound of step (i), having the formula (X):



(X)

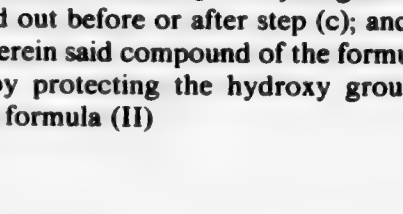
(iii) reacting the resultant compound of step (ii), having the formula (XI):



(XI)

wherein R_1, R and PG are as defined above, with triphenylphosphine at a temperature of from 30° to 60° C., and

(iv) converting the resultant compound of step (iii), having the formula (XII):

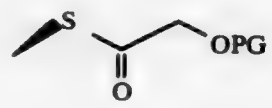


(XII)

with a compound having the formula (I) as defined above, by the following steps (a) to (c):

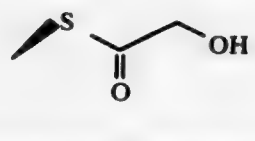
(a) cyclizing by heating under nitrogen atmosphere at a temperature of from 80° to 150° C. in an inert solvent,

(b) removing the protecting group PG from the substituent of the moiety:



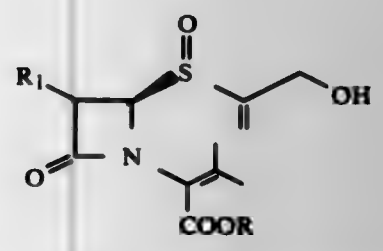
and,

(c) introducing the group R_2, which is as defined above into the resultant moiety of step (b):



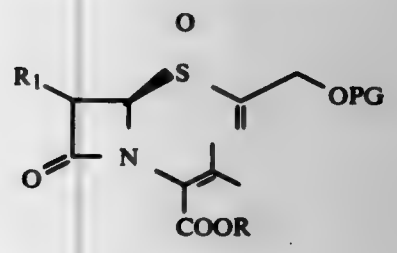
wherein step (a) is carried out after step (b) and before step (c), or step (a) is carried out after steps (b) and (c), or step (b) is omitted when R_2 is a hydrogen atom and step (a) is carried out before or after step (c); and

further wherein said compound of the formula (V) in step (i) is prepared by protecting the hydroxy group of a compound having the formula (II)



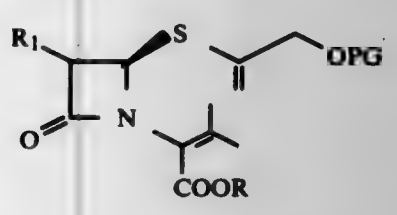
(II)

wherein R_1 and R are as defined above, with a protecting group, PG, which is as defined above; reducing the resultant compound having the formula (III)



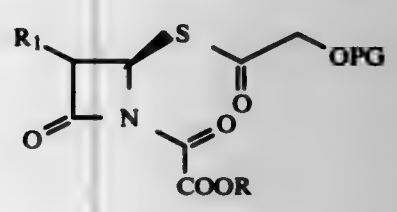
(III)

wherein R, R_1 and PG are as defined above, with phosphorous tribromide, ozonolyzing the resultant compound having the formula (IV)



(IV)

wherein R, R_1 and PG are as defined above, in a solvent at a temperature of from −80° to −50° C.; and methanolyzing the resultant compound having formula (IVa)



(IVa)

wherein R, R_1 and PG are as defined above, in the presence of silica gel to give a compound having formula V.

4,508,650

PROCESS FOR THE PREPARATION OF HIGH PURITY PHTHALOCYANINE PIGMENTS

Emery G. Tokoli, Rochester; Anthony M. Horgan, Pittsford, and Kathleen M. Carmichael, Williamson, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1983, Ser. No. 517,868
Int. Cl.[3] C07D *487/22*; C09B *47/04*
U.S. Cl. 260—245.86 **28 Claims**

1. A process for the preparation of pigments of high purity which comprises reacting in the presence of an organic solvent an appropriate impure pigment with an organic acid of the formula R-X, or comprises reacting an appropriate impure pigment with an organic acid of the formula R-X, and subsequently mixing an organic solvent with the resulting organic mixture, mixing a precipitating agent with the resulting solution mixture, followed by separation of the desired pure pigment from the reaction mixture, wherein R is an alkyl group, containing from about 4 carbon atoms to about 22 carbon atoms, or an aryl group containing from about 6 carbon atoms to about 24 carbon atoms, and X is an anion.

4,508,651

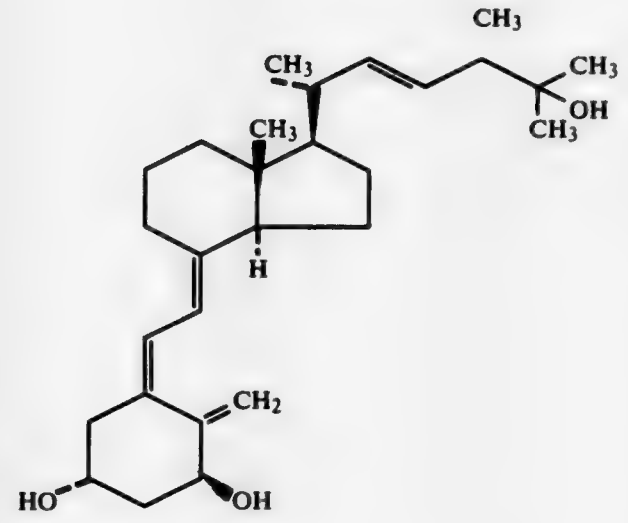
SYNTHESIS OF 1α,25-DIHYDROXYERGOCALCIFEROL

Enrico G. Baggiolini; Andrew D. Batcho, both of North Caldwell; Alfred Boris, Parsippany, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 21, 1983, Ser. No. 477,059
Int. Cl.[3] C07J *9/00*
U.S. Cl. 260—397.2 **3 Claims**

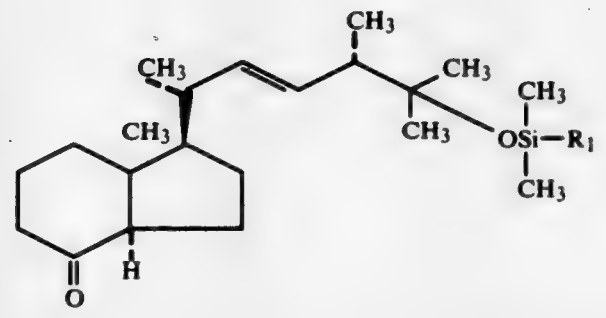
1. A process of the preparation of 1α,25-dihydroxyergocalciferol of the formula

I



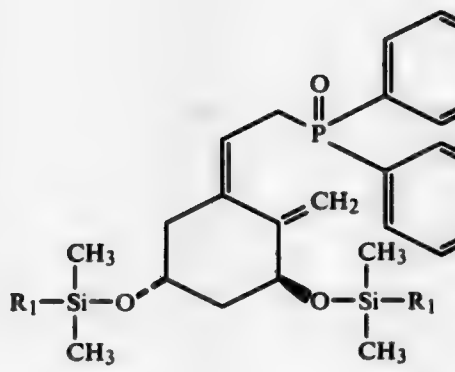
which comprises the steps of
(a) reacting a compound of the formula

II

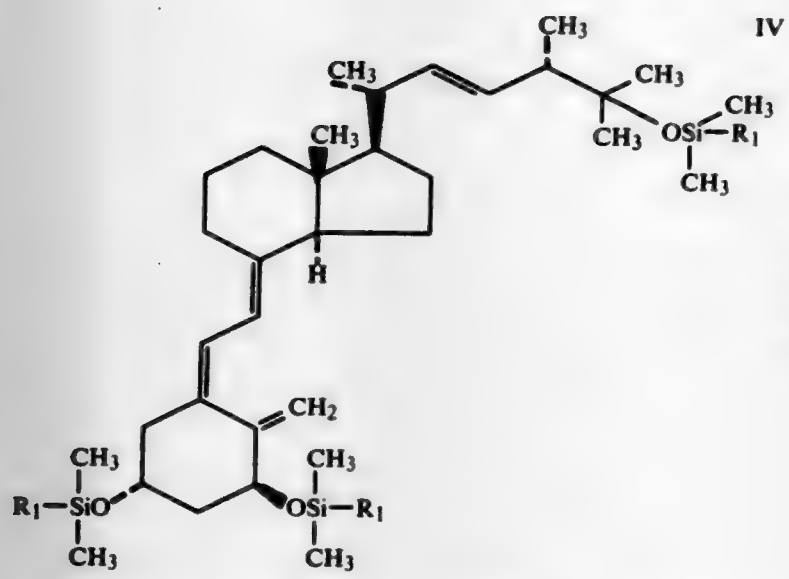


wherein R_1 is lower alkyl, aryl, or ar-lower alkyl, with a compound of the formula

III



wherein R_1 is as previously described to yield a corresponding compound of the formula



IV

wherein R_1 as previously described, and

(b) removing the protecting groups from a compound of formula IV, whereby there is obtained the compound of formula I.

4,508,652

PROCESS FOR THE TRIMERIZATION OF UNSATURATED FATTY ACIDS

Jacob van Dijk, Maassluis; Johannes W. Renken, Gouda; Jan G. Dekker, Rozenburg, and Johannes Helmond, Gouda, all of Netherlands, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,258

Claims priority, application Netherlands, Jun. 25, 1981, 8103066

Int. Cl.³ C08H *3/00, 5/00*

U.S. Cl. 260—407 **9 Claims**

1. A process for the polymerization of C_{14-22} unsaturated fatty acids and C_{1-4} alkyl esters thereof which comprises dissolving 0.5 to 20% by weight of an aliphatic or aromatic monosulfonic acid catalyst in said unsaturated fatty acid/ester and heating at a temperature of at least 120° C.

4,508,653

METHOD FOR PREPARING ACYLOXY STYRENES

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 14, 1983, Ser. No. 474,775

Int. Cl.³ C07F *5/08*; C07C *67/055*

U.S. Cl. 260—410.5 **18 Claims**

1. The oxidation process for preparing acyloxy styrene compounds which comprises contacting at least one substrate member selected from the group consisting of styrene, ethyl, benzene, alpha methyl styrene and cumene with a carboxylic acid and molecular oxygen in the liquid phase at a temperature in the range of from about 100° to 300° C. in the presence of a catalyst composed of palladium or a compound of palladium and a compound of at least one member selected from the group consisting of antimony, lead, cobalt, nickel, iron, copper, zinc, chromium, tin and optionally an alkali metal also compound.

4,508,654

PREPARATION OF BIS-CARBOXY ETHYL GERMANIUM SESQUIOXIDE AND ITS PROPIONIC ACID DERIVATIVES

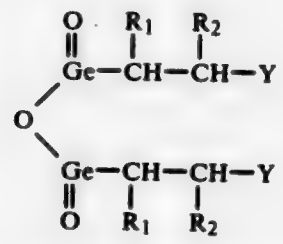
Ching-Te Chang, Taipei; Lian-Tze Lee, Hsinchu, both of Taiwan, and Hsueh-Ling Su, St. Paul, Minn., assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 1, 1982, Ser. No. 344,377

Int. Cl.³ C07F *7/30*

U.S. Cl. 260—429 R **11 Claims**

1. A method of making a bis organic germanium sesquioxide compound of the following formula: (V):



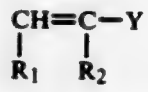
(V)

where R_1 and R_2 are hydrogen or lower alkyl and Y is COOH, COOR (where R is lower alkyl), $CONH_2$ or CN, comprising in combination the steps of:

(a) reducing germanium dioxide with hypophosphorous acid or its salt in an aqueous medium in the presence of hydrochloric acid in a concentration sufficient to form germanous phosphite;

(b) extracting the aqueous solution formed in step (a) with an organic solvent incompatible with water;

(c) reacting the germanous phosphite in the solution obtained from step (b) in an organic solvent with an acrylic compound of the following formula (III):



(III)

where R_1, R_2 and Y are as previously defined to form organo germanyl chlorophosphite derivatives of (III):

(d) evaporating the organic solvent from the solution resulting from step (c); and

(e) hydrolyzing the organo-germanium derivatives in the product of step (d) with water to form a bis organo germanium sesquioxide compound of said formula (V).

4,508,655

METAL COMPLEXES OF HALOGEN-SUBSTITUTED O-BENZENEDITHIOLS

Katsuyoshi Sasagawa, and Masao Imai, both of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

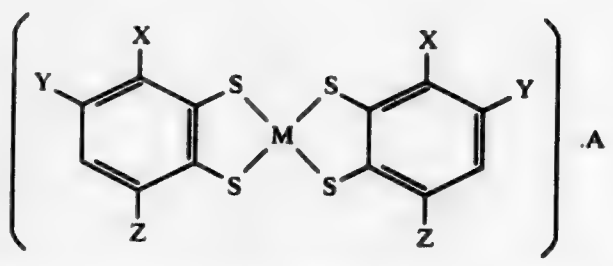
Filed Dec. 9, 1982, Ser. No. 448,331

Claims priority, application Japan, Dec. 16, 1981, 56-201574; Dec. 16, 1981, 56-201575

Int. Cl.³ C07F *15/00, 15/04*

U.S. Cl. 260—429 R **2 Claims**

1. Metal complexes of halogen-substituted o-benzenedithiols of general formula (I):



(I)

wherein X represents a chlorine or bromine atom, Y and Z represent each a hydrogen or chlorine atom when X is a chlo-

rine atom or they represent each a hydrogen or bromine atom when X is a bromine atom, M represents a nickel, palladium or platinum atom, and A represents a quaternary ammonium group selected from the group consisting of tetra-n-butylammonium, tetra-n-propylammonium and trioctylmethylammonium.

4,508,656

PROCESS FOR SYNTHESIZING ALLYL CARBONATES OF POLYHYDRIC ALCOHOLS AND THEIR DERIVATIVES

Ugo Romano, Vimercate, and Giuseppe Iori, San Donato Milanese, both of Italy, assignors to Anic, S.p.A., Palermo, Italy

Continuation of Ser. No. 240,119, Mar. 3, 1981, abandoned. This application May 3, 1982, Ser. No. 374,331
Claims priority, application Italy, Mar. 5, 1980, 20351 A/80
Int. Cl.³ C07C *68/06*
U.S. Cl. 260—463 **8 Claims**

1. A process for the preparation of allyl carbonates consisting essentially of reacting a diallyl carbonate with a polyhydric alcohol selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol, triethyleneglycol, tetraethylene glycol, butanediol, hexanediol and glycerol, the diallyl carbonate and polyol being present in a molar ratio from about 2:1 to about 20:1, said reaction taking place at a temperature of from about 50° C. to about 150° C. in the presence of an alkaline catalyst selected from the group consisting of sodium hydroxide, sodium carbonate, and organic bases, said alkaline catalyst being present in an amount between 0.01 ppm and 1 percent on a weight basis relative to the polyhydric alcohol.

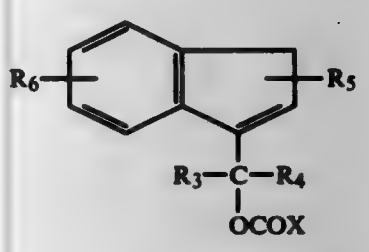
4,508,657

PEPTIDE SYNTHESIS AND AMINO ACID BLOCKING AGENTS

Louis A. Carpino, and Beri Cohen, both of Amherst, Mass., assignors to Research Corporation, New York, N.Y.

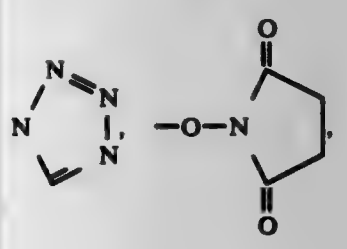
Division of Ser. No. 342,296, Jan. 19, 1982, Pat. No. 4,394,514. This application Apr. 29, 1983, Ser. No. 490,124
Int. Cl.³ C07D *233/66*
U.S. Cl. 260—463 **9 Claims**

1. A compound of the formula

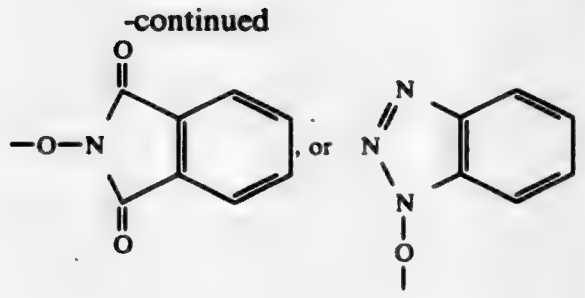


wherein R_3 and R_4 are each hydrogen, alkyl, aryl or aralkyl; R_5 is up to three hydrogen atoms, alkyl, aryl, alkaryl, aralkyl, halogen or nitro; and R_6 is up to four hydrogen atoms, fused phenyl, alkyl, aryl, alkaryl, aralkyl, halogen or nitro; X is —F,—Cl,—Br,—I,—CN,—SR_7,—SAr,—N_3,—OAr,





-continued



an alkyl, aryl, alkaryl or aralkyl group containing up to nine carbon atoms.

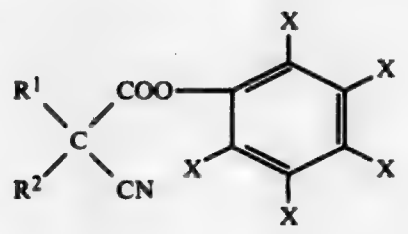
4,508,658

PENTAHALOPHENYL ESTER OF CYANOACETIC ACID DERIVATIVES

Magda Huhn; Gabor Szabo; Peter Dvortsak, all of Budapest; Marianna Karpati, Szeged, and Eva Somfai, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 923,698, Jul. 11, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,380
Claims priority, application Hungary, Jul. 13, 1977, CI 1755
Int. Cl.³ C07C *121/46*
U.S. Cl. 260—465 D **9 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen or C_1 to C_6 alkyl;

R^2 is hydrogen, phenyl, thienyl, furyl, pyridyl, C_1 to C_6 alkyl, furylalkyl where the alkyl is C_1 to C_6, or phenylalkyl where the alkyl is C_1 to C_6; or

R^1 and R^2 together form C_1 to C_4 alkylidene, furyl-C_1 to C_4 alkylidene or phenyl-C_1 to C_4 alkylidene; and X is halo.

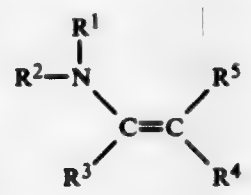
4,508,659

2-CYANO-3-BENZYLAMINO-2-PROPENOATES, USEFUL AS FUNGICIDES

Graham P. Rowson, Gt. Chesterford; Albert Percival, Hauxton, and Philip N. Judson, Linton, all of England, assignors to FBC Limited, Hauxton, England

Filed Feb. 28, 1983, Ser. No. 470,679
Claims priority, application United Kingdom, Mar. 5, 1982, 8206480
Int. Cl.³ C07C *121/52*; A61K *31/275*
U.S. Cl. 260—465 D **4 Claims**

1. A compound of formula I



I

in which

R^1 is methyl;

R^2 is benzyl;

R^3 is hydrogen;

R^4 is cyano and

R^5 is C_{3-5} alkoxycarbonyl.

4. A method of controlling or preventing fungal growth

which comprises applying to a locus infested or liable to be infested by a fungus, a fungicidally effective amount of a compound as claimed in claim 1.

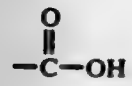
4,508,660

CARBONYLATION OF OLEFINICALLY UNSATURATED NITRILES AND ACIDS USING A SULFONE SOLVENT

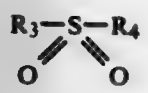
James B. Sieja, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 14, 1983, Ser. No. 475,029
Int. Cl.³ C07C *121/407, 67/38, 51/14*
U.S. Cl. 260—465.4 **11 Claims**

1. A process for cabonylating compounds of the formula R_1A wherein R_1 is selected from a group consisting of alkenyl groups having 3–8 carbon atoms and A is selected from the groups consisting of C≡N and



and mixtures thereof comprising reacting said compounds at a temperature up to 250° C. with carbon monoxide and a compound having the formula R_2OH wherein R_2 is selected from the groups H and alkyl groups having 1–12 carbon atoms in the pressure of a sulfone solvent having the formula



wherein R_3 and R_4 are the same or different and are optionally cojoined and are selected from alkyl groups having 1–8 carbon atoms and when R_3 and R_4 are cojoined aliphatic alkylene groups having 2–4 carbon atoms wherein solvent amounts of a mole ratio of the sulfone to the starting R_1A compound of at least 0.5/1 is employed and said process being carried out in the presence of a cobalt containing carbonylation catalyst.

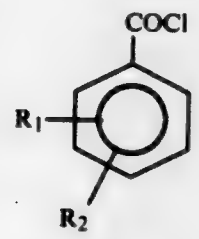
4,508,661

METHOD FOR THE DECOLORIZATION OF AROYL CHLORIDE COMPOSITIONS

Richard H. Chow, Williamsville, and Emil J. Geering, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,237
Int. Cl.³ C07C *51/64*
U.S. Cl. 260—544 D **13 Claims**

1. A method for decolorizing an aroyl chloride of the formula



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, alkyl, and alkoxy, which comprises contacting the aroyl chloride with a polyamide.

4,508,662

PENTAFLUOROTELLURIUMOXIDE FLUOROCARBONS

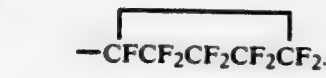
Carl J. Schack, Chatsworth, and Karl O. Christe, Calabasas, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 24, 1983, Ser. No. 478,589
Int. Cl.³ C07C *165/00*
U.S. Cl. 260—550 **15 Claims**

1. A high density, TeF_5O— substituted, fluorocarbon fluid having the following structural formula:

$$TeF_5OR_f$$

wherein R_f is a radical selected from the group consisting of $-CF_2CF_3$; $-CF_2CF_2Cl$; $-CFClCF_3$; $-CF_2CF_2CF_3$; $-CF(CF_3)_2$; $-CF_2CFClCF_3$ and



9. A method for synthesizing a pentafluorotellurim oxide fluorocarbon which comprises the steps of:

(A) cooling an evacuated reaction chamber to a subambient temperature;

(B) successively condensing (1) a pentafluorotellurium hypohalite and (2) an ethylenically unsaturated, abphatic or acyclic, straight or branch-chained fluorocarbon having from 2 to 5 carbon atoms into said cooled reaction chamber;

(C) raising the subambient temperature of said reaction chamber to ambient temperature and maintaining said ambient temperature for a period of time, sufficient to effect a reaction between said hypohalite and said fluorocarbon thereby synthesizing a highly dense reaction product;

(D) fractionally condensing said reaction product successively at a series of temperatures sufficient to produce respectively a (1) less volatile fraction and (2) a more volatile fraction; and

(E) collecting said less volatile fraction as a pentafluorotellurium oxide fluorocarbon reaction product.

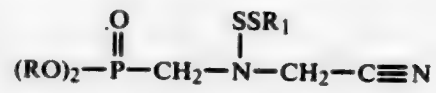
4,508,663

PROCESS FOR PREPARING THIOSULFENAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINONITRILES

James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 309,321, Oct. 5, 1981, Pat. No. 4,407,763.
This application Jul. 18, 1983, Ser. No. 514,403
The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.
Int. Cl.³ C07F *9/32*
U.S. Cl. 260—968 **26 Claims**

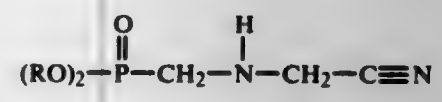
1. A process for preparing a compound of the formula



(I)

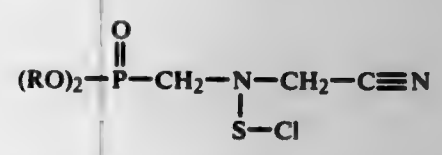
wherein R is selected from the group consisting of phenyl, naphthyl, biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and R_1 is independently alkyl, cycloalkyl, aralower alkyl, phenyl, naphthyl, or phenyl, naphthyl or aralower alkyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl,

lower alkoxy, halogen, and trifluoromethyl which comprises reacting a compound of the formula



(II)

wherein R is as aforedefined with sulfur dichloride in the presence of a hydrogen chloride acceptor to form a compound of the formula



(III)

wherein R is as above defined, and reacting said compound of formula (III) with a compound of the formula

R_1SH (IV)

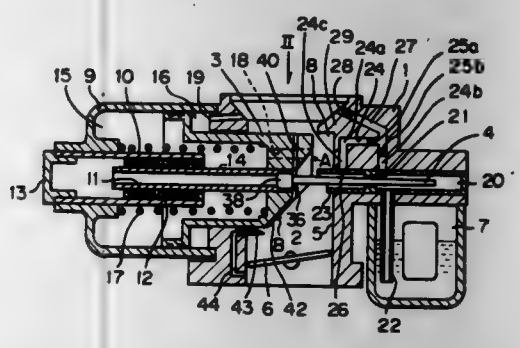
to form said compound of formula (I) wherein R_1 is as aforedefined in the presence of a hydrogen chloride acceptor.

4,508,664

VARIABLE VENTURI-TYPE CARBURETOR

Yoshio Tamura; Takaaki Ito, both of Mishima, and Toshiharu Morino, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisan Industry Co., Ltd., both of, Japan

Filed Oct. 24, 1983, Ser. No. 544,988
Claims priority, application Japan, Mar. 23, 1983, 58-047296
Int. Cl.³ F02M 9/06
U.S. Cl. 261—44 C **7 Claims**



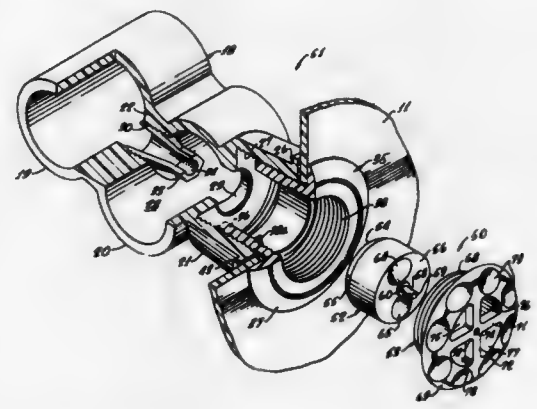
1. A variable venturi-type carburetor comprising:
(a) a substantially vertically and axially extending intake passage formed in said carburetor;
(b) a suction piston substantially horizontally movable in said intake passage in response to a change in the amount of air flowing within said intake passage, said suction piston having a tip face which defines a venturi in said intake passage;
(c) a fuel passage extending substantially horizontally in said carburetor and being open to said intake passage, said fuel passage having a metering jet therein;
(d) a needle extending through said fuel passage and said metering jet and having a root portion which is fixed onto a central portion of the tip face of said suction piston;
(e) the tip face of said suction piston including
(1) an annular groove around the root portion of said needle, said annular groove being defined by a generally planar bottom surface and a circumferential wall spaced from said root; and
(2) a narrow passage extending in the axial direction of said intake passage from an upstream inlet communicating with said annular groove to a downstream outlet at the downstream end of said tip face, the upstream inlet of said narrow passage being defined by a base surface and opposed side walls, said base surface smoothly merging with the bottom surface of said annular groove; and
(f) an air-introduction bore into said suction piston having an inlet port communicating with the inlet passage upstream of said suction piston and an outlet port in said circumferential wall above said needle communicating with said annular groove, said bore at said outlet port being tangent to the plane of said bottom surface.

4,508,665

RETROFIT PULSATOR APPARATUS AND METHOD FOR AN AIR/WATER MIXER OF A SWIMMING POOL, THERAPY TUB, SPA OR THE LIKE

Raymond G. Spinnett, Santa Ana, Calif., assignor to KDI American Products, Inc., North Hollywood, Calif.

Filed Jun. 20, 1983, Ser. No. 505,803
Int. Cl.³ B01F 3/04
U.S. Cl. 261—93 **4 Claims**



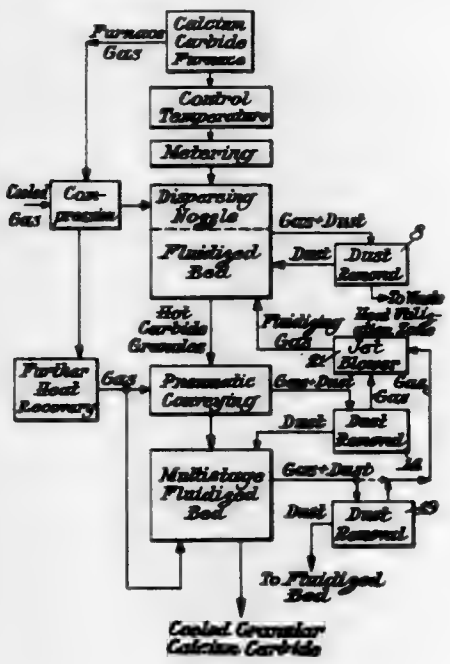
1. For use with a swimming pool, therapy tub, spa or the like having a wall confining a body of water, a pulsating air/water mixer for projecting an air/water mixture through said wall into said body of water below its surface, said pulsating mixer comprising:
(a) a mixer body having:
(1) an air/water mixing chamber,
(2) an air/water mixture outlet passage communicating with said mixing chamber and opening outwardly through said mixer body,
(3) water input means for projecting an increased velocity water stream through said mixing chamber, whereby air in said chamber is mixed with said water stream to form an air/water mixture stream, and whereby said air/water mixture stream is projected outwardly through said mixture outlet passage, and
(4) an input means for flowing air into said mixing chamber for mixture with said water stream; and
(b) means for repetitively and intermittently blocking said projected air/water mixture stream to cause a pulsation therein, said blocking means comprising a cross bar fixed to and extending across an outer end of said mixture passage, at a portion adapted to be immersed in said body of water, and a rotor journalled in said cross bar, said rotor having an offset dog-leg passage therethrough for flowing said air/water mixture stream toward said cross bar and for rotating said rotor, said dog-leg passage having an upstream end that circumscribes the axis of said rotor.

4,508,666

PROCESS FOR COOLING AND COMMINUTING MOLTEN CALCIUM CARBIDE

Wilhelm F. Pietzarka; Albrecht Malten, both of Dortmund, and Georg Strauss, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 262,338, May 11, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 478,893
Claims priority, application Fed. Rep. of Germany, May 17, 1980, 3018921
Int. Cl.[3] B29C *23/00*
U.S. Cl. 264—12 4 Claims



1. A process for cooling and comminuting of molten calcium carbide to recover relatively cool particulate solid calcium carbide, said process comprising:

(a) tapping off from a calcium carbide furnace a molten stream of molten calcium carbide, which stream is at a temperature of 1900° to 2100° C., and directing the molten stream to a dispersing zone, the dispersing zone including a dispersing nozzle; said calcium carbide furnace being a furnace which produces a furnace gas substantially inert toward calcium carbide;

(b) compressing the furnace gas produced by the calcium carbide furnace to obtain a pressurized flow of furnace gas, and utilizing pressurized flowing furnace gas in subsequent steps of the process;

(c) dispersing the molten stream in the dispersing zone with the air of the nozzle and pressurized flowing furnace gas, thereby comminuting the molten stream to form droplets of molten calcium carbide;

(d) cooling and solidifying the droplets of calcium carbide to a temperature of about 500° to 600° C. in a first fluidized bed cooling zone comprising the comminuted calcium carbide fluidized by said pressurized flowing furnace gas;

(e) with the aid of pressurized flowing furnace gas, conveying the thus-solified calcium carbide in the form of solid particles to a second fluidized bed cooling zone comprising particles of calcium carbide fluidized by pressurized flowing furnace gas and cooling the particles of calcium carbide to below 200° C. during a calcium carbide particle residence time of less than one hour in the first and second cooling zones;

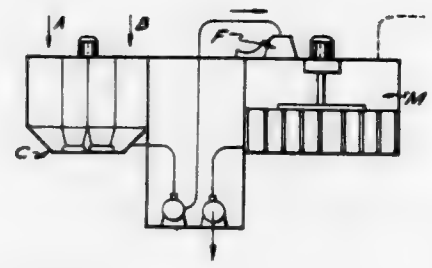
(f) conveying the further-cooled calcium carbide particles from the second cooling zone at the end of said residence time and recovering cooled calcium carbide particles, said particles being in the form of granules; and (g) recycling at least a portion of the pressurized flowing furnace gas flowing from the fluidized beds for reuse in the process.

4,508,667

MANUFACTURE OF HIGHLY POROUS REFRACTORY MATERIAL

Alwyn Elliott, Tollesbury, England, assignor to Moler Products Limited, Colchester, England

Filed Sep. 29, 1982, Ser. No. 426,901
Claims priority, application United Kingdom, Mar. 2, 1982, 8206054
Int. Cl.[3] B01J *2/02*
U.S. Cl. 264—13 6 Claims



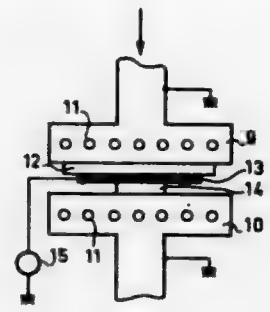
1. A method of making a highly porous refractory material, the method including the steps of making a slurry of the raw material of argillaceous or, feeding the slurry into a spray drier to produce particles having a desired particle size range, subsequently feeding the particles into the hot zone of a furnace chamber and into contact with a gaseous medium therein which gaseous medium is discharged from said furnace chamber as flue gas, and subjecting the particles and the gaseous medium to a violent movement within the furnace chamber to cause said particles to impinge one against another and against surfaces in the hot zone of the furnace chamber, the burning of the gaseous medium producing a temperature high enough to bring the moving particles to a pyro-plastic condition to cause said impinging particles to adhere indiscriminately to one another and to surfaces of the furnace chamber to form agglomerate masses thereon, until such masses become large enough to overcome their adherence to said surfaces and fall into a cooler zone from where they are removed in burned and hardened condition, said desired particle size range being such that the loss of material due to entrainment is the flue gas in approximately 10 percent or less.

4,508,668

METHOD OF FABRICATION OF PIEZOELECTRIC POLYMER TRANSDUCERS BY FORGING

Dominique Broussoux; Hugues Facoetti, and Francois Micheron, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 18, 1983, Ser. No. 467,887
Claims priority, application France, Feb. 22, 1982, 82 02876
Int. Cl.[3] B29D *7/24;* H01G *7/02*
U.S. Cl. 264—22 10 Claims



1. A method of fabrication of a wafer of piezoelectric polymeric material which has uniform piezoelectric properties with respect to one axis when they are measured with respect to said axis, said wafer being obtained from at least one preform by increasing its transverse dimensions and by electric polarization by means of a field directed at right angles to its faces, wherein the elongation results from compression of said pre-

form between two pressure plates having rigid faces continuously contacting said film during compressing, so that the distance between the ends of said film is increased, the variations in relative spacing of the plates being the same at an equal distance from an axis of compression.

4,508,669

PROCESS AND APPARATUS FOR PRODUCING THERMOPLASTIC RESIN FOAM

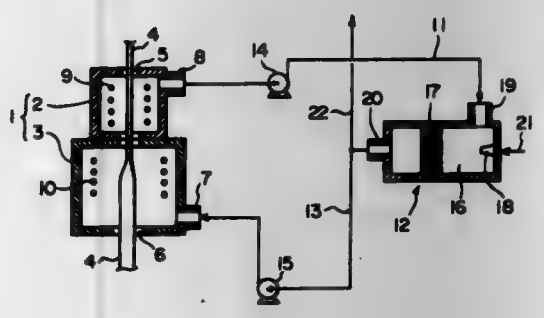
Noboru Iwai, Osaka; Masanori Hirunuma, Kazo, and Junichi Kaneko, Hasuda, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 25, 1984, Ser. No. 604,316

Claims priority, application Japan, Apr. 27, 1983, 58-75393

Int. Cl.³ B29H *5/06*

U.S. Cl. 264—36 **6 Claims**



1. In a process for producing a thermoplastic resin foam which comprises continuously heat-foaming a foamable thermoplastic resin sheet containing a heat-decomposable organic blowing agent with a heated gas, the improvement wherein a gas containing sublimation products generated by the heat-foaming of the foamable sheet is burned to decompose the sublimation products and obtain a treated gas having a substantially reduced content of the sublimation products, and the treated gas is then used as the heated gas for the heat-foaming of the foamable sheet.

4,508,670

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE IN THERMOFORMING MACHINES

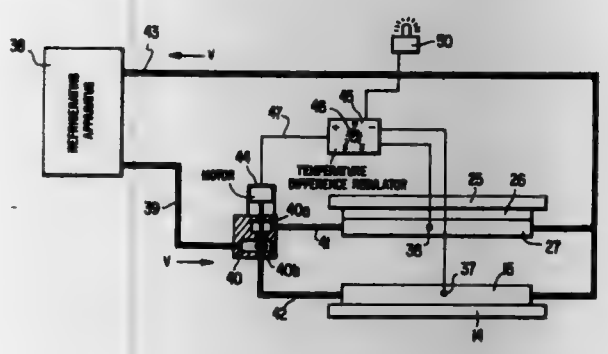
Jürgen Janke, Heilbronn, Fed. Rep. of Germany, assignor to Adolf Illig Maschinenbau GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,342

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135206

Int. Cl.³ B29C *17/03, 17/04*

U.S. Cl. 264—40.6 **5 Claims**



1. A method of controlling the temperature of upper and lower parts of a forming tool making deep-drawn thermoplastic articles, comprising the following steps:

(a) passing a coolant of predetermined total volume through the upper part and the lower part of the forming tool;

(b) measuring the temperature of said upper and lower parts;

(c) determining the actual temperature difference between said upper and lower parts;

(d) comparing the actual temperature difference with a predetermined desired temperature difference;

(e) generating a signal representing the magnitude of deviation between said actual and desired temperature differences; and

(f) applying said signal to a distributor valve connected to conduits passing through said upper and lower parts, thereby increasing the volume of coolant passing through one of said upper and lower parts and decreasing the volume of coolant passing through the other of said upper and lower parts for reducing said magnitude of deviation while maintaining said total volume unchanged; and further comprising the steps of applying the temperatures measured in step (b) to, and setting said desired temperature difference in, a temperature difference regulator; said steps (c), (d) and (e) being performed in said temperature difference regulator.

3. An apparatus for controlling the temperature of an upper and a lower part of a forming tool making deep-drawn thermoplastic articles, comprising

(a) a first conduit means passing through said upper part of said forming tool for introducing coolant into and withdrawing coolant from said upper part;

(b) a second conduit means passing through said lower part of said forming tool for introducing coolant into and withdrawing coolant from said lower part;

(c) a distributor valve having a first coolant port, a second coolant port coupled to said first conduit means and a third coolant port coupled to said second conduit mant port, a second coolant port coupled to said first conduit means and a third coolant port coupled to said second conduit means, a movable distributing means for increasing the quantity of coolant delivered through one of the second and third coolant ports and simultaneously decreasing the quantity of coolant delivered through the other of the second and third coolant ports while maintaining the sum of the quantity of coolant flowing through said first and second conduit means and the respective second and third coolant ports of said distributor valve unchanged;

(d) first and second temperature sensors responding to the temperature of said upper and lower parts, respectively, and emitting first and second signals representing, respectively, the temperature of said upper and lower parts; and

(e) a temperature difference regulator operatively connected to said first and second temperature sensors for receiving said first and second signals for determining the actual temperature difference between said upper and lower parts, for comparing the actual temperature difference with a desired temperature difference and for generating a third signal representing the magnitude of deviation between the actual and desired temperature differences; said temperature difference regulator being further operatively connected to said distributor valve for applying said third signal to said distributor valve for varying the position of said movable distributing means to reduce said magnitude of deviation.

4,508,671

METHOD OF MAKING AN ANISOTROPIC SILICON NITRIDE COMPRISING OBJECT BY USE OF HIGHER DENSITY AND FULLY REACTED PREFORMS

Andre Ezis, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/01113, § 371 Date Jul. 19, 1983, § 102(e) Date Jul. 19, 1983

PCT Filed Jul. 19, 1983, Ser. No. 525,498

Int. Cl.³ C04B *35/58*

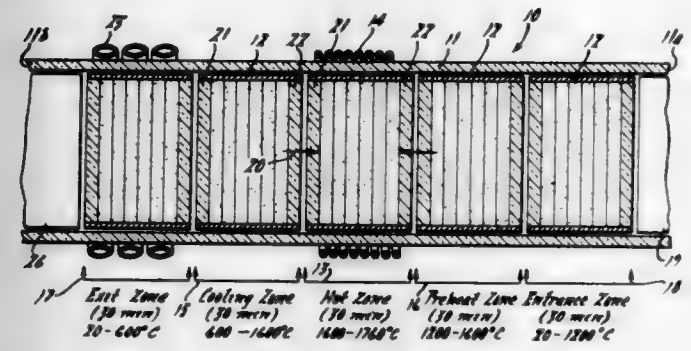
U.S. Cl. 264—58 **13 Claims**

1. A method of densifying a silicon nitride comprising com-

pact having 5–17% by weight yttrium silicon oxynitride and having a density of 2.0–2.6 gm/cm^3, comprising the steps of:

(a) partially sintering said compact at a temperature of 3000°–3200° F. for a period of 0.5–72 hours to form a semidense body with a density of 2.9–3.15 gm/cm^3; and

(b) sequentially hot pressing a stacked assembly of said



bodies by sliding said bodies through the hot zone of a hot pressing cavity during hot pressing cycle at a temperature and pressure to form fully dense anistropic products, each body being separated from the other within the assembly during such sliding by a distance no greater than 0.030 inch, said stacked assembly occupying substantially the entire length of the hot zone of said hot pressing cavity.

4,508,672

CONTINUOUS DRY-SPINNING PROCESS FOR HIGHLY SHRINKABLE ACRYLONITRILE FILAMENTS AND FIBERS

Ulrich Reinehr; Toni Herbertz, and Hermann-Josef Jungverdorben, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,542

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225268

Int. Cl.^{3} D01D *5/22*; D01F *6/18*

U.S. Cl. 264—78 **8 Claims**

1. A process for preparing a highly shrinkable filament or fiber made of an acrylonitrile copolymer containing at least 40% by weight of acrylonitrile units which consists essentially of:

(A) continuously dry-spinning a spinning solution of an acrylonitrile copolymer containing at least 40% by weight of acrylonitrile units which spinning solution has a viscosity at 100° C. of 10 to 60 falling-ball seconds;

(B) continuously evaporating solvent in the spinning cell through which said spinning solution passes in such a way that on leaving the spinning cell the solvent content of the resultant filaments is at most 10% by weight, relative to the solids content of the fiber or filament;

(C) continuously applying to fiber or filament as spun a lubricant and an anti-static composition while maintaining the moisture content of the filaments or fibers at at most 10% by weight, relative to the solids content of the fiber or filament;

(D) continuously stretching the resultant fibers or filaments at a stretching temperature of 65 to 100° C. at a stretching ratio of at most 1:3.5 while insuring that before or during the stretching the filaments have no contact with any other extraction liquid for the spinning solvent; and

(E) continuously crimping the resultant so stretched filaments.

4,508,673

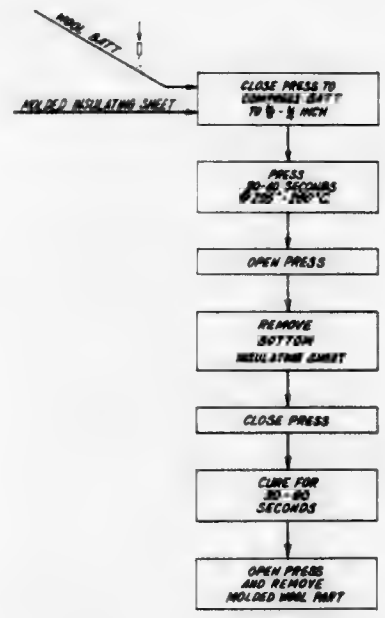
MOLDING OF GLASS WOOL WITH WRINKLE-FREE SURFACE

Steven B. Stahl, Granville; Shiv K. Bakhshi, Columbus, and George M. Naul, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 432,575, Oct. 4, 1982, abandoned. This application May 4, 1984, Ser. No. 606,859

Int. Cl.^{3} B29G *1/00*

U.S. Cl. 264—120 **8 Claims**



1. A process of molding a wool batt comprising mineral or glass wool with uncured thermosettable binder to produce a molded mineral or glass wool part with a wrinkle-free surface, said process comprising subjecting the wool batt to an initial molding step between heated molds after moistening the surface which is to be wrinkle-free, said initial molding step being carried out with an insulating sheet on the side of the wool batt opposite the moistened surface and resulting in a partially cured wrinkle-free skin at the surface which was moistened, and subjecting the wool batt to a second molding step between heated molds without the insulating sheet to cure the wool batt throughout its thickness.

4,508,674

PROCESS FOR THE PRODUCTION OF A POLYESTER FIBER DYEABLE UNDER NORMAL PRESSURE

Tomio Kuriki, Katano, and Seiichi Manabe, Ibaraki, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 363,628, Mar. 30, 1982, Pat. No. 4,426,516. This application Sep. 16, 1983, Ser. No. 519,393

Claims priority, application Japan, Mar. 31, 1981, 56-46407; Mar. 31, 1981, 56-46408; May 14, 1981, 56-71358; May 14, 1981, 56-71360

Int. Cl.^{3} D01D *5/12*

U.S. Cl. 264—234 **15 Claims**

1. A process for producing a fiber not undergoing false twisting and consisting essentially of polyethylene terephthalate capable of being dyed under normal pressure and having an initial modulus at 30° C. of about 55 g/d to about 130 g/d, a relationship between a peak temperature (T_{max} (°C.)) at the peak of a dynamic mechanical loss tangent (tan δ) measured with a frequency of 110 Hz and a peak value of the dynamic mechanical loss tangent ((tan $\delta)_{max}$) represented by the formula:

$$(\tan\delta)_{max} \geqq 1\times10^{-2}(T_{max}-105)$$

and a (tan $\delta)_{max}$ of about 0.14 to about 0.30, a dynamic mechanical loss tangent at 220° C. (tan δ_{220}) of at most about 0.055, and a T_{max} (°C.) of at most about 105° C., which comprises subject-

ing a polyethylene terephthalate fiber obtained at a spinning speed of at least about 4000 m/min. to heat treatment at a temperature ranging from a temperature at which a dynamic modulus (E') of the fiber deviates from a tangent line at 180° C. of a logarithm of the E' of the fiber-temperature curve (T_{min}) plus 10° C. to a temperature of completion of melting (T_{m3}) at a melting curve of the fiber measured by a differential scanning calorimeter (DSC) plus 10° C.

4,508,675

NYLON COMPOSITION FOR USE IN ROTATIONAL MOLDING

Peter P. Salatiello, Morris Plains; Frank Petrucelli, Boonton, and Paul W. Flood, Lake Hopatcong, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 256,887, Apr. 24, 1981, abandoned. This application Feb. 8, 1983, Ser. No. 464,836

Int. Cl.³ B29C *5/04*

U.S. Cl. 264—310 **14 Claims**

1. A method of rotationally molding a polyamide article in a rotational molding mold comprising the steps of:

feeding an unwashed polyepsiloncaprolactam composition to the cavity of the rotational mold, wherein the composition comprises polyepsiloncaprolactam, from about 0.001 percent to about 0.5 percent, by weight of the polyepsiloncaprolactam, of a copper compound, and from about 0.001 percent to about 0.3 percent by weight potassium iodide; and

rotationally molding the polyepsiloncaprolactam composition.

4,508,676

CORE STABILIZATION BY SEQUENTIAL INJECTIONS

Jens O. Sorensen, P.O. Box 2274, Rancho Santa Fe, Calif. 92067

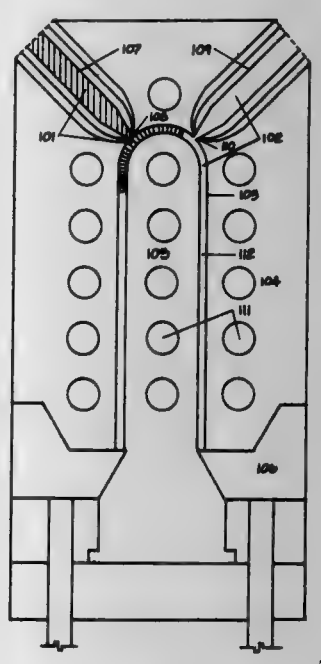
Continuation-in-part of Ser. No. 230,302, Jan. 30, 1981, Pat. No. 4,381,275. This application Mar. 4, 1983, Ser. No. 472,125

Claims priority, application United Kingdom, Jul. 29, 1982, 8221909

The portion of the term of this patent subsequent to Apr. 26, 2000, has been disclaimed.

Int. Cl.³ B29F *1/00*

U.S. Cl. 264—328.8 **25 Claims**



1. A method for controlling the dimensions of a hollow plastics product injection molded within the cooling cavity of a mold having a core section and a cavity section defining the cooling cavity therebetween and separated by a parting line comprising stabilizing the core section in the cooling cavity and being characterized by the steps of:

(a) injecting a first plastics material into the cooling cavity so that only a part of the cooling cavity is filled and so that the injected first plastics material does not completely cover the parting line;

(b) cooling the injected first plastics material in the cooling cavity;

(c) injecting subsequent to injecting the first plastics material a second plastics material into the cooling cavity so that the cooled injected first plastics material in said part of the cooling cavity stabilizes the core section by impeding movement of the core section caused by injecting the second plastics material and whereby the injected second plastics material fills the cooling cavity to thereby completely cover the parting line and fuses with the cooled previously injected plastics material;

(d) cooling the injected plastics material in the cooling cavity to thereby solidify the fused unit; and

(e) ejecting the solidified molded unit.

4,508,677

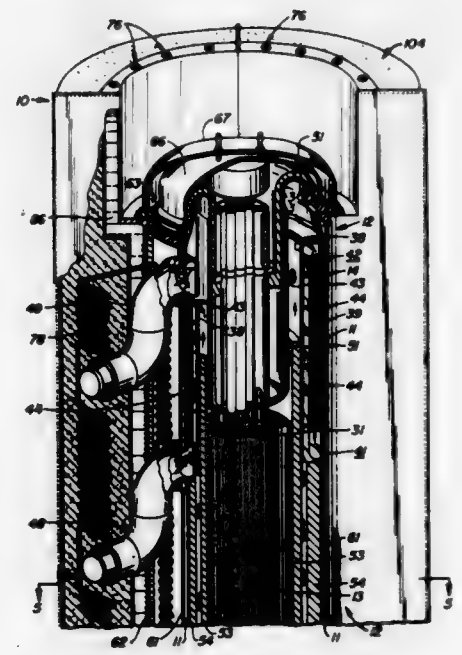
MODULAR NUCLEAR REACTOR FOR A LAND-BASED POWER PLANT AND METHOD FOR THE FABRICATION, INSTALLATION AND OPERATION THEREOF

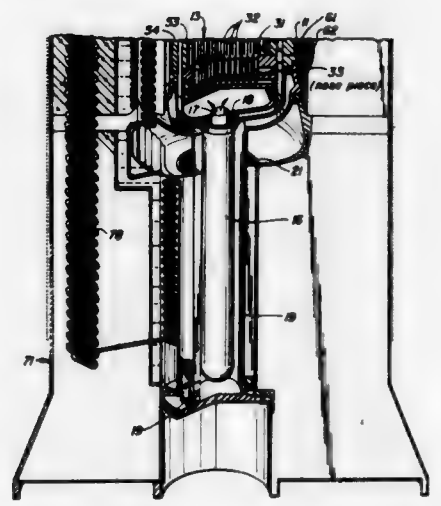
Edwin R. Craig, and Ben Blumberg, Jr., both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 9, 1983, Ser. No. 465,309

Int. Cl.³ G21C *1/32, 13/02*

U.S. Cl. 376—174 **19 Claims**





1. A transportable prefabricated fast-breeder nuclear heat supply module for shipment to and erection at an electric-power generating facility comprising:

a primary vessel having a removable recessed head including a cylindrical wall;

an outer vessel surrounding said primary vessel and close-coupled thereto to define an interstitial region therebetween, said outer vessel having a removable head and having dimensions sized for shipment on a railroad car;

a fast-breeder reactor core unit mounted within said primary vessel, said reactor core unit including a plurality of control rods;

a heat exchanger of cylindrical annular shape mounted within said primary vessel and having an outer cylindrical wall in common with said primary vessel, said heat exchanger having an inlet and an outlet for secondary coolant;

inlet means and outlet means communicating through said outer and primary vessels with said heat-exchanger inlet and outlet, respectively, said inlet means and said outlet means being adapted for connection to a secondary cooling system;

a pump mounted within said primary vessel underneath the reactor core unit for pumping a primary coolant upwardly through said reactor core unit and said heat exchanger;

first means defining an inlet plenum positioned intermediate the pump and the overlying reactor core, said pump and said reactor core unit communicating directly with said intermediate inlet plenum to define a direct upward primary coolant flow path from said pump to said reactor core unit;

second means defining a primary coolant flow path from said reactor core unit to said heat exchanger including an inner cylindrical wall of said heat exchanger and said cylindrical wall of said recessed head, whereby said heat exchanger serves to isolate said primary coolant from said primary vessel to reduce thermal stress in said primary vessel, said heat exchanger providing a downward flow path for said primary coolant in counterflow to a secondary coolant, and third means defining a primary coolant flow path from said heat exchanger to an inlet of said pump mounted underneath the reactor core, said third means including a first shielding member surrounding said reactor core unit and extending upward therefrom thereby to shield said heat exchanger from said reactor core unit, and a second shielding member interiorly lining a portion of said primary vessel, said second means and said third means being devoid of piping; and

a control rod drive unit mounted within the recess defined by said recessed head and operatively connected through the bottom of said recessed head to said control rods;

whereby primary coolant will be contained entirely within said primary vessel and said nuclear heat supply module will be in fluid communication with the balance of said electric-power generating facility only through said secondary coolant inlet means and outlet means.

13. A segmented shell for assembly about a nuclear heat supply module comprising:

a nuclear heat supply module having an outer wall;

a plurality of shell segments adapted to be joined to one another in surrounding relation to said nuclear heat supply module, the joined shell segments defining an inner wall immediately adjacent the outer wall of said nuclear heat supply module, an outer wall spaced apart from said inner wall and an intermediate wall spaced apart from said inner and outer walls to define therebetween an inner interstitial region providing a water jacket and an outer interstitial region for receiving a cementatious material;

a plurality of heat exchange loops secured to said segments, each loop having an inner branch defining a first heat exchange area disposed at the inner wall of the shell segments for placement intimate to the outer wall of said heat supply module and an outer branch defining a second heat exchange area disposed at the outer surface of said segmented shell outer wall;

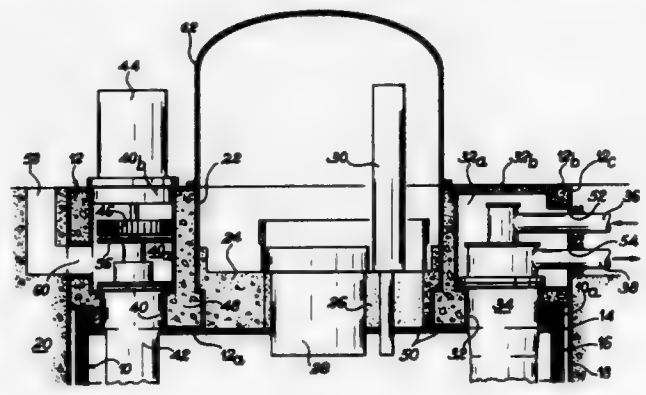
whereby said segmented shell when assembled about said heat supply module provides a form for the pouring and curing of a biological shield of cementatious material and said heat exchange loops provide an emergency heat removal system.

4,508,678

LIQUID METAL-COOLED NUCLEAR REACTOR

Didier Costes, Meudon, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 7, 1982, Ser. No. 337,746
Claims priority, application France, Jan. 20, 1981, 81 00963
Int. Cl.³ G21C *11/00, 13/06*
U.S. Cl. 376—205
2 Claims

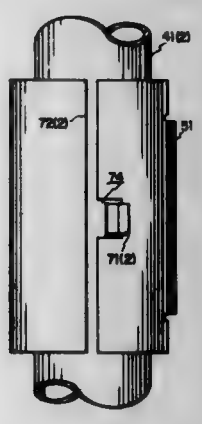


1. A liquid metal-cooled nuclear reactor comprising a vessel containing a liquid metal in which the reactor core is to be immersed, said vessel being sealed by a structurally uniform and rigid slab having a thickness greater than the height of the pump structure and heat exchanger structure which are housed in said slab, said slab having a central opening in which is located at least one rotary plug overhanging said reactor core and peripheral openings arranged in the form of a ring around said central opening, at least one pump being suspended in one of said peripheral openings and at least one heat exchanger being suspended in another of said peripheral openings, both of said at least one pump and said at least one heat exchanger being positioned in said liquid metal and wherein at least one of said peripheral openings through which is suspended said heat exchanger comprises a first housing contained within said rigid slab so as to confine the heat exchanger head, said first housing being sealed by a cover located above the heat exchanger head; wherein one of the said peripheral openings through which is suspended said pump comprises a second housing contained within the rigid slab so as to confine the upper part of said pump including the pump head, at least one part of a vertical drive shaft connecting said pump to a motor and a flywheel carried by said shaft, said second housing being sealed by a cover positioned above the pump head and below the pump motor; wherein said first housing extends radially outwardly of the slab through a wall sealingly connected to the slab in such a way that said first housing provides a passage for the pipes of a secondary cooling circuit of the heat exchanger, said pipes extending from said heat exchanger and traversing said wall; wherein said second housing is extended radially outwardly into said slab so as to form a large horizontal passageway, said horizontal passageway being connected to a vertical passageway which extends only from said horizontal passageway to the top of said slab; wherein the thick slab contains another housing for handling fuel, said other housing being connected to the interior of the vessel and to a fuel handling installation by two transfer devices; wherein said rotary plug is covered by a detachable cover fixed to the slab; and wherein the thick slab has a rigid structure formed from steel sheets for constituting recesses and wherein each recess is provided in its floor with a lining of neutron-absorbing material.

4,508,679
NUCLEAR FUEL ASSEMBLY SPACER

Bruce Matzner; Victor M. Horn; Michael V. Curulla, all of San Jose, Calif., and John F. Price, Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 20, 1982, Ser. No. 410,124
Int. Cl.³ G21C *3/34*
U.S. Cl. 376—438 9 Claims

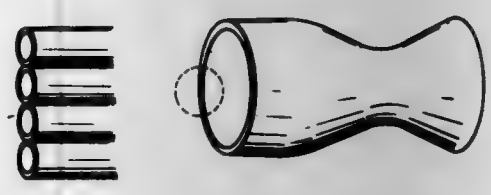


3. A fuel assembly for a nuclear reactor comprising a plurality of elongated elements positioned in spaced array between upper and lower tie plates, at least one spacer positioned intermediate said upper and lower tie plates to provide lateral support for said elements, said spacer comprising a plurality of laterally positioned, conjoined tubular ferrules each providing a passage for a respective one of said elements, a selected one of said elements being fitted with a laterally extending lug, the ferrule providing a passage for said selected one of said elements being formed with a vertical slot to provide a passage through said ferrule for said laterally extending lug, a lateral cutout in ferrule wall adjacent said slot for receiving said lug when it is inserted into said slot and said selected one of said elements is rotated to move said lug into said cutout, and antirotation means to prevent subsequent rotation of said one of said elements whereby engagement of said lug in said cutout retains said spacer in its position intermediate said upper and lower tie plates.

4,508,680
METHOD OF MANUFACTURING A ROCKET COMBUSTION CHAMBER

Masayuki Niino, Sendai; Nobuyuki Yatsuyanagi, Shibata; Akinaga Kumakawa, Souma; Akio Suzuki, Shibata; Hiromi Gomi, Shibata; Hiroshi Sakamoto, Shibata; Masaki Sasaki, Shibata; Yoshimichi Masuda, Sendai; Ryuzo Watanabe, Sendai; Junjiro Takekawa, Sendai; Etsuo Ohtsuki, Sendai, and Terashi Isago, Shibata, all of Japan, assignors to National Aerospace Laboratory of Science and Technology Agency, Tokyo, Japan

Filed Jun. 1, 1983, Ser. No. 500,018
Claims priority, application Japan, Jun. 8, 1982, 57-98355
Int. Cl.³ B22F *7/00*
U.S. Cl. 419—5 9 Claims



1. A method for manufacturing the cooling wall of a rocket combustion chamber, comprising the steps of:

making an inner cylinder of a metallic material formed with grooves in the exterior surface thereof;

filling up the grooves of said inner cylinder with a filler;

compression-molding an outer cylinder on the inner cylinder by uniformly compressing metallic material powder of a predetermined thickness against the entire outermost surface of the inner cylinder having its grooves filled up with the filler;

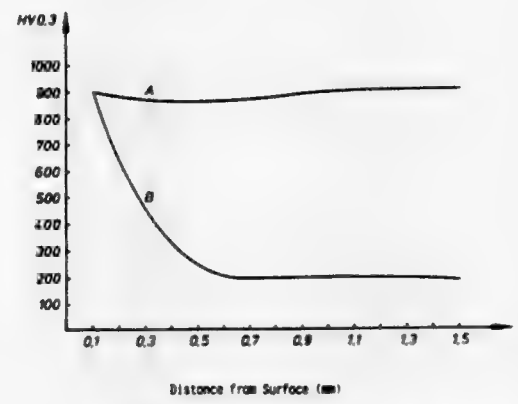
removing the filler from the grooves of said inner cylinder, whereby the grooves remain as empty cooling channels; and

sintering the compression-molded powder to join the sintered outer cylinder material to the inner cylinder material and to form integral inner and outer cylinders with cooling channels therebetween.

4,508,681
METHOD OF MAKING SURFACE-HARDENED SINTER-IRON PART

Werner Bodden, and Winfried Diegelmann, both of Heuchelheim, Fed. Rep. of Germany, assignors to Schunk & Ebe GmbH, Postfach, Fed. Rep. of Germany

Continuation of Ser. No. 301,238, Sep. 11, 1984, abandoned. This application Dec. 21, 1983, Ser. No. 564,350
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035772
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—29 5 Claims



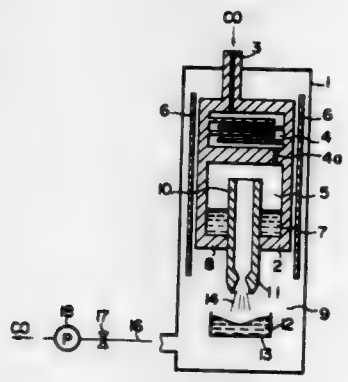
1. Method of making a surface-hardened sinter-iron part, comprising the steps of: producing a sinter-iron part by powder-metallurgy; impregnating the sinter-iron part with an alkali-silicate-solution; flushing off the alkali-silicate-solution adhering to the surface of the sinter-iron part; drying the impregnated sinter-iron part; and subjecting the sinter-iron part to a heat treatment for hardening said iron part; said impregnating step before said heat treatment step protecting said part against corrosion and producing an exclusively hardened surface of said part, said part after said heat treatment step having a predetermined depth of hardening independent of space filling and sinter density of the part, said part being resistant to gas penetration at elevated temperatures, said part having pores with upper surface closed by a substantially thin layer produced by said impregnating step so that a substantial residual porosity remains in said part for allowing fluids to stream freely through said part; said substantially thin layer being a glass-like protective layer located over walls of said pores to prevent gas from penetrating into metallic structure of said part; only exterior surfaces of said part which are free from silicate due to said flushing step becoming hardened; said impregnating step with said silicate solution preventing full-depth hardening throughout the part without filling said pores; said part being able to receive and retain substantial fluid for functioning as a porous sintered bearing part.

4,508,682

METHOD FOR MAKING COMPOSITE MATERIAL INCLUDING MATRIX METAL AND METAL CORED CERAMIC SURFACED FINE POWDER MATERIAL

Hirohisa Miura; Hiroshi Satou; Toshio Natsume, and Hidenori Katagiri, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 1, 1983, Ser. No. 481,466
Claims priority, application Japan, Apr. 2, 1982, 57-054874
Int. Cl.³ B22F *9/00*; C22C *23/00*
U.S. Cl. 420—590
14 Claims



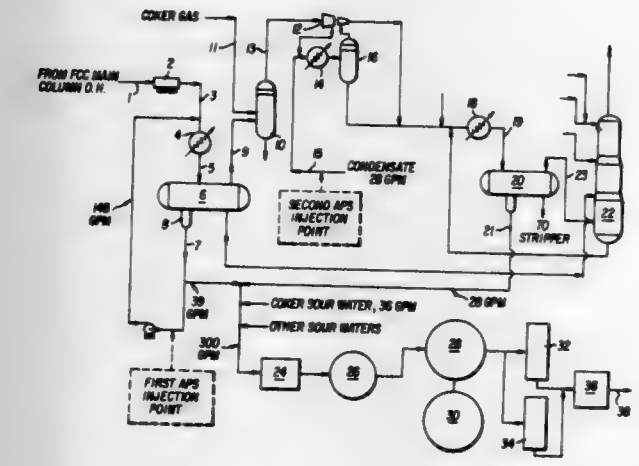
1. A method of making a composite material composed of fine powder particles embedded in matrix metal, each of the particles having a metallic core and a ceramic surface layer which is a compound of the metal composing said core and another element, the average value of the ratio of the thickness of the surface layer of a powder particle to the radius of the particle being substantially greater than 0.05, wherein said core metal in a gaseous form is mixed with said another element in the gaseous state, the resulting mixture being then passed through a convergent-divergent nozzle and being thereby rapidly cooled by adiabatic expansion, and blowing as a jet against the free surface of a molten mass of said matrix metal.

4,508,683

CONTROL OF CYANIDES IN FCC REACTOR BY INJECTION OF AMMONIUM POLYSULFIDE

Brian E. Doll, 1020 Central Ave., Ocean City, N.J. 08226, and Patrick G. Smyth, 726 Bayview Dr., Hermosa Beach, Calif. 90254

Continuation of Ser. No. 357,955, Mar. 15, 1982, abandoned.
This application Nov. 10, 1983, Ser. No. 550,515
Int. Cl.³ C23F *11/06*
U.S. Cl. 422—7
16 Claims



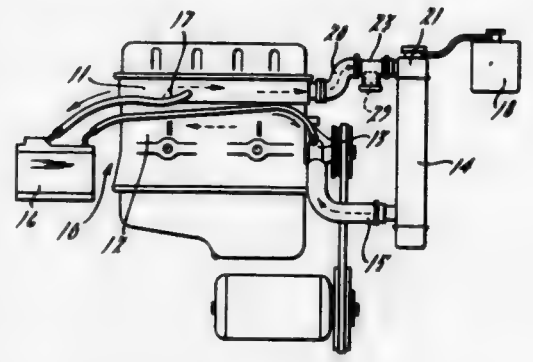
1. In a method of controlling the concentration of cyanides in the sour water system of a fluid catalytic cracking (FCC) reactor comprising injecting a solution of ammonium polysulfide (APS) into the water system of the reactor, the improvement wherein the solution of ammonium polysulfide is injected at the point in the sour water system wherein the concentration of cyanides complexed with metals is less than 125 ppm, thereby promoting the conversion of a large proportion of simple cyanides to thiocyanates and substantially preventing the formation of complex cyanides in excess of the amount thereof present at the point of injection.

4,508,684

PROTECTION OF ALUMINUM BASED STRUCTURES AGAINST HEAT TRANSFER CORROSION IN COOLING SYSTEMS

John Huff, Detroit; Ronald R. Wiggle, Dearborn, both of Mich., and Vladimir Hospadaruk, Clearwater, Fla., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 8, 1981, Ser. No. 300,367
Int. Cl.³ C23F *11/00*
U.S. Cl. 422—8
24 Claims



1. A method of protecting heated aluminum based metals subject to heat transfer through the metal to a circulating aqueous cooling solution in contact therewith, comprising:

(a) exposing said heated metal to an initially constituted cooling solution comprised of an aqueous solution having dissolved therein a first substance effective to retard heat transfer corrosion of said metal, said first substance consisting of alkali metal silicate of the formula $M_2O.(SiO_2)_n$, where M is the alkali metal and n is 1.0 or greater in a concentration of at least 0.2 gram per liter after adjustment for any precipitation of said silicate on the walls of said metal;

(b) continuously or interruptedly exposing said initially constituted solution to an alkali metal silicate glass causing said glass to progressively dissolve in an amount to continuously stabilize the silicate concentration in solution at a level of at least 0.1 gram per liter of solution to and thereby to continuously substantially inhibit heat transfer corrosion of said metal.

19. An apparatus for a cooling system through which a fluid is positively circulated, comprising:

(a) walls defining cooling channels having a heat absorption zone and a heat release zone, said walls being comprised at least in part of aluminum;

(b) a conduit interconnecting said heat absorption and heat release zones;

(c) a coupling interposed in said conduit, said coupling having a chamber communicating with the interior of said conduit and exposed to the fluid passing therethrough; and

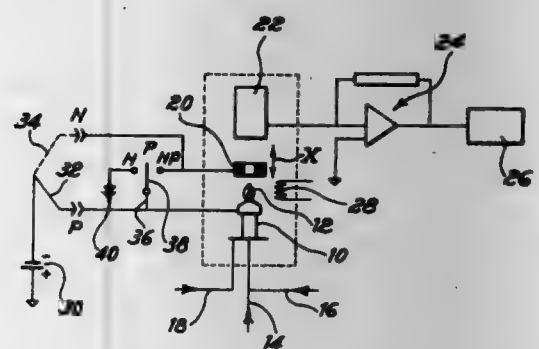
(d) a solid glass silicate body nested in said chamber for exposure to the moving cooling fluid.

4,508,685

MODIFIED-FLAME THERMIONIC DETECTOR FOR GAS CHROMATOGRAPHS AND METHOD FOR THE IDENTIFICATION OF COMPONENTS IN SAMPLE UNDER ANALYSIS

Giorgio Sisti, and Giuseppe Verga, both of Milan, Italy, assignors to Carlo Erba Strumentazione S.p.A., Milan, Italy

Filed May 26, 1982, Ser. No. 382,313
Claims priority, application Finland, Jun. 9, 1981, 8122199
Int. Cl.³ G01N *21/72*
U.S. Cl. 422—54 8 Claims



1. A modified flame thermionic detector for gas chromatographs, comprising:

flame nozzle means for generating a flame along an axis from an eluant gas from a chromatography system and a combustible gas;

collecting electrode means positioned coaxially to said flame nozzle means and connected to recording means for recording emitted current therefrom;

excitation electrode means having an alkali source of thermions for being positioned along the flame axis between the flame and said collecting electrode means with said flame nozzle means and said excitation electrode means connected in a continuous current electrical circuit;

said electrical circuit having a negative potential portion, a positive potential portion and a ground connection, and position switch means selectively switchable between a first position for connecting said flame nozzle means and said excitation electrode means to the negative potential of the circuit, a second position for connecting said flame nozzle means at the negative potential of the circuit and for electrically insulating said excitation electrode means with respect to the circuit, and a third position for connecting said excitation electrode means to the negative potential of the circuit and said flame nozzle means to ground; and

mobile support means having said excitation electrode means mounted thereon for supporting said excitation electrode means in a movable manner for selectively positioning said excitation electrode means at will along the flame axis between said flame nozzle means and said collecting electrode means.

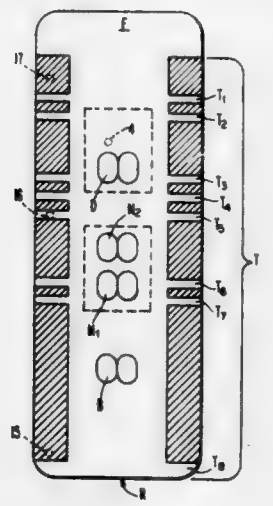
4,508,686

FILM STRIP FOR RAPID TEST OF A FILM PROCESSOR

Gary S. Shaber, Villanova, Pa., and Charles W. Buenzli, Jr., Richardson, Tex., assignors to Probex, Inc., Villanova, Pa.

Division of Ser. No. 212,742, Dec. 3, 1980, Pat. No. 4,365,895.
This application May 19, 1982, Ser. No. 379,981
Int. Cl.³ G01N *21/59, 21/84*
U.S. Cl. 422—55 6 Claims

1. A test film adapted for automatic testing of film processor function, said film having a lengthwise direction and including a plurality of test areas disposed at preselected locations along said lengthwise direction and preselected lengthwise test positions associated therewith, said film further including a lengthwise track comprising alternating signal and non-signal areas disposed at preselected lengthwise positions along said track, the length, position and spacing of said signal and non-signal areas being adapted to provide a continuous output signal indicative of the presence of said film in a reader therefor, counting signals indicative of the passage of said film lengthwise through a preselected number and sequence of positions relative to a reader therefor and to provide signals indicative of the relative locations of said test positions.

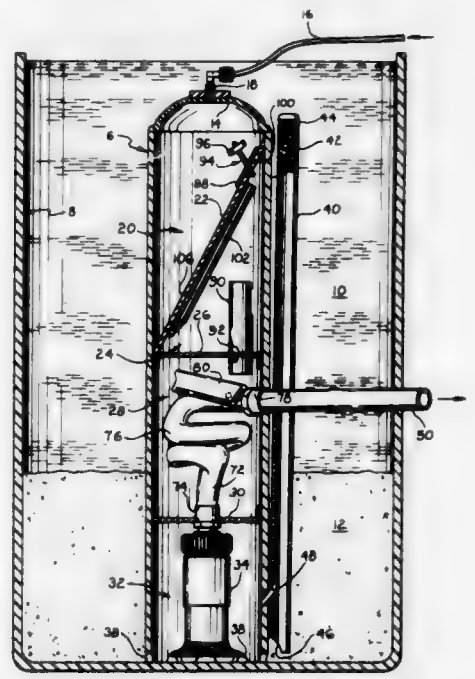


4,508,687

DEGASSING/BRINE TANK FOR POOL CHLORINATING SYSTEM

Richard W. Houghton, 344 Elm St., East Longmeadow, Mass. 01028

Filed Jun. 20, 1983, Ser. No. 505,928
Int. Cl.³ B01D *15/00*
U.S. Cl. 422—276 9 Claims

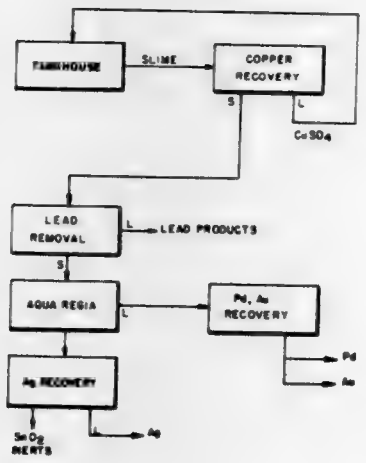


1. Degassing/brine tank for a pool chlorinator system including two upper and two lower chambers separated by an intermediate chamber having a coil tube therein, said tank including liquid flow passages for the gravity flow of liquid from the top of said tank successively from the first to the second of said upper chambers and then into said intermediate chamber, said tank also including means for conducting liquid successively upward from the first to the second of said lower chambers and then into said coil tube, said intermediate and upper chambers each including gas escape openings therethrough, and a mixing well in said intermediate chamber for combining liquid surrounding said coil with the liquid flowing within the coil, said coil including a radially extending upper leg portion adapted to extend through the side wall of said tank.

4,508,688
METHOD OF REGENERATING ACETATE IN A METAL REMOVAL PROCESS

Christopher C. Handy, Jr., Vineland, and D'Arcy H. Lorimer, Mercer County, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 31, 1983, Ser. No. 499,714
Int. Cl.³ C01G 21/14
U.S. Cl. 423—92 19 Claims

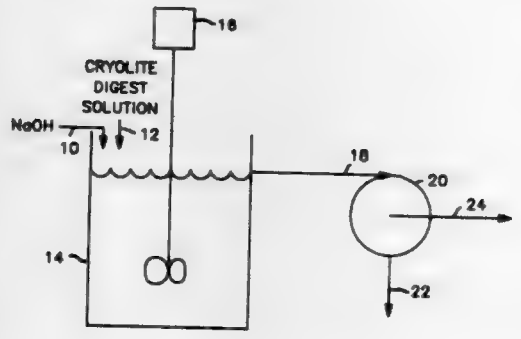


1. A method of separating acetate ions from sulfite and sulfate ions in an aqueous solution comprising the steps of:
(a) evaporating a substantial portion of the water from the acetate solution;
(b) crystallizing the acetate;
(c) drying the crystals;
(d) redissolving the acetate crystals in essentially water free alcohol;
(e) filtering off any insoluble material; and
(f) evaporating the alcohol from the solution to leave purified acetate crystals.

4,508,689
ALUMINUM-FLUORINE COMPOUND MANUFACTURE

J. Finley Bush, New Kensington, and Gary F. Gaydoski, Allegheny Township, Allegheny County, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 21, 1983, Ser. No. 515,805
Int. Cl.³ C01F 1/00; C01B 7/00, 7/19
U.S. Cl. 423—127 10 Claims

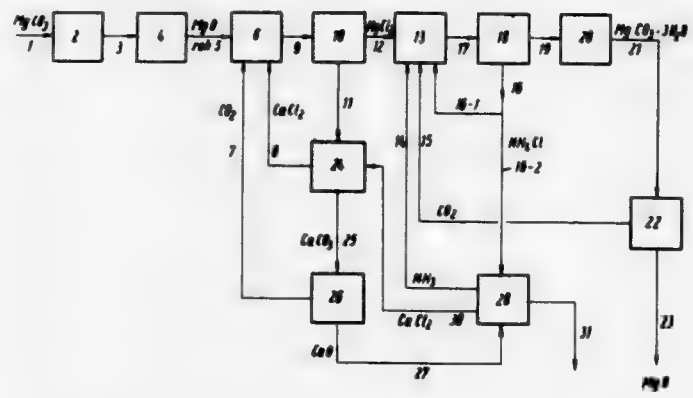


1. Method for improving yield of solid, sodium-poor fluoride material from an aqueous solution comprising ionic species containing sodium, aluminum and fluorine, the solution also containing sulfate ions, comprising neutralizing the solution from an acidic state saturated with respect to fluoride incompletely with an aqueous basic sodium compound to increase the pH into the range of about 5.0 to 5.6 to precipitate material consisting essentially of aluminum fluoride hydroxide hydrate in preference to more than minor amounts of chiolite or cryolite or other sodium compounds.

4,508,690
METHOD OF PRODUCING VERY PURE MAGNESIUM OXIDE

Albert Obrist, Elgg, and Balkrishna B. Gadgill, Raterschen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 154,821, May 30, 1980, abandoned. This application Aug. 29, 1983, Ser. No. 527,354
Claims priority, application Switzerland, Jun. 20, 1979, 5745/79
Int. Cl.³ C01F 11/04
U.S. Cl. 423—173 13 Claims



1. A method of producing magnesium oxide comprising the steps of
obtaining an ore containing magnesium and being capable of producing magnesium oxide upon calcination;
calcining the ore to obtain magnesium oxide;
leaching the obtained magnesium oxide with carbon dioxide and a calcium chloride solution in a leaching stage to obtain a magnesium chloride solution of a concentration of from 15% to 25% and calcium carbonate;
introducing said magnesium chloride solution into a precipitator and adding continuously carbon dioxide and ammonia to the magnesium chloride solution in the precipitator to precipitate magnesium carbonate trihydrate crystals and to obtain an ammonium chloride solution while maintaining a temperature of from 25° C. to 45° C. and pH from 7.5 to 8.5;
continuously separating a part of the precipitated magnesium carbonate trihydrate crystals from the precipitation; and
decomposing the magnesium carbonate trihydrate in a first decomposing stage to obtain magnesium oxide and carbon dioxide.

4,508,691
METHOD FOR TREATING EXHAUST GASES WITH AN IMPROVED CATALYST COMPOSITION

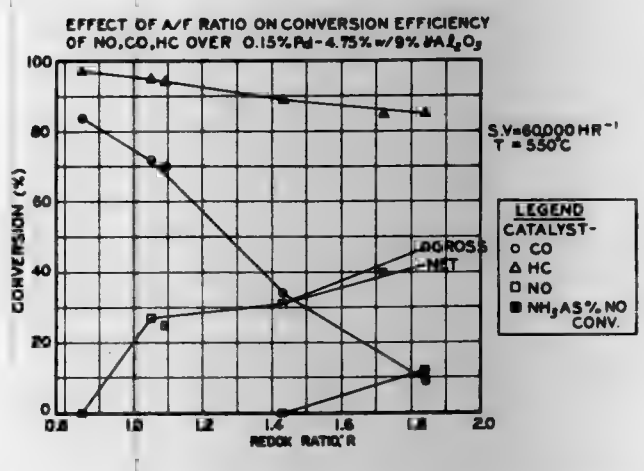
Karen M. Adams, Dearborn Heights, and Haren S. Gandhi, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 284,759, Jul. 20, 1981, abandoned. This application Aug. 16, 1982, Ser. No. 408,546
Int. Cl.³ B01D 53/36
U.S. Cl. 423—213.5 14 Claims

1. In a process for treatment of exhaust gases from an internal combustion engine the steps of:
burning a hydrocarbon fuel or a fuel containing hydrocarbons and alcohol blends in the internal combustion engine thereby to generate exhaust gases from the internal combustion engine containing various amounts of unburned hydrocarbons, carbon monoxide and oxides of nitrogen depending upon operating conditions of the internal combustion engine; and
passing said generated exhaust gases over an improved catalyst composition in which a support medium for supporting a catalyst system had deposits thereon consisting essentiaiiy of:

palladium; and

finely divided tungsten, said tungsten being present on said support medium in quantities such that tungsten is available to substantially all of said palladium on the support medium so that said palladium/tungsten combination is effective in the catalytic oxidation of unburned hydrocarbons and carbon monoxide and the catalytic reduction of oxides of nitrogen without significant production of ammonia when the internal combustion engine is operating under fuel rich conditions.

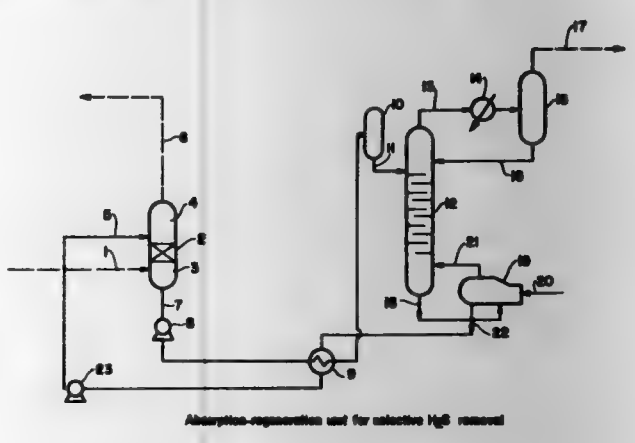


4,508,692

PROCESS FOR THE SELECTIVE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS MIXTURES WITH STRONGLY BASIC TERTIARY AMINO COMPOUNDS

David W. Savage, Summit, and Guido Sartori, Linden, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,893
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 21 Claims



Absorption-regeneration unit for selective H_2S removal

1. A process for the selective absorption of H_2S from a normally gaseous mixture containing H_2S and CO_2 comprising contacting under kinetic conditions said normally gaseous mixture with an absorbent solution comprising a strongly basic acyclic or alicyclic tertiary amino compound having a pK_a at 20° C. greater than 8.6, a boiling point at 760 mm of greater than 180° C. and further characterized as capable of selectively absorbing H_2S from said mixture at a "selectivity" value of at least about 10 at a loading of at least 0.1 moles of H_2S and CO_2 per moles of the amino compound under conditions whereby H_2S is selectively absorbed from said mixture.

4,508,693

SOLUTION REMOVAL OF HCN FROM GASEOUS STREAMS, WITH PH ADJUSTMENT OF REACTED SOLUTION AND HYDROLYSIS OF THIOCYANATE FORMED

Zaida Diaz, Houston, Tex.

Filed Nov. 29, 1983, Ser. No. 556,257
The portion of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.³ C01C *3/00;* C01B *17/16, 17/02*
U.S. Cl. 423—236 3 Claims

1. A process for removing hydrogen cyanide from a gaseous stream containing hydrogen cyanide comprising

(a) contacting said gaseous stream in a contact zone with a solution containing ammonium polysulfide under conditions to convert hydrogen cyanide, and producing a solution containing ammonium polysulfide and ammonium thiocyanate, and a gas stream having reduced hydrogen cyanide content;

(b) removing solution containing ammonium polysulfide and ammonium thiocyanate from the contact zone;

(c) lowering the pH of the removed solution to decompose ammonium polysulfide and precipitate sulfur, and producing hydrogen sulfide, sulfur, and a remaining ammonium thiocyanate-containing solution, and removing sulfur from said remaining solution;

(d) hydrolyzing the ammonium thiocyanate in said remaining solution and producing ammonia, hydrogen sulfide, and carbon dioxide.

4,508,694

SEPARATION AND RECOVERY OF CARBON MONOXIDE BY COPPER (I) COMPLEXES

Gerald Doyle, Whitehouse Station; Roy L. Pruett, New Providence, and David W. Savage, Lebanon, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 6, 1983, Ser. No. 492,173
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—246 14 Claims

1. A process for separating carbon monoxide from a feedstream without copper metal formation which comprises the steps of:

(a) contacting the feedstream with a solution of a cuprous fluorinated acetylacetonate of the formula

$$Cu(R^1-\overset{O}{\overset{\|}{C}}-\overset{R^2}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-C_nF_{2n+1})$$

where R^1 is C_1–C_6 fluoroalkyl, C_1–C_8 alkyl, C_4–C_6 heterocycle containing O, S, or N or C_6–C_{10} aryl, R^2 is H or C_1–C_6 alkyl with the proviso that R^1 and R^2 together with the carbons to which they are attached may be joined together to form a C_6 ring and n is an integer from 1 to 8, in an organic solvent containing a stabilizing agent at a temperature sufficient to remove carbon monoxide by forming a first Cu(I) complex of the formula

$$[Cu(R^1-\overset{O}{\overset{\|}{C}}-\overset{R^2}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-C_nF_{2n+1})]_x(CO)_y$$

where R^1, R^2 and n are defined above, and x and y are 1 or 2, said stabilizing agent being characterized by being able to replace CO in the first Cu(I) complex thereby forming a second Cu(I) complex which is stable at temperatures wherein the first Cu(I) complex decomposes through loss of CO,

(b) heating to a temperature sufficient to decompose the first Cu(I) complex through loss of CO whereby the stabilizing agent replaces CO in the first Cu(I) complex and copper metal formation is prevented by formation of the second Cu(I) complex, and

(c) separating the CO.

4,508,695

PROCESS FOR PREPARING HYDRAZINES

Hans Osborg, P.O. Box 152, 80 Long View Rd., Port Washington, N.Y. 11050

Filed Apr. 22, 1982, Ser. No. 370,980
Int. Cl.[3] C01B *21/16*
U.S. Cl. 423—407 20 Claims

1. An improved process for preparing anhydrous hydrazine and hydrocarbyl-substituted hydrazines which comprises:

a. reacting a compound of the formula $X—NR_1R_2$, wherein X is selected from hydrogen, an alkali metal or an alkaline earth metal and R_1 and R_2 may be the same or different and are selected from hydrogen and hydrocarbyl radicals, with a chlorinating agent effective to produce a chloramine of the formula $Cl—NR_1R_2$, wherein R_1 and R_2 are as previously defined, without co-production of ammonium chloride;

b. reacting said chloramine with a tertiary amine of the formula $NR_3\ R_4\ R_5$, wherein $R_3\ R_4$ and R_5 may be the same or different and represent hydrocarbyl radicals, to produce a tertiary hydrazinium chloride of the formula $NR_1R_2NR_3R_4R_5Cl$, wherein R_1, R_2, R_3, R_4 and R_5 are as previously defined; and

c. reacting said tertiary hydrazinium chloride with a compound of the formula ANR_6R_7, wherein A represents an alkali metal or an alkaline earth metal and R_6 and R_7 may be the same or different and are selected from hydrogen and hydrocarbyl radicals, under substantially anhydrous conditions to produce the desired product.

4,508,696

CYCLIC PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Michel Coingt, Lyons, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 526,206, Aug. 26, 1983, abandoned, which is a continuation of Ser. No. 361,585, Mar. 24, 1982, abandoned. This application Sep. 21, 1984, Ser. No. 654,040
Claims priority, application France, Apr. 7, 1981, 81 06923
Int. Cl.[3] C01B *15/02*
U.S. Cl. 423—588 3 Claims

1. In a recycle process for the production of hydrogen peroxide wherein at least one alkylanthraquinone is hyrogenated in a water-immiscible vehicle to convert the alkylanthraquinone to alkylhydroanthraquinone, the resulting liquid is treated with an oxygen-containing gas to form hydrogen peroxide and regenerate the starting alkylanthraquinone, the hydrogen peroxide so formed is extracted with water from the vehicle, and the quinones are recycled to the hydrogenation with a loss of quinone occurring during the process, the improvement comprising using a mixture of 2-ethylanthraquinone and 2-ethyl-5,6,7,8-tetrahydroanthraquinone as the quinones and introducing 2-ethyl-5,6,7,8-tetrahydroanthraquinone as the sole quinone to replace lost quinone, the proportion of the tetrahydroanthraquinone being about 90 percent of the two quinones and the quinone degradation product content of the liquid being greater than 150 g/L.

4,508,697

HYPOCHLORITE DESTRUCTION USING UREA

Harry O. Burrus, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 28, 1983, Ser. No. 518,020
Int. Cl.[3] C01D *3/04*
U.S. Cl. 423—499 8 Claims

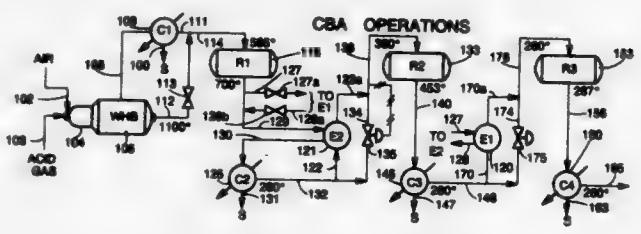
1. A continuous process for destroying alkali metal hypochlorite comprising in dilute aqueous solution reacting said alkali metal hypochlorite with from 50 to 90% of the stoichiometrically required amount of urea to react with the hypochlorite, at from 20° to 60° C., using a pH of from 6 to 8.

4,508,698

PROCESS AND SYSTEM FOR PRODUCING AND RECOVERING ELEMENTAL SULFUR

Robert L. Reed, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 30, 1983, Ser. No. 527,903
Int. Cl.[3] C01B *17/04*
U.S. Cl. 423—574 R 9 Claims



1. In an improved modified Claus reactor process of the type including the steps of reacting acid gas and air in a thermal reaction zone, reacting the resulting gas in a plurality of catalytic reaction zones arranged in series and maintained at progressively reduced temperatures, sulfur being removed in cooling zones between said reaction zones, the last of said catalytic reaction zones being maintained below the dew point of sulfur, the improvement comprising:

(a) operating only three catalytic reaction zones in series, two catalytic reaction zones above the dewpoint of sulfur and a last catalytic reaction zone below the dewpoint of sulfur for the recovery of sulfur and when the catalyst loading in said last catalytic reaction zone reaches a preselected level, heating the effluent from the cooling zone immediately preceding said last catalytic reaction zone to produce a regeneration gas;

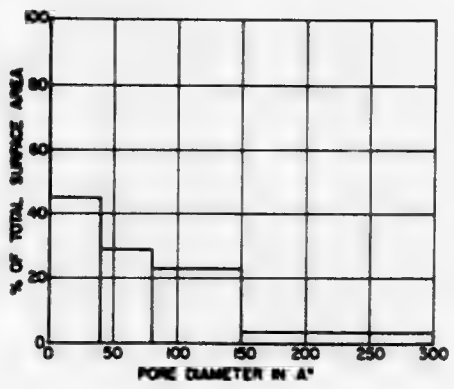
(b) feeding said regenerating gas to said last catalytic reaction zone until the catalyst is regenerated, the steps of producing and feeding a regeneration gas to said last catalytic reaction zone being carried out only for as long as necessary to regenerate the catalyst.

4,508,699

CLAUS PROCESS IMPROVEMENT

Richard J. Schoofs, Moraga, Calif., assignor to Schoofs, Inc., Moraga, Calif.

Filed Jan. 13, 1984, Ser. No. 570,397
Int. Cl.[3] C01B *17/04*
U.S. Cl. 423—574 R 3 Claims

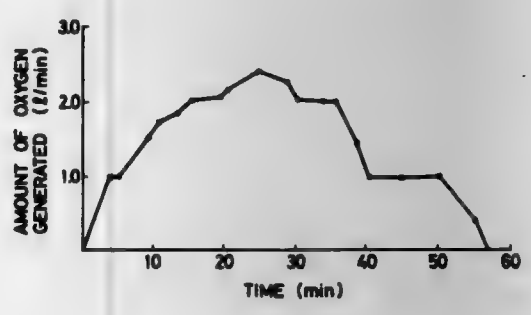


2. In a process for producing sulfur by contacting hydrogen sulfide and sulfur dioxide with a porous catalyst having a large surface area at elevated temperature, the imprpvement which comprises in the process a porous catalyst characterized by a proportion of its pores, having diameters within and throughout the range 80 to 150 A°, sufficient to provide at least 20% of the total surface area of the catalyst.

4,508,700
METHOD OF GENERATING OXYGEN FOR EMERGENCY USE

Yoshinori Hoshiko, Ueki, Japan, assignor to Hoshiko Medical Laboratories, Inc., Kamoto, Japan

Filed Apr. 25, 1983, Ser. No. 488,606
Claims priority, application Japan, Apr. 27, 1982, 57-69678
Int. Cl.[3] C01B *13/00*
U.S. Cl. 423—579 6 Claims



1. A method of generating oxygen for emergency use, comprising: p1 (a) solidifying a hydrogen peroxide-binding catalyst in a series of differently-concentrated aqueous solutions of at least one effective binding agent for said catalyst; and

(b) mixing therewith an addition compound of sodium bicarbonate and hydrogen peroxide, whereby, when a need for oxygen arises, water may be mixed therewith in order to cause a chemical reaction which generates oxygen more contiuously and constantly over an extended period of time than would be the case were said catalyst solidified in only one, uniformly concentrated aqueous solution of such binding agent.

4,508,701
EXTRACTION OF TUNGSTEN FROM SPENT OR SCRAP CATALYST MATERIALS

John B. Goddard, Grand Island, N.Y., and William N. Johnson, Ridgefield, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1983, Ser. No. 480,735
Int. Cl.[3] C01G *41/00*
U.S. Cl. 423—61 18 Claims

1. A process for extracting tungsten values from a silicate-containing, tungsten-bearing ore concentrate comprising:

(a) providing a finally-divided catalyst material containing predominantly Al_2O_3 and SiO_2 and from about 10 to 25% by weight WO_3;

(b) mixing said catalyst material together with finely-divided silicate-containing, tungsten-bearing ore concentrate in amounts such that at least about 2.0% by weight of the total tungsten values in the mixture are present in said catalyst material;

(c) digesting said mixture in an alkaline leach solution containing a material selected from the group consisting of sodium carbonate, sodium hydroxide, potassium carbonate and potassium hydroxide under pressure generated by the leach reaction and at an elevated temperature of at least about 200° C. for a period of time sufficient to extract substantially all of said tungsten values from the mixture components, the presence of said catalyst material substantially suppressing the dissolution of silica in the latch liquor; and

(d) filtering said leach liquor and recovering the substantially silica-free tungsten values from the resulting residue.

4,508,702
SUSTAINED RELEASE ASPIRIN

Charles H. Hsiao, Miami, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation of Ser. No. 388,183, Jun. 14, 1982, abandoned.
This application Feb. 3, 1984, Ser. No. 576,777
Int. Cl.[3] A61K *9/20, 9/28, 9/48*
U.S. Cl. 424—19 5 Claims

1. In a sustained release aspirin easily openable housing capsule or sealed pouch dosage form to permit the sprinkling onto food or mixing with a beverage, and, upon ingestion of said food or beverage, the continuous delivery of taste-masked aspirin into the gstrointestinal tract for a period of at least eight hours, the improvement consisting of a plurality of polymerically taste-masked coated aspirin crystal seeds each having therein a seed of pure aspirin as such, the majority of aspirin seeds having a mesh size of from about 30 to about 60 mesh, each of said otherwise unpleasant tasting aspirin seeds being individually coated with a polymeric mixture consisting of from about 1.5 to about 15 parts by weight ethyl cellulose and about one part by weight hydroxypropyl cellulose, and wherein the weight of the coating constitutes from about 3 to about 10% by weight of the said coated aspirin seeds.

4,508,703
PRODUCTION OF PULVERULENT MIXTURES OF LIPIDIC AND HYDROPHOBIC CONSTITUENTS

Gérard Redziniak, Sartrouville, and Alain Meybeck, Courbevoie, both of France, assignors to Parfums Christian Dior, France

Filed Feb. 10, 1983, Ser. No. 465,598
Claims priority, application France, Feb. 17, 1982, 82 02620
Int. Cl.[3] B01J *13/00;* A61K *9/42*
U.S. Cl. 424—38 34 Claims

1. A method for producing a pulverulent material of at least one amphiphilic lipidic constituent which deteriorates at a predetermined temperature, said material being used in particular for forming hydrated lipidic lamellar phase such as liposomes or the like, said method comprising

dissolving said amphiphilic lipidic constituent in a non-aqueous solvent having a boiling point below said predetermined temperature to form a solution of the same, and

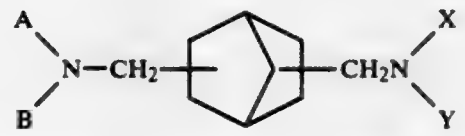
atomizing the thus-formed solution in a flow of hot gaseous fluid above the boiling pont of said non-aqueous solvent and below said predetermined temperature to produce said pulverulent material without damage to said amphiphilic lipidic constituent.

4,508,704
RADIOACTIVE METALS COMPLEXED WITH PHOSPHONATE DERIVATIVES OF BICYCLOHEPTANE BIS(ALKYLAMINES)

Jaime Simon, Angleton; David A. Wilson, Richwood, both of Tex., and Wynn A. Volkert, Columbia, Mo., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 27, 1984, Ser. No. 584,070
Int. Cl.[3] A61K *49/00, 43/00*
U.S. Cl. 424—14 20 Claims

1. A bone seeking complex of a radioactive nuclide and a compound having the structural formula



wherein substituents A, B, X and Y each are independently selected from radicals consisting of hydrogen, hydroxyalkyl (wherein the alkyl group contains 2–6 carbon atoms), methylenephosphonic; methylene-, ethylene- and propylenesulfonic; alkylcarboxylic acid radicals (having 2–4 carbon atoms)

and the alkali, alkaline earth metal, ammonium and amine salts of any of the phosphonic, sulfonic or carboxylic acid derivatives, and wherein at least one of the substituents is other than hydrogen.

4,508,705

SKIN TREATMENT COMPOSITION

Dwaipayan Chaudhuri, Ashford, and Malcolm R. Stebles, Maidenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,453
Int. Cl.³ A61K *7/36, 9/12*
U.S. Cl. 424—47 **19 Claims**

1. An antiperspirant composition having a solid phase and a liquid phase, the solid phase comprising

(i) from 0.1 to 30% by weight of the composition of a moisture-absorbent water-insoluble polymer which is substantially dry-to-the-touch when swollen with water and which has a water absorption value of at least 2 and which is selected from the group consisting of

(a) a cross-linked gelatinised starch in which the degree of substitution of the cross-linking groups is 0.001 to 0.04;

(b) an ionic complex of a water-soluble anionic polyelectrolyte and a polyvalent metal cation having a valency of at least three, the cation being present in the amount of from 0.01 to 5 milliequivalents per g polyelectrolyte;

(c) a covalently cross-linked anionic olyelectrolyte wherein the anionic polyelectrolyte is selected from the group consisting of water-soluble derivatives of starch, water-soluble derivatives of cellulose, carboxylic homopolymers and copolymers containing at least 20 mole percent carboxylic acid units; and

(d) mixtures thereof;

and the liquid phase comprising:

(ii) from 0.1 to 15% by weight of the composition of a substantially water-insoluble surfactant having a melting point of from 30° to 75° C.; and

(iii) from 1 to 99.8% by weight of the composition of an organic solvent in which the polymer is substantially insoluble.

4,508,706

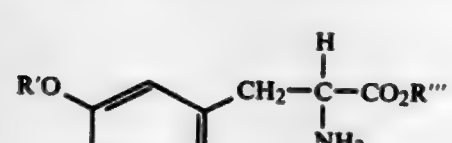
COMPOSITION FOR INCREASING MELANIN IN MAMMALIAN SKIN AND HAIR

John M. Pawelek, Hamden, Conn., and Patricia P. Agin, Cordova, Tenn., assignors to Yale University, New Haven, Conn. and Plough, Inc., Memphis, Tenn.

Filed Mar. 30, 1983, Ser. No. 480,465
Int. Cl.³ A61K *7/44, 31/66*
U.S. Cl. 424—60 **23 Claims**

1. A composition for increasing melanization in the epidermis of a mammal comprising the admixture of

(a) an effective amount of at least one O-phosphorylated derivative of DOPA of the formula I

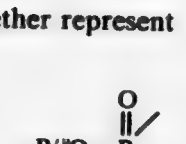


I

wherein R′ and R″ each represent hydrogen or



or R′ and R″ together represent

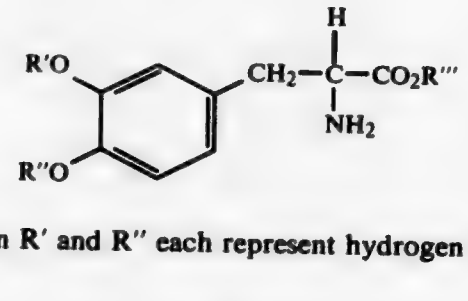


wherein R‴ and R⁗ each represent hydrogen or a pharmaceutically acceptable cation; with the provisos that R′ and R″ cannot both be hydrogen and

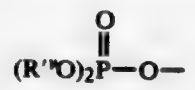
(b) a pharmaceutically acceptable carrier.

13. A method for increasing melanization in the epidermis of a mammal comprising the step of administering to the mammal a composition comprising the admixture of

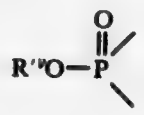
(a) an effective amount of at least one O-phosphorylated derivative of DOPA of the formula I



wherein R′ and R″ each represent hydrogen or



or R′ and R″ together represent



wherein R‴ and R⁗ each represent hydrogen or a pharmaceutically acceptable cation; with the provisos that R′ and R″ cannot both be hydrogen and

(b) a pharmaceutically acceptable carrier.

4,508,707

HAIR TONIC COMPOSITION

Taizo Ayukawa, Tokyo, Japan, assignor to Kakudai Shosan Kabushiki Kaisha and Taizo Ayukawa, both of Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,216
Claims priority, application Japan, Nov. 9, 1981, 56-179195
Int. Cl.³ A61K *7/06*
U.S. Cl. 424—70 **4 Claims**

1. A hair tonic composition comprising 0.001% to 5% by weight of a gibberellin, a hair tonic solvent and conventional hair tonic ingredients.

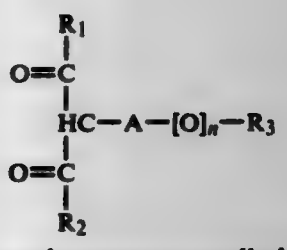
4,508,708

VIRUS VACCINES AND PROCESS FOR PREPARING THE SAME

Antonius L. Van Wezel, Bilthoven, Netherlands, assignor to De Staat Der Nederlanden, Vertegenwoozdigd doozde Minister van volksgezondheid en Milieuhygiene, BaLeidschendam, Netherlands

Filed Jun. 2, 1982, Ser. No. 384,386
Claims priority, application Netherlands, Jun. 5, 1981, 8102740
Int. Cl.³ A61K *39/13, 39/135*
U.S. Cl. 424—89 **24 Claims**

1. Vaccine containing one or more picorna virus antigens in the form of inactivated picorna virus or virus polypeptide thereof, free from live virus and containing a stabilizingly effective amount of at least one compound of formula 1



in which R_1 and R_2 each represent an alkyl or alkoxy group of not more than 6 carbon atoms; A represents a bivalent hydrocarbon radical of 3–12 carbon atoms, R_3 represents an unsubstituted or substituted phenyl radical and n represents one of the figures 0 or 1.

4,508,709

PROCESS FOR PURIFYING FACTOR VIII:C

Godfrey W. Amphlett, Mount Vernon, N.Y., and Michael E. Hrinda, Wilton, Conn., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Dec. 5, 1983, Ser. No. 557,805
Int. Cl.[3] A61K *35/16*
U.S. Cl. 424—101 **21 Claims**

1. A process for purifying Factor VIII:C from source material containing antihemophilic factor, comprising

(a) providing an aqueous solution of said source material which has a pH of 6.0 to about 8.0, and a conductivity of about 25 mS/cm to 35 mS/cm,

(b) equilibrating aminohexyl agarose to the pH of said solution,

(c) adsorbing antihemophilic factor from said solution onto said equilibrated aminohexyl agarose,

(d) eluting Factor VIII:R from the aminohexyl agarose, and then

(e) eluting the Factor VIII:C from the aminohexyl agarose.

4,508,710

IN VITRO AND IN VIVO TREATMENT OF CANCER CELLS AND TREATMENT OF VIRUSES WITH A TRIPEPTIDE COMPOUND

Augusto DeBarbieri, Milan, Italy, and Julius G. Bekesi, Teaneck, N.J., assignors to Proter S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 455,477, Jan. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 311,646, Oct. 15, 1981, Pat. No. 4,428,875, which is a continuation-in-part of Ser. No. 173,621, Jul. 30, 1980, Pat. No. 4,314,999, which is a continuation-in-part of Ser. No. 929,237, Jul. 31, 1978, Pat. No. 4,216,208. This application Feb. 23, 1983, Ser. No. 468,036
Int. Cl.[3] A61K *37/02*; C07C *103/52*
U.S. Cl. 514—19 **17 Claims**

1. A method of controlling human and animal tumor cells transplanted into a living animal comprising injecting the animal with a therapeutically effective amount of a tripeptide compound, said tripeptide has members selected from a group consisting of:

(1) 3-(p-fluorophenyl)-L-alanyl-3-[m-bis(2-chloroethyl)-aminophenyl]-L-alanyl-L-methionine

(2) 3-[m-bis(2-chloroethyl)aminophenyl]-L-alanyl-3-(p-fluorophenyl)-L-alanyl-L-methionine

(3) 3-(p-fluorophenyl)-L-alanyl-L-methionyl-3-[m-bis(2-chloroethyl)aminophenyl]-L-alanine

(4) 3-[m-bis(2-chloroethyl)aminophenyl]-L-alanyl-L-methionyl-3-(p-fluorophenyl)-L-alanine

(5) L-methionyl-3-(p-fluorophenyl)-L-alanyl-3-[m-bis(2-chloroethyl)aminophenyl]-L-alanine

(6) L-methionyl-3-[m-bis(2-chloroethyl)aminophenyl]-L-alanyl-3-(p-fluorophenyl)-L-alanine.

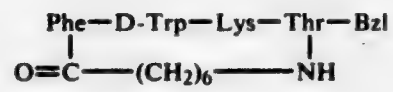
4,508,711

CYCLIC PENTAPEPTIDE DISPLAYING SOMATOSTATIN ANTAGONISM AND METHOD OF TREATMENT OF MAMMALS THEREWITH

David H. Coy, New Orleans, and William A. Murphy, Slidell, both of La., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 485,770, Apr. 18, 1983, abandoned. This application Feb. 10, 1984, Ser. No. 578,921
Int. Cl.[3] A61K *37/00*; C07C *103/52*
U.S. Cl. 514—11 **8 Claims**

1. A cyclic pentapeptide compound having the structure:



or a pharmaceutically acceptable salt thereof.

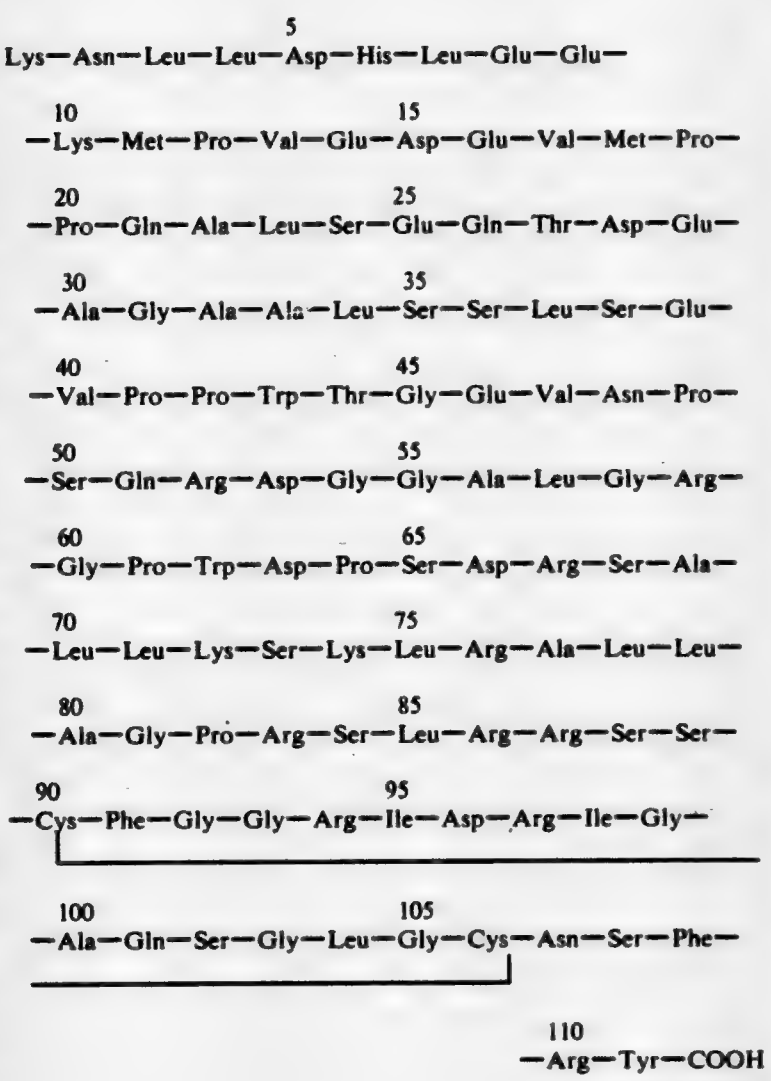
4,508,712

ATRIAL PEPTIDE

Philip Needleman, Olivette, Mo., assignor to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 569,684, Jan. 10, 1984, , which is a continuation-in-part of Ser. No. 551,372, Nov. 10, 1983,. This application May 4, 1984, Ser. No. 607,064
Int. Cl.[3] A61K *37/00*; C07C *103/52*
U.S. Cl. 514—11 **6 Claims**

1. A peptide having potent natriuretic, diruetic and vasodilating activity comprising the following amino acid sequence:



4,508,713

METHOD OF REDUCING DENTAL CARIES

John J. Stroz, Monroe, Conn., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 492,990, May 9, 1983, Pat. No. 4,457,921, which is a continuation of Ser. No. 248,087, Mar. 27, 1981, abandoned. This application Apr. 25, 1984, Ser. No. 596,873

Int. Cl.³ A61K *9/68, 31/70, 31/715*

U.S. Cl. 514—60 9 Claims

1. A method of treating teeth to inhibit or prevent dental plaque and/or caries in the presence of sucrose at a concentration of 0.4% or more and *Streptococcus mutans* having near optimum growth occurring in an environment of 0.4 to 0.5% of sucrose, with a slight increase in growth resulting with an increase of the sucrose level to up to 2%, the improvement comprising contacting said teeth with a composition comprising hydrogenated starch hydrolysate as a non-metabolizing carbohydrate sugar substitute in such amounts as to provide about a 0.25:1.0 to about 4.0:1.0 ratio of said sucrose to said sugar substituted at a final carbohydrate concentration of up to 2.0% so as to thereby inhibit or prevent the growth of extracellular polysaccharide production, in the presence of said teeth, fromsaid sucrose by said *Streptococcus mutans* to an extent greater than that achieved merely by replacement of some or all of said sucrose by non-metabolized carbohydrate and thereby prevent the exposure of said teeth to the dental plaque and/or caries causitive effects of said sucrose.

4,508,714

ORGANIC SCALP LOTION

Tihomir Cecic, and Norma Cecic, both of 8641 NW. 23rd St., Pembroke Pines, Fla. 33024

Filed Nov. 14, 1983, Ser. No. 551,306

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195.1 1 Claim

1. A composition of organic ingredients, constituting an organic scalp lotion comprising in percent by volume:

8.6% Tincture of Cinchona containing Quinine and Cinchonidine and prepared from powdered bark of Cinchona plants;

2.1% Tincture of Quillaia containing Quillajic acid and quillaja sapotoxin and prepared from powdered bark of Qullaja Saponaria;

2.1% Tincture of Eucalyptus containing tannin, Kino Red and catechin and prepared from Red Gum of Eucalyptus plants;

85.1% ethyl alcohol; and

2.1% distilled water.

4,508,715

ANTAGONISM OF CENTRAL NERVOUS SYSTEM DRUGS BY THE ADMINISTRATION OF 4-AMINOPYRIDINE ALONE OR IN COMBINATION WITH OTHER DRUGS

Nicholas H. Booth, Athens; Roger C. Hatch, Watkinsville, and Lester M. Crawford, Athens, all of Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation-in-part of Ser. No. 279,519, Jul. 1, 1981, abandoned. This application Apr. 13, 1982, Ser. No. 367,864

Int. Cl.³ A61K *31/485, 31/495, 31/515, 31/335, 31/415, 31/445, 31/475, 31/44, 31/54, 31/045, 31/195*

U.S. Cl. 514—280 19 Claims

1. A method of antagonizing the pharmacologic action of a drug affecting a central nervous system dopamine or α-2-andrenergic receptor, which comprises:

administering an amount of 4-aminopyridine effective to reverse or partially reverse the pharmacologic effect of said drug to a human or animal to which said drug has been administered, wherein when said administering is to a human, said amount is 0.15 to 0.5 mg/kg of 4-aminopyridine.

4,508,716

[1,2]-FUSED 1,4-BENZODIAZEPINE COMPOUNDS, PROCESS FOR THE PREPARATION AND COMPOSITIONS CONTAINING THEM

Hans Liepmann; Michael Ruhland, both of Hanover; Herbert Muesch, Wennigsen; Werner Benson, Hanover; Henning Heinemann, Hanover, and Horst Zeugner, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

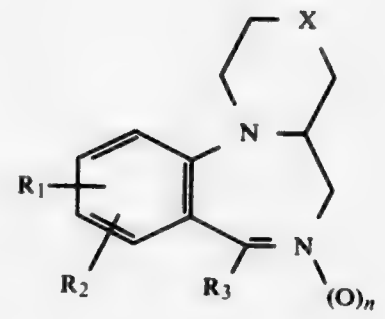
Filed Dec. 27, 1982, Ser. No. 453,785

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151597

Int. Cl.³ A61K *31/495;* C07D *487/04, 498/04, 513/04*

U.S. Cl. 514—220 13 Claims

1. A [1,2]-fused 1,4-benzodiazepine compound corresponding to the formula I



I

wherein

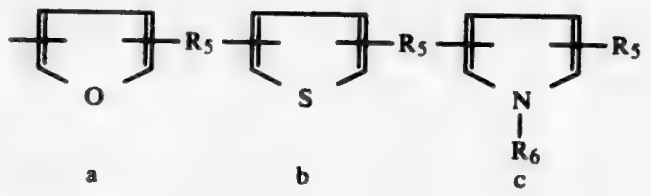
X represents an oxygen or sulfur atom or an amino group =N—R_4 in which R_4 represents a hydrogen atom, a C_1-C_5-alkyl group, a C_2-C_5-alkyl group which is terminally substituted by a methoxy group or a hydroxyl group, a C_3-C_5-alkenyl group or a cyclopropylmethyl group;

R_1 represents a hydrogen or halogen atom, a lower alkyl group, a lower alkoxy group or a nitro group, and

R_2 represents a hydrogen atom or a lower alkyl group, or

R_1 and R_2 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy group;

R_3 represents a group selected from the group consisting of groups corresponding to the formulas a, b and c:



a b c

in which

R_5 represents a hydrogen, fluorine, chlorine or bromine atom or a lower alkyl group, and

R_6 represents a hydrogen atom or a methyl group; and

n is zero or, if R_3 is a group corresponding to formula a or b, is zero or 1;

and the optical isomers and acid addition salts of said compound.

11. A pharmaceutical composition comprising a neuroleptically active amount of a compound according to claim 1 and a pharmaceutical adjuvent.

4,508,717

CEPHALOSPORIN DERIVATIVES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Christian Berger, Ecully; Daniel Farge, Thiais; Claude Moutonnier, Le Plessis Robinson; Jean-Francois Peyronel, Palaiseau, and Bernard Plau, Creteil, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

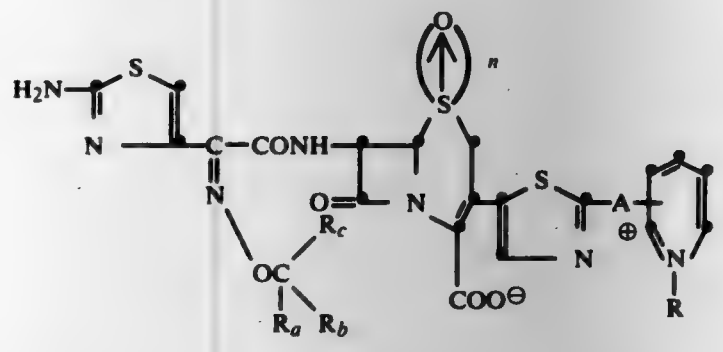
Filed Aug. 11, 1983, Ser. No. 522,359

Claims priority, application France, Aug. 13, 1982, 82 14092

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/36*

U.S. Cl. 514—203 **17 Claims**

1. A cephalosporin derivative of the formula:



in which the symbol A represents a single bond or a divalent radical chosen from $—CH_2—$, —NH—or —NHCO—, attached to the 3-position or 4-position of the pyridinio radical, the symbol R represents a methyl, carboxymethyl, carbamoylmethyl, benzyl or allyl radical, and either the symbols R_a, R_b and R_c each represent a hydrogen atom, or the symbol R_a represents a carboxyl radical and the symbols R_b and R_c, which are identical or different, represent hydrogen atoms or alkyl radicals having 1 to 4 carbon atoms, or together form an alkylene radical containing 2 to 5 carbon atoms, and n is equal to 0 or 1, the group $—OCR_aR_bR_c$ being in the syn position, and if appropriate the isomeric forms of the said cephalosporin derivative and mixtures thereof, or an addition salt thereof with an acid, or, if appropriate, a metal salt thereof or an addition salt thereof with a nitrogen-containing base.

17. A pharmaceutical composition which comprises, as active ingredient, a cephalosporin as claimed in claim 1 or an addition salt thereof with an acid, or a metal salt thereof, or an addition salt thereof with a nitrogen-containing base, in association with a pharmaceutically acceptable carrier or coating.

4,508,718

CARDIOTONIC AND ANTIHYPERTENSIVE OXADIAZINONE COMPOUNDS

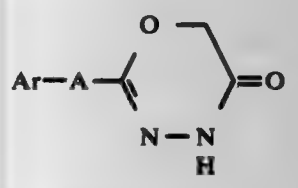
Ila Sircar, Ann Arbor; Michael H. Cain, Saline, and John G. Topliss, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 16, 1984, Ser. No. 571,057

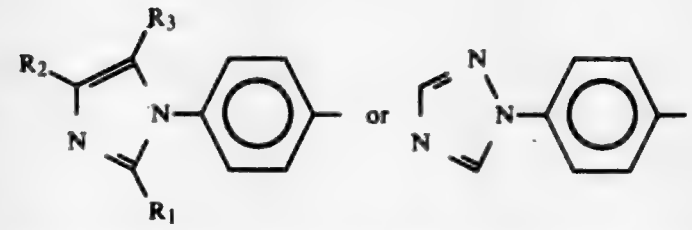
Int. Cl.[3] **A61K** *31/535;* **C07D** *413/10*

U.S. Cl. 514—238 **12 Claims**

1. A compound of the formula



wherein Ar is a group of the formula



in which R_1, R_2, and R_3 are each independently hydrogen, lower alkyl or CH_2OH, and R_2 and R_3 when taken together may form a five- or six-membered saturated or unsaturated ring; A is a bond, 1–4 carbon alkylene or 2–4 carbon alkenylene, and pharmaceutically acceptable acid addition salts thereof.

10. A pharmaceutical composition comprising an effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

4,508,719

HYDROXYIMINO AND ALKOXYIMINO DERIVATIVES OF 1,4-DIHYDROPYRIDINE AND ANTI-HYPERTENSIVE COMPOSITIONS

Silvia Z. Tricerri, Carimate; Cesare Casagrande, Arese; Franco De Marchi, Milan, and Massimo Nicola, Pavia, all of Italy, assignors to Pierrel S.p.A., Napoli, Italy

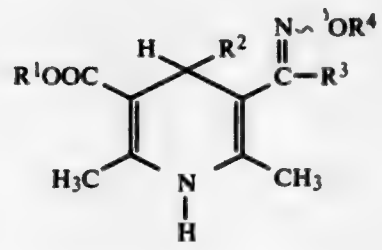
Filed May 26, 1983, Ser. No. 498,248

Claims priority, application Italy, Jun. 3, 1982, 21679 A/82; May 11, 1983, 21044 A/83

Int. Cl.[3] **A61K** *31/535, 31/455;* **C07D** *211/82, 413/12*

U.S. Cl. 514—236 **17 Claims**

1. A compound of formula I:



(I)

wherein

R^1 is a linear or branched alkyl radical containing between 1 and 5 carbon atoms, said alkyl radical being unsubstituted or substituted by an alkoxy group;

R^2 is an unsubstituted phenyl or phenyl substituted by a nitro group;

R^3 is hydrogen or a linear or branched alkyl residue containing between 1 and 4 carbon atoms, said alkyl radical being unsubstituted or substituted by at least one alkoxy or fluorine atom or both alkoxy and fluorine atoms;

R^4 is hydrogen or a linear or branched alkyl containing between 1 and 4 carbon atoms, said alkyl radical being unsubstituted or substituted by alkoxy, carbalkoxy, dialkylamino, monocyclic aryl, or monocyclic heterocyclic ring which is 1-piperidinyl, 4-morpholinyl, pyridyl, pyrazinyl, pyrimidyl, furyl, imidazolyl, imidazolinyl, thienyl, thiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, said monocyclic ring being unsubstituted or being mono- or di-substituted with alkyl, alkoxy, halogen, amino, acylamino, alkylamino, dialkylamino, carbalkoxy, hydroxy, nitrile, nitro and SO_n-alkyl, wherein n=0.1 or 2, or trifluoromethyl or R^4 is alkenyl or cyclo (C_3–C_6) alkyl

and its enantiomers, racemates, diastereoisomers and isomers (E) and (Z) thereof, and their salts with a pharmaceutically acceptable acid.

16. An antihypertensive composition which consists of an amount of a compound of claim 1 effective in the treatment of hypertension, and a pharmaceutically acceptable carrier.

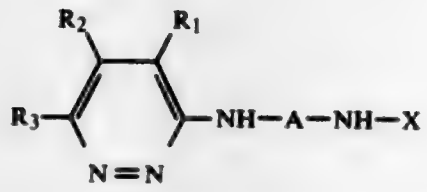
4,508,720

AMINO DERIVATIVES OF PYRIDAZINE, AND COMPOSITIONS THEREOF FOR THE CENTRAL NERVOUS SYSTEM

Jean-Paul Kan; Kathleen Biziére, both of Clapiers, and Camille G. Wermuth, Strasbourg, all of France, assignors to Sanofi, Paris, France

Filed Jul. 29, 1982, Ser. No. 402,906
Claims priority, application France, Aug. 7, 1981, 81 15380
Int. Cl.³ A61K *31/50*; C07D *237/20*
U.S. Cl. 514—247 **3 Claims**

1. An amino derivative of pyridazine of the general formula:



wherein:

R_1 is selected from the group consisting of hydrogen and a lower alkyl group having from 1 to 4 carbon atoms;

R_2 is hydrogen;

R_3 is selected from the group consisting of a phenyl group and a hydroxyphenyl group;

A is a linear or branched alkylene group having 2 to 5 carbon atoms; and

X is selected from the group consisting of hydrogen and a C_1–C_4 alkyl group, as well as the salts of said derivatives with the pharmaceutically acceptable acids.

2. A pharmaceutical composition useful in the treatment of psychomotor behavioral disorders comprising an effective amount of a compound within the scope of claim **1** and a pharmaceutically acceptable carrier.

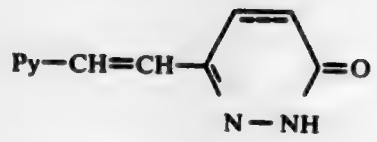
4,508,721

PYRIDAZIN-3-ONE DERIVATIVES

Rodney B. Hargreaves, Poynton, England, assignor to Imperial Chemical Industries, PLC, England

Filed Nov. 3, 1982, Ser. No. 438,729
Claims priority, application United Kingdom, Nov. 12, 1981, 8134177
Int. Cl.³ C07D *237/06*; A61K *31/50*
U.S. Cl. 514—252 **6 Claims**

1. A heterocyclic compound of the formula:



wherein the dotted line in the pyridazine nucleus indicates that a double bond is optional in this position, and wherein Py is a 4-pyridinyl group which is unsubstituted,
or an acid-addition salt thereof.

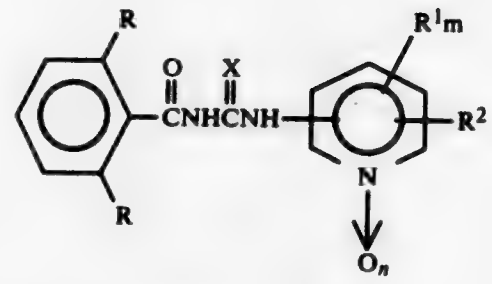
4,508,722

1-BENZOYL-3-(ARYLPYRIDYL)UREA COMPOUNDS

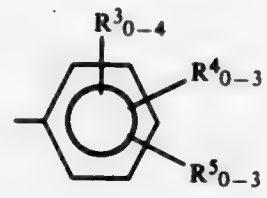
John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 264,494, May 18, 1981, Pat. No. 4,405,552, which is a continuation-in-part of Ser. No. 240,331, Mar. 3, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,971
Int. Cl.³ A61K *31/44*
U.S. Cl. 514—353 **16 Claims**

1. A method for reducing a population of manure-breeding insects which comprises orally administering to a warm-blooded animal an insecticidally effective amount of an active agent which is a compound of the formula



wherein each R is independently
H,
Br,
Cl,
F,
CH_3, or
OCH_3
with the proviso that both R groups are not simultaneously H, and with the further proviso that when one R group is fluoro or methoxy the other R group is not simultaneously H:
X=O or S;
n=0–1;
R^1 is independently
Cl,
Br,
CH_3, or
CH_3CH_2;
m=0–2; and
R^2 is a phenyl radical of the formula:



R^3 represents
Br,
Cl, or
F;
R^4 represents
CF_3,
OCF_3,
OC_2F_5,
OCF_2CF_2H, or
SCF_3;
R^5 represents
Methyl,
Ethyl,
Methoxy,
Ethoxy,
SCH_3, or
SCH_2CH_3;
with the limitation that the entire substituted phenyl radical bears
(1) not more than 4 substituents, when all substituents are halo substituents;
(2) not more than 3 substituents, when any one substituent is other than halo;
(3) not more than 2 different substituents;
and wherein positions on the pyridine ring are as follows:
(1) the NH to pyridine bond is at the 2-position of the pyridine ring, the R^2 group is at the 5-position of the pyridine ring, and when m=1–2, any R^1 is at the 4-, 6-, or 4 and 6-positions of the pyridine ring, subject to the limitation that
(a) when simultaneously R^1 represents bromo and n=0, m=1 and R^1 is at the 6-position;
(b) when simultaneously R^1 represents Cl and m=1, R^1 is at the 6-position;
(c) when simultaneously m and n=0 and each R repre-

sents OCH_3, R^2 is not unsubstituted phenyl, 3-chlorophenyl, 3,4-dichlorophenyl, or 4-methoxyphenyl;
(d) when simultaneously m and n=0 and each R represents CH_3, R^2 is not 4-chlorophenyl;
(e) when simultaneously m and n=0 and one R represents Cl and the other R represents, H, R^2 is not 3-chlorophenyl, 3,4-dichlorophenyl, 4-tolyl, 4-methoxyphenyl, or 3,4,5-trimethoxyphenyl;
(f) when simultaneously m=2 and n=0 and one R^1 moiety represents CH_3 or CH_3CH_2, the other R^1 moiety is not chloro or bromo;
(g) when n=1, neither R represents CH_3 or OCH_3, any R^1 represents CH_3 or Cl, and R^2 represents a para-substituted phenyl in which the substituent is Br, Cl, F, CH_3, or CF_3;
(h) when n=1 and one R group simultaneously represents H, m=1-2;

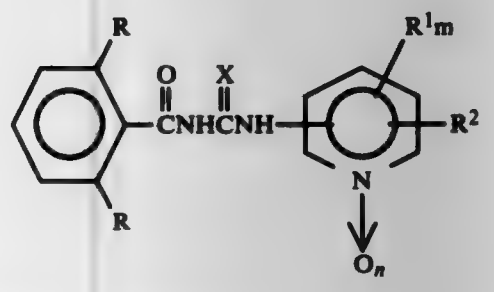
or

(2) the NH to pyridine bond is at the 3-position of the pyridine ring, the R^2 group is at the 6-position of the pyridine ring, and when m=1, any R^1 is at the 5-position of the pyridine ring, subject to the limitation that m=0-1 and
(a) when n=0, R^1 represents CH_3 or CH_3CH_2;
(b) when simultaneously n=0 and one R represents Cl and the other R represents H, R^2 is not 3-chlorophenyl;
(c) when simultaneously n=0 and one R represents CH_3 and the other R represents H, R^2 is not unsubstituted phenyl;
(d) when n=1, each R independently represents Cl or F, any R^1 represents CH_3, and R^2 represents a para-substituted phenyl in which the substituent is Br, Cl, F, CH_3, or CF_3;

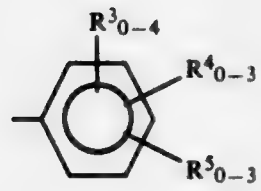
or an agriculturally acceptable acid addition salt thereof.

8. The method of claim 7 wherein the compound is administered to the animal as an additive to the animals feed.

15. A feed premix comprising a physiologically acceptable carrier and an active agent which is a compound of the formula



wherein each R is independently
H,
Br,
Cl,
F,
CH_3, or
OCH_3
with the proviso that both R groups are not simultaneously H, and with the further proviso that when one R group is fluoro or methoxy the other R group is not simultaneously H:
X=O or S;
n=0-1;
R^1 is independently
Cl,
Br,
CH_3, or
CH_3CH_2;
m=0-2; and
R^2 is a phenyl radical of the formula:



R^3 represents
Br,
Cl, or
F;
R^4 represents
CF_3,
OCF_3,
OC_2F_5,
OCF_2CF_2H, or
SCF_3;
R^5 represents
Methyl,
Ethyl,
Methoxy,
Ethoxy,
SCH_3, or
SCH_2CH_3;
with the limitation that the entire substituted phenyl radical bears
(1) not more than 4 substituents, when all substituents are halo substituents;
(2) not more than 3 substituents, when any one substituent is other than halo;
(3) not more than 2 different substituents;
and wherein positions on the pyridine ring are as follows:
(1) the NH to pyridine bond is at the 2-position of the pyridine ring, the R^2 group is at the 5-position of the pyridine ring, and when m=1-2, any R^1 is at the 4-, 6-, or 4 and 6-positions of the pyridine ring, subject to the limitation that
(a) when simultaneously R^1 represents bromo and n=0, m=1 and R^1 is at the 6-position;
(b) when simultaneously R^1 represents Cl and m=1, R^1 is at the 6-position;
(c) when simultaneously m and n=0 and each R represents OCH_3, R^2 is not unsubstituted phenyl, 3-chlorophenyl, 3,4-dichlorophenyl, or 4-methoxyphenyl;
(d) when simultaneously m and n=0 and each R represents CH_3, R^2 is not 4-chlorophenyl;
(e) when simultaneously m and n=0 and one R represents Cl and the other R represents H, R^2 is not 3-chlorophenyl, 3,4-dichlorophenyl, 4-tolyl, 4-methoxyphenyl, or 3,4,5-trimethoxyphenyl;
(f) when simultaneously m=2 and n=0 and one R^1 moiety represents CH_3 or CH_3CH_2, the other R^1 moiety is not chloro or bromo;
(g) when n=1, neither R represents CH_3 or OCH_3, any R^1 represents CH_3 or Cl, and R^2 represents a para-substituted phenyl in which the substituent is Br, Cl, F, CH_3, or CF_3;
(h) when n=1 and one R group simultaneously represents H, m=1-2;

or

(2) the NH to pyridine bond is at the 3-position of the pyridine ring, the R^2 group is at the 6-position of the pyridine ring, and when m=1, any R^1 is at the 5-position of the pyridine ring, subject to the limitation that m=0-1 and
(a) when n=0, R^1 represents CH_3 or CH_3CH_2;
(b) when simultaneously n=0 and one R represents Cl and the other R represents H, R^2 is not 3-chlorophenyl;
(c) when simultaneously n=0 and one R represents CH_3 and the other R represents H, R^2 is not unsubstituted phenyl;
(d) when n=1, each R independently represents Cl or F, any R^1 represents CH_3, and R^2 represents a para-sub-

stituted phenyl in which the substituent is Br, Cl, F, CH_3, or CF_3;

or an agriculturally acceptable acid addition salt thereof.

4,508,723

6-AZAOLIGOCYCLOALKYLMETHYLENEAMINOPENAM COMPOUNDS

Karl Schaffner, Oberwil, and Riccardo Scartazzini, Basel, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

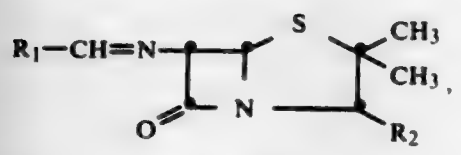
Continuation of Ser. No. 183,899, Sep. 4, 1980, , which is a continuation of Ser. No. 906,378, May 16, 1978, abandoned. This application Jun. 4, 1982, Ser. No. 385,139

Claims priority, application Luxembourg, May 17, 1977, 77362

Int. Cl.[3] **A61K** *31/38;* **C07D** *499/32*

U.S. Cl. 514—195 **18 Claims**

1. A 6-amino-penam compound of the formula



(I)

wherein R_1 is azabicycloalkyl, azatricycloalkyl, azabicycloalkenyl, oxaazabicycloalkyl, diazabicycloalkyl, azatricycloalkenyl, oxaazatricycloalkyl or diazatricycloalkyl, which is bonded via a ring nitrogen atom and has 1-3 endo bridge atoms, and contains a total of 7 to 12 ring atoms, wherein a ring carbon atom is unsubstituted or substituted by hydroxy, hydroxyl esterified by lower alkanoyl, carboxyl-lower alkanoyl, di-lower alkylamino-lower alkanoyl, lower alkoxycarbonyl, lower alkoxycarbonyl monosubstituted to trisubstituted by chlorine, or benzoyl, nicotinoyl, carbamoyl or toluene-sulfonyl, or hydroxyl etherified by lower alkyl, lower alkyl monosubstituted to trisubstituted by lower alkoxy, carboxyl, di-lower alkylamino, phenyl or anisyl, wherein a second nitrogen atom is substituted by hydrogen or lower alkyl, R_2 is free carboxyl or carboxyl esterified by a conventional physiologically detachable group, or a pharmaceutically acceptable salt of said compound.

4,508,724

ARYLOXYMETHYLPYRROLIDINOLS AND PIPERIDINOLS HAVING ANTIDEPRESSANT, ANTIARRHYTHMIC OR HYPOTENSIVE ACTIVITY

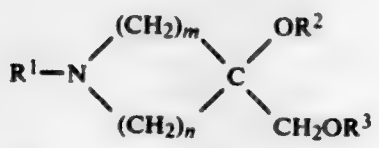
Chandler R. Taylor, Jr., Mechanicsville, and Harold F. Stauffer, Jr., Midlothian, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Feb. 3, 1984, Ser. No. 576,904

Int. Cl.[3] **C07D** *211/48, 207/12;* **A61K** *31/40, 31/445*

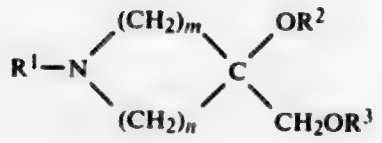
U.S. Cl. 514—317 **49 Claims**

1. A compound selected from aryloxymethylpyrrolidinol and piperidinol compounds of the formula:



wherein R^1 is hydrogen, loweralkyl or phenylloweralkyl, R^2 is hydrogen, loweralkyl or acyl; R^3 is phenyl, 1-naphthyl, 2-naphthyl, 1H-2,3-dihydroinden-4-yl or 1H-2,3-dihydroinden-5-yl; m is 2 or 3, and n is 1 or 2, with the proviso that m is never 3 when n is 2; and the pharmaceutically acceptable salts thereof.

32. A pharmaceutical composition comprising a pharmaceutical carrier and a compound effective as an antiarrhythmic, antidepressant or antihypertensive when administered in unit dosage form selected from aryloxymethylpyrrolidinol and piperidinol compounds of the formula:



wherein R^1 is hydrogen, loweralkyl or phenylloweralkyl; R^2 is hydrogen, loweralkyl or acyl; R^3 is phenyl, 1-naphthyl, 2-naphthyl, 1H-2,3-dihydroinden-4-yl or 1H-2,3-dihydroinden-5-yl; m is 2 or 3 and n is 1 or 2 with the proviso that m is never 3 when n is 2; and the pharmaceutically acceptable salts thereof.

4,508,725

ESTERS OF 3-(3-SUBSTITUTED-AMINO-2-HYDROXYPROPOXY)-4-SUBSTITUTED-1,2,5-THIADIAZOLE DERIVATIVES

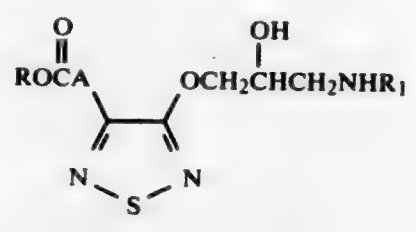
William L. Matier, Libertyville; Paul W. Erhardt, Mundelein, and Ghanshyam Patil, Vernon Hills, all of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 22, 1982, Ser. No. 452,280

Int. Cl.[3] **C07D** *285/10;* **A61K** *31/41*

U.S. Cl. 514—362 **35 Claims**

1. A compound having the formula



wherein R is lower alkyl, lower cycloalkyl, lower haloalkyl, lower alkyl carboxymethyl, aryl carboxymethyl, lower alkenyl, lower alkynyl, aryl having from 6 to about 10 carbon atoms, or aralkyl; R_1 is lower alkyl, lower hydroxyalkyl, lower alkenyl, lower alkynyl, or aralkyl; A is lower alkylene, or lower alkene having from 1 to about 10 carbon atoms; and the pharmaceutically acceptable salts thereof.

4,508,726

TREATMENT OF PANIC DISORDERS WITH ALPRAZOLAM

James H. Coleman, Cumberland, R.I., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 418,922, Sep. 16, 1982, abandoned. This application Aug. 1, 1983, Ser. No. 518,332

Int. Cl.[3] **A61K** *31/41*

U.S. Cl. 514—220 **3 Claims**

1. A process for preventing or treating panic attacks comprising the administration to a human subject susceptible to panic attacks, in unit dosage form, from about 0.01 mg to about 0.4 mg/kg body weight of 8-chloro-1-methyl-6-phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepine or the pharmacologically acceptable acid addition salt or a (5) N-oxide thereof in association with a pharmaceutical carrier.

4,508,727

ANTIHYPERTENSIVE 2-OXO-IMIDAZOLIDINE DERIVATIVES

Naoto Yoneda, Suita; Jyoji Kato, Yawata; Kimiaki Hayashi, Suita; Takashi Ochiai, Kobe, and Keizo Kinashi, Yao, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

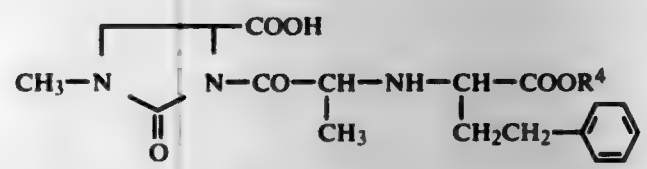
Filed May 24, 1983, Ser. No. 496,877

Claims priority, application Japan, May 24, 1982, 57-88637

Int. Cl.[3] **A61K** *31/415;* **C07D** *233/38*

U.S. Cl. 514—398 **9 Claims**

7. A method of producing a hypotensive effect on a warm-blooded animal comprising administering to said warm-blooded animal an effective amount of a compound of the formula:



wherein R^4 is lower alkyl, or a pharmaceutically acceptable salt thereof.

4,508,728

METHOD OF TREATING INFLAMMATORY DISEASES

Kineshiro Nagai, and Kinuko Nagai, both of No. 4-22-2, Yoyogi, Shibuya-ku, Tokyo, Japan

Filed May 24, 1984, Ser. No. 613,230

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 514—400 **5 Claims**

1. A method of treating inflammatory disease selected from the group consisting of wounds of all sorts, dental extraction wounds, aphtha ulcer, angulus infectiosus allergic rhinitis, tonsillitis, inflammation of respiratory tract, burn, herpes zoster, decubital ulcer, eczema, allergic dermatitis, geriatic itchness, stomach ulcer, ulcer of the duodenum, ulcers of the small and large intestines and the rectum, hemorrhoid, ulcer of the anus, cervical erosion, vaginal ulcer, ulcer of the outer genitalia, herpes and asthma in a human suffering therefrom comprising administering a preparation comprising homocarnosine or a physiologically acceptable salt thereof in an effective amount for treating the inflammatory disease in said human.

4,508,729

SUBSTITUTED IMINODIACIDS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to Adir, Neuilly-sur-Seine, France

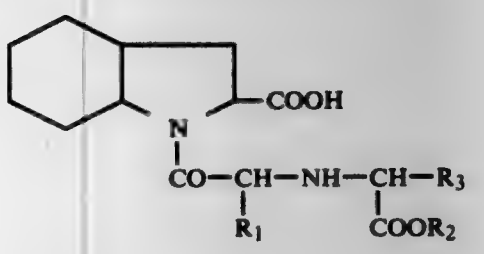
Continuation-in-part of Ser. No. 212,607, Dec. 3, 1980, Pat. No. 4,404,206. This application Oct. 2, 1981, Ser. No. 308,234

Claims priority, application France, Oct. 2, 1980, 80 21095; Apr. 7, 1981, 81 06916

Int. Cl.[3] **C07D** *209/34;* **A61K** *31/405*

U.S. Cl. 514—419 **7 Claims**

1. A compound selected from the group consisting of iminodiacid compounds having the formula:



wherein

R_1 represents lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_2 represents hydrogen or lower-alkyl having 1 to 4 carbon atoms, inclusive,

R_3 is $—CH_2CH_2—CH_3$, in racemic form or as an optical isomer, a salt thereof with a pharmaceutically-acceptable inorganic or organic base, and an addition salt thereof with a pharmaceutically-acceptable inorganic or organic acid.

4,508,730

1,7-DIHYDRO-PYRROLO[3,4-e][1,4]DIAZEPIN-2(3H)-ONE DERIVATIVES A PROCESS FOR PREPARING THEM AND THEIR USE AS ANTICONVULSANT AND ANTI-ANXIETY AGENTS

Luigi Mariani, and Giorgio Tarzia, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Italy

Filed Aug. 9, 1983, Ser. No. 521,774

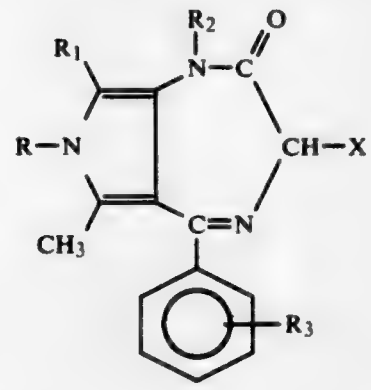
Claims priority, application United Kingdom, Sep. 8, 1982, 8225582

The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.

Int. Cl.[3] **A61K** *31/55;* **C07D** *487/04*

U.S. Cl. 514—218 **10 Claims**

1. A 1,7-dihydro-pyrrolo[3,4-e][1,4]diazepin-2-(3H)-one of following formula I



I

wherein

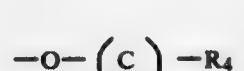
R represents methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl and 1,1-dimethylethyl

R_1 stands for hydrogen, methyl, ethyl, phenyl, chloro, bromo or nitro

R_2 is hydrogen, methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl and 1,1-dimethylethyl

R_3 represents hydrogen, chloro, fluoro, bromo, trifluoromethyl and methoxy, and

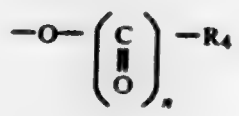
X is



or —NH—R_4 wherein n is 0 or 1 and

R_4 represents a straight or branched alkyl or alkenyl group which may contain up to 12 carbon atoms, which may be unsubstituted or substituted with one or more groups independently selected from (C_{1-4})alkoxy, halogen, carboxy, carbo-(C_{1-4})alkoxy, amino, mono- or di-(C_{1-4})alkylamino, (C_{2-4})alkanoylamino, benzoylamino, phthalimido, carbamyl, (C_{1-4})alkylcarbamyl, carboxy-(C_{1-4})alkylcarbamyl, carbalkoxy-(C_{1-4})alkylcarbamyl, and phenylcarbamyl, a (C_{5-8})cycloalkyl group which may be unsubstituted or substituted with one or two groups independently selected from (C_{1-4})alkyl, hydroxy, halogen, carboxy, and carbo-(C_{1-4})alkoxy, or a phenyl group which may be unsubstituted or substituted with 1 to 3 groups independently selected from (C_{1-4})alkyl, hydroxy, halogen, carboxy, and carbo(C_{1-4})alkoxy, or a phenyl group

which may be unsubstituted or substituted with 1 to 3 groups independently selected from (C_{1-4})alkyl, (C_{1-4})alkoxy, (C_{3-8})cycloalkyl, amino, mono- or di-(C_{1-4})alkylamino, phenyl, trifluoromethyl and halogen with the proviso that when simultaneously R_1 is hydrogen, methyl, ethyl or phenyl and X is an



group wherein n is 1, R_4 cannot represent methyl; and the pharmaceutically acceptable acid addition salts thereof.

8. A method of treating anxiety or convulsions by the administration of an anti-anxiety or anticonvulsant amount of a compound of claim 1 to a patient in need thereof.

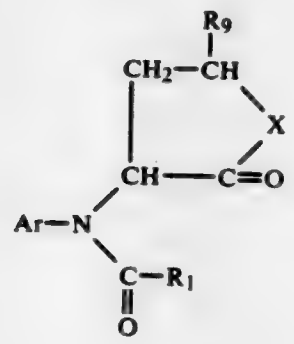
4,508,731

MICROBICIDAL N-(TETRAHYDRO-2-ON-FUR-3-YL)-N-SUBSTITUTED ACETYL-ANILINES AND -NAPHTHYLAMINES

Peter Riebli, Basel; Hanspeter Fischer, Bottmingen; Rudolph C. Thummel, Courgenay, and Adolf Hubele, Magden, all of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 370,759, Apr. 22, 1982, Pat. No. 4,448,773.
This application Feb. 13, 1984, Ser. No. 579,230
Claims priority, application Switzerland, Apr. 29, 1981, 2783/81
Int. Cl.³ A01N *43/08, 43/10*; C07D *307/30, 309/28*
U.S. Cl. 514—472 **11 Claims**

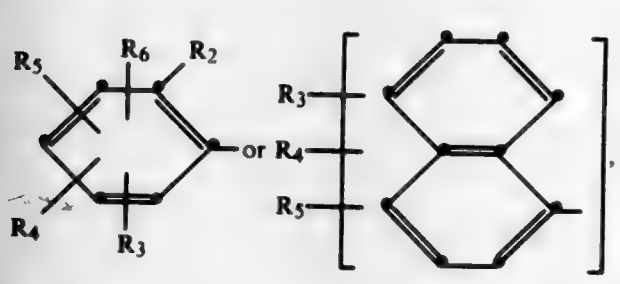
1. A compound of the formula I



(I)

wherein

Ar is a group of the formula



R_1 is 2-furyl, 2-tetrahydrofuryl, C_2–C_4-alkenyl, cyclopropyl, β-$(C_1$–$C_4)$-alkoxyethyl or $—CH_2Z$, each being unsubstituted or substituted by halogen, and Z being

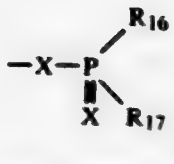
(a) —OH,

(b) —1H-1,2,4-triazolyl, 1-imidazolyl or 1-pyrazolyl,

(c) $—S(O)_n—R_{13}$, where R_{13} is C_1–C_4-alkyl, and n is 1 or 2,

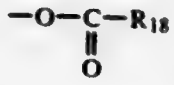
(d) $—X—R_{14}$, where X is oxygen or sulfur, and R_{14} is C_1–C_6-alkyl, C_3–C_4-alkenyl or C_3–C_4-alkynyl, each unsubstituted or substituted by C_1–C_2-alkoxy,

(e) $—OSO_2—R_{15}$, where R_{15} is C_1–C_4-alkyl, or mono- or di-$(C_1$–$C_3)$-alkylamine,



(f)

where X is oxygen or sulfur, R_{16} is C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkylamino, and R_{17} is C_1–C_4-alkoxy or C_1–C_4-alkylamino, or

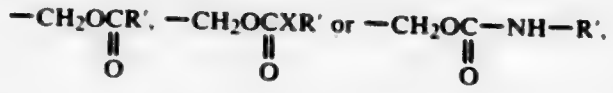


(g)

where R_{18} is C_1–C_3-alkyl which is unsubstituted or substituted by C_1–C_2-alkoxy,

R_2 is C_1–C_3-alkyl, C_1–C_3-alkoxy or halogen,

R_3 is $—CH_2OH$, $—N_3$,



where R′ is C_1–C_6-alkyl or C_2–C_4-alkenyl, each unsubstituted or substituted by halogen or C_1–C_3-alkoxy, or it is phenyl substituted by chlorine and X is oxygen or sulfur,

R_4 is hydrogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, halogen, $—NO_2$ or $—NH_2$,

R_5 is hydrogen or C_1–C_3-alkyl,

R_6 is hydrogen or C_1–C_3-alkyl,

R_9 is hydrogen or methyl,

X is oxygen or sulfur.

6. A composition for combating and/or preventing an infestation by harmful microorganisms, which composition contains as active ingredient at least one active substance according to claim 1 and an inert carrier.

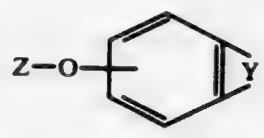
4,508,732

BASIC ETHERS USEFUL AS ANTIDEPRESSANT AGENTS

Hans-Heinrich Hausberg, Weiterstadt; Helmut Prücher, Heppenheim; Jürgen Uhl, Seeheim; Christoph Seyfried, Seeheim-Jugenheim, and Klaus Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 216,454, Dec. 15, 1980, Pat. No. 4,376,123.
This application Jan. 21, 1983, Ser. No. 459,928
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950135
Int. Cl.³ A61K *31/36, 31/135*; C07C *93/14*
U.S. Cl. 514—466 **7 Claims**

1. A basic ether of the formula



wherein Z is $CH_3—NR^2—CH_2CH_2—CHR^1—$; R^1 is cyclopropyl or Ar; R^2 is H, alkyl of 1–4 C atoms, alkenyl of 2–4 C atoms, cycloalkylalkyl of 4–8 C atoms or benzyl; Y is $—CH_2—CHQ^1—CHQ^2—CO—$; Q^1 and Q^2 are independently each H, alkyl of 1–4 C atoms, cycloalkyl or alkylcycloalkyl each of 3–6 total C atoms or Ar; and Ar is phenyl or phenyl substituted by F, Cl, alkoxy or alkylthio, each of 1–4 C atoms, methylenedioxy or CF_3;

or a physiologically acceptable acid addition salt thereof.

7. A method of treating depression in a patient in need of such treatment comprising administering to the patient an antidepressantly effective amount of a compound of claim 1.

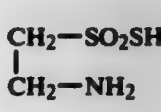
4,508,733

DRUG FOR STIMULATING HEPATIC CELL HOMEOSTASIS AND FOR RESTORING THE FUNCTIONAL CAPACITY OF THE HEPATOCYTES

René Moreuil, Paris, France, assignor to Arcanthorn Limited, London, England

Filed Nov. 4, 1982, Ser. No. 439,181
Int. Cl.[3] A61K *31/185;* C07C *143/02*
U.S. Cl. 514—578 4 Claims

1. A method for stimulating hepatic cell homeostasis which comprises administering to a host an effective amount of aminoethanethiosulphonic acid having the formula:



or a pharmaceutically acceptable salt thereof.

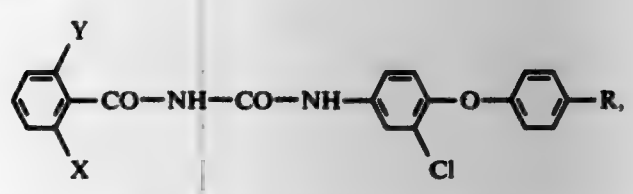
4,508,734

SUBSTITUTED N-BENZOYL-N-PHENOXYPHENYLUREAS, THE MANUFACTURE, AND THE USE THEREOF FOR COMBATING INSECTS

Arno Lange, Mannheim; Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,667
Int. Cl.[3] A01N *47/34;* C07C *127/22*
U.S. Cl. 514—594 5 Claims

1. A substituted N-benzoyl-N'-phenoxyphenylurea of the formula



(I)

where X and Y denote fluorine or chlorine and R denotes fluorine, chlorine or bromine.

5. A process for combating insects which comprises: allowing an insecticidally effective amount of an N-benzoyl-N'-phenoxyphenylurea of the formula I as set forth in claim 1 to act on the insects, their eggs and/or their habitat.

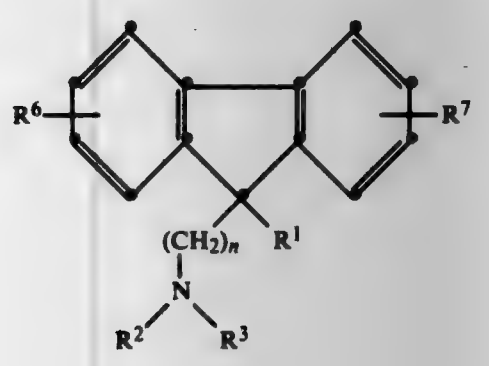
4,508,735

ANTI-ARRHYTHMIC N-ALKANOYLAMINOALKYL FLUORENES

William B. Lacefield, and Terry D. Lindstrom, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 21, 1983, Ser. No. 534,519
Int. Cl.[3] C07C *103/28;* A61K *31/165*
U.S. Cl. 514—616 20 Claims

1. An N-alkanoylaminoalkylfluorene of the formula



wherein:

R^1 is hydroxy, cyano, $CONR^4R^5$ or $COOR^4$, in which R^4 and R^5 independently are hydrogen or C_1–C_6 alkyl;

n is 3, 4 or 5;

R^2 is hydrogen, C_1–C_6 alkyl, CH_2C_2–C_5 alkenyl or phenyl-C_1–C_3 alkyl;

R^3 is C_1–C_6 alkanoyl; and

R^6 and R^7 independently are hydrogen, C_1–C_4 alkyl or halogen.

16. A method of treating cardiac arrhythmias comprising administering to a subject an antiarrhythmic amount of a compound of claim 1.

4,508,736

METHOD FOR PREPARING IMPROVED QUALITY RICE-CONTAINING BAKED PRODUCTS

Maura M. Bean; Kazuko D. Nishita, both of Berkeley, and Elizabeth A. Hoops, San Jose, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 24, 1982, Ser. No. 423,404
Int. Cl.[3] A21D *8/02*
U.S. Cl. 426—19 4 Claims

1. A method for preparing improved quality rice-containing chemically-leavened or yeast-leavened baked products wherein all or most of the wheat flour in the baking formulation has been replaced with rice flour, which comprises the steps of:

(a) mixing rice flour having an amylose content below 20% and a low gelatinization temperature with an amount of water and for a time sufficient to wet all the particles;

(b) holding the rice flour-water mixture at a temperature of about −25° C. to 77° C. for a period sufficient to hydrate the particles and insufficient to cause undesirable microbial growth in the mixture or cause undersirable heat deterioration of the flour;

wherein steps (a) and (b) are performed in the absence of added sugar; and

wherein the intensity of the mixing of step (a) and the holding time and temperature of step (b) are interrelated as follows:

if the mixing of step (a) is vigorous, the minimum holding time is shorter than for a simple blending; and for a given mixing intensity, the minimum holding time is longer at the lower temperatures than at the higher temperatures;

(c) mixing the treated rice flour of step (b) into a baking formulation; and

(d) baking the formulation of step (c).

4,508,737

METHOD FOR PRESERVING SILAGE AND RELATED COMPOSITIONS

Joseph G. Forest, Waverly, and Edward J. Czarnetzky, Chazy, both of N.Y., assignors to International Stock Food Corporation, Waverly, N.Y.

Continuation of Ser. No. 344,693, Feb. 1, 1982, abandoned, which is a continuation of Ser. No. 233,261, Feb. 10, 1981, abandoned, which is a continuation of Ser. No. 116,730, Jan. 30, 1980, abandoned, which is a continuation of Ser. No. 852,645, Nov. 18, 1977, abandoned. This application Nov. 16, 1983, Ser. No. 551,518
Int. Cl.[3] A23K *1/00*
U.S. Cl. 426—54 8 Claims

1. A process for preserving and controlling the fermentation of silages and high moisture content grains comprising mixing with fresh silages and/or grains a composition comprising a compound selected from the group consisting of alkali metal sulfite, alkali metal bisulfite, alkali metal metabisulfite or mixtures thereof, said compound being present in the resulting silage and/or grain mixture in an amount of 0.2 to 1.5 lbs/ton silage and sufficient to provide a substantially anaerobic atmosphere in the silage and/or grain, said amount being insufficient

to destroy substantial amounts of the natural bacteria which are present in the fresh silage and/or grain and which take part in fermentation.

4,508,738

NON-SUCROSE FERMENTING *PEDIOCCUS PENTOSACEUS*

Carlos F. Gonzalez, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Mar. 17, 1982, Ser. No. 359,164
Int. Cl.³ A23B *4/12*; A23L *1/31*; C12P *7/56*; C12N *15/00, 1/20, 1/00*; C12R *1/01*
U.S. Cl. 426—55 **23 Claims**

1. A storage stable biologically pure strain of *Pediococcus pentosaceus* adapted for food fermentations which strain is unable to ferment sucrose to lactic acid as a result of curing removal of a single naturally occurring plasmid from a known strain of *Pediococcus pentosaceus*, wherein the single plasmid removed corresponds in size and in control of sucrose fermentation to a single plasmid in *Pediococcus pentosaceus* NRRL-B-11,465, and which strain with the plasmid removed is able to ferment dextrose to lactic acid in a food.

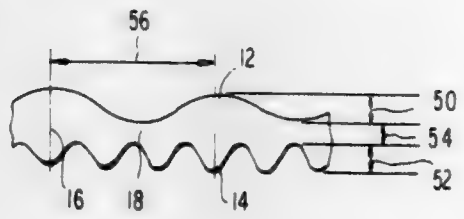
8. In the method for preparation of fermented foods by providing a culture in the foods and then fermenting the foods the improvement which comprises: providing in the foods a strain of *Pediococcus pentosaceus* which is unable to ferment sucrose to lactic acid as a result of curing removal of a single naturally occurring plasmid from a known strain of *Pediococcus pentosaceus*, wherein the single plasmid removed corresponds in size and in control of sucrose fermentation to a single plasmid in *Pediococcus pentosaceus* NRRL-B-11,465, wherein the fermentation is conducted in the presence of dextrose which is fermented to produce lactic acid which lowers pH of the food.

4,508,739

POTATO PRODUCT WITH OPPOSITE CORRUGATIONS OF DIFFERENT FREQUENCIES

Philip J. Ryan, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Dec. 7, 1982, Ser. No. 447,643
Int. Cl.³ A23L *1/212, 1/216*; A23P *1/00*
U.S. Cl. 426—144 **7 Claims**



1. A food product comprising:
a potato slice or potato dough sheet having corrugations on opposite surfaces thereof,
the corrugations on one surface having a frequency in the range from 1.5 to 5 times the frequency of the corrugations on the opposite surface, and
said slice or sheet having the capability of being cooked differentially in different thickness portions thereof.

4,508,740

TABLETTED BEVERAGE COMPOSITION CONTAINING DIPEPTIDE SWEETENER AND PROCESS THEREFORE

Daniel R. McSweeney, Plainsboro, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,805
Int. Cl.³ B27J *5/00*; A23L *2/00, 1/275, 1/236*
U.S. Cl. 426—250 **9 Claims**

1. An improved process for preparing a nonfriable, tableted beverage mix comprising a dipeptide sweetener, colorant, flavor and edible acidulent by compressing a moistened mixture of these components comprising the steps of:
(a) preparing a uniform dry mix comprising a dipeptide sweetener, an acidulent, a hydrophilic material and a colorant;
(b) admixing with the dry mix a moistener consisting of water, propylene glycol or ethyl alcohol, monocalcium phosphate, and glycerine or a glycerine derivative;
(c) adding a sufficient amount of a disintegrant to convert the mixture of step (b) into a tabletable mixture;
(d) compressing the tabletable mixture to the extent necessary to obtain a coherent tablet which has a tablet density, after drying, of from 0.5 to 1.0 grams per cubic centimeter; and, thereafter,
(e) drying the tablet to a stable moisture content of less than about 1% by weight.

4,508,741

COATED PET FOOD AND PROCESS FOR PREPARATION THEREOF

Colin D. Corbett, El Paso, Tex.; Robert L. Milloch, Garden Grove, and Felicisimo S. Sarno, Cerritos, both of Calif., assignors to Star-Kist Foods, Inc., Terminal Island, Calif.

Filed Sep. 15, 1982, Ser. No. 418,239
Int. Cl.³ A23K *1/00*
U.S. Cl. 426—303 **14 Claims**

1. A process for preparing a dry pet food product, comprising the steps of:
forming an edible core, the core including at least some farinaceous material;
applying a primary coating to the core, the primary coating having a proteinaceous component in an amount less than 50 percent of the total dry weight of the primary coating; and
applying a secondary coating over the primary coating on the core, the ingredients of the secondary coating being selected to produce a moist shiny and glossy appearance on the product after drying.

4,508,742

TREATING BEER TO PREVENT CHILL HAZE AND METAL CONTAMINATION

John R. McLaughlin, Media, Pa., and Elliot P. Hertzenberg, Wilmington, Del., assignors to PQ Corporation, Valley Forge, Pa.

Filed May 6, 1983, Ser. No. 492,314
Int. Cl.³ C12H *1/04*; C01B *33/24*; C10M *7/02*
U.S. Cl. 426—330.4 **11 Claims**

1. A method of treating beer to prevent chill haze while averting metal contamination of the beer comprising the steps of:
(a) contacting said beer with a combination of an inorganic chill-proofing agent and 0.2 to 6 pbw (parts by weight) of a porous, amorphous magnesium silicate for each 100 pbw of chill-proofing agent;
(b) maintaining said contact for a time sufficient for said combination to adsorb the components of chill haze from the beer; and
(c) separating the combination from the beer, said magnesium silicate having the following properties:

Properties of Magnesium Silicate	
Mole Ratio $MgO:SiO_2$	1:1.6 to 4.7
Surface Area (M^2/g)	30 to 600
Bulk Density Tamped (g/cc)	0.25 to 0.75
Weight loss 105° C. (wt %)	5 to 20
Ignition loss (wt %)	10 to 35
pH 5% wt in water	8.5 to 10.5

4,508,743

CAFFEINE ADSORPTION

David Green, Chavornay, and Maurice Blanc, Morges, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 153,904, May 28, 1980,. This application May 15, 1981, Ser. No. 264,062

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.[3] A23F *5/22*

U.S. Cl. 426—422 3 Claims

1. A process for the removal of caffeine from green coffee beans which comprises contacting the beans with an aqueous medium selected from the group consisting of water, an aqueous solution of non-caffeine green coffee solids and an aqueous solution of non-caffeine green coffee solids containing a minor amount of caffeine, recovering aqueous medium containing caffeine dissolved from the green coffee beans, removing caffeine from the medium by contact with substantially neutral activated carbon, separating the activated carbon with caffeine adsorbed thereon from aqueous medium of reduced caffeine content and combining non-caffeine green coffee solids present in the aqueous medium of reduced caffeine content with green coffee beans having a reduced content of caffeine and of non-caffeine green coffee solids, the ratio of aqueous medium to green coffee beans being 3:1 to 15:1.

4,508,744

BEVERAGE CLOUDING AGENT BASED ON CARNAUBA WAX

Albert J. Kruger, Jr., Altamonte Springs, Fla., and John K. Johnson, Decatur, Ga., assignors to The Coca Cola Company, Atlanta, Ga.

Filed Jun. 15, 1983, Ser. No. 504,457

Int. Cl.[3] A23L *2/00*

U.S. Cl. 426—590 23 Claims

1. An edible clouding agent which comprises finely divided carnauba wax particles in an emulsion base comprising water, a water-soluble gum, a polyhydric alcohol of two to six carbons, and an edible salt, wherein the size of the wax particles is characterized by an interfacial area of 12.5 m^2/cm^3 to 15.0 m^2/cm^3, wherein the weight ratio of wax to salt is about 1:2 to 2:3, and the weight ratio of wax to alcohol is about 1:4 to 1:3.

4,508,745

PRODUCTION OF A MANNAN OLIGOMER HYDROLYSATE

Charles V. Fulger, Millwood; Howard D. Stahl, Scarsdale, both of N.Y.; Evan J. Turek, Paramus, N.J., and Renee Bayha, Mahopac, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,914

Int. Cl.[3] A23F *5/24*

U.S. Cl. 426—594 14 Claims

1. A method of hydrolyzing a coffee extraction residue material to produce mannan oligomers from DP 1 to about DP 10 said coffee extraction residue material comprising coffee grounds that have been atmospherically extracted and then thermally hydrolyzed to remove most of the arabinogalactan therefrom, said method comprising:

(a) slurrying the coffee extraction residue material in a liquid to between 5% and 60% by weight dry basis, residue material;

(b) adding an acid catalyst to the slurry in an amount sufficient to adjust the pH of said slurry to between pH 0.5 and pH 4;

(c) feeding the slurry through a reactor at a temperature between 160° C. and 260° C. in from 6 seconds to 60 seconds at a pressure between 6 atmospheres and 35 atmospheres to hydrolyze the mannan;

(d) discharging the slurry from the reactor through an orifice so that the pressure is rapidly reduced to atmospheric, quenching the hydrolysis reaction;

(e) neutralizing the discharged slurry; and

(f) separating hydrolyzed coffee extraction residue material from the mannan oligomers from DP 1 to about DP 10 to produce mannan oligomers of a purity in excess of 80%.

8. A method of hydrolyzing a coffee extraction residue material to produce mannan oligomers from DP 1 to about DP 10 said coffee extraction residue material comprising coffee grounds that have been atmospherically extracted and then thermally hydrolyzed to remove most of the arabinogalactan therefrom, said method comprising:

(a) slurrying the coffee extraction residue material in a liquid to between 5% and 60% by weight dry basis, residue material;

(b) reacting the slurry in a reactor at a temperature between 160° C. and 260° C. for from 6 seconds to 60 seconds while simultaneously injecting carbon dioxide into the reactor as an acid catalyst so that the pH is less than about pH 4;

(d) discharging the slurry from the reactor through an orifice so that the pressure is rapidly reduced to atmospheric, rapidly quenching the hydrolysis reaction; and

(e) separating hydrolyzed coffee extraction residue material from the mannan oligomer solution having oligomers from DP 1 to about DP 10 to produce mannan oligomers of a purity in excess of 80%.

4,508,746

LOW CALORIE EDIBLE OIL SUBSTITUTES

Donald J. Hamm, New Providence, N.J., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 20, 1983, Ser. No. 506,234

Int. Cl.[3] A23D *5/00*

U.S. Cl. 426—601 2 Claims

1. A method for reducing the available calories in a food composition having an edible oil component, which method consists of replacing at least a substantial portion of the edible oil in such food composition with at least one low calorie substitute consisting of tricarballylic acid esterfied with saturated or unsaturated alcohols having straight or branched carbon chains of from 8 to 30 carbon atoms.

4,508,747

AROMATIC CITRUS OIL CONCENTRATE WHICH IS STABLE IN STORAGE

Erich Ziegler, Draisendorfer Strasse 143, D-8551 Aufsess, Fed. Rep. of Germany

Division of Ser. No. 362,893, Mar. 26, 1982, Pat. No. 4,435,437. This application Oct. 6, 1983, Ser. No. 539,672

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112380

Int. Cl.[3] A23L *1/221, 1/28*

U.S. Cl. 426—651 4 Claims

4. A process for producing a concentrate of natural citrus oil which retains its aroma and is stable in storage comprising: forming a mixture containing 10 to 95 percent by weight citrus peel oil concentrate and the remainder being one or more ingredients selected from the group consisting of essence oil concentrate and concentrate of an aqueous essence, wherein the peel oil concentrate is obtained by extracting the cold-pressed citrus peel oil with a polar organic solvent to form a solvent extract phase and a raffinate phase, separating the solvent extract phase from the raffinate phase, and separating oil concentrate from the separated solvent extract phase.

4,508,748

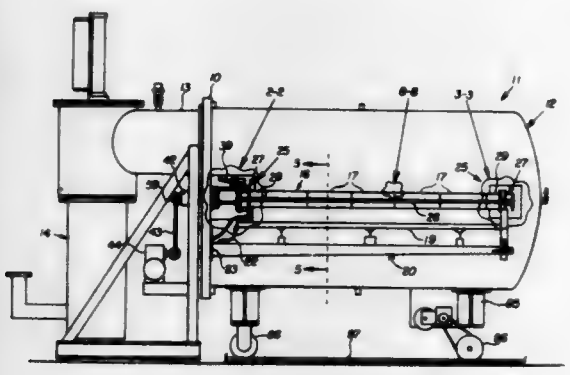
MANUFACTURING PROCESS FOR SELENIUM PHOTORECEPTORS

Richard C. Eriksson, Kingston, Mass., assignor to XIS, Incorporated, W. Groton, Mass.

Division of Ser. No. 455,828, Jan. 5, 1983,. This application Feb. 13, 1984, Ser. No. 579,550

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—8 **11 Claims**



1. A vacuum deposition method comprising the following steps:

providing a vacuum chamber;

disposing within said chamber a plurality of substrate electrode units to be coated;

reducing the pressure within said vacuum chamber;

establishing between said electrode units an electrical potential gradient that produces a glow discharge therebetween and resultant heating thereof;

sensing the temperature of said electrode units produced by said glow discharge heating thereof;

evaporatively coating said electrode units after a predetermined electrode unit temperature is produced by said glow discharge heating and sensed during said sensing step; and

removing said coated electrode units from said vacuum chamber.

4,508,749

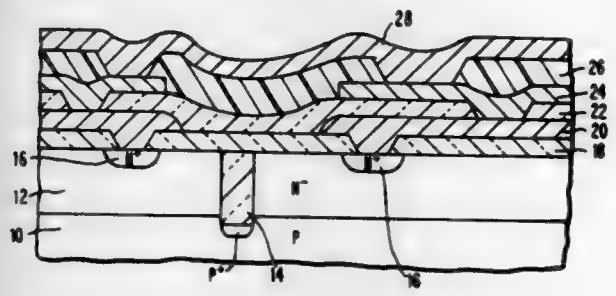
PATTERNING OF POLYIMIDE FILMS WITH ULTRAVIOLET LIGHT

James H. Brannon, Wappingers Falls, and John R. Lankard, Sr., Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,566

Int. Cl.³ B44C *1/22*; C03C *25/06, 15/00*; B05D *3/06*

U.S. Cl. 427—43.1 **34 Claims**



28. A method for forming a multilayer metallurgy structure for circuit interconnections comprising:

providing a substrate having a first circuit pattern of metallurgy thereon;

forming a polyimide layer over said circuit pattern in sufficient thickness to act as a dielectric layer;

directing U.V. radiation having a wavelength between about 240 to 400 nm. through a mask having a desired interlayer opening pattern;

projecting said pattern of U.V. radiation through a suitable optical system and imaging onto said polyimide layer;

continuing the exposure of said polyimide layer to said pattern of U.V. radiation until said layer has been etched through to said pattern of metallurgy with said openings each having sidewalls with a positive slope; and

forming a second circuit pattern of metallurgy on the remaining polyimide layer and through said interlayer opening pattern to electrical interconnect the said first and second patterns of metallurgy.

4,508,750

PROCESS FOR CROSSLINKING LACQUERS WHICH ARE BASED ON PLASTICS AND HAVE BEEN APPLIED TO BASE MATERIALS

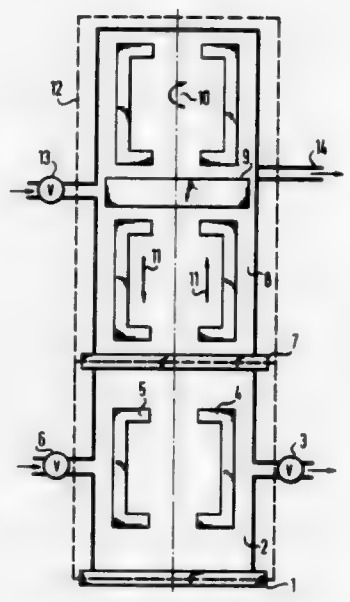
Eberhard Föll, Nehren; Peter Holl, and Helmut Vetter, both of Tübingen, all of Fed. Rep. of Germany, assignors to 501 Polymer-Physik GmbH & Co., Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,039

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010821

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **5 Claims**



1. A method of cross-linking a lacquer coating applied to an article, said lacquer being of the type curable by ionizing radiation in an inert atmosphere comprising:

(a) providing an article in a gas lock chamber, said chamber comprising a gate lock;

(b) evacuating said gas lock chamber;

(c) flooding inert gas into said gas lock chamber to normal pressure;

(d) opening said lock gate;

(e) moving said article directly from said gas lock chamber through said lock gate and into an irradiation chamber, said article bearing a coating of said lacquer, said irradiation chamber containing an inert gas atmosphere at normal pressure;

(f) irradiating the coated article with ionizing radiation in said radiation chamber to cross link said lacquer;

(g) moving the irradiated article back through said lock gate directly into said gas lock chamber, said gas lock chamber containing inert gas at normal pressure;

(h) closing said lock gate; and

(i) removing said article from said gas lock chamber.

4,508,751

PROCESS FOR THE PREPARATION OF HIGHLY SIZED PAPER

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 24, 1983, Ser. No. 478,257
Claims priority, application Japan, Mar. 26, 1982, 57-48244
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—44 10 Claims

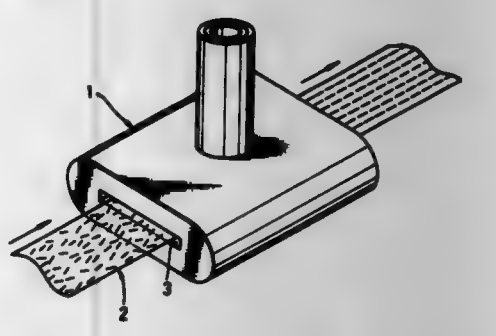
1. A process for the preparation of a sized paper resistant to permeation of water, an alkaline solution and an organic solvent which comprises subjecting a paper containing sodium stearate in combination with aluminum sulfate to electron radiation in such a manner that the dosage of the electron radiation absorbed by the paper reaches a range of 0.5 to 30 megarads.

4,508,752

METHOD FOR MANUFACTURING A MAGNETIC RECORDING MEDIUM

Yutaka Takei, and Masashi Somezawa, both of Sendai, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP82/00209, § 371 Date Jan. 28, 1983, § 102(e) Date Jan. 28, 1983, PCT Pub. No. WO82/04343, PCT Pub. Date Dec. 9, 1982
Continuation of Ser. No. 464,496, Jan. 28, 1983, abandoned. This PCT application May 28, 1982, Ser. No. 634,183
Claims priority, application Japan, May 28, 1981, 56-81296
Int. Cl.[3] H01F *10/00;* B05D *5/12*
U.S. Cl. 427—48 5 Claims



1. A method for manufacturing a magnetic recording medium, comprising the steps of coating a magnetic paint consisting mainly of a needle-like magnetic powder and a binder on a nonmagnetic support to form a coating film; establishing a DC magnetic field of a predetermined direction in a slot about which a superconductive solenoid coil is formed, said coil having substantially zero electrical resistance by being exposed to an extremely low temperature, passing said nonmagnetic support with the magnetic paint thereon while said needle-like magnetic powder is still mobile through said slot, said DC magnetic field having an intensity of 1.5 to 15 kOe and is applied for at least 100 msec, thereby orienting said needle-like magnetic powder in said predetermined direction; and drying said coating film.

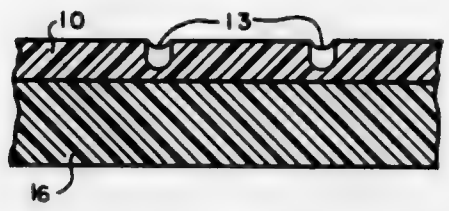
4,508,753

METHOD OF PRODUCING FINE LINE CONDUCTIVE/RESISTIVE PATTERNS ON AN INSULATING COATING

William E. Stepan, Clarendon Hills, Ill., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Aug. 19, 1982, Ser. No. 409,672
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—53.1 12 Claims

1. The method of forming a fine line circuit on an insulating coating comprising the steps of:
bonding said insulating coating on a substrate surface;
forming an engraved circuit pattern on a surface of said insulating coating by directing engraving means to remove selected portions of said insulating material;
applying a circuit medium over said engraved circuit pattern;



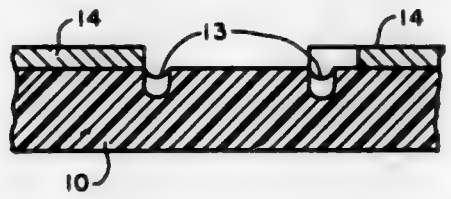
wiping said circuit medium off of said insulating coating surface leaving said engraved circuit pattern filled with said circuit medium; and
heating said insulating coating and substrate to cause said circuit medium to be sintered to said insulating coating and establishing said circuit pattern.

4,508,754

METHOD OF ADDING FINE LINE CONDUCTIVE/RESISTIVE PATTERNS TO A THICK FILM MICROCIRCUIT

William E. Stepan, Clarendon Hills, Ill., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Aug. 19, 1982, Ser. No. 409,673
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—53.1 6 Claims



1. The method of adding fine line circuits to a thick film microcircuit comprising the steps of;
providing a dielectric substrate surface;
forming an engraved circuit pattern on said dielectric substrate surface by directing engraving means to cut and remove selected portions of said dielectric substrate surface;
applying a circuit medium over said engraved pattern;
wiping said circuit medium off of said dielectric substrate surface leaving said engraved pattern filled with said circuit medium;
screen printing thick film circuit elements on said dielectric substrate surface and over selected portions of said engraved circuit pattern; and
heating said substrate, to cause said circuit medium and said thick film elements to be sintered to said substrate establishing said thick film microcircuit.

4,508,755

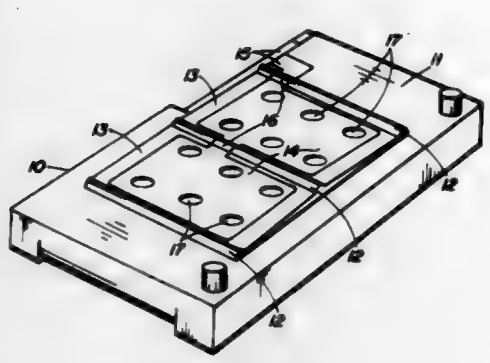
METHOD OF APPLYING A LAYER OF CONDUCTIVE INK

Anthony B. Reintjes, Dorchester; Robert J. Fleming, St. Thomas, and Bev W. T. Gumb, London, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 30, 1983, Ser. No. 480,217
Int. Cl.[3] B05D *5/12;* B41F *17/00*
U.S. Cl. 427—58 5 Claims

1. A method of applying a layer of conductive ink in a predetermined pattern on a plastic backplate of an electret transducer, said backplate having a non-planar front surface, a side edge, a recessed portion at one end and an end surface associated with said recess, said predetermined pattern extending into said recess comprising;
filling a recess in a die with conductive ink, the recess having a shape related to said predetermined pattern;

positioning said plastic backplate at a position relative to said recess in said die;
pressing a resilient ball-ended member on to said die, over said recess in said die;
pressing said ball-ended member on to said plastic backplate and deforming the ball end of the ball-ended member into



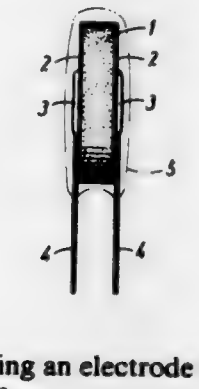
contact for the entire predetermined pattern on said non-planar surface, down said side edge into contact with a surface in said recess in the backplate, and into contact with said end surface, whereby the ink picked up by the ball end from said recess in said die is transferred to said non-planar surface, including said side edge, said surface in said recess in said backplate and said end surface.

4,508,756

METHOD FOR INHIBITING OXIDATION OF A COPPER FILM ON CERAMIC BODY

Atsuo Senda, Ootsu; Tohru Kasanami, Otokuni, and Takuji Nakagawa, Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 194,984, Oct. 8, 1980, abandoned. This application Jun. 17, 1982, Ser. No. 389,251
Int. Cl.³ B05D *1/18*; C23C *3/02, 13/02*
U.S. Cl. 427—81 **8 Claims**



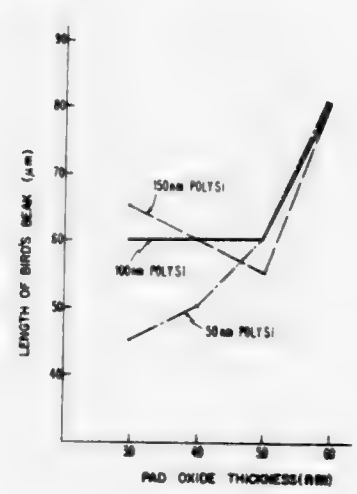
8. A process of forming an electrode of a ceramic capacitor, comprising the steps of
preparing a dielectric ceramic body having a surface,
forming a copper film serving as an electrode on said surface of said dielectric body by electroless plating, vacuum evaporation, sputtering or ion plating, and
poisoning the catalytic activity of said copper film by temporarily subjecting the copper film formed on the surface of the ceramic body to an agent consisting of a hydrocarbon halide compound promptly after the step of forming the copper film on the ceramic body, wherein said hydrocarbon halide is at least one member selected from the group consisting of trichloroethylene, perchloroethylene, freon, chlorobenzene, methyl chloride, methylene chloride, chloroform and carbon tetrachloride, and removing said agent from said copper film, whereby said copper film has a measurably increased resistance to oxidation after removal of said agent, said increased resistance being a result of the action of said agent.

4,508,757

METHOD OF MANUFACTURING A MINIMUM BIRD'S BEAK RECESSED OXIDE ISOLATION STRUCTURE

Karen A. Fabricius, Newburgh, and Bernard M. Kemlage, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,883
Int. Cl.³ H01L *21/76*
U.S. Cl. 427—93 **9 Claims**



1. A method for manufacturing a monolithic integrated circuit structure comprising:
providing a monocrystalline silicon semiconductor body;
depositing onto said monocrystalline semiconductor body layers of silicon dioxide, polycrystalline silicon, and silicon nitride in that order;
said silicon dioxide layer is between about 2 to 10 nanometers in thickness;
patterning the said layers to form openings at the areas wherein it is desired to form an oxide isolation pattern within the said monocrystalline semiconductor body;
oxidizing said body at the same openings until the desired oxide isolation pattern penetrates to the desired depth within the semiconductor body; and
removing the remaining pattern of said layers following said oxidizing of said body before forming semiconductor devices in said body and between said oxide isolation pattern.

4,508,758

ENCAPSULATED ELECTRONIC CIRCUIT

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,004
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—96 **8 Claims**



1. A method of encapsulating a hybrid circuit formed from a substrate having a plurality of circuit patterns contained thereon, comprising the steps of:
(a) mounting individual or discrete circuit devices on preselected areas of each circuit pattern;
(b) applying a first encapsulant composition having a yield point stress of from 2000 to 3200 dynes/cm^2 and a viscos-

ity of from 700,000 to 1.2×10^6 centipoise around the periphery of each circuit pattern on the substrate so as to form a wall or dam around each such circuit pattern, except for bonding pad areas used for making external connections to each of such circuits; and

(c) applying a second encapsulant within the wall so as to cover and encapsulate each circuit pattern and device mounted thereon, said second encapsulant being applied to a level such that it is retained within the wall.

4,508,759

METHOD AND APPARATUS FOR MAKING FRICTION LOCKING THREADED FASTENERS

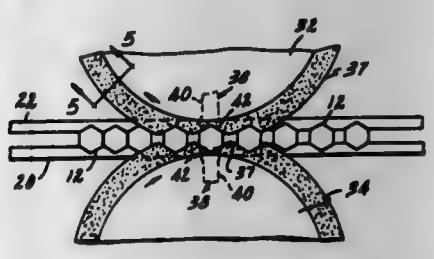
Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 376,764, May 10, 1982, Pat. No. 4,428,981. This application Jan. 10, 1983, Ser. No. 456,569

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.[3] **B05D** *1/12*

U.S. Cl. 427—195 **11 Claims**



1. The method of making locking fasteners which comprises advancing a series of headed threaded fasteners on a pair of parallel belts spaced to support the fasteners with the heads thereof on the belts and with the threaded shanks extending downwardly below the belts, defining an application zone by providing nozzle means at the side of the path of advance of the threaded shanks, heating the fasteners prior to entry into the application zone to a temperature sufficient to fuse thermoplastic resin particles received on the shanks, applying a stream of thermoplastic resin particles through said nozzle means onto the shanks as they traverse the application zone, positively rotating the fasteners as they traverse the application zone at a rate sufficient to form an annular deposit of fused resin extending completely around the shanks of the fasteners and directing the stream of particles against the sides of the fasteners at an oblique angle to the axes thereof such that the deposit of friction material is primarily at the non-load bearing sides of the threads.

4,508,760

METHOD AND APPARATUS FOR MICROENCAPSULATION

Roger Olson, Clear Lake, Wis., and Ronald J. Versic, Dayton, Ohio, assignors to Nova Tran Corporation, Clear Lake, Mich.

Filed Jun. 10, 1983, Ser. No. 503,053

Int. Cl.[3] **B01J** *13/02;* **B05D** *5/06, 5/12*

U.S. Cl. 427—213.34 **8 Claims**

1. A method for microencapsulating an electroluminescent phosphor with an extremely thin coating which comprises:

vaporizing a poly-para-xylylene,

pyrolyzing the resulting vapors to form reactive monomeric radicals,

passing said monomeric radicals to a vacuum deposition zone,

tumbling particles of an electroluminescent phosphor in said deposition zone,

sifting said particles during such tumbling to thereby maintain the original particle size distribution during deposition, and

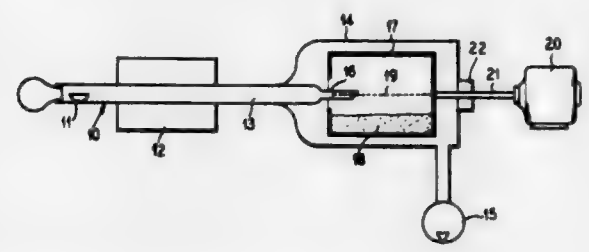
depositing said reactive monomeric radicals on said particles to cause said radicals to be adsorbed and polymerized into a coating on the surfaces of said particles.

7. An apparatus for encapsulating particles of an electroluminescent phosphor which comprises:

a vaporizing zone for vaporizing a poly-para-xylylene,

a pyrolysis zone connected to said vaporizing zone,

a rotary drum receiving reactive monomers formed in said pyrolysis zone, said rotary drum having discrete particles of said electroluminescent phosphor therein,



a vacuum chamber surrounding said drum and communicating with the interior of said drum,

a screen disposed within said drum to sift particles during rotation of said drum and tumbling of said particles, said screen having openings therein of a size arranged to maintain the original particle size distribution by the sifting action, and drive means for rotating said drum.

4,508,761

METHOD OF PREPARING POLYMER-COATED PARTICULATE INORGANIC MATERIAL

Takao Miyoshi, and Akira Sakanoue, both of Ube, Japan, assignors to Central Glass Company Limited, Ube, Japan

Filed Feb. 18, 1983, Ser. No. 467,839

Claims priority, application Japan, Feb. 19, 1982, 57-24292

Int. Cl.[3] **B05D** *7/00;* **B29J** *5/00*

U.S. Cl. 427—221 **22 Claims**



1. A method of preparing a polymer-coated particulate graphite fluoride, comprising the steps of:

a. preparing a reaction system by dispersing from 1 to 100 parts by weight of graphite fluoride in the form of fine particles and from 0.1 to 100 parts by weight of at least one vinylic monomer capable of undergoing radical polymerization or radical copolymerization in a liquid medium comprised of 100 parts by weight of water and from 1 to 100 parts by weight of an organic solvent which is soluble in water, followed by adding to said liquid medium from 0.01 to 20% by weight, based on the weight of said at least one vinylic monomer, of a polymerization initiator for said at least one vinylic monomer;

b. adjusting the pH of said reaction system to a value in the range of from 5 to 9; and

c. allowing said at least one vinylic monomer to undergo polymerization or copolymerization and to bond to the surfaces of the particles of said graphite fluoride by graft Polymerization.

4,508,762

PROCESS FOR MANUFACTURING A HIGH-PERFORMANCE THERMAL PERFORMANCE MATERIAL

Gérard Rousseau, Gironde, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Apr. 29, 1983, Ser. No. 490,039
Claims priority, application France, Apr. 29, 1982, 82 07415
Int. Cl.³ B05D *3/02, 3/12;* B29C *25/00*
U.S. Cl. 427—228 **14 Claims**

1. A process for manufacturing a thermal protection material capable of withstanding thermal shocks and very high temperatures up to 1000° C. for 10 hours, which comprises:

(1) forming a highly porous substrate comprising at least one of inorganic and organic fibers rigidified by a reinforcing resin selected from the group of thermostable and thermosetting resins having a carbon content higher than 45% by weight, by the steps of:

(a) preparing a first solution of a suspension of said fibers comprising a dispersant agent non-solvent of said resin and an emulsifying agent,

(b) preparing a second solution comprising a liquid form of said resin, said emulsifying agent, a solvent of said resin, said dispersant agent which is miscible with said solvent,

(c) mixing said first and second solutions until a homogeneous liquid phase is obtained,

(d) maintaining said phase for a period of time necessary so that the droplets of said resin collect and form on said fibers, thereby forming a film of said resin thereon,

(e) draining, drying and hardening the resulting material so as to form said substrate, and

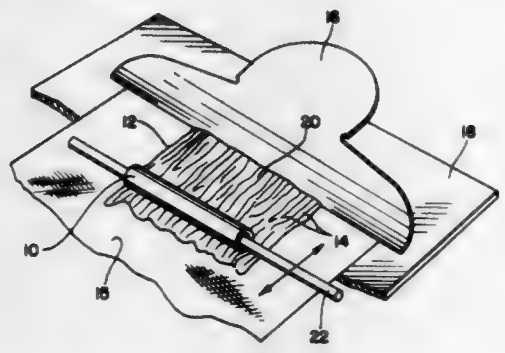
(2) subjecting said substrate, at least once, to the steps of pyrolyzing, coating and heating.

4,508,763

PROCESS AND PATTERN FOR DECORATING CYLINDRICAL ARTICLES

Kenneth L. Shemenski, Spragueville Rd., Smithfield, R.I. 02917

Filed Sep. 6, 1983, Ser. No. 529,502
Int. Cl.³ B05D *1/36*
U.S. Cl. 427—262 **8 Claims**



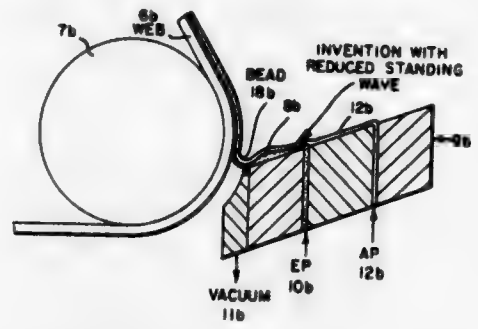
1. The process of lacquer decorating the outer surface of a metal generally cylindrically-shaped article such as a pen barrel, flashlight body, and the like comprising, coating said outer surface with a first lacquer, curing said first lacquer coat and thereafter decorating said surface with a second substantially similar lacquer of a substantially different color or shade than said first lacquer in a variegated pattern, said decorative pattern being applied by supporting said article for free rotation and thereafter lightly rolling said article in longitudinal contact with the upper surface of a patterning pad formed from a planar sheet of unpatterned, lint-free textile material which has been folded upon itself along a plurality of irregular longitudinally directed lines and wetted with said second lacquer coat so as to impart said variegated pattern to said article and thereafter immediately roll blotting said thus decorated article on a sheet of lacquer absorbent cloth and thereafter curing said second lacquer coat, wherein said first and second lacquers are melamine-alkyd resin mixtures.

4,508,764

COATING PROCESS EMPLOYS SURFACTANTS

Michael D. Zeldes, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1982, Ser. No. 449,744
Int. Cl.³ B05D *3/00;* G03C *1/76*
U.S. Cl. 427—296 **7 Claims**



1. In a process of slide flow coating wherein a stream of silver halide emulsion flows onto a moving support or web under vacuum conditions and, just prior to contact, said stream of emulsion exhibits a standing wave which causes nonuniform coating, ribbing or streaking as defects in the coating the improvement comprising reducing said standing wave by incorporating in the emulsion a hydrocarbon surfactant in combination with a surfactant.

4,508,765

SYNTHETIC RESINS AND COATING COMPOSITIONS CONTAINING THEM

John Ring, Romford; David French, Walthamstow; Michael Hickling, Saffron Walden, and Michael G. Sturgess, Addington, all of England, assignors to International Paint public limited company, London, England

Filed Sep. 30, 1982, Ser. No. 429,983
Claims priority, application United Kingdom, Oct. 20, 1981, 8131611
Int. Cl.³ C08L *61/14, 61/32, 62/00*
U.S. Cl. 427—386 **22 Claims**

1. A heat-curable water-dispersible film-forming synthetic resin composition which is the reaction product of a water insoluble resin, selected from the group consisting of phenolic resins which are condensation products of a phenol and an aldehyde and amino resins which are formed by the reaction of a compound containing amine groups with an aldehyde, with an epoxy resin and from 0.5 to 15 percent by weight of a phosphoric acid based on the total synthetic resin in the composition, the weight ratio of the said water insoluble resin to the epoxy resin in the composition being from 1:20 to 2:1.

10. A process for the preparation of a heat-curable film-forming synthetic resin composition comprising reacting an epoxy resin with a water insoluble resin, selected from the group consisting of phenolic resins which are condensation products of a phenol and an aldehyde and amino resins which are formed by the reaction of a compound containing amine groups with an aldehyde, in a weight ratio of the said water insoluble resin to epoxy resin of 1:20 to 2:1 and with 0.5 to 15% by weight of a phosphoric acid based on the total synthetic resin in the composition, the reaction including a heating step at a temperature of at least 50° C. when the water insoluble resin and the epoxy resin are both present, to produce a water dispersible reaction product.

22. A process for coating a metal substrate comprising the steps of:

preparing a heat-curable water dispersible film-forming synthetic resin composition by reacting a water insoluble resin, selected from the group consisting of phenolic resins which are condensation products of a phenol and an alde-

hyde and amino resins which are formed by the reaction of a compound containing amine groups with an aldehyde, with an epoxy resin and from 0.5 to 15 percent by weight of a phosphoric acid based on the total synthetic resin in the composition, the weight ratio of said water-insoluble resin to said epoxy resin in the composition being from 1:20 to 2:1; and dispersing the reaction product in a mainly aqueous continuous phase in the presence of a base which neutralizes at least partially the acidic phosphate groups of the synthetic resin and optionally a water-dispersible epoxy resin;

applying said composition to a metal substrate; and,

heating said composition at a temperature of from about 100° C. to about 240° C. for a period of time of from about 5 seconds to about 10 minutes to effect curing.

4,508,766

PROCESS FOR PRODUCING AROMATIC IMIDE POLYMER LAMINATE MATERIAL

Toshihiro Inaike, Chiba; Katsuhiko Ushimi, Ichihara; Shuji Yamamoto, Chiba, and Toshihiro Inoue, Ichihara, all of Japan, assignors to UBE Industries, Ltd., Chiba, Japan

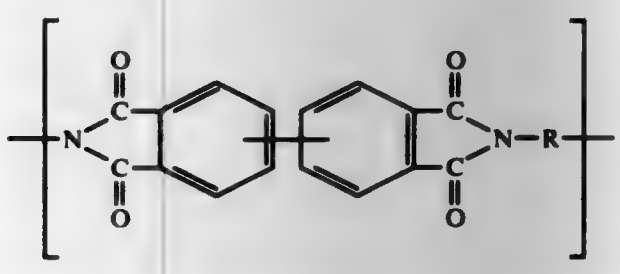
Filed Apr. 21, 1983, Ser. No. 487,140

Claims priority, application Japan, Apr. 30, 1982, 57-71546

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—388.2 **14 Claims**

1. A process for producing an aromatic imide polymer laminate material, comprising coating a surface of a metallic foil with a solution of at least one aromatic imide polymer comprising at least 90 molar% of at least one type of recurring unit of the formula (I):



(I)

wherein R represents a symmetrical bivalent aromatic radical having no substituent, and dissolved in a solvent consisting essentially of at least one phenolic compound; and heat evaporating said solvent from said aromatic imide polymer solution layer to form an aromatic imide polymer solid layer firmly bonded directly to said metallic foil.

4,508,767

PROCESS FOR FORMING A CORROSION RESISTANT COATING

Sadakazu Hokamura, Yamato; Toshio Shinohara, Yokohama; Mitsutoshi Aritomi, and Yuji Yoshida, both of Ibaraki, all of Japan, assignors to Dai Nippon Tokyo Co., Ltd, Osaka and Mitsubishi Yuka Fine Chemicals Co., Ltd., Tokyo, both of, Japan

Filed Nov. 30, 1983, Ser. No. 556,328

Claims priority, application Japan, Dec. 28, 1982, 57-229956; Dec. 28, 1982, 57-229957

Int. Cl.³ B05D *1/36*

U.S. Cl. 427—407.1 **5 Claims**

1. A process for forming a moisture resistant coating film, which comprises:

(i) priming a coating composition on a substrate and drying it to form a prime coat;

(ii) coating thereon a radical-polymerizable and oxidation-polymerizable, room temperature solventless coating composition composed essentially of:

A. from 30 to 90% by weight of a resin component comprising (A) from 30 to 70% by weight of an oil-modified alkyd resin having an oil length of from 30 to 70% and modified with an α,β-unsaturated monocarboxylic acid selected from the group consisting of sorbic acid, crotonic acid and 2-(β-furyl)acrylic acid, the content of the α,β-unsaturated monocarboxylic acid in the alkyd resin being from 0.5 to 30% by weight, and (B) from 70 to 30% by weight of a polymerizable monomer in which the ingredient (A) is dissolved,

B. from 70 to 10% by weight of a scaly pigment, and

C. an effective amount of a curing catalyst, and polymerizing it to form a cured intermediate coat; and

(iii) coating thereon an air-drying finish coating composition and drying it to form a finish coat.

4,508,768

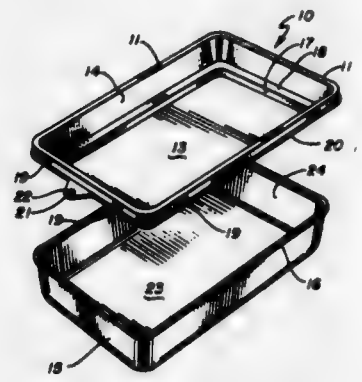
PROTECTIVE LINER FOR VESSELS

Edward B. Kornely, Two Rivers, and Gerald T. Paul, Manitowoc, both of Wis., assignors to Newell Companies, Inc., Manitowoc, Wis.

Filed Jul. 5, 1983, Ser. No. 510,948

Int. Cl.³ B65D *21/00*

U.S. Cl. 428—35 **12 Claims**



1. A liner made of a thin film of flexible material for packaging and protecting the interior surfaces of a vessel having a rim, a bottom surface and a medial surface which lies between the rim and the bottom surface, comprising:

an edge section for attachment to the rim of the vessel, said edge section having a channel which fits over the rim of the vessel along the full length of the rim and further having means for holding the channel in place on the full length of the rim;

a bottom web section which covers the entire bottom surface of the vessel when the liner is in place in the vessel; and

a spacer web section extending between the edge section and the bottom web section which covers the entire medial surface of the vessel.

said spacer web section including a spacing portion raised inwardly so as to stand away from the medial surface of said vessel, such that when a second vessel of the same shape is nested within the vessel, the second vessel is prevented from lying tightly against the interior surfaces of the vessel.

4,508,769

PROCESS TO FORM AMORPHOUS, CRYSTALLIZABLE THERMOPLASTIC POLYMERS

Nicholas Vanderkooi, Jr., Pompton Plains; Philip E. Stevenson, South Orange, and Robert J. Welgos, Wharton, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 395,432, Jul. 6, 1982, Pat. No. 4,455,417. This application Feb. 15, 1984, Ser. No. 580,396

Int. Cl.³ F16L *11/00*

U.S. Cl. 428—36 **9 Claims**

1. An article of manufacture made of a crystallizable amorphous thermoplastic polymer composition having a modulus of rigidity G which decreases with increasing temperature to a G_{min} at T_{min} and subsequently increases with increasing tem-

perature from G_{min} to G_{cry} at T_{cry} at which point there is a decrease in the rate at which G changes with increasing temperature, the polymer crystallizing below T_{cc} upon cooling from a temperature above T_{cc}, the article having a thickness of from 0.127 cm (0.050 inches) to 1.27 cm (0.500 inches).

3. The article as recited in claim 1 in the form of a tube.

4,508,770

ROAD REPAIR MATERIAL OF KNITTED UNIDIRECTIONAL GLASS ROVING MAT COATED WITH ELASTOMERIC MODIFIED ASPHALT

John W. Muncaster, Columbus; Michael G. Roberts, Heath; R. David Rowlett, Granville; Todd B. Hoitink, Columbus; William E. Uffner, Newark, and Robert N. White, Etna, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 19, 1984, Ser. No. 590,674
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—63 **2 Claims**

1. A knitted unidirectional mat of glass rovings factory coated with elastomeric modified asphalt, for use in road repairing.

4,508,771

EXTRUDED CARPET BACKING WITH RESIN AND ELASTOMER COMPONENTS

Clarence Peoples, Jr., Rockwell, N.C.; Robert C. Puydak, East Orange, and Deborah S. Jansen, East Windsor, both of N.J., assignors to Exxon Research & Engineering Co. and Collins and Aikman Corporation, both of, Del., a part interest to each

Filed Nov. 19, 1979, Ser. No. 95,565
Int. Cl.³ B32B *3/02, 33/00*
U.S. Cl. 428—95 **63 Claims**

33. A carpet construction comprising a plurality of carpet fibers, and an extrudable thermoplastic acoustical and thermal barrier comprising from 10 up to about 25 weight percent of a thermoplastic resin component comprising a copolymer of ethylene and an unsaturated ester of a lower carboxylic acid, from about 4 to about 15 weight percent of an olefinic elastomer component, and from about 60 to about 85 weight percent of a filler component.

4,508,772

PRESSED COMPOSITE ASSEMBLY AND METHOD

Mark T. Churchland, Vancouver, and David Parker, West Vancouver, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Nov. 1, 1983, Ser. No. 547,577
Int. Cl.³ B29J *5/02, 5/04*; B32B *5/08, 31/20*
U.S. Cl. 428—106 **20 Claims**



1. In a continuous process of forming an elongate pressed composite assembly from a plurality of elongate strands by subjecting the strands to heat and pressure wherein the improvement comprises a method for compressing a particularly arranged composite mat of strands so as to compensate for internal stresses imparted to said pressed composite assembly during compressing because of the angle at which the strands are stacked, including the steps of:

(a) forming a first lay-up containing a plurality of strands in a generally parallel, longitudinally aligned relationship and in a generally random overlapping relationship wherein succeeding strands generally overlap only a portion of preceding strands so that the strands are, on the average, angled above the horizontal;

(b) forming a second lay-up containing a plurality of strands in a generally parallel, longitudinally aligned relationship and in a generally random overlapping relationship wherein succeeding strands generally overlap only a portion of preceding strands so that the strands are, on the average, angled above the horizontal;

(c) inverting one of said first or second lay-ups and positioning it on top of the other of said first or second lay-ups to form a composite mat; and

(d) transporting the composite mat through a compressing zone of a press assembly whereby the internal stress in each half of the pressed composite assembly due to the angle at which the strands are stacked is offset by the internal stress in the opposing half of the pressed composite assembly.

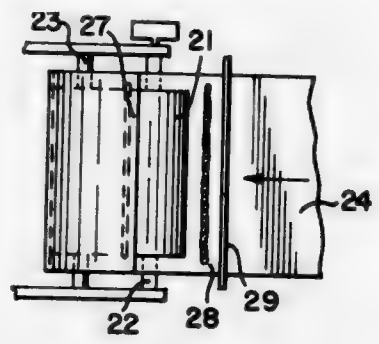
13. An elongate pressed composite assembly formed by compressing a particularly arranged composite mat of elongate strands between converging facing walls of a press assembly so that the internal stress in horizontal sections of the pressed composite assembly due to said compressing is offset by a stress due to the particular arrangement of elongate strands in said composite mat, said particularly arranged composite mat comprising one lay-up inverted and positioned above another lay-up, said lay-ups containing a plurality of strands in a generally parallel, longitudinally aligned relationship and in a generally random overlapping relationship wherein succeeding strands generally overlap only a portion of preceding strands so that the strands are, on the average, angled above the horizontal.

4,508,773

PAPER PRODUCT AND GLUE THEREFOR

Gary A. Maxwell, Lisle, Ill., assignor to Eschem Inc., Chicago, Ill.

Filed Apr. 27, 1983, Ser. No. 489,154
Int. Cl.³ B32B *27/14, 9/06*; C09J *5/02*
U.S. Cl. 428—198 **37 Claims**



1. A cellulosic article having portions thereof adhered to each other, comprising the portions being adhered together by a rapidly setting, aqueous protein-based animal glue formulation that is set as a glue strip of the cellulosic article,

said glue formulation being a water-soluble blend of: (a) between about 20 and about 40 weight percent, based on total weight of the formulation, of an animal protein component derived from collagen, (b) water, and (c) a tack enhancing agent which is a water soluble inorganic salt;

said water soluble inorganic salt including an anion that is divalent at the pH value of the glue formulation, said divalent anion being present in the glue formulation at a concentration that is effective to provide a controlled rapid setting time, up to the solubility limit of the soluble salt within the glue formulation; and

said set glue strip having been formed by controlled rapid setting of said glue formulation that had been applied to the cellulosic article at an elevated temperature greater than room temmperature;

said set glue strip had been applied at a temperature between about 100° and about 180° F.

4,508,774

CELLULAR, MOLDED POLYURETHANE PARTS, PROCESS FOR THEIR PREPARATION BY THERMOFORMING OF POLYESTER-URETHANE FOAM AND THEIR USE

Herbert Grabhoefer, Limburgerhof, and Otto Volkert, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,888
Int. Cl.³ C08G *18/14*
U.S. Cl. 428—220 13 Claims

1. A cellular polyurethane having a density of 15 Kg/m^3 to 400 Kg/m^3 prepared by: thermoforming in a molding device at a temperature of from about 140° C. to 200° C. and at a compression factor of from 1 to 10, a polyurethane foam having a density of from 15 Kg/m^3 to 40 Kg/m^3, wherein said polyurethane foam is prepared by reacting an isocyanate component comprising a member selected from the group consisting of;

(a) polymeric MDI;
(b) carbodiimide modified MDI;
(c) urethane modified MDI; and
(d) mixtures thereof,

with a polyol component selected from the group consisting of:

(e) a polyester polyol mixture containing one or more polyester polyols; and
(f) a polyester/polyether polyol mixture comprising one or more polyester polyols and one or more polyether polyols, provided that the polyester polyols comprise at least 55 percent by weight of said polyol component,

in the presence of catalysts, blowing agents, and optionally chain extenders, cross-linking agents, additives, and auxiliaries.

4,508,775

GAS PERMEABLE COMPOSITE STRUCTURES

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 542,026, Oct. 14, 1983, abandoned. This application Dec. 28, 1983, Ser. No. 566,404
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—240 20 Claims

1. A flexible, microporous, hydrophobic and oleophobic film-like composite structure comprising:

(1) from about 25 to about 75 parts by weight of inorganic, reinforcing microfibers,
(2) from about 75 to about 25 parts by weight of a polymeric binding agent in the form of a continuous matrix, said binding agent being derived from an emulsion or latex of particles of said binding agent having a size of less than about 1 micrometer in a liquid, said binding agent and said microfibers being present in the composite structure in a total amount of 100 parts by weight, based on the weight of said binding agent and said microfibers, and
(3) a treating agent present in an amount sufficient to render the composite structure both hydrophobic and oleophobic.

4,508,776

METALLISED FABRIC

Theodore D. Smith, Heathrow, Brimpton Rd., Baughurst, Hampshire, England

Filed Oct. 11, 1983, Ser. No. 540,673
Claims priority, application United Kingdom, Oct. 12, 1982, 8229142
Int. Cl.³ B32B *15/14;* E06B *9/24*
U.S. Cl. 428—248 10 Claims

1. A microporous metallised fabric comprising a microporous flexible fabric substrate having a layer of metal deposited on at least one side thereof, and a thin film of a polyamide-based ink printed on to the deposited metal at such a rate as not significantly to affect the microporous nature of the fabric substrate.

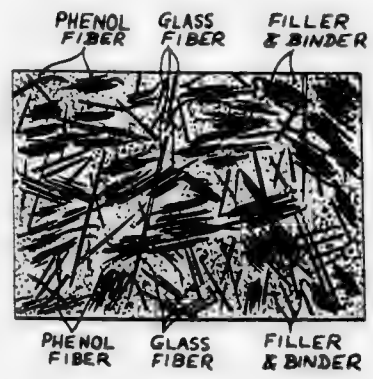
8. A method of manufacturing a microporous metallised fabric, including a first step of metallising at least one surface of a microporous fabric substrate and a second step of printing on the metallised surface a thin film of a polyamide-based ink at such a rate that the microporous structure of the metallised fabric is not significantly affected by the ink film.

4,508,777

COMPRESSED NON-ASBESTOS SHEETS

Tsutomu Yamamoto; Masaaki Ashizawa; Kazuo Nishimoto, and Yuji Sekiguchi, all of Yokohama, assignors to Nichias Corporation, Tokyo, Japan

Continuation of Ser. No. 243,575, Mar. 13, 1981, abandoned. This application Dec. 30, 1982, Ser. No. 454,791
Claims priority, application Japan, Mar. 14, 1980, 55-32536
Int. Cl.³ D04H *1/08*
U.S. Cl. 428—280 13 Claims



1. A compressed non-asbestos gasket material sheet having an improvement which comprises in combination:

a base including 25 to 75% by weight of at least two types of fibers selected from at least one of two groups of inorganic fibers other than asbestos and a group of organic fibers, the inorganic and organic fibers having a uniform mix completely free of asbestos;
rubber as a binder for said base including 5 to 50% by weight thereof selected from the group consisting of natural rubber and synthetic rubber in a solvent with the uniform mix of inorganic and organic fibers;
the remainder fillers and rubber chemicals in a compressed sheet having void content at an extremely low level that avoids shrinkage upon rubber vulcanization into an intimate and dense mix completely free of asbestos.

4,508,778

YARNS AND FIBERS GOOD PROPERTIES, BASED ON ATACTIC POLYVINYL CHLORIDE, AND PROCESS FOR THE PRODUCTION

Georges Achard, Décines, France, assignor to Rhovyl, Lyons, France

Continuation of Ser. No. 328,522, Dec. 8, 1981,. This application Aug. 12, 1983, Ser. No. 522,746
Claims priority, application France, Dec. 8, 1980, 80 26046
Int. Cl.³ B32B *27/00;* D02P *3/00;* D01D *5/12*
U.S. Cl. 428—364 2 Claims

1. An improved dry-spun filament, yarn or fiber consisting essentially of atactic polyvinyl chloride, and having the following characteristics:

a residual shrinkage in boiling water of less than 3%,
a modulus of elasticity which is greater than or equal to 2 kN/mm^2,
an orientation index of the crystalline zones which is greater than or equal to 70%,
an orientation index of the mesomorphic zones which is greater than or equal to 8%, and
an orientation index of the amorphous zones which is greater than or equal to 5%.

4,508,779

ENAMELLED WIRE

Masayoshi Miyake; Isao Ueoka; Munetaka Kawaguchi; Hirohiko Nakabayashi, and Teruyuki Yamamoto, all of Aichi, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 18, 1982, Ser. No. 389,800
Claims priority, application Japan, Jun. 18, 1981, 56-94757
Int. Cl.³ B32B *27/00;* H01B *7/00*
U.S. Cl. 428—383 10 Claims

1. An enameled wire comprising a layer of baked insulation formed on a conductor either directly or through another insulation, wherein at least the outermost layer of said wire has an insulation coating formed by applying and baking a wire enamel composition consisting essentially of a polyester resin at least one molecule of which is terminated with an alkyl group having 21 or more carbon atoms prepared by reacting component (i) a polyhydric alcohol, component (ii) a polybasic carboxylic acid or a derivative thereof and component (iii) a compound that has a straight alkyl group having 21 or more carbon atoms in the molecule and which has a functional group capable of reaction with either component (i) or (ii), wherein component (iii) is used in an amount of from 0.4 to 6.0% by weight of the resin obtained.

4,508,780

METALLIZED POLYMER GRANULES, AND THEIR USE

Kirkor Sirinyan, and Rudolf Merten, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,614
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215413
Int. Cl.³ B32B *5/16, 15/08*
U.S. Cl. 428—407 16 Claims

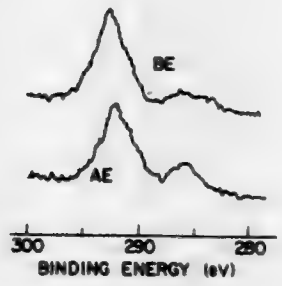
1. Polymer granules having a single particle volume of 0.01 mm^3 to 150 mm^3 and a metal layer of 0.5 to 35 percent by weight, relative to polymer said metal layer obtained by currentless chemical metallization after activating the surfaces of the granules with metallo-organic compounds of elements of group 1B or VIII of the periodic table of the elements and subsequently reducing said metallo-organic.

4,508,781

FLUORINATION BY INORGANIC FLUORIDES IN GLOW DISCHARGE

Toshiharu Yagi, Takarazuka, Japan, and Attila E. Pavlath, Walnut Creek, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 7, 1982, Ser. No. 385,674
Int. Cl.³ B32B *27/00;* B05D *3/06*
U.S. Cl. 428—409 13 Claims



1. An essentially surface fluorinated carbon containing synthetic or natural polymer, the fluorinated surface of which is comprised of carbon-fluorine entities and has a ratio of fluorine to carbon in the range of about 1.14 to about 1.82, the surface of said polymer prior to fluorination being capable of forming a carbon-fluorine bond on fluorination with fluorine radicals derived from inorganic fluoride vapors dissociated in an activated glow discharge reactor.

4,508,782

BASE FILM FOR MAGNETIC RECORDING TAPE WITH F-5 VALUES OF 9–15 KG/MM²

Yasuki Miura, Otsu; Masahiko Motegi, Hikone, and Kazuo Okabe, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 563,018, Dec. 19, 1983, abandoned, which is a continuation of Ser. No. 483,849, Apr. 15, 1983, abandoned, which is a continuation of Ser. No. 223,401, Jan. 8, 1981, abandoned. This application Jun. 27, 1984, Ser. No. 625,185
Int. Cl.³ H01F *10/00*
U.S. Cl. 428—409 7 Claims

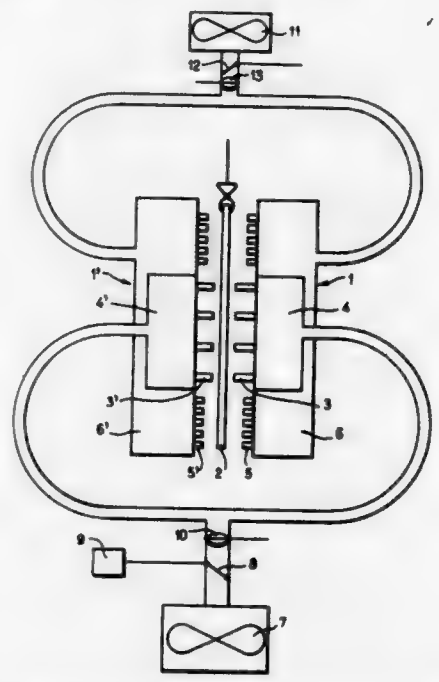
1. A biaxially oriented polyester base film for a magnetic recording tape, which possesses an F-5 value of from 9 to 15 Kg/mm^2 as measured along both the longitudinal and transverse directions, and for which the ratio of the average surface roughness when expressed as microns to the average particle size of included particles, when expressed as microns and measured under dark field illumination, is from 2.0×10^{-3} to 5.1×10^{-3}, and said average surface roughness is from 0.005 to 0.040 micron.

4,508,783

METHOD FOR THE DIFFERENTIATED HARDENING OF GLASS SHEETS, ESPECIALLY OF AUTOMOBILE WINDSHIELDS, AND TEMPERED GLASS SHEET

Claude Aubry; Jacques Chaumette, both of Thourotte, and Pierre Touchon, Le Pecq, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Apr. 18, 1983, Ser. No. 485,849
Claims priority, application France, Apr. 16, 1982, 82 06596
Int. Cl.³ C03B *27/04*
U.S. Cl. 428—410 5 Claims



1. A method of differentially tempering a flat glass sheet so as to harden the entire surface of said sheet, said sheet including a central zone and a peripheral zone having mutually different degrees of surface hardening, said method including steps of:

uniformly heating said entire glass sheet to a degree sufficient for tempering to occur upon cooling;

rapidly cooling said central zone at a first rate sufficient to temper said glass sheet; and

subsequent to beginning said cooling of said central zone, rapidly cooling said peripheral zone at a second rate sufficient to temper said glass sheet, said second rate being

greater than said first rate, wherein said cooling steps are performed such that both of said zones of said glass sheet are simultaneously solidified.

5. Glass sheet characterized in that it presents a central zone of at least 20 cm × 50 cm, having after fragmentation a visibility of at least 15% of visibility before fragmentation, this ratio being determined by the total of the surfaces of all fragments of at least 2 cm^2 divided by the total surface of the central zone, no fragment in this zone being allowed to have a surface area greater than 16 cm^2, and characterized in that it presents also a peripheral zone having after fragmentation in a square of 5 cm × 5 cm, from 40 to 350 fragments, having no needles greater than 7.5 cm in length, said glass sheet being flat, wherein said glass sheet has no hoop stresses between said central and peripheral zones.

4,508,784

4-STYRYL-4'-VINYLBIPHENYLS, THE PRODUCTION THEREOF AND USE THEREOF AS FLUORESCENT

Leonardo Guglielmetti, Bottmingen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

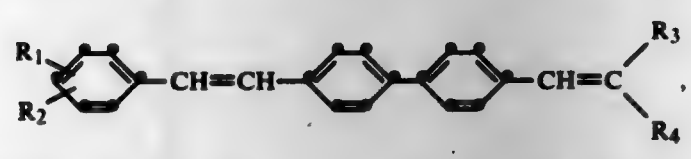
Continuation of Ser. No. 327,665, Dec. 7, 1981, abandoned. This application Jan. 23, 1984, Ser. No. 572,973

Claims priority, application Switzerland, Dec. 12, 1980, 9192/80

Int. Cl.³ B32B *9/04*

U.S. Cl. 252—301.21 **24 Claims**

1. A 4-styryl-4'vinylbiphenyl of the formula



wherein each of R_1 and R_2 is hydrogen or a non-chromophoric substituent, or both together when ortho to each other complete a fused ring, R_3 is a second order non-chromophoric substituent and R_4 is hydrogen or alkyl or alkenyl, each unsubstituted or substituted by a non-chromophoric group.

21. A process for whitening a natural, regenerated or synthetic organic substrate of high molecular weight, which process comprises incorporating in or applying to said substrate a compound of claim 1.

24. Organic material of high molecular weight, containing 0.001 to 2%, of a fluorescent whitening agent of claim 1.

4,508,785

IN-MOLD COATING

David S. Cobbledick, Kent; Donald F. Reichenbach, Massillon, and Henry Shanoski, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 514,415, Jul. 18, 1983, and a continuation-in-part of Ser. No. 316,592, Nov. 2, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 592,772

Int. Cl.³ B32B *27/06, 27/36*

U.S. Cl. 428—424.4 **5 Claims**

1. A laminate comprising an adherent, thermoset in-mold coating composition in-mold coated and cured at a temperature of from about 290°–310° F. and at a pressure of about 1000 Psi for 0.5 to 3 minutes onto a molded thermoset polyester resin or thermoset vinyl ester resin glass fiber composition containing from about 10 to 75% by weight of glass fibers, said in-mold coating composition comprising the reaction product of 100 parts by weight of at least one polymerizable epoxy based oligomer having at least two acrylate groups and a weight average molecular weight of from about 500 to 1,500, from about 80 to 160 parts by weight of at least one copolymerizable ethylenically unsaturated monomer selected from the group consisting of styrene, alpha methyl styrene, vinyl toluene, t-butyl styrene, chlorostyrene, methyl methacrylate, diallyl phthalate (with styrene or methyl methacrylate), triallyl cyanurate, triallyl isocyanurate, divinyl benzene and methyl acrylate, from about 10 to 120 parts by weight of at least one copolymerizable monoethylenically unsaturated compound having a —CO— group and a —NH_2, —NH— and/or —OH group and from about 5 to 120 parts by weight of a copolymerizable or cocurable diacrylate compound having a weight average molecular weight of from about 250 to 5,000 and being selected from the group consisting of

(I) at least one polyoxyalkylene glycol oligomer having two acrylate groups and

(II) at least one polyurethane oligomer having two acrylate groups and mixtures of (I) and (II)

in admixture with from about 20 to 90 parts by weight of polyvinyl acetate, from about 0.2 to 5 parts by weight of at least one zinc salt of a fatty acid having at least 10 carbon atoms, from about 5 to 30 parts by weight of conductive carbon black and from about 50 to 155 parts by weight of a filler.

4,508,786

POLYOLEFIN RESIN COMPOSITION

Tadao Ishibashi, and Youichi Kugimiya, both of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Division of Ser. No. 520,171, Aug. 4, 1983, Pat. No. 4,487,871. This application Jun. 29, 1984, Ser. No. 625,951

Claims priority, application Japan, Aug. 5, 1982, 57-136660

Int. Cl.³ B32B *5/00;* C23C *15/00*

U.S. Cl. 428—461 **2 Claims**

1. In the process of subjecting a resin film base to corona discharge treatment and then metallizing in vacuo, the improvement which comprises using a resin film consisting of a blend of

(a) crystalline propylene-alpha-olefin copolymer,

(i) containing at least 70% by weight of propylene, and

(ii) having a crystalline melting point of lower than 150° C. with

(b) a high density polyethylene having a density of at least 0.940 g/cm^3,

(c) said blend containing 96–80% by weight of said copolymer and 4–20% by weight of said polyethylene,

(d) the ratio of the melt flow rate of said polyethylene to the melt flow rate of said copolymer being at least 0.7,

and

at least one additive selected from the group consisting of phenolic antioxidants and phosphoric antioxidants having a molecular weight of 500 or more and being present in an amount of 0.01 to 0.30% by weight based on the weight of the entire composition.

2. A metallized polyolefin resin film wherein the polyolefin resin film is a polymeric blend consisting of:

(a) a crystalline propylene-alpha-olefin copolymer

(i) containing at least 70% by weight of propylene, and

(ii) having a crystalline melting point of lower than 150° C. with

(b) a high density polyethylene having a density of at least 0.940 g/cm^3,

(c) said blend containing 96–80% by weight of said copolymer and 4–20% by weight of said polyethylene,

(d) the ratio of the melt flow rate of said polyethylene to the melt flow rate of said copolymer being at least 0.7,

and

at least one additive selected from the group consisting of phenolic antioxidants and phosphoric antioxidants having a molecular weight of 500 or more and being present in an amount of 0.01 to 0.30% by weight based on theveight of the entire composition.

4,508,787

IMIDIZED SURFACE PROTECTION FOR MALEIC ANHYDRIDE INTERPOLYMER ARTICLES

William M. Giffen, Jr., Hudson; George S. Li, Macedonia, and Arthur F. Miller, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 17, 1980, Ser. No. 217,482
Int. Cl.[3] B32B *9/02*; B05D *3/02*
U.S. Cl. 428—473.5 13 Claims

1. A process for forming a protective surface on an article, the processing comprising producing a layer consisting essentially of RNH_3^+ salts of a maleic anhydride interpolymer on the surface of the article, where R is hydrogen or an alkyl group of from 1 to 6 carbon atoms, and heating the article at a temperature sufficient to form a cyclic imide structure.

12. The article treated by the process of claim 1.

4,508,788

PLASMA SPRAY POWDER

Richard F. Cheney, Sayre, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 420,456, Sep. 9, 1982, abandoned. This application Mar. 9, 1984, Ser. No. 587,833
Int. Cl.[3] B32B *15/00*; C23C *7/00*
U.S. Cl. 428—570 5 Claims

1. A plasma spray coating consisting essentially of silicon nitride particles in a matrix of plasma meltable metal.

4,508,789

LOW REFLECTANCE, LOW EMISSIVITY SPUTTERED FILM

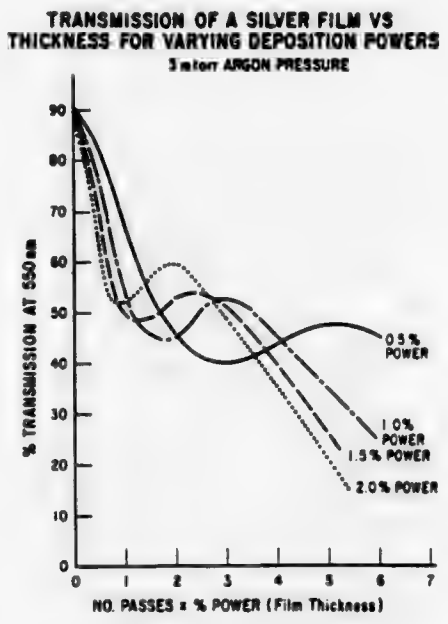
F. Howard Gillery, Allison Park, and Russell C. Criss, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

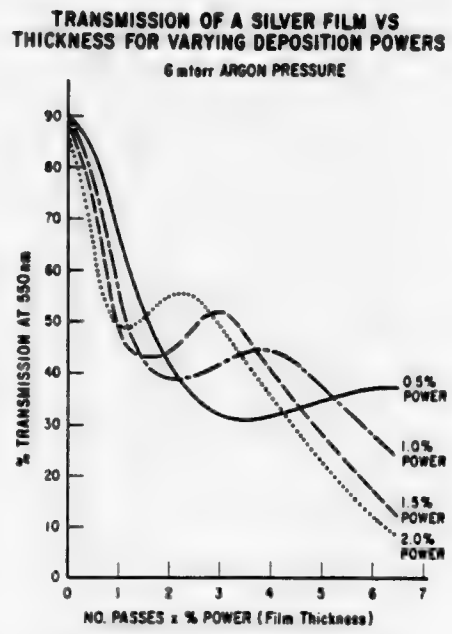
Division of Ser. No. 516,816, Jul. 25, 1983, Pat. No. 4,462,884. This application May 29, 1984, Ser. No. 614,358
Int. Cl.[3] C23C *15/00*
U.S. Cl. 428—630 8 Claims

1. An article of manufacture comprising:

a. a transparent substrate;

b. sputtered onto a surface of said substrate a discontinuous agglomerated transparent silver film; and





c. sputtered over said discontinuous agglomerated transparent silver film a continuous transparent copper film.

4,508,790

TIN FREE STEEL HAVING AN EXCELLENT WELDABILITY AND ITS PRODUCTION METHOD

Nobuyoshi Shimizu; Terunori Fujimoto; Tsuneo Inui, and Masatoki Ishida, all of Yamaguchi, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1984, Ser. No. 619,271
Int. Cl.[3] C25D *5/12, 5/34, 5/48, 11/38*
U.S. Cl. 428—632 19 Claims

1. A tin free steel having three layers consisting of a bottom layer of metallic chromium, a middle layer of nickel-zinc alloy and a top layer of hydrated chromium oxide on a steel base.

6. A process for continuously preparing a tin free steel as claimed in claim 1, which comprises: (a) chromium plating a steel base to form a layer of metallic chromium and hydrated chromium oxide thereon: (b) nickel-zinc alloy plating the chromium plated steel base using a nickel-zinc alloy plating electrolyte under conditions sufficiently acidic to substantially dissolve said hydrated chromium oxide in said electrolyte; and (c) forming a layer of hydrated chromium oxide on the nickel-zinc alloy plated, chromium plated steel base of step (b).

8. The process for continuously preparing a tin free steel as claimed in claim 1, which comprises: (a) chromium plating a steel base to form a layer of metallic chromium and hydrated

chromium oxide thereon; (b) removing the hydrated chromium oxide formed on the chromium plated steel base by a cathodic treatment in an acidic solution; (c) nickel-zinc alloy plating the chromium plated steel base; and (d) forming a layer of hydrated chromium oxide on the nickel-zinc alloy plated, chromium plated steel base of step (c).

4,508,791

ELECTRIC WIRE WITH A COPPER, SILVER, OR GOLD CORE CLAD WITH TUNGSTEN, MOLYBDENUM OR TUNGSTEN/MOLYBDENUM ALLOY

Isidoor K. Van Hoff, and Johannes H. P. M. Van Den Bergh, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 346,306, Feb. 5, 1982, Pat. No. 4,455,481. This application Dec. 7, 1983, Ser. No. 559,067

Claims priority, application Netherlands, Feb. 9, 1981, 8100601

Int. Cl.³ H05B *3/06*

U.S. Cl. 428—663 **2 Claims**

1. A wire made of a copper, silver or gold core and a tungsten, molybdenum or tungsten-molybdenum alloy cladding, having a diameter less than 50 micrometers and an electric resistivity from 2.0–5.0 $\mu\Omega$/cm.

4,508,792

ELECTROCHROMIC ELEMENT

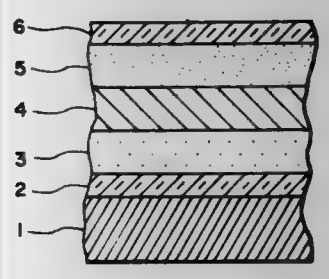
Kazuya Ishiwata, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1983, Ser. No. 549,427

Claims priority, application Japan, Nov. 16, 1982, 57-200911

Int. Cl.³ B41M *5/20*

U.S. Cl. 428—702 **7 Claims**



1. An electrochromic element comprising an electrochromic layer disposed between a pair of electrode plates, characterized in that the electrochromic layer is a coat formed by the ion plating of cobalt oxide in the presence of at least one of oxygen gas and/or water vapor.

4,508,793

AIR-COOLED FUEL CELL SYSTEM

Masao Kumata, Neyagawa, and Noriaki Matsuoka, Yawata, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

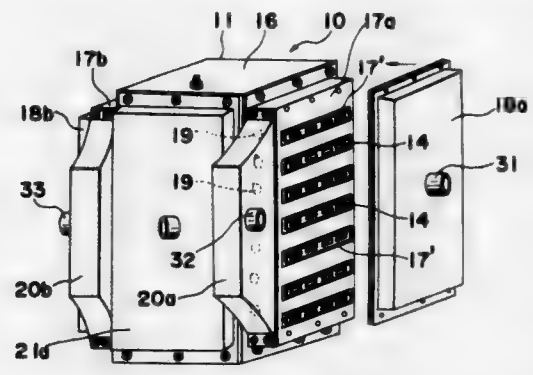
Filed Sep. 1, 1983, Ser. No. 528,443

Claims priority, application Japan, Sep. 8, 1982, 57-157133; Jun. 20, 1983, 58-111322; Jun. 30, 1983, 58-119801

Int. Cl.³ H01M *8/04*

U.S. Cl. 429—26 **9 Claims**

1. An air-cooled fuel cell system comprising a cell stack including substacks and cooling plate arranged between neighbouring two substacks; each substack comprising a plurality of unit cells each including an electrolyte matrix placed between two electrodes of a gas-diffusion-type, and bipolar plates each having fuel channels and process air channels and being arranged between two unit cells; said unit cells and bipolar plates being arranged in a stack and electrically connected in series; said cooling plates having passages for cooling air; said fuel cell system being characterized in that the system further comprises a process air inlet manifold mounted on one peripheral face of the cell stack where inlets of said process air channels are opened, a cooling air manifold mounted on said process air inlet manifold, said cooling plates extending from the



peripheral face of the cell stack and passing through the process air manifold in such a manner that the cooling air passages provided therein are communicated with said cooling air manifold.

4,508,794

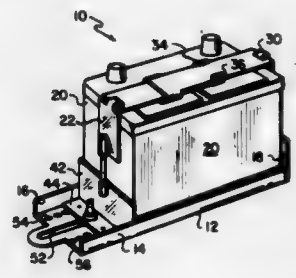
SECURITY BATTERY HOLDER

Anthony A. Wright, 1269 Clarendon, El Cajon, Calif. 92021

Filed Jan. 25, 1984, Ser. No. 573,836

Int. Cl.³ H01M *2/10*

U.S. Cl. 429—100 **11 Claims**



1. An automobile battery security holder comprising:

a generally rectangular planar support member having vertically extending side members extending along the lateral edges thereof for supporting and laterally confining a battery; and

an adjustable length security strap connected at one end to one end of said support member and releasably connected at the other end by keyed lock means to said support member for extending over the top of a battery for securing same to said support member, said security strap being constructed of a hardened metal for resisting the action of bolt cutters.

4,508,795

SODIUM-TETRAVALENT SULFUR MOLTEN CHLOROALUMINATE CELL

Gleb Mamantov, Knoxville, Tenn., assignor to University of Tennessee Research Corporation, Knoxville, Tenn.

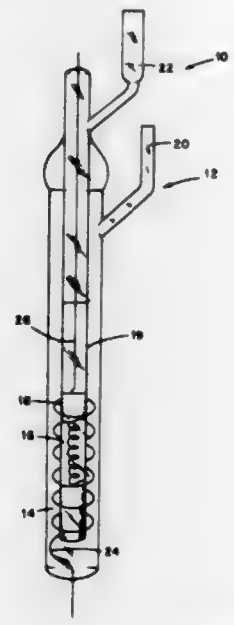
Filed Feb. 10, 1984, Ser. No. 578,885

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—103 **4 Claims**

1. An improved rechargeable sodium-tetravalent sulfur molten chloroaluminate cell having a cathode compartment containing a molten cathode composition including sulfur in a chloroaluminate melt and a cathode current collector, an anode compartment containing molten sodium and an anode current collector, and a β''-alumina sodium ion conductor in contact with said molten cathode composition and said molten sodium, the improvement comprising: a sulfur to aluminum mole ratio in said cathode composition of above about 0.15,

whereby said improved cell operates at low temperatures to provide high energy densitites and operates at moderate temperatures to provide high power densities and high energy densities.



4,508,796

CHROMIUM (V) COMPOUNDS AS CATHODE MATERIAL IN ELECTROCHEMICAL POWER SOURCES

Frank M. Delnick; Ronald A. Guidotti, and David K. McCarthy, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 21, 1983, Ser. No. 487,492
Int. Cl.[3] H01M *6/20*
U.S. Cl. 429—112 **7 Claims**

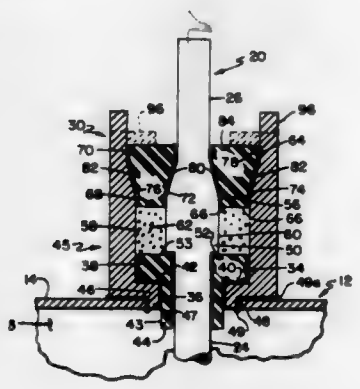
1. In a thermal battery having a plurality of single cell pellets arranged in a stack, with each single cell comprising a heat pellet and two current collectors, an anode pellet, a separator pellet, and a cathode pellet, the improvement wherein said cathode material comprises a system compatible chromium (V) compound.

4,508,797

HERMETICALLY SEALED ELECTRICAL FEEDTHROUGH FOR HIGH TEMPERATURE SECONDARY CELLS

Reinhard Knoedler, Nussloch, Fed. Rep. of Germany; Paul A. Nelson, Wheaton, Ill.; Hiroshi Shimotake, Hinsdale, Ill., and James E. Battles, Oak Forest, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1983, Ser. No. 517,473
Int. Cl.[3] H01M *2/08, 2/02*
U.S. Cl. 429—184 **19 Claims**



1. In a lithium/metal sulfide cell, a passthrough seal for electrically isolating a cell terminal from the cell housing and for sealingly insolating the cell chamber from the exterior thereof, comprising an upstanding wall sealed to the housing and located generally annularly of and spaced from the terminal as it is extended through an opening in the housing, a lower insulator ring fitted snuggly over the terminal and within the upstanding wall, cooperating shoulder means on the lower ring and on the housing and terminal respectively operable to preclude axial movement of the terminal inwardly relative to the housing, a powdered insulator disposed over the lower ring and between the upstanding wall and the terminal, an upper insulator ring fitted snugly between the upstanding wall and the terminal and against the powdered insulator opposite the lower ring, the upper ring and the upstanding wall and terminal having pairs of opposed surfaces that move closer together as the ring is moved axially inwardly toward the powdered insulator, and rings of soft bonding material located annularly of the terminal and confined between the opposed pairs of surfaces, said seal being set upon axial movement of the upper ring toward the powdered insulator firstly to compress that powdered insulator to a high order of compression and secondly to compress the rings of soft bonding material sufficiently to bond them between the adjacent surfaces.

4,508,798

CELL WITH $COCL_2$ CATHODE

Mysore L. Gopikanth; Han C. Kuo, both of Burlington, Mass., and William L. Bowden, Nashua, N.H., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 30, 1983, Ser. No. 509,679
Int. Cl.[3] H01M *6/14*
U.S. Cl. 429—196 **10 Claims**

1. A non-aqueous, electrochemical cell comprising an anode comprised of an alkali or alkaline earth metal and an inorganic electrolyte comprised of SO_2 with an electrolyte salt dissolved therein, characterized in that said cell contains an active cathode comprised of at least 55% by weight of $CoCl_2$ admixed with a conductive carbon material, with said conductive carbon material comprising from 10–30% by weight of said cathode.

4,508,799

CELL WITH $NICL_2$ CATHODE

Mysore L. Gopikanth, and Han C. Kuo, both of Burlington, Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 30, 1983, Ser. No. 509,689
Int. Cl.[3] H01M *6/14*
U.S. Cl. 429—196 **10 Claims**

1. A non-aqueous, electrochemical cell comprising an anode comprised of an alkali or alkaline earth metal and an inorganic electrolyte comprised of SO_2 with an electrolyte salt dissolved therein, characterized in that said cell contains an active cathode comprised of at least 55% by weight of $NiCl_2$ $NiCl_2$ admixed with a conductive carbon material with said conductive carbon material comprising from 10–30% by weight of said cathode.

4,508,800

CELL WITH $FEBR_3$ CATHODE

Mysore L. Gopikanth; Han C. Kuo, both of Burlington, and Carl R. Schlaikjer, Winchester, all of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 30, 1983, Ser. No. 509,693
Int. Cl.[3] H01M *6/14*
U.S. Cl. 429—196 **10 Claims**

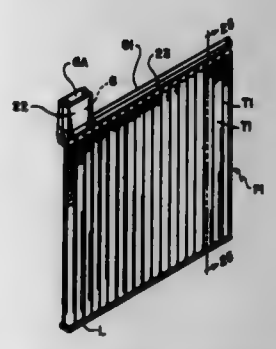
1. A non-aqueous, electrochemical cell comprising an anode comprised of an alkali or alkaline earth metal and an inorganic electrolyte comprised of SO_2 with an electrolyte salt dissolved therein, characterized in that said cell contains an active cathode comprised of at least 55% by weigth of $FeBr_3$ admixed with a conductive carbon material, with said conductive carbon material comprising from 10–30% by weight of said cathode.

4,508,801

LEAD ACID BATTERY WITH SELF-REGISTERING GRID COMPLEMENT AND METHODS OF MAKING AND OPERATING SAME

Roy A. Guimond, Holden; John E. Gulliksen, Shrewsbury, and Nanci W. Reed, Sudbury, all of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Continuation-in-part of Ser. No. 239,159, Feb. 27, 1981, Pat. No. 4,359,509. This application Sep. 3, 1981, Ser. No. 299,157
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.³ H01M *4/76, 2/18, 10/44/6/00*
U.S. Cl. 429—238 8 Claims



1. A method of making a tubular positive electrode for use in lead-acid storage batteries wherein grid structure includes a lug portion, a top bar portion having a plurality of spaced apart spines extending therefrom and having shaped surfaces including converging flat surfaces at an upper side thereof and the said electrode further including tube means and a grid complement member comprising a lug enclosure portion and a top bar enclosure portion including angularly displaceable side portions, and said side portions of the grid complement being extended to provide elongated tube engaging surfaces and also having inner surfaces which are shaped to mate with the shaped surfaces of the top bar in self adjusting relationship thereto, said method being characterized in that the lug portion of the grid structure is first inserted into the lug enclosure portion of the grid complement with initial angular displacement of the side wall portions occurring, thereafter advancing the said grid structure into the grid complement to further angularly displace the said side wall portions, then advancing and engaging the top bar against the top bar enclosure into a position in which the said angularly displaceable side portions revert into self-registering relationship with the shaped portions of the top bar lying between the spines, thereafter distensibly fitting the tube means over the outer sides of the tube engaging surfaces, and finally advancing the tube means into contact with the side portions of the grid complement.

4,508,802

MULTIPLE REGISTRATION AND IMAGING PROCESS TO FORM A SET OF REGISTERED IMAGED ELEMENTS

Robert B. Heiart, Middletown, and Abraham B. Cohen, Springfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 11, 1982, Ser. No. 387,537
Int. Cl.³ G03F *9/00*
U.S. Cl. 430—22 18 Claims

1. A process of registering and imagewise exposing to actinic radiation a set of sheet substrates registratable to one another to produce a composite image, each substrate containing a photosensitive layer comprising the steps of:

(1) advancing a substrate to a position in a device to undertake in either order or concurrently

(a) aligning the substrate and a photomask in a predetermined relationship to one another through a hinged relationship of the photomask and the substrate to permit substantially identical alignment of a photomask and each similar sheet substrate of the sequence;

(b) applying a liquid between the photosensitive layer and the photomask;

(2) contacting through the liquid the substrate containing the photosensitive layer and the photomask wherein liquid between the photosensitive layer and the photomask is displaced when the substrate and photomask are brought into more intimate contact by an advancing pressure line whereby during said contacting substantially no movement of the photosensitive layer relative to the photomask occurs other than a more intimate contact due to displacement of the liquid from a liquid layer and whereby at least one of a set of interfacial or viscous forces due to the liquid layer aids to maintain the photosensitive layer and photomask in a fixed position relative to one another;

(3) exposing the photosensitive layer to actinic radiation through the photomask;

(4) removing the photomask from the exposed photosensitive layer and removing the exposed substrate from the device;

(5) repeating steps 1 to 4 for each sheet substrate of said set employing at least one additional photomask whereby the exposed substrates are registratable to one another to produce a composite image.

4,508,803

PHOTOCONDUCTIVE DEVICES CONTAINING NOVEL BENZYL FLUORINATED SQUARAINE COMPOSITIONS

Kock-Yee Law, Fairport, and Frank C. Bailey, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1983, Ser. No. 558,248
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—59 36 Claims

1. An improved photoresponsive device comprised in the order stated of (1) a supporting substrate, (2) a photoconductive layer comprised of the squaraine compositions selected from the group consisting of bis(2-fluoro-4-methylbenzylaminophenyl)squaraine, bis(2-fluoro-4-methyl-p-chlorobenzylaminophenyl)squaraine, bis(2-fluoro-4-methyl-p-fluorobenzylaminophenyl)squaraine, and bis(2-fluoro-4-methyl-m-chlorobenzylaminophenyl)squaraine, and (3) a diamine hole transport layer.

4,508,804

SUPPORT FOR ELECTROGRAPHIC PLATE-MAKING MATERIAL AND A LITHOGRAPHIC PRINTING PLATE EMPLOYING SAME

Yasuzi Asao, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 13, 1983, Ser. No. 541,635
Claims priority, application Japan, Oct. 13, 1982, 57-179377
Int. Cl.³ G03G *5/14;* B32B *27/08, 27/10*
U.S. Cl. 430—62 15 Claims

1. A lithographic printing plate comprising:

(A) a support and (B) a photoconductive layer coated on said support, wherein said support is a support for electrophotographic plate-making material having a volume-electrric resistance of $10^{10}\Omega$ or less and comprising:

(1) a paper base;

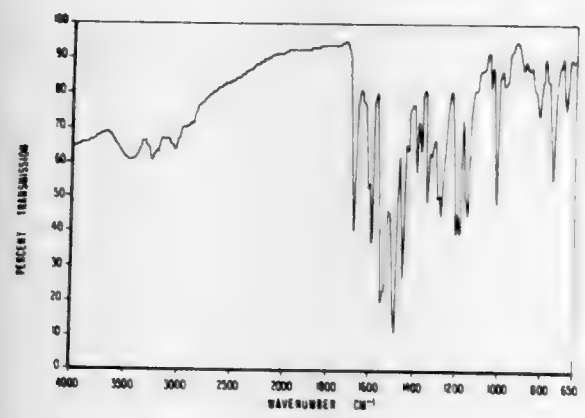
(2) a polyolefin laminate layer on both sides of said paper base; and

(3) an ionomer coated between said paper base and said polyolefin laminate layer, wherein said ionomer is prepared by ion-cross linking a copolymer comprising at least one α-olefin and 0.2 to 40 mol % of at least one α,β-ethylenically unsaturated carboxylic acid with a monovalent, divalent or trivalent ion of a metal of Group I, II, III, IV-A or VIII of the periodic table, said metal ion providing a degree of neutralization of the carboxylic groups in the range of from 5 to 97%.

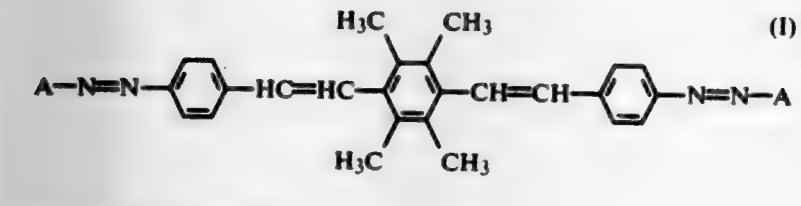
4,508,805
DISAZO COMPOUNDS, PHOTOCONDUCTIVE COMPOSITIONS AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS CONTAINING THE SAME

Kouichi Kawamura; Seiji Horie; Naonori Makino, and Hideo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 16, 1983, Ser. No. 523,920
Claims priority, application Japan, Aug. 16, 1982, 57-141821
Int. Cl.[3] G03G *5/06*
U.S. Cl. 430—72 9 Claims

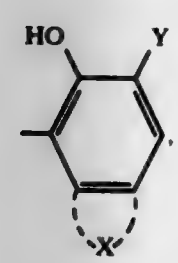


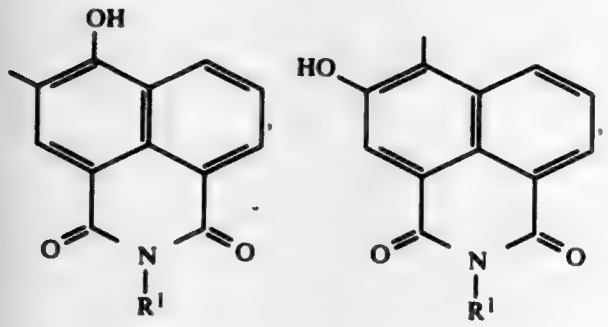
1. Photoconductive compositions which contain disazo compounds represented by the general formula (I):

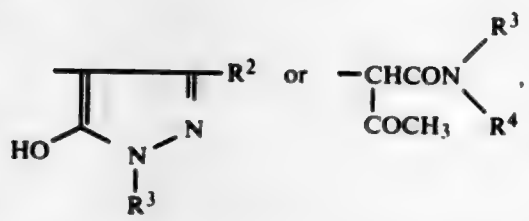


(I)

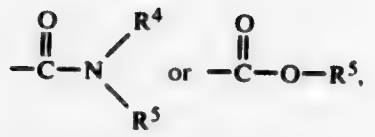
wherein A represents







wherein X represents an atomic group necessary to form an aromatic or heterocyclic ring (which may be substituted or nonsubstituted) by condensing with the benzene ring in the above described formula to which a hydroxyl group and Y are attached, Y represents



R^1 represents an alkyl group, a phenyl group or a substituted alkyl or phenyl group, R^2 represents a hydrogen atom, a lower alkyl group, a carbamoyl group, a carboxyl group, an alkoxycarbonyl group, an aryloxycarbonyl group or a substituted or nonsubstituted amino group, R^3 and R^5 each represents an alkyl group, an aromatic group, a heteroaromatic group or a substituted alkyl, aromatic or heteroaromatic group, and R^4 represents a hydrogen atom, an alkyl group, a phenyl group or a substituted alkyl or phenyl group.

4,508,806
ELECTROPHOTOGRAPHIC TONER COMPOSITION

Osamu Oseto, and Fumio Moriuchi, both of Suita, Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 15, 1983, Ser. No. 514,049
Claims priority, application Japan, May 9, 1983, 58-80477
Int. Cl.[3] G03G *9/08*
U.S. Cl. 430—109 9 Claims

1. A toner composition for electrophotography comprising a resin binder and a colorant, said resin binder being a polymeric rosin compound having a glass transition temperature of 30° to 100° C. and a gel fraction of 1 to 99% to xylene and being prepared by the reaction of:

(a) a glycidyl ester of rosin,

(b) a dicarboxylic acid or a dicarboxylic acid anhydride, and

(c) at least one crosslinking agent selected from the group consisting of a polyfunctional epoxy compound, a polybasic acid having a valency of not less than 3 and its anhydride, and a polyhydric alcohol having a valency of not less than 3.

4,508,807
PHOTOSENSITIVE MATERIAL EMPLOYING ENCAPSULATED RADIATION SENSITIVE COMPOSITION AND A TRANSPARENTIZABLE IMAGE-RECEIVING LAYER

Paul C. Adair, Chillicothe, Ohio, assignor to Mead Corporation, Dayton, Ohio

Filed Jul. 11, 1983, Ser. No. 512,268
Int. Cl.[3] G03C *1/40, 1/00*
U.S. Cl. 430—138 18 Claims

1. A photosensitive material comprising a microcapsule-containing layer including a plurality of rupturable microcapsules containing an internal phase, said internal phase including a radiation sensitive composition which undergoes a change in viscosity upon exposure to incident actinic radiation, and

an image-receiving layer including a light-scattering pigment, said image-receiving layer being opaque, but having the capacity to be rendered transparent upon being contacted with said internal phase upon its release from said microcapsule-containing layer following exposure and development,

said microcapsule-containing layer and said image-receiving layer being on the same or separate supports,

wherein one image-wise exposing said microcapsule-containing layer to actinic radiation and rupturing said microcapsules, said internal phase is released from said microcapsules in the image areas and transferred to said image-receiving layer where it renders said image-receiving layer image-wise transparent.

4,508,808

METHOD OF USING DIAZOTYPE PHOTOGRAPHIC MATERIALS WITH PREEXPOSURE TREATMENT TO FORM UNIFORM SITES OF REFRACTIVE INDEX CHANGE

Wai-Hon Lee, Cupertino, and Paul H. Voisin, San Mateo, both of Calif., assignors to Xidex Corporation, Calif.

Filed Nov. 12, 1982, Ser. No. 440,890
Int. Cl.³ G03C 5/18
U.S. Cl. 430—146 **8 Claims**

1. A method for preparing a diazotype photoprinting material having an azo dye image thereon, said method comprising:

(a) providing a photoprinting material comprising a base support coated with a dry substantially uniform layer of a composition comprising a light-decomposable diazonium salt, an azo coupler, an acid or alkali-generating neutral stabilizer, and a film-forming binder, said layer further containing a plurality of sites distributed therethrough in substantially uniform manner, said sites having a refractive index substantially different from that of the remainder of said layer;

(b) exposing said photoprinting material in image-wise manner;

(c) permitting substantially all nitrogen gas produced during step (b) to diffuse out of said composition; and

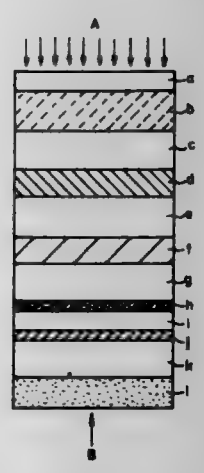
(d) developing said exposed photoprinting material to produce an azo dye image.

4,508,809

PROCESS FOR THE EXPOSURE AND DEVELOPMENT OF PHOTO-GRAPHIC IMAGES AND AN APPARATUS FOR CARRYING OUT THE PROCESS

Immo Boie, Niederkassel; Hermann Lührig, Leverkusen, and Guido Kovacic, Unkel, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 23, 1983, Ser. No. 497,087
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220912
Int. Cl.³ G03C 5/54, 7/00
U.S. Cl. 430—237 **3 Claims**



1. A process for the exposure and development of photographic images according to the dye diffusion process, using a monosheet material, the laminated structure of such monosheet being divided by a layer which is impermeable to light but permeable to moisture into a photosensitive side of the monosheet capable of image-wise producing diffusible dyes when image-wise exposed to light, and a non-photosensitive side for receiving dyes diffusing from the photosensitive side, and for treatment by an activator or developer solution, thus forming the image-observation side, characterized in that

(a) the monosheet is removably positioned in frame means for holding the edges of the monosheet all round in a light-proof and moisture-tight manner,

(b) the photosensitive side of the monosheet is exposed image-wise to light,

(c) the photosensitive side of the monosheet is then covered by cover means of that frame means for protecting said photosensitive side against light and activator or developer solution during subsequent image-developing,

(d) the non-photosensitive side of the monosheet lies open and with its outer surface is brought into contact with an activator or developer solution in daylight to develop the latent image, so that the image formation takes place visibly,

(e) once the image quality has been achieved, development is stopped by removing the activator or developer solution and by subsequent rinsing, and

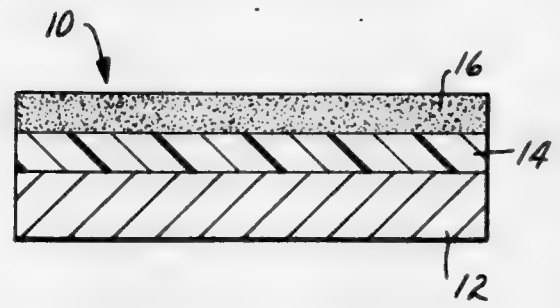
(f) the monosheet is dried.

4,508,810

LIGHT-DESENSITIZABLE TRANSFER MEDIUM WITH PHOTOOXIDIZABLE REACTANT AND OXYGEN-SENSITIZING DYE

Thomas G. Wartman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1984, Ser. No. 584,493
Int. Cl.³ G03C 5/54, 1/72
U.S. Cl. 430—201 **9 Claims**



1. A transfer medium comprising,

(a) a backing sheet having a uniform face-coating including a volatizable, photooxidizable reactant and an oxygen-sensitizing dye in a film-forming binder, said photooxidizable reactant being capable of inter-reacting with a second reactant material borne on the surface of a receptor sheet at a conversion temperature between about 70° C. and about 150° C. to produce a visibly distinct reaction product, said photooxidizable reactant capable of being desensitized in an image-wise manner upon exposure of the transfer medium to a visible light image pattern,

(b) said face-coating being overcoated with an adhesive coating, said adhesive coating being sufficiently permeable to permit said photooxidizable reactant to migrate therethrough upon exposure to heat, whereby said photooxidizable reactant reacts with said second reactant to form a color, said adhesive coating further being sufficiently permeable to oxygen to allow said photooxidizable reactant to be exposed to sufficient oxygen to be desensitized in an image-wise manner upon exposure to visible light, said adhesive coating being sufficiently tacky to provide close face-to-face contact between said transfer medium and an original and between said transfer medium and said receptor sheet, said adhesive coating further being capable of being stripped away from both said original without affecting the image thereon and said receptor sheet without affecting the image formed thereon, and said adhesive coating being non-reactive with and non-interfering with said photooxidizable reactant and said second reactant material.

7. A copy-sheet system comprising

(a) the transfer medium of claim 1, and

(b) a receptor sheet bearing said second reactant material.

4,508,811
RECORDING ELEMENT HAVING A PYRYLIUM OR THIOPYRYLIUM-SQUARYLIUM DYE LAYER AND NEW PYRYLIUM OR THIOPYRYLIUM-SQUARYLIUM COMPOUNDS

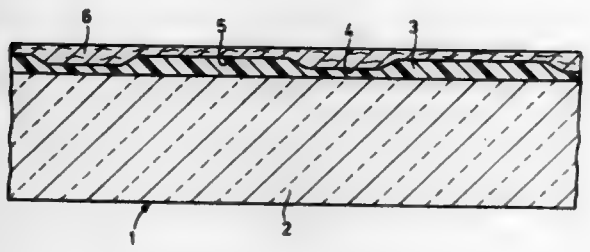
Dirk J. Gravesteijn, Eindhoven, Netherlands; Christiaan Steenbergen, Colorado Springs, Colo.; Jan Van der Veen, and Wilhelmus P. M. Nijssen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,149

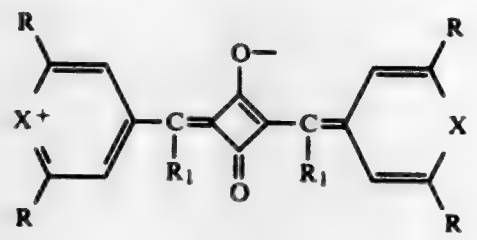
Claims priority, application Netherlands, Jan. 17, 1983, 8300155

Int. Cl.³ G03C 1/78

U.S. Cl. 430—270 4 Claims



1. A recording element in which information can be recorded and read optically and which recording element comprises a supporting plate bearing a recording layer comprising a squarylium dye, characterized in that the dye is a pyrylium- or thiopyrylium-squarylium compound of the formula



wherein

X is an oxygen atom or a sulphur atom,

R is an alkyl group having at least 3 carbon atoms, and

R_1 is a hydrogen atom or a methyl group.

4,508,812
METHOD OF APPLYING POLY(METHACRYLIC ANHYDRIDE RESIST TO A SEMICONDUCTOR

Robert G. Brault, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 3, 1984, Ser. No. 606,506

Int. Cl.³ H01L 21/316

U.S. Cl. 430—270 12 Claims

1. A method of coating a semiconductor wafer with a positive resist of poly(methacrylic anhydride), comprising the steps of:

(a) coating the wafer with a thin layer of poly(t-butyl methacrylate);

(b) heating the pre-coated wafer to a temperature at which the poly(t-butyl methacrylate) is converted to poly(methacrylic anhydride) to form on the surface of the wafer a thin, relatively uniform precursor layer of said anhydride;

(c) applying to said anhydride surface a solution of poly(methacrylic anhydride); and

(d) removing the solvent from said solution so that a uniform coating of the desired thickness of poly(methacrylic anhydride) is obtained upon the precoated surface of the semiconductor wafer.

4,508,813
METHOD FOR PRODUCING NEGATIVE RESIST IMAGES

Takayuki Nakagawa, Shimodate, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 159,520, Jun. 16, 1980, abandoned. This application Oct. 28, 1981, Ser. No. 315,904

Int. Cl.³ G03C 5/00

U.S. Cl. 430—296 8 Claims

1. A method for producing a negative resist image for producing finely patterned microcircuits, said method comprising

exposing a film of a diazo-type resist material consisting essentially a phenol-formaldehyde novolak resin containing about 10% by weight of a naphthoquinone diazide, said resist material being free from 1-hydroxyethyl-2-alkylimidazoline, to electron beam radiation in a predetermined fine pattern corresponding to said image for producing said microcircuits,

heat treating said patternwise exposed resist film,

subjecting said heat treated film to overall exposure to ultraviolet radiation and

developing the so treated film to remove the resist material in the area of said pattern that is not exposed to said electron beam radiation.

4,508,814
WATERLESS NEGATIVE OR POSITIVE LITHOGRAPHIC PRINTING PLATE PREPARATION

Kiyomi Sakurai, Neyagawa, and Seiji Arimatsu, Kyoto, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jul. 8, 1982, Ser. No. 396,476

Claims priority, application Japan, Jul. 9, 1981, 56-107833

Int. Cl.³ G03F 7/08, 7/10, 7/00

U.S. Cl. 430—303 18 Claims

1. A method for preparing a waterless lithographic printing plate with a photosensitive printing plate comprising a support material and a photosensitive layer provided thereon, said photosensitive layer being made of a photosensitive composition comprising a mixture of (a) an emulsion polymerization product of an acrylic or methacrylic monomer having a perfluoroalkyl group in the side chain with or without at least one of other polymerizable monomers, the content of the perfluoroalkyl group-bearing acrylic or methacrylic monomer being not less than 50% by weight, and (b) a film-forming, water-soluble photosensitive substance which is rendered water-insoluble by irradiation with ultra-violet rays in an aqueous medium, the weight proportion of the emulsion polymerization product (a) and the photosensitive substance (b) being 100:0.5–500 in terms of the solid components and the total content of the emulsion polymerization product (a) and the photosensitive substance (b) in the photosensitive composition being from 1 to 50% by weight in terms of the solid components, which comprises the steps of (1) placing an original image film on the photosensitive layer, (2) irradiating ultraviolet rays thereto, (3) separating the irradiated plate from the image film, (4) treating the separated plate with water for washing out the photosensitive composition at the non-exposed part to make the non-exposed part as imaged and the exposed part as non-imaged, thereby producing a positive type printing plate and (5) inking the surface of the printing plate with a lithographic ink so that the ink adheres to the substrate, but does not substantially adhere to the exposed non-image part; said film-forming substance (b) being used in such small amounts in the mixture relative to component (a) that the exposed portion acquires lithographic ink repellant properties when said lithographic ink is applied to the surface thereof.

2. In a method for preparing a waterless lithographic printing plate with a photosensitive printing plate comprising a support material and a photosensitive layer provided thereon, said photosensitive layer being made of a photosensitive composition comprising a mixture of (a) an emulsion polymerization product of an acrylic or methacrylic monomer having a perfluoroalkyl group in the side chain with or without at least

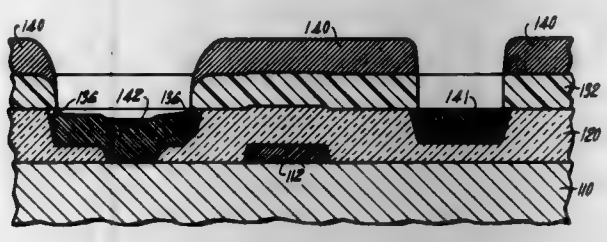
one of other polymerizable monomers, the content of the perfluoroalkyl group-bearing acrylic or methacrylic monomer being not less than 50% by weight, and (b) a film-forming, water-soluble photosensitive substance which is rendered water-insoluble by irradiation with ultra-violet rays in an aqueous medium, the weight proportion of the emulsion polymerization product (a) and the photosensitive substance (b) being 100:0.5–500 in terms of the solid components and the total content of the emulsion polymerization product (a) and the photosensitive substance (b) in the photosensitive composition being from 1 from 50% by weight in terms of the solid components, which comprises the steps of (1) placing an original image film on the photosensitive layer, (2) irradiating ultraviolet rays thereto, (3) separating the irradiated plate from the image film and (4') treating the separated plate with water for extracting the photosensitive substance in the photosensitive composition at the non-exposed part to make the exposed part as imaged and the non-exposed part as non-imaged, thereby producing a negative type printing plate, said film-forming substance (b) being used in large amounts relative to component (a) such that the exposed portion becomes the lithographic ink accepting part, when a lithographic ink is applied to the surface thereof.

4,508,815

RECESSED METALLIZATION

Paul W. Ackmann, Lewisville, and Frank R. Bryant, Denton, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Nov. 3, 1983, Ser. No. 548,465
Int. Cl.³ H01L *21/312, 21/283*
U.S. Cl. 430—314 **4 Claims**



1. A method of forming a patterned layer of conductor on an integrated circuit comprising the steps of:

depositing a first dielectric layer of predetermined dielectric thickness above at least one lower layer;

depositing a contact layer of photoresist above said dielectric layer;

exposing and developing said contact photoresist to form at least one contact aperture in said contact photoresist;

removing that portion of said dielectric lying below said at least one contact aperture to a first contact depth; and

stripping said contact photoresist;

depositing a layer of conductor photoresist having a predetermined conductor photoresist thickness above said dielectric layer;

exposing and developing said conductor photoresist to form at least one conductor aperture, overlapping said at least one contact aperture, in an overlap region, in said photoresist and a remainder portion of said photoresist outside said at least one conductor aperture;

removing that portion of said dielectric lying below said at least one conductor aperture to a predetermined channel depth, thereby forming at least one channel having first and second sides in said dielectric, and also simultaneously removing a portion of dielectric in said overlap region to a second contact depth;

depositing a layer of conductor over said integrated circuit, said layer of conductor having a predetermined conductor thickness substantially equal to said predetermined channel depth, so that a portion of said layer of metal penetrates said overlap region and penetrates said channel to abut said first and second sides and so that said layer of conductor is discontinuous between said at least one channel and said remainder of said photoresist; and

lifting off chemically said remainder of said photoresist, thereby leaving a patterned layer of conductor embedded in said at least one channel in said dielectric layer.

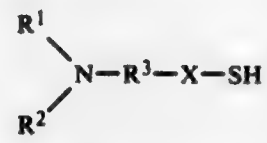
4,508,816

METHOD FOR BLEACHING COLOR PHOTOSENSITIVE MATERIAL

Kiyohiko Yamamuro; Shigeo Hirano; Isamu Itoh, and Yasuo Iwasa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 21, 1983, Ser. No. 544,155
Claims priority, application Japan, Oct. 21, 1982, 57-185680; Jan. 11, 1983, 58-2522
Int. Cl.³ G03C *7/00, 5/44*
U.S. Cl. 430—393 **23 Claims**

1. A method for bleaching a color photosensitive material, which comprises exposing imagewise a silver halide color photosensitive material, performing color development, and bleaching the color photosensitive material with a processing solution containing a persulfate, said silver halide color photosensitive material containing at least one compound selected from the group consisting of the compounds represented by formula I, salts thereof, and precursors thereof which cleaves under an acid or alkaline processing solution to form a compound represented by the formula I:



Formula I

where R^1 and R^2 each independently represents a hydrogen atom, an aliphatic group, or R^1 and R^2 together form a ring together with the N atom; R^3 represents $—R^4—$ or $—R^4—S—$, said $—R^4—$ being a divalent aliphatic group; and X represents a divalent heterocyclic ring group containing at least one atom selected from the group consisting of a nitrogen atom, an oxygen atom, and a sulfur atom.

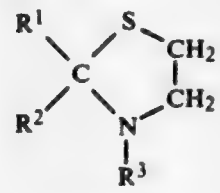
4,508,817

METHOD OF COLOR PHOTOGRAPHIC PROCESSING

Shigeru Ohno, and Shinzo Kishimoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 21, 1984, Ser. No. 612,173
Claims priority, application Japan, May 20, 1983, 58-88938
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—393 **10 Claims**

1. A method of color photographic processing which comprises color developing an exposed silver halide color photographic light-sensitive material and thereafter carrying out a bleach treatment and a fix treatment or a bleach-fix treatment, wherein the bleaching agent used for the bleach treatment or the bleach-fix treatment is a ferric ion complex salt or a persulfate and the bleaching bath or the bleach-fixing bath or a prebath therefor contains at least one compound represented by the following formula (I):



(I)

wherein R^1 and R^2 represent each a hydrogen atom, an alkyl group which may be substituted, a phenyl group which may be substituted or a heterocyclic group which may be substituted, and R^3 represents a hydrogen atom or a lower alkyl group which may be substituted.

4,508,818

SILVER HALIDE PHOTOGRAPHIC SENSITIVE MATERIALS

Masashi Ogawa; Kunio Ishigaki; Nobuyuki Iwasaki, and Taku Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 391,663, Jun. 24, 1982, abandoned.
This application Mar. 26, 1984, Ser. No. 592,763
Claims priority, application Japan, Jun. 24, 1981, 56-97998
Int. Cl.[3] G03C *1/76, 1/30*
U.S. Cl. 430—523 23 Claims

1. A silver halide photographic sensitive material, comprising:

a support base;

a sensitive silver halide emulsion layer on the support base;

a first insensitive layer positioned on the silver halide emulsion layer; and

a second insensitive layer positioned on the first insensitive layer, wherein the second insensitive layer has a melting time higher than the first insensitive layer which has a melting time equal to or higher than that of the silver halide emulsion layer, wherein the second insensitive layer is hardened with a non-diffusible polymeric hardener.

4,508,819

METHOD FOR CULTURING CELLS OR TISSUES

Sam Rose, Eggertsville, N.Y., assignor to Bio-Response, Inc., Wilton, Conn.

Continuation of Ser. No. 287,032, Jul. 27, 1981, , which is a continuation of Ser. No. 59,497, Jul. 23, 1979, abandoned, which is a division of Ser. No. 851,744, Nov. 15, 1977, Pat. No. 4,189,470, which is a division of Ser. No. 549,985, Feb. 11, 1975, Pat. No. 4,064,006, which is a division of Ser. No. 349,330, Apr. 9, 1973, Pat. No. 3,964,467, which is a continuation-in-part of Ser. No. 328,048, Jan. 30, 1973, Pat. No. 3,857,393, which is a division of Ser. No. 136,467, Apr. 22, 1971, Pat. No. 3,719,182.
This application May 21, 1982, Ser. No. 380,960
Int. Cl.[3] A01N *1/02*
U.S. Cl. 435—1 12 Claims

1. A method for the in vitro culturing of cells or tissues in an environment which simulates the in vivo environment in which said cells or tissues normally grow such that said cells or tissues grow, behave and function in substantially the manner as said cells or tissues grow, behave and function in vivo, comprising contacting said cells or tissues with flowing, cell-free lymph.

4,508,820

METHOD FOR SIMULTANEOUSLY MONITORING TURNOVER RATE IN MULTIPLE PROTEINS

Carl R. Merril, Rockville, and David Goldman, Gaithersburg, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 407,762, Aug. 13, 1982, abandoned.
This application Feb. 27, 1984, Ser. No. 582,862
Int. Cl.[3] C12Q *1/29, 1/16;* G01T *1/00*
U.S. Cl. 435—29 4 Claims

1. In a method for determining polypeptide turnover rates of the type wherein radiolabelled proteins in a protein mixture extracted from a sample incubated with radioactive labelled amino acids are separated from the protein mixture, the improvement comprising employing ^{14}C-labelled amino acids as the radioactive label for the synthesis of said proteins, silver staining the separated proteins and determining turnover rate by the amount of radioactive amino acid incorporated into protein per unit time/total protein.

4,508,821

DETECTION OF WHITE CELL ASSOCIATED BACTERIA WITH A FLUORESCENT DYE

James D. Mansour, Raleigh, and Thomas Schulte, Cary, both of N.C., assignors to Becton Dickinson and Company, Paramus, N.J.

Filed Jul. 5, 1983, Ser. No. 510,537
Int. Cl.[3] C12Q *1/04, 1/06*
U.S. Cl. 435—34 29 Claims

1. A method for the detection of bacteria including intracellular bacteria comprising staining said bacteria with ethidium bromide, applying excitation light to said bacteria, and observing said bacteria for fluorescence prior to the appearance of fluorescence from any substantial number of leukocyte nuclei.

4,508,822

BIOCHEMICAL PROCESS

Stephen C. Taylor, Hawarden, Wales, assignor to Imperial Chemical Industries, PLC, London, England

Filed Oct. 6, 1982, Ser. No. 433,093
Claims priority, application United Kingdom, Oct. 6, 1981, 8130116
Int. Cl.[3] C12P *7/02;* C12N *1/26, 15/00, 1/20*
U.S. Cl. 435—155 6 Claims

1. A process for the production of a compound comprising a 1,2-dihydroxycyclohexa-3,5-diene ring which process comprises the steps of:

(1) growing a mutant strain in a growth medium at a temperature in the range 25° C. to 35° C. and at a pH within the range 5.5 to 8.0 in the presence of oxygen or an oxygen containing gas, the said mutant strain comprising (a) an enzyme for producing cyclic dihydroxy compounds from aromatic compounds; (b) being incapable of growing on benzene or toluene, and (c) being obtained by mutation of a strain of *Pseudomonas putida* selected from the group consisting of NCIB 11680 and NCIB 11767 which is able to grow on benzene or toluene, the said growth medium comprising an aqueous mineral salts solution and a suitable source of carbon for cell growth, the concentration of said source being maintained between 1% w/w and 5% w/w;

(2) supplying to the cells of the said mutant strain suspended in a suitable medium, after the growth period, an aromatic compound and a compound which functions as a source of energy for metabolising the aromatic compound, the said suitable medium being capable of supporting little or no growth of the cells of the said mutant strain and lacking, or containing little of, one or more elements essential for growth, of the cells of said strain the said aromatic compound having one or more aromatic rings, each of which may bear one or more substituents which may be hydrocarbyl groups having up to four carbon atoms, or heteroatoms or hetero-groups, at least one of the said one or more aromatic rings having a hydrogen atom attached to adjacent carbon atoms in the aromatic rings, the concentration of the said source of energy in the said suitable medium being maintained at between 0.05% w/v and 0.5% w/v, and the concentration of the said cells in the said suitable medium being from 1 to 30 grams dry weight of cells per liter of medium;

(3) allowing the said mutant strain to convert the aromatic compound into a compound comprising a 1,2-dihydroxycyclohexa-3,5-diene ring at an oxygen tension which is greater than 1% of saturation;

(4) removing the said cells by centrifugration, flocculation or both; and

(5) isolating the compound comprising (a) 1,2-dihydroxycyclohexa-3,5-diene ring from the medium.

4,508,823

GENE SPLICING METHOD AND PRODUCTS PRODUCED THEREFROM

Ronald H. Olsen, Ann Arbor, Mich., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 147,563, May 8, 1980, Pat. No. 4,374,200. This application Dec. 9, 1981, Ser. No. 328,957
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.
Int. Cl.[3] C12N *15/00, 1/20, 1/00;* C12P *21/00, 19/34;* C12R *1/38, 1/385*
U.S. Cl. 435—172.3 16 Claims

1. In a gene splicing method wherein chromosomal DNA is partially and randomly cleaved into fragments with a restriction enzyme and spliced into a cleaved vector thereby joining the chromosomal DNA fragments to the vector to form a recombinant plasmid, the improvement which comprises:

(a) mechanically fragmenting concentrated chromosomal DNA in the absence of bacterial cells into multiple fragments of randomly varying lengths, wherein the average length of the fragments is between 0.1 and 20×10^6 daltons;

(b) partially cleaving with a restriction enzyme the mechanically fragmented and cleaved chromosomal DNA; and

(c) joining the endonuclease cleaved mechanically fragmented DNA with an endonuclease cleaved vector selected from derivatives of pRO1600 as carried in NRRL-B-12124 to form a bank of recombinant plasmids of varying sizes, wherein the bank contains intact alleles which are usually cleaved by the restriction endonuclease.

4,508,824

PSEUDOMONAS DEGRADATION OF HYDROCARBONS

Ronald H. Olsen, Ann Arbor, Mich., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 147,563, May 8, 1980, Pat. No. 4,374,200. This application Oct. 22, 1982, Ser. No. 436,077
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.
Int. Cl.[3] C12N *15/00, 1/20, 1/00;* C12P *19/34;* C12R *1/38*
U.S. Cl. 435—172.3 11 Claims

1. In a method of introducing hydrocarbon degradation encoding metabolic plasmids into a bacterium of the genus Pseudomonas by transconjugal mating to transmit the plasmid of a donor bacterium to a recipient bacterium to produce a transconjugant bacterium containing the metabolic plasmid, wherein the recipient and donor bacterium are each different nutrient factor auxotrophs the improvement which comprises:

(a) providing a donor bacterium containing (1) a plasmid derivative of pRO1600 as carried in NRRL-B-12124 and (2) at least one first series hydrocarbon degradation encoding metabolic plasmid wherein each metabolic plasmid derives energy from different hydrocarbons;

(b) mating the donor bacterium with a recipient bacterium to produce a first transconjugant bacterium without the pRO1600 plasmid derivative and with the metabolic plasmid; and

(c) growing the transconjugant bacterium with the nutrient factor required by the recipient bacterium without the nutrient factor required by the donor bacterium so as to isolate the first transconjugant bacterium with the metabolic plasmid of the donor bacterium.

4,508,825

METHOD FOR THE SEPARATION OF EXTRACELLULAR AMYLASE AND PROTEASE PRODUCED DURING THE FERMENTATION OF ENZYME PRODUCING MICROORGANISMS

Chong Y. Kim; Terry F. Farver, and Jack W. Brewer, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 30, 1983, Ser. No. 480,245
Int. Cl.[3] C12N *9/26, 9/50;* C12R *1/07*
U.S. Cl. 435—201 12 Claims

1. In combination with the method of fermenting an enzyme producing microorganism capable of producing protease and amylase to produce a fermentation broth containing extracellular protease and amylase and filtering this broth to provide a cell-free filtrate containing these enzymes, the improvement which comprises the steps of:

(a) adding low molecular weight polyethyleneglycol and a high molecular weight cationic polymer selected from the group of epihalohydrin/polyamine copolymers and dextran or a mixture thereof of the filtrate;

(b) providing sufficient agitation to mix the two polymers and the filtrate and allowing phase separation to occur between the polyethyleneglycol containing phase and the epihalohydrin/polyamine copolymer or dextran containing phase to provide a polyethyleneglycol containing phase rich in protease relative to amylase and an epihalohydrin/polyamine copolymer or dextran containing phase rich in amylase relative to protease;

(c) separating the phases formed in step (b);

(d) recovering the enzymes in the polyethyleneglycol containing phase to provide a protease/amylase product rich in protease; and/or

(e) recovering the enzymes in the epihalohydrin/polyamine copolymer or dextran containing phase to provide a protease/amylase product which is rich in amylase.

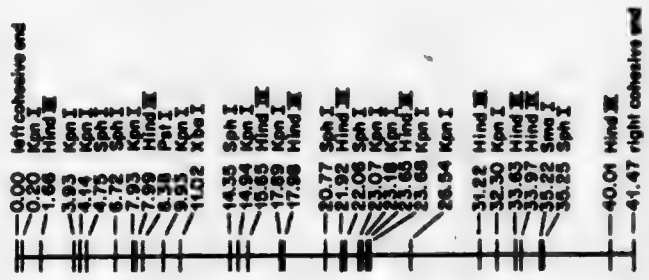
4,508,826

BACTERIOPHAGE DNA CLONING VECTOR TG1 AND MICROORGANISMS CONTAINING TG1

Forrest Foor, New York, N.Y., and Gary P. Roberts, Fanwood, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 368,544, Apr. 15, 1982, abandoned. This application Mar. 8, 1983, Ser. No. 471,579
Int. Cl.[3] C12N *7/00, 7/02, 15/00, 1/20, 1/00*
U.S. Cl. 435—235 5 Claims

– Restriction Map of Phage TG1



1. An isolated vector consisting essentailly of TG1 bacteriophage, or its respective genome.

4,508,827

MOLECULAR CLONING VECTORS FOR USE IN GRAM-NEGATIVE BACTERIA

Ronald H. Olsen, Ann Arbor, Mich., assignor to Microlife Technics, Inc., Sarasota, Fla.

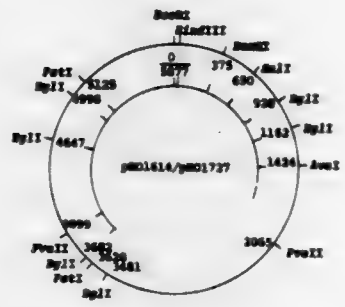
Continuation-in-part of Ser. No. 147,563, May 8, 1980, Pat. No. 4,374,200. This application Jan. 31, 1983, Ser. No. 462,630

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.³ C12N *1/20, 1/00, 15/00;* **C12P** *21/00, 19/34, 21/02;* **C12R** *1/385*

U.S. Cl. 435—253

7 Claims



1. The plasmid pRO1727 ligated to other deoxyribonucleic acid segments.

3. The plasmid pRO1729 ligated to other deoxyribonucleic acid segments.

4,508,828

BIOASSAY OF PARATHYROID HORMONE

Arnold W. Lindall, Marine-on-St. Croix, and James J. Elting, North Oaks, both of Minn., assignors to Immuno Nuclear Corporation, Stillwater, Minn.

Filed Mar. 21, 1983, Ser. No. 477,253

Int. Cl.³ G01N *33/56, 33/58, 33/60*

U.S. Cl. 436—500

18 Claims

1. A method of bioassay of mammalian parathyroid peptides in biological or other fluids comprising:

extracting from a measured volume of the biological or other fluid, with a support-antibody matrix specific to the N-terminal region of mammalian parathyroid hormone, mammalian parathyroid peptides to which the matrix is specific;

contacting the extracted mammalian parathyroid peptides with cultured animal tissue, cultured animal cells, or tissue extract containing adenylate cyclase-coupled parathyroid hormone receptors in a measured volume of medium and under conditions suitable for the extracted mammalian parathyroid peptides to bind the parathyroid hormone receptors; and

measuring the response to binding of the parathyroid hormone receptors.

4,508,829

METHOD AND KIT FOR PREGNANCY DETECTION

Bernard Sulitzeanu, Jerusalem, Israel, assignor to Teva Pharmaceutical Industries Ltd., Israel

Filed Aug. 18, 1982, Ser. No. 409,053

Claims priority, application Israel, Sep. 16, 1981, 63855

Int. Cl.³ G01N *33/54, 33/58, 33/76*

U.S. Cl. 436—510

14 Claims

1. A method for the detection of pregnancy, comprising:

(i) contacting urine of a female subject with a lectin bound to a solid substrate, said lectin being capable of binding HCG;

(ii) separating the solid substrate with the lectin bound thereto from the urine;

(iii) contacting the thus-separated solid substrate with a liquid reagent comprising a carrier material of killed and stained Staphylococci bacteria suspended therein and having anti-HCG antibodies bound to said bacteria, said bacteria with anti-HCG antibodies bound thereto constituting a colour reagent; and

(iv) separating any excess colour reagent from the lectin substrate,

whereby any HCG in the urine will be bound to said anti-HCG antibodies bound to said bacteria to thus colour said lectin substrate, thus indicating that the subject is pregnant,

while no HCG in the urine results in no binding of said anti-HCG antibodies to said lectin substrate and thus in no colouring of said lectin substrate, thus indicating that the subject is not pregnant.

8. A kit for detecting pregnancy, comprising the following separately contained components:

(A) a colour reagent comprising a suspension in a liquid of killed and stained Staphylococci bacteria, said bacteria having bound thereto anti-HCG antibodies; and

(B) at least one column packed with a solid substrate to which lectin is bound.

14. A colour reagent for binding to HCG, to detect pregnancy, said colour reagent being in the form of a liquid suspension, and comprising

killed and stained *Staphylococci bacteria,* and

anti-HCG antibodies bound to said bacteria.

4,508,830

ASSAY

Terence S. Baker, 70 Welley Rd., Wraysbrugy, Staines, Middlesex, TW19 5EP, England, and William F. Couslon, 1 Grayson's Close, Rayleigh, Essex, England

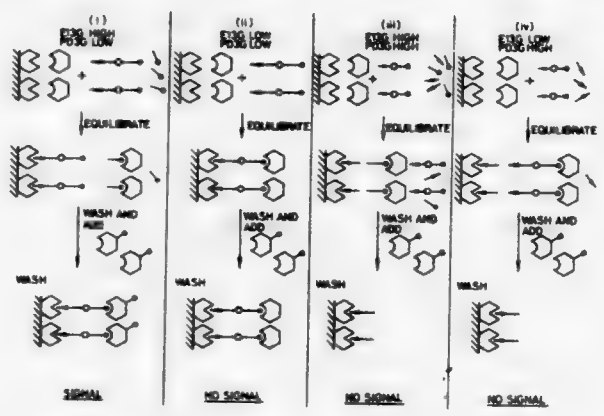
Filed Feb. 7, 1983, Ser. No. 464,143

Claims priority, application United Kingdom, Feb. 10, 1982, 8203906

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—510

14 Claims



1. An assay involving the following components;

a sample solution containing a first and a second antigenic solute;

a first antibody capable of reversibly binding to a determinant of the first antigenic solute, the first antibody being in solution;

a second antibody capable of reversibly binding to a determinant of the second antigenic solute, the second antibody being irreversibly bound to a solid phase support;

a ligand molecule comprising a first antigen to which the first antibody is capable of reversibly binding and a second antigen to which the second antibody is capable of reversibly binding, the first and second antigens being irreversibly bound together through a bridging support molecule, the ligand molecule being in solution; and

a labelled antibody capable of reversibly binding to the antigen,

the assay comprising the steps of;

forming a mixture of the sample solution, the first antibody, the second antibody and the ligand molecule, provided that the first antibody, the second antibody and the ligand molecule are not all mixed with each other prior to admixture of the sample solution;

incubating the said mixture, thereby allowing competition between the ligand molecule and the first antigenic solute for association with the first antibody and allowing competition between the ligand molecule and the second antigenic solute for association with the second antibody;

placing the solid phase support in contact with the labelled antibody, thereby allowing association between the labelled antibody and any unbound first antigen; and

determining the amount of labelled antibody bound to the solid phase support through the ligand molecule and the second antibody.

4,508,831

ANTI-STREPTOLYSIN O LATEX REAGENT AND PROCESS FOR THE PREPARATION THEREOF

Tibor Toth, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,128

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210080

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—512 20 Claims

1. A process for the preparation of an antistreptolysin O latex reagent, which comprises reacting streptolysin O with a bifunctional low molecular weight compound to form a product and adsorbing said product to latex particles.

4,508,832

ELLIPSOMETRICALLY MEASURING RATE OF OPTICAL CHANGE IN IMMUNOASSAY

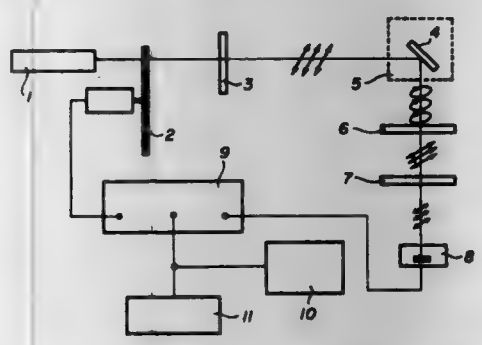
Timothy J. N. Carter, Geneva, and Claus Dähne, Onex, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Jun. 18, 1982, Ser. No. 389,973

Claims priority, application European Pat. Off., Jun. 22, 1981, 81 81 0255.0

Int. Cl.³ G01N *33/54, 21/17, 21/21*

U.S. Cl. 436—517 6 Claims



1. A bioassay method for determining a bioactive substance in a sample by the reaction of said bioactive substance, antigen A_G or antibody A_B, with its specific binding partner, antibody A_B or antigen A_G, respectively, which comprises contacting with the sample to be determined a transparent dielectric substrate the surface of which is at least partly coated with a film of or containing A_B or A_G, respectively distributed on the surface of said transparent dielectric substrate, ellipsometrically measuring the rate of optical change occurring in a beam of light where reflection takes place at the boundary line between substrate surface and film as the result of the reaction of A_B and the A_G of the sample, then correlating the rate data thus obtained with standard rate data from identical rate measurements done with known standard samples of A_G or A_B, respectively.

4,508,833

SEPARATION OF INTERLEUKIN-2 FROM PHYTOHEMAGGLUTININ BY DYE MATRIX CHROMATOGRAPHY

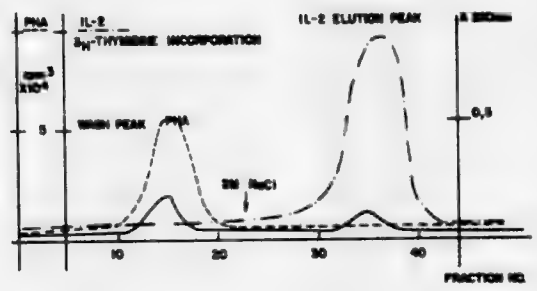
Hans H. Sonneborn, Heusenstamm; Udo Schwulera, Bad-Vilbel, and Hans Schleussner, Frankfurt, all of Fed. Rep. of Germany, assignors to Biotest-Serum-Institut GmbH, Frankfurt, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,708

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149360

Int. Cl.³ G01N *31/08;* A61K *37/02;* B01D *15/08*

U.S. Cl. 436—543 6 Claims



1. A method of purifying human interleukin-2 comprising passing crude interleukin-2 extract through a group-selective dye-ligand adsorption chromatographic column containing a matrix-gel medium consisting of a Blue A ligand or variant thereof or of a Green A ligand in a concentration of approximately 1.5 to 3.0 mg/ml of expanded matrix at a pH of approximately 6.8 to 8.5, a temperature of approximately 4° to 40° C., and a flowthrough rate of approximately 10 to 100 ml/h, and eluting purified interleukin-2 from the medium.

4,508,834

SPECTACLE GLASS WITH INCREASED REFRACTIVE INDEX

Georg Gliemeroth, Mainz-Finthen; Ludwig Ross, Klein-Winternheim; Burkhard Speit, Mainz-Momback; Volkmar Geiler, Mainz-Finthen; Hans-Georg Krolla, Mainz, and Lothar Meckel, Oestrich-Winkel, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Feb. 10, 1983, Ser. No. 465,410

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204625

Int. Cl.³ C03C *3/04, 3/02, 3/16*

U.S. Cl. 501—73 9 Claims

1. An alumina-silica-phosphate spectacle glass which is colorless in the visible range, has a density of less than about 2.65 gcm^{-3}, an Abbe number equal to or greater than about 45 and a refractive index n_d greater than about 1.56, and consisting essentially of (in % by weight):

P_2O_5	12 to 40
Al_2O_3	13 to 34
SiO_2	8 to 30
Total of P_2O_5, Al_2O_3 and SiO_2	47 to 87
B_2O_3	0 to 16
ZrO_2	0 to 4
TiO_2	3 to 12
Total of ZrO_2 and TiO_2	4 to 12
CaO	2 to 18
MgO	0 to 4
Total of CaO and MgO	2 to 18
Na_2O	0 to 15
K_2O	0 to 11
Total of Na_2O and K_2O	4 to 15
Li_2O	0 to 6
Nb_2O_5	0 to 12
ZnO	0 to 8

-continued

Refining agent oxides U.V. absorption agent oxides, and other properties adjustment oxides	0 to 12.

4,508,835

VIBRATABLE REFRACTORY MIX AND BINDER THEREFOR

John A. Kaniuk, State College, Pa.; William E. Meinking, Alfred, and Jeffrey R. Morris, Scio, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 8, 1983, Ser. No. 502,076
Int. Cl.³ C04B *35/02*
U.S. Cl. 501—94 **23 Claims**

1. A vibratable refractory mix comprising the following components:

(a) a particulate, non-basic refractory grain material in an amount sufficient and a sizing suitable to provide refractoriness to said mix,

(b) a P_2O_5 source in an amount sufficient to form a bond with said non-basic refractory material,

(c) a non-clay containing binder which comprises a blend of a member selected from the group consisting of a cellulose ether, microcrystalline cellulose and polyvinyl alcohol in an amount sufficient to provide slump resistance to said mix after it has been vibrated into a form and the form is removed, and a dry, colloidal, particulate material in an amount sufficient to reduce phosphate migration in said mix, after it has been vibrated into a form and cured by heating, to a maximum acceptable level to achieve satisfactory integrity of the molded refractory product, and

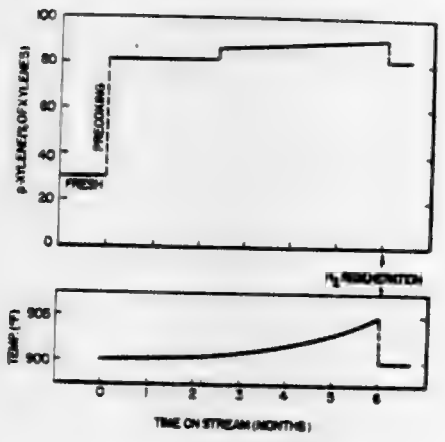
(d) water in an amount sufficient to provide lubricity to said mix and make it vibratable, but not in an amount which would adversely affect the slump resistance of said mix after it has been vibrated into a form.

4,508,836

CATALYTIC CONVERSION PROCESS FOR AROMATIC FEEDSTOCKS WITH HYDROGEN REGENERATION OF COKE-SELECTIVATED ZEOLITE CATALYST

Werner O. Haag, Lawrenceville; David H. Olson, Pennington, and Paul G. Rodewald, Rocky Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,822
Int. Cl.³ B01J *29/38*; C07C *2/66, 5/22*
U.S. Cl. 502—53 **17 Claims**



1. A process for catalytically converting an organic feedstock by alkylation, disproportionation and/or isomerization comprising at least one aromatic compound by contacting the feedstock under catalytic conversion conditions with a catalyst comprising a crystalline aluminosilicate zeolite characterized by a silica to alumina mole ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, which catalyst has undergone controlled precoking by contact with a thermally decomposable organic compound at a temperature in excess of the decomposition temperature of said compound but less than about 1200° F. at a hydrogen to organic compound mole ratio of between 0 to 1 to deposit at least about 1 weight percent of coke thereon and using the thus precoked catalyst in conversion of said feedstock to a product comprising at least one mononuclear alkyl-aromatic compound under conditions of lesser severity which include at least one variable of a lower temperature or a higher hydrogen concentration than employed during the aforesaid precoking with consequent loss in conversion activity of said catalyst and thereafter effecting regeneration of the aged catalyst by exposure to an atmosphere comprising hydrogen at a temperature between about 800° F. and about 1200° F. and a pressure between about 0 and about 2000 psig for a period of time sufficient to at least partially restore the activity of the catalyst.

14. In the process of converting an aromatic feedstock by alkylation, disproportionation and/or isomerization to an alkyl-substituted mono-nuclear aromatic product by contacting the feedstock with a coke-selectivated ZSM-5 type zeolite catalyst at elevated temperature under conversion conditions to produce said alkyl-substituted mononuclear aromatic product, the improvement which comprises:

regenerating the process coked catalyst in contact with a non-oxidizing atomsphere comprising an effective amount of hydrogen at elevated temperature to restore activity of the catalyst while retaining selectivity.

15. The process of claim 14 wherein the regeneration is conducted at a temperature of about 800° F. to 1200° F. and the aromatic product comprises para lower di-alkyl benzene.

4,508,837

ZEOLITE SSZ-16

Stacey I. Zones, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 28, 1982, Ser. No. 425,786
Int. Cl.³ C01B *33/26*; B01J *29/28*
U.S. Cl. 502—62 **10 Claims**

1. A zeolite having a mole ratio of an oxide selected from silicon oxide, germanium oxide and mixtures thereof to an oxide selected from aluminum oxide, gallium oxide, and mixtures thereof greater than about 5:1, and having the X-ray diffraction lines of Table 1.

9. A method for preparing the zeolite of claim 1, comprising:

(a) preparing an aqueous mixture containing sources of an organonitrogen compound, an oxide selected from aluminum oxide, gallium oxide, and mixtures thereof, and an oxide selected from silicon oxide, germanium oxide, and mixtures thereof, the aqueous mixture having the following composition in terms of mole ratio of oxides:

$YO_2/W_2O_3 = 5\text{–}350$

$M_2O/W_2O_3 = 0.5\text{–}20$

$R_2O/W_2O_3 = 0.5\text{–}40$

$MCl/W_2O_3 = 20\text{–}200$

wherein Y is silicon, germanium or mixtures thereof, W is aluminum, gallium or mixtures thereof, M is an alkali metal, and R is a 1,4-di(1-azoniabicyclo[2.2.2]octane)butyl dihalide, and wherein said aqueous mixture has a mole ratio of OH^-/YO_2 of greater than 0.95;

(b) maintaining the mixture at a temperature of from about 100° C. to about 235° C. until the crystals of said zeolite form; and

(c) recovering said crystals.

4,508,838

COMPOSITIONS CONTAINING THIOLATES FOR REMOVAL OF HEAVY METAL IONS FROM DILUTE AQUEOUS SOLUTIONS

Hans Buckl, Freising, Fed. Rep. of Germany, assignor to Süd Chemie Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,786

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1982, 3231982

Int. Cl.³ B01J *20/12, 20/18*

U.S. Cl. 502—62 13 Claims

1. A composition, comprising a thiol-treated sorption complex, for the removal of heavy metal ions from dilute solutions, which comprises:

A. a thiolate having two or more —SMe— groups, wherein Me represents an alkali or ammonium; and

B. a swellable silicate whose ion exchange capacity is 5–350 meq/100 g.

2. A composition, as defined in claim 1, in which said thiolate is derived from a heterocyclic dithiol.

3. A composition, as defined in claim 1, in which said thiolate is derived from a heterocyclic trithiol.

4. A composition, as defined in claim 3, in which the thiol is derived from trimercaptotriazine.

11. A substance, as defined in claim 1, characterized in that the silicate represents a mixture of a bentonite, kaolinite, and a zeolite mineral.

4,508,839

CATALYST FOR THE CONVERSION OF CARBO-METALLIC CONTAINING OILS

Oliver J. Zandona, Ashland; William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, and Hubert W. Beck, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 27, 1981, Ser. No. 296,679

Int. Cl.³ B01J *29/08*

U.S. Cl. 502—65 2 Claims

1. A catalyst composition for cracking hydrocarbons boiling above 650° F. and comprising carbo-metallic impurities of naphthenes and asphaltenes comprising at least about 35 wt % of a calcined rare earth exchanged "Y" crystalline faujasite dispersed in a clay containing matrix material, said catalyst composition providing a pore volume of at least 0.35 cc/g, a matrix material providing a substantial amount of pore size openings within the range of 500 to 2000 A, said catalyst composition comprising a residual sodium content of less than 0.30 wt % and said catalyst composition being rare earth exchanged during preparation to provide a lanthanum to cerium ratio greater than 1.3:1.

4,508,840

METHOD OF PREPARING A HIGH-DENSITY CRACKING CATALYST WITH REDUCED SULFUR EMISSIONS FROM COKE

William E. Cormier, Jr., Clarksboro; Gary M. Pasquale, Sewell, and William A. Stover, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 30, 1982, Ser. No. 403,691

Int. Cl.³ B01J *29/08*

U.S. Cl. 502—70 11 Claims

1. A method of preparing a high-density cracking catalyst with reduced sulfur emmissions from coke, said catalyst comprising active catalytic crystalline aluminosilicate zeolite fines dispersed in an amorphous matrix, said method consisting essentially of the steps of mixing a basic solution containing silica with an acidic solution containing alumina, adding to the mixture said active catalytic zeolite fines, continuously maintaining said mixture at a pH of about 3.0 to about 4.5 from initial mixing to the formation of a gel matrix, homogenizing the gel matrix and spray drying the homogenized gel.

4,508,841

PROCESS FOR PRODUCING POROUS REFRACTORY INORGANIC OXIDE PRODUCTS

Kazuhiko Onuma, Machida; Yoichi Kageyama, Isehara; Hiromu Kobayashi, Yokohama; Akihiro Matsuki, Yokohama, and Makoto Suzuki, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd. and Asia Oil Company, Limited, both of Tokyo, Japan

Filed Jan. 19, 1982, Ser. No. 340,763

Claims priority, application Japan, Jan. 19, 1981, 56-6147; Jan. 19, 1981, 56-17759; Mar. 2, 1981, 56-29699; Apr. 8, 1981, 56-52730; Dec. 9, 1981, 56-198014

Int. Cl.³ B01J *29/00;* C01F *7/02*

U.S. Cl. 502—73 13 Claims

1. A process for producing a catalyst or catalyst carrier, which comprises:

shaping a mixture comprising at least one inorganic member selected from the group consisting of alumina hydrate and mixtures of alumina hydrate with other refractory inorganic oxide, and from about 20 to 80 wt.%, based on the total oxide content of said mixture, of carbon black, wherein said carbon black aids in the formation of controlled pores in the catalyst or catalyst carrier whereby a shaped product is obtained;

drying the shaped product without sintering; and

firing the dried shaped product in an oxygen-containing gas flow, wherein the carbon black is burned off and a porous refractory inorganic oxide catalyst or catalyst carrier containing alumina is formed having a specific surface area ranging from 30 to 350 m^2/g and a total pore capacity of pores between 37.5 Å and 75,000 Å in radius ranging from 0.6 to 1.5 cc/g wherein the pore capacity of pores between 37.5 Å and 500 Å in radius is 90% or more of the total pore capacity, said catalyst or catalyst carrier also having two peak pore distributions, one being between 40 Å and 100 Å in radius and the other being between 100 Å and 500 Å in radius with a pore capacity of pores between 37.5 Å and 100 Å in radius of 0.45 cc/g or more and a pore capacity of pores between 100 Å and 500 Å in radius of 0.1 cc/g or more.

4,508,842

ETHYLENE POLYMERIZATION USING SUPPORTED VANADIUM CATALYST

Debra L. Beran, Crosslanes, W. Va.; Kevin J. Cann, Belle Mead, N.J.; Robert J. Jorgensen, Dunbar, W. Va.; Frederick J. Karol, Belle Mead; Norma J. Maraschin, Somerset, both of N.J., and Arthur E. Marcinkowsky, Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1983, Ser. No. 480,297

Int. Cl.³ C08F *4/68*

U.S. Cl. 502—112 5 Claims

1. A supported catalyst precursor for producing polyethylene consisting essentially of:

(1) a vanadium compound which is the reaction product of:

(a) a vanadium trihalide of chlorine, bromine or iodine; and

(b) an electron donor which is a liquid, organic, Lewis base in which said vanadium trihalide is soluble, said electron donor being selected from the group consisting of aliphatic ketones, aliphatic amines, aliphatic alcohols, and alkyl and cycloalkyl ethers;

(2) a modifier having the formula:

$$MX_a$$

wherein:

M is either boron or $AlR_{(3-a)}$ and wherein each R is independently alkyl provided that the total number of aliphatic carbon atoms in any one R group may not exceed 14;

X is chlorine, bromine or iodine; and

a is 1 or 2 with the provision that when M is boron a is 3; and

(3) wherein said vanadium compound and said modifier are on a solid, inert carrier which consists essentially of silica or alumina.

4,508,843

SUPPORTED POLYOLEFIN CATALYST FOR THE POLYMERIZATION OF ETHYLENE UNDER HIGH TEMPERATURES

Bradley P. Etherton, and Anthony D. Hamer, both of Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 8, 1983, Ser. No. 520,935
Int. Cl.³ C08F 4/64
U.S. Cl. 502—115 **20 Claims**

1. A catalyst component for (co)polymerizing ethylene at temperatures greater than about 150° C. which is the product obtained by treating at least one dehydrated particulate support material having an average particle size diameter of from about 0.05 to about 20 micron with

(a) at least one dihydrocarbyl magnesium compound wherein the hydrocarbyl groups can be the same or different,

(b) optionally, a chlorinating agent,

(c) a transition metal compound of a Group IVb, Vb, or VIb metal of the Periodic Table, and as the last treatment step prior to optional step (e)

(d) ethyl aluminum dichloride, and

(e) optionally, prepolymerizing with an alpha-olefin containing 4 to 18 carbon atoms.

4,508,844

SUPPORTED POLYOLEFIN CATALYST FOR THE POLYMERIZATION OF ETHYLENE UNDER HIGH TEMPERATURES

Agapios K. Agapiou, Humble, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 4, 1983, Ser. No. 520,391
Int. Cl.³ C08F 4/64, 4/68
U.S. Cl. 502—132 **20 Claims**

1. In a catalyst component produced by,

(a) co-comminuting a support base, and an organic electron donor to form a catalyst component support, said support base selected from the Group IIa and IIIa salts and the salts of the multivalent metals of the first transition series with the exception of copper, and

(b) co-comminuting said catalyst component support with a transition metal compound of a Group IVb–VIb metal, to provide a catalyst component precursor

the improvement comprising contacting said precursor with transition metal halide or oxyhalide of Group IVb–Vb, washing the contacted product with an inert hydrocarbon diluent and prepolymerizing the washed product with an alpha-olefin having from 4 to 12 carbon atoms in the presence of an organometallic compound of the Group IIa and IIIa metals, whereby an improved catalyst component is obtained for the (co)polymerization of ethylene under a pressure of from about 30 to about 3,000 bar at a temperature of from about 130° C. to 350° C.

2. The improved catalyst component of claim 1 wherein the support base is magnesium dichloride, the transition metal compound of step (b) is titanium tetrachloride, the precursor is contacted with transition metal halide or oxyhalide neat or in hydrocarbon solution in a weight percent of 5 to 100 based on the amount of catalyst precursor and the improved catalyst component comprises from about 5 to about 200 weight percent of prepolymer.

3. The improved catalyst component of claim 2 wherein the catalyst precursor component is contacted with transition metal halide or oxyhalide from about 0.5 to about 5 hours at a temperature of from 30° to 130° C.

4. The improved catalyst component of claim 3 wherein a Lewis acid is co-comminuted with the support base and the electron donor.

4,508,845

CATALYTIC PREPARATION OF HIGH MOLECULAR WEIGHT POLYSILOXANES

Adrien Dromard, Paris, and Claude Millet, Saint-Priest, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Division of Ser. No. 377,589, May 12, 1982, Pat. No. 4,426,508. This application May 31, 1983, Ser. No. 499,472
Claims priority, application France, May 12, 1981, 81 09571
Int. Cl.³ B01J 31/08, 31/10
U.S. Cl. 502—159 **14 Claims**

1. A catalyst for the preparation of high molecular weight polysiloxanes by polymerization/rearrangement of polysiloxanes of lower molecular weight, comprising

a porous, inorganic mineral particulate support having an average pore diameter in excess of 20 Å and a pore volume ranging from 0.2 to 2 ml/g, said porous support being grafted with less than 15 mg/m² of a film of polymeric material comprising pendant sulfonic or phosphonic acid functions, and said polymeric material being characterized by an ion exchange capacity of less than 2 milliequivalents per gram.

4,508,846

RUTHENIUM CARBONYL CATALYST SUPPORTED ON CERIC OXIDE FOR PREPARATION OF OLEFINS FROM SYNTHESIS GAS

Ronald Pierantozzi, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 373,934, May 3, 1982, abandoned. This application Mar. 5, 1984, Ser. No. 573,525
Int. Cl.³ B01J 23/46, 27/20
U.S. Cl. 502—174 **9 Claims**

1. A catalyst for the selective synthesis of olefins from mixtures of hydrogen and carbon monoxide comprising a ruthenium carbonyl compound deposited on a ceric oxide-containing support made by preparing a solution of the ruthenium carbonyl compound in a solvent sufficient to wet the entire surface of the ceric oxide-containing support, contacting the ceric oxide-containing support with the ruthenium carbonyl compound-containing solution and removing the solvent to yield the ruthenium carbonyl compound on the ceric oxide-containing support.

4,508,847

CARBON-CONTAINING MOLYBDENUM AND TUNGSTEN SULFIDE CATALYSTS

Russell R. Chianelli, Somerville, N.J., and Theresa A. Pecoraro, Danville, Calif., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 399,991, Jul. 20, 1982, abandoned. This application Nov. 16, 1983, Ser. No. 552,404
Int. Cl.³ B01J 27/24, 21/18, 27/02
U.S. Cl. 502—200 **12 Claims**

1. A process for forming a carbon-containing, poorly crystalline metal sulfide catalyst which comprises contacting one or more catalyst precursor salts, in the presence of sulfur and hydrogen and at elevated temperature, with a hydrocarbon for a time sufficient to form said catalyst wherein said precursor salt has the formula $B_x[MO_ySs_{4-y}]$ wherein x is 1 or 2 and y is any value between 0 and 4, wherein M is Mo or W and wherein B is (a) an ammonium ion, or (b) an alkyl or aryl ion wherein said ion may contain from 1–4 alkyl or aryl groups.

4,508,848

CATALYSTS AND PROCESS OF MAKING

Serge R. Dolhyj, Parma, and Roseann M. Enyedy, Brecksville, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 11, 1983, Ser. No. 540,595
Int. Cl.³ B01J *21/06, 21/00, 23/16*
U.S. Cl. 502—239 **21 Claims**

1. A composite complex oxide catalyst comprising (1) a particulate support containing Si or Al, or both, and Ti in the ratios represented by the empirical formula $TiSi_nAl_mO_x$, wherein n is a number from 0–5, m is a number from 0–6, n+m=0.4 to 6 and x is the number of oxygens required to satisfy the valence requirements of the other elements present; and (2) coated on the outer surface of said support a catalytic metal oxide composition containing vanadium and antimony wherein the atomic ratio of vanadium to antimony is in the range from 1:3 to 1:7 and the oxygen is present in the amount to satisfy the valence requirements of the other elements present in said coating, and

wherein the ratio of (2) to (1) is in the range from 1:50 to 3:7.

4,508,849

METHOD FOR PREPARATION OF CATALYST CARRIERS

Akira Inoue, Kawasaki; Shinji Takase; Yasuo Sekido, both of Yokohama; Masao Mori, Yokosuka, and Tatsuki Kubo, Kawasaki, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,136
Claims priority, application Japan, May 12, 1983, 58-81636
Int. Cl.³ B01J *21/12, 21/04*
U.S. Cl. 502—263 **6 Claims**

1. Method for the preparation of alumina or silica-alumina catalyst carriers which comprises blending a precursor of alumina or silica-alumina carriers with polytetrafluoroethylene resin particles, warming the blend and subjecting the same to a compression and shearing operation in a blender, followed by drying and baking.

4,508,850

OLEFIN METATHESIS CATALYST

R. L. Banks, c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Division of Ser. No. 506,950, Jun. 22, 1983, Pat. No. 4,454,368. This application Feb. 13, 1984, Ser. No. 579,334
Int. Cl.³ B01J *21/04, 21/06, 23/14*
U.S. Cl. 502—351 **20 Claims**

1. A composition suitable for the disproportionation of olefins comprising the product produced by contacting rhenium oxide and a support with a promoting amount of at least one aluminum alkyl compound and heating the aluminum alkyl treated rhenium oxide to a temperature of at least about 200° C. suitable for said aluminum alkyl to promote the activity of said rhenium oxide for the disproportionation reaction.

4,508,851

FIBROUS ACTIVATED CARBON AND PROCESS OF PRODUCING IT

Kazuo Izumi; Kenji Shimazaki, and Kenji Seki, all of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,269
Claims priority, application Japan, Jun. 23, 1982, 57-107760
Int. Cl.³ C01B *31/12*
U.S. Cl. 502—426 **21 Claims**

1. A process of producing fibrous activated carbon having a pH not greater than 5 by acid-treatment comprising (i) subjecting raw fibrous activated carbon fiber to an acid so as to attach or adsorb said acid to said fiber and (ii) if necessary, adjusting the pH of the fibrous activated carbon to not greater than 5, wherein the raw fibrous activated carbon has a specific surface area of at least 500 m^2/g after the acid-treatment.

10. The process as claimed in claim 1 wherein the fibrous activated carbon is derived from fibers selected from the group consisting of acrylonitrile-based fibers, pitch-based fibers, and phenol-based fibers.

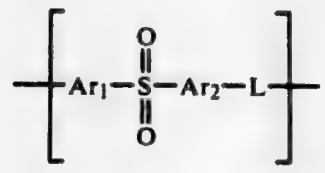
4,508,852

COMPOSITIONS AND METHOD OF PREPARATION BY CHLOROSULFONATION OF DIFFICULTLY SULFONATABLE POLY(ETHER SULFONE)

Benjamin Bikson, Brookline; Myron J. Coplan, Natick, and Gertrud Götz, Brookline, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Sep. 22, 1983, Ser. No. 534,799
Int. Cl.³ C08G *65/48*
U.S. Cl. 521—27 **8 Claims**

1. A chlorosulfonated polyarylethersulfone resin which may be linear or branched and which comprises a plurality of repeating units of the formula:



wherein Ar_1 and Ar_2 each represent phenylene or phenylene partially substituted with non-deactivating groups and where Ar_1 and Ar_2 may be the same or different and wherein some of the phenylene moieties are also substituted with hydroxysulfonyl groups and some of the phenylene moieties are also substituted with chlorosulfonyl groups, the ratio of chlorosulfonyl groups to hydroxysulfonyl groups being within the range of from 0.01–20:1 while the combined contents of both hydroxysulfonyl and chlorosulfonyl groups in the above mentioned polymer range from about 0.05 to about 4 milliequivalents per gram of dry resin; L represents oxygen.

4,508,853

POLYURETHANE PREPOLYMERS BASED ON OLEOCHEMICAL POLYOLS

Hermann Kluth, Duesseldorf, and Alfred Meffert, Monheim, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed May 8, 1984, Ser. No. 608,322
Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317194
Int. Cl.³ C08G *18/34*
U.S. Cl. 521—107 **20 Claims**

1. A starting material for polyurethane foam comprising: a polyurethane prepolymer containing terminal isocyanate groups comprising the reaction product of (1) a stoichiometric excess of an aromatic isocyanate containing an average of 2 to 4 isocyanate groups per molecule and (2) an oleochemical polyol obtained from the complete or partial ring opening of epoxidized triglycerides of a fatty acid mixture containing at least partly olefinically unsaturated fatty acids with a monohydric or polyhydric alcohol; and an effective amount of a blowing agent, said blowing agent being at least partially soluble in said polyurethane prepolymer.

4,508,854

QUATERNIZED CELLULAR POLYMERS FROM AMINE TERMINATED POLY(AMINOETHERS) AND POLYFUNCTIONAL EPOXIDES

Shmuel Dabi, Highland Park, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Apr. 27, 1984, Ser. No. 604,708
Int. Cl.³ C08J *9/08*
U.S. Cl. 521—178 **13 Claims**

1. An absorbent cellular polymeric material comprising the

reaction product of a poly(amino ether) and an epoxy resin, said reaction product having quaternized amine groups.

4,508,855

DRY MIX FRICTION BEARING MATERIAL

Walter B. Peters, Englewood, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Jul. 6, 1984, Ser. No. 628,172
Int. Cl.[3] C08L *61/10*; C08K *3/22*
U.S. Cl. 523—153 **6 Claims**

1. A friction material suitable for use as a bearing, comprising:

(a) 20–40 weight percent phenolic resin;

(b) 5–15 weight percent graphite;

(c) 0.5–3.5 weight percent carbon black;

(d) 40–60 weight percent of a non-asbestos refractory fiber comprising at least 25 wt.% CaO and 35 wt.% SiO_2; and

(e) 4–10 weight percent acrylic fiber.

4,508,856

COMPOSITES UTILIZING FILLERS OF SURFACE MODIFIED HOLLOW MICROSPHERES

Christopher G. Smith, Flourtown, and John F. Peters, Lansdale, both of Pa., assignors to PQ Corporation, Valley Forge, Pa.

Filed Oct. 28, 1983, Ser. No. 546,232
Int. Cl.[3] C08J *9/32*
U.S. Cl. 523—218 **4 Claims**

1. In the method of using water resistant non-fused microspheres as fillers for polymer systems wherein the microspheres are characterized by a weight percent ratio of "polysalt" solids to sodium silicate solids of 0.02:1 to 2.0:1, said sodium silicate containing 1.5 to 4.0 moles of SiO_2 per mole of Na_2O; a particle size of about 5 to 2000 microns; less than 7% (wt/wt) moisture and 0.1 to 5.0% (wt/wt) of a multivalent metal that decreases the solubility of the microsphere in water; the improvement comprising combining said microspheres having pH values between about 4 and 7 in water that have not been washed free of anions with an aqueous emulsion or suspension of a polymer that is not sensitive to high ionic concentrations and setting said polymer which now contains the microspheres.

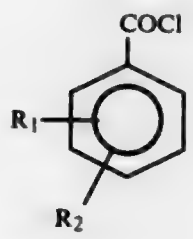
4,508,857

COLOR-STABILIZED AROYL CHLORIDE COMPOSITIONS

Richard H. Chow, Williamsville, and Emil J. Geering, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

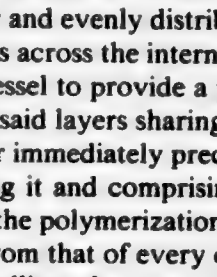
Filed Aug. 15, 1983, Ser. No. 523,238
Int. Cl.[3] C07C *51/64*
U.S. Cl. 260—544 D **7 Claims**

1. An aroyl chloride composition comprising an aroyl chloride of the formula



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, alkyl and alkoxy containing about 0.00001 to about 5.0 percent by weight of methanamide.

5. A method for color-stabilizing an aroyl chloride of the formula



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, alkyl, and alkoxy, which comprises adding thereto about 0.0001 to about 5.0 percent by weight of methanamide.

4,508,858

APPARATUS AND METHOD FOR PREPARING POLYMER SOLUTIONS

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Feb. 16, 1983, Ser. No. 466,737
Int. Cl.[3] C08L *33/26*
U.S. Cl. 523—313 **10 Claims**

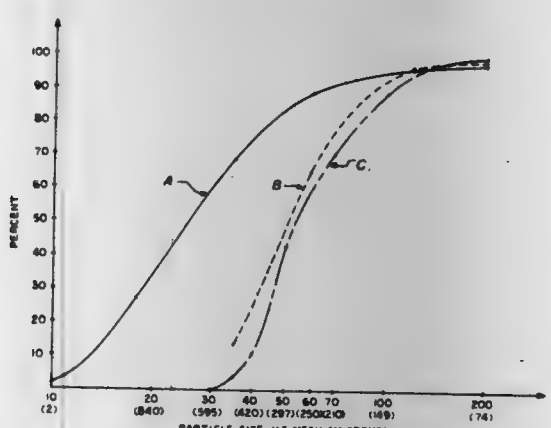
1. A process for the continuous preparation of aqueous polymer solutions for use as drive fluids and/or mobility control buffers in the secondary or tertiary recovery of oil from subterranean oil-bearing formations, comprising: forming a first reaction mixture containing a polymerizable substance and a polymerization initiator; introducing said reaction mixture into a first reaction vessel having an inlet and an outlet; repeating at regular predetermined intervals the forming of additional reaction mixtures corresponding to said first reaction mixture and introducing each of said additional reaction mixtures successively into the first reaction vessel in a manner to substantially uniformly and evenly distribute each of said additional reaction mixtures across the internal cross-sectional area of said first reaction vessel to provide a plurality of individual layers therein, each of said layers sharing a substantially stable interface with the layer immediately preceding it and the layer immediately succeeding it and comprising a reaction mixture in which the extent of the polymerization reaction has reached a stage which differs from that of every other layer in the first reaction vessel; controlling the rate of movement of each reaction mixture layer in said reaction vessel from the inlet to the outlet thereof in a manner such that as each reaction mixture layer is continuously moved through the reaction vessel the polymerization of the polymerizable substance in each reaction mixture layer will be essentially completed when each of the reaction mixture layers successively reaches the outlet of the first reaction vessel; successively and continuously removing each of the layers from the outlet of the first reaction vessel; introducing a modifying agent capable of reacting with the polymer formed in the first reaction vessel into each of the layers as they are successively and continuously removed from said first reaction vessel to form each layer into a second reaction mixture; successively and continuously introducing each layer of said second reaction mixture into a second reaction vessel having an inlet and an outlet in a manner to substantially uniformly and evenly distribute each layer of said second reaction mixture across the internal cross-sectional area of said second reaction vessel to provide a plurality of individual zones of said second reaction mixture therein, each of said zones of the second reaction mixture being characterized in that the extent of the completeness of the reaction between the polymer and the modifying agent varies progressively from the inlet to the outlet of the second reaction mixture; successively and continuously removing each of the zones of the second reaction mixture from the outlet of the second reaction vessel; and diluting said second reaction mixture prior to injecting it into an input well of a subterranean oil-bearing formation.

4,508,859

FINISHING OF ROTATIONAL MOLDING GRADE RESIN

Mike E. Muhle, Kingwood; Richard J. Stolz, LaPorte, and Cecil W. Wright, Baytown, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 22, 1982, Ser. No. 452,269
Int. Cl.³ C08J 3/20
U.S. Cl. 523—346 15 Claims



1. A method of finishing polyolefin thermoplastic granules for rotomolding, which comprises:

(a) blending polyolefin thermoplastic granules and additive material at a temperature below the softening point of the thermoplastic to form a masterblend;

(b) introducing the masterblend and additional polyolefin thermoplastic granules into an intensive mixer in an additional resin/masterblend weight ratio between about 5:1 and 50:1, and mixing the same (i) until the temperature of the resin reaches its softening point but below its fluxing temperature whereby the additive material is incorporated into or onto substantially all of the granules (ii) until the particle size of the granules is reduced to the extent that at least about 80 weight percent of the granules are smaller than about 30 mesh, and (iii) until the bulk density of the granules is increased by at least 10%;

(c) withdrawing the granules from the intensive mixer and cooling the particles below the fusion temperature of the additive and below the softening point of the resin; and

(d) removing essentially all of the particles larger than 30 mesh.

4,508,860

DISCONTINUOUS FIBER PRETREATMENT

David H. Hawes, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 352,229, Feb. 25, 1982, abandoned. This application Mar. 7, 1984, Ser. No. 587,047
Int. Cl.³ B32B 5/16
U.S. Cl. 524—13 7 Claims

1. In a method of incorporating unregenerated discontinuous cellulose fibers within a vulcanizable elastomeric matrix, a fiber pretreatment which consists essentially of mixing from 3% to 15% by weight vinyl pyridine latex with a fiber-in-water mixture of essentially delignified hardwood fibers which have not been subjected to post-delignification drying, said mixture having a consistency of from 10% to 40% solids, subsequently expressing water and drying the treated fiber.

4,508,861

THERMALLY STABILIZED POLYETHERIMIDES

Roger W. Avakian, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 29, 1983, Ser. No. 566,698
Int. Cl.³ C08K 5/53
U.S. Cl. 524—101 23 Claims

1. A thermally stabilized polyetherimide which comprises a polyetherimide and a stabilizing amount of antioxidant selected from the group comprising (a) a hindered phenol, (b) an arylphosphonite, (c) an organic phosphite, (d) a thioester, and (e) mixtures thereof, wherein said antioxidant has a molecular weight greater than 400.

4,508,862

PROCESS FOR THE PRODUCTION OF FLUID AQUEOUS DISPERSIONS OF POLYMERS OF CONJUGATED DIENES

Adolf Schmidt, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk

Filed Nov. 24, 1982, Ser. No. 444,157
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148107
Int. Cl.³ C08K 5/42
U.S. Cl. 524—157 7 Claims

1. A process for the production of a fluid, aqueous dispersion of one or more conjugated diene homo- and/or copolymers, which dispersion has a viscosity of less than 50,000 mPas, measured at 1 bar and 22° C., a solids content of from 25 to 55%, by weight, and an average particle diameter of from 20 to 150 nm, which comprises:

adding to a non-fluid, alkane polysulfonate salt-free, aqueous dispersion of one or more conjugated diene homo- and/or copolymers, which non-fluid, alkane polysulfonate salt-free, aqueous dispersion has a viscosity of more than 50,000 mPas, as measured at 1 bar and 22° C., a solid content of from 22 to 55%, by weight, and an average particle diameter of from 20 to 150 nm,

one or more water soluble salts of one or more alkane polysulfonates in an amount of 0.05 to 0.5%, by weight, based on the solids content of the non-fluid, alkane polysulfonate and in the form of a dilute aqueous solution.

4,508,863

STABILIZATION OF POLYVINYL CHLORIDE

Otto S. Kauder, New York, and Charles Keeley, Wantagh, both of N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Continuation of Ser. No. 511,432, Jul. 6, 1983, abandoned. This application Feb. 10, 1984, Ser. No. 578,936
Int. Cl.³ C08K 5/57, 5/09, 9/04
U.S. Cl. 524—181 17 Claims

13. A polyvinyl chloride resin composition having an enhanced resistance to deterioration when heated and worked, comprising a polyvinyl chloride resin, a polyvinyl chloride resin stabilizer, and a highly branched alpha-olfin oligomer obtained by oligomerization of a 1-olefin having from about six to about twelve carbon atoms, and having alkyl branches of at least two carbon atoms, the alpha-olefin oligomer being in an amount to enhance the stabilizing effect of the polyvinyl chloride resin stabilizer.

4,508,864

PRESSURE SENSITIVE ADHESIVES

Ivan S. Lee, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Continuation of Ser. No. 357,093, Mar. 11, 1982,. This application Oct. 7, 1983, Ser. No. 539,636
Claims priority, application Canada, Apr. 28, 1981, 376453
Int. Cl.³ C08L 9/08, 93/00
U.S. Cl. 524—187 9 Claims

1. A composition comprising a latex of a polymer and a tackifier resin wherein said polymer is formed by polymerizing:

(a) from about 20 to about 45 weight percent of a vinyl or vinylidene monoaromatic monomer which is unsubstituted or substituted in the aromatic ring by a C_{1-4} alkyl radical or a bromine or chlorine atom;

(b) from about 50 to about 75 weight percent of a C_{4-6} conjugated diene monomer; and

(c) from about 1 to about 5 weight percent of an unsaturated carboxylic acid monomer; and wherein said polymer has:

(i) a weight average molecular weight distribution so that from about 20 to about 45 weight percent of the polymer has a molecular weight from about 3,500 to about 36,000;

(ii) a polymeric Tg (DSC) from about −29.5° to about −62° C.; and

(iii) a toluene insoluble portion from about 20 percent to about 70 percent by weight; and wherein said tackifier resin comprises from about 10 to about 35 parts by weight per 100 parts by weight of said polymer and is selected from the group:

(a) a rosin or a hydrogenated rosin ester which has a ring and ball softening temperature from about 75° to about 100° C.

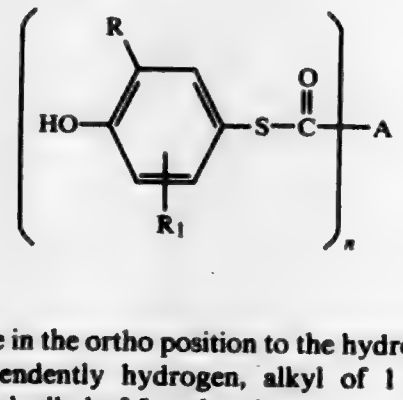
4,508,865

S-(4-HYDROXYPHENYL)THIOCARBOXYLIC ESTER ANTIOXIDANTS

John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,561
Int. Cl.³ C08K *5/36*; C07C *153/09*
U.S. Cl. 524—283 **11 Claims**

1. A compound of the formula



wherein

R and R_1 are in the ortho position to the hydroxyl group and are independently hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms;

n=2, and A is alkylene of from 1 to 10 carbon atoms, cycloalkylene of 5 to 6 carbon atoms arylene, biphenylene or hydroxy-substituted arylene.

8. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of claim 1.

4,508,866

POLYMERIC ANTITUMOR AGENT

Edward H. Mottus, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 274,596, Jun. 17, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 540,215
Int. Cl.³ C08K *3/16*; C08F *222/06*
U.S. Cl. 524—401 **9 Claims**

1. An antitumor active, water-soluble composition of matter selected from the group consisting of low molecular weight copolymers of butyl vinyl ether and maleic anhydride, wherein said molecular weight is less than about 3000 and wherein said copolymer is derivatized to contain half-amide, half-carboxyl acid groups in which from 0 weight percent to about 25 weight percent of the half amide, half-carboxyl acid groups are converted to imide groups, and the pharmaceutically acceptable cationic salt derivatives of said derivatized copolymers.

4,508,867

POLYMER COMPOSITIONS COMPRISING POLYAMIDES, CARBOXYLATED (METH)ACRYLONITRILE-BUTADIENE RUBBER, AND NONPOLYMERIC ADDITIVES

Kyosaku Sato, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Nov. 7, 1983, Ser. No. 549,502
Int. Cl.³ C08K *3/16, 3/10, 3/20*
U.S. Cl. 524—434 **16 Claims**

1. A vulcanizable rubbery composition comprising, per 100 parts by weight of polymeric materials, as one polymeric material from about 10 to about 32.5 parts by weight of a crystalline polyamide and as a second polymeric material from about 67.5 to about 90 parts by weight of a synthetic rubbery polymer which polymer comprises, for a total of 100 parts by weight, from about 25 to about 40 parts by weight of acrylonitrile or methacrylonitrile, from about 0.5 to about 10 parts by weight of one or more α,β-unsaturated carboxylic acid and the balance butadiene, and as non-polymeric additives from about 0.1 to about 15 weight percent based on polyamide of an additive selected from the halides of lithium, magnesium, calcium and zinc, and from about 1 to about 10 parts by weight per 100 parts by weight of polymeric materials of an additive selected from the oxides and hydroxides of magnesium, calcium, barium and zinc and the peroxides of calcium and zinc and further comprising sulphur vulcanization active agents.

4,508,868

POLYMERIC FAT ACID POLYAMIDE RESINS FOR USE IN FLEXOGRAPHIC INK VEHICLES HAVING REDUCED SOLVENT EMISSIONS

Paul D. Whyzmuzis, Plymouth, and Anne E. Spinks, Minneapolis, both of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Mar. 29, 1984, Ser. No. 594,514
Int. Cl.³ C08G *69/34*
U.S. Cl. 524—607 **14 Claims**

1. A polyamide comprising the condensation product of (A) an amine component comprising from 50–60 equivalent percent of a short chain diamine having from 2–3 carbon atoms and 40–50 equivalent percent of a long chain diamine having 6–10 carbon atoms and (B) an acid component comprising from 45–55 equivalent present of a polymerized fatty acid having a dimeric fat acid content between 65–75% by weight, 15–30 equivalent percent of an unsaturated monobasic fatty acid having from 12–22 carbon atoms and the remainder of the acid component being a lower aliphatic monobasic acid of the formula RCOOH where R is hydrogen or an aliphatic hydrocarbon radical of 1–4 carbon atoms, the equivalents ratio of acid equivalents from said acid component to amine equivalents from said amine component being in the range of about 1.04–1.09.

4,508,869

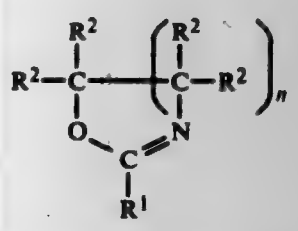
LATEXES OF POLYMERS HAVING PENDANT COREACTIVE AND OXAZOLINE GROUPS

William H. Keskey; James E. Schuetz, and Do I. Lee, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 14, 1983, Ser. No. 504,120
Int. Cl.³ C08L *39/00*
U.S. Cl. 524—808 **13 Claims**

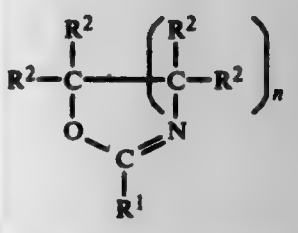
1. A curing latex composition comprising discrete polymer particles, which particles contain pendant coreactive groups selected from the group consisting of weak acid groups, aliphatic alcohols, aromatic alcohols, amines and amides and pendant oxazoline groups, which particles have been prepared by the polymerization of addition polymerizable monomers, which monomers comprise (a) a coreactive monomer containing pendant groups which are capable of reacting with an

oxazoline group to form a covalent bond thereto, (b) an oxazoline as represented by the general structure:



wherein R^1 is an acyclic organic radical having addition polymerizable unsaturation; each R^2 is independently hydrogen, halogen or an inertly substituted orgaanic radical and n is 1 or 2 and (c) at least one other addition polymerizable monomer which does not contain a coreactive or oxazoline group.

8. A process for preparing a latex comprising discrete particles containing pendant weak acid and oxazoline groups, said process comprising the steps of (a) forming a latex containing particles of a polymer containing pendant weak acid groups by polymerizing a first monomer mix comprising an addition polymerizable monomer containing pendant weak acid groups and at least one other addition polymerizable monomer which is copolymerizable with said monomer, said polymerization being conducted at a pH in the range from about 1 to about 6, then (b) adjusting the pH of the resulting latex to a value at which an addition polymerizable oxazoline does not substantially react or hydrolyze under conditions suitable for the polymerization thereof, (c) adding to said latex a second monomer mix comprising (1) an addition polymerizable oxazoline as represented by the general formula:



wherein R^1 is an acyclic organic radical hving addition polymerizable unsaturation; each R^2 is independently hydrogen, halogen or an organic radical and n is 1 or 2 and (2) at least one other monomer and (d) polymerizing said monomer mix under conditions such that the second monomer mix is polymerized within or around said polymer particles containing pendant weak acid groups.

4,508,870

POLYBLENDS OF THERMOPLASTIC COPOLYETHERESTERS AND ACRYLONITRILE-BUTADIENE-STYRENE POLYMERS

Daniel L. Dufour, Waterloo, Belgium, and William J. Jones, Holyoke, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 27, 1984, Ser. No. 574,445
Int. Cl.³ C08L 55/02
U.S. Cl. 525—64 **10 Claims**

1. A polyblend comprising:

A. from 1 to 15% by weight of a thermoplastic copolyetherester elastomer with the provision that if the thermoplastic copolyetherester elastomer contains less than 40% by weight soft segments, the amount of the thermoplastic copolyetherester elastomer is in the range of from 1 to 10% by weight; and

B. from 99 to 85% by weight of a grafted polymer composition comprising a graft polymer of from 20 to 40 parts by weight of a monomer selected from the group consisting of methyl methacrylate and acrylonitrile and 80 to 60 parts by weight of a vinyl aromatic monomer, the polymer being grafted onto a substrate rubber having a glass transition temperature below 0° C. wherein the monomers are polymerized in the presence of and grafted onto the substrate rubber, wherein the weight percent of the rubber is in the range from 1 to 60% by weight based on the weight of the composition;

and wherein the weight percent for Components (A) and (B) are based on the total amount of Components (A) and (B) in the polyblend.

4,508,871

TRANSPARENT BLENDS OF POLYMETHYLMETHACRYLATE AND CERTAIN STYRENE COPOLYMERS

Henno Keskkula, Austin, Tex.; Kathleen M. McCreedy, and Donald A. Maass, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 255,957, Apr. 20, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,419
Int. Cl.³ C08L 33/10, 51/00
U.S. Cl. 525—78 **14 Claims**

1. Polyblended, organic thermoplastic polymers composition, transparent in visual perception by the unaided human eye,

said composition being particularly characterizable in having a light absorbance value in the 640 nanometer wave length that is not greater than about 0.12 by standard test when said composition in a solid, shaped specimen form that has an at least substantially uniform thickness which at least approximates 10 mils is disposed and exposed perpendicularly to the path of a ray of said 640 nanometer wavelength light from a source thereof,

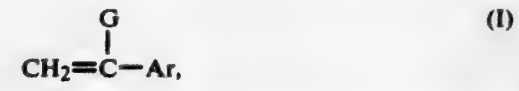
said composition comprising, in intimate, thoroughly physically interdispersed admixture:

(a) polymethylmethacrylate in an effective, substantial quantity as an indispensable essential component in said polyblended composition; plus

as additional polyblended component(s) in admixture with said polymethylmethacrylate component (a), a polymeric complement of:

(b) from 1 to about 99 weight percent, based on total composition weight of a copolymerizate of an alkenyl aromatic monomer and a monomeric vinyl acid containing polymerized in the copolymer molecule between about 95 and about 50 weight percent of the alkenyl aromatic monomer,

said alkenyl aromatic monomer being of the Formula:



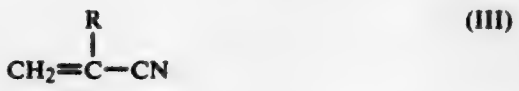
(I)

wherein G is selected from the Group consisting of hydrogen and methyl and Ar is an aromatic radical including alkyl and halo-ring-substituted aromatic units of from 6 to about 10 carbon atoms,

said vinyl acid monomer being selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid and mixtures thereof; and

(c) from 0 to 70 weight percent of a mass-made acrylonitrile-butadiene-styrene-type resin that comprises:

from about 14 to about 28 parts by weight of a cyanoalkene of the Formula:



(III)

wherein R is selected from the Group consisting of hydrogen and a lower alkyl unit containing not more than about 4 carbon atoms therein;

from about 86 to about 72 parts by weight of an alkenyl aromatic monomer of the Formula (I); and

between about 5 and about 18 weight percent of a natural or synthetic rubber ingredient, said rubber ingredient being

in the form of particles having a weight average diameter range of from about 0.3 micron to about 5 microns having occluded styrene-acrylonitrile polymer therein;

with the formulation limitations attendant said polyblend composition that:

(i) when there is no quantity of component (c) in the polyblended composition, the weight percent of said component (b) therein present is at least about 1; and

(ii) when both said component (b) and component (c) are present in the polyblended composition, the weight percent of said component (b) therein present is at least about 1 and the weight percent of said component (c) therein present is at least about 20.

4,508,872

HIGH TOUGHNESS PROPYLENE POLYMER COMPOSITIONS

J. Douglas McCullough, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 22, 1984, Ser. No. 582,417

Int. Cl.³ C08L *53/00, 23/04, 23/26*

U.S. Cl. 525—88 **28 Claims**

1. A composition having a melt flow between about 5 and about 50 dg/min (ASTM D1238—Condition L), and a high notched impact value, said composition being obtained by first peroxide-contacting an impact-improved propylene-ethylene copolymer and then melt mixing the resulting visbroken propylene polymer with a linear low density ethylene copolymer and a high density ethylene homopolymer, wherein

(a) said impact-improved propylene-ethylene polymer has a melt flow (ASTM D1238-Condition L) of about 0.5–15 dg/min and an elastomeric propylene-ethylene copolymer content of 5–50% by weight, the copolymer fraction having an ethylene content of 30–95% by weight, which propylene-ethylene polymer is the product of sequential polymerization of propylene and a propylene-ethylene mixture over a titanium halide-containing coordination catalyst;

(b) said high density ethylene homopolymer has a density in the range from 0.941 to 0.965 grams per cubic centimeter and a melt index (ASTM D1238-Condition E) in the range from 0 to 20 dg/min;

(c) said linear low density ethylene copolymer is the product of random polymerization of ethylene with up to 15 mole percent of at least one C_3–C_8 alpha olefin monomer over a transition metal-based coordination catalyst and which has a density below 0.935 and a melt index (ASTM D1238-Condition E) not exceeding 16; and

(d) said composition comprises 50–90% by weight of said impact-modified propylene polymer, 3–45% by weight of said high density ethylene homopolymer, 3–45% by weight of said linear low density ethylene copolymer, wherein the weight ratio of said high density ethylene homopolymer to said linear low density ethylene copolymer is between 80:20 and 20:80.

4,508,873

EMULSIONS OF LIQUID HYDROCARBONS WITH WATER AND/OR ALCOHOLS

Russell R. Reeves, Richmond, Australia, assignor to Apace Research Limited, New South Wales, Australia

Division of Ser. No. 471,536, Mar. 2, 1983, Pat. No. 4,482,666. This application Mar. 8, 1984, Ser. No. 587,631

Claims priority, application Australia, Mar. 12, 1982, PF3086/82; Nov. 30, 1982, PF7052/82

Int. Cl.³ C08L *9/00*

U.S. Cl. 525—91 **26 Claims**

1. An emulsifying preparation for use in the formation of emulsions containing a hydrocarbon liquid in one phase and water and/or an alcohol in the other phase,

said emulsifying preparation comprising a solution consisting essentially of an emulsifier and a coupling agent in a suitable solvent, said emulsifier and said coupling agent being present in said solution in a weight ratio of 1:3 to 3:1,

said emulsifier being a block copolymer containing at least one polymeric block of at least one monomer selected from the group consisting of styrene and ring substituted styrenes and at least one polymeric block containing at least one monomer selected from the group having the formula:

$$H(O—R)_nOH$$

wherein

R is an aliphatic hydrocarbon radical containing from 1 to 4 carbon atoms, and

n is a number between 4 and 4000,

said coupling agent being soluble in the continuous phase of said emulsion and being substantially insoluble in the discontinuous phase of said emulsion, said coupling agent being such that it will couple with that part of said emulsifier which is solvated by the continuous of said emulsion.

4,508,874

IMPACT RESISTANT POLYMERIC COMPOSITIONS CONTAINING POLYAMIDES, MALEIC ANHYDRIDE ADDUCTS OF HYDROGENATED POLYMERS AND GRAFT COPOLYMERS THEREOF

William L. Hergenrother, Akron, Ohio; Mark G. Matlock, Decatur, Ill., and Richard J. Ambrose, Erie, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 410,094, Aug. 20, 1982, Pat. No. 4,427,828, which is a continuation-in-part of Ser. No. 298,424, Sep. 1, 1981, abandoned, which is a continuation of Ser. No. 115,635, Jan. 28, 1980, abandoned, which is a continuation of Ser. No. 31,577, Apr. 19, 1979, abandoned. This application Nov. 4, 1983, Ser. No. 548,904

Int. Cl.³ C08F *8/00, 297/04*

U.S. Cl. 525—285 **9 Claims**

1. A maleic anhydride adduct of a hydrogenated polymer of one or more conjugated dienes or hydrogenated copolymer of a conjugated diene and a vinyl aromatic hydrocarbon, said hydrogenated polymer or copolymer having a residual unsaturation content of from about 0.5 to about 20% of its original unsaturation content prior to hydrogenation.

4,508,875

MULTI-LAYER STRUCTURE POLYMER COMPOSITION

Kazuo Kishida, Ohtake; Akira Hasegawa, Hiroshima, and Masahiro Sugimori, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 349,910, Feb. 18, 1982, abandoned. This application Aug. 26, 1983, Ser. No. 526,546

Claims priority, application Japan, Feb. 25, 1981, 56-26553; Mar. 9, 1981, 56-33653

Int. Cl.³ C08F *265/06*

U.S. Cl. 525—308 **20 Claims**

1. A multi-layer structure polymer composition having the following layers as fundamental structural units;

(a) an innermost layer polymer (A) comprising 50–100 parts by weight of an alkyl acrylate having a C_1–C_8 alkyl group (A_1), 0–50 parts by weight of an alkyl methacrylate having a C_1–C_4 alkyl group (A_2), provided that the total of (A_1) and (A_2) is 80–100 parts by weight, 0–20 parts by weight of a monomer having a copolymerizable double bond (A_3), 0–10 parts by weight of a polyfunctional monomer (A_4), provided that the total of (A_1), (A_2), (A_3) and (A_4) is 100 parts by weight, and 0.1–5 parts by weight, per 100 parts by weight of the total of (A_1) to (A_4), of a graft linking agent (A_5) and having a glass transition temperature of lower than 10° C., and a degree of swelling of from 2–10;

(b) a crosslinked elastic polymer (B) comprising 80–100 parts by weight of an alkyl acrylate having a C_1–C_8 alkyl group

(B_1), 0–20 parts by weight of an alkyl methacrylate having a C_1–C_4 alkyl group (B_2), 0–20 parts by weight of a monomer having a copolymerizable double bond (B_3), 0–10 parts by weight of a polyfunctional monomer (B_4), provided that the total of (B_1), (B_2) and (B_3) and (B_4) is 100 parts by weight, and 0.1–5 parts by weight, per 100 parts by weight of the total of (B_1) to (B_4), of a graft linking agent (B_5) and having a glass transition temperature of 0° C. or lower and a degree of swelling of from 3–15, with the proviso that the degree of swelling of layer B is higher than that of said innermost layer polymer (A);

(c) an outermost layer polymer (C) comprising 51–100 parts by weight of an alkyl methacrylate having a C_1–C_4 alkyl group (C_2), 0–29 parts by weight of an alkyl acrylate having a C_1–C_8 alkyl group (C_1) and 0–20 parts by weight of a monomer having a copolymerizable double bond (C_3), provided that the total of (C_1), (C_2) and (C_3) is 100 parts by weight, and having a glass transition temperature of 60° C. or higher; and

(d) at least one intermediate layer (D) between said polymer (B) layer and said polymer (C) layer comprising 10–90 parts by weight of an alkyl acrylate having a C_1–C_8 alkyl group (D_1), 90–10 parts by weight of an alkyl methacrylate having a C_1–C_4 alkyl group (D_2), 0–20 parts by weight of a monomer having a copolymerizable double bond (D_3), 0–10 parts by weight of a polyfunctional monomer (D_4), provided that the total of (D_1), (D_2), (D_3) and (D_4) is 100 parts by weight, and 0.15 parts by weight, based on a total of (D_1) to (D_4), of a graft linking agent (D_5), wherein the amount of alkyl acrylate in said intermediate layer (D) linearly decreases from the crosslinked elastic polymer (B) to the outermost layer polymer (C), and wherein the gel content of said multi-layer structural polymer composition is at least 50%.

4,508,876

GRAFT COPOLYMER USEFUL AS REINFORCEMENTS FOR VINYL CHLORIDE POLYMERS AND PROCESS FOR PREPARING THE SAME

Akira Takaki, and Hideki Hosoi, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 7, 1983, Ser. No. 511,479

Claims priority, application Japan, Jul. 13, 1982, 57-122445; Jun. 1, 1983, 58-98200

Int. Cl.³ C08F *279/06, 279/00*

U.S. Cl. 525—310 **4 Claims**

1. A graft copolymer comprising an aromatic vinyl monomer and an alkyl methacrylate grafted onto a butadiene copolymer, said graft copolymer being prepared by emulsion-polymerizing 20 to 60 parts by weight of a monomer mixture of 20 to 80% by weight of an aromatic vinyl monomer, 80 to 20% by weight of an alkyl methacrylate and 0 to 20% by weight of other vinyl monomer copolymerizable therewith in the presence of an aqueous latex of 80 to 40 parts by weight of a butadiene copolymer prepared from a monomeric mixture containing 5 to 35% by weight of styrene, 95 to 65% by weight of butadiene and 0 to 20% by weight of at least one other vinyl monomer copolymerizable therewith, said butadiene copolymer being a multistage polymer which is produced in at least two stages, in the last stage of which 20% by weight of the entire multistage butadiene copolymer is produced and the product of which has a butadiene content that is from 80% to 100% by weight and that is at least 5% by weight higher than the butadiene content of the entire multistage butadiene copolymer.

4,508,877

PROCESS FOR PRODUCING A HIGH PURITY CYCLIZED POLYMER OF ISOPRENE

Masaaki Todoko, and Hiroyuki Watanabe, both of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Nov. 22, 1983, Ser. No. 554,299

Claims priority, application Japan, Nov. 26, 1982, 57-206049

Int. Cl.³ C08F *8/48*

U.S. Cl. 525—333.1 **11 Claims**

1. A process for producing a cyclized polymer of isoprene having a dispersion degree not greater than 2 as defined by the ratio of $\overline{M}w/\overline{M}n$, where $\overline{M}w$ is the weight-average molecular weight and $\overline{M}n$ is the number-average molecular weight, comprising:

(a) polymerizing isoprene monomer in the presence of an organometallic compound expressed by the general formula RM, wherein R is an alkyl, aryl or aralkyl group and M is lithium, sodium or potassium; and

(b) placing the thus obtained polymer in contact with a catalyst comprising a boron trifluoride diethyl-ether complex and a carboxylic acid of the general formula $Cl_{3-n}H_nCCOOH$, wherein n is an integer ranging from 0 to 3 to obtain the cyclized polymer.

4,508,878

PROCESS FOR PRODUCING A BLOW MOLDING RESIN

Yoshiho Matsuo; Atsuhiko Yoshino, and Ryoji Nishijima, all of Ichihara, Japan, assignors to Nissan Chemical Industries Ltd and Nissan Maruzen Polyethylene Company, both of Tokyo, Japan

Filed Sep. 8, 1983, Ser. No. 530,248

Claims priority, application Japan, Jul. 14, 1983, 58-128523

Int. Cl.³ C08F *236/00*

U.S. Cl. 525—333.8 **3 Claims**

1. A process for producing a blow molding resin which comprises pelletizing a high density polyethylene prepared by means of a highly active Ziegler catalyst, wherein a cross-linking agent is added to the high density polyethylene in an amount such that the concentration of the cross-linking agent is from 0.001 to 0.01 phr relative to the high density polyethylene, and the pelletizing is conducted in an atmosphere having an oxygen concentration within the range of from 0.5 to 10% by volume.

4,508,879

CROSSLINKABLE COMPOSITION OF MATTER III

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 14, 1983, Ser. No. 458,119

Int. Cl.³ C08F *280/00;* C08L *63/00*

U.S. Cl. 525—528 **30 Claims**

1. A crosslinkable composition of matter, which composition comprises:

A. substantially gel-free dieneophile-functionalized epoxy-amine adduct, comprising the reaction product of (i) polyhydroxy functional epoxy-amine reactant comprising the reaction product of polyepoxy reactant having an average of at least about 2 epoxy groups per molecule with secondary amine reactant having a total of less than about 20 carbons per amino nitrogen, wherein each hydroxy group, if any, of the secondary amine is removed at least 1 carbon from each amino nitrogen, with (ii) dieneophile functional mono-isocyanate reactant; and

B. substantially gel-free, substantially isocyanate-free diene-functionalized polyisocyanate oligomer having number average diene functionality of at least about three, comprising the reaction product of (i) polyisocyanate reactant with (ii) isocyanate-reactive diene functional reactant, wherein the polyisocyanate reactant and the diene functional reactant are in molar equivalent ratio of one to at least about one, respectively.

4,508,880

"LIVING" POLYMERS AND PROCESS FOR THEIR PREPARATION

Owen W. Webster, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

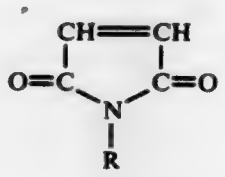
Continuation-in-part of Ser. No. 389,110, Jun. 17, 1982, Pat. No. 4,417,034, which is a continuation-in-part of Ser. No. 279,025, Jun. 30, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,409

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

Int. Cl.[3] C08F *4/58, 4/72, 2/00*

U.S. Cl. 526—190 97 Claims

1. In a process comprising polymerizing the monomer selected from the group consisting of $CH_2{=}C(Y)X$,



and mixtures thereof wherein:

X is —CN, —CH=CHC(O)X′ or —C(O)X′;

Y is —H, —CH_3, —CN or —CO_2R, provided, however, when X is CH=CHC(O)X′, Y is —H or —CH_3;

X′ is —$OSi(R^1)_3$, —R, —OR or —NR′R″;

each R^1, independently, is hydrocarbyl of up to 20 carbon atoms;

R is hydrocarbyl of up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof, and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and

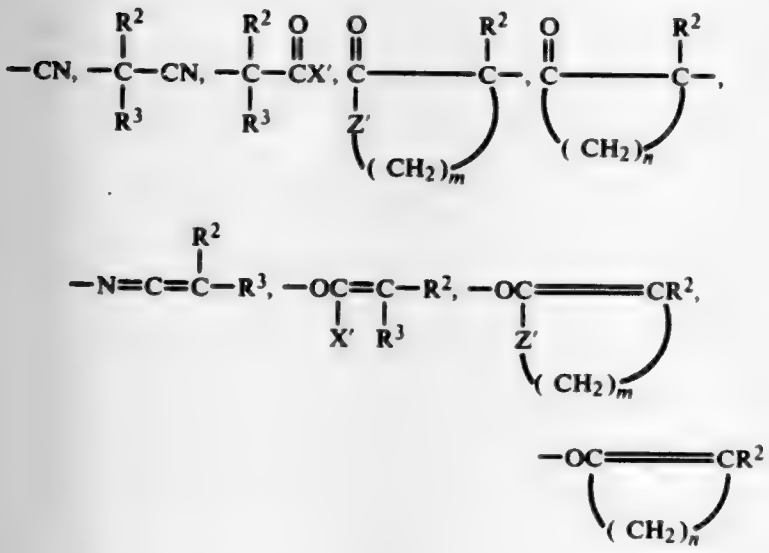
each of R′ and R″ is independently selected from C_{1-4} alkyl

by contacting the one or more monomers under polymerizing conditions with:

(i) the initiator of the formula $(R^1)_3MZ$ wherein:

R^1 is as defined above;

Z is an activating substituent selected from the group consisting of



and mixtures thereof

X′ is as defined above for the monomer;

each of R^2 and R^3 is independently selected from H and hydrocarbyl of up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof, and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and

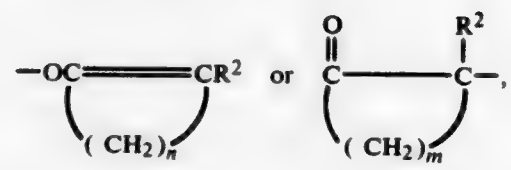
Z′ is O or NR′;

m is 2, 3 or 4;

n is 3, 4 or 5; and

M is Si, Sn, or Ge,

provided, however when Z is



M is Sn or Ge; and

(ii) a co-catalyst which is a source of fluoride, cyanide or azide ions or a suitable Lewis acid,

to produce "living" polymer having repeat units of the one or more monomers,

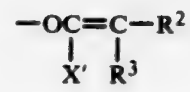
said process further characterized in that:

(a) R^1 is H, provided that at least one R^1 group is not H; and/or

(b) R is a polymeric radical containing at least 20 carbon atoms and optionally containing one or more ether oxygen atoms within aliphatic segments thereof and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and/or

(c) at least one of any R group in the monomer contains one or more reactive substituents of the formula —Z′(O)-C—$C(Y^1){=}CH_2$ wherein Y^1 is H or CH_3 and Z′ is as defined above; and/or

(d) the initiator is of the formula $(R^1)_2M(Z^1)_2$ or $O[M(R^1)_2Z^1]_2$ wherein R^1 and M are as defined above and Z^1 is

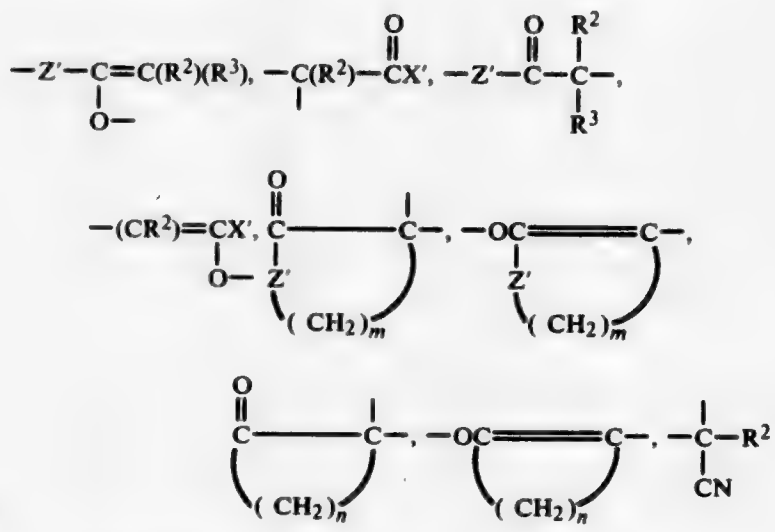


wherein X′, R^2 and R^3 are as defined above; and/or

(e) at least one of any R, R^2 and R^3 in the initiator contains one or more initiating substitutents of the formula —Z^2—$M(R^1)_3$ wherein

M and R^1 are as defined above; and

Z^2 is a diradical selected from the group consisting of



and mixtures thereof, wherein R^2, R^3, X′, Z′, m and n are as defined above, provided, however, when Z^2 is

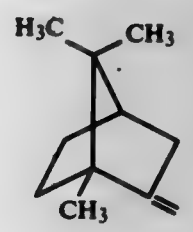


M is Sn or Ge; and/or

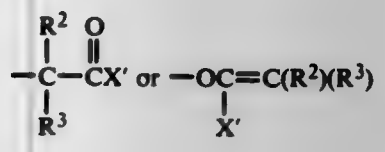
(f) Z is selected from the group consisting of —SR, —$OP(NR'R'')_2$, —$OP(OR^1)_2$, —$OP[OSi(R^1)_3]_2$ and mixtures thereof,

wherein R, R^1, R′ and R″ are as defined above; and/or

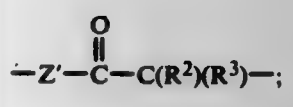
(g) R^2 and R^3 taken together are



provided, however, Z is



and/or Z^2 is

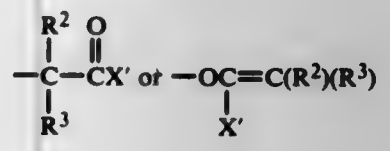


and/or

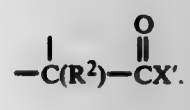
(h) X′ and either R^2 or R^3 taken together are



provided, however, Z is



and/or Z^2 is



4,508,881

PROCESS FOR NONAQUEOUS DISPERSION POLYMERIZATION OF BUTADIENE IN THE PRESENCE OF POLYMERIC DISPERSING AGENTS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 420,065, Sep. 20, 1982, Pat. No. 4,452,960. This application May 21, 1984, Ser. No. 612,225
Int. Cl.³ C08F *2/14*
U.S. Cl. 526—201 **19 Claims**

1. A process for the nonaqueous dispersion polymerization of butadiene monomer in a reaction mixture containing a liquid nonaqueous dispersion medium, the improvement which comprises carrying out the polymerization of the butadiene monomer in the presence of random copolymers of butadiene and isoprene to produce very high cis-1,4-polybutadiene.

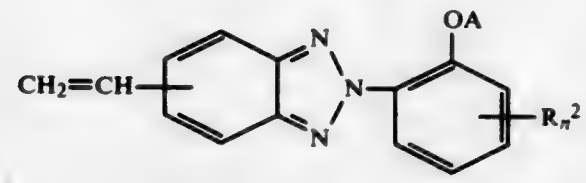
4,508,882

BENZOTRIAZOLE COMPOUND AND HOMOPOLYMER OR COPOLYMERS THEREOF

Shohei Yoshida, Yokohama, Japan, and Otto Vogl, Amherst, Mass., assignors to Asahi Glass Company Ltd., Tokyo, Japan

Division of Ser. No. 295,545, Aug. 24, 1981, Pat. No. 4,380,643, and a continuation-in-part of Ser. No. 238,090, Feb. 25, 1981, abandoned. This application Jan. 11, 1983, Ser. No. 457,221
Int. Cl.³ C08F *26/06*
U.S. Cl. 526—259 **2 Claims**

1. A homopolymer or copolymer with a vinyl comonomer of a benzotriazole compound having the formula:



wherein A is hydrogen or acetyl; R^2 is C_{1-4} alkyl; and n is 1 or 2 and when n is 2, said R^2 radicals may be the same or different.

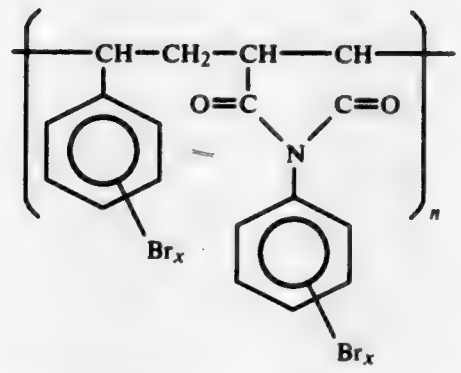
4,508,883

ALTERNATING COPOLYMER OF BROMINATED STYRENE AND N-BROMINATED PHENYL MALEIMIDE

Usama E. Younes, Newtown Square, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 28, 1983, Ser. No. 489,688
Int. Cl.³ C08F *214/16*
U.S. Cl. 526—262 **1 Claim**

1. An alternating copolymer having the following general formula:



wherein each x separately represents an integer of from 1 to 5 and n represents an integer of from 10 to 2000.

4,508,884

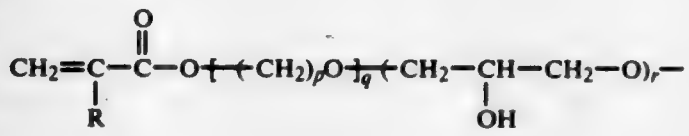
OXYGEN PERMEABLE HARD CONTACT LENS

Joseph W. Wittmann, Rochester, and John M. Evans, Greece, both of N.Y., assignors to CooperVision, Inc., Scottsville, N.Y.

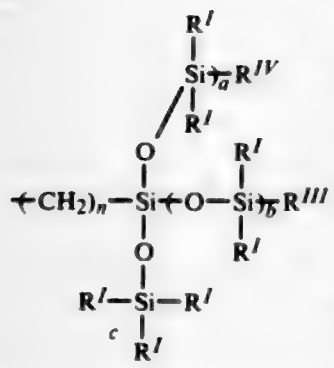
Filed May 25, 1983, Ser. No. 497,929
Int. Cl.³ C08F *30/08*
U.S. Cl. 526—279 **20 Claims**

1. A hard oxygen permeable contact lens of concavo-convex shape with the concave surface substantially conforming to the cornea of the eye, fabricated from a material formed by the copolymerization of

(a) about 9 to 90% by weight of a polymerizable ethylenically unsaturated silicone ester having the following formula:



-continued



wherein R is hydrogen or methyl; each R^I individually is methyl or O—SiR_3^{II}; each R^{II} individually is methyl or phenyl; R^{III} is methyl or phenyl, and R^{IV} is methyl or phenyl or R^{III} and R^{IV} together form a bond with a bridging —O— between the Si atom and R^{III} to form a cyclic ring; each a, b, to form a cyclic ring; each a, b, and c individually is an integer of 0–3; p is an integer of 2–4; q is an integer of 0–10; n is an integer of 1–3; and r is an integer of 0–1;

(b) about 5 to about 90% by weight of a polymerizable ethylenically unsaturated ester selected from the group of isobornyl methacrylate, isobornyl acrylate, isobornyl crotonate, dicyclopentadienyl methacrylate, dicyclopentadienyl acrylate, dicyclopentadienyl crotonate, isopinocamphyl methacrylate, isopinocamphyl acrylate, isopinocamphyl crotonate, t-butylcyclohexyl methacrylate, 5-butylcyclohexyl crotonate, 3,3,5-trimethylcyclohexyl methacrylate, 3,3,5-trimethylcyclohexyl acrylate, 3,3,5-trimethylcyclohexyl erotonate, neopentyl methacrylate, neopentyl acrylate, neopentyl crotonate, or mixtures thereof;

(c) about 1 to 30% by weight of a hydrophilic monomer for wettability selected from the group of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, acrylic acid, methacrylic acid, N-vinyl pyrrolidone, maleic anhydride, acrylamide, methacrylamide, N,N-dimethylacrylamide, glyceryl acrylate, glyceryl methacrylate, dimethylaminoethyl methacrylate, dimethylaminoethyl acrylate, polyethyleneglycol monoacrylates and polyethylene glycol monomethacrylates and their corresponding methyl ethers thereof, or mixtures thereof;

(d) about 0–20% by weight of a cross-linking agent selected from the group of acrylate and methacrylate diesters of a compound selected from the group of dihydric alcohols, polyhydric alcohols, and phenols; methylene bisacrylamide; methylene bismethacrylamide; hexamethylene bisacrylamide; hexamethylene bismethacrylamide; divinyl esters; diallyl esters; or mixtures thereof;

(e) about 0 to 20% by weight of a C_2–C_{20} straight or branched aliphatic monoester or diester of an ethylenically unsaturated carboxylic acid.

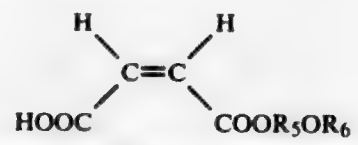
4,508,885

ELASTOMER OF ACRYLIC ESTER TYPE COPOLYMER

Kenichiro Nishiwaki; Tomio Sakai, and Takashi Ohkubo, all of Chiba, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,354
Claims priority, application Japan, Dec. 28, 1982, 57-227382
Int. Cl.³ C08F *22/20*
U.S. Cl. 526—318 **17 Claims**

1. An elastomer of acrylic ester type copolymer made up of a monomeric composition consisting of; 100 parts by weight of a mixture of the following three components, (A) 0–50% by weight of a vinyl carboxylate of the formula, $R_1COOCH{=}CH_2$ wherein R_1 is an alkyl group having 1 to 4 carbon atoms, (B) 0–30% by weight of ethylene and (C) 10–100% by weight of an alkyl acrylate of the formula, $CH_2{=}CHCOOR_2$ wherein R_2 is an alkyl group having 1 to 8 carbon atoms and/or an alkoxyalkyl acrylate of the formula, $CH_2{=}CHCOOR_3OR_4$ wherein R_3 is an alkylene group having 1 to 4 carbon atoms and R_4 is an alkyl group having 1 to 4 carbon atoms; and 2–15 parts by weight of (D) a monoalkoxyalkyl maleate of the formula,



wherein R_5 is an alkylene group having 1 to 4 carbon atoms and R_6 is an alkyl group having 1 to 4 carbon atoms.

4,508,886

METHOD FOR MAKING ADHESIVE FROM BIOMASS

Janet A. Russell, Richland, and William F. Riemath, Pasco, both of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1984, Ser. No. 595,015
Int. Cl.³ C08L *97/00;* C07C *37/28;* C08G *8/28;* C08H *5/04*
U.S. Cl. 528—1 **4 Claims**

1. A method for making adhesive from lignin comprising:

a. preparing a liquefaction oil from lignin-bearing plant material by heating said lignin-bearing plant material to about 290 to 350 C. from about 0.25 to 1 hours at a pressure of about 1500 to 3000 psi in the presence of water and an alkaline catalyst;

b. recovering said liquefaction oil;

c. extracting a phenolic fraction from said liquefaction oil;

d. reacting said phenolic fraction with formaldehyde and thereby producing a phenol-formaldehyde resin; and

e. formulating an adhesive from said resin.

4,508,887

METHOD AND NOVEL CATALYST COMPOSITIONS FOR PREPARING POLYORGANOSILOXANES

Charles F. Kohl, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 1, 1983, Ser. No. 519,357
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—21 **21 Claims**

1. A method for preparing a polyorganosiloxane, said method comprising the steps of

(I) forming a liquid reaction mixture comprising

(A) at least one hydroxyl-containing organosiloxane reactant containing repeating units of the formula $R_a^1SiO_{(4-a)/2}$ where each R^1 is individually selected from the group consisting of monovalent inertly substituted and monovalent unsubstituted hydrocarbon radicals containing from 1 to 6 carbon atoms and a has an average value of from 1 to 2;

(B) a catalytically effective amount of a catalyst composition consisting essentially of

(1) at least one salt derived from substantially equivalent amounts of an organic amine containing at least one primary, secondary or tertiary nitrogen atom and an acid selected from the group consisting of mono- and polyfunctional carboxylic acids, mono- and polyfunctional organosulfonic acids, phosphoric acid and sulfonic acid; and

(2) at least one unreacted acid selected from the group consisting of fluorinated alkanesulfonic acids and sulfuric acid; and

(C) an inert liquid reaction medium;

(II) heating said reaction mixture at a temperature of from 30° C. to the boiling point of the reaction mixture while removing the by-product water from the reaction mixture; and

(III) maintaining said temperature for a period of time sufficient to form said polyorganosiloxane.

4,508,888

RAPIDLY HARDENING ORGANOPOLYSILOXANE COMPOSITIONS COMPRISING POLYACYLOXYSILANE CROSS-LINKING AGENTS

Michel Letoffé, Sainte-Foy les Lyon; Roger Favre, and Patrice Perrin, both of Lyons, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jan. 25, 1984, Ser. No. 573,612
Claims priority, application France, Jan. 27, 1983, 83 01505
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—23 16 Claims

1. An organopolysiloxane composition of matter, comprising (i) a polyhydroxylated polysiloxane, (ii) a polyacyloxysilane cross-linking agent therefor, and (iii) a hardening accelerator which comprises admixture of water or water donor and an alkali or alkaline earth metal phosphate, polyphosphate, or mixture thereof.

4,508,889

PREPARATION OF ISOCYANATE-TERMINATED POLYURETHANES CONTAINING AMINO SILANES

Gerry K. Noren, Hoffman Estates; Erwin S. Poklacki, Arlington Heights; Fred D. Hawker, Villa Park, and Janice M. Sich, Chicago, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jul. 19, 1984, Ser. No. 632,613
Int. Cl.³ C08G *18/38*
U.S. Cl. 528—28 14 Claims

1. A process of incorporating polyalkoxy amino silane adhesion promoters into isocyanate-functional polyurethane resins formed by the reaction of a stoichiometric excess of organic polyisocyanate with an hydroxy-functional resin without producing cloudy and/or unstable resin solutions comprising, prereacting said hydroxy-functional resin with the alkoxy functionality of said amino silane in a reaction which liberates alcohol, and then adding a stoichiometric excess of said organic polyisocyanate to cause the isocyanate groups of said polyisocyanate to react with both the hydroxy groups and the amino hydrogen atoms present, whereby the previously troublesome clouding and instability which prevented use of effective amounts of the amino silane adhesion promoters is avoided.

4,508,890

PROCESS FOR THE PREPARATION OF THERMOPLASTIC AROMATIC POLYPHOSPHONATOCARBONATES WITH IMPROVED HEAT-AGING RESISTANCE, AND THEIR USE

Manfred Schmidt, Pittsburgh, Pa.; Ludwig Bottenbruch, and Dieter Freitag, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 224,077, Jan. 12, 1981, Pat. No. 4,401,802. This application May 12, 1983, Ser. No. 493,793
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001863
The portion of the term of this patent subsequent to Aug. 3, 2000, has been disclaimed.
Int. Cl.³ C08G *63/62, 79/04*
U.S. Cl. 528—167 2 Claims

1. An aromatic thermoplastic polyphosphonatocarbonate having improved heat-ageing resistance produced by polycondensing the mixture consisting essentially of (A) at least one aromatic dihydroxy compound having 6 to 30 carbon atoms with (B) a diaryl carbonate having 6 to 14 carbon atoms in each aryl moiety and (C) a phosphonic acid diaryl ester having 6 to 14 carbon atoms in each aryl moiety in the presence of 10^{-7} to 2.10^{-2} mole percent, per mole of aromatic dihydroxy compound, of at least one catalyst selected from the group consisting of (a) tetra-C_1–C_{18}-alkyl titanates, (b) di-C_2–C_4-alkyl-tin oxides, (c) di-C_2–C_4-alkyl-di-C_1–C_4-alkoxy-tin compounds, (d) tetra-C_3–C_{18}-alkyl zirconates, (e) tri-C_2–C_{18}-alkyl vanadylates and (f) mixtures of germanium dioxide or titanium dioxide with at least one of the catalysts listed under (a) to (e), in a weight ratio of 1:3 to 3:1 at a temperature of from 80°–340° C. and under a pressure of from 600 to 0.1 mm Hg in an inert gaseous atmosphere, the molar ratio of (B) to (C) being from 5:95 to 95:5 and the molar ratio of (A) to the sum of (B) and (C) being from 0.91:1 to 0.99:1.

4,508,891

SHAPED ARTICLES FORMED FROM POLYMERS CAPABLE OF EXHIBITING ANISOTROPIC MELTS

Derrick S. Bailey, Welwyn; Frederic N. Cogswell, Welwyn Garden City, and Brian P. Griffin, St Albans, all of England, assignors to Imperial Chemical Industries, PLC, England

Continuation of Ser. No. 282,952, Jul. 13, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 463,292
Claims priority, application United Kingdom, Jul. 16, 1980, 8023193
Int. Cl.³ C08G *63/18;* B29C *25/00;* B29D *27/00*
U.S. Cl. 528—191 6 Claims



1. A shaped article formed from a polymer which is capable of exhibiting anisotropy in the melt which has been prepared by obtaining a melt of the polymer in a temperature range over which the polymer exhibits a two-phase melt of the polymer molecules in both isotropic and anisotropic form and below the decomposition temperature of the polymer, forming a shaped article from said two-phase melt and cooling the melt at a rate sufficient to retain the disposition of the melt so that a mixture of polymer in oriented and random form is obtained in the shaped article.

4,508,892

COMPOSITIONS FOR COMPETITIVE PROTEIN BINDING ASSAYS INHIBITING NON-SPECIFIC INTERFERENCE

Robert A. Yoshida, Mountain View, Calif., assignor to Syva Company, Palo Alto, Calif.

Continuation of Ser. No. 017,874, Mar. 5, 1979, abandoned. This application Aug. 25, 1982, Ser. No. 411,180
Int. Cl.³ C08B *37/02*
U.S. Cl. 536—51 10 Claims

1. A support comprising a ligand analog-fluorescer conjugate covalently bonded to a macromolecular polysaccharide support having a molecular weight of at least 35,000 and not exceeding 2,000,000, said ligand analog-fluorescer conjugate comprising a fluorescent molecule that absorbs light having a wavelength longer than 350 nanometers with an extinction coefficient above 10^4 and emits light having a wavelength longer than 400 nanometers, said fluorescent molecule being covalently bonded to a ligand that is a modified hapten or antigen having a heavy atom capable of quenching said flurescent molecule by inhibiting the fluorescence of said fluorescent molecule upon contact therewith.

4,508,893

PROCESS FOR THE PREPARATION OF A POWDERY CALCIUM CELLULOSE GLYCOLATE

Takahiro Koyama, Himeji; Haruo Matsumura, and Teturo Morita, both of Itami, all of Japan, assignors to Daicel Chemical Industries Ltd. and Nichirin Chemical Industries Ltd., both of, Japan

Filed Aug. 23, 1984, Ser. No. 643,648

Claims priority, application Japan, Aug. 25, 1983, 58-156187; Aug. 29, 1983, 58-158741

Int. Cl.[3] C08B *11/20, 11/00*

U.S. Cl. 536—85 8 Claims

1. A process for the preparation of a powdery calcium cellulose glycolate comprising reacting cellulose glycolic acid in wet form with a calcium reagent, drying and pulverizing the resultant product, the calcium reagent being calcium hydroxide or a combination of calcium hydroxide and calcium carbonate.

4,508,894

ACID-TYPE CARBOXYMETHYL CELLULOSE AND PROCESS FOR PREPARING THE SAME

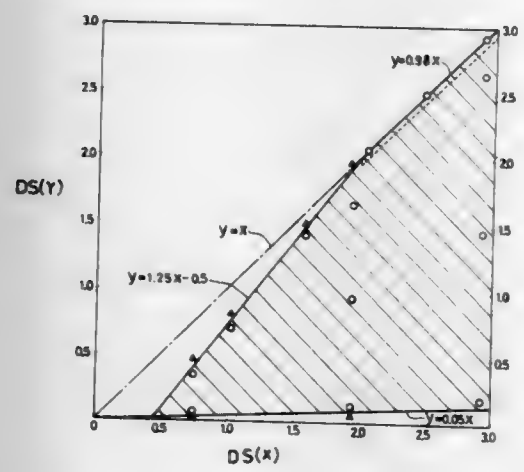
Takeo Omiya, Himeji, Japan, assignor to Daicel Chemical Industries Ltd., Osaka, Japan

Filed Dec. 23, 1983, Ser. No. 565,145

Claims priority, application Japan, Dec. 28, 1982, 57-230070; Jul. 23, 1983, 58-134860

Int. Cl.[3] C08B *11/00, 11/20*

U.S. Cl. 536—89 11 Claims



1. A carboxymethyl cellulose having a free acid form of carboxymethyl groups which is characterized by:

(a) having a total degree of substitution "x" by carboxymethyl groups of 0.42 to 3.00 per anhydrous glucose unit, the degree of substitution "y" by acid-form carboxymethyl groups being 5 to 100% of the total degree of substitution, provided that when "x" is less than 2.0, "y" shall be less than (1.25x−0.5), the remaining carboxymethyl groups being in the alkali salt form,

(b) having an average degree of polymerization of 50 to 1500, and

(c) being soluble in water.

4,508,895

PROCESS FOR THE PRODUCTION OF HYDROXYALKYL METHYL CELLULOSES

Klaus Balser, Walsrode, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 488,019, Apr. 25, 1983, abandoned. This application Feb. 13, 1984, Ser. No. 579,767

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216786

Int. Cl.[3] C08B *11/193, 11/08*

U.S. Cl. 536—91 6 Claims

1. A process for the production of water-soluble hydroxyalkyl methyl cellulose having a molar substitution greater than about two, which comprises alkalization of cellulose with sodium hydroxide to form aqueous alkali cellulose; reducing the alkali content of said aqueous alkali cellulose to 0.3 to 0.8 mols of NaOH/mol of cellulose by washing with a solvent or solvent mixture; etherification of the resulting alkali cellulose with an alkylene oxide in an inert solvent different from the solvent used for washing out; and optionally purifying the product.

4,508,896

PROCESS FOR THE SIMULTANEOUS PRODUCTION OF 2-(2-AMINOALKOXY)ALKANOL AND MORPHOLINE

James H. Templeton, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 582,480, May 30, 1975, abandoned. This application Jul. 25, 1979, Ser. No. 60,266

Int. Cl.[3] C07D *295/02*

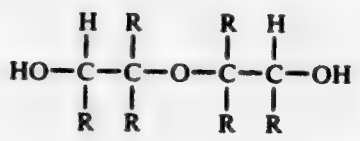
U.S. Cl. 544—106 2 Claims

1. A process for simultaneously producing a morpholine compound and a 2-(2-aminoethoxy)ethanol compound, comprising the steps of:

reacting an oxydialkanol with ammonia, in the presence of added hydrogen, over an hydrogenation-dehydrogenation catalyst selected from the group consisting of copper, nickel, chromium, cobalt, manganese, molybdenum, palladium, platinum, rhodium, oxides of said metals, and mixtures thereof;

said reaction taking place within a pressure range of from about 700 psig to about 2200 psig, and within a temperature range of from about 190° C. to about 230° C.;

said oxydialkanol having the formula:



in which R is selected from the group consisting of hydrogen and lower alkyl radicals; and

isolating said morpholine compound and said 2-(2-aminoethoxy)ethanol compound from the reaction products.

4,508,897

PREPARATION OF CHROMOGENIC AZAPHTHALIDES

Davor Bedekovic, Therwil, and Ian J. Fletcher, Magden, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

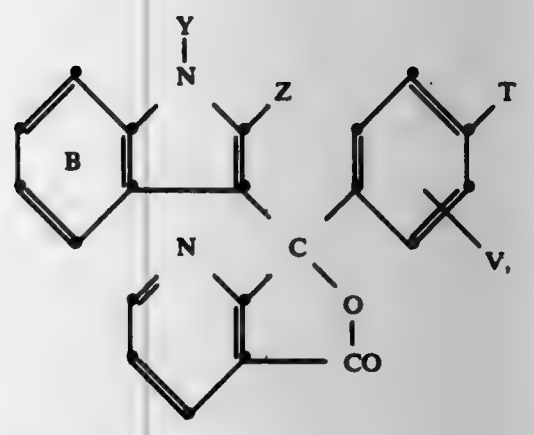
Continuation-in-part of Ser. No. 449,955, Dec. 15, 1982,. This application Jun. 7, 1983, Ser. No. 502,035

Claims priority, application Switzerland, Dec. 23, 1981, 8250/81; Dec. 23, 1981, 8251/81; Apr. 7, 1983, 1868/83

Int. Cl.[3] C07D *491/048*

U.S. Cl. 544—127 19 Claims

1. A process for the preparation of a 4-azaphthalide compound of the formula



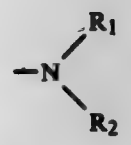
(1a)

wherein

Y is hydrogen, C_1–C_{12} alkyl which is unsubstituted or substituted by halogen, cyano, hydroxyl or lower alkoxy, acyl having 1 to 12 carbon atoms, benzyl or benzyl which is substituted by halogen, nitro, lower alkyl or lower alkoxy,

Z is hydrogen, lower alkyl or phenyl,

T is $—OR_1$ or,

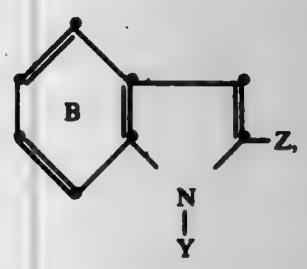


R_1 and R_2 independently of each other are hydrogen, C_1–C_{12} 2alkyl which is unsubstituted or substituted by halogen, cyano, hydroxyl or lower alkoxy, cycloalkyl, phenyl, benzyl or phenyl or benzyl which is substituted by halogen, nitro, cyano, lower alkyl, lower alkoxy or lower alkoxycarbonyl, or

R_1 and R_2 together with the connecting nitrogen atom, are a 5-membered or 6-membered heterocyclic radical and

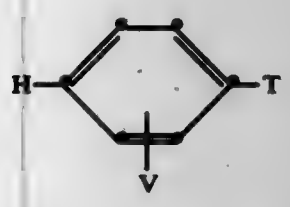
V is hydrogen, halogen, hydroxyl, nitro, lower alkyl or lower alkoxy, and in which

the ring B is unsubstituted or substituted by halogen, nitro, cyano, lower alkyl, lower alkoxy, lower alkoxycarbonyl, amino, mono-(lower alkyl)-amino or di-(lower alkyl)-amino, which process comprises reacting quinolinic anhydride with an indole compound of the formula



(7a)

in which B, Y and Z are as defined, in the presence of an inorganic or organic metal salt of a polyvalent metal in an organic reaction medium consisting of a lower aliphatic monocarboxylic acid or a nitrile of this acid at a temperature of not more than 65° C., further condensing the resulting reaction product with a compound of the formula



(5a)

in which T and V are as defined, and adjusting the pH value of the reaction mixture to not less than 6.

4,508,898

ANTIVIRAL TRIAZINE COMPOUNDS

Kelvin K. Ogilvie, 54, Place de Bretagne, Candiac, Quebec, Canada (J5R 3M8)

Continuation-in-part of Ser. No. 302,790, Sep. 16, 1981, which is a continuation-in-part of Ser. No. 187,631, Sep. 16, 1980, Pat. No. 4,347,360. This application Jun. 8, 1982, Ser. No. 386,430

Int. Cl.³ C07D *251/10, 251/46*

U.S. Cl. 544—211 **1 Claim**

1. The triazine compound 5-aza-1-[[2-benzyloxymethyl-[1-benzyloxy]-ethoxy]methyl]cytosine.

4,508,899

NICKEL COMPLEX PIGMENTS OF BIS-AZOMETHINES

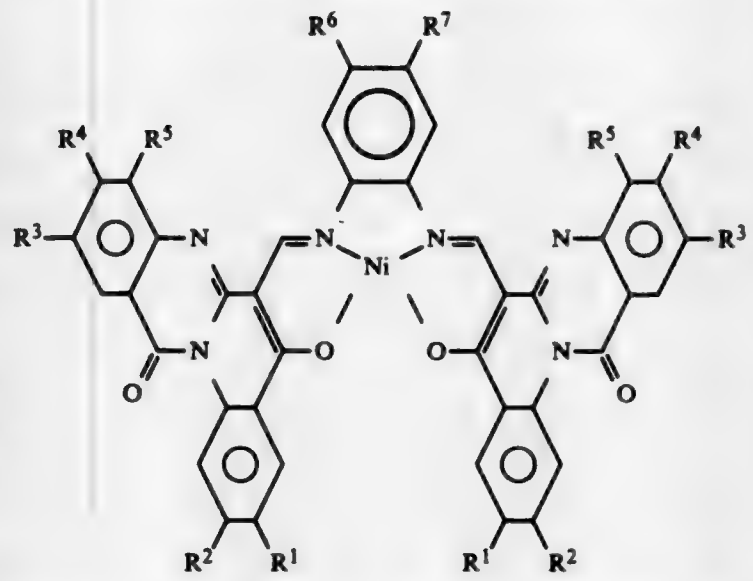
Terence R. Chamberlain, Verona, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Oct. 14, 1983, Ser. No. 542,019

Int. Cl.³ C07D *519/00;* C09B *170/00*

U.S. Cl. 544—225 **8 Claims**

1. A nickel complex having the structural formula



wherein each R^1, each R^3, and R^7 represent hydrogen, halogen, nitro, or lower alkyl, and each R^2, each R^4, and each R^5 and R^6 represent hydrogen or halogen.

4,508,900

CATIONIC COMPOUNDS OF THE NAPHTHALIMIDE SERIES, PROCESS FOR THEIR PREPARATION AND THEIR USE

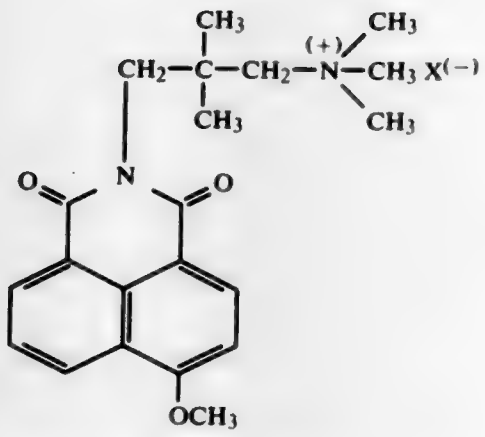
Norbert Schönberger, Wehrheim; Erich Schinzel, Hofheim am Taunus; Thomas Martini, and Günter Röech, both of Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 203,530, Nov. 3, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,052

Int. Cl.³ C07D *221/14;* D06P *1/649;* C09B *17/04*

U.S. Cl. 546—99 **1 Claim**

1. A cationic compound of the formula:



wherein $X^{(-)}$ denotes a colorless anion.

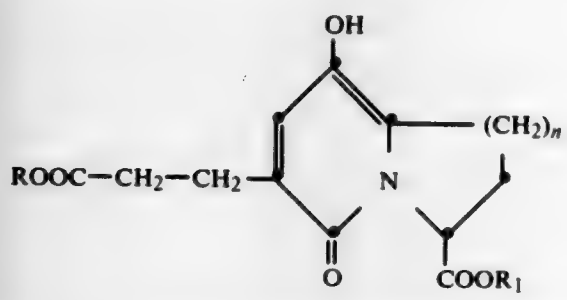
4,508,901

QUIUOLIZINE AND INDOLIZINE ENZYME INHIBITORS

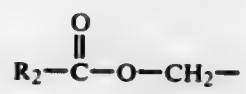
Jon S. Mynderse, Indianapolis, Ind., and Sean C. O'Connor, Jamesville, N.Y., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 19, 1982, Ser. No. 409,763
Int. Cl.³ C07D *221/02*
U.S. Cl. 546—112 **3 Claims**

1. The compound of the formula



wherein n is 1 or 2, R and R_1 can be the same or different and are each hydrogen, C_1–C_6 alkyl, indan-5-yl, phthalidyl, or a group of the formula



wherein R_2 is C_1–C_4 alkyl, phenyl, halophenyl, or methylphenyl, and when either or both of R and R_1 are hydrogen the pharmaceutically acceptable non-toxic salts thereof.

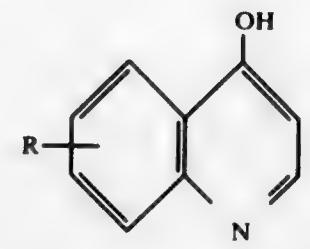
4,508,902

PROCESS FOR THE PREPARATION OF 4-HYDROXYQUINOLINES

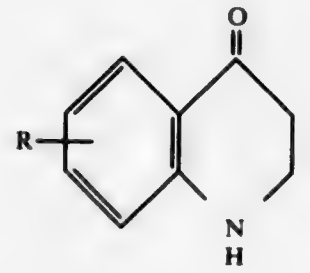
Dominique Pétré, Paris, and Daniel Michelet, Tassin, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Jun. 16, 1983, Ser. No. 504,954
Claims priority, application France, Jun. 17, 1982, 82 10615
Int. Cl.³ C07D *215/22*
U.S. Cl. 546—153 **6 Claims**

1. A process for the preparation of a 4-hydroxyquinoline of the formula:



in which R represents a hydrogen atom or one, two or three substituents, which may be the same or different, selected from halogen atoms, alkyl radicals containing 1' to 4 carbon atoms, alkoxy radicals containing 1 to 4 carbon atoms, and the trifluoromethyl radical, the substituent(s) being in the 2-, 3-, 5-, 6-, 7- or 8-position, which comprises oxidising a 1,2,3,4-tetrahydroquinolin-4-one of the formula:



in which R is as hereinbefore defined, in a basic medium but in the absence of a catalyst, under pressure, by means of excess oxygen or air at a temperature between 80° and 150° C.

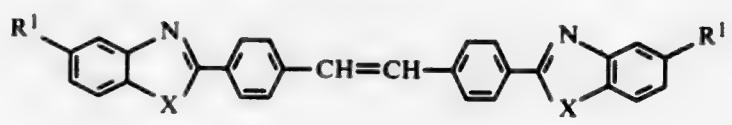
4,508,903

PROCESS FOR THE PREPARATION OF 4,4'-BIS[BENZ(OX, OTHI OR IMID)AZOL-2-YL]STILBENES

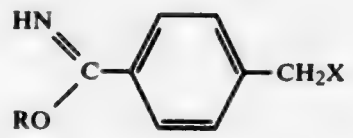
Lorenz Heiss, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,090
Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216723
Int. Cl.³ C07D *413/10, 417/10*
U.S. Cl. 548—156 **3 Claims**

1. A process for the preparation of a 4,4'-bis[benz(ox, othi or imid)azol-2-yl]stilbene of the formula



in which the R^1 groups are identical or different and denote hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, chlorine, bromine, nitro or sulfo and X denotes oxygen, sulfur or NH, which comprises reacting an alkyl (4-halomethyl-)iminobenzoate of the formula



or its HCl or HBr salts, R denoting C_1–C_4-alkyl or C_1–C_4-alkoxyethyl and X denoting Cl or Br, with o-aminophenol, o-aminothiophenol or o-phenylenediamine and allowing the 2-benz(ox, othi or imid)azol-4-ylhalomethylbenzene obtained thereby to react with an approximately equivalent amount of sodium tert.-butylate.

4,508,904

FLUORANE COMPOUNDS

Horst Bingmann, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

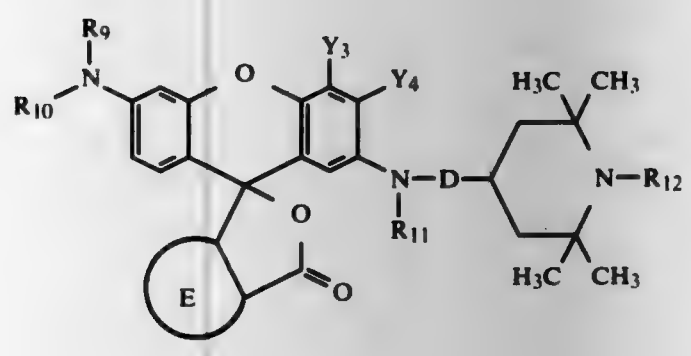
Filed May 9, 1983, Ser. No. 492,822

Claims priority, application Fed. Rep. of Germany, May 18, 1982, 3218645

Int. Cl.³ C07D *493/10*

U.S. Cl. 546—196 **3 Claims**

1. A fluorane compound of the formula (2)



(2)

in which:

R_9 and R_{10} independently of each other each denote an alkyl group having 1–4 carbon atoms or a benzyl group;

R_{11} and R_{12} independently of each other each denote a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, or a benzyl, acetyl, propionyl or benzoyl group;

Y_3 denotes a hydrogen chlorine, or bromine atom, an alkoxy group having 1 to 4 carbon atoms, or a phenyl group;

Y_4 denotes a hydrogen atom or an alkyl or alkoxy group having 1 to 4 carbon atoms; provided, that one of Y_3 and Y_4 is hydrogen, if the other of these two substituents is not hydrogen;

D denotes a direct bond or the 1,2-ethylene group; and

E denotes a 1,2-phenylene radical, unsubstituted or substituted with chlorine or bromine.

4,508,905

SUBSTITUTED 2-(-BENZIMIDAZOLYL)PYRIDINES

Ulf K. Junggren, Mölnlycke, and Sven E. Sjöstrand, Kungsbacka, both of Sweden, assignors to Aktiebolaget Hassle, Mölndal, Sweden

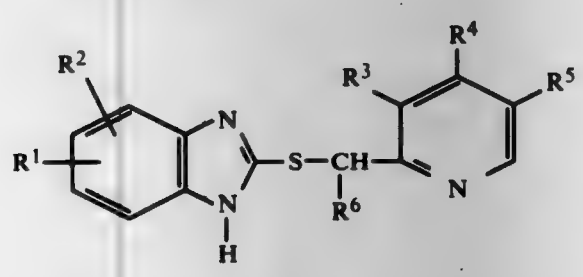
Continuation of Ser. No. 369,404, Apr. 19, 1982, abandoned, which is a division of Ser. No. 150,965, May 19, 1980, Pat. No. 4,337,257, which is a division of Ser. No. 027,277, Apr. 15, 1979, Pat. No. 4,255,431. This application Apr. 6, 1983, Ser. No. 482,513

Claims priority, application Sweden, Apr. 14, 1978, 7804231

Int. Cl.³ C07D *401/12*

U.S. Cl. 546—271 **3 Claims**

1. A compound of the formula



wherein R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, alkyl having from 1–7 carbon atoms, halogen, carbomethoxy, carboethoxy, alkoxy having up to 5 carbon atoms and alkanoyl having up to 4 carbon atoms, R^6 is selected from the group consisting of hydrogen, methyl and ethyl, R^3 and R^5 are the same or different and are selected from the group consisting of hydrogen, methyl, methoxy, ethoxy, methoxyethoxy, and ethoxyethoxy and R^4 is selected from the group consisting of methoxy, ethoxy, methoxyethoxy and ethoxyethoxy.

4,508,906

3-AMINO-4-(2-PYRIDYLOXY)PHENOXYALKANOIC AND ALKENOIC ACID ESTERS

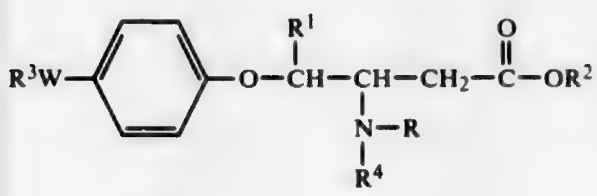
Joe T. Bamberg, Redwood City, and Gustave K. Kohn, Palo Alto, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 430,057, Sep. 30, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 581,859

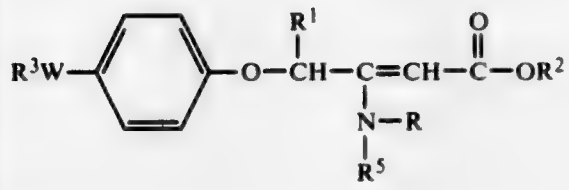
Int. Cl.³ C07D *213/64*; A01N *43/40*

U.S. Cl. 546—300 **10 Claims**

1. A compound of the following formula (A) or (B):



(A)



(B)

wherein,

R is hydrogen, lower alkyl or phenyl;

R^1 is hydrogen or lower alkyl;

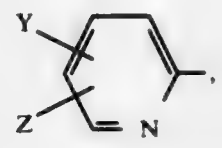
R^2 is lower alkyl, lower alkenyl or lower alkynyl;

R^4 is hydrogen, lower alkyl or phenyl;

R^5 is lower alkyl or phenyl;

W is oxygen or sulfur; and

R^3 is the group



in which,

each of Y and Z is independently hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, bromo, chloro, fluoro, nitro or cyano.

4,508,907

2,3-DICHLORO-5-TRICHLOROMETHYLPYRIDINE

David Cartwright, Woodley, England, assignor to Imperial Chemical Industries, PLC, London, England

Continuation of Ser. No. 29,341, filed as PCT GB 78/00008, Aug. 10, 1978, published as WO 79/00094, Mar. 8, 1979, § 102(e) date Apr. 11, 1979. This application Sep. 30, 1982, Ser. No. 431,373

Claims priority, application United Kingdom, Aug. 12, 1977, 34039/77; Oct. 26, 1977, 44541/77; Feb. 9, 1978, 5230/78

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 **1 Claim**

1. 2,3-dichloro-5-trichloromethylpyridine.

4,508,908

2-ALKYL-3-HALOISOTHIAZOLIUM SALTS AND THEIR DERIVATIVES

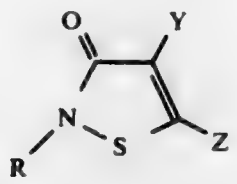
Joseph A. Virgilio; Milton Manowitz, both of Wayne, and Emanuel Heilweil, Fairfield, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 952,038, Oct. 16, 1978, Pat. No. 4,281,136, which is a continuation-in-part of Ser. No. 854,456, Nov. 25, 1977, abandoned. This application Sep. 29, 1980, Ser. No. 192,123

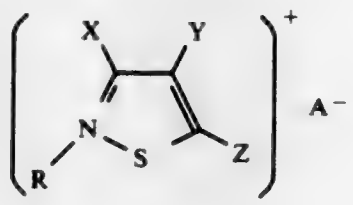
Int. Cl.[3] **C07D** *275/02*

U.S. Cl. 548—213 **46 Claims**

1. A process for preparing a 4-isothiazolin-3-one of the formula:



from a 2-alkyl-3-haloisothiazolium salt of the formula:



wherein:

R is alkyl or alkenyl;

X is halogen;

Y and Z are the same or different and are selected from the group consisting of hydrogen, lower alkyl, halogen, nitro, cyano and carboalkoxy, and

A^- is a suitable anion;

which comprises reacting said 2-alkyl-3-haloisothiazolium salt with a suitable oxygen source wherein the source of oxygen is the carbonyl group of a urea or an amide, the hydroxyl group of an alcohol or water, or the oxygen of a sulfoxide or a sulfate.

4,508,909

SYNTHESIS OF HYDROXYETHYLTETRAZOLETHIOL AND ETHERIFIED INTERMEDIATES THEREFOR

Wataru Nagata, Hyogo; Yasuhiro Nishitani, Osaka, and Hisao Sato, Nara, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 15, 1983, Ser. No. 475,410

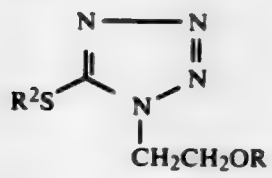
Claims priority, application Japan, Mar. 24, 1982, 57-47846

Int. Cl.[3] **C07D** *257/04*

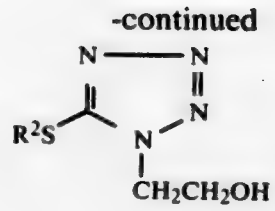
U.S. Cl. 548—251 **18 Claims**

1. A process for preparing optionally protected 1-hydroxyethyl-1H-tetrazole-5-thiol or the mercaptide salt thereof which comprises the steps of heating an etherified N-hydroxyethyldithiocarbamate ester (I) in the presence of an azide in an inert solvent to give the corresponding etherified 1-(hydroxyethyl)-1H-tetrazole-5-thiol or the mercaptide salt thereof (II) and then, if required, removing the ether-forming group to give the free alcohol compound (III), the compounds I, (II) and (III) having the following formulae:

$ROCH_2CH_2NHCSSR^1$ (I)

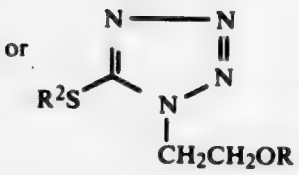
 (II)

-continued

 (III)

wherein R is an ether forming group selected from the group consisting of tertiary alkyl, triarylmethyl, 1-(C_1 to C_6-alkoxy)-C_1 to C_6-alkyl and C_4 to C_6-2-oxacycloalk-1-yl, R^1 is an ester forming group and R^2 is hydrogen or an alkali metal or alkaline earth metal salt forming group.

17. An N-(etherified hydroxyethyl)dithiocarbamic acid alkyl ester or 1-(etherified hydroxyethyl)-1H-tetrazole-5-thiol compound represented by the following formula

$ROCH_2CH_2NHCSSR^1$ or 

wherein R is an ether forming group,

R^1 is alkyl and

R^2 is hydrogen or alkali metal.

4,508,910

HERBICIDAL 4-BENZOYL-5-HYDROXY-PYRAZALES

Takuo Konotsune, Hiromachi, and Katsuhiko Kawakubo, Yasumachi, both of Japan, assignors to Sankyo Company Ltd., Tokyo, Japan

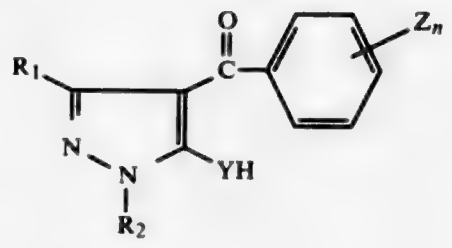
Continuation of Ser. No. 953,357, Oct. 23, 1978, abandoned, which is a continuation of Ser. No. 838,083, Sep. 30, 1977, Pat. No. 4,146,726, which is a division of Ser. No. 558,682, Mar. 17, 1975, Pat. No. 4,063,925. This application Oct. 23, 1980, Ser. No. 199,824

Claims priority, application Japan, Mar. 28, 1974, 49-34939

Int. Cl.[3] **A01N** *43/56*; **C07D** *231/20*

U.S. Cl. 548—367 **3 Claims**

1. An agriculturally compatible compound having the formula



wherein

R_1 represents hydrogen atom or an alkyl group having from 1 to 3 carbon atoms,

R_2 represents an alkyl group having from 1 to 3 carbon atoms or an alkenyl group having 3 or 4 carbon atoms,

n is an integer of 2 or 3 or 4,

Z represents a halogen atom, nitro group, an alkyl group having from 1 to 4 carbon atoms, and when n is 2 or 3 or 4, Z's may be the same or different, and

Y represents oxygen atom,

and acid addition salts thereof.

4,508,911
AMINE INTERMEDIATES FOR ANALGESIC COMPOUNDS

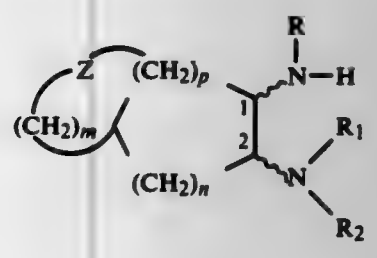
Lester J. Kaplan, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 390,462, Jun. 21, 1982, Pat. No. 4,438,130, which is a continuation-in-part of Ser. No. 320,635, Nov. 12, 1981, abandoned. This application Feb. 14, 1984, Ser. No. 580,060

Int. Cl.³ C07D *307/94, 311/96*

U.S. Cl. 548—407 12 Claims

1. A compound of the formula



(II)

wherein

the wavy line bonds indicate a cis or trans relationship of the two nitrogen-containing groups at positions 1 and 2 of the cycloaliphatic ring;

p is a whole number integer 0, 1, 2, 3 or 4, and

n is a whole number integer 1, 2, 3 or 4, so that the resulting cycloaliphatic ring containing them has 5, 6 or 7 carbon atoms;

m is 3 or 4;

R is hydrogen or C_1 to C_3-alkyl;

R_1 and R_2, taken separately are each hydrogen, C_1 to C_3-alkyl or allyl;

R_1 and R_2, taken together with the nitrogen to which they are bonded, complete a ring selected from the group consisting of

azetidinyl,

pyrrolidinyl,

piperidinyl,

pyrrolyl,

3-pyrrolin-1-yl,

3-azabicyclo[3.1.0]hexan-3-yl, and

3-azabicyclo[3.2.0]heptan-3-yl;

Z is selected from the group consisting of oxygen, bivalent sulfur and sulfinyl.

4,508,912
PROCESS FOR PRODUCING N-CARBOBENZOXY-L-ASPARTIC ANHYDRIDE

Tetsuo Yamatani, Yokkaichi; Toyoto Hijiya, Yokosuka; Hideo Takeda, Inagi; Koji Shibuya, Ashiya, and Kiichiro Tanaka, Tokyo, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 479,898

Claims priority, application Japan, Mar. 30, 1982, 57-51628; Mar. 30, 1982, 57-51629

Int. Cl.³ C07D *307/66*

U.S. Cl. 549—253 11 Claims

1. In a process for producing N-carbobenzoxy-L-aspartic acid anhydride which comprises reacting N-carbobenzoxy-L-aspartic acid with acetic anhydride, the improvement which consists of conducting the reaction in the presence of a catalytic amount of a metal oxide, a metal hydroxide, a metal salt of an acid, an organobasic compound or an acid having a dissociation constant of 5×10^{-2} or more.

4,508,913
DIALKOXYMETHYL-BUTYROLACTONES

Dieter Arlt, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

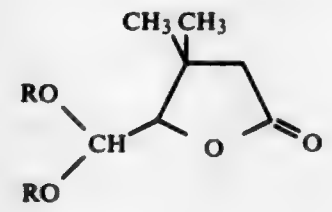
Filed Aug. 5, 1983, Ser. No. 520,676

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231815

Int. Cl.³ C07D *407/04, 307/32*

U.S. Cl. 549—320 1 Claim

1. A dialkoxymethyl-butyrolactone of the formula



in which

R is C_{1-4}-alkyl, or both radicals R together are ethylene.

4,508,914
3H-FURANONES

Hans-Georg Schmidt, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

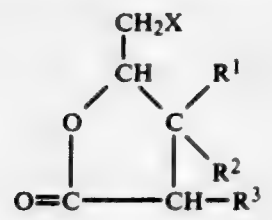
Division of Ser. No. 282,689, Jul. 13, 1981, Pat. No. 4,424,369, which is a division of Ser. No. 218,593, Dec. 19, 1980, Pat. No. 4,348,535. This application May 5, 1982, Ser. No. 375,060

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952068; Dec. 3, 1980, 3045455; Dec. 6, 1980, 3046059

Int. Cl.³ C07D *307/28*

U.S. Cl. 549—323 5 Claims

1. A substituted lactone of the formula



wherein X is chlorine, bromine or hydroxyl and R^1, R^2 and R^3 are the same or different radicals from the group of hydrogen and C_1 to C_{10} alkyl radicals, at least one of the radicals R^1 and R^2 being such an alkyl radical.

4,508,915
SILYLALKYL THIOALKANOATES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Rolf-Dieter Acker, Leimen; Adolf Parg, Bad Duerkheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

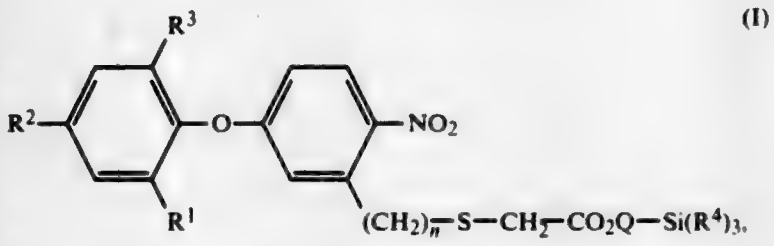
Filed Mar. 18, 1983, Ser. No. 476,578

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210336

Int. Cl. C07F *7/08, 7/10*

U.S. Cl. 556—418 9 Claims

1. A silylalkyl thioalkanoate of the formula



(I)

where R^1 is hydrogen or halogen, R^2 is halogen, trihalomethyl,

trihalomethoxy or trihalomethylmercapto, R^3 is hydrogen or halogen, the radicals R^4 are identical or different and are each C_1-C_6-alkyl or phenyl, Q is straight-chain or branched C_1-C_8-alkylene and n is 0 or 1.

4,508,916

CURABLE SUBSTITUTED URETHANE ACRYLATES

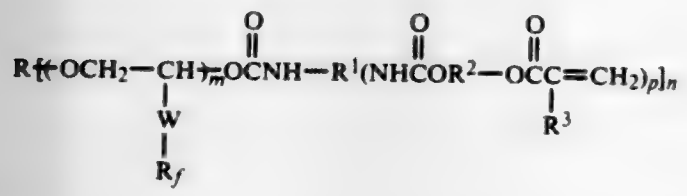
Richard G. Newell, and Stephen F. Wolf, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 255,739, Apr. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 028,966, Apr. 11, 1979, abandoned. This application May 20, 1983, Ser. No. 496,471

Int. Cl.[3] **C07F** *7/18;* **C07C** *125/073, 125/077*

U.S. Cl. 556—420 **13 Claims**

1. A radiation curable urethane acrylate or methacrylate compound having an aliphatic backbone, said backbone having at least one ether or polyether group with at least one pendent fluorinated organic group attached thereto, said urethane acrylate or methacrylate having the formula:

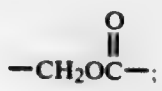


wherein

R is a monomeric or polymeric organic radical having a valence of n selected from (a) a monomeric aliphatic radical having 1 to 18 carbon atoms, (b) a polymeric aliphatic radical having an equivalent weight of less than 1000 for each valence, (c) cyclohexyl, (d) 1,4-cyclohexanediyl, or (e) 1,4-cyclohexanedimethyl;

n is an integer from 1 to 6;

W is a connecting group selected from a single bond, —CH_2—O—CH_2—, and



R^1 is an organic radical selected from the group consisting of aliphatic, cycloaliphatic and aromatic radicals;

R^2 is a divalent aliphatic group having 2 to 6 carbon atoms;

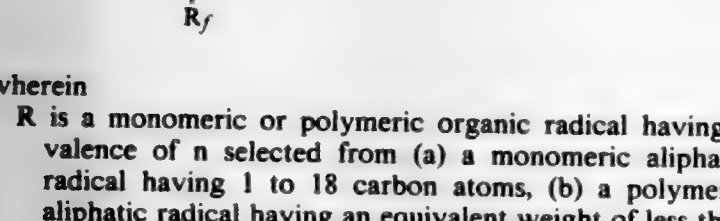
R^3 is hydrogen or methyl;

m is a number having a value from 1 to 20;

p is one or two; and

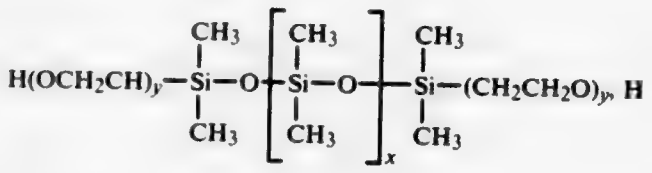
R_f is a monovalent fluorinated organic radical having 1 to 18 carbon atoms and 35 to 85 weight percent of fluorine.

8. A radiation curable urethane acrylate or methacrylate compound having an aliphatic backbone, said backbone having at least one ether or polyether group with at least one pendent fluorinated organic group attached thereto, said urethane acrylate or methacrylate having the formula:



wherein

R is a monomeric or polymeric organic radical having a valence of n derived from alcohol selected from the group consisting of ethyleneglycol, 1,6-hexanediol, 1,4-butanediol, tetraethyleneglycol, 1,4-cyclohexanedimethanol, 1,4-cyclohexanediol, 1,1,6,6-tetrahydroperfluorohexanediol, trimethylolpropane, 1,2,6-hexanetriol, allylalcohol, pentaerythritol, sorbitol, polyoxyethylene glycol having a molecular weight of less than 2000, and diorgano polysiloxanediol having the formula:



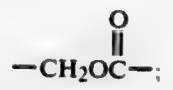
wherein

$y+y'=26$

$x=10$

n is an integer 1, 2, 3, 4, or 6;

W is a connecting group selected from a single bond, —CH_2—O—CH_2—, and



R^1 is an organic radical selected from aliphatic, cycloaliphatic, or aromatic radicals;

R^2 is a divalent aliphatic group having 2 to 6 carbon atoms;

R^3 is hydrogen or methyl;

m is a number having a value from 1 to 20;

p is one or two; and

R_f is a monovalent fluorinated organic radical having 1 to 18 carbon atoms and 35 to 85 weight percent of fluorine.

4,508,917

PREPARATION OF ALKYL ADIPATES

Jean Jenck, Villeurbanne, France, assignor to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Mar. 29, 1983, Ser. No. 479,937

Claims priority, application France, Apr. 7, 1982, 82 06225

Int. Cl.[3] **C07C** *67/38*

U.S. Cl. 560—204 **18 Claims**

1. A process for the preparation of an alkyl adipate, comprising reacting an alcohol and carbon monoxide with an alkyl pentenoate in the presence of (i) a catalytically effective amount of a cobalt catalyst, (ii) a tertiary nitrogen base, and (iii) hydrogen, with the hydrogen comprising at least 0.1% by volume of the carbon monoxide, and said reaction being carried out in (iv) an aromatic hydrocarbon or an alkyl, aryl or aralkyl substituted aromatic hydrocarbon reaction medium.

4,508,918

METHOD OF PRODUCING CYCLOHEXANE DERIVATIVES DIRECTLY FROM AROMATIC HYDROCARBONS

Yutaka Yasuhara; Masaki Nishino, and Seikichi Matsuhisa, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 822,380, Aug. 5, 1977, abandoned, which is a division of Ser. No. 581,788, May 29, 1975, Pat. No. 4,067,915. This application Nov. 20, 1979, Ser. No. 95,956

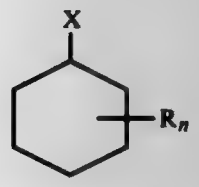
Claims priority, application Japan, Jun. 5, 1974, 49-62844; Nov. 7, 1974, 49-127523

The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.

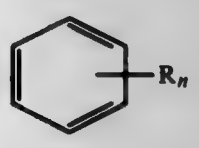
Int. Cl.[3] **C07C** *29/19, 29/20, 35/08, 67/04, 69/06, 69/14, 69/24*

U.S. Cl. 560—241 **11 Claims**

1. A process for producing a cyclohexane derivative having the general formula



wherein X is selected from the group consisting of hydroxyl, and OAc groups, wherein Ac is a residue selected from the group consisting of formyl, acetyl, and propionyl groups, R is a lower alkyl group having 1 to 3 carbon atoms, and n is an integer of from 0 to 2, which process comprises reacting an aromatic hyrocarbon having the general formula



wherein R and n are the same as above, with hydrogen and a compound having the general formula HX, wherein X is the same as above, in the presence of a strong acid and a hydrogenation catalyst which contains at least one noble metal of Group VIII metals at a pressure of 0.01–500 kg/cm^2 and at a temperature of 0°–300° C.

4,508,919

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE CYCLOPROPANE CARBOXYLIC ACIDS

Elemér Fogassy; László Toke; Ferenc Faigl; Rudolf Sóós; József Bozzay; Rezso Kolta; József Nemes, and Péter Bencsik, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

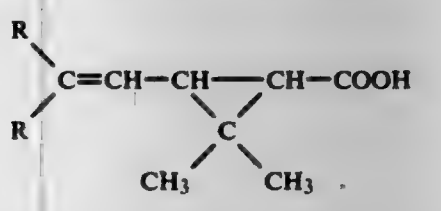
Filed Nov. 25, 1983, Ser. No. 555,187

Claims priority, application Hungary, Nov. 25, 1982, 3789/82

Int. Cl.^{3} C07B *19/00*

U.S. Cl. 562—401 **9 Claims**

1. Process for the preparation of enantiomers of trans vinylcyclopropane carboxylic acids of the formula I



wherein R is methyl or chlorine, by resolution of racemic trans compound or mixture of racemic trans and cis compounds, wherein an effective amount of (+)- or (−)-N-(1-formamido-2,2,2-trichloro.ethyl)-piperazine is used as a resolving agent in a polar solvent, then the crystallizing salt of (+)-trans carboxylic acid and (−)-resolving agent or (−)-trans carboxylic acid and (+)-resolving agent is separated from the mother liquor by filtration then the enantiomers are obtained by acidifying the mother liquor or the salts suspended in water followed by extraction with a solvent and evaporation.

4,508,920

PROCESS FOR THE PREPARATION OF AROMATIC HYDROXYCARBOXYLIC ACIDS

Gerhard Stopp, Leverkusen; Horst Karkossa, Leichlingen, and Viktor Trescher, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,501

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210597

Int. Cl.^{3} C07C *51/15*

U.S. Cl. 562—423 **10 Claims**

1. In a process for the preparation of an aromatic hydrocarboxylic acid by contacting alkali metal salt of an aromatic hydroxy compound in the solid phase with carbon dioxide, and thereafter converting the resultant reaction product to the free acid, the improvement which comprises contacting said alkali metal salt of said aromatic hydroxy compound in the form of granules having a diameter of 0.2 to 5 mm and a specific surface area of 1 to 6 m^2 per gram in a fluidized bed with carbon dioxide at a temperature of 120° to 300° C. with continuous removal, by means of excess carbon dioxide, of the aromatic hydroxy compound which is formed, until at least 40% of said alkali metal salt with aromatic hydroxy compound has been converted into the alkali metal salt with the corresponding hydroxycarboxylic acid, the process being carried out employing a reaction mixture consisting essentially of said alkali metal salt of aromatic hydroxy compound and said carbon dioxide.

4,508,921

PROCESS FOR PREPARATION OF ALPHA-ALKYL AMINO ACIDS

Joseph S. Amato, Brooklyn, N.Y.; Leonard M. Weinstock, Belle Mead, and Sandor Karady, Mountainside, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 28, 1984, Ser. No. 625,761

Int. Cl.^{3} C07C *51/09*

U.S. Cl. 562—443 **3 Claims**

1. A process for preparing an optically active acyclic or open chain α-alkyl-α-amino acid from the corresponding optically active acyclic α-amino acid which comprises:

(1) converting an optically active acyclic α-amino acid to a 2-aryloxazolidinone compound in which the non-hydrogen substituent at the 4-position and the aryl group are in a cis relationship by:

(a) reacting an optically active nitrogen protected α-amino acid with an aromatic aldehyde in the presence of an acid catalyst, or

(b) reacting an optically active unprotected α-amino acid with an aromatic aldehyde in alkaline solution to produce a Schiff base of the amino acid salt and thereafter reacting the Schiff base with an acylating agent,

(2) stereospecifically alkylating said 2-aryloxazolidinone compound by first forming an alkali metal enolate by reacting the oxazolidinone compound with a strong base at greatly reduced temperatures followed by reacting the enolate with an alkylating agent, and

(3) generating the α-alkyl-α-amino acid from the alkylated 2-aryloxazolidinone by alkaline hydrolysis to open the ring followed by hydrolytic or reductive removal of the protecting group.

4,508,922

PROCESS FOR THE PREPARATION OF OPTIONALLY HALOGENATED ANILINES

Serge Ratton, Lyons, France, assigno: to Rhone-Poulenc Agrochimie, Lyons, France

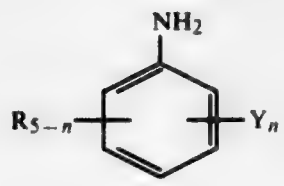
Filed Jun. 28, 1983, Ser. No. 508,716

Claims priority, application France, Jun. 29, 1982, 82 11617

Int. Cl.^{3} C07C *85/04*

U.S. Cl. 564—407 **14 Claims**

1. A process for the preparation of an optionally halogenated aniline of the general formula:

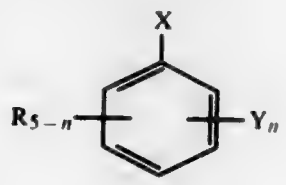


in which

Y represents one or more identical or different halogen atoms,

R represents one or more substituents chosen from the group comprising a hydrogen atom, an alkyl radical containing from 1 to 4 carbon atoms or an alkoxy radical containing from 1 to 4 carbon atoms, and

n is an integer from 0 to 5, by the ammonolysis of a halogenobenzene of the formula:



in which:

Y and R have the same meanings as above and

X represents a halogen atom, in the presence of copper as a catalyst and of a complexing agent for the copper, the improvement which comprises conducting the ammonolysis with an aqueous ammonia solution and using 8-hydroxyquinoline and/or an 8-hydroxyquinoline derivative as the complexing agent.

4,508,923

OXIDATION OF HYDROCARBONS

Paul D. Taylor, Berwyn, and Michael T. Mocella, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 22, 1983, Ser. No. 468,605

Int. Cl.³ C07C *45/53*

U.S. Cl. 568—311 **19 Claims**

1. In a process for producing a mixture containing decomposition products of an organic hydroperoxide wherein a hydrocarbon is oxidized in the presence of a molecular oxygen containing gas to provide a reation mixture containing the corresponding hydroperoxide of said hydrocarbon and said hydroperoxide is decomposed in the presence of starting hydrocarbon to provide a mixture containing reaction products of such decomposition reaction, including an alcohol and/or ketone products, the improvement which comprises conducting the oxidation reaction by contacting the hydrocarbon with a molecular oxygen containing gas at a temperature of from about 50° C. to about 250° C. in the presence of a catalytic amount of an admixture of chromium and ruthenium compounds which are soluble in said reaction mixture, and conducting the decomposition reaction by contacting a reaction mixture containing the hydroperoxide of the hydrocarbon starting material at a temperature of from about 25° C. to about 250° C. in the presence of a diluent with a catalytic amount of said catalyst admixture, optionally in the presence of a molecular oxygen containing gas.

4,508,924

PREPARATION OF O-ACYLPHENOLS AND P-ACYLPHENOLS

Josef Mueller, Ludwigshafen; Walter-Wielant Wiersdorff, Mutterstadt; Werner Kirschenlohr, Ludwigshafen, and Gerd Schwantje, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

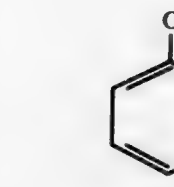
Continuation of Ser. No. 344,014, Jan. 29, 1982, abandoned. This application Nov. 1, 1983, Ser. No. 548,215

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108076

Int. Cl.³ C07C *45/46*

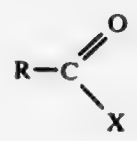
U.S. Cl. 568—322 **9 Claims**

1. A process for the preparation of o-acylphenols and p-acylphenols of the formula



I

where the acyl radical is in the o-position and/or p-position to the hydroxyl group, and R is an aliphatic or cycloaliphatic radical, wherein phenol is reacted with an acid halide of the formula



II

where R has the above meanings and X is halogen, in an amount of from 0.5 to 1.5 moles permole of phenol, in the presence of from 0.5 to 1.5 moles of aluminum chloride per mole of phenol, and of a halobenzene as the solvent, initially at from 15° to 55° C. and then at from 55° to 200° C.

4,508,925

3-PHENYL-PROPIONALDEHYDES

Yvo Crameri, Oberwil; Paul A. Ochsner, Geneva, and Peter Schudel, Grüt-Wetzikon, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

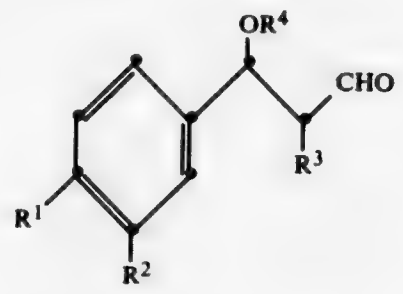
Division of Ser. No. 322,135, Nov. 17, 1981, Pat. No. 4,435,585. This application Nov. 9, 1983, Ser. No. 549,950

Claims priority, application Switzerland, Nov. 21, 1980, 8621/80

Int. Cl.³ C07C *47/228*

U.S. Cl. 568—442 **3 Claims**

1. A compound of the formula



wherein:

R^1 represents isopropyl, n-butyl, sec.butyl, isobutyl, tert.butyl, methoxy or, together with R^2, represents methylene dioxy

R^2 represents hydrogen or, together with R^1, represents methylene dioxy;

R^3 represents hydrogen or methyl; and

R^4 represents methyl or ethyl.

4,508,926

4-HYDROXY-BENZHYDROLS, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Toth; Jozsef Torley; Gyorgy Fekete; László Szporny; Laszlo Vereczkey; Eva Pàlosi; Imre Klebovich; Pal Vittay; Sandor Gorog, and Istvan Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

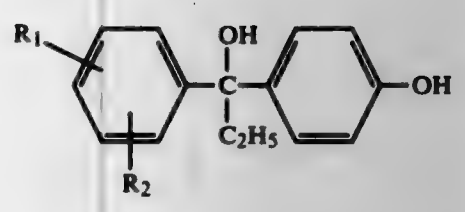
Filed Dec. 27, 1983, Ser. No. 565,840

Claims priority, application Hungary, Dec. 28, 1982, 4188/82

Int. Cl.³ C07C *39/11*

U.S. Cl. 568—766 **4 Claims**

1. A 4-Hydroxy-α-ethyl-benzhydrol compound of the formula (I)



(I)

wherein

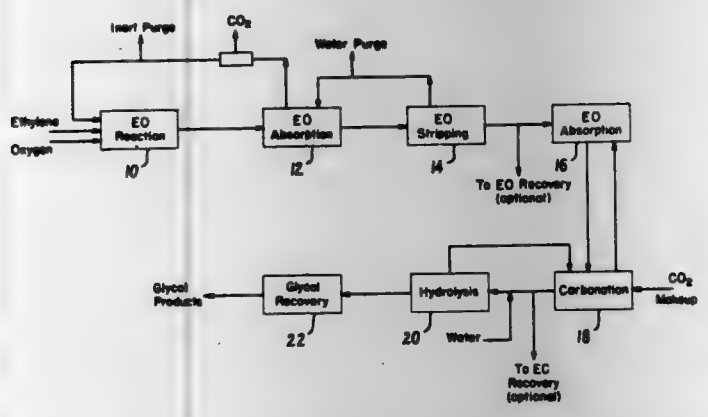
R_1 and R_2 independently represent hydrogen, halogen, trihalomethyl, alkyl having from one to 4 carbon atoms or alkoxy having from one to 4 carbon atoms, but when R_1 is hydrogen, R_2 is other than hydrogen or a 3-trifluoromethyl group, or when R_1 is a 2-methyl group, R_2 is other than an 5-methyl group.

4,508,927

PREPARATION OF GLYCOLS FROM ETHYLENE OXIDE

Vijay S. Bhise, Bloomfield, N.J., and Harold Gilman, Millwood, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Aug. 2, 1983, Ser. No. 519,653
Int. Cl.³ C07C *29/00, 31/20*
U.S. Cl. 568—858 **8 Claims**



1. A process for preparing ethylene glycols comprising:

(a) reacting ethylene with molecular oxygen in the vapor phase over a supported silver catalyst to produce an effluent comprising ethylene oxide, unreacted ethylene, carbon oxides and water;

(b) scrubbing said effluent of (a) with a recirculating aqueous stream to absorb the ethylene oxide formed in said reaction of (a) to produce an enriched aqueous stream;

(c) stripping at a lower pressure than the scrubbing of (b) in a first vapor-liquid contacting column the enriched aqueous stream of (b) to remove the absorbed ethylene oxide therefrom in a vapor stream, and returning the stripped aqueous stream to step (b);

(d) partially condensing the ethylene oxide-containing vapor stream of (c) to remove the bulk of the water therefrom, separating water-containing liquid condensed therefrom, and returning said liquid as reflux to said first column;

(e) scrubbing the ethylene oxide-containing vapor after separating said condensed water in a second vapor-liquid contacting column with an aqueous solution comprising ethylene carbonate, ethylene glycol, and carbonation catalyst to absorb substantially all of the ethylene oxide and water content of said vapor to form an enriched ethylene carbonate solution;

(f) adding carbon dioxide to said enriched solution of (e) and thereafter reacting ethylene oxide and carbon dioxide contained in said solution in the presence of an effective amount of a carbonation catalyst to form ethylene carbonate;

(g) stripping the reacted solution of (f) to remove unreacted ethylene oxide and carbon dioxide therefrom, dividing the stripped solution in at least two portions, and recirculating the first portion as scrubbing solution to step (e);

(h) adding water to the second portion of the stripped solution of (g) and reacting ethylene carbonate with water in the presence of said carbonation catalyst to form ethylene glycols; and

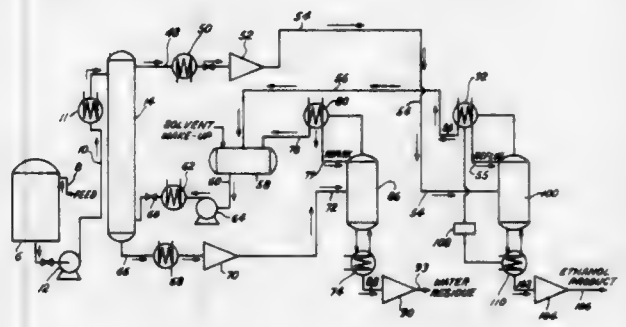
(i) separating the ethylene glycols formed in (h) and returning said carbonation catalyst to step (f).

4,508,928

ETHANOL EXTRACTION PROCESS

John G. Victor, Indian Head Park, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed May 3, 1982, Ser. No. 374,402
Int. Cl.³ C07C *29/86*
U.S. Cl. 568—916 **7 Claims**



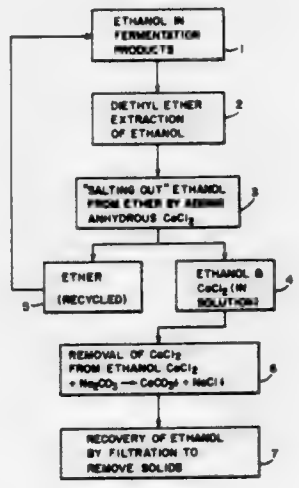
1. A process for extracting ethanol from an aqueous solution containing ethanol which comprises contacting the solution with propylene (propene) solvent at conditions of pressure and temperature sufficient to maintain the solvent in the liquid state, and to selectively extract at least a portion of the ethanol from the solution and to provide two separate liquid phases including a solvent phase containing the extracted ethanol.

4,508,929

RECOVERY OF ALCOHOL FROM A FERMENTATION SOURCE BY SEPARATION RATHER THAN DISTILLATION

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1983, Ser. No. 455,362
Int. Cl.³ C07C *29/76, 29/86, 31/08;* C12P *7/06*
U.S. Cl. 568—923 **1 Claim**



1. A method of recovering ethanol from a fermentation source by separation rather than by distillation, said method comprising:

i. providing a fermentation source which contains ethanol in a mixture of fermentation products in said fermentation source;

ii. extracting said ethanol by countercurrent extraction with diethyl ether to yield an ethanol-diethyl ether mixture;

iii. employing a salting out process which comprises adding anhydrous calcium chloride to said ethanol-diethyl ether mixture to form a diethyl ether layer and an ethanol-calcium chloride solution layer;

iv. removing said $CaCl_2$ from said ethanol-calcium chloride solution by adding sodium carbonate to yield the solids calcium carbonate and sodium chloride; and

v. filtering said ethanol to remove solids of calcium carbonate and sodium chloride and recovering said ethanol as the filtrate.

4,508,930

PROCESS FOR THE CONVERSION OF TERPENES TO LIMONENE

Lawson G. Wideman, Tallmadge, and Lynn A. Bente, Dover, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 20, 1984, Ser. No. 632,746

Int. Cl.[3] **C07C** *5/24, 5/26*

U.S. Cl. 585—377 **16 Claims**

1. A process for the conversion of a terpene to limonene which comprises contacting at least one terpene selected from the group consisting of mono- and bi- cyclic unsaturated hydrocarbons having the formula $C_{10}H_{16}$, with an alkali metal sulfide catalyst on a carrier at a temperature from 300° C. to 450° C.

4,508,931

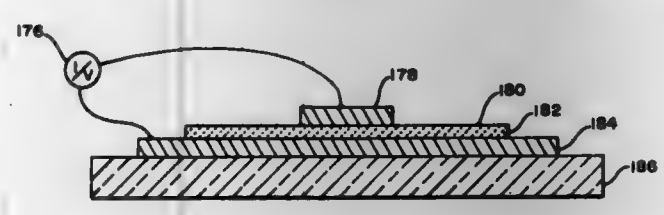
CATENATED PHOSPHORUS MATERIALS, THEIR PREPARATION AND USE, AND SEMICONDUCTOR AND OTHER DEVICES EMPLOYING THEM

Christian G. Michel, Ossining; Rozalie Schachter, New York, both of N.Y.; Mark A. Kuck, Upper Montclair, N.J.; John A. Baumann, Dobbs Ferry, N.Y., and Paul M. Raccah, Chicago, Ill., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 335,706, Dec. 30, 1981, abandoned, and a continuation-in-part of Ser. No. 419,537, Sep. 17, 1982,. This application Nov. 16, 1982, Ser. No. 442,208

Int. Cl.[3] **H01L** *31/06*

U.S. Cl. 136—255 **164 Claims**



37. A method of generating electrical potential between spared electrodes, comprising the steps of:

(a) attaching said electrodes to a material which comprises, at least as one component thereof, a polyphosphide containing phosphorus-to-phosphorus bonds and alkali metal atoms, which atoms are bonded to said phosphorus, and wherein the number of consecutive covalent phosphorus-to-phosphorus bonds is sufficiently greater than the number of non-phosphorus-to-phosphorus bonds, to render said material semiconducting; and

(b) subjecting said material to radiant energy.

4,508,932

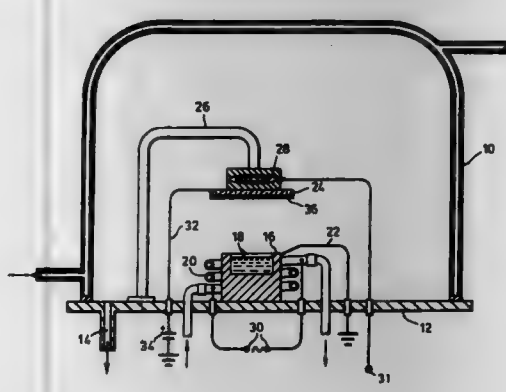
SILICON-BASED SOLAR ENERGY CONVERSION CELLS

Stefan Zukotynski, Thornhill, Canada, assignor to The Innovations Foundation of the University of Toronto, Toronto, Canada

Continuation-in-part of Ser. No. 369,384, Apr. 19, 1982, abandoned. This application Jun. 21, 1984, Ser. No. 623,056

Int. Cl.[3] **H01L** *31/06*

U.S. Cl. 136—258 **20 Claims**



1. A method of making an amorphous silicon-based solar energy conversion device comprising:

placing a substrate to be coated and a source of silicon vapour in an enclosure and establishing a vacuum of a least 1×10^{-4} Torr in the enclosure,

heating the silicon source in the said vacuum to a temperature such as to cause the production of heated silicon vapour within the enclosure, whereby the substrate is exposed in the enclosure under said vacuum to the heated silicon vapour for deposit thereon of a layer of amorphous silicon,

applying an electric field between the source and the substrate with the substrate positive with respect to the source, so that the electric field opposes the deposition of positive silicon ions on the substrate to result in a layer of amorphous silicon having improved electrical characteristics as compared to a layer desposited in the absence of an electric field.

11. A silicon-based solar energy conversion device when prepared by the method of claim 1.

4,508,933

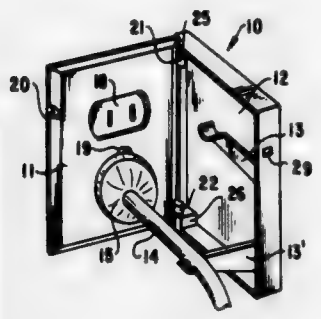
ELECTRIC OUTLET COVER

Thomas Carvel, Chauncey, N.Y., assignor to Carvel Corporation, Yonkers, N.Y.

Filed Mar. 1, 1983, Ser. No. 471,110

Int. Cl.[3] **H05K** *5/03*

U.S. Cl. 174—67 **5 Claims**



1. An electric outlet cover comprising,

a base plate having at least one opening and locking means, said base plate being adapted to be disposed adjacent to an electric outlet so that the outlet registers with said opening for insertion of an electric plug into the outlet through the opening,

a cover plate hingedly connected to said base plate for covering the outlet when the outlet is not used, said cover plate having a closure element adapted to engage said locking means when said cover plate is placed over the base plate, and

at least one supporting means connected to said cover plate and adapted to support an insulated electric conductor when the electric plug connected to the conductor is received in the outlet so that the plug is retained in the outlet despite unintended movement of the wire, said supporting means including an arm, a supporting post connected to an end of the arm, said supporting post being rotationally attached to said cover plate, and a supporting member connected to the opposite end of the arm relative to the supporting post, so that when the cover plate is closed, the arm can be folded inside the cover plate and the arm can be extended relative to the base plate for supporting of the conductor by the supporting member when the plug is inserted into the outlet.

4,508,934

HIGH-CURRENT SWEEP CABLE

Karl T. Feldman, Jr., Albuquerque, N. Mex., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 29, 1983, Ser. No. 537,031

Int. Cl.[3] **H01B** *7/12, 7/34;* **H02G** *15/02*

U.S. Cl. 174—101.5 **18 Claims**

11. A high electrical current conductive marine sweep cable comprising:

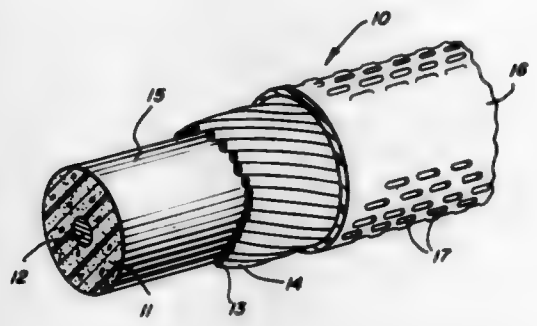
an elongated flotation core defining an outer surface;

longitudinally extending electrical conductors juxtaposed to said surface;

a thin covering of electrical insulation material on each electrical conductor that provides high thermal conductance therethrough;

means for preventing abrasion of said insulation material comprising a porous abrasion-resistant outer jacket surrounding the associated insulated conductors and core, the pore size of said jacket being preselected to conduct

seawater radially therethrough at a rate for effecting sufficient heat transfer between said conductors and the ambient seawater, at a preselected maximum electrical current flow through said conductors, to prevent the I^2R



induced temperature increase in said conductors and insulation material from exceeding a preselected maximum value; and

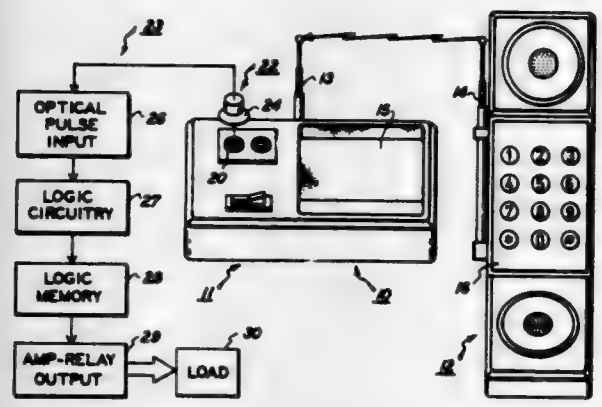
said cable having an overall density of less than 1.

4,508,935

CORDLESS TELEPHONE HAVING A REMOTE CONTROL FUNCTION

John F. Mastromoro, Liverpool, N.Y., assignor to Samuel S. Strobert, Clay, N.Y., a part interest

Filed Jun. 2, 1983, Ser. No. 500,357
Int. Cl.[3] H04M *11/00*; H04Q *7/04*
U.S. Cl. 179—2 EA 8 Claims



1. In a cordless telephone system of the type wherein a base unit is capable of being coupled to existing telephone lines, apparatus for remotely controlling at least one load in response to a coded input signal without interrupting the telephone voice communication, said apparatus including

a remote unit in wireless communication with the base unit, said remote unit having a keyboard for entering digits into the system whereby code numbers representing selected loads can be initiated,

a pulse generator contained in the base unit that is responsive to the keyboard entries for providing a pulsed output signal containing a given number of pulses for each enterable digit whereby each digit is recognizable,

counter means for counting the number of pulses in said output signal from said generator, and providing a coded control signal indicative of a number entered into the keyboard, and

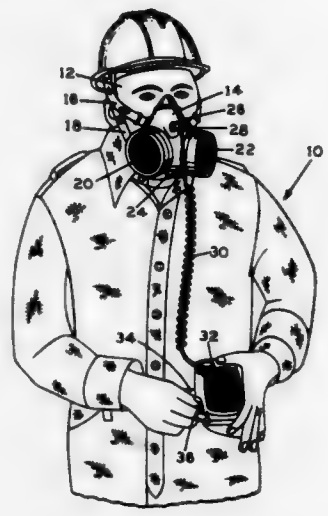
gating means that is enabled in response to the coded control signal to energize a selected load.

4,508,936

LOCAL EXTERNAL COMMUNICATION SYSTEM

Robert Ingalls, Epping, N.H., assignor to Gentex Corporation, Carbondale, Pa.

Continuation-in-part of Ser. No. 169,419, Jul. 16, 1980, abandoned. This application May 6, 1982, Ser. No. 375,673
Int. Cl.[3] H04R *1/08*; H04M *1/05*; A62B *18/00*
U.S. Cl. 179—82 10 Claims



1. A combined mask and local external communication system adapted to be applied to said mask as a retrofit including in combination a mask adapted to enclose the mouth of a wearer and having a wall of generally uniform thickness comprising a portion with continuous inner and outer surfaces, an assembly comprising a first coil and a microphone, means for adhering said assembly to the inner surface of said mask wall portion without piercing said wall, means including said microphone for producing a first electrical signal in response to the wearer's voice, means for applying said first electrical signal to said first coil to cause said first coil to produce a magnetic flux passing through said mask, a second coil, means for adhering said second coil to the outer surface of the mask wall portion without piercing said wall and at a location at which it is subjected to the action of said flux to produce a second electrical signal representative of the voice of the wearer without adversely affecting the integrity of the mask, a speaker carried on the person of the wearer, and means for applying said second signal to said speaker.

3. A vibration pick-up for producing an output signal in response to vibration of a body including in combination, a housing adapted to contact said body to receive vibrations therefrom, a slug, first resilient means mounting said slug in said housing for movement relative thereto, the relative masses of said slug and said housing being such that said slug tends to remain stationary when said housing vibrates, a microphone having a diaphragm, means mounting said microphone in said housing, and second resilient means coupling said slug to said diaphragm to cause said microphone to produce an output signal in response to vibration of said housing.

4,508,937

METHOD AND CIRCUITRY FOR ENCODING TELEPHONE RINGING SIGNALS

William A. Burger, Eatontown, N.J.; David M. Embree, Reading, Pa.; Martin H. Singer, Fair Haven, N.J., and David R. Vogelpohl, Indianapolis, Ind., assignors to AT&T Information Systems Inc., Homdel and Bell Telephone Laboratories, Inc., Murray Hill, both of, N.J.

Filed Feb. 28, 1983, Ser. No. 470,149
Int. Cl.[3] H04M *1/00*
U.S. Cl. 179—84 T 12 Claims

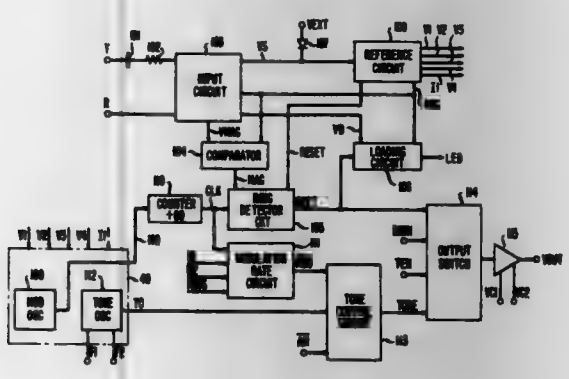
1. A circuit responsive to a ringing signal received over a communication line for providing a user with encoded telephone ringing signals from a plurality of tones comprising:

ring detector means for detecting the existence of said ring-

ing signal and generating an enable signal during the existence of said ringing signal,

modulating means responsive to said enable signal for generating an encoded ringing signal for the user during the existence of said enable signal by modulating between at least two of said plurality of tones and

means for controlling the modulation rate of said modulating means at one of a plurality of fixed rates with each rate representing a different code.



4,508,938

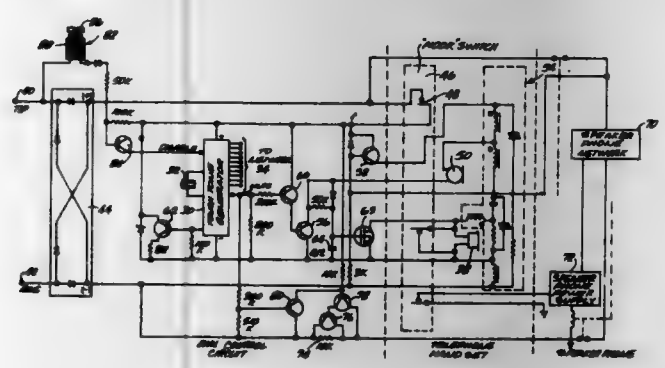
PUSH-BUTTON DIAL FOR A TELEPHONE

Ronald W. Bench, Clay, N.Y., and Edson S. Hineline, Jr., Charlottesville, Va., assignors to Comdial Telephone Systems, Inc., Charlottesville, Va.

Filed May 18, 1983, Ser. No. 495,758

Int. Cl.³ H04M *1/26*

U.S. Cl. 179—90 BD **5 Claims**



1. A solid state touch-tone dial circuit for a telephone, comprising;

a push-button key pad having a plurality of single pole push-button switches, a touch-tone generator connected to the key pad for generating an output signal having a frequency controlled by the closing of respective ones of said push-button switches, the generator providing a control signal output when any of the push-button switches is closed, a hand set including a transmitter, a receiver, and hybrid circuit for connecting the transmitter and receiver to a telephone line, a first transistor switch connected in series with the transmitter, means responsive to said control signal from the touch-tone generator for opening the first transistor switch to disconnect the transmitter while any one of the push-button switches is closed,

a second transistor switch connected across the receiver, and means responsive to the first transistor switch for closing the second transistor switch when the first transistor switch is opened.

4,508,939

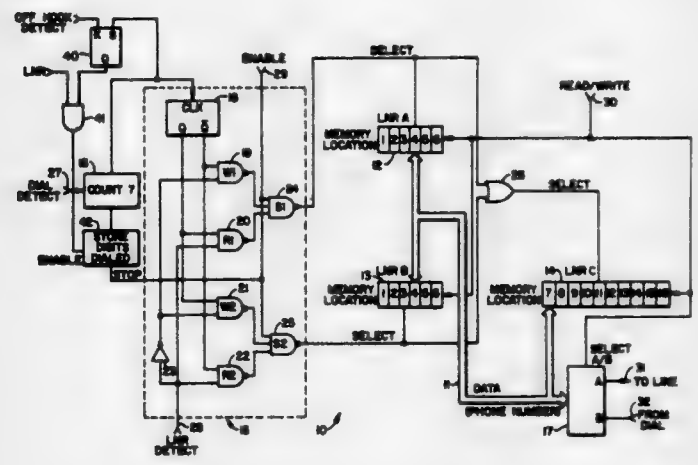
LAST NUMBER REDIAL DEVICE

Robert Lawson; Jimmie R. Augustus; Robert Corless, all of San Jose, and John Kardash, Gilroy, all of Calif., assignors to Comdial Technology Corporation, Sunnyvale, Calif.

Filed Jul. 14, 1983, Ser. No. 513,871

Int. Cl.³ H04M *1/272*

U.S. Cl. 179—90 B **17 Claims**



1. A telephone last number redial device, comprising:

a first register operable to selectably store a first, threshold portion (N) of a telephone number (N+M) produced during a telephone dialing sequence;

a second register operable to alternately store said first, threshold portion (N) of said telephone number (N+M) produced during said telephone dialing sequence;

a third register for storing a second, terminal portion (M) of said telephone number (N+M) produced during said telephone dialing sequence;

select means for alternately coupling a selected one of said first register and said second register to said third register, for storing said first, threshold telephone number portion (N) during said telephone dialing sequence, and for accessing said first, threshold telephone number portion (N) during a last number redial sequence; and

a counter, operable to produce a toggle signal in response to a threshold count (N+1) during said telephone dialing sequence, said threshold count being indicative of a valid phone number entry, said toggle signal being coupled to said select means whereby said selected one of said first register and said second register is coupled to said third register, such that said second, terminal portion (M) of said telephone number, when entered, is concatenated with said first, threshold portion (N) of said telephone number to store said telephone number (N+M) for access during said last number redial sequence.

4,508,940

DEVICE FOR THE COMPENSATION OF HEARING IMPAIRMENTS

Gerhard Steeger, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,413

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1981, 3131193

Int. Cl.³ H04K *25/00*

U.S. Cl. 179—107 FD **9 Claims**

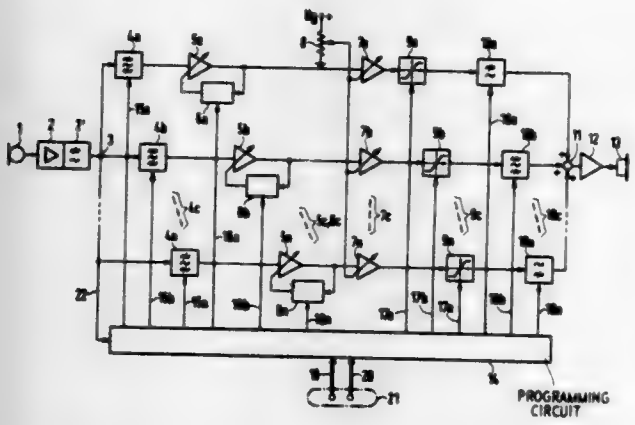
1. A hearing aid device for the compensation of hearing deficiencies, said device comprising a signal input transducer for receiving input audio signals, an input amplifier connected at its input side with the output side of said input transducer, and an output transducer for supplying output signals compensated for a hearing deficiency of a hearing impaired individual,

a plurality of parallel signal channels for transmitting respective signal components of an input signal,

first bandpass filters connected at their input sides with the output side of said input amplifier and connected at their respective output sides with the respective parallel signal channels, said first bandpass filters having respective different frequency responses and supplying to the respective parallel signal channels respective signal components having respective different frequency bands of an input signal, and said first bandpass filters each being a sampled-data analog filter and being realized in integrated circuit technology,

non-linear signal processing means in the respective parallel signal channels and connected at their respective input sides with the output sides of the respective first bandpass filters for non-linear processing of respective signal components with the respective different frequency bands,

controlled-gain amplifiers in the respective parallel signal channels and having a volume control potentiometer which is common to all of said controlled gain amplifiers, said volume control potentiometer providing a common



adjustment of the gain for all of said parallel signal channels,

second bandpass filters in each of said parallel signal channels and connected at their input sides with the output sides of the respective non-linear signal processing means in the respective parallel signal channels, said second bandpass filters each being a sampled-data analog filter and being realized in integrated circuit technology, and said second bandpass filters having respective frequency responses substantially corresponding with the frequency responses of said first bandpass filters for reducing distortion components caused by the respective nonlinear signal processing means, and

signal summing and amplifier means connected at its input side with the output sides of all of said second bandpass filters and connected at its output side with the input side of said output transducer for combining signal components from all of the second bandpass filters into a resultant signal and for supplying an amplified resultant signal to said output transducer.

4,508,941

VOICE COIL CENTERING AND SUSPENSION FOR VENTED POLE PIECE

John T. Wiggins, Philadelphia, Pa., assignor to Community Light & Sound Inc., Chester, Pa.

Filed Oct. 28, 1982, Ser. No. 437,258

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147145

Int. Cl.³ H04M *2/02*

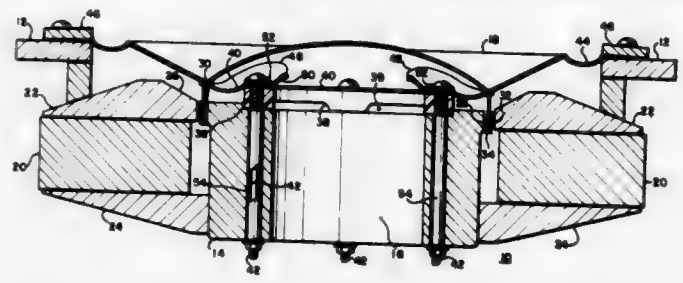
U.S. Cl. 179—115.5 PC **23 Claims**

1. A self-centering mounting arrangement for a diaphragm and voice coil assembly in a magnetic structure having an axially vented pole piece which defines an inner boundary for an air gap in the magnetic structure, in which air gap the voice coil must be aligned, the arrangement comprising:

a mounting ring;

a voice coil suspension for the diaphragm and voice coil assembly projecting outwardly from the mounting ring and in axial alignment therewith; and,

the pole piece having a concentric recess of predetermined diameter formed in the top thereof and the outer diameter



of the mounting ring corresponding to the predetermined diameter, whereby the mounting ring may be received in the recess and positively held in axial alignment with the pole piece, the voice coil being thereby automatically properly positioned in the air gap.

4,508,942

KEYBOARD SWITCH

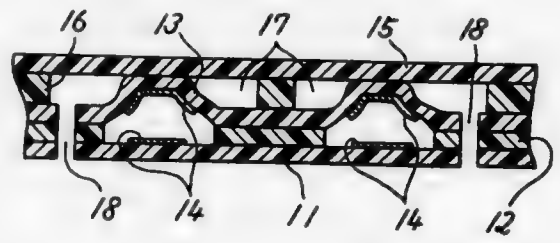
Masaichi Inaba, Ibaraki, Japan, assignor to Nippon Mektron Ltd., Japan

Filed Nov. 28, 1983, Ser. No. 555,819

Claims priority, application Japan, Nov. 30, 1982, 57-211126

Int. Cl.³ H01H *13/76*

U.S. Cl. 200—5 A **10 Claims**



1. A membrane keyboard including:

first electrical circuit means having a plurality of first switch contacts;

second electrical circuit means having a plurality of second switch contacts corresponding to said first switch contaets, said plurality of first switch contacts being equal to said plurality of second switch contacts;

at least one tactile protrusion formed in said second circuit means, said tactile protrusion projecting out of said second circuit means and away from said first circuit means, said tactile protrusion supporting at least one of said second switch contacts for selective contact with said first switch contacts;

insulating means between said first and second circuit means, said insulating means having at least one opening aligned with said protrusion to permit selective contact between said first and second switch contacts, said opening being hermetically sealed from the ambient environment;

flexible cover sheet means planar with the upper surface of said protrusion, said cover sheet enclosing said second electrical circuit means;

spacer means between said flexible cover sheet means and said second circuit means, said spacer means having at least one cavity surrounding said protrusion; and

channel means connecting said spacer means cavity with said ambient environment, said channel means being located through at least said first and second electrical circuit means and said insulating means.

5. A keyboard as in claim 1 wherein:

at least a portion of said first electrical circuit means, said second electrical circuit means and said insulating means are in abutting relationship; and wherein:

said channel means is located through said abutting portion

of said first and second electrical circuit means and said insulating means.

4,508,943

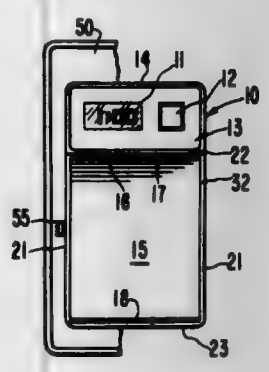
WALL COMMAND SWITCH

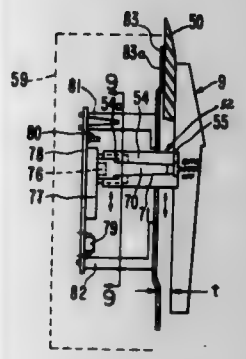
James W. Pfeiffer, Santa Clara, and Thomas E. Corder, Martinez, both of Calif., assignors to Security Switch, Ltd., San Ramon, Calif.

Filed Mar. 28, 1983, Ser. No. 479,382

Int. Cl.[3] H01H *3/00*

U.S. Cl. 200—17 R 19 Claims





9. A wall command lighting switch comprising

(a) a base portion mechanically connected to one side of a mounting plate of an electrical wall switch box and positioned exteriorly of said switch box;

(b) a movable pressure plate at least partially mounted within said base portion;

(c) means for mounting a first electrical switch adjacent to and under a bottom surface of said base portion;

(d) first switch operator means connected to said plate and in alignment with operable portions of said first switch means whereby movement of said plate moves said first switch operator means into and out of operative engagement with said first switch means;

(e) a second switch operator means connected in sliding relationship to said base portion;

(f) a second electrical slide switch connected in spaced relation to the opposite side of said mounting plate and positioned internally of said switch box; and

(g) means integrally extending from said second switch operator means and behind said base portion for connecting said second switch operator means to said second slide switch, said second electrical slide switch being movable into automatic or manual or off positions to automatically control lighting functions and wherein said first switch means is operable by movement of said plate in any position of said second slide switch.

4,508,944

HANDLE SWITCH ASSEMBLY FOR MOTORCYCLES

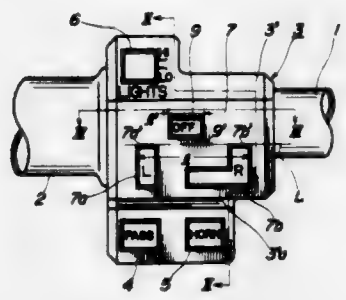
Michio Yashima, Kawagoe; Akihiro Komatsu, Nerima; Masami Takanashi, Yokohama; Masashi Hirose, Wako, and Kengo Nakayama, Iruma, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,635

Claims priority, application Japan, Apr. 5, 1982, 57-49175[U]; Apr. 5, 1982, 57-49176[U]; Apr. 5, 1982, 57-49177[U]; Apr. 5, 1982, 57-49178[U]; Apr. 5, 1982, 57-49179[U]; May 31, 1982, 57-80358[U]

Int. Cl.[3] H01H *9/06*

U.S. Cl. 200—61.85 9 Claims



1. A handle switch assembly for use in a motorcycle in combination with a pair of handle grips mounted on opposite ends of a steering handle, said handle switch assembly comprising:

a housing arranged around said steering handle in the vicinity of one of said handle grips and having one surface extending transversely and generally contoured circumferentially of said one of said handle grips; and

a plurality of switches arranged in said housing, at least one of said switches including a plurality of push buttons arranged on said one surface of said housing,

said push buttons being juxtaposed on said one surface of said housing along a line extending axially of said one of said handle grips, with each of said push buttons having a side face facing in the same predetermined circumferential direction of said one of said handle grips, and a plurality of push rods integrally connected to respective ones of said push buttons,

said push rods each having an axis thereof extending in a direction in which a corresponding one of said push buttons may be pushed,

said push buttons each having a pushing surface adjacent said one surface of said housing,

at least a part of each push button remote from said one of said handle grips having the pushing surface thereof offset toward said one of said handle grips with respect to the axis of the corresponding integrally connected push rod,

said push buttons each having a portion thereof outwardly projected from said one surface of said housing, the projected portion of each push button having a volume greater than that of any of said push buttons closer to said one of said handle grips.

4,508,945

VACUUM SWITCHING INTERRUPTER WITH ANNULAR MEMBER AND DIAMETRICAL CONTACT WEB

Karl Zückler, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,735

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 3235298

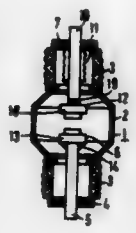
Int. Cl.[3] H01H *33/66*

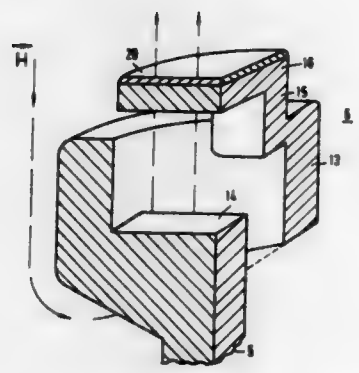
U.S. Cl. 200—144 B 3 Claims

1. A vacuum switching arrangement of the type having two contacts which are movable with respect to one another, each contact having an annular member and a diametrical web for

connecting the annular member to a lead-in pin, the contact further comprising:

a contact plate in the form of a cylindrical washer, said contact plate being made slotless and having a diameter smaller than the annular member; and





a pair of projections arranged as arms for mechanically and electrically coupling said contact plate and the annular member to one another.

4,508,946

MICROWAVE OVEN WITH ROTARY ANTENNA

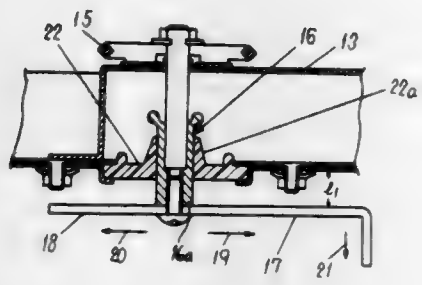
Hirofumi Yoshimura, and Nobuo Ikeda, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 8, 1983, Ser. No. 473,343

Claims priority, application Japan, Mar. 11, 1982, 57-38441; Mar. 12, 1982, 57-39806

Int. Cl.³ H05B 6/64

U.S. Cl. 219—10.55 F **3 Claims**



1. A high-frequency heating apparatus comprising:

a heating chamber for accommodating a heating load;

a high frequency oscillator for generating high frequency electromagnetic waves;

a waveguide extending from said oscillator for propagating said high frequency electromagnetic waves; and

a rotary antenna between said waveguide and the interior of said heating chamber for feeding said electromagnetic waves into said heating chamber, said rotary antenna having a rotary shaft extending from said waveguide into said heating chamber, a first antenna portion and a second antenna portion mounted on the end of said shaft in said heating chamber and extending at substantially right angles to said shaft in opposite directions therefrom, said first antenna portion having a greater length than said second antenna portion by approximately one quarter of the wavelength of said high frequency electromagnetic waves, and the free end of said first antenna portion being bent about 90 degrees to the first antenna portion in a direction toward the central part of the interior of said chamber and the thus bent portion having a length not exceeding one quarter of the wavelength of said electromagnetic waves.

4,508,947

MICROWAVE OVENS AND METHODS OF COOKING FOODS

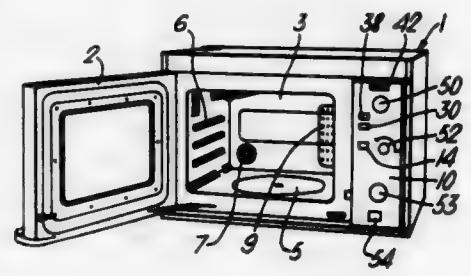
Kenneth I. Eke, Sanderstead, England, assignor to Microwave Owens Limited, Surrey, England

Filed Jul. 13, 1983, Ser. No. 513,296

Claims priority, application United Kingdom, Jul. 17, 1982, 8220786; Oct. 20, 1982, 8230015; Nov. 19, 1982, 8233098

Int. Cl.³ H05B 6/06, 6/78

U.S. Cl. 219—10.55 B **17 Claims**



1. A portable microwave oven designed to be powered from a domestic power socket with a rating not exceeding 1800 watts, comprising a microwave generator for supplying microwave power to a cavity of the oven, a rotatable turntable on the base of said cavity for supporting and rotating food therein, thermal heating means capable of heating the air within the oven cavity, and control means operative to supply continuous microwave power to said cavity simultaneously with the supply of thermal power to said cavity, whereby the microwave power heats the inside of the food rotated by said turntable and the thermal power dissipates the resulting moisture and browns the external surface of the food rotated by said turntable, said thermal heating means comprising an electrical heating element and fan means for recirculating air over said element and through said cavity, said fan means causing a forced flow of air, heated by said thermal heating means, to enter said cavity from one side thereof, to pass around and over food on said turntable in a direction opposite to its direction of rotation and thereafter to leave said cavity from the other side thereof.

4,508,948

MICROWAVE COOKING METHOD

Roger W. Carlson, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 16, 1984, Ser. No. 571,159

Int. Cl.³ H05B 6/68

U.S. Cl. 219—10.55 M **8 Claims**

1. In a microcomputer controlled microwave oven having a scale coupled to the cavity thereof, the method of using the microcomputer to control the microwave oven comprising the steps of:

positioning a food body in said cavity of said microwave oven;

providing a first signal from said scale to said microcomputer, said first signal corresponding to the weight W of said food body positioned in said cavity;

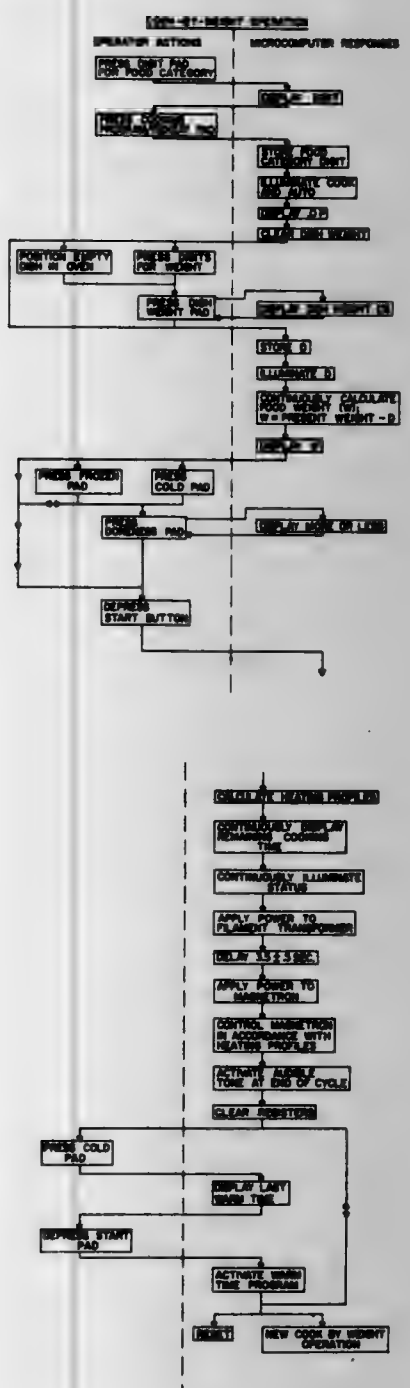
inputting a second signal to said microcomputer, said second signal specifying the food category of said food body as selected by the operator;

calculating a first time period in response to said first signal, said first time period defining the time of microwave radiation to raise the temperature of said food body from an initial state of approximately refrigerator temperature to a final state of approximately room temperature;

calculating a second time period in response to said first and second signals, said second time period defining the time

of microwave radiation to cook said food body from an initial state of approximately room temperature;

controlling said microwave oven through sequential steps of microwave radiation in accordance with said first and second time periods, respectively; and



controlling said microwave oven through a sequential step of microwave radiation in accordance with said first time period of a second occurrence, said second occurrence following said step of said second time period and being in response to an operator actuated input.

4,508,949

METHOD AND APPARATUS FOR WELDING TAPERED METAL POLES

Wallace C. Rudd, New Canaan, Conn., assignor to Thermatool Corporation, Stamford, Conn.

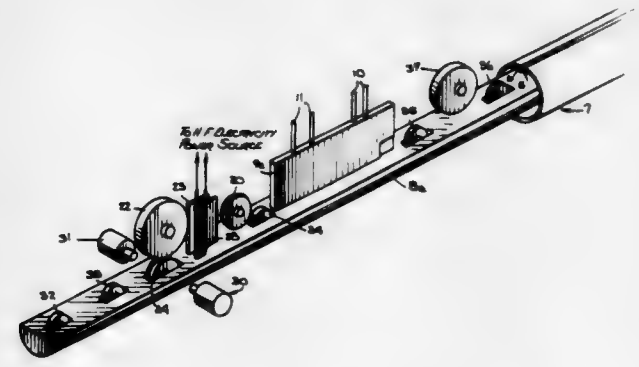
Filed Sep. 30, 1982, Ser. No. 429,099
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—61.2 **17 Claims**

15. A method for manufacturing a tapered metal tube, said method comprising:

forming a substantially complete tube from a sheet of metal, said tube having portions adjacent to the edges of said sheet adjacent to but spaced from each other with surfaces thereof facing each other and said tube having a cross-section which varies in size in the direction of its length;

advancing said tube lengthwise thereof to bring said portions to a weld point with said surfaces thereof in spaced apart relation in advance of said weld point;

guiding said portions to the weld point by supporting said tube at said weld point by means engaging the interior of said tube at or adjacent said portions while permitting a part of said tube opposite from said portions to assume positions determined by the positions of said portions;



in advance of said weld point, supplying high frequency, electrical heating current to said tube by contacts to bring at least said surfaces of said portions to welding temperature by the time they reach the weld point, one of said contacts engaging said tube at or adjacent one of said portions and the other of said contacts engaging said tube at or adjacent the other of said portions; and

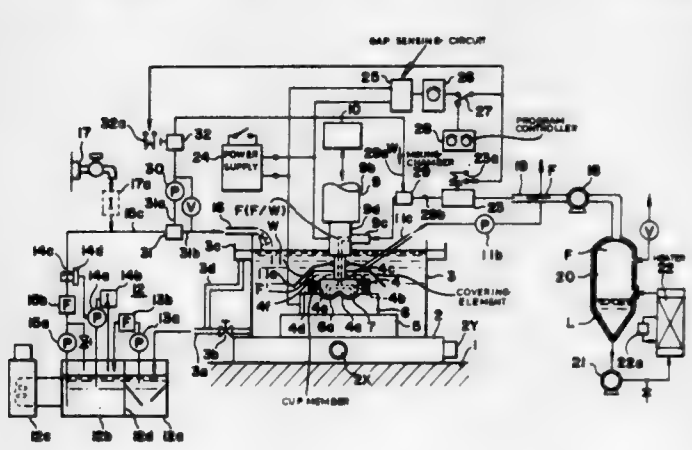
bringing said portions into contact and welding them together by pressing said surfaces of said portions together at said weld point by applying pressure to the oppositely facing surfaces of said portions which is directed transversely to said surfaces.

4,508,950

EDM METHOD AND APPARATUS USING LIQUID HYDROCARBON DECOMPOSITION YIELDED GASES AND A DEIONIZED WATER LIQUID

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 10, 1983, Ser. No. 474,745
Claims priority, application Japan, Mar. 25, 1982, 57-48441
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 D **30 Claims**



21. An apparatus for machining an electrically conductive workpiece by means of a succession of discrete, time-spaced electrical discharges effected between a tool electrode and the workpiece across a machining gap so as to electroerosively remove material from the workpiece, the apparatus comprising:

means for immersing at least a region of a tool electrode juxtaposed with a conductive workpiece across a machining gap across which a succession of discrete, time-spaced

electrical discharges are effected, which region defines said machining gap in a continuous volume of a deionized water liquid of a temperature sufficient to cool at least said region against heat to be developed by said electrical discharge, said electrical discharges effecting electroerosive material removal from said workpiece;

means for decomposing, outside of said machining gap, a liquid hydrocarbon to yield gases containous gaseous hydrocarbons; and

means for injecting a volume of said yielded gases into said machining gap immersed in said water liquid whereby at least a portion of said gases injected volume constitutes a gap fluid medium for said electrical discharges to produce said erosive material removal while said region tends to be cooled by said deionized water liquid.

4,508,951

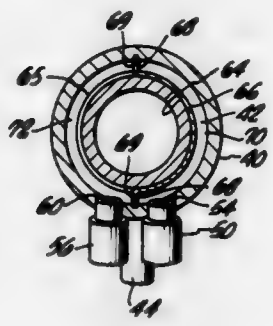
FLUID BAFFLE ASSEMBLY FOR A WATER-COOLED WELDING TORCH

William Rehrig, Jr., Burbank, Calif., assignor to Richard B. Rehrig, Burbank, Calif.

Filed Aug. 19, 1982, Ser. No. 409,663

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—74 **4 Claims**



3. In a water-cooled welding and cutting torch of the type having an inner cylindrical wall and outer cylindrical wall defining an annular chamber therebetween for the ingress and egress of water therethrough, the improvement comprising: a baffle member defining an arcuate elongate body portion and a pair of lateral flanges extending along the length thereof and projecting radially therefrom and a pair of diametrically opposed grooves in the interior of said outer cylindrical wall, the spacing between said grooves being less than the transverse dimension of said baffle member such that upon disposing said flanges within said grooves, said baffle member is held in compression therebetween with said body portion thereof bearing against said inner cylindrical wall and said flanges separating said annular chamber into a water inlet channel, a water outlet channel and an annular lower cooling chamber, said inlet channel being separated from said outlet channel by said flanges and said channels communicating with said lower cooling chamber.

4,508,952

ELECTRON BEAM CUTTING

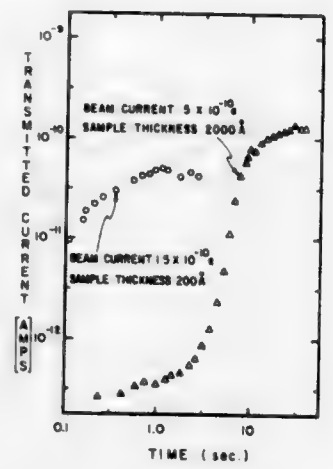
Margaret E. Mochel, Champaign, Ill., and Colin J. Humphreys, Abingdon, England, assignors to University Patents, Inc., Westport, Conn.

Filed Feb. 17, 1983, Ser. No. 467,559

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 EH **3 Claims**

1. A method for providing an opening through a positive ionic conductor material having minimal electron conduction which comprises (a) placing said material in a vacuum, and (b) exposing a region of said material to a focused electron beam having a current level sufficient to cause the material within said region to become positively charged, and causing the



positively charged ions within said region to be repelled from said region.

4,508,953

METHOD OF MULTI-LAYER WELDING

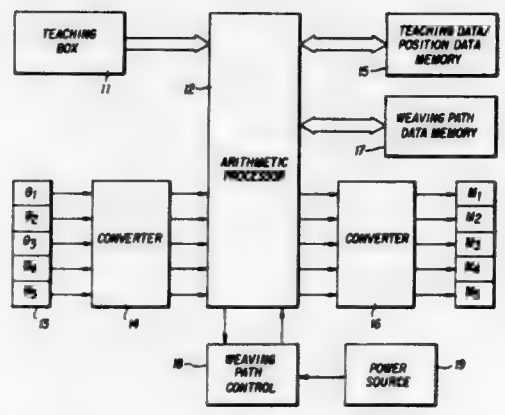
Tsudoi Murakami, Ashiya; Shoji Nasu, Kobe; Kazuaki Tatsumi, Kamakura, and Yasuhide Nagahama, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 22, 1983, Ser. No. 487,687

Claims priority, application Japan, Apr. 27, 1982, 57-71791; Apr. 30, 1982, 57-73679

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—125.1 **11 Claims**



1. A method of multi-layer welding in which the welding operation is performed according to a path of welding defined by interpolating a suitable line between a plurality of instruction points and which utilizes a welding torch, a memory device and an arithmetic processor, wherein said method comprises:

storing in said memory device coordinates of a plurality of instruction points that define a desired path for a first welding layer;

welding said first layer by interpolating a suitable path between said plurality of instructed points;

detecting coordinates of points actually passed during said welding of said first welding layer;

storing in said memory device said detected coordinates as teaching points for second and succeeding welding layers; and

determining welding paths of said second and succeeding layers by adding a predetermined amount of shift to said actually detected coordinates stored in said memory device at said teaching points and interpolating a suitable line between the shifted coordinates by means of said arithmetic processor.

4,508,954

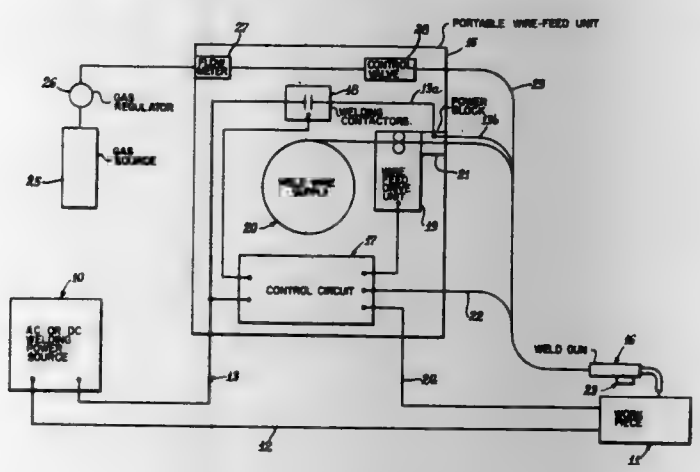
PORTABLE ARC VOLTAGE WIREFEED WELDING SYSTEM

Robert E. Kroll, Orland Park, Ill., assignor to Oxo Welding Equipment Co., Inc., New Lenox, Ill.

Filed May 18, 1984, Ser. No. 612,043

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—132 **6 Claims**



1. In a consumable wire electrode arc welding system having a welding power source, a portable wirefeed unit and a remote welding gun with a normally open trigger switch, a single electrode power cable interconnecting the power source to the wirefeed unit and to said gun, a ground cable interconnecting the power source and a work piece to be welded, and control cables interconnecting the wirefeed unit with said trigger switch and welding ground potential, improved wirefeed and welding control apparatus comprising: rectifier means coupled to the electrode power cable for energization by either AC or DC power carried thereby and productive of a low voltage DC output, capacitor means in circuit with the output of said rectifier means, voltage regulator means in circuit with said capacitor means and the output of said rectifier means for providing low voltage power to load components comprising control relay means and welding contactor control means; wirefeed drive motor means in circuit with the output of said rectifier means and operable to feed electrode wire to the welding gun, and welding contactors in circuit with the electrode power cable and welding gun and operable to control energization of the welding wire electrode; said capacitor means serving to reinforce the output of said voltage regulator means to maintain said control relay means and welding contactor control means energized during low voltage dips, such as at welding arc initiation; energization of said control relay means and welding contactor control means being selectively controlled by the welding gun trigger switch.

4,508,955

ELECTRODE FOR THE TIG WELDING PROCESS

Michael Müller, Munich, and Dietmar Mautner, Herbertshausen, both of Fed. Rep. of Germany, assignors to Mortoren Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,732

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1983, 3309069

Int. Cl.³ B23K *35/00*

U.S. Cl. 219—146.21 **3 Claims**

1. An electrode for a TIG welding process, in which a welding arc is produced by contact-less ignition between a tip of the electrode and the workpiece within an atmosphere of an inert gas and welding material is supplied from a separately guided welding rod, said electrode consisting of tungsten with



thorium-oxide, the thorium oxide being present in an amount of 2–4% and a particle size of 6–12 μm.

4,508,956

HEAT DEVICE FOR HEATING PORTIONS OF SHOE UPPERS

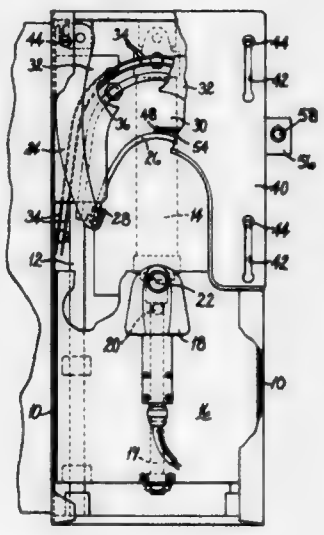
Arthur W. Prichard, Leicester, England, assignor to USM Corporation, Farmington, Conn.

Filed Aug. 30, 1982, Ser. No. 412,994

Claims priority, application United Kingdom, Sep. 12, 1981, 8127602

Int. Cl.³ A43D *25/20*; H05B *1/02*

U.S. Cl. 219—215 **3 Claims**



1. A heater device for heating portions of shoe uppers in a shoe upper backpart molding machine, prior to molding such portions to a desired shape, the device comprising:

a shaped inner form;

a co-operating outer band of a flexible silicone rubber sheet material;

means for effecting relative movement between the inner form and the outer band, whereby a shoe upper placed therebetween can be clamped between the inner form and the outer band, the latter stretching about the inner form to cause the upper to be conformed to the shape thereof and thus causing the shoe upper to be pressed over its area against the inner form;

first and second heating means for heating respectively the inner forms and the outer band, the second heating means comprising radiant heater means to which the outer surface of the band is exposed; and

temperature control means for controlling the operation of the second heating means, said temperature control means comprising a temperature sensing element and a controller operable in response to signals from said element to control the second heating means, wherein the temperature sensing element is carried in a tubular pocket of flexible silicone rubber material being secured by adhesive, with a line contact, onto the outer surface of the outer band, with

its longitudinal axis of the tubular pocket perpendicular to the direction of stretch of the outer band to insure securement thereto and provide temperature control thereof, even with any stretching of said outer band.

4,508,957

THERMOSTATICALLY CONTROLLED ELECTRIC HEATING DEVICE FOR MOTOR VEHICLE GLASS WASHING FLUID

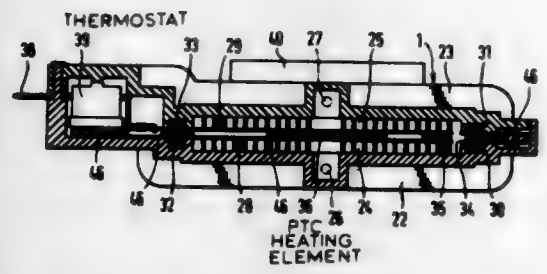
Onofrio Rocchitelli, 31, Via per Lainate, I 20010 Pogliano Milanese, Province of Milano, Italy

Filed Sep. 9, 1983, Ser. No. 530,534

Claims priority, application Italy, Sep. 24, 1982, 23017/82[U]; Mar. 2, 1983, 20986/83[U]

Int. Cl.[3] **B60S** *1/46;* **B67D** *5/62;* **H05B** *1/02;* **F24H** *1/10*

U.S. Cl. 219—305 **10 Claims**



1. Heating device for the glass washing fluid of motor vehicles and the like, consisting of at least one plate-like body element in which a spiral channel is made, said channel having two communications with the outside, namely an inlet and an outlet, said channel being sealingly closed by a plate cover, a heating element being externally superposed to said plate in heat exchange relation to heat the fluid to a desired temperature and consisting of a PTC (Positive Temperature Coefficient) thermistor, and adapted to be connected through a suitable switch to the two poles of the motor vehicle battery, a thermostat connected in series with the thermistor and arranged on the plate cover so as to be responsive to the temperature thereof, wherein the thermistor is calibrated to reach a temperature substantially higher than said desired temperature and said thermostat is activated at the desired temperature, the channel inlet adapted to be connected to a line coming from the washing fluid reservoir provided with a pump, and the channel outlet adapted to be connected to spraying nozzles, so that water enters the inlet cold and goes out warm from the outlet.

4,508,958

CEILING FAN WITH HEATING APPARATUS

Frederick S. C. Kan; Kam Wing Li, and Kong Ping P. Lau, all of Kowloon, Hong Kong, assignors to Wing Tat Electric Mfg. Co. Ltd., Kowloon, Hong Kong

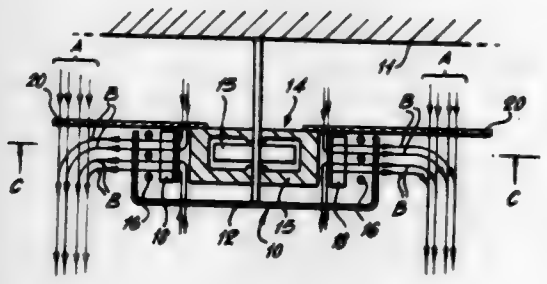
Filed Dec. 16, 1982, Ser. No. 450,169

Continuation-in-part of Ser. No. 424,789, Sep. 27, 1982.

Claims priority, application United Kingdom, Nov. 1, 1982, 8231200

Int. Cl.[3] **F24H** *3/04;* **H05B** *1/00*

U.S. Cl. 219—369 **14 Claims**



1. A ceiling fan for optionally heating or cooling a room comprising a housing adapted to be suspended from a ceiling and including an aperture arranged so that air can flow through the housing; a motor disposed within the housing and having a stationary stator and a rotatable rotor; a selectively energizable electric heating element disposed within the housing and spaced from the motor; first fan means attached to the rotor and disposed exteriorly of the housing for generating a relatively large volume air flow on the exterior of the housing; and second fan means for generating a relatively small volume flow and positioned to pass the small volume air flow over the heating element and through the housing aperture so that the small volume air flow can be heated.

4,508,959

APPARATUS FOR HEATING STACKABLE DISHES

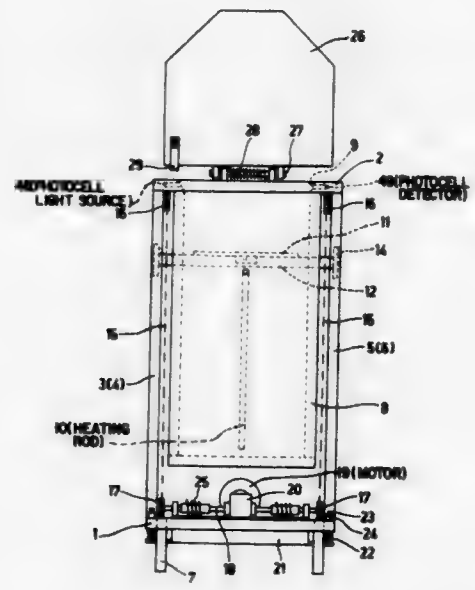
Paul Lüscher, Bern, Switzerland, assignor to Lükon, Fabrik für elektrothermische Apparate und elektrische Stabheizkörper, Paul Lüscher, Täuffelen, Switzerland

Filed Jul. 12, 1983, Ser. No. 513,096

Claims priority, application Switzerland, Jul. 21, 1982, 4439/82

Int. Cl.[3] **F24C** *15/18;* **F27D** *11/02*

U.S. Cl. 219—385 **11 Claims**



1. An apparatus for heating stackable dishes, comprising a heatable housing with an open top, a cover for closing the open top, a support for a stack of dishes, the support being arranged in said housing and being adapted to be raised and lowered, power-driven means for selectively raising and lowering said support, the power-driven means for raising and lowering the support comprising drive means which is electrically controllable for lowering the support, a first switch being included in a circuit for the drive means, said switch being controlled by a sensing arrangement arranged at an upper edge of the housing, whereby when a top of a stack of dishes resting on the support passes down through said upper edge said first switch is opened, and a second switch in the circuit for the drive means, time delay means, the second switch being closed after a predetermined time interval by the time delay means, the time delay means being actuated by a manually operable switch which controls the raising and lowering of the support.

4,508,960

LIGHT-RADIANT FURNACE

Tetsuji Arai, Tachikawa, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1983, Ser. No. 527,474

Claims priority, application Japan, Aug. 30, 1982, 57-149055

Int. Cl.[3] **F27B** *9/06;* **H05B** *1/02*

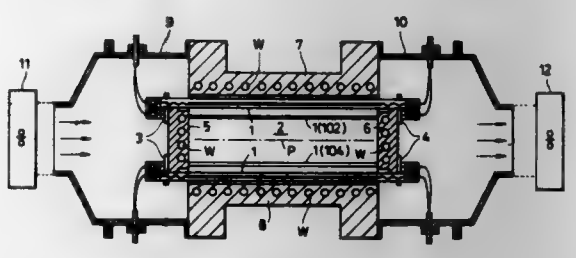
U.S. Cl. 219—388 **1 Claim**

1. A method for heating semiconductor wafers by a light-radiant furnace equipped with, as the light-radiant source thereof, incandescent lamps having filaments subject to burn-

ing out as a result of a rush current substantially greater than a current of a full-radiation-state operation of said incandescent lamps, said method comprising:

transporting a plurality of said semiconductor wafers successively into the light-radiant furnace;

controlling operation of the incandescent lamps so that the incandescent lamps are brought into heating operation in synchronization with the transportation of each of said semiconductor wafers into the light-radiant furnace and



are operated in accordance with a predetermined heating operation curve including said full-radiation-state operation to expose each said semiconductor wafer to light for its heating; and

limiting the flow of said rush current through the incandescent lamps by feeding a small current to said lamps so as to provide dim operation of said lamps prior to each said heating operation of the incandescent lamps in accordance with the heating operation curve.

4,508,961

ELECTRIC RADIANT HEATER UNITS FOR GLASS CERAMIC TOP COOKERS

Joseph A. McWilliams, Droitwich, England, assignor to Micropore International Limited, Droitwich, England

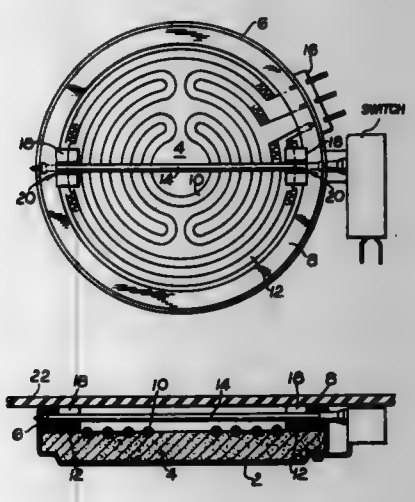
Filed Feb. 28, 1983, Ser. No. 470,294

Claims priority, application United Kingdom, Mar. 2, 1982, 8206043

The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—449 **11 Claims**



1. An electric radiant heater unit for a glass ceramic top cooker, the heater unit comprising:

a base layer of electrical and thermal insulating material;

first and second bare heater elements disposed adjacent to each other on the base layer, said second heater element being disposed peripherally about said first heater element, said first and second heater elements being arranged such that, in use, heat emitted by the second heater element augments heat emitted by the first heater element;

a peripheral wall of thermal insulating material positioned on the base layer and surrounding the heater elements for keeping heat within the peripheral wall;

a thermal cut-out device for controllably disconnecting an electrical power source from the heater elements, the thermal cut-out device extending over the first and second heater elements; and

means for minimizing heat conduction to the thermal cut-out device in regions thereof which pass over the second heater element from heat emitted by both the first and second heater elements.

4,508,962

READ FORMAT PRESET IN AN ELECTRONIC CASH REGISTER

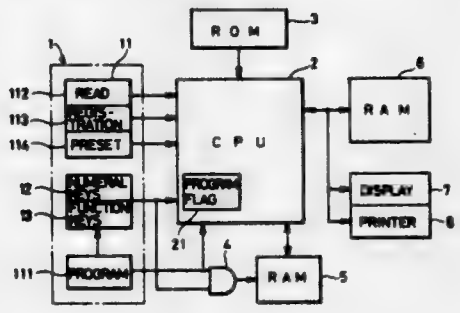
Hitoshi Yamasaki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 285,638, Jul. 21, 1981, abandoned. This application Jul. 9, 1984, Ser. No. 629,732

Claims priority, application Japan, Jul. 30, 1980, 55-105737

Int. Cl.³ G06K *15/00*

U.S. Cl. 235—378 **6 Claims**



1. An electronic cash register comprising:

transaction data memory means for storing transaction data;

mode selection means for selectively placing the electronic cash register in a normal registration mode, a read out mode or a program preset mode;

keyboard panel means for introducing transaction data into said transaction data memory means in said normal registration mode, and for introducing program commands into the electronic cash register in said program preset mode, said program commands including variable print format instruction commands for determining a print format of the information printed out in said read out mode;

print format memory means for storing said variable print format instruction commands introduced from said keyboard panel means in said program present mode;

read out means responsive to said print format memory means for reading out said transaction data stored in said transaction data memory means in accordance with said variable print format instruction commands stored in said print format memory means when the electronic cash register is placed in said read out mode; and

printer means for printing out said transaction data read through said read out means in said read out mode.

4,508,963

DETECTOR MISMATCH CORRECTION APPARATUS

Dennis J. Wilwerding, Littleton, and James R. Adams, Jr., Westminster, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 28, 1982, Ser. No. 425,341

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **10 Claims**

1. Apparatus for use with a system in which a plurality of first detectors and a plurality of second detectors are exposed to variable conditions and each detector is operable to produce a signal of magnitude indicative of the condition to which it is exposed, the apparatus being operable to at least partly correct for a mismatch of detectors that causes the magnitude of the signals from the first detectors to differ from the magnitude of the signals from the second detectors when they are exposed to the same condition, the signals from the first detectors and the

signals from the second detectors being presented in serial fashion at a first output of the system and a first control signal being presented at a second output of the system each time a signal from a first detector is presented at the first output, comprising:

modifying means having first and second inputs and an output, said modifying means operable upon receipt of a control signal at the second input to modify any signal at the first input to produce a modified signal at the output of said modifying means;

means connecting the first input to the first output of the system so that said modifying means receives the signals from the first and second detectors in serial fashion; and

means connecting the second input to the second output of the system so that said modifying means receives the first control signal each time a signal from a first detector appears at the first input, said modifying means modifying all of the signals from the first detectors by a first value and all of the signals from the second detectors by a second value which causes the modified signals at the output of said modifying means to have substantially the same magnitude when the first and second detectors are exposed to the same condition.

4,508,964

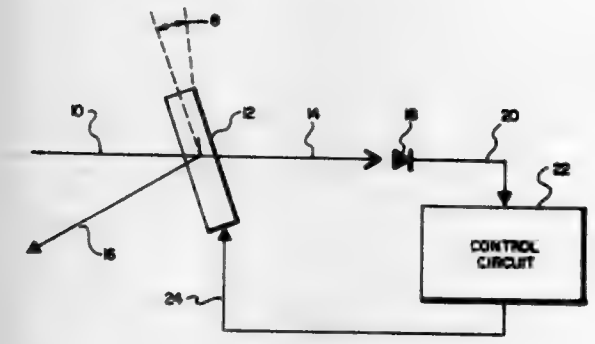
ELECTRO-OPTICALLY TUNED REJECTION FILTER

William J. Gunning, III, Newbury Park, and John M. Tracy, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 29, 1982, Ser. No. 426,348

Int. Cl.³ G02F *1/03*

U.S. Cl. 250—201 **9 Claims**



1. An apparatus for automatically removing intense, narrowband electromagnetic energy centered at an unknown wavelength λ from a broadband beam of electromagnetic energy, comprising:

an electro-optically tunable interference filter for intercepting the beam, the transmission of said filter being controllable by the application of an electrical potential to said filter;

a detector for producing an electrical signal in response to the electromagnetic energy transmitted by said filter; and

a control circuit for calculating the partial derivative of said signal with respect to said applied potential and adjusting the applied potential to minimize the absolute value of said partial derivative and thereby maximize the transmission of electromagnetic energy at the wavelength λ by the filter.

4,508,965

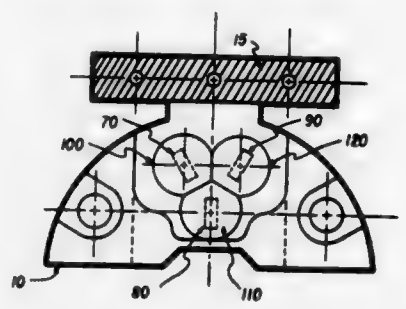
UNIAXIALLY COLLIMATED LIGHT SOURCE FOR OPTICAL SHAFT ANGLE ENCODERS

James R. Casciani, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 5, 1982, Ser. No. 355,002

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 SE **9 Claims**



1. A optical shaft angle encoder for generating an electrical signal in response to rotation of a shaft, comprising:

light emitting means for generating a uniaxially collimated beam, the light emitting means having a length dimension greater than a width dimension thereof;

a code wheel, concentrically, affixed to the shaft and positioned to receive the beam from the light emitting means and to modulate the beam, said wheel having a plurality of radially positioned transmissive slits therethrough;

detector means, positioned to receive the modulated beam from the encoder means, for generating the electrical signal indicative of rotation of the shaft; and

wherein the length dimension of the light emitting means is located on and aligned with a radius of the shaft and the width dimension is orthogonal thereto and is substantially parallel to the code wheel.

4,508,966

RECORDING AND READOUT APPARATUS FOR X-RAYS

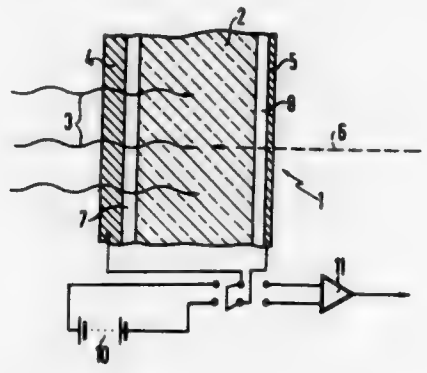
Raimund Oberschmid, Munich, and Ingmar Feigt, Langensendelbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,437

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235076

Int. Cl.³ G03C *5/16*

U.S. Cl. 250—327.2 **7 Claims**



1. A recording and readout apparatus for X-rays, comprising: a layer means comprising a $Bismuth_{12}$ Oxide compound in which, given an applied external electric field in association with the layer means, by use of incident X-rays, an electric charge distribution corresponding to a respective X-ray image

is generated and stored in the layer means; a light ray generating and scanning means for a point-by-point readout of the stored charge distribution by scanning the layer means in a point-by-point fashion; said layer means having generated therein electric photoconduction by exposure to said light ray; and opposite surfaces of the layer means each being covered with an electrode, at least one of the electrodes being electrically insulated by an insulating layer from the layer means; and means for connecting said electrodes during readout operations to a current-amplifier with low input-impedance and during recording to an electric field source.

4,508,967

ELECTRONIC OPTICAL APPARATUS COMPRISING PYROLYTIC GRAPHITE ELEMENTS

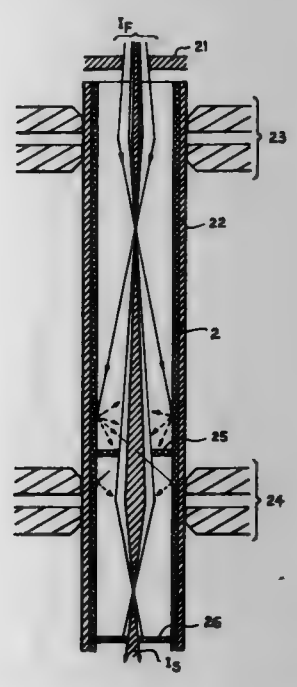
Pierre Boissel, and Mathias Tong, both of Courbevoie, France, assignors to Cameca, Courbevoie, France

Filed Jan. 11, 1983, Ser. No. 457,233

Claims priority, application France, Jan. 22, 1982, 82 01010

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—396 R **6 Claims**



1. In an electronic optical apparatus comprising an electron gun, a condenser block for the electron beam coming from the gun, a deflection and focussing block for the beam coming from the condenser block and a useful signal detection device, the tubular screen surrounding the beam inside the condenser block and the deflection block are formed from a vacuum tight outer part and an inner part formed from pyrolytic graphite.

4,508,968

APPARATUS FOR PROCESSING NEGATIVE PHOTORESIST

Koichi Kobayashi, Yokohama; Kenichi Kawashima, Sagamihara, and Shuzo Oshio, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

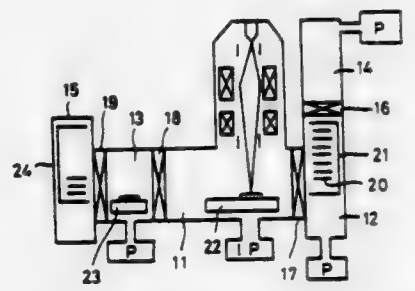
Division of Ser. No. 329,941, Dec. 11, 1981, Pat. No. 4,426,439. This application Jul. 5, 1983, Ser. No. 510,584

Claims priority, application Japan, Dec. 12, 1980, 55-175634

Int. Cl.³ G01N *23/00, 21/00*

U.S. Cl. 250—441.1 **6 Claims**

1. An exposure apparatus comprising: a gas chamber filled with non-oxidizing gas and an exposure chamber connected to the gas chamber wherein charged particle beams are irradiated onto a substrate for pattern writing exposure, in which after exposure in said exposure chamber, said substrate is kept in



non-oxidizing gas in said gas chamber and then taken out to the outside atmosphere.

4,508,969

DEVICE FOR HOLDING, TRANSPORTING AND FINAL STORING OF BURNED-OUT REACTOR FUEL ELEMENTS

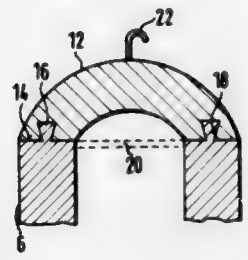
Klaus Janberg, Ratingen, and Hans-Peter Dyck, Burgdorf, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,348

Claims priority, application European Pat. Off., Jun. 28, 1980, 80103681.5

Int. Cl.³ G21F *5/00*

U.S. Cl. 250—506.1 **7 Claims**



2. A device for holding, transporting and finally storing burned out reactor fuel elements comprising an open-ended cylindrical container having a sealing surface around said open end, a cover for said open end having a sealing surface for mating with said container sealing surface, characterized in that

one sealing surface has an annular undercut recess, said recess being enlarged below said surface, the other sealing surface has an integral annular projection of a shape complementary to said undercut recess, said projection being disposed in said recess.

4,508,970

MELT LEVEL SENSING SYSTEM AND METHOD

Charles B. Ackerman, Paradise Valley, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 15, 1982, Ser. No. 398,495

Int. Cl.³ G01N *21/26*

U.S. Cl. 250—577 **17 Claims**

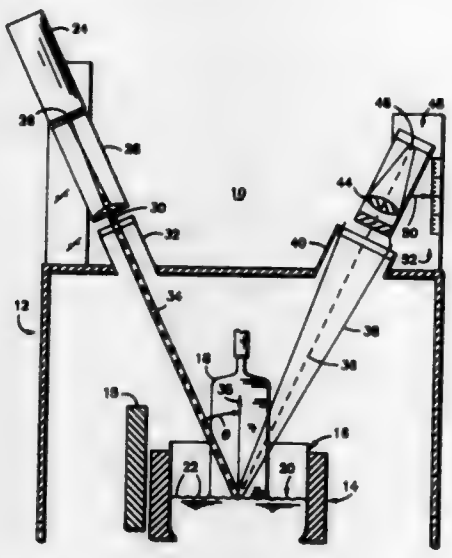
1. A sensing system for detecting changes in the level of a liquid surface comprising:

a source of essentially monochromatic illumination of narrow beam width for directing an incident beam toward said liquid surface at an oblique angle thereto, and providing a reflected beam therefrom;

a beam expander interposed between said illumination source and said liquid surface for increasing said narrow beam width of said incident beam to a beam width substantially greater than the wavelength of most disturbances in said liquid surface;

a converging lens transverse to and intercepting a portion of

said reflected beam from said liquid surface for focusing said portion of said reflected beam to a centrum; and



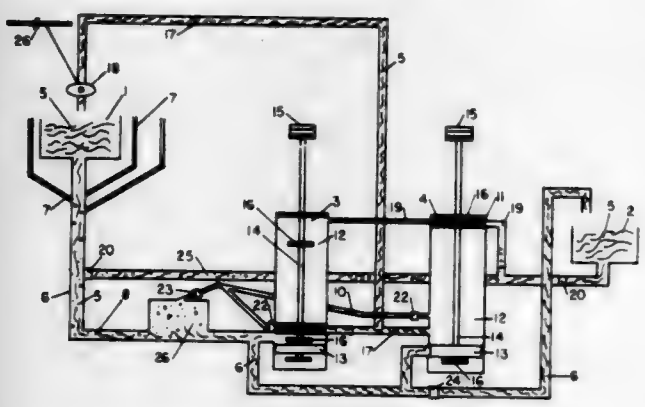
a beam detector positioned adjacent to said centrum for providing an indication of changes in said level of said liquid surface by detecting corresponding changes in a relative position of said centrum.

4,508,971

TWO RESERVOIR SOLAR AIR-WEIGHT IMPELLING HYDRO POWER SYSTEM

Wayne E. Bailey, R.D. #2, Schaghticoke, N.Y. 12154

Filed Aug. 9, 1982, Ser. No. 406,264
Int. Cl.³ F03G *7/02, 7/04;* F04F *1/18*
U.S. Cl. 290—1 R **2 Claims**



1. A method of using heat to produce work, comprising the steps of:

(a) entraining gas into a flow of liquid from an upper reservoir;

(b) releasing continuous quantities of said entrained gas into a chamber until it is compressed;

(c) exposing said compressed gas to a heat source and releasing it into a vertically movable container;

(d) allowing said container to rise due to increased buoyancy from said heated compressed gas; and

(e) releasing said compressed gas from said container at a point in its vertical path of travel and allowing said container to fall.

4,508,972

ARMATURE LIFT WINDMILL

Robert W. Willmouth, 1011 Frederick St. South, Arlington, Va. 22202

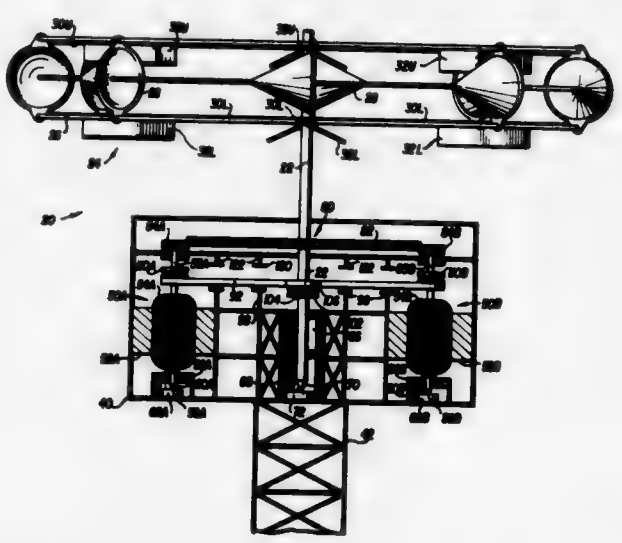
Filed Jan. 20, 1984, Ser. No. 572,285
Int. Cl.³ F03D *9/00*
U.S. Cl. 290—55 **28 Claims**

1. An apparatus for generating electricity from wind currents, the apparatus comprising:

a rotatable vertical shaft for supporting impeller means, said impeller means including a horizontally extending frame and a plurality of winddriven elements secured at the periphery of the frame;

airfoil means secured to said frame for providing a vertical lift force to said impeller means and to said rotatable vertical shaft when the wind velocity is of a sufficient magnitude;

electrical generator means comprising a rotor and a coil, said rotor being vertically oriented and capable of slidable



vertical movement with respect to said coil, the lower end of said rotor being selectively positionable upon a support;

means for transmitting the rotational motion of said rotatable vertical shaft to said rotor of said electrical generator means; and,

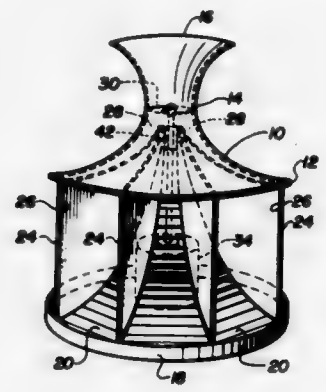
means for transmitting vertical lift created by said airfoil means to said rotor of said electrical generator means whereby said rotor is vertically lifted above said support upon which the lower end of said rotor would otherwise rest.

4,508,973

WIND TURBINE ELECTRIC GENERATOR

James M. Payne, 2300 Mardale Dr., York, Pa. 17403

Filed May 25, 1984, Ser. No. 613,808
Int. Cl.³ F03D *3/04*
U.S. Cl. 290—5 S **7 Claims**



1. A wind-operated electric generator system comprising in combination, a stationary Venturi unit having a vertical axis and a circular assembly of similar segmental wind-inlet passages extending around said axis and having substantially vertical inlet openings outermost from said axis, said segmental inlet passages being defined by similar substantially vertical and radially extending walls comprising the sides of said segmental passages and said inlet openings also each having similar top and bottom walls curved inwardly toward said axis and upwardly and said bottom walls sloping upwardly to a greater extent than said top walls and converging at the upper ends thereof toward the upper and inner portions of said top wall to

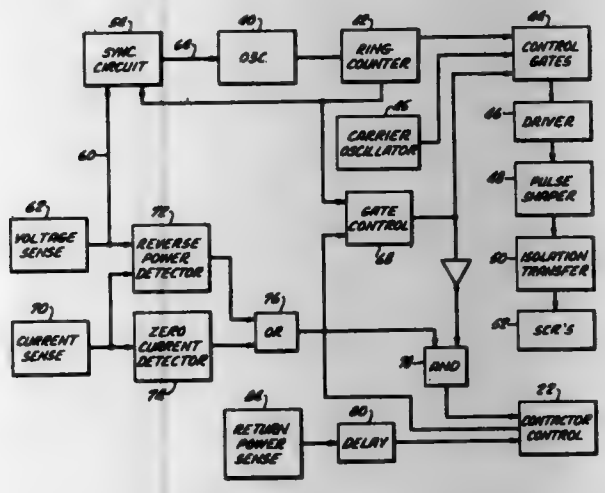
provide with the upper portions of said top walls constricted upwardly directed exit passages for wind merging into a single upwardly directed discharge opening comprising a Venturi discharge throat, whereby the converging of said walls toward the axis of the unit provides additional compression of incoming wind and thereby further enhances the increasing of inlet air speed generated by the converging top and bottom walls of said inlet passages, a radial bladed impeller mounted within said Venturi throat and supported by a shaft coincident with the axis of said Venturi throat, bearing means for said shaft, an electric generator supported relative to said shaft and connected thereto for operation thereby when driven by wind passing through said throat and the blades of said impeller to drive the same, whereby wind blowing from any direction will enter at least one of said inlet openings and be directed upwardly by the passage thereof while the speed thereof is increased by said Venturi effect produced by both lateral and vertical compression of the incoming gas.

4,508,974

EMERGENCY POWER SYSTEM AND LOGIC THEREFOR

Lawrence E. Henderson, Anaheim, Calif., assignor to Emergency Power Engineering, Inc., Costa Mesa, Calif.

Filed Aug. 9, 1982, Ser. No. 406,348
Int. Cl.³ H02J 9/06
U.S. Cl. 307—66 **6 Claims**



1. In combination with a motor generator set and a multiphase primary power source connected thereto to energize the motor generator set and provide power to a load, a standby emergency power supply connected in series between the source and motor generator set, said standby power supply comprising

an inverter having a plurality of switching devices,

first and second power switching contacts operable between a normal state in which said primary power source is connected to said motor generator and said inverter is disconnected from said motor generator, and an emergency state in which said primary power source is disconnected from said motor generator and said inverter is connected to said motor generator,

logic circuit means for controlling said inverter and said power switching contacts, and

an auxiliary power supply for providing power to said logic circuit means and to said inverter, said logic circuit comprising

trigger generating means for generating a plurality of inverter switching device trigger signals,

driving means responsive to said trigger signals for triggering said inverter switching devices,

an oscillator connected to clock said trigger generating means,

means for sensing motor voltages,

synchronizing means responsive to said trigger generating means and to said motor voltage sensing means to cause the phase and frequency of said oscillator to track phase and frequency of said motor voltage,

means for sensing current of said motor,

reverse power detecting means responsive to said motor voltage sensing means and to said current sensing means for providing a reverse power signal indicative of reverse power from said motor,

means responsive to said current sensing means for providing a zero current signal indicative of lack of current from said motor, and

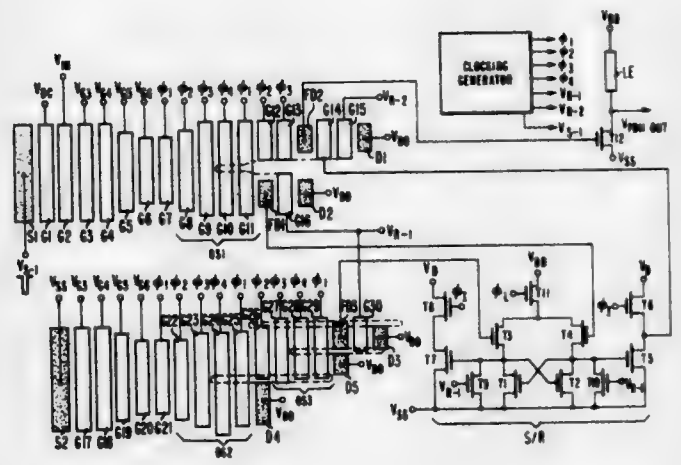
emergency control means responsive to either said reverse power signal or to said zero current signal for controlling transmission of said trigger signals to said inverter switching devices and for operating said power switching contacts into said emergency state.

4,508,975

PULSE DURATION MODULATOR USING CHARGE COUPLED DEVICES

Leonard R. Rockett, Jr., Washington, D.C., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,098
Int. Cl.³ H03K 9/02, 11/00
U.S. Cl. 307—261 **9 Claims**



1. In combination:

means recurrently sampling an analog input signal voltage for generating pulse-amplitude-modulated (PAM) charge packets;

means for storing each succeeding PAM charge packet until the next is generated;

means operative between generating successive PAM charge packets for removing at a time-invariant rate quanta of charge from said stored charge packet, each quantum equal to a standard decrement of charge so long as said stored charge packet is not depleted; and

means for box-car detecting each train of charge pulses generated by the successively removed charge quanta to obtain a respective duration-modulated pulse component of a pulse-duration-modulated (PDM) signal.

4,508,976

ADJUSTABLE FREQUENCY DRIVE

Mark R. Hickman, Westboro, Mass., and Michael M. Brown, Kingston, N.H., assignors to Vee Arc Corporation, Westboro, Mass.

Continuation-in-part of Ser. No. 359,037, Mar. 17, 1982,. This application Jan. 14, 1983, Ser. No. 457,880
Int. Cl.³ H03K 3/26, 23/22
U.S. Cl. 307—270 **14 Claims**

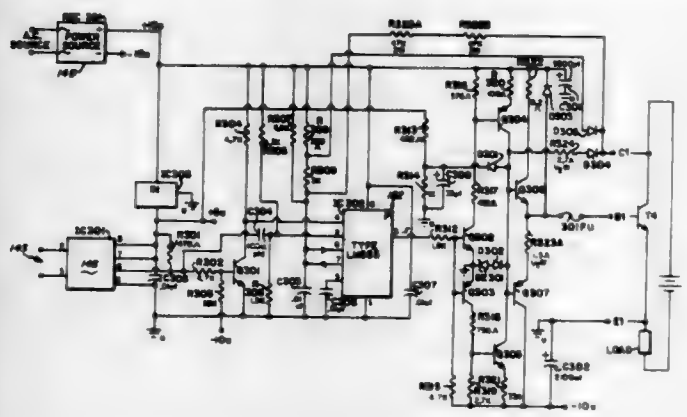
1. A circuit for driving a biased power transistor that is adapted to switch high voltages and that has an input electrode and a pair of output electrodes comprising emitter and collector electrodes, said circuit comprising;

input circuit means for receiving an input control signal for switching said power transistor,

control transistor means coupled from said input circuit means having drive and non-drive states and having its output coupled to the input electrode of said power transistor,

first means, responsive to the magnitude of the power transistor collector-to-emitter voltage exceeding a predetermined threshold, for decreasing drive current from the control transistor means to the power transistor,

second means, responsive to the magnitude of the power transistor base-to-emitter voltage exceeding a predetermined threshold under overload conditions, for decreasing drive current from the control transistor means to the power transistor,



third means, responsive to the magnitude of the power transistor collector-to-emitter voltage being below a predetermined reference level, for decreasing drive current to the power transistor for maintaining the power transistor in a non-saturated condition,

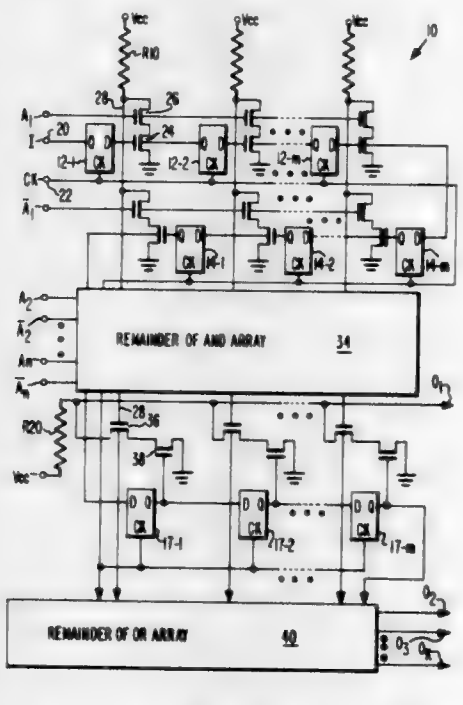
and fourth means, responsive to the magnitude of the power transistor collector-to-emitter voltage for decreasing the power transistor try-time under heavy overload or short circuit conditions.

4,508,977

RE-PROGRAMMABLE PLA

David W. Page, and LuVerne R. Peterson, both of San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 11, 1983, Ser. No. 457,175
Int. Cl.[3] H03K *19/177, 19/094, 23/24;* H04Q *3/00*
U.S. Cl. 307—468 13 Claims



1. In a programmable logic array having an AND array disposed for receiving n input signals, an OR array providing K output signals on k output lines and m term lines coupling said AND or OR arrays, wherein n, m, and k are integers greater than one, said array comprising:

a. AND array having n×m cells wherein each cell comprises:

(i) first and second transistor means coupled in series between one of said term lines and a reference potential, each of said transistor means having a control element;

(ii) a first data storage element having an output terminal coupled to the control element of said first transistor means;

(iii) one of said n input terminals being coupled to the control element of said second transistor means;

b. OR array having m×k cells wherein each cell comprises:

(i) third and fourth transistor means coupled in series between one of said output lines and a reference potential, each of said transistor means having a control element;

(ii) a second data storage element having an output terminal coupled to the control element of said third transistor means;

(iii) one of said m term lines being coupled to the control element of said fourth transistor means; and

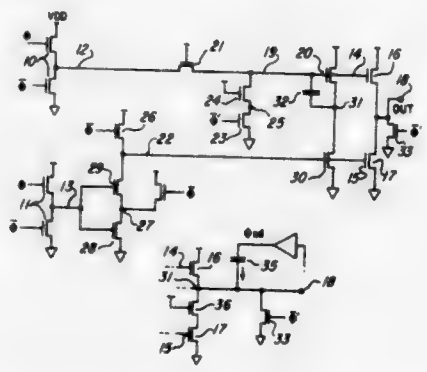
c. a means for biasing said term lines and said output lines, and an input terminal means for writing data into each of said first and second data storage elements.

4,508,978

REDUCTION OF GATE OXIDE BREAKDOWN FOR BOOTED NODES IN MOS INTEGRATED CIRCUITS

Chitranjan N. Reddy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1982, Ser. No. 419,117
Int. Cl.[3] H03K *17/08, 17/10, 17/687*
U.S. Cl. 307—482 9 Claims



1. A clock generator circuit for producing a high level clock voltage, comprising:

an output transistor, an input transistor, a decoupling transistor, and a pair of discharge transistors, each of such transistors having a source-drain path and a gate,

a clock voltage input connected to the gate of the input transistor, the source-drain path of the input transistor being connected between a supply voltage and an input node,

means connecting the source-drain path of the decoupling transistor in series between said input node and the gate of the output transistor, the gate of the decoupling transistor being coupled to said supply voltage,

the source-drain path of the output transistor being connected between said supply voltage and an output node,

first means for booting said gate of the output transistor to a voltage level higher then said supply voltage at a selected time after a delay, in response to said clock voltage input,

first means for discharging said gate of the output transistor comprising a series connection of the source-drain paths of said pair of discharge transistors connected between said gate of the output transistor and reference potential, the gate of the discharge transistor adjacent said reference potential having a discharge clock voltage thereon and the gate of the other discharge transistor having a said supply

voltage thereon, said discharge clock voltage occurring after said gate of the output transistor is booted,

second means for booting said output node to a voltage level higher than said supply voltage at a time after said selected time,

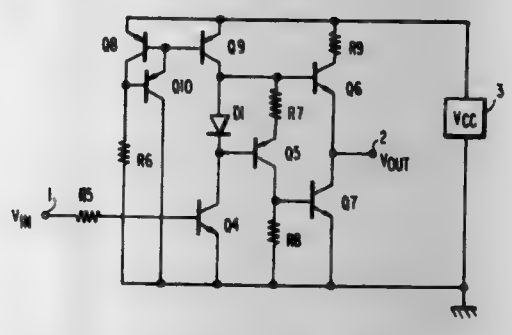
second means for discharging said output node, comprising a series connection of the source-drain paths of a pair of pull-down transistors, the gate of the pull-down transistor adjacent said output node being coupled to said supply voltage and the gate of the other of said pull-down transistors being coupled to turn said other pull-down transistor off at said selected time.

4,508,979

SINGLE-ENDED PUSH-PULL CIRCUIT HAVING A SMALL THROUGH-CURRENT

Hisashi Togari, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,335
Claims priority, application Japan, Apr. 1, 1981, 56-48775
Int. Cl.³ H03K *5/13, 3/01*
U.S. Cl. 307—513 **11 Claims**



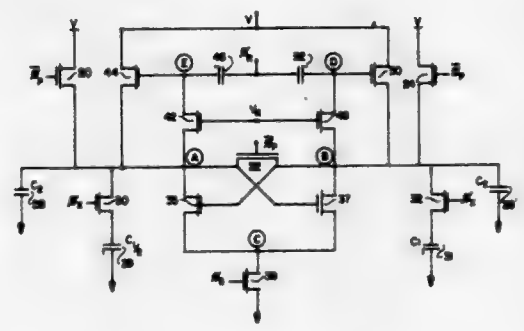
1. An electronic circuit comprising a signal input terminal for receiving an input signal; a first transistor having a control electrode and first and second electrodes; means for connecting said control electrode of said first transistor to said signal input terminal; said first transistor generating at its first electrode an output signal having a phase opposite that of said input signal; a second transistor having a control electrode and first and second electrodes; means for connecting said control electrode of said second transistor to said first electrode of said first transistor; resistor means coupled between said first electrode of said second transistor and a first circuit node; a diode coupled between said first electrode of said first transistor and said first circuit node for conducting current from said first circuit node to said first electrode of said first transistor; a third transistor having a control electrode and first and second electrodes, means for connecting said control electrode of said third transistor to said first circuit node; a fourth transistor having a control electrode and first and second electrodes; means for connecting said control electrode of said fourth transistor to said second electrode of said second transistor; means for connecting said second electrode of said third transistor and said first electrode of said fourth transistor, an output terminal coupled to the connection point between the second electrode of said third and the first electrode of said fourth transistor, source means, including a power voltage terminal, for applying a source potential across said first electrode of said third transistor and said second electrode of fourth transistor, and a supply means coupled between said first circuit node and said power voltage terminal for supplying current to said first circuit node.

4,508,980

SENSE AND REFRESH AMPLIFIER CIRCUIT

Deepraj S. Puar, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 740,963, Nov. 11, 1976, abandoned.
This application Feb. 1, 1984, Ser. No. 575,724
Int. Cl.³ H03K *5/24, 3/356;* G11C *7/06*
U.S. Cl. 307—530 **5 Claims**



1. In an amplifier circuit for sensing stored information, utilized with a voltage supply, the amplifier of the type that is capable of assuming first and second conditions in response to signals at first and second input nodes, the circuit comprising, first and second cross coupled active devices with respective input nodes, each device being capable of assuming a high and a low conduction state, restore circuitry means connected solely between said active device input nodes and the voltage supply for selectively connecting the supply solely to the device assuming a low conduction state, said restore circuitry connected to the cross coupled devices including third, fourth, fifth and sisth active devices having control, common and output elements and first and second coupling means, the third and fourth device common elements together connected to a first input node, the fifth and sixth device common elements together connected to a second input node, the output element of the third connected to the control element of the fourth and the output element of the fifth connected to the control element of the sixth, the output of the fourth and sixth devices connected to the voltage supply, the control element of the third and fifth connected to an additional voltage supply, the first coupling means connected for coupling control signals to the control element of the fourth device, and the second coupling means connected for coupling control signals to the control element of the sixth device, and means for alternately precharging said nodes to a predetermined state and applying stored information to the input nodes to cause the amplifier to assume first and second conditions in response to said stored information.

4,508,981

DRIVER CIRCUITRY FOR REDUCING ON-CHIP DELTA-I NOISE

Jack A. Dorler, Wappingers Falls; Joseph M. Mosley, Hopewell Junction, and Stephen D. Weitzel, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation

Filed Jun. 28, 1982, Ser. No. 392,982
Int. Cl.³ H03K *3/013, 19/003, 17/16*
U.S. Cl. 307—542 **8 Claims**

1. In an integrated circuit packaging structure, at least a first integrated circuit chip, said first integrated circuit chip being contained on said packaging structure and having off-chip driver circuit means, at least a second integrated circuit chip, said second integrated circuit chip being contained on said packaging structure and having chip receiver circuit means, said integrated circuit packaging structure including electrical connection means for connecting said off-chip driver circuit means of said first chip to said chip receiver circuit means of said second chip, said off-chip driver circuit means including noise suppression circuit means, said integrated circuit packaging structure being further characterized as follows:

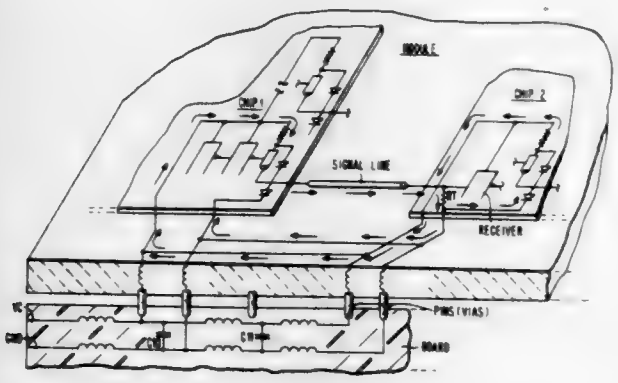
said off-chip driver circuit means of said first chip including an output transistor having a collector, base and emitter;

a first package inductance and a resistor serially connected between said collector of said output transistor and a first potential source;

said base of said output transistor being adapted to receive an input signal;

said electrical connection means of said integrated circuit packaging structure having at least a first signal line and a first reference potential line for providing electrical connection between said first and second chips;

said emitter of said output transistor of said off-chip driver circuit means of said first integrated circuit chip being connected via said first signal line of said electrical connection means to a first terminal of said receiver circuit means of said second integrated circuit chip;



said noise suppression circuit means comprising a serial two terminal non-linear impedance, a first terminal of said serial two terminal non-linear impedance being connected to said collector of said output transistor contained on said first chip; and

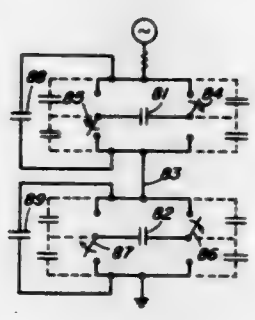
a second package inductance, said second package inductance being serially connected between a second potential source and via said first reference potential line of said electrical connection means to said second terminal of said serial two terminal non-linear impedance and a second terminal of said receiver circuit means contained on said second chip.

4,508,982

FLOATING NODE STABILIZING CIRCUIT FOR A SWITCHED-CAPACITOR CIRCUIT AND FILTER

Christopher W. Kapral, Pasadena, Calif., and Michael Cooperman, Framingham, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 29, 1982, Ser. No. 426,353
Int. Cl.³ H03K *17/16, 17/693*
U.S. Cl. 307—572 **4 Claims**



1. In a switched capacitor filter including two switching capacitors, one of said switching capacitors capable of having one plate thereof switched between a first voltage potential and a nodal point and to have a second plate thereof switched between said nodal point and said first voltage potential, and the other of said switching capacitors capable of having one plate thereof switched between said nodal point and a second voltage potential and to have a second plate thereof switched between said second voltage potential and said nodal point, the switching of said plates occurring synchronously whereby repetitive switching tends to cause an undesirable charge to accumulate at said nodal point, the improvement for preventing said undesirable charge from accumulating on said nodal point comprising

a first fixed capacitor coupled across said first voltage potential and said nodal point, and

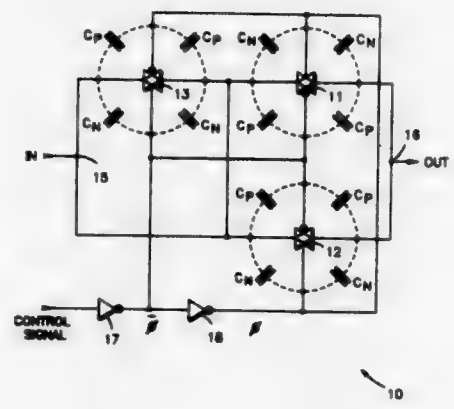
a second fixed capacitor coupled across said second voltage potential and said nodal point.

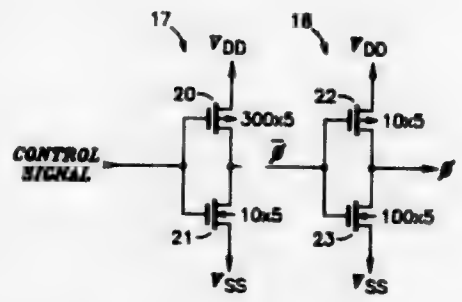
4,508,983

MOS ANALOG SWITCH DRIVEN BY COMPLEMENTARY, MINIMALLY SKEWED CLOCK SIGNALS

Robert N. Allgood; Joe W. Peterson, and Roger A. Whatley, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 10, 1983, Ser. No. 465,408
Int. Cl.³ H03K *17/16, 17/687, 19/096*
U.S. Cl. 307—577 **12 Claims**





1. An MOS analog switch, comprising:

first, second and third MOS transmission gates, each transmission gate having a transistor of first conductivity type utilizing a first current electrode as an input terminal, a second current electrode as an output terminal, and a control electrode, the input terminals of the first, second and third transmission gates connected together to form an input of said switch, the output terminals of the second and third transmission gates connected together to form an output of said switch, and the output terminal of said first transmission gate connected to both input terminals of said second and third transmission gates; and

clock means for providing a clock signal to the control electrodes of said second and third transmission gates, and for providing a complement clock signal to the control electrode of said first transmission gate, comprising:

first inverter means having an input for receiving a control signal, and an output for providing said complement clock signal; and second inverter means having an input coupled to the output of said first inverter means and an output for providing said clock signal, wherein:

said first and second inverter means have transistors with control electrode dimensions ratioed in a predetermined manner to minimize the delay between said clock signal and its complement.

4,508,984

VARIABLE RELUCTANCE ELECTRIC MOTOR FOR THE TRANSLATION OF CONTROL RODS IN A NUCLEAR REACTOR

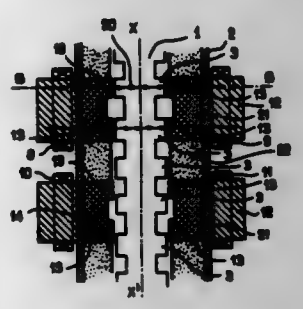
F. Guedj; J. Defaucheux, both of Jeumont, and A. Wiart, Sannois, all of France, assignors to Jeumont-Schneider Corporation, France

Filed Jul. 8, 1982, Ser. No. 396,489

Claims priority, application France, Jul. 8, 1981, 81 13448; Apr. 30, 1982, 82 07540; May 27, 1982, 82 09303

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—14 8 Claims



1. A variable-reluctance electric motor having a moving component arranged in a tight cylindrical casing, characterized by the fact that the moving component comprises a shaft of magnetic material provided with regularly spaced projections defining cavities therebetween, and by at least three multipolar stators arranged along the shaft consecutively in a direction of movement of said moving component, each stator comprising a core including a pair of core parts arranged diametrically opposite each other outside of said casing with magnetic tips extending the core parts inside the casing, said tips having cavities facing the shaft and defined by projections of the same width and spacing as those of the shaft, with the spacing between said stators being such that the projections of the shaft and those of the tips face one another for only one of the stators, and coils on the core parts oriented to produce magnetic flux along paths extending transversely to and through the shaft and casing between each pair of tips and not substantially along the length of the shaft, said stators having yoke means external thereto to close the magnetic flux paths between each pair of tips.

4,508,985

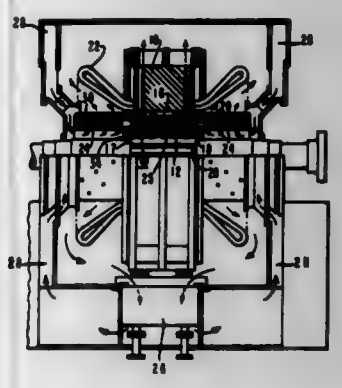
DYNAMOELECTRIC MACHINE WITH ROTOR VENTILATION SYSTEM INCLUDING AXIAL DUCT INLET FAIRING

Dennis Pavlik, Murrysville, and Richard A. Gronholm, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 16, 1983, Ser. No. 552,592

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—55 4 Claims



1. A dynamoelectric machine comprising:

a stator and a rotor centrally disposed on a shaft for rotation within said stator;

said rotor comprising an outer body portion having axially opposing end faces, said body portion having a plurality of axially extending coil slots in each of which is located an insulating slot cell adjacent the surface of said body portion, an axial ventilating channel at the bottom of each said slot, a plurality of coil turns, and a wedge closing the upper end of each said slot;

said coil turns extending axially out of said body portion beyond at least one of said end faces, said cell and said channel extending axially out of said body portion beyond said end face to an extent less than said coil turns;

a fairing of solid material disposed outward from said at least one of said end faces between said shaft and the extended portions of said coil turns, said fairing extending beyond the axial extent of said cell and said channel and less than the extent of said coil turns; and

said fairing fitting closely around the extended portion of said cell and, at the inlet to said channel, having a curved portion providing a smooth flow transition region through which coolant gas flows into said channel without encountering the protruding sharp edges of said channel and said cell that would disturb the flow and cause a higher pressure drop.

4,508,986

ELECTRIC MOTOR DRIVE FOR A SLOW-RUNNING ANNULAR ROTOR OF A PROCESSING MACHINE

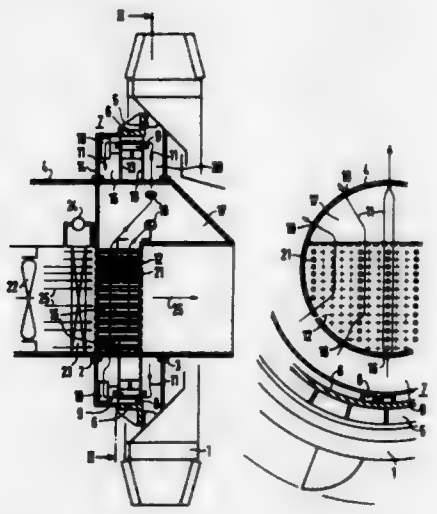
Detlef Vandamme, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 13, 1983, Ser. No. 560,943

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1982, 3247888

Int. Cl.³ E02F *3/29*

U.S. Cl. 310—67 R 6 Claims



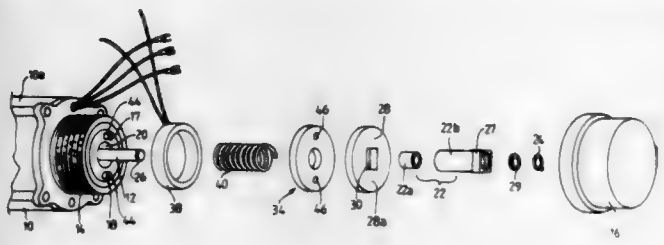
1. A drive for a slow-running annular rotor of a machine, the drive comprising a tubular body, two bearings spaced apart from each other axially along the tubular body for rotatably supporting the rotor on the tubular body, an electric motor for driving the rotor having a motor rotor disposed between the two bearings fastened to the annular rotor and a stator supported between the two bearings on the outside of the tubular body, the electric motor being of encapsulated design, a closed cooling loop including the electric motor and a heat exchanger through which a gaseous coolant is circulated to cool the electric motor, and means for conducting the coolant with forced circulation in the closed cooling loop, the heat exchanger being disposed in the interior of the tubular body.

4,508,987

HERMETIC COMPRESSOR INCLUDING A TERMINAL BLOCK AND THERMAL PROTECTION RETAINER MEANS

William T. Ladusaw, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 6, 1984, Ser. No. 597,683
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 C **4 Claims**



1. A hermetic compressor including a casing having a side wall, a lower wall, and an upper wall provided with an opening and a vertically extending stud member secured to said upper wall;

an electric terminal disposed in said opening;

conductor pins arranged in said terminal including end portions projecting outwardly from said casing;

a terminal receptacle block assembly having female terminals removably receiving said end portion of said conductor pins;

a thermal overload protector including a base wall located on said casing upper wall and having an upper wall with a central depression;

a retainer arrangement removably securing said terminal receptacle block relative to said electric terminal and said thermal overload protector relative to said casing upper wall comprising:

an arcuate resilient retainer means formed of stiffly flexible metal stock, the apex of said arcuate retainer means including an elongated central opening removably receiving said stud member, leg portions diverging downwardly and outwardly from said apex, a downward projection on the end portion of one of said leg portions removably engaging said depression on said upper wall of said thermal overload protector, a holding area on the end portion of the other of said leg portions removably engaging the upper end of said terminal receptacle block;

a post member threadably engaging said stud member including an enlargement which removably applies pressure on said apex of said retainer to cause its said end portions of said leg portions to forceably engage said terminal block and said thermal overload protector to removably secure said terminal receptacle block assembly relative to said conductor pins and removably securing said thermal overload protector relative to said compressor upper wall.

4,508,988

PERMANENT MAGNET MOTOR STATOR FOR D.C. MOTORS

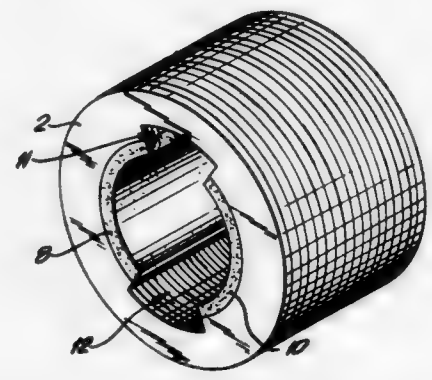
Leon G. Reiss, Dublin, and Roy D. Schultz, Radford, both of Va., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 451,857, Dec. 21, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,446
Int. Cl.³ H02K *21/26*
U.S. Cl. 310—154 **10 Claims**

1. In a permanent magnet commutator type D.C. servomotor of the type having a wound iron core armature, wherein the improvement comprises:

a permanent magnet stator core including an annular yoke having a central axial opening, and

a plurality of permanent magnet pole pieces within said opening and spaced equally from and about the axis of said yoke, each of said pole pieces including an arcuate permanent magnet and an arcuate member of magnetic material intermediate said permanent magnet and said yoke, the adjoining ends of said arcuate magnets and said arcuate members of magnet material forming a relieved interpole



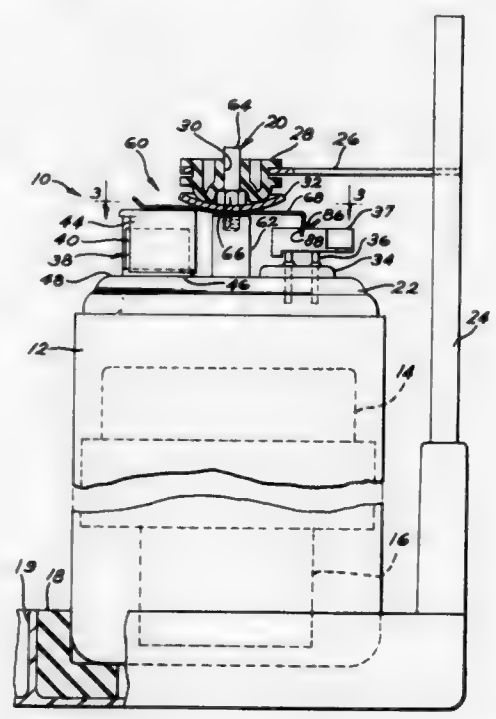
area; wherein the ratio of the combined radial thicknesses of said arcuate permanent magnet and said arcuate member of magnetic material to the combined radial thickness of said arcuate permanent magnet, said arcuate member of magnetic material and said annular yoke is $0.44 \pm 20\%$.

4,508,989

CORE ELEMENT FOR ELECTRODYNAMIC ROTARY MACHINE

Carleton E. Sawyer, Littleton, and Hugh C. Masterman, Westford, both of Mass., assignors to Display Components, Inc., Westford, Mass.

Filed May 19, 1983, Ser. No. 495,962
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—184 **23 Claims**



1. A ϕ-phase electrodynamic rotary machine of the type including a pair of magnetic core elements coaxially mounted and rotatable relative to one another about a common axis, at least one of said core elements including a plurality of slots "s" formed in at least one of said core elements and a plurality of coil windings respectively wound in said slots, said slots and coil windings being circumferentially spaced in a predetermined pattern around at least one of said core elements about said common axis so that as said elements rotate relative to one another at a substantially constant speed in response to a balanced sinusoidal excitation signal having ϕ phases, the particular energy distribution around at least one of said core elements is a substantially balanced sinusoidal field around at least one of said core elements, said field providing a peak value for each of

said ϕ phases, said peak values of said phases being equiangularly distributed around at least one of said core elements, and

wherein said coil windings are wound in said slots so that the number of turns of each of the coil windings associated with each phase are such that the (6c+3) harmonics of said energy distribution for that phase are reduced to substantially zero, wherein c=any interger including zero,

and wherein said predetermined pattern is such that

(1) slots in each 90° quadrant of at least one of said core elements defined by mutually perpendicular radial axes extending normal to said common axis, are nonuniformly angularly spaced within said quadrant and symmetrically arranged with corresponding slots in each adjacent 90° quadrant about the radial axis disposed therebetween so as to reduce the even harmonics in said field to substantially zero;

(2) each of said 90° quadrants is divided into 90°/ϕ segments; and

(3) the slots in each of said segments are symmetrically arranged with slots in each of the adjacent segments about a radially-directed line between adjacent segments so as to reduce at least the third and fifth harmonics of said balanced sinusoidal field to substantially zero.

4,508,990

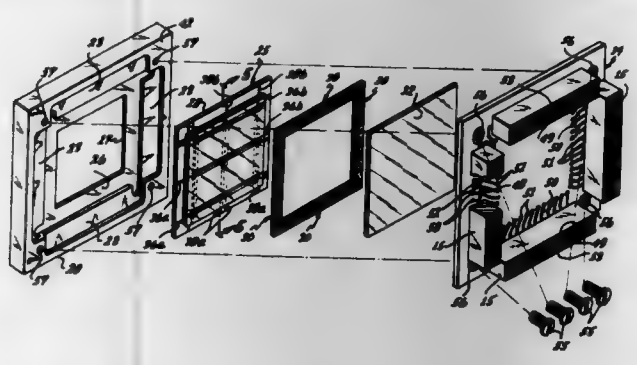
THIN-FILM EL PANEL MOUNTING UNIT

Walter F. Essinger, Thousand Oaks, Calif., assignor to Sigmatron Associates, Los Angeles, Calif.

Filed Sep. 17, 1982, Ser. No. 419,176

Int. Cl.³ H05B *33/04, 33/06;* H01J *5/50;* H01R *9/00*

U.S. Cl. 313—50 **11 Claims**



1. A display panel mounting unit comprising:

a thin-film EL display panel including a glass substrate with crossed-grid electrodes formed on the back surface thereof providing terminals having a fixed spacing on each marginal side thereof;

a frame support having a central opening and a recess on the back thereof surrounding said opening;

said panel positioned with its front edges seated in the recess of said frame support;

a printed circuit board having rows of inner and outer connecting holes and a row of routing holes on each side portion thereof, each said hole being plated-through;

each side portion of the front surface of said printed circuit board having a plurality of conductive paths with end portions having said fixed spacing, alternate ones of said conductive paths respectively connected to the inner connecting holes and the remaining ones of said conductive paths respectively connected to the routing holes;

each said side portion of the back surface of said printed circuit board provided with a plurality of conductive paths respectively connecting each routing hole to an outer connecting hole;

a plug connector positioned on each side portion of the back surface of said printed circuit board, each said plug connector having two rows of contacts with leads respectively connected to the rows of inner and outer connecting holes on said printed circuit board;

a strip of conductive elastomeric connector having closely spaced transverse conductive layers therein positioned to lie over the terminals on each marginal side of the back surface of said substrate; and

means for attaching said printed circuit board on the back of said frame support with the end portions of the conductive paths on each side portions of the front surface thereof positoned to lie over each said strip of conductive elastomeric connector.

4,508,991

HALOGEN CYCLE INCANDESCENT LAMP AND METHOD FOR THE PROTECTION OF ITS INNER SURFACE

Ewald Würster, Grünwald, and Albert Heidemann, Herbrechtingen, both of Fed. Rep. of Germany, assignors to Patent Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,866

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139294

Int. Cl.³ B05D *5/12;* H01K *1/32, 1/50*

U.S. Cl. 313—579 **23 Claims**

1. A halogen cycle incandescent lamp having a bulb comprising a potassium or sodium containing soft glass and an inert fill containing a halogen additive, the inner surface of said soft glass having been treated to remove the potassium or sodium ions therefrom so that during operation of the lamp, the sodium or potassium component of the soft glass will not be available to react with the halogen additive component of the fill gas.

4,508,992

MICROWAVE AMPLIFIER TUBE HAVING TWO RING RESONATORS

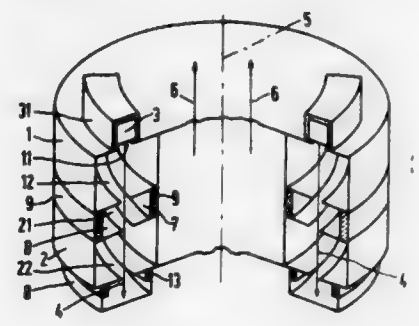
Heinz Bohlen, Hamburg, and Enzio Demmel, Quickborn, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,594

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126119

Int. Cl.³ H01J *23/18; 25/04*

U.S. Cl. 315—5.39 **11 Claims**



1. A microwave amplifier tube comprising:

(a) a ring-shaped cathode disposed about an axis for emitting electrons in a direction parallel to said axis;

(b) a ring-shaped input resonator for receiving a microwave input signal, said input resonator being disposed about the axis, being arranged relative to the cathode to enable emitted electrons to pass through the resonator, and having an annular output slot for enabling said emitted electrons to leave the resonator in a direction parallel to the axis,

said input signal effecting formation of the emitted electrons into a beam which leaves the resonator through the annular output slot and rotates around said axis;

(c) a ring-shaped output resonator for producing a microwave output signal, said output resonator being disposed about the axis and having an annular input slot axially-spaced from said annular output slot for enabling the

electron beam to enter the output resonator and effect production of said output signal; and

(d) collector means for collecting the electrons in the beam after the beam enters the output resonator.

4,508,993

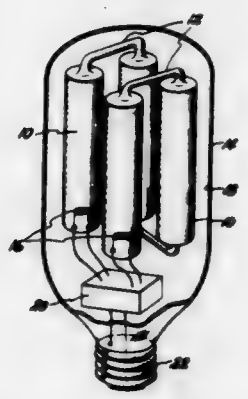
FLUORESCENT LAMP WITHOUT BALLAST

John M. Anderson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 324,925, Nov. 25, 1981, abandoned. This application Oct. 3, 1983, Ser. No. 538,694

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—59 **1 Claim**



1. A lamp operable without a ballast for regulating lamp current, comprising:

at least three evacuable, light-transmissive discharge tube sections have a relatively large diameter;

at least two evacuable capillary tube sections having a relatively small diameter, each capillary tube section joining an adjacent part of said relatively large diameter discharge tube sections and being in gaseous communication therewith;

an ionizable discharge medium disposed within said discharge tube sections and within said capillary tube sections;

a pair of electrodes disposed within distinct discharge tube sections at opposite ends of said lamp, said lamp having a positive volt-ampere characteristic across the lamp from electrode to electrode when there is an arc discharge through said discharge tube sections and said capillary tube sections;

starter means connected to said electrodes; and

an outer light-transmissive phosphor coated envelope enclosing said discharge tube sections, said capillary tube sections and said starter means, said outer envelope being configured with a screw-in base, and said discharge tube sections being substantially cylindrical and being arranged in a configuration in which the cylindrical axes are substantially parallel.

4,508,994

HEAT-SENSITIVE VARIABLE-RESISTANCE LIGHT SOCKET INSERT

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

Filed Mar. 30, 1983, Ser. No. 480,346

Int. Cl.³ H05B *37/00*

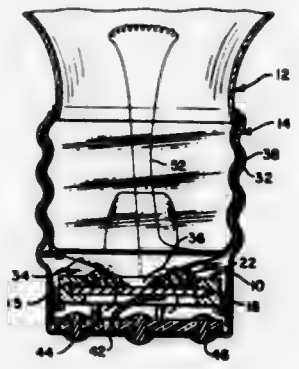
U.S. Cl. 315—200 R **21 Claims**

1. A heat-sensitive variable-resistance insert device for use with a light bulb and socket comprising:

a heat-sensitive variable-resistance wafer;

a perimetrical ceramic insulation member surrounding the edge of said wafer and electrically insulating it from the wall of the socket;

said wafer having a contact area on one side for engaging the central contact of the socket and on the other side for engaging the central contact of the light bulb; and



an adhesive paste on said other side of said wafer within said perimetrical member for adhering the device to the base of a light bulb.

4,508,995

METHOD OF ELIMINATING DISCOMFORTING FLICKERING WHEN VIEWING X-RAY FILM IN A LIGHT CABINET, AND A FLICKER-ELIMINATING UNIT FOR USE IN A LIGHT CABINET

Rickard Gajecki, Lidingö, Sweden, assignor to AO:s Metall & Mek. Verkstad AB, Stockholm, Sweden

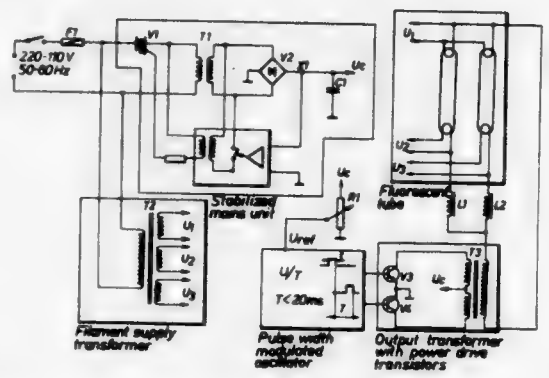
PCT No. PCT/SE81/00190, § 371 Date Mar. 10, 1982, § 102(e) Date Mar. 10, 1982, PCT Pub. No. WO82/00367, PCT Pub. Date Feb. 4, 1982

PCT Filed Jun. 26, 1981, Ser. No. 359,669

Claims priority, application Sweden, Jul. 18, 1980, 8005271

Int. Cl.³ H05B *37/02, 39/04, 41/36*

U.S. Cl. 315—209 R **6 Claims**



1. A method of eliminating discomforting flickering when viewing an under-exposed portion of X-ray film in a light cabinet having fluorescent tube means supplied with alternating current mains voltage of a given frequency via a filament transformer, and for regulating the light intensity, said method comprising the steps of:

stabilizing and rectifying the mains voltage to obtain a substantially smooth and non-pulsing d.c. voltage;

viewing said underexposed portion of said X-ray film; generating a nominal voltage having a predetermined frequency determined by:

seting a level of voltage utilizing said d.c. voltage to reduce flickering of said fluorescent tube means while viewing said X-ray film;

generating pulse-width signals wherein the pulse width and the magnitude thereof are determined by said level of voltage;

transforming said pulse-width signals into said nominal voltage such that said predetermined frequency corresponds to said pulse width of said pulse-width signals;

choking said nominal voltage having said predetermined frequency to impede the current in accordance with the current requirements for said fluorescent tube means,

applying the choked nominal voltage to said fluorescent tube means.

4,508,996

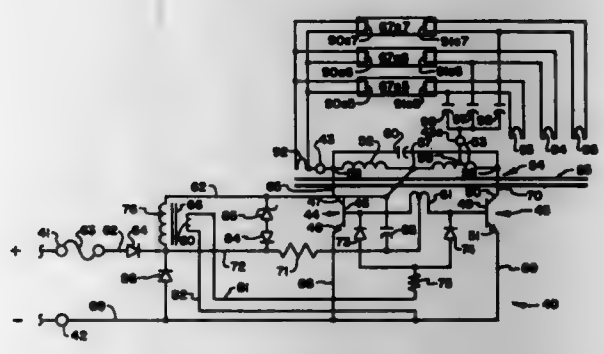
HIGH FREQUENCY SUPPLY SYSTEM FOR GAS DISCHARGE LAMPS AND ELECTRONIC BALLAST THEREFOR

John C. Clegg, and Ariel R. Davis, both of Provo, Utah, assignors to Brigham Young University, Provo, Utah

Continuation-in-part of Ser. No. 161,914, Jun. 23, 1980, abandoned. This application May 3, 1982, Ser. No. 373,994

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—224 **3 Claims**



1. An electrical system for supplying a high frequency AC voltage to gas discharge lamps, said system comprising:

(a) rectifier means for converting an AC voltage to a rectified DC voltage,

(b) inverter means having a pair of input terminals and a pair of output terminals, said inverter means coupled to the output of said rectifier means for converting said rectified DC voltage appearing across said pair of input terminals to a high frequency AC voltage across said pair of output terminals, said inverter means comprising:

(1) oscillator means comprising first and second switching transistors, each of said transistors having a base, collector and emitter, the emitters of said transistors connected to one of said pair of input terminals,

(2) tuned circuit means, said tuned circuit means comprising a transformer having first and second series-connected inductive windings respectively connected to the output terminals and connected with the collectors of said transistors, a feed back winding connecting the bases of said transistors,

(3) inductor means connected between the other one of said pair of input terminals and a junction point intermediate said first and second inductive windings for limiting the current in the collectors of said first and second transistors during the time period of simultaneous conduction of said transistors, and

(4) capacitor means coupled between said junction point and said feedback winding for increasing the switching of said first and second transistors by decreasing base current of the transistor that is turning off and increasing base current of the transistor that is turning on; and

(c) means coupling at least one gas discharge lamp to the pair of output terminals of said inverter means.

4,508,997

LIGHTING CONTROL SYSTEM

John P. Woodnutt, London, England, assignor to Delmatic Limited, London, England

Filed Apr. 15, 1983, Ser. No. 485,244

Claims priority, application United Kingdom, May 10, 1982, 8213499

Int. Cl.³ H05B *37/02*

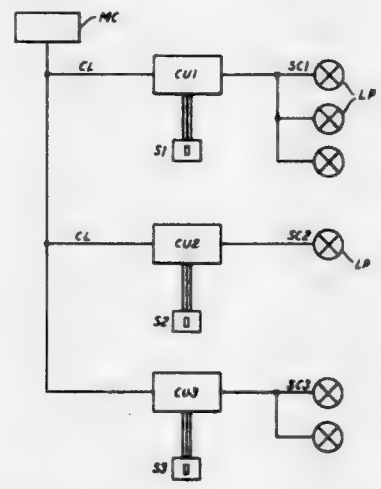
U.S. Cl. 315—360 **2 Claims**

1. A lighting system comprising

a plurality of lighting sub-circuits;

a master control;

local control units each arranged for operation in response to a signal from the master control to temporarily interrupt the lighting on one or more lighting sub-circuits associated with the respective local control unit during a delay



period, to provide a warning, and to switch off the lighting at the end of the delay period; and

a manually-operable switch associated with each local control unit, and actuable during the delay period to inhibit the switching off of said one or more lighting sub-circuits under the control of the respective local control unit.

4,508,998

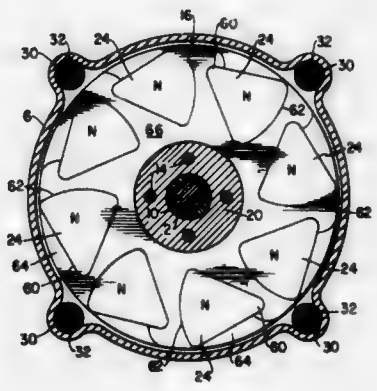
BRUSHLESS DISC-TYPE DC MOTOR OR GENERATOR

James H. Hahn, Fort Lauderdale, Fla., assignor to David H. Rush, Hollywood, Fla.

Filed Feb. 9, 1981, Ser. No. 232,810

Int. Cl.³ H02K *29/00*

U.S. Cl. 318—138 **26 Claims**



1. An electrical machine comprising

rotor and stator elements,

the rotor element being mounted for rotation about an axis,

one of said elements including a coil arrangement having a plurality of sets of coils,

each set being in a substantially circular arrangement coaxial with and in opposed relationship to said other element,

each coil of each set being angularly offset from a coil of another set,

all said coils being wound in a direction to produce similarly oriented magnetic fields extending between said elements upon having current flow through the coils,

the other of said elements including a permanent magnet arrangement having a plurality of poles facing said coils and having magnetic fields extending between said elements,

all of said poles which face in the same axial direction having the same magnetic orientation,

each of said poles being positioned to face each of said coils sequentially as said rotor element rotates,

said coils and magnets being relatively shaped to provide a gradually varying magnitude of magnetic interaction therebetween as said coils and magnets have relative motion therebetween, and

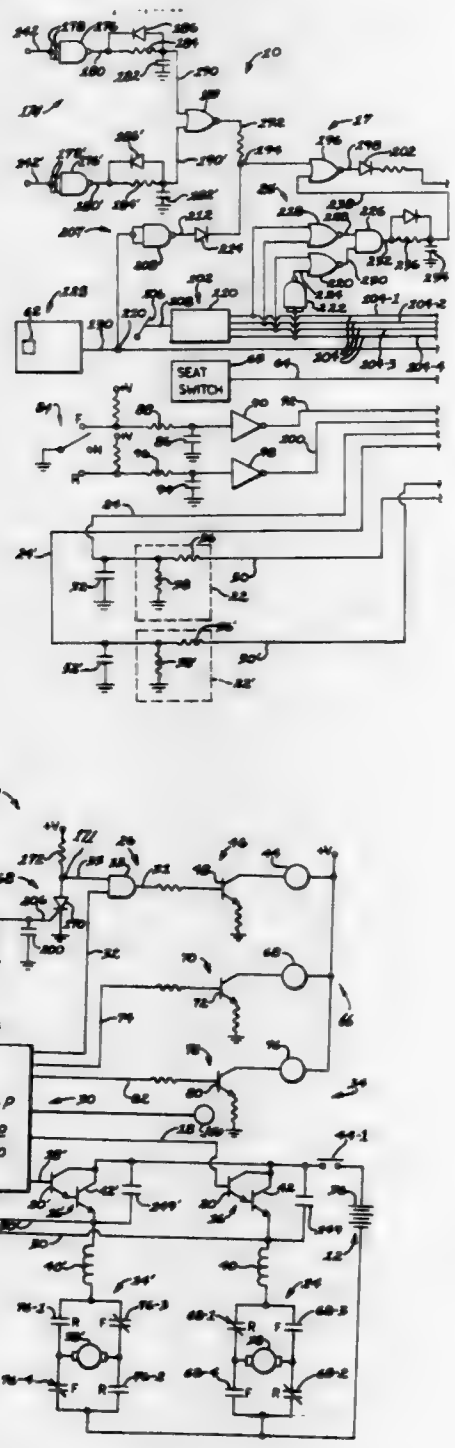
a switching arrangement for rendering said sets of coils alternately conductive.

4,508,999

SHORT CIRCUIT PROTECTION APPARATUS

Grant C. Melocik, Chardon, and William Pickering, University Heights, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 5, 1983, Ser. No. 455,723
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—331 **12 Claims**



1. In an apparatus **(10)** for controlling the speed of an electric motor **(14,14')** in response to receiving a command speed signal having a magnitude responsive to an accelerator pedal **(106)** position, said apparatus **(10)** including a power source **(12)**, a processing means **(30)** for producing a variable frequency and variable duty cycle pulse train, and controllable means **(16,16')** for connecting and disconnecting said motor **(14,14')** to and from said power source **(12)** in response to said pulse train, the improvement comprising:

converting means **(22,22')** for producing a first logic signal in response to a voltage being applied to said motor **(14,14')**;

said processing means **(30)** monitoring said first logic signal during only the low periods of said pulse train, producing a second logic signal in response to said first logic signal being greater than a preselected logically high level, and delivering said second signal;

safety means **(17)** for producing a third logic signal in response to the motor **(14,14')** and the power supply **(12)** being connected for a time greater than a preselected period and delivering said third signal;

switching means **(26)** connected to said processing means **(30)** and said safety means **(17)** for disconnecting said motor **(14,14')** from said power supply **(12)** in response to receiving one of said second and third logic signals independent of said controllable means **(16,16')**; and,

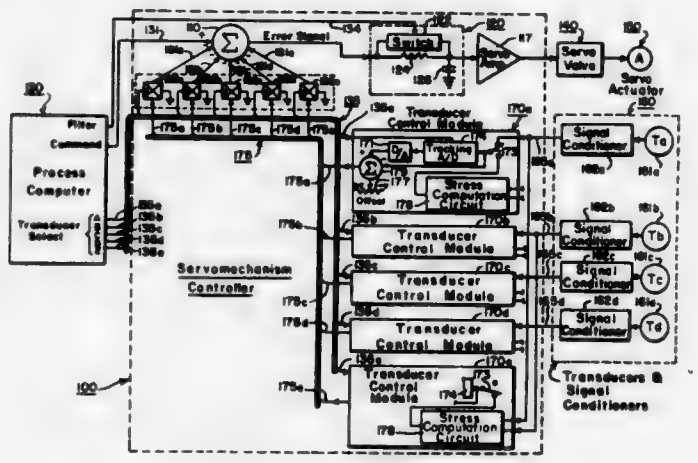
means **(216)** for disabling said safety means **(17)** in response to receiving a maximum command speed signal.

4,509,000

BUMPLESS FEEDBACK SWITCHING APPARATUS FOR USE IN A SERVO SYSTEM

Hugo S. Ferguson, Averill Park, N.Y., assignor to Duffers Scientific, Inc., Troy, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,800
Int. Cl.³ G05B *7/00*
U.S. Cl. 318—591 **8 Claims**



1. In a servo-mechanism, which is capable of bumplessly switching between at least two feedback transducers, said servo-mechanism being of a type comprised of a summer which produces an error signal which is substantially equal to the difference between a command signal and any one of at least two fed-back output signals, at least two transducers each of which produces a corresponding feedback signal, and at least two circuits each operative in response to a corresponding one of said feedback signals for providing a corresponding one of said fed-back output signals, each of said circuits comprising:

means operative in response to said corresponding feedback signal and to a corresponding one of a plurality of select signals for producing a tracking signal which has a value that either tracks the value of said corresponding feedback signal or remains constant, and

means for subtractively combining said tracking signal with said corresponding feedback signal to produce said corresponding fed-back output signal, and

said servo-mechanism being further comprised of means for generating said plurality of select signals in accordance with the particular transducers being switched.

4,509,001

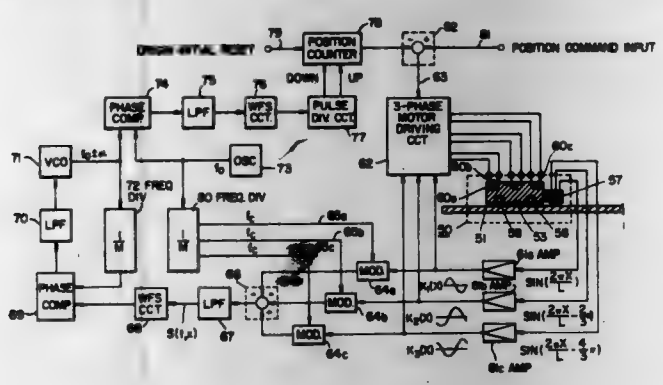
BRUSHLESS LINEAR SERVOMOTOR

Noriaki Wakabayashi; Terumichi Fukumoto, both of Hirakata, and Nobuhiro Ueda, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 4, 1983, Ser. No. 472,123

Int. Cl.³ G05B *11/00*

U.S. Cl. 318—687 **5 Claims**



1. A brushless linear servomotor comprising:

a first member provided at the surface thereof with magnetic teeth comprising a large number of teeth-like salients and slots arranged lengthwise of said first member at regular pitches, said magnetic teeth being formed on a flat plane of said surface;

a second member movable along said first member and lengthwise thereof and relative thereto and having at least one magnetic cores, said second member comprising magnetic teeth groups engraved on said magnetic cores at the surfaces thereof opposite to said first member, a plurality of coils wound around said magnetic cores, and a guide means which keeps a constant gap between said magnetic cores and said first member to allow said second member to move smoothly relative to said first member;

a plurality of non-contact detectors which are connected to said second member, and which detect said salients and slots of said magnetic teeth of said first member and convert the detected results into electric signals so as to thereby output position signals of sine wave form which are different from each other;

an electronic commutator means for energizing said plurality of coils in the order according to said position signals;

an electronic scale means which electronically measures the position of said second member relative to said first member by demodulating phase information from a carrier wave signal modulated by said position signals; and

a motor driving circuit which extracts a difference between the output of said electric scale means and the input of position command and provides a current to said plurality of coils according to the magnitude of said difference so as to thereby allow said second member to move relative to said first member.

4,509,002

PRECISION X-Y POSITIONER

Ralph L. Hollis, Jr., Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1983, Ser. No. 563,334

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—687 **6 Claims**

1. A precision positioner characterized by

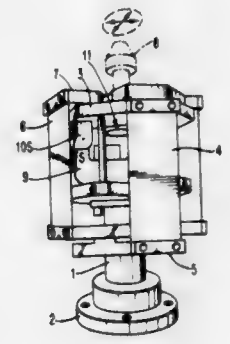
(a) stator means establishing a reference plane having a reference point;

(b) armature means having a reference point, said armature means and said stator means together acting as motor means;

(c) armature support means comprising a basket of two sets of flexure springs suspending said armature from said stator via an intervening spring carrier, establishing said armature in space with freedom of motion in X and Y dimensions about the reference point in an armature plane parallel and close to the reference plane;

(d) armature position sensing means, mounted on said armature means and said stator means at their respective reference points, for sensing the position of said armature;

(e) control computer means;



(f) feedback means connecting said armature position sensing means to said control computer means; and

(g) motor control servo means connecting said control computer means and said motor means operatively so as to provide repositioning power to said armature.

4,509,003

VECTOR CONTROL METHOD AND SYSTEM FOR AN INDUCTION MOTOR

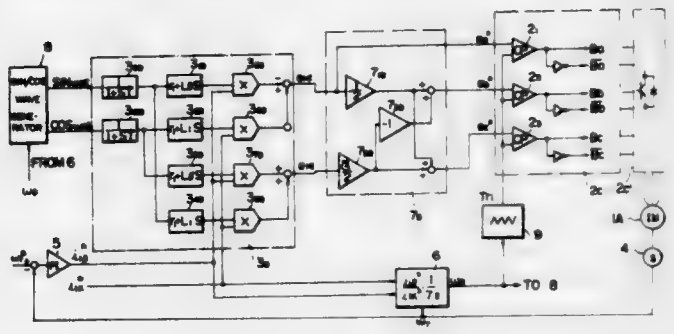
Kouhei Ohnishi, Kodaira; Tadashi Ashikaga, Tokyo, and Masayuki Terashima, Sakura, all of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Filed Mar. 1, 1984, Ser. No. 585,598

Claims priority, application Japan, Mar. 10, 1983, 58-39433; Mar. 10, 1983, 58-39434

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—800 **16 Claims**



1. An induction motor decoupled vector control system, which comprises:

(a) speed sensing means for detecting a rotor angular frequency w_r of an induction motor;

(b) proportional integrating means for generating a primary reference current $i_{1\beta}$ corresponding to a secondary reference driving current on the basis of a difference between a reference rotor angular frequency w_r and a detected rotor angular frequency w_r in order to obtain a reference torque;

(c) supply voltage angular frequency calculating means for calculating a primary supply voltage angular frequency w_0 on the basis of the primary reference current $i_{1\beta}$, a primary reference current $i_{1\alpha}$ corresponding to a secondary magnetic flux, a detected rotor angular frequency w_r, and a ratio τ_2 of a secondary inductance L_2 to a secondary resistance r_2;

(d) SIN/COS signal generating means for generating a sine wave signal with an angular frequency w_0 and a cosine wave signal with an angular frequency w_0, independently;

(e) first calculating means for calculating fixed d-q coordinate primary voltages e_{1d} and e_{1q} on the basis of the pri-

mary reference currents $i_{1\alpha}$ and $i_{1\beta}$ and the sine and cosine wave signals in accordance with following expressions:

$$e_{1d} = (r_1 + L_1S)\cos w_0t \cdot i^*_{1\alpha} - (r_1 + L_\sigma S)\sin w_0t \cdot i^*_{1\beta}$$

$$e_{1q} = (r_1 + L_1S)\sin w_0t \cdot i^*_{1\alpha} + (r_1 + L_\sigma S)\cos w_0t \cdot i^*_{1\beta}$$

where r_1 denotes a primary resistance; L_1 denotes a primary inductance; L_σ denotes an equivalent leakage inductance $(L_1L_2 - M^2)/L_2$ M: mutual inductance; S denotes a Laplace operator: and

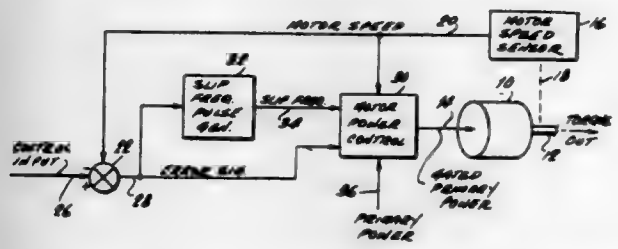
(f) power amplifying means for driving the induction motor on the basis of the calculated primary reference voltages e_{1d}, e_{1q}.

4,509,004

APPARATUS FOR VARIABLE SPEED DRIVE OF AN INDUCTION MOTOR FROM A FIXED FREQUENCY AC SOURCE

Francis H. Shepard, Jr., 16 Lee Lane Countryside, Summit, N.J. 07901

Filed Jul. 6, 1982, Ser. No. 395,331
Int. Cl.[3] H02P 5/34
U.S. Cl. 318—801 13 Claims



1. A motor control for driving an induction motor of the type having at least first, second and third Y-connected armature windings with ungrounded common from an AC power source having first, second and third phases comprising:

an array of silicon-controlled rectifiers;

means for sensing a time at which a voltage in one of said first, second and third phases reaches a predetermined maximum;

gating means for gating said one phase through said array to a predetermined one of said first, second and third windings at said time;

said gating means being further operative at said time for gating another of said first, second and third phases having a maximum voltage of polarity opposite said predetermined maximum through said array to another predetermined one of said first, second and third windings whereby silicon-controlled rectifiers controlling both positive and negative current flow are simultaneously gated on to provide said current flow through two of said windings in series;

said gating means including means for selecting said predetermined one and said another predetermined one of said first, second and third windings in a sequence effective to produce a rotating magnetic field in said induction motor rotating at a speed related at least to a speed of said motor;

means for controlling a value of said predetermined maximum whereby a torque of said motor is controlled; and

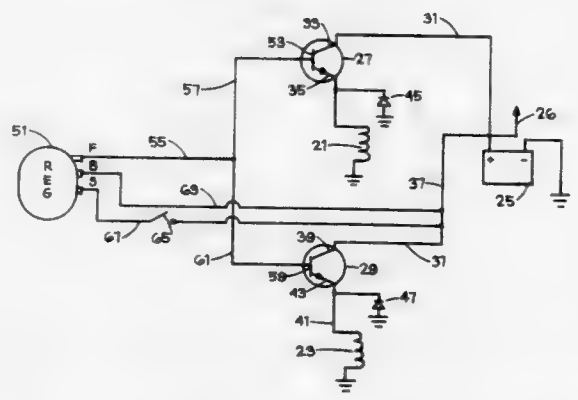
said gating means including means for simultaneously pulsing gates of said silicon-controlled rectifiers at a frequency which is substantially higher than three times the frequency of any one of said first, second and third phases, said frequency being effective to simultaneously trigger said silicon-controlled rectifiers into conduction with minimum delay so that both positive and negative current flow are simultaneously begun.

4,509,005

DUAL ALTERNATOR SYSTEM

Lebern W. Stroud, 321 Charleston Pl., Hurst, Tex. 76053

Filed Jul. 15, 1982, Ser. No. 398,557
Int. Cl.[3] H02J 7/00
U.S. Cl. 320—68 9 Claims



1. A dual alternator system in a motor vehicle, comprising:

a regulator having first and second terminals,

first and second transistors,

first and second alternators having first and second rotors respectively,

a battery,

means for connecting said first terminal of said regulator to the bases of said first and second transistors,

means for connecting said second terminal of said regulator to the plus terminal of said battery,

means for connecting the collectors of said first and second transistors to the plus terminal of said battery,

means for connecting the emitter of said first transistor to said first rotor for supplying current to said first rotor from said battery by way of said first transistor, and

means for connecting the emitter of said second transistor to said second rotor for supplying current to said second rotor from said battery by way of said second transistor,

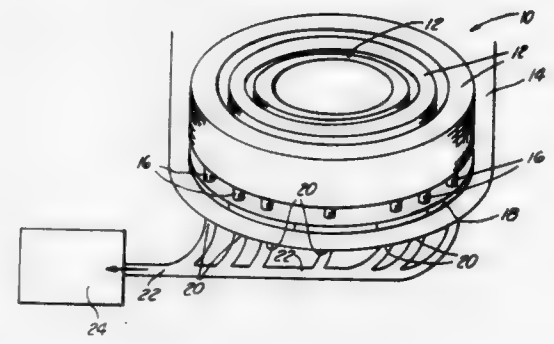
said regulator sensing the voltage output of said battery by way of said second terminal and controlling said two transistors by way of said first terminal.

4,509,006

MULTIPLE ANNULUS ENERGY STORAGE SYSTEM

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 26, 1984, Ser. No. 593,259
Int. Cl.[3] H02K 7/02
U.S. Cl. 322—4 4 Claims



1. A multiple annulus energy storage system for generating and storing electrical power, the system comprising:

a stationary housing;

a plurality of rotating annuli, the annuli disposed inside each other and received inside the housing;

electrical poles connected to each of the annuli;

field coils mounted in the housing and disposed adjacent the electrical poles; and

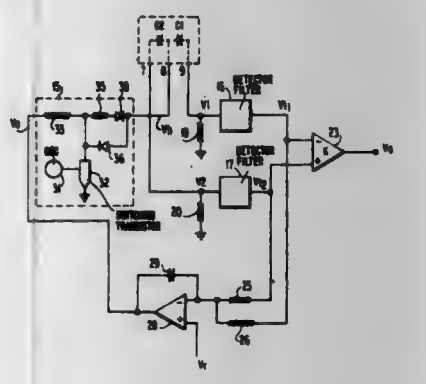
a power system controller connected to the field coils for receiving electrical energy therefrom and reversing the polarity of the system and exciting the coils for rotating the annuli during start up.

4,509,007

DIFFERENTIAL SENSOR MEASURING APPARATUS AND METHOD INCLUDING SENSOR COMPENSATOR CIRCUITRY

Rudolf H. Barsotti, and Arthur W. Grove, both of Tucson, Ariz., assignors to IBM Corporation, Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,726
Int. Cl.³ G01R *11/52, 27/26*
U.S. Cl. 324—60 C **8 Claims**



1. In a measuring system wherein first and second differential voltages V_1, V_2 are produced from a sensor for indicating the value of a sensed condition, apparatus for compensating changes in the response of said sensors comprising:

means for summing said first and second differential voltages to provide a composite correction signal of V_1+V_2;

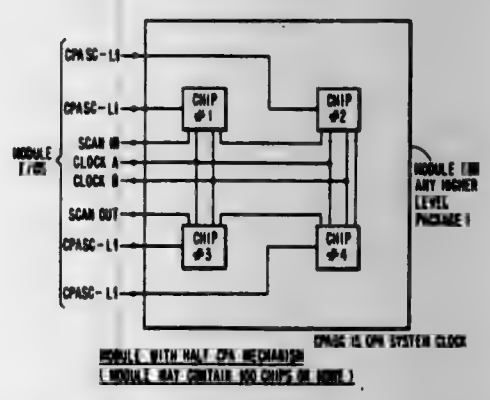
means for multiplying each of said differential voltages by the reciprocal of V_1+V_2 whereby first and second weighted voltages are produced.

4,509,008

METHOD OF CONCURRENTLY TESTING EACH OF A PLURALITY OF INTERCONNECTED INTEGRATED CIRCUIT CHIPS

Sumit DasGupta, Wappingers Falls; Matthew C. Graf, Highland; Robert A. Rasmussen, LaGrangeville, all of N.Y., and Thomas W. Williams, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 370,214, Apr. 20, 1982,. This application Apr. 10, 1984, Ser. No. 598,638
Int. Cl.³ G01R *31/28*
U.S. Cl. 324—73 R **1 Claim**



1. A method for concurrently electrically testing each integrated circuit chip in a high density electronic packaging structure containing at least first, second, third and fourth integrated circuit chips, said packaging structure comprising,

an array of package contacts, said array of package contacts including a CPA-SCL1 package contact, a CPA-SCL2* package contact, an A-clock package contact, a B-clock package contact, a scan-in package contact and a scan-out package contact,

at least first, second third and fourth integrated circuit chips, each of said integrated circuit chips including a CPA-SCL1 chip contact, a CPA-SCL2* chip contact, an A-clock contact, a B-clock chip contact, a scan-in chip contact, and a scan-out chip contact,

each of said integrated circuits including logic circuit means having at least first and second inputs and at least first and second outputs, at least first and second receiver circuits, each of said receiver circuits having an input and an output, at least first and second off-chip driver circuits, each of driver circuits having an input and an output,

each of said integrated circuit chips having scan circuit means, said scan circuit means having an input connected to said scan-in chip contact and an output connected to said scan-out chip contact, said scan circuit means of each of said integrated circuit chips comprising a plurality of serially connected shift register latch circuits, at least first and second ones of said plurality of shift register latch circuits, each having an L1 latch and an L2* latch, said remaining ones of said shift register latch circuits of said plurality of shift register latch circuits each having an L1 latch and an L2 latch said A-clock chip contact being connected to said scan circuit means, said B-clock chip contact being connected to said scan circuit means,

said scan circuit means of each of said integrated circuit chips having a first L1 latch and a second L1 latch, said first and second L1 latches each having an input, an output and a clock input, said first L1 latch having its input connected to said first output of said logic circuit means, said first L1 latch having its output connected to said input of said first off-chip driver circuit, said first L1 latch having its clock input connected to said CPA-SCL1 chip contact, said second L1 latch having its input connected to said second output of said logic circuit means, said second L1 latch circuit having its output connected to said input of said second off chip driver circuit, and said second L1 latch having its clock input connected to said CPA-SCL1 chip contact,

said scan circuit means of each of said integrated circuit chips having said first L2* latch and said second L2* latch, each of said first and second L2* latches having an input, an output and a C* clock input, said input of said first L2* latch circuit being connected to said output of said first receiver circuit, said output of said first L2* latch circuit being connected to said first input of said logic circuit means, said input of said second L2* latch circuit being connected to said output of said first receiver circuit, said output of said second L2* latch circuit being connected to said second input of said logic circuits, said C* clock input of said first L2* latch circuit and said C* clock input of said second L2* latch circuit being connected in common to said CPA-SCL2* chip contact,

packaging wiring means for interconnecting said array of package contacts and said array of chip contacts of each said at least first, second, third and fourth integrated circuit chips, said package wiring means including means for connecting said package scan in contact to said chip scan-in contact of said first integrated circuit chip, said chip scan-out contact of said first chip to said chip scan-in contact of said second chip, said chip scan-out contact of said second chip to said chip scan-in contact of said third chip, said chip scan-out contact of said third chip to said chip scan-in contact of said fourth chip, said chip scan-out contact of said fourth chip to said package scan-out contact, said A-clock package contact in common to said A-clock chip contact of each of said integrated circuit chips, said B-clock package contact in common to said B-clock chip contact of each of said integrated circuit chips, said CPA-SCL1 package contact in common to said CPA-SCL1 chip contact of each of said integrated circuit chips, and said CPA-SCL2* package contact to said CPA-SCL2* chip contact of each of said integrated circuit

chips, said method concurrently determining the electrical integrity of each one of said first, second, third and fourth integrated circuit chips and including in the order recited the following steps:

(a) impress a first known binary pattern on said scan-in package contact;

(b) apply a pulse train of A-clock pulses and a pulse train of B-clock pulses via said A-clock package contact and said B-clock package contact for a predetermined period of time to shift said first known binary pattern, via said scan-in package contact, into said scan circuit means of said first, second, third and fourth integrated circuit chips;

(c) apply a CPA-SCL2* pulse to said CPA-SCL2* package contact;

(d) apply a pulse train of A-clock pulses and a pulse train of B-clock pulses via said A-clock package contact and said B-clock package contact for a predetermined period of time to shift a resultant binary pattern out of said scan circuit means of said first, second, third and fourth integrated circuit chips via said scan-out package contact: and,

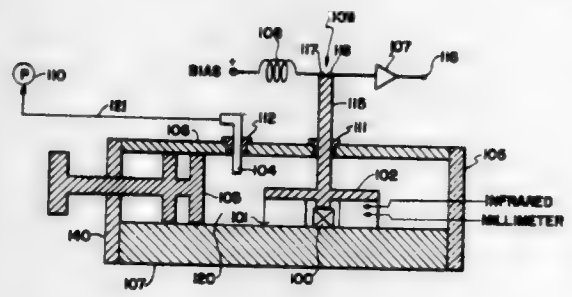
(e) compare the resultant binary pattern appearing at said scan-out package contact with a second known binary pattern to concurrently determine the electrical integrity of each one of said first, second, third and fourth integrated circuit chips.

4,509,009

SINGLE DEVICE FOR MEASUREMENT OF INFRARED OR MILLIMETER WAVE RADIATION

Harold Jacobs, West Long Branch; Samuel Dixon, Jr., Neptune, and Edmund E. Malecki, Rumson, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1983, Ser. No. 496,165
Int. Cl.³ G01R *23/04*
U.S. Cl. 324—95 **9 Claims**



1. An infrared and millimeter wave radiation detection device comprising:

a biased negative resistance device, self-oscillating within a microwave cavity; one end of said cavity adjacent the device comprising an optical window;

means surrounding said negative resistance device, said means for surrounding being of a semiconductor material;

means for probing the level of power subsistent within said cavity and means for establishing that said power level has experienced a drop;

means connected to said negative resistance device for outputting the signals being generated by said negative resistance device; and means for detecting output signals of said device whose frequency is intermediate between that of a measured wave, and that of the self-oscillating frequency of the said negative resistance device;

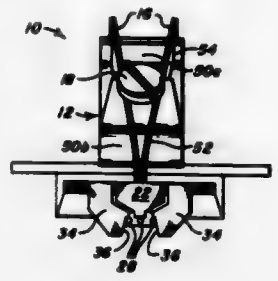
whereby a drop in power represents detection of infrared wave radiation and presence of an intermediate frequency signal represents detection of millimeter wave radiation.

4,509,010

LEAD COMBING APPARATUS FOR RADIAL LEAD ELECTRONIC DEVICES

Nicholas J. Cedrone, 10 Hawthorne Rd., Wellesley Hills, Mass. 02181

Filed Dec. 27, 1982, Ser. No. 452,885
Int. Cl.³ G01R *31/00*
U.S. Cl. 324—158 P **4 Claims**



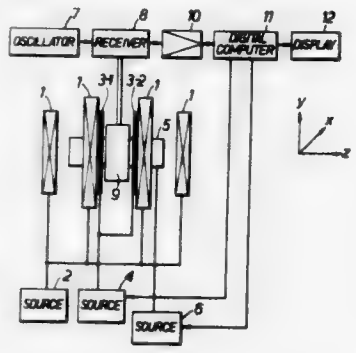
1. In a contactor assembly for making an electrical connection to a radial lead electronic device having a body and at least a center and two outer leads projecting from said body in the same general direction, said contactor assembly having a body, at least a center and two outer contacts secured to said body and extending from said body in generally the same direction and terminating in end portions structured to make electrical connection with said radial leads, said outer contacts having means for steering said outer leads into a known alignment with respect to said contacts, and said center contact being accurately positioned with respect to and positioned to make said electrical connection with said center lead when said device is thus steered, said contactor assembly being driven repeatedly through a closed-loop path of motion that incudes a testing path portion where said contacts are lowered onto said leads and drawn along said leads as an electrical test is performed, wherein the improvement comprises means for combing said radial leads and maintaining a separation between them during said testing, said combing and separation means including at least one blade means formed of a resilient insulating material and associated with each said center contact, means for mounting said blade means to interpose itself between two adjacent ones of said leads during said testing path portion, and means for precisely locating said blade means with respect to said associated center contact to insure that said blade means locates the spacings between said leads as said contactor assembly is lowered and drawn along said leads.

4,509,011

NUCLEAR MAGNETIC RESONANCE DIAGNOSTIC APPARATUS

Hiroshi Sugimoto, Tochigi, and Kozo Satoh, Yokohama, both of Japan, assignors to Tokyo Shubaura Denki Kabushiki Kaisha, Japan

Filed Apr. 30, 1982, Ser. No. 373,627
Claims priority, application Japan, Apr. 30, 1981, 56-65914
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **8 Claims**



1. Nuclear magnetic resonance diagnostic apparatus for

measuring the nuclear magnetic resonance of a specified atomic nucleus in an object, the apparatus comprising:

a magnet apparatus for generating an uniform static magnetic field;

a first coil apparatus for generating a gradient magnetic field;

selective detecting means for detecting the free induction decay signals as to the specified atomic nuclei in a slice portion of the object perpendicular to the direction of said static magnetic field after applying exciting signals to the object positioned in said combined magnetic field;

a current control apparatus for controlling the value of current flowing in said first coil apparatus to shift the selected portion in the direction of said static magnetic field;

a second coil apparatus for generating a gradient magnetic field in the direction in the plane of said selected portion;

means for obtaining the one-directional projection data as to the specified atomic nuclei distribution in said selected portion by processing the free induction decay signals detected by said selective detecting means;

image synthesizing means for producing the extensive one-directional projection image of the specified atomic nuclei distribution in the object by placing a plurality of one-directional projection data corresponding to the different selective planes, obtained by said producing means, in order in the direction of said static magnetic field; and

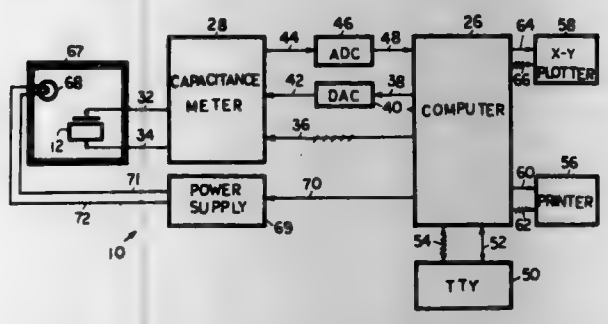
a display for depicting the one-directional projection image produced by said image synthesizing means.

4,509,012

METHOD FOR DETERMINING THE CHARACTERISTIC BEHAVIOR OF A METAL-INSULATOR-SEMICONDUCTOR DEVICE IN A DEEP DEPLETION MODE

Shi-Tron Lin, 10746 Francis Pl., Apt. 139, Los Angeles, Calif. 90034

Filed Dec. 30, 1982, Ser. No. 454,690
Int. Cl.³ G01R *31/26, 27/26*
U.S. Cl. 324—158 D **28 Claims**



1. A method for determining the characteristic behavior of a metal-insulator-semiconductor device in a deep depletion mode, comprising the steps of:

applying a first initial gate voltage to set first initial conditions;

applying a first voltage sweep with the device in the deep depletion mode during at least a portion of the sweep;

determining capacitance-voltage characteristics of the device for a part of the first voltage sweep while the device is in the deep depletion mode;

applying a second initial gate voltage to set second initial conditions;

applying a second voltage sweep with the device in the deep depletion mode during at least a portion of the sweep;

determining capacitance-voltage characteristics of the device for a part of the second voltage sweep while the device is in the deep depletion mode;

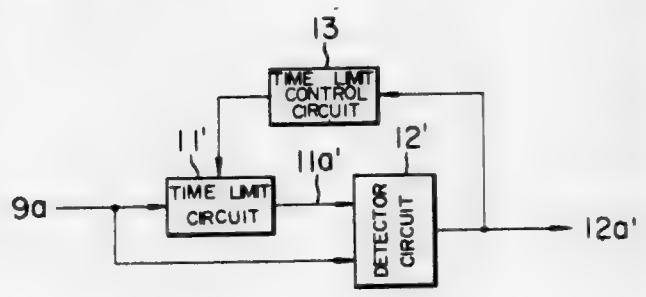
determining minority carrier generation parameters of the device in the deep depletion mode based on the capacitance-voltage characteristics determined for the first and second voltage sweeps.

4,509,013

SPEED DETECTING DEVICE

Isao Sasao, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,675
Claims priority, application Japan, Mar. 3, 1982, 57-33262
Int. Cl.³ G01P *3/42, 3/56*
U.S. Cl. 324—161 **9 Claims**



1. For comparing the speed of an object relative to an automatically variable threshold value on the basis of a pulse generated each time said object moves a unit distance, a speed threshold value crossing device comprising:

a time limit circuit means for providing an output signal active for a predetermined period of time in response to said generated pulses, so that said predetermined period of time is the time limit of the time limit circuit means;

a detector circuit means supplied with the output signal of said time limit circuit means and said generated pulses, for detecting, upon receiving consecutive pulses which caused the output of said time limit circuit means to be active, whether or not the time limit of said time limit circuit means is over, and thereupon generating a detection signal indicating whether or not said object has reached a preset speed threshold value corresponding to the time limit; and

a time limit control circuit means, receiving the detection signal from said detector circuit means, for automatically varying the threshold value from the preset value by lengthening the time limit of said time limit circuit means upon receiving said detection signal indicating that the object speed has reached the preset speed threshold value.

4,509,014

NUCLEAR MAGNETIC RESONANCE GYROSCOPE

Francis A. Karwacki, Harleysville, and Joseph Griffin, Churchville, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

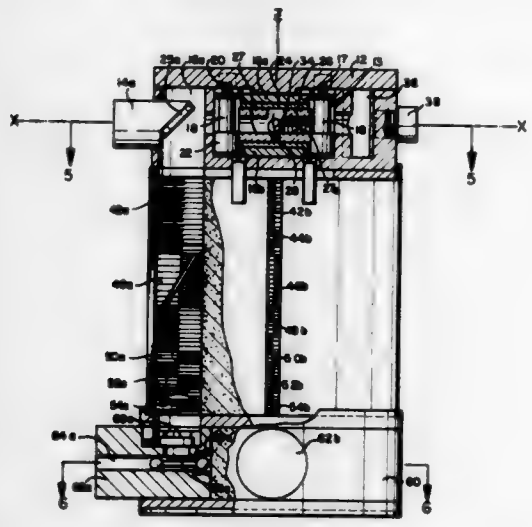
Filed Nov. 23, 1982, Ser. No. 444,001
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—305 **4 Claims**

3. Apparatus for generating a uniform magnetic field comprising, in combination:

a pair of spaced coaxial circular plates of magnetic material, each plate having a raised circular and planar surface parallel to and confronting the raised surface of the other plate forming a uniformly thicker portion about the center;

a plurality of parallel magnetic coils connected at their ends between said plates and symmetrically spaced about the thinner portion of said plates for generating a magnetic field in the space between said surfaces; and

a plurality of magnetic rods inserted in one end of respective ones of said coils, the insertion length being adjustable for



varying the flux density in the space between said surfaces to obtain a uniform magnetic field.

4,509,015

NUCLEAR MAGNETIC RESONANCE METHODS

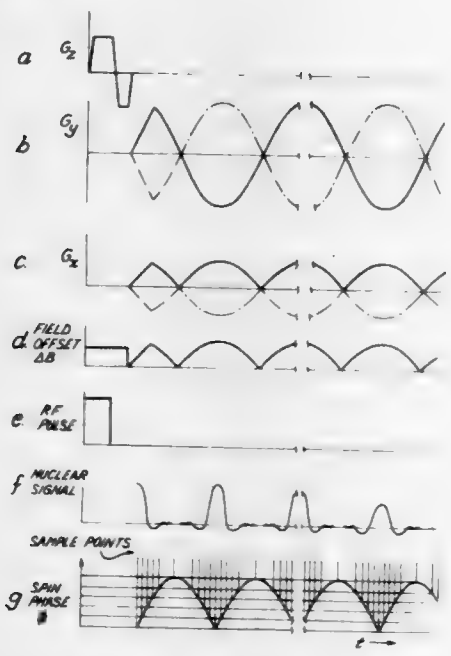
Roger J. Ordidge, 36 Brampton Dr., Stapleford, Nottingham, Nottinghamshire, and Peter Mansfield, 15 Devonshire Ave., Beeston, Nottingham, Nottinghamshire, both of England

Filed Sep. 16, 1982, Ser. No. 418,641

Claims priority, application United Kingdom, Sep. 21, 1981, 8128524

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **19 Claims**



1. A method of investigating a body by nuclear magnetic resonance comprising: preferentially exciting nuclear magnetic resonance in a slice of the body; applying for a first period a magnetic field to said body with first and second gradients in first and second directions respectively in said slice, and the first gradient subjected to a modulation such that the sense of said first gradient is periodically reversed; re-exciting said slice and re-applying said magnetic field for a second period but with the first gradient periodically reversed in sense with opposite phase to that obtaining during said first period; detecting the resultant free induction decay signals occurring during each said period of application of said magnetic field; editing the detecting signals to obtain a set of signals comprising those signals occurring when said first gradient has one sense; and processing said set of signals to retrieve data.

4,509,016

SIGNAL DETECTING CIRCUIT

Kaichi Yamamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

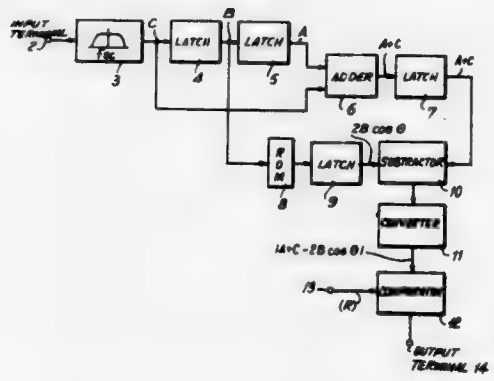
Continuation of Ser. No. 315,451, Oct. 27, 1981, abandoned.

This application Feb. 21, 1984, Ser. No. 581,204

Claims priority, application Japan, Oct. 29, 1980, 55-151956

Int. Cl.³ H03D *3/00*; H03K *5/22, 5/00*; H03N *9/62*

U.S. Cl. 328—138 **11 Claims**



1. A signal detecting circuit for detecting in an input signal the presence of a generally sinusoidal signal of a predetermined frequency f_p, comprising

input means for receiving said input signal;

sampling means for sampling said input signal and providing first, second, and third signal samples respectively representing the amplitude of said input signal at a first time, at a second time following said first time by a predetermined period $1/f_s$, and at a third time following said second time by said predetermined period $1/f_s$;

summing means for calculating the sum of said first and third signal samples and providing a sum signal whose value represents said sum;

calculating means for calculating 2B cos θ, where B is the amplitude of said second sampled signal and θ equals $2\pi f_p(1/f_s)$, and providing a calculated signal having a value representing 2B cos θ;

judging means for judging whether the value of said sum signal is substantially equal to the value of said calculated signal, and providing an output signal when said values are substantially equal.

4,509,017

METHOD AND APPARATUS FOR PULSE ANGLE MODULATION

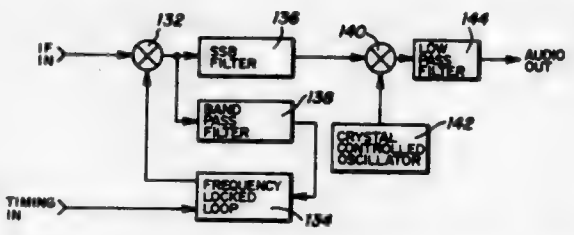
Carl F. Andren, Indiatlantic; William H. Mosley, Jr., St. Petersburg, and David E. Sanders, Kenneth City, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Division of Ser. No. 306,507, Sep. 28, 1981, Pat. No. 4,485,358.

This application Feb. 15, 1984, Ser. No. 580,426

Int. Cl.³ H03D *3/00*; H04L *27/22*

U.S. Cl. 329—105 **8 Claims**



1. A method for demodulating a pulse angle modulated carrier signal having a plurality of discrete phase angles during each of a plurality of signal sampling periods, comprising the steps of:

mixing the carrier signal with a local oscillator signal to frequency translate the carrier signal to baseband;

averaging the phase angles of the baseband signal during each signal sampling period to produce a resultant signal

having an amplitude and a phase representing the vector sum of the phase angles; and

detecting the resultant signal to produce a demodulated output signal.

4,509,018

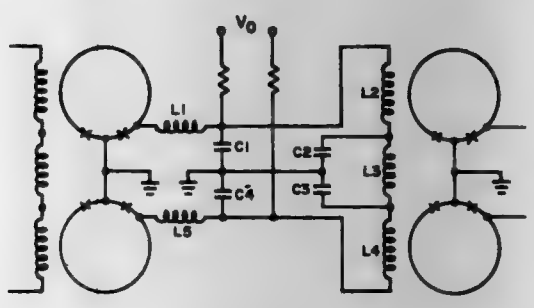
ASYMMETRIC SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE IN A LINEAR AMPLIFIER CIRCUIT

Meir Gershenson, St. Paul, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,987

Int. Cl.[3] H03F *19/00*

U.S. Cl. 330—61 R 9 Claims



1. A linear amplifier comprising:

a first superconducting quantum interference device with non-hysteretic Josephson Junctions asymmetrically interconnected for the application of direct current bias thereto; and

a second superconducting quantum interference device also with non-hysteretic Josephson Junctions asymmetrically interconnected for the application of said direct current bias thereto at an opposite asymmetry to said interconnected first superconducting quantum interference device connected to said first superconducting quantum interference device;

wherein said asymmetrically interconnected first superconducting quantum interference device which is connected to said asymmetrically second superconducting quantum interference device of opposite asymmetry combinatorially results in a combined voltage output response which is of equal deviation about zero voltage output with input applied magnetic flux.

4,509,019

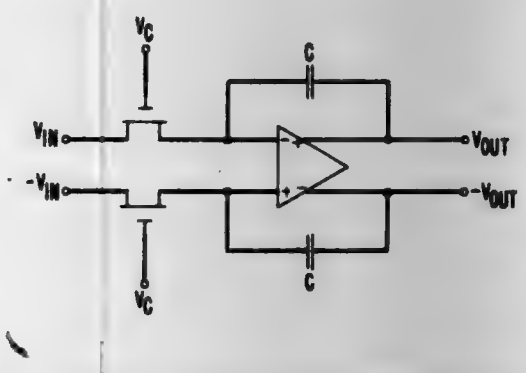
TUNABLE ACTIVE FILTER

Mihai Banu, Woodside, and Yannis Tsividis, New York, both of N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 27, 1983, Ser. No. 461,532

Int. Cl.[3] H03F *3/04*

U.S. Cl. 330—107 7 Claims



1. A filter comprising a balanced amplifier having an inverting input and a noninverting input, and an inverted output and a noninverted output, wherein a pair of first and second input paths are connected to said inverting input and said noninverting input, respectively, and wherein a pair of first and second feedback paths are connected between said noninverted output and said inverting input, and between said inverted output and said noninverting input, respectively, and wherein at least one of said pair of paths comprises an electronically controlled resistance in the form of a field effect transistor in each of said first and second paths therein, and wherein at least the other of said pair of paths comprises a reactive element in each of said first and second paths therein.

4,509,020

PUSH-PULL AMPLIFIER

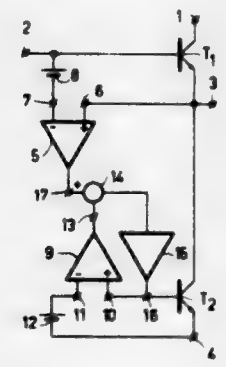
Rudy J. van de Plassche, Sunnyvale, Calif., and Eise C. Dijkmans, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1983, Ser. No. 529,892

Claims priority, application Netherlands, Sep. 22, 1982, 8203667

Int. Cl.[3] H03F *3/26*

U.S. Cl. 330—274 8 Claims



1. A push-pull amplifier comprising a first and a second output transistor of the same conductivity type, whose collector-emitter paths are arranged in series between two power-supply terminals, the base of the first transistor being coupled to an input terminal, the emitter of one transistor and the collector of the other transistor being coupled to an output terminal, which amplifier further comprises means for maintaining the sum of the base-emitter voltages of the first and the second transistors substantially constant, characterized in that the maintaining means comprises a first measuring circuit arranged between the base and the emitter of the first transistor, which first measuring circuit comprises a first voltage-current converter, a second measuring circuit arranged between the base and the emitter of the second transistor, which second measuring circuit comprises a second voltage-current converter, a combining circuit for combining the output currents of the first and the second voltage-current converters, and a control amplifier coupled to an output of said combining circuit, said control amplifier driving the second transistor in such a way that the sum of the base-emitter voltages of the first and the second transistors remains substantially constant.

4,509,021

CIRCUIT FOR AMPLIFYING AND/OR ATTENUATING A SIGNAL

Albertus J. P. M. van Uden, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,032

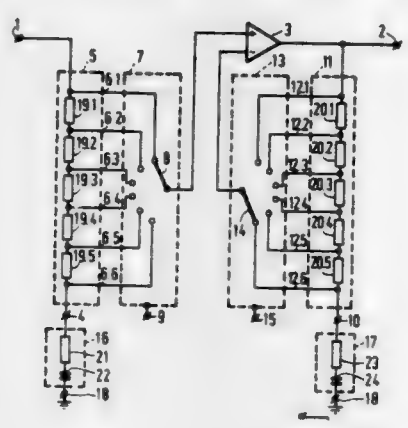
Claims priority, application Netherlands, Apr. 1, 1982, 8201376

Int. Cl.[3] H03G *3/12*

U.S. Cl. 330—282 5 Claims

1. A circuit for amplifying and/or attenuating a signal, including an input terminal for receiving an input signal, an output terminal for supplying an output signal, and an amplifier stage, which amplifier stage includes an inverting input, a non-inverting input, an output and a controllable negative-feedback loop from the output to the inverting input thereof, the circuit further including a first voltage divider having n

taps (n≧2) arranged between the input terminal and a first connection terminal, a first controllable switching unit for selectively coupling said n taps to the non-inverting input of said amplifier stage, a second voltage divider having m taps (m≧2) arranged between the output terminal and a second connection terminal, and a second controllable switching unit for selectively coupling said m taps to the inverting input of said amplifier stage, said second voltage divider and said second controllable switching unit comprising said negative-feedback loop, the output of said amplifier stage being coupled to the output terminal, and the first and second connection terminals being coupled to a point of constant potential, characterized in that said first and second voltage dividers each comprises a series arrangement of a plurality of resistors, the ends of the series arrangement and the junction points of the resistors each constituting a tap, and the end of the series arrangement corresponding to the first voltage divider are coupled to the input terminal of the circuit and to the first connection terminal, respectively, and the ends of the series arrangement corresponding to the second voltage divider are coupled to the output of the amplifier stage and to the second connection terminal, respectively, and said circuit further comprises impedances connected between said connection terminals and said point of constant potential, respectively, wherein said impedances each comprises at least a capacitance arranged between the first connection terminal and the second connection terminal, respectively, and the point of constant potential.



4,509,022

AMPLIFIER CIRCUIT WITH AUTOMATIC GAIN CONTROL AND HEARING AID EQUIPPED WITH SUCH A CIRCUIT

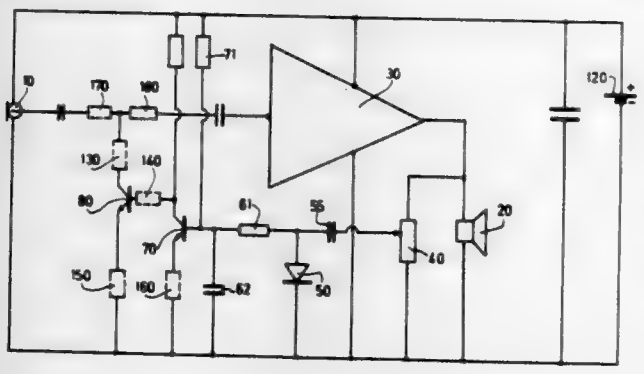
Philippe Ridel, Bois d'Ennebourg, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,745

Claims priority, application France, Mar. 1, 1982, 82 03347

Int. Cl.³ H03G *3/20*

U.S. Cl. 330—284 **15 Claims**



1. An amplifier circuit with automatic gain control comprising, in cascade, an input transducer, an amplifier, and an output transducer, and an automatic gain control circuit comprising a variable resistor for taking off an alternating voltage the amplitude of which varies with a signal from the input transducer, a rectifier and an RC-filter responsive to said alternating voltage, and means connecting an output of the filter to a base of a first transistor having a collector that directly drives a base of a second transistor connected to an input of the amplifier such that it attenuates an input signal of said amplifier to a greater extent as the signal across the variable resistor increases, and wherein said first and second transistors are of the same conductivity type whereby an increase in conduction of the first transistor produces a decrease in conduction of the second transistor.

4,509,023

OSCILLATOR WITH A TEMPERATURE COMPENSATED OSCILLATING COIL

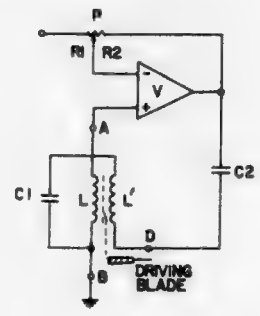
Peter Heimlicher, Freiburg, Switzerland, assignor to Contrinex S.A., Matran, Switzerland and Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany, a part interest

Filed Jun. 30, 1982, Ser. No. 393,629

Claims priority, application Switzerland, Jul. 17, 1981, 4702/81

Int. Cl.³ H03L *1/02*

U.S. Cl. 331—176 **8 Claims**



8. A proximity switch comprising:

an oscillator including an oscillating circuit having an oscillating coil with a temperature dependent resistance, said oscillating circuit having a resonant frequency and a negative resistance connected across said oscillating circuit;

a constant alternating current source for supplying said oscillating circuit with current at said resonant frequency, said constant alternating current producing in the temperature dependent resistance of said oscillating coil a temperature dependent voltage drop effective to compensate for any temperature variation in the amplitude of a voltage across said oscillating circuit;

said proximity switch being responsive to a driving blade for driving said proximity switch according to a switching distance between said driving blade and said oscillating coil, said switching distance determining a switching on and off of said oscillator, and said temperature variation compensation of the voltage across the oscillating circuit providing an increased effective switching distance.

4,509,024

IMPEDANCE BOND

H. James Wilson, LaGrange, Ky., assignor to Safetran Systems Corporation, Louisville, Ky.

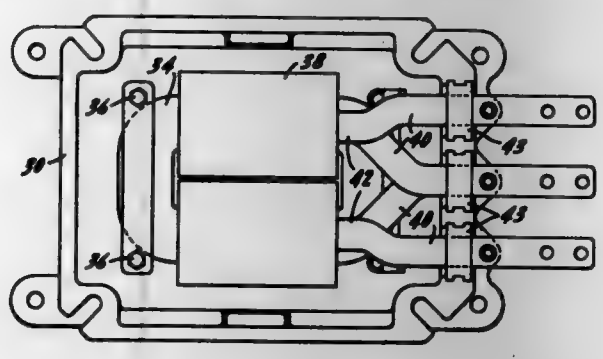
Filed Jan. 26, 1983, Ser. No. 461,105

Int. Cl.³ H03H *7/01, 7/09*

U.S. Cl. 333—24 R **4 Claims**

1. An impedance bond for use in an electrified railway to provide a path for traction current including a housing, a core within said housing, said core being formed of a band of silicon steel wound into a closed loop construction which is severed to form a cap and a U-shaped body to permit coil placement thereon, a pair of coils positioned each upon a leg of the U-shaped core, each of said coils being substantially identical in

electrical resistance and each being formed of a flat copper sheet, identical in length, and wound into coils identical in



configuration, and terminal straps attached to said coils and extending outwardly from said housing.

4,509,025

POLARIZED ELECTROMAGNETIC RELAY

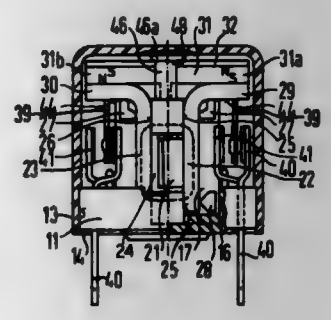
Rolf-Dieter Kimpel, Unterschweinbach; Ulf Rauterberg, and Horst Tamm, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,235

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132244

Int. Cl.³ H01H *51/22*

U.S. Cl. 335—85 **16 Claims**



1. A polarized electromagnetic relay comprising:

a hollow coil body having a coil wound thereabout having a longitudinal coil axis;

a bar-shaped armature having a mounted end in a pivotable bearing means disposed at one end of said coil body, said armature extending through said coil body substantially along said coil axis and terminating in a free end at an opposite end of said coil body;

a quadripole permanent magnet arrangement having first and second pole pairs with opposite polarization directions perpendicular to said coil axis;

two yokes disposed in a single plane parallel to said permanent magnet arrangement, one of said yokes being magnetically coupled to a pole of said first pole pair and the other of said yokes being magnetically coupled to an opposite pole of said second pole pair;

two pole plates respectively connected to said yokes and extending perpendicular to said coil axis for effecting movement of said free end of said armature, and

a flux plate for coupling the remaining opposite poles of said first and second pole pairs to each other and to the mounted end of said armature; said flux plate having a flat segment overlapping

and spaced from said yokes and said permanent magnet arrangement being disposed in the volume defined between the flat segment and said yokes longitudinally parallel to said coil axis, and said flux plate, said yokes, and said permanent magnet arrangement therebetween disposed longitudinally overlying said coil.

4,509,026

POLARIZED ELECTROMAGNETIC RELAY

Hidetoshi Matsushita, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan and SDS, Elektro GmbH, Munich, Fed. Rep. of Germany

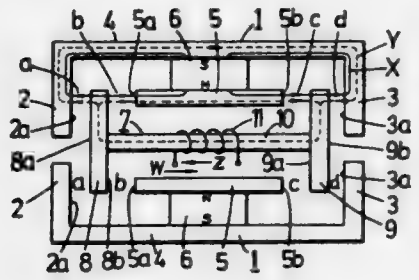
PCT No. PCT/JP82/00147, § 371 Date Dec. 29, 1982, § 102(e) Date Dec. 29, 1982, PCT Pub. No. WO82/03944, PCT Pub. Date Nov. 11, 1982

PCT Filed Apr. 30, 1982, Ser. No. 459,873

Claims priority, application Japan, Apr. 30, 1981, 56-65601; Apr. 30, 1981, 56-65602

Int. Cl.³ H01H *51/22*

U.S. Cl. 335—85 **7 Claims**



7. A polarized electromagnetic relay comprising:

a U-shaped first yoke comprising right and left lateral pieces interconnected by a longitudinal piece, said lateral pieces including mutually facing inner surfaces which define contacting pole surfaces,

a second yoke shorter than the distance between said right and left lateral pieces of said first yoke and disposed generally parallel to said longitudinal piece of said first yoke, said second yoke including right and left outer lateral surfaces which define contacting pole surfaces,

a first permanent magnet disposed between said second yoke and said longitudinal piece of said first yoke and having a magnetization axis directed generally parallel to planes defined by said lateral and longitudinal pieces of said first yoke,

a U-shaped third yoke comprising right and left lateral pieces interconnected by a longitudinal piece, said lateral pieces of said third yoke including mutually facing inner surfaces which define contacting pole surfaces,

said right and left lateral pieces of said third yoke extending toward said plane defined by said longitudinal piece of said first yoke, and said right and left lateral pieces of said first yoke extending toward a plane defined by said longitudinal piece of said third yoke,

a fourth yoke shorter than the distance between said right and left lateral pieces of said third yoke and disposed generally parallel to said longitudinal piece of said third yoke, said fourth yoke including right and left outer lateral surfaces which define contacting pole surfaces,

a second permanent magnet disposed between said fourth yoke and said longitudinal piece of said third yoke and having a magnetization axis directed generally parallel to planes defined by said lateral and longitudinal pieces of said first yoke,

an armature positioned between said second and fourth yokes and including right and left lateral pieces interconnected by a longitudinal piece, said longitudinal piece of said armature being disposed between and parallel to said second and fourth yokes, said lateral pieces of said armature each forming inner and outer contact surfaces,

said armature being longitudinally reciprocable along a longitudinal axis of said longitudinal piece of said armature such that when said armature is at either end of its reciprocable stroke:

said inner contact surface of one of said lateral pieces of said armature engages adjacent contacting pole surfaces of said second and fourth yokes, and

said outer contact surface of the other of said lateral pieces

of said armature engages adjacent contacting pole surfaces of said first and third yokes, and

a coil disposed around said longitudinal piece of said armature,

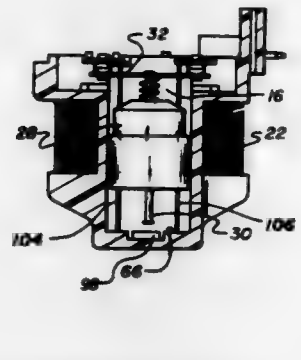
the contacting pole surfaces at one pair of adjacent ends of said second and fourth yokes are larger than the contacting pole surfaces at the other pair of adjacent ends of said second and fourth yokes.

4,509,027

CURRENT OPERATED MINIATURE RELAY

William C. Otto, Indianapolis, Ind., and Norman E. Daugherty, Elizabethtown, Ky., assignors to E.M.B. Corporation, Elizabethtown, Ky.

Filed Sep. 23, 1982, Ser. No. 421,867
Int. Cl.³ H01H *9/30*
U.S. Cl. 335—201 **6 Claims**



1. A gravity/spring assisted electrical current operated relay comprising:

(a) a relay body and a cavity therein,

(b) a magnetic coil carried by said body,

(c) an electrical contact and armature assembly slideably carried in said cavity, and

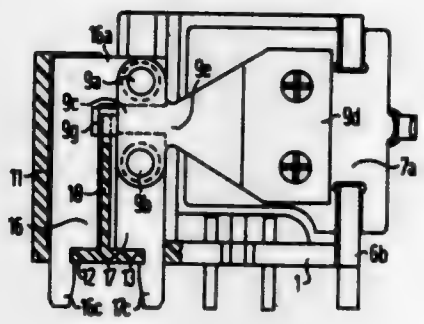
(d) anti-tracking means disposed in said cavity preventing electrically conductive paths from arc tracking over electrically insulating surfaces of said cavity including slots provided in said electrically insulating surfaces and projections extending from said electrically insulating surfaces.

4,509,028

ELECTROMAGNETIC RELAY

Erwin Müller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,450
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 8234360[U]
Int. Cl.³ H01H *45/02*
U.S. Cl. 335—202 **6 Claims**



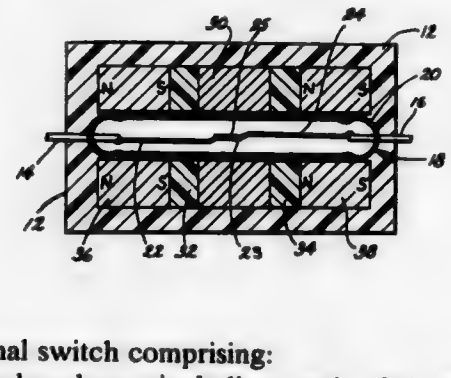
1. An electromagnetic relay comprising a coil body carrier supported by an angular yoke having a first leg coupled to one pole end of a coil core and a second leg forming a bearing edge for a flat armature facing across a working gap with the other pole end of the coil core, a contact spring connected to said armature and extending longitudinally thereof, said contact spring having a transverse contact bridge portion outward from said armature for engaging at least one pair of cooperating contact pieces aligned with one another in one switch position, the improvement comprising at least one pair of contact elements in the form of side-by-side planar plates mounted in said carrier to extend together in a common plane, the first contact element free end having a cross-leg directed over the free end of the second contact element so as to extend across the linear axis of the second contact element, and the free ends of the first contact element cross-leg and the second contact element having said at least one pair of cooperating contact pieces respectively mounted thereon.

4,509,029

THERMALLY ACTUATED SWITCH

Fennimore N. Bradley, Muskegon, Mich., assignor to Midwest Components, Inc., Muskegon, Mich.

Filed Mar. 9, 1984, Ser. No. 588,096
Int. Cl.³ H01H *36/00*
U.S. Cl. 335—208 **12 Claims**



1. A thermal switch comprising:

a cylindrical enclosure including a pair of electrical contact arms extending longitudinally inwardly from opposite ends thereof and spaced from one another, said contact arms having contacts at a free end which overlay one another in spaced relationship, said contact arms made of a ferromagnetic material;

an annular ferrite sleeve surrounding said enclosure and axially aligned with said contacts, said ferrite sleeve having a preselected Curie point temperature at which its permeability changes;

a pair of annular permanent magnets surrounding said enclosure on opposite sides of said ferrite sleeve and aligned in series aiding relationship, said magnets each spaced from an end of said sleeve a predetermined gap distance of from about 0.04 to 0.07 inches and having outer ends which generally align with the ends of said enclosure; and

means for holding said enclosure, said sleeve and said magnets in fixed relationship with respect to each other.

4,509,030

CORRECTION COIL ASSEMBLY FOR NMR MAGNETS

Mark E. Vermilyea, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 5, 1984, Ser. No. 628,076
Int. Cl.³ H01F *7/22*
U.S. Cl. 335—216 **13 Claims**

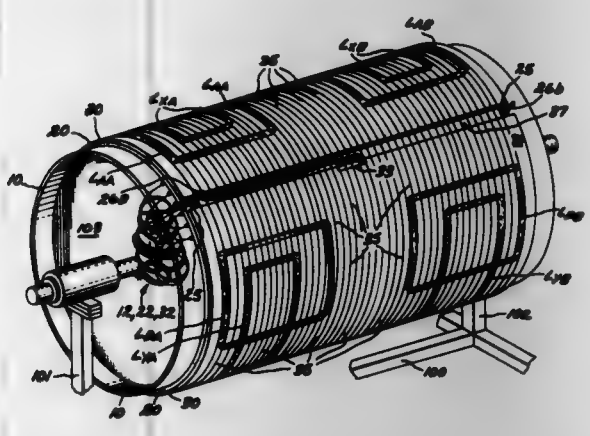
1. A correction coil assembly, especially for use in superconductive magnets and other cryogenic environments, said assembly comprising:

at least one electrical coil disposed on a first cylindrical form;

at least one transverse coil disposed on a second cylindrical coil form, said second form having a longitudinal slit therein, said second form being disposed coaxially about said first form and over said coil disposed on said first form;

an insulated, non-magnetic wire having a coefficient of thermal expansion greater than that of the material of said second coil form, said wire being tightly wrapped around

said second coil form so as to securely hold said second form against said first form under cryogenic conditions; and



a pair of insulative supports diposed at and fixed to each end of said assembly, each end of said wire being attached to a distinct one of said supports.

4,509,031

MAGNETIC ROLLER DEVICE

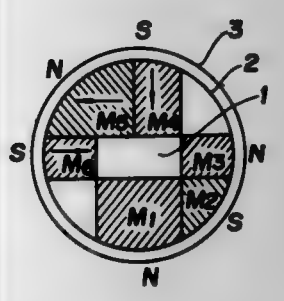
Yoshio Sakata, Kanagawa, and Yasushi Kakehashi, Shiga, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 20, 1983, Ser. No. 486,888

Claims priority, application Japan, Apr. 20, 1982, 57-65757

Int. Cl.³ H01F *7/02*

U.S. Cl. 335—306 **9 Claims**



1. A magnet roller having contacting configurations of plural magnets around a ferro-magnetic metal shaft, said magnet roller comprising: a plurality of contacting magnets disposed about a ferro-magnetic shaft, the number of which magnets corresponds to the number of magnetic poles necessary at the circumference of said magnet roller, said magnets in at least one pair of adjacent magnets having magnetically contacting portions not only through the ferro-magnetic metal shaft but also between the said shaft and the said circumference so that one magnet of at least one pair of adjacent magnets is a magnet corresponding to a necessary magnetic pole and also is an assistant magnet for an adjacent magnet, and the magnet which serves as an assistant magnet additionally is aligned so that the magnetic flux thereof has a component along the rectangular direction of the magnetized direction of the other magnet.

4,509,032

MAINS TRANSFORMER

Sieghard Post, Guntersdorf, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

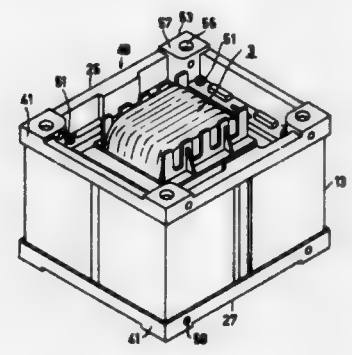
Filed Feb. 28, 1983, Ser. No. 470,653

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207606

Int. Cl.³ H01F *15/04, 27/08*

U.S. Cl. 336—59 **12 Claims**

1. A transformer comprising a ferromagnetic core having windings thereon, a metal screening sheath surrounding the core, first and second supporting caps placed on the transformer from opposite directions and between which the screening sheath is clamped at a distance from the core, the edges of the screening sheath being fixed in grooves in the



supporting caps, and wherein the grooves include lugs which extend transversely to the longitudinal direction of the grooves and into which the edges of the screening sheath penetrate thereby to locate the screening sheath in the grooves so as to be free from play.

4,509,033

IGNITION COIL CONSTRUCTION FOR ENGINE IGNITION SYSTEM

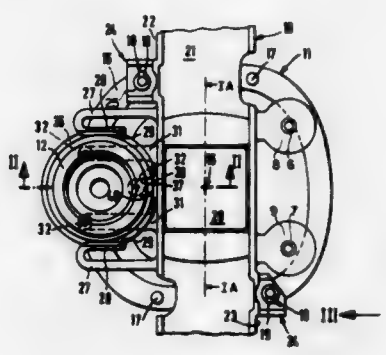
Günther Weiss, Markgröingen; Paul Wörz, and Stanislaus Tomczak, both of Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,961

Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217754; Mar. 19, 1983, 3309986

Int. Cl.³ H01F *27/04*

U.S. Cl. 336—107 **17 Claims**



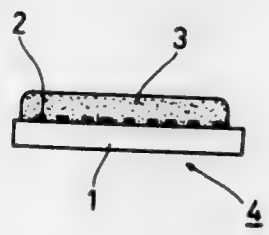
1. Ignition coil structure, suitable for embedding in a cast insulating mass, comprising a primary coil body having a hollow leg carrying a primary coil and an iron core havng a central leg inserted into said hollow leg of said body so as to pass through said primary coil, a secondary coil body carrying a secondary coil and a high voltage terminal holder containing a connector connected to said secondary coil at least said primary coil body and said secondary coil body being held together by a snap connection produced by integral parts of said coil bodies, said integral snap connection parts of said secondary coil body comprising at least first and second studs (18) extending from one end face (15) of said secondary coil body, each having a catch tip (19), and said integral snap connection parts of said primary coil body including at least first and second flanges (24) each having a perforation (25), the snap connection between said bodies being provided by insertion of said studs (18) in said perforations (25) and engagement of said catch tips (19) of said studs (18) behind said flanges (24).

4,509,034

GAS SENSOR

Sai Sakai, Osaka, Japan, assignor to New Cosmos Electric Col, Ltd., Japan

Filed Feb. 14, 1984, Ser. No. 579,926
Claims priority, application Japan, Mar. 22, 1983, 58-39724[U]; Jun. 28, 1983, 58-98725[U]
Int. Cl.³ G01N *27/12*
U.S. Cl. 338—34 7 Claims



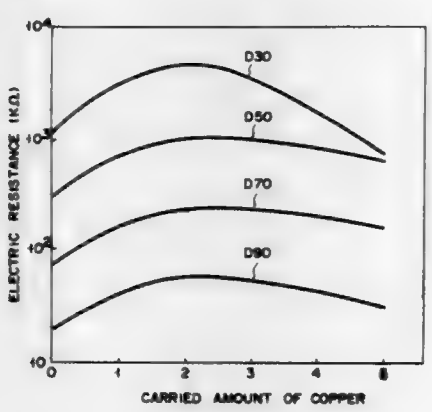
1. A gas sensor comprising an electric resistor of noble metal and a sintered piece of a metal oxide covering the electric resistor, the sintered piece being a semiconductor, wherein the ratio of the combined resistance Ro of the resistor and the semiconductor to the resistance ro of the resistor, Ro/ro, is within the range defined by the inequality $0.45 < Ro/ro < 0.95$, wherein the electric resistor is adapted to serve as a heater and also as an electrode for detecting a decrease in the electric resistance of the semiconductor in response to gas adsorption by said semiconductor.

4,509,035

HUMIDITY-SENSITIVE ELEMENT AND PROCESS FOR PRODUCING THE SAME

Mituo Harata; Hideaki Hiraki, both of Kawasaki; Shigeki Uno; Kazuo Sakuma, both of Tokyo, and Kiyosi Matsunaga, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 30, 1983, Ser. No. 556,598
Claims priority, application Japan, Nov. 30, 1982, 57-209605
Int. Cl.³ H01L *7/00*
U.S. Cl. 338—35 7 Claims



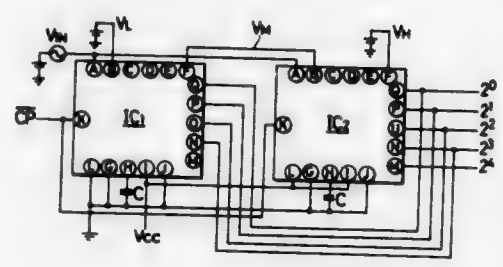
1. A humidity-sensitive element comprising:
a porous metal oxide sintered body;
a material selected from the group consisting of phosphorus, sulfur and oxides thereof, said simple material carried on said porous metal oxide sintered body; and
copper ions carried on said porous metal oxide sintered body.

4,509,036

A/D CONVERTER WITH BIT EXTENSION CAPABILITY USING WIRED-OR OUTPUTS

Makoto Furihata, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 13, 1981, Ser. No. 292,587
Claims priority, application Japan, Aug. 13, 1980, 55-110231; Aug. 13, 1980, 55-110232
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD 7 Claims



1. An integrated A/D converter comprising:
(1) comparator means for comparing a plurality of different reference voltages individually to an analog input signal and for producing a plurality of output signals as a result of said comparisons;
(2) code converter means connected to said comparator means for converting the plural output signals of said comparator means into digital signals of plural bits;
(3) critical detecting means for comparing a critical reference voltage having a level outside of the range of said plural reference voltages with the analog input signal and for producing a detection output at a predetermined level in case said analog input signal exceeds said critical reference voltage;
(4) control means responsive to external control for selectively forcibly controlling the levels of said digital signals of the plural bits to a selected level in case said detected output of said critical detecting means reaches said predetermined level;
(5) first output means for feeding out said digital signals of the plural bits of said code converter means to the plural output terminals of an integrated circuit; and
(6) second output means for feeding out the detected output of said critical detecting means to another output terminal of said integrated circuit, wherein said control means includes a control input terminal which is provided as an external terminal of said integrated circuit and means for inhibiting the forced control operation by impressing a control signal upon the control input terminal of said control means.

4,509,037

ENHANCED DELTA MODULATION ENCODER

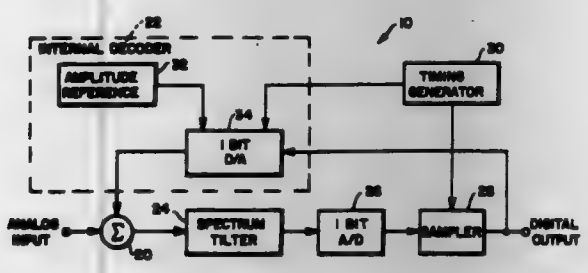
Robert W. Harris, Ellicott City, Md., assignor to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 272,983, Jun. 12, 1981, abandoned. This application Dec. 1, 1982, Ser. No. 446,012
Int. Cl.³ H03K *13/22*
U.S. Cl. 340—347 AD 29 Claims

1. An analog-to-digital encoder for converting an analog input signal to a digital output, comprising:
first means for receiving the analog input signal and for generating an analog dither signal;
second means, operatively connected to said first means, for receiving the analog dither signal and for generating a flattened analog signal, said second means having more than 180° of phase lag at certain frequencies, said second means including means for reducing the phase lag below 180°;
third means, operatively connected to said second means, for

receiving the flattened analog signal and for generating the digital output; and

fourth means, operatively connected to said third means and to said first means, for feeding back the digital output to



said first means by generating an internal analog signal and providing the internal analog signal to said first means, said first means adding the analog input signal and internal analog signal to obtain the analog dither signal.

4,509,038

CODE-CONVERTING SYSTEM FOR BAND COMPRESSION OF DIGITAL SIGNALS

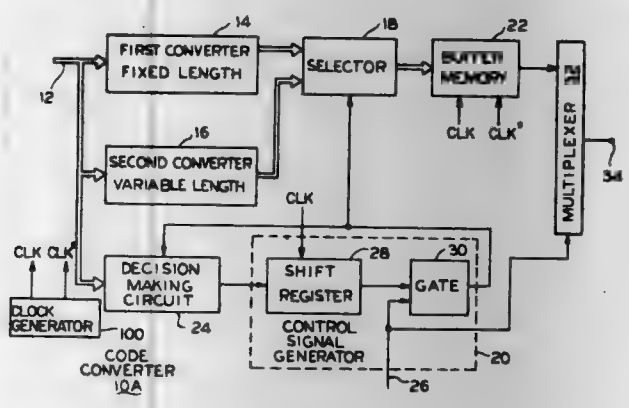
Akira Hirano, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 099,501, Dec. 3, 1979, abandoned, which is a continuation of Ser. No. 918,102, Jun. 22, 1978, abandoned. This application Feb. 18, 1983, Ser. No. 467,953

Claims priority, application Japan, Jun. 27, 1977, 52-76978

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **3 Claims**



1. A code converting system for band compression of digital signals including a code converter and a code-inverse converter, wherein:

said code converter comprises:

an input terminal for receiving an N-bit parallel input digital signal,

first converting means coupled to said input terminal for converting said input digital signal into a fixed length code selected from 2^N kinds of fixed length codes and corresponding to the signal level of said input digital signal,

second converting means coupled to said input terminal for converting said input digital signal to a variable length code selected from 2^N kinds of variable length codes and corresponding to the signal level of said input digital signal,

first selector means coupled to the outputs of said first converting means and said second converting means for selectively passing the output of one of said converting means,

first buffer memory means for storing the code supplied from said first selector and for transmitting the stored code in series and at a constant speed to a transmission channel,

first decision making circuit means coupled to said input terminal for deciding whether said input digital signal has a signal level corresponding to a first predetermined variable length code or whether said input digital signal has the signal level corresponding to a second predetermined variable length code, said decision making circuit means causing said first selector means to select between said converting means responsive to the decision which is made by the decision making circuit means,

first register means coupled to said first decision making circuit means for storing the output signal from said first decision making circuit means and for delaying said output signal by one sample period in order to form a delayed output signal which is supplied to said first selector;

said code-inverse converter comprises:

serial-to-parallel converter means for converting an output code transmitted from said code converter into a parallel code,

first inverse-converting means coupled to said serial-to-parallel converter means for inversely-converting the fixed length code given from said serial-to- parallel converter means into an input digital signal corresponding to said fixed length code,

second inverse-converting means coupled to said serial-to-parallel converter means for inverse-converting the variable length code given from said serial-to- parallel converter means into an input digital signal corresponding to said variable length code,

code-boundary detecting means coupled to said serial-to-parallel converter means for detecting the boundary between codes in said output code given from said code converter,

second decision making circuit means coupled to said serial-to-parallel converter means for deciding whether said output code from said serial-to-parallel converter means is a fixed length code or a variable length code,

second register means coupled to said second decision making circuit means for storing the output signal from said second decision making circuit means and for delaying said output signal by one sample period,

second selector means coupled to the outputs of said first inverse-converting means and said second inverse-converting means, said second selector being operated in response to an output signal means from said second register means, and

second buffer memory means connected to said second selector means for storing an output digital signal selected by said second selector in response to an output signal from said code-boundary detecting means and for reading out the resulting stored digital signal at a constant speed.

4,509,039

SHIELDED, CLOSELY SPACED TRANSMIT-RECEIVER ANTENNAS FOR ELECTRONIC ARTICLE SURVEILLANCE SYSTEM

Dean M. Dowdle, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 5, 1983, Ser. No. 510,780

Int. Cl.³ G08B *13/24*; H01Q *7/04*

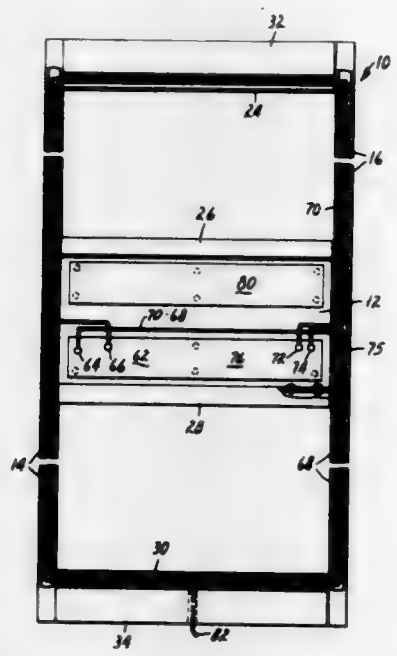
U.S. Cl. 340—572 **7 Claims**

1. For use in an electronic article surveillance system having transmitter means for providing an electromagnetic field in a predetermined area at at least one of a plurality of frequencies extending through a predetermined range of frequencies, a resonant marker circuit having at least one resonant frequency within said predetermined range of provided frequencies, and receiver means for detecting the presence of said marker circuit in said electromagnetic field and providing an alarm indication thereof, an antenna system comprising:

a transmitting antenna coupled to said transmitter means and a receiving antenna coupled to said receiver means, said antennas being disposed in a closely spaced, generally parallel relationship on one side of an exit-way along which a said marker circuit must pass for detection, said transmitting and receiving antennas each having substantially the same area and being magnetically nulled to

minimize mutual inductance, at least one of said antennas having at least two twisted loops lying in a common plane, each loop being twisted 180° to be in phase opposition with each adjacent loop; and

a conductive shield enclosing substantially all of both of the closely spaced antennas and including a discontinuity in



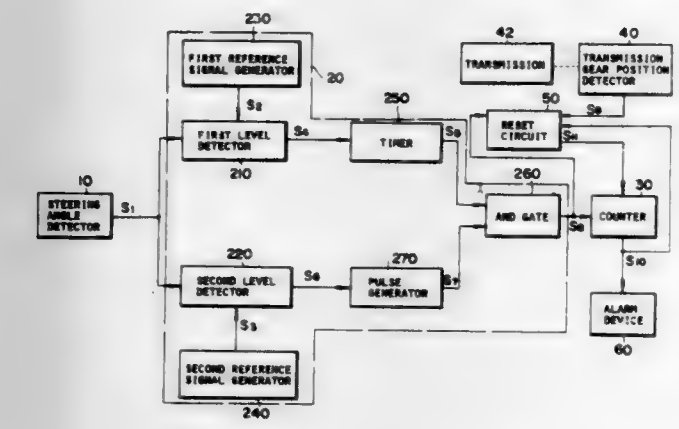
each outer portion enclosing a said twisted loop to provide a discontinuous shield for both the transmit and receive antennas to prevent external electric fields from inducing current flow in either antenna which could otherwise destroy the null created therebetween and hence adversely effect the detection of said marker circuit.

4,509,040

ALARM SYSTEM FOR PREVENTING AN AUTOMOTIVE VEHICLE DRIVER FROM DOZING AT THE WHEEL

Yasutoshi Seko, Yokohama; Masami Inoue, and Takayuki Yanagishima, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 1, 1981, Ser. No. 326,393
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—576 **19 Claims**



1. An alarm system for preventing an automotive vehicle driver from dozing while driving, comprising:

a steering angle detector for detecting angular displacement of a steering member from a neutral position and producing a first signal having a value which is proportional to the detected displacement;

a discriminator for detecting a condition wherein said first signal value exceeds a threshold value and detecting a rate of variation of the steering angular displacement higher than a predetermined value, which discriminator produces a discriminator signal when said first signal value exceeds said threshold value and said rate of variation is higher than said predetermined value;

a counter for counting occurrences of said discriminator signal and producing an alarm signal when the counted value reaches a preset value;

a counter enabling signal generator associated with said counter and producing a counter enabling signal while a preselected steady cruise condition is satisfied, which enabling signal makes said counter operative to count said occurrences of said discriminator signal while said enabling signal is present and otherwise disables the counter operation and clears the counter value; and

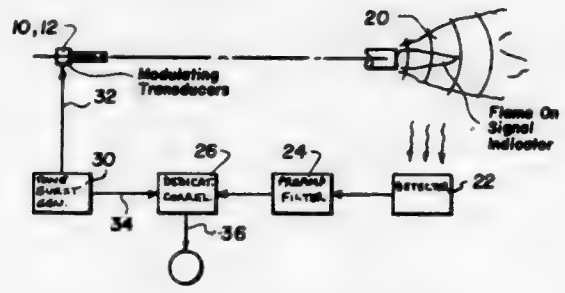
an alarm device responsive to said alarm signal to produce an alarm for preventing the driver from dozing at the wheel.

4,509,041

CORRELATION TYPE FLICKER FLAMON

Marion A. Keyes, Chagrin Falls, and William L. Thompson, Chardon, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 22, 1982, Ser. No. 360,861
Int. Cl.³ G08B *17/12, 21/00*
U.S. Cl. 340—578 **4 Claims**



1. A device for continuously determining the presence of a flame emitted from a burner comprising:

modulation means connected to the burner for modulating a burner flow pressure at a selected frequency to modulate a light amplitude of the burner flame;

an optical flicker detector associated with the burner for detecting variations in the light amplitude of the burner flame and generating a light amplitude modulation signal which varies with variations in the light amplitude of the flame;

correlator means connected to said optical flicker detector for generating a flame on signal when correlation is established between the selected frequency of said modulation means and said light amplitude modulation signal; and

said modulation means comprising a tone burst generator for modulating the burner flow pressure at said selected frequency in bursts with said correlator means being operable to detect the termination of each burst and detect a corresponding termination in said light amplitude modulation signal to maintain said flame on signal.

4,509,042

PORTAL RADIATION MONITOR

Lyle W. Kruse, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 361,152
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—600 **8 Claims**

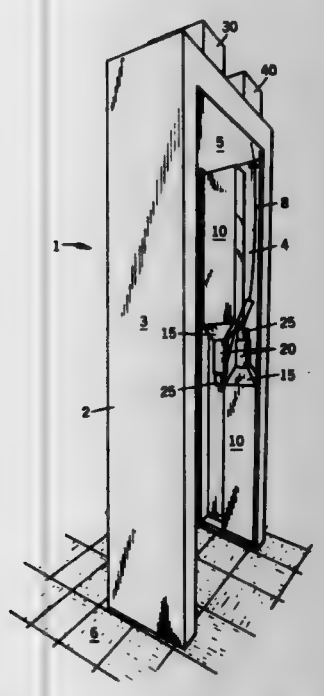
1. A portal radiation monitor comprising:

a portal having spaced opposed sides defining an opening therebetween;

scintillator means connected to said sides for detecting radiation within said opening;

means for converting scintillations from said scintillator means into electrical pulses;

pulse-shape discriminator means for producing only output pulses corresponding to pulses from said converting



means having a predetermined rise time indicative of a radiation event;

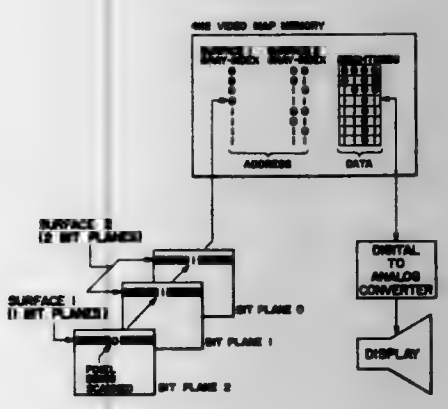
alarm means for indicating the presence of radiation at the monitor when the count rate of pulses from said discrimination exceeds a predetermined level.

4,509,043

METHOD AND APPARATUS FOR DISPLAYING IMAGES

Paula X. Mossaides, Canby, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 12, 1982, Ser. No. 367,659
Int. Cl.[3] G09G *1/16*
U.S. Cl. 340—721 3 Claims



1. Graphic display apparatus for producing a plurality of images to be independently displayed and for superimposing said plurality of images onto one another to produce a composite image on a display, comprising:

a plurality of individual storage area means, each of said storage area means storing a plurality of bits therein, each corresponding bit in each of the plurality of storage are means being associated with a pixel point on said display;

first interactive means for user subdivision of said plurality of storage area means into a plurality of groups of storage areas and for user designation of at least one of said groups to be displayed to form a composite image, each group of storage areas corresponding to an image, the number of said plurality of groups of storage areas corresponding to the maximum number of said plurality of images which may be displayed on said display, the digital condition of the bits in each of said plurality of groups of storage areas defining the particular image stored therein;

further storage means for storing a plurality of initial brightness indices therein for each of said plurality of groups of storage areas, each of the initial brightness indices determining the brightness of the image of the corresponding storage area group, said further storage means storing a plurality of columns of bits therein, the number of columns of bits corresponding to the number of groups of storage areas, each of said initial brightness indices corresponding to at least one bit in each of the plurality of columns;

scanning means for scanning said plurality of groups of storage areas to determine the digital condition of the bits in each of said plurality of groups for each pixel point on said display, the located bit in each group being representative of the image from that group to be displayed at the selected pixel point;

locating means responsive to the scanning performed by the scanning mean for locating at least one bit in each of the plurality of columns of bits in said further storage means corresponding to the located bit in each of said plurality of groups of storage areas, the locating mean determining a said initial brightness index corresponding to the located bits in each of the plurality of columns of bits in said further storage means; and

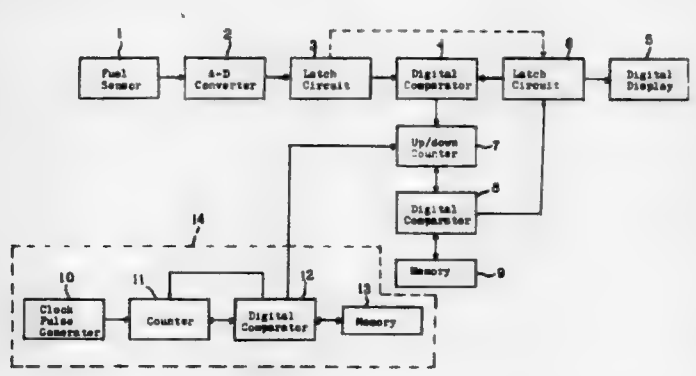
means for converting the initial brightness index determined by the locating means into an electrical signal, said electrical signal determining the brightness of said composite image at each of the pixel points on said display.

4,509,044

DEVICE WHICH ACCURATELY DISPLAYS CHANGES IN A QUANTITY TO BE MEASURED

Yoichi Yachida, Nagaoka, Japan, assignor to Nippon Seiki Kabushiki Kaisha, Nigata, Japan

Filed May 7, 1982, Ser. No. 376,237
Claims priority, application Japan, May 13, 1981, 56-71919; Jun. 9, 1981, 56-89110
Int. Cl.[3] G09G *3/00*
U.S. Cl. 340—789 4 Claims

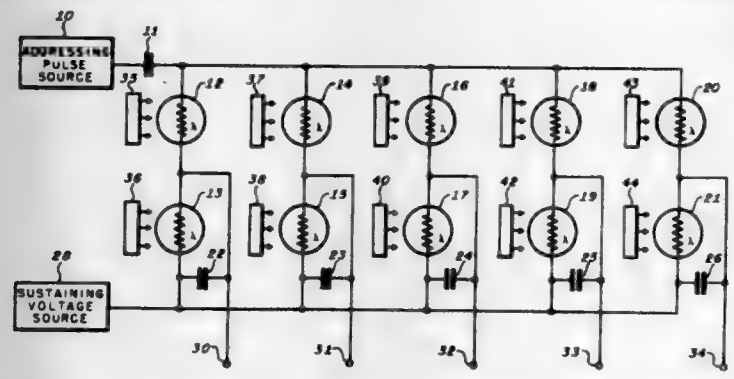


1. A display device comprising: means for displaying display data; sampling means for periodically sampling digital signals corresponding to changes in a quantity to be measured; comparing means for comparing sampling data from said sampling means with said display data to generate a difference signal; accumulating means for accumulating the difference signal generated by said comparing means to output an accumulation signal; and discriminating means for discriminating a large or small relation between the accumulation signal from said accumulating means and a predetermined value, said discriminating means further producing an output signal to update said display data according to said sampling data when said discriminating means discriminates that the accumulation signal has exceeded the predetermined value.

4,509,045
LOW COST ADDRESSING SYSTEM FOR AC PLASMA PANELS

Claude D. Lustig, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,364
Int. Cl.³ G09G 3/00
U.S. Cl. 340—794 6 Claims



1. An improved flat panel display of the type having an AC plasma display panel with individual display lines therein comprising:

means for providing addressing pulse signals;

a plurality of coupling photoresistors coupled to said addressing pulse means;

a plurality of decoupling photoresistors, each of said decoupling photoresistors coupled to a corresponding one of said plurality of coupling photoresistors;

a plurality of shunt capacitors coupled in shunt relationship with a corresponding one of said decoupling photoresistors;

a sustaining voltage source means coupled to said decoupling photoresistors for providing sustaining voltage pulses in synchronism with said addressing pulses;

a plurality of output terminals coupled to the junction of said coupling and decoupling photoresistors and said shunt capacitors, each of said output terminals being coupled to a one of said AC plasma panel display lines;

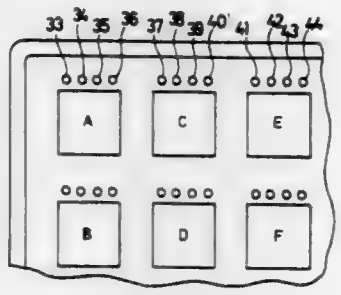
means including a plurality of coupling light sources for selectively illuminating in a one to one correspondence said plurality of coupling photoresistors substantially in synchronism with said addressing pulses; and

a plurality of decoupling light sources for selectively illuminating in a one to one correspondence said plurality of decoupling photoresistors; said decoupling light sources being respectively illuminated at a predetermined interval subsequent to the illumination of said coupling light sources.

4,509,046
INDICATING METHOD AND APPARATUS FOR DIGITIZER MENU PORTIONS

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jul. 2, 1982, Ser. No. 394,652
Claims priority, application Japan, Jul. 30, 1981, 56-120403
Int. Cl.³ G09G 3/00
U.S. Cl. 340—815.1 2 Claims

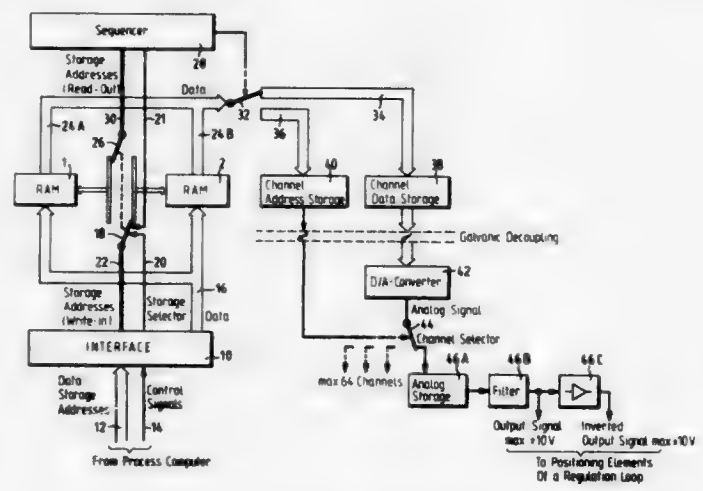


1. Digitizer apparatus comprising a menu element having a face divided into a plurality of blocks, each block being responsive to activation by an operator to produce a corresponding command signal for control of a data processing device having a plurality of modes of operation, a plurality of cells positioned behind the face, each cell corresponding to one of the plurality of blocks, a plurality of light sources of different colors associated with each cell, and control means for controlling of the illumination of each of the plurality of light sources so as to selectively illuminate at least one light source to indicate a command signal to be provided in the next step in a series of sequential processing steps to be carried out in a selected one of the plurality of modes of operation of the data processing device.

4,509,047
CIRCUIT FOR CONNECTING A PROCESS COMPUTER BY MEANS OF A NUMBER OF ANALOG CHANNELS WITH A MACHINE TOOL

Fritz Rhyner, Zurich, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Sep. 24, 1982, Ser. No. 423,192
Claims priority, application Switzerland, Oct. 2, 1981, 6339/81
Int. Cl.³ H04Q 9/00; G06F 15/46
U.S. Cl. 340—825.23 7 Claims



1. A circuit for connecting a process computer by means of a number of analog channels with a machine tool, comprising:

an interface arranged at an input side of the circuit;

a D/A-converter for converting digital data received from the process computer into analog signals which are to be delivered to the analog channels;

a sequencer for multiplex control of a signal output to the analog channels;

each analog channel containing an analog storage;

two random-access memories arranged in circuit with and after said interface;

a storage address line and a data bus cooperating with said interface;

a further storage address line cooperating with said sequencer;

a further data bus cooperating with said random-access memories;

two reversing switches, defining first and second reversing switches, operatively connected with said interface and said sequencer and which can be set in opposition with respect to one another for connecting one of the random-access memories with the interface by means of said storage address line for writing-in 8-bit data by means of said data bus into said one random-access memory and for operatively connecting the other random-access memory by means of said further storage address line with the sequencer for reading-out data by means of said further data bus out of the other random-access memory and vice versa;

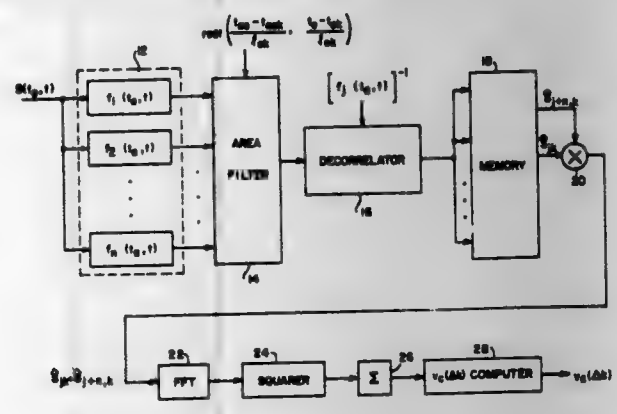
a third reversing switch which can be selectively set by said sequencer;
a channel data storage connected with the D/A-converter;
a channel address storage;
said third reversing switch alternately connecting the further data bus with the channel data storage connected with the D/A-converter and the channel address storage;
a channel selector switch operatively connected with the D/A-converter;
said channel selector switch being settable by means of the channel address storage; and
said channel selector switch serving for switching the D/A-converter to the individual analog channels.

4,509,048

METHOD AND APPARATUS FOR ΔK SYNTHETIC APERTURE RADAR MEASUREMENT OF OCEAN CURRENT

Atul Jain, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 18, 1982, Ser. No. 359,382
Int. Cl.³ G01S *13/90*
U.S. Cl. 343—5 CM **4 Claims**



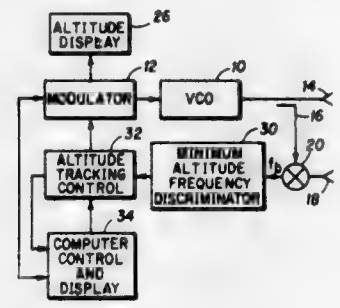
1. A method for measurement of ocean current using a chirped synthetic aperture radar which transmits periodic pulses of predetermined chirp bandwidth toward the ocean at an angle β that is the complement of the Bragg angle θ, and receives return signals, $S(t_a,t)$, comprising the steps of
compressing said signals $S(t_a,t)$ to provide signals $e_f(t_{ao},t_o)$ for different sections of said bandwidth,
selecting a small common area for separate image fields at the different sections of said bandwidth in the signals $e_f(t_{ao},t_o)$ to produce image signals $e_{jk}(t_{ao},t_o)$ for the common area,
deconvolving the signals $e_{jk}(t_{ao},t_o)$ to produce different signals for the different frequencies of said bandwidth, but of the same common area,
producing a signal $s_{jk}\cdot s_{j+n,k}$ that is a product of pairs of signals from the previous step,
Fourier transforming and squaring the signal thus obtained from the preceding step to produce a spectrum,
determining the Doppler shift f_D of the spectrum peak from the center of said spectrum, and
comparing said Doppler shift f_D to the Doppler shift expected due to the phase velocity v_p of the Bragg scattering wave to obtain ocean current velocity $v_c(\Delta k)$ from the difference between the expected Doppler phase shift and the determined Doppler phase shift.

4,509,049

FMCW SYSTEM FOR PROVIDING SEARCH-WHILE-TRACK FUNCTIONS AND ALTITUDE RATE DETERMINATION

Richard S. Haendel, Iowa City, and John C. Wauer, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 26, 1982, Ser. No. 401,801
Int. Cl.³ G01S *13/32*
U.S. Cl. 343—7.5 **13 Claims**



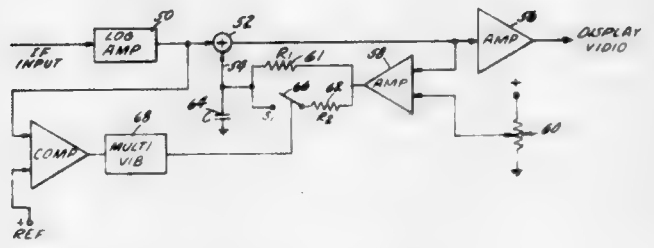
1. A distance measuring apparatus comprising:
means for providing a modulating signal having an upsweep and a downsweep;
means responsive to said modulating signal for generating a variable frequency signal;
means for transmitting said variable frequency signal to a target;
means for receiving a return spectrum of said variable frequency signal reflected from said target; and
means response to said return spectrum for controlling said modulating signal for tracking distance to target independently on both said upsweep and said downsweep.

4,509,050

AUTOMATIC ADAPTIVE SENSITIVITY TIME CONTROL FOR A GROUND MAPPING RADAR

Salvatore Amoroso, Jr., Fairfield, and Russell W. Conklin, Stratford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 30, 1982, Ser. No. 413,007
Int. Cl.³ G01S *7/34*
U.S. Cl. 343—5 SM **4 Claims**



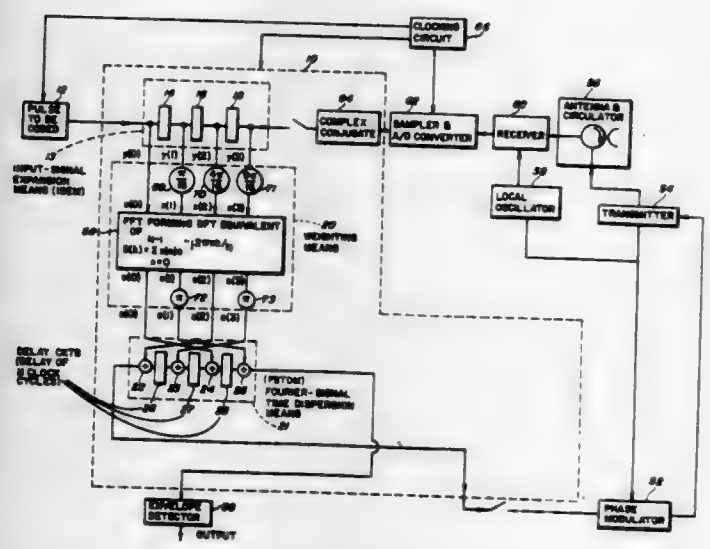
1. An adaptive sensitivity time control for a radar system employing a video display, comprising:
a log IF amplifier means for receiving radar return signals in a radar system;
a limit amplifier connected to said log IF amplifier for providing an output signal to a video display, said output signal having a range related to the available contrast in said video display; and
a feedback loop for sensing the input to said limit amplifier for providing a feedback to a node between said log IF amplifier and said limit amplifier for adjusting the clutter level of radar returns out of said limit amplifier so that the nominal clutter level of close-in radar return signals does not exceed a predetermined magnitude.

4,509,051

PHASE-CODED PULSE EXPANDER-COMPRESSOR

Bernard L. Lewis, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1982, Ser. No. 420,209
Int. Cl.³ G01S *13/28*
U.S. Cl. 343—17.2 PC **9 Claims**



1. In a digital pulse expander-compressor,

input-signal expansion means responsive to an applied pulse for successively generating N replicas y(n) of the pulse, where n=0,1,2, . . . , N−1 and N is an integer, in a time which is N times the length of the pulse;

weighting means connected to the input-signal expansion means and having N output terminals for weighting the replicas y(n) in accordance with the formula

$$z(k) = \sum_{n=0}^{N-1} y(n) e^{-j\pi(k + \frac{2nk}{N} + \frac{n2}{N2})}$$

where k=0,1,2, . . . , N−1, to provide N weighted pulses z(k), each at a respective one of the N output terminals, whenever one of the N replicas y(n) is generated; and

time-dispersion means connected to the weighting means for delaying each of the N weighted pulses z(k) corresponding to any replica of the applied pulse by a time which is determined by cyclically permutating, R/2 times, the values of k assigned to the N weighted pulses, and then multiplying the newly assigned value of k of said each one of the N weighted pulses z(k) by N times the length of the applied pulse, where R equals N if N is an even integer, and R equals (N−1) if N is an odd integer.

4,509,052

RF INTERFEROMETER/DOPPLER TARGET LOCATION SYSTEM

Carlton H. Cash, Marietta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed Apr. 27, 1983, Ser. No. 489,101
Int. Cl.³ G01S *5/02*
U.S. Cl. 343—418 **16 Claims**

1. A target location system, having a combination of an RF interferometer and doppler receiver, comprising:

a source for generating an RF signal;

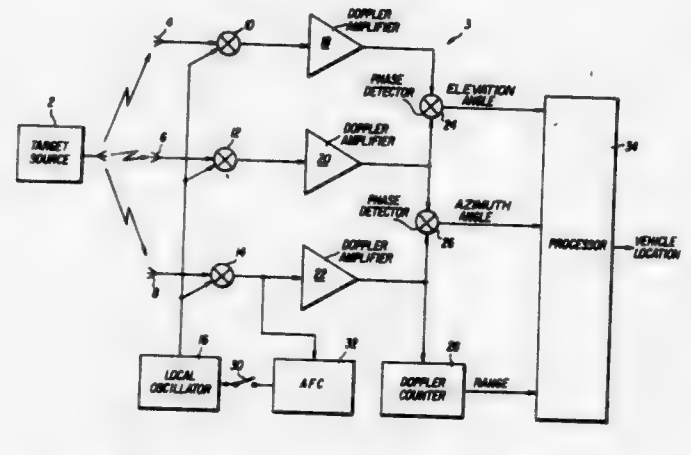
receiver circuit means for receiving said RF signal and generating a first signal representing the elevation angle of one of said source and said receiver circuit means, a second signal representing the azimuth angle of one of said source and said receiver circuit means and a third signal representing the range of one of said source and said receiver circuit means;

at least three antennas;

at least three mixer circuits, each said mixer circuits connected to a respective antenna;

an oscillator, connected to each of said mixer circuits, for heterodyning the signals from said antennas;

at least first, second and third doppler amplifiers, each said doppler amplifier connected to a respective mixer circuit for amplifying the signal from a respective mixer circuit;



a first phase detector, connected to said first and second doppler amplifiers, for generating said first signal;

a second phase detector, connected to said second and third doppler amplifiers, for generating said second signal;

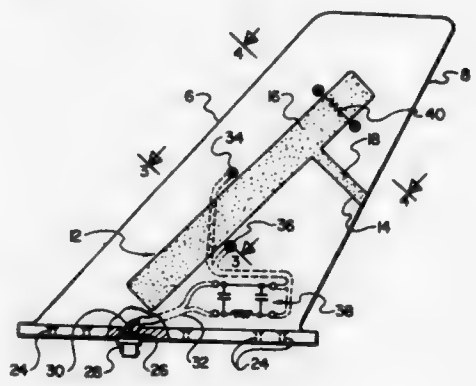
a doppler counter means, connected to said third doppler amplifier, for generating said third signal.

4,509,053

BLADE ANTENNA WITH SHAPED DIELECTRIC

Seymour Robin, Woodland Hills, and Yosef Klein, Northridge, both of Calif., assignors to Sensor Systems, Inc., Chatsworth, Calif.

Filed Jul. 26, 1982, Ser. No. 401,867
Int. Cl.³ H01Q *1/28, 13/10*
U.S. Cl. 343—708 **17 Claims**



1. An antenna having a predetermined resonant frequency for high speed craft, comprising:

a blade-like member having a base portion, a leading edge and a trailing edge,

a dielectric material disposed within the blade-like member in a radiating slot, a first section of said dielectric material extending generally longitudinally along the member, and a second section of said material extending generally transversely to the first section from an intermediate location thereon which is spaced inwardly from the ends of the first section, the location of the second section relative to the first section being selected to establish said predetermined resonant frequency, and

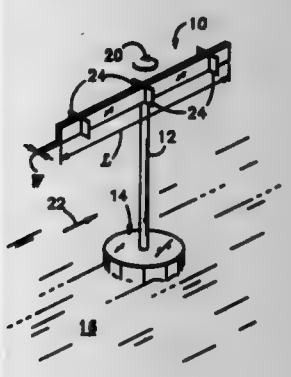
means for feeding a radiating signal to said dielectric material.

4,509,054

ANTI-STALLING ROTATING ANTENNA BUOY SYSTEM USING WIND DEFLECTING PLATES

George K. Gardiner, and Dean E. Norris, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1982, Ser. No. 446,735
Int. Cl.[3] H01Q *1/34*
U.S. Cl. 343—709 17 Claims



1. An anti-stalling, rotating antenna buoy system, for use in the presence of a directed movement of air capable of inducing a rotational moment on a rotating antenna, comprising:

a buoy;

a rotating antenna having a first side with a first length, having a second side with a second length, having a major axis between said first side and said second side and being rotatably coupled to said buoy;

first means, affixed to said first side, for distributing pressure of the directed movement of air, and

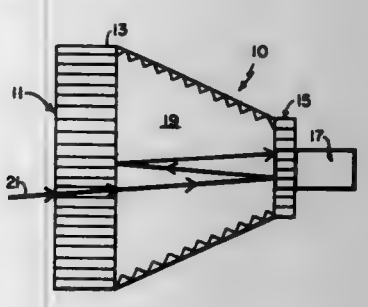
second means, affixed to said second side, for distributing pressure of the directed movement of air so that by the action of said first and said second means the rotational moment on the rotating antenna due to the directed movement of air is reduced.

4,509,055

BLOCKAGE-FREE SPACE FED ANTENNA

Matthew Fassett, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 30, 1982, Ser. No. 431,899
Int. Cl.[3] H01Q *3/46*
U.S. Cl. 343—754 5 Claims



1. A space fed antenna comprising:

(a) a first planar array of vertically-polarized antenna elements having a predetermined focal length;

(b) a second planar array of pairs of cross-polarized antenna elements parallel to the first planar array at a distance equal to one-third the focal length of the first planar array, such second planar array having peripherally located pairs of elements and centrally located pairs of elements; and

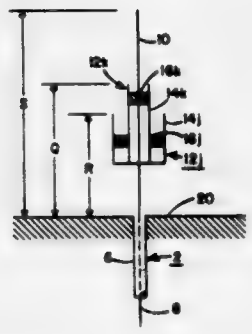
(c) means for connecting the elements in each one of the pairs of cross-polarized antenna elements to form a polarization-twisting screen from the peripherally located ones of such pairs and a combined polarization-twisting array and feed from the centrally located ones of such pairs.

4,509,056

MULTI-FREQUENCY ANTENNA EMPLOYING TUNED SLEEVE CHOKES

George Ploussios, 4 Hackney Cir., Andover, Mass. 01810

Filed Nov. 24, 1982, Ser. No. 444,493
Int. Cl.[3] H01Q *9/40*
U.S. Cl. 343—791 6 Claims



1. A multi-frequency antenna system capable of efficient operation at a plurality of frequencies comprising

a feedline having a predetermined feedpoint,

a first radiating section resonant at a first operating frequency including

a coaxial choke assembly having

an inner conductor connected to said feedline, and

an outer conductive cylindrical shell surrounding and spaced from said inner conductor and having an open end and a closed end, said closed end being connected electrically to said feedline, the open end of said shell being directed away from said feedpoint and defining one end of said first radiating section and arranged so that said shell forms an active radiating element of said first section at said first operating frequency,

dielectric material partially filling said space between said outer shell and said inner conductor and being adjusted to cause the inner length of said choke assembly to be precisely one-quarter wavelength at said first operating frequency, and

a second radiating section including

said first radiating section, and

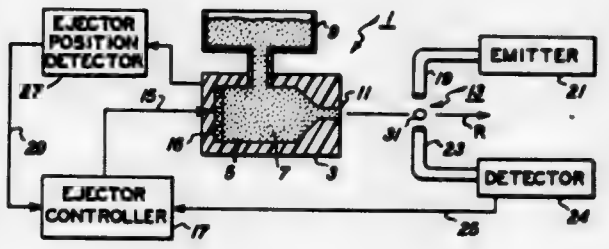
an additional element formed by an extension of said inner conductor and extending beyond the open end of said choke, said second radiating section being resonant at a second operating frequency lower than said first frequency.

4,509,057

AUTOMATIC CALIBRATION OF DROP-ON-DEMAND INK JET EJECTOR

Gordon Sohl, Richardson; Donald L. Ort, Dallas, and John R. Leicht, Bedford, all of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 28, 1983, Ser. No. 468,834
Int. Cl.[3] G01D *18/00*
U.S. Cl. 346—1.1 2 Claims



1. A method for calibrating a scanning carriage drop-on-demand ink jet ejector which comprises:

(a) providing a droplet detection zone, including a droplet detector, for generating a droplet detector output signal in response to droplet traverse through said detection zone;

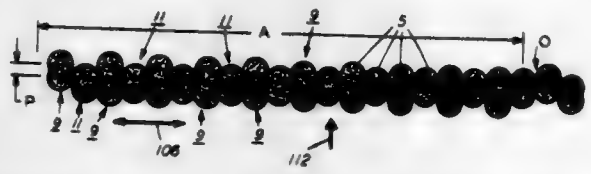
(b) providing an ejector position detector for generating an ejector position output signal in response to ejector position;
(c) moving said ejector past said detection zone while ejecting droplets from said ejector toward said detection zone;
(d) analyzing said droplet detector output signal and said ejector position output signal to determine whether an error exists in ejector position; and
(e) correcting the error by changing the time of droplet ejection during ejector printing.

4,509,058

INK JET PRINTING USING HORIZONTAL INTERLACING

Kenneth H. Fischbeck, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 22, 1983, Ser. No. 534,952
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **1 Claim**



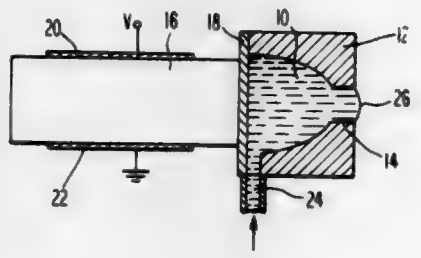
1. A method of printing on an image-receiving surface using an oscillating bar ink jet printer, which comprises:
(a) advancing said image-receiving surface at a substantially constant rate in a first direction,
(b) oscillating said bar in a direction substantially at a right angle to said first direction,
(c) expelling droplets from the oscillating bar as it moves from left to right to form a first row of droplets on said image-receiving surface,
(d) expelling droplets from the oscillating bar as it moves from right to left to form a second row of droplets,
(e) repeating steps (c) and (d) at least once, wherein
the rows of droplets formed during oscillating bar movement from left to right form a first set of columns, and the rows of droplets formed during oscillating bar movement from right to left form a second set of columns and wherein said first and said second sets of columns are interlaced on said image-receiving surface in a direction substantially at a right angle to said first direction.

4,509,059

METHOD OF OPERATING AN INK JET

Stuart D. Howkins, Ridgefield, Conn., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 1, 1982, Ser. No. 384,131
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **36 Claims**



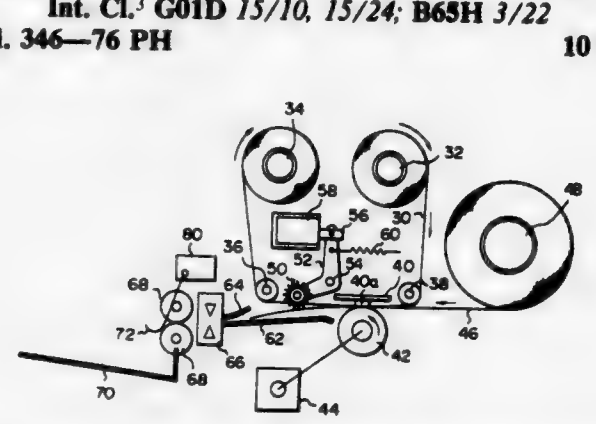
1. A method of operating a demand ink jet comprising a variable volume chamber, a transducer coupled to the chamber for varying the volume of the chamber and an ink droplet ejection orifice communicating with the chamber, said method comprising:
applying a drive level to said transducer so as to permit filling of said chamber and the formation of a meniscus at the orifice, said drive level expanding the volume of said chamber to a volume larger than the volume of said chamber when the transducer is in the quiescent state;
creating a perturbation in the drive level applied after filling has been initiated so as to move the meniscus away from the chamber in response to the perturbation;
substantially changing the drive level applied to the transducer immediately after the perturbation so as to eject a droplet from said orifice; and
controlling the time lapse between the perturbation and the substantial change in the drive level so as to control the position and the velocity of the meniscus immediately prior to ejection.

4,509,060

SHEET SEPARATION SYSTEM FOR THERMAL TRANSFER TYPE RECORDING APPARATUS

Osamu Uozumi, Zushi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,380
Claims priority, application Japan, Aug. 25, 1982, 57-147296
Int. Cl.³ G01D *15/10, 15/24;* B65H *3/22*
U.S. Cl. 346—76 PH **10 Claims**



1. In a thermal transfer type recording apparatus having a thermal head located in a predetermined position where the thermal head faces a predetermined path along which a recording sheet and an ink sheet move in contact with each other, the thermal head selectively heating the ink sheet in response to video information to thermally transfer ink from the ink sheet to the recording sheet in order to produce the video information on the recording sheet, a system for separating the recording sheet from the ink sheet after the thermal transfer of video information, comprising:
separator means located in said sheet path downstream of the thermal head to face the ink sheet, said separator means being selectively movable to a position inside the sheet path and a position outside the sheet path; and
drive means for driving said separator means to the position inside the sheet path to cause the separator means to pierce the ink sheet, which is in contact with the recording sheet, and urge the recording sheet away from the ink sheet.

4,509,061

METHOD AND APPARATUS FOR FORMING PHOTOGRAPHIC RECORD OF SOUND FIELD

Sadao Nomoto, Kamakura, and Kazuyoshi Iida, Yokohama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

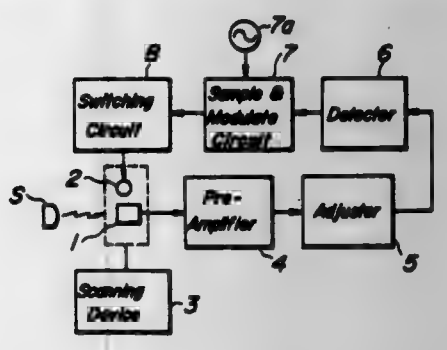
Filed Sep. 30, 1983, Ser. No. 537,610
Claims priority, application Japan, Oct. 1, 1982, 57-172698
Int. Cl.³ G01D *9/42*
U.S. Cl. 346—107 R **14 Claims**

1. A method of making a photographic record of a sound field comprising
scanning a sound field to be recorded by means of an acoustic-electric transducing means to derive a signal representing sound pressure at respective scanning points;
detecting said signal to produce an envelope signal;

sampling said envelope signal at a predetermined sampling frequency to produce a sample signal;

amplitude-modulating a carrier having a predetermined frequency with said sample signal to produce a modulated signal;

driving an electric-light transducing means for producing a light spot moving in synchronism with the movement of



said acoustic-electric converting means, with said modulated signal in such a manner that when an amplitude of the modulated signal exceeds a predetermined threshold level, said light spot is periodically turned on and off at a rate of said predetermined frequency of the carrier; and

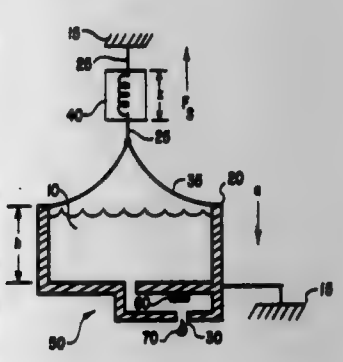
recording an image of a locus of the moving light spot on a photographic film.

4,509,062

INK RESERVOIR WITH ESSENTIALLY CONSTANT NEGATIVE BACK PRESSURE

Robert N. Low; Frank L. Cloutier, Corvallis, and Gary Siewell, Albany, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 23, 1982, Ser. No. 443,973
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **8 Claims**



1. A reservoir for holding a liquid for a liquid jet apparatus, said reservoir comprising:

a support structure;

a bladder supported by said support structure; and

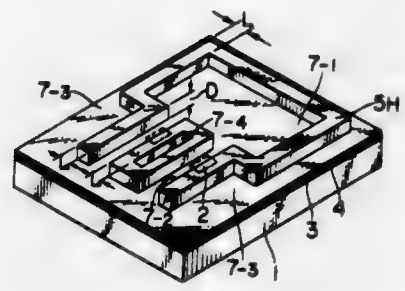
first means coupled to said support structure and said bladder for providing a negative pressure force to said liquid in said reservoir, said first means comprising a non-linear spring having an essentially constant spring force over a change in position of said bladder as the liquid in said reservoir goes from full to empty.

4,509,063

INK JET RECORDING HEAD WITH DELAMINATING FEATURE

Hiroshi Sugitani, Machida; Tadayoshi Inamoto, and Masami Yokota, both of Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,591
Claims priority, application Japan, Jul. 26, 1982, 57-128867
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **2 Claims**



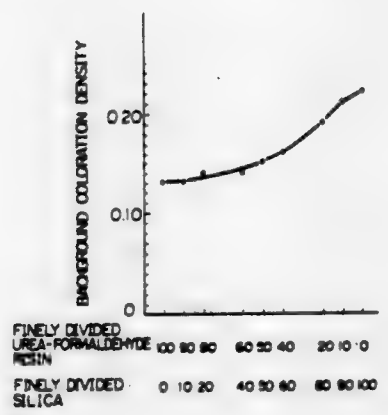
1. An ink jet recording head made by laminating on a substrate a cured photosensitive resin film for forming ink pathways on said substrate and a cover of said pathways, characterized in that the wall thickness of said ink pathways formed by said cured photosensitive resin film is not more than 15 times the film thickness of said cured photosensitive resin film.

4,509,064

HEAT-SENSITIVE RECORDING PAPER AND FILLER THEREFOR

Koichi Usui; Masahide Ogawa, both of Shibata; Kunio Goto, Nakajo; Teiji Sato; Masanori Tanaka, both of Shibata; Seikichi Takahashi, Nakajo; Kinichi Ono, Kurokawa, and Seiji Kojima, Nakajo, all of Japan, assignors to Mizusawa Industrial Chemicals, Ltd., Osaka, Japan

Filed Jan. 27, 1984, Ser. No. 574,574
Claims priority, application Japan, Sep. 13, 1983, 58-167474
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—207 **2 Claims**



1. A heat-sensitive recording paper comprising a paper substrate and a heat-sensitive recording layer formed on the paper substrate, which comprises a composition formed by dispersing in a binder a coloring agent composed of a leuco dye, a color developer composed of a heat-fusible phenol and an inorganic filler, wherein the inorganic filler comprises finely divided amorphous silica having a BET specific surface area of 10 to 100 m^2/g and a bulk density of 0.14 to 0.30 g/cc, said finely divided amorphous silica having such a secondary particle size distribution that secondary particles having a size smaller than 4 microns, as measured by the centrifugal precipitation method, occupy at least 90% by weight of the total particles.

4,509,065

RECORD MATERIAL

Kenneth J. Shanton, Beaconsfield, England, assignor to The Wiggins Teape Group Limited, Hampshire, England

Filed Nov. 18, 1982, Ser. No. 442,565

Claims priority, application United Kingdom, Dec. 4, 1981, 8136583; Dec. 4, 1981, 8136584; Dec. 9, 1981, 8137069; Dec. 9, 1981, 8137070; Dec. 9, 1981, 8137071; Dec. 9, 1981, 8137073

Int. Cl.[3] B41M *5/16, 5/18, 5/22*

U.S. Cl. 346—225 4 Claims

1. Record material carrying a colour developer composition which comprises a particulate composite having as components hydrated zirconia and at least one of hydrated silica and hydrated alumina.

4,509,066

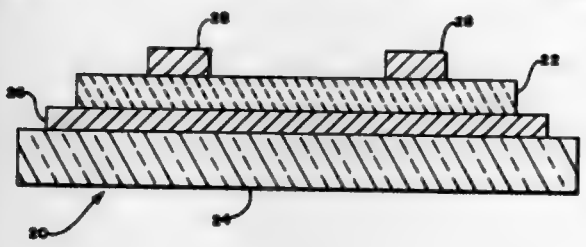
SPUTTERED SEMICONDUCTING FILMS OF CATENATED PHOSPHORUS MATERIAL AND DEVICES FORMED THEREFROM

Rozalie Schachter, Flushing; Marcello Viscogliosi, North Tarrytown, and Lewis A. Bunz, Peekskill, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 29, 1983, Ser. No. 509,175

Int. Cl.[3] H01L *49/02; C23C 15/00*

U.S. Cl. 357—2 40 Claims



36. A diode comprising a semiconducting film of MP_x, where M is an alkali metal and x is equal to or greater than 15, incorporating a metal dopant having unfilled d or f orbitals, said film formed by sputtering.

4,509,067

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES WITH PROTECTIVE MEANS AGAINST OVERVOLTAGES

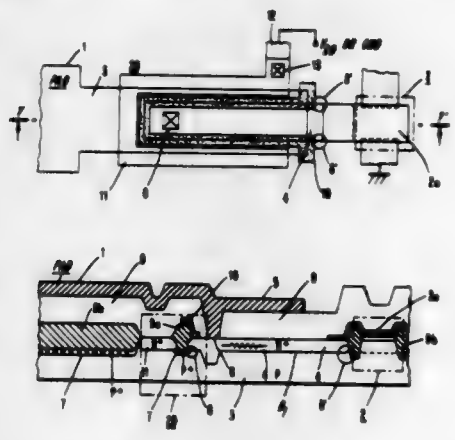
Kenji Minami, Kawasaki; Masaru Katagiri, and Hideo Noguchi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 3, 1982, Ser. No. 354,397

Claims priority, application Japan, Jun. 23, 1981, 56-96887

Int. Cl.[3] H01L *29/90, 29/78, 27/02*

U.S. Cl. 357—13 4 Claims



1. A semiconductor integrated circuit comprising:

a semiconductor substrate of a first conductivity type of a given impurity concentration;

an active semiconductor element formed in said substrate;

a protective resistor region of a second conductivity type opposite to said first conductivity type formed in the surface of the substrate, said protective resistor region being electrically connected to said active element;

an input contact portion in said resistor region for connecting an input signal to said resistor region; and

protective means including a metal oxide semiconductor field effect transistor formed to substantially surround said resistor region and electrically connected to said resistor region for being rendered conductive only by excessive voltage surges applied to said input contact portion of said resistor region and for absorbing such excess voltage surges and thereby protecting said active element; wherein said metal oxide semiconductor field effect transistor is comprised of said resistor region; a second conductivity type region in the semiconductor substrate substantially surrounding at least the input contact portion of said resistor region; an insulating layer formed adjacent to and insulating said second conductivity type region from said resistor region; a conducting layer formed at least in part on the insulating layer and extending over at least a part of said resistor region; and a channel stopper region of said first conductivity type having a higher impurity concentration than said substrate and located below and in contact with said insulating layer.

4,509,068

THYRISTOR WITH CONTROLLABLE EMITTER SHORT CIRCUITS AND TRIGGER AMPLIFICATION

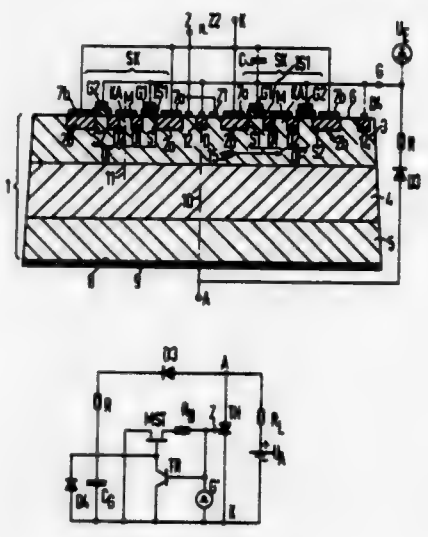
Michael Stoisiek, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,122

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138762

Int. Cl.[3] H01L *29/74*

U.S. Cl. 357—38 7 Claims



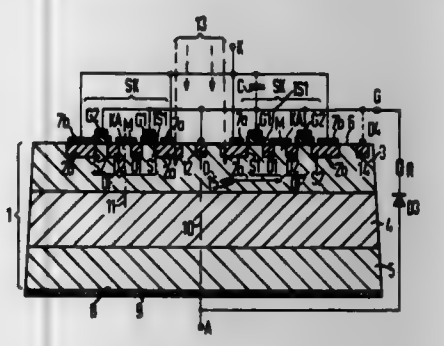
1. A thyristor comprising a semiconductor body having an n-emitter contacted by a cathode, and an adjacent p-base, and a p-emitter contacted by an anode, and an adjacent n-base, and with a plurality of emitter short circuits disposed at a boundary surface of the semiconductor body comprising MIS transistors, each MIS transistor comprising an edge region of the n(p)-emitter, a n(p)-conductive semiconductor region inserted in the p(n)-base and conductively connected thereto, and a region of the p(n)-base covered by a gate, a lateral transistor provided at the boundary surface, said lateral transistor comprising an edge region of the n(p)-emitter, a further n(p)-conductive semiconductor region inserted in the p(n)-base and connected to the gates of the MIS transistors, and comprising a sub-region of the p(n)-base lying therebetween; said sub-region having a trigger electrode; and means for connecting the gates of the MIS transistors to a positive voltage.

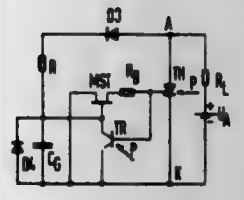
4,509,069

LIGHT TRIGGERABLE THYRISTOR WITH CONTROLLABLE EMITTER-SHORT CIRCUIT AND TRIGGER AMPLIFICATION

Michael Stoisiek, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 9, 1982, Ser. No. 416,333
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138763
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 5 Claims





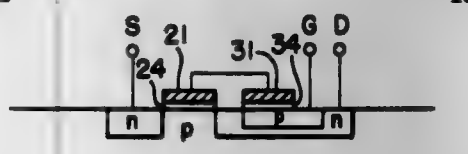
1. A light-triggerable thyristor having a semiconductor body with an n-emitter contacted by a cathode, an adjacent p-base, a p-emitter contacted by an anode, and an adjacent n-base, a plurality of emitter short circuits disposed at one boundary surface of the semiconductor body in the form of MIS transistors, each MIS transistor comprising an edge region of the n(p)-emitter, an n(p)-conductive semiconductor region inserted into the p(n)-base covered by a gate, a lateral transistor provided at the light-irridated boundary surface, said lateral transistor comprising an edge region of the n(p)-emitter, a further n(p)-conductive semiconductor region inserted into the p(n)-base which is connected to the gates of the MIS transistors, and a sub-region of the p(n)-base lying therebetween; and means for connecting the gates of the MIS transistors to the anode.

4,509,070

METAL-INSULATOR-SEMICONDUCTOR TRANSISTOR DEVICE

Yuji Furumura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 18, 1980, Ser. No. 218,007
Claims priority, application Japan, Dec. 27, 1979, 54-169165
Int. Cl.³ H01L *27/07*
U.S. Cl. 357—41 15 Claims



1. A metal-insulator-semiconductor device comprising: a semiconductor substrate and a MIS transistor and a MIS input element separately formed in combiantion with the semiconductor substrate;

said MIS transistor comprising a source region and a drain region, both having a first conductivity type, a channel region between said source and drain regions and having a second conductivity type opposite said first conductivity type, a gate insulating layer on said channel region and a gate electrode on said gate insulating layer, said source region, drain region and channel region all being formed in said semiconductor substrate;

said MIS input element comprising an input region of said second conductivity type, an insulating layer formed on said input region and an electrode formed on said insulating layer of said MIS input element, the insulating layer and electrode of said MIS input element respectively consisting of the same materials as those of said gate insulating layer and gate electrode of said MIS transistor;

wherein said gate electrode of said MIS transistor and said electrode of said MIS input element are electrically interconnected; and

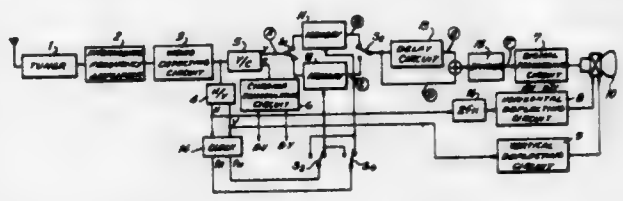
means connected to said input region for receiving an input signal to drive said MIS transistor.

4,509,071

DOUBLE-SCANNING NON-INTERLACE TELEVISION RECEIVER

Yasushi Fujimura, Musashino; Takashi Okada; Yutaka Tanaka, both of Yokohama, and Yasunari Ikeda, Funabashi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,206
Claims priority, application Japan, Nov. 5, 1981, 56-177459
Int. Cl.³ H04N *5/44*
U.S. Cl. 358—11 21 Claims



1. A double-scanning non-interlace television receiver for receiving an interlace television signal having alternating odd and even fields of scanned lines which are normally interlaced, as displayed, comprising:

receiver means for receiving said interlace television signal and generating received line signals representative of said scanned lines of a field being received;

visual display means; and

non-interlace converting means connected to said receiver means for generating an averaged line signal from two consecutive received line signals and for serially supplying said averaged line signal and said consecutive received line signals to said visual display means for display by the latter, with each said averaged line signal being supplied and displayed between the respective received line signals, said non-interlace converting means supplying said received line signals of each said odd field and said averaged line signals derived therefrom to said visual display means, and then supplying said received line signals of the following even field and said averaged line signals derived therefrom to said visual display means, whereby each of said scanned lines is scanned twice on said visual display means, said non-interlace converting means including memory means for storing said received line signals, delay means connected to said memory means for delaying said received line signals, and summing means connected to said delay means and said memory means for generating the sum of two of said received line signals.

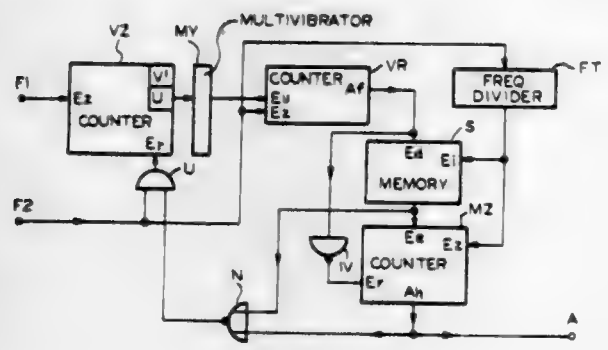
4,509,072

DIGITAL CIRCUIT FOR PROVIDING A BINARY SIGNAL ON THE OCCURRENCE OF A PREDETERMINED FREQUENCY RATIO OF TWO SIGNALS

Herbert Elmis, Denzlingen, and Adrian Klar, Freiburg, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 350,556, Feb. 22, 1982, Pat. No. 4,454,531. This application Mar. 23, 1984, Ser. No. 592,900
Claims priority, application European Pat. Off., Mar. 9, 1981, 81 10 720.1

Int. Cl.³ H04N 9/44
U.S. Cl. 358—17 17 Claims



1. A digital circuit for determining when a predetermined frequency ratio occurs between a first signal at a first frequency and a second signal at a second frequency, said first frequency being higher than said second frequency, and for providing a digital output signal when said ratio occurs over a measuring period, said circuit comprising:

first means for counting the number of pulses of said first signal which occur during a predetermined period and for providing a first output signal when a predetermined count is reached, said predetermined count being offset from a first count corresponding to said predetermined ratio, said first output signal having a duration which has a predetermined relationship to the time required to count from said predetermined count to said first count;

second means for counting successive pulses of said second signal, said second means counting in a first direction when said pulses of said second signal occur in coincidence with said first output signal and counting in the reverse direction otherwise, and for providing a first signal state at an output when a second predetermined count is exceeded in said first direction; and

third means for counting successive third pulses to establish said measuring period and for providing said digital output signal when a predetermined number of successive ones of said third pulses occur when said output has said first signal state, said third pulses having a predetermined relationship to said second signal.

16. A digital circuit in accordance with claim 1, for use in a television receiver wherein:

said first signal is a chrominance subcarrier frequency and said second signal is the horizontal frequency in a received color television signal and said third pulses are synchronous with the vertical deflection, and said third counting means thereby counts a predetermined number of field periods.

4,509,073

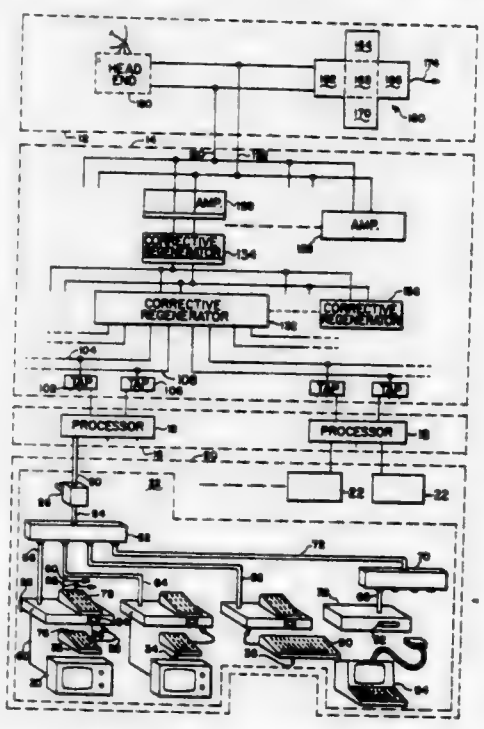
TWO-WAY CABLE-TELEVISION SYSTEM

Paul Baran, Menlo Park, and Maarten R. Pranger, Morgan Hill, both of Calif., assignors to Packet Technologies, Inc., Cupertino, Calif.

Filed Apr. 29, 1982, Ser. No. 373,048
Int. Cl.³ H04N 7/10
U.S. Cl. 358—86 4 Claims

1. A tree-type two-way data communications system for use in a cable televison system having a single head-end subsystem, a plurality of data sources and a cable television distribution network wherein each said data source is a source of digital commands to said head-end subsystem, said two-way system comprising:

a plurality of interface subsystems intermediate of said head-end subsystem and each one of said data sources, said interface subsystems being coupled in a tree structure to said head-end subsystem, each one of said data sources being coupled to one of said interface subsystems, and each one of said interface subsystems being coupled to at least one other of said interface subsystems, said interface subsystems receiving without acknowledgment through said cable distribution network from at least one of said



data sources said digital command signals, each said interface subsystem verifying data for mat and regenerating and forwarding at least some of said digital commands as command packet signals in a packet signal format on an uplinked carrier towards said head-end subsystem;

said head-end subsystems receiving said digital command signals as said command packet signals and developing response signals; and

said cable-distribution subsystem coupling response signals in a tree-structure without loops from said head-end subsystems to each one of said data sources through a common signal path independent of said uplink for acknowledging receipt of said command packet signals.

4,509,074

TELEVISION INSTALLATION COMPRISING A CIRCUIT ARRANGEMENT FOR THE COMPENSATION OF AMPLITUDE VARIATIONS

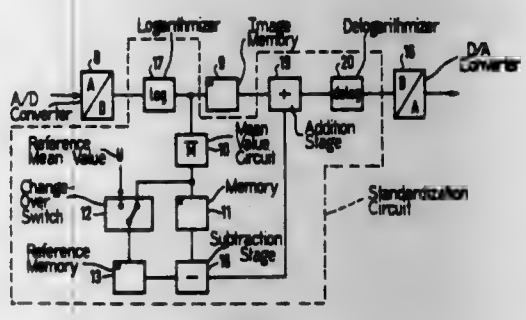
Peter Krauss, Bubenreuth; Jürgen Reinhardt, Aurachtal, and Johann Seissl, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,485
Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218505

Int. Cl.³ H04N 7/18
U.S. Cl. 358—111 6 Claims

1. A television installation comprising: a television camera producing a video signal; a monitor; circuit means for amplification alteration of the video signal in dependence upon a standardization value; a presently occurring video signal being fed to an image memory and a standardization circuit; and said standardization circuit comprising a mean value circuit means for determining a mean value of a brightness of the presently

occurring video signal, a reference means for creating a reference brightness value, and logic element means for comparing



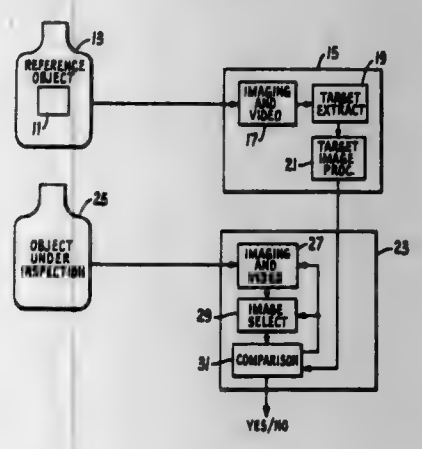
the mean value and reference value to create a standardization value for input to the circuit means for alteration.

4,509,075

AUTOMATIC OPTICAL INSPECTION APPARATUS

R. John Simms, Menlo Park, and Jerry D. Haney, Sunnyvale, both of Calif., assignors to Oxbridge, Inc., Mountain View, Calif.

Filed Jun. 15, 1981, Ser. No. 273,508
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 **35 Claims**



1. An automatic inspection apparatus for inspecting a series of illuminated objects comprising

means positionable on a properly configured object for identifying portions on the properly configured object;

means for recognizing the identifying means on the properly configured object including means for obtaining reference data from the identified portions and for deriving inspection instructions from the identifying means and from the reference data; and

data processing means responsive to the inspection instructions for evaluating data in accordance with the inspection instructions to derive an accept-or-reject decision, the data originating from subsequent objects, wherein the data processing means evaluate data corresponding to portions of the subsequent objects which portions are the counterparts of the identified portions of the properly configured object.

4,509,076

DEFECT INSPECTION APPARATUS

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 409,032, Aug. 17, 1982, abandoned, which is a continuation of Ser. No. 131,543, Mar. 18, 1980, abandoned. This application Jun. 5, 1984, Ser. No. 617,237
Claims priority, application Japan, Mar. 22, 1979, 54-33406
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 **2 Claims**

1. A defect inspection apparatus for inspecting small defects such as flaws comprising:

(a) image sensing means for picking up an object to be inspected and producing an analog video signal of said object;

(b) processor means for receiving said analog video signal and separating therefrom a horizontal synchronizing signal component and a video signal free of any unnecessary component;

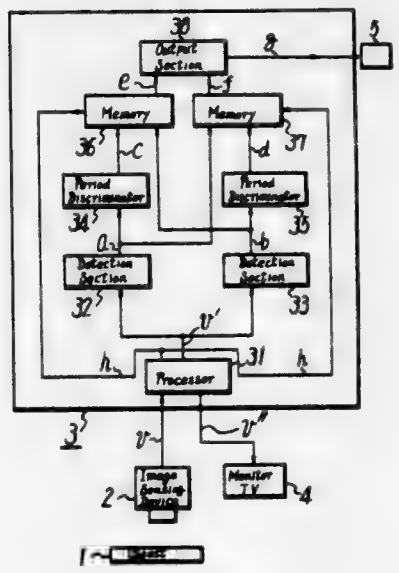
(c) a first section for receiving said video signal and converting said video signal to a digital signal having an output differentiation pulse at a rising edge thereof;

(d) a second detection section for receiving said video signal and converting said video signal to a digital signal having an output differentiation pulse at a falling edge thereof;

(e) a first period discriminator for receiving the output pulse from said first detection section and producing a signal with a period which is established in conjunction with the size of a defect to be detected;

(f) a second period discriminator for receiving the output pulse from said second detection section and producing a signal with a period the same as that of the signal from said first period discriminator;

(g) a first memory for receiving the signals from said first period discriminator section and the output pulse from second detection section and producing a signal when



both of said signals are present so as to detect a defect of a size smaller than that determined by the signal with the period derived from said first period discriminator, said horizontal synchronizing signal component being supplied to said first memory after receipt of the signals from said first period discriminator section and the output pulse from said second detection section so as to constantly clear said memory;

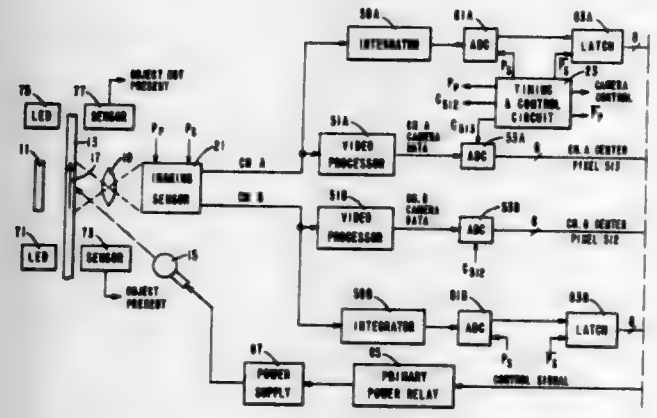
(h) a second memory for receiving the signals from said second period discriminator section and the output pulse from said first detection section and producing a signal when both of said signals are present so as to detect the defect of a size smaller than that determined by the signal with the period derived from said second period discriminator, and said horizontal synchronizing signal component being supplied to said second memory after receipt of the signals from said second period discriminator section and the output pulse from said first detection section so as to constantly clear said memory;

(i) output means responsive to said first and second memories for producing a defect detection signal when either one or both of said first and second memories produce output signals.

4,509,077
AUTOMATIC, SELF-DIAGNOSING, ELECTRO-OPTICAL IMAGING SYSTEM

Roger H. Therrien, Waterloo, Canada, assignor to NCR Canada Ltd-NCR Canada LTEE, Mississauga, Canada

Filed Dec. 17, 1982, Ser. No. 450,582
Int. Cl.[3] H04N 5/30
U.S. Cl. 358—139 29 Claims

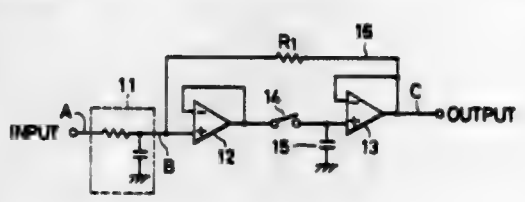


1. An automatic, self-diagnosing, electro-optical imaging system comprising:
a reference background for reflecting radiant energy impinging thereon;
first means for illuminating said reference background with radiant energy during an on mode of operation;
second means including a photosensor for generating a first signal proportional to the intensity of reflected radiant energy received from said reference background during said on mode of operation;
third means responsive to the first signal for producing an associated first data signal;
fourth means selectively responsive to the first signal and first data signal for selectively developing test signals during said on mode of operation; and
fifth means for initiating said on mode of operation, said fifth means including sixth means responsive to the first plurality of test signals for automatically testing the operation of each of said second and third means during said on mode of operation.

4,509,078
DROPOUT COMPENSATION CIRCUIT

Kazuo Kuroda, Saitama, Japan, assignor to Pioneer Video Corporation, Yamanashi, Japan

Filed Feb. 8, 1983, Ser. No. 465,066
Claims priority, application Japan, Feb. 8, 1982, 57-16087[U]
Int. Cl.[3] H04N 5/14, 5/21
U.S. Cl. 358—160 5 Claims

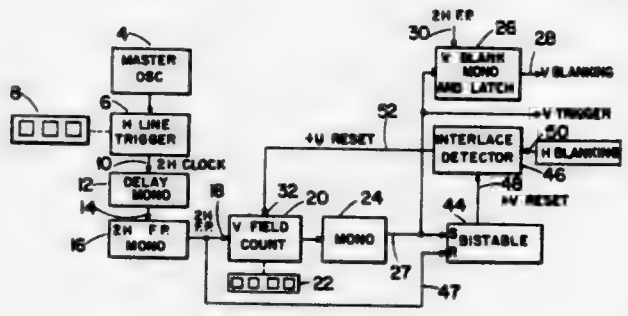


1. A dropout compensation circuit comprising:
a low-pass filter to which an information signal is inputted;
a first buffer amplifier;
a second buffer amplifier coupled to an output of said first buffer amplifier;
a switch interposed between said first and said second buffer amplifiers, said switch being opened when dropout occurs;
a holding capacitor for holding an input voltage of said low-pass filter when said switch is closed and for outputting the voltage held therein through said second buffer amplifier when said switch is opened; and
a feedback circuit for feeding back the output voltage of said second buffer amplifier to the input of said first buffer amplifier.

4,509,079
INTERLACE DETECTOR

John H. Harshbarger, Xenia, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio

Filed Feb. 7, 1983, Ser. No. 464,687
Int. Cl.[3] H04N 5/24
U.S. Cl. 358—165 14 Claims

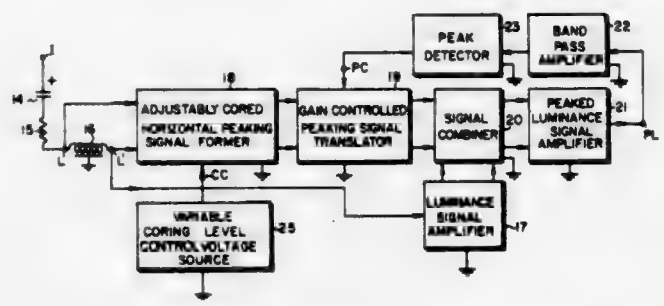


1. A system for controlling a raster beam capable of operating selectively in 1:1 or 2:1 field interlace comprising: horizontal blanking means for causing blanking during horizontal retrace of the beam, vertical blanking means for causing blanking of the beam during vertical retrace, said vertical blanking means including means for generating a vertical blanking control pulse which initiates the onset of vertical blanking, and an interlace correction circuit connected to said vertical blanking means for detecting the occurrence of vertical blanking during a normally unblanked horizontal scan of the beam and delaying the vertical blanking control pulse to delay vertical blanking until completion of said normally unblanked horizontal scan.

4,509,080
VIDEO SIGNAL PEAKING SYSTEM

William A. Lagoni, and Wayne E. Harlan, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,885
Int. Cl.[3] H04N 5/14
U.S. Cl. 358—166 3 Claims



1. In an image reproduction system, including a source of video signals representative of the luminance of an image to be reproduced, a video signal peaking system comprising:
means, responsive to said video signals for forming an adjustably cored horizontal peaking signal output, said forming means having a coring level control terminal, with the depth of coring of said horizontal peaking signal output effected by said forming means being dependent upon the level of a potential appearing at said control terminal;
means for developing a variable coring level control potential, said variable coring level control potential being supplied to said control terminal;
a gain controlled peaking signal translator responsive to said

adjustably cored horizontal peaking signal output of said forming means;

means for combining the output of said gain controlled peaking signal translator with video signals derived from said source to form a peaked luminance signal;

a frequency selective amplifier having an input responsive to said peaked luminance signal and exhibiting a passband encompassing a portion of the frequency band occupied by said video signals; and

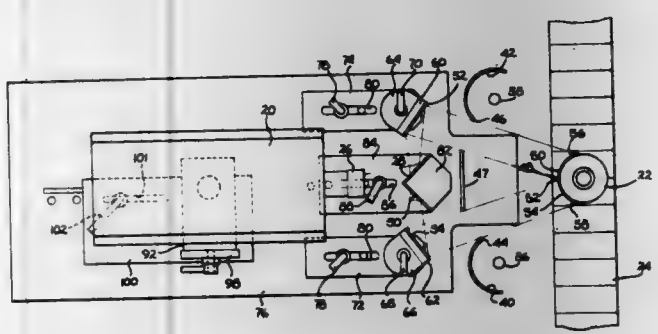
means, responsive to the amplitude of an output of said frequency selective amplifier for controlling the gain of said peaking signal translator in a sense opposing variations of said amplitude.

4,509,081

OPTICAL SYSTEM FOR AUTOMATIC SORTING AND INSPECTION EQUIPMENT

John J. Peyton, and Bryan K. Watt, both of Santa Barbara, Calif., assignors to Industrial Automation Corp., Goleta, Calif.

Filed Nov. 29, 1982, Ser. No. 445,282
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—225 **4 Claims**



1. A system for providing a video signal containing image portions of a container label representing an approximately 180 degree wrap of the label region thereof comprising

a conveyor means for providing a steady stream of containers substantially contacting each other along a conveyor path;

a video camera for receiving an image along the optical axis thereof approximately perpendicular to said conveyor path and providing a video signal in response thereto;

a first mirror for receiving light from a first area of a target container located substantially on the said optical axis of said video camera;

a second mirror for receiving light from a second area of the target container; and

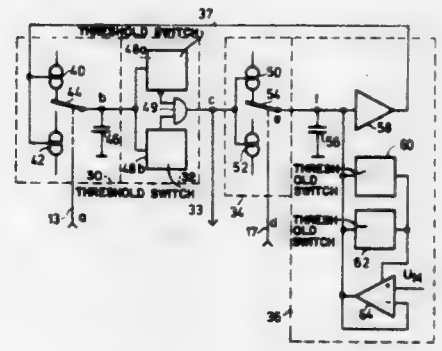
third and fourth mirrors adjacent said optical axis and positioned to reflect light from said target container and reflected by said first and second mirrors, respectively, along said optical axis, whereby said video camera may receive an image comprised of a first image portion of the first area of the target container and a second image portion of the second area of the target container, said first and second areas of the target container being substantially contiguous along one edge thereof and collectively representing an approximately 180 degree wrap of the container extending from adjacent the area of contact of the container into the next preceeding container on said conveyor means to adjacent the area of contact of the container with the next succeeding container on said conveyor means, said first and second image portions having sufficiently low image portions having sufficiently low image distortion over said first and second areas that said video camera will provide a video signal containing substantially all the detail of said first and second areas.

4,509,082

CIRCUIT ARRANGEMENT FOR GENERATING THE VERTICAL SYNCHRONIZING INFORMATION IN A MAGNETIC VIDEO TAPE APPARATUS

Klaus Kröner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 14, 1982, Ser. No. 434,281
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142272
Int. Cl.³ H04N *5/93, 5/94, 5/782*
U.S. Cl. 360—37.1 **9 Claims**



1. A circuit arrangement for generating the vertical synchronizing information in a magnetic videotape apparatus in which the magnetic tape is at least partly wrapped around a rotating head-support and the head support carries one or more magnetic heads which are uniformly space over the circumference of the head support, which magnetic heads consecutively write or scan adjacent tracks on the magnetic tape, which tracks are inclined relative to the longitudinal axis of the magnetic tape and each contain the information of one field and at a predetermined small distance from the edge of the magnetic tape contain the vertical synchronizing information, a track-change signal being generated, which signal is synchronized with the head-support rotation and indicates a track change, and which apparatus further comprises a video signal processing circuit for demodulating and amplifying the information from said magnetic heads, said video signal processing circuit including a line pulse generator for generating a line-pulse signal, which generator is synchronized by the horizontal synchronizing pulses in the video information, characterized in that said circuit arrangement comprises adjustable delay means for deriving a starting signal from the track-change signal, a vertical synchronizing generator coupled to said delay means for generating vertical synchronizing information for the video signal processing circuit from the line-pulse signal in substitution for that contained in said scanned tracks, and a phase comparator arranged to receive the starting signal and the line-pulse signal for controlling the delay time of the delay means such that the starting signal coincides with a phase range of a specific one of the line pulses, which phase range is situated between starting edges of two pulses in the line-pulse signal in which the vertical synchronizing information in said scanned tracks should occur.

4,509,083

HEAD TRACKING CONTROL FOR VIDEO TAPE RECORDER

Kenji Nakano, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

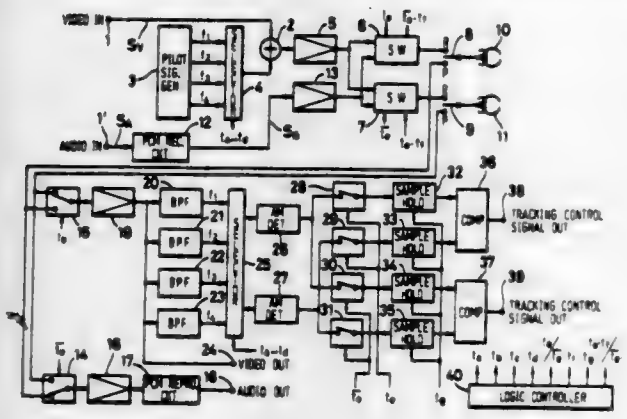
Filed Apr. 29, 1982, Ser. No. 373,128
Claims priority, application Japan, May 6, 1981, 56-67885
Int. Cl.³ G11B *5/58, 21/10*
U.S. Cl. 360—77 **7 Claims**

1. Apparatus for reproducing an information signal comprised of a first video signal, a second information signal and tracking information signals recorded in parallel tracks on a record medium, said first video signal and said tracking information signals being recorded only in a first section of each of said tracks and said second information signal being recorded

with no tracking information signals in a second subsequent section of each of said tracks, said first video signal being recorded in said tracks in a first frequency range, said tracking information signals being recorded in said tracks in a second frequency range lower than and not overlapping said first frequency range, and said second information signal being modulated and recorded in said tracks in a third frequency range which overlaps at least said second frequency range of said tracking information signals, said apparatus comprising:

transducer means for scanning said tracks to reproduce sequentially said first video signal including said tracking information signals and said second information signals;

means for separating said tracking information signals from



said reproduced first video signal and producing error detection signals corresponding to scanning errors of said transducer means in response to said separated tracking information signals; and

means for holding an error detecting signal produced during scanning of the first section of each of said tracks and producing second-section tracking control signals, whereby the scanning of said second subsequent section of each of said tracks by said transducer means is controlled in response to said second-section tracking control signals derived from the tracking information signals included only with the first video signal and reproduced by said transducer means during scanning of the first section of the respective track.

4,509,084

ROTARY MAGNETIC HEAD

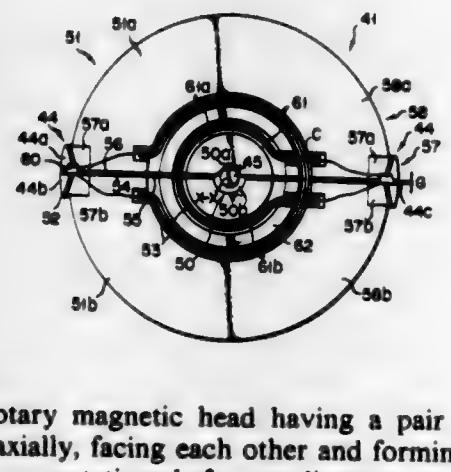
Yoshiharu Fujioka, Yamato; Akio Onuki, Ichikawa, and Tomio Sakamoto, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 29, 1982, Ser. No. 373,105

Claims priority, application Japan, May 11, 1981, 56-70490; Sep. 1, 1981, 56-137241

Int. Cl.³ G11B *5/08*

U.S. Cl. 360—84 **8 Claims**



1. In a rotary magnetic head having a pair of cylinders disposed coaxially, facing each other and forming a chamber therebetween, a rotating shaft extending substantially coaxial with said cylinders into said cylinders, a rotor mounted on said shaft in the chamber and including a pair of magnetic heads each having a gap of a predetermined length at one end, and a rotary transformer for coupling said magnetic heads to an external circuit, the improvement in which said rotor comprises:

a rotor core comprised of core halves having joining end faces which face each other, said core halves having a central portion and end portions, said end portions being used as the core halves of said magnetic heads and having a gap of a predetermined width, the central portions of said core halves having joining surfaces and being used as head base halves, said central portions forming a rotor-side core of said rotary transformer; and

centering means for centering the joining surfaces of said core halves, comprising an isosceles triangular notch cut in the joining surface of one of said head base halves, a bisector of the vertex angle of the isosciles traingular notch extending at right angles to the joining surface, and a semicircular notch cut in the joining surface of the other head base half, extending along the axis of said rotor, and having a radius larger than said rotating shaft, said centering means receiving the rotating shaft, holding the shaft in contact with the surface of the isosceles triangular notch and maintaining a clearance between the shaft and the semicircular notch so that an axis of the rotating shaft lies substantially at a midpoint between the outer tips of said head core halves and in a plane of the gaps between the end portions of said rotor core halves;

said rotor secured to said rotating shaft by means of a mounting plate secured to the rotating shaft; and

two semicircular grooves cut in said head base halves, to define a circuit whose center is identical with the center of rotation of said rotor, and to hold a rotor-side coil of said rotary transformer.

4,509,085

EJECTING DEVICE OF A MAGNETIC TAPE DRIVING APPARATUS

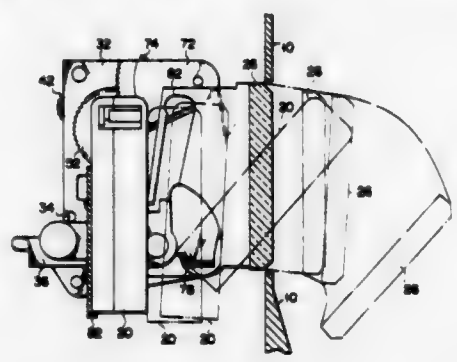
Shoichi Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1982, Ser. No. 405,744

Claims priority, application Japan, Aug. 13, 1981, 56-127068; Aug. 13, 1981, 56-127069; Aug. 13, 1981, 56-120365[U]

Int. Cl.³ G11B *15/00, 19/18*

U.S. Cl. 360—93 **6 Claims**



1. An ejecting device for use in a magnetic tape driving apparatus of the kind having a rising surface relative to a horizontal plane, reel shafts having projected ends and whose axes intersect the riding surface, a magnetic tape driving mode setting switch movable between a first position where the reel shafts are stopped and a magnetic tape driving mode is cleared and a second position where the reel shafts are set for rotation and the magnetic tape driving mode is established, and an ejection switch movable between first and secodd positions,

wherein said ejecting device can move between a first position where reel hubs of a tape cassette held in the ejecting device in a holding space inside said tape driving apparatus are mounted on the projected ends of the reel shafts, and a second Position where the reel hubs are disengaged from the reel shafts and the tape cassette is outside the

holding space, and said device is arranged to move from its first position to the second position as the ejection switch held in the first position thereof is shifted to its second position, said ejecting device comprising:

a first base plate arranged to extend parallel to the axes of the reel shafts and to intersect the horizontal plane;

a second base plate attached to the first base plate so as to be rotatable substantially parallel to the first base plate between first and second positions, so that a lower portion of the second base plate below its axis of rotation relative to the first base plate is farther away from the projected ends of the reel shafts when the second base plate is located in its second position than when in the first position;

a third base plate rotatably attached to that portion of the second base plate below the axis of rotation of the second base plate relative to the first base plate, and arranged for rotation substantially parallel to the second base plate;

tape cassette retaining means on the third base plate for detachably holding the tape cassette;

said retaining means including a face plate for providing a covering surface for the holding space inside the tape driving apparatus when the second base plate is located in its first position, the vertical length of said face plate being less than the corresponding vertical length of the tape cassette to be held by a part of said retaining means;

a guide pin on the third base plate; and

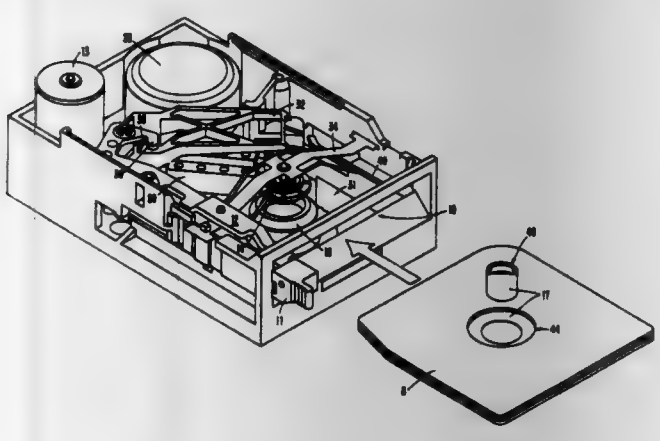
the first base plate having a guide hole in which the guide pin is fitted, so that the reel hubs of the tape cassette held by the tape cassette retaining means are mounted on the reel shafts when the second base plate is located in its first position, and that the reel hubs of the tape cassette held by the tape cassette retaining means are disengaged from the reel shafts to tilt the axes of the reel hubs relative to the axes of the reel shafts while the second base plate moves from its first position to the second position.

4,509,086

METHOD AND APPARATUS FOR LOADING AND REGISTERING A DISKETTE IN A DISKETTE DRIVE

Craig R. Hickethier; Ronald E. Hogan, both of Boulder, and Marvin E. Prahl, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1982, Ser. No. 391,050
Int. Cl.³ G11B *5/016*
U.S. Cl. 360—99 **14 Claims**



1. In a disk drive for reading and writing magnetic signals on a flexible magnetic disk housed inside a rigid cartridge having access openings for a spindle and a read/write head, said drive having a rotatable drive spindle for rotating the magnetic disk in a rotation plane inside the rigid cartridge, and said drive also having a read/write head for reading and writing signals on said magnetic disk as the disk rotates in the rotation plane, improved apparatus for loading said rigid cartridge in said drive, said improved apparatus comprising:

fixed guide means for guiding the cartridge as it is inserted into the drive and registering the cartridge on a guide surface in a registration plane parallel to the rotation plane;

said spindle and said head protruding into the insertion path of said cartridge and above said registration plane;

means for biasing the cartridge against the guide surface of said guide means and the top surface of said spindle as the cartridge is inserted;

said spindle having sides beveled to guide the leading edge of the cartridge up and over the spindle and head as the cartridge moves into the drive;

said biasing means pressing the cartridge against the top of the spindle and holding the cartridge away from said head as the cartridge passes over said spindle; and

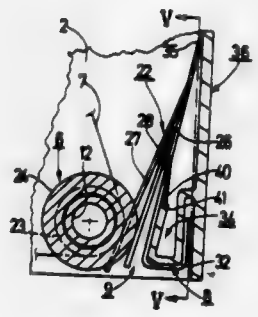
said cartridge biased onto the guide surface of said guide means by said biasing means when the spindle access opening aligns with said spindle whereby the cartridge is registered in the registration plane and said disk lies in the rotation plane.

4,509,087

TAPE GROUNDING ELEMENT IN A MAGNETIC-TAPE CASSETTE

Lothar Jäger; Anton Peter, and Reinhard Winkler, all of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,000
Claims priority, application Austria, Jan. 7, 1982, 33/82
Int. Cl.³ G11B *15/60*
U.S. Cl. 360—130.21 **10 Claims**



1. A magnetic-tape cassette, adapted for use with a magnetic-tape apparatus having an electrically conductive locating pin which is arranged thereon and which is at the reference potential of the apparatus; said cassette comprising at least one electrically conductive cylindrical tape guide arranged to be movable to a limited extent and formed with at least one axial recess which is accessible from the exterior of the magnetic tape cassette for engagement by a locating pin of an apparatus in which the cassette is inserted, and a magnetic tape having a base side arranged to pass along a part of the circumferential surface of said tape guide, and a magnetic coating side,

characterized by comprising an electrically conductive resilient element associated with the tape guide, arranged inside the magnetic-tape cassette adjacent the coating side of the magnetic-tape, said element comprising at least two portions; one of said portions contacting the coating side of the magnetic tape at the location of the tape guide, and the other portion being an electrically conductive contact with the tape guide.

4,509,088

MOTOR PROTECTOR RELAY WITH MEMORY OF OVERLOAD

Mark V. Profio, Wauwatosa, Wis., assignor to Square D Company, Palatine, Ill.

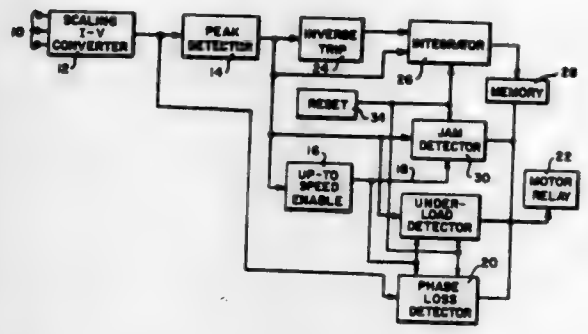
Filed Sep. 30, 1982, Ser. No. 430,074
Int. Cl.³ H02H *3/08*
U.S. Cl. 361—29 **4 Claims**

1. A method of protecting an electric motor from damage

caused by a prompt restart after an overload and a loss of power to a motor controller comprising the steps of:

producing a current signal that is a measure of current in the electric motor;

producing an integrated value of the current signal as a function of time;



leveling the integrated value when the motor is running within a maximum load limit;

storing the integrated value of the current signal in a memory for a predetermined time; and

preventing restart of the electric motor during the predetermined time.

4,509,089

TWO-POLE OVERCURRENT PROTECTION DEVICE

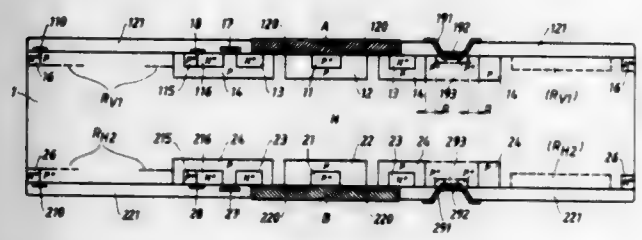
Per Svedberg, Vällingby, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed May 23, 1983, Ser. No. 497,326

Claims priority, application Sweden, Jun. 3, 1982, 8203432

Int. Cl.³ H02H *3/08;* H03K *17/72*

U.S. Cl. 361—100 **3 Claims**



1. In a two-pole overcurrent protection device for connection into a current-carrying conductor, the device comprising a normally conducting thyristor provided with turn-off means and having, in turn, a first emitter layer, a first base layer, a second base layer and a second emitter layer, and a MOS transistor integrated with the thyristor, connected in parallel with the PN-junction between said first emitter layer and said first base layer and arranged, when the voltage across the thyristor exceeds a predetermined value, to short-circuit the said PN-junction for turning off the thyristor, the improvement wherein the MOS transistor has control means connected via a Schottky diode to said second base layer of the thyristor, the Schottky diode comprising a junction between said second base layer and a contact layer arranged on said second base layer and connected to said control means of the MOS transistor, being arranged adjacent to, but separated from, a semiconductor layer which is of the same conduction type as said first base layer and which is connected to said first emitter layer, and having a reverse direction which coincides with the blocking direction of the thyristor.

4,509,090

COAXIAL LIGHTNING ARRESTING STRUCTURE

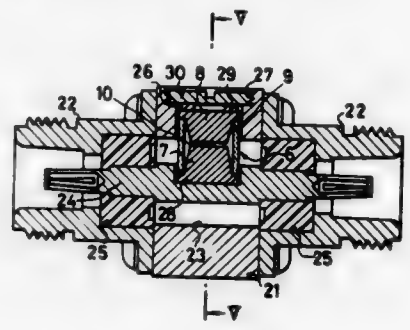
Norihide Kawanami; Yukinori Miyake; Kenji Kawamura, all of Tokyo, and Toshiharu Toda, Mitaka, all of Japan, assignors to Hirose Electric Co., Ltd., Tokyo and Mito Teck O., Ltd., Ibaragi, both of, Japan

Filed Jun. 20, 1983, Ser. No. 505,852

Claims priority, application Japan, Jun. 23, 1982, 57-107779

Int. Cl.³ H02H *9/06*

U.S. Cl. 361—119 **6 Claims**



1. A coaxial lightning arresting structure comprising an inner conductor, an outer conductor surrounding the inner conductor and an arrester tube located between the inner and outer conductors perpendicularly to the direction of transmission and connected at its ends to the inner and outer conductors, respectively, the portion of said inner conductor provided with the arrester tube having a reduced effective sectional area as compared with the other portions of the inner conductor so that the ratio of the outer conductor inner diameter to the outer diameter of said inner conductor portion having the reduced effective sectional are is greater than the ratio of the outer conductor inner diameter to the inner conductor outer diameter at the other portions thereof, which latter said ratio provides the coaxial transmission line with a given characteristic impedance.

4,509,091

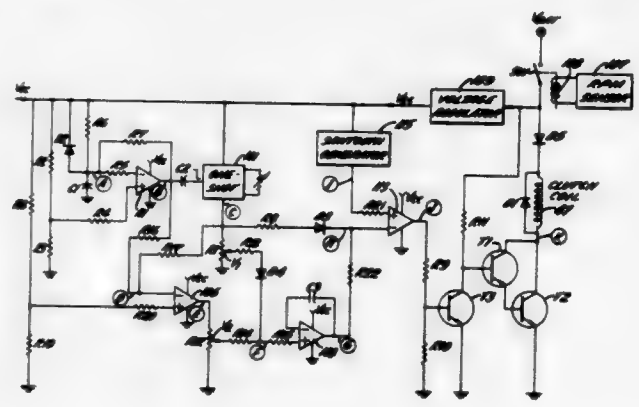
METHODS AND APPARATUS FOR CONTROLLING THE ENGAGEMENT OF GAP-TYPE ELECTROMAGNETIC COUPLINGS

Dwight E. Booth, Janesville, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Feb. 17, 1984, Ser. No. 581,108

Int. Cl.³ H01F *7/18*

U.S. Cl. 361—154 **23 Claims**



1. Apparatus for energizing the multiple-turn winding of an electromagnetic coupling having an armature and a rotor separated by an air gap, said apparatus comprising:

first means for initially energizing said winding for a period of time sufficient to build magnetic flux between said armature and rotor and across said air gap so as to cause said armature and rotor to close the air gap between them;

second means for reducing the energization of said winding after the termination by said first means of said initial

energization so as to allow slippage between said armature and rotor; and

third means, operative after the reducing effected by said second means, for gradually increasing the energization of said winding so as to increase the coupling torque and decrease the slippage between said armature and said rotor.

4,509,092

LOCK AND RELATED KEY OF ELECTRONIC TYPE

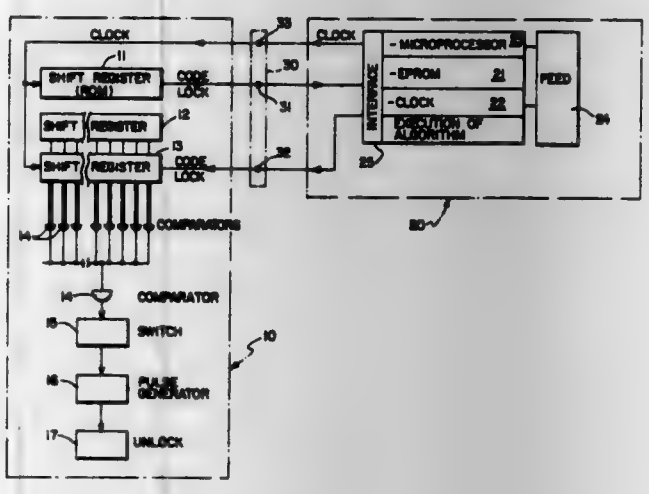
Antonino Invernizzi, Milan, Italy, assignor to Alfredo Scagliotti, Cogne, Italy, a part interest

Filed Oct. 6, 1982, Ser. No. 433,101

Claims priority, application Italy, Oct. 13, 1981, 24467 A/81

Int. Cl.³ H01H *47/22*

U.S. Cl. 361—172 **7 Claims**



1. A lock system comprising:

a lock comprising:

a movable locking element having an unlocking position and a locking position;

an actuator for moving said locking element between said positions;

a first memory storing a code;

a second memory which is not externally accessible and which contains a code indicating a result of an execution of a related algorithm on said code;

a third memory adapted to receive as information a code comparable with the code stored in the second memory;

means for comparing the codes stored in the second memory and the third memory and, if they match, for causing said actuator to move said locking element to said unlocking position; and

a key for said lock comprising:

a memory in which is stored at least one code identical to the code stored in the first memory, and the related algorithm;

an interface for interconnection with the lock; and

a microprocessor for receiving the code stored in the first memory through said interface, comparing the code stored in the first memory with the code stored in the memory of the key and, if they match, executing a processing of the code according to the related algorithm and transmitting the result of the execution to the third memory of the lock through said interface.

4,509,093

ELECTRONIC LOCKING DEVICE HAVING KEY AND LOCK PARTS INTERACTING VIA ELECTRICAL PULSES

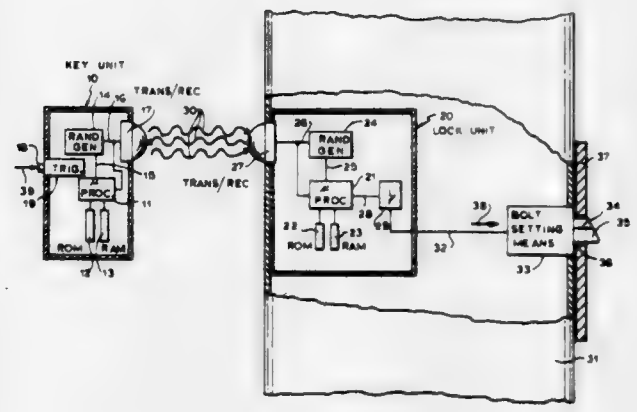
Karl-Heinz Stellberger, Velbert, Fed. Rep. of Germany, assignor to Hülsbeck & Fürst GmbH & Co. KG, Velbert, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,615

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3225754

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—172 **10 Claims**



1. An electronic locking device of the type having pulse-operated interacting key and lock units each including a random number generator, data processing means connected to the random number generator and communication means connected to the random number generator and to the data processing means, the lock unit being connectable to an object to be locked and including a bolt control means which in response to an assigned key unit moves between an operative and an inoperative position, at least the lock unit generating, in response to a start pulse, a sequence of digital input data in the form of electrical pulses which are transmitted to the key unit, the key and lock units being preprogrammed respectively for a specific association between the unanimous input and output data generated at each unit, the two specific associations being in tune only for key and lock units which belong one to another, whereby the tuned up associations serve as an electric code for the units, a common comparator arranged at least in the lock unit for comparing the pulse sequences of the output data and for generating an actuation pulse for the bolt control means when the two pulse sequences are in tune, comprising

means for generating a start pulse at the key unit;

said input data being at least one randomized random number;

two-stage coding means for generating an electronic code characteristic of the associated pair of key and lock units, one coding stage including means for performing in each unit computations according to a preset algorithm whereby the resulting values of these computations depend on the input random number, the other stage of the coding means including means for generating from the results of the computations in the first-mentioned stage a fragmented number derived according to a preset formula or rule which is independent from the input random number; and

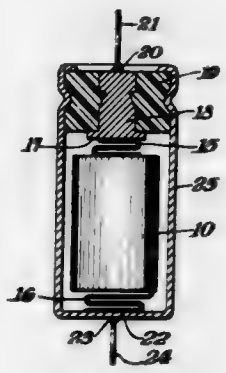
means for applying the fragmented numbers generated at respective key and lock units as said output data to said common comparator.

4,509,094

ELECTROLYTIC CAPACITOR FOR AT LEAST 150 V SERVICE

Manuel Finkelstein, North Adams, and Sidney D. Ross, Williamstown, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 21, 1984, Ser. No. 581,757
Int. Cl.³ H01G 4/22
U.S. Cl. 361—314 **8 Claims**



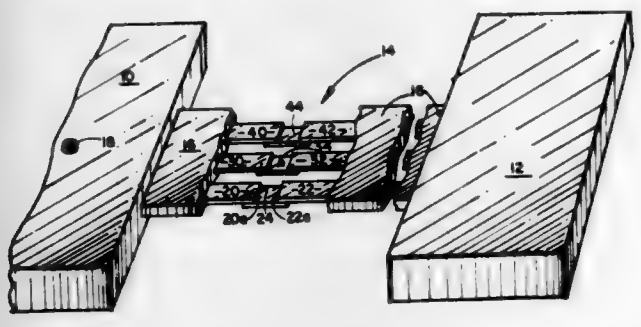
1. An aluminūm electrolytic capacitor comprising two contiguously wound aluminum foil electrodes with interleaved spacers, one of said foils bearing a barrier layer dielectric oxide on its surface, and an electrolyte in contact therewith, said electrolyte comprising as solute a diisopropylamine or a triethylamine mono salt of azelaic acid dissolved in a solvent mixture of water and a solvent selected from the group of ethylene glycol, ethylene glycol and N-methylpyrrolidinone, ethylene glycol and N-methylpyrrolidinone and dimethylformamide, butyrolactone, and butyrolactone and N-methylpyrrolidinone and providing a capacitor that operates at 105° to 125° C. and at least 150 V.

4,509,095

FLEXIBLE CIRCUIT BOARD INTERCONNECT HAVING LOW THERMAL CONDUCTIVITY

John Boros, Irvine, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 8, 1982, Ser. No. 356,069
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 **11 Claims**



1. An apparatus in flexible electrical interconnection between first and second rigid circuit systems, said systems being desirably isolated thermally from each other against heat energy tending undesirably to transfer between said systems, comprising in combination:

a first flexible electrical conductor extending outwardly of a first rigid circuit system to terminate in a first end;

a second flexible electrical conductor extending outwardly of a second rigid circuit system to terminate in a second end; and

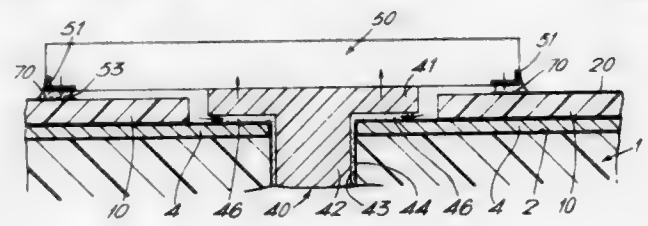
a third flexible electrical conductor bridging at least said first and second ends to provide said flexible electrical interconnection between said first and second systems and characterized by low thermal conductivity relative to at least one of said first and second conductors to thermally isolate said systems.

4,509,096

CHIP-CARRIER SUBSTRATES

Graham J. Baldwin, Cheltenham, and Michael O. McCann, Wotton-Under-Edge, both of England, assignors to Smiths Industries Public Limited Company, London, England

Filed Feb. 10, 1984, Ser. No. 578,924
Claims priority, application United Kingdom, Feb. 22, 1983, 8304890
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 **11 Claims**



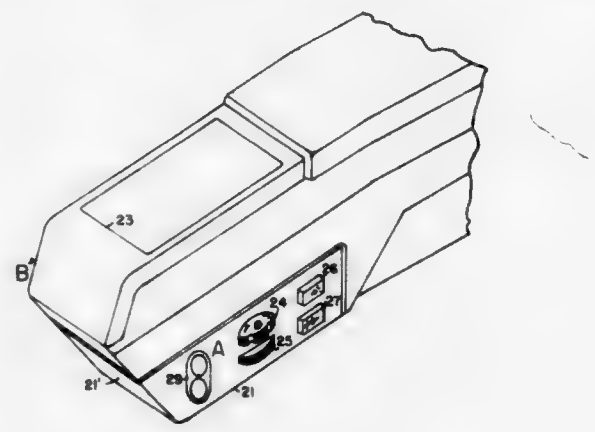
1. A chip-carrier substrate assembly comprising a chip-carrier substrate, a leadless chip carrier mounted on said substrate, said leadless chip carrier having a plurality of electrical contact pads spaced around its lower edge, said substrate including a substantially rigid multi-layer circuit board having electrical contact elements on its upper surface, solder joints electrically connecting said contact elements on said circuit board with respective ones of said electrical contact pads on said chip carrier, said substrate including at least one metal heat-dissipating layer, the chip-carrier substrate further including a metal pad with an upper surface and a lower surface, a layer of solder between the lower surface of said metal pad and the circuit board, said solder layer mounting said metal pad between said circuit board and the lower surface of said chip carrier, said metal pad being in thermal contact with both said heat-dissipating layer and the lower surface of the said leadless chip carrier, and the size and thickness of the said metal pad being such that the edges of said chip carrier overhang the metal pad and such that the contact pads on the chip carrier are spaced above the contact elements on the circuit board so as to increase the thickness of the said solder joint between the contact pads and the contact elements.

4,509,097

CONTROL UNIT INDIVIDUALLY SERVING TWO ADJACENT PASSENGERS

Ronnie D. Robinson, Mission Viejo, Calif., assignor to EECO Incorporated, Santa Ana, Calif.

Continuation-in-part of Ser. No. 273,712, Jun. 15, 1981, abandoned. This application Oct. 3, 1983, Ser. No. 538,463
Int. Cl.³ H05K 5/02
U.S. Cl. 361—395 **12 Claims**



1. One passenger control unit to individually serve two adjacently seated passengers that is affixable to a seat arm (2) disposed between the two passengers, comprising;

(a) only one housing (1), essentially symmetrical, side to side,

and having two independent sets of external manual controls (4–7),

(b) guide means upon said housing and said seat arm for removably stationarily affixing said housing to said seat arm,

(c) only one electrical connector means (11), attached to said guide means,

(d) one circuit board (12) within said housing, carrying essentially all electrical elements for said two independent sets of external manual controls,

(e) only one electrical connector (14) connected to said electrical elements and connectable to said electrical connector means (11), and

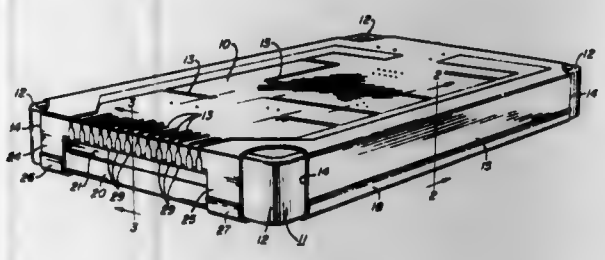
(f) only one cable (10) carrying conductors for at least one passenger service connected to said electrical connector means (11) to provide independent passenger controls for each passenger for each such passenger service, and having a connection to external means to supply each said passenger service.

4,509,098

ELECTRICAL PRINTED WIRING CIRCUIT BOARD CONSTRUCTION

Sujan DasGupta, and Merton B. Purvis, both of Worthington, Ohio, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 24, 1983, Ser. No. 469,164
Int. Cl.³ H05K *7/14*
U.S. Cl. 361—398 **11 Claims**



5. A printed wiring circuit board construction comprising a rectangular frame having opposite sidewalls having substantially parallel edges defining an open housing, a flexible tape having printed wiring affixed to one surface stretched over one side of said housing and folded about said sidewalls into the other side of said housing, and spring clamp means for clamping said tape to each of said sidewalls.

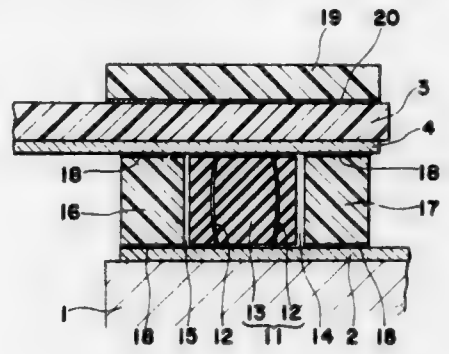
4,509,099

ELECTRONIC COMPONENT WITH PLURALITY OF TERMINALS THEREON

Toshiaki Takamatsu, Tenri; Fumiaki Funada, Yamatokoriyama; Shuhei Yasuda, Nara, and Masataka Matsuura, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 235,920, Feb. 19, 1981, abandoned.
This application Feb. 18, 1983, Ser. No. 467,664
Claims priority, application Japan, Feb. 19, 1980, 55-20294
Int. Cl.³ H05K *1/14*
U.S. Cl. 361—413 **2 Claims**

1. An electronic component with a plurality of terminals thereon comprising in combination a rigid base plate having a plurality of terminal pieces juxtapositioned thereon next to each other and secured on one surface of said base plate, an interposing member provided with elastic flexible conductors having first and second end portions, each conductor extending in the thickness direction through said interposing member substantially perpendicular and corresponding to each of said terminal pieces, said interposing member adapted to retain said elastic conductors mutually insulated one from the other, said first end portions along the thickness direction of each of said elastic conductors being in individual contact with each of said terminal pieces on said base plate, a distributing sheet secured by way of said interposing member to an end portion of said base plate, the surface of said distributing sheet facing said interposing member being provided with a plurality of flexible terminals thereon in electrical contact with said second end portions of said elastic conductors, said flexible terminals being in electrical connection with said terminal pieces on said base plate along the thickness of said elastic conductors, a rigid



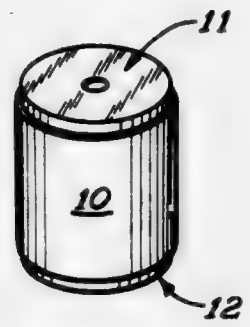
support plate having a flat face superimposed and bonded over its entire surface to an end portion of said distributing sheet corresponding to said end portion of said base plate, said flexible terminals being held rigid therebetween in contact with said elastic conductors by said rigid support plate, so as to maintain electrical contact at all times between said elastic conductors and said terminals.

4,509,100

LOW INDUCTANCE WOUND CAPACITOR

Henry F. Puppolo, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 3, 1983, Ser. No. 455,348
Int. Cl.³ H01G *9/00, 1/14*
U.S. Cl. 361—433 **15 Claims**



1. An aluminum electrolytic capacitor comprising two electrode foils with interleaved spacer material convolutely wound into an extended-foil section, said section being impregnated with an electrolyte, the extended edges of said foils each being deformed in such a manner that said edges at the ends of said section are folded and subjected to a plastic deformation such that said edges are smeared and there is a metallurgical bond between adjacent of said foils to provide a low inductance capacitor section with low electrical series resistance absent any conductive coating of said edges.

4,509,101

PROTECTION CIRCUIT FOR SWITCHING POWER AMPLIFIER

Yokoyama Kenji, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

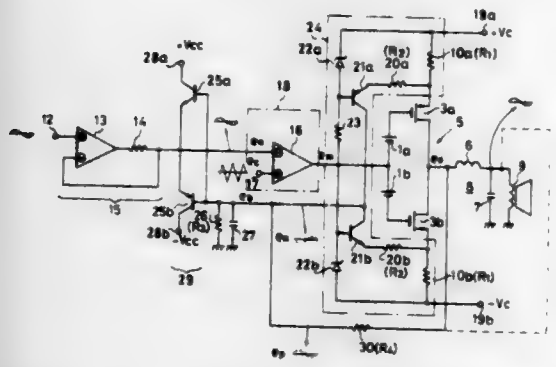
Filed Aug. 15, 1983, Ser. No. 522,989
Claims priority, application Japan, Sep. 28, 1982, 57-146759[U]
Int. Cl.³ H02H *7/20*
U.S. Cl. 361—79 **3 Claims**

3. A protection circuit for a switching power amplifier comprising:

first detection circuit means for detecting a current flowing through an output stage switching circuit means of said amplifier and outputting a first detection signal, wherein an output signal of the output stage switching circuit means is a pulse signal amplified by said switching circuit means and said first detection signal is an analogue signal corresponding to a pulse signal representative of the current which is integrated by low-pass filter means, said analogue signal having a phase opposite to that of said output signal of the switching circuit means;

second detection circuit means for detecting an output voltage of said output stage switching circuit means and outputting a second detection signal which has an amplitude proportional to the amplitude of said output voltage and a phase opposite to the phase of said first detection signal, wherein said second detection signal is an analogue signal corresponding to the output signal of the switching circuit means integrated by low-pass filter means, said analogue signal having the same phase as that of said output signal of the switching circuit means; and

amplitude limitation circuit means for limiting the amplitude of an input signal of said amplifier in response to said first and second detection signals, wherein said first detection signal operates to enhance an amplitude limitation function of said amplitude limitation circuit means, and said second detection signal operates to depress an amplitude limitation function of said amplitude limitation circuit means, whereby said first detection signal becomes dominant and a limitation level of said amplitude limitation circuit means decreases as a load resistance of said amplifier decreases, while said second detection signal becomes dominant and a limitation level of said amplitude limitation circuit means increases as the load resistance of said amplifier increases;



wherein said input signal of said amplifier is an analogue signal and has a same phase as that of said output signal of the switching circuit means, the amplifier including pulse-width modulation circuit means for pulse-width modulating said input signal of the amplifier based on a carrier signal having a constant frequency and outputting a pulse-width modulated signal having a pulse-width responsive to the amplitude of said input signal of the amplifier, said pulse-width modulated signal being applied to said output stage switching circuit means;

wherein said amplitude limitation circuit means adds said first and second detection signals, and limits the amplitude of said input signal of the pulse width modulation means in response to a resultant added signal obtained;

low-pass filter means for demodulating an output signal of said output stage switching circuit means which is an amplified pulse-width modulated signal, into an amplified analogue signal analogous to said input signal of the amplifier, said amplified analogue signal being applied to a load;

wherein said amplitude limitation circuit means comprises:

third and fourth transistor means each having emitter, collector, and base electrodes;

said emitter electrodes of said third and fourth transistor means being commonly connected to an input signal terminal of said pulse-width modulation circuit means,

said collector electrodes of said third and fourth transistor means being connected to positive and negative power supply means, respectively, and

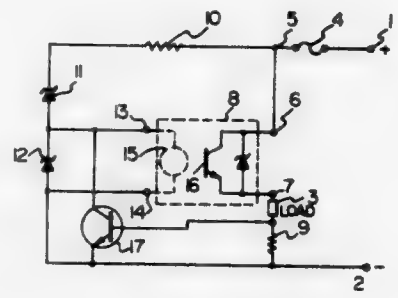
said base electrodes of said third and fourth transistor means being commonly connected together to receive said resultant added signal obtained by the addition of said first and second detection signals.

4,509,102

VOLTAGE CONTROLLED CURRENT SWITCH WITH SHORT CIRCUIT PROTECTION

John B. Ayer, Ontario, Canada, assignor to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Mar. 8, 1983, Ser. No. 473,256
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—92 **2 Claims**



1. A current source switch for undervoltage and overcurrent protection in combination a circuit having a current source and a load comprising:

opto-isolated switch means having a pair of input signal terminals and a pair of power terminals, the pair of power terminals being connected in series with the current source and the load;

a pair of avalanche breakdown diodes reverse connected in series across the current source, the input signal terminals being connected across one of the diodes to close the opto-isolated switch means when the current source voltage is above a predetermined value; and

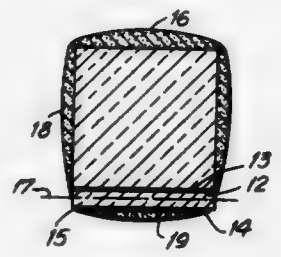
switch means for sensing the current in the series current source-load circuit, the sensing switch means being connected across the input signal terminals to open the opto-isolated switch means when the sensed current is above a predetermined value.

4,509,103

LOW DISSIPATION FACTOR MONOLITHIC CAPACITOR FOR HIGH FREQUENCY APPLICATIONS

John D. Prymak, Allegany, N.Y., assignor to AVX Corporation, Great Neck, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,926
Int. Cl.³ H01G *1/13*
U.S. Cl. 361—321 **7 Claims**



1. A low loss, low value ceramic capacitor especially adapted for use in high frequency applications, comprising in combination a ceramic monolithic dielectric body portion in the form of a right geometric figure having a regular cross section portion taken in a direction normal to the longitudinal axis of said body portion, said body portion including a planar end surface, a first electrode formed on and covering essen-

tially the entirety of said end surface, an internal electrode disposed within said monolith said internal electrode being in proximate spaced parallel relation to said first electrode and being separated from said first electrode by a layer of said ceramic, the side margin edges of said internal electrode extended to and being exposed at the edges of said body portion, a first termination portion comprising a conductive mass covering the center of said first electrode and in electrical contact therewith and a second termination portion comprising a conductive cap member covering substantially the entirety of the sides of said body portion from the end of said body portion remote from said end surface to a level overlapping said exposed edges of said internal layer, said second termination portion being in electrical contact with said side marginal edges of said internal electrode throughout substantially the entire extent thereof.

4,509,104

HIGH TEMPERATURE RESISTANT LIGHTING DEVICE

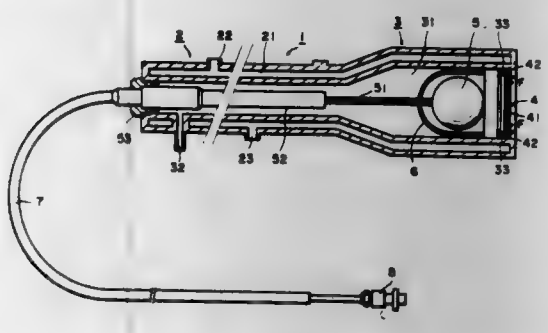
Koichi Suzuki, Suita; Seiroku Oose, Higashiosaka; Yuzo So, Ashiya, and Yasutaka Hirao, Munakata, all of Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki, Japan

Filed Apr. 19, 1983, Ser. No. 486,343

Claims priority, application Japan, Apr. 27, 1982, 57-62997[U]; Dec. 28, 1982, 57-202129[U]; Dec. 28, 1982, 57-202130[U]

Int. Cl.³ F21V *7/04*

U.S. Cl. 362—32 **10 Claims**



1. A high temperature resistant lighting device for monitoring a high temperature environment, comprising: a metallic heat protective casing including a space section formed therein and a window made of a heat protective glass member disposed along a wall thereof, said casing further having a cooling path defined along a wall in said space section, except in said window, for circulation of a cooling medium; light source means housed in said space section of said metallic heat protective casing for lighting an object to be observed through said window in said high temperature environment, a bundle of optical fibers forming a light conductor cable leading into said heat protective casing, objective means secured in a position in said heat protective casing for picking up light reflected by said object through said window and for introducing the reflected, picked-up light into a tip portion of said light conductor cable, and means leading said light conductor cable outside said heat protective casing for observing said object inside said high temperature environment by an observer outside said high temperature environment.

4,509,105

LAMP ASSEMBLY

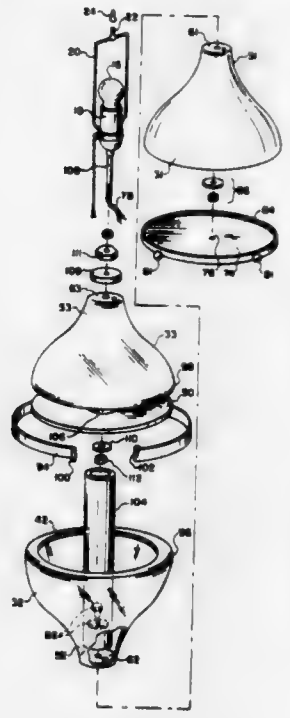
Henry A. Short, Sr., 556 E. 88th St., Chicago, Ill. 60619

Filed Mar. 5, 1984, Ser. No. 586,307

Int. Cl.³ F21P *1/02*

U.S. Cl. 362—122 **9 Claims**

1. A lamp assembly comprising a modular base portion, a lamp socket and shade supporting assembly mounted on said base portion and said base portion comprising first, second and third substantially identical-in-shape shells each having an annular flange at one end and an end wall at the other end, said shells being stacked with the annular flange of said first shell positioned on the bottom of said stack, two end walls of said first and second shells abutting each other, each end having an opening therethrough, means for securing said end walls together, two annular flanges of said second and third shells abutting each other and said end wall of said third shell mounting said lamp socket and shade supporting assembly, a platform positioned between said annular flanges of said second and



third shells and having a central opening therein, a hollow tube extending within said second and third shells between said end walls thereof, a lamp cord which extends through said end wall openings from said first shell to said lamp socket assembly, a display item on said platform, said third shell being transparent, and means for releasably clamping said second and third shells together.

4,509,106

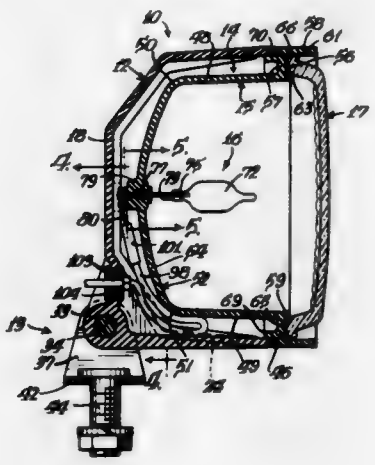
SELF-HOUSED RECTANGULAR LAMP ASSEMBLY WITH A REPLACEABLE HALOGEN BULB LAMP UNIT

William Mayer, and Alton E. Runions, both of Rochester, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Jun. 28, 1982, Ser. No. 392,338

Int. Cl.³ F21V *29/00*

U.S. Cl. 362—267 **7 Claims**



1. A self-housed rectangular lamp assembly having a replaceable lamp unit, comprising; a reusable cup-shaped housing member having a generally rectangular frontal configuration, a lamp unit adapted to be replaceably mounted in the housing member having a one-piece plastic reflector with a paraboloidal mirrorized inner surface, a halogen bulb unit mounted within the reflector, a lens enclosing the front of the reflector, axially interengaging alignment elements extending forwardly from a forward portion of the housing member and

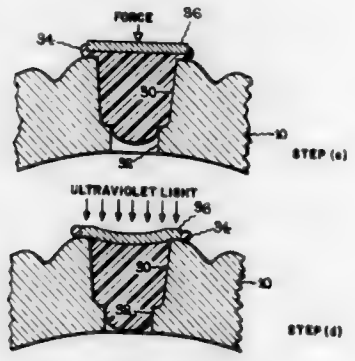
rearwardly from a forward portion of the reflector for holding the reflector in proper alignment in the housing member, a mounting projection formed integrally with and extending rearwardly from the reflector, and fastener means connected to the rear of the housing member and engageable with the reflector projection for drawing and holding the reflector and lamp unit in the housing member with the alignment elements interengaged without the need for any locking rings.

4,509,107

SEALED BEAM LAMP UNIT AND METHOD FOR AN IMPROVED SEALED EXHAUST HOLE

Richard F. Malinowski, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1983, Ser. No. 546,011
Int. Cl.[3] H01K *3/26*; H01J *9/00*
U.S. Cl. 362—267 **10 Claims**



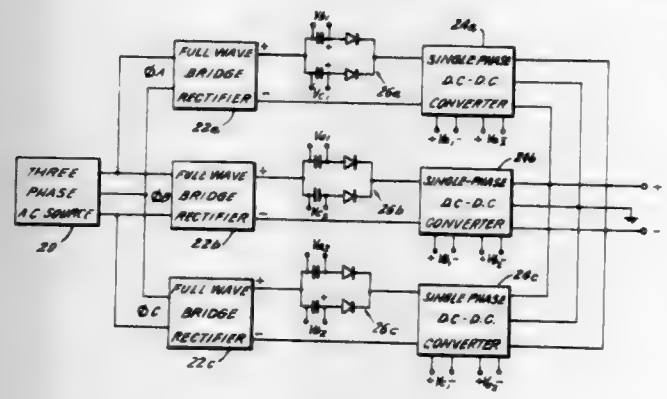
1. A method of sealing an exhaust hole of a sealed beam headlamp unit comprising the steps of:
(a) applying a predetermined amount of viscous ultraviolet light curable plastic in the form of a blob onto a piece of light-transmissive material,
(b) forcing both the curable plastic and the light-transmissive material into a region defining said exhaust hole, and
(c) applying ultraviolet light onto said piece of light-transmissive material effective to harden said plastic within said exhaust hole and effective to bond said piece of light-transmissive material to said curable plastic.

4,509,108

THREE PHASE A.C. TO D.C. VOLTAGE CONVERTER WITH IMPROVED POWER LINE HARMONIC CURRENT REDUCTION

George C. Gallios, Setauket, N.Y., assignor to Venus Scientific Inc., Farmingdale, N.Y.

Filed Sep. 15, 1983, Ser. No. 532,619
Int. Cl.[3] H02M *1/12*
U.S. Cl. 363—45 **1 Claim**



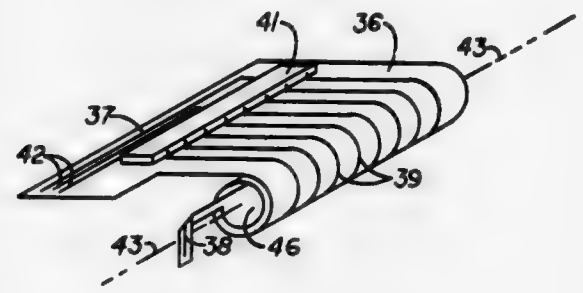
1. A three phase a.c. to d.c. voltage converter comprising:
first, second and third rectifier circuits for rectifying respective phases of a three phase a.c. source into respective varying d.c. voltages;
first, second and third converters connected to the output of said first, second and third rectifier circuits, respectively, each of said converters converting the varying d.c. voltage generated by its respective rectifier circuit into a substantially constant d.c. voltage, each of said converters also generating at least one respective isolated d.c. voltage; and
means for adding said at least one isolated d.c. voltage of each said converter to a respective one of said varying d.c. voltages such that all of said d.c. voltages are biased by at least one of said isolated d.c. voltages.

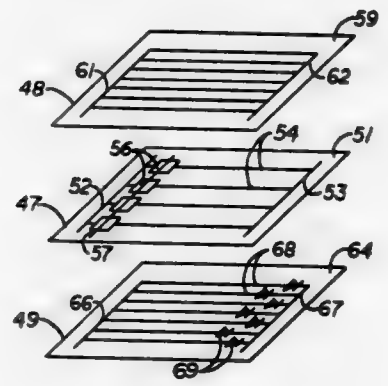
4,509,109

ELECTRONICALLY CONTROLLED COIL ASSEMBLY

Thomas C. Hansen, 1115 Sir Francis Drake Blvd., Apt. A, Kentfield, Calif. 94904

Filed Sep. 13, 1982, Ser. No. 417,222
Int. Cl.[3] H02M *7/06*
U.S. Cl. 363—126 **17 Claims**





1. An electronically controlled coil assembly, comprising a substrate, a plurality of electrical conductors carried by the substrate and connected electrically in parallel to form the windings of a coil, and control means connected electrically in series with individual ones of the conductors for selectively controlling energization of said conductors.

4,509,110

METHOD AND APPARATUS FOR DETECTING FAILURES IN A CONTROL SYSTEM

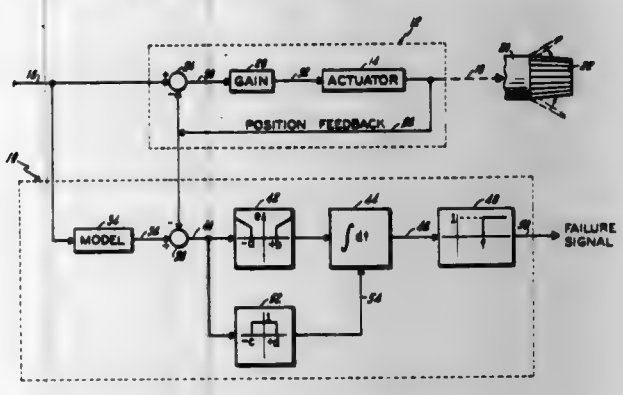
Adelard Levesque, Jr., and John P. Rembold, both of North Palm Beach, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 7, 1982, Ser. No. 386,136
Int. Cl.[3] G05B *17/00*
U.S. Cl. 364—153 **6 Claims**

1. A system for detecting the failure of apparatus, said apparatus including control means and an object of said control means, said system comprising:
model means simulating the input/output characteristics of said apparatus;
means for providing the same input to said apparatus and to said model means;
means for continuously comparing the output of said object to the apparatus input and for operating on said object to eliminate any difference between the compared input and output;

means for continuously comparing the output of said object to the output of said model means and for calculating error signals corresponding to the differences therebetween;

means for integrating, over time, the absolute value of said error signals which are outside a predetermined deadband having limits −a and +b;



means for generating a failure signal when said integral exceeds a predetermined value; and

means for resetting said integral to zero whenever the value of the error signal is within predetermined limits −c and +d, where the absolute value of c is less than or equal to the absolute value of a, and the absolute value of d is less than or equal to the absolute value of b.

4,509,111

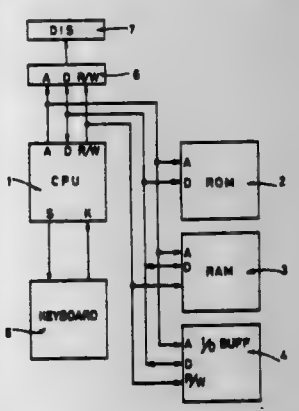
Patent Not Issued For This Number

4,509,112

SMALL PROGRAMMABLE COMPUTER

Mitsuhiro Saiji, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 28, 1981, Ser. No. 315,885
Claims priority, application Japan, Oct. 28, 1980, 55-152857
Int. Cl.³ G06F *7/04*
U.S. Cl. 364—200 **5 Claims**



1. A programmable computer comprising:

input means for inputting a plurality of program statements and a plurality of statement identifiers associated with respective statements;

memory means connected to said input means for storing said identifiers and associated statements;

comparing means responsive to said input means for comparing an identifier input by said input means with identifiers previously stored in said memory means for determining if an identifier input by said input means is identical to any previously stored identifier;

means responsive to said comparing means for storing in said memory means an input statement and an input associated identifier when said input identifier is not identical to any previously stored identifier; and

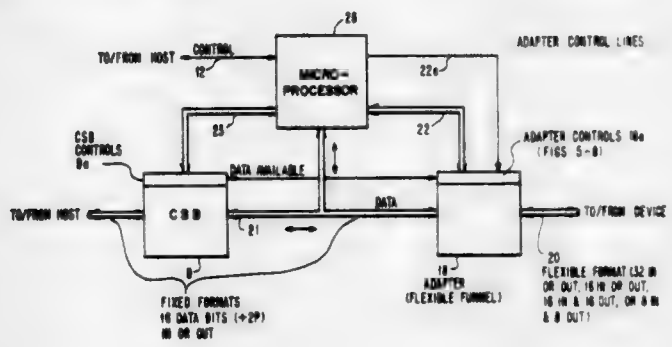
display means responsive to said comparing means for displaying a statement stored in said memory means associated with an identifier which is the same as an identifier input by said input means.

4,509,113

PERIPHERAL INTERFACE ADAPTER CIRCUIT FOR USE IN I/O CONTROLLER CARD HAVING MULTIPLE MODES OF OPERATION

Chester A. Heath, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,177
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **12 Claims**



1. In an I/O controller having interfaces for transferring data between a host processor system and one or more peripheral devices, an improved interface adapter comprising:

format conversion circuit means connectable in various configurations between said host processor and devices for transferring data between said processor and devices in various bit width-parallel formats;

multi-state control means dedicated exclusively for controlling said format conversion circuit means; and

means responsive to various transfer initiating signals produced under the direction of supervisory programs executed in said host system for variably conditioning said control means to sequence autonomously through various series of control states for causing said conversion circuit to transfer data between said host processor and said devices in various bit width-parallel formats pre-defined by said signals.

4,509,114

MICROWORD CONTROL MECHANISM UTILIZING A PROGRAMMABLE LOGIC ARRAY AND A SEQUENCE COUNTER

Joel C. Leininger, Boca Raton; Victor S. Moore, Pompano Beach, and William L. Stahl, Jr., Coral Springs, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

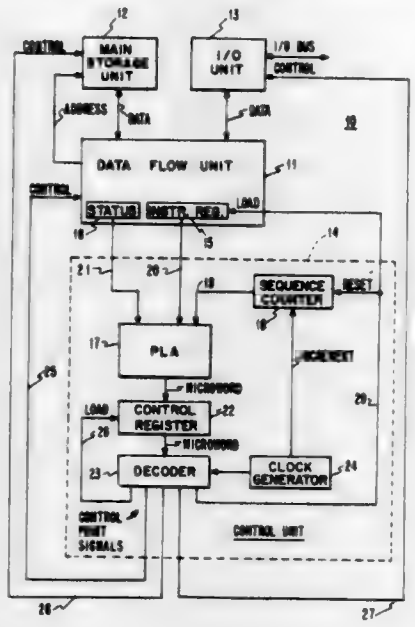
Filed Feb. 22, 1982, Ser. No. 350,662
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **22 Claims**

1. In a microprogrammed data processor wherein a sequence of microwords are used to control the execution of each processor instruction, an improved microword control mechanism comprising:

circuitry responsive to the processor instruction to be executed for providing an instruction dependent signal uniquely representative of such instruction;

sequence counter circuitry for supplying a sequence of number signals;

and a programmable logic array responsive to the instruction dependent signal and to the sequence of number



signals for producing a sequence of microwords needed to execute the instruction.

4,509,115

TWO-PORT MEMORY CONTROLLER

John C. Manton, Marlboro, Mass.; Kenneth Okin, Saratoga, Calif., and Anthony N. Zacconi, Braintree, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 21, 1982, Ser. No. 370,520
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **10 Claims**

1. A memory unit for connection to a central processor unit over a first interconnection means which includes means for transferring address, transfer control and data signals, said memory unit being connectable to an input/output unit over a second interconnection means including means for transferring address, transfer control and data signals, said input/output unit including a storage location identified by an address, and said memory unit including a plurality of storage locations also identified by addresses and further comprising:

A. a first port means for connection to said first interconnection means for transmitting and receiving address, transfer control and data signals to and from said central processor unit over said first interconnection means;

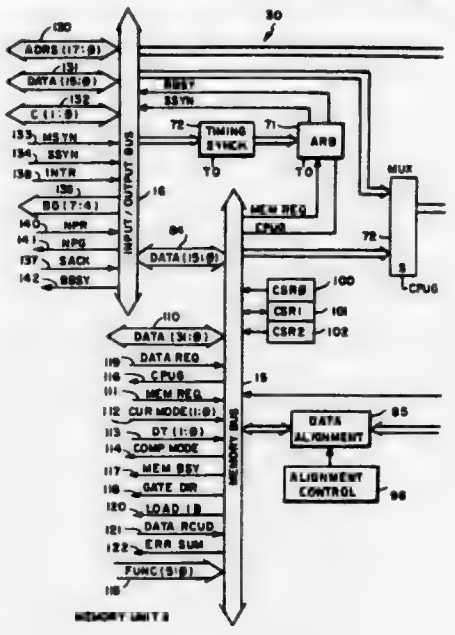
B. a second port means for connection to said second interconnection means for transmitting and receiving address, transfer control and data signals to and from said input/output unit over said second interconnection means;

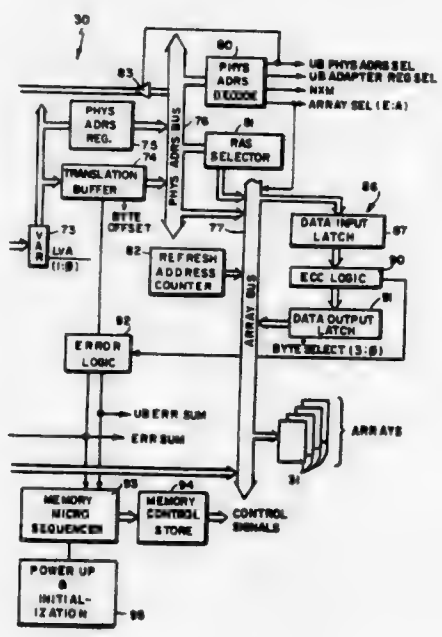
C. address multiplexer means connected to said first and second port means and responsive to control signals from said first and second port means for selectively transmitting address signals from one of said first port means or said second port means;

D. address decoding means connected to the output of said address multiplexer means for receiving the address signal transmitted by said address multiplexer means and for decoding the received address signal, said address decoding means transmitting a first control signal when the address signal identifies the storage location in the input/output unit and a second control signal when the address signal identifies a storage location in said memory unit;

E. data signal transfer means connected to said first and second port means and said address decoding means for transferring data signals between said first and second port means in response to said first control signal from said address decoding means; and

F. address signal transfer means connected to said address multiplexer means, said second port means and said address decoding means for transmitting address signals from said address multiplexer means to said second port





means in response to said first control signal from said address decoding means.

4,509,116

SPECIAL INSTRUCTION PROCESSING UNIT FOR DATA PROCESSING SYSTEM

Stanley A. Lackey, Littleton; Kim A. Meinerth, North Andover, and David A. Stoner, Tewksbury, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

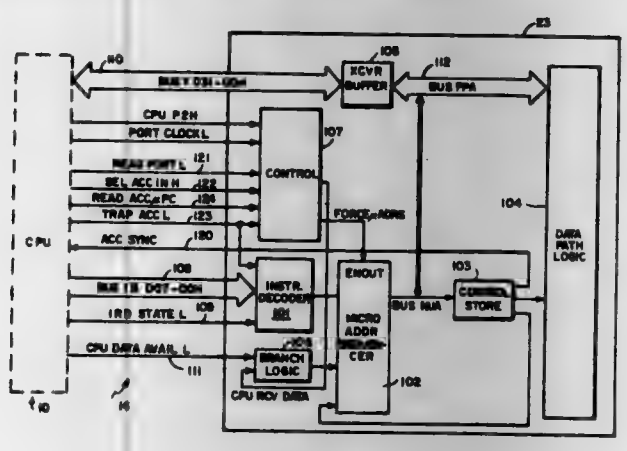
Filed Apr. 21, 1982, Ser. No. 370,390
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **7 Claims**

1. A special instruction processor for processing a predetermined class of instructions on a predetermined class of operands each containing a predetermined number of data words, the special instruction processor for connection to bus that also connects to a central processing unit that retrieves instructions and operands from, and transmits results of processing to, a memory, the instructions in said predetermined class each containing an operation code identifying the operation to be performed and the number of operands required to process the instruction, the bus including lines for transferring instruction operation codes, data words and control signals including timing signals defining successive bus cycles between the central processing unit and the special instruction processor, the special instruction processor comprising:

A. means arranged to be connected to the instruction opera-

tion code and control lines of the bus for receiving instructions of said predetermined class transmitted from the central processing unit and for decoding the instructions to determine the number of data words required to be received in order to process the operand;

B. means connected to said decoding means and arranged to be connected to the data and control lines of the bus for iteratively receiving data words over the data lines in successive bus cycles, the number of data words received being determined by said decoding means;



C. means connected to said decoding means and said receiving means and arranged to be connected to the control lines of the bus for processing the operands in accordance with the operation defined in the operation code and for transmitting a control signal to the central processing unit when the processing has been completed; and

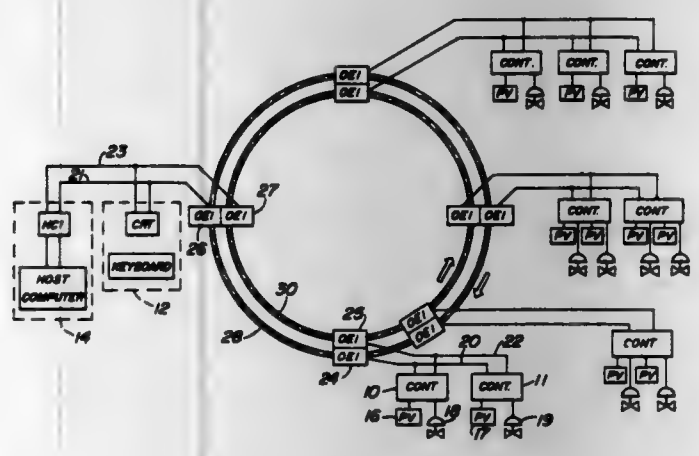
D. means connected to said decoding means and arranged to be connected to the data and control lines of the bus for transmitting the results of processing to the central processing unit over the data lines in successive bus cycles in response to a control signal from the central processing unit.

4,509,117

COMMUNICATIONS NETWORK ACCESS RIGHTS ARBITRATION

Simon Korowitz, Hatfield, Pa., assignor to General Signal Corporation, Stamford, Conn.

Filed May 3, 1982, Ser. No. 373,917
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **7 Claims**



1. A method for transferring mastership in a multi-master communications channel of a distributed process control system having a plurality of microprocessor based control stations as devices intercommunicating in the control of a large number of variables of a complex industrial process, comprising the steps of:

grouping into a sequence forming a first logical loop the active stations which are high usage devices;

grouping into a sequence forming at least one other logical loop the active stations which are low usage devices;

passing mastership repetitively through the sequence of stations in the first loop at a maximum speed compatible with the work to be done by each station until a predetermined time period has elapsed since passing mastership through said other loop; and

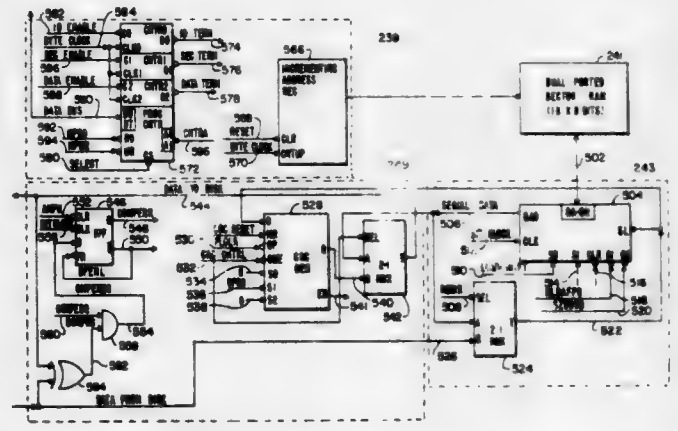
upon expiration of said time period passing mastership once through the sequence of stations of the other loop and thence from the last station in that sequence to a predetermined station of the first loop for continuing repetitive passage through said first loop.

4,509,118

METHOD AND APPARATUS FOR DEFINING MAGNETIC DISK TRACK FIELD LENGTHS USING A PROGRAMMABLE COUNTER

William H. Shenk, Acton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 25, 1982, Ser. No. 382,000
Int. Cl.³ G06F *13/08*
U.S. Cl. 364—200 **11 Claims**



9. An apparatus for defining magnetic disk track field lengths comprising:

a. a programmable counter having a plurality of independent counters, each of said plurality of independent counters having an enable input, a clock input and an expiration output;

b. a plurality of enable counter means, each of said plurality of enable counter means connected to said enable input of a corresponding one of said plurality of said independent counters;

c. a unit data clocking means connected to the clock input of each of said plurality of independent counters;

d. an incrementing address register;

e. a memory for containing a plurality of units of data, an address input of said memory coupled to an address output of said incrementing address register;

f. a parallel to serial shift register having a parallel input/output coupled to a data input/output of said memory, a serial output of said shift register coupled to a serial input of said shift register and to an input for data to be written on a disk; and

g. a bit clocking means coupled to a clocking input of said shift register, whereby as each unit of data is transfered from said memory to said shift register each of said plurality of independent counters is clocked by said unit clocking means and those independent counters of said plurality of independent counters enabled by its corresponding enable counter means are incremented toward its corresponding predetermined count, when a first counter of said plurality of independent counters reaches its predetermined count its expiration output inhibits the further transfer of information from said memory to said shift register and causes a last unit of data transferred from said memory to be recirculated within said shift register and written to said disk until the expiration output of a second

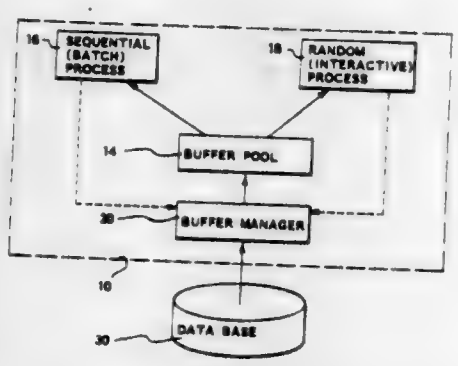
counter of said plurality of independent counters causes said incrementing address register to be reset to location zero causing a first unit of data from said memory to be transferred from said memory to said shift register.

4,509,119

METHOD FOR MANAGING A BUFFER POOL REFERENCED BY BATCH AND INTERACTIVE PROCESSES

Robert A. Gumaer, San Jose, and John A. Mortenson, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,629
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **3 Claims**



1. A method for operating a computing apparatus including a main processor, a plurality of main storage buffers, and at least one external storage device; the main processor being operated under control of a data base system which includes a buffer manager for allocating data set pages read from the storage device into the buffers for concurrent access by both sequential and random processes; the method being characterized by the steps of:

(1) establishing a sequential steal threshold value of a queue as the product of the number of levels of out-of-line nesting most often expected per sequential processing instance times the maximum number of concurrent sequential processing instances most often expected;

(2) maintaining a normal least recently used (LRU) buffer chain and a sequential LRU buffer chain with sequential buffers included in both chains and the random buffer included only in the normal LRU buffer chain;

(3) placing buffers released from a sequential process that is not a prefetch process in both LRU buffer chains, and placing buffers released from a random process or from a sequential prefetch process only in the normal LRU buffer chain; and

(4) responsive to a sequential access request for a buffer, stealing the head buffer from the sequential LRU buffer chain provided the number of buffers in that chain exceeds the queue value, otherwise, stealing the head buffer from the normal LRU chain, because the number of buffers on the sequential LRU chain is not greater than the queue value or the request is for access by a random process, thereby preventing recursive steals of buffers employed in nested sequential processes.

4,509,120

VARIABLE CYCLE-TIME MICROCOMPUTER

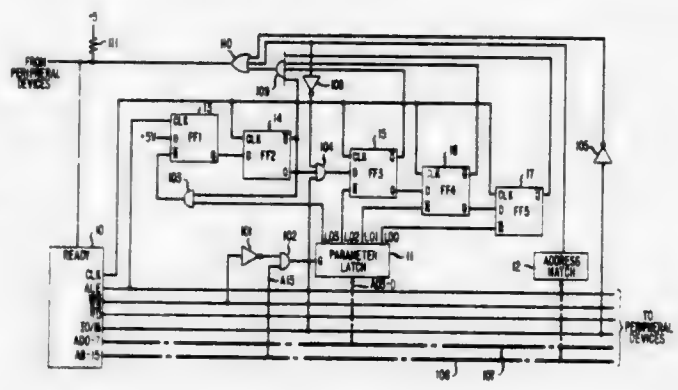
Douglas S. Daudelin, Jackson, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Sep. 30, 1982, Ser. No. 428,875
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 **14 Claims**

1. A microcomputer operable under program instruction control for communicating over peripheral access leads with a plurality of peripheral devices, said microcomputer including

means for controlling said communication during a single access instruction cycle of said microcomputer,

means for storing a value representative of a desired access instruction cycle time, and



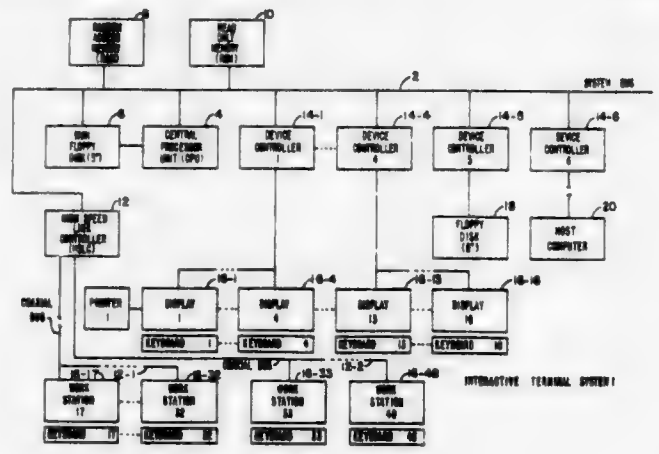
means for modifying said single access instruction cycle time in accordance with said stored value.

4,509,121

APPARATUS FOR SYNCHRONIZING A STREAM OF DATA BITS RECEIVED OVER A SINGLE COAXIAL CONDUCTOR

Thomas J. Rey, Bedford, and Ervin Forbes, Mansfield, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1982, Ser. No. 431,410
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **9 Claims**



1. An interactive terminal system includes a high speed link controller (HSLC) and a plurality of work stations, all coupled in common to a single conductor coaxial bus for transferring data bit signals between one of said plurality of work stations and said HSLC, said HSLC including data recovery logic for receiving said data bit signals, said data recovery logic including synchronization means for synchronizing said data bit signals received from said one of said plurality of work stations, said synchronization means comprising:

first means for generating a first plurality of binary signals indicative of a repeating sequence of consecutive numbers;

second means having the first plurality of binary signals applied to a first set of input terminals and a second plurality of binary signals applied to a second set of input terminals and generating a first signal where the numerical value of the first and the second plurality of binary signals are not equal, and generating a second signal when the first plurality of binary signals has a numerical value of less than the second plurality of binary signals;

third means having the first plurality of binary signals applied to a third set of input terminals and a third plurality of binary signals, one of which is the second signal applied

to a fourth set of input terminals and generating a fourth plurality of binary signals indicative of the sum of the first and the third plurality of binary numbers; and

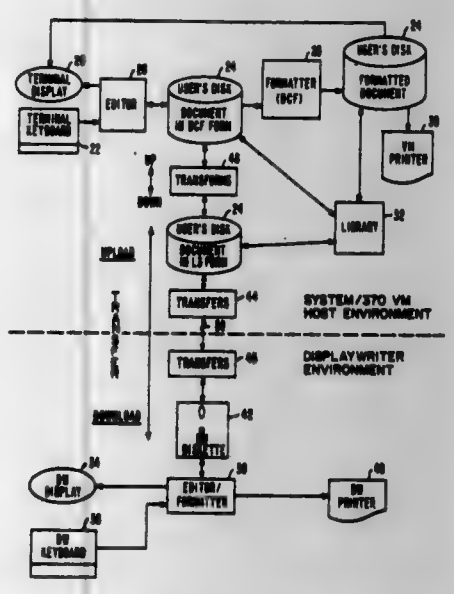
gating means responsive to the data bit signals representative of ZERO data bits and the first signal for generating a third signal, said first means being responsive to the third signal for generating the first plurality of binary signals equal in value to said fourth plurality of binary signals thereby increasing the numerical value of the first plurality of binary signals by the binary value of the second signal when the first plurality of binary signals is less than the second plurality of binary signals and decreasing the value of the first plurality of binary signals when the first plurality of binary signals is greater than the second plurality of binary signals for receiving said ZERO data bit signals at a numerical value wherein the first and the second plurality of data signals are equal.

4,509,122

METHOD FOR CONTROLLING THE FILE TRANSFER CAPABILITY OF AN INTERACTIVE TEXT PROCESSING SYSTEM THAT IS EMULATING A HOST PROCESSING SYSTEM TERMINAL

Palmer W. Agnew, Owego, N.Y.; John S. Coviello, San Jose, Calif.; Linda S. Green, Vestal, and Anne S. Kellerman, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,817
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—200 **3 Claims**



1. In cooperation with a hardware link and programming therefor that allows an interactive text processing system emulate a host data processing system terminal, a method for transferring information between a user's host disk and the private storage media diskette of said text processor, said method comprising the steps of:

(a) placing a master program to control information transfer in the host environment;

(b) placing an elementary diskette control program, responsive to said master control program, in the text processing environment; and

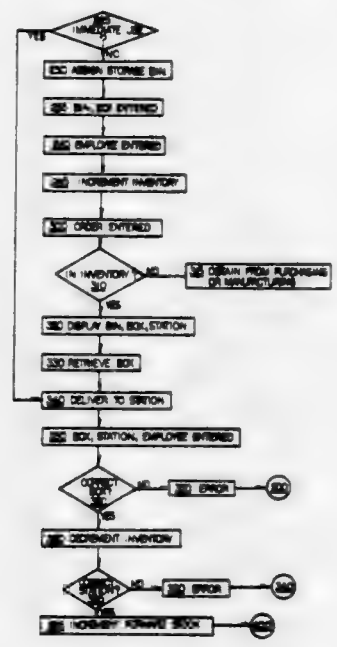
(c) prefacing all blocks of information intended to flow between said user's disk and said diskette with a unique identifier that is recognized by said terminal emulation programming as not belonging to said emulation function so that it may be steered to said master program or said diskette control program, as required.

4,509,123

AUTOMATED TRACKING PROCESS FOR MANUFACTURING AND INVENTORY

William J. Vereen, Dogwood Clr., Moultrie, Ga. 31768

Filed Jan. 6, 1983, Ser. No. 429,178
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—300 **13 Claims**



1. A process for storage and retrieval of items in inventory with the aid of a programable digital computer and a plurality of reading means adapted to read labels and communicate said label to said computer, comprising the steps of:

(a) establishing within said computer a plurality of data records, each said data record being identifiable with and adapted to record the characteristics, location and contents of labeled elements;

(b) selecting a plurality of items of like characteristics, each said item bearing a machine-readable identification code label unique to the item bearing said label, and identifying one said data record corresponding to the item bearing sad label;

(c) selecting a common container, said container bearing a machine-readable identification code label unique to said container, and identifying one said data record corresponding to the container bearing said label;

(d) reading said labels of said plurality of items of like characteristics and of said container by use of one said reading means, and updating said data records of said container and said items to indicate the location of said items inside said container;

(e) selecting an inventory storage space in which to store said container from among a plurality of inventory storage spaces, each said space bearing a machine-readable identification code label unique to the space and having a data record corresponding to said space, reading said labels of said selected space and said container by use of one of said reading means, and updating said data records of said container and said space to indicate the location of said container inside said space;

(f) receiving an order for items, identifying one said data record corresponding to said order, recording said order in said data record corresponding to said order, comparing said order with said data records for said items stored in said spaces, and identifying selected items in said inventory storage spaces having characteristics corresponding to characteristics demanded by said order;

(g) identifying of each said space and each said container in which each said selected item is located;

(h) retrieving each said identified container to a predetermined picking area, each said picking area having one said reading means associated therewith and a data record within said computer corresponding thereto;

(i) entering said label of each said selected container by use

of said reading means associated with said predetermined picking area, and updating said data records of each said inventory storage spaces, said selected container and said picking area to indicate the location of each said selected container in said picking area; and

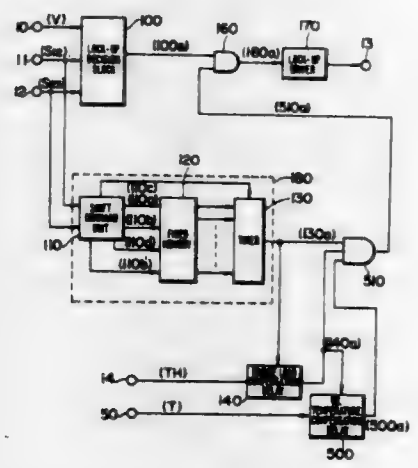
(j) retrieving said selected items from each said selected container, reading said labels of said order and each said selected items by use of said reading means, and updating said data records of said order and each said selected items to indicate the retrieval of said selected items for said order.

4,509,124

LOCK-UP CONTROL SYSTEM FOR LOCK-UP TYPE AUTOMATIC TRANSMISSION

Tadashi Suzuki; Yoshiro Morimoto; Hideo Hamada; Masaaki Suga, and Takashi Murasugi, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 29, 1982, Ser. No. 362,852
Claims priority, application Japan, Mar. 30, 1981, 56-46975
Int. Cl.³ G06F *15/20*; B60K *41/02, 41/22*; F16D *27/16*
U.S. Cl. 364—424.1 **5 Claims**



2. A lock-up control system for a vehicle equipped with a lock-up type automatic transmission, said transmission being responsive to a shift command to shift from one gear to another and including a torque converter which assumes one of a lock-up state and a torque converter state in response to a lock-up command signal, the lock-up control system comprising:

means for sensing values of predetermined operating parameters of said vehicle and for generating a lock-up enable signal when said values indicate said vehicle to be operating within a predetermined lock-up range;

means for detecting the presence of said shift command and for generating a timer trigger signal in response to a positive detection of the presence of said shift command;

means for sensing the temperature of transmission fluid within said transmission and for generating a temperature signal indicative of said sensed transmission fluid temperature;

means responsive to said temperature signal and said timer trigger signal for determining a time duration required for said transmission to shift gears in response to said shift command and for generating a lock-up inhibit signal indicative of said time duration, said time duration being determined at least in accordance with said temperature signal; and

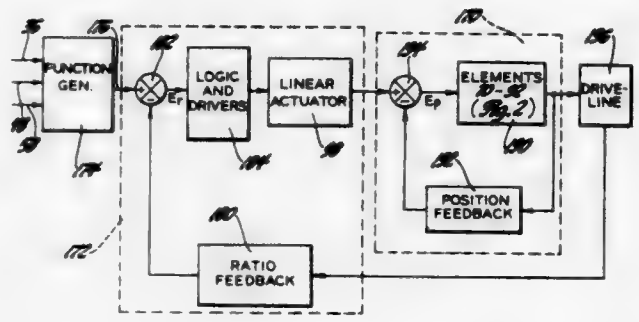
means responsive to said lock-up enable signal and said lock-up inhibit signal for generating a lock-up command signal in response to the presence of said lock-up enable signal and the absence of said lock-up inhibit signal; and for not generating said lock-up command signal in the presence of said lock-up inhibit signal.

4,509,125

CONTINUOUSLY VARIABLE TRANSMISSION RATIO CONTROL SYSTEM

Gerald T. Fattic, Anderson, Ind., and William J. Vukovich, Pittsfield Township, Washtenaw County, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1982, Ser. No. 405,909
Int. Cl.³ G06F *15/20*; B60K *41/12, 41/18*
U.S. Cl. 364—424.1 **4 Claims**



1. For a continuously variable speed ratio transmission control system having an inner servo loop for adjusting the transmission speed ratio in accordance with the position of an actuator member, the response of the inner loop being characterized in that the rate of change in speed ratio with respect to actuator position is a nonconstant function of the actual speed ratio, apparatus defining an outer servo loop for adjusting the position of the actuator member in a manner to establish a desired speed ratio in said transmission, comprising:

control means for determining the ratio error according to the difference between the actual speed ratio and the desired speed ratio, and for adjusting the actuator member in a direction to reduce such ratio error, such control means being effective when the ratio error is at or above a predetermined value for regulating the rate of adjustment of said actuator member so that the rate of change in actuator position with respect to time is a direct function of the ratio error to relatively quickly reduce such error to the predetermined value below which further such adjustment would compromise system stability in view of the nonconstant response of the inner servo loop, thereby providing an overall system response with satisfactory shift feel, such control means being further effective when the ratio error is below the predetermined value for regulating the rate of adjustment of said actuator member so that the rate of change in actuator position with respect to time is a nonconstant function of the actual speed ratio and in inverse relationship with the nonconstant function of said inner loop to yield a substantially constant rate of change of speed ratio with respect to time for all actual speed ratio values for relatively slowly reducing such error, thereby bringing the actual speed ratio into correspondence with the desired speed ratio in a stable manner.

4,509,126

ADAPTIVE CONTROL FOR MACHINE TOOLS

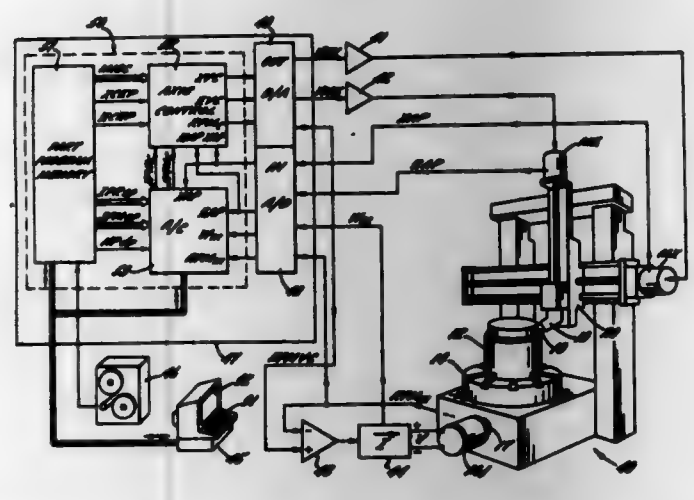
Eugene A. Olig, and Lee R. Ladwig, both of Fond du Lac, Wis., assignors to AMCA International Corporation, Fond du Lac, Wis.

Filed Jun. 9, 1982, Ser. No. 386,481
Int. Cl.³ G06F *15/46*; G05B *13/02*
U.S. Cl. 364—474 **45 Claims**

1. In a machine tool wherein a cutter is driven relatively to the surface of a workpiece to remove a layer of workpiece material, the method of compensating the measured power supplied to the drive means for net power required for net acceleration of the drive means to signal a power value closer to the actual power dissipated at the cutter tip than the measured power supplied to the drive means, said method comprising the steps of:

(a) determining the value of the net power supplied to the

drive means that is required for net acceleration of the drive means, and



(b) subtracting the value of the net power determined in step (a) from the measured power supplied to the drive means.

4,509,127

CONTROL DEVICE FOR LOADING AND UNLOADING MECHANISM

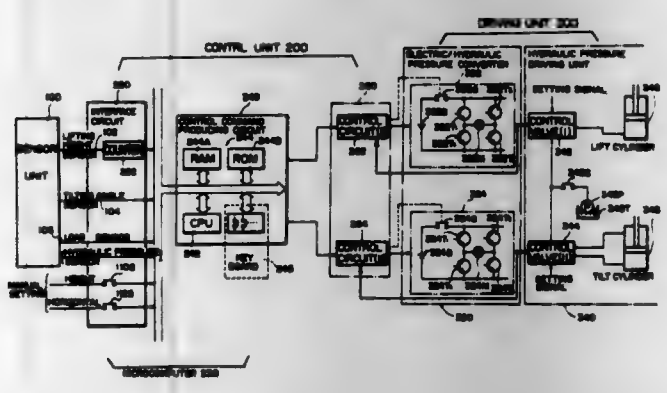
Katsumi Yuki, Toyota; Susumu Yoshida, Aichi; Mineo Ozeki, Ichinomiya; Yasuyuki Miyazaki, Aichi, and Masaru Kawamata, Numazu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho, Japan

Filed Mar. 31, 1982, Ser. No. 364,403

Claims priority, application Japan, Mar. 31, 1981, 56-47736; Mar. 31, 1981, 56-47738; Mar. 31, 1981, 56-47742; Mar. 31, 1981, 56-45959[U]

Int. Cl.³ G06F *15/20;* G06G *7/48*

U.S. Cl. 364—478 **19 Claims**



1. A control device for a loading and unloading mechanism adapted to a fork lift truck comprising:

(a) a sensor unit including a lifting height sensor for measuring lifting height of a fork and producing output signals indicative thereof,

(b) a control unit including

(i) an interface circuit having a lifting height counter for counting the output signals from the sensor unit,

(ii) a memory for storing data indicative of lifting height, said memory storing a data pattern shown target lifting height speeds with respect to an absolute value of a difference between a target lifting height and the present lifting height,

(iii) data input means for inputting control data indicative of lifting height into the memory, and

(iv) a control command producing circuit for performing a comparison calculation between the output signals of the sensor unit and the data stored in the memory, and for producing a valve opening command based on the comparison, said control command producing circuit operable for producing a control command for a target lifting speed in accordance with the difference read from said data pattern and in accordance with a current lifting height speed,

(c) a servomotor driving circuit for producing a control signal responsive to the valve opening command signal from the control unit,

(d) hydraulic pressure driving circuit producing a further control signal for hydraulically controlling a lift cylinder to vary the lifting height of the fork in accordance with the control signal fed from the servomotor driving circuit, and

(e) inhibiting means in said control device for inhibiting storage in said memory of lifting height control data when the sensed lifting height is above a preselected upper limit or below a preselected lower limit, thereby to prevent erroneous operations and to smoothly effect an automatic lifting height control.

4,509,128

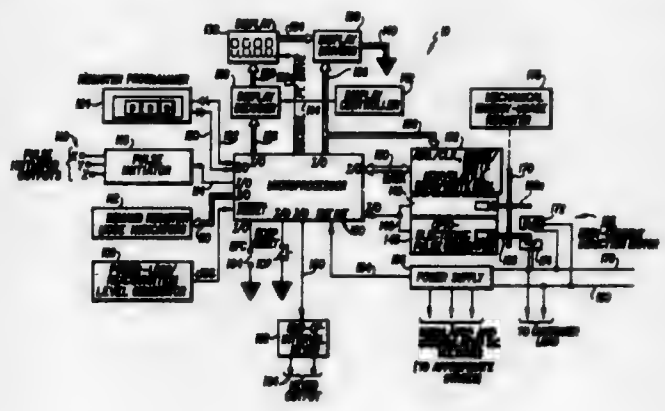
SOLID-STATE ELECTRICAL-POWER DEMAND REGISTER AND METHOD

Richard G. Coppola, Marietta, and George H. Stephens, Tucker, both of Ga., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Apr. 16, 1982, Ser. No. 369,058

Int. Cl.³ G06F *11/10, 15/46*

U.S. Cl. 364—483 **69 Claims**



1. A register for monitoring electrical-power demand made upon alternating current mains, comprising:

(a) means, responsive to power consumed from said mains, for computing values of electrical-power demand over a succession of demand-monitoring intervals, said computing means including:

(i) sensing means for providing pulses at a rate substantially proportional to consumption of electrical energy in said mains, said pulse rate being electrically programmable;

(ii) means for defining said succession of demand-monitoring intervals;

(iii) means, responsive to said sensing means and said defining means, for accumulating said pulses generated during each said demand-monitoring interval; and

(iv) means, responsive to said accumulating means, for generating said demand-monitoring interval values of electrical-power demand;

(b) means, responsive to said computing means, for determining a maximum demand-monitoring interval value of the electrical-power demand; and

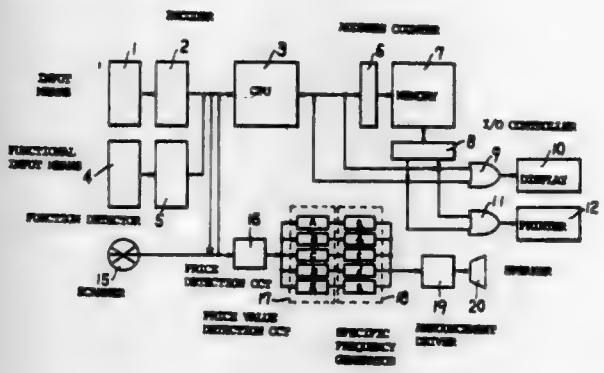
(c) nonvolatile read/write memory means, responsive to said determining means, for storing said maximum demand-monitoring interval value even when said memory means is deenergized.

4,509,129

ELECTRONIC CALCULATING MACHINE WITH FACILITIES OF ANNOUNCING DATA INTRODUCED

Kenrow Yatsunami, Yamatokoriyama, and Yoshihiki Iwamoto, Sakurai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 85,302, Oct. 16, 1979,. This application Jun. 26, 1984, Ser. No. 625,003
Claims priority, application Japan, Oct. 16, 1978, 53-128803
Int. Cl.[3] G10L *1/00;* G06F *15/02*
U.S. Cl. 364—513.5 3 Claims



1. An electronic cash register comprising:

input means for entering product code information related to a product to be sold, said input means including a bar code reader for reading bar code information in connection with the specific article, a plurality of input keys for entering a specific price of the article, and function key for entering the type of article involved in a transaction;

price determination means responsive to said input means for determining the price of said product from its related produce code information;

classification means responsive to said price determination means for generating a price range signal representative of one of a plurality of price ranges, said price range signal generated being representative of a code which in simplified manner represents the price range in which the price of said product is included;

audible frequency generator means for producing an audio frequency signal from said price range signal, said audio frequency signal being representative of the price range in which the price of said product is included;

sound generator means responsive to said audible frequency generator means for generating an audible indication of the price range in which the price of said product is included, an operator thereby determining if a price determined by said price determination means is erroneous in magnitude; and

operator actuatable means operatively connected to said price determination means for correcting said determined price when said price range is determined by the operator to be erroneous from said audible indication.

4,509,130

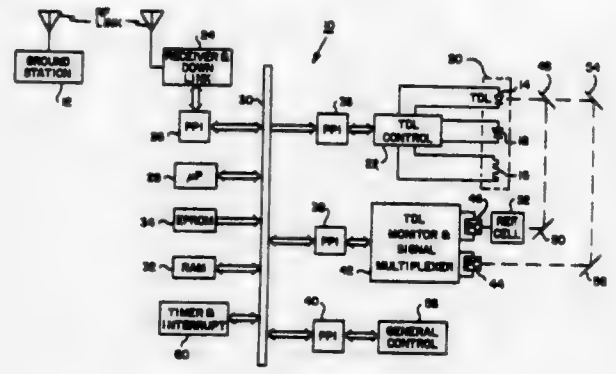
DIGITAL CONTROL OF DIODE LASER FOR ATMOSPHERIC SPECTROSCOPY

Robert T. Menzies, Pasadena, and Charles W. Rutledge, Temple City, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 3, 1982, Ser. No. 384,547
Int. Cl.[3] G01N *21/25, 21/29*
U.S. Cl. 364—556 9 Claims

1. In a system for remote absorption spectroscopy for measurement of trace species using an infrared diode laser having emission tuned over a predetermined spectral region by control of current through said diode laser and control of the temperature of said diode laser, the combination comprising

means for transmitting commands to and receiving data from an instrument in a remote location,



means for transmitting commands of both current and temperature set points in digital form to said instrument,

means in said instrument for receiving said commands and transmitting data,

a digital data processing and control system connected to said instrument receiving and transmitting means comprising a bus and a microprocessor, tuning and interrupt means and memory connected to said bus for receiving, storing and calling up for use under a stored program commands and data, including set points for current and temperature control of said diode laser,

current control means coupled to said bus by a peripheral interface means and responsive to said current set points called up by said microprocessor for establishing a stable current through said diode laser, and

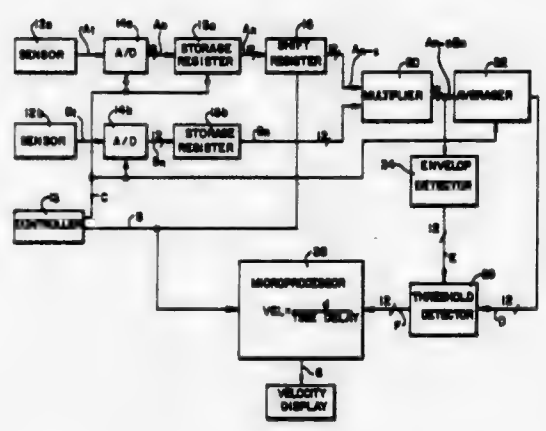
temperature control means coupled to said bus by a peripheral interface means and responsive to said temperature set point called up by said microprocessor for establishing a stable temperature of said diode.

4,509,131

GEOMAGNETIC VELOCIMETER

David Krasnjanski, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 1, 1982, Ser. No. 383,429
Int. Cl.[3] G01P *3/42;* G06F *15/336*
U.S. Cl. 364—565 4 Claims



4. A system for determining the ground speed of a vehicle comprising:

a first magnetometer mounted in a forward section of the vehicle, said first magnetometer having sufficient sensitivity to detect a geomagnetic field and being capable of generating a first signal representative thereof;

a second magnetometer mounted in a rearward section of the vehicle a predetermined distance from said first magnetometer, said second magnetometer having sufficient sensitivity to detect a geomagnetic field and being capable of generating a second signal representative thereof;

first and second digital converters connected to receive the first and second analog signals respectively for providing first and second digital signals respectively;

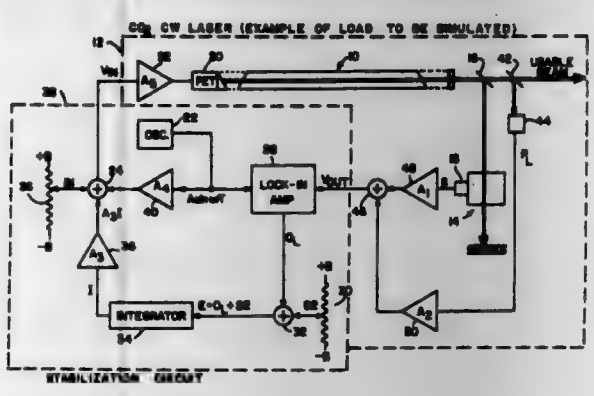
first and second storage registers respectively connected to receive the outputs of said first and second digital converters;
a shift register connected to receive the output of said first storage register;
a multiplier circuit connected to receive output signals from said shift register and said second storage register for providing a product signal thereof;
an envelope detector circuit connected to receive the product signal for providing a level signal representative of the instantaneous amplitude of the product signal;
an averaging circuit also connected to receive the product signal for providing an average signal representative of the cross-correlation of the first and second signals;
a peak detecting circuit connected to receive the level signal and the average signal for providing maximum similarity signals whenever said level signal exceeds a predetermined value; and
computing means connected to receive the maximum similarity signals from said peak detecting circuit and programmed for computing the velocity of the vehicle based on the distance between the first and second magnetometers.

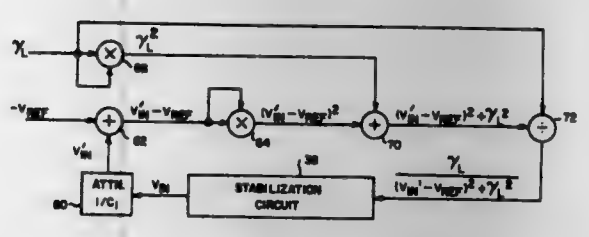
4,509,132

METHOD AND APPARATUS FOR TRANSFER FUNCTION SIMULATOR FOR TESTING COMPLEX SYSTEMS

Michael J. Kavaya, San Gabriel, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 11, 1982, Ser. No. 387,647
Int. Cl.³ G06G *7/48*; G06F *15/46*; H01S *3/13*
U.S. Cl. 364—571 **7 Claims**





1. A method for testing the operation of a stabilization circuit in a closed-loop system, where the stabilization circuit is designed to interact with an actual load in response to an output signal, V_{OUT}, by generating a control signal, V_{IN}, from said output signal in accordance with the transfer function of said actual load, comprising the steps of determining the transfer function of said actual load, programming computing means to implement said transfer function, utilizing said programmed computing means in place of said actual load in said closed loop, and testing the operation of said stabilization circuit in said closed loop, thus determining the operation of the stabilization circuit in a closed loop system free of any faults that may be present in said actual load to be stabilized.

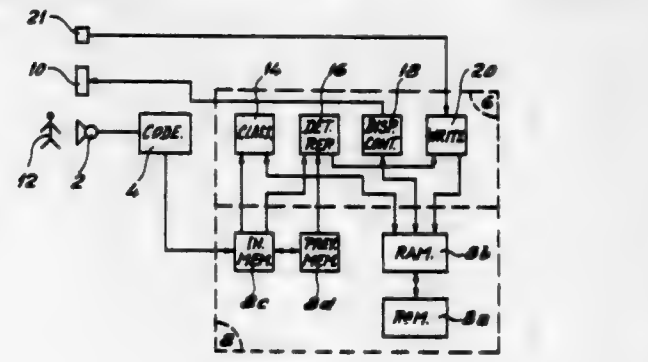
3. Apparatus for testing the operation of a stabilization circuit having frequency stabilizing parameters in a closed-loop system for stabilizing a load, where said stabilization circuit interacts with an actual load in response to an actual load output signal, V_{OUT}, to provide a feedback signal, V_{IN}, comprising a load simulating signal generating means adapted to be substituted for said load and supplied with said feedback signal and at least one load parameter, and operative to transmit an output signal, V_{OUT}, as a function of said feedback signal and load parameter for simulating said actual load, and means for adjusting said load parameter.

4,509,133

APPARATUS FOR INTRODUCING CONTROL WORDS BY SPEECH

Jean-Jacques Monbaron, Malvilliers, and Ngoc C. Bui, Neuchatel, both of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed May 3, 1982, Ser. No. 374,019
Claims priority, application Switzerland, May 15, 1981, 3179/81
Int. Cl.³ G10L *1/00*
U.S. Cl. 364—513.5 **6 Claims**



1. A device for introducing control words by speech said words being pronounced by a speaker and belonging to a predetermined vocabulary of n words, said device comprising:
means for coding each word pronounced by the speaker in accordance with a first predetermined algorithm, which gives a coded word;
means for memorizing (a) n coded references each corresponding to the coding of one of the n words of said vocabulary in accordance with the said first algorithm and (b) at least one word pronounced by said speaker in coded form;
means for displaying one of said n words;
means for initiating a change in coded references to provide a different code corresponding to a word; and
a control circuit connected to the memorizing means and to the display means, comprising:
(a) repetition detection means for comparing a presently pronounced coded word to the previous coded pronounced word, if it exists, in dependence on a second predetermined algorithm, to detect whether or not the presently pronounced word is a repetition of the previously pronounced word;
(b) means responsive to the detection means for comparing a coded pronounced word when there is no repetition, to the n references, and to allocate to each reference a level of resemblance with the coded pronounced word in dependence on a third predetermined algorithm;
(c) means for causing the display of the memorized reference having a first level of resemblance when no repetition has been detected, and for causing, if repetition has been detected, the display of the word associated with the reference occupying the level of resemblance which immediately follows that of the reference associated with the word displayed immediately previously; and
(d) means for replacing in said memorizing means the reference associated with the word displayed last, said reference being replaced by the information corresponding to the coding of the word repeated, said replacement being

in response to activation by the speaker of the means for initiating a change of reference, when the speaker has found that the word displayed is the word that he actually pronounced, thereby providing a fresh coded reference for the word.

4,509,134

SQUARING DEVICE WITH COOLING MEANS

Jury S. Maltsev, ulitsa Kalinina, 8, kv. 52; Viktor D. Shevchenko, gorodok 17, dom 366, kv. 9, and Mikhail M. Chernin, ulitsa Lenina, 41, kv. 9, all of Omsk, U.S.S.R.

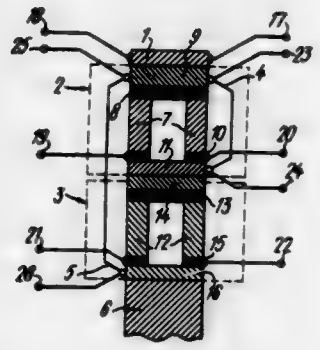
PCT No. PCT/SU80/00192, § 371 Date Jun. 18, 1982, § 102(e) Date Jun. 18, 1982, PCT Pub. No. WO82/01949, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 28, 1980, Ser. No. 395,041

Int. Cl.³ B06G *7/20*

U.S. Cl. 364—813

4 Claims



1. A squaring device comprising an electrical heater with leads serving as inputs of said squaring device; a first cooling means having first and second working surfaces, said first working surface of said first cooling means being maintained in thermal contact with said heater, and said first cooling means having leads serving as a first output of said squaring device; a second cooling means having first and second working surfaces, said first working surface of said second cooling means being maintained in thermal contact with said second working surface of said first cooling means, and said second cooling means having leads serving as a second output of said squaring device; a first temperature sensor having its first and second sensitive elements maintained in thermal contact with said first and second working surfaces of said first cooling means, respectively; a second temperature sensor having its first and second sensitive elements maintained in thermal contact with said second working surface of said second cooling means and one of said working surfaces of said first cooling means, respectively; and, a heatsink maintained in thermal contact with said second working surface of said second cooling means.

4,509,135

COSINE SIGNAL CORRECTION CIRCUIT

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 165,474, Jul. 2, 1980,. This application Sep. 30, 1982, Ser. No. 429,379

Int. Cl.³ H03K *3/023*

U.S. Cl. 364—826

3 Claims

1. A cosine signal corrector comprising:

first input means for receiving a first input signal which is approximately cos f(t) where f(t) is an information signal;

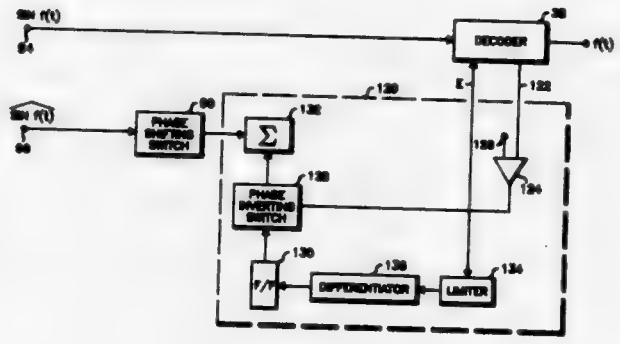
second input means for receiving a second input signal which is approximately equal to $\sin^2 f(t)+\cos^2 f(t)$;

third input means for providing a reference signal;

comparator means coupled to the second and third input means for providing an error signal in response to any error in the approximated second input signal;

adder means coupled to an output of the comparator means and to the first input means for adding the error signal to the approximate cos f(t) signal; and

circuit means coupled to an output of the adder means for deriving sgn cos f(t), and coupled to the output of the



comparator means for inverting the phase of the error signal in response to sgn cos f(t).

4,509,136

TELLER MACHINE WITH PRESET ABILITIES

Koichi Horigome, Nara; Seizo Okada, Osaka; Katsuji Nishimura, Habikino, and Hachizou Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

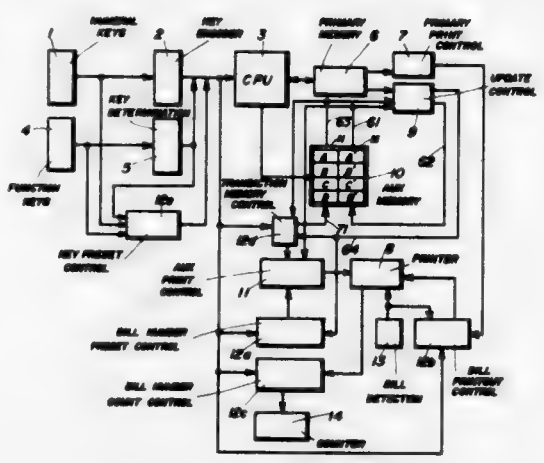
Filed May 31, 1979, Ser. No. 44,315

Claims priority, application Japan, Jun. 1, 1978, 53-66395; Jul. 25, 1978, 53-92138; Jul. 25, 1978, 53-92139; Jul. 25, 1978, 53-92140; Jul. 25, 1978, 53-92142

Int. Cl.³ G06F *15/00*

U.S. Cl. 364—900

8 Claims



1. A teller machine for performing various teller functions comprising:

a keyboard panel including numeral keys and function keys for introducing transaction data representative of the various teller functions;

primary memory means for storing the transaction data introduced by said keyboard panel;

auxiliary memory means for accumulating all transaction data associated with selected ones of said various teller functions and for storing the accumulated data;

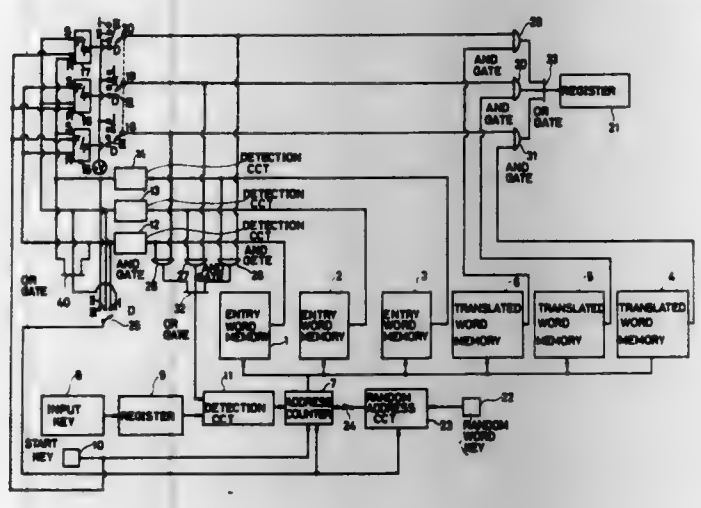
control means for receiving said transaction data from said primary memory means and for transferring the said transaction data associated with only the selected ones of said various teller functions to said auxiliary memory for accumulation therein, said control means including a preset memory means for storing an indication of whether each of said function keys corresponds to a selected teller function.

4,509,137

LANGUAGE TRANSLATOR WITH RANDOM GENERATION OF TEST WORDS DURING LEARNING MODE

Kunio Yoshida, Yamabe, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1980, Ser. No. 176,294
Claims priority, application Japan, Aug. 17, 1979, 54-105157
Int. Cl.[3] G06F *15/38, 7/58, 3/14*
U.S. Cl. 364—900 5 Claims



1. A combined language interpreter and language learning aid device for selectively either inputting a word in a first language to obtain an equivalent word in a second language or for testing an operator's knowledge of said first and second languages, said device comprising:

mode selector means for selectively setting said device in a language interpretation mode or a learning aid mode;

first and second memory means for storing a plurality of words in the first and second languages, respectively, said first words being equivalent to respective second words;

input means for entering a first word in the first language;

access means responsive to said input means in said language interpretation mode for sequentially retrieving first words in said first language and second words equivalent to said first words from said first and second memory means;

detection means operatively connected to said input means and to said first memory means for detecting equivalency between said entered first word and each retrieved first word, and for providing a signal to said access means in said language interpretation mode for advancing said access means to retrieve another first word and second word when a retrieved first word is not equivalent to said entered first word;

indicating means operatively connected to said detection means and responsive to said detection means in the language interpretation mode for displaying a retrieved second word equivalent to a retrieved first word when said retrieved first word is equivalent to said input first word;

random address generating means for providing random addresses in the learning aid mode;

wherein said access means is operatively connected to said random address generating means and is responsive thereto in said learning aid mode for progressively randomly retrieving first words in said first language and second words equivalent to said first words;

wherein said indicating means is responsive to said access means in said learning aid mode for displaying progressively retrieved second words;

wherein said detection means comprises means for providing a signal for said random address generating means and said access means in said learning aid mode for advancing said access means to retrieve another first word and second word when said input first word is equivalent to a retrieved first word;

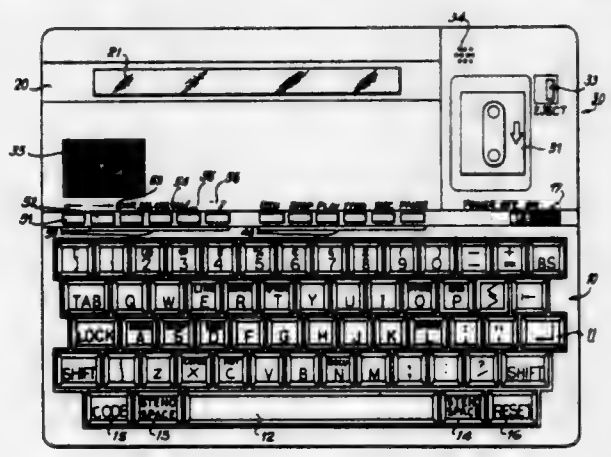
wherein said indicating means is responsive to said detecting means in said learning aid mode to repeatedly display a retrieved second word when said input first word is not equivalent to a retrieved first word.

4,509,138

WORD PROCESSOR

Yoshio Hayashi, Zushi; Kouji Aoyagi, Ayase; Toshio Sakurai, Yokohama; Tusnehiro Kashima, Tokyo, and Koichi Higeta, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 328,836
Claims priority, application Japan, Dec. 15, 1980, 55-176892
Int. Cl.[3] G06F *7/00*
U.S. Cl. 364—900 16 Claims



1. A word processor device on which a page of a textual document can be composed and edited, and in which textual data representing said page can be temporarily stored and the stored textual data transferred to and from magnetic tape wound on a tape cassette, the word processor device being a unitary and integral device and comprising:

keyboard means integrally formed with said word processor device for manually entering said textual data and for entering word processing commands;

information buffer means integrally formed with said word processor device and connected to said keyboard means for temporarily storing one page of said textual data;

character display means integrally formed with said word processor device for visually displaying at least a portion of the page of textual data stored in said information buffer means;

cassette recorder apparatus integrally formed with said word processor device for transferring said one page of said textual data between said information buffer means and the magnetic tape of said tape cassette, the latter containing any such pages of transferred textual data in sequential order; and

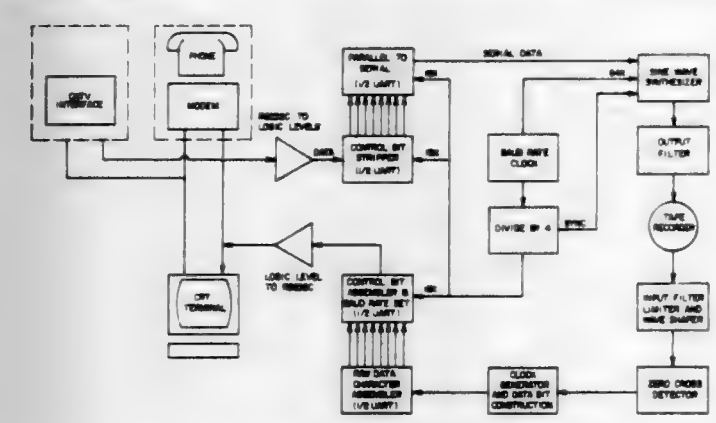
signal processing means for controlling the operation of said information buffer means and said cassette recorder apparatus for transferring said page of textual data to said magnetic tape in response to a word processing command entered on said keyboard means, and also transferring a stored page of said textual data from said magnetic tape to said information buffer means in response to another command entered on said keyboard means;

said keyboard means, said information buffer means, said cassette recorder apparatus, said signal processing means, and said character display means integrally forming said word processor device being arranged in a size, shape and weight that is personally portable.

4,509,139
BINARY DATA STORAGE AND RETRIEVAL SYSTEM FOR SERIAL INTERFACE COMMUNICATIONS AND ARCHIVAL ACCESS

Robert L. Creager, Sr., Westerville, Ohio, assignor to Creager & Company, Westerville, Ohio

Filed Jan. 21, 1982, Ser. No. 341,230
Int. Cl.[3] G06F *3/00, 5/04, 13/00*
U.S. Cl. 364—900 15 Claims



1. Apparatus for recording at a remote location the data contained in a signal transmitted from a host computer, in which said signal consists of a succession of discrete serial binary digital signals each of which comprise a character byte, each byte including a predetermined number of control bits associated with a data character, each data character having a uniform predetermined number of bits, said apparatus including:

(A) communication means for accepting at the remote location the signal generated by the host computer;

(B) means for processing said signal including

(i) first means for receiving a serial input corresponding to the succession of discrete character bytes of said signal and converting said serial input into a parallel data signal, said first means including register means interconnected with a buffer means for providing a pulse at the beginning of each character byte within said signal to set the buffer means to store a number of bits corresponding to the uniform number of bits associated with each data character; and transmitter means for providing a parallel data signal of data character bits stored in said buffer means, from said buffer means when a number of bits corresponding to the predetermined number of bits in a data character of the said byte are stored in said buffer means; and

(ii) second means for receiving the parallel data signal corresponding to a data character from said buffer means of the first means and translating said parallel data signal into a translated serial data signal which comprises the predetermined number of bits of each of the data characters associated with the serial succession of bytes in the signal accepted by the communication means; and

(C) means for storing said translated serial data signal generated by the second means.

8. Playback apparatus for displaying a stored data signal present in a means for storing, in which a storage media stores a succession of binary digital signals corresponding to data characters in which, each data character has a uniform predetermined number of serial bits and the bits forming the characters are stored in a sequential string fashion, including:

(A) means for generating a signal corresponding to the stored sequential string of data characters from the storage media;

(B) signal processing means for processing the signal derived from said storage media including

(i) first means for receiving a serial input signal of a sequential string of data characters and converting said serial input signal into a parallel data signal, said first means including register means interconnected with a buffer means for providing a pulse at the beginning of each character to set the buffer means to store a number of bits from said serial input signal corresponding to the uniform number of bits associated with each data character of the signal; and transmitter means for providing a parallel data signal corresponding to the character bits stored in said buffer means from said buffer means when a number of bits corresponding to the predetermined number of bits in a data character are stored; and

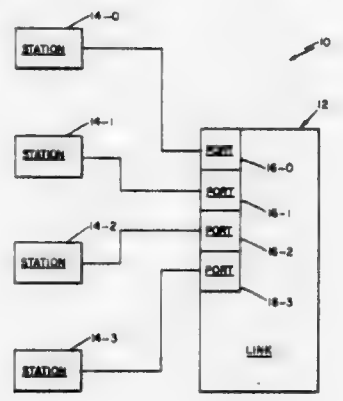
(ii) second means for receiving the parallel data signal corresponding to the character bits stored in the buffer of the first means and for translating said parallel data signal into a translated serial data signal in which a predetermined number of serial control bits are associated in the translated signal with each data character of the parallel signal in a correspondence with a pulse transmitted by a register means corresponding to a predetermined number of bits; and

(C) means for converting said translated serial data signal into a visual display of said data characters.

4,509,140
DATA TRANSMITTING LINK

Kin L. Cheung, Lowell, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 205,164, Nov. 10, 1980, abandoned. This application Jun. 24, 1982, Ser. No. 391,778
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—900 4 Claims



1. A communications link for receiving data from one station of a data processing network having a plurality of asynchronous stations and forwarding such data to another station of the data processing network, said link including a plurality of data ports each constructed to receive data from and dispatch data to an associated station when connected thereto, a memory unit having operating cycles for storing data, computer elements other than said ports requiring memory access, memory priority circuitry, and interconnections connecting together said ports, memory unit, computer elements, and memory priority circuitry,

said memory unit including a common section accessable to all of said ports and a plurality of local sections each associated with one of said plurality of ports and accessable to its associated port and no other port,

each of said ports including decoding circuitry for receiving signals from its associated station and in response thereto emitting signals distinctively indicating the need for access to said common or local memory sections,

said computer elements requiring memory access including a processor for effecting manipulations of data in accordance with a program,

said interconnections including a dual memory bus system with a common memory bus subsystem providing direct access between said memory common section and any of said ports or said processor, and a local memory bus subsystem providing direct access between each of said ports and its corresponding local memory section and between said processor and any of said memory local

sections, said common and local subsystems being constructed and connected to enable concurrent independent use,

said memory priority circuitry including

means for supplying timed signals which for each memory unit operating cycle designate the one of said plurality of ports which may have access to said memory unit, the several ports being designated in cyclic order,

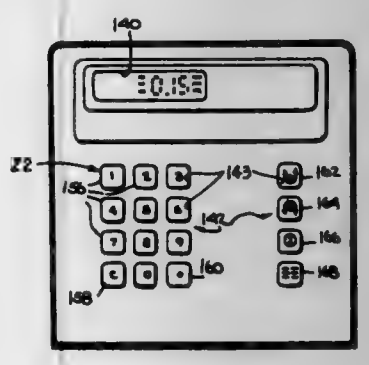
means for receiving said signals emitted by said ports distinctively indicating the need for access to said common or local memory sections and signals from said computer elements requiring memory access indicating need for access to said common or local memory sections and responsive thereto emitting signals enabling said currently designated port to use the common bus subsystem or the local bus subsystem in accordance with its signaled needs, and concurrently enabling said computing elements other than ports to use the memory bus systems not enabled to the currently designated port.

4,509,141

POSTAGE METER WITH KEYBOARD KEYS USED FOR CHANGING OPERATING CONSTANTS

John H. Soderberg, Stratford, and Edward C. Duwel, Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,905
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **20 Claims**



1. In a postage meter having means for printing postage, means for displaying numerical values, means for entering data, computer means electrically connected to each of the aforesaid means and programmed for processing data for controlling the operation thereof, wherein said computer means is programmed for causing said postage meter to enter a service mode of operation in response to data entered from said data entering means, and wherein said computer means includes means for storing a first amount corresponding to a constant value for controlling operation of the postage meter, an improvement for changing the said first amount to a new first amount when said postage meter is in the service mode of operation, said improvement comprising:

(a) said data entering means including a keyboard, said keyboard including a plurality of depressable numeric keys and at least two depressable special purpose keys;

(b) said computer means including means programmed for causing said displaying means to display a first numerical value in response to the depression of selected numeric keys, said first numerical value corresponding to a second amount desired to be a replacement for said first amount;

(c) said computer means including means programmed for causing said display means to display a second numerical value in reponse to the depression of selected numeric keys, said second numerical value corresponding to a predetermined combination;

(d) said computer means including means programmed for entering said second amount in response to the depression of one of said special purpose keys and for entering said combination in response to the depression of another of said special purpose keys; and

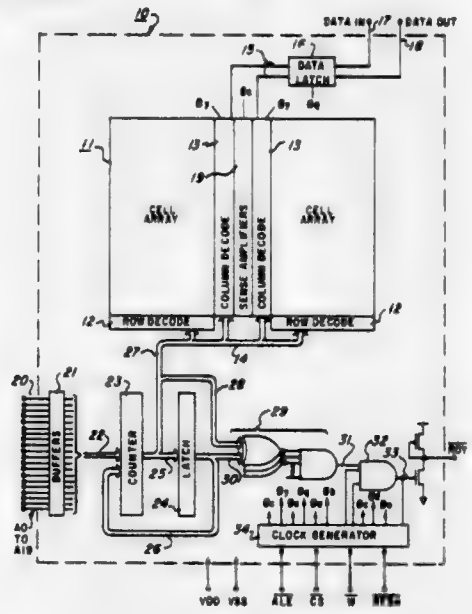
(e) said computer means including means programmed for automatically processing said second amount and said combination in response to entry of the later one of said second amount and said combination for replacing said first amount with said second amount, whereby said first amount is changed to said new first amount.

4,509,142

SEMICONDUCTOR MEMORY DEVICE WITH PIPELINE ACCESS

Jimmie D. Childers, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1982, Ser. No. 449,959
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 **15 Claims**



1. A memory drive comprising:

an array of memory cells;

accessing means for reading selected data from the array based upon a read address and for storing such data in a data latch;

a counter with means for incrementing the counter;

input address terminals for the device;

a comparator;

coupling means applying an input address from said terminals to said counter, to said accessing means and to one input of said comparator;

an address latch having an input connected to receive the incremented contents of the counter an output connected to an input of the comparator;

and means for activating either said accesssing means or said data latch in response to an output of the comparator.

4,509,143

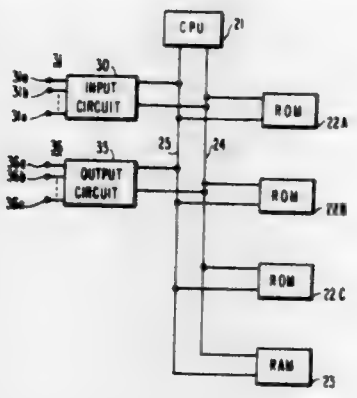
COMPUTER CONTROL SYSTEM FOR SELECTING A DESIRED CONTROL PROGRAM FROM A PLURALITY OF CONTROL PROGRAMS

Shinobu Tajima; Yasukazu Umeda, and Toshiyuki Kamohara, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 224,236, Jan. 12, 1981, Pat. No. 4,410,959. This application Aug. 1, 1983, Ser. No. 519,345
Int. Cl.³ G06F *9/22, 13/06;* B66B *1/18*
U.S. Cl. 364—900 **4 Claims**

1. In a control device for an elevator system comprising a central processing unit, a first read-only memory for storing a first set of program instructions for computing output control signals for operating controlling means of said elevator system in response to input instructing signals to said central process-

ing unit, an output circuit for communicating said output control signals to said controlling means, a first random access memory for storing said output control signals produced as a result of execution of said first set of program instructions immediately prior to said output control signals being communicated to said controlling means by said output circuit, and address and data buses for connecting said first read-only memory, said output circuit, and said first random access memory with said central processing means, the improvement comprising: a second read-only memory and a second random access memory, said second read-only memory and said second random access memory being connected to said central processing means by said address and data buses, said second read-only memory containing a second set of program instructions for selectively modifying said output control signals produced as a result of said first set of program instructions.

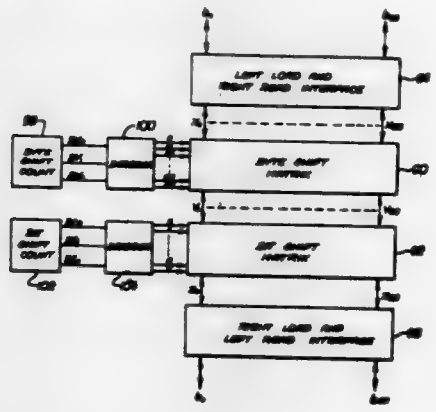


4,509,144

PROGRAMMABLE BIDIRECTIONAL SHIFTER

John Palmer, Hillsboro, Oreg.; Bruce Ravenel, Sunnyvale, Calif., and Rafi Nave, Kiriat Motzkia, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 341,862, Jan. 22, 1982, abandoned, which is a division of Ser. No. 129,995, Feb. 13, 1980, Pat. No. 4,338,675. This application Dec. 5, 1983, Ser. No. 558,171
Int. Cl.³ G06F *1/00*; G11C *19/00*
U.S. Cl. 364—900 1 Claim



1. A programmable bidirectional shifter for shifting a plurality of bits a plurality of bit positions during a single clock cycle comprising:

a selectively activated left load and right read interface circuit means for the loading of bits, which have been input and are to be shifted left and the reading of bits which have been shifted right which are to be output;

a byte shift matrix coupled to said left load and right read interface circuit means for performing a plurality of byte length shifts;

a bit shift matrix coupled to said byte shift matrix, for performing a plurality of bit length shifts;

a selectively activated right load and left read interface circuit means coupled to said bit shift matrix for the loading of bits which have been input and are to be shifted right and the reading of bits which have been shifted left and which are to be output;

a byte shift control circuit means coupled to said byte shift matrix to control the number of left and right byte shifts, said number of shifts being determined by the number of bit portions to be shifted and the number of bits per byte;

a bit shift control circuit means coupled to said bit shift matrix to control the number of left and right bit shifts, said number of shifts being determined by the number of bit positions to be shifted and the number of bits per byte;

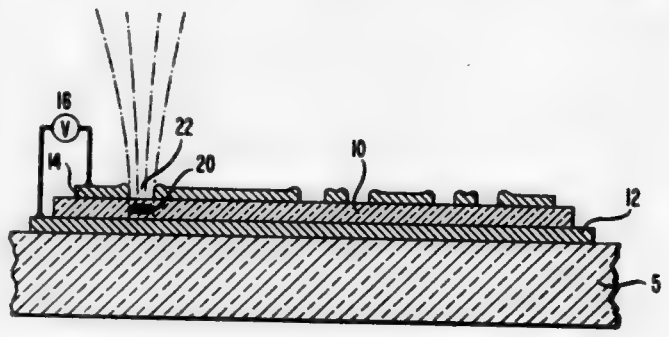
whereby a left or right shift may be performed by said shifter for a plurality of bits a plurality of bit positions during a single clock cycle.

4,509,145

ELECTRICALLY BIASED OPTICAL STORAGE MEDIUM

Martin A. Bosch, Lincroft, and Ross A. Lemons, Tinton Falls, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 18, 1982, Ser. No. 389,877
Int. Cl.³ G11C *11/42, 13/04*
U.S. Cl. 365—112 17 Claims



1. An optical storage medium which undergoes a perceivable optical change in a localized area upon illumination with electromagnetic radiation in a localized illuminated region, comprising a storage material which undergoes an optical change in said localized area upon localized heating characterized in that

(A) said localized illuminated region includes a portion of a photoconductive material which has an unilluminated resistivity of at least 10^6 Ohm-cm and which undergoes a resistivity decrease of at least 10^5 upon said illumination,

(B) said localized illuminated region is in thermal contact with said localized area of said storage material, and

(C) means are present for applying a voltage to said photoconductive material wherein said voltage application means are situated such that upon said illumination, a substantial current flows across said photoconductive material,

wherein said localized area of said storage medium is capable of undergoing an optical change of greater than 10 percent and wherein an information storage density greater than 10^7 bits/cm^2 is achievable.

4,509,146

HIGH DENSITY JOSEPHSON JUNCTION MEMORY CIRCUIT

Tsing-Chow Wang, Norristown, and Richard M. Josephs, Willow Grove, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,129
Int. Cl.³ G11C *11/44*
U.S. Cl. 365—162 14 Claims

1. A high density Josephson junction memory circuit comprising:

a substrate,

a ground plane pattern on said substrate,

a plurality of memory cells on said substrate,

each memory cell comprising a storage loop having a biasing

470-923 O.G.—85-16

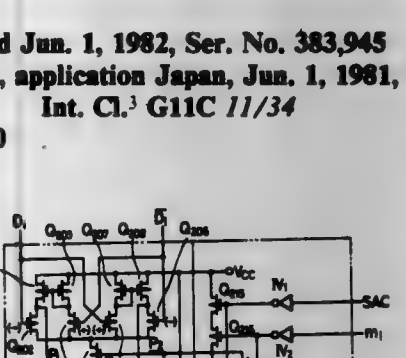
gate current source, a low reference voltage source and a storage loop connected between said current source and said voltage source,

said storage loop having a first branch and a second branch connected in parallel,

a single Josephson junction device in said first branch,

said Josephson junction device being mounted on the substrate adjacent and apart from said ground plane pattern,

an X current control line inductively coupled to said Josephson junction device,



a Y current control line inductively coupled to said Josephson junction device,

said coupling between said X and Y current control lines and said Josephson junction device being separated from said ground plane pattern so that the threshold characteristic of said Josephson junction device is symmetrical with respect to said biasing gate current, and

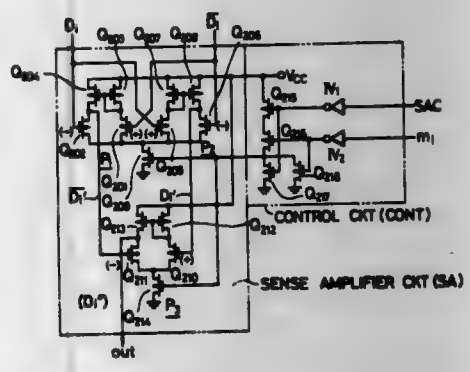
sensing means inductively coupled to said second branch of said storage loop for sensing the magnitude of the current flowing in said loop of said memory cell.

4,509,147

HIGH SPEED SEMICONDUCTOR MEMORY DEVICE HAVING A HIGH GAIN SENSE AMPLIFIER

Nobuyoshi Tanimura; Sho Yamamoto; Kazuo Yoshizaki, and Isao Akima, all of Tokyo, Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,945
Claims priority, application Japan, Jun. 1, 1981, 56-82474
Int. Cl.³ G11C *11/34*
U.S. Cl. 365—190 **16 Claims**



1. A static type semiconductor random access memory comprising:

one or more memory cells each of which delivers a pair of signals complementary to each other;

a first dissymmetric type differential amplifier circuit having a non-inverting input terminal coupled to said memory cells to receive one signal of the pair of complementary signals, and an inverting input terminal coupled to said memory cells to receive the other signal of said pair of complementary signals, said first amplifier circuit including means for forming a first output signal in-phase with said signal received at its non-inverting input terminal;

a second dissymmetric type differential amplifier circuit having an inverting input terminal coupled to said memory cells to receive said one signal, and a non-inverting input terminal coupled to said memory cells to receive said other signal, said second amplifier circuit including means for forming a second output signal in-phase with said signal received at its non-inverting input terminal; and

first means coupled to said first and second amplifier circuits to receive said first output signal and said second output signal, said first means including means for forming a third output signal based on said first output signal and said second output signal,

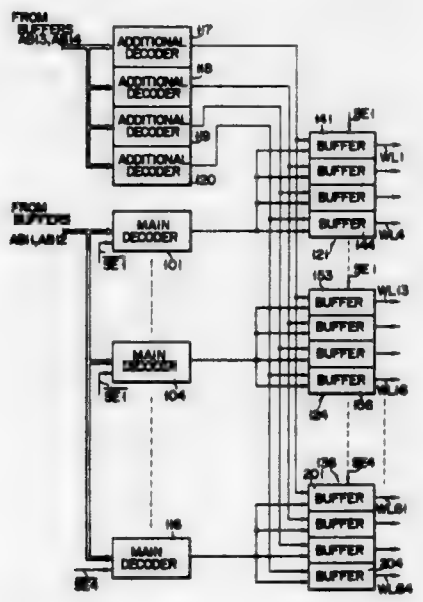
wherein each of said first and second dissymmetric type differential amplifier circuits is a dissymmetric type differential amplifier which comprises a first insulated-gate field effect transistor of a first conductivity type having its gate coupled to said non-inverting input terminal, a second insulated-gate field effect transistor of said first conductivity type having its gate coupled to said inverting input terminal and having its source coupled to a source of said first insulated-gate field effect transistor, and first active load means connected between respective drains of said first and second insulated-gate field effect transistors and a first power supply, said first and second dissymmetric type differential amplifier circuits being coupled to at least one constant current source connected between sources of said first and second insulated-gate field effect transistors and a second power supply, and in which the signal in-phase with said signal received at its non-inverting input terminal is derived from said drain of said second insulated-gate field effect transistor.

4,509,148

SEMICONDUCTOR MEMORY DEVICE

Masamichi Asano, Tokyo, and Hiroshi Iwahashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 192,203, Sep. 30, 1980, Pat. No. 4,447,895. This application May 11, 1983, Ser. No. 493,605
Claims priority, application Japan, Oct. 4, 1979, 54-128392
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—230 **1 Claim**



1. An address designation circuit responsive to externally-generated address signals and comprising:

a plurality of first decoding circuits coupled to said address signals;

a plurality of second decoding circuits coupled to said address signals; and

a plurality of buffer circuits each including a plurality of buffers having first and second input terminals, said first input terminals of the buffers in each of said buffer circuits being commonly connected to an output of a different one of said plurality of said first decoding circuits, and said second input terminals of each buffer in each buffer circuit being connected to an output of a different one of said plurality of said second decoding circuits.

4,509,149

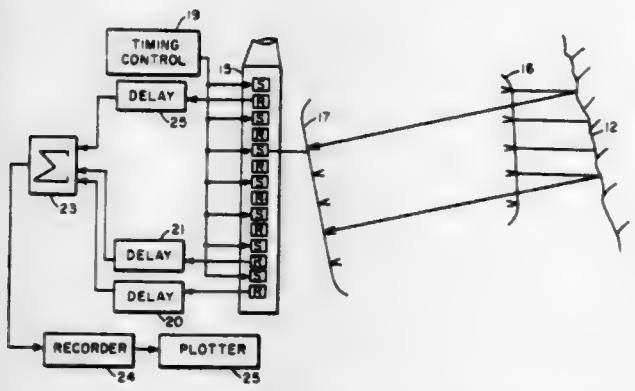
DIRECTIONAL LONG ARRAY FOR LOGGING VERTICAL BOUNDARIES

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 57,776, Jul. 16, 1979, abandoned. This application Oct. 8, 1981, Ser. No. 309,647

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—27 **6 Claims**



1. A method of logging a variable shape vertical formation in the earth from a borehole comprising:

traversing said borehole with a linear array of interspersed and coextensive acoustic sources and acoustic receivers,

producing acoustic pulses from the acoustic sources of said array at spaced points along said borehole,

detecting the reflections of said acoustic pulses from the boundary of said vertical formation with the receivers of said array,

changing the directivity angle of the acoustic pulses of said array at each of said spaced points along said borehole through a range including that angle at which said acoustic pulses strike the formation orthogonally and are reflected orthogonally to said array of receivers with maximum energy,

recording the travel time only of the orthogonally reflected energy at each of the spaced points along said borehole, and

plotting a series of recorded travel times in a display of travel time from the borehole to said variable shape vertical formation boundary at spaced points along said borehole.

4,509,150

LINEAR PREDICTION CODING FOR COMPRESSING OF SEISMIC DATA

Aaron J. Davis, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 221,559, Dec. 31, 1980,. This application Mar. 23, 1983, Ser. No. 478,214

Int. Cl.³ G01N *1/28*

U.S. Cl. 367—76 **10 Claims**

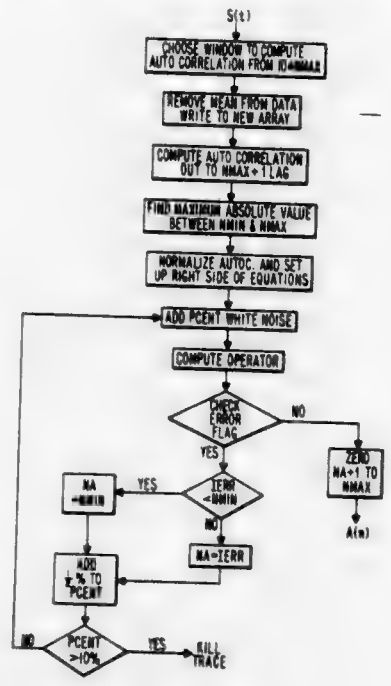
1. A method of seismic exploration, comprising the steps of transmitting acoustic energy through the subterranean structure of the earth to be reflected from an interface within the earth and return upwardly to the surface of the earth, detecting return of said energy, outputting electrical data signals in response thereto, and compressing said data signals for storage or transmission, said compression step comprising the following steps:

sampling said signals at a fixed rate to produce data samples;

generating a prediction operator;

analyzing pluralities of said samples successively in accordance with said prediction operator to yield a predicted value for the next data sample;

comparing said next data sample with the corresponding predicted value to yield a prediction error value;



quantizing said prediction error value to yield a quantum number; and

storing or transmitting said quantum number;

wherein said step of generating the prediction operator includes performing autocovariance on a plurality of samples, whereby low-frequency drift of said prediction errors is avoided.

4,509,151

MARINE ACOUSTIC ANALYSIS SYSTEM AND METHOD

George B. Anderson, Dallas, Tex., assignor to Sea World, Inc., San Diego, Calif.

Filed Jan. 22, 1982, Ser. No. 342,494

Int. Cl.³ G01S *3/80*

U.S. Cl. 367—118 **38 Claims**



1. An acoustic array system for sensing underwater marine sounds in a plurality of different bands of sound frequencies comprising:

an acoustic array adapted to be submerged including:

(a) a first portion having a first set of a plurality of hydrophones spaced longitudinally along its length, the length of the first portion being at least a substantial fraction of a first acoustic wavelength of a first band of sound frequencies, the spacing between the hydrophones in the first set being a minor fraction of the first acoustic wavelength; and

(b) a second portion comprising a second set of a plurality hydrophones spaced longitudinally along its length, the length of the second portion being a fraction of the length of the first portion and being at least a substantial fraction of a second acoustic wavelength of a second band of sound frequencies which is different than the

first band of sound frequencies, the spacing between the hydrophones in the second set being a minor fraction of the second acoustic wavelength; and

means connected to each of the first set and second set of hydrophones for presenting representations of output signals therefrom in separate frequency bands grouped around the first and second acoustic wavelengths for use in determining the identity of the source of the marine sounds received by the hydrophones and the direction of the source of marine sounds with respect to the acoustic array.

22. A method for identifying a marine animal by the underwater sounds which it produces by using a passive acoustic array coupled to a receiver for simultaneously but separately detecting underwater sounds present in at least one low frequency band and one higher frequency band which is distinct from the low frequency band, the method including the steps of:

detecting sounds propagated under water in both the low freguency band and in the high frequency band by plural kinds of marine animals;

analyzing and classifying the sounds present in each frequency band according to the animal known to have produced them; and

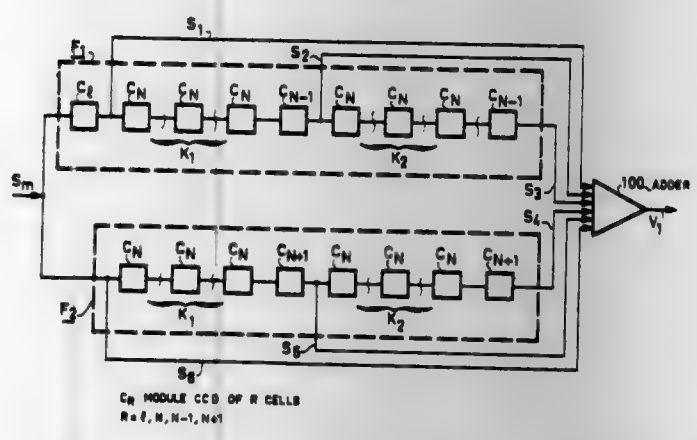
detecting the sounds from an unknown animal in both frequency bands and comparing the sounds present in at least one of the frequency bands with the previously classified sounds of known animals to identify the unknown animal.

4,509,152

CHANNEL FORMATION SYSTEM FOR PANORAMIC SONARS

André Buhart, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 6, 1982, Ser. No. 406,001
Claims priority, application France, Aug. 7, 1981, 81 15363
Int. Cl.³ G01S *7/52, 15/02*
U.S. Cl. 367—123 **3 Claims**



1. A device for the formation of channels for panoramic sonar systems comprising:

a circular base of N receiving transducers ($A_1 A_2 \ldots A_n$) for receiving N signals

a clock having a set frequency (Fe);

a multiplexing circuit coupled to said transducers for receiving said N signals which is controlled by said clock and for multiplexing said N signals;

shift registers coupled to said multiplexing circuit having lines for receiving said multiplexed signals;

taps provided on said lines of said lines of said shift registers for collecting the N delayed signals corresponding to the N receiving transducers, employed for the formation of a channel and for outputting a resultant signal;

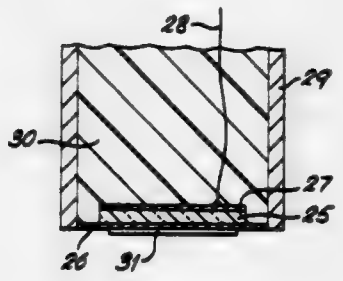
a summing circuit for supplying said channels sequentially wherein the delayed signals are obtained by means of two lines of shift registers, one line of said shift registers being composed of modules C_N having N cells and of modules C_{N-1} having N−1 cells and the other line of said shift registers being composed of modules C_N having N cells and of modules C_{N+1} having N+1 cells.

4,509,153

RESOLUTION TRANSDUCERS, SYSTEMS AND METHODS FOR THE TRANSMISSION AND/OR RECEPTION OF WAVES PROPAGATED BY VIBRATION

John P. Weight, Crowborough, England, assignor to National Research Development Corporation, London, England

Filed Feb. 17, 1982, Ser. No. 349,524
Claims priority, application United Kingdom, Feb. 19, 1981, 8105195
Int. Cl.³ B06B *1/02*
U.S. Cl. 367—140 **12 Claims**



4. A transducer for conversion between electrical signals and waves propagated by the vibration of the propagating medium, comprising:

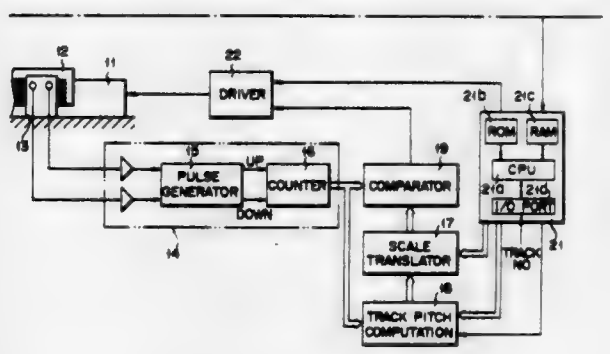
means for converting between edge waves and electrical signals, and for inhibiting conversion between plane waves and said signals, said means producing a constant peak pressure along the axis of transmission from the transducer into the far field if used for conversion from an electrical signal to said waves.

4,509,154

OPTICAL DISK APPARATUS

Katsumi Kimoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 14, 1983, Ser. No. 474,980
Claims priority, application Japan, Mar. 15, 1982, 57-40607
Int. Cl.³ G11B *17/06*
U.S. Cl. 369—33 **2 Claims**



1. A data recording apparatus comprising:

(a) a recording/reproducing head for recording data on a recording medium having a plurality of tracks and for reproducing the data from the recording medium;

(b) a position detecting means having a predetermined scale pitch for detecting the position of the head and for outputting a scale value representing the position of the head with respect to the plurality of tracks of the recording medium;

(c) a track pitch computing means for computing the pitch at which the tracks are arranged, by multiplying the scale value and the predetermined scale pitch and then by dividing the product of the multiplication by the number of said plurality of tracks;

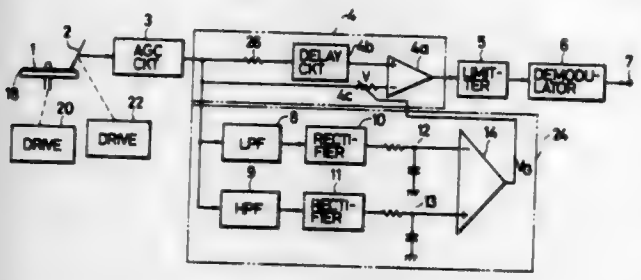
(d) a scale value computing means for computing a new scale value by multiplying the number of said plurality of tracks by the track pitch computed by the track pitch computing means and then by dividing the product of the multiplication by the predetermined scale pitch;
(e) a head driving means for driving the recording/reproducing head until the scale value obtained by the position detecting means becomes equal to the scale value obtained by the scale value computing means; and
(f) a control means for controlling the position detecting means, track pitch computing means, scale value computing means and head driving means in such a manner that when the difference between the number of a track to which the head has been moved by the head driving means and the number of any desired track to which the head is to have an access surpasses a predetermined value, the track pitch computing means computes a track pitch from the track number to which the head has been moved and supplies the track pitch to the scale value computing means, so that the scale value computing means computes a scale value thereby to move the head to the desired track.

4,509,155

CIRCUIT ARRANGEMENT FOR A DISK PLAYER FOR REPRODUCING INFORMATION PRERECORDED IN THE FORM OF PITS

Isao Masuda, Sagamihara; Kazunori Nishikawa, Machida; Yoshiki Iwasaki, Yokohama, and Makoto Komura, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed May 28, 1982, Ser. No. 383,258
Claims priority, application Japan, Jun. 1, 1981, 56-84191
Int. Cl.³ G11B *15/02, 7/00*
U.S. Cl. 369—48 **6 Claims**



1. A circuit arrangement for a disk player of the type arranged to reproduce information prerecorded in a disk in the form of pits, where said information has been recorded as a modulated signal obtained by modulating a carrier wave, said circuit arrangement comprising:
(a) first means responsive to both a lower sideband signal and an upper sideband signal of a reproduced signal from said disk, for producing a control signal indicative of the difference between the levels of said lower sideband signal and said upper sideband signal; and
(b) second means for changing the frequency characteristic of said reproduced signal in accordance with said control signal.

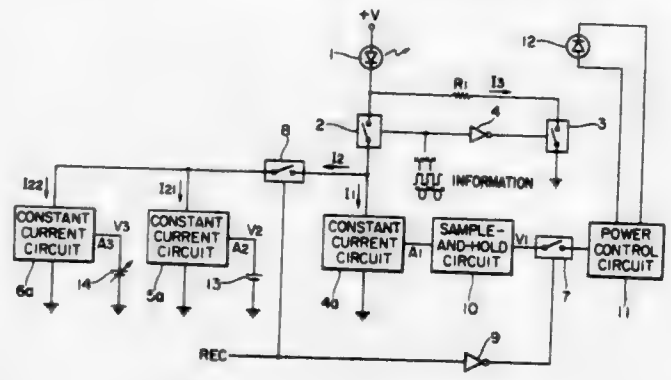
4,509,156

SEMICONDUCTOR LASER DRIVING SYSTEM

Shunji Ohara; Tomio Yoshida; Isao Satoh, all of Osaka, and Kenji Koishi, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 29, 1982, Ser. No. 445,273
Claims priority, application Japan, Dec. 1, 1981, 56-193971
Int. Cl.³ G11B *7/00, 27/36*
U.S. Cl. 369—54 **4 Claims**

1. An optical recording and reproducing device of the type in which the laser light emitted from a laser is used to write and read on and off a recording medium data represented in binary coded signals or binary digits "0s" and "1s", comprising,
(a) a photosensor for sensing or monitoring the power of a laser beam emitted from said laser in the read or reproduction mode in which the binary coded data are recorded on said recording medium,
(b) a laser light power control circuit which is responsive to the output from said photosensor for maintaining the read or reproduction current applied to said laser at a predetermined level,
(c) a first gate means for disabling said laser light power control circuit in the write or recording mode in which binary coded data or information are recorded on said recording medium,
(d) a sample-and-hold circuit for sampling and holding said



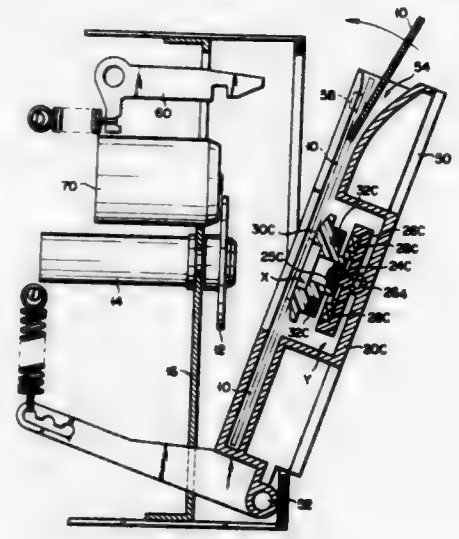
read or reproduction current immediately before said write or recording mode is initiated,
(e) a constant current circuit for providing a predetermined level of the write or recording current,
(f) a second gate means for superposing the write or recording current on said read or reproduction current sampled and held in said sample-and-hold circuit immediately before the binary coded data are recorded on said recording medium, and for providing the current thus superposed to said laser, and
(g) a third gate means for switching said superposed write or recording current on and off in response to the binary digits "0s" and "1s".

4,509,157

DISC PLAYER APPARATUS WITH AN IMPROVED DISC CLAMPER

Kaoru Morinaga, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 16, 1982, Ser. No. 398,926
Claims priority, application Japan, Jul. 20, 1981, 56-113254
Int. Cl.³ G11B *17/04, 3/62*
U.S. Cl. 369—75.2 **31 Claims**



1. A clamper for a disk player apparatus comprising:
turntable means for receiving a disc to be played back;
clamp means for engaging and holding the disc against said turntable means and between said turntable means and said clamp means when said clamp means is in a first

position and for permitting the removal of the disc from the turntable means when said clamp means is in a second position;

support means positioned opposite said turntable means for rotatably and slidably supporting said clamp means, said clamp means being slidable along a direction running from said support means to said turntable means and, when said clamp means is in said first position, said clamp means being mechanically free from said support means;

electromagnetic force means fixed solely to said clamp means and said support means for selectively clamping said clamp means against and releasing said clamp means from said turntable means;

means for selectively supplying a first current to said electromagnetic means, said first current causing said electromagnetic means to generate an electromagnetic force which urges the clamp means toward said turntable means so that the clamp means engages and clamps the disc against said turntable means; and

means for selectively supplying a second and opposite current to said electromagnetic means, said second current causing said electromagnetic means to generate an electromagnetic force which urges the clamp means away from said turntable means so that the clamp means is spaced from said turntable means.

4,509,158

DISC LOADING DEVICE IN A VIDEO DISC PLAYER

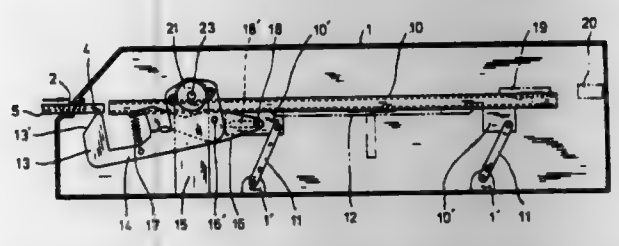
Seong S. Kang, 394-84 Anyang-dong, Anyang-city, Gyunggi-do, Rep. of Korea

Filed Jan. 27, 1983, Ser. No. 461,397

Claims priority, application Rep. of Korea, Feb. 13, 1982, 82-628

Int. Cl.³ G11B *25/04*

U.S. Cl. 369—77.2 **1 Claim**



1. A disc loading device used in video disc player in which a turntable is held rotatably at a certain position, comprising;

a caddy-receiving plate having a caddy-receiving plate opening through which said turntable can be protruded and having at both lateral edges a guide means extended longitudinally and adapted to guide horizontally a caddy into said plate;

a driving mechanism provided at each side of said plate adjacent to a caddy-inserting opening and including a bracket mounted fixedly to the bottom of a body of the player, a first operating means mounted to said bracket for rotating according to insertion of the caddy into said caddy-inserting opening and formed with a cam adjacent to said caddy-inserting opening, said cam having an inclined surface facing towards said caddy-inserting opening and contacting with the proceeding end of the caddy at insertion of the caddy, a damper mounted to the connection between said bracket and the first operating means, and a second operating means mounted pivotally to said first operating means and adapted to transmit the movement thereof to the plate;

a linkage mechanism connected to both sides of said plate and driving mechanism and adapted to change a rotational movement from said driving mechanism into an upward and downward movement of the plate, whereby the plate is movable upwardly and downwardly, while being maintained horizontally, between a position lifted to be in a common plane with said caddy-inserting opening to permit the caddy to be inserted into the plate at insertion of the caddy into said caddy-inserting opening and a position lowered to permit the disc to be seated on the turntable at removal of the caddy from said caddy-inserting opening;

said second operating means being connected at one end to said first operating means by means of a coil spring and at the other end to the caddy-receiving plate by means of a pin mounted fixedly to said other end of the second operating means and a slot formed at a support member connecting the plate and the linkage mechanism.

4,509,159

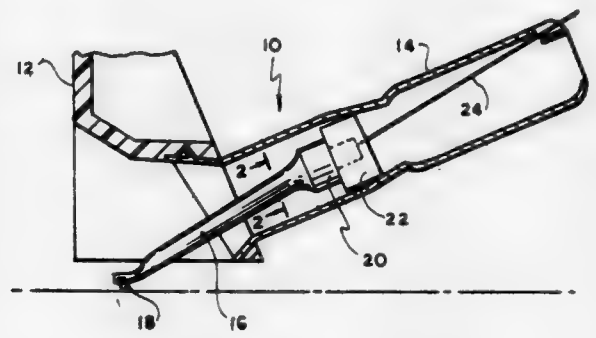
ALUMINUM-ALUMINUM OXIDE STYLUS ARM

George Alexandrovich, Commack; J. Raymond Edinger, Uniondale; Alan Hofer, Wantaugh, and John Kuykendall, Nesconset, all of N.Y., assignors to Pickering & Company, Inc., Plainview, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,128

Int. Cl.³ G11B *3/02;* H04R *11/12*

U.S. Cl. 369—170 **4 Claims**



1. A phonographic stylus assembly comprising: a hollow arm formed of a non-magnetic metallic material; a jeweled stylus affixed to one end of said arm and a magnetic element mounted to said arm opposite said jeweled stylus; said arm having an anodized skin extending inwardly for substantially one-half the thickness of said arm from the outer surface toward the interior surface thereof, said skin comprising an oxide of said metallic material; a non-magnetic, electrically conducting tube surrounding said arm; and an electrically conducting tie wire electrically connecting the interior surface of said arm with said tube.

4,509,160

DISC DRIVE ASSEMBLY

Fred S. Eggers, 3961 Altadena La., San Jose, Calif. 95127

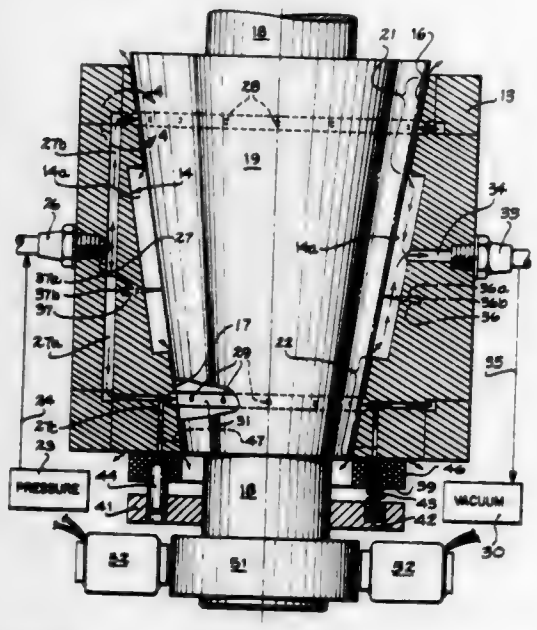
Filed Dec. 5, 1983, Ser. No. 558,320

Int. Cl.³ G11B *3/36;* F16C *32/06*

U.S. Cl. 369—269 **8 Claims**

1. In a disc drive assembly of a type employing a rotating disc having a record surface thereon for carrying information and means for transducing the information with respect to said record surface, means supporting said disc for rotation on an axis extending normal to the disc through the center thereof to cause tracks of information to be disposed thereon concentrically of the center of the disc, the last named said means including a shaft carrying said disc and journal body means carried by said shaft, said journal body means being formed with a sloping side, an air bearing assembly including a bearing housing, said housing having top, bottom and side walls defining a hollow interior, tapered openings formed respectively through said top and bottom walls, the side walls of said openings sloping downwardly and radially inwardly to receive said journal body means nested therein, the slope of the side wall of said openings corresponding to the slope of that portion of said journal body means disposed adjacent thereto, and means forming air passages interposed between said body and said side walls of each opening to discharge air under positive pressure to supply an air lubricated bearing around those portions of said journal body means nested in said openings, a hollow cavity formed within said housing disposed between

said openings, said cavity serving to define a manifold disposed about an intermediate portion of said body, means coupling a



vacuum pump to said cavity to withdraw air from said manifold to draw said body downwardly against said air lubricated bearings to axially center said body within said housing.

4,509,161

OPTICALLY READABLE INFORMATION DISC PROVIDED WITH A REFLECTIVE OPTICAL STRUCTURE

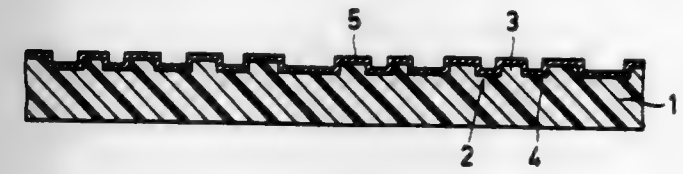
Renaat E. Van de Leest, and Jan C. Gijsbers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,570

Claims priority, application Netherlands, Feb. 4, 1982, 8200415

Int. Cl.³ G11B *5/62*; G01D *15/34*

U.S. Cl. 369—275 **4 Claims**



1. An optically readable information disc comprising a substrate plate provided on one side or on both sides with a reflective optical structure provided with reflective layer composed of a nitride, carbide or boride of a transition metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, chromium, niobium, molybdenum, lanthanum, tantalum and tungsten.

4,509,162

HIGH DENSITY RECORDING MEDIUM

Marshall D. Rester, Anaheim, Calif., assignor to Quixote Corporation, Chicago, Ill.

Continuation of Ser. No. 201,554, Oct. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 64,177, Aug. 6, 1979, , which is a continuation-in-part of Ser. No. 43,429, May 29, 1979,. This application Dec. 13, 1982, Ser. No. 449,489

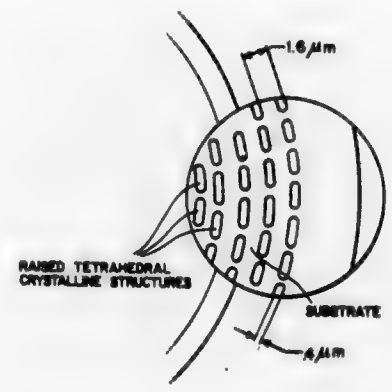
Int. Cl.³ G11B *7/00, 5/82*

U.S. Cl. 369—275 **15 Claims**

1. A high density recording medium comprising:

a substrate having a surface;

an array of microscopic structures deposited on the surface of the substrate along a reading axis, each of the structures extending above the surface and defining deflection surfaces tilted with respect to the surface to divert an incident



beam of radiation wherein information is recorded in the pattern of the structures along the reading axis.

4,509,163

PROCESS FOR PRODUCING A LOW HYGROSCOPIC METHACRYLIC RESIN AND INFORMATION RECORDING SUBSTRATES MADE THEREFROM

Kazumasa Kamada, Hiroshima; Katsumi Tamai, Otake; Yasunori Shimomura, Otake, and Kazunori Abe, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,616

Claims priority, application Japan, Jun. 29, 1982, 57-112038

Int. Cl.³ C08F *220/14*

U.S. Cl. 369—284 **5 Claims**

1. An information recording substrate comprising a low hygroscopic methacrylic resin of a water absorption rate of no greater than 1.4% comprising copolymerized monomers consisting essentially of 50–85% by weight methyl methacrylate, 15–50% by weight cyclohexyl methacrylate and 0–30% by weight of a third monomer selected from the group consisting of methyl acrylate, ethyl(meth)acrylate, butyl(meth)acrylate, lauryl(meth)acrylate, stearyl(meth)acrylate, 2-ethylexyl(meth-)acrylate, ethylene glycol di(meth)acrylate, tetraethylene glycol di(meth)acrylate, trimethylol ethane tri(meth)acrylate, trimethylol propane tri(meth)acrylate, pentaerythritol tetra(-meth)acrylate, allyl(meth)acrylate and styrene.

4,509,164

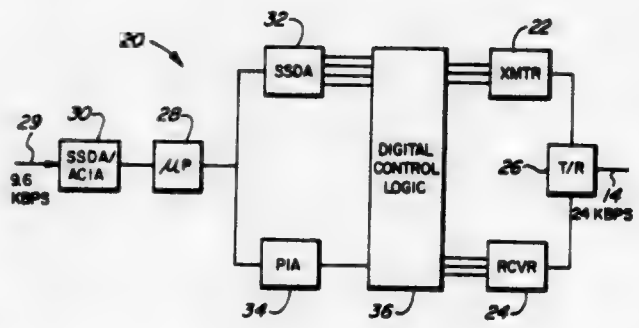
MICROPROCESSOR BASED DIGITAL TO DIGITAL CONVERTING DATASET

Hussein T. Mouftah, Kingston, Canada, assignor to Queen's University at Kingston, Ontario, Canada

Filed Nov. 30, 1981, Ser. No. 325,967

Int. Cl.³ H04M *11/00*

U.S. Cl. 370—29 **40 Claims**



1. Digital to digital converting communication interface for providing high speed, full duplex, burst mode communication of fixed length data blocks comprising:

(a) transmitting means and receiving means for transmitting and receiving data;

(b) mode switching means responsive to a mode switching signal for alternately connecting said transmitting means

and said receiving means to a communication path having a two-wire line;

(c) programmable microprocessor control means for causing said mode switching means to alternate between transmit and receive modes when a complete fixed length data block has been transmitted or received;

(d) first adaptor means addressably connectable to said programmable microprocessor control means for communicating data at a first rate and in a first format with said programmable microprocessor control means and for communicating said data at a second rate and in a second format with said transmitting means and said receiving means;

(e) digital control logic means for generating a plurality of control signals to control operation of said interface, and for causing said data to be communicated at said second rate and in said second format between said first adaptor means and said transmitting means and said receiving means;

(f) second adaptor means interfacing said programmable microprocessor control means with said digital control logic means; and

(g) third adaptor means for connecting data terminating equipment to said programmable microprocessor control means.

4,509,165

MINIATURIZED ANTENNA DUPLEXER USING SAW FILTER

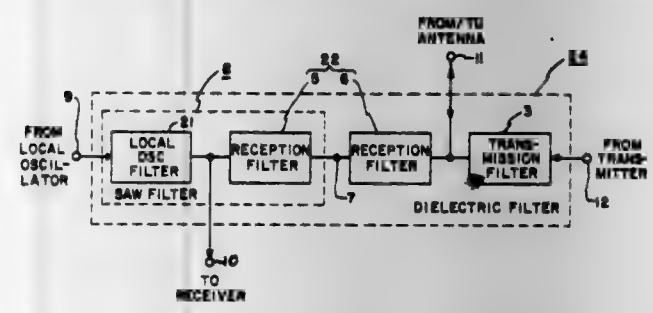
Yoshiharu Tamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,388

Claims priority, application Japan, Dec. 22, 1981, 56-192325[U]

Int. Cl.³ H03H *9/00*; H04B *1/40*

U.S. Cl. 370—38 **10 Claims**



1. An antenna duplexer comprising:

first filter means for a local oscillation frequency, said first filter means being comprised of a first surface acoustic wave filter;

second filter means for a reception frequency, said second filter means having first and second sections, said first section being coupled to said first filter means and being comprised of a second surface acoustic wave filter, said second section having low susceptibility to burnout at the voltage of a transmission signal;

third filter means for the frequency of said transmission signal, said third filter means being coupled to said second section; and

antenna means coupled between said second section and said filter means.

4,509,166

PCM COMMUNICATION SYSTEM AND METHOD OF OPERATION

Joachim W. Simon, Goslar, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

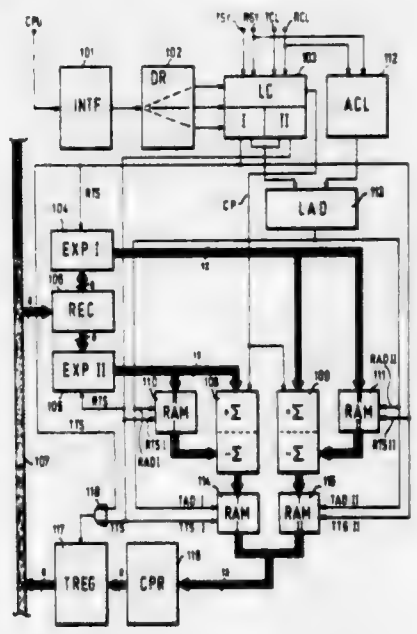
Division of Ser. No. 233,816, Feb. 12, 1981, Pat. No. 4,449,217.

This application Nov. 4, 1983, Ser. No. 503,421

Claims priority, application Fed. Rep. of Germany,

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—62 **11 Claims**



1. A circuit for PCM conference communications between conference-connected stations of the type having a processing circuit (104–116) connected by way of a receiver (106) or a transmitter (117) to a multiplex line (107) of a PCM time-division multiplex communication network, an expander circuit (104,105) for linearizing the received PCM signals, an adder-subtractor unit (108,109) with summing registers and a compressor circuit (116) for delinearizing the PCM signals to be transmitted, temporary stores (110,111) and means (113) for producing control signals and relative address signals, time-slot sequence clock signals, time-slot synchronizing clock signals and relative addresses received from the central processing unit, wherein the improvement comprises:

a processing channel (110–115) in the processing circuit (104–116) between receiver (106) and transmitter (117), said processing channel (110–115) comprising parallel-connected receiving storage registers (110,111) and adder-subtractor units (108,109), each of which include an adder section and a subtractor section, the subtractor section being connected to the outputs of the receiving storage registers (110, 111) and transmitting storage registers (114,115) connected to the parallel-connected registers (110,111).

4,509,167

DATA CONFERENCE ARRANGEMENT

Richard G. Bantel, West Allenhurst, N.J., and Diane E. Herr, Warrenville, Ill., assignors to AT&T Bell Laboratories, Murray Hill and American Bell, Inc., Holmdel, both of, N.J.

Filed Aug. 5, 1983, Ser. No. 520,690

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—62 **9 Claims**

1. For use in an arrangement for conferencing a plurality of data terminals via a conference bridge, a method for establishing a set of communication parameters for each of a plurality of data terminals engaged in a conference comprising the steps of:

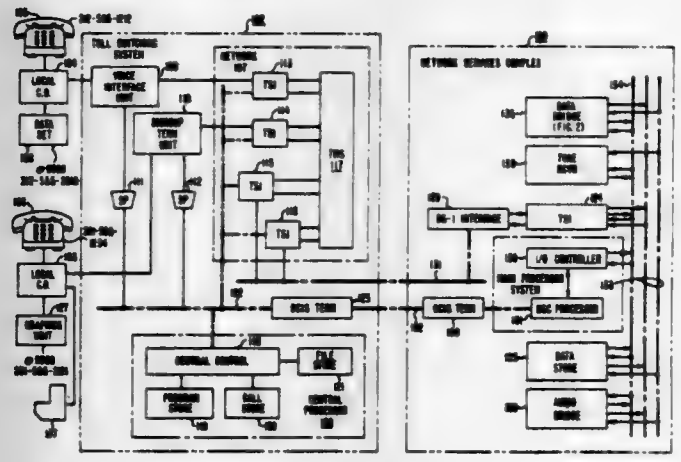
ascertaining a first set of parameters of a first data terminal connected to the bridge,

assigning to the bridge said first set of parameters,

informing a second data terminal requesting connection to the bridge of the parameters assigned to the bridge,

ascertaining a second set of parameters assigned to said second data terminal,

comparing the second set of parameters with the parameters assigned to the bridge,



altering the parameters assigned to the bridge to conform to said second set upon concurrence of said first data terminal and,

connecting said second data terminal to the bridge when said assigned parameters have been altered.

4,509,168

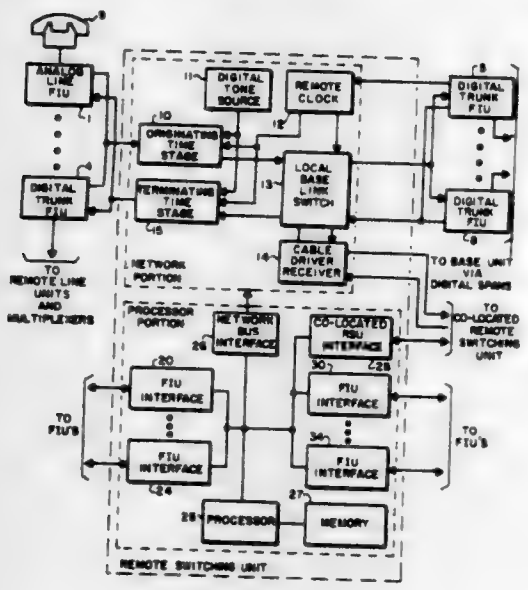
DIGITAL REMOTE SWITCHING UNIT

Robert E. Renner, Glendale, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Nov. 3, 1983, Ser. No. 548,481

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—63 **24 Claims**



1. In a telecommunications system, a remote switching unit is connected between subscribers and other switching systems via a plurality of interface equipment, said remote switching unit comprising:

first and second PCM buses connected to said subscribers via said interface equipment for transmitting a plurality of PCM data samples;

third and fourth PCM buses connected to said other switching systems via said interface equipment for transmitting a plurality of PCM data samples;

digital span means connected between said plurality of interface equipment and said other switching system and being operated to transmit said PCM data samples between said remote switching unit and said other switching systems;

first and second originating time switching means, each of said originating time switching means being operated to switch said PCM samples received from said interface equipment, said first and second originating time switching means being connected to said interface equipment via said first and second buses respectively;

first and second space switching means, each including:

first latching means connected to said corresponding first and second originating time switching means, said first latching means being operated in response to said subsequently transmitted PCM samples to store said PCM samples during each time slot;

first multiplexing means connected to said first latching means and being operated to transmit said stored PCM samples during each time slot in response to a first and a second operating signal of first predefined values; and

second latching means connected to said first multiplexing means and being operated to store said PCM samples transmitted through said first multiplexing means during each time slot;

selecting means connected to said first multiplexing means, to said first latching means, and to said interface equipment via said third and fourth PCM buses, said selecting means being operated to receive and to transmit said PCM data samples from said other switching systems during each time slot;

said first multiplexing means being further operated, in response to said received PCM data samples of said other switching systems, to transmit said received PCM samples during particular time slots in response to said first and second operating signals of second predefined values;

said selecting means being further operated in response to said stored PCM samples of said first latching means to transmit said stored PCM samples to said interface equipment via said third and fourth PCM buses for transmission through said digital span means; said remote switching unit further comprising:

first and second terminating time switching means being connected respectively between said first and said second space switching means via said second latching means and said interface equipment, said first and second terminating time switching means respectively operated to switch said PCM samples from said first and second space switching means to said interface equipment for transmission to said subscribers.

4,509,169

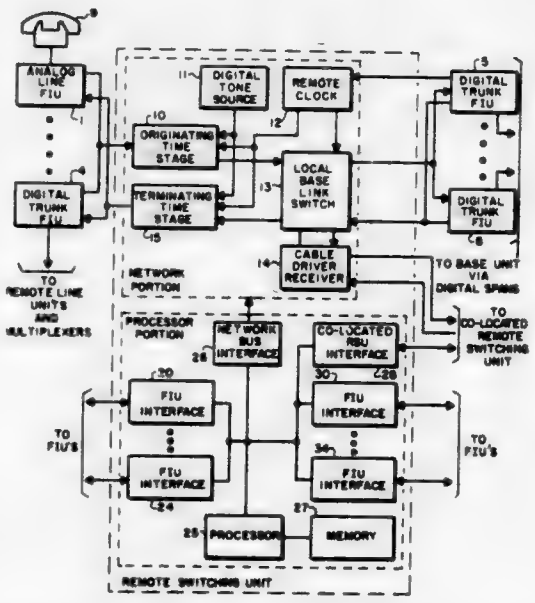
DUAL RAIL NETWORK FOR A REMOTE SWITCHING UNIT

Robert E. Renner, Glendale, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Nov. 3, 1983, Ser. No. 548,483

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—63 **31 Claims**



1. In a remote switching arrangement, a remote switching unit is connected between subscribers and other switching

systems via a plurality of interface equipment, said remote switching unit comprising:

first and second PCM buses connected to said subscribers and to said other switching systems via said interface equipment for transmitting a plurality of PCM data samples;

first and second originating time switching means, each of said originating time switching means being operated to switch said PCM samples from said interface equipment, said first and second originating time switching means being connected to said interface equipment via said first and second buses respectively;

each of said originating time switching means including:

first and second memory means connected to each of said first and second PCM buses, said first and said second memory means being interconnected so that said first and said second memory means are written into simultaneously corresponding time slots with said transmitted PCM samples;

said first and said second memory means further being capable of being operated so that said PCM samples transmitted on said first bus may be switched from said second bus for subsequent retransmission or alternatively said PCM samples transmitted on said second bus may be switched to said first bus for subsequent retransmission;

said remote switching unit further comprising:

first and second space switching means, said first and second space switching means each including:

first latching means connected to said corresponding first and second originating time switching means, said first latching means operated in response to said subsequently transmitted PCM samples to store said PCM sample during each time slot;

first multiplexing means connected to said first latching means and operated to transmit said stored PCM samples during each time slot in response to first and second operating signals of first predefined values; and

second latching means connected to said multiplexing means and being operated to store said PCM samples transmitted through said multiplexing means during each time slot;

said remote switching unit further comprising:

first and second terminating time switching means being connected respectively between said first and said second space switching means and said interface equipment, said first and second terminating time switching means respectively operated to switch said PCM samples from said first and second space switching means to said interface equipment for transmission to telephone subscribers;

each of said terminating time switching means including:

first and second memory means connected between said second latching means and said interface equipment, said first and said second memory means being interconnected so that said first and said second memory means are written into simultaneously in corresponding time slots for storing said PCM samples stored in said second latching means;

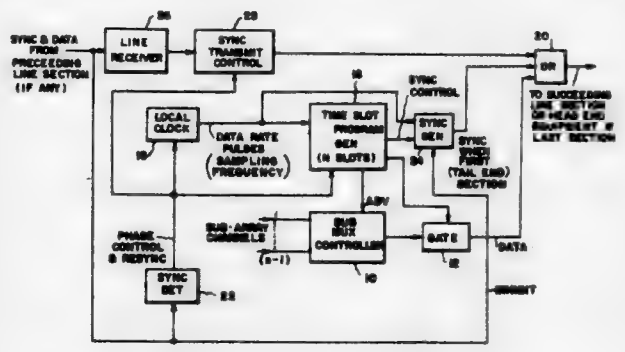
said first and said second memory means further being capable of being operated to switch said PCM samples from said first space switching means through said second terminating time switching means to said telephone subscribers or alternatively being capable of being operated to switch said PCM samples from said second space switching means through said first terminating time switching means to said telephone subscribers.

4,509,170

TIME DIVISION MULTIPLEX TRANSMISSION OF SUBMULTIPLEX SEQUENCES OF SIGNALS FROM SECTIONS OF A CHAIN OF DATA ACQUISITION UNITS

David P. Hollinger, Kendall; David E. Nelson, and Robert J. Hannon, both of Rochester, all of N.Y., assignors to Hydroacoustics Inc., Rochester, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,903
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—85 **15 Claims**



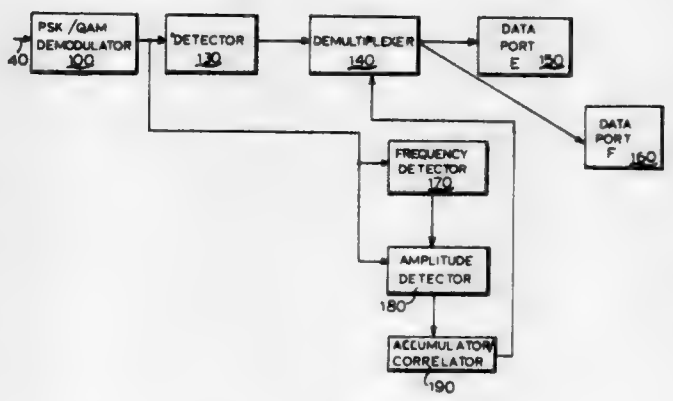
1. In a telemetry system having a plurality of sections at which data is time division multiplexed and transmitted to a receiving point, the improvement comprising means for each of said sections for generating a sequence of time slots for transmissions of signals from all of said sections, means for each of said sections responsive to the reception of signals from a preceding section for synchronizing said time slots generated therein, with the time slot sequence of said preceding section in the sequence in which said sections are connected to each other, and means in each of said sections for the transmission of signals therefrom and from said preceding section or sections in time division multiplex relationship in different ones of said time slots.

4,509,171

MODEM MULTIPLEXER SYNCHRONIZATION BY RADIAL MODULATION

Gordon Bremer, Clearwater, and William L. Betts, Madeira Beach, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Dec. 8, 1982, Ser. No. 447,988
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **4 Claims**



1. A digital data transmission system employing a QAM or PSK technique of sending concurrently a first series of bits consisting of bits A and a second series of bits consisting of bits B comprising:

a transmitter which transmits symbols X1, Y1, X2, Y2, wherein each of said X symbols corresponds to a first 3-bit group of the form ABA and each of said Y symbols corresponds to a second 3-bit group of the form BAB wherein said bits A are bits from said first series of bits and said bits B are bits from said second series of bits and wherein each

of said X and Y symbols are characterized by a radius R and R′ respectively; and

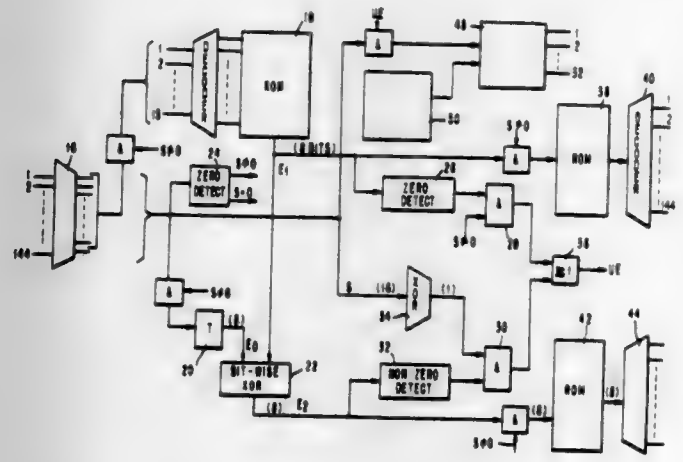
a receiver which receives a series of received symbols corresponding to said transmitted symbols, and is adapted to separate the series of received symbols into said first series and said second series of bits by determining the radii of every other received signal, correlating the radii of a preselected number of symbols to obtain a correlated value, and generating a synchronizing signal dependent on said correlated value.

4,509,172

DOUBLE ERROR CORRECTION - TRIPLE ERROR DETECTION CODE

Chin-Long Chen, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1982, Ser. No. 424,940
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 11 Claims



1. In an error correction system having a double bit error correction and triple bit error detection code for a memory in which bits of memory code words are divided into N memory packages of M bits per package, modularized error correction apparatus for correcting package errors including:

encoder means for encoding data words into said code words for storage in said memory using a double error correction and triple error detection code characterized by an H matrix substantially as shown below

$H =$

1	2	3			
1 . 1 1	1 . 1 1	1 1 . 1	. 1 1 1	1 1 . 1	. . 1 1
. . . .	1 1 . .	1 . 1 .	1 . . 1	1 . . 1	. . 1 .
1 1 . .	. . . .	. . . .	1 . . 1	. . . .	. 1 1 1
1 1 . 1	. 1 1 .	1 . 1 .	. . . 1	. . 1 1	1 1 1 1
1 . . .	1 . . 1	1 . . 1	. 1 . .	1 1 1 1	. . . 1
1 . . 1	1 1 1 1	1 1 1 1	1 1 . .	. 1 . 1	. 1 1 1
1 . 1 .	. . . 1	1 . . .	1 . 1 .	. . . 1	1 1 1 1
. . . .	. . 1 .	1 . 1 1	. . 1 .	. 1 1 .	. . 1 1
1 1 1 .	1 . . 1	. . . 1	. . 1 .	. . 1 .	1 . 1 .
. 1 1 1	. . . .	. . 1 1	. . 1 1	. . 1 1	1 . . .
. . . .	. 1 1 .	. . . 1	. 1 1 .	1 . . .	1 1 . 1
. . 1 1	. . 1 1	. 1 1 1	. 1 . 1	. 1 1 1	. 1 . .
. 1 . .	. 1 1 .	1 1 . .	1 . 1 1	. 1 1 .	1 . . .
. 1 . .	1 1 1 1	1 1 1 .	1 1 1 .	1 1 1 .	. 1 1 1
. 1 . 1	. 1 1 1	. 1 . .	1 1 1 1	. 1 . .	. 1 . 1
. . . 1	1 . . 1	. 1 . 1	. . 1 1	1 . . .	. . 1 1

1	2	3			
1 . . .	. 1 . .	. 1 1 .	. 1 . 1	1 1 1 1	1 1 . .
1 . . 1	1 . . 1	. 1 1 .	1 1 . 1	. . 1 .	1 . 1 1
1 . . 1	1 1 1 .	1 . 1 1	1 1 . .	. . . 1	1 1 . .
1 1 1 1	. . 1 .	1 . 1 .	1 . . 1	1 1 1 1	. . 1 .
1 . . .	. 1 1 1	1 1 1 .	. 1 . 1	1 1 1 .	. 1 . 1
. . 1 .	. . . 1	. . 1 1	1 . 1 .	1 . . .	1 . . 1
. 1 1 1	1 1 . .	1 . . 1	. . 1 .	. 1 . 1	. 1 . .
. 1 1 1	1 1 . 1	. . 1 .	. 1 . .	. 1 1 1	1 . 1 1
1 . . .	. 1 . .	. 1 1 .	. . . .	1 . . .	. . 1 1
1 . . .	1 1 . 1	. 1 1 1	1 1 1 .	1 . . 1	. . . 1
1 . 1 1	. . 1 1	. . 1 1	1 . . .	. 1 . .	. . 1 1
. . . .	. . 1 1	. . 1 1	1 1 1 1	. 1 . .	. . 1 .
. 1 . 1	. 1 . 1	. . 1 .	1 1 . .	1 . . .	1 1 1 .
1 . 1 1	. 1 . 1	. 1 . .	. . 1 1	. 1 1 .	1 1 . 1
1 . . .	. . 1 1	. . 1 1	1 . . .	. . . .	1 . . 1

32	33	34	35	36
1 1 . .	. . . 1	1 . . .	. . . .	. . . .
. . 1 .	. 1 1 .	. 1 . .	. . . .	. . . .
1 1 1 1	1 1 1 1	. . 1 .	. . . .	. . . .
. 1 1 1	. 1 1 1	. . . 1	. . . .	. . . .
1 . . .	. 1 . 1	. . . .	1 . . .	. . . .
. 1 . 1	. 1 1 .	. . . .	. 1 . .	. . . .
. 1 . .	. 1 1 1	. . . .	. . 1 .	. . . .
1 . . .	1 1 . 1	. . . .	. . . 1	. . . .
1 1 . 1	1 1 . .	. . . .	. . . .	1 . . .
1 . 1 1	1 . 1 .	. . . .	. . . .	. 1 . .
. 1 . .	1 . 1 .	. . . .	. . . .	. . 1 .
1 . . 1	1 1 1 .	. . . .	. . . .	. . . 1
. . 1 1	. 1 . .	. . . .	. . . .	1 . . .
1 1 . 1	1 . . .	. . . .	. . . .	. 1 . .
. 1 . .	1 . 1 .	. . . .	. . . .	. . 1 .
1 . . 1	1 1 . 1	. . . .	. . . .	. . . 1

-continued

. . . 1	. 1 1 .	. . 1 .	. 1 1 .	. . 1 1	1 1 . .
. 1 1 .	. . . 1	1 . 1 .	1 1 . 1	. 1 1 .	. 1 . .
1 1 . .	1 . 1 .	1 . . .	1 1 1 1	. . 1 1	1 1 1 .
1 . 1 .	. 1 1 1	1 1 1 1	1 . . .	1 . 1 1	. 1 1 .
. . . .	. 1 1 1	. . . .	1 . 1 1	1 . 1 .	1 . 1 .
. . 1 1	1 . . .	1 . . 1	. . 1 1	1 . 1 1	1 1 . 1
. . 1 1	1 . 1 1	. 1 1 .	. 1 1 1	. 1 . .	. 1 . .
. . 1 .	. . 1 1	1 . 1 1	1 . 1 1	. 1 1 1	1 1 1 .
. 1 . .	1 1 1 1	1 . 1 .	. 1 1 .	. . 1 .	1 1 1 .
. 1 . .	1 1 1 1	. 1 . .	1 . 1 .	. 1 1 .	1 . . 1
. 1 1 1	1 1 . .	1 . . .	. 1 . 1	. . 1 1	. 1 . 1
1 1 1 1	. 1 . .	1 . . .	. . . .	1 . 1 .	. 1 1 1
1 1 . 1	1 . . 1	1 . . 1	1 1 1 .	1 1 1 1	. . 1 1
. 1 1 1	. 1 . .	. 1 . .	. . 1 1	. 1 1 .	. . . 1
. . . .	1 1 . 1	1 . 1 .	1 . . 1	. 1 . .	1 . 1 1
. 1 . 1	. 1 . 1	1 . 1 .	. . 1 .	1 . . 1	1 1 1 .
1 . 1 1	. . 1 1	. . 1 1	1 . . .	. . 1 1	1 1 . 1
1 . . .	. . 1 1	. . 1 1	1 . . .	. . . .	1 . . 1

1 1 . .	. . 1 1	. 1 1 1	. . 1 1	1 . 1 .	1 . . .
1 . . 1	1 . . 1	. 1 1 .	1 1 . 1	. . 1 .	1 . 1 1
1 . . 1	1 1 1 .	1 . 1 1	1 1 . .	. . . 1	1 1 . .
1 . 1 1	. 1 1 1	1 . . 1	1 1 1 1	. . . 1	. 1 . .
1 1 1 1	. . 1 .	1 . 1 .	1 . . 1	1 1 1 1	. . 1 .
1 . . .	. 1 1 1	1 1 1 .	. 1 . 1	1 1 1 .	1 . . 1
. . 1 .	. . . 1	. . 1 1	1 . 1 .	1 . . .	1 . . .
. 1 1 1	1 1 . .	1 1 . 1	. . 1 .	. . . .	. 1 . 1
. 1 1 1	1 1 . 1	. . 1 .	. 1 . .	. 1 1 1	1 . 1 1
1 . . .	. 1 . .	. 1 1 .	. . . .	1 . . .	. . 1 1
1 . . .	1 1 . 1	. 1 1 1	1 1 1 .	1 . . 1	. . . 1
1 . 1 1	. . . .	. . 1 1	. 1 . .	. . 1 .	. . 1 1
. . . .	. . 1 1	. . 1 1	1 1 1 1	. 1 . .	. . 1 .
. 1 . 1	. 1 . 1	. . 1 .	1 1 . .	1 . . .	1 1 1 .
1 . 1 1	. 1 . 1	. 1 . .	. . 1 1	. 1 1 .	1 1 . 1
1 . . .	. . 1 1	. . 1 1	1 . . .	. . . .	1 . . 1

32	33	34	35	36
1 1 . .	. . . 1	1 . . .	. . . .	. . . .
. . 1 .	. 1 1 .	. 1 . .	. . . .	. . . .
1 1 1 1	1 1 1 1	. . 1 .	. . . .	. . . .
. 1 1 1	. 1 1 1	. . . 1	. . . .	. . . .
1 . . .	. 1 . 1	. . . .	1 . . .	. . . .
. 1 . 1	. 1 1 .	. . . .	. 1 . .	. . . .
. 1 . .	. 1 1 1	. . . .	. . 1 .	. . . .
1 . . .	1 1 . 1	. . . .	. . . 1	. . . .
1 1 . 1	1 1 . .	. . . .	. . . .	1 . . .
1 . 1 1	1 . 1 .	. . . .	. . . .	. 1 . .
. 1 . .	1 . 1 .	. . . .	. . . .	. . 1 .
1 . . 1	1 1 1 .	. . . .	. . . .	. . . 1
. . 1 1	. 1 . .	. . . .	. . . .	1 . . .
1 1 . 1	1 . . .	. . . .	. . . .	. 1 . .
. 1 . .	1 . 1 .	. . . .	. . . .	. . 1 .
1 . . 1	1 1 . 1	. . . .	. . . .	. . . 1

syndrome generation means for generating syndrome S from a codewords read from said memory,

decode means responsive to the output of said syndrome generation means for identifying all possible single bit error syndromes of said codeword and all possible double bit error syndromes of said codeword; and

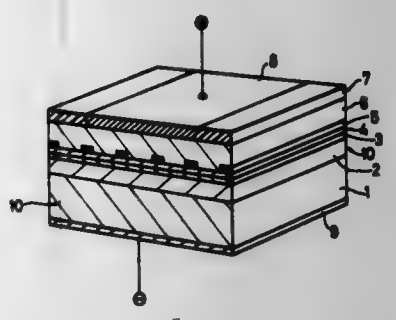
means to determine the location of any single or double bit errors once they are identified by said decode means.

4,509,173

PHASE-LOCKED SEMICONDUCTOR LASER DEVICE

Jun-ichi Umeda, Hachioji; Hisao Nakashima, Tokorozawa; Takashi Kajimura, Hachioji, and Takao Kuroda, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,324
Claims priority, application Japan, Apr. 15, 1981, 56-55547
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—50 **12 Claims**



1. A semiconductor laser device comprising:
a semiconductor substrate having first and second major surfaces;
a semiconductor assembly for optical confinement having a first major surface formed on said first major surface of said semiconductor substrate, said semiconductor assembly including an active layer, a first cladding layer formed on a side of said active layer which faces toward said semiconductor substrate and a second cladding layer formed on a side of said active layer which faces away from said semiconductor substrate;
a first electrode formed on a second major surface of said semiconductor assembly; and
a second electrode formed on said second major surface of said semiconductor substrate,
wherein said semiconductor assembly further includes a plurality of regions which are optical absorption regions of an optical absorption layer formed in said semiconductor assembly between said second cladding layer and said first electrode which optical absorption regions cause a variation of a complex refractive index for a laser beam in a direction intersecting with a traveling direction of the laser beam such that local emissions of adjacent laser regions formed by said plurality of optical absorption regions give rise to a non-linear interaction therebetween.

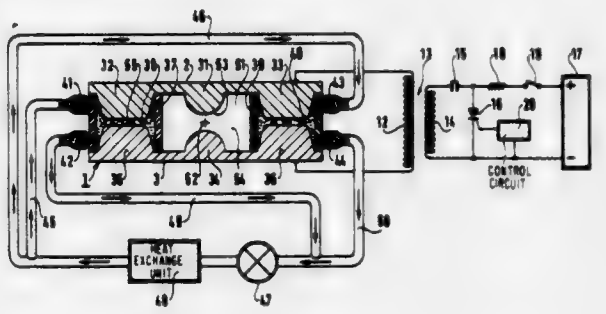
4,509,174

CAPACITOR DISCHARGE EXCITED GAS LASER

Bernard Lacour, Marcoussis; Marc Maillet, Massy; Chantal Vannier, Saint Michel sur Orge, and Olivier de Witte, Gif sur Yvette, all of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Jan. 12, 1983, Ser. No. 457,536
Claims priority, application France, Jan. 14, 1982, 82 00526
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—82 **5 Claims**

1. A capacitor discharge excited gas laser comprising:
a pair of metal plates which face each other, with each plate having oppositely facing a middle portion situated between two adjacent end portions;
a pair of dielectric members disposed between said pair of plates on either side of said middle portions and in contact with said end portions to form, together with the plates, two parallel connected capacitors, the space between said dielectric members and said plates constituting a channel having an axis and containing a gaseous active medium, and the middle portions of the plates which are in contact with the active medium forming respective electrodes;
a resonant optical cavity disposed along the axis containing the active medium; and
a charging circuit comprising:
a transformer having a primary winding connected in series with a capacitance, and a secondary winding having its ends connected to respective ones of said plates;
a source of electric current capable of charging said capacitance; and



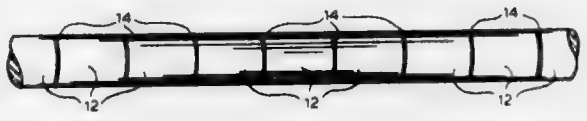
means for causing the capacitance to discharge through the primary winding, thereby inducing a current in the secondary winding capable of charging said capacitors in order to establish an electric discharge between the electrodes, said discharge serving to excite the active gaseous medium to form a laser beam;
the improvement wherein each of said dielectric members comprises an insulating wall disposed perpendicularly to said plates and enclosing a volume between the corresponding pair of facing end portions, and water filling said enclosed volume.

4,509,175

SEGMENTED YAG LASER RODS AND METHOD OF MANUFACTURE

Richard T. Daly, and Martin G. Cohen, both of Huntington, N.Y., assignors to Quantronix Corporation, Smithtown, N.Y.

Filed Sep. 14, 1982, Ser. No. 418,023
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—101 **9 Claims**



1. In a laser rod, which comprises a plurality of rod segments joined to each other by optical cement the improvement comprising: each surface of adjacent ends of the segments having a radius or figure, the interposed cement having a predetermined refractive index and is in the configuration of a lens for compensation of dynamic focusing.

4,509,176

LONGITUDINAL-DISCHARGE-PULSE LASER WITH PREIONIZATION OBTAINED BY CORONA EFFECT

Renato Marchetti, and Eugenio Penco, both of Rome, Italy, assignors to Selenia Industrie Elettroniche Associate S.p.A., Rome, Italy

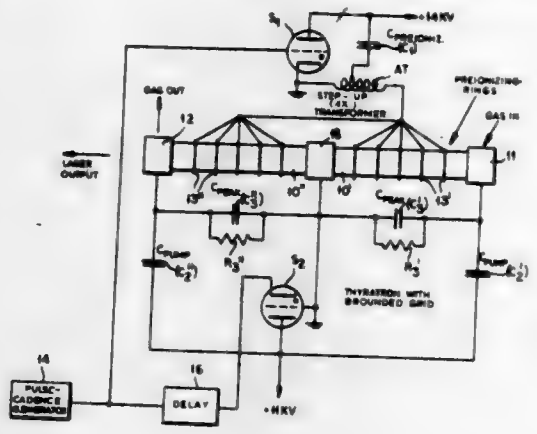
Filed Jun. 15, 1982, Ser. No. 388,590
Claims priority, application Italy, Jun. 17, 1981, 48705 A/81
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—86 **7 Claims**

1. In a longitudinal-discharge-pulse laser comprising:
two coaxial sections formed by a pair of glass tubes joined together by a grounded central electrode and terminated by two outer electrodes;
an ionizable gas mixture in said glass tubes;

a multiplicity of metal rings spacedly surrounding each of said glass tubes;

a pulse-cadence generator periodically emitting a series of command pulses;

first electronic switch means connected to said generator for emitting a steep negative preionizing pulse to all said metal rings simultaneously in response to each command pulse,



thereby giving rise to a corona effect in a zone encompassed by each metal ring with resulting preionization of said gas mixture; and

second electronic switch means connected via a delay circuit to said generator for simultaneously emitting a negative trigger pulse to said outer electrodes in response to each command pulse, thereby initiating a pumping discharge in said sections.

4,509,177

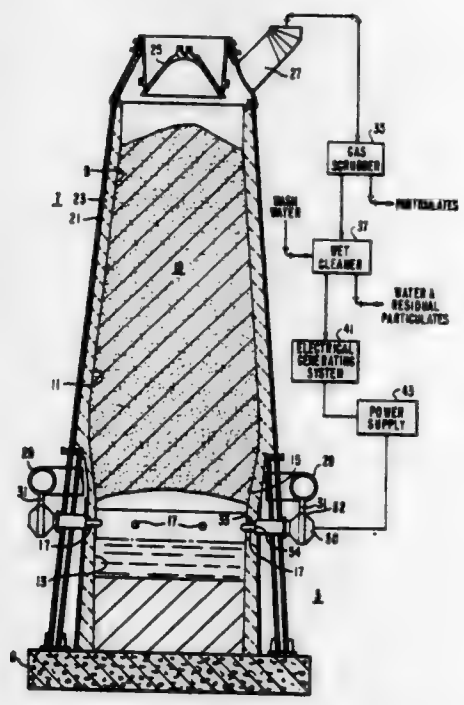
ELECTRIC ARC-FIRED BLAST FURNACE SYSTEM

Maurice G. Fey, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1983, Ser. No. 509,121

Int. Cl.[3] F27B *1/26*

U.S. Cl. 373—60 8 Claims



1. A blast furnace system for reducing metal ore contained in a burden to a metal, comprising:

blast furnace means having a refractory shell defining a vertical shaft, the upper, middle and lower regions thereof being the stack, bosh and hearth, respectively, the shaft containing the burden and products of reaction;

a tuyere having a nose end and a tail end, the nose end extending through the refractory shell and being in communication with the bosh;

means for injecting a gaseous mixture of pulverized carbon-containing fuel and an oxygen-containing gas into the bosh and comprising at least one electric arc heater;

the electric arc heater having an electrode and an arcing chamber, the electrode connected to a source of electricity to produce an electric arc in the arcing chamber;

inlet means communicating with the arcing chamber for introducing the gaseous mixture into the arcing chamber to form an arc-heated gas stream containing a reducing gas;

outlet means intermediate the arcing chamber and the tail end of the tuyere and communicating therebetween such that the arc-heated gas stream can pass therethrough for injection into the bosh to contact the burden, the arc-heated gas stream reacting with the burden, the products of reaction including metal, slag and water vapor, the metal and slag being collected in the hearth, the arc-heated gas stream passing upwardly through the burden entraining particulates and water vapor and causing the prereduction and preheating of the burden in the stack;

gas uptake means for receiving the excess arc-heated gas stream and water vapor exhausted from the top of the shaft, the upstream end of the gas uptake means communicating with the top of the shaft;

gas scrubber means communicating with the downstream end of the gas uptake means for cleaning the gases exhausted from the blast furnace means of substantially all entrained particulates and water vapor;

a gas compressor, the inlet being in communication with the outlet of the gas scrubber means, the gas compressor compressing the cleaned gases exiting the gas scrubber means;

a combustion turbine, the inlet being in communication with the outlet of the gas compressor, the compressed gases being combusted therein to rotate the output shaft of the turbine;

an electric generator connected to the output shaft of the turbine such that rotation of the turbine output shaft causes the electric generator to produce electricity for use by the electric arc heater;

a heat exchanger having primary and second sides, with the secondary side containing a heat transfer medium, the primary side inlet being in communication with the gas outlet of the combustion turbine, the hot products of combustion passing from the combustion turbine into the primary side wherein they are cooled by the transfer of their heat to the secondary side medium causing the vaporization thereof with the cooled products of combustion being vented out the primary side outlet; and

a compressor turbine, the gas inlet and outlet thereof being in communication with the secondary side outlet and inlet, respectively, of the heat exchanger, the vaporized secondary side medium entering therethrough to cause the rotation of the output shaft of the turbine while condensing therein, the cooled secondary side medium being recirculated into the heat exchanger with the output shaft of the compressor turbine being connected to and driving the gas compressor.

4,509,178

ARRANGEMENT OF AN ELECTRODE FOR ELECTRIC ARC FURNACES

Hans Lades, Schwaig; Friedrich Fink, Lauf a. d. Pegnitz; Siegfried Liebel, Röthenbach; Inge Lauterbach, Nuremberg; Thomas Taube, Erlangen-Steudach, and Dieter Zöllner, Schwaig, all of Fed. Rep. of Germany, assignors to Arc Technologies Systems Ltd., Cayman Islands

Filed Apr. 21, 1983, Ser. No. 487,119

Claims priority, application Switzerland, Apr. 23, 1982, 2503/82

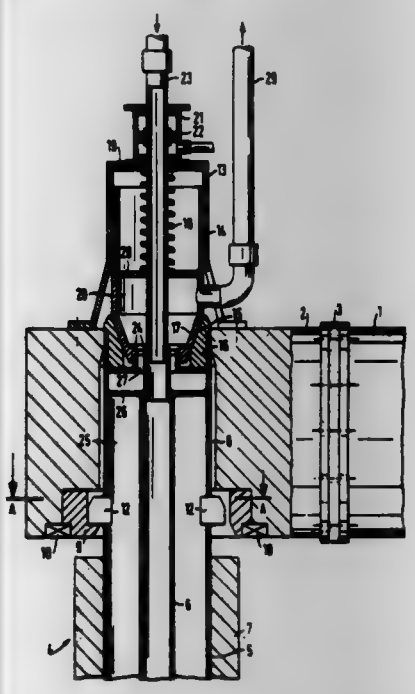
Int. Cl.[3] H05B *7/07*

U.S. Cl. 373—93 10 Claims

1. An electrode and electrode support arrangement for use in an electric arc furnace, the electrode having a metallic, cooled

upper section to which a lower section of consumable material is attached, the electrode support arrangement having a movable arm and having connections for supplying electric current and coolant to the electrode, and comprising;

coolant receiving means at the upper section of said electrode for press connecting with coolant supply means, said receiving and supply means being pressably interengaged within said electrode support arm;



electric current receiving means at said upper electrode section for press connecting with current supply means, said receiving and supply means being pressably interengaged within said electrode support arm; and

mechanical fastening means engaging said upper electrode section with said support arm, said electrode section and support arm being thereby mechanically interengaged within said electrode support arm.

4,509,179

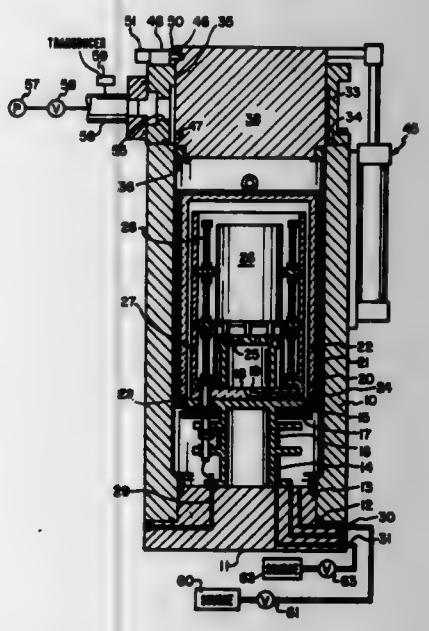
VACUUM SINTERING AND HOT ISOSTATIC PRESSING IN THE SAME VESSEL

Franz X. Zimmerman, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed Sep. 27, 1983, Ser. No. 536,313

Int. Cl.³ F27B *1/26*

U.S. Cl. 373—109 **7 Claims**



1. An apparatus for heating a workpiece at elevated temperatures both under vacuum and under superatmospheric pressures comprising:

(a) a vacuum pressure vessel comprising a cylindrical pressure shell having an inner cylindrical sealing face near the upper edge thereof and a cover at one axial end and a bottom plug at the other axial end, both arranged to be placed within a reaction frame bearing thereupon;

(b) a furnace within the shell having an insulating hood for protecting the shell from the heated workspace;

(c) a vacuum manifold mounted to the top edge of the cylindrical shell and being sealed thereto, said manifold having a cylindrical interior through which the cover passes and an inner cylindrical sealing face at the upper end thereof;

(d) mechanically powered means for raising and lowering the cover and placing it in a first or a second position;

(e) means associated with the cover providing an interior vacuum seal between the cover and the inner cylindrical sealing face on the manifold when the cover is in the first position, and forming an interior pressure seal with the inner cylindrical sealing face on the cylindrical shell when the cover is in the second position; and

(f) a port in the manifold exposed to the interior of the vessel when the cover is in the first position, said port having a cross sectional area of at least eight square inches.

4,509,180

METHOD AND AN APPARATUS FOR CORRECTING DISTORTION OF BINARY RECEIVED SIGNALS

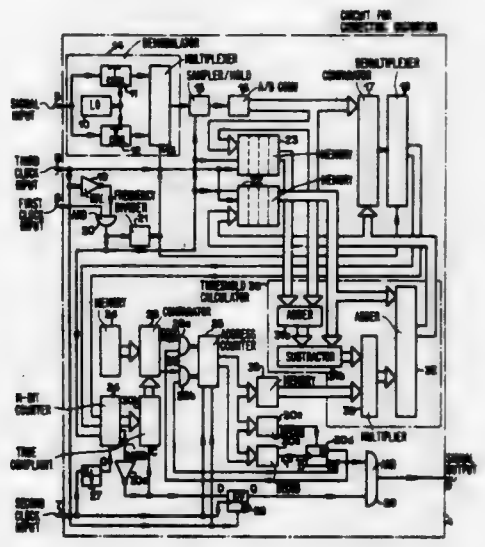
Norbert Neyer, Zurich, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Nov. 4, 1982, Ser. No. 439,328

Claims priority, application Switzerland, Mar. 15, 1982, 1604/82

Int. Cl.³ H03K *5/20*

U.S. Cl. 375—76 **8 Claims**



1. An apparatus for correcting a signal for distortion by means of threshold value comparisons, said signal having a sequence of binary "1" and "0" bits modulated on a carrier, and wherein the distortion has been impressed on said signal during passage through a transmission channel,

comprising in combination

signal demodulation means for demodulating the signal,

sampling means for sampling the demodulated "1" and "0" bits each an equal number of times during a bit duration, including hold means for holding the sampled signal substantially at the sampled value, and wherein the sampled "0" bits form initial threshold values, and the sampled "1" bits form demodulated signal values,

analog-to-digital converter means postcoupled to said sampling means for quantizing the sampled values,

a first memory for storing the quantized initial threshold values,

a second memory for storing the quantized demodulated values,

a threshold calculator for calculating from the stored and quantized demodulated signal values and from the stored and quantized initial threshold values revised threshold values,

a first comparator for comparing the quantized demodulated signal values with corresponding of said revised threshold values, and for deciding whether the sampled signal value is a "1" value or a "0" value,

quality factor determining means for determining the quality factor of a detected bit including

storage means for storing a reference quality factor,

a second comparator connected to said storage means for arriving at a decision whether said quality factor of a detected bit exceeds or falls below said reference quality factor in dependence of the output of said first comparator, and of said storage means,

read only memory means having address locations with variable contents, and

means for changing the contents of said address locations in dependent of the decision of said second comparator, and for feeding a series of parameters to said treshold calculator in dependence of the changed contents of said address locations.

4,509,181

CCD CHARGE SUBSTRACTION ARRANGEMENT

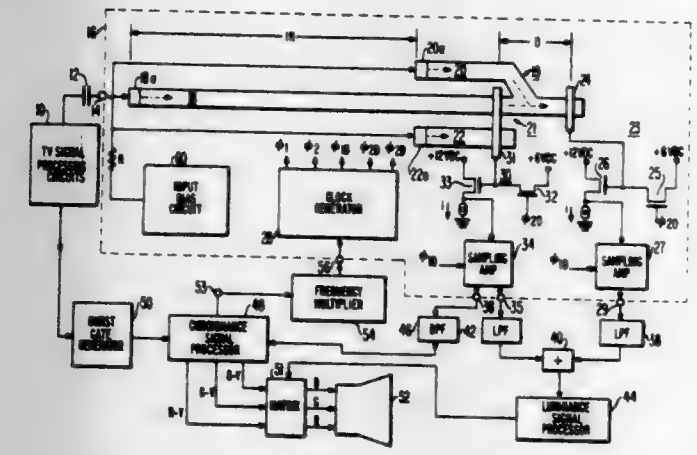
Donald J. Sauer, Plainsboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 383,302

Int. Cl.³ G11C *19/28*; H03H *7/30*

U.S. Cl. 377—63

4 Claims



1. Apparatus for subtracting a first signal from a second signal, comprising:

first and second charge transfer channels formed on a substrate;

a plurality of gates overlying said first channel for storing and transferring charge packets representative of said first signal therein;

a plurality of gates overlying said second channel for storing and transferring charge packets representative of said second signal therein;

means for applying a first clock signal to gates overlying said first channel, the storage of a charge packet under a clocked gate being initiated when said first clock signal transgresses a first threshold level and transfer of a charge packet out from beneath a clocked gate being initiated when said first clock signal transgresses a second threshold level;

means for applying a second clock signal opposite in phase to said first clock signal to gates overlying said second channel, the storage of a charge packet under a clocked gate being initiated when said second clock signal transgresses said first threshold level and transfer of a charge packet out from beneath a clocked gate being initiated when said second clock signal transgresses said second threshold level;

a floating gate overlying both said first and second channels, between preceding and succeeding gates of each of said channels;

means for periodically clamping and unclamping said floating gate to a reference potential when the level of a clamp signal transgresses a third threshold level in first and second directions, respectively; and

means for applying said second clock signal to said clamp means as said clamp signal, said second clock signal including an amplitude excursion which sequentially transgreses said third threshold level in said second direction for unclamping said floating gate and then transgresses said second threshold level for initiating a transfer of a charge packet in said second channel to transfer under said floating electrode from said preceding gate of said second channel;

said first clock signal including an amplitude excursion which transgresses said first threshold level at a time after said second clock signal transgresses said second threshold level, for initiating storage of a charge packet in said succeeding gate of said first channel;

whereby said floating electrode senses a subtractive combination of said charge packet of said second channel transferred under said floating electrode and said charge packet of said first channel transferred to said succeeding gate.

4,509,182

BINARY COUNTER

Hiroshi Minakuchi, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

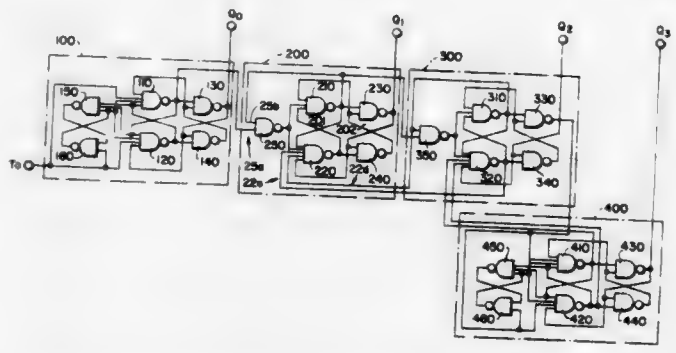
Filed Jun. 2, 1982, Ser. No. 384,173

Claims priority, application Japan, Jun. 4, 1981, 56-86465; Aug. 13, 1981, 56-127644; Nov. 16, 1981, 56-183567

Int. Cl.³ H03K *23/08, 21/06, 21/10*

U.S. Cl. 377—116

2 Claims



1. A binary counter, a unit stage thereof comprising:

a first pair of coincidence gates consisting of a first and a second coincidence gates, a first input terminal of each gate being cross-coupled with the other's output terminal;

a second pair of coincidence gates consisting of a third and a fourth coincidence gates, a first input terminal of each gate being cross-coupled with the other's output terminal;

a fifth coincidence gate, an output terminal thereof being coupled with second input terminals of said first and said second coincidence gates;

means for supplying an output signal of said first coincidence gate to a second input terminal of said third coincidence gate;

means for supplying an output signal of said second coincidence gate to a second input terminal of said fourth coincidence gate;

means for supplying an output signal of said second pair of coincidence gates to third input terminals of said first and said second coincidence gates;

means for supplying a trigger signal from a preceding unit stage to a first input terminal of said fifth coincidence gate;

means for supplying the output signal of said first coinci-

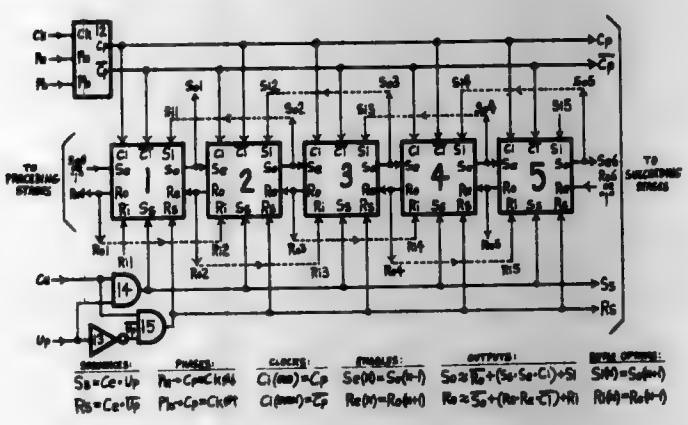
dence gate to a second input terminal of said fifth coincidence gate;
means for supplying, as a trigger signal, the output signal of said first coincidence gate to a next unit stage; and
means for supplying output signals of a next first and a next second coincidence gates which constitute the next unit stage to a fourth and a fifth input terminals of said second coincidence gate, respectively.

4,509,183

BIDIRECTIONAL TRANSITION COUNTER WITH THRESHOLD OUTPUT

Fred R. Wright, San Pedro, Calif., assignor to Helene R. Wright, San Pedro, Calif.

Filed Sep. 16, 1982, Ser. No. 418,694
Int. Cl.³ H03K *23/04, 23/08;* G11C *19/28*
U.S. Cl. 377—125 **6 Claims**



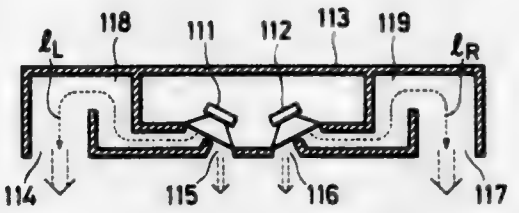
1. A transition counter comprising a plurality of three or more counting elements arranged in a linear array;
each of said counting elements including a bistable latch having one or more input means for "setting" said latch to one of its bistable states, and one or more input means for "resetting" said latch to the other one of its bistable states, and output means for signaling the existing "set" or "reset" bistable state of said latch and thus of the counting element, said "setting" and "resetting" input means to be normally maintained in logic states other than those which induce "set" or "reset" output results;
each of said counting elements having input means for a signal indicating the bistable state of the preceding counting element, and input means for a signal indicating the bistable state of the succeeding counting element, and input means for a signal indicating whether a "setting" count sequence is to occur, and input means for a signal indicating whether a "resetting" count sequence is to occur, and input means for a common clocking signal of effectively complementary logic polarity to adjacent counting elements;
each of said counting elements including first conditional gating means whereby a "setting" signal is applied to the bistable latch during the specific conditions where said "setting" count sequence is indicated, and the signal from the preceding counting element indicates that it is "set", and said common clocking signal is in a preselected logical state;
each of said counting elements including second conditional gating means whereby a "resetting" signal is applied to the bistable latch during the specific conditions where said "resetting" count sequence is indicated, and the signal from the succeeding counting element indicates that it is "reset", and said common clocking signal is in a logical state opposite to said preselected logical state;
the counter being constructed and defined such that each consecutive counting element is permitted to "set" at the clocking transition following the "setting" of the preceding counting element during a "setting" count sequence, or to "reset" at the clocking transition following the "resetting" of the succeeding counting element during a "resetting" count sequence, and wherein a change from one count sequence to the other becomes effective at the next clocking transition;
a threshold is manifest at that point along the array where all preceding counting elements are "set" and all succeeding counting elements are "reset";
said threshold progressing by one counting element in the "setting" or the "resetting" direction on each clocking transition during the appropriate count sequence, thus effectively progressing by two counting elements for each clocking cycle, and producing the sequence of counting states RRR, SRR, SSR, SSS during "setting", or SSS, SSR, SRR, RRR during "resetting", thereby exhibiting one more counting state than the number of counting elements composing the array.

4,509,184

STEREO SOUND SYSTEM

Hirofumi Yanagawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,943
Claims priority, application Japan, Mar. 26, 1982, 57-43660[U]
Int. Cl.³ H04R *5/00*
U.S. Cl. 381—24 **7 Claims**



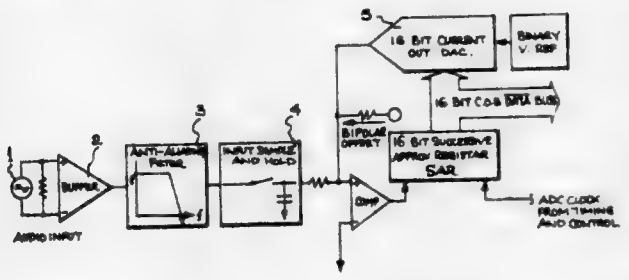
1. A stereo sound system for reproducing signals from two indlependent channels, comprising:
right and left speakers;
center means for summing in phase and attenuating the acoustic outputs of said right and left speaker and radiating said summed attenuated signals; and
right and left acoustic tunnels having input ends facing at least a portion of said right and left speakers respectively and sound issuing ends located on the right and left sides respectively of said center means, said tunnels delaying signals propagating from said input ends to said sound issuing ends.

4,509,185

TIME DOMAIN AUDIO PANNER

Robert M. Grunberg, 15 Fairfax Rd., Bellevue Hill, N.S.W., 2023, Australia

Filed Jul. 25, 1983, Ser. No. 512,136
Claims priority, application Australia, Aug. 9, 1982, PF5284/82
Int. Cl.³ G11B *13/00*
U.S. Cl. 381—34 **3 Claims**



1. A time domain panner, comprising a control means, a single analogue audio input signal source, a buffer, an anti-aliasing filter, a sample-and-hold circuit, an analogue-to-digital

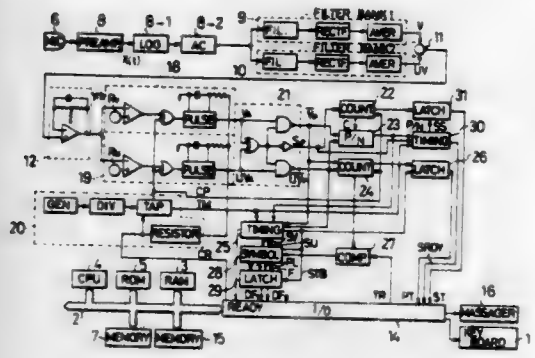
converter, a memory array, an address counter, a digital-to-analogue converter, said source being connected via said buffer, said anti-aliasing filter and said sample-and-hold circuit to said analogue-to-digital converter, said analogue-to-digital converter being for digitizing a sampled audio input into a PCM representation which is fed as an input to said memory array which has a plurality of memory locations, a multiplexer which feeds said memory array and which continuously cycles in response to said address counter which repetitively counts to a maximum count, whereby address words produced by said address counter may address said array with or without add words and a selected channel of said multiplexer points to a value established by said address counter plus an offset, thereby time-shifting selectively analogue output signals provided from left and right analogue output channels with respect to said analogue input signal and with respect to each other, said analogue output signals being obtained from said array via said digital-to-analogue converter, and means for processing said audio signal, said means for processing comprising a variable filter having controllable transfer characteristics which are a function of said control means.

4,509,186

METHOD AND APPARATUS FOR SPEECH MESSAGE RECOGNITION

Koichi Omura, Osaka, and Hiroyoshi Yuasa, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 31, 1981, Ser. No. 336,055
Int. Cl.[3] G10L *1/00*
U.S. Cl. 381—43 **48 Claims**



1. A speech message recognizing method wherein a speech message is analyzed into a plurality of frequency bands, energies contained in respective said frequency bands are measured and a frequency band distribution of said energies is compared with reference patterns to recognize the contents of said speech message, said method comprising the steps of:

(a) logarithmically compressing the amplitude of said speech message,

(b) analyzing said amplitude-compressed speech message into a first frequency band in which the energies of voiced sounds concentrate, and a second frequency band in which the energies of unvoiced sounds concentrate,

(c) obtaining a difference between the energies of voiced sound components belonging to said first frequency band and the energies of unvoiced sound components belonging to said second frequency band to generate voiced and unvoiced sound signals, and

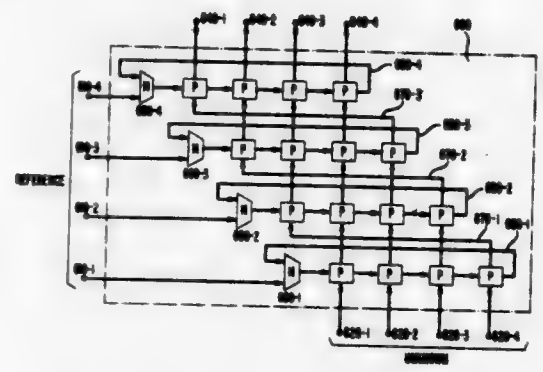
(d) comparing said voiced and unvoiced sound signals with respective said reference patterns to extract one of the reference patterns which is substantially identical to the signals.

4,509,187

TIME WARP SIGNAL RECOGNITION PROCESSOR USING RECIRCULATING AND/OR REDUCED ARRAY OF PROCESSOR CELLS

Bryan D. Ackland, East Windsor; David J. Burr, Tinton Falls, both of N.J., and Neil H. E. Weste, Durham, N.C., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 14, 1982, Ser. No. 388,033
Int. Cl.[3] G06K *9/64*; G10L *1/00*
U.S. Cl. 381—43 **10 Claims**



1. A signal processor including an array of processor cells, pattern matching means for extending an input signal through said cells to an output terminal, said pattern matching means including:

first means for comparing a first unknown input signal having m elements and a first reference input signal having n elements,

first means for time warping either of said first input signals with respect to the other of said first input signals, and

diagonal control means coupled to said first comparing means for controlling cells on a first predetermined diagonal of said array of cells characterized in that said processor further comprises

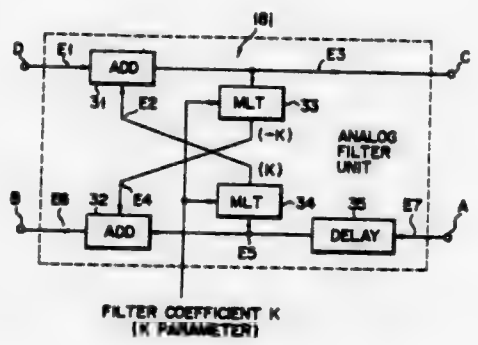
means for recirculating either of said input signals through said cells according to a predetermined methodology, said recirculating means including means for extending signals from an output of first periphery predetermined ones of said cells to an input of second periphery predetermined ones of said cells, said recirculated signals being extended for processing by said second cells.

4,509,188

SIGNAL SYNTHESIZER APPARATUS

Seigo Suzuki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 259,207, Mar. 30, 1981, Pat. No. 4,403,295. This application Jun. 16, 1983, Ser. No. 504,747
Claims priority, application Japan, Apr. 3, 1980, 55-43868
Int. Cl.[3] G10L *1/00*
U.S. Cl. 381—53 **2 Claims**



1. A signal synthesizer apparatus including a parameter dependent multiplier utilizing a charge transfer device whose multiplicative coefficient is determined by a prescribed parameter, said signal synthesizer apparatus comprising:

input means including an input electrode for storing an input charge corresponding to an input signal applied to said parameter dependent multiplier;

transmission means coupled to said input means for selectively transferring charges of said input charge, the selectivity of said transmission means being dependent on said prescribed parameter; and

output means for receiving charges transferred from said transmission means and providing an output signal corresponding to the received charges,

wherein said input charge represents only said input signal, and

said transmission means comprises:

charge divide means located in a charge-transferring path between said input means and said output means for selectively dividing said input charge into given fragments and transferring the divided fragments of charge to said output means, said charge divide means includes a plurality of transfer electrodes, each of said transfer electrodes stores a part of the given fragments of said input charge and has a given capacitance less than the capacitance of said input electrode, said given fragments of said input charge being obtained by charge-dividing according to the ratio of the given capacitance of each of said transfer electrodes to the capacitance of said input electrode; and

determination means coupled to said charge divide means for determining the selectivity of the dividing of charge according to said prescribed parameter, with the rate of the dividing of charge corresponding to said multiplicative coefficient, said determination means including a plurality of first transmission switches coupled respectively to said transfer electrodes for enabling operation of said transfer electrodes, and designation means coupled to said first transmission switches for designating which one of said first transmission switches enables operation of a corresponding one of said transfer electrodes.

4,509,189

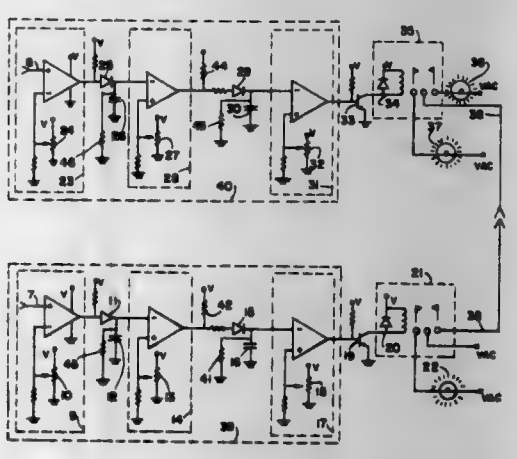
SOUND LEVEL INDICATING DEVICES

Buddy B. Simpson, Rte. 1 Box 320-A, Woodland, Ala. 36280

Filed Jun. 8, 1983, Ser. No. 502,195

Int. Cl.³ G08B *5/36, 23/00;* G01H *3/12*

U.S. Cl. 381—56 **3 Claims**



1. A sound level indicating device to give a visual signal automatically to indicate the decibel level of noise being detected, with said signal being sustained for the duration of the noise level being detected, and for changing the visual signal a multiplicity of times to indicate predetermined levels of noise as being acceptable or at higher levels with said device comprising in combination: a microphone for detecting noise and generating a voltage potential in response to the detection of said noise; a first stage audio amplifier coupled with said microphone by means of an RC coupling for amplifying the output of said microphone with a fixed gain; and a second stage audio amplifier coupled with said first stage audio amplifier by means of an RC coupling for amplifying the output of said first stage audio amplifier with adjustable gain by means of an array of resistors and a rotary switch to allow the operator to choose different decibel levels of noise as being acceptable; a first series of cascading threshold detector circuits comprised of: a first threshold detector circuit coupled to an output of said second stage audio amplifier for converting the erratic signal from said second stage audio amplifier into a square wave indicative of when the level of noise exceeds a threshold value said first threshold detector including variable threshold setting means for changing the sensitivity of said device when predetermined the decibel level of noise to be indicated as acceptable; a second threshold detector circuit coupled to said first threshold detector circuit by means of a filter comprised of a diode and an appropriate RC timing circuit the second threshold detector gives a sustained signal to indicate detection of a decibel level of noise by said microphone which has been predetermined to be acceptable, the second threshold detector alternately gives a signal indicating detection of a noise level above the acceptable level for at least a set period of time; a third threshold detector circuit coupled to said second threshold detector circuit by means of a second filter comprised of a second diode and an appropriate second RC timing circuit, the third threshold detector gives a sustained signal indicating an acceptable noise level unless the signal from the second threshold detector indicating a noise level above the acceptable level persists for an additional set period of time; an SPDT relay; a transistor coupled with said third threshold detector circuit for switching the SPDT relay in response to the sustained signal from the third threshold detector, to supply A/C current to a lamp bulb which glows to indicate the noise level being detected by said microphone is within a decibel level which has been predetermined to be acceptable.

4,509,190

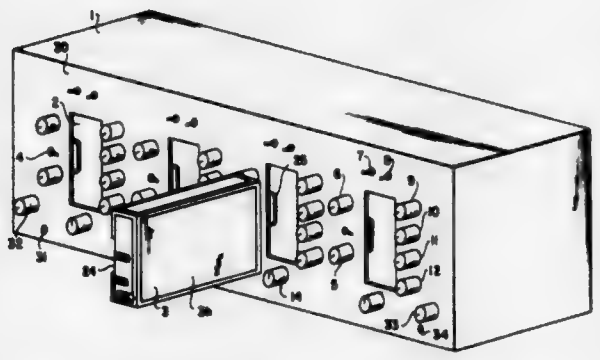
EFFECTS BOX SYSTEM AND METHOD

Abner Spector, 250 174th St. #1904, Miama Beach, Fla. 33160

Continuation-in-part of Ser. No. 479,869, Mar. 29, 1983, abandoned, which is a continuation of Ser. No. 150,813, May 19, 1980, Pat. No. 4,388,490. This application Sep. 27, 1983, Ser. No. 536,368

Int. Cl.³ H04R *3/12*

U.S. Cl. 381—61 **65 Claims**



1. An audio signal processing system for rapidly attaining a large number of different sounds resulting from facile insertion and removal of audio effects circuits into and from a live main audio path of said system, said system having an incoming source audio signal, said system being linkable to and operable in the audio path of any device adapted to receive an audio signal processing device, comprising:

at least one cartridge for containing said audio effects circuit and contact elements thereof serving as cartridge contact elements, said cartridge contact elements including at least one audio input and at least one audio output, whereby said audio output provides the audio effects;

a main housing having a system input terminal for connecting the incoming source audio signal to the audio path and having a system output terminal, said main housing further having at least one cartridge-receiving recess adapted

to removeably receive said cartridge, said recess having recess contact elements adapted to correspondingly engage said cartridge contact elements when said cartridge is installed in said recess, said recess contact elements including at least one audio input and at least one audio output being respectively associated with said main audio path; and

at least one recess bypass switching means associated with the main audio path and said recess for providing a bypass mode of operation wherein said bypass mode provides for electrically disconnecting said main audio path from said recess in a manner that provides for routing the audio path and, as a matter of course, the incoming source audio signal by said recess, and

for providing an operative mode of operation wherein said operative mode provides for electrically connecting said audio path to said recess in a manner that provides for routing said audio signal to and from said recess via and through the audio effects circuit of a cartridge installed therein;

so that said modes can provide for avoiding spurious signals that can be generated into said audio path by the making or breaking of electronic contact between some of said corresponding contact elements while providing means for maintaining the continuity of said main audio path by,

with respect to insertion of the audio effects circuit into said main audio path, first, before said insertion, placing said recess bypass switching means in said bypass mode of operation until, at a point reached during installation of said cartridge into said recess, stabilized electronic contact has been established between said corresponding contact elements, whereupon the placing of said switching means in said operative mode of operation can provide for noiselessly directing said audio signal to flow into and out of said recess via and through the audio effects circuit of the cartridge installed therein, while maintaining the continuity of said main audio path, and

with respect to removal of the audio effects circuit from said audio path, by again first, before said removal, placing said recess bypass switching means in said bypass mode of operation, providing thereby, for noiselessly directing said audio signal to flow to said recess before disturbance to said stabilized electronic contact between said corresponding contact elements is caused by said removal, while maintaining the continuity of said main audio path;

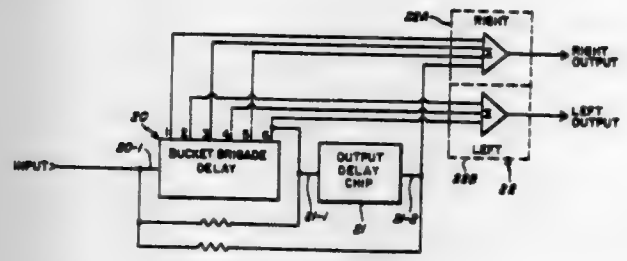
whereby insertion and removal of the audio effects circuits into and from said main audio path can be accomplished in a manner permitting rapid and noiseless changing of said circuits to provide a large number of different sounds, while said system is in operation, while maintaining the continuity of said main audio path.

4,509,191

ELECTRONIC STEREO REVERBERATION DEVICE

Neil A. Miller, Newtonville, Mass., assignor to Scholz Research & Development, Waltham, Mass.

Filed Sep. 20, 1982, Ser. No. 420,281
Int. Cl.³ H04R *3/00*
U.S. Cl. 381—63 **7 Claims**



1. An electronic reverberation device for providing reverberation to signals in the audio frequency range, comprising:

an input terminal and a pair of output terminals corresponding to right and left stereo output signals, respectively;

an analog delay device having an input coupled from said input terminal for receiving an input audio signal and including a plurality of successive output taps separated into at least first and second output tap groups with at least some of the output taps of the first group being timewise interleaved with output taps of the second group;

said successive output taps having a delay period defined therebetween with at least some of said delay periods being of different length than an adjacent delay period;

a feedback path coupling from at least one of said output taps of said analog delay device to said analog delay device input;

first and second summing devices each having multiple inputs and an output;

means coupling the output taps of the first group only to the inputs of the first summing device;

means coupling the output taps of the second group only to the inputs of the second summing device;

means coupling the output of each of the summing devices to one of the pair of output terminals;

said summing devices for summing the signals inputted thereto to provide two different audio output signals having different delay components,

an output delay circuit having an input and an output and means coupling the input thereof from an output tap of the analog delay device,

said feedback path including a first feedback path coupled from the output tap that couples to the output delay circuit to the analog delay device input and a second feedback path that couples from the output of the delay circuit to the analog delay device input,

means coupling the output of the output delay circuit to only one of said summing devices at an input thereto,

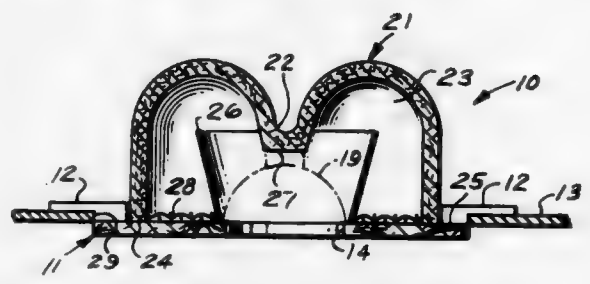
wherein each output delay tap is connected to provide an input to only one summing device.

4,509,192

SPEAKER ENCLOSURE

Roy D. Straughn, 5021 Muldoon Cir., Pensacola, Fla. 32506

Filed Apr. 7, 1983, Ser. No. 482,848
Int. Cl.³ H04R *1/28; G10K 13/00*
U.S. Cl. 381—90 **1 Claim**



1. A speaker enclosure, comprising, in combination, a square-shaped, plywood panel, a circular central opening through said panel, a circular row of secondary openings through said panel being located concentrically around an outer side of said central opening, a concentric, circular ring thus being formed between said central opening and said secondary openings, and a spoke portion formed between each said secondary opening, and extending radially outwardly from said ring; a circular, hollow, fiberglass dome mounted on a rear side of said panel, and forming a closed chamber on a rear side of said central and secondary openings; a central portion of said dome being inwardly concaved a part distance toward said panel, a speaker inside said chamber having a front side mounted on said ring, and a rear side thereof engaging said concaved central portion of said dome, a frusto-conical baffle around a side of said speaker being mounted at one end on said

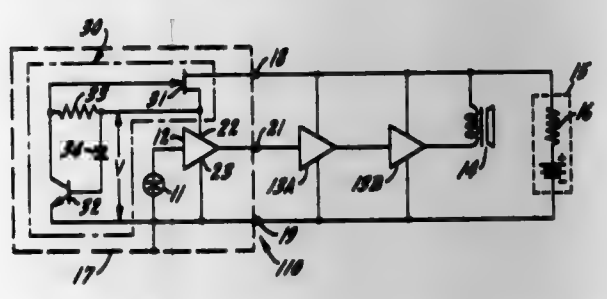
rear side of said panel, and extending divergingly rearwardly inside said chamber, and a galvanized wire screen covering an inner side of said secondary openings being bonded to a metallic coating on an inner peripheral surface of said dome.

4,509,193

MINIATURE ACOUSTICAL TRANSDUCER WITH FILTER/REGULATOR POWER SUPPLY CIRCUIT

Elmer V. Carlson, Prospect Heights, Ill., assignor to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed Jul. 11, 1983, Ser. No. 512,352
Int. Cl.³ H04M *1/03*
U.S. Cl. 381—113 17 Claims



1. In a miniature acoustical transducer system suitable for use in hearing aids and like applications, of the kind comprising a microphone connected to the signal input of an amplifier, the amplifier having first and second power terminals connected to a battery, the improvement comprising a combined filter and voltage regulator circuit interposed between the battery and the first power terminal of the amplifier, the filter/regulator circuit comprising:

a first semiconductor gate device having input, output, and control electrodes, the input electrode of the first gate device being connected to the battery and the output electrode of the first gate device being connected to the first power terminal of the amplifier;

a second semiconductor gate device having input, output, and control electrodes, the input electrode of the second gate device being connected to the second power terminal of the amplifier and to the battery and the output electrode of the second gate device being connected to the control electrode of the first gate device;

a resistance connected between the output and control electrodes of the first gate device;

and a junction diode connected between the output electrode of the first gate device and the control electrode of the second gate device;

the junction diode and the control electrode-input electrode junction of the second gate device each having a highly non-linear voltage/current characteristic.

4,509,194

APPARATUS FOR PRODUCING A CODE WORD

John A. Harrington, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

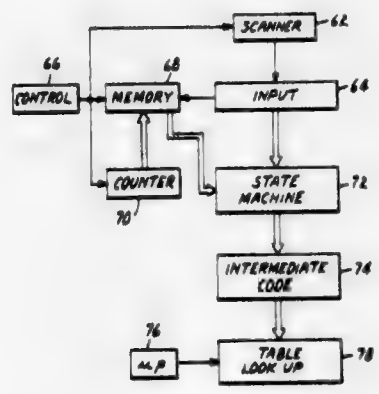
Filed Sep. 9, 1982, Ser. No. 416,138
Int. Cl.³ G06K *9/00*; H04N *1/00*
U.S. Cl. 382—56 8 Claims

1. An apparatus for producing a code word, said apparatus responsive to the binary information content in an information bearing document defined by a predetermined number of picture elements in each of a plurality of horizontal lines in said document, said apparatus receiving said binary information content sequentially from said picture elements in each one of said plurality of lines and sequentially through said plurality of lines, said code word being indicative of the vertical correlation between a change in the binary information content of sequential picture elements in a current one of said plurality of lines with a change in the binary information content of said picture elements in a prior one of said plurality of lines, comprising:

picture element counting means receiving said binary information content, said picture element counting means for counting said predetermined number of picture elements;

memory means operatively coupled to said picture element counting means, said memory means for storing the binary information content of said predetermined number of picture elements in said prior one of said plurality of lines;

a state machine receiving as inputs the binary information content of a current one of said predetermined number of picture elements and operatively coupled to said memory means, said state machine for determining a change in the binary information content of said predetermined number of picture element in said prior one of said plurality of lines and for moving from state to state depending upon the vertical correlation of said change binary information content in said prior one of said plurality of lines with a change in the binary information content in the line containing said current one of said predetermined number of picture elements; and



output means responsive to said state machine, said output means for outputting said code word depending upon the vertical correlation of a change in the binary information content of said picture elements between said prior one of said plurality of lines and the line containing said current one of said predetermined number of picture elements;

said state machine being responsive as current inputs only to said current one of said predetermined number of picture elements, to the binary information content of a corresponding one of said picture elements in said prior one of said plurality of lines corresponding to said current one of said predetermined number of picture elements and to the binary information content of picture elements in said prior one of said plurality of lines which are sequentially ahead of said corresponding one of said picture elements, said state machine using said current inputs to determine its internal state and using said current inputs and its internal state to determine said code word.

4,509,195

PROCESS AND DEVICE FOR THE BINARIZATION OF A PATTERN

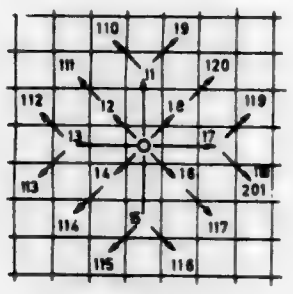
Morton Nadler, 17 Les Huppes, 78170 La Celle Saint Cloud, France

Filed Dec. 28, 1981, Ser. No. 334,468
Claims priority, application United Kingdom, Jan. 5, 1981, 8100094
Int. Cl.³ G06K *9/38, 9/36*
U.S. Cl. 382—51 10 Claims

5. A device for the binarized evaluation of a pattern from a signal indicative of intensity values of spatially distributed discrete points of said pattern, wherein said device comprises:

means for registering the intensity values of points distributed in at least two concentric rings around each elementary area of successively scanned elementary areas, at least in one sector centered on said elementary area, determining contrast values each equal to the difference of the registered intensity values between a point of an inner ring and a point of an outer ring, and assigning a positive and

negative difference sign to respectively the positive and negative contrast values thus determined having an absolute value higher than a predetermined contrast threshold, means for counting distinctively said positive and negative difference signs in the vicinity of said elementary area and



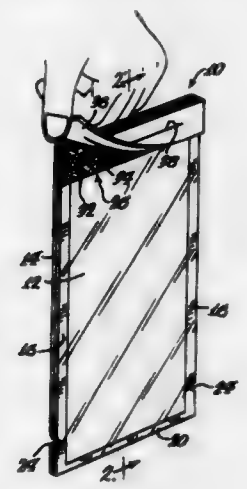
means for assigning a light or dark quality to said elementary area respectively when said counted difference signs contain a predominant number of positive or negative difference signs comforming to a predetermined minimum condition.

4,509,196

TAMPER-INDICATING SELF-SEALING POUCH

Dennis A. Sak, Hinsdale; Thomas Mestetsky, St. Charles, and Stanley Manne, Glencoe, all of Ill., assignors to Arvey Corporation, Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,861
Int. Cl.[3] B65D *33/20, 77/12, 33/34*
U.S. Cl. 383—5
15 Claims



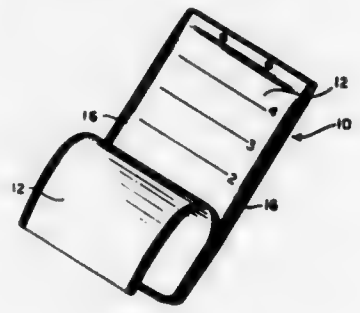
1. A tamper-indicating, self-sealing pouch, comprising:
first and second generally coextensive webs at least partially marginally joined together to define the interior of said pouch;
access opening means defined by said pouch for providing access to the interior of said pouch comprising an elongated access opening defined by said first pouch web; and
laminate adhesive sealing means on said pouch in association with said opening means for closing and sealing said access opening means, said adhesive sealing means comprising a laminate of adhesive carrier means having first and second adhesive means on opposite sides thereof, said first adhesive means being adhered to said first of said pouch webs for maintaining said laminate adhesive means on said pouch, and said second adhesive means being adapted to effect the closing and sealing of said access opening means such that if said access opening means is opened after being closed and sealed by said second adhesive means, said laminate adhesive means delaminates to indicate opening;
said laminate adhesive means being positioned on said first web on opposite sides of said access opening such that said pouch can be folded to bring said second adhesive means into confronting relation with itself to effect closing and sealing of said access opening with an adhesive-to-adhesive seal.

4,509,197

WINDOW BAG FOR LIQUIDS

Florren E. Long, Mount Vernon, Ohio, assignor to Ludlow Corporation, Needham Heights, Mass.

Filed Sep. 29, 1982, Ser. No. 427,190
Int. Cl.[3] B65D *33/04*
U.S. Cl. 383—106
9 Claims



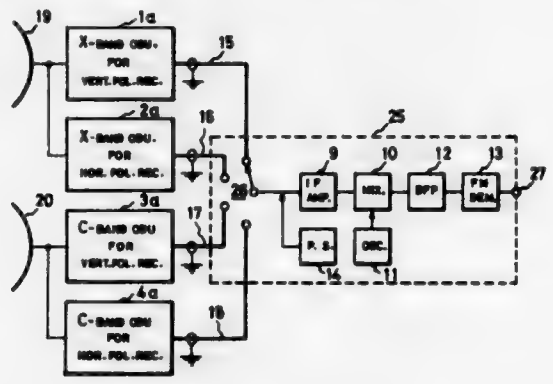
1. A heat-sterilizable flexible pouch suitable for use in retort packaging, said pouch comprising:
(a) a first opaque barrier ply, heat-sealed about its periphery to
(b) a first side of a transparent window ply, which is in turn heat-sealed about its periphery on its second side to
(c) a second opaque barrier ply and wherein the minimum seal strength of the seal between (a) and (b) is over about 2000 grams per inch and the maximum peel strength of the seal between plys (b) and (c) is below the seal strength between (a) and (b).

4,509,198

SATELLITE BROADCAST SIGNAL RECEIVING SYSTEM

Akihiko Nagatomi, Kobe, Japan, assignor to DX Antenna Company, Limited, Kobe, Japan

Filed Sep. 22, 1982, Ser. No. 421,083
Claims priority, application Japan, Oct. 19, 1981, 56-155916[U]
Int. Cl.[3] H04N *7/16;* H04B *3/44*
U.S. Cl. 455—4
3 Claims



1. A broadcast signal receiving system comprising a plurality of outdoor receiving units for receiving a plurality of broadcast signals, and converting them into intermediate frequency signals in a common frequency band, an indoor unit having an input for receiving said intermediate frequency signals from a selected one of said outdoor units, switching means, a plurality of coaxial cables each coupling a respective outdoor unit to said switching means, means for connecting the input of said indoor unit to said switching means, said switching means selectively coupling one of said outdoor units through its associated coaxial cable to the input of said indoor unit via said

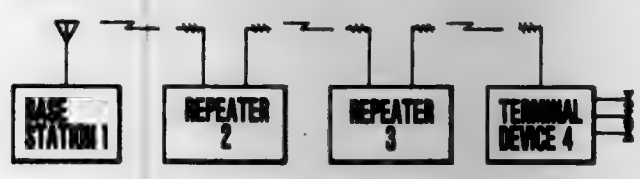
connecting means, a power supply coupled to the switching means for supplying operating power to said one outdoor unit through the associated coaxial cable, said switching means including conduction path means coupled through said coaxial cables to said outdoor units to supply said operating power thereto through the associated coaxial cables and additional conduction path means for feeding respective ones of said intermediate frequency signals from the associated outdoor units to said indoor unit through said coaxial cables and connecting means, said switching means selectively applying operating power to said one of said plurality of outdoor units, which selective power application enables a respective one of said additional conduction path means to close in order to feed said selected, respective intermediate frequency signal from the selectively powered outdoor unit to said indoor unit.

4,509,199

POWER SUPPLY SYSTEMS FOR USE IN RADIO COMMUNICATION SYSTEMS

Masaki Ichihara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,343
Claims priority, application Japan, Feb. 1, 1982, 57-14459
Int. Cl.³ H04B *1/60, 7/14*
U.S. Cl. 455—7 **7 Claims**



1. In a power supply system including one or more batteries for use in a radio communication system comprising a base station for transmitting and receiving radio signals, one or more repeater stations for repeating said radio signals, and a terminal station communicating with said base station through said one or more repeater stations, the improvement wherein said base station comprises means for transmitting synchronizing signal pulses at a predetermined period, and each of said one or more repeater stations and said terminal station comprise means, responsive to successive reception of a predetermined number of said synchronizing signal pulses, for effecting intermittent battery saving during intervals of time substantially equal to the period of said synchronizing signal pulses.

4,509,200

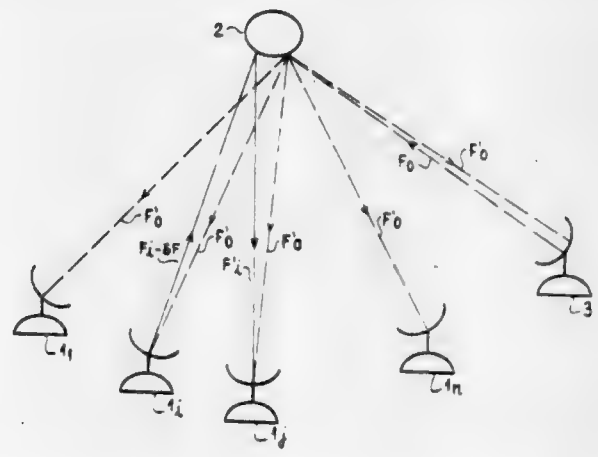
SATELLITE TELECOMMUNICATIONS SYSTEM

Pierre Luginbuhl; Alain Parnière, and Lazare Argintaru, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 23, 1983, Ser. No. 478,107
Claims priority, application France, Mar. 26, 1982, 82 05246
Int. Cl.³ H04B *7/185*
U.S. Cl. 455—12 **4 Claims**

1. A satellite telecommunications system comprising a central station and n peripheral stations communicating with one another, via a satellite, by the modulation of carrier waves, each peripheral station having an allocated frequency F_i of carrier wave, i=1 to n and in which the central station transmits to said satellite a signal F_o which retransmits a reference signal having a frequency F'_o to the peripheral stations, the satellite operating an algebraic addition of the received frequency F_o and of a frequency shift ΔF and imparting also a frequency drift δF variable in time,

wherein the central station comprises means for controlling said frequency F_o according to the frequency drift δF so that said frequency F'_o is stable in time, said means for controlling including a phase discriminator for evaluating the instantaneous frequency drift δF of the satellite supplying said signal, and means for modulating the reference frequency F_o with the thus evaluated instantaneous frequency drift δF, said means for modulating the reference frequency transmitted by the central station comprising an oscillator with controllable frequency having a control input connected to an output of said phase discriminator, said phase discriminator having two inputs which receives on one input a perfectly stable frequency supplied by a reference oscillator and on the second input the frequency



F'_o retransmitted by the satellite in response to the reference frequency F_o transmitted by the central station and converted by means of a frequency conversion stage; and

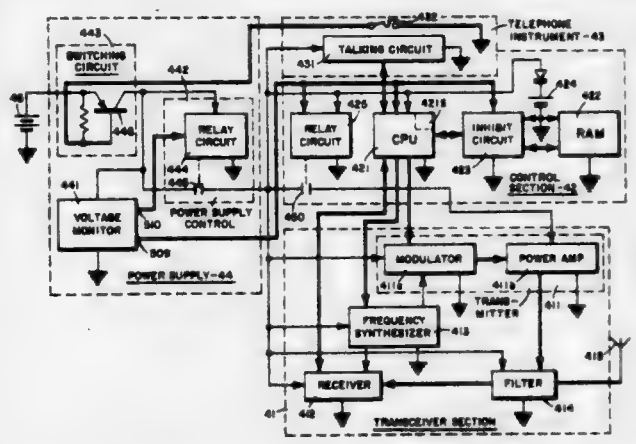
wherein each peripheral station comprises means for demodulating the instantaneous frequency drift δF of the satellite and, before transmission, algebraically substracting the instantaneous frequency drift δF of the satellite from the carrier frequency F_i allocated to said peripheral station.

4,509,201

WIRELESS TELEPHONE APPARATUS WITH PROTECTION AGAINST POWER LOSS

Tatsuaki Sekigawa; Akio Gotoh; Syuitsu Tsutsumi, all of Hachioji; Kuniyoshi Marui, Tokorozawa, and Naoto Honda, Hino, all of Japan, assignors to Toshiba Corporation, Kawasaki, Japan

Filed Jun. 23, 1983, Ser. No. 506,906
Claims priority, application Japan, Jun. 23, 1982, 57-108070
Int. Cl.³ H04B *1/40;* H04M *11/00*
U.S. Cl. 455—73 **11 Claims**



1. Wireless telephone apparatus for sending an outgoing telephone call and receiving an incoming telephone call, said wireless telephone apparatus comprising:

talking circuit means for generating the outgoing telephone call and receiving the incoming telephone call;

transmitter means for modulating a radio signal with the outgoing telephone call and for radiating the modulated radio signal;

receiver means for intercepting a radio signal modulated with the incoming telephone call and for demodulating the intercepted radio signal;

control means coupled to said talking circuit means, said transmitter means, and said receiver means for control-

ling, in accordance with control data, the operation of said wireless telephone apparatus;

power supply means for furnishing electrical power at a power supply voltage to said talking circuit means, said transmitter means, said receiver means and said control means;

monitor means coupled to said power supply means for generating a first alarm signal when the power supply voltage is beyond a first limit voltage and a second alarm signal when the power supply voltage is beyond a second limit voltage;

first interrupt means response to the first alarm signal for preventing said transmitter means from radiating the radio signal; and

second interrupt means responsive to the second alarm signal for preventing said control means from controlling the operation of said wireless telephone apparatus.

4,509,202

FULL-WAVE RECTIFICATION OF SIGNALS GENERATED BY RADIO FREQUENCY TRANSMITTING CIRCUITS

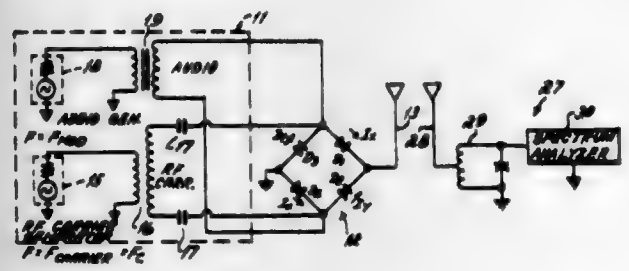
William L. Kingery, P.O. Box 12554, Cincinnati, Ohio 45212

Continuation-in-part of Ser. No. 249,197, Mar. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 135,729, Mar. 31, 1980, abandoned, which is a continuation of Ser. No. 894,745, Apr. 10, 1978, abandoned. This application Jun. 3, 1983, Ser. No. 500,979

Int. Cl.[3] H04B *1/02*

U.S. Cl. 455—108

1 Claim



1. A modulated radio frequency signal transmitting circuit comprising:

a full-wave rectifier circuit, having a pair of input terminals and a pair of output terminals, operable to produce a full-wave rectified signal across the pair of output terminals in response to a signal applied to the pair of input terminals;

an antenna coupled to a first output terminal of said pair of output terminals of the full-wave rectifier circuit, the second output terminal of said pair of output terminals of the full-wave rectifier circuit being coupled to electrical ground;

radio frequency signal generating means for producing a radio frequency signal at a pair of output terminals, each output terminal of said pair of output terminals of the radio frequency signal generating means being coupled to a different input terminal of said pair of input terminals of the full-wave rectifier circuit; and

audio frequency signal generating means for producing an audio frequency signal at a pair of output terminals, each output terminal of said pair of output terminals of the audio frequency signal generating means being coupled to a different input terminal of said pair of input terminals of the full-wave rectifier circuit, the output terminals of the radio frequency signal generating means being connected in parallel with the output terminals of the audio frequency signal generating means, the audio frequency signal generating means producing an audio frequency signal having a greater amplitude than that of the radio frequency signal produced by the radio frequency signal generating means.

4,509,203

AUTO TUNING RECEIVER WITH A TUNING INFORMATION MEMORY

Shinji Yamada, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

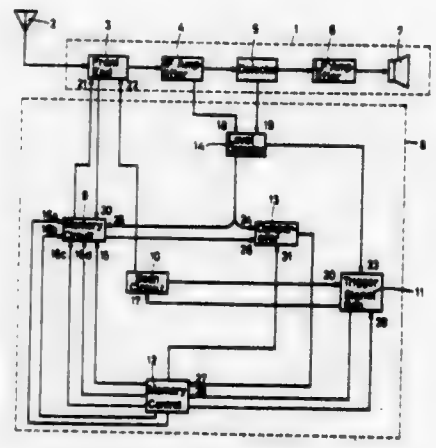
Filed Jun. 23, 1982, Ser. No. 391,385

Claims priority, application Japan, Jun. 24, 1981, 56-98720

Int. Cl.[3] H03J *7/18*

U.S. Cl. 455—166

13 Claims



1. A radio receiver system comprising:

receiver means for receiving and demodulating radio waves at an input frequency in response to a tuning signal to produce an output;

detector means responsive to said receiver means for detecting the quality of said output and developing a current digital quality level signal indicative of the quality of said output;

scanning means for providing said tuning signal to tune said receiver means to an input frequency within a desired range of frequencies;

memory means having a plurality of memory sections for storing a plurality of signals within said range of frequencies and their corresponding digital quality level signals in response to said scanning means;

means for comparing the current digital quality level signal with a stored digital level signal representing the weakest digital quality level; and for substituting the current digital quality level signal and its associated signal frequency for the level signal representing said weakest digital quality level and its associated frequency stored in said memory means when said current digital quality level signal exceeds the level of the quality signal representing said weakest digital level stored in said memory.

4,509,204

AM RADIO STOP DETECTOR

Donald T. Wile, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 23, 1983, Ser. No. 535,186

Int. Cl.[3] H03J *7/18*

U.S. Cl. 455—169

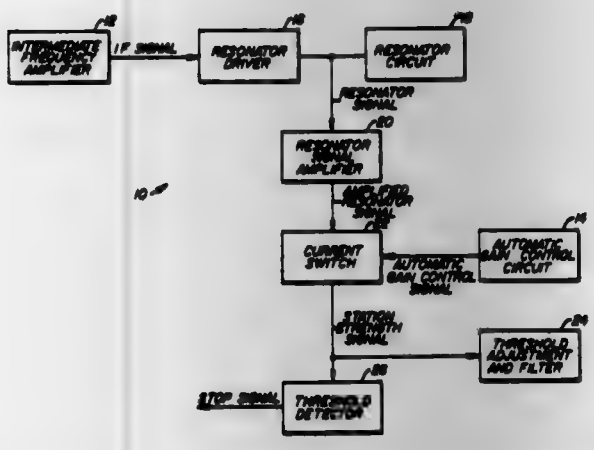
9 Claims

1. An electronic circuit for use in an electronically tuned radio for issuing a stop signal, which radio includes receiver means for scanning the AM broadcast band and receiving broadcast signals at a receiver frequency, which receiver frequency is variable in discrete increments, which radio also includes intermediate frequency means for generating an intermediate frequency signal affected by modulation and having a frequency equal to a reference frequency when said receiver frequency substantially equals the broadcast frequency of a received broadcast signal and for generating said intermediate frequency signal having a frequency other than said reference frequency when said receiver frequency does not substantially equal the broadcast frequency of the received broadcast signal, which radio also includes an automatic gain control current having a magnitude that is proportional to the strength of the received broadcast signal, said circuit comprising:

(a) resonator drive means coupled to said intermediate frequency means for generating an oscillatory resonator signal current having a frequency equal to that of said intermediate frequency signal, and for removing effects of modulation on said IF signal;

(b) resonator circuit means coupled to said resonator drive means for converting said resonator signal current to a resonator signal voltage where the magnitude of the AC component of said voltage is inversely related to the difference between the frequency of said resonator signal current and said reference frequency;

(c) amplifier means coupled to said resonator drive means and said resonator circuit means for amplifying said resonator signal voltage;



(d) current switch means coupled to said amplifier means and to said automatic gain control current for generating a station strength signal, said station strength signal having a current that is equal to a large fraction of said automatic gain control current when the frequency of said resonator signal voltage substantially equals said reference frequency;

(e) threshold ajustment and filter means coupled to said current switch means for filtering alternating current pulses from said station strength signal, for converting said station strength signal to a DC voltage, and for setting a threshold value; and

(f) threshold detector means coupled to said current switch means and said threshold adjustment and filter means for generating a stop signal when the voltage of said station strength signal exceeds said threshold value.

4,509,205

RADIO RECEIVER COMPRISING A FREQUENCY LOCKED LOOP WITH AUDIO FREQUENCY FEEDBACK, AND A MUTING CIRCUIT

Wolfdietrich G. Kasperkovitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

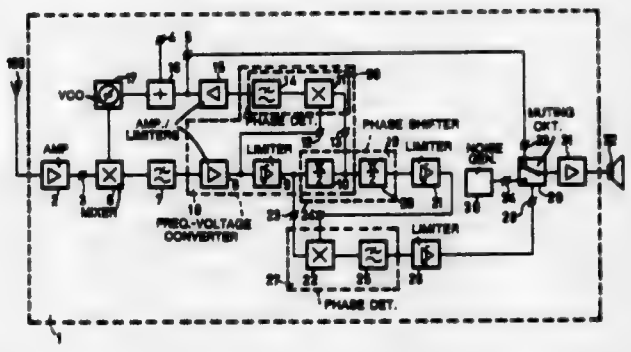
Continuation of Ser. No. 183,553, Sep. 2, 1980, Pat. No. 4,426,735. This application Aug. 10, 1983, Ser. No. 521,812

Claims priority, application Netherlands, Sep. 4, 1979, 7906602

Int. Cl.³ H04B *1/10, 1/26*

U.S. Cl. 455—194 **1 Claim**

1. A radio receiver having a frequency locked loop, said loop including a voltage controlled oscillator having an input for a tuning voltage, a mixer stage coupled to the voltage controlled oscillator and also connected to an antenna, a filter coupled to an output of the mixer stage, and a frequency-voltage converter coupled to an output of the filter, the receiver further having a muting circuit responsive to an audio signal output of said frequency-voltage converter and blocking the feeding of said audio signal to an audio signal processing section of the receiver unless the receiver is substantially correctly tuned to a broadcast transmission, said muting circuit receiving a correct tuning signal from a correct tuning detector coupled to said frequency-voltage converter, characterized in that the



frequency voltage converter is coupled to the voltage controlled oscillator via an amplifier-limiter.

4,509,206

RECEIVER FOR MULTICARRIER SIGNALS PROTECTED FROM UNWANTED SIGNALS

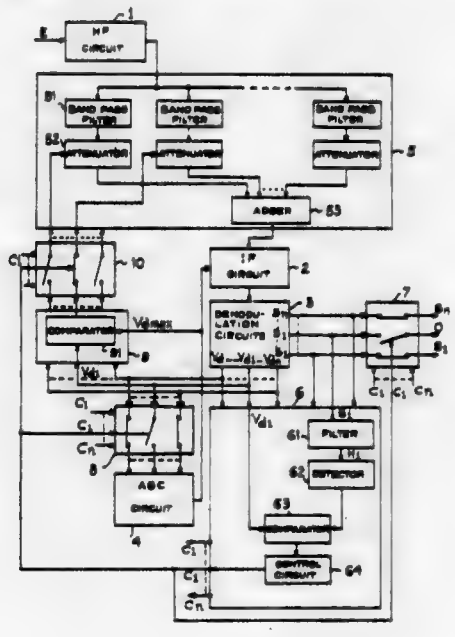
Michel Carpe; Claude Collin, and Marc Pontif, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 2, 1983, Ser. No. 490,513

Claims priority, application France, May 4, 1982, 82 07754

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—245 **7 Claims**



1. A multicarrier signal receiver comprising a high frequency circuit for receiving a plurality of modulated carrier signals and having an output providing a corresponding plurality of modulated intermediate frequency carrier signals, a circuit for the preselection and selective attenuation of the intermediate frequency carrier signals comprising a plurality of filters tuned to the intermediate frequency carrier signals, whose inputs are connected to the output of the high frequency circuit and whose outputs are connected to respective attenuators, each having a control input and an output, an adder responsive to said attenuator outputs and having a sum output, an intermediate frequency amplification circuit having an input connected to the output of the adder, and an output, a demodulation circuit comprising a plurality of signal demodulation paths have one path for each modulated intermediate frequency carrier signal respective, each path including a filter connected to the output of the intermediate frequency amplification circuit, in series with a detector-amplifier and a demodulator, each path further including an elementary detection circuit for detecting an unwanted or interfering signal having an input connected to the output of a respective demodulator and an output supplying a control signal characteristic of an appearance or disappearance of an unwanted signal for the

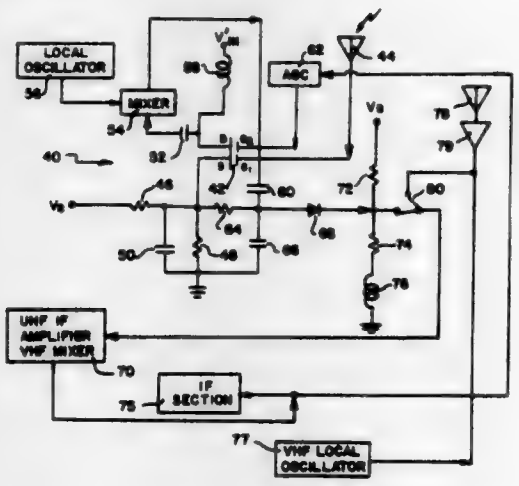
corresponding carrier signal, the output of the detection circuit associated with a particular carrier signal being coupled to the control input of the corresponding attenuator.

4,509,207

UHF RF AMPLIFIER AND AGC SYSTEM

Francis F. Tong, Chicago, and Harmon P. Vaughter, Evanston, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 7, 1983, Ser. No. 511,803
Int. Cl.[3] H04B *1/26*
U.S. Cl. 455—251 **6 Claims**



1. In a UHF tuning system including a local oscillator for generating a reference frequency signal and a mixer coupled thereto for mixing said reference frequency signal with a received RF signal to generate an IF signal for processing in an IF stage coupled to said mixer, said UHF tuning system further including RF AGC means responsive to the amplitude of said IF signal for generating a correction signal for controlling the amplitude of said received RF signal coupled to the mixer, a UHF RF amplifier/IF AGC system comprising:

a field effect transistor amplifier coupled to said mixer and responsive to said received RF signal for providing an amplified RF signal to said mixer, the gain of said field effect transistor being controlled in response to said correction signal for regulating the amplitude of the amplified RF signal coupled to the mixer;

biasing means coupled to said field effect transistor amplifier for establishing the operating point thereof and for providing a variable control signal responsive to a variable condition at an output of said field effect transistor amplifier; and

a circuit coupled between said mixer and said IF stage and coupled to said biasing means and being responsive to said contral signal for regulating the amplitude of said IF signal coupled from said mixer to said IF stage.

4,509,208

FREQUENCY CONVERSION UNIT

Hiroyuki Sogo, Tokyo; Zenichi Ohsawa, Yokohama; Isamu Umino, Kawasaki, and Haruki Nishida, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 5, 1983, Ser. No. 482,300
Claims priority, application Japan, Apr. 6, 1982, 57-56092
Int. Cl.[3] H04B *1/26*
U.S. Cl. 455—317 **12 Claims**

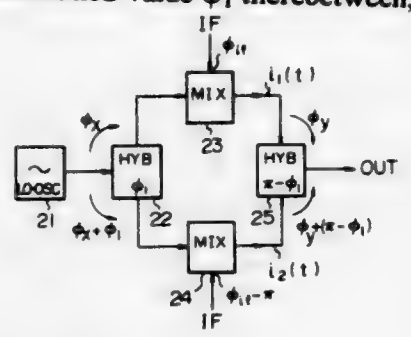
1. A frequency conversion unit receiving an intermediate frequency signal, comprising:

local oscillator means for supplying an oscillation output;

first mixer means, operatively connected to receive the intermediate frequency signal, for producing a first mixed frequency signal;

second mixer means, operatively connected to receive the intermediate frequency signal, for producing a second mixed frequency signal, the intermediate frequency signal in said second mixer means being π radians out of phase with the intermediate frequency signal in said first mixer means;

a first hybrid circuit, operatively connected to said local oscillator, said first mixer means and said second mixer means, for producing two outputs having a phase difference of a predetermined value ϕ_1 therebetween; and



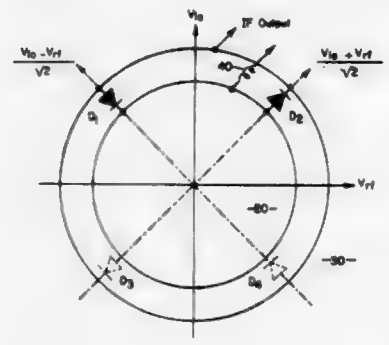
a second hybrid circuit, operatively connected to said first mixer means and said second mixer means, for producing a frequency conversion output signal, said second hybrid circuit phase-shifting the second mixed frequency signal by a predetermined value $(\pi-\phi_1)$ prior to mixing the first and second mixed frequency signals.

4,509,209

QUASI-OPTICAL POLARIZATION DUPLEXED BALANCED MIXER

Tatsuo Itoh, and Karl D. Stephan, both of Austin, Tex., assignors to Board of Regents, University of Texas System, Austin, Tex.

Filed Mar. 23, 1983, Ser. No. 477,968
Int. Cl.[3] H04B *1/26*; H01Q *13/00*
U.S. Cl. 455—327 **4 Claims**



1. Apparatus for converting a free-space radio frequency signal into an intermediate frequency signal using a local oscillator signal, comprising:

a slot-ring antenna for receiving a quasi-optical free-space radio frequency signal and a local oscillator signal, the radio frequency signal being polarized in a direction orthogonal to the local oscillator signal; and

a pair of diodes connected to the slot ring antenna, for mixing the received radio frequency and local oscillator signals.

4,509,210

TELEVISION RECEIVER ADAPTABLE FOR DESCRAMBLER MODULE

Elliott S. Kohn, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 326,159
Int. Cl.[3] H04B *1/08*; H04N *5/64, 5/44, 7/16*
U.S. Cl. 455—349 **6 Claims**

1. A television receiver adapted for use with a plurality of tunerless video signal descramblers, comprising:

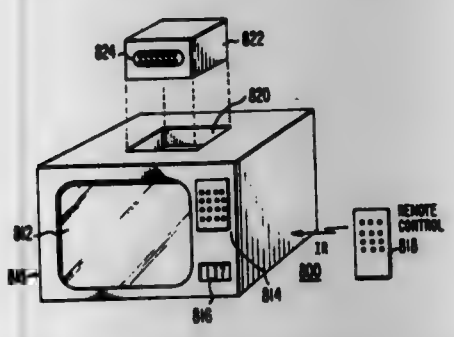
a cabinet for housing components of said receiver;

a tuner in said cabinet and having an input for receiving a

plurality of modulated television signals, said signals occupying both standard broadcast channels and cable television channels, said tuner being remotely controllable for selecting a predetermined one television signal from among said plurality and for converting said predetermined one television signal to an intermediate frequency signal, said tuner having an output terminal for providing said intermediate frequency signal thereat;

an intermediate-frequency signal amplifier in said cabinet for amplifying said intermediate-frequency signal, said amplifier having an input terminal and an output terminal;

a connector accessible from the exterior of said cabinet, said connector having first and second terminals;



first coupling means for coupling said output terminal of said tuner to said first terminal of said connector;

second coupling means for coupling said second terminal of said connector to said input terminal of said amplifier means; and wherein

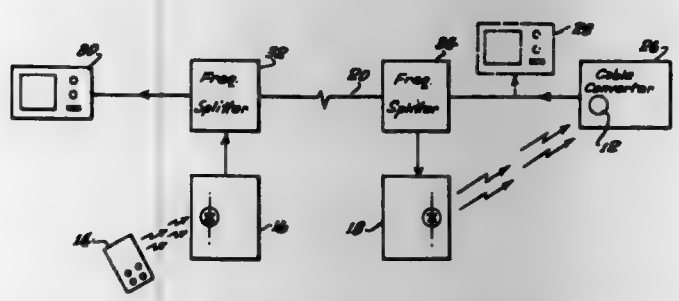
said connector is of a type selected to mate with a similar descrambler connector so that when the connectors are mated said intermediate frequency signal is coupled from said tuner to said amplifier via said connector thereby enabling descrambling of said intermediate frequency signal prior to amplification by said amplifier.

4,509,211

INFRARED EXTENSION SYSTEM

Michael S. Robbins, Los Angeles, Calif., assignor to Xantech Corporation, Sylmar, Calif.

Filed May 16, 1983, Ser. No. 494,807
Int. Cl.³ H04N 5/44
U.S. Cl. 455—603 **2 Claims**



1. In a television viewing system at one area of which there is a television receiver, and at a second area of which there is programmable apparatus for transmitting signals to said television receiver through a transmission line extending between said areas, said programmable apparatus having a light receiver ordinarily cooperable with a portable light transmitter for determining parameters of said apparatus, said portable light transmitter when in said first area, being beyond the range of said light receiver, the combination therewith of:

(a) a first transducer unit including a light emitter and located at said second area within the range of said receiver for converting electrical impulses into light radiation;

(b) means connecting said first transducer unit to said transmission line;

(c) a second transducer unit including a light sensor and located at said first area for converting light radiation into electrical signals;

(d) means connecting said second transducer unit to said transmission line for actuation of said first transducer unit whereby operation of said portable light transmitter at said one area is operative to control the programmable apparatus;

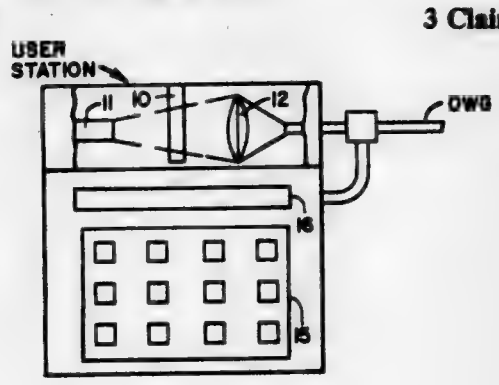
(e) and circuit means for isolating the intelligence of said transducers from said television receiver and from said programmable apparatus.

4,509,212

MULTIPLE-USER OPTICAL ANALYZER SYSTEM USING OPTICAL NETWORK FOR DATA TRANSMISSION AND CONTROL

Richard Baker, Medfield, Mass., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 10, 1983, Ser. No. 473,771
Int. Cl.³ H04B 9/00
U.S. Cl. 455—612 **3 Claims**



1. A multiple-user analyzer system comprising:

a centralized optical analyzer for receiving optical data signals from a remote sample input station and generating at least one electrical signal of an intensity proportional to the intensity of at least one selected frequency of the optical data signal;

multiple remote sample input stations for generating optical data signals containing color information about a sample inserted at the station by a system user, each station being connected to the analyzer by a low-loss optical fiber capable of transmitting optical data to the analyzer with low attenuation;

user terminal means connected to the optical fiber at each remote input station for generating or receiving optical communication or control signals transmitted over the optical fiber during system operation; and

analyzer controller means connected to the optical fiber and to the optical analyzer for controlling the operation of the analyzer during the receipt of optical data signals from a remote input station, and for generating or receiving optical communication or control signals carried over the fiber between the controller means and the user terminal means.

DESIGN PATENTS

GRANTED APR. 2, 1985

ERRATA

For CLASS	See PATENT NO.
D08–071	278,237

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DESIGNS

APRIL 2, 1985

278,184
BOOT HEEL PROTECTIVE SHIELD
Lance D. Cross, Houston, Tex., assignor to Heel Shield, Inc., Houston, Tex.
Filed Sep. 17, 1982, Ser. No. 419,569
Term of patent 14 years
U.S. Cl. D2—277



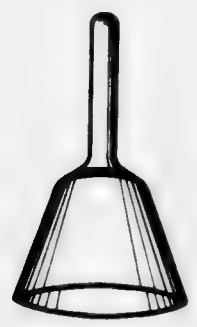
278,185
SHOE UPPER
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Filed Feb. 4, 1983, Ser. No. 463,931
Term of patent 14 years
U.S. Cl. D2—314



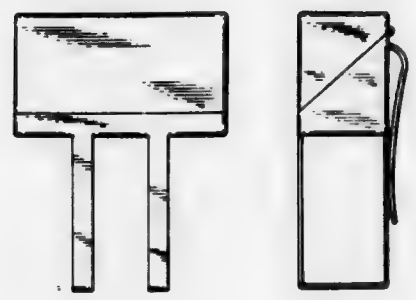
278,186
SHOE UPPER
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Filed Feb. 4, 1983, Ser. No. 463,944
Term of patent 14 years
U.S. Cl. D2—314



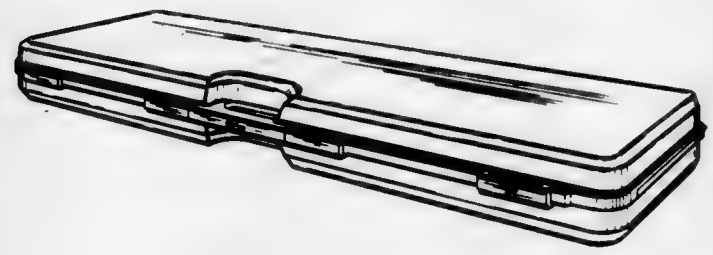
278,187
PAINTER'S PROTECTIVE DEVICE
Lennart O. Rolin, Rullstensvägen 3, S-183 40 Täby, Sweden
Filed Feb. 12, 1982, Ser. No. 348,406
Claims priority, application Sweden, Aug. 14, 1981, 81-1742
Term of patent 14 years
U.S. Cl. D2—361



278,188
CIGARETTE PACK HOLDER
Michael D. Burns, 8255 Kingsbrook #240, Houston, Tex. 77024
Filed Sep. 2, 1982, Ser. No. 414,430
Term of patent 14 years
U.S. Cl. D2—400



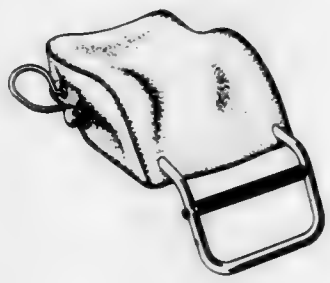
278,189
CASE FOR A GUN OR THE LIKE
Donald V. Frydenberg, Arlington, Tex., assignor to Doskocil Manufacturing Co., Inc., Arlington, Tex.
Filed Mar. 1, 1983, Ser. No. 470,967
Term of patent 14 years
U.S. Cl. D3—38



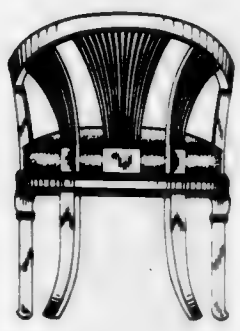
278,190
CARRYING BAG
Joe Ganz, 38-15 Garvey Pl., Fair Lawn, N.J. 07410
Filed Sep. 23, 1982, Ser. No. 422,159
Term of patent 14 years
U.S. Cl. D3—48



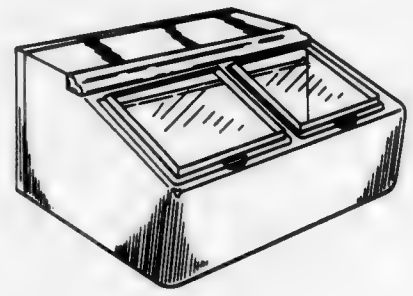
278,191
AUXILIARY SEAT FOR A CHILD
Michel Johansson, Götgatan 8B, S-573 00 Tranås, Sweden
Filed Jul. 19, 1982, Ser. No. 399,807
Claims priority, application Sweden, Feb. 2, 1982, 82-0217
Term of patent 14 years
U.S. Cl. D6—333



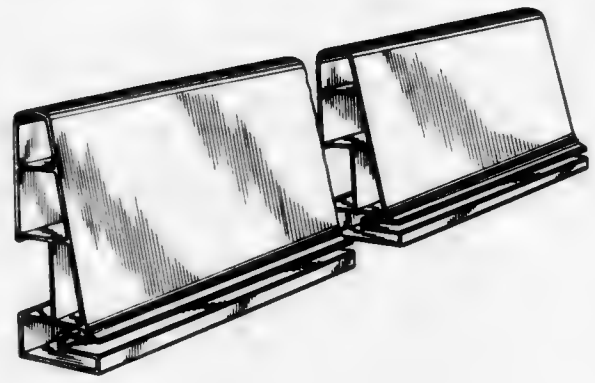
278,192
CHAIR
Anthony F. Albanese, Upper Montclair; Samuel Chalfin, Ho-Ho-Kus, and Lawrence M. Chalfin, Wayne, all of N.J., assignors to I.P.F. International, Inc., Paterson, N.J.
Filed Dec. 16, 1982, Ser. No. 450,232
Term of patent 14 years
U.S. Cl. D6—379



278,193
DISPLAY CASE
Stanley S. Boxall, Rte. 1, Box K4, Flowery Branch, Ga. 30542
Filed Aug. 9, 1982, Ser. No. 406,391
Term of patent 14 years
U.S. Cl. D6—471



278,194
FURNITURE DRAWER WALL OR SIMILAR ARTICLE
Terence Hardy, Nether Heage, England, assignor to L. B. (Plastics) Limited, England
Filed May 24, 1982, Ser. No. 381,284
Claims priority, application United Kingdom, Nov. 26, 1981, 1003816
Term of patent 14 years
U.S. Cl. D6—510



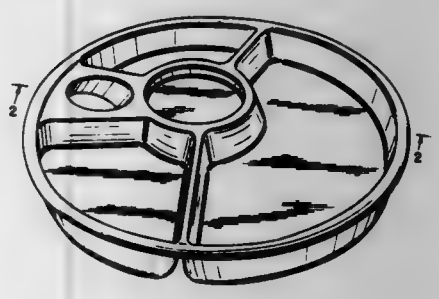
278,195
CHAIR
Cosmo N. Tisbo; Thomas A. Tisbo, both of Barrington; Ricard D. Recker, Palatine, and Bruce Heggeland, Rolling Meadows, all of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed Feb. 4, 1983, Ser. No. 463,717
Term of patent 14 years
U.S. Cl. D6—373



278,196
STORAGE RACK FOR COMPUTER EQUIPMENT
Thomas Koves, 431 Burnside Ave., Apt. 2C, Los Angeles, Calif. 90036
Filed Sep. 20, 1982, Ser. No. 423,040
Term of patent 14 years
U.S. Cl. D6—465



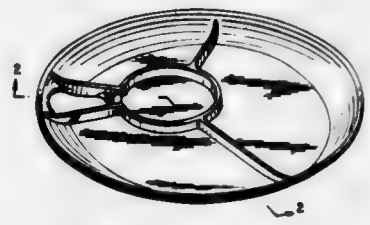
278,197
COMBINED PLATE AND GLASS HOLDER
James B. Harper, Warwick, England, assignor to Harford Overseas Limited, Irish Place,
Filed Dec. 15, 1982, Ser. No. 449,936
Claims priority, application United Kingdom, Aug. 12, 1982, 1008276
Term of patent 14 years
U.S. Cl. D7—27







278,198
COMBINED PLATE AND GLASS HOLDER
James B. Harper, Warwick, England, assignor to Harford Overseas Limited, Irish Place,
Filed Dec. 15, 1982, Ser. No. 450,157
Claims priority, application United Kingdom, Sep. 15, 1982, 1008734
Term of patent 14 years
U.S. Cl. D7—27







278,199
TACO HOLDER OR THE LIKE
Norman L. Richards, 219 Barcelona, San Clemente, Calif. 92672
Filed Sep. 30, 1982, Ser. No. 431,142
Term of patent 14 years
U.S. Cl. D7—76



278,200
BEVERAGE CARBONATING MACHINE
Johan A. F. Dahlberg, Stockholm, Sweden, assignor to Kommanditbolaget Aldolf, Västerås, Sweden
Filed Nov. 2, 1982, Ser. No. 438,555
Claims priority, application Sweden, May 4, 1982, 82-1161
Term of patent 14 years
U.S. Cl. D7—312



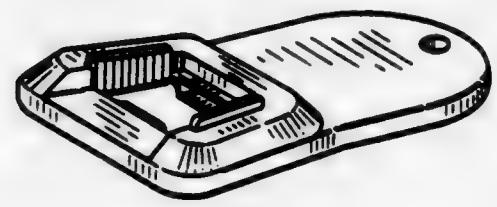
278,201
INSTRUMENT FOR REMOVING KEY CAPS FROM A KEYBOARD
John A. Koepke, 8142 Sehome Rd., Blaine, Wash. 98230
Filed Jun. 7, 1982, Ser. No. 385,847
Term of patent 14 years
U.S. Cl. D8—17



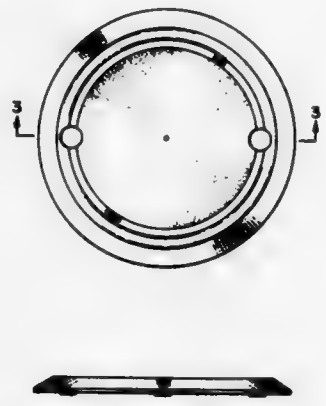
278,202
PAIL OPENER
Frank J. Romanowski, 24 Grove St., Easthampton, Mass. 01027
Filed Jul. 29, 1982, Ser. No. 403,148
Term of patent 14 years
U.S. Cl. D8—40



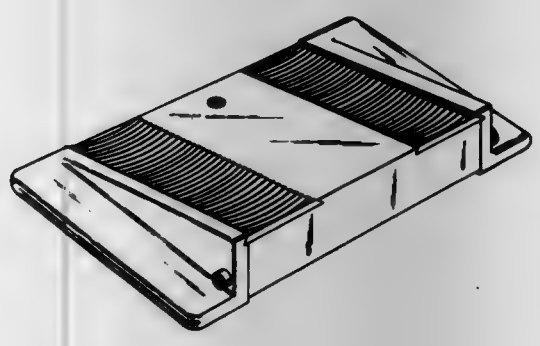
278,203
BOTTLE CAP OPENER
Heinz W. Braukmann, 98 Heathcote Ave., Willowdale, Ontario, Canada M2L 1Z4
Filed Apr. 21, 1983, Ser. No. 487,229
Claims priority, application Canada, Nov. 19, 1982, 51265
Term of patent 14 years
U.S. Cl. D8—40



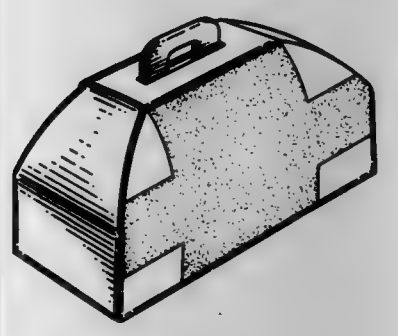
278,204
SUPPORT FOR PHONOGRAPH RECORDS DURING CLEANING OR THE LIKE
Manuel B. Guerra, Jr., 4100 Parkdale, Apt. 3301, San Antonio, Tex. 78229
Filed Sep. 7, 1982, Ser. No. 415,699
Term of patent 14 years
U.S. Cl. D8—71



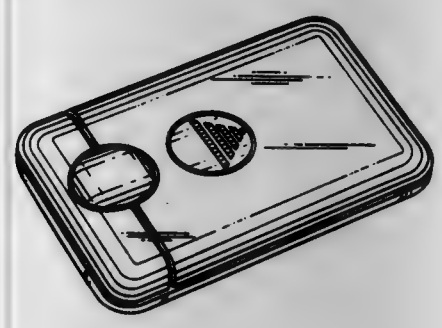
278,205
SKI SHARPENER
Erik Lindgren, Pl 1101, S-790 15 Sundborn, Sweden
Filed Apr. 19, 1982, Ser. No. 369,430
Claims priority, application Sweden, Oct. 21, 1981, 81-2384
Term of patent 14 years
U.S. Cl. D8—91



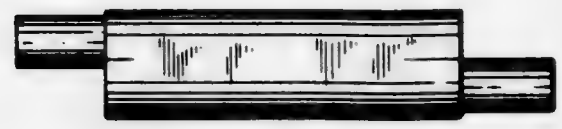
278,206
COMBINED SHIPPING, STORAGE AND PACKAGING CONTAINER
Laura M. Burdick, 330 4th Ave., Apt. B, Venice, Calif. 90291
Filed Sep. 30, 1982, Ser. No. 430,132
Term of patent 14 years
U.S. Cl. D9—327



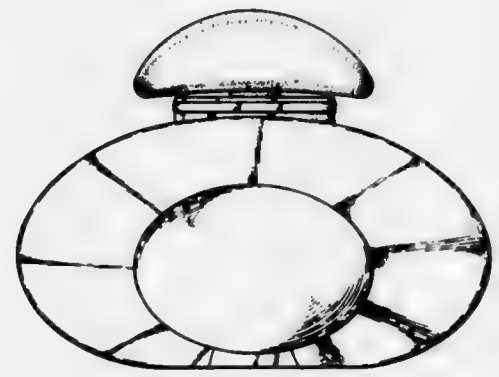
278,207
MEDICINE DISPENSER
John T. McLaughlin, 1839 Risa Pl., Glendale, Calif. 91208
Filed Nov. 15, 1982, Ser. No. 441,652
Term of patent 14 years
U.S. Cl. D9—339



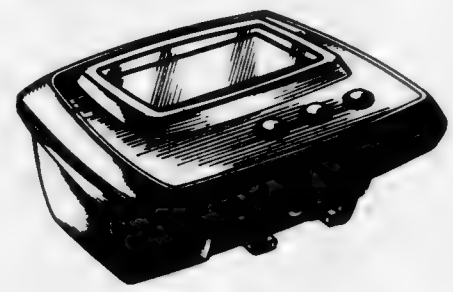
278,208
BOTTLE
Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414, and Gino H. Cassai, 924 E. 96th St., Apt. 2, Brooklyn, N.Y. 11236
Filed May 17, 1982, Ser. No. 378,872
Term of patent 14 years
U.S. Cl. D9—352



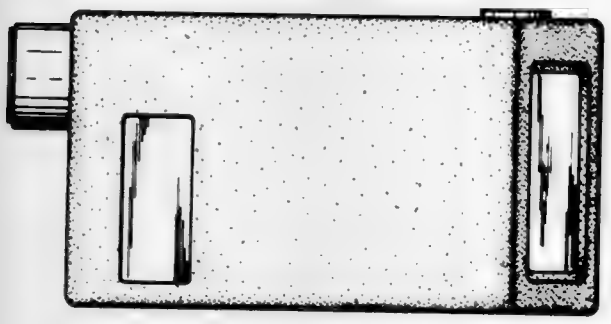
278,209
BOTTLE
Pierre Dinand, Levallois, France, assignor to Helena Rubinstein, Inc., Secaucus, N.J.
Filed Oct. 29, 1982, Ser. No. 437,526
Term of patent 14 years
U.S. Cl. D9—384



278,210
COMPUTERIZED BICYCLE COMBINED SPEEDOMETER, ODOMETER AND STOP WATCH
Yoshimasa Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Japan
Filed Jun. 2, 1982, Ser. No. 384,230
Term of patent 14 years
U.S. Cl. D10—46



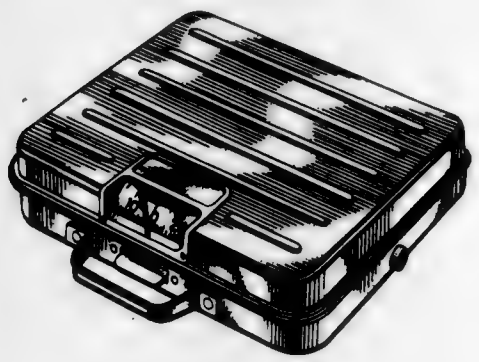
278,211
COATING THICKNESS GAGE
Frank Koch, R.F.D. #4, Ogdensburg, N.Y. 13669
Filed Sep. 13, 1982, Ser. No. 417,590
Term of patent 14 years
U.S. Cl. D10—46



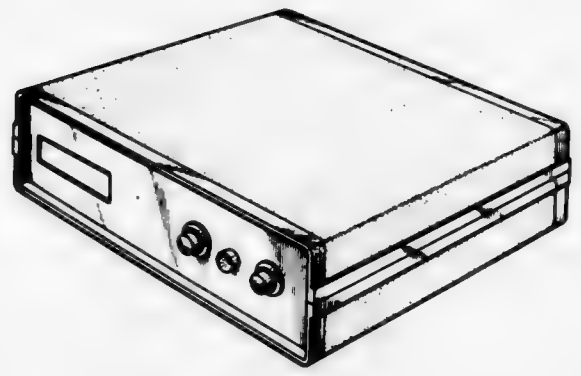
278,212
BATTERY TESTER
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 26, 1982, Ser. No. 371,763
The portion of the term of this patent subsequent to Aug. 16, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—77



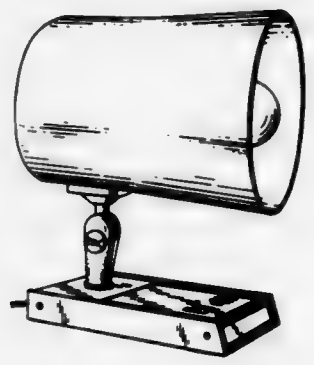
278,213
WEIGHT RESPONSIVE SCALE
Walter P. Kushmuk, Niles, Ill., assignor to Continental Scale Corporation, Bridgeview, Ill.
Filed Feb. 26, 1982, Ser. No. 411,672
Term of patent 14 years
U.S. Cl. D10—92



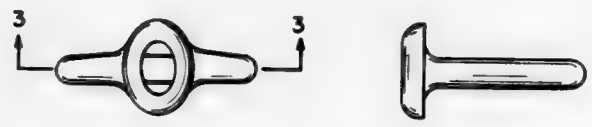
278,214
POSTAGE CONTROL AND COUNTER
Patrick J. Evans, Downers Grove, Ill., assignor to Evcor Systems, Inc., Downers Grove, Ill.
Filed Nov. 26, 1982, Ser. No. 444,809
Term of patent 14 years
U.S. Cl. D10—97



278,215
INTRUSION RADAR DEVICE
Robert E. Patterson, Lee's Summit, Mo., assignor to M. P. H. Industries, Inc., Chanute, Kans.
Filed Mar. 30, 1982, Ser. No. 363,654
Term of patent 14 years
U.S. Cl. D10—106



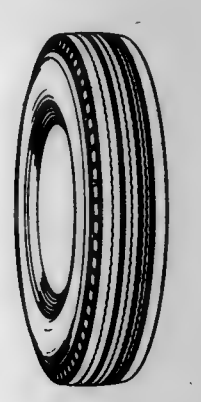
278,216
GEMLESS RING
Maxwell P. Lewis, 1229 Grouse Dr., Pittsburgh, Pa. 15243
Filed Sep. 29, 1982, Ser. No. 426,847
Term of patent 14 years
U.S. Cl. D11—27



278,217
WHEELCHAIR
Joe M. Nassiri, Thousand Oaks, Calif., assignor to Everest & Jennings, Inc., Camarillo, Calif.
Filed Dec. 10, 1982, Ser. No. 448,700
Term of patent 14 years
U.S. Cl. D12—131



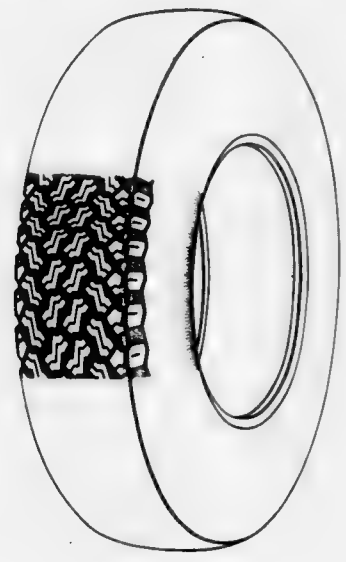
278,218
VEHICLE TIRE
Kenichi Motomura, and Seiichiro Tokunaga, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Jan. 7, 1983, Ser. No. 456,457
Claims priority, application Japan, Jul. 29, 1982, 57-34007
Term of patent 14 years
U.S. Cl. D12—142



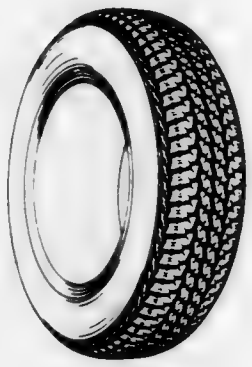
278,219
TIRE
Harold C. Gray, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Apr. 7, 1983, Ser. No. 483,022
Term of patent 14 years
U.S. Cl. D12—147



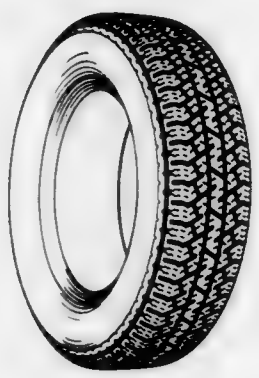
278,220
TIRE
Peter McDonald, Hudson, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jun. 2, 1983, Ser. No. 500,500
Term of patent 14 years
U.S. Cl. D12—147



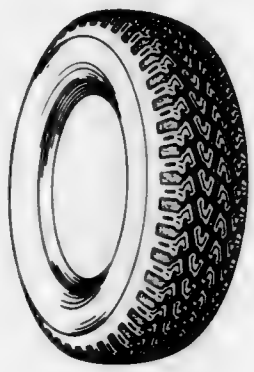
278,221
VEHICLE TIRE
Hiroshi Kojima, and Tooru Tsuda, both of Tokyo, Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan
Filed Jun. 27, 1983, Ser. No. 507,641
Claims priority, application Japan, Jan. 14, 1983, 58-751
Term of patent 14 years
U.S. Cl. D12—147



278,222
VEHICLE TIRE
Hiroshi Kojima, and Tosihiro Koyasu, both of Tokyo, Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan
Filed Sep. 8, 1983, Ser. No. 530,440
Claims priority, application Japan, Mar. 11, 1983, 58-9743
Term of patent 14 years
U.S. Cl. D12—147



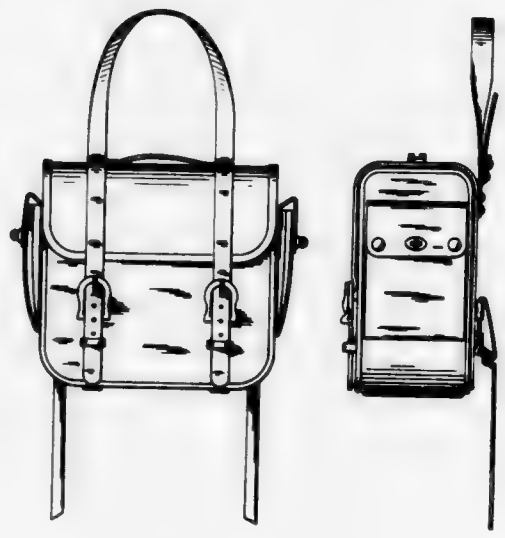
278,223
VEHICLE TIRE
Hiroshi Kojima, and Yuji Sakamaki, both of Tokyo, Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan
Filed Sep. 8, 1983, Ser. No. 530,441
Claims priority, application Japan, Mar. 11, 1983, 58-9744
Term of patent 14 years
U.S. Cl. D12—147



278,224
VEHICLE TIRE
Masao Nakamura; Hiroshi Kojima, and Hideaki Nishio, all of Tokyo, Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan
Filed Jun. 27, 1983, Ser. No. 507,642
Term of patent 14 years
U.S. Cl. D12—151



278,225
MOTORCYCLE SADDLEBAG
John A. Heiman, Waukesha, and Richard D. Miller, Oconomowoc, both of Wis., assignors to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.
Filed Sep. 29, 1982, Ser. No. 428,409
Term of patent 14 years
U.S. Cl. D12—158



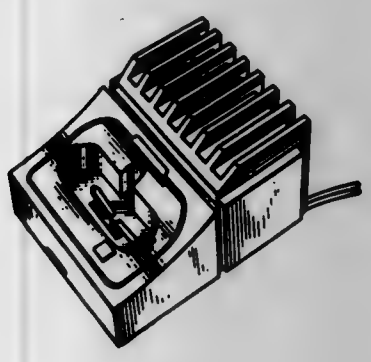
278,226
AIRPLANE
Charles Henderson, 8308 Cagle Rd., Fort Washington, Md. 20744
Filed Apr. 9, 1982, Ser. No. 367,218
Term of patent 14 years
U.S. Cl. D12—319



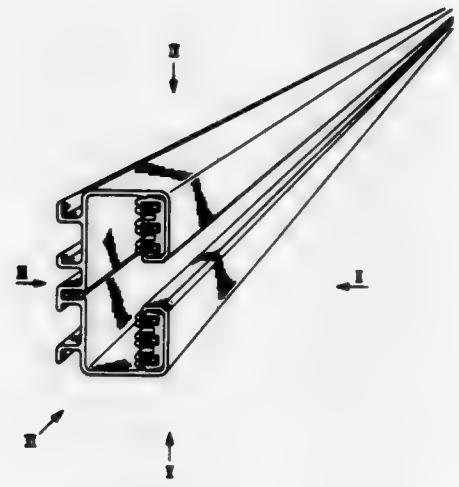
278,227
HELICOPTER
George W. Johnston, Jr., Arlington, Tex., assignor to Bell Helicopter Textron Inc., Providence, R.I.
Filed Aug. 5, 1980, Ser. No. 175,574
Term of patent 14 years
U.S. Cl. D12—327



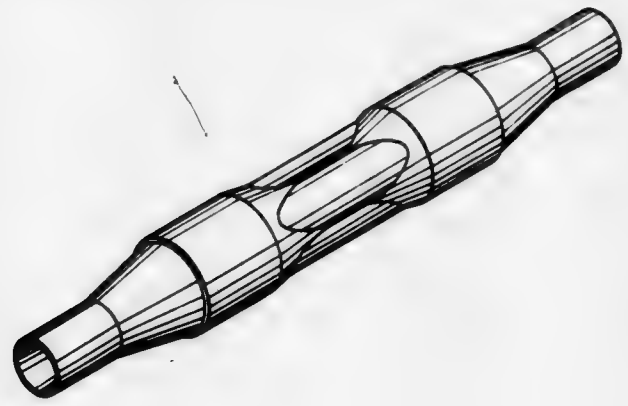
278,228
BATTERY CHARGER HOUSING FOR A PORTABLE BATTERY OPERATED TRANSCEIVER
James P. Liautaud, River and Bluff Rds., Trout Valley, Cary, Ill. 60013; Peter F. Stultz, Elgin, and David L. Maloney, Barrington, both of Ill., assignors to James P. Liautaud, Cary, Ill.
Filed Sep. 6, 1983, Ser. No. 529,959
Term of patent 14 years
U.S. Cl. D13—5



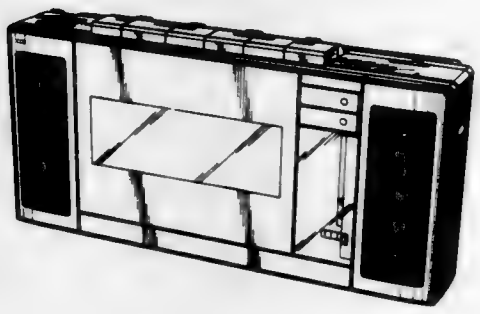
278,229
COLLECTOR RAIL
Jan Widell, Augustivägen 11; Harald Widell, Kalendervägen 25, and Nils-Ake Bergman, Junivägen 24, all of S-352 47 Växjö , Sweden
Filed Jun. 17, 1982, Ser. No. 389,662
Claims priority, application Sweden, Dec. 17, 1982, 81002976
Term of patent 14 years
U.S. Cl. D13—12



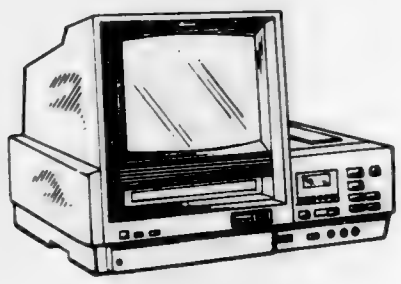
278,230
SPLICE CONNECTOR
Andrew A. Kominiak, Flanders, N.J., and Glenn J. Luzzi, Mount Bethel, Pa., assignors to Amerace Corporation, New York, N.Y.
Filed Oct. 18, 1982, Ser. No. 434,965
Term of patent 14 years
U.S. Cl. D13—24



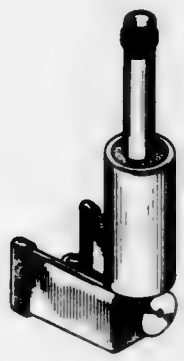
278,231
COMBINED TAPE RECORDER AND RADIO RECEIVER
Michio Tanaka, Nara, and Masanori Hamada, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 16, 1982, Ser. No. 450,162
Claims priority, application Japan, Jun. 16, 1982, 57-27168
Term of patent 14 years
U.S. Cl. D14—5



278,232
DISPLAY UNIT VIDEO TAPE PLAYER OR THE LIKE
Robert E. Gaskins, Mission Viejo, Calif., assignor to Eiki International, Inc., Laguna Niguel, Calif.
Filed Feb. 14, 1983, Ser. No. 465,962
Term of patent 14 years
U.S. Cl. D14—5



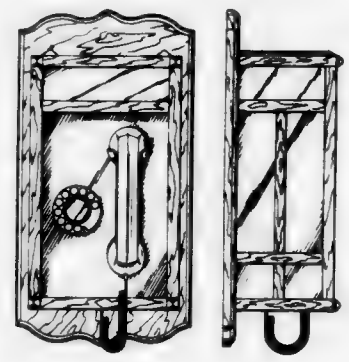
278,233
MICROPHONE MOUNTING STAND
Bruce N. Hardy, P.O. Box 4124, Elkhart, Ind. 46515
Filed Jan. 13, 1983, Ser. No. 457,723
Term of patent 14 years
U.S. Cl. D14—13



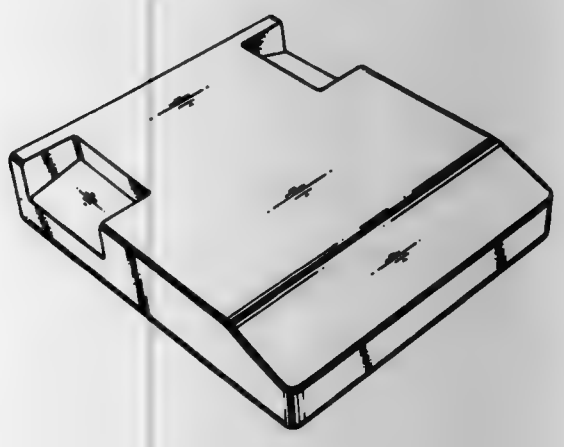
278,234
HEADPHONE
Tomonaga Saito, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 22, 1982, Ser. No. 421,329
Claims priority, application Japan, Apr. 1, 1982, 57-13967
Term of patent 14 years
U.S. Cl. D14—36

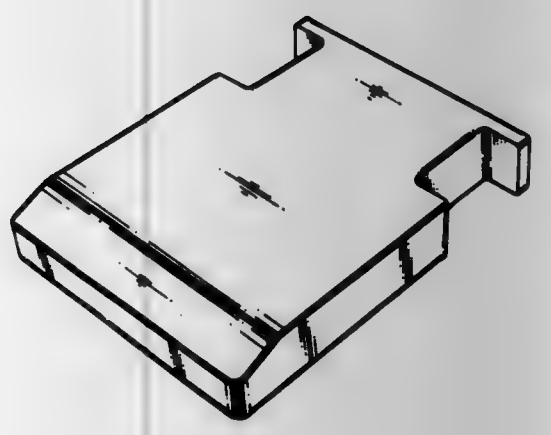


278,235
TELEPHONE
Lawrence M. Festa, 238 Cajon St., Laguna Beach, Calif. 92651
Filed Jan. 31, 1983, Ser. No. 462,472
Term of patent 14 years
U.S. Cl. D14—56

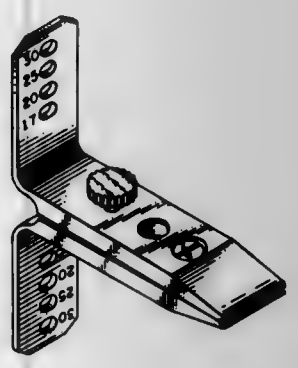


278,236
TELEPHONE SET BASE
Michael Brown, Nepean; Clifford D. Read, Almonte, and Warren K. Ellis, Constance Bay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Feb. 15, 1983, Ser. No. 466,722
Term of patent 14 years
U.S. Cl. D14—60

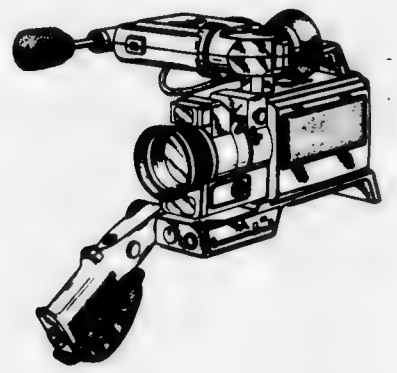


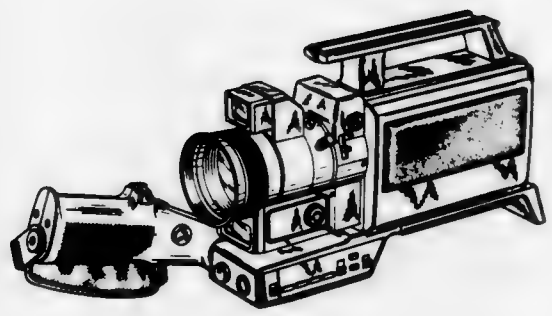


278,237
KNIFE HOLDER FOR KNIFE SHARPENER
Arthur L. LeVine, P.O. Box 800, Williamsville, N.Y. 14221
Filed Sep. 24, 1982, Ser. No. 423,478
Term of patent 14 years
U.S. Cl. D8—71



278,238
CAMERA FOR VIDEO TAPE RECORDER
Koya Kurokawa, and Noriyuki Arai, both of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 28, 1982, Ser. No. 426,035
Claims priority, application Japan, Apr. 1, 1982, 57-13980
Term of patent 14 years
U.S. Cl. D14—78

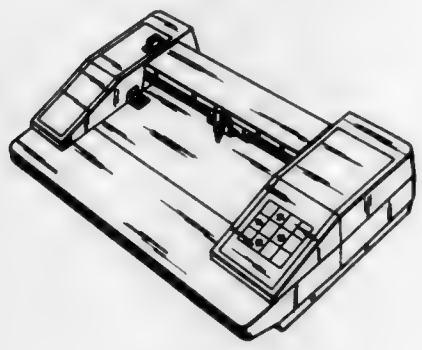




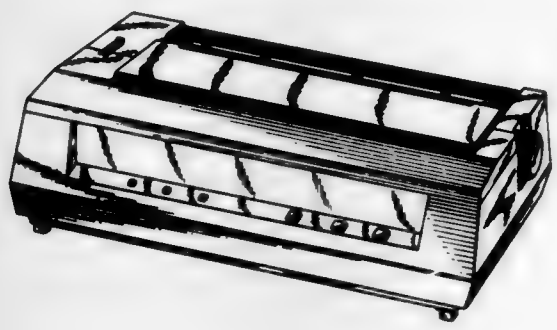
278,239
STAND-ALONE KEYBOARD
Christian Felix, Flushing, N.Y.; Donald M. Genaro, Haworth, N.J., and Casimer Gotfryd, Wauconda, Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed Oct. 8, 1982, Ser. No. 433,593
Term of patent 14 years
U.S. Cl. D14—100



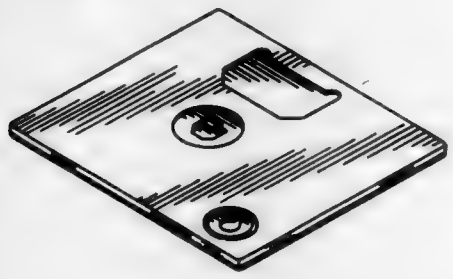
278,240
PLOTTER
Richard A. Murray, San Diego, Calif., assignor to Enter Computer, Inc., San Diego, Calif.
Filed Nov. 15, 1982, Ser. No. 441,722
Term of patent 14 years
U.S. Cl. D14—107



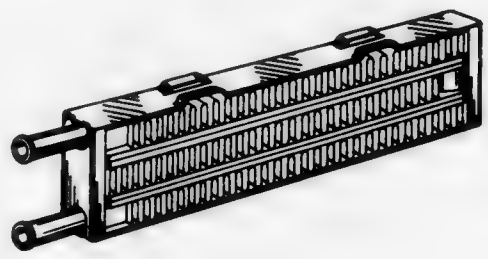
278,241
PRINTER FOR COMPUTER
Haruyuki Enomoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 24, 1982, Ser. No. 410,992
Claims priority, application Japan, Mar. 2, 1982, 57-8526
Term of patent 14 years
U.S. Cl. D14—111



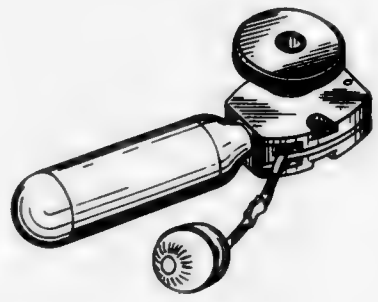
278,242
CASE CONTAINING A MAGNETIC DISC FOR RECORDING OF STILL PICTURES
Etsuro Saito, Ayase, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 10, 1982, Ser. No. 347,553
Claims priority, application Japan, Aug. 21, 1981, 56-36944
Term of patent 14 years
U.S. Cl. D14—114



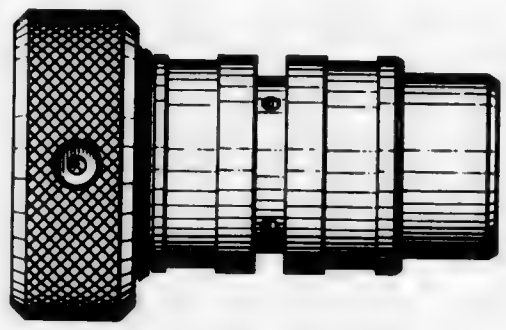
278,243
MOTORCYCLE OIL COOLER
Ytzhak Gewelber, 15510 Olive Branch Dr., La Mirada, Calif. 90638, assignor to Ytzhak Gewelber, La Mirada, Calif.
Filed Jun. 4, 1982, Ser. No. 384,890
Term of patent 14 years
U.S. Cl. D15—5



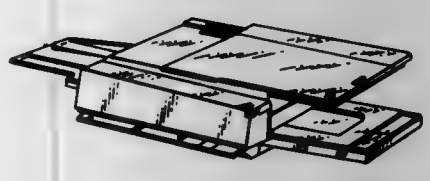
278,244
TIRE INFLATOR
Ronald L. Boetger, Willoughby, Ohio, assignor to Code Manufacturing, Inc., Willoughby, Ohio
Filed Aug. 27, 1982, Ser. No. 412,154
Term of patent 14 years
U.S. Cl. D15—7



278,245
COLLET HOLDER
Roger R. Smith, Erin, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Mar. 9, 1982, Ser. No. 356,414
Term of patent 14 years
U.S. Cl. D15—140

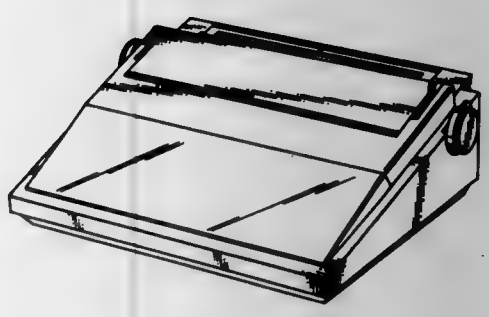


278,246
ELECTROPHOTOGRAPHIC COPIER
Nobuo Masaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 1, 1982, Ser. No. 437,950
Claims priority, application Japan, May 8, 1982, 57-19815
Term of patent 14 years
U.S. Cl. D16—31



278,247
TYPEWRITER
Ishin Miyamoto; Yasuo Nagamatsu; Toshiya Moriyama, and Masaharu Sakamoto, all of Fukuoka, Japan, assignors to Kyushu Matsushita Electric Co., Ltd., Fukuoka, Japan
Filed Mar. 24, 1983, Ser. No. 478,586
Term of patent 14 years
U.S. Cl. D18—1





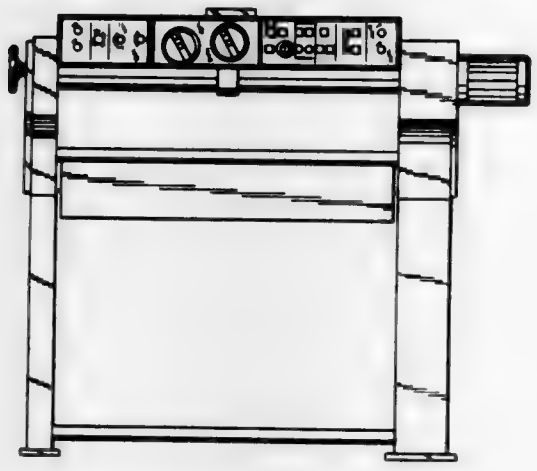
278,248
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,342
Claims priority, application Japan, Jan. 11, 1983, 58-501
Term of patent 14 years
U.S. Cl. D18—1



278,249
REMOTE CONTROL DESK FOR MULTICOLOR PRINTING MACHINE

Alfred Schott; Hans Johne, both of Radebeul; Karl-Heinz Förster, Dresden; Helmut Schuck, Coswig, and Horst Schulz, Dresden, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

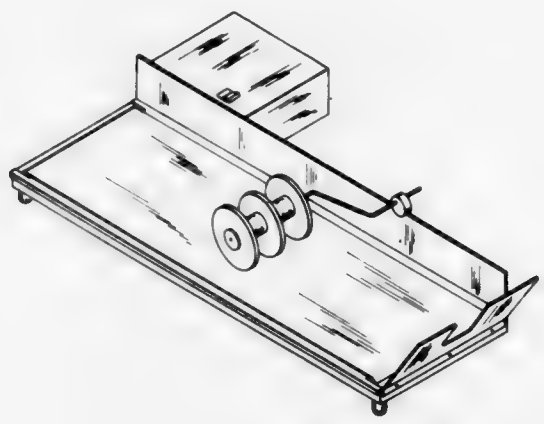
Filed Feb. 1, 1982, Ser. No. 344,780
Claims priority, application German Democratic Rep., Apr. 21, 1981, 14012-U2212
Term of patent 14 years
U.S. Cl. D18—22

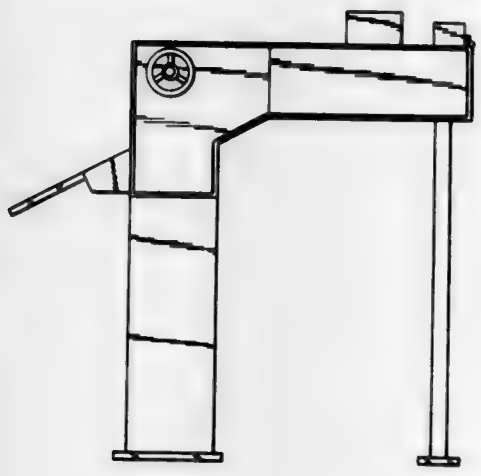


278,250
ENVELOPE POWER CONVEYOR STACKER

Burton J. Rosensweig, San Mateo; George H. Bingham, and Edward A. Krupotich, both of Los Altos, all of Calif., assignors to Omation Corporation, Mountain View, Calif.

Filed Jul. 12, 1982, Ser. No. 397,133
Term of patent 14 years
U.S. Cl. D18—22

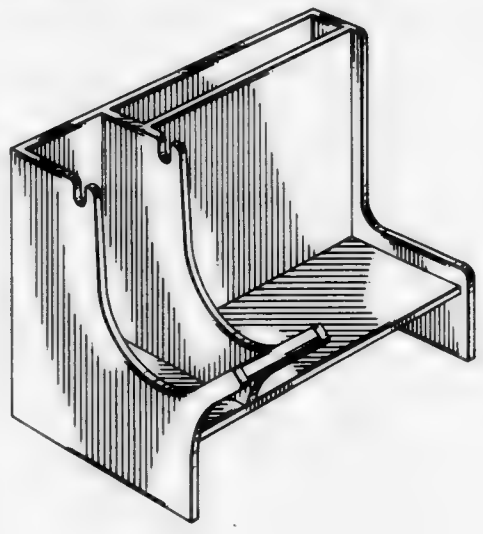




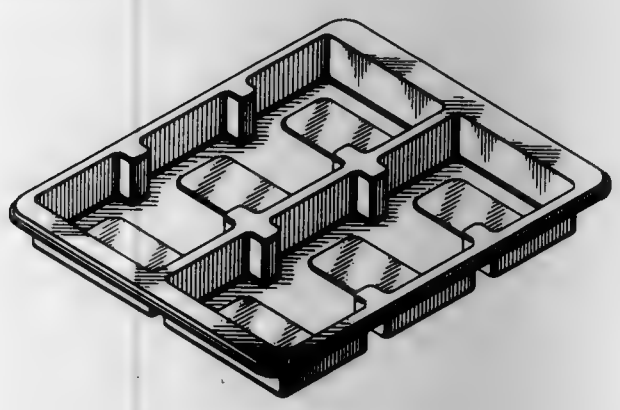
278,251
TAPE DISPENSER

Nathan F. Dobbs, 361 Collins St., Ormond Beach, Fla. 32074

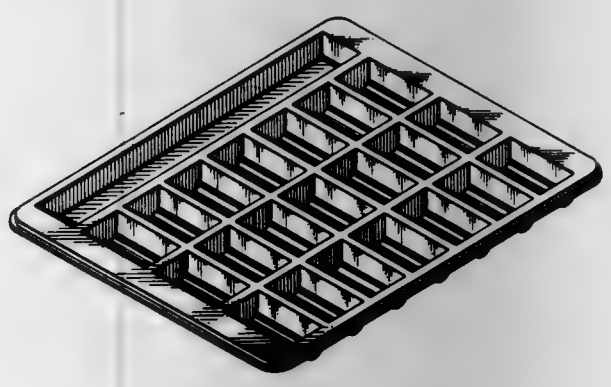
Filed Nov. 5, 1982, Ser. No. 439,344
Term of patent 14 years
U.S. Cl. D19—69



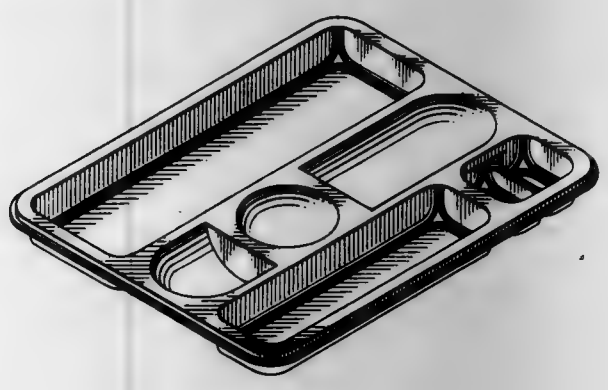
278,252
DRAWER INSERT FOR A DESK STORAGE TRAY SYSTEM
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Nov. 22, 1982, Ser. No. 443,181
Term of patent 14 years
U.S. Cl. D19—75



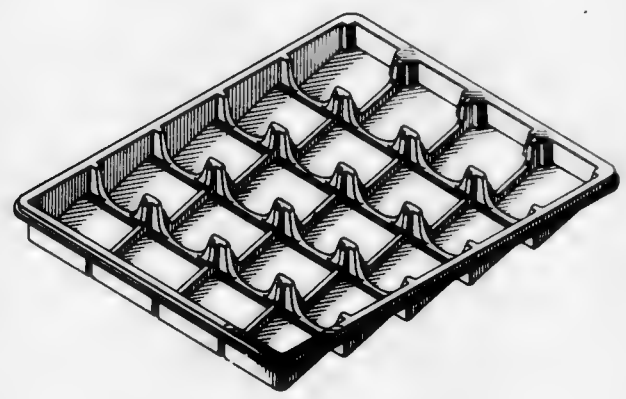
278,253
DRAWER INSERT FOR A DESK STORAGE TRAY SYSTEM
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Nov. 22, 1982, Ser. No. 443,187
Term of patent 14 years
U.S. Cl. D19—75



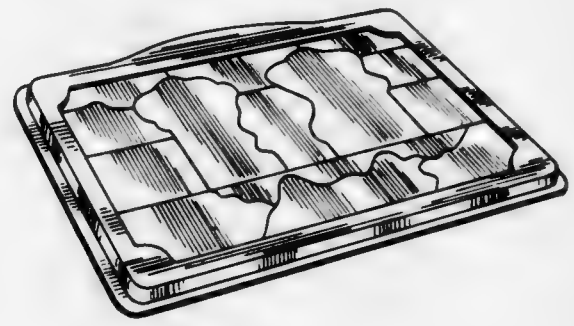
278,254
DRAWER INSERT FOR A DESK STORAGE TRAY SYSTEM
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Nov. 22, 1982, Ser. No. 443,211
Term of patent 14 years
U.S. Cl. D19—75



278,255
DRAWER INSERT FOR A DESK STORAGE TRAY SYSTEM
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Dec. 13, 1982, Ser. No. 449,243
Term of patent 14 years
U.S. Cl. D19—75



278,256
COMBINED PUZZLE AND TRAY
Pamela J. Lockhart, Sterling Heights, Mich., assignor to CPG Products Corp., Minneapolis, Minn.
Filed Jul. 12, 1982, Ser. No. 397,642
Term of patent 14 years
U.S. Cl. D21—104



278,257
TOY ANIMAL STALL
Americo D'Ambra, Jr., Johnston, and Kenneth Nichols, Providence, both of R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Mar. 21, 1983, Ser. No. 477,417
Term of patent 14 years
U.S. Cl. D21—114



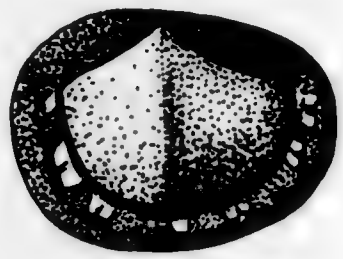
278,258
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 12, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,325
Term of patent 14 years
U.S. Cl. D21—190



278,259
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 12, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,326
Term of patent 14 years
U.S. Cl. D21—190



278,260
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,329
Term of patent 14 years
U.S. Cl. D21—190



278,261
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,438
Term of patent 14 years
U.S. Cl. D21—190



278,262
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 278,262
Term of patent 14 years
U.S. Cl. D21—190



278,263
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,440
Term of patent 14 years
U.S. Cl. D21—190



278,264
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,642
Term of patent 14 years
U.S. Cl. D21—190



278,265
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,644
Term of patent 14 years
U.S. Cl. D21—190



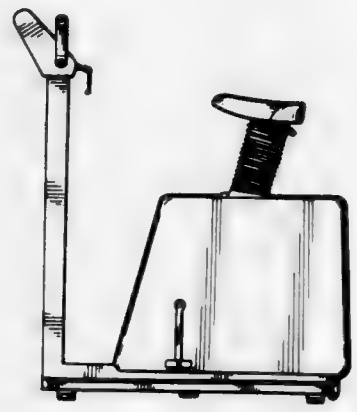
278,266
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,645
Term of patent 14 years
U.S. Cl. D21—190



278,267
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Sep. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,647
Term of patent 14 years
U.S. Cl. D21—190



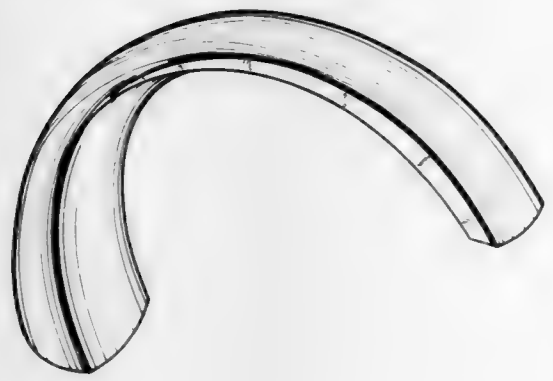
278,268
EXERCISE AND FITNESS TESTING MACHINE
Heikki Kiiski, Turku, Finland, assignor to Tunturipyora Oy, Turku, Finland
Filed Nov. 30, 1982, Ser. No. 445,520
Claims priority, application Finland, Jun. 3, 1982, 498/82
Term of patent 14 years
U.S. Cl. D21—194



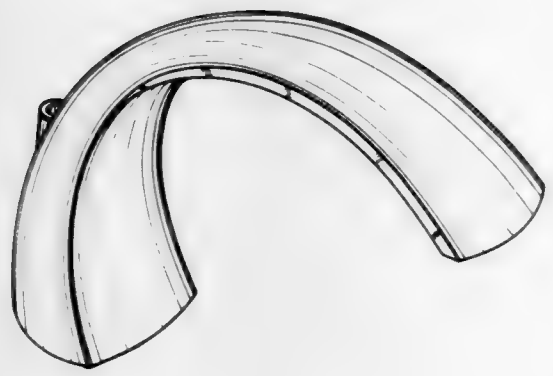
278,269
PASSENGER SEAT FOR AN AMUSEMENT RIDE
Michael J. Thornalley, Lincoln, England, assignor to Fibrecast (UK) Limited, Lincoln, England
Filed Aug. 19, 1982, Ser. No. 409,725
Claims priority, application United Kingdom, Feb. 22, 1982, 821005246
Term of patent 14 years
U.S. Cl. D21—247



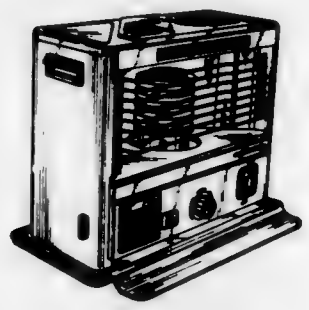
278,270
BATH SPOUT OR SIMILAR ARTICLE
James E. Niemann, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Mar. 7, 1983, Ser. No. 472,798
Term of patent 14 years
U.S. Cl. D23—32



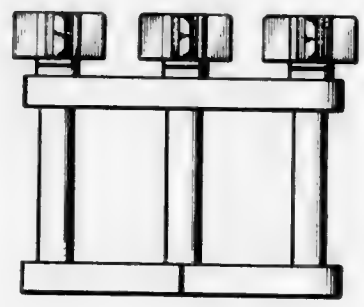
278,271
LAVATORY SPOUT OR SIMILAR ARTICLE
James E. Niemann, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Mar. 7, 1983, Ser. No. 472,799
Term of patent 14 years
U.S. Cl. D23—32



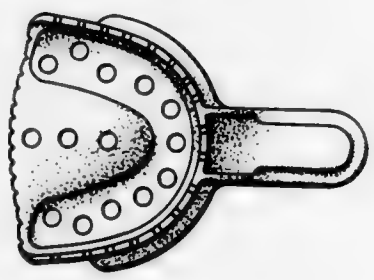
278,272
OILSTOVE
Nobuyuki Kojima, and Youichi Sekigawa, both of Kamo, Japan, assignors to Toshiba Heating Appliances Co., Ltd., Japan
Filed Aug. 3, 1982, Ser. No. 404,839
Claims priority, application Japan, Feb. 18, 1982, 57-6639
Term of patent 14 years
U.S. Cl. D23—122



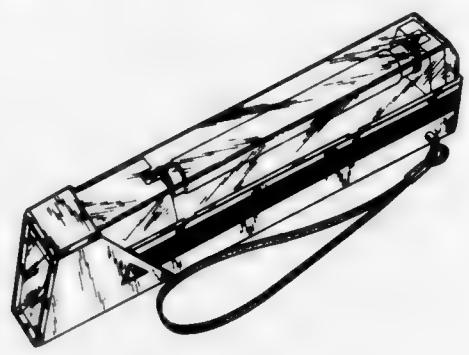
278,273
PRESS FOR HOLDING A PAIR OF RELINED DENTURES FOR CURING
John W. Mitchell, Sr., 1701 W. 168th St., Gardena, Calif. 90247
Filed Jun. 2, 1982, Ser. No. 384,183
Term of patent 14 years
U.S. Cl. D24—4



278,274
DENTAL IMPRESSION MAXILLARY TRAY
Hyman S. Levine, 74 Fifth Ave., New York, N.Y. 10011
Filed Mar. 17, 1982, Ser. No. 359,102
Term of patent 14 years
U.S. Cl. D24—10



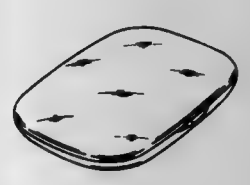
278,275
LANTERN
Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei Metal and Plastic Factory, Kowloon, Hong Kong
Filed Dec. 27, 1982, Ser. No. 453,335
Term of patent 14 years
U.S. Cl. D26—42

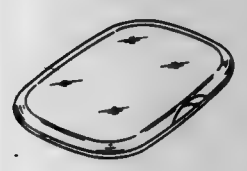


278,276
COSMETIC CASE

Dieter Bakic, Roemerstrasse 15, D-8000 Muenchen 40, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 416,094
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 12 924
Term of patent 14 years
U.S. Cl. D28—78





278,277
RIDING SADDLE

Judith A. Sarnelli, 15521 Morrison St., Sherman Oaks, Calif. 91403

Filed Jun. 16, 1982, Ser. No. 388,799
Term of patent 14 years
U.S. Cl. D30—20

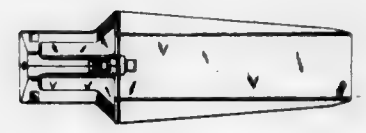


278,278
PORTABLE VACUUM CLEANER

Don R. McCloskey, Trappe, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jan. 28, 1983, Ser. No. 462,103
Term of patent 14 years
U.S. Cl. D32—18







LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF APRIL, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Taylor, Chandler R., Jr.; and Stauffer, Harold F., Jr., 4,508,724, Cl. 514-317.000.

A. J. Sparks & Company: *See—*
Catrambone, Joel, 4,508,223, Cl. 206-423.000.

A-Lok Products Corporation: *See—*
Ditcher, John, 4,508,355, Cl. 277-189.000.

AAR Corp.: *See—*
Hitt, Gerard J.; Nowakowski, Victor A.; and Warren, Walter R., 4,507,962, Cl. 73-384.000.

Aavid Engineering, Inc.: *See—*
McCarthy, Alfred F., 4,508,163, Cl. 165-80.00B.

Abe, Kazunori: *See—*
Kamada, Kazumasa; Tamai, Katsumi; Shimomura, Yasunori; and Abe, Kazunori, 4,509,163, Cl. 369-284.000.

Abe, Toshiro: *See—*
Hama, Hiroaki; and Abe, Toshiro, 4,507,938, Cl. 62-324.100.

Abex Corporation: *See—*
Nolden, Wilhelm, 4,508,011, Cl. 91-506.000.

Abramson, Daniel. Surgical drain. 4,508,533, Cl. 604-35.000.

Achard, Georges, to Rhovyl. Yarns and fibers good properties, based on atactic polyvinyl chloride, and process for the production. 4,508,778, Cl. 428-364.000.

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Ackerman, Charles B., to Motorola, Inc. Melt level sensing system and method. 4,508,970, Cl. 250-577.000.

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Acushnet Company: *See—*
Brown, Robert A., 4,508,309, Cl. 249-81.000.

Adair, Paul C., to Mead Corporation. Photosensitive material employing encapsulated radiation sensitive composition and a transparentizable image-receiving layer. 4,508,807, Cl. 430-138.000.

Adams, James R., Jr.: *See—*
Wilwerding, Dennis J.; and Adams, James R., Jr., 4,508,963, Cl. 250-201.000.

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Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,508,729, Cl. 514-419.000.

Adolf Illig Maschinenbau GmbH & Co.: *See—*
Janke, Jurgen, 4,508,670, Cl. 264-40.600.

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Lange, Arno; Kiehs, Karl; and Adolphi, Heinrich, 4,508,734, Cl. 514-594.000.

AEG-Kanis Turbinenfabrik GmbH: *See—*
Teckentrup, Hermann; and Hoffmann, Wilhelm, 4,507,926, Cl. 60-656.000.

Agapiou, Agapios K., to Exxon Research & Engineering Co. Supported polyolefin catalyst for the polymerization of ethylene under high temperatures. 4,508,844, Cl. 502-132.000.

Agency of Industrial Science & Technology: *See—*
Jido, Morio, 4,508,265, Cl. 239-3.000.

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Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, 4,508,809, Cl. 430-237.000.

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Weber, Klaus; Hujer, Friedrich; and Schaner, Ferdinand, 4,508,224, Cl. 206-455.000.

Agin, Patricia P.: *See—*
Pawelek, John M.; and Agin, Patricia P., 4,508,706, Cl. 424-60.000.

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Pierantozzi, Ronald, 4,508,846, Cl. 502-174.000.

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Saito, Eiiji; Aizawa, Shoji; Mitsui, Michio; Miyata, Tomohiko; and Kuroda, Masayuki, 4,508,266, Cl. 239-3.000.

Ajax Consolidated Co.: *See—*
Bretz, Frank E., 4,507,937, Cl. 62-298.000.

Ajinomoto Company, Incorporated: *See—*
Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,508,912, Cl. 549-253.000.

AKG Akustische u.Kino-gerate gesellschaft mbH: *See—*
Fidi, Werner; Pribyl, Richard; and Wolf, Konrad, 4,508,192, Cl. 181-158.000.

Akima, Isao: *See—*
Tanimura, Nobuyoshi; Yamamoto, Sho; Yoshizaki, Kazuo; and Akima, Isao, 4,509,147, Cl. 365-190.000.

Akiyama, Nobuyuki: *See—*
Hara, Yasuhiko; Akiyama, Nobuyuki; Fushimi, Satoru; Oshima, Yoshimasa; and Aoki, Nobuhiko, 4,508,453, Cl. 356-394.000.

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Junggren, Ulf K.; and Sjostrand, Sven E., 4,508,905, Cl. 546-271.000.

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Schaetzle, Walter J.; Brett, C. Everett; and Al-Ansari, Jasem M., 4,507,925, Cl. 60-641.400.

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Bikson, Benjamin; Coplan, Myron J.; and Gotz, Gertrud, 4,508,852, Cl. 521-27.000.

Albright, Roger N.: *See—*
Hubler, Lawrence C.; Ferrara, Joseph J.; Albright, Roger N.; and Bassett, Raymond C., 4,508,329, Cl. 270-53.000.

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Alfa-Laval AB: *See—*
Jakobson, Sten; and Rabold, Karl, 4,508,058, Cl. 119-14.020.

Allegheny Valve Company: *See—*
DeFrees, Joseph H., deceased, 4,508,131, Cl. 137-43.000.

Allen, Dillis V. Speed loader. 4,507,889, Cl. 42-89.000.

Allen, Henry E.: *See—*
Banko, William, 4,507,976, Cl. 73-861.540.

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Mims, Donald S.; and Allen, Richard S., 4,508,172, Cl. 166-303.000.

Allgood, Robert N.; Peterson, Joe W.; and Whatley, Roger A., to Motorola, Inc. MOS Analog switch driven by complementary, minimally skewed clock signals. 4,508,983, Cl. 307-577.000.

Allied Corporation: *See—*
Bailey, William R., 4,508,413, Cl. 339-129.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,508,257, Cl. 228-263.130.
Brush, Robert W., Sr.; and Werth, Dee A., 4,508,406, Cl. 339-89.00M.
Canham, Kevin, 4,508,410, Cl. 339-99.00R.
Evans, Rowland M., 4,507,915, Cl. 60-39.281.
Fairbairn, Leroy W.; and Waldron, Clifford R., 4,507,858, Cl. 29-747.000.
Kaniuk, John A.; Meinking, William E.; and Morris, Jeffrey R., 4,508,835, Cl. 501-94.000.
Salatiello, Peter P.; Petrucelli, Frank; and Flood, Paul W., 4,508,675, Cl. 264-310.000.
Shepler, Eric F.; and Knapp, Anthony W., 4,508,408, Cl. 339-89.00M.
Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., 4,508,769, Cl. 428-36.000.

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Wolf, Isaac; and Alper, Yekutiel, 4,507,911, Cl. 56-327.00R.

Althoff, Erwin: *See—*
Langhoff, Joseph; Althoff, Erwin; Kolodzey, Wolfgang; and Gerhardus, Ulrich, 4,508,542, Cl. 48-77.000.

Aluminum Company of America: *See—*
Bush, J. Finley; and Gaydoski, Gary F., 4,508,689, Cl. 423-127.000.

Amada Company, Limited: *See—*
Ikeda, Hidekatsu, 4,507,997, Cl. 83-368.000.

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Carlson, Roger W., 4,508,948, Cl. 219-10.55M.

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Ambrose, Richard J.: *See—*
Hergenrother, William L.; Matlock, Mark G.; and Ambrose, Richard J., 4,508,874, Cl. 525-285.000.

AMCA International Corporation: *See—*
Olig, Eugene A.; and Ladwig, Lee R., 4,509,126, Cl. 364-474.000.

American Bell, Inc.: *See—*
Bantel, Richard G.; and Herr, Diane E., 4,509,167, Cl. 370-62.000.

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Coy, David H.; and Murphy, William A., 4,508,711, Cl. 514-11.000.

American Filtrona Corporation: *See—*
Berger, Richard M., 4,508,525, Cl. 493-43.000.

American Hospital Supply Corporation: *See—*
Matier, William L.; Erhardt, Paul W.; and Patil, Ghanshyam, 4,508,725, Cl. 514-362.000.
Wyatt, Philip W.; Newsome, Allen L., Jr.; Bloom, William G.; Siegel, Bernard; and Lubov, Michael, 4,508,123, Cl. 128-692.000.

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AMP Incorporated: *See—*
Bunnell, Edward D., 4,508,415, Cl. 339-143.00R.
Casciotti, Albert; McCleerey, Earl W.; and Cosmos, Pete, 4,508,401, Cl. 339-14.00R.
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Dowling, Edward C.; and Fortuna, Jon A., 4,508,399, Cl. 339-17.0CF.
Hughes, Richard L.; and Sigmon, Ned A., 4,508,411, Cl. 339-99.00R.

Ampex Corp.: *See—*
Kudelski, Stefan, 4,508,292, Cl. 242-190.000.

Amphlett, Godfrey W.; and Hrinda, Michael E., to Armour Pharmaceutical Company. Process for purifying factor VIII:C. 4,508,709, Cl. 424-101.000.

Anbe, Yoshiharu: *See—*
Koyama, Toshihiro; Anbe, Yoshiharu; and Funahashi, Takuo, 4,507,946, Cl. 72-17.000.

Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Extruder. 4,508,454, Cl. 366-80.000.

Anders, Edward O., to Dailey Petroleum Services Corp. Method and apparatus for controlling azimuthal drift of a drill bit. 4,508,182, Cl. 175-61.000.

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Anderson, Daryl E.: *See—*
Brown, Robert L.; Jones, William A.; and Anderson, Daryl E., 4,508,586, Cl. 156-401.000.

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Anderson, John M., to General Electric Company. Fluorescent lamp without ballast. 4,508,993, Cl. 315-59.000.

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Andrade, Joseph D.; Triolo, Philip M.; Smith, Lee M.; and Miller, Frank J. Process for treating polymer surfaces to reduce their friction resistance characteristics when in contact with non-polar liquid, and resulting products. 4,508,606, Cl. 204-169.000.

Andre, Eugene R. Pressure chuck for irregular articles. 4,508,326, Cl. 269-22.000.

Andren, Carl F.; Mosley, William H., Jr.; and Sanders, David E., to E-Systems, Inc. Method and apparatus for pulse angle modulation. 4,509,017, Cl. 329-105.000.

Andrews, Robert S. L. Apparatus for reclaiming foundry sand. 4,508,277, Cl. 241-65.000.

Anetsberger Brothers, Inc.: *See—*
Anetsberger, Richard J.; and Anetsberger, John A., 4,508,026, Cl. 99-407.000.

Anetsberger, John A.: *See—*
Anetsberger, Richard J.; and Anetsberger, John A., 4,508,026, Cl. 99-407.000.

Anetsberger, Richard J.; and Anetsberger, John A., to Anetsberger Brothers, Inc. Basket moving mechanism for deep fat fryer. 4,508,026, Cl. 99-407.000.

Angres Clinic, Ltd.: *See—*
Angres, Giora G., 4,508,106, Cl. 128-1.00R.

Angres, Giora G., to Angres Clinic, Ltd. Microsurgical method for applying permanent eyelid liner. 4,508,106, Cl. 128-1.00R.

Anic, S.p.A.: *See—*
Romano, Ugo; and Iori, Giuseppe, 4,508,656, Cl. 260-463.000.

AO:s Metall & Mek. Verkstad AB: *See—*
Gajecki, Rickard, 4,508,995, Cl. 315-209.00R.

Aoki, Nobuhiko: *See—*
Hara, Yasuhiko; Akiyama, Nobuyuki; Fushimi, Satoru; Oshima, Yoshimasa; and Aoki, Nobuhiko, 4,508,453, Cl. 356-394.000.

Aoyagi, Kouji: *See—*
Hayashi, Yoshio; Aoyagi, Kouji; Sakurai, Toshio; Kashima, Tusnehiro; and Higeta, Koichi, 4,509,138, Cl. 364-900.000.

Apace Research Limited: *See—*
Reeves, Russell R., 4,508,873, Cl. 525-91.000.

Arai, Tetsuji, to Ushio Denki Kabushiki Kaisha. Light-radiant furnace. 4,508,960, Cl. 219-388.000.

Arakawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Oseto, Osamu; and Moriuchi, Fumio, 4,508,806, Cl. 430-109.000.

Arango, Aurelio, to Arango, Miguel Angel. Device for extracting paste from a tube. 4,508,240, Cl. 222-96.000.

Arango, Miguel Angel: *See—*
Arango, Aurelio, 4,508,240, Cl. 222-96.000.

ARBED S.A.: *See—*
Fleming, Georges, 4,508,323, Cl. 266-191.000.

Arc Technologies Systems Ltd.: *See—*
Lades, Hans; Fink, Friedrich; Liebel, Siegfried; Lauterbach, Inge; Taube, Thomas; and Zollner, Dieter, 4,509,178, Cl. 373-93.000.

Arco Industries Ltd.: *See—*
D'Andrade, Bruce M.; and Sing Chuen, Johnny Y., 4,508,516, Cl. 446-443.000.

Arconthorn Limited: *See—*
Moreuil, Rene , 4,508,733, Cl. 514-578.000.

Arcu Armaturindustri AB: *See—*
Hammarstedt, Gosta, 4,507,921, Cl. 60-527.000.

Argintaru, Lazare: *See—*
Luginbuhl, Pierre; Parniere, Alain; and Argintaru, Lazare, 4,509,200, Cl. 455-12.000.

Argus Chemical Corporation: *See—*
Kauder, Otto S.; and Keeley, Charles, 4,508,863, Cl. 524-181.000.

Arias, Beairit C.: *See—*
Larrauri, Jose M.; Arias, Beairit C.; and Galiasso, Roberto E., 4,508,616, Cl. 208-111.000.

Arimatsu, Seiji: *See—*
Sakurai, Kiyomi; and Arimatsu, Seiji, 4,508,814, Cl. 430-303.000.

Aritomi, Mitsutoshi: *See—*
Hokamura, Sadakazu; Shinohara, Toshio; Aritomi, Mitsutoshi; and Yoshida, Yuji, 4,508,767, Cl. 427-407.100.

Arlt, Dieter, to Bayer Aktiengesellschaft. Dialkoxymethyl-butyrolactones. 4,508,913, Cl. 549-320.000.

Armour Pharmaceutical Company: *See—*
Amphlett, Godfrey W.; and Hrinda, Michael E., 4,508,709, Cl. 424-101.000.

Armstrong International, Inc.: *See—*
Schlesch, Ronald D.; and Lyons, Robert F., 4,508,135, Cl. 137-185.000.

Arnoldt, Peter J., to Ductmate Industries, Inc. Flange type duct joint assembly and seal arrangement therefor. 4,508,376, Cl. 285-363.000.

Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH: *See—*
Bachmann, Erich; Fabel, Ludwig; Fischer, Roland; Peter, Werner; Scheiter, Bernd; and Wenzel, Werner, 4,508,494, Cl. 418-13.000.

Arvey Corporation: *See—*
Sak, Dennis A.; Mestetsky, Thomas; and Manne, Stanley, 4,509,196, Cl. 383-5.000.

Asahi Glass Company Ltd.: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,508,603, Cl. 204-98.000.
Yoshida, Shohei; and Vogl, Otto, 4,508,882, Cl. 526-259.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kuriki, Tomio; and Manabe, Seiichi, 4,508,674, Cl. 264-234.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ogawa, Ryota, 4,508,434, Cl. 350-454.000.

Asano, Masamichi; and Iwahashi, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,509,148, Cl. 365-230.000.

Asao, Yasuzi; and Fuchizawa, Tetsuro, to Fuji Photo Film Co., Ltd. Support for electrographic plate-making material and a lithographic printing plate employing same. 4,508,804, Cl. 430-62.000.

Asawa, Tatsuro: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,508,603, Cl. 204-98.000.

ASE (UK) Limited: *See—*
Temple, John D., 4,508,363, Cl. 280-808.000.

ASEA Aktiebolag: *See—*
Svedberg, Per, 4,509,089, Cl. 361-100.000.

Ashikaga, Tadashi: *See—*
Ohnishi, Kouhei; Ashikaga, Tadashi; and Terashima, Masayuki, 4,509,003, Cl. 318-800.000.

Ashizawa, Masaaki: *See—*
Yamamoto, Tsutomu; Ashizawa, Masaaki; Nishimoto, Kazuo; and Sekiguchi, Yuji, 4,508,777, Cl. 428-280.000.

Ashland Oil, Inc.: *See—*
Goel, Anil B., 4,508,653, Cl. 260-410.500.
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,508,839, Cl. 502-65.000.

Ashton, Richard D. A., to North American Decorative Products Inc. Reversible angle display. 4,508,230, Cl. 211-181.000.

Asia Oil Company, Limited: *See—*
Onuma, Kazuhiko; Kageyama, Yoichi; Kobayashi, Hiromu; Matsuki, Akihiro; and Suzuki, Makoto, 4,508,841, Cl. 502-73.000.

Asulab S.A.: *See—*
Dinger, Rudolf, 4,507,970, Cl. 73-702.000.
Monbaron, Jean-Jacques; and Bui, Ngoc C., 4,509,133, Cl. 364-513.500.

AT&T Bell Laboratories: *See—*
Ackland, Bryan D.; Burr, David J.; and Weste, Neil H. E., 4,509,187, Cl. 381-43.000.
Bantel, Richard G.; and Herr, Diane E., 4,509,167, Cl. 370-62.000.
Banu, Mihai; and Tsividis, Yannis, 4,509,019, Cl. 330-107.000.
Bosch, Martin A.; and Lemons, Ross A., 4,509,145, Cl. 365-112.000.
DasGupta, Sujan; and Purvis, Merton B., 4,509,098, Cl. 361-398.000.

AT&T Information Systems Inc.: *See—*
Burger, William A.; Embree, David M.; Singer, Martin H.; and Vogelpohl, David R., 4,508,937, Cl. 179-84.00T.

AT&T Technologies, Inc.: *See—*
Lorimer, D'Arcy H.; and Handy, Christopher C., Jr., 4,508,688, Cl. 423-92.000.
Wong, Ching-Ping, 4,508,758, Cl. 427-96.000.

Atkinson, Gerald O., to Hughes Tool Company. Clamping assembly. 4,507,843, Cl. 29-466.000.

Atlantic Richfield Company: *See—*
Taylor, Paul D.; and Mocella, Michael T., 4,508,923, Cl. 568-311.000.
Younes, Usama E., 4,508,883, Cl. 526-262.000.

Aubry, Claude; Chaumette, Jacques; and Touchon, Pierre, to Saint-Gobain Vitrage. Method for the differentiated hardening of glass sheets, especially of automobile windshields, and tempered glass sheet. 4,508,783, Cl. 428-410.000.

Auer, C. J.: *See—*
Lack, Larry H., 4,507,990, Cl. 81-57.390.

Auer, Frank M.: *See—*
Lack, Larry H., 4,507,990, Cl. 81-57.390.

Augat Inc.: *See—*
Damon, Neil F.; and Rydwansky, Frank C., Jr., 4,508,405, Cl. 339-75.0MP.

Augustus, Jimmie R.: *See—*
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,508,939, Cl. 179-90.00B.

Aulagner, Michel; and Jour, Jean-Paul. Double cable funicular transport device, looped on itself and with speed variation. 4,508,205, Cl. 198-334.000.

Autoclave Engineers, Inc.: *See—*
Zimmerman, Franz X., 4,509,179, Cl. 373-109.000.

Autoflug GmbH: *See—*
Singer, Klaus-Peter; and Butenop, Klaus, 4,508,289, Cl. 242-107.40B.

Avakian, Roger W., to General Electric Company. Thermally stabilized polyetherimides. 4,508,861, Cl. 524-101.000.

Avella, Frank S.: *See—*
Johnson, Sigurd A.; Avella, Frank S.; and Jones, Robert I., 4,508,305, Cl. 208-455.000.

AVX Corporation: *See—*
Prymak, John D., 4,509,103, Cl. 361-321.000.

Axthammer, Ludwig; and Wossner, Felix, to Fichtel & Sachs AG. Piston rod with an integral piston for a shock absorber. 4,508,201, Cl. 188-322.190.

Ayer, John B., to Canadian Patents & Dev. Limited. Voltage controlled current switch with short circuit protection. 4,509,102, Cl. 361-92.000.

Ayukawa, Taizo, to Kakudai Shosan Kabushiki Kaisha; and Taizo Ayukawa. Hair tonic composition. 4,508,707, Cl. 424-70.000.

B.A.T. Cigaretten-Fabriken GmbH: *See—*
Hirsch, Werner; and Ehling, Uwe, 4,507,875, Cl. 34-44.000.

Babcock & Wilcox Company, The: *See—*
Kaya, Azmi; and Sommer, Alan C., 4,507,930, Cl. 62-129.000.
Keyes, Marion A.; and Thompson, William L., 4,509,041, Cl. 340-578.000.

Bachmann, Erich; Fabel, Ludwig; Fischer, Roland; Peter, Werner; Scheiter, Bernd; and Wenzel, Werner, to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH. Two stage rotary vane pump. 4,508,494, Cl. 418-13.000.

Baduel, Guy M., to Isover Saint-Gobain. Method and apparatus for scrubbing effluent gases from mineral fiber production. 4,508,555, Cl. 65-3.430.

Baggiolini, Enrico G.; Batcho, Andrew D.; Boris, Alfred; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Synthesis of 1α,25-dihydroxyergocalciferol. 4,508,651, Cl. 260-397.200.

Bailey, Derrick S.; Cogswell, Frederic N.; and Griffin, Brian P., to Imperial Chemical Industries, PLC. Shaped articles formed from polymers capable of exhibiting anisotropic melts. 4,508,891, Cl. 528-191.000.

Bailey, Donald L.: *See—*
Packo, Joseph J.; and Bailey, Donald L., 4,508,631, Cl. 252-68.000.

Bailey, Frank C.: *See—*
Law, Kock-Yee; and Bailey, Frank C., 4,508,803, Cl. 430-59.000.

Bailey, Wayne E. Two reservoir solar air-weight impelling hydro power system. 4,508,971, Cl. 290-1.00R.

Bailey, William R., to Allied Corporation. Connector. 4,508,413, Cl. 339-129.000.

Baird, Donald H.: *See—*
Freeman, Eva C.; and Baird, Donald H., 4,508,610, Cl. 204-192.00P.

Baker Oil Tools, Inc.: *See—*
Weinberg, Roger A.; and Glaser, Mark C., 4,508,167, Cl. 166-120.000.

Baker, Richard, to Corning Glass Works. Multiple-user optical analyzer system using optical network for data transmission and control. 4,509,212, Cl. 455-612.000.

Baker, Rodney W. Ratchet tool. 4,507,989, Cl. 81-57.390.

Baker, Terence S.; and Couslon, William F. Assay. 4,508,830, Cl. 436-510.000.

Bakhshi, Shiv K.: *See—*
Stahl, Steven B.; Bakhshi, Shiv K.; and Naul, George M., 4,508,673, Cl. 264-120.000.

Balbinot, Renzo: *See—*
Vaccari, Franco; and Balbinot, Renzo, 4,507,877, Cl. 36-2.600.

Baldwin, Graham J.; and McCann, Michael O., to Smiths Industries Public Limited Company. Chip-carrier substrates. 4,509,096, Cl. 361-386.000.

Ball Corporation: *See—*
Frawley, Norman E., 4,508,404, Cl. 339-45.00M.
Lester, James M.; Reinker, Richard P.; and Regenbrecht, Douglas E., 4,507,941, Cl. 62-514.00R.

Ball, David J., to International Telephone & Telegraph Corporation. Self-locking connector. 4,508,407, Cl. 339-89.00R.

Balser, Klaus, to Bayer Aktiengesellschaft. Process for the production of hydroxyalkyl methyl celluloses. 4,508,895, Cl. 536-91.000.

Bamberg, Joe T.; and Kohn, Gustave K., to Zoecon Corporation. 3-Amino-4-(2-pyridyloxy)phenoxyalkanoic and alkenoic acid esters. 4,508,906, Cl. 546-300.000.

Banko, William, to Shamos, Morris; and Allen, Henry E. Flow meter with hall effect sensor and method. 4,507,976, Cl. 73-861.540.

Banks, Julia G.; and Ficho, William, to Vasilia Ltd. Personalized items and process for making them. 4,508,156, Cl. 164-35.000.

Banks, R. L. Olefin metathesis catalyst. 4,508,850, Cl. 502-351.000.

Bantel, Richard G.; and Herr, Diane E., to AT&T Bell Laboratories; and American Bell, Inc. Data conference arrangement. 4,509,167, Cl. 370-62.000.

Banu, Mihai; and Tsividis, Yannis, to AT&T Bell Laboratories. Tunable active filter. 4,509,019, Cl. 330-107.000.

Banzhaf, Werner: *See—*
Hofmann, Karl; and Banzhaf, Werner, 4,508,275, Cl. 239-533.300.

Baran, Paul; and Pranger, Maarten R., to Packet Technologies, Inc. Two-way cable-television system. 4,509,073, Cl. 358-86.000.

Barbagli, Rino O., to Fiatallis Europe, S.p.A. Remote controlled hydraulic circuit having selector means for establishing priority therein. 4,508,013, Cl. 91-516.000.

Barclay, John A., to United States of America, Energy. Low-temperature magnetic refrigerator. 4,507,927, Cl. 62-3.000.

Baron, Walter J., to Water Services of America, Inc. Dash pot basket for heat exchanger tube cleaning element. 4,508,164, Cl. 165-95.000.

Barr, Rodney E.; and Kochanek, George E., to Borg-Warner Corporation. Housing for capacitive pressure sensor. 4,507,973, Cl. 73-724.000.

Barrow, Billy E.; Barrow, William E.; and Barrow, Michael A., to Barrow Systems, Inc. Bottling plant cooling systems. 4,507,931, Cl. 62-175.000.

Barrow, Michael A.: *See—*
Barrow, Billy E.; Barrow, William E.; and Barrow, Michael A., 4,507,931, Cl. 62-175.000.

Barrow Systems, Inc.: *See—*
Barrow, Billy E.; Barrow, William E.; and Barrow, Michael A., 4,507,931, Cl. 62-175.000.

Barrow, William E.: *See—*
Barrow, Billy E.; Barrow, William E.; and Barrow, Michael A., 4,507,931, Cl. 62-175.000.

Barsotti, Rudolf H.; and Grove, Arthur W., to International Business Machines Corporation. Differential sensor measuring apparatus and method including sensor compensator circuitry. 4,509,007, Cl. 324-60.00C.

Barth, Tomislav: *See—*
Simek, Petr; Barth, Tomislav; Brtnik, Frantisek; Jost, Karel; Machova, Alena; Servitova, Linda; and Slantinova, Jirina, 4,508,645, Cl. 260-112.50R.

Bartholdson, Lennart O., to Polar-Plastik HB. Implantable breast prostheses. 4,507,810, Cl. 3-36.000.

Bartholomew, Donald D., to Proprietary Technology, Inc. Manually releasable drainport closure apparatus. 4,508,234, Cl. 215-206.000.

Bartlett, Keith G.; and Caolo, Mary A., to Hewlett-Packard Company. Polymethyl methacrylate compatible silicon dioxide complexing agent. 4,508,591, Cl. 156-659.100.

BASF Aktiengesellschaft: *See—*
Acker, Rolf-Dieter; Parg, Adolf; and Wuerzer, Bruno, 4,508,915, Cl. 556-418.000.
Grabhoefer, Herbert; and Volkert, Otto, 4,508,774, Cl. 428-220.000.
Lange, Arno; Kiehs, Karl; and Adolphi, Heinrich, 4,508,734, Cl. 514-594.000.
Mueller, Josef; Wiersdorff, Walter-Wielant; Kirschenlohr, Werner; and Schwantje, Gerd, 4,508,924, Cl. 568-322.000.

Bassett, Raymond C.: *See—*
Hubler, Lawrence C.; Ferrara, Joseph J.; Albright, Roger N.; and Bassett, Raymond C., 4,508,329, Cl. 270-53.000.

Bast, Wilhelm, to Faust-Fertigungstechnik GmbH & Co. KG. Apparatus for applying viscous substances particularly adhesives. 4,508,051, Cl. 118-410.000.

Bata Schuh AG.: *See—*
Fink, Hans, 4,508,582, Cl. 156-93.000.

Batcho, Andrew D.: *See—*
Baggiolini, Enrico G.; Batcho, Andrew D.; Boris, Alfred; and Uskokovic, Milan R., 4,508,651, Cl. 260-397.200.

Battelle Memorial Institute: *See—*
Baumberger, Otto; and Kalbskopf, Reinhard, 4,508,054, Cl. 118-718.000.
Carter, Timothy J. N.; and Dahne, Claus, 4,508,832, Cl. 436-517.000.

Battery Engineering Inc.: *See—*
Epstein, James; and Marincic, Nikola, 4,507,857, Cl. 29-623.200.

Battistini, Carlo: *See—*
Alpegiani, Marco; Battistini, Carlo; Bedeschi, Angelo; Franceschi, Giovanni; Foglio, Maurizio; and Zarini, Franco, 4,508,649, Cl. 260-245.20R.

Battles, James E.: *See—*
Knoedler, Reinhard; Nelson, Paul A.; Shimotake, Hiroshi; and Battles, James E., 4,508,797, Cl. 429-184.000.

Bauer, Gerhard; Hees, Eckart; and Beckers, Karl-Dieter, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte; and Martin & Pagenstecher GmbH. Slidable closure element for slide closures of metallurgical vessels. 4,508,241, Cl. 222-600.000.

Bauer, Gordon L., to Wyrepak Industries, Inc. Cap assembly with friction drag on tension brush. 4,508,290, Cl. 242-128.000.

Baumann, John A.: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,508,931, Cl. 136-255.000.

Baumberger, Otto; and Kalbskopf, Reinhard, to Battelle Memorial Institute. Device for depositing a mineral oxide coating on a substrate. 4,508,054, Cl. 118-718.000.

Baumgarten, Ronald: *See—*
Chapa, Roman; and Baumgarten, Ronald, 4,507,933, Cl. 62-184.000.

Baumgartner, Hans; and Sudbeck, Rainer, to Pierburg GmbH & Co. KG. Method of regulating the charge of combustion gas delivered to an internal combustion engine. 4,508,089, Cl. 123-559.000.

Baxter Travenol Laboratories, Inc.: *See—*
Calamai, Edward G.; and Daigle, Martha A., 4,508,643, Cl. 260-112.00B.
Garver, Edward B., Sr.; and Zabielski, Kenneth D., 4,508,534, Cl. 604-111.000.
Keilman, Michael R.; and West, Richard, 4,508,236, Cl. 215-308.000.

Bayer Aktiengesellschaft: *See—*
Arlt, Dieter, 4,508,913, Cl. 549-320.000.
Balser, Klaus, 4,508,895, Cl. 536-91.000.
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,508,672, Cl. 264-78.000.
Schmidt, Adolf, 4,508,862, Cl. 524-157.000.
Schmidt, Manfred; Bottenbruch, Ludwig; and Freitag, Dieter, 4,508,890, Cl. 528-167.000.
Sirinyan, Kirkor; and Merten, Rudolf, 4,508,780, Cl. 428-407.000.
Stopp, Gerhard; Karkossa, Horst; and Trescher, Viktor, 4,508,920, Cl. 562-423.000.
Zlokarnik, Marko, 4,508,546, Cl. 55-87.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Woltmann, Reinhard; and Sixt, Karl, 4,508,159, Cl. 164-306.000.

Bayern-Chemie Gesellschaft fur flugchemische Antriebe mit beschrankter Haftung: *See—*
Nilsson, Karl E., 4,508,287, Cl. 242-107.000.
Nilsson, Karl E., 4,508,288, Cl. 242-107.000.

Bayha, Renee: *See—*
Fulger, Charles V.; Stahl, Howard D.; Turek, Evan J.; and Bayha, Renee, 4,508,745, Cl. 426-594.000.

Bean, Maura M.; Nishita, Kazuko D.; and Hoops, Elizabeth A., to United States of America, Agriculture. Method for preparing improved quality rice-containing baked products. 4,508,736, Cl. 426-19.000.

Beavers, John A.; and North, Willard F., to Hughes Tool Company. Method of reclaiming electric motor laminations. 4,508,583, Cl. 156-94.000.

Beck, Hubert W.: *See—*
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,508,839, Cl. 502-65.000.

Becker, Billy G.; and Swafford, Charles V., to BST Lift Systems, Inc. Subsurface safety system. 4,508,166, Cl. 166-117.500.

Becker, James R. Toy building. 4,508,519, Cl. 446-478.000.

Becker, Wolfram; and Denz, Helmut, to Robert Bosch GmbH. Electronically controlled fuel metering system for an internal combustion engine. 4,508,082, Cl. 123-478.000.

Beckerer, Frank S., Jr. Holder for containers. 4,508,303, Cl. 248-311.200.

Beckers, Karl-Dieter: *See—*
Bauer, Gerhard; Hees, Eckart; and Beckers, Karl-Dieter, 4,508,241, Cl. 222-600.000.

Becton Dickinson and Company: *See—*
Mansour, James D.; and Schulte, Thomas, 4,508,821, Cl. 435-34.000.

Bed Store, The: *See—*
Danko, Peter, 4,507,815, Cl. 5-400.000.

Bedekovic, Davor; and Fletcher, Ian J., to Ciba Geigy Corporation. Preparation of chromogenic azaphthalides. 4,508,897, Cl. 544-127.000.

Bedeschi, Angelo: *See—*
Alpegiani, Marco; Battistini, Carlo; Bedeschi, Angelo; Franceschi, Giovanni; Foglio, Maurizio; and Zarini, Franco, 4,508,649, Cl. 260-245.20R.

Beer, Michael: *See—*
Hofbauer, August; and Beer, Michael, 4,508,073, Cl. 123-307.000.

Beerwald, Hans; Boehm, Guenter; and Glomski, Guenter, to Schott Glaswerke. Plasma process for the production of a dielectric rod. 4,508,554, Cl. 65-3.100.

Behn, Reinhard; Heywang, Hermann; and Pachonik, Horst, to Siemens Aktiengesellschaft. Method and a device for the production of electrical components, in particular laminated capacitors. 4,508,049, Cl. 118-50.100.

Behringwerke Aktiengesellschaft: *See—*
Heber, Helmut; Eberle, Reinhard; and Teetz, Volker, 4,508,644, Cl. 260-112.50R.
Toth, Tibor, 4,508,831, Cl. 436-512.000.

Beisswanger, Rudolf, to J. M. Voith GmbH. Winding machine for winding a web slit lengthwise. 4,508,283, Cl. 242-56.400.

Bekesi, Julius G.: *See—*
DeBarbieri, Augusto; and Bekesi, Julius G., 4,508,710, Cl. 514-19.000.

Belanger, Thomas D., Jr.: *See—*
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,508,398, Cl. 339-17.0LM.

Belart, Juan, to ITT Industries, Inc. Hydraulic brake booster. 4,508,008, Cl. 91-372.000.

Bell Telephone Laboratories, Inc.: *See—*
Burger, William A.; Embree, David M.; Singer, Martin H.; and Vogelpohl, David R., 4,508,937, Cl. 179-84.00T.
Daudelin, Douglas S., 4,509,120, Cl. 364-200.000.

Belliveau, Dennis A.; and Thomas, Eugene W., to Hitchiner Manufacturing Co., Inc. Self-tapping support for shell molds. 4,508,157, Cl. 164-63.000.

Belonger, Donald P.: *See—*
Gilbert, Wilbur E.; Martin, Robert E.; and Belonger, Donald P., 4,508,387, Cl. 297-429.000.

Ben Clements & Sons, Inc.: *See—*
Furutsu, Akira, 4,507,828, Cl. 24-16.0PB.

Bench, Ronald W.; and Hineline, Edson S., Jr., to Comdial Telephone Systems, Inc. Push-button dial for a telephone. 4,508,938, Cl. 179-90.0BD.

Bencsik, Peter: *See—*
Fogassy, Elemer; Toke, Laszlo ; Faigl, Ferenc; Soos, Rudolf; Bozzay, Jozsef; Kolta, Rezso; Nemes, Jozsef; and Bencsik, Peter, 4,508,919, Cl. 562-401.000.

Bennett, Terry A.; Claassen, George R.; and Zimmerman, William B., to PPG Industries, Inc. Method and apparatus for bending glass sheets to complicated shapes including an S-shaped transverse bend. 4,508,556, Cl. 65-25.400.

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Liepmann, Hans; Ruhland, Michael; Muesch, Herbert; Benson, Werner; Heinemann, Henning; and Zeugner, Horst, 4,508,716, Cl. 514-220.000.

Bente, Lynn A.: *See—*
Wideman, Lawson G.; and Bente, Lynn A., 4,508,930, Cl. 585-377.000.

Beppu, Kohichi; and Kawakami, Shigezo, to Kabushiki Kaisha Kobe Seiko Sho. Pressure reduction apparatus for solid particle-containing high pressure liquids. 4,508,549, Cl. 55-165.000.

Beran, Debra L.; Cann, Kevin J.; Jorgensen, Robert J.; Karol, Frederick J.; Maraschin, Norma J.; and Marcinkowsky, Arthur E., to Union Carbide Corporation. Ethylene polymerization using supported vanadium catalyst. 4,508,842, Cl. 502-112.000.

Berardi, Randal L., to RCA Corporation. Apparatus for accurately establishing the sealing length of CRT envelopes. 4,507,873, Cl. 33-180.00R.

Berenz, John J.: *See—*
McIver, George W.; Nakano, Kenichi; and Berenz, John J., 4,507,845, Cl. 29-571.000.

Beres, Arthur W.; and Verderico, Joseph P., to Goodyear Tire & Rubber Company, The. Cable take-up for tire vulcanizer. 4,508,497, Cl. 425-28.00R.

Berfield, Robert C.; Crevling, Robert L., Jr.; and Lawson, Lonnie B., Jr., to Shop-Vac Corporation. Air flow responsive outlet from tank of vacuum cleaner. 4,508,550, Cl. 55-216.000.

Berg, Keith E. Self cleaning indoor barbecue griller. 4,508,097, Cl. 126-41.00R.

Berger, Christian; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, to Rhone-Poulenc Sante. Cephalosporin derivatives, their preparation and compositions containing them. 4,508,717, Cl. 514-203.000.

Berger, Richard M., to American Filtrona Corporation. Method and apparatus for producing tobacco smoke filter having improved tar/-carbon monoxide ratio. 4,508,525, Cl. 493-43.000.

Bergmann, Roland: *See—*
Strempel, Hans-Jurgen; Diehl, Manfred; and Bergmann, Roland, 4,508,633, Cl. 252-135.000.

Bergstrom, John R., to Mo och Domsjo Aktiebolag. Process for recovery of sulfur dioxide liberated in the chemical pulping of lignocellulosic material. 4,508,593, Cl. 162-29.000.

Bernard, Jean: *See—*
Beyl, Jean; Bernard, Jean; Guerreau, Rene ; le Faou, Daniel; and Peyre, Henri, 4,508,360, Cl. 280-605.000.

Bernard, Walter J.; and Millard, Richard J., to Sprague Electric Company. Reducing the oxygen content of tantalum. 4,508,563, Cl. 75-0.5BB.

Bernett, Thomas B., to Eaton Corporation. Flow control device. 4,508,144, Cl. 138-45.000.

Berry, Paul S.; Kettlewell, Peter J.; and Turner, Michael J. B., to National Research Development Corporation. Poultry-harvesting assembly. 4,508,062, Cl. 119-82.000.

Bertin & Cie: *See—*
Schlegel, Raymond F.; Bourassin, Rene P.; and Lapautre, Michel A., 4,508,530, Cl. 494-49.000.

Bertini, Millo. Target-pigeon launcher. 4,508,093, Cl. 124-1.000.

Bessac, Michel, to Foncages et Forages Bessac, S.A. Machine for making underground galleries. 4,508,390, Cl. 299-33.000.

Betts, Edmund D.; and Keith, Jon T., to Gregor Jonsson Associates, Inc. Self-adjusting tail breaker means. 4,507,825, Cl. 17-73.000.

Betts, William L.: *See—*
Bremer, Gordon; and Betts, William L., 4,509,171, Cl. 370-100.000.

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Bhise, Vijay S.; and Gilman, Harold, to Halcon SD Group, Inc., The. Preparation of glycols from ethylene oxide. 4,508,927, Cl. 568-858.000.

Bianchi, Nereo, to NECCHI Societa per Azioni. Needle clamp for a sewing machine. 4,508,042, Cl. 112-226.000.
Biegel, Robert A., to Thrall Car Manufacturing Company. Handbrake system for railway car. 4,508,197, Cl. 188-47.000.
Bienwald, F. Wolfgang, to Leviton Manufacturing Company, Inc. Plug-in wire terminal system. 4,508,417, Cl. 339-176.00L.
Bikson, Benjamin; Coplan, Myron J.; and Gotz, Gertrud, to Albany International Corp. Compositions and method of preparation by chlorosulfonation of difficultly sulfonatable poly(ether sulfone). 4,508,852, Cl. 521-27.000.
Bingham, F. Emmett: *See—*
Fenton, Donald M.; Delaney, Dennis D.; and Bingham, F. Emmett, 4,508,537, Cl. 23-293.00S.
Bingmann, Horst, to Hoechst Aktiengesellschaft. Fluorane compounds. 4,508,904, Cl. 546-196.000.
Bio-Response, Inc.: *See—*
Rose, Sam, 4,508,819, Cl. 435-1.000.
Bion Corporation: *See—*
Roberts, Michael K.; Ottosen, Richard A.; and McConnell, Matthew L., 4,507,968, Cl. 73-626.000.
Biotest-Serum-Institut GmbH: *See—*
Sonneborn, Hans H.; Schwulera, Udo; and Schleussner, Hans, 4,508,833, Cl. 436-543.000.
Bittner, Franz; Poortman, Boudewijn J.; Rademacher-Dubbick, Kristian; Roskam, Abram K.; Stevens, Udo; and Tromp, Wouter T., to Rheometron AG. Measured-value sensors for magnetic-inductive flowmeters. 4,507,975, Cl. 73-861.120.
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Mulders, Gerardus L. M.; and Hermans, Jacobus G. J. M., 4,508,471, Cl. 405-109.000.
Biziere, Kathleen: *See—*
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille G., 4,508,720, Cl. 514-247.000.
Bjorling, Gotthard: *See—*
Eriksson, Sune; Santen, Sven; and Bjorling, Gotthard, 4,508,566, Cl. 75-88.000.
Blackwell, Kim J.; White, Russell T., Jr.; and Wilson, James W., to International Business Machines Corporation. Shield for improved magnetron sputter deposition into surface recesses. 4,508,612, Cl. 204-298.000.
Blanc, Maurice: *See—*
Green, David; and Blanc, Maurice, 4,508,743, Cl. 426-422.000.
Blank, Gerald. Hot water control and management system. 4,508,261, Cl. 236-20.00R.
Blechman, Abraham: *See—*
Smiley, Harry; and Blechman, Abraham, 4,508,505, Cl. 433-18.000.
Bloechel, Bradley A. Collapsible portable stove and carrying case therefor. 4,508,095, Cl. 126-9.00R.
Bloom, William G.: *See—*
Wyatt, Philip W.; Newsome, Allen L., Jr.; Bloom, William G.; Siegel, Bernard; and Lubov, Michael, 4,508,123, Cl. 128-692.000.
Blumberg, Ben, Jr.: *See—*
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Blumenkranz, James J., to R & G Sloane Mfg. Co., Inc. Plastic pipe joint. 4,508,368, Cl. 285-21.000.
Board of Regents, University of Texas System: *See—*
Itoh, Tatsuo; and Stephan, Karl D., 4,509,209, Cl. 455-327.000.
Bock, Rudolf. Hydraulic motor. 4,508,010, Cl. 91-474.000.
Bodden, Werner; and Diegelmann, Winfried, to Schunk & Ebe GmbH. Method of making surface-hardened sinter-iron part. 4,508,681, Cl. 419-29.000.
Bodenseewerk Geratetechnik GmbH: *See—*
Vachek, Josef, 4,507,971, Cl. 73-707.000.
Boehm, Guenter: *See—*
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Boeing Company, The: *See—*
Pinson, George T., 4,509,006, Cl. 322-4.000.
Bohlen, Heinz; and Demmel, Enzio, to U.S. Philips Corporation. Microwave amplifier tube having two ring resonators. 4,508,992, Cl. 315-5.390.
Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, to Agfa-Gevaert Aktiengesellschaft. Process for the exposure and development of photo-graphic images and an apparatus for carrying out the process. 4,508,809, Cl. 430-237.000.
Boissel, Pierre; and Tong, Mathias, to Cameca. Electronic optical apparatus comprising pyrolytic graphite elements. 4,508,967, Cl. 250-396.00R.
Bolgert, Edwin F., to Kohler Co. Wall mountable vacuum breaker. 4,508,137, Cl. 137-218.000.
Boliden Aktiebolag: *See—*
Leirnes, Johan S.; Lundstrom, Malkolm S.; Hedlund, Martin L.; and Buren, Kurt J. A., 4,508,565, Cl. 75-77.000.
Bolle, Fred; Herronen, John R.; and Wright, Joseph M., to Tek-Matik, Inc. Adjustable torque conveyor roller drive. 4,508,212, Cl. 198-781.000.
Bolza-Schunemann, Claus A., to Koenig & Bauer Aktiengesellschaft. Control mechanism to disable driven ink metering elements in rotary printing machines. 4,508,034, Cl. 101-365.000.
Booker, James D., Jr. Cooking apparatus for vertically suspending and rotating meat. 4,508,028, Cl. 99-421.00V.
Booth, Dwight E., to Warner Electric Brake & Clutch Company. Methods and apparatus for controlling the engagement of gap-type electromagnetic couplings. 4,509,091, Cl. 361-154.000.
Booth, Nicholas H.; Hatch, Roger C.; and Crawford, Lester M., to University of Georgia Research Foundation, Inc. Antagonism of central nervous system drugs by the administration of 4-aminopyridine alone or in combination with other drugs. 4,508,715, Cl. 514-280.000.
Borchardt, John K., to Halliburton Company. Method of viscosifying aqueous fluids and process for recovery of hydrocarbons from subterranean formations. 4,508,629, Cl. 252-8.55D.
Bordat, Andre J. E., to Constructions Mecaniques de Normandie. Connections between dividing walls, particularly for the construction of boat hulls. 4,508,047, Cl. 114-355.000.
Borg-Warner Corporation: *See—*
Barr, Rodney E.; and Kochanek, George E., 4,507,973, Cl. 73-724.000.
Boris, Alfred: *See—*
Baggiolini, Enrico G.; Batcho, Andrew D.; Boris, Alfred; and Uskokovic, Milan R., 4,508,651, Cl. 260-397.200.
Borner, Willy; and Jackson, Bernie F. Slow speed dynamic wheel balancer. 4,507,964, Cl. 73-462.000.
Boros, John, to Rockwell International Corporation. Flexible circuit board interconnect having low thermal conductivity. 4,509,095, Cl. 361-386.000.
Bosch, Martin A.; and Lemons, Ross A., to AT&T Bell Laboratories. Electrically biased optical storage medium. 4,509,145, Cl. 365-112.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Method of brazing with nickel based alloy. 4,508,257, Cl. 228-263.130.
Bottenbruch, Ludwig: *See—*
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Bottka, Nicholas: *See—*
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Bourassin, Rene P.: *See—*
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Boutwell, Johnie R., to Tubing Testors, Inc. Wraparound used for testing tubing with premixed gases. 4,507,954, Cl. 73-40.700.
Bowden, William L.: *See—*
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Bowen, James B.; and Kramer, Charles F., to Steel Heddle Mfg. Co. Heddle frame and composite frame slat construction. 4,508,145, Cl. 139-92.000.
Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D., 4,508,267, Cl. 239-11.000.
Bowman, James A., to Hoover Universal, Inc. Seat track assembly. 4,508,385, Cl. 297-341.000.
Bowman, James L., to Ingersoll-Rand Co. Rotary, positive-displacement machine, of the helical-rotor type, and rotors therefor. 4,508,496, Cl. 418-201.000.
Bozzay, Jozsef: *See—*
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Bradley, Fennimore N., to Midwest Components, Inc. Thermally actuated switch. 4,509,029, Cl. 335-208.000.
Bradshaw, Cyril E.: *See—*
Kelly, William W.; and Bradshaw, Cyril E., 4,508,134, Cl. 137-103.000.
Brannon, James H.; and Lankard, John R., Sr., to International Business Machines Corporation. Patterning of polyimide films with ultraviolet light. 4,508,749, Cl. 427-43.100.
Brault, Robert G., to Hughes Aircraft Company. Method of applying poly(methacrylic anhydride resist to a semiconductor. 4,508,812, Cl. 430-270.000.
Brazener, David J., to Smiths Industries Public Limited Company. Aircraft instruments. 4,507,959, Cl. 73-182.000.
Bredow, Walter, to C. Behrens AG. Arrangement for removing workpieces from a cutting press. 4,507,995, Cl. 83-153.000.
Bremer, Gordon; and Betts, William L., to Paradyne Corporation. Modem multiplexer synchronization by radial modulation. 4,509,171, Cl. 370-100.000.
Brett, C. Everett: *See—*
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Bretz, Frank E., to Ajax Consolidated Co. Vehicle refrigeration unit and mounting assembly. 4,507,937, Cl. 62-298.000.
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Bridger, Nevill J.: *See—*
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Bridgestone Corporation: *See—*
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Bridgestone Tire Company Limited: *See—*
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Brindle, Robert J., to James Burn International Limited. Holders for computer disks and the like. 4,508,366, Cl. 281-36.000.
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British Petroleum Company p.l.c., The: *See—*
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Broussoux, Dominique; Facoetti, Hugues; and Micheron, Francois, to Thomson-CSF. Method of fabrication of piezoelectric polymer transducers by forging. 4,508,668, Cl. 264-22.000.
Brown, Charles D.: *See—*
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Brown, Dewey E. Bow sight. 4,507,874, Cl. 33-265.000.
Brown, George T. Pipe repair bypass system. 4,508,129, Cl. 137-15.000.
Brown, Michael M.: *See—*
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Brown, Phillip P.: *See—*
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Brown, Robert A., to Acushnet Company. Fast thermal response mold. 4,508,309, Cl. 249-81.000.
Brown, Robert L.; Jones, William A.; and Anderson, Daryl E., to GenCorp Inc. Tire bead turn-up device. 4,508,586, Cl. 156-401.000.
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Bruel, Michel; Escaron, Jean; and Labartino, Joseph, to Commissariat a l'Energie Atomique. Target holder with mechanical scanning. 4,508,056, Cl. 118-730.000.
Brunner, Hans-Georg; Schurter, Rolf; and Szczepanski, Henry, to Ciba Geigy Corporation. Certain pyridylacetylene compounds, compositions containing same and herbicidal methods of use. 4,508,560, Cl. 71-94.000.
Bruns, Engelbert: *See—*
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Brush, Robert W., Sr.; and Werth, Dee A., to Allied Corporation. Electrical connector assembly having an anti-decoupling device. 4,508,406, Cl. 339-89.00M.
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BST Lift Systems, Inc.: *See—*
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Buckl, Hans, to Sud Chemie Aktiengesellschaft. Compositions containing thiolates for removal of heavy metal ions from dilute aqueous solutions. 4,508,838, Cl. 502-62.000.
Buelow, Jack; and Darland, Michael A., to Clorox Company, The. Toilet bowl dispenser. 4,507,811, Cl. 4-225.000.
Buenzli, Charles W., Jr.: *See—*
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Buggert, Peter O., to Oktan Aktiebolag. Arrangement in the combustion chamber of an internal combustion engine. 4,508,070, Cl. 123-193.0CP.
Buhart, Andre, to Thomson-CSF. Channel formation system for panoramic sonars. 4,509,152, Cl. 367-123.000.
Bui, Ngoc C.: *See—*
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Bunnell, Edward D., to AMP Incorporated. Shielded electrical connector for flat cable. 4,508,415, Cl. 339-143.00R.
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Burger, William A.; Embree, David M.; Singer, Martin H.; and Vogelpohl, David R., to AT&T Information Systems Inc.; and Bell Telephone Laboratories, Inc. Method and circuitry for encoding telephone ringing signals. 4,508,937, Cl. 179-84.00T.
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Sprenkle, George J., 4,507,861, Cl. 29-741.000.
Burrus, Harry O., to Du Pont de Nemours, E. I., and Company. Hypochlorite destruction using urea. 4,508,697, Cl. 423-499.000.
Bush, J. Finley; and Gaydoski, Gary F., to Aluminum Company of America. Aluminum-fluorine compound manufacture. 4,508,689, Cl. 423-127.000.
Busta, Heinz H.; Tsao, Kuey-Yeou; White, Wayne D.; and Loeppert, Peter V., to Gould Inc. Miniaturized potassium ion sensor. 4,508,613, Cl. 204-418.000.
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Byrt, Graham A. B. Sheet stacking apparatus. 4,508,333, Cl. 271-218.000.
C. Behrens AG: *See—*
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Cabrera, Pedro P., to Coulter Electronics, Inc. Liquid metering and transfer valve assembly. 4,507,977, Cl. 73-864.120.
Cain, Michael H.: *See—*
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Cairns & Brother, Inc.: *See—*
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Calamai, Edward G.; and Daigle, Martha A., to Baxter Travenol Laboratories, Inc. Rat antibody to hCG. 4,508,643, Cl. 260-112.00B.
Calisi, Constance M. Pressure monitoring interconnect system. 4,508,103, Cl. 128-673.000.
Calutoiu, Nicolae I. Ambulatory sleeping bag. 4,507,805, Cl. 2-69.500.
Calvin, Donald W.: *See—*
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Cameca: *See—*
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Cameron Iron Works, Inc.: *See—*
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Campbell, Willis R.; Hunt, Larry J.; and Waldrop, T. William, to Sperry Corporation. Automatic latch for draft member of bale handler. 4,508,359, Cl. 280-463.000.
Camps, Marcel; Douillard, Alain; Dubois, Jean-Claude; Gazard, Maryse; Montheard, Jean-Pierre; Pascal, Thierry; and Seytre, Gerard, to Thomson-CSF. Polymers containing heterocycles and aromatic nuclei, and conductive organic materials made from such polymers. 4,508,639, Cl. 252-500.000.
Canadian Patents & Dev. Limited: *See—*
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Canham, Kevin, to Allied Corporation. Electrical termination system and connector member. 4,508,410, Cl. 339-99.00R.
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Kitagishi, Nozomu; and Tsuji, Sadahiko, 4,508,433, Cl. 350-454.000.
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Carlo Erba Strumentazione S.p.A.: *See—*
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Carlson, Elmer V., to Industrial Research Products, Inc. Miniature acoustical transducer with filter/regulator power supply circuit. 4,509,193, Cl. 381-113.000.
Carlson, Roger W., to Amana Refrigeration, Inc. Microwave cooking method. 4,508,948, Cl. 219-10.55M.
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Carpe, Michel; Collin, Claude; and Pontif, Marc, to Thomson-CSF. Receiver for multicarrier signals protected from unwanted signals. 4,509,206, Cl. 455-245.000.
Carpino, Louis A.; and Cohen, Beri, to Research Corporation. Peptide synthesis and amino acid blocking agents. 4,508,657, Cl. 260-463.000.
Carrington, Michael R. Pass-blocking sled. 4,508,341, Cl. 273-55.00R.
Carroll, Frank E. Sheet metal structural shape and use in building structures. 4,507,901, Cl. 52-302.000.
Carroll, William R. Log conveying apparatus. 4,508,149, Cl. 144-245.00A.
Carter, Don E.; and Yuen, Henry K., to Monsanto Company. Thermal energy storage system. 4,508,101, Cl. 126-436.000.
Carter, Timothy J. N.; and Dahne, Claus, to Battelle Memorial Institute. Ellipsometrically measuring rate of optical change in immunoassay. 4,508,832, Cl. 436-517.000.

Cartwright, David, to Imperial Chemical Industries, PLC. 2,3-Dichloro-5-trichloromethylpyridine. 4,508,907, Cl. 546-345.000.
Carvel Corporation: *See—*
Carvel, Thomas, 4,508,933, Cl. 174-67.000.
Carvel, Thomas, to Carvel Corporation. Electric outlet cover. 4,508,933, Cl. 174-67.000.
Casagrande, Cesare: *See—*
Tricerri, Silvia Z.; Casagrande, Cesare; De Marchi, Franco; and Nicola, Massimo, 4,508,719, Cl. 514-236.000.
Casciani, James R., to Hewlett-Packard Company. Uniaxially collimated light source for optical shaft angle encoders. 4,508,965, Cl. 250-231.0SE.
Casciotti, Albert; McCleerey, Earl W.; and Cosmos, Pete, to AMP Incorporated. Woven cable connector. 4,508,401, Cl. 339-14.00R.
Cash, Carlton H., to Georgia Tech Research Institute. RF Interferometer/Doppler target location system. 4,509,052, Cl. 343-418.000.
Casio Computer Co., Ltd.: *See—*
Haruhara, Kazuyoshi, 4,508,462, Cl. 400-70.000.
Castelot, Lawrence E.; and Castelot, Linda A. Pregnancy-supporting lounge chair. 4,508,384, Cl. 297-284.000.
Castelot, Linda A.: *See—*
Castelot, Lawrence E.; and Castelot, Linda A., 4,508,384, Cl. 297-284.000.
Catrambone, Joel, to A. J. Sparks & Company. Preformed pot cover package. 4,508,223, Cl. 206-423.000.
Cattaneo, Christian J.; Derouet, Patrick R. J.; and Laroche, Michel C. F., to S.N.E.C.M.A. Device for detecting and preventing the formation of ice on contoured surfaces. 4,508,295, Cl. 244-134.00A.
Cecic, Norma: *See—*
Cecic, Tihomir; and Cecic, Norma, 4,508,714, Cl. 424-195.100.
Cecic, Tihomir; and Cecic, Norma. Organic scalp lotion. 4,508,714, Cl. 424-195.100.
Cedrone, Nicholas J. Lead combing apparatus for radial lead electronic devices. 4,509,010, Cl. 324-158.00P.
Celanese Corporation: *See—*
Kiss, Gabor D., 4,507,983, Cl. 74-572.000.
Central Glass Company Limited: *See—*
Miyoshi, Takao; and Sakanoue, Akira, 4,508,761, Cl. 427-221.000.
Central Sprinkler Corporation: *See—*
Pieczykolan, George S., 4,508,175, Cl. 169-38.000.
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Mouilhayrat, Guy G.; Duchon, Paul A. J.; Guilbert, Jean M. A. M.; and Rolfo, Andre A., 4,508,297, Cl. 244-173.000.
Ceskoslovenska akademie ved: *See—*
Simek, Petr; Barth, Tomislav; Brtnik, Frantisek; Jost, Karel; Machova, Alena; Servitova, Linda; and Slantinova, Jirina, 4,508,645, Cl. 260-112.50R.
Chamberlain, Terence R., to Sun Chemical Corporation. Nickel complex pigments of bis-azomethines. 4,508,899, Cl. 544-225.000.
Champion International Corporation: *See—*
Dutcher, Daniel P., 4,508,526, Cl. 493-346.000.
Chang, Ching-Te; Lee, Lian-Tze; and Su, Hsueh-Ling, to Industrial Technology Research Institute. Preparation of bis-carboxy ethyl germanium sesquioxide and its propionic acid derivatives. 4,508,654, Cl. 260-429.00R.
Chapa, Roman; and Baumgarten, Ronald, to Chapa, Roman. System combining water heater and refrigeration unit. 4,507,933, Cl. 62-184.000.
Charles I. Brown: *See—*
Forrest, William E., 4,508,193, Cl. 182-5.000.
Chas. M. Bailey Co., Inc.: *See—*
Dixon, Robert W., 4,508,138, Cl. 137-239.000.
Charles, Paul A. S., to Ingersoll Milling Machine Company, The. Tape-laying head. 4,508,584, Cl. 156-353.000.
Chaudhuri, Dwaipayan; and Stebles, Malcolm R., to Lever Brothers Company. Skin treatment composition. 4,508,705, Cl. 424-47.000.
Chaumette, Jacques: *See—*
Aubry, Claude; Chaumette, Jacques; and Touchon, Pierre, 4,508,783, Cl. 428-410.000.
Chemische Werke Huls Ag: *See—*
Kurandt, Hans-Friedrich; and Kampner, Karl-Heinz, 4,508,574, Cl. 106-109.000.
Chen, Chin-Long, to International Business Machines Corporation. Double error correction - triple error detection code. 4,509,172, Cl. 371-38.000.
Chen, Tsu F.; and Phillips, Edwin R., to Sperry Corporation. Drilling monitor. 4,507,834, Cl. 29-26.00R.
Cheney, Richard F., to GTE Products Corporation. Plasma spray powder. 4,508,788, Cl. 428-570.000.
Chernin, Mikhail M.: *See—*
Maltsev, Jury S.; Shevchenko, Viktor D.; and Chernin, Mikhail M., 4,509,134, Cl. 364-813.000.
Cherry, Hitesh; and Werner, Walter M., to AMP Incorporated. Insulation piercing coaxial grip splice device. 4,508,409, Cl. 339-97.00R.
Cheung, Kin L., to Wang Laboratories, Inc. Data transmitting link. 4,509,140, Cl. 364-900.000.
Chevron Research Company: *See—*
Fox, Richard C., 4,508,568, Cl. 106-2.000.
Zones, Stacey I., 4,508,837, Cl. 502-62.000.
Chi Rho Corporation: *See—*
Llewellyn, Link W., 4,508,339, Cl. 273-26.00E.
Chianelli, Russell R.; and Pecoraro, Theresa A., to Exxon Research & Engineering Co. Carbon-containing molybdenum and tungsten sulfide catalysts. 4,508,847, Cl. 502-200.000.
Chiarella, Anthony A.: *See—*
Lerman, Michael J.; Koehl, Richard; Chiarella, Anthony A.; and Zamory, William, 4,508,455, Cl. 366-247.000.
Chicago Rawhide Manufacturing Company: *See—*
Szcupak, Peter, 4,508,020, Cl. 92-168.000.
Chicopee: *See—*
Malaney, Frank E., 4,508,113, Cl. 128-132.00D.
Childers, Jimmie D., to Texas Instruments Incorporated. Semiconductor memory device with pipeline access. 4,509,142, Cl. 364-900.000.
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Fogassy, Elemer; Toke, Laszlo ; Faigl, Ferenc; Soos, Rudolf; Bozzay, Jozsef; Kolta, Rezso; Nemes, Jozsef; and Bencsik, Peter, 4,508,919, Cl. 562-401.000.
Huhn, Magda; Szabo, Gabor; Dvortsak, Peter; Karpati, Marianna; and Somfai, Eva, 4,508,658, Cl. 260-465.00D.
Chisso Corporation: *See—*
Ishibashi, Tadao; and Kugimiya, Youichi, 4,508,786, Cl. 428-461.000.
Chloride Group Public Limited Company: *See—*
Pearson, Ernest J., 4,507,856, Cl. 29-623.100.
Choe, Francis S. O., to 501 Lamipak Industries (Europe) Ltd. Plastic bags. 4,508,222, Cl. 206-390.000.
Choffin, Justin C. Telescopically extendable pole. 4,508,467, Cl. 403-104.000.
Choi, Smith: *See—*
Gebauer, Paul W.; and Choi, Smith, 4,508,349, Cl. 273-175.000.
Choinski, Graydon J.; and Brooks, Dave W., to Thyssen-Bornemisza, Inc. Boot assembly for brake actuator. 4,508,018, Cl. 92-128.000.
Chow, Richard H.; and Geering, Emil J., to Occidental Chemical Corporation. Method for the decolorization of aroyl chloride compositions. 4,508,661, Cl. 260-544.00D.
Chow, Richard H.; and Geering, Emil J., to Occidental Chemical Corporation. Color-stabilized aroyl chloride compositions. 4,508,857, Cl. 260-544.00D.
Christe, Karl O.: *See—*
Schack, Carl J.; and Christe, Karl O., 4,508,662, Cl. 260-550.000.
Churchland, Mark T.; and Parker, David, to MacMillan Bloedel Limited. Pressed composite assembly and method. 4,508,772, Cl. 428-106.000.
Ciba Geigy Corporation: *See—*
Bedekovic, Davor; and Fletcher, Ian J., 4,508,897, Cl. 544-127.000.
Brunner, Hans-Georg; Schurter, Rolf; and Szczepanski, Henry, 4,508,560, Cl. 71-94.000.
Erzinger, Paul; and Lapple, Arnulf R., 4,508,536, Cl. 8-639.000.
Guglielmetti, Leonardo, 4,508,784, Cl. 252-301.210.
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,508,731, Cl. 514-472.000.
Schaffner, Karl; and Scartazzini, Riccardo, 4,508,723, Cl. 514-195.000.
Spivack, John D.; and Pastor, Stephen D., 4,508,865, Cl. 524-283.000.
Cigognini, Silvio, to Socimi, S.p.A. High performance disc brake. 4,508,200, Cl. 188-264.00P.
Citizen Watch Co., Ltd.: *See—*
Suzuki, Fuminori, 4,508,000, Cl. 84-1.010.
CKD Corporation: *See—*
Ogasawara, Yoshinari, 4,508,143, Cl. 137-636.100.
Claassen, George R.: *See—*
Bennett, Terry A.; Claassen, George R.; and Zimmerman, William B., 4,508,556, Cl. 65-25.400.
Clantex Limited: *See—*
Houlbrook, Kenneth; and Thornton, Paul A., 4,508,245, Cl. 222-327.000.
Clarion Co., Ltd.: *See—*
Wada, Hideo, 4,508,048, Cl. 116-291.000.
Clark, Keith H., to United States of America, National Aeronautics and Space Administration. Hemispherical latching apparatus. 4,508,296, Cl. 244-158.00R.
Clarke, David E., to Lever Brothers Company. General-purpose cleaning composition comprising nonionic surfactant and alcohol esterified resin copolymer. 4,508,635, Cl. 252-174.230.
Clavier, Philippe A. Solar furnace. 4,508,099, Cl. 126-400.000.
Clegg, John C.; and Davis, Ariel R., to Brigham Young University. High frequency supply system for gas discharge lamps and electronic ballast therefor. 4,508,996, Cl. 315-224.000.
Clifford, Mona. Method for psychomotor training of physical skills. 4,508,510, Cl. 434-247.000.
Clorox Company, The: *See—*
Buelow, Jack; and Darland, Michael A., 4,507,811, Cl. 4-225.000.
Cloutier, Frank L.: *See—*
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CMD Enterprises, Inc.: *See—*
Taylor, Noel R.; and Taylor, Paul A., 4,508,487, Cl. 417-12.000.
Coash, Ronald J.: *See—*
Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., 4,508,269, Cl. 239-177.200.
Cobbledick, David S.; Reichenbach, Donald F.; and Shanoski, Henry, to General Tire & Rubber Company, The. In-mold coating. 4,508,785, Cl. 428-424.400.
Coca Cola Company, The: *See—*
Kruger, Albert J., Jr.; and Johnson, John K., 4,508,744, Cl. 426-590.000.
Cogswell, Frederic N.: *See—*
Bailey, Derrick S.; Cogswell, Frederic N.; and Griffin, Brian P., 4,508,891, Cl. 528-191.000.

Cohen, Abraham B.: *See—*
Heiart, Robert B.; and Cohen, Abraham B., 4,508,802, Cl. 430-22.000.
Cohen, Beri: *See—*
Carpino, Louis A.; and Cohen, Beri, 4,508,657, Cl. 260-463.000.
Cohen, Martin G.: *See—*
Daly, Richard T.; and Cohen, Martin G., 4,509,175, Cl. 372-101.000.
Coingt, Michel, to Produits Chimiques Ugine Kuhlmann. Cyclic process for the production of hydrogen peroxide. 4,508,696, Cl. 423-588.000.
Coleman, James H., to Upjohn Company, The. Treatment of panic disorders with alprazolam. 4,508,726, Cl. 514-220.000.
Collin, Claude: *See—*
Carpe, Michel; Collin, Claude; and Pontif, Marc, 4,509,206, Cl. 455-245.000.
Collins and Aikman Corporation: *See—*
Peoples, Clarence, Jr.; Puydak, Robert C.; and Jansen, Deborah S., 4,508,771, Cl. 428-95.000.
Collmann, Wilhelm. Spacer device for a tire processing machine. 4,508,498, Cl. 425-58.000.
Colt Industries Operating Corp: *See—*
Wakeman, Russell J., 4,508,091, Cl. 123-586.000.
Columbia Research Laboratories: *See—*
Stratton, Leo M.; Sipple, Kenneth J.; and Tatonetti, Mario B., 4,507,965, Cl. 73-517.00B.
Combustion Engineering, Inc.: *See—*
Palmer, David N., 4,508,608, Cl. 204-192.00C.
Comdial Technology Corporation: *See—*
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,508,939, Cl. 179-90.00B.
Comdial Telephone Systems, Inc.: *See—*
Bench, Ronald W.; and Hineline, Edson S., Jr., 4,508,938, Cl. 179-90.0BD.
Commissariat a l'Energie Atomique: *See—*
Bruel, Michel; Escaron, Jean; and Labartino, Joseph, 4,508,056, Cl. 118-730.000.
Costes, Didier, 4,508,678, Cl. 376-205.000.
Community Light & Sound Inc.: *See—*
Wiggins, John T., 4,508,941, Cl. 179-115.5PC.
Compagnie Generale de Geophysique: *See—*
Manin, Michel, 4,508,191, Cl. 181-107.000.
Compagnie Generale d'Electricite: *See—*
Lacour, Bernard; Maillet, Marc; Vannier, Chantal; and de Witte, Olivier, 4,509,174, Cl. 372-82.000.
Compagnie Generale des Etablissements Michelin: *See—*
Jamon, Jacques, 4,508,196, Cl. 188-1.110.
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Ruoss, Erwin; and Sieber, Kurt, 4,508,551, Cl. 55-263.000.
Conklin, Russell W.: *See—*
Amoroso, Salvatore, Jr.; and Conklin, Russell W., 4,509,050, Cl. 343-5.0SM.
Conn, Andrew F.; Lindenmuth, William T.; and Frederick, Gary S., to Tracor Hydronautics, Inc. Fluid jet apparatus and method for cleaning tubular components. 4,508,577, Cl. 134-1.000.
Conrad, Lucas J., to R. J. Reynolds Tobacco Company. End seal for rotary treating drum. 4,507,876, Cl. 34-242.000.
Consigny, Claude. Finger-guard. 4,507,804, Cl. 2-21.000.
Constructions Mecaniques de Normandie: *See—*
Bordat, Andre J. E., 4,508,047, Cl. 114-355.000.
Conti, Allen C. Tape and method for measuring and/or pulling cable. 4,508,317, Cl. 254-134.3FT.
Contrinex S.A.: *See—*
Heimlicher, Peter, 4,509,023, Cl. 331-176.000.
Control Data Corporation: *See—*
Gagne, Donald J., 4,508,418, Cl. 339-253.00R.
Cook, Dudley D., Jr.: *See—*
Graham, Marshall D.; Cook, Dudley D., Jr.; Gecks, Donald L.; and Shaw, Robert, 4,508,435, Cl. 350-529.000.
Cookerly, Jack C.: *See—*
Hall, George R.; Hall, Robert J.; and Cookerly, Jack C., 4,508,002, Cl. 84-1.030.
Coombs, Christopher E., to Cairns & Brother, Inc. Protective garment. 4,507,806, Cl. 2-85.000.
Cooperman, Michael: *See—*
Kapral, Christopher W.; and Cooperman, Michael, 4,508,982, Cl. 307-572.000.
CooperVision, Inc.: *See—*
Wittmann, Joseph W.; and Evans, John M., 4,508,884, Cl. 526-279.000.
Coplan, Myron J.: *See—*
Bikson, Benjamin; Coplan, Myron J.; and Gotz, Gertrud, 4,508,852, Cl. 521-27.000.
Coppola, Richard G.; and Stephens, George H., to Sangamo Weston, Inc. Solid-state electrical-power demand register and method. 4,509,128, Cl. 364-483.000.
Corbett, Colin D.; Milloch, Robert L.; and Sarno, Felicisimo S., to Star-Kist Foods, Inc. Coated pet food and process for preparation thereof. 4,508,741, Cl. 426-303.000.
Corder, Thomas E.: *See—*
Pfeiffer, James W.; and Corder, Thomas E., 4,508,943, Cl. 200-17.00R.
Coret & Company, Ltd.: *See—*
Kojima, Satoru, 4,508,328, Cl. 269-236.000.
Corless, Robert: *See—*
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,508,939, Cl. 179-90.00B.
Cormier, William E., Jr.; Pasquale, Gary M.; and Stover, William A., to Mobil Oil Corporation. Method of preparing a high-density cracking catalyst with reduced sulfur emissions from coke. 4,508,840, Cl. 502-70.000.
Corning Glass Works: *See—*
Baker, Richard, 4,509,212, Cl. 455-612.000.
Rajnik, Lawrence S., 4,508,031, Cl. 101-41.000.
Cosmos, Pete: *See—*
Casciotti, Albert; McCleerey, Earl W.; and Cosmos, Pete, 4,508,401, Cl. 339-14.00R.
Costa, Peter F.; and Whiteside, George D., to Polaroid Corporation. Bellows shielding structure. 4,508,440, Cl. 354-187.000.
Costes, Didier, to Commissariat a l'Energie Atomique. Liquid metal-cooled nuclear reactor. 4,508,678, Cl. 376-205.000.
Coulter Electronics, Inc.: *See—*
Cabrera, Pedro P., 4,507,977, Cl. 73-864.120.
Graham, Marshall D.; Cook, Dudley D., Jr.; Gecks, Donald L.; and Shaw, Robert, 4,508,435, Cl. 350-529.000.
Coulter, James C.; and Shannon, Michael P., to Shannon, Michael P. Wind surfing hydrofoil apparatus. 4,508,046, Cl. 114-39.000.
Couslon, William F.: *See—*
Baker, Terence S.; and Couslon, William F., 4,508,830, Cl. 436-510.000.
Coviello, John S.: *See—*
Agnew, Palmer W.; Coviello, John S.; Green, Linda S.; and Kellerman, Anne S., 4,509,122, Cl. 364-200.000.
Cowell, Peter A.; and Herbert, Paul F. Tractor linkage with pitch altitude control connected to sensor ram. 4,508,178, Cl. 172-239.000.
Coy, David H.; and Murphy, William A., to American Cyanamid Company. Cyclic pentapeptide displaying somatostatin antagonism and method of treatment of mammals therewith. 4,508,711, Cl. 514-11.000.
CPC International Inc.: *See—*
Hamm, Donald J., 4,508,746, Cl. 426-601.000.
Mudde, John P., 4,508,576, Cl. 106-213.000.
CPG Products Corp.: *See—*
Cummings, Charles A., 4,508,509, Cl. 434-88.000.
Craig, Edwin R.; and Blumberg, Ben, Jr., to General Electric Company. Modular nuclear reactor for a land-based power plant and method for the fabrication, installation and operation thereof. 4,508,677, Cl. 376-174.000.
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, to Givaudan Corporation. 3-Phenyl-propionaldehydes. 4,508,925, Cl. 568-442.000.
Crammond, James: *See—*
Oehlke, Donald N.; MacRae, Ralph A.; Crammond, James; and Rattmann, Hans R., 4,508,477, Cl. 411-174.000.
Crawford, Lester M.: *See—*
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Creager & Company: *See—*
Creager, Robert L., Sr., 4,509,139, Cl. 364-900.000.
Creager, Robert L., Sr., to Creager & Company. Binary data storage and retrieval system for serial interface communications and archival access. 4,509,139, Cl. 364-900.000.
Crevling, Robert L., Jr.: *See—*
Berfield, Robert C.; Crevling, Robert L., Jr.; and Lawson, Lonnie B., Jr., 4,508,550, Cl. 55-216.000.
Criss, Russell C.: *See—*
Gillery, F. Howard; and Criss, Russell C., 4,508,789, Cl. 428-630.000.
Croo, Robert J., to British Petroleum Company p.l.c., The. Process and apparatus for continuous measurement of the pour point of oil. 4,508,460, Cl. 374-16.000.
Crostack, Horst-Artur. Method and means for imaging sound waves. 4,507,966, Cl. 73-603.000.
Cummings, Charles A., to CPG Products Corp. Device for making preselected composite designs. 4,508,509, Cl. 434-88.000.
Curt G. Joa, Inc.: *See—*
Hirsch, John L.; and VanVoorst, Gene A., 4,508,528, Cl. 493-426.000.
Curulla, Michael V.: *See—*
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Czarnetzky, Edward J.: *See—*
Forest, Joseph G.; and Czarnetzky, Edward J., 4,508,737, Cl. 426-54.000.
Czernicki, Thomas R.: *See—*
Litt, Frederic A.; and Czernicki, Thomas R., 4,508,630, Cl. 252-32.500.
Dabi, Shmuel, to Personal Products Company. Quaternized cellular polymers from amine terminated poly(aminoethers) and polyfunctional epoxides. 4,508,854, Cl. 521-178.000.
Daggett, Charles W., to Littelfuse, Inc. Fuse holder. 4,508,412, Cl. 339-126.00R.
Dahan, Israel. Holder for sheet-like objects. 4,507,830, Cl. 24-527.000.
Dahne, Claus: *See—*
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Dai Nippon Tokyo Co., Ltd: *See—*
Hokamura, Sadakazu; Shinohara, Toshio; Aritomi, Mitsutoshi; and Yoshida, Yuji, 4,508,767, Cl. 427-407.100.

Daicel Chemical Industries Ltd.: *See—*
Koyama, Takahiro; Matsumura, Haruo; and Morita, Teturo, 4,508,893, Cl. 536-85.000.
Daicel Chemical Industris Ltd.: *See—*
Omiya, Takeo, 4,508,894, Cl. 536-89.000.
Daigle, Martha A.: *See—*
Calamai, Edward G.; and Daigle, Martha A., 4,508,643, Cl. 260-112.00B.
Dailey Petroleum Services Corp.: *See—*
Anders, Edward O., 4,508,182, Cl. 175-61.000.
Daimler-Benz Aktiengesellschaft: *See—*
Dobler, Helmut; Zeller, Rolf; and Seitz, Helmut, 4,508,069, Cl. 123-192.00B.
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Dainichi-Nippon Cables, Ltd.: *See—*
Kusui, Akio; Morita, Shuji; Kudoh, Toshio; Tanaka, Yasuo; and Itoh, Hirotaka, 4,508,414, Cl. 339-143.00R.
Suzuki, Koichi; Oose, Seiroku; So, Yuzo; and Hirao, Yasutaka, 4,509,104, Cl. 362-32.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Yamada, Mitsuhiko, 4,509,046, Cl. 340-815.100.
Daly, Richard T.; and Cohen, Martin G., to Quantronix Corporation. Segmented YAG laser rods and method of manufacture. 4,509,175, Cl. 372-101.000.
Damon, Neil F.; and Rydwansky, Frank C., Jr., to Augat Inc. Electronic socket having spring probe contacts. 4,508,405, Cl. 339-75.0MP.
Dana Corporation: *See—*
Hinkle, Donald H., 4,507,837, Cl. 29-262.000.
D'Andrade, Bruce M.; and Sing Chuen, Johnny Y., to Arco Industries Ltd. Steering system and reversible drive for toy vehicles. 4,508,516, Cl. 446-443.000.
Danfoss A/S: *See—*
Pedersen, Svend P.; Molbaek, Jens J.; and Hansen, Allan H., 4,508,262, Cl. 236-42.000.
Pedersen, Svend P.; Wrang, Soren N.; and Molbaek, Jens J., 4,508,263, Cl. 236-42.000.
Danko, Peter, to Bed Store, The. Platform bed and corner connector. 4,507,815, Cl. 5-400.000.
Darland, Michael A.: *See—*
Buelow, Jack; and Darland, Michael A., 4,507,811, Cl. 4-225.000.
Darton, Richard C.: *See—*
Voetter, Heinz; Darton, Richard C.; Van Meurs, Hubrecht C. A.; and Krishna, Rajamani, 4,508,041, Cl. 110-347.000.
DasGupta, Sujan; and Purvis, Merton B., to AT&T Bell Laboratories. Electrical printed wiring circuit board construction. 4,509,098, Cl. 361-398.000.
DasGupta, Sumit; Graf, Matthew C.; Rasmussen, Robert A.; and Williams, Thomas W., to International Business Machines Corporation. Method of concurrently testing each of a plurality of interconnected integrated circuit chips. 4,509,008, Cl. 324-73.00R.
Dassler, Armin, to PUMA-Sportschuhfabriken Rudolk Dassler KG. Athletic shoe sole, particularly a soccer shoe, with a springy-elastic sole. 4,507,879, Cl. 36-102.000.
Datta, Amitava: *See—*
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Daudelin, Douglas S., to Bell Telephone Laboratories, Inc. Variable cycle-time microcomputer. 4,509,120, Cl. 364-200.000.
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Otto, William C.; and Daugherty, Norman E., 4,509,027, Cl. 335-201.000.
Davis, Aaron J., to Mobil Oil Corporation. Linear prediction coding for compressing of seismic data. 4,509,150, Cl. 367-76.000.
Davis, Ariel R.: *See—*
Clegg, John C.; and Davis, Ariel R., 4,508,996, Cl. 315-224.000.
Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., to Reinke Manufacturing Co., Inc. Corner watering system for center pivot irrigation machines. 4,508,269, Cl. 239-177.200.
Davis, Robert E.; Maio, Patrick S.; and Growney, Lawrence J., to Federal Paper Board Company, Incorporated. Sealed carton with tamper indicating features. 4,508,226, Cl. 206-620.000.
De Dietrich (USA), Inc.: *See—*
Lerman, Michael J.; Koehl, Richard; Chiarella, Anthony A.; and Zamory, William, 4,508,455, Cl. 366-247.000.
De Staat Der Nederlanden, Vertegenwoozdigd doozde Minister van volksgezondheid en Milieuhygiene: *See—*
Van Wezel, Antonius L., 4,508,708, Cl. 424-89.000.
Deans, Harry A.: *See—*
Mut, Alan D.; and Deans, Harry A., 4,508,169, Cl. 166-250.000.
Dearing, Harry L.: *See—*
Walker, Thad O.; Simpson, Jay P.; and Dearing, Harry L., 4,508,628, Cl. 252-8.50P.
DeBarbieri, Augusto; and Bekesi, Julius G., to Proter S.p.A. In vitro and in vivo treatment of cancer cells and treatment of viruses with a tripeptide compound. 4,508,710, Cl. 514-19.000.
DeCristofaro, Nicholas J.: *See—*
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,508,257, Cl. 228-263.130.
Deere & Company: *See—*
Deutsch, Timothy A.; and Hadley, Howard C., 4,508,243, Cl. 222-142.000.
Drenner, David D., 4,508,071, Cl. 123-198.00A.
Kabele, Dennis F.; and Hauser, Herbert J., Jr., 4,508,019, Cl. 92-158.000.
Wiegardt, Gordon K.; Hanks, Thomas W.; and Murphy, Kenneth E., 4,508,176, Cl. 172-7.000.
Defaucheux, J.: *See—*
Guedj, F.; Defaucheux, J.; and Wiart, A., 4,508,984, Cl. 310-14.000.
DeFrees, Charles W. S., Barbara B. DeFrees, executors: *See—*
DeFrees, Joseph H., deceased, 4,508,131, Cl. 137-43.000.
DeFrees, Joseph H., deceased (by DeFrees, Charles W. S., Barbara B. DeFrees, executors), to Allegheny Valve Company. Safety valving for cargo tanks used for bulk transportation of hazardous commodities. 4,508,131, Cl. 137-43.000.
Degussa Aktiengesellschaft: *See—*
Strempel, Hans-Jurgen; Diehl, Manfred; and Bergmann, Roland, 4,508,633, Cl. 252-135.000.
Dekker, Jan G.: *See—*
van Dijk, Jacob; Renken, Johannes W.; Dekker, Jan G.; and Helmond, Johannes, 4,508,652, Cl. 260-407.000.
Delaney, Dennis D.: *See—*
Fenton, Donald M.; Delaney, Dennis D.; and Bingham, F. Emmett, 4,508,537, Cl. 23-293.00S.
Delmatic Limited: *See—*
Woodnutt, John P., 4,508,997, Cl. 315-360.000.
Delnick, Frank M.; Guidotti, Ronald A.; and McCarthy, David K., to United States of America, Energy. Chromium (V) compounds as cathode material in electrochemical power sources. 4,508,796, Cl. 429-112.000.
DeLoach, Walter W. Closed loop water treating system and method. 4,508,545, Cl. 55-53.000.
Delta Recherche et Developpement: *See—*
Dozier, Jose J., 4,507,929, Cl. 62-79.000.
De Marchi, Franco: *See—*
Tricerri, Silvia Z.; Casagrande, Cesare; De Marchi, Franco; and Nicola, Massimo, 4,508,719, Cl. 514-236.000.
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Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Nishiwaki, Kenichiro; Sakai, Tomio; and Ohkubo, Takashi, 4,508,885, Cl. 526-318.000.
Dennis, Victor S. Lockable telescopic joint. 4,508,466, Cl. 403-104.000.
Denz, Helmut: *See—*
Becker, Wolfram; and Denz, Helmut, 4,508,082, Cl. 123-478.000.
DePalma, Bernard F.: *See—*
Kavanagh, Frank J.; Plunkett, James D.; and DePalma, Bernard F., 4,507,801, Cl. 2-2.000.
Derouet, Patrick R. J.: *See—*
Cattaneo, Christian J.; Derouet, Patrick R. J.; and Laroche, Michel C. F., 4,508,295, Cl. 244-134.00A.
DeSoto, Inc.: *See—*
Noren, Gerry K.; Poklacki, Erwin S.; Hawker, Fred D.; and Sich, Janice M., 4,508,889, Cl. 528-28.000.
Deutsch, Timothy A.; and Hadley, Howard C., to Deere & Company. Seed meter assembly. 4,508,243, Cl. 222-142.000.
Deutsche Gesellschaft fur Wiederaufarbeitung: *See—*
Janberg, Klaus; and Dyck, Hans-Peter, 4,508,969, Cl. 250-506.100.
Deville, Jean-Pierre, to Seb S.A. Method for enameling the bottom face of a culinary vessel of aluminum or aluminum alloy and a culinary vessel obtained in accordance with said method. 4,508,100, Cl. 126-390.000.
de Witte, Olivier: *See—*
Lacour, Bernard; Maillet, Marc; Vannier, Chantal; and de Witte, Olivier, 4,509,174, Cl. 372-82.000.
Dezern, Morris L. Saw retaining arrangement. 4,507,999, Cl. 83-665.000.
Diaz, Zaida, to Shell Oil Co. Solution removal of HCN from gaseous streams, with pH adjustment of reacted solution and hydrolysis of thiocyanate formed. 4,508,693, Cl. 423-236.000.
Didier-Werke AG: *See—*
Eschmann, Friedrich; Gelsdorf, Gunter; Nold, Peter; Staats, Gotthard; and Subat, Gerhard, 4,508,504, Cl. 432-217.000.
Luhrsen, Ernst; Pohl, Siegfried; and Plath, Jurgen, 4,508,324, Cl. 266-236.000.
Diegelmann, Winfried: *See—*
Bodden, Werner; and Diegelmann, Winfried, 4,508,681, Cl. 419-29.000.
Diehl GmbH & Co.: *See—*
Klober, Martin, 4,508,580, Cl. 149-19.910.
Diehl, Manfred: *See—*
Strempel, Hans-Jurgen; Diehl, Manfred; and Bergmann, Roland, 4,508,633, Cl. 252-135.000.
Diesel Kiki Co., Ltd.: *See—*
Madarame, Michimasa; and Ueda, Kaichi, 4,507,935, Cl. 62-227.000.
Nakamura, Hisashi, 4,508,080, Cl. 123-449.000.
Suzuki, Nobuhiko; Sutoh, Shinji; and Sasaki, Masaya, 4,507,932, Cl. 62-180.000.
Digital Equipment Corporation: *See—*
Lackey, Stanley A.; Meinerth, Kim A.; and Stoner, David A., 4,509,116, Cl. 364-200.000.
Manton, John C.; Okin, Kenneth; and Zacconi, Anthony N., 4,509,115, Cl. 364-200.000.
Dijkmans, Eise C.: *See—*
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DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., to Robotic Vision Systems, Inc. Arrangement for sensing the characteristics of a surface and determining the position of points thereon. 4,508,452, Cl. 356-375.000.

Dinger, Rudolf, to Asulab S.A. Pressure sensitive element and a sensor comprising such an element. 4,507,970, Cl. 73-702.000.

Display Components, Inc.: *See—*
Sawyer, Carleton E.; and Masterman, Hugh C., 4,508,989, Cl. 310-184.000.

Disston, Horace C.: *See—*
Eichfeld, Timothy J.; and Disston, Horace C., 4,508,274, Cl. 239-455.000.

Ditcher, John, to A-Lok Products Corporation. Gasket suitable for use in sealing exterior of sewer pipe to opening in manhole, and method and system employing same. 4,508,355, Cl. 277-189.000.

Ditton, Elaine A.: *See—*
Meyer, Steven M.; Kuna, Wayne A.; Morrison, Robert S.; Morrison, Howard J.; Ditton, Richard A.; and Ditton, Elaine A., 4,508,353, Cl. 273-313.000.

Ditton, Richard A.: *See—*
Meyer, Steven M.; Kuna, Wayne A.; Morrison, Robert S.; Morrison, Howard J.; Ditton, Richard A.; and Ditton, Elaine A., 4,508,353, Cl. 273-313.000.

Diversified Products Corporation: *See—*
Kelley, Robert C.; and Silberman, Ira J., 4,508,335, Cl. 272-145.000.

Dixon, Robert H.: *See—*
Elton, Raymond C.; Dixon, Robert H.; and Ford, James L., 4,508,055, Cl. 118-724.000.

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Dixon, Samuel, Jr.: *See—*
Jacobs, Harold; Dixon, Samuel, Jr.; and Malecki, Edmund E., 4,509,009, Cl. 324-95.000.

Djordjevic, Borislav B.; and Traugott, Stephen C., to Martin Marietta Corporation. Ultrasonic liquid jet probe. 4,507,969, Cl. 73-644.000.

Dobler, Helmut; Zeller, Rolf; and Seitz, Helmut, to Daimler-Benz Aktiengesellschaft. Internal combustion engine balance shaft bearing arrangement at the crankcase. 4,508,069, Cl. 123-192.00B.

Doboy Packaging Machinery, Inc.: *See—*
Meyer, James A., 4,507,906, Cl. 53-371.000.

Doc-K Protective Equipment, Inc.: *See—*
Kavanagh, Frank J.; Plunkett, James D.; and DePalma, Bernard F., 4,507,801, Cl. 2-2.000.

Dr. Ing. h.c.F. Porsche A.G.: *See—*
Hofbauer, August; and Beer, Michael, 4,508,073, Cl. 123-307.000.

Doery, Michael S., to Xerox Corporation. Alternative feeding document recirculation. 4,508,447, Cl. 355-14.0SH.

Doi, Motomichi; Okano, Kinpei; Nii, Katsutoshi; and Yokota, Yoshiharu, to Hitachi, Ltd. Method of producing bearing component. 4,508,396, Cl. 384-463.000.

Dolhyj, Serge R.; and Enyedy, Roseann M., to Standard Oil Company, The. Catalysts and process of making. 4,508,848, Cl. 502-239.000.

Doll, Brian E.; and Smyth, Patrick G. Control of cyanides in FCC reactor by injection of ammonium polysulfide. 4,508,683, Cl. 422-7.000.

Don Marketing Ltd.: *See—*
Donovan, John, 4,508,513, Cl. 434-346.000.

Donner, Bernd; and Siefert, Roland, to Kienzle Apparate GmbH. Tachograph cover door assembly. 4,507,963, Cl. 73-431.000.

Donovan, John, to Don Marketing Ltd. Game card device. 4,508,513, Cl. 434-346.000.

Dorler, Jack A.; Mosley, Joseph M.; and Weitzel, Stephen D., to International Business Machines Corporation. Driver circuitry for reducing on-chip Delta-I noise. 4,508,981, Cl. 307-542.000.

Dorrian, Philip J.: *See—*
Livorsi, Carl F.; Wucik, Joseph A., Jr.; Dorrian, Philip J.; and Struzik, Lawrence F., 4,508,315, Cl. 251-173.000.

Douillard, Alain: *See—*
Camps, Marcel; Douillard, Alain; Dubois, Jean-Claude; Gazard, Maryse; Montheard, Jean-Pierre; Pascal, Thierry; and Seytre, Gerard, 4,508,639, Cl. 252-500.000.

Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel N.V.: *See—*
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,508,553, Cl. 62-541.000.

Dow Chemical Company, The: *See—*
Keskey, William H.; Schuetz, James E.; and Lee, Do I., 4,508,869, Cl. 524-808.000.
Keskkula, Henno; McCreedy, Kathleen M.; and Maass, Donald A., 4,508,871, Cl. 525-78.000.
Leathers, Joel F. M.; and Calvin, Donald W., 4,508,538, Cl. 23-313.00R.
Simon, Jaime; Wilson, David A.; and Volkert, Wynn A., 4,508,704, Cl. 424-14.000.

Dow Corning Corporation: *See—*
Kohl, Charles F., 4,508,887, Cl. 528-21.000.

Dowdle, Dean M., to Minnesota Mining and Manufacturing Company. Shielded, closely spaced transmit-receiver antennas for electronic article surveillance system. 4,509,039, Cl. 340-572.000.

Dowling, Edward C.; and Fortuna, Jon A., to AMP Incorporated. Polarized ribbon cable connector having circuit components therein. 4,508,399, Cl. 339-17.0CF.

Downey, Claudine K.: *See—*
Downey, Robert E.; and Downey, Claudine K., 4,508,044, Cl. 112-262.200.

Downey, Robert E.; and Downey, Claudine K. Rebuilt pillow and method of manufacturing the same. 4,508,044, Cl. 112-262.200.

Doyle, Gerald; Pruett, Roy L.; and Savage, David W., to Exxon Research & Engineering Co. Separation and recovery of carbon monoxide by copper (I) complexes. 4,508,694, Cl. 423-246.000.

Dozier, Jose J., to Delta Recherche et Developpement. Method and installation for monitoring the temperature in a greenhouse. 4,507,929, Cl. 62-79.000.

Dragerwerk AG: *See—*
Warncke, Ernst, 4,508,115, Cl. 128-201.230.

Drake, Robert C. Golf putter. 4,508,342, Cl. 273-80.00C.

Drenner, David D., to Deere & Company. Canister retainer assembly. 4,508,071, Cl. 123-198.00A.

Dresser Industries, Inc.: *See—*
Montgomery, Marshall N.; and Michaels, John M., 4,507,957, Cl. 73-151.000.
Read, Norman W., 4,508,173, Cl. 166-330.000.

Drews, Robert C.; Meyer, Danny D.; Shalon, Tadmor; and Pasternak, Eliezer, to Ninetronix, Inc. Ophthalmic aspirator/irrigator and cystotome. 4,508,532, Cl. 604-22.000.

Dromard, Adrien; and Millet, Claude, to Rhone-Poulenc Specialites Chimiques. Catalytic preparation of high molecular weight polysiloxanes. 4,508,845, Cl. 502-159.000.

Drometer, Klaus, to Daimler-Benz Aktiengesellschaft. Brake-force control for at least one axle of a vehicle equipped with an anti-locking system. 4,508,393, Cl. 303-111.000.

Drumco: *See—*
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., 4,508,183, Cl. 175-69.000.

Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., to Drumco. Method and apparatus for lubricating a drill bit. 4,508,183, Cl. 175-69.000.

Dubois, Jean; Lacroix, Alain; Forestier, Lucienne; and Steiner, Jean-Pierre, to Lesieur-Cotelle. Dispenser for a toilet. 4,507,812, Cl. 4-228.000.

Dubois, Jean-Claude: *See—*
Camps, Marcel; Douillard, Alain; Dubois, Jean-Claude; Gazard, Maryse; Montheard, Jean-Pierre; Pascal, Thierry; and Seytre, Gerard, 4,508,639, Cl. 252-500.000.

Duchon, Paul A. J.: *See—*
Mouilhayrat, Guy G.; Duchon, Paul A. J.; Guilbert, Jean M. A. M.; and Rolfo, Andre A., 4,508,297, Cl. 244-173.000.

Duclos, Clovis R. Golf club head. 4,508,350, Cl. 273-183.00D.

Ductmate Industries, Inc.: *See—*
Arnoldt, Peter J., 4,508,376, Cl. 285-363.000.

Duffers Scientific, Inc.: *See—*
Ferguson, Hugo S., 4,509,000, Cl. 318-591.000.

Dufour, Daniel L.; and Jones, William J., to Monsanto Company. Polyblends of thermoplastic copolyetheresters and acrylonitrile-butadiene-styrene polymers. 4,508,870, Cl. 525-64.000.

Duke, George B. Garden and lawn tractor. 4,508,188, Cl. 180-210.000.

Dumortier, Robert. Manhole with articulated cover members. 4,508,469, Cl. 404-25.000.

Duncan, David T.; Lipscomb, David M.; McElligott, John; and Williams, Charles W., to Products for Health and Industry. Carbon dioxide rebreathing apparatus. 4,508,116, Cl. 128-203.280.

Duncan, George A., to University of Kentucky Research Foundation. Method and apparatus for harvesting tobacco. 4,508,482, Cl. 414-26.000.

Dungs, Horst: *See—*
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Bruns, Engelbert; and Osterholt, Gerd, 4,508,596, Cl. 202-227.000.

Dunham-Bush, Inc.: *See—*
Schaefer, Donald D., 4,508,491, Cl. 417-310.000.

Du Pont de Nemours, E. I., and Company: *See—*
Burrus, Harry O., 4,508,697, Cl. 423-499.000.
Heiart, Robert B.; and Cohen, Abraham B., 4,508,802, Cl. 430-22.000.
Sieja, James B., 4,508,660, Cl. 260-465.400.
Webster, Owen W., 4,508,880, Cl. 526-190.000.
Zeldes, Michael D., 4,508,764, Cl. 427-296.000.

Duracell Inc.: *See—*
Gopikanth, Mysore L.; Kuo, Han C.; and Bowden, William L., 4,508,798, Cl. 429-196.000.
Gopikanth, Mysore L.; and Kuo, Han C., 4,508,799, Cl. 429-196.000.
Gopikanth, Mysore L.; Kuo, Han C.; and Schlaikjer, Carl R., 4,508,800, Cl. 429-196.000.

Dutcher, Daniel P., to Champion International Corporation. 3-D Glasses and method for producing same. 4,508,526, Cl. 493-346.000.

Duvdevani, Ilan: *See—*
Kowalik, Ralph M.; Duvdevani, Ilan; Peiffer, Dennis G.; and Lundberg, Robert D., 4,508,128, Cl. 137-13.000.

Duwel, Edward C.: *See—*
Soderberg, John H.; and Duwel, Edward C., 4,509,141, Cl. 364-900.000.

Dvortsak, Peter: *See—*
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DX Antenna Company, Limited: *See—*
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Dyck, Hans-Peter: *See—*
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Dynamit Nobel AG: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
Jensen, Ernst; Knappworst, Jurgen; and Stahlmann, Rudolf, 4,508,036, Cl. 102-444.000.

Dynasplint Systems, Inc.: *See—*
Hepburn, George R., 4,508,111, Cl. 128-87.00R.

E.C.H. Will (GmbH & Co.): *See—*
Ramcke, Bernd; and Stahl, Gunther, 4,508,210, Cl. 198-627.000.
E. L. Mustee & Sons, Inc.: *See—*
Mustee, Robert J., 4,508,304, Cl. 248-311.200.
E.M.B. Corporation: *See—*
Otto, William C.; and Daugherty, Norman E., 4,509,027, Cl. 335-201.000.
E-Systems, Inc.: *See—*
Andren, Carl F.; Mosley, William H., Jr.; and Sanders, David E., 4,509,017, Cl. 329-105.000.
E-Z Buck, Inc.: *See—*
Freewalt, Wayne L.; and Ziegler, Joseph L., 4,508,194, Cl. 182-153.000.
Eaton Corporation: *See—*
Bernett, Thomas B., 4,508,144, Cl. 138-45.000.
Goscenski, Edward J., Jr., 4,507,984, Cl. 74-650.000.
Hemme, Wilbur F., 4,508,314, Cl. 251-11.000.
Kelly, William W.; and Bradshaw, Cyril E., 4,508,134, Cl. 137-103.000.
Oehlke, Donald N.; MacRae, Ralph A.; Crammond, James; and Rattmann, Hans R., 4,508,477, Cl. 411-174.000.
Schlesinger, Lawrence; German, Dale F.; and Richards, Donald L., 4,507,956, Cl. 73-146.500.
Eberle, Reinhard: *See—*
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Eburn, William H., Jr.; and Kalenik, Stephen P., to Polaroid Corporation. Zero displacement low-shear valve. 4,508,142, Cl. 137-625.400.
Edilvelox S.R.L.: *See—*
Rossin, Ineo; and Zanella, Francesco, 4,508,308, Cl. 249-19.000.
Edinger, J. Raymond: *See—*
Alexandrovich, George; Edinger, J. Raymond; Hofer, Alan; and Kuykendall, John, 4,509,159, Cl. 369-170.000.
Edison International Inc.: *See—*
Livorsi, Carl F.; Wucik, Joseph A., Jr.; Dorrian, Philip J.; and Struzik, Lawrence F., 4,508,315, Cl. 251-173.000.
Edmiston, James H.: *See—*
Lambert, Johnny H.; Primat, Didier; Edmiston, William H.; Edmiston, Johnny J.; and Edmiston, James H., 4,507,998, Cl. 83-419.000.
Edmiston, Johnny J.: *See—*
Lambert, Johnny H.; Primat, Didier; Edmiston, William H.; Edmiston, Johnny J.; and Edmiston, James H., 4,507,998, Cl. 83-419.000.
Edmiston, William H.: *See—*
Lambert, Johnny H.; Primat, Didier; Edmiston, William H.; Edmiston, Johnny J.; and Edmiston, James H., 4,507,998, Cl. 83-419.000.
EECO Incorporated: *See—*
Robinson, Ronnie D., 4,509,097, Cl. 361-395.000.
Eggers, Fred S. Disc drive assembly. 4,509,160, Cl. 369-269.000.
Ehling, Uwe: *See—*
Hirsch, Werner; and Ehling, Uwe, 4,507,875, Cl. 34-44.000.
Eichfeld, Timothy J.; and Disston, Horace C. Adjustable flow coolant nozzle. 4,508,274, Cl. 239-455.000.
Eiting, John R., to Precision Strip, Inc. Scroll slitting and rewind apparatus. 4,508,282, Cl. 242-56.200.
Eke, Kenneth I., to Microwave Owens Limited. Microwave ovens and methods of cooking foods. 4,508,947, Cl. 219-10.55B.
El Paso Products Company: *See—*
Olah, George A., 4,508,618, Cl. 208-134.000.
Elco Corporation, The: *See—*
Litt, Frederic A.; and Czernicki, Thomas R., 4,508,630, Cl. 252-32.500.
Elepano, Normita P.; Schnur, William H.; and Jorgensen, Jens L., to Minnesota Mining and Manufacturing Company. Aqueous skin cleaner composition comprising propylene carbonate. 4,508,634, Cl. 252-163.000.
Elhaus, Friedrich W. Conveying means for extrusion profiles. 4,507,950, Cl. 72-257.000.
Eli Lilly and Company: *See—*
Lacefield, William B.; and Lindstrom, Terry D., 4,508,735, Cl. 514-616.000.
Miesel, John L., 4,508,722, Cl. 514-353.000.
Mynderse, Jon S.; and O'Connor, Sean C., 4,508,901, Cl. 546-112.000.
Elliott, Alwyn, to Moler Products Limited. Manufacture of highly porous refractory material. 4,508,667, Cl. 264-13.000.
Elmis, Herbert; and Klar, Adrian, to ITT Industries, Inc. Digital circuit for providing a binary signal on the occurrence of a predetermined frequency ratio of two signals. 4,509,072, Cl. 358-17.000.
Elspass, Marold, to Rheinmetall GmbH. Locking arrangement for the elevating mechanism of a gun barrel. 4,508,007, Cl. 89-37.110.
Elting, James J.: *See—*
Lindall, Arnold W.; and Elting, James J., 4,508,828, Cl. 436-500.000.
Elton, Raymond C.; Dixon, Robert H.; and Ford, James L., to United States of America, Navy. Device for cryogenically fabricating source material for plasma X-ray lasers. 4,508,055, Cl. 118-724.000.
Embree, David M.: *See—*
Burger, William A.; Embree, David M.; Singer, Martin H.; and Vogelpohl, David R., 4,508,937, Cl. 179-84.00T.
Emergency Power Engineering, Inc.: *See—*
Henderson, Lawrence E., 4,508,974, Cl. 307-66.000.
Emerson Electric Co.: *See—*
Tuggle, Lloyd H.; and Ferlito, Michael J., 4,508,068, Cl. 123-187.50R.
Emhart Industries, Inc.: *See—*
Fenton, Frank A., 4,508,557, Cl. 65-348.000.
Emi, Toshihiko: *See—*
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.
Energy Adaptive Grinding, Inc.: *See—*
Smith, Roderick L., 4,507,896, Cl. 51-165.920.
English, George J., to GTE Products Corporation. Single-ended metal halide discharge lamp arc gap fabricating process. 4,508,514, Cl. 445-26.000.
Enyedy, Roseann M.: *See—*
Dolhyj, Serge R.; and Enyedy, Roseann M., 4,508,848, Cl. 502-239.000.
Epic Metals Corporation: *See—*
Landis, Donald H., 4,507,900, Cl. 52-221.000.
Epstein, James; and Marincic, Nikola, to Battery Engineering Inc. Electrochemical cell. 4,507,857, Cl. 29-623.200.
Erel, David. Apparatus for use as physical exerciser and means of locomotion. 4,508,358, Cl. 280-234.000.
Erhardt, Paul W.: *See—*
Matier, William L.; Erhardt, Paul W.; and Patil, Ghanshyam, 4,508,725, Cl. 514-362.000.
Ericsson, Inc.: *See—*
Harris, Robert N.; and McGuire, Michael E., 4,508,278, Cl. 242-1.000.
Eriksson, Richard C., to XIS, Incorporated. Vacuum deposition apparatus for manufacturing selenium photoreceptors. 4,508,053, Cl. 118-712.000.
Eriksson, Richard C., to XIS, Incorporated. Manufacturing process for selenium photoreceptors. 4,508,748, Cl. 427-8.000.
Eriksson, Sune; Santen, Sven; and Bjorling, Gotthard, to SKF Steel Engineering Aktiebolag. Method of cleaning a gas flow containing zinc vapor. 4,508,566, Cl. 75-88.000.
Erlam, David P., to Rittal-CSM Limited. Card frames. 4,508,228, Cl. 211-41.000.
Ersoy, Metin, to Maschinenfabrik HILMA GmbH. Swing clamp. 4,508,327, Cl. 269-23.000.
Erzinger, Paul; and Lapple, Arnulf R., to Ciba-Geigy Corporation. Solid dye mixtures for dyeing polyacrylonitrile navy blue to black. 4,508,536, Cl. 8-639.000.
Escaron, Jean: *See—*
Bruel, Michel; Escaron, Jean; and Labartino, Joseph, 4,508,056, Cl. 118-730.000.
Eschem Inc.: *See—*
Maxwell, Gary A., 4,508,773, Cl. 428-198.000.
Eschmann, Friedrich; Gelsdorf, Gunter; Nold, Peter; Staats, Gotthard; and Subat, Gerhard, to Didier-Werke AG. Blast heating apparatus for blast furnaces. 4,508,504, Cl. 432-217.000.
Essinger, Walter F., to Sigmatron Associates. Thin-film EL panel mounting unit. 4,508,990, Cl. 313-50.000.
Etablissements Montabert: *See—*
Montabert, Roger, 4,508,017, Cl. 92-85.00B.
Etherton, Bradley P.; and Hamer, Anthony D., to Exxon Research & Engineering Co. Supported polyolefin catalyst for the polymerization of ethylene under high temperatures. 4,508,843, Cl. 502-115.000.
Ethyl Corporation: *See—*
Perilstein, Warren L., 4,508,540, Cl. 44-53.000.
Evans, John M.: *See—*
Wittmann, Joseph W.; and Evans, John M., 4,508,884, Cl. 526-279.000.
Evans, Rowland M., to Allied Corporation. Stall detector and surge prevention feature for a gas turbine engine. 4,507,915, Cl. 60-39.281.
Everard, Lloyd D., to Valley Industries, Inc. Retractable awning for mobile dwellings. 4,508,126, Cl. 135-89.000.
Ex-Cell-O Corporation: *See—*
Kalokhe, Shivdas A., 4,508,476, Cl. 408-156.000.
Exevea, Amador G. Toy camera that produces simulated photo, 4,508,518, Cl. 446-475.000.
Exxon Production Research Co.: *See—*
Mut, Alan D.; and Deans, Harry A., 4,508,169, Cl. 166-250.000.
Exxon Research & Engineering Co.: *See—*
Agapiou, Agapios K., 4,508,844, Cl. 502-132.000.
Chianelli, Russell R.; and Pecoraro, Theresa A., 4,508,847, Cl. 502-200.000.
Doyle, Gerald; Pruett, Roy L.; and Savage, David W., 4,508,694, Cl. 423-246.000.
Etherton, Bradley P.; and Hamer, Anthony D., 4,508,843, Cl. 502-115.000.
Fuller, Everett J.; and Lundberg, Robert D., 4,508,626, Cl. 210-708.000.
Howkins, Stuart D., 4,509,059, Cl. 346-1.100.
Kowalik, Ralph M.; Duvdevani, Ilan; Peiffer, Dennis G.; and Lundberg, Robert D., 4,508,128, Cl. 137-13.000.
Kowalski, Ronald C., 4,508,592, Cl. 159-2.100.
Moss, Gerald, 4,508,544, Cl. 48-197.00R.
Moustakas, Theodore D.; and Maruska, H. Paul, 4,508,609, Cl. 204-192.00S.
Muhle, Mike E.; Stolz, Richard J.; and Wright, Cecil W., 4,508,859, Cl. 523-346.000.
Peoples, Clarence, Jr.; Puydak, Robert C.; and Jansen, Deborah S., 4,508,771, Cl. 428-95.000.
Savage, David W.; and Sartori, Guido, 4,508,692, Cl. 423-228.000.

Ezis, Andre, to Ford Motor Company. Method of making an anisotropic silicon nitride comprising object by use of higher density and fully reacted preforms. 4,508,671, Cl. 264-58.000.
Ezra C. Lundahl, Inc.: *See—*
Thornley, W. Ray; Wiser, James G.; and Lundahl, E. Cordell, 4,507,910, Cl. 56-10.200.
Fabel, Ludwig: *See—*
Bachmann, Erich; Fabel, Ludwig; Fischer, Roland; Peter, Werner; Scheiter, Bernd; and Wenzel, Werner, 4,508,494, Cl. 418-13.000.
Fabricius, Karen A.; and Kemlage, Bernard M., to International Business Machines Corporation. Method of manufacturing a minimum bird's beak recessed oxide isolation structure. 4,508,757, Cl. 427-93.000.
Facet Enterprises, Incorporated: *See—*
Packard, Gary R.; and Mower, Michael L., 4,508,203, Cl. 192-84.00C.
Facoetti, Hugues: *See—*
Broussoux, Dominique; Facoetti, Hugues; and Micheron, Francois, 4,508,668, Cl. 264-22.000.
FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien: *See—*
Hofmann, Heinrich; and Treutlein, Dieter, 4,508,397, Cl. 384-510.000.
Faigl, Ferenc: *See—*
Fogassy, Elemer; Toke, Laszlo ; Faigl, Ferenc; Soos, Rudolf; Bozzay, Jozsef; Kolta, Rezso; Nemes, Jozsef; and Bencsik, Peter, 4,508,919, Cl. 562-401.000.
Fainzilberg, Zeilik: *See—*
Peters, Albin; and Fainzilberg, Zeilik, 4,508,343, Cl. 273-119.00A.
Fairbairn, Leroy W.; and Waldron, Clifford R., to Allied Corporation. Apparatus for making an electrical contact. 4,507,858, Cl. 29-747.000.
Fairchild Camera & Instrument Corporation: *See—*
Smith, Peter R., 4,507,848, Cl. 29-576.00B.
Farge, Daniel: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,508,717, Cl. 514-203.000.
Farmitalia Carlo Erba: *See—*
Alpegiani, Marco; Battistini, Carlo; Bedeschi, Angelo; Franceschi, Giovanni; Foglio, Maurizio; and Zarini, Franco, 4,508,649, Cl. 260-245.20R.
Farver, Terry F.: *See—*
Kim, Chong Y.; Farver, Terry F.; and Brewer, Jack W., 4,508,825, Cl. 435-201.000.
Fassett, Matthew, to Raytheon Company. Blockage-free space fed antenna. 4,509,055, Cl. 343-754.000.
Fattic, Gerald T.; and Vukovich, William J., to General Motors Corporation. Continuously variable transmission ratio control system. 4,509,125, Cl. 364-424.100.
Faust-Fertigungstechnik GmbH & Co. KG: *See—*
Bast, Wilhelm, 4,508,051, Cl. 118-410.000.
Favre, Roger: *See—*
Letoffe, Michel; Favre, Roger; and Perrin, Patrice, 4,508,888, Cl. 528-23.000.
FBC Limited: *See—*
Rowson, Graham P.; Percival, Albert; and Judson, Philip N., 4,508,659, Cl. 260-465.00D.
Federal Paper Board Company, Incorporated: *See—*
Davis, Robert E.; Maio, Patrick S.; and Growney, Lawrence J., 4,508,226, Cl. 206-620.000.
Feigt, Ingmar: *See—*
Oberschmid, Raimund; and Feigt, Ingmar, 4,508,966, Cl. 250-327.200.
Fekete, Gyorgy: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.
Feldkamper, Richard, to Windmoller & Holscher. Apparatus for folding paper sacks to Z shape. 4,508,529, Cl. 493-438.000.
Feldman, Karl T., Jr., to Gould Inc. High-current sweep cable. 4,508,934, Cl. 174-101.500.
Fenton, Donald M.; Delaney, Dennis D.; and Bingham, F. Emmett, to Union Oil Company of California. Method for removing elemental sulfur particles from the aqueous washing solution of a hydrogen sulfide removal process. 4,508,537, Cl. 23-293.00S.
Fenton, Frank A., to Emhart Industries, Inc. Dead plate arrangement of a glassware forming machine. 4,508,557, Cl. 65-348.000.
Ferag Ag: *See—*
Leu, Willy, 4,508,523, Cl. 474-115.000.
Ferguson, Hugo S., to Duffers Scientific, Inc. Bumpless feedback switching apparatus for use in a servo system. 4,509,000, Cl. 318-591.000.
Ferlito, Michael J.: *See—*
Tuggle, Lloyd H.; and Ferlito, Michael J., 4,508,068, Cl. 123-187.50R.
Ferns, Derek, to Selflevel Covers (Jersey) Limited. Manhole/access cover and frame assemblies. 4,508,470, Cl. 404-25.000.
Ferrara, Joseph J.: *See—*
Hubler, Lawrence C.; Ferrara, Joseph J.; Albright, Roger N.; and Bassett, Raymond C., 4,508,329, Cl. 270-53.000.
Ferrari, Luigi M. Container display package. 4,508,225, Cl. 206-461.000.
Fey, Maurice G., to Westinghouse Electric Corp. Electric arc-fired blast furnace system. 4,509,177, Cl. 373-60.000.
Fiatallis Europe, S.p.A.: *See—*
Barbagli, Rino O., 4,508,013, Cl. 91-516.000.
Ficho, William: *See—*
Banks, Julia G.; and Ficho, William, 4,508,156, Cl. 164-35.000.
Fichtel & Sachs AG: *See—*
Axthammer, Ludwig; and Wossner, Felix, 4,508,201, Cl. 188-322.190.
Fidi, Werner; Pribyl, Richard; and Wolf, Konrad, to AKG Akustische u.Kino-gerate gesellschaft mbH. Microphone diaphragm. 4,508,192, Cl. 181-158.000.
Fields, Ellis K.: *See—*
Nimry, Tayseer S.; and Fields, Ellis K., 4,508,605, Cl. 204-158.00R.
Figgie International Inc.: *See—*
Goodell, Daniel L., 4,507,905, Cl. 53-262.000.
Filges, Ralf: *See—*
Ramesohl, Hubert; Seelen, Fritz; Filges, Ralf; Schroder, Karlheinz; and Veiser, Elmar, 4,508,503, Cl. 432-109.000.
Fink, Friedrich: *See—*
Lades, Hans; Fink, Friedrich; Liebel, Siegfried; Lauterbach, Inge; Taube, Thomas; and Zollner, Dieter, 4,509,178, Cl. 373-93.000.
Fink, Hans, to Bata Schuh AG. Process for joining polyurethane coated fabrics. 4,508,582, Cl. 156-93.000.
Finkelstein, Manuel; and Ross, Sidney D., to Sprague Electric Company. Electrolytic capacitor for at least 150 V service. 4,509,094, Cl. 361-314.000.
Finkelstein, Wolfgang; and Riegel, Hans, to Gebrueder Trox GmbH. Ceiling air outlet. 4,508,022, Cl. 98-40.120.
Firestone Tire & Rubber Company, The: *See—*
Hergenrother, William L.; Matlock, Mark G.; and Ambrose, Richard J., 4,508,874, Cl. 525-285.000.
Firey, Joseph C. Crossed pulse liquid atomizer. 4,508,273, Cl. 239-427.000.
Fischbeck, Kenneth H., to Xerox Corporation. Ink jet printing using horizontal interlacing. 4,509,058, Cl. 346-1.100.
Fischer, Hanspeter: *See—*
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,508,731, Cl. 514-472.000.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Traveling paper web capturing apparatus for use with a rotary printing machine. 4,508,033, Cl. 101-217.000.
Fischer, Roland: *See—*
Bachmann, Erich; Fabel, Ludwig; Fischer, Roland; Peter, Werner; Scheiter, Bernd; and Wenzel, Werner, 4,508,494, Cl. 418-13.000.
Fitzgerald, Marilyn. Game with individual two part boards. 4,508,351, Cl. 273-248.000.
Fleming, Georges, to ARBED S.A. Runner for molten metal. 4,508,323, Cl. 266-191.000.
Fleming, Robert J.: *See—*
Reintjes, Anthony B.; Fleming, Robert J.; and Gumb, Bev W. T., 4,508,755, Cl. 427-58.000.
Fletcher, Ian J.: *See—*
Bedekovic, Davor; and Fletcher, Ian J., 4,508,897, Cl. 544-127.000.
Flood, Paul W.: *See—*
Salatiello, Peter P.; Petrucelli, Frank; and Flood, Paul W., 4,508,675, Cl. 264-310.000.
Focke & Co.: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,508,218, Cl. 206-271.000.
Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Packing cigarettes. 4,507,903. Cl. 53-151.000.
Focke, Heinz; and Liedtke, Kurt, to Focke & Co. Soft cigarette pack. 4,508,218, Cl. 206-271.000.
Focke & Pfuhl: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,507,903, Cl. 53-151.000.
Fogassy, Elemer; Toke, Laszlo ; Faigl, Ferenc; Soos, Rudolf; Bozzay, Jozsef; Kolta, Rezso; Nemes, Jozsef; and Bencsik, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for the preparation of optically active cyclopropane carboxylic acids. 4,508,919, Cl. 562-401.000.
Foglio, Maurizio: *See—*
Alpegiani, Marco; Battistini, Carlo; Bedeschi, Angelo; Franceschi, Giovanni; Foglio, Maurizio; and Zarini, Franco, 4,508,649, Cl. 260-245.20R.
Fokker BV: *See—*
Schliekelmann, Robert J., 4,507,967, Cl. 73-621.000.
Foll, Eberhard; Holl, Peter; and Vetter, Helmut, to 501 Polymer-Physik GmbH & Co. Process for crosslinking lacquers which are based on plastics and have been applied to base materials. 4,508,750, Cl. 427-44.000.
Foncages et Forages Bessac, S.A.: *See—*
Bessac, Michel, 4,508,390, Cl. 299-33.000.
Foor, Forrest; and Roberts, Gary P., to Merck & Co., Inc. Bacteriophage DNA cloning vector TG1 and microorganisms containing TG1. 4,508,826, Cl. 435-235.000.
Forbes, Ervin: *See—*
Rey, Thomas J.; and Forbes, Ervin, 4,509,121, Cl. 364-200.000.
Ford, James L.: *See—*
Elton, Raymond C.; Dixon, Robert H.; and Ford, James L., 4,508,055, Cl. 118-724.000.
Ford Motor Company: *See—*
Adams, Karen M.; and Gandhi, Haren S., 4,508,691, Cl. 423-213.500.
Ezis, Andre, 4,508,671, Cl. 264-58.000.
Hartsock, Dale L., 4,508,066, Cl. 123-41.710.
Hayosh, Robert J.; Lewis, Robert H.; and Simon, Frederick A., 4,508,280, Cl. 242-191.000.
Holubka, Joseph W., 4,508,879, Cl. 525-528.000.
Huff, John; Wiggle, Ronald R.; and Hospadaruk, Vladimir, 4,508,684, Cl. 422-8.000.
Turner, Robert; and Seabrook, Robert A., 4,507,982, Cl. 74-493.000.

Forest, Joseph G.; and Czarnetzky, Edward J., to International Stock Food Corporation. Method for preserving silage and related compositions. 4,508,737, Cl. 426-54.000.

Forestier, Lucienne: *See—*
Dubois, Jean; Lacroix, Alain; Forestier, Lucienne; and Steiner, Jean-Pierre, 4,507,812, Cl. 4-228.000.

Forrest, William E., to Charles I. Brown, a part interest. Friction-type descent control device. 4,508,193, Cl. 182-5.000.

Fortuna, Jon A.: *See—*
Dowling, Edward C.; and Fortuna, Jon A., 4,508,399, Cl. 339-17.0CF.

Fossa, Guiseppe. Device for retrieval of golf balls. 4,507,881, Cl. 36-132.000.

Foster, R. Keith. Reciprocating floor conveyor apparatus and method. 4,508,211, Cl. 198-750.000.

Foster, Ronald B.: *See—*
Joyner, Keith A.; and Foster, Ronald B., 4,507,851, Cl. 29-590.000.

Foust, Tommy C., to Otis Engineering Corporation. Kickover tool. 4,508,165, Cl. 166-117.500.

Fox, Richard C., to Chevron Research Company. Biocidal wood preservative composition and method. 4,508,568, Cl. 106-2.000.

Frakes, David L. Apparatus for fabricating coaxial cable. 4,508,585, Cl. 156-393.000.

Franceschi, Giovanni: *See—*
Alpegiani, Marco; Battistini, Carlo; Bedeschi, Angelo; Franceschi, Giovanni; Foglio, Maurizio; and Zarini, Franco, 4,508,649, Cl. 260-245.20R.

Franzino, Peter L. Hair curling spool holder. 4,508,124, Cl. 132-41.00R.

Frawley, Norman E., to Ball Corporation. Remote connect and disconnect assembly with energy isolation. 4,508,404, Cl. 339-45.00M.

Frederick, Charles V. Air conveyor for particulate material. 4,508,474, Cl. 406-88.000.

Frederick, Gary S.: *See—*
Conn, Andrew F.; Lindenmuth, William T.; and Frederick, Gary S., 4,508,577, Cl. 134-1.000.

Freeman, Eva C.; and Baird, Donald H., to GTE Laboratories Incorporated. Method for making thin film electroluminescent rare earth activated zinc sulfide phosphors. 4,508,610, Cl. 204-192.00P.

Freewalt, Wayne L.; and Ziegler, Joseph L., to E-Z Buck, Inc. Sawhorse and bracket therefor. 4,508,194, Cl. 182-153.000.

Freitag, Dieter: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; and Freitag, Dieter, 4,508,890, Cl. 528-167.000.

Freller, Helmut; Horauf, Friedrich; Lorenz, Hans-Peter; and Mund, Konrad, to Siemens Aktiengesellschaft. Electrochromic display cell I. 4,508,430, Cl. 350-351.000.

Freller, Helmut; and Mund, Konrad, to Siemens Aktiengesellschaft. Electrochromic display cell II. 4,508,432, Cl. 350-357.000.

French, David: *See—*
Ring, John; French, David; Hickling, Michael; and Sturgess, Michael G., 4,508,765, Cl. 427-386.000.

French, Terry M., to Tamaqua Cable Products Corporation. Electrical duct extrusion apparatus. 4,508,500, Cl. 425-388.000.

Fresenius AG: *See—*
Polaschegg, Hans-Dietrich; and Husar, Dieter, 4,508,622, Cl. 210-96.200.

Frito-Lay, Inc.: *See—*
Ryan, Philip J., 4,508,739, Cl. 426-144.000.

Frontier Contact Lenses of Florida, Inc.: *See—*
Sitterle, George, 4,508,436, Cl. 351-160.00H.

Fuchizawa, Tetsuro: *See—*
Asao, Yasuzi; and Fuchizawa, Tetsuro, 4,508,804, Cl. 430-62.000.
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,508,751, Cl. 427-44.000.

Fuhrmann, Wolfgang, to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG. Tappet and a cam contact member therefor. 4,508,067, Cl. 123-90.490.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Uchiyama, Shintaro, 4,508,190, Cl. 180-247.000.

Fuji Kogyo Co., Ltd.: *See—*
Ohmura, Ryuichi, 4,507,891, Cl. 43-24.000.

Fuji Photo Film Co., Ltd.: *See—*
Asao, Yasuzi; and Fuchizawa, Tetsuro, 4,508,804, Cl. 430-62.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,508,438, Cl. 354-105.000.
Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, 4,508,805, Cl. 430-72.000.
Ochiai, Takeji, 4,508,636, Cl. 252-301.360.
Ogawa, Masashi; Ishigaki, Kunio; Iwasaki, Nobuyuki; and Nakamura, Taku, 4,508,818, Cl. 430-523.000.
Ohno, Shigeru; and Kishimoto, Shinzo, 4,508,817, Cl. 430-393.000.
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,508,751, Cl. 427-44.000.
Yamamuro, Kiyohiko; Hirano, Shigeo; Itoh, Isamu; and Iwasa, Yasuo, 4,508,816, Cl. 430-393.000.

Fuji Xerox Co., Ltd.: *See—*
Izumi, Hirotaka, 4,508,445, Cl. 355-3.0SH.

Fujii, Tadashi; Yamaguchi, Tomoyuki; Murakami, Kakuji; Kawakami, Tomiko; and Uenozono, Hiroko, to Ricoh Company, Ltd. Aqueous ink for ink-jet printing. 4,508,570, Cl. 106-20.000.

Fujimoto Photo Industrial Co., Ltd.: *See—*
Kashiwagi, Atumi, 4,508,331, Cl. 271-107.000.

Fujimoto, Terunori: *See—*
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,508,790, Cl. 428-632.000.

Fujimura, Yasushi; Okada, Takashi; Tanaka, Yutaka; and Ikeda, Yasunari, to Sony Corporation. Double-scanning non-interlace television receiver. 4,509,071, Cl. 358-11.000.

Fujioka, Yoshiharu; Onuki, Akio; and Sakamoto, Tomio, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotary magnetic head. 4,509,084, Cl. 360-84.000.

Fujisawa, Kazuo: *See—*
Kumasaka, Hideo; and Fujisawa, Kazuo, 4,508,569, Cl. 106-14.120.

Fujitsu Limited: *See—*
Furumura, Yuji, 4,509,070, Cl. 357-41.000.
Kobayashi, Koichi; Kawashima, Kenichi; and Oshio, Shuzo, 4,508,968, Cl. 250-441.100.
Nakagawa, Takayuki, 4,508,813, Cl. 430-296.000.
Sogo, Hiroyuki; Ohsawa, Zenichi; Umino, Isamu; and Nishida, Haruki, 4,509,208, Cl. 455-317.000.

Fujiwara, Kousyun, to Toyota Jidosha Kabushiki Kaisha. Adhering gun for fasteners. 4,508,254, Cl. 227-116.000.

Fukagawa, Yasuo: *See—*
Kubo, Katsuro; Yoshioka, Takeo; Okabe, Mitsuyasu; Fukagawa, Yasuo; and Ishikura, Tomoyuki, 4,508,648, Cl. 260-245.20T.

Fukumoto, Ryoichi: *See—*
Nemoto, Tadashi; Fukumoto, Ryoichi; Kawamura, Hiroaki; Kondo, Yoshikazu; and Inui, Tsuneo, 4,508,601, Cl. 204-38.500.

Fukumoto, Terumichi: *See—*
Wakabayashi, Noriaki; Fukumoto, Terumichi; and Ueda, Nobuhiro, 4,509,001, Cl. 318-687.000.

Fulger, Charles V.; Stahl, Howard D.; Turek, Evan J.; and Bayha, Renee, to General Foods Corporation. Production of a mannan oligomer hydrolysate. 4,508,745, Cl. 426-594.000.

Fuller, Everett J.; and Lundberg, Robert D., to Exxon Research & Engineering Co. Oil removal from water suspensions using ionic domain polymers. 4,508,626, Cl. 210-708.000.

Funada, Fumiaki: *See—*
Takamatsu, Toshiaki; Funada, Fumiaki; Yasuda, Shuhei; and Matsuura, Masataka, 4,509,099, Cl. 361-413.000.

Funahashi, Takuo: *See—*
Koyama, Toshihiro; Anbe, Yoshiharu; and Funahashi, Takuo, 4,507,946, Cl. 72-17.000.

Funahashi, Yasuyuki: *See—*
Sato, Mineo; Kawaguchi, Tadaaki; Okawachi, Yukinori; and Funahashi, Yasuyuki, 4,507,940, Cl. 62-407.000.

Funk, Erwin D.: *See—*
Richter, Ole J.; and Funk, Erwin D., 4,508,473, Cl. 406-64.000.

Furihata, Makoto, to Hitachi, Ltd. A/D Converter with bit extension capability using wired-OR outputs. 4,509,036, Cl. 340-347.0AD.

Furumura, Yuji, to Fujitsu Limited. Metal-insulator-semiconductor transistor device. 4,509,070, Cl. 357-41.000.

Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Bundling belt device. 4,507,828, Cl. 24-16.0PB.

Fushimi, Satoru: *See—*
Hara, Yasuhiko; Akiyama, Nobuyuki; Fushimi, Satoru; Oshima, Yoshimasa; and Aoki, Nobuhiko, 4,508,453, Cl. 356-394.000.

G. D. Societa per Azione: *See—*
Seragnoli, Enzo, 4,507,908, Cl. 53-498.000.

Gadgill, Balkrishna B.: *See—*
Obrist, Albert; and Gadgill, Balkrishna B., 4,508,690, Cl. 423-173.000.

Gagne, Donald J., to Control Data Corporation. Releasable position-locking connector assembly. 4,508,418, Cl. 339-253.00R.

Gajecki, Rickard, to AO:s Metall & Mek. Verkstad AB. Method of eliminating discomforting flickering when viewing X-ray film in a light cabinet, and a flicker-eliminating unit for use in a light cabinet. 4,508,995, Cl. 315-209.00R.

Galiasso, Roberto E.: *See—*
Larrauri, Jose M.; Arias, Beairit C.; and Galiasso, Roberto E., 4,508,616, Cl. 208-111.000.

Galindo, Anibal. Hypodermic needle connector. 4,508,419, Cl. 339-256.00S.

Gallios, George C., to Venus Scientific Inc. Three phase a.c. to d.c. voltage converter with improved power line harmonic current reduction. 4,509,108, Cl. 363-45.000.

Gambro Crafon AB: *See—*
Hansson, Ingvar J. M.; Hakansson, Hakan B.; Igefjord, Magnus G. K.; and Wall, Berth-Ove G., 4,507,854, Cl. 29-612.000.

Gandhi, Haren S.: *See—*
Adams, Karen M.; and Gandhi, Haren S., 4,508,691, Cl. 423-213.500.

Gaponov, Valery M.: *See—*
Spektor, Jury N.; Gaponov, Valery M.; and Masovich, Felix Z., 4,508,391, Cl. 299-43.000.

Garages Mutualistes Francais: *See—*
Schermann, Maurice, 4,507,872, Cl. 33-174.00R.

Gardineer, Bayard; and Vilkomerson, David, to Ultramed, Inc. Ultrasonic scanning apparatus and techniques. 4,508,122, Cl. 128-660.000.

Gardiner, George K.; and Norris, Dean E., to Motorola, Inc. Anti-stalling rotating antenna buoy system using wind deflecting plates. 4,509,054, Cl. 343-709.000.

Garnett, William A.: *See—*
Ramirez, Joe D.; Gorin, Steven E.; and Garnett, William A., 4,508,490, Cl. 417-234.000.

Garrett Corporation, The: *See—*
Manatt, Scott A., 4,508,548, Cl. 55-158.000.
Thurston, John F., 4,508,127, Cl. 137-8.000.
Wieland, Kurt H., 4,507,939, Cl. 62-402.000.

Garver, Edward B., Sr.; and Zabielski, Kenneth D., to Baxter Travenol Laboratories, Inc. Assembly employing a breakable thermal bond

which is not substantially effected by prolonged heat exposure. 4,508,534, Cl. 604-111.000.
Gaskins, Karl S. Resilient bladder type suspension system for a support structure such as a chair, bed, or the like. 4,508,383, Cl. 297-284.000.
Gasland, Stein. Process for manufacturing of formed products. 4,508,595, Cl. 162-158.000.
Gay, William H.: *See—*
Kukowski, John A.; Soth, Henry J.; and Gay, William H., 4,507,862, Cl. 29-837.000.
Gaydoski, Gary F.: *See—*
Bush, J. Finley; and Gaydoski, Gary F., 4,508,689, Cl. 423-127.000.
Gazard, Maryse: *See—*
Camps, Marcel; Douillard, Alain; Dubois, Jean-Claude; Gazard, Maryse; Montheard, Jean-Pierre; Pascal, Thierry; and Seytre, Gerard, 4,508,639, Cl. 252-500.000.
Gebauer, Paul W.; and Choi, Smith. Golf club. 4,508,349, Cl. 273-175.000.
Geberth, John D., Jr. Reversible spray tip. 4,508,268, Cl. 239-119.000.
Gebrueder Trox GmbH: *See—*
Finkelstein, Wolfgang; and Riegel, Hans, 4,508,022, Cl. 98-40.120.
Gecks, Donald L.: *See—*
Graham, Marshall D.; Cook, Dudley D., Jr.; Gecks, Donald L.; and Shaw, Robert, 4,508,435, Cl. 350-529.000.
Geering, Emil J.: *See—*
Chow, Richard H.; and Geering, Emil J., 4,508,661, Cl. 260-544.00D.
Chow, Richard H.; and Geering, Emil J., 4,508,857, Cl. 260-544.00D.
Geiler, Volkmar: *See—*
Gliemeroth, Georg; Ross, Ludwig; Speit, Burkhard; Geiler, Volkmar; Krolla, Hans-Georg; and Meckel, Lothar, 4,508,834, Cl. 501-73.000.
Geiser, Markus: *See—*
Vandevoir, Claude A.; and Geiser, Markus, 4,507,992, Cl. 82-2.700.
Gelsdorf, Gunter: *See—*
Eschmann, Friedrich; Gelsdorf, Gunter; Nold, Peter; Staats, Gotthard; and Subat, Gerhard, 4,508,504, Cl. 432-217.000.
GenCorp Inc.: *See—*
Brown, Robert L.; Jones, William A.; and Anderson, Daryl E., 4,508,586, Cl. 156-401.000.
General Dynamics, Pomona Division: *See—*
Jones, Richard W., 4,508,293, Cl. 244-3.150.
General Electric Company: *See—*
Anderson, John M., 4,508,993, Cl. 315-59.000.
Avakian, Roger W., 4,508,861, Cl. 524-101.000.
Craig, Edwin R.; and Blumberg, Ben, Jr., 4,508,677, Cl. 376-174.000.
Ladusaw, William T., 4,508,987, Cl. 310-68.00C.
Malinowski, Richard F., 4,509,107, Cl. 362-267.000.
Matzner, Bruce; Horn, Victor M.; Curulla, Michael V.; and Price, John F., 4,508,679, Cl. 376-438.000.
Steinert, Leopold A.; and Perry, Richard W., 4,507,840, Cl. 29-401.100.
Vermilyea, Mark E., 4,509,030, Cl. 335-216.000.
General Foods Corporation: *See—*
Fulger, Charles V.; Stahl, Howard D.; Turek, Evan J.; and Bayha, Renee, 4,508,745, Cl. 426-594.000.
McSweeney, Daniel R., 4,508,740, Cl. 426-250.000.
General Motors Corporation: *See—*
Fattic, Gerald T.; and Vukovich, William J., 4,509,125, Cl. 364-424.100.
Suchdev, Jagan N., 4,508,065, Cl. 123-41.350.
General Signal Corporation: *See—*
Korowitz, Simon, 4,509,117, Cl. 364-200.000.
General Tire & Rubber Company, The: *See—*
Cobbledick, David S.; Reichenbach, Donald F.; and Shanoski, Henry, 4,508,785, Cl. 428-424.400.
Gentex Corporation: *See—*
Ingalls, Robert, 4,508,936, Cl. 179-82.000.
Georgia Tech Research Institute: *See—*
Cash, Carlton H., 4,509,052, Cl. 343-418.000.
Geotronics AB: *See—*
Scholdstrom, Ragnar; Marcus, Holger; and Nordstrom, Lennart, 4,508,448, Cl. 356-5.000.
Gerhardus, Ulrich: *See—*
Langhoff, Joseph; Althoff, Erwin; Kolodzey, Wolfgang; and Gerhardus, Ulrich, 4,508,542, Cl. 48-77.000.
German, Dale F.: *See—*
Schlesinger, Lawrence; German, Dale F.; and Richards, Donald L., 4,507,956, Cl. 73-146.500.
Gershenson, Meir, to Sperry Corporation. Asymmetric superconducting quantum interference device in a linear amplifier circuit. 4,509,018, Cl. 330-61.00R.
Gesellschaft zur Forderung der industrieorientierten: *See—*
Hanulik, Jozef, 4,508,641, Cl. 252-626.000.
Giffen, William M., Jr.; Li, George S.; and Miller, Arthur F., to Standard Oil Company, The. Imidized surface protection for maleic anhydride interpolymer articles. 4,508,787, Cl. 428-473.500.
Gijsbers, Jan C.: *See—*
Van de Leest, Renaat E.; and Gijsbers, Jan C., 4,509,161, Cl. 369-275.000.
Gilbert, Wilbur E.; Martin, Robert E.; and Belonger, Donald P., to Hamilton Industries, Inc. Leg and foot support assembly for medical examination table. 4,508,387, Cl. 297-429.000.
Gillery, F. Howard; and Criss, Russell C., to PPG Industries, Inc. Low reflectance, low emissivity sputtered film. 4,508,789, Cl. 428-630.000.
Gillespie, C. Earl, Jr. Basketball goal height reducing frame. 4,508,337, Cl. 273-1.50R.
Gilman, Harold: *See—*
Bhise, Vijay S.; and Gilman, Harold, 4,508,927, Cl. 568-858.000.
Giner, Inc.: *See—*
Giner, Jose D., 4,508,598, Cl. 204-1.00T.
Giner, Jose D., to Giner, Inc. Gas sensor and method of using same. 4,508,598, Cl. 204-1.00T.
Girsch, B. J. Maria; Girsch, Charles W.; and McCarthy, Thomas C., to Hasbro Industries, Inc. Shape-matching toy apparatus with safety hinge. 4,508,512, Cl. 434-259.000.
Girsch, Charles W.: *See—*
Girsch, B. J. Maria; Girsch, Charles W.; and McCarthy, Thomas C., 4,508,512, Cl. 434-259.000.
Givaudan Corporation: *See—*
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,508,925, Cl. 568-442.000.
Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, 4,508,908, Cl. 548-213.000.
GKN-Stenman AB: *See—*
Widen, Bo; and Rubensson, Bjorn, 4,507,944, Cl. 70-276.000.
GKN Technology Limited: *See—*
Marsh, Barry J., 4,508,325, Cl. 267-47.000.
Glaser, Mark C.: *See—*
Weinberg, Roger A.; and Glaser, Mark C., 4,508,167, Cl. 166-120.000.
Gliemeroth, Georg; Ross, Ludwig; Speit, Burkhard; Geiler, Volkmar; Krolla, Hans-Georg; and Meckel, Lothar, to Schott Glaswerke. Spectacle glass with increased refractive index. 4,508,834, Cl. 501-73.000.
Glomski, Guenter: *See—*
Beerwald, Hans; Boehm, Guenter; and Glomski, Guenter, 4,508,554, Cl. 65-3.100.
Godar, Richard L.: *See—*
Heintzelman, William J.; and Godar, Richard L., 4,508,637, Cl. 252-396.000.
Goddard, John B.; and Johnson, William N., to Union Carbide Corporation. Extraction of tungsten from spent or scrap catalyst materials. 4,508,701, Cl. 423-61.000.
Goel, Anil B., to Ashland Oil, Inc. Method for preparing acyloxy styrenes. 4,508,653, Cl. 260-410.500.
Gold, Kenneth R.: *See—*
LoFaso, Joseph S.; LoFaso, Mardi I.; and Gold, Kenneth R., 4,507,988, Cl. 81-3.090.
Goldman, David: *See—*
Merril, Carl R.; and Goldman, David, 4,508,820, Cl. 435-29.000.
Gomi, Hiromi: *See—*
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
Gonzalez, Carlos F., to Microlife Technics, Inc. Non-sucrose fermenting *Pedioccus pentosaceus*. 4,508,738, Cl. 426-55.000.
Goodell, Daniel L., to Figgie International Inc. Guide finger mounting for case packer assembly heads. 4,507,905, Cl. 53-262.000.
Goodyear Tire & Rubber Company, The: *See—*
Beres, Arthur W.; and Verderico, Joseph P., 4,508,497, Cl. 425-28.00R.
Throckmorton, Morford C., 4,508,881, Cl. 526-201.000.
Wideman, Lawson G.; and Bente, Lynn A., 4,508,930, Cl. 585-377.000.
Gopikanth, Mysore L.; Kuo, Han C.; and Bowden, William L., to Duracell Inc. Cell with $CoCl_2$ cathode. 4,508,798, Cl. 429-196.000.
Gopikanth, Mysore L.; and Kuo, Han C., to Duracell Inc. Cell with $NiCl_2$ cathode. 4,508,799, Cl. 429-196.000.
Gopikanth, Mysore L.; Kuo, Han C.; and Schlaikjer, Carl R., to Duracell Inc. Cell with $FeBr_3$ cathode. 4,508,800, Cl. 429-196.000.
Gorin, Steven E.: *See—*
Ramirez, Joe D.; Gorin, Steven E.; and Garnett, William A., 4,508,490, Cl. 417-234.000.
Gornall, Graham J.; Price, Anthony G.; and Parry, David, to Lucas Industries. Spreading type disc brakes for vehicles. 4,508,198, Cl. 188-71.400.
Gorog, Sandor: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.
Goscenski, Edward J., Jr., to Eaton Corporation. Single shaft positive drive. 4,507,984, Cl. 74-650.000.
Gosudarstvenny Proektno-Konstruktorsky I Experimentalny Institut Ugolnogo Mashinostroenia: *See—*
Spektor, Jury N.; Gaponov, Valery M.; and Masovich, Felix Z., 4,508,391, Cl. 299-43.000.
Goth, George R.; and Malaviya, Shashi D., to International Business Machines Corporation. Lateral device structures using self-aligned fabrication techniques. 4,508,579, Cl. 148-175.000.
Goto, Kunio: *See—*
Usui, Koichi; Ogawa, Masahide; Goto, Kunio; Sato, Teiji; Tanaka, Masanori; Takahashi, Seikichi; Ono, Kinichi; and Kojima, Seiji, 4,509,064, Cl. 346-207.000.
Gotoh, Akio: *See—*
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,509,201, Cl. 455-73.000.
Gotz, Gertrud: *See—*
Bikson, Benjamin; Coplan, Myron J.; and Gotz, Gertrud, 4,508,852, Cl. 521-27.000.

Gould Inc.: *See*—
Busta, Heinz H.; Tsao, Kuey-Yeou; White, Wayne D.; and Loeppert, Peter V., 4,508,613, Cl. 204-418.000.
Feldman, Karl T., Jr., 4,508,934, Cl. 174-101.500.
Harris, Robert W., 4,509,037, Cl. 340-347.0AD.

Grabhoefer, Herbert; and Volkert, Otto, to BASF Aktiengesellschaft. Cellular, molded polyurethane parts, process for their preparation by thermoforming of polyester-urethane foam and their use. 4,508,774, Cl. 428-220.000.

Graf, Matthew C.: *See*—
DasGupta, Sumit; Graf, Matthew C.; Rasmussen, Robert A.; and Williams, Thomas W., 4,509,008, Cl. 324-73.00R.

Graham, Marshall D.; Cook, Dudley D., Jr.; Gecks, Donald L.; and Shaw, Robert, to Coulter Electronics, Inc. Air vacuum chuck for a microscope. 4,508,435, Cl. 350-529.000.

Graham, Marshall D. Magnetic separation using chelated magnetic ions. 4,508,625, Cl. 210-695.000.

Granryd, Thorvald G., to TG Strips, Inc. Retractable traction intensifying means for agricultural tractors and the like. 4,508,150, Cl. 152-169.000.

Graser, Earl J., to Manville Service Corporation. Sleeve-style beverage carton. 4,508,258, Cl. 229-38.000.

Gravesteijn, Dirk J.; Steenbergen, Christiaan; Van der Veen, Jan; and Nijssen, Wilhelmus P. M., to U.S. Philips Corporation. Recording element having a pyrylium or thiopyrylium-squarylium dye layer and new pyrylium or thiopyrylium-squarylium compounds. 4,508,811, Cl. 430-270.000.

Green, David; and Blanc, Maurice, to Societe d'Assistance Technique pour Produits Nestle S.A. Caffeine adsorption. 4,508,743, Cl. 426-422.000.

Green, David T., to United States Surgical Corporation. Surgical fastener applying apparatus. 4,508,253, Cl. 227-19.000.

Green, Linda S.: *See*—
Agnew, Palmer W.; Coviello, John S.; Green, Linda S.; and Kellerman, Anne S., 4,509,122, Cl. 364-200.000.

Gregor Jonsson Associates, Inc.: *See*—
Betts, Edmund D.; and Keith, Jon T., 4,507,825, Cl. 17-73.000.

Grenn, James F. Check means for a water dispenser. 4,508,246, Cl. 222-477.000.

Grenon, Rene . Metal binding wire twisting device. 4,508,030, Cl. 100-26.000.

Gress, Ronald A. Airbrush assembly. 4,508,271, Cl. 239-305.000.

Griffin, Brian P.: *See*—
Bailey, Derrick S.; Cogswell, Frederic N.; and Griffin, Brian P., 4,508,891, Cl. 528-191.000.

Griffin, Joseph: *See*—
Karwacki, Francis A.; and Griffin, Joseph, 4,509,014, Cl. 324-305.000.

Gronholm, Richard A.: *See*—
Pavlik, Dennis; and Gronholm, Richard A., 4,508,985, Cl. 310-55.000.

Grove, Arthur W.: *See*—
Barsotti, Rudolf H.; and Grove, Arthur W., 4,509,007, Cl. 324-60.00C.

Growney, Lawrence J.: *See*—
Davis, Robert E.; Maio, Patrick S.; and Growney, Lawrence J., 4,508,226, Cl. 206-620.000.

Grunberg, Robert M. Time domain audio panner. 4,509,185, Cl. 381-34.000.

Gruppo Lepetit S.p.A.: *See*—
Mariani, Luigi; and Tarzia, Giorgio, 4,508,730, Cl. 514-218.000.

GTE Automatic Electric Inc.: *See*—
Renner, Robert E., 4,509,168, Cl. 370-63.000.
Renner, Robert E., 4,509,169, Cl. 370-63.000.
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,508,398, Cl. 339-17.0LM.
Stepan, William E., 4,508,753, Cl. 427-53.100.
Stepan, William E., 4,508,754, Cl. 427-53.100.

GTE Laboratories Incorporated: *See*—
Freeman, Eva C.; and Baird, Donald H., 4,508,610, Cl. 204-192.00P.
Kapral, Christopher W.; and Cooperman, Michael, 4,508,982, Cl. 307-572.000.

GTE Products Corporation: *See*—
Cheney, Richard F., 4,508,788, Cl. 428-570.000.
English, George J., 4,508,514, Cl. 445-26.000.

Guedj, F.; Defaucheux, J.; and Wiart, A., to Jeumont-Schneider Corporation. Variable reluctance electric motor for the translation of control rods in a nuclear reactor. 4,508,984, Cl. 310-14.000.

Guerreau, Rene : *See*—
Beyl, Jean; Bernard, Jean; Guerreau, Rene ; le Faou, Daniel; and Peyre, Henri, 4,508,360, Cl. 280-605.000.

Guex, Betty S.: *See*—
Strom, Larry O.; and Guex, Betty S., 4,508,107, Cl. 128-54.000.

Guglielmetti, Leonardo, to Ciba Geigy Corporation. 4-Styryl-4'-vinylbiphenyls, the production thereof and use thereof as fluorescent. 4,508,784, Cl. 252-301.210.

Guidotti, Ronald A.: *See*—
Delnick, Frank M.; Guidotti, Ronald A.; and McCarthy, David K., 4,508,796, Cl. 429-112.000.

Guilbert, Jean M. A. M.: *See*—
Mouilhayrat, Guy G.; Duchon, Paul A. J.; Guilbert, Jean M. A. M.; and Rolfo, Andre A., 4,508,297, Cl. 244-173.000.

Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., to Koehler Manufacturing Company. Lead acid battery with self-registering grid complement and methods of making and operating same. 4,508,801, Cl. 429-238.000.

Gulliksen, John E.: *See*—
Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., 4,508,801, Cl. 429-238.000.

Gumaer, Robert A.; and Mortenson, John A., to International Business Machines Corporation. Method for managing a buffer pool referenced by batch and interactive processes. 4,509,119, Cl. 364-200.000.

Gumb, Bev W. T.: *See*—
Reintjes, Anthony B.; Fleming, Robert J.; and Gumb, Bev W. T., 4,508,755, Cl. 427-58.000.

Gunning, William J., III; and Tracy, John M., to Rockwell International Corporation. Electro-optically tuned rejection filter. 4,508,964, Cl. 250-201.000.

Gunter, William L.: *See*—
Lawson, William J.; and Gunter, William L., 4,507,813, Cl. 4-253.000.

Haag, Werner O.; Olson, David H.; and Rodewald, Paul G., to Mobil Oil Corporation. Catalytic conversion process for aromatic feedstocks with hydrogen regeneration of coke-selectivated zeolite catalyst. 4,508,836, Cl. 502-53.000.

Haas, Anton J., Jr. Cable sheath cutter knife. 4,507,867, Cl. 30-90.400.

Haase, Walter. Pipette for carrying out and determining sedimentation rates, in particular that of blood. 4,507,955, Cl. 73-61.400.

Habu, Yasuhiro: *See*—
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.

Hachimoto, Akihiko: *See*—
Matsuzaki, Minoru; Hachimoto, Akihiko; Inoue, Takashi; Shirai, Hitoshi; Watanabe, Akira; and Tofukuji, Ikuo, 4,508,443, Cl. 354-402.000.

Hacker, Karl M. Tool for removing and replacing wheelbearings. 4,507,838, Cl. 29-263.000.

Hadley, Howard C.: *See*—
Deutsch, Timothy A.; and Hadley, Howard C., 4,508,243, Cl. 222-142.000.

Haendel, Richard S.; and Wauer, John C., to Rockwell International Corporation. FMCW system for providing search-while-track functions and altitude rate determination. 4,509,049, Cl. 343-7.500.

Hager, Ira V. Heat collection, dissipation and storage. 4,508,102, Cl. 126-437.000.

Hahn, James H., to Rush, David H. Brushless disc-type DC motor or generator. 4,508,998, Cl. 318-138.000.

Hait, Paul W., to Pyromid, Inc. Convertible cooking unit. 4,508,094, Cl. 126-9.00R.

Hajdu, Istvan: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.

Hajime Industries Ltd.: *See*—
Yoshida, Hajime, 4,509,076, Cl. 358-106.000.

Hakansson, Hakan B.: *See*—
Hansson, Ingvar J. M.; Hakansson, Hakan B.; Igefjord, Magnus G. K.; and Wall, Berth-Ove G., 4,507,854, Cl. 29-612.000.

Halcon SD Group, Inc., The: *See*—
Bhise, Vijay S.; and Gilman, Harold, 4,508,927, Cl. 568-858.000.

Hall, George R.; Hall, Robert J.; and Cookerly, Jack C., to Norlin Industries. Method and apparatus for improved automatic harmonization. 4,508,002, Cl. 84-1.030.

Hall, Robert J.: *See*—
Hall, George R.; Hall, Robert J.; and Cookerly, Jack C., 4,508,002, Cl. 84-1.030.

Halliburton Company: *See*—
Borchardt, John K., 4,508,629, Cl. 252-8.55D.
Hamid, Syed, 4,508,133, Cl. 137-68.00R.
Skinner, Neal G.; and Wesson, David S., 4,508,174, Cl. 166-373.000.

Hama, Hiroaki; and Abe, Toshiro, to Mitsubishi Denki Kabushiki Kaisha. System for air-conditioning and hot water supplying. 4,507,938, Cl. 62-324.100.

Hamada, Hideo: *See*—
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,509,124, Cl. 364-424.100.

Hamelin Industries, Inc.: *See*—
LeBlond, Charles E.; and LeBlond, Henri, 4,508,392, Cl. 301-63.0PW.

Hamer, Anthony D.: *See*—
Etherton, Bradley P.; and Hamer, Anthony D., 4,508,843, Cl. 502-115.000.

Hamid, Syed, to Halliburton Company. Protective cover retainer. 4,508,133, Cl. 137-68.00R.

Hamilton Industries, Inc.: *See*—
Gilbert, Wilbur E.; Martin, Robert E.; and Belonger, Donald P., 4,508,387, Cl. 297-429.000.

Hamm, Donald J., to CPC International Inc. Low calorie edible oil substitutes. 4,508,746, Cl. 426-601.000.

Hammarstedt, Gosta, to Arcu Armaturindustri AB. Thermostatic sensor and method of making same. 4,507,921, Cl. 60-527.000.

Hammond, Steve A. Suntan booth. 4,508,120, Cl. 128-372.000.

Handy, Christopher C., Jr.: *See*—
Lorimer, D'Arcy H.; and Handy, Christopher C., Jr., 4,508,688, Cl. 423-92.000.

Handy, Richard L.; and Murray, James A., to Iowa State University Research Foundation, Inc. Method for controlling moisture-expansive clay supporting building foundations. 4,508,472, Cl. 405-229.000.

Haney, Jerry D.: *See—*
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Hanks, Thomas W.: *See—*
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Hannon, Robert J.: *See—*
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Hansen, Allan H.: *See—*
Pedersen, Svend P.; Molbaek, Jens J.; and Hansen, Allan H., 4,508,262, Cl. 236-42.000.

Hansen, Michael S. Roller reamer/stabilizer. 4,508,184, Cl. 175-346.000.

Hansen, Thomas C. Electronically controlled coil assembly. 4,509,109, Cl. 363-126.000.

Hansson, Ingvar J. M.; Hakansson, Hakan B.; Igefjord, Magnus G. K.; and Wall, Berth-Ove G., to Gambro Crafon AB. Method of manufacturing temperature-sensitive instruments. 4,507,854, Cl. 29-612.000.

Hanulik, Jozef, to Gesellschaft zur Forderung der industrieorientierten. Process for the decontamination of steel surfaces and disposal of radioactive waste. 4,508,641, Cl. 252-626.000.

Hara, Yasuhiko; Akiyama, Nobuyuki; Fushimi, Satoru; Oshima, Yoshimasa; and Aoki, Nobuhiko, to Hitachi, Ltd. Pattern detection system. 4,508,453, Cl. 356-394.000.

Harada, Kazuhiro; Tsuchiya, Yuzoh; Sekiguchi, Nobuo; and Ishikawa, Toshio, to Nippon Telegraph and Telephone Public Corp.; and Showa Electric Wire & Cable Co. Cable pulling/feeding apparatus. 4,508,251, Cl. 226-25.000.

Harada, Yuji, to Canon Kabushiki Kaisha. Ink projections on the polarizer of an electro-optic display. 4,508,428, Cl. 350-337.000.

Harata, Mituo; Hiraki, Hideaki; Uno, Shigeki; Sakuma, Kazuo; and Matsunaga, Kiyosi, to Tokyo Shibaura Denki Kabushiki Kaisha. Humidity-sensitive element and process for producing the same. 4,509,035, Cl. 338-35.000.

Hargreaves, Rodney B., to Imperial Chemical Industries, PLC. Pyridazin-3-one derivatives. 4,508,721, Cl. 514-252.000.

Harlan, Wayne E.: *See—*
Lagoni, William A.; and Harlan, Wayne E., 4,509,080, Cl. 358-166.000.

Harrell, Bruce W. Detachable shoe-pocket system. 4,507,882, Cl. 36-136.000.

Harrington, John A., to Minnesota Mining and Manufacturing Company. Apparatus for producing a code word. 4,509,194, Cl. 382-56.000.

Harris, Philip H., to Texas Industries, Inc. Co-production of cementitious products. 4,508,573, Cl. 106-100.000.

Harris, Robert N.; and McGuire, Michael E., to Ericsson, Inc. Tandem stripping and reversing apparatus. 4,508,278, Cl. 242-1.000.

Harris, Robert W., to Gould Inc. Enhanced delta modulation encoder. 4,509,037, Cl. 340-347.0AD.

Harrison, Anthony W., to Lucas Industries public limited company. Hydraulic flow control valves. 4,508,140, Cl. 137-501.000.

Harshbarger, John H., to Visual Information Institute, Inc. Interlace detector. 4,509,079, Cl. 358-165.000.

Hartco Company: *See—*
Pearson, Kenneth C., 4,508,220, Cl. 206-343.000.

Hartsock, Dale L., to Ford Motor Company. Ceramic head for internal combustion engine. 4,508,066, Cl. 123-41.710.

Haruhara, Kazuyoshi, to Casio Computer Co., Ltd. Printing apparatus with computer control of impressing a print setting mark on a recording sheet for realignment. 4,508,462, Cl. 400-70.000.

Hasbro Industries, Inc.: *See—*
Girsch, B. J. Maria; Girsch, Charles W.; and McCarthy, Thomas C., 4,508,512, Cl. 434-259.000.

Hasegawa, Akira: *See—*
Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, 4,508,875, Cl. 525-308.000.

Hasegawa, Shumpei; and Yamato, Akihiro, to Honda Giken Kogyo Kabushiki Kaisha; and Matsushita Electric Industrial Co., Ltd. Electronic fuel injection control system for multi-cylinder internal combustion engines. 4,508,083, Cl. 123-491.000.

Hasegawa, Shumpei; and Kishi, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling fuel supply to an internal combustion engine after termination of fuel cut. 4,508,088, Cl. 123-493.000.

Haselswerdt, Vernon: *See—*
Mayfield, John M., Jr.; and Haselswerdt, Vernon, 4,508,132, Cl. 137-62.000.

Hashiguchi, Makoto: *See—*
Yamato, Akihiro; and Hashiguchi, Makoto, 4,508,074, Cl. 123-327.000.

Hashimoto, Masao; and Kato, Katsumi, to Seikosha Co., Ltd. Clock having a rotationally displaceable clock movement. 4,508,459, Cl. 368-276.000.

Hatakeyama, Tetsuya: *See—*
Kanda, Masahiro; Hatakeyama, Tetsuya; and Morito, Yusuke, 4,508,640, Cl. 252-503.000.

Hatch, Roger C.: *See—*
Booth, Nicholas H.; Hatch, Roger C.; and Crawford, Lester M., 4,508,715, Cl. 514-280.000.

Hatori, Masami; Ohkuma, Hiroaki; Konishi, Masataka; Miyaki, Takeo; and Kawaguchi, Hiroshi, to Bristol-Myers Company. Antitumor antibiotics BBM-2040A and BBM-2040B. 4,508,647, Cl. 260-239.30T.

Hausberg, Hans-Heinrich; Prucher, Helmut; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus, to Merck Patent Gesellschaft mit beschrankter Haftung. Basic ethers useful as antidepressant agents. 4,508,732, Cl. 514-466.000.

Hauser, Herbert J., Jr.: *See—*
Kabele, Dennis F.; and Hauser, Herbert J., Jr., 4,508,019, Cl. 92-158.000.

Hausser, Horst, to Horst Hausser Metallwaren GmbH. Furniture fitting. 4,508,302, Cl. 248-297.300.

Hawes, David H., to Westvaco Corporation. Discontinuous fiber pretreatment. 4,508,860, Cl. 524-13.000.

Hawes, Debra K., to Rockwell International Corporation. Continuous form paper with pull tabs for easier separation. 4,508,365, Cl. 281-2.000.

Hawker, Fred D.: *See—*
Noren, Gerry K.; Poklacki, Erwin S.; Hawker, Fred D.; and Sich, Janice M., 4,508,889, Cl. 528-28.000.

Hayashi, Kimiaki: *See—*
Yoneda, Naoto; Kato, Jyoji; Hayashi, Kimiaki; Ochiai, Takashi; and Kinashi, Keizo, 4,508,727, Cl. 514-398.000.

Hayashi, Yoshio; Aoyagi, Kouji; Sakurai, Toshio; Kashima, Tusnehiro; and Higeta, Koichi, to Sony Corporation. Word processor. 4,509,138, Cl. 364-900.000.

Hayosh, Robert J.; Lewis, Robert H.; and Simon, Frederick A., to Ford Motor Company. Tape deck with take-up reel rotation sensor configured to prevent tape windup on the capstan or pinch roller. 4,508,280, Cl. 242-191.000.

Haze, Setsuo: *See—*
Minamida, Kazukiyo; Haze, Setsuo; and Yamada, Seiji, 4,508,185, Cl. 177-1.000.

Health-Mor, Inc.: *See—*
Martinec, Eugene F., 4,507,819, Cl. 15-321.000.

Heath, Chester A., to International Business Machines Corporation. Peripheral interface adapter circuit for use in I/O controller card having multiple modes of operation. 4,509,113, Cl. 364-200.000.

Heber, Helmut; Eberle, Reinhard; and Teetz, Volker, to Behringwerke Aktiengesellschaft. Chromogenic compounds, a process for their preparation and their use. 4,508,644, Cl. 260-112.50R.

Heberlein Maschinenfabrik AG: *See—*
Simmen, Christian, 4,507,833, Cl. 28-254.000.

Heckl, Franz; and Herget, Herbert, to Lenser Verwaltungs-GmbH. Snap-together filter-plate assembly. 4,508,623, Cl. 220-229.000.

Hedlund, Martin L.: *See—*
Leirnes, Johan S.; Lundstrom, Malkolm S.; Hedlund, Martin L.; and Buren, Kurt J. A., 4,508,565, Cl. 75-77.000.

Heeren, Vernon L., to Raytheon Company. RF Applicator for in situ heating. 4,508,168, Cl. 166-248.000.

Hees, Eckart: *See—*
Bauer, Gerhard; Hees, Eckart; and Beckers, Karl-Dieter, 4,508,241, Cl. 222-600.000.

Hegarty, Bernard L. Fence system. 4,508,320, Cl. 256-47.000.

Heiart, Robert B.; and Cohen, Abraham B., to Du Pont de Nemours, E. I., and Company. Multiple registration and imaging process to form a set of registered imaged elements. 4,508,802, Cl. 430-22.000.

Heidemann, Albert: *See—*
Wurster, Ewald; and Heidemann, Albert, 4,508,991, Cl. 313-579.000.

Heilweil, Emanuel: *See—*
Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, 4,508,908, Cl. 548-213.000.

Heimlicher, Peter, to Contrinex S.A.; and Siemens Aktiengesellschaft, a part interest. Oscillator with a temperature compensated oscillating coil. 4,509,023, Cl. 331-176.000.

Heina, Karl-Fritz: *See—*
Klenk, Emil; and Heina, Karl-Fritz, 4,508,214, Cl. 198-833.000.

Heine, Otto R., to R&H Technology, Inc. High capacity linear rotary bearing. 4,508,395, Cl. 308-6.00C.

Heinemann, Henning: *See—*
Liepmann, Hans; Ruhland, Michael; Muesch, Herbert; Benson, Werner; Heinemann, Henning; and Zeugner, Horst, 4,508,716, Cl. 514-220.000.

Heintzelman, William J.; and Godar, Richard L., to Petrolite Corporation. Mixtures of alkyl and alkenyl succinic acids and polymer acids. 4,508,637, Cl. 252-396.000.

Heiss, Lorenz, to Hoechst Aktiengesellschaft. Process for the preparation of 4,4'-bis[benz(ox, othi or imid)azol-2-yl]stilbenes. 4,508,903, Cl. 548-156.000.

Heiz, Ulrich, to Inventio AG. Installation for the automatic removal and reception of loads through the intermediary of transport vehicles. 4,508,484, Cl. 414-337.000.

Helmond, Johannes: *See—*
van Dijk, Jacob; Renken, Johannes W.; Dekker, Jan G.; and Helmond, Johannes, 4,508,652, Cl. 260-407.000.

Helms, Thomas G. Compact heavy duty lifting crane. 4,508,233, Cl. 212-182.000.

Hemme, Wilbur F., to Eaton Corporation. Gas valve. 4,508,314, Cl. 251-11.000.

Hemphill, Charles W. System for efficiently converting hydrocarbons into power. 4,507,924, Cl. 60-595.000.

Henderson, Lawrence E., to Emergency Power Engineering, Inc. Emergency power system and logic therefor. 4,508,974, Cl. 307-66.000.

Henkel Corporation: *See—*
Whyzmuzis, Paul D.; and Spinks, Anne E., 4,508,868, Cl. 524-607.000.

Henkel Kommanditgesellschaft: *See—*
Kluth, Hermann; and Meffert, Alfred, 4,508,853, Cl. 521-107.000.

Henshaw, Philip D., to Massachusetts Institute of Technology. Photorefractive laser beamsteering device. 4,508,431, Cl. 350-354.000.

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Hepburn, George R., to Dynasplint Systems, Inc. Adjustable splint. 4,508,111, Cl. 128-87.00R.

Hepfer, Rolf; and Runzler, Jurgen, to Joseph Kieninger Uhrenfabrik GmbH. Striking clock with device for disconnecting the striking mechanism. 4,508,456, Cl. 368-262.000.

Herbert, Paul F.: *See*—
Cowell, Peter A.; and Herbert, Paul F., 4,508,178, Cl. 172-239.000.

Herbert, Tony E. G., to Rotaflex p.l.c. Electrical supply connector for continuous outlet track. 4,508,400, Cl. 339-22.00R.

Herbertz, Toni: *See*—
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,508,672, Cl. 264-78.000.

Herbulot, Jean; and Jumel, Bernard, to Valeo. Brake shoe. 4,508,199, Cl. 188-250.00B.

Hergenrother, William L.; Matlock, Mark G.; and Ambrose, Richard J., to Firestone Tire & Rubber Company, The. Impact resistant polymeric compositions containing polyamides, maleic anhydride adducts of hydrogenated polymers and graft copolymers thereof. 4,508,874, Cl. 525-285.000.

Herget, Herbert: *See*—
Heckl, Franz; and Herget, Herbert, 4,508,623, Cl. 220-229.000.

Herloski, Robert P., to Xerox Corporation. Holographic scanning system utilizing a scan linearization lens. 4,508,421, Cl. 350-3.710.

Herman, Timm R.; and Mikic, Frank, to Snap-on Tools Corporation. Quick release mechanism for ratchet wrench. 4,508,005, Cl. 81-177.00G.

Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar, 4,508,454, Cl. 366-80.000.

Hermans, Jacobus G. J. M.: *See*—
Mulders, Gerardus L. M.; and Hermans, Jacobus G. J. M., 4,508,471, Cl. 405-109.000.

Herr, Diane E.: *See*—
Bantel, Richard G.; and Herr, Diane E., 4,509,167, Cl. 370-62.000.

Herring, Asa. Snap-on plastic cover for sun-damaged vinyl covered dashboard pads and method of making. 4,508,381, Cl. 296-70.000.

Herronen, John R.: *See*—
Bolle, Fred; Herronen, John R.; and Wright, Joseph M., 4,508,212, Cl. 198-781.000.

Hertzenberg, Elliot P.: *See*—
McLaughlin, John R.; and Hertzenberg, Elliot P., 4,508,742, Cl. 426-330.400.

Herubel, Jean-Frederic, to N. Schlumberger and Cie. Automatic machine for splitting butchery animals, notably pigs. 4,507,822, Cl. 17-23.000.

Hessling, Heinz W.; and Weykam, Gottfried J., to Weykam, Gottfried J. Lifting device for a magazine for empty pallets in an automatic palletizing machine. 4,508,483, Cl. 414-127.000.

Hettinger, William P., Jr.: *See*—
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,508,839, Cl. 502-65.000.

Hewlett-Packard Company: *See*—
Bartlett, Keith G.; and Caolo, Mary A., 4,508,591, Cl. 156-659.100.
Casciani, James R., 4,508,965, Cl. 250-231.0SE.
Low, Robert N.; Cloutier, Frank L.; and Siewell, Gary, 4,509,062, Cl. 346-140.00R.

Heywang, Hermann: *See*—
Behn, Reinhard; Heywang, Hermann; and Pachonik, Horst, 4,508,049, Cl. 118-50.100.

Hickethier, Craig R.; Hogan, Ronald E.; and Prahl, Marvin E., to International Business Machines Corporation. Method and apparatus for loading and registering a diskette in a diskette drive. 4,509,086, Cl. 360-99.000.

Hickling, Michael: *See*—
Ring, John; French, David; Hickling, Michael; and Sturgess, Michael G., 4,508,765, Cl. 427-386.000.

Hickman, Mark R.; and Brown, Michael M., to Vee Arc Corporation. Adjustable frequency drive. 4,508,976, Cl. 307-270.000.

Hicks, Robert R. Variable access parcel and mail receptacle. 4,508,259, Cl. 232-17.000.

Higeta, Koichi: *See*—
Hayashi, Yoshio; Aoyagi, Kouji; Sakurai, Toshio; Kashima, Tusnehiro; and Higeta, Koichi, 4,509,138, Cl. 364-900.000.

Higuchi, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Passive seat belt device. 4,508,362, Cl. 280-804.000.

Higuchi, Masayuki: *See*—
Tomino, Tadashi; and Higuchi, Masayuki, 4,508,402, Cl. 339-17.0CF.

Hijiya, Toyoto: *See*—
Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,508,912, Cl. 549-253.000.

Hill, Michael R. H.: *See*—
Moseley, Patrick T.; and Hill, Michael R. H., 4,508,147, Cl. 141-1.100.

Hilti Aktiengesellschaft: *See*—
Klueber, Wilhelm, 4,508,180, Cl. 173-104.000.

Hineline, Edson S., Jr.: *See*—
Bench, Ronald W.; and Hineline, Edson S., Jr., 4,508,938, Cl. 179-90.0BD.

Hinkle, Donald H., to Dana Corporation. Extractor tool. 4,507,837, Cl. 29-262.000.

Hintsch, Otto, to Sulzer Brothers Limited. Gripper projectile for a weaving machine. 4,508,146, Cl. 139-196.200.

Hiraiwa, Kazuyoshi; and Yamasaki, Saburou, to Nissan Motor Company, Limited. Transmission shift control mechanism. 4,507,981, Cl. 74-477.000.

Hiraki, Hideaki: *See*—
Harata, Mituo; Hiraki, Hideaki; Uno, Shigeki; Sakuma, Kazuo; and Matsunaga, Kiyosi, 4,509,035, Cl. 338-35.000.

Hirano, Akira, to Nippon Electric Co., Ltd. Code-converting system for band compression of digital signals. 4,509,038, Cl. 340-347.0DD.

Hirano, Shigeo: *See*—
Yamamuro, Kiyohiko; Hirano, Shigeo; Itoh, Isamu; and Iwasa, Yasuo, 4,508,816, Cl. 430-393.000.

Hirao, Yasutaka: *See*—
Suzuki, Koichi; Oose, Seiroku; So, Yuzo; and Hirao, Yasutaka, 4,509,104, Cl. 362-32.000.

Hirata, Toshiyuki: *See*—
Takeda, Keisou; and Hirata, Toshiyuki, 4,508,264, Cl. 237-12.30B.

Hirbour, Louis: *See*—
Johnson, Frank; Reese, Dieter; and Hirbour, Louis, 4,508,611, Cl. 204-202.000.

Hirohata, Michio, to Canon Kabushiki Kaisha. Electromagnetically driven shutter camera having automatic focusing device. 4,508,442, Cl. 354-400.000.

Hiromitsu, Naka. Access door and framing apparatus for the access door's framework. 4,507,836, Cl. 29-252.000.

Hirose Electric Co., Ltd.: *See*—
Kawanami, Norihide; Miyake, Yukinori; Kawamura, Kenji; and Toda, Toshiharu, 4,509,090, Cl. 361-119.000.

Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, to Hitachi, Ltd. Washing machine with drier. 4,507,942, Cl. 68-20.000.

Hirose, Masashi: *See*—
Yashima, Michio; Komatsu, Akihiro; Takanashi, Masami; Hirose, Masashi; and Nakayama, Kengo, 4,508,944, Cl. 200-61.850.

Hirsch, John L.; and VanVoorst, Gene A., to Curt G. Joa, Inc. Pad-cross folder. 4,508,528, Cl. 493-426.000.

Hirsch, Werner; and Ehling, Uwe, to B.A.T. Cigaretten-Fabriken GmbH. Apparatus for determining the concentration of vapors in a flowing gas stream. 4,507,875, Cl. 34-44.000.

Hirunuma, Masanori: *See*—
Iwai, Noboru; Hirunuma, Masanori; and Kaneko, Junichi, 4,508,669, Cl. 264-36.000.

Hitachi, Ltd.: *See*—
Doi, Motomichi; Okano, Kinpei; Nii, Katsutoshi; and Yokota, Yoshiharu, 4,508,396, Cl. 384-463.000.
Furihata, Makoto, 4,509,036, Cl. 340-347.0AD.
Hara, Yasuhiko; Akiyama, Nobuyuki; Fushimi, Satoru; Oshima, Yoshimasa; and Aoki, Nobuhiko, 4,508,453, Cl. 356-394.000.
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,507,942, Cl. 68-20.000.
Nagae, Yoshiharu; Isogai, Masato; Kawakami, Hideaki; and Nakano, Fumio, 4,508,429, Cl. 350-350.00S.
Takano, Yoshiya, 4,508,081, Cl. 123-450.000.
Tanimura, Nobuyoshi; Yamamoto, Sho; Yoshizaki, Kazuo; and Akima, Isao, 4,509,147, Cl. 365-190.000.
Umeda, Jun-ichi; Nakashima, Hisao; Kajimura, Takashi; and Kuroda, Takao, 4,509,173, Cl. 372-50.000.

Hitachi Microcomputer Engineering, Ltd.: *See*—
Tanimura, Nobuyoshi; Yamamoto, Sho; Yoshizaki, Kazuo; and Akima, Isao, 4,509,147, Cl. 365-190.000.

Hitchiner Manufacturing Co., Inc.: *See*—
Belliveau, Dennis A.; and Thomas, Eugene W., 4,508,157, Cl. 164-63.000.

Hitt, Gerard J.; Nowakowski, Victor A.; and Warren, Walter R., to AAR Corp. Digital barometric altimeter. 4,507,962, Cl. 73-384.000.

Hobart Corporation: *See*—
Treiber, Fritz F., 4,507,904, Cl. 53-203.000.

Hodek, Robert B.; and Seiner, Jerome A., to PPG Industries, Inc. Process for the preparation of a catalyst useful for anionic lactam polymerization. 4,508,646, Cl. 260-239.30R.

Hodges, Everett L. Apparatus and method for hydraulically mining unconsolidated subterranean mineral formations. 4,508,389, Cl. 299-17.000.

Hoechst Aktiengesellschaft: *See*—
Bingmann, Horst, 4,508,904, Cl. 546-196.000.
Heiss, Lorenz, 4,508,903, Cl. 548-156.000.
Pietzarka, Wilhelm F.; Malten, Albrecht; and Strauss, Georg, 4,508,666, Cl. 264-12.000.
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,508,900, Cl. 546-99.000.

Hofbauer, August; and Beer, Michael, to Dr. Ing. h.c.F. Porsche A.G. Combustion space of a piston driven internal combustion engine. 4,508,073, Cl. 123-307.000.

Hofer, Alan: *See*—
Alexandrovich, George; Edinger, J. Raymond; Hofer, Alan; and Kuykendall, John, 4,509,159, Cl. 369-170.000.

Hofer, Peter H., to International Harvester Company. Abrasive liquid jet cutting apparatus. 4,507,898, Cl. 51-410.000.

Hofert, Paul: *See*—
Schlick, Horst; Hofert, Paul; and Caramel, Rudolf, 4,508,458, Cl. 368-76.000.

Hoffmann-La Roche Inc.: *See*—
Baggiolini, Enrico G.; Batcho, Andrew D.; Boris, Alfred; and Uskokovic, Milan R., 4,508,651, Cl. 260-397.200.

Hoffmann, Wilhelm: *See*—
Teckentrup, Hermann; and Hoffmann, Wilhelm, 4,507,926, Cl. 60-656.000.

Hofmann, Hans-Otto, to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft. Adjustable seat assembly for motor vehicles. 4,508,386, Cl. 297-346.000.

Hofmann, Heinrich; and Treutlein, Dieter, to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien. Anti-friction bearing with assembly feature. 4,508,397, Cl. 384-510.000.

Hofmann, Karl; and Banzhaf, Werner, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,508,275, Cl. 239-533.300.

Hogan, Ronald E.: *See—*
Hickethier, Craig R.; Hogan, Ronald E.; and Prahl, Marvin E., 4,509,086, Cl. 360-99.000.

Hoitink, Todd B.: *See—*
Muncaster, John W.; Roberts, Michael G.; Rowlett, R. David; Hoitink, Todd B.; Uffner, William E.; and White, Robert N., 4,508,770, Cl. 428-63.000.

Hokamura, Sadakazu; Shinohara, Toshio; Aritomi, Mitsutoshi; and Yoshida, Yuji, to Dai Nippon Tokyo Co., Ltd; and Mitsubishi Yuka Fine Chemicals Co., Ltd. Process for forming a corrosion resistant coating. 4,508,767, Cl. 427-407.100.

Holden, Scott C., to Varian Associates, Inc. Method for gas-assisted, solid-to-solid thermal transfer with a semiconductor wafer. 4,508,161, Cl. 165-1.000.

Holl, Peter: *See—*
Foll, Eberhard; Holl, Peter; and Vetter, Helmut, 4,508,750, Cl. 427-44.000.

Holleyman, John E. Reciprocating piston compressed fluid engine having radial cylinders and triggerable valves. 4,507,918, Cl. 60-370.000.

Hollinger, David P.; Nelson, David E.; and Hannon, Robert J., to Hydroacoustics Inc. Time division multiplex transmission of submultiplex sequences of signals from sections of a chain of data acquisition units. 4,509,170, Cl. 370-85.000.

Hollis, Ralph L., Jr., to International Business Machines Corporation. Precision X-Y positioner. 4,509,002, Cl. 318-687.000.

Holubka, Joseph W., to Ford Motor Company. Crosslinkable composition of matter III. 4,508,879, Cl. 525-528.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Shumpei; and Yamato, Akihiro, 4,508,083, Cl. 123-491.000.
Hasegawa, Shumpei; and Kishi, Noriyuki, 4,508,088, Cl. 123-493.000.
Higuchi, Kazuo, 4,508,362, Cl. 280-804.000.
Yamato, Akihiro; and Hashiguchi, Makoto, 4,508,074, Cl. 123-327.000.
Yamato, Akihiro; and Koike, Akihiko, 4,508,084, Cl. 123-492.000.
Yasuoka, Akimasa; and Otobe, Yutaka, 4,508,087, Cl. 123-493.000.

Honda Motor Co., Ltd.: *See—*
Yamato, Akihiro, 4,508,085, Cl. 123-492.000.
Yashima, Michio; Komatsu, Akihiro; Takanashi, Masami; Hirose, Masashi; and Nakayama, Kengo, 4,508,944, Cl. 200-61.850.

Honda, Naoto: *See—*
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,509,201, Cl. 455-73.000.

Honeywell Inc.: *See—*
Wilwerding, Dennis J.; and Adams, James R., Jr., 4,508,963, Cl. 250-201.000.

Honeywell Information Systems Inc.: *See—*
Rey, Thomas J.; and Forbes, Ervin, 4,509,121, Cl. 364-200.000.
Shenk, William H., 4,509,118, Cl. 364-200.000.

Honickman, Reuben. Wall unit. 4,508,231, Cl. 211-199.000.

Hoobler, Mary A.: *See—*
Sikorski, James A.; and Hoobler, Mary A., 4,508,663, Cl. 260-968.000.

Hoops, Elizabeth A.: *See—*
Bean, Maura M.; Nishita, Kazuko D.; and Hoops, Elizabeth A., 4,508,736, Cl. 426-19.000.

Hoover Universal, Inc.: *See—*
Bowman, James A., 4,508,385, Cl. 297-341.000.

Horace Small Manufacturing Company: *See—*
Small, Irvin L., 4,507,802, Cl. 2-2.500.

Horauf, Friedrich: *See—*
Freller, Helmut; Horauf, Friedrich; Lorenz, Hans-Peter; and Mund, Konrad, 4,508,430, Cl. 350-351.000.

Horgan, Anthony M.: *See—*
Tokoli, Emery G.; Horgan, Anthony M.; and Carmichael, Kathleen M., 4,508,650, Cl. 260-245.860.

Horie, Seiji: *See—*
Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, 4,508,805, Cl. 430-72.000.

Horigome, Koichi; Okada, Seizo; Nishimura, Katsuji; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Teller machine with preset abilities. 4,509,136, Cl. 364-900.000.

Horn, Victor M.: *See—*
Matzner, Bruce; Horn, Victor M.; Curulla, Michael V.; and Price, John F., 4,508,679, Cl. 376-438.000.

Horst Hausser Metallwaren GmbH: *See—*
Hausser, Horst, 4,508,302, Cl. 248-297.300.

Hoshiko Medical Laboratories, Inc.: *See—*
Hoshiko, Yoshinori, 4,508,700, Cl. 423-579.000.

Hoshiko, Yoshinori, to Hoshiko Medical Laboratories, Inc. Method of generating oxygen for emergency use. 4,508,700, Cl. 423-579.000.

Hosoi, Hideki: *See—*
Takaki, Akira; and Hosoi, Hideki, 4,508,876, Cl. 525-310.000.

Hospadaruk, Vladimir: *See—*
Huff, John; Wiggle, Ronald R.; and Hospadaruk, Vladimir, 4,508,684, Cl. 422-8.000.

Houghton, Richard W. Degassing/brine tank for pool chlorinating system. 4,508,687, Cl. 422-276.000.

Houlbrook, Kenneth; and Thornton, Paul A., to Clantex Limited. Dispensers for flowable compositions. 4,508,245, Cl. 222-327.000.

Howes, Peter, to Lucas Industries public limited company. Fuel injection pumps. 4,508,489, Cl. 417-221.000.

Howkins, Stuart D., to Exxon Research & Engineering Co. Method of operating an ink jet. 4,509,059, Cl. 346-1.100.

Hrinda, Michael E.: *See—*
Amphlett, Godfrey W.; and Hrinda, Michael E., 4,508,709, Cl. 424-101.000.

Hsiao, Charles H., to Key Pharmaceuticals, Inc. Sustained release aspirin. 4,508,702, Cl. 424-19.000.

Hubele, Adolf: *See—*
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,508,731, Cl. 514-472.000.

Hubler, Lawrence C.; Ferrara, Joseph J.; Albright, Roger N.; and Bassett, Raymond C., to Xerox Corporation. High speed duplicator with stapler and staple loading arrangement. 4,508,329, Cl. 270-53.000.

Huff, John; Wiggle, Ronald R.; and Hospadaruk, Vladimir, to Ford Motor Company. Protection of aluminum based structures against heat transfer corrosion in cooling systems. 4,508,684, Cl. 422-8.000.

Hufnagel, Walter; and Kreuz, Alois, to VDO Adolf Schindling AG. Speed indicator. 4,507,960, Cl. 73-187.000.

Hughes Aircraft Company: *See—*
Brault, Robert G., 4,508,812, Cl. 430-270.000.

Hughes, Richard L.; and Sigmon, Ned A., to AMP Incorporated. Wire stuffing cover. 4,508,411, Cl. 339-99.00R.

Hughes Tool Company: *See—*
Atkinson, Gerald O., 4,507,843, Cl. 29-466.000.
Beavers, John A.; and North, Willard F., 4,508,583, Cl. 156-94.000.

Huhn, Magda; Szabo, Gabor; Dvortsak, Peter; Karpati, Marianna; and Somfai, Eva, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Pentahalophenyl ester of cyanoacetic acid derivatives. 4,508,658, Cl. 260-465.00D.

Hujer, Friedrich: *See—*
Weber, Klaus; Hujer, Friedrich; and Schaner, Ferdinand, 4,508,224, Cl. 206-455.000.

Hulsbeck & Furst GmbH & Co. KG: *See—*
Stellberger, Karl-Heinz, 4,509,093, Cl. 361-172.000.

Hultquist, John V. Force producing and transmitting apparatus. 4,507,951, Cl. 72-431.000.

Humphreys, Colin J.: *See—*
Mochel, Margaret E.; and Humphreys, Colin J., 4,508,952, Cl. 219-121.0EH.

Hunt, Larry J.: *See—*
Campbell, Willis R.; Hunt, Larry J.; and Waldrop, T. William, 4,508,359, Cl. 280-463.000.

Hunter, Travis L. Masking paper and tape dispenser. 4,508,587, Cl. 156-527.000.

Husar, Dieter: *See—*
Polaschegg, Hans-Dietrich; and Husar, Dieter, 4,508,622, Cl. 210-96.200.

Hutchison, Joseph A. Locking means for solar collector. 4,508,426, Cl. 350-614.000.

Hwang, Shih M. Quincunx-shaped lock device. 4,507,945, Cl. 70-363.000.

Hydroacoustics Inc.: *See—*
Hollinger, David P.; Nelson, David E.; and Hannon, Robert J., 4,509,170, Cl. 370-85.000.

Iacoviello, Steven A.: *See—*
Kaczur, Jerry J.; Iacoviello, Steven A.; and Miller, Edward G., 4,508,602, Cl. 204-95.000.

ICG Gasbec Inc.: *See—*
Mathieu, Jean-Paul, 4,507,952, Cl. 73-3.000.

Ichihara, Masaki, to Nippon Electric Co., Ltd. Power supply systems for use in radio communication systems. 4,509,199, Cl. 455-7.000.

Idemitsu Kosan Company Limited: *See—*
Nakai, Masayuki, 4,508,539, Cl. 44-10.00D.

Igefjord, Magnus G. K.: *See—*
Hansson, Ingvar J. M.; Hakansson, Hakan B.; Igefjord, Magnus G. K.; and Wall, Berth-Ove G., 4,507,854, Cl. 29-612.000.

Iida, Kazuyoshi: *See—*
Nomoto, Sadao; and Iida, Kazuyoshi, 4,509,061, Cl. 346-107.00R.

Ikai, Takasi: *See—*
Sakata, Gozyo; Numata, Tatsuo; Makino, Kenzi; Kakuta, Takuya; Kusano, Kazuya; Ikai, Takasi; and Oguti, Tosihiko, 4,508,561, Cl. 71-94.000.

Ikeda, Hidekatsu, to Amada Company, Limited. Shearing machine. 4,507,997, Cl. 83-368.000.

Ikeda, Nobuo: *See—*
Yoshimura, Hirofumi; and Ikeda, Nobuo, 4,508,946, Cl. 219-10.55F.

Ikeda, Tsuneichi: *See—*
Naya, Masaru; and Ikeda, Tsuneichi, 4,508,023, Cl. 99-279.000.

Ikeda, Yasunari: *See—*
Fujimura, Yasushi; Okada, Takashi; Tanaka, Yutaka; and Ikeda, Yasunari, 4,509,071, Cl. 358-11.000.

Ikegami, Satoshi: *See—*
Monden, Tsuneo; Ozu, Masao; and Ikegami, Satoshi, 4,508,495, Cl. 418-63.000.

Ikegaya, Kazutoshi: *See—*
Takeda, Takeshi; Machida, Yasuhiko; Kudoh, Yasuo; and Ikegaya, Kazutoshi, 4,508,632, Cl. 252-70.000.

IMA - Industria Macchine Automatiche S.p.A.: *See—*
Romagnoli, Andrea, 4,508,524, Cl. 493-11.000.

Imai, Chikara, to Ricoh Company, Ltd. Reproduction process control method. 4,508,446, Cl. 355-14.00R.

Imai, Masao: *See*—
Sasagawa, Katsuyoshi; and Imai, Masao, 4,508,655, Cl. 260-429.00R.
Imatani, Tsuneo: *See*—
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,508,481, Cl. 413-1.000.
Immuno Nuclear Corporation: *See*—
Lindall, Arnold W.; and Elting, James J., 4,508,828, Cl. 436-500.000.
Imperial Chemical Industries, PLC: *See*—
Bailey, Derrick S.; Cogswell, Frederic N.; and Griffin, Brian P., 4,508,891, Cl. 528-191.000.
Cartwright, David, 4,508,907, Cl. 546-345.000.
Hargreaves, Rodney B., 4,508,721, Cl. 514-252.000.
Taylor, Stephen C., 4,508,822, Cl. 435-155.000.
Ina, Yoshifumi: *See*—
Kusakawa, Yukio; Nakamura, Toshiaki; Ina, Yoshifumi; and Inbe, Takashi, 4,508,492, Cl. 417-366.000.
Inaba, Masaichi, to Nippon Mektron Ltd. Keyboard switch. 4,508,942, Cl. 200-5.00A.
Inaga, Hisashi; and Ohtagawa, Kozi, to Kioritz Corporation. Grass trimmer. 4,507,865, Cl. 30-276.000.
Inaike, Toshihiro; Ushimi, Katsuhiko; Yamamoto, Shuji; and Inoue, Toshihiro, to UBE Industries, Ltd. Process for producing aromatic imide polymer laminate material. 4,508,766, Cl. 427-388.200.
Inamoto, Tadayoshi: *See*—
Sugitani, Hiroshi; Inamoto, Tadayoshi; and Yokota, Masami, 4,509,063, Cl. 346-140.00R.
Inbe, Takashi: *See*—
Kusakawa, Yukio; Nakamura, Toshiaki; Ina, Yoshifumi; and Inbe, Takashi, 4,508,492, Cl. 417-366.000.
Industrial Automation Corp.: *See*—
Peyton, John J.; and Watt, Bryan K., 4,509,081, Cl. 358-225.000.
Industrial Research Products, Inc.: *See*—
Carlson, Elmer V., 4,509,193, Cl. 381-113.000.
Industrial Technology Research Institute: *See*—
Chang, Ching-Te; Lee, Lian-Tze; and Su, Hsueh-Ling, 4,508,654, Cl. 260-429.00R.
Ingalls, Robert, to Gentex Corporation. Local external communication system. 4,508,936, Cl. 179-82.000.
Ingersoll Milling Machine Company, The: *See*—
Charles, Paul A. S., 4,508,584, Cl. 156-353.000.
Ingersoll-Rand Co.: *See*—
Bowman, James L., 4,508,496, Cl. 418-201.000.
Innovations Foundation of the University of Toronto, The: *See*—
Zukotynski, Stefan, 4,508,932, Cl. 136-258.000.
Innovative Concepts, Inc.: *See*—
Long, Jerry M.; and Womack, James A., 4,508,217, Cl. 206-45.180.
Inoue, Akira; Takase, Shinji; Sekido, Yasuo; Mori, Masao; and Kubo, Tatsuki, to Nippon Oil Company, Limited. Method for preparation of catalyst carriers. 4,508,849, Cl. 502-263.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,508,604, Cl. 204-129.500.
Inoue, Kiyoshi, 4,508,950, Cl. 219-69.00D.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Traveling-wire EDM method. 4,508,604, Cl. 204-129.500.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM Method and apparatus using liquid hydrocarbon decomposition yielded gases and a deionized water liquid. 4,508,950, Cl. 219-69.00D.
Inoue, Masami: *See*—
Seko, Yasutoshi; Inoue, Masami; and Yanagishima, Takayuki, 4,509,040, Cl. 340-576.000.
Inoue, Takashi: *See*—
Matsuzaki, Minoru; Hachimoto, Akihiko; Inoue, Takashi; Shirai, Hitoshi; Watanabe, Akira; and Tofukuji, Ikuo, 4,508,443, Cl. 354-402.000.
Inoue, Toshihiro: *See*—
Inaike, Toshihiro; Ushimi, Katsuhiko; Yamamoto, Shuji; and Inoue, Toshihiro, 4,508,766, Cl. 427-388.200.
Institute of Gas Technology: *See*—
Victor, John G., 4,508,928, Cl. 568-916.000.
Intel Corporation: *See*—
Palmer, John; Ravenel, Bruce; and Nave, Rafi, 4,509,144, Cl. 364-900.000.
INTERCONTROLE Societe Anonyme: *See*—
Monne, Maxime, 4,508,063, Cl. 122-504.000.
International Business Machines Corporation: *See*—
Agnew, Palmer W.; Coviello, John S.; Green, Linda S.; and Kellerman, Anne S., 4,509,122, Cl. 364-200.000.
Barsotti, Rudolf H.; and Grove, Arthur W., 4,509,007, Cl. 324-60.00C.
Blackwell, Kim J.; White, Russell T., Jr.; and Wilson, James W., 4,508,612, Cl. 204-298.000.
Brannon, James H.; and Lankard, John R., Sr., 4,508,749, Cl. 427-43.100.
Chen, Chin-Long, 4,509,172, Cl. 371-38.000.
DasGupta, Sumit; Graf, Matthew C.; Rasmussen, Robert A.; and Williams, Thomas W., 4,509,008, Cl. 324-73.00R.
Dorler, Jack A.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,508,981, Cl. 307-542.000.
Fabricius, Karen A.; and Kemlage, Bernard M., 4,508,757, Cl. 427-93.000.
Goth, George R.; and Malaviya, Shashi D., 4,508,579, Cl. 148-175.000.
Gumaer, Robert A.; and Mortenson, John A., 4,509,119, Cl. 364-200.000.
Heath, Chester A., 4,509,113, Cl. 364-200.000.
Hickethier, Craig R.; Hogan, Ronald E.; and Prahl, Marvin E., 4,509,086, Cl. 360-99.000.
Hollis, Ralph L., Jr., 4,509,002, Cl. 318-687.000.
Leininger, Joel C.; Moore, Victor S.; and Stahl, William L., Jr., 4,509,114, Cl. 364-200.000.
MacWilliams, David; and Rigbey, Leonard J., 4,508,204, Cl. 193-40.000.
International Harvester Company: *See*—
Amateau, Maurice F.; and Karasek, Keith R., 4,508,158, Cl. 164-110.000.
Hofer, Peter H., 4,507,898, Cl. 51-410.000.
International Paint public limited company: *See*—
Ring, John; French, David; Hickling, Michael; and Sturgess, Michael G., 4,508,765, Cl. 427-386.000.
International Standard Electric Corporation: *See*—
Ross, Peter W., 4,508,427, Cl. 350-335.000.
International Stock Food Corporation: *See*—
Forest, Joseph G.; and Czarnetzky, Edward J., 4,508,737, Cl. 426-54.000.
International Telephone & Telegraph Corporation: *See*—
Ball, David J., 4,508,407, Cl. 339-89.00R.
Intevep, S.A.: *See*—
Larrauri, Jose M.; Arias, Beairit C.; and Galiasso, Roberto E., 4,508,616, Cl. 208-111.000.
Inui, Tsuneo: *See*—
Nemoto, Tadashi; Fukumoto, Ryoichi; Kawamura, Hiroaki; Kondo, Yoshikazu; and Inui, Tsuneo, 4,508,601, Cl. 204-38.500.
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,508,790, Cl. 428-632.000.
Inventio AG: *See*—
Heiz, Ulrich, 4,508,484, Cl. 414-337.000.
Invernizzi, Antonino, to Scagliotti, Alfredo, a part interest. Lock and related key of electronic type. 4,509,092, Cl. 361-172.000.
Iori, Giuseppe: *See*—
Romano, Ugo; and Iori, Giuseppe, 4,508,656, Cl. 260-463.000.
Iowa State University Research Foundation, Inc.: *See*—
Handy, Richard L.; and Murray, James A., 4,508,472, Cl. 405-229.000.
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, to Nisshin Steel Company, Ltd. Process for preparing Zn-Ni-alloy-electroplated steel sheets with excellent adherence of the plated layer. 4,508,600, Cl. 204-27.000.
Irwin, Lawrence F. Locking coupling. 4,508,468, Cl. 403-328.000.
Isago, Terashi: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Process for preparation of metal vessels. 4,508,481, Cl. 413-1.000.
Ishibashi, Tadao; and Kugimiya, Youichi, to Chisso Corporation. Polyolefin resin composition. 4,508,786, Cl. 428-461.000.
Ishida, Masatoki: *See*—
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,508,790, Cl. 428-632.000.
Ishigaki, Kunio: *See*—
Ogawa, Masashi; Ishigaki, Kunio; Iwasaki, Nobuyuki; and Nakamura, Taku, 4,508,818, Cl. 430-523.000.
Ishikawa, Toshio: *See*—
Harada, Kazuhiro; Tsuchiya, Yuzoh; Sekiguchi, Nobuo; and Ishikawa, Toshio, 4,508,251, Cl. 226-25.000.
Ishikura, Tomoyuki: *See*—
Kubo, Katsuro; Yoshioka, Takeo; Okabe, Mitsuyasu; Fukagawa, Yasuo; and Ishikura, Tomoyuki, 4,508,648, Cl. 260-245.20T.
Ishiwata, Kazuya, to Canon Kabushiki Kaisha. Electrochromic element. 4,508,792, Cl. 428-702.000.
Isobe, Masahiro: *See*—
Takami, Toshihiro; and Isobe, Masahiro, 4,508,072, Cl. 123-195.00C.
Isogai, Masato: *See*—
Nagae, Yoshiharu; Isogai, Masato; Kawakami, Hideaki; and Nakano, Fumio, 4,508,429, Cl. 350-350.00S.
Isover Saint-Gobain: *See*—
Baduel, Guy M., 4,508,555, Cl. 65-3.430.
Ito, Koichi: *See*—
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.
Ito, Takaaki: *See*—
Tamura, Yoshio; Ito, Takaaki; and Morino, Toshiharu, 4,508,664, Cl. 261-44.00C.
Ito, Toshimitsu; and Norota, Kazuhiko, to Toyota Jidosha Kabushiki Kaisha. Method of electronically controlling fuel injection for internal combustion engine. 4,508,086, Cl. 123-492.000.
Itoh, Hirotaka: *See*—
Kusui, Akio; Morita, Shuji; Kudoh, Toshio; Tanaka, Yasuo; and Itoh, Hirotaka, 4,508,414, Cl. 339-143.00R.
Itoh, Isamu: *See*—
Yamamuro, Kiyohiko; Hirano, Shigeo; Itoh, Isamu; and Iwasa, Yasuo, 4,508,816, Cl. 430-393.000.

Itoh, Jiro, to Rinnai Corporation. Infrared gas burner plate. 4,508,502, Cl. 431-328.000.

Itoh, Tatsuo; and Stephan, Karl D., to Board of Regents, University of Texas System. Quasi-optical polarization duplexed balanced mixer. 4,509,209, Cl. 455-327.000.

ITT Industries, Inc.: *See—*
Belart, Juan, 4,508,008, Cl. 91-372.000.
Elmis, Herbert; and Klar, Adrian, 4,509,072, Cl. 358-17.000.

Ivary, David J.; and Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Web feeding method and apparatus for a printer. 4,508,252, Cl. 226-44.000.

Iwahashi, Hiroshi: *See—*
Asano, Masamichi; and Iwahashi, Hiroshi, 4,509,148, Cl. 365-230.000.

Iwai, Noboru; Hirunuma, Masanori; and Kaneko, Junichi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process and apparatus for producing thermoplastic resin foam. 4,508,669, Cl. 264-36.000.

Iwamoto, Yoshihiki: *See—*
Yatsunami, Kenrow; and Iwamoto, Yoshihiki, 4,509,129, Cl. 364-513.500.

Iwanaga, Yoshiharu, to Ricoh Company, Ltd. System for separating transfer-printing sheet. 4,508,334, Cl. 271-308.000.

Iwasa, Yasuo: *See—*
Yamamuro, Kiyohiko; Hirano, Shigeo; Itoh, Isamu; and Iwasa, Yasuo, 4,508,816, Cl. 430-393.000.

Iwasaki, Nobuyuki: *See—*
Ogawa, Masashi; Ishigaki, Kunio; Iwasaki, Nobuyuki; and Nakamura, Taku, 4,508,818, Cl. 430-523.000.

Iwasaki, Yoshiki: *See—*
Masuda, Isao; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Komura, Makoto, 4,509,155, Cl. 369-48.000.

Iwata, Yoshitaka: *See—*
Tanaka, Hiroshi; and Iwata, Yoshitaka, 4,508,425, Cl. 350-641.000.

Izumi, Hirotaka, to Fuji Xerox Co., Ltd. Sheet conveying device for a copying machine. 4,508,445, Cl. 355-3.0SH.

Izumi, Kazuo; Shimazaki, Kenji; and Seki, Kenji, to Toho Beslon Co., Ltd. Fibrous activated carbon and process of producing it. 4,508,851, Cl. 502-426.000.

J. M. Voith GmbH: *See—*
Beisswanger, Rudolf, 4,508,283, Cl. 242-56.400.

J. P. Tool: *See—*
Peuterbaugh, Bruce G., 4,508,475, Cl. 408-153.000.

Jackson, Bernie F.: *See—*
Borner, Willy; and Jackson, Bernie F., 4,507,964, Cl. 73-462.000.

Jackson, Henry D. Filtration and separation device. 4,508,621, Cl. 210-86.000.

Jackson, Robert M. Process and apparatus for the preparation of dental models. 4,508,506, Cl. 433-74.000.

Jackson, Thomas R. Magnetic denture retention apparatus. 4,508,507, Cl. 433-189.000.

Jacobs, Harold; Dixon, Samuel, Jr.; and Malecki, Edmund E., to United States of America, Army. Single device for measurement of infrared or millimeter wave radiation. 4,509,009, Cl. 324-95.000.

Jagenberg AG: *See—*
Meurer, Wolfgang, 4,507,994, Cl. 83-58.000.

Jager, Lothar; Peter, Anton; and Winkler, Reinhard, to U.S. Philips Corporation. Tape grounding element in a magnetic-tape cassette. 4,509,087, Cl. 360-130.210.

Jain, Atul, to United States of America, National Aeronautics and Space Administration. Method and apparatus for ΔK synthetic aperture radar measurement of ocean current. 4,509,048, Cl. 343-5.0CM.

Jakobson, Sten; and Rabold, Karl, to Alfa-Laval AB. Milking method and an apparatus therefor. 4,508,058, Cl. 119-14.020.

James Burn International Limited: *See—*
Brindle, Robert J., 4,508,366, Cl. 281-36.000.

Jamon, Jacques, to Compagnie Generale des Etablissements Michelin. Wear and licking alarm for crown or disk brake. 4,508,196, Cl. 188-1.110.

Janberg, Klaus; and Dyck, Hans-Peter, to Deutsche Gesellschaft fur Wiederaufarbeitung. Device for holding, transporting and final storing of burned-out reactor fuel elements. 4,508,969, Cl. 250-506.100.

Janian, Robert. Modified C-shaped mechanical spring seal. 4,508,356, Cl. 277-205.000.

Janitzky, Manfred. Underground shelter. 4,507,899, Cl. 52-169.600.

Janke, Jurgen, to Adolf Illig Maschinenbau GmbH & Co. Method and apparatus for controlling the temperature in thermoforming machines. 4,508,670, Cl. 264-40.600.

Janninck, Robert F.: *See—*
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,508,398, Cl. 339-17.0LM.

Jansen, Deborah S.: *See—*
Peoples, Clarence, Jr.; Puydak, Robert C.; and Jansen, Deborah S., 4,508,771, Cl. 428-95.000.

Jansma, Roger H.; and Sandberg, Karen R., to Nalco Chemical Company. Polyaldehyde/polyacetal compositions. 4,508,594, Cl. 162-135.000.

Japan Bano'k Co., Ltd.: *See—*
Furutsu, Akira, 4,507,828, Cl. 24-16.0PB.

Jenck, Jean, to Rhone-Poulenc Chimie de Base. Preparation of alkyl adipates. 4,508,917, Cl. 560-204.000.

Jenne, Gustav. Driving head for pneumatic pile drivers. 4,508,181, Cl. 175-19.000.

Jensen, Ernst; Knappworst, Jurgen; and Stahlmann, Rudolf, to Dynamit Nobel Aktiengesellschaft. Training cartridge with synthetic resin projectile or dummy projectile. 4,508,036, Cl. 102-444.000.

Jeumont-Schneider: *See—*
Salmon, Jean P., 4,508,298, Cl. 246-167.00R.

Jeumont-Schneider Corporation: *See—*
Guedj, F.; Defaucheux, J.; and Wiart, A., 4,508,984, Cl. 310-14.000.

Jido, Morio, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for spray combination of liquids and apparatus therefor. 4,508,265, Cl. 239-3.000.

Jidosha Kiki Co., Ltd.: *See—*
Shimamura, Morihiko; and Uyama, Shintaro, 4,508,009, Cl. 91-376.00R.

Joh, Yasushi; Kaneko, Noriaki; and Nagase, Toshio, to Nippon Zeon Co., Ltd. Cannula. 4,508,535, Cl. 604-282.000.

Johnsey, Walter F.: *See—*
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., 4,508,183, Cl. 175-69.000.

Johnson, Bruce K., to Polaroid Corporation. Method and apparatus for exposing and viewing at same station. 4,508,437, Cl. 354-78.000.

Johnson, Dean L., to United States of America, National Aeronautics and Space Administration. Reciprocating magnetic refrigerator employing tandem porous matrices within a reciprocating displacer. 4,507,928, Cl. 62-3.000.

Johnson, Frank; Reese, Dieter; and Hirbour, Louis, to Technic, Inc. Apparatus for electroplating and chemically treating the contact elements of encapsulated electronic components and like devices. 4,508,611, Cl. 204-202.000.

Johnson, John K.: *See—*
Kruger, Albert J., Jr.; and Johnson, John K., 4,508,744, Cl. 426-590.000.

Johnson, Nathan D.; Sampson, James D.; and Sampson, Darwin L. Newspaper vending machine. 4,508,238, Cl. 221-107.000.

Johnson, Sigurd A.; Avella, Frank S.; and Jones, Robert I., to Plan Hold Corporation. Tilt lock means for a drafting table. 4,508,305, Cl. 208-455.000.

Johnson, William C. Mouse trap game. 4,508,352, Cl. 273-274.000.

Johnson, William N.: *See—*
Goddard, John B.; and Johnson, William N., 4,508,701, Cl. 423-61.000.

Jones, Marvin R., to Koomey Blowout Preventers, Inc. Valves. 4,508,313, Cl. 251-1.00A.

Jones, Richard W., to General Dynamics, Pomona Division. Seeker-body decoupling system. 4,508,293, Cl. 244-3.150.

Jones, Robert I.: *See—*
Johnson, Sigurd A.; Avella, Frank S.; and Jones, Robert I., 4,508,305, Cl. 208-455.000.

Jones, William A.: *See—*
Brown, Robert L.; Jones, William A.; and Anderson, Daryl E., 4,508,586, Cl. 156-401.000.

Jones, William J.: *See—*
Dufour, Daniel L.; and Jones, William J., 4,508,870, Cl. 525-64.000.

Jorgensen, Helge D., to Superfos Emballage A/S. Plastic handle assembly. 4,507,821, Cl. 16-126.000.

Jorgensen, Jens L.: *See—*
Elepano, Normita P.; Schnur, William H.; and Jorgensen, Jens L., 4,508,634, Cl. 252-163.000.

Jorgensen, Robert J.: *See—*
Beran, Debra L.; Cann, Kevin J.; Jorgensen, Robert J.; Karol, Frederick J.; Maraschin, Norma J.; and Marcinkowsky, Arthur E., 4,508,842, Cl. 502-112.000.

Jorss, Norbert, to Pirzer Co. Pick-up and transfer mechanism for labels or the like. 4,508,330, Cl. 271-33.000.

Joseph, Claude, to Kerma. Ski pole. 4,508,364, Cl. 280-821.000.

Joseph Kieninger Uhrenfabrik GmbH: *See—*
Hepfer, Rolf; and Runzler, Jurgen, 4,508,456, Cl. 368-262.000.

Josephs, Richard M.: *See—*
Wang, Tsing-Chow; and Josephs, Richard M., 4,509,146, Cl. 365-162.000.

Jost, Karel: *See—*
Simek, Petr; Barth, Tomislav; Brtnik, Frantisek; Jost, Karel; Machova, Alena; Servitova, Linda; and Slantinova, Jirina, 4,508,645, Cl. 260-112.50R.

Joubert, Raymond J. M., to S.N.E.C.M.A. Apparatus for rolling and guiding a directable jet nozzle. 4,508,270, Cl. 239-265.350.

Jour, Jean-Paul: *See—*
Aulagner, Michel; and Jour, Jean-Paul, 4,508,205, Cl. 198-334.000.

Joyner, Keith A.; and Foster, Ronald B., to Texas Instruments Incorporated. Process for forming an electrical interconnection system on a semiconductor. 4,507,851, Cl. 29-590.000.

Judson, Philip N.: *See—*
Rowson, Graham P.; Percival, Albert; and Judson, Philip N., 4,508,659, Cl. 260-465.00D.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich, 4,508,394, Cl. 308-3.800.

Jumel, Bernard: *See—*
Herbulot, Jean; and Jumel, Bernard, 4,508,199, Cl. 188-250.00B.

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Jungverdorben, Hermann-Josef: *See—*
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Just, Friedrich E.; and Williams, Bolie C., III, to Cameron Iron Works, Inc. Annular blowout preventer. 4,508,311, Cl. 251-1.00B.

Kabele, Dennis F.; and Hauser, Herbert J., Jr., to Deere & Company. Reduced impact piston assembly. 4,508,019, Cl. 92-158.000.

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Sashiki, Takashi; and Sakaeda, Keiko, 4,508,186, Cl. 177-1.000.

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Minamida, Kazukiyo; Haze, Setsuo; and Yamada, Seiji, 4,508,185, Cl. 177-1.000.
Kabushiki Kaisha Kito: *See*—
Maeda, Kazuo, 4,508,318, Cl. 254-350.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Beppu, Kohichi; and Kawakami, Shigezo, 4,508,549, Cl. 55-165.000.
Murakami, Tsudoi; Nasu, Shoji; Tatsumi, Kazuaki; and Nagahama, Yasuhide, 4,508,953, Cl. 219-125.100.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Minami, Teruo, 4,508,388, Cl. 298-22.00C.
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Ohnishi, Kouhei; Ashikaga, Tadashi; and Terashima, Masayuki, 4,509,003, Cl. 318-800.000.
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Noguchi, Tetsuo; and Kuwabara, Kanji, 4,508,039, Cl. 110-258.000.
Kabushiki Kaisha Patine Shokai: *See*—
Ohashi, Kazuo, 4,507,880, Cl. 36-115.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Aizawa, Hitomi, 4,508,457, Cl. 368-63.000.
Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,509,127, Cl. 364-478.000.
Kabushiki Kaisha Universal: *See*—
Okada, Kazuo, 4,508,345, Cl. 273-143.00R.
Kaczur, Jerry J.; Iacoviello, Steven A.; and Miller, Edward G., to Olin Corporation. Process for producing concentrated solutions containing alkali metal chlorates and alkali metal chlorides. 4,508,602, Cl. 204-95.000.
Kadota, Youichi: *See*—
Komurasaki, Satoshi; Ueda, Atsushi; Morimoto, Yoshinobu; and Kadota, Youichi, 4,508,079, Cl. 123-425.000.
Kageyama, Yoichi: *See*—
Onuma, Kazuhiko; Kageyama, Yoichi; Kobayashi, Hiromu; Matsuki, Akihiro; and Suzuki, Makoto, 4,508,841, Cl. 502-73.000.
Kah, Carl L. C., Jr. Anti-syphon flow control valve. 4,508,136, Cl. 137-218.000.
Kaito, Haruyuki: *See*—
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,507,942, Cl. 68-20.000.
Kajimura, Takashi: *See*—
Umeda, Jun-ichi; Nakashima, Hisao; Kajimura, Takashi; and Kuroda, Takao, 4,509,173, Cl. 372-50.000.
Kakehashi, Yasushi: *See*—
Sakata, Yoshio; and Kakehashi, Yasushi, 4,509,031, Cl. 335-306.000.
Kakudai Shosan Kabushiki Kaisha: *See*—
Ayukawa, Taizo, 4,508,707, Cl. 424-70.000.
Kakuta, Takuya: *See*—
Sakata, Gozyo; Numata, Tatsuo; Makino, Kenzi; Kakuta, Takuya; Kusano, Kazuya; Ikai, Takasi; and Oguti, Tosihiko, 4,508,561, Cl. 71-94.000.
Kalbskopf, Reinhard: *See*—
Baumberger, Otto; and Kalbskopf, Reinhard, 4,508,054, Cl. 118-718.000.
Kalenik, Stephen P.: *See*—
Eburn, William H., Jr.; and Kalenik, Stephen P., 4,508,142, Cl. 137-625.400.
Kali-Chemie Pharma GmbH: *See*—
Liepmann, Hans; Ruhland, Michael; Muesch, Herbert; Benson, Werner; Heinemann, Henning; and Zeugner, Horst, 4,508,716, Cl. 514-220.000.
Kalokhe, Shivdas A., to Ex-Cell-O Corporation. Adjustable boring tool. 4,508,476, Cl. 408-156.000.
Kamada, Kazumasa; Tamai, Katsumi; Shimomura, Yasunori; and Abe, Kazunori, to Mitsubishi Rayon Co., Ltd. Process for producing a low hygroscopic methacrylic resin and information recording substrates made therefrom. 4,509,163, Cl. 369-284.000.
Kamohara, Toshiyuki: *See*—
Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, 4,509,143, Cl. 364-900.000.
Kampner, Karl-Heinz: *See*—
Kurandt, Hans-Friedrich; and Kampner, Karl-Heinz, 4,508,574, Cl. 106-109.000.
Kamyr, Inc.: *See*—
Richter, Ole J.; and Funk, Erwin D., 4,508,473, Cl. 406-64.000.
Kan, Frederick S. C.; Li, Kam Wing; and Lau, Kong Ping P., to Wing Tat Electric Mfg. Co. Ltd. Ceiling fan with heating apparatus. 4,508,958, Cl. 219-369.000.
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille G., to Sanofi. Amino derivatives of pyridazine, and compositions thereof for the central nervous system. 4,508,720, Cl. 514-247.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, to Fuji Photo Film Co., Ltd. Side printing method and apparatus therefor. 4,508,438, Cl. 354-105.000.
Kanazawa Industries: *See*—
Naya, Masaru; and Ikeda, Tsuneichi, 4,508,023, Cl. 99-279.000.
Kanda, Masahiro; Hatakeyama, Tetsuya; and Morito, Yusuke, to Showa Denko Kabushiki Kaisha. Electromagnetic wave-shielding materials. 4,508,640, Cl. 252-503.000.
Kandler, William C., to Tecumseh Products Company. Economical engine construction having integrally cast muffler. 4,507,917, Cl. 60-323.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Sakata, Yoshio; and Kakehashi, Yasushi, 4,509,031, Cl. 335-306.000.
Takaki, Akira; and Hosoi, Hideki, 4,508,876, Cl. 525-310.000.
Kaneko, Junichi: *See*—
Iwai, Noboru; Hirunuma, Masanori; and Kaneko, Junichi, 4,508,669, Cl. 264-36.000.
Kaneko, Noriaki: *See*—
Joh, Yasushi; Kaneko, Noriaki; and Nagase, Toshio, 4,508,535, Cl. 604-282.000.
Kaneko, Tadashi: *See*—
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Kang, Seong S. Disc loading device in a video disc player. 4,509,158, Cl. 369-77.200.
Kaniuk, John A.; Meinking, William E.; and Morris, Jeffrey R., to Allied Corporation. Vibratable refractory mix and binder therefor. 4,508,835, Cl. 501-94.000.
Kano, Hisae: *See*—
Tsumoto, Akio; and Kano, Hisae, 4,508,382, Cl. 296-213.000.
Kantor, Itzhak, to Plasson Maagan Michael Industries Ltd. Tube connection fittings. 4,508,374, Cl. 285-319.000.
Kaplan, Lester J., to Upjohn Company, The. Amine intermediates for analgesic compounds. 4,508,911, Cl. 548-407.000.
Kaplan, Raphael; and Bottka, Nicholas. Method for the deposition of high-quality crystal epitaxial films of iron. 4,508,590, Cl. 156-601.000.
Kapral, Christopher W.; and Cooperman, Michael, to GTE Laboratories Incorporated. Floating node stabilizing circuit for a switched-capacitor circuit and filter. 4,508,982, Cl. 307-572.000.
Karady, Sandor: *See*—
Amato, Joseph S.; Weinstock, Leonard M.; and Karady, Sandor, 4,508,921, Cl. 562-443.000.
Karasek, Keith R.: *See*—
Amateau, Maurice F.; and Karasek, Keith R., 4,508,158, Cl. 164-110.000.
Kardash, John: *See*—
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,508,939, Cl. 179-90.00B.
Karkanen, Kip M. Work glove finger structure. 4,507,807, Cl. 2-161.00R.
Karkossa, Horst: *See*—
Stopp, Gerhard; Karkossa, Horst; and Trescher, Viktor, 4,508,920, Cl. 562-423.000.
Karlsson, Lars, to Pharos AB. Optical scanning system. 4,508,422, Cl. 350-6.800.
Karol, Frederick J.: *See*—
Beran, Debra L.; Cann, Kevin J.; Jorgensen, Robert J.; Karol, Frederick J.; Maraschin, Norma J.; and Marcinkowsky, Arthur E., 4,508,842, Cl. 502-112.000.
Karpati, Marianna: *See*—
Huhn, Magda; Szabo, Gabor; Dvortsak, Peter; Karpati, Marianna; and Somfai, Eva, 4,508,658, Cl. 260-465.00D.
Karulkar, Pramod C., to Rockwell International Corporation. Method for making a reliable ohmic contact between two layers of integrated circuit metallizations. 4,507,852, Cl. 29-590.000.
Karwacki, Francis A.; and Griffin, Joseph, to United States of America, Navy. Nuclear magnetic resonance gyroscope. 4,509,014, Cl. 324-305.000.
Kasanami, Tohru: *See*—
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,508,756, Cl. 427-81.000.
Kashima, Tusnehiro: *See*—
Hayashi, Yoshio; Aoyagi, Kouji; Sakurai, Toshio; Kashima, Tusnehiro; and Higeta, Koichi, 4,509,138, Cl. 364-900.000.
Kashiwagi, Atumi, to Fujimoto Photo Industrial Co., Ltd. Sheet feeder. 4,508,331, Cl. 271-107.000.
Kasperkovitz, Wolfdietrich G., to U.S. Philips Corporation. Radio receiver comprising a frequency locked loop with audio frequency feedback, and a muting circuit. 4,509,205, Cl. 455-194.000.
Katagiri, Hidenori: *See*—
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,508,682, Cl. 420-590.000.
Katagiri, Masaru: *See*—
Minami, Kenji; Katagiri, Masaru; and Noguchi, Hideo, 4,509,067, Cl. 357-13.000.
Kataoka, Hiroshi, to Kataoka Machine Product Co., Ltd. Apparatus for controlling winding tension. 4,508,284, Cl. 242-75.510.
Kataoka Machine Product Co., Ltd.: *See*—
Kataoka, Hiroshi, 4,508,284, Cl. 242-75.510.
Kato, Hiromi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 4,508,189, Cl. 180-219.000.
Kato, Jyoji: *See*—
Yoneda, Naoto; Kato, Jyoji; Hayashi, Kimiaki; Ochiai, Takashi; and Kinashi, Keizo, 4,508,727, Cl. 514-398.000.
Kato, Katsumi: *See*—
Hashimoto, Masao; and Kato, Katsumi, 4,508,459, Cl. 368-276.000.
Katsu, Masutaro: *See*—
Mizuno, Shigeru; Suzuki, Masahiko; Mizuno, Haruki; and Katsu, Masutaro, 4,508,567, Cl. 75-231.000.
Katsuji BABA: *See*—
Watanabe, Kenji, 4,508,064, Cl. 123-1.00A.
Kauder, Otto S.; and Keeley, Charles, to Argus Chemical Corporation. Stabilization of polyvinyl chloride. 4,508,863, Cl. 524-181.000.
Kaufman, Benjamin J.; and Sung, Rodney L., to Texaco Inc. Mannich reaction product and a motor fuel composition containing same. 4,508,541, Cl. 44-71.000.
Kavanagh, Frank J.; Plunkett, James D.; and DePalma, Bernard F., to Doc-K Protective Equipment, Inc. Protective garment. 4,507,801, Cl. 2-2.000.

Kavaya, Michael J., to United States of America, National Aeronautics and Space Administration. Method and apparatus for transfer function simulator for testing complex systems. 4,509,132, Cl. 364-571.000.

Kawaguchi, Hiroshi: *See—*
Hatori, Masami; Ohkuma, Hiroaki; Konishi, Masataka; Miyaki, Takeo; and Kawaguchi, Hiroshi, 4,508,647, Cl. 260-239.30T.

Kawaguchi, Munetaka: *See—*
Miyake, Masayoshi; Ueoka, Isao; Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Yamamoto, Teruyuki, 4,508,779, Cl. 428-383.000.

Kawaguchi, Tadaaki: *See—*
Sato, Mineo; Kawaguchi, Tadaaki; Okawachi, Yukinori; and Funahashi, Yasuyuki, 4,507,940, Cl. 62-407.000.

Kawakami, Hideaki: *See—*
Nagae, Yoshiharu; Isogai, Masato; Kawakami, Hideaki; and Nakano, Fumio, 4,508,429, Cl. 350-350.00S.

Kawakami, Shigezo: *See—*
Beppu, Kohichi; and Kawakami, Shigezo, 4,508,549, Cl. 55-165.000.

Kawakami, Tomiko: *See—*
Fujii, Tadashi; Yamaguchi, Tomoyuki; Murakami, Kakuji; Kawakami, Tomiko; and Uenozono, Hiroko, 4,508,570, Cl. 106-20.000.

Kawakubo, Katsuhiko: *See—*
Konotsune, Takuo; and Kawakubo, Katsuhiko, 4,508,910, Cl. 548-367.000.

Kawamata, Masaru: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,509,127, Cl. 364-478.000.

Kawamura, Hiroaki: *See—*
Nemoto, Tadashi; Fukumoto, Ryoichi; Kawamura, Hiroaki; Kondo, Yoshikazu; and Inui, Tsuneo, 4,508,601, Cl. 204-38.500.

Kawamura, Kenji: *See—*
Kawanami, Norihide; Miyake, Yukinori; Kawamura, Kenji; and Toda, Toshiharu, 4,509,090, Cl. 361-119.000.

Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Disazo compounds, photoconductive compositions and electrophotographic light-sensitive materials containing the same. 4,508,805, Cl. 430-72.000.

Kawamura, Toshiaki: *See—*
Tanaka, Tatsuo; and Kawamura, Toshiaki, 4,507,934, Cl. 62-210.000.

Kawanami, Norihide; Miyake, Yukinori; Kawamura, Kenji; and Toda, Toshiharu, to Hirose Electric Co., Ltd.; and Mito Teck O., Ltd. Coaxial lightning arresting structure. 4,509,090, Cl. 361-119.000.

Kawasaki Steel Corporation: *See—*
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.

Kawashima, Kenichi: *See—*
Kobayashi, Koichi; Kawashima, Kenichi; and Oshio, Shuzo, 4,508,968, Cl. 250-441.100.

Kaya, Azmi; and Sommer, Alan C., to Babcock & Wilcox Company, The. Cooling tower monitor. 4,507,930, Cl. 62-129.000.

Kaya, Tadahiro: *See—*
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.

Kazanjian, Harout. Picture display assembly. 4,507,884, Cl. 40-152.200.

KDI American Products, Inc.: *See—*
Spinnett, Raymond G., 4,508,665, Cl. 261-93.000.

Kearney & Trecker Corporation: *See—*
Kielma, Ervin J., 4,507,850, Cl. 29-568.000.

Keeley, Charles: *See—*
Kauder, Otto S.; and Keeley, Charles, 4,508,863, Cl. 524-181.000.

Keilman, Michael R.; and West, Richard, to Baxter Travenol Laboratories, Inc. Container and associated cap assembly for plasma collection and the like. 4,508,236, Cl. 215-308.000.

Keir, Grant G. H.; Peebles, John A.; McNab, Jonas K.; and Campbell, Ian N., to NCR Corporation. Portable container for valuable articles. 4,508,260, Cl. 232-43.100.

Keith, Jon T.: *See—*
Betts, Edmund D.; and Keith, Jon T., 4,507,825, Cl. 17-73.000.

Keller, Alex J.; and Pinto, Akiva. Method and apparatus for opening fiber bales. 4,507,826, Cl. 19-80.00R.

Kellerman, Anne S.: *See—*
Agnew, Palmer W.; Coviello, John S.; Green, Linda S.; and Kellerman, Anne S., 4,509,122, Cl. 364-200.000.

Kelley, Hugh D. Hydraulic take-up device. 4,508,213, Cl. 198-813.000.

Kelley, Robert C.; and Silberman, Ira J., to Diversified Products Corporation. Sit-up exerciser. 4,508,335, Cl. 272-145.000.

Kelly, William W.; and Bradshaw, Cyril E., to Eaton Corporation. Controlling EGR in an internal combustion engine and fluid pressure signal controller therefor. 4,508,134, Cl. 137-103.000.

Kelman, Charles D. Housing for an intraocular lens and method of using the same. 4,508,216, Cl. 206-5.100.

Kelpin, Thomas G., Sr., to Kottothara, Abraham C. Compactor and paddle wheel for aquatic harvester. 4,507,909, Cl. 56-9.000.

Kemlage, Bernard M.: *See—*
Fabricius, Karen A.; and Kemlage, Bernard M., 4,508,757, Cl. 427-93.000.

Kemmerer, Kermit H., Jr. Computer read-out book stand. 4,508,306, Cl. 248-454.000.

Kenji, Yokoyama, to Nippon Gakki Seizo Kabushiki Kaisha. Protection circuit for switching power amplifier. 4,509,101, Cl. 361-79.000.

Kennedy, James A., to William L. Bonnell Company, The. Scrap metal reclaiming process. 4,508,564, Cl. 75-65.00R.

Kerma: *See—*
Joseph, Claude, 4,508,364, Cl. 280-821.000.

Kerr-McGee Refining Corporation: *See—*
Roach, Jack W., 4,508,597, Cl. 203-79.000.

Keskey, William H.; Schuetz, James E.; and Lee, Do I., to Dow Chemical Company, The. Latexes of polymers having pendant coreactive and oxazoline groups. 4,508,869, Cl. 524-808.000.

Keskkula, Henno; McCreedy, Kathleen M.; and Maass, Donald A., to Dow Chemical Company, The. Transparent blends of polymethylmethacrylate and certain styrene copolymers. 4,508,871, Cl. 525-78.000.

Kesten, Martin, to Preston Engravers, Inc. Device for transferring and monitoring load to die roll. 4,507,996, Cl. 83-344.000.

Kettlewell, Peter J.: *See—*
Berry, Paul S.; Kettlewell, Peter J.; and Turner, Michael J. B., 4,508,062, Cl. 119-82.000.

Key Pharmaceuticals, Inc.: *See—*
Hsiao, Charles H., 4,508,702, Cl. 424-19.000.

Keyes, Marion A.; and Thompson, William L., to Babcock & Wilcox Company, The. Correlation type flicker flamon. 4,509,041, Cl. 340-578.000.

Kiehs, Karl: *See—*
Lange, Arno; Kiehs, Karl; and Adolphi, Heinrich, 4,508,734, Cl. 514-594.000.

Kielma, Ervin J., to Kearney & Trecker Corporation. Boring bar adjusting apparatus. 4,507,850, Cl. 29-568.000.

Kienzle Apparate GmbH: *See—*
Donner, Bernd; and Siefert, Roland, 4,507,963, Cl. 73-431.000.

Kiess, Ronald J.; and Nichols, Gary R., to Magnavox Government and Industrial Electronics Company. Magnetic sensor for distributorless ignition system and position sensing. 4,508,092, Cl. 123-617.000.

Killilea, Daniel E., to Republic Steel Corporation. Apparatus for cooling a hot-rolled product. 4,507,949, Cl. 72-201.000.

Kim, Chong Y.; Farver, Terry F.; and Brewer, Jack W., to Miles Laboratories, Inc. Method for the separation of extracellular amylase and protease produced during the fermentation of enzyme producing microorganisms. 4,508,825, Cl. 435-201.000.

Kimberly-Clark Corporation: *See—*
Whitehead, Howard A., 4,508,531, Cl. 604-14.000.

Kimoto, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical disk apparatus. 4,509,154, Cl. 369-33.000.

Kimpel, Rolf-Dieter; Rauterberg, Ulf; and Tamm, Horst, to Siemens Aktiengesellschaft. Polarized electromagnetic relay. 4,509,025, Cl. 335-85.000.

Kimura, Etsuji; Ogi, Katsumi; and Sato, Kazusuke, to Mitsubishi Kinzoku Kabushiki Kaisha. Apparatus for preparing high melting point high toughness metals. 4,508,322, Cl. 266-149.000.

Kinashi, Keizo: *See—*
Yoneda, Naoto; Kato, Jyoji; Hayashi, Kimiaki; Ochiai, Takashi; and Kinashi, Keizo, 4,508,727, Cl. 514-398.000.

King Design, Inc.: *See—*
Robinson, Larry G.; and King, Edward C., 4,507,888, Cl. 40-621.000.

King, Edward C.: *See—*
Robinson, Larry G.; and King, Edward C., 4,507,888, Cl. 40-621.000.

Kingery, William L. Full-wave rectification of signals generated by radio frequency transmitting circuits. 4,509,202, Cl. 455-108.000.

Kinnard, Wolcott S. Album assembly. 4,507,885, Cl. 40-405.000.

Kioritz Corporation: *See—*
Inaga, Hisashi; and Ohtagawa, Kozi, 4,507,865, Cl. 30-276.000.

Kirby, Raymond L., Jr.: *See—*
Ivary, David J.; and Kirby, Raymond L., Jr., 4,508,252, Cl. 226-44.000.

Kirschenlohr, Werner: *See—*
Mueller, Josef; Wiersdorff, Walter-Wielant; Kirschenlohr, Werner; and Schwantje, Gerd, 4,508,924, Cl. 568-322.000.

Kishi, Norimasa: *See—*
Morimoto, Yoshiro; and Kishi, Norimasa, 4,507,985, Cl. 74-866.000.

Kishi, Noriyuki: *See—*
Hasegawa, Shumpei; and Kishi, Noriyuki, 4,508,088, Cl. 123-493.000.

Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, to Mitsubishi Rayon Co., Ltd. Multi-layer structure polymer composition. 4,508,875, Cl. 525-308.000.

Kishimoto, Shinzo: *See—*
Ohno, Shigeru; and Kishimoto, Shinzo, 4,508,817, Cl. 430-393.000.

Kiss, Gabor D., to Celanese Corporation. Energy storage flywheel using liquid crystalline polymer tape. 4,507,983, Cl. 74-572.000.

Kitagishi, Nozomu; and Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Telephoto objective. 4,508,433, Cl. 350-454.000.

Kitahara, Tsuyoshi: *See—*
Okamura, Kenji; Nagaishi, Hatsuo; Kitahara, Tsuyoshi; Sone, Kohki; and Nakamura, Koyo, 4,507,986, Cl. 74-866.000.

Kiya, Soichi: *See—*
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.

Klar, Adrian: *See—*
Elmis, Herbert; and Klar, Adrian, 4,509,072, Cl. 358-17.000.

Klebovich, Imre: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.

Klein, Yosef: *See—*
Robin, Seymour; and Klein, Yosef, 4,509,053, Cl. 343-708.000.

Klempke, William D.: *See—*
Vieau, Robert G.; and Klempke, William D., 4,507,897, Cl. 51-209.00R.

Klenk, Emil; and Heina, Karl-Fritz, to Maschinenbau Oppenweiler Binder GmbH & Co. Tightening means for at least one presser belt associated with a tail pulley of a continuous sheet feeder. 4,508,214, Cl. 198-833.000.

Klimpert, Randall J.; and Meyer, Burton C., to Marvin Glass & Associates. Impact responsive toy. 4,508,521, Cl. 446-486.000.

Klober, Martin, to Diehl GmbH & Co. Incendiary mixture constituted of metals. 4,508,580, Cl. 149-19.910.

Klockner-Humboldt-Deutz AG: *See—*
Ramesohl, Hubert; Seelen, Fritz; Filges, Ralf; Schroder, Karlheinz; and Veiser, Elmar, 4,508,503, Cl. 432-109.000.

Klueber, Wilhelm, to Hilti Aktiengesellschaft. Cylindrical guide member for an impacting mechanism in a hammer drill. 4,508,180, Cl. 173-104.000.

Kluth, Hermann; and Meffert, Alfred, to Henkel Kommanditgesellschaft. Polyurethane prepolymers based on oleochemical polyols. 4,508,853, Cl. 521-107.000.

Knapp, Anthony W.: *See—*
Shepler, Eric F.; and Knapp, Anthony W., 4,508,408, Cl. 339-89.00M.

Knappworst, Jurgen: *See—*
Jensen, Ernst; Knappworst, Jurgen; and Stahlmann, Rudolf, 4,508,036, Cl. 102-444.000.

Knoedler, Reinhard; Nelson, Paul A.; Shimotake, Hiroshi; and Battles, James E., to United States of America, Energy. Hermetically sealed electrical feedthrough for high temperature secondary cells. 4,508,797, Cl. 429-184.000.

Kobayashi, Hiromu: *See—*
Onuma, Kazuhiko; Kageyama, Yoichi; Kobayashi, Hiromu; Matsuki, Akihiro; and Suzuki, Makoto, 4,508,841, Cl. 502-73.000.

Kobayashi, Koichi; Kawashima, Kenichi; and Oshio, Shuzo, to Fujitsu Limited. Apparatus for processing negative photoresist. 4,508,968, Cl. 250-441.100.

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Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,508,481, Cl. 413-1.000.

Kochanek, George E.: *See—*
Barr, Rodney E.; and Kochanek, George E., 4,507,973, Cl. 73-724.000.

Kodama, Masanori: *See—*
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.

Koehl, Richard: *See—*
Lerman, Michael J.; Koehl, Richard; Chiarella, Anthony A.; and Zamory, William, 4,508,455, Cl. 366-247.000.

Koehler Manufacturing Company: *See—*
Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., 4,508,801, Cl. 429-238.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Bolza-Schunemann, Claus A., 4,508,034, Cl. 101-365.000.

Kohl, Charles F., to Dow Corning Corporation. Method and novel catalyst compositions for preparing polyorganosiloxanes. 4,508,887, Cl. 528-21.000.

Kohler Co.: *See—*
Bolgert, Edwin F., 4,508,137, Cl. 137-218.000.

Kohn, Elliott S., to RCA Corporation. Television receiver adaptable for descrambler module. 4,509,210, Cl. 455-349.000.

Kohn, Gustave K.: *See—*
Bamberg, Joe T.; and Kohn, Gustave K., 4,508,906, Cl. 546-300.000.

Kohyama, Mitsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing device. 4,508,052, Cl. 118-651.000.

Koike, Akihiko: *See—*
Yamato, Akihiro; and Koike, Akihiko, 4,508,084, Cl. 123-492.000.

Koishi, Kenji: *See—*
Ohara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,509,156, Cl. 369-54.000.

Kojima, Satoru, to Coret & Company, Ltd.; and Machine Engineering Co., Ltd. Vice for fishhook. 4,508,328, Cl. 269-236.000.

Kojima, Seiji: *See—*
Usui, Koichi; Ogawa, Masahide; Goto, Kunio; Sato, Teiji; Tanaka, Masanori; Takahashi, Seikichi; Ono, Kinichi; and Kojima, Seiji, 4,509,064, Cl. 346-207.000.

Kollman, Garald E., to Rohm and Haas Company. Herbicidal compositions. 4,508,559, Cl. 71-83.000.

Kollmorgen Technologies Corporation: *See—*
Reiss, Leon G.; and Schultz, Roy D., 4,508,988, Cl. 310-154.000.

Kolm, Eric A.: *See—*
Kolm, Henry H.; and Kolm, Eric A., 4,508,994, Cl. 315-200.00R.

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Kolodzey, Wolfgang: *See—*
Langhoff, Joseph; Althoff, Erwin; Kolodzey, Wolfgang; and Gerhardus, Ulrich, 4,508,542, Cl. 48-77.000.

Kolt, Stanley, to Suroff, Leonard W., a part interest. Thermostatic assembly. 4,507,922, Cl. 60-531.000.

Kolta, Rezso: *See—*
Fogassy, Elemer; Toke, Laszlo ; Faigl, Ferenc; Soos, Rudolf; Bozzay, Jozsef; Kolta, Rezso; Nemes, Jozsef; and Bencsik, Peter, 4,508,919, Cl. 562-401.000.

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Yashima, Michio; Komatsu, Akihiro; Takanashi, Masami; Hirose, Masashi; and Nakayama, Kengo, 4,508,944, Cl. 200-61.850.

Komura, Makoto: *See—*
Masuda, Isao; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Komura, Makoto, 4,509,155, Cl. 369-48.000.

Komurasaki, Satoshi; Ueda, Atsushi; Morimoto, Yoshinobu; and Kadota, Youichi, to Mitsubishi Denki Kabushiki Kaisha. Knocking control system for internal combustion engine. 4,508,079, Cl. 123-425.000.

Kondo, Yoshikazu: *See—*
Nemoto, Tadashi; Fukumoto, Ryoichi; Kawamura, Hiroaki; Kondo, Yoshikazu; and Inui, Tsuneo, 4,508,601, Cl. 204-38.500.

Konishi, Masataka: *See—*
Hatori, Masami; Ohkuma, Hiroaki; Konishi, Masataka; Miyaki, Takeo; and Kawaguchi, Hiroshi, 4,508,647, Cl. 260-239.30T.

Konotsune, Takuo; and Kawakubo, Katsuhiko, to Sankyo Company Ltd. Herbicidal 4-benzoyl-5-hydroxy-pyrazales. 4,508,910, Cl. 548-367.000.

Koomey Blowout Preventers, Inc.: *See—*
Jones, Marvin R., 4,508,313, Cl. 251-1.00A.

Kornely, Edward B.; and Paul, Gerald T., to Newell Companies, Inc. Protective liner for vessels. 4,508,768, Cl. 428-35.000.

Korowitz, Simon, to General Signal Corporation. Communications network access rights arbitration. 4,509,117, Cl. 364-200.000.

Kosch, Delmar D. Welding wire dispenser. 4,508,291, Cl. 242-156.200.

Koseki, Hiroyuki: *See—*
Sano, Shigehisa; Seto, Isao; Koseki, Hiroyuki; and Minomura, Mana, 4,508,152, Cl. 152-356.00R.

Koshikawa, Takao: *See—*
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.

Kotchy, Alan W. Flashlight holder. 4,508,249, Cl. 224-219.000.

Kottothara, Abraham C.: *See—*
Kelpin, Thomas G., Sr., 4,507,909, Cl. 56-9.000.

Kovach, Stephen M.: *See—*
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,508,839, Cl. 502-65.000.

Kovacic, Guido: *See—*
Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, 4,508,809, Cl. 430-237.000.

Kowalik, Ralph M.; Duvdevani, Ilan; Peiffer, Dennis G.; and Lundberg, Robert D., to Exxon Research & Engineering Co. Drag reduction agent for hydrocarbon liquid. 4,508,128, Cl. 137-13.000.

Kowalski, Ronald C., to Exxon Research & Engineering Co. Elastomer extrusion drying with gas injection. 4,508,592, Cl. 159-2.100.

Koyama, Takahiro; Matsumura, Haruo; and Morita, Teturo, to Daicel Chemical Industries Ltd.; and Nichirin Chemical Industries Ltd. Process for the preparation of a powdery calcium cellulose glycolate. 4,508,893, Cl. 536-85.000.

Koyama, Toshihiro; Anbe, Yoshiharu; and Funahashi, Takuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and system for controlling an interstand tension in a continuous rolling mill. 4,507,946, Cl. 72-17.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Peter, Siegfried, 4,508,543, Cl. 48-197.00R.

Kramer, Charles F.: *See—*
Bowen, James B.; and Kramer, Charles F., 4,508,145, Cl. 139-92.000.

Krasnjanski, David, to United States of America, Navy. Geomagnetic velocimeter. 4,509,131, Cl. 364-565.000.

Krauss, Peter; Reinhardt, Jurgen; and Seissl, Johann, to Siemens Aktiengesellschaft. Television installation comprising a circuit arrangement for the compensation of amplitude variations. 4,509,074, Cl. 358-111.000.

Kreeger, Elsmer W.; and Stahl, Edward L., to Pinckney Molded Plastics, Inc. Collapsible container. 4,508,237, Cl. 220-6.000.

Kremski, Jacob. Bumper rail cover and method of installing the same. 4,508,338, Cl. 273-9.000.

Kreuz, Alois: *See—*
Hufnagel, Walter; and Kreuz, Alois, 4,507,960, Cl. 73-187.000.

Krishna, Rajamani: *See—*
Voetter, Heinz; Darton, Richard C.; Van Meurs, Hubrecht C. A.; and Krishna, Rajamani, 4,508,041, Cl. 110-347.000.

Krogh, Kris K. Spinner device. 4,508,344, Cl. 273-141.00R.

Kroll, Robert E., to Oxo Welding Equipment Co., Inc. Portable arc voltage wirefeed welding system. 4,508,954, Cl. 219-132.000.

Krolla, Hans-Georg: *See—*
Gliemeroth, Georg; Ross, Ludwig; Speit, Burkhard; Geiler, Volkmar; Krolla, Hans-Georg; and Meckel, Lothar, 4,508,834, Cl. 501-73.000.

Kroner, Klaus, to U.S. Philips Corporation. Circuit arrangement for generating the vertical synchronizing information in a magnetic video tape apparatus. 4,509,082, Cl. 360-37.100.

Kruger, Albert J., Jr.; and Johnson, John K., to Coca Cola Company, The. Beverage clouding agent based on carnauba wax. 4,508,744, Cl. 426-590.000.

Kruse, Lyle W., to United States of America, Energy. Portal radiation monitor. 4,509,042, Cl. 340-600.000.

Kubo, Katsuro; Yoshioka, Takeo; Okabe, Mitsuyasu; Fukagawa, Yasuo; and Ishikura, Tomoyuki, to Sanraku-Ocean Co., Ltd. Phosphoric ester of antibiotic OA-6129. 4,508,648, Cl. 260-245.20T.

Kubo, Tatsuki: *See*—
Inoue, Akira; Takase, Shinji; Sekido, Yasuo; Mori, Masao; and Kubo, Tatsuki, 4,508,849, Cl. 502-263.000.

Kuck, Mark A.: *See*—
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,508,931, Cl. 136-255.000.

Kudelski, S.A.: *See*—
Kudelski, Stefan, 4,508,292, Cl. 242-190.000.

Kudelski, Stefan, to Ampex Corp.; and Kudelski, S.A. Tape loop sensing arm and tape guide for magnetic tape recording and playback machines. 4,508,292, Cl. 242-190.000.

Kudoh, Toshio: *See*—
Kusui, Akio; Morita, Shuji; Kudoh, Toshio; Tanaka, Yasuo; and Itoh, Hirotaka, 4,508,414, Cl. 339-143.00R.

Kudoh, Yasuo: *See*—
Takeda, Takeshi; Machida, Yasuhiko; Kudoh, Yasuo; and Ikegaya, Kazutoshi, 4,508,632, Cl. 252-70.000.

Kugimiya, Youichi: *See*—
Ishibashi, Tadao; and Kugimiya, Youichi, 4,508,786, Cl. 428-461.000.

Kuhn, Friedhelm, to Ruhrgas Aktiengesellschaft. Method of monitoring furnace installations. 4,508,501, Cl. 431-2.000.

Kukowski, John A.; Soth, Henry J.; and Gay, William H., to Universal Instruments Corporation. Method and apparatus for high speed transfer and insertion of electrical components. 4,507,862, Cl. 29-837.000.

Kulesza, Ralph J., to Marvin Glass & Associates. Pivotably linked toy vehicles, one self-propelled. 4,508,517, Cl. 446-464.000.

Kumagai, Tadanobu: *See*—
Numazawa, Akio; Sakai, Ichio; Kumagai, Tadanobu; and Nishikawa, Seiichi, 4,508,522, Cl. 464-11.000.

Kumakawa, Akinaga: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.

Kumasaka, Hideo; and Fujisawa, Kazuo, to Toyo Seikan Kaisha, Ltd. Sealing compound for cans. 4,508,569, Cl. 106-14.120.

Kumata, Masao; and Matsuoka, Noriaki, to Sanyo Electric Co., Ltd. Air-cooled fuel cell system. 4,508,793, Cl. 429-26.000.

Kuna, Wayne A.: *See*—
Meyer, Steven M.; Kuna, Wayne A.; Morrison, Robert S.; Morrison, Howard J.; Ditton, Richard A.; and Ditton, Elaine A., 4,508,353, Cl. 273-313.000.

Kuo, Han C.: *See*—
Gopikanth, Mysore L.; Kuo, Han C.; and Bowden, William L., 4,508,798, Cl. 429-196.000.
Gopikanth, Mysore L.; and Kuo, Han C., 4,508,799, Cl. 429-196.000.
Gopikanth, Mysore L.; Kuo, Han C.; and Schlaikjer, Carl R., 4,508,800, Cl. 429-196.000.

Kupper, Wilhelm, to W. Schlafhorst & Co. Cop preparation plant. 4,508,227, Cl. 209-927.000.

Kurandt, Hans-Friedrich; and Kampner, Karl-Heinz, to Chemische Werke Huls Ag. Process for improving the fluidity and conveyability of moist calcium sulfate precipitates. 4,508,574, Cl. 106-109.000.

Kurashima, Hideo: *See*—
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,508,481, Cl. 413-1.000.

Kuriki, Tomio; and Manabe, Seiichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the production of a polyester fiber dyeable under normal pressure. 4,508,674, Cl. 264-234.000.

Kuroda, Kazuo, to Pioneer Video Corporation. Dropout compensation circuit. 4,509,078, Cl. 358-160.000.

Kuroda, Masayuki: *See*—
Saito, Eiiji; Aizawa, Shoji; Mitsui, Michio; Miyata, Tomohiko; and Kuroda, Masayuki, 4,508,266, Cl. 239-3.000.

Kuroda, Takao: *See*—
Umeda, Jun-ichi; Nakashima, Hisao; Kajimura, Takashi; and Kuroda, Takao, 4,509,173, Cl. 372-50.000.

Kusakawa, Yukio; Nakamura, Toshiaki; Ina, Yoshifumi; and Inbe, Takashi, to Nippondenso Co., Ltd. Motor driven fuel pump. 4,508,492, Cl. 417-366.000.

Kusano, Kazuya: *See*—
Sakata, Gozyo; Numata, Tatsuo; Makino, Kenzi; Kakuta, Takuya; Kusano, Kazuya; Ikai, Takasi; and Oguti, Tosihiko, 4,508,561, Cl. 71-94.000.

Kusui, Akio; Morita, Shuji; Kudoh, Toshio; Tanaka, Yasuo; and Itoh, Hirotaka, to Dainichi-Nippon Cables, Ltd. Shielded cable-connector assembly. 4,508,414, Cl. 339-143.00R.

Kuwabara, Kanji: *See*—
Noguchi, Tetsuo; and Kuwabara, Kanji, 4,508,039, Cl. 110-258.000.

Kuykendall, John: *See*—
Alexandrovich, George; Edinger, J. Raymond; Hofer, Alan; and Kuykendall, John, 4,509,159, Cl. 369-170.000.

Kyoto Ceramic Co., Ltd.: *See*—
Nagata, Koichi, 4,508,624, Cl. 210-658.000.

Labartino, Joseph: *See*—
Bruel, Michel; Escaron, Jean; and Labartino, Joseph, 4,508,056, Cl. 118-730.000.

Lacefield, William B.; and Lindstrom, Terry D., to Eli Lilly and Company. Anti-arrhythmic N-alkanoylaminoalkyl fluorenes. 4,508,735, Cl. 514-616.000.

Lack, Larry H., to Auer, Frank M.; Auer, C. J.; and Lindenmayer, Paul B. Ratchet wrench. 4,507,990, Cl. 81-57.390.

Lackey, Stanley A.; Meinerth, Kim A.; and Stoner, David A., to Digital Equipment Corporation. Special instruction processing unit for data processing system. 4,509,116, Cl. 364-200.000.

Lacour, Bernard; Maillet, Marc; Vannier, Chantal; and de Witte, Olivier, to Compagnie Generale d'Electricite. Capacitor discharge excited gas laser. 4,509,174, Cl. 372-82.000.

Lacroix, Alain: *See*—
Dubois, Jean; Lacroix, Alain; Forestier, Lucienne; and Steiner, Jean-Pierre, 4,507,812, Cl. 4-228.000.

Lades, Hans; Fink, Friedrich; Liebel, Siegfried; Lauterbach, Inge; Taube, Thomas; and Zollner, Dieter, to Arc Technologies Systems Ltd. Arrangement of an electrode for electric arc furnaces. 4,509,178, Cl. 373-93.000.

Ladusaw, William T., to General Electric Company. Hermetic compressor including a terminal block and thermal protection retainer means. 4,508,987, Cl. 310-68.00C.

Ladwig, Lee R.: *See*—
Olig, Eugene A.; and Ladwig, Lee R., 4,509,126, Cl. 364-474.000.

Lagoni, William A.; and Harlan, Wayne E., to RCA Corporation. Video signal peaking system. 4,509,080, Cl. 358-166.000.

Lambert, James L., to Westinghouse Electric Corp. Distributed fiber optic temperature monitoring apparatus and method. 4,508,461, Cl. 374-161.000.

Lambert, Johnny H.; Primat, Didier; Edmiston, William H.; Edmiston, Johnny J.; and Edmiston, James H., to Primlumber, Inc. Firewood sawing apparatus. 4,507,998, Cl. 83-419.000.

Lampson, Neil F., to Riggers Manufacturing Co. Counterbalanced crane structure. 4,508,232, Cl. 212-178.000.

Landis, Donald H., to Epic Metals Corporation. Electrical distribution for metal deck construction. 4,507,900, Cl. 52-221.000.

Lange, Arno; Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Substituted N-benzoyl-N-phenoxyphenylureas, the manufacture, and the use thereof for combating insects. 4,508,734, Cl. 514-594.000.

Langhoff, Joseph; Althoff, Erwin; Kolodzey, Wolfgang; and Gerhardus, Ulrich. Slag separator for a coal gasification installation. 4,508,542, Cl. 48-77.000.

Lankard, John R., Sr.: *See*—
Brannon, James H.; and Lankard, John R., Sr., 4,508,749, Cl. 427-43.100.

Lapautre, Michel A.: *See*—
Schlegel, Raymond F.; Bourassin, Rene P.; and Lapautre, Michel A., 4,508,530, Cl. 494-49.000.

Lapointe, Wildy. Animated puzzle block game. 4,508,348, Cl. 273-157.00R.

Lapple, Arnulf R.: *See*—
Erzinger, Paul; and Lapple, Arnulf R., 4,508,536, Cl. 8-639.000.

Laroche, Michel C. F.: *See*—
Cattaneo, Christian J.; Derouet, Patrick R. J.; and Laroche, Michel C. F., 4,508,295, Cl. 244-134.00A.

Larrauri, Jose M.; Arias, Beairit C.; and Galiasso, Roberto E., to Intevep, S.A. Hydrocracking with treated bauxite or laterite. 4,508,616, Cl. 208-111.000.

Larson, Allan B.: *See*—
Trechsel, Hans W.; Larson, Allan B.; and Ryerse, John A., 4,508,148, Cl. 141-147.000.

Lau, Kong Ping P.: *See*—
Kan, Frederick S. C.; Li, Kam Wing; and Lau, Kong Ping P., 4,508,958, Cl. 219-369.000.

Laubie, Michel: *See*—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,508,729, Cl. 514-419.000.

Launie, Kenneth J., to Polaroid Corporation. Film counter. 4,508,441, Cl. 354-217.000.

Lauterbach, Inge: *See*—
Lades, Hans; Fink, Friedrich; Liebel, Siegfried; Lauterbach, Inge; Taube, Thomas; and Zollner, Dieter, 4,509,178, Cl. 373-93.000.

Law, Kock-Yee; and Bailey, Frank C., to Xerox Corporation. Photoconductive devices containing novel benzyl fluorinated squaraine compositions. 4,508,803, Cl. 430-59.000.

Lawson, Lonnie B., Jr.: *See*—
Berfield, Robert C.; Crevling, Robert L., Jr.; and Lawson, Lonnie B., Jr., 4,508,550, Cl. 55-216.000.

Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, to Comdial Technology Corporation. Last number redial device. 4,508,939, Cl. 179-90.00B.

Lawson, William J.; and Gunter, William L. Toilet seat and lid lock. 4,507,813, Cl. 4-253.000.

Lazarre, Flavien, to Societe Nationale Elf Aquitaine. Moving piston with self-tightening sealing ring. 4,508,354, Cl. 277-27.000.

Le Joint Francais: *See*—
Pages, Gerard, 4,508,004, Cl. 84-385.00P.

Lear Siegler, Inc.: *See*—
Whitman, Bruce, 4,508,209, Cl. 198-583.000.

Leary, William: *See*—
Mlinaric, Jerry; Leary, William; and Mummery, Robert J., 4,508,485, Cl. 414-458.000.

Leathers, Joel F. M.; and Calvin, Donald W., to Dow Chemical Company, The. Recovery of fumed SiO_2. 4,508,538, Cl. 23-313.00R.

LeBlond, Charles E.; and LeBlond, Henri, to Hamelin Industries, Inc. Wheel hub including structure for attachment of accessories. 4,508,392, Cl. 301-63.0PW.

LeBlond, Henri: *See*—
LeBlond, Charles E.; and LeBlond, Henri, 4,508,392, Cl. 301-63.0PW.

Lecharpy, Joel: *See*—
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Lee, Andrew L.: *See*—
Nicholson, Timothy J. H.; Lee, Andrew L.; and Roberts, Clifford, 4,508,301, Cl. 248-250.000.

Lee, Do I.: *See*—
Keskey, William H.; Schuetz, James E.; and Lee, Do I., 4,508,869, Cl. 524-808.000.

Lee, Ivan S., to Polysar Limited. Pressure sensitive adhesives. 4,508,864, Cl. 524-187.000.

Lee, Lian-Tze: *See*—
Chang, Ching-Te; Lee, Lian-Tze; and Su, Hsueh-Ling, 4,508,654, Cl. 260-429.00R.

Lee, Wai-Hon; and Voisin, Paul H., to Xidex Corporation. Method of using diazotype photographic materials with preexposure treatment to form uniform sites of refractive index change. 4,508,808, Cl. 430-146.000.

le Faou, Daniel: *See*—
Beyl, Jean; Bernard, Jean; Guerreau, Rene ; le Faou, Daniel; and Peyre, Henri, 4,508,360, Cl. 280-605.000.

Leibowitz, Martin N. Cutting shears. 4,507,864, Cl. 30-248.000.

Leicht, John R.: *See*—
Sohl, Gordon; Ort, Donald L.; and Leicht, John R., 4,509,057, Cl. 346-1.100.

Leininger, Joel C.; Moore, Victor S.; and Stahl, William L., Jr., to International Business Machines Corporation. Microword control mechanism utilizing a programmable logic array and a sequence counter. 4,509,114, Cl. 364-200.000.

Leirnes, Johan S.; Lundstrom, Malkolm S.; Hedlund, Martin L.; and Buren, Kurt J. A., to Boliden Aktiebolag. Method for producing lead from oxidic lead raw materials which contain sulphur. 4,508,565, Cl. 75-77.000.

Leistner, Herbert E., to Sigma Tool & Machine Limited. Tee nut fastener member. 4,508,478, Cl. 411-176.000.

Leland Stanford Jr. University, The Board of Trustees of the: *See*—
Yelderman, Mark L., 4,507,974, Cl. 73-861.060.

Lemke, Stuart H. Apparatus for installing fasteners. 4,507,991, Cl. 81-463.000.

Lemons, Ross A.: *See*—
Bosch, Martin A.; and Lemons, Ross A., 4,509,145, Cl. 365-112.000.

Lenser Verwaltungs-GmbH: *See*—
Heckl, Franz; and Herget, Herbert, 4,508,623, Cl. 220-229.000.

Lerman, Michael J.; Koehl, Richard; Chiarella, Anthony A.; and Zamory, William, to De Dietrich (USA), Inc. Agitator including impeller assembly and shaft having interference fit. 4,508,455, Cl. 366-247.000.

Lesieur-Cotelle: *See*—
Dubois, Jean; Lacroix, Alain; Forestier, Lucienne; and Steiner, Jean-Pierre, 4,507,812, Cl. 4-228.000.

Lester, James M.; Reinker, Richard P.; and Regenbrecht, Douglas E., to Ball Corporation. Solid subliming cooler with radiatively-cooled vent line. 4,507,941, Cl. 62-514.00R.

Letoffe, Michel; Favre, Roger; and Perrin, Patrice, to Rhone-Poulenc Specialites Chimiques. Rapidly hardening organopolysiloxane compositions comprising polyacyloxysilane cross-linking agents. 4,508,888, Cl. 528-23.000.

Leu, Willy, to Ferag Ag. Drive means for the shaft of a mobile apparatus. 4,508,523, Cl. 474-115.000.

Lever Brothers Company: *See*—
Chaudhuri, Dwaipayan; and Stebles, Malcolm R., 4,508,705, Cl. 424-47.000.
Clarke, David E., 4,508,635, Cl. 252-174.230.

Levesque, Adelard, Jr.; and Rembold, John P., to United Technologies Corporation. Method and apparatus for detecting failures in a control system. 4,509,110, Cl. 364-153.000.

Leviton Manufacturing Company, Inc.: *See*—
Bienwald, F. Wolfgang, 4,508,417, Cl. 339-176.00L.

Lewis, Bernard L., to United States of America, Navy. Phase-coded pulse expander-compressor. 4,509,051, Cl. 343-17.2PC.

Lewis, Robert H.: *See*—
Hayosh, Robert J.; Lewis, Robert H.; and Simon, Frederick A., 4,508,280, Cl. 242-191.000.

LGZ Landis & Gyr Zug AG: *See*—
Neyer, Norbert, 4,509,180, Cl. 375-76.000.

Li, George S.: *See*—
Giffen, William M., Jr.; Li, George S.; and Miller, Arthur F., 4,508,787, Cl. 428-473.500.

Li, Kam Wing: *See*—
Kan, Frederick S. C.; Li, Kam Wing; and Lau, Kong Ping P., 4,508,958, Cl. 219-369.000.

Liao, Leon. Batting aid with pivotally supported ball. 4,508,340, Cl. 273-26.00E.

Liebel, Siegfried: *See*—
Lades, Hans; Fink, Friedrich; Liebel, Siegfried; Lauterbach, Inge; Taube, Thomas; and Zollner, Dieter 4,509,178, Cl. 373-93.000.

Liedtke, Kurt: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,507,903, Cl. 53-151.000.
Focke, Heinz; and Liedtke, Kurt, 4,508,218, Cl. 206-271.000.

Liepmann, Hans; Ruhland, Michael; Muesch, Herbert; Benson, Werner; Heinemann, Henning; and Zeugner, Horst, to Kali-Chemie Pharma GmbH. [1,2]-Fused 1,4-benzodiazepine compounds, process for their preparation and compositions containing them. 4,508,716, Cl. 514-220.000.

Lin, Shi-Tron. Method for determining the characteristic behavior of a metal-insulator-semiconductor device in a deep depletion mode. 4,509,012, Cl. 324-158.00D.

Lin, Weihwang. Hydraulic cylinder. 4,508,015, Cl. 92-2.000.

Lindall, Arnold W.; and Elting, James J., to Immuno Nuclear Corporation. Bioassay of parathyroid hormone. 4,508,828, Cl. 436-500.000.

Lindenmayer, Paul B.: *See*—
Lack, Larry H., 4,507,990, Cl. 81-57.390.

Lindenmuth, William T.: *See*—
Conn, Andrew F.; Lindenmuth, William T.; and Frederick, Gary S., 4,508,577, Cl. 134-1.000.

Lindstrom, Terry D.: *See*—
Lacefield, William B.; and Lindstrom, Terry D., 4,508,735, Cl. 514-616.000.

Lipscomb, David M.: *See*—
Duncan, David T.; Lipscomb, David M.; McElligott, John; and Williams, Charles W., 4,508,116, Cl. 128-203.280.

Litt, Frederic A.; and Czernicki, Thomas R., to Elco Corporation, The. Oil soluble sulfur free oxymolybdenum organic compounds having friction reducing antiwear properties in lubricant compositions, process of manufacture, and lubricant compositions. 4,508,630, Cl. 252-32.500.

Littelfuse, Inc.: *See*—
Daggett, Charles W., 4,508,412, Cl. 339-126.00R.

Littmann, Wolfgang. Method of increasing the yield of hydrocarbons from a subterranean formation. 4,508,170, Cl. 166-272.000.

Livorsi, Carl F.; Wucik, Joseph A., Jr.; Dorrian, Philip J.; and Struzik, Lawrence F., to Edison International Inc. Bidirectional valve seal. 4,508,315, Cl. 251-173.000.

Llewellyn, Link W., to Chi Rho Corporation. Eye-hand coordinator. 4,508,339, Cl. 273-26.00E.

Loeppert, Peter V.: *See*—
Busta, Heinz H.; Tsao, Kuey-Yeou; White, Wayne D.; and Loeppert, Peter V., 4,508,613, Cl. 204-418.000.

LoFaso, Joseph S.; LoFaso, Mardi I.; and Gold, Kenneth R. Beverage receptacle opener. 4,507,988, Cl. 81-3.090.

LoFaso, Mardi I.: *See*—
LoFaso, Joseph S.; LoFaso, Mardi I.; and Gold, Kenneth R., 4,507,988, Cl. 81-3.090.

Logan Industries & Services, Inc.: *See*—
Pikna, Richard G., 4,508,488, Cl. 417-12.000.

Lone Star Steel Company: *See*—
Patterson, Billy R.; and Schneider, Warren P., 4,508,375, Cl. 285-334.000.

Long, Florren E., to Ludlow Corporation. Window bag for liquids. 4,509,197, Cl. 383-106.000.

Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Storage container and display device. 4,508,217, Cl. 206-45.180.

Looker, Robert. Light weight tensionable buckle. 4,507,829, Cl. 24-68.0CD.

Loram Maintenance of Way, Inc.: *See*—
Vieau, Robert G.; and Klempke, William D., 4,507,897, Cl. 51-209.00R.

Lorch, Daniel L., to United States of America, Navy. Air bag restraint system. 4,508,294, Cl. 244-122.0AG.

Lorenz, Hans-Peter: *See*—
Freller, Helmut; Horauf, Friedrich; Lorenz, Hans-Peter; and Mund, Konrad, 4,508,430, Cl. 350-351.000.

Lorenz, Horst; and Schulte, Richard, to Th. Kieserling & Albrecht. Apparatus for manufacturing wheel rim blanks. 4,508,255, Cl. 228-5.100.

Lorenz, Kurt: *See*—
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Bruns, Engelbert; and Osterholt, Gerd, 4,508,596, Cl. 202-227.000.

Lorimer, D'Arcy H.; and Handy, Christopher C., Jr., to AT&T Technologies, Inc. Method of regenerating acetate in a metal removal process. 4,508,688, Cl. 423-92.000.

Loubier, Robert J. Dental floss applicator. 4,508,125, Cl. 132-92.00R.

Low, Robert N.; Cloutier, Frank L.; and Siewell, Gary, to Hewlett-Packard Company. Ink reservoir with essentially constant negative back pressure. 4,509,062, Cl. 346-140.00R.

Lubov, Michael: *See*—
Wyatt, Philip W.; Newsome, Allen L., Jr.; Bloom, William G.; Siegel, Bernard; and Lubov, Michael, 4,508,123, Cl. 128-692.000.

Lucas Industries: *See*—
Gornall, Graham J.; Price, Anthony G.; and Parry, David, 4,508,198, Cl. 188-71.400.

Lucas Industries public limited company: *See*—
Harrison, Anthony W., 4,508,140, Cl. 137-501.000.
Howes, Peter, 4,508,489, Cl. 417-221.000.
Reynolds, Desmond H. J.; and Taft, Phillip A., 4,508,012, Cl. 91-512.000.

Lucas, Jean-Claude. Device for the formation of a joint for an industrial type flooring. 4,507,902, Cl. 52-370.000.

Ludlow Corporation: *See*—
Long, Florren E., 4,509,197, Cl. 383-106.000.

Luetzelschwab, Wayne E., to Marathon Oil Company. Apparatus and method for preparing polymer solutions. 4,508,858, Cl. 523-313.000.

Luginbuhl, Pierre; Parniere, Alain; and Argintaru, Lazare, to Thomson-CSF. Satellite telecommunications system. 4,509,200, Cl. 455-12.000.

Luhrig, Hermann: *See*—
Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, 4,508,809, Cl. 430-237.000.

Luhrsen, Ernst; Pohl, Siegfried; and Plath, Jurgen, to Didier-Werke AG. Fastening means for a closure plate on a sliding shutter outlet in a vessel which contains molten metal. 4,508,324, Cl. 266-236.000.

Lukon, Fabrik fur elektrothermische Apparate und elektrische Stabheizkorper, Paul Luscher, Tauffelen: *See—*
Luscher, Paul, 4,508,959, Cl. 219-385.000.

Lundahl, E. Cordell: *See—*
Thornley, W. Ray; Wiser, James G.; and Lundahl, E. Cordell, 4,507,910, Cl. 56-10.200.

Lundberg, Robert D.: *See—*
Fuller, Everett J.; and Lundberg, Robert D., 4,508,626, Cl. 210-708.000.
Kowalik, Ralph M.; Duvdevani, Ilan; Peiffer, Dennis G.; and Lundberg, Robert D., 4,508,128, Cl. 137-13.000.

Lundstrom, Malkolm S.: *See—*
Leirnes, Johan S.; Lundstrom, Malkolm S.; Hedlund, Martin L.; and Buren, Kurt J. A., 4,508,565, Cl. 75-77.000.

Luscher, Paul, to Lukon, Fabrik fur elektrothermische Apparate und elektrische Stabheizkorper, Paul Luscher, Tauffelen. Apparatus for heating stackable dishes. 4,508,959, Cl. 219-385.000.

Lustig, Claude D., to Sperry Corporation. Low cost addressing system for AC plasma panels. 4,509,045, Cl. 340-794.000.

Lyons, Robert F.: *See—*
Schlesch, Ronald D.; and Lyons, Robert F., 4,508,135, Cl. 137-185.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg AG: *See—*
Fuhrmann, Wolfgang, 4,508,067, Cl. 123-90.490.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,508,033, Cl. 101-217.000.

Maag Gear-Wheel & Machine Company Limited: *See—*
Rhyner, Fritz, 4,509,047, Cl. 340-825.230.

Maass, Donald A.: *See—*
Keskkula, Henno; McCreedy, Kathleen M.; and Maass, Donald A., 4,508,871, Cl. 525-78.000.

Machida, Yasuhiko: *See—*
Takeda, Takeshi; Machida, Yasuhiko; Kudoh, Yasuo; and Ikegaya, Kazutoshi, 4,508,632, Cl. 252-70.000.

Machine Engineering Co., Ltd.: *See—*
Kojima, Satoru, 4,508,328, Cl. 269-236.000.

Machova, Alena: *See—*
Simek, Petr; Barth, Tomislav; Brtnik, Frantisek; Jost, Karel; Machova, Alena; Servitova, Linda; and Slantinova, Jirina, 4,508,645, Cl. 260-112.50R.

Mackay, Donald A. M.: *See—*
Stroz, John J.; and Mackay, Donald A. M., 4,508,713, Cl. 514-60.000.

MacMillan Bloedel Limited: *See—*
Churchland, Mark T.; and Parker, David, 4,508,772, Cl. 428-106.000.

MacRae, Ralph A.: *See—*
Oehlke, Donald N.; MacRae, Ralph A.; Crammond, James; and Rattmann, Hans R., 4,508,477, Cl. 411-174.000.

MacWilliams, David; and Rigbey, Leonard J., to International Business Machines Corporation. Gravity feed chute. 4,508,204, Cl. 193-40.000.

Madarame, Michimasa; and Ueda, Kaichi, to Diesel Kiki Co., Ltd. Overheat detecting device of an air conditioning system for automotive vehicles. 4,507,935, Cl. 62-227.000.

Maeda, Kazuo, to Kabushiki Kaisha Kito. Electric hoist. 4,508,318, Cl. 254-350.000.

Magnavox Government and Industrial Electronics Company: *See—*
Kiess, Ronald J.; and Nichols, Gary R., 4,508,092, Cl. 123-617.000.

Maier, William. Easy access pulley box. 4,508,371, Cl. 285-121.000.

Maillet, Marc: *See—*
Lacour, Bernard; Maillet, Marc; Vannier, Chantal; and de Witte, Olivier, 4,509,174, Cl. 372-82.000.

Maio, Patrick S.: *See—*
Davis, Robert E.; Maio, Patrick S.; and Growney, Lawrence J., 4,508,226, Cl. 206-620.000.

Makino, Kenzi: *See—*
Sakata, Gozyo; Numata, Tatsuo; Makino, Kenzi; Kakuta, Takuya; Kusano, Kazuya; Ikai, Takasi; and Oguti, Tosihiko, 4,508,561, Cl. 71-94.000.

Makino, Naonori: *See—*
Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, 4,508,805, Cl. 430-72.000.

Malaney, Frank E., to Chicopee. Microfine fiber laminate. 4,508,113, Cl. 128-132.00D.

Malaviya, Shashi D.: *See—*
Goth, George R.; and Malaviya, Shashi D., 4,508,579, Cl. 148-175.000.

Malcolm, David H., to Titan Tool Inc. Current limited electrostatic spray gun system with positive feedback controlled constant voltage output. 4,508,276, Cl. 239-691.000.

Malecki, Edmund E.: *See—*
Jacobs, Harold; Dixon, Samuel, Jr.; and Malecki, Edmund E., 4,509,009, Cl. 324-95.000.

Malinowski, Richard F., to General Electric Company. Sealed beam lamp unit and method for an improved sealed exhaust hole. 4,509,107, Cl. 362-267.000.

Malone, Thomas J., to Nutri-Developers, Inc. Apparatus for preparing feed grain. 4,508,029, Cl. 99-516.000.

Malten, Albrecht: *See—*
Pietzarka, Wilhelm F.; Malten, Albrecht; and Strauss, Georg, 4,508,666, Cl. 264-12.000.

Maltsev, Jury S.; Shevchenko, Viktor D.; and Chernin, Mikhail M. Squaring device with cooling means. 4,509,134, Cl. 364-813.000.

Mamantov, Gleb, to University of Tennessee Research Corporation. Sodium-tetravalent sulfur molten chloroaluminate cell. 4,508,795, Cl. 429-103.000.

Manabe, Seiichi: *See—*
Kuriki, Tomio; and Manabe, Seiichi, 4,508,674, Cl. 264-234.000.

Manatt, Scott A., to Garrett Corporation, The. Air oxygen and nitrogen concentration device. 4,508,548, Cl. 55-158.000.

Manin, Michel, to Compagnie Generale de Geophysique. Method and device for initiating an underwater implosive seismic source. 4,508,191, Cl. 181-107.000.

Manne, Stanley: *See—*
Sak, Dennis A.; Mestetsky, Thomas; and Manne, Stanley, 4,509,196, Cl. 383-5.000.

Manowitz, Milton: *See—*
Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, 4,508,908, Cl. 548-213.000.

Mansfield, Peter: *See—*
Ordidge, Roger J.; and Mansfield, Peter, 4,509,015, Cl. 324-309.000.

Mansour, James D.; and Schulte, Thomas, to Becton Dickinson and Company. Detection of white cell associated bacteria with a fluorescent dye. 4,508,821, Cl. 435-34.000.

Manton, John C.; Okin, Kenneth; and Zacconi, Anthony N., to Digital Equipment Corporation. Two-port memory controller. 4,509,115, Cl. 364-200.000.

Manville Service Corporation: *See—*
Graser, Earl J., 4,508,258, Cl. 229-38.000.
Peters, Walter B., 4,508,855, Cl. 523-153.000.

Maraschin, Norma J.: *See—*
Beran, Debra L.; Cann, Kevin J.; Jorgensen, Robert J.; Karol, Frederick J.; Maraschin, Norma J.; and Marcinkowsky, Arthur E., 4,508,842, Cl. 502-112.000.

Marathon Manufacturing Company: *See—*
McClure, David K., 4,507,831, Cl. 24-590.000.

Marathon Oil Company: *See—*
Luetzelschwab, Wayne E., 4,508,858, Cl. 523-313.000.

Marchetti, Renato; and Penco, Eugenio, to Selenia Industrie Elettroniche Associate S.p.A. Longitudinal-discharge-pulse laser with preionization obtained by corona effect. 4,509,176, Cl. 372-86.000.

Marcinkowsky, Arthur E.: *See—*
Beran, Debra L.; Cann, Kevin J.; Jorgensen, Robert J.; Karol, Frederick J.; Maraschin, Norma J.; and Marcinkowsky, Arthur E., 4,508,842, Cl. 502-112.000.

Marcus, Holger: *See—*
Scholdstrom, Ragnar; Marcus, Holger; and Nordstrom, Lennart, 4,508,448, Cl. 356-5.000.

Mariani, Luigi; and Tarzia, Giorgio, to Gruppo Lepetit S.p.A. 1,7-Dihydro-pyrrolo[3,4-e][1,4]diazepin-2(3H)-one derivatives a process for preparing them and their use as anticonvulsant and anti-anxiety agents. 4,508,730, Cl. 514-218.000.

Marincic, Nikola: *See—*
Epstein, James; and Marincic, Nikola, 4,507,857, Cl. 29-623.200.

Marketing Displays, Inc.: *See—*
Seely, James R., 4,507,887, Cl. 40-606.000.

Marsh, Barry J., to GKN Technology Limited. Composite leaf springs. 4,508,325, Cl. 267-47.000.

Martin Marietta Corporation: *See—*
Djordjevic, Borislav B.; and Traugott, Stephen C., 4,507,969, Cl. 73-644.000.

Martin & Pagenstecher GmbH: *See—*
Bauer, Gerhard; Hees, Eckart; and Beckers, Karl-Dieter, 4,508,241, Cl. 222-600.000.

Martin, Robert E.: *See—*
Gilbert, Wilbur E.; Martin, Robert E.; and Belonger, Donald P., 4,508,387, Cl. 297-429.000.

Martinec, Eugene F., to Health-Mor, Inc. Power nozzle sudser for canister type vacuum cleaner. 4,507,819, Cl. 15-321.000.

Martini, Thomas: *See—*
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,508,900, Cl. 546-99.000.

Marui, Kuniyoshi: *See—*
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,509,201, Cl. 455-73.000.

Marusho Industrial Co., Ltd.: *See—*
Tarui, Yuichi; and Obayashi, Toshio, 4,508,589, Cl. 156-584.000.

Maruska, H. Paul: *See—*
Moustakas, Theodore D.; and Maruska, H. Paul, 4,508,609, Cl. 204-192.00S.

Marvin Glass & Associates: *See—*
Klimpert, Randall J.; and Meyer, Burton C., 4,508,521, Cl. 446-486.000.
Kulesza, Ralph J., 4,508,517, Cl. 446-464.000.
Meyer, Steven M.; Kuna, Wayne A.; Morrison, Robert S.; Morrison, Howard J.; Ditton, Richard A.; and Ditton, Elaine A., 4,508,353, Cl. 273-313.000.

Maschinenbau Oppenweiler Binder GmbH & Co.: *See—*
Klenk, Emil; and Heina, Karl-Fritz, 4,508,214, Cl. 198-833.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
Oberdorf, Manfred, 4,508,207, Cl. 198-478.000.

Maschinenfabrik HILMA GmbH: *See—*
Ersoy, Metin, 4,508,327, Cl. 269-23.000.

Mashimo, Tohru; and Satoh, Osamu, to Mazda Motor Corporation. Explosive charging apparatus for rock drilling. 4,508,035, Cl. 102-313.000.

Masovich, Felix Z.: *See—*
Spektor, Jury N.; Gaponov, Valery M.; and Masovich, Felix Z., 4,508,391, Cl. 299-43.000.

Massachusetts Institute of Technology: *See—*
Henshaw, Philip D., 4,508,431, Cl. 350-354.000.

Masterman, Hugh C.: *See—*
Sawyer, Carleton E.; and Masterman, Hugh C., 4,508,989, Cl. 310-184.000.

Mastromoro, John F., to Strobert, Samuel S., a part interest. Cordless telephone having a remote control function. 4,508,935, Cl. 179-2.0EA.

Masuda, Isao; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Komura, Makoto, to Victor Company of Japan, Limited. Circuit arrangement for a disk player for reproducing information prerecorded in the form of pits. 4,509,155, Cl. 369-48.000.

Masuda, Yoshimichi: *See—*
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.

Mathieu, Jean-Paul, to ICG Gasbec Inc. Apparatus for testing flow meters. 4,507,952, Cl. 73-3.000.

Matier, William L.; Erhardt, Paul W.; and Patil, Ghanshyam, to American Hospital Supply Corporation. Esters of 3-(3-substituted-amino-2-hydroxypropoxy)-4-substituted-1,2,5-thiadiazole derivatives. 4,508,725, Cl. 514-362.000.

Matlock, Mark G.: *See—*
Hergenrother, William L.; Matlock, Mark G.; and Ambrose, Richard J., 4,508,874, Cl. 525-285.000.

Matsuhisa, Seikichi: *See—*
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhisa, Seikichi, 4,508,918, Cl. 560-241.000.

Matsuki, Akihiro: *See—*
Onuma, Kazuhiko; Kageyama, Yoichi; Kobayashi, Hiromu; Matsuki, Akihiro; and Suzuki, Makoto, 4,508,841, Cl. 502-73.000.

Matsumoto, Hiroshi: *See—*
Nakayama, Koji; Yoshida, Ryo; and Matsumoto, Hiroshi, 4,508,562, Cl. 71-94.000.

Matsumura, Haruo: *See—*
Koyama, Takahiro; Matsumura, Haruo; and Morita, Teturo, 4,508,893, Cl. 536-85.000.

Matsunaga, Kiyosi: *See—*
Harata, Mituo; Hiraki, Hideaki; Uno, Shigeki; Sakuma, Kazuo; and Matsunaga, Kiyosi, 4,509,035, Cl. 338-35.000.

Matsuo, Yoshiho; Yoshino, Atsuhiko; and Nishijima, Ryoji, to Nissan Chemical Industries Ltd; and Nissan Maruzen Polyethylene Company. Process for producing a blow molding resin. 4,508,878, Cl. 525-333.800.

Matsuoka, Noriaki: *See—*
Kumata, Masao; and Matsuoka, Noriaki, 4,508,793, Cl. 429-26.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hasegawa, Shumpei; and Yamato, Akihiro, 4,508,083, Cl. 123-491.000.
Minakuchi, Hiroshi, 4,509,182, Cl. 377-116.000.
Ohara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,509,156, Cl. 369-54.000.
Takeda, Takeshi; Machida, Yasuhiko; Kudoh, Yasuo; and Ikegaya, Kazutoshi, 4,508,632, Cl. 252-70.000.
Wakabayashi, Noriaki; Fukumoto, Terumichi; and Ueda, Nobuhiro, 4,509,001, Cl. 318-687.000.
Yoshimura, Hirofumi; and Ikeda, Nobuo, 4,508,946, Cl. 219-10.55F.

Matsushita Electric Works, Ltd.: *See—*
Matsushita, Hidetoshi, 4,509,026, Cl. 335-85.000.
Omura, Koichi; and Yuasa, Hiroyoshi, 4,509,186, Cl. 381-43.000.

Matsushita, Hidetoshi, to Matsushita Electric Works, Ltd.; and SDS, Elektro GmbH. Polarized electromagnetic relay. 4,509,026, Cl. 335-85.000.

Matsuura, Masataka: *See—*
Takamatsu, Toshiaki; Funada, Fumiaki; Yasuda, Shuhei; and Matsuura, Masataka, 4,509,099, Cl. 361-413.000.

Matsuzaki, Minoru; Hachimoto, Akihiko; Inoue, Takashi; Shirai, Hitoshi; Watanabe, Akira; and Tofukuji, Ikuo, to Olympus Optical Co., Ltd. Lens barrel. 4,508,443, Cl. 354-402.000.

Matzner, Bruce; Horn, Victor M.; Curulla, Michael V.; and Price, John F., to General Electric Company. Nuclear fuel assembly spacer. 4,508,679, Cl. 376-438.000.

Maui Harness Corporation: *See—*
Spanier, Barry, 4,508,045, Cl. 114-39.000.

Mautner, Dietmar: *See—*
Muller, Michael; Mautner, Dietmar; and Motoren Turbinen-Union Munchen GmbH, 4,508,955, Cl. 219-146.210.

Maxwell, Gary A., to Eschem Inc. Paper product and glue therefor. 4,508,773, Cl. 428-198.000.

May, Joseph N.; and Wing, Joseph M., to Xerox Corporation. Multimode document handling apparatus and reproducing apparatus containing same. 4,508,444, Cl. 355-3.00R.

Mayer, William; and Runions, Alton E., to Stewart-Warner Corporation. Self-housed rectangular lamp assembly with a replaceable halogen bulb lamp unit. 4,509,106, Cl. 362-267.000.

Mayfield, John M., Jr.; and Haselswerdt, Vernon, to Microphor, Inc. Temperature controlled valve mechanism and method. 4,508,132, Cl. 137-62.000.

Mazda Motor Corporation: *See—*
Mashimo, Tohru; and Satoh, Osamu, 4,508,035, Cl. 102-313.000.
Oda, Tatsuro; Tanaka, Hideki; Yoshioka, Sadashichi; and Yokooku, Katsuhiko, 4,508,076, Cl. 123-339.000.
Takeuchi, Nobuo; Kaneko, Tadashi; Nakazumi, Tadataka; and Yokooku, Katsuhiko, 4,508,078, Cl. 123-399.000.

McCann, Michael O.: *See—*
Baldwin, Graham J.; and McCann, Michael O., 4,509,096, Cl. 361-386.000.

McCarthy, Alfred F., to Aavid Engineering, Inc. Heat sinks for integrated circuit modules. 4,508,163, Cl. 165-80.00B.

McCarthy, David K.: *See—*
Delnick, Frank M.; Guidotti, Ronald A.; and McCarthy, David K., 4,508,796, Cl. 429-112.000.

McCarthy, Thomas C.: *See—*
Girsch, B. J. Maria; Girsch, Charles W.; and McCarthy, Thomas C., 4,508,512, Cl. 434-259.000.

McCleerey, Earl W.: *See—*
Casciotti, Albert; McCleerey, Earl W.; and Cosmos, Pete, 4,508,401, Cl. 339-14.00R.

McClure, David K., to Marathon Manufacturing Company. Spring clip for tilter worm shaft. 4,507,831, Cl. 24-590.000.

McConnell, Matthew L.: *See—*
Roberts, Michael K.; Ottosen, Richard A.; and McConnell, Matthew L., 4,507,968, Cl. 73-626.000.

McCord, Frederick B. Portion dividing frying basket. 4,508,027, Cl. 99-416.000.

McCreedy, Kathleen M.: *See—*
Keskkula, Henno; McCreedy, Kathleen M.; and Maass, Donald A., 4,508,871, Cl. 525-78.000.

McCullough, J. Douglas, Jr., to Shell Oil Company. High toughness propylene polymer compositions. 4,508,872, Cl. 525-88.000.

McDavid, James M., to Texas Instruments Incorporated. Metallization process for integrated circuits. 4,507,853, Cl. 29-591.000.

McElligott, John: *See—*
Duncan, David T.; Lipscomb, David M.; McElligott, John; and Williams, Charles W., 4,508,116, Cl. 128-203.280.

McGuire, Michael E.: *See—*
Harris, Robert N.; and McGuire, Michael E., 4,508,278, Cl. 242-1.000.

McIver, George W.; Nakano, Kenichi; and Berenz, John J., to TRW Inc. Method of making field effect transistors with opposed source and gate regions. 4,507,845, Cl. 29-571.000.

McLaughlin, John R.; and Hertzenberg, Elliot P., to PQ Corporation. Treating beer to prevent chill haze and metal contamination. 4,508,742, Cl. 426-330.400.

McMillan, Robert E. Cable brake. 4,508,285, Cl. 242-99.000.

McNab, Jonas K.: *See—*
Keir, Grant G. H.; Peebles, John A.; McNab, Jonas K.; and Campbell, Ian N., 4,508,260, Cl. 232-43.100.

McQueen, Wayne F. Educational baby toy with lights. 4,508,511, Cl. 434-258.000.

McSweeney, Daniel R., to General Foods Corporation. Tabletted beverage composition containing dipeptide sweetener and process therefore. 4,508,740, Cl. 426-250.000.

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Smiley, Harry; and Blechman, Abraham, 4,508,505, Cl. 433-18.000.

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Myers, George H., 4,508,121, Cl. 128-639.000.

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Amato, Joseph S.; Weinstock, Leonard M.; and Karady, Sandor, 4,508,921, Cl. 562-443.000.
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Radtke, Manfred, 4,508,162, Cl. 165-56.000.

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Seufert, Josef J., 4,508,547, Cl. 55-101.000.
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Meyer, Danny D.: *See—*
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Olsen, Ronald H., 4,508,823, Cl. 435-172.300.
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Mayfield, John M., Jr.; and Haselswerdt, Vernon, 4,508,132, Cl. 137-62.000.
Micropore International Limited: *See—*
McWilliams, Joseph A., 4,508,961, Cl. 219-449.000.
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Bradley, Fennimore N., 4,509,029, Cl. 335-208.000.
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Herman, Timm R.; and Mikic, Frank, 4,508,005, Cl. 81-177.00G.
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Takeuchi, Hirosato; and Mikiya, Toshio, 4,508,104, Cl. 126-443.000.
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Giffen, William M., Jr.; Li, George S.; and Miller, Arthur F., 4,508,787, Cl. 428-473.500.
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Andrade, Joseph D.; Triolo, Philip M.; Smith, Lee M.; and Miller, Frank J., 4,508,606, Cl. 204-169.000.
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Millet, Serge D. Oil changing and lubricating apparatus. 4,508,195, Cl. 184-1.500.
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Mills, Stephen D.; and Brown, Charles D. Stopper support mechanism for casting containers. 4,508,247, Cl. 222-598.000.
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Minick, Harold N., to Wolff Wire Corporation. Support bracket for accessory beam. 4,508,300, Cl. 248-216.100.
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Jido, Morio, 4,508,265, Cl. 239-3.000.
Minnesota Mining and Manufacturing Company: *See—*
Dowdle, Dean M., 4,509,039, Cl. 340-572.000.
Elepano, Normita P.; Schnur, William H.; and Jorgensen, Jens L., 4,508,634, Cl. 252-163.000.
Harrington, John A., 4,509,194, Cl. 382-56.000.
Newell, Richard G.; and Wolf, Stephen F., 4,508,916, Cl. 556-420.000.
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Mitsubishi Chemical Industries, Ltd.: *See—*
Onuma, Kazuhiko; Kageyama, Yoichi; Kobayashi, Hiromu; Matsuki, Akihiro; and Suzuki, Makoto, 4,508,841, Cl. 502-73.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
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Sato, Mineo; Kawaguchi, Tadaaki; Okawachi, Yukinori; and Funahashi, Yasuyuki, 4,507,940, Cl. 62-407.000.
Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, 4,509,143, Cl. 364-900.000.
Tanaka, Toshinori; and Morishita, Akira, 4,507,978, Cl. 74-7.00E.
Yoshino, Hozo, 4,507,936, Cl. 62-235.100.
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Najima, Tetsuo; Tetsuta, Setsuya; Sawata, Yukitaka; and Yamagishi, Masahiro, 4,508,620, Cl. 209-500.000.
Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha: *See—*
Tanaka, Hiroshi; and Iwata, Yoshitaka, 4,508,425, Cl. 350-641.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Kimura, Etsuji; Ogi, Katsumi; and Sato, Kazusuke, 4,508,322, Cl. 266-149.000.
Mitsubishi Rayon Co., Ltd.: *See—*
Kamada, Kazumasa; Tamai, Katsumi; Shimomura, Yasunori; and Abe, Kazunori, 4,509,163, Cl. 369-284.000.
Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, 4,508,875, Cl. 525-308.000.
Mitsubishi Yuka Fine Chemicals Co., Ltd.: *See—*
Hokamura, Sadakazu; Shinohara, Toshio; Aritomi, Mitsutoshi; and Yoshida, Yuji, 4,508,767, Cl. 427-407.100.
Mitsui, Michio: *See—*
Saito, Eiiji; Aizawa, Shoji; Mitsui, Michio; Miyata, Tomohiko; and Kuroda, Masayuki, 4,508,266, Cl. 239-3.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Sasagawa, Katsuyoshi; and Imai, Masao, 4,508,655, Cl. 260-429.00R.
Mitutoyo Mfg. Co. Ltd.: *See—*
Sakata, Hideo; and Nakaoki, Tokuzo, 4,507,895, Cl. 51-98.00R.
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, to Toyota Jidosha Kabushiki Kaisha. Method for making composite material including matrix metal and metal cored ceramic surfaced fine powder material. 4,508,682, Cl. 420-590.000.
Miura, Yasuki; Motegi, Masahiko; and Okabe, Kazuo, to Toray Industries, Inc. Base film for magnetic recording tape with F-5 values of 9–15 Kg/mm^2. 4,508,782, Cl. 428-409.000.
Miyake, Haruhisa: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,508,603, Cl. 204-98.000.
Miyake, Masayoshi; Ueoka, Isao; Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Yamamoto, Teruyuki, to Sumitomo Electric Industries, Ltd. Enamelled wire. 4,508,779, Cl. 428-383.000.
Miyake, Yukinori: *See—*
Kawanami, Norihide; Miyake, Yukinori; Kawamura, Kenji; and Toda, Toshiharu, 4,509,090, Cl. 361-119.000.
Miyaki, Takeo: *See—*
Hatori, Masami; Ohkuma, Hiroaki; Konishi, Masataka; Miyaki, Takeo; and Kawaguchi, Hiroshi, 4,508,647, Cl. 260-239.30T.
Miyaoka, Eikichi. Adjustable body brush and massager. 4,508,108, Cl. 128-65.000.
Miyata, Tomohiko: *See—*
Saito, Eiiji; Aizawa, Shoji; Mitsui, Michio; Miyata, Tomohiko; and Kuroda, Masayuki, 4,508,266, Cl. 239-3.000.
Miyazaki, Yasuyuki: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,509,127, Cl. 364-478.000.
Miyoshi, Takao; and Sakanoue, Akira, to Central Glass Company Limited. Method of preparing polymer-coated particulate inorganic material. 4,508,761, Cl. 427-221.000.
Mizuno, Haruki: *See—*
Mizuno, Shigeru; Suzuki, Masahiko; Mizuno, Haruki; and Katsu, Masutaro, 4,508,567, Cl. 75-231.000.

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Mizusawa Industrial Chemicals, Ltd.: *See*—
Usui, Koichi; Ogawa, Masahide; Goto, Kunio; Sato, Teiji; Tanaka, Masanori; Takahashi, Seikichi; Ono, Kinichi; and Kojima, Seiji, 4,509,064, Cl. 346-207.000.

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Mo och Domsjo Aktiebolag: *See*—
Bergstrom, John R., 4,508,593, Cl. 162-29.000.

Mobil Oil Corporation: *See*—
Cormier, William E., Jr.; Pasquale, Gary M.; and Stover, William A., 4,508,840, Cl. 502-70.000.
Davis, Aaron J., 4,509,150, Cl. 367-76.000.
Haag, Werner O.; Olson, David H.; and Rodewald, Paul G., 4,508,836, Cl. 502-53.000.
Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,508,615, Cl. 208-89.000.
Ruehle, William H., 4,509,149, Cl. 367-27.000.
Yan, Tsoung Y., 4,508,614, Cl. 208-78.000.

Mocella, Michael T.: *See*—
Taylor, Paul D.; and Mocella, Michael T., 4,508,923, Cl. 568-311.000.

Mochel, Margaret E.; and Humphreys, Colin J., to University Patents, Inc. Electron beam cutting. 4,508,952, Cl. 219-121.0EH.

Mochida, Haruo, to Nissan Motor Company, Limited. Locking device of an automotive door. 4,508,379, Cl. 292-336.300.

Mode, Paul, to Nycoil Corporation. Releasable coupling device. 4,508,369, Cl. 285-39.000.

Modglin, Michael D. Body jacket. 4,508,110, Cl. 128-78.000.

Molbaek, Jens J.: *See*—
Pedersen, Svend P.; Molbaek, Jens J.; and Hansen, Allan H., 4,508,262, Cl. 236-42.000.
Pedersen, Svend P.; Wrang, Soren N.; and Molbaek, Jens J., 4,508,263, Cl. 236-42.000.

Moler Products Limited: *See*—
Elliott, Alwyn, 4,508,667, Cl. 264-13.000.

Monarch Marking Systems, Inc.: *See*—
Ivary, David J.; and Kirby, Raymond L., Jr., 4,508,252, Cl. 226-44.000.

Monbaron, Jean-Jacques; and Bui, Ngoc C., to Asulab S.A. Apparatus for introducing control words by speech. 4,509,133, Cl. 364-513.500.

Mondel, Karl: *See*—
Seifert, Helmut; and Mondel, Karl, 4,508,286, Cl. 242-107.000.

Monden, Tsuneo; Ozu, Masao; and Ikegami, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotary shaft for compressor. 4,508,495, Cl. 418-63.000.

Money, Michael F. Foldable pen. 4,508,464, Cl. 401-6.000.

Monne, Maxime, to INTERCONTROLE Societe Anonyme. Mobile positioning body introduction device. 4,508,063, Cl. 122-504.000.

Monsanto Company: *See*—
Carter, Don E.; and Yuen, Henry K., 4,508,101, Cl. 126-436.000.
Dufour, Daniel L.; and Jones, William J., 4,508,870, Cl. 525-64.000.
Mottus, Edward H., 4,508,866, Cl. 524-401.000.
Sikorski, James A.; and Hoobler, Mary A., 4,508,663, Cl. 260-968.000.

Montabert, Roger, to Etablissements Montabert. Fluid-control system for a hydraulic percussion instrument. 4,508,017, Cl. 92-85.00B.

Montalto, Antonelli. Method of manufacturing clothing. 4,507,808, Cl. 2-243.00B.

Montgomery, Dean P., to Phillips Petroleum Company. Detection of catalyst by-passing in fixed bed naphtha reformer. 4,508,617, Cl. 208-134.000.

Montgomery, Marshall N.; and Michaels, John M., to Dresser Industries, Inc. Apparatus for testing earth formations. 4,507,957, Cl. 73-151.000.

Montheard, Jean-Pierre: *See*—
Camps, Marcel; Douillard, Alain; Dubois, Jean-Claude; Gazard, Maryse; Montheard, Jean-Pierre; Pascal, Thierry; and Seytre, Gerard, 4,508,639, Cl. 252-500.000.

Moore, John W.; and Thomas, William M., to Stewart Systems, Inc. Conveyor and sorting switch. 4,508,206, Cl. 198-365.000.

Moore, Victor S.: *See*—
Leininger, Joel C.; Moore, Victor S.; and Stahl, William L., Jr., 4,509,114, Cl. 364-200.000.

Morales, Liborio D. Foldable, self-supporting, adjustable book holder. 4,508,307, Cl. 248-460.000.

Moreuil, Rene , to Arconthorn Limited. Drug for stimulating hepatic cell homeostasis and for restoring the functional capacity of the hepatocytes. 4,508,733, Cl. 514-578.000.

Mori, Masao: *See*—
Inoue, Akira; Takase, Shinji; Sekido, Yasuo; Mori, Masao; and Kubo, Tatsuki, 4,508,849, Cl. 502-263.000.

Mori, Toshiro: *See*—
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,507,942, Cl. 68-20.000.

Morimoto, Tsuyoshi, to Totoku Co., Ltd. Latticed tubular fence and method of making same. 4,508,321, Cl. 256-65.000.

Morimoto, Yoshinobu: *See*—
Komurasaki, Satoshi; Ueda, Atsushi; Morimoto, Yoshinobu; and Kadota, Youichi, 4,508,079, Cl. 123-425.000.

Morimoto, Yoshiro; and Kishi, Norimasa, to Nissan Motor Company, Limited. Apparatus for controlling a direct drive clutch for a vehicle automatic transmission. 4,507,985, Cl. 74-866.000.

Morimoto, Yoshiro: *See*—
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,509,124, Cl. 364-424.100.

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Morino, Toshiharu: *See*—
Tamura, Yoshio; Ito, Takaaki; and Morino, Toshiharu, 4,508,664, Cl. 261-44.00C.

Morishita, Akira: *See*—
Tanaka, Toshinori; and Morishita, Akira, 4,507,978, Cl. 74-7.00E.

Morita, Saichiro, to Yokogawa Hokushin Electric Corporation. Pressure gauge. 4,507,972, Cl. 73-708.000.

Morita, Shuji: *See*—
Kusui, Akio; Morita, Shuji; Kudoh, Toshio; Tanaka, Yasuo; and Itoh, Hirotaka, 4,508,414, Cl. 339-143.00R.

Morita, Teturo: *See*—
Koyama, Takahiro; Matsumura, Haruo; and Morita, Teturo, 4,508,893, Cl. 536-85.000.

Morito, Yusuke: *See*—
Kanda, Masahiro; Hatakeyama, Tetsuya; and Morito, Yusuke, 4,508,640, Cl. 252-503.000.

Moriuchi, Fumio: *See*—
Oseto, Osamu; and Moriuchi, Fumio, 4,508,806, Cl. 430-109.000.

Morris, Jeffrey R.: *See*—
Kaniuk, John A.; Meinking, William E.; and Morris, Jeffrey R., 4,508,835, Cl. 501-94.000.

Morrison, Elbert F., to Burlington Industries, Inc. Vacuum spinning. 4,507,913, Cl. 57-328.000.

Morrison, Howard J.: *See*—
Meyer, Steven M.; Kuna, Wayne A.; Morrison, Robert S.; Morrison, Howard J.; Ditton, Richard A.; and Ditton, Elaine A., 4,508,353, Cl. 273-313.000.

Morrison, Robert S.: *See*—
Meyer, Steven M.; Kuna, Wayne A.; Morrison, Robert S.; Morrison, Howard J.; Ditton, Richard A.; and Ditton, Elaine A., 4,508,353, Cl. 273-313.000.

Mortenson, John A.: *See*—
Gumaer, Robert A.; and Mortenson, John A., 4,509,119, Cl. 364-200.000.

Moseley, Patrick T.; and Bridger, Nevill J., to United Kingdom Atomic Energy Authority. Lead acid electric storage cell and a positive electrode therefor. 4,507,855, Cl. 29-623.100.

Moseley, Patrick T.; and Hill, Michael R. H., to United Kingdom Atomic Energy Authority. Method of manufacturing a positive electrode for a lead acid electric storage cell. 4,508,147, Cl. 141-1.100.

Mosley, Joseph M.: *See*—
Dorler, Jack A.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,508,981, Cl. 307-542.000.

Mosley, William H., Jr.: *See*—
Andren, Carl F.; Mosley, William H., Jr.; and Sanders, David E., 4,509,017, Cl. 329-105.000.

Moss, Gerald, to Exxon Research & Engineering Co. Converting a fuel to combustible gas. 4,508,544, Cl. 48-197.00R.

Mossaides, Paula X., to Tektronix, Inc. Method and apparatus for displaying images. 4,509,043, Cl. 340-721.000.

Mostek Corporation: *See*—
Ackmann, Paul W.; and Bryant, Frank R., 4,508,815, Cl. 430-314.000.

Motegi, Masahiko: *See*—
Miura, Yasuki; Motegi, Masahiko; and Okabe, Kazuo, 4,508,782, Cl. 428-409.000.

Motoren Turbinen-Union Munchen GmbH: *See*—
Muller, Michael; Mautner, Dietmar; and Motoren Turbinen-Union Munchen GmbH, 4,508,955, Cl. 219-146.210.

Motorola, Inc.: *See*—
Ackerman, Charles B., 4,508,970, Cl. 250-577.000.
Allgood, Robert N.; Peterson, Joe W.; and Whatley, Roger A., 4,508,983, Cl. 307-577.000.
Gardiner, George K.; and Norris, Dean E., 4,509,054, Cl. 343-709.000.
Parker, Norman W., 4,509,135, Cl. 364-826.000.

Mottus, Edward H., to Monsanto Company. Polymeric antitumor agent. 4,508,866, Cl. 524-401.000.

Mouftah, Hussein T., to Queen's University at Kingston. Microprocessor based digital to digital converting dataset. 4,509,164, Cl. 370-29.000.

Mouilhayrat, Guy G.; Duchon, Paul A. J.; Guilbert, Jean M. A. M.; and Rolfo, Andre A., to Centre National d'Etudes Spatiales. Satellite on an equatorial orbit with improved solar means. 4,508,297, Cl. 244-173.000.

Moustakas, Theodore D.; and Maruska, H. Paul, to Exxon Research & Engineering Co. Method for sputtering a PIN microcrystalline/amorphous silicon semiconductor device with the P and N-layers sputtered from boron and phosphorous heavily doped targets. 4,508,609, Cl. 204-192.00S.

Moutonnier, Claude: *See*—
Berger, Christian; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,508,717, Cl. 514-203.000.

Mower, Michael L.: *See*—
Packard, Gary R.; and Mower, Michael L., 4,508,203, Cl. 192-84.00C.

MTS Systems Corporation: *See—*
Meyer, Richard A.; and Meline, Harry R., 4,507,871, Cl. 33-148.00D.
Mudde, John P., to CPC International Inc. Hot-water dispersible corn starch having high paste viscosity. 4,508,576, Cl. 106-213.000.
Mueller, Josef; Wieradorff, Walter-Wielant; Kirschenlohr, Werner; and Schwantje, Gerd, to BASF Aktiengesellschaft. Preparation of o-acylphenols and p-acylphenols. 4,508,924, Cl. 568-322.000.
Muesch, Herbert: *See—*
Liepmann, Hans; Ruhland, Michael; Muesch, Herbert; Benson, Werner; Heinemann, Henning; and Zeugner, Horst, 4,508,716, Cl. 514-220.000.
Muhle, Mike E.; Stolz, Richard J.; and Wright, Cecil W., to Exxon Research & Engineering Co. Finishing of rotational molding grade resin. 4,508,859, Cl. 523-346.000.
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Muller, Erwin, to Siemens Aktiengesellschaft. Electromagnetic relay. 4,509,028, Cl. 335-202.000.
Muller, Michael; Mautner, Dietmar; and Motoren Turbinen-Union Munchen GmbH. Electrode for the TIG welding process. 4,508,955, Cl. 219-146.210.
Mummery, Robert J.: *See—*
Mlinaric, Jerry; Leary, William; and Mummery, Robert J., 4,508,485, Cl. 414-458.000.
Muncaster, John W.; Roberts, Michael G.; Rowlett, R. David; Hoitink, Todd B.; Uffner, William E.; and White, Robert N., to Owens-Corning Fiberglas Corporation. Road repair material of knitted unidirectional glass roving mat coated with elastomeric modified asphalt. 4,508,770, Cl. 428-63.000.
Mund, Konrad: *See—*
Freller, Helmut; Horauf, Friedrich; Lorenz, Hans-Peter; and Mund, Konrad, 4,508,430, Cl. 350-351.000.
Freller, Helmut; and Mund, Konrad, 4,508,432, Cl. 350-357.000.
Murakami, Kakuji: *See—*
Fujii, Tadashi; Yamaguchi, Tomoyuki; Murakami, Kakuji; Kawakami, Tomiko; and Uenozono, Hiroko, 4,508,570, Cl. 106-20.000.
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Wada, Hitoshi; Tachikawa, Kyoji; Yamada, Yutaka; and Murase, Satoru, 4,508,578, Cl. 148-11.50F.
Murasugi, Takashi: *See—*
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,509,124, Cl. 364-424.100.
Murata Kikai Kabushiki Kaisha: *See—*
Noguchi, Kazuyoshi, 4,507,912, Cl. 57-22.000.
Murata Manufacturing Co., Ltd.: *See—*
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,508,756, Cl. 427-81.000.
Murphy, Kenneth E.: *See—*
Wiegardt, Gordon K.; Hanks, Thomas W.; and Murphy, Kenneth E., 4,508,176, Cl. 172-7.000.
Murphy, William A.: *See—*
Coy, David H.; and Murphy, William A., 4,508,711, Cl. 514-11.000.
Murray, James A.: *See—*
Handy, Richard L.; and Murray, James A., 4,508,472, Cl. 405-229.000.
Mustee, Robert J., to E. L. Mustee & Sons, Inc. Laundry tub mounting apparatus. 4,508,304, Cl. 248-311.200.
Mut, Alan D.; and Deans, Harry A., to Exxon Production Research Co. Method for determining connate water saturation and salinity in reservoirs. 4,508,169, Cl. 166-250.000.
Myers, George H., to Medsys, Inc. Apparatus for measurement of corneal thickness. 4,508,121, Cl. 128-639.000.
Mynderse, Jon S.; and O'Connor, Sean C., to Eli Lilly and Company. Quiuolizine and indolizine enzyme inhibitors. 4,508,901, Cl. 546-112.000.
N. Schlumberger and Cie: *See—*
Herubel, Jean-Frederic, 4,507,822, Cl. 17-23.000.
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Stroz, John J.; and Mackay, Donald A. M., 4,508,713, Cl. 514-60.000.
Nadler, Morton. Process and device for the binarization of a pattern. 4,509,195, Cl. 382-51.000.
Nagae, Yoshiharu; Isogai, Masato; Kawakami, Hideaki; and Nakano, Fumio, to Hitachi, Ltd. Method for driving liquid crystal element employing ferroelectric liquid crystal. 4,508,429, Cl. 350-350.00S.
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Nagai, Kineshiro; and Nagai, Kinuko. Method of treating inflammatory diseases. 4,508,728, Cl. 514-400.000.
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Nagai, Kineshiro; and Nagai, Kinuko, 4,508,728, Cl. 514-400.000.
Nagaishi, Hatsuo: *See—*
Okamura, Kenji; Nagaishi, Hatsuo; Kitahara, Tsuyoshi; Sone, Kohki; and Nakamura, Koyo, 4,507,986, Cl. 74-866.000.
Nagase, Toshio: *See—*
Joh, Yasushi; Kaneko, Noriaki; and Nagase, Toshio, 4,508,535, Cl. 604-282.000.
Nagata, Koichi, to Kyoto Ceramic Co., Ltd. Ceramic body for chromatography and process for preparation thereof. 4,508,624, Cl. 210-658.000.
Nagata, Wataru; Nishitani, Yasuhiro; and Sato, Hisao, to Shionogi & Co., Ltd. Synthesis of hydroxyethyltetrazolethiol and etherified intermediates therefor. 4,508,909, Cl. 548-251.000.
Nagatomi, Akihiko, to DX Antenna Company, Limited. Satellite broadcast signal receiving system. 4,509,198, Cl. 455-4.000.
Najima, Tetsuo; Tetsuta, Setsuya; Sawata, Yukitaka; and Yamagishi, Masahiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of and apparatus for feeding and discharging air for pneumatic jigs. 4,508,620, Cl. 209-500.000.
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Miyake, Masayoshi; Ueoka, Isao; Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Yamamoto, Teruyuki, 4,508,779, Cl. 428-383.000.
Nakagawa, Takayuki, to Fujitsu Limited. Method for producing negative resist images. 4,508,813, Cl. 430-296.000.
Nakagawa, Takuji: *See—*
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,508,756, Cl. 427-81.000.
Nakagawa, Yoshitaka: *See—*
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,508,600, Cl. 204-27.000.
Nakai, Masayuki, to Idemitsu Kosan Company Limited. Process for improving low quality coal. 4,508,539, Cl. 44-10.00D.
Nakamura, Hisashi, to Diesel Kiki Co., Ltd. Injection quantity correcting device for distribution type fuel injection pump. 4,508,080, Cl. 123-449.000.
Nakamura, Koyo: *See—*
Okamura, Kenji; Nagaishi, Hatsuo; Kitahara, Tsuyoshi; Sone, Kohki; and Nakamura, Koyo, 4,507,986, Cl. 74-866.000.
Nakamura, Taku: *See—*
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Nakamura, Toshiaki: *See—*
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Nakano, Fumio: *See—*
Nagae, Yoshiharu; Isogai, Masato; Kawakami, Hideaki; and Nakano, Fumio, 4,508,429, Cl. 350-350.00S.
Nakano, Kenichi: *See—*
McIver, George W.; Nakano, Kenichi; and Berenz, John J., 4,507,845, Cl. 29-571.000.
Nakano, Kenji, to Sony Corporation. Head tracking control for video tape recorder. 4,509,083, Cl. 360-77.000.
Nakaoki, Tokuzo: *See—*
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Nakashima, Hisao: *See—*
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Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, to Kawasaki Steel Corporation; and Sakai Chemical Industry Co., Ltd. Mold additives for use in continuous casting. 4,508,571, Cl. 106-38.280.
Nakayama, Kengo: *See—*
Yashima, Michio; Komatsu, Akihiro; Takanashi, Masami; Hirose, Masashi; and Nakayama, Kengo, 4,508,944, Cl. 200-61.850.
Nakayama, Koji; Yoshida, Ryo; and Matsumoto, Hiroshi, to Sumitomo Chemical Company, Limited. Benzylsulfinyl pyridine-N-oxides and their herbicidal method of use. 4,508,562, Cl. 71-94.000.
Nakazumi, Tadataka: *See—*
Takeuchi, Nobuo; Kaneko, Tadashi; Nakazumi, Tadataka; and Yokooku, Katsuhiko, 4,508,078, Cl. 123-399.000.
Nalco Chemical Company: *See—*
Jansma, Roger H.; and Sandberg, Karen R., 4,508,594, Cl. 162-135.000.
Nankervis, Robert L. Adjustable press jig for front wheel strut assembly. 4,507,835, Cl. 29-251.000.
Nasu, Shoji: *See—*
Murakami, Tsudoi; Nasu, Shoji; Tatsumi, Kazuaki; and Nagahama, Yasuhide, 4,508,953, Cl. 219-125.100.
National Aerospace Laboratory of Science and Technology Agency: *See—*
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
National Distillers and Chemical Corporation: *See—*
van Dijk, Jacob; Renken, Johannes W.; Dekker, Jan G.; and Helmond, Johannes, 4,508,652, Cl. 260-407.000.
National Research Development Corporation: *See—*
Berry, Paul S.; Kettlewell, Peter J.; and Turner, Michael J. B., 4,508,062, Cl. 119-82.000.
Weight, John P., 4,509,153, Cl. 367-140.000.
National Research Institute: *See—*
Wada, Hitoshi; Tachikawa, Kyoji; Yamada, Yutaka; and Murase, Satoru, 4,508,578, Cl. 148-11.50F.
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Natsume, Toshio: *See—*
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,508,682, Cl. 420-590.000.

Naul, George M.: *See*—
Stahl, Steven B.; Bakhshi, Shiv K.; and Naul, George M., 4,508,673, Cl. 264-120.000.
Nave, Rafi: *See*—
Palmer, John; Ravenel, Bruce; and Nave, Rafi, 4,509,144, Cl. 364-900.000.
Naya, Masaru; and Ikeda, Tsuneichi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Kanazawa Industries. Extract generating device. 4,508,023, Cl. 99-279.000.
NCR Canada Ltd-NCR Canada LTEE: *See*—
Therrien, Roger H., 4,509,077, Cl. 358-139.000.
NCR Corporation: *See*—
Keir, Grant G. H.; Peebles, John A.; McNab, Jonas K.; and Campbell, Ian N., 4,508,260, Cl. 232-43.100.
Sullivan, Paul A., 4,507,847, Cl. 29-576.00B.
NECCHI Societa per Azioni: *See*—
Bianchi, Nereo, 4,508,042, Cl. 112-226.000.
Needleman, Philip, to Washington University. Atrial peptide. 4,508,712, Cl. 514-11.000.
Neese, Wayne E.: *See*—
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,508,398, Cl. 339-17.0LM.
Nelson, David E.: *See*—
Hollinger, David P.; Nelson, David E.; and Hannon, Robert J., 4,509,170, Cl. 370-85.000.
Nelson, Paul A.: *See*—
Knoedler, Reinhard; Nelson, Paul A.; Shimotake, Hiroshi; and Battles, James E., 4,508,797, Cl. 429-184.000.
Nemes, Jozsef: *See*—
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Nemoto, Tadashi; Fukumoto, Ryoichi; Kawamura, Hiroaki; Kondo, Yoshikazu; and Inui, Tsuneo, to Toyo Kohan Co., Ltd. Process for producing a thin tin and zinc plated steel sheet. 4,508,601, Cl. 204-38.500.
New Cosmos Electric Col, Ltd.: *See*—
Sakai, Sai, 4,509,034, Cl. 338-34.000.
Newell Companies, Inc.: *See*—
Kornely, Edward B.; and Paul, Gerald T., 4,508,768, Cl. 428-35.000.
Newell, Richard G.; and Wolf, Stephen F., to Minnesota Mining and Manufacturing Company. Curable substituted urethane acrylates. 4,508,916, Cl. 556-420.000.
Newsome, Allen L., Jr.: *See*—
Wyatt, Philip W.; Newsome, Allen L., Jr.; Bloom, William G.; Siegel, Bernard; and Lubov, Michael, 4,508,123, Cl. 128-692.000.
Neyer, Norbert, to LGZ Landis & Gyr Zug AG. Method and an apparatus for correcting distortion of binary received signals. 4,509,180, Cl. 375-76.000.
Nichias Corporation: *See*—
Yamamoto, Tsutomu; Ashizawa, Masaaki; Nishimoto, Kazuo; and Sekiguchi, Yuji, 4,508,777, Cl. 428-280.000.
Nichirin Chemical Industries Ltd.: *See*—
Koyama, Takahiro; Matsumura, Haruo; and Morita, Teturo, 4,508,893, Cl. 536-85.000.
Nichols, Gary R.: *See*—
Kiess, Ronald J.; and Nichols, Gary R., 4,508,092, Cl. 123-617.000.
Nicholson, Timothy J. H.; Lee, Andrew L.; and Roberts, Clifford. Shelf support. 4,508,301, Cl. 248-250.000.
Nicola, Massimo: *See*—
Tricerri, Silvia Z.; Casagrande, Cesare; De Marchi, Franco; and Nicola, Massimo, 4,508,719, Cl. 514-236.000.
Nielsen Industries, Inc.: *See*—
Anderson, Bernard O., 4,508,059, Cl. 119-14.030.
Niggli, Guido: *See*—
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Nii, Katsutoshi: *See*—
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Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, to National Aerospace Laboratory of Science and Technology Agency. Method of manufacturing a rocket combustion chamber. 4,508,680, Cl. 419-5.000.
Niitti, Timo U.; and Niskala, Alvar M., to Outokumpu Oy. Procedure for providing the vanes of the stator of a flotation machine with a cover and for fixing the cover. 4,508,619, Cl. 209-169.000.
Nijssen, Wilhelmus P. M.: *See*—
Gravesteijn, Dirk J.; Steenbergen, Christiaan; Van der Veen, Jan; and Nijssen, Wilhelmus P. M., 4,508,811, Cl. 430-270.000.
Nilsson, Karl E., to Bayern-Chemie Gesellschaft fur flugchemische Antriebe mit beschrankter Haftung. Winding attachment for safety belts in vehicles. 4,508,287, Cl. 242-107.000.
Nilsson, Karl E., to Bayern-Chemie Gesellschaft fur flugchemische Antriebe mit beschrankter Haftung. Winding attachment for belts. 4,508,288, Cl. 242-107.000.
Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Nonaromatic dianhydride and polyimides from tricyclo[4.2.1.$0^{2,5}$] nonane-3,4-dimethyl-3,4,7,8-tetracarboxylic acid dianhydride. 4,508,605, Cl. 204-158.00R.
Ninetronix, Inc.: *See*—
Drews, Robert C.; Meyer, Danny D.; Shalon, Tadmor; and Pasternak, Eliezer, 4,508,532, Cl. 604-22.000.
Nintendo Co., Ltd.: *See*—
Yokoi, Gunpei, 4,508,336, Cl. 273-1.00L.
Nippon Electric Co., Ltd.: *See*—
Hirano, Akira, 4,509,038, Cl. 340-347.0DD.
Ichihara, Masaki, 4,509,199, Cl. 455-7.000.
Tamura, Yoshiharu, 4,509,165, Cl. 370-38.000.
Togari, Hisashi, 4,508,979, Cl. 307-513.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kenji, Yokoyama, 4,509,101, Cl. 361-79.000.
Oshima, Yutaka, 4,508,575, Cl. 106-148.000.
Suzuki, Hideo, 4,508,001, Cl. 84-1.010.
Nippon Mektron Ltd.: *See*—
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Nippon Oil Company, Limited: *See*—
Inoue, Akira; Takase, Shinji; Sekido, Yasuo; Mori, Masao; and Kubo, Tatsuki, 4,508,849, Cl. 502-263.000.
Nippon Paint Co., Ltd.: *See*—
Sakurai, Kiyomi; and Arimatsu, Seiji, 4,508,814, Cl. 430-303.000.
Nippon Seiki Kabushiki Kaisha: *See*—
Yachida, Yoichi, 4,509,044, Cl. 340-789.000.
Nippon Telegraph and Telephone Public Corp.: *See*—
Harada, Kazuhiro; Tsuchiya, Yuzoh; Sekiguchi, Nobuo; and Ishikawa, Toshio, 4,508,251, Cl. 226-25.000.
Nippon Zeon Co., Ltd.: *See*—
Joh, Yasushi; Kaneko, Noriaki; and Nagase, Toshio, 4,508,535, Cl. 604-282.000.
Nippondenso Co., Ltd.: *See*—
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Takao, Mitsunori; and Mizuno, Toshiaki, 4,508,075, Cl. 123-339.000.
Nishida, Haruki: *See*—
Sogo, Hiroyuki; Ohsawa, Zenichi; Umino, Isamu; and Nishida, Haruki, 4,509,208, Cl. 455-317.000.
Nishijima, Ryoji: *See*—
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Nishikawa, Kazunori: *See*—
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Nishikawa, Seiichi: *See*—
Num: zawa, Akio; Sakai, Ichio; Kumagai, Tadanobu; and Nishikawa, Seiichi, 4,508,522, Cl. 464-11.000.
Nishimoto, Kazuo: *See*—
Yamamoto, Tsutomu; Ashizawa, Masaaki; Nishimoto, Kazuo; and Sekiguchi, Yuji, 4,508,777, Cl. 428-280.000.
Nishimura, Katsuji: *See*—
Horigome, Koichi; Okada, Seizo; Nishimura, Katsuji; and Yamamoto, Hachizou, 4,509,136, Cl. 364-900.000.
Nishino, Masaki: *See*—
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Nishio, Tadashi, to Olympus Optical Co., Ltd. Sheet feeder for copying machines. 4,508,332, Cl. 271-118.000.
Nishita, Kazuko D.: *See*—
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Nishitani, Yasuhiro: *See*—
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Nishiwaki, Kenichiro; Sakai, Tomio; and Ohkubo, Takashi, to Denki Kagaku Kogyo Kabushiki Kaisha. Elastomer of acrylic ester type copolymer. 4,508,885, Cl. 526-318.000.
Nishiwaki, Yoshikazu, to Sumitomo Electric Industries, Ltd. Optical system. 4,508,420, Cl. 350-3.600.
Nishiyama, Taichiro; and Tsuji, Shinsaku, to Nissan Motor Company, Limited. Low vibration-level remote control gearshift linkage for manual transmission. 4,507,980, Cl. 74-473.00R.
Niskala, Alvar M.: *See*—
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Nissan Chemical Industries Ltd.: *See*—
Sakata, Gozyo; Numata, Tatsuo; Makino, Kenzi; Kakuta, Takuya; Kusano, Kazuya; Ikai, Takasi; and Oguti, Tosihiko, 4,508,561, Cl. 71-94.000.
Nissan Chemical Industries Ltd: *See*—
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Nissan Maruzen Polyethylene Company: *See*—
Matsuo, Yoshiho; Yoshino, Atsuhiko; and Nishijima, Ryoji, 4,508,878, Cl. 525-333.800.
Nissan Motor Company, Limited: *See*—
Hiraiwa, Kazuyoshi; and Yamasaki, Saburou, 4,507,981, Cl. 74-477.000.
Mochida, Haruo, 4,508,379, Cl. 292-336.300.
Morimoto, Yoshiro; and Kishi, Norimasa, 4,507,985, Cl. 74-866.000.
Nishiyama, Taichiro; and Tsuji, Shinsaku, 4,507,980, Cl. 74-473.00R.
Okamura, Kenji; Nagaishi, Hatsuo; Kitahara, Tsuyoshi; Sone, Kohki; and Nakamura, Koyo, 4,507,986, Cl. 74-866.000.
Seko, Yasutoshi; Inoue, Masami; and Yanagishima, Takayuki, 4,509,040, Cl. 340-576.000.
Shimbara, Hiroyuki, 4,508,077, Cl. 123-357.000.
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,509,124, Cl. 364-424.100.
Tsumoto, Akio; and Kano, Hisae, 4,508,382, Cl. 296-213.000.

Nisshin Steel Company, Ltd.: *See—*
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,508,600, Cl. 204-27.000.
Nitschko, Theodor: *See—*
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Nitto Kohki Co., Ltd.: *See—*
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Nixdorf Computer AG: *See—*
Simon, Joachim W., 4,509,166, Cl. 370-62.000.
NL Sperry-Sun, Inc.: *See—*
Russell, Anthony W.; and Russell, Michael K., 4,507,958, Cl. 73-151.000.
Noguchi, Hideo: *See—*
Minami, Kenji; Katagiri, Masaru; and Noguchi, Hideo, 4,509,067, Cl. 357-13.000.
Noguchi, Kazuyoshi, to Murata Kikai Kabushiki Kaisha. Pneumatic yarn splicing apparatus. 4,507,912, Cl. 57-22.000.
Noguchi, Tetsuo; and Kuwabara, Kanji, to Kabushiki Kaisha Okawara Seisakusho. Method of and system for incinerating sludge. 4,508,039, Cl. 110-258.000.
Nold, Peter: *See—*
Eschmann, Friedrich; Gelsdorf, Gunter; Nold, Peter; Staats, Gotthard; and Subat, Gerhard, 4,508,504, Cl. 432-217.000.
Nolden, Wilhelm, to Abex Corporation. Hydraulic axial piston machine. 4,508,011, Cl. 91-506.000.
Nomoto, Sadao; and Iida, Kazuyoshi, to Bridgestone Tire Company Limited. Method and apparatus for forming photographic record of sound field. 4,509,061, Cl. 346-107.00R.
Nordica S.p.A.: *See—*
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Nordstrom, Lennart: *See—*
Scholdstrom, Ragnar; Marcus, Holger; and Nordstrom, Lennart, 4,508,448, Cl. 356-5.000.
Noren, Gerry K.; Poklacki, Erwin S.; Hawker, Fred D.; and Sich, Janice M., to DeSoto, Inc. Preparation of isocyanate-terminated polyurethanes containing amino silanes. 4,508,889, Cl. 528-28.000.
Norlin Industries: *See—*
Hall, George R.; Hall, Robert J.; and Cookerly, Jack C., 4,508,002, Cl. 84-1.030.
Norota, Kazuhiko: *See—*
Ito, Toshimitsu; and Norota, Kazuhiko, 4,508,086, Cl. 123-492.000.
Norris, Dean E.: *See—*
Gardiner, George K.; and Norris, Dean E., 4,509,054, Cl. 343-709.000.
North American Decorative Products Inc.: *See—*
Ashton, Richard D. A., 4,508,230, Cl. 211-181.000.
North, Willard F.: *See—*
Beavers, John A.; and North, Willard F., 4,508,583, Cl. 156-94.000.
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Reintjes, Anthony B.; Fleming, Robert J.; and Gumb, Bev W. T., 4,508,755, Cl. 427-58.000.
Nova Tran Corporation: *See—*
Olson, Roger; and Versic, Ronald J., 4,508,760, Cl. 427-213.340.
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Malone, Thomas J., 4,508,029, Cl. 99-516.000.
Nycoil Corporation: *See—*
Mode, Paul, 4,508,369, Cl. 285-39.000.
O.K. Industries Inc.: *See—*
Weltman, David; and Tsipenyuk, Pyotr, 4,508,403, Cl. 339-28.000.
Oakland Corporation, The: *See—*
Wallace, Richard B., 4,508,759, Cl. 427-195.000.
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Tarui, Yuichi; and Obayashi, Toshio, 4,508,589, Cl. 156-584.000.
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Oberschmid, Raimund; and Feigt, Ingmar, to Siemens Aktiengesellschaft. Recording and readout apparatus for X-rays. 4,508,966, Cl. 250-327.200.
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Walker, Thad O.; Simpson, Jay P.; and Dearing, Harry L., 4,508,628, Cl. 252-8.50P.
Obrist, Albert; and Gadgill, Balkrishna B., to Sulzer Brothers Limited. Method of producing very pure magnesium oxide. 4,508,690, Cl. 423-173.000.
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Chow, Richard H.; and Geering, Emil J., 4,508,661, Cl. 260-544.00D.
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Ochs, Joe A. Spinner type fishing lure. 4,507,892, Cl. 43-42.180.
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Oehlke, Donald N.; MacRae, Ralph A.; Crammond, James; and Rattmann, Hans R., to Eaton Corporation. Fastening device. 4,508,477, Cl. 411-174.000.
Oftedahl, Glen F., to Pneumo Corporation. Multiple thermocouple connector panel. 4,508,416, Cl. 339-176.00M.
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Ogi, Katsumi: *See—*
Kimura, Etsuji; Ogi, Katsumi; and Sato, Kazusuke, 4,508,322, Cl. 266-149.000.
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O'Hare, Louis R. Self actuating diaphragm pump. 4,508,493, Cl. 417-379.000.
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Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Line guide. 4,507,891, Cl. 43-24.000.
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Ohshima, Ken; and Sakamoto, Masaharu, to Olympus Optical Co., Ltd. System for checking defects on a flat surface of an object. 4,508,450, Cl. 356-237.000.
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Okazaki, Nobuo, to Shimadzu Corporation. Apparatus for measuring diamond colors. 4,508,449, Cl. 356-30.000.

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Oktan Aktiebolag: *See*—
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Kaczur, Jerry J.; Iacoviello, Steven A.; and Miller, Edward G., 4,508,602, Cl. 204-95.000.
Winter, Joseph; and Pryor, Michael J., 4,508,423, Cl. 350-96.230.

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Orton, J. Berkeley. Apparatus for cleaning paint rollers. 4,508,465, Cl. 401-11.000.

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Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Bruns, Engelbert; and Osterholt, Gerd, 4,508,596, Cl. 202-227.000.

Otis Engineering Corporation: *See*—
Foust, Tommy C., 4,508,165, Cl. 166-117.500.

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Muncaster, John W.; Roberts, Michael G.; Rowlett, R. David; Hoitink, Todd B.; Uffner, William E.; and White, Robert N., 4,508,770, Cl. 428-63.000.
Stahl, Steven B.; Bakhshi, Shiv K.; and Naul, George M., 4,508,673, Cl. 264-120.000.

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Simms, R. John; and Haney, Jerry D., 4,509,075, Cl. 358-106.000.

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Kroll, Robert E., 4,508,954, Cl. 219-132.000.

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Bremer, Gordon; and Betts, William L., 4,509,171, Cl. 370-100.000.

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Redziniak, Gerard; and Meybeck, Alain, 4,508,703, Cl. 424-38.000.

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Payne, James M. Wind turbine electric generator. 4,508,973, Cl. 290-5.00S.
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Karlsson, Lars, 4,508,422, Cl. 350-6.800.
Philipp, Wilfred. Gravure press. 4,508,032, Cl. 101-163.000.
Phillips, Edwin R.: *See—*
Chen, Tsu F.; and Phillips, Edwin R., 4,507,834, Cl. 29-26.00R.
Phillips Petroleum Company: *See—*
Montgomery, Dean P., 4,508,617, Cl. 208-134.000.
Pickering & Company, Inc.: *See—*
Alexandrovich, George; Edinger, J. Raymond; Hofer, Alan; and Kuykendall, John, 4,509,159, Cl. 369-170.000.
Pickering, William: *See—*
Melocik, Grant C.; and Pickering, William, 4,508,999, Cl. 318-331.000.
Pieczykolan, George S., to Central Sprinkler Corporation. Flush pendant or flush horizontal automatic sprinkler head. 4,508,175, Cl. 169-38.000.
Pierantozzi, Ronald, to Air Products and Chemicals, Inc. Ruthenium carbonyl catalyst supported on ceric oxide for preparation of olefins from synthesis gas. 4,508,846, Cl. 502-174.000.
Pierburg GmbH & Co. KG: *See—*
Baumgartner, Hans; and Sudbeck, Rainer, 4,508,089, Cl. 123-559.000.
Pierrel S.p.A.: *See—*
Tricerri, Silvia Z.; Casagrande, Cesare; De Marchi, Franco; and Nicola, Massimo, 4,508,719, Cl. 514-236.000.
Pietzarka, Wilhelm F.; Malten, Albrecht; and Strauss, Georg, to Hoechst Aktiengesellschaft. Process for cooling and comminuting molten calcium carbide. 4,508,666, Cl. 264-12.000.
Piezo Electric Products, Inc.: *See—*
Kolm, Henry H.; and Kolm, Eric A., 4,508,994, Cl. 315-200.00R.
Pikna, Richard G., to Logan Industries & Services, Inc. Well pump controller. 4,508,488, Cl. 417-12.000.
Pinckney Molded Plastics, Inc.: *See—*
Kreeger, Elsmer W.; and Stahl, Edward L., 4,508,237, Cl. 220-6.000.
Pinson, George T., to Boeing Company, The. Multiple annulus energy storage system. 4,509,006, Cl. 322-4.000.
Pinto, Akiva: *See—*
Keller, Alex J.; and Pinto, Akiva, 4,507,826, Cl. 19-80.00R.
Pioneer Electronic Corporation: *See—*
Yanagawa, Hirofumi, 4,509,184, Cl. 381-24.000.
Pioneer Video Corporation: *See—*
Kuroda, Kazuo, 4,509,078, Cl. 358-160.000.
Pirzer Co.: *See—*
Jorss, Norbert, 4,508,330, Cl. 271-33.000.
Pisarski, Lech: *See—*
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Pitney Bowes Inc.: *See—*
Soderberg, John H.; and Duwel, Edward C., 4,509,141, Cl. 364-900.000.
Plan Hold Corporation: *See—*
Johnson, Sigurd A.; Avella, Frank S.; and Jones, Robert I., 4,508,305, Cl. 208-455.000.
Plaschka, Emil; Pauls, Mathias; and Niggli, Guido, to Polypag A.G. Pressure can for application of mounting foams, in particular, single-component polyurethane foams. 4,508,244, Cl. 222-153.000.
Plasson Maagan Michael Industries Ltd.: *See—*
Kantor, Itzhak, 4,508,374, Cl. 285-319.000.
Plater, Robert J., to TSE International. Hydraulic drive system for cable stringing apparatus. 4,508,281, Cl. 242-54.00R.
Plath, Jurgen: *See—*
Luhrsen, Ernst; Pohl, Siegfried; and Plath, Jurgen, 4,508,324, Cl. 266-236.000.
Plau, Bernard: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,508,717, Cl. 514-203.000.
Plough, Inc.: *See—*
Pawelek, John M.; and Agin, Patricia P., 4,508,706, Cl. 424-60.000.
Ploussios, George. Multi-frequency antenna employing tuned sleeve chokes. 4,509,056, Cl. 343-791.000.
Plunkett, James D.: *See—*
Kavanagh, Frank J.; Plunkett, James D.; and DePalma, Bernard F., 4,507,801, Cl. 2-2.000.
Pneumo Corporation: *See—*
Oftedahl, Glen F., 4,508,416, Cl. 339-176.00M.
Pohl, Siegfried: *See—*
Luhrsen, Ernst; Pohl, Siegfried; and Plath, Jurgen, 4,508,324, Cl. 266-236.000.
Poklacki, Erwin S.: *See—*
Noren, Gerry K.; Poklacki, Erwin S.; Hawker, Fred D.; and Sich, Janice M., 4,508,889, Cl. 528-28.000.
Polar-Plastik HB: *See—*
Bartholdson, Lennart O., 4,507,810, Cl. 3-36.000.
Polaroid Corporation: *See—*
Costa, Peter F.; and Whiteside, George D., 4,508,440, Cl. 354-187.000.
Eburn, William H., Jr.; and Kalenik, Stephen P., 4,508,142, Cl. 137-625.400.
Johnson, Bruce K., 4,508,437, Cl. 354-78.000.

Launie, Kenneth J., 4,508,441, Cl. 354-217.000.
Polaschegg, Hans-Dietrich; and Husar, Dieter, to Fresenius AG. Dialysis apparatus with regulated mixing of the dialysis solution. 4,508,622, Cl. 210-96.200.
Polypag A.G.: *See—*
Plaschka, Emil; Pauls, Mathias; and Niggli, Guido, 4,508,244, Cl. 222-153.000.
Polysar Limited: *See—*
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Sato, Kyosaku, 4,508,867, Cl. 524-434.000.
Pontif, Marc: *See—*
Carpe, Michel; Collin, Claude; and Pontif, Marc, 4,509,206, Cl. 455-245.000.
Poortman, Boudewijn J.: *See—*
Bittner, Franz; Poortman, Boudewijn J.; Rademacher-Dubbick, Kristian; Roskam, Abram K.; Stevens, Udo; and Tromp, Wouter T., 4,507,975, Cl. 73-861.120.
Post, Lothar; and Schneider, Bernhard, to Rheinmetall GmbH. Device for quickly stopping a remote controlled automatic cannon. 4,508,006, Cl. 89-24.000.
Post, Sieghard, to U.S. Philips Corporation. Mains transformer. 4,509,032, Cl. 336-59.000.
PPG Industries, Inc.: *See—*
Bennett, Terry A.; Claassen, George R.; and Zimmerman, William B., 4,508,556, Cl. 65-25.400.
Gillery, F. Howard; and Criss, Russell C., 4,508,789, Cl. 428-630.000.
Hodek, Robert B.; and Seiner, Jerome A., 4,508,646, Cl. 260-239.30R.
PQ Corporation: *See—*
McLaughlin, John R.; and Hertzenberg, Elliot P., 4,508,742, Cl. 426-330.400.
Smith, Christopher G.; and Peters, John F., 4,508,856, Cl. 523-218.000.
Prahl, Marvin E.: *See—*
Hickethier, Craig R.; Hogan, Ronald E.; and Prahl, Marvin E., 4,509,086, Cl. 360-99.000.
Pranger, Maarten R.: *See—*
Baran, Paul; and Pranger, Maarten R., 4,509,073, Cl. 358-86.000.
Precision Strip, Inc.: *See—*
Eiting, John R., 4,508,282, Cl. 242-56.200.
Preedy, John R., to Thos. Hill & Company Limited. Apparatus and method for moving materials. 4,508,208, Cl. 198-751.000.
Preston Engravers, Inc.: *See—*
Kesten, Martin, 4,507,996, Cl. 83-344.000.
Pribyl, Richard: *See—*
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Price, John F.: *See—*
Matzner, Bruce; Horn, Victor M.; Curulla, Michael V.; and Price, John F., 4,508,679, Cl. 376-438.000.
Price, Robert G., administrator: *See—*
Oreopoulos, Dimitrios G.; Zellerman, Gabor, deceased; and Price, Robert G., administrator, 4,508,367, Cl. 285-3.000.
Prichard, Arthur W., to USM Corporation. Heat device for heating portions of shoe uppers. 4,508,956, Cl. 219-215.000.
Primat, Didier: *See—*
Lambert, Johnny H.; Primat, Didier; Edmiston, William H.; Edmiston, Johnny J.; and Edmiston, James H., 4,507,998, Cl. 83-419.000.
Primlumber, Inc.: *See—*
Lambert, Johnny H.; Primat, Didier; Edmiston, William H.; Edmiston, Johnny J.; and Edmiston, James H., 4,507,998, Cl. 83-419.000.
Probex, Inc.: *See—*
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Procter & Gamble Company, The: *See—*
Radel, Clifford J.; and Thompson, Hugh A., 4,508,256, Cl. 228-152.000.
Products for Health and Industry: *See—*
Duncan, David T.; Lipscomb, David M.; McElligott, John; and Williams, Charles W., 4,508,116, Cl. 128-203.280.
Produits Chimiques Ugine Kuhlmann: *See—*
Coingt, Michel, 4,508,696, Cl. 423-588.000.
Profio, Mark V., to Square D Company. Motor protector relay with memory of overload. 4,509,088, Cl. 361-29.000.
Proprietary Technology, Inc.: *See—*
Bartholomew, Donald D., 4,508,234, Cl. 215-206.000.
Proter S.p.A.: *See—*
DeBarbieri, Augusto; and Bekesi, Julius G., 4,508,710, Cl. 514-19.000.
Prucher, Helmut: *See—*
Hausberg, Hans-Heinrich; Prucher, Helmut; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus, 4,508,732, Cl. 514-466.000.
Pruett, Roy L.: *See—*
Doyle, Gerald; Pruett, Roy L.; and Savage, David W., 4,508,694, Cl. 423-246.000.
Prymak, John D., to AVX Corporation. Low dissipation factor monolithic capacitor for high frequency applications. 4,509,103, Cl. 361-321.000.
Pryor, Michael J.: *See—*
Winter, Joseph; and Pryor, Michael J., 4,508,423, Cl. 350-96.230.
Puar, Deepraj S., to Signetics Corporation. Sense and refresh amplifier circuit. 4,508,980, Cl. 307-530.000.
Pullman Standard, Inc.: *See—*
Rousseau, George L., 4,508,037, Cl. 105-290.000.
PUMA-Sportschuhfabriken Rudolk Dassler KG: *See—*
Dassler, Armin, 4,507,879, Cl. 36-102.000.
Punchak, Kathleen. Ampoule breaker tool. 4,508,250, Cl. 225-97.000.
Puppolo, Henry F., to Sprague Electric Company. Low inductance wound capacitor. 4,509,100, Cl. 361-433.000.
Purcocks, Dale M. Concealable handle with a slidable pivot. 4,507,820, Cl. 16-125.000.
Purvis, Merton B.: *See—*
DasGupta, Sujan; and Purvis, Merton B., 4,509,098, Cl. 361-398.000.
Puydak, Robert C.: *See—*
Peoples, Clarence, Jr.; Puydak, Robert C.; and Jansen, Deborah S., 4,508,771, Cl. 428-95.000.
Pyromid, Inc.: *See—*
Hait, Paul W., 4,508,094, Cl. 126-9.00R.
Quantronix Corporation: *See—*
Daly, Richard T.; and Cohen, Martin G., 4,509,175, Cl. 372-101.000.
Queen's University at Kingston: *See—*
Mouftah, Hussein T., 4,509,164, Cl. 370-29.000.
Quixote Corporation: *See—*
Rester, Marshall D., 4,509,162, Cl. 369-275.000.
R & G Sloane Mfg. Co., Inc.: *See—*
Blumenkranz, James J., 4,508,368, Cl. 285-21.000.
R&H Technology, Inc.: *See—*
Heine, Otto R., 4,508,395, Cl. 308-6.00C.
R. J. Reynolds Tobacco Company: *See—*
Conrad, Lucas J., 4,507,876, Cl. 34-242.000.
Rabold, Karl: *See—*
Jakobson, Sten; and Rabold, Karl, 4,508,058, Cl. 119-14.020.
Raccah, Paul M.: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,508,931, Cl. 136-255.000.
Radel, Clifford J.; and Thompson, Hugh A., to Procter & Gamble Company, The. Method of constructing a three dimensional tubular member. 4,508,256, Cl. 228-152.000.
Rademacher-Dubbick, Kristian: *See—*
Bittner, Franz; Poortman, Boudewijn J.; Rademacher-Dubbick, Kristian; Roskam, Abram K.; Stevens, Udo; and Tromp, Wouter T., 4,507,975, Cl. 73-861.120.
Radtke, Manfred, to Mero-Werke Dr.-Ing. Max Mengeringhausen GmbH & Co. Double floor. 4,508,162, Cl. 165-56.000.
Rajnik, Lawrence S., to Corning Glass Works. Flexible membrane printing apparatus for a decorating machine. 4,508,031, Cl. 101-41.000.
Ramcke, Bernd; and Stahl, Gunther, to E.C.H. Will (GmbH & Co.). Apparatus for transporting paper stacks or the like. 4,508,210, Cl. 198-627.000.
Ramesohl, Hubert; Seelen, Fritz; Filges, Ralf; Schroder, Karlheinz; and Veiser, Elmar, to Klockner-Humboldt-Deutz AG. Intake assembly for rotary drums. 4,508,503, Cl. 432-109.000.
Ramirez, Joe D.; Gorin, Steven E.; and Garnett, William A., to United States of America, Navy. Two stage manual air pump. 4,508,490, Cl. 417-234.000.
Ransburg Japan, Ltd.: *See—*
Saito, Eiiji; Aizawa, Shoji; Mitsui, Michio; Miyata, Tomohiko; and Kuroda, Masayuki, 4,508,266, Cl. 239-3.000.
Rasch, Ulf: *See—*
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Rasmussen, Robert A.: *See—*
DasGupta, Sumit; Graf, Matthew C.; Rasmussen, Robert A.; and Williams, Thomas W., 4,509,008, Cl. 324-73.00R.
Rattmann, Hans R.: *See—*
Oehlke, Donald N.; MacRae, Ralph A.; Crammond, James; and Rattmann, Hans R., 4,508,477, Cl. 411-174.000.
Ratton, Serge, to Rhone-Poulenc Agrochimie. Process for the preparation of optionally halogenated anilines. 4,508,922, Cl. 564-407.000.
Rau, Jim L., to TRW Inc. Steering control apparatus. 4,507,920, Cl. 60-443.000.
Rauterberg, Ulf: *See—*
Kimpel, Rolf-Dieter; Rauterberg, Ulf; and Tamm, Horst, 4,509,025, Cl. 335-85.000.
Ravenel, Bruce: *See—*
Palmer, John; Ravenel, Bruce; and Nave, Rafi, 4,509,144, Cl. 364-900.000.
Raytheon Company: *See—*
Fassett, Matthew, 4,509,055, Cl. 343-754.000.
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RCA Corporation: *See—*
Berardi, Randal L., 4,507,873, Cl. 33-180.00R.
Kohn, Elliott S., 4,509,210, Cl. 455-349.000.
Lagoni, William A.; and Harlan, Wayne E., 4,509,080, Cl. 358-166.000.
Rockett, Leonard R., Jr., 4,508,975, Cl. 307-261.000.
Sauer, Donald J., 4,509,181, Cl. 377-63.000.
Read, Norman W., to Dresser Industries, Inc. Flow control valve for use on oil and gas wells or the like. 4,508,173, Cl. 166-330.000.
Reddy, Chitranjan N., to Texas Instruments Incorporated. Reduction of gate oxide breakdown for booted nodes in MOS integrated circuits. 4,508,978, Cl. 307-482.000.

Redziniak, Gerard; and Meybeck, Alain, to Parfums Christian Dior. Production of pulverulent mixtures of lipidic and hydrophobic constituents. 4,508,703, Cl. 424-38.000.

Reed, Nanci W.: *See—*
Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., 4,508,801, Cl. 429-238.000.

Reed, Robert L., to Standard Oil Company (Indiana). Process and system for producing and recovering elemental sulfur. 4,508,698, Cl. 423-574.00R.

Reese, Dieter: *See—*
Johnson, Frank; Reese, Dieter; and Hirbour, Louis, 4,508,611, Cl. 204-202.000.

Reeves, Russell R., to Apace Research Limited. Emulsions of liquid hydrocarbons with water and/or alcohols. 4,508,873, Cl. 525-91.000.

Regenbrecht, Douglas E.: *See—*
Lester, James M.; Reinker, Richard P.; and Regenbrecht, Douglas E., 4,507,941, Cl. 62-514.00R.

Rehrig, Richard B.: *See—*
Rehrig, William, Jr., 4,508,951, Cl. 219-74.000.

Rehrig, William, Jr., to Rehrig, Richard B. Fluid baffle assembly for a water-cooled welding torch. 4,508,951, Cl. 219-74.000.

Reich, Kurt, to Paul Forkardt GmbH & Co. KG. Power-operated chuck for turning machines. 4,508,357, Cl. 279-1.00C.

Reichenbach, Donald F.: *See—*
Cobbledick, David S.; Reichenbach, Donald F.; and Shanoski, Henry, 4,508,785, Cl. 428-424.400.

Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, to Bayer Aktiengesellschaft. Continuous dry-spinning process for highly shrinkable acrylonitrile filaments and fibers. 4,508,672, Cl. 264-78.000.

Reinhardt, Jurgen: *See—*
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Reinke Manufacturing Co., Inc.: *See—*
Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., 4,508,269, Cl. 239-177.200.

Reinker, Richard P.: *See—*
Lester, James M.; Reinker, Richard P.; and Regenbrecht, Douglas E., 4,507,941, Cl. 62-514.00R.

Reintjes, Anthony B.; Fleming, Robert J.; and Gumb, Bev W. T., to Northern Telecom Limited. Method of applying a layer of conductive ink. 4,508,755, Cl. 427-58.000.

Reiss, Leon G.; and Schultz, Roy D., to Kollmorgen Technologies Corporation. Permanent magnet motor stator for d.c. motors. 4,508,988, Cl. 310-154.000.

Reith, Heribert: *See—*
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Rembold, Helmut, to Robert Bosch GmbH. Method and apparatus for controlling the supercharger of an internal combustion engine. 4,508,090, Cl. 123-564.000.

Rembold, John P.: *See—*
Levesque, Adelard, Jr.; and Rembold, John P., 4,509,110, Cl. 364-153.000.

Remond, Georges: *See—*
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Renaud, Maurice, to Renaud, Maurice. T-assembly and method of obtaining same. 4,507,844, Cl. 29-522.00R.

Rengo Co., Ltd.: *See—*
Tokuno, Masateru; and Sawata, Tetsuya, 4,508,279, Cl. 242-56.00R.

Renken, Johannes W.: *See—*
van Dijk, Jacob; Renken, Johannes W.; Dekker, Jan G.; and Helmond, Johannes, 4,508,652, Cl. 260-407.000.

Renner, Robert E., to GTE Automatic Electric Inc. Digital remote switching unit. 4,509,168, Cl. 370-63.000.

Renner, Robert E., to GTE Automatic Electric Inc. Dual rail network for a remote switching unit. 4,509,169, Cl. 370-63.000.

Repa Feinstanzwerk GmbH: *See—*
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Republic Steel Corporation: *See—*
Killilea, Daniel E., 4,507,949, Cl. 72-201.000.

Research Corporation: *See—*
Carpino, Louis A.; and Cohen, Beri, 4,508,657, Cl. 260-463.000.

Rester, Marshall D., to Quixote Corporation. High density recording medium. 4,509,162, Cl. 369-275.000.

Rey, Thomas J.; and Forbes, Ervin, to Honeywell Information Systems Inc. Apparatus for synchronizing a stream of data bits received over a single coaxial conductor. 4,509,121, Cl. 364-200.000.

Reynolds, Desmond H. J.; and Taft, Phillip A., to Lucas Industries Public Limited Company. High pressure hydraulic systems. 4,508,012, Cl. 91-512.000.

Rheinmetall GmbH: *See—*
Elspass, Marold, 4,508,007, Cl. 89-37.110.
Post, Lothar; and Schneider, Bernhard, 4,508,006, Cl. 89-24.000.

Rheometron AG: *See—*
Bittner, Franz; Poortman, Boudewijn J.; Rademacher-Dubbick, Kristian; Roskam, Abram K.; Stevens, Udo; and Tromp, Wouter T., 4,507,975, Cl. 73-861.120.

Rhone-Poulenc Agrochimie: *See—*
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Rhone-Poulenc Chimie de Base: *See—*
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Rhone-Poulenc Sante: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,508,717, Cl. 514-203.000.
Petre, Dominique; and Michelet, Daniel, 4,508,902, Cl. 546-153.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Dromard, Adrien; and Millet, Claude, 4,508,845, Cl. 502-159.000.
Letoffe, Michel; Favre, Roger; and Perrin, Patrice, 4,508,888, Cl. 528-23.000.

Rhovyl: *See—*
Achard, Georges, 4,508,778, Cl. 428-364.000.

Rhyner, Fritz, to Maag Gear-Wheel & Machine Company Limited. Circuit for connecting a process computer by means of a number of analog channels with a machine tool. 4,509,047, Cl. 340-825.230.

Rice, Ivan G. Steam cooled gas generator. 4,507,914, Cl. 60-39.170.

Richards, Donald L.: *See—*
Schlesinger, Lawrence; German, Dale F.; and Richards, Donald L., 4,507,956, Cl. 73-146.500.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.

Richter, Ole J.; and Funk, Erwin D., to Kamyr, Inc. Simple dry feeder. 4,508,473, Cl. 406-64.000.

Rickert, Robert E., to Vista Polymers Inc. Removal and reinstallation of bottom entering agitator seals. 4,507,841, Cl. 29-402.080.

Ricoh Company, Ltd.: *See—*
Fujii, Tadashi; Yamaguchi, Tomoyuki; Murakami, Kakuji; Kawakami, Tomiko; and Uenozono, Hiroko, 4,508,570, Cl. 106-20.000.
Imai, Chikara, 4,508,446, Cl. 355-14.00R.
Iwanaga, Yoshiharu, 4,508,334, Cl. 271-308.000.
Uozumi, Osamu, 4,509,060, Cl. 346-76.0PH.

Ridel, Philippe, to U.S. Philips Corporation. Amplifier circuit with automatic gain control and hearing aid equipped with such a circuit. 4,509,022, Cl. 330-284.000.

Ridgeon, Paul W., to Walkover Limited. Wheeled applicator for liquids. 4,508,248, Cl. 222-623.000.

Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, to Ciba Geigy Corporation. Microbicidal N-(tetrahydro-2-onfur-3-yl)-N-substituted acetyl-anilines and -naphthylamines. 4,508,731, Cl. 514-472.000.

Riegel, Hans: *See—*
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Riemath, William F.: *See—*
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Rieter Machine Works Ltd.: *See—*
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Rigbey, Leonard J.: *See—*
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Riggers Manufacturing Co.: *See—*
Lampson, Neil F., 4,508,232, Cl. 212-178.000.

Rimmeir, Paul. Device for removing portion of a roll and method of using same. 4,507,866, Cl. 30-316.000.

Ring, John; French, David; Hickling, Michael; and Sturgess, Michael G., to International Paint public limited company. Synthetic resins and coating compositions containing them. 4,508,765, Cl. 427-386.000.

Rinnai Corporation: *See—*
Itoh, Jiro, 4,508,502, Cl. 431-328.000.

Rittal-CSM Limited: *See—*
Erlam, David P., 4,508,228, Cl. 211-41.000.

Roach, Jack W., to Kerr-McGee Refining Corporation. Recovery of organic solvents from liquid mixtures. 4,508,597, Cl. 203-79.000.

Robbins, Michael S., to Xantech Corporation. Infrared extension system. 4,509,211, Cl. 455-603.000.

Robert Bosch GmbH: *See—*
Becker, Wolfram; and Denz, Helmut, 4,508,082, Cl. 123-478.000.
Hofmann, Karl; and Banzhaf, Werner, 4,508,275, Cl. 239-533.300.
Ott, Rudi; and Reith, Heribert, 4,508,599, Cl. 204-10.000.
Rembold, Helmut, 4,508,090, Cl. 123-564.000.
Steinmann, Helmut, 4,508,021, Cl. 98-2.010.
Weiss, Gunther; Worz, Paul; and Tomczak, Stanislaus, 4,509,033, Cl. 336-107.000.

Roberts, Clifford: *See—*
Nicholson, Timothy J. H.; Lee, Andrew L.; and Roberts, Clifford, 4,508,301, Cl. 248-250.000.

Roberts, Gary P.: *See—*
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Roberts, Michael G.: *See—*
Muncaster, John W.; Roberts, Michael G.; Rowlett, R. David; Hoitink, Todd B.; Uffner, William E.; and White, Robert N., 4,508,770, Cl. 428-63.000.

Roberts, Michael K.; Ottosen, Richard A.; and McConnell, Matthew L., to Bion Corporation. Ultrasound visualization systems. 4,507,968, Cl. 73-626.000.

Robin, Seymour; and Klein, Yosef, to Sensor Systems, Inc. Blade antenna with shaped dielectric. 4,509,053, Cl. 343-708.000.

Robinson, Larry G.; and King, Edward C., to King Design, Inc. Magnetic digital display sign. 4,507,888, Cl. 40-621.000.

Robinson, Larry G.: *See—*
Streeter, Bert E.; Streeter, Mary M.; and Robinson, Larry G., 4,507,886, Cl. 40-447.000.

Robinson, Ronnie D., to EECO Incorporated. Control unit individually serving two adjacent passengers. 4,509,097, Cl. 361-395.000.

Robotic Vision Systems, Inc.: *See—*
DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,508,452, Cl. 356-375.000.

Rocchitelli, Onofrio. Thermostatically controlled electric heating device for motor vehicle glass washing fluid. 4,508,957, Cl. 219-305.000.
Rochman, Zvi H. Door locking device. 4,508,378, Cl. 292-333.000.
Rock, Erich, to Julius Blum Gesellschaft m.b.H. Drawer guide assembly. 4,508,394, Cl. 308-3.800.
Rockett, Leonard R., Jr., to RCA Corporation. Pulse duration modulator using charge coupled devices. 4,508,975, Cl. 307-261.000.
Rockwell International Corporation: *See*—
Boros, John, 4,509,095, Cl. 361-386.000.
Gunning, William J., III; and Tracy, John M., 4,508,964, Cl. 250-201.000.
Haendel, Richard S.; and Wauer, John C., 4,509,049, Cl. 343-7.500.
Hawes, Debra K., 4,508,365, Cl. 281-2.000.
Karulkar, Pramod C., 4,507,852, Cl. 29-590.000.
Rodari, Gianpiero S., to Soxil S.p.A. Apparatus for artificial pulmonary ventilation during anaesthesia and resuscitation. 4,508,117, Cl. 128-204.210.
Rodewald, Paul G.: *See*—
Haag, Werner O.; Olson, David H.; and Rodewald, Paul G., 4,508,836, Cl. 502-53.000.
Rohm and Haas Company: *See*—
Kollman, Garald E., 4,508,559, Cl. 71-83.000.
Rohringer, Ernst, to Steuler-Industriewerke GmbH. Method for producing lining panels which are cast into concrete as an integral lining. 4,508,581, Cl. 156-73.100.
Rolfo, Andre A.: *See*—
Mouilhayrat, Guy G.; Duchon, Paul A. J.; Guilbert, Jean M. A. M.; and Rolfo, Andre A., 4,508,297, Cl. 244-173.000.
Romagnoli, Andrea, to IMA - Industria Macchine Automatiche S.p.A. Device for centering the printing of strip material for the automatic production of small filter bags for infusion products. 4,508,524, Cl. 493-11.000.
Romano, Ugo; and Iori, Giuseppe, to Anic, S.p.A. Process for synthesizing allyl carbonates of polyhydric alcohols and their derivatives. 4,508,656, Cl. 260-463.000.
Rosch, Gunter: *See*—
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,508,900, Cl. 546-99.000.
Rose, Sam, to Bio-Response, Inc. Method for culturing cells or tissues. 4,508,819, Cl. 435-1.000.
Roskam, Abram K.: *See*—
Bittner, Franz; Poortman, Boudewijn J.; Rademacher-Dubbick, Kristian; Roskam, Abram K.; Stevens, Udo; and Tromp, Wouter T., 4,507,975, Cl. 73-861.120.
Ross, Joseph A.: *See*—
DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,508,452, Cl. 356-375.000.
Ross, Ludwig: *See*—
Gliemeroth, Georg; Ross, Ludwig; Speit, Burkhard; Geiler, Volkmar; Krolla, Hans-Georg; and Meckel, Lothar, 4,508,834, Cl. 501-73.000.
Ross, Peter W., to International Standard Electric Corporation. Liquid crystal display device. 4,508,427, Cl. 350-335.000.
Ross, Sidney D.: *See*—
Finkelstein, Manuel; and Ross, Sidney D., 4,509,094, Cl. 361-314.000.
Rossin, Ineo; and Zanella, Francesco, to Edilvelox S.R.L. Reinforcement structure for reinforced-concrete buildings. 4,508,308, Cl. 249-19.000.
Rotaflex p.l.c.: *See*—
Herbert, Tony E. G., 4,508,400, Cl. 339-22.08R.
Rousseau, Carl H. Apparatus for and method of obtaining improved dental castings. 4,508,155, Cl. 164-35.000.
Rousseau, George L., to Pullman Standard, Inc. Door lever adjusting device for hopper car doors. 4,508,037, Cl. 105-290.000.
Rousseau, Gerard, to Societe Nationale Industrielle Aerospatiale. Process for manufacturing a high-performance thermal performance material. 4,508,762, Cl. 427-228.000.
Rowe, Jerry D. Packsaw. 4,507,863, Cl. 30-166.00R.
Rowlett, R. David: *See*—
Muncaster, John W.; Roberts, Michael G.; Rowlett, R. David; Hoitink, Todd B.; Uffner, William E.; and White, Robert N., 4,508,770, Cl. 428-63.000.
Rowson, Graham P.; Percival, Albert; and Judson, Philip N., to FBC Limited. 2-Cyano-3-benzylamino-2-propenoates, useful as fungicides. 4,508,659, Cl. 260-465.00D.
Rozzen, David L. Toothpaste dispenser. 4,508,239, Cl. 222-39.000.
Rubensson, Bjorn: *See*—
Widen, Bo; and Rubensson, Bjorn, 4,507,944, Cl. 70-276.000.
Rudd, Wallace C., to Thermatool Corporation. Method and apparatus for welding tapered metal poles. 4,508,949, Cl. 219-61.200.
Ruder, Nils I. A. Binocular display of information with two combiner means. 4,508,424, Cl. 350-174.000.
Ruehle, William H., to Mobil Oil Corporation. Directional long array for logging vertical boundaries. 4,509,149, Cl. 367-27.000.
Ruhland, Michael: *See*—
Liepmann, Hans; Ruhland, Michael; Muesch, Herbert; Benson, Werner; Heinemann, Henning; and Zeugner, Horst, 4,508,716, Cl. 514-220.000.
Ruhrgas Aktiengesellschaft: *See*—
Kuhn, Friedhelm, 4,508,501, Cl. 431-2.000.
Runglin Co. Inc.: *See*—
Steele, Edward J.; and Sexton, Rodney N., 4,508,235, Cl. 215-307.000.
Runions, Alton E.: *See*—
Mayer, William; and Runions, Alton E., 4,509,106, Cl. 362-267.000.
Runzler, Jurgen: *See*—
Hepfer, Rolf; and Runzler, Jurgen, 4,508,456, Cl. 368-262.000.
Ruoss, Erwin; and Sieber, Kurt, to Condair AG. Steam distributor. 4,508,551, Cl. 55-263.000.
Rush, David H.: *See*—
Hahn, James H., 4,508,998, Cl. 318-138.000.
Russell, Anthony W.; and Russell, Michael K., to NL Sperry-Sun, Inc. Surveying of a borehole for position determination. 4,507,958, Cl. 73-151.000.
Russell, Janet A.; and Riemath, William F., to United States of America, Energy. Method for making adhesive from biomass. 4,508,886, Cl. 528-1.000.
Russell, Michael K.: *See*—
Russell, Anthony W.; and Russell, Michael K., 4,507,958, Cl. 73-151.000.
Rutledge, Charles W.: *See*—
Menzies, Robert T.; and Rutledge, Charles W., 4,509,130, Cl. 364-556.000.
Ryan, Harriet E.; and Ryan, Linda A. Riding mittens. 4,507,803, Cl. 2-16.000.
Ryan, Linda A.: *See*—
Ryan, Harriet E.; and Ryan, Linda A., 4,507,803, Cl. 2-16.000.
Ryan, Philip J., to Frito-Lay, Inc. Potato product with opposite corrugations of different frequencies. 4,508,739, Cl. 426-144.000.
Rydwansky, Frank C., Jr.: *See*—
Damon, Neil F.; and Rydwansky, Frank C., Jr., 4,508,405, Cl. 339-75.0MP.
Ryerse, John A.: *See*—
Trechsel, Hans W.; Larson, Allan B.; and Ryerse, John A., 4,508,148, Cl. 141-147.000.
S.N.E.C.M.A.: *See*—
Cattaneo, Christian J.; Derouet, Patrick R. J.; and Laroche, Michel C. F., 4,508,295, Cl. 244-134.00A.
Joubert, Raymond J. M., 4,508,270, Cl. 239-265.350.
Safetran Systems Corporation: *See*—
Wilson, H. James, 4,509,024, Cl. 333-24.00R.
Saiji, Mitsuhiro, to Sharp Kabushiki Kaisha. Small programmable computer. 4,509,112, Cl. 364-200.000.
Saint-Gobain Vitrage: *See*—
Aubry, Claude; Chaumette, Jacques; and Touchon, Pierre, 4,508,783, Cl. 428-410.000.
Saito, Eiiji; Aizawa, Shoji; Mitsui, Michio; Miyata, Tomohiko; and Kuroda, Masayuki, to Ransburg Japan, Ltd. Method of changing color of paints for an electrostatic coating machine. 4,508,266, Cl. 239-3.000.
Saito, Shoichi, to Olympus Optical Co., Ltd. Ejecting device of a magnetic tape driving apparatus. 4,509,085, Cl. 360-93.000.
Sak, Dennis A.; Mestetsky, Thomas; and Manne, Stanley, to Arvey Corporation. Tamper-indicating self-sealing pouch. 4,509,196, Cl. 383-5.000.
Sakaeda, Keiko: *See*—
Sashiki, Takashi; and Sakaeda, Keiko, 4,508,186, Cl. 177-1.000.
Sakai Chemical Industry Co., Ltd: *See*—
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.
Sakai, Ichio: *See*—
Numazawa, Akio; Sakai, Ichio; Kumagai, Tadanobu; and Nishikawa, Seiichi, 4,508,522, Cl. 464-11.000.
Sakai, Sai, to New Cosmos Electric Col, Ltd. Gas sensor. 4,509,034, Cl. 338-34.000.
Sakai, Tomio: *See*—
Nishiwaki, Kenichiro; Sakai, Tomio; and Ohkubo, Takashi, 4,508,885, Cl. 526-318.000.
Sakamoto, Hiroshi: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
Sakamoto, Masaharu: *See*—
Ohshima, Ken; and Sakamoto, Masaharu, 4,508,450, Cl. 356-237.000.
Sakamoto, Tomio: *See*—
Fujioka, Yoshiharu; Onuki, Akio; and Sakamoto, Tomio, 4,509,084, Cl. 360-84.000.
Sakanoue, Akira: *See*—
Miyoshi, Takao; and Sakanoue, Akira, 4,508,761, Cl. 427-221.000.
Sakata, Gozyo; Numata, Tatsuo; Makino, Kenzi; Kakuta, Takuya; Kusano, Kazuya; Ikai, Takasi; and Oguti, Tosihiko, to Nissan Chemical Industries Ltd. 1-Phenylethyl sulfone derivatives of 2-pyridyl-N-oxides and herbicidal compositions containing same. 4,508,561, Cl. 71-94.000.
Sakata, Hideo; and Nakaoki, Tokuzo, to Mitutoyo Mfg. Co. Ltd. Radially adjustable internal grinder. 4,507,895, Cl. 51-98.00R.
Sakata, Yoshio; and Kakehashi, Yasushi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Magnetic roller device. 4,509,031, Cl. 335-306.000.
Sakuma, Kazuo: *See*—
Harata, Mituo; Hiraki, Hideaki; Uno, Shigeki; Sakuma, Kazuo; and Matsunaga, Kiyosi, 4,509,035, Cl. 338-35.000.
Sakurai, Kiyomi; and Arimatsu, Seiji, to Nippon Paint Co., Ltd. Waterless negative or positive lithographic printing plate preparation. 4,508,814, Cl. 430-303.000.
Sakurai, Toshio: *See*—
Hayashi, Yoshio; Aoyagi, Kouji; Sakurai, Toshio; Kashima, Tusnehiro; and Higeta, Koichi, 4,509,138, Cl. 364-900.000.

Sakuraya, Toshikazu: *See—*
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.

Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, to Takenaka Komuten Co., Ltd.; Takenaka Doboku Co., Ltd.; and Sankyo Chemical Industries Ltd. Cement composition for laying underwater. 4,508,572, Cl. 106-90.000.

Salatiello, Peter P.; Petrucelli, Frank; and Flood, Paul W., to Allied Corporation. Nylon composition for use in rotational molding. 4,508,675, Cl. 264-310.000.

Salm, Dietmar F. E., to Broken Hill Proprietary Company Limited, The. Manufacture of tinplate and tinplate containers. 4,508,480, Cl. 413-1.000.

Salmon, Jean P., to Jeumont-Schneider. Apparatus for localizing of a train. 4,508,298, Cl. 246-167.00R.

Salvucci, Lucio P. Random number selection method and apparatus. 4,508,346, Cl. 273-144.00B.

Sameca S.A.: *See—*
Vandevoir, Claude A.; and Geiser, Markus, 4,507,992, Cl. 82-2.700.

Sampson, Darwin L.: *See—*
Johnson, Nathan D.; Sampson, James D.; and Sampson, Darwin L., 4,508,238, Cl. 221-107.000.

Sampson, James D.: *See—*
Johnson, Nathan D.; Sampson, James D.; and Sampson, Darwin L., 4,508,238, Cl. 221-107.000.

Sandberg, Karen R.: *See—*
Jansma, Roger H.; and Sandberg, Karen R., 4,508,594, Cl. 162-135.000.

Sanders, David E.: *See—*
Andren, Carl F.; Mosley, William H., Jr.; and Sanders, David E., 4,509,017, Cl. 329-105.000.

Sangamo Weston, Inc.: *See—*
Coppola, Richard G.; and Stephens, George H., 4,509,128, Cl. 364-483.000.

Sankrithi, Mithra M. K. V. Truck afterbody drag reducing device. 4,508,380, Cl. 296-1.00S.

Sankyo Chemical Industries Ltd.: *See—*
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.

Sankyo Company Ltd.: *See—*
Konotsune, Takuo; and Kawakubo, Katsuhiko, 4,508,910, Cl. 548-367.000.

Sano, Shigehisa; Seto, Isao; Koseki, Hiroyuki; and Minomura, Mana, to Bridgestone Tire Company Limited. Pneumatic radial tires having an improved bead portion durability. 4,508,152, Cl. 152-356.00R.

Sanofi: *See—*
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille G., 4,508,720, Cl. 514-247.000.

Sanraku-Ocean Co., Ltd.: *See—*
Kubo, Katsuro; Yoshioka, Takeo; Okabe, Mitsuyasu; Fukagawa, Yasuo; and Ishikura, Tomoyuki, 4,508,648, Cl. 260-245.20T.

Santen, Sven; and Thornblom, Jan, to SKF Steel Engineering Aktiebolag. Method and plant for conversion of waste material to stable final products. 4,508,040, Cl. 110-347.000.

Santen, Sven: *See—*
Eriksson, Sune; Santen, Sven; and Bjorling, Gotthard, 4,508,566, Cl. 75-88.000.

Sanyo Electric Co., Ltd.: *See—*
Kumata, Masao; and Matsuoka, Noriaki, 4,508,793, Cl. 429-26.000.

Sarno, Felicisimo S.: *See—*
Corbett, Colin D.; Milloch, Robert L.; and Sarno, Felicisimo S., 4,508,741, Cl. 426-303.000.

Sartori, Guido: *See—*
Savage, David W.; and Sartori, Guido, 4,508,692, Cl. 423-228.000.

Sasagawa, Katsuyoshi; and Imai, Masao, to Mitsui Toatsu Chemicals, Inc. Metal complexes of halogen-substituted o-benzenedithiols. 4,508,655, Cl. 260-429.00R.

Sasaki, Masaki: *See—*
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.

Sasaki, Masaya: *See—*
Suzuki, Nobuhiko; Sutoh, Shinji; and Sasaki, Masaya, 4,507,932, Cl. 62-180.000.

Sasao, Isao, to Mitsubishi Denki Kabushiki Kaisha. Speed detecting device. 4,509,013, Cl. 324-161.000.

Sashiki, Takashi; and Sakaeda, Keiko, to Kabushiki Kaisha Ishida Koki Seisakusho. Weighing method and apparatus therefor. 4,508,186, Cl. 177-1.000.

Sato, Hideo: *See—*
Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, 4,508,805, Cl. 430-72.000.

Sato, Hisao: *See—*
Nagata, Wataru; Nishitani, Yasuhiro; and Sato, Hisao, 4,508,909, Cl. 548-251.000.

Sato, Kazusuke: *See—*
Kimura, Etsuji; Ogi, Katsumi; and Sato, Kazusuke, 4,508,322, Cl. 266-149.000.

Sato, Kyosaku, to Polysar Limited. Polymer compositions comprising polyamides, carboxylated (meth)acrylonitrile-butadiene rubber, and nonpolymeric additives. 4,508,867, Cl. 524-434.000.

Sato, Mineo; Kawaguchi, Tadaaki; Okawachi, Yukinori; and Funahashi, Yasuyuki, to Mitsubishi Denki Kabushiki Kaisha. Air conditioning apparatus of the type embedded within a ceiling. 4,507,940, Cl. 62-407.000.

Sato, Teiji: *See—*
Usui, Koichi; Ogawa, Masahide; Goto, Kunio; Sato, Teiji; Tanaka, Masanori; Takahashi, Seikichi; Ono, Kinichi; and Kojima, Seiji, 4,509,064, Cl. 346-207.000.

Satoh, Isao: *See—*
Ohara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,509,156, Cl. 369-54.000.

Satoh, Kozo: *See—*
Sugimoto, Hiroshi; and Satoh, Kozo, 4,509,011, Cl. 324-309.000.

Satoh, Osamu: *See—*
Mashimo, Tohru; and Satoh, Osamu, 4,508,035, Cl. 102-313.000.

Satou, Hiroshi: *See—*
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,508,682, Cl. 420-590.000.

Sauer, Donald J., to RCA Corporation. CCD charge substraction arrangement. 4,509,181, Cl. 377-63.000.

Saunders, Harold D. Cervical traction device. 4,508,109, Cl. 128-75.000.

Sautebin, Raoul, to Swiss Aluminium Ltd. Process for cooling in ingot during continuous casting. 4,508,160, Cl. 164-467.000.

Savage, David W.; and Sartori, Guido, to Exxon Research & Engineering Co. Process for the selective removal of hydrogen sulfide from gaseous mixtures with strongly basic tertiary amino compounds. 4,508,692, Cl. 423-228.000.

Savage, David W.: *See—*
Doyle, Gerald; Pruett, Roy L.; and Savage, David W., 4,508,694, Cl. 423-246.000.

Sawata, Tetsuya: *See—*
Tokuno, Masateru; and Sawata, Tetsuya, 4,508,279, Cl. 242-56.00R.

Sawata, Yukitaka: *See—*
Najima, Tetsuo; Tetsuta, Setsuya; Sawata, Yukitaka; and Yamagishi, Masahiro, 4,508,620, Cl. 209-500.000.

Sawusch, Axel. Device for filleting beheaded fish. 4,507,824, Cl. 17-61.000.

Sawyer, Carleton E.; and Masterman, Hugh C., to Display Components, Inc. Core element for electrodynamic rotary machine. 4,508,989, Cl. 310-184.000.

Sayles, David C., to United States of America, Army. Recovery of alcohol from a fermentation source by separation rather than distillation. 4,508,929, Cl. 568-923.000.

Scagliotti, Alfredo: *See—*
Invernizzi, Antonino, 4,509,092, Cl. 361-172.000.

Scartazzini, Riccardo: *See—*
Schaffner, Karl; and Scartazzini, Riccardo, 4,508,723, Cl. 514-195.000.

Schachter, Rozalie; Viscogliosi, Marcello; and Bunz, Lewis A., to Stauffer Chemical Company. Sputtered semiconducting films of catenated phosphorus material and devices formed therefrom. 4,509,066, Cl. 357-2.000.

Schachter, Rozalie: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,508,931, Cl. 136-255.000.

Schack, Carl J.; and Christe, Karl O., to United States of America, Air Force. Pentafluorotelluriumoxide fluorocarbons. 4,508,662, Cl. 260-550.000.

Schaefer, Donald D., to Dunham-Bush, Inc. Modular unload slide valve control assembly for a helical screw rotary compressor. 4,508,491, Cl. 417-310.000.

Schaetzle, Walter J.; Brett, C. Everett; and Al-Ansari, Jasem M. Method for and thermal energy injection withdrawal system for aquifers. 4,507,925, Cl. 60-641.400.

Schaffner, Karl; and Scartazzini, Riccardo, to Ciba Geigy Corporation. 6-Azaoligocycloalkylmethyleneaminopenam compounds. 4,508,723, Cl. 514-195.000.

Schaner, Ferdinand: *See—*
Weber, Klaus; Hujer, Friedrich; and Schaner, Ferdinand, 4,508,224, Cl. 206-455.000.

Scheiter, Bernd: *See—*
Bachmann, Erich; Fabel, Ludwig; Fischer, Roland; Peter, Werner; Scheiter, Bernd; and Wenzel, Werner, 4,508,494, Cl. 418-13.000.

Scheler, Philip E. Fireplace cap. 4,508,098, Cl. 126-139.000.

Schermann, Maurice, to Garages Mutualistes Francais. Method for measuring the state of damage of an automobile vehicle and measuring apparatus for carrying out said method. 4,507,872, Cl. 33-174.00R.

Schinzel, Erich: *See—*
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,508,900, Cl. 546-99.000.

Schlaikjer, Carl R.: *See—*
Gopikanth, Mysore L.; Kuo, Han C.; and Schlaikjer, Carl R., 4,508,800, Cl. 429-196.000.

Schlegel, Raymond F.; Bourassin, Rene P.; and Lapautre, Michel A., to Bertin & Cie. Energy recuperation centrifuge. 4,508,530, Cl. 494-49.000.

Schlesch, Ronald D.; and Lyons, Robert F., to Armstrong International, Inc. Combined inlet and outlet fitting. 4,508,135, Cl. 137-185.000.

Schlesinger, Lawrence; German, Dale F.; and Richards, Donald L., to Eaton Corporation. Circuit mounting apparatus. 4,507,956, Cl. 73-146.500.

Schleussner, Hans: *See—*
Sonneborn, Hans H.; Schwulera, Udo; and Schleussner, Hans, 4,508,833, Cl. 436-543.000.

Schlick, Horst; Hofert, Paul; and Caramel, Rudolf, to VDO Adolf Schindling AG. Electric clock movement, particularly a quartz clock movement. 4,508,458, Cl. 368-76.000.

Schliekelmann, Robert J., to Fokker BV. Method and apparatus for the non-destructive testing of materials by the use of ultra-sonic waves. 4,507,967, Cl. 73-621.000.

Schmidt, Adolf, to Bayer Aktiengesellschaft. Process for the production of fluid aqueous dispersions of polymers of conjugated dienes. 4,508,862, Cl. 524-157.000.

Schmidt, Hans-Georg, to Dynamit Nobel AG. 3H-Furanones. 4,508,914, Cl. 549-323.000.

Schmidt, Manfred; Bottenbruch, Ludwig; and Freitag, Dieter, to Bayer Aktiengesellschaft. Process for the preparation of thermoplastic aromatic polyphosphonatocarbonates with improved heat-aging resistance, and their use. 4,508,890, Cl. 528-167.000.

Schneider, Bernhard: *See*—
Post, Lothar; and Schneider, Bernhard, 4,508,006, Cl. 89-24.000.

Schneider, Warren P.: *See*—
Patterson, Billy R.; and Schneider, Warren P., 4,508,375, Cl. 285-334.000.

Schnur, William H.: *See*—
Elepano, Normita P.; Schnur, William H.; and Jorgensen, Jens L., 4,508,634, Cl. 252-163.000.

Scholdstrom, Ragnar; Marcus, Holger; and Nordstrom, Lennart, to Geotronics AB. Apparatus for measuring the distance to a point on the inner wall of a hot furnace. 4,508,448, Cl. 356-5.000.

Scholz Research & Development: *See*—
Miller, Neil A., 4,509,191, Cl. 381-63.000.

Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Cationic compounds of the naphthalimide series, process for their preparation and their use. 4,508,900, Cl. 546-99.000.

Schoofs, Inc.: *See*—
Schoofs, Richard J., 4,508,699, Cl. 423-574.00R.

Schoofs, Richard J., to Schoofs, Inc. Claus process improvement. 4,508,699, Cl. 423-574.00R.

Schott Glaswerke: *See*—
Beerwald, Hans; Boehm, Guenter; and Glomski, Guenter, 4,508,554, Cl. 65-3.100.
Gliemeroth, Georg; Ross, Ludwig; Speit, Burkhard; Geiler, Volkmar; Krolla, Hans-Georg; and Meckel, Lothar, 4,508,834, Cl. 501-73.000.

Schourup, William E.: *See*—
Studer, Robert L.; and Schourup, William E., 4,508,130, Cl. 137-15.000.

Schroder, Karlheinz: *See*—
Ramesohl, Hubert; Seelen, Fritz; Filges, Ralf; Schroder, Karlheinz; and Veiser, Elmar, 4,508,503, Cl. 432-109.000.

Schroeder, Clifford A. Rigid duct with bendable elbow. 4,508,370, Cl. 285-53.000.

Schudel, Peter: *See*—
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,508,925, Cl. 568-442.000.

Schuetz, James E.: *See*—
Keskey, William H.; Schuetz, James E.; and Lee, Do I., 4,508,869, Cl. 524-808.000.

Schulte, Jan J. Skid mounted multiple weaning calf enclosure. 4,508,060, Cl. 119-16.000.

Schulte, Richard: *See*—
Lorenz, Horst; and Schulte, Richard, 4,508,255, Cl. 228-5.100.

Schulte, Thomas: *See*—
Mansour, James D.; and Schulte, Thomas, 4,508,821, Cl. 435-34.000.

Schultz, Allan A. Waler bracket. 4,508,310, Cl. 249-189.000.

Schultz, George A. Tortilla press and oven unit. 4,508,025, Cl. 99-353.000.

Schultz, Roy D.: *See*—
Reiss, Leon G.; and Schultz, Roy D., 4,508,988, Cl. 310-154.000.

Schunk & Ebe GmbH: *See*—
Bodden, Werner; and Diegelmann, Winfried, 4,508,681, Cl. 419-29.000.

Schurter, Rolf: *See*—
Brunner, Hans-Georg; Schurter, Rolf; and Szczepanski, Henry, 4,508,560, Cl. 71-94.000.

Schwantje, Gerd: *See*—
Mueller, Josef; Wiersdorff, Walter-Wielant; Kirschenlohr, Werner; and Schwantje, Gerd, 4,508,924, Cl. 568-322.000.

Schwulera, Udo: *See*—
Sonneborn, Hans H.; Schwulera, Udo; and Schleussner, Hans, 4,508,833, Cl. 436-543.000.

SDS, Elektro GmbH: *See*—
Matsushita, Hidetoshi, 4,509,026, Cl. 335-85.000.

Sea World, Inc.: *See*—
Anderson, George B., 4,509,151, Cl. 367-118.000.

Seabrook, Robert A.: *See*—
Turner, Robert; and Seabrook, Robert A., 4,507,982, Cl. 74-493.000.

Seb S.A.: *See*—
Deville, Jean-Pierre, 4,508,100, Cl. 126-390.000.

Security Switch, Ltd.: *See*—
Pfeiffer, James W.; and Corder, Thomas E., 4,508,943, Cl. 200-17.00R.

Seelen, Fritz: *See*—
Ramesohl, Hubert; Seelen, Fritz; Filges, Ralf; Schroder, Karlheinz; and Veiser, Elmar, 4,508,503, Cl. 432-109.000.

Seeler, C. Oliver. Fluid pressure actuated immobilizing structure. 4,508,112, Cl. 128-89.00R.

Seely, James R., to Marketing Displays, Inc. Sign and attachment apparatus. 4,507,887, Cl. 40-606.000.

Seifert, Helmut; and Mondel, Karl, to Repa Feinstanzwerk GmbH. Deflection device for safety belts. 4,508,286, Cl. 242-107.000.

Seikosha Co., Ltd.: *See*—
Hashimoto, Masao; and Kato, Katsumi, 4,508,459, Cl. 368-276.000.

Seiner, Jerome A.: *See*—
Hodek, Robert B.; and Seiner, Jerome A., 4,508,646, Cl. 260-239.30R.

Seissl, Johann: *See*—
Krauss, Peter; Reinhardt, Jurgen; and Seissl, Johann, 4,509,074, Cl. 358-111.000.

Seitz, Helmut: *See*—
Dobler, Helmut; Zeller, Rolf; and Seitz, Helmut, 4,508,069, Cl. 123-192.00B.

Seki, Kenji: *See*—
Izumi, Kazuo; Shimazaki, Kenji; and Seki, Kenji, 4,508,851, Cl. 502-426.000.

Sekido, Yasuo: *See*—
Inoue, Akira; Takase, Shinji; Sekido, Yasuo; Mori, Masao; and Kubo, Tatsuki, 4,508,849, Cl. 502-263.000.

Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, to Toshiba Corporation. Wireless telephone apparatus with protection against power loss. 4,509,201, Cl. 455-73.000.

Sekiguchi, Nobuo: *See*—
Harada, Kazuhiro; Tsuchiya, Yuzoh; Sekiguchi, Nobuo; and Ishikawa, Toshio, 4,508,251, Cl. 226-25.000.

Sekiguchi, Yuji: *See*—
Yamamoto, Tsutomu; Ashizawa, Masaaki; Nishimoto, Kazuo; and Sekiguchi, Yuji, 4,508,777, Cl. 428-280.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Iwai, Noboru; Hirunuma, Masanori; and Kaneko, Junichi, 4,508,669, Cl. 264-36.000.

Seko, Yasutoshi; Inoue, Masami; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Alarm system for preventing an automotive vehicle driver from dozing at the wheel. 4,509,040, Cl. 340-576.000.

Selenia Industrie Elettroniche Associate S.p.A.: *See*—
Marchetti, Renato; and Penco, Eugenio, 4,509,176, Cl. 372-86.000.

Selflevel Covers (Jersey) Limited: *See*—
Ferns, Derek, 4,508,470, Cl. 404-25.000.

Sellers, Elisabeth A.: *See*—
Sellers, Richard K.; and Sellers, Elisabeth A., 4,508,520, Cl. 446-485.000.

Sellers, Richard K.; and Sellers, Elisabeth A. Heart-shaped light-emitting novelty. 4,508,520, Cl. 446-485.000.

Semouha, Hertzl. Fastening mechanism. 4,507,878, Cl. 36-50.000.

Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, to Murata Manufacturing Co., Ltd. Method for inhibiting oxidation of a copper film on ceramic body. 4,508,756, Cl. 427-81.000.

Sensor Systems, Inc.: *See*—
Robin, Seymour; and Klein, Yosef, 4,509,053, Cl. 343-708.000.

Sepheriades, Jean; and Lecharpy, Joel. Non-skid device for motor-vehicle tires. 4,508,151, Cl. 152-213.00A.

Seragnoli, Enzo, to G. D. Societa per Azione. Apparatus for feeding and wrapping products. 4,507,908, Cl. 53-498.000.

Servitova, Linda: *See*—
Simek, Petr; Barth, Tomislav; Brtnik, Frantisek; Jost, Karel; Machova, Alena; Servitova, Linda; and Slantinova, Jirina, 4,508,645, Cl. 260-112.50R.

Sethi, Amar J.: *See*—
Yong, Raymond N.; and Sethi, Amar J., 4,508,627, Cl. 210-728.000.

Seto, Isao: *See*—
Sano, Shigehisa; Seto, Isao; Koseki, Hiroyuki; and Minomura, Mana, 4,508,152, Cl. 152-356.00R.

Seufert, Josef J., to Metallgesellschaft Aktiengesellschaft. Electrostatic precipitator having a sealing cover or roof. 4,508,547, Cl. 55-101.000.

Sexton, Rodney N.: *See*—
Steele, Edward J.; and Sexton, Rodney N., 4,508,235, Cl. 215-307.000.

Seyfried, Christoph: *See*—
Hausberg, Hans-Heinrich; Prucher, Helmut; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus, 4,508,732, Cl. 514-466.000.

Seytre, Gerard: *See*—
Camps, Marcel; Douillard, Alain; Dubois, Jean-Claude; Gazard, Maryse; Montheard, Jean-Pierre; Pascal, Thierry; and Seytre, Gerard, 4,508,639, Cl. 252-500.000.

Shaber, Gary S.; and Buenzli, Charles W., Jr., to Probex, Inc. Film strip for rapid test of a film processor. 4,508,686, Cl. 422-55.000.

Shalon, Tadmor: *See*—
Drews, Robert C.; Meyer, Danny D.; Shalon, Tadmor; and Pasternak, Eliezer, 4,508,532, Cl. 604-22.000.

Shamos, Morris: *See*—
Banko, William, 4,507,976, Cl. 73-861.540.

Shannon, Michael P.: *See*—
Coulter, James C.; and Shannon, Michael P., 4,508,046, Cl. 114-39.000.

Shanoski, Henry: *See*—
Cobbledick, David S.; Reichenbach, Donald F.; and Shanoski, Henry, 4,508,785, Cl. 428-424.400.

Shanton, Kenneth J., to Wiggins Teape Group Limited, The. Record material. 4,509,065, Cl. 346-225.000.

Sharp Kabushiki Kaisha: *See—*
Horigome, Koichi; Okada, Seizo; Nishimura, Katsuji; and Yamamoto, Hachizou, 4,509,136, Cl. 364-900.000.
Saiji, Mitsuhiro, 4,509,112, Cl. 364-200.000.
Takamatsu, Toshiaki; Funada, Fumiaki; Yasuda, Shuhei; and Matsuura, Masataka, 4,509,099, Cl. 361-413.000.
Tomino, Tadashi; and Higuchi, Masayuki, 4,508,402, Cl. 339-17.0CF.
Yamada, Shinji, 4,509,203, Cl. 455-166.000.
Yamasaki, Hitoshi, 4,508,962, Cl. 235-378.000.
Yatsunami, Kenrow; and Iwamoto, Yoshihiki, 4,509,129, Cl. 364-513.500.
Yoshida, Kunio, 4,509,137, Cl. 364-900.000.

Shaw, James E. Oil recovery method. 4,508,171, Cl. 166-273.000.

Shaw, Robert: *See—*
Graham, Marshall D.; Cook, Dudley D., Jr.; Gecks, Donald L.; and Shaw, Robert, 4,508,435, Cl. 350-529.000.

Shell Internationale Research Maatschappij B.V.: *See—*
Voetter, Heinz; Darton, Richard C.; Van Meurs, Hubrecht C. A.; and Krishna, Rajamani, 4,508,041, Cl. 110-347.000.

Shell Oil Co.: *See—*
Diaz, Zaida, 4,508,693, Cl. 423-236.000.
McCullough, J. Douglas, Jr., 4,508,872, Cl. 525-88.000.

Shemenski, Kenneth L. Process and pattern for decorating cylindrical articles. 4,508,763, Cl. 427-262.000.

Shenk, William H., to Honeywell Information Systems Inc. Method and apparatus for defining magnetic disk track field lengths using a programmable counter. 4,509,118, Cl. 364-200.000.

Shepard, Francis H., Jr. Apparatus for variable speed drive of an induction motor from a fixed frequency AC source. 4,509,004, Cl. 318-801.000.

Shepler, Eric F.; and Knapp, Anthony W., to Allied Corporation. Anti-decoupling mechanism for an electrical connector assembly. 4,508,408, Cl. 339-89.00M.

Shettler, Carol A. Alphabet blocks. 4,508,347, Cl. 273-157.00R.

Shevchenko, Viktor D.: *See—*
Maltsev, Jury S.; Shevchenko, Viktor D.; and Chernin, Mikhail M., 4,509,134, Cl. 364-813.000.

Shibuya, Koji: *See—*
Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,508,912, Cl. 549-253.000.

Shimadzu Corporation: *See—*
Okazaki, Nobuo, 4,508,449, Cl. 356-30.000.

Shimamura, Morihiko; and Uyama, Shintaro, to Jidosha Kiki Co., Ltd. Brake power servo booster. 4,508,009, Cl. 91-376.00R.

Shimazaki, Kenji: *See—*
Izumi, Kazuo; Shimazaki, Kenji; and Seki, Kenji, 4,508,851, Cl. 502-426.000.

Shimbara, Hiroyuki, to Nissan Motor Company, Limited. Fuel pump control apparatus. 4,508,077, Cl. 123-357.000.

Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, to Toyo Kohan Co., Ltd. Tin free steel having an excellent weldability and its production method. 4,508,790, Cl. 428-632.000.

Shimizu, Shigehisa: *See—*
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,508,438, Cl. 354-105.000.

Shimokawa, Fumitaka: *See—*
Nakato, Hakaru; Sakuraya, Toshikazu; Habu, Yasuhiro; Emi, Toshihiko; Kodama, Masanori; Koshikawa, Takao; Yoshida, Yoshimitsu; and Shimokawa, Fumitaka, 4,508,571, Cl. 106-38.280.

Shimomura, Yasunori: *See—*
Kamada, Kazumasa; Tamai, Katsumi; Shimomura, Yasunori; and Abe, Kazunori, 4,509,163, Cl. 369-284.000.

Shimotake, Hiroshi: *See—*
Knoedler, Reinhard; Nelson, Paul A.; Shimotake, Hiroshi; and Battles, James E., 4,508,797, Cl. 429-184.000.

Shimoyama, Yoshifumi: *See—*
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.

Shinjo, Katsumi, to VE-Wissenschaftlich-Technischer Betrieb Keramik. Self-piercing nut holding device. 4,507,859, Cl. 29-798.000.

Shinohara, Toshio: *See—*
Hokamura, Sadakazu; Shinohara, Toshio; Aritomi, Mitsutoshi; and Yoshida, Yuji, 4,508,767, Cl. 427-407.100.

Shinozaki, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of making isolation grooves by over-filling with polycrystalline silicon having a difference in impurity concentration inside the grooves followed by etching off the overfill based upon this difference. 4,507,849, Cl. 29-576.00W.

Shionogi & Co., Ltd.: *See—*
Nagata, Wataru; Nishitani, Yasuhiro; and Sato, Hisao, 4,508,909, Cl. 548-251.000.

Shioya, Tsunetoshi: *See—*
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.

Shirai, Hitoshi: *See—*
Matsuzaki, Minoru; Hachimoto, Akihiko; Inoue, Takashi; Shirai, Hitoshi; Watanabe, Akira; and Tofukuji, Ikuo, 4,508,443, Cl. 354-402.000.

Shoff, Bernell D., to U.S. Truck Cranes, Inc. Remote control apparatus for a machine such as a crane. 4,508,014, Cl. 91-527.000.

Shook, Donald P.: *See—*
Silverman, Martin L.; and Shook, Donald P., 4,507,993, Cl. 82-36.00A.

Shop-Vac Corporation: *See—*
Berfield, Robert C.; Crevling, Robert L., Jr.; and Lawson, Lonnie B., Jr., 4,508,550, Cl. 55-216.000.

Short, Henry A., Sr. Lamp assembly. 4,509,105, Cl. 362-122.000.

Showa Denko Kabushiki Kaisha: *See—*
Kanda, Masahiro; Hatakeyama, Tetsuya; and Morito, Yusuke, 4,508,640, Cl. 252-503.000.

Showa Electric Wire & Cable Co.: *See—*
Harada, Kazuhiro; Tsuchiya, Yuzoh; Sekiguchi, Nobuo; and Ishikawa, Toshio, 4,508,251, Cl. 226-25.000.

Sich, Janice M.: *See—*
Noren, Gerry K.; Poklacki, Erwin S.; Hawker, Fred D.; and Sich, Janice M., 4,508,889, Cl. 528-28.000.

Sieber, Kurt: *See—*
Ruoss, Erwin; and Sieber, Kurt, 4,508,551, Cl. 55-263.000.

Siefert, Roland: *See—*
Donner, Bernd; and Siefert, Roland, 4,507,963, Cl. 73-431.000.

Siegel, Bernard: *See—*
Wyatt, Philip W.; Newsome, Allen L., Jr.; Bloom, William G.; Siegel, Bernard; and Lubov, Michael, 4,508,123, Cl. 128-692.000.

Siegert, Gunter; and Rasch, Ulf, to SUDHAUS Schloss- und Beschlagtechnik GmbH & Co. Full-strap assembly for towing a wheeled suitcase. 4,508,202, Cl. 190-115.000.

Sieja, James B., to Du Pont de Nemours, E. I., and Company. Carbonylation of olefinically unsaturated nitriles and acids using a sulfone solvent. 4,508,660, Cl. 260-465.400.

Siemens Aktiengesellschaft: *See—*
Behn, Reinhard; Heywang, Hermann; and Pachonik, Horst, 4,508,049, Cl. 118-50.100.
Freller, Helmut; Horauf, Friedrich; Lorenz, Hans-Peter; and Mund, Konrad, 4,508,430, Cl. 350-351.000.
Freller, Helmut; and Mund, Konrad, 4,508,432, Cl. 350-357.000.
Heimlicher, Peter, 4,509,023, Cl. 331-176.000.
Kimpel, Rolf-Dieter; Rauterberg, Ulf; and Tamm, Horst, 4,509,025, Cl. 335-85.000.
Krauss, Peter; Reinhardt, Jurgen; and Seissl, Johann, 4,509,074, Cl. 358-111.000.
Muller, Erwin, 4,509,028, Cl. 335-202.000.
Oberschmid, Raimund; and Feigt, Ingmar, 4,508,966, Cl. 250-327.200.
Steeger, Gerhard, 4,508,940, Cl. 179-107.0FD.
Stoisiek, Michael, 4,509,068, Cl. 357-38.000.
Stoisiek, Michael, 4,509,069, Cl. 357-38.000.
Vandamme, Detlef, 4,508,986, Cl. 310-67.00R.
Zuckler, Karl, 4,508,945, Cl. 200-144.00B.

Siewell, Gary: *See—*
Low, Robert N.; Cloutier, Frank L.; and Siewell, Gary, 4,509,062, Cl. 346-140.00R.

Sigma Tool & Machine Limited: *See—*
Leistner, Herbert E., 4,508,478, Cl. 411-176.000.

Sigmatron Associates: *See—*
Essinger, Walter F., 4,508,990, Cl. 313-50.000.

Sigmon, Ned A.: *See—*
Hughes, Richard L.; and Sigmon, Ned A., 4,508,411, Cl. 339-99.00R.

Sigmund, Adolf, to Sigri Elektrographit GmbH. Production line for graphite nipples. 4,507,860, Cl. 29-825.000.

Signetics Corporation: *See—*
Puar, Deepraj S., 4,508,980, Cl. 307-530.000.

Sigri Elektrographit GmbH: *See—*
Sigmund, Adolf, 4,507,860, Cl. 29-825.000.

Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. Process for preparing thiosulfenamide derivatives of N-phosphonomethylglycinonitriles. 4,508,663, Cl. 260-968.000.

Silberman, Ira J.: *See—*
Kelley, Robert C.; and Silberman, Ira J., 4,508,335, Cl. 272-145.000.

Silverman, Martin L.; and Shook, Donald P., to Warner & Swasey Company, The. Machine tool with two speed turret indexing. 4,507,993, Cl. 82-36.00A.

Simek, Petr; Barth, Tomislav; Brtnik, Frantisek; Jost, Karel; Machova, Alena; Servitova, Linda; and Slantinova, Jirina, to Ceskoslovenska akademie ved. Analogs of neurohypophysial hormones with inhibition effects. 4,508,645, Cl. 260-112.50R.

Simmen, Christian, to Heberlein Maschinenfabrik AG. Jet texturing nozzle. 4,507,833, Cl. 28-254.000.

Simms, R. John; and Haney, Jerry D., to Oxbridge, Inc. Automatic optical inspection apparatus. 4,509,075, Cl. 358-106.000.

Simon, Frederick A.: *See—*
Hayosh, Robert J.; Lewis, Robert H.; and Simon, Frederick A., 4,508,280, Cl. 242-191.000.

Simon, Jaime; Wilson, David A.; and Volkert, Wynn A., to Dow Chemical Company, The. Radioactive metals complexed with phosphonate derivatives of bicycloheptane bis(alkylamines). 4,508,704, Cl. 424-14.000.

Simon, Joachim W., to Nixdorf Computer AG. PCM Communication system and method of operation. 4,509,166, Cl. 370-62.000.

Simpson, Buddy B. Sound level indicating devices. 4,509,189, Cl. 381-56.000.

Simpson, Floyd H. Two-piece ear tag removing tool. 4,507,839, Cl. 29-268.000.

Simpson, Jay P.: *See—*
Walker, Thad O.; Simpson, Jay P.; and Dearing, Harry L., 4,508,628, Cl. 252-8.50P.

Sing Chuen, Johnny Y.: *See*—
D'Andrade, Bruce M.; and Sing Chuen, Johnny Y., 4,508,516, Cl. 446-443.000.

Singer, Klaus-Peter; and Butenop, Klaus, to Autoflug GmbH. Roll-up device for safety belts. 4,508,289, Cl. 242-107.40B.

Singer, Martin H.: *See*—
Burger, William A.; Embree, David M.; Singer, Martin H.; and Vogelpohl, David R., 4,508,937, Cl. 179-84.00T.

Sipple, Kenneth J.: *See*—
Stratton, Leo M.; Sipple, Kenneth J.; and Tatonetti, Mario B., 4,507,965, Cl. 73-517.00B.

Sircar, Ila; Cain, Michael H.; and Toplisa, John G., to Warner-Lambert Company. Cardiotonic and antihypertensive oxadiazinone compounds. 4,508,718, Cl. 514-238.000.

Sirinyan, Kirkor; and Merten, Rudolf, to Bayer Aktiengesellschaft. Metallized polymer granules, and their use. 4,508,780, Cl. 428-407.000.

Sisti, Giorgio; and Verga, Giuseppe, to Carlo Erba Strumentazione S.p.A. Modified-flame thermionic detector for gas chromatographs and method for the identification of components in sample under analysis. 4,508,685, Cl. 422-54.000.

Sitterle, George, to Frontier Contact Lenses of Florida, Inc. Soft toric contact lens. 4,508,436, Cl. 351-160.00H.

Sixt, Karl: *See*—
Woltmann, Reinhard; and Sixt, Karl, 4,508,159, Cl. 164-306.000.

Sjostrand, Sven E.: *See*—
Junggren, Ulf K.; and Sjostrand, Sven E., 4,508,905, Cl. 546-271.000.

SKF Steel Engineering Aktiebolag: *See*—
Eriksson, Sune; Santen, Sven; and Bjorling, Gotthard, 4,508,566, Cl. 75-88.000.
Santen, Sven; and Thornblom, Jan, 4,508,040, Cl. 110-347.000.

Skinner, Neal G.; and Wesson, David S., to Halliburton Company. Downhole tool and method of using the same. 4,508,174, Cl. 166-373.000.

Skolnick, Joel B. Book with puppet. 4,508,515, Cl. 446-148.000.

SKW Trostberg Aktiengesellschaft: *See*—
von Seyerl, Joachim, 4,508,638, Cl. 252-401.000.

Slantinova, Jirina: *See*—
Simek, Petr; Barth, Tomislav; Brtnik, Frantisek; Jost, Karel; Machova, Alena; Servitova, Linda; and Slantinova, Jirina, 4,508,645, Cl. 260-112.50R.

Slattery, Walter T. Compact versatile portable cooker. 4,508,096, Cl. 126-9.00R.

Smakula, Peter H. Truss rod apparatus. 4,508,003, Cl. 84-293.000.

Small, Irvin L., to Horace Small Manufacturing Company. Adaptive ballistic panel carrying garment. 4,507,802, Cl. 2-2.500.

Smiley, Harry; and Blechman, Abraham, to Medical Magnetics, Inc. Magnetic orthodontic torquing appliance. 4,508,505, Cl. 433-18.000.

Smith, Christopher G.; and Peters, John F., to PQ Corporation. Composites utilizing fillers of surface modified hollow microspheres. 4,508,856, Cl. 523-218.000.

Smith, Gray H., Jr. Waterbed with sound wave system. 4,507,816, Cl. 5-451.000.

Smith, Lee M.: *See*—
Andrade, Joseph D.; Triolo, Philip M.; Smith, Lee M.; and Miller, Frank J., 4,508,606, Cl. 204-169.000.

Smith, Peter R., to Fairchild Camera & Instrument Corporation. Control of substrate injection in lateral bipolar transistors. 4,507,848, Cl. 29-576.00B.

Smith, Roderick L., to Energy Adaptive Grinding, Inc. Centerless grinding systems. 4,507,896, Cl. 51-165.920.

Smith, Ronald W. Cabinet. 4,507,893, Cl. 47-74.000.

Smith, Russell G. Fail safe actuator. 4,507,919, Cl. 60-404.000.

Smith, Theodore D. Metallised fabric. 4,508,776, Cl. 428-248.000.

Smiths Industries Public Limited Company: *See*—
Baldwin, Graham J.; and McCann, Michael O., 4,509,096, Cl. 361-386.000.
Brazener, David J., 4,507,959, Cl. 73-182.000.

Smyth, Patrick G.: *See*—
Doll, Brian E.; and Smyth, Patrick G., 4,508,683, Cl. 422-7.000.

Snap-on Tools Corporation: *See*—
Herman, Timm R.; and Mikic, Frank, 4,508,005, Cl. 81-177.00G.

So, Yuzo: *See*—
Suzuki, Koichi; Oose, Seiroku; So, Yuzo; and Hirao, Yasutaka, 4,509,104, Cl. 362-32.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Green, David; and Blanc, Maurice, 4,508,743, Cl. 426-422.000.

Societe Nationale Elf Aquitaine: *See*—
Lazarre, Flavien, 4,508,354, Cl. 277-27.000.

Societe Nationale Industrielle Aerospatiale: *See*—
Rousseau, Gerard, 4,508,762, Cl. 427-228.000.

Socimi, S.p.A.: *See*—
Cigognini, Silvio, 4,508,200, Cl. 188-264.00P.

Soderberg, John H.; and Duwel, Edward C., to Pitney Bowes Inc. Postage meter with keyboard keys used for changing operating constants. 4,509,141, Cl. 364-900.000.

Sogo, Hiroyuki; Ohsawa, Zenichi; Umino, Isamu; and Nishida, Haruki, to Fujitsu Limited. Frequency conversion unit. 4,509,208, Cl. 455-317.000.

Sohl, Gordon; Ort, Donald L.; and Leicht, John R., to Xerox Corporation. Automatic calibration of drop-on-demand ink jet ejector. 4,509,057, Cl. 346-1.100.

Somezawa, Masashi: *See*—
Takei, Yutaka; and Somezawa, Masashi, 4,508,752, Cl. 427-48.000.

Somfai, Eva: *See*—
Huhn, Magda; Szabo, Gabor; Dvortsak, Peter; Karpati, Marianna; and Somfai, Eva, 4,508,658, Cl. 260-465.00D.

Sommer, Alan C.: *See*—
Kaya, Azmi; and Sommer, Alan C., 4,507,930, Cl. 62-129.000.

Sone, Kohki: *See*—
Okamura, Kenji; Nagaishi, Hatsuo; Kitahara, Tsuyoshi; Sone, Kohki; and Nakamura, Koyo, 4,507,986, Cl. 74-866.000.

Sonneborn, Hans H.; Schwulera, Udo; and Schleussner, Hans, to Biotest-Serum-Institut GmbH. Separation of interleukin-2 from phytohemagglutinin by dye matrix chromatography. 4,508,833, Cl. 436-543.000.

Sony Corporation: *See*—
Fujimura, Yasushi; Okada, Takashi; Tanaka, Yutaka; and Ikeda, Yasunari, 4,509,071, Cl. 358-11.000.
Hayashi, Yoshio; Aoyagi, Kouji; Sakurai, Toshio; Kashima, Tusnehiro; and Higeta, Koichi, 4,509,138, Cl. 364-900.000.
Nakano, Kenji, 4,509,083, Cl. 360-77.000.
Takei, Yutaka; and Somezawa, Masashi, 4,508,752, Cl. 427-48.000.
Yamamoto, Kaichi, 4,509,016, Cl. 328-138.000.

Soos, Rudolf: *See*—
Fogassy, Elemer; Toke, Laszlo ; Faigl, Ferenc; Soos, Rudolf; Bozzay, Jozsef; Kolta, Rezso; Nemes, Jozsef; and Bencsik, Peter, 4,508,919, Cl. 562-401.000.

Sorensen, Jens O. Core stabilization by sequential injections. 4,508,676, Cl. 264-328.800.

Soth, Henry J.: *See*—
Kukowski, John A.; Soth, Henry J.; and Gay, William H., 4,507,862, Cl. 29-837.000.

Soxil S.p.A.: *See*—
Rodari, Gianpiero S., 4,508,117, Cl. 128-204.210.

Spanier, Barry, to Maui Harness Corporation. Sailboard harness. 4,508,045, Cl. 114-39.000.

Spector, Abner. Effects box system and method. 4,509,190, Cl. 381-61.000.

Speit, Burkhard: *See*—
Gliemeroth, Georg; Ross, Ludwig; Speit, Burkhard; Geiler, Volkmar; Krolla, Hans-Georg; and Meckel, Lothar, 4,508,834, Cl. 501-73.000.

Spektor, Jury N.; Gaponov, Valery M.; and Masovich, Felix Z., to Gosudarstvenny Proektno-Konstruktorsky I Experimentalny Institut Ugolnogo Mashinostroenia. Mining machine for extraction of minerals. 4,508,391, Cl. 299-43.000.

Spengler, Ernst M., to Stanztechnik GmbH R & S. System for manufacturing three-dimensional work pieces. 4,508,499, Cl. 425-88.000.

Sperry Corporation: *See*—
Campbell, Willis R.; Hunt, Larry J.; and Waldrop, T. William, 4,508,359, Cl. 280-463.000.
Chen, Tsu F.; and Phillips, Edwin R., 4,507,834, Cl. 29-26.00R.
Gershenson, Meir, 4,509,018, Cl. 330-61.00R.
Lustig, Claude D., 4,509,045, Cl. 340-794.000.
Wang, Tsing-Chow; and Josephs, Richard M., 4,509,146, Cl. 365-162.000.

Spinks, Anne E.: *See*—
Whyzmuzis, Paul D.; and Spinks, Anne E., 4,508,868, Cl. 524-607.000.

Spinnett, Raymond G., to KDI American Products, Inc. Retrofit pulsator apparatus and method for an air/water mixer of a swimming pool, therapy tub, spa or the like. 4,508,665, Cl. 261-93.000.

Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. S-(4-Hydroxyphenyl)thiocarboxylic ester antioxidants. 4,508,865, Cl. 524-283.000.

Sprague Electric Company: *See*—
Bernard, Walter J.; and Millard, Richard J., 4,508,563, Cl. 75-0.5BB.
Finkelstein, Manuel; and Ross, Sidney D., 4,509,094, Cl. 361-314.000.
Puppolo, Henry F., 4,509,100, Cl. 361-433.000.

Sprenkle, George J., to Burroughs Corporation. Insertion device for an electronic circuit package assembly. 4,507,861, Cl. 29-741.000.

Square D Company: *See*—
Profio, Mark V., 4,509,088, Cl. 361-29.000.

Staats, Gotthard: *See*—
Eschmann, Friedrich; Gelsdorf, Gunter; Nold, Peter; Staats, Gotthard; and Subat, Gerhard, 4,508,504, Cl. 432-217.000.

Staehli, Urs, to Rieter Machine Works Ltd. Cleaning machine for fiber material. 4,507,827, Cl. 19-200.000.

Staffeld, Stanley E. Connector and insertion tool. 4,507,817, Cl. 7-158.000.

Stahl, Edward L.: *See*—
Kreeger, Elsmer W.; and Stahl, Edward L., 4,508,237, Cl. 220-6.000.

Stahl, Gunther: *See*—
Ramcke, Bernd; and Stahl, Gunther, 4,508,210, Cl. 198-627.000.

Stahl, Howard D.: *See*—
Fulger, Charles V.; Stahl, Howard D.; Turek, Evan J.; and Bayha, Renee, 4,508,745, Cl. 426-594.000.

Stahl, Steven B.; Bakhshi, Shiv K.; and Naul, George M., to Owens-Corning Fiberglas Corporation. Molding of glass wool with wrinkle-free surface. 4,508,673, Cl. 264-120.000.

Stahl, William L., Jr.: *See*—
Leininger, Joel C.; Moore, Victor S.; and Stahl, William L., Jr., 4,509,114, Cl. 364-200.000.

Stahlecker, Peter H.: *See*—
Steiner, Erwin; and Stahlecker, Peter H., 4,507,832, Cl. 28-248.000.

Stahlmann, Rudolf: *See—*
Jensen, Ernst; Knappworst, Jurgen; and Stahlmann, Rudolf, 4,508,036, Cl. 102-444.000.
Standard Oil Company, The: *See—*
Dolhyj, Serge R.; and Enyedy, Roseann M., 4,508,848, Cl. 502-239.000.
Giffen, William M., Jr.; Li, George S.; and Miller, Arthur F., 4,508,787, Cl. 428-473.500.
Standard Oil Company (Indiana): *See—*
Nimry, Tayseer S.; and Fields, Ellis K., 4,508,605, Cl. 204-158.00R.
Reed, Robert L., 4,508,698, Cl. 423-574.00R.
Stanley, Louis, to Card-O-Matic Pty. Limited. Punch and winding machine. 4,507,947, Cl. 72-130.000.
Stanztechnik GmbH R & S: *See—*
Spengler, Ernst M., 4,508,499, Cl. 425-88.000.
Star-Kist Foods, Inc.: *See—*
Corbett, Colin D.; Milloch, Robert L.; and Sarno, Felicisimo S., 4,508,741, Cl. 426-303.000.
State of Israel, Ministry of Agriculture: *See—*
Wolf, Isaac; and Alper, Yekutiel, 4,507,911, Cl. 56-327.00R.
Stauffer Chemical Company: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,508,931, Cl. 136-255.000.
Schachter, Rozalie; Viscogliosi, Marcello; and Bunz, Lewis A., 4,509,066, Cl. 357-2.000.
Stauffer, Harold F., Jr.: *See—*
Taylor, Chandler R., Jr.; and Stauffer, Harold F., Jr., 4,508,724, Cl. 514-317.000.
Ste LOOK: *See—*
Beyl, Jean; Bernard, Jean; Guerreau, Rene ; le Faou, Daniel; and Peyre, Henri, 4,508,360, Cl. 280-605.000.
Stebles, Malcolm R.: *See—*
Chaudhuri, Dwaipayan; and Stebles, Malcolm R., 4,508,705, Cl. 424-47.000.
Steeger, Gerhard, to Siemens Aktiengesellschaft. Device for the compensation of hearing impairments. 4,508,940, Cl. 179-107.0FD.
Steel Heddle Mfg. Co.: *See—*
Bowen, James B.; and Kramer, Charles F., 4,508,145, Cl. 139-92.000.
Steele, Edward J.; and Sexton, Rodney N., to Runglin Co. Inc. Beverage cup cover. 4,508,235, Cl. 215-307.000.
Steenbergen, Christiaan: *See—*
Gravesteijn, Dirk J.; Steenbergen, Christiaan; Van der Veen, Jan; and Nijssen, Wilhelmus P. M., 4,508,811, Cl. 430-270.000.
Steiner, Erwin; and Stahlecker, Peter H., to Technology Consulting Corporation. Method and apparatus for the continuous treatment of yarn. 4,507,832, Cl. 28-248.000.
Steiner, Jean-Pierre: *See—*
Dubois, Jean; Lacroix, Alain; Forestier, Lucienne; and Steiner, Jean-Pierre, 4,507,812, Cl. 4-228.000.
Steinert, Leopold A.; and Perry, Richard W., to General Electric Company. Method for compacting nuclear reactor components. 4,507,840, Cl. 29-401.100.
Steinmann, Helmut, to Robert Bosch GmbH. Ventilating arrangement. 4,508,021, Cl. 98-2.010.
Stellberger, Karl-Heinz, to Hulsbeck & Furst GmbH & Co. KG. Electronic locking device having key and lock parts interacting via electrical pulses. 4,509,093, Cl. 361-172.000.
Stepan, Walter, to Uvex Winter Optik GmbH. Visor for a protective helmet. 4,507,809, Cl. 2-424.000.
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., to GTE Automatic Electric Inc. Printed circuit connecting device. 4,508,398, Cl. 339-17.0LM.
Stepan, William E., to GTE Automatic Electric Inc. Method of producing fine line conductive/resistive patterns on an insulating coating. 4,508,753, Cl. 427-53.100.
Stepan, William E., to GTE Automatic Electric Inc. Method of adding fine line conductive/resistive patterns to a thick film microcircuit. 4,508,754, Cl. 427-53.100.
Stephan, Karl D.: *See—*
Itoh, Tatsuo; and Stephan, Karl D., 4,509,209, Cl. 455-327.000.
Stephens, George H.: *See—*
Coppola, Richard G.; and Stephens, George H., 4,509,128, Cl. 364-483.000.
Stern, Howard K.: *See—*
DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,508,452, Cl. 356-375.000.
Steuler-Industriewerke GmbH: *See—*
Rohringer, Ernst, 4,508,581, Cl. 156-73.100.
Stevens, Udo: *See—*
Bittner, Franz; Poortman, Boudewijn J.; Rademacher-Dubbick, Kristian; Roskam, Abram K.; Stevens, Udo; and Tromp, Wouter T., 4,507,975, Cl. 73-861.120.
Stevenson, Philip E.: *See—*
Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., 4,508,769, Cl. 428-36.000.
Stewart Systems, Inc.: *See—*
Moore, John W.; and Thomas, William M., 4,508,206, Cl. 198-365.000.
Stewart-Warner Corporation: *See—*
Mayer, William; and Runions, Alton E., 4,509,106, Cl. 362-267.000.
Stockdale, Trevor J., to U.S. Philips Corporation. Atomic absorption spectrophotometer. 4,508,451, Cl. 356-315.000.
Stoisiek, Michael, to Siemens Aktiengesellschaft. Thyristor with controllable emitter short circuits and trigger amplification. 4,509,068, Cl. 357-38.000.
Stoisiek, Michael, to Siemens Aktiengesellschaft. Light triggerable thyristor with controllable emitter-short circuit and trigger amplification. 4,509,069, Cl. 357-38.000.
Stolz, Richard J.: *See—*
Muhle, Mike E.; Stolz, Richard J.; and Wright, Cecil W., 4,508,859, Cl. 523-346.000.
Stoner, David A.: *See—*
Lackey, Stanley A.; Meinerth, Kim A.; and Stoner, David A., 4,509,116, Cl. 364-200.000.
Stopp, Gerhard; Karkossa, Horst; and Trescher, Viktor, to Bayer Aktiengesellschaft. Process for the preparation of aromatic hydroxycarboxylic acids. 4,508,920, Cl. 562-423.000.
Stouffer, Ronald D., to Bowles Fluidics Corporation. Liquid oscillator device. 4,508,267, Cl. 239-11.000.
Stover, William A.: *See—*
Cormier, William E., Jr.; Pasquale, Gary M.; and Stover, William A., 4,508,840, Cl. 502-70.000.
Stradella, Fabio. Level gauge for liquefied gas tanks, with dial-and-hand indicator actuated by an axially movable drive coupled with a single internal magnet. 4,507,961, Cl. 73-317.000.
Stratton, Leo M.; Sipple, Kenneth J.; and Tatonetti, Mario B., to Columbia Research Laboratories. Detector for determining both forces on and positions of a host device. 4,507,965, Cl. 73-517.00B.
Straughn, Roy D. Speaker enclosure. 4,509,192, Cl. 381-90.000.
Strauss, Georg: *See—*
Pietzarka, Wilhelm F.; Malten, Albrecht; and Strauss, Georg, 4,508,666, Cl. 264-12.000.
Streeter, Bert E.; Streeter, Mary M.; and Robinson, Larry G. Display sign. 4,507,886, Cl. 40-447.000.
Streeter, Mary M.: *See—*
Streeter, Bert E.; Streeter, Mary M.; and Robinson, Larry G., 4,507,886, Cl. 40-447.000.
Strempel, Hans-Jurgen; Diehl, Manfred; and Bergmann, Roland, to Degussa Aktiengesellschaft. Scouring powder. 4,508,633, Cl. 252-135.000.
Strobert, Samuel S.: *See—*
Mastromoro, John F., 4,508,935, Cl. 179-2.0EA.
Strom Corporation: *See—*
Strom, Larry O.; and Guex, Betty S., 4,508,107, Cl. 128-54.000.
Strom, Larry O.; and Guex, Betty S., to Strom Corporation. Pneumatic percussor. 4,508,107, Cl. 128-54.000.
Stroud, Lebern W. Dual alternator system. 4,509,005, Cl. 320-68.000.
Stroz, John J.; and Mackay, Donald A. M., to Nabisco Brands, Inc. Method of reducing dental caries. 4,508,713, Cl. 514-60.000.
Struzik, Lawrence F.: *See—*
Livorsi, Carl F.; Wucik, Joseph A., Jr.; Dorrian, Philip J.; and Struzik, Lawrence F., 4,508,315, Cl. 251-173.000.
Stude, Michael E. Marker attachment for rules. 4,507,869, Cl. 33-42.000.
Studer, Robert L.; and Schourup, William E. Method and apparatus for repairing water leaks. 4,508,130, Cl. 137-15.000.
Sturgess, Michael G.: *See—*
Ring, John; French, David; Hickling, Michael; and Sturgess, Michael G., 4,508,765, Cl. 427-386.000.
Su, Hsueh-Ling: *See—*
Chang, Ching-Te; Lee, Lian-Tze; and Su, Hsueh-Ling, 4,508,654, Cl. 260-429.00R.
Subat, Gerhard: *See—*
Eschmann, Friedrich; Gelsdorf, Gunter; Nold, Peter; Staats, Gotthard; and Subat, Gerhard, 4,508,504, Cl. 432-217.000.
Suchdev, Jagan N., to General Motors Corporation. Piston cooling oil delivery tube assembly. 4,508,065, Cl. 123-41.350.
Sud Chemie Aktiengesellschaft: *See—*
Buckl, Hans, 4,508,838, Cl. 502-62.000.
Sudbeck, Rainer: *See—*
Baumgartner, Hans; and Sudbeck, Rainer, 4,508,089, Cl. 123-559.000.
SUDHAUS Schloss- und Beschlagtechnik GmbH & Co.: *See—*
Siegert, Gunter; and Rasch, Ulf, 4,508,202, Cl. 190-115.000.
Suga, Masaaki: *See—*
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,509,124, Cl. 364-424.100.
Sugimori, Masahiro: *See—*
Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, 4,508,875, Cl. 525-308.000.
Sugimoto, Hiroshi; and Satoh, Kozo, to Tokyo Shubaura Denki Kabushiki Kaisha. Nuclear magnetic resonance diagnostic apparatus. 4,509,011, Cl. 324-309.000.
Sugitani, Hiroshi; Inamoto, Tadayoshi; and Yokota, Masami, to Canon Kabushiki Kaisha. Ink jet recording head with delaminating feature. 4,509,063, Cl. 346-140.00R.
Sulitzeanu, Bernard, to Teva Pharmaceutical Industries Ltd. Method and kit for pregnancy detection. 4,508,829, Cl. 436-510.000.
Sullivan, Paul A., to NCR Corporation. Method of making CMOS by twin-tub process integrated with a vertical bipolar transistor. 4,507,847, Cl. 29-576.00B.
Sulzer Brothers Limited: *See—*
Hintsch, Otto, 4,508,146, Cl. 139-196.200.
Obrist, Albert; and Gadgill, Balkrishna B., 4,508,690, Cl. 423-173.000.
Sumitomo Chemical Company, Limited: *See—*
Nakayama, Koji; Yoshida, Ryo; and Matsumoto, Hiroshi, 4,508,562, Cl. 71-94.000.
Sumitomo Electric Industries, Ltd.: *See—*
Miyake, Masayoshi; Ueoka, Isao; Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Yamamoto, Teruyuki, 4,508,779, Cl. 428-383.000.

Nishiwaki, Yoshikazu, 4,508,420, Cl. 350-3.600.
Sun Chemical Corporation: *See*—
Chamberlain, Terence R., 4,508,899, Cl. 544-225.000.
Suncor, Inc.: *See*—
Yong, Raymond N.; and Sethi, Amar J., 4,508,627, Cl. 210-728.000.
Sung, Rodney L.: *See*—
Kaufman, Benjamin J.; and Sung, Rodney L., 4,508,541, Cl. 44-71.000.
Superfos Emballage A/S: *See*—
Jorgensen, Helge D., 4,507,821, Cl. 16-126.000.
Suroff, Leonard W.: *See*—
Kolt, Stanley, 4,507,922, Cl. 60-531.000.
Sutoh, Shinji: *See*—
Suzuki, Nobuhiko; Sutoh, Shinji; and Sasaki, Masaya, 4,507,932, Cl. 62-180.000.
Suzuki, Akio: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
Suzuki, Fuminori, to Citizen Watch Co., Ltd. Frequency-selectable signal generator. 4,508,000, Cl. 84-1.010.
Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument using large-capacity recording medium. 4,508,001, Cl. 84-1.010.
Suzuki, Koichi; Oose, Seiroku; So, Yuzo; and Hirao, Yasutaka, to Dainichi-Nippon Cables, Ltd. High temperature resistant lighting device. 4,509,104, Cl. 362-32.000.
Suzuki, Makoto: *See*—
Onuma, Kazuhiko; Kageyama, Yoichi; Kobayashi, Hiromu; Matsuki, Akihiro; and Suzuki, Makoto, 4,508,841, Cl. 502-73.000.
Suzuki, Masahiko: *See*—
Mizuno, Shigeru; Suzuki, Masahiko; Mizuno, Haruki; and Katsu, Masutaro, 4,508,567, Cl. 75-231.000.
Suzuki, Masayuki: *See*—
Ohara, Tsunemasa; Suzuki, Masayuki; and Yamamichi, Masayoshi, 4,508,439, Cl. 354-154.000.
Suzuki, Nobuhiko; Sutoh, Shinji; and Sasaki, Masaya, to Diesel Kiki Co., Ltd. Control system for air conditioning systems. 4,507,932, Cl. 62-180.000.
Suzuki, Seigo, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal synthesizer apparatus. 4,509,188, Cl. 381-53.000.
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, to Nissan Motor Company, Limited. Lock-up control system for lock-up type automatic transmission. 4,509,124, Cl. 364-424.100.
Suzuki, Tetsuo, to Tokyu Musashi Mfg. Co., Ltd. Algal culturing reef unit, artificial reef unit and artificial culturing and fishing field unit. 4,508,057, Cl. 119-3.000.
Svedberg, Per, to ASEA Aktiebolag. Two-pole overcurrent protection device. 4,509,089, Cl. 361-100.000.
Svoboda, Josef; Nitschko, Theodor; and Wittmann, Heinz, to TMC Corporation. Safety ski binding. 4,508,361, Cl. 280-628.000.
Swafford, Charles V.: *See*—
Becker, Billy G.; and Swafford, Charles V., 4,508,166, Cl. 166-117.500.
Swarthout, Richard L., to United States of America, Army. Ammunition locking mechanism. 4,508,215, Cl. 206-3.000.
Swearingin, David. Nipple feeder for dispensing dry feed. 4,508,061, Cl. 119-51.00R.
Swiss Aluminium Ltd.: *See*—
Sautebin, Raoul, 4,508,160, Cl. 164-467.000.
System Homes Company Ltd.: *See*—
Yoshino, Hozo, 4,507,936, Cl. 62-235.100.
Syva Company: *See*—
Yoshida, Robert A., 4,508,892, Cl. 536-51.000.
Szabo, Gabor: *See*—
Huhn, Magda; Szabo, Gabor; Dvortsak, Peter; Karpati, Marianna; and Somfai, Eva, 4,508,658, Cl. 260-465.00D.
Szcupak, Peter, to Chicago Rawhide Manufacturing Company. Multifunction fluid seal for dampers and the like. 4,508,020, Cl. 92-168.000.
Szczepanski, Henry: *See*—
Brunner, Hans-Georg; Schurter, Rolf; and Szczepanski, Henry, 4,508,560, Cl. 71-94.000.
Szporny, Laszlo : *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.
Tachikawa, Kyoji: *See*—
Wada, Hitoshi; Tachikawa, Kyoji; Yamada, Yutaka; and Murase, Satoru, 4,508,578, Cl. 148-11.50F.
Taft, Phillip A.: *See*—
Reynolds, Desmond H. J.; and Taft, Phillip A., 4,508,012, Cl. 91-512.000.
Taira, Kazuo: *See*—
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,508,481, Cl. 413-1.000.
Taizo Ayukawa: *See*—
Ayukawa, Taizo, 4,508,707, Cl. 424-70.000.
Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Computer control system for selecting a desired control program from a plurality of control programs. 4,509,143, Cl. 364-900.000.
Takahashi, Kimio: *See*—
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,507,942, Cl. 68-20.000.
Takahashi, Seikichi: *See*—
Usui, Koichi; Ogawa, Masahide; Goto, Kunio; Sato, Teiji; Tanaka, Masanori; Takahashi, Seikichi; Ono, Kinichi; and Kojima, Seiji, 4,509,064, Cl. 346-207.000.
Takaki, Akira; and Hosoi, Hideki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Graft copolymer useful as reinforcements for vinyl chloride polymers and process for preparing the same. 4,508,876, Cl. 525-310.000.
Takamatsu, Toshiaki; Funada, Fumiaki; Yasuda, Shuhei; and Matsuura, Masataka, to Sharp Kabushiki Kaisha. Electronic component with plurality of terminals thereon. 4,509,099, Cl. 361-413.000.
Takami, Toshihiro; and Isobe, Masahiro, to Toyota Jidosha Kabushiki Kaisha. Sealing device for timing belt cover and engine mount bracket. 4,508,072, Cl. 123-195.00C.
Takanashi, Masami: *See*—
Yashima, Michio; Komatsu, Akihiro; Takanashi, Masami; Hirose, Masashi; and Nakayama, Kengo, 4,508,944, Cl. 200-61.850.
Takano, Yoshiya, to Hitachi, Ltd. Fuel injection pump. 4,508,081, Cl. 123-450.000.
Takao, Mitsunori; and Mizuno, Toshiaki, to Nippondenso Co., Ltd. Method and apparatus for controlling internal combustion engines. 4,508,075, Cl. 123-339.000.
Takasaki, Kunihiko, to Takigen Zeizous Co., Ltd. Door handle unit. 4,508,377, Cl. 292-166.000.
Takase, Shinji: *See*—
Inoue, Akira; Takase, Shinji; Sekido, Yasuo; Mori, Masao; and Kubo, Tatsuki, 4,508,849, Cl. 502-263.000.
Takeda, Hideo: *See*—
Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,508,912, Cl. 549-253.000.
Takeda, Keisou; and Hirata, Toshiyuki, to Toyota Jidosha Kabushiki Kaisha. Heater coolant circulation system for vehicle providing matched heating for intake system and passenger compartment. 4,508,264, Cl. 237-12.30B.
Takeda, Takeshi; Machida, Yasuhiko; Kudoh, Yasuo; and Ikegaya, Kazutoshi, to Matsushita Electric Industrial Co., Ltd. Heat storage materials. 4,508,632, Cl. 252-70.000.
Takei, Yutaka; and Somezawa, Masashi, to Sony Corporation. Method for manufacturing a magnetic recording medium. 4,508,752, Cl. 427-48.000.
Takekawa, Junjiro: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
Takenaka Doboku Co., Ltd.: *See*—
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.
Takenaka Komuten Co., Ltd.: *See*—
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.
Takeuchi, Hirosato; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Retaining device for an inner tube of an evacuated double-tubing type solar heat collector. 4,508,104, Cl. 126-443.000.
Takeuchi, Nobuo; Kaneko, Tadashi; Nakazumi, Tadataka; and Yokooku, Katsuhiko, to Mazda Motor Corporation. Electrically operated engine throttle valve actuating device. 4,508,078, Cl. 123-399.000.
Takigen Zeizous Co., Ltd.: *See*—
Takasaki, Kunihiko, 4,508,377, Cl. 292-166.000.
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, to Fuji Photo Film Co., Ltd. Process for the preparation of highly sized paper. 4,508,751, Cl. 427-44.000.
Tamai, Katsumi: *See*—
Kamada, Kazumasa; Tamai, Katsumi; Shimomura, Yasunori; and Abe, Kazunori, 4,509,163, Cl. 369-284.000.
Tamaqua Cable Products Corporation: *See*—
French, Terry M., 4,508,500, Cl. 425-388.000.
Tamm, Horst: *See*—
Kimpel, Rolf-Dieter; Rauterberg, Ulf; and Tamm, Horst, 4,509,025, Cl. 335-85.000.
Tamura, Yoshiharu, to Nippon Electric Co., Ltd. Miniaturized antenna duplexer using SAW filter. 4,509,165, Cl. 370-38.000.
Tamura, Yoshio; Ito, Takaaki; and Morino, Toshiharu, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi-type carburetor. 4,508,664, Cl. 261-44.00C.
Tanabe Seiyaku Co., Ltd.: *See*—
Yoneda, Naoto; Kato, Jyoji; Hayashi, Kimiaki; Ochiai, Takashi; and Kinashi, Keizo, 4,508,727, Cl. 514-398.000.
Tanaka, Hideki: *See*—
Oda, Tatsuro; Tanaka, Hideki; Yoshioka, Sadashichi; and Yokooku, Katsuhiko, 4,508,076, Cl. 123-339.000.
Tanaka, Hiroshi; and Iwata, Yoshitaka, to Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha. Mirrors and method of manufacturing the same. 4,508,425, Cl. 350-641.000.
Tanaka, Kiichiro: *See*—
Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,508,912, Cl. 549-253.000.

Tanaka, Masanori: *See—*
Usui, Koichi; Ogawa, Masahide; Goto, Kunio; Sato, Teiji; Tanaka, Masanori; Takahashi, Seikichi; Ono, Kinichi; and Kojima, Seiji, 4,509,064, Cl. 346-207.000.

Tanaka, Tatsuo; and Kawamura, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Refrigerating systems having differential valve to control condenser outflow. 4,507,934, Cl. 62-210.000.

Tanaka, Toshinori; and Morishita, Akira, to Mitsubishi Denki Kabushiki Kaisha. Starter. 4,507,978, Cl. 74-7.00E.

Tanaka, Tsutomu; Yahagi, Mitsuhisa; and Watanabe, Shuichi, to Bridgestone Corporation. Pneumatic tires. 4,508,153, Cl. 152-362.0CS.

Tanaka, Yasuo: *See—*
Kusui, Akio; Morita, Shuji; Kudoh, Toshio; Tanaka, Yasuo; and Itoh, Hirotaka, 4,508,414, Cl. 339-143.00R.

Tanaka, Yutaka: *See—*
Fujimura, Yasushi; Okada, Takashi; Tanaka, Yutaka; and Ikeda, Yasunari, 4,509,071, Cl. 358-11.000.

Tanimura, Nobuyoshi; Yamamoto, Sho; Yoshizaki, Kazuo; and Akima, Isao, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. High speed semiconductor memory device having a high gain sense amplifier. 4,509,147, Cl. 365-190.000.

Tappan, Pam R.: *See—*
Tappan, R. Warner; and Tappan, Pam R., 4,508,319, Cl. 256-19.000.

Tappan, R. Warner; and Tappan, Pam R. Bender board mounting system. 4,508,319, Cl. 256-19.000.

Tarrant, Thomas G. Three part diskette labeling system. 4,507,883, Cl. 40-2.00R.

Tarui, Yuichi; and Obayashi, Toshio, to Marusho Industrial Co., Ltd. Protective coating stripping apparatus. 4,508,589, Cl. 156-584.000.

Tarzia, Giorgio: *See—*
Mariani, Luigi; and Tarzia, Giorgio, 4,508,730, Cl. 514-218.000.

Tatano, Masayoshi: *See—*
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,508,600, Cl. 204-27.000.

Tatonetti, Mario B.: *See—*
Stratton, Leo M.; Sipple, Kenneth J.; and Tatonetti, Mario B., 4,507,965, Cl. 73-517.00B.

Tatsumi, Kazuaki: *See—*
Murakami, Tsudoi; Nasu, Shoji; Tatsumi, Kazuaki; and Nagahama, Yasuhide, 4,508,953, Cl. 219-125.100.

Taube, Thomas: *See—*
Lades, Hans; Fink, Friedrich; Liebel, Siegfried; Lauterbach, Inge; Taube, Thomas; and Zollner, Dieter, 4,509,178, Cl. 373-93.000.

Taylor, Chandler R., Jr.; and Stauffer, Harold F., Jr., to A. H. Robins Company, Inc. Aryloxymethylpyrrolidinols and piperidinols having antidepressant, antiarrhythmic or hypotensive activity. 4,508,724, Cl. 514-317.000.

Taylor, Noel R.; and Taylor, Paul A., to CMD Enterprises, Inc. Automatic load seeking control for a pumpjack motor. 4,508,487, Cl. 417-12.000.

Taylor, Paul A.: *See—*
Taylor, Noel R.; and Taylor, Paul A., 4,508,487, Cl. 417-12.000.

Taylor, Paul D.; and Mocella, Michael T., to Atlantic Richfield Company. Oxidation of hydrocarbons. 4,508,923, Cl. 568-311.000.

Taylor, Stephen C., to Imperial Chemical Industries, PLC. Biochemical process. 4,508,822, Cl. 435-155.000.

Taylor, William M.; and Williams, Bolie C., III, to Cameron Iron Works, Inc. Ram-type blowout preventer. 4,508,312, Cl. 251-1.00A.

Technic, Inc.: *See—*
Johnson, Frank; Reese, Dieter; and Hirbour, Louis, 4,508,611, Cl. 204-202.000.

Technology Consulting Corporation: *See—*
Steiner, Erwin; and Stahlecker, Peter H., 4,507,832, Cl. 28-248.000.

Teckentrup, Hermann; and Hoffmann, Wilhelm, to AEG-Kanis Turbinenfabrik GmbH. Rotor rotating device for driving or driven machines. 4,507,926, Cl. 60-656.000.

Tecumseh Products Company: *See—*
Kandler, William C., 4,507,917, Cl. 60-323.000.

Teetz, Volker: *See—*
Heber, Helmut; Eberle, Reinhard; and Teetz, Volker, 4,508,644, Cl. 260-112.50R.

Tek-Matik, Inc.: *See—*
Bolle, Fred; Herronen, John R.; and Wright, Joseph M., 4,508,212, Cl. 198-781.000.

Tektronix, Inc.: *See—*
Mossaides, Paula X., 4,509,043, Cl. 340-721.000.

Temple, John D., to ASE (UK) Limited. Adjustable seat belt anchorage. 4,508,363, Cl. 280-808.000.

Templeton, James H., to Texaco Development Corporation. Process for the simultaneous production of 2-(2-aminoalkoxy)alkanol and morpholine. 4,508,896, Cl. 544-106.000.

Terashima, Masayuki: *See—*
Ohnishi, Kouhei; Ashikaga, Tadashi; and Terashima, Masayuki, 4,509,003, Cl. 318-800.000.

Tetsuta, Setsuya: *See—*
Najima, Tetsuo; Tetsuta, Setsuya; Sawata, Yukitaka; and Yamagishi, Masahiro, 4,508,620, Cl. 209-500.000.

Teumer, Henry E. Top-entry check valve. 4,508,139, Cl. 137-315.000.

Teva Pharmaceutical Industries Ltd.: *See—*
Sulitzeanu, Bernard, 4,508,829, Cl. 436-510.000.

Texaco Development Corporation: *See—*
Templeton, James H., 4,508,896, Cl. 544-106.000.

Texaco Inc.: *See—*
Kaufman, Benjamin J.; and Sung, Rodney L., 4,508,541, Cl. 44-71.000.

Mims, Donald S.; and Allen, Richard S., 4,508,172, Cl. 166-303.000.

Texas Industries, Inc.: *See—*
Harris, Philip H., 4,508,573, Cl. 106-100.000.

Texas Instruments Incorporated: *See—*
Childers, Jimmie D., 4,509,142, Cl. 364-900.000.
Joyner, Keith A.; and Foster, Ronald B., 4,507,851, Cl. 29-590.000.
McDavid, James M., 4,507,853, Cl. 29-591.000.
Reddy, Chitranjan N., 4,508,978, Cl. 307-482.000.

TG Strips, Inc.: *See—*
Granryd, Thorvald G., 4,508,150, Cl. 152-169.000.

Th. Kieserling & Albrecht: *See—*
Lorenz, Horst; and Schulte, Richard, 4,508,255, Cl. 228-5.100.

Theodore, Paris. Firearm training system. 4,508,508, Cl. 434-19.000.

Thermatool Corporation: *See—*
Rudd, Wallace C., 4,508,949, Cl. 219-61.200.

Therrien, Roger H., to NCR Canada Ltd-NCR Canada LTEE. Automatic, self-diagnosing, electro-optical imaging system. 4,509,077, Cl. 358-139.000.

Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel N.V. Process for countercurrent crystallization with recirculation. 4,508,553, Cl. 62-541.000.

Thomas, Eugene W.: *See—*
Belliveau, Dennis A.; and Thomas, Eugene W., 4,508,157, Cl. 164-63.000.

Thos. Hill & Company Limited: *See—*
Preedy, John R., 4,508,208, Cl. 198-751.000.

Thomas, William M.: *See—*
Moore, John W.; and Thomas, William M., 4,508,206, Cl. 198-365.000.

Thompson, Hugh A.: *See—*
Radel, Clifford J.; and Thompson, Hugh A., 4,508,256, Cl. 228-152.000.

Thompson, Lincoln. Hose end spray nozzle. 4,508,272, Cl. 239-318.000.

Thompson, William L.: *See—*
Keyes, Marion A.; and Thompson, William L., 4,509,041, Cl. 340-578.000.

Thomson-CSF: *See—*
Broussoux, Dominique; Facoetti, Hugues; and Micheron, Francois, 4,508,668, Cl. 264-22.000.
Buhart, Andre , 4,509,152, Cl. 367-123.000.
Camps, Marcel; Douillard, Alain; Dubois, Jean-Claude; Gazard, Maryse; Montheard, Jean-Pierre; Pascal, Thierry; and Seytre, Gerard, 4,508,639, Cl. 252-500.000.
Carpe, Michel; Collin, Claude; and Pontif, Marc, 4,509,206, Cl. 455-245.000.
Luginbuhl, Pierre; Parniere, Alain; and Argintaru, Lazare, 4,509,200, Cl. 455-12.000.

Thornblom, Jan: *See—*
Santen, Sven; and Thornblom, Jan, 4,508,040, Cl. 110-347.000.

Thorne, Keith. Fishing rod indicator. 4,507,890, Cl. 43-17.000.

Thornley, W. Ray; Wiser, James G.; and Lundahl, E. Cordell, to Ezra C. Lundahl, Inc. Automatic sonar activated height control for a header. 4,507,910, Cl. 56-10.200.

Thornton, Paul A.: *See—*
Houlbrook, Kenneth; and Thornton, Paul A., 4,508,245, Cl. 222-327.000.

Thrall Car Manufacturing Company: *See—*
Biegel, Robert A., 4,508,197, Cl. 188-47.000.

Throckmorton, Morford C., to Goodyear Tire & Rubber Company, The. Process for nonaqueous dispersion polymerization of butadiene in the presence of polymeric dispersing agents. 4,508,881, Cl. 526-201.000.

Thummel, Rudolph C.: *See—*
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,508,731, Cl. 514-472.000.

Thurston, John F., to Garrett Corporation, The. Fuel mass flow measurement and control system. 4,508,127, Cl. 137-8.000.

Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
Bauer, Gerhard; Hees, Eckart; and Beckers, Karl-Dieter, 4,508,241, Cl. 222-600.000.

Thyssen-Bornemisza, Inc.: *See—*
Choinski, Graydon J.; and Brooks, Dave W., 4,508,018, Cl. 92-128.000.

Tinker, Charles L., to Peabody ABC Corporation. Ventilation fan with noise-attenuating housing. 4,508,486, Cl. 415-119.000.

Titan Tool Inc.: *See—*
Malcolm, David H., 4,508,276, Cl. 239-691.000.

Tittmann, Frederick R. Doctor apparatus for coating machine. 4,508,050, Cl. 118-118.000.

TL Systems Corporation: *See—*
Trechsel, Hans W.; Larson, Allan B.; and Ryerse, John A., 4,508,148, Cl. 141-147.000.

TMC Corporation: *See—*
Svoboda, Josef; Nitschko, Theodor; and Wittmann, Heinz, 4,508,361, Cl. 280-628.000.

Toda, Toshiharu: *See—*
Kawanami, Norihide; Miyake, Yukinori; Kawamura, Kenji; and Toda, Toshiharu, 4,509,090, Cl. 361-119.000.

Todoko, Masaaki; and Watanabe, Hiroyuki, to Toyo Soda Manufacturing Co., Ltd. Process for producing a high purity cyclized polymer of isoprene. 4,508,877, Cl. 525-333.100.

Tofukuji, Ikuo: *See—*
Matsuzaki, Minoru; Hachimoto, Akihiko; Inoue, Takashi; Shirai, Hitoshi; Watanabe, Akira; and Tofukuji, Ikuo, 4,508,443, Cl. 354-402.000.

Togari, Hisashi, to Nippon Electric Co., Ltd. Single-ended push-pull circuit having a small through-current. 4,508,979, Cl. 307-513.000.

Toho Beslon Co., Ltd.: *See*—
Izumi, Kazuo; Shimazaki, Kenji; and Seki, Kenji, 4,508,851, Cl. 502-426.000.

Toke, Laszlo : *See*—
Fogassy, Elemer; Toke, Laszlo ; Faigl, Ferenc; Soos, Rudolf; Bozzay, Jozsef; Kolta, Rezso; Nemes, Jozsef; and Bencsik, Peter, 4,508,919, Cl. 562-401.000.

Tokoli, Emery G.; Horgan, Anthony M.; and Carmichael, Kathleen M., to Xerox Corporation. Process for the preparation of high purity phthalocyanine pigments. 4,508,650, Cl. 260-245.860.

Tokuno, Masateru; and Sawata, Tetsuya, to Rengo Co., Ltd. Surface winder. 4,508,279, Cl. 242-56.00R.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Asano, Masamichi; and Iwahashi, Hiroshi, 4,509,148, Cl. 365-230.000.
Fujioka, Yoshiharu; Onuki, Akio; and Sakamoto, Tomio, 4,509,084, Cl. 360-84.000.
Harata, Mituo; Hiraki, Hideaki; Uno, Shigeki; Sakuma, Kazuo; and Matsunaga, Kiyosi, 4,509,035, Cl. 338-35.000.
Kimoto, Katsumi, 4,509,154, Cl. 369-33.000.
Kohyama, Mitsuaki, 4,508,052, Cl. 118-651.000.
Koyama, Toshihiro; Anbe, Yoshiharu; and Funahashi, Takuo, 4,507,946, Cl. 72-17.000.
Minami, Kenji; Katagiri, Masaru; and Noguchi, Hideo, 4,509,067, Cl. 357-13.000.
Monden, Tsuneo; Ozu, Masao; and Ikegami, Satoshi, 4,508,495, Cl. 418-63.000.
Morinaga, Kaoru, 4,509,157, Cl. 369-75.200.
Naya, Masaru; and Ikeda, Tsuneichi, 4,508,023, Cl. 99-279.000.
Ohno, Junichi, 4,507,846, Cl. 29-571.000.
Shinozaki, Satoshi, 4,507,849, Cl. 29-576.00W.
Suzuki, Seigo, 4,509,188, Cl. 381-53.000.
Tanaka, Tatsuo; and Kawamura, Toshiaki, 4,507,934, Cl. 62-210.000.
Wada, Hitoshi; Tachikawa, Kyoji; Yamada, Yutaka; and Murase, Satoru, 4,508,578, Cl. 148-11.50F.

Tokyo Shubaura Denki Kabushiki Kaisha: *See*—
Sugimoto, Hiroshi; and Satoh, Kozo, 4,509,011, Cl. 324-309.000.

Tokyu Musashi Mfg. Co., Ltd.: *See*—
Suzuki, Tetsuo, 4,508,057, Cl. 119-3.000.

Tomczak, Stanislaus: *See*—
Weiss, Gunther; Worz, Paul; and Tomczak, Stanislaus, 4,509,033, Cl. 336-107.000.

Tomino, Tadashi; and Higuchi, Masayuki, to Sharp Kabushiki Kaisha. Integrated circuit package and display panel. 4,508,402, Cl. 339-17.0CF.

Tong, Francis F.; and Vaughter, Harmon P., to Zenith Electronics Corporation. UHF RF Amplifier and AGC system. 4,509,207, Cl. 455-251.000.

Tong, Mathias: *See*—
Boissel, Pierre; and Tong, Mathias, 4,508,967, Cl. 250-396.00R.

Topliss, John G.: *See*—
Sircar, Ila; Cain, Michael H.; and Topliss, John G., 4,508,718, Cl. 514-238.000.

Toray Industries, Inc.: *See*—
Miura, Yasuki; Motegi, Masahiko; and Okabe, Kazuo, 4,508,782, Cl. 428-409.000.
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhisa, Seikichi, 4,508,918, Cl. 560-241.000.

Torley, Jozsef: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.

Toshiba Corporation: *See*—
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,509,201, Cl. 455-73.000.

Toth, Douglas J., to Under Sea Industries, Inc. Diaphragm assembly for scuba diving regulator. 4,508,118, Cl. 128-204.260.

Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. 4-Hydroxy-benzhydrols, process for their preparation and pharmaceutical compositions containing them. 4,508,926, Cl. 568-766.000.

Toth, Tibor, to Behringwerke Aktiengesellschaft. Anti-streptolysin O latex reagent and process for the preparation thereof. 4,508,831, Cl. 436-512.000.

Totoku Co., Ltd.: *See*—
Morimoto, Tsuyoshi, 4,508,321, Cl. 256-65.000.

Touchon, Pierre: *See*—
Aubry, Claude; Chaumette, Jacques; and Touchon, Pierre, 4,508,783, Cl. 428-410.000.

Towmotor Corporation: *See*—
Melocik, Grant C.; and Pickering, William, 4,508,999, Cl. 318-331.000.

Toyo Kohan Co., Ltd.: *See*—
Nemoto, Tadashi; Fukumoto, Ryoichi; Kawamura, Hiroaki; Kondo, Yoshikazu; and Inui, Tsuneo, 4,508,601, Cl. 204-38.500.
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,508,790, Cl. 428-632.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,508,481, Cl. 413-1.000.
Kumasaka, Hideo; and Fujisawa, Kazuo, 4,508,569, Cl. 106-14.120.

Toyo Soda Manufacturing Co., Ltd.: *See*—
Todoko, Masaaki; and Watanabe, Hiroyuki, 4,508,877, Cl. 525-333.100.

Toyota Jidosha Kabushiki Kaisha: *See*—
Fujiwara, Kousyun, 4,508,254, Cl. 227-116.000.
Ito, Toshimitsu; and Norota, Kazuhiko, 4,508,086, Cl. 123-492.000.
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,508,682, Cl. 420-590.000.
Takami, Toshihiro; and Isobe, Masahiro, 4,508,072, Cl. 123-195.00C.
Takeda, Keisou; and Hirata, Toshiyuki, 4,508,264, Cl. 237-12.30B.
Tamura, Yoshio; Ito, Takaaki; and Morino, Toshiharu, 4,508,664, Cl. 261-44.00C.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Numazawa, Akio; Sakai, Ichio; Kumagai, Tadanobu; and Nishikawa, Seiichi, 4,508,522, Cl. 464-11.000.

Trabbic, Thomas D. Hydraulic device. 4,507,923, Cl. 60-583.000.

Tracor Hydronautics, Inc.: *See*—
Conn, Andrew F.; Lindenmuth, William T.; and Frederick, Gary S., 4,508,577, Cl. 134-1.000.

Tracy, John M.: *See*—
Gunning, William J., III; and Tracy, John M., 4,508,964, Cl. 250-201.000.

Traugott, Stephen C.: *See*—
Djordjevic, Borislav B.; and Traugott, Stephen C., 4,507,969, Cl. 73-644.000.

Trechsel, Hans W.; Larson, Allan B.; and Ryerse, John A., to TL Systems Corporation. Pharmaceutical filler apparatus. 4,508,148, Cl. 141-147.000.

Treiber, Fritz F., to Hobart Corporation. Film and package handling apparatus for wrapping machine. 4,507,904, Cl. 53-203.000.

Trescher, Viktor: *See*—
Stopp, Gerhard; Karkossa, Horst; and Trescher, Viktor, 4,508,920, Cl. 562-423.000.

Treutlein, Dieter: *See*—
Hofmann, Heinrich; and Treutlein, Dieter, 4,508,397, Cl. 384-510.000.

Tricerri, Silvia Z.; Casagrande, Cesare; De Marchi, Franco; and Nicola, Massimo, to Pierrel S.p.A. Hydroxyimino and alkoxyimino derivatives of 1,4-dihydropyridine and anti-hypertensive compositions. 4,508,719, Cl. 514-236.000.

Triolo, Philip M.: *See*—
Andrade, Joseph D.; Triolo, Philip M.; Smith, Lee M.; and Miller, Frank J., 4,508,606, Cl. 204-169.000.

Tromp, Wouter T.: *See*—
Bittner, Franz; Poortman, Boudewijn J.; Rademacher-Dubbick, Kristian; Roskam, Abram K.; Stevens, Udo; and Tromp, Wouter T., 4,507,975, Cl. 73-861.120.

TRW Inc.: *See*—
McIver, George W.; Nakano, Kenichi; and Berenz, John J., 4,507,845, Cl. 29-571.000.
Rau, Jim L., 4,507,920, Cl. 60-443.000.

Tsao, Kuey-Yeou: *See*—
Busta, Heinz H.; Tsao, Kuey-Yeou; White, Wayne D.; and Loeppert, Peter V., 4,508,613, Cl. 204-418.000.

TSE International: *See*—
Plater, Robert J., 4,508,281, Cl. 242-54.00R.

Tsipenyuk, Pyotr: *See*—
Weltman, David; and Tsipenyuk, Pyotr, 4,508,403, Cl. 339-28.000.

Tsipov, Mikhail E. Shower valve. 4,508,141, Cl. 137-560.000.

Tsividis, Yannis: *See*—
Banu, Mihai; and Tsividis, Yannis, 4,509,019, Cl. 330-107.000.

Tsuchiya, Yuzoh: *See*—
Harada, Kazuhiro; Tsuchiya, Yuzoh; Sekiguchi, Nobuo; and Ishikawa, Toshio, 4,508,251, Cl. 226-25.000.

Tsuji, Sadahiko: *See*—
Kitagishi, Nozomu; and Tsuji, Sadahiko, 4,508,433, Cl. 350-454.000.

Tsuji, Shinsaku: *See*—
Nishiyama, Taichiro; and Tsuji, Shinsaku, 4,507,980, Cl. 74-473.00R.

Tsumoto, Akio; and Kano, Hisae, to Nissan Motor Company, Limited. Gutter structure for a vehicle body. 4,508,382, Cl. 296-213.000.

Tsutsumi, Syuitsu: *See*—
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,509,201, Cl. 455-73.000.

Tubing Testors, Inc.: *See*—
Boutwell, Johnie R., 4,507,954, Cl. 73-40.700.

Tuggle, Lloyd H.; and Ferlito, Michael J., to Emerson Electric Co. Fuel mixture enrichment system for internal combustion engine. 4,508,068, Cl. 123-187.50R.

Tukamoto, Kenkichi. Needle. 4,508,119, Cl. 128-329.00A.

Tulenko, William, Jr. Collapsible end table. 4,508,038, Cl. 108-135.000.

Turek, Evan J.: *See*—
Fulger, Charles V.; Stahl, Howard D.; Turek, Evan J.; and Bayha, Renee, 4,508,745, Cl. 426-594.000.

Turner, Michael J. B.: *See*—
Berry, Paul S.; Kettlewell, Peter J.; and Turner, Michael J. B., 4,508,062, Cl. 119-82.000.

Turner, Robert; and Seabrook, Robert A., to Ford Motor Company. Steering column assembly. 4,507,982, Cl. 74-493.000.

Tuss, John J., to Warner & Swasey Company, The. Coordinate measuring machine with a self aligning pneumatic counterbalance. 4,507,868, Cl. 33-1.00M.

UBE Industries, Ltd.: *See*—
Inaike, Toshihiro; Ushimi, Katsuhiko; Yamamoto, Shuji; and Inoue, Toshihiro, 4,508,766, Cl. 427-388.200.

Uchiyama, Shintaro, to Fuji Jukogyo Kabushiki Kaisha. Shift device for operating a transmission for a four-wheel drive vehicle. 4,508,190, Cl. 180-247.000.
Uchizaki, Iwao: *See*—
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.
Ueda, Atsushi: *See*—
Komurasaki, Satoshi; Ueda, Atsushi; Morimoto, Yoshinobu; and Kadota, Youichi, 4,508,079, Cl. 123-425.000.
Ueda, Kaichi: *See*—
Madarame, Michimasa; and Ueda, Kaichi, 4,507,935, Cl. 62-227.000.
Ueda, Nobuhiro: *See*—
Wakabayashi, Noriaki; Fukumoto, Terumichi; and Ueda, Nobuhiro, 4,509,001, Cl. 318-687.000.
Ueno, Hiroshi: *See*—
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,508,481, Cl. 413-1.000.
Uenozono, Hiroko: *See*—
Fujii, Tadashi; Yamaguchi, Tomoyuki; Murakami, Kakuji; Kawakami, Tomiko; and Uenozono, Hiroko, 4,508,570, Cl. 106-20.000.
Ueoka, Isao: *See*—
Miyake, Masayoshi; Ueoka, Isao; Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Yamamoto, Teruyuki, 4,508,779, Cl. 428-383.000.
Uffner, William E.: *See*—
Muncaster, John W.; Roberts, Michael G.; Rowlett, R. David; Hoitink, Todd B.; Uffner, William E.; and White, Robert N., 4,508,770, Cl. 428-63.000.
Uhl, Jurgen: *See*—
Hausberg, Hans-Heinrich; Prucher, Helmut; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus, 4,508,732, Cl. 514-466.000.
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, to Asahi Glass Company Ltd. Fluorinated cation exchange membrane and use thereof in electrolysis of an alkali metal halide. 4,508,603, Cl. 204-98.000.
Ultramed, Inc.: *See*—
Gardineer, Bayard: and Vilkomerson, David, 4,508,122, Cl. 128-660.000.
Umeda, Jun-ichi; Nakashima, Hisao; Kajimura, Takashi; and Kuroda, Takao, to Hitachi, Ltd. Phase-locked semiconductor laser device. 4,509,173, Cl. 372-50.000.
Umeda, Yasukazu: *See*—
Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, 4,509,143, Cl. 364-900.000.
Umino, Isamu: *See*—
Sogo, Hiroyuki; Ohsawa, Zenichi; Umino, Isamu; and Nishida, Haruki, 4,509,208, Cl. 455-317.000.
Under Sea Industries, Inc.: *See*—
Toth, Douglas J., 4,508,118, Cl. 128-204.260.
Union Carbide Corporation: *See*—
Beran, Debra L.; Cann, Kevin J.; Jorgensen, Robert J.; Karol, Frederick J.; Maraschin, Norma J.; and Marcinkowsky, Arthur E., 4,508,842, Cl. 502-112.000.
Goddard, John B.; and Johnson, William N., 4,508,701, Cl. 423-61.000.
Union Oil Company of California: *See*—
Fenton, Donald M.; Delaney, Dennis D.; and Bingham, F. Emmett, 4,508,537, Cl. 23-293.00S.
Young, Donald C., 4,508,558, Cl. 71-30.000.
United Kingdom Atomic Energy Authority: *See*—
Moseley, Patrick T.; and Bridger, Nevill J., 4,507,855, Cl. 29-623.100.
Moseley, Patrick T.; and Hill, Michael R. H., 4,508,147, Cl. 141-1.100.
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Agriculture: *See*—
Bean, Maura M.; Nishita, Kazuko D.; and Hoops, Elizabeth A., 4,508,736, Cl. 426-19.000.
Yagi, Toshiharu; and Pavlath, Attila E., 4,508,781, Cl. 428-409.000.
Air Force: *See*—
Schack, Carl J.; and Christe, Karl O., 4,508,662, Cl. 260-550.000.
Army: *See*—
Jacobs, Harold; Dixon, Samuel, Jr.; and Malecki, Edmund E., 4,509,009, Cl. 324-95.000.
Sayles, David C., 4,508,929, Cl. 568-923.000.
Swarthout, Richard L., 4,508,215, Cl. 206-3.000.
Energy: *See*—
Barclay, John A., 4,507,927, Cl. 62-3.000.
Delnick, Frank M.; Guidotti, Ronald A.; and McCarthy, David K., 4,508,796, Cl. 429-112.000.
Knoedler, Reinhard; Nelson, Paul A.; Shimotake, Hiroshi; and Battles, James E., 4,508,797, Cl. 429-184.000.
Kruse, Lyle W., 4,509,042, Cl. 340-600.000.
Russell, Janet A.; and Riemath, William F., 4,508,886, Cl. 528-1.000.
Health and Human Services: *See*—
Merril, Carl R.; and Goldman, David, 4,508,820, Cl. 435-29.000.
National Aeronautics and Space Administration: *See*—
Clark, Keith H., 4,508,296, Cl. 244-158.00R.
Jain, Atul, 4,509,048, Cl. 343-5.0CM.
Johnson, Dean L., 4,507,928, Cl. 62-3.000.
Kavaya, Michael J., 4,509,132, Cl. 364-571.000.
Menzies, Robert T.; and Rutledge, Charles W., 4,509,130, Cl. 364-556.000.
Navy: *See*—
Elton, Raymond C.; Dixon, Robert H.; and Ford, James L., 4,508,055, Cl. 118-724.000.
Karwacki, Francis A.; and Griffin, Joseph, 4,509,014, Cl. 324-305.000.
Krasnjanski, David, 4,509,131, Cl. 364-565.000.
Lewis, Bernard L., 4,509,051, Cl. 343-17.2PC.
Lorch, Daniel L., 4,508,294, Cl. 244-122.0AG.
Ramirez, Joe D.; Gorin, Steven E.; and Garnett, William A., 4,508,490, Cl. 417-234.000.
U.S. Philips Corporation: *See*—
Bohlen, Heinz; and Demmel, Enzio, 4,508,992, Cl. 315-5.390.
Gravesteijn, Dirk J.; Steenbergen, Christiaan; Van der Veen, Jan; and Nijssen, Wilhelmus P. M., 4,508,811, Cl. 430-270.000.
Jager, Lothar; Peter, Anton; and Winkler, Reinhard, 4,509,087, Cl. 360-130.210.
Kasperkovitz, Wolfdietrich G., 4,509,205, Cl. 455-194.000.
Kroner, Klaus, 4,509,082, Cl. 360-37.100.
Post, Sieghard, 4,509,032, Cl. 336-59.000.
Ridel, Philippe, 4,509,022, Cl. 330-284.000.
Stockdale, Trevor J., 4,508,451, Cl. 356-315.000.
Van de Leest, Renaat E.; and Gijsbers, Jan C., 4,509,161, Cl. 369-275.000.
van de Plassche, Rudy J.; and Dijkmans, Eise C., 4,509,020, Cl. 330-274.000.
Van Hoff, Isidoor K.; and Van Den Bergh, Johannes H. P. M., 4,508,791, Cl. 428-663.000.
van Uden, Albertus J. P. M., 4,509,021, Cl. 330-282.000.
Zebrowski, Tadeusz, 4,507,979, Cl. 74-89.220.
United States Surgical Corporation: *See*—
Green, David T., 4,508,253, Cl. 227-19.000.
U.S. Truck Cranes, Inc.: *See*—
Shoff, Bernell D., 4,508,014, Cl. 91-527.000.
United Technologies Corporation: *See*—
Amoroso, Salvatore, Jr.; and Conklin, Russell W., 4,509,050, Cl. 343-5.0SM.
Levesque, Adelard, Jr.; and Rembold, John P., 4,509,110, Cl. 364-153.000.
Universal Instruments Corporation: *See*—
Kukowski, John A.; Soth, Henry J.; and Gay, William H., 4,507,862, Cl. 29-837.000.
University of Georgia Research Foundation, Inc.: *See*—
Booth, Nicholas H.; Hatch, Roger C.; and Crawford, Lester M., 4,508,715, Cl. 514-280.000.
University of Kentucky Research Foundation: *See*—
Duncan, George A., 4,508,482, Cl. 414-26.000.
University of Tennessee Research Corporation: *See*—
Mamantov, Gleb, 4,508,795, Cl. 429-103.000.
University Patents, Inc.: *See*—
Mochel, Margaret E.; and Humphreys, Colin J., 4,508,952, Cl. 219-121.0EH.
Uno, Hiroshi: *See*—
Uno, Tadao; and Uno, Hiroshi, 4,508,527, Cl. 493-357.000.
Uno, Shigeki: *See*—
Harata, Mituo; Hiraki, Hideaki; Uno, Shigeki; Sakuma, Kazuo; and Matsunaga, Kiyosi, 4,509,035, Cl. 338-35.000.
Uno, Tadao; and Uno, Hiroshi. Method and apparatus for quantitatively dividing zigzag folded sheet of paper. 4,508,527, Cl. 493-357.000.
Uozumi, Osamu, to Ricoh Company, Ltd. Sheet separation system for thermal transfer type recording apparatus. 4,509,060, Cl. 346-76.0PH.
Upjohn Company, The: *See*—
Coleman, James H., 4,508,726, Cl. 514-220.000.
Kaplan, Lester J., 4,508,911, Cl. 548-407.000.
Ushimi, Katsuhiko: *See*—
Inaike, Toshihiro; Ushimi, Katsuhiko; Yamamoto, Shuji; and Inoue, Toshihiro, 4,508,766, Cl. 427-388.200.
Ushio Denki Kabushiki Kaisha: *See*—
Arai, Tetsuji, 4,508,960, Cl. 219-388.000.
Uskokovic, Milan R.: *See*—
Baggiolini, Enrico G.; Batcho, Andrew D.; Boris, Alfred; and Uskokovic, Milan R., 4,508,651, Cl. 260-397.200.
USM Corporation: *See*—
Prichard, Arthur W., 4,508,956, Cl. 219-215.000.
Usui, Koichi; Ogawa, Masahide; Goto, Kunio; Sato, Teiji; Tanaka, Masanori; Takahashi, Seikichi; Ono, Kinichi; and Kojima, Seiji, to Mizusawa Industrial Chemicals, Ltd. Heat-sensitive recording paper and filler therefor. 4,509,064, Cl. 346-207.000.
Uvex Winter Optik GmbH: *See*—
Stepan, Walter, 4,507,809, Cl. 2-424.000.
Uyama, Shintaro: *See*—
Shimamura, Morihiko; and Uyama, Shintaro, 4,508,009, Cl. 91-376.00R.
V. E. Anderson Mfg. Co.: *See*—
Anderson, Richard N., 4,507,894, Cl. 49-449.000.
Vaccari, Franco; and Balbinot, Renzo, to Nordica S.p.A. Heater device, particularly for ski boots. 4,507,877, Cl. 36-2.600.
Vachek, Josef, to Bodenseewerk Geratetechnik GmbH. Hydraulic filter for eliminating slow pressure fluctuations. 4,507,971, Cl. 73-707.000.
Valeo: *See*—
Herbulot, Jean; and Jumel, Bernard, 4,508,199, Cl. 188-250.00B.
Valley Industries, Inc.: *See*—
Everard, Lloyd D., 4,508,126, Cl. 135-89.000.

Vandamme, Detlef, to Siemens Aktiengesellschaft. Electric motor drive for a slow-running annular rotor of a processing machine. 4,508,986, Cl. 310-67.00R.

Van de Leest, Renaat E.; and Gijsbers, Jan C., to U.S. Philips Corporation. Optically readable information disc provided with a reflective optical structure. 4,509,161, Cl. 369-275.000.

Van Den Bergh, Johannes H. P. M.: *See—*
Van Hoff, Isidoor K.; and Van Den Bergh, Johannes H. P. M., 4,508,791, Cl. 428-663.000.

van de Plassche, Rudy J.; and Dijkmans, Eise C., to U.S. Philips Corporation. Push-pull amplifier. 4,509,020, Cl. 330-274.000.

Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., to Allied Corporation. Process to form amorphous, crystallizable thermoplastic polymers. 4,508,769, Cl. 428-36.000.

van der Lely, Cornelis. Soil cultivating implements. 4,508,179, Cl. 172-49.500.

van der Malen, Bernardus G. M.: *See—*
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,508,553, Cl. 62-541.000.

Vandermeerssche, Gaston A. Abrasion testing machine. 4,507,953, Cl. 73-7.000.

Van der Veen, Jan: *See—*
Gravesteijn, Dirk J.; Steenbergen, Christiaan; Van der Veen, Jan; and Nijssen, Wilhelmus P. M., 4,508,811, Cl. 430-270.000.

Vandevoir, Claude A.; and Geiser, Markus, to Sameca S.A. Bar-guidance equipment for an automatic lathe. 4,507,992, Cl. 82-2.700.

van Dijk, Jacob; Renken, Johannes W.; Dekker, Jan G.; and Helmond, Johannes, to National Distillers and Chemical Corporation. Process for the trimerization of unsaturated fatty acids. 4,508,652, Cl. 260-407.000.

Van Hoff, Isidoor K.; and Van Den Bergh, Johannes H. P. M., to U.S. Philips Corporation. Electric wire with a copper, silver, or gold core clad with tungsten, molybdenum or tungsten/molybdenum alloy. 4,508,791, Cl. 428-663.000.

Van Meurs, Hubrecht C. A.: *See—*
Voetter, Heinz; Darton, Richard C.; Van Meurs, Hubrecht C. A.; and Krishna, Rajamani, 4,508,041, Cl. 110-347.000.

Vannier, Chantal: *See—*
Lacour, Bernard; Maillet, Marc; Vannier, Chantal; and de Witte, Olivier, 4,509,174, Cl. 372-82.000.

van Uden, Albertus J. P. M., to U.S. Philips Corporation. Circuit for amplifying and/or attenuating a signal. 4,509,021, Cl. 330-282.000.

VanVoorst, Gene A.: *See—*
Hirsch, John L.; and VanVoorst, Gene A., 4,508,528, Cl. 493-426.000.

Van Wezel, Antonius L., to De Staat Der Nederlanden, Vertegenwoordigd doozde Minister van volksgezondheid en Milieuhygiene. Virus vaccines and process for preparing the same. 4,508,708, Cl. 424-89.000.

Varian Associates, Inc.: *See—*
Holden, Scott C., 4,508,161, Cl. 165-1.000.

Vasilia Ltd.: *See—*
Banks, Julia G.; and Ficho, William, 4,508,156, Cl. 164-35.000.

Vaughter, Harmon P.: *See—*
Tong, Francis F.; and Vaughter, Harmon P., 4,509,207, Cl. 455-251.000.

VDO Adolf Schindling AG: *See—*
Hufnagel, Walter; and Kreuz, Alois, 4,507,960, Cl. 73-187.000.
Schlick, Horst; Hofert, Paul; and Caramel, Rudolf, 4,508,458, Cl. 368-76.000.

VE-Wissenschaftlich-Technischer Betrieb Keramik: *See—*
Shinjo, Katsumi, 4,507,859, Cl. 29-798.000.

Vee Arc Corporation: *See—*
Hickman, Mark R.; and Brown, Michael M., 4,508,976, Cl. 307-270.000.

Veiser, Elmar: *See—*
Ramesohl, Hubert; Seelen, Fritz; Filges, Ralf; Schroder, Karlheinz; and Veiser, Elmar, 4,508,503, Cl. 432-109.000.

Venus Scientific Inc.: *See—*
Gallios, George C., 4,509,108, Cl. 363-45.000.

Verderico, Joseph P.: *See—*
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Vereczkey, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.

Vereen, William J. Automated tracking process for manufacturing and inventory. 4,509,123, Cl. 364-300.000.

Verga, Giuseppe: *See—*
Sisti, Giorgio; and Verga, Giuseppe, 4,508,685, Cl. 422-54.000.

Vermilyea, Mark E., to General Electric Company. Correction coil assembly for NMR magnets. 4,509,030, Cl. 335-216.000.

Versic, Ronald J.: *See—*
Olson, Roger; and Versic, Ronald J., 4,508,760, Cl. 427-213.340.

Vetter, Helmut: *See—*
Foll, Eberhard; Holl, Peter; and Vetter, Helmut, 4,508,750, Cl. 427-44.000.

Victor Company of Japan, Limited: *See—*
Masuda, Isao; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Komura, Makoto, 4,509,155, Cl. 369-48.000.

Victor, John G., to Institute of Gas Technology. Ethanol extraction process. 4,508,928, Cl. 568-916.000.

Vieau, Robert G.; and Klempke, William D., to Loram Maintenance of Way, Inc. Grinding head assembly. 4,507,897, Cl. 51-209.00R.

Viljanmaa, Antti K. Drying press for hides. 4,507,943, Cl. 69-41.000.

Vilkomerson, David: *See—*
Gardineer, Bayard; and Vilkomerson, David, 4,508,122, Cl. 128-660.000.

Vincent, Michel; Remond, Georges; and Laubie, Michel, to Adir. Substituted iminodiacids, their preparation and pharmaceutical compositions containing them. 4,508,729, Cl. 514-419.000.

Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, to Givaudan Corporation. 2-Alkyl-3-haloisothiazolium salts and their derivatives. 4,508,908, Cl. 548-213.000.

Viscogliosi, Marcello: *See—*
Schachter, Rozalie; Viscogliosi, Marcello; and Bunz, Lewis A., 4,509,066, Cl. 357-2.000.

Vista Polymers Inc.: *See—*
Rickert, Robert E., 4,507,841, Cl. 29-402.080.

Visual Information Institute, Inc.: *See—*
Harshbarger, John H., 4,509,079, Cl. 358-165.000.

Vittay, Pal: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,508,926, Cl. 568-766.000.

Voetter, Heinz; Darton, Richard C.; Van Meurs, Hubrecht C. A.; and Krishna, Rajamani, to Shell Internationale Research Maatschappij B.V. Process for the combustion of coke present on solid particles and for the production of recoverable heat from hydrocarbon-bearing solid particles and apparatus therefor. 4,508,041, Cl. 110-347.000.

Vogelpohl, David R.: *See—*
Burger, William A.; Embree, David M.; Singer, Martin H.; and Vogelpohl, David R., 4,508,937, Cl. 179-84.00T.

Vogl, Otto: *See—*
Yoshida, Shohei; and Vogl, Otto, 4,508,882, Cl. 526-259.000.

Voisin, Paul H.: *See—*
Lee, Wai-Hon; and Voisin, Paul H., 4,508,808, Cl. 430-146.000.

Volkert, Otto: *See—*
Grabhoefer, Herbert; and Volkert, Otto, 4,508,774, Cl. 428-220.000.

Volkert, Wynn A.: *See—*
Simon, Jaime; Wilson, David A.; and Volkert, Wynn A., 4,508,704, Cl. 424-14.000.

Vollmar, Kurt, to Pfaff Industriemaschinen GmbH. Presser foot device on a sewing machine. 4,508,043, Cl. 112-235.000.

vonBergen, Otto E. Wire fence strand spreader. 4,507,987, Cl. 81-485.000.

von Seyerl, Joachim, to SKW Trostberg Aktiengesellschaft. Agent and method for the stabilization of polyvinyl chloride against heat and light. 4,508,638, Cl. 252-401.000.

Vukovich, William J.: *See—*
Fattic, Gerald T.; and Vukovich, William J., 4,509,125, Cl. 364-424.100.

W. R. Grace & Co.: *See—*
Winyall, Milton E., 4,508,607, Cl. 204-180.00P.

W. Schlafhorst & Co.: *See—*
Kupper, Wilhelm, 4,508,227, Cl. 209-927.000.

Wada, Hideo, to Clarion Co., Ltd. Pointer mechanism. 4,508,048, Cl. 116-291.000.

Wada, Hitoshi; Tachikawa, Kyoji; Yamada, Yutaka; and Murase, Satoru, to National Research Institute; and Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing fine filamentary Nb-Ti based alloy superconducting wire. 4,508,578, Cl. 148-11.50F.

Wakabayashi, Noriaki; Fukumoto, Terumichi; and Ueda, Nobuhiro, to Matsushita Electric Industrial Co., Ltd. Brushless linear servomotor. 4,509,001, Cl. 318-687.000.

Wakeman, Russell J., to Colt Industries Operating Corp. Fuel metering apparatus with multi-stage fuel metering valve assembly. 4,508,091, Cl. 123-586.000.

Waldron, Clifford R.: *See—*
Fairbairn, Leroy W.; and Waldron, Clifford R., 4,507,858, Cl. 29-747.000.

Waldrop, T. William: *See—*
Campbell, Willis R.; Hunt, Larry J.; and Waldrop, T. William, 4,508,359, Cl. 280-463.000.

Walker, Thad O.; Simpson, Jay P.; and Dearing, Harry L., to O'Brien-Goins-Simpson & Associates. Fast drilling invert emulsion drilling fluids. 4,508,628, Cl. 252-8.50P.

Walkover Limited: *See—*
Ridgeon, Paul W., 4,508,248, Cl. 222-623.000.

Wall, Berth-Ove G.: *See—*
Hansson, Ingvar J. M.; Hakansson, Hakan B.; Igefjord, Magnus G. K.; and Wall, Berth-Ove G., 4,507,854, Cl. 29-612.000.

Wallace, Richard B., to Oakland Corporation, The. Method and apparatus for making friction locking threaded fasteners. 4,508,759, Cl. 427-195.000.

Wallis, Bernard J. Method and apparatus for cutting corrugated strip. 4,507,948, Cl. 72-185.000.

Wang, An; and Brown, Phillip P., to Wang Laboratories, Inc. High density dot matrix printer. 4,508,463, Cl. 400-124.000.

Wang Laboratories, Inc.: *See—*
Cheung, Kin L., 4,509,140, Cl. 364-900.000.
Wang, An; and Brown, Phillip P., 4,508,463, Cl. 400-124.000.

Wang, Tsing-Chow; and Josephs, Richard M., to Sperry Corporation. High density Josephson junction memory circuit. 4,509,146, Cl. 365-162.000.

Ward, Leslie M. Universal joint. 4,508,373, Cl. 285-226.000.

Warncke, Ernst, to Dragerwerk AG. Protective breathing hood for escape purposes. 4,508,115, Cl. 128-201.230.

Warner Electric Brake & Clutch Company: *See—*
Booth, Dwight E., 4,509,091, Cl. 361-154.000.

Warner-Lambert Company: *See—*
Sircar, Ila; Cain, Michael H.; and Topliss, John G., 4,508,718, Cl. 514-238.000.
Warner & Swasey Company, The: *See—*
Silverman, Martin L.; and Shook, Donald P., 4,507,993, Cl. 82-36.00A.
Tuss, John J., 4,507,868, Cl. 33-1.00M.
Warren, Walter R.: *See—*
Hitt, Gerard J.; Nowakowski, Victor A.; and Warren, Walter R., 4,507,962, Cl. 73-384.000.
Wartman, Thomas G., to Minnesota Mining and Manufacturing Company. Light-desensitizable transfer medium with photooxidizable reactant and oxygen-sensitizing dye. 4,508,810, Cl. 430-201.000.
Washington University: *See—*
Needleman, Philip, 4,508,712, Cl. 514-11.000.
Watanabe, Akira: *See—*
Matsuzaki, Minoru; Hachimoto, Akihiko; Inoue, Takashi; Shirai, Hitoshi; Watanabe, Akira; and Tofukuji, Ikuo, 4,508,443, Cl. 354-402.000.
Watanabe, Eiji: *See—*
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,508,600, Cl. 204-27.000.
Watanabe, Hiroyuki: *See—*
Todoko, Masaaki; and Watanabe, Hiroyuki, 4,508,877, Cl. 525-333.100.
Watanabe, Kenji, to Katsuji BABA, a part interest. Internal combustion engine of hydrogen gas. 4,508,064, Cl. 123-1.00A.
Watanabe, Koichi: *See—*
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,508,600, Cl. 204-27.000.
Watanabe, Michio: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,508,481, Cl. 413-1.000.
Watanabe, Ryuzo: *See—*
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
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Wauer, John C.: *See—*
Haendel, Richard S.; and Wauer, John C., 4,509,049, Cl. 343-7.500.
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Bruns, Engelbert; and Osterholt, Gerd, to Carl Still GmbH & Co. KG, Firma. Apparatus for dry cooling of coke. 4,508,596, Cl. 202-227.000.
Weber, Klaus; Hujer, Friedrich; and Schaner, Ferdinand, to Agfa-Gevaret Aktiengesellschaft. Container for photographic films and prints. 4,508,224, Cl. 206-455.000.
Webster, Owen W., to Du Pont de Nemours, E. I., and Company. "Living" polymers and process for their preparation. 4,508,880, Cl. 526-190.000.
Weight, John P., to National Research Development Corporation. Resolution transducers, systems and methods for the transmission and/or reception of waves propagated by vibration. 4,509,153, Cl. 367-140.000.
Weinberg, Roger A.; and Glaser, Mark C., to Baker Oil Tools, Inc. Selective casing bore receptacle. 4,508,167, Cl. 166-120.000.
Weinstock, Leonard M.: *See—*
Amato, Joseph S.; Weinstock, Leonard M.; and Karady, Sandor, 4,508,921, Cl. 562-443.000.
Weiss, Gunther; Worz, Paul; and Tomczak, Stanislaus, to Robert Bosch GmbH. Ignition coil construction for engine ignition system. 4,509,033, Cl. 336-107.000.
Weitzel, Stephen D.: *See—*
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Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., 4,508,769, Cl. 428-36.000.
Weltman, David; and Tsipenyuk, Pyotr, to O.K. Industries Inc. Low profile IC test clip. 4,508,403, Cl. 339-28.000.
Wenzel, Werner: *See—*
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Wenzel, William B. Powered roller skates. 4,508,187, Cl. 180-181.000.
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Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille G., 4,508,720, Cl. 514-247.000.
Werner, John. Method of sealing and protecting a plastic lined pipe joint. 4,507,842, Cl. 29-451.000.
Werner, Walter M.: *See—*
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Werth, Dee A.: *See—*
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Fey, Maurice G., 4,509,177, Cl. 373-60.000.
Lambert, James L., 4,508,461, Cl. 374-161.000.
Pavlik, Dennis; and Gronholm, Richard A., 4,508,985, Cl. 310-55.000.
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Weyer, Paul P. Rotary actuated support. 4,508,016, Cl. 92-33.000.
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Wheeler, Everett T. Window casement. 4,508,154, Cl. 160-98.000.
White, Frank L. Grease gun extension assembly. 4,508,372, Cl. 285-175.000.
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Whitehead, Howard A., to Kimberly-Clark Corporation. Convolutely wound paper tampon tube. 4,508,531, Cl. 604-14.000.
Whiteside, George D.: *See—*
Costa, Peter F.; and Whiteside, George D., 4,508,440, Cl. 354-187.000.
Whitman, Bruce, to Lear Siegler, Inc. Accessory attachment for conveyors. 4,508,209, Cl. 198-583.000.
Whitten, Glen A.; and Pisarski, Lech. Shadow generating apparatus. 4,508,105, Cl. 128-1.00C.
Whyzmuzis, Paul D.; and Spinks, Anne E., to Henkel Corporation. Polymeric fat acid polyamide resins for use in flexographic ink vehicles having reduced solvent emissions. 4,508,868, Cl. 524-607.000.
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Wico Corporation: *See—*
Peters, Albin; and Fainzilberg, Zeilik, 4,508,343, Cl. 273-119.00A.
Wideman, Lawson G.; and Bente, Lynn A., to Goodyear Tire & Rubber Company, The. Process for the conversion of terpenes to limonene. 4,508,930, Cl. 585-377.000.
Widen, Bo; and Rubensson, Bjorn, to GKN-Stenman AB. Cylinder lock combination, a lock cylinder and a key for such a combination. 4,507,944, Cl. 70-276.000.
Wiegardt, Gordon K.; Hanks, Thomas W.; and Murphy, Kenneth E., to Deere & Company. Vehicle with control system having operator-actuable switch for storing parameter signal value to control vehicle-connected implement raising and lowering structure. 4,508,176, Cl. 172-7.000.
Wieland, Kurt H., to Garrett Corporation, The. Three wheel center fan cooling turbine apparatus and associated methods. 4,507,939, Cl. 62-402.000.
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Wiggins, John T., to Community Light & Sound Inc. Voice coil centering and suspension for vented pole piece. 4,508,941, Cl. 179-115.5PC.
Wiggins Teape Group Limited, The: *See—*
Shanton, Kenneth J., 4,509,065, Cl. 346-225.000.
Wiggle, Ronald R.: *See—*
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Wile, Donald T., to National Semiconductor Corporation. AM Radio stop detector. 4,509,204, Cl. 455-169.000.
William L. Bonnell Company, The: *See—*
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Williams, Bolie C., III: *See—*
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Williams, Thomas W.: *See—*
DasGupta, Sumit; Graf, Matthew C.; Rasmussen, Robert A.; and Williams, Thomas W., 4,509,008, Cl. 324-73.00R.
Willmouth, Robert W. Armature lift windmill. 4,508,972, Cl. 290-55.000.
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Wilson, H. James, to Safetran Systems Corporation. Impedance bond. 4,509,024, Cl. 333-24.00R.
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Wilson, Robert C., Jr.: *See*—
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Feldkamper, Richard, 4,508,529, Cl. 493-438.000.
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Kan, Frederick S. C.; Li, Kam Wing; and Lau, Kong Ping P., 4,508,958, Cl. 219-369.000.
Winkler, Reinhard: *See*—
Jager, Lothar; Peter, Anton; and Winkler, Reinhard, 4,509,087, Cl. 360-130.210.
Winter, Joseph; and Pryor, Michael J., to Olin Corporation. Method and apparatus for assembling an optical fiber communication cable. 4,508,423, Cl. 350-96.230.
Winyall, Milton E., to W. R. Grace & Co. Particulate dialytic silica. 4,508,607, Cl. 204-180.00P.
Wiser, James G.: *See*—
Thornley, W. Ray; Wiser, James G.; and Lundahl, E. Cordell, 4,507,910, Cl. 56-10.200.
Wiser, Thayne B. Soil pitting and damming implement and process. 4,508,177, Cl. 172-177.000.
Wittmann, Heinz: *See*—
Svoboda, Josef; Nitschko, Theodor; and Wittmann, Heinz, 4,508,361, Cl. 280-628.000.
Wittmann, Joseph W.; and Evans, John M., to CooperVision, Inc. Oxygen permeable hard contact lens. 4,508,884, Cl. 526-279.000.
Wolf, Isaac; and Alper, Yekutiel, to State of Israel, Ministry of Agriculture. Apparatus for harvesting and separation of produce. 4,507,911, Cl. 56-327.00R.
Wolf, Konrad: *See*—
Fidi, Werner; Pribyl, Richard; and Wolf, Konrad, 4,508,192, Cl. 181-158.000.
Wolf, Stephen F.: *See*—
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Wolfe, Edward B. Toothpaste extractor. 4,508,242, Cl. 222-102.000.
Wolff Wire Corporation: *See*—
Minick, Harold N., 4,508,300, Cl. 248-216.100.
Wolfson, Sumner H., to Burr-Brown Corporation. Expendable heater sealing process. 4,507,907, Cl. 53-478.000.
Woltmann, Reinhard; and Sixt, Karl, to Bayerische Motoren Werke Aktiengesellschaft. Mold with feeder channel for the casting of metals, in particular, for low-pressure casting. 4,508,159, Cl. 164-306.000.
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Wong, Ching-Ping, to AT&T Technologies, Inc. Encapsulated electronic circuit. 4,508,758, Cl. 427-96.000.
Wood, Roy W.: *See*—
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., 4,508,183, Cl. 175-69.000.
Woodnutt, John P., to Delmatic Limited. Lighting control system. 4,508,997, Cl. 315-360.000.
World, Victor B. Method of obtaining greater lifetime duration from chemiluminescent systems. 4,508,642, Cl. 252-700.000.
Worz, Paul: *See*—
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Wrang, Soren N.: *See*—
Pedersen, Svend P.; Wrang, Soren N.; and Molbaek, Jens J., 4,508,263, Cl. 236-42.000.
Wright, Anthony A. Security battery holder. 4,508,794, Cl. 429-100.000.
Wright, Cecil W.: *See*—
Muhle, Mike E.; Stolz, Richard J.; and Wright, Cecil W., 4,508,859, Cl. 523-346.000.
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Wulff, Hermann. Fish processing machine with controlling means for the processing tools. 4,507,823, Cl. 17-55.000.
Wurster, Ewald; and Heidemann, Albert, to Patent Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Halogen cycle incandescent lamp and method for the protection of its inner surface. 4,508,991, Cl. 313-579.000.
Wyatt, Philip W.; Newsome, Allen L., Jr.; Bloom, William G.; Siegel, Bernard; and Lubov, Michael, to American Hospital Supply Corporation. Thermodilution injectate assembly. 4,508,123, Cl. 128-692.000.
Wyrepak Industries, Inc.: *See*—
Bauer, Gordon L., 4,508,290, Cl. 242-128.000.
Xantech Corporation: *See*—
Robbins, Michael S., 4,509,211, Cl. 455-603.000.
Xerox Corporation: *See*—
Doery, Michael S., 4,508,447, Cl. 355-14.0SH.
Fischbeck, Kenneth H., 4,509,058, Cl. 346-1.100.
Herloski, Robert P., 4,508,421, Cl. 350-3.710.
Hubler, Lawrence C.; Ferrara, Joseph J.; Albright, Roger N.; and Bassett, Raymond C., 4,508,329, Cl. 270-53.000.
Law, Kock-Yee; and Bailey, Frank C., 4,508,803, Cl. 430-59.000.
May, Joseph N.; and Wing, Joseph M., 4,508,444, Cl. 355-3.00R.
Sohl, Gordon; Ort, Donald L.; and Leicht, John R., 4,509,057, Cl. 346-1.100.
Tokoli, Emery G.; Horgan, Anthony M.; and Carmichael, Kathleen M., 4,508,650, Cl. 260-245.860.
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Lee, Wai-Hon; and Voisin, Paul H., 4,508,808, Cl. 430-146.000.
XIS, Incorporated: *See*—
Eriksson, Richard C., 4,508,053, Cl. 118-712.000.
Eriksson, Richard C., 4,508,748, Cl. 427-8.000.
Yachida, Yoichi, to Nippon Seiki Kabushiki Kaisha. Device which accurately displays changes in a quantity to be measured. 4,509,044, Cl. 340-789.000.
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Yahagi, Mitsuhisa: *See*—
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Yamada, Mitsuhiko, to Dainippon Screen Mfg. Co., Ltd. Indicating method and apparatus for digitizer menu portions. 4,509,046, Cl. 340-815.100.
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Minamida, Kazukiyo; Haze, Setsuo; and Yamada, Seiji, 4,508,185, Cl. 177-1.000.
Yamada, Shinji, to Sharp Kabushiki Kaisha. Auto tuning receiver with a tuning information memory. 4,509,203, Cl. 455-166.000.
Yamada, Yutaka: *See*—
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Yamaguchi, Tomoyuki: *See*—
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Kato, Hiromi, 4,508,189, Cl. 180-219.000.
Yamakawa, Hiroyuki: *See*—
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.
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Yamamoto, Kaichi, to Sony Corporation. Signal detecting circuit. 4,509,016, Cl. 328-138.000.
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Yamamoto, Tsutomu; Ashizawa, Masaaki; Nishimoto, Kazuo; and Sekiguchi, Yuji, to Nichias Corporation. Compressed non-asbestos sheets. 4,508,777, Cl. 428-280.000.
Yamamuro, Kiyohiko; Hirano, Shigeo; Itoh, Isamu; and Iwasa, Yasuo, to Fuji Photo Film Co., Ltd. Method for bleaching color photosensitive material. 4,508,816, Cl. 430-393.000.
Yamasaki, Hitoshi, to Sharp Kabushiki Kaisha. Read format preset in an electronic cash register. 4,508,962, Cl. 235-378.000.
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Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, to Ajinomoto Company, Incorporated. Process for producing N-carbobenzoxy-L-aspartic anhydride. 4,508,912, Cl. 549-253.000.
Yamato, Akihiro; and Hashiguchi, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Intake air quantity control method for internal

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Yamato, Akihiro; and Koike, Akihiko, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling a fuel metering system of an internal combustion engine. 4,508,084, Cl. 123-492.000.
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Yan, Tsoung Y., to Mobil Oil Corporation. Visbreaker performance for production of heating oil. 4,508,614, Cl. 208-78.000.
Yanagawa, Hirofumi, to Pioneer Electronic Corporation. Stereo sound system. 4,509,184, Cl. 381-24.000.
Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; Inoue, Masami; and Yanagishima, Takayuki, 4,509,040, Cl. 340-576.000.
Yashima, Michio; Komatsu, Akihiro; Takanashi, Masami; Hirose, Masashi; and Nakayama, Kengo, to Honda Motor Co., Ltd. Handle switch assembly for motorcycles. 4,508,944, Cl. 200-61.850.
Yasuda, Shuhei: *See*—
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Yasuhara, Yutaka; Nishino, Masaki; and Matsuhisa, Seikichi, to Toray Industries, Inc. Method of producing cyclohexane derivatives directly from aromatic hydrocarbons. 4,508,918, Cl. 560-241.000.
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Yasuoka, Akimasa; and Otobe, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling fuel supply to an internal combustion engine after termination of fuel cut. 4,508,087, Cl. 123-493.000.
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Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Gomi, Hiromi; Sakamoto, Hiroshi; Sasaki, Masaki; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Ohtsuki, Etsuo; and Isago, Terashi, 4,508,680, Cl. 419-5.000.
Yelderman, Mark L., to Leland Stanford Jr. University, The Board of Trustees of the. Method and apparatus for measuring flow. 4,507,974, Cl. 73-861.060.
Yokogawa Hokushin Electric Corporation: *See*—
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Yokoi, Gunpei, to Nintendo Co., Ltd. Game device. 4,508,336, Cl. 273-1.00L.
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Takeuchi, Nobuo; Kaneko, Tadashi; Nakazumi, Tadataka; and Yokooku, Katsuhiko, 4,508,078, Cl. 123-399.000.
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Yoneda, Naoto; Kato, Jyoji; Hayashi, Kimiaki; Ochiai, Takashi; and Kinashi, Keizo, to Tanabe Seiyaku Co., Ltd. Antihypertensive 2-oxo-imidazolidine derivatives. 4,508,727, Cl. 514-398.000.
Yong, Raymond N.; and Sethi, Amar J., to Suncor, Inc. Process for making starch flocculants of improved efficiency. 4,508,627, Cl. 210-728.000.
Yoshida, Hajime, to Hajime Industries Ltd. Defect inspection apparatus. 4,509,076, Cl. 358-106.000.
Yoshida, Kunio, to Sharp Kabushiki Kaisha. Language translator with random generation of test words during learning mode. 4,509,137, Cl. 364-900.000.
Yoshida, Robert A., to Syva Company. Compositions for competitive protein binding assays inhibiting non-specific interference. 4,508,892, Cl. 536-51.000.
Yoshida, Ryo: *See*—
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Yoshida, Shohei; and Vogl, Otto, to Asahi Glass Company Ltd. Benzotriazole compound and homopolymer or copolymers thereof. 4,508,882, Cl. 526-259.000.
Yoshida, Susumu: *See*—
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Yoshimura, Hirofumi; and Ikeda, Nobuo, to Matsushita Electric Industrial Co., Ltd. Microwave oven with rotary antenna. 4,508,946, Cl. 219-10.55F.
Yoshino, Atsuhiko: *See*—
Matsuo, Yoshiho; Yoshino, Atsuhiko; and Nishijima, Ryoji, 4,508,878, Cl. 525-333.800.
Yoshino, Hozo, to System Homes Company Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Integral solar and heat pump water heating system. 4,507,936, Cl. 62-235.100.
Yoshioka, Sadashichi: *See*—
Oda, Tatsuro; Tanaka, Hideki; Yoshioka, Sadashichi; and Yokooku, Katsuhiko, 4,508,076, Cl. 123-339.000.
Yoshioka, Takeo: *See*—
Kubo, Katsuro; Yoshioka, Takeo; Okabe, Mitsuyasu; Fukagawa, Yasuo; and Ishikura, Tomoyuki, 4,508,648, Cl. 260-245.20T.
Yoshioka, Yasuhiko: *See*—
Sakuta, Masaharu; Kiya, Soichi; Uchizaki, Iwao; Yoshioka, Yasuhiko; Ito, Koichi; Kaya, Tadahiro; Shioya, Tsunetoshi; Shimoyama, Yoshifumi; and Yamakawa, Hiroyuki, 4,508,572, Cl. 106-90.000.
Yoshizaki, Kazuo: *See*—
Tanimura, Nobuyoshi; Yamamoto, Sho; Yoshizaki, Kazuo; and Akima, Isao, 4,509,147, Cl. 365-190.000.
Yost, William G., Jr. Ski rack. 4,508,229, Cl. 211-70.500.
Younes, Usama E., to Atlantic Richfield Company. Alternating copolymer of brominated styrene and N-brominated phenyl maleimide. 4,508,883, Cl. 526-262.000.
Young, Donald C., to Union Oil Company of California. Compositions containing urea, ammonia, and water. 4,508,558, Cl. 71-30.000.
Yuasa, Hiroyoshi: *See*—
Omura, Koichi; and Yuasa, Hiroyoshi, 4,509,186, Cl. 381-43.000.
Yuen, Henry K.: *See*—
Carter, Don E.; and Yuen, Henry K., 4,508,101, Cl. 126-436.000.
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho. Control device for loading and unloading mechanism. 4,509,127, Cl. 364-478.000.
Zabielski, Kenneth D.: *See*—
Garver, Edward B., Sr.; and Zabielski, Kenneth D., 4,508,534, Cl. 604-111.000.
Zacconi, Anthony N.: *See*—
Manton, John C.; Okin, Kenneth; and Zacconi, Anthony N., 4,509,115, Cl. 364-200.000.
Zamory, William: *See*—
Lerman, Michael J.; Koehl, Richard; Chiarella, Anthony A.; and Zamory, William, 4,508,455, Cl. 366-247.000.
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., to Ashland Oil, Inc. Catalyst for the conversion of carbo-metallic containing oils. 4,508,839, Cl. 502-65.000.
Zanella, Francesco: *See*—
Rossin, Ineo; and Zanella, Francesco, 4,508,308, Cl. 249-19.000.
Zarini, Franco: *See*—
Alpegiani, Marco; Battistini, Carlo; Bedeschi, Angelo; Franceschi, Giovanni; Foglio, Maurizio; and Zarini, Franco, 4,508,649, Cl. 260-245.20R.
Zebrowski, Tadeusz, to U.S. Philips Corporation. Arrangement for rotating the shaft of an electrical component. 4,507,979, Cl. 74-89.220.
Zeldes, Michael D., to Du Pont de Nemours, E. I., and Company. Coating process employs surfactants. 4,508,764, Cl. 427-296.000.
Zeller, Rolf: *See*—
Dobler, Helmut; Zeller, Rolf; and Seitz, Helmut, 4,508,069, Cl. 123-192.00B.
Zellerman, Gabor, deceased: *See*—
Oreopoulos, Dimitrios G.; Zellerman, Gabor, deceased; and Price, Robert G., administrator, 4,508,367, Cl. 285-3.000.
Zenith Electronics Corporation: *See*—
Tong, Francis F.; and Vaughter, Harmon P., 4,509,207, Cl. 455-251.000.
Zeugner, Horst: *See*—
Liepmann, Hans; Ruhland, Michael; Muesch, Herbert; Benson, Werner; Heinemann, Henning; and Zeugner, Horst, 4,508,716, Cl. 514-220.000.
Ziegler, Erich. Aromatic citrus oil concentrate which is stable in storage. 4,508,747, Cl. 426-651.000.
Ziegler, Joseph L.: *See*—
Freewalt, Wayne L.; and Ziegler, Joseph L., 4,508,194, Cl. 182-153.000.
Zielke, Terry L.: *See*—
Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., 4,508,269, Cl. 239-177.200.
Zimmerman, Franz X., to Autoclave Engineers, Inc. Vacuum sintering and hot isostatic pressing in the same vessel. 4,509,179, Cl. 373-109.000.
Zimmerman, William B.: *See*—
Bennett, Terry A.; Claassen, George R.; and Zimmerman, William B., 4,508,556, Cl. 65-25.400.
Zlokarnik, Marko, to Bayer Aktiengesellschaft. Mechanical foam breakers and a process for mechanical foam-breaking. 4,508,546, Cl. 55-87.000.
Zoecon Corporation: *See*—
Bamberg, Joe T.; and Kohn, Gustave K., 4,508,906, Cl. 546-300.000.
Zollner, Dieter: *See*—
Lades, Hans; Fink, Friedrich; Liebel, Siegfried; Lauterbach, Inge; Taube, Thomas; and Zollner, Dieter, 4,509,178, Cl. 373-93.000.
Zones, Stacey I., to Chevron Research Company. Zeolite SSZ-16. 4,508,837, Cl. 502-62.000.
Zuckler, Karl, to Siemens Aktiengesellschaft. Vacuum switching interrupter with annular member and diametrical contact web. 4,508,945, Cl. 200-144.00B.
Zukotynski, Stefan, to Innovations Foundation of the University of Toronto, The. Silicon-based solar energy conversion cells. 4,508,932, Cl. 136-258.000.
Zyki, Leonard C., Jr. Patient lift. 4,507,814, Cl. 5-84.000.
501 Lamipak Industries (Europe) Ltd.: *See*—
Choe, Francis S. O., 4,508,222, Cl. 206-390.000.
501 Polymer-Physik GmbH & Co.: *See*—
Foll, Eberhard; Holl, Peter; and Vetter, Helmut, 4,508,750, Cl. 427-44.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF APRIL, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aldridge, R. Warren, Jr., to Spencer Wright Industries, Inc. Align boring machine. Re. 31,859, Cl. 408-54.000.

Decoene, Frans J. G. C.; and Muijs, Cornelis G. M., to Sperry Corporation. Harvesting machines. Re. 31,860, Cl. 130-27.00P.

Diver, James J.: *See*—
Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., Re. 31,858, Cl. 414-37.000.

Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., to Velten & Pulver, Inc. Continuous chain stacker/unstacker. Re. 31,858, Cl. 414-37.000.

Heide, Henry A.: *See*—
Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., Re. 31,858, Cl. 414-37.000.

Holly, Harry H., to Holly Systems, Inc. Method for making food patty. Re. 31,857, Cl. 17-45.000.

Holly Systems, Inc.: *See*—
Holly, Harry H., Re. 31,857, Cl. 17-45.000.

Muijs, Cornelis G. M.: *See*—
Decoene, Frans J. G. C.; and Muijs, Cornelis G. M., Re. 31,860, Cl. 130-27.00P.

Spencer Wright Industries, Inc.: *See*—
Aldridge, R. Warren, Jr., Re. 31,859, Cl. 408-54.000.

Sperry Corporation: *See*—
Decoene, Frans J. G. C.; and Muijs, Cornelis G. M., Re. 31,860, Cl. 130-27.00P.

Velten & Pulver, Inc.: *See*—
Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., Re. 31,858, Cl. 414-37.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Adams, Robert M. Vehicle cover assembly. B1 4,272,119, 4-2-85, Cl. 296-100.000.

American Cyanamid Company: *See*—
Spatz, David M.; and Cross, Barrington, B1 4,289,903, Cl. 564-20.000.

Benson, Clark K.: *See*—
Caridis, Andrew A.; and Benson, Clark K., B1 4,167,585, Cl. 426-233.000.

Brad Ragan Inc.: *See*—
Ragan, Bradley E., B1 3,472,714, Cl. 156-96.000.

Caridis, Andrew A.; and Benson, Clark K., to Heat and Control, Inc. Method for heating and cooking foods in a closed treatment chamber by maintaining the temperature and moisture content. B1 4,167,585, 4-2-85, Cl. 426-233.000.

Cross, Barrington: *See*—
Spatz, David M.; and Cross, Barrington, B1 4,289,903, Cl. 564-20.000.

DeFreitas, Richard E., to DeltaLab Research, Inc. Digital encoding circuitry. B1 4,190,801, 4-2-85, Cl. 375-30.000.

DeltaLab Research, Inc.: *See*—
DeFreitas, Richard E., B1 4,190,801, Cl. 375-30.000.

Gonzalez, Georges: *See*—
Quillery, Henri P. M.; and Gonzalez, Georges, B1 3,523,464, Cl. 74-552.000.

Heat and Control, Inc.: *See*—
Caridis, Andrew A.; and Benson, Clark K., B1 4,167,585, Cl. 426-233.000.

Medtronic, Inc.: *See*—
Stokes, Kenneth B., B1 4,313,448, Cl. 128-785.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Yamaguchi, Takaaki, B1 4,357,256, Cl. 252-188.240.

Quillery, Henri P. M.; and Gonzalez, Georges, to Societe Quillery. Steering wheel with plastic foam sheathing. B1 3,523,464, 4-2-85, Cl. 74-552.000.

Ragan, Bradley E., to Brad Ragan Inc. Method of rebuilding previously used tires. B1 3,472,714, 4-2-85, Cl. 156-96.000.

Societe Quillery: *See*—
Quillery, Henri P. M.; and Gonzalez, Georges, B1 3,523,464, Cl. 74-552.000.

Spatz, David M.; and Cross, Barrington, to American Cyanamid Company. Para-phenylalkoxy phenylurea and thiourea compounds and herbicidal use thereof. B1 4,289,903, 4-2-85, Cl. 564-20.000.

Stokes, Kenneth B., to Medtronic, Inc. Myocardial sutureless lead. B1 4,313,448, 4-2-85, Cl. 128-785.000.

Yamaguchi, Takaaki, to Mitsubishi Gas Chemical Company, Inc. Sodium hydrosulfite composition. B1 4,357,256, 4-2-85, Cl. 252-188.240.

LIST OF DESIGN PATENTEES

Albanese, Anthony F.; Chalfin, Samuel; and Chalfin, Lawrence M., to I.P.F. International, Inc. Chair. 278,192, 4-2-85, Cl. D6-379.000.

Amerace Corporation: *See*—
Kominiak, Andrew A.; and Luzzi, Glenn J., 278,230, Cl. D13-24.000.

American Standard Inc.: *See*—
Niemann, James E., 278,270, Cl. D23-32.000.
Niemann, James E., 278,271, Cl. D23-32.000.

Arai, Noriyuki: *See*—
Kurokawa, Koya; and Arai, Noriyuki, 278,238, Cl. D14-78.000.

Bakic, Dieter. Cosmetic case. 278,276, 4-2-85, Cl. D28-78.000.

Bell Helicopter Textron Inc.: *See*—
Johnston, George W., Jr., 278,227, Cl. D12-327.000.

Bergman, Nils-Ake: *See*—
Widell, Jan; Widell, Harald; and Bergman, Nils-Ake, 278,229, Cl. D13-12.000.

Bingham, George H.: *See*—
Rosensweig, Burton J.; Bingham, George H.; and Krupotich, Edward A., 278,250, Cl. D18-22.000.

Black & Decker Inc.: *See*—
McCloskey, Don R., 278,278, Cl. D32-18.000.

Boetger, Ronald L., to Code Manufacturing, Inc. Tire inflator. 278,244, 4-2-85, Cl. D15-7.000.

Boxall, Stanley S. Display case. 278,193, 4-2-85, Cl. D6-471.000.

Braukmann, Heinz W. Bottle cap opener. 278,203, 4-2-85, Cl. D8-40.000.

Bridgestone Tire Company, Limited: *See*—
Kojima, Hiroshi; and Tsuda, Tooru, 278,221, Cl. D12-147.000.
Kojima, Hiroshi; and Koyasu, Tosihiro, 278,222, Cl. D12-147.000.
Kojima, Hiroshi; and Sakamaki, Yuji, 278,223, Cl. D12-147.000.
Motomura, Kenichi; and Tokunaga, Seiichiro, 278,218, Cl. D12-142.000.

Nakamura, Masao; Kojima, Hiroshi; and Nishio, Hideaki, 278,224, Cl. D12-151.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,248, Cl. D18-1.000.

Brown, Michael; Read, Clifford D.; and Ellis, Warren K., to Northern Telecom Limited. Telephone set base. 278,236, 4-2-85, Cl. D14-60.000.

Burdick, Laura M. Combined shipping, storage and packaging container. 278,206, 4-2-85, Cl. D9-327.000.

Burns, Michael D. Cigarette pack holder. 278,188, 4-2-85, Cl. D2-400.000.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 278,212, Cl. D10-77.000.

Canon Kabushiki Kaisha: *See*—
Masaki, Nobuo, 278,246, Cl. D16-31.000.

Cassai, Gino H.: *See*—
Cassai, Henry J.; and Cassai, Gino H., 278,208, Cl. D9-352.000.

Cassai, Henry J.; and Cassai, Gino H. Bottle. 278,208, 4-2-85, Cl. D9-352.000.

Chalfin, Lawrence M.: *See*—
Albanese, Anthony F.; Chalfin, Samuel; and Chalfin, Lawrence M., 278,192, Cl. D6-379.000.

Chalfin, Samuel: *See*—
Albanese, Anthony F.; Chalfin, Samuel; and Chalfin, Lawrence M., 278,192, Cl. D6-379.000.

Chaussures Mephisto S.A.: *See*—
Michaeli, Martin, 278,185, Cl. D2-314.000.
Michaeli, Martin, 278,186, Cl. D2-314.000.

Chung Mei Metal and Plastic Factory: *See*—
Mann, Kittson, 278,275, Cl. D26-42.000.

Code Manufacturing, Inc.: *See*—
Boetger, Ronald L., 278,244, Cl. D15-7.000.

Continental Scale Corporation: *See*—
Kushmuk, Walter P., 278,213, Cl. D10-92.000.

CPG Products Corp.: *See*—
Lockhart, Pamela J., 278,256, Cl. D21-104.000.

Cross, Lance D., to Heel Shield, Inc. Boot heel protective shield. 278,184, 4-2-85, Cl. D2-277.000.

Dahlberg, Johan A. F., to Kommanditbolaget Aldolf. Beverage carbonating machine. 278,200, 4-2-85, Cl. D7-312.000.

D'Ambra, Americo, Jr.; and Nichols, Kenneth, to Hasbro Industries, Inc. Toy animal stall. 278,257, 4-2-85, Cl. D21-114.000.

Dinand, Pierre, to Helena Rubinstein, Inc. Bottle. 278,209, 4-2-85, Cl. D9-384.000.

Dobbs, Nathan F. Tape dispenser. 278,251, 4-2-85, Cl. D19-69.000.

Doskocil Manufacturing Co., Inc.: *See*—
Frydenberg, Donald V., 278,189, Cl. D3-38.000.

Eiki International, Inc.: *See*—
Gaskins, Robert E., 278,232, Cl. D14-5.000.

Eldon Industries, Inc.: *See*—
Evenson, Mel, 278,252, Cl. D19-75.000.
Evenson, Mel, 278,253, Cl. D19-75.000.
Evenson, Mel, 278,254, Cl. D19-75.000.
Evenson, Mel, 278,255, Cl. D19-75.000.

Ellis, Warren K.: *See*—
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 278,236, Cl. D14-60.000.

Enomoto, Haruyuki, to Sony Corporation. Printer for computer. 278,241, 4-2-85, Cl. D14-111.000.

Enter Computer, Inc.: *See*—
Murray, Richard A., 278,240, Cl. D14-107.000.

Evans, Patrick J., to Evcor Systems, Inc. Postage control and counter. 278,214, 4-2-85, Cl. D10-97.000.

Evcor Systems, Inc.: *See*—
Evans, Patrick J., 278,214, Cl. D10-97.000.

Evenson, Mel, to Eldon Industries, Inc. Drawer insert for a desk storage tray system. 278,252, 4-2-85, Cl. D19-75.000.

Evenson, Mel, to Eldon Industries, Inc. Drawer insert for a desk storage tray system. 278,253, 4-2-85, Cl. D19-75.000.

Evenson, Mel, to Eldon Industries, Inc. Drawer insert for a desk storage tray system. 278,254, 4-2-85, Cl. D19-75.000.

Evenson, Mel, to Eldon Industries, Inc. Drawer insert for a desk storage tray system. 278,255, 4-2-85, Cl. D19-75.000.

Everest & Jennings, Inc.: *See*—
Nassiri, Joe M., 278,217, Cl. D12-131.000.

Felix, Christian; Genaro, Donald M.; and Gotfryd, Casimer, to Teletype Corporation. Stand-alone keyboard. 278,239, 4-2-85, Cl. D14-100.000.

Festa, Lawrence M. Telephone. 278,235, 4-2-85, Cl. D14-56.000.

Fibrecast (UK) Limited: *See*—
Thornalley, Michael J., 278,269, Cl. D21-247.000.

Firestone Tire & Rubber Company, The: *See*—
Gray, Harold C., 278,219, Cl. D12-147.000.
McDonald, Peter, 278,220, Cl. D12-147.000.

Forster, Karl-Heinz: *See*—
Schott, Alfred; Johne, Hans; Forster, Karl-Heinz; Schuck, Helmut; and Schulz, Horst, 278,249, Cl. D18-22.000.

Frydenberg, Donald V., to Doskocil Manufacturing Co., Inc. Case for a gun or the like. 278,189, 4-2-85, Cl. D3-38.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,248, 4-2-85, Cl. D18-1.000.

Ganz, Joe. Carrying bag. 278,190, 4-2-85, Cl. D3-48.000.

Gaskins, Robert E., to Eiki International, Inc. Display unit video tape player or the like. 278,232, 4-2-85, Cl. D14-5.000.

Genaro, Donald M.: *See*—
Felix, Christian; Genaro, Donald M.; and Gotfryd, Casimer, 278,239, Cl. D14-100.000.

Gewelber, Ytzhak, to Gewelber, Ytzhak. Motorcycle oil cooler. 278,243, 4-2-85, Cl. D15-5.000.

Gotfryd, Casimer: *See*—
Felix, Christian; Genaro, Donald M.; and Gotfryd, Casimer, 278,239, Cl. D14-100.000.

Gray, Harold C., to Firestone Tire & Rubber Company, The. Tire. 278,219, 4-2-85, Cl. D12-147.000.

Guerra, Manuel B., Jr. Support for phonograph records during cleaning or the like. 278,204, 4-2-85, Cl. D8-71.000.

Hamada, Masanori: *See*—
Tanaka, Michio; and Hamada, Masanori, 278,231, Cl. D14-5.000.

Hardinge Brothers, Inc.: *See*—
Smith, Roger R., 278,245, Cl. D15-140.000.

Hardy, Bruce N. Microphone mounting stand. 278,233, 4-2-85, Cl. D14-13.000.

Hardy, Terence, to L. B. (Plastics) Limited. Furniture drawer wall or similar article. 278,194, 4-2-85, Cl. D6-510.000.

Harford Overseas Limited: *See*—
Harper, James B., 278,197, Cl. D7-27.000.
Harper, James B., 278,198, Cl. D7-27.000.

Harley-Davidson Motor Co., Inc.: *See*—
Heiman, John A.; and Miller, Richard D., 278,225, Cl. D12-158.000.

Harper, James B., to Harford Overseas Limited. Combined plate and glass holder. 278,197, 4-2-85, Cl. D7-27.000.

Harper, James B., to Harford Overseas Limited. Combined plate and glass holder. 278,198, 4-2-85, Cl. D7-27.000.

Hasbro Industries, Inc.: *See*—
D'Ambra, Americo, Jr.; and Nichols, Kenneth, 278,257, Cl. D21-114.000.

Heel Shield, Inc.: *See*—
Cross, Lance D., 278,184, Cl. D2-277.000.

Heggeland, Bruce: *See*—
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Ricard D.; and Heggeland, Bruce, 278,195, Cl. D6-373.000.

Heiman, John A.; and Miller, Richard D., to Harley-Davidson Motor Co., Inc. Motorcycle saddlebag. 278,225, 4-2-85, Cl. D12-158.000.

Helena Rubinstein, Inc.: *See*—
Dinand, Pierre, 278,209, Cl. D9-384.000.

Henderson, Charles. Airplane. 278,226, 4-2-85, Cl. D12-319.000.

I.P.F. International, Inc.: *See*—
Albanese, Anthony F.; Chalfin, Samuel; and Chalfin, Lawrence M., 278,192, Cl. D6-379.000.

Itoh, Masafumi: *See*—
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,248, Cl. D18-1.000.

Johansson, Michel. Auxiliary seat for a child. 278,191, 4-2-85, Cl. D6-333.000.

Johne, Hans: *See*—
Schott, Alfred; Johne, Hans; Forster, Karl-Heinz; Schuck, Helmut; and Schulz, Horst, 278,249, Cl. D18-22.000.

Johnston, George W., Jr., to Bell Helicopter Textron Inc. Helicopter. 278,227, 4-2-85, Cl. D12-327.000.

Kiiski, Heikki, to Tunturipyora Oy. Exercise and fitness testing machine. 278,268, 4-2-85, Cl. D21-194.000.

Koch, Frank. Coating thickness gage. 278,211, 4-2-85, Cl. D10-46.000.

Koepke, John A. Instrument for removing key caps from a keyboard. 278,201, 4-2-85, Cl. D8-17.000.

Kojima, Hiroshi; and Tsuda, Tooru, to Bridgestone Tire Company, Limited. Vehicle tire. 278,221, 4-2-85, Cl. D12-147.000.

Kojima, Hiroshi; and Koyasu, Tosihiro, to Bridgestone Tire Company, Limited. Vehicle tire. 278,222, 4-2-85, Cl. D12-147.000.

Kojima, Hiroshi; and Sakamaki, Yuji, to Bridgestone Tire Company, Limited. Vehicle tire. 278,223, 4-2-85, Cl. D12-147.000.

Kojima, Hiroshi: *See*—
Nakamura, Masao; Kojima, Hiroshi; and Nishio, Hideaki, 278,224, Cl. D12-151.000.

Kojima, Nobuyuki; and Sekigawa, Youichi, to Toshiba Heating Appliances Co., Ltd. Oilstove. 278,272, 4-2-85, Cl. D23-122.000.

Kominiak, Andrew A.; and Luzzi, Glenn J., to Amerace Corporation. Splice connector. 278,230, 4-2-85, Cl. D13-24.000.

Kommanditbolaget Aldolf: *See*—
Dahlberg, Johan A. F., 278,200, Cl. D7-312.000.

Koper, Barry R. Facial appliance for makeup. 278,258, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,259, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,260, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,261, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,262, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,263, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,264, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,265, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,266, 4-2-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,267, 4-2-85, Cl. D21-190.000.

Koves, Thomas. Storage rack for computer equipment. 278,196, 4-2-85, Cl. D6-465.000.
Koyasu, Tosihiro: *See*—
Kojima, Hiroshi; and Koyasu, Tosihiro, 278,222, Cl. D12-147.000.
Krupotich, Edward A.: *See*—
Rosensweig, Burton J.; Bingham, George H.; and Krupotich, Edward A., 278,250, Cl. D18-22.000.
Kurokawa, Koya; and Arai, Noriyuki, to Matsushita Electric Industrial Co., Ltd. Camera for video tape recorder. 278,238, 4-2-85, Cl. D14-78.000.
Kushmuk, Walter P., to Continental Scale Corporation. Weight responsive scale. 278,213, 4-2-85, Cl. D10-92.000.
Kyushu Matsushita Electric Co., Ltd.: *See*—
Miyamoto, Ishin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 278,247, Cl. D18-1.000.
L. B. (Plastics) Limited: *See*—
Hardy, Terence, 278,194, Cl. D6-510.000.
LeVine, Arthur L. Knife holder for knife sharpener. 278,237, 4-2-85, Cl. D8-71.000.
Levine, Hyman S. Dental impression maxillary tray. 278,274, 4-2-85, Cl. D24-10.000.
Lewis, Maxwell P. Gemless ring. 278,216, 4-2-85, Cl. D11-27.000.
Liautaud, James P.; Stultz, Peter F.; and Maloney, David L., to Liautaud, James P. Battery charger housing for a portable battery operated transceiver. 278,228, 4-2-85, Cl. D13-5.000.
Lindgren, Erik. Ski sharpener. 278,205, 4-2-85, Cl. D8-91.000.
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Nakamura, Masao; Kojima, Hiroshi; and Nishio, Hideaki, to Bridgestone Tire Company, Limited. Vehicle tire. 278,224, 4-2-85, Cl. D12-151.000.
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Niemann, James E., to American Standard Inc. Lavatory spout or similar article. 278,271, 4-2-85, Cl. D23-32.000.
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Rolin, Lennart O. Painter's protective device. 278,187, 4-2-85, Cl. D2-361.000.
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

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CLASSIFICATION

CLASSIFICATION OF PATENTS

ISSUED APRIL 2, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

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85	4,507,806
161 R	4,507,807
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424	4,507,809

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225	4,507,811
228	4,507,812
253	4,507,813

CLASS 5

84	4,507,814
400	4,507,815
451	4,507,816

CLASS 7

158	4,507,817

CLASS 8

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203	4,507,818
321	4,507,819

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55	4,507,823
61	4,507,824
73	4,507,825

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200	4,507,827

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313 R	4,508,538

CLASS 24

16 PB	4,507,828
68 CD	4,507,829
527	4,507,830
590	4,507,831

CLASS 28

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254	4,507,833

CLASS 29

26 R	4,507,834
251	4,507,835
252	4,507,836
262	4,507,837
263	4,507,838
268	4,507,839
401.1	4,507,840
402.08	4,507,841
451	4,507,842
466	4,507,843
522 R	4,507,844
568	4,507,850
571	4,507,845
	4,507,846
576 B	4,507,847
	4,507,848
576 W	4,507,849
590	4,507,851
	4,507,852
591	4,507,853
612	4,507,854
623.1	4,507,855
	4,507,856
623.2	4,507,857
741	4,507,861
747	4,507,858
798	4,507,859
825	4,507,860
837	4,507,862

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166 R	4,507,863
248	4,507,864
276	4,507,865
316	4,507,866

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265	4,507,874

CLASS 34

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242	4,507,876

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50	4,507,878
102	4,507,879
115	4,507,880
132	4,507,881
136	4,507,882

CLASS 40

2 R	4,507,883
152.2	4,507,884
405	4,507,885
447	4,507,886
606	4,507,887
621	4,507,888

CLASS 42

89	4,507,889

CLASS 43

17	4,507,890
24	4,507,891
42.18	4,507,892

CLASS 44

10 D	4,508,539
53	4,508,540
71	4,508,541

CLASS 47

74	4,507,893

CLASS 48

77	4,508,542
197 R	4,508,543
	4,508,544

CLASS 49

449	4,507,894

CLASS 51

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165.92	4,507,896
209 R	4,507,897
410	4,507,898

CLASS 52

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221	4,507,900
302	4,507,901
370	4,507,902

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151	4,507,903
203	4,507,904
262	4,507,905
371	4,507,906
478	4,507,907
498	4,507,908

CLASS 55

53	4,508,545
87	4,508,546
101	4,508,547
158	4,508,548
165	4,508,549
216	4,508,550
263	4,508,551
440	4,508,552

CLASS 56

9	4,507,909
10.2	4,507,910
327 R	4,507,911

CLASS 57

22	4,507,912
328	4,507,913

CLASS 60

39.17	4,507,914
39.281	4,507,915
323	4,507,917
370	4,507,918
404	4,507,919
443	4,507,920
527	4,507,921
531	4,507,922
583	4,507,923
595	4,507,924
641.1	4,507,916
641.4	4,507,925
656	4,507,926

CLASS 62

3	4,507,927
	4,507,928
79	4,507,929
129	4,507,930
175	4,507,931
180	4,507,932
184	4,507,933
210	4,507,934
227	4,507,935
235.1	4,507,936
298	4,507,937
324.1	4,507,938
402	4,507,939
407	4,507,940
514 R	4,507,941
541	4,508,553

CLASS 65

3.1	4,508,554
3.43	4,508,555
25.4	4,508,556
348	4,508,557

CLASS 68

20	4,507,942

CLASS 69

41	4,507,943

CLASS 70

276	4,507,944
363	4,507,945

CLASS 71

30	4,508,558
83	4,508,559
94	4,508,560
	4,508,561
	4,508,562

CLASS 72

17	4,507,946
130	4,507,947
185	4,507,948
201	4,507,949
257	4,507,950
431	4,507,951

CLASS 73

3	4,507,952
7	4,507,953
40.7	4,507,954
61.4	4,507,955
146.5	4,507,956
151	4,507,957
	4,507,958
182	4,507,959
187	4,507,960
317	4,507,961
384	4,507,962
431	4,507,963
462	4,507,964
517 B	4,507,965
603	4,507,966
621	4,507,967
626	4,507,968
644	4,507,969
702	4,507,970
707	4,507,971
708	4,507,972
724	4,507,973
861.06	4,507,974
861.12	4,507,975
861.54	4,507,976
864.12	4,507,977

CLASS 74

7 E	4,507,978
89.22	4,507,979
473 R	4,507,980
477	4,507,981
493	4,507,982
552	B1 3,523,464
572	4,507,983
650	4,507,984
866	4,507,985
	4,507,986

CLASS 75

0.5 BB	4,508,563
65 R	4,508,564
77	4,508,565
88	4,508,566
231	4,508,567

CLASS 81

3.09	4,507,988
57.39	4,507,989
	4,507,990
177 G	4,508,005
463	4,507,991
485	4,507,987

CLASS 82

2.7	4,507,992
36 A	4,507,993

CLASS 83

58	4,507,994
153	4,507,995
344	4,507,996
368	4,507,997
419	4,507,998
665	4,507,999

CLASS 84

1.01	4,508,000
	4,508,001
1.03	4,508,002
293	4,508,003
385 P	4,508,004

CLASS 89

24	4,508,006
37.11	4,508,007

CLASS 91

372	4,508,008
376 R	4,508,009
474	4,508,010
506	4,508,011
512	4,508,012
516	4,508,013
527	4,508,014

CLASS 92

2	4,508,015
33	4,508,016
85 B	4,508,017
128	4,508,018
158	4,508,019
168	4,508,020

CLASS 98

2.01	4,508,021
40.12	4,508,022

CLASS 99

279	4,508,023
340	4,508,024
353	4,508,025
407	4,508,026
416	4,508,027
421 V	4,508,028
516	4,508,029

CLASS 100

26	4,508,030

CLASS 101

41	4,508,031
163	4,508,032
217	4,508,033
365	4,508,034

CLASS 102

313	4,508,035
444	4,508,036

CLASS 105

290	4,508,037

CLASS 106

2	4,508,568
14.12	4,508,569
20	4,508,570
38.28	4,508,571
90	4,508,572
100	4,508,573
109	4,508,574
148	4,508,575
213	4,508,576

CLASS 108

135	4,508,038

CLASS 110

258	4,508,039
347	4,508,040
	4,508,041

CLASS 112

226	4,508,042
235	4,508,043
262.2	4,508,044

CLASS 114

39	4,508,045
	4,508,046
355	4,508,047

CLASS 116

291	4,508,048

CLASS 118

50.1	4,508,049
118	4,508,050
410	4,508,051
651	4,508,052
712	4,508,053
718	4,508,054
724	4,508,055
730	4,508,056

CLASS 119

3	4,508,057
14.02	4,508,058
14.03	4,508,059
16	4,508,060
51 R	4,508,061
82	4,508,062

CLASS 122

504	4,508,063

CLASS 123

1 A	4,508,064
41.35	4,508,065
41.71	4,508,066
90.49	4,508,067
187.5 R	4,508,068
192 B	4,508,069
193 CP	4,508,070
195 C	4,508,072
198 A	4,508,071
307	4,508,073
327	4,508,074
339	4,508,075
	4,508,076
357	4,508,077
399	4,508,078
425	4,508,079
449	4,508,080
450	4,508,081
478	4,508,082
491	4,508,083
492	4,508,084
	4,508,085
	4,508,086
493	4,508,087
	4,508,088
559	4,508,089
564	4,508,090
586	4,508,091
617	4,508,092

CLASS 124

1	4,508,093

CLASS 126

9 R	4,508,094
	4,508,095
	4,508,096
41 R	4,508,097
139	4,508,098
390	4,508,100
400	4,508,099
436	4,508,101
437	4,508,102
443	4,508,104

CLASS 128

1 C	4,508,105
1 R	4,508,106
54	4,508,107
65	4,508,108
75	4,508,109
78	4,508,110
87 R	4,508,111
89 R	4,508,112
132 D	4,508,113
138 R	4,508,114
201.23	4,508,115
203.28	4,508,116
204.21	4,508,117
204.26	4,508,118
329 A	4,508,119
372	4,508,120
639	4,508,121
660	4,508,122
673	4,508,103
692	4,508,123
785	B1 4,313,448

CLASS 130

27 P	Re.31,860

CLASS 132

41 R	4,508,124
92 R	4,508,125

CLASS 134

1	4,508,577

CLASS 135

89	4,508,126

CLASS 136

255	4,508,931
258	4,508,932

CLASS 137

8	4,508,127
13	4,508,128
15	4,508,129
	4,508,130
43	4,508,131
62	4,508,132
68 R	4,508,133
103	4,508,134
185	4,508,135
218	4,508,136
	4,508,137
239	4,508,138
315	4,508,139
501	4,508,140
560	4,508,141
625.4	4,508,142
636.1	4,508,143

CLASS 138

45	4,508,144

CLASS 139

92	4,508,145
196.2	4,508,146

CLASS 141

1.1	4,508,147
147	4,508,148

CLASS 144

245 A	4,508,149

CLASS 148

11.5 F	4,508,578
175	4,508,579

CLASS 149

19.91	4,508,580

CLASS 152

169	4,508,150
213 A	4,508,151
356 R	4,508,152
362 CS	4,508,153

CLASS 156

73.1	4,508,581
93	4,508,582
94	4,508,583
96	B1 3,472,714
353	4,508,584
393	4,508,585
401	4,508,586
527	4,508,587
584	4,508,588
	4,508,589
601	4,508,590
659.1	4,508,591

CLASS 159

2.1	4,508,592

CLASS 160

98	4,508,154

CLASS 162

29	4,508,593
135	4,508,594
158	4,508,595

CLASS 164

35	4,508,155
	4,508,156
63	4,508,157
110	4,508,158
306	4,508,159
467	4,508,160

CLASS 165

1	4,508,161
56	4,508,162
80 B	4,508,163
95	4,508,164

CLASS 166

117.5	4,508,165
	4,508,166
120	4,508,167
248	4,508,168
250	4,508,169
272	4,508,170
273	4,508,171
303	4,508,172
330	4,508,173
373	4,508,174

CLASS 169

38	4,508,175

CLASS 172

7	4,508,176
49.5	4,508,179
177	4,508,177
239	4,508,178

CLASS 173

104	4,508,180

CLASS 174

67	4,508,933
101.5	4,508,934

CLASS 175

19	4,508,181
61	4,508,182
69	4,508,183
346	4,508,184

CLASS 177

1	4,508,185
	4,508,186

CLASS 179

2 EA	4,508,935
82	4,508,936
84 T	4,508,937
90 B	4,508,939
90 BD	4,508,938
107 FD	4,508,940
115.5 PC	4,508,941

CLASS 180

181	4,508,187
210	4,508,188
219	4,508,189
247	4,508,190

CLASS 181

107	4,508,191
158	4,508,192

CLASS 182

5	4,508,193
153	4,508,194

CLASS 184

1.5	4,508,195

CLASS 188

1.11	4,508,196
47	4,508,197
71.4	4,508,198
250 B	4,508,199
264 P	4,508,200
322.19	4,508,201

CLASS 190

115	4,508,202

CLASS 192

84 C	4,508,203

CLASS 193

40	4,508,204

CLASS 198

334	4,508,205
365	4,508,206
478	4,508,207
583	4,508,209
627	4,508,210
750	4,508,211
751	4,508,208
781	4,508,212
813	4,508,213
833	4,508,214

CLASS 200

5 A	4,508,942
17 R	4,508,943
61.85	4,508,944
144 B	4,508,945

CLASS 202

227	4,508,596

CLASS 203

79	4,508,597

CLASS 204

1 T	4,508,598
10	4,508,599
27	4,508,600
38.5	4,508,601
95	4,508,602
98	4,508,603
129.5	4,508,604
158 R	4,508,605
169	4,508,606
180 P	4,508,607
192 C	4,508,608
192 P	4,508,610
192 S	4,508,609
202	4,508,611
298	4,508,612
418	4,508,613

CLASS 206

3	4,508,215
3.1	4,508,216
45.18	4,508,217
271	4,508,218
319	4,508,219
343	4,508,220
379	4,508,221
390	4,508,222
423	4,508,223
455	4,508,224
461	4,508,225
620	4,508,226

CLASS 208

78	4,508,614
89	4,508,615
111	4,508,616
134	4,508,617
	4,508,618
455	4,508,305

CLASS 209

169	4,508,619
500	4,508,620
927	4,508,227

CLASS 210

86	4,508,621
96.2	4,508,622
658	4,508,624
695	4,508,625
708	4,508,626
728	4,508,627

CLASS 211

41	4,508,228
70.5	4,508,229
181	4,508,230
199	4,508,231

CLASS 212

178	4,508,232
182	4,508,233

CLASS 215

206	4,508,234
307	4,508,235
308	4,508,236

CLASS 219

10.55 B	4,508,947
10.55 F	4,508,946
10.55 M	4,508,948
61.2	4,508,949
69 D	4,508,950
74	4,508,951
121 EH	4,508,952
125.1	4,508,953
132	4,508,954
146.21	4,508,955
215	4,508,956
305	4,508,957
369	4,508,958
385	4,508,959
388	4,508,960
449	4,508,961

CLASS 220

6	4,508,237
229	4,508,623

CLASS 221

107	4,508,238

CLASS 222

39	4,508,239
96	4,508,240
102	4,508,242
142	4,508,243
153	4,508,244
327	4,508,245
477	4,508,246
598	4,508,247
600	4,508,241
623	4,508,248

CLASS 224

219	4,508,249

CLASS 225

97	4,508,250

CLASS 226

25	4,508,251
44	4,508,252

CLASS 227

19	4,508,253
116	4,508,254

CLASS 228

5.1	4,508,255
152	4,508,256
263.13	4,508,257

CLASS 229

38	4,508,258

CLASS 232

17	4,508,259
43.1	4,508,260

CLASS 235

378	4,508,962

CLASS 236

20 R	4,508,261
42	4,508,262
	4,508,263

CLASS 237

12.3 B	4,508,264

CLASS 239

3	4,508,265
	4,508,266
11	4,508,267
119	4,508,268
177.2	4,508,269
265.35	4,508,270
305	4,508,271
318	4,508,272
427	4,508,273
455	4,508,274
533.3	4,508,275
691	4,508,276

CLASS 241

65	4,508,277

CLASS 242

1	4,508,278
54 R	4,508,281
56 R	4,508,279
56.2	4,508,282
56.4	4,508,283
75.51	4,508,284
99	4,508,285
107	4,508,286
	4,508,287
	4,508,288
107.4 B	4,508,289
128	4,508,290
156.2	4,508,291
190	4,508,292
191	4,508,280

CLASS 244

3.15	4,508,293
122 AG	4,508,294
134 A	4,508,295
158 R	4,508,296
173	4,508,297

CLASS 246

167 R	4,508,298

CLASS 248

216.1	4,508,300
250	4,508,301
297.3	4,508,302
311.2	4,508,303
	4,508,304
454	4,508,306
460	4,508,307

CLASS 249

19	4,508,308
81	4,508,309
189	4,508,310

CLASS 250

201	4,508,963
	4,508,964
231 SE	4,508,965
327.2	4,508,966
396 R	4,508,967
441.1	4,508,968
506.1	4,508,969
577	4,508,970

CLASS 251

1 A	4,508,312
	4,508,313
1 B	4,508,311
11	4,508,314
173	4,508,315

CLASS 252

8.5 P	4,508,628
8.55 D	4,508,629
32.5	4,508,630
68	4,508,631
70	4,508,632
135	4,508,633
163	4,508,634
174.23	4,508,635
188.24	B1 4,357,256
301.21	4,508,784
301.36	4,508,636
396	4,508,637
401	4,508,638
500	4,508,639
503	4,508,640
626	4,508,641
700	4,508,642

CLASS 254

4 R	4,508,316
134.3 FT	4,508,317
350	4,508,318

CLASS 256

19	4,508,319
47	4,508,320
65	4,508,321

CLASS 260

112 B	4,508,643
112.5 R	4,508,644
	4,508,645
239.3 R	4,508,646
239.3 T	4,508,647
245.2 R	4,508,649
245.2 T	4,508,648
245.86	4,508,650
397.2	4,508,651
407	4,508,652
410.5	4,508,653
429 R	4,508,654
	4,508,655
463	4,508,656
	4,508,657
465 D	4,508,658
	4,508,659
465.4	4,508,660
544 D	4,508,661
	4,508,857
550	4,508,662
968	4,508,663

CLASS 261

44 C	4,508,664
93	4,508,665

CLASS 264

12	4,508,666
13	4,508,667
22	4,508,668
36	4,508,669
40.6	4,508,670
58	4,508,671
78	4,508,672
120	4,508,673
234	4,508,674
310	4,508,675
328.8	4,508,676

CLASS 266

149	4,508,322
191	4,508,323
236	4,508,324

CLASS 267

47	4,508,325

CLASS 269

22	4,508,326
23	4,508,327
236	4,508,328

CLASS 270

53	4,508,329

CLASS 271

33	4,508,330
107	4,508,331
118	4,508,332
218	4,508,333
308	4,508,334

CLASS 272

145	4,508,335

CLASS 273

1 L	4,508,336
1.5 R	4,508,337
9	4,508,338
26 E	4,508,339
	4,508,340
55 R	4,508,341
80 C	4,508,342
119 A	4,508,343
141 R	4,508,344
143 R	4,508,345
144 B	4,508,346
157 R	4,508,347
	4,508,348
175	4,508,349
183 D	4,508,350
248	4,508,351
274	4,508,352
313	4,508,353

CLASS 277

27	4,508,354
189	4,508,355
205	4,508,356

CLASS 279

1 C	4,508,357

CLASS 280

234	4,508,358
463	4,508,359
605	4,508,360
628	4,508,361
804	4,508,362
808	4,508,363
821	4,508,364

CLASS 281

2	4,508,365
36	4,508,366

CLASS 285

3	4,508,367
21	4,508,368
39	4,508,369
53	4,508,370
121	4,508,371
175	4,508,372
226	4,508,373
319	4,508,374
334	4,508,375
363	4,508,376

CLASS 290

1 R	4,508,971
5 S	4,508,973
55	4,508,972

CLASS 292

166	4,508,377
333	4,508,378
336.3	4,508,379

CLASS 296

1 S	4,508,380
70	4,508,381
100	B1 4,272,119
213	4,508,382

CLASS 297

284	4,508,383
	4,508,384
341	4,508,385
346	4,508,386
429	4,508,387

CLASS 298

22 C	4,508,388

CLASS 299

17	4,508,389
33	4,508,390
43	4,508,391

CLASS 301

63 PW	4,508,392

CLASS 303

111	4,508,393

CLASS 307

66	4,508,974
261	4,508,975
270	4,508,976
468	4,508,977
482	4,508,978
513	4,508,979
530	4,508,980
542	4,508,981
572	4,508,982
577	4,508,983

CLASS 308

3.8	4,508,394
6 C	4,508,395

CLASS 310

14	4,508,984
55	4,508,985
67 R	4,508,986
68 C	4,508,987
154	4,508,988
184	4,508,989

CLASS 313

50	4,508,990
579	4,508,991

CLASS 315

5.39	4,508,992
59	4,508,993
200 R	4,508,994
209 R	4,508,995
224	4,508,996
360	4,508,997

CLASS 318

138	4,508,998
331	4,508,999
591	4,509,000
687	4,509,001
	4,509,002
800	4,509,003
801	4,509,004

CLASS 320

68	4,509,005

CLASS 322

4	4,509,006

CLASS 324

60 C	4,509,007
73 R	4,509,008
95	4,509,009
158 D	4,509,012
158 P	4,509,010
161	4,509,013
305	4,509,014
309	4,509,011
	4,509,015

CLASS 328

138	4,509,016

CLASS 329

105	4,509,017

CLASS 330

61 R	4,509,018
107	4,509,019
274	4,509,020
282	4,509,021
284	4,509,022

CLASS 331

176	4,509,023

CLASS 333

24 R	4,509,024

CLASS 335

85	4,509,025
	4,509,026
201	4,509,027
202	4,509,028
208	4,509,029
216	4,509,030
306	4,509,031

CLASS 336

59	4,509,032
107	4,509,033

CLASS 338

34	4,509,034
35	4,509,035

CLASS 339

14 R	4,508,401
17 CF	4,508,399
	4,508,402

17 LM 4,508,398
22 R 4,508,400
28 4,508,403
45 M 4,508,404
75 MP 4,508,405
89 M 4,508,406
4,508,408
89 R 4,508,407
97 R 4,508,409
99 R 4,508,410
4,508,411
126 R 4,508,412
129 4,508,413
143 R 4,508,414
4,508,415
176 L 4,508,417
176 M 4,508,416
253 R 4,508,418
256 S 4,508,419

CLASS 340

347 AD 4,509,036
4,509,037
347 DD 4,509,038
572 4,509,039
576 4,509,040
578 4,509,041
600 4,509,042
721 4,509,043
789 4,509,044
794 4,509,045
815.1 4,509,046
825.23 4,509,047

CLASS 343

5 CM 4,509,048
5 SM 4,509,050
7.5 4,509,049
17.2 PC 4,509,051
418 4,509,052
708 4,509,053
709 4,509,054
754 4,509,055
791 4,509,056

CLASS 346

1.1 4,509,057
4,509,058
4,509,059
76 PH 4,509,060
107 R 4,509,061
140 R 4,509,062
4,509,063
207 4,509,064
225 4,509,065

CLASS 350

3.6 4,508,420
3.71 4,508,421
6.8 4,508,422
96.23 4,508,423
174 4,508,424
335 4,508,427
337 4,508,428
350 S 4,508,429
351 4,508,430
354 4,508,431
357 4,508,432
454 4,508,433
4,508,434
529 4,508,435
614 4,508,426
641 4,508,425

CLASS 351

160 H 4,508,436

CLASS 354

78 4,508,437
105 4,508,438
154 4,508,439
187 4,508,440
217 4,508,441
400 4,508,442
402 4,508,443

CLASS 355

3 R 4,508,444
3 SH 4,508,445
14 R 4,508,446
14 SH 4,508,447

CLASS 356

5 4,508,448
30 4,508,449
237 4,508,450
315 4,508,451
375 4,508,452
394 4,508,453

CLASS 357

2 4,509,066
13 4,509,067
38 4,509,068
4,509,069
41 4,509,070

CLASS 358

11 4,509,071
17 4,509,072
86 4,509,073
106 4,509,075
4,509,076
111 4,509,074
139 4,509,077
160 4,509,078
165 4,509,079
166 4,509,080
225 4,509,081

CLASS 360

37.1 4,509,082
77 4,509,083
84 4,509,084
93 4,509,085
99 4,509,086
130.21 4,509,087

CLASS 361

29 4,509,088
79 4,509,101
92 4,509,102
100 4,509,089
119 4,509,090
154 4,509,091
172 4,509,092
4,509,093
314 4,509,094
321 4,509,103
386 4,509,095
4,509,096
395 4,509,097
398 4,509,098
413 4,509,099
433 4,509,100

CLASS 362

32 4,509,104
122 4,509,105
267 4,509,106
4,509,107

CLASS 363

45 4,509,108
126 4,509,109

CLASS 364

153 4,509,110
200 4,509,112
4,509,113
4,509,114
4,509,115
4,509,116
4,509,117
4,509,118
4,509,119
4,509,120
4,509,121
4,509,122
300 4,509,123
424.1 4,509,124
4,509,125
474 4,509,126
478 4,509,127
483 4,509,128
513.5 4,509,129
4,509,133
556 4,509,130
565 4,509,131
571 4,509,132
813 4,509,134
826 4,509,135
900 4,509,136
4,509,137
4,509,138
4,509,139
4,509,140
4,509,141
4,509,142
4,509,143
4,509,144

CLASS 365

112 4,509,145
162 4,509,146
190 4,509,147
230 4,509,148

CLASS 366

80 4,508,454
247 4,508,455

CLASS 367

27 4,509,149
76 4,509,150
118 4,509,151
123 4,509,152
140 4,509,153

CLASS 368

63 4,508,457
76 4,508,458
262 4,508,456
276 4,508,459

CLASS 369

33 4,509,154
48 4,509,155
54 4,509,156
75.2 4,509,157
77.2 4,509,158
170 4,509,159
269 4,509,160
275 4,509,161
4,509,162
284 4,509,163

CLASS 370

29 4,509,164
38 4,509,165
62 4,509,166
4,509,167
63 4,509,168
4,509,169
85 4,509,170
100 4,509,171

CLASS 371

38 4,509,172

CLASS 372

50 4,509,173
82 4,509,174
86 4,509,176
101 4,509,175

CLASS 373

60 4,509,177
93 4,509,178
109 4,509,179

CLASS 374

16 4,508,460
161 4,508,461

CLASS 375

B1 4,190,801
30 4,509,180
76

CLASS 376

174 4,508,677
205 4,508,678
438 4,508,679

CLASS 377

63 4,509,181
116 4,509,182
125 4,509,183

CLASS 381

24 4,509,184
34 4,509,185
43 4,509,186
4,509,187
53 4,509,188
56 4,509,189
61 4,509,190
63 4,509,191
90 4,509,192
113 4,509,193

CLASS 382

51 4,509,195
56 4,509,194

CLASS 383

5 4,509,196
106 4,509,197

CLASS 384

463 4,508,396
510 4,508,397

CLASS 400

70 4,508,462
124 4,508,463

CLASS 401

6 4,508,464
11 4,508,465

CLASS 403

104 4,508,466
4,508,467
328 4,508,468

CLASS 404

25 4,508,469
4,508,470

CLASS 405

109 4,508,471
229 4,508,472

CLASS 406

4,508,473
64 4,508,474
88

CLASS 408

54 Re.31,859
153 4,508,475
156 4,508,476

CLASS 411

174 4,508,477
176 4,508,478
340 4,508,479

CLASS 413

1 4,508,480
4,508,481

CLASS 414

26 4,508,482
37 Re.31,858
127 4,508,483
337 4,508,484
458 4,508,485

CLASS 415

119 4,508,486

CLASS 417

12 4,508,487
4,508,488
221 4,508,489
234 4,508,490
310 4,508,491
366 4,508,492
379 4,508,493

CLASS 418

13 4,508,494
63 4,508,495
201 4,508,496

CLASS 419

5 4,508,680
29 4,508,681

CLASS 420

590 4,508,682

CLASS 422

7 4,508,683
8 4,508,684
54 4,508,685
55 4,508,686
276 4,508,687

CLASS 423

61 4,508,701
92 4,508,688
127 4,508,689
173 4,508,690
213.5 4,508,691
228 4,508,692
236 4,508,693
246 4,508,694
407 4,508,695
499 4,508,697
574 R 4,508,698
4,508,699
579 4,508,700
588 4,508,696

CLASS 424

14 4,508,704
19 4,508,702
38 4,508,703
47 4,508,705
60 4,508,706
70 4,508,707
89 4,508,708
101 4,508,709
195.1 4,508,714

CLASS 425

28 R 4,508,497
58 4,508,498
88 4,508,499
388 4,508,500

CLASS 426

19 4,508,736
54 4,508,737
55 4,508,738
144 4,508,739
233 B1 4,167,585
250 4,508,740
303 4,508,741
330.4 4,508,742
422 4,508,743
590 4,508,744
594 4,508,745
601 4,508,746
651 4,508,747

CLASS 427

8 4,508,748
43.1 4,508,749
44 4,508,750
4,508,751
48 4,508,752
53.1 4,508,753
4,508,754
58 4,508,755
81 4,508,756
93 4,508,757
96 4,508,758
195 4,508,759
213.34 4,508,760
221 4,508,761
228 4,508,762
262 4,508,763
296 4,508,764
386 4,508,765
388.2 4,508,766
407.1 4,508,767

CLASS 428

35 4,508,768
36 4,508,769
63 4,508,770
95 4,508,771
106 4,508,772
198 4,508,773
220 4,508,774
240 4,508,775
248 4,508,776
280 4,508,777
364 4,508,778
383 4,508,779
407 4,508,780
409 4,508,781
4,508,782
410 4,508,783
424.4 4,508,785
461 4,508,786
473.5 4,508,787
570 4,508,788
630 4,508,789
632 4,508,790
663 4,508,791
702 4,508,792

CLASS 429

26 4,508,793
100 4,508,794
103 4,508,795
112 4,508,796
184 4,508,797
196 4,508,798
4,508,799
4,508,800
238 4,508,801

CLASS 430

22 4,508,802
59 4,508,803
62 4,508,804
72 4,508,805
109 4,508,806
138 4,508,807
146 4,508,808
201 4,508,810
237 4,508,809
270 4,508,811
4,508,812
296 4,508,813
303 4,508,814
314 4,508,815
393 4,508,816
4,508,817
523 4,508,818

CLASS 431

2 4,508,501
328 4,508,502

CLASS 432

109 4,508,503
217 4,508,504

CLASS 433

18 4,508,505
74 4,508,506
189 4,508,507

CLASS 434

19 4,508,508
88 4,508,509
247 4,508,510
258 4,508,511
259 4,508,512
346 4,508,513

CLASS 435

1 4,508,819
29 4,508,820
34 4,508,821
155 4,508,822
172.3 4,508,823
4,508,824
201 4,508,825
235 4,508,826
253 4,508,827

CLASS 436

500 4,508,828
510 4,508,829
4,508,830
512 4,508,831
517 4,508,832
543 4,508,833

CLASS 445

26 4,508,514

CLASS 446

148 4,508,515
443 4,508,516
464 4,508,517
475 4,508,518
478 4,508,519
485 4,508,520
486 4,508,521

CLASS 455

4 4,509,198
7 4,509,199
12 4,509,200
73 4,509,201
108 4,509,202
166 4,509,203
169 4,509,204
194 4,509,205
245 4,509,206
251 4,509,207
317 4,509,208
327 4,509,209
349 4,509,210
603 4,509,211
612 4,509,212

CLASS 464

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181	4,508,863	528	4,508,879		CLASS 536	271	4,508,905	420	4,508,916	322	4,508,924
187	4,508,864		CLASS 526	51	4,508,892	300	4,508,906		CLASS 560	442	4,508,925
283	4,508,865	190	4,508,880	85	4,508,893	345	4,508,907	204	4,508,917	766	4,508,926
401	4,508,866	201	4,508,881	89	4,508,894		CLASS 548	241	4,508,918	858	4,508,927
434	4,508,867	259	4,508,882	91	4,508,895	156	4,508,903		CLASS 562	916	4,508,928
607	4,508,868	262	4,508,883		CLASS 544	213	4,508,908	401	4,508,919	923	4,508,929
808	4,508,869	279	4,508,884	106	4,508,896	251	4,508,909	423	4,508,920		CLASS 585
	CLASS 525	318	4,508,885	127	4,508,897	367	4,508,910	443	4,508,921	377	4,508,930
64	4,508,870		CLASS 528	211	4,508,898	407	4,508,911		CLASS 564		CLASS 604
78	4,508,871	1	4,508,886	225	4,508,899		CLASS 549	20	B1 4,289,903	14	4,508,531
88	4,508,872	21	4,508,887		CLASS 546	253	4,508,912	407	4,508,922	22	4,508,532
91	4,508,873	23	4,508,888	99	4,508,900	320	4,508,913		CLASS 568	35	4,508,533
285	4,508,874	28	4,508,889	112	4,508,901	323	4,508,914	311	4,508,923	111	4,508,534
308	4,508,875	167	4,508,890	153	4,508,902		CLASS 556			282	4,508,535
310	4,508,876	191	4,508,891	196	4,508,904	418	4,508,915				
333.1	4,508,877										
333.8	4,508,878										

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D2—	277	278,184		312	278,200		106	278,215	D14—	5	278,231			278,248	
	314	278,185	D8—	17	278,201	D11—	27	278,216			278,232		22	278,249	278,264
		278,186		40	278,202	D12—	131	278,217		13	278,233			278,250	278,265
	361	278,187			278,203		142	278,218		36	278,234	D19—	69	278,251	278,266
	400	278,188		71	278,204		147	278,219		56	278,235		75	278,252	278,267
D3—	38	278,189			278,237			278,220		60	278,236			278,253	194 278,268
	48	278,190		91	278,205			278,221		78	278,238			278,254	247 278,269
D6—	333	278,191	D9—	327	278,206			278,222		100	278,239			278,255	D23— 32 278,270
	373	278,195		339	278,207			278,223		107	278,240	D21—	104	278,256	278,271
	379	278,192		352	278,208		151	278,224		111	278,241		114	278,257	122 278,272
	465	278,196		384	278,209		158	278,225		114	278,242		190	278,258	D24— 4 278,273
	471	278,193	D10—	46	278,210		319	278,226	D15—	5	278,243			278,259	10 278,274
	510	278,194			278,211		327	278,227		7	278,244			278,260	D26— 42 278,275
D7—	27	278,197		77	278,212	D13—	5	278,228		140	278,245			278,261	D28— 78 278,276
		278,198		92	278,213		12	278,229	D16—	31	278,246			278,262	D30— 20 278,277
	76	278,199		97	278,214		24	278,230	D18—	1	278,247			278,263	D32— 18 278,278

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P.—	8	5,427	9	5,424	11	5,425	21	5,426	22	5,428	26	5,429

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71—	39	T105,301	206—	524.8	T105,302							

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01 :	Re.31,859	4,508,239	4,509,048	11 :	4,508,975	4,507,962	19 :	4,508,019
	4,507,925	4,508,252	4,509,053	12 :	Re.31,857	4,508,020		4,508,060
	4,508,139	4,508,261	4,509,073		4,507,814	4,508,026		4,508,071
	4,508,183	4,508,271	4,509,075		4,507,864	4,508,065		4,508,176
	4,508,296	4,508,293	4,509,081		4,507,881	4,508,144		4,508,243
	4,508,335	4,508,305	4,509,095		4,507,977	4,508,150		4,508,365
	4,508,929	4,508,307	4,509,097		4,508,037	4,508,156		4,508,472
	4,509,006	4,508,319	4,509,109		4,508,110	4,508,158		4,508,474
	4,509,189	4,508,344	4,509,119		4,508,124	4,508,197		4,508,948
04 :	4,507,907	4,508,350	4,509,130		4,508,129	4,508,220		4,509,049
	4,508,059	4,508,352	4,509,132		4,508,136	4,508,236	20 :	4,507,842
	4,508,127	4,508,356	4,509,160		4,508,155	4,508,314		4,508,238
	4,508,381	4,508,368	4,509,162		4,508,240	4,508,341	21 :	4,507,816
	4,508,467	4,508,370	4,509,183		4,508,405	4,508,343		4,507,894
	4,508,970	4,508,389	4,509,204		4,508,415	4,508,353		4,507,999
	4,509,007	4,508,395	4,509,211		4,508,419	4,508,398		4,508,385
	4,509,054	4,508,407	4,167,585		4,508,436	4,508,412		4,508,482
	4,509,168	4,508,466	4,272,119		4,508,490	4,508,413		4,508,506
	4,509,169	4,508,468	08 :	4,507,847		4,508,510	4,508,416		4,508,839
05 :	4,508,213	4,508,537	4,507,941		4,508,533	4,508,517		4,508,987
06 :	4,507,805	4,508,548	4,507,968		4,508,545	4,508,521		4,509,024
	4,507,807	4,508,552	4,508,193		4,508,631	4,508,534	22 :	4,507,874
	4,507,811	4,508,558	4,508,347		4,508,702	4,508,559		4,507,909
	4,507,829	4,508,568	4,508,404		4,508,714	4,508,576		4,507,918
	4,507,840	4,508,585	4,508,493		4,508,738	4,508,584		4,507,954
	4,507,845	4,508,587	4,508,591		4,508,744	4,508,594		4,507,990
	4,507,848	4,508,611	4,508,855		4,508,998	4,508,605		4,508,028
	4,507,852	4,508,618	4,508,858		4,509,017	4,508,613		4,508,068
	4,507,884	4,508,662	4,508,963		4,509,110	4,508,725		4,508,258
	4,507,928	4,508,665	4,509,086		4,509,113	4,508,753		4,508,281
	4,507,939	4,508,676	09 :	4,507,996		4,509,114	4,508,754		4,508,711
	4,507,951	4,508,677	4,508,093		4,509,171	4,508,773	24 :	4,507,882
	4,507,964	4,508,679	4,508,253		4,509,190	4,508,889		4,507,969
	4,507,974	4,508,699	4,508,272		4,509,192	4,508,928		4,508,055
	4,507,988	4,508,736	4,508,290	13 :	4,507,931	4,508,952		4,508,111
	4,508,002	4,508,794	4,508,303		4,508,027	4,508,954		4,508,267
	4,508,024	4,508,808	4,508,371		4,508,278	4,509,105		4,508,577
	4,508,094	4,508,812	4,508,384		4,508,564	4,509,106		4,508,607
	4,508,096	4,508,837	4,508,423		4,508,715	4,509,135		4,508,820
	4,508,099	4,508,892	4,508,464		4,509,052	4,509,193		4,509,037
	4,508,105	4,508,906	4,508,491		4,509,123	4,509,196		4,509,051
	4,508,112	4,508,939	4,508,608		4,509,128	4,509,207	25 :	4,507,857
	4,508,118	4,508,943	4,508,706	15 :	4,508,045	18 :	4,507,920		4,508,053
	4,508,123	4,508,951	4,508,713		4,508,349	4,508,092		4,508,142
	4,508,132	4,508,964	4,508,775	16 :	4,508,465	4,508,125		4,508,154
	4,508,138	4,508,965	4,508,949	17 :	4,507,825	4,508,663		4,508,161
	4,508,166	4,508,974	4,509,050		4,507,869	4,508,722		4,508,168
	4,508,187	4,508,977	4,509,059		4,507,889	4,508,735		4,508,309
	4,508,217	4,508,980	4,509,141		4,507,896	4,508,825		4,508,346
	4,508,219	4,508,982	10 :	4,507,813		4,507,898	4,508,901		4,508,431
	4,508,223	4,508,990	4,508,660		4,507,901	4,509,027		4,508,435
	4,508,233	4,509,012	4,508,697		4,507,916	4,509,080		4,508,437
	4,508,235	4,509,020	4,508,880		4,507,937	4,509,125		4,508,440

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PLANT PATENTS

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48 : 5,425

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

01 : T105,301

37 : T105,302

U.S. GOVERNMENT PRINTING OFFICE : O—1985

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Malcolm Baldrige, *Secretary*
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Donald J. Quigg, *Acting Commissioner*

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Patent and Trademark Office

Vol. 1053 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 9, 1985

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UNITED STATES PATENT AND TRADEMARK OFFICE
April 9, 1985 Volume 1053 Number 2

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 24/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	no charge

DONALD J. QUIGG,
Feb. 4, 1985. *Acting Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 6, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,322,858 through 4,324,002

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,250,338, Re. S.N. 701,004, Filed Dec. 21, 1984, Cl. 568/343, BRIDGED KETONES AND PROCESS FOR PREPARING SAME, Mark A. Sprecker, et al., Owner of Record: *International Flavors & Fragrances, Inc., New York, N.Y.*, Attorney or Agent: Arthur L. Liberman, et al., Ex. Gp.: 126

4,373,452, Re. S.N. 696,650, Filed Jan. 30, 1985, Cl. 110/203, WOOD BURNING STOVE, Robert V. van Dewoestine, Owner of Record: *Corning Glass Works,*

Corning, N.Y., Attorney or Agent: Russell J. Barron, et al., Ex. Gp.: 344

4,423,813, Re. S.N. 699,655, Filed Feb. 8, 1985, Cl. 206/506, MULTILEVEL STACKING CONTAINER, Elsmer W. Kreeger, et al., Owner of Record: *Pinckney Molded Plastics, Inc., Pinckney, Mich.*, Attorney or Agent: Andrew R. Basile, et al., Ex. Gp.: 241

4,446,302, Re. S.N. 700,848, Filed Feb. 11, 1985, Cl. 528/302, ELECTROSTATOGRAPHIC DEVELOPERS COMPRISING TONERS CONTAINING A POLYESTER HAVING P-HYDROXYBENZOIC ACID RECURRING UNITS, M. Akram Sandhu, et al., Owner of Record: *Eastman Kodak Co., Rochester, N.Y.*, Attorney or Agent: John R. Everett, et al., Ex. Gp.: 153

4,464,802, Re. S.N. 697,143, Filed Feb. 1, 1985, Cl. 004/506, STRUCTURAL FOAM SWIMMING POOL WALL AND BRACE AND METHOD OF ERECTING SAME, Robert L. Glonek, et al., Owner of Record: *Said Assors to Robert L. Glonek, Grand Rapids, Mich.*, Attorney or Agent: Peter P. Price, et al., Ex. Gp.: 243

4,467,590, Re. S.N. 701,321, Filed Feb. 13, 1985, Cl. 056/11.2, DRIVE REVERSING MECHANISM, Glenn A. Musser, et al., Owner of Record: *Sperry Corp., New Holland, Pa.*, Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 333

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,953,394, Reexam. No. 90/000,736, Requested: Mar. 11, 1985, Cl. 524/86, POLYESTER ALLOYS AND MOLDING COMPOSITIONS CONTAINING THE SAME, Daniel W. Fox, et al., Owner of Record: *General Electric Co., Pittsfield, Mass.*, Attorney or Agent: William F. Mufatti, Ex. Gp.: 153, Requester: General Electric Co., New York, N.Y.

4,307,764, Reexam. No. 90/000,734, Requested: Mar. 8, 1985, Cl. 383/17, BULK MATERIAL TRANSPORT BAG, Peter J. Nattrass, Owner of Record: *Bulk Lift International, Inc., Des Plains, Ill.*, Attorney or Agent: Kinzer, Plyer, et al., Ex. Gp.: 241, Requester: Cajun Bag & Supply Co., Inc., Arlington, Va.

Marks Published for Opposition

The Apr. issues of the Official Gazette (Trademark Section) will present marks published for opposition in two separate sections.

Each section will contain both multiple class and single class applications. The first section will be printed at the beginning of the Official Gazette and the second section will be printed at the end of the Official Gazette, after the Index of Registrants.

The second section will be numbered separately from the first section, and each page will bear the notation Ap.

Jan. 10, 1985.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of any of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before May 3, 1985:

Mar. 12, 1985.

HARRY I. MOATZ,
Office of Enrollment and Discipline.

A

Ackerman, Steve W., 11908 Dorothy St., #201, Brentwood, Conn. 90049

Algieri, Aldo A., 113 Vanida La., Fayetteville, N.Y. 13066

Arismendi, Andres M. Jr., 9707 Ravensworth, Houston, Tex. 77031

B

Battison, Adrian D., Ade & Co., 1710-360 Main St., Winnipeg, Manitoba, Canada R3C 3Z3

Beltran, Howard, Box 702N, 2111 Jefferson Davis Hwy., Arlington, Va. 22202

Bundren, William J., 7469 Towchester Ct., Alexandria, Va. 22310

C

Chen, Chung C., 3603 Barcroft View Terr., #101, Baileys' Crossroads, Va. 22041

D

Douglas, Earl, 414 W. 120th St., #209, New York, N.Y. 10027

F

Feldman, William, 932 Schindler Dr., Silver Spring, Md. 20903

Frost, Hubert S., P.O. Box 313, Toronto, Canada M5L 1G1

G

Groseth, Craig C., 750 N. Dearborn, #1605, Chicago, Ill. 60610

H

Harrison, Al, 5206 Indigo, Houston, Tex. 77096

K

Konick, Bernard, 11617 Fulham St., Silver Spring, Md. 20902

Kosdan, Gary L., 321 E. 89th St., New York, N.Y. 10028

Kuehl, Gerhard, 86 Forrest Ave., Fair Haven, N.J. 07701

L

Linder, Walter C., 4201 Lakeside Ave., N, #316, Brooklyn Center, Minn. 55429

M

Mattern, Fred C., Jr., Rte. 3, Box 280, Warrenton, Va. 22186

Merkling, John R., 1105 W. 680 South, Orem, Utah 84058

P

Poulos, James A. III, 2307 Westview Dr., Silver Spring, Md. 20910

S

Sears, Jere W., 310 Melvin Ave., Annapolis, Md. 21401
Sheedy, John J., 2404 Mill Grove Rd., Pittsburgh, Pa. 15241
Stearns, Arlyce, 6705 Inverness Dr., Fort Wayne, Ind. 46804

T

Tager, Clifford L., 2124 I St., N.W. #800, Washington, D.C. 20037
Thein, James R., 2111 Jefferson Davis Hwy., Suite 71N, Arlington, Va. 22202
Toyooka, Yoshiharu, 1124 Cline Crescent, Ottawa, Ont., Canada K2C 2P2
Travnikoff, Basil, 333 N. Mills Ave., Lodi, Calif. 95240
Tungol, Maria P., 1305 Gatewood Dr., Alexandria, Va. 22307

Z

Zacharias, John P., 20 Kipp Dr., Fishkill, N.Y. 12524

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-411,196 (4,497,898). SPECTROPHOTOMETRIC METHOD FOR SIMULTANEOUSLY ANALYZING PROTEIN AND FAT CONTENTS IN MILK.
SN 6-646,730. IMPROVED TRANSPORT CARRIAGE.
SN 6-649,038. FABRICATED WOOD BEAM.
SN 6-650,462. PROCESS FOR ENHANCED FERMENTATION OF XYLOSE TO ETHANOL.
SN 6-650,587. IMPROVED LOCKING BALLS FOR LOGGING CARRIAGE.
SN 6-662,378. DEVICE AND METHOD FOR MEASURING THE ENERGY CONTENT OF HOT AND HUMID AIR STREAMS.
SN 6-683,284. DIAGNOSTIC REAGENT FOR SWINE TRICHINOSIS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-596,636 (4,497,730). METHOD FOR OBTAINING PERIPLASMIC PROTEINS FROM BACTERIAL CELLS USING CHLOROFORM.
SN 6-680,992. METHOD FOR RAPID DNA SEQUENCING.

DEPARTMENT OF THE AIR FORCE

SN 6-258,500 (4,487,476). METHOD OF MULTIVARIANT INTRACLASS PATTERN RECOGNITION.
SN 6-308,972 (4,484,297). VARIABLE DATA BASE GENERATOR APPARATUS.
SN 6-324,346 (4,488,311). OPTICALLY PUMPED IODINE MONOFLUORIDE LASER.
SN 6-343,042 (4,495,502). MULTIPLE LOOP SIDELOBE CANCELLER.
SN 6-366,732 (4,495,466). EDDY CURRENT TEST PROBE WITH CIRCUMFERENTIAL SEGMENTS AND METHOD OF TESTING MATERIAL SURROUNDING FASTENER HOLES.
SN 6-366,746 (4,489,289). SAW OSCILLATOR WITH DIGITIAL COMPENSATION FOR TEMPERATURE RELATED FREQUENCY CHANGES.
SN 6-373,084 (4,495,501). METHOD AND MEANS FOR PROVIDING FREQUENCY AGILE OPERATION OF MTI RADAR.
SN 6-375,621 (4,483,006). AXIAL FLOW LASER CAVITY.
SN 6-384,292 (4,484,332). MULTIPLE DOUBLE HETEROJUNCTION BURIED LASER DEVICE.
SN 6-393,834 (4,484,722). TRANSLATING RUDDER PEDAL SYSTEM.
SN 6-398,132 (4,494,838). RETINAL INFORMATION MAPPING SYSTEM.
SN 6-417,726 (4,482,900). DEPLOYABLE FOLDED ANTENNA APPARATUS.
SN 6-418,952 (4,482,112). WINDBLAST ARM PROTECTOR ASSEMBLY.
SN 6-422,430 (4,496,917). RF-PRIMED HIGH POWER HALOGEN VIAL APPARATUS.
SN 6-435,522 (4,494,827). IMAGING APPARATUS FOR TRANSVERSE ELECTRODE ELECTRO-OPTIC TUNABLE FILTER.
SN 6-437,655 (4,488,914) PROCESS FOR THE EPITAXIAL DEPOSITION OF III-V COMPOUNDS UTILIZING A CONTINUOUS IN-SITU HYDROGEN CHLORIDE ETCH.
SN 6-444,003 (4,491,845). WIDE ANGLE PHASED ARRAY DOME LENS ANTENNA WITH A REFLECTION/TRANSMISSION SWITCH.
SN 6-445,639 (4,489,324). LOW SIDELOBE PHASED ARRAY ANTENNA SYSTEM.
SN 6-445,646 (4,490,829). DETECTION OF ANGULAR MODULATED ELECTROMAGNETIC SIGNALS.
SN 6-445,887 (4,490,002). RELEASABLE CABLE CONNECTOR ASSEMBLY FOR USE BETWEEN A MOBILE AND STATIONARY OBJECT.
SN 6-452,604 (4,485,361). PULSE TRANSFORMER PACKAGE FOR IMPEDANCE MATCHING A LASER DIODE TO A TRANSMISSION LINE.
SN 6-455,673 (4,483,198). OSTEOCLAST FOR WHOLE BONE TESTING.
SN 6-461,424 (4,487,550). COOLED TURBINE BLADE TIP CLOSURE.
SN 6-461,427 (4,489,322). RADAR CALIBRATION USING DIRECT MEASUREMENT EQUIPMENT AND OBLIQUE PHOTOMETRY.
SN 6-465,213 (4,480,958). HIGH PRESSURE TURBINE ROTOR TWO-PIECE BLADE RETAINER.
SN 6-468,781 (4,487,640). METHOD FOR THE PREPARATION OF EPITAXIAL FILMS OF MERCURY CADMIUM TELLURIDE.
SN 6-469,176 (4,485,314). POWER CIRCUIT UTILIZING SELF-EXCITED HALL EFFECT SWITCH MEANS.
SN 6-469,370 (4,481,707). METHOD FOR THE FABRICATION OF DIELECTRIC ISOLATED JUNCTION FIELD EFFECT TRANSISTOR AND PNP TRANSISTOR.

SN 6-475,664 (4,488,713). PNEUMATIC CLAMPING DEVICE.
SN 6-484,329 (4,490,973). FLAMEHOLDER WITH INTEGRATED AIR MIXER.
SN 6-493,387 (4,495,505). PRINTED CIRCUIT BALUN WITH A DIPOLE ANTENNA.
SN 6-498,238 (4,482,259). LASER CLOCK.
SN 6-498,335 (4,495,764). INTEGRATED INSULATION WALL ASSEMBLY.
SN 6-502,771 (4,487,068). METHOD AND APPARATUS FOR DETECTING ACOUSTIC EMISSIONS FROM METAL MATRIX WIRE.
SN 6-552,555 (4,495,782). TRANSMISSIVE DEWAR COOLING CHAMBER FOR OPTICALLY PUMPED SEMICONDUCTOR RING LASERS.
SN 6-574,433 (4,482,398). METHOD FOR REFINING MICROSTRUCTURES OF CAST TITANIUM ARTICLES.
SN 6-643,203. TALLY CELL CIRCUIT.
SN 6-649,445. AUTOMATED PARTS STORAGE AND RETRIEVAL SYSTEM POSITIONING DEVICE AND METHOD.
SN 6-659,920. HIGH VOLTAGE RF COAXIAL CABLE.
SN 6-679,333. DOUBLE PINHOLE SPATIAL PHASE CORRELATOR APPARATUS.

DEPARTMENT OF THE ARMY

SN 6-488,249 (4,493,741). AMINE SALTS AS BONDING AGENTS.
SN 6-669,147. NORMAL COORDINATE MONOLITHIC CRYSTAL FILTER.
SN 6-677,274. FREEZE DRIED RAW MEATS.
SN 6-690,358. STRESS COMPENSATED CRYSTAL DEVICE.

DEPARTMENT OF THE INTERIOR

SN 6-168,815 (4,497,578). MACHINE FOR MIXING AND INJECTING WATER AND GROUT INTO A ROOF BOLT HOLE.
SN 6-577,459 (4,498,928). DUCTILE DUPLEX IRON-BASED ALLOY CONTAINING ALUMINUM.

Patents Available for Licensing or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: General Electric Co., Motor Business Group, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204, Attention: Patent Counsel.

4,433,466. APPARATUS FOR MAKING AND USING SLOT CLOSURE WEDGES AT A COIL INJECTION STATION.
4,443,934. METHOD OF ASSEMBLING PERMANENT MAGNET DC MACHINES.
4,466,762. TOOL FOR FORMING INTERNAL SCREW THREADS.
4,469,970. ROTOR FOR PERMANENT MAGNET EXCITED SYNCHRONOUS MOTOR.
4,472,651. PERMANENT MAGNET ROTOR.
4,477,306. LAMINATED CORE, APPARATUS AND METHODS.
4,479,081. STEP MOTOR DRIVE.

Applications for licenses may be addressed to the Patent Counsel, Military Electronic Systems Operation, General Electric Co., Bldg. 2, Rm. 205, Electronics Park, Syracuse, N.Y. 13221.

4,277,787. CHARGE TRANSFER DEVICE PHASED ARRAY BEAMSTEERING AND BEAMFORMER.
4,303,898. LONGITUDINALLY FLANGED WAVEGUIDE.
4,321,526. RIPPLE CURRENT STABILIZED CONTROL LOOP FOR SWITCHING REGULATOR.
4,349,915. MINIMIZATION OF MULTIPATH AND DOPPLER EFFECTS IN RADIANT ENERGY COMMUNICATION SYSTEMS.

Applications for licenses may be addressed to: General Electric Co., Construction Equipment Business Operation, P.O. Box 704, Farmington, Conn. 06034-0704 Att: Richard A. Menelly, Patent Counsel.

4,484,045. MOLDED CASE CIRCUIT BREAKER HAVING IMPROVED ARC RESISTANT PROPERTIES.
4,484,045. MOLDED CASE CIRCUIT BREAKER HAVING IMPROVED ARC RESISTANT PROPERTIES.
4,485,283. CURRENT LIMITER UNIT.

Applications for license may be addressed to Patent Counsel, Steam Turbine-Generator/Lynn Operations, General Electric Co., 1100 Western Ave., Lynn, Mass. 01910.

4,437,809. TURNING GEAR INTERLOCK.
4,443,725. DYNAMOELECTRIC MACHINE STATOR WEDGE.
4,469,971. STATOR SLOT WEDGE ASSEMBLY WITH AXIAL SPRING RETAINER.

Applications for license may be addressed to Patent Counsel, Industrial & Marine Steam Turbine Division, General Electric Co., 1100 Western Ave., Lynn, Mass. 01910.

4,063,872. UNIVERSAL BURNER.
4,082,115. VALVE OPERATOR.
4,190,961. METHOD AND APPARATUS FOR ALIGNING TURBINE INTERNAL COMPONENTS.
4,033,234. THROTTLE VALVE OPERATOR.
4,018,083. VIBRATION DETECTION PROBE HOLDER.
4,402,183. SLIDING PRESSURE FLASH TANK.
4,391,101. ATTEMPERATOR-DEAERATOR CONDENSER.

4,419,578. A SOLID STATE NEUTRON DETECTOR. Kenneth A. Kress, Correspondence address: Dr. Kennedy L. Wilson, Chairman, CIA Patents Board, Central Intelligence Agency, Washington, D.C. 20505.

4,409,544. INSTRUMENTS FOR MEASUREMENT OF CARRIER POWER AND ANTENNA IMPEDANCE IN AM BROADCASTING. Robert W. Redlich, 9 Grand Park Blvd., Athens, Ohio 45701.

4,393,925. STOVE PIPE HEAT EXTRACTOR. Ken Jacobsen, P.O. Box 283, Beaverton, Oreg. 97075.

4,389,893. PRECISION ULTRASOUND ATTENUATION MEASUREMENT. Jack E. Haken, Esq., North American Philips Corp., 580 White Plains Rd., Tarrytown, N.Y. 10591 (914) 332-0222.

4,163,438. ROTARY VALVE TIMING APPARATUS. Dana Corp., P.O. Box 1000, Toledo, Ohio 43697.

4,107,975. METHOD AND APPARATUS FOR TESTING SHOCK ABSORBERS AND THE LIKE. William P. Cargile, P.O. Box 10101, Palo Alto, Calif. 94303.

4,034,596. METHOD AND APPARATUS FOR TESTING SHOCK ABSORBERS AND THE LIKE. William P. Cargile, P.O. Box 10101, Palo Alto, Calif. 94303.

3,948,227. STRATFIELD CHARGE ENGINE. Dana Corp., P.O. Box 1000, Toledo, Ohio 43697.

D-275,685. ELECTROMOTIVE CAMERA LENS OR SIMILAR ARTICLE. Oma Mfg. Co., Ltd., Tokyo, Japan. Correspondence to: Holman & Stern, Chartered, 2401 Fifteenth St., N.W., Washington, D.C. 20009. Folio: 47965-D.

4,489,795. SHOCK RESISTANT DIGGING IRON. Richard F. Leidy, 4910 Arters Mill Rd., Westminister, Md. 21157.

4,484,516. CLAMP FOR PRESSING FOOD IN PAN DURING COOKING. Lev Bimman, Skogveien 117, 1320, Stabekk, Norway. Correspondence to: P.O. Box 9504, Arlington, Va. 22209.

4,484,066. GARMENT-COUNTING APPARATUS. Paul L. DeBlieux, et al. Prospective assignees or licensees should contact: Reginald F. Roberts, Jr., P.O. Box 515, Baton Rouge, La. 70821.

4,477,912. CORRELATION DATA COMMUNICATIONS SYSTEM. James A. Oliff, Esq., Parkhurst & Oliff, 277 S. Washington St., Suite 212, Alexandria, Va. 22313 (703) 836-6400.

4,475,647. ROPE BUCKET ELEVATOR. Gerts Diner/Liza Kremerova. Correspondence should be addressed to: Martin W. Schiffmiller, Esq., Kirschstein, Kirschstein, et al., 551 Fifth Ave., New York, N.Y. 10176.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 9, 1985

Pp. 3,971	4,444,322	4,465,532	4,477,585
Pp. 5,242	4,444,343	4,465,569	4,479,770
Pp. 5,311	4,444,597	4,466,651	4,479,847
Pp. 5,312	4,445,622	4,467,257	4,480,064
Pp. 5,313	4,445,791	4,467,342	4,480,326
Pp. 5,314	4,446,107	4,467,414	4,480,473
D. 262,296	4,450,078	4,467,560	4,481,066
4,031,235	4,450,269	4,467,617	4,481,088
4,140,089	4,450,474	4,467,993	4,481,198
4,197,744	4,450,752	4,468,310	4,481,344
4,243,142	4,451,592	4,468,749	4,481,365
4,264,595	4,451,647	4,469,132	4,481,428
4,289,289	4,452,350	4,469,288	4,481,577
4,339,173	4,452,784	4,469,292	4,482,004
4,371,825	4,452,884	4,469,660	4,482,099
4,374,472	4,453,183	4,469,707	4,482,204
4,379,853	4,453,559	4,469,849	4,482,234
4,379,943	4,453,806	4,470,012	4,482,327
4,380,473	4,454,206	4,470,044	4,482,332
4,393,637	4,455,661	4,470,133	4,482,338
4,394,741	4,455,733	4,470,468	4,482,417
4,400,548	4,456,803	4,470,851	4,482,530
4,400,615	4,457,230	4,471,066	4,482,689
4,401,803	4,457,569	4,471,425	4,482,742
4,402,972	4,457,710	4,471,460	4,482,834
4,403,108	4,457,727	4,471,672	4,483,019
4,403,490	4,457,731	4,471,686	4,483,083
4,408,387	4,458,256	4,472,169	4,483,103
4,408,468	4,458,336	4,472,200	4,483,356
4,413,416	4,458,643	4,472,362	4,483,379
4,417,375	4,458,764	4,472,480	4,483,495
4,423,961	4,459,036	4,472,562	4,483,506
4,426,003	4,459,356	4,472,876	4,483,543
4,427,104	4,459,680	4,472,914	4,483,708
4,428,693	4,459,754	4,473,279	4,483,752
4,429,003	4,460,563	4,473,354	4,483,770
4,429,769	4,460,632	4,473,600	4,484,244
4,431,442	4,460,640	4,473,750	4,484,264
4,437,406	4,460,923	4,473,961	4,484,288
4,438,172	4,460,998	4,474,056	4,484,832
4,438,417	4,461,013	4,474,166	4,484,920
4,438,419	4,461,944	4,474,425	4,484,959
4,440,142	4,462,328	4,474,556	4,485,225
4,441,764	4,462,369	4,474,787	4,485,274
4,441,843	4,462,718	4,475,716	4,485,283
4,442,851	4,463,124	4,476,383	4,485,506
4,443,448	4,464,002	4,476,430	4,490,416
4,443,809	4,464,576	4,477,504	

Disclaimers

4,006,267.—*Philip Kurz,* deceased, late of Columbus, Ohio; by Jessie M. Kurz, executrix, Rockhill, S.C. COLOR HIGHLIGHTING PROCESS. Patent dated Feb. 1, 1977. Disclaimer filed Jan. 22, 1985, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1 through 10, inclusive of said patent.

4,188,541.—*Godfrey N. Hounsfield,* Newark, England. APPARATUS FOR EXAMINING A BODY BY RADIATION SUCH AS X OR GAMMA RADIATION. Patent dated Feb. 12, 1980. Disclaimer filed Feb. 24, 1983, by the assignee, *EMI Ltd.*

The term of this patent subsequent to Dec. 11, 1990 has been disclaimed.

4,350,626.—*Yasuhiko Masuho* and *Takeshi Hara,* Tokyo, Japan. ANTITUMOR PROTEIN HYBRID AND PROCESS FOR THE PREPARATION THEREOF. Patent dated Sept. 21, 1982. Disclaimer filed Jan. 28, 1985, by the assignee, *Teijin Ltd.*

Hereby enters this disclaimer to claims 1 through 6 of said patent.

4,364,212.—*Robert J. Pearson,* Tonawanda and *Rodney G. Buergin,* Snyder, N.Y. FIRE-RESISTANT METAL STUD. Patent dated Dec. 21, 1982. Disclaimer filed Feb. 4, 1985, by the assignee, *National Gypsum Co.*

The term of this patent subsequent to Oct. 12, 1999 has been disclaimed.

4,396,938.—*Robert A. Dischert,* Burlington, N.J. CONTROLLED RAM SIGNAL PROCESSOR. Patent dated Aug. 2, 1983. Disclaimer filed Jan. 17, 1985, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 16 and 17 of said patent.

4,423,745.—*William C. Butt* and *Buford L. Almond,* Lynchburg, Va. RINSING MACHINE. Patent dated Jan. 3, 1984. Disclaimer filed Feb. 4, 1985, by the assignee, *Simplimatic Engineering Co.*

Hereby enters this disclaimer to all claims of said patent.

4,436,612.—*Soni O. Oyekan,* Piscataway, N.J., and *George A. Swan,* Baton Rouge, La. CATALYTIC REFORMING PROCESS. Patent dated Mar. 13, 1984. Disclaimer filed Feb. 4, 1985, by the assignee, *Exxon Research and Engineering Co.*

Hereby enters this disclaimer to claims 1–3 and 6–15 of said patent.

4,444,703.—*Richard J. G. Dominguez* and *Doris M. Rice,* Austin, Tex. REINFORCED REACTION INJECTION MOLDED ELASTOMERS. Patent dated Apr. 24, 1984. Disclaimer filed Feb. 1, 1985, by the assignee, *Texaco, Inc.*

Hereby enters this disclaimer to claims 1 through 21 of said patent.

4,448,127.—*John J. Frain,* Clearwater, Fla. METHOD OF PRODUCING STACKS OF TICKET STACKS. Patent dated May 15, 1984. Disclaimer filed Jan. 17, 1985, by the assignee, *Metro Game Manufacturing Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,468,531.—*James H. Postlethwait,* Hartford and *William F. Olashaw,* and *Roger Kusek,* Plainville, Conn. SAFETY SHIELD ASSEMBLY FOR A DRAWOUT-TYPE CIRCUIT BREAKER. Patent dated Aug. 28, 1984. Disclaimer filed Nov. 14, 1984, by the assignee, *General Electric Co.*

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

Hereby enters this disclaimer to all claims of said patent.

Dedication

4,406,480.—*Lewis B. Izzi,* Shelby, N.C. WATER CLOSET COUPLING. Patent dated Sept. 27, 1983. Dedication filed Feb. 11, 1985, by the assignee, *Plastic Oddities, Inc.*

Hereby dedicates the remaining term of said patent to the People of the United States of America.

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The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 2, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	7-25-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-05-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	1-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	8-01-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-30-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-07-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	7-19-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	10-25-68
DESIGN, GROUP 290—K. L. CAGE, Director	9-17-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	3-19-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	10-29-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	12-21-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-15-82

Expiration of patents: The patents within the range of numbers indicated below expire during February 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,366,970 to 3,371,350, inclusive

Plant Patents ..... Numbers 2,784 to 2,793 inclusive

1053 OG 40

REISSUES

APRIL 9, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,861

SINGLE LEVER REMOTE CONTROL FOR ENGINE THROTTLE AND CLUTCH

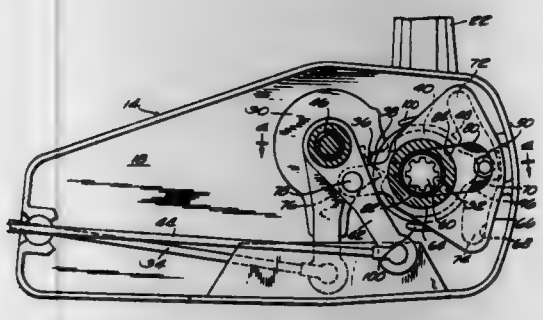
Anthony P. Prince, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Original No. 4,232,771, dated Nov. 11, 1980, Ser. No. 1,486, Jan. 8, 1979. Continuation of Ser. No. 789,798, Apr. 22, 1977, abandoned. Application for reissue Nov. 9, 1982, Ser. No. 440,415

Int. Cl.[3] **B60K** *29/02*

U.S. Cl. 192—0.096

13 Claims



11. A throttle control for an engine having a throttle and a clutch, said control comprising a housing, a control lever mounted on said housing for rotation relative to a neutral position, a shaft member supported within said housing for rotation relative to said housing and connected to said control lever for common rotation therewith, said shaft member being further supported within said housing for axial movement relative to said housing between first and second positions in response to axial movement of said control lever, a throttle lever movably mounted on said housing and adapted to be connected to the engine throttle for actuation thereof in response to movement of said throttle lever, a throttle drive member including a drive pin and connected to said shaft member for rotation in response to movement of said control lever from the neutral position, a shift lever adapted to be connected to the engine clutch for actuation thereof in response to shift lever movement, said shift lever being movably mounted on said housing for movement between a neutral position and a shift position in response to movement of said shift lever, means releasably connecting said shift lever to said shaft member so as selectively to move said shift lever from the neutral position to the shift position in response to rotational movement of said control lever from the neutral position and to permit relative rotation between said shift lever and said shaft member in response to rotational movement of said control lever, said means connecting said shift lever to said shaft member including a shift drive member mounted on said shaft member for relative rotary movement therebetween, means connecting said shift lever and said shift drive member, and drive means for releasably connecting said shift drive member and said throttle drive member to provide common rotary movement of said shift drive member and said throttle drive member when said shaft member is in the first position and to permit relative rotation between said shaft member and said shift drive member, in response to rotational movement of said control lever, when said shaft member is in the second position, a cam member connected between said throttle lever and said throttle drive member for movement between an idle position and throttle advance positions in response to rotation of said throttle drive member, said cam member including a cam track receiving said drive pin and having a central portion extending at a uniform radius from the rotational axis of said shaft member and end portions extending from said central portion at increasing distances from the rotational axis of said shaft member, and guide means located on said cam member and on said housing for guiding movement of said cam member in response to movement of said drive pin in said cam track, whereby said cam member remains in the idle position while said drive pin travels in said cam track central portion in response to rotation of said throttle drive member and said cam member moves from the idle position to a throttle advance position after said drive pin enters into and travels within one of said cam track end portions in response to rotation of said throttle drive member.

12. A control in accordance with claim 11 and further including lockout means for preventing rotation of said shift drive member when said shaft member is in said second position.

Re. 31,862

APPARATUS FOR THE TREATMENT OF LIGNOCELLULOSIC MATERIAL

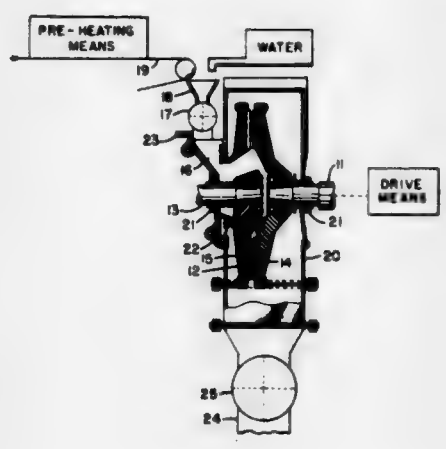
Kenneth C. Logan, Jakarta, Indonesia, and Friedrich O. B. Ludhe, Bethesda, Md., assignors to Sunds Defibrator, Inc., Minn.

Original No. 3,948,449, dated Apr. 6, 1976, Ser. No. 465,056, Apr. 29, 1974. Division of Ser. No. 231,694, Mar. 3, 1972, Pat. No. 3,808,090, which is a continuation-in-part of Ser. No. 77,374, Oct. 1, 1970, abandoned, which is a continuation of Ser. No. 888,728, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 704,497, Dec. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 569,351, Aug. 1, 1966, abandoned, which is a continuation-in-part of Ser. No. 357,008, Mar. 25, 1964, abandoned, which is a continuation-in-part of Ser. No. 159,329, Dec. 14, 1961, abandoned. Application for reissue Mar. 22, 1983, Ser. No. 477,842

Int. Cl.[3] **B02C** *23/24*

U.S. Cl. 241—41

2 Claims



2. Apparatus for producing a paper making pulp comprised of a predominance of long unbroken fibers and having a brightness in excess of 50 G.E. and a Canadian Standard Freeness not exceeding [510 c.c.] *364 c.c.* comprising abrading means, housing means surrounding said abrading means for maintaining said abrading means in a pressurized environment, supply means for feeding lignocellulosic fibrous particles to said abrading means and means for supplying a substantial quantity of liquid water to said abrading means while maintaining a pressurized environment in said housing, discharge means for removing the fibrous end product from said housing means while maintaining a pressurized environment inside of the housing means, drive means for operating said abrading means with a minimum total power consumption of 30 horsepower days per ton of fibrous end product and means for supplying a pressure medium to said housing means.

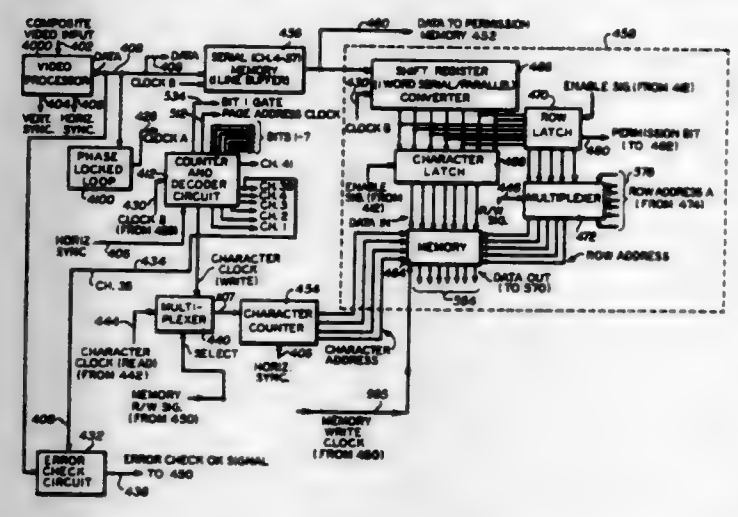
Re. 31,863
ROW GRABBING SYSTEM

Richard Saylor, Monsey, and Robert H. Nagel, New York, both of N.Y., assignors to IDR, Inc., Farmingdale, N.Y.

Original No. 4,042,958, dated Aug. 16, 1977, Ser. No. 611,843, Sep. 10, 1975. Application for reissue May 23, 1983, Ser. No. 496,831

Int. Cl.³ H04N *1/02*

U.S. Cl. 358—141 **33 Claims**



1. A real time frame grabbing system for substantially instantaneously providing a continuous video display of a selectable predetermined video frame of information on a video display means from continuously transmittable video information comprising means for transmitting said video information as a plurality of pseudo video scan lines, each of said pseudo video scan lines having a television video scan line format and capable of comprising a complete self-contained packet of digital information sufficient to provide an entire displayable row of video data characters, said pseudo video scan line having an associated transmission time equivalent to said television video scanline, said packet of digital information comprising at least address information for said displayable row and data information for said displayable characters in said displayable row, each of said pseudo video scan lines further comprising a horizontal sync signal at the beginning thereof and a start bit pulse between said horizontal sync signal and said packet of digital information, said horizontal sync signal providing a record separator between adjacent psuedo video scan lines, said transmitting means further comprising means for providing a vertical sync signal [signal] after a predetermined plurality of pseudo video scan lines have been transmitted, said pseudo video scan line being a composite video signal, said system further comprising television signal distribution means for distributing said transmitted composite pseudo video scan line signals to said video display means for providing said continuous video display and receiver means operatively connected between said television signal distribution means and said video display means for processing said distributed composite pseudo video scan line signals and capable of providing a displayable video row signal to said video display means from each of said pseudo video scan line signals pertaining to said selected frame for providing said [containing] *continuous* video display, [a predetermined plurality of displayable video rows comprising a displayable video frame of information,] said start bit pulse providing a unique synchronizing pulse for each transmitted pseudo video scan line for enabling precise determination of a sampling time for the received distributed pseudo video scan line to enable accurate determination of the binary state of the bits comprising said digital information packet, said receiver signal processing means comprising means responsive to the occurrence of said bit *and said horizontal sync signal* for each distributed pseudo video scan line for providing a reset signal for resetting said processing means in response to detection of said start bit *for enhancing immunity of said system to any noise or jitter present in said horizontal sync signal,* whereby noise immunity and accurate signal information detection are enhanced.

Re. 31,864
SELF-TEST FEATURE FOR APPLIANCE OR ELECTRONIC SYSTEMS OPERATED BY MICROPROCESSOR

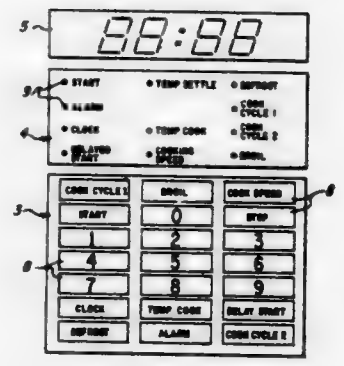
Michael G. van Bavel, Sugarland, and Alan J. Shannon, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original No. 4,158,431, dated Jun. 19, 1979, Ser. No. 749,487, Dec. 10, 1976. Application for reissue Sep. 19, 1983, Ser. No. 533,838

Int. Cl.³ G06F *11/04*

U.S. Cl. 371—20 **25 Claims**

1. Apparatus *with self-test initiated at power-up, said apparatus* having a plurality of electrically operated devices including electrically operated visible indicia, a plurality of manually operable input means for entering functional commands, microprocessor means connected to the devices and receiving inputs from the input means, said microprocessor means containing a fixed, permanently programmed read-only-memory for storing instruction words which define operating sequences for the apparatus, the microprocessor means further including logic means for sequentially executing the instruction words to operate the devices in response to commands from the input



means, *an off-on switch for controlling the supply of power to the apparatus,* the microprocessor means having self-contained test control means operable in response to actuation thereof *by actuation means* without external control equipment to energize at least some of said electrically operated devices in sequence, the test control means including a sequence of said instruction words in the read-only-memory, *the actuation means initiating said sequence of instruction words for self-test upon power-up of said apparatus by means of said off-on switch.*

PLANT PATENTS

GRANTED APRIL 9, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,430

HEATHER NAMED ERICA PACIFICA

Bruno L. Imazio, Watsonville, Calif., assignor to Bruno Imazio Partnership, Watsonville, Calif.

Filed Mar. 25, 1983, Ser. No. 478,740
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new variety of heather, substantially as herein shown and described, particularly characterized by its very early blooming habit as compared with its seed parent.

5,431

ALSTROEMERIA NAMED STALRAMA

Jacob van Andel, Jac. Takkade 9a 1432 CA, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij/M. C. van Staaveren, Aalsmeer, Netherlands

Filed Aug. 11, 1983, Ser. No. 522,256
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinctive alstroemeria cultivar, substantially as herein shown and described, particularly distinguished from its parent Red Sunset (U.S. Plant Pat. 4,635) by its deeper red flower color and its abundance of foliage.

5,432

CARNATION NAMED LONTOCIA

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 11, 1983, Ser. No. 512,727
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct carnation cultivar, substantially as herein shown and described, characterized in particular by the shrimp red color of its blooms which are streaked with union jack red; and by its vigorous and rigid growth habit, moderately abundant foliage and relatively few branches.

5,433

CARNATION NAMED LONKORPI

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,512
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of spray carnation, substantially as herein shown and described, characterized by the chartreuse yellow coloration of its small blooms, the petals of which are edged with a combination of cardinal red and greyed purple. The flowers of this plant are produced profusely on long, straight and strong flowering stems and the plant has a vigorous and upright growth habit with abundant foliage and resistance to *Fusarium oxysporum*.

5,434

CARNATION NAMED LONBLITEC

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,565
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct spray carnation cultivar, substantially as herein shown and described, characterized by the very white color of its small blooms which are produced profusely on tall, straight and strong flowering stems which have a vigorous and upright growth habit with abundant foliage and resistance to *Fusarium oxysporum*.

5,435

CARNATION NAMED LONTARION

Nicoletta Baratta, and Giacomo Nobbio, both of San Remo, Italy, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Aug. 11, 1983, Ser. No. 522,100
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—73 **1 Claim**

1. The new and distinct carnation cultivar, substantially as herein shown and described, characterized by its abundant production of bright, medium sized blooms, its regularly recurrent blooming habit, and its resistance to *Fusarium oxysporum*.

PATENTS

GRANTED APR. 9, 1985

ERRATA

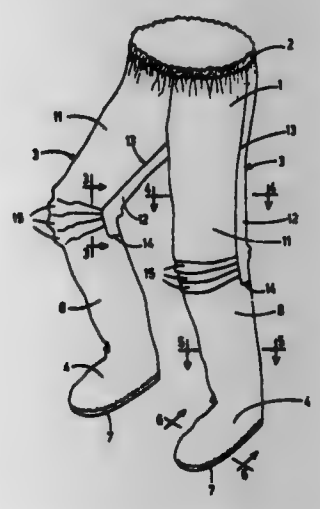
For CLASS	See PATENT NO.
123–440	4,509,502
277–082	4,509,773
384–099	4,509,804
357–081	4,509,839
514–002	4,510,130
514–011	4,510,132
514–030	4,510,133
514–027	4,510,134
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514–080	4,510,137
514–206	4,510,138
514–234	4,510,139
544–360	4,510,140
514–250	4,510,141
514–255	4,510,142
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514–257	4,510,144
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514–365	4,510,154
514–276	4,510,155
514–415	4,510,156
514–411	4,510,157
514–415	4,510,158
514–456	4,510,159
514–521	4,510,160
514–054	4,510,161
514–255	4,510,322
514–530	4,510,323

PATENTS

GRANTED APRIL 9, 1985

GENERAL AND MECHANICAL

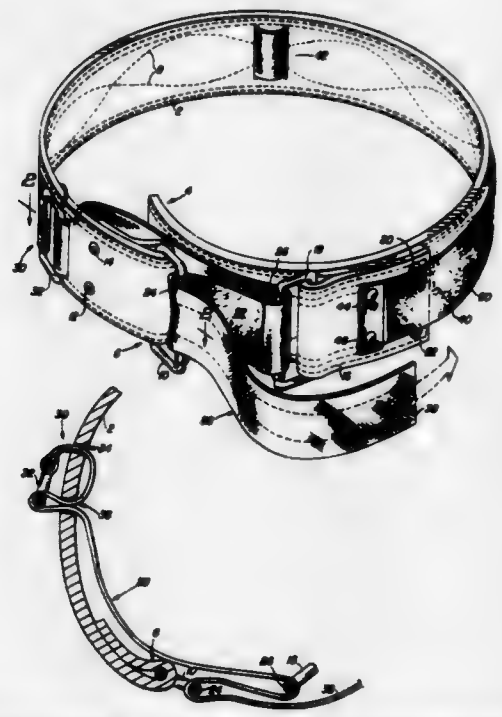
4,509,213
RAIN COVER FOR MOTORCYCLIST'S LEGS
Marc Harvey, 18, St-Cyrille, Outremont, Quebec, Canada H2V 1H8
Filed Jun. 18, 1982, Ser. No. 389,945
Claims priority, application Canada, Aug. 19, 1981, 384179
Int. Cl.³ A41D *13/02*
U.S. Cl. 2—22 **5 Claims**



1. A rain garment for motorcyclists comprising:
a body-encircling portion,
a pair of leggings depending from said body-encircling portion to cover the wearer's entire legs,
a gaiter portion at the lower end of each legging to completely cover the wearer's shoes while leaving the undersides of the shoe soles substantially completely exposed,
retaining means substantially all around the inner perimeter of the gaiter portion to secure the latter to the perimeter of the sole, said retaining means comprising an elastic strip secured to the inner perimeter of the gaiter portion at the extending below the lower edge thereof,
said elastic strip being adapted to be stretched in direct contact with substantially the entire perimeter of the sole and extending all around the perimeter of the sole,
pouch means consituting the knee-covering portion of each legging to allow free knee flexing up to 120° without disengagement of the gaiter portion from the wearer's shoes, said pouch means comprising accordeon pleats extending transversely across the front of each legging in the region of the wearer's knee and terminating at the sides of said legging,
the back of the bottom portion of each legging, including the gaiter portion and said elastic strip, being longitudinally slit and being provided with a fastener to close said slit, said slit and said fastener extending upwardly toward the back of the knee, and
attachment means to secure said garment onto said wearer.

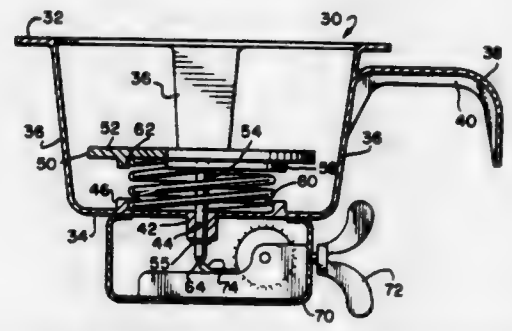
4,509,214
WEIGHT LIFTER'S BELT INCORPORATING PULLEY MECHANISM
Lance L. Shea, 2933 N. 83rd St., Scottsdale, Ariz. 85251
Filed Sep. 22, 1980, Ser. No. 189,070
Int. Cl.³ A41F *9/00*
U.S. Cl. 2—322 **10 Claims**

1. A waist belt for weight lifting, said waist belt comprising in combination:
a. a belt having first and second ends;
b. a flexible strap having a fixed end secured to said belt proximate the second end thereof, said flexible strap having a free end opposite the fixed end;
c. first means secured to said belt proximate the first end thereof for engaging said flexible strap at a first point disposed between the fixed end and free end thereof;
d. second means secured to said belt proximate the second end thereof for engaging said flexible strap at a second point disposed between the first point and the free end thereof;



e. said flexible strap, said first means, and said second means forming a pulley arrangement for tightening said belt when the free end of said flexible strap is pulled; and
f. means to secure said belt when tightened.

4,509,215
DISPOSABLE LINER FOR A MUSICAL POTTY CHAIR
Lirida Paz, 815 Summer St., Elizabeth, N.J. 07202
Filed Jun. 28, 1983, Ser. No. 508,565
Int. Cl.³ A47K *11/02*; G08B *21/00*
U.S. Cl. 4—452 **4 Claims**



1. In a potty chair having a seat and a receptacle removably attached thereto for receiving excrement including feces and urine, wherein said receptacle includes a bottom, an open top having an outwardly turned flange, and at least one support member, one end of which is rigidly attached to said flange and the other end of which is rigidly attached to said bottom, thereby forming a rigid basket like structure, said potty chair including a liner means for forming a liquid containing membrane within and supported by said receptacle, said liner means being constructed of thin, light-weight water impermeable material of low mass and having a bottom, a flexible side wall, and an open top having a drawstring means arranged thereabout for selectively deforming said open top into either of two positions, wherein the first position, said open top is arranged so that a portion of said side wall of said liner is turned out-

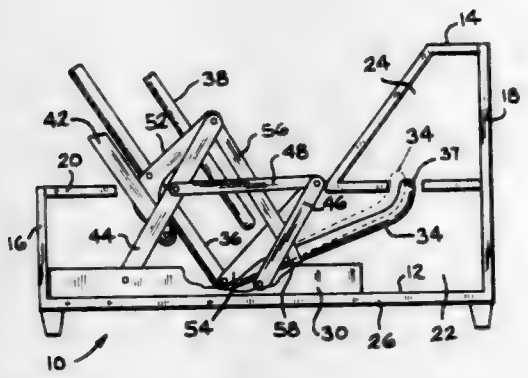
wardly over and under said flange and said drawstring means pulled snuggly to secure said portion of said side wall about said flange, and wherein the second position, said open top is arranged so that said draw string means is pulled snuggly to close said open top for disposal of said liner wherein said potty chair includes a music box means for sounding musical tones, a platform means having an upper surface arranged to undergo linear movement in an upward direction and a downward direction for actuating said music box means wherein said upper surface of said platform means is in contact with and supports the weight of said bottom of said liner means said flexible side wall being arranged so that said bottom of said liner means will move in correspondence to and along with said upper surface of said platform means while said receptacle remains stationary.

4,509,216

SOFA BED MECHANISM

Theodore J. Blevins, and Paul R. Swiderski, both of Georgetown, Ky., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Nov. 29, 1982, Ser. No. 444,942
Int. Cl.³ A47C *17/04, 17/00*
U.S. Cl. 5—13 **4 Claims**



1. In a sofa bed including front, back and side frame members which define a storage space which includes a vertically elongated section adjacent said back frame member, a mechanism comprising a foldable bed frame including in succession a head section, an intermediate section and a foot section, said sections being pivotally joined at their ends and movable between a substantially coplanar horizontal bed position and a folded sofa position in which said sections are completely received within said storage space with said head section extending into the vertically elongated portion of said storage space, a support member on which said bed frame is supported and which is adapted to be secured to said sofa bed within said storage space, a linkage assembly on said support member operable to control movement of said bed frame between said bed and sofa positions and a head section control member comprising a free-ended bracket member freely pivotally supported on said linkage assembly and operable to engage said head section during movement of said bed frame toward said sofa position to pivot said head section relative to said intermediate section and guide said head section upwardly into said vertically elongated portion of said storage space.

4,509,217

GUARDRAIL ASSEMBLY FOR HOSPITAL BED

Gaston Therrien, Montreal, Canada, assignor to Bertec Inc., Montreal, Canada

Filed Apr. 4, 1983, Ser. No. 481,943
Int. Cl.³ A47C *21/08*
U.S. Cl. 5—430 **8 Claims**

1. A guardrail assembly mounted on one side of a hospital bed of the type having a bed frame including a horizontal frame part (5) and an upright bracket (17) at either end and on one side of said horizontal part, said guardrail assembly including a guardrail (18) extending along said side of sid horizontal part and means connecting the ends of said guardrail to said upright brackets (17) for allowing movement of said guardrail between a raised position, suitable to protect a bed patient from accidentally falling out of the bed, and a retracted lowered position suitable to allow the patient to move in and out of the bed, the improvement wherein said rail connection means comprises:

linkage means at both ends of said bed frame between said brackets and the ends of said guardrail for allowing movement of said guardrail between said raised and lowered positions; each linkage means comprising at least one link (23) having one end connected to one end of said guardrail and another end provided with a pin locking hole (31);

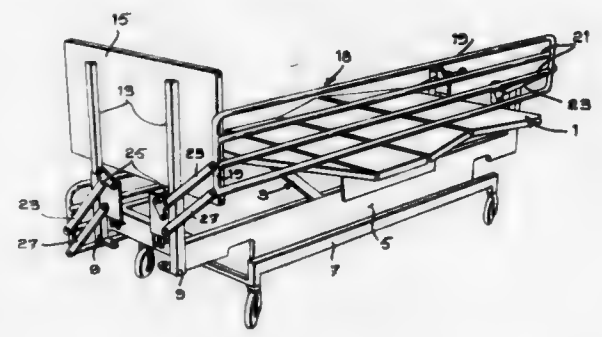
means (25) pivotally connecting said at least one link (23) intermediate its end to the upright bracket (17); said pivot means allowing swinging of said links (23) in parallel vertical planes during movement of said guardrail between said raised and lowered positions;

pin locking holes (35) provided in the upright brackets (17), said holes (35) in the brackets (17) being located so as to register with the pin locking holes (31) of the links (23) when said guardrail is in its raised position;

pin locking means (36) on said brackets, including locking pins (37) extending through said bracket locking holes (31) and resilient means biasing said pins (37) toward said locking hles (31) of said links (23) so as to move thereinto when the guardrail is in its rised position and the locking holes (31) of said in said raised position;

manual means (39) on one of said pins (37) said manual means being operable to withdraw said one pin, and

means (51) interconnecting said pin locking means (36) to



cause simultaneous engagement and disengagement of the pins (37) with the locking holes of the links (23) at both ends of the bed, whereby locking of said guardrail in raised position and at both ends of said bed may be achieved at the end only of said bed that has said manual means,

wherein each of said pin locking means (36) comprises a hollow cylindr (41) having one open end secured to the corresponding bracket (17) coaxially with the pin locking hole (35) of said bracket, said locking pin resilient means (47) being housed within said cylinder; the locking pin in said cylinder including a transverse trunnion (43) extending through and out of elongated slots (45) of said cylinder;

wherein one of said locking pins extends outwardly through the closed end of its cylinder;

wherein said manual means is a knob (39) mounted at the outwardly extending pin; and

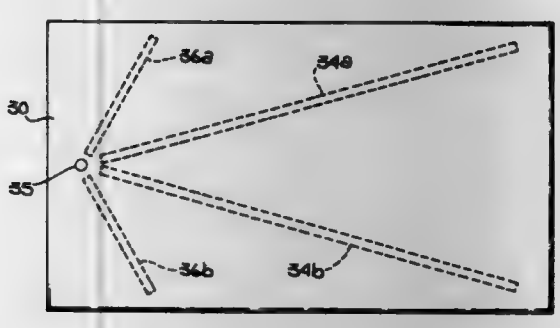
wherein said means interconnecting said pin locking means (36) comprise: a pair of upward levers (53) each mounted on one of said brackets (17 below said cylinders, for rocking motion about a horizontal axis transverse to said bed; a horizontal elongated movement transmitting rod (59) beneath said bed and pivotally connected at the ends thereof respectively to the lower ends of said upward levers; and means pivotally mounting the upper ends of said levers (53) respectively to the ends of said trunnions (43) extending outwardly of said cylinders (41), constructed so that pulling on said knob (39) against the bias of said locking pin resilient means (47) rocks said levers

(53) through said movement transmitting rod (59) and pulls said pins (37) out of said locking holes (31) of the links (23) to release said links and guardrail for free movement between said raised and lowered positions.

4,509,218
DRAIN PIPES FOR EMPTYING WAVELESS WATERBED MATTRESSES

Albert L. Rhoton, Cypress, Calif., assignor to Morgan Flotation Systems, Los Angeles, Calif.

Filed Mar. 18, 1983, Ser. No. 476,489
Int. Cl.[3] A47C *27/08*
U.S. Cl. 5—450 10 Claims

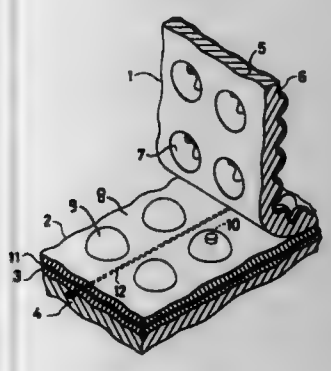


1. A waterbed mattress system which dampens wave motion and drains rapidly, comprising:
a sealable liquid enclosure means with at least one drain port;
wave dampening filler disposed inside said enclosure means;
at least two perforated pipes disposed inside said enclosure means, said pipes disposed horizontally and adjacent said dampening filler, and each of said pipes having an open end disposed near said drain port and extending therefrom in a fanlike manner, whereby said pipes provide a relatively low resistance path for passing liquid contained in said enclosure means to said drain port, to be removed therefrom.

4,509,219
SLEEPING MATTRESS

Toshizo Yagi, Kodairashi, Japan, assignor to Japan Life Company Limited, Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 540,908
Int. Cl.[3] A47C *27/22*
U.S. Cl. 5—481 7 Claims

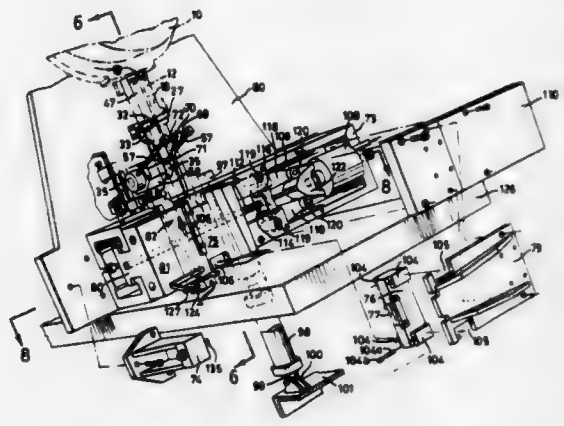


1. A sleeping mattress comprising, in order:
a first layer made of cushion material, having a plurality of holes therein, formed with an undulated outer surface;
a second layer having semicircular projections provided with magnets, said semicircular projections being mated with said holes;
a third layer stuffed with fibers and reinforcing materials; and
a fourth layer comprising cushion material.

4,509,220
PREVAILING TORQUE NUT

David C. Cooper, Oakville, and Kenneth J. Bouchard, Scarborough, both of Canada, assignors to Stelco Inc., Hamilton, Canada

Filed Dec. 6, 1982, Ser. No. 447,411
Int. Cl.[3] B21D *53/24*
U.S. Cl. 10—86 A 17 Claims



5. The method of making a prevailing torque nut from a regular hexagonal nut having an integral washer at one end, the nut having an internally threaded bore, the method comprising the steps:
(a) placing the regular hexagonal nut between two anvil members having oblique flat working surfaces extending over substantially the full axial height of the nut except for the integral washer,
(b) decreasing the distance between the anvil members to bring them into contact with the nut, and
(c) further decreasing the distance between the anvil members to cause an inward deformation of the nut which increases smoothly and progressively from one end of the nut to the other, the slope of the working surfaces of the jaws being such that, after inward deformation of the nut, the threads at the washer end of the nut remain substantially undeformed.

10. Apparatus for converting regular nuts into prevailing torque nuts, comprising:
two anvil members, having oblique working surfaces,
delivery means for placing the regular nuts sequentially between the anvil members,
power means for controlling the spacing between the anvil members such that (a) the anvil members first come into contact with the opposite sides of a nut located between them over substantially the full axial height of the nut, and then (b) the spacing between the anvil members decreases by a predetermined amount which is the same for all nuts within a given size range, whereby to permanently inwardly deform each nut in a smooth and progressive manner from one end of the nut to the other.

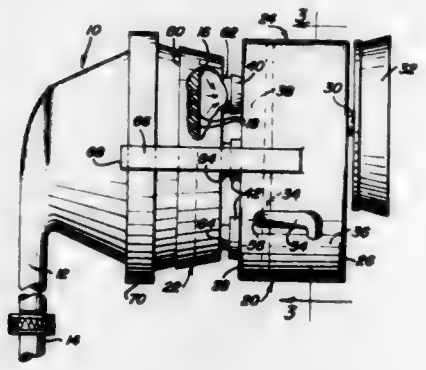
4,509,221
WATER DRIVEN SCRUBBER FOR HAND HELD SHOWER HEAD

Raymond A. Simpson, Jr., 609 Frontier Dr., High Point, N.C. 27263

Filed Oct. 6, 1983, Ser. No. 539,821
Int. Cl.[3] A46B *13/06*
U.S. Cl. 15—29 8 Claims

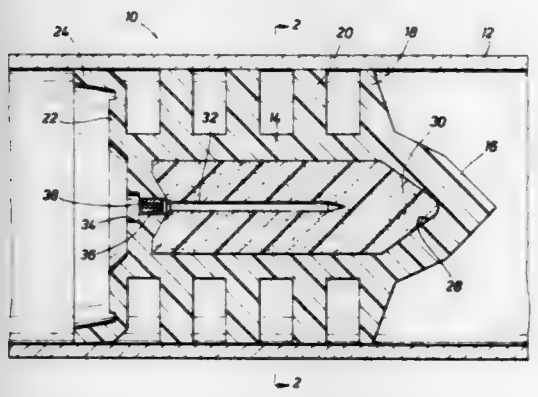
1. In combination with a hand-held shower spray head of the type including a flexible water inlet supply hose opening into said head on one side thereof through an elongated tubular handle projecting outwardly of said one side and wherein said head includes a plurality of liquid spray jet outlets opening outwardly of a side of said head remote from said handle, a scrubber assembly attachment including a housing having first and second remote sides, said housing including rotary scrubbing means journalled therefrom and facing and disposed

outwardly of said first side, said second side including liquid inlet means, liquid motor means in said housing including a rotary output shaft upon which said scrubbing means is mounted, said housing including liquid outlet means, said motor means being operative to receive liquid under pressure from said inlet means, discharge liquid from said liquid outlet



means and to develop rotary torque input to said shaft as a result of a liquid flow under pressure therethrough from said inlet means through said outlet means, said housing and head including means operative to releasably mount said housing from said head with at least one of said spray jet outlets in sealed communication with said inlet means.

4,509,222
PIG FEATURING FOAM FILLED CAVITY
Kenneth M. Knapp, 1209 Hardy St., Houston, Tex. 77020
Filed Dec. 2, 1983, Ser. No. 557,370
Int. Cl.[3] B08B *9/04*
U.S. Cl. 15—104.06 R **7 Claims**



1. A pipeline pig sized for placement in a pipeline flowing a fluid therealong in response to a pressure gradient acting on the fluid from an upstream location, and wherein the pig is carried with the flow of fluid in the pipeline, the pig comprising:

(a) an elongated pig body having a nose and having a centrally located hollow cavity therein of specified length and diameter;

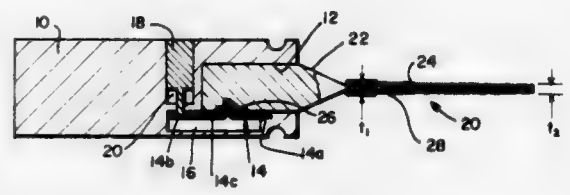
(b) annular flexible rib means surrounding said body and extending radially outwardly therefrom to contact the inside surface of a pipeline wherein said rib means wipes the inside surface of the pipeline;

(c) a transversely extending rearwardly locating face on said body extending toward the surrounding pipe for intercepting fluid flowing in the pipeline to impart a force to the pig for moving the pig;

(d) passage means through said face into the cavity in said body, said passage means exposing said cavity to fluid in the pipeline from behind the pig; and

(e) retarding means having the form of foamed plastic in said cavity for retarding the velocity of propagation of pressure surges from behind the pig into said cavity from said passage means and wherein said retarding means enables fluid from behind the pig to impinge on the nose portion of said cavity delayed such that pressure shock waves propagated along the pipe from behind the pig are retarded by said retarding means.

4,509,223
GUN CLEANING TOOL
Douglas E. Sipple, and Charles T. Wolstenholme, both of P.O. Box 65, Georgetown, Del. 19947
Filed Aug. 2, 1983, Ser. No. 519,586
Int. Cl.[3] F41C *31/00*
U.S. Cl. 15—160 **16 Claims**



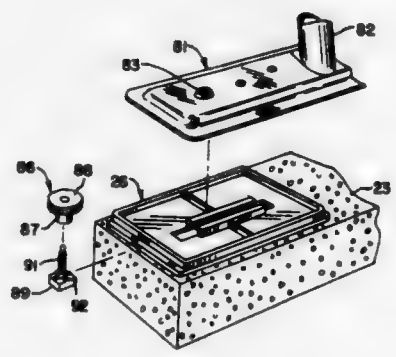
1. A gun cleaning tool comprising:

(a) a handle to facilitate manual manipulation by the user;

(b) a tip extending from the handle, the tip having: (i) a shank portion which extends from the handle; (ii) a stiffly resilient bar having a generally rectangular cross section defining top, bottom, and side surfaces extending from the shank portion, the resilient bar having a distal end; and (iii) cleaning means attached to at least the top and bottom surfaces and extending along the length of the bar, the distance between the exterior surfaces of the cleaning means on the top and bottom surfaces defining a thickness which decreases toward the distal end of the bar; and,

(c) latching means to removably attach the tip to the handle.

4,509,224
REFILL SPONGE MOP ASSEMBLY
Douglas R. Batchelor, Chicago, Ill., assignor to Libman Broom Company, Arcola, Ill.
Division of Ser. No. 507,590, Jun. 24, 1983, Pat. No. 4,468,832.
This application Aug. 3, 1984, Ser. No. 637,307
Int. Cl.[3] A47L *13/10*
U.S. Cl. 15—244 R **3 Claims**



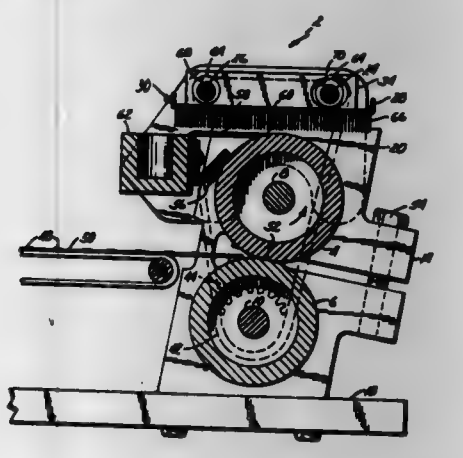
3. A refill sponge mop assembly for use with a mop head comprising a sponge, a backing plate secured to one side of said sponge, said backing plate including first connecting means thereon, an adapter having at least two sides, said adapter including second connecting means on one of said two sides and third connecting means on the other of said two sides, said first and second connecting means having mating configurations and being interengageable, and said first and third connecting means having similar constructions, and a screw and nut, said screw having a shank and a head attached to said third connecting means, and said shank and said nut being adapted to be attached to said mop head.

4,509,225

PRESSURE ROLL CLEANING SYSTEM

Orville C. Haugen, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 20, 1983, Ser. No. 459,342
Int. Cl.[3] B21B *45/02*; G03G *21/00*
U.S. Cl. 15—256.51 5 Claims



1. A cleaning apparatus in combination with a moving surface and a doctor blade having a free end engaging said surface along a line to scrape and thereby clean said surface of foreign material, said cleaning apparatus comprising:

a brush having a longitudinal axis extending parallel to said line of engagement between said blade and said surface; and

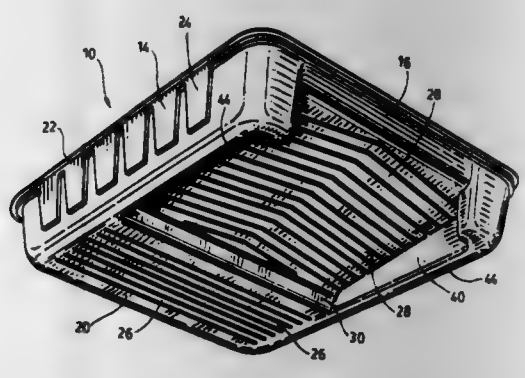
means for orbitally moving said brush into and out of contact with said surface and in a direction perpendicular to said line of engagement to force said foreign material away from said line of engagement and across said blade.

4,509,226

UNITARY PAINT TRAY

Philip J. Allison, Renforth, and Morley L. Smith, Beaconsfield, both of Canada, assignors to T. S. Simms & Co. Limited, Saint John, Canada

Filed Mar. 28, 1984, Ser. No. 594,217
Int. Cl.[3] B44D *3/12*
U.S. Cl. 15—257.06 1 Claim



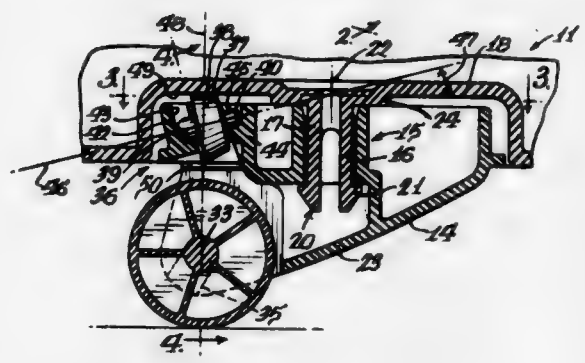
1. A nestable paint tray comprising a unitary body having a bottom wall, and a pair of oppositely disposed side walls and a pair of oppositely disposed end walls, said side and end walls having an upper edge extending in a first plane, the bottom wall being formed to provide a raised ramp which extends inwardly and downwardly from a first end wall and a paint reservoir which extends inwardly from a second end wall, said bottom wall being formed to provide a generally planar base for the tray extending inwardly from the side walls, and, said first and second end walls of the tray terminating in a second horizontal plane, said side walls extending from said first plane to said second horizontal plane along the full length thereof, said planar base comprising a generally horizontally extending first support wall formed on the underside of the paint reservoir and a pair of L-shaped second support walls projecting from said first support wall, one along the full length of each side wall of the tray to said first end wall and a short distance laterally inwardly along said first end wall, said ramp having side walls which extend downwardly to said second support walls in an oppositely disposed spaced relationship with respect to said side walls, said ramp having an inner end wall communicating with said first support wall, said side and end walls of said tray and side walls of said ramp being arranged to define an upwardly open enclosure which will accommodate a further tray of like construction in a nesting relationship.

4,509,227

THREE-PIECE SWIVEL CASTER HAVING A FORCE TRANSFER ROLLER

James W. Keane, Ramsey County, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 30, 1982, Ser. No. 429,843
Int. Cl.[3] B60B *33/00*
U.S. Cl. 16—23 7 Claims



1. In a swivel caster having a base defining a swivel portion defining a vertical swivel axis and arranged for cooperation with a complementary swivel support to permit the base to be snap-fitted to the swivel support without tools and separate fasteners to swivel about said axis of said swivel portion, and a caster wheel mounting portion defining a horizontal caster wheel axis spaced from said swivel portion axis, a caster wheel journaled in said caster wheel mounting portion for rolling movement about said caster wheel axis, the improvement comprising:

a force transfer element comprising a roller having an axis of rotation and a frustoconical periphery defining an angle of approximately 14° to said axis of rotation, axle means coaxially associated with said roller for journaling said roller on said base about a fixed rolling axis defined by said axle means, said fixed rolling axis being inclined at an angle of approximately 14° to the horizontal plane and with a lower end of the axle means being spaced further from said swivel axis than is a vertical axial plane of said caster wheel axis; and

means on said swivel support defining a planar downwardly facing bearing surface extending perpendicularly to said swivel axis and engaging said frustoconical roller periphery on a line of engagement for transmitting an overlying load from said support substantially solely vertically downwardly toward said caster wheel mounting axis, said line of engagement of the bearing surface with said frustoconical roller periphery being substantially bisected by said vertical plane of the caster wheel axis, said axle means and roller being cooperatively constructed to permit installation of the roller on said base with the frustoconical periphery narrowing in only one preselected axial direction, said axle means including an upper end projecting from said roller coaxially oppositely to said lower end, said lower end of the axial means defining a substantially hemispherical bearing having a radius substantially greater than the diameter of said upper end, the extension of said lower end of the axle means from said roller being less than twice said radius, said base having an upstanding wall forming a pair of spaced axle supports defining com-

plementary lower and upper axle supporting portions and being open downwardly toward said caster wheel intermediate said axle supporting portions, said roller being maintained spaced from said lower axle supports by the engagement of the lower axle means end with said lower axle supporting portion, said caster comprising a three-piece structure formed of synthetic resin.

4,509,228

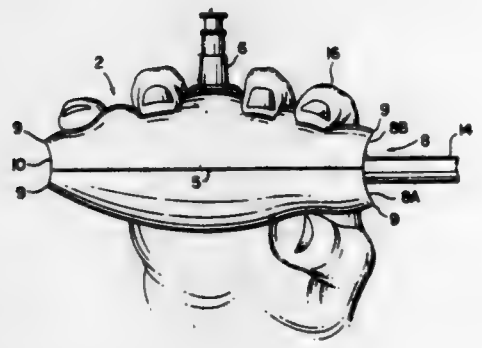
INFLATABLE IMPLEMENT HANDLE

Kurt Landsberger, 103 Harrison St., Verona, N.J. 07044

Filed Mar. 4, 1983, Ser. No. 472,046

Int. Cl.³ B25G *1/00*

U.S. Cl. 16—114 R **6 Claims**



1. An inflatable implement handle for use by the manually impaired, comprising:

a substantially oblong inflatable handle including top and bottom walls circumferentially joined together and front and rear walls separating the top and bottom walls and circumferentially joined thereto;

the front and rear walls being continuous walls, with the front wall having upper and lower sections extending longitudinally within the handle to provide a longitudinally extending internal pocket substantially in the center of the front wall;

the upper and lower sections of the front wall being laterally and longitudinally joined on either side of the pocket;

valve means arranged with one of the top and bottom walls and operable for permitting the handle to be inflated to a degree of resiliency commensurate with the manual impairment of a user, and for being deflated;

an implement interchangeably received in the pocket before the handle is inflated;

a force being exerted on the pocket for retaining the implement therein when the handle is inflated; and

the force being relieved for releasing the implement from the pocket when the handle is deflated.

4,509,229

CONCEALED HINGE HAVING A SPRING BIASED U-SHAPED SLIDER

Luciano Salice, Carimate, Italy, assignor to Arturo Salice, S.p.A., Novedrate, Italy

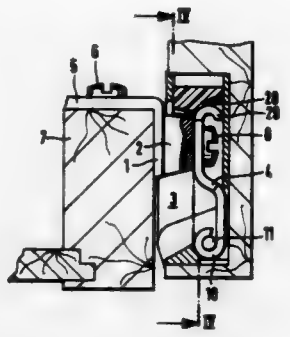
Filed Mar. 2, 1984, Ser. No. 585,447

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307777

Int. Cl.³ E05D *11/10*

U.S. Cl. 16—327 **4 Claims**

1. A concealed hinge assembly, comprising a mounting plate, a projecting base member, which is connected to the mounting plate, a hinge bracket, which adjacent to its one end is screw-connected to the mounting plate and at its other end is hinged to one side of a pot-shaped member in such a manner that the one end on the hinge bracket moves into the pot-shaped member during closing movement, and a slider, which is guided in the pot-shaped member in a radial plane and biased by two mutually parallel coiled compression springs and carries a cam, which during the closing movement cooperates with a projection of the hinge bracket, characterized in that the slider is U-shaped and comprises a crosspiece and side legs, which are guided in mating recesses of the pot-shaped member and at their free ends are provided with inwardly directed, angled projections, the compression springs bear at one end on



said angled projections and at the other end on abutments consisting of stops carried by the pot-shaped member, the crosspiece carries the cam, and the hinge bracket has an end portion which extends beyond the projecting base member and runs up and slides along said cam.

4,509,230

DRAFTING MECHANISM FOR A SPINNING MACHINE

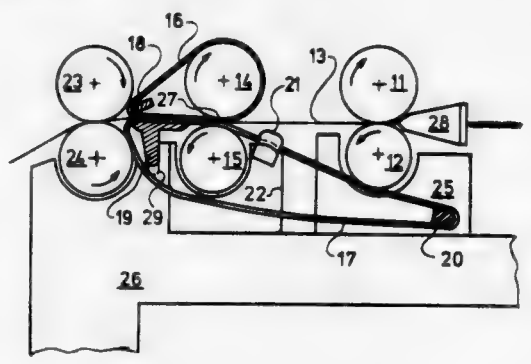
Arthur Wuermli, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Jun. 29, 1983, Ser. No. 509,235

Claims priority, application Switzerland, Jul. 23, 1982, 4503/82

Int. Cl.³ D01H *5/64*

U.S. Cl. 19—245 **9 Claims**



1. A drafting mechanism for a spinning machine provided with a preliminary drafting zone and a main drafting zone comprising:

an infeed roller pair comprising an upper infeed roller and a lower infeed roller;

a delivery roller pair comprising an upper delivery roller and a lower delivery roller;

an apron roller pair comprising an upper apron roller and a lower apron roller;

an upper apron and a lower apron driven by said apron roller pair;

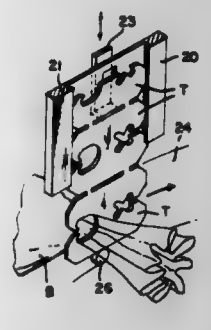
the preliminary drafting zone extending between the infeed roller pair and a nip line formed by the apron rollers which are pressed against the upper and lower aprons;

the main drafting zone extending between said nip line and the delivery roller pair;

said lower apron extending beneath the preliminary drafting zone and the lower infeed roller; and

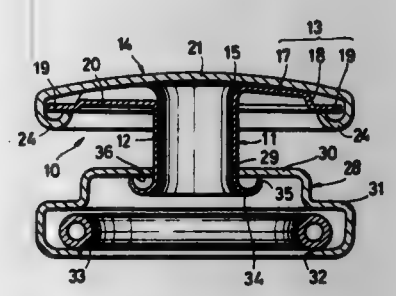
the lower apron being in grazing contact with said lower infeed roller during operation of the drafting mechanism in order to clean the lower infeed roller of fibers.

4,509,231
DUAL-OPENING BAG CLOSURE
Jerre H. Paxton, 2720 S. 16th Ave., Yakima, Wash. 98903
Filed May 27, 1983, Ser. No. 498,967
Int. Cl.[3] B65D *77/10*
U.S. Cl. 24—30.5 R 5 Claims



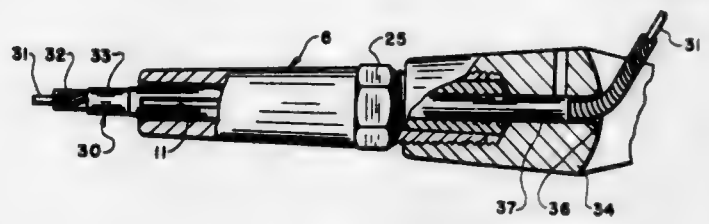
1. In a multiple-closure strip of the type for closing the neck of a bag or the like wherein each of the closures includes a flat, thin, transversely stiff body having opposite ends terminating in longitudinal side edges in the direction of the length of the strip, frangible means connecting the closures in said strip so as to cause at least one of said opposite longitudinal side edges of the terminal closure in the strip adapted to be exposed for contact with a bag neck to be closed, each of said opposite longitudinal side edges having an opening terminating in a bag neck-receiving aperture, with the bag neck-receiving aperture at one end of the closure being different from the bag neck-receiving aperture at the opposite end, whereby bags of various sizes or materials can be closed, with said closure dependent upon which side edge is exposed to the bag.

4,509,232
ATTACHING POST FOR SNAP FASTENER ELEMENTS
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1983, Ser. No. 517,897
Claims priority, application Japan, Aug. 2, 1982, 57-117499
Int. Cl.[3] A44B *1/42*
U.S. Cl. 24—113 R 3 Claims



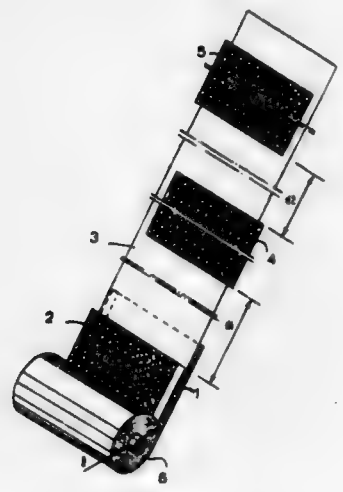
1. An attaching device for a snap fastener element, comprising:
(a) a post including a cylindrical stem and a circular flange integral therewith and extending from an end of said stem;
(b) a cap mounted on said flange and including a rounded circular wall and an annular curled rim integral with and extending axially from said rounded wall and having an end;
(c) said circular flange including a central portion contiguous to said end of said stem, an inclined annular step extending radially outwardly from said central portion, an annular shoulder extending radially outwardly from said annular step, and a plurality of radial ribs integral with said past and extending radially outwardly from said end of said stem to said annular step, said end of said stem being spaced from said rounded wall of said cap, and said annular shoulder being locked in position by said end of said annular rim.

4,509,233
ROPE CLAMP CONSTRUCTION
Charles R. Shaw, Twinsburg, Ohio, assignor to Esmet, Inc., Canton, Ohio
Filed Jun. 15, 1983, Ser. No. 504,625
Int. Cl.[3] F16G *11/00;* H02G *15/08*
U.S. Cl. 24—136 R 22 Claims



1. An improved rope clamp construction including:
(a) an elongated sleeve having first and second ends and formed with an internal tapered bore converging toward the second end;
(b) a tapered plug slidably mounted within the tapered bore of the sleeve for gripping a nonmetallic fibrous rope within a bore formed in an extending axially throughout the length of the plug;
(c) the plug having an annular collar formed at one end and a plurality of tapered segments formed integrally with the collar and extending outwardly therefrom, said plug having a length between ten and twenty times greater than the diameter of the plug bore, with the annular collar being located toward the second end of the sleeve and with the taper of the tapered segments extending in the same direction as the taper of the internal tapered bore of said sleeve;
(d) a friction reducing, corrosive resistant coating on the plug and on the internal bore of the sleeve to facilitate the sliding movement of the plug within the sleeve bore; and
(e) attachment means removably mounted on the first end of the sleeve for attaching the sleeve and internally mounted plug to a termination structure.

4,509,234
AUTO-REGENERABLE CAPACITOR AND METHOD OF MANUFACTURE THEREOF
Franz Voglaire, Rue Bois des Collines No. 15, Braine - l'Alleud, Belgium
Filed Oct. 20, 1983, Ser. No. 543,931
Claims priority, application European Pat. Off., Oct. 20, 1982, 82870056.7; Feb. 4, 1983, 83200184.6
Int. Cl.[3] H01G *7/00, 4/24*
U.S. Cl. 29—25.42 11 Claims



1. A method of manufacturing an auto-regenerable capacitor, comprising the steps of:
providing a first tape made from dielectric material metallized on one side except for one edge;
providing a second tape, said second tape being similar to

said first tape and being made from dielectric material metallized on one side except for one edge;

provided a non-metallized packing tape having at least two metal sheets thereon, each metal sheet having a length of at least $\pi \times D$ and each metal sheet being spaced apart from the next adjacent metal sheet by at least $\pi \times D$;

arranging said first and second tapes and said packing tape such that said non-metallized edges of said first and second tapes are positioned opposite each other, and said metal sheets are positioned such that the closest of said metal sheets to said first and second tapes is spaced from the longest of said first and second tapes by at least $\pi \times D$;

winding said first and second tapes and said packing tape to form a capacitor roll; and

depositing a metallized layer on the edges of said wound first and second tapes as well as the edges of said packing tape to form contacts for said capacitor roll;

wherein D is the diameter of said capacitor roll.

4,509,235

TOOL CHANGER

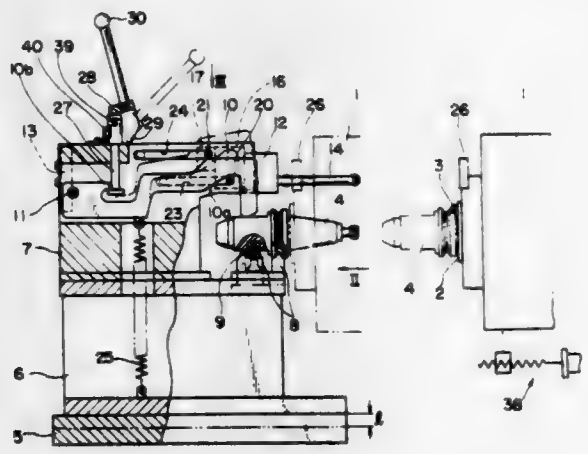
Shinichiro Sakamoto, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 4, 1982, Ser. No. 405,085

Claims priority, application Japan, Sep. 9, 1981, 56-141094

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—26 A **8 Claims**



1. A tool changer comprising:

a machining unit having a tool spindle for clamping a tool therein and including means for releasing said tool therefrom;

a pallet movable toward a station in front of said machining unit;

support means on said pallet for releasably supporting the tool in substantial alignment with said tool spindle;

a feed actuator for displacing said machining unit toward and away from said support means to allow said tool spindle to receive the tool or release the same onto said support means;

means for displacing said pallet in a direction transverse to the direction in which said machining unit is displaceable so as to allow said support means to release the tool onto or receive the same from said tool spindle when said machining unit completes its displacement toward said support means; and

a tool clamp mounted on said pallet for releasably clamping the tool on said support means, said tool clamp being mechanically responsive to the displacement of said machining unit toward said support means for releasing the tool on said support means wherein said tool clamp further comprises a clamp frame mounted on said pallet, a horizontally extending clamp arm vertically pivotably mounted on said clamp frame for releasably holding the tool on said support means, and a clamp actuation mechanism operatively mounted on said clamp frame and mechanically responsive to the displacement of said machining unit towards said support means for vertically moving said clamp arm to release the tool.

4,509,236

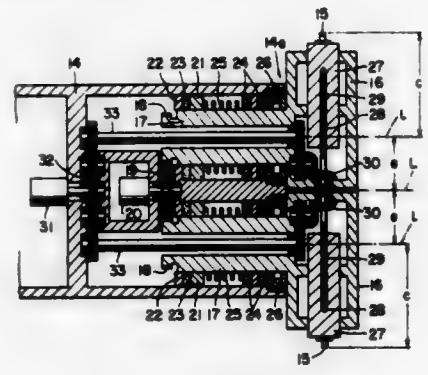
BORING MACHINES

Seiichiro Morita; Akihiko Yuasa, both of Numazu, and Takao Arai, Mishima, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,548

Int. Cl.³ B23B *39/00*

U.S. Cl. 29—26 A **1 Claim**



1. In a hollow rotary spindle of a boring machine provided with a pair of swing arms attached to the front end of the rotary spindle and adapted to support cutters and also provided with a driving mechanism disposed within the rotary spindle for driving the swing arm, the improvement in which said pair of swing arms extend in symmetric radial directions with respect to said rotary spindle and are rotated about the axis thereof and a pair of rams are disposed respectively within said swing arms to be movable in radial directions of said swing arm so as to extend beyond the front ends thereof, said cutters being secured at the front ends of said rams, said rotary spindle being further provided therein with a driving mechanism for driving said rams, said ram being further provided with threaded holes extending in the longitudinal direction, and said ram driving mechanism comprising an electric motor disposed within said rotary spindle, a gear mounted on a drive shaft of said motor, rotary shafts provided with rear gears meshed with said gears, bevel gears operatively connected to said rotary shafts through gearings, and screw rods secured to said bevel gears to engage with said threaded inner holes of said rams.

4,509,237

ARRANGEMENT CONTAINING A CONTROLLED DEFLECTION ROLL AND RELATED REGULATOR

Karl Volz, Baindt; Christoph Link; Wolf-Gunter Stotz, both of Ravensburg, and Peter Heitmann, Ravensburg-Oberhofen, all of Fed. Rep. of Germany, assignors to Escher Wyss Aktiengesellschaft, Zürich, Switzerland

Filed Apr. 26, 1982, Ser. No. 372,011

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117398

Int. Cl.³ B21B *13/14*

U.S. Cl. 29—116 AD **6 Claims**

1. An arrangement comprising:

a controlled deflection roll;

said controlled deflection roll comprising a roll shell having opposed ends and a roll support;

support elements for supporting said roll shell upon said roll support;

a regulation arrangement for regulating a position of the roll shell;

means for operatively connecting said regulation arrangement with said support elements;

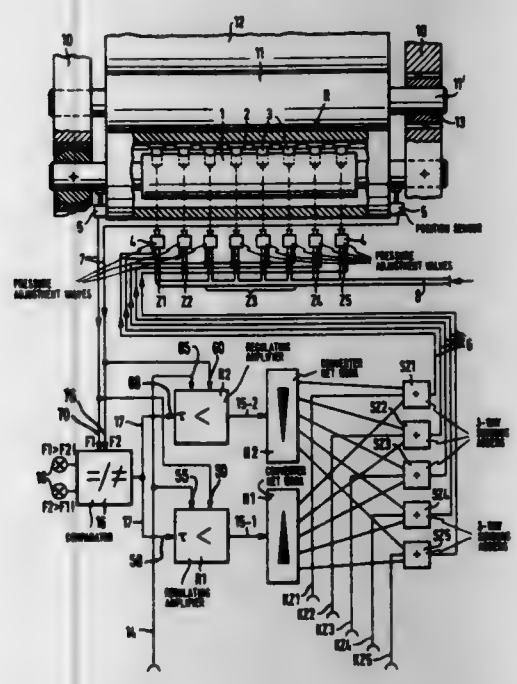
position sensors for detecting the position of the roll shell at least at said opposed ends thereof and cooperating with said regulation arrangement;

the regulation arrangement serving for processing two refer-

ence value-actual value differences of the position of the roll shell into two adjustment magnitudes operatively acting upon said support elements;

the regulation arrangement containing circuit means for forming both of said two adjustment magnitudes, while taking into account a possible difference between both of said two reference value-actual value differences and for thereafter transforming the same into a plurality of weighted adjustment values and summing them together with further such adjustment values, and inputting such summed adjustment values to the support elements;

said circuit means of said regulation arrangement containing at least two regulation circuits possessing regulation time-



constants for defining a response time—delay of said at least two regulation circuits;

said circuit means of said regulation arrangement further containing time-constant altering means which alter said regulation time-constant of at least one of said two regulation circuits when there are present different reference value-actual value differences of the roll shell; both of said two regulation circuits possessing relatively high regulation time-constants when there are present two substantially equal reference value-actual value differences; and

the regulation time-constant of at least one of the two regulation circuits being reduced by said time-constant altering means when there are present two substantially different reference value-actual value differences.

4,509,238

METHOD FOR FABRICATING A STEAM TURBINE DIAPHRAGM

Lester H. Lee, Braintree; Kathryn M. Johnson, Salem, and Richard W. Jones, Melrose, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Mar. 21, 1983, Ser. No. 477,345

Int. Cl.³ B21K *3/04*

U.S. Cl. 29—156.8 R **2 Claims**

1. A method for making a turbine diaphragm comprising the steps of:

forming two 360 degree bands of different diameters;

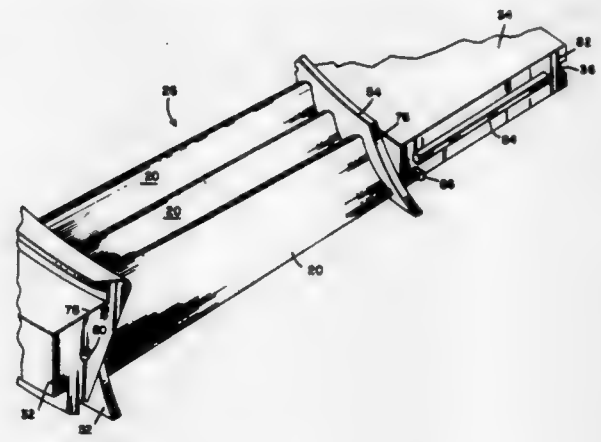
cutting a plurality of slots in each of the bands for accepting opposite ends of blades;

placing the bands into concentric alignment with one another to define an inner and outer band and welding inner and outer blade ends each into respective inner and outer band slots;

severing both said inner and outer bands at two locations approximately 180 degrees apart using first and second line cuts spaced between adjacent blades;

forming a pair of 180 degree inner and outer half rings, each ring having generally planar mating surfaces at opposite ends; and,

welding the pair of inner and outer half rings to the inner and



outer bands respectively whereby the line cuts between adjacent blades and the planar mating surfaces of inner and outer half rings at each location are not aligned in the same radial plane.

4,509,239

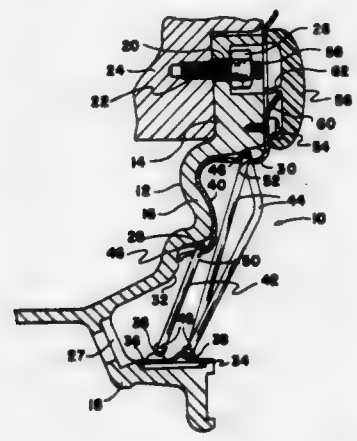
METHOD OF FORMING A WHEEL

John V. Liggett, Plymouth, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Dec. 27, 1983, Ser. No. 565,544

Int. Cl.³ B21D *53/32*

U.S. Cl. 29—159 A **5 Claims**



1. A method of forming a wheel having a plurality of ornamental spoke elements on an outer side thereof comprising the steps of:

providing said wheel with a mounting hub and a radial wall portion extending therefrom and terminating at a tire-receiving rim, said radial wall portion having a cross-sectional contour including at least one generally axially extending, radially outwardly facing surface on said outer side located radially between said hub and said rim;

forming a radially inwardly opened circumferential groove on said outer side of said rim;

forming a hub plate to overlie at least a portion of said wall portion with edge portions thereof being located radially outwardly of said axially extending surface;

forming said plurality of said spoke elements with a hub end and a rim end;

forming a cylindrical element with a plurality of openings therein, which said openings are each capable of receiving said rim end of one of said spoke elements;

installing said cylindrical element within said circumferential groove;

installing said spoke elements with said rim ends in corresponding said openings in said cylindrical element and said hub ends resting against said axially extending surface;

installing said hub plate over said wall portion with said edge portions thereof entrapping said hub ends of said spoke elements against said axially extending surface; and

securing said hub plate to said wheel.

4,509,240

SPRING INSTALLING DEVICE

Nobuo Tezuka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1982, Ser. No. 375,300

Claims priority, application Japan, May 14, 1981, 56-69556[U]

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—227 **5 Claims**



1. A device for installing a spring having a first arm and a second arm adapted to develop a resilient force between a first member and a second member by having said first arm of said spring engaged with said first member and by having said second arm of said spring engaged with said second member, comprising:

holding means for holding said spring in freely movable relation in a direction in which said first member is attached, said holding means being provided at said first member and having a cylindrical shape with a diameter almost equal to the outer diameter of said spring;

engaging means engageable with said second arm of said spring, including release means for releasing said engagement when said spring moves to a direction in which said first member is attached, said engaging means being formed as an end part of said holding member along with the direction in which said first member is attached, and

a shaft adapted to be fitted in said spring when said first member is attached to said second member, said shaft consisting of a portion having a smaller diameter than the inner diameter of said spring and a portion having a larger diameter than the inner diameter of said spring, said shaft being fixed to said second member.

4,509,241

COMBINATION BEARING REMOVAL AND INSTALLATION TOOL

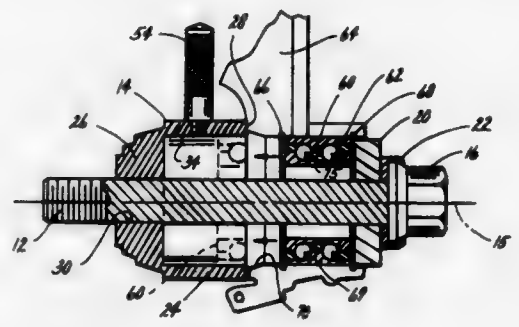
John A. Freeland, 6901 Scio Church Rd., and Robert D. Freeland, 907 Sunnyside, both of Ann Arbor, Mich. 48103

Filed Apr. 9, 1984, Ser. No. 597,886

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—263 **20 Claims**

1. A combination bearing removal and installation tool adapted for use in removing and installing an annular bearing assembly from and in a spindle-receiving bore of a vehicle wheel spindle supporting system without the need to disassemble the wheel spindle supporting system from the vehicle, said tool comprising a shaft having a thread and a cup coaxial with said shaft, said cup having a sidewall open at one axial end and an end wall at the opposite axial end, said end wall having a threaded hole via which said cup threads coaxially onto said shaft, actuating means for rotating said shaft relative to said cup, and bearing engaging means operable by said actuating means for advancing a bearing assembly toward said cup when the tool is in use, said cup being reversible on said shaft by unthreading the cup from the shaft, reversing the cup and then rethreading it onto the shaft, such reversibility endowing the tool with respective bearing removal and bearing installation modes of operation, said bearing removal mode of operation being characterized by said cup being disposed at an end of the spindle-receiving bore with its open axial end facing toward the bore, and said bearing installation mode of operation being characterized by the end wall of said cup facing toward the bore, the tool being operable in the bearing removal mode of operation such that operation of said actuating means causes said bearing engaging means to engage a bearing assembly in the bore from the end of the bore opposite the end at which



said cup is disposed and to advance along said shaft and displace the bearing assembly from the bore and into said cup, the tool being operable in the bearing installation mode of operation such that operation of said actuating means causes said bearing engaging means to engage a bearing assembly and advance it along said shaft from the end of the bore opposite said cup to dispose the bearing assembly within the bore, said cup having on its end wall a locator which, when the tool is in the bearing installation mode of operation, is disposed in predetermined relation to the bore for abutment by the bearing assembly being installed thereby to accurately locate same in a desired installation position within the bore.

4,509,242

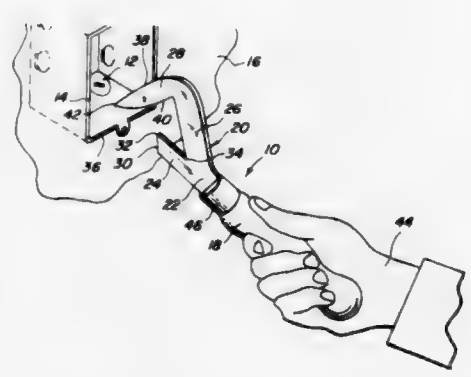
TOOL FOR QUICK REMOVAL OF KNOCK-OUT PLUGS

Gerardo J. Marra, 175 Cherry La., River Edge, N.J. 07661

Filed Jun. 10, 1983, Ser. No. 503,242

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—267 **5 Claims**



1. A tool for quick removal of knock-out blocks in an electrical box within a wall which comprises:

(a) an elongated insulated handle; and

(b) a triangular shaped prying blade hook for prying out the knock out plugs from the electrical box said hook affixed to said handle, and wherein said hook comprises:

(1) a flat shank portion that is secured to said handle;

(2) a piercing blade portion having a beveled forward end forming a top point, said piercing blade portion extending outwardly from said flat shank portion to pierce the wall adjacent the electrical box;

(3) an arm portion extending outwardly at an angle from the top of said piercing blade portion, the junction between said arm portion and said piercing blade portion forming a

pivot point therebetween to engage a front edge of the electrical box; and

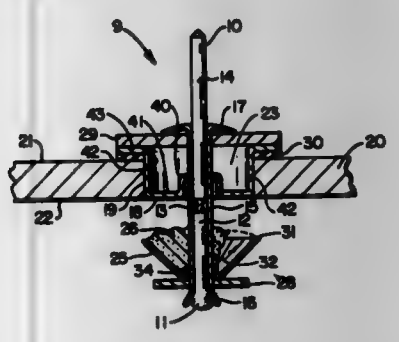
(4) an engaging blade portion having curved outer and inner edges thus forming a tip end, said engaging blade portion extending outwardly and downwardly at an angle from the arm portion and forming a triangular configuration, the tip end being spaced from the top point and lying in a longitudinal plane below the longitudinal plane of the upper edge of said piercing blade which top edge includes said top point, whereby the tip end of said engaging plane will knock out a plug in the electrical box when said handle is pivoted against the electrical box.

4,509,243

BLIND SIDE SEALER APPARATUS AND METHOD

William R. Schneider, and Robert B. Smith, both of Columbus, Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Feb. 8, 1982, Ser. No. 346,516
Int. Cl.³ F16L *55/16;* B23P *7/04*
U.S. Cl. 29—402.02 **12 Claims**



1. An apparatus for the blind sealing of leaks through the wall of a vessel from inside the vessel to outside the vessel, comprising:

a. a stem having in sequential spaced relation an enlarged head portion, a neck portion of reduced size and an extension portion;

b. a sleeve member coaxially surrounding the stem in juxtaposition to acommodate and surround the head portion, and having a collar means portion at the end opposite to the head portion of the stem;

c. a guide means encircling the sleeve member, constructed to loosely fit in a preformed aperture in the wall of the vessel to position the apparatus;

d. an expandable capping means encircling the sleeve member between the head surrounding portion and the guide means; and

e. a viscous caulking sealant interposed between the capping means, the guide means, and the vessel.

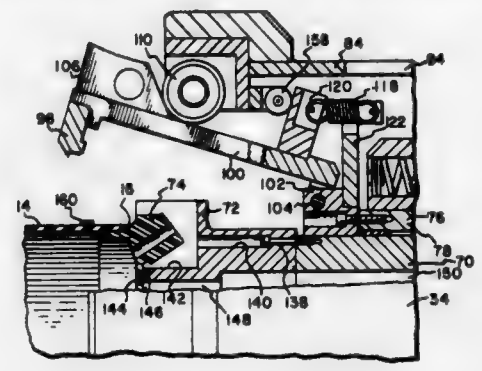
4,509,244

AIR SPRING ASSEMBLY APPARATUS AND METHOD

Richard C. Houck, Clinton, and Dennis A. Lundell, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 437,146, Oct. 27, 1982, Pat. No. 4,471,520. This application Apr. 25, 1984, Ser. No. 603,677
Int. Cl.³ B21D *39/00*
U.S. Cl. 29—516 **4 Claims**

1. A method of assembling a tubular member with an end fitting inserted in an open end of the tubular member and held in place by crimping a ring member around the open end of the tubular member over said fitting comprising placing said ring member over the end of said tubular member, inserting said end fitting into the open end of said tubular member, contracting segments of an annular segmental clamping member to positions on the surface of said tubular member for clamping engagement with said ring member, axially moving said segments to move ring member toward end to predetermined position for crimping increasing the clamping force exerted by said clamping member to crimp said ring member and thereafter radially expanding said segments out of contact with said ring member.

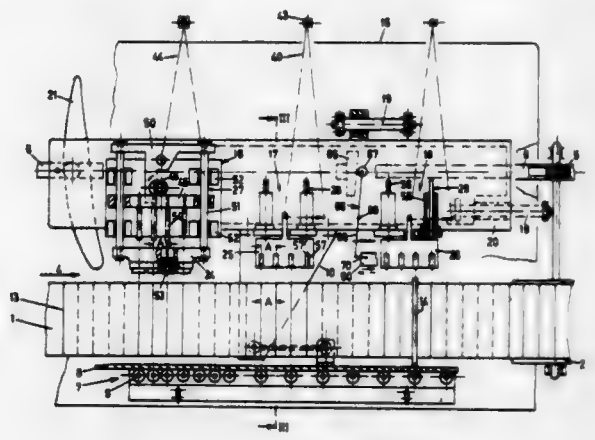


4,509,245

APPARATUS FOR SECURING PARTS ON ELONGATED WRITING INSTRUMENTS, IN PARTICULAR FOR SECURING AN ERASER FOR A SHEATH RECEIVING IT ON A PENCIL

Walter Barth, Nuremberg, and Harald H. Kremser, Postbauer-Heng, both of Fed. Rep. of Germany, assignors to Bleistiftmaschinenfabrik Dipl. Ing. Karl Zuber GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

Filed Apr. 14, 1983, Ser. No. 484,866
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214994
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—525 **19 Claims**



1. In an apparatus for attaching parts, such as erasers and/or sheaths for holding the erasers, on the ends of elongated writing instruments, the improvement comprising:

a linear conveyor device for carrying sets of writing instruments through said apparatus, said conveyor device defining means for supporting said writing instruments normal to the direction of movement of said conveyor device and parallel to, and equidistantly spaced apart from, one another:

means for feeding said supplied parts toward said conveyor device, said supplying means being coupled to said feeding means at said location, each said feeding means including means for pushing said parts onto said writing instruments and menas for moving said feeding means parallel to, adjacent and at the same rate as said conveyor device;

whereby as said conveyor device carries said writing instruments to said feeding means, and when said writing instruments register with said supplied parts, said feeding means first moves from said location in the same direction as said conveyor device while said parts as pushed onto said writing instruments, and then moves in the reciprocal direction back to said location whereupon said supplying means again supplied parts to said feeding means.

4,509,246

METHOD AND A DEVICE FOR SECURING DOUBLE-WALL PANELS TO SUBSTRUCTURES

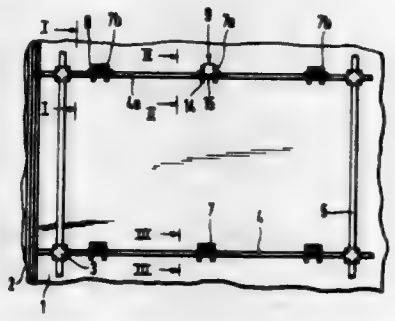
Artur Fischer, Weinhalde 34, 7244 Waldachtal 3/Tumlingen, and Horst Walther, Heidelberg, both of Fed. Rep. of Germany, assignors to Artur Fischer, Tumlingen/Waldachtal, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,442

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1982, 3234188

Int. Cl.³ B23D *19/00*; E04B *5/52*

U.S. Cl. 29—526 R **4 Claims**



1. A method of securing double-wall panels, each being formed by an upper cover plate and a lower plate spaced from each other and connected to each other by parallel cross-pieces to form hollow chambers, to a substructure having transversal rods by means of a plurality of fastening devices, each including a hook-shaped anchor insertable into at least one hole in the lower cover plate of the panel and a U-shaped clamping member connectable to the anchor and adapted to be placed over the respective rod for securing the lower cover plate of the panel to the respective transversal rod, the method comprising positioning one of the fastening devices on the transversl rod in the center of the lower plate and securing said one fastening device to the rod so as to rigidly hold it on said one rod to produce a central anchorage immovable in all directions, and positioning laterally of said one fastening device and at a distance therefrom on said transversal rod, at least one further fastening device, which is placed over said one rod and connected to the lower cover plate of the panel in a self-supporting manner.

4,509,247

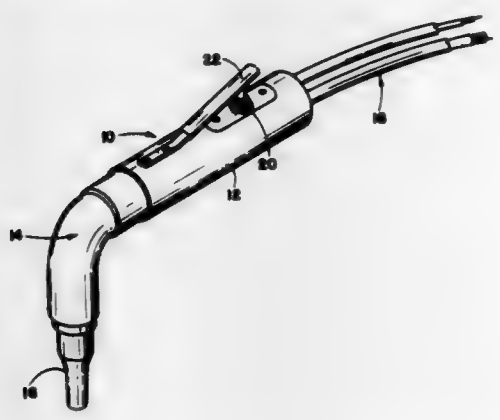
MIG WELDING GUN

Michael S. Conover, Bartlesville, Okla., assignor to K. C. Welding, Bartlesville, Okla.

Filed Dec. 15, 1980, Ser. No. 216,159

Int. Cl.³ B22D *11/126*; B22C *9/02*

U.S. Cl. 29—527.4 **2 Claims**



1. A method of manufacturing an outer housing for a MIG welding gun and comprising the steps of molding the housing by an investment casting process to provide an unitary structure having an integral internally threaded portion for threadedly receiving a nozzle therein, sand blasting the housing subsequent to the investment casting process, and painting the housing with a suitable heat resistant paint subsequent to the sand blasting operation.

4,509,248

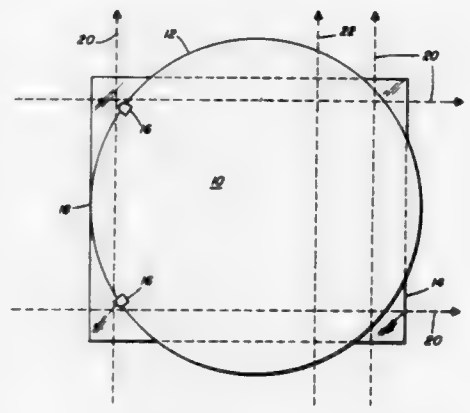
ENCAPSULATION OF SOLAR CELLS

Mark B. Spitzer, Lexington, and Roger G. Little, Bedford, both of Mass., assignors to Spire Corporation, Bedford, Mass.

Filed Mar. 4, 1982, Ser. No. 354,808

Int. Cl.³ H01L *31/18*

U.S. Cl. 29—572 **20 Claims**



1. A process of encapsulating a solar cell comprising:
(a) processing a semiconductor wafer into an uncut cell having a p-n junction and front and back contacts;
(b) securing an interconnect strip to said front contact of said cell;
(c) providing a coverglass plate;
(d) bonding said plate to said cell; and
(e) cutting the bonded assembly of plate and cell to size.

4,509,249

METHOD FOR FABRICATING ISOLATION REGION IN SEMICONDUCTOR DEVICES

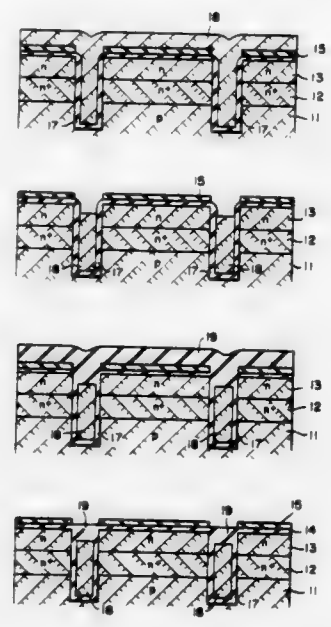
Hiroshi Goto, Yokohama, and Akira Tabata, Zama, both of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Sep. 23, 1983, Ser. No. 535,342

Claims priority, application Japan, Sep. 29, 1982, 57-171977

Int. Cl.³ H01L *21/205*

U.S. Cl. 29—576 W **18 Claims**



1. A method for fabricating an isolation region in a semiconductor device formed with a semiconductor substrate having a U-shaped isolation groove, comprising:
coating said isolation groove with a first insulating layer;
filling the coated groove with polycrystalline semiconductor material at least to a first depth below the surface of said substrate; and

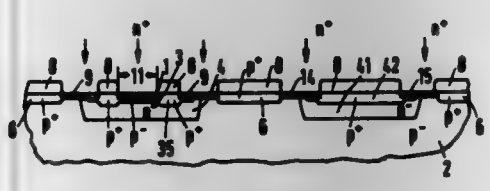
depositing a second insulating layer on said polycrystalline semiconductor material so as to at least fill said isolation groove up to said substrate surface.

4,509,250

PROCESS FOR MANUFACTURING A MONOLITHIC INTEGRATED CIRCUIT COMPRISING AT LEAST ONE BIPOLAR PLANAR TRANSISTOR

Lothar Blossfeld, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,526
Claims priority, application European Pat. Off., Sep. 20, 1982, 82108669.1
Int. Cl.[3] H01L *21/98, 21/223, 21/265*
U.S. Cl. 29—578 4 Claims



1. A process for manufacturing a monolithic integrated circuit comprising at least one bipolar vertical planar transistor whose emitter region is formed in one surface of a semiconducting substrate into a base region which is diffused into a collector region, said process employing a first photoresist mask to produce a diffusion masking layer whereby a collector area is restricted, dopings of a conductivity type of the collector region being implanted and diffused into said collector area;

then employing a second photoresist mask, such that a base area is restricted and dopings of an base region are implanted;

thereafter implanting the dopings of the emitter region into the emitter area; and

employing a third photoresist mask to produce, contact holes in an insulated layer covering the surface side, and a fourth mask to produce an interconnection pattern on the insulating layer contacting the regions, characterized by the following processing steps:

(a) employing said first photoresist mask to produce a diffusion masking layer on the surface side of the substrate which leaves the base area on the substrate unmasked; thereafter

(b) introducing and diffusing the doping material of the collector region into the semiconductor surface within the base area, and subsequently introducing the doping material of the base region in a first relatively small dose into the semiconductor surface by way of ion implantation and by employing the diffusion masking layer as the implantation masking; thereafter

(c) removing the diffusion masking layer and employing a second photoresist mask to produce an oxidation masking layer on the semiconductor surface, said oxidation masking layer covering both the emitter area and the base rim portion in a frame-shaped manner; thereafter

(d) by employing the oxidation masking layer as an implantation mask, implanting ions of the base region type into the exposed semiconductor surface with a second relatively high dose rate, and subsequently thereto, thermal oxidizing the exposed semiconductor surface by forming a new implantation mask, in the course of which the implanted ions are activated; and

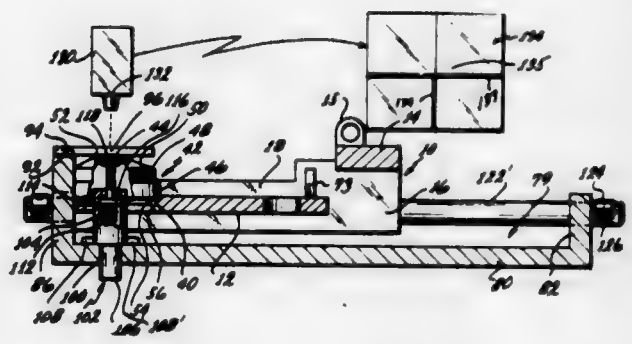
(e) opening contact holes by employing a third photoresist mask and producing an interconnection pattern by employing a fourth photoresist mask.

4,509,251

APPARATUS AND METHOD FOR ORIENTING A MAGNETIC GAP IN A SLIDER HEAD IN A CARRIAGE

Ko K. Gyi, Thousand Oaks, and Gurbachan S. Grewal, Sepulveda, both of Calif., assignors to Magnetic Information Technology, Inc., Chatsworth, Calif.

Filed Sep. 29, 1982, Ser. No. 426,883
Int. Cl.[3] G11B *5/42*
U.S. Cl. 29—603 16 Claims



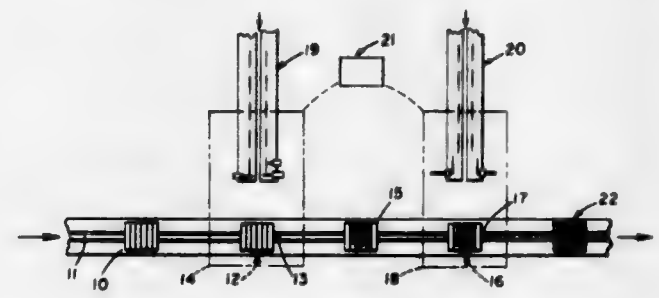
1. As an article of manufacture, an apparatus for assembling a carrier member and a magnetic slider head in a carriage which is a component of a magnetic recording apparatus and for orienting the gap of the magnetic slider head in the carrier member relative to the carriage, in combination, fixture means for holding the carriage with the carrying member and the magnetic slider head mounted on the carriage in a position in which the carrier member is relatively movable, means establishing a fixed reference point in a position relative to the gap in the magnetic slider head wherein the relative positions of the fixed reference point and the magnetic slider are observed whereby the carrier member and the magnetic slider head are manually adjusted and positioned relative to the carriage to orient the magnetic gap relative to the reference point such that the magnetic gap is oriented in azimuth, track to track orientation and is indexed relative to the carriage and whereby the carrier member can be bonded to the carriage in the oriented position.

4,509,252

METHOD AND APPARATUS FOR ASSEMBLING BATTERY COMPONENTS

Anthony Sabatino, St. Paul; Eugene F. Stanefski, South St. Paul; Ronald N. Romanchuk, Fridley, and Edward G. Schaumburg, Askov, all of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Jul. 6, 1982, Ser. No. 395,686
Int. Cl.[3] H01M *6/04;* B23P *19/04*
U.S. Cl. 29—623.1 70 Claims



1. Apparatus for assembling battery components including a battery case having at least one divider wall defining a plurality of cell spaces opening through a top portion of the case, and a plurality of separate individual cell elements having electrical connecting means, said apparatus comprising:

means for positioning a battery case at at least one insert station with the top portion uppermost;

means for picking up a plurality of said separate cell elements;

means for moving the cell elements picked up by said means for picking up cell elements to separate aligned positions over predesignated cell spaces with said electrical connecting means uppermost; and

means for concurrently inserting the picked-up separate cell elements into said predesignated cell spaces to provide said cell elements in said spaces with a polarity arrangement for making series connections of the cell elements between said connecting means thereof.

4,509,253

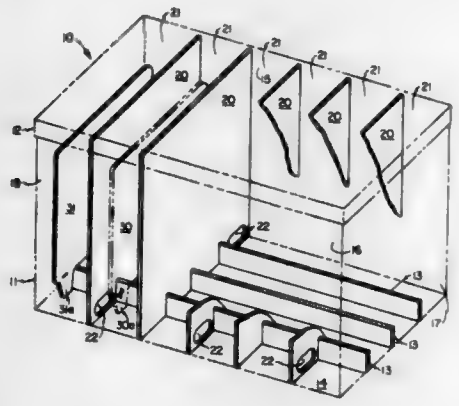
METHOD FOR MANUFACTURE OF A STORAGE BATTERY

Kelly L. Eberle, 738 Northern Rd., S. Daytona, Fla. 32019

Continuation-in-part of Ser. No. 369,054, Apr. 16, 1982, abandoned. This application May 25, 1984, Ser. No. 614,067

Int. Cl.[3] H01M *6/00*

U.S. Cl. 29—623.1 **13 Claims**



1. A method for manufacture of a storage battery of the type including a one piece case integral below the acid level of the battery having spaced partitions extending upward from the bottom of the case which define with walls of the case a plurality of liquid tight cell compartments, and spaced rest ups extending respectively from the bottom of the case and transversely to the partitions to provide means for supporting lugged positive and negative plates of the battery comprising the steps of:

establishing one opening in each partition adjacent the bottom portion thereof at one end of each partition and below the tops of the spaced rest ups, the openings being established alternatively at the front and the back of adjacent partitions between a side wall of the case and an adjacent rest up to provide fluid communication between adjacent cell compartments;

adding a mobile electrically-conductive material into the ends of said cell compartments to a level below the tops of the rest ups and at least to the height of the openings for flow through said openings to establish beds of conductive material between adjacent cell compartments; and

placing a stack of battery plates in each cell compartment and locating lugs of the plates in the beds of conductive material, the lugs of the negative plates being at one end of a cell compartment and the lugs of the positive plates being at an opposite end of that cell compartment.

4,509,254

METHOD FOR MOLYBDENUM-COATED ALUMINUM CURRENT COLLECTOR FOR ALKALI METAL/SULFUR BATTERY CELLS

Paul A. Damrow, Concord, and Floris Y. Tsang, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 494,595, May 13, 1983, Pat. No. 4,460,662. This application Mar. 5, 1984, Ser. No. 586,461

Int. Cl.[3] H01M *6/00*

U.S. Cl. 29—623.5 **7 Claims**

1. The method of making a cathodic current collector for an alkali metal/sulfur cell which comprises:

(1) providing a shaped article having an outer layer, at least 150Å thick, of molybdenum or of a predominantly molybdenum, aluminum/molybdenum mixture, on a substrate of aluminum or of a predominantly aluminum, aluminum/-molybdenum mixture, and

(2) contacting said layer with oxygen molecules, at a temperature above 50° C. but below the melting point of aluminum for a time period of about 10 minutes or longer.

4,509,255

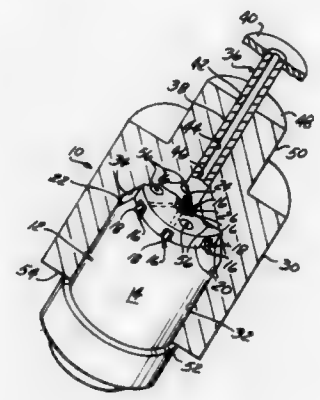
APPARATUS FOR CRIMPING BRUSH CONTACTS

Samuel J. Costello, Nineveh, and Eric R. Sohne, Hartwick, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 319,496, Nov. 9, 1981, Pat. No. 4,426,496. This application Aug. 29, 1983, Ser. No. 527,591

Int. Cl.[3] H01R *43/04*

U.S. Cl. 29—753 **5 Claims**



1. In combination with a crimping apparatus of the type adapted to crimp one of the ends of a plurality of wires in a metal sleeve holder, including a plurality of indentors; means supporting said indentors to be radially converged and evenly arranged about said holder, and means for forcing all of said indentors simultaneously into the sides of said holder to crimp the same against said wires, the improvement wherein each of said indentors has a Vee-shaped tip forming an edge extending generally parallel to the length of said holder and forming valley shaped crimp recesses in said holder upon advance thereunto, said means for supporting said indentors comprising a generally cylindrical nest having a series of radially converging slots formed on one end thereof, with each indentor being elongated and slidably disposed in a respective one of said slots; said means for forcing said indentors into the side of said holder comprising a cam sleeve having a bore slidably received over the exterior of said nest and having an internal sloping shoulder formed in said bore; and wherein each of said indentors is formed with a sloping cam surface on the radially outside end thereof located to be engaged by said internal shoulder of said cam sleeve upon axial advance of said cam sleeve over said nest, said cam sleeve formed with a pilot section having an internal passage formed therein and further including a prebundling tube slidably received within said internal passage and means for supporting said tube received over the free ends of said wires extending from said holder during said crimping.

4,509,256

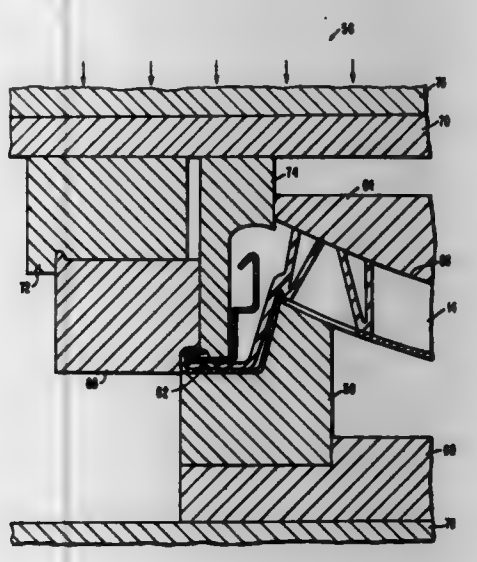
MANUFACTURING APPARATUS FOR LAMINATE STRUCTURE

Lawrence C. Ladouceur, Windsor, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1983, Ser. No. 469,887

Int. Cl.³ B23P *10/00, 11/00*

U.S. Cl. 29—802 **1 Claim**



1. An apparatus for manufacturing the laminate structure of a metal and plastic lightweight wheel cover comprising:

an upper and lower support means;

a wheel cover support means mounted on said lower support means, the upper surface of said wheel cover support means complementing the axially outwardly facing surface of the outer peripheral region of said wheel cover;

a flange die curling means mounted on said upper support means, said flange die curling means being positioned radially outward of and above said wheel cover support means;

a jagged edged barbs seating means mounted on said upper support means, said barbs seating means being radially inward of said flange die curling means and above said wheel cover support means; and

a means for applying pressure to said flange die curling means and said barb seating means, said wheel cover support means includes an annular riser, the upper surface of said riser complementing the outwardly facing surface of the outer peripheral region of said wheel cover, said flange die curling means and said jagged edged barbs seating means is combined into a single forming die, said jagged edged barbs seating means is an annular seating ring, said flange die curling means includes an annular curl ring.

4,509,257

METHOD OF AND APPARATUS FOR BARING THE END OF SHEATHED MULTICORE CABLE

Takashi Moriyama, 2-3-3, Uozaki-Nishimachi, Higashinada-ku, Kobe 658, Japan

Filed May 20, 1983, Ser. No. 496,425

Claims priority, application Japan, Jun. 18, 1982, 57-105634; Oct. 6, 1982, 57-176820

Int. Cl.³ H01R *43/00;* H02G *1/12*

U.S. Cl. 29—825 **13 Claims**

1. A method of baring an end portion of an electric multicore cable including a plurality of coated wires enclosed in an outer sheath, said method comprising the steps of:

clamping said cable at first and second longitudinally spaced positions removed from said cable end;

making a circumferential cut in said sheath to form a cut sheath end portion adjacent said end;

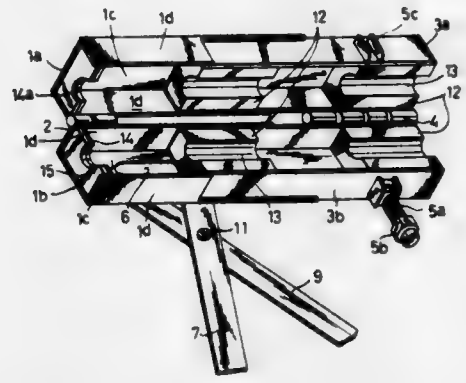
moving the clamped positions relative to each other to separate said cut end portion from the remainder of the sheath, and to expand said coatings beyond the ends of the wires;

trimming said expanded coatings substantially at said wire ends;

releasing the clamping and removing said cut sheath end portion to allow the expanded coatings to return to normal positions and thereby expose said wires.

2. A method of baring an end of an electric cable including a plurality of coated wires enclosed in a sheath, comprising the steps of tightly gripping an end portion of the cable, tightly gripping said cable at a location which is spaced from said end portion, cutting said sheath between said first and second clamp means, moving said second clamp means away from said first clamp means after said sheath has been cut, said second clamp means gripping said cable sufficiently to move said cable and said wires with it, and said first clamp means holding said cut end portion of said sheath and said coating against said movement, said coatings and said cut end portion of said sheath are extended past the ends of said wires, severing said sheath and said coatings at the ends of said wires, releasing said grips on said cable, and removing said cut end portion of said sheath to enable said extended coatings to retract from the ends of said wires.

3. Apparatus for baring an electric cable including a plural-



ity of coated wires covered by a sheath, said apparatus comprising:

a pair of box-like frames, hinge means having a hinge axis, said frames being attached to said hinge means and thereby hinged together for movement between open and closed positions, said frames being adapted to receive the cable therebetween, the cable extending generally parallel with said hinge axis;

a first pair of adjacent clamp members, each of said members of said first pair being fastened to one of said frame adjacent one end thereof;

a second pair of adjacent clamp members, each of said members of said second pair being attached to one of said frames and slideably supported within said frames and slideable generally parallel with said hinge axis;

a pair of adjacent cutter blades, each of said blades being attached to one of said frames and said pair of blades being supported within said frames adjacent said pairs of clamp members, and each of said blades having an arcuate cutting edge for cutting through said sheath; and

lever means coupled to said frames and to said movable clamp members for moving said second pair of clamp members relative to said first pair of clamp members.

4,509,258

CONNECTOR CENTERING DEVICE AND METHOD FOR USING

Ronald P. Locati, and James A. Rickrode, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 8, 1982, Ser. No. 396,223

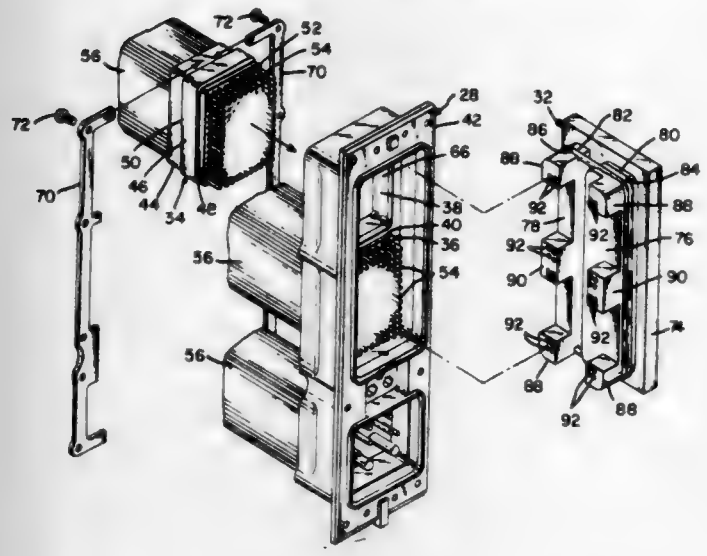
Int. Cl.³ H01R *43/00;* B23P *19/00*

U.S. Cl. 29—876 **18 Claims**

1. A method of centering one or more electrical connectors in respective openings of a shell member, each of said electrical connectors having rows of passageways for containing electrical terminals therein, comprising the steps of:

placing a centering device in engagement with walls of a said shell member and centering said shell member;

moving a said electrical connector into an opening in the shell member and into engagement with connector-engaging means of said centering device thereby centering the electrical connector in the opening; and



securing the electrical connector onto the shell member such that said connector remains centered in said opening following removal therefrom of said centering device.

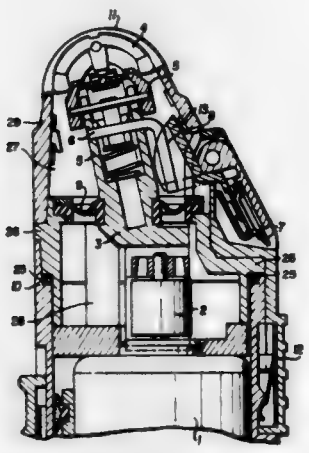
7. A method as set forth in claim 1 further comprising, after centering and securing in said shell member said one or more of electrical connectors, the step of removing said centering device therefrom.

4,509,259

ELECTRIC SHAVER

Hiromi Kakumoto; Shinji Ihara; Yoji Iguchi, and Makoto Miyata, all of Shiga, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 384,888, Jun. 4, 1982, Pat. No. 4,426,776. This application Dec. 9, 1983, Ser. No. 559,807
Claims priority, application Japan, Jun. 15, 1981, 56-92734
Int. Cl.³ B26B *19/10*
U.S. Cl. 30—34.1 **8 Claims**



1. An electric shaver having at its upper end an outer blade frame carrying an outer blade said shaver comprising:

a motor housing having therein a motor;

an inner blade frame having thereon a plurality of spaced inner blades positioned to be driven in slidable movement relative to said outer blade;

a drive element operatively connected to the motor to be driven thereby to move and having at its upper end portion a drive rod portion which is coupled to said inner blade frame;

a support interposed between the housing and the outer blade frame, said support being in the form of a sleeve having at its upper end an open border frame and which defines thereabove with the outer blade frame an inner blade chamber for receiving therein the inner blade frame and the drive rod portion of the drive element and which further defines adrive unit chamber in the housing for receiving the motor;

a sealing plate of resilient material having a central opening through which said drive rod portion extends upwardly into said inner blade chamber, said sealing plate being seated within said open border frame so that its outer circumferential edge is fixed thereto to establish a watertight seal between said inner blade chamber and said drive unit chamber; and

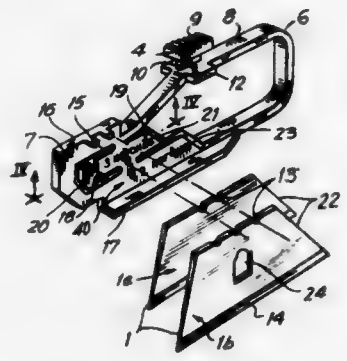
sealing means disposed at the juncture of the support and the housing to establish a watertight seal therebetween.

4,509,260

KNIFE HANDLE FOR ACCOMMODATING DIFFERENT ADJUSTABLE BLADE TYPES

Donald Gringer, 1 Bishop Rd., Bedford, N.Y. 10506

Filed Jul. 12, 1983, Ser. No. 512,962
Int. Cl.³ B26B *1/00*
U.S. Cl. 30—162 **9 Claims**



1. In an improved retractable knife comprising a housing defining a hollow interior chamber with a passage thereinto from the front of said housing, said chamber having a top and a bottom, a longitudinal slit extending from the top of said housing into said chamber at the top thereof, a blade carriage within said chamber, said carriage being made of a tough resilient plastic and comprising a simple beam of resilient material, a button disposed outside said housing at the top thereof, and means for connecting said button to a central portion of said beam, said carriage being slidable in said housing toward and away from said passage, said connecting means extending through said slit and being movable therealong when said carriage slides within said chamber, means for supporting said beam at both ends, said beam being deflectable between said supporting means in a given plane, a blade detachably secured to said carriage in a plane that is parallel to said given plane of deflection of said beam, and detent means associated with said carriage and said housing for releasably holding said carriage against said sliding movement, said detent means being released when said resilient simple beam is deflected; the improvement comprising a pallet formed at the frontal portion of said beam, said pallet comprising a plurality of spaced apart register pins disposed along an upper edge thereof, a blade carrying ledge disposed along an opposed lower edge thereof, a pair of longitudinally extending vertically spaced apart blade side support members disposed between said upper and lower edges, one of said blade side support members being disposed substantially along the longitudinal axis of said beam and comprising a pair of flexible laterally biasable cantilevered arms cantilevered from a support member, the forwardmost arm having a lug disposed at the distal end thereof and the rearwardmost arm having a first rear edge blade guide element disposed at the distal end thereof with respect to the support member from which said arms are cantileverd, said other blade side support member disposed adjacent said ledge and having a second rear edge blade guide element at the distal end

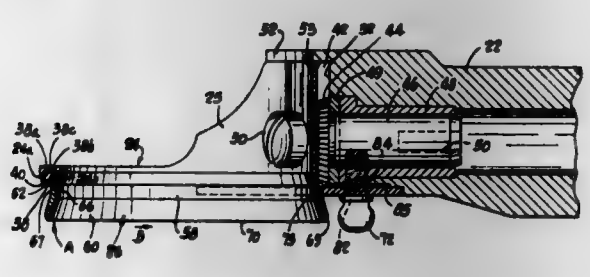
thereof, said blade side support members being capable of interchangeably securely supporting at least solid type blades and apertured type blades on said carrier, said cantilevered arms being laterally biased under lateral loading from a solid type blade while said solid type blade is engagingly retained between said second rear edge blade guide in cooperation with said register pins and said ledge, and further being capable of interchangeably engagingly retaining an apertured type blade between said lug and first rear edge blade guide in cooperation with said register pins and ledge; whereby different type blades may be interchangeably mounted for use in said retractable knife.

4,509,261

BONING AND TRIMMING KNIFE AND HOUSING

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Dec. 14, 1981, Ser. No. 330,553
Int. Cl.³ A22C *17/04*
U.S. Cl. 30—276 **28 Claims**



1. A hand knife for cutting meat and the like comprising a handle; a ring-like blade housing at one end of the handle; a continuous ring blade rotatable in the housing; said housing having an arcuate recess that opens toward one axial end of the housing, spaced inwardly of the outer periphery of the housing, and having an arcuate wall surface engageable by and at least partially encircling the blade, the greatest radius of the wall surface being at said one axial end of the housing to allow assembly of the blade with the housing from the said one axial end; said blade having gear teeth at one axial end received in said recess, a cutting portion extending from the housing, and an exterior flange about the periphery of the blade; said recess being of a depth greater than the axial length of the blade from the exterior flange to the one axial end of the blade having gear teeth; and means including a blade retainer movably connected to the handle, engageable with the housing, and located to oppose the exterior flange, to retain the blade in the housing without applying clamping force to the blade.

4,509,262

MOUNTING ARRANGEMENT FOR LENGTH MEASURING DEVICE

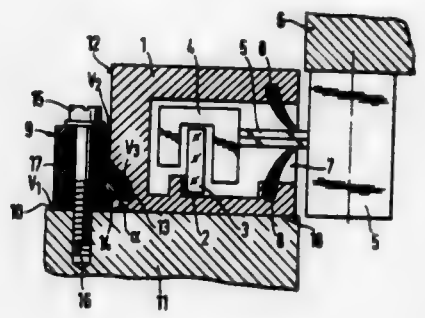
Guenther Nelle, Bergen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jan. 18, 1984, Ser. No. 572,166
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302643
Int. Cl.³ G01B *11/04*
U.S. Cl. 33—125 R **9 Claims**

1. In a measuring apparatus for measuring the relative position of two objects, of the type comprising a measuring scale which extends along a longitudinal direction and a carrier which supports the measuring scale, the improvement comprising:

a lateral stop;

at least one clamping shoe for mechanically clamping the carrier to the mounting surface, said clamping shoe comprising a first contacting surface which contacts a second contacting surface defined by the carrier, at least one of the first and second contacting surfaces being inclined with respect to the mounting surface such that the clamping shoe develops a contact force K having two force components K_1, K_2 perpendicular to one another in a plane perpendicular to the longitudinal direction, the



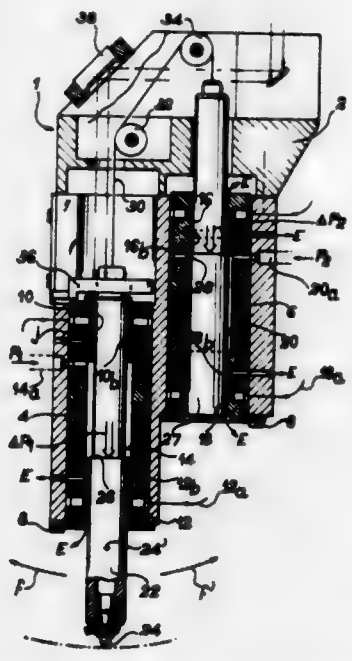
force component K_1 operating to hold the carrier against the mounting surface, the force component K_2 operating to hold the carrier against the lateral stop.

4,509,263

LASER SENSING MEANS FOR DIMENSIONAL CONTROL PURPOSES

Philippe Andrié, Longpont s/Orge, and Jacques Mimeur, Veyrier du Lac, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 20, 1983, Ser. No. 515,580
Claims priority, application France, Jul. 29, 1982, 82 13241
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—169 R **8 Claims**



1. A sensing device having a body, first and second parallel bores in said body, a sensor slidably fitted in said first bore, and guided therein by pneumatic bearings, a counter weight having the same weight as the sensor, slidably fitted in said second bore and guided therein by pneumatic bearings, first and second pulleys pivotedly fitted on said body, a wire passing over said first and second pulleys, and connecting the sensor to the counterweight, means for exerting a pressure on the sensor, means for measuring the sensor displacement, wherein said body has an annular chamber surrounding the sensor, said annular chamber being connected to a pressure source, a shoulder in the sensor, a second annular chamber in said body, said second annular chamber surrounding said counterweight, and being connected to a second pressure source, a shoulder in said counterweight, the surface of the sensor shoulder being larger than the surface of the counterweight shoulder.

4,509,264

SENSING HEAD WITH OVERLOAD PROTECTION

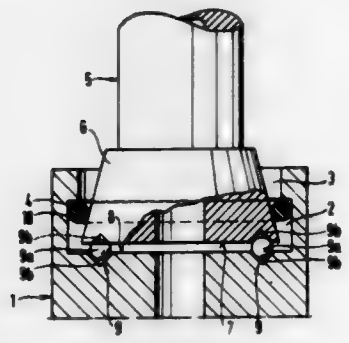
Kurt Feichtinger, Palling, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Aug. 1, 1983, Ser. No. 518,930

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3229991

Int. Cl.³ G01B *3/00*

U.S. Cl. 33—169 R **5 Claims**



1. In a sensing head for a measuring or processing machine, wherein the sensing head comprises a sensing head casing and a mandrel adapted for mounting to the measuring or processing machine, the improvement comprising:

means for defining a recess in the casing, which recess defines an undercut region adjacent an opening in the casing and a first base surface;

an end piece secured to the mandrel and having a truncated conical shape which comprises a second base surface and a conical surface, said end piece sized to pass into the recess through the opening with the second base surface opposed to the first base surface;

at least three precision bearings disposed between the first and second base surfaces to position the casing precisely with respect to the end piece in a predetermined orientation; and

a resilient element positioned against the conical surface in the undercut region of the recess to bias the first and second base surfaces together to hold the casing in the predetermined orientation with respect to the mandrel and the end piece;

said recess, end piece, bearings and resilient element cooperating to provide overload protection against excessive tilting forces on the casing.

4,509,265

TURBINE BLADE MEASUREMENT

Charles W. Donaldson, Blanchester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 21, 1983, Ser. No. 477,272

Int. Cl.³ B23Q *17/16*; G01B *3/00, 11/00*

U.S. Cl. 33—174 PA **4 Claims**

1. Apparatus for supporting a gas turbine engine blade which has a root having an upstream portion and a dovetail portion; a platform having a radially inner side; and an airfoil having a tip, a leading edge, and a low pressure side, comprising:

(a) a bracket;

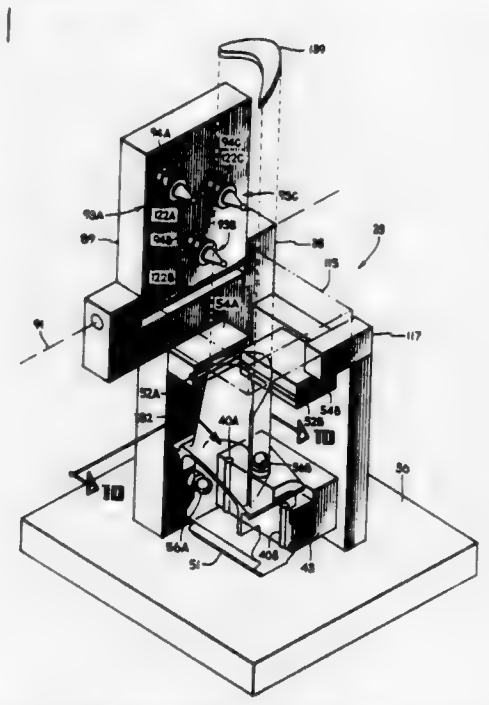
(b) a spherical first support positioned at a first predetermined position with respect to the bracket for supporting the upstream portion of the root;

(c) a spherical second support positioned at a second predetermined position with respect to the bracket for supporting the platform;

(d) cylindrical third and fourth supports positioned at respective third and fourth predetermined positions with respect to the bracket for supporting the dovetail portion;

(e) a cylindrical fifth support positioned at a fifth predetermined position with respect to the bracket for supporting the low pressure side;

(f) a cylindrical sixth support positioned at a sixth predetermined position with respect to the bracket for supporting the leading edge; and



(g) measuring means for measuring the distance between a predetermined point on the blade and a predetermined reference.

4,509,266

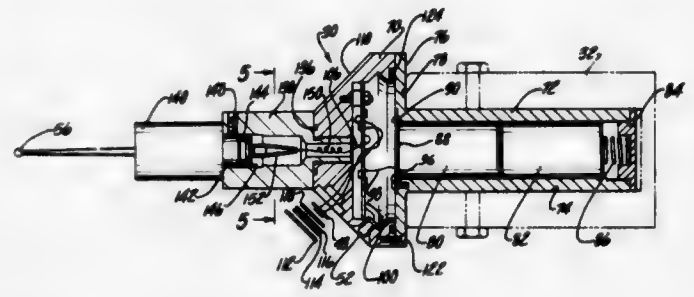
TOUCH PROBE

Robert F. Cusack, Grosse Pointe, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 388,187, Jun. 14, 1982, Pat. No. 4,451,987. This application Jun. 14, 1983, Ser. No. 504,066

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—174 L **18 Claims**



7. Apparatus for detecting contact with another object, said apparatus comprising:

a housing having stylus means projecting from one end thereof for contacting an object, said housing having a generally conically shaped middle portion having an outer surface converging toward said stylus, said middle portion having a given cross sectional dimension and including a surface extending generally perpendicular to the axis of the stylus;

an elongated, hollow, generally cylindrical portion of reduced cross sectional dimension with respect to the middle portion and extending from an opposite end of the housing, said cylindrical portion being adapted to be mounted in a machine in the same manner as a tool;

circuit means within the housing for generating signals associated with stylus contact with the object;

battery means in said cylindrical portion for powering said circuit means; and

optical transmission means on said converging outer surface of the housing middle portion, adapted to provide an

470-924 O.G.-85-2

optical signal to a remote receiver associated with stylus contact with the object.

11. In a probe for detecting contact with a workpiece, said probe having a movable stylus at one end thereof and mounting means on an opposite end thereof for mounting the probe in a machine adapted to move the probe relative to the workpiece, with the probe further including circuit means therein for generating a signal when the stylus moves upon contact with the workpiece, the improvement wherein the mounting means comprises:

an elongated member having exterior portions thereof conforming to a receptacle in the machine for mounting the probe thereto, the interior of said member including a coaxially extending hollow bore therein adapted to slidably receive a plurality of cylindrical batteries for providing power to the circuit means; and

removable cap means on the end of said member adapted to permit said batteries to be inserted and removed from the interior of said member whereby said member serves the dual purpose of providing the mounting means for the probe and to house the batteries.

4,509,267

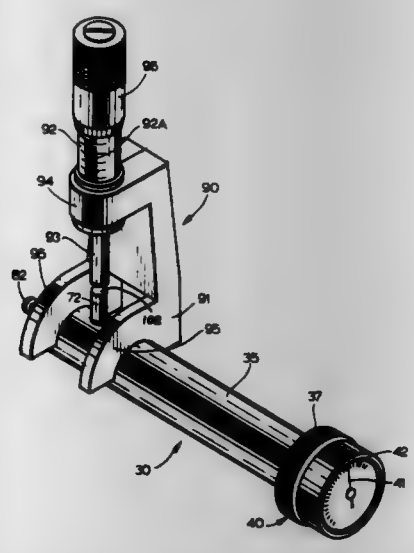
PRESET INDICATOR ASSEMBLY

James F. Flaten, Burnsville, Minn., assignor to Tobin-Arp Manufacturing Company, Eden Prairie, Minn.

Filed Mar. 7, 1983, Ser. No. 472,613

Int. Cl.³ G01B *5/12*

U.S. Cl. 33—185 R **3 Claims**



1. A method of aligning the axes of bores through housings of a part to be bored along a common axis, and using a boring bar supported in at least one hanger having means for rotatably supporting such boring bar and comprising the steps of:

measuring the interior of the bore to be worked upon;

providing an indicator assembly mounted on a substantially cylindrical sleeve having a radially extending post operably coupled to the indicator dial to indicate the amount of extension of the post;

setting the post extension to the desired radius from the center of said cylindrical sleeve;

placing the cylindrical sleeve in the boring bar hanger and with the post inside a bore;

moving the part to be machined in a direction transverse to the sleeve to engage the post and to return the indicator to substantially a zero reading;

rotating the cylindrical sleeve 90° and moving the part to be machined with the post in the same bore until the indicator reaches the desired reading;

fastening the part securely in the machine when centered after the above steps, and inserting a boring bar in the hanger in place of the cylindrical sleeve.

4,509,268

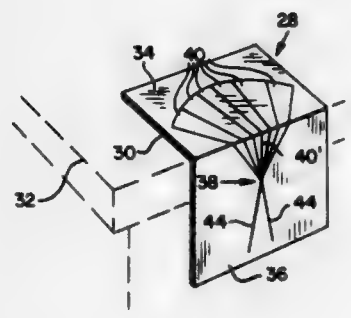
DENTAL CURET SHARPENING GUIDE

Barbara J. Marquam, 7321 SW. Corbett, Portland, Oreg. 97219, and Dana J. Lillie, 2375 S. Dogwood Ter., Cornelius, Oreg. 97113

Continuation of Ser. No. 295,693, Aug. 24, 1981, abandoned. This application Aug. 15, 1984, Ser. No. 641,363

Int. Cl.³ B24B *3/36*

U.S. Cl. 33—201 **4 Claims**



1. A sharpening guide for curved dental curet blades having a top flat surface and at least one angled side surface that joins with the top surface in a top cutting edge, said guide comprising

(a) a base member arranged to be configured for fitting over a right angle edge of a table top,

(b) said base member having opposite side surfaces with one side surface being arranged to face and engage the right angle edge of a table top and the other side surface having first and second substantially planar surface portions arranged to be disposed at a right angle to each other;

(c) said first surface portion being arranged substantially horizontally upon fitting said base member over the edge of a table and said second surface portion being arranged substantially vertically;

(d) positioning means on said second surface portion of the base member for denoting a location for positioning the blade of a curet;

(e) sighting means on said first surface portion of the base member for aligning a selected part of the curet other than the blade such that the blade repeatedly assumes the same position and orientation for engagement by a manually held reciprocatable grinding stone on one side surface of the blade to sharpen its cutting edge, said sighting means comprising a plurality of sections at angularly divergent locations configured for alignment of variously shaped curets, said sighting means extending onto said second surface portion and forming a vertex of angularly divergent lines providing an upwardly opening V-shape, said sections being bent in their divergent angles at the corner of said first surface portion and said second surface portion to compensate for parallax introduced by viewing the sharpening guide from an angle; and

(e) stone guide means on said second surface portion of the base member below the positioning means for aligning a sharpening stone adjacent the blade of the curet at said positioning means and at an angle to the face of the blade for grinding the side surface.

4,509,269

TARGET FOR MEASUREMENTS WITH ANGLE-MEASURING INSTRUMENTS

Helmut Leitz, Konigsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 480,815

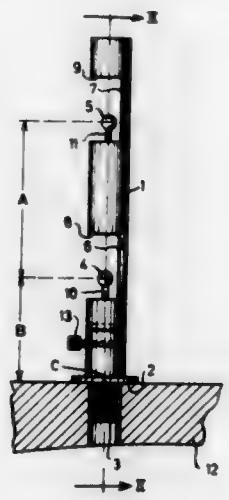
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214998

Int. Cl.³ G01C *15/06*

U.S. Cl. 33—293 **14 Claims**

1. A target device for marking a measuring point (C) on the surface of an object which is difficult to sight with an angle-

measuring instrument, said device comprising an elongate rigid rod having a base end, a radial flange at the base end and means beneath the flange for securing the rod to the object with the flange abutting the surface of the object and with the axis of the rod centered at the point to be measured, a first measurement



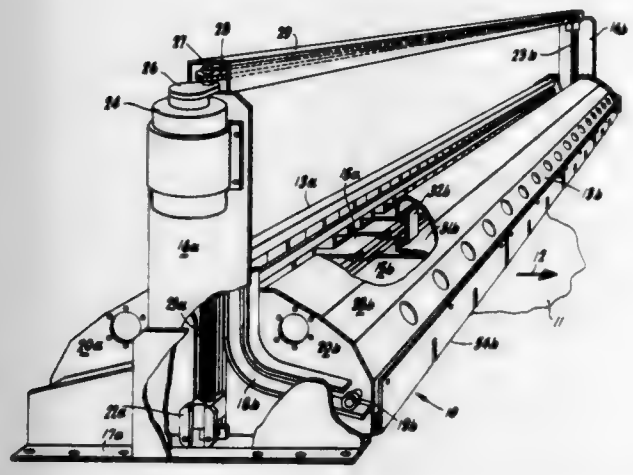
mark fixed to said rod at a first predetermined offset from the intersection of the rod axis with the radial plane of the underside of said flange, and a second measurement mark fixed to said rod at a second predetermined offset from the underside of said flange, the centers of said marks being in fixed alignment with said intersection of the rod axis with said radial plane.

4,509,270

METHOD AND APPARATUS FOR DRYING A MOVING WEB

Erik Stephansen, Hillsborough, Calif., assignor to Impact Systems, Inc., San Jose, Calif.

Filed May 26, 1983, Ser. No. 498,298
Int. Cl.³ F26B *3/28*
U.S. Cl. 34—4 **11 Claims**



1. A method of drying a moving web comprising the following steps:

providing across the transverse cross-direction of said web a pair of elongated dryer units each extending from one edge of said web to the other, each having radiation emitting surfaces facing said web and being in close proximity to said web to dry it;

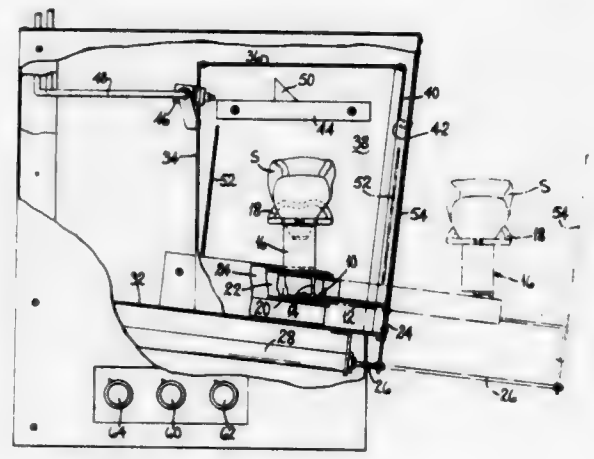
moving said pair of dryer units to a stowed position in which the radiation emitting surfaces of said units which were formerly facing said web are now closely juxtaposed and co-extensive with each other and have the same boundary with each other to form a closed envelope for retaining heat produced by said radiation emitting surfaces whereby the escape of infrared radiation from said drying elements to the surrounding area and direct radiation to other surfaces is prevented to minimize fire hazards.

4,509,271

TREATMENT OF ARTICLES HAVING A COATING OF A MOISTURE-CURABLE COMPOSITION

Nigel R. Tout, Leicester, and Raymond Hanson, Rearsby, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Nov. 4, 1982, Ser. No. 439,279
Claims priority, application United Kingdom, Nov. 14, 1981, 8134392; Oct. 21, 1982, 8230200
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—12 **8 Claims**



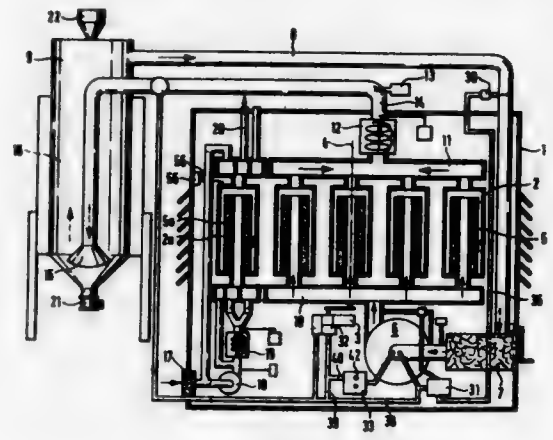
1. Method of treating an article, e.g. a shoe part, having a coating of a moisture-curable composition, characterised in that the article is supported stationarily in an enclosed chamber for a period of between 5 and 25 seconds, during which period the article is subjected to infra-red radiation from a radiant source having a surface temperature of between 420° and 250° C. and a quantity of steam at ambient pressure is supplied to the chamber such that during said period the humidity of the atmosphere within the chamber is maintained at a dew point of between 50° and 60° C.

4,509,272

METHOD AND APPARATUS FOR DRYING MOIST EXHAUST AIR FROM ONE OR MORE BULK MATERIAL DRYING HOPPERS

Roderich W. Gräff, 1311 Pine Valley Ct., Ann Arbor, Mich. 48104

Filed Mar. 17, 1982, Ser. No. 359,114
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ F26B *3/14*
U.S. Cl. 34—27 **5 Claims**



1. In a method of drying exhaust air from one or more bulk material drying hoppers, comprising the steps of conveying exhaust air from a bulk material drying hopper through at least one chamber filled with an adsorbing medium and feeding the air back to the drying hopper in a closed circuit, the chamber being regenerated at intervals by a counterflow of drying gas,

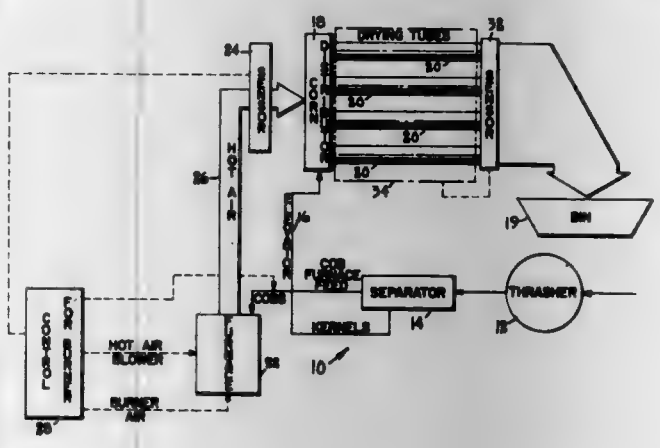
the improvement comprising the step of controlling the frequency of regeneration the chamber as a function of the temperature of the exhaust air from the drying hopper.

4,509,273

COMBINE GRAIN DRYER AND DRYING ATTACHMENT

David Roisen, Rte. 2, Dawson, Minn. 56232

Continuation of Ser. No. 233,924, Feb. 12, 1981, abandoned.
This application Apr. 2, 1982, Ser. No. 365,002
Int. Cl.³ F26B *17/20*
U.S. Cl. 34—86 **11 Claims**



1. In combination with a grain crop harvesting combine wherein the combine includes means for separating the grain of the plant from residue material such as plant husks, leaves, cobs, and stalks; a grain drying attachment, comprising:

(a) a grain distributor in which the separated grain is received;

(b) a dried grain storage bin;

(c) means for transferring the grain from said distributor to said bin;

(d) a burner chamber in which the residue material is deposited and burned to generate thermal energy, said burner chamber comprises a furnace capable of burning both the residue material and combustible gaseous products of the burning material, said furnace comprising:

(i) a firebox defined by a generally cylindrical wall having an upwardly placed aperture;

(ii) a hopper having a downwardly and inwardly sloping wall, said hopper being seated in said aperture;

(iii) air inlet means disposed proximate the bottom of said firebox;

(iv) a perforated combustion product exhaust conduit positioned centrally within said firebox; said conduit having a peripheral wall;

(v) an inverted generally V-shaped baffle overlying said conduit and having a pair of legs, each with an extremity extending laterally beyond said peripheral wall of said conduit; and

(vi) a pair of baffles extending downwardly and inwardly from said generally cylindrical wall of said firebox and positioned above, and spaced from, said generally V-shaped baffle, each pair of baffles overlapping one of said legs of said generally V-shaped baffle; and

(e) means for using said thermal energy to dry the grain as it is transferred from said distributor to said bin.

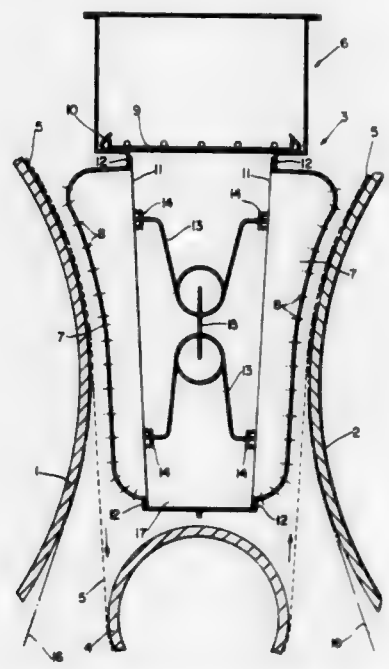
4,509,274

EQUIPMENT FOR DRYING LENGTHS OF MATERIALS

Helmut Heimel; Willy Schlosser, and Alfred Luttenberger, all of Graz, Austria, assignors to Maschinenfabrik Andritz Actiengesellschaft, Graz, Austria

Filed Dec. 21, 1982, Ser. No. 451,954
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—114 **3 Claims**

1. In equipment for drying lengths of material, in particular webs of paper, with the web being guided by means of a continuous permeable belt around an arc of a drying drum and being deflected by a guide roller toward a next drying drum which is enveloped in the same manner, blow boxes comprising blowout sections having apertures for directing a drying medium against the web, said blowout sections being arranged between said drums, in spaced relation to said guide roller and within the loop formed by said continuous permeable belt, said blow boxes having walls adjacent the surfaces of adjacent



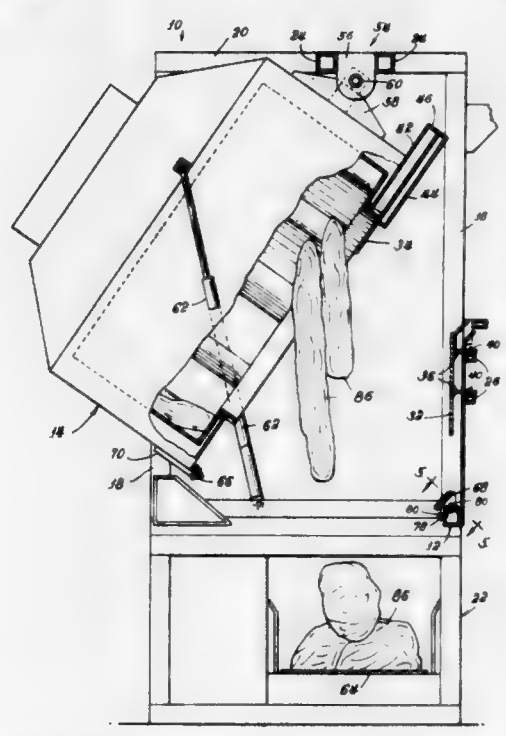
drying drums, the improvement comprising means mounting said blowout sections having apertures in a displaceable manner in the radial direction of the drying drums within a frame so as to allow for movement of the apertured blowout sections away from the drying drums when an irregularity in the material, such as a nodule, passes between the drying drums and apertured blowout sections, and means whereby said sections can be returned into their initial positions.

4,509,275

DRYER HAVING TOP PIVOT FOR TUMBLER

Randall R. Coffman, McHenry, and James E. Mitchell, Algonquin, both of Ill., assignors to Norman Dryer Company, Inc., Crystal Lake, Ill.

Filed Oct. 17, 1983, Ser. No. 542,524
Int. Cl.³ F26B *11/02*
U.S. Cl. 34—126 **15 Claims**



1. In a dryer for extracting moisture from wet goods, includ-

ing a tumbler cylinder mounted for rotation about a horizontal axis, an open side of said cylinder through which wet goods are inserted and dry goods are removed, a shell in which the cylinder is housed, means for supplying heated air to the cylinder for drying goods therein, and means for rotating the cylinder within the shell about said horizontal axis, the improvement comprising

a. a fixed external support having a portion extending above said shell,

b. hinge means suspending said shell beneath said support portion for pivot about said hinge means, said hinge means having a first portion attached to said support and a second portion attached to the top of said shell and having a pivot axis perpendicular to said horizontal axis,

c. means for pivoting said shell about said hinge means to permit goods to be removed from said cylinder directly beneath said shell, and

d. a door for closing said open side, comprising

i. a lower door segment fixedly secured to said external support,

ii. an upper door segment moveably secured to said shell adjacent said open side, and

iii. means to shift said upper door segment from a first position closing an upper portion of said open side to a second position opening said upper portion.

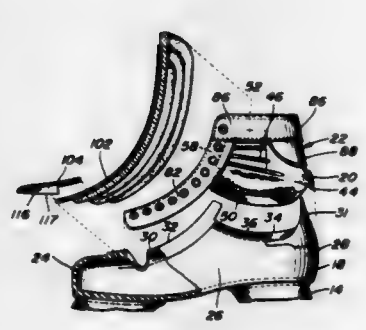
4,509,276

COMPOSITE SKATE BOOT AND METHOD OF MAKING THE SAME

Rene Bourque, Duvernay, Canada, assignor to Warrington Inc., Montreal, Canada

Filed Jan. 28, 1983, Ser. No. 462,118
Int. Cl.³ A43B *5/16*
U.S. Cl. 36—115 **12 Claims**





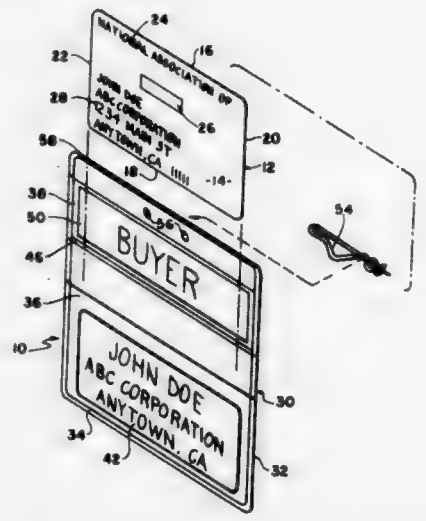
1. A skate boot including a lower, an upper and an intermediate portion between the lower and the upper; the lower including a sole, a toe and heel portion of the boot and being made of a molded, unitary, rigid plastics material; the intermediate portion being connected on either side thereof to the lower and including ankle and Achilles tendon portions of the boot, the intermediate portion being made of a relatively flexible material; the upper including a collar and an upper tendon guard, the upper being connected to upper edge portions of the intermediate portion, the upper being made of a pliable material.

4,509,277

COMBINATION BADGE AND CARD HOLDER

Edgar A. Bolton, Thousand Oaks, Calif., assignor to Registration Control Systems, Ventura, Calif.

Filed Feb. 2, 1983, Ser. No. 463,124
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—1.5 **3 Claims**



1. A badge for an individual attending a convention, comprising:

a holder formed from a first plastic sheet, the holder having a compartment formed by a second plastic sheet superimposed and connected to the first sheet;

a first card removably and partially received in the compartment, said first card bearing machine-readable information regarding a mailing address of the individual on a bottom portion and visually-discernible information regarding the convention along an exposed upper portion thereof which extends above the second plastic sheet;

a second card bearing the name of the individual, the second card being adhesively attached to the second plastic sheet and overlying the portion of the first card bearing the machine-readable information;

a pocket formed from a third plastic sheet superimposed and connected to the first sheet, and an insert bearing visually-readable information regarding the individual's function at the convention inserted therein; and

means for retaining the badge on an article of apparel wherein the compartment and the pocket are each visible while so retained on the article of apparel.

4,509,278

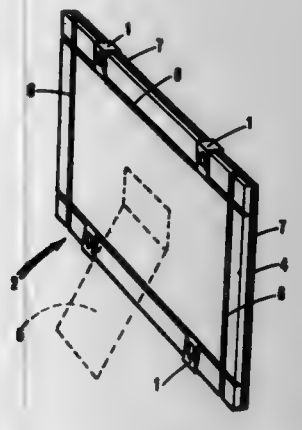
CLIP FOR PORTRAIT FRAMES AND THE LIKE

Pietro Astolfi, Bologna, Italy, assignor to Pico-Glass S.p.A., Italy

Filed May 16, 1983, Ser. No. 494,654
Claims priority, application Italy, Feb. 11, 1983, 4746/83[U]
Int. Cl.³ A47G *1/06*; G09F *1/12*
U.S. Cl. 40—156 **4 Claims**

1. A clip for portrait frames and the like, of the type constituted by a metal strip that deforms elastically and is so shaped as to wrap around one edge of a frame and to place a first terminal part in contact with the front surface of said frame, and to place a second terminal part, at the opposite end to the first terminal part, in the region of a slot made in the outer surface of the back part of said frame, wherein said strip, in the non-operative position, is defined, in between said terminal parts, by two substantially flat sections which form, one with the other, an angle of less than 90°, said sections constituting a covering section, to be placed adjacent to one of said edges on said frame, and a rear section, to be placed adjacent to the back

part of said frame, the latter section being provided at one extremity with an integral pressure tongue placed oblique



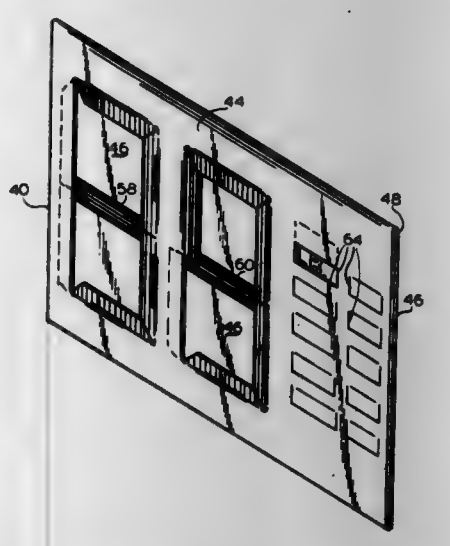
thereto and with a pair of strengthening ribs respectively disposed on opposite sides of said tongue.

4,509,279

INTERCHANGEABLE DIGITAL DISPLAY SIGN

William Greenberger, White Plains, N.Y., assignor to The Hopp Press, New York, N.Y.

Filed Jan. 13, 1983, Ser. No. 457,526
Int. Cl.³ G09F *3/04*
U.S. Cl. 40—447 **5 Claims**



1. A sheet, constructed of a single resilient plastic piece, having a face with at leat one opening therein and having a plurality of flaps with color contrasting portions thereon, the flaps being disposed about the periphery of said openings; and

a first rear panel having color contrasting portions thereon and extending from a bottom portion of the face and being pivotable thereabout, the first rear panel being adapted to fold against a back of the face, forming a pocket between the face and the first rear panel, wherein the color contrasting portions of the flaps and the rear panel are adapted to cooperate with each other to display one of a number of possible characters, the color contrasting portions of the first rear panel being visible through the opening in the face.

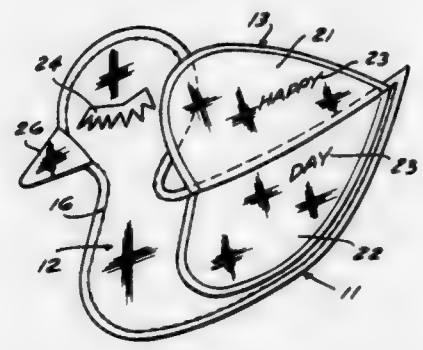
4,509,280

THREE-DIMENSIONAL GREETING CARD

Veronica Smith, 7 Smedley Dr., Newtown Square, Pa. 19073

Filed May 19, 1983, Ser. No. 437,866
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—486 **1 Claim**

1. An information carrying toy device comprising a body member shaped to simulate at least a portion of an animated creature including a double layered first section in the form of an envelope having two panels of a soft flexible fabric web, the two panels being secured together around their periphery, which is shaped to define the animated creature, and containing a soft compressible filler of such form and size to resiliently space the panels apart a maximum distance small compared to the longitudinal dimension of the first section in order to provide a dimension of thickness to the first section, a second flap section of soft flexible fabric web joined to said first section at least along a seam providing a hinge, said first and second sections having surfaces which are in overlying confronting relationships in a closed position, representation of features



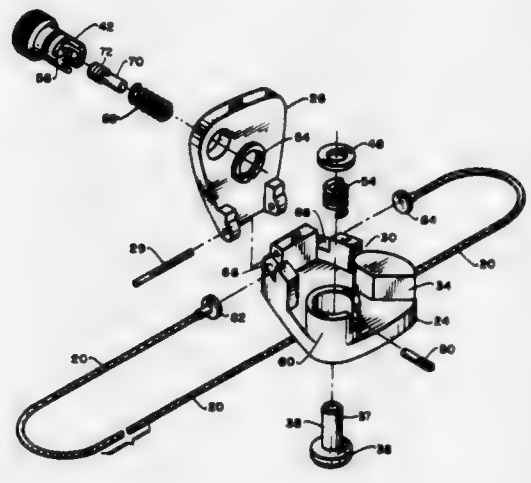
simulating animation, including at least one eye, being applied to visible parts of the sections when the flap is closed on the side of the first section to which the second is attached, such that the toy has an enhanced appearance of an animated creature, at least in the closed flap position, and an information display carried on at least one of the confronting faces, whereby using the seam as a hinge the second section may be moved relative to the first section about the hinge to an open position so as to expose the information display to view.

4,509,281

GUN TRIGGER LOCK

Ronald Dreiling, 24528 Kansas St., Newhall, Calif. 91321, and Blaine Perrella, 17357 Chase St., Northridge, Calif. 91325

Filed Aug. 19, 1982, Ser. No. 409,450
Int. Cl.³ F41C *27/10*
U.S. Cl. 42—1 Y **27 Claims**



1. A gun locking device comprising;

a first member;

a second member;

said first and second members constructed to mate around a gun trigger;

interconnecting means interconnecting to secure said first and second members around said trigger comprising;

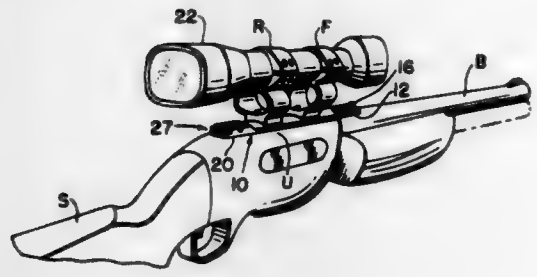
a pair of axially aligned latch members having means latching said pair of axially aligned latch members together; said latch means constructed and arranged to require opposite axial and rotational forces to be simultaneously applied to said pair of latch members for unlatching and removing said first and second members.

4,509,282

SIGHT AND SCOPE CONVERSION MOUNTING

Carlos H. McMillon, Vandalia, Ohio, assignor to Mack's Guns, Vandalia, Ohio

Filed Jun. 20, 1983, Ser. No. 505,907
Int. Cl.[3] F41G 1/38
U.S. Cl. 42—1 ST 10 Claims



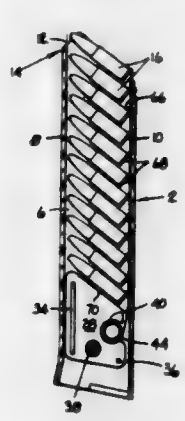
1. A sight and scope conversion mounting for front and rear sight members as well as a pair of front and rear scope support loop pieces on fire arms including rifles, shotguns, pumps, and automatic weapons having at least one barrel and stock longitudinally spaced from each other as joined to an intermediate firing mechanism having an upper surface therebetween, said sight and scope conversion mounting comprising: a unitary metal base substantially rectangular shaped in planar configuration though having a curved upper surface in intermediate location provided with mounting screw holes therein, a flattened, reduced-size end integral with said base and recessed to receive in combination therewith a front sight member including a longitudinal rib and aiming projection, an elevated and enlarged end integrally joined to said base at a location axially and longitudinally remote from said reduced size end, said enlarged end having T-shaped recessing complementary to receive also in combination therewith a rear sight member with a transverse groove carrying a downwardly notched transverse plate secured in the transverse groove, and a continuous rail-like rib projecting downwardly and extending accurately longitudinally aligned along an underside of said base from end to end thereof for complementary fixation on the upper surface of the intermediate firing mechanism.

4,509,283

CARTRIDGE CLIP

M. Gaines Chesnut, 17219 W. 57th Pl., Golden, Colo. 80401

Filed Mar. 31, 1983, Ser. No. 480,675
Int. Cl.[3] F41C 25/02
U.S. Cl. 42—50 12 Claims



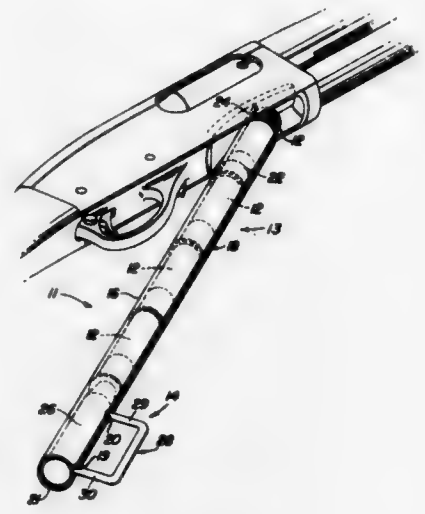
1. A cartridge clip comprising:
a case for storing cartridges having a pair of opposed longitudinally extending side walls and a pair of opposed longitudinally extending end walls;
each of said end walls having smooth continuous inner surfaces;
said side walls having a width greater than said end walls;
an opening adjacent the top of said case through which cartridges may be moved;
a follower mounted for movement in said case and adapted to contact the lowermost cartridge in said case;
spring means for providing a force resisting movement of said follower into said case and for urging said follower in a direction out of said case as cartridges are loaded into and moved out of said case;
said spring means comprising a negator spring with the major portion thereof mounted in said follower in a coiled relationship when no cartridges are in said case;
means for securing said negator spring at one end thereof to one of said end walls;
said negator spring having a width slightly less than the width of said one of said end walls;
substantially all of the remaining portion of said negator spring being mounted in means in said follower when no cartridges are in said case;
said means for securing said negator spring comprising means defining a recess having an outer surface in the outer surface of one of said end walls adjacent said opening adjacent the top of said case;
means for defining an edge on said recess adjacent said opening adjacent the top of said case;
said edge having a thickness less than the thickness of said one end wall;
a substantially inverted U-shaped portion adjacent said one end of said negator spring;
said inverted U-shaped portion extending from inside said case, over said edge and in close proximity to said outer surface of said recess; and
means integral with said case for securing the portion of said inverted U-shaped portion in close proximity to said outer surface of said recess to said case.

4,509,284

SHOTGUN SPEED LOADER

James R. Naber, Rt. #4, Box 60, Muscatine, Iowa 52761

Filed Apr. 22, 1983, Ser. No. 487,534
Int. Cl.[3] F42B 39/06; F41C 27/00
U.S. Cl. 42—87 5 Claims



1. A shotgun speed loader comprising:
flexible wall means defining a column space for receiving at least one shell, and defining a storage position connected with said column space;
plunger means connected to said flexible wall means, positionable at said storage position whereby said flexible wall means fits around and holds said plunger means and the shell, and movable from said storage position to spread apart said flexible wall means and to push the shell, thereby effecting rapid discharge of the shell from said column space;
slot means is formed in said flexible wall means, and an

enlarged area is formed in said slot means and defines said storage position; and

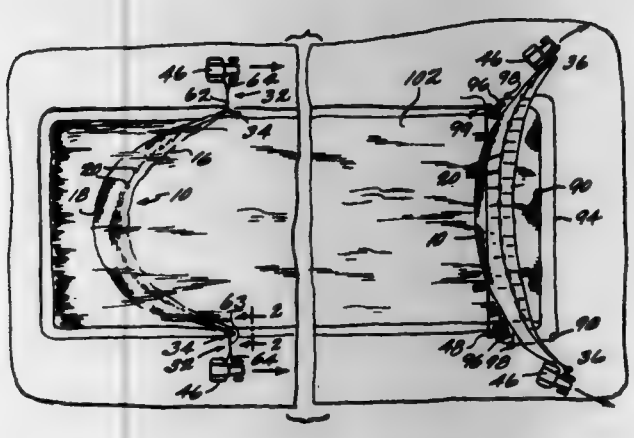
said plunger means includes a plunger body and a handle joined to said plunger body, said handle engaged by said enlarged area when said plunger means is at said storage position, said handle movable in said slot means, and said plunger body movable in said column space, when said plunger means is moved from said storage position.

4,509,285

AQUACULTURE HARVESTER

C. Bruce Smith, P.O. Box 168, Kahuku, Hi. 96731

Filed Jun. 2, 1982, Ser. No. 384,280
Int. Cl.[3] A01K *73/00*
U.S. Cl. 43—9 28 Claims



1. A method of harvesting aquaculture from a body of water comprising the steps of:

disposing a first water permeable, aquaculture impermeable web on the bottom of said body;

dragging a second water permeable, aquaculture impermeable web through said body of water toward said first web until any portion of said second web in said body of water is over said first web; and

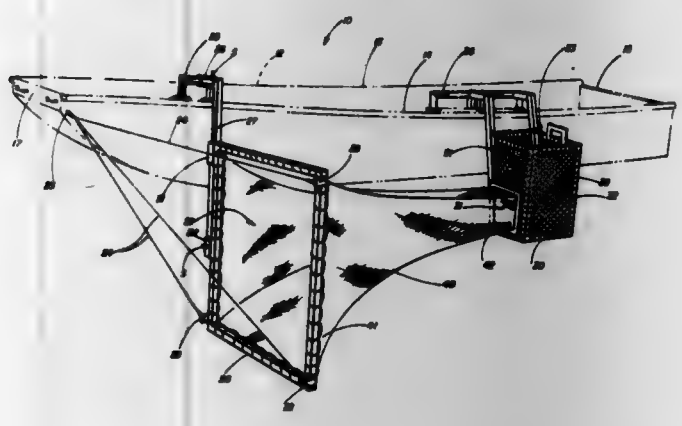
lifting said first web to concentrate said aquaculture thereupon.

4,509,286

TRAWL SHRIMP CAGE

Martin John, 205 Brunswick Ct., New Orleans, La. 70114

Continuation of Ser. No. 322,023, Nov. 16, 1981, abandoned.
This application Sep. 29, 1983, Ser. No. 537,172
Int. Cl.[3] A01K *71/00, 73/12*
U.S. Cl. 43—9 7 Claims



1. A vessel supported shrimp trawl cage, comprising:

a. at least one net supported at the water surface by the vessel so that a forward end of the net defines a net opening which can entrap shrimp swimming near the water surface and the rear of the net defines a tail;

b. cage means supported in a partially submerged position by the vessel and having a cage inlet fed by the tail of the net so that shrimp caught in the net will eventually enter the cage and a cage outlet for discharging contents of the cage during trawling; and

c. gate means attachable to the cage means at the cage outlet for closing the cage outlet to retain the contents of the cage means during trawling;

d. frame means affixed to the vessel and extending laterally for supporting the net and the cage means in a lateral position with respect to and generally parallel to the vessel; and

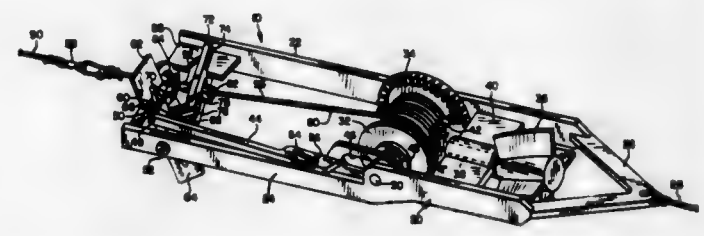
e. the frame means comprises in part adjustable means for moving the cage means with respect to the net opening so that the net can be tightened or slackened by movement of the cage relative to the net.

4,509,287

FISH TROLLING DEVICE

Edwin I. Hood, P.O. Box 207, Eastsound, Wash. 98245

Filed Jun. 13, 1983, Ser. No. 503,908
Int. Cl.[3] A01K *91/00*
U.S. Cl. 43—19.2 7 Claims



1. A trolling device for a fishing lure comprising:

a frame adapted to be towed through a body of water,

a spool rotatably mounted on said frame and a length of line connected at one end to said spool and adapted to be wound thereon,

said line trailing from said frame as said frame is towed, and being adapted for connection to a lure,

and drive means means on said frame for alternately driving said spool to cause said line to wind upon said spool and thereafter to reverse its rotation to unwind said line,

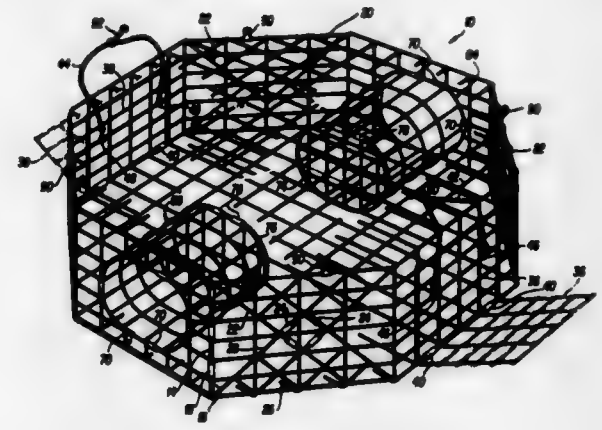
whereby said lure will alternately be accelerated toward said frame and next be caused to drop back from said frame as said frame is towed through the water.

4,509,288

SHELLFISH TRAP

C. Barrett Shepherd, Houston, Tex., assignor to C. E. Shepherd Company, Inc., Houston, Tex.

Filed Oct. 19, 1982, Ser. No. 435,228
Int. Cl.[3] A01K *69/08*
U.S. Cl. 43—102 8 Claims



1. A shellfish trap comprising:

a circumferential body portion formed of mesh material and having an open top and an open bottom;

a top member connected to said body portion, said top member having a planar portion covering said open top of

said body portion and depending portions overlapping said body;

a bottom member connected to said body portion, said bottom member having a planar portion covering the open bottom of said body portion and upwardly extending portions overlapping, respectively, said depending portions and attached to said depending portions to directly connect said top member to said bottom member;

a first opening formed in said trap;

a first closure member;

means for connecting said first closure member over said first opening to prevent either unaided entry or exit of a shellfish through said first opening;

a second opening formed in said trap;

an elongated passage formed of mesh material connected to be aligned with said second opening and to extend inwardly of said trap; and

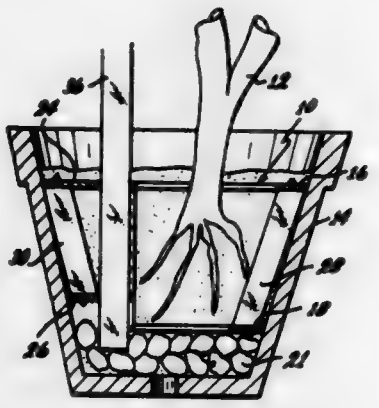
trapdoor means connected to the inner end of said passage to permit a shellfish to enter said trap but to inhibit the shellfish from exiting.

4,509,289

APPARATUS FOR STABILIZING PLANT SUPPORT STAKES IN POTS

Seymour Fogelson, 19841 Redwing St., Woodland Hills, Calif. 91364, assignor to Seymour Fogelson, Woodland Hills, Calif.

Filed Nov. 19, 1979, Ser. No. 95,635
Int. Cl.³ A01G 9/12
U.S. Cl. 47—70 **14 Claims**



1. In combination for staking a plant in a pot,

means defining a spacer member for disposition at an intermediate position in the pot,

means defining with the spacer member first and second loops at a pair of vertically spaced positions to receive and hold the plant, the second loop being disposed substantially directly below the first loop and being provided with a reduced diameter relative to that of the first loop wherein, the means defining the first and second loops and the spacer member are formed from a single member and the single member is pivotable at first particular positions to form the first and second loops, and

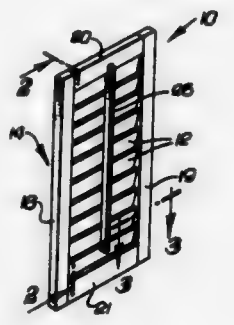
means defining with the spacer member third and fourth loops at a pair of positions directly below each other and respectively disposed in horizontally disposed relationship to the first and second loops to receive and hold the stake wherein, the third and fourth loops are disposed on the opposite side of the spacer member from the first and second loops.

4,509,290

SHUTTER CONSTRUCTION

Alvin M. Stanfield, Jr., 73591 El Hasson Cir., Palm Desert, Calif. 91206

Filed Mar. 18, 1983, Ser. No. 476,493
Int. Cl.³ E06B 7/08
U.S. Cl. 49—92 **23 Claims**



1. A shutter, comprising:

a shutter frame having a central opening formed therein;

a plurality of louvers; and

a pair of bushing assemblies disposed respectively at opposite ends of each of said louvers for pivotally mounting each of said louvers with respect to said frame to extend across said opening generally in parallel with each other, said louvers being pivotally movable between an open position oriented generally perpendicular to the plane of said frame to permit passage of light and air through the frame opening, and a closed position oriented generally within the plane of said frame and at least slightly overlapping one another to block passage of light and air through the frame opening;

said louvers including generally complementary-shaped ribs and grooves for interlocking engagement with each other in said closed position;

each of said bushing assemblies comprising

a support pin having an elongated shank including a series of first fetter rings for compression fit reception into a hole formed in the associated end of said louver and a cylindrical bearing surface having a length for at least partial reception into the louver hole and to project therefrom, said pin further having a flared head at the end of said pin opposite said first fetter rings, and a cylindrical bushing sleeve slidably receivable over and rotatable about said support pin, said sleeve having a smooth-surface inner diameter and an axial length less than the axial length of said support pin bearing surface, said sleeve further having an outer diameter surface defined by a series of second fetter rings for compression fit reception into a hole formed in said frame and a sleeve cylindrical bearing surface for at least partial reception into the frame hole.

4,509,291

HORIZONTALLY SLIDING DOOR

Alan C. Geisthardt, North Fond du Lac, Wis., assignor to Jack Walters & Sons Corp., Allenton, Wis.

Filed Jun. 24, 1983, Ser. No. 507,297
Int. Cl.³ E05D 13/02
U.S. Cl. 49—409 **6 Claims**

1. A horizontally sliding door adapted for two point hanging support on a building from a pair of horizontally spaced track-mounted trolleys from which releasable hanger brackets are suspended, said door comprising:

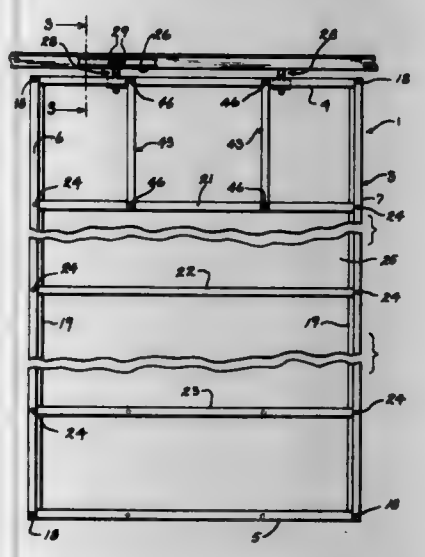
(a) a rectangular peripheral frame including elongated top, bottom and side rails of generally channel shape and with said rails being open and having spaced front and rear flanges joined by a web,

(b) the flanges of said top rail extending downwardly, and the web of said top rail receiving said hanger brackets thereon for connecting said top rail to said trolleys,

(c) a plurality of vertically spaced horizontal struts joined to and extending between said side rails,

(d) a siding panel mounted to the front flanges of said rails of said peripheral frame and with said panel providing a weight component offset forwardly of the central plane of the door,

(e) said siding panel offset weight component forming means



creating a twist component in said open top rail tending to pivotally pull said top rail front flange vertically downwardly with resultant vertical rising of said top rail rear flange at said hanger brackets so that said hanger brackets tend to release from said trolley,

(f) and means disposed immediately adjacent said hanger brackets to hold said open top rail in place against said twisting component.

4,509,292

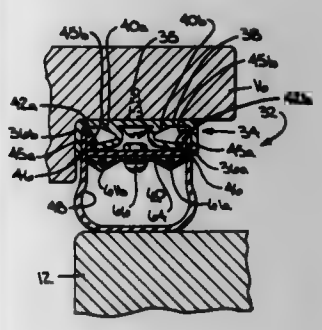
DOOR GASKET

Robert L. Konle, New Berlin, Wis., assignor to Arthur Smith Industries, Inc., New Berlin, Wis.

Filed Mar. 3, 1983, Ser. No. 471,881

Int. Cl.[3] E06B *7/16*

U.S. Cl. 49—499 **10 Claims**



1. An improved door gasket comprising:

a base having a pair of oppositely disposed catches rising therefrom and a pair of upstanding, opposing flanges;

a channel having a pair of depending, spaced apart latches, each said channel latch releasably engaging a corresponding one of said base catches when said channel is pressed against said base and each of said channel latches disengaging said corresponding one of said base catches when said channel is pried from said base; and

a strip of deformable gasket material having a pair of planar lateral edges, each said lateral edge is fastened to one of said latches to create a half-rounded deformable body having an interior void and each said lateral edge being held between the channel latch and one of said base flanges.

4,509,293

VEHICLE DOOR, IN PARTICULAR FOR PASSENGER MOTOR CAR

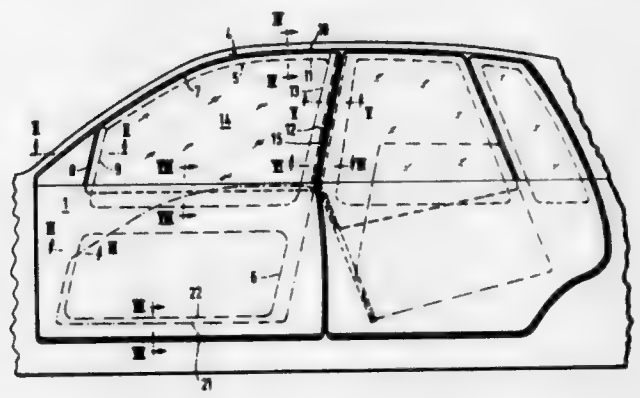
Martin Ufrecht, and Heinz Rest, both of Cologne, Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 13, 1983, Ser. No. 503,939

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227153

Int. Cl.[3] B60J *5/04*

U.S. Cl. 49—502 **7 Claims**



1. A vehicle door, in particular for motor cars which consists of at least an inner metal sheet and an outer metal sheet and in which these sheets are spot welded together along the door outer periphery and, in an upper frame part of the door, along the flanges around the opening area for a lowerable window, characterized in that the portions of the inner and outer sheets forming the upper frame part extend approximately normal to the plane of the glass of the lowerable window at their inner flanges, and extend parallel to the edges of the window glass at their outer flanges, the window glass being positioned to overlap the inner and outer flanges, thereby forming supporting channels mounting window glass guides and/or seals, and that the inner sheet forms an outwardly open shell which in the area of its upper frame part has a deep U-shaped cross-section profile which is closed by a shallow profiled region, approximately U-shaped in cross-section, formed on the outer sheet in the region of the upper frame part.

4,509,294

DOOR FRAME ASSEMBLY

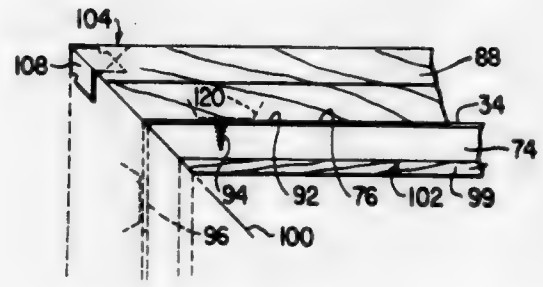
Raynald Boilard, Comté Beauce Nord, Canada, assignor to Fernand Flamand Ltee, St.-Henri, Canada

Continuation of Ser. No. 183,450, Sep. 2, 1980, abandoned. This application Aug. 18, 1983, Ser. No. 524,231

Claims priority, application Canada, Jul. 4, 1980, 355503

Int. Cl.[3] E06B *1/04*

U.S. Cl. 49—504 **10 Claims**



1. A knocked down door frame comprising three factory made assemblies made of wood components and hardware means and designed to be readily mounted without shim means to a wall opening in a building, which opening is defined by a horizontal stud and two vertical spaced apart studs, said assemblies consisting of a lintel assembly adapted to be secured

adjacent said horizontal stud and two side post assemblies adapted to be secured to said vertical studs respectively, each side post assembly comprising a door jamb member of constant, generally rectangular cross-section having a main planar outer surface, an inner surface, an outer side edge and an inner side edge, an outer jamb moulding permanently secured along one of its margins to said outer side edge so as to substantially cover same and extend in the plane of said outer side edge away from said main planar outer surface, an inner jamb moulding permanently secured along one of its margins to said inner side edge so as to substantially cover same and extend in the plane of said inner side edge away from said main planar outer surface, said lintel assembly comprising the combination of a lintel member whose cross-section is identical to that of said door jamb member having a main outer surface, an inner surface, an outer side edge and an inner side edge, an outer lintel moulding having the profile and transverse dimensions of said outer jamb mouldings, permanently secured to the outer side edge of said lintel member in the same position as in the case of said outer jamb mouldings, and an inner lintel moulding having the profile and transverse dimensions of said inner jamb mouldings, permanently secured to the inner side of said lintel member in the same position as in the case of said inner jamb mouldings, wherein both ends of said lintel assembly are pre-cut at the point of manufacture at exactly 45 degree angles with respect to the main outer surface of said lintel member so as to produce miter ends, wherein the upper end of each side post assembly is pre-cut at the point of manufacture at an angle of exactly 45 degrees with respect to the main outer surface of the respective door jamb member so as to produce a miter end thereat, whereby at every miter end of each assembly every component thereof terminates in a commo plane which extends across the assembly at an angle of 45 degrees with respect to the corresponding main outer surface, wherein said inner surface of the door jamb member of each side post assembly and the inner surface of the lintel member of said lintel assembly have a longitudinally extending shallow, wide groove of rectangular cross-section extending at least in the region of every miter end and reaching the corresponding common plane, which groove is preferably disposed centrally of the width of the corresponding inner surface, wherein said hardware means comprises a rigid cross-piece for every miter end to be secured transversally of said groove so as to bridge same close to the corresponding miter end and an L-shaped clip to be mounted at each miter end of said lintel assembly, each L-shaped clip having a first and a second flat arms defining an angle of about 90 degrees, the first arm being adapted to be secured prior to erection of said door frame in the groove of said lintel assembly under said cross-piece with the second arm extending generally perpendicularly of the main outer surface of said lintel assembly away from said inner and outer lintel mouldings, said second flat arm being adapted to fit closely into the groove of the miter end of the adjacent side post assembly under the corresponding cross-piece upon erection of said door frame.

4,509,295

CONTROLLED GRINDING OF ROLLERS FOR ELIMINATION OF CRACKS

Wolfgang Böttcher, Schwerte-Ergste; Heinz Jüttner, Dortmund; Albrecht Maurer, Dortmund, and Ferdinand Stutzinger, Dortmund, all of Fed. Rep. of Germany, assignors to Estel Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,225

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3112991

Int. Cl.³ B24B *5/00*

U.S. Cl. 51—49 **25 Claims**

1. A method for controlled grinding of roller surfaces comprising

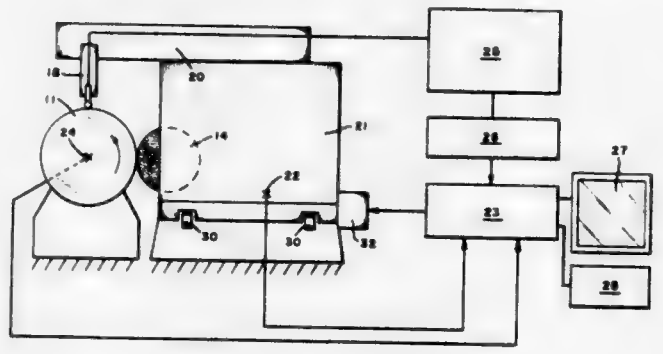
rotating a roller with a rotary drive;

rotating the grinding wheel having a rotation axis parallel to the rotation axis of the roller;

pressing the rotating grinding wheel against the rotating roller at a certain position along the axis of the roller;

moving the grinding wheel along the direction of its axis;

testing the surface of the roller with an eddy current test probe disposed at substantially the same position along the axis of the roller as the grinding wheel, however, staggered with respect to the grinding wheel by a suitable angle around the roller axis while the grinding wheel is rotating, mounting two support wheels having aligned axes on the eddy current test probe arm and disposed on each side of the eddy current test probe in a direction about parallel to the axis of the roller for providing proper relative positioning of the eddy current test probe with respect to the roller surface;



feeding a signal from the eddy current test probe to an eddy current test instrument;

converting an output from the eddy current test instrument with an analog-digital converter;

processing the signals from the eddy current test probe via an output of the analog-digital converter in a digital processor;

subdividing the circumference of the roller with a subdividing device connected to the digital processor;

subdividing the length of the roller with a subdividing device connected to the digital processor;

coordinating at least part of the roller surface with all sectors of said subdivided roller positively conforming to the surface of a picture screen connected to the digital processor.

4,509,296

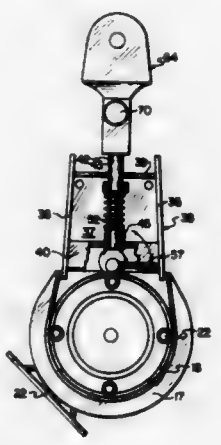
RADIAL BELT GRINDER

Aaron P. Rasmussen, 9606 Candy La., La Mesa, Calif. 92041

Filed Mar. 22, 1982, Ser. No. 360,607

Int. Cl.³ B24B *21/00*

U.S. Cl. 51—148 **6 Claims**



1. A radial belt grinder comprising:

a drive motor having a drive shaft;

a drive wheel mounted on said drive shaft;

a housing assembly for said drive wheel;

an idler wheel;

an idler wheel support bar having an upper and bottom end;

means for supporting said idler wheel laterally spaced from said housing assembly comprising a middle frame assembly having one end connected to said drive wheel housing assembly, an other end having the bottom end of said idler wheel support bar extending from it, an idler wheel case being supported on the upper end of said idler wheel support bar, said idler wheel case having bifurcated supporting arms that receive the end of an axle supporting said idler wheel;

a closed loop abrasive belt passing around the perimeter of said drive wheel and said idler wheel;

means for allowing the bottom end of said idler support bar to telescope within said middle frame assembly a predetermined distance sufficient to mount and remove said closed loop abrasive belt comprising said middle frame assembly having a surface plate extending transversely to said idler wheel support bar and having a bored hole through which said idler wheel support bar passes; following in axial sequence on said idler support bar after passing through said bored hole there being a guide stop, a compression spring, and a sleeve bushing; said sleeve bushing being telescopingly mounted in the bottom end of a transversely extending angle member that forms part of said middle frame assembly;

a cam shaft extending transversely to the lower end of said idler wheel support bar and having opposite ends journaled in said middle frame assembly, a cam being mounted on said cam shaft and said cam bearing against a lower end of said sleeve bushing, a cam handle being attached to said cam for rotating it between a position facilitating belt exchanges and a position limiting recoil when working pressures are applied to said idler wheel during contouring operations; and

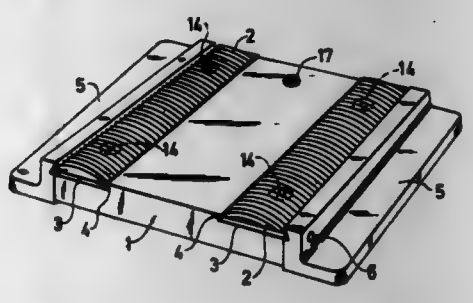
means for rotating said housing assembly with respect to said drive motor to various radial work positions.

4,509,297

SKI SHARPENER

Erik V. Lindgren, P1 1101, S-790 15 Sundborn, Sweden

Filed Oct. 19, 1982, Ser. No. 435,249
Claims priority, application Sweden, Oct. 21, 1981, 8106227
Int. Cl.[3] A63C *11/06;* B23D *67/12*
U.S. Cl. 51—181 R 12 Claims



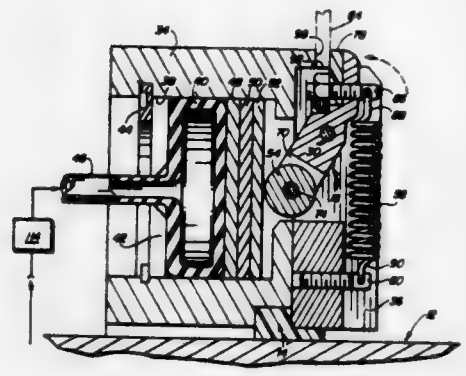
1. A device for sharpening the edges and scraping the base of skis, comprising a substantially plate-shaped holder body, which on one side thereof carries two parallel and spaced apart file blades arranged in the same plane, and which on the opposite side thereof carries a cutting blade arranged in the transverse direction of said file blades and substantially crosswise to the plane of the file blades, adjustment means to vary the distance of the cutting blade edge from the holder body surface along the cutting blade.

4,509,298

PNEUMATIC CLAMP MOUNTING FOR A DISC

Harold R. Klievoneit, Mesa, Ariz., assignor to St. Florian Company, Ltd., Phoenix, Ariz.

Filed Jul. 21, 1982, Ser. No. 400,303
Int. Cl.[3] B25B *5/00*
U.S. Cl. 51—237 R 7 Claims



1. A pneumatic clamp apparatus for retaining an apertured disc upon a shaft during grinding and polishing of the disc, said apparatus comprising in combination:

(a) an hub for penetrably engaging and supporting the disc, said hub including an annular cavity;

(b) an annular shoulder for locating the disc upon the hub;

(c) a plurality of clamps for clamping the disc upon said hub;

(d) means for biasing each clamp of said plurality of clamps;

(e) means for pivotally mounting each of said clamps;

(f) pneumatic means for urging pivotal movement of said plurality of clamps, said pneumatic means including an annular bladder operatively associated with said annular cavity and means for operating said plurality of clamps in response to inflation and deflation of said bladder; and

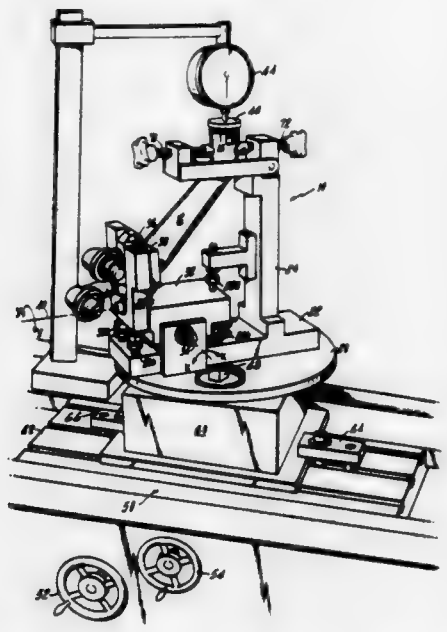
(g) means for slidably locating and rotationally locking said hub upon the shaft.

4,509,299

MEANS FOR REFACING A FUEL NOZZLE AND METHOD THEREOF

Joseph R. Guertin, Bristol, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 27, 1982, Ser. No. 424,666
Int. Cl.[3] B25B *5/00;* B24B *19/00*
U.S. Cl. 51—237 R 3 Claims



1. In combination, apparatus for refacing the face of a fuel nozzle that has a threaded section that is to be replaced in a gas turbine engine, and a gage for orienting the face in a given spatial orientation, a retractable cap having a flat top surface threadably engaging said threaded section, said fuel nozzle

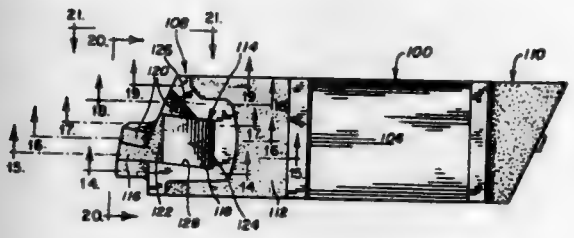
having a central axis comprising a base for being supported in a grinding machine adapted to move the base longitudinally and laterall, an upstanding support member for supporting said fuel nozzle for placing said face in position for being grinded by the grinding wheel of said grinding machine, a horizontal support member having a pivot pivotally supporting it to said base for being adjusted in a first plane so that said gage bears against said surface so that said face is oriented in spatial relationship to be square with respect to the pitch diameter of threads formed on said nozzle; said horizontal member pivotally supporting said upstanding support member so that said gage bears against said surface to orient said face in a second plane that is transverse to said first plane to square said face relative to the pitch diameter of said threads, and means for imparting rotary motion to said base so that said face rotates about its central axis at a relative slow rate of speed relative to the rate of speed of said grinding wheel in a direction that is opposite relative to the direction of rotation of said grinding wheel upon removal of said gage and said cap.

4,509,300

VANE RETENTION APPARATUS FOR ABRASIVE BLASTING MACHINE

James H. Carpenter, and Donald G. Corderman, both of Hagerstown, Md., assignors to Kennecott Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 245,028, Mar. 18, 1981, Pat. No. 4,402,163. This application Mar. 18, 1982, Ser. No. 359,411
Int. Cl.³ B24C *5/06*
U.S. Cl. 51—435 **13 Claims**



1. A throwing vane for a particular throwing device, said vane comprising:

a vane blade:

a base secured to the vane blade, said base having an inner end and outer end spaced along an axial direction and situated such that the vane blade extends between the two ends, said base defining a recess at the outer end thereof, said recess comprising:

a first groove extending generally in the axial direction and bounded at an inner edge by a first surface which extends from a shoulder toward the inner end and is oriented to diverge from the vane blade in the direction of the inner end, and by a second surface which extends from the shoulder to the outer end; and

a second groove, intersecting the first groove and oriented obliquely with respect to the axial direction, said second groove bounded at one edge by a third surface having an outer edge positioned to one side of the vane blade and an inner edge intersecting the second surface near the shoulder.

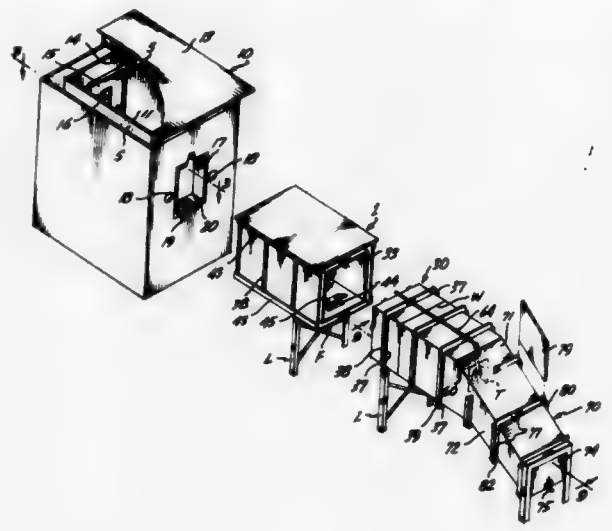
4,509,301

MODULAR SHOOTING RANGE

Robert L. Head, 3501 Perenosa Bay Dr., Anchorage, Ak. 99515

Filed Apr. 23, 1982, Ser. No. 371,342
Int. Cl.³ E04H *14/00*; F41J *1/12, 1/14*
U.S. Cl. 52—79.8 **9 Claims**

1. A firing tube for use in a shooting range comprising a generally tubular liner of metal sheet material, and panels for forming an outer sleeve completely encircling said liner, said liner having stiffeners projecting outward therefrom for supporting said panels spaced from the tube of said liner leaving room for filler material between said sleeve and said tube, and said liner including laterally spaced, upright sidewalls, integral flanges bent inward from the upper portions of said sidewalls,



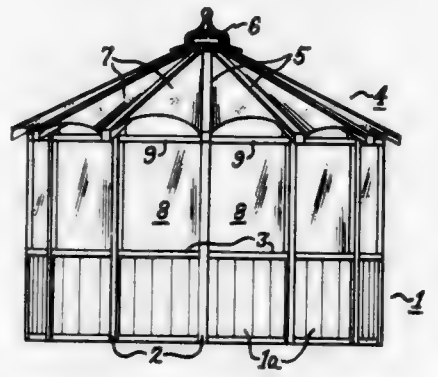
respectively, and interconnected so as to form a ceiling and a floor plate for extending generally between the lower portions of said sidewalls.

4,509,302

BUILDING STRUCTURE

Eugene R. Donatelli, 660 Taconic Trail, Williamstown, Mass. 01267

Filed Sep. 27, 1982, Ser. No. 424,007
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—82 **4 Claims**



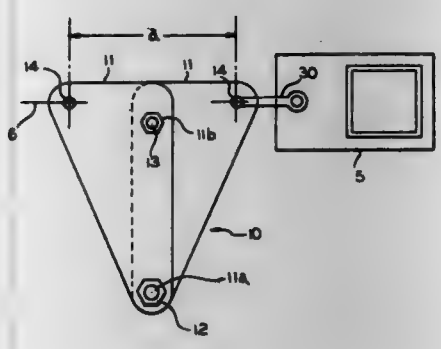
1. A building structure for a solarium or the like, comprising, in combination, a plurality of panels formed of stiff, outwardly bowed, transparent sheet members arranged adjacent one another in substantially radial array, and elongated spaced framing members extending along the adjacent sides of said panels holding said panels in bowed condition in said array, the form and arrangement of said panels being generally such that some portions of said panels are substantially normal to the rays of the sun as the position of the sun changes relative to said panels, thereby facilitating passage of the sun's rays through said transparent panels, said panels being generally triangular in flat form, said framing members formed with grooves along their length, said panels inserted along their side edges in said grooves, whereby said framing members firmly hold said panels in outwardly bowed position, the dimensions of said grooves in cross-section being sufficiently greater than the thickness of said panel edges to allow variation of the position of said panel side edges in said grooves along the length thereof, the opposite side walls of said grooves being convergent, said grooves being substantially triangular in cross-section, said panels having straight side edge portions inserted along their length in said grooves, said opposite side walls converging outwardly and holding said inserted panel edge portions in substantial sealing relation therewith.

4,509,303

OVERLOAD PROTECTOR FOR GUYED STRUCTURES

Ronald E. Randle, and Arnold M. Milbright, both of Red Wing, Minn., assignors to International Telephone and Telegraph Corp., New York, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,824
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—98 **14 Claims**



1. A device for serial connection in a guy arrangement comprising:

a first plate adapted for coupling to said guy arrangement and having first and second apertures spaced apart a first predetermined distance;

a second plate adapted for coupling to said guy arrangement and having third and fourth apertures spaced apart said first predetermined distance;

a hinge bolt extending through said first and third apertures to pivotally couple said first and second plate;

a shear bolt extending through said second and fourth apertures to couple said first and second plates;

said hinge bolt and said shear bolt cooperatively holding said first and second plates in a fixed position relative to each other when forces exerted on said device are below a predetermined level, and said plates shearing said shear bolt when said forces are equal to or exceed said predetermined level whereby said first and second plates pivot around said hinge bolt to add a predetermined length to said guy arrangement.

4,509,304

METHOD AND APPARATUS FOR INSERTING INSULATION IN PREEXISTING BUILDING STRUCTURES

Jack R. Epes, 520 North First St., Lompoc, Calif. 93436

Filed May 19, 1983, Ser. No. 495,947
Int. Cl.³ E04F *21/06*
U.S. Cl. 52—127.3 **15 Claims**



1. A device for installing batts of insulation in preexisting structures, comprising:

a control sheet having a substantially flat elongated surface for receiving a bat of insulation, a first end having a handle, and a second end which is free for insertion into a wall opening;

a compressor sheet having a substantially flat elongated surface for overlying said control sheet flat surface to compress a batt of insulation therebetween; a first end having a handle, and having a second end which is free for insertion into a wall opening;

means for connecting said control sheet second end to said compression sheet second end such that said sheets are maintained a predetermined distance apart to compress a batt of insulation and said compressor sheet second end and said control sheet second end overlie one another; and

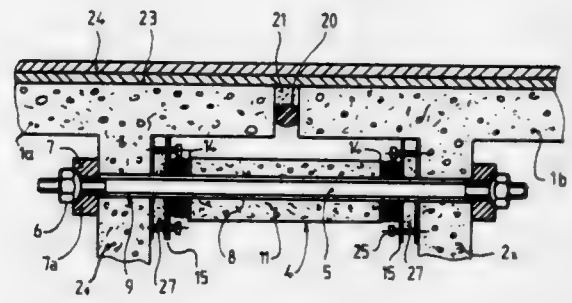
means for releasing said connecting means to release a batt of insulation after insertion into a wall opening.

4,509,305

DEVICE FOR CONNECTING ISOSTATIC ELEMENTS IN LINE

Pierre Guinard, Maintenon, France, assignor to Freyssinet International (STUP), Boulogne-Billancourt, France

Filed Feb. 15, 1983, Ser. No. 466,711
Claims priority, application France, Feb. 24, 1982, 82 03030
Int. Cl.³ E04C *3/10*
U.S. Cl. 52—223 R **4 Claims**



1. A device for connecting together the upper parts of adjacent, opposing butt ends of isostatic elements disposed in line with one another, comprising:

at least one tensioned tie rod having a longitudinal axis and being disposed between said upper parts of said opposing butt ends of said isostatic elements;

a pre-compressed member also disposed between said upper parts of said opposing butt ends of said isostatic elements, said pre-compressed member having a longitudinal axis and being brought into a state of substantially permanent pre-compression at least in part by said tie rod;

said tie rod being longitudinally coaxially disposed within and extending through said pre-compressed member; and

said pre-compressed member being a tubular cylinder filled with concrete and freely traversed by said tie rod.

4,509,306

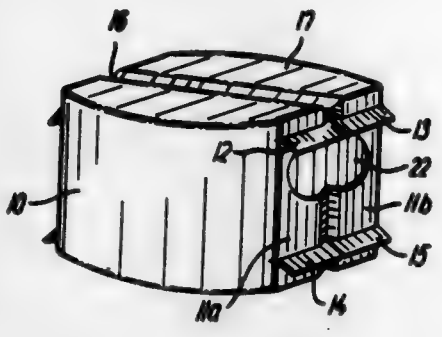
PANEL FOR SELF-SUPPORTING ROOF STRUCTURES COMPRISING ELONGATED EXTRUDED PROFILE ELEMENTS OF PLASTICS MATERIAL CLOSED AT THEIR ENDS, AND CLOSING MEMBER FOR SUCH PROFILE ELEMENTS

Henryk Sokoler, Roskilde, and Eigil Pedersen, Jyllinge, both of Denmark, assignors to Everlite A/S, Skaevinge, Denmark

Filed Jul. 25, 1983, Ser. No. 512,341
Claims priority, application Denmark, Aug. 12, 1982, 3621/82
Int. Cl.³ E04B *1/70*
U.S. Cl. 52—302 **8 Claims**

5. A closing member of plastics material for closing a main duct in an elongated extruded profile element for a panel for roof structures which closing member has substantially the same profile as the wall of said profile element defining said main duct and with such dimensions that the closing member can fit into said main duct and substantially prevent free air circulation through said duct and which closing member fur-

ther has resilient sealing flaps along and issuing from two opposite lateral outer surfaces of said closing member, the free ends of the flapes facing the open end of the closing member;



each sealing flap extending over said lateral surface and being divided into two parts by a narrow slit which is closed when the closing member is in position in the end of the profile element.

4,509,307

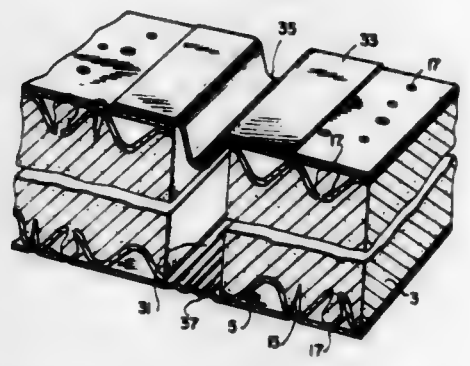
HEAT INSULATING PANEL

Emilien Beaudet, Chateaugway, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 321,272, Nov. 13, 1981,. This application Jul. 28, 1983, Ser. No. 517,912

Int. Cl.³ E04C *2/24*

U.S. Cl. 52—309.4 **4 Claims**



1. In a composite roofing panel, the combination of an insulating core of polymeric foam, the core having

an upper surface,

a lower surface,

two oppositely disposed edge surfaces, and

an elongated slit extending between and opening through said edge surfaces and also opening along its length through one of the upper surface and the lower surface;

at least one lamina of non-foam material overlying and secured to said one of the upper and lower surfaces;

said at least one lamina being interrupted by the slit;

an elongated flexible transversely strong tape covering the slit and adhesively secured to the portions of said at least one lamina of non-foam material adjacent the slit,

the slit presenting side walls which are spaced apart when the tape is relaxed and undeformed; and

at least one additional lamina of non-foam material overlying and secured to the other of the upper and lower surfaces and extending in unbroken fashion across the location of the slit;

the slit affording space for relief of stresses resulting from shrinkage of the insulating core of polymeric foam due to uneven loss of moisture and thereby inhibiting curling of the panel which would otherwise result from such stresses;

the tape providing supplemental structural strength to allow handling of the panel despite presence of the slit, yet also allowing limited movement of the side walls of the slit relative to each other as said stresses are relieved.

4,509,308

MOUNTING ASSEMBLY AND METHOD FOR INSTALLING DOWELS IN COMPOUND PANELS

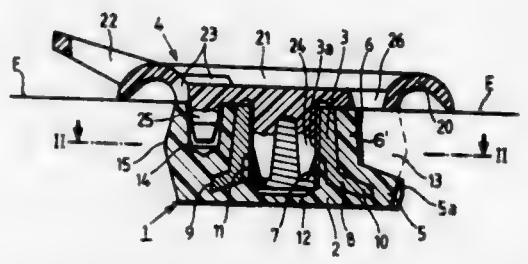
Karl Dettfurth, and Bernd Dettfurth, both of Hamburg, Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,571

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213213

Int. Cl.³ E04C *2/54*

U.S. Cl. 52—787 **9 Claims**



1. A mounting assembly having a central axis, for installing a dowel in a hole in a compound panel, comprising a dowel body with a central hole, a threaded bushing rigidly held in said central hole, said dowel body having anchoring elements and at least one flange, said assembly further comprising a mounting member (4, 50) removably connected to an outer end of said dowel body, said mounting member having a curved margin (20, 52) forming a casting depression (21, 59) around the outer end of the dowel body on the surface of a panel in which the assembly is to be installed, said dowel body having a cornered portion (6, 45) arranged centrally around said central axis, said flange (5, 43) of the dowel body merging into the cornered portion, said cornered portion having relatively flattened corners (15) defining a circle having a diameter larger than the diameter of a circle defined by said flange, said threaded bushing (3, 42) also having a flange (8, 46) reaching into said flange (5, 43) of the dowel body.

4,509,309

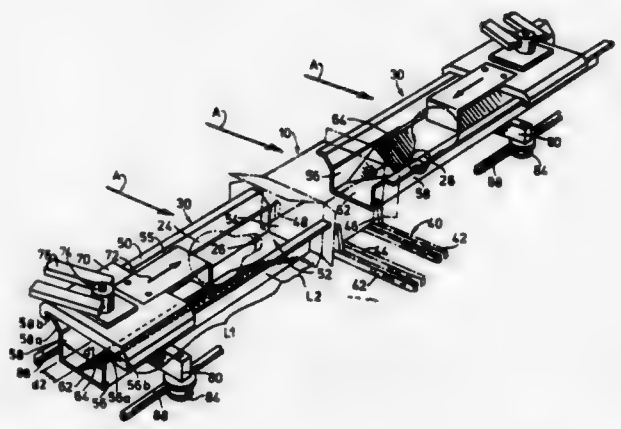
LOAD ORIENTING RECEPTACLES FOR CARTON LOADING MACHINES

Marinus J. M. Langen, and Peter Guttinger, both of Rexdale, Canada, assignors to H. J. Langen & Sons Limited, Mississauga, Canada

Filed Aug. 8, 1983, Ser. No. 520,906

Int. Cl.³ B65B *35/56, 39/14*

U.S. Cl. 53—142 **7 Claims**



1. A load orienting receptacle for a carton loading machine for use in loading lightbulbs into an open end of a carton, the lightbulbs being of the type having a bulbous end and a narrow plug end, comprising;

a trough having a slipway extending longitudinally thereof to an open discharge end,

said slipway having an open upper end for admitting a light-bulb to a load orienting portion thereof spaced inwardly from the discharge end,

said load orienting portion having opposite sides which converge downwardly to form a downwardly directed laterally inclined chute,

said opposite sides being spaced from one another a sufficient distance to support the bulbous end above the bottom of the trough while permitting the narrow end to be laterally deflected as it passes downwardly along the chute to come to rest in the trough thereby to laterally offset the narrow end with respect to the bulbous end of the bulb prior to discharge through the open discharge end of the trough.

4,509,310

APPARATUS FOR THE PRODUCTION OF PACKS, ESPECIALLY CIGARETTE CARTONS

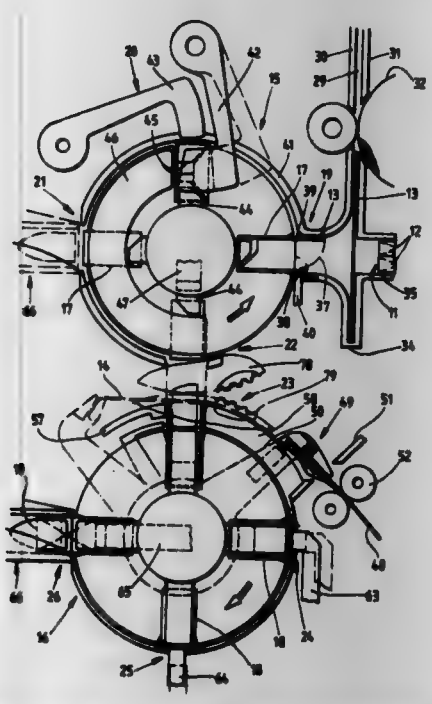
Heinz Focke, Verden, and Hugo W. Mutschall, Kirchlinteln, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,478

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123496

Int. Cl.³ B65B *11/32, 41/18*

U.S. Cl. 53—170 **10 Claims**



1. An apparatus for selectively wrapping groups of cigarette packs with first and second carton-forming wrapper blanks to form a carton of cigarette packs, and for discharging cartons wrapped in only the first wrapper blank, in only the second wrapper blank or in both the first and second wrapper blanks, said apparatus comprising:

first (15) and second (16) rotatable wrapping-and-folding turrets disposed one above the other with their rotational axes parallel to each other;

first feeding means for feeding first wrapper blanks (13) to said first turret (15);

second feeding means for feeding second wrapper blanks (14) to said second turret;

first discharge means in said first turret for discharging wrapped cartons at a first discharge station (21);

second discharge means in said second turret for discharging wrapped cartons at a second discharge station (26); and

wrapped carton receiving means (66), movable between said first and second discharge stations, for selectively receiving wrapped cartons from said first and second discharge stations.

4,509,311

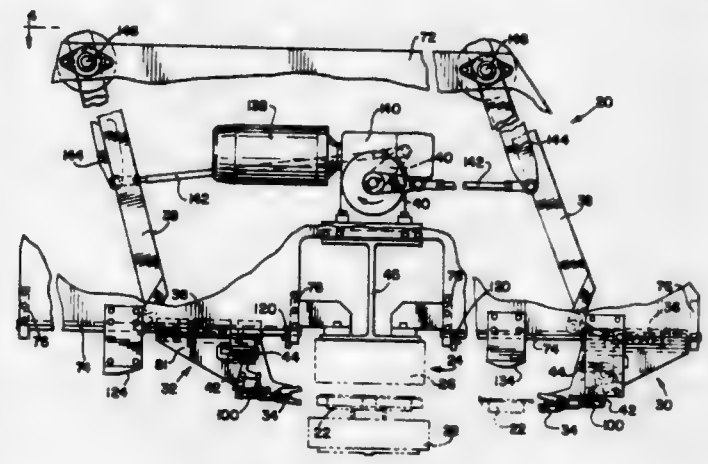
METHOD AND APPARATUS FOR LOADING AND UNLOADING PACKAGE-FORMING MACHINE

Carroll P. Hartl, Madison, Wis., assignor to General Foods Corporation, White Plains, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,482

Int. Cl.³ B65B *7/06*

U.S. Cl. 53—202 **7 Claims**



1. In a package-forming machine having an apparatus for sealing a package cover to a food containing package tray, which apparatus includes a pair of sealing portions which are relatively movable between a spaced-apart position and a closed sealing position, the improvement comprising, in combination:

a pair of shuttles slidably mounted on opposite sides of the sealing portions and movable toward and away from the sealing portions;

each of the shuttles including at least a pair of sliding portions biased to a normally spaced-apart relationship;

a pair of gripping jaws carried by one of the sliding portions of each shuttle;

means for reciprocally moving each of the shuttles toward and away from the sealing portions, said moving means including a drive member attached to another of the sliding portions of each shuttle;

a stop defining the end of the movement of each shuttle toward the sealing portions, the stop being disposed to engage the jaw-carrying sliding portion;

jaw control means carried by the jaw-carrying sliding portion operable to move the gripping jaws of the respective shuttle between open and closed positions; and

means associated with said another sliding portion of each shuttle adapted to engage the respective jaw control means when the sliding portions of each shuttle are adjacent at the end of shuttle movement toward the sliding portions.

4,509,312

AUTOMATIC CARTON PACKING MACHINE

Mutsuhiko Nakajima, Soka, Japan, assignor to Ace Pak Company Incorporated, Japan

Division of Ser. No. 250,282, Apr. 2, 1981, Pat. No. 4,448,013. This application Aug. 16, 1983, Ser. No. 523,427

Int. Cl.³ B65B *57/00, 19/24*

U.S. Cl. 53—375 **2 Claims**

1. A device for treating the triangular lugs of carton tops to be packed and to have a flat top, in a process of packing enclosing the cartons, said device comprising:

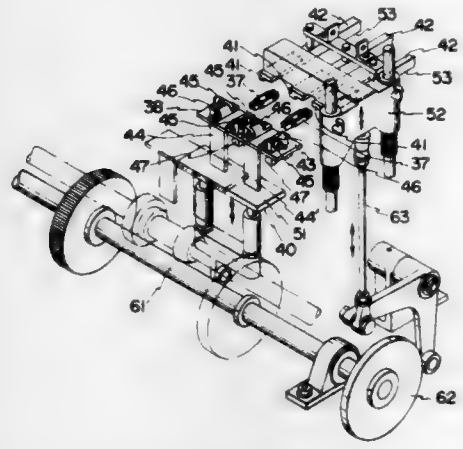
clamp conveyor means arranged at a right angle to a bucket conveyor, said clamp conveyor means provided for running intermittently in a timed relation to running of the bucket conveyor, and for running in a running direction;

a clamp set including a horizontal base plate attached to said clamp conveyor means, a back pushing plate attached to said base plate for pushing cartons in the running direc-

tion, said back pushing plate extending vertically, clamp members projecting from a lower side of said base plate, and a driven mechanism connected to said clamp members for moving said clamp members toward each other, said driven mechanism provided on said base plate and including a cam follower movable from an upper position to a lower position for actuating said driven mechanism to move said clamp members together, said cam follower movable upwardly to actuate said driven mechanism to move said clamp members apart;

a hot-air blower for blowing hot air against lower sides of the lugs and side surfaces of cartons carrying the lugs;

a push-up bed disposed at a downstream side of said hot-air blower, as viewed in the running direction, with means



connected to said bed for pushing a carton up toward said base plate; and

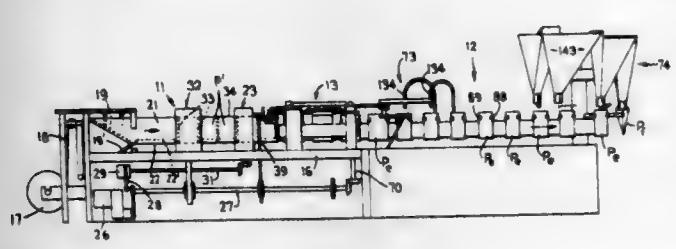
a clamp cam having a closing surface positioned to engage said cam follower with movement of said clamp conveyor means to move said cam follower downwardly, and an opening surface downstream of said closing surface in said running direction for moving said cam follower upwardly whereby said push-up bed is moved upwardly to move triangular lugs of a carton against said clamp members and said clamp conveyor means is movable in the running direction to move said clamp members together to clamp against the lugs and to hold the carton, said clamp conveyor means being further movable in the running direction to move said clamp members apart to release the carton.

4,509,313

POUCH FORMING AND FILLING APPARATUS

Robert G. Koppe, 4243 Dickman Rd., Apt. 3C, Battle Creek, Mich. 49015

Division of Ser. No. 106,124, Dec. 21, 1979, Pat. No. 4,353,198.
This application Jun. 9, 1982, Ser. No. 386,815
Int. Cl.³ B65B *43/34, 43/30*
U.S. Cl. 53—570 **4 Claims**



1. An apparatus for filling a pouch having an openable mouth, comprising:

a frame;

a pouch-supporting mechanism for supporting a preformed pouch so that the mouth thereof opens upwardly;

filling means positioned above said pouch for permitting selected material to be deposited into said pouch through the open mouth thereof, said filling means including a filling member having a lower portion which is positionable adjacent the mouth of said pouch and defines a downwardly directed discharge opening for permitting discharge of said material into said pouch; and

a centering mechanism for engaging the mouth of said pouch and holding same in an opened and centered relationship relative to the discharge opening of said filling member, said centering mechanism including a pair of horizontally elongated pouch-engaging elements which are pivotally mounted adjacent one end thereof and are free adjacent the other end thereof, the free ends of said elements defining downwardly projecting portions which are adapted to project into the pouch mouth for engagement with the opposite sidewalls of the pouch, said pouch-engaging elements being normally maintained in a raised position wherein said free ends are disposed directly adjacent one another and are positioned vertically between said discharge opening and the mouth of said pouch, said pouch-engaging elements being moved into a lowered centering position wherein the free ends of said elements project into the open mouth of said pouch and are horizontally spaced a substantial distance from one another for engaging the opposite sidewalls of the pouch in the vicinity of the mouth thereof, said pouch-engaging elements during movement from said raised to said lowered centering position being moved through an intermediate lowered position wherein said free ends of said elements project into the open mouth of said pouch but are still maintained closely adjacent one another;

said centering mechanism including swivel means mounting said one ends of said pouch-engaging elements for permitting both vertical swinging of said elements between said raised and intermediate lowered positions and horizontal swinging of said elements between said intermediate lowered position and said lowered centering position, and stop means for limiting the downward vertical swinging of said elements when they reach said intermediate lowered position; and

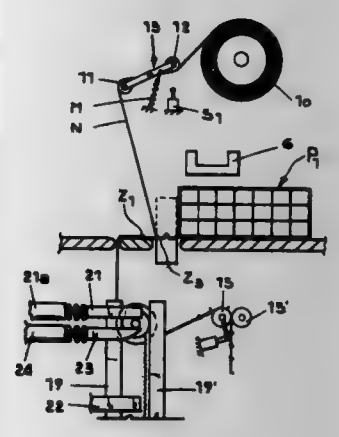
said centering mechanism including activating linkage means interconnected to said pouch-engaging elements for effecting movement thereof from said raised position into said intermediate lowered position and thence into said lowered centering position, said activating linkage means including a pivot member swingable about a substantially horizontal pivot axis, a pair of activating links pivotally connected at one ends thereof to said pivot member and respectively individually pivotally connected at the other ends thereof to said pouch-engaging elements at locations spaced intermediate the ends thereof, and actuating means interconnected to said pivot member for effecting swinging movement thereof from a first end location through an intermediate location into a second end location, whereby swinging movement of said pivot member from said first end location to said intermediate location acts through said activating links for swinging said pouch-engaging elements downwardly from said raised position into said intermediate lowered position until limited by said stop means, whereupon further swinging of said pivot member from said intermediate location toward said second end location acts on said activating links to cause said pouch-engaging elements to be swung outwardly away from one another into said lowered centering position wherein the free ends of said elements engage the opposite sidewalls of the pouch to hold the mouth open in centered relationship to the discharge opening of the filling member.

4,509,314

BAND WRAPPING MACHINE FOR THE PACKAGING OF PARCELS OF BOXES OR PRODUCTS

Ireneo Bozza, Via Stoppato, 9, Bologna, Italy

Filed Mar. 24, 1982, Ser. No. 361,138
Claims priority, application Italy, Jul. 17, 1981, 3483 A/81
Int. Cl.[3] B65B *11/08, 13/22*
U.S. Cl. 53—586 8 Claims



1. Band wrapping machine for the packaging of parcels of boxes or products, comprising in combination:

thrust means for sliding the parcels across a horizontal surface from a packaging position to a fastening position in which they are fastened by a heat-sealing material web initially extending vertically with respect to said surface and passing through a first transverse slit;

an operating device for welding and cutting the web once the wrapping of the package has been completed to form a seal on the wrapped package and on the vertically extending film, said operating device acting through a second slit parallel to said first one and placed downstream thereof;

a reel of said wrapping material, placed above said horizontal surface and rotating around a horizontal axis parallel to the said slits to feed said material in a feeding direction to said first slit;

a web storage roller, located beneath, and parallel to said first slit around which said web is wound, in the region of the lower generatrices and at an angle close to one half circle turn,

bilateral guide means, said web storage roller being movable vertically and freely under the influence of gravity along said bilateral guide means, between two extreme positions, namely an extreme upper position with said web tightened and shrouded around the parcel, and an extreme lower position for taking up and unwinding the wrapping material from the reel and downwardly move said seal on the vertically extending film out of the path of the next parcel; and

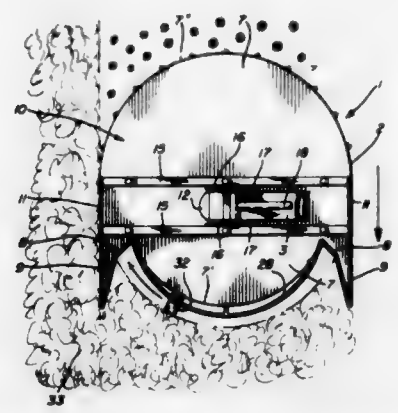
a device for locking the web issuing from the web storage roller and preventing said wrapping material from moving in the direction opposite said feeding direction, means for mounting said device underneath said horizontal surface at a height in between said horizontal surface and said web storage roller when said storage roller is in said lower position, means for actuating said device to move said film in said film feeding direction only each time the web is unwound from the reel, following the return of said web storage roller to the extreme lower position to further downwardly move the seal on the vertically extending film sufficiently so that no seal is present in the film for the next parcel.

4,509,315

BUSHWOOD MOWING APPARATUS

Noëlli Giguere, St-Adrien de Ham (Richmond), Quebec J0A 1C0, Canada

Filed Nov. 28, 1983, Ser. No. 555,772
Int. Cl.[3] A01D *35/262*
U.S. Cl. 56—10.7 5 Claims



1. In combination, a mowing device consisting of a floating work head and a work-related vehicle, comprising: a multiple-lever arm to movably manipulate said work head against bush to be mown; said head comprising a housing having a top wall with semi-circular front and rear ends, lateral walls and a rear wall, a motor fixedly secured to said top wall and having a shaft extending through said top wall below the same, an elongated flat rigid bar fixed to said shaft at its center and rotatable in a plane parallel to the plane defined by said top wall, a cutting blade pivoted to each end of said bar and defining a full cutting arc outwardly of said front end but inwardly of said rear end; said front end having two end portions projecting forwardly outwardly from said cutting arc and defining inner indents adapted to retain said bush to be mown therewithin upon forward progression of said work head; said bar defining slashing and comminuting leading edges, each cutting blade mounted on said bar at its inner end portion for full rotation in a plane parallel to said bar about a pivotal member protruding from the top of said bar and from the bottom of said blade, each of said blades having a free end portion parallel to said bar and which is downwardly offset from said blade inner end portion to fully shield the lower end of said pivotal member, wherein said bush slidingly brought within said indent is shearingly struck by one said blade which may yieldingly pivot inwardly depending upon the resistance of said bush and is thereafter struck by the other said blade which may also yieldingly pivot inwardly and again by the said one blade having outwardly pivoted under centrifugal force which may again pivot inwardly, sucessively, until the bush is completely cut, and the leading edges of said bar subsequently slash and comminute the cut bush.

4,509,316

LAWN MOWER SHARPENER

Jack F. Edwards, 4917 Harrison Dr., Holiday, Fla. 33590

Filed Aug. 3, 1984, Ser. No. 637,609
Int. Cl.[3] B24B *19/00*
U.S. Cl. 56—250 10 Claims

6. An improved rotary, power lawn mower sharpener, comprising:

a base member having a pivot mounted thereon;

a lever pivotally mounted on said pivot for horizontal motion about said pivot, having a handle connected thereto for actuating said lever;

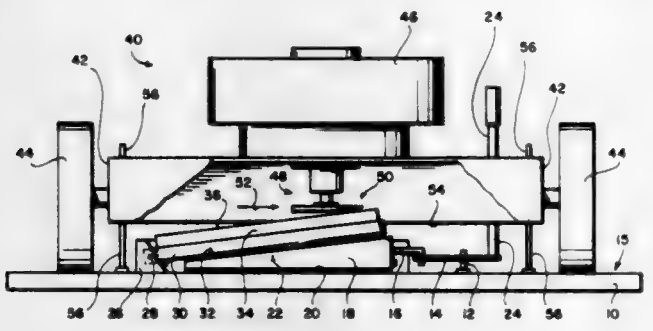
a wedge having a horizontal, planar, bottom surface for sliding engagement with said upper surface of said base, and having an inclined, planar, upper surface, said wedge connected to said lever, said lever acting to displace said wedge in a horizontal direction;

a tray member pivotally mounted to said base by means of a horizontal pivot, said tray having a planar, bottom surface

adapted for sliding engagement with said inclined, upper surface of said wedge when said wedge is moved horizontally by said lever;

a grinding stone mounted in said tray, having an upper, planar grinding surface which is raised when said wedge moves inwardly beneath said tray and which is lowered when said wedge is moved outwardly from beneath said tray;

said base member being positioned beneath a rotary power lawn mower by rolling the wheels of said mower over said base and moving said handle so that said lever pulls said



wedge outwardly from beneath said tray member, lowering said grinding stone so that said upper surface thereof clears the bottom edge of said mower;

said mower having a rotary blade with a leading edge which is to be sharpened, said blade being driven into horizontal motion by means of its motor, said blade being sharpened by moving said handle so that said lever pushes said wedge inwardly beneath said tray member, raising said grinding stone so that said upper surface thereof operatively contacts the lower surface of said leading edge of said blade at an inclined angle;

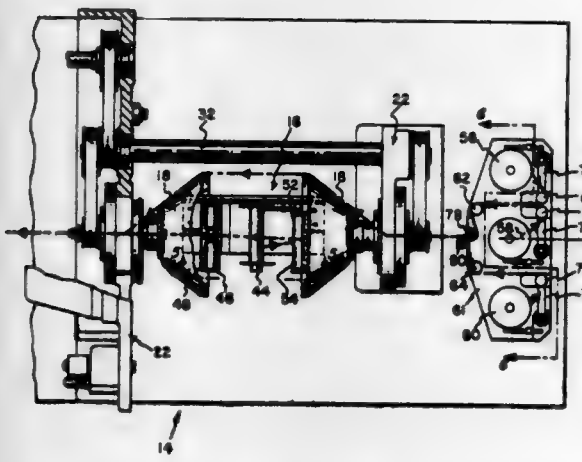
whereby said blade is conveniently and safely sharpened.

4,509,317

APPARATUS AND METHOD FOR MAKING METALLIC CORD

Carl Rogister, Colmar-Berg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 25, 1983, Ser. No. 488,492
Claims priority, application Luxembourg, May 7, 1982, 84135
Int. Cl.³ D07B *3/12, 3/02*
U.S. Cl. 57—58.32 **28 Claims**



1. A method for producing metallic cords adapted to be used as reinforcing members in elastomer structures having a first element of two or more parallel filaments brought together with a second element of one or more filaments, the method comprising the steps of:

withdrawing a first group of filaments at a pre-determined tension from the plurality of fixedly located delivery spools and applying a turn through the first group of filaments forming the first element;

withdrawing one or more filaments forming a second element at a predetermined tension from one or more fixedly located delivery spools;

directing the second element along an axis of rotation on which the turn is applied;

bringing the first and second elements together while maintaining the predetermined tensions respectively thereon to helically form one element with respect to the other by application of the turn on the first element, formed of the first group of filaments, to the second element, formed of one or more filaments, which second element has received no turns because of its location on the axis of rotation; and

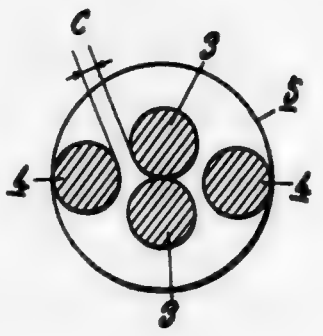
subsequently mechanically setting the cord formed above to set the cord structure formed by joining the two elements together.

4,509,318

STEEL CORD

Osamu Yoneda, Miki, Japan, assignor to Tokusen Kogyo Kabushiki Kaisha, Ono, Japan

Filed Feb. 3, 1984, Ser. No. 576,922
Claims priority, application Japan, Feb. 10, 1983, 58-18628[U]
Int. Cl.³ D07B *1/06, 1/10*
U.S. Cl. 57—212 **2 Claims**



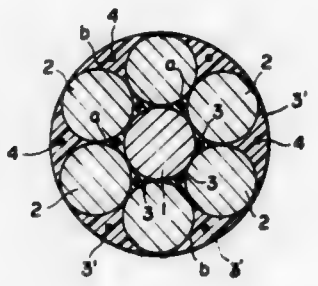
1. A steel cord composed of four material wires of the same diameter which are intertwisted, of which two material wires are stuck to each other and intertwisted at the center and each of the other two material wires is arranged on both sides of the former two material wires with a certain space left therebetween and the latter two material wires are twisted about the former two material wires in the same twist direction and at the same pitch as the former two material wires.

4,509,319

WIRE ROPE

Tatsuo Yoshida; Kikuo Fukuda, both of Kakogawa, and Akihiko Tomiguchi, Nabari, all of Japan, assignors to Shinko Kosen Kogyo Kabushiki Kaisha, Amagasaki, Japan

Continuation of Ser. No. 324,664, Nov. 24, 1981, abandoned.
This application Aug. 20, 1984, Ser. No. 641,931
Claims priority, application Japan, Dec. 27, 1980, 55-188642
Int. Cl.³ D07B *1/14, 1/08, 5/00*
U.S. Cl. 57—218 **2 Claims**



1. A wire rope comprising:

a core rope;

a plurality of outer strands, including outermost strands, laid on the circumference of said core rope, said outermost

strands having gaps formed therebetween and forming a plurality of first interstices between said core rope and said respective outermost strands and a plurality of second interstices formed between said outermost strands at positions radially outside of said gaps;

means for maintaining flexibility of said rope without cracking and peeling, said means for maintaining comprising a flexible filler element of a thermoplastic material formed as an integral body independently disposed in each of said first interstices formed between said core rope and said outermost strands, and in each of said gaps and second interstices between the individual outer strands, each said filler element being preformed with a shape corresponding to that of an interstice in which said filler element is disposed; and

a reinforcing core embedded in at least said filler element disposed in a respective one of said first and second interstices.

4,509,320

ELASTIC COVERED YARN AND METHOD AND APPARATUS FOR PRODUCING THE SAME

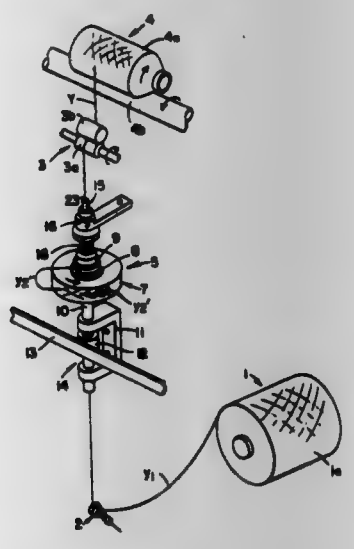
Senichi Maeda, 462 Shinhakusuimaru-cho, Ichijyo-Sagaru, Chiekoindori, Kamigyo-ku, Kyoto, Japan

Filed Mar. 18, 1983, Ser. No. 476,608

Claims priority, application Japan, Apr. 5, 1982, 57-57086; Jul. 16, 1982, 57-124615

Int. Cl.³ D02G *3/32*

U.S. Cl. 57—225 **4 Claims**



1. A method of producing an elastic covered yarn capable of stretching and contracting from its stretched condition, said method comprising the steps of:

(a) feeding a non-elastic yarn at a constant speed in one direction as a core yarn over a straight portion of the length thereof while applying a predetermined tension force thereto;

(b) at the same time, continuously wrapping an elastic yarn around said straight portion of said non-elastic yarn as said non-elastic yarn is fed thereover under a predetermined tension, and while applying a stretching force to the elastic yarn at said straight portion as it is being wrapped; and

(c) releasing the tensioning force from the non-elastic yarn and the stretching force from the elastic yarn after they have been moved past said straight portion;

(d) whereby to permit the covered yarn to contract after passing the straight portion so that the elastic yarn which when stretched was the cover yarn upon contraction becomes the core yarn and the non-elastic yarn which when tensioned was the core yarn upon release of tensioning becomes the cover yarn, softly and substantially covering the released elastic yarn, with no twist and with the non-elastic yarn being prevented from any substantially additional stretching.

4,509,321

APPARATUS FOR MANUFACTURING FASCIATED YARN

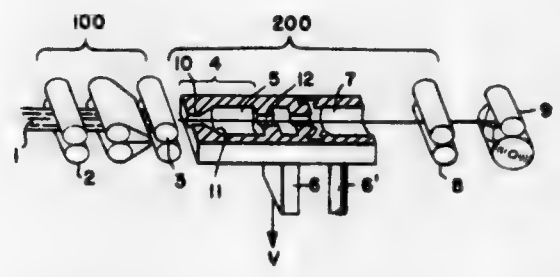
Koji Kajita, Omihachiman; Takashi Nakayama, and Seiichi Yamagata, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 4, 1983, Ser. No. 491,414

Claims priority, application Japan, May 4, 1982, 57-73340; May 4, 1982, 57-73336

Int. Cl.³ D01H *5/28*

U.S. Cl. 57—328 **24 Claims**



1. A fasciated yarn spinning apparatus having a drafting section, a false-twisting section and a delivery section, characterized in that said false-twisting section is adapted to produce a false-twisted core and a plurality of outside fibers, said apparatus including a fiber-diffusing section using a suction fluid between the final nip point in said drafting section and said false-twisting section, said fiber-diffusing section being arranged to control the path of movement of outside fibers to cause the outside fibers to return in a uniform manner alongside the false-twisted core.

4,509,322

FALSE TWIST UNIT

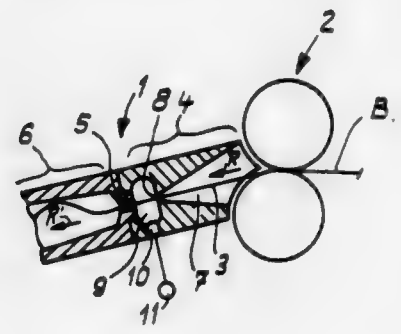
Emil Briner, and Richard Hieronymi, both of Winterthur, Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Mar. 28, 1984, Ser. No. 594,240

Claims priority, application Switzerland, Apr. 12, 1983, 1961/83

Int. Cl.³ D01H *5/28;* D02G *1/04*

U.S. Cl. 57—333 **13 Claims**



1. A false twist unit for threads or the like having a predetermined direction of thread movement, in particular for false twist spinning, comprising:

a suction portion containing a converging suction channel including a throat portion;

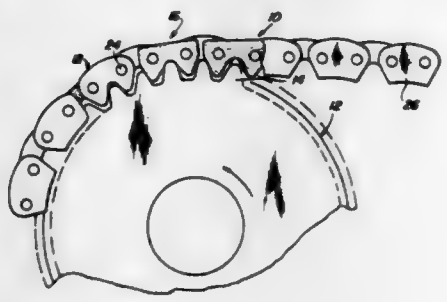
means defining a throttle location following said converging suction channel considered with respect to the predetermined direction of thread movement;

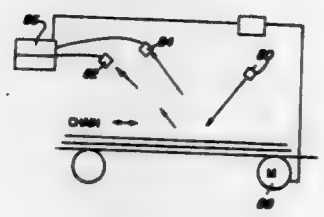
twist imparting means following the suction portion with respect to said predetermined direction of thread movement;

said suction portion further containing an expansion space which is in flow communication with the suction channel and located forwardly of the throttle location so that the suction channel opens at its throat portion into said expansion space;

means defining an air exit for said expansion space;
means defining a source of negative pressure; and
said expansion space being connected by said air exit to said source of negative pressure.

4,509,323
POWER TRANSMISSION CHAIN
Timothy J. Ledvina, and Robert H. Mead, both of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 332,032, Dec. 18, 1981, abandoned. This application Oct. 28, 1983, Ser. No. 546,669
Int. Cl.[3] B21L *3/00*
U.S. Cl. 59—8 **6 Claims**

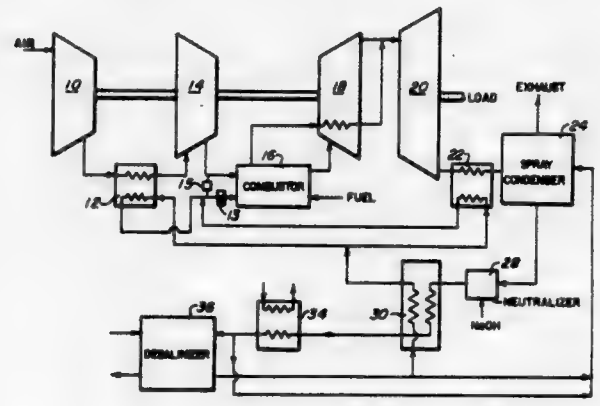




1. A method for differentiating between two types of links in a chain adapted for use in a sprocket drive and in which the links drivingly engage the teeth of the sprockets, the chain being composed of pivotable, interconnected and interleaved sets of links, each of said links having a pair of toes defined by converging flanks and a back surface opposite said toes, said chain further being composed of a first type of links and a second type of links both of which drivingly engage the teeth of the sprockets of the sprocket drive with at least one of the flanks thereof, the first type of links having a first flank configuration and the second type of links having a flank configuration which differs from that of said first type of links, comprising:
providing a generally flat and planar back on each link of one type of links;
providing a different configuration back on each link of the other type of links; and
inspecting the chain backs to determine the locations of the two types of links.

4,509,324
DIRECT OPEN LOOP RANKINE ENGINE SYSTEM AND METHOD OF OPERATING SAME
Herman B. Urbach, Rte. 2, 1355 Tydings Rd., and Earl R. Quandt, 203 Winchester Rd., both of Annapolis, Md. 21401
Filed May 9, 1983, Ser. No. 492,860
Int. Cl.[3] F02C *1/06, 6/00, 7/00, 7/08*
U.S. Cl. 60—39.17 **8 Claims**

1. An open-cycle Rankine engine system, said open-cycle Rankine engine system having a predetermined power profile curve, comprising:
first compression means for receiving ambient air and outputting a first compressed air flow mass;
cooling means cooperating with said first compression means for extracting a thermal energy of compression from said first compressed air flow mass and outputting a cooled, compressed air flow mass;
second compression means for receiving said cooled compressed air flow mass and outputting a second compressed air flow mass, and wherein said second compressed air flow mass is variable over a range from a predetermined maximum compressed air flow mass to a predetermined compressed minimum air flow mass;
combustion means optimized for stoichiometric combustion of said predetermined maximum compressed air flow mass at a maximum specific horsepower point of said predetermined power profile curve to generate combustion products, said combustion means further optimized to operate at a predetermined maximum combustion temperature during said stoichiometric combustion at said maximum specific horsepower point and wherein said predetermined maximum combustion temperature remains substantially constant over a 4-to-1 power turndown ratio between said maximum specific horsepower point and a Simple Cycle point along said predetermined power profile curve to form said combustion products, such that said combustion means operates at a maximum combustion efficiency at said maximum specific horsepower point and over said 4-to-1 power turndown ratio without flame out and said maximum predetermined compressed air flow mass required during stoichiometric combustion is minimized;
injection means for injecting a predetermined mass of steam-water into said combustion means to form a low tempera-



ture steam mass and a combustion gases-steam working fluid, said predetermined steam-water mass being variable over a range from a predetermined maximum steam-water mass to a predetermined minimum steam-water mass, and wherein said predetermined steam-water mass is injected into said combustion means and mixes with said combustion products to form said combustion products-steam working fluid;
first expansion means optimized for receiving and expanding said low temperature steam mass and said combustion gases-steam working fluid to generate a first output power for powering said second and first compression means and outputting an expanded combustion products-steam working fluid, said first expansion means further optimized to operate at a predetermined maximum inlet temperature at said maximum specific horsepower point and wherein said predetermined maximum inlet temperature remains substantially constant over said 4-to-1 power turndown ratio between said maximum specific horsepower point and said Simple Cycle point along said predetermined power profile curve without choking and said first expansion means is cooled by flow of said low temperature steam mass therethrough;
second expansion means for receiving and expanding said expanded combustion products-steam working fluid to generate a second output power for powering a variable load and outputting a combustion products-steam exhaust fluid;
means for regulating said predetermined steam-water mass,

said second compressed air flow mass, and a fuel introduced into said combustion means, said regulating means adapted to introduce said predetermined maximum steam-water mass, said predetermined maximum compressed air flow mass and said fuel into said combustion means in a first predetermined manner to cause said stoichiometric combustion at said maximum specific horsepower point of said predetermined power profile curve, said regulating means further adapted to vary said fuel and said predetermined steam-water mass introduced into said combustion means in a second predetermined manner, said predetermined steam-water mass being varied between said predetermined maximum steam-water mass and said predetermined minimum steam-water mass, to cause said open-cycle Rankine engine system to operate along said predetermined power profile curve over said 4-to-1 power turndown ratio between said maximum specific horsepower point and said Simple Cycle point such that said predetermined maximum combustion temperature and said predetermined maximum inlet temperature remain substantially constant over said 4-to-1 power turndown ratio and a thermal efficiency of said open-cycle Rankine engine system increases as it operates along said predetermined power profile curve from said maximum specific horsepower point to a Cheng point, and wherein said regulating means is further adapted to vary said fuel and said second compressed air flow mass, said second compressed air flow mass being varied between said predetermined maximum compressed air flow mass and said predetermined minimum air flow mass, in a third predetermined manner for operation of said open-cycle Rankine engine system below said Simple Cycle point such that an inlet temperature of said first expansion means is less than said predetermined maximum inlet temperature; and

means for treating said combustion products-steam exhaust fluid to recover water and waste thermal energy therefrom, said treating means further comprising

first heat exchanging means for extracting said waste thermal energy from said combustion products-steam exhaust fluid to produce a cooled exhaust fluid,

means for condensing water out of said cooled exhaust fluid to produce adulterated water and exhaust gases, said exhaust gases being exhausted to said ambient air,

means for neutralizing said adulterated water to produce neutralized water,

second heat exchanging means for cooling said neutralized water to produce cooled neutralized water, and

means for desalinizing said cooled neutralized water to produce fresh water,

wherein said fresh water cooperates with said second heat exchanging means to form preheated fresh water and a first portion of said preheated fresh water cooperates with said first heat exchanging means to extract said waste thermal energy therefrom to form a first steam-water mass and a second portion of said preheated fresh water cooperates with said cooling means to extract said thermal energy of compression therefrom to form a second steam-water mass such that said first steam-water mass and said second steam-water mass combine to form said predetermined steam-water mass;

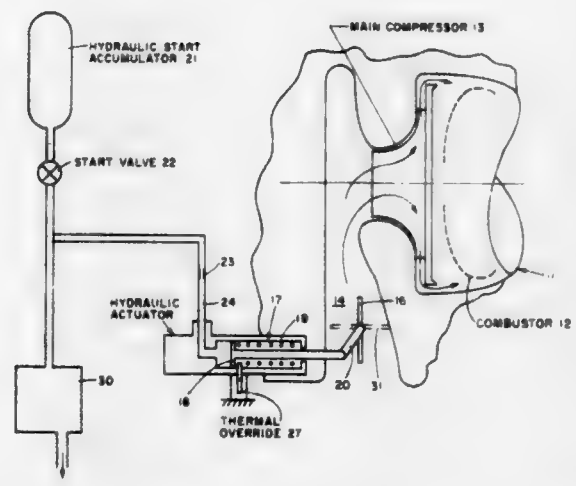
whereby said open-cycle Rankine engine system is optimized for full-load operation at said maximum specific horsepower point, for a first part-load operation along said predetermined power profile curve between said maximum specific horsepower point and said Simple Cycle point over said 4-to-1 power turndown ratio, and for a second part-load operation below said Simple Cycle point to significantly reduce fuel consumption of said open-cycle Rankine engine system over an integrated, weighted full load-part load operating cycle thereof and wherein a total volume of said open cycle Rankine engine system is reduced by approximately fifty percent.

4,509,325

TURBINE ENGINE COLD TEMPERATURE STARTING SYSTEM

Walter R. Morgan, Simi Valley, Calif.; Edmund A. Boniface, Ogden, Utah, and Clayton A. Huben, West Bloomfield, Mich., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 28, 1978, Ser. No. 974,155
Int. Cl.³ F02C *7/26*
U.S. Cl. 60—39.141 **1 Claim**



1. In a gas turbine engine having a combustor including an ignitor thereof, a compressor with an air inlet and connected to said combustor for supplying a fuel/air mixture across the ignitor thereof, an improved main compressor intake system comprising:

rotatable damper means connected to said compressor at the air inlet thereof;

a hydraulic actuator having a piston linked to said rotatable damper means, said piston being resiliently biased to a normal operating position;

a hydraulic start accumulator disengagingly connected to said hydraulic actuator via a conduit, depletion of fluid pressure in said hydraulic start accumulator allowing said biasing means to return said rotatable damper means to the normal operating position after which said accumulator may be disengaged and pressure therein restored;

a hydraulically activated start motor and a start valve inserted in a fluid conduit connecting said hydraulic start accumulator and said motor;

a rate control orifice in said actuator conduit for controlling the rate of flow of liquid to said actuator and thereby the rate of travel of said piston; and

thermal override means housed in said hydraulic actuator for preventing actuation of said rotatable damper means under selected temperature conditions;

whereby said hydraulic actuator conduit is operatively connected to said fluid conduit at a point intermediate said start valve and said hydraulically activated start motor; upon actuation of said start valve, fluid accumulated in said hydraulic start accumulator actuates said hydraulically activeted start motor via said fluid conduit and actuates said hydraulic actuator via said actuator conduit.

4,509,326

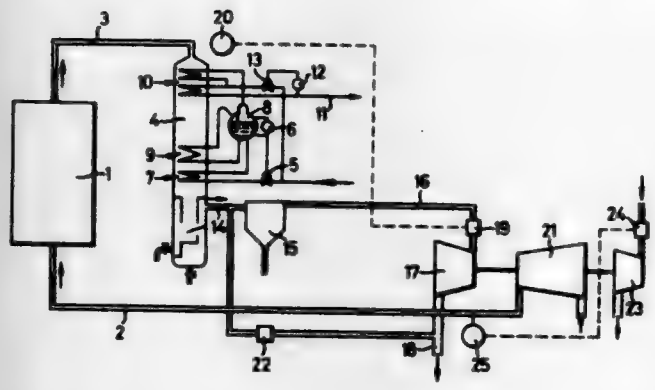
ENERGY EXTRACTION FROM HOT GASES

Pierre Jörgensen, L'Hay les Roses, France, assignor to The British Petroleum Company p.l.c., London, England

Filed Aug. 2, 1982, Ser. No. 404,360
Claims priority, application France, Aug. 7, 1981, 81 15370
Int. Cl.³ F01K *23/00*
U.S. Cl. 60—39.182 **4 Claims**

1. Process for extracting energy and removing solid particles from hot, dust-laden gases (3) emitted from a plant (1) simultaneously supplied with combustion air (2) under pressure char-

acterized by the fact that (a) the hot gases (3) before being cooled or treated with water are supplied to a steam boiler (4) wherein thermal energy is extracted, (b) the solid particles are then removed in a dry manner from the cooled gases still under pressure, and (c) the solids-free and cooled gases are then fed to an expansion turbine (17) wherein mechanical energy is



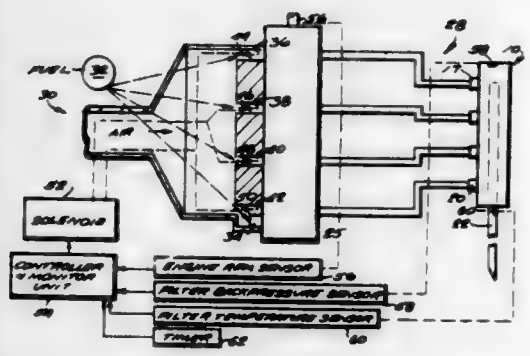
extracted, the supply of combustion air (2) to the plant (1) being provided by a compressor (21) driven by said expansion turbine (17), the whole being arranged so that the unit formed by the turbine and the compressor has a shortfall of energy and that the make-up is supplied by a steam turbine (23) whose inlet is regulated according to the flow (25) of the combustion air supplied.

4,509,327

REGENERATING CATALYTIC PARTICULATE FILTERS AND APPARATUS THEREFOR

Bernard E. Enga, West Chester, Pa., assignor to Johnson Matthey, Inc., West Chester, Pa.

Filed Jan. 27, 1983, Ser. No. 461,586
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—274 **23 Claims**



1. A method for regenerating a catalyzed particulate filter for an internal combustion engine having a plurality of cylinders comprising the steps of: during operation of the engine cyclically pulsating the intake air flow to a predetermined number of said plurality of cylinders so that the exhaust therefrom will generate an exotherm on the catalyst thereby igniting particulate material within the filter.

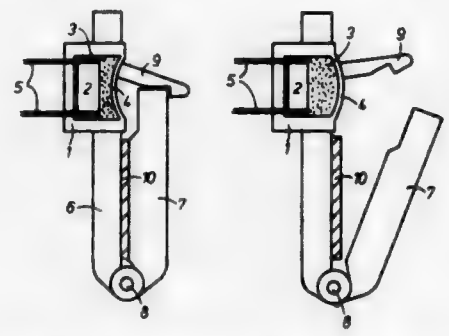
4,509,328

THERMO-ELECTRIC RESPONSIVE DEVICE

Walter Holzer, Drosteweg 19, S-7758 Meersburg, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,498
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3101473
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—528 **7 Claims**

1. An electro-thermal actuating component comprising:
a container;
an electrical heating element disposed in said container and having a positive thermal coefficient with a temperature/resistance curve having a sharp upward bend in a predetermined temperature range;
a deformable membrane disposed across said container to close same;
a liquid disposed in said container and immersing said heating element, said liquid having an evaporation temperature in the range of the bend in the temperature/resistance



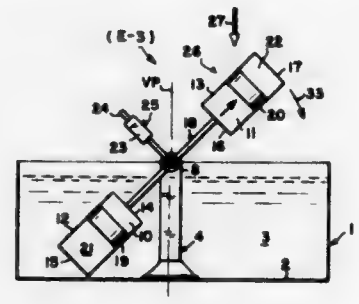
curve of said electrical heating element to vaporize in the predetermined temperature range of the electrical heating element to deform said membrane from a concave to a convex flexure;
a swiveling locking lever disposed proximate said membrane, upon deformation of said membrane from said concave to convex flexure said lever swiveling from a first to a second position.

4,509,329

GRAVITY-ACTUATED THERMAL ENGINES

Michael P. Breston, 102 Plantation, Houston, Tex. 77024

Filed Sep. 23, 1982, Ser. No. 421,972
Int. Cl.³ F03G *3/00, 7/06*
U.S. Cl. 60—531 **21 Claims**



1. A power engine including in combination:
(a) elongate enclosure means comprising at least two separate fluid-tight enclosures having their respective longitudinal axes substantially aligned;
(b) a solid mass associated with each enclosure and movable in the longitudinal direction of said enclosures;
(c) abutment means for limiting the stroke of each solid mass;
(d) coupling means rigidly interconnecting said enclosures;
(e) pivot means defining an axis of rotation and pivotally supporting the engine for rotation from a first position, whereat a first enclosure is located at a first level above said axis of rotation, to a second position, whereat said first enclosure is located at a second level below said axis of rotation;
(f) a motive fluid enclosed within each enclosure, the pressure of said motive fluid varying in response to temperature changes;
(g) each solid mass being free to move only in response to a pressure change in its associated enclosure in the direction of the longitudinal axis thereof; and
(h) said engine being responsive to alternating thermal effects which cause alternating variations in the pressures of said enclosures resulting in alternating shifts of the center of gravity of said engine, thereby rotating said engine about said axis of rotation.

4,509,330

PNEUMATICALLY CONTROLLED PRESSURE TRANSDUCER FOR OPERATING HYDRAULIC WORK TOOLS

Béla Zimber, Budapest, and Imre Molnár, Székesfehérvár, both of Hungary, assignors to Kozponti Valto, Budapest, Hungary

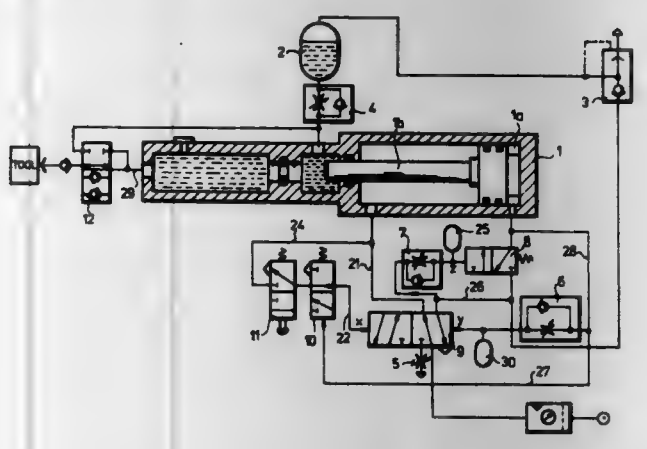
PCT No. PCT/HU82/00037, § 371 Date Apr. 4, 1983, § 102(e) Date Apr. 4, 1983, PCT Pub. No. WO83/00540, PCT Pub. Date Feb. 17, 1983

PCT Filed Aug. 4, 1982, Ser. No. 483,949

Claims priority, application Hungary, Aug. 4, 1981, 2257/81

Int. Cl.³ F15B *7/08*

U.S. Cl. 60—537 **4 Claims**



1. A pneumatically operated pressure transducer for the operation of a hydraulic work tool having a dual operating cylinder, on one side of which a pneumatically operable piston, on the other side a hydraulically operable piston is joined, comprising a control valve (9) coupled to a primary space located in front of the piston (1*a*) of the pneumatic cylinder of the dual operating cylinder, said control valve (9) being operatively coupled to a starter valve (11), the control valve (9) is coupled to a throttle-check valve (7) and said throttle-check valve (7) is coupled to a valve (8), said valve (8) connecting said control valve (9) to a quick exhaust waste valve (3) and to the hydraulic container (2) and with the secondary space of the pneumatic cylinder, a throttle-check valve (4) coupling said hydraulic container (2) to said hydraulic cylinder of the dual operating cylinder (1) in a fashion that said throttle-check valve (4) can be closed by the hydraulic piston (1*b*), and wherein a further throttle-check valve (6) is placed into a conduit (28) between the valve (8) and the cylinder (1) and couples said valve (8) and cylinder (1) into operating relationship with the control valve (9).

4,509,331

KNOCK-FREE ENGINE CONTROL SYSTEM FOR TURBOCHARGED AUTOMOTIVE ENGINE

Yuji Hirabayashi, Zushi, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 22, 1982, Ser. No. 436,029

Claims priority, application Japan, Oct. 27, 1981, 56-170756

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **18 Claims**

1. An engine control system for a turbocharged internal combustion engine for controlling spark ignition timing and charge pressure in an air induction passage, comprising:

first means for measuring engine speed and producing a first signal having a value representative of the engie speed;

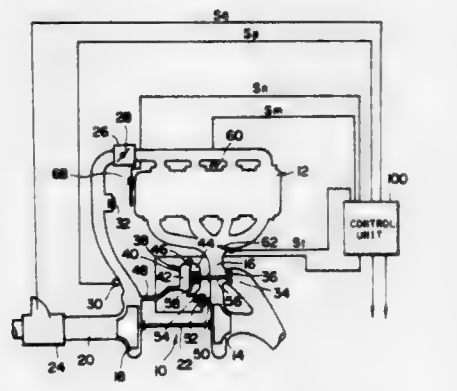
second means for measuring charge pressure in the air induction passage of the engine and producing a second signal having a value representative of the charge pressure;

third means for detecting an engine knocking condition and producing a third signal indicative of the engine knocking condition;

fourth means for controlling charge pressure relative to a given optimum pressure, said fourth means including an electrically-controlled valve for controlling said charge pressure;

fifth means for controlling a spark advance angle within a predetermined variation range defined by predetermined extremes for defining the spark ignition timing; and

sixth means for operating said fourth and fifth means in order to independently control charge pressure and spark ignition timing in accordance with the engine operating conditions represented by said first to third signals, said sixth



means being responsive to said third signal to selectively operate one of said fourth and fifth means for knock prevention, said sixth means defining said variation range of said spark advance angle and said optimum charge pressure value and operating said fourth means to adjust said charge pressure while holding said spark advance angle at an angle adjacent one of said extremes and said fifth means to adjust said spark advance angle while holding said charge pressure at said optimum charge pressure value.

4,509,332

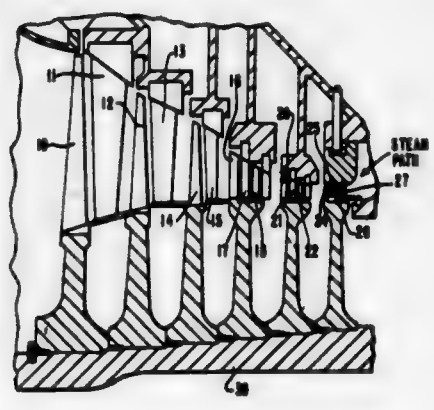
APPARATUS FOR MONITORING CORROSIVE SALT SOLUTIONS IN A LOW PRESSURE STEAM TURBINE

James C. Bellows, Maitland, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1984, Ser. No. 605,031

Int. Cl.³ F01K *13/02*

U.S. Cl. 60—660 **12 Claims**



1. Apparatus for monitoring corrosive salt solutions in a low pressure steam turbine having stages of rotating and stationary blades, said solutions occurring in a relatively narrow salt solution zone at one of the ultimate stages of said turbine, comprising:

(A) a first plurality of sensors affixed to a selected one of said stationary blades at a first location on said blade;

(B) at least a second plurality of sensors affixed to said selected stationary blade at a second location on said blade;

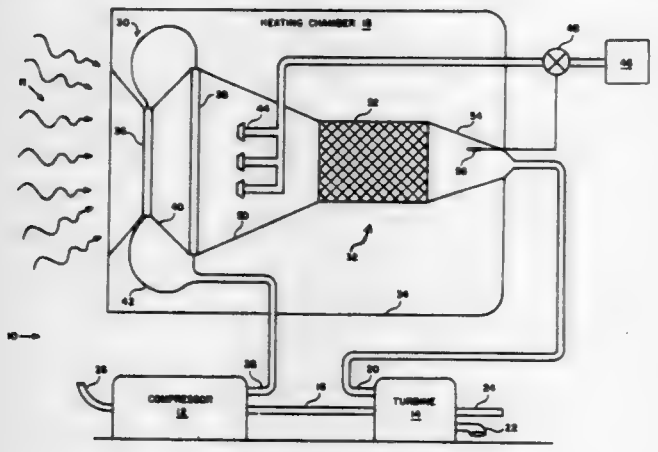
(C) each of said sensors of said first and second plurality being of the type which will provide an output signal indicative of the presence of a salt solution; and

(D) means responsive to all said sensor output signals to provide an indication of the location of said salt solution zone.

4,509,333
BRAYTON ENGINE BURNER

Theodore J. Nussdorfer, Nashua, and James B. Kesseli, Milford, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 15, 1983, Ser. No. 485,360
Int. Cl.[3] F02C 7/00
U.S. Cl. 60—723 4 Claims



1. Apparatus for providing heated air to the inlet of a gas turbine having air inlet means for receiving air in a stream comprising:

(a) solar collection means situated in said air inlet means for receiving sunlight and imparting heat energy to the airstream,

(b) burner means situated in said air inlet means in series with said solar collection means for providing additional heat energy to the airstream, including

(i) fuel injection means for injecting fuel into the airstream,

(ii) catalyst means for reacting the fuel in the airstream with the air, and

(iii) sensing means for sensing a parameter related to the operation of the turbine and for adjusting the flow of fuel in response thereto,

(c) said solar collector means and said burner means disposed in a common housing forming a single heating chamber.

4,509,334
MAGNETIC REFRIGERATOR

Hideki Nakagome, Yokohama, and Satoshi Yasuda, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 23, 1983, Ser. No. 497,233
Claims priority, application Japan, Aug. 31, 1982, 57-150939
Int. Cl.[3] F25B 9/00
U.S. Cl. 62—6 17 Claims

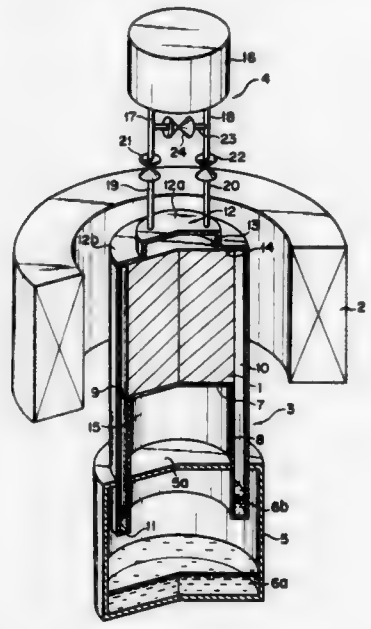
1. A magnetic refrigerator comprising:

(a) a container for the object to be cooled by the refrigerator;

(b) a working material which radiates heat when magnetized and absorbs heat when demagnetized;

(c) a magnetic field generating means for selectively applying a magnetic field to and removing a magnetic field from said working material;

(d) at least one heat pipe disposed between said working material and said container, said at least one heat pipe having an internal space therein through which heat is transferred from said container to said working material, said internal space being directly in contact with said working material; and

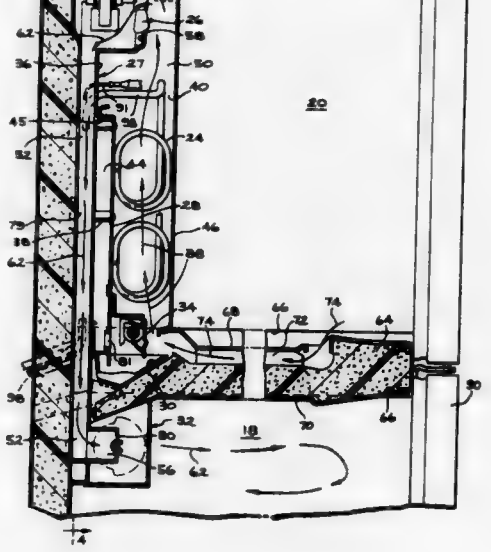


(e) heat absorbing means for absorbing heat radiated by said working material when said working material is magnetized.

4,509,335
PRE-ASSEMBLED COOLING AND AIR CIRCULATING MODULE FOR A HOUSEHOLD REFRIGERATOR

James R. Griffin, and James A. White, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 25, 1984, Ser. No. 624,201
Int. Cl.[3] F25B 45/00
U.S. Cl. 62—77 3 Claims



1. A self-contained pre-assembled air circulating and cooling module adapted to be arranged in a refrigerator cabinet including guide means dimensioned for receiving a partition means dividing said refrigerator cabinet between a first food storage compartment to be maintained at a temperature above freezing and a second food storage compartment to be maintained at a below freezing temperature, the method of assembling and arranging said pre-assembled air circulating and cooling module in said cabinet comprising the steps of:

providing a main support frame dimensioned to extend substantially the full width of said cabinet in said second food storage compartment;

mounting a plate having an evaporator secured on one side

thereof in spaced relationship to said main support frame to define a first passageway therebetween;

positioning a cover portion on said support frame in spaced relationship to said plate defining a second passageway including said evaporator;

arranging air moving means in said module for moving air through said passageways;

inserting said module in said cabinet in spaced relationship to the rear wall of said cabinet so that a third passageway is arranged between said support frame and said cabinet wall; and

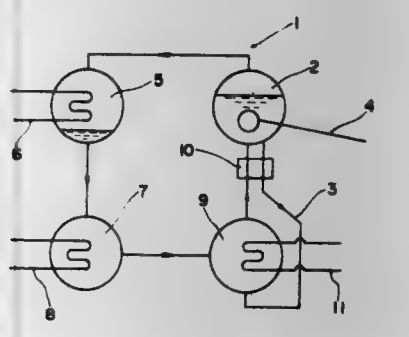
arranging said partition means in said cabinet guide means to thereby divide said cabinet between said first and second food storage compartments; whereby said air moving means directs air from said first compartment to said first passageway and thereafter to said second passageway and then through said third passageway back to said first compartment, and for directing air from said second compartment to said second passageway and thereafter back to said second compartment.

4,509,336

AIR CONDITIONING APPARATUS

Yasumasa Ouchi, Nara, and Shoji Otoshi, Sakai, both of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Dec. 12, 1983, Ser. No. 560,483
Claims priority, application Japan, Dec. 17, 1982, 57-222592
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—112 **2 Claims**



1. An air condition-heating apparatus including an absorption type heat pump which comprises:

an absorber containing an absorbent solution of an absorbent dissolved in a coolant,

a regenerator interconnected with said absorber for flow of said absorbent solution between said absorber and said regenerator and for vaporizing said coolant,

a condenser interconnected with said regenerator for receiving coolant vapors vaporized in said regenerator and for condensing said vapors,

an evaporator interconnected with said condenser for receiving and evaporating condensate from said condenser, and for directing coolant vapors from said evaporator to said absorber for absorption therein,

said absorbent solution including a mixture of lithium bromide and zinc chloride and said coolant is a solvent mixture of water and methanol, which has a ratio by weight of methanol to water in which the ratio ranges from about 0.1 to about 0.3 with the ratio measured on said absorbent solution in said evaporator.

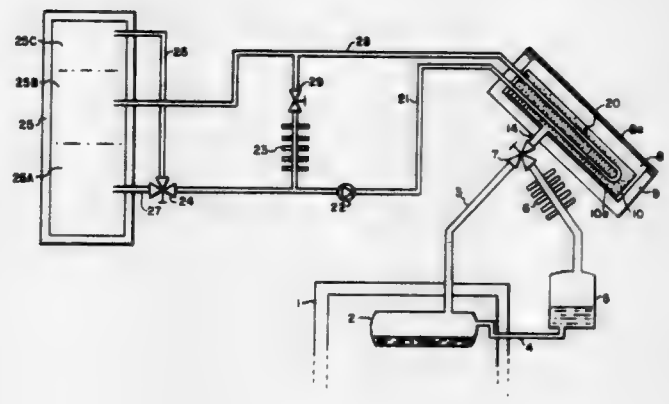
4,509,337

SOLAR ENERGY REFRIGERATION DEVICE

Albert Wiart, Sannois, and Gérard Paeye, Champagne sur Seine, both of France, assignors to Jeumont-Schneider Corporation, France

Filed Dec. 30, 1983, Ser. No. 567,268
Claims priority, application France, Jan. 3, 1983, 83 00001
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—235.1 **7 Claims**

1. A refrigeration device comprising a solar collector containing a substance having a high adsorption and desorption capability, a condenser, an evaporator, a first channel including said condenser and said evaporator and having means for connecting said solar collector through said condenser to an input of said evaporator and, alternatively, for connecting said solar collector to an output of said evaporator, said first channel having a refrigeration fluid therein, and a separate second channel including a heat exchanger disposed in said substance, said second channel having means including a second fluid adapted to circulate through said heat exchanger for transferring heat between said substance and said second fluid.

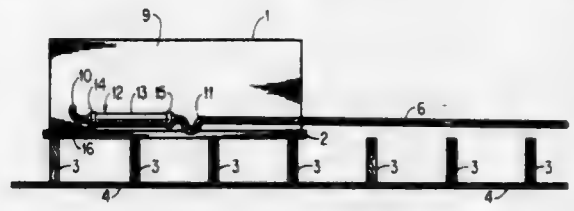


4,509,338

CONDENSATION ELIMINATION TANK

Eugene J. Gould, Village of Newhaven #613, Fripp Island, S.C. 29920

Filed May 7, 1984, Ser. No. 607,749
Int. Cl.³ F25D *21/14*
U.S. Cl. 62—288 **10 Claims**



1. A device for eliminating condensation, on condensate drainage piping located in a warm attic-type atmosphere, caused by cold condensate water emanating from the indoor section, including an air handler, of an air-conditioning system comprising:

a. a cylindrical external shell

b. a first end connection comprised of a reducing bushing connecting said cylindrical external shell's first end directly to said indoor section, including said air handler, of said air-conditioning system;

c. a second end connection comprised of a reducing busing connecting said cylindrical external shell's second end directly to said condensate drainage piping;

d. flow restricting means secured within said cylindrical external shell and operative to impede the flow of said cold condensate water, said flow restricting means comprising a drainage trough secured within said cylindrical external shell and rigidly connected to said first end connection and operative to impede the flow of said cold condensate water before said cold condensate water contacts said cylindrical external shell; and

e. a reservoir comprising cold condensate water which has

been heated by said warm attic-type atmosphere as said cold condensate water has been impeded by said flow restricting means to become warmed water, which has been deposited at the bottom of said cylindrical external shell where said warmed water has has been further heated by said warm attic-type atmosphere to become said reservoir, whereby when more of said cold condensate water emanates from said indoor section, including said air handler, of said air-conditioning system, said reservoir will overflow causing a portion of said reservoir to empty into said condensate drainage piping at a temperature whereby said condensate drainage piping will be free from condensation.

4,509,339

AUTOMATIC DISPENSING MACHINE HAVING A COOLING UNIT

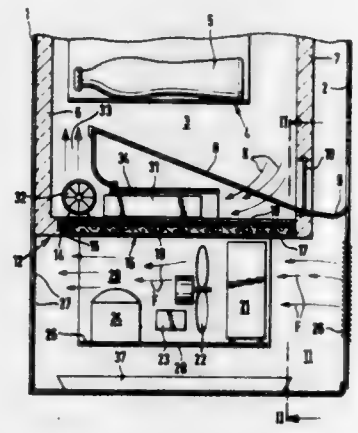
Bernd Mehlan, Herrieden, and Josef Gress, Bechhofen, both of Fed. Rep. of Germany, assignors to Sielaff GmbH & Co. Automatenbau Herrieden, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,671

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1982, 3240124

Int. Cl.³ F25D *19/00*

U.S. Cl. 62—450 **10 Claims**



1. A refrigerated vending machine comprising:
a housing (1) having a front opening and a lower end;
a housing door (2) connected to said housing and closing said front opening of said housing;
an insulated goods compartment (3) in said housing (1), said insulated goods compartment having a front opening and an intermediate bottom (12) space above said lower end of said housing, said housing defining an equipment compartment (11) below said intermediate bottom, said intermediate bottom having a U-shaped opening (13) therein having a supporting shoulder (14), said U-shaped opening opening into said front opening of said insulated goods compartment;
a compartment door (7) connected to said goods compartment and closing said front opening of said goods compartment;
a shelving structure (4) mounted in said goods compartment above said intermediate bottom (12) for supporting goods to be vended;
an insulated mounting plate (15) in said U-shaped opening (13) and supported on said supporting shoulder (14), said insulated mounting plate being slidable forwardly out of said U-shaped opening with said housing door and said compartment door each in an open position for opening said front opening of said housing and said compartment; and
refrigeration means connected to said mounting plate for cooling said goods compartment, said refrigeration means being removable with said mounting plate from said housing through said front opening of said housing;
said refrigeration means comprising;
a vaporator (31) mounted on said mounting plate in said goods compartment and below said shelving structure;
an evaporator fan (32) mounted on said mounting plate in said goods compartment and below said shelving structure;
a condenser (21) mounted under said mounting plate and in said equipment compartment (11);
a condenser fan (22) mounted under said mounting plate in said equipment compartment; and
a compressor (24) mounted under said mounting plate and in said equipment compartment;
whereby said refrigeration means can be removed by moving said compartment door and said housing door into their open position for opening said front openings of said compartment and housing, and sliding said mounting plate (15) forwardly through said front openings without interferring with goods in said supporting structure (4).

4,509,340

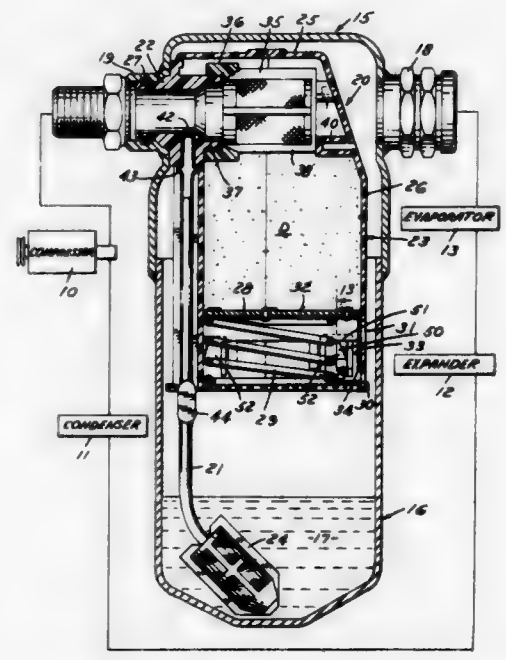
ACCUMULATOR-DEHYDRATOR ASSEMBLY FOR AN AIR CONDITIONING SYSTEM

Charles J. Mullally, Muskegon; Steven L. Brown, Spring Lake; David L. Anderson, Muskegon, all of Mich., and Robert F. Hitchcock, Glendale Heights, Ill., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Nov. 10, 1983, Ser. No. 551,101

Int. Cl.³ F25B *43/00*

U.S. Cl. 62—503 **62 Claims**



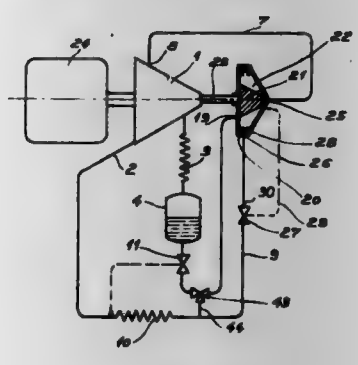
1. An accumulator-dehydrator assembly for an air conditioning system comprising
an accumulator housing defining an enclosed chamber including an inlet and an outlet in the upper end and a refrigerant and oil accumulator in the lower end,
a vapor drier canister assembly comprising a one-piece plastic body defining a closed top wall, a closed side wall and an open bottom,
said canister including an integral outlet projection extending into and sealingly engaging the outlet of said housing,
a vapor filter associated with said integral outlet projection of said canister such that refrigerant flows through the filter before passing through the outlet,
a perforated plate in the bottom of said canister for holding desiccant within said canister.

4,509,341

ECONOMIZER DEVICE FOR A REFRIGERATING MACHINE, A HEAT-PUMP OR THE LIKE

Bernard Zimmern, 6 New St., East Norwalk, Conn. 06855

Continuation-in-part of Ser. No. 491,475, May 4, 1983, abandoned. This application Jun. 11, 1984, Ser. No. 619,186
Claims priority, application France, May 13, 1982, 82 08325
Int. Cl.³ F25B *43/00*
U.S. Cl. 62—512 **23 Claims**



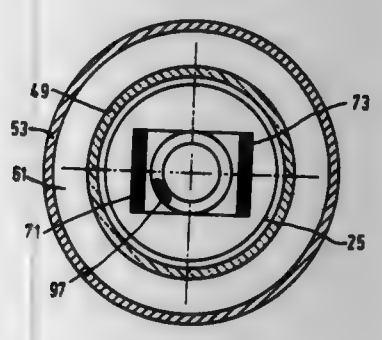
1. A refrigerator, heat-pump or like apparatus comprising a compressor provided with a casing having at least one intake port, at least one exhaust port, and at least one economizer port at a point where the pressure in the casing is, in operation, intermediate intake pressure and exhaust pressure; and a fluid circuit between the exhaust and the intake of the compressor, said circuit including a condenser, an evaporator, two valves between said condenser and said evaporator, a housing between said two valves, said housing having a central region and a peripheral region, a rotor mounted for rotation in said housing, a first gas conduit connecting said economizer port with said central region of said housing, substantially adjacent to the axis of rotation of said rotor, one of said two valves being an expansion valve and the second of said two valves having control means to maintain a liquid annulus which builds up in the peripheral region of the housing during operation of the apparatus with rotation of said rotor, and means for rotatably driving the rotor.

4,509,342

INFRARED RECEIVER HAVING A COOLED RADIATION DETECTOR

Hubrecht C. Van Antwerpen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,856
Claims priority, application Netherlands, Oct. 19, 1983, 8303603
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **6 Claims**



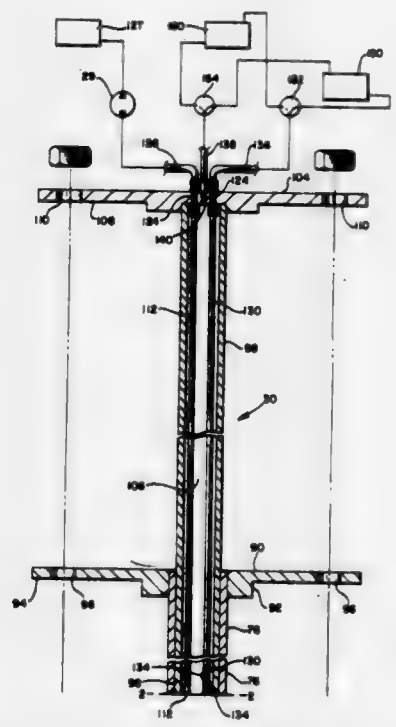
1. In an infrared receiver having a radiation detector in cold exchanging contact with a cooling surface of a cooler by way of a thermally conducting bridge between the cooling surface and the radiation detector, and wherein a support for the radiation detector is comprised of an inner wall of a thermal isolation vessel; the improvement wherein the bridge comprises an elastic metal cylinder of substantially rectangular cross-section, said cylinder being comprised of a plurality of turns of a metal strip secured in the proximity of each of diametrically opposite sides thereof, each side being secured between a mounting plate located inside the cylinder and a mounting plate located outside the cylinder, one of the mounting plates located outside the cylinder resiliently engaging the radiation detector, the other of the mounting plates outside the cylinder resiliently engaging the cooling surface.

4,509,343

APPARATUS FOR INSERTING A FLEXIBLE BAG INTO A FLUID TRANSMISSION LINE

Beryle D. Brister, P.O. Box 9272, Amarillo, Tex. 79105

Continuation-in-part of Ser. No. 328,029, Dec. 8, 1981, Pat. No. 4,428,204. This application Jan. 25, 1984, Ser. No. 573,554
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **19 Claims**



1. Apparatus for inserting a flexible collapsible bag into a fluid transmission line and expanding said bag to form a flow stopping plug in said transmission line by filling said bag with a liquid and freezing said liquid in said bag, said apparatus comprising:

a frame for supporting said apparatus on said transmission line adjacent an opening in the wall of said transmission line;

a first member forming a casing for holding said bag in a collapsed condition;

a second member and means for connecting said bag to said second member, said second member being movable relative to said first member for injecting said bag into the interior of said transmission line;

means forming a passage for conducting liquid into the interior of said bag; and

means forming a heat exchanger extending into the interior of said bag when said bag is filled with liquid for transferring heat from said liquid to cool said liquid to form a frozen plug within said bag.

4,509,344

APPARATUS AND METHOD OF COOLING USING STORED ICE SLURRY

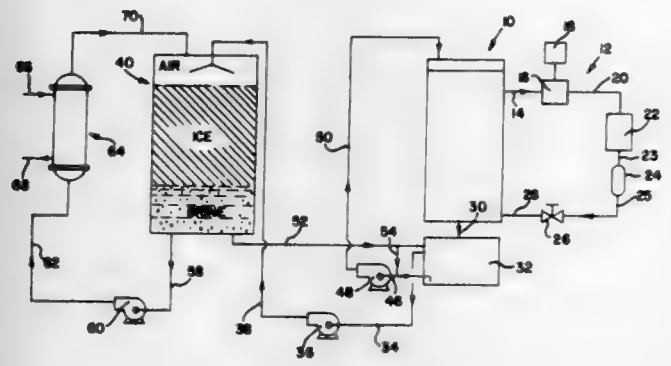
John S. Ludwigsen; Jill L. Ludwigsen, both of Naperville, and Terry A. Gallagher, Wheaton, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Dec. 8, 1983, Ser. No. 559,486
Int. Cl.³ F25C *1/24*
U.S. Cl. 62—76 **36 Claims**

35. Apparatus comprising:

a freeze exchanger of the shell and tube type having an

aqueous liquid feed stream inlet and an aqueous liquid stream outlet;
a closed loop refrigeration means for supplying a refrigerant to the shell side of the freeze exchanger;
a receiving tank for receiving a mixture of ice and aqueous liquid from the freeze exchanger outlet;
means for removing aqueous liquid from the receiving tank and feeding it to the freeze exchanger inlet;
an ice storage tank adapted to have a layer of ice floating on a layer of cold aqueous liquid in the bottom of the tank;



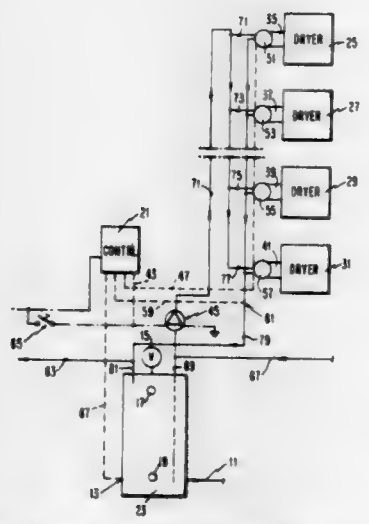
means for removing an ice slurry from the receiving tank and feeding it to the ice storage tank;
means for removing aqueous liquid from the ice storage tank and feeding it to the freeze exchanger inlet;
means for removing cold aqueous liquid from the bottom of the ice storage tank and feeding it to a heat exchanger to cool fluid used for air conditioning a building;
means for removing warm aqueous liquid from the heat exchanger and feeding it to the ice storage tank, or the freeze exchanger inlet, or partially to both.

4,509,345

LAUNDRY HEAT RECOVERY SYSTEM

Peter Alio, Box 212-B, Tillson, N.Y. 12486

Filed Sep. 30, 1982, Ser. No. 429,627
Int. Cl.³ D06F *31/00, 39/04*
U.S. Cl. 68—20 **10 Claims**



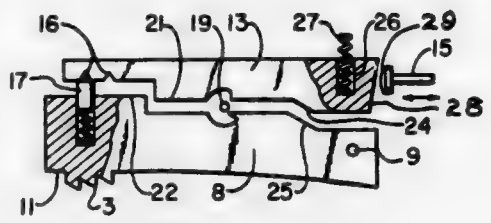
1. A laundry heat recovery system comprising in combination,
a laundry installation comprising a wash water source and a plurality of laundry washers and dryers,
a plurality of heat exchangers,
each of said heat exchangers being mounted in the exhaust outlet of an associated dryer,
each of said heat exchangers being adapted to heat the water contained therein with exhaust heat from its associated dryer,
a heat sensor associated with each of said heat exchangers for determining the temperature of the water therein,
a heat sensor associated with said wash water source, and
means responsive to a predetermined relationship between said heat exchanger sensors and said wash water source sensor for selectively circulating the water through said heat exchangers to said wash water source, thereby raising the temperature of said wash water source.

4,509,346

HANDCUFF LOCK CONSTRUCTION

Thaddeus J. Szczepanek, Springfield, Mass., assignor to Universal Tool Company, Inc., Springfield, Mass.

Continuation-in-part of Ser. No. 327,812, Dec. 7, 1981, abandoned. This application Oct. 13, 1983, Ser. No. 541,674
Int. Cl.³ E05B *75/00*
U.S. Cl. 70—16 **3 Claims**



1. In a double-locking shackle device having (1) a casing, (2) a fixed arm, one end of which is held by said casing, (3) a movable arcuate locking arm, one end of which is pivotally mounted to the other end of said fixed arm and which has a first series of inclined teeth at its free end, said locking arm being adapted to have said free end move circularly through one side of said casing, (4) an elongated latch pivotally mounted by one end within said casing, the free end of which latch has a second series of inclined teeth adapted to engage said first series, (5) an elongated bolt within said casing and adjacent and behind said elongated latch, (6) restraining means between said latch and bolt normally resiliently urging said latch and said second series of inclined teeth against said first series and permitting closure of said locking arm but not opening thereof, said bolt being slideable within limits along the axis of its length from a locking position of engagement with said latch preventing movement thereof and disengagement of said first and second series of inclined teeth to an unlocked, retracted position allowing movement of said latch and closure of said locking arm, and (7) a drift pin in said casing at the end of said bolt and effecting movement of said bolt into said locking position by said drift pin being pushed from outside said casing against said end; the improvement restraining the unwanted sliding movement of said bolt comprising a first shoulder on said latch near the pivot point thereof and facing said bolt, a second shoulder on said bolt adapted to slideably engage said first shoulder and as the two shoulders engage to effect a widening between the longitudinal axes of said latch and bolt; a second restraining means between said casing and said bolt resiliently urging said bolt toward said latch and causing an increase in the effort required to effect riding up of said second shoulder on said first shoulder as said bolt moves towards said locking position; and an inclined face on said end of said bolt contacting the nose of said drift pin and said nose being complimentarily sloped to effect a lifting action on said end when said drift pin is pushed.

4,509,347

DOOR LOCKING SYSTEM

Quentin H. Young, San Antonio, Tex., assignor to Southern Steel Company, San Antonio, Tex.

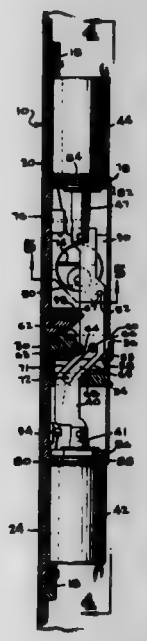
Filed Jun. 30, 1982, Ser. No. 393,701
Int. Cl.³ E05B *47/00, 65/06;* E05C *1/06, 1/12*
U.S. Cl. 70—129 **29 Claims**

1. An electrically operated door locking system comprising:
a door mounted in a door jamb separating a room from a corridor or the like;
a modular carrier frame mounted in said door jamb;

bolt means mounted on said carrier frame for reciprocation between a retracted position wholly enclosed within said housing an an extended position in which one end of said bolt means protrudes from said housing;

a bolt actuator cam slide operable for movement between a lock position and an unlock position for respectively positioning said bolt means in said extended position or said retracted position;

guide surfaces on said carrier frame for precluding horizontal movement of the bolt actuator cam slide;



solenoid means for selectively positioning said bolt actuator slide in its unlock or lock positions;

a control circuit for said solenoid means including circuit means for actuating said solenoid means to cause the bolt actuator slide to move to its lock position in response to movement of the door to closed position; and

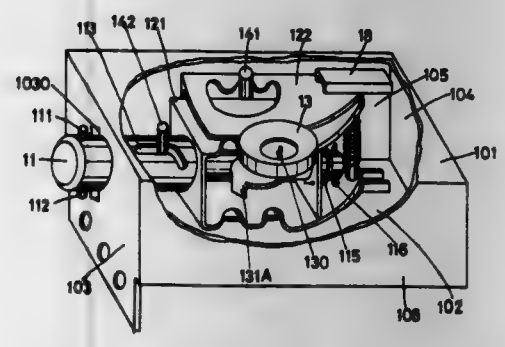
means operable in response to said door not being in a fully closed position for preventing actuation of said solenoid means so as to preclude movement of the bolt to its lock position.

4,509,348

DEVICE FOR AUTOMATIC LOCK

S. P. Hsu, No. 8, Lane 232, Line-sen Rd., Hu-wei, Yunlin Hsien, Taiwan

Filed Sep. 20, 1982, Ser. No. 420,118
Int. Cl.³ E05B *63/12*
U.S. Cl. 70—131 **2 Claims**



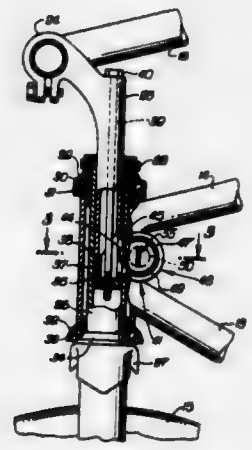
1. A lock comprising a housing having disposed therein an activating mechanism comprising a movable bracket and a multistage locating plate straddling said movable bracket, said locating plate and movable bracket being hingedly connected at one end by means of a pin, a spring means being used to urge said movable bracket toward from said multistage locating plate, said pin being placed between guide tracks provided on the interior walls of said housing to allow lateral movement of said activating mechanism, a laterally movable lug being disposed within said movable bracket so that in a retracted position said lug is disposed within said housing and in an extended position, said lug extends out of said housing to enter a socket disposed adjacent said housing, said lug being provided with a bent slot through which a fixing rod extends so that when said lug is in its fully extended position, said fixing rod causes said lug to rotate, said movable bracket and said multistage locating plate being provided with notches to engage a cam plug activatable by a key to permit selected lateral movement of said activating mechanism when the key is turned.

4,509,349

BICYCLE WITH KEY-OPERATED LOCKING MECHANISM

Wilfred H. Partridge, 1477 Royal Blvd., Glendale, Calif. 91207

Filed Feb. 15, 1983, Ser. No. 448,025
Int. Cl.³ E05B *71/00*
U.S. Cl. 70—233 **5 Claims**



1. In combination with a bicycle having a frame including an upright head tube having an opening in its rear side and two struts arranged in a "V" with the head tube at the vertex, a handlebar having a depending stem projecting downwardly into the head tube, a front wheel fork having an upstanding fork stem projecting upwardly into the head tube and telescoping with the handlebar stem, and means for rotatably mounting the telescoped stems in the head tube for steering of the bicycle, an improved locking mechanism fitted into the "V" between the struts and against the head tube, comprising:

a cylinder lock extending transversely across said rear side and having a lock cylinder with a key slot at one end, a body rotatably supporting said lock cylinder and having an annular groove around the body, a removable key for turning said cylinder in said body between locking and unlocking positions, and a locking bolt mounted on said lock cylinder and extending radially therefrom into said groove to swing along the groove as the lock cylinder is turned by said key;

said body having an arcuate recess in its front side in which said stems are nested, and said bolt projecting forwardly into said recess and into said head tube when said cylinder is in said locking position, and being retracted from said recess when the cylinder is in the unlocking position;

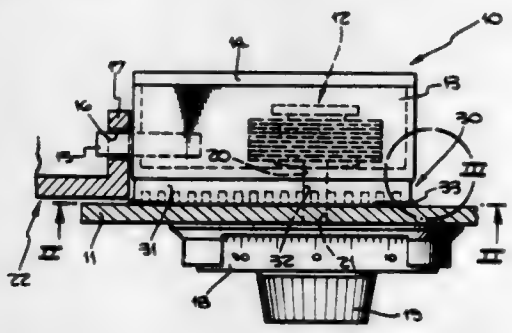
means defining first and second angularly spaced, longitudinally extending locking slots in at least the outer one of said telescoping stems alongside said cylinder lock, to be aligned with said bolt in two selected angular positions of said handlebar and said front wheel fork, said locking slots being sized to receive said bolt with a relatively close locking fit and to prevent steering of the bicycle;

and a part-cylindrical protective lock housing fitted over said lock cylinder and having an opening exposing said one end, said lock housing being secured to said frame to hold and protect said cylinder lock.

4,509,350
PROTECTIVE LOCK MOUNTING PLATE FOR SAFE DOOR LOCKS

Klaus W. Gartner, 2632 Via Anacapa, Palos Verdes Estates, Calif. 90274

Filed Jun. 27, 1983, Ser. No. 508,119
Int. Cl.[3] E05B *15/16*
U.S. Cl. 70—333 R 3 Claims



1. A protective lock mounting plate for mounting a lock to the interior of a safe door, said lock having a lock housing containing lock works mounted interiorally of the safe door, a dial shaft associated with said works for operating the same and a lock dial mounted to an outer end of the dial shaft exteriorally of the safe door, said safe door having a shaft receiving bore to facilitate passage of said shaft therethrough, said protective lock mounting plate comprising:

a plate-like body of hardened material having a body throughbore to receive said dial shaft of said safe door lock therethrough wherein said plate-like body is provided with a plurality of concentric circular grooves and a material of greater hardness than the plate-like body is positioned in at least one of said grooves;

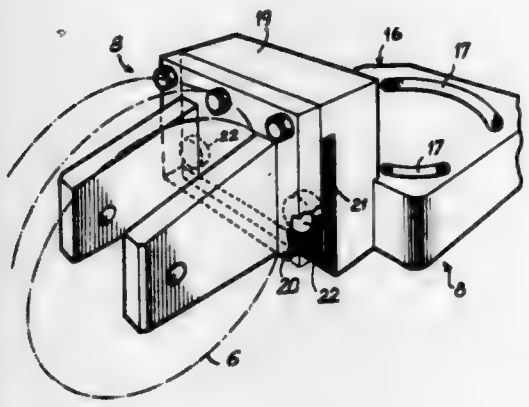
means for mounting said body to the inner surface of said safe door with said body throughbore aligned to said shaft receiving bore of said door; and

means for mounting said lock housing to said body with said dial shaft extending through said body throughbore and door bore whereby said lock works are protected against intrusion as by drilling through said door.

4,509,351
SPINNING LATHE

Guy Rolin, Chelles, France, and Jacques Rabizzoni, late of Lesigny, France (by Yannick Rabizzoni neé Volle, administratrix), assignors to Etablissements Rondolotti, Vincennes, France

Filed Jan. 26, 1982, Ser. No. 342,805
Claims priority, application France, Jan. 26, 1981, 81 01383
Int. Cl.[3] B21B *37/08;* B21D *22/16*
U.S. Cl. 72—19 9 Claims



1. A spinning/fluoturning machine, comprising:

a bed;

a chuck;

a device mounted on said bed for rotating said chuck about a horizontal axis;

said chuck carrying a form having a contour corresponding to that of a workpiece which is to be produced;

a carriage mounted relative to said bed to be movable in two directions which are mutually perpendicular;

a support means for a spinning tool, comprising:

a post rigid with said carriage, and

a yoke member rotatably mounting said spinning tool;

a first part of said yoke member being fixed to said post in a thrust-transmitting abuttment relationship while allowing, in use, slight deformation of a second part of said yoke member by virtue of stresses imparted thereto by said spinning tool in the course of conducting a spinning/-fluoturning operation;

sensor means fixed to said post so as to be responsive to said deformation of said second part of said yoke member;

means for shifting said carriage, comprising a shifting device connected to said carriage and including a control element for shifting said carriage by means of said shifting device in a respective one of said two directions which is substantially transverse to a mean generatrix of said chuck;

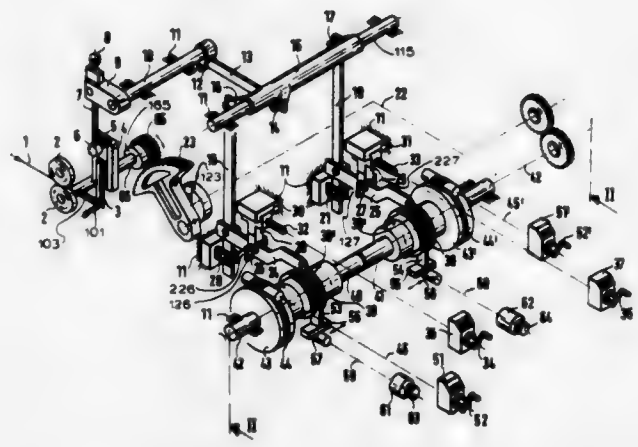
a servo-loop connected to said control element of said shifting device, comprising, as a generator of a real instantaneous signal, said sensor means; and

a generator of a set value representing the force required to be exerted by said spinning tool on said workpiece, comprising means for dynamically varying said set value within the course of each working travel of said spinning tool, said sensor means and said set value generator being connected to comparing means for comparing the set value provided by said set value generator and the real instantaneous signal provided by said sensor means and for delivering a signal to said control element of said shifting device.

4,509,352
SPRING COILING MACHINE

Max Frei, Schönenwerd, Switzerland, assignor to Schenker Maschinen AG, Schönenwerd, Switzerland

Filed May 13, 1983, Ser. No. 494,183
Claims priority, application Switzerland, May 24, 1982, 3176/82; Sep. 20, 1982, 5531/82
Int. Cl.[3] B21F *3/02*
U.S. Cl. 72—138 24 Claims



1. A machine for converting wire into a series of coil springs during successive operating cycles of the machine, comprising a support; feeding means mounted in said support and operative to advance the wire along a predetermined path; a wire treating tool mounted on said support for movement with reference to said path; means for moving said tool, including first and second rotary cams and means for transmitting motion from said cams to said tool, said motion transmitting means including first and second follower means arranged to track the respective cams during first and second stages of each cycle so that the first cam determines the position of said tool during the making of a first portion and the second cam determines the position of said tool during the making of the remainder of each spring; and adjusting means for changing the posi-

tion of at least one of said cams with reference to the other of said cams, irrespective of whether the machine is in operation or at a standstill, to thereby change the timing of transmission of motion from the one cam to said tool during successive cycle.

4,509,353

METHOD OF AND APPARATUS FOR FORMING GEARS

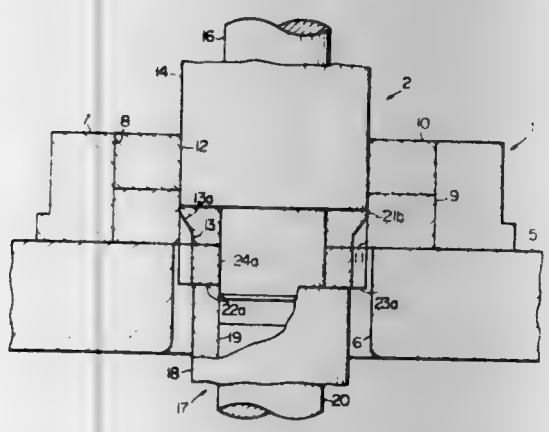
Masahide Ike, Yokosuka, and Masashi Arita, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 18, 1983, Ser. No. 467,603

Claims priority, application Japan, Mar. 23, 1982, 57-46108; Sep. 24, 1982, 57-167111

Int. Cl.³ B21C *23/18*

U.S. Cl. 72—267 **4 Claims**



1. A method of forming gears from annular blanks each having flat opposite end faces and predetermined inside and outside diameters in a gear-forming apparatus including a die block formed with an axial bore having a diameter slightly larger than the outside diameter of the blanks and a plurality of teeth radially projecting into the bore, a hollow cylindrical punch sleeve having a flat end face and a predetermined inside diameter slightly smaller than the inside diameter of the blanks and a predetermined outside diameter substantially equal to the diameter of the bore in the die block, an elongated mandrel having a diameter substantially equal to the inside diameter of the punch sleeve, and a cylindrical backup sleeve having a flat end face and a predetermined outside diameter smaller than the diameter of the deddendum circle of said teeth, the punch sleeve and the backup sleeve being axially movable with respect to each other and to said die block, comprising:

preliminarily forcing at least one of the blanks into the bore in the die block until the blank is partially deformed by said teeth;

placing another one of the blanks on the preceding blank so that the subsequent blank has one of its end faces received on one end face of the preceding blank;

causing said mandrel to axially extend through the respective center holes in the preceding and subsequent blanks;

pressing the preceding and subsequent blanks between the respective end faces of said punch sleeve and said backup sleeve and forcing the two blanks through the bore in the die block so that the preceding blank is caused to form gear teeth on its outer peripheral surface by the teeth of the die block; and

forcing the subsequent blank and the gear resulting from the preceding blank through the bore in the die block for withdrawing the gear out of the bore in the die block,

wherein each of the blanks in the axial bore in the die block is axially pressed upon in one direction by means of said punch sleeve and in the opposite direction by means of said backup sleeve and is forced to move in the former direction through the axial bore in the die block.

4,509,354

METHOD OF MANUFACTURING FAN GUARD

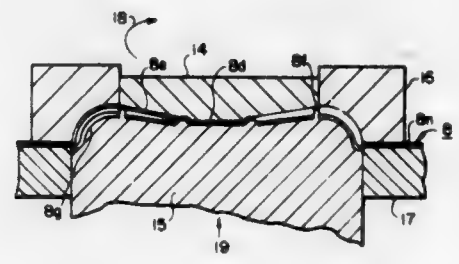
Akio Suzuki; Mitsuo Akiyama; Hideo Uzuhashi; Izumi Ochiai, all of Tochigi; Hitoshi Yamashita, Ashikaga; Youji Sekine, Tochigi; Katsuo Matsui, Utsunomiya, and Syuji Tomita, Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1982, Ser. No. 403,017

Claims priority, application Japan, Apr. 22, 1981, 56-59884

Int. Cl.³ B21D *53/00, 53/80*

U.S. Cl. 72—294 **4 Claims**



1. A method of manufacturing a fan guard from a plate member, comprising the steps of:

forming a plurality of radially inward slits each having at least a radial slit section in a first section of said plate member, said first section extending between a central section of said plate member and a ring-like section thereof radially outwardly spaced from said central section, said radial slit sections radially extending in said first section from said central section to said ring-like section in circumferentially spaced relation to each other;

forming a plurality of radially outward slits each having at least an arcuate slit section in a second section of said plate member, said second section extending between said ring-like section and an outer peripheral section of said plate member radially outwardly spaced from said ring-like section, said arcuate slit sections extending from said ring-like section to said outer peripheral section in circumferentially spaced relation to each other;

bending portions of said first section each extending between the adjacent two radial slit sections to form louvers; and

offsetting said central section, said first section and said ring-like section from said outer peripheral section while rotating said central section, said first section and said ring-like section relative to said outer peripheral section, to twist portions of said second section each extending between the adjacent two arcuate slit sections to form louvers.

4,509,355

APPARATUS FOR FORMING A SHEET METAL PRODUCT HAVING AN OPENING

Masatoshi Oishi, Hiroshima, Japan, assignor to Mazda Motor Company, Hiroshima, Japan

Filed Sep. 27, 1982, Ser. No. 424,313

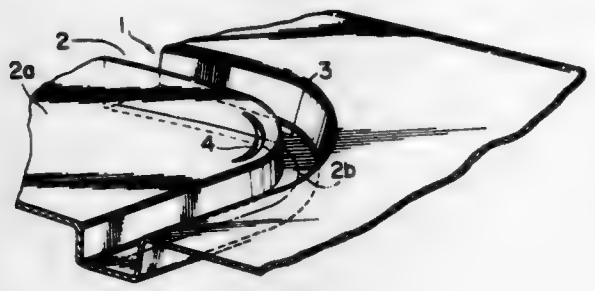
Claims priority, application Japan, Sep. 29, 1981, 56-155482

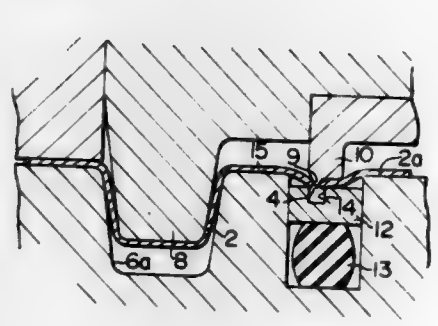
Int. Cl.³ B21D *28/00, 28/32*

U.S. Cl. 72—325 **3 Claims**

1. An apparatus for manufacturing from a blank of sheet metal a sheet metal product including an area which is to be cut off in a later stage to form an opening which has at least one corner portion surrounded by a drawn area, said apparatus comprising: a pair of cooperating complementary dies, one die having drawing punch means and the other die having drawing cavity means for drawing a blank of sheet metal, said punch being movable along an axis towards said cavity, said punch and cavity having a noncylindrical shape taken in cross-section transverse to said axis so that the shape of each punch and cavity is defined by a working surface comprising side surfaces extending along said axis with each of said side surfaces being connected at a corner, one of said dies being provided in said area which is to be cut off and adjacent to said corner portion

with tearing projection means located only at said corners of the side surfaces and projecting toward the other die, at a portion in which material of the blank is stretched while it is being drawn, the other die being provided with receptacle





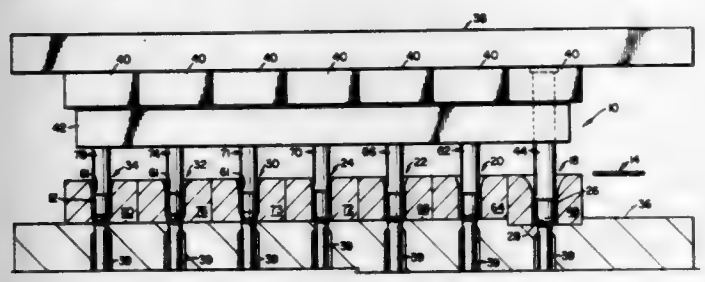
means supported by said other die through resilient support means and having recess means for loosely receiving said tearing projection means so that the blank is torn by said tearing projection means when it is being drawn.

4,509,356

METHOD AND APPARATUS FOR DRAWING HEAVY WALL SHELLS

John D. Budrean, DeMotte, Ind., and John A. Kirkpatrick, Chicago Heights, Ill., assignors to Verson Allsteel Press Co., Chicago, Ill.

Filed Aug. 13, 1982, Ser. No. 408,015
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—349 **9 Claims**



1. An apparatus for forming a material into a part having side walls, comprising:

a first draw stage of forming having a draw die and cooperating draw punch to draw the material through said draw die to form the material, said draw punch having a nose portion of relatively reduced diameter and a relatively enlarged diameter portion to form a draw shoulder between the nose portion and relatively enlarged diameter portion for forming a step in the side walls of the part to establish the volume of material below said shoulder, said draw shoulder sharply defined to prevent metal from flowing upward past said draw shoulder; and

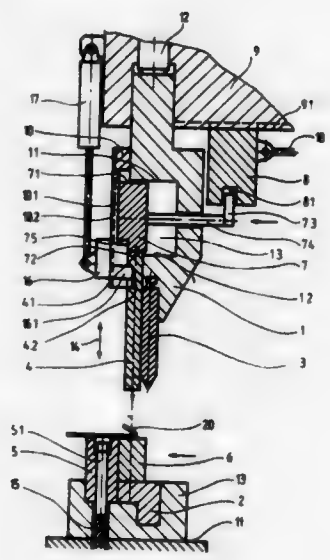
a finishing stage of forming to form the bottom portion of the part, said finishing stage having a finishing die and cooperating finishing punch to form the material, the finishing punch having a finishing shoulder for contacting the step formed in the side walls of the part to maintain the volume of material below said finishing shoulder equal to said first draw stage.

4,509,357

TOOL ARRANGEMENT FOR A BENDING PRESS

Vaclav Zbornik, Oftringen, Switzerland, assignor to Hämmerle AG Maschinenfabrik, Zofingen, Switzerland

Filed May 23, 1983, Ser. No. 497,144
Claims priority, application Switzerland, Jun. 7, 1982, 3496/82
Int. Cl.³ B21D *17/02*
U.S. Cl. 72—384 **13 Claims**



1. In a tool arrangement for a bending press including a displaceable ram, an elastically yielding hydraulic cushion provided within said ram and a work table, the improvement which comprises:

a segmental tool holding fixture operatively connected with said hydraulic cushion;

a segmental first tool arranged in said segmental tool holding fixture and displaceable in a first displacement plane;

a two-piece auxiliary second tool arranged in said tool holding fixture in addition to said segmental first tool;

said auxiliary second tool being subdivided into substantially horizontally displaceable spacer segments each having a contact surface and related tool segments substantially vertically displaceable in a second displacement plane;

said auxiliary second tool being displaceable into an operative position in which said spacer segments and said tool segments are arranged in substantially superimposed relationship with the contact surface on each spacer segment being in contact with its related tool segments and into an inoperative position in which said spacer segments and said tool segments are arranged in juxtaposition with said contact surfaces in noncontact relationship with said tool segments;

said horizontally displaceable spacer segments being structured for displacement substantially perpendicular to said second displacement plane of said vertically displaceable tool segments and said vertically displaceable tool segments being structured for displacement substantially parallel to said first displacement plane;

a tool support secured to said work table and provided with a bottom die; and

said segmental first tool cooperating with said bottom die.

4,509,358

URETHANE DIES

William G. Krowl, Roseville, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 26, 1984, Ser. No. 593,449
Int. Cl.³ B21C *3/02*; B29C *1/00, 27/00*
U.S. Cl. 72—476 **8 Claims**

1. A laminated forming tool with a work contact surface, tool sides and a base made from resins and fillers for the cold forming of sheet metal, especially suitable for forming short

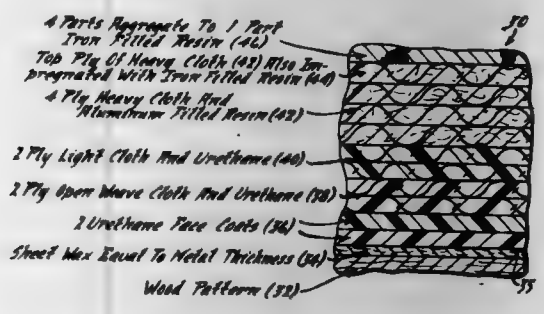
runs of sheet metal parts with drop hammers, hydraulic presses or mechanical crank presses and the like which comprises:

two layers of urethane on the tool sides and adjacent the contact surface;

two layers of loose-knit cloth each impregnated into two more urethane layers;

a first layer of thin, tight-knit cloth impregnated into another urethane layer;

a second layer of thin, tight-knit cloth impregnated with aluminum filled resin and layered onto the first layer of thin, tight-knit cloth;



three layers of thick, tight-knit cloth each impregnated with aluminum filled resin and layered onto the second layer of thin, tight-knit cloth;

a fourth layer of thick, tight-knit cloth layered onto the other three layers of thick tight-knit cloth and impregnated with iron filled resin;

a mass cast core comprising four parts aggregate mixed with one part iron filled resin formed onto the fourth layer of thick, tight-knit cloth, the core having a surface at the cloth and a free surface;

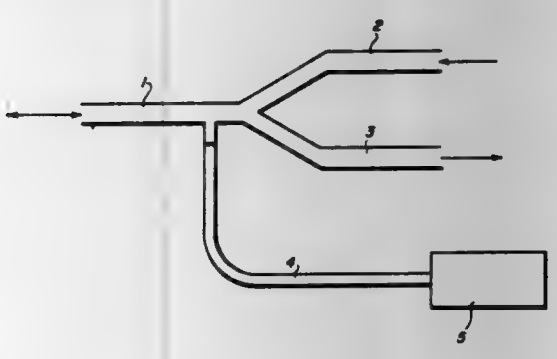
a base affixed to a free surface of said core available for mounting purposes on a machine to press or form the sheet metal parts.

4,509,359

METHOD AND APPARATUS FOR MEASURING THE CONCENTRATION OF A GIVEN COMPONENT IN A GAS INHALED AND/OR EXHALED BY A PATIENT

Andras Gedeon, Täby, and Lennart Mathiasson, Lund, both of Sweden, assignors to Gambro Engström AB, Bromma, Sweden

Filed Dec. 10, 1982, Ser. No. 448,802
Claims priority, application Sweden, Dec. 23, 1981, 8107775
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—23 **6 Claims**



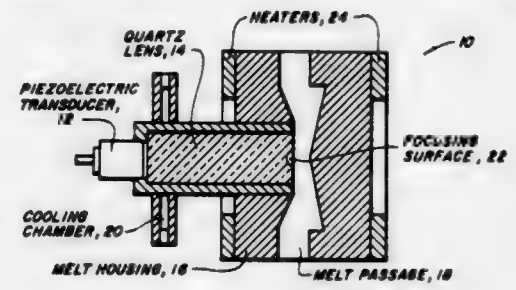
1. A method for measuring the concentration of at least one given component in a breathing gas passing through a breathing-gas line connected to the air passages of a patient, comprising the steps of withdrawing continuously a small part of the gas flow passing through said breathing-gas line, bringing the relative humidity and temperature of said withdrawn gas into substantial agreement with the relative humidity and temperature of the ambient air, and subsequently supplying said withdrawn gas to a measuring instrument sensitive to the concentration of said component.

4,509,360

ON-LINE MEASUREMENT OF FLUID MIXTURES

Lewis Erwin, Winchester, Mass., and Jeffrey L. Dohner, Fort Wayne, Ind., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 24, 1983, Ser. No. 508,217
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—61 R **23 Claims**



1. An apparatus for determining the degree of mixing of components in a fluid mixture, the apparatus comprising:

(a) a housing having a passageway through which the fluid mixture to be analyzed passes;

(b) a source of wave energy;

(c) a focusing surface coupled to the source of wave energy transmitting the wave energy into the fluid mixture and focusing the wave energy in the passageway in an interrogation zone within the passageway such that changes in the impedance of the fluid mixture caused by unmixed components within the zone will cause fluctuations in the intensity of backscattered wave energy; and

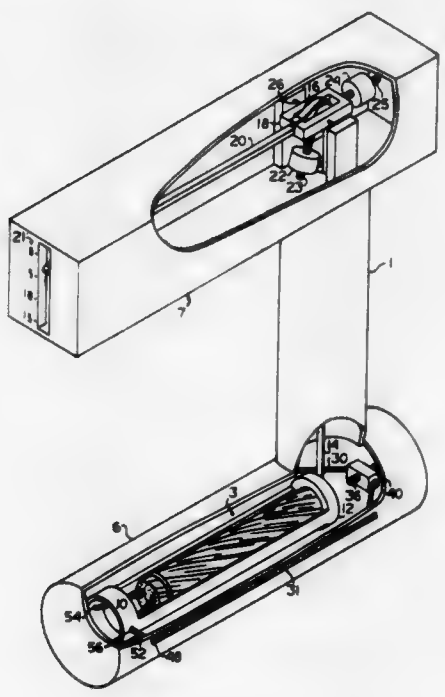
(d) a detector means also coupled to the fluid mixture within the passageway for detecting a portion of the focused wave energy back scattered by the components and thereby determining the dispersion of components in the fluid mixture by measuring fluctuations in the intensity of the backscattered portion of the wave energy.

4,509,361

SOIL MOISTURE POTENTIAL DETERMINATION BY WEIGHT MEASUREMENT

Lonnie G. Johnson, 12503 S. 31st St., Omaha, Nebr. 68123

Filed Nov. 30, 1983, Ser. No. 556,276
Int. Cl.³ G01N *5/02*
U.S. Cl. 73—73 **12 Claims**



1. An instrument for measuring soil moisture potential, said instrument being positioned in contact with the soil being measured and comprising:

a. A structure means joined to an absorber means by a coupling means and a scale means, said structure means providing containment and physical mounting means for said absorber means, said coupling means and said scale means, said structure means including a subsurface chamber means, a baffle means and an above surface section chamber means, said chamber means being installed in direct contact with said soil, said absorber means being mounted internal to said chamber means, said scale means being mounted to said above surface section means, said coupling means being mounted to said chamber means, said absorber means being coupled to said scale means and suspended internal to said chamber means under gravitational force;

b. Said coupling means movably coupling said absorber means to said soil and facilitating water flow between said absorber means and said soil to effect moisture potential equilibrium of said absorber means with said soil, said absorber means absorbing water and maintaining moisture potential equilibrium with said soil, said scale means weighing said absorber means to determine moisture content thereof and provide an indication of soil moisture potential, said coupling means offering minimum resistance to movement of said absorber means to permit accurate weight measurements thereof;

c. Said scale means including an indicator means, a bias calibration means and a gain calibration means, said indicator means being an integral part of said scale means and providing a visible indication of soil moisture potential, said bias calibration means being coupled to said indicator means and being adjustable for selecting an operating range for said instrument, said gain calibration means being coupled to said indicator means and being adjustable for selecting ratios of change in soil moisture potential indication to change in weight of said absorber and thereby cause said indicator means to display desired units of soil moisture potential;

d. Said subsurface chamber means being constructed of porus material means, said baffle means and said porus material means functioning to minimize affects on instrument accuracy due to water vapor migration induced by environmental temperature transients, said baffle means being mounted internal to said structure means and isolating said chamber means to prevent water vapor migration between said absorber means and said above ground section means to minimize affects of water vapor migration on instrument readings, said porus material means being in moisture potential equilibrium with said soil and permitting vapor migration between said material means and said absorber means such that water evaporated from said absorber means can be replaced through water condensation on said absorber during continued termperature cycles to minimize accummulation of dissolved minerals in said absorber which could affect instrument calibration.

4,509,362

DEVICE FOR TESTING GAME BALLS

Robert V. Lyons, 516 LaForce, Zephyrhills, Fla. 33599

Filed Jul. 15, 1983, Ser. No. 514,106
Int. Cl.³ G01N *3/52*
U.S. Cl. 73—79 **13 Claims**

1. A device for testing a game ball comprising in combination:

a substantially tubular member having a top opening for receiving the game ball inserted therein when said tubular member is in a vertical position;

said opening enabling the operator to drop the game ball from a predetermined position on said tubular member;

said tubular member further including;

a plurality of vertically spaced cylindrical bands;

at least three vertically extending guides interconnecting said bands;

said guides being equidistantly spaced about said cylindrical bands;

a striking surface secured to said tubular member in proximity to a bottom portion of said tubular member when said tubular member is in the vertical position;

calibrated markings disposed along the length of said tubular member for indicating the degree of resiliency of the game ball in accordance with the rebound of the same from said



striking surface, said calibrated markings comprising markings to indicate a dead ball, old ball and live ball, respectively; and

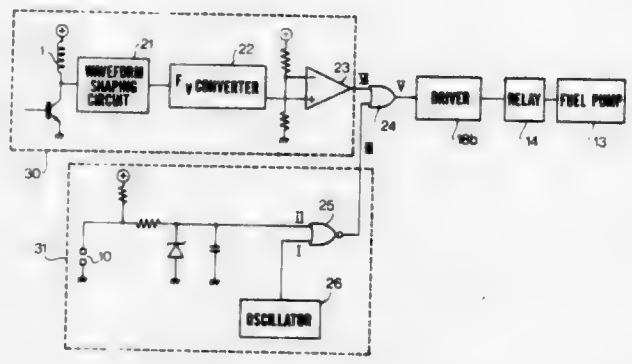
each of said guides projecting inwardly of said tubular member along the longitudinal length thereof for guiding the game ball to be tested from said opening toward said striking surface and for guiding the game ball during the rebound from said striking surface.

4,509,363

SYSTEM FOR DIAGNOSING A DEVICE OF AN INTERNAL COMBUSTION ENGINE

Toshio Takahashi, Mitakashi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 536,038
Claims priority, application Japan, Oct. 1, 1983, 57-173624
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **4 Claims**



1. A system for diagnosing a device of an internal combustion engine mounted on a vehicle comprising; first means for detecting an engine operating condition and for producing an output; second means for converting said output to a control signal. a driver responsive to said control signal for driving said device; a first gate means for controlling said control signal from said second means to said driver; a force-driving system for forcibly driving said device; said force-driving system comprising a manual operated terminal for applying a

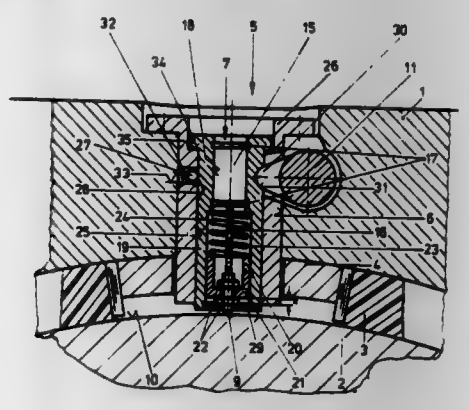
voltage; an oscillator for producing pulses; a second gate means responsive to said voltage from said terminal for controlling said pulses, said first gate means being applied with said pulses and operative to pass the pulses in response to the level of said control signal, whereby said device is driven by said pulses.

4,509,364

WEAR MEASURING ARRANGEMENT FOR BEARINGS

Karl H. Schütz, Schweinfurt, Fed. Rep. of Germany, and Günter Mauch, Vienna, Austria, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 485,284, Apr. 15, 1983, abandoned.
This application Aug. 7, 1984, Ser. No. 638,537
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 8210726[U]
Int. Cl.³ G01M *13/04*
U.S. Cl. 73—118 **11 Claims**



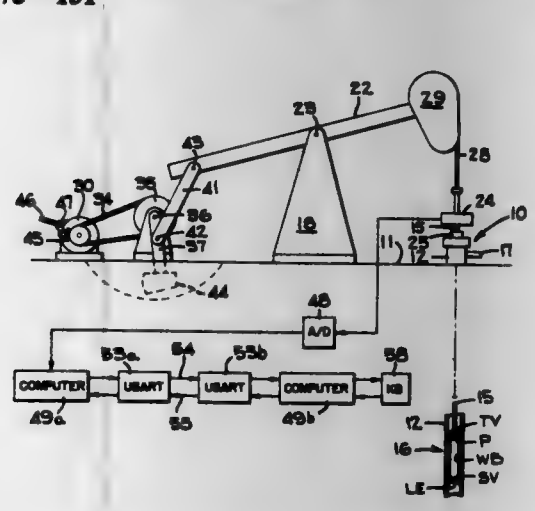
1. A wear measuring apparatus for measuring wear on a sliding surface of a first bearing part, comprising a support sleeve slidably arranged in a second bearing part for movement between upper and lower positions, away from and toward said sliding surface, and a sensor assembly, said sensor assembly including a sensor, a plunger-type armature, a probe tip connected to said armature, and a spring, said spring being mounted with respect to said support sleeve and said plunger-type armature so as to urge said plunger-type armature in the direction of said sliding surface.

4,509,365

METHOD AND APPARATUS FOR WEIGHING A SUCKER-ROD PUMPED WELL

Donald E. Eineichner, San Jose; Rangasami S. Chandra, Walnut Creek, and James M. Tucci, Campbell, all of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 26, 1983, Ser. No. 535,490
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **17 Claims**



15. A method of detecting and analyzing faults in downhole equipment of a sucker-rod pumped well by weighing the well and providing a digital display of the weight values, said well having a downhole pump which includes a standing valve and a plunger with a traveling valve, said equipment including a sucker-rod string connected to said plunger and a load measuring transducer connected between a power unit and an upper portion of said sucker-rod, said power unit reciprocating said plunger to produce fluid from an underground location, said method comprising the steps of:

supporting said rod string independent of said transducer to obtain a zero load signal from said transducer;

storing said zero load signal for use in correcting load signals when said transducer supports the weight of said plunger and said rod string;

halting said plunger at a position adjacent the top of an upstroke with said transducer supporting said plunger and said rod string;

taking a series of corrected load readings from said transducer with said plunger in a stationary position; and

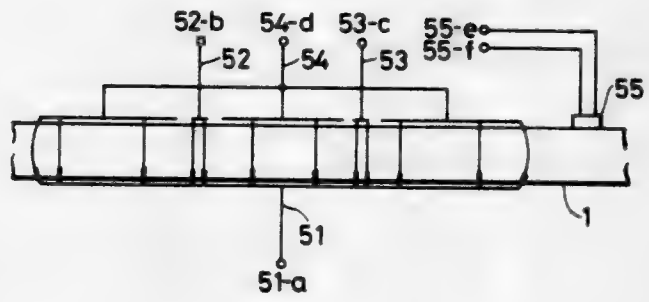
using said series of corrected load readings to check for faults in said traveling valve and its associated equipment.

4,509,366

FLOW METER FOR A TWO-PHASE FLUID

Shigetada Matsushita, Tokyo, and Yuji Doi, Oita, both of Japan, assignors to Fuji Electric Co., Ltd., Kanagawa and Nippon Steel Corporation, Tokyo, both of, Japan

Filed Apr. 28, 1983, Ser. No. 489,294
Claims priority, application Japan, Apr. 30, 1982, 57-73170
Int. Cl.³ G01F *1/74, 1/86*
U.S. Cl. 73—861.02 **7 Claims**



1. In a flow meter for measuring the mass flow of a two-phase fluid flowing through a pipe arrangement using an electrostatic capacity detector and mutual correlation method, the improvement comprising a first common electrode mounted proximate the outerwall of said pipe and extending along a certain length of said pipe on one side of said pipe, a pair of second and third electrodes mounted proximate said outerwall opposite said first common electrode for detecting the fluid flow velocity, each of said pair of electrodes extending along only a small portion of said certain length, and a fourth electrode for detecting the fluid density mounted proximate said outerwall opposite said common electrode, said fourth electrode extending along said outerwall upstream and downstream of each of said pair of electrodes and extending along said outerwall a greater length than said pair of electrodes.

4,509,367

TACHOMETER GENERATOR INDEXING DEVICE

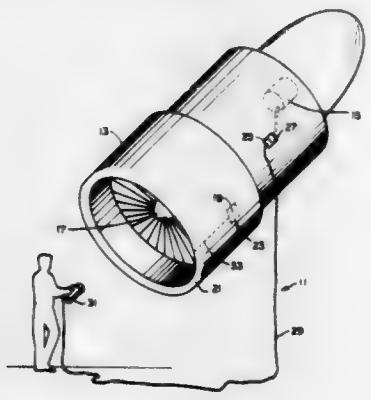
Joe A. McInturff, and David W. Patterson, both of Marietta, Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed May 9, 1983, Ser. No. 493,063
Int. Cl.³ G01M *1/00*
U.S. Cl. 73—457 **7 Claims**

1. In a machine having a rotor with a plurality of associated fan blades, a housing, an accelerometer, and a generator connected to the machine for generating a continuous sinusoidal output signal proportional to the position and speed of the associated rotor, an indexing device comprising:

(a) connection means for operatively connecting said device to the output of the generator;

(b) detector means for detecting a predetermined output from said generator, said predetermined output being the zero crossover point of the sinusoidal output signal of said generator going from negative to positive;
(c) an indicator for providing a stroboscopic flash each time said detector means has detected said predetermined output from said generator;
(d) a predetermined point on the housing of the machine for indicating the mounting position of the accelerometer;



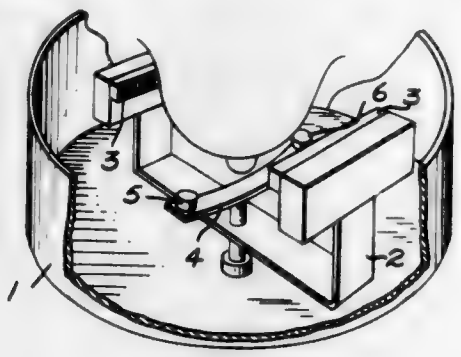
(e) said indicator being adapted to be oriented to a position adjacent to said predetermined point on the housing;
whereby said indicator is positioned relative to the mounting position of the accelerometer so as the rotor is turned, said indicator is activated when said predetermined output is detected, and illuminates the particular fan blade that is passing by the accelerometer position so that an operator can physically index the angular position of the rotor to said predetermined output from said generator as well as said predetermined point on the housing.

4,509,368

ULTRASOUND TOMOGRAPHY

James F. Whiting, Indooroopilly, and Rolf H. L. Koch, Bardon, both of Australia, assignors to The Commonwealth of Australia, Australian Capital Territory, Australia

PCT No. PCT/AU82/00098, § 371 Date Feb. 17, 1983, § 102(e) Date Feb. 17, 1983, PCT Pub. No. WO83/00009, PCT Pub. Date Jan. 6, 1983
PCT Filed Jun. 18, 1982, Ser. No. 467,481
Claims priority, application Australia, Jun. 22, 1981, PE9381
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—624 **10 Claims**



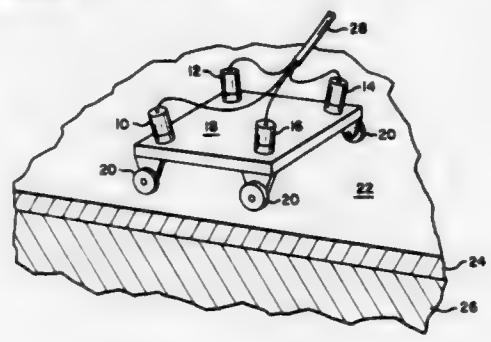
1. An apparatus for examining the internal structure of a body along mutually perpendicular planes of interest, comprising:
means for transmitting pulses of ultrasonic energy through said body along a plurality of substantially parallel paths in a first plane;
means for receiving ultrasonic energy pulses transmitted through said body in said first plane;
means for transmitting pulses of ultrasonic energy into said body along a second plane perpendicular to said first plane;
means for receiving ultrasonic energy pulses reflected by said body along said second plane;
and means for correlating acoustic transmission and reflection data for reconstruction of one or more images corresponding to said first plane.

4,509,369

NEAR SURFACE INSPECTION SYSTEM

Zoran Kuljis, Zagreb, Yugoslavia, and John P. Lareau, Granby, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 25, 1983, Ser. No. 526,187
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—628 **11 Claims**



1. An ultrasonic inspection system for detecting the presence of flaws in a zone of interest surrounding a focal point disposed a preselected distance beneath a substantially planar surface of a solid material, said solid material being immersed in a sonic conducting medium, comprising:
a carrier for transporting said inspection system over the surface while maintaining a constant, fixed spacing therebetween;
an ultrasonic transmitter, secured to said carrier, for directing a beam of ultrasonic sound radiation through said medium and into said solid material toward said zone of interest, said transmitter further being oriented with respect to the surface so as to result in the formation of an included angle of approximately 20° between the beam path traveling within said material and said planar surface;
a first ultrasonic receiver, secured to said carrier, for receiving reflected ultrasonic sound originating as a result of the presence of a flaw within said zone of interest, said first receiver being oriented with respect to the surface of said material so as to receive only reflected sound originating within said zone of interest and traveling through said solid material along a reflected sound path forming an included angle of approximately 20° with said planar surface; and
a second ultrasonic receiver, secured to said carrier, for receiving reflected ultrasonic sound originating as a result of the presence of a flaw within said zone of interest, said second receiver being oriented with respect to said planar surface of said material so as to receive only reflected sound originating within said zone of interest and traveling through said material along a reflected sound path forming an included angle of approximately 20° with said planar surface.

4,509,370

PRESSURE-SENSITIVE OPTRODE

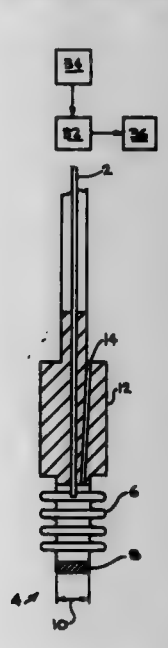
Tomas B. Hirschfeld, Livermore, Calif., assignor to Regents of the University of California, Berkeley, Calif.

Filed Sep. 30, 1982, Ser. No. 430,578
Int. Cl.³ G01B *11/00;* G01L *7/06*
U.S. Cl. 73—705 **15 Claims**

1. An apparatus for sensing changes in pressure and for generating optical signals related to said changes in pressure, the apparatus comprising:

(a) a fiber optic through which light from at least one associated light source is transmitted from a first end of the fiber optic to a second end of the fiber optic;

(b) resilient means operationally associated with the second end of the fiber optic, the resilient means having a movable surface which moves relative to the second end of the fiber optic along an axis of the fiber optic in response to changes in pressure and the movable surface having a fluorescent composition attached to one side such that light transmitted by the fiber optic impinges on the fluorescent composition, causing it to generate an optical signal;



(c) a beam splitting means adjacent to the first end of the fiber optic for separating light from at least one associated light source from the optical signal generated by the fluorescent composition and transmitted by the fiber optic; and

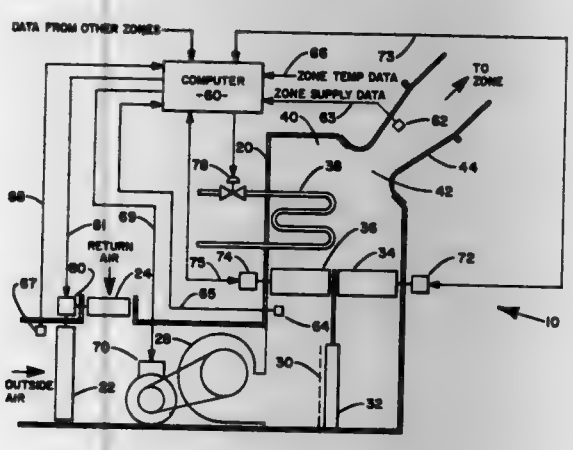
(d) detection means adjacent to the beam-splitting means for collecting and analyzing the optical signal generated by the fluorescent composition and transmitted by the fiber optic.

4,509,371

VENTURI FLOW MEASURING DEVICE AND METHOD

Donald C. Wellman, Marcellus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 7, 1983, Ser. No. 456,633
Int. Cl.³ G01F *1/00*
U.S. Cl. 73—861 **5 Claims**



1. A method for determining the variable volume flow rate of a fluid subject to varying temperature, pressure and flow paths comprising the steps of:

directing all of the fluid into a single fluid path;

passing all of the fluid in the single fluid path through a converging-diverging section to stabilize by sequentially accelerating and decelerating the fluid flow therethrough;

selecting a single point from a plurality of axially spaced predetermined locations along said diverging section at points of differing cross-sectional area for measuring the velocity of fluid flow so that the measured velocity is within a predetermined range; and

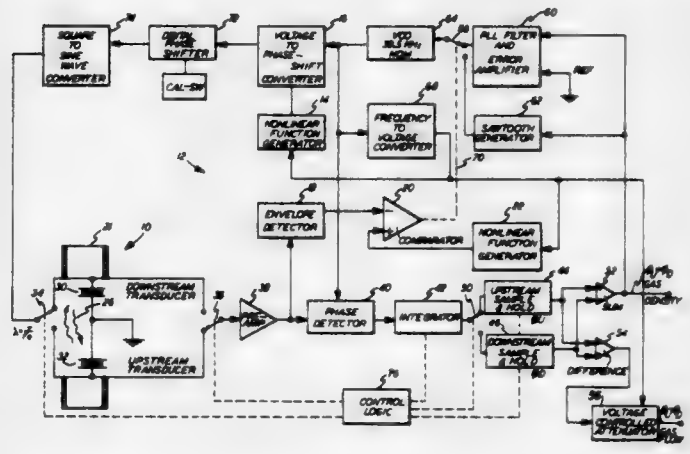
measuring the velocity of fluid flow at said single point whereby the variable volume rate of flow is the product of the measured velocity and the cross sectional area at that location.

4,509,372

ACOUSTICAL WAVE FLOWMETER WITH INCREASED DENSITY CAPABILITY

Bruce E. Mount, Diamond Bar, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 4, 1983, Ser. No. 482,104
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 **15 Claims**



12. A phase-locked loop system for measuring fluid flow by detecting phase differences between a transmitted and received signal within a confined path having a voltage controlled oscillator,

applying signals at a given frequency from said voltage controlled oscillator to said fluid in said flow path,

a phase detector for detecting the phase difference between the received signal and the transmitted signal,

means for generating an error voltage corresponding to said detected phase difference between the transmitted and received signal and applying said error voltage to said voltage controlled oscillator so that said transmitted signal will be maintained in operating phase with the received signal, and

means for varying the operating phase between said transmitted signal and said received signal in a continuous manner according to a predetermined relationship of acoustic resonance of the confined path with fluids of different densities therein, wherein said means for varying is coupled to control the phase of said signals from said voltage controlled oscillator in cooperation with said means for generating an error voltage.

4,509,373

CALIBRATION CIRCUIT FOR ULTRASONIC FLOWMETER

Alvin E. Brown, Santa Cruz, Calif., assignor to Manning Technologies, Inc., Scotts Valley, Calif.

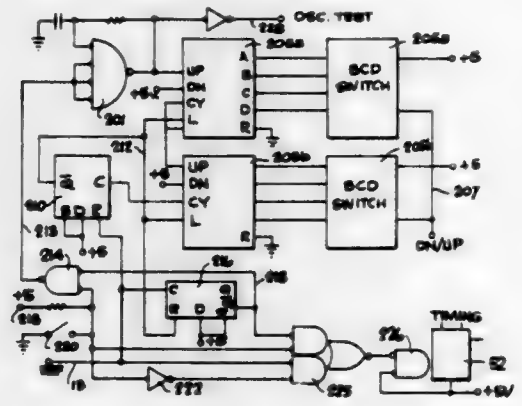
Filed Jun. 9, 1983, Ser. No. 502,485
Int. Cl.³ G01F *1/66, 25/00*
U.S. Cl. 73—861.28 **7 Claims**

1. In a flowmeter of the type using upstream and downstream acoustic signals to measure flow by means of early and late arrival of acoustic signals in comparison to a reference, a calibration circuit comprising,

phase detector means comparing a received acoustic signal

input against a variable delay calibration signal input for generating early and late output signals, and

means for generating a frequency counted variable delay,



said variable delay means connected in series to a fixed delay means, the output of said fixed delay means connected to said phase detector means as said variable delay calibration signal.

4,509,374

ELECTRIC DYNAMOMETER

Akinori Sugimoto, Hyogo, and Hiroshi Sugimoto, Osaka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

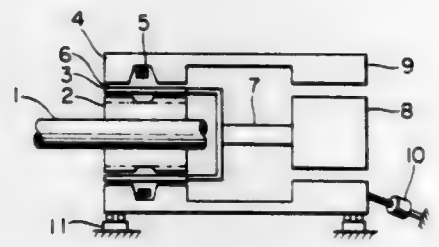
PCT No. PCT/JP82/00247, § 371 Date Feb. 25, 1983, § 102(e) Date Feb. 25, 1983, PCT Pub. No. WO83/00224, PCT Pub. Date Jan. 20, 1983

PCT Filed Jun. 28, 1982, Ser. No. 474,644

Claims priority, application Japan, Jun. 30, 1981, 56-102795

Int. Cl.[3] **G01L** *3/22*

U.S. Cl. 73—862.17 **1 Claim**



1. An electric dynamometer, comprising:

(a) a rotatable shaft;

(b) a first rotor mounted for conjoint rotation with said shaft;

(c) a first stator surrounding said first rotor, said first stator including a dynamometer yoke surrounding said first rotor in radially spaced relation therewith, and a loss drum between said dynamometer yoke and said first rotor, rotatable through 360° about said first rotor;

(d) an electric rotor including a second rotor and a second stator surrounding said second rotor, said second rotor being coupled to said loss drum so as to rotate said loss drum therewith about said first rotor, said second stator being fixed to said dynamometer yoke so as to define in combination with said dynamometer yoke a combined yoke surrounding said first and second rotors;

(e) means for supporting said combined yoke for rotation about said first and second rotors; and

(f) means, including a torque detector connected to said combined yoke, for measuring the combined torque exerted on said dynamometer yoke and said second stator about said first and second rotors.

4,509,375

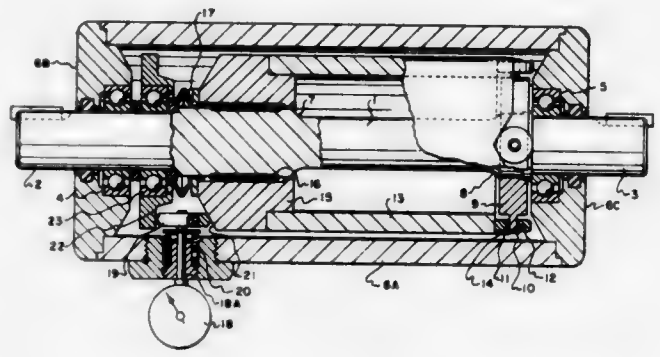
TORQUE METER

Toby L. Davis, 3406 Karen Ct., Arlington, Tex. 76014

Filed Sep. 29, 1982, Ser. No. 428,303

Int. Cl.[3] **G01L** *3/04*

U.S. Cl. 73—862.32 **3 Claims**



1. An apparatus for measuring torque, comprising:

first and second shaft means spaced axially from each other, said second shaft means having an aperture formed therethrough,

a tubular torque sensitive means connected between said first and second shaft means,

axially movable means located within said aperture and within said tubular torque sensitive means and having a first end coupled to said first shaft means,

first cam means coupled to said first shaft means,

means for allowing said first cam means to move axially relative to said first shaft means,

second cam means connected to said second shaft means,

said first and second cam means having first and second surfaces respectively engaging each other for causing said first cam means to move axially when torsion of said tubular torque sensitive means occurs upon the application of torque to one of said shaft means,

means coupling said first cam means to said axially movable means for causing said axially movable means to move axially when said first cam means moves axially,

and means for measuring the axial displacement of said axially movable means.

4,509,376

SAFE LOAD INDICATOR

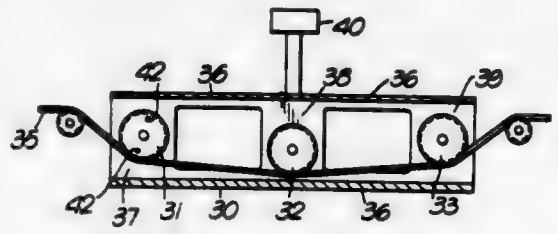
William R. Thomasson, Houghton-le-Spring, England, assignor to Coles Cranes Limited, Sunderland, England

Division of Ser. No. 149,376, May 13, 1980, Pat. No. 4,368,824. This application Sep. 24, 1982, Ser. No. 423,366

Claims priority, application United Kingdom, May 18, 1979, 7817405

Int. Cl.[3] **G01L** *5/04*

U.S. Cl. 73—862.56 **11 Claims**



1. A dynamometer comprising:

a frame;

rope deflecting means, including a second rotatable member, mounted to said frame;

first and third rotatable members mounted to said frame on either side of said second rotatable member, said first and third rotatable members being out of alignment with said second rotatable member;

said frame including three mounting blocks, each block

carrying one of said rotatable members and each block being connected to the other in line by a pair of resiliently flexible portions;

a rope, the tension of which is to be measured, rove past said first and third rotatable members and in bearing contact with said second rotatable member to be deflected by said second rotatable member;

a load cell mounted to said frame and arranged to measure the deflection force of said rope against said second rotatable member; and

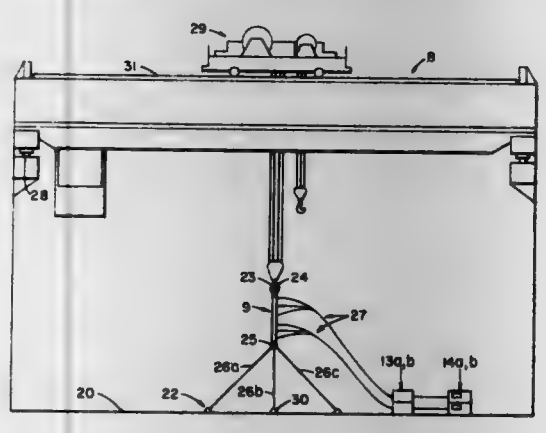
wherein at least one of said rotatable members is provided with indicating means radially spaced from its axis, and wherein the frame is provided with detector means arranged to detect the passage of said indicating means past said detector means, said detector means being enabled to transmit at least the rope movement direction to a microprocessor.

4,509,377

LOAD TESTING

Walter J. Mentzell, Upper Burrell Township, Westmoreland County, Pa., and Oscar L. Ganoe, Pennsville, N.J., assignors to Mentzell Electric Co., Inc., Apollo, Pa.

Filed Nov. 19, 1982, Ser. No. 443,015
Int. Cl.[3] G01L *5/00;* G01M *19/00*
U.S. Cl. 73—862.56 9 Claims



1. A method of testing the load lifting ability of a lifting device, comprising connecting the lifting device to a securement able to resist more force than a weight for which the lifting device is to be tested, operating the lifting device until the force exerted by the lifting device on the securement equals said weight, and displacing the lifting device under load for performing a moving load test.

4,509,378

RECIPROCATING MACHINES WITH BOTH PRIMARY AND SECONDARY COUNTER ROTATING BALANCERS

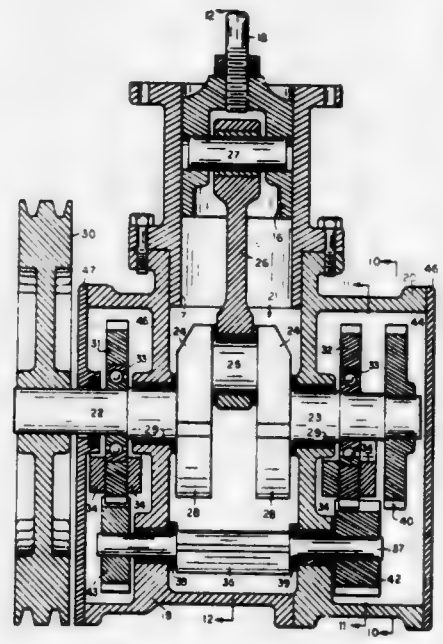
Arthur E. Brown, R.D. 1, Box 1107, Lake George, N.Y. 12845

Filed Feb. 22, 1983, Ser. No. 468,139
Int. Cl.[3] F16F *15/26;* F16H *21/22;* F16C *3/04*
U.S. Cl. 74—44 7 Claims

1. In a reciprocating machine, the combination of a frame structure, a reciprocable member guided for reciprocation relative to said frame structure, a crankshaft mounted for rotation in the frame structure, said crankshaft having a center throw crank with a first main shaft on one side of the crank and a second main shaft on the other side of the crank, said center throw crank having two crank arms and a crankpin, a connecting rod interconnecting said crankpin and said reciprocable member for respective rotary and reciprocative motion, at least one main counterweight attached to said crankshaft and rotatable therewith,

a first countershaft mounted for rotation offset from said crankshaft, a second countershaft mounted for rotation offset from said crankshaft, positive toothed gearing for driving both of said countershafts at twice the RPM of said crankshaft and in opposite directions of rotation from each other, a secondary balance weight mounted on each of said countershafts and rotatable therewith, said two secondary weights serving to counterbalance the secondary reciprocating inertia force of said reciprocable member,

a first contraweight mounted for rotation around said first main shaft, a second contraweight mounted for rotation around said second main shaft, said two contraweights being adapted to both rotate at the same RPM as said crankshaft but in the opposite direction from that of the crankshaft, said main counterweight and said two contraweights combining so as to counterbalance the primary reciprocating inertia force of said reciprocable member, and wherein the improvement comprises:



positive toothed gearing rotatably and directly interconnecting one of said countershafts and said first contraweight such that the countershaft drives the first contraweight with a two to one speed reduction,

positive toothed gearing rotatably and directly interconnecting one of said countershafts and said second contraweight such that the countershaft drives the second contraweight with a two to one speed reduction, and at least one of said countershafts thus serving a multifunction purpose which is to: (a) serve as a shaft for holding and rotating a secondary counterweight and (b) to serve as a transmission for driving one of said contraweights.

4,509,379

ROTARY TO RECIPROCATING MOTION CONVERTER

Julius C. Westmoreland, 4600 Via Dolce, #104, Marina del Rey, Calif. 90291

Filed May 3, 1982, Ser. No. 374,082
Int. Cl.[3] F04B *21/02, 39/08*
U.S. Cl. 74—58 9 Claims

1. A converter of rotary power input to a reciprocating motion output, comprising:

a housing having a sidewall and open ends, said sidewall including at least one slot therein;

a drive shaft having one end connected to the rotary power input and including a first portion with an external right-hand thread and a second portion with a left-hand thread;

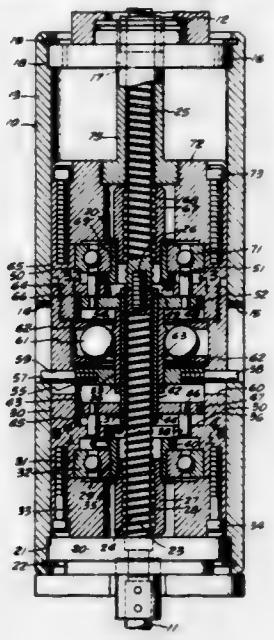
first and second nut means threaded onto the respective right-hand and left-hand shaft portions in a spaced apart relation along said shaft;

first and second clutch means respectively interconnected with said first and second nut means;

means slidably received within said housing and interconnected with said nut means for unitary movement therewith; and

means slidably received on the drive shaft between said first and second nut means for cyclically engaging the first

clutch means while simultaneously disengaging the second clutch means and disengaging the first clutch means while simultaneously engaging the second clutch means,



said engaging and disengaging means including a pin extending into the housing slot which is driven on contact with a housing slot edge to actuate said engaging and disengaging means.

4,509,380

GEAR UNIT TRANSFORMING A UNIFORM DRIVER TO A NON-UNIFORM POWER TAKE-OFF

Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

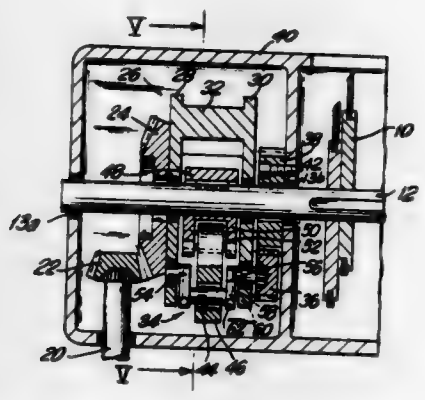
Filed Dec. 22, 1981, Ser. No. 333,476

Claims priority, application Switzerland, Dec. 30, 1980, 9630/80

Int. Cl.³ F16H *35/02*

U.S. Cl. 74—394

8 Claims



1. A gear unit for generating a non-uniform power take-off from a uniform drive, such as for the shedding mechanism of a weaving machine useful in a ribbon weaving machine, comprising an axially extending rotatable power take-off shaft, a stationary sun gear coaxial with said power take-off shaft, a driving member rotatably mounted on said power take-off shaft and the axis of said driving member is coaxial with said sun gear, means for uniformly driving said driving member, a crankshaft mounted in said driving member, a planet pinion in meshed engagement with said sun wheel and connected to said crankshaft, said crankshaft including a crank pin, a swing arm connected to said power take-off shaft for rotation therewith, a connecting element connected to said crank pin and to said swing arm, wherein the improvement comprises that means for supporting said power take-off shaft comprising a pair of bearings spaced apart in the axial direction of said power take-off shaft said driving member is formed as a driving cage comprising a pair of side walls rotatably supported on and spaced apart in the axial direction of said power take-off shaft and located between said pair of bearings, said crankshaft extending between and supportably mounted in said side walls, said connecting element hinged to said crank pin of said crankshaft, and a bolt supported in said swing arm, said bolt connects said connecting element to said swing arm.

4,509,381

SPLINED PRESS FIT CONNECTION IN GEAR WHEEL ASSEMBLY

Kazuhito Ikemoto; Yukio Terakura; Takashi Miyake, and Takashi Yamamoto, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

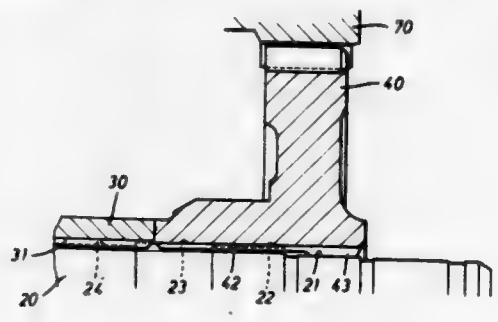
Filed Dec. 15, 1982, Ser. No. 450,000

Claims priority, application Japan, Dec. 26, 1981, 56-210858

Int. Cl.³ F16H *1/06, 1/20*

U.S. Cl. 74—413

2 Claims



1. In a gear wheel assembly in a transmission including a shaft rotatably supported in position from a transmission housing, and a gear wheel mounted on said shaft by means of a spline connection,

the improvement wherein said gear wheel is formed at its hub portion with an axial stepped bore, which includes a first inner spline portion of large diameter and a second inner spline portion of small diameter, and said shaft is formed at its outer circumference with a cylindrical portion engaged with a cylindrical portion engaged with the second inner spline portion of said gear wheel with a press fit, a first outer spline portion slidably engaged with the first inner spline portion of said gear wheel, and a second outer spline portion engaged with the first inner spline portion of said gear wheel with a press fit, the cylindrical portion, the first outer spline portion and the second outer spline portion being formed axially in sequence, and wherein said gear wheel is mounted on said shaft in such a manner that the first inner spline portion of said gear wheel is loosely engaged with the first outer spline portion of said shaft and fixedly engaged by a press fit with the second outer spline of said shaft, and the second inner spline portion of said gear wheel is fixedly engaged by a press fit with the cylindrical portion of said shaft.

4,509,382

PRELOADED SCREW ACTUATOR

Albert J. Colautti, Windsor, Canada, and Hans J. Borlinghaus, Utica, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 25, 1983, Ser. No. 478,660

Int. Cl.³ F16H *1/20*

U.S. Cl. 74—424.8 R

5 Claims

1. An actuator comprising threadedly engaged screw and nut members,

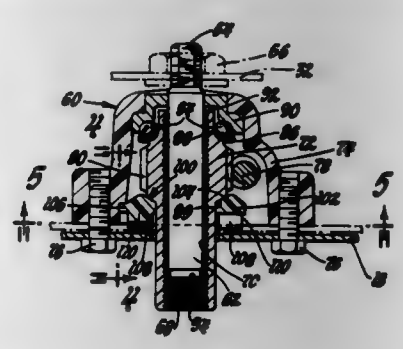
housing means defining an axis,

one of said members disposed on said axis and having an axially spaced pair of bearing surfaces with one thereof mounted against the housing means,

means defining a support surface adjacent the other of said bearing surfaces,

the other of said members adapted to be connected with a load to be actuated,

a one piece resilient bearing operative to preload said one member against the housing means with force applied up to a predetermined maximum axially thereof and comprising a molded body of low friction polymeric material formed with a main portion engaged with the other bearing surface of said one member and adapted to sustain substantially without deformation at least said predeter-



mined force, said body being further formed with a yieldable portion engaged with said support surface and deflected along said axis under preload force a distance no greater than the distance corresponding to said predetermined force,

abutment stop means operable under a force on said one member having an axial force at or greater than said predetermined force to limit deflection of said resilient bearing elastic portion, and drive torque means connected for rotation of one of said members to actuate the load.

4,509,383

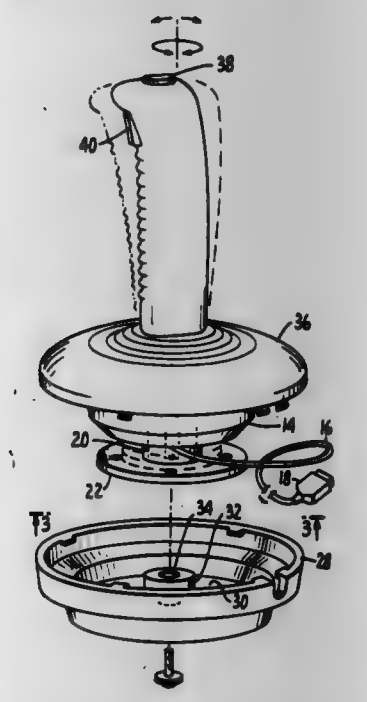
JOYSTICK CONTROLLER

Gregory Y. S. Yeh, Kowloon, Hong Kong, assignor to Championship Electronics (USA) Inc., San Mateo, Calif.

Filed Dec. 1, 1982, Ser. No. 446,066

Int. Cl.³ G05G *9/00;* H01H *25/04;* B65H *75/40;* H02G *11/00*

U.S. Cl. 74—471 XY **4 Claims**



1. In a joystick controller of the type having a handle pivotally mounted in a base for selective movement about a pivotal axis from a nominal rest position for selectively generating switch closures; a cord from said base for carrying electrical signals from said switch closures, wherein the improvement comprising:

a ring having an inner radius and an outer radius

a spacer for positioning said ring spaced apart from said base; one end of said spacer attached to said ring, the other end of said spacer attached to said base; and

a housing for enclosing said base, said spacer, and said ring; said housing having a substantially planar surface with a radius of curvature greater than the outer radius of said ring; a substantially cylindrically shaped member having a radius of curvature less than said inner radius being positioned near the center of said surface; said housing with said member being engaged with said ring disposed over said member and resting against said surface;

whereby the rotation of said handle about said pivotal axis winds and unwinds said cord from said controller.

4,509,384

MANUAL GEARBOX RATIO CHANGE CONTROL DEVICE

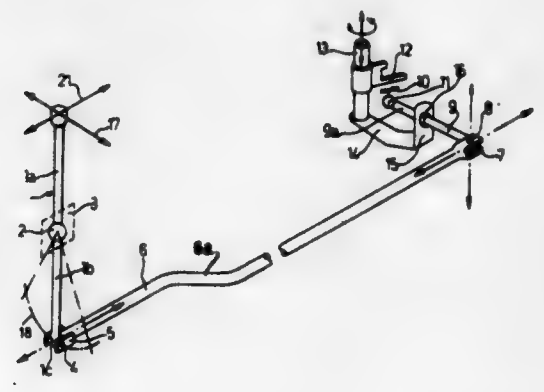
Jean-Michel Lamy, Paris, and Jean-Jacques Boutant, Rueil Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Aug. 13, 1982, Ser. No. 408,120

Claims priority, application France, Aug. 14, 1981, 81 15745

Int. Cl.³ G05G *9/18*

U.S. Cl. 74—473 R **6 Claims**



1. A manual device for controlling the gear ratio changes of an automotive vehicle gearbox, comprising a manually operated control lever provided with a fixed swivel point, a gear change peg installed inside the gearbox and capable of undergoing a rotary movement round a control shaft axis and the translational movement along the said shaft axis, and a change rod connected by one of its ends to the control lever in order to transmit the movements of the control lever to the change peg, the change rod being connected at one of its ends to the manual control lever by a joint with one degree of freedom in rotation and at its other end, by a joint with one degree of freedom in rotation, to a demultiplication device installed at least partially inside the gearbox, the fixed joint point of the control lever being so placed on said control lever that the demultiplication due to the control lever is about 1.5, with the whole device producing a total demultiplication in the order of 6 to 7.

4,509,385

CONSTRUCTION FOR PREVENTING WEAR OF SHIFT FORK IN TRANSMISSION MANIPULATION DEVICE FOR MANUAL TRANSMISSION

Masaki Inui, and Yasuyoshi Yasui, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

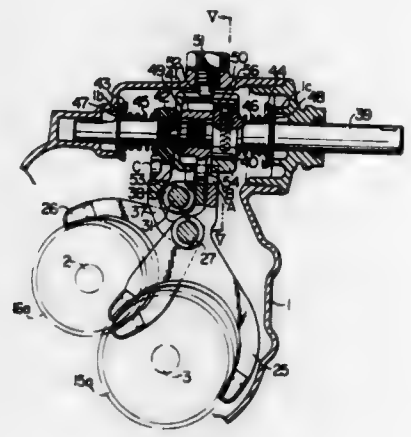
Filed Dec. 27, 1982, Ser. No. 452,968

Int. Cl.³ G05G *5/10, 9/18*

U.S. Cl. 74—477 **1 Claim**

1. A transmission comprising a transmission case, a first fork shaft and a second fork shaft, said second fork shaft being axially movably and nonrotatably mounted within said transmission case, a plurality of shift forks axially movably and rotatably provided on said first fork shaft, each said shift fork having engaging portions aligned in a direction perpendicular to a longitudinal axis defined by said fork shafts, a shift and select lever shaft axially movably and rotatably carried by said transmission case and extending in a direction perpendicular to

said longitudinal axis of said fork shafts, a resilient member through which said lever shaft is held in a neutral position, a first retaining portion provided on said lever shaft and selectively engageable with the engaging portion of one of said shift forks, a first shift head fixed to said first fork shaft having an engaging portion arranged in a side-by-side relation to said engaging portions of said shift forks, a second retaining portion provided on said lever shaft being engageable with the engaging portion of said first shift head only when said first retaining portion is in engagement with the engaging portion of any one of said shift forks on said first fork shaft, a single shift fork fixed to said second fork shaft, and a second shift head fixed to said



second fork shaft having an engaging portion arranged in a side-by-side relation to said engaging portions of said shift forks, said first engaging portion on said lever shaft being selectively engageable with the engaging portion of said second shift head,

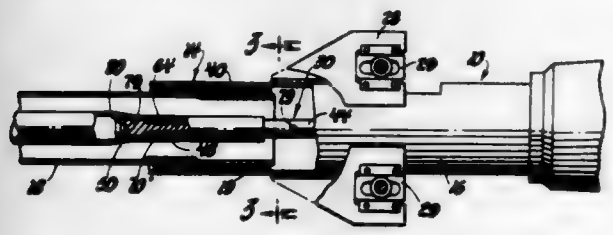
whereby as said lever shaft is rotated while said lever shaft has been moved axially against the force of said resilient member to hold said first retaining portion in engagement with the engaging portion of said second shift head, said second retaining portion is retained by said first shift head to prevent the axial movement of said lever shaft due to repulsive forces of said resilient member and thereby prevent wear of said shift forks.

4,509,386

LASH-FREE TELESCOPIC STEERING SHAFT ASSEMBLY AND METHOD OF MAKING THE ASSEMBLY

Dan R. Kimberlin, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1982, Ser. No. 441,498
Int. Cl.[3] B62D *1/18*; F16D *3/06*; B21D *53/10*
U.S. Cl. 74—492 **5 Claims**



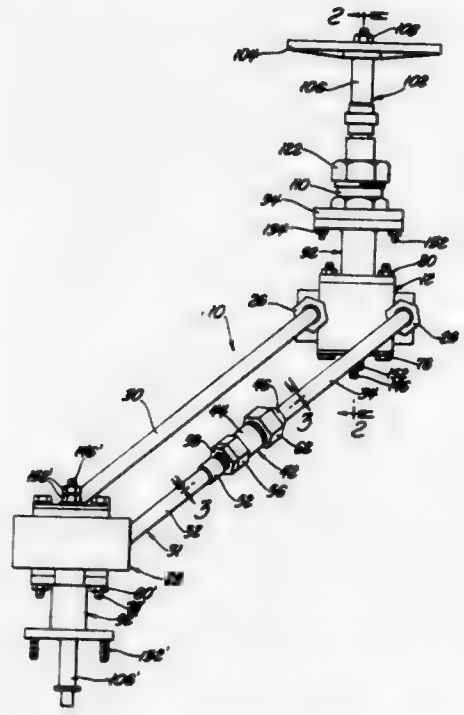
1. An energy absorbing steering column collapsible in an energy absorbing mode of operation from an extended length to a collapsed length comprising a mast jacket assembly incorporating energy absorbing means therein, a steering shaft assembly operatively mounted within said mast jacket assembly, said steering shaft assembly having first and second shaft members mounted for relative telescopic sliding movement with respect to one another from an initial position to a shortened position when said column collapses in an energy absorbing mode of operation and rotatable as an assembly in a steering mode of operation said steering shaft assembly having ball means operatively interposed therein and operative in said energy absorbing mode of operation to move in linear track means in said first and second shaft members, said track means being directly formed in said first and second shaft members by said ball means when said steering shaft assembly is initially telescoped to said shortened position and returned to said initial position, said ball means being normally operative to drivingly interconnect said members for the transmission of steering torque with minimized lash in response to turning input to one of said steering shaft members.

4,509,387

ACTUATOR ASSEMBLY FOR REMOTELY CONTROLLING A VALVE

August E. Tschanz, Lansdale, and Robert W. Geiger, Geigertown, both of Pa., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Aug. 2, 1982, Ser. No. 404,464
Int. Cl.[3] G05G *1/08*
U.S. Cl. 74—505 **16 Claims**



1. An actuator assembly **(10)** comprising; an input housing **(12)**, a circular drive wheel **(14)** rotatably supported by said input housing **(12)** and having a cylindrical outer periphery with a plurality of parallel teeth **(16)** disposed about said outer periphery thereof and a drive cable groove **(18)** extending radially into said outer periphery and circularly about said outer periphery of said drive wheel **(14)**, said drive cable groove **(18)** being semi-circular and having a plurality of equally spaced notches **(20)** therein, a drive gear **(22)** rotatably supported by said input housing **(12)** and in meshing engagement with said teeth **(16)** of said drive wheel **(14)**, said input housing **(12)** having a first pair of cable guide tubes **(24)** disposed opposite to one another on opposite sides of said drive gear **(22)**; an output housing **(28)**, a circular driven wheel rotatably supported by said output housing and having a cylindrical outer periphery with a plurality of parallel teeth disposed about said outer periphery thereof and a driven cable groove extending radially into said outer periphery and circularly about said periphery of said driven wheel, said driven groove being semi-circular and having a plurality of equally spaced notches therein; a driven gear rotatably supported by said output housing **(28)** and in meshing engagement with said teeth of said driven wheel, said output housing **(28)** having a second pair of cable guide tubes disposed opposite to one another on opposite sides of said driven gear; a first conduit **(30)** connected to and extending between one of said guide tubes **(24)** of said input housing **(12)** and one of said guide tubes of said output housing **(28)**; a second conduit **(31)** connected to and extending between the other guide tube **(24)** of said input housing **(12)** and the other guide tube of said output housing

(28); and endless flexible motion transmitting core element (38) slidably disposed in said first and second conduits (30,31) and said guide tubes (24) and entrained about said drive (14) and driven wheels, said core element (38) being circular and disposed in said grooves (18) in said drive (14) and driven wheels, said core element (38) having spaced radial protrusions therealong for engaging said notches (30) in said grooves (18) of said drive (14) and driven wheels so that said core element (38) moves longitudinally to rotate said drive (14) and driven wheels in a closed all-tension system, at least one of said conduits (31) including first and second parts (32,34); and adjustment means (42) including a slider sleeve member (44) for sliding over said second part (34) of said conduit (31) when not secured thereto and spacer means (60) disposed within said slider sleeve member (44) for spacing apart said first and second parts (32,34) of said conduit (31) and adjustable connecting means for fixedly connecting said slider sleeve member (44) to said first and second parts (32,34) whereby said adjustable connecting means can be released to allow said slider sleeve member (44) to slide over said second part (34) and said spacer means (60) can be removed to allow access to said core element (38).

4,509,388

DIFFERENTIAL GEAR

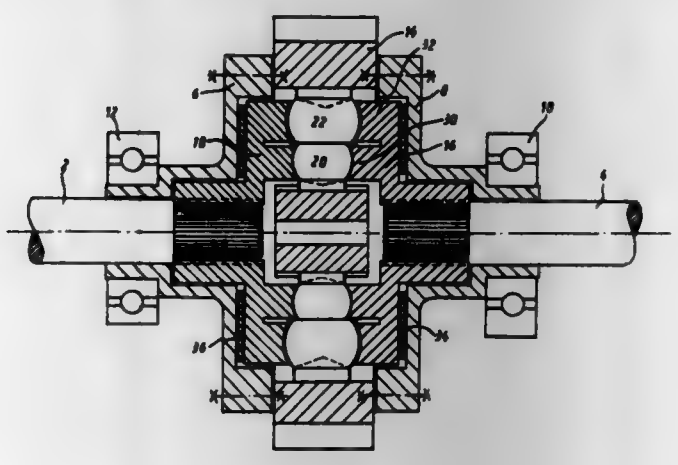
Theodoros Tsiriggakis, Athens, Greece, assignor to Greek Powder and Cartridge Co., S.A., Hymettus, Greece

Filed May 12, 1982, Ser. No. 377,591

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 8115191[U]

Int. Cl.³ F16H *35/04*

U.S. Cl. 74—650 **19 Claims**



1. In a differential gear assembly of the type including two axially aligned shafts and a power transmission element for transmitting rotary motion of a drive motor to said two shafts via gear connections, the improvement comprising:

two cam track disks mounted to rotate with respective said shafts and to rotate coaxially of said power transmission element and relative thereto, said cam track disks having respective axially facing surfaces;

each said cam track disk having on said respective surface thereof at least one circumferentially extending cam track having a contour of axial height varying circumferentially;

at least two circumferentially spaced rolling elements bearing on facing said cam tracks of respective said cam track disks;

each said rolling element being positioned within a recess formed in said power transmission element and having an axis of rotation extending radially with respect thereto;

means for mounting each said rolling element on said power transmission element to enable rotation of said rolling element about said axis thereof; and

means for guiding said mounting means for movement axially relative to said power transmission element, thereby enabling movement of said rolling element axially of said power transmission element upon relative rotation of said power transmission element with respect to said cam track disk.

4,509,389

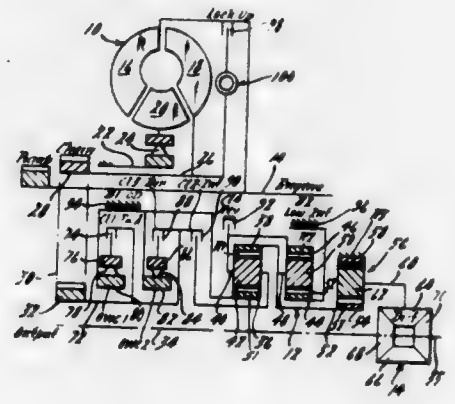
FOUR SPEED RATIO TRANSAXLE WITH OVERDRIVE

Adam Vahratian, Livonia; Roosevelt Maynard, Jr., Birmingham, both of Mich.; Howard L. Croswhite, Thousand Oaks, Calif., and Po-Lung Liang, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 164,869, Jul. 1, 1980, Pat. No. 4,368,649. This application Dec. 6, 1982, Ser. No. 447,065

Int. Cl.³ F16H *37/08, 47/08, 37/06, 57/10*

U.S. Cl. 74—695 **4 Claims**



1. In an automatic transaxle for an automotive vehicle having an engine driven torque input shaft and a driven shaft arranged in offset, parallel relationship;

a hydrokinetic torque converter having a turbine and an impeller mounted for rotation about the axis of said torque input shaft, a turbine driven shaft driven by said turbine;

a planetary gear system comprising two simple planetary gear units mounted for rotation about the axis of said driven shaft, each gear unit having a sun gear, a ring gear and a planet pinion carrier, a torque output element of said gear system being connected to the ring gear of the first of said gear units and the carrier of the second of said gear units, the carrier of the first of said gear units being connected to the ring gear of the second of said gear units;

final drive gearing connecting drivably said torque output element with said driven shaft;

first, second and third clutch means for delivering torque through said gear system comprising a clutch sleeve shaft driven by said turbine driven shaft, said first clutch means comprising a first overrunning coupling and a first friction clutch in series, said first friction clutch being located between said clutch sleeve shaft and said first overrunning coupling in the torque flow path between said clutch sleeve shaft and the sun gear of said first gear unit, said second clutch means comprising a second friction clutch adapted to connect said sleeve shaft to the carrier of said first gear unit, said third clutch means comprising a second overrunning coupling and a third friction clutch in series, said third friction clutch being located between said clutch sleeve shaft and said second overrunning coupling in the torque flow path between said clutch sleeve shaft and the sun gear of said first gear unit;

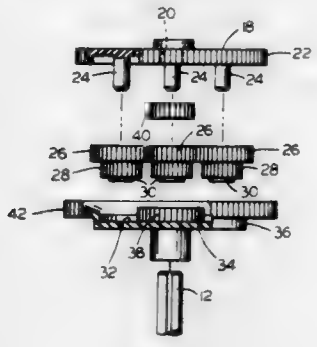
first brake means for braking the sun gear of the first of said gear units, second brake means for braking the sun gear of the second of said gear units and third brake means for braking the carrier of the first of said gear units.

4,509,390

DIFFERENTIAL SUMMING MECHANISM

Richard L. Hockmuth, Avon, Conn., assignor to Petroleum Meter & Pump Co., Inc., Avon, Conn.

Filed Dec. 30, 1982, Ser. No. 453,331
Int. Cl.[3] F16H *37/06*; B67D *5/22*
U.S. Cl. 74—705 7 Claims



1. A compact rotary summing mechanism comprising: a generally planar input gear member, a drive gear, and a generally planar output gear member disposed for coaxial mounting on a shaft; and three identical compound planetary gears disposed between said input and output gear members, at least one of said input and output gear members having a recessed portion to provide a space therebetween within which said drive gear and said planetary gears are contained, said planetary gears being carried by said input gear member in a relationship to one another of isosceles triangularity and in circumferential meshing engagement with said drive gear, and each of said planetary gears having two gear elements thereon, said drive gear being affixable to the shaft for rotation therewith and being meshed with one of said gear elements of each of said planetary gears, said input and output gear members being rotatable on the shaft, and having tooth formations extending about the entire outside circumference thereof and lying in close axial proximity to one another, said output gear member also having an internal tooth formation extending entirely about an inside circumferential portion thereof and meshed with the other gear elements of said planetary gears, whereby said summing mechanism will combine rotary inputs from the shaft and said input gear member to generate a cumulative rotary output from said output gear member.

4,509,391

HYDRAULIC PRESSURE REGULATING SYSTEM FOR A VEHICLE AUTOMATIC TRANSMISSION

Koji Sumiya, and Kojiro Kuramochi, both of Aichi, Japan, assignors to Aisin Warner Kabushiki Kaisha, Anjo and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 18, 1981, Ser. No. 322,611
Claims priority, application Japan, Nov. 23, 1980, 55-167991
Int. Cl.[3] B60K *41/10*
U.S. Cl. 74—869 4 Claims

1. A hydraulic pressure regulating system for use in a automatic transmission associated with an engine having an intake throttle opening, said automatic transmission having a fluid coupling type torque converter, a gear system with a number of friction elements to establish two or more speed ratios, and a hydraulic control system comprising:

a fluid reservoir;

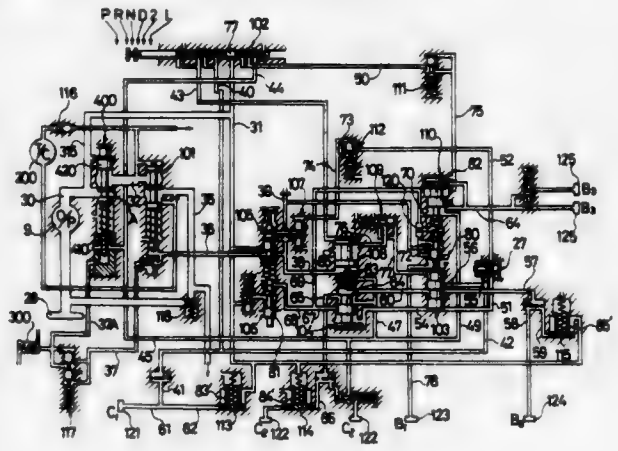
a pump for pumping fluid from said reservoir and for supplying pressurized fluid to said hydraulic control system;

a first pressure regulator valve for regulating the discharge pressure of said pressurized fluid from said pump and supplying said pressure regulated fluid as a controlled line pressure to said hydraulic control system;

a throttle valve for generating a throttle pressure, said throttle pressure varying in accordance with the intake throttle opening of said engine;

a second pressure regulator valve for regulating the fluid pressure of a portion of said fluid supplied to said hydraulic control system, said second pressure regulator valve being adapted to supply said portion of fluid to said torque converter at a regulated pressure commensurate with both the throttle pressure and the line pressure;

passage means for supplying said throttle pressure to the second pressure regulator valve and an inlet of said first pressure regulator valve, said first pressure regulator valve being adapted to vary said line pressure commensurately with said throttle pressure;



a pressure relief valve provided in said passage means for relieving the fluid pressure in said passage means when the fluid pressure in said passage means is in excess of a preselected level; and

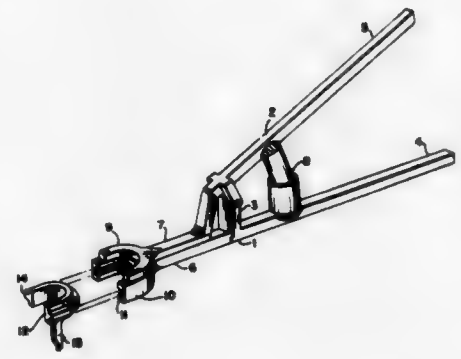
a throttle modulator valve provided in said passage means, said throttle modulator valve being upstream of said pressure relief valve and downstream from said second pressure regulator valve.

4,509,392

DEVICE FOR EXTRACTING VALVE PACKING

Edgar L. Smith, 102 East Liberty, Savannah, Ga. 31401

Filed Sep. 19, 1983, Ser. No. 533,800
Int. Cl.[3] B25B *27/00*
U.S. Cl. 81—8.1 4 Claims



1. A device for cutting and extracting packing from around a shaft comprising a pair of elongated levers disposed in opposed, spaced relationship to one another and connected by fulcrum means disposed between the levers at respective points intermediate the ends thereof, one pair of the respective opposing portions of the levers on one side of said fulcrum means forming handles such that compression thereof causes the other opposing portions of the levers on the other side of the fulcrum to separate, one of the ends of said other opposing portions being provided with a semicircular collar means for partially, slidably encircling the shaft from which packing is to be removed, said collar having a plane perpendicular to the plane of movement of said levers, second semicircular collar means being disposed on the opposing end of said other lever and adapted to also slidably encircle a portion of said shaft and to hold elongated means for cutting and removing packing

from around said shaft, said cutting means being adapted to fit in said second collar and project downward therefrom parallel to said shaft such that compression of the handle portion of said levers causes said elongated cutting means to be displaced downward along side shaft and to penetrate padding disposed around said shaft and below the collar.

4,509,393

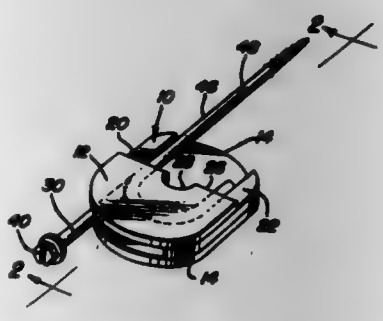
DRIVE ATTACHMENT FOR J-HOOK

Frank J. Castiglione, P.O. Box 651, Cape Coral, Fla. 33910

Filed Mar. 4, 1983, Ser. No. 472,115

Int. Cl.³ B25B *13/48*

U.S. Cl. 81—121 A **4 Claims**



1. A one-piece drive attachment for a J-hook, said attachment including an open-ended sleeve of rectangular inside transverse cross-sectional shape, said sleeve being defined by a pair of laterally spaced apart, registered and parallel opposite side plate portions including two pairs of corresponding opposite side marginal edges and a pair of elongated, parallel spacer portions each disposed between, extending along and rigidly interconnecting a corresponding pair of said side marginal edges, said sleeve defining a major inside transverse dimension between said spacer portions and a minor transverse dimension between said plate portions, an elongated drive shank of a diameter substantially equal to said minor transverse inside dimension, one end of said drive shank being telescoped within one end of said sleeve between said plate portions and positioned against and paralleling the inner surface of one of said spacer portions, said drive shank being rigidly secured to said sleeve, the other end of said drive shank projecting endwise outwardly from said one end of said sleeve, said one end of said drive shank terminating inwardly of said one end of said sleeve a spaced distance outwardly of the longitudinal mid-point of said sleeve, the free end of said other end of said shank including means adapted to have a rotary torque input tool removably coupled thereto, the other end of said sleeve being adapted to have the hooked end of a threaded shank-equipped J-hook slidingly telescoped therein, the end of one of said plate portions remote from said one end of said sleeve terminating appreciably inwardly of the corresponding end of the other plate portion, whereby an appreciable end portion of the inner surface of said other plate portion is exposed from the side of said sleeve partially closed by said one plate portion and may be used as a guide surface for assisting the manual insertion of the hooked end of a J-hook into said other end of said sleeve, said other plate portion having a central opening formed therethrough registered with a central portion of said end of said one plate portion remote from said one end of said sleeve, said opening and central portion being engageable between the thumb and forefinger of the user's hand to withdraw said sleeve from the hooked end of an installed J-hook, said one end of said drive shank comprising an abutment limiting telescoped engagement of the hooked end of a J-hook into said sleeve from said other end thereof, said one end of said drive shank terminating inwardly a spaced distance outward of said opening toward said one end of said sleeve.

4,509,394

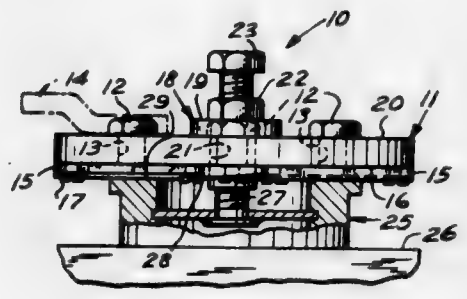
RADIATOR FILLER NECK REFACING TOOL

Dan Medlock, 1209 E. Main St., Richmond, Ky. 40475

Filed Apr. 20, 1983, Ser. No. 486,734

Int. Cl.³ B23B *5/00*

U.S. Cl. 82—4 R **1 Claim**



1. A radiator filler neck refacing tool, comprising, in combination, a flat, circular main body, a guide sleeve fitted through a central opening in said main body, a flange around an intermediate portion of said sleeve being shouldered against an upper side of said main body, a hexagonal head formed around an upper end of said sleeve, a threaded central opening extending axially through said sleeve, a cutting depth control bolt engaged in an upper portion of said threaded opening for elevating or lowering said tool on said neck, a lower portion of said threaded opening being engagable by a stud mounted on a radiator filler neck for securing said tool upon said neck, a plurality of radially extending cutting members mounted on an underside of said main body for placement upon the face of a top end of said radiator filler neck, and wrench-engaging means upon an upper side of said main body for turning said tool, and causing cutting edges of said cutting members to reface said top end face.

4,509,395

PROCESS FOR PRECISION CUTTING

Johannes Haack, Lyss, Switzerland, assignor to Feintool AG Lyss, Lyss, Switzerland

Filed Jul. 1, 1981, Ser. No. 279,560

Claims priority, application European Pat. Off., Jul. 8, 1980, 80200663.5

Int. Cl.³ B26D *3/00*

U.S. Cl. 83—55 **23 Claims**

1. A process for precision cutting a hole in a workpiece which is less than 30 mm thick in the direction of the cut where the hole comes within 30 mm of an edge of the workpiece, said process comprising the steps of:

(a) clamping a workpiece (**6**) the thickness S of which is less than 30 mm and which is unheated between a smooth surfaced cutting plate (**2**) having a bore therein for the receipt of a waste slug (**7**) located underneath the hole to be cut and a smooth surfaced retaining member (**4**), both said cutting plate (**2**) and said retaining member (**4**) lacking a knife edge ring surrounding the hole to be cut;

(b) prior to undertaking a cutting operation, supporting the workpiece (6) laterally adjacent the hole to be cut therein at a point where the distance A between the nearest edge of the hole to be cut and an edge of the workpiece is both less than 30 mm and less than the thickness S of the workpiece (6) with at least one supporting member (3);
(c) prior to undertaking a cutting operation, supporting the workpiece (6) beneath the hole to be cut with pressure pad (8) movably mounted in said bore; and
(d) cutting a hole in the workpiece (6) with a cutting punch (1) which is movable independently of said at least one supporting member (3), said cutting punch (1) cutting out a waste slug (7) which it ejects into said bore against a counterforce supplied by said pressure pad (8), said pressure pad (8) yielding before forward movement of said cutting punch (1), thereby leaving a precision-cut hole in the workpiece (6) which is spaced laterally from said at least one supporting member (3) by a distance A which is both less than 30 mm and less than the thickness S of the workpiece (6).

4,509,396

APPARATUS FOR MAKING HOLES IN THICK STACKS OF PAPER

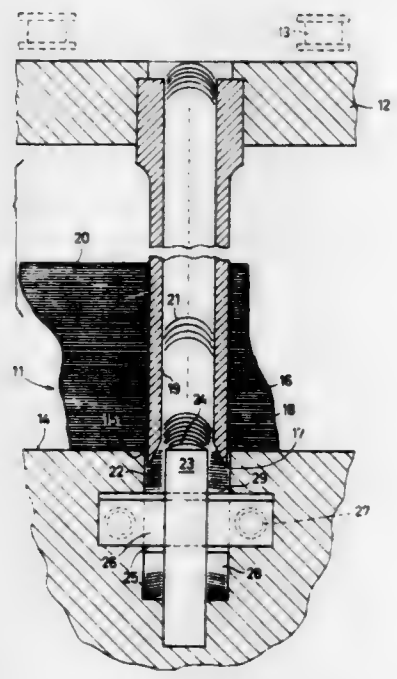
Walter Schall; Guido Negro, both of Neuffen; Martin Hipp, Grossengstingen, and Hans Albrecht, Neuffen, all of Fed. Rep. of Germany, assignors to Bielomatik Leuze GmbH & Co., Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 490,194

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220461

Int. Cl.³ B26F *1/14*

U.S. Cl. 83—126 **7 Claims**



1. An appratus for making holes in thick stacks of paper, comprising:
first and second member mounted for relative movement toward and away from one another, the first member having a die surface for bearing the stack of paper and the second member having a punching tool non-rotatably fixed thereto, the punching tool having an inner bore and a sharp axially pointing cutting edge at its end, the bore communicating with a first discharge opening for cut-out cup-shaped waste parts which collect in the bore;
the die surface having an opening forming a cutting rim at the die surface;
a counterpunch having a diameter corresponding to the bore in the punching tool and disposed in the opening to form an annular gap between the cutting rim and the counterpunch; and,
an annular removal path for cut-out annular waste parts which collect in the gap, the removal path communicating between the gap and a second discharge opening remote from the die surface, the removal path including means for retarding movement of the annular waste parts along the removal path, so as to form a self-renewing countercutting plug cooperating with the cutting edge of the tool, whereby, when said members undergo movement toward one another, the stack is first cut by the cutting edge of the punching tool alone, the cup-shaped waste parts being transported through the bore in the punching tool to the first discharge opening, and when cutting has progressed through the stack, the paper is punched out between the rim of the die opening and the counterpunch to form both waste parts, the cup-shaped waste parts being transported through the bore, and the annular waste parts being retardedly transported through the removal path.

4,509,397

PUNCH AND PERFORATION JIG ASSEMBLY HAVING POSITION MAINTAINING FEATURE

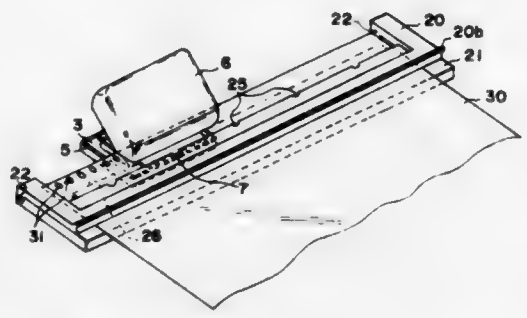
Chuzo Mori, Funabashi; Jun Watanabe, Matsudo, and Katsutaka Kudo, Tsuchiura, all of Japan, assignors to Carl Manufacturing Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,488

Claims priority, application Japan, Sep. 27, 1982, 57-145873[U]; May 30, 1983, 58-81502[U]; May 30, 1983, 58-81500[U]

Int. Cl.³ B26D *1/14*

U.S. Cl. 83—453 **22 Claims**



1. A perforator which comprises:
a punch provided in a front portion thereof with at least one projection and possessing a recess extended under said projections from the front side toward the rear side thereof and adapted to receive insertion of paper sheets, and
a separate perforation jig comprising upper and lower sheet retainer members, a front longitudinal edge of said upper sheet retainer member being pivotally attached to a front longitudinal edge of said lower sheet retainer member, said upper sheet retainer member being provided along the pivotally attached edge thereof with at least one punch-positioning depression adapted to engage with the projections of said punch, said perforating jig being provided with a protruding punch-supporting member on the side containing said punch-positioning depressions and adapted to enter said recess of said punch when the front portion of said punch is abutted against said upper sheet retainer member.

4,509,398

BLOCK GUIDE CUTTER

Preston A. Mason, 903 44th St., Oakland, Calif. 94608

Filed Feb. 21, 1984, Ser. No. 581,995

Int. Cl.³ B27B *9/04*

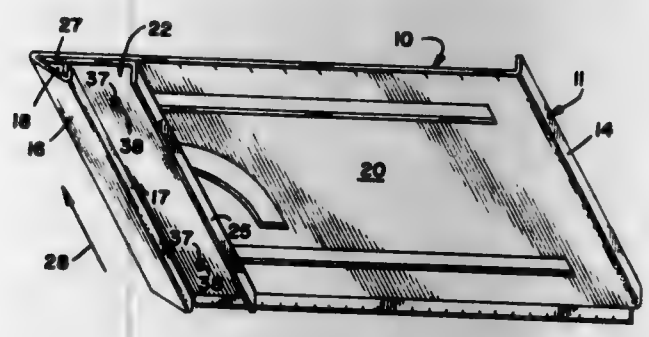
U.S. Cl. 83—745 **3 Claims**

1. A block cutting tool comprising a flat, rectangular plate having an upper face and a lower face;
a saw guide extending from an edge of said plate above and in a plane perpendicular to said upper face,
a work-engaging means extending from the lower face of

said plate parallel to and at a fixed distance from said saw guide;

a second engaging means extending from the lower face of said plate, said second work-extending means lying in a plane perpendicular to the plane of said saw guide;

an adapter including third work-engaging means; and



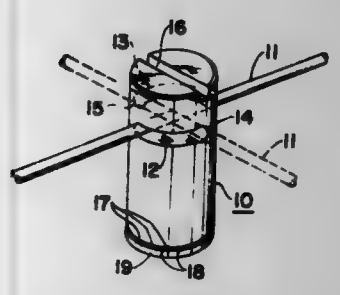
releasable means to hold said adapter with said third work-engaging means parallel to said saw guide, at a fixed predetermined distance from said saw guide, and with said third work-engaging means positioned between said saw guide and said work-engaging means.

4,509,399

VIBRATION DAMPER FOR STRING MUSICAL INSTRUMENT

Jerry McKibben, Seneca, S.C., assignor to Coats & Clark, Inc., Seneca, S.C.

Filed Mar. 1, 1983, Ser. No. 470,998
Int. Cl.³ G10C *3/00*
U.S. Cl. 84—216 **6 Claims**



1. A vibration damper for a musical instrument having a vibratory string with a given diameter, comprising:

a cylindrical body comprising a yieldable material,

one end of said body having means for receiving a tool to rotate said body about the longitudinal axis thereof,

said body having a pair of substantially coplanar oppositely disposed slits in the surface thereof, each slit having a width less than the diameter of a string to be secured therein, each slit subtending a radial angle greater than 90 degrees, said slits communicating with each other through a cavity in said body capable of receiving said string,

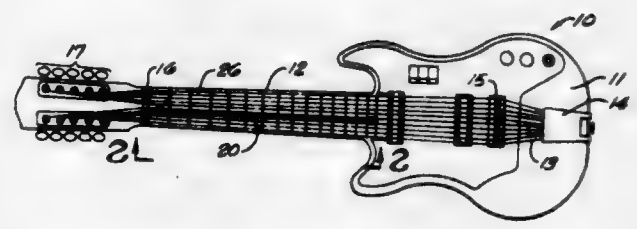
one end of each slit being enlarged to a diameter greater than the diameter of said string to be secured, the enlarged ends of said slits being disposed 180 degrees apart, whereby said string may be inserted through said enlarged ends of said slits and said cavity, and thereafter said body may be rotated by engagement of a tool with said one end thereof, to cause said string to yieldably deform said body adjacent the edges of said slits, so that said string is secured to said body

4,509,400

SLIDE BAR GUITAR

Walter E. Smith, Box 707, Weiser, Id. 83672

Filed Jun. 10, 1983, Ser. No. 503,260
Int. Cl.³ G10D *3/06*
U.S. Cl. 84—293 **1 Claim**



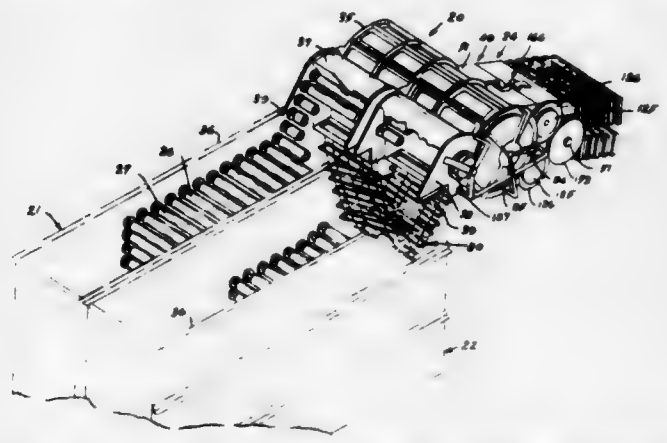
1. In a stringed musical instrument having a set of tensioned strings occupying a common plane overlying the instrument and adapted to be played in conjunction with a manually-held slide bar, a position indicator comprising: a carrier extending longitudinally of the tensioned strings and having a series of longitudinally spaced projections extending above said common plane and between the same two strings, each projection forming a pair of opposed longitudinally spaced abutments engageable by said slide bar during longitudinal movement thereof, such movement serving to place the slide bar in preselected locations with respect to said strings, certain of the strings on one side of the position indicator being tuned to produce a first major chord when sounded together, and certain of the strings on the other side of the position indicator being tuned to produce a second major chord when sounded together, resilient means yieldably supporting the carrier and projections to enable the slide bar to depress the projections in sequence to an inoperative position against the action of said resilient means.

4,509,401

PORTABLE AMMUNITION HANDLING AND LOADING SYSTEM

Stephen F. Pollock, Tallahassee, Fla., assignor to Wayne H. Coloney Company, Inc., Tallahassee, Fla.

Continuation of Ser. No. 563,885, Dec. 28, 1983, abandoned, which is a continuation of Ser. No. 376,044, May 7, 1982, abandoned. This application Jun. 27, 1984, Ser. No. 624,807
Int. Cl.³ F42B *39/12*
U.S. Cl. 86—48 **12 Claims**



1. An apparatus for transferring large caliber ammunition stored in tubular members of an ammunition belt from a supply container to an armament system and simultaneously delivering shells and unfired rounds of ammunition from the armament system to a collection container comprising a housing, means for mounting said housing on the supply and collection containers, a drum means rotatably mounted within said housing, a plurality of fixed and radially spaced cradle members carried by said drum means adjacent one end thereof, a supply interface having conveying means to draw the ammunition belt from the supply container and guide the tubular members of the ammunition belt toward said fixed cradle members of said

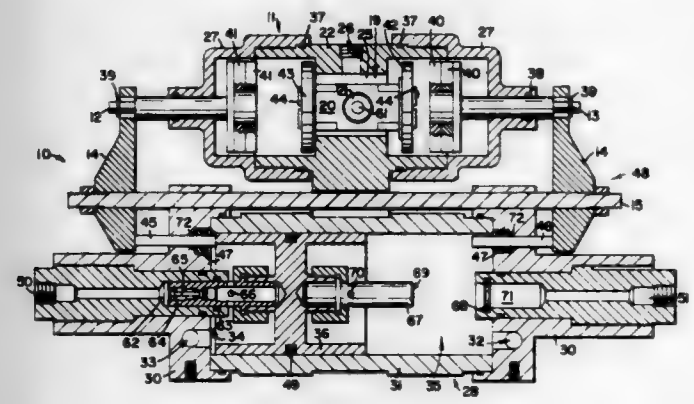
drum, a plurality of shuttle means carried by said drum means and being longitudinally movable relative thereto between said fixed cradle members and the opposite end of said drum means, each of said shuttle means having ammunition engaging and support means so that said shuttle means can engage a round of ammunition carried within the tubular members of the ammunition belt and transfer the same therefrom towards said opposite end of said drum means remote from the ammunition belt as said drum means is rotated, a gun interface adjacent said opposite end of said transfer drum, said gun interface having first and second transfer means, said first transfer means having means for engaging rounds of ammunition carried by said shuttles and for transferring said rounds to a conveyor means extending from adjacent said gun interface to the armament system, said second transfer means being vertically spaced from said first transfer means and having means for receiving shells and unfired rounds of ammunition passing from the armament system through the conveyor means and transferring such shells and unfired rounds to said shuttle means, a discharge interface remote from said gun interface and in vertically spaced relationship to said supply interface, a reorientation chute means extending from adjacent said discharge interface outwardly of said housing and longitudinally of said drum means, said discharge interface having means to guide the ammunition belt from said drum means into said reorientation chute means so that the ammunition belt is shifted longitudinally with respect to said drum means outwardly of said housing and guide means for guiding said ammunition belt from said reorientation chute means into the collection container.

4,509,402

MAGNETIC REVERSING MECHANISM

Duane L. Salmonson, Cottage Grove, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Jun. 8, 1983, Ser. No. 502,251
Int. Cl.³ F01L *25/08, 23/00*
U.S. Cl. 91—275 **19 Claims**



1. A reversing mechanism for use with a fluid pressure actuated motor of the type having a piston reciprocally movable in a piston chamber at a piston frequency, said piston dividing said piston chamber into first and second subchambers, said reversing mechanism comprising:

(a) a valve body defining therewith an interior chamber having an inlet port, outlet port, and first and second transfer ports, said inlet port adapted to receive a flow of pressurized fluid, said interior chamber having a first opening at a first end and a second opening at a second end;

(b) means for switching the flow of pressurized fluid from said inlet port between said first and second transfer ports, said switching means having a first magnetic area and a second magnetic area wherein when said switching means is in a first position the pressurized fluid flows to said first transfer port and when said switching means is in a second position the pressurized fluid flows to said second transfer port, said switching means positioned within said interior chamber between said first and second ends of said interior chamber;

(c) a tie rod assembly having first and second magnetic holders, said first holder positioned in said first opening of said interior chamber and said second holder positioned in said second opening of said interior chamber, said holders slidable in said interior chamber, and a tie rod cooperatively connecting said first and second holders;

(d) means for reciprocally driving said tie rod in a lateral direction, movement of said piston activating said driving means; and

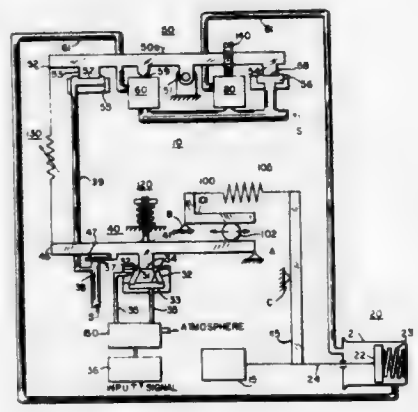
(e) means for magnetically moving said switching means between said first position and said second position at said piston frequency, said first position of said switching means being effected by an increased magnetic coupling between said first magnetic areas and a decreased magnetic coupling between said second magnetic areas, and said second position of said switching means being effected by an increased magnetic coupling between said second magnetic areas and a decreased magnetic coupling between said first magnetic areas.

4,509,403

POSITIONER HAVING USER-ADJUSTABLE DYNAMIC RESPONSE

George W. Gassman, and Gerald F. Varnum, both of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Marshalltown, Iowa

Filed Apr. 23, 1982, Ser. No. 371,331
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—365 **12 Claims**



1. A positioner system for controlling the position of a controlled device in accordance with an input signal comprising:

output means for controlling the position of said controlled device;

summing means for integrating said input signal with a signal representative of the position of said controlled device and for producing a command signal for said output means;

adjustable damping means including user-adjustable variable rate spring means for tailoring the dynamic overshoot characteristic of said system to accommodate a wide range of controlled devices;

said variable rate spring means affecting said overshoot characteristic without substantially affecting static characteristics of said system;

said variable rate spring means comprising a pair of spring members, each having one end coupled to a respective one of said output means and said summing means; and

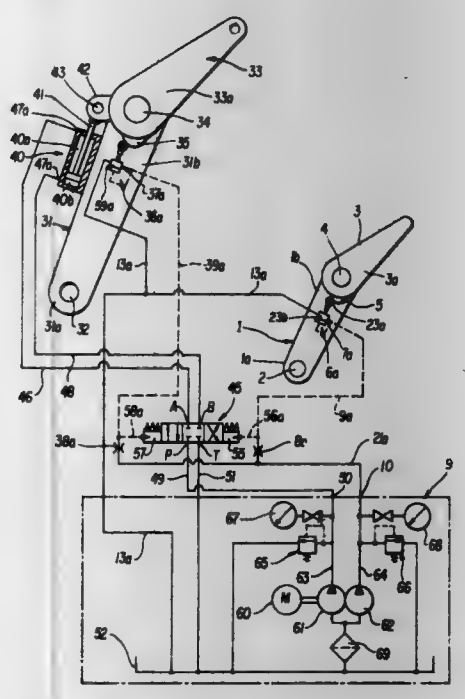
a movable clamp for simultaneously changing the effective lengths of said spring members to alter the damping effect on said summing means.

4,509,404

MASTER/SLAVE FLUID PRESSURE APPARATUS

Masakatsu Kawahara, Amagasaki, and Masaru Takeda, Kobe, both of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation of Ser. No. 214,679, Dec. 9, 1980, abandoned. This application Aug. 22, 1983, Ser. No. 525,427
Claims priority, application Japan, Dec. 14, 1979, 54-162985
Int. Cl.[3] F15B *13/16*
U.S. Cl. 91—388 1 Claim



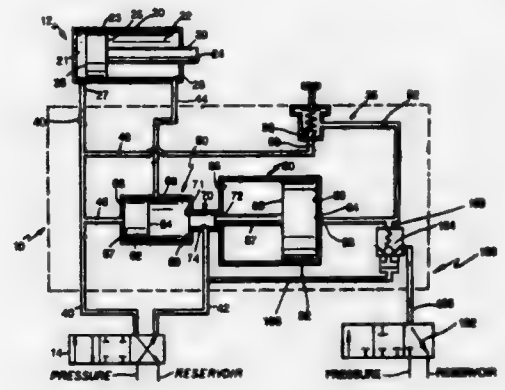
1. A master/slave fluid-pressure apparatus comprising:
a first and second shaft;
a master member pivotably mounted on said first shaft and having a first cam member extending therefrom;
a slave member pivotably mounted on said second shaft and having a second cam member and a lobe member, each extending from one end of said slave member;
a fluid-pressure actuator operatively connected to said slave member and which includes means for moving said slave member wherein said means for moving said slave member is connected to said lobe member;
a first hydraulic means for converting displacement of said master member into a fluid pressure;
second hydraulic means for converting displacement of said slave member into a fluid pressure;
a source of fluid pressure for supplying fluid pressure to said fluid-pressure actuator and to said first and second hydraulic means;
a three-position directional valve connected to said fluid-pressure actuator and said fluid pressure supply and having first and second pilot chambers connected to said first and second hydraulic means, respectively, for receiving fluid pressure therefrom, said three-position directional valve being controllable by comparison between the fluid pressure applied to said pilot chambers from said first and second hydraulic means for controlling follow-up movement of said slave member with respect to said master member wherein each said first and second hydraulic means further comprises a restrictor in communication with said fluid pressure source and a relief valve; wherein each said relief valve further comprises a poppet, a roller contacting one of said first and second cams, a roller rod connected to said roller and a coil spring disposed between said roller rod and said poppet; and each said relief valve of said first and second hydraulic means is connected via one of said restrictors to said fluid pressure source; and wherein each said first and second hydraulic means further comprises a first fluid line extending between one of said relief valves and one of said restrictors, and a second fluid line connected between said first fluid line and one of said pilot chambers, whereby said first and second fluid lines of each of said first and second hydraulic means comprise means for applying fluid pressures to said first and second pilot chambers, respectively, so that the fluid pressures in said first fluid lines can be controlled in response to the displacement of said master and slave members.

4,509,405

CONTROL VALVE SYSTEM FOR BLOWOUT PREVENTERS

H. John Bates, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 067,609, Aug. 20, 1979, Pat. No. 4,349,041. This application Jan. 11, 1982, Ser. No. 338,792
The portion of the term of this patent subsequent to Nov. 14, 1999, has been disclaimed.
Int. Cl.[3] F15B *13/04*; F16K *31/122*
U.S. Cl. 91—420 5 Claims



1. For use with a blowout preventer having an actuating cylinder and piston for actuating the closing of the blowout preventer, the actuating piston having a closing side and an opening side of smaller effective area than the closing side, a differential pressure control valve system comprising:
a directional flow control system for directing flow from the opening side of the actuating piston alternatively to the closing side of the actuating piston and to a discharge point; and
a pressure sensitive switching system in communication with the directional flow control system, said switching system being operative, upon the communication of a pressurized fluid to the closing side of said actuating piston, to cause said directional flow control system to direct flow from the opening side of the actuating piston to the closing side of the actuating piston when the pressure at the closing side of the actuating piston is below a predetermined magnitude, and to automatically vary the alternative flow paths of the directional flow control system when the pressure at the closing side of the actuating piston reaches said predetermined magnitude to cause said directional flow control system to direct flow from the opening side of the actuating piston to said discharge point;
said pressure sensitive switching system further comprising an override system for selectively causing said directional flow control system to direct flow from the opening side of the actuating piston to the discharge point independently of the pressure at the closing side of the actuating piston.

4,509,406

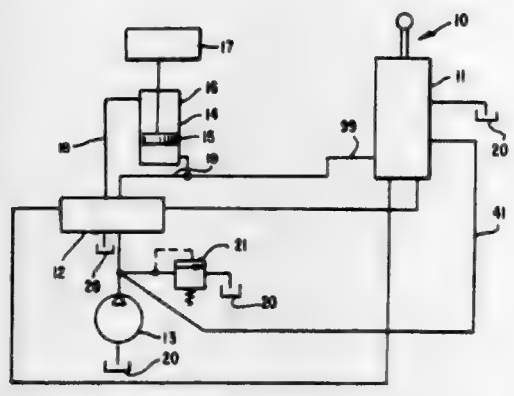
PRESSURE REDUCING VALVE FOR DEAD ENGINE LOWERING

Kurt B. Melocik, Mazon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 230,972, Jun. 16, 1980, abandoned. This application Mar. 16, 1983, Ser. No. 475,872

Int. Cl.³ F15B *11/08, 13/042*

U.S. Cl. 91—453 **10 Claims**



1. In a fluid system (**10**) having a reciprocable fluid motor (**14**), fluid supply means including a source of pressurized fluid (**13**), a pilot operated directional control valve (**12**) for controlling delivery of the pressurized fluid to said fluid motor for reciprocably operating the same, and a pilot valve (**11**) having a first inlet port (**40**) connected to said source, an outlet port (**35**) connected to said directional control valve, a spool (**31**) movable between a neutral position at which said spool blocks communication between the first inlet port and said outlet port and a first operational position at which said spool communicates the inlet port with said outlet port for conducting fluid from the source to said control valve to controllably move the fluid motor in one direction, a manually operable actuator (**22**) for selectively positioning said spool, and a spring positioned between the manually operable actuator and said spool, the improvement comprising:

fluid pressure responsive means on said spool to move said spool for providing pressure regulation of the fluid in the outlet port at the first operational position of the spool;

means in said pilot valve defining a second inlet port (**100**) connected to a load supporting end of said fluid motor; and

said manually operable actuator and said fluid pressure responsive means defining means for causing said spool to move to a second operational position at which the spool communicates the second inlet port with the outlet port for conducting fluid from the load supporting end of said fluid motor to the control valve at the regulated pressure only in the absence of pressurized fluid from said source in said first inlet port.

4,509,407

HYDRAULIC CONTROL VALVE WITH MAINTENANCE-FACILITATING FEATURE

Spyros Balaskas, Bremen, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,414

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1982, 3222435

Int. Cl. F15B *13/042 15/26*

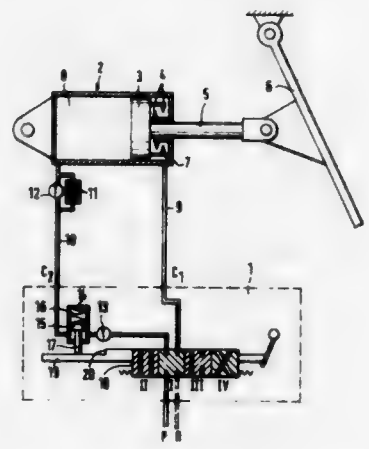
U.S. Cl. 91—466 **2 Claims**

1. A system including a valve and a hydraulic actuator, the valve including a valve slide element adjustable to assume different operating positions to thereby establish different hydraulic operating states for the actuator, the actuator having a chamber with a piston movable therein, there being a first and a second conduit for connecting the valve to the chamber, respectively, on opposite sides of the piston, the improvement comprising:

the valve slide element having in addition a venting position for the actuator for opening conduction into the first conduit, but not into the second conduit;

a slide rod connected to the valve slide and being provided with a step;

a spring-loaded second piston and a second chamber, the chamber being inserted in one of said conduits between the control valve and the actuator such that pressure in the conduit tends to urge the second piston against the spring force; and



a plunger connected to the second piston and having a disposition to stop the slide rod by abutment against said step in the venting position equivalent to and providing for a venting operation as between the control valve and the actuator if substantial air bubbles are contained in the system, so that system pressure is insufficient to retract the second piston and its plunger, full operating pressure in said one conduit being effective to retract said second piston with the plunger for unrestraint positioning of the slide element through its rod in any of the operating positions.

4,509,408

FLUID PRESSURE ACTUATOR

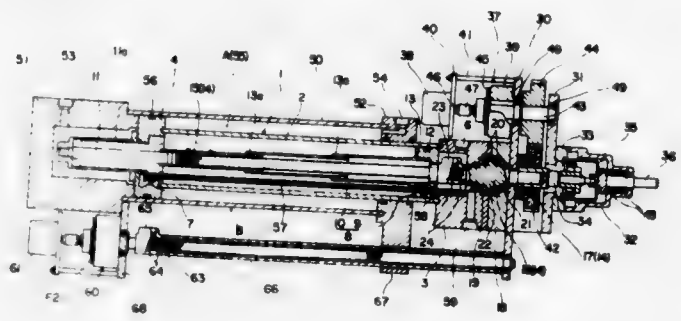
Takeshi Kuroda, Kure, Japan, assignor to Kowa Shoji, Ltd., Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,772

Claims priority, application Japan, Apr. 20, 1982, 57-66527

Int. Cl.³ F01B *21/00*

U.S. Cl. 92—2 **4 Claims**



1. A fluid pressure actuator comprising, a cylinder body (**1**) a telescopic rod (**10**) disposed in a cylinder tube (**2**) of the body (**1**).

a piston (**9**) disposed in the tube (**2**) and secured to one end of the rod (**10**),

a screw shaft (**14**) disposed in and extending through the rod (**10**) and having a helically grooved portion (**15**), a support portion (**16**) and an output portion (**17**),

a final output shaft (**36**) and rotation signal generator means (**38**) both connected to the output portion (**17**);

a ball nut (**23**) having balls (**24**), said balls engaging with a

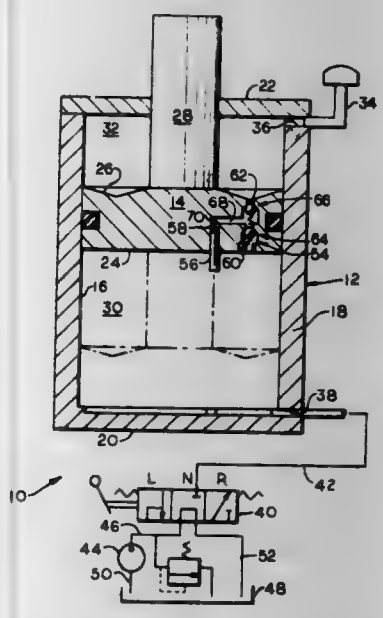
helical groove of the grooved portion (15) and said ball nut secured to the piston (9);
a rod cover (4) secured to the other end of the telescopic rod (10) and also to one end of the cylinder tube (2);
a head cover (3) secured to the other end of the tube (2) and supporting the support portion (16);
a pipe (57) extending between the head cover (3) and the rod cover (4) and passing through the piston (9);
a further cylinder tube (50) coaxial with and enclosing the tube (2), the further tube (50) having a further head cover (51) and adapted to support the rod cover (4) slidable within said further tube (50);
a still further tube (66) disposed in parallel to and outside the further tube (50), and still further tube (66) having one end secured to the head cover (3), and the other end secured to the further head cover (51);
a further screw shaft (63) rotatably disposed in the still further tube (66) and engaging with a further ball nut (65) by means of a further plurality of balls (64), the ball nut (65) secured to an end of said tube (66);
further rotation signal generator means (61) operatively connected to the further screw shaft (63);
inlet and outlet ports (6), (7), of a pressure fluid said ports allowing communication between said pressure fluid and said tube providing means for driving the piston (9) in an axial direction; and
further inlet and outlet ports (53) and (54) of the pressure fluid said further ports allowing communication between said pressure fluid and said further tube providing means for driving the rod cover (4) in an axial direction.

4,509,409

PUMP ARRANGEMENT FOR A LINEAR FLUID OPERATED DEVICE

Jerry L. Reeves, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

Filed Feb. 7, 1983, Ser. No. 464,243
Int. Cl.³ F15B *21/04*
U.S. Cl. 92—80 **2 Claims**



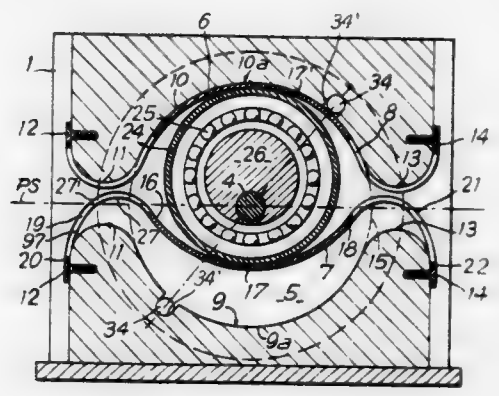
1. A linear fluid operated jack; comprising:
a housing having first and second end members and a bore extending between said end members;
a reciprocating piston having an aperture, and being slidably disposed in said bore and movable between said end members, said housing defining first and second chambers separated by said reciprocating piston, said second chamber being vented to the atmosphere;
a pumping assembly having a pump piston, a pump body having a pump chamber, and first and second fluid passages, said pumping assembly being disposed in said aperture, said first fluid passage connecting said first chamber to said pump chamber, and said second fluid passage connecting said second chamber to said pump chamber, said pump piston being slidably disposed in said pump chamber and movable in a first direction toward said pump chamber and in a second direction opposite said first direction, said pump piston being adapted to force fluid from said pump chamber in response to movement in said first direction and draw fluid into said pump chamber in response to movement in said second direction, said pump piston having a pumping end disposed in said pump chamber and a force responsive end exposed to said first chamber, said first passage having a first aperture and a first increased diameter portion and being disposed in said pump piston, said first increased diameter portion being open to said first chamber and said first aperture, and said first aperture being open to said pump chamber;
means for fastening said pump body to said reciprocating piston;
first means for passing fluid flow, in said first passage, from said pump chamber to said first chamber, and blocking fluid flow, in said first passage, from said first chamber to said pump chamber, said first means having a first seat surface disposed in the pump piston and connecting the first aperture to said first increased diameter portion, and a first check disposed in the first increased diameter portion of said first passage and engageable with the first seat surface;
second means for passing fluid flow, in said second passage, from said second chamber to said pump chamber, and blocking fluid flow, in said second passage from said pump chamber to said second chamber, said first and second means for passing being connected to said pumping assembly;
means for biasing said pump piston in said second direction; and
means for applying a force to said pump piston and moving said pump piston in said first direction against said biasing means, said pump piston being movable in said first direction in response to said force being at or greater than a preselected minimum magnitude.

4,509,410

VARIABLE VOLUME FLUID INDUCTION AND DELIVERY MACHINE

Jean H. P. Blin, 6, Square Henry PatéParis, France

Filed Feb. 10, 1983, Ser. No. 465,671
Claims priority, application France, Feb. 16, 1982, 82 02506
Int. Cl.³ F01B *17/00*
U.S. Cl. 92—89 **18 Claims**



1. A variable volume induction and delivery machine having a longitudinal direction and a transverse direction, said machine comprising:
a fixed curved wall having transverse edges and longitudinal edges,
a wall movable with respect to said fixed wall and situated in facing relation thereto and having transverse edges and longitudinal edges,
control means for moving said movable wall closer to or away from said fixed wall,

two fixed flat, parallel side walls perpendicular both to the fixed wall and to the movable wall, and tightly engaging the transverse edges of said fixed wall and said movable wall, said four walls defining a chamber of variable volume,

an induction pipe provided with a suction valve and connected to said variable volume chamber,

a delivery pipe provided with a delivery valve and connected to said variable volume chamber,

the longitudinal edges of the movable wall being secured in a tight manner to the corresponding longitudinal edges of the fixed wall, and

the movable wall comprising

a rigid middle part which extends over its length between its transverse edges, and

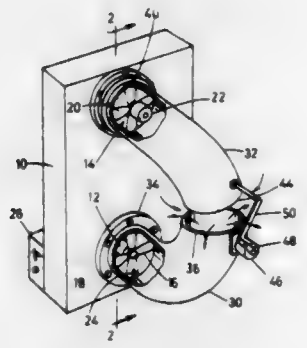
two longitudinally extending side parts disposed on either side of the rigid middle part, and said side parts being flexible in the transverse direction and rigid in the longitudinal direction.

4,509,411

FLUID HANDLING DEVICE

Edward T. Martin, Georgetown, Canada, assignor to Axis Products Limited, Georgetown, Canada

Filed Dec. 21, 1982, Ser. No. 451,852
Int. Cl.[3] F24F *7/08*
U.S. Cl. 98—34.5 **7 Claims**



1. A fluid exchanger apparatus for exchanging a first fluid with a second fluid in varying proportions comprising;

fluid exhaust means for exhausting such first fluid along a predetermined exhaust flow path;

fluid inlet means for inducting such second fluid along a predetermined inlet flow path;

transfer duct means extending around a curved flow path, said path essentially defining a path plane, from said exhaust flow path to said inlet flow path, and providing a smoothly curved fluid flow path therebetween, a movable duct portion of said transfer duct means, said duct portion being movable relative to the fluid exhaust means and to said fluid inlet means, between a transfer position in which fluid transfer takes place from said fluid exhaust means to said fluid inlet means, and a disconnect position in which fluid is exhausted by said exhaust and fluid is taken in by said inlet independently of each other, and,

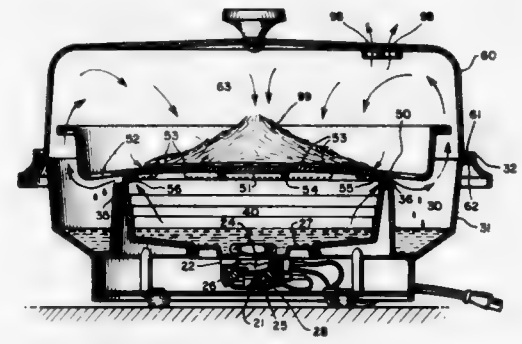
duct movement means for moving said movable portion between said positions and into a plurality of different locations intermediate said positions, whereby said first fluid may be mixed with said second fluid in varying proportions.

4,509,412

FOOD STEAMING DEVICE

Stephen L. Whittenburg, Overland Park, Kans.; David D. McCormick; William J. Tweed, both of Kansas City, Mo.; A. Aykut Ozgunay, Clinton, Mo., and James T. Williams, Sacramento, Calif., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Mar. 4, 1983, Ser. No. 472,193
Int. Cl.[3] A47J *27/04*
U.S. Cl. 99—331 **32 Claims**



1. A steam cooking utensil comprising:

a base;

a boiling water reservoir defined by the base;

a heater, mounted in the base to heat liquid in the boiling water reservoir;

thermostat means, mounted in the base and coupled to the heater, for switching off the heater when all the liquid in the boiling water reservoir has evaporated therefrom;

a condensate trough, defined by the base and thermally insulted from the heater; and

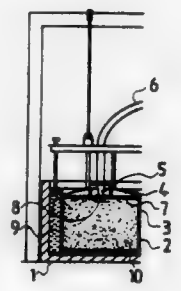
a food tray comprising an imperforate surface and a drainage surface, said food tray supported above the reservoir and trough such that said imperforate surface is aligned with the boiling water reservoir, said drainage surface is aligned with the condensate trough, and water flows from the imperforate surface to the drainage surface and into the condensate trough, said reservoir, trough and tray cooperating substantially to prevent the flow of water from the imperforate surface into the reservoir.

4,509,413

PROCEDURE FOR TREATING CURD PARTICLES AND CHEESE MOULD FOR APPLYING THE PROCEDURE

Carl-Gustav Granberg, Paippinen, and Heikki Kauppi, Helsinki, both of Finland, assignors to MKT-tehtaat Oy, Helsinki, Finland

Filed May 27, 1983, Ser. No. 497,169
Claims priority, application Finland, May 31, 1982, 821909
Int. Cl.[3] A01J *25/00*
U.S. Cl. 99—453 **4 Claims**



1. An apparatus for treating a mixture of whey and curd particles obtained from the cooking step in a cheese-making process, said apparatus comprising a vat, at least one cheese mould positioned within said vat, said at least one cheese

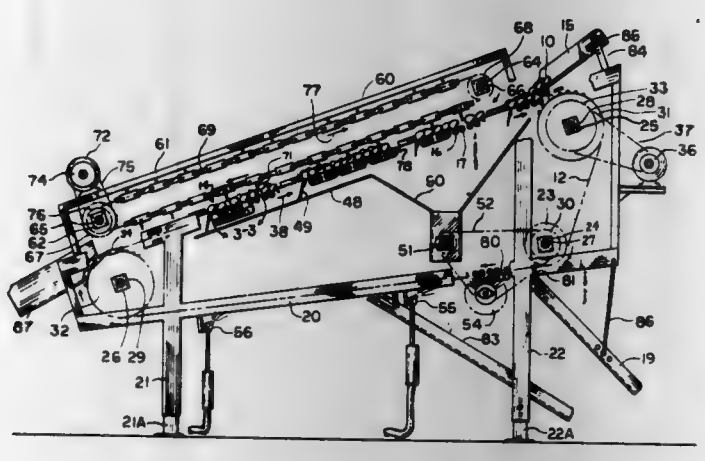
mould having a bottom part and side wall parts extending upwardly from said bottom part, said bottom part and said side wall parts are made of a strainer sheet capable of draining whey from the interior of said cheese mold, a separate strainer-like cover part positionable within said side wall parts and being vertically movable relative to said bottom part and side wall parts, said cover part having an opening for supplying whey and curd particles into said cheese mould, a supply conduit connected to said opening in said cover part for filling whey and curd particles into said cheese mould while said cheese mould is closed by said cover part.

4,509,414

STEMMING AND PEELING APPARATUS

Tony T. Chiu; Charles W. Coatney, both of Los Gatos, and Katsuji Hirahara, Santa Clara, all of Calif., assignors to Magnuson Corporation, Reno, Nev.

Filed Aug. 26, 1983, Ser. No. 526,606
Int. Cl.³ A23N *7/00, 7/02*
U.S. Cl. 99—585 **8 Claims**



1. An apparatus for stemming and peeling produce, comprising:

a first conveyor having an inclined section and carrying a plurality of parallel-positioned pinch rolls extending normal to the direction of travel of the conveyor;

means to drive said first conveyor;

first rotating means rotating adjacent pinch rolls on said first conveyor in opposite directions;

a chute for feeding the produce onto the first conveyor at one end of said inclined section to allow the produce to ride on the first conveyor throughout that section and be exposed to the pulling action of said opposite rotating pinch rolls;

means to control the rate at which the produce moves across the inclined section thereby to regulate the dwell time the produce spends on the pinch rolls and the density of the product to assure removal of a predetermined percentage of appendages from the produce; and

said means to control the rate the produce moves across the inclined section comprising a second conveyor carrying plows positioned to move along the inclined section in a direction opposite to the direction the first conveyor is moving to control the rate the produce moves across the inclined section.

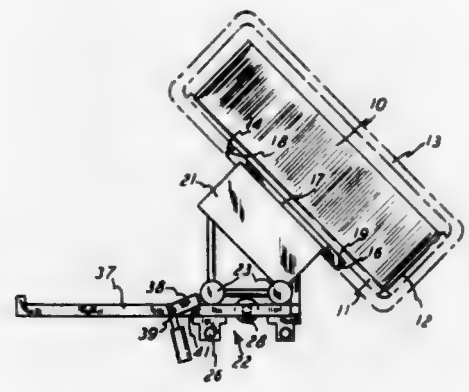
4,509,415

METHOD AND APPARATUS FOR SUPPLYING STRAP TO AN ITEM

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Oct. 17, 1983, Ser. No. 542,650
Int. Cl.³ B65B *13/04*
U.S. Cl. 100—2 **18 Claims**

1. A method for supplying strap to encircle an item positioned on a strapper, comprising the steps of positioning an item on a strapper having only a segment of a strap guide disposed on a plane in a fixed position and with the item being positioned on said plane to be strapped therealong, movably supporting two strapping mechanisms adjacent said segment and with each of said mechanisms having a strap guide segment matable with the first said segment, and selectively positioning either one of said two strapping mechanisms into mating relationship with the first said segment for strapping the item.

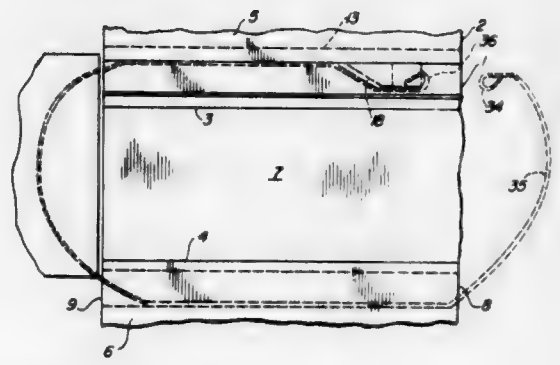


4,509,416

BALE TIE JOINING DEVICES

Emil Simich, Chicago, Ill., assignor to A.J. Gerrard & Company, Des Plaines, Ill.

Filed Jul. 7, 1983, Ser. No. 511,649
Int. Cl.³ B65B *13/06*
U.S. Cl. 100—25 **9 Claims**



1. A bale tie joining device comprising

a. a housing having a pair of upstanding sidewalls spaced apart for defining an elongated passageway extending therethrough for the longitudinal passage of an elongated bale tie through said passageway from one end to the other end thereof,

b. an anchor member positioned in said housing within said elongated passageway in spaced relation to said one end of said housing for engaging and holding the trailing end loop portion of such a bale tie during such passage of the latter through said passageway in position to be joiningly engaged by the other end portion of said bale tie, and

c. said housing having an opening in the top thereof, between said anchor member and said one end of said passageway, for viewing the joined and engaged tie ends in said passageway from outside said housing when said engaged and joined tie ends have been released from said anchor member.

4,509,417

APPARATUS FOR EXPELLING AIR FROM STACKS OF PAPER SHEETS OR THE LIKE

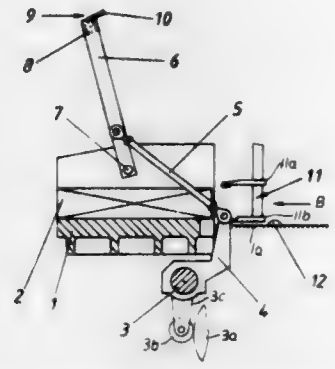
Eckhard Brandt, Norderstedt, and Wolfram Wolf, Bilsen, both of Fed. Rep. of Germany, assignors to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,205

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304955

Int. Cl.³ B30B *9/00*

U.S. Cl. 100—90 **14 Claims**



1. Apparatus for manipulating stacks of superimposed sheets of paper or the like wherein pockets of entrapped air are likely to develop between neighboring sheets, comprising a support for the lowermost sheet of each of a series of successive stacks; means for transporting successive stacks of the series away from said support in a predetermined direction; and means for expelling air from between the sheets of successively transported stacks, including a pressure applying device and means for moving said device into engagement with the topmost sheet of the stack on said support so that said device exerts upon the topmost sheet a requisite pressure at least substantially all the way across the stack, as considered transversely of said direction, while the stack is being transported away from said support whereby the topmost layer moves with reference to said pressure applying device.

4,509,418

SURFACE FOR SUPPORTING CUT FRUIT IN FRUIT JUICER

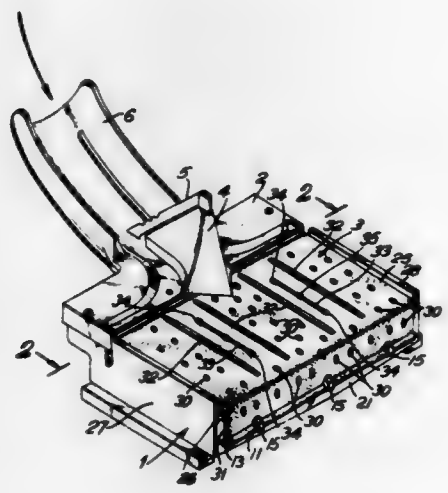
Stewart C. Nelson, Forest Hills, N.Y., assignor to The Automatic Orange Juicer Corp., Forest Hills, N.Y.

PCT No. PCT/US83/00578, § 371 Date Mar. 29, 1984, § 102(e) Date Mar. 29, 1984, PCT Pub. No. WO84/04025, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 18, 1983, Ser. No. 606,434

Int. Cl.³ A23N *1/00*

U.S. Cl. 100—97 **7 Claims**



1. In a citrus fruit juice extractor having means for feeding whole citrus fruit to the extractor, means for cutting the fruit, means for feeding the cut fruit to a supporting surface, means above and below the support surface for expressing the juice from the cut fruit, and means for collecting the juice expressed from the fruit, the improvement comprising:

a. means for collecting the juice expressed from the fruit comprising a juice collector tray having a bottom, side support walls parallel to said means for cutting said fruit and front and rear walls perpendicular to said means for cutting said fruit;

b. an elastic sheet member for supporting said cut fruit during expressing of the juice from said cut fruit, said elastic sheet member being supported by said front and rear walls of said juice collecting means and being held in place on the outer portions of said front and rear walls, the opening between said elastic sheet member and said juice collecting means being remote from the location of feeding of said cut fruit onto said elastic sheet member.

4,509,419

WORM PRESS FOR MECHANICALLY SEPARATING LIQUID/SOLID MIXTURES

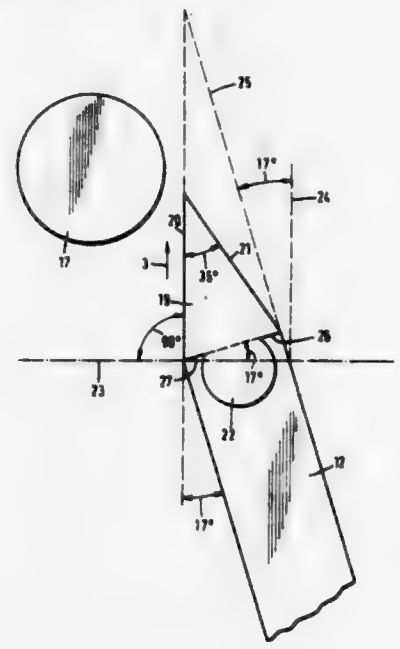
Klaus Koch; Hans-Joachim Schaeffer, both of Laatzen, and Gerhard Syrbius, Grossburgwedel, all of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,318

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242999

Int. Cl.³ B30B *9/14*

U.S. Cl. 100—117 **11 Claims**



1. A worm press for mechanically separating liquid/solid mixtures, said worm press comprising a material feed region and a pressing region downstream, in the direction of material flow, of said feed region, hollow barrel means extending along and defining said feed and said pressing regions, a rotatable worm disposed within said barrel, pin means projecting radially inwardly towards the axis of rotation of said worm from said barrel in said pressing region, said pin means being spaced around the periphery of said barrel, said worm including at least one helical flight formed thereon, said flight being radially interrupted in the region of said pin means so as to define a plurality of flight portions, each said flight portion having, in said direction of material flow, an upstream end region and a downstream end region, said downstream end of said flight portion terminating in a profiled tip portion, means for detachably affixing said profiled tip portion to the adjacent flight portion, said tip portion comprising a shearing flank portion extending substantially at right angles to said axis of rotation of said worm, and a thrust flank portion subtending an acute angle with said shearing flank portion, said thrust flank sub-

tending an angle of from 20° to 50° relative to a line extending perpendicularly to said worm axis of rotation.

4,509,420

UMBRELLA SILK SCREENING FIXTURE

Leon C. Stroffolino, Oceanport, N.J., assignor to Vito J. Paolantonio, Oceanport, N.J.

Filed Oct. 6, 1983, Ser. No. 539,662
Int. Cl.³ B41F *17/00*
U.S. Cl. 101—35 **3 Claims**



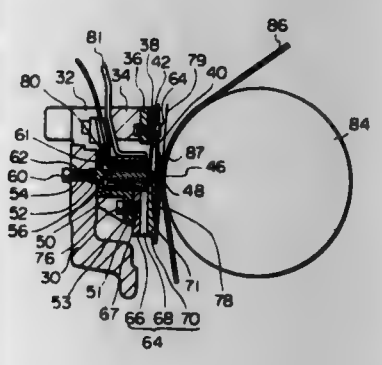
1. A device for supporting an umbrella to facilitate printing on a portion of the umbrella comprising: a base; first and second legs extending upwardly from said base; said first leg being slidably mounted for lateral movement along said base, and said second leg being affixed to said base; a first collar affixed to said first leg; a second collar affixed to said second leg; an arm affixed to said second collar and slidably mounted in said first collar; said arm extending from said second collar into said first collar generally parallel to said base; and adjustable support means affixed to said first collar for supporting a portion of the umbrella.

4,509,421

PRINTER HEAD FOR A DOT LINE PRINTER

Toshio Kurihara; Masao Kunita; Makoto Yasunaga; Katuya Masuda; Takashi Moriya, and Seiichi Oosawa, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,585
Claims priority, application Japan, Jul. 23, 1982, 57-128671; Oct. 26, 1982, 57-162251[U]; Oct. 26, 1982, 57-162252[U]; Oct. 26, 1982, 57-162253[U]
Int. Cl.³ B41J *3/12*
U.S. Cl. 101—93.04 **8 Claims**



1. A printer head for a dot line printer in which the printer head performs impact printing of dot patterns on a periodically advanced printer paper, comprising:

an integrally formed elongated frame composed of a non-magnetic metal and disposed longitudinally in a direction perpendicular to the direction of advancement of said printer paper;

a plurality of first yokes formed of a magnetically permeable material and arrayed at regular spacings along said frame, each of said first yokes having a base portion with a first side fixedly attached to a longitudinally extending plane surface of said frame, each of said first yokes being formed with a coil core protruding from said base portion on a side thereof opposite to said first side and further being formed with a bracket portion protruding from said base portion in the same general direction as said coil core and spaced apart from said coil core;

a plurality of coils each formed around a corresponding one of said coil cores, each of said coil cores having a tip;

a plurality of magnet blocks each attached to a corresponding one of said first yokes and each comprising a permanent magnet and a second yoke mutually attached, each of said second yokes being formed of a magnetically permeable material and having a U-shaped cutout portion formed at an end portion thereof which is disposed adjacent to the tip of the corresponding coil core, and each of said permanent magnets having a pair of magnetic poles with magnetic flux paths, one magnetic pole thereof being coupled to the corresponding first yoke and the opposite magnetic pole being coupled to the corresponding second yoke;

a plurality of leaf springs arrayed along said frame, leaf spring attachment means attaching said leaf spring to said frame, each of said leaf springs having a fixed end and a free end, said fixed ends being fixedly attached to said frame by said leaf spring attachment means at a position which is substantially completely outside the magnetic flux paths of said permanent magnets, said free ends of said leaf springs being disposed adjacent to the tip of a corresponding one of said coil cores;

a plurality of armatures each formed of a magnetically permeable material and fixedly attached to the free end of a corresponding one of said leaf springs at a position directly opposite and adjacent to an end face of the tip of the corresponding coil core such as to be spaced apart therefrom in the absence of the corresponding magnet block and to be attracted onto said tip face when said corresponding magnet block is installed, said U-shaped cutout portion of the corresponding second yoke partially surrounding the periphery of said armature with an air gap therebetween, whereby a major proportion of the magnetic flux of the corresponding permanent magnet passes from the corresponding second yoke, through said air gap, through said armature, and into said coil core;

a plurality of printer rods arrayed in line, each having a narrow rod-shaped configuration and being fixedly attached to a corresponding one of said armatures and protruding therefrom;

each of said magnet blocks in conjunction with the corresponding first yoke and armature acting to form a path for the magnetic flux of the corresponding permanent magnet, said magnetic flux acting to retain the free end of the corresponding leaf spring in contact with the tip of the corresponding coil core by magnetic attraction exerted on the corresponding armature, and said leaf spring attachment means being arranged such as to provide a desired degree of displacement between the free end and fixed end of each said leaf springs, as measured in a direction perpendicular to the plane of the spring, in said magnetically retained condition, whereby a restoring force corresponding to said degree of displacement is exerted by each of said leaf springs in said magnetically retained condition, each of said coils being responsive to a pulse of drive current passed therethrough for momentarily producing a magnetic flux acting in opposition to the magnetic flux of the corresponding permanent magnet to thereby momen-

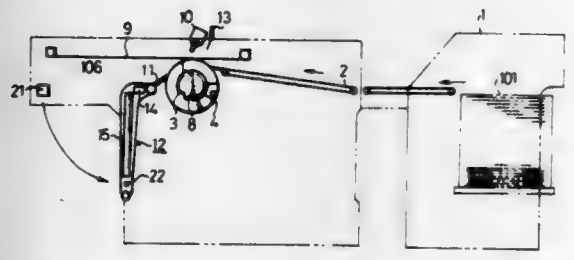
tarily release the corresponding leaf spring from the magneticaly retained condition, whereby the corresponding printer rod is caused to impact on said printer paper.

4,509,422

PAPER DISCHARGER IN CYLINDER SCREEN PRINTING MACHINE

Kazuo Nagatani, Seki, Japan, assignor to Sakurai Machine Trading Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 391,551, Jun. 24, 1982, Pat. No. 4,448,124. This application Oct. 12, 1983, Ser. No. 541,146
Claims priority, application Japan, Jun. 10, 1983, 58-104741
Int. Cl.³ B41L *13/00*
U.S. Cl. 101—118 **10 Claims**



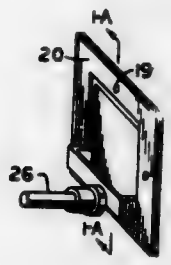
1. A cylinder screen printing machine comprising:
(a) a cylinder rotatable about its own axis in opposite directions;
(b) a screen plate disposed upwardly of said cylinder and movable reciprocably in synchronism with rotation of said cylinder;
(c) a squeezee positioned upwardly of said screen plate for pressing ink through said screen plate onto a sheet of printing paper passing between said cylinder and said screen plate in response to synchronized movements of said cylinder and said screen plate;
(d) a pair of spaced frames;
(e) a paper discharge table located between said spaced frames and downstream of said cylinder for discharging a printed sheet which has been fed from said cylinder, said paper discharge table being retractable downwardly from an upper position to provide a space below said screen plate;
(f) first means for supporting said paper discharge table in said upper position, said first means being operable to allow said paper discharge table to be retracted downwardly; and
(g) second means for positioning a rear end of said paper discharge table vertically and laterally in said upper position with respect to said pair of frames.

4,509,423

MULTI-POSITIONAL HANDLE FOR SEROGRAPHIC SCREEN

Robert S. Kluck, 14681 Pepper Tree Cir., Tustin, Calif. 92680

Continuation-in-part of Ser. No. 401,725, Jul. 26, 1982, abandoned. This application Aug. 29, 1983, Ser. No. 527,556
Int. Cl.³ B05C *17/06*
U.S. Cl. 101—127.1 **7 Claims**



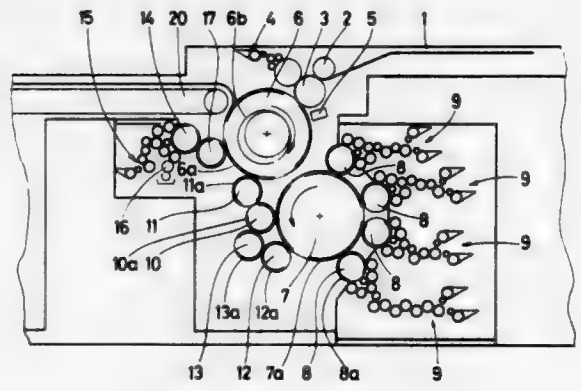
1. A multi-positional transfer device comprising: a serigraphic screen bearing a pattern to be transferred to a surface, said screen being supported by a substantially rigid frame; an open color-medium hopper engaging said frame in liquid-tight relationship, said hopper communicating directly with said screen substantially entirely across one dimension thereof; handle means affixed to said frame and extending outwardly from the plane thereof, said handle means including means for maintaining said hopper in said liquid-tight relationship with said frame; and means for selectively affixing said handle means to each face of said frame.

4,509,424

CONVERTIBLE, MULTICOLOR, ROTARY PRINTING PRESS

Albrecht J. Germann, Würzburg, Fed. Rep. of Germany, assignor to De la Rue Giori S.A., Switzerland

Filed Apr. 5, 1983, Ser. No. 482,234
Claims priority, application Switzerland, Apr. 22, 1982, 2445/82
Int. Cl.³ B41F *11/02*
U.S. Cl. 101—177 **3 Claims**



1. A convertible multicolor printing machine comprising, in one configuration:
a. a blanket cylinder;
b. an impression cylinder spaced away from said blanket cylinder for holding sheets during printing;
c. a first plate cylinder in contact with said blanket cylinder and disposed between said impression and blanket cylinders for transferring a multicolored design to said sheets;
d. a plurality of inking rollers for transferring different colored contours of ink to said blanket cylinder; and
e. means for converting said printing machine into a second configuration, said means comprising means for exchanging said plurality of inking rollers for a plurality of second printing plates which second printing plates transfer multicolored designs to said blanket cylinder, means for moving said impression cylinder from a first position, in one configuration, in which the impression cylinder is spaced away from said blanket cylinder to a second position, in the second configuration, in which said impression cylinder contacts said blanket cylinder,
means for moving said first plate cylinder from a first position, in one configuration, in which said first plate cylinder is disposed between said impression and blanket cylinders and in contact with said blanket cylinder to a second position, in the second configuration, in which said first plate cylinder is spaced away from said blanket and impression cylinders;
whereby sheets may be printed by moving said impression cylinder and said first plate cylinder to said respective first positions in which ink is transferred from said inking rollers to said blanket cylinder which ink the first plate cylinder, said first plate cylinder transferring said design to said sheets; and
whereby sheets may be printed by moving said impression and said first plate cylinders to said respective second positions and exchanging said plurality of inking rollers

for a plurality of second printing plates whereby multicolored designs are transferred from said second printing plates to said blanket cylinder and from said blanket cylinder directly to said sheets in said impression cylinder.

4,509,425

ARRANGEMENT FOR ADJUSTING THE CYLINDERS IN ROTARY PRINTING PRESSES

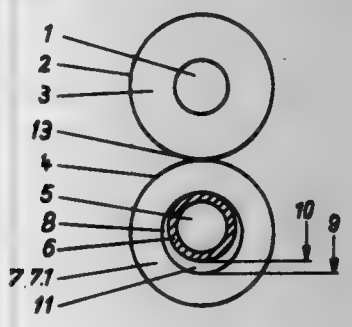
Ulrich Hahn, Taura; Peter Straube, Radebeul, and Michael Koch, Taucha, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Aug. 24, 1983, Ser. No. 526,162

Claims priority, application German Democratic Rep., Aug. 24, 1982, 242747

Int. Cl.³ B41F *13/20, 31/34;* B41L *27/36*

U.S. Cl. 101—216 **5 Claims**



1. An arrangement for adjusting the distance between two cylinders having axles in a rotary printing press for printing on materials of different thicknesses, the arrangement comprising:

a first roller ring arranged fixedly on and centrically to the axle of the one of the cylinders;

a second roller ring arranged on the other cylinder, the second roller ring defining a bore hole having a diameter and cooperating with the first roller ring; means for mounting the second roller ring for radial movement and

means for maintaining a constant printing pressure of the cylinders during printing of different material thicknesses and including a conical bushing projecting through the bore hole and supporting the second roller ring in the other cylinder, and means for mounting the conical bushing for axial movement with respect to the other cylinder axis so as to radially move the second roller ring and to adjust the distance between the two cylinders so as to maintain, during printing on materials of different material thicknesses, a constant printing pressure at each material thickness.

4,509,426

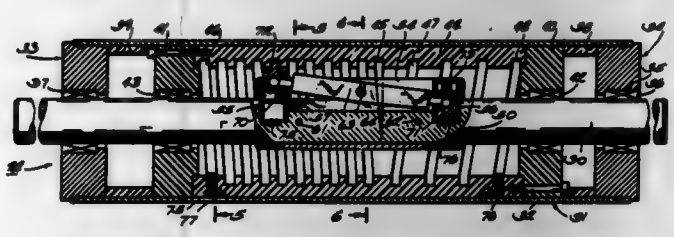
AUTOREVERSING DUAL AXIAL SPEED INK ROLLER

Philip J. Hardin, 850 Park La., Elm Grove, Wis. 53225

Continuation-in-part of Ser. No. 544,258, Oct. 21, 1983, abandoned. This application Aug. 31, 1984, Ser. No. 646,476

Int. Cl.³ B41F *31/14, 31/26;* B41L *27/28*

U.S. Cl. 101—348 **19 Claims**



1. An ink roller adapted for oscillating in opposite axial directions, comprising:

a stationary shaft,

support means slidable in opposite axial directions on and rotatable on said shaft,

a cylindrical roller sleeve supported by said support means concentric to said shaft for being driven rotationally and for moving axially on said shaft,

means defining first and second coaxial and axially adjacent helixes in said sleeve concentric to said shaft and rotatable with said sleeve, the twist of the convolutions of one helix being opposite of the twist of the other,

first and second movable follower members arranged in axially spaced apart relationship along said shaft inside of said helixes for cooperating with said first and second helixes, respectively, and

means for moving the first follower member into engagement with the first helix and disengaging the second follower member from the second helix and alternately moving the second follower member into engagement with the second helix and disengaging the first follower member from the helix whereby when the first rotating helix is engaged, it will turn on said first follower member and drive said sleeve in one axial direction and when the second rotating helix is engaged, it will turn on said second follower member and drive said sleeve in the other axial direction.

4,509,427

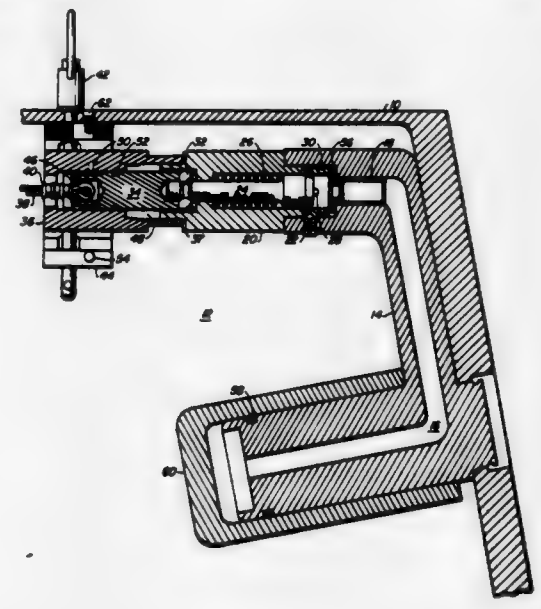
TAIL FIN FIRING DEVICE

Charles R. Andreoli, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 14, 1983, Ser. No. 474,762

Int. Cl.³ F42C *15/00*

U.S. Cl. 102—261 **11 Claims**



1. A tail fin firing device for use in a housing containing deployable tail fins comprising:

a pressure cartridge capable of creating a preset gas pressure;

a spring loaded actuator pin mounted next to said cartridge to trigger pressure release from said cartridge;

a ball retainer with locking balls held to said spring loaded actuator pin by said locking balls to grip said actuator pin until said locking balls release by movement of said ball retainer a predetermined distance;

a lanyard tied to said mounting bar, placed to pull in the direction of said actuator pin movement required to release said locking balls;

a pressure tube connected to said pressure cartridge to direct said gas pressure from said cartridge;

a pusher piston mounted to said pressure tube such that said pusher piston moves when pressure is present above a preset level in said pressure tube; and

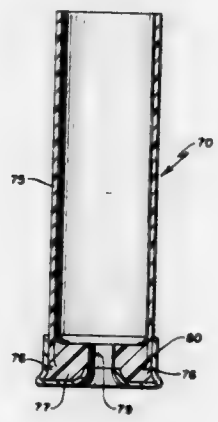
means for holding said deployable tail fins by said pusher piston until pusher piston moves a set distance.

4,509,428

SHOTSHELL CASING WITH PARTIALLY TELESCOPED BASEWAD

Luke J. Davich; Jack A. Erickson, both of Anoka, and Richard W. Proulx, Forest Lake, all of Minn., assignors to Federal Cartridge Corporation, Minneapolis, Minn.

Continuation of Ser. No. 224,267, Jan. 16, 1981, abandoned. This application Oct. 13, 1983, Ser. No. 541,808
The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.
Int. Cl.[3] F42B *5/30*
U.S. Cl. 102—466 11 Claims



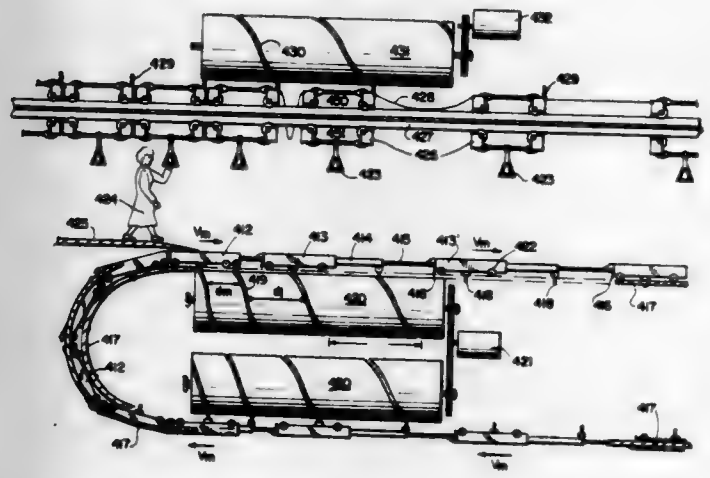
1. A single-piece plastic shotshell casing comprising:
(a) an elongated tubular body comprised of biaxially oriented thermoplastic material throughout;
(b) said body having wall structure with inner surfaces and having sidewalls terminating at one of its ends in an integral substantially thickened biaxially oriented transverse base section formed from a length thereof with a centrally disposed axially extending primer opening therein, and supporting the same;
(c) said transverse base section contituting an integral internally homogenous base wad and being only partially telescoped axially inwardly in contiguous relation with said inner surfaces within said supporting sidewalls and being devoid of internal physical boundaries.

4,509,429

TRANSPORTATION SYSTEM UTILIZING A STRETCHABLE TRAIN OF CARS AND STRETCHABLE BANDCONVEYORS

Axel de Broqueville, 2904 Daniel, Dallas, Tex. 75205

Continuation-in-part of Ser. No. 127,541, Mar. 30, 1980, Pat. No. 4,370,931, which is a continuation-in-part of Ser. No. 19,776, Mar. 12, 1979, abandoned. This application Aug. 17, 1982, Ser. No. 408,746
Int. Cl.[3] A63G *1/00*
U.S. Cl. 104—25 36 Claims



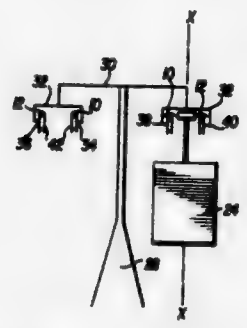
1. A transportation device, comprising:
a plurality of successive load carrying components, each of said components being connected to adjacent components by means which permit the distance between said adjacent components to vary from a mininum distance to a maximum distance and permit said components to move in a closed loop path;
a plurality of endless screws with grooves of predetermined thread pitch patterns and means for rotating said screws;
means associated with said components for engaging said components with said grooves when said components move along said screws, said patterns being arranged whereby the distance between adjacent components varies between said maximum distance and said minimum distance and the speed of said components varies between a maximum speed and a minimum speed as said means moves along the grooves of said endless screws.

4,509,430

TWIN SUSPENSION/HAULAGE CABLE GONDOLA LIFT

Denis C. Creissels, 43, Boulevard des Alpes, 38240 Meylan, France

Filed Jun. 6, 1983, Ser. No. 501,138
Int. Cl.[3] B61B *9/00*
U.S. Cl. 104—173 R 14 Claims



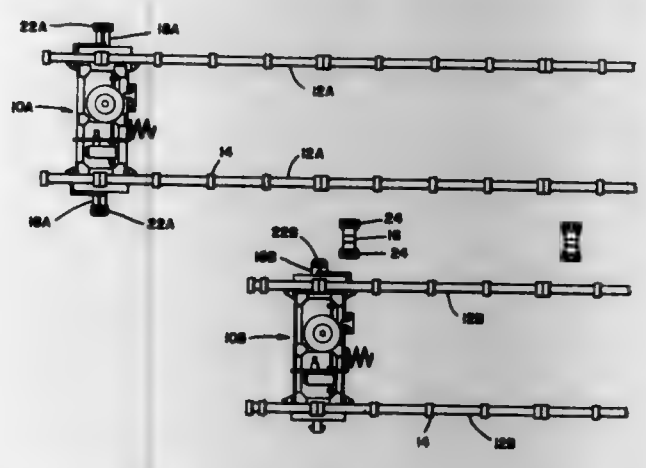
1. An overhead cable transport installation comprising:
terminals having each two pulleys
two parallel suspension haulage cables passing over said pulleys and being continuously driven at the same speed while extending in line in a horizontal plane with constant spacing,
towers including cable support rollers for supporting said two cables at a same level,
gondolas coupled in line to said two cables and each having a suspension bar hanging in the vertical symmetry plane of the cables and a carriage whereon said suspension bar is articulated,
at least one pair of detachable grips secured to said carriage, one grip cooperating with one cable and the other grip of said pair cooperating with the other of said two cables for coupling the carriage to the two cables in line and to disconnect the carriage inside the terminals to allow for embarkation and disembarkation of the passengers of the gondola at reduced speed, each grip having a body that rests on the upper face of the cable in closed position of the grip and protrudes slightly upwards and a pair of jaws protruding downwards from said body to surround and clamp the cable while the end of the jaws become substantially level with the lower face of the cable in order to facilitate passing around the cable support rollers,
cable guide rollers disposed in the terminals in order to deviate said cables so as to modify slightly the spacing to each other and to allow for disengagement or engagement of the carriage disconnected from the cables, and
transfer rails in the terminals for supporting the carriage disconnected from the cables, the trajectory of the rails bending downwards with respect to the cables on the travel section corresponding to the modified spacing of the cables for disengagement of the carriage and bending upwards in the travel section for engagement of the carriage.

4,509,431

BRIDGE CRANE HOIST STOP SYSTEM

Gordon J. Laskowski, Port Orchard, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1983, Ser. No. 510,702
Int. Cl.[3] B61K *7/20*
U.S. Cl. 104—250 5 Claims



1. A rail interlocking and hoist stop apparatus for material handling systems in which a hoist travels between a movable rail and a stationary rail, which comprises:

(a) a master stop assembly mounted at the end of the movable rail;

(b) a slave stop assembly mounted at the end of the stationary rail; said master stop assembly including

(1) a master housing;

(2) a master pin slidably disposed in said master housing for movement parallel to the longitudinal direction of said rails, said master pin being moved toward said stationary rail to actuate said apparatus to interlock the rails and allow the hoist to travel between the stationary rail and the movable rail;

(3) a locking pin slidably disposed in said master housing for sliding parallel to the longitudinal direction of said rails, said locking pin being moved away from said stationary rail when said apparatus is actuated;

(4) a master stop pin movably disposed in said master housing for movement into the path of said hoist to prevent travel of said hoist between the movable rail and said stationary rail and for movement out of the path of said hoist to allow travel of said hoist between the movable rail and the stationary rail,

(5) means for coupling the movement of said locking pin to said master stop pin, movement of said locking pin away from said stationary rail moving said master stop pin allowing travel of said hoist between the movable rail and the stationary rail, said slave stop assembly including:

(1) a slave housing;

(2) a slave pin slidably disposed in said slave housing for movement parallel to the longitudinal direction of said rails, said slave pin being aligned with said master pin when the movable rail and the stationary rail are aligned, said slave pin being pushed by said master pin when said apparatus is actuated;

(3) a crossover pin slidably disposed in said slave housing for sliding parallel to the longitudinal direction of said rails, said crossover pin aligned with said locking pin when the movable rail and the stationary rail are aligned, said crossover pin pushing said locking pin when said apparatus is actuated;

(4) means for coupling said slave pin and said crossover pin so that movement of either one of said pins is one direction will cause the other one of said pins to move in the opposite direction;

(5) a slave stop pin movably disposed in said housing for movement into the path of said hoist to prevent travel of said hoist between the movable rail and said stationary rail and for movement out of the path of said hoist to allow travel of said hoist between the movable rail and the stationary rail;

(6) means for coupling the movement of said slave pin and said crossover pin to said slave stop pin, the movement of said crossover pin toward said movable rail moving said slave stop pin to allow travel of the hoist between the stationary rail and the movable rail; and

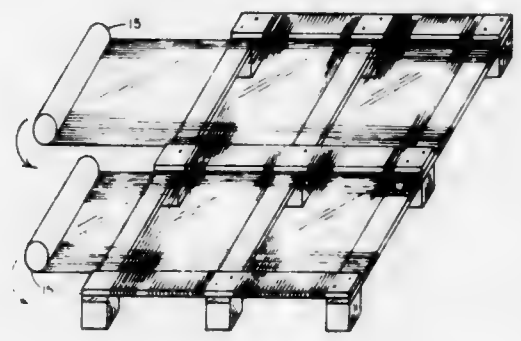
(c) means for sliding said master pin toward said stationary rail to actuate said apparatus.

4,509,432

BLOCK AND STRINGER TYPE LIFT TRUCK PALLET

Michael M. Win, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,797
Int. Cl.[3] B65D *19/00*
U.S. Cl. 108—51.1 9 Claims



1. A lift truck pallet comprising in combination:

(a) a plurality of elongated narrow stringers arranged in parallel, spaced relationship;

(b) a plurality of elongated narrow runners arranged in parallel, spaced relation, substantially at right angles to the stringers so as to form the perimeter of a plurality of comparatively broad open spaces;

(c) spacer means defining lift truck fork openings in the sides of the pallet;

(d) fastening means securing the stringers and runners together; and

(e) said broad open spaces being tautly overwrapped with a plurality of layers of stretch wrap film in its tension-stretched condition, so as to form in cooperation with said stringers and runners, plastic film product-supporting surfaces for said open spaces of said pallet.

4,509,433

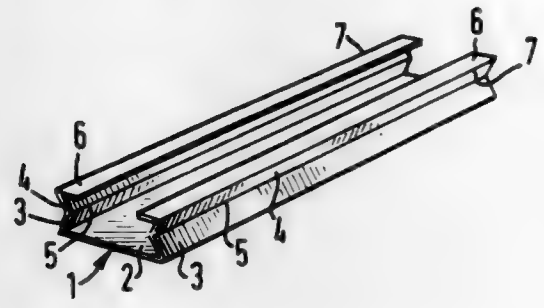
COLLAPSIBLE EXPANSIBLE HANDLING FACILITY FOR UNITIZED AND UNIT LOADS

Kenneth Farr, 3, Victoria La. Colcar, Huddersfield, Yorks, England

PCT No. PCT/GB82/00081, § 371 Date Nov. 9, 1982, § 102(e) Date Nov. 9, 1982, PCT Pub. No. WO82/03057, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 9, 1982, Ser. No. 442,196
Claims priority, application United Kingdom, Mar. 10, 1981, 8107561
Int. Cl.[3] B65D *19/40*
U.S. Cl. 108—52.1 11 Claims

1. A unitised load handling means comprising a sleeve secured to a lower surface of the load, the sleeve being defined by a base to form a ground bearing surface, a pair of opposed side walls joined to the base and each including two side wall sections joined by a longitudinal crease, said sleeve arranged to collapse or expand by bending about the creases, an inturned part joined to the top of said side walls to secure the sleeve to the load, the sleeve when vertically expanded substantially defining an enlarged opening of rectangular cross-section therewithin and when fully collapsed under load defining an

opening of rectangular cross-section therewithin of reduced height and of a width substantially different than when expanded and defining a space sufficient for initial entry of load



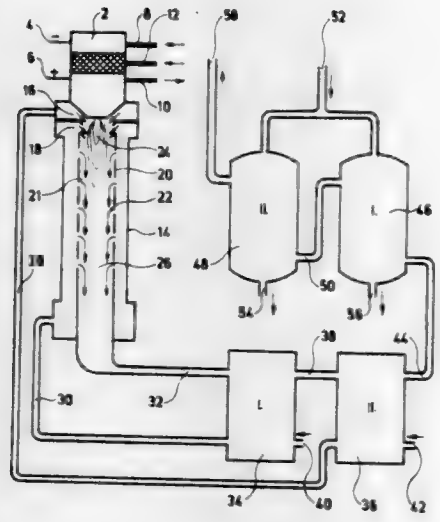
handling equipment, said opening being laterally defined between said creases, and said creases allowing the sleeve to expand vertically to fully receive the load handling equipment.

4,509,434

PROCEDURE AND EQUIPMENT FOR DESTROYING WASTE BY PLASMA TECHNIQUE

Ottó Bóday; András Herpay; Ferenc Krajcsovics; István Néveri; Sándor Pete; Ferenc Pócsy; Béla Szikora, and Endre Szirmai, all of Budapest, Hungary, assignors to Villamosipari Kutato Intezel, Budapest, Hungary

Division of Ser. No. 350,397, Feb. 12, 1982, Pat. No. 4,438,706.
This application Nov. 28, 1983, Ser. No. 555,492
Claims priority, application Hungary, Feb. 27, 1981, 485/81
Int. Cl.[3] F23G *5/12*
U.S. Cl. 110—238 **7 Claims**



1. Apparatus for destroying fluid waste containing vaporizable organic materials, comprising

a plasma generator;

a plasma reactor comprising a gas permeable ceramic pipe axially arranged with respect to said generator to receive in one end the plasma torch produced by said generator, and a metallic outer housing spaced from said pipe,

means for introducing cooling gas into said housing surrounding said pipe and passing therethrough into contact with the plasma,

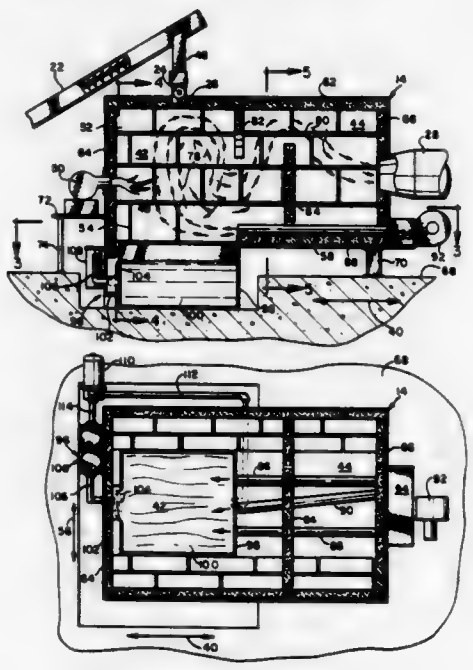
said reactor having inlet means for the introduction into one end of said ceramic pipe organic waste vapor and preheated oxygen to react with said plasma completely within said ceramic pipe, and outlet means at the other end of said ceramic pipe for the removal of the reaction end products; and gas washing means for cooling the end products removed from said reactor.

4,509,435

WASTE MATERIAL INCINERATION SYSTEM AND METHOD

Jack C. Adams, Boca Raton, Fla., assignor to Energy Recovery Group, Inc., Boca Raton, Fla.

Division of Ser. No. 448,425, Dec. 10, 1982, Pat. No. 4,440,098.
This application Feb. 28, 1984, Ser. No. 584,529
Int. Cl.[3] F23J *3/00*; F23G *5/12*
U.S. Cl. 110—344 **29 Claims**



1. A method of incinerating waste material, including the steps of:

(a) inserting waste material into a first combustion zone of a longitudinally directed furnace;

(b) vortexing said combusting waste material in said first combustion zone about an axis line substantially normal said longitudinal direction;

(c) removing particulate material from said combusting waste material in said first combustion zone; and,

(d) passing said first combustion zone combusted waste material products to a second combustion zone of said furnace; wherein the step of vortexing said combusting waste material includes the step of inserting preheated air into a lower section of said first combustion zone of said longitudinally directed furnace, the step of inserting preheated air into said lower section of said first combustion zone includes the step of passing air adjacent said second combustion zone and the step of inserting preheated air includes the step of inserting at least one stream of said preheated air into said lower section of said first combustion zone in a direction inclined to said longitudinal direction.

4,509,436

METHOD OF AND APPARATUS FOR THE DESULFURIZATION OF FLUE GAS OF A COAL-FIRED COMBUSTION PROCESS

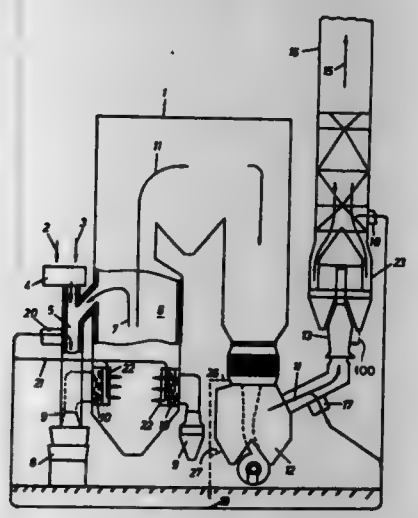
Herbert Schröfelbauer; Josef Kakl, both of Klagenfurt; Gernot Staudinger, Graz, and Hermann Filipot, Villach, all of Austria, assignors to Österreichische Draukraftwerke Aktiengesellschaft, Klagenfurt, Austria

Filed Sep. 30, 1983, Ser. No. 537,651
Claims priority, application Austria, Sep. 30, 1982, 3632/82
Int. Cl.[3] F23J *11/00*
U.S. Cl. 110—345 **13 Claims**

1. A method of desulfurizing a raw gas generated by the combustion of coal in a combustion chamber, said method comprising in combination:

(a) introducing into said combustion chamber a solid sulfur-binding additive adapted to form an additive ash which is entrained in said raw gas;

(b) cooling a quantity of additive ash previously recovered from a flue gas and formed by reaction in a coal-fired combustion chamber to form a cold additive ash;
(c) cooling at least a portion of said raw gas to reduce the temperature thereof to a temperature level above a water dewpoint thereof at which water spontaneously condenses with lowering of temperature;



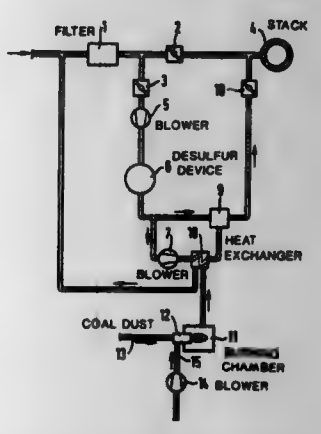
(d) filtering at least said portion of said raw gas cooled in step (c) to recover additive ash therefrom, thereby forming a clean gas;
(e) discharging said clean gas; and
(f) further cooling at least said portion of said raw gas to substantially said dewpoint following step (c) and prior to step (d) by adding to it said portion of the additive ash cooled in step (b).

4,509,437

PROCESS FOR CLEANING OF FLUE GASES OF A POWER PLANT WITH THE AID OF A COAL DUST BURNING FLAME AND APPARATUS FOR CARRYING OUT THE PROCESS

Heribert Breidenbach, Essen, and Udo Strauss, Bochum, both of Fed. Rep. of Germany, assignors to Steag AG, Fed. Rep. of Germany

Division of Ser. No. 412,105, Aug. 27, 1982, Pat. No. 4,430,951. This application Feb. 10, 1984, Ser. No. 579,189
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136480
Int. Cl.³ F23J *11/00*
U.S. Cl. 110—345 **4 Claims**



1. A process for the cleaning of flue gases heated in a coal dust fired power plant boiler comprising the steps of:
filtering the flue gases to remove dust therefrom;
wet desulfurizing at least a portion of the flue gases;
burning coal dust to provide reheating gases for the flue gases;
filtering the reheating gases to remove dust; and
mixing a portion of the desulfurized flue gases and the reheating gases to reheat the flue gases for discharge from the power plant.

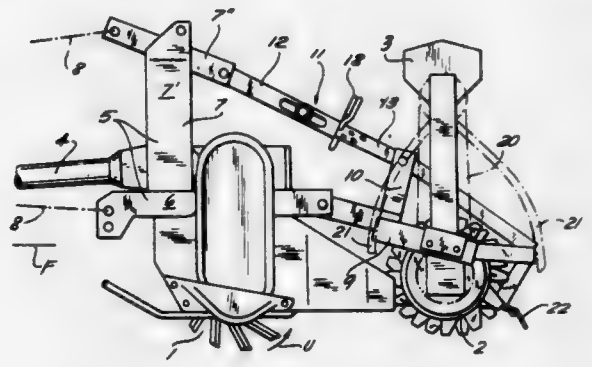
3. Apparatus for cleaning flue gases heated in a coal dust fired power plant boiler comprising:
a dust filter for receiving flue gases from the boiler and for removing dust therefrom;
a wet desulfurization means coupled to said dust filter for desulfurizing at least a portion of the flue gases;
at least one coal dust burner for providing reheating gases for the flue gases;
a mixer coupled to said wet desulfurization means and said coal dust burner for mixing desulfurized flue gases and the reheating gases to reheat the flue gases for discharge from the power plant; and
dust filter means coupled to said burner for removing dust from the reheating gases.

4,509,438

COMBINATION IMPLEMENT FOR AGRICULTURAL CULTIVATION

Willy Rau, Weilheim, and Christian Taus, Kirchheim, both of Fed. Rep. of Germany, assignors to Maschinenwerk Rau GmbH, Weilheim, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,463
Claims priority, application European Pat. Off., Aug. 31, 1982, 82107986.0
Int. Cl.³ A01C *7/08*; A01B *49/06*
U.S. Cl. 111—13 **11 Claims**

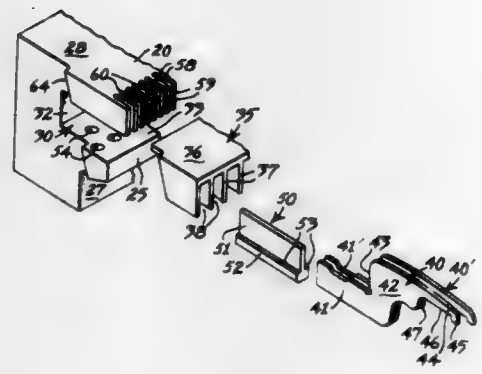


1. A combination implement for agricultural cultivation, comprising
a main frame liftably connectable with a pulling or dragging vehicle and carrying a cultivating device;
an auxiliary frame carrying a crumbler roller which supports the implement during cultivation, said auxiliary frame being hinged to the main frame to form an extension of the latter which is pivotable about a transverse axis;
a telescopic supporting member linked at the ends thereof between said main- and auxiliary frames and including adjustable stop means for limiting pivotal movement of the auxiliary frame in upward direction, the telescopic supporting member having a tubular part linked to the main frame and a shifting part slidably movable in the tubular part;
the adjustable stop means including perforations provided in the shifting part and an abutment member engageable in any selected one of said perforations to adjustably limit the displacement of the shifting member into the tubular member.

4,509,439
CLAMP INSERT FOR TUFTING ELEMENTS IN NARROW GAUGE TUFTING MACHINE

John C. Densmore, Dalton, Ga., and Charles W. Watkins, Ooltewah, Tenn., assignors to Tuftco Corporation, Chattanooga, Tenn.

Filed Sep. 30, 1983, Ser. No. 537,598
Int. Cl.[3] D05C *15/00*
U.S. Cl. 112—79 R 9 Claims



1. In a narrow gauge, multiple-needle tufting machine having a plurality of cooperative reciprocable tufting elements, including needles and looper hooks, for producing a tufted pile fabric, a clamping apparatus for a plurality of tufting elements, comprising:

(a) an elongated bar having a longitudinal dimension, a transverse dimension, a depthwise dimension, an elongated outer face and an elongated outer surface disposed at an angle to said outer face,

(b) an elongated recess extending longitudinally within said bar, opening through said face, and spaced from said outer surface,

(c) said recess having depthwise spaced first and second opposed inner surfaces, said second inner surface being closer to said outer surface than said first inner surface,

(d) an elongated gauge member comprising an elongated bearing wall and a plurality of longitudinally spaced parallel partition walls projecting away from said bearing wall and defining gauge slots between said partition walls,

(e) a clamp member having an elongated divider member of predetermined thickness adapted to be received within a gauge slot, and a clamp head projecting from both sides of said divider member to form opposite interior clamp seats and an exterior bearing surface,

(f) said gauge member being received within said elongated recess with said bearing wall opposing said first inner surface, in assembled position,

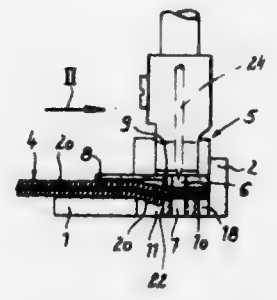
(g) said clamp member being received within said elongated recess with said divider member inserted in a corresponding gauge slot and spaced between a pair of opposed partition walls to receive a pair of tufting elements within said gauge slot on opposite sides of said divider member, in assembled position, and

(h) set screw means projecting through said elongated outer surface of said elongated bar and said second inner surface into said recess for engaging said exterior bearing surface of said clamp member to force said clamp member into a corresponding gauge slot to clamp tufting elements within said gauge member, in assembled position.

4,509,440
STITCHING ASSEMBLY FOR SELVEDGING MACHINE

Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale KG, Ochtrup, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,870
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227198
Int. Cl.[3] D05B *35/10, 29/06*
U.S. Cl. 112—153 6 Claims



1. A stitching assembly for a sewing machine, the stitching assembly comprising:

a stationary stitch plate having a flat upper face defining a stitching location, provided on the face adjacent the stitching location with an upstanding edge guide extending in and defining a transport direction, and formed with an upwardly open elongated groove extending upstream in the transport direction from the stitching location and having an outer flank turned inward and mainly parallel to the edge guide and an inner flank turned away from and mainly parallel to the edge guide;

a presser foot having a sole plate with a lower face turned toward and confronting the upper face of the stitch plate at the stitching location and provided on its lower face with a downwardly projecting guide ridge that extends in the transport direction and that has an inner flank turned toward and generally parallel to the edge guide and an outer flank turned away from and generally parallel to the edge guide, the outer flank of the ridge being aligned over the inner flank of the groove, the inner flank of the groove diverging from the outer flank of the groove from a point upstream in the direction from the stitching location, whereby a thick web workpiece can have a turned-over thin edge held between the ridge and the edge guide while the thick portion of the workpiece lies outside the ridge, the sole plate and stitch plate being formed between the edge and the ridge with vertically aligned needle holes; and

at least one transporter engageable through the stitch plate between the ridge and the edge guide with the turned-over edge of the workpiece and displaceable in the transport direction, whereby the transporter can engage the web workpiece and advance it in the transport direction.

4,509,441
SEWING MACHINE WITH AN AUTOMATIC BUTTONHOLE STITCHING DEVICE

Yoshimichi Tamiya, and Yasukata Eguchi, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

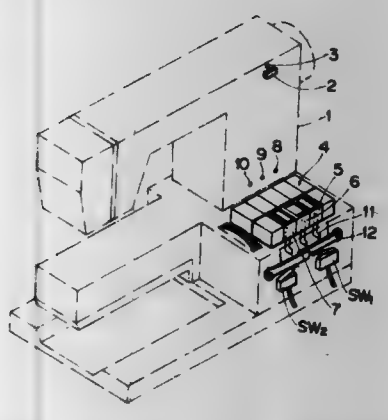
Filed Jul. 9, 1982, Ser. No. 396,692
Claims priority, application Japan, Jul. 16, 1981, 56-110039
Int. Cl.[3] D05B *3/02*
U.S. Cl. 112—158 B 3 Claims

1. A sewing machine of a type including a machine motor and an automatic buttonhole stitching device having a plurality of pattern cams selectively operated to form a series of stitches of a buttonhole in predetermined sequential steps, the buttonhole stitching device comprising:

pattern selecting means including a predetermined number of pattern cam selecting buttons selectively operated to select said pattern cams;

switch means operated in association with the selective operation of said pattern cam selecting buttons to produce buttonhole sequence signals indicating predetermined sequential steps for forming the stitches of the buttonhole;

electronic control means responsive to the buttonhole sequence signals of the switch means for storing a number of stitches formed in each sequential step for once produced buttonhole to thereby control the following formation of buttonhole stitches;



detecting means responsive to the buttonhole sequence signals of said switch means and to an output of said electronic control means to produce sequence detecting signals; and

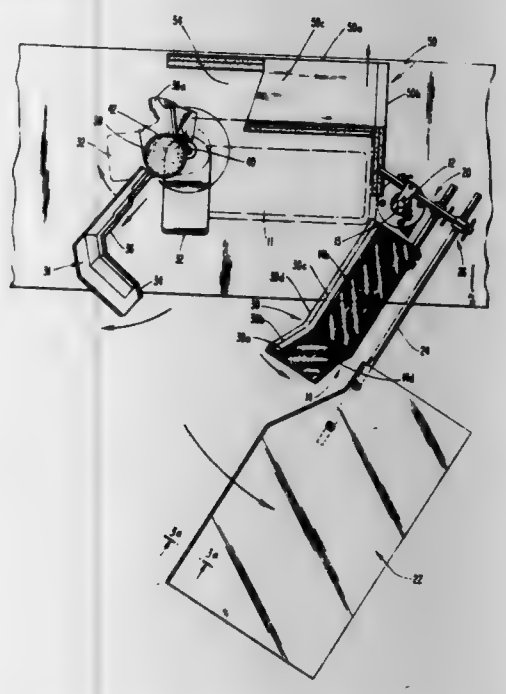
indicating means responsive to the sequence detecting signals of said detecting means to indicate the sequential steps of stitching the buttonhole.

4,509,442

ACOUSTICAL SHIELD ASSEMBLY FOR A SEWING MACHINE

Lee W. Gregory, Hickory, N.C., assignor to Marvel Specialty Company, Hickory, N.C.

Filed May 16, 1983, Ser. No. 494,778
Int. Cl.³ D05B *77/00*
U.S. Cl. 112—261 **14 Claims**



1. An acoustical shield assembly adapted for attenuating noise generated by a sewing machine or the like, comprising:

(a) a support post;

(b) a front shield mounted to the support post for movement relative to the support post to permit movement toward and away from the front face of the sewing machine;

(c) an acoustical covering on the interior of the front shield, said acoustical covering being closely spaced and substantially conforming to the front of the sewing machine so as to be operative for attenuating noise generated by the sewing machine; and

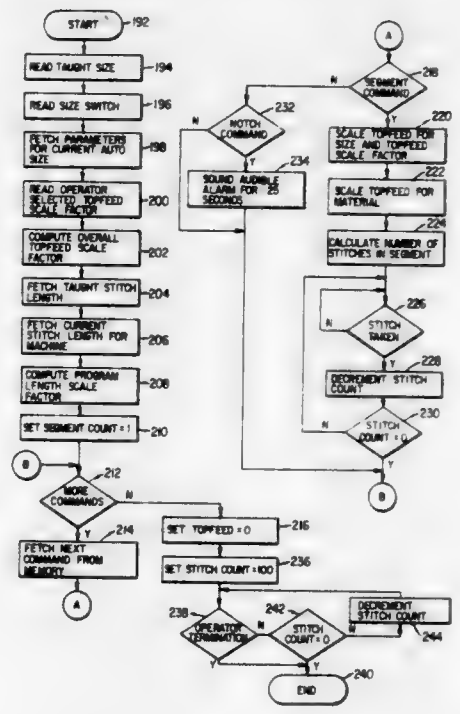
(d) a face shield mounted for movement with respect to said support post, said face shield being transparent and adapted for selective positioning between the sewing machine and the adjacent face of the operator to allow observation of the sewing operation, said face shield being movable into overlapping relationship with said front shield when the front shield and the face shield are operatively positioned.

4,509,443

AUTOMATIC SEWING MACHINE AND METHOD FOR JACKET SLEEVE ATTACHMENT

Charles R. Martell; Elmer N. Leslie, both of Dallas, and Stephen S. Treadwell, Richardson, all of Tex., assignors to Microdynamics, Inc., Dallas, Tex.

Filed Mar. 1, 1983, Ser. No. 462,568
Int. Cl.³ D05B *27/08*
U.S. Cl. 112—262.1 **11 Claims**



1. A method for stitching pieces of material together with a specified fullness distribution for a plurality of different sizes and styles of a garment comprising:

storing first information regarding the number of stitches defining the length of differential feed zones for a specific garment size or style;

storing second information regarding the magnitude of differential feed for each differential feed zone for said specific garment size or style;

storing third information relating to variations in the number of stitches defining the length of differential feed zones for a plurality of different garment sizes or styles;

storing fourth information relating to variations in the magnitude of differential feed rates for a plurality of different garment sizes or styles;

sensing the stitch count of the material being sewn; and

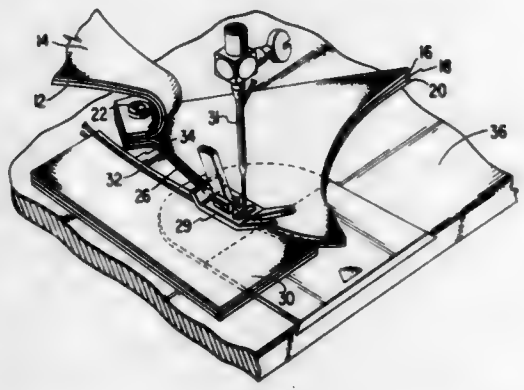
automatically adjusting the magnitude of the differential feed and length of the differential feed zones of said material being sewn in dependence upon said stitch count and said first, second, third and fourth stored information, wherein different fullness distribution is automatically provided to a plurality of different garment sizes or styles being sewn.

4,509,444

FOOT LEVELING SEWING AID AND METHOD OF USE

Clarice M. Howe, Westfield, and Audrey Mack, Colonia, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 27, 1983, Ser. No. 488,937
Int. Cl.[3] D05B *35/00*
U.S. Cl. 112—262.1 3 Claims



1. A method of sewing stitches in multiple plies of fabric on a sewing machine along a line permitting only a portion of the presser foot of the machine to extend over the multiple plies during a sewing operation, the said method comprising disposing the multiple plies under a portion of the presser foot in a position providing for penetration of the multiple plies by the needle of the machine in said line, selecting one or more layers of material to provide a combined thickness thereof substantially corresponding to the combined thickness of the multiple plies, disposing the selected material under the presser foot of the machine in a position adjacent to the multiple plies, lowering the presser foot to cause the foot to engage the multiple plies as well as said material and press both against the feed dog of the machine for movement thereby, and sewing the multiple plies with the machine along said line while maintaining the said material adjacent the multiple plies.

4,509,445

SEWING MACHINE CONTROL DEVICE

Katsuhiro Fujikawa, and Osamu Gohda, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

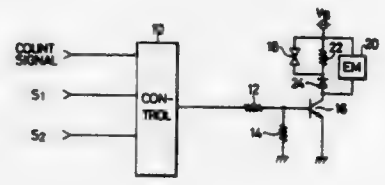
Filed Feb. 4, 1983, Ser. No. 463,763
Claims priority, application Japan, Feb. 4, 1982, 57/16611
Int. Cl.[3] D05B *69/18, 69/20*
U.S. Cl. 112—317 16 Claims

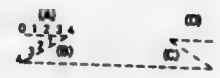
1. A control device for a sewing machine of the type including means for generating a stitch signal corresponding to each stitch sewed, means for indicating a desired stitch count representing the number of stiches to be sewed while feeding an article in a first direction, and reverse-stitching electromagnetic operating unit for controlling the direction of feed of said article in response to an electrical instruction signal, said electromagnetic operating unit turning "on" in response to a first state of said electrical instruction signal to feed said article in said first direction and turning "off" in response to a second state of said electrical instruction signal to feed said article in a second direction, said control device further including control means for controlling the on and off switching of said electromagnetic operating unit, said control means comprising:

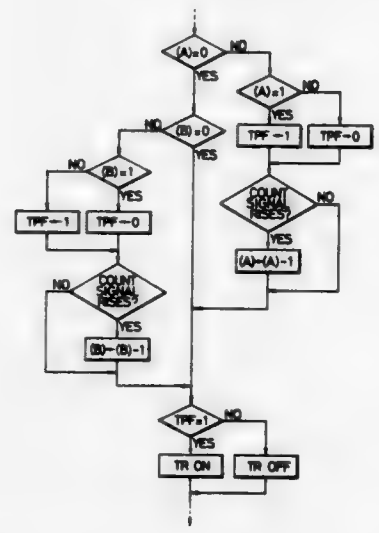
delay means for controlling the duration of a delay time interval between the switching of said electrical instruction signal from said first state to said second state and the corresponding switching of said electromagnetic operating unit from "on" to "off";

counting means responsive to said stitch signal for generating an actual stitch count signal representing the number of stitches which have been sewed while feeding said article in said first direction; and

means for determining when said actual stitch count reaches a first count value which is less than said desired stitch count value by a predetermined amount, said predetermined amount corresponding to said delay time interval, said control means switching said electrical instruction







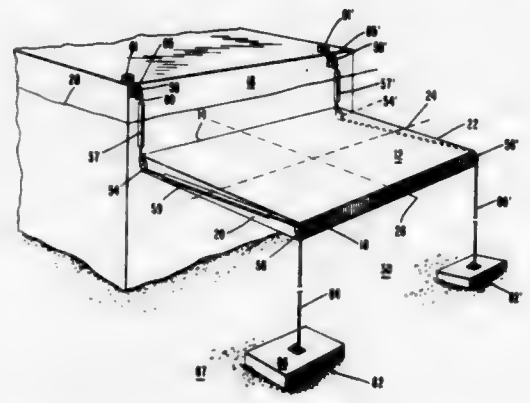
signal from said first state to said second state when said actual count value reaches said first count value.

4,509,446

DRYDOCKING DEVICE HAVING A MOMENT RESISTING ARRANGEMENT

John R. Sutton, Beaumont, Tex., assignor to Marine Concepts, Inc., Beaumont, Tex.

Filed Dec. 21, 1982, Ser. No. 451,923
Int. Cl.[3] B63B *35/42*
U.S. Cl. 114—45 6 Claims



1. A drydocking device operable for providing a predetermined bouyancy for raising and lowering a vessel relative to a surface of a body of water, comprising:

a pontoon having at least one chamber within the pontoon;

means for selectively introducing air or water into the cham-

ber within the pontoon for raising and lowering the pontoon, respectively;

a fixed structure positioned adjacent to at least a portion of a first side of the pontoon;

means for resisting moments tending to rotate the pontoon out of a substantially horizontal plane, including

means for creating an induced moment in a first direction tending to rotate the first side downwardly,

first rotary means attached adjacent to the first side of the pontoon and operable to rotate with respect thereto and second rotary means attached adjacent to a second side of the pontoon and operable to rotate with respect thereto, the second side being opposite to the first side,

a cable extending from attachment means for securing a first end of the cable to the fixed structure, the cable passing around the first rotary means, across the pontoon and around the second rotary means to anchoring means for anchoring a second opposite end of the cable, the anchoring means being arranged adjacent to the second side of the pontoon; and

the means for creating an induced moment including at least one permanent void tank located between the second side of the pontoon and an axis of the pontoon.

4,509,447

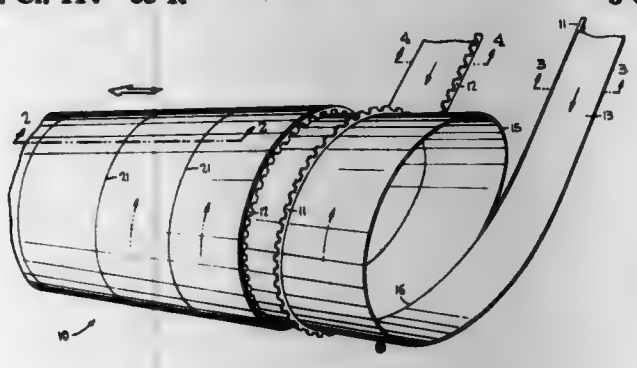
HELICAL SEAMED STRUCTURAL VESSEL AND METHOD OF FORMING SAME

Richard H. Smith, Sr., Bloomfield, N.J., assignor to Universal Spiralweld Enterprises, Inc., Bloomfield, N.J.

Continuation-in-part of Ser. No. 282,082, Jul. 10, 1981, Pat. No. 4,429,654. This application Jun. 28, 1983, Ser. No. 508,509

Int. Cl.³ B63B *9/06, 3/00;* **F16L** *9/16, 9/18*

U.S. Cl. 114—65 R **8 Claims**



1. A structural vessel, comprising an inner tubular liner and an outer tubular shell surrounding said liner in spaced relation, said liner and said shell comprising helically curved strips of material, continuous and helically curved spacer means between said liner and said shell, said spacer means spanning contiguous edges at successive turns of said liner and spanning contiguous edges at successive turns of said shell, said liner and said shell being relatively shifted axially such that said shell edges are out of alignment with said liner edges, means securing said spacer means to said strips and said liner edges together as well as said shell edges together.

4,509,448

QUICK DISCONNECT/CONNECT MOORING METHOD AND APPARATUS FOR A TURRET MOORED DRILLSHIP

Floyd T. Pease, and Joseph T. Shelton, both of Houston, Tex., assignors to Sonat Offshore Drilling Inc., Houston, Tex.

Filed Oct. 13, 1983, Ser. No. 541,539

Int. Cl.³ B63B *21/50*

U.S. Cl. 114—293 **20 Claims**

1. A disconnect/connect mooring system for a turret moored drillship comprising:

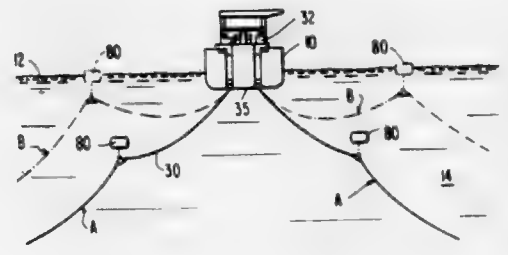
an anchor for releasably engaging the bed of a body of water;

a first mooring line connected at one end to said anchor, said first mooring line including

a length of wire rope operably connected at one end to said anchor and extending upwardly within the body of water, and

a mooring line chain connected at one end to the other end of said length of wire rope at a location remote from said anchor, said mooring line chain having a length substantially less than the length of said wire rope;

a submersible buoy connected to said mooring line chain and having a buoyancy sufficient to float with said length of wire rope and said mooring line chain of said first mooring line suspended from said submersible buoy; and



a second mooring line operably connected to said first mooring line and extending to the turret moored drillship such that upon tensioning of said second mooring line from said drillship said submersible buoy will be drawn into the body of water and said first mooring line will form a first catenary between said anchor and the submerged buoy and said second mooring line will form a second catenary between said submerged buoy and the turret moored drillship and upon release of said second mooring line from operable connection with said first mooring line said buoy will float on the surface of the body of water carrying said first mooring line, wherein said turret moored drillship may be facilely disconnected and connected from said mooring system.

4,509,449

TEMPERATURE/TIME LIMIT INDICATOR

Stephen P. Chalmers, 21 Martha's La., Scituate, Mass. 02066

Filed Nov. 5, 1982, Ser. No. 439,615

Int. Cl.³ G01K *3/00, 11/08*

U.S. Cl. 116—218 **16 Claims**

1. A temperature-time limit indicator comprising:

an elongated container provided with an opening at one end, which container holds a measured volume of frozen fluid which frozen fluid is known to desolidify at a specified desired temperature;

a temperature insulating layer surrounding the container except for the opening;

an elongated temperature indicating member fitting in a loosely slidable manner within the container through the opening;

a means of exerting a force on the indicating member press-

ing it into the container against the frozen fluid causing the temperature indicating member to maintain contact with the solid frozen fluid as the frozen fluid desolidifies, moving the indicating member into the container at a measured rate relative to temperature and time of desolidification;

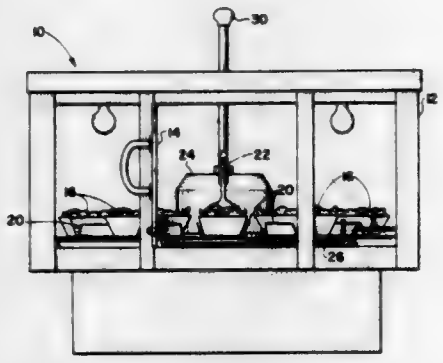
a casing enclosing the container and the insulating layer, and substantially enclosing the temperature indicating member with only a small portion of one end of the temperature indicating member protruding beyond the casing and one portion of the casing permitting the visual monitoring of the movement of the temperature indicating member wherein the protruding end of the temperature indicating member is provided with a transverse opening therethrough and a rigid pin is removably inserted through the transverse opening with the ends of the pin extending beyond the opening and resting against the casing to prevent movement of the temperature indicating member into the container until the limit indicator is prepared for use.

4,509,450

SANITARY FOOD DISPENSER

Joseph S. Jondahl, 9142 S. Lakewood, Tulsa, Okla. 74136

Filed Oct. 25, 1982, Ser. No. 436,599
Int. Cl.³ B05C *5/04*
U.S. Cl. 118—20 **6 Claims**



1. A food dispenser comprising:

(a) a sanitary, windowed enclosure;

(b) a carousel within said enclosure adapted to hold containers of individual servings of food visible through said window;

(c) a door in said enclosure for access to said visible individual food servings and adapted to index said carousel through a rotation equivalent to the advancement by the relative position of one food serving for each time said door is opened and then closed; and

(d) a sauce dispenser adapted to dispense sauce on the next visible food serving to be withdrawn from said food dispenser.

4,509,451

ELECTRON BEAM INDUCED CHEMICAL VAPOR DEPOSITION

George J. Collins; Lance R. Thompson; Jorge J. Rocca, and Paul K. Boyer, all of Ft. Collins, Colo., assignors to Colromm, Inc., Fort Collins, Colo.

Filed Mar. 29, 1983, Ser. No. 479,987
Int. Cl.³ C23C *13/08*; B05D *3/06*
U.S. Cl. 118—50.1 **25 Claims**

1. A chemical vapor deposition and native film growth apparatus for depositing or growing films on a substrate, the apparatus comprising:

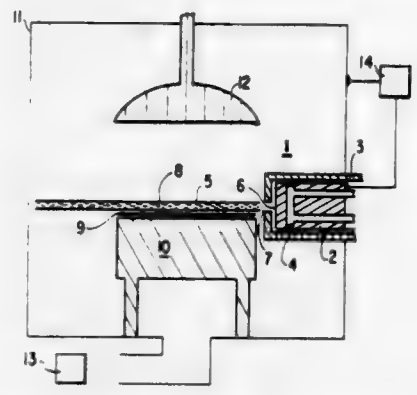
a reaction chamber;

means for supporting the substrate within the reaction chamber;

means for controlling the temperature of the substrate supported within the reaction chamber;

means for introducing one or more selected gases into the reaction chamber;

a glow discharge, cold cathode electron gun for producing a beam of high energy electrons, said glow discharge, cold cathode electron gun being positioned within the reaction chamber for exciting, ionizing, and dissociating molecules of the one or more gases introduced into the reaction chamber in a region therein defined by the beam of high energy electrons;



vacuum pump means for evacuating the reaction chamber and for causing the one or more gases introduced into the reaction chamber to flow through the reaction chamber;

gas flow control means for controlling the flow and pressure of the one or more gases introduced into the reaction chamber such that the gas pressure in the reaction chamber is maintained within the range of 0.05 Torr to 5 Torr; and

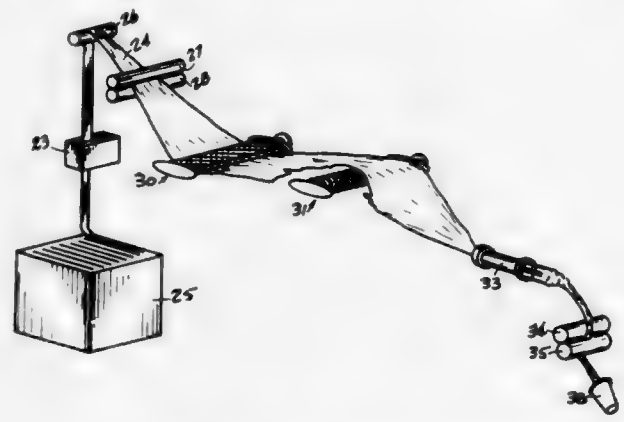
power supply means for providing a source of negative high voltage to the glow discharge, cold cathode electron gun to start and maintain the production of the beam of high energy electrons therefrom.

4,509,452

APPLICATION OF LIQUID ADDITIVES TO CIGARETTE FILTER TOW

James W. Pryor, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 29, 1982, Ser. No. 437,654
Int. Cl.³ B05C *5/00, 9/04*
U.S. Cl. 118—234 **7 Claims**



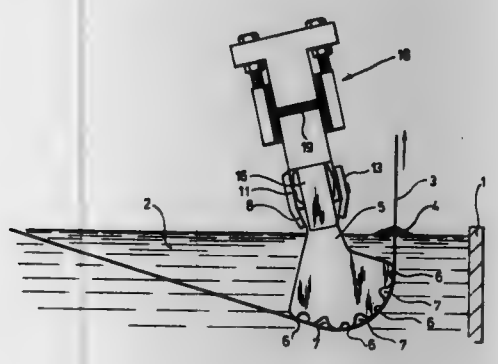
1. Apparatus for applying a liquid additive to a moving band of continuous, multifilament filter tow comprising a liquid applicator provided with a porous metal surface adapted for contacting said band of filter tow, means for supplying controlled amounts of liquid additive to said porous metal surface, means for continuously moving the band of filter tow in contacting relationship across said porous metal surface and wherein said porous metal surface is provided with tow spreading means comprising a plurality of ridges arranged at angles which are inclined with respect to the path of the moving band of filter tow so that the filter tow is urged to move laterally from the central portion of the band of filter tow to each edge of said band of filter tow.

4,509,453

APPARATUS FOR CONTINUOUSLY DIP-ZINCING OF METALLIC WIRE OR STRIP MATERIAL

Giulio Zaccheroni, Via della Grada 6, Bologna, Italy

Filed Nov. 30, 1982, Ser. No. 445,634
Claims priority, application Italy, Nov. 30, 1981, 3591 A/81
Int. Cl.[3] B05C *3/12*
U.S. Cl. 118—420 6 Claims



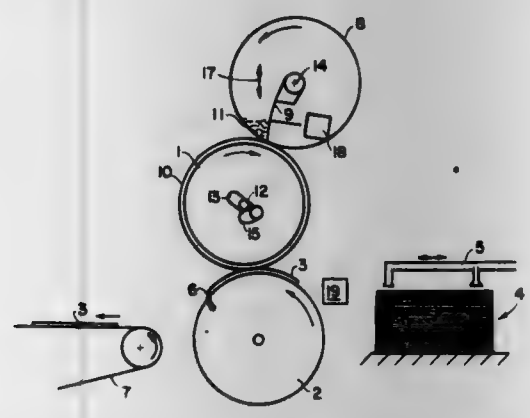
1. Apparatus for continuously zinc-coating metallic wire, strip material or the like in a zinc melt dip bath, comprising a stationary return guide member at least partially immersed in said bath for guiding the material to be zinc-coated therethrough and redirecting it substantially vertically upwards, said return guide member (5) comprising a plurality of separate guide surfaces (6) extending transversely to the running direction of said material (3) and cooperating to define the path of the material through said bath (2).

4,509,454

PRINTING APPARATUS, PARTICULARLY ADAPTED TO APPLY A VARNISH

Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Brabant B.V., Netherlands

Filed May 27, 1983, Ser. No. 498,843
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 8215996[U]
Int. Cl.[3] B05C *1/02*
U.S. Cl. 118—681 8 Claims



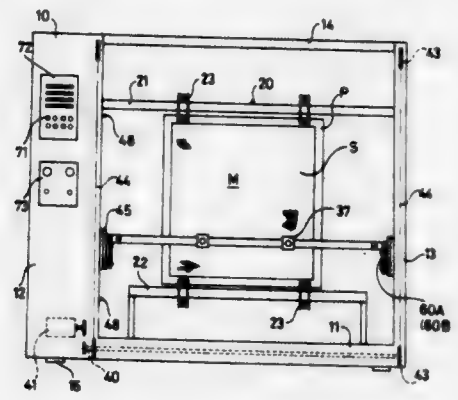
1. Apparatus adapted to apply a layer of viscous sticky material, particularly varnish, in the form of a pattern or otherwise, to a substrate, comprising an applicator roll and means for applying the viscous material to said roll, the substrate being fed by feed means between the applicator roll and an impression roll, the means for applying the viscous material to the applicator roll consisting of a cylindrical screen stencil with an internal squeegee, means for rotating said applicator roll and said cylindrical screen stencil in opposite directions to produce a circumferential movement of the applicator roll and screen stencil in the same direction at the point where they meet, the circumferential speed of the applicator roll being greater than that of the cylindrical screen stencil.

4,509,455

APPARATUS FOR APPLYING EMULSION ONTO SCREEN PRINTING PLATE

Kenji Shirataki, Tokyo, Japan, assignor to Tokai Shoji Co. Ltd., Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 624,060
Claims priority, application Japan, Aug. 27, 1983, 58-156776
Int. Cl.[3] B05C *3/00, 11/00*
U.S. Cl. 118—696 6 Claims



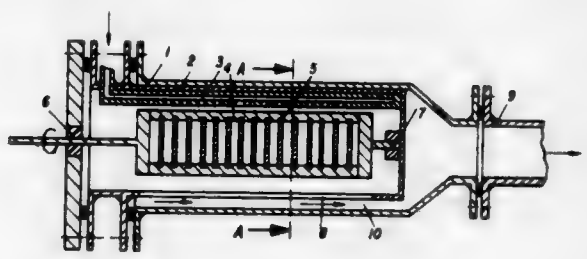
1. An apparatus for applying an emulsion onto a screen printing plate, which comprises a base consisting of a frame having side walls at its opposite sides; a supporting mechanism having clamps for supporting the screen vertically; a lifting mechanism for lifting along the screen an applying squeegee and a scraping squeegee arranged on both sides of the screen; actuating mechanisms for the squeegees, one of said actuating mechanisms allowing the applying squeegee to move toward the screen, to be contacted at its leading edge with the screen and to be inclined upon its upward movement, while the other actuating mechanism allows the scraping squeegee to be not contacted with the screen, or to move toward the screen and to be contacted at its leading edge with the screen but not to be inclined upon its upward movement, both of said squeegees being restored to their horizontal state and retreated to be spaced apart from the screen face upon their downward movement; and a controlling mechanism for controlling the movement of each squeegee for allowing the applying squeegee to apply the emulsion and the scraping squeegee to scrape and recover the emulsion.

4,509,456

APPARATUS FOR GUIDING GAS FOR LP CVD PROCESSES IN A TUBE REACTOR

Michael Kleinert; Rainer Möller, and Horst Stelzer, all of Dresden, German Democratic Rep., assignors to VEB Zentrum für Forschung und Technologie Mikroelektronik, Dresden, German Democratic Rep.

Filed Jun. 18, 1982, Ser. No. 389,750
Claims priority, application German Democratic Rep., Jul. 28, 1981, 232136
Int. Cl.[3] C23C *13/08*
U.S. Cl. 118—715 11 Claims



1. An apparatus for guiding gas through a tube reactor and in contact with a plurality of substrates within said tube reactor, in low pressure chemical vapor deposition processes, which comprises a substantially rectilinear tube reactor, a generally centrally oriented substantially rectilinear substrate

mounting element disposed within the interior of said tube reactor, said substrate mounting element being substantially parallel to the longitudinal axis of said tube reactor, and being provided with means to receive and mount a plurality of substrates, so that said substrates are disposed in a generally parallel and spaced-apart disposition with respect to each other along said substrate mounting element, and in a substantially perpendicular orientation relative to both said substrate mounting element and the longitudinal axis of said tube reactor, a generally rectilinear cup-shaped inner tube within and spaced from said tube reactor, so that an intermediate zone is formed between said inner tube and said tube reactor, said inner tube being disposed about and surrounding said substrate mounting element, and being oriented generally parallel to the longitudinal axis of said tube reactor, at least one foraminous substantially rectilinear gas supply feed pipe, said gas feed pipe being disposed within said inner tube and being contiguous with a continuous inner wall area of said inner tube, and being spaced from and parallel to said substrate mounting element, means to pass a gas stream into said gas feed pipe, said inner tube having a gas discharge opening disposed generally on the opposite side of said inner tube from said continuous wall area adjacent said gas feed pipe, so that said gas stream is discharged into said inner tube from the openings in said gas feed pipe and flows transversely to the longitudinal axis of said tube reactor and between and across the surfaces of said substrates, and is discharged from said inner tube through the gas discharge opening in said inner tube and into said intermediate zone between said inner tube and said tube reactor, and means to remove discharged gas from said intermediate zone and out of said tube reactor, so that the gas stream flow is suctioned off, in the flow direction, immediately after flowing transversely to the longitudinal axis of said tube reactor and between and across the surfaces of said substrates, and is suctioned out of said tube reactor outside the substrate areas.

4,509,457

ANIMAL LITTER AND PROCESS FOR THE PRODUCTION THEREOF

Hartmut Durbye, Kirchlinteln-Luttum, Fed. Rep. of Germany, assignor to Mars Inc., McLean, Va.

Filed May 28, 1982, Ser. No. 383,010

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121403

Int. Cl.³ A01K *1/015*

U.S. Cl. 119—1 **20 Claims**

1. Animal litter comprising an odor-suppressing granular or powder porous inorganic material which has been uniformly contacted with a gaseous or liquid acidic substance to neutralize alkalinity therein and impart to said inorganic material a weakly acidic pH between approximately 5.8 and 6.2, and said litter characterized by exhibiting good adsorption for odors from animal excrement having a pH in the weak acid range.

4,509,458

PROCESS OF SEA-RANCHING SALMON AND THE LIKE

Robert H. Rines, and Albert H. Knowles, both of Concord, N.H., assignors to K. R. Associates, Inc., Concord, N.H.

Filed Sep. 29, 1982, Ser. No. 427,950

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—3 **11 Claims**

1. A process of sea-ranching salmon and the like, that comprises, rearing fry through to the smolt stage in fresh water; transferring the smolt directly to confined salt-water holding volumes located at a region where sea-ranch return is desired such as where a river empties into the sea; feeding the smolt in such volumes over periods of time not only sufficient to imprint said region upon the smolt for sea-return purposes but also sufficient to enable substantial growth in the salt water over the size at the time of introduction into the said salt-water holding volumes; holding some of said smolt in such volumes at said region continually over extended periods of time sufficient for such smolt to reach maturity at the same region while other smolt in such volumes are released to the sea for ranching; the effluent from said volumes being continually present at said region, assisting not only in the initial imprinting of the smolt-to-be-released to the sea but also in attracting the subsequent sea return of the released smolt to said region.

4,509,459

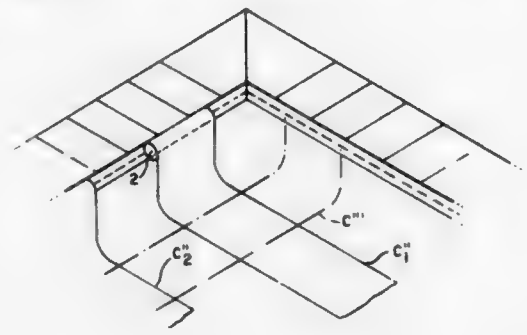
PROCESS AND APPARATUS FOR FISH GROWTH ACCELERATION

Albert H. Knowles, and Robert H. Rines, both of 13 Spaulding St., Concord, N.H. 03301

Division of Ser. No. 360,563, Mar. 22, 1982, Pat. No. 4,399,770, which is a continuation of Ser. No. 181,831, Aug. 27, 1980, abandoned. This application Jun. 2, 1983, Ser. No. 500,349

Int. Cl.³ A01K *63/00*

U.S. Cl. 119—3 **2 Claims**



1. For use in a contained water volume having a border at least at the water surface and fish contained therein, apparatus comprising the combination of a plurality of elongate, light-blocking cover sheets of soft, resilient material and means for suspending said cover sheets respectively from opposite parts of said border at successive laterally spaced positions along said border and in an arrangement that provides cover sheets that are orthogonal to one another and that provides successive laterally spaced dark areas beneath said cover sheets, wherein the fish may stack and rest in darkness, with intervening light areas corresponding to the spaces between adjacent cover sheets, each of said cover sheets, when suspended, having major portions in the water.

4,509,460

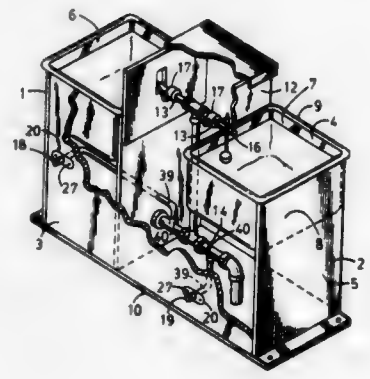
WATERING DEVICE FOR ANIMALS

Leonard W. Seltzer, R.R. 1, Box 160, Manhattan, Ill. 60442

Filed Oct. 5, 1983, Ser. No. 539,248

Int. Cl.³ A01K *7/02*

U.S. Cl. 119—74 **13 Claims**



1. A watering device for animals, comprising a housing having a peripheral side wall, first drinking means in said housing located therein at a first preselected height for animals of a relatively greater height to drink from, said first drinking means including a pan having an open top wall seated in said housing to receive water therein for drinking by said animals of said relatively greater height, second drinking means in said housing located therein at a second preselected height for animals of a relatively shorter height to drink from, said first

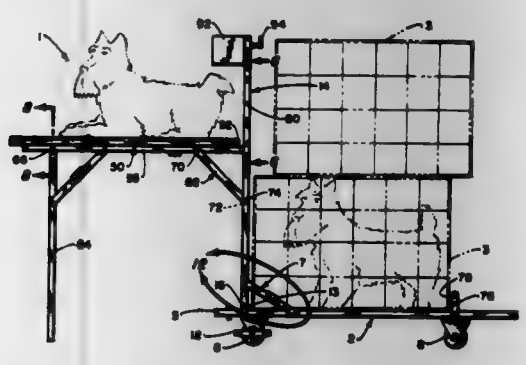
preselected height being higher than said second preselected height, said housing including therein water intake means, said first and second drinking means both being positioned to receive water from the same said water intake means, bracket means to mount said drinking means in said peripheral side wall of said housing, at least one aperture in said side wall, said bracket means including inwardly facing tubular projection means having a peripheral configuration and dimension corresponding to that of said aperture to seat snugly in said aperture when said bracket means is positioned against said peripheral side wall and affixed thereto, said bracket means including outwardly facing projection means, said inwardly facing and outwardly facing projection means each having a central bore therethrough, each of said central bores being in registration to provide a through passageway through said bracket means and said peripheral side wall, water dispensing means connected to said outwardly facing tubular projection means, said water dispensing means including a portion thereof receivable in the mouth of said animals of a relatively shorter height, first water conduit means connecting said inwardly facing tubular projecting means to said water intake means and second water conduit means connected to said water intake means having an outlet positioned to pour water into said pan of said first drinking means.

4,509,461

ANIMAL TRANSPORT AND GROOMING DEVICE

Paul P. Peck, 18918 Hartland St., Reseda, Calif. 91335

Filed Aug. 15, 1983, Ser. No. 523,460
Int. Cl.³ A61D *3/00*
U.S. Cl. 119—103 **13 Claims**



1. A compact, collapsible, easily moved animal transport and grooming device comprising the combination of:

a chassis member having a roller means attached thereto for movement of said chassis and formed by at least two side elements held in spaced, parallel relationship by at least one transverse element connected at its termini to said side elements;

a U-shaped support member operatively connected adjacent one end of said chassis member and adapted to being placed into a folded position on top of said chassis member and an erected position away from said chassis member so as to form a support;

a brace member formed by pivotally connected link members operatively connected at one end to said chassis member and at the other end to said U-shaped support member to permit erection of said U-shaped support member in a secure manner and to hold said U-shaped support member in a secured manner when in its folded position on top of said chassis; and

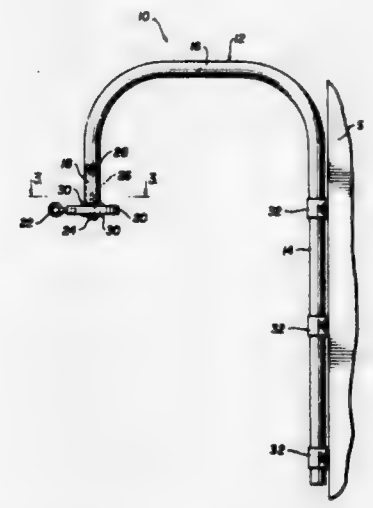
a tabletop member having one end pivotally connected to said U-shaped support member and having at least one support leg pivotally connected at one terminus to said tabletop member.

4,509,462

PET HITCHING DEVICE

Bobby L. Pickett, 3 Tuck Cir., Lemmon Valley, Nev. 89506

Filed May 17, 1984, Ser. No. 611,084
Int. Cl.³ A01K *1/04*
U.S. Cl. 119—117 **5 Claims**



1. A pet hitching device for a vertical support, comprising:

an elongated member having a generally vertically extending section that merges upwardly into a generally U-shaped upper section having a downwardly extending end portion that is shorter than said vertically extending section,

a disk member rotatably mounted on said end portion in a substantially horizontal plane,

hook means secured to said disk member and adapted to be connected to a pet leash, and

means for rotatably securing said vertically extending section to said vertical support to position said disk member a predetermined distance above the ground.

4,509,463

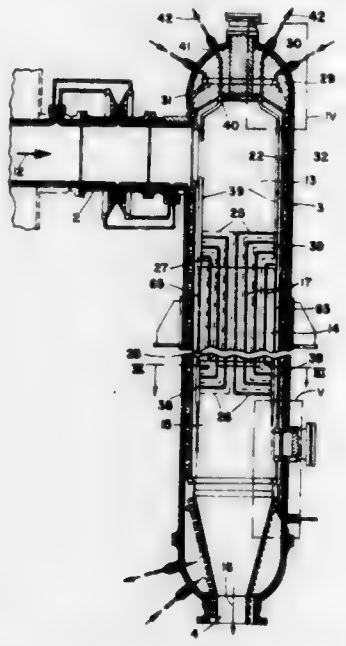
UPRIGHT APPARATUS FOR COOLING HIGH PRESSURE GASES CONTAINING A HIGH DUST CONTENT

Frohmut Vollhardt, Oberhausen, and Heinz Haacker, Kreuztal-Ferndorf, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Ausburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1983, Ser. No. 564,210
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3248096
Int. Cl.³ F22D *1/00*
U.S. Cl. 122—7 R **7 Claims**

1. In an upright apparatus for cooling high pressure gases containing a high dust component by radiation and convection, which apparatus is followed by a radiation cooler on the gas side, the improvement comprising a cooler housing defining a vertically elongated interior chamber with an inlet adjacent its upper end for the gas and a discharge for the gas adjacent its lower end, and at least one heat exchanger in said chamber comprising a plurality of vertical finned tube walls arranged in spaced substantially parallel rows forming gas pass lanes be-

tween said rows and extending across said chamber substantially from one side thereof to the other, and header means



associated with said rows for connecting a coolant through said tubes.

4,509,464

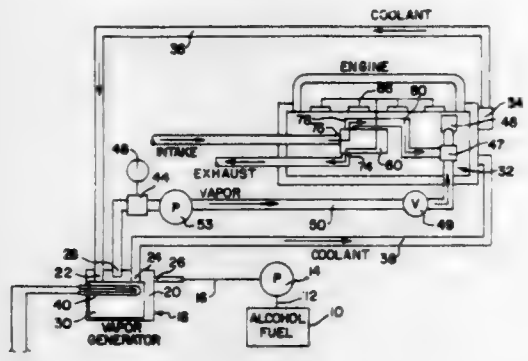
HIGH EFFICIENCY INTERNAL COMBUSTION STEAM ENGINE

Herbert N. W. Hansen, 432 Wing Park Blvd., Elgin, Ill. 60120

Continuation-in-part of Ser. No. 402,116, Jul. 26, 1982, abandoned. This application Mar. 14, 1984, Ser. No. 589,049

Int. Cl.[3] **F02M** *25/02, 31/10*

U.S. Cl. 123—1 A **14 Claims**



1. A fuel-water system for an internal combustion steam engine adapted for use with alcohol-water mixtures, the engine including at least one cylinder having an air/fuel-water inlet and a burned fuel exhaust outlet, the engine further including a fluid engine coolant system; the fuel-water system comprising a carburetor; a reservoir adapted to contain an alcohol-water mixture; two-stage fuel-water vaporizing means having an fuel-water inlet from the reservoir and a vapor fuel-water outlet connected to the carburetor, the vaporizing means operatively connected to the engine coolant system, the vaporizing means defining a first fuel-water preheat zone and a second final fuel-water vaporizing zone above the first pre-heat zone, means for maintaining the liquid fuel-water substantially at the upper limit of the final fuel-water vaporizing zone whereby the waste engine heat transferred from the coolant system to the vaporizing means preheats the fuel-water in the first zone to a temperature less than the vaporization temperature of alcohol and heats the fuel-water in the second zone to at least the temperature of water vaporization whereby proper fuel-water vaporization occurs with minimal fractional vaporization.

4,509,465

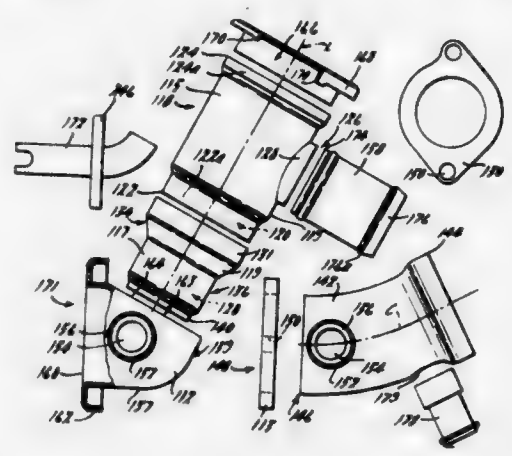
THERMOSTAT HOUSING ASSEMBLY

Karl R. Edelmann, 1468 Chestnut La., Rochester, Mich. 48063

Continuation-in-part of Ser. No. 404,463, Aug. 2, 1982, Pat. No. 4,434,750. This application Oct. 31, 1983, Ser. No. 547,003

Int. Cl.[3] **F01P** *7/16*

U.S. Cl. 123—41.02 **28 Claims**



1. A modular thermostat housing construction for attachment to an engine comprising:

(a) base module having means for attaching to said engine and defining a first chamber for conducting fluid;

(b) thermostat receiving module having a wall defining a second chamber for conducting fluid and having an opening through said wall communicating with said second chamber; and

(c) hollow extension module assembled on said wall of said thermostat receiving module to communicate with said opening;

(d) said base module and said thermostat receiving module having interfitting means adapted for interfitting assembly and engageable to join said thermostat receiving module and said base module together in a selected one of a plurality of spatial configurations, whereby the spatial relationship of said extension module relative to said engine is determined.

12. A method of constructing a thermostat housing for an engine comprising:

(a) forming a thermostat receiving module to have a wall defining a first fluid conducting chamber communicating with a first opening;

(b) forming a second opening through said wall;

(c) attaching a hollow extension module to said wall to communicate with said second opening;

(d) forming a base module to have means for attaching to said engine and to define a second fluid conducting chamber communicating with a second opening;

(e) interfitting said base module with said thermostat receiving module so that said second opening is positioned at a preselected position relative to said base module; and

(f) attaching said base module to said thermostat receiving module.

4,509,466

DIESEL ENGINE WITH AN EFFECTIVE COMPRESSION RATIO SUBSTANTIALLY EQUAL TO THE GEOMETRICAL COMPRESSION RATIO

Luigi Bernardoni, Tradate, and Umberto Invernizzi, Milan, both of Italy, assignors to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Aug. 5, 1983, Ser. No. 520,848

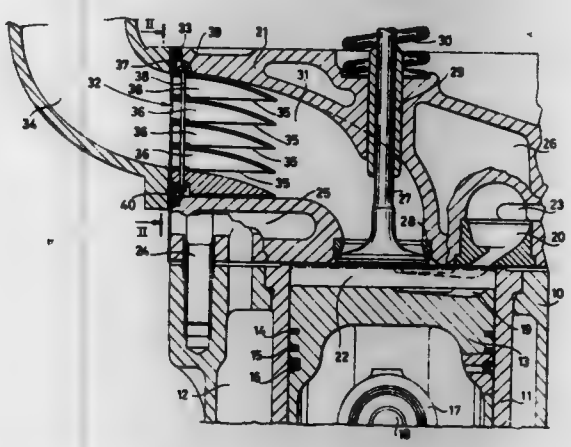
Claims priority, application Italy, Aug. 18, 1982, 22886 A/82

Int. Cl.[3] **F02B** *77/00*

U.S. Cl. 123—52 MF **2 Claims**

1. A diesel internal combustion engine of the type having a cylinder, a piston mounted in said cylinder for reciprocating movement, an intake duct for air, and an intake valve between said cylinder and said intake duct, said intake valve having a timing means relative to the movement of said piston wherein

said intake valve is open during an initial part of a compression stroke of said piston wherein there is a back flow of intake gases during an initial part of said compression stroke which would evolve an effective compression ratio less than a calculated geometric compression ratio, and automatic non-return valve means within said intake duct immediately upstream of said intake valve and in series with said intake valve for restricting intake air back flow into said intake duct during said initial part of said compression stroke, said non-return valve means forming means for providing an effective compression ratio substantially equal to said geometrical compression ratio.

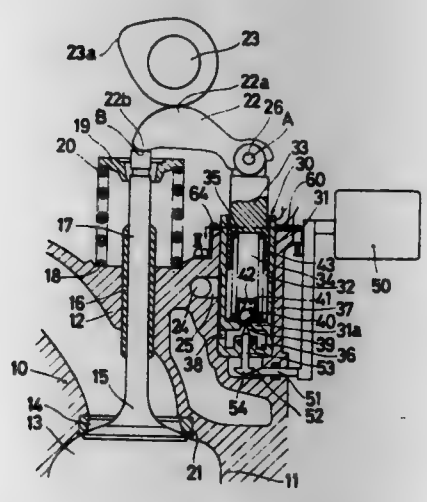


4,509,467

HYDRAULIC LIFTER SYSTEM FOR VARIABLE CYLINDER ENGINES

Fuminao Arai, Chiryu; Hisashi Kodama, Nagoya, and Takuro Ono, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 2, 1983, Ser. No. 548,100
Claims priority, application Japan, Nov. 9, 1982, 57-197367
Int. Cl.³ F02D *13/06*
U.S. Cl. 123—90.16 **6 Claims**



1. A hydraulic lifter system for variable cylinder engines comprising:

a rocker arm being capable of rocking in association with a rotation of a cam shaft and being in contact with an intake or exhaust valve,

a hydraulic lifter operatively connected to said rocker arm and including a body having a pressure chamber and a reservoir chamber therein, a plunger slidably positioned within said body and exposed to said pressure chamber and a check valve positioned between said pressure and reservoir chambers to thereby allow the fluid flow only into said pressure chamber from said reservoir chamber,

a solenoid valve positioned by the side of said hydraulic lifter and actuated in response to electric signals,

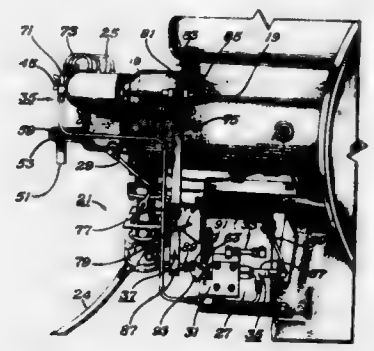
means for causing said check valve to open to thereby establish the fluid communication between said pressure and reservoir chambers by means of said solenoid valve, and a stopper member for locking said plunger to stop the operation of said hydraulic lifter in association with said means for causing said check vavle to open.

4,509,468

CYLINDER OILER ASSEMBLY

Harrold Cockburn; Darrel Weatherly, and Earl Yarbro, all of Bowie, Tex., assignors to Bell Manufacturing Company, Bowie, Tex.

Filed Jan. 3, 1984, Ser. No. 567,670
Int. Cl.³ F01M *9/10, 1/00*
U.S. Cl. 123—90.38 **5 Claims**



1. In an engine having conventional components including at least one valve, pivotally mounted rocker arm for operating said valve, reciprocally movable member for effecting pivotal movement of said rocker arm, splash system for internal lubrication of the engine and including an oil sump internally of the engine for containing oil for the splash system, the improvement consisting essentially of an external lubrication system comprising:

a. a cover for said rocker arm; said cover being sealingly emplaced about said rocker arm and having at least one oil inlet aperture to allow oil to be applied to said rocker arm at its lubrication points of contact and having at least one oil drain aperture to allow oil to drain from said cover;

b. oil reservoir for containing oil for lubricating said rocker arm; said oil reservoir being externally mounted and separate from the engine oil sump;

c. oil drain conduit connected at its one end with said oil drain aperture of said cover and at its other end with said oil reservoir for recycling oil from said cover to said oil reservoir;

d. oil pump having a suction and a discharge for pumping said oil for lubricating said rocker arm; said oil pump being mounted exteriorly of said engine and operable independently of the splash internal lubrication system;

e. oil suction conduit connected respectively with said oil reservoir and said suction of said oil pump so as to convey oil from said reservoir to said pump for being pumped to lubricate said rocker arm; said oil suction conduit being mounted exteriorly of said engine;

f. discharge oil distribution system including a plurality of conduits sealingly connected respectively with said discharge of said pump and containing a manifold for distributing the oil in said external lubrication system to a plurality of lubrication points of contact interiorly of said cover; said discharge oil distribution system being mounted exteriorly of said engine; and

g. oil pump power means for powering said oil pump; said oil pump power means being drivingly connected with a moving part of said engine so as to operate said pump and driven in response to the engine operation; said oil pump power means being disposed exteriorly of said engine.

4,509,469

BREAK IGNITION PLUG

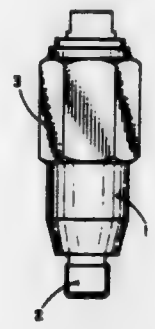
Max Pasbrig, Orselina, Switzerland, assignor to Lacrex Brevetti S.A., Orselina, Switzerland

Filed Nov. 17, 1980, Ser. No. 207,455

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951848

Int. Cl.[3] F02P *15/00*

U.S. Cl. 123—154 6 Claims



1. A break ignition plug for piston engines, comprising:
an electromagnet having a magnet core and magnet coil;
blade springs arranged in spaced relationship from one another at a lengthwise axis of the ignition plug;
said blade springs having free ends;
electrode heads provided at the free ends of said blade springs;
said electrode heads confronting one another;
said blade springs being retained in the magnet core;
said blade springs freely protruding with the electrode heads provided at the blade spring ends into a hollow space formed at a threaded portion of the ignition plug;
armature means formed on the blade springs at a magnetic gap region of the magnet core; and
said armature means comprising armature members arranged to be repelled from one another upon excitation of the electromagnet.

4,509,470

FUEL INJECTION PUMP

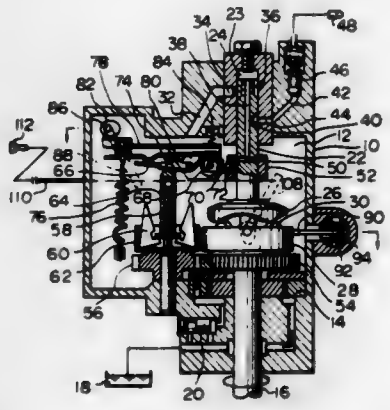
Satoru Ito, and Masatoshi Endo, both of Higashi Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,130

Claims priority, application Japan, Mar. 12, 1981, 56-34670[U]

Int. Cl.[3] F02M *39/00;* F02D *31/00*

U.S. Cl. 123—179 L 2 Claims



1. A fuel injection pump for an engine, comprising a fuel injection advance angle control member which is controlled to increase the angle as the speed of the engine is increased, a fuel control member which is controlled to decrease the amount of fuel injection as the engine speed is increased, a knob located in a position accessible for manipulation, an operative connection means between said knob and at least the fuel injection advance angle control member for permitting said member to be manually controlled through said knob to increase the angle before the engine is started, said operative connection means comprising reaction force reducing means for reducing the reaction force which counteracts the force exerted on said knob when manually controlling said fuel injection advance angle control member toward an angle advancing direction, said reaction force reducing means comprising a spring which yields upon manipulation of said knob prior to the start of the engine to store a resilient force therein without moving said fuel injection advance angle control member in the angle advance direction said fuel injection advance angle control member being moved toward the angle advancing direction by said stored resilient force upon starting of the engine, whereby prior to starting of said engine said knob is manually manipulated to apply said stored resilient force to said spring and upon starting of said engine said stored resilient force is applied to move said fuel injection advance angle control member when the force necessary for such movement is reduced due to said starting of the engine.

4,509,471

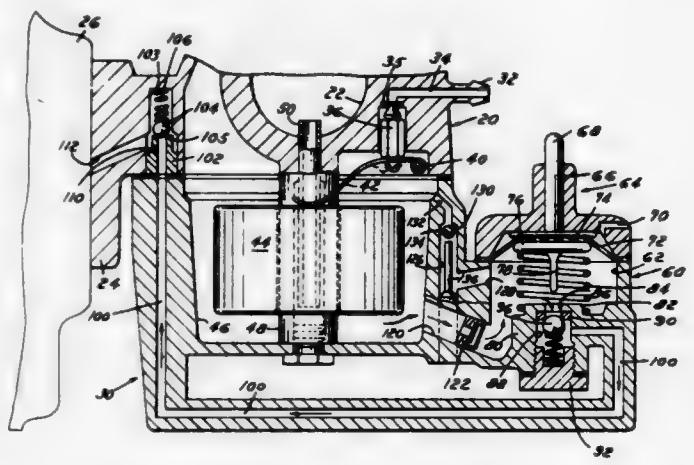
START SYSTEM FOR INTERNAL COMBUSTION ENGINES

William C. Eberline, Cass City, Mich.; Norman H. Radtke, Fond du Lac, Wis., and Robert L. Van Camp, Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jan. 7, 1983, Ser. No. 456,422

Int. Cl.[3] F02N *17/00*

U.S. Cl. 123—179 G 1 Claim



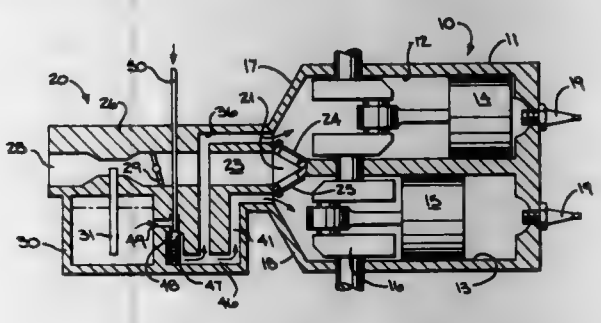
1. In a float carburetor for providing fuel to engines, such as outboard motors, of the type having a body forming a float chamber, a fuel and air mixing passage connected to the fuel induction chamber of an engine, a main fuel nozzle and idle passages connected to said mixing passage, a supplemental fuel chamber laterally adjacent said float chamber in the carburetor body with expulsion means which, upon actuation, will expel fuel from the fuel chamber, that improvement which comprises means forming an inlet passage to the base of said chamber connected to the base of said float chamber and an outlet air vent passage at the top of said chamber connected to the top of said float chamber, normally open, one-way valves in said passages to allow fuel to flow freely into said chamber from said float chamber and closed upon actuation of said expulsion means, means forming an auxiliary fuel passage connecting said supplemental fuel chamber to a fuel receiving portion of an internal combustion engine, a first one-way valve at the chamber end of said auxiliary passage mechanically opened by actuation of said explusion means to allow flow from said chamber to said auxiliary passage, a second normally closed, spring-biased one-way valve at the engine end of said auxiliary passage opened by pressure in said chamber and said auxiliary passage created by actuation of said expulsion means, and a third calibrated passage opening from said auxiliary passage to said engine to admit fuel to said engine when said first one-way valve is open by said expulsion means and said second one-way valve is open by said explusion means and said second one-way valve is closed.

4,509,472

STARTING ENRICHMENT OF ALTERNATE FIRING TWO CYCLE INTERNAL COMBUSTION ENGINE

Gordon C. Slattery, Omro, Wis., assignor to Brunswick Corp., Skokie, Ill.

Continuation of Ser. No. 452,912, Dec. 27, 1982, abandoned.
This application Jul. 26, 1984, Ser. No. 634,657
Int. Cl.[3] F02N *17/00*
U.S. Cl. 123—179 G 8 Claims



1. In an internal combustion engine, the combination comprising:

(a) a cylinder block having first and second pistons reciprocable in opposite directions within first and second cylinders,

(b) first and second crankcases associated with said first and second pistons,

(c) means mounted to said engine for supplying a fuel-air mixture to said first and second crankcases alternately upon reciprocation of said first and second pistons,

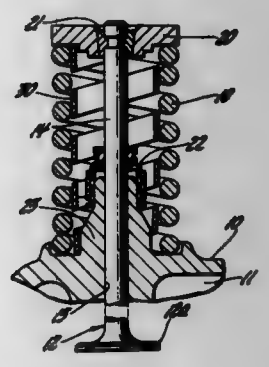
(d) and means responsive to pressure in each crankcase for supplying a supplemental charge of fuel alternately to said crankcases upon reciprocation of said pistons during starting of said engine, said supplemental charge supplying means operative upon reciprocation of said first piston in one direction and said second piston in the opposite direction to inject fuel into said first crankcase by the pressure developed within said second crankcase by said second piston, and upon reciprocation of said first piston in the said opposite direction and said second piston in the said one direction to inject fuel into said second crankcase by the pressure developed within said first crankcase by said first piston.

4,509,473

SPRING DAMPER WITH CONTROLLED WEAR AREA

Nshan Hamparian, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1984, Ser. No. 601,427
Int. Cl.[3] F01L *3/10*
U.S. Cl. 123—188 SC 3 Claims



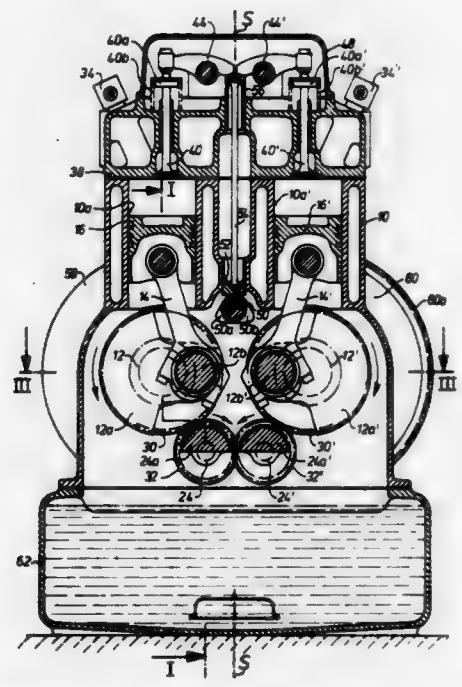
1. In an internal combustion engine having a cylinder head, a poppet valve supported by the cylinder head for movement between valve open and valve closed positions, the poppet valve having a stem extending through a guide bore in the cylinder head, actuator means operatively associated with the poppet valve for reciprocating the poppet valve, the actuator means including a coiled valve return spring loosely encircling the stem of the valve and operatively associated at one end with the valve and its opposite bottom end in abutment against the cylinder head whereby to normally bias the poppet valve to the closed position and, a coiled valve spring damper of flat wire operatively positioned within the valve return spring for reducing spring coil resonance, the improvement wherein said valve spring damper is of reduced external diameter adjacent to the bottom of the valve return spring for an axial extent corresponding to approximately 2¼ coils of said valve spring whereby to eliminate damper-to-spring contact up to at least 1½ coils of said valve return spring next adjacent to the bottom end thereof.

4,509,474

PISTON MACHINE

Johann Schmuck, Sternplattenweg 11, 8201 Bad Feilnbach, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,831
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109778; Aug. 18, 1981, 3132502
Int. Cl.[3] F16F *15/24*
U.S. Cl. 123—192 B 21 Claims



1. In a piston machine assembly which includes at least one piston machine having:

two similar, rotatably supported, parallel crankshafts which are each operatively coupled to a respective piston, said crankshafts being driven synchronously with one another, and said pistons and crankshafts forming a working unit;

two rotatably supported balance shafts which are each associated with an extend approximately parallel to a respective said crankshaft;

counterweights of equal mass supported on said crankshafts and balance weights of equal mass supported on said balance shafts, said crankshafts, said pistons, said balance shafts, said counterweights and said balance weights being arranged in mirror-image fashion relative to a plane of symmetry which extends parallel to and is disposed intermediate said crankshafts and said balance shafts; and

coupling means for operatively rotationally coupling said crankshafts and said balance shafts;

the improvement comprising wherein:

said coupling means is adapted to cause said crankshafts to rotate synchronously with one another but in opposite directions; and

each of said balance shafts is disposed adjacent to and is driven through said coupling means by the associated crankshaft in a rotatable direction which is opposite to that of and at a speed which is twice that of the associated crankshaft, first and second order forces produced by

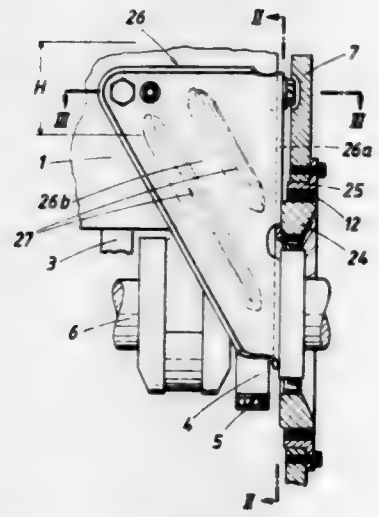
rotating and oscillating elements of said piston machine being fully balanced by forces produced by said counterweights and said balance weights.

4,509,475

RECIPROCATING INTERNAL COMBUSTION ENGINE

Tomas Visek, Steyr, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Feb. 28, 1984, Ser. No. 584,487
Claims priority, application Austria, Mar. 3, 1983, 730/83
Int. Cl.³ F16M *1/02*
U.S. Cl. 123—195 A **8 Claims**



1. In a reciprocating internal combustion engine comprising an outer pan,

an engine block mounted in said outer pan and including crankshaft main bearings defining an axis, a crankshaft mounted in said main bearings for rotation on said axis, and cylinders extending above said crankshaft main bearings, and

annular supporting elements which insulate against a transmission of structure-borne sound and are adjacent said engine block at both ends thereof and disposed within said outer pan extending beyond said outer pan towards said engine block and centered on said axis,

the improvement residing in that said supporting elements are connected to said engine block solely by holding means, which are secured to said engine block only substantially above said crankshaft main bearings.

4,509,476

SPARK-PLUG ASSEMBLY FOR INTERNAL-COMBUSTION ENGINE

Erich Breuser; Wilhelm Grözinger; Reinhard Latsch, all of Vaihingen, and Gernot Würfel, Sinsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 540,605
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241697
Int. Cl.³ F02B *19/08*
U.S. Cl. 123—266 **18 Claims**

1. In combination with an internal-combustion engine having a piston cylinder, a wall covering the piston cylinder and delimiting therewith a combustion chamber, and a spark-plug assembly comprising:

a fitting mounted in said wall and formed with a generally closed firing chamber;

a spark plug having electrodes in the firing chamber;

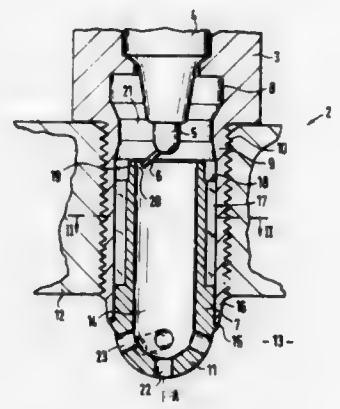
the fitting including

an outer part carrying the spark plug and forming a normally upper portion of the firing chamber, and

an electrically conductive insert forming a normally lower portion of the firing chamber;

at least one firing port extending between the lower portion of the firing chamber and the combustion chamber for fluid communication therebetween;

at least one storage compartment arranged between the outer part and the insert and opening only into the upper portion of the firing chamber, the fitting being provided



with means preventing the entrance of a flame front from the firing chamber into the storage compartment; the electrodes forming a spark gap lying in the firing chamber between the upper and lower portions thereof; and

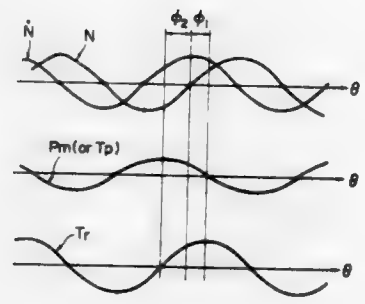
the electrically conductive insert being one of said electrodes.

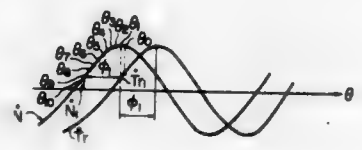
4,509,477

IDLE OPERATION CONTROL FOR INTERNAL COMBUSTION ENGINES

Mitsunori Takao, Kariya, and Takahiko Kimura, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 18, 1983, Ser. No. 553,295
Int. Cl.² F02P *5/04*; F02B *3/00*
U.S. Cl. 123—339 **8 Claims**





1. A method for controlling the idle operation of an internal combustion engine comprising the steps of:

detecting at successive times a rotational speed of said engine and determining a variation characteristic thereof;

determining a torque variation characteristic of said engine as a function of said rotational speed variation characteristic of said engine;

determining a phase difference between said rotational speed variation and torque variation characteristics as a function of said engine rotational speed;

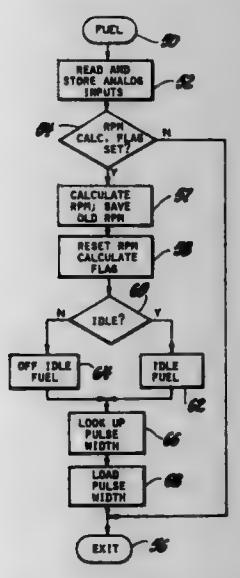
determining a present value of engine torque variation as a function of said torque variation characteristic; and

controlling at least one engine operation parameter in a direction to minimize said engine torque variation.

4,509,478
ENGINE FUEL CONTROL SYSTEM

Frank Ament, Rochester; Richard A. Peden, Livonia, and John E. Ausen, Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1984, Ser. No. 619,476
Int. Cl.[3] F02B *32/00*
U.S. Cl. 123—339 2 Claims



1. A fuel control system for an internal combustion engine having a fuel delivery means for supplying fuel to the engine, the fuel control system comprising:

means for sensing the idle and off-idle operating states of the engine;

means for sensing the engine speed;

means for scheduling an off-idle fuel quantity in accord with predetermined engine operating parameters during the off-idle operating state of the engine;

means for scheduling an idle fuel quantity in accord with the engine speed during the idle operating state of the engine;

means for controlling the fuel delivery means to supply the scheduled idle and off-idle fuel quantities during the respective idle and off-idle operating states of the engine;

means responsive to the sensed engine speed during the idle operating state of the engine for adjusting the scheduled idle fuel quantity by an amount to obtain a desired engine idle speed; and

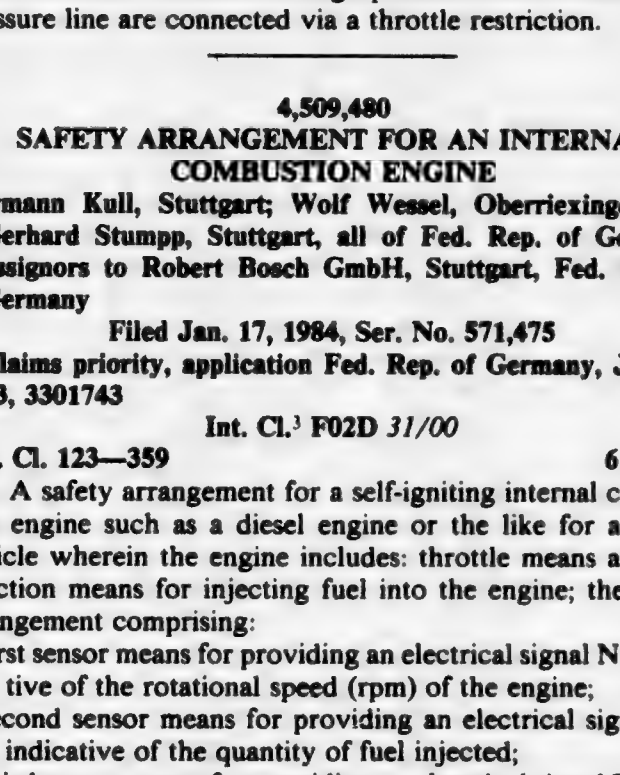
means for progressively adjusting the scheduled off-idle fuel quantity between 0 and 100 percent of the prior idle fuel adjustment amount in an inverse relationship to engine speed over a predetermined speed range in proximity to the desired engine idle speed, whereby the progressive variation in the off-idle fuel quantity value provides a smooth transition between the idle and off-idle operating states of the engine.

4,509,479
APPARATUS FOR AIR-INJECTION OF LIQUID GAS

Rudolf C. Rijkeboer, Voorburg, Netherlands, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 11, 1984, Ser. No. 569,867
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312760
Int. Cl.[3] F02M *21/02, 39/00*
U.S. Cl. 123—525 7 Claims

1. An apparatus for air-injection of liquid gas into an intake tube of an internal combustion engine comprising a vaporizer pressure regulating valve, which has a yielding wall, and a movable valve element, said movable valve element of the vaporizer pressure regulating valve being actuatable by said yielding wall which is engaged on one side by the pressure of the vaporized liquid gas and a compression spring, and on the other side with the atmosphere, and a metering valve including a metering valve element disposed downstream of the vaporizer pressure regulating valve, the valve element of said metering valve is embodied as a metering piston and actuated by an air flow rate meter measuring the air throughput in intake tube upstream of a throttle valve, said metering valve opens a metering cross section for the gaseous fuel to a greater or lesser extent toward an air-injection line leading to the intake tube and can be acted upon on one side by the pressure of the vaporized liquid gas in the varporizer pressure regulating valve and on the other side by the air flow rate meter and by the air flow rate meter and by a pneumatic counterpressure medium, and said metering piston is remote from the air flow rate meter and has a control face which on one side defines a control chamber communicating with a control pressure line by which the pressure in said control chamber is regulated by



a pressure control regulating valve in the control pressure line, of a control air serving as a pneumatic counter-pressure medium, and a movable valve element of the control pressure regulating valve opens a valve seat disposed in a control pressure chamber communicating with the control pressure line, to a greater or lesser extent, from which a negative-pressure line leads from a valve seat to the intake tube downstream of a throttle valve, and the control pressure chamber includes therein a regulating spring which urges the movable valve element in the opening direction of the control pressure regulating valve toward a high-pressure chamber communicating via a high-pressure line with the intake tube upstream of the air flow rate meter, wherein the high-pressure line and the control pressure line are connected via a throttle restriction.

4,509,480
SAFETY ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Hermann Kull, Stuttgart; Wolf Wessel, Oberriexingen, and Gerhard Stumpp, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,475
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301743
Int. Cl.[3] F02D *31/00*
U.S. Cl. 123—359 6 Claims

1. A safety arrangement for a self-igniting internal combustion engine such as a diesel engine or the like for a motor vehicle wherein the engine includes: throttle means and fuel injection means for injecting fuel into the engine; the safety arrangement comprising:

first sensor means for providing an electrical signal N indicative of the rotational speed (rpm) of the engine;

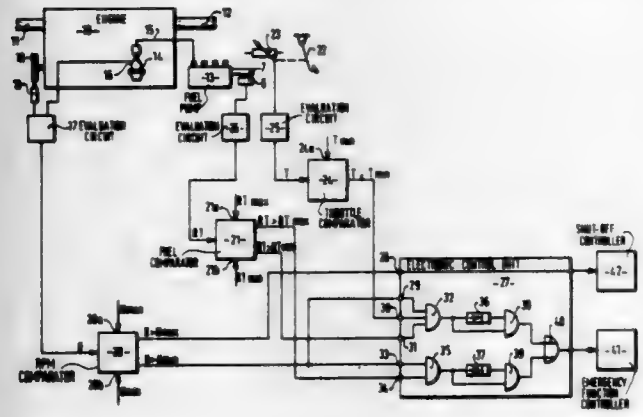
second sensor means for providing an electrical signal RT indicative of the quantity of fuel injected;

third sensor means for providing an electrical signal T indicative of the position of said throttle means;

rpm comparator means for monitoring said rpm signal N and comparing the same to a lower limit value N_{min} and an upper limit value N_{max} thereof and generating a signal indicative of the comparison;

fuel comparator means for monitoring said fuel-quantity signal RT and comparing the same to a lower limit value RT_{min} and a higher limit value RT_{max} thereof and generating a signal indicative of the comparison;

throttle comparator means for monitoring said throttle means position signal T and comparing the same to a lower limit value T_{min} and generating a signal indicative of the comparison; and,



an electronic control unit having an input side connected to each of said rpm comparator means, said fuel comparator means and said throttle comparator means for processing the outputs thereof and providing respective control signals in dependence upon and as required by conditions in the engine as evaluated from said outputs of said respective comparator means.

4,509,481

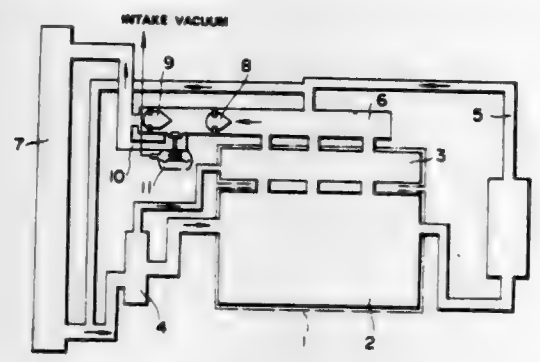
INTERNAL COMBUSTION ENGINE WITH COOLING SYSTEM

Shinichi Nagumo, Yokohama; Hiromichi Ofuji, Yokosuka, and Kazuyuki Miisho, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 25, 1984, Ser. No. 573,724

Int. Cl.[3] F02P *5/04*; F01P *7/14*

U.S. Cl. 123—407 **18 Claims**



1. An internal combustion engine having a radiator and coolant jackets, comprising:

means for varying the amount of engine coolant introduced from the coolant jackets to the radiator in accordance with engine load; and

ignition timing control means for retarding an ignition timing relative to a predetermined ignition timing only for a time period immediatly after engine operation is shifted to a high engine load mode.

4,509,482

ELECTRONICALLY CONTROLLED IGNITION SYSTEM

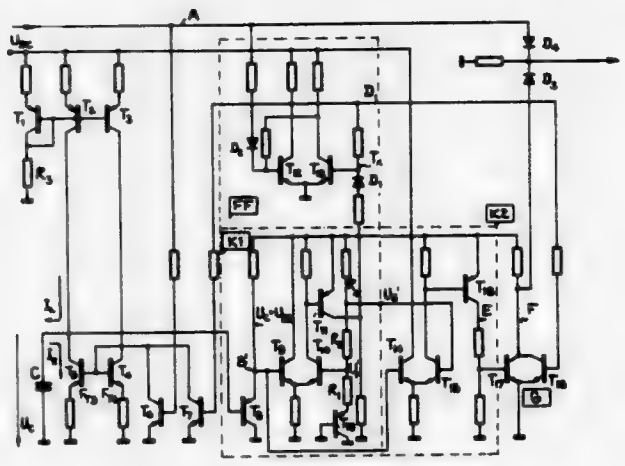
Willy Minner, Schwaigern; Alfred Krappel, Ismaning, and Johannes Guggenmos, Dirlewang, all of Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn and Bayerische Motoren Werke AG, Munich, both of, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 415,704

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3134883

Int. Cl.[3] F02P *5/04*

U.S. Cl. 123—418 **17 Claims**



1. An electronically controlled ignition system for an internal combustion engine comprising an ignition pulse sensor, control signal generating means producing a square wave control signal in dependence on said sensor, and means connected to receive the control signal for producing a saw-tooth signal in each cycle of the square wave control signal, the saw-tooth signal having a slow rising flank and a rapid falling flank and being derived from only one flank of the control signal and the relationship of the gradients of the two flanks of said saw-tooth signal being a measure for the change necessary in the control signal to produce a corrected control signal.

4,509,483

FUEL INJECTION APPARATUS AND SYSTEM

Kalin S. Johnson, Northville, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

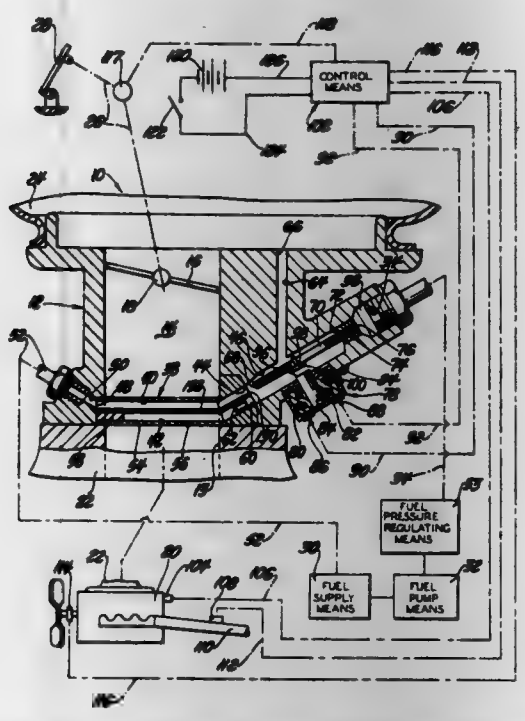
Filed Jan. 24, 1984, Ser. No. 573,336

Int. Cl.[3] F02M *32/00, 7/24*; F02B *75/18*

U.S. Cl. 123—432 **14 Claims**

1. Fuel injection apparatus and system for a combustion engine, comprising throttle body means, induction passage means formed through said throttle body means, throttle valve means for controlling the flow of induction air through said induction passage means, an associated source of fuel, metered fuel discharge nozzle means for discharging metered fuel into said flow of induction air through said induction passage means, said metered fuel discharge nozzle means comprising first fuel inlet means, fuel return passage means for operative communication with said associated source of fuel, said fuel return passage means comprising second fuel inlet means, fuel discharge orifice means, means for providing a supply of fuel under regulated superatmospheric pressure to said fuel discharge orifice means as to be discharged therethrough, and means responsive to indicia of engine operation for causing a first portion of said fuel as is discharged from said discharge orifice means to flow into said second inlet means and through said fuel return passage means and causing a second portion of said fuel as is discharged from said discharge orifice means to flow into said first inlet means and be discharged by said metered fuel discharge nozzle means into said flow of induction air, said second portion of said fuel as is discharged into said flow of induction air determining the rate of metered fuel flow being supplied to said engine, said means responsive to indicia

of engine operation being effective to vary the relative proportion of said first portion compared to said second portion as to



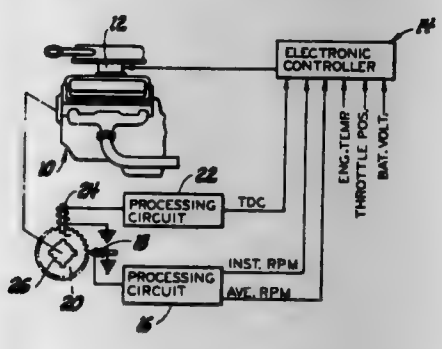
thereby vary the rate of said metered fuel flow in accordance with engine operating conditions.

4,509,484

CLOSED LOOP LEAN AIR/FUEL RATIO CONTROLLER

Kevin M. Gertiser, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 16, 1983, Ser. No. 494,938
Int. Cl.³ F02M *7/10*
U.S. Cl. 123—436 **4 Claims**



1. For an internal combustion engine having combustion chambers and an output shaft that undergoes cyclic speed variations in response to the pressure variations in the combustion chambers representative of engine operating roughness, a system for controlling the air-fuel mixture supplied to the engine to a lean limit resulting in a maximum desired engine operating roughness, the engine tending to increase its operating roughness at engine idle conditions so that the air-fuel mixture resulting in the maximum engine operating roughness is substantially richer during an engine idle condition, the system comprising:

means effective to sense the instantaneous speed of the output shaft;

means responsive to the sensed output shaft speed effective to generate a roughness signal indicative of the roughness of the engine's operation;

means effective to generate a roughness reference signal representing the maximum desired engine roughness;

means effective to increase the air/fuel ratio of the mixture supplied to the engine at a first predetermined rate when the roughness signal is less than the roughness reference signal and to decrease the air/fuel ratio of the mixture at a second predetermined rate when the roughness signal is greater than the roughness reference signal, the air/fuel ratio at which the roughness signal is equal to the roughness reference signal comprising the lean limit of the air fuel-mixture;

means effective to sense an engine idle condition; and

means responsive to a sensed engine idle condition effective to shift the roughness reference signal by a predetermined value representing a predetermined increase in the engine roughness level and decrease the rate of increase in the air/fuel ratio from the first predetermined rate to a third predetermined rate, whereby the fuel economy of the internal combustion engine is maximized by increasing the allowable engine roughness and accordingly the lean limit of the air/fuel ratio supplied to the engine during an engine idle condition.

2. A method for detecting the operating roughness level of an internal combustion engine having combustion chambers and an output shaft that undergoes cyclic speed variations in response to pressure variations in the combustion chambers associated with the compression and combustion in each combustion chamber, the method comprising the steps of:

sensing the minimum output shaft speed of each cycle of the cyclic speed variations;

averaging the sensed minimum output shaft speeds; and

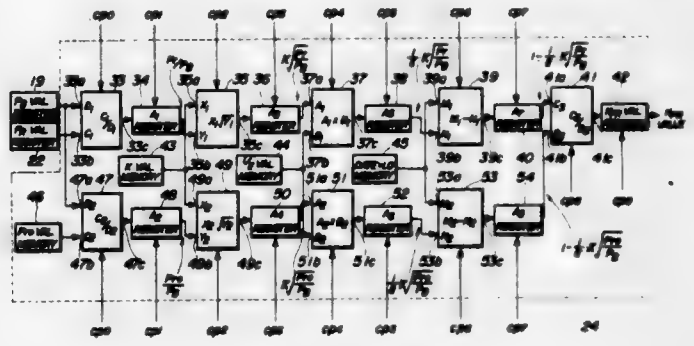
taking the difference between the sensed minimum output shaft speed and the average of the sensed minimum output shaft speeds, the difference being an indication of the operating roughness level of the engine.

4,509,485

METHOD AND DEVICE FOR BACK PRESSURE-DEPENDENT CORRECTION OF AIR/FUEL RATIO FOR INTERNAL COMBUSTION ENGINES

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,505
Claims priority, application Japan, Nov. 18, 1981, 56-184985
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—440 **7 Claims**



1. A method for correcting the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine having an exhaust pipe, an intake pipe, and a throttle valve arranged in said intake pipe, comprising: detecting a value of at least one parameter indicative of the operating condition of said engine; determining a value of the air/fuel ratio of said air/fuel mixture in accordance with the detected value of said at least one parameter; detecting a value of absolute pressure in said exhaust pipe; detecting a value of absolute pressure in said intake pipe at a location downstream of said throttle valve; determining a value of a coefficient for correction of said determined value of the air/fuel ratio, as a function of the detected values of said exhaust pipe absolute pressure, said intake pipe absolute pressure, and a predetermined reference value of said exhaust pipe absolute pressure which is available at a predetermined value of atmospheric pressure provided that said engine is not provided with any element which increases said exhaust pipe absolute pressure; and correcting the determined value of the air/fuel ratio by an amount corre-

sponding to the determined value of said correction coefficient.

4,509,486

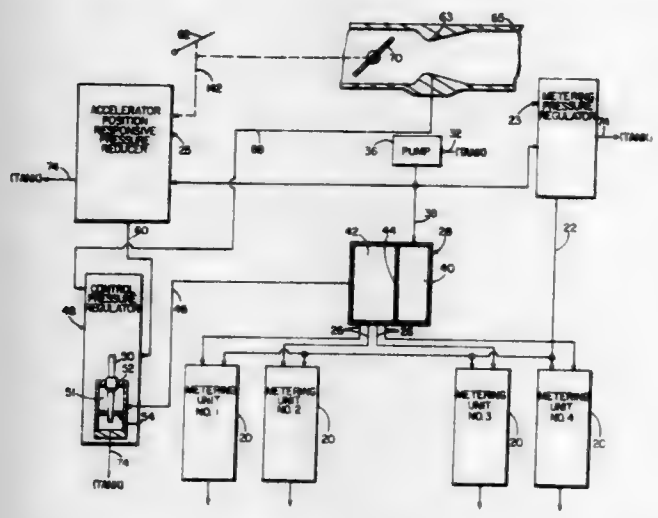
CONTINUOUS FLOW FUEL INJECTION SYSTEM

Joseph E. Swift, 47 Highview Rd., South Windsor, Conn. 06074

Filed Apr. 29, 1983, Ser. No. 489,792

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—453 **16 Claims**



1. A continuous flow fuel injection system for an internal combustion engine having at least one combustion zone, said system comprising:

a metering unit for continuously injecting fuel into the air induction path for said one combustion zone,

means for supplying injection fuel at a pressure which remains substantially constant for all operating conditions of the engine to said metering unit for said injection at said substantially constant pressure into said air induction path, and

means for supplying control fuel to said metering unit independently of said supply of injection fuel and at a control pressure the value of which is dependent on engine requirements during normal running of said engine, so that during normal running of said engine said control pressure changes with changes in engine requirements,

said metering unit including a valve member positioned in response to the value of said control pressure, and

said metering unit being so constructed that the position of said valve member controls the rate of injection by said metering unit of said injection fuel without any of said control fuel being injected.

4,509,487

FUEL SYSTEM FOR MULTI-CYLINDER ENGINE

Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Continuation of Ser. No. 451,855, Dec. 21, 1982, abandoned.

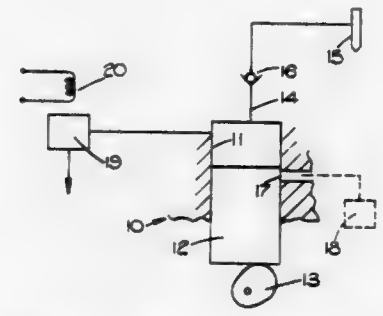
This application Oct. 24, 1984, Ser. No. 664,109

Claims priority, application United Kingdom, Dec. 24, 1981, 8138931

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—458 **2 Claims**

1. Fuel system for a multi cylinder compression ignition engine comprising a plurality of injection pumps for delivering fuel to the injection nozzles of the engine respectively, a cam shaft for operating said pumps said cam shaft being driven in use by the associated engine, a plurality of electrically operated valves associated with the pumps respectively, said valves being operable to ensure the supply of fuel by the associated pumps to the injection nozzles, control circuit means for controlling the operation of said valves whereby the operating periods of said valves and hence the amount of fuel delivered by the pumps can be controlled in accordance with desired and actual engine operating parameters, transducer means for providing a pulse signal at each working stroke of the engine, means for measuring the period between successive pulse signals, means for producing an average period value from a plurality of said periods, means for comparing each period



with said average period value to produce error signals and means responsive to said error signals for modifying the individual operating periods of said valves whereby the amount of fuel supplied to the associated engine through each nozzle will be substantially equal.

4,509,488

PROCESS AND APPARATUS FOR INTERMITTENT CONTROL OF A CYCLICALLY OPERATING INTERNAL COMBUSTION ENGINE

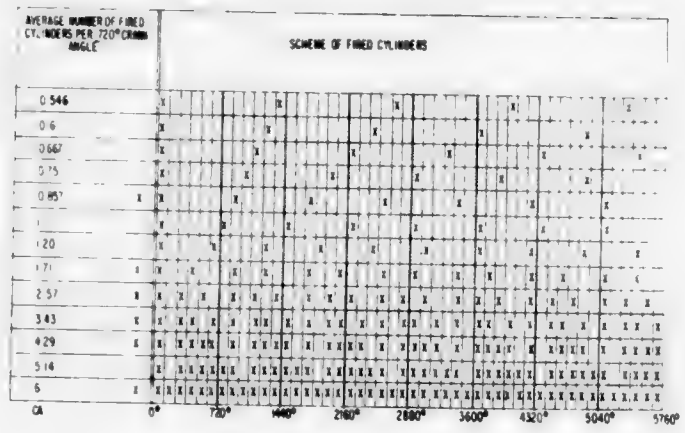
Hans-Joachim Förster, Stuttgart; Bernd-Eric Lübbing, Winterbach, and Ulrich Letsche, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,045

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129078

Int. Cl.³ F02D *73/06*

U.S. Cl. 123—481 **4 Claims**



1. A process for intermittent control of a cyclically operating internal combustion engine having plural working chambers, the steps comprising:

skipping working strokes in the succession of working cycles;

distributing the skipped working strokes stochastically among the various working chambers;

distributing the skipped working strokes approximately uniformly in time;

varying the number of skipped working strokes in dependence on the load and independently of the number of revolutions; and

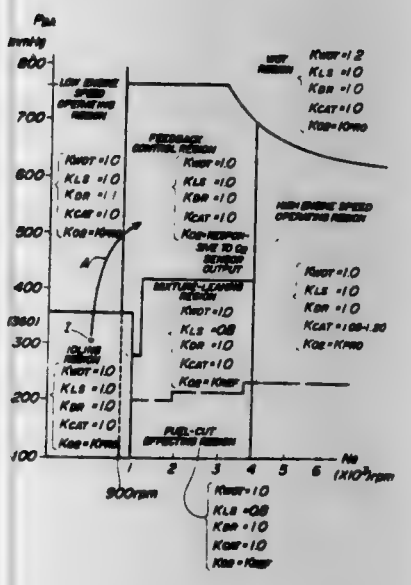
feeding fuel in a controlled fashion only respectively to the nonskipped working chambers of the internal combustion engine independently of the load in a constant amount per working stroke.

4,509,489

FUEL SUPPLY CONTROL METHOD FOR AN INTERNAL COMBUSTION ENGINE, ADAPTED TO IMPROVE OPERATIONAL STABILITY, ETC., OF THE ENGINE DURING OPERATION IN PARTICULAR OPERATING CONDITIONS

Shumpei Hasegawa, Niiza; Yutaka Otobe, Shiki; Noriyuki Kishi, Itabashi, and Takashi Koumura, Iruma, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1983, Ser. No. 502,129
Claims priority, application Japan, Jun. 11, 1982, 57-100440
Int. Cl.[3] F02M *51/00*
U.S. Cl. 123—489 12 Claims



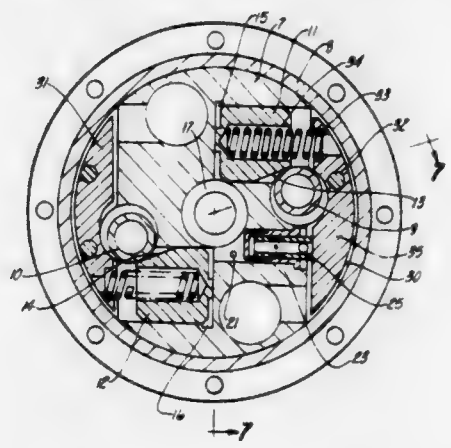
1. A method for electronically controlling the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine having an intake passage, and a throttle valve arranged in said intake passage, in response to an output from means for detecting the concentration of an ingredient in exhaust gases emitted from said engine, the method comprising the steps of: (1) determining an operating region in which said engine is operating, including a feedback control region and a plurality of predetermined particular operating regions other than said feedback control region; (2) applying a first coefficient which is variable in value in response to the output from said exhaust gas ingredient concentration detecting means, for controlling the air/fuel ratio of the air/fuel mixture, and simultaneously determining a mean value of values of said first coefficient applied during the same air/fuel ratio control, for use as a second coefficient, when it is determined in the step (1) that said engine is operating in said feedback control region; (3) applying said second coefficient in place of said first coefficient for controlling the air/fuel ratio of the air/fuel mixture, when it is determined in the step (1) that said engine is operating in a first one of said predetermined particular operating regions; and (4) applying a predetermined value in place of said first coefficient, for controlling the air/fuel ratio of the air/fuel mixture, when it is determined in the step (1) that said engine is operating in a second one of said predetermined particular operating regions other than said first one predetermined particular operating region.

4,509,490

BUILT-IN HYDRAULIC AUTOMATIC DEVICE FOR ADVANCING THE INJECTION OF A DIESEL ENGINE

Rene' Morin, Pelussin, France, assignor to Renault Vehicules Industriels, France

Continuation of Ser. No. 107,882, Dec. 28, 1979, Pat. No. 4,401,088. This application Jul. 19, 1982, Ser. No. 399,660
Claims priority, application France, Dec. 29, 1978, 78 37109
The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.
Int. Cl.[3] F02M *59/20;* F02D *5/00*
U.S. Cl. 123—502 4 Claims



1. An automatic device for advancing the fuel injection pump of a diesel engine in response to engine speed, said fuel injection pump having a camshaft with a first central axis, said automatic device comprising:

a hub member having a second central axis substantially aligned with said first central axis of said camshaft of said fuel injection pump;

at least one cavity in said hub member, said at least one cavity having a third central axis spaced a predetermined distance from said second central axis of said hub member;

passage means in said hub member, said passage means having an inlet and an outlet;

means for connecting said passage means to said at least one cavity such that said inlet and said outlet of said passage means communicate with said at least one cavity;

a casing member rotatably mounted to said hub member, said casing member further surrounding a portion of said hub member;

at least one roller member fixed to said casing member for rotative movement therewith, said at least one roller member further being partially disposed in said at least one cavity of said hub member for communication therewith;

moving means, for rotatably moving said casing member relative to said hub member, said moving means being mounted in said at least one cavity in spaced relationship to said at least one roller member and contacting said at least one roller member such that linear movement of said moving means rotates said at least one roller member about said second central axis of said hub member; said moving means for rotatably moving said casing further comprising:

(a) at least one piston member movably disposed in said at least one cavity, said at least one piston member having one end engageable with said at least one roller member and an other end opposite said one end;

(b) displacement means for displacing said piston member against said at least one roller member such as to displace said at least one roller member in order to advance said fuel injection pump of said diesel engine, said displacement means being responsive to said engine speed;

valve distribution means mounted in said passage means for terminating communication between said at least one cavity and said outlet of said passage means; said valve distribution means further comprising:

(a) a second cavity located in said hub member, said second

cavity having a fourth central axis parallel to said third central axis;

(b) cap means mounted in said second cavity, said cap means having a central aperture and a plurality of radial holes, each of said plurality of radial holes providing flow communication between said central aperture and said second cavity; and

(c) slide means movably disposed in said central aperture, said slide means having passageway means selectively communicating said plurality of radial holes with said outlet to regulate the pressure in said second cavity;

centrifugal displacement means, for centrifugally displacing said valve distribution means, said centrifugal displacement means being mounted to said hub member and having one end portion contiguous to said valve distribution means and an other opposite end portion adapted to engage said moving means; and

rotative driving means, for rotatively driving said casing member, said rotative driving means being mounted to the outer periphery of said casing member.

4,509,491

OVERFLOW VALVE FOR DISTRIBUTOR-TYPE FUEL INJECTION PUMPS

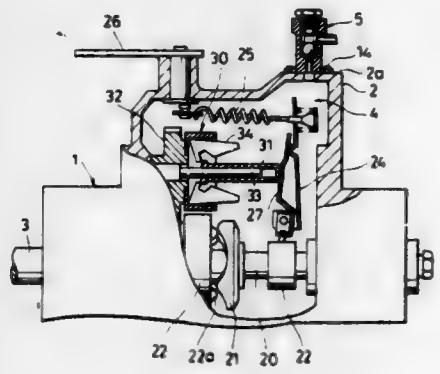
Hisatsugu Kawatei, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 547,949

Claims priority, application Japan, Nov. 9, 1982, 57-168651[U]

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—502 **2 Claims**



1. In a distributor-type fuel injection pump for an internal combustion engine, having a suction chamber filled with fuel, said fuel being variable in pressure as a function of the rotational speed of said engine, and a timing device operable in response to the pressure of said fuel within said suction chamber for advancing the fuel injection timing of said fuel injection pump with an increase in the pressure of said fuel within said suction chamber,

an overflow valve for returning excess fuel from said suction chamber to a zone under lower pressure of said fuel injection pump, said overflow valve comprising:

a passage having one end communicating with said suction chamber and another end communicating with said lower pressure zone, said passage including:

a first bore having an inner peripheral surface and an inner diameter; and

a second bore having one end opening in said first bore concentrically therewith and another end communicating with said suction chamber, said second bore having a diameter much smaller than that of said first bore;

a check valve arranged within said passage and responsive to the pressure of said fuel within said suction chamber for closing and opening said passage, said check valve having a valve body having a pressure-applying surface on which the pressure of said fuel within said suction chamber acts in a direction of opening said check valve, said pressure-applying surface assuming a first surface area when said check valve is in a closed position, and assuming a second surface area larger than said first surface area when said check valve is an open position, said check valve comprising:

a ball forming said valve body, said ball being movably received within said first bore of said passage and disposed to be liftably seated on said one end of said second bore of said passage for closing same, said ball having a diameter much larger than the diameter of said one end of said second bore; and

a spring urging said ball toward said one end of said second bore;

said ball of said check valve having said pressure-applying surface, said pressure-applying surface assuming said first surface area when said ball is in a seated position closing said one end of said second bore, and assuming said second surface area when said ball is a lifted position opening said one end of said second bore;

said ball having an outer surface and having an outer diameter slightly smaller than the inner diameter of said first bore; and

means for forming a throttle in said passage when said check valve is in said open position, said throttle forming means comprising said inner peripheral surface of said first bore and said outer surface of said ball, said throttle being formed by an annular space defined between said inner peripheral surface of said first bore and said outer surface of said ball when said ball is in said lifted position.

4,509,492

DIESEL ENGINE WITH EGR CONTROL

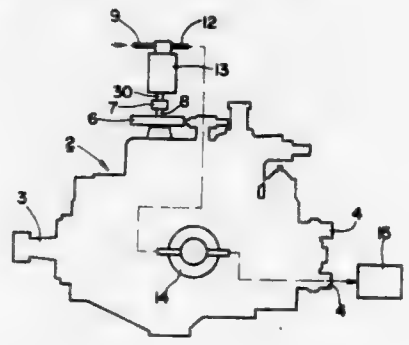
Kouji Ochiai, and Hitoshi Tomita, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1983, Ser. No. 481,372

Claims priority, application Japan, Apr. 6, 1982, 57-49567

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—569 **9 Claims**



1. Diesel engine apparatus comprising:

a load responsive means providing a load mechanical output dependent on the load on the engine;

a source of vacuum pressure;

a load pressure converter communicating with said source and coupled to said load responsive means, said load pressure converter providing a load vacuum pressure level dependent on said load mechanical output;

a speed responsive means providing a speed mechanical output dependent on the revolution rate of the engine;

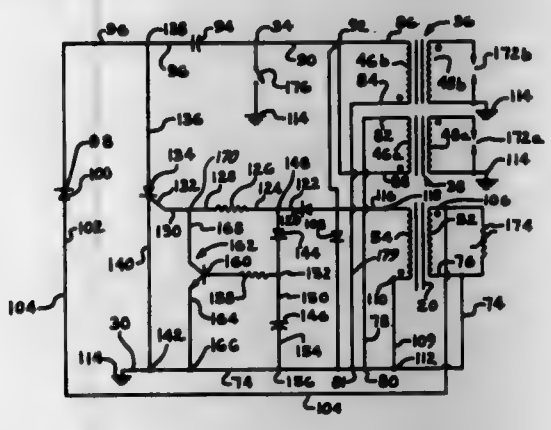
a speed pressure converter communicating with said load pressure converter and coupled to said speed responsive means, said speed pressure converter providing an output vacuum pressure level dependent on said load vacuum pressure level and said speed mechanical output; and

an EGR control valve for regulating the flow of gases between the exhaust and the intake of the engine in response to said output vacuum pressure level.

4,509,493
SMALL ENGINE IGNITION SYSTEM WITH SPARK ADVANCE

Donald R. Nash, Berkey, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Jun. 13, 1984, Ser. No. 619,979
Int. Cl.[3] F02P 3/08, 3/06
U.S. Cl. 123—602 10 Claims



1. An ignition system for an internal combustion engine having a rotatable flywheel means including magnet means for providing a rotating magnetic field, comprising:

a magnetic core means adapted to be mounted adjacent said flywheel means, said magnetic core means being an E-shaped core means having a first leg, a second leg and a third leg, each said leg having a free end disposed adjacent said flywheel means when said core means is mounted adjacent said flywheel means, said second leg being an intermediate leg;

a plurality of electrical windings disposed about said intermediate leg, said plurality of windings including a charging winding and a trigger winding;

a voltage waveform having a first portion, a second portion and a third portion being cyclically induced in said plurality of coils by said rotating magnetic field, said first portion and said third portion having a first polarity and said second portion having a second polarity, said second portion being temporally intermediate said first and third portions;

ignition coil means for providing an ignition impulse to said internal combustion engine; energy storage means for providing energy to said ignition coil means operably connected to and cyclically charged by said charging winding in response to said second portion of said voltage waveform;

switching means operably interposed between said ignition coil means and said energy storage means, said switching means being responsive to a predetermined voltage of said first and third portions of said voltage waveform for discharging said energy storage means into said ignition coil means to provide said ignition impulse;

said switching means having a first input terminal for controlling said switching means;

a shunting means connected to said first input terminal for shunting a trigger signal provided by said trigger winding to said first input terminal, said trigger winding being operably connected to said first input terminal and to said shunting means;

said shunting means being resistively connected to a second energy storage means;

said second energy storage means being operatively connected to said trigger winding and being cyclically charged thereby;

said shunting means having a threshold voltage and being rendered conductive when the voltage upon said second energy storage means exceeds a predetermined value;

said second energy storage means being cyclically at least partially discharged through said shunting means;

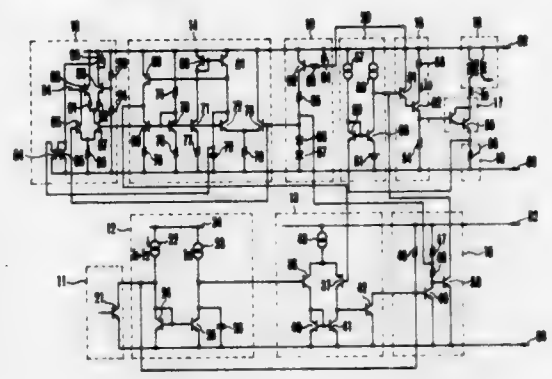
said second energy storage means being maintained at a voltage below said threshold voltage when said engine is operated below a predetermined rotational speed, said ignition impulse being provided during one said third portion, said shunting means being nonconductive;

said second energy storage means being maintained at a voltage above said threshold voltage during said second and third portions when said engine is operated above said predetermined rotational speed, said ignition impulse being provided during said first portion to provide an advanced ignition impulse, said shunting means being conductive during said second and third portions of a first said cyclically induced voltage waveform and becoming nonconductive between said first waveform and a second said waveform.

4,509,494
PULSE WIDTH CONTROL CIRCUIT

Shigeo Nishitoba, and Hirokazu Fukaya, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Japan

Filed Jun. 9, 1982, Ser. No. 386,489
Claims priority, application Japan, Jun. 12, 1981, 56-90240
Int. Cl.[3] F02P 9/00
U.S. Cl. 123—609 5 Claims



2. A pulse width control circuit comprising:

pulse generator means responsive to an input signal for generating a pulse signal;

output generator means for generating an output signal in response to said pulse signal;

means responsive to the current of said output signal equaling a predetermined value for generating a current detection signal;

first feedback loop means connected to said output generator means for controlling the magnitude of the current of said output signal in response to said current detection signal;

means for generating a voltage detection signal in response to the voltage applied to at least said output generator means exceeding a predetermined value; and

second feedback loop means connected to said pulse generator means for controlling the pulse width of said pulse signal in response to said voltage detection signal and thereby controlling the pulse width of said output signal.

4,509,495
IGNITION COIL FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Dieter Betz, Vaihingen, and Jörg Issler, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,264
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1983, 3314410
Int. Cl.[3] F02P 1/00
U.S. Cl. 123—643 10 Claims

1. Ignition coil system, for a distributor-less ignition system of a multi-cylinder internal combustion engine having

a crankshaft (CS);

a plurality of spark plugs (10, 11, 23, 24), one each being associated with a cylinder of the engine;

a battery (2); and

at least two interruptor switches (8,27) controlled for timed opening and closing, in synchronism with rotation of the the crankshaft;

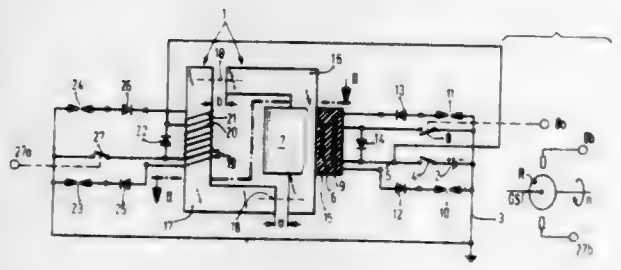
wherein the ignition coil system has

at least two winding groups (7, 19, 32, 33), each winding group including

a primary winding (6, 20) and a secondary winding (9, 21), the primary winding of each winding group being connected to the battery (2) through an associated interruptor switch (8, 27) and

a magnetic circuit (16, 17, a, b; 28, 29, 30, 31, c) coupling the primary and secondary windings of any one group, said magnetic circuit comprising iron core portions (16, 17, 28, 29), and interruption portions (a, b, c) of magnetic flux conductivity which is poor with respect to the flux conductivity of the iron core portion,

the winding groups being so located and wound on the magnetic core portions that, upon interruption of current flow from the battery by the respective interruptor switch through any one primary winding, only that one of the



secondary windings which is associated with said one primary winding will have a high voltage induced therein to cause spark-over of the at least one spark plug connected to the associated secondary coil, and

wherein, in accordance with the invention,

each one of the winding groups (7, 19; 32, 33) has its respective primary winding (6, 20) and the respective secondary winding (9, 21) wound on an individual core portion (16, 17; 28, 29) common to the respective primary and secondary windings, said core portions associated with any one winding group being coupled to core portions of another winding group by said interruption portion (a, b, c), and the distance between the primary and secondary winding on any one core portion is small with respect to the distance between the winding groups, and

wherein the core portions, on which the winding groups are wound, form essentially straight core elements (28, 29);

the core elements are connected by an iron yoke (30) at one end; and

a cross yoke (31) is provided, spaced from the other end of the core elements by the said interruption portions (c).

4,509,496

IGNITION CIRCUIT FOR INTERNAL COMBUSTION ENGINE HAVING ALTERNATELY OPERABLE HIGH AND LOW SPEED CONTROL DEVICES

Shigetoshi Ishida, Narashino, Japan, assignor to Tanaka Kogyo Company, Ltd., Narashino, Japan

Filed Nov. 22, 1982, Ser. No. 452,210

Claims priority, application Japan, Dec. 29, 1981, 56-193830[U]

Int. Cl.³ F02P 5/00

U.S. Cl. 123—651 **8 Claims**

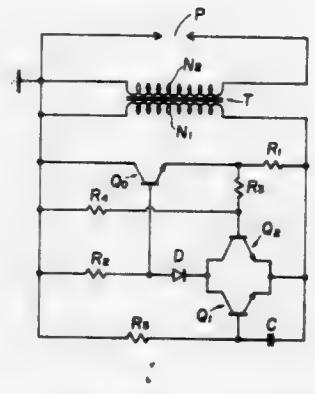
1. In an ignition circuit for an internal combustion engine where a primary current passing through a primary winding is abruptly interrupted by cut-off of a power transistor to thereby cause spark discharge of the ignition plug connected to a secondary winding of said ignition coil,

the improvement comprising:

a time constant circuit which includes a resistor (R_5) coupled to capacitor (C), said time constant circuit being coupled to said primary winding so that a portion of the primary current flows therethrough to charge said capacitor;

first and second control transistors (Q_1, Q_2) coupled to said power transistor and to said time constant circuit,

said first control transistor (Q_1) being arranged to become conductive prior to said second control transistor responsive to the electrical charge of said capacitor (C) due to said flow of said portion of said primary current therethrough at a revolution rate of the engine below a rate determined by the time constant of said time constant circuit so as to operate to control cut-off of said power transistor only at relatively lower revolution rates of said engine; and



said second control transistor (Q_2) being arranged to become conductive prior to said first control transistor when said electrical charge on said capacitor exceeds a predetermined value so as to operate to control cut-off of said power transistor only at relatively higher revolution rates exceeding said relatively lower revolution rates of the engine, said first control transistor being inoperative to cut-off said power transistor at said relatively higher revolution rates of said engine, and said second control transistor being inoperative to cut-off said power transistor at said relatively lower revolution rates of said engine.

4,509,497

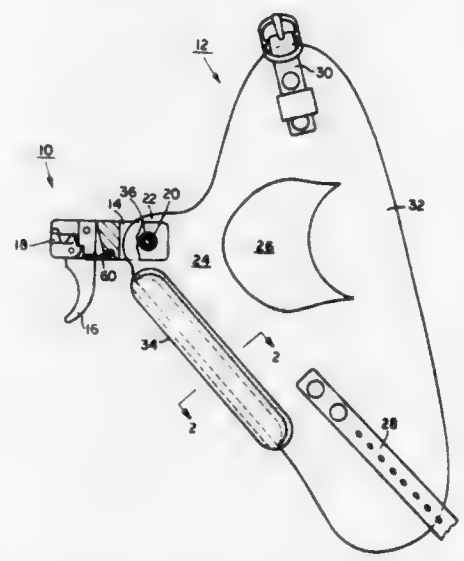
BOWSTRING RELEASE MECHANISM

Geary L. Garvison, 410 N. Shore Dr., South Haven, Mich. 49090

Filed Nov. 24, 1980, Ser. No. 209,757

Int. Cl.³ F41C 19/00

U.S. Cl. 124—35 A **10 Claims**



1. A bowstring release mechanism which comprises:

a sheet of resilient, non-stretchable material shaped to overlie the palm of an archer's hand and having a thumbhole therein in combination with a triggered-latch mechanism affixed thereto;

said triggered-latch mechanism comprising an elongate rigid body in which the maximum dimension of any transverse

cross section is substantially smaller than the length of said body;

latch means in one end of said elongate body adapted releasably to engage a bow-string;

trigger means operatively associated with said latch means and adapted releasably to hold said latch means in latch position, whereby a bowstring is released when said trigger means is actuated;

first fastening means for fastening said sheet of material to the wrist of the archer with the thumb projecting through said thumbhole; and,

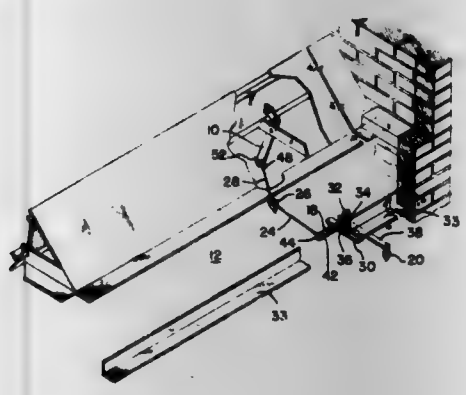
second fastening means for fastening said elongate body to said sheet at the end thereof opposite said latch means and in a position such that, when said latch means is latched onto a bowstring and drawn to the desired release position, the end of said elongate body which is fastened to said sheet is disposed in the crotch of the thumb and trigger finger; said elongate body being of such a length that when the end thereof which is attached to said sheet is so disposed in said crotch, it extends out to a position beyond and along side of the folded-back middle finger of the archer and along said trigger finger to a position where said trigger means can be actuated by said trigger finger to effect release of a bowstring and, when not latched, dangles down from said second fastening means in a position to be easily engaged by the thumb and forefinger for the purpose of latching it onto a bowstring.

4,509,498

DAMPER CONTROL

W. Dean England, 2615 - 109th Pl. NE., Belleuve, Wash. 98004, and Gerald J. Enneking, 4243 SW. 328th, Federal Way, Wash. 98003

Filed Feb. 18, 1982, Ser. No. 349,855
Int. Cl.³ F23L *13/02*
U.S. Cl. 126—288 **5 Claims**



1. A front operated damper control for a fireplace having a damper with a downward projecting operating arm and a lintel extending across the top of its frontal opening, comprising:

(a) an adjustable height support bracket securable to the lintel;

(b) a control lever including, at least, a right angle bell crank lever pivotally secured near the intersection of its two arms to the support bracket for rotation in a horizontal plane with the body of one arm defining a plurality of holes extending inwardly in sequence from its outer end;

(c) a horizontal connecting rod having a hook in its end which engages the rod by extending through one of the holes in the control lever arm from below;

(d) an upright connecting rod having an offset loop in its end for engaging the damper operating lever; and

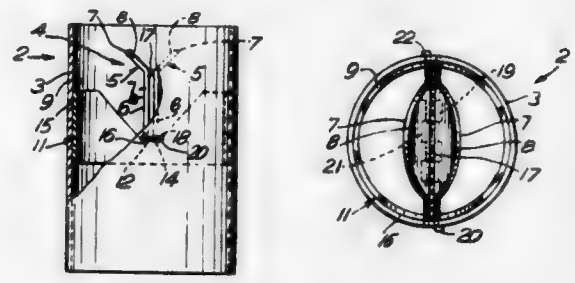
(e) means for adjustably connecting the horizontal connecting rod to the upright connecting rod.

4,509,499

ENERGY EFFICIENT DAMPER FOR A FURNACE

Alfred M. Hebert, Skidmore Rd., Pleasant Valley, N.Y. 12569

Continuation-in-part of Ser. No. 342,817, Jan. 26, 1982, Pat. No. 4,449,512. This application Apr. 16, 1984, Ser. No. 600,909
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—292 **3 Claims**



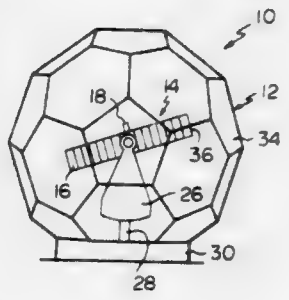
1. A damper for sealing and unsealing a vertical furnace exhaust flue pipe to minimize the escape of heat when the furnace is not operating, said damper comprising a cylindrical body adapted to form a section of vertical flue pipe having inner and outer walls, said cylindrical body having a top opening and a bottom opening, at least one transverse hinge rod horizontally transversing said body carried by opposed apertures in opposing wall portions of the body, an annular rim mounted on the inner wall of the body, a pair of oppositely extending gull-wing shaped damper shutters pivotably mounted on said hinge rod, each of said pair of gull-wing shaped damper shutters having upper and lower surfaces, each of said gull-wing shaped shutters having a lower section and an outer upper section, and in the closed condition the lower sections of the shutters extending upwardly and outwardly at approximately a 45° angle and the outer upper sections of the shutters extending horizontally and slightly spaced from the inner walls of the damper section, the upper surface of said annular rim being contoured to match the lower surface of said shutters along their edges in the closed condition so that the edges of the lower surface of said shutters rest on said rim to close said damper, and the lower edges of said shutters engaging said annular rim so as to prevent the lower edges from becoming wedged against the inner wall of the damper section, said gull-wing shaped damper shutters opening to a vertical position when said furnace is operating and closing when said furnace is not operating.

4,509,500

SOLAR ENERGY COLLECTION APPARATUS

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,087
Claims priority, application Japan, Jan. 26, 1982, 57-10680
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **16 Claims**



1. A solar ray collection apparatus comprising:

solar ray collector means for collecting the solar rays, said means including a plurality of lenses which define a light receiving surface; and

a housing or capsule made up of a number of interconnected transparent members plates which are interconnected to enclose the solar ray collector means thereinside, said transparent plates being inclined at a plurality of different

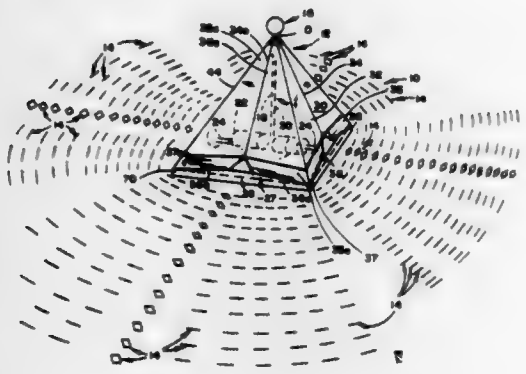
angles and being configured such that, when intersected by imaginary lines which extend from the peripheral edge of the light receiving surface, perpendicularly to the light receiving surface, the transparent plates are inclined relative to said imaginary lines by the maximum value within the angular range which allows the sun rays to penetrate the capsule.

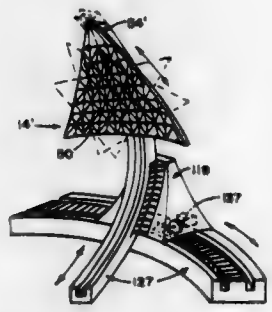
4,509,501

SOLAR ENERGY COLLECTING SYSTEM USING A PRIMARY REFLECTOR BASED ON A PYRAMID STRUCTURE

Larry D. Hunter, 1920 Hillcrest Rd., Apt. 20, Hollywood, Calif. 90068

Filed Jan. 13, 1982, Ser. No. 339,069
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **30 Claims**





1. A solar energy collecting system comprising a primary reflector located in open exposure to the sun and formed of a plurality of intersecting reflecting surfaces, at least some of which are bounded by at least two adjacent arris lines of a pyramid having a polygonal base, and at least a pair of said reflecting surfaces bounded by said adjacent arris lines intersect at an obtuse angle in a line which lies in a plane perpendicular to said base, whereby said pair of reflecting surfaces defines a dihedral, and the reflecting surfaces bounded by said two arris lines reflect light impingent thereon into a concentrated field of reflection, and when projected onto a plane defined by said two arris lines, define a face of said pyramid, at least one secondary reflector located within said concentrated field of reflection and oriented to return light reflected from said reflecting surfaces of said primary reflector to the apex of said pyramid, and solar energy collection means located so as to receive light reflected to the apex of said pyramid.

15. In a solar energy collecting system comprising a reflector disposed on the surface of a backing, the improvement comprising a plurality of planar reflecting surfaces arranged in fixed disposition relative to each other, pairs of said planar surfaces intersecting each other along a line, said line oriented at a non-perpendicular angle to the surface of the backing, said surfaces forming at least one fixed obtuse angle said surfaces reflecting light impingent thereon into a concentrated field of reflection including a region of double reflection, a solar energy collection means, and means for moving said reflector to track the sun while maintaining said reflecting surfaces in the aforesaid fixed disposition relative to each other so that said collection means is continuously located within said region of double reflection.

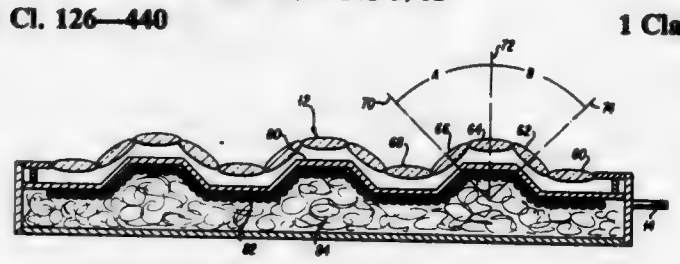
16. In a solar energy collecting system employing a solar energy collector and at least one reflector for focusing light into said solar energy collector, comprising a backing at least two planar reflecting surfaces which are arranged in fixed disposition relative to each other and which intersect along a line to form at least one obtuse angle and which reflect light impingent thereon into a region of overlapping reflections said line oriented at a non-perpendicular angle to the surface of the backing, and means for mounting said reflector in mobile fashion to track the azimuth and zenith of the sun according to inputs determined by latitude and longitude, time of solar day, and the date of the solar year to maintain said reflector in focus on said solar energy collector with said solar energy collector remaining in said region of overlapping reflections while said reflecting surfaces remain in said fixed disposition relative to each other.

4,509,502

MULTIPLE LENS COVER FOR SOLAR HEATING PANEL

Jack Youcha, 100 Elm Dr., Levittown, N.Y. 11756

Filed Nov. 15, 1982, Ser. No. 441,453
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—440 **1 Claim**



1. A cover for use with a solar panel, comprising a sheet of transparent material having periodic undulations forming parallel elongate upraised ridges, each said ridge having a top and sides and a valley extending between adjacent ridges in the surface thereof, and a plurality of solar heat collecting lens means integrally formed in said sheet and being arranged substantially over the entire surface of said sheet, said lens means being arranged substantially in longitudinal rows aligned with said ridges, whereby said lens means focus and intensify incident solar radiation onto heat collecting elements of the solar panel, said solar heat collecting lens means being arranged in three rows along each of said elongate upraised ridges, one of said rows of lens means being arranged on the top of said ridge, and a row of lens means being arranged along each side of said elongate upraised ridge, each lens means being formed as a substantially circular lens substantially contiguous to its next adjacent circular lenses, each lens having a central axes, and wherein said lenses arranged along the sides of said upraised ridges are arranged at angles such that the angle subtended by the central axes of said two side rows is 90°.

4,509,503

SOLAR HEATING SYSTEM

James E. Young, Box 1052, Alamosa, Colo. 81101

Filed Apr. 11, 1983, Ser. No. 483,638
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—452 **23 Claims**

1. A combination solar energy system for preheating a supply of hot water and supplementing heat in a building comprising:

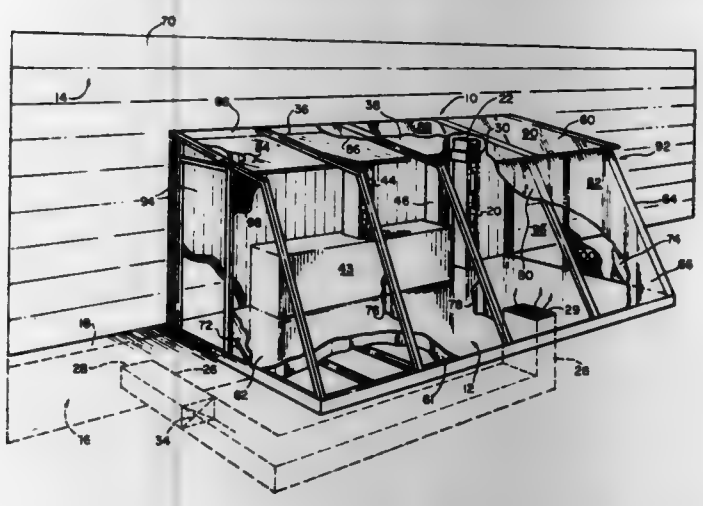
solar enclosure means for collecting large quantities of low temperature heated air;

an air space within said building having a structure capable of storing heat provided by said low temperature heated air;

duct means for delivering said low temperature heated air to

said airspace and for returning air from said airspace to said solar enclosure means;

solar concentration collector means disposed within said solar enclosure to collect high temperature heated air within said solar enclosure;



phase change heat storage means for storing high temperature heat provided by said high temperature heated air; and

heat transfer means connected to said supply of hot water for transferring said high temperature heat from said phase change heat storage means to said supply of hot water to preheat said hot water.

4,509,504

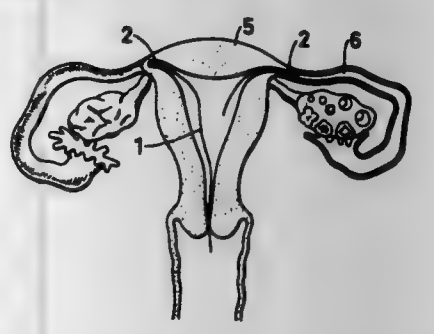
OCCLUSION OF BODY CHANNELS

Jan-Olof Brundin, Lidingö, Sweden, assignor to Medline AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 870,595, Jan. 18, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 79,951

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—1 R **12 Claims**



1. A method of occluding a body reproduction duct of an animal comprising the steps of

(1) inserting a water-swellable contraceptive hydrogel article into said body reproduction duct;

(2) bringing said hydrogel into contact with animal tissue fluid;

(3) allowing said hydrogel to swell to an extent of at least 40% up to 300% of its original size and thereby

(4) contacting and impinging upon the body duct in which said device is inserted,

said device being substantially completely inert to said body fluid and the body tissue with which it is in contact, having a cross-sectional configuration corresponding to that of said reproduction duct and an indicator removal thread secured thereto.

4,509,505

ISOLATOR FOR CONFINING AND TRANSPORTING HUMAN BEINGS IN A STERILE ATMOSPHERE

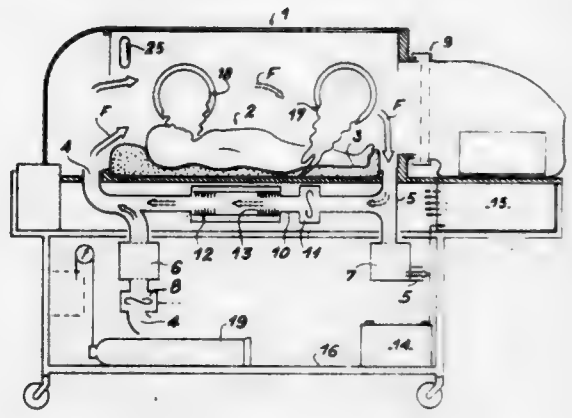
Gilles Mercey, Vendome; Claude Picard, Nanterre, and Bernard Saint-Martin, Paris, all of France, assignors to La Calhene Societe Anonyme, France

Filed Mar. 10, 1983, Ser. No. 474,717

Claims priority, application France, Mar. 12, 1982, 82 04199

Int. Cl.³ A61G *11/00*

U.S. Cl. 128—1 B **8 Claims**



1. An isolator for confining and transporting human beings in a sterile atmosphere comprising a tight enclosure; a first fan for providing a forced fresh air circulation through an absolute inlet filter and an absolute outlet filter for ventilating the enclosure, the first fan having a first preselected constant rotational speed; means for placing the first fan in an operative state or in an inoperative state; means adapted for rapid transfer of objects from the exterior to the interior of said enclosure; intervention means enabling functions to be performed within said enclosure while maintaining said sterile atmosphere, a portion of said intervention means forming an integral part of a wall of said enclosure; air recycling branch means interposed between said inlet filter and said outlet filter, said branch means containing a second fan having a second preselected constant rotational speed and variable temperature heating means automatically limited to a predetermined maximum temperature, said second fan and said heating means being operable to controllably reheat and recycle a portion of said fresh air circulation at a predetermined reference temperature; battery means capable of supplying all of the energy required by the isolator; and control means for regulating the temperature of the heating means to obtain an internal temperature within the enclosure equal to the reference temperature, the control means comprising a basic control portion responsive to the variation between an external temperature and the reference temperature and to the operative or inoperative state of the first fan for providing a first signal for controlling the heating means, and a complementary fine control portion responsive to the variation between the internal temperature and the reference temperature for providing a second signal for controlling the heating means.

4,509,506

SHIELDING DEVICE FOR RADIOACTIVE SEED

David C. Windorski, Cottage Grove, and David O. Kubiatowicz, White Bear Lake, both of Minn., assignors to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Filed May 11, 1981, Ser. No. 262,760

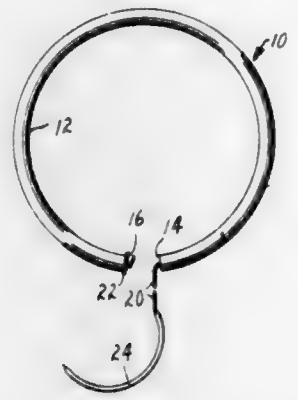
Int. Cl.³ A61J *1/00*

U.S. Cl. 128;1.2 **6 Claims**

1. A device for handling radioactive seeds comprising:

a. a curved tube of dense material open at both ends, said tube having an interior diameter larger than said seeds to allow said seeds to be moved freely therein and side walls of sufficient thickness to prevent radiation from penetrating therethrough;

b. a length of suture material located within said tube and not protruding through at least one of said open ends;
c. removable stop means attached to at least end of said suture material for preventing said end of said suture material from entering said tube; and



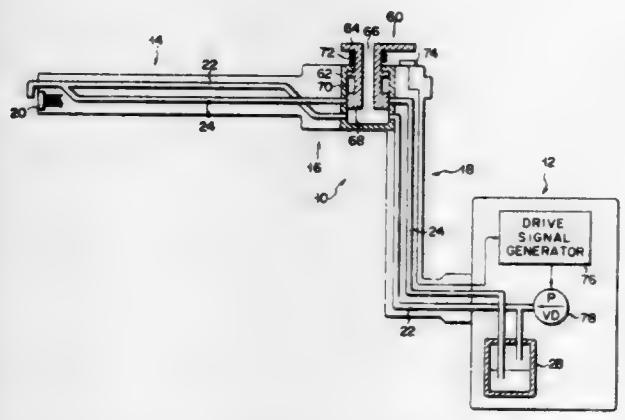
d. a plurality of surgically-implantable radioactive seeds within said tube arranged consecutively and spaced apart in said suture material, said seeds being spaced from said open ends so as to prevent radiation from escaping from said open ends.

4,509,507

ENDOSCOPE APPARATUS

Hisao Yabe, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 318,265, Nov. 4, 1981,. This application Jan. 4, 1984, Ser. No. 568,278
Claims priority, application Japan, Nov. 12, 1980, 55-159245
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **1 Claim**



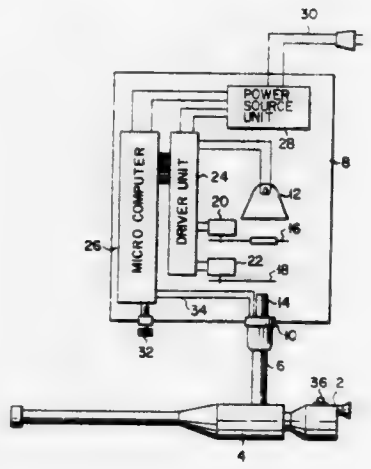
1. An endoscope apparatus comprising:
an endoscope body including an endoscope insertion section having a foremost end and a viewing window arranged at said foremost end;
an air supply pipe and a water supply pipe disposed within said endoscope body and integrally connected with each other at one end to form a discharge conduit through which a source of air and water is alternately directed in front of said viewing window, said air and water supply pipes being respectively divided into two sections;
a water supply source connected to said water supply pipe and an air supply source connected to said air supply pipe;
a variable output pump means connected to the upstream sides of said air supply source and to said water supply source and having first and second modes of output, the second output being higher than the first output;
a change-over valve arranged alternately to connect said sections of air and water supply pipes to said foremost end and formed by a cylinder having an inner circumferential face connected with said sources of air and water supply, and a piston within said cylinder for selectively and alternatively supplying air to said air supply pipe and water to said water supply pipe, the piston having a first diameter portion and second diameter portion which is larger than the first diameter portion and a leak hole connecting the inside of the cylinder with the outside of the cylinder, the piston being normally urged outwardly by a spring to shut off said water supply source by means of said second diameter portion and to connect said air supply source through said first diameter portion, and when pushed down into said cylinder against said spring, to shut off the air supply by means of said second diameter portion and thereby connect said water supply through said first diameter portion;
a detector switch arranged adjacent to said changeover valve and generating a detection signal when said piston is pushed down into said cylinder; and
a drive signal generator for supplying a first signal to said variable output pump means causing said pump means to be operated in the second mode, and after a predetermined period of time after the detection signal is generated, for supplying a second signal to said pump means thereby causing said pump means to be operated in the first mode.

4,509,508

ENDOSCOPE SYSTEM

Takashi Tsukaya, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,461
Claims priority, application Japan, Nov. 5, 1981, 56-177751
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **7 Claims**

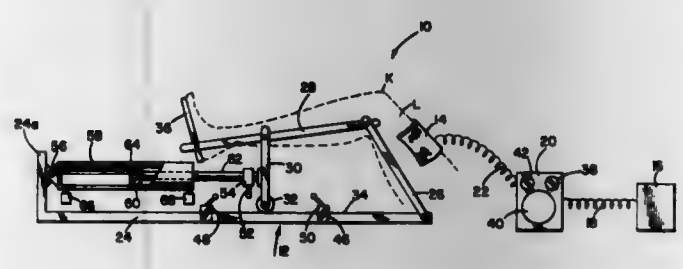


1. An endoscope system comprising:
a memory for storing control data;
a chip selector operatively connected to said memory for applying a chip enabling signal to the memory to hold the memory in an enabling state in which the control data can be read out from the memory;
means for producing setting signals;
a processor operatively connected to said means, for fetching the setting signals as instruction commands, operating the chip selector and reading out the control data from the memory in response to the setting signals when the memory is maintained in the enabling state by the chip selector;
a light source in said endoscope system;
means operatively connected to the light source for adjusting power supplied to the light source in response to the receipt of the control data;
means for producing an alarm signal while the memory is not maintained in the enabling state by the chip selector which is operated under the control of the processor although the setting signals are being produced; and
means operatively connected to said alarm signal producing means for causing the adjusting means to operate the light source at a fixed brightness in response to the alarm system.

4,509,509
APPARATUS FOR TREATING THE JOINTS OF THE HUMAN BODY

Jean Bouvet, 1319 Butterfield Rd., San Anselmo, Calif. 94960, and Robert D. Teasdale, 307A Third St., Sausalito, Calif. 94965

Filed Jul. 11, 1983, Ser. No. 512,669
Int. Cl.[3] A61H *29/00*
U.S. Cl. 128—24.1 6 Claims



1. Apparatus for treating the joints of the human body comprising:

a machine operative to support a human limb and, without physical participation of the patient, to flex a joint including same, while a portion on said machine moves back and forth along a given path; and

an electrical stimulator including an electrode to be attached to the skin of the human body in areas over muscles affected by the flexing of a joint and a stimulator electric circuit with a signal source including said electrode;

the improvement comprising:

an electrically actuated switch device in said stimulator electric circuit;

a control circuit with a source of control current;

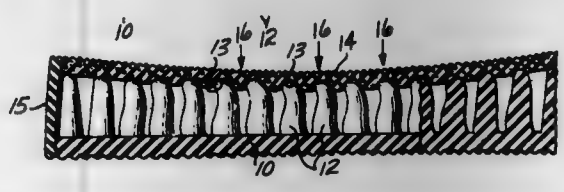
said electrically actuated switch device being in said control circuit to be energized thereby; and

a pair of limit switches in said control circuit, each selectively positioned along said given path and engageable by said machine portion to energize said switch device during a predetermined stage of the back and forth movement thereof.

4,509,510
MASSAGE TREAD FOR HUMAN SKIN

Clarence L. Hook, P.O. Box 4109, Bellevue, Wash. 98009

Continuation-in-part of Ser. No. 334,741, Dec. 28, 1981, abandoned. This application Nov. 5, 1982, Ser. No. 439,649
Int. Cl.[3] A61H *7/00;* A43B *13/38;* A47C *23/00*
U.S. Cl. 128—25 R 12 Claims

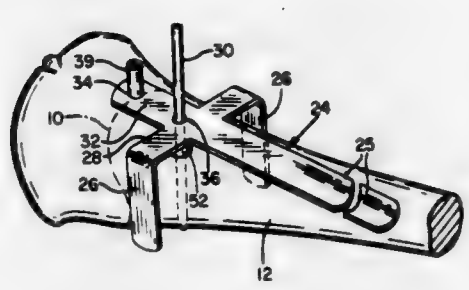


1. A surface for contact by human skin intermittently urged thereagainst, comprising a base member having spaced apart, upwardly projecting, flexible tines, each of said tines having a height a plurality of times greater than its diameter; and an upper surface member having a lesser hardness than said tines, disposed above and being provided with depressions therein when the upper surface of said tines are relatively urged thereagainst, and being mechanically engaged with the said tines through said depressions and the upper portions of said tines urged into said depressions, said tread surfaces reacting to massage human skin portions urged toward such upper surface.

4,509,511
METHOD AND APPARATUS FOR CORRECTIVE OSTEOTOMY

John A. Neufeld, 20840 Charriere Rd., Oregon City, Oreg. 97045

Filed Jun. 30, 1983, Ser. No. 509,339
Int. Cl.[3] A61F *5/04*
U.S. Cl. 128—92 H 17 Claims



1. Apparatus employed in an arcuate osteotomy procedure comprising:

a gauge having a central member provided with a pair of spaced, depending arms adapted to fit on either side of the bone on which the osteotomy is to be performed for the purpose of determining the center axis, radius, and position of an arcuate cut through the bone, said central member being provided with a central alignment index point for locating the center axis of said arcuate cut through said bone, while the spacing of said arms gauges the length of the chord demarcating said arcuate cut,

a guide rod for reception in a drilled hole in said bone in substantial registry with said alignment index point,

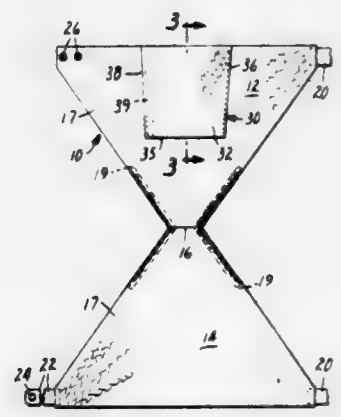
and a saw comprising a semi-circular blade, said blade having teeth at a forward end thereof for making an arcuate cut through said bone,

said saw having bearing means for slidably receiving said rod to guide said saw in making said arcuate cut.

4,509,512
SUPPORT UNDERGARMENT FOR PENILE PROTHESIS IMPLANT PATIENT

Marion J. LeClercq, 2893 Knox Ave. S., Apt. 216, Minneapolis, Minn. 55408

Filed Apr. 6, 1983, Ser. No. 482,422
Int. Cl.[3] A61F *5/40*
U.S. Cl. 128—160 11 Claims



1. An undergarment for protecting and supporting a continually erected penis of a prothesis implant patient, which undergarment comprises

triangular front and rear cloth panels connected together at apices to form a crotch,

elastic bands puckering the edges of the panels in the vicinity of the crotch,

a trapezoidal cloth flap with its first parallel side permanently attached to the front panel along the top of the

panel, one of its sides which are adjacent to said first side being permanently and the other being releasably attached to the front panel, and its second parallel side being open at the bottom to provide a pocket for the erected penis, means for fastening the free corners of said panels together around the wearer's waist with said flap between the abdomen of the wearer and his penis.

4,509,513

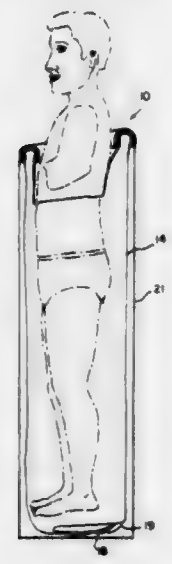
PORTABLE AND COLLAPSIBLE HYPERBARIC CHAMBER ASSEMBLY

Robert A. Lasley, 508 Sentinel Rd., Moorestown, N.J. 08057

Filed Sep. 29, 1982, Ser. No. 426,634

Int. Cl.³ A61H *9/00*

U.S. Cl. 128—202.12 **6 Claims**



1. A portable and collapsible hyperbaric chamber assembly adapted to accommodate a major portion of a patient's body and adapted for connection to means for supplying pressurized oxygen or other suitable gas to and exhausting from said chamber, said chamber comprising

a circular frame having a U-shaped cross section wherein the closed portion of the U constitutes the frame base and the depending portions form the inner and outer frame walls, said circular frame being sized to fit around the patient's torso,

a flexible tubular chamber member having first and second open ends, said first open end being secured to the outer frame wall and extending downwardly therefrom, said tubular member having sufficient length whereby the second open end may be folded over and under the patient's feet,

means for securing said open end in said folded position to seal the tubular chamber member from the ambient atmosphere,

a sealing sleeve having first and second open ends, said sleeve extending within said tubular chamber member with said first open end thereof connected to the inner frame wall such that said second end extends downwardly therefrom, said sealing sleeve being sized to sealingly engage the upper portion of a patient's body,

the frame base having mounting connection means adapted to receive pressurized oyygen or some other suitable gas,

whereby a patient is positioned within the tubular chamber member and sealing sleeve with the sealing sleeve sealingly contacting the upper portion of the patient's body, then the tubular chamber member is folded below the patient's feet and secured by said securing means to form an airtight seal therein so that an airtight chamber is provided between the tubular chamber the patient's body and the sealing sleeve to receive the pressurized oxygen as required for treatment.

4,509,514

ARTIFICIAL AIRWAY DEVICE

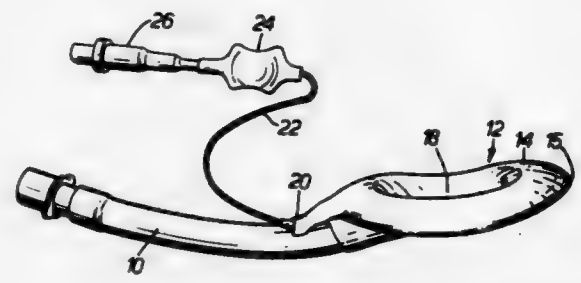
Archibald I. J. Brain, Flat 1, 6 Claremont Rd., Folkestone, Kent, England

Filed Dec. 14, 1982, Ser. No. 449,728

Claims priority, application United Kingdom, Dec. 16, 1981, 8137899

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.15 **5 Claims**



1. An artificial airway device to facilitate lung ventilation in an unconscious patient, comprising a curved or flexible tube and a mask portion carried at one end of the tube, the mask portion having a soft flexible annular peripheral formation which surrounds a hollow interior space or lumen of the mask, said annular peripheral formation of the mask being preformed with a roughly elliptical shape capable of conforming to, and fitting readily within the actual and potential space behind the larynx and to form a seal around the circumference of the laryngeal inlet without the device penetrating into the interior of the larynx, the tube opening into the lumen of the mask to provide the airway with the axis of the tube substantially aligned with the length of the roughly elliptical annular periphery of the mask.

4,509,515

INHALATION DEVICE

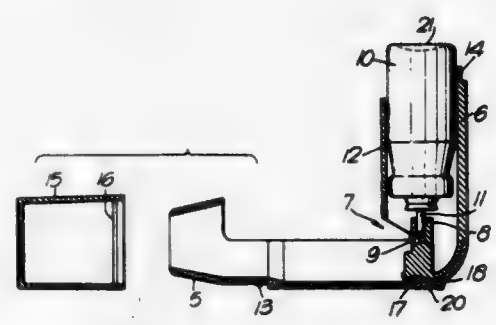
Roger E. C. Altounyan, Wilmslow, and Richard M. Auty, Rempstone, both of England, assignors to Fisons plc, Ipswich, England

Filed Feb. 7, 1983, Ser. No. 464,421

Claims priority, application United Kingdom, Feb. 23, 1982, 8205240

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—200.23 **11 Claims**



1. An aerosol inhalation device, suitable for use in association with a pressurized medicament composition aerosol container, comprising in combination an elongate open trough member, a mouthpiece having a continuous tubular wall member and an aerosol dispenser having a body and a spray orifice at the dispenser discharge end, said tubular mouthpiece extending from one end of the elongate open trough member and in axial alignment therewith, and pivot means adjacent the other end of said open trough member for pivotally connecting said other end to the aerosol dispenser body at said discharge end adjacent said spray orifice, the elongate open trough member being pivotally movable between an open inhalation position and a closed position, the spray orifice being directed towards the mouthpiece in the open inhalation position with the open trough member open vertically upward during inhalation use,

and in the closed position the elongate open trough member fitting around the body of the aerosol dispenser, and the elongate open trough member being of such a length that the mouthpiece is able to fit over the non-discharge end of the aerosol dispenser said device being suitable for use in association with a cylindrical pressurized medicament composition aerosol container of about 2.4 cm diameter and about 5 cm length, and wherein the length of the elongate open trough member is from 5 to 10 cm, measured from the pivot to the point of attachment of the mouthpiece whereby said open trough portion is of a length sufficient to enable the user to view the open trough portion during inhalation use and detect any medicament escaping upwardly from said open trough portion, thereby indicating the user's failure to coordinate inhalation with actuation of said aerosol dispenser.

4,509,516

LIGAMENT TUNNELING INSTRUMENT

James W. Richmond, Comstock Township, Kalamazoo County, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed Feb. 24, 1983, Ser. No. 469,366
Int. Cl.[3] A61B *17/00*
U.S. Cl. 128—303 R 4 Claims



2. A surgical instrument, comprising: an elongated, substantially rigid rod which is of arcuate shape in plane view, said rod having end portions at opposite ends thereof and a central portion extending between said end portions, said central portion having the cross-sectional shape of a closed smooth curve, said end portions being of reduced thickness relative to the thickness of said central portion and having an out-of-round cross section, each of said end portions having an eyelet therein extending transversely therethrough, the tips of each of said end portions being smoothly rounded so that said rod can be pushed through a joint in the human body, either end first, whereby to form a tunnel between the body tissue in and around that joint, each of said end portions having handle-attaching means thereon, and a handle releasably fixedly securable to said handle-attaching means on either of said end portions, said handle having a through-hole of out-of-round cross section and sized to slidably receive said end portions so that said handle cannot rotate with respect to said rod when said handle is mounted on one of said end portions.

4,509,517

KIDNEY STONE INSTRUMENT

Henry S. Zibelin, 1423 26th St. NW., Winter Haven, Fla. 33880

Filed Sep. 30, 1982, Ser. No. 430,353
Int. Cl.[3] A61B *17/00*
U.S. Cl. 128—319 4 Claims

1. An instrument for the removal of kidney stones that includes the combination of

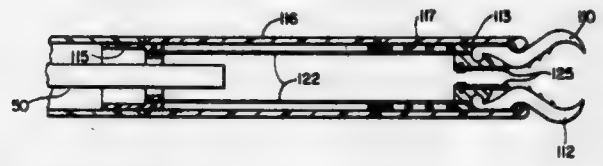
(a) a kidney stone grasping means comprising at least one pair of opposed jaw members that are mounted in a support which is mounted for axial movement in a tube,

(b) means for alternately moving said jaw members toward each other and away from each other, said means including

(1) a first resilient means for urging the toothed sections of said jaw members apart in an "open" position,

(2) at least one length of Nitinol having one end attached to said axially movable jaw member support and the other end attached to a spaced apart fixed point on the tube in which said jaw members are mounted,

(3) mechanical pressure means for maintaining sufficient pressure on said length of Nitinol when said length is below its critical temperature condition so that said length of Nitinol will be stretched in a lengthwise direc-



tion, but said sufficient pressure being inadequate to maintain said length of Nitinol in a stretched position when the Nitinol is heated above its critical temperature, and

(4) means to control the temperature of said Nitinol,

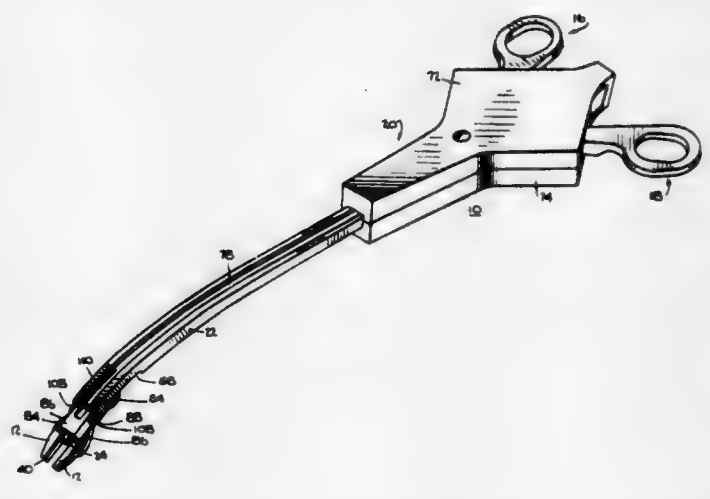
whereby said jaws will be maintained in an open position to receive kidney stones when said length of Nitinol is below said critical temperature and said jaws will move from an open to a closed position to grasp and/or crush kidney stones when said length of Nitinol is above said critical temperature.

4,509,518

APPARATUS FOR APPLYING SURGICAL CLIPS

Richard A. McGarry, Norwalk, and Douglas G. Noiles, New Canaan, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 17, 1982, Ser. No. 349,584
Int. Cl.[3] A61B *17/04*
U.S. Cl. 128—325 35 Claims



1. Apparatus for applying hemostatic clips to tissue comprising:

a body;

means associated with the body for storing a plurality of undeformed hemostatic clips having elongated, spaced-apart arms;

a pair of jaws at one end of the body for receiving, holding and deforming a clip, the jaws being movable relative to each other in their common plane to deform the clip by bringing the spaced-apart arms of the clip towards one another;

means for camming the jaws closed including first cam surface means associated with the body, second cam surface means associated with the jaws, and means for moving the first and second cam surface means relative to each other to cause the jaws to move towards one another in their common plane to deform a clip;

means for feeding one clip at a time from the means for storing to the jaws; and

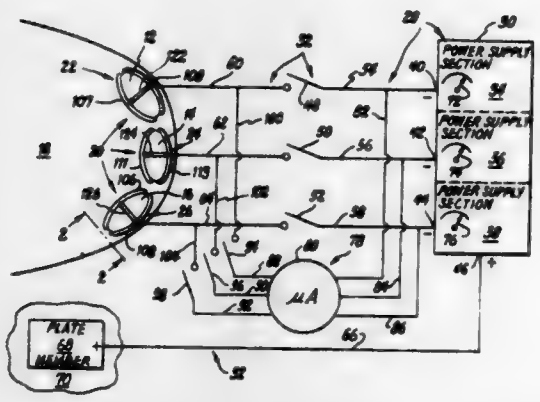
actuating and sequencing means for sequentially actuating the means for feeding and the means for camming the jaws closed including a pair of handles movable between a first open position and a second closed position, movement of said handles from said first open position to said second closed position first causing the means for feeding to move a clip from the means for storing to the jaws and then causing the means for camming the jaws closed to move the jaws towards each other to close the clip.

4,509,519

ORAL ELECTRICAL TREATMENT APPARATUS AND METHOD

Steven G. Detsch, 4146 Bryan St., Oceanside, Calif. 92054

Filed Sep. 21, 1982, Ser. No. 420,853
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—419 F **17 Claims**



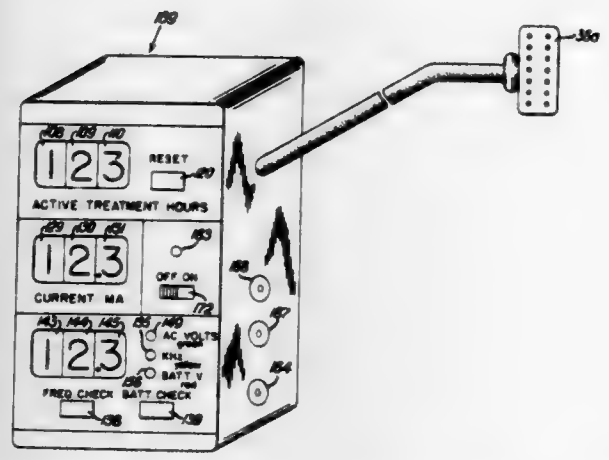
1. Oral electrical treatment apparatus comprising means for electrically contacting gingival tissue in a mouth, said gingival electrical contacting means comprising at least one electrode assembly including at least two elongated gingival tissue contact members each having an underside shaped to conform to the shape of the gingival tissue adjacent a tooth in said mouth, said gingival tissue contact members each having an inner surface shaped to conform to the exterior outer surface of said tooth just above the gum line, means locatable about said tooth for locating said electrode assembly, and means locatable outside of said mouth for supplying an electrical current to said gingival electrical contacting means.

4,509,520

ELECTRICAL STIMULATING APPARATUS

Richard S. Dugot, New York, N.Y., assignor to Biolectron, Inc., Hackensack, N.J.

Division of Ser. No. 350,440, Feb. 22, 1982, Pat. No. 4,459,988.
This application Apr. 5, 1984, Ser. No. 597,171
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—419 F **4 Claims**



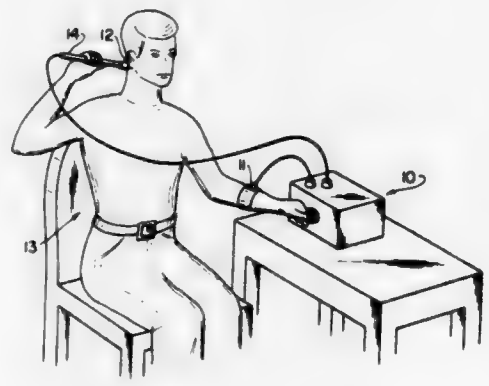
1. Apparatus for intermittently monitoring the operation of treatment apparatus having a multiple contact connector with terminals for first signals representative of stored treatment information in coded form and second signals representative of at least one property of a treatment signal in analog form, comprising a multiple contact connector having a plurality of contacts engageable with the contacts of said treatment apparatus connector, decoder means responsive to connector contacts carrying signals representative of said stored information for decoding the same, means responsive to said decoded stored information for exhibiting the latter visually, means connectable to connector contacts carrying signals representative of said at least one property of said treatment signal in analog form, peak detector means connected to produce a signal representative of said treatment signal property, analog-to-digital converter means for converting said last named signal to digital form, and means for exhibiting visually the output of said analog-to-digital converter means.

4,509,521

HEADACHE RELIEF METHOD

Terrence J. Barry, 6820 N. Augusta Dr., Hialeah, Fla. 33015

Filed Jan. 31, 1983, Ser. No. 462,350
Int. Cl.³ A61N *1/32*
U.S. Cl. 128—421 **7 Claims**



1. A method of relief for a headache sufferer comprising the step of applying electrical pulses from a ground electrode and a live electrode to said sufferer, said pulses characterized by:

(a) a frequency in the range of from 10 to 12 pulses per second,

(b) a pulse shape approximately square,

(c) a pulse width between 35 and 45 microseconds,

(d) an amplitude in the range of from somewhat below said sufferer's pain threshold to said pin threshold, and

(e) said pulses being applied to the sufferer by placing the ground electrode on a body portion other than the neck or head and applying the live electrode to the sufferer's neck or head.

4,509,522

INFRARED OPTICAL MEASUREMENT OF BLOOD GAS CONCENTRATIONS AND FIBER OPTIC CATHETER

Thomas J. Manuccia, Silver Spring, Md., and J. Gary Eden, Urbana, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

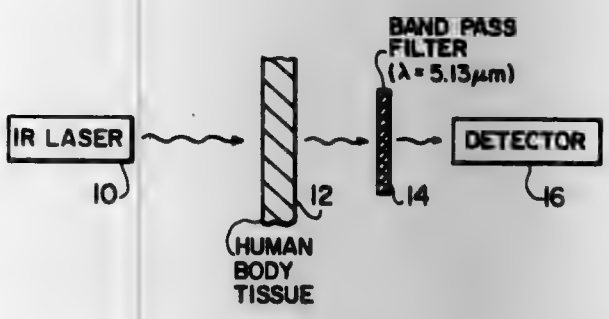
Filed Dec. 15, 1981, Ser. No. 331,091
Int. Cl.³ G01N *33/16*
U.S. Cl. 128—634 **6 Claims**

1. A method of determining the absolute concentrations of CO, CO_2 and O_2 in blood comprising the steps of:

selectively passing infrared light of near 5.13 μm, 4.3 μm and 9.0 μm through a dimension of blood and measuring magnitudes of transmission at absorption peak wavelengths near 5.13 μm, 4.3 μm and 9.0 μm, corresponding to CO, CO_2, and O_2, respectively;

comparing said respective transmissions to transmissions through like dimension reference samples of blood whose blood gas concentrations are known;

determining the absolute concentrations of CO, CO_2, and O_2, biased on the comparison of transmission through the



blood dimension at these wavelengths to transmission through the reference blood samples having known concentrations of CO, CO_2, and O_2.

4,509,523

METHOD OF USING MINIATURE BALLOON CATHETER FOR PERFUSING

Paul H. Pevsner, 4121 Kingcrest Pkwy., Richmond, Va. 23221

Continuation-in-part of Ser. No. 286,100, Jul. 22, 1981,. This application Sep. 30, 1982, Ser. No. 430,217
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—658 **6 Claims**



1. A diagnostic and therapeutic method for carrying out perfusion procedures in small vessels comprising the steps of:

preparing a miniature balloon catheter assembly including an inflatable balloon formed to be extremely thin by aerosolizing balloon-catheter-material solution onto a mandril and allowing it to cure, said balloon having no perfusion hole therein and being connected to a distal end of a resilient cannula, said balloon and said cannula having a size for insertion into blood vessels and said inflatable balloon being constructed to be inflated and deflated in said blood vessels for being transported and directed therein by the flow of blood, said balloon being further constructed to be inflated until bursting in a particular blood vessel without damaging said particular blood vessel;

inserting the distal end of said cannula including said inflatable balloon, into a blood vessel;

attaching the proximal end of said cannula to a source of pressurized fluid and pressurizing the balloon to partially inflate the balloon to permit the balloon and the attached cannula to be transported by blood flow within the vessel to said particular blood vessel;

increasing the fluid pressure inside the balloon portion to expand the thin balloon portion until said balloon portion bursts, thereby causing a rupture hole in the thin balloon; and

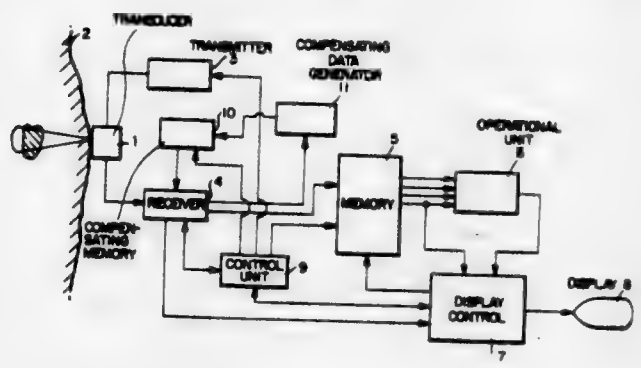
inserting a therapeutic perfusate into the proximal end of said cannula and perfusing said perfusate into said blood vessel via said ruptured hole in said burst balloon.

4,509,524

ULTRASONIC MEDIUM CHARACTERIZATION SYSTEM

Hirohide Miwa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 426,700
Claims priority, application Japan, Sep. 30, 1981, 56-155271
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **10 Claims**



1. An apparatus for characterizing an inhomogeneous medium using ultrasonic waves, comprising:

transducing means for transmitting ultrasonic waves having a plurality of frequency components to a reference medium having at least one reference reflector provided therein, receiving ultrasonic waves reflected by the reference reflector, transmitting ultrasonic waves having a plurality of frequency components to an inhomogeneous medium, and receiving ultrasonic waves reflected by the inhomogenous medium;

compensating means, operatively connected to said transducing means, for analyzing the frequency components of the ultrasonic waves reflected by each reference reflector, for generating compensating data based on the analysis of the frequency components of the waves reflected by each reference reflector and for storing said compensating data;

memory means, operatively connected to said transducing means, for storing the output of the transducing means when the transducing means receives ultrasonic waves reflected from the inhomogeneous medium;

control means, operatively connected to said transducing means, said compensating means and said memory means, for controlling said transducer means to transmit or receive and for reading the compensating data from said compensating means, for causing said transducing means to apply the compensating data to the signal received from the inhomogeneous medium, and for storing the compensated data in said memory means;

means, operatively connected to said transducing means, said control means and said memory means, for displaying said compensated data.

4,509,525

ULTRASONIC DIAGNOSTIC EQUIPMENT

Yasutsugu Seo, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1982, Ser. No. 422,174
Claims priority, application Japan, Dec. 3, 1981, 56-193642
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **7 Claims**

1. An ultrasonic Doppler system for displaying a pattern of a fluid moving within an object, comprising:

an ultrasonic transducer array having plural transducer elements for transmitting an ultrasonic beam and generating echo signals from the echos reflected from an object;

means for exciting said transducer elements to generate the ultrasonic beam that propagates along a predetermined scanning line on the object;

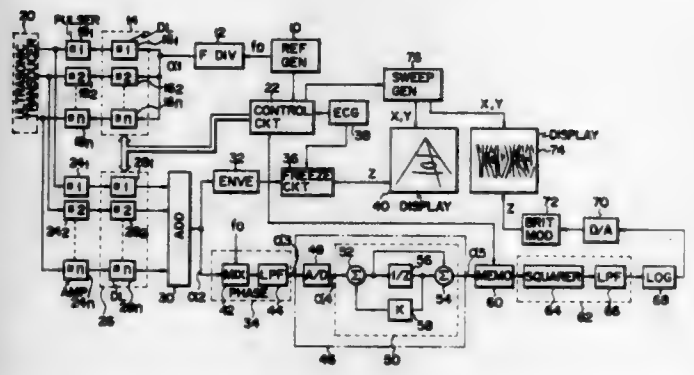
receiver means for time delaying and summing said echo

signals to produce summed output signals representative of echoes along a predetermined scanning line;

phase detecting means for selecting Doppler shift signals from said summed output signal to produce phase detected signals representative of Doppler shifts associated with points along a predetermined scanning line;

digital filtering means for removing the phase detected signal component of objects moving at lower speed than a predetermined speed from said Doppler shift signals and for producing digital signals;

means for squaring the digital signals from said digital filtering means to produce squared signals;



means for brightness modulating responsive to the amplitude of the squared signals and outputting signal modulated by said amplitudes for representing said fluid pattern at successive depths along said predetermined scanning line to thereby produce an output pattern line; and

display means for displaying the output signal from said brightness modulating means, said display means comprising means for displaying successive pattern lines as a function of time in real time, whereby said display means displays said fluid pattern without determining the velocity of the fluid.

4,509,526

METHOD AND SYSTEM FOR NON-INVASIVE ULTRASOUND DOPPLER CARDIAC OUTPUT MEASUREMENT

Stephen R. Barnes; Gary L. Tarbox, both of Seattle; Lee L. Huntsman, Bainbridge Island, and Barry D. McLaren, Auburn, all of Wash., assignors to Lawrence Medical Systems, Inc., Redmond, Wash.

Filed Feb. 8, 1983, Ser. No. 464,965
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **23 Claims**

1. A method for the noninvasive measurement of cardiac output of a mammalian patient on a real time, beat-by-beat basis as a combined function of the cross-sectional area of the ascending aorta and the systolic velocity of blood flow therethrough, comprising the steps of:

a. pulsedly insonifying the ascending aorta of said patient with repetitive, intermittent ultrasonic energy propagating along a line generally transverse with respect to the axis of said ascending aorta to define a first insonification zone;

b. receiving pulses of ultrasonic energy reflected from anatomical structure within said first insonification zone, including energy reflected from the anterior and posterior walls of said ascending aorta characteristic of the separation thereof along the transverse line of propagation;

c. discriminating said pulses of received ultrasonic energy to detect the transverse dimension of said ascending aorta between said anterior and posterior walls thereof;

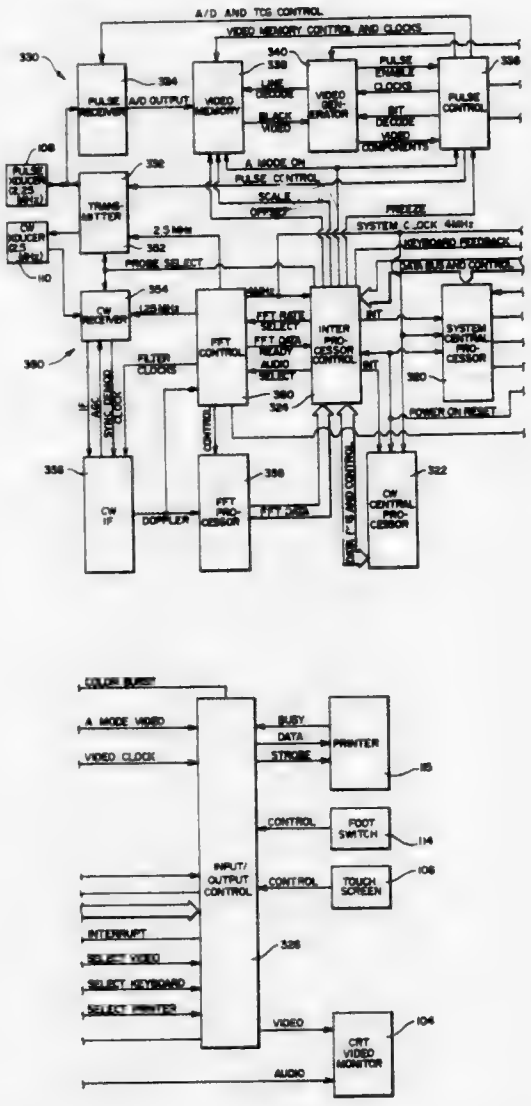
d. developing an aortic diameter signal proportional to and indicative of said transverse dimension;

e. computing the cross-sectional area of said ascending aorta in the plane of said transverse line of porpagation of pulsed energy;

f. continuously insonifying said ascending aorta with uninterrupted ultrasonic energy propagating along a line generally axial with respect to the axis of said ascending aorta to define a second insonification zone;

g. receiving Doppler-shifted ultrasonic energy reflected from pulsatile blood flow through said ascending aorta, frequency-shifted from said uninterrupted ultrasonic energy by values characteristic of systolic velocity of said blood flow;

h. developing a systolic velocity energy signal proportional to and indicative of said systolic velocity;



i. subjecting said systolic velocity energy signal to frequency spectrum analysis at a predetermined signal sampling rate to yield a velocity component profile signal;

j. integrating said velocity component profile signal over time for each period of said pulsatile flow to calculate a systolic velocity integral;

k. computing systolic volume as a combined function of said cross-sectional area and said systolic velocity integral;

l. computing cardiac output as the sum of said systolic volumes for n periods and dividing the sum by the time duration thereof.

4,509,527

CARDIO-RESPIRATION TRANSDUCER

Jacob Fraden, Hamden, Conn., assignor to Timex Medical Products Corporation, Waterbury, Conn.

Filed Apr. 8, 1983, Ser. No. 483,358
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—671 **23 Claims**

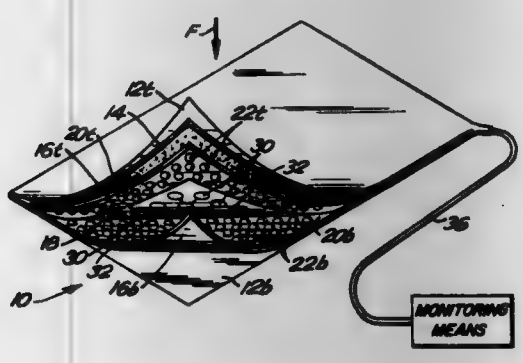
1. A laminated, sheet-like transducer for electrical connection connected to electronic circuit means responsive to changing mechanical forces applied to said transducer, comprising:

a top flexible plate including a first surface having a matrix of uniformly spaced-apart first convex members,

a bottom flexible plate including a second surface having a matrix of uniformly spaced-apart second convex members

aligned with the spaces between said first convex members,

an electret made of a synthetic resin polymer sandwiched between said first and second surfaces of said top and bottom plates, said electret producing electrical charges when deformed due to said first and second convex members pressing against and horizontally stretching said electret in response to said changing mechanical forces, and



electrodes attached to opposite surfaces of said electret, said electrodes forming a uniformly spaced-apart, electrically interconnected electrode configuration on at least one surface of said electret, said electrodes sensing said electrical charges producing a signal for transmission to said electronic circuit means which is proportional to the magnitude of said changing mechanical forces.

4,509,528

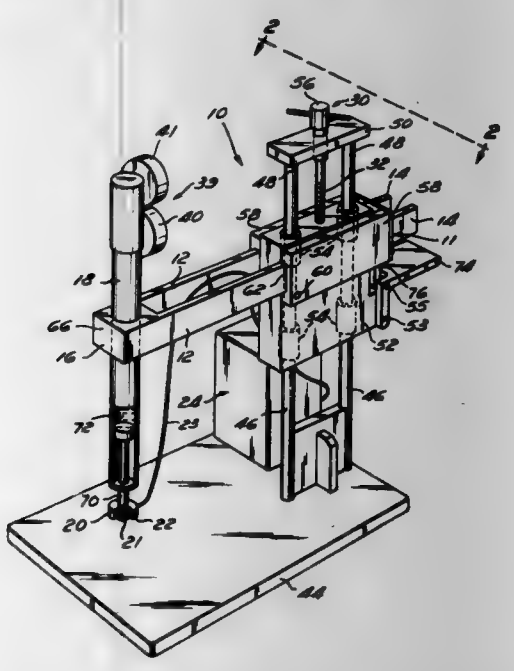
HEMOSTAT WITH BLOOD FLOW SENSOR

Harvinder Sahota, 3861 Wisteria, Seal Beach, Calif. 90740

Continuation-in-part of Ser. No. 331,236, Dec. 16, 1981,. This application Jul. 15, 1982, Ser. No. 398,621

Int. Cl.[3] A61B *5/02, 17/12*

U.S. Cl. 128—691 **27 Claims**



1. A hemostat for controlling the flow of blood in a blood vessel to a puncture site in the body, comprising:

a mounting fixture;

an arm adjustably mounted to said mounting fixture;

a non-inflatable pressure pad mounted to said arm for applying pressure to said blood vessel at a location upstream from said puncture site;

an electronic sensor mounted with said pressure pad for sensing blood flow through said vessel past said pressure location, said sensor being responsive to the rate of blood flow through said vessel, and providing an output signal to indicate changes in blood flow through said vessel to attending personnel;

means for adjusting the force applied by said pressure pad to said blood vessel so that blood flow through said blood vessel may be accurately controlled; and

means for indicating the force applied by said pressure pad to said blood vessel.

4,509,529

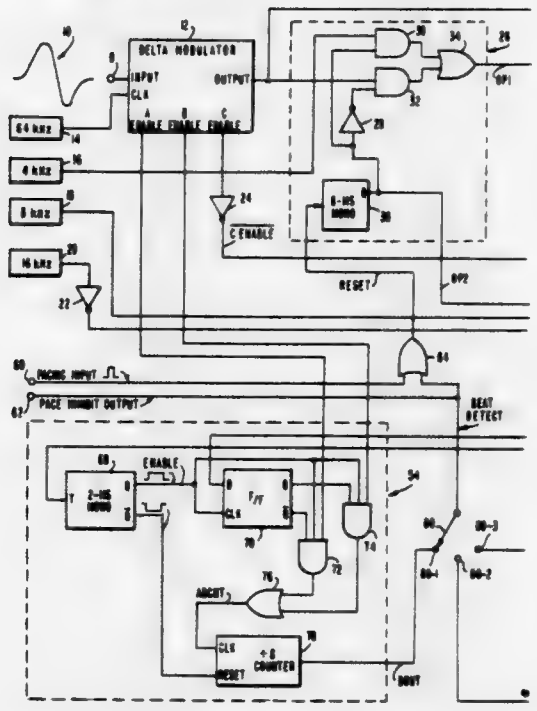
PHYSIOLOGICAL EVENT RECOGNITION TECHNIQUES FOR USE WITH A DELTA MODULATOR

David K. Money, Pennant Hills; Stephen Swift, Hornsby; Andrew MacLaurin, North Epping, and John G. Frost, West Pymble, all of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Jun. 30, 1982, Ser. No. 393,649

Int. Cl.[3] A61B *5/04*

U.S. Cl. 128—708 **31 Claims**



1. A system for recognizing a cardiac event of interest by operating on a sensed cardiac signal comprising means for deriving from said sensed signal a first continuous sequence of bit samples, the two states of said bit samples representing changes in opposite directions in the sensed signal and bit samples of alternating opposite states representing a non-changing sensed signal, means for generating a second continuous sequence of bit samples which is the same as said first sequence but delayed in time, means for deriving a count which is indicative of on-going differences between said first and second bit sample sequences, and recognition logic means responsive to said count for indicating a cardiac event of interest.

4,509,530

SYSTEM FOR PLOTTING A MINIATURE ECG

Huntington W. Curtis, Chelsea; Frederick A. Dodge, Katonah; David B. Francis, Mt. Kisco, and John V. Mizzi, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,499

Int. Cl.[3] A61B *5/04*

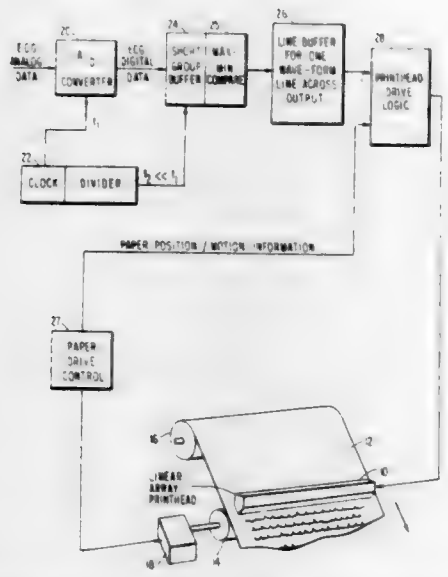
U.S. Cl. 128—710 **13 Claims**

1. A method of printing an analog waveform having a time variable comprising the steps of:

converting said analog waveform into a time sequence of digitally expressed values;

forming predetermined groups of said digital data and determining maximum and minimum amplitude values of said digital data within said groups;

serially storing said maximum and minimum values;
moving a recording medium past a transversely oriented linear array of discrete recording elements; and
reading out in parallel in accordance with said serial stored values to said recording elements and actuating respective elements in parallel by said stored values at initial times



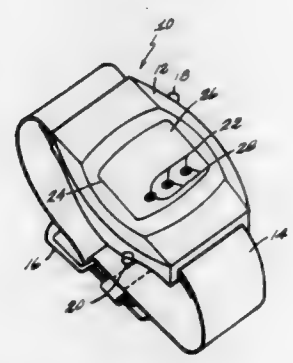
and for time durations for each element that is a function of the stored maximum and minimum amplitude values for that element, wherein said waveform is recorded as a series of appropriately placed short parallel longitudinal lines to form in aggregate a transverse waveform display on said recording medium.

4,509,531

PERSONAL PHYSIOLOGICAL MONITOR

John W. Ward, Charlottesville, Va., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 28, 1982, Ser. No. 402,533
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—736 **26 Claims**



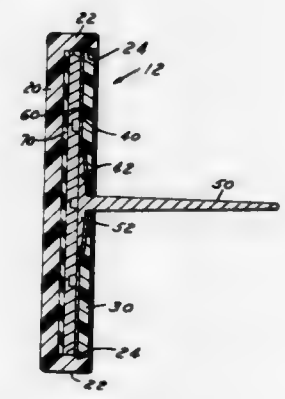
16. Apparatus for physiological monitoring of a subject comprising:
a case, including an electrically conductive underside adapted for electrical contact with said subject; said underside including an aperture therein;
temperature sensing means, including a temperature sensitive element and disposed within said case, for generating a temperature signal indicative of temperature;
an electrically and thermally conductive cap; adapted to receive said temperature sensitive element in electrical and thermal contact with the interior thereof;
retainer means for securing said cap in said underside aperture, to dispose said cap for electrical and thermal contact with said subject, electrically and thermally isolated from said underside;
means for providing electrical connections to said temperature sensitive element and said cap;
resistance sensing means, electrically connected to said underside and said cap, for generating a resistance signal indicative of the galvanic skin resistance of said subject; and
alarm means, responsive to said temperature signal and said resistance signal for generating alarm indicia in response to predetermined physiological conditions of said subject.

4,509,532

CARDIOPLEGIA TEMPERATURE INDICATOR

James H. DeVries, Grand Rapids, Mich., assignor to DLP, Inc., Grand Rapids, Mich.

Filed Jul. 29, 1982, Ser. No. 403,124
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—736 **11 Claims**



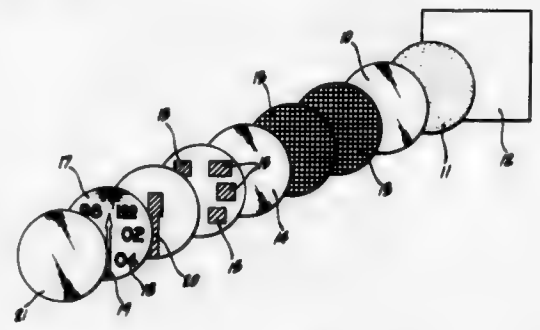
1. A visual temperature monitor for use in open heart surgery and adapted to be used in connection with cardioplegia systems for reducing the temperature of the heart which comprises:
(a) a double walled housing providing between the walls a relatively thin chamber, one of the walls of said housing being transparent,
(b) a thin temperature sensitive liquid crystal chip disposed in said chamber and exposed to said transparent wall,
(c) a heat sink plate lying against said chip on a side of said chip opposite said transparent wall, and
(d) a heat transfer pin having a tapering shank projecting from said housing for removable insertion into heart tissue and having an end within said housing in heat conductive contact with said heat sink plate.

4,509,533

FEVER THERMOMETER

Melvin Chervitz, E.Z. Temp, Inc., P.O. Box 27505, 12148 Lackland Rd., St. Louis, Mo. 63141

Continuation of Ser. No. 173,164, Jul. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 924,507, Jul. 14, 1978, Pat. No. 4,232,684. This application Sep. 20, 1982, Ser. No. 420,099
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—736 **3 Claims**



1. A fever thermometer comprising:
(a) a flexible backing web having two opposing sides, the web provided with a background color,

(b) an adhesive on one side of the web for securing the web to the skin of the human body,

(c) a plurality of numerical display areas on the opposite side of the web, each numerical display area including an encapsulated liquid crystal indicator, the color spectrum of each liquid crystal indicator being responsive to a different specific temperature range, and the liquid crystal indicators being initially of a color to complement the background color so as to be substantially invisible at temperature below a minimum threshold temperature of the indicator having the lowest temperature range,

(d) a mask overlying the liquid crystal indicators, the mask being substantially the same color as the background color, and the mask being provided with windows disposed over and exposing the liquid crystal indicators to provide the numerical display areas,

(e) a directional indicator on the web for enabling adherence of the web with the numerical display areas in a predetermined attitude when the numerical display areas are substantially invisible at temperatures below the minimum threshold temperature so that the numerical display areas can be easily read when made visible at temperatures within the responsive ranges of the liquid crystal indicators, and

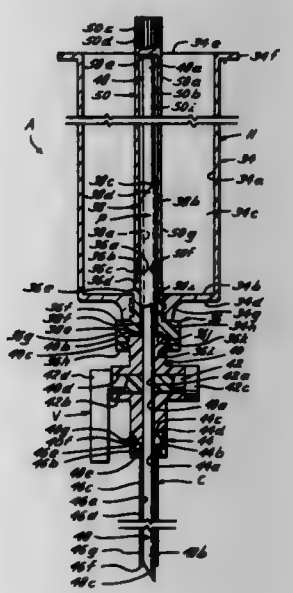
(f) the numerical display areas having liquid crystal indicators that indicate a fever condition being located at one side of the directional indicator, and the numerical display areas having liquid crystal indicators that indicate a non-fever condition being located at the opposite side of the directional indicator.

4,509,534

BLOOD WITHDRAWAL APPARATUS AND METHOD OF USING SAME

Myron J. Tassia, Jr., 732 Dalzell St., Shreveport, La. 71104

Filed Jun. 14, 1982, Ser. No. 388,419
Int. Cl.[3] A61M *5/14*
U.S. Cl. 128—764 16 Claims



1. A blood withdrawal apparatus adapted to be mounted in flow communication with an intravenous catheter for collecting in a blood sample test tube samples of blood withdrawn through the intravenous catheter and an entry device, the intravenous catheter positioned in a vein of a subject receiving intravenous fluid and the entry device in flow communication with the intravenous fluid and the intravenous catheter, comprising:

a test tube housing formed having a test tube receiving chamber for receiving the blood sample test tube therein, said test tube housing having an open end and a closed end;

test tube penetration means within said test tube receiving chamber for penetrating the blood sample test tube when the blood sample test tube is properly positioned with said test tube receiving chamber;

valve means in flow communication with said test tube penetration means and mounted with said test tube housing for regulating the flow of blood to said test tube penetration means from the vein of the subject;

a connecting needle having a bore therethrough, said connecting needle having an upper end mounted with said valve means and said connecting needle formed having a blunt surface adjacent its lower end, said connecting needle being in flow communication with said valve means;

said test tube penetration means, said valve means, and said connecting needle are formed having bores that are axially aligned when said valve means is in an open position; and,

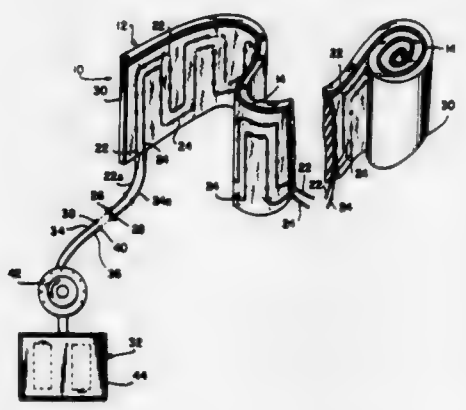
an inner cannula removably mounted substantially within said axially aligned bores formed in said test tube penetration means, said valve means, and said connecting needle for permitting ease of insertion of said connecting needle solely into the entry device, whereupon said inner cannula is removed for exposing said blunt surface on said lower end of said connecting needle.

4,509,535

ELECTRODE APPARATUS

Horace Bryan, 12 Brighton 10 La., Brooklyn, N.Y. 11235

Filed Jun. 7, 1982, Ser. No. 385,531
Int. Cl.[3] A61N *1/04*
U.S. Cl. 128—798 10 Claims



1. An electrode apparatus for contacting a human body comprising: a planar flexible electrode assembly including a sheet of electrically non-conductive mesh-like material, first and second flexible electrically conductive wires incorporated into said mesh sheet along the length thereof in a spaced relationship through the interstitial spaces of said mesh sheet, a flexible planar cover sheet of electrically non-conductive material secured to one side of said mesh sheet, one of the terminal ends of each of said first and second wires being adaptable for selective connection to a source of electrical power at one end of the length of said mesh sheet, the other terminal ends of said first and second wires terminating at the other end of the length of said mesh sheet; the other side of said mesh sheet being adapted for contact application to a selected skin area of the human body.

4,509,536

TOBACCO STRIPPER

Jackie D. Bennett; Johnnie R. Bennett, both of Thompson Station, and Jimmie D. Bennett, Jr., Franklin, all of Tenn., assignors to 3-J-Co., Inc., Franklin, Tenn.

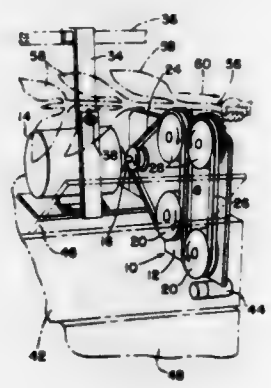
Continuation-in-part of Ser. No. 266,052, May 21, 1981,. This application Oct. 16, 1981, Ser. No. 312,144
Int. Cl.[3] A01D *45/16*
U.S. Cl. 130—30 R 9 Claims

1. An apparatus for stripping leaves from a tobacco stalk comprising:

(a) a base,

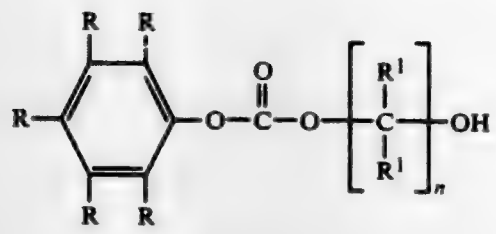
(b) first and second pulleys,

(c) a first endless belt entrained around said first pulley for rotary movement therewith,
(d) a second endless belt entrained around said second pulley for rotary movement therewith,
(e) mounting means supporting said pulleys on said base for rotary movement about parallel axes and closely adjacent each other to cause said first and second belts to converge into contiguous relationship to form a nip, each of said first and second belts having inner and outer leg portions,
(f) first and second belt guide members, said first belt passing around said first belt guide member, and said second belt passing around said second belt guide member,
(g) said mounting means supporting said first and second belt guide members so that said inner leg portions are in substantial contiguous engagement for a predetermined length of said inner leg portions,
(h) means for driving said first belt so that said substantially contiguously engaging inner leg portions move in the same direction together from said pulleys toward said belt guide members to grip and pull a leaf from a tobacco stalk in a stripping position in which the tobacco stalk is drawn longitudinally adjacent said nip and substantially parallel to said rotary axes, and
(i) at least one leaf cog fixed adjacent at least one of said first and second pulleys and projecting radially beyond the periphery of said corresponding pulley for drawing leaves from the tobacco stalk in said stripping position toward said nip.



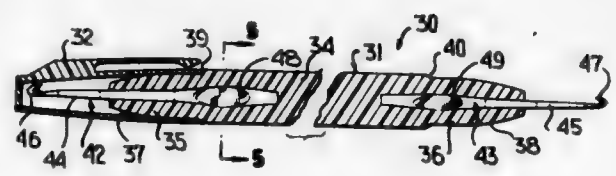
4,509,537
SMOKING COMPOSITIONS
Yoram Houminer, and Kenneth F. Podraza, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Apr. 4, 1983, Ser. No. 482,100
Int. Cl.³ A24B *3/14*
U.S. Cl. 131—276 **11 Claims**

1. A smoking composition comprising an admixture of (1) combustible filler selected from natural tobacco, reconstituted tobacco and non-tobacco substitutes, and (2) between about 0.0001 and 2 weight percent, based on the total weight of filler, of a monocarbonate ester flavorant corresponding to the formula:



where R is a substituent selected from hydrogen, alkyl and alkoxy groups, R^1 is a substituent selected from hydrogen and alkyl groups, and n is an integer between 3 and about 10.

4,509,538
HAIR STREAKING IMPLEMENT
Vincent L. Ramik, 4966 Sabra Ln., Annandale, Va. 22003
Filed Mar. 16, 1984, Ser. No. 590,489
Int. Cl.³ A45D *1/00*
U.S. Cl. 132—9 **18 Claims**



1. An implement particularly adapted for engaging groups of hair and withdrawing the groups through an associated frosting cap whereby the hair groups can be tinted, frosted, bleached or the like comprising a generally elongated body of one piece homogeneous copolymeric/polymeric material, a pair of generally oppositely directed hook portions carried one at each of axially opposite ends of said body, each hook portion including a shank and a hook, said hooks being of different sizes, said elongated body being formed in situ molded relative to said shank, and a cap housing each hook in partial external telescopic relationship to an associated one of said body ends whereby each cap can be selectively removed to expose the associated hook for withdrawing groups of hair as aforesaid.

4,509,539
HAIRPIECE WITH SIMULATED NATURAL HAIRLINE FRONT
Charles Alfieri, 250 East 63rd St., New York, N.Y. 10021
Filed Feb. 8, 1984, Ser. No. 578,205
Int. Cl.³ A41G *3/00*
U.S. Cl. 132—53 **10 Claims**



1. A wear-durable hairpiece for covering an area on the scalp of a user, and for simulating a natural, visible hairline that appears to be growing directly out of the scalp at the front of the head of the user, comprising:
(a) a flexible, light-weight, shape-retaining lace mesh foundation constituted of a first set of spaced-apart fine fibers sonically bonded to a second set of spaced-apart fine fibers to strengthen the foundation and to retain the same in a predetermined shape which conforms to the contour of the scalp area to be covered, said second set extending transversely across said first set and bounding open spaces therewith, said foundation having an unbordered front region at the front of the head the user, said unbordered front region terminating at a non-frayable, unbound front edge which is defined by the ends of the fibers of the first and second sets;
(b) a multitude of hairs attached to the foundation substantially up to the front edge thereof, said attached hairs including a plurality of self-standing hairs knotted to the unbordered front region of the foundation along the front edge and extending in the immediate vicinity of the scalp in a generally vertically-disposed direction away from the

scalp at the front of the head of the user, said vertically-disposed, self-standing hairs being spaced apart from one another along the front edge to permit the scalp of the user to be visible through the open spaces of the foundation; and

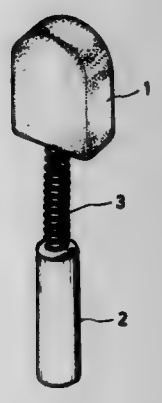
(c) means for detachably securing the hair-attached foundation to the scalp area for repetitive covering of the same, and for positioning the vertically-disposed, self-standing, spaced-apart hairs along the front edge on the front of the head of the user to simulate a natural, visible hairline that appears to be growing directly out of the scalp at the front of the head of the user.

4,509,540

COSMETIC PUFF

Masaaki Inagaki, 4-2-27 Sakashita-cho, Hatogaya-shi, Saitama-ken, Japan

Filed Mar. 15, 1983, Ser. No. 475,408
Claims priority, application Japan, May 24, 1982, 57-74993[U]
Int. Cl.³ A45D *40/00*
U.S. Cl. 132—79 R 3 Claims



1. A cosmetic puff for applying makeup to the skin of an individual by utilizing a dusting mode of application comprising:

a main body of appropriately soft material for dusting an individual's skin with makeup;

a grip rod for grasping by an individual and including a first end and a second end; and

spring means operatively connected to said main body and said first end of said grip rod, said spring means having a predetermined restoring force;

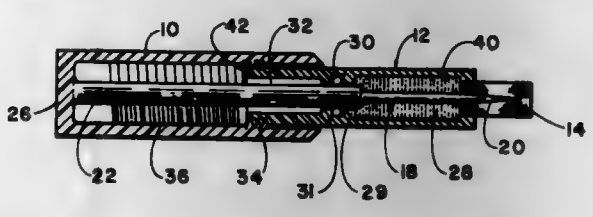
wherein said spring means transmits oscillating motion to said main body as said grip rod is actuated for dusting an individual's skin with makeup.

4,509,541

ANTISEPTIC TOOTHPICK

William D. Manciocchi, Jr., 803 Diamond St., Williamsport, Pa. 17701, assignor to William D. Manciocchi, Jr.; Lawrence S. Allison; Robert F. Griffin, Jr. and Steven J. Hall, all of Williamsport, Pa.

Filed Jun. 24, 1983, Ser. No. 507,745
Int. Cl.³ A61C *15/00;* B43K *5/16*
U.S. Cl. 132—90 12 Claims



1. An antiseptic toothpick comprising:

(a) a case including a base end and a top end, said case including internal wall threads;

(b) a hollow cylinder adapted to contain a liquid and including a base end and a top end and sealed at both ends, said cylinder threadably engaged on its external wall with case internal wall to give controllable telescopic action;

(c) a wick adapted to sealingly fit through said top end of said hollow cylinder to absorb and transmit liquid therethrough;

(d) a toothpick fastened to the internal center of said base end of said case and extending into and through said hollow cylinder and into a portion of said wick,

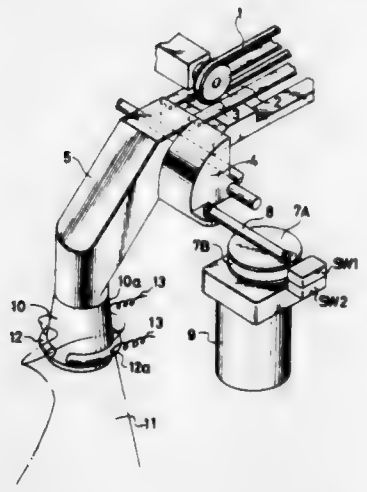
whereby, when through said telescopic action said hollow cylinder is retracted into said case, said toothpick protracts through said wick and into an exposed position and when said telescoping action is reversed, said toothpick retracts within said cylinder, leaving said wick available for use as an applicator.

4,509,542

COIN COUNTING AND PACKAGING MACHINE

Kenkichi Watanabe, and Katusuke Furuya, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,676
Claims priority, application Japan, Jul. 23, 1982, 56-115522
Int. Cl.³ G07D *9/04*
U.S. Cl. 133—8 A 2 Claims



1. A machine for counting and packaging coins, which comprises:

a chute mouthpiece of an electrically conductive material attached to an outlet of a counting chute for discharging coins therethrough;

a ring of an electrically conductive material seated on the chute mouthpiece;

a coin bag of an electrically insulating material adopted to be capped on the chute mouthpiece between the ring and the chute mouthpiece;

means for generating a first signal when the coin bag is capped on the chute mouthpiece between the ring and the chute mouthpiece due to the electrical isolation of said ring from said chute mouthpiece, and for generating a second signal when the coin bag is not capped on the chute mouthpiece due to the electrical connection between said ring and said chute mouthpiece, the generating means being electrically coupled to said chute mouthpiece and said ring; and

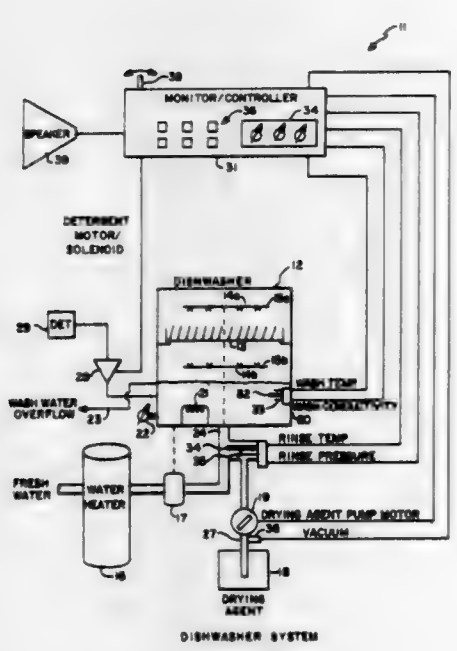
a control circuit for rendering the machine operable to cause the coins to be discharged into the coin bag, in response to the first signal of the generating means and for rendering the machine inoperable to prevent the coins from being discharged, in response to the second signal of the generating means.

4,509,543

INDUSTRIAL DISHWASHER MONITOR/CONTROLLER WITH SPEECH CAPABILITY

James W. Livingston, and James G. Schoatzler, both of Santa Cruz, Calif., assignors to Beta Technology, Inc., Santa Cruz, Calif.

Filed Sep. 12, 1983, Ser. No. 531,753
Int. Cl.[3] B08B 7/04
U.S. Cl. 134—57 D 3 Claims



DISHWASHER SYSTEM

1. In a dishwasher system having rinse water receiving means, detergent receiving means and detergent dispensing means, and wash tank means for holding a quantity of water, monitor/controller apparatus comprising:

electrode means for both measuring the concentration of detergent in the water in said wash tank means and for detecting when said wash tank is empty;

detergent dispenser control means for activating said detergent dispensing means to add detergent to the water in said wash tank means when said electrode means detects that the concentration of detergent in the water in said wash tank is less than a preselected concentration value;

detergent fault means for detecting when the concentration of detergent in said wash tank does not reach said preselected concentration value after said detergent dispenser means has been activated for a preselected length of time and for transmitting a first speech message when said detergent fault is detected;

rinse water fault means for detecting when the temperature of water in said rinse water receiving means falls below a preselected minimum rinse water temperature value and for transmitting a second speech message when said rinse water temperature fault is detected;

rinse water detection means for detecting when water is flowing through said rinse water receiving means into said dishwasher; and

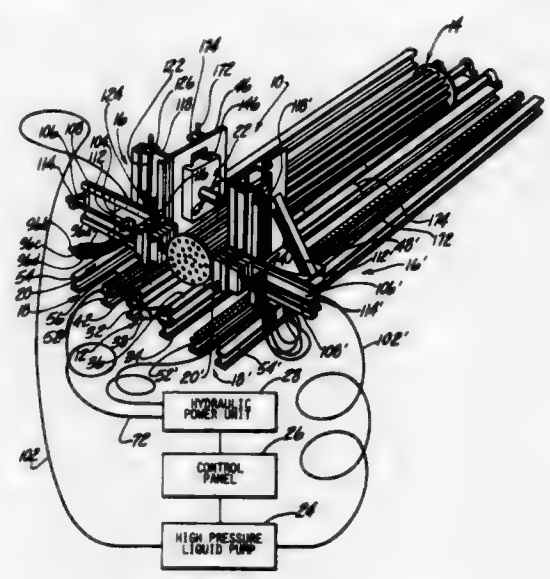
wash water purge fault means responsive to said electrode means and said rinse water detection means for detecting if the cumulative length of time that water has been flowing in said rinse water receiving means since the last time said wash tank means was empty exceeds a preselected dirty water delay period and for transmitting a third speech message when said purge fault is detected.

4,509,544

TUBE BUNDLE CLEANING APPARATUS

Gilbert L. Mains, Jr., 2767 Warwick Dr., Bloomfield Hills, Mich. 48013

Filed Aug. 29, 1983, Ser. No. 527,092
Int. Cl.[3] B08B 3/02, 9/02
U.S. Cl. 134—144 7 Claims



1. A tube bundle cleaning apparatus comprising:

a set of power-driven rollers adapted to receive a tube bundle for cleaning,

a horizontal track extending parallel to said rollers,

a carriage movably supported on said track,

a non-rotatable cleaning head adjustably mounted on said carriage and including plural nozzles, each pointed transversely of said bundle and adapted to be connected with a source of high pressure fluid,

first head positioning means for adjustably positioning said head on the carriage in the vertical direction,

second head positioning means for adjustably positioning said head on the carriage in the horizontal direction toward and away from said tube bundle,

nozzle positioning means for adjustably positioning each of said plural nozzles by translational movement relative to each other on said head,

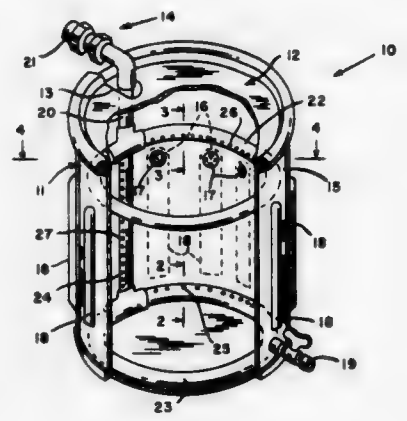
and means for moving the carriage along said track between the ends of said tube bundle.

4,509,545

PORTABLE WASHING AND SPRAY ASSEMBLY

Lamar S. Trotter, 210 Sixth St., Bridgeport, Conn. 06607

Filed Apr. 10, 1984, Ser. No. 598,538
Int. Cl.[3] B08B 3/02
U.S. Cl. 134—199 9 Claims



1. Portable washing and spray assembly designed to receive a continuous flow of cleaning liquid, such as water, and to circulate, wash and spray articles placed therein, said assembly comprising a container having a floor and a wall, at least one

overflow opening in said wall located a predetermined distance above said floor in order to maintain the volume of water within said container at a predetermined level, and a water supply attachment comprising a vertical conduit section communicating with and supporting a parallel pair of spaced horizontal conduit spray rings comprising a lower spray ring designed to be supported adjacent the floor of the container and being provided with a plurality of radial spray holes inclined upwardly at an angle between horizontal and vertical towards the center of the container, and an upper spray ring which is supported by said vertical conduit in a position spaced above said lower spray ring by a distance greater than the height of said overflow opening above the floor of said container, said upper spray ring being provided with a plurality of radial spray holes declined downwardly at an angle between horizontal and vertical towards the center of the container, said vertical conduit being designed to receive a continuous flow of water and to transmit said flow through said upper and lower spray rings and radial openings to fill said container to its overflow opening(s), to generate a water current from the bottom of said container upwardly towards the center thereof, and to generate a water spray from above the level of the water in the container towards the center thereof.

4,509,546

FIRESAFE SEAL

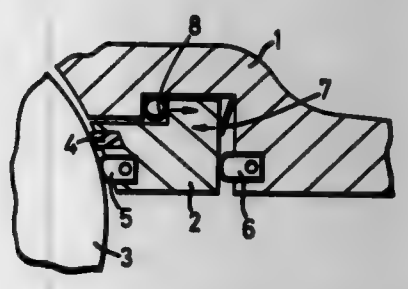
David A. Brookes, Orpington, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Jul. 12, 1984, Ser. No. 630,065

Claims priority, application United Kingdom, Jul. 15, 1983, 8319185

Int. Cl.[3] F16K *13/04*

U.S. Cl. 137—74 6 Claims



1. A sealing assembly comprising three non-compressible and relatively movable members, the first and second members having a first elastomeric, inflatable sealing element located between them, the second and third members having a second elastomeric, inflatable sealing element located between them to urge the second member away from the third member and towards the first member, spaces being provided between the second and third members and being occupied by an elastomeric spring biassed to urge the second member away from the first member and a metallic spring biassed to urge the second member towards the first member, the force exerted by the elastomeric spring being greater than and opposite to that exerted by the metallic spring.

4,509,547

CONTROL SYSTEM FOR AN ELECTRO-PNEUMATIC CONVERTER

Jane E. Smith, Mentor, and Rowland E. Whitford, Painesville, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 22, 1983, Ser. No. 468,105

Int. Cl.[3] G05D *16/00*

U.S. Cl. 137—85 10 Claims

1. A closed-loop electro-pneumatic control system comprising:

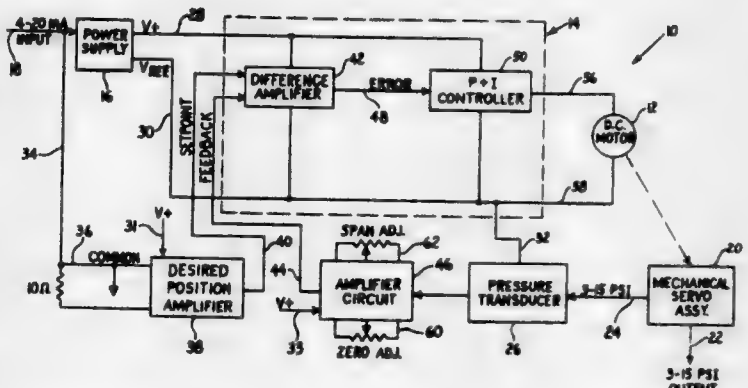
a mechanical servo assembly for providing a variable pneumatic output in response to a movable variable restriction;

motor means for moving said variable restriction of said mechanical servo assembly to vary the pneumatic output therefrom;

means for actuating said motor means in response to a control signal;

means for establishing a set point signal in response to an electrical input signal indicative of a desired pneumatic output signal;

means for establishing a feedback signal indicative of an actual pneumatic output signal;



combining means for comparing said set point signal with said feedback signal to establish a control signal to said actuating means; and

said motor actuating means and said combining means are powered by a pair of positive voltage sources established by a dual power supply to provide bi-directional rotation of said motor means without a negative power supply.

4,509,548

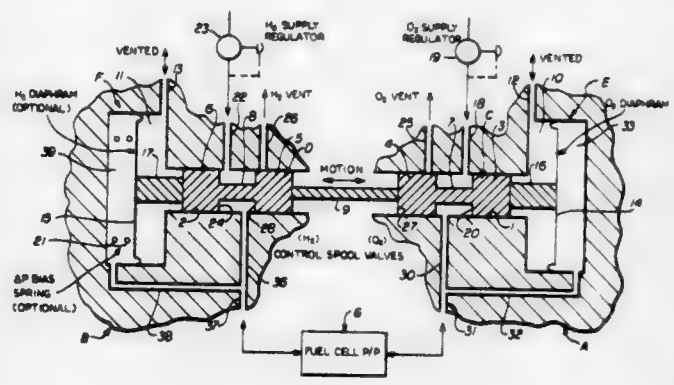
REACTANT PRESSURE DIFFERENTIAL CONTROL FOR FUEL CELL GASES

Albert P. Grasso, Vernon, Conn., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 394,344, Jul. 1, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 646,044

Int. Cl.[3] H01M *8/04*

U.S. Cl. 137—99 4 Claims



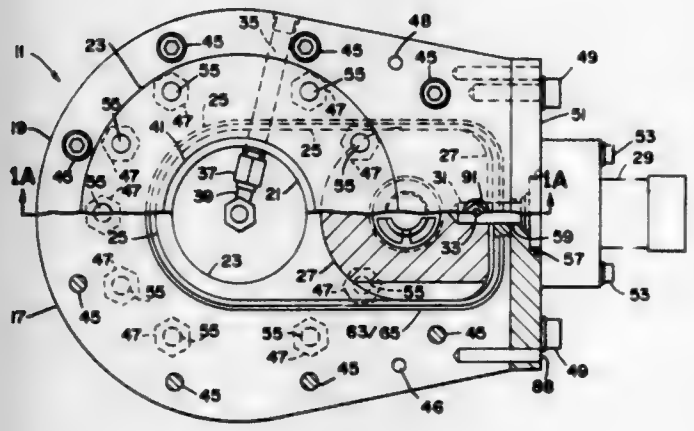
1. Means to control, vent and balance the supply of two separate reactant gases to a fuel cell comprising a control valve for each of said gases, separate flow path means for each of said gases for preventing intermingling of said gases, devices responsive to the pressures of the respective gases for actuating said valves, said valves being rigidly connected together so as to operate in unison for reciprocal adjustment of said gases, and dual vent means, one for each gas, operably associated with said valves for automatically accommodating major pressure unbalances between said gases.

4,509,549

HYDRAULIC POWERED GATE VALVE

Merton G. Cooper; William R. Kerns, both of Port Orchard; Daniel E. Filley, Bremerton, all of Wash., and Gary A. Koschnick, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1982, Ser. No. 433,747
Int. Cl.[3] F16K *3/30*
U.S. Cl. 137—327 6 Claims



1. A gate valve comprising:

(a) a front plate, a back plate and a center plate, said front plate having a first opening for receiving or discharging a highly viscous fluid, said back plate having a second opening in alignment with said first opening for receiving or discharging said highly viscous fluid, said center plate having a slot, said center plate being positioned between said front and back plates wherein one end of said slot is in alignment with said first and second openings and the other end forms a rearward gate cavity between said front and back plates;

(b) a flat gate positioned within said slot and having a forward section, a flat rearward secion, a length, a width, a height, a top, and a bottom, said width of said gate being less than the width of said center plate, said length being less than the length of said gate cavity, said height being less than the height of said slot and said forward section of said gate being curved to provide reduced drag when said gate is closed against highly viscous fluid, said one end of said slot being curved to receive said curved forward section of said gate and said other end of said slot being flat to receive said rearward section of said gate; and

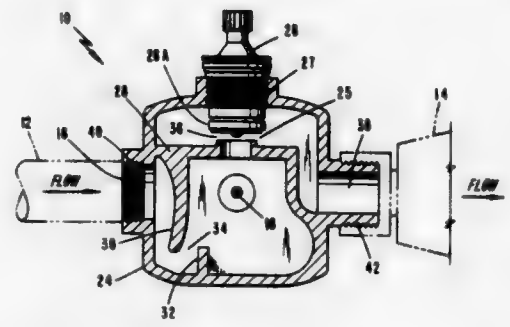
(c) means for slidably actuating said gate, said actuating means including a hydraulic device mounted onto the exterior of said valve and inluding an actuating rod extending through an opening in said center plate and into said rearward gate cavity and operatively connected to said rearward section of said gate, said actuating rod being operatively connected to said gate by a locking pin extending through a passage through the width of the gate in the region of said cavity and an aperture in the actuator rod, said front plate and rear plate have opposing passages facing said actuating rod for disposing removable plugs, said passages allowing access to said locking pin, whereby said actuating rod may be held immovable by apparatus secured in one of said opposing passages, said apparatus being inserted into the passage in the actuating rod to displace said locking pin and secure said actuating rod to said gate.

4,509,550

WATER TEMPERATURE DISPLAY AND FLOW CONTROL APPARATUS

Kermit R. Monk, 122 Oakland Dr., Cross Lanes, W. Va. 25313

Continuation-in-part of Ser. No. 411,097, Aug. 24, 1982, abandoned. This application Mar. 14, 1983, Ser. No. 475,444
Int. Cl.[3] F03B *7/07*
U.S. Cl. 137—551 15 Claims



1. Regulating apparatus for regulating a temperature of a liquid mixture provided as a mixture of two streams of liquid at first and second temperatures, comprising:

inlet means connected for providing said liquid mixture to the regulating apparatus;

a chamber within said regulating apparatus receiving said liquid mixture from said inlet means;

a temperature sensing means disposed within said chamber for detecting the temperature of said liquid mixture provided by said inlet means; and

flow control means, comprising a valve structure disposed at an outlet of said chamber, for controlling flow of said liquid mixture from said chamber to an outlet from said regulating apparatus

said inlet means including mixing means for more thoroughly mixing said liquid mixture provided to said temperature detecting means than in the mixture provided by a supply line for said liquid,

said mixing means comprising baffle means,

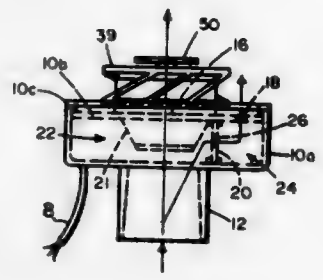
said baffle means including a baffle shaped for deflecting flow of said liquid mixture and for redirecting said flow, together with a second baffle means, oriented for receiving the redirected flow from said first mentioned baffle means and for further redirecting said flow towards said temperature sensing means.

4,509,551

BREATH SWITCH

Charles R. Luper, Anaheim, Calif., assignor to Sensormedics Corporation, Anaheim, Calif.

Filed Dec. 27, 1982, Ser. No. 453,414
Int. Cl.[3] F16K *37/00*
U.S. Cl. 137—554 8 Claims



1. A switch for indicating the beginning and ending of a pulsatile flow of gas comprising:

(a) a housing having an inlet and first and second outlets,

(b) means defining a first flow path for the flow of gas between the inlet and the first outlet,

(c) means defining a second flow path for the flow of gas between the inlet and the second outlet,

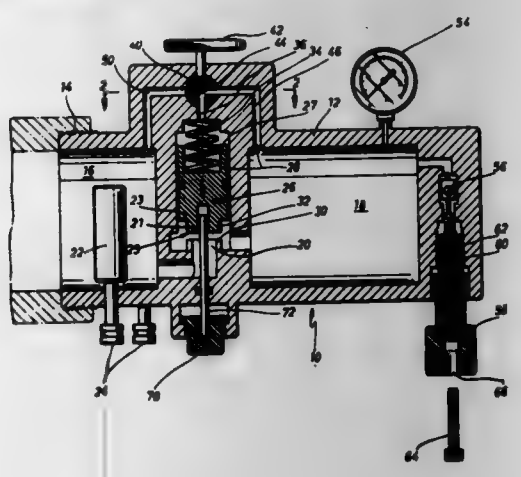
(d) a check valve including a flexible diaphragm connected in series with the first flow path,
(e) a flow responsive member connected in series with the second flow path and adapted to move in response to the flow of gas through the second flow path,
(f) means for indicating the position of said flow responsive member, and
(g) a vibration damping member attached to said flexible diaphragm.

4,509,552

GAS GUN FOR DETERMINING THE LIQUID LEVEL OF A WELL

Dean A. Eicher, Bellaire, and Fount E. McKee, Houston, both of Tex., assignors to Delta-X Corporation, Houston, Tex.

Filed Apr. 18, 1983, Ser. No. 486,128
Int. Cl.[3] F16K *37/00*; G01L *19/02*
U.S. Cl. 137—557 17 Claims



1. A gas gun for producing pressure pulses for measuring the liquid level in a well comprising,
a body adapted to be connected to a well,
said body including first and second chambers interconnected by an intermediate passageway whereby a pressure pulse flowing between the chambers creates a pressure pulse for transmittal to a well, one of said chambers adapted to be connected to the well and one of said chambers adapted to be connected to a pressure source,
means in the body measuring pressure variations,
a piston actuated valve coupled to means for selectively opening and closing the passageway between the first and second chambers,
means for transmitting the higher pressure in one of the chambers to the piston for resiliently closing the valve, and
means for exhausting the pressure from the pressurized piston to the atmosphere for opening the valve and creating a pressure pulse between the chambers.

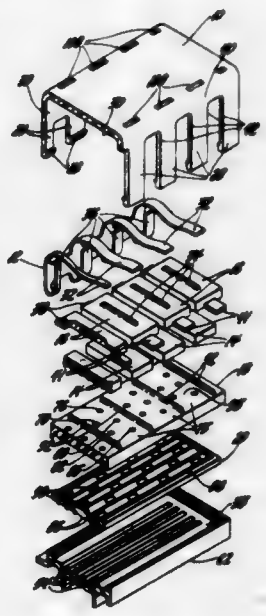
4,509,553

FLUID FLOW SELECTOR VALVE

Sangman Hahn, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 2, 1983, Ser. No. 528,742
Int. Cl.[3] F15B *13/08*
U.S. Cl. 137—596 3 Claims

1. A multimode slide valve comprising a complement of elongated side-by-side extending passages including a pressure potential passage and a plurality of communication passages, a plurality of groups of ports spaced along the length of said passages with the ports in each group being arranged in a prescribed pattern common to all the groups and so as to correspond with and be separately connected to said passages and with the number of said groups corresponding to a predetermined number of different modes of communication desired between said communication passages and said pressure potential passage and atmosphere, and individual slidable selector means for each said group slidable between a position blocking all the ports in the respective group and a position separately connecting said pressure potential passage and atmosphere with a prescribed number of said communication passages via



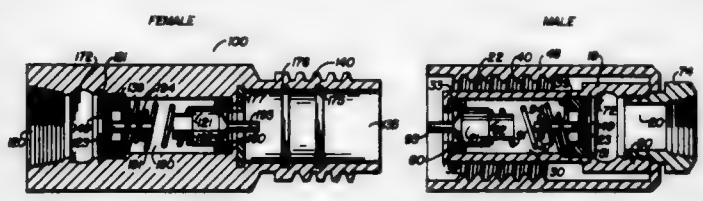
the ports in the respective group, said selector means having differently patterned passage means adapted to cooperate with the ports in the respective groups to provide the desired mode of communication including that with atmosphere to effect venting.

4,509,554

HIGH AND LOW PRESSURE, QUICK-DISCONNECT COUPLING

William G. Failla, 1 Rutgers Ct., Belleville, N.J. 07109

Continuation-in-part of Ser. No. 439,992, Nov. 8, 1982, abandoned. This application Sep. 19, 1983, Ser. No. 533,601
Int. Cl.[3] F16L *37/08*
U.S. Cl. 137—614.05 5 Claims



1. An anti-vibration, high and low pressure, quick-disconnect, safety coupling, comprising:
(a) an elongate male element having a longitudinal axial bore comprising first and second regions, said regions each separated by an orifice, said male element further comprising a third annular region surrounding said second region, the outer circumference of said third annular region defining a circumferential housing of said elongate male element, the interior circumference of said third region comprising longitudinal locking means;
(b) an elongate female element having a longitudinal bore including first, second and third regions, each separated respectively by an orifice in which the external surface of a mating end of said female element comprises a longitudinal locking means with relationship to the locking means of the interior of the circumferential housing of said third annular region of said male element, said longitudinal locking means comprising means for securing said male and female elements into a plurality of respective axial positions, one of said axial positions defining a first locking mode between the locking means of said male and female elements, said first locking mode occurring prior to axial contact between any other elements of said male and female elements;

(c) a pair of inner-sealing valves having axial stems biased in a normally closed position, disposed upon a common axis of the respective male and female elements, said elements and said inner valves acting to define a second locking mode upon the axial advancement of said longitudinal locking means to a point of axial communication between the respective stems of said inner-sealing valves to the point of overcoming the normal closure bias of said inner valves to thereby open said inner valves, such open condition corresponding to said second locking mode; and

(d) a pair of outer sealing valves biased in a normally closed position, disposed axially within the respective orifices of each male and female element, axially opposite the regions of axial communication between said male and female elements respectively, said outer valves acting to enable fluid flow through said orifices after said inner valves have been opened and advanced past and second locking mode, thereby defining a third locking mode ultimately characterized by fluid flow through the entire axial length of said male and female elements, in which said third locking mode will occur only after both pairs of normally-closed, inwardly-biased outer valves have become actuated into an open condition, in which that outer valve exposed to the greater external fluid pressure will open only after the opening of the opposite outer valve, such later opening caused by the eventual overcoming of the normal inward pulling bias of said outer axial valve, this caused by the axial advance of the male and female elements toward each other, into said third locking mode,

whereby fluid flow toward said opposite valve through the entire coupling will occur in the direction of greatest fluid pressure.

4,509,555

DISK TRANSFER SYSTEM

James S. Stirbis, Littleton, Colo., assignor to Adolph Coors Company, Golden, Colo.

Continuation of Ser. No. 464,555, Feb. 7, 1983,. This application Feb. 10, 1984, Ser. No. 578,812

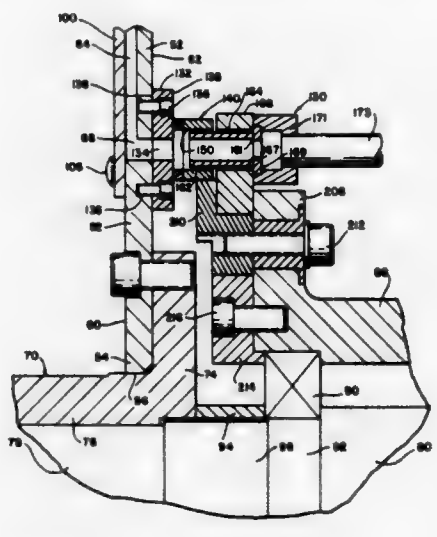
Int. Cl.[3] F16K *25/00;* B65G *47/04;* B41F *17/20*

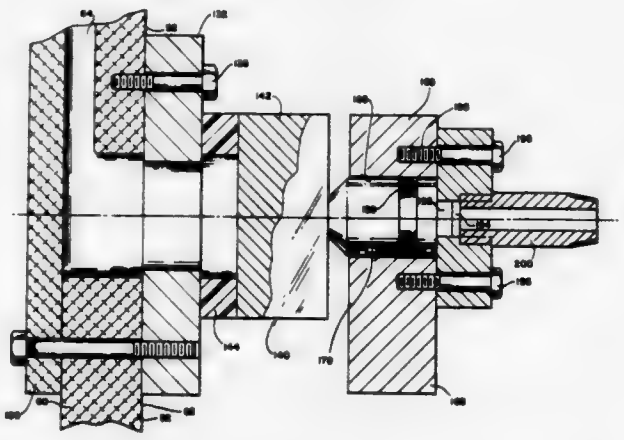
U.S. Cl. 137—625.11 1 Claim

1. A system for connecting a plurality of circumferentially spaced ports on a rotating member to an air or vacuum chamber in a non-rotatable manifold member located in axially spaced juxtaposition to said rotating member which comprises:

mounting means for holding said manifold member in circumferentially fixed relationship to said rotating member while enabling axial movement of said manifold member relative to said rotating member; and

biasing means operatively associated with said manifold member for holding said manifold member in engagement with said rotating member while permitting limited axial displacement of said manifold member relative to said rotating member, said biasing means including a plurality of circumferentially spaced reciprocably mounted piston abuttingly engaging said manifold member and biasing said manifold member in a direction parallel to the direction of reciprocal movement of said reciprocally mounted piston means into engagement with said rotating member; and pressurized air means connected to said piston means for applying force thereon to hold said piston means in engagement with said manifold member while enabling





variable axial location of said piston means relative to said manifold member.

4,509,556

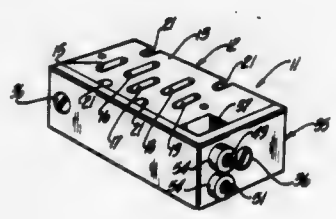
FLOW CONTROL FOR VALVE INTERFACE

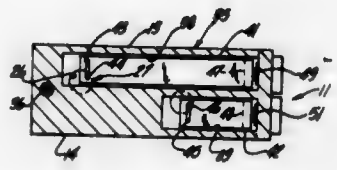
James E. Scanlon, Madison Heights, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.

Filed May 13, 1982, Ser. No. 377,935

Int. Cl.[3] F16K *11/20*

U.S. Cl. 137—884 7 Claims





1. A flow control element for interpositioning in a fluid system comprising a valve body adapted to be interposed between a pair of elements of the system having fluid ports adapted to communicate with each other, said valve body having a pair of spaced flow ports extending through oppositely facing faces thereof and adapted to provide the communication between respective pairs of said element ports when

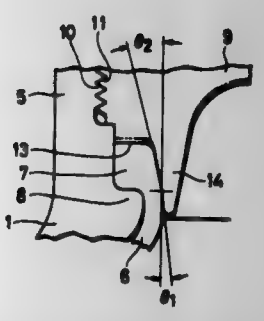
received therebetween, said flow ports having a non-cylindrical cross section comprised of parallel sides joined by rounded end portions, a pair of valve elements rotatably supported in said valve body and each extending across a respective one of said flow ports, said valve elements each having a semi-cylindrical portion of a diameter at least equal to the transverse dimension between said parallel sides of the respective flow control port transverse to the axis of said valve element and a relief in one side, each of said valve elements having a pin eccentrically affixed thereto and further including a pair of slidably supported valve operators each having a transversely extending slot receiving a respective one of said pins for rotating the respective valve element.

4,509,557

ACCUMULATOR

Nobuyuki Sugimura, 308 Mabase, Shimizu-Shi, Shizuoka-ken, Japan

Filed Jul. 8, 1983, Ser. No. 512,035
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 3 Claims



1. A hydraulic accumulator of the type that comprises a pressure vessel having a threaded opening, its interior divided by resilient bladder into a gas compartment and a liquid compartment that are sealed from one another, and a threaded plug to removably fit into the opening of said pressure vessel, said accumulator being characterized by:

A. said bladder comprising an opening and a surrounding outwardly extending enlarged flange, said bladder having an inner surface defining the opening and having an inwardly radial upper surface on the flange and an adjoining tapered or curved opening periphery;

B. said pressure vessel having a detaining step upon which said flange of the bladder is placed to support the bladder;

C. said plug being provided with a radial surface and an adjoining downward projection to trap said bladder flange, said projection having an inwardly tapered or curved periphery having a shape mating with the shape of said bladder inner surface defining the opening, wherein said plug projection periphery will tightly contact with and compress said periphery of the bladder at the final moment of screwing down the plug radial surface against the bladder radial surface while providing a clearance between them at any stage other than that final moment so that the flange is not required to be forced to turn by the rotation of the plug.

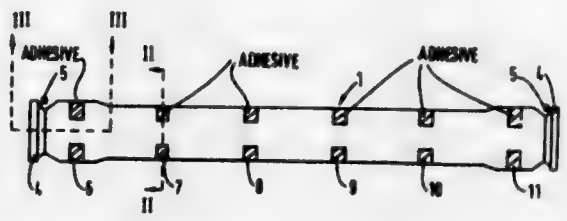
4,509,558

FLEXIBLE HOSE

Christopher J. Slater, Grimsby, England, assignor to Dunlop Limited, London, England

Filed Sep. 24, 1982, Ser. No. 423,266
Claims priority, application United Kingdom, Mar. 23, 1982, 8208402
Int. Cl.³ F16L *55/00*
U.S. Cl. 138—104 8 Claims

1. A flexible hose comprising a main fluid retaining carcass, a secondary fluid retaining carcass which encloses at least part of said main carcass and is capable of expanding radially relative to said main carcass in response to leakage of fluid from said main carcass and means to control radial expansion of said secondary carcass relative to said main carcass at positions



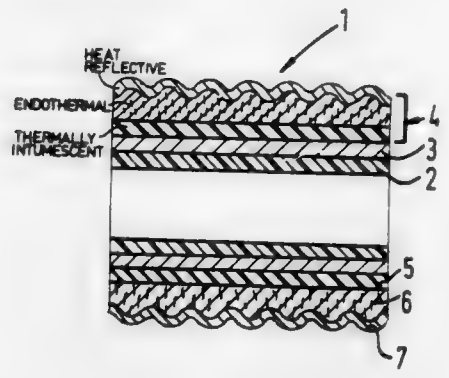
spaced axially along the length of the hose comprising a bonding of said secondary carcass to said main carcass at said positions spaced axially along the length of said hose.

4,509,559

FIRE-BARRIERS

Ivan C. Cheetham, and George A. Pope, both of Sutton Coldfield, England, assignors to Dunlop Limited, London, England

Filed Mar. 22, 1983, Ser. No. 477,663
Claims priority, application United Kingdom, Mar. 30, 1982, 8209258
Int. Cl.³ F16L *11/00*
U.S. Cl. 138—121 14 Claims



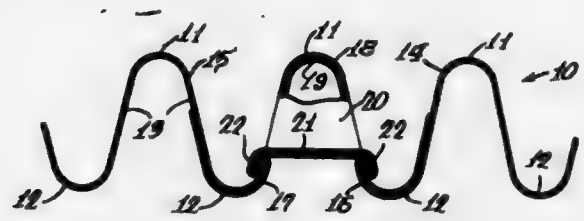
4. A flexible hose for conveying fluid, said hose having an outer cover comprising a flexible fire-barrier consisting of an outer layer of heat reflective material, an inner layer of thermally intumescent material compounded with elastomer, and an intermediate layer of endothermal material between said inner and outer layers.

4,509,560

LOCKING DETENT FOR CORRUGATED TUBE

Gunter Schafer, Ft. Lauderdale, Fla., assignor to Security Lumber & Supply Co., Bradley, Ill.

Filed Oct. 25, 1983, Ser. No. 545,189
Int. Cl.³ F16L *9/06*
U.S. Cl. 138—122 2 Claims



1. In a flexible corrugated tube of the type that has a succession of axially displaced convolutions of spirally coiled thin metal strip having longitudinally extending corrugations, the corrugations being of wave form having alternating arcuate axially spaced crests and troughs, the border portions of successive tube convolutions overlapping each other with at least one corrugation in the overlying border portion of one convo-

lution fitting into one corrugation of the underlying border portion of an adjoining convolution, and a plurality of circumferentially spaced detents in the crests of said interfitting corrugations with said interfitting corrugations having said wave form between said detents, the improvement comprising:

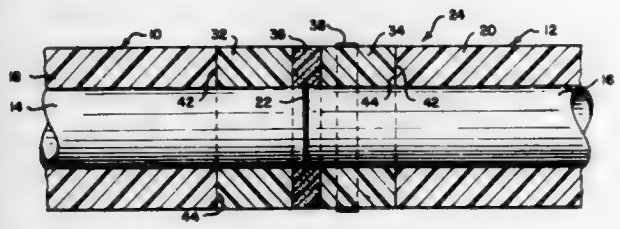
each of said detents has a flattened central area flanked by crimps along the marginal portions of said central area that extend downwardly and outwardly therefrom substantially parallel to a closely adjacent the lowermost portions of the crests in which said detents are located, so the overlapping convolution border portions are firmly locked into one another in said crimps.

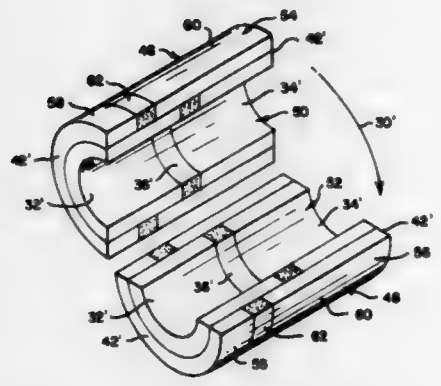
4,509,561

INSULATION DEVICE FOR APPLICATION TO AN UNINSULATED PORTION OF A PREINSULATED PIPE

Milton B. Litz, Pittsburgh, Pa., assignor to Power Piping Company, Pittsburgh, Pa.

Filed Apr. 28, 1983, Ser. No. 489,458
Int. Cl.³ F16L 9/14
U.S. Cl. 138—149 **13 Claims**





1. An insulation device for surrounding the combined lengths of the uninsulated, adjoining end portions of a preinsulated pipe, the end portions being so adjoined that a junction is defined thereby and the end portions having an outside diameter which is less than the outside diameter of the preinsulated pipe, comprising:

a plurality of axially extending cylinder segments molded from an insulating material and adapted to be circumferentially joined to form a cylindrical insulating jacket around the uninsulated end portions, said cylinder segments in their undeformed states having a length slightly greater than the combined length of the uninsulated adjoining end portions;

said cylindrical insulating jacket having an inside diameter generally conforming to the outside diameter of the uninsulated end portions;

each said cylinder segment having at least a first pair of rigid arcuate sections and a first resilient arcuate section sandwiched therebetween, said first resilient arcuate sections of all said cylinder segments being longitudinally positioned in said cylindrical insulating jacket to fall substantially in the same transverse plane; and

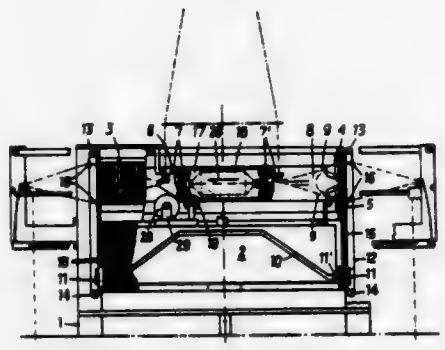
said first resilient arcuate section being made of such a resilient form of said insulating material that said first resilient arcuate sections of said plurality of cylinder segments are adapted to permit axial compression of said cylinder segments and, when said cylinder segments are so axially compressed, said first resilient arcuate sections are adapted to urge said cylinder segments to so axially expand toward resumption of their undeformed states that said cylindrical insulating jacket provides an expansion and contraction joint.

4,509,562

CIRCULAR LOOM

Johann Schönberger, Timelkam; Johann Bloo, Rosenau; Bruno Mistlberger, Vöcklabruck, and Johann Gehmaier, Gampern, all of Austria, assignors to Chemiefaser Lenzing Aktiengesellschaft

Filed Nov. 14, 1983, Ser. No. 550,943
Claims priority, application Austria, Nov. 11, 1982, 4100/82
Int. Cl.³ D03D 37/00
U.S. Cl. 139—13 R **2 Claims**



1. In a circular loom of the type including

a machine frame including an upper running race and a lower running race, a reed and at least one shuttle having a front end and a rear end arranged between said upper running race and said lower running race, running roller means arranged on said shuttle front end and on said shuttle rear end,

a rotor, and

a catch roller arranged on said rotor to drive said shuttle,

the improvement which is characterized in that said running roller means are adapted to support and guide said shuttle between said upper and lower running races and include a running roller arranged on said shuttle front end, and wherein said catch roller, during operation, is in contact with said running roller arranged on said shuttle front end, said catch roller being provided between said running roller means arranged on said shuttle front end and on said shuttle rear end.

4,509,563

DEVICE FOR THE INSERTION OF A WEFT THREAD INTO THE SHED BETWEEN TWO LINES OF WARP THREAD IN A WEAVING LOOM

Guy Gosciniak, Illfurth; Yves Juillard; Pierre Menissier, both of Mulhouse, all of France, and Albert Moessinger, Vaud, Switzerland, assignors to Mecaniques de Mulhouse Societe Alsacienne de Constructions, France

Continuation-in-part of Ser. No. 239,577, Mar. 2, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,844
Int. Cl.³ D03D 47/12, 47/36
U.S. Cl. 139—443 **15 Claims**

1. Device for the insertion of a weft thread into the shed of a weaving loom comprising:

a delivery system;

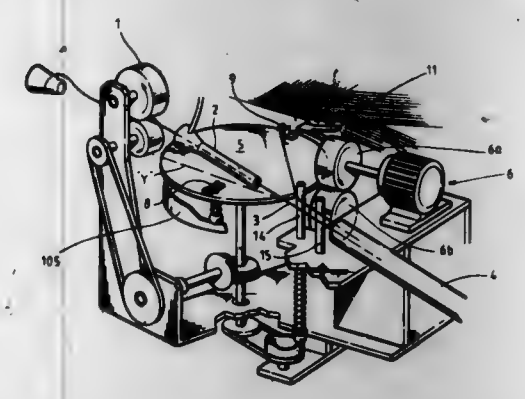
a thread collecting unit for receiving thread from the delivery system;

an insertion system, placed between the delivery system and the thread collecting unit for inserting a pick of weft thread into the shed between the warp threads;

a feeding system which is adapted to be driven to cooperate with said insertion system to transfer a pick of weft thread from the thread collecting unit to the insertion system;

said feeding system including:

driving means adapted to be moved during driving of the feeding system through a set path which is outside the operative zone of the insertion system but which intersects the trajectory of thread between the delivery



system and the thread collecting unit, and gripping means mounted on the driving means adapted to engage such a pick of weft thread and carry the thread into the operative zone of the insertion system for insertion thereby.

4,509,564

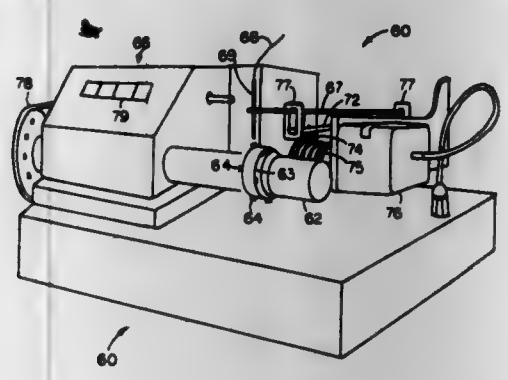
METHOD FOR WINDING ANNULAR ZIG-ZAG WINDINGS

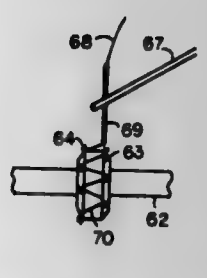
Richard D. Sedgewick, 100 Horne St., Dover, N.H. 03820

Division of Ser. No. 342,647, Jan. 25, 1982, Pat. No. 4,399,843, which is a division of Ser. No. 198,928, Oct. 20, 1980, Pat. No. 4,331,896. This application Apr. 18, 1983, Ser. No. 485,737

Int. Cl.³ B21F *3/00*

U.S. Cl. 140—92.2 **6 Claims**





1. A method of winding multi-phase annular zig-zag windings comprising:

rotating a winding arbor having a winding surface for receiving coil forming wire in an annulus around the rotating arbor and a plurality of pins spaced apart around the arbor in at least two opposite rings of pins defining the opposite perimeters of the annular winding to be wound, said pins mounted in the winding arbor forming acute angles with the winding surface of the arbor, each ring of pins oriented with the acute angles in the direction away from the other ring of pins;

reciprocating back and forth a wire feed winding arm over the winding surface in a span greater than the spaced apart rings of pins and delivering coil winding wire to the winding surface in timed relationship to the rotation of the winding arbor;

winding a first annular zig-zag winding element of a multi-turn filament bundle of troughs and peaks by feeding the coil winding wire onto the winding surface of the rotating arbor around spaced apart pins of alternately opposite rings of pins on the winding arbor during multiple turns of the rotating arbor and packing and holding the multiple turns of the filament bundle together on the winding surface at the troughs and peaks in the acute angles of the pins;

advancing the phase of the rotating winding arbor relative to the reciprocating wire feed winding arm and winding a second annular zig-zag winding element of a multi-turn filament bundle of peaks and troughs over the first annular zig-zag winding element and offset from the first winding element so that the troughs of the second winding element are approximately aligned with the peaks of the first winding element, by feeding the coil winding wire onto the winding surface of the rotating arbor around spaced apart pins of alternately opposite rings of pins on the winding arbor during multiple turns of the rotating arbor and packing and holding the multiple turns of the filament bundle together at the peaks and troughs in the acute angles of the pins, thereby laying the second winding element over the first winding element as adjacent multi-filament bundles, rather than as individual filament cross-overs and providing a first phase in the form of a ring of equivalent current loops oriented with orthogonal axes along radial directions of the annular zig-zag winding:

advancing the phase of the rotating winding arbor relative to the reciprocal wire feeding arm and winding a second phase in the form of a ring of equivalent current loops comprising third and fourth annular zig-zag winding elements wound in the same manner as the first and second zig-zag winding elements but formed around different pins offset in phase from the first and second zig-zag winding elements thereby providing a multi-phase annular zig-zag winding.

4,509,565

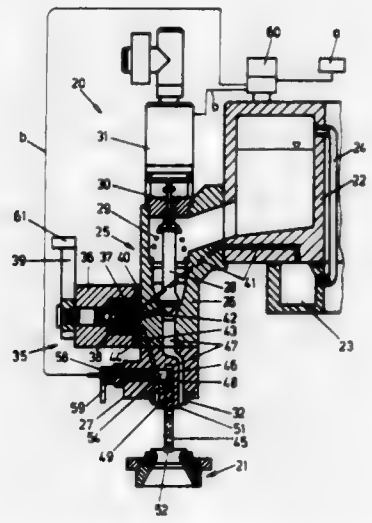
FILLING ELEMENT FOR SINGLE-CHAMBER AND MULTI-CHAMBER COUNTERPRESSURE FILLING MACHINES

Egon Ahlers, Neu-Bamberg, Fed. Rep. of Germany, assignor to Seitz Enzinger Noll Maschinenbau AG, Bad Kreuznach, Fed. Rep. of Germany

Filed Oct. 14, 1982, Ser. No. 434,257

Int. Cl.³ B67C *3/06*

U.S. Cl. 141—39 **7 Claims**



1. A filling element for single-chamber and multi-chamber

counterpressure filling machines, said filling element comprising:

a filling element body which is provided with a liquid guidance conduit;

a controlled, pressurized gas valve arrangement associated with said filling element body for producing a gas pressure in a pressed-on container which is to be filled prior to liquid flowing therein;

a liquid flow valve provided in said filling element body for opening and closing said liquid guidance conduit;

an actuating device for effecting opening and closing of said liquid flow valve, and hence of said liquid guidance conduit;

an electrical switching member for generating a closure-control signal, upon contact of said member with liquid rising in a pressed-on container, for having said actuating device assume a closing position; said switching member being electrically insulated relative to said liquid guidance conduit, and being a rod-shaped probe of electrically conductive material over its entire length;

an electrical connection which is electrically connectible with said actuating device and with said probe; said filling element body being made of electrically insulating material from that end of said liquid guidance conduit thereof which would be closest to a pressed-on container, to at least beyond said electrical connection; and

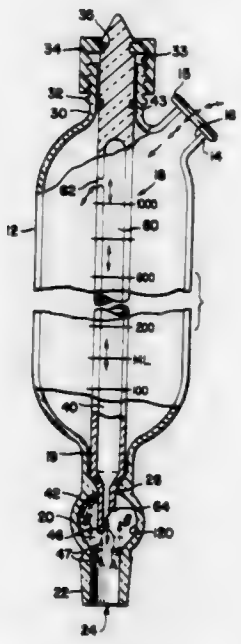
a holder located below said liquid flow valve in that part of said filling element body made of electrically insulating material for fixing the position of said probe and for shielding said probe from contact with liquid in said liquid guidance conduit.

4,509,566

SEPARATORY FUNNEL AND VALVE DEVICE

Edwin D. Phillips, 700 Cedar Ave., Middlesex, N.J. 08846

Filed Jul. 21, 1983, Ser. No. 515,860
Int. Cl.³ B01L *3/00*
U.S. Cl. 141—94 **22 Claims**



1. A separatory funnel comprising:

an enlarged enclosed chamber for holding liquids to be accurately dispensed therefrom;

an inlet opening for the chamber;

an outlet opening for the chamber;

an elongated valve stem movably mounted within said chamber;

means at one end of said valve stem associated with said chamber outlet opening to control the flow of liquid therefrom; and

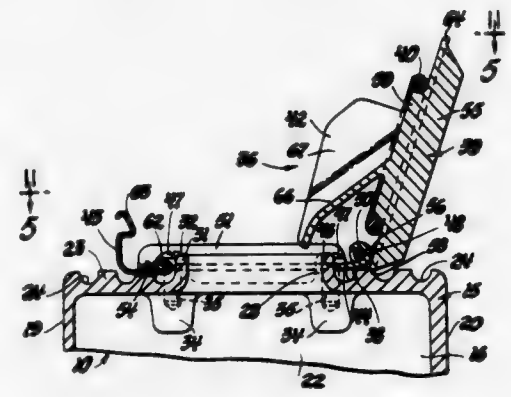
further means integral with said valve stem to permit fluid flow through the stem separate from the path of controlled liquid flow from said chamber outlet opening.

4,509,567

OIL FILTER AND CAP

Bobby J. Harrison, Ortonville, and Peter Ashurkoff, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,477
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—97 **5 Claims**



3. An engine oil filler and cap comprising

means defining an exterior wall of an oil containing chamber of such engine, said wall having an oil fill opening therethrough with a sealing surface peripherally surrounding said opening and said wall having a side portion extending in generally planar relation with the peripheral surface outward of one side of the peripheral surface,

a filler cap hinged to said exterior wall along said side portion thereof and pivotable between a closed position generally parallel with said wall and covering said opening and an open position extending at an angle with said wall and permitting access to said opening to pour oil therethrough into said chamber,

a continuous resilient seal carried on the interior of said cap and sealingly engageable with said peripheral wall surface when said cap is in the closed position,

latch means operative between an edge of said cap and said wall at a location distal from the cap hinged portion, said latch means being engageable to maintain said seal compressed to seal the opening along the peripheral surface when the cap is closed and said latch means being releasable to permit the seal to urge the cap in an opening direction when released to facilitate opening of the cap and permit oil filling, and

a pouring trough extending from an inner side of said cap within said seal, said trough extending through said opening and behind said wall side portion when the cap is in the closed position, and said trough extending above said cap and sloping downwardly over said peripheral surface and above said opening when the cap is in the open position, whereby oil poured on said trough is prevented from contacting the main cap surface and is directed by said trough into said opening.

4,509,568

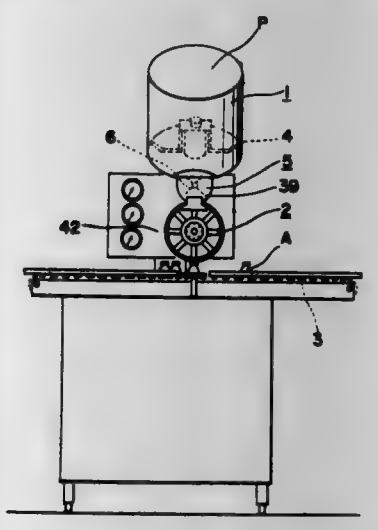
GRANULAR MATERIAL PROCESSING APPARATUS WITH SEAL FOR STIRRER SHAFT OR THE LIKE FORMED BY THE GRANULAR MATERIAL

Toshihiro Kawaguchi, Osaka; Mineo Ishizaka, Hikari, and Hiyoshi Doi, Izumisano, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 8, 1983, Ser. No. 502,232
Claims priority, application Japan, Dec. 10, 1982, 57/217380
Int. Cl.³ B65B *43/42*
U.S. Cl. 141—129 **5 Claims**

1. A granular material processing apparatus which comprises a stationary container means for storing and transferring granular material, a movable processing means adapted to be coupled with a driving means for stirring and dispensing the granular material, said stationary container means and said

movable processing means each having at least one part provided adjacent to a corresponding part on the other so as to constitute part of said processing apparatus and having a gap therebetween, and a sealing arrangement for preventing leakage of the granular material from the stationary container means through the gap between said stationary container means and said movable processing means, said sealing arrangement having a porous plate with a large number of pores therein having diameters smaller than the particle diameters of the granular material and extending through said porous plate



from a front face to a rear face thereof, and which porous plate is positioned on the surface of a portion of said stationary container means part in spaced opposed relation to said movable processing means part, and a pressure reduction introducing space provided between said stationary container means and said porous plate to which the rear face of said porous plate is exposed, and a pressure reducing means communicated with said space, whereby a granular material attracted onto the front face of said porous plate by the reduced pressure in said space tightly closes the gap between said stationary container means and said movable processing means.

4,509,569

ARRANGEMENT FOR SUPPLYING GAS TO A LIQUID IN A CONTAINER THEREFOR

Bengt O. Adolfsson, Stockholm, Sweden, assignor to Kommanditbolaget Aldolf, Västerås, Sweden

PCT No. PCT/SE82/00183, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO82/04243, PCT Pub. Date Dec. 9, 1982

PCT Filed May 19, 1982, Ser. No. 463,451

Claims priority, application Sweden, May 25, 1981, 8103281

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—360 **10 Claims**

1. A pressurized apparatus for domestic use for carbonating and dispensing water, comprising:

(a) a water container (2; 30),

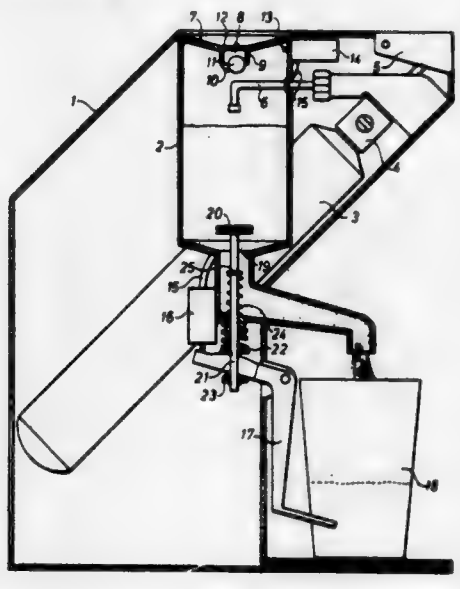
(b) a closeable fill orifice (8) for introducing water into the container,

(c) means (3, 4, 5, 6) for supplying pressurized carbon dioxide gas to the container through a discharge outlet disposed below a highest level to which the container may be filled with water,

(d) a normally closed discharge orifice (19; 31) for dispensing carbonated water from the container,

(e) a gas venting orifice (13) disposed in an upper portion of the container above said highest level,

(f) dispenser actuation means (17; 43) for enabling the opening of the discharge orifice, and



(g) means for preventing the opening of the discharge orifice upon the enablement thereof when the pressure in the container exceeds a predetermined value.

4,509,570

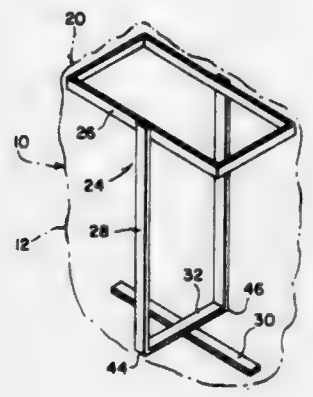
ELASTIC TOP BAG

Jeffrey Eby, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 24, 1983, Ser. No. 460,748

Int. Cl.³ B65B *43/26*

U.S. Cl. 141—390 **1 Claim**



1. An elastic top trash bag which comprises:

(a) a trash bag having an opening at the top;

(b) an elastic band placed around the top of the trash bag, the trash bag having edges of the top folded over the elastic band and sealed forming a hem so that the elastic band is held within the hem, the hem serves to hold the trash bag in place around top of a receptacle when the hem is folded over the top of the recepticle and to close the trash bag automatically when the trash bag is removed from the recepticle, in combination with removeable collapsible frame for internally supporting the bag in open position, said means having portions detachable for purposes of being collapsed wherein the trash bag is made out of plastic and the elastic band is made out of rubber, said frame further comprises:

(a) a rectangular top frame member to hold the hem in an open position;

(b) a U-shaped frame member that is placed within the trash bag in a vertical position, the U-shaped frame member is removeably attached to and supports the rectangular top frame member; and

(c) a bar frame member removeably attached transverse to bottom of the U-shaped frame member so that the trash bag can be supported in an open position to be filled

without utilizing the receptacle wherein the rectangular top frame member, the U-shaped frame member and bar frame member are made of durable hard plastic and are collapsible for storage when not in use wherein the rectangular top frame member, the U-shaped frame member and the bar frame member are attached to each other with peel away adhesive for easy assembly.

4,509,571

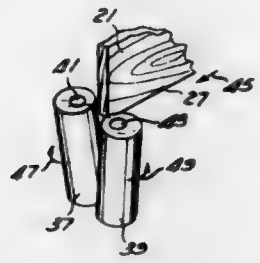
APPARATUS FOR FORMING I-BEAM TRUSS STRUCTURE

Dierk D. Peters, P.O. Box 137, Rancho Santa Fe, Calif. 92067

Continuation of Ser. No. 60,908, Jul. 26, 1979, Pat. No. 4,336,678, which is a continuation-in-part of Ser. No. 927,618, Jul. 24, 1978, abandoned. This application Jun. 23, 1982, Ser. No. 391,231

Int. Cl.³ B27M *1/02*

U.S. Cl. 144—2 R **12 Claims**



4. A forming device for impressing indentations of a selected shape or pattern into a surface of a sheet of wood adjacent an edge thereof, comprising:

roller means rotatably mounted for engaging the edge of a sheet of wood; and

forming means on said roller means, having a surface shape and pattern for compressing the wood and leaving an impression on the wood corresponding to the shape and pattern of said forming means, said forming means forming impressions having a depth which generally increases toward the edge of the wood.

4,509,572

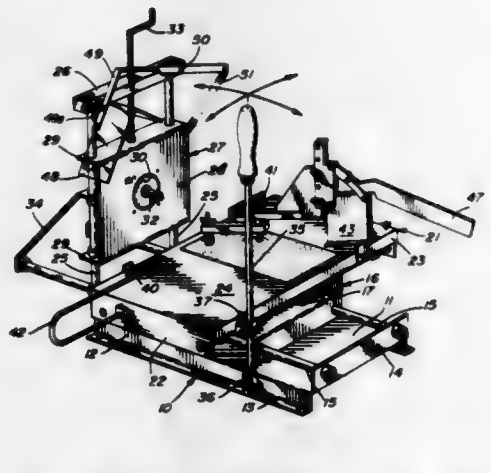
WOODWORKING PRESS

Germain L'Archer, 866 Lamarre St., Laprairie, Canada J5R 1N7

Filed Jun. 17, 1983, Ser. No. 506,396

Int. Cl.³ B27F *5/00*; B27C *5/00*

U.S. Cl. 144—84 **5 Claims**



1. A woodworking press comprising a base, superposed lower and upper carriages slidably mounted on said base and on said lower carriage respectively for horizontal guided displacement at right angles one with respect to the other relative to said base, said upper carriage forming a horizontal work supporting surface, a single generally upright actuation arm pivoted to said base at its lower end about a first universal joint and to said top carriage about a second universal joint, said arm also longitudinally slidable relative to said second universal joint, actuation of said arm causing movement of said upper carriage in any horizontal direction, a pair of upright spaced support rods fixedly secured to said base, upwardly projecting therefrom and located exteriorly of the area of displacement of said upper and lower carriages, a top cross bar interconnecting the ends of said support rods, a third plate-like carriage slidably mounted on said support rods for vertical movement therealong, said third carriage having a back surface and a front surface, the latter facing towards said upper and lower carriages, said third carriage having an aperture made therein, a power-driven router removeably secured to said third carriage at the back surface thereof so as to be movable therewith, a horizontally disposed cutting tool operatively carried by said router and extending through said aperture of said third carriage and protruding from said front surface towards the upper and lower carriages, upright screw means extending through and screwed within said cross bar and rotatively attached to said third carriage at its lower end, and manually actuable means at the top end of said screw means exposed above said cross bar to rotate said screw means and adjust the height of said cutting tool relative to said work supporting surface.

4,509,573

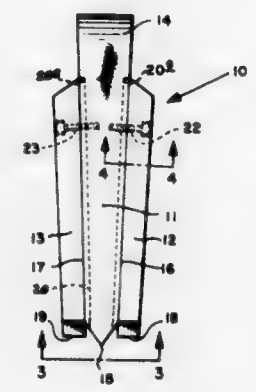
CONVERTIBLE LOG SPLITTING DEVICE

Kenneth R. Santmyer, Jr., 294 Valley Rd., Furlong, Pa. 18925

Filed Oct. 27, 1983, Ser. No. 545,790

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 D **1 Claim**



1. A splitting wedge for use in splitting a log, comprising:

an elongated wedge body having tapered sides extending between a driving head at one end and a major edge at the opposite end,

a pair of quartering members extending lengthwise of said wedge body along opposite sides thereof and having auxiliary edges extending orthogonal to said major edge a spaced distance upwardly therefrom,

interengaging surfaces extending lengthwise in said wedge body and on each quartering member for slidably mounting said quartering members to said wedge body, said surfaces defining a dovetail groove extending in each tapered side of said wedge body and a shaped tongue on each quartering member,

abutment surface means in said groove on the wedge body and on said tongue of each quartering member adjacent its upper end for engaging one another to transfer pressure from the wedge body to each quartering member, and

fastener means releasably coupling said quartering members to said wedge body,

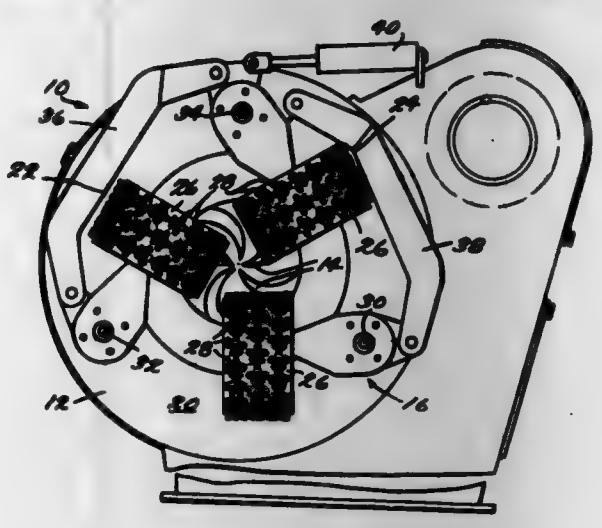
whereby the cutting wedge may be used to split logs into various shapes.

4,509,574

FEED ROLL SPIKES WITH PLUS-SHAPED CUTTING EDGES

Walden M. Gaitten, deceased, late of Sylacauga, Ala. (by Dorothy A. Gaitten, executrix), assignor to Kockums Cancar, Corp., Talladega, Ala.

Filed Dec. 9, 1983, Ser. No. 559,815
Int. Cl.[3] B27L *1/00*
U.S. Cl. 144—208 E 18 Claims



1. In a debarking machine of the type including an annular frame, a plurality of debarking tools, means mounting said tools in annularly spaced relation within said annular frame for rotation together about the axis of said annular frame and for movement toward and away from each other, infeed and outfeed mechanisms for feeding logs through said annular frame so that said tools will engage the exterior periphery of the successive logs and strip the bark therefrom during their movement through the annular frame, said infeed mechanism including three driven infeed spiked rolls arranged so that their spiked peripheries normally engage the exterior periphery of the log in centered relation and move the same axially through said annular frame for debarking by said tools, each of said spiked rolls including a cylinder and a multiplicity of spikes extending radially outwardly therefrom, the improvement which comprises:

each of said spikes in at least one of said rolls being constructed so as to provide a radially outward cutting edge disposed generally within a plane parallel with the plane of said cylinder, said cutting edge being configured to define at least one line extending transverse to the direction of movement thereof on said roll and a second line extending transverse to said first line, said spike divergingly tapering from said lines in a direction toward the exterior of said cylinder.

4,509,575

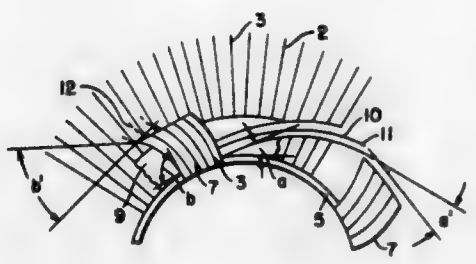
PNEUMATIC VEHICLE TIRE

Heinrich Funk, Burgwald; Henryk Pakur, Bückeburg, and Hans Seitz, Langenhagen, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,533
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313854
Int. Cl.[3] B60C *15/06, 9/08*
U.S. Cl. 152—356 R 7 Claims

1. A belted pneumatic vehicle tire having a radial carcass with strength carriers which are anchored in the tire beads by being looped around the bead cores thereof; each carcass strength carrier is provided with a portion which extends uninterrupted from one bead to the other, and with two end portions, each of which is disposed laterally, respectively axially, outwardly of the associated bead core, and is guided radially outwardly from the associated bead; also provided are bead reinforcers composed of filaments which are disposed in a cord ply and extend at an incline to the radial direction of said tire;

the improvement comprises the arrangement of said filaments of said bead reinforcers, and of said strength carriers of said end portions of said carcass, with said filaments of said bead reinforcers on the one hand, and said strength carriers of said end portions on the oher hand, extending at oppositely directed inclines relative to radial planes determined by the axis of said tire, or relative to the circumferential direction of said tire; each of said strength carriers of said end portions has a radially outer portion which extends at a first angle relative to the circumferential direction of said tire, and a portion in the vicinity of



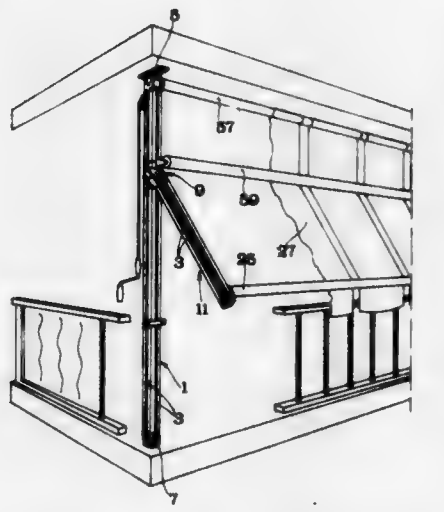
the associated bead core which extends at a second angle relative to the circumferential direction of said tire, with said first angle of said radially outer portion of each strength carrier being less than said second angle of said bead core portion of each strength carrier in the end portion of the latter; each of said filaments of said bead reinforcers has a radially outer portion which extends at a first angle relative to the circumferential direction of said tire, and a portion in the vicinity of the associated bead core which extends at a second angle relative to the circumferential direction of said tire, with said first angle of said radially outer portion of each filament being less than said second angle of said bead core portion of each of said filaments.

4,509,576

SUNSHADE FITTING CONVERTIBLE INTO VERANDA CURTAIN FITTING

Serafini Giovanni, via Fiocchetto 33, 10152 Turin, Italy

Filed Oct. 24, 1983, Ser. No. 544,609
Claims priority, application Italy, Nov. 9, 1982, 68310 A/82
Int. Cl.[3] E04F *10/06*
U.S. Cl. 160—66 3 Claims



1. A sunshade fitting convertible into a veranda curtain fitting comprising:

a supporting column made of an appropriately longitudinally grooved sectional member secured to the ceiling and floor of the terrace to which the curtain is to be applied, each of said columns being provided with an upper link

member for connection to the ceiling by means of a plate with dowels and bolts, and a lower link member having an adjustable foot supported on the floor;

an arm forming a single body with the supporting column, but pivotally mounted relative thereto, to pivot about a center of rotation located at a suitable height in the vicinity of the middle or the medium third of said column;

a pivot means provided adjacent said arm for rotation in an appropriate seat and adapted to regulate by said rotation the height of the curtain supporting arm secured thereto, said pivot means being formed by coupling two members one of which is flat and firmly secured to the column and has a substantially circular profile projecting outwardly from said column and the other is firmly secured to said arm and fits said first member in the manner of a jaw and is adapted to rotate relative thereto, said first member being provided with a series of notches appropriately spaced along the periphery of said circular profile and defining the pitch of inclination of said movable arm, said second member being provided with a stop pin adapted to selectively engage one of said notches and being urged radially thereinto by spring means;

said pivot member firmly secured to said arm being laterally provided with at least two grooves adapted to be aligned alternately with a longitudinal groove provided laterally on said column, one groove forming a slideway for a curtain supporting lower end rod, when the curtain is to be extended along said arm in the sunshade position and the other groove forming a slideway for said curtain supporting lower end rod when said rod is to be moved downwardly to the end of said longitudinal groove in said column in the veranda curtain position;

said grooves in said column and arm being provided at their ends with a labyrinth locking track for locking the drawn curtain in position and facilitating its extraction for lifting;

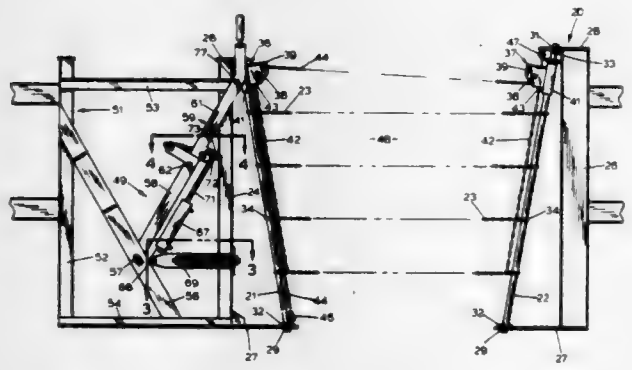
said curtain supporting lower end rod being provided at its two ends with a lever member freely pivotally mounted on an appropriate pivot on the axis of said rod and adapted to move along said grooves in said column and arm, said pivot supporting at its free end another pivot adapted to move along said labyrinth track, the movability of said pivot arranged at the free end of said lever member permitting said curtain supporting lower end rod to be locked and unlocked for lowering and lifting the curtain.

4,509,577

CHAIN GATE STRUCTURE

Marvin J. Priefert, Mount Pleasant, Tex., assignor to Priefert Mfg. Co., Inc., Mount Pleasant, Tex.

Filed Nov. 7, 1983, Ser. No. 549,161
Int. Cl.³ E05C *5/00*
U.S. Cl. 160—328 **5 Claims**



1. A chain gate for a gateway defined by a pair of upright horizontally spaced anchor members comprising:

(a) a chain structure for opening and closing said gateway including a pair of end posts corresponding to said pair of anchor members with each end post located adjacent to and inwardly of an associated anchor member and inclined upwardly and toward the anchor member,

(b) means for securing each end post to an adjacent anchor member,

(c) a plurality of chain members extended between said end posts in a vertically spaced relation to raised positions therefor to close said gateway with the uppermost one of said chain members adjacent the upper ends of said end posts, and to lowered positions extended between the lower ends of said end posts to open said gateway,

(d) means connecting the ends of said chain members to said end posts for up and down movement thereon,

(e) flexible means interconnecting adjacent ends of said chain members whereby on movement of the uppermost one of said chain members from the gate opening to the gate closing position therefor the remaining chain members are sequentially moved thereby to the gateway closing positions therefor, said chain members having varying lengths relative to the inclination of said end posts to provide for their taut extension between the end posts in the gate closing positions therefôr, and

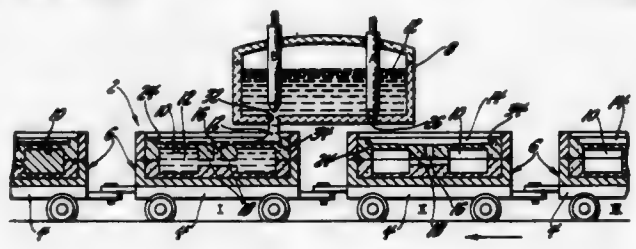
(f) means for raising and lowering said uppermost chain member.

4,509,578

STATIONARY CONTINUOUS AUTOMATIC POURING APPARATUS

Daniel Shaw, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 12, 1982, Ser. No. 348,287
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—155 **3 Claims**



3. Automatic metal casting apparatus comprising:

a plurality of molds, said molds each having a cavity for shaping a melt and a pouring basin extended in the direction of mold travel for receiving said melt from a vessel and directing it into said cavity;

mold translating means for successively transporting each mold in a predetermined path adjacent a metal melt dispensing vessel;

a vessel for holding said melt in substantially stationary position above said path and dispensing said melt to said molds, said vessel having a floor defining its lower extremity;

first and second melt discharge outlets in said floor, said outlets being spaced one from the other in the direction of said mold travel and adapted to sequentially dispense melt to each said mold as it passes beneath the outlets;

first and second valve means operatively associated with said first and second outlets respectively so as to permit melt flow when open and restrict melt flow when closed;

first and second actuator means for opening and closing said first and second valve means respectively;

sensing means for determining the location of a mold to be poured with respect to said outlets;

control means responsive to said sensing means for energizing said first and second actuator means in sequence such as to incrementally fill each mold with melt from each said outlet as it passes beneath said outlets, said sequence being such as (1) to open said first valve when said first outlet is aligned with said basin, (2) to open said second valve when said second outlet is aligned with said basin, (3) to close said first valve before said first outlet comes out of alignment with said basin, and (4) to close said second

valve before said second outlet comes out of alignment with said basin; and

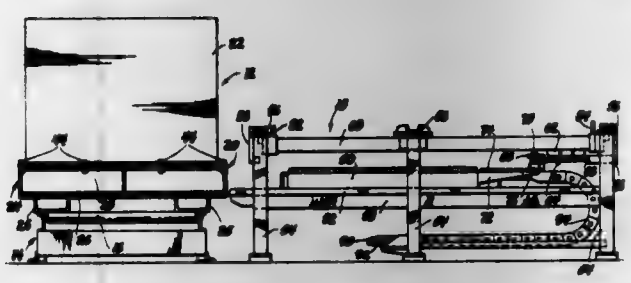
means for translating said vessel in a direction transverse said path for dumping such melt in said vessel as can no longer effectively be poured into said molds.

4,509,579

APPARATUS FOR FLUIDIZING A PARTICULATE BED WITHIN A FLASK

Frank G. Pirrallo, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1984, Ser. No. 622,476
Int. Cl.³ B22D *21/12, 19/00*
U.S. Cl. 164—159 **2 Claims**



1. A fluidization gas delivery apparatus for use in conjunction with a flask containing a particulate bed to subject said particulate bed to a forceful gas flow to fluidize the bed, said flask comprising a gas-permeable partition for admitting fluidizing gas to the bed and having an open chamber providing access to the partition opposite the particulate bed, said permeable partition being susceptible to plugging by contaminants entrained in gas flowing therethrough, said apparatus comprising

a plenum box receivable within the flask chamber adjacent the permeable partition and defining a plenum having a gas outlet, said plenum box being reciprocal between an outboard position wherein the box is independent of the flask and an inboard position wherein the box is received within the flask chamber with the plenum outlet facing the partition,

seal means disposed about the plenum outlet for forming a peripheral hermetic seal when urged against the flask partition,

means for reciprocating the plenum box between the inboard and the outboard positions, said box reciprocation being facilitated by suitable clearance provided between the flask partition and the seal means,

lift means mounted upon the plenum box and operative for raising the box within the flask chamber relative toward the partition to urge the seal means against the partition to form the peripheral seal about the plenum outlet,

filter means mounted upon the plenum box coextensive with the plenum outlet for removing contaminants from gas flowing from the plenum, and

means for introducing pressurized gas into the plenum when the plenum box is peripherally sealed against the flask permeable partition to thereby cause gas to flow from the plenum through the filter and thereafter through the permeable partition into the particulate bed to produce fluidization, said filter removing contaminants entrained in the gas to reduce plugging of the flask partition.

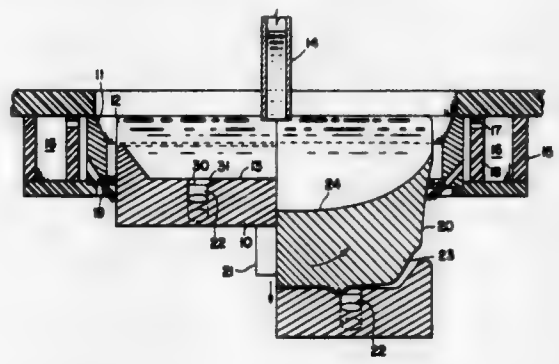
4,509,580

BOTTOM BLOCK

David G. Goodrich, Danville, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 9, 1982, Ser. No. 448,084
Int. Cl.³ B22D *11/08*
U.S. Cl. 164—445 **11 Claims**

1. A bottom block for use in the vertical DC or EM continuous casting of large elongated ingots or billets, said block having a dish-shaped upper surface provided with a plurality of drain holes, said drain holes being adapted to remove coolant that collects on the said upper surface from said surface and recess means associated with at least certain of said drain holes for directing coolant to the drain holes and alleviating sticking of the butt portion of an ingot with said bottom block while at the same time maintaining sliding contact with said ingot butt portion as the butt portion of the ingot shrinks and curls due to cooling and solidification, said drain holes are located closer to one end of said recess means said recess means including inclined surfaces that project upwardly and inwardly from their



associated drain holes as well as toward the central part of the bottom block, said recess means also being adapted to receive molten metal at the start of the casting operation and initial formation of the butt portion of the ingot, which molten metal upon solidification forms appendages that in part have configurations which match and mate with the inclined surfaces of the recess means whereby the appendages can maintain sliding contact with the recess means to thereby stably support the ingot on and minimize ingot movement relative to the bottom block during the casting operation.

4,509,581

MACHINE FOR CONTINUOUSLY CASTING BATTERY GRIDS

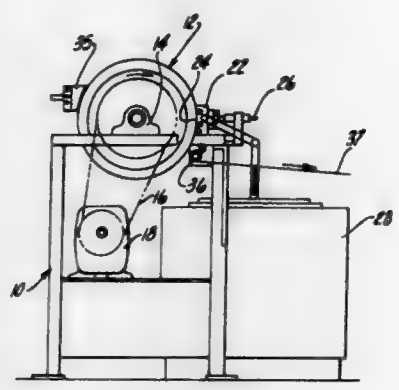
Jack E. McLane; Raymond L. Schenk; Robert R. Rader, and John W. Wirtz, all of Port Huron, Mich., assignors to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

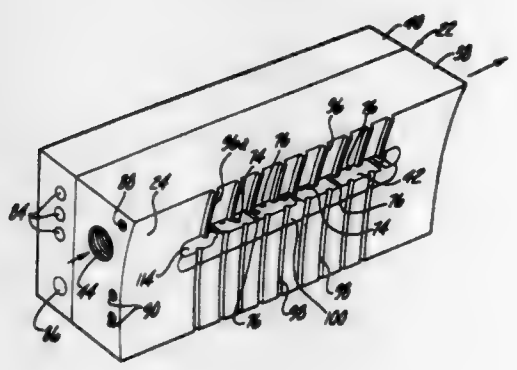
Division of Ser. No. 380,056, May 20, 1982, Pat. No. 4,415,016.
This application Jul. 27, 1983, Ser. No. 517,668
Int. Cl.³ B22D *11/10*
U.S. Cl. 164—479 **14 Claims**

1. In a machine for continuously casting battery grids, the machine including a drum adapted to be rotated in one direction and having on its outer peripheral surface a cavity which defines the pattern of the battery grid, said grid pattern comprising two sets of intersecting grooves, said grooves defining pads therebetween which form the outer peripheral surface of the drum and which define the open spaces between the wires of the cast battery grid, said machine including a shoe having an arcuate surface in mating engagement with said pads around an arcuate segment of the drum, said shoe having an orifice slot therein which is axially co-extensive with said cavity and which is open at the portion of said arcuate surface that is intermediate the circumferentially opposite ends of the shoe, said shoe having an inlet and an outlet communicating with axially spaced portions of the orifice slot, said machine also including means for directing molten lead at superatmospheric pressure to said inlet in an amount in excess of that required to progressively fill the grid cavity as it rotates past the opening in the orifice slot so that the excess is discharged through said outlet, that improvement which comprises means in the orifice slot for reducing the tendency for the lead to partially solidify and bridge circumferentially across the upstream and downstream sides of the opening in the orifice slot, said means comprising obstructions spaced lengthwise along the orifice slot which cause the lead flowing from said inlet to said outlet to follow an irregular undulating path across the outer peripheral surface of the drum.

10. In a method for continuously casting battery grids, by

using a machine which includes a drum adapted to be rotated in one direction and having on its outer peripheral surface a cavity which defines the pattern of the battery grid, said grid pattern comprising two sets of intersecting grooves, said grooves defining pads therebetween which form the outer peripheral surface of the drum and which define the open spaces between the wires of the cast battery grid, said machine including a shoe having an arcuate surface in mating engagement with said pads around an arcuate segment of the drum, said shoe having an orifice slot therein which is axially coextensive with said cavity and which is open at a portion of said arcuate surface that is intermediate the circumferentially





opposite ends of the shoe, said shoe having an inlet and an outlet communicating with axially spaced portions of the orifice slot, said machine also including means for directing molten lead at superatmospheric pressure to said inlet in an amount in excess of that required to progressively fill the grid cavity as it rotates past the opening in the orifice slot so that the excess is discharged through said outlet, the method of preventing lead sludge from circumferentially bridging across the upstream and downstream edges of the opening of the orifice slot which comprises providing obstructions spaced lengthwise along the orifice slot for causing the molten lead to flow from said inlet to said outlet in an undulating path along said opening.

4,509,582

METHOD OF AND ARRANGEMENT FOR, RECOVERING THE SENSIBLE HEAT OF A CONTINUOUSLY CAST STRAND

Othmar Kriegner, St. Valentin, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Continuation of Ser. No. 248,979, Mar. 30, 1981, abandoned. This application Oct. 27, 1983, Ser. No. 546,066

Claims priority, application Austria, Apr. 15, 1980, 2024/80

Int. Cl.³ B22D *11/124*; F27D *15/02*

U.S. Cl. 164—486 **13 Claims**

1. A method of recovering the sensible heat of an undivided continuously cast strand guided through a cooling chamber comprising the steps of:

bringing a supply of coolant into direct contact with said strand immediately after said strand emerges from a mould into said cooling chamber and while said strand has at least a partial liquid core, thereby forming a coolant vapor,

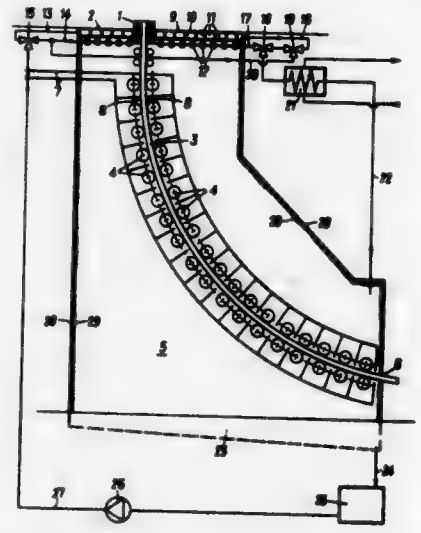
bringing the coolant vapor thus formed into heat exchange with a closed surface condenser arranged within said cooling chamber and through which a flow-through medium flows, and

bringing said flow-through medium of said closed surface condenser into further heat exchange with a heat transformer arranged outside said cooling chamber.

3. In an arrangement for recovering the sensible heat of a continuously cast strand, to be used in a continuous casting plant, in particular in a continuous casting plant for slabs, and of the type including

a closed cooling chamber including a secondary cooling zone therein;

spraying nozzles provided in said secondary cooling zone and directed toward said cast strand; and



a coolant being sprayed onto said cast strand through said spraying nozzles, the improvement wherein:

said closed cooling chamber is arranged immediately adjacent a mould so that said cast strand is guided through said cooling chamber immediately after its emergence from said mould and while said strand is undivided and has at least a partial liquid core,

said arrangement further comprising

at least one closed surface condenser provided within said closed cooling chamber,

a flow-through medium flowing through said closed surface condenser, and

at least one heat transformer arranged outside said cooling chamber and connected with said at least one closed surface condenser.

4,509,583

APPARATUS FOR REGENERATIVE FLUE GAS HEAT EXCHANGER

Günther Raths, Olpe, Fed. Rep. of Germany, assignor to Apparatebau Rothemühle Brandt & Kritzler Gesellschaft mit beschränkter Haftung, Rothemühle, Fed. Rep. of Germany

Filed Oct. 20, 1983, Ser. No. 543,958

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238941

Int. Cl.³ F28D *17/00*

U.S. Cl. 165—4 **6 Claims**

1. A regenerative heat exchanger for processing a crude flue gas from a boiler comprising:

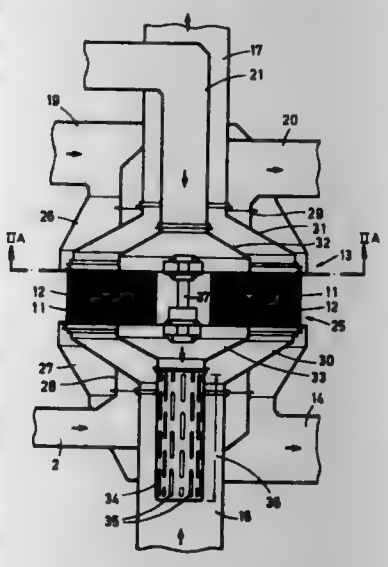
a stationary regenerated heat exchanger mass adapted to be traversed by a gas;

a fixed feed hood communicating with one side of said mass and a fixed collection hood communicating with an opposite side of said mass;

a rotary feed hood and a rotary collection hood on opposite sides of said mass within said fixed hood for communicating with registered limited portions of said mass;

means for introducing a first gas stream into one of said feed hoods and for conducting said first gas stream from the corresponding collection hood and means for introducing a second gas stream into the other of said feed hoods and for collecting said second gas stream into the other collection hoods whereby said first and second gas streams are passed in a regenerative indirect heat exchange relationship through said mass, said means including respective fixed ducts communicating with said hoods;

and respective fittings on opposite sides of said mass for passing a third gas stream through said heat exchanger.



4,509,584

HEAT-TRANSFERRING ELEMENTS FOR REGENERATIVE HEAT EXCHANGE IN GAS-GAS FLUIDIZED BED HEAT EXCHANGERS

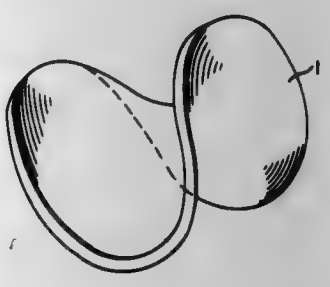
Stanislaw Michalak, Reichshof, and Bernd Hermanns, Gummersbach-Rebbelroth, both of Fed. Rep. of Germany, assignors to Apparatebau Rothemühle Brandt & Kritzler GmbH, Wenden, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,488

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3213972

Int. Cl.³ F28D *19/02*

U.S. Cl. 165—10 **4 Claims**



1. A heat-transferring element having increased surface areas as well as good thermal conducting for regenerative heat exchange in a gas-gas fluidized bed heat exchanger, said element having a greater specific surface than spheres as well as being embodied stable to withstand increased turbulence in the fluidized bed heat exchanger during heat transfer therewith as a separate and distinct, freely movable, saddle-shaped body having a self-cleaning effect and having a surface construction arcuate on opposite sides so that heat can be transferred better from both sides into the element having a thickness in a range of only 1 mm to 3 mm to reduce material content, whereby necessarily also pressure losses in the heat exchanger decrease while also having an excellent aerodynamic behavior and increased turbulence in the fluidized bed heat exchanger.

4,509,585

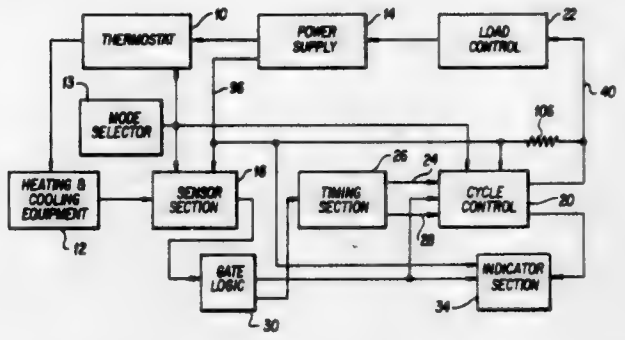
ENERGY MANAGEMENT CONTROL SYSTEM

George T. Carney, Boardman, Ohio, and Gary C. Heath, Hermitage, Pa., assignors to Energy Control Products, Inc., Youngstown, Ohio

Filed Jan. 9, 1984, Ser. No. 569,203

Int. Cl.³ F23N *5/20*; H02J *1/00*

U.S. Cl. 165—12 **39 Claims**



1. In combination with at least one device for controlling consumption of energy, a power supply, manual selector means for enabling the device, and condition monitoring means connected to the power supply for operation of the enabled device in response to energy demand, the improvement residing in the management of energy consumption, comprising sensing means responsive to said operation of the enabled device for detecting the energy demand, load control means connected to the power supply for interrupting said operation of the enabled devices by the power supply, programmed cycle control means connected to the load, control means for establishing a plurality of different time dependent interruption cycles causing the load control means to intermittently interrupt said operation of the enabled device initiated by energy demand, timing means connected to the cycle control means for changing the interruption cycles controlling said operation of the enabled device, and logic means operatively connecting the sensing means to the timing means for directionally controlling said change in the interruption cycles in accordance with the duration and absence of the energy demand.

4,509,586

TEMPERATURE CONTROL DEVICE FOR A REFRIGERATING APPARATUS HAVING BOTH A HEATING MEANS AND A COOLING MEANS

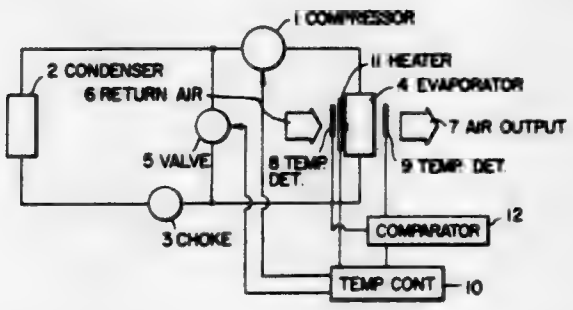
Shin Watabe, Nagoya, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,171

Claims priority, application Japan, May 20, 1982, 57-84006

Int. Cl.³ F25B *29/00, 41/00*; G05D *23/00*

U.S. Cl. 165—29 **4 Claims**



1. A temperature control device for a refrigerating apparatus having both a heating means and a cooling means, said device comprising a means for detecting a temperature of return air from an interior of a storage area of said refrigerating apparatus, a means for detecting a temperature of air which is blown

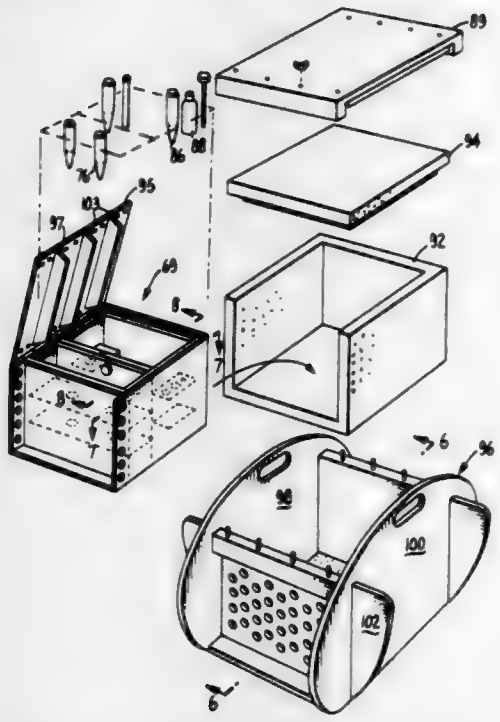
into said interior of said storage area, and a means for controlling said heating and cooling means in accordance with the temperature detected by said means for detecting said return air temperature when a set temperature is lower than a predetermined temperature and in accordance with the lower one of the two temperatures detected by said two temperatures detecting means when said set temperature is higher than said predetermined temperature.

4,509,587

PASSIVE TEMPERATURE CONTROL SHIPMENT CONTAINER

Thomas S. Clark, 2177 Webster St., Palo Alto, Calif. 94301, and William S. Kennedy, 3043 Emerson Ave., Palo Alto, Calif. 94306

Filed Aug. 30, 1982, Ser. No. 412,579
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—61 **2 Claims**



1. A passive temperature control device comprising in combination:

a. a container,

b. a first chamber for holding a sample in said container,

c. said first chamber having at least two spaced heat conductive vertically opposed baffles forming at least a part of the walls of said first chamber,

d. a plurality of heat conductive horizontal baffles within said first chamber connecting said vertical baffles and forming a plurality of horizontal sealed compartments within said first chamber,

e. a second chamber in heat exchange relationship with one of said vertical baffles,

f. a third chamber in heat exchange relationship with another of said vertical baffles,

g. convective fluids in said second and third chambers of said container,

h. a carrier box for holding said container, an end wall of said carrier box having a plurality of openings for permitting flow of convective fluid therethrough,

i. said second chamber serving as a heat sink and said third chamber serving as a heat source, and

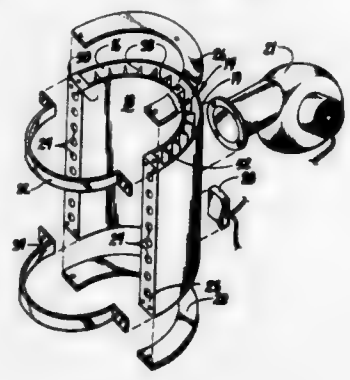
j. means for preventing the inhibiting of fluid circulation through the openings of the carrier box end wall and the third chamber of said container comprising a first set of outwardly extending fins and a second set of outwardly extending fins at right angles thereto which space said carrier box from surrounding objects during shipment and the like.

4,509,588

HEAT RECLAIMER

Fred Parham, Corydon, Iowa, assignor to Deflecta-Shield Corporation, Corydon, Iowa

Filed May 20, 1982, Ser. No. 380,093
Int. Cl.³ F24B *7/02*
U.S. Cl. 165—80 R **10 Claims**



1. A device for reclaiming heat from a stove or furnace flue or the like which can be retrofitted without any modification to the flue comprising:

a concavely shaped housing defining an enclosed air chamber having a concave interior wall made of highly thermal conductive material, a concentric outer wall spaced apart from the inner wall, top and bottom end walls, and edge walls, said interior and outer walls extending approximately halfway circumferentially around said flue;

heat transfer members projecting from the inward facing surface of said interior wall of said housing being integrally formed with said interior wall and extending throughout said air chamber so as to substantially fill up the space between said interior and said outer wall, said heat transfer members being thinnest at their very outwardmost edges;

an air inlet means in said outer concentric wall of said housing for inlet of pressurized unheated air from a pressurized air source;

an air outlet means positioned along each said edge wall for the outlet of heated air from said air chamber; and

attachment means for movably attaching said housing to said flue in such a manner that said interior surface is in conforming thermal conductive contact at a maximum number of points approximately halfway circumferentially around said flue.

4,509,589

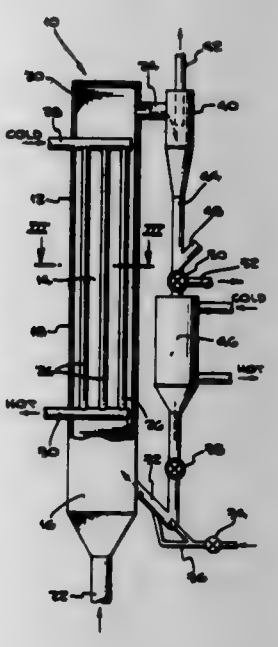
CIRCULATING BED HEAT EXCHANGER FOR COOLING SHALE ASH

Franklin B. Carlson, Broomfield, and Robert N. Hall, Boulder, both of Colo., assignors to Tosco Corporation, Santa Monica, Calif.

Filed Aug. 5, 1982, Ser. No. 405,529
Int. Cl.³ F28G *13/00*
U.S. Cl. 165—95 **15 Claims**

1. In a process for removing heat from a hot gas stream containing entrained hot fine particles by passing said gas stream into contact with a heat exchange surface defining a heat exchange zone, wherein the improvement comprises increasing the rate of heat transfer between said gas stream and

said heat exchange surface by introducing sufficient gas stream entrainable heat transfer solids into said gas stream to cause the



density of solids in said heat exchange zone to be between 1 lb/ft^3 and 10 lb/ft^3.

4,509,590

HEAT TRANSFER DEVICE AND METHOD OF MANUFACTURE

Harvey E. Svetlik, Dallas, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 22, 1982, Ser. No. 341,719
Int. Cl.[3] F28D *15/00*
U.S. Cl. 165—104.27 18 Claims



1. A heat transfer device comprising:

(a) a gas impervious, elongated container sealed against the ingress or egress of vapors or gases;

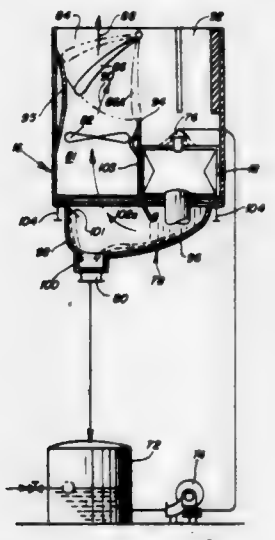
(b) a major portion of a heat transfer medium which evaporates and condenses within the temperature range at which said device is to be utilized, partially filling said container at the highest temperature to which the device is to be subjected, thereby forming a void space therein; and a minor amount of a solidifiable or liquifiable normally gaseous pressurization medium adapted to undergo phase transition and which is gaseous at a temperature at least as high as about the lowest temperature to which said device is subjected, in an amount sufficient to create a positive pressure in said void space at said at least said lowest temperature to which said device is to be subjected.

4,509,591

VACUUM PRODUCING CONDENSER

Walter Kals, Hastings-on-Hudson, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Continuation-in-part of Ser. No. 324,785, Nov. 25, 1981, abandoned. This application May 4, 1983, Ser. No. 491,594
Int. Cl.[3] F28F *13/12*
U.S. Cl. 165—122 9 Claims



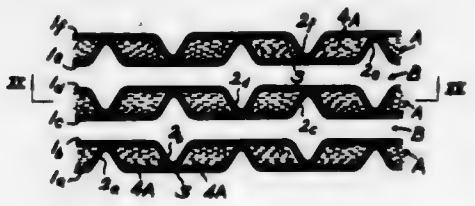
1. In a vacuum producing condenser for vapors containing non-condensible gases, a shell having a generally horizontal condenser chamber, a bundle of condenser tubes generally horizontally across said condenser chamber, means for directing water downwardly onto said bundle of condenser tubes, means for discharging air from the interior of said shell to create a downward flow of air through said condenser chamber across said bundle of condenser tubes, a basin at the bottom of said condenser chamber for collecting and draining said water directed onto said bundle of condenser tubes, said basin being configured to guide said downward flow of air smoothly through a 180° turn and back upwardly into said shell for exhaustion therefrom, and means in the upper portion of said basin for directing air from said condenser chamber toward the lower portion of the basin to provide a more uniform air flow velocity through a greater portion of the basin.

4,509,592

PLATE TYPE EVAPORATOR

Ken'ichi Yamada; Hiroyuki Sumitomo; Akira Horiguchi, and Kenzo Masutani, all of Osaka, Japan, assignors to Hisaka Works, Ltd., Osaka, Japan

Filed Aug. 3, 1979, Ser. No. 63,403
Claims priority, application Japan, Jan. 18, 1979, 54-5158
Int. Cl.[3] F28F *3/04*
U.S. Cl. 165—166 1 Claim



1. A plate type evaporator comprising a plurality of vertically extending plate elements assembled face-to-face to define therebetween alternate channels for a heating medium and for a liquid to be evaporated, each plate element being formed on its heat transfer surface with a plurality of vertically extending transversely spaced ridges projecting toward the associated liquid channel, said ridges abutting against the flat surface portions between ridges of an adjacent plate element, such places of contact serving to facilitate the evolution of bubbles, each of said liquid channels being divided by said ridges into a

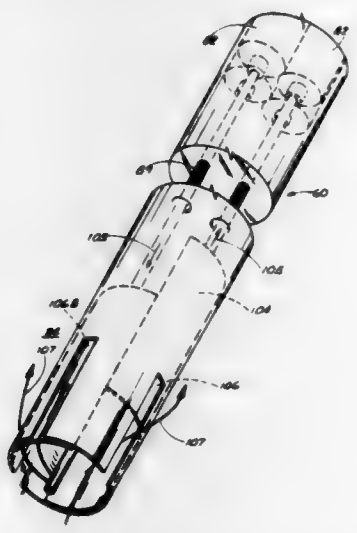
plurality of vertically extending sections laterally separated from each other to facilitate evaporation.

4,509,593

DOWNHOLE MOBILITY AND PROPULSION APPARATUS

Jack L. Traver; C. Dale Palmer, both of Lafayette, and Richard Hughes, Youngsville, all of La., assignors to Traver Tool Company, Lafayette, La.

Filed Jun. 20, 1983, Ser. No. 505,583
Int. Cl.³ E21B *7/08*
U.S. Cl. 166—63 **11 Claims**



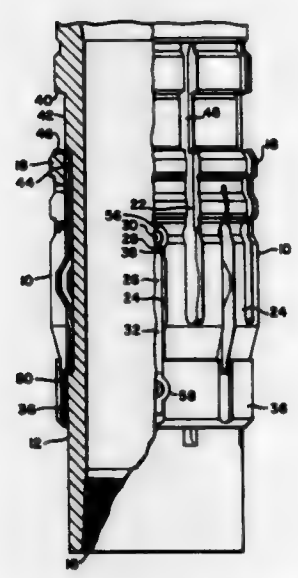
1. An apparatus for steering equipment downhole, comprising:
   a. a tool body;
   b. steering means, including gate means on said tool body moveable between upward and downward positions for allowing fluid flow through a portion of said tool body;
   c. impeller means rotatably mounted within said tool body for directing said fluid flow through said gate means on said tool body;
   d. first means for imparting rotation to said impeller means; and
   e. second means for moving said gate means between said upward and downward positions.

4,509,594

MUDLINE CASING HANGER ASSEMBLY

Lionel J. Milberger, and Charles D. Bridges, both of Houston, Tex., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Nov. 29, 1982, Ser. No. 445,316
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—208 **11 Claims**



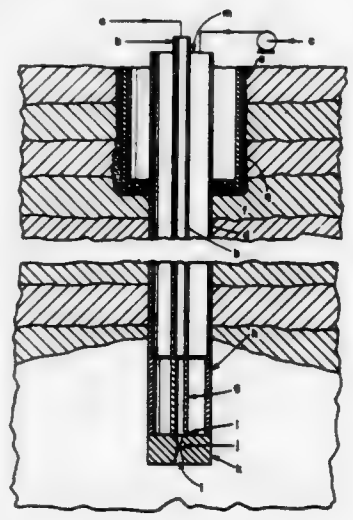
1. A casing hanger assembly for supporting a casing string within and from a tubular member comprising: a cylindrical hanger body having a downwardly-facing load shoulder at an upper elevation, first attaching means at a lower elevation, means for supporting a casing string from said hanger body, and a reduced diameter portion between said load shoulder and said first attaching means; a diametrically compressible collet surrounding said hanger body at said reduced diameter portion having, an upwardly-facing support shoulder at the upper end adapted to support said load shoulder, outwardly-extending latch means adapted to engage mating grooves in the tubular member, and a second attaching means located on the collet; a plurality of tensile coupons, each comprising a vertically elongated member attached to said first and second attaching means, and having a weakened section between the attached ends, said weakened section being strong enough to pull the collet into and through a riser casing but weak enough to break when the load of the casing string is imposed.

4,509,595

IN SITU COMBUSTION FOR OIL RECOVERY

Guy Savard, Westmount, and Robert G. H. Lee, Montreal, both of Canada, assignors to Canadian Liquid Air Ltd/Air Liquide, Montreal, Canada

Filed Jan. 22, 1982, Ser. No. 341,677
Claims priority, application Canada, Jan. 28, 1981, 369497
Int. Cl.³ E21B *43/243, 36/00*
U.S. Cl. 166—261 **13 Claims**



4. An oil recovery installation, comprising,
an inner conduit for an oxidant gas and a surrounding outer conduit forming therebetween a water jacket for cooling liquid leading from an upper end at the surface through a sealing well casing to a lower end within the underground oil recovery formation,
terminal means closing the lower end of the outer conduit and providing a restricted passage in communication with the inner conduit for injecting oxygen into the formation,
means for supplying oxidant gas under pressure to the upper end of the inner conduit,
means for supplying water to circulate within the cooling jacket, and
means for controlling the supply rate of oxidant gas and means for controlling the water supply rate,
the inner conduit being connected to the injection passage and there being a communication between the jacket and the injection passage so that both water and oxidizing gas may be injected.

6. A method of recovering oil from an underground formation by combustion of oil in situ in which an active fluid comprising combustion supporting oxidant gas containing more than 30% oxygen by volume and water are flowed into the formation to control the flame temperature, to produce steam drive, and to recover heat behind the flame front, comprising supplying the oxidant gas through a passage formed by an

inner conduit leading from a supply end at the surface to an injection end in the oil-containing formation,

surrounding the inner conduit with water flowed through an outer passage surrounding the inner conduit from the surface of the formation,

supplying water as an active fluid to the injection end of the inner passage,

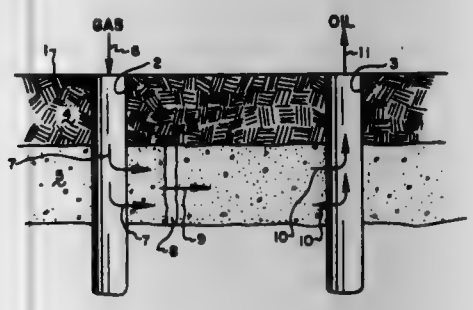
passing the active fluid from the bottom of the inner passage through a single restricted injection passage aligned with the end of the inner passage and provided with a venturi throat into the formation at a velocity greater than the maximum possible flame velocity in the formation.

4,509,596

ENHANCED OIL RECOVERY

Leonard W. Emery, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 23, 1984, Ser. No. 573,093
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—263 **4 Claims**



1. In an enhanced oil recovery method which employs a pressurized gas injection process through at least one injection well for the miscible displacement of oil from a subterranean geologic formation, wherein said gas has a pressure in said formation above which said gas becomes miscible with said oil, and said formation has a pressure point above which it fractures, said fracture pressure being above said miscibility pressure, the improvement comprising (1) injecting said gas at a volumetric rate and in a quantity such the pressure in said formation increases above said miscibility pressure and continuing the injection of said gas to increase said formation pressure until it approaches but does not exceed said fracture pressure, (2) terminating gas injection before said formation pressure reaches said fracture pressure and shutting in said at least one injection well thereby holding said injected gas in said formation to allow it to expand outwardly into said formation on its own thereby lowering said formation pressure, and (3) injecting additional gas into said formation when the gas in said formation has expanded pursuant to step (2) above to the extent that said formation pressure approaches but does not go below said miscibility pressure whereby oil production is possible during one or more of steps (1), (2) and (3).

4,509,597

SODA-ANTHRAQUINONE LIGNIN SACRIFICIAL AGENTS IN OIL RECOVERY

Richard E. Dardis, Brevard, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.

Filed May 3, 1984, Ser. No. 606,636
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **4 Claims**

1. In a method for recovering oil from a subterranean formation containing oil and having at least one injection well and at least one production well wherein a micellar dispersion containing a surfactant is injected via said at least one injection well into said subterranean formation in order to displace the oil contained therein to said at least one production well wherein it is produced, the improvement comprising:

prior to injecting said micellar dispersion, injecting into said subterranean formation via said at least one injection well a fluid containing soda-anthraquinone lignin which is adsorbed by adsorptive sites within said subterranean formation and functions as a sacrificial agent for the surfactant and other components contained in said micellar dispersion.

2. In a method for recovering oil from a subterranean formation containing oil and having at least one injection well and at least one production well wherein a micellar dispersion containing a surfactant is injected via said at least one injection well into said subterranean formation in order to displace the oil contained therein to said at least one production well wherein it is produced, the improvement comprising:

injecting into said subterranean formation in admixture with said micellar dispersion a soda-anthraquinone lignin which is adsorbed by adsorptive sites within said subterranean formation and functions as a sacrificial agent for the surfactant and other components of said micellar dispersion.

4,509,598

FRACTURING FLUIDS CONTAINING BOUYANT INORGANIC DIVERTING AGENT AND METHOD OF USE IN HYDRAULIC FRACTURING OF SUBTERRANEAN FORMATIONS

Robert B. Earl; David B. Larson, and Huy X. Nguyen, all of Tulsa County, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1983, Ser. No. 478,933
Int. Cl.³ E21B *43/26*
U.S. Cl. 166—308 **13 Claims**

1. In the method of hydraulically fracturing a subterranean formation penetrated by a wellbore by injecting a fracturing fluid through the wellbore and against the formation at a rate and pressure at least sufficient to initiate and/or extend a fracture into the formation, the improvement comprising: (1) initiating the fracture with a first fluid which is a pad fluid; and (2) extending the fracture with a second fluid comprising a carrier fluid and a bouyant inorganic diverting agent in an amount sufficient to inhibit or prevent the growth of an upward vertical fracture; said second fluid being injected through the wellbore and into the formation at a rate and pressure high enough to extend the fracture and to carry the diverting agent into the fracture but low enough to permit the diverting agent to accumulate in the upper portion of the fracture and form a compacted barrier zone which is capable of diverting subsequently injected fluids downwardly and/or horizontally.

4,509,599

GAS WELL LIQUID REMOVAL SYSTEM AND PROCESS

David V. Chenoweth, Lahaina, Hi., and David M. McStravick, Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Oct. 1, 1982, Ser. No. 432,166
Int. Cl.³ E21B *36/00, 43/25, 43/34*
U.S. Cl. 166—370 **18 Claims**

1. A split-stream assembly for transporting gas at a prescribed flow rate to a surface gathering system from a subterranean producing formation yielding gases and liquids and having, in the presence of accumulating liquids at the producing formation, a bottom hole pressure insufficient to independently transport gas from the producing formation to the surface, comprising:

means for defining separate first and second fluid transmission conduits in said well, extending from the surface of the well to the producing formation, each fluid transmission conduit communicating with the producing formation;

compression means for lowering the pressure in the first fluid transmission conduit at the surface, said compression means communicating with the surface gathering system at a horsepower sufficient to transport a two-phase gas-liquid medium from the formation through the first fluid

transmission conduit to the gathering system at a flow rate less than the prescribed flow rate; and

an interconnection at the surface of the well establishing gathering system communication with the second fluid transmission conduit whereby a two-phase gas-liquid medium is produced through the first fluid transmission conduit and gas alone is produced through the second fluid transmission conduit, the sum of the flow rates in the first and second fluid transmission conduits being equal to the prescribed flow rate.

16. A method of transporting gas at a prescribed flow rate to a surface gathering system from a subterranean producing formation yielding gases and liquids and having, in the presence of accumulating liquids at the producing formation, a bottom hole pressure insufficient to independently transport



gas from the producing formation to a gathering line having a prescribed pressure, the method comprising the steps of: inserting a tubing string between the surface and the producing formation within a primary fluid transmission conduit in the well, the primary fluid transmission conduit communicating directly with the gathering line; and installing a compressor at the surface, having a theoretical adiabatic horsepower less than the theoretical adiabatic horsepower necessary to transport fluids at the prescribed flow rate to the gathering line at the prescribed pressure in the gathering line, the input pressure of the compressor being sufficient to permit two-phase liquid-gas transport through the tubing string at a flow rate less than said prescribed flow rate, and producing gas through the primary fluid transmission conduit; the sum of the flow rate in the tubing string and the primary fluid transmission conduit being equal to the prescribed flow rate.

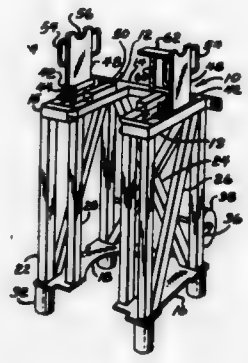
4,509,600

PIPE BASE WELL SCREEN AND SYSTEM FOR JOINING A PLURALITY OF WELL SCREEN SEGMENTS

Harry J. Boudreaux, Lafayette, La.; David C. Card, New Brighton, and Bernard M. Hanson, Excelsior, both of Minn., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 26, 1982, Ser. No. 401,500
Int. Cl.³ E21B *19/16*
U.S. Cl. 166—381 **6 Claims**

2. A slip assembly for use in a system for joining successive lengths or segments of pipe base well screen which have a screen jacket portion mounted on a pipe base member at a predetermined distance from a coupling at the upper end of the pipe base member and a boss ring integrally mounted to the pipe base member intermediate the screen jacket and coupling, said slip assembly comprising upper and lower support surfaces which have central apertures therethrough for accommodating vertically positioned well screen segments, said upper and lower support surfaces having overlying portions of said apertures extending to an open side edge thereof; means for vertically spacing said upper and lower support surfaces; means for locking said slip assembly against rotation relative to a horizontal surface upon which its lower support surface is resting; and a plurality of support plates mounted on said upper support surface for movement relative thereto, said support plates being selectively movable from an inoperative position into an operative position, adjacent to each other and immedi-



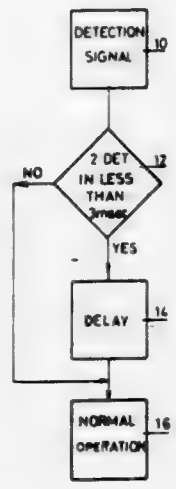
ately surrounding the periphery of the pipe base portion of a well screen which is above a screen jacket portion, wherein they will engage and support the lower surface of the boss ring on a screen segment that is lowered into contact with them.

4,509,601

DISCRIMINATION CIRCUITRY FOR FIRE AND EXPLOSION SUPPRESSION APPARATUS

Yehiel Spector, Tel Aviv, and Ilan Cohen, Petach Tikva, both of Israel, assignors to Spectronix Ltd., Tel Aviv, Israel

Filed Mar. 30, 1983, Ser. No. 481,054
Claims priority, application Israel, Apr. 18, 1982, 65517
Int. Cl.³ A62C *37/18*; G08B *17/00*
U.S. Cl. 169—61 **5 Claims**



1. Discrimination apparatus for use in a fire and/or explosion detection and suppression system including a plurality of detectors and suppression apparatus operated by the detectors, the discrimination apparatus comprising:

means for sensing detection by a first plurality of detectors within a predetermined time period and providing an output signal only when said first plurality of detectors detect within said predetermined time period; and

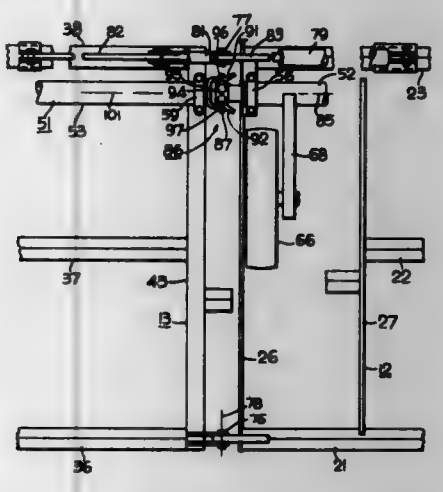
means responsive to an output signal provided by said sensing means indicating detection by said first plurality of detectors within said predetermined time period for inhibiting operation of the suppression apparatus.

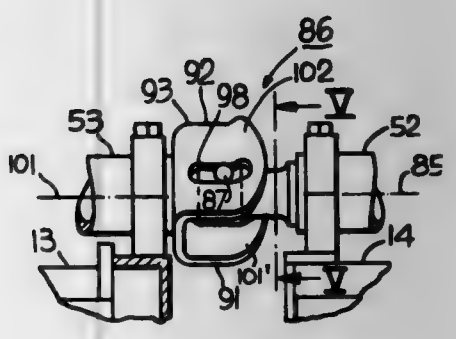
4,509,602

AGRICULTURAL IMPLEMENT WITH HINGE CONNECTION FOR FOLDING CROSS SHAFT

David E. Russ, Roscoe, Ill., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed May 25, 1983, Ser. No. 498,141
Int. Cl.[3] A01B *73/00*
U.S. Cl. 172—311 4 Claims





1. In an agricultural implement having a main frame adapted to be connected in towed relation to a draft vehicle for forward movement through a field, a wing frame pivotally connected to one lateral side of the main frame for swinging movement about a horizontal longitudinal pivot axis between a generally horizontal working position in which it is generally coplanar with the main frame to a folded upright transport position and a transverse cross shaft with radially extending arms rotatably carrying support wheels and having main frame and wing frame segments which are substantially coaxial in the working position of said wing frame, a hinge connection joining adjacent ends of said cross shaft segments at said longitudinal pivot axis characterized by

a pin having a central portion rigidly secured to said adjacent end of said main frame segment of said cross shaft with its axis at substantially right angles to said axis of said main frame segment and having opposite cylindrical end portions,

a pair of legs having corresponding ends rigidly secured to the adjacent end of said wing frame segment of said cross shaft and extending therefrom toward said main frame segment and terminating in free ends,

wall means in said legs defining a pair of slots elongated in the direction toward said main frame segment, said slots lying on opposite sides of and being radially open relative to said axis of said wing frame segment, each of said slots presenting parallel confronting bearing surfaces,

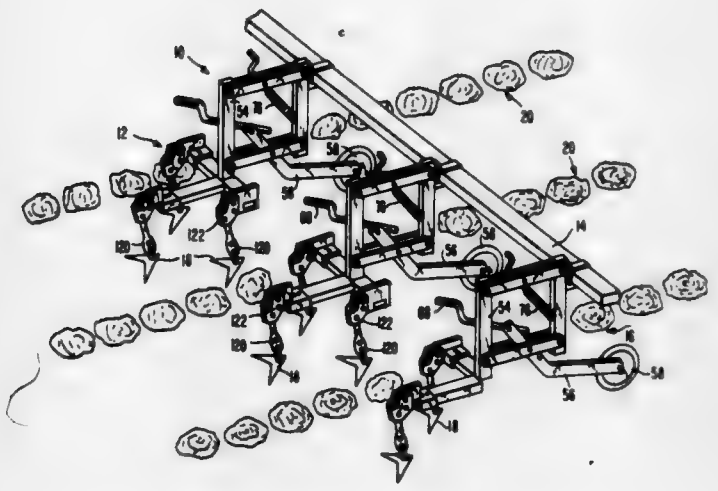
said pin end portions being disposed, respectively, in said slots and being in cooperative bearing engagement with said bearing surfaces thereof when said wing frame is in its working and transport positions and during movement of said wing frame between said positions.

4,509,603

ADJUSTABLE CULTIVATOR TOOL HOLDER

Louis E. Adams, U.S. Rte. 1, Box 59E, Leary, Ga. 31762

Filed Aug. 9, 1983, Ser. No. 521,776
Int. Cl.[3] A01B *65/02*
U.S. Cl. 172—427 3 Claims



1. An adjustable cultivator tool holder for use with a tool bar adapted to be secured to a vehicle for effecting movement of such tool bar and said adjustable tool holder to cultivate soil between spaced rows of crops, said adjustable cultivator tool holder comprising:

a cultivator tool support means including a vertical bar, means for attachment of said vertical bar to a tool bar, a vertical mounting bar positioned rearwardly of said vertical bar and generally parallel thereto, and spaced upper and lower link arms pivotably attached at forward ends to upper and lower portions respectively of said vertical bar and pivotably attached at rearward ends to upper and lower portions respectively of said vertical mounting bar, said vertical bar, upper and lower link arms, and vertical mounting bar defining a generally rectangular vertical plane;

a gauge wheel secured to a lower end of a support leg, said support leg being pivotably secured at a point intermediate its ends to said lower link arms and being adjustably positioned by a gauge wheel height adjusting crank assembly;

at least first and second cultivator tool holder frame arms fixedly secured at first ends to each other and to said vertical mounting bar, each of said tool holder frame arms extending outwardly from said vertical mounting bar in a generally horizontal plane which is generally perpendicular to said vertical mounting bar, each of said tool holder frame arms being generally rectangular in cross-section and having plural spaced holes;

a tool mounting sleeve slideably carried on each of said frame arms, each of said sleeves being generally rectangular in cross-section and having spaced holes, said holes in said sleeve and in said cooperating frame arm along which each of said sleeves is slideable being alignable and adapted to receive quick release pins to secure said sleeve in a selected position on said frame arm;

a tool supporting flange secured to each of said tool mounting sleeves, each of said tool supporting flanges being generally perpendicular to said horizontal plane defined by said cultivator tool holder frame arms and generally parallel to said vertical plane defined by said cultivator tool support means; and

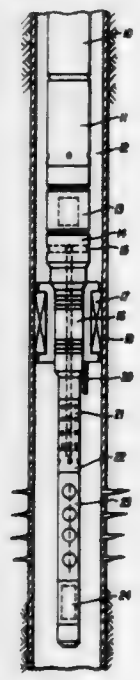
means for attaching a cultivator tool to each of said tool supporting flanges.

4,509,604

PRESSURE RESPONSIVE PERFORATING AND TESTING SYSTEM

James M. Upchurch, Stafford, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 16, 1982, Ser. No. 369,209
Int. Cl.[3] E21B *43/11*
U.S. Cl. 175—4.52 9 Claims



5. A method for perforating a well bore interval isolated in a well by packer means, comprising the steps of:

locating a perforating gun in the isolated interval;

establishing fluid communication between the isolated interval and the well surface by means of a pipe string, the space between the pipe string and the walls of the well bore above the packer means defining an annulus;

independently of the step of establishing fluid communication between the isolated interval and the well surface, applying relative pressure at the surface of the well to develop a predetermined difference between the pressure of fluid in the isolated interval and the pressure of fluid in the annulus; and

firing the gun in response to the predetermined pressure difference.

4,509,605

WIRELINE PROTECTOR WITH IMPROVED CLAMPING MECHANISM

Homan C. Tullos, Lafayette, La., and Dewey W. Woods, Livingston, Tex., assignors to Kelly Bushing Tools, Inc., Lafayette, La.

Continuation-in-part of Ser. No. 246,095, Mar. 20, 1981, Pat. No. 4,431,067. This application Jul. 8, 1983, Ser. No. 511,984
Int. Cl.[3] E27B *47/00*
U.S. Cl. 175—57 27 Claims

1. A wireline protector for protecting an electrical wireline used in a downhole drilling operation where such wireline passes through the opening in a drilling rotary table through which the drill string passes, said wireline protector comprising:

an elongated section capable of extending through the opening in the rotary table without interfering with the drill string, said elongated section having an elongated opening into which the portion of the wireline passing through the rotary table can be inserted so as to be substantially protected by said elongated section;

a support base connected to said elongated section and capable of being arranged in engagement with the rotary table for maintaining said wireline protector in a fixed position; and

clamping means mounted on said support base for enabling clamping of the wireline to prevent its movement, said



clamping means including toggle links which are movable beyond the center line position.

4,509,606

AXIAL RETURN HAMMER

Clyde A. Willis, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Continuation-in-part of Ser. No. 201,772, Oct. 29, 1980, which is a continuation of Ser. No. 958,886, Jan. 3, 1978, which is a continuation of Ser. No. 854,810, Nov. 25, 1977, abandoned. This application Nov. 16, 1983, Ser. No. 552,277
Int. Cl.[3] E21B *7/18*
U.S. Cl. 175—69 7 Claims

1. A method for drilling a borehole comprising the following steps:

providing a concentric dual tube pipe string which defines a central passageway and an annular passageway;

providing an air driven hammer drill at a lower end of the pipe string, said hammer drill comprising:

a hammer bit which defines a bit face;

means for receiving pressurized air from the annular passageway;

hammer means operated by the pressurized air for delivering successive impacts to the bit;

conducting means for directing exhaust air from the hammer means to the periphery of the bit face; and

channeling means for passing substantially all of the exhaust air and entrained cuttings from the periphery of the bit face, across the bit face and through at least one passage extending between a central portion of the bit face and the central passageway;

said hammer drill defining a wide bodied portion which substantially fills the borehole formed by the bit;

providing an air injection sub in the pipe string near the hammer drill to inject compressed air from the annular passageway into the central passageway;

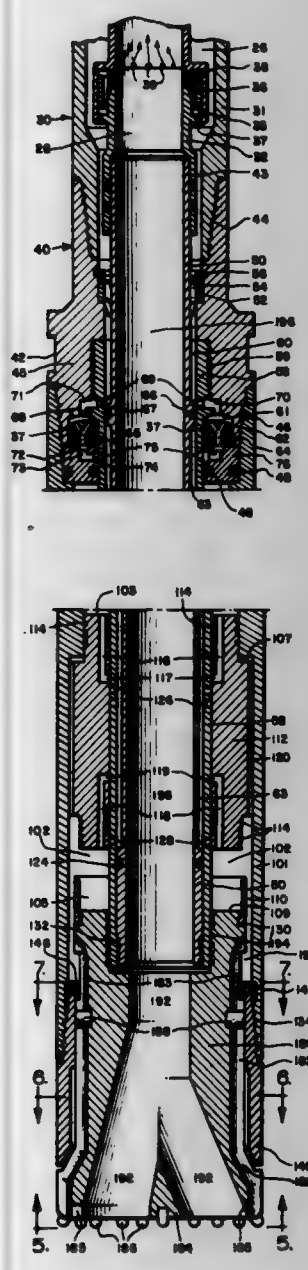
operating the hammer drill to form a borehole; and

maintaining a head of water in the borehole annulus above the hammer drill during operation of the hammer drill to cause water to cascade down continuously around the hammer drill to the region of the bit face and to sweep across the bit face into the passage and on into the central passageway;

said wide bodied portion of the hammer drill operating to restrict, direct and accelerate the flow of water to the region of the bit face;

said flow of water cooperating with the flow of exhaust air

to prevent the movement of cuttings and exhaust air into the borehole annulus;



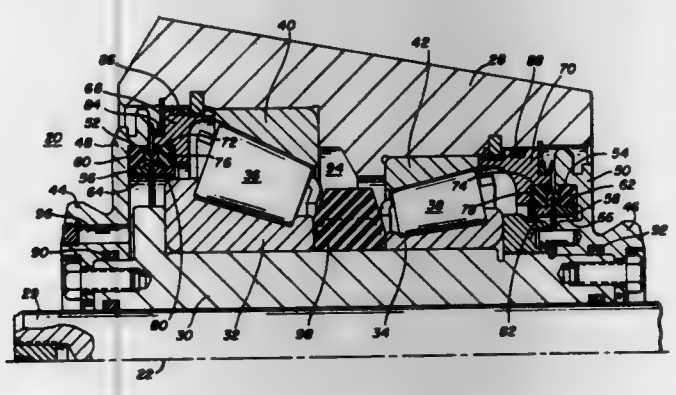
said air injection sub operating to lift water and cuttings up the central passageway.

4,509,607

COMPRESSIBLE PRESSURE COMPENSATOR WITHIN CLOSED LUBRICANT VOLUME OF AN EARTH BORING APPARATUS

William C. Saxman, Irving, and Larry J. Parker, Fort Worth, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 26, 1983, Ser. No. 527,704
Int. Cl.[3] E21B *10/24*
U.S. Cl. 175—227 4 Claims



1. An improved earth boring apparatus having an earth contacting member rotatably mounted on bearing means disposed on an axle member, and seal means disposed between said earth contacting member and said axle member, said seal means including a pair of primary seals, one each adjacent but outside said bearing means, to define therebetween a sealed lubricant volume enclosing said bearing means, and a lubricant having a level substantially filling said lubricant volume, said primary seals generally effective to prevent loss of said lubricant until the internal pressure exceeds the external pressure on said primary seals by a certain limit, wherein said improvement comprises:

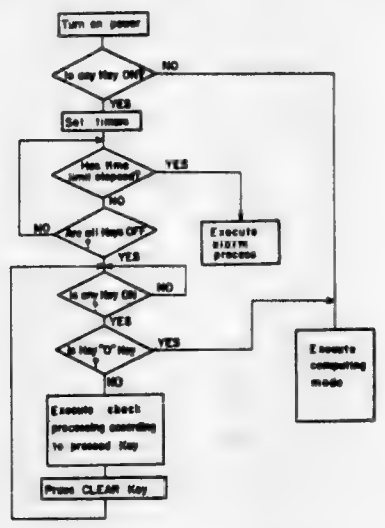
a resilient compressible member disposed entirely within said sealed lubricant volume, said member being generally impervious to said lubricant and compressible in response to increased internal pressure due to thermal expansion of said lubricant, said compression accommodating an increased volume of said lubricant to prevent the internal pressure in said sealed lubricant volume from exceeding the internal pressure limit of said primary seals thereby preventing loss of lubricant from said sealed lubricant volume and maintaining the lubricant level substantially as originally filled.

4,509,608

METHOD OF SELECTING ELECTRONIC SCALE OPERATING MODE, AND ELECTRONIC SCALE USING SAID METHOD

Michiyasu Hikita, Kusatsu, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Feb. 22, 1983, Ser. No. 468,706
Claims priority, application Japan, Feb. 22, 1982, 57-26957
Int. Cl.[3] G01G *9/00, 19/413*
U.S. Cl. 177—1 10 Claims



1. A method of selecting the operating mode of an electronic scale wherein either a computing mode or a checking mode is selected and operation is executed based on the selected mode, the computing mode being a mode wherein a control circuit performs an arithmetic operation based on a weight of articles sensed by a weight sensor and on items of data input from an input device having a plurality of keys, and causes a display device to display information relating to the articles, which information is inclusive of the result of the arithmetic operation, and the checking mode being a mode wherein said control circuit checks the operation of the electronic scale, said method comprising the steps of:

(a) sensing the state of each said key of the input device at the time that power is introduced to the electronic scale;

(b) executing operation in said computing mode when it is sensed in step (a) that no key of the input device is in the ON state;

(c) executing operation in said checking mode when it is sensed in step (a) that any of said keys of the input device is in the ON state, said operating in said checking mode comprising selectively operating a plurality of individual

checking modes according to any respective ones of said keys of the input device being in the ON state; and

(d) producing an alarm when each said key in the ON state does not assume the OFF state within a predetermined period of time.

4,509,609

WEIGHBELT APPARATUS

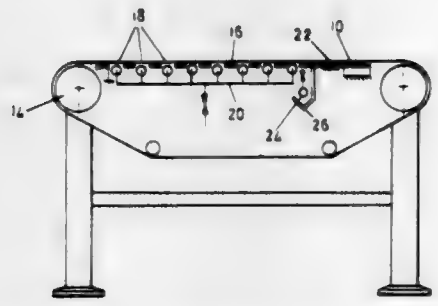
Willem J. Meiring, Stellenbosch, South Africa, assignor to Tobacco Research & Development Institute Limited, Zug, Switzerland

Filed Jul. 27, 1983, Ser. No. 517,822

Claims priority, application South Africa, Sep. 23, 1982, 82/6993

Int. Cl.³ G01G *9/00, 23/01, 23/14*

U.S. Cl. 177—1 **14 Claims**



1. A weighbelt apparatus having a belt upon which material is moved across the apparatus, a generally planar support for the belt extending across the apparatus, belt lifting means connected to the apparatus arranged to lift the belt out of contact with the planar support during operation of the apparatus, means arranged to apply a known downward force to the planar support, measuring means attached to the planar support arranged to provide output signals corresponding to a downward force exerted by the planar support at any time, control means to co-ordinate and control the belt lifting means, the means to apply the known downward force and to select three sets of signals provided by the measuring means:

(a) first signals arising when the belt is lifted out of contact with the planar support and no external downward force is applied to the planar support;

(b) second signals arising when the belt is lifted out of contact with the planar support and the known downward force is applied to the planar support; and

(c) third signals arising when the belt is in contact with the planar support and the known downward force has been removed from the planar support,

and means for processing the first and second signals to provide calibration values and the third signals with the calibration values to provide a measure of the mass carried by the belt.

4,509,610

WEIGHING DEVICE OF LOAD CELL TYPE

Junichi Hayashi, Akashi, Japan, assignor to Yamato Scale Company, Limited, Akashi, Japan

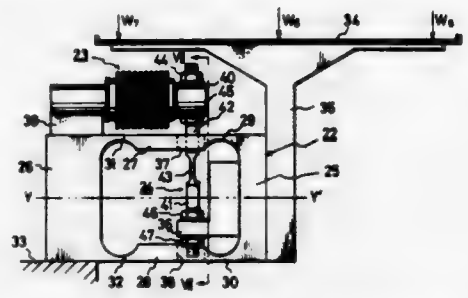
Filed Oct. 19, 1982, Ser. No. 435,113

Claims priority, application Japan, Oct. 28, 1981, 56-173411

Int. Cl.³ G01G *3/14, 3/08;* G01L *5/12*

U.S. Cl. 177—211 **4 Claims**

1. A weighing device, comprising a parallelogrammatic mechanism having first and second vertical members and first and second horizontal members coupled to form a parallelogram, each of said horizontal members having a pair of elastically deformable portions adjacent its ends, the first vertical member being fixed to a stationary part of said device, the second vertical member carrying a weighing cradle or platform of said device, a cantilever type load cell having one end fixed with respect to said stationary part and another end left free, a connecting rod coupled at one end thereof to said free end of said load cell and at the other end thereof to the second vertical member of the said parallelogrammatic mechanism which carries the weighing cradle; characterized in that said connecting rod is detachably coupled at one end in rigidly fixed fashion to said free end of the load cell and detachably coupled at its other end in rigidly fixed fashion to the second vertical member of the parallelogrammatic mechanism, said



connecting rod having no connection to either of said horizontal members of the parallelogrammatic mechanism, said connecting rod including at least one first generally flat portion and at least one second generally flat portion, the flat surface of said first flat portion being generally parallel to the plane of said parallelogram, and the flat surface of said second flat portion being generally perpendicular to said plane.

4,509,611

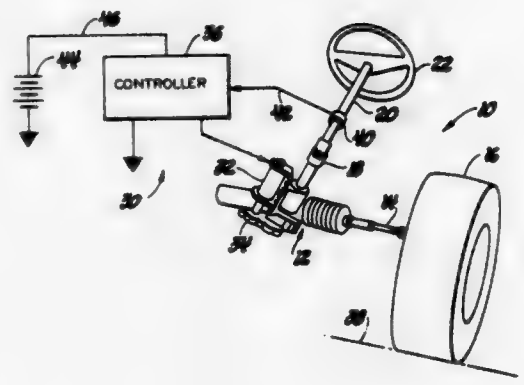
ADAPTIVE CONTROLLER FOR ELECTRIC POWER STEERING

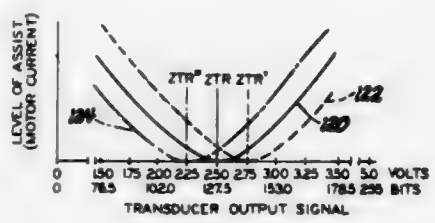
Alexander Kade, Detroit, and Sam M. Karadsheh, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1983, Ser. No. 541,781

Int. Cl.³ B62D *5/04*

U.S. Cl. 180—79.1 **9 Claims**





1. In a motor vehicle electric power steering system including a torque transducer responsive to steering torque exerted by the operator of the vehicle for generating an electrical output signal variable in magnitude from a lower limit value representative of a large operator exerted steering torque in one direction through a mean value representative of no operator exerted steering torque to an upper limit value representative of a large operator exerted steering torque in the opposite direction, an electric motor energizable to produce a steering assist torque, and a motor controller for variably energizing such motor to produce steering assist torque in direct relation to a control signal applied thereto, a method of operation, comprising the steps of:

generating a zero torque reference having an initial value which corresponds to the mean value of the torque transducer output signal;

developing a control signal for said motor controller according to the magnitude of the difference between the zero torque reference and the transducer output signal, such difference being attributable to operator exerted steering

torque, to sources of error which affect the magnitude of the transducer output signal, or to both; and

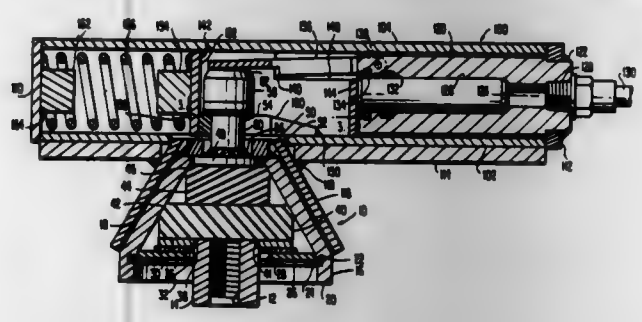
shifting the zero torque reference in a direction to reduce the difference between it and the transducer output signal in accordance with a predetermined time response characteristic so that over a period of time shifting of the zero torque reference due to operator exerted steering torque tends to cancel out and the remaining net shift tends to adaptively compensate the zero torque reference for sources of error which affect the magnitude of the transducer output signal thereby to cause the value of the zero torque reference to more nearly correspond to the actual value of the transducer output signal for which no steering torque is exerted by the operator of the vehicle.

4,509,612

LATCH MECHANISM FOR A TILT-CAB TRUCK

Thomas G. Stuart, Mukwonago, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Sep. 28, 1982, Ser. No. 425,894
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—89.14 **4 Claims**



1. A latch mechanism for a tilt-cab truck, said latch mechanism comprising:

a latch pin adapted for mounting on a tilting cab or on a cab chassis, said latch pin having a generally cylindrical shaft portion and a head portion connected at one end of said shaft portion, said head portion being larger in diameter than said shaft portion; and

a latch locking assembly adapted for mounting on the other of said tilting cab or said cab chassis in position to engage said latch pin, said latch locking assembly having

a housing with a top section, a bottom section and two side sections,

a sliding latch arrangement disposed in said housing for sliding movement in a direction generally perpendicular to the motion of said latch pin as it moves into and out of engagement with said latch locking assembly, said sliding latch arrangement comprising

two side walls slidingly and guidingly received within said side sections of said housing;

a bottom plate connected to said side walls, said bottom plate having a first slotted section of sufficient size to receive said shaft portion of said latch pin and a second slotted section of sufficient size to receive said head portion of said latch pin; and

a first end wall and a second end wall,

a compression spring positioned against said first end wall of said sliding latch arrangement and biasing said sliding latch assembly in a first direction toward a position of engagement with said latch pin;

a piston housing positioned within said housing of said latch locking assembly and having a piston bore,

a piston disposed within said piston bore of said piston housing, said piston being hydraulically actuated so that upon introduction of hydraulic pressure into said piston bore said piston contacts said second end wall of said slding latch arrangement and moves said sliding latch arrangement in a second direction opposite to said first direction to disengage said sliding latch arrangement from said latch pin when it is desired to move said latch pin and said latch locking assembly apart from each other; and

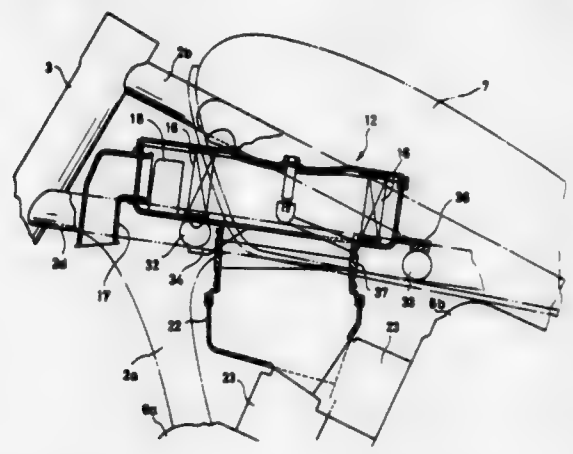
a latch locking plate pivotally secured to said side sections of said housing of said latch locking assembly and disposed within said housing to engage said second end wall of said sliding latch arrangement when said sliding latch assembly has moved sufficiently in said second direction to permit separation of said latch pin from said latch locking assembly and to hold said sliding latch assembly against the urging of said compression spring in a position in which said sliding latch arrangement cannot engage said latch pin after removal of hydraulic pressure from said piston bore until said latch locking plate is separated from said second end wall by said latch pin, whereupon said compression spring returns said sliding latch assembly into engagement with said latch pin.

4,509,613

MOTORCYCLE AIR CLEANER ARRANGEMENT

Ken Yamaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1982, Ser. No. 419,295
Claims priority, application Japan, Sep. 19, 1981, 56-148251
Int. Cl.³ B62D *61/02*
U.S. Cl. 180—219 **11 Claims**



1. In a motorcycle having an engine, a frame, a fuel tank, and an air cleaner, the improvement comprising; said air cleaner positioned below a bottom wall of, and at a front portion of said fuel tank; and said frame provided with a head pipe, at least one upper main pipe extending in the vicinity of said bottom wall of said fuel tank and connected to said head pipe, and a pair of lower main pipes positioned above said engine and connected to said upper pipe adjacent to a rear half portion of said fuel tank, said air cleaner being disposed within a space defined by said head pipe, said upper main pipe and said pair of lower main pipes.

4,509,614

WORKING VEHICLE EQUIPPED WITH ENGINE AUTOMATIC STOP DEVICE

Niro Bando; Kazuaki Kurohara; Yasuo Fujima, all of Sakai; Fumihiro Ikeda, Osaka; Kenzo Usiro, Sakai, and Hiroyuki Ogasawara, Izumi, all of Japan, assignors to Kubota Ltd., Osaka, Japan

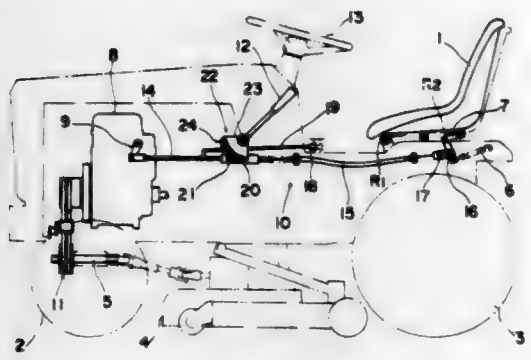
Filed May 6, 1983, Ser. No. 492,249
Claims priority, application Japan, Dec. 13, 1982, 57-218082
Int. Cl.³ B60R *21/00*
U.S. Cl. 180—273 **5 Claims**

1. A working vehicle equipped with an automatic engine stopping device, comprising:

an engine stopper mechanism including (a) a sitting sensor having a sensor arm and a spring and adapted to push up a seat when a load applied to the seat is below a predetermined amount, (b) engine stopper means to stop an engine in response to an upward pushing action of said sitting sensor, (c) a wire having one end thereof connected to

said sensor arm, and (d) a rod having one end thereof connected to said engine stopper means, said rod and said wire being interconnected at the other end of each through link means attached thereto, respectively,

clutch operating means for engaging and disengaging a clutch disposed in a transmission system for a power takeoff shaft, and



restraining means including a restraining member provided on said link means and said clutch operating means, said restraining means for preventing said link means from moving in a first direction to permit said seat to be upwardly pushed while yet permitting said link means to move in a second direction, opposite to said first direction, when said clutch operating means is in a clutch-disengaging position.

4,509,615

MULTI-CHAMBER ENCLOSURE FOR LOUDSPEAKERS

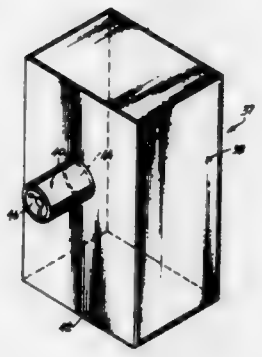
John O. Hruby, 1240 Alta Paseo, Burbank, Calif. 91501

Filed Feb. 4, 1980, Ser. No. 118,596

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.³ H04R *1/28*

U.S. Cl. 181—148 **12 Claims**



1. A loudspeaker enclosure comprising a primary chamber defining a principal interior volume and a secondary chamber defining a minor interior volume substantially smaller than the principal interior volume, the primary chamber having a front wall with outer and inner faces, the inner face forming a front boundary of selected height and width dimensions for the principal volume, the secondary chamber comprising an elongated housing essentially permanently sealed to the front wall of the primary chamber and projecting beyond at least one of the faces of the primary chamber front wall, the secondary chamber housing defining a speaker mounting opening which opens essentially directly to the exterior of the enclosure from a front boundary of the minor volume, the enclosure defining a second simple opening that opens simply and directly from the minor interior volume only to the principal interior volume substantially coaxially of the speaker mounting opening through a rear boundary of the minor interior volume, the speaker mounting opening being the only opening from the combination of the primary and secondary chambers to the exterior of the enclosure, the second opening having height and width dimensions which are less than and are in directions respectively parallel to the height and width dimensions of the principal volume front boundary, the minor volume between the speaker mounting and second openings having a length dimension substantially greater than the length of a loudspeaker mountable in the speaker mounting opening.

4,509,616

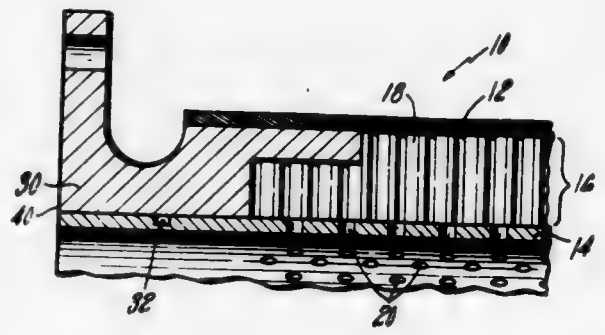
ACOUSTICAL LINERS

Sol S. Blecherman, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 2, 1983, Ser. No. 490,950

Int. Cl.³ B64D *33/02*

U.S. Cl. 181—214 **1 Claim**



1. For an acoustical liner, having a cylindrical porous sheet, a spaced concentric hard nonporous sheet and a concentric honeycomb material sandwiched between said porous sheet and said hard nonporous sheet, means for preventing separation of said porous sheet, flange means for mounting said liner adjacent the inner surface, of a duct carrying air so that the grazing flow is adjacent said porous sheet, said porous sheet extending axially from said honeycomb material and having a contiguous surface in contact with a coplanar surface formed on said flange means, adhesive means between said porous sheet and said coplanar surface, the improvement comprising a groove lateral to the flow of air spaced from the front edge of said porous sheet formed in said contiguous surface facing said adhesive means whereby said groove provides a weakened joint for breaking off the front portion of said porous sheet in the event of peeling thereof to avoid the entire sheet from peeling and separating from the remaining portion of said acoustical liner and said means for preventing separation includes a fillet formed adjacent the side walls of said grooves formed by the adhesive of said adhesive means migrating thereto upon assembly of said porous sheet.

4,509,617

STAIR HAVING ALTERNATE HALF TREADS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 257,960, Apr. 27, 1981, abandoned. This application Jul. 26, 1982, Ser. No. 402,219

Int. Cl.³ E06C *9/02*; B63B *29/20*

U.S. Cl. 182—93 **7 Claims**

1. A stairway comprising:

first and second spaced, parallel side tread supports adapted for mounting between an upper level and a lower level at a predetermined angle of inclination;

a central tread support having an outer edge, said central support disposed between said side supports and parallel thereto;

a plurality of first spaced tread members extending laterally between the first side tread support and said central tread support, each of said first tread members having a foot support portion;

a plurality of second spaced tread members extending laterally between said central tread support and the second side tread support, each of said second tread members being disposed between adjacent ones of said first tread

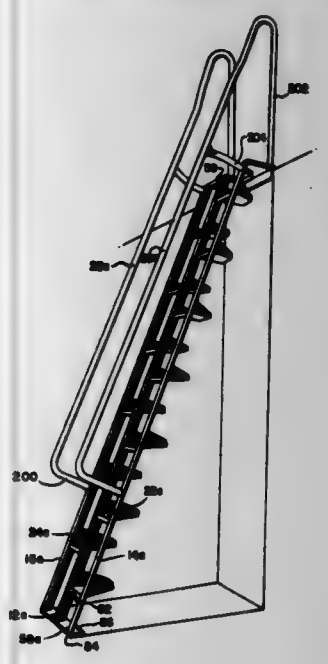
members in an alternating relationship therewith, each of said second tread members having a foot support portion;

each of said foot portions on the first and second tread members having a forward edge, a lateral inner edge, a lateral outer edge and a rear edge;

first and second handrails each supported on a respective side of the tread members and disposed in a plane forward and parallel to a plane passing through the forward edges of the foot support portions, the handrails positioned at a height in relation to the foot support portions to lie under the armpits and support the forearms of a user while descending the stairway;

said first tread members being of substantially identical construction, the first tread members being complimentary to the second tread members;

said tread members integrally formed as a single unitary structure, each tread member including:



an upwardly extending flange at the inner and outer lateral edges and the rear edge of the foot support portion, and having mounting portions for attaching the tread member to respective side and central tread support members; and

a downwardly extending flange at the forward edge of the foot support portion, said downwardly extending flange having side portions for attaching the tread member to respective side and central supports;

said first and second tread supports comprising first and second right angle members with an inner angle surface and an outer surface, said central tread support comprising a U-shaped member having an inner surface and an outer surface;

said mounting portions of the upwardly extending flanges of the first and second tread members adapted to confront the inner angle surface of the respective first and second right angle members and the inner surface of the U-shaped member.

4,509,618

OIL LUBRICATION SYSTEM, ESPECIALLY FOR KNITTING MACHINES

Falk Kühn, Rottenburg, Fed. Rep. of Germany, assignor to Erich Roser, Salem-Grasbeuren, Fed. Rep. of Germany

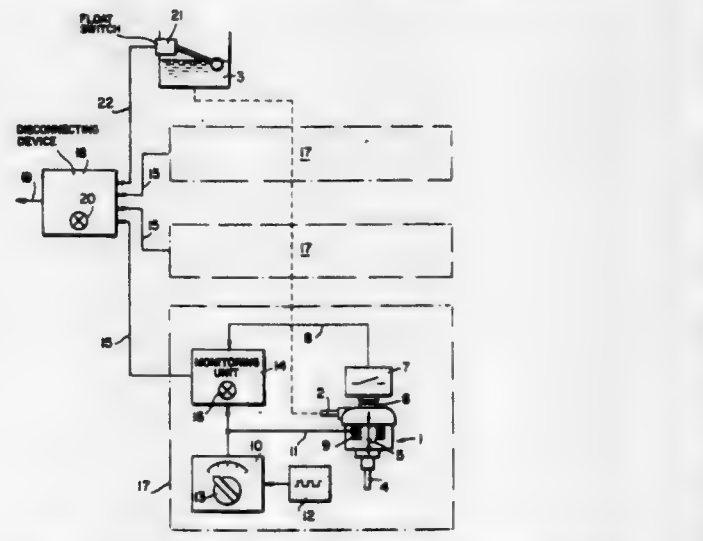
Continuation-in-part of Ser. No. 180,988, Aug. 25, 1980, Pat. No. 4,349,085. This application Mar. 2, 1982, Ser. No. 353,891

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1981, 3108836

Int. Cl.³ F01M *1/22*; G08B *21/00*

U.S. Cl. 184—6.4 **3 Claims**

1. An oil lubricating system comprising an electro-magnetically driven piston pump having a pump intake and a pump outlet for pumping lubricating oil from an oil storage reservoir to a lubrication site, said pump having a pump piston, an exciting coil responsive to current pulses for moving the pump piston from a first position to a second position to effect the circulation of lubricating oil from the reservoir to the lubrication site, means for producing periodic current pulses, means for applying said periodic current impulses to said exciting coil, each pulse causing the pump piston to move between said first and second positions in response to said current pulses, means coupled to said pump for sensing when the pump piston reaches said second position in response to the application of a current pulse and producing a first control signal indicative of



the pump piston reaching said second position, monitoring means responsive to said current pulses and said first control signal for providing a second control signal indicative of improper operation of said piston pump, said monitoring means monitoring the time between receipt of one of said current pulses and the receipt of a corresponding first control signal after the application of said one of said current pulses, and if said first control signal is not received within a predetermined period of time after said one of said current pulses, producing said second control signal indicating that said piston pump is operating improperly.

4,509,619

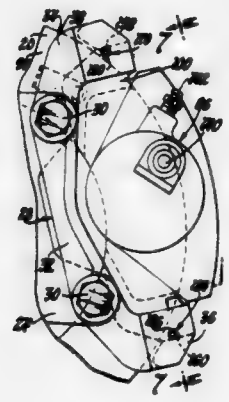
SHOE MOUNTED DISC BRAKE CALIPER AND SHOE SUPPORT STRUCTURE

Gene P. Baynes, Kettering, and Wolfgang Melinat, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1982, Ser. No. 389,428

Int. Cl.³ F16D *55/18*

U.S. Cl. 188—73.39 **2 Claims**



2. A disc brake caliper assembly for braking a rotatable disc, said caliper assembly comprising:

a fixed bracket forming a mounting saddle defined by opposed side rails having main body portions extending chordally along either side of an arcuate portion of the disc, said side rails having upturned ends extending beyond and across the disc outer periphery, said upturned

ends providing brake shoe torque-taking abutments and including arcuately spaced cross bars joining said side rail main bodies;

opposed brake pad assemblies including braking plates and friction lining material brake pads secured to said braking plates, said brake pad assemblies being positioned along either side of an arcuate portion of the disc in friction braking relation thereto, said brake pad assemblies being received within said fixed bracket and having complementary brake torque-transmitting abutments cooperating with said fixed bracket abutments to transmit braking torque to said fixed bracket when the disc brake caliper assembly is actuated;

removable means forming a part of said fixed bracket and extending through said side rail upturned ends across the disc outer periphery and locking said brake pad assemblies within said fixed bracket and permitting sliding brake actuating and release movements of said brake pad assemblies;

a caliper housing having a bridge section extending across the disc outer periphery, opposed leg sections extending along the sides of the disc from the bridge section, and a brake actuating and release mechanism in at least one of said legs, said legs operatively engaging said brake pad assemblies in brake actuating and release relation, said caliper housing being received within the saddle formed by said fixed bracket;

mounting means positioned back of said brake pads and operatively connecting said backing plates to said caliper housing to mount one leg section of said caliper housing on one brake pad assembly and the other leg section of said caliper housing on the other brake pad assembly so that said caliper housing is supported on said fixed bracket only by said brake pad assemblies at points in alignment with said brake pads and the arcuate portion of the disc in friction braking relation with said brake pads.

4,509,620

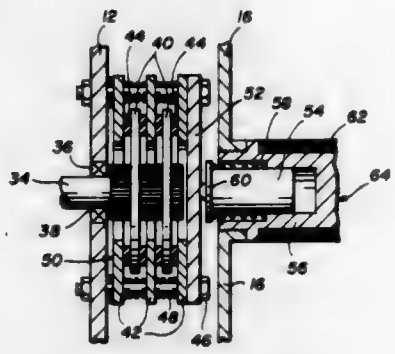
HOIST OR THE LIKE

Stephen P. Verbos, Muskegon, Mich., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 8, 1982, Ser. No. 356,009

Int. Cl.³ B60T *13/04*; B60L *7/00*; F16D *19/00*; H01H *51/34*

U.S. Cl. 188—171 **7 Claims**



1. An improved hoist comprising in combination:

a housing;

an electrically powered motor located in the housing;

a shaft journaled in the housing and driven by the motor;

braking means including rotatable friction means on the shaft and stationary friction means on the housing that are arranged to be mutually engageable to prevent rotation of the shaft;

solenoid means on said housing including biasing means urging said friction means toward engagement, said solenoid means being operative to enable disengagement between said friction means when energized and permitting engagement therebetween when deenergized;

electrical switch means operable in a portion of the electrical circuit remote from the power input to said motor and at a reduced voltage as compared to said motor input, said switch means being connected to contacts operable when actuated to energize and deenergize said motor; and

electrical control means energized and deenergized by said switch means in a parallel circuit relation with the contacts for said motor, said control means being connected with said solenoid means for energizing said solenoid means at a high power level and including power reduction means for decreasing the power supplied to said solenoid means at a predeterminable time after said solenoid means is energized thereby reducing the power consumption of said solenoid during operation of the hoist.

4,509,621

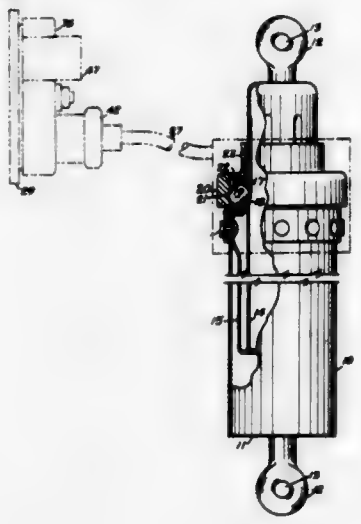
VARIABLE-LOAD ENERGY ABSORBER AND METHOD FOR MAKING ENERGY ABSORBERS HAVING VARIABLE-LOAD CAPABILITY

Stanley P. Desjardins, and James C. Warrick, both of Tempe, Ariz., assignors to Simula Inc., Tempe, Ariz.

Filed Aug. 13, 1982, Ser. No. 407,917

Int. Cl.³ F16F *7/12*

U.S. Cl. 188—372 **6 Claims**



1. A variable-load energy absorber comprising:

an inversion tube, wherein the tube is partially turned outside in, so that the uninverted portion is external to the inverted portion and surrounds and is parallel thereto;

annular support means attached to said external uninverted tube for attaching it to other structures;

means attached to the internal inverted end of the tube for attaching it to other structures; and

means surrounding the tube and attached to said annular support means for constricting the inverted tube to the extent desired.

4,509,622

SUITCASE

Dieter Morszeck, Kinkelstr.16, 5000 Koeln 41, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,982

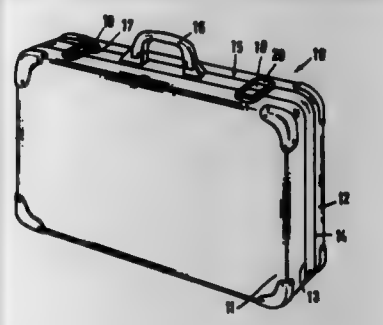
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242265

Int. Cl.³ A45C *5/04*

U.S. Cl. 190—119 **7 Claims**

1. A suitcase, comprising a first shell having a top surface provided with a first indentation; a second shell having a further top surface provided with a second indentation, the second shell being hingedly connected to the first shell so that the first and the second shells are movable between an open and a closed position wherein the first and the second indentations define a common indentation of predetermined contour when the first and second shells are moved into the closed position; and means for locking the first and the second shells when the latter are in the closed position, the locking means including two locking members cooperating with each other, wherein

one of the two members is connected to one of the shells and the other of the two members is connected to the other of the shells, the first and the second indentations having such a depth that upon locking the first and second shells in the closed position, the locking means is completely enclosed within the common indentation without projecting beyond the top surface and the further top surface of the first and second shells,



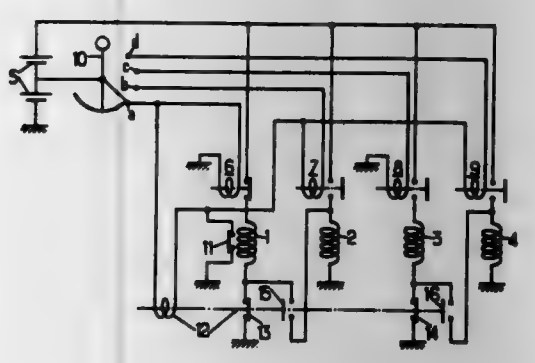
the first and the second shell each having a circumferential edge and being each provided along its circumferential edge with a profile strip which extends within a respective indentation and has therein a contour corresponding to the contour of the respective indentation so as to form a loop-shaped bending, said common indentation extending across both shells and the profile strip.

4,509,623

RETARDER EQUIPMENT FOR VEHICLES

André Marandet, Saint-Gratien, France, assignor to Labavia S.G.E., Bois-D'Arcy, France

Filed Apr. 29, 1982, Ser. No. 373,060
Claims priority, application France, May 5, 1981, 81 08921
Int. Cl.³ F16D *66/00*
U.S. Cl. 192—4 A **2 Claims**



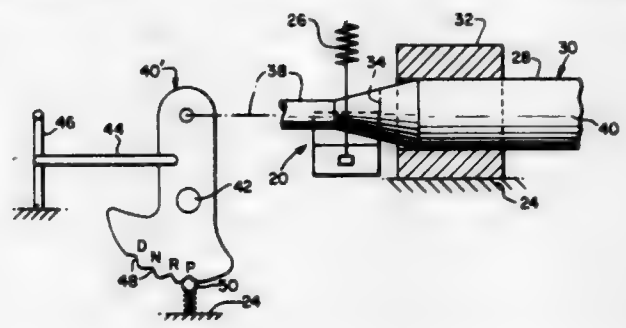
1. Retarder equipment for vehicles comprising an eddy-current retarder which comprises 2n inductor windings, n being an integer at least equal to 2, a DC voltage source, control means actuated by an actuating member with 2n+1 positions for normally causing the retarder to generate 2n+1 distinct braking torques, which torques have values increasing from zero to a maximum value when the actuating member goes over from its zero position to its 2n position, which results in connecting respectively in parallel to the DC voltage source a number of independent windings increasing from zero to 2n, and means for under-energizing the retarder by automatically connecting its windings in series two by two, the means for under-energizing the retarder being responsive to overshooting of a given threshold by a temperature of a rotor armature of the retarder, said means for under-energizing comprising a thermosensitive element mounted on a stator of the retarder at a position of said stator in front of which passes said rotor armature.

4,509,624

PARKING BRAKE SAFETY MECHANISM FOR AUTOMATIC TRANSMISSIONS

William A. Barr, Gibson Island, Md. 21056

Continuation of Ser. No. 363,080, Mar. 29, 1982,. This application Jul. 17, 1984, Ser. No. 631,793
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A **15 Claims**



1. A parking brake for an automatic transmission comprising a toothed parking gear secured to an output shaft journaled in a stationary housing of a vehicle, a pawl movable in between a park position in which said pawl engages said gear and non-park position in which it is clear of said gear, driver operated means movable in opposite directions between park and reverse positions, a control rod connected to said driver operated means, cam means operated by said control rod and engageable with said pawl to effect movement thereof towards said parking gear when said driver operated means is moved to its park position and to effect movement of said pawl clear of said gear when said driver operated means is moved to its reverse position, lost motion means between said driver operated means and said pawl enabling said driver operated means to be moved to its park position when said pawl engages the surface of a tooth of said parking gear intermediate spaces on either side of said tooth, and resilient means arranged to re-act against said control rod when the driver operated means in cooperation with said lost motion means is accidently positioned intermediate its park and reverse positions, to exert a force on said driver operated means which at all times while the latter is in said intermediate position restrains movement thereof from said intermediate position towards its reverse position while tending to move said driver operated means in a direction away from its reverse position and towards its park position.

4,509,625

AUTOMATIC FRICTION CLUTCHES AND CONTROLS THEREFOR

Rudy Tellert, Schweinfurt, Fed. Rep. of Germany, assignor to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,548
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028250; Nov. 17, 1980, 3043347; Nov. 17, 1980, 3043348; Apr. 24, 1981, 3116455
Int. Cl.³ F16D *25/12*
U.S. Cl. 192—0.033 **22 Claims**

1. For a motor vehicle having an engine and a friction clutch driven by the engine, a device for actuation of the friction clutch, comprising:

an actuation element for said clutch;

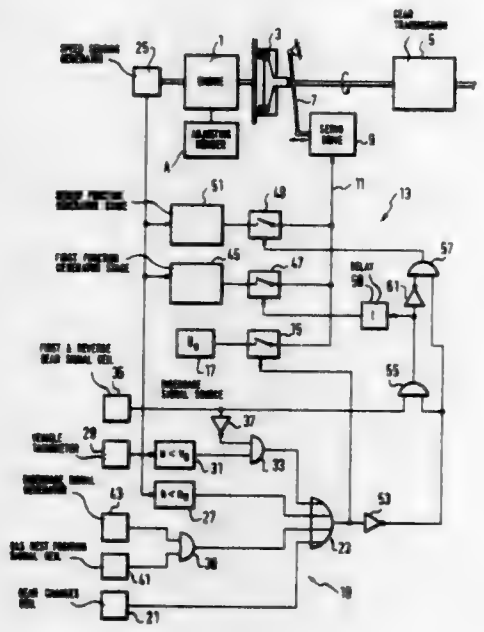
a positioning servo drive means for moving said actuating member between a disengagement position in which the clutch is disengaged and a full engagement position in which the clutch is completely engaged and through an adustable slippage range of engagement positions between a threshold position at the start of torque conversion and the full engagement position;

a speed sensor means for producing a speed signal corresponding to the positioning of the engine;

a position control means for controlling the operation of said drive;

a function generator means for said position control means for generating a predetermined speed-position characteristic between the engine speed and the engagement position;

characterized in:



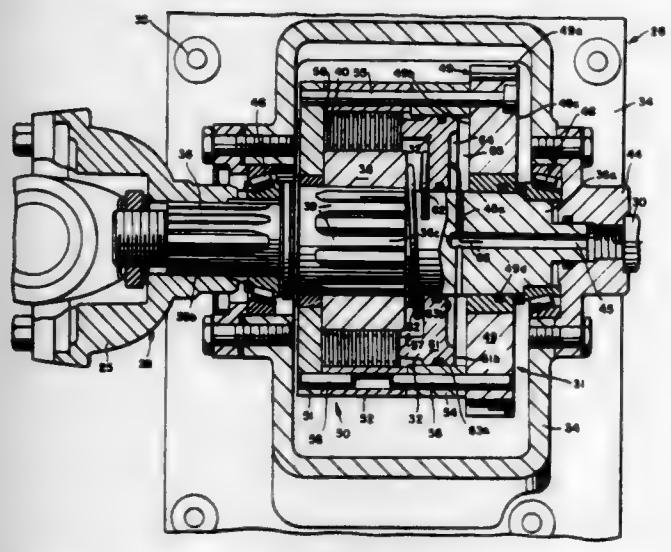
the position control means being arranged to adjust said actuation member in the slippage range between said threshold position and said full engagement position in response to the speed of the engine according to a characteristic set by the function generator means such that for each engine speed there is a unique position of the actuating members.

4,509,626

HYDRAULICALLY ACTUATED HIGH TORQUE, QUICK ENGAGEMENT CLUTCH ASSEMBLY

Donald D. Jones, Elwood, Ill., assignor to Elwood Manufacturing Company, Elwood, Ill.

Filed May 27, 1982, Ser. No. 382,478
Int. Cl.³ F16D *25/063*
U.S. Cl. 192—85 AA **7 Claims**



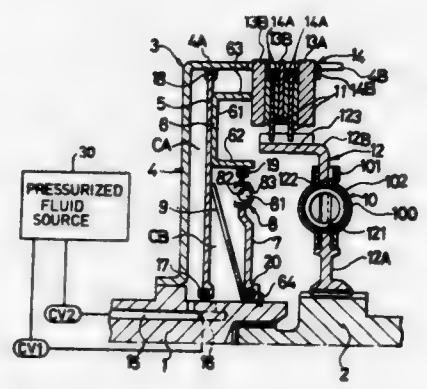
1. For transmitting power from the transmission of a two-wheel drive vehicle to an auxiliary drive axle for the vehicle to thereby convert the vehicle to a four-wheel drive vehicle, a clutch assembly comprising, in combination, a clutch casing mounted on the vehicle; an output shaft assembly having an output shaft and means for rotatably mounting the shaft in said clutch casing, a hub secured to a mid-portion of the output shaft, a plurality of axially spaced, annular separator plates extending outwardly from and slidably secured along their inner periphery directly to the output shaft hub without any intervening element therebetween, said separator plates being rotatable with the output shaft hub and axially slidable with respect thereto; means for drivingly connecting one end of the output shaft to the auxiliary two-wheel drive axle for the vehicle; a drive gear assembly including a drive gear disposed within said clutch casing and rotatably mounted on the other end of said output shaft, said drive gear having inner and outer faces, an axially disposed outer carrier member rotatably secured to the drive gear, a plurality of axially spaced, annular friction plates extending inwardly from and slidably secured along their outer periphery directly to the outer carrier member without any intervening element therebetween, said friction plates being rotatable with the drive gear and axially slidable with respect to said hub; said annular friction plates of the drive gear assembly being interposed between said annular separator plates of the output shaft assembly so that lateral motion of said respective plates toward one another causes clutching action of the drive gear and output shaft; means for drivingly connecting said drive gear through its gear teeth to the vehicle transmission; and coupling means for drivingly connecting said drive gear assembly to said output shaft assembly, said coupling means including an annular piston rotatably disposed within a piston housing and rotatably mounted on said output shaft and interposed between said drive gear and said output shaft hub, said piston having inner and outer faces and being laterally movable along the output shaft, said outer piston face being annular in shape and defining therewithin a cup-shaped recess and disposed to directly engage the innermost one of said separator plates carried by the output shaft assembly when the clutch is actuated without any intervening element therebetween for obstructing immediate lockup of said piston face and separator plate, coil spring means for normally maintaining the piston disengaged from said innermost separator plate and thus in a disengaged position of the clutch, said coil spring means surrounding said output shaft and disposed within said cup-shaped recess and interposed between the piston and said output shaft hub without any intervening element therebetween, said inner piston face cooperating with said outer face of said drive gear to define therebetween a chamber for hydraulic fluid, and means for applying hydraulic fluid under pressure within said chamber to overcome the bias of said coil spring means for moving said piston laterally so that its outer face engages said innermost one of the separator plates to thereby compress said separator and friction plates together to actuate and thereby bring about immediate lockup of the clutch.

4,509,627

HYDRAULIC CENTRIFUGAL CLUTCH

Matsumi Kawamoto, Nagoya, Japan, assignor to Aisin Warner Kabushiki Kaisha, Anjo, Japan

Filed Aug. 3, 1982, Ser. No. 404,729
Int. Cl.³ F16D *25/063, 43/284*
U.S. Cl. 192—85 F **14 Claims**



1. A hydraulic centrifugal clutch, comprising:
an input shaft;
an output shaft;

a hydraulic servomechanism including a first fixed member fixed to said input shaft, a movable member axially slidable with respect to the said input shaft, a first cylindrical chamber formed between said first fixed member and said movable member and adapted to receive a hydraulic fluid therein from a source of hydraulic fluid at a predetermined pressure for moving said movable member in one axial direction of said input shaft, and a second cylindrical chamber having a pressure receiving area smaller than the pressure receiving area of said first cylindrical chamber, said second cylindrical chamber being formed between a second fixed member and said movable member and adapted to move said movable member in the other axial direction of said input shaft at the reception of said hydraulic fluid therein, said first and second cylindrical chambers and the fluid therein rotating with said input shaft, the pressure of said fluid increasing due to a centrifugal force in proportion to the rate of rotation of said input shaft;

centrifugal check valve means including a valve casing being received in a through hole formed in said second fixed member, a valve port formed in said valve casing for allowing said second cylindrical chamber to communicate with the outside of the second cylindrical chamber and a check ball movably received in said valve casing and adapted to be moved for closing said valve port by the pressure of said fluid within said second cylindrical chamber when said pressure is greater than a predetermined value and said check ball being adapted to move radially outward within said valve casing for opening said valve port by means of a centrifugal force acting on said check ball when the pressure of said fluid within said second cylindrical chamber is smaller than the predetermined value;

a clutch mechanism interposed between said input shaft and said output shaft and adapted to be engaged to connect said output shaft to said input shaft by movement of said movable member as a result of said hydraulic fluid pressure generated within said first chamber;

bias means for applying a force counteracting the force applied to said movable member by the hydraulic fluid within said first cylindrical chamber, said counteracting force being applied to said movable member of said servomechanism; and

said clutch mechanism being automatically engaged or released at a rotational speed of said input shaft where the sum of the pressure force of said hydraulic fluid within said first cylindrical chamber and the force generated by centrifugal force acting on said hydraulic fluid within said first cylindrical chamber counterbalances the sum of the pressure force of said hydraulic fluid within said second cylindrical chamber, the force generated by centrifugal force acting on the hydraulic fluid within said second cylindrical chamber, and the force of said bias means.

4,509,628

FREE-WHEELING CONTROL SYSTEM FOR A MOTOR VEHICLE

Erich Junginger; Norbert Rittsmannsberger, both of Stuttgart, and Eberhard Schnaibel, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,349

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3130453

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.094 **7 Claims**

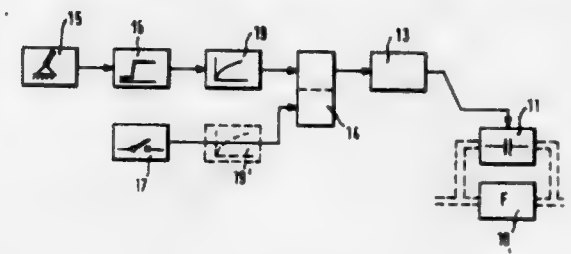
1. Free-wheeling control system for a motor vehicle having an engine, a drive train, driving wheels, brakes, an accelerator pedal and a brake pedal and having interposed, in its power train between the engine and the driving wheels of the vehicle, overrunning clutch means (10,12) for free-wheeling one-way transmission of rotary power from the engine to the drive wheels and controllable clutch means (11, 12) which is disengageable to permit free wheeling and engageable to assure transmission of rotary power between the drive wheels and the engine in either direction, said sytem comprising:

means for producing a first signal corresponding to a change of engine operation away from an idling operation;

means for producing a second signal corresponding to the onset of operation of the brakes in response to said brake pedal;

means for producing a third signal corresponding to the existence of an idling operation of said engine;

means for engaging said controllable clutch in response to said first signal to a change of engine operation away from an idling operation and for engaging said controllable clutch means in response to said second signal;



means for releasing said controllable clutch means in response to appearance of a third signal representative of the existence of an idling operation of said engine, means for averaging said third signal for delaying the release of said clutch with respect to the beginning of idling operation of said engine, and

means (14) for keeping said controllable clutch means engaged after a completed operation of said engaging means until operation of said releasing means and for keeping said controllable clutch released after a completed operation of said releasing means until an operation of said engaging means.

4,509,629

PLURAL MOTOR PLURAL CLUTCH WITH WORM DRIVE

Jan Pajgrt; Jan Bezdicek, and Jiri Novak, all of Brno, Czechoslovakia, assignors to ZVS Vyzkumnevyvojovy Ustav, koncernova ucelova organizace, Brno, Czechoslovakia

Filed Dec. 15, 1982, Ser. No. 450,122

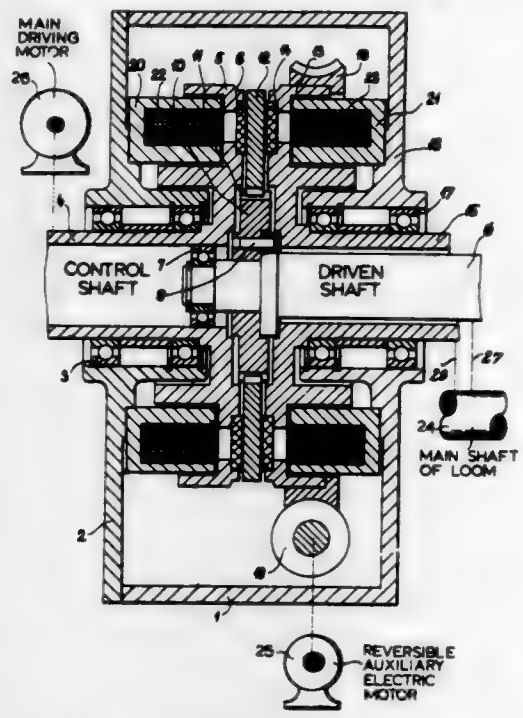
Claims priority, application Czechoslovakia, Dec. 16, 1981, 9365-81

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.098 **5 Claims**

1. A clutch mechanism adapted for use with looms, comprising a housing, a pair of opposed, coaxially disposed electromagnets stationarily mounted in the housing, a driven shaft disposed coaxial of the electromagnets, a friction disc mounted on the driven shaft between the electromagnets, the friction disc being mounted for axial displacement on the driven shaft, a control shaft mounted coaxially of the driven shaft, a main motor for driving the control shaft, a rotor fixedly connected to the control shaft disposed between one electromagnet and the friction disc for selective driving engagement with the friction disc, a second rotor provided with a frictional surface adapted for selective driving engagement with the other side of the friction disc, said second rotor being disposed between the second electromagnet and the friction disc, said second rotor being fixed to a hollow shaft which freely surrounds the driven shaft and is rotatably mounted in the housing of the clutch

mechanism, one of said first and second rotors being drivingly connected with a worm wheel, a worm having meshing driv-



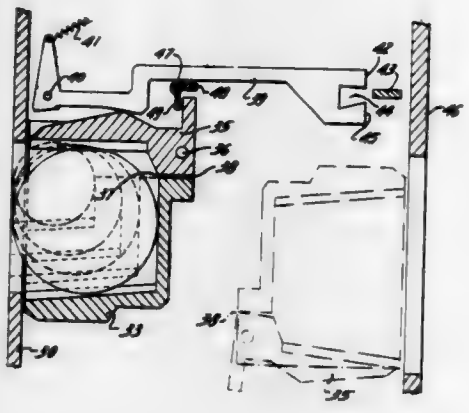
ing engagement with the worm wheel, and an auxiliary prime mover drivingly connected with the worm.

4,509,630

MULTI-COIN COIN CHUTE

Julio Mongelli, 96 Roehrs Dr., Wallington, N.J. 07057

Filed Jun. 7, 1982, Ser. No. 386,117
Int. Cl.³ G07F *5/06*
U.S. Cl. 194—1 G **7 Claims**



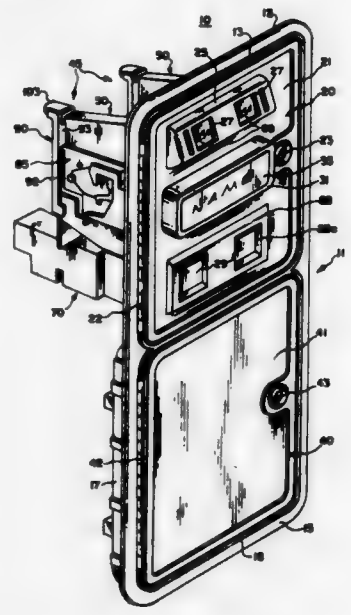
1. An improved coin chute of the type which accepts a set combination of coins, calipers said coins and actuates a coin-operated machine such as a clothes washer or dryer, wherein the improvement comprises a coin housing having a multiplicity of coin receiving slots up to ten or more allowing said machine actuation by any set amount from five cents to ten dollars or more; said coin housing pivotally mounted on a movable frame wherein the transfer of coins to a cash receptacle acheived by a combined linear translation motion and a rotational motion of said coin housing followed by gravity drop of the coins; said coin receiving slots calipering coins for acceptability; means for releasing coins when set amount of coins not satisfied with all acceptable coins; and means for actuating the machine.

4,509,631

COIN DOOR ASSEMBLY

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Nov. 26, 1982, Ser. No. 444,530
Int. Cl.³ G07F *9/10*
U.S. Cl. 194—1 A **19 Claims**



1. In a coin receiving assembly including a support panel having a coin receiving opening therein, a coin acceptor module with a coin path therethrough for distinguishing between acceptable and unacceptable coins, and an entry chute mounted on the support panel and projecting therefrom and in communication with the coin receiving opening, the improvement comprising: coin box means having an inlet and mounted on the support panel, said coin box means being spaced from the entry chute and projecting from the support panel in the same direction as the entry chute and cooperating with the support panel and the entry chute for defining therebetween a receptacle for the coin acceptor module, the coin acceptor module being freely receivable in said receptacle in a coin accepting position wherein the coin path thereof is disposed in communication with the entry chute and with the inlet of said coin box means, and retaining means adapted for releasably interconnecting the entry chute and said coin box means for cooperation therewith substantially immovably to retain the coin acceptor module in said receptacle.

4,509,632

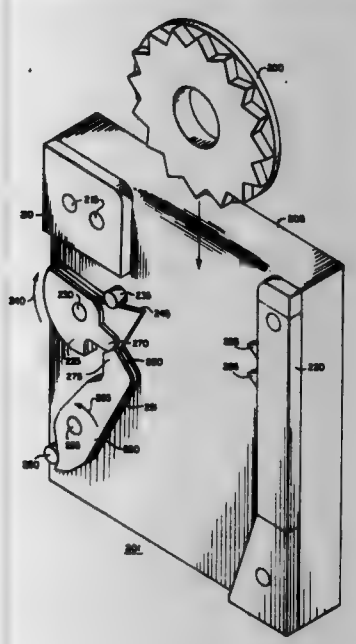
TOKEN AND ACCEPTANCE MECHANISM

Myron I. Jaffe, Chestnut Hill, Mass., assignor to Sintered Metals, Inc., Boston, Mass.

Continuation of Ser. No. 321,721, Nov. 16, 1981, abandoned.
This application Oct. 19, 1983, Ser. No. 543,384
Int. Cl.³ G07F *7/00*
U.S. Cl. 194—4 D **21 Claims**

1. In combination, a disk-shaped token having
a first section and a second section disposed perpendicularly to the axis of said token, said first section having a notched periphery and said second section layer having a smooth periphery, and a token acceptance mechanism comprising:
means for defining a slot in said token acceptance mechanism through which said token moves,
means responsive to said notched periphery for enabling said acceptance mechanism, comprising a plurality of teeth, including at least one fixed tooth located on one side of said slot and at least one movable tooth on the other side of said slot, whereby a token with a notched periphery entering said token acceptance mechanism causes movement of said movable tooth, and
means, when enabled, responsive to said smooth periphery for accepting the token, said acceptance means comprising a movable arm, said arm being responsive to the move-

ment of said movable tooth and to said smooth periphery for moving in a direction to allow said token to move through said token acceptance mechanism, whereby only



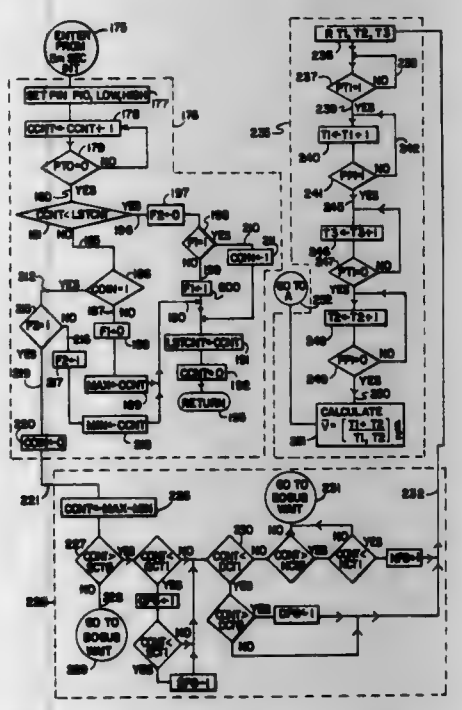
tokens having both a notched periphery section and a smooth periphery section will be accepted by the token acceptance mechanism.

4,509,633

ELECTRONIC COIN VALIDATOR WITH IMPROVED DIAMETER SENSING APPARATUS

Edmund E. Chow, Lilburn, Ga., assignor to Reed Industries, Inc., Stone Mountain, Ga.

Filed Aug. 24, 1983, Ser. No. 525,997
Int. Cl.[3] G07F *3/02*
U.S. Cl. 194—100 A 7 Claims



1. In an electronic coin validator of the type including a content measuring apparatus for measuring the metal content of a coin as it travels along a predefined path, an improved diameter measuring apparatus comprising in combination:

a first electronic coin sensor located along said path;

a second electronic coin sensor, spaced apart a predetermined distance from said first electronic coin sensor, along said path;

timing means connected to said first and second electronic coin sensor for measuring, and storing in a memory, three distinct time intervals between a first event corresponding to the leading edge of said coin being sensed by said first electronic coin sensor and a second event corresponding to the trailing edge of said coin being sensed by said second electronic coin sensor;

calculating means connected to said memory for providing a calculated average velocity of said coin as it passed said first and second electronic coin sensors, and for subsequently calculating an effective diameter of said coin in response to said calculated average velocity and one of said three distinct time intervals;

storage means for storing a plurality of predetermined ranges of diameter values;

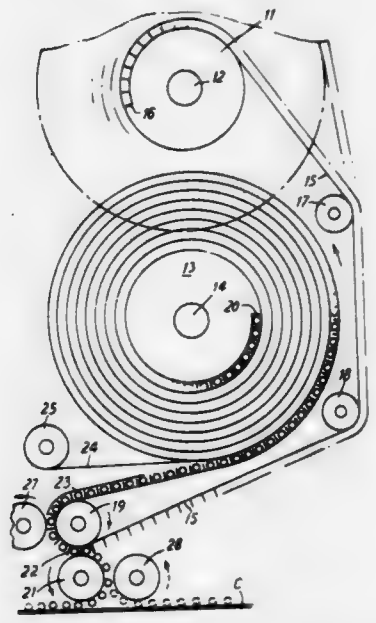
comparison means connected to said calculating means and said storage means for comparing said effective diameter to said plurality of predetermined ranges of diameter values and for providing a valid diameter output signal in response to detection of said effective diameter being within one of said plurality of predetermined ranges of diameter values.

4,509,634

BUFFER STORAGE APPARATUS

Kenneth G. Payne, Chislehurst, England, assignor to Sasib S.p.A., Bologna, Italy

Filed Jan. 6, 1982, Ser. No. 337,483
Claims priority, application United Kingdom, Jan. 12, 1981, 8100840
Int. Cl.[3] B65G *1/00*
U.S. Cl. 198—347 7 Claims



1. A buffer storage apparatus for receiving a product normally carried by a product conveyor along a path from one location to another, comprising: an elongated reservoir belt movable in the direction of its elongation from a stowed position, past a predetermined region to receive the product and thereafter to a product storage position; a pair of wheels around which the elongate reservoir passes and between which there exists a linear transfer region which is arranged to align with the forward feed product path of the product conveyor during buffer storage demand; pusher means at said transfer region for moving the product laterally in relation to said reservoir belt to transfer the product from the conveyor to the reservoir belt during buffer storage demand; levers to support said pair of wheels and to shift said wheels from said transfer region to a return region so that the linear transfer region of the belt is aligned with a return run of the conveyor; and further pusher means for moving said product laterally from the linear transfer region of said reservoir belt to said conveyor.

4,509,635

SORTING SYSTEM

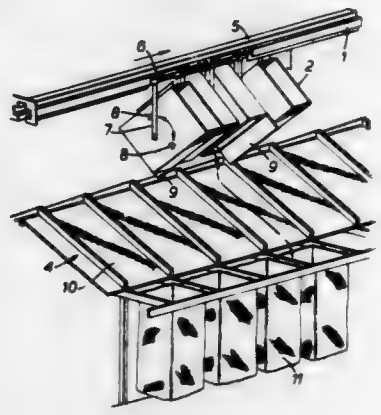
Robert M. Emsley, Harpenden, and Derek C. Pitt, London, both of England, assignors to The Post Office, London, England

Filed Jan. 13, 1983, Ser. No. 457,518

Claims priority, application United Kingdom, Jul. 12, 1982, 8220211

Int. Cl.³ B65G *43/10, 47/46*

U.S. Cl. 198—365 **12 Claims**



1. A sorting system for generally flat articles comprising a conveyor, a plurality of receptacles carried by said conveyor and individually disposed to receive and convey an article to be carried with the surface of maximum size of the article perpendicular to the line of travel of the conveyor, each of the receptacles including a controllable discharge outlet and each of said receptacles being disposed to lie in one or the other of first and second inclined positions in which the receptacle is inclined to the vertical about an axis extending lengthwise of the conveyor and the discharge outlet of the receptacle is positioned on one or the other of the opposite sides of the conveyor, and means for permitting angular displacement of each receptacle about said axis between said inclined positions so that the controllable discharge outlet of the receptacle can be positioned on either one of the opposite sides of the conveyor.

4,509,636

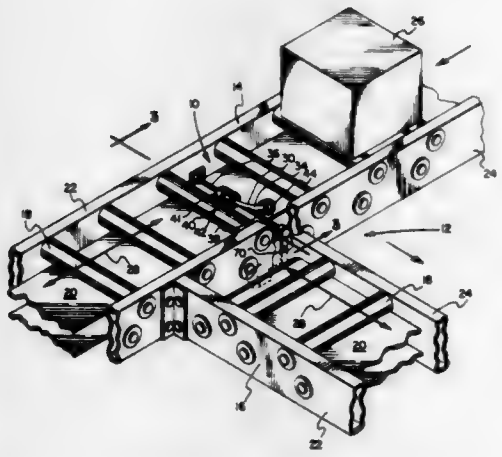
DIVERTING ROLLER SYSTEM

Arthur G. Godbois, 2241 Avenue B, Grand Prairie, Tex. 75051

Filed Jul. 18, 1983, Ser. No. 514,449

Int. Cl.³ B65G *47/46*

U.S. Cl. 198—372 **10 Claims**



1. An apparatus for selectively diverting articles carried by a conveyor system of the type comprising a plurality of roller elements disposed in generally parallel spaced relationship defining a notional plane of conveyance and disposed upon an underlying drive member imparting a rotational motion to the rollers, wherein the diverting apparatus comprises:

an elongate housing adapted for mounting between adjacent rollers of said conveyor system and atop said drive member at a location where diverting of articles is to be effected, said housing comprising a generally "Y" shaped configuration including a linear body section and an angularly extending arm;

at least one drive roller rotatably mounted upon said linear body section in generally parallel spaced relationship with said adjacent rollers;

a diverting roller rotatably mounted upon said angularly extending arm;

means coupling said drive roller and said diverting roller for generally concomittant rotation; and

means for selectively rotating said "Y" shaped housing about said linear body section for moving said diverting roller into and out of said notional plane of conveyance for diverting articles.

4,509,637

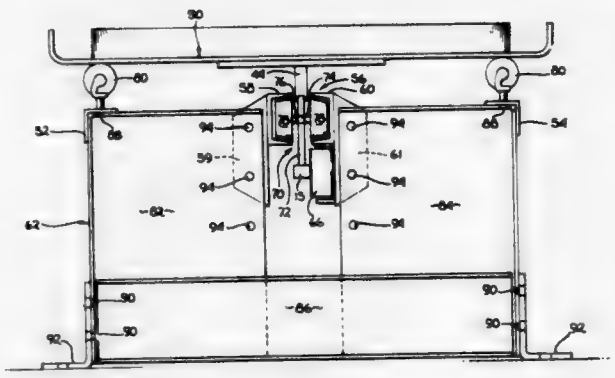
BOLT TOGETHER CONVEYOR STRUCTURE

Jess Browning, 4217 Via Pinzon, Palos Verdes Estates, Calif. 90274

Continuation of Ser. No. 266,926, May 26, 1981, abandoned. This application Sep. 28, 1983, Ser. No. 536,688

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—472 **6 Claims**



1. A conveyor assembly for supporting a plurality of pallets, each pallet having a drive pin extending below the bottom surface thereof, comprising:

(a) a plurality of interchangeable modular conveyor sections which are affixed together to define a conveyor pathway, each of said sections comprising:

a plurality of standardized generally flat, U-shaped support stands which may be compactly stacked for shipment, each of said support stands being adapted for anchoring to a floor with adjustable elevation and provided with appropriately located first bolt holes adjacent the U-shaped opening in said support stands, and second bolt holes adjacent the outer portion of the upward extending legs of said U-shaped support stands;

a plurality of individual standardized trolley rails, each of said trolley rails having a channel section having at least one trolley rail mounting member permanently fastened thereto and provided with a plurality of spaced apart third bolt holes, said trolley rail mounting members of each of said trolley rails being bolted in said first bolt holes on one of the two opposite sides of the U-shaped opening of said support stands so that two channel sections are spaced apart facingly disposed parallel relationship and generally perpendicular to said support stands to define a conveyor path whereby a pallet drive pin may extend between and be guided by said channel sections;

(b) a flexible drive means, and a plurality of pairs of trolley wheels coupled within and guided by said facingly disposed channel sections, said trolley wheels being fastened to said flexible drive means at spaced apart positions so as to support said flexible drive means;

(c) pallet support means adjacent each side of said trolley rails for supporting a pallet on the conveyor assembly;

(d) a plurality of pallet engagement means coupled to said drive means for engaging said drive pins;

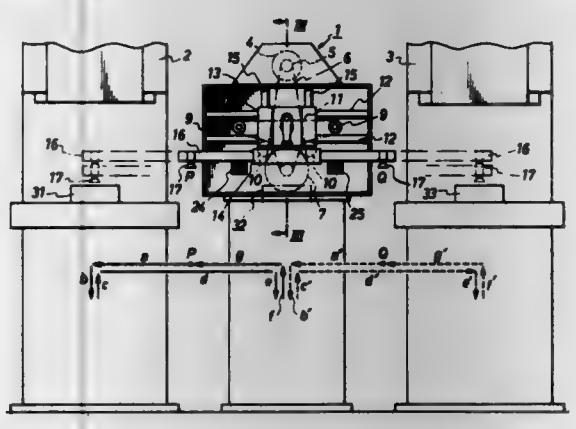
whereby said plurality of interchangeable modular conveyor sections may be readily assembled to define a desired conveyor pathway and may be readily disassembled, including disassembly of each of said individual trolley rails from said support stands for dense packing for transport or for redesigning the shape or location of the conveyor pathway, and a disassembled on site without requiring welding or other skilled labor for erection, alignment, leveling and adjustment.

4,509,638

CONVEYING SYSTEM FOR PRESS WORK MATERIALS

Yoshinori Kato, Otsuki; Makoto Matsui, and Zenichiro Nonaka, both of Kanagawa, all of Japan, assignors to Aida Engineering, Ltd., Kanagawa, Japan

Filed Mar. 29, 1983, Ser. No. 479,977
Claims priority, application Japan, Apr. 8, 1982, 57-58617
Int. Cl.[3] B65G *47/91*
U.S. Cl. 198—486 9 Claims



1. A device for conveying materials, comprising:

a main body;

a moving member mounted on said main body for horizontal reciprocal movement with respect thereto;

a crank shaft rotatably mounted to said moving member for horizontal movement therewith;

a feed bar;

a feed bar guide supporting said feed bar for sliding horizontal movement of said feed bar;

a connecting rod connecting said feed bar guide to said crank shaft;

holding members mounted to opposite ends of said feed bar for holding the materials to be conveyed;

a belt having a horizontally extending upper portion;

a pair of pulleys mounted on said main body so as to support said belt with said upper portion extending horizontally for reciprocal movement about said pulleys; and

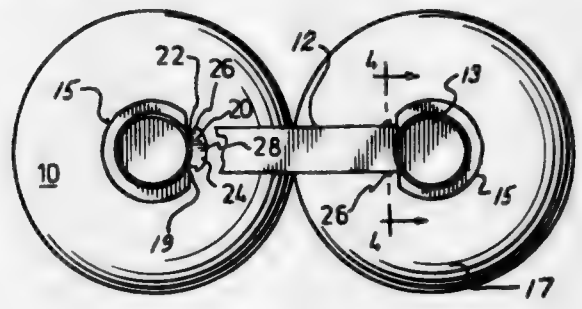
a revolving member mounted on said crank shaft and coupled with said upper portion of said belt so as to be moved horizontally between said pulleys and revolve at each pulley a pre-set angle about said each pulley in response to reciprocal movement of said belt, revolution of said revolving member rotating said crank shaft so as to vertically move said connecting rod, said feed bar guide and said feed bar, whereby said feed bar moves in vertical and horizontal directions when said belt is reciprocated.

4,509,639

MULTI-CONTAINER CARRIER PACKAGE AND A METHOD OF ASSEMBLY THEREFOR

Mortimer S. Thompson, Arlington, Mass., assignor to Tri-Tech Systems International Inc., West Springfield, Mass.

Filed Apr. 1, 1982, Ser. No. 364,243
Int. Cl.[3] B65D *71/00*
U.S. Cl. 206—159 22 Claims



1. A two container carrier package in which the carrier is attached to the containers, comprising:

two containers, each of which includes an upper portion of reduced breadth and an integral attachment site with engaging means at said upper portion which restricts movement of the attached carrier about the container, and wherein said containers are adjacent one another with said reduced upper portions forming a space therebetween with said engaging means at said upper portions extending inwardly toward one another, and

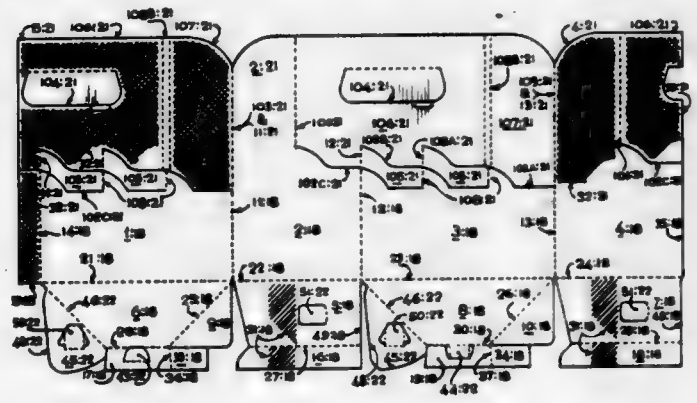
a hollow tubular carrier, which spans only the space between the reduced upper portions of adjacent containers and which substantially lies in the horizontal plane therebetween, and includes ends of resilient material having integral attachment sites, wherein said container engaging means are adapted to extend into said tube ends, and wherein said ends are adapted to be releasably deformed for interlocking said carrier attachment sites about said container engaging means so that said carrier can be gripped for lifting and carrying the assembled package without disengagement of said containers and, when desired, to release said interlocking carrier attachment sites and container engaging means so that said containers can be removed from said carrier.

4,509,640

CARTON WITH SEPARATERS, ITS BLANK AND APPARATUS FACILITATING ITS ERECTION FOR USE

Michael F. Joyce, 25 Rangewood Ave., Reading RG3 3NN, England

Filed May 28, 1981, Ser. No. 268,087
Claims priority, application United Kingdom, May 28, 1980, 8017393; Jun. 25, 1980, 8020811; Feb. 12, 1981, 8104349
Int. Cl.[3] R65D *75/00*
U.S. Cl. 206—175 24 Claims



1. A collapsible carrier for articles constructed from a blank

of sheet material including a bottom comprising bottom member panels depending from the bottom edges of each of four side walls by a horizontal line of fold, each side wall hinged by a line of vertical corner fold to the next side wall, and when the carrier is folded flat into the collapsed condition and assembled two of the four said vertical corner folds lie between the two other vertical corner folds which are folded fully each with members adjacent to it forming a similar opposing structure, the adjacent bottom member panels folded to lie against the inside of the adjacent side walls and a glue lap divided from one of the bottom member panels of each structure by a diagonal fold meeting with the vertical corner fold folded fully and the horizontal line of fold, the glue lap folded to lie against the adjacent bottom member panel and glued to it, at least one substantially horizontal cut above a said vertical corner fold and its adjacent side walls, the ends of the cut connecting with the lines of two vertical folds which have a further vertical fold therebetween and above the cut, one of said vertical folds providing another such vertical corner fold upon said further vertical fold forming an internal corner by reverse folding the carrier material, means including a second substantially horizontal cut located above at least one of said fully folded vertical corner folds with the carrier material above the second cut being folded to reverse inwardly for forming separation for separating the upper parts of the articles carried and for accommodating a carrying opening, when the carrier is erected; characterised in that the free edge of at least one bottom member panel of each one of said similar opposing structures carries a separater forming extension hinging with the bottom member at a line of weakness parallel with the said horizontal line of fold and the line of weakness dimensioned to communicate with a said line of weakness of the similar opposing structure when erected and the height of the separater extensions dimensioned to finish below the carrying opening of the inwardly reversing carrier material when the carrier is collapsed, said separaters each arranged and adapted for the transmission to it of opposition force through engagement between said separater and another said separater for their rightangular displacement relative to their said at least one bottom member panel when said at least one bottom member panel and the bottom member sharing a said diagonal fold together are displaced vertically by their respective side walls of their said similar opposing structure being displaced horizontally and said carrier material enabled to reverse inwardly is displaced inwardly contributing stiffness and positioned for co-operating with the separater forming extensions of the bottom which separate the lower parts of the same said articles carried in the erected collapsible carrier which is erected by moving each said fold for folding fully one toward the other and opened to provide the said displacements.

4,509,641

TWO PART MIXABLE COMPONENT STORAGE CONTAINER FOR WHIPPED CREAM IN FLAVORS AND CORRESPONDING COLORS, AND THE LIKE

Frank Scieri, 85 W. 18th St., Deer Park, N.Y. 11729, and Richard L. Miller, Dix Hills, N.Y., assignors to Frank Scieri, Deer Park, N.Y.

Filed Nov. 19, 1982, Ser. No. 443,048
Int. Cl.³ B65D *25/08, 83/14*
U.S. Cl. 206—219 **3 Claims**

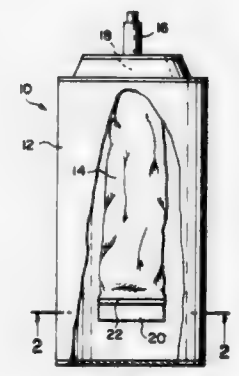
1. A container for storing a first and second mixable component prior to the opening and allowing for mixing subsequent to opening, in combination comprising:

(a) an inverted hollow frustum having a first concentric groove disposed on its base;

(b) a removable hollow cylinder having a first end removably attached to said first concentric groove and being coaxial with said inverted hollow frustum, so that said first mixable component is stored within the confines of said hollow cylinder and said second mixable component is stored within the "ring" shaped area defined by said inverted hollow frustum and said hollow cylinder;

(c) a removable lid for placement on said inverted hollow frustum, having a second concentric groove disposed on its interior so that said lid, when placed on said inverted hollow frustum, will be in alignment for a second end of said hollow cylinder to be removably attached to said second concentric groove; and

(d) a lanyard having a first fixed end to an underside of said lid and a second end fixed to an upper end of said hollow cylinder and being wound at least one turn around the



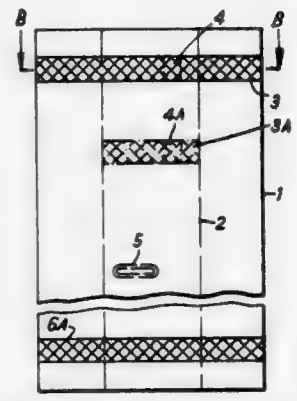
lower hollow cylinder intermediate said first and second ends so that, upon removal of said lid, said turns of lanyard will ride up said hollow cylinder, causing said second mixable component to separate from the perimeter of said hollow cylinder and ultimately after said turns slide off the top of said hollow cylinder removes said removable hollow cylinder causing said first and second mixable component to come into direct contact for mixing.

4,509,642

CONTAINERS OF FLEXIBLE MATERIAL

Frank J. Rowell, Fishponds Farm, Brook, Near Ashford, Kent, England

Division of Ser. No. 309,746, Oct. 8, 1981,. This application Apr. 24, 1984, Ser. No. 603,428
Claims priority, application United Kingdom, Oct. 14, 1980, 8033091; Jul. 31, 1981, 8123457
Int. Cl.³ B65D *25/0*
U.S. Cl. 206—219 **4 Claims**



4. A device comprising a container through which extends a tube of flexible material, an opening being provided in the container through which access can be gained to the interior of the tube and container characterized by:

(a) the container (1) being an outer (first) tube of flexible sheet material,

(b) an inner (second) tube (2) extending through the top and bottom of the outer tube,

(c) the inner and outer tubes being sealed together at the top and bottom by first and second seals (3,6A) extending across the tubes,

(d) a third seal (3A) being provided partly across the inner tube between the top and bottom seals,

(e) an opening (4) being provided through the top seal leading to the interior of the inner tube,

(f) a third tube (B2 FIG. 5) within the first tube and around the second tube, and

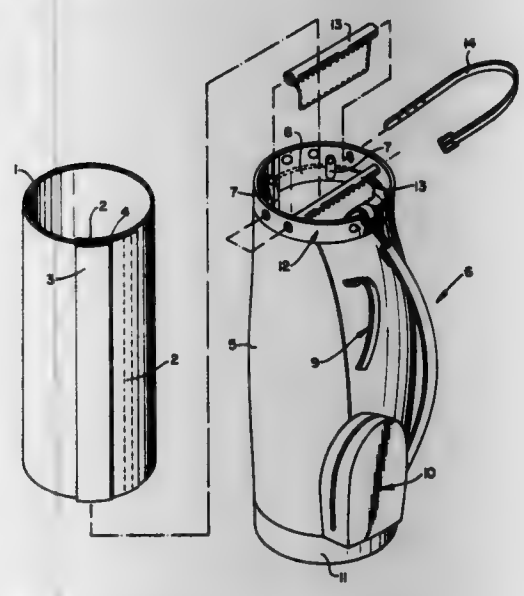
(g) a fourth seal (D) extending across the second tube and partly across the third tube between the ends of the second tube to form two parts of the third tube in communication with each other, an opening being provided through the fourth seal (D) within the region of the second tube, said first and second tubes containing substances to be mixed together.

4,509,643

GOLF BAG WITH A REINFORCING INSERT TUBE

Yong S. Rhee, 251-1 Soo Yoo 2nd-Dong, Dobbong-ku, Seoul, Rep. of Korea (132)

Filed Sep. 15, 1983, Ser. No. 532,523
Claims priority, application Rep. of Korea, Sep. 15, 1982, 7279
Int. Cl.³ A63B *55/00*
U.S. Cl. 206—315.8 **5 Claims**



1. A golf bag, comprising in combination:

a flexible cylinder having a bottom end and a top end;

a lower base portion fixedly connected to said bottom end of said flexible cylinder;

a rigid annular member fixedly connected to said top end of said flexible cylinder; said rigid annular member having an upper free end and a lower end;

said lower end of said rigid annular member having an inner flap and an outer portion having an inner layer; said outer portion being fixedly connected to said top end of said flexible cylinder such that said flexible cylinder is generally continuous with said rigid annular member along respective peripheries thereof so that said rigid annular member forms an opening into said flexible cylinder;

said inner flap of said rigid annular member being annular and having an upper fixed portion and a lower free portion; said upper fixed portion of said inner flap being fixedly connected to said inner layer of said outer portion of said rigid annular member at a location intermediate a lower end and an upper end of said inner layer, such that a receiving portion exists between said inner layer and said inner flap of said rigid annular member; said receiving portion being adapted to receive an edge of a curved sheet;

an assembleable insert cylinder including a resiliently bendable sheet; said resiliently bendable sheet having generally a rectangular perimeter and further having an elongated, resiliently bendable member fixedly connected thereto generally parallel to an edge of said resiliently bendable sheet at a location spaced a predetermined distance from said edge of said resiliently bendable sheet; said elongated, resiliently bendable member having an extension portion which extends generally parallel to said resiliently bendable sheet toward said edge of said resiliently bendable sheet; said extension portion and said edge being adapted to receive an opposing edge of said resiliently bendable sheet therebetween;

in assembled condition, with said opposing edge of said resiliently bendable sheet inserted between said extension portion and said edge to form a cylinder, said assembleable insert cylinder being insertable into said flexible cylinder through said rigid annular member, said assembleable insert cylinder having a length sufficient to contact both said lower base portion of said flexible cylinder and a portion of said inner flap when said flexible cylinder is fully extended about said assembleable insert cylinder; said inner flap being sufficiently flexible to be moved away from said inner layer of said outer portion so as to receive an uppermost edge of said assembleable insert cylinder;

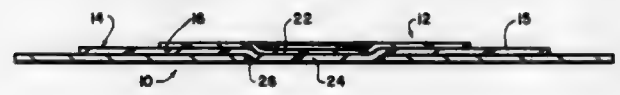
whereby said assembleable insert cylinder is retained within said flexible cylinder by said inner layer of said flexible cylinder.

4,509,644

WATCH CRYSTAL COVER AND PACKAGE ASSEMBLY

John M. Kulick, 50 E. Hill Rd., Canton, Conn. 06019

Filed Jun. 16, 1983, Ser. No. 504,791
Int. Cl.³ B65D *65/40*
U.S. Cl. 206—461 **8 Claims**



1. A watch crystal protective cover assembly, comprising:

a backing board;

a crystal cover member fabricated from a deformable sheet or film of clear synthetic resinous material, said cover member having formed therein a depressed portion dimensioned and configured to protectively overlie a watch crystal;

an insert piece interposed between said cover member and said backing board, said insert piece being dimensioned and configured to lie inwardly of first marginal portions of said cover member, and also to provide a tab portion extending outwardly of a second marginal portion thereof, said insert piece extending beneath said depressed portion of said cover member and having formed therein a similarly depressed portion conforming thereto, said depressed portion of said cover member being nested within said depressed portion of said insert piece, or vice versa;

and an adhesive surface layer bonding said cover member in substantially full surface contact to said backing board and said insert piece, said first marginal portions of said cover member being bonded by said adhesive layer to said backing board, and said tab portion of said insert piece providing means for lifting, and effecting the removal of, said cover member.

8. In a method for protecting a watch crystal, the steps comprising: providing a cover member by forming into a deformable sheet or film of clear synthetic resinous material and depressed portion dimensioned and configured to protectively overlie a watch crystal; providing an adhesive surface layer on said cover member, at least on the convex side of said depressed portion; applying said cover member to the watch crystal with said convex side in registered contact therewith; applying force to the portion of said sheet or film surrounding said depressed portion to displace it downwardly, thereby inverting said depressed portion to render said convex side concave; applying pressure to bring said film or sheet into close conformity and intimate contact with substantially the entire exposed surface of said watch crystal, to adhesively secure it thereto; and excising said inverted depressed portion from the remainder of said cover member to provide said protective cover on said crystal.

4,509,645

PORTABLE CONSTANT TEMPERATURE BOX

Masashi Hotta, Osaka, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

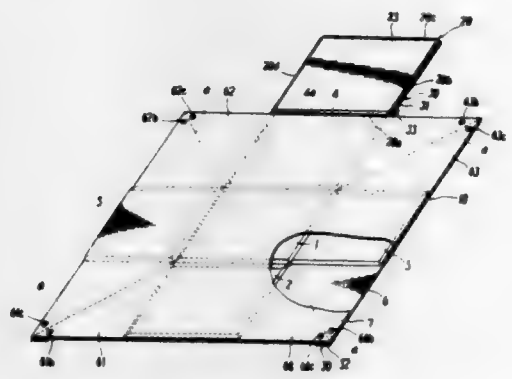
Filed Sep. 14, 1983, Ser. No. 532,169

Claims priority, application Japan, Sep. 22, 1982, 57-143712[U]; Nov. 30, 1982, 57-182134[U]; Dec. 4, 1982, 57-183819[U]

Int. Cl.³ A45C *11/20*

U.S. Cl. 206—545

1 Claim



1. A portable constant-temperature box comprising:

(a) a box body having a square bottom wall formed of adiabatic material and four side walls formed of adiabatic material and connected to four side edges of said bottom wall such that said walls can be unfolded and raised,

(b) a lid formed of adiabatic material and supported to at least one of said side walls such that said lid can open and close with respect to said box body;

(c) a square external sheet connecting outer edges of said side walls, respective corners of said external sheet positioned between side edges of adjacent side walls forming connecting portions for connecting adjacent side walls respectively, said connecting portions being foldable triangularly so that first connecting portion free ends thereof folded at said connecting portions between said at least one side wall to which said lid is supported and a pair of side walls adjacent to said at least one side wall overlap second connecting portion free ends which are folded at connecting portions between another side wall opposite to said at least one side wall and a pair of side walls adjacent said another side wall, said first free ends overlapping said second free ends at said pair of side walls which are adjacent said at least one side wall, said first free ends being disposed between said second free ends and said pair of side walls adjacent said at least one side wall such that said first free ends are inside said second free ends in overlapped relationship; and

(d) an elongated fastener comprising a slider and a pair of first and second band members each band member having engaging teeth, said slider being movable to engage and disengage said engaging teeth of said first and second bands with respect to each other to close and release said lid, said first band member being fixed along an entire length of three side edges of said lid, said three side edges each being other than a lid side edge through which said lid is supported to said at least one side wall, said second band member being fixed along an entire length of an upper edge of said another side wall opposite to said at least one side wall, said upper side edge being a highest edge of said another side wall when said another side wall is raised, said second band member also being fixed along an entire length of outer side edges of said connecting portions disposed between said another side wall and said pair of side walls adjacent said another side wall, said outer side edges being outwardly positioned when said connecting portions are folded.

4,509,646

INSPECTION, REJECTION AND SORTING MACHINE

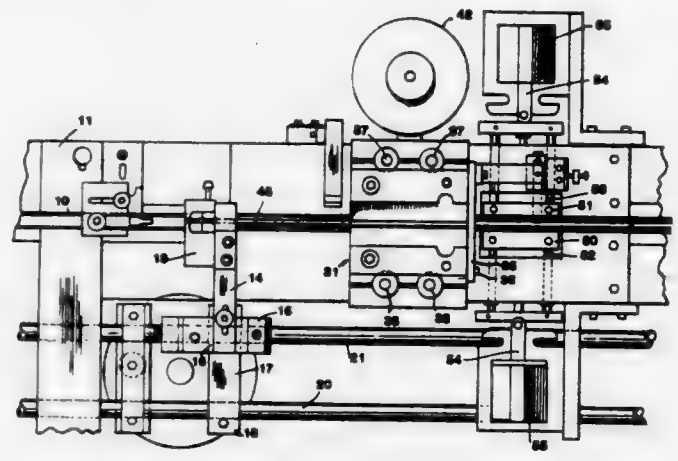
Robert Eitzinger, Deerfield, Ill., assignor to Mid-West Automation Inc., Wheeling, Ill.

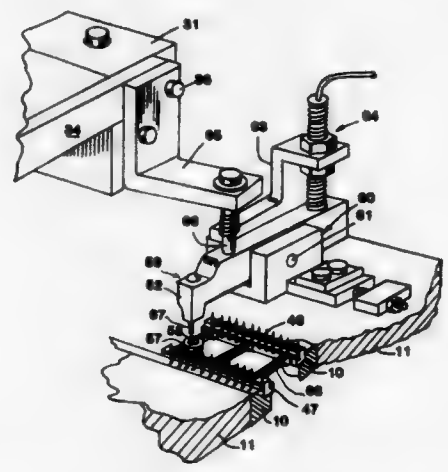
Filed Sep. 27, 1982, Ser. No. 424,110

Int. Cl.³ B07C *5/344*

U.S. Cl. 209—573

8 Claims





1. An apparatus for inspecting, orienting, and sorting finished work pieces possessing exposed electrical terminals having a designated leading edge, comprising:

(a) an elongated track extending horizontally through the apparatus,

(b) a feed means for moving randomly oriented work pieces into an inspection station of the apparatus,

(c) means for reciprocally moving said feed means relative to said track for feeding finished work pieces into the inspection station of the apparatus,

(d) sets of electrical probes positioned above and below said track and adapted to be moved through a vertical plane into electrical contact with each work piece fed therebetween by said feed means,

(e) means for reciprocally moving said probes toward and away of said track so as to contact both top and bottom terminals of the work piece positioned therebetween on said track,

(f) a work piece rejection means in alignment with said track and adapted to receive inspected work pieces from between said electrical probes,

(g) means for moving said rejection means out of the path of a work piece electrically rejected by said probes for ejecting the work piece from the apparatus,

(h) an orientation probe for the work piece to determine the position of said designated leading edge as it is moved over said track for determining the further path of movement of the work piece into a storage container,

(i) an actuating means connected to one of said electrical probes for movement therewith so as to actuate said orientation probe relative to a work piece as it is positioned on said track, and

(j) a switching track means in alignment with said track and

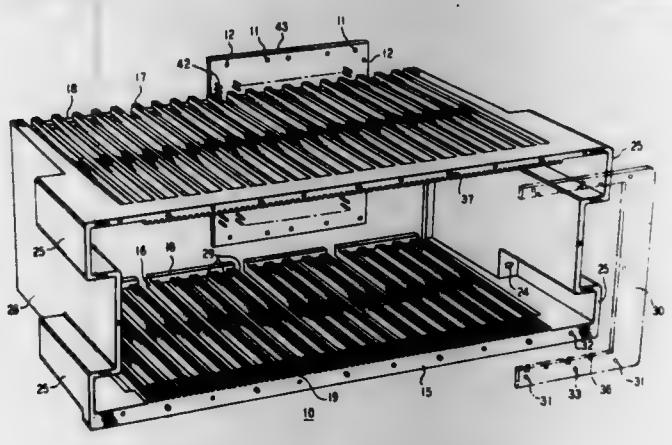
movable between separate storage containers and responsive to said orientation probe for directing all work pieces moving through the apparatus with said designated leading edge in a forward position into one of the storage containers.

4,509,647

UNITARY CONSTRUCTION CIRCUIT PACK CARRIER

George J. Shevchuk, Old Bridge, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Aug. 2, 1982, Ser. No. 404,452
Int. Cl.[3] A47G *19/08*
U.S. Cl. 211—41 16 Claims



1. A carrier molded as a unitary structure, said carrier comprising;

a front member forming an aperture, and

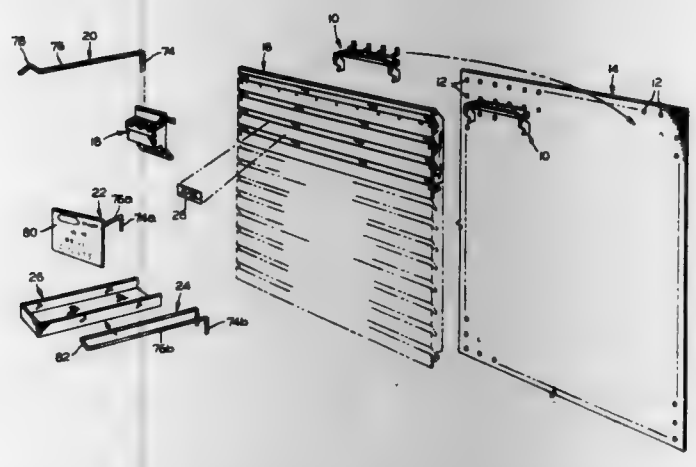
at least one pair of opposing board edge guides integral with said front member and adapted to receive the edges of circuit boards passing through said aperture, said opposing edge guides being cantilevered from said front member such that the distance between said opposing edge guides is substantially greater at said front member than at the free ends of said opposing edge guides.

4,509,648

MERCHANDISING DISPLAY SYSTEM AND COMPONENTS THEREFOR

James A. Govang, Clinton; William W. Mee, New Canaan, both of Conn., and Robert S. de Gruchy, Massapequa, N.Y., assignors to The Stanley Works, New Britain, Conn.

Filed Jul. 26, 1982, Ser. No. 401,970
Int. Cl.[3] A47F *5/08*
U.S. Cl. 211—70.6 21 Claims



1. A merchandise display assembly for use with a perforated member such as perforated panel board and the like comprising:

A. a plurality of panel mounting brackets each having

(i) a body portion providing an upwardly and outwardly inclined ledge and

(ii) a multiplicity of spaced finger portions extending upwardly from said body portion and adapted to engage in the apertures of the associated perforated board;

B. a panel member having

(i) a front face defined by a multiplicity of web portions lying in a common plane and

(ii) vertically spaced track portions extending horizontally therebetween, said track portions providing channels opening at said front face and inclined downwardly therefrom each of said track portions having a bottom wall and a top wall, said track portions being exposed on the rear face of said panel, said inclined ledges of said panel brackets seating the bottom walls of said track portions of said panel member for supporting said panel member on the associated perforated member;

C. a multiplicity of clip members disengageably seated in spaced relationship in said channels of said panel member, said clip members each having

(i) a body portion disposed adjacent a web portion of said panel member,

(ii) a plurality of laterally spaced upper legs inclined downwardly and inwardly from said body portion and extending into a first channel, and

(iii) a lower leg inclined downwardly and inwardly from said body portion and extending into a second channel spaced below said first channel, said legs being configured to seat securely within a vertically spaced pair of said channels, said body portion having a vertically disposed recess therein opening on the upper surface thereof; and

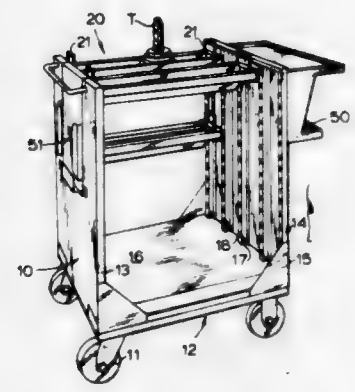
D. a multiplicity of display hooks seated in said clip members and each having at least one arm portion extending away from said panel and a depending leg portion on the inner end of said arm portion seated in one of the recesses in said body portions of said clip members.

4,509,649

CART WITH PLASTIC TOOLHOLDER

Robert J. Evans, Shorewood, Ill., assignor to Aurora Equipment Company, Aurora, Ill.

Filed Aug. 18, 1982, Ser. No. 408,141
Int. Cl.[3] A47F *7/00*
U.S. Cl. 211—70.6 17 Claims



1. In a portable cart mounted on wheels and having a frame with spaced upright walls mounted thereon, portable trays mounted between the spaced upright walls and means securing the trays in detachable assembly with the spaced upright walls, the improvement of a series of toolholders in mounted assembly on said portable trays, each of said toolholders having a central tubular section for receiving an elongated tool in mounted assembly therein, the toolholder having one of its sides provided with a recessed area, a wedge block mounted in said recessed area between the toolholder and the tray, the wedge block and the recessed area having inclined matching engaged surfaces slidable relative to one another, and a thumb screw mounted on said toolholder and extended through and engaged in threaded assembly with said wedge block such that rotation of said thumb screw causes relative movement between said inclined matching engaged surfaces to firmly

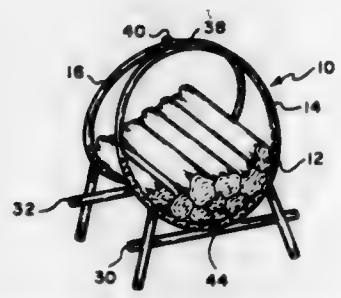
wedge the wedge block and toolholder and tray in snug fixed assembly together, and rotation of the thumb screw in an opposite direction causes relative movement between said inclined surfaces to release the toolholder from the tray.

4,509,650

COMBINED FIREWOOD RACK AND FUMIGATOR

Robert Wilgosz, 1000 Crestmont Ave., Mantua, N.J. 08051

Filed May 11, 1983, Ser. No. 493,623
Int. Cl.[3] A47F *5/00*
U.S. Cl. 211—60.1 20 Claims



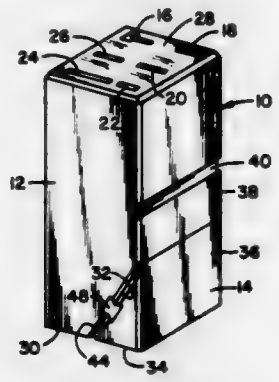
1. A combined firewood rack and fumigator comprising:
a firewood support frame including at least one tubular member having an upper surface onto which may be placed a plurality of pieces of firewood for supporting the same;
means associated with said frame for supporting said frame on the ground;
said tubular member having a plurality of non-obstructed holes in the tubular wall thereof providing communication between the interior of said tubular member and the exterior thereof;
said tubular member also including a portion thereof extending vertically upwardly;
a fill opening in said tubular member adjacent the top of said vertical portion into which may be poured a fumigant while firewood is supported on said upper surface, and
closure means for closing said fill opening.

4,509,651

VERSATILE KNIFE HOLDER

William A. Prindle, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,458
Int. Cl.[3] A47F *7/00*
U.S. Cl. 211—70.6 11 Claims



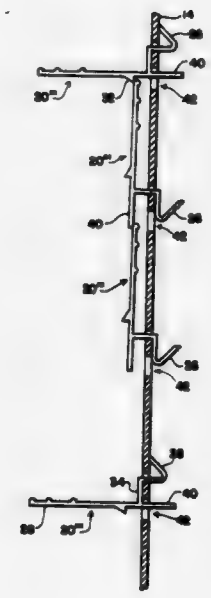
1. A cutlery holder for positionably retaining a plurality of cutlery items in either an upright orientation or in an inclined orientation, which comprises, a body portion having a plurality of slots formed therein for receiving blade portions of cutlery items, selectively positionable wedge means forming a complementary portion of said body portion, and means for removably retaining said wedge means in alternate positions on said body portion and for positioning said cutlery holder in either a stable upright orientation or an inclined orientation, as desired.

4,509,652

BAKER'S RACK

Neil E. Arney, 6474 Camelia Dr., San Jose, Calif. 95120

Filed Feb. 8, 1983, Ser. No. 464,955
Int. Cl.[3] A47F *3/14*
U.S. Cl. 211—126 5 Claims

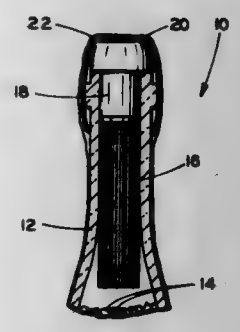


1. A rack comprising:
first and second pairs of vertical support means;
interconnection means for selectively spacing apart said first and second pairs of vertical support means one from the other and for selectively spacing apart each vertical support means within each pair of said vertical support means one from the other with said first pair of vertical supports being opposite and aligned with said second pair of vertical supports;
each of said vertical support means defining a multiplicity of slot means therewithin in the surface of said vertical support means facing the opposite vertical support means in the other pair thereof; and
a multiplicity of support members rotationally mountable within the slot means of, and extendable between, the pair of vertical support means of either of said first and second pair of vertical support means;
each of said support members includes:
a support flange portion;
capture means for retaining the support member within the slot means of the vertical support means with said flange in any position within its rotatable range;
interconnection means for joining said flange means and capture means of said support member and for abutting the outer surface of said vertical support means to, in conjunction with said capture means, support the flange portion in a horizontal attitude; and
interaction means for selectively maintaining the flange portion of the next lower support member mounted on the same pair of vertical support means in a substantially vertical position, said interaction means includes an outwardly projecting medial portion on the underside of the flange portion spaced apart from the intersection of said flange means with the interconnection means a distance at least equal to the thickness of the flange to selectively interact with the free end of the flange of the lower adjacent support member to maintain same in the vertical attitude while the flange portion of the upper adjacent support member remains in a horizontal attitude.

4,509,653
FOOD CONTAINER

Warren J. Corbett, 2719 120th Avenue NE., Bellevue, Wash. 98005

Filed Apr. 19, 1984, Ser. No. 602,135
Int. Cl.[3] B65D *47/32*
U.S. Cl. 215—231 3 Claims

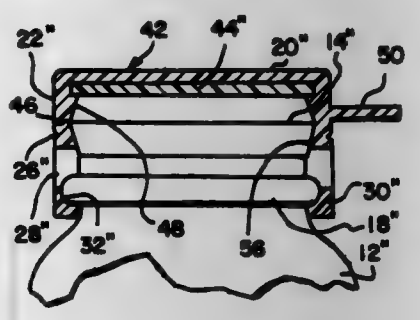


1. A pressurized container package, comprising:
(a) a bottle having a neck portion;
(b) a quantity of granular material disposed in and spaced from the top of said bottle;
(c) a stopper disposed in the neck portion of said bottle and space relationed to the top of said granular material; and
(d) a valve disposed in the neck portion of said bottle in the space defined between the bottom of the stopper and the upper level of the granular material whereby said valve prevents the expulsion of said granular material when the stopper is removed from the pressurized bottle.

4,509,654
TAMPERPROOF CLOSURE

Daniel J. Maguire, P.O. Box 113, Flourtown, Pa. 19031

Division of Ser. No. 478,209, Mar. 24, 1983,. This application Jul. 20, 1984, Ser. No. 632,954
Int. Cl.[3] B65D *41/48*
U.S. Cl. 215—253 7 Claims

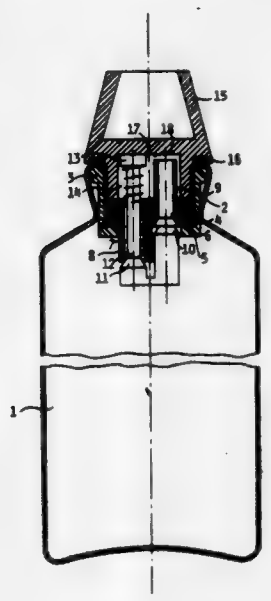


1. A tamperproof closure for securing to the nozzle of a container of the type having a nozzle provided with a medial snap ring and a lower, circular transfer bead comprising
a circular top and cylindrical sidewalls depending therefrom, the sidewalls having an interior surface;
a bottom extension extending from the sidewalls, the bottom extension having an exterior cylindrical surface and an interior surface,
the bottom extension being provided with an internal circular groove, the outer diameter of the groove being less than the outer diameter of the nozzle transfer bead,
the groove of the bottom extension being adapted for frictional engagement over the transfer bead of the nozzle;
a circular weakened seam defining the bottom extension from the said cylindrical sidewalls; and
a snap groove formed in the interior of the closure, the snap groove being formed partially in the interior surface of the sidewalls and in the interior surface of the bottom extension, the snap groove of the closure being adapted for engagement upon the snap ring of the nozzle,
whereby the strength of the frictional engagement between the closure circular groove and the nozzle transfer bead is greater than the strength of the closure at the said weakened seam so that when the closure is to be removed from the nozzle for container opening purposes, the closure will separate along the weakened seam and the bottom extension will remain affixed to the transfer bead of the nozzle.

4,509,655
BOTTLE OR SIMILAR CONTAINER, ESPECIALLY FOR READILY COMBUSTIBLE LIQUIDS, WITH A SCREW-ON CLOSURE

Peter A. Killmann, Essen, Fed. Rep. of Germany, assignor to Marsteller & Killman GmbH & Co. KG, Essen, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 545,962
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324097
Int. Cl.[3] B65D *47/14*
U.S. Cl. 215—309 6 Claims

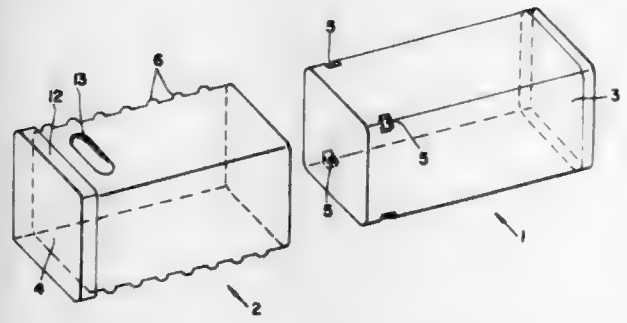


1. Bottle or similar container, particularly for readily combustible liquids, with a closure comprising: two openings that can be closed off, one a liquid outlet and the other an air inlet, said container having a neck;
(a) an insert in the neck of the container with said two openings therethrough, said openings being parallel, one opening being a liquid outlet for pouring out a liquid and the other opening being an air inlet;
(b) a tubular projection that is oriented outward for extending said liquid outlet;
(c) two separate plugs for closing each opening from inside the container, one plug being rigidly attached to the other;
(d) a bolt rigidly attached to the plug associated with said air inlet, said bolt passing through said air inlet with a predetermined amount of play; spring means on said bolt for forcing both plugs against said openings;
(e) said bolt having a free end projecting out of said air inlet for functioning as a button that can be activated to open valves comprised by said openings and plugs;
(f) a stopper screwed into the neck of the container and having an external annular shoulder resting on the neck;
(g) said stopper having a recess opening toward the inside of the container, said button and said tubular projection on said liquid outlet extend into said recess.

4,509,656
VARIABLE LENGTH PACKING CONTAINER ASSEMBLY

Peter Rösler, Wangen, Fed. Rep. of Germany, assignor to Rose-Plastic GmbH, Hergensweiler, Fed. Rep. of Germany

Filed Sep. 20, 1983, Ser. No. 534,084
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 8226875[U]
Int. Cl.³ B65D *11/02, 85/54*
U.S. Cl. 220—8 13 Claims



1. A packing container assembly particularly for storing elongated objects comprising:

an inner and an outer elongated hollow member each having a polygonal cross-sectional configuration with a closed end and an open end, said open end of said inner hollow member being inserted into said open end of said outer hollow member to place said hollow members in longitudinal sliding engagement relative to each other to form said container assembly;

first interlocking means formed on the outer surface of said inner hollow member;

second interlocking means formed onfhe inner surface of said outer hollow member, said second interlocking means comprising inwardly projecting webs formed in said outer hollow member;

said first and said second interlocking means cooperating to hold said hollow members in fixed engagement with each other;

said first interlocking means comprising a plurality of longitudinally spaced members with each of said members comprising protuberances extending outwardly from said inner hollow member and with said members being located diagonally opposite each other and lying in a common plane extending perpendicularly to the longitudinal direction of said hollow members;

the polygonal cross-sectional configuration of each of said hollow members being formed with interfitting corners, with the corners of said inner hollow member being formed with an outer radius of curvature which is greater than the inner radius of curvature of said corners of said outer hollow member;

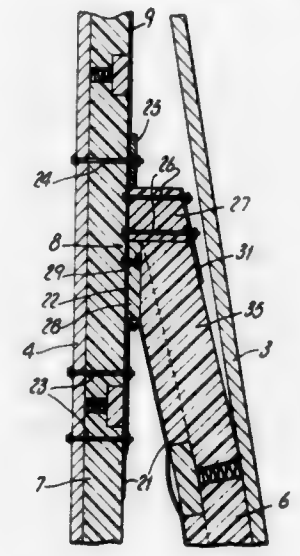
each of said inner and outer hollow members being formed as a solid, one-piece member of relatively stiff material.

4,509,657
INSULATION EMBODIMENT IN A WEDGE-SHAPED SPACE BETWEEN TWO STRUCTURAL MEMBERS

Svein Grondalen, Moss, Norway, assignor to Moss Rosenberg Verft A/S, Moss, Norway

Filed Sep. 23, 1982, Ser. No. 422,365
Claims priority, application Norway, Nov. 4, 1981, 813731
Int. Cl.³ B63B *25/08, 25/16;* B65D *8/06*
U.S. Cl. 220—436 8 Claims

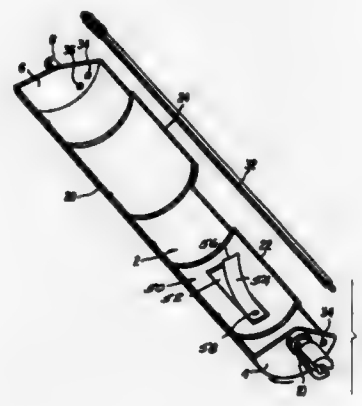
1. An insulated spherical tank system for containing liquefied gas comprising, a spherical tank for containing liquefied gas, an annular support ring for the tank joined to the periphery of the tank at a point of juncture for supporting the tank on a support structure, said support ring having an inner surface facing the tank, and said tank having an outer surface facing the inner surface of the ring, said tank and ring defining a generally wedge shaped space therebetween below said point of juncture thereof, a first insultation layer secured to said inner surface of said ring and a second insulation layer surrounding and adjacent to said outer surface of the tank, said first and second insulation layers extending into said wedge shaped space, and nonadhesive mechanical means for joining said insulation layers together in said wedge shaped space; said nonadhesive mechanical joining means including means secured to said ring and defining a generally wedge shaped receiving pocket opening outwardly away from said point of juncture between the ring and tank, said second insulation layer having an upper and received in said pocket, said means defining said generally wedged shaped pocket including means for mechanically clamping said upper end of the second insulation layer in said pocket.



4,509,658
ANTI-THEFT DEVICE FOR TANDEM COLUMN VENDOR

Kenneth W. Oden, Charles Town, W. Va., assignor to Dixie-Narco, Inc., Ranson, W. Va.

Filed Jan. 11, 1984, Ser. No. 569,910
Int. Cl.³ B59Q *59/00*
U.S. Cl. 221—115 17 Claims



1. In a vending machine:

means defining a compartment adapted to hold front and rear columns of cylindrical articles of predetermined diameter;

a dispensing cradle in the lower end portion of said compartment and comprising a hollow, open-sided, generally semi-cylindrical cradle extending from front to rear of said compartment and mounted for angular movement about its own longitudinal axis, said axis extending from front to rear of said compartment;

said cradle internally having wall means defining a floor provided with a front site constructed and arranged to receive through the open side of the cradle and to support a front cylindrical article from a front column of cylindri-

cal articles when such a column is held in said compartment, and with a rear site constructed and arranged to receive through the open side of the cradle and to support a rear cylindrical article from a rear column of cylindrical articles when such a column is held in said compartment the front site axially adjoining the rear site within the cradle;

said cradle wall means providing an axially extending leading edge which, axially coincident with said front site and said rear site is effectively at a common angular disposition;

said cradle wall means providing a stepped axially extending trailing edge which, axially coincident with said front site and said rear site is effectively at two substantially different angular dispositions, so that angular rotation of said cradle by a first increment about said axis is sufficient to permit a said cylindrical article if contained in said cradle at said front site to drop therefrom over said trailing edge, but insufficient to permit a said cylindrical article if contained in said cradle at said rear site to drop therefrom until said cradle has been angularly rotated by a second increment about said axis;

said cradle being characterized by being internally free of fixed transverse partitioning between said front site and said rear site, whereby said compartment may selectively contain, and said cradle may hold, a single column of alternate articles which are so much longer than said cylindrical articles that in order to be contained in said cradle, one of them would need to occupy at least parts of both said front site and said rear site;

an anti-theft device comprising:

a raiseable/lowerable barrier disposed within said cradle for preventing when raised a said cylindrical article if contained in said cradle at said rear site at a time when said front site is empty of any said cylindrical article, from being urged axially forwards sufficiently from said rear site towards said front site when said cradle has angularly rotated about said axis only by said first increment as to be able to fall over said trailing edge; and

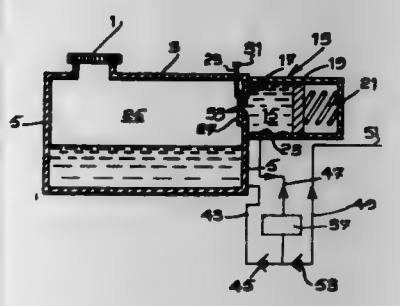
means associated with said barrier and said cradle for effectively raising said barrier when said front site is empty of a said cylindrical article and for permitting said barrier to be effectively lowered out of the way when said front site either contains a said cylindrical article or when at least part of said rear site and at least part of said front site in common contain a said alternate article.

4,509,659

PORTABLE LIQUID MEASURING AND DISPENSING DEVICE

Richard Cloutier, 23 Langevin St., Boisbriand, Quebec, Canada J7E 4H5, and Carlo Vissani, 9885 Larose St., Montreal, Quebec, Canada H2B 2Y7

Filed Sep. 8, 1982, Ser. No. 415,900
Int. Cl.³ B67D *5/30*
U.S. Cl. 222—41 **5 Claims**



1. A portable liquid measuring and dispensing device comprising:

a main reservoir for containing said liquid;

chamber means for metering predetermined quantities of said liquid, said chamber means being solid with said main reservoir and comprising a chamber having visual means capable of indicating the quantity of liquid therein, said chamber also having a liquid aperture, said chamber means further comprising a movable piston closing one end of said chamber and resilient means biassing said piston toward said liquid aperture,

a liquid moving assembly solid with said reservoir and chamber means, said assembly comprising:

a rotary pump;

a D.C. motor connected to said pump for operation thereof in either one of two opposed directions of rotation;

D.C. power source means connected to said motor and including a polarity inverter switch having operating button means actuatable to cause selective rotation of said pump in one of said directions;

a liquid dispenser, and

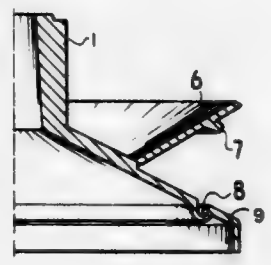
piping means operatively connecting said reservoir pump, chamber, reservoir and dispenser to allow movement of said liquid restritively from said reservoir through said pump to said chamber when the button means are actuated for rotation of the motor in one of said directions and to allow movement of said liquid restrictively from said chamber through said pump to said dispenser when the button means are actuated for rotation of the motor in the other of said directions.

4,509,660

TUBE END PIECE

Antero Makilaakso, Espoo, Finland, assignor to Printal Oy, Helsinki, Finland

Filed Mar. 14, 1983, Ser. No. 475,320
Claims priority, application Finland, Mar. 17, 1982, 820914
Int. Cl.³ B65D *35/10*
U.S. Cl. 222—107 **5 Claims**



1. A tube end piece adapted for convenient joining to a separately manufactured tube mantle, wherein on a conical portion of said end piece a bendable fixing and seaming member is provided flexibly attached thereto in readiness for bending down onto and clamping an end of the tube mantle, said fixing member consisting of an annular bendable extension extending outwardly from said conical portion and which is stable in both an initial upper position and also in a downward clamped position against said end of the tube mantle.

4,509,661

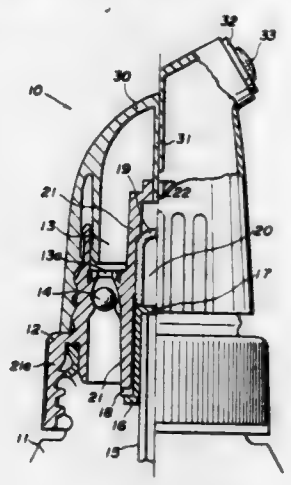
SQUEEZABLE CONTAINER FOR DISPENSING FOAMED SOL

Takashi Sugizaki, Kaizuka, and Yoshisuke Sakamoto, Osaka, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,868
Claims priority, application Japan, Nov. 24, 1981, 56-186854
Int. Cl.³ B05B *11/04*
U.S. Cl. 222—190 **9 Claims**

1. A squeezable container for dispensing foamed sol which comprises a container body and a nozzle assembly adapted to be connected together by means of threads, said nozzle assembly comprising an internally threaded outer cap member having a plug and a double walled inner cap member including a

threaded outer cylinder for threaded engagement with said container body and said outer cap member, respectively and an inner cylinder surrounded by said outer cylinder in peripherally spaced relationship thereto to define a check valve therebetween, said inner cylinder including a spouting opening to be closed and opened by said plug, an inverted U-shaped flanged pipe joint received in said inner cylinder of the inner cap member and having a communication opening at the top, the flange at the lower end of said pipe joint being positioned below and spaced from the lower end of said inner cylinder of the inner



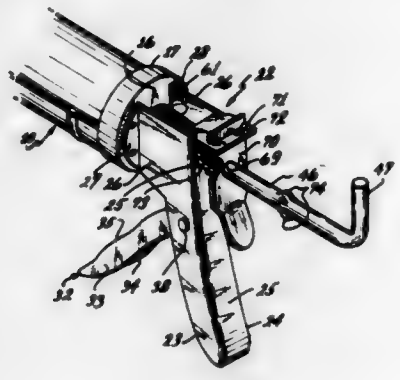
cap member, a flow-out pipe received in said pipe joint and opens at the top and bottom for communication with said communication opening and the interior of said container body, respectively, an inverted cup-shaped porous member positioned on the top of said pipe joint in said inner cylinder of the inner cap member, flow-out passage means extending from the space between said lower end of the inner cylinder and said bottom flange of the pipe joint to a point of the outer surface of said porous member, and an adapter adjustably fitted in the leading end of said outer cap member.

4,509,662

CAULKING GUN

Sherman L. Weiss, 17537 Devonshire St., Northridge, Calif. 91325

Filed Jan. 13, 1983, Ser. No. 457,661
Int. Cl.³ G01F *11/00*
U.S. Cl. 222—391 **1 Claim**



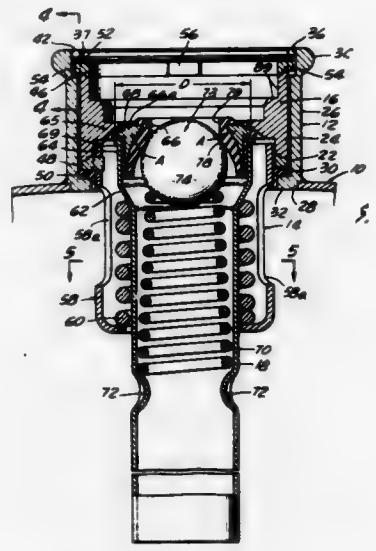
1. In a caulking gun of the type having a cradle in the form of a half cylinder having a rear end part and having a front end member attached to it, adapted to receive a cartridge of caulking material having a piston member in it and having an end dispensing nozzle, the front end member having an opening adapted to receive the nozzle, the gun having a handle member attached to the said rear end, an actuating stem extending through the handle member and through the rear end part and carrying a disk member engageable with the piston member of the cartridge, a trigger member formed of sheet metal and having side walls, a transverse member extending between said side walls, a dog engageable with the stem for reciprocating it positioned to be actuatable by the trigger, the said dog having a part extending between said side walls and engaging said transverse member, a coil spring on said stem normally urging the dog in a rearward direction, an abutment member carried by the said stem in a position to engage a part of the gun to limit forward movement of the stem to prevent the said disk member from driving the cartridge piston against the said front end member in a manner to break the front end member away from the cradle, a latch member carried by the said handle member, the latch member being in the form of a latch dog engageable with the said stem for holding the stem against reverse movement requiring that the latch dog be actuated to release the stem, the said abutment member being positioned on the stem whereby to engage the said latch dog so as to actuate the said latch dog to release the stem so as to release the pressure on the cartridge piston, and to prevent continued forward movement of the stem, the latch dog being mounted for angular movement, the stem extending through an aperture in the latch dog at a position requiring relatively small movement of the latch dog to effect release, the said handle having an extending bracket having a slot in it, the latch dog having a part extending through said slot for mounting it.

4,509,663

LOCKING MECHANISM AND VALVE ASSEMBLY

Merton R. Fallon, Thousand Oaks, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Filed Mar. 29, 1982, Ser. No. 361,975
Int. Cl.³ B65D *83/00*
U.S. Cl. 222—400.7 **11 Claims**



1. A valve sealing arrangement for sealing a container of fluid comprising:

(a) a valve assembly for providing access to said container;

(b) a valve assembly receiving member secured to said container;

(c) a deformable sealing member;

(d) said valve assembly having a body portion with a seal engaging surface and including a pair of diametrically opposed inwardly extending lugs;

(e) said sealing arrangement including a nonthreaded retaining member for insertion between said valve assembly and said receiving means for deforming and compressing said seal member between said seal engaging surface of said valve assembly and said receiving member for effecting a seal between said valve assembly and said receiving member;

(f) safety delay means for retaining said valve assembly within said receiving member when the container is under pressure should said retaining member become disengaged thereby allowing for gas to be released from the container prior to removal of said valve assembly, said safety delay means comprising:

(i) a pair of diametrically opposed keys carried by said body portion of said valve assembly, said keys being circumferentially spaced 90 degrees from said lugs; and

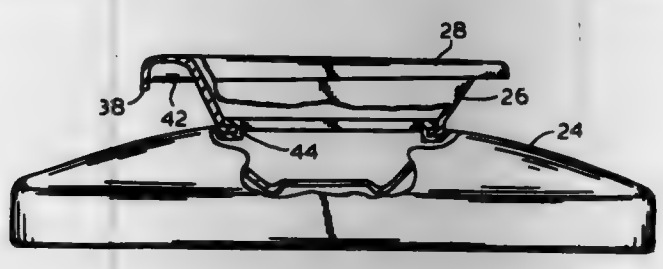
(ii) a pair of diametrically opposed offset keyways formed in said valve assembly receiving member, said keys being adapted to engage said keyways to prevent withdrawal of said valve assembly until rotated to a predetermined position after said retaining member has been withdrawn.

4,509,664

PORTABLE SPRAYER WITH SAFETY COVER

Walter E. Petersen, Hastings, Minn., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.

Filed Mar. 23, 1983, Ser. No. 478,027
Int. Cl.[3] B65D *83/14*
U.S. Cl. 222—402 4 Claims



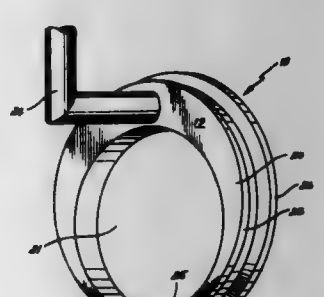
1. A sprayer for dispensing a liquid comprising:
a tank provided for holding said liquid and having a funnel-shaped neck with an upper flange and a circumferential wall extending downwardly from said upper flange, said wall having at least one bottom edge portion formed to gradually rise toward said flange to form a camed surface;
a pump for generating air pressure within said tank;
a closure adapted to hold said pump and to form an air tight seal with said tank while the tank is pressurized by engaging said cammed surface;
means mounted on said neck and adapted to stop said closure from separating from said tank when said closure is removed while the tank is pressurized; and
a nozzle for dischargine said liquid under pressure from said tank.

4,509,665

POURING DEVICE

Donald T. Goodall, 30 Beach St., Blakehurst, N.S.W. 2220, Australia

Continuation of Ser. No. 325,424, Nov. 23, 1981, filed as PCT AU 81/00033, Mar. 23, 1981, published WO 81/02720, Oct. 1, 1981, § 102(e) date abandoned.
This application Feb. 6, 1984, Ser. No. 577,017
Claims priority, application Australia, Mar. 21, 1980, PE2869; Nov. 13, 1980, PE6486
Int. Cl.[3] B65D *25/48, 51/16*
U.S. Cl. 222—478 5 Claims



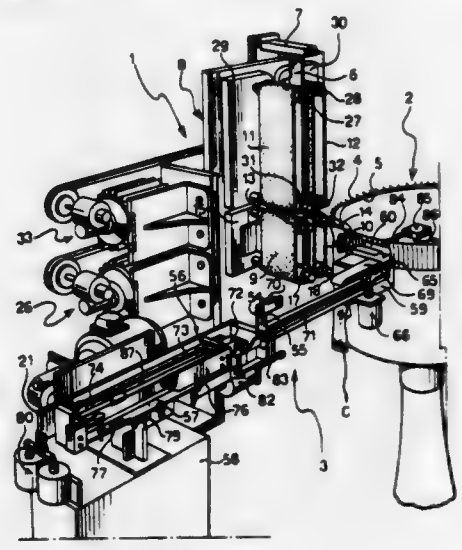
1. A pouring device adapted to be positioned in the outlet of a container, said device comprising:
(i) a body portion having a front face and a rear face arranged so that the rear face is directed towards the interior of the container when the device is in position,
(ii) an aperture through the body portion from the front face to the rear face,
(iii) an air flow tube extending from the rear face of the body portion and in communication with the aperture, the air flow tube having a free end disposed within the container so that air may flow through the tube from the exterior of the container to the interior thereof, said free end being located above the aperture when the container is in the pouring position,
(iv) a pair of opposed legs extending from the body portion which generally conform to the shape of the container outlet but which are spaced apart at their ends remote from the body portion, the area between the legs defining an outlet path through which liquid from the container may flow, the cross-sectional area and the width of the legs progressively increasing lengthwise from their free ends so that when deformed inwardly to fit within the container outlet the bending stresses are evenly distributed therealong to resist creep.

4,509,666

STOCKING TURNING DEVICE

Pietro Rosso, Turin, Italy, assignor to Rosso Industrie S.p.A., Orbassano, Italy

Filed Apr. 11, 1984, Ser. No. 598,942
Claims priority, application Italy, Apr. 11, 1983, 67394 A/83
Int. Cl.[3] D05B *21/00*
U.S. Cl. 223—39 22 Claims



1. A stocking turning device of the type having a fixed flat bar and members which are resiliently pressed against the opposite faces of the flat bar, said members being arranged to grasp the tubular textile portion of a stocking close to the previously-sewn toe when this toe is held against the free end of the flat bar, and being arranged to fit the tubular textile progressively on to the flat bar, simultaneously turning it inside out, wherein the improvement comprises at least one pair of endless drive belts identical in each pair disposed on opposite side of the said flat bar symmetrically relative thereto, said belts each passing around pulleys rotatable about axes the positions of which are at fixed levels relative to the flat bar and sandwiching the said bar between their passes closely fitting the above mentioned bar.

4,509,667

WRIST OR ARMBAND FOR HOLDING CAMERA

Kent J. Meldrum, 4820 E. Clearwater Pkwy., Paradise Valley, Ariz. 85253

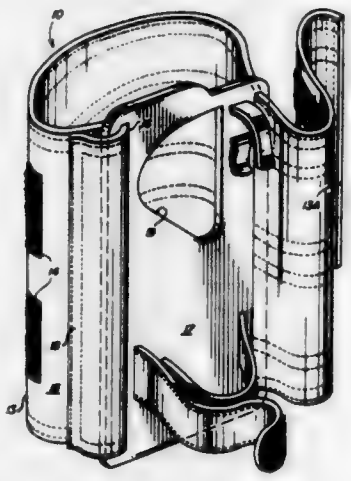
Filed Jan. 23, 1984, Ser. No. 572,817
Int. Cl.[3] A45C *11/00*
U.S. Cl. 224—250 6 Claims

1. An arm mountable camera support comprising:
a thin plate for supporting a camera,
an elongated strap for looping at least partially around the arm of a user,

said plate having a pair of slots extending longitudinally thereof one along each side thereof, and an aperture at one end thereof for receiving the camera film sequencing means therein,

one end of said strap extends through one of said slots and is folded back on and secured to itself,

a pair of camera holding straps one attached to each end of said plate for securing each end of a camera positioned on said plate, and



at least one strip of a Velcro connector mounted on a surface of said elongated strap to extend longitudinally thereof,

whereby when the other end of said elongated strap is extended through said other of said slots in said plate and folded back on itself to tightly surround an arm of a user, said Velcro connector on said elongated strap engages itself along its length to securely hold the support on the arm of the user.

4,509,668

PNEUMATICALLY OPERABLE FASTENER DRIVING TOOL

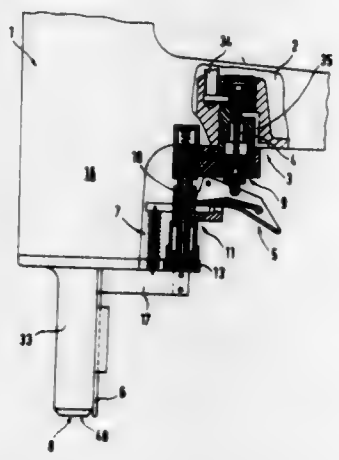
Artur Klaus, Frankfurt am Main, and Hans Wilhelm, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Signode Corporation, Glenview, Ill.

Filed Oct. 25, 1982, Ser. No. 436,485

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142237

Int. Cl.³ B25L *1/04*

U.S. Cl. 227—8 **9 Claims**



1. A pneumatic fastener driving tool including a housing for high-pressure air, a cylinder in said housing, a driving piston in said cylinder and having a driver secured to said driving piston, which driver is guided in an output barrel, the improvement comprising a mechanism for controlling the operation of said tool to drive a fastener, said mechanism including a first valve means for controlling the flow of high-pressure air relative to said driving piston, a control assembly for controlling the operation of said first valve means, and a safety mechanism for controlling the operation of said control assembly, which safety mechanism regulates the operation of said first valve means to effect driving of a fastener when the output barrel is in engagement with a workpiece, and means for normally retaining the safety mechanism in an inoperative position when the tool is not being operated.

4,509,669

SOUND-DAMPENED DRIVING APPARATUS FOR FASTENERS

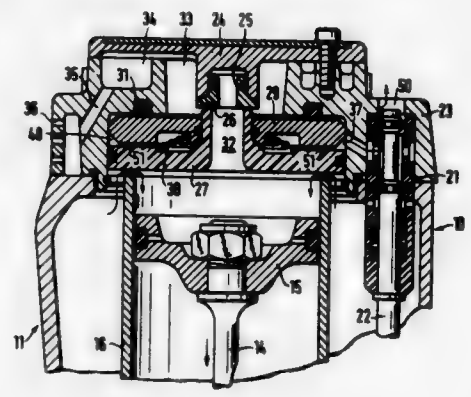
Wolfgang Elliesen, Ahrensburg, Fed. Rep. of Germany, assignor to Joh. Friedrich Behrens AG, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,970

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3119956

Int. Cl.³ B25C *1/04*

U.S. Cl. 227—130 **5 Claims**



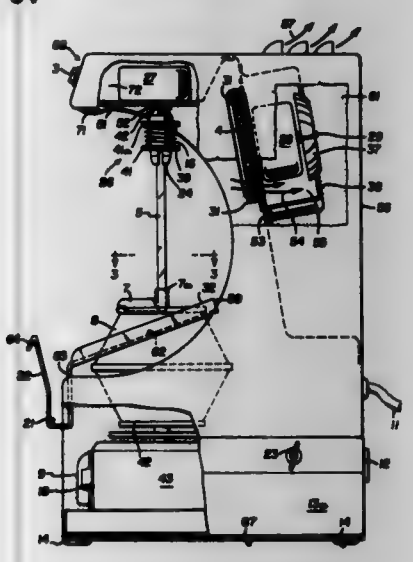
1. A sound and recall-dampened driving apparatus for fasteners, which apparatus includes a housing defining a main working piston cylinder and a cylindrical housing bore thereabove and a main valve means positioned in said cylindrical housing bore above the working piston cylinder and defining a chamber between the valve means and the end of the housing bore, which valve means includes a valve member movable from a lower position, wherein the valve member separates the working piston cylinder from a source of compressed air and connects the cylinder with the atmosphere, to an upper position, wherein the valve member connects the working piston cylinder to the source of compressed air while blocking the connection of the cylinder with the atmosphere, and in which the chamber defined above the main valve member and the end of said cylindrical housing bore is alternately connected to the atmosphere or compressed air, and sound and recoil-dampening means positioned in the chamber above the main valve member, said sound and recoil-dampening means including a delaying disc positioned in and supported for limited axial movement above the main valve member, said delaying disc having a central opening for receiving and guiding an axial flange of the valve member, wherein said delaying disc is formed of a relatively heavy metallic material whereas said valve member is formed of a light synthetic material, a further chamber between said delaying disc and said valve member being alternatively connected to the atmosphere and a source of compressed air, and a resiliently elastic dampening material positioned between said delaying disc and the end of said cylindrical housing bore to bias said delaying disc away from said end of said cylindrical housing bore when said further chamber between said delaying disc and said valve member is connected to compressed air to press said delaying disc against said resiliently elastic dampening material.

4,509,670

SOLDERING STATION WITH AUTOMATIC DROSS REMOVAL

Edward Cammarata, 517 SW. 73rd Ave., North Lauderdale, Fla. 33068

Filed Apr. 14, 1983, Ser. No. 484,973
Int. Cl.[3] B23K *1/00*
U.S. Cl. 228—34 15 Claims



1. A solder station for production dipping of small parts in molten solder metal, comprising in combination:

a solder pot with heating element containing solder metal;

automatic dross skimmer means;

dross collection tray means; and power for said solder pot and for said automatic dross skimmer means;

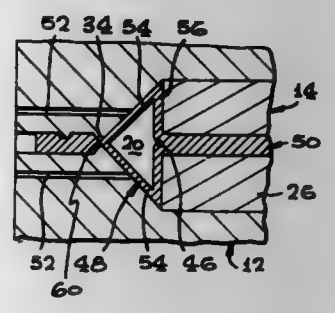
said dross collection tray means comprises a downward sloping dross tray main panel having a generally centrally located opening that admits the upper part of said solder pot, said dross tray main panel having an upper rear edge and two side edges, said edges having vertical flanges, and a lower front edge, said front edge extending generally vertically downward as a vertical extension, a forward facing generally vertical front panel, said vertical extension and said front panel mutually attached at their lower edges and forming a dross trough, said dross trough open at at least one of the sides.

4,509,671

METHOD OF PRODUCING DIFFUSION BONDED SUPERPLASTICALLY FORMED STRUCTURES

Edward D. Weisert, San Carlos, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 25, 1983, Ser. No. 517,153
Int. Cl.[3] B23K *31/02*
U.S. Cl. 228—157 29 Claims



1. A process for producing metallic structures of predetermined shape from at least two metal workpieces capable of diffusion bonding and superplastic forming which comprises:

inserting at least two of said metal workpieces in contact with each other in a tooling apparatus,

providing a cavity in said tooling apparatus on opposite sides of said workpieces along a preselected area thereof,

diffusion bonding said workpieces at certain contacting areas thereof while leaving the preselected area adjacent to said cavity unbonded, and

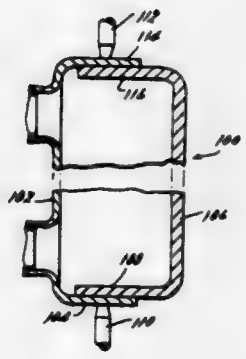
expanding said unbonded areas of said workpieces by superplastic forming to force the unbonded portions of said at least two workpieces into contact with the walls of said cavity and forming a hollow, peripheral cross-sectional shape on said diffusion bonded workpieces.

4,509,672

METHOD OF CONSTRUCTING HEADERS OF HEAT EXCHANGERS

Ivan D. Woodhull, Jr., Flat Rock, and Thomas H. Liedel, Maybee, both of Mich., assignors to Karmazin Products Corporation, Wyandotte, Mich.

Division of Ser. No. 250,541, Apr. 3, 1981, Pat. No. 4,381,033, which is a continuation of Ser. No. 884,368, Mar. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 789,411, Apr. 21, 1977, abandoned. This application Feb. 8, 1983, Ser. No. 464,985
Int. Cl.[3] B23P *15/26*; B23K *28/02*
U.S. Cl. 228—175 4 Claims



1. A method of constructing a header for a heat exchanger of the fin and tube type comprising:

assembling a base member to a fin and tube core having said base member a plurality of tapered tubular projections extending outwardly from one side, respective of said tubular projections being telescopically mated with respective ones of said tubes, said base member further having a first and second spaced flange portions extending outwardly in an opposite direction from said tubular projections;

assembling a cover member to said base member, said cover member having first and second spaced flange portions which are positioned in closely adjacent overlapping relationship with said first and second flange portions of said base member to thereby define an enclosed space simultaneously securing said first flange portions together and said second flange portions together at a plurality of spaced apart locations, from outside said closed space, said locations being spaced from the edges of said flange portions;

placing a quantity of brazing material within said header adjacent at least one of said overlapping first flange portions and said overlapping second flange portions; and

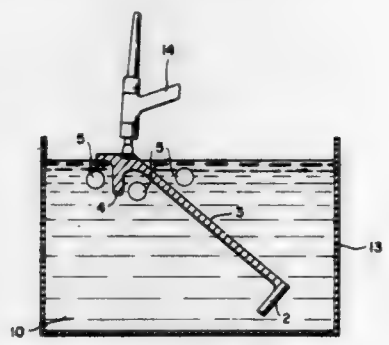
passing said header through a brazing furnace so as to cause said brazing material to flow between and seal said overlapping first flange portions and said overlapping second flange portions together.

4,509,673

PROCESS FOR CREATING A SUPPORT MEANS FOR A COMPONENT PART TO BE REWORKED AND/OR REPAIRED AND A WELDING DEVICE OBTAINED ACCORDING TO SAID PROCESS

Werner Schmidt, Niederroth, and Franz Jahn, Sigmertshausen, both of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 26, 1983, Ser. No. 461,015
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203868
Int. Cl.[3] B23K *37/04, 37/00*
U.S. Cl. 228—212 14 Claims



1. A process for creating a support means, for welding treatment of a component part to be reworked and/or repaired, the component part having areas to be supported during welding treatment, comprising the steps of

placing cooling means in a support area to be cooled during welding treatment of the component,

pouring a meltable alloy around the surfaces of the component that are to be supported, the meltable alloy in the cooled state supporting the component,

embedding the cooling means during the pouring process with the meltable alloy and allowng access to the cooling means from outside the poured alloy, and

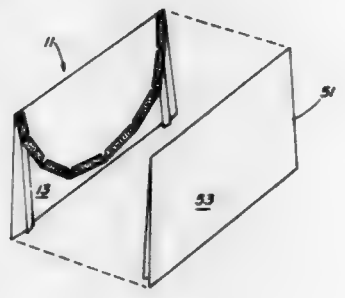
removing the meltable alloy after the welding treatment of the component part by heating said meltable alloy.

4,509,674

PITA BREAD SANDWICH HOLDER

Lois B. Levick, 32 Savoy Rd., Framingham, Mass. 01701

Filed Apr. 18, 1983, Ser. No. 486,259
Int. Cl.[3] B65D *5/32*
U.S. Cl. 229—23 R 10 Claims



1. A blank for use in the construction of a holder for supporting a pita bread sandwich in an upright position on a table top comprising a sheet of foldable material cut and scored to define:

a. a lower panel having an upper edge, a bottom edge and a pair of side edges,

b. a pair of side sections panels hingedly connected to the side edges of the lower panel, one on each side thereof,

c. a pair of glue flaps hingedly connected to the outer side edges of the side section panels, one on each side thereof,

d. an upper panel hingedly connected to the top edge of the lower panel, and

e. a plurality of glue tabs hingedly connected to the upper panel,

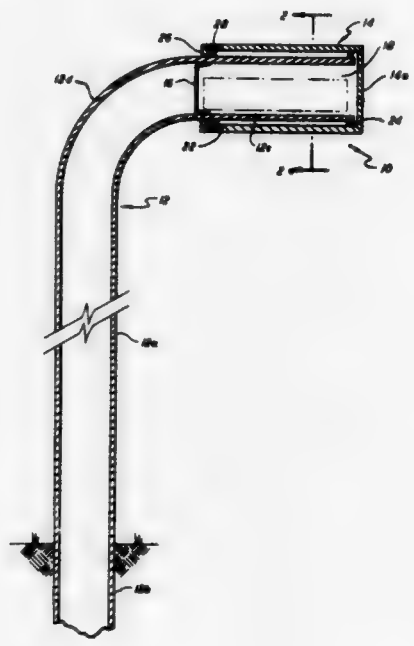
f. said upper panel being of semicircular configuration and having a straight bottom edge and an arcuate top edge.

4,509,675

MAIL BOX

Bradford E. Siff, and Elliott J. Siff, both of 15 Broadview Rd., Westport, Conn. 06880

Filed Feb. 8, 1980, Ser. No. 119,742
Int. Cl.[3] A47G *29/12*
U.S. Cl. 232—17 10 Claims



1. A roadside mail receptacle of the rural delivery type, comprising:

a hollow member of L-shaped configuration, at least the horizontal leg of the L-shape being of substantially circular cross-section;

a transverse partition in said horizontal leg remote from the free end thereof and defining therein a mail compartment;

means defining an opening in the horizontal leg for the insertion and removal of mail into and from said compartment; and

a cylindrical closure sleeve, closed at one end, coaxially rotatably disposed on said horizontal leg and having a sidewall opening adapted, in one rotational position of the sleeve, to register with the opening in said horizontal leg.

4,509,676

ROTARY POST OFFICE BOX AND EQUIPMENT ENCLOSURE

George F. Stacy, Traverse City, Mich., assignor to HSS Industries, Inc., Traverse City, Mich.

Filed Dec. 20, 1983, Ser. No. 563,674
Int. Cl.[3] B65D *91/00*
U.S. Cl. 232—43.4 9 Claims

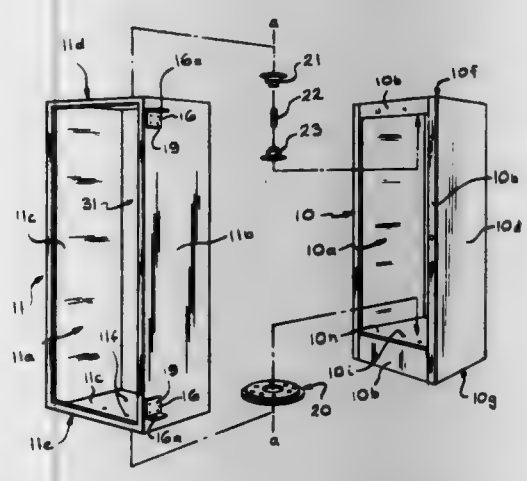
1. An enclosure for a plurality of boxes which comprises:

(a) an enclosed housing (10) having a single first vertically oriented first opening (10*a*) on one side (10*b*);

(b) a holder unit (11) having a vertically oriented second opening (11*a*) mounted within the housing so as to be rotatable on a vertical axis (a—a) in the housing to align the second opening on a first side of the holder unit adjacent the first opening in the housing, wherein the boxes are (12) mounted in the holder unit and are accessible by a user in a first position when the first and second openings are aligned, and wherein the holder unit is rotated in the housing to provide access to a back side of the boxes in a second position;

(c) locking means (13, 14, 15, 16, 17, 18, 19) acting between

the housing and the holder unit which when locked prevents the rotation of the holder unit in the housing so that the second opening can be aligned and locked in position adjacent the first opening in the housing and so that when the locking means is unlocked, the second opening can be



rotated into the housing in order to provide the access to the back side of the holder unit; and

(d) a covering on the holder unit over the back side of the holder unit with a lock which can be opened to provide access to the boxes in the second position through the first opening of the enclosed housing.

4,509,677

MIXING VALVE

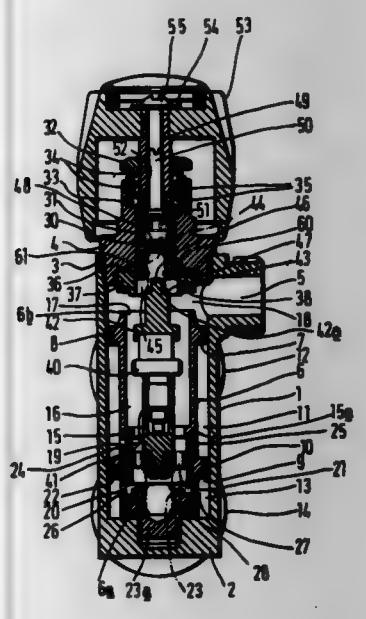
Brian Bendall, Nr. Newport, and Stephen W. Flannery, Wolverhampton, both of England, assignors to Meynell Valves Limited, Wolverhampton, England

Filed Sep. 24, 1982, Ser. No. 422,948

Claims priority, application United Kingdom, May 26, 1982, 8215409

Int. Cl.³ G05D *23/13*

U.S. Cl. 236—122 **4 Claims**



1. A valve for controlling the mixing of hot and cold water comprising:

a hollow body having two ends and being closed at one end;

a sleeve having top and bottom ends and located concentrically of said hollow body, one end making fluid tight engagement with the said closed end of said body;

a first annular flange member spaced from said closed end of said body and extending between said sleeve and the walls of said body to define a first chamber between said flange and said closed end of said body;

a second annular flange member adjacent the top end of said sleeve and extending between said sleeve and said walls to define a second chamber therebetween;

a hot water inlet communicating with said first chamber;

a cold water inlet communicating with said second chamber;

a third annular flange member extending inwardly of said sleeve to define a mixing chamber in the portion of said sleeve remote from said closed end of said body,

a face of said flange facing said closed end forming a first valve seat;

said first chamber communicating with the inside of said sleeve via radially directed hot water passageways formed through said sleeve adjacent the closed end of said body,

said second chamber communicating with the insides of said sleeve via radially directed cold water passageways formed through said sleeve, and adjacent said third annular flange member;

a piston member slidably located within said sleeve for movement between,

a first position where it seats against said first valve seat and closes said cold water passageways and permits water to flow through said hot water passageways and a second position where it seats against a second valve seat located at said closed end of said body and closes said hot water passageways and permits water to flow through said cold water passageways, said piston including axially directed passageways to permit hot water to flow therethrough and into said mixing chamber, when said piston is in said first position;

spring means located between said closed end of said body and the piston urging said piston into said first position;

a tap head closing the other end of said body and including a mixed fluid outlet communicating with said mixing chamber through a shut-off valve member capable of axial movement within said body between an open position wherein water is permitted to flow from said mixing chamber through said mixed outlet and a closed position wherein said member seats on the outer end of said sleeve to prevent flow of water from said mixing chamber;

an externally threaded hollow spindle located in a correspondingly screw-threaded axial passageway extending through said tap head and having one end fixedly attached to said shut-off valve member;

a flow control member non-rotatably attached to the other end of said spindle;

a temperature responsive device located in said mixing chamber between one element abutting said piston, and another element extending into said hollow spindle;

a second compression spring member being located within said hollow spindle between the top of said other element and an axially adjustable temperature control member screw-threadedly located within said hollow spindle, said second spring having a greater compression strength than said first spring,

whereby expansion of the temperature responsive device in response to an increase in water temperature in said mixing chamber, initially urges said other element and said second spring upwardly into said hollow spindle until said second spring abutts the temperature control member, and thereafter urges said first mentioned element against the said piston to move said piston against said first compression spring to seat against said hot water seat and close said hot water passageways, further expansion of the temperature responsive device then compressing said second spring;

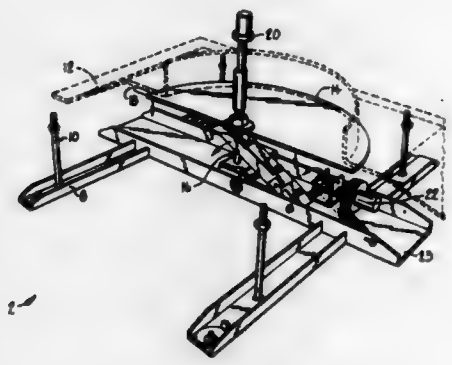
wherein the movement of the piston between its first and second positions is in the range of about 0.4–0.6 mm.

4,509,678

THERMALLY-POWERED CONTROL MECHANISM

Robert W. Noll, 800 Wikiup Rd., Santa Rosa, Calif. 95401

Filed Feb. 1, 1984, Ser. No. 576,067
Int. Cl.[3] F24F *7/00*
U.S. Cl. 236—49 3 Claims



1. A thermally powered control mechanism for an air diffuser for discharging supply air into a room comprising:

output means for varying the size of the air diffuser discharge opening;

means for sensing the temperature of the room air;

means for sensing the temperature of the supply air;

linkage operatively connecting said room air temperature sensing means and said supply air temperature sensing means to said output means so that when the supply air temperature is cool, said room air temperature sensing means operates to decrease the size of said discharge opening when the room temperature cools, and to increase the size of said discharge opening when the room temperature warms; and

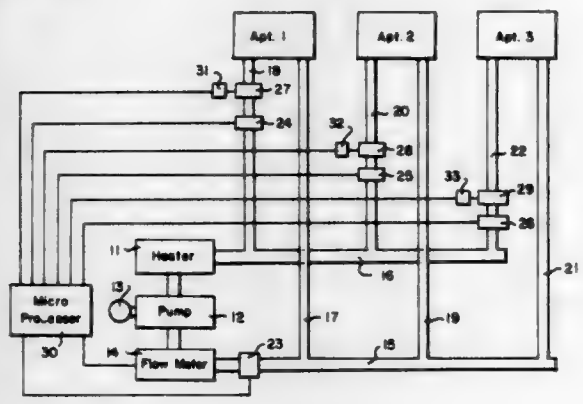
when the supply air temperature is warm, said supply air temperature sensing means operates to disengage said room air temperature sensing means and to increase the size of said discharge opening.

4,509,679

ENERGY USE MONITORING SYSTEM

Richard L. Longini, 6731 Forest Glen Rd., Pittsburgh, Pa. 15217

Filed May 16, 1983, Ser. No. 494,715
Int. Cl.[3] G05D *23/00*
U.S. Cl. 236—94 8 Claims



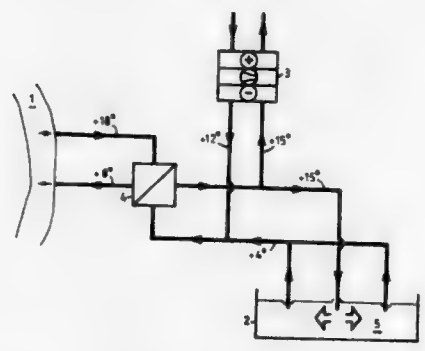
1. In a central heating system for a multiple unit building including a central heater, heating fluid delivery and return lines between the heater and each unit, a control valve for each unit in those lines and a motor driven pump connected to circulate fluid from the heater in those lines, the improvement comprising single digital flow measuring means connected to measure the aggregate flow of heating fluid in those lines to at least several of those units, digital temperature measuring means connected to measure the temperature of the heating fluid leaving the heater, separate digital temperature measuring means connected to measure the fluid temperature in each measured unit heating fluid return line, means for signalling the open or closed state of each measured unit control valve, and a digital microprocessor connected with the single digital flow measuring means, each measured unit digital temperature measuring means and each measured unit valve signalling means, arranged to measure the change in heating fluid flow when a control valve is opened or closed, the temperature differences at short regular time intervals between the heating fluid leaving the heater and the fluid in the heating fluid return line measured unit when its control valve is opened, and to multiply said changes in flow in each measured unit by said temperature differences for that unit.

4,509,680

METHOD FOR COMBINED UTILIZATION OF HEAT-CONVEYING MEDIA SUCH AS GROUND WATER OR SURFACE WATER OR THE LIKE AS A HEAT SOURCE

Leif Lemmeke, Bondevägen 9, 237 00 Bjärred, Sweden

PCT No. PCT/SE81/00371, § 371 Date Aug. 17, 1982, § 102(e) Date Aug. 17, 1982, PCT Pub. No. WO82/02085, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 14, 1981, Ser. No. 413,367
Claims priority, application Sweden, Dec. 18, 1980, 8008906
Int. Cl.[3] G05D *23/00*
U.S. Cl. 237—2 B 1 Claim



1. A method of operating a heating system including a ground water reservoir, a heat store in said ground water reservoir, a heat exchanger outside said ground water reservoir but operatively connected thereto, and heat pump means connected to said heat store, comprising the steps of:

in summer circulating water from a surface water source through said heat exchanger to thereby transfer heat from said removed water to said ground water reservoir to charge said heat store; and during the remainder of the year discharging said heat store by circulating water from the thus heated ground water reservoir through said heat pump means.

4,509,681

CONTROL UNIT FOR MAKE-UP AND COMBUSTION AIR CIRCULATION

Jimmy A. Kogut, 14660 Cavell, Livonia, Mich. 48154

Filed Oct. 11, 1983, Ser. No. 540,641
Int. Cl.[3] F24D *5/00*
U.S. Cl. 237—53 5 Claims

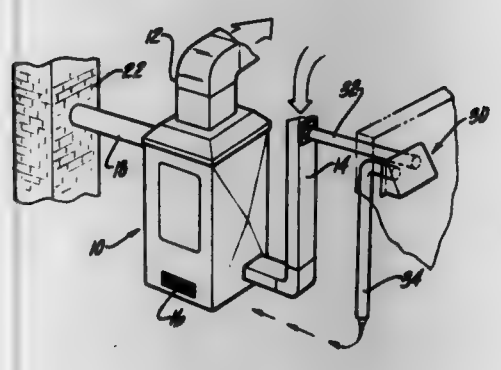
1. In an air circulating system for a building, said system being of the type including a furnace having a combustion chamber and a heat exchanger, a first duct for conducting air to said heat exchanger, a second duct for conducting air from said heat exchanger, an intermittently operable blower for drawing air through said first duct and forcing it through said heat exchanger, the passage of air through said first duct causing a reduced pressure in said first duct, and make-up air supply means communicating between the outside of said building and said first duct, the improvement comprising:

a control unit adapted to be mounted in an outside wall of said building and including a baffle and a weather protective hood,

said baffle including a baffle plate having first and second

circular openings for said make-up air and combustion air inlets, respectively, said openings being bound by first and second axially extending annular flanges and including a screen extending across each of said inlets,

said baffle also including a damper disposed within said make-up air inlet and mounted for pivotal motion inwardly of said baffle,



said make-up air supply means comprising a conduit extending from said first flange to said first duct at a location upstream of said blower whereby reduced pressure in said first duct causes said damper to open inwardly and admit outside air to said first duct,

and combustion air supply means comprising a conduit extending, independently of the conduit of said make-up air supply means, from said second flange to a location in communication with said combustion chamber.

4,509,682

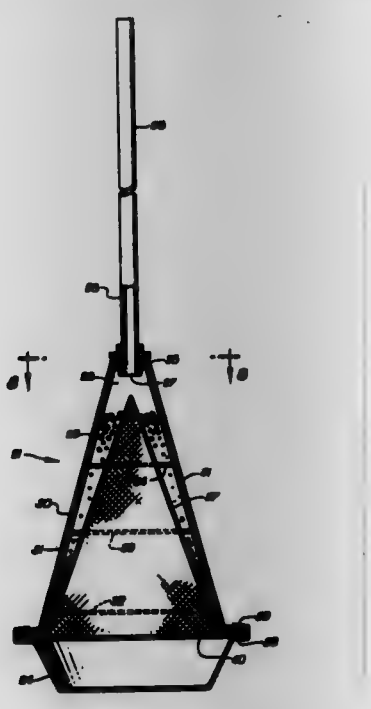
METHOD AND APPARATUS FOR FUMIGATING GRAIN AND OTHER COMMODITIES IN BULK STORAGE COMPARTMENTS

Gerald R. Heiman, Pasadena, and Frank Fleck, Arcadia, both of Calif., assignors to Pestcon Systems, Inc., Alhambra, Calif.

Filed Oct. 13, 1982, Ser. No. 433,952

Int. Cl.³ A61L *9/04;* B05B *1/28*

U.S. Cl. 239—60 **12 Claims**



1. A fumigating receptacle for use with solid fumigant that releases fumigating gas upon exposure to atmosphere and produces a powder residue, comprising:

an outside wall composed of material that is pervious to atmosphere and the fumigating gas, and having an inlet opening generally at its upper end for admitting solid fumigant into the receptacle;

an inside wall spaced below the outside wall and cooperating therewith to define a chamber for holding the solid fumigant in a thin layer, said inside wall being pervious to the residue to pass the latter out of the chamber;

and a bottom tray on said receptacle below said inside wall in a generally upwardly open position for collecting fumigant residue passed from the chamber and maintaining it in the receptacle.

4,509,683

APPARATUS FOR DISPERSING ATOMIZED LIQUID

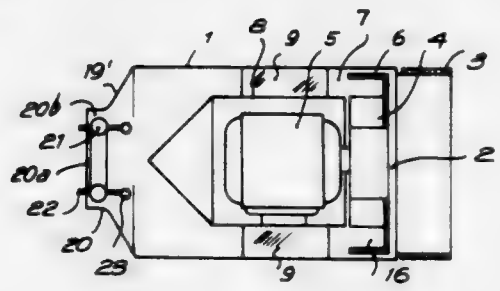
Josep Ramisa Navarro, Rbla. Sant Just, 13, Sant Just Desvern, Barcelona, Spain

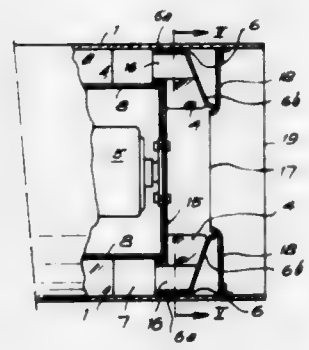
Filed Nov. 29, 1982, Ser. No. 445,065

Claims priority, application Spain, Nov. 30, 1981, 507.555; Sep. 30, 1982, 516.091

Int. Cl.³ B05B *9/06*

U.S. Cl. 239—77 **6 Claims**





1. Apparatus for dispersing atomized liquid, comprising:

a casing having an open rearward end constituting air inlet means;

a centrifugal rotor mounted in said casing for rotation about an axis of rotation, said rotor including rotor blades defining an outer blade diameter, each blade having a width in the axial direction;

motor means situated in said casing for rotating said rotor;

an annular deflector integrally connected to said centrifugal rotor to rotate therewith, said deflector being concentric with said rotor and having a diameter greater than said outer blade diameter and a width substantially equal to the width of said blades, to define an open annular concentric space situated radially outwardly of the outer periphery of said rotor blades;

means defining an annular passage within said casing downstream of and communicating with said open concentric space, said annular passage being substantially coextensive with said annular concentric space;

nozzle means provided at a forward end of said casing and communicating with said annular passage; and

means for injecting liquid into the region defined by said nozzle means;

whereby rotation of said rotor jointly with said integral deflector, causes air to be drawn into said casing through said air inlet means and directed substantially radially into said open concentric space, where the flow of air is redirected by said integral deflector to a substantially axial direction, whereupon the airflow is conducted through said annular passage.

4,509,684

COLOR CHANGE APPARATUS

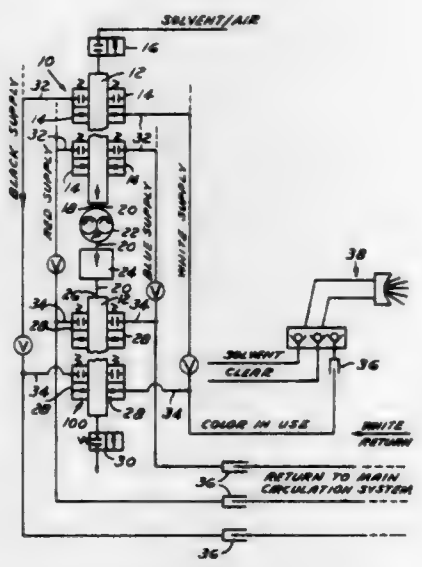
Duane C. Schowiak, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01375, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO84/01312, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 30, 1982, Ser. No. 444,401

Int. Cl.³ B05B *15/02*

U.S. Cl. 239—112 **6 Claims**



1. An apparatus for effecting rapid color change of the color component of a multiple component sprayable fluid to be applied using a manual spraygun, characterized in that said apparatus comprises:

(A) Primary color changer means comprising

(i) a primary manifold having a primary through passage,

(ii) a plurality of primary color inlet means, one for each of a selected number of colors of said color component, said primary color inlet means being in communication with said primary through passage and being adapted to be selectively opened when the selected color component is in use and closed when it is not in use,

(iii) solvent/air inlet means in communication with said primary through passage and adapted to be opened during flushing of said apparatus and closed during spraying, and

(iv) primary outlet means in communication with said primary through passage and adapted to allow fluid from said primary through passage to flow out of said primary color changer means and into a primary outlet line;

(B) A solvent/air inlet line attached to said solvent/air inlet means and adapted to carry solvent and/or air for flushing said apparatus prior to color change;

(C) Primary color component inlet lines, one for each of said selected colors, attached to each of said corresponding primary color inlet means of said primary color changer means and filled with the selected color component;

(D) A primary outlet line adapted to carry fluid from said primary color changer means to a secondary color changer means, said primary outlet line being attached to said primary outlet means of said primary color changer means and a second inlet means of said secondary color changer means;

(E) Flushable metering means disposed in said primary outlet line between said primary color changer means and said secondary color changer means;

(F) Said secondary color changer means comprising

(i) a secondary manifold having a secondary through passage,

(ii) secondary inlet means to which said primary outlet line for conveying fluid from said primary color changer means to said secondary color changer means is attached, said secondary inlet means being in communication with said secondary through passage,

(iii) a plurality of secondary color outlet means, one for each of said selected number of colors of said color component, said secondary outlet means being in communication with said secondary through passage and being adapted to be closed during flushing of said apparatus and selectively opened when the selected color component is in use,

(iv) outlet flush means in communication with said secondary through passage and being adapted to be opened during flushing of the apparatus and closed during spraying; and

(G) Secondary color component outlet lines, one for each of said selected colors, attached to each of said secondary color outlet means of said secondary color changer, each being filled with the selected color component and each being adapted to be connected to a spraygun.

4,509,685

IRRIGATION APPARATUS

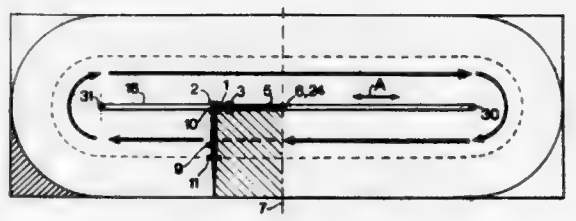
Vernon B. W. Harvey, Tanglewood, Stour Close, Little Canford, Wimborne, Dorset, England BH21 7LU

Filed Aug. 5, 1982, Ser. No. 405,535

Claims priority, application United Kingdom, Aug. 7, 1981, 8124204

Int. Cl.³ B05B *3/18*

U.S. Cl. 239—186 **6 Claims**



1. Irrigation apparatus comprising a vehicle movable between at least two predetermined fixed positions spaced apart in an area of ground to be irrigated; a hose drum mounted for rotation on the vehicle and having a hose wound thereon, the hose having an inlet end to be fixed with respect to a fixed source of water and an outlet end connected to a water-discharging device movable with the vehicle when the vehicle is moving between said spaced fixed positions; means whereby said hose is unwound from said drum when the vehicle is moving away from said fixed inlet end of said hose; means to rewind said hose on said drum when the vehicle is moving towards said fixed inlet end of said hose; means for propelling the vehicle between said fixed positions; guiding means for maintaining the vehicle in a substantially straight path during its travel between said fixed positions, said guiding means including a taut cable extending between said fixed positions and defining said straight path and steering means mounted on the vehicle and responsive to deviation of the vehicle to either side of said cable and operable to restore the vehicle to said straight path defined by said cable, said steering means comprising an arm pivotally mounted with respect to the vehicle for swinging transversely of the vehicle about an upright axis, said cable engaging said arm, whereby said arm will be swung transversely of the vehicle by the cable when the vehicle deviates sideways from the line of the cable, and means operable by the pivotal movement of said arm to impart a steering correction to the vehicle in response to said sideways deviation of the vehicle from the line of said cable, the apparatus also comprising a winch carried by the vehicle, said cable wound around said winch adjacent one end of said cable; means for driving said winch in the winding-in sense of said cable to maintain said cable taut, said cable also being arranged to be passed around at least one pulley and connectable at its end remote from said winch to an anchorage for said cable, each said pulley being attachable to a pulley anchorage at a respec-

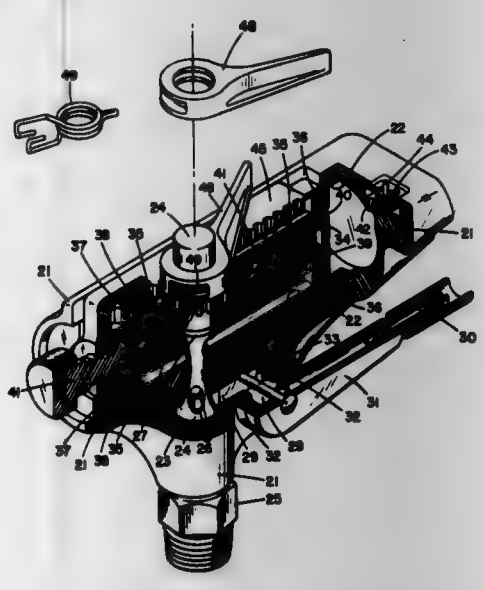
tive one of said fixed positions, whereby the vehicle will be guided by said cable towards said respective fixed position or to a plurality of said respective fixed positions in sequence, each said fixed position to which the vehicle is guided being determined by a respective said pulley being attached to a respective one of said pulley anchorages, and means whereby each said pulley is releasable from said respective anchorage, after being engaged therewith, by engagement of said pulley with the vehicle, when the latter has reached said respective pulley anchorage and said arm having at least one socket therein in each of which each said pulley is locatable before it is engaged with a respective one of said pulley anchorages and after it is released therefrom.

4,509,686

WATER SPRINKLING APPARATUS

Donald R. Larsen, 358 E. 800 North, American Fork, Utah 84003

Filed Jun. 15, 1982, Ser. No. 388,693
Int. Cl.³ B05B *3/16*
U.S. Cl. 239—239 **5 Claims**



1. A fluid drive, water sprinkler device including means for imparting reciprocating or oscillating motion to a sprinkler nozzle by fluid flow through the device, said sprinkler device comprising:

a body having a water inlet connection and a main water flow passageway therein;

a spray nozzle associated with the body and in fluid flow communication with the main water flow passageway;

a piston chamber formed within the body separate and apart from the main water flow passageway;

means for diverting a portion of the water from the main water flow passageway to the piston chamber;

a piston positioned for reciprocating movement within the piston chamber;

a rack connected to the piston and extending outside of the piston chamber, said rack being adapted to move outside the piston chamber with the same reciprocating motion as the piston;

a gear associated with body and spray nozzle and adapted to mesh with the rack so as to impart reciprocating or oscillating movement to the spray nozzle as the rack moves in its reciprocating motion; and

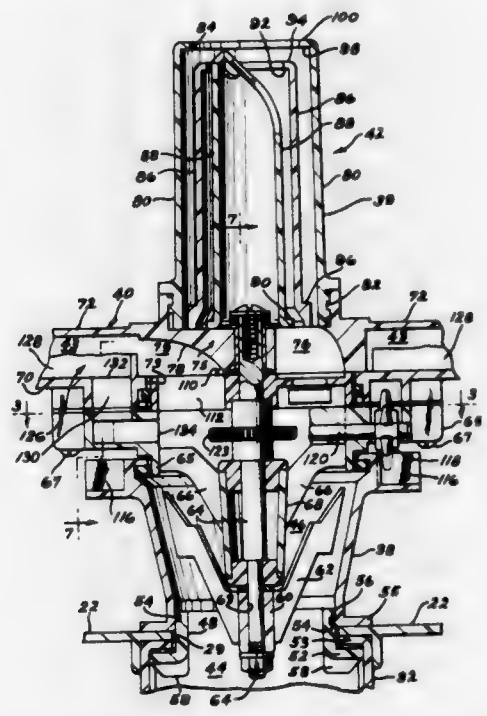
means for varying the pressure of the water within the piston chamber to thereby control movement of the piston and rack.

4,509,687

MULTIPLE SPRAY DISTRIBUTION SYSTEM FOR A DOMESTIC DISHWASHER

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 20, 1983, Ser. No. 515,572
Int. Cl.³ B05B *3/04*
U.S. Cl. 239—245 **5 Claims**



1. A dishwashing machine including a tub for receiving articles to be washed and liquid distribution means arranged in said tub for spraying liquid onto said articles;

a liquid responsive rotable spray arm rotatable about a central axis having a liquid passage therein and a vertically extensible liquid responsive spray member movable between a non-operative retracted position and an operative extended position;

such spray arm including an inlet including a diverter means communicating with said liquid passage in said spray arm, and a passageway communicating with said extensible member;

a stationary tubular liquid receiving hub member arranged in the bottom wall of said tub defining a liquid inlet;

a valve member rotatably arranged in said spray arm inlet including a port for directing liquid between said diverter means and said passageway; and

drive means responsive to the relative rotational movement between said spray arm and said hub member for causing said valve member to continuously rotate relative to said spray arm inlet whereby said port is positioned alternatively in alignment with said diverter means and said passageway to direct liquid between said spray arm liquid passage and said extensible means as a function of liquid flowing through said hub member from said liquid inlet.

4,509,688

ONE-PIECE NEBULIZER JET

Roger A. Gagne, Los Angeles, and Rolf O. Orchard, Manhattan Beach, both of Calif., assignors to Puritan-Bennett Corporation, Los Angeles, Calif.

Filed Dec. 4, 1981, Ser. No. 327,487
Int. Cl.³ A61M *11/00*
U.S. Cl. 239—338 **3 Claims**

1. A one-piece nebulizer jet, comprising:

first and second complementary components each defining complementary contours of a nebulizer chamber; said components having openings in them to provide a jet inlet port, a liquid inlet port and an outlet port;

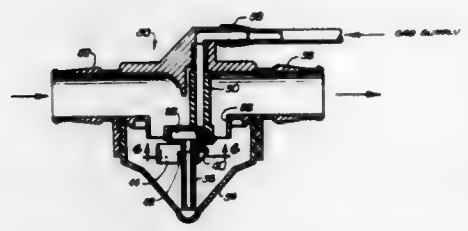
integral hinge means connecting said first and second complementary components and permitting said complemen-

tary components to be rotated with respect to each other into an assembled position;

integral means for holding said first and second complementary components in the assembled position, in which the jet inlet port and the outlet port are axially aligned;

fractionating means formed integrally with said first and second complementary components, and presenting a convex surface to the flow of fluid from the outlet port;





second integral hinge means connecting said fractionating means with one of said first and second complementary components and permitting rotation of said fractionating means to an operative position adjacent to the outlet port; and

integral retaining means, for retaining said fractionating means in its operative position, and including an arcuate element adjoining said fractionating means, and an integral post for engaging said arcuate element as said fractionating means reaches the operative position.

4,509,689

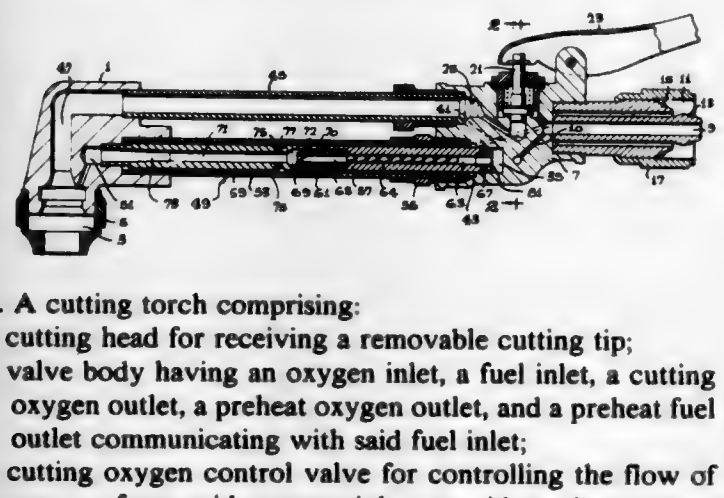
CUTTING TORCH

Chuan-Ming Kuo, 2nd Fl. No. 10 La. 22 Tung Hwa N. Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 432,169, Oct. 1, 1982, , which is a continuation-in-part of Ser. No. 395,164, Jul. 6, 1982,. This application Jun. 21, 1983, Ser. No. 506,426

Int. Cl.³ B05B 7/12

U.S. Cl. 239—407 **20 Claims**



1. A cutting torch comprising:

a cutting head for receiving a removable cutting tip;

a valve body having an oxygen inlet, a fuel inlet, a cutting oxygen outlet, a preheat oxygen outlet, and a preheat fuel outlet communicating with said fuel inlet;

a cutting oxygen control valve for controlling the flow of oxygen from said oxygen inlet to said cutting oxygen outlet;

a preheat oxygen control valve for controlling the flow of oxygen from said oxygen inlet to said preheat oxygen outlet;

a cutting oxygen tube connecting said cutting oxygen outlet to said cutting head; and

a preheat tube connecting said preheat oxygen outlet and said preheat fuel outlet with said cutting head, said preheat tube including:

an outer tube having a first end connected to said valve body and a second end connected to said cutting head;

an inner tube the majority of which is within said outer tube and having a first end extending beyond the first end of said outer tube and a second end within said outer tube;

a nozzle fitting having a first end sealing connected to said second end of said inner tube;

a mixer tube having a first end sealingly connected to a second end of said nozzle fitting, said mixer tube having a second end sealingly connected to said cutting head,

the outer surfaces of said inner tube and said mixer tube and the inner surface of said outer tube defining a fuel channel communicating with said preheat fuel outlet; and

sealing means adjacent the first end of said inner tube for isolating said fuel channel from said preheat oxygen outlet,

said inner tube and said nozzle fitting including a central bore defining an oxygen channel communicating with said preheat oxygen outlet, said nozzle fitting having a nozzle of smaller diameter than to said oxygen bore, said nozzle being disposed at the second end of said fitting, said central core having a heat absorbing metallic spiral disposed therein upstream of said nozzle.

said second end of said nozzle fitting and said first end of said mixer tube defining a chamber of larger diameter than said oxygen channel,

said mixer tube including a central bore defining a mixing channel communicating with said chamber and said cutting head,

said mixer tube also including a plurality of transverse passageways communicating with said fuel channel and said mixing channel at a point adjacent to but spaced from said chamber.

4,509,690

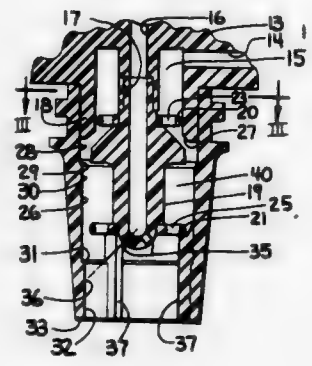
CARBONATED BEVERAGE MIXING NOZZLE FOR A DISPENSER

Forrest L. Austin, Brooklyn Center, and Jerald R. Bebeau, Coon Rapids, both of Minn., assignors to The Cornelius Company, Anoka, Minn.

Filed Dec. 6, 1982, Ser. No. 447,380

Int. Cl.³ B05B 7/06

U.S. Cl. 239—429 **11 Claims**



7. An improved carbonated beverage mixing nozzle for a post-mix carbonated beverage dispenser having a carbonated water supply chamber co-axially surrounding a syrup supply port, said nozzle comprising:

(a) a syrup diffuser having an elongate tubular body, said body having a snap-in connector means on an upper end for connection to said syrup supply port, and a spray head in a lower end having outwardly focused outlets for spraying syrup outwardly from the diffuser and into a water outlet for a carbonated water stream around the spray head;

(b) an upper carbonated water distribution disc, said disc having a outer diameter loosely-fitted within the water supply chamber and a plurality of water openings in a circular pattern around the syrup diffuser;

(c) a lower carbonated water distribution disc spaced below the upper disc and immediately above the syrup spray head, said lower disc having an outer diameter having a greater clearance with the water outlet than a similar clearance between the upper disc and the supply chamber, said lower disc having a plurality of water openings in a circular pattern around the syrup diffuser, said lower disc openings having a greater cumulative area than the upper disc openings; and

(d) a water plenum chamber between the discs, said plenum chamber having a height greater than its annular width as measured from the syrup diffuser to an inside surface of the water outlet.

4,509,691

FUEL INJECTION NOZZLES

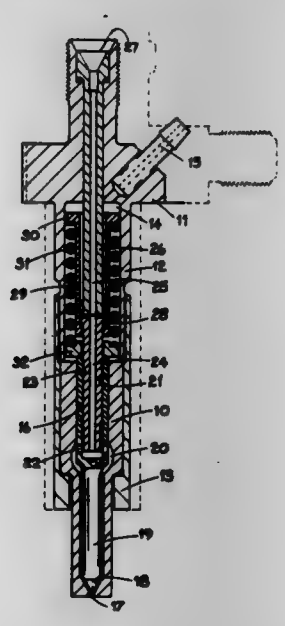
Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Jun. 8, 1983, Ser. No. 502,169

Claims priority, application United Kingdom, Jul. 15, 1982, 8220491; Oct. 20, 1982, 8229951

Int. Cl.³ F02M *61/10, 61/20*

U.S. Cl. 239—533.9 **6 Claims**



1. A fuel injection nozzle for supplying fuel to an internal combustion engine comprising a nozzle body, a bore formed in the body and an outlet communicating with one end of the bore, a seating defined in the bore adjacent the outlet, a valve member movable within the bore and shaped for cooperation with the seating to control the flow of fuel from the bore through the outlet, a blind drilling formed in the valve member, said drilling extending from the end of the valve member remote from the seating, cross drillings in the valve member, said cross drillings acting to place the inner end of the blind drilling in communication with an enlargement defined in the bore, the portion of the valve member located between the enlargement and the seating being of reduced diameter, a tubular member extending into a chamber defined in a nozzle holder, said tubular member exterior of the holder defining a fuel inlet connected in use to an outlet of a fuel injection pump, characterized by a sleeve member slidably mounted in said drilling, said sleeve member and said tubular member engaging each other in end to end relationship to convey fuel from the inlet to the enlargement, a coiled compression spring acting to maintain said sleeve member and said tubular member in engagement, the end portion of the sleeve member adjacent the tubular member being provided with a peripheral flange, a tubular spring abutment located about said tubular member, said abutment defining a first flange for engagement with the flange on said sleeve member and a second flange, said coiled compression spring having one end which abuts against said second flange, and a further spring abutment engaged by the other end of said spring, said further spring abutment being engaged with the valve member, said compression spring acting to bias the valve member into contact with the seating.

4,509,692

DRIP OR TRICKLE IRRIGATION

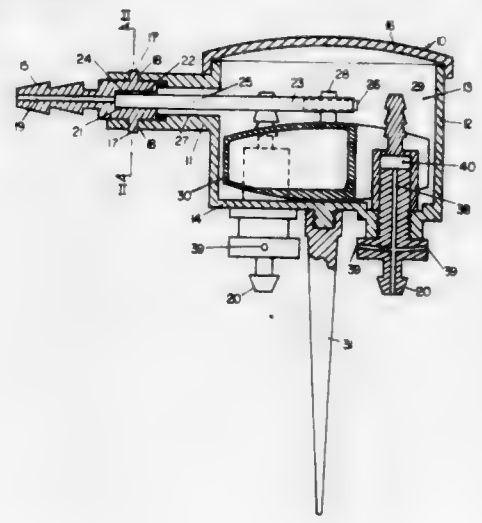
Lionel V. Moss, 88 A Borewell Rd., Whitefield, Bangalore 560066 Karnataka, India

Filed Jun. 7, 1983, Ser. No. 501,860

Claims priority, application United Kingdom, Jun. 29, 1982, 8218776

Int. Cl.³ B05B *15/00*

U.S. Cl. 239—542 **5 Claims**



1. An emitter for drip or trickle irrigation, said emitter comprising an inlet for irrigation fluid, a chamber to receive fluid from said inlet, a fluid outlet from said chamber, a variable-orifice device to control fluid flow from said inlet to said chamber, and a float member within the chamber operatively coupled to said device to vary the cross-sectional area of its orifice (and thus control the fluid flow through said inlet) upon variation of the head of fluid within the chamber;

said variable orifice device comprising a tube having one end open and connected to said inlet and having its other opposite end closed, the tube being out or slit intermediate its ends in an upper wall portion to provide said orifice and being yieldable at least in the vicinity of the wall portion below the cut or slit whereby the orifice is openable and closable by bending the two end portions of the pipe about the said yieldable lower wall portion.

4,509,693

ELECTROMAGNETIC FUEL INJECTOR

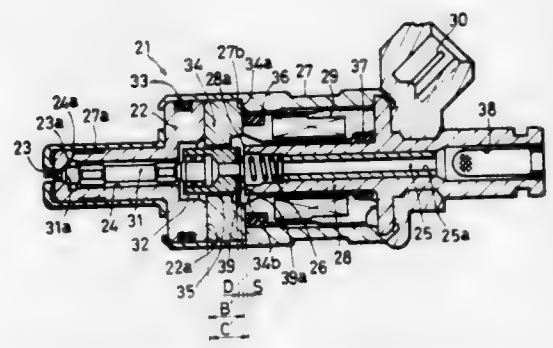
Kenji Nakai, Obu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Feb. 1, 1983, Ser. No. 463,013

Claims priority, application Japan, Feb. 18, 1982, 57-23218[U]

Int. Cl.³ B05B *1/30*

U.S. Cl. 239—585 **2 Claims**



1. In combination with an electromagnetic fuel injector for an internal combustion engine including a valve housing pro-

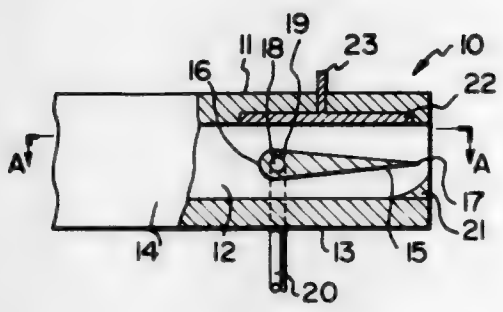
vided with a fuel injection nozzle and a valve seat at its front end and a guide hole extending along the axis of said valve housing, a valve body slideable axially in said guide hole, a compression spring adapted to normally urge said valve body in a direction toward said valve seat so as to close said fuel injection nozzle, an armature fixed to the end of said valve body furthest from said nozzle, a fixed magnet core having a front end opposite to the rear end of said armature and having a fuel passage extending through its central portion, an exciting coil surrounding said fixed magnet core, and a magnetic housing enclosing said valve housing and said fixed magnet core and having an internal mounting shoulder, said electromagnetic fuel injector being adapted to discharge pressurized fuel when said exciting coil receives a control signal to open said valve body; the improvement comprising a non-magnetic spacer fixed to the end of said armature furthest from said nozzle for cutting off residual magnetism of said fixed magnet core, and a ferromagnetic spacer having a fixed thickness interposed between the rear end surface of said valve housing and the shoulder of said magnetic housing, wherein a front end of said fixed magnet core is flush with the shoulder of said magnetic housing, and the end of said armature furthest from said nozzle and the rear end surface of said valve housing are machined so that in their positions under a fully closed condition of said valve body, they provide a maximum stroke of said valve body.

4,509,694

CROSS-CURRENT AIRFOIL ELECTROSTATIC NOZZLE

Ion I. Inculet, and Kenneth J. Hodgson, both of London, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jun. 1, 1983, Ser. No. 499,983
Int. Cl.³ B05B *5/00*
U.S. Cl. 239—697 **15 Claims**



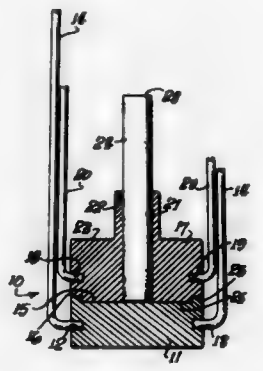
1. An electrode nozzle for spraying liquid comprising:
conduit means for receiving a gas to be driven at high speed out of an opening defined by edges in the conduit means;
one or more airfoil means positioned at the conduit opening, the airfoil means having a curved leading edge, a tapered trailing edge, channel means within the airfoil means near the leading edge for receiving the liquid to be sprayed and perforations through one surface of the airfoil means to the channel means for directing the liquid onto the one surface;
electrode means spaced from the one surface of the airfoil means for connection to a dc voltage source to inductively charge the liquid on the one surface of the airfoil means; and
deflector means positioned near the trailing edge of the airfoil on the side of the airfoil opposite the one surface, for redirecting gas flow toward the trailing edge to atomize the liquid from the channel means.

4,509,695

TISSUE PULVERIZER

Samuel P. Bessman, Los Angeles, Calif., assignor to Spectrum Medical Industries, Inc., Los Angeles, Calif.

Filed Jul. 18, 1983, Ser. No. 514,454
Int. Cl.³ B02C *19/08, 19/12*
U.S. Cl. 241—2 **14 Claims**



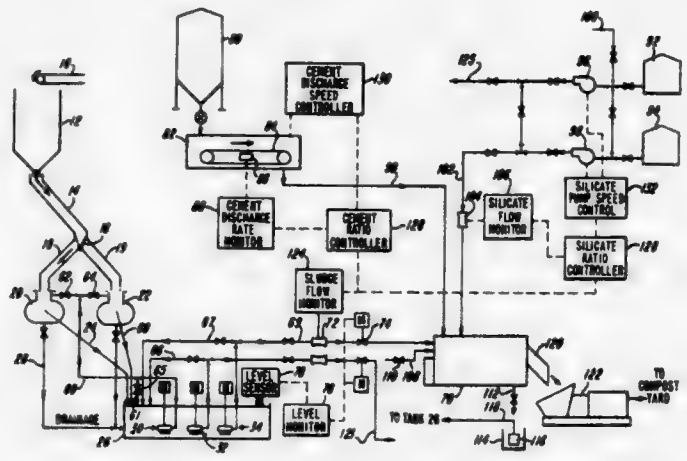
1. A tissue pulverizer for pulverizing specimens of living tissue for facilitating chemical or other testing, said pulverizer comprising:
a base member having an upper surface, said base member being cooled to a temperature of at least as low as −150 degrees Centigrade;
a guide member having a bottom which is removably mated with the upper surface of said base member, said guide member being partable from the base member, said guide member having a guide passageway which terminates at the interface of the guide member and the base member and said guide member being cooled to a temperature of at least as low as −150 degrees Centigrade; and
an elongated pestle member held in said passageway of said guide member, said pestle member being longitudinally movable in said passageway but having its longitudinal axis fixed with respect to said guide member and said pestle member being sufficiently long so that it protrudes above the guide member when the bottom of the pestle member is touching the base member said pestle member also being cooled to at least as low as −150 degrees Centigrade.

4,509,696

METHOD FOR TREATING LIQUID AND SEMI-SOLID ORGANIC WASTE MATERIALS

David L. Donaldson, New Orleans, La., assignor to Chemfix Technologies, Inc., Kenner, La.

Division of Ser. No. 413,025, Aug. 30, 1982, Pat. No. 4,471,916. This application Aug. 12, 1983, Ser. No. 522,755
Int. Cl.³ B02C *23/20*
U.S. Cl. 241—15 **3 Claims**



1. A continuous method of treating sewage sludge, comprising the steps of:

feeding raw sludge through a mixing apparatus to work the sludge into a homogenuous mass and to reduce its viscosity initially;
feeding the worked sludge into a first end of an elongated tank and through a chopping pump located within the tank to break up large particles and to further reduce the viscosity of the sludge;
recirculating the sludge from said tank through a conduit back into said first end of said elongated tank;
pumping the sludge from a second end of said tank into a continuous mixer;
adding a quantity of setting agent into the mixer continuous;
mixing the sludge and setting agent;
adding to the mixed sludge and setting agent a quantity of an alkali metal silicate;
mixing the silicate into the sludge and setting agent; and
transferring the mixed sludge, setting agent and silicate from the mixer to a holding area where solidification reaction of the sludge, setting agent, and alkali metal silicate proceeds to completion resulting in a friable end product.

4,509,697

ROTARY DRUM SCREEN FOR WASTE MATERIAL AND ITS METHOD OF OPERATION

Hanns-Helmut Riemann, Bochum; Hans Sonnenschein, Hatzperbogen, and Heinz Skaletz, Recklinghausen, all of Fed. Rep. of Germany, assignors to Mannesmann Veba Umwelttechnik GmbH, Herne, Fed. Rep. of Germany

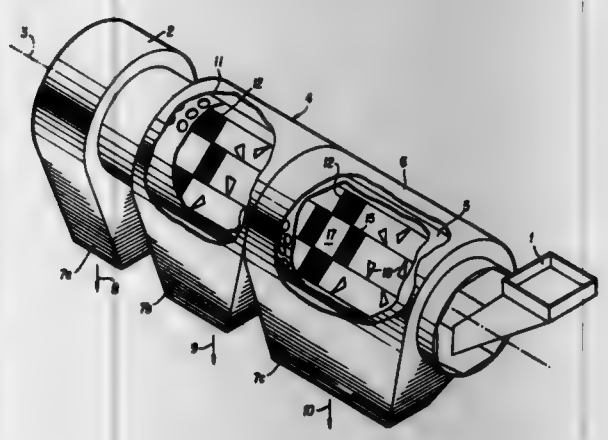
PCT No. PCT/DE82/00016, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/02502, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 27, 1982, Ser. No. 385,395

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102846

Int. Cl.³ B02C *17/06*

U.S. Cl. 241—72 **8 Claims**



1. A rotary drum screen assembly for waste material, comprising:
a housing;
a drum screen casing mounted in said housing for rotation during operation of said drum screen assembly to cause waste material to flow through the drum screen casing;
a first and second baffle positioned in said casing, for disrupting flow of said waste material within said casing and defining and dividing a first and second baffle zone; and
a plurality of impact plates for impacting said waste material positioned in said casing and within said baffle zones, said plates being positioned on the periphery of the casing, wherein the diameter of said casing is such as to allow for breaking up of said waste material upon impact under the force of gravity with a wall of said casing during rotation of the rotary screen casing.

4,509,698

CONDIMENT GRINDER-DISPENSER

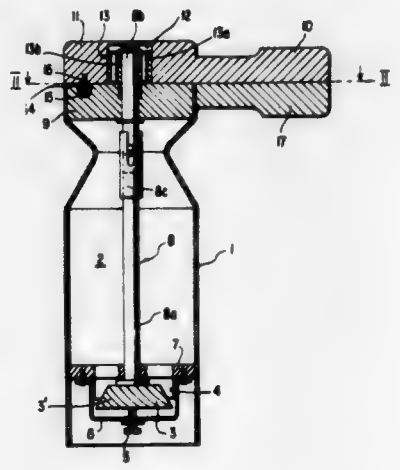
Tom David, Nantucket Island, Mass., assignor to Tom David, Inc., Nantucket, Mass.

Filed Feb. 9, 1984, Ser. No. 578,570

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.³ B02L *13/30*; A47J *42/00*

U.S. Cl. 241—169.1 **6 Claims**



1. A hand-held and hand-operated condiment grinder dispenser comprising in combination:
(a) a housing;
(b) a grinding mechanism supported in said housing and including a rotary grinding wheel for comminuting and dispensing condiment upon rotation in a sole, operative direction;
(c) an operating lever operatively coupled to said grinding wheel and being arranged for a reciprocating motion composed of alternating motions in a forward and in a return direction; said operating lever being positioned with respect to a part of said housing such that said operating lever and said part of said housing are included in a grip of a user's hand for effecting said forward motion;
(d) a spring means for urging said operating lever in said return direction, whereby upon release of said operating lever by the user's hand after a motion of said operating lever in said forward direction said spring moves said operating lever in said return direction; and
(e) an overrunning clutch connecting said operating lever to said grinding wheel; said overrunning clutch being so oriented that it transmits an operating torque from said operating lever to said grinding wheel solely in the course of forward motions of said operating lever; the direction of said operating torque coinciding with said operative direction of said grinding wheel.

4,509,699

COMPRESSION CRUSHER HAVING AN OPTIMIZED JAW CONFIGURATION

Tsuyoshi Tanaka, and Kazuhisa Yoshikawa, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 29, 1983, Ser. No. 508,905

Claims priority, application Japan, Jul. 15, 1982, 57-107846[U]; Oct. 19, 1982, 57-158453[U]; Oct. 19, 1982, 57-158450[U]

Int. Cl.³ B02C *1/10*

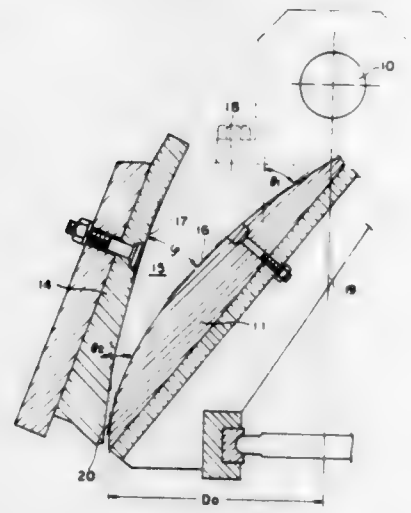
U.S. Cl. 241—268 **8 Claims**

1. A compression type crusher which is adapted to crush feed material, said crusher comprising:
(a) a generally vertically oriented stationary crusher plate having a working surface;
(b) a generally vertically oriented pivotable crusher plate having a working surface;
(c) the working surfaces of said stationary and pivotable

crusher plates defining a crusher chamber therebetween, said crusher chamber having an inlet region and an outlet region;

(d) said pivotable crusher plate being mounted for oscillatory pivotable movement about a fulcrum located above said crusher chamber;

(e) the entire working surface of one of said crusher plates being convex and shaped such that, in the inlet region, it is inclined away from the vertical axis by an angle of between 45° and 55°, its angle from the vertical gradually and continuously decreases in the downward direction, and, in the outlet region, it is inclined away from the vertical by an angle of between 0° and 10°;



(f) the entire working surface of the other one of said crusher plates being concave; and

(g) the angle between the working surfaces of said stationary and pivotable crusher plates being less than 27° in the inlet region of the crusher chamber and decreasing gradually and continuously in the downward direction.

4,509,700

METHOD OF AND A MACHINE FOR DISINTEGRATING MATERIALS

Anders G. Svengren, Klippan, Sweden, assignor to Nestec S.A., Vevey, Switzerland

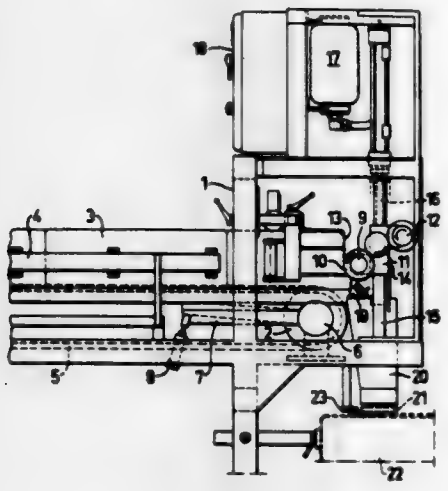
PCT No. PCT/CH79/00058, § 371 Date Jan. 2, 1980, § 102(e) Date Jan. 2, 1980, PCT Pub. No. WO79/01038, PCT Pub. Date Nov. 29, 1979

PCT Filed Apr. 26, 1979, Ser. No. 193,407

Claims priority, application Switzerland, May 8, 1978, 4990/78

Int. Cl.³ B02C *19/22*

U.S. Cl. 241—280 **6 Claims**



1. A machine for disintegrating a soft food material comprising:

(a) a disintegrating element having a pair of oppositely directed screw threads disposed about an axis, each of said threads occupying a portion of the length of said disintegrating element;

(b) means for rotating said disintegrating element about said axis in a predetermined direction, each of said threads having at its periphery a substantially continuous cutting edge directed in the axial direction in which such thread appears to move upon rotation in such predetermined direction;

(c) means for reciprocating said disintegrating element transversely of said axis, so that the disintegrating element moves in a predetermined plane of reciprocation; and

(d) means for positioning a mass of said soft food material so that a surface of said mass is disposed parallel to said plane of reciprocation and such surface is engaged by said cutting edges.

4,509,701

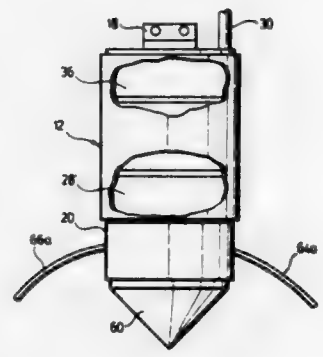
APPARATUS FOR BREAKING UP SOLIDIFIED MATERIAL IN A STORAGE CONTAINER

James M. Jack, Georgetown, and Stanley W. Mitchell, Windsor, both of Canada, assignors to Northern Vibrator Manufacturing Limited, Georgetown, Canada

Filed Aug. 19, 1983, Ser. No. 524,800

Int. Cl.³ F23J *3/00*

U.S. Cl. 241—292 **10 Claims**



1. Apparatus for breaking up solidified particulate material in a storage container comprising a housing lowerable into the container on the lower end of a suspension element, a flailing element holder rotatably mounted on the housing for rotary movement relative thereto about a substantially vertical axis when the housing is suspended in the container, an elongated flexible flailing element projecting from the holder, means for rotating the holder relative to the housing to cause the flailing element to engage and break up solidified particulate material when the housing is suspended in the container, said housing having torque-balancing means mounted for rotation relatively thereto about a substantially vertical axis, and means for rotating the torque-balancing means in a direction opposite to the direction of rotation of the flailing element holder to substantially balance torque produced by rotation of the flailing element holder and thereby substantially prevent angular movement of the housing about a vertical axis when the flailing element holder is rotated.

4,509,702

APPARATUS FOR PACKAGING A PLURALITY OF FIBERS OR STRANDS

Walter J. Reese, North Huntington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 27, 1983, Ser. No. 461,331

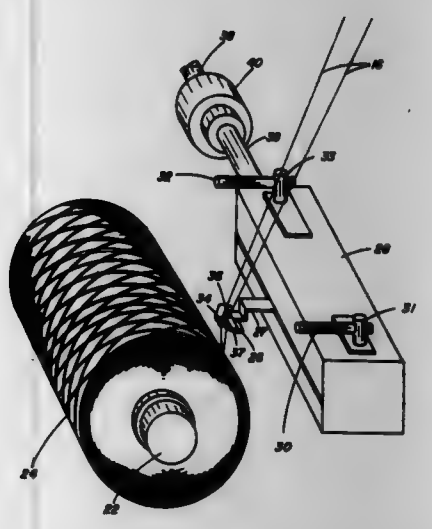
Int. Cl.³ B65H *54/02*

U.S. Cl. 242—18 G **12 Claims**

1. An apparatus for producing and collecting a plurality of strands, comprising:

a. a means for forming a plurality of continuous fibers from a supported supply,

b. applicating means mounted beneath the supply means to treat the continuous fibers with a chemical composition,
c. gathering means mounted beneath the applicating means to gather the plurality of fibers from the forming means into more than one strand,
d. a rotatable winder to attenuate the continuous fibers and to collect the more than one strand,
e. a traversing guide having more than one slot, the slots are located linearly with one behind the previous slot after the first slot, where the linear slots are perpendicular to the axis of rotation of the winder and where each slot receives one strand, and where the slots extend into the guide and terminate with a curved end with sufficient depth to retain the strands during traversing and where the slots behind the first slot open to the peripheral surface of the guide through chambers that are arranged so the strands remain in the slots at the end of the chambers during traversing of the guide,



f. reciprocating means to which the traversing guide is nearly horizontally attached for reciprocation parallel to the axis of rotation of the rotating winder,
g. engaging means to engage the reciprocating means to start the traversing movement of the traversing guide and to disengage the reciprocating means to stop the traversing movement of the guide,
h. a drive means to effect the reciprocating movement of the traversing guide when engaged through the engaging means to the reciprocating means,
i. an adjustable contact means around each end of the reciprocating stroke of the traversing guide positioned so that the traversing guide passage by the contact means around the end of each stroke so that strands passing to or from the traversing guide are contacted by the contact means to apply tension to the strands being wound on the winder.

4,509,703

METHOD AND APPARATUS FOR TRANSPORTING AND STORING PARTIALLY OVERLAPPING SHEETS

Roland Grunder, Vordemwald, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Apr. 27, 1983, Ser. No. 489,261

Claims priority, application Switzerland, May 5, 1982, 2755/82

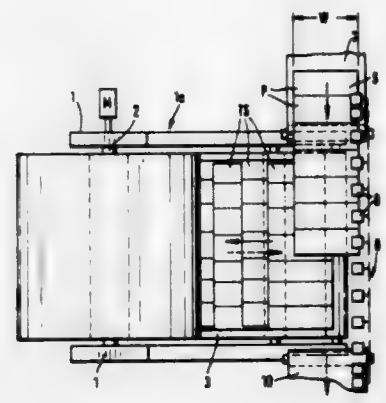
Int. Cl.³ B65H *29/28, 33/14, 5/00, 1/00*

U.S. Cl. 242—59 **17 Claims**

1. A method of temporarily storing the sheets of a stream of partially overlapping sheets having a first width between the windings of a flexible carrier which has a second width, is convoluted on a first reel and has a leader connected to a second reel, said method comprising the steps of:

(a) transporting the stream lengthwise along a predetermined path;

(b) transferring from said path successive stream sections, each of which has a length no greater than matching said second width and each of which contains a plurality of partially overlapping sheets, onto the carrier retaining said partial overlapping between the first and second reels the transferring step being performed in such a manner that each stream section extends transversely of the carrier; and



(c) advancing the carrier stepwise in a direction towards the second reel upon transfer of successive sections of the stream so that the carrier is wound onto the second reel and the sections of the stream are confined between the neighboring windings of the carrier.

4,509,704

FISHING LINE ENGAGING AND RELEASING MECHANISM IN A CLOSED-FACE TYPE REEL

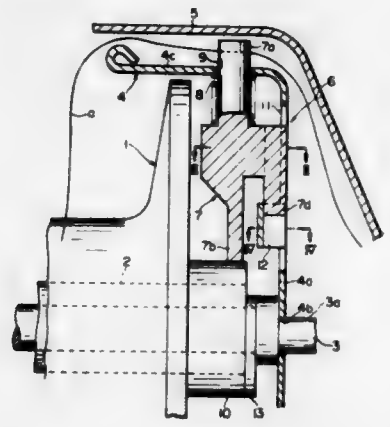
Kiyomi Ozaki, and Kikuo Tunoda, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Sep. 29, 1982, Ser. No. 427,035

Claims priority, application Japan, Nov. 30, 1981, 56-178905[U]

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 A **3 Claims**



1. A closed-face type reel comprising:

(a) a fixed shaft having a sleeve fixed thereto;

(b) a spool mounted on said fixed shaft for winding a fishing line and a moveable shaft rotatably and axially moveable relative to said fixed shaft;

(c) a rotor mounted on said moveable shaft, said rotor including a sidewall having a guide hole and a guide slot communicating radially with each other and a peripheral wall having a radially directed hole; and

(d) a fishing line engaging and releasing mechanism removably mounted on said rotor and comprising a pickup member having a pickup pin moveable out of and retractable into said radially directed hole in said peripheral wall for allowing the fishing line to be wound around and reeled out of said spool respectively, and a spring acting between said pickup member and said peripheral wall for normally urging said pickup member radially inwardly, said pickup member including a tongue engageble with said sleeve for enabling said pickup pin to project out of said hole, and a back portion and a locking portion slidably and remov-

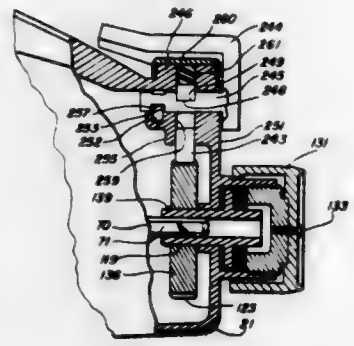
ably fitted respectively in said guide hole and said guide slot, wherein said guide slot and said locking portion have complementary semicircular cross sections with said guide slot being located on the side of said side wall adjacent said pickup member and wherein the radial length of said guide hole is at least equal to the combined radial length of said back portion and said locking portion whereby said pickup member may be detached from said side wall by shifting said pickup radially outwardly until said locking portion clears said guide slot to permit lateral movement of said back portion out of said guide hole.

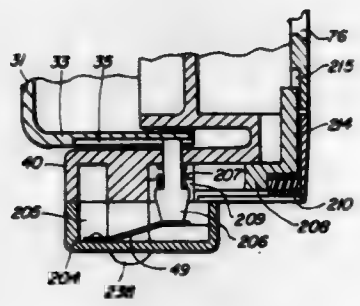
4,509,705

SURFCASTING SPINNING REEL

Richard R. Councilman, Collinsville; Steven L. Swisher, and Robert L. Carpenter, both of Tulsa, all of Okla., assignors to Brunswick Corporation, Skokie, Ill.

Filed Feb. 10, 1984, Ser. No. 578,876
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—84.21 R **20 Claims**





13. In a spinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting;

the reel having a housing with a forward spool end portion, a back end portion and a centershaft extending through the housing and projecting rearward into a cavity on the back end portion, a keyed portion on the centershaft extending into the cavity;

a spool carried by the forward portion of the centershaft;

a front drag acting between the spool and the centershaft to resist rotation between the spool and the centershaft;

a handcrank;

a rotatably mounted rotor connected by a transmission means to the handcrank to be rotated thereby;

an anti-reverse means carried by the housing and selectively engageable with the transmission means to prevent the rotor from being rotated in a reverse direction, the improvement comprising:

a rear drag mounted in the cavity and operatively engaging the centershaft, the rear drag comprising:

(a) drag driver means rotatably mounted in the cavity and keyed to the keyed portion of the centershaft;

(b) means acting between the drag driver means and the cavity walls for applying a drag on the centershaft;

(c) a ratchet wheel keyed to a keyed portion of the drag driver means;

(d) click means carried by the housing and having a portion engaging with the ratchet wheel to audibly signal rotation of the ratchet wheel when the line pull on the spool exceeds the drag of the rear drag; and

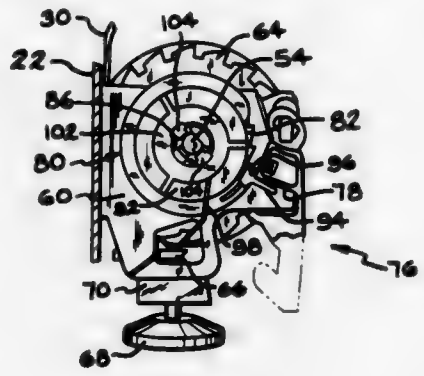
(e) means carried by the housing and selectively contacting the ratchet wheel for locking the ratchet wheel, drag driver means and centershaft against rotation.

4,509,706

SAFETY BELT SYSTEM WITH TENSION ELIMINATING MECHANISM

Rudy V. Thomas, Sterling Heights, Mich., assignor to Allied Corporation

Filed May 10, 1983, Ser. No. 493,195
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **9 Claims**



1. In a safety belt retraction mechanism having a rotatable shaft, a belt connected to and wound around the shaft, a spring connected to the shaft and biasing the shaft to rotate in the direction to wind the belt onto the shaft, a main ratchet wheel and a main pawl movable into engagement with the main ratchet wheel to prevent rotation of the shaft in a direction to extend the belt, a belt tension eliminating mechanism comprising:

a ratchet wheel mounted on the shaft for conjoint rotation therewith, said ratchet wheel including a hollow shaft;

a pawl member have a pawl movable into engagement with said ratchet wheel to prevent the rotation of the shaft in a direction to wind the belt onto the shaft and an integral stop projection spatially separated from said pawl;

a first member rotatably journaled on said hollow shaft and disposed adjacent to said ratchet wheel, said first member having a peripheral cam surface about a predetermined portion of the circumference for blocking the engagement of said pawl with said ratchet wheel and a first projection adjacent to the periphery extending axially away from said ratchet wheel;

a second member rotatably journaled on said hollow shaft and disposed adjacent to said first member, said second member having a second projection extending radially from its periphery between said pawl and said stop projection to limit the rotation of said second member, said second projection having a blocking surface on the side adjacent to said pawl for blocking the engagement of said pawl with said ratchet wheel when said second projection is engaging said pawl, said second projection further being engaged by said first projection limiting the rotation of said first member with respect to said second member to approximate one full revolution;

a compression spring carried on said hollow shaft for biasing said first and second members and said ratchet wheel in frictional engagement;

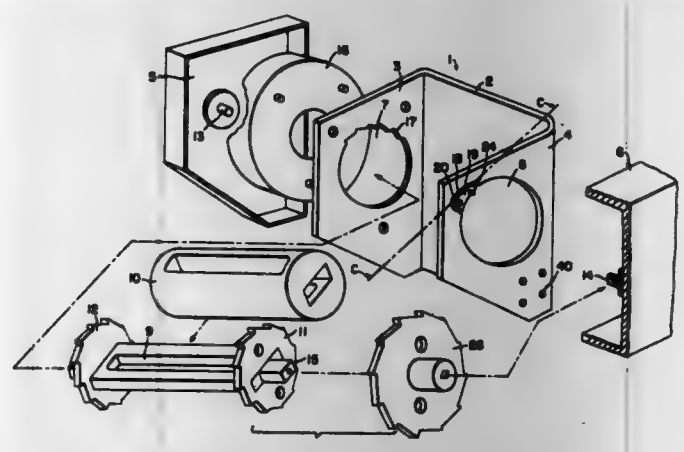
means for retaining said first and second members and said compression spring on said hollow shaft; and

means for locking said ratchet wheel on the shaft.

4,509,707
SELF-LOCKING BELT REELING DEVICE FOR MOTOR VEHICLE SAFETY BELTS

Hans-Hellmut Ernst, Sülfeld, and Holger Seel, Aidlingen, both of Fed. Rep. of Germany, assignors to AUTOFLUG GmbH, Rellingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 260,034, May 4, 1981, abandoned. This application Oct. 11, 1983, Ser. No. 540,818
Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017097
Int. Cl.[3] A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A 20 Claims



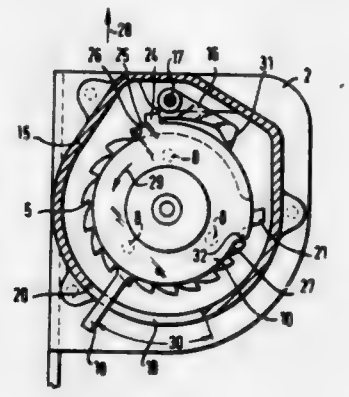
1. A self-locking belt reeling device, comprising:
a housing having a first and a second aperture, said second aperture being provided with a recess;
a belt rewinding shaft having two ends and being mounted in said housing in such a way as to prevent axial movement yet allow radial movement under the action of locking forces, said ends of said shaft extending through said apertures of said housing;
a disc respectively provided near each end of said shaft, said discs being respectively located in the plane of the associated aperture, with at least that disc associated with said second aperture being a toothed disc, at least one of said apertures being provided with a fixed inner toothing for engagement by the associated disc when locking forces occur;
a latch pivotably mounted in said recess of said second aperture in such a way as to be pivotable into said second aperture and into the toothing of said toothed disc associated therewith;
an actuating element arranged on said latch; and
a device, for actuating self-locking, associated with said housing and controlling said actuating element, said device sensing forces requiring locking of said belt rewinding shaft.

4,509,708
MECHANISM IN ROLL-UP DEVICE FOR SAFETY BELTS IN MOTOR VEHICLES

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Feb. 23, 1983, Ser. No. 468,978
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206596
Int. Cl.[3] A62B *35/00;* B65H *75/48*
U.S. Cl. 242—107.7 14 Claims

1. A safety belt retractor assembly comprising a base, a spool rotatably mounted on said base and adapted to be connected with a safety belt, biasing means for urging said spool to rotate in a direction tending to wrap the safety belt around said spool to thereby press the safety belt against an occupant of a vehicle after the safety belt has been connected, and comfort means for holding said spool against rotation under the influence of said biasing means to thereby relieve the pressure applied against the occupant of the vehicle by the connected safety belt, said comfort means including a ratchet wheel which is connected with said spool for rotation therewith, a pawl which is connected with said base and is movable between an engaged position engaging said ratchet wheel to hold said spool against rotation under the influence of said biasing means and a disengaged position in which said pawl is ineffective to hold said spool against rotation, first and second coaxial cam means rotatable between a blocking orientation in which at least one of said first and second cam means is effective to maintain said pawl in a disengaged position and a nonblocking orientation in which said first and second cam means are ineffective to maintain said pawl in a disengaged position, stop means for limiting rotation of said first cam means in one direction relative to said

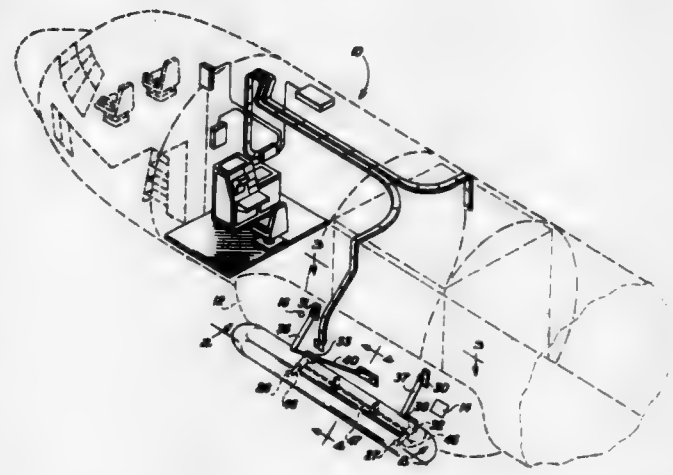


base, and means for rotating at least one of said first and second cam means from a blocking orientation to a nonblocking orientation in response to withdrawal of a short length of the safety belt from said spool, said means for rotating at least one of said first and second cam means including a plurality of rotatable force transmitting elements having spherical outer side surfaces disposed in engagement with said first cam means, and means for rolling the spherical side surfaces of said force transmitting elements along said first cam means while said stop means prevents rotation of said first cam means in the one direction.

4,509,709
SWINGING POD ANTENNA MOUNT

Charles G. Utton, Mesa, Ariz., and Bill D. Stratman, Pomona, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 18, 1983, Ser. No. 467,707
Int. Cl.[3] B64C *1/36*
U.S. Cl. 244—118.1 6 Claims



1. A swinging pod antenna mount for use on vehicles, such as airplanes and the like, comprising:
an elongated antenna pod designed to be mounted with its longitudinal axis parallel to the vehicle's direction of travel;
a plurality of mounting lugs affixed to said pod to define a first line parallel with the longitudinal axis of said pod and to define a second line spaced vertically from the first line and parallel with the longitudinal axis of said pod;
a plurality of struts each affixed adjacent one end to said

vehicle and adjacent the other end to one of said lugs defining the first line, said struts being affixed to said lugs for pivotal movement of said pod about the first line and so that the first line is spaced from the vehicle a predetermined amount and parallel with the vehicle's direction of travel; and

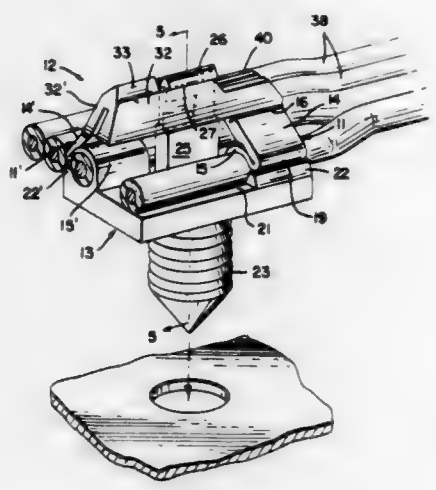
a longitudinally extendable member affixed adjacent one end to the vehicle and affixed adjacent the other end to one of said lugs defining the second line for pivotal movement of said pod about the first line between an operating position, when said extendable member is retracted, and a maintenance position, when said extendable member is fully extended longitudinally.

4,509,710

CABLE CLAMP

Ralph M. Cooper, Clemmons, N.C., and Walter M. Mena, Marietta, Ga., assignors to AMP Incorporated, Harrisburgh, Pa.

Filed Dec. 23, 1983, Ser. No. 565,078
Int. Cl.³ F16L *3/08;* B65D *63/00*
U.S. Cl. 248—73 **13 Claims**



1. A cable clamp moulded in one piece from plastics material comprising first and second clamping limbs extending in side-by-side relation and joined at respective opposite ends by tool bearing portions, each clamping limb comprising a rigid portion at one end of the limb joined to a flexible wire engaging portion at the other end of the limb, laterally extending wire supporting surfaces being provided adjacent respective wire engaging portions such that on urging the tool bearing portions together, the clamping limbs are changed from an erect to a collapsed, clamping condition with deformation of the wire engaging portions around wires located adjacent the wire supporting surfaces thereby to clamp the wires against the wire supporting surfaces, means being provided on the cable clamp to latch the cable clamp in the clamping condition.

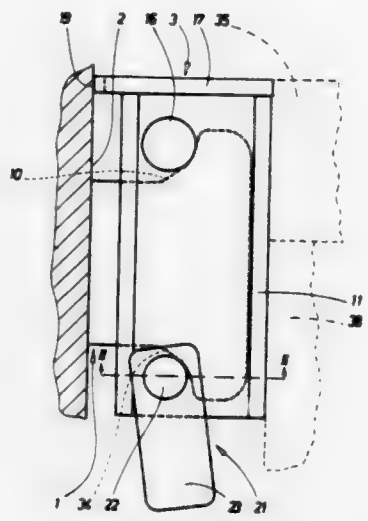
4,509,711

DEVICE FOR DETACHABLY SUPPORTING A WORK STAND ON A WALL SURFACE OR THE LIKE

Harry Wallther, Hindås, Sweden, assignor to Stallningsgruppen i Goteborg Aktiebolag, Goteborg, Sweden

PCT No. PCT/SE81/00253, § 371 Date Apr. 27, 1982, § 102(e) Date Apr. 27, 1982, PCT Pub. No. WO82/01026, PCT Pub. Date Apr. 1, 1982
PCT Filed Sep. 10, 1981, Ser. No. 375,280
Claims priority, application Sweden, Sep. 11, 1980, 8006368
Int. Cl.³ A47G *29/02*
U.S. Cl. 248—235 **5 Claims**

1. A device for supporting an object detachably at a wall surface, comprising: a supporting member for the object; a coupling device to be fitted to the supporting member; said supporting member having a supporting surface to rest against the wall surface below the coupling device; a holder element having a plate-shaped body with at least one attachment surface to be fixed to the wall surface, and having at least two hooking-up portions which are directed away from one another, one directed upwardly and the other downwardly, each hooking-up portion having a bearing surface partially turned towards the wall surface; said coupling device comprising: two portions provided with guide surfaces facing one another and forming therebetween a gap for receiving said holder element, and also a first, upper locking member positioned in the gap and adapted to be hooked up to the hooking-up portion which is directed upwardly; the coupling device further comprising a locking device movable between a locking position and a releasing position and vice versa, said locking device in the locking position ensuring that the coupling device is held firmly hooked to the holder element, and in the releasing



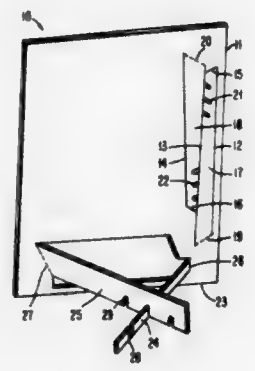
position, allowing the coupling device to be unhooked from the holder element; the holder element being substantially symmetrical relative to at least a central axis extending symmetrically from said wall surface; said locking device also having a second, lower locking member cooperating with the downwardly directed hooking-up portion in the locking position of the locking device to prevent the coupling device from being unhooked from said holder element, said coupling device having at least one, upper supporting surface for bearing against said wall surface, said bearing surfaces of the hooking-up portions having an inclined or curved portion allowing the bearing point between the upper locking member and the bearing surface cooperating therewith to be chosen such that support of the upper support surface against the wall surface is assured.

4,509,712

EASEL FORMED BY TWO CROSSED TABS AT BACK OF DISPLAY OBJECT

Carl Moller, 101 W. 57th St., New York, N.Y. 10019

Filed Jan. 24, 1983, Ser. No. 460,479
Int. Cl.³ A47B *97/04*
U.S. Cl. 248—464 **20 Claims**



1. An easel for holding a display object in an upward position when placed on a support surface, which comprises a first elongate flexible tab disposed near and along the bottom edge

of said display object and hinged at the back of said display object near one lateral edge of said display object, a second elongate flexible tab disposed above and along said first tab and hinged at the back of said display object near the opposite lateral edge of said display object, the hinge lines of said first tab and said second tab being slanted so that the distances between the bottom ends of said hinge lines and between the top ends of said hinge lines are unequal, at least one first notch in the top edge of said first tab, and at least one second notch in the bottom edge of said second tab, said first notch and said second notch being adapted to lock said first tab and said second tab in crossed relation in order to hold said display object in an upward position.

4,509,713

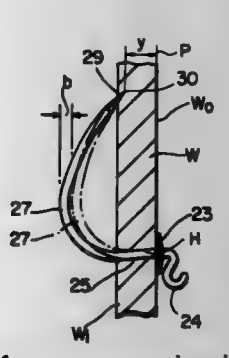
LOCKING WALL HANGER

James W. Hogg, 6216 Hillsboro Rd., Nashville, Tenn. 37215

Continuation of Ser. No. 377,192, May 11, 1982,. This application Aug. 24, 1984, Ser. No. 643,767

Int. Cl.[3] F16M *13/00*

U.S. Cl. 248—546 **9 Claims**



1. A locking wall hanger mounting in a wall for supporting articles thereon, comprising:

in combination with a wall, a curved wire having a first end, a second end, and a central portion;

said first end being adapted to receive articles for hanging thereon;

an abutment member fixed to said curved wire at a location adjacent said first end;

said abutment member having a wall contacting surface;

said second end terminating in a sharp point;

said second end being adapted to pierce said wall and being inserted therethrough, said insertion defining a straight passage through said wall;

said curved wire being sufficiently resiliently deformable that passing of said curved wire into said wall results in a passage having a snug fit about said wire and causes temporary resilient straightening of any portion of said wire passing through the wall so that the diameter of the passage is not substantially greater than that of the wire that during insertion of said wire therethrough;

said central portion being generally in the shape of a parabola; a first portion of said curved wire adjacent said first end being substantially straight along a predetermined length thereof;

said first portion of said curved wire being connected to said central portion of said curved wire, said first portion being disposed in the passage;

in an undeformed condition, said sharp point terminating at a predetermined distance "X" as measured from a line perpendicular to a plane which contains said wall contacting surface and which is generally perpendicular to said straight portion of said curved wire;

said distance "X" being less in value than the thickness of the wall in which said curved wire is inserted;

said curved wire being adapted for manual insertion into the wall;

said central portion of said curved wire having a minimum radius of curvature sufficiently large that the passageway is not enlarged due to a spring force in said central portion, which force tends to return said central portion to its original parabolic shape during insertion of said central portion into the passage; said minimum radius of curvature being sufficiently small that said second end substantially overlies a substantial portion of said first portion of said curved wire;

said curved wire having a first position wherein said curved wire passes snugly through the passage in the wall created by said second end, with said sharp point of said second end contacting a rear side of the wall and said first end remaining on a front side of the wall, without deformation of said central portion of said curved wire;

said wall contacting surface of said abutment member in said first position being spaced away from the front surface of the wall;

said curved wire being movable from said first position to a second position by movement of said wall contacting surface of said abutment member into contact with the wall; said central portion of said curved wire being resiliently deformed in going from said first position to said second position such that said force arises in said central portion of said curved member due to its resiliency urging said second end and said first end toward one another creating a snap action in moving from said first position to said second position;

said force tending to retain said abutment member in said second position adjacent the wall;

whereby said second position is stable due to resiliency of said curved wire, so that a snap action retains said abutment member against the wall even when no external load is applied to said first end, and

whereby due to the resiliency of said curved wire, the passage in said second position remains snugly fitting and is not substantially enlarged from its initial size when it is created by entry of said second end into the wall.

4,509,714

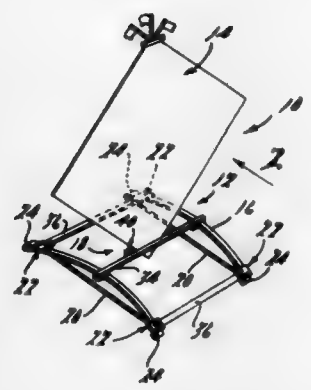
PORTABLE WIND-RESISTANT SIGN STAND WITH FLEXIBLE BOW-TYPE LEGS

James R. Seely, Rochester, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Jul. 14, 1983, Ser. No. 513,852

Int. Cl.[3] G09F *1/00*

U.S. Cl. 248—518 **20 Claims**



1. In a sign and stand apparatus having a sign panel protruding in a generally outward direction from an unanchored and readily portable base assembly, said sign panel being supported by said base assembly, the improvement wherein said base assembly includes at least one base member which is flexible and resilient in bending, mounting means for securing said sign panel to said base assembly, and retainer means for releasably engaging said base member to cause said base member to be resiliently and bendably deflected from an unflexed condition to a resiliently flexed generally arcuate bow-shaped condition, said flexed and generally bow-shaped base member being adapted to further resiliently deflect in response to loads exerted on said sign and stand apparatus in directions generally transverse to said sign panel in order to substantially prevent

said sign and stand apparatus from tipping over in response to said transverse loads.

4,509,715

PRESSURE CONTROL VALVE

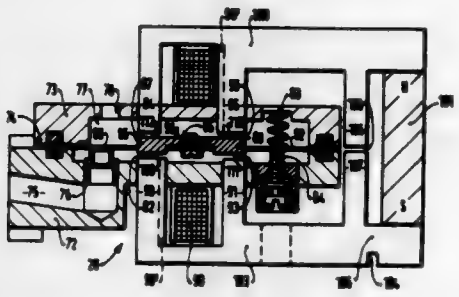
Hans Kubach, Korntal-Münchingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,591

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225179

Int. Cl.³ F16K *31/02*

U.S. Cl. 251—138 **2 Claims**



1. A pressure control valve including a permanent magnet for producing a permanent magnetic field having a North and South polarity; an electromagnetic coil coupled with said permanent magnet for inducing an electromagnetic field; a pressure plate; a valve seat, said pressure plate opening said valve seat to a greater or lesser extent; an armature coupled with said pressure plate and located within said electromagnetic field induced by said electromagnetic coil and said permanent magnetic field; said armature being disc shaped and rotatably supported between two pairs of separate pole shoes disposed on a pair of yokes on opposite sides of said armature, which forms an air gap on opposite sides of said armature; said pole shoes located on said yokes on opposite sides of said armature having a same polarity induced by said permanent magnet; and one of said pair of yokes includes a magnetic restriction, said electromagnetic field at said pole shoes located on said yokes on opposite sides of said armature being arranged to extend in the same direction, whereas the electromagnetic field at the pole shoes aligned on opposite sides of the armature extends in an opposite direction of the permanent magnetic field, characterized in that upon rotational movement of said pressure plate in a direction of said valve seat, at least two pole shoes which are diagonally disposed on opposite sides of said armature provide a larger air gap surface area facing said armature than two other diagonally disposed pole shoes on opposite sides of said armature.

4,509,716

ELECTROMAGNETICALLY OPERATED HYDRAULIC VALVE DEVICE WITH SNAP-TOGETHER VALVE HOUSING

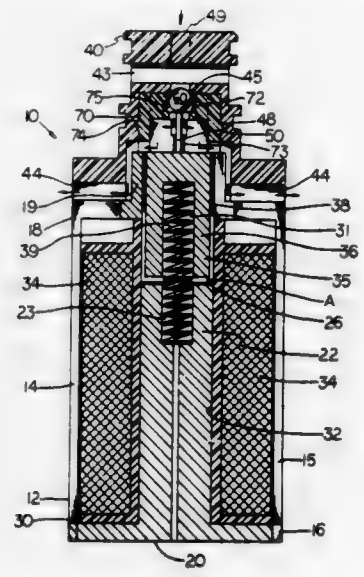
Michael Barber, Toronto, and Charles F. Lloyd, Rexdale, both of Canada, assignors to CTS Corporation, Elkhart, Ind.

Filed Sep. 30, 1983, Ser. No. 537,532

Int. Cl.³ F16K *31/02*; H01F *7/00*

U.S. Cl. 251—141 **18 Claims**

1. A fast response electromagnetic hydraulic valve device, comprising a housing having a plurality of longitudinal openings disposed therein and a bushing disposed at one end thereof, a core providing end closure means for an end of said housing oppositely disposed from said bushing, said core including a longitudinal core post projecting inwardly of said housing and having an opening in said post, a bobbin having a central opening therein receiving said post, winding means supported by said bobbin and circumposing said core post, an armature movable longitudinally within said housing with one end received in the central opening of said bobbin and the other end disposed within the bushing, the one end of the armature having an opening disposed opposite the post opening, resilient means received by the post and armature openings, sleeve means disposed between said bushing and the other end of the armature and providing a constant cross section nonmagnetizable gap between said armature and bushing, an outer valve casing secured over said bushing and having an interior cavity with a circumferential groove disposed about the cavity, an inner valve casing disposed within said interior



cavity and a circumferential boss received by said circumferential groove to provide a snap-together engagement of the valve casings, a valve cavity disposed between the inner and outer valve casings, a valve member disposed within the valve cavity, and a free-floating drive pin engaging said valve member and the armature, whereby said winding means is energizable to effect almost instantaneous displacement of said armature and associated drive pin.

4,509,717

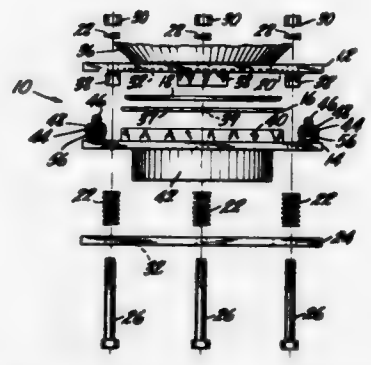
SLIDE GATE VALVE FOR DRY BULK DISCHARGING CONTAINERS

Dennis C. Wright, Conneaut, and Ernest J. Camodeca, Ashtabula, both of Ohio, assignors to Elkem Metals Company, Pittsburgh, Pa.

Filed Mar. 14, 1983, Ser. No. 475,273

Int. Cl.³ F16K *51/00*

U.S. Cl. 251—144 **6 Claims**



1. A container for transporting dry materials in bulk having a discharge aperture in the bottom thereof and a valve assembly for opening and closing said discharge aperture comprising:

(a) a first plate member that extends out beyond the exterior wall of the periphery of said discharge aperture in the bottom of said container and has an aperture therein aligned with said discharge aperture,

(b) a second plate member that extends out beyond the exterior wall of the periphery of said discharge aperture in the bottom of said container and has an aperture therein aligned with said aperture in the first plate member,

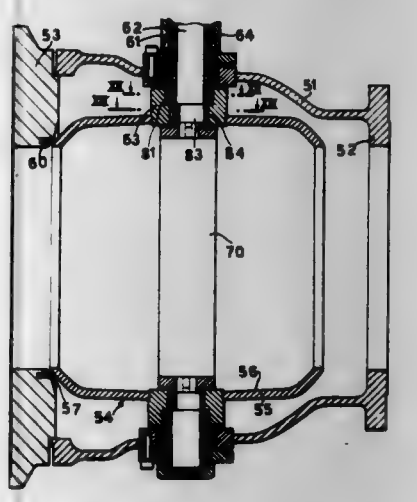
(c) a third plate member that extends out beyond the exterior wall of the periphery of said discharge aperture in the bottom of said container and has an aperture therein aligned with said aperture in said second plate member,
(d) one side of said first plate member being fixed to the bottom of said container,
(e) means carried by said first plate member in position outside the exterior wall of the periphery of said discharge aperture in the bottom of said container for supporting the second and the third plate members with the apertures therein aligned with the aperture in said first plate member,
(f) a solid gate valve member slidably mounted between said first and second plate members,
(g) resilient means between said second and third plate members positioned outside the exterior wall of the periphery of said discharge aperture in the bottom of said container for exerting positive pressure against said second plate member to move it against said solid gate valve member and force it into a resilient sealing relationship with said first plate to close said discharge aperture, and
(h) cam means in position outside the exterior wall of the periphery of said discharge aperture in the bottom of said container for releasing the positive pressure of said resilient means whereby said solid gate valve member may be slidably removed to open said discharge aperture.

4,509,718

BALL VALVE WITH ROTARY-TRANSLATORY MOVEMENT FOR FLUID PRODUCTS AT VERY HIGH OR VERY LOW TEMPERATURE

Giorgio Bormioli, Via Galileo Galilei, 11 - 35100 Padova, Italy

Filed May 31, 1983, Ser. No. 499,325
Claims priority, application Italy, Oct. 27, 1982, 23948 A/82
Int. Cl.[3] F16K *25/00*
U.S. Cl. 251—163 5 Claims



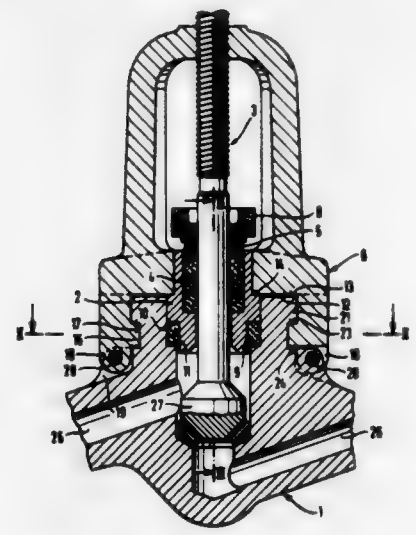
1. Ball valve with rotary-translatory movement for controlling the flow of fluid products passing at very high or very low temperatures, comprising a duct section through which can be passed a fluid product, a ball which can be moved to closing and opening positions in said duct section with seqeuntial movements of rotation and translation, and a control device including a single control shaft able to cause each of said sequential movements through the continuous rotation of said control shaft characterized in that said control device comprises further a first rotatable body integral with said control shaft, a second rotatable body, and connection and release means responsive to a closing rotation of said control shaft in one direction to first keep said bodies connected with each other for rotation in unison and to then stop said second body and to free said first body therefrom for rotation relative to said second body, and vice-versa in response to an opening rotation of said control shaft in the opposite direction, and said ball being coupled to said rotatable bodies of the control shaft so that said rotation in unison causes a movement of mere rotation of the ball around an axis perpendicular to that of said duct section, and wherein the rotation of the first body relative to said second body causes a movement of mere translation of said ball in a direction perpendicular to the above first-mentioned axis, said ball comprising an approximately spherically shaped body having thereon a hub connected to said second body for rotation therewith and a slide rotatably mounted on an eccentric on said first body and slidably connected to said hub to impart said translational movement to said spherical body.

4,509,719

VALVE COVER SEALING

Vilho Uomala; Jouko Kärkkäinen, and Kjell Sandström, all of Pietarsaari, Finland, assignors to Oy Wartsila Ab, Helsinki, Finland

Filed Mar. 16, 1983, Ser. No. 475,861
Claims priority, application Finland, Mar. 24, 1982, 821044
Int. Cl.[3] F16K *31/34*
U.S. Cl. 251—214 10 Claims



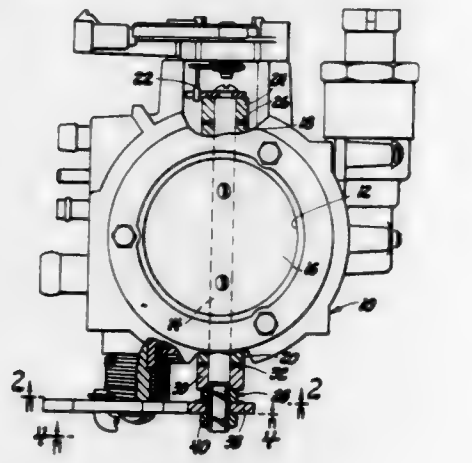
1. A valve comprising:
a valve housing which defines a valve chamber and a bore extending between the valve chamber and the exterior of the valve housing, and which has a surface surrounding the bore and directed to the exterior of the valve housing;
a detachable valve lid having a surface which confronts said surface of the housing;
an elongate valve spindle passing through said lid and entering the valve chamber;
a gasket member which is fitted between said surface of the valve housing and the confronting surface of the lid and which is elastically compressible by at least 5%; and
a clamping member for clamping the lid to the valve housing by means of a clamping force acting mainly in the longitudinal direction of the valve spindle, whereby the gasket member is compressed between the confronting surfaces of the valve housing and the lid and the elasticity of the gasket member maintains a continuous sealing contact pressure between said gasket member and both said lid and said surface of the housing,
and wherein the valve housing comprises guiding means for guiding said clamping member into a locking position relative to said valve housing, in which position the lid is clamped to the valve housing, said guiding means requiring at least first and second consecutive movements of the clamping member relative to the valve housing, said first movement being an essentially linear movement in the longitudinal direction of the valve spindle and said second movement being a rotational movement about the spindle.

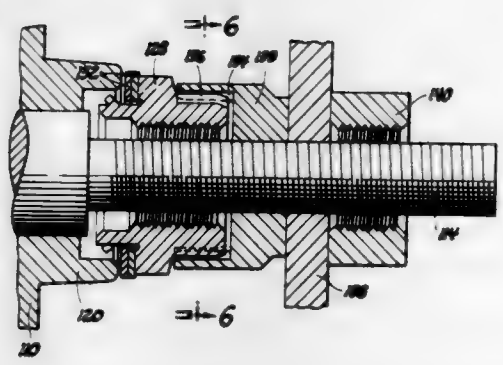
4,509,720

VALVE SHAFT END FLOAT CONTROL

Michael D. Griffin, Rochester; John A. Gural, Pittsford, and Donald J. Lamirande, Spencerport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 7, 1983, Ser. No. 511,534
Int. Cl.[3] F16K *1/22;* F16D *1/12*
U.S. Cl. 251—308 2 Claims





1. A valve assembly comprising a valve body defining a fluid flow passage, a valve shaft journalled for rotation in said body and extending across said passage, a valve member in said passage secured to said shaft and rotatable with said shaft to control flow through said passage, said body having an external boss, and wherein said shaft has a threaded end projecting from said boss, a nut is threaded on said end of said shaft, the position of said nut on said shaft being adjustable during assembly for establishing a selected clearance between said nut and said boss to thereby limit end float of said shaft, a retainer is secured to and rotatable with said shaft, and said retainer has an interfering engagement with said nut for preventing rotation of said nut about said shaft and consequent axial movement of said nut along said shaft to thereby maintain said clearance.

4,509,721

OPERATING MECHANISM FOR A HIGH-PRESSURE VALVE HAVING A VALVE PASSAGE OF RELATIVELY SMALL WIDTH

Gunter M. Lassally, Amsterdam, Netherlands, assignor to Amstelstaal B.V., Netherlands

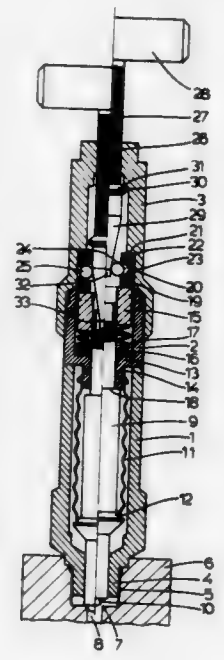
Filed Jun. 6, 1983, Ser. No. 501,491
Claims priority, application Netherlands, Jun. 22, 1982, 8202513
Int. Cl.[3] F16K *41/10*
U.S. Cl. 251—335 B 6 Claims

1. An operating mechanism for a high-pressure valve having a valve body with a valve passage of relatively small width and a movable valve element for opening and closing said passage, said mechanism comprising

valve stem means carrying said valve element at one end thereof, a housing adapted to be mounted on said valve body and receiving said valve stem means for axial sliding movement,

sealing means for sealing said valve stem means with respect to said housing, a first stationary thrust ring in said housing having a central opening, a second movable thrust ring in said housing axially spaced from said first thrust ring and having a central opening coaxial with said first thrust ring central opening, said second thrust ring being axially movable with respect to said first thrust ring,

each one of said two thrust rings having on its side facing the other of said thrust rings an annular end face having an inwardly bevelled conical shape whereby said two opposing end faces of said two thrust rings enclose therebetween an annular space of radially inwardly increasing axial width,



a plurality of ball members arranged in said annular space between said conical thrust ring end faces,

said valve stem means on the side opposite of said valve element axially engaging said second movable thrust ring,

spring means between said housing and said valve stem means urging the latter against said second movable thrust ring and thereby urging said second thrust ring towards said first thrust ring whereby said ball members are urged radially inwardly by said conical thrust ring end faces,

and an operating spindle axially adjustably mounted in said housing, said spindle having an elongate tapering end portion projecting through said central openings of said two thrust rings and forming an adjustable tapering holding surface for said ball members urged radially inwardly by the pressure of said spring means.

4,509,722

COMPOSITE VALVE SEAT

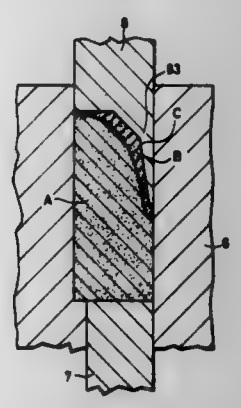
Tadashi Ebihara, Saitama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,385
Claims priority, application Japan, Feb. 26, 1981, 56-26117
Int. Cl.[3] F01L *3/00*
U.S. Cl. 251—359 4 Claims

1. A composite valve seat formed around a core rod by compressing first and second layers within a surrounding die between upper and lower punches, said valve seat comprising:

first and second zones, said first zone comprising said first layer and being made of a first sintered alloy powder, said second zone comprising said second layer and being made of a second sintered alloy powder, a boundary between said first and second sintered alloy powders having a rest-curvelike shape formed by relative movement between said die and lower punch after said first sintered

alloy powder is deposited within said die on an upper surface of said lower punch but prior to said second sintered alloy powder being deposited on said first sintered alloy powder.

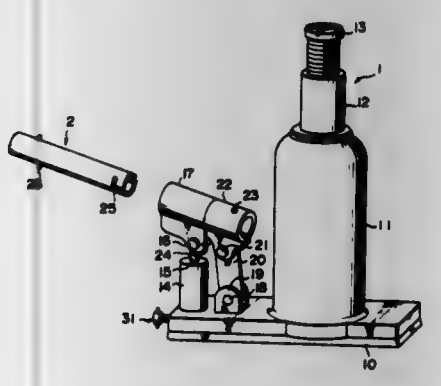


4,509,723

PORTABLE HYDRAULIC LIFTING JACK

Tatsuo Shimura, Tokyo, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Jun. 28, 1983, Ser. No. 508,580
Int. Cl.[3] F15B *15/18*
U.S. Cl. 254—93 H 3 Claims



1. A lever activated portable hydraulic lifting jack of relatively compact size for automobiles or the like, comprising:

a main body supporting a plunger cylinder and a ram cylinder in upright orientation, said jack being provided in said main body with a release valve having a rotatable bolt head activated by a slotted end provided in said lever;

a plunger receivable in said plunger cylinder;

a ram receivable in said rom cylinder; and

a two-piece socket comprising a first piece and a second piece for slidably receiving a lever therethrough for activating said plunger, said first piece being pivoted to the main body and being provided with a pin for engageably receiving grooves provided in the forward end of said lever;

said second piece being pivoted to the upper end of said plunger so that the distance between said two pieces of said socket is adjustable, and the second piece of the socket freely receives said lever until the second piece comes into contact with a stopper provided in said lever at a predetermined distance from said slotted end of said lever;

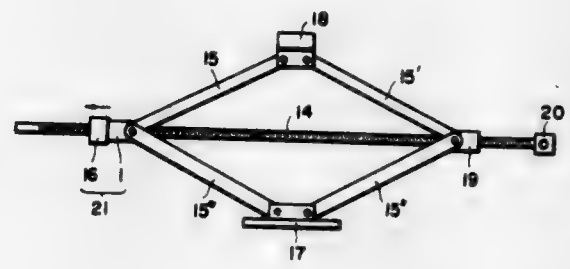
whereby said jack is adapted to lift a wide range of loads without any rotation of said lever and whereby the ratio of the stroke of said lever to that of said plunger is very depending upon the separation of said socket pieces by said lever.

4,509,724

PANTAGRAPH TYPE JACK

Hiroshi Okada, Seto, Japan, assignor to Mitsuchi Corporation, Nagoya, Japan

Filed May 11, 1983, Ser. No. 493,553
Claims priority, application Japan, May 15, 1982, 57-70988[U]
Int. Cl.[3] B66F *3/08*
U.S. Cl. 254—126 2 Claims



1. In a pantagraph jack of the type in which support bars forming parallel links are provided with a bolt support at one of their two connection portions and with a bolt-receiving nut at the other, and in which an actuating bolt is inserted into said two connection portions through said bolt support and said bolt-receiving nut, the improvement wherein:

a casing of said bolt-receiving nut is formed with a tapered through bore, said bolt-receiving nut comprising separate nut segments arranged slidably therein in the direction of the taper and being biased toward the smaller-diameter end of said tapered bore;

said bolt-receiving nut including an actuating member slidably mounted over said casing for thrusting said nut segments toward the larger-diameter end of said tapered bore; and wherein

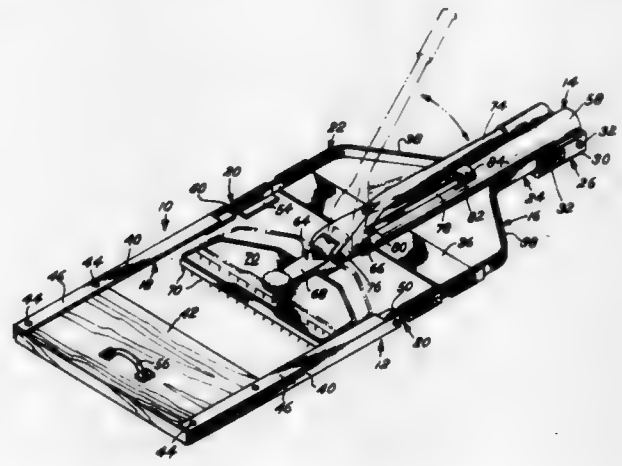
said actuating member for thrusting said nut segments toward the larger-diameter end of said tapered bore comprises an actuating ring which is slidably fitted over the outer surface of said casing, and a sleeve integrally formed with said actuating ring and having a center bore into which said actuating bolt is inserted; and wherein said sleeve is provided with openings into which said nut segments are fitted and engagement portions which engage with rear end faces of said nut segments.

4,509,725

CARPET REPAIR MECHANISM

Victor T. Talavera, Chicago, Ill., assignor to Talavera Corporation, Chicago, Ill.

Filed Jan. 3, 1983, Ser. No. 455,340
Int. Cl.[3] A47G *27/04*
U.S. Cl. 254—212 4 Claims



1. A mechanism for drawing first and second adjacent sections of previously laid and stretched carpeting towards one

another for purposes of facilitating the repair of a selected section of said carpeting, said mechanism comprising, in combination a frame assembly having first and second portions, the second portion having support bars, means for pivotally interconnecting said first and second portions together, means mounted on said first portion of said frame assembly for selectively engaging said first section of said carpet, wherein the engaging means comprises a support member and a plurality of projecting teeth thereon, a power member including a tubular support member, the tubular support member being removably and operatively, non-rotatably fixed to the support bars and the power member thereby being removably and operatively mounted in a fixed position on said second portion of said frame assembly wherein said support bars extend in a longitudinal direction of said tubular support member locating said pivotally interconnecting means remote from the position at which said tubular support member is fixed to said support bars, means on said power member for selectively engaging said second section of said carpeting in a position adjacent said second portion of said frame assembly, a drive section on said tubular support member of said power member movable from a first position to a second position by use of external force, said carpeting sections being in their original positions when said power member is in its first position and being in a drawn together position when said power member is forcibly moved to said second position while both of said carpeting engaging means are engaged with said carpeting, said carpet engaging means on said power member being movable towards said carpet engaging means provided on said frame assembly so that said selected section of said carpeting is more easily repairable when said carpeting sections are in said drawn together position.

4,509,726

BARRIER

William G. Boggs, Phoenix; David S. VanDenburgh, Paradise Valley, and Gabriel A. Valdez, Tolleson, all of Ariz., assignors to American Security Fence Company, Phoenix, Ariz.

Filed Oct. 17, 1983, Ser. No. 542,513
Int. Cl.³ B21F *25/00*
U.S. Cl. 256—8 **4 Claims**



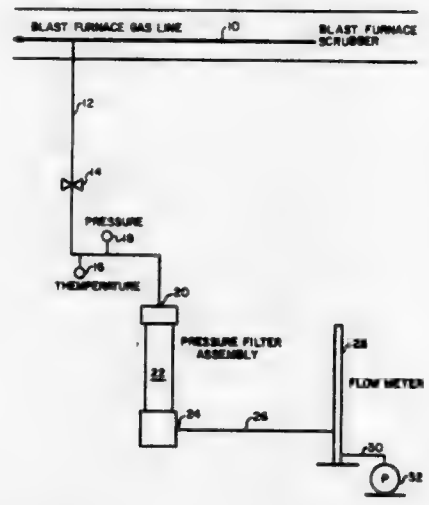
1. A self-supporting barrier structure comprising an elongated metal tape having a generally constant edgewise arcuate curvature therein providing a series of interconnected coils of equal diameter, said tape having a channel formed lengthwise therein and providing a bight, a reinforcing wire disposed in the bight and uniformly gripped by said tape throughout its length, said tape further having continuous reinforcing flange regions extending from opposite sides of said coil channel and barbs formed at spaced intervals along said tape and extending outwardly of the extent of said flange regions, said barbs formed in pairs with the individual barbs in each pair extending in opposite directions and each pair having a root portion connecting the pair to the flange region of the tape, the width of the flange regions of the tape adjacent each barb root being narrower than the wider flange regions elsewhere along the tape.

4,509,727

OFF-GAS MONITOR FOR STEEL PROCESSES

Kevin M. Davis; Timothy M. Wahl, both of Rochester; John A. Beckman, and Karl J. Isele, Jr., both of Canton, all of Mich., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 23, 1983, Ser. No. 497,360
Int. Cl.³ C21B *7/22*
U.S. Cl. 266—44 **1 Claim**



1. A method for determining the efficiency of chemical treatments used in gas scrubbers in steel mill furnace off-gas systems which comprises the steps of:

(a) withdrawing a side stream sample from untreated gas flowing through an off-gas line;

(b) passing said sample through a pressure filter for a fixed period of time at a constant flow rate whereby the particulate matter in the sample is collected,

(c) withdrawing a side stream sample from the same off-gas line after chemical treatment has been added to the off-gas and passing the treated sample through a pressure filter at the same constant flow rate and for the same fixed period of time used in step (b), whereby the particulate matter in the treated matter is collected,

(d) comparing the amount and types of samples collected in steps (b) and (c) to determine the efficiency of the treatment.

4,509,728

MOLTEN METAL FILTRATION INDICATOR

Frank M. Powers, and Robert H. Ogletree, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Oct. 12, 1983, Ser. No. 541,214
Int. Cl.³ C22B *9/00*
U.S. Cl. 266—44 **1 Claim**

1. A method of detecting the effectiveness of a molten metal filter in a molten metal tundish of the type having a first chamber for molten metal, a second chamber for molten metal, and a molten metal filter means disposed between said first and second chambers for filtering molten metal between said chambers, including the steps of:

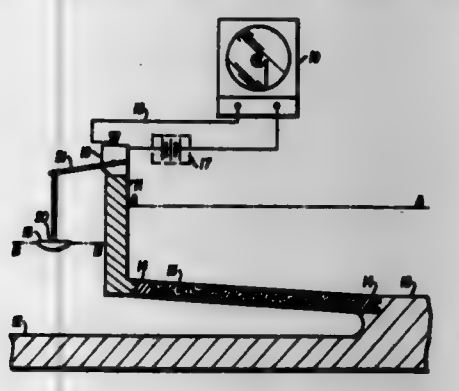
pouring molten metal into the first chamber;

filtering said molten metal from the first chamber into the second chamber through said filter means;

sensing the level of molten metal in one of said chambers;

converting the sensed molten metal level into a signal;

monitoring said level signal as a function of time to detect the rate of change of the level of molten metal; and



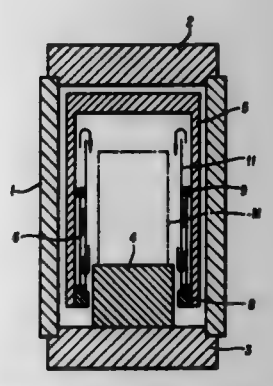
determining the effectiveness of said filter means based on the rate of change of the level of molten metal.

4,509,729

HOT ISOSTATIC PRESSING APPARATUS

Yoichi Inoue, Hyogo, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 26, 1983, Ser. No. 545,516
Claims priority, application Japan, Oct. 29, 1982, 57-165347[U]
Int. Cl.³ F27B 5/04
U.S. Cl. 266—252 5 Claims



1. A hot isostatic pressing apparatus comprising:

(a) a cylindrical pressure vessel comprising a pressure cylinder and a lower lid;

(b) a cup-shaped, downwardly open heat-insulating layer disposed within said pressure cylinder so as to define a first intercylindrical flow passage between the inner surface of said cylindrical pressure cylinder and the outer surface of said cup-shaped heat-insulating layer, the bottom edge of said cup-shaped, downwardly open heat-insulating layer being spaced above said lower lid;

(c) a ring-shaped electrical insulator projecting inwardly from the inner surface of said cup-shaped heat-insulating layer in a low temperature zone near the bottom of said pressure vessel;

(d) a heating unit of the cylindrical, self-standing, single-stage type mounted on said electrical insulator and extending upwardly therefrom, said cylindrical heating unit being disposed within said cup-shaped heat-insulating layer so as to define a second intercylindrical flow passage between the inner surface of said cup-shaped heat-insulating layer and the outer surface of said cylindrical heating unit;

(e) a convection-promoting cylinder mounted on said electrical insulator and extending upwardly therefrom beyond the uppermost portion of said cylindrical heating unit, said convection-promoting cylinder having radial gas flow passages through the lower portion thereof and being disposed within said cylindrical heating unit so as to define a third intercylindrical flow passage between the inner surface of said cylindrical heating unit and the outer surface of said convection-promoting cylinder and a fourth intercylindrical flow passage between the inner surface of said cup-shaped heat-insulating layer and the outer surface of said convection-promoting cylinder; and

(f) a table upon which the material being pressed is supported during use of the hot isostatic pressing apparatus, said table having an upper material supporting surface which is above the radial gas flow passages in said convection-promoting cylinder, said table being disposed within said convection-promoting cylinder so as to define a fifth intercylindrical flow passage between the inner surface of said convection-promoting cylinder and the outer surface of said table,

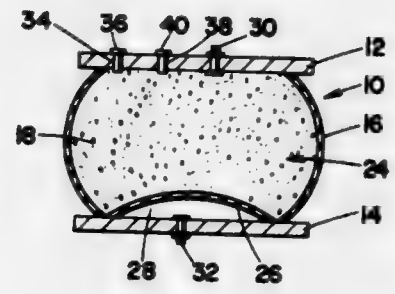
whereby, when the hot isostatic pressing apparatus is in use, the gaseous pressure medium is caused to convect downwardly along the outer surface of the material being pressed, which material is disposed within said convection-promoting cylinder on top of said table, downwardly in said fifth intercylindrical flow passage, radially outwardly through said radial gas flow passages in said convection-promoting cylinder, upwardly in said second and third intercylindrical flow passages, during which passage it is heated by said cylindrical heating unit, after which it continues upwardly in said fourth intercylindrical flow passage, passes over the top of said convection-promoting cylinder, and once again is caused to convect downwardly along the outer surface of the material being pressed, said convection-promoting cylinder serving to substantially eliminate the temperature difference in the vertical direction in the treatment volume inside said convection-promoting cylinder even though said cylindrical heating unit is short relative to the height of the treatment volume.

4,509,730

FLEXIBLE WALL SPRING DAMPER

Emile M. Shtarkman, Euclid, Ohio, assignor to Imperial Clevite Inc., Glenview, Ill.

Filed Oct. 25, 1982, Ser. No. 436,330
Int. Cl.³ F16F 13/00
U.S. Cl. 267—35 15 Claims

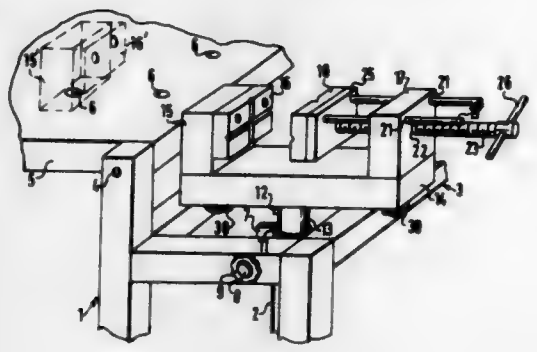


1. A flexible wall spring damper including opposed first and second rigid mounting members interconnected by a flexible side wall for defining a flexible wall spring damper chamber, a plurality of solid essentially incompressible in volume irregular shaped elastomeric particles included in said damper chamber, said plurality of elastomeric particles having particle sizes of 30 mesh or smaller filling said chamber at least to the point wherein under static load said chamber is essentially filled, and a flexible diaphragm connected to said second rigid mounting member, a selectively pressurizable gas chamber is interposed between said second rigid mounting member and said diaphragm, whereby relative movement between said opposed rigid mounting members operates to stress said flexible side wall, vary the volume of said gas chamber, and cause relative interaction between the solid incompressible individual particles thus promoting the desired damping and spring characteristics.

4,509,731
WORKBENCH WITH REMOVABLE VISE

Günter Schaal, and Heribert Schramm, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 15, 1983, Ser. No. 504,473
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222750
Int. Cl.³ B25B *1/10*
U.S. Cl. 269—78 9 Claims



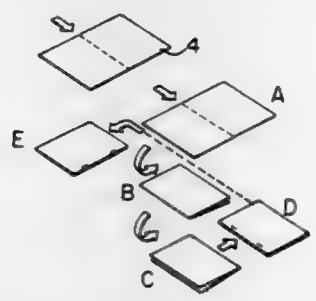
1. Workbench having a removable vise (3), a seat cavity for rotary mounting of said vise, and a workplate (5) separate from said vise provided with apertures for seating clamp elements, said workbench comprising the improvements wherein:

said removable vise (3) comprises a vise base (14) having apertures (27) corresponding in their dimensions to said apertures (6) of said workplate (5) and a downwardly extending mandrel (13) for rotary mounting of said removable vise, a first jaw assembly (15,16) with a fixed jaw (16), a second jaw assembly (17,18) with an adjustable jaw (18) and means (28-30) for fastening said jaw assemblies selectively either to said vise base (14) or to said workplate (15) and for detaching said jaw assemblies therefrom, said fastening and detaching means including elements of elongated configuration suitable for passing respectively through said apertures of said vise base or of said work plate, for grasping said jaw assemblies at one end of said elongated configuration and for manual fastening or detaching actuation at the other end of said configuration.

4,509,732
DOCUMENT HANDLING APPARATUS FOR PRODUCING FOLDED AND BOUND STACKS OF DOCUMENTS

Tadaaki Kanno, Yokosuka; Takeshi Ukai, Yokohama; Yutaka Akahoshi, Funabashi, and Katsuji Shibata, Kiyose, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 20, 1980, Ser. No. 123,007
Claims priority, application Japan, Feb. 24, 1979, 54-21245
Int. Cl.³ B41L *43/12*
U.S. Cl. 270—37 13 Claims

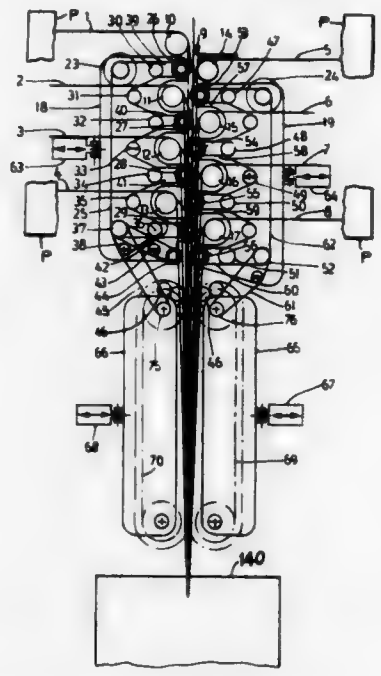


1. A document handling device for producing bound stacks of documents received from a machine such as a printing machine, a copying machine or the like; comprising a first conveying means for conveying documents received from said machine to a handling section; said handling section including a folding device for folding each received document along a line, a stacking device located at a level beneath that of said folding device and including a stop member, means for sequentially feeding the folded documents with their fold lines as their leading edges from said folding device and directing them into engagement with said stop member to stack said documents in said stacking device, means for binding the trailing edge portions of the documents stacked in said stacking device, and second conveying means for feeding the bound stack of documents to a delivery area.

4,509,733
MULTIPLE PAPER WEB GUIDING AND COMBINING APPARATUS FOR COMBINATION WITH ROTARY PRINTING MACHINE AND FOLDING DEVICE

August Pflaum, and Albert Mayer, both of Augsburg, Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,690
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308069
Int. Cl.³ B41L *43/04*
U.S. Cl. 270—41 13 Claims



1. For combination with a rotary printing machine (P) and paper handling apparatus (140),

a paper web guiding, transporting and combining apparatus having

a frame (20, 21, 22, 18, 19);

and comprising, in accordance with the invention,

a first set of vertically positioned, spaced deflection rollers (10–13; 85–88) positioned to receive a first plurality of paper webs (1–4; 77–80), and deflecting the webs for travel in a vertical direction, and for guiding the webs into a vertically positioned combining plane extending at least approximately tangentially to said rollers, and towards said paper handling apparatus (140);

a second set of vertically positioned spaced deflection rollers (14–17; 89–92) positioned to receive a second plurality of paper webs (5–8, 81–84) from a direction opposite the first direction, and deflecting said paper webs for travel in a vertical direction and into said combining plane, parallel to and adjacent said first plurality of webs and towards said paper-handling apparatus,

the rollers of the second set of rollers being vertically staggered or offset with respect to the rollers of the first set;

and transport means (26–29, 53–56; 110–113, 128–130) located outside of the combining plane (9) at both sides thereof, movable toward and away from the combining plane to permit threading of the respective plurality of

webs about the respective deflection rollers while the transport means are located away from the combining plane, and subsequent movement of the transport means to the combining plane and engagement of the transport means with the respective webs of said first and second plurality of webs.

4,509,734

MECHANICALLY-OPERATED MAGAZINE-UNLOADING, SHEET-FEEDING MECHANISM FOR SHEET PROCESSING APPARATUS

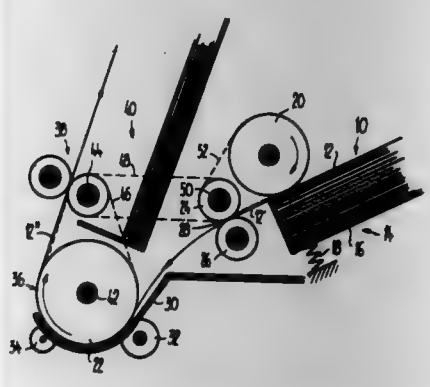
Albert Rutishauser, Rütihofstrasse 38-40, 8713 Uerikon, Switzerland

Filed Apr. 27, 1982, Ser. No. 372,373

Claims priority, application Switzerland, Jul. 30, 1981, 4941/81

Int. Cl.³ B65H *7/02*

U.S. Cl. 271—10 **11 Claims**



1. A sheet feeding mechanism, comprising:

a driven separating means constructed and arranged to convey a succession of sheets, sheet by sheet, from a stack along a path, towards a sheet processing station;

a sensing lever extending into said path and being constructed and arranged to be displaced by contact with each sheet;

a spring-operated accumulator; a catch arrangement constructed and arranged to releasably block said accumulator; and a resetting device constructed and arranged for loading said accumulator; said spring-operated accumulator being constructed and arranged when blocked to permit sheets to pass along said path towards said sheet processing station, and when unblocked, to interrupt passage of sheets along said path towards said sheet processing station;

a drive means for said sheet processing station;

a coupling disengagably drivingly connecting said drive means with said driven separating means so that when said coupling is engaged, said drive means for said sheet processing station also drives said driven separating means;

said sensing lever being constructed and arranged to operate said catch arrangement and said catch arrangement being connected with said coupling, for disengaging drive means from said driven separating means by unblocking said accumulator, so that conveying of sheets from said stack into said path is interrupted; and

said resetting device being operatively connected with said drive means to be rotated by said drive means as said drive means is operated;

a second spring-operated accumulator constructed and arranged for re-engaging said coupling; said resetting device being connected with said second spring-operated accumulator for recharging said second spring-operated accumulator each time after said second spring-operated accumulator has re-engaged said coupling.

4,509,735

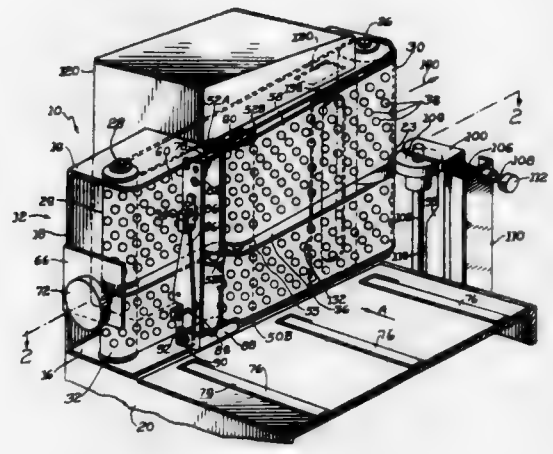
VARIABLE WIDTH ENVELOPE FEEDER

Jerry J. Kosner, LaGrange, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jul. 26, 1982, Ser. No. 401,577

Int. Cl.³ B65H *5/08*

U.S. Cl. 271—11 **13 Claims**



1. In a sheet feeding apparatus for feeding vertically disposed sheet material from a horizontally extending stack comprising a platform adapted to support a stack of sheet material, vertically extending frame means disposed at one end of said platform, first and second roller means vertically supported in spaced relation by said frame means, endless web means extending around and driven by said first and second roller means, said web means including a plurality of perforations therein and having one run facing said platform, said one run providing an effective contact surface to engage the first article in said stack of sheet material whereby said first article is transported from said stack of sheet material as said endless web is driven, and adjusting means associated with said frame to vary the effective contact surface of said endless web means by driving said run of said endless web means facing said platform in two spaced apart planes, the effective contact surface of said web means being adjusted by varying the length of said planes by said adjusting means, whereby the effective contact surface of the web is adjusted to prevent corners of the sheet material from becoming caught by the perforations in said web.

4,509,736

APPARATUS FOR MANIPULATING STACKED X-RAY SHEETS OR THE LIKE

Werner Stahl, Kirchheim-Heimstetten, and Jürgen Müller, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 18, 1983, Ser. No. 476,588

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211609

Int. Cl.³ B65H *5/08*

U.S. Cl. 271—11 **39 Claims**

1. Apparatus for transferring sheets, particularly X-ray films, from a stack of overlapping sheets to an inlet of a transporting device which accepts the sheets in a first plane, each sheet including a leader having one of a plurality of widths greater than or equal to a minimum width, and each sheet also including an edge which extends transversely of the leader, said apparatus comprising:

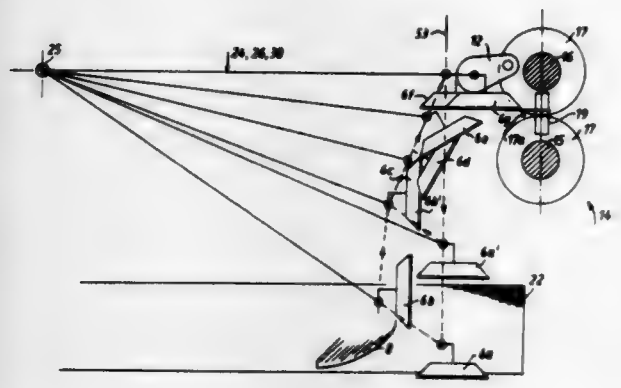
(a) a source of sheets arranged to support the stack so that the outermost sheet is located in a second plane which is at least substantially parallel to said first plane, said source being further arranged to support the stack such that the leaders are substantially superimposed and the edges are substantially in alignment;

(b) a singularizing device including a pair of suction-

operated, mobile lifting elements separated from one another in a predetermined direction by a spacing which at most equals said minimum width, said singularizing device being devoid of lifting elements to the outside of said pair as considered along said predetermined direction;

(c) means for moving said lifting elements into engagement with the leader of the outermost sheet so that one of said lifting elements is in the region of the respective edge and said spacing extends along the leader of the outermost sheet; and

(d) means for steering the movements of said lifting elements



between a first end position in which the latter engage the leader of the outermost sheet in said second plane, and a second end position adjacent to said inlet in which the leader is located substantially in said first plane, said steering means being designed such that said lifting elements bend at least a portion of the leader out of parallelism with said planes as said lifting elements begin to move from said first end position towards said second end position, and said steering means being further designed such that said lifting elements maintain the bent portion of the leader out of parallelism with said planes until arrival of said lifting elements at said second end position.

4,509,737

SHEET FEEDING MEANS

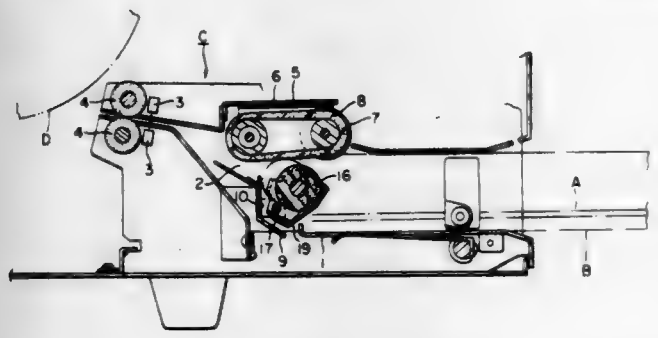
Takao Shiozawa, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1982, Ser. No. 411,540

Claims priority, application Japan, Aug. 29, 1981, 56-128522[U]

Int. Cl.[3] B65H *3/52*

U.S. Cl. 271—125 6 Claims



1. A sheet feeding means comprising a sheet feeding member for feeding a sheet from a sheet feeding cassette, a transporting member for transporting said sheet fed by said sheet feeding member, a sheet double feeding prevention member movable into contact with said transporting member for preventing double feeding of another sheet with said sheet, a swing member for supporting said sheet double feeding prevention member swingable to an operative position, a movable fitting member for positioning the swing member at said operative position so that it can be adjusted relatively to said transporting member, and a locking member attached to the fitting member for locking said swing member in the operative position during an adjustment operation.

4,509,738

UNIVERSAL PAPER FEED CASSETTE

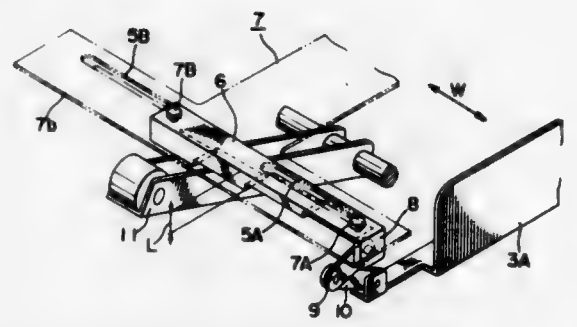
Naoki Aoki, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 525,936

Claims priority, application Japan, Aug. 31, 1982, 57-151318

Int. Cl.[3] B65H *3/04, 3/46*

U.S. Cl. 271—160 2 Claims



1. A universal paper feed cassette comprising:

a bottom plate adapted to be raised by a spring lift member provided on a paper feed base of a recording apparatus to which said universal paper feed cassette is set;

a restriction plate slidable in the widthwise direction of the recording paper and adapted to restrict the widthwise movement of the recording paper;

paper-pressure regulator slidable in the widthwise direction of the recording paper along the inner surface of said bottom plate and having a thickness varying in the widthwise direction thereof, said regulator being linked to said restriction plate, and said bottom plate being thereby raised by said spring lift member via said regulator.

4,509,739

APPARATUS FOR STACKING LETTER MAIL

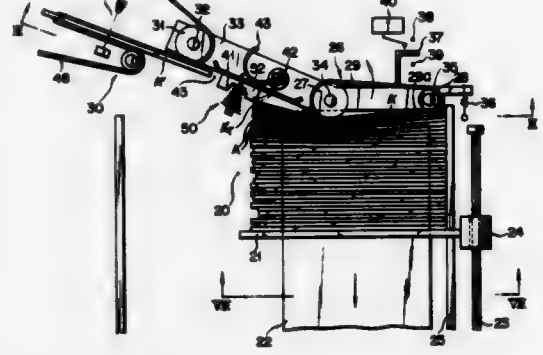
Koji Kurokawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 28, 1982, Ser. No. 426,134

Claims priority, application Japan, Oct. 26, 1981, 56-171007

Int. Cl.[3] B65H *43/00, 29/44*

U.S. Cl. 271—176 14 Claims



1. An apparatus for stacking letter mail side by side in the upright state in a stacking position in a stacking section, said apparatus comprising:

a letter mail supply path extending toward said stacking section through which the letter mail is supplied;

letter mail supply means for supplying pieces of letter mail one by one in the upright state through said letter mail supply path;

letter mail supporting means provided with a surface for supporting the bottom of the letter mail stacked in said stacking section on the surface;

holding means connected to said letter mail supply path for holding the stacked letter mail, and including a forcible feeding means for engaging the forward end portion of each piece of the letter mail supplied from said letter mail supply path and for forcibly feeding said piece to the stacking position, and urging means for urging a rear end portion of the piece of the letter mail; and

a movable back-up means facing said holding means for co-operating with said holding means to sandwich the stacked letter mail between said holding means and movable back-up means,

said urging means including

a lever means which is pivotally supported on the holding means side of the supply path, and movable between an advanced position in which the free end of the lever is located in the stacking section and capable of pushing the rear end portion of the letter mail against the movable back-up means, and a retracted position in which said lever means is separated from the supply path such that the next piece of the letter mail can be supplied along the supply path,

detecting means provided along the supply path at a location upstream of said lever means with respect to the feeding direction of the letter mail, said detecting means for detecting the forward end of the letter mail which has passed through the detecting means, and

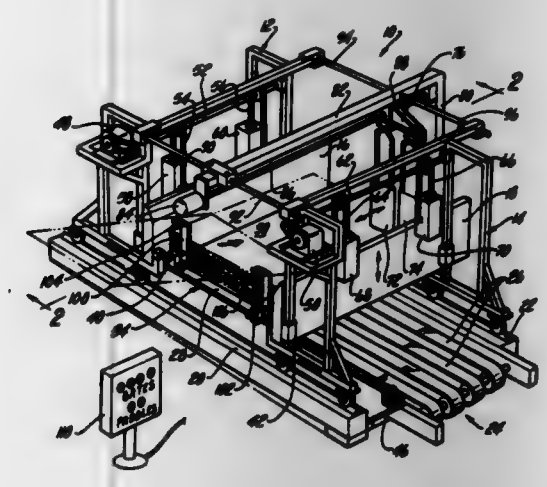
driving means for keeping the lever means in the advanced position when the detecting means does not detect the letter mail, and for moving the lever means from the advanced position to the retracted position during a given time until the forward end of the piece of the letter mail passes beyond the lever means when the detecting means detects the forward end portion of the piece of the letter mail.

4,509,740

SHEET STACKING SYSTEM

Anthony Foresi, and Peter Naysmith, both of Allen Park, Mich., assignors to Anthony Foresi & Associates, Inc., Allen Park, Mich.

Filed Jan. 10, 1983, Ser. No. 457,094
Int. Cl.³ B65H *31/20*
U.S. Cl. 271—224 **7 Claims**



1. A system for stacking sheets of material onto a pallet comprising:

a conveyor arranged for movement along a longitudinal axis and adapted to support a pallet onto which sheets are successively fed in a direction substantially normal to said longitudinal axis to form a stack of sheets on the pallet;

a pair of side gates extending transversely across the conveyor on opposite sides of, and equidistant from, a central stacking axis extending transversely across the conveyor in general alignment with the feed direction of the sheets;

first motive power means for automatically moving said side gates oppositely and in unison in directions normal to said central stacking area axis to vary the spacing between said gates while maintaining their equidistant relationship to said central stacking area axis;

second motive power means for automatically lifting the gates up from the conveyor to allow the conveyor to move a pallet into and out of the stacking area;

rigid stop means located at the sheet entry end of the stacking area;

flexible stop means at the opposite end of the stacking area including at least one swinging panel for contacting a forward edge of the sheets as they are fed into the stacking area;

third motive power means for automatically moving said flexible stop means in a direction parallel to the stacking area axis; and,

controller means for selectively energizing at least the first and third motive power means to position the gates and flexible stop means at desired positions to substantially conform the stacking area to various sheet sizes.

4,509,741

HEIGHT ADJUSTABLE CRUTCH

Alfred A. Smith, Van Nuys, Calif., assignor to Guardian Products Company, Inc., Simi Valley, Calif.

Filed Jan. 3, 1983, Ser. No. 454,985
Int. Cl.³ A61H *3/02*
U.S. Cl. 272—69 **5 Claims**





1. A height adjustable crutch comprising:

(a) a bow having a transverse arm crutch support and a pair of vertical hollow tubular members extending down-

wardly from said support, said members being brought into closer but spaced apart parallel alignment for a predetermined distance from their lower extremities and maintained in their hollow tubular condition

(b) a hollow tubular carrier, said carrier being disposed in the space between the lower extremities of said hollow tubular vertical members and in abutment therewith, said carrier being orificed at spaced intervals along at least one of its sides not in abutment with said lower extremities of said hollow tubular vertical members;

(c) first means securing the upper end of said carrier to each of said vertical members;

(d) second means securing the lower end of said carrier to each of said vertical members, said second means comprising an element encompassing externally each of said lower extremities of said vertical members and the carrier therebetween and secured externally at diametrically opposite points of contact to each of said extremities to prevent axial movement of said element relative to each said extremity; and

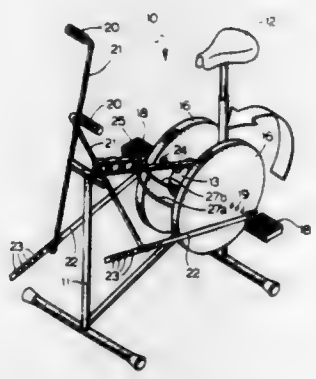
(e) a telescoping foot member disposed for axial displacement within and relative to said carrier, said foot member being provided with at least one laterally projecting detent, said detent being spring-biased radially outwardly for projection through any of the orifices at spaced intervals along said carrier whereby, when said detent is so projected through any such orifice, the foot member is locked against telescoping movement relative to said carrier, but such movement may be effected by pressing the spring-biased detent radially inwardly thereby to change the disposition of the foot member relative to the carrier, for locking engagement at such changed disposition by projection of the detent outwardly through a different orifice in said carrier.

4,509,742

EXERCISE BICYCLE

Charles F. Cones, 124 S. Market St., Thorntown, Ind. 46071

Filed Jun. 6, 1983, Ser. No. 501,634
Int. Cl.³ A63B *23/04, 21/00*
U.S. Cl. 272—73 **10 Claims**



1. An exercise bicycle, comprising:

a frame;

a positive displacement hydraulic pump mounted on said frame, said pump having a pair of inlet/outlet passages and a driveshaft for operating said pump;

a pair of foot pedals connected to said driveshaft of said pump for rotating said driveshaft;

a load resistance control means operatively connected to said pump for selectively controlling the load resistance on said hydraulic pump and automatically maintaining said load resistance constant at varying speeds of said driveshaft, said control means defining a valve body and valve seat in flow communication with said inlet/outlet passages; and

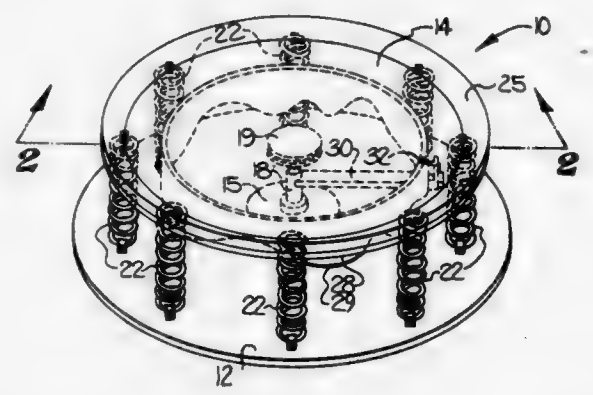
a hydraulic pressure gauge means in fluid communication with said pump and said load resistance control means, said hydraulic pressure gauge means serving to indicate work rate input of an operator actuating said exercise bicycle.

4,509,743

BALANCE TRAINING APPARATUS

Hakon Lie, Oslo, Norway, assignor to Chatanooga Corporation, Chattanooga, Tenn.

Filed Mar. 7, 1983, Ser. No. 472,678
Claims priority, application Norway, Mar. 10, 1982, 820780
Int. Cl.³ A63B *23/04, 69/18*
U.S. Cl. 272—97 **10 Claims**



1. An apparatus for the balance training of athletes, and which is particularly adapted for use in training for downhill skiing, and comprising

a base adapted to rest upon a horizontal supporting surface,

a foot plate upon which the athlete is adapted to stand,

means supporting said foot plate in spaced relation above said base, said supporting means including resilient means joining said base and foot plate and disposed in a generally circular arrangement around the central portion of the foot plate, and

drive means for imparting continuous irregular tilting movement of said foot plate relative to said base, whereby an athlete standing upon said foot plate is required to continuously adjust to the changing inclination of the foot plate, said drive means including a circular cam plate defining an irregularly undulating cam surface which is disposed between said base and said foot plate and coaxially about said central portion of said foot plate, with said cam plate being fixed to one of either said base or said foot plate, and cam follower means disposed between said cam surface and the other of said base or said foot plate, and means for drivingly moving said cam follower means in a circular path of travel along said cam surface.

4,509,744

AQUATIC EXERCISE DEVICE WITH RIGID FLUID RESISTANCE MEMBER

Robert L. Beasley, 1217 Terra Mar Dr., Tampa, Fla. 33612

Continuation of Ser. No. 384,720, Jun. 3, 1982, abandoned. This application Mar. 28, 1984, Ser. No. 594,463
Int. Cl.³ A63B *69/12, 31/10*
U.S. Cl. 272—116 **9 Claims**

1. An aquatic exercise device for use in a swimming pool or the like comprising a rigid fluid resistance member including a substantially planar inner portion having a wrist guide extending outwardly from the periphery of said substantially planar inner portion and a hand grip held in fixed spaced relation relative to said substantially planar inner portion by a pair of interconnecting members, said wrist guide comprising a wrist stabilizing member extending outwardly from said rigid fluid resistance member to engage the user's wrist, said wrist stabilizing member comprising a substantially U-shaped member, the legs of said U-shaped member extending substantially parallel to the plane defined by said planar inner portion of said rigid fluid resistance member and also to said hand grip to engage opposite sides of the user's wrist joint to retain the

user's wrist rigidly therein such that the user grasps said hand grip while placing his wrist within said wrist guide to prevent



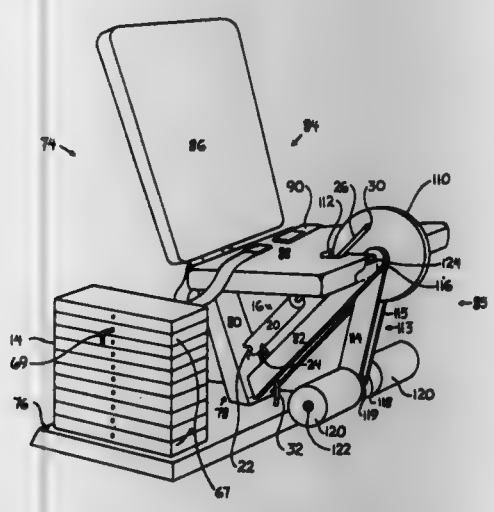
flexure and extension of the user's wrist as the user moves said aquatic exercise device through the water creating a resistance on said rigid fluid resistance member to exercise the user.

4,509,745

WEIGHT LIFTING DEVICE

Gregory S. Angsten, 151 South St., Crystal Lake, Ill. 60014

Filed Jun. 18, 1982, Ser. No. 389,719
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—130 7 Claims



1. A weight lifting device comprising a frame, said frame having secured thereto, a variable weight stack, a force applicator means for moving said variable weight stack, a connecting means for operably connecting said force applicator means to said variable weight stack so that movement of said force applicator means causes movement of a selected portion of said variable stack, wherein:

(a) said force applicator means is acted upon by a user during exercise of one or more groups of muscles;

(b) said variable weight stack includes a first weight and a second weight, said second weight adjustable and removable attachable to said first weight, said first weight is operably and directly connected to said connecting means:

(c) a hydraulic connector forming a part of the connecting means and comprises a hydraulic cylinder operatively connected to said weight stack; and

(d) said connecting means including a hydraulic connecting means being connected at one end to said variable weight stack and at the other end to said force applicator means to thereby form a closed hydraulic circuit.

4,509,746

ARTICULATED EXERCISE BENCH WITH LEG CURL DEVICE

Ernest D. Mask, 311 Marion La., Lee's Summit, Mo. 64063

Filed Jul. 19, 1983, Ser. No. 515,305
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—134 9 Claims



9. An exercise device adjustable for exercising the legs in either a sitting or prone position, said device comprising:

a frame including an elongated, floor-engaging base and three elongated, spaced-apart, upright, approximately coplanar first, middle, and last members affixed to said base;

an exercise unit presenting a pair of elongated first elements fixedly interconnected to each other adjacent one end thereof in oblique orientation, a pair of elongated second elements respectively transversely affixed to a corresponding first element adjacent the other end thereof, said unit being pivotally interconnected to said first, upright member adjacent the upperend thereof, and said unit including weight-receiving structure for varying the resistance of said unit to pivoting;

an elongated bench having a flattened, first portion pivotally secured at one end thereof to said first upright member in close proximity to said pivotal interconnection of said unit to said first member, and said bench having an elongated, flattened second portion hingedly interconnected at one end thereof to said other end of said first portion, and said second portion other end including means for securing said second portion to the upper end of said last upright member,

means for alternately securing said bench in first and second positions wherein in said first position said first and second portions are oriented substantially perpendicular to each other and said second portion abuts said frame middle member, and in said second position wherein said bench is upwardly oriented along the hinged interconnection between said first and second portions thereby presenting a gabled configuration and said bench is supported at one end by said pivotal securement to said first member, said alternate securement means comprising said apart structures carried by said bench for engaging a plurality of said elongated, spaced-apart, upright members.

4,509,747

ARM WRESTLING APPARATUS

Michael L. Martin, Canyon, Tex., assignor to Martin Research & Development, Canyon, Tex.

Filed Jul. 18, 1983, Ser. No. 514,463
Int. Cl.[3] A63B *21/00, 21/16*
U.S. Cl. 272—136 9 Claims

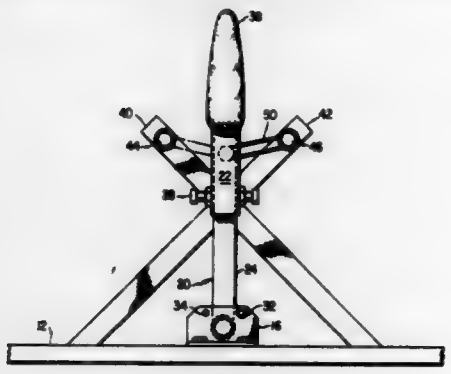
1. An arm wrestling apparatus, comprising:

a base;

a pivoting arm pivoted at one end to said base;

resilient force means attached to a first point on said pivoting arm and to a second and stationary point for stretching to provide an opposing force that increases as the distance between said first and second point increases;

a first longitudinal reinforcing member disposed in a plane at right angles to said base with said second point disposed thereon along the longitudinal axis thereof, said first member forming an acute angle with respect to the surface of said base such that the force resulting from pivoting of said arm is primarily directed along the longitudinal axis thereof, said first member essentially oriented along the cord of the arcuate path traversed by said first point and providing maximum reinforcement therealong such that



the opposing force vector resulting from said opposing force is essentially directed along the longitudinal axis of said first member when said pivoting arm is proximate its maximum rotation; and

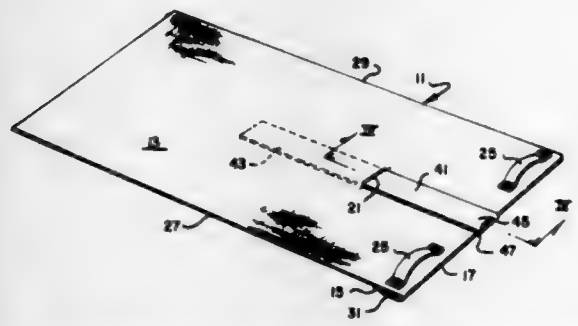
a second longitudinal reinforcing member attached to said first member at an essentially right angle thereto for reinforcing said first member against force vectors directed off axis to said first member that results from said pivoting arm not being proximate its maximum rotation.

4,509,748

FOOT HOLDING APPARATUS FOR SIT-UPS AND LIKE EXERCISES

Michael J. Bezak, 5203 First St., Versailles Boro, Pittsburgh, Pa. 15132

Filed Jul. 5, 1983, Ser. No. 510,902
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—145 **8 Claims**



1. A foot holding apparatus for performing sit-ups and like exercises comprising:

(a) a rectangular mat adapted to lie flat in a substantially horizontal plane when placed on a generally flat supporting surface, said mat having a first sleeve portion therein extending across the width of the mat near one end thereof and presenting an uppwer sleeve surface, said mat also having a pair of spaced-apart foot holding means attached to the upper sleeve surface;

(b) a generally rectangular flat cross bar member having a single top and a single bottom surface, said member having a relative narrow width and thin thickness with respect to a length dimension thereof, said cross member adapted to lie flat in a substantially horizontal plane and to be inserted into the sleeve; and

(c) a separate generally rectangular substantially flat elongated member having a single top and a single bottom surface, said elongated member having a relatively narrow width and thin thickness with respect to a length dimension thereof, said elongated member adapted to lie flat in a substantially horizontal plane and to be positioned over said cross member in a manner whereby at least a portion of one end of said elongated member engages the top surface of the cross bar at the approximate midpoint of the cross bar and an opposite end of the elongated member extends away from the sleeve and is positioned under the mat and upward movement of the sleeve portion of the mat and attached foot holding means is resisted by the mass of a user applied through the mat to the opposite end of the elongated member.

4,509,749

TENNIS NET TIE DOWN AND HEIGHT MEASUREMENT DEVICE

Philip I. Robinson, 23608 Clover Trail, Calabasas, Calif. 91302

Filed Dec. 10, 1979, Ser. No. 101,414
Int. Cl.³ A63B *61/00*
U.S. Cl. 273—29 BA **1 Claim**



1. A tennis net tie down and height setting device, comprising:

a top hook, for attaching to the upper edge of a tennis net;

a measuring and tie down means for connecting to said top hook; and

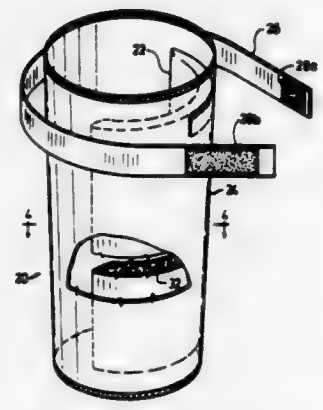
a height refinement mechanism, comprising a turnbuckle and a bottom hook connected in parallel with said measuring and tie down means for joining said measuring and tie down means to an existing tennis court tie down fitting so as to insure that said upper edge of said tennis net is thirty-six inches (36″) above the court surface.

4,509,750

SURFACE VIBRATION ABSORBING STRAP

Anthony J. Last, 191 King St., Oakville, Ontario, Canada

Filed Mar. 25, 1981, Ser. No. 247,258
Claims priority, application United Kingdom, Apr. 9, 1980, 8011688
Int. Cl.³ A63B *69/38*
U.S. Cl. 273—29A **8 Claims**



1. A device for treating epicondylalgia externa, which comprises:

pad means containing vibration-absorbing high viscosity permanently-fluid material dimensioned to extend over an area of the forearm of a wearer of the device which is at

least half of the area of the extensor or flexor muscles in the forearm projected to the forearm surface,

said high viscosity permanently-fluid material being a high viscosity liquid which is selected from the group consisting of liquid silicones and liquid uncured thermal setting glues, and

a forearm-encircling tubular member contoured to fit over a forearm and having said pad means mounted to an internal surface theroef, whereby said pad means may be maintained in contact with the forearm, said tubular member comprising a conical sleeve constructed of a fabric which is stretchable only in the circumferential direction of said tubular member.

4,509,751

GOLFER'S WIND INDICATOR AND BALL RETRIEVER

Michael A. Tabet, 1302 Pamela Pl., Norfolk, Va. 23513

Filed Mar. 23, 1983, Ser. No. 477,937

Int. Cl.[3] A63B *69/36, 57/00;* G01F *15/00;* B66F *11/00*

U.S. Cl. 273—32 H 1 Claim



1. A combination golf ball retriever and wind indicator comprising:

(a) an extensible and collapsible telescoping rod member;

(b) a handle on one end of the rod member;

(c) a wind sock and golf ball retrieving member on the other end of the rod member, the wind sock and golf ball retrieving member including an annular wind opening, a rigid guide for the annular wind opening and a wind outlet smaller than the opening, the opening and outlet connected by an annular sock of substantially solid fabric material, the sock diminishing in diameter from the opening to the outlet, the opening being of a diameter larger than a golf ball to allow passage of a golf ball therethrough, and the outlet being of a diameter smaller than a golf ball to prevent passage of a golf ball therethrough; and

(d) means for enabling said wind sock and golf ball retrieving member to be rotated, relative to the handle, by the force of the wind,

wherein the sock, rod and handle may function as a wind sock and as a golf ball retriever, the combination golf ball retriever and wind indicator being compact, portable and easily carried by a golfer when collapsed.

4,509,752

RETURNED BOWLING BALL LIFTING APPARATUS

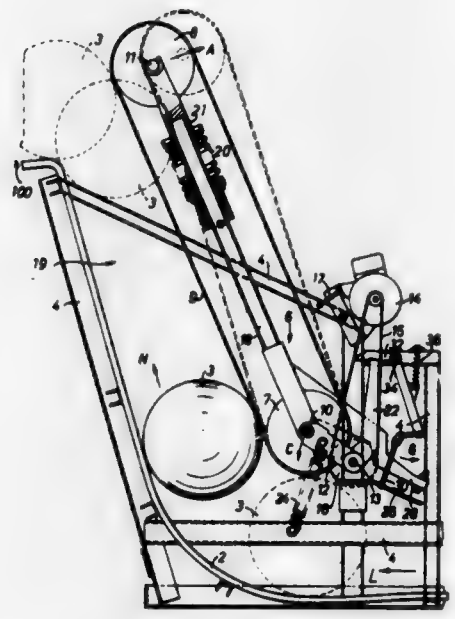
August Schmid, Schwerzenbach, Switzerland, assignor to Patentverwertungs-u, Finanzierungsgesellschaft Seranta AG, Glaurus, Switzerland

Filed Sep. 8, 1983, Ser. No. 530,115

Claims priority, application Switzerland, Sep. 14, 1982, 5441/82

Int. Cl.[3] A63D *5/02*

U.S. Cl. 273—49 15 Claims



12. Return bowling ball lifting apparatus, for combination with a bowling ball return race or track (2) in which bowling balls (3) are moved towards a playing position (100),

said apparatus including

a ball lift mechanism (6) having

an elongated frame (18, 20, 21),

a pair of rollers (7, 8) positioned on the frame adjacent the end positions thereof,

belt means (9) engageable with a bowling ball (3) to be lifted from the race (20) to an elevated position (100), looped about the rollers (7, 8);

and comprising,

feeler means (30, 62, 130) extending into the path of the bowling ball (3) on the race (2) and sensing presence of the ball (3) at a predetermined unusual position on the race,

wherein the feeler means comprises a feeler lever (30) positioned to be engaged by a ball, the feeler lever being mounted for free pivoting movement upon engagement with a ball operating in ball supplying direction (L), the feeler lever being actuated by the ball when the ball is running on the race or track (2) in reverse direction (P), and actuating the feeler for operating the ball lift mechanism moving means (12, 13, 24, 22, 32, 38),

means (12, 13, 24, 22, 32, 38; 66, 68, 70–98, 38) for permitting moving the entire ball lift mechanism from a first, or normal position in which the lowermost point of the lower roller (7) of the pair (7, 8) is clear of a ball passing therebeneath to a second or lower position,

said moving means being coupled to and controlled by the feeler means and operative to effect said movement upon sensing of a ball at said predetermined position on the race and thereby engage the ball and lift the ball;

and reset means (26, 28) coupled to the ball lift mechanism (6) to return the ball lift mechanism to said first or normal position upon lifting of the ball beyond a predetermined level.

4,509,753

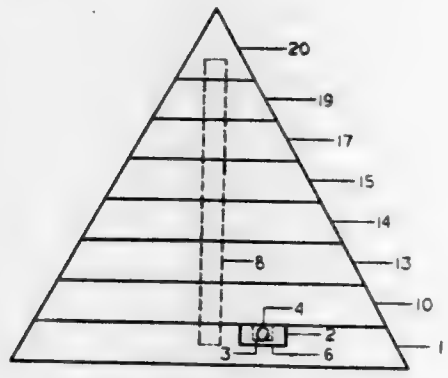
HIDDEN PASSAGE BALL PUZZLE

Philip M. Vaughan, Jr., P.O. Box 925, Woodstock, N.Y. 12498

Filed May 23, 1983, Ser. No. 467,146

Int. Cl.³ A63F *7/04*

U.S. Cl. 273—110 **7 Claims**



1. A puzzle game comprising,
(a) a base, a top piece and a plurality of intermediate levels wherein the said intermediate levels are parallel with and rotatable about an axis relative to said base,
(b) said intermediate levels have at least one hole through said level and capable of aligning with the hole of an adjacent level providing a pathway, through the puzzle,
(c) all said intermediate levels except the top level of said intermediate levels, and said base have holes extending into each level but not through said levels and the partial holes being capable of alignment with said holes forming the pathway,
(d) a ball capable of traversing said pathway,
(e) one of said partial holes in said base having means to indicate passage of said ball.

4,509,754

ELECTRIC GAME APPARATUS WITH ROTATING MARKER

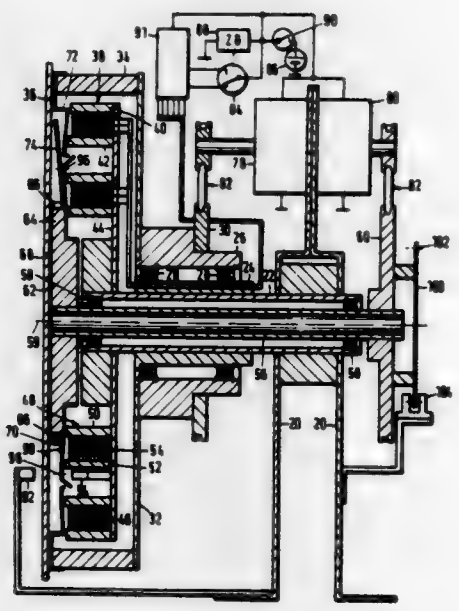
Andreas Remmler, deceased, late of Neu Isenburg, Fed. Rep. of Germany; by Heinz Remmler, heir, and by A. Käthe Remmler, heir, both of An den Grundweisen 65, 6078 Neu Isenburg, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,412

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308618

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—142 J **14 Claims**



1. A game apparatus having a frame rotatably mounting a symbol substrate and a marker capable of relative motion by means of an electric motor, with a plurality of teeth fixed with respect to the axis of said symbol substrate about which it is coaxially mounted and with a spatial tooth frequency corresponding to that between the symbols on the symbol substrate, further including an electromagnet means allowing the relative motion between the symbol substrate and the marker and interrupting this motion as a function of a random generator output, the marker and the symbol substrate being mutually lockable in one of several rotational angular positions predetermined by the teeth,

characterized in that the electromagnet means comprises the poles of two annual electromagnets mounted approximately concentrically to each other and coaxially with the axis of the symbol substrate, one electromagnet being located adjacent the teeth and the other electromagnet being located radially therefrom, the marker being a freely moving magnetizable element positioned adjacent but spaced from the poles of the electromagnets, a pair of non-magnetizable rings each mounted between the poles of the electromagnets and the marker and spaced from the electromagnets, one ring being fastened to the symbol sybstrate, the rings being so shaped that the marker rests only against that ring which is next to the actuated electromagnet and means for selectively energizing said electromagnets whereby when the other electromagnet is energized the marker is held against the ring not attached to the symbol substrate and spaced from the teeth of the symbol substrate, and when the one electromagnet is energized, the marker is held against the ring fastened to the symbol substrate and engages in the space between a pair of teeth.

4,509,755

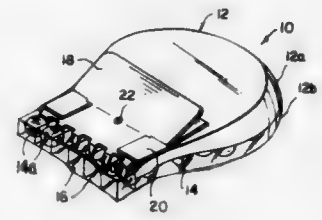
VERSATILE PLURALITY MIXER WITH RAPID CHANCE LOT CYCLING AND LOCKING MEANS

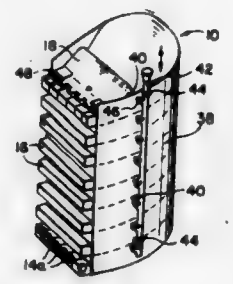
James S. Cheatham, 11 Hunter St., Ossining, N.Y. 10565

Filed May 7, 1984, Ser. No. 607,591

Int. Cl.³ A63F *7/04*

U.S. Cl. 273—144 B **2 Claims**





1. A versatile plurality mixer with rapid change lot cycling and locking means which comprises:
(a) a mixing housing masked and fully enclosed having an opaque sloped to half member and a transparent bottom half member affixed to said top half member permitting inspection;
(b) a plurality of multiple marked indicia opaque chance lot spheres placed within said mixing housing;
(c) a single row of transparent cubical cells, each said cell having a top slot therein and said cells interfaced with a side of said mixing housing such that said spheres can enter said cubical cells when said mixing housing is inclined with said cells downward to permit rapid chance lot formation of said spheres and said spheres can exit said cubical cells when said mixing housing is inclined with

said cells upward to permit mixing of said spheres within said mixing housing;

(d) means for locking said spheres simultaneously within said cubical cells for viewing and for unlocking said spheres simultaneously within said cubical cells so that said spheres can enter said mixing housing said means having a bent lock control member having a plurality of downwardly extending fingers, a fastener to hold said lock control member to the top half member of said mixing housing allowing said lock control member to move about said fastener so that all said fingers can move simultaneously in and out of said top slots in said cubical cells, and a resilient flat leaf spring engaging said lock control member to apply a force against said lock control member to normally keep said fingers of said lock control member within said top slots of said cubical cells;

(e) a plate transversely mounted across top of said cubical cells and in front of said top slots to protect said fingers of said lock control member; and

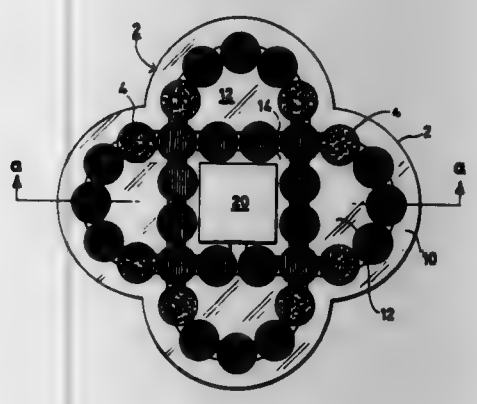
(f) a plurality of perturabators built within the mixing housing which with adequate volume assures that said spheres are forced into random intermixing even during mild mixer agitations, said top half member of said mixing housing having an aperture placed at the rear thereof and a cap for sealing said aperture after said spheres are placed within said mixing housing, said mixing housing further having at least one inner wall to divide said mixing housing into more than one compartment, each connected to a transparent cubical cell with a plurality of said spheres contained within each said compartment determined by intended lottery game in use.

4,509,756

PUZZLE WITH ELEMENTS TRANSFERABLE BETWEEN CLOSED-LOOP PATHS

Ivan Moscovich, 19 Elkachi St., Afek-Ramat Aviv, Israel

Filed Dec. 18, 1981, Ser. No. 332,260
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **11 Claims**



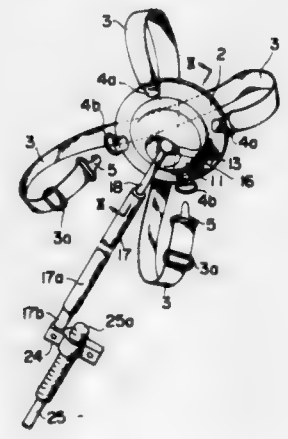
11. A game puzzle comprising: a holder and a plurality of at least two distinguishable kinds of manipulatable elements movable within said holder; said holder defining two closed-loop paths of movement for said manipulatable elements; each of said closed-loop paths being constituted of two essentially straight and essentially parallel sides joined by semicircular ends, the sides of the two closed-loop paths intersecting each other substantially perpendicularly to each other at four intersection points defining the corners of a square; said manipulatable elements filling said two closed-loop paths and being constrained by said holder to move only along one closed-loop path except at the intersection points whereat the elements may be moved along either of said closed-loop paths, thereby permitting an element to be transferred at said intersection points from one closed-loop path to another.

4,509,757

GOLF SWING DIAGNOSING DEVICE

Mitsuho Yuhara, 4-12-25 Kugayama, Suginami-ku, Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,629
Claims priority, application Japan, Jun. 18, 1982, 57-104016
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 A **6 Claims**



1. A golf swing diagnosing device comprising:

a base plate;

means for removably supporting said base plate on a part of a person's body so that one side faces said body and the other front side faces outwardly therefrom;

a supporting plate having a front surface removably mounted on said base plate;

a recording plate removably mounted on the front surface of said supporting plate;

an indicating surface of said recording plate;

a cover mounted on said base plate enclosing said recording plate;

a front opening through said cover plate;

a rotary ball member rotatably mounted in said opening;

a pipe shaft extending through and fixedly mounted in said ball member having an inner end between said ball member and said indicating surface, and an outer end extending outwardly from said ball member;

a recording means mounted in said pipe shaft and extending from the inner end thereof in operative engagement with said indicating surface to mark a locus thereon when moved thereover; and

an elongated telescoping arm attached to the outer end of said pipe shaft at one end and having a mounting bracket at the other end, said mounting bracket being adapted to removably connect the grip end of a golf club to said telescoping arm;

so that when the golf clug is swung by the person, the movement thereof is transmitted through said rotary ball member to record corresponding loci on said indicating surface by said recording means indicating the form of the swing.

4,509,758

CRYPTOGRAPHIC GAME APPARATUS AND MODE OF PLAY

Joycene L. Cole, 10875 Kling St., North Hollywood, Calif. 91602

Filed Aug. 16, 1983, Ser. No. 523,425
Int. Cl.³ A63F *9/00, 9/04*; G09C *1/00*
U.S. Cl. 273—240 **6 Claims**

1. Cryptographic game apparatus comprising:

a. an encrypting device for producing chance pairs of alphabetical indicia forming a sample substitution cypher;

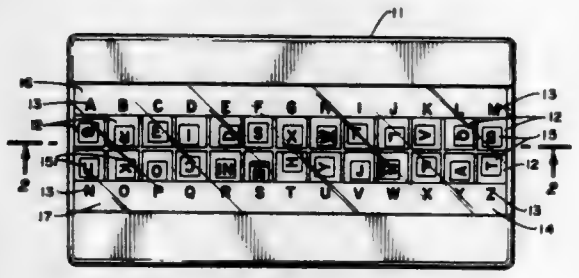
b. a first sheet containing a message to be encrypted employing said pairs of alphabetical indicia; and,

c. a plurality of additional sheets, one for each player, whereupon said players write the encrypted message and attempt to determine the alphabetical pairs to recover the original message, said encrypting device including:

1. a container;
2. a plurality of substantially identical compartments having open tops;
3. alphabetical indicia uniquely identifying each of said compartments;
4. a plurality of markers adapted to fit in said compartments; and,
5. alphabetical indicia uniquely identifying each of said markers.

6. The method of playing a cryptographic game comprising the steps of:

a. a first player selecting a message to be encrypted;



b. said first player manipulating a container having alphabetically labeled compartments and alphabetically labeled markers, whereby each of said markers is randomly placed in one of said alphabetically labeled compartments, thereby forming a simple substitution cypher;

c. said first player notifying other players of the substituted letters forming the encrypted message, together with at least one prearranged clue;

d. said other players in turn attempting to determine the pairs of letters randomly combined by said markers in said compartments; and,

e. providing a time limit for each of said other players to decrypt said encrypted message.

4,509,759

BINGO GAME INVOLVING PROMOTIONAL COUPONS

Maynard E. Small, 105 Ward Pkwy., Kansas City, Mo. 64112

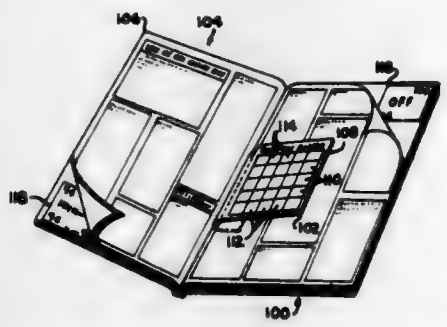
Continuation-in-part of Ser. No. 273,259, Jun. 12, 1981, Pat. No. 4,342,457, which is a continuation of Ser. No. 79,189, Sep. 26, 1979, Pat. No. 4,285,520. This application Jun. 7, 1982, Ser. No. 385,840

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ A63F *3/06*

U.S. Cl. 273—269

2 Claims



1. A game of the type known as "bingo" for players comprisng:

(a) a single edition printed run-of-press, multi-page and mass circulation publication;

(b) a set of playing cards, one of said set provided with each sample of said publication, each of said cards having a grid with several rows and columns forming a set of oriented areas, each oriented area respectively bearing individual indicia thereon;

(c) a set of coupons common to all players printed in said publication, at least a portion of said coupons being positioned at various isolated locations throughout the pages of the publication as to be spaced apart from one another by printed subject matter unrelated thereto, each coupon respectively bearing individual indicia, whereby every player has an identical set of indicia bearing coupons; at least a portion of said coupons being located on pages separate from said playing card; and

(d) said area indicia and said coupon indicia being cooperatively related, in that selected indicia from the coupon indicia set match with selected indicia from the area indicia set such that said matched area indicia describes a predetermined pattern on said playing card grid; whereby each player is urged to scan each page of said publication to determine the presence of said coupons in order to produce said predetermined pattern of matched indicia.

4,509,760

TARGET STRUCTURE

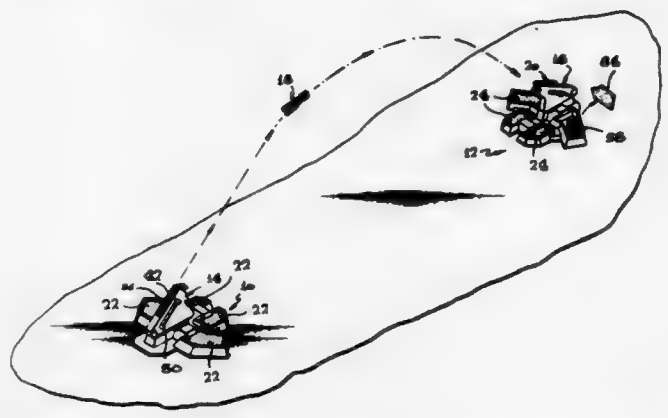
Adolph E. Goldfarb, 1432 SE. Wind Cir., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.

Filed May 11, 1983, Ser. No. 493,520

Int. Cl.³ A63F *9/02*

U.S. Cl. 273—380

11 Claims



1. A battle simulating game apparatus for two or more players to play a competitive missile shooting game, the apparatus comprising at least two relatively movable combination launcher-target units, one unit for each player, each unit comprising:

(a) a separate base for allowing a player to selectively locate the unit in desired positions on a supporting surface such as a floor or table, said base having an upper surface;

(b) A missile launcher on and movable with said base for propelling missiles toward another unit; and

(c) means on and movable with said base providing a plurality of targets, said target means comprising:

a plurality of relatively large, upwardly facing, separate target panels, said target panels collectively occupying a substantial portion of said upper surface of said base,

propelling means for propelling said target panels away from said unit, and

release means for releasing an individual target panel, to allow it to be propelled when that panel is struck by a missile to simulate an explosive hitting the target while leaving said other target panels on the unit in condition to be propelled only when they are subsequently struck by a missile, so that the players can continue to shoot missiles back and forth even after one or more targets have been hit.

4,509,761

MODEL SHUTTLECOCK

Mau-Fan Liu, No. 28, Alley 2, La. 141, Tung-Ho St., Taipei, Taiwan

Filed Jun. 29, 1983, Ser. No. 509,149

Int. Cl.³ A63B *67/18*

U.S. Cl. 273—417

5 Claims

1. A plastic shuttlecock comprising a hemispheric cork and a body of monobloc molded plastic materials; said body being

composed of a shaft ring, a collar, a base seat and stems, which stems extend outwardly from the base seat to form a conical structure; and a tail skirt composed of three portions: an upper skirt connected to the base seat; a lower skirt comprising feather wings extending from opposite sides of the stems and



having air exhaust surfaces and air resistant surfaces, said air exhaust surfaces and air resistant surfaces being angularly connected to each other at one edge and to said feathers, forming an outwardly open V-shape recessed relative to the surface of the tail skirt; and a mid-skirt comprising a plurality of reinforcing circles connected with said stems.

4,509,762

STATIONARY ASSEMBLY FOR MECHANICAL SHAFT SEAL

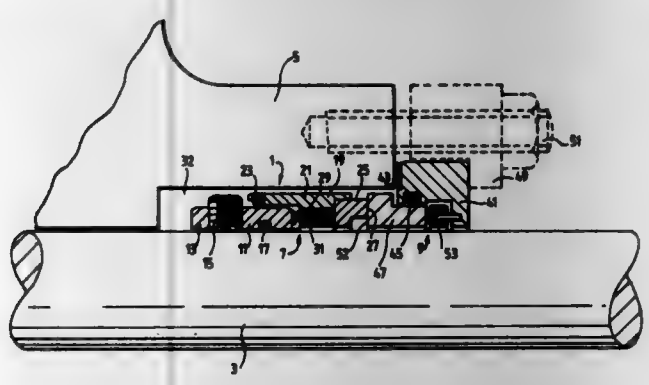
Keith C. Garrett, Shipley, England, assignor to AES Engineering Limited, South Yorkshire, England

Filed Jun. 30, 1983, Ser. No. 509,379

Claims priority, application United Kingdom, Jul. 1, 1982, 8219023

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—81 R **6 Claims**



1. A stationary assembly for a balanced mechanical shaft seal for sealing a rotatable shaft to a fixed housing, said seal including a rotary assembly with a radial face and also including a stationary assembly, the stationary assembly comprising a first annular member for surrounding the shaft and attachable to the housing, a second annular member having a radial face for mating with said radial face of the rotary assembly, a third annular member between said first and second members, and mounting means for permitting relative pivotal movement about a first axis between said first and third members and about a second axis at right angles to the first axis between said second and third members, said pivotal movement between members being without any axial forces being exerted between said members by any spring of the stationary assembly.

4,509,763

RADIALLY EXTENSIBLE JOINT PACKING WITH HELICAL SPRING SUPPORT MEANS

Richard J. Fischer, Aurora, Colo., assignor to The Gates Rubber Company, Denver, Colo.

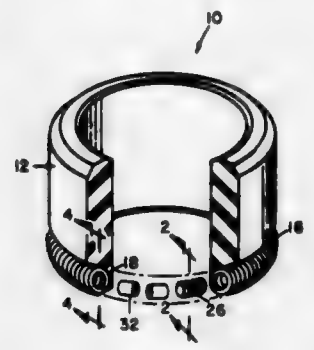
Filed May 2, 1983, Ser. No. 490,649

Int. Cl.³ F16J *15/12*

U.S. Cl. 277—163 **12 Claims**

1. In a joint packing of the type used to seal an annular radial gap and having a generally annularly shaped polymeric core, with two ends, that is radially extensible when externally clamped along a longitudinal axis of the core to seal the annular gap, the improvement comprising:

a core having at least one circumferential groove located next to at least one end; and



a garter type spring circumferentially oriented to and located in the groove of the core and having a helical coil diameter generally greater than the radial gap to be sealed and wherein the groove has a depth that is substantially equal to the helical coil diameter.

4,509,764

SEALING ARRANGEMENT

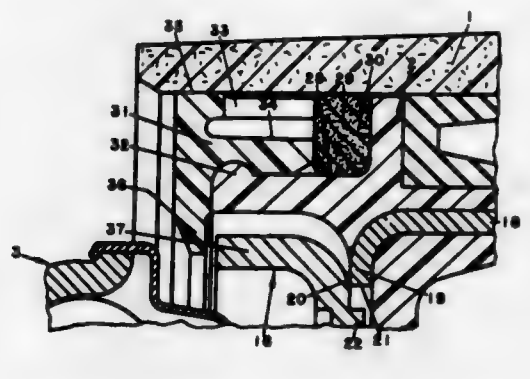
Manfred Brandenstein, Eussenheim; Rüdiger Hans, Niederwerrn, and Heinz Kiener, Waigolshausen, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,292

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 8133054[U]

Int. Cl.³ F16N *1/00*; F16J *15/00*

U.S. Cl. 277—166 **7 Claims**



1. In a sealing arrangement for sealing the space between a cylinder and a piston or the like on the side thereof directed to the pressure space, against dust and dirt particles, the improvement comprising a felt ring or the like having a rectangular cross-section with one side engaging a shoulder of the piston and with another side surface abutting a radial surface of the piston or the like, the felt ring having an outer diameter, which in the noninstalled condition is larger than the outer diameter of the piston or the like, and further comprising a holding ring for the felt ring, the holding ring being connected to the piston, on the side of the felt ring directed away from the radial surface of the piston or the like, the holding ring having a sealing surface engaging the cylinder as well as an annular recess opening toward the bore surface of the cylinder space for forming a dust chamber between the felt ring and sealing surface.

4,509,765

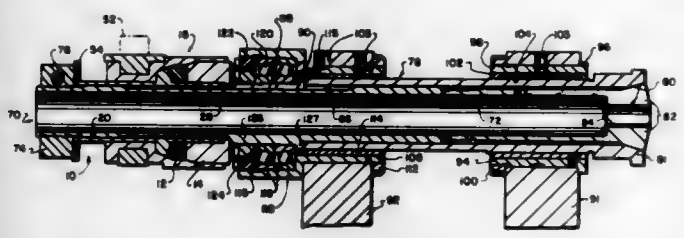
FORCE TRANSMITTING WEDGE STRUCTURE

Florian I. Nowak, 16 Dean Dr., Newington, Conn. 06111

Division of Ser. No. 363,104, Mar. 29, 1982, Pat. No. 4,418,925, which is a continuation-in-part of Ser. No. 312,387, Oct. 19, 1981,. This application Jul. 18, 1983, Ser. No. 514,577

Int. Cl.[3] B23B *31/20*

U.S. Cl. 279—50 8 Claims



1. A solid wedge member adapted for use in a collet-operating mechanism or the like configured as a toroidal section and having a radially outward face with an arcuate bearing surface thereon, and axially spaced forward and rearward faces angularly disposed with respect to one another to provide an inward taper to said member, said faces having compound bearing surfaces thereon, each comprised of an outer zone and a bevelled inner zone with a ridge line at the juncture therebetween, said ridge lines being radially offset from one another, thereby permitting pivotal movement of said member thereabout in contact with bearing surfaces of a collet-operating mechanism.

4,509,766

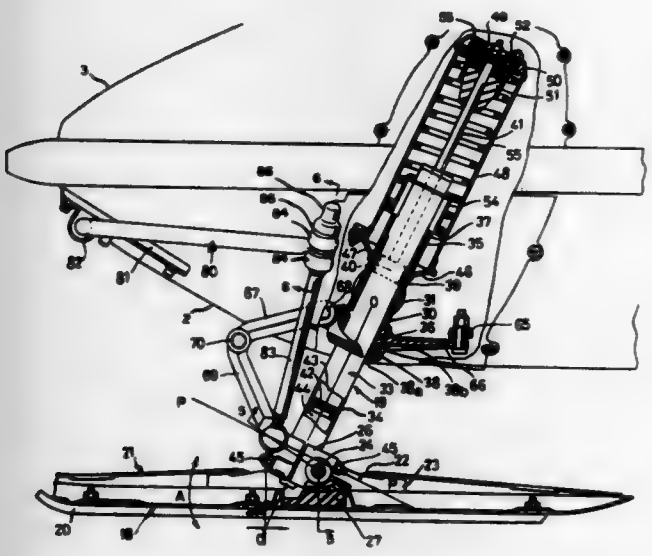
ANTI-ROLLING SYSTEM FOR SNOWMOBILE OF SMALL SIZE

Toshihiro Yasui, and Wayne L. Warnke, both of Coon Rapids, Minn., assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 4, 1980, Ser. No. 213,167

Int. Cl.[3] B62M *27/02*

U.S. Cl. 280—21 R 9 Claims



1. A suspension and steering system for a snowmobile or the like having a body and a pair of skis comprising suspension means for suspending each of the skis for movement vertically relative to the body independently of the other, said suspension means providing pivotal steering movement of each of the skis about a respective generally upstanding steering axis, anti-roll means comprising a torsional bar supported by the body, and means for connecting opposite ends of said torsional bar to a respective one of said skis for torsional loading of said torsion bar upon independent movement of the skis relative to the body, said means for connecting between each of the skis and said torsion bar end being effective to load said torsion bar upon pivotal movement of the skis about their steering axes for providing a self-centering force upon said skis.

4,509,767

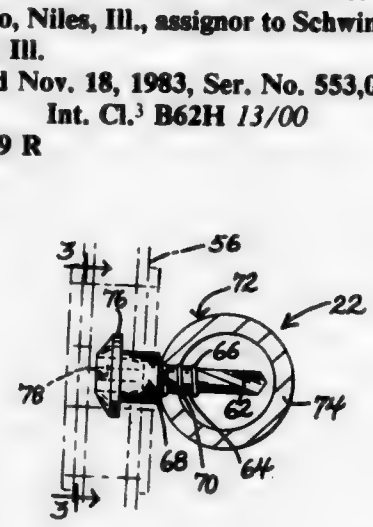
BICYCLE CHAIN HANGAR

Frank P. Brilando, Niles, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.

Filed Nov. 18, 1983, Ser. No. 553,052

Int. Cl.[3] B62H *13/00*

U.S. Cl. 280—289 R 3 Claims



1. A bicycle chain hangar in combination with a bicycle seat stay comprising:

an elongated body;

a hardened, pointed drill bit of one diameter at the extreme forward end thereof and an externally threaded collar behind said drill bit having hardened, self-tapping external screw threads with a diameter larger than said one diameter and sized to be self-tapping into a bore made by the drill bit;

a diametrically enlarged neck portion immediately behind said threaded collar and having at the rear end of said threaded collar a forwardly facing stop shoulder engaged with the outer surface of a bicycle seat stay; and

a further diametrically enlarged head portion behind said neck portion engageable within a bicycle chain to furnish stationary support therefor during maintenance or repair;

whereby said chain hangar can be removably assembled on a bicycle seat stay by pressing and rotating said drill point against the seat stay to drill a bore in the wall thereof and continuing to rotate it to self-thread the collar into the seat stay until limited by engagement with said stop shoulder.

4,509,768

VEHICLE WITH DETACHABLE IMPLEMENT

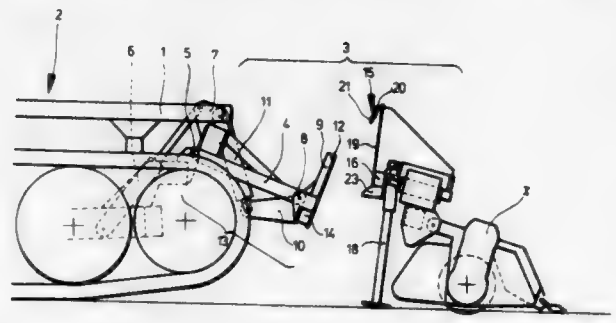
Walter Haug, Blaustein, Fed. Rep. of Germany, assignor to Karl Kassbohrer Fahrezeugwerke GmbH, Olm, Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 446,014

Claims priority, application Fed. Rep. of Germany, May 24, 1982, 8215040[U]

Int. Cl.[3] E02F *3/80, 3/96*

U.S. Cl. 280—479 R 5 Claims



1. For use in detachably mounting an implement to a vehicle, the vehicle having associated therewith an adjustable take-up frame having at least one coupling element arranged to coact in engagement with a counter-coupling element on the implement, the improvement comprising: a mounting plate arranged

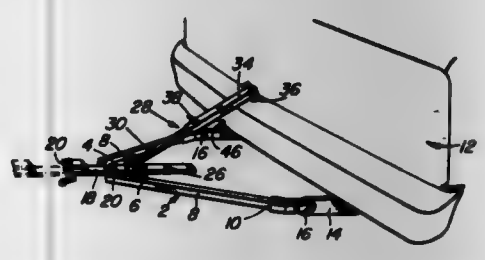
on the implement in a substantially vertical plane extending transversely with respect to the working direction of the implement and the vehicle, the counter-coupling element being in the form of a single downwardly opening hook centrally secured to and protruding rearwardly from the upper portion of said mounting plate, said hook being substantially triangular in shape and having its apex directed downwardly, and the coupling element being in the form of a horizontal pin extending between two laterally spaced cheek plates, said cheek plates forming part of the take-up frame, with the spacing between said cheek plates being only slightly greater than the largest width dimension of said hook, and with said horizontal pin being arranged for engagement beneath said hook as the latter is received between said cheek plates.

4,509,769

VEHICLE HITCH

Arthur E. Weber, P.O. Box 1026, Weyburn, Saskatchewan, Canada (S4H 2L3)

Filed Nov. 18, 1982, Ser. No. 442,730
Int. Cl.³ B60D 1/14
U.S. Cl. 280—491 R **7 Claims**



1. A vehicle hitch which is selectively adjustable with respect to extension, elevation and lateral positioning and which is movable to erect storage position on a vehicle, and comprising a frame of general A-shape having an end cross-member and a pair of diverging legs and a central cross-member,

and means to pivotally connect diverging ends of the legs to a vehicle enabling pivoting movement of the frame about a horizontal axis,

and an elongate draw bar having a projecting end adjustably carried by the end and central cross members, the end cross-member carrying a removable securing pin and the draw bar having a plurality of securing pin-receiving holes provided longitudinally therealong permitting selected extension and securement of the draw bar with respect to the end cross-member,

and abutment means on the central cross-member enabling central positioning of the draw bar with respect to the frame or selected positioning of the draw bar generally parallel to one or other of the legs enabling lateral positioning of the projecting end,

and telescoping adjustment means extending between the central cross-member and the vehicle enabling selected pivoted positioning of the frame with respect to the vehicle and securement of the frame in erect storage position.

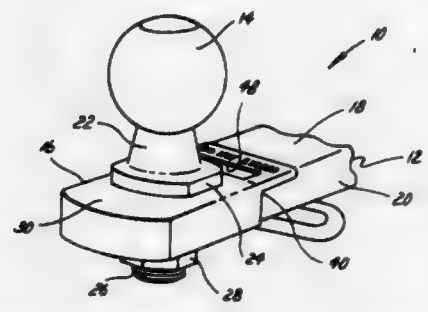
4,509,770

DRAWBAR COVER

David A. Young, Plymouth, and William H. Hummel, Ann Arbor, both of Mich., assignors to Draw-Tite, Inc., Belleville, Mich.

Filed Jul. 9, 1982, Ser. No. 396,555
Int. Cl.³ B60D 1/06
U.S. Cl. 280—507 **5 Claims**

1. In a drawbar assembly comprising a drawbar member having a terminal end portion and a ball mounted on said terminal end portion, a cover fitting in close conformity onto said terminal end portion and leaving the ball available for connection with a coupler, said terminal end portion comprising a top surface and said cover comprising a top wall overlying said top surface, aligned apertures through said top wall and said terminal end portion of said drawbar member, said ball being disposed on a stem having a flange overlying said top wall around the aperture therein, and fastening means including a threaded shank passing through said apertures urging said flange, and corresponding said top wall, toward



said drawbar member, the improvement in which said top wall, in the free condition of said cover, has a shape slightly different from that of said top surface so as to be flexed from its free shape by said fastening means.

4,509,771

SKI

Wolfgang Nussbaumer, Dorkbirn, Austria, assignor to Kästle Gesellschaft m.b.H., Hohenems, Austria

Continuation of Ser. No. 936,937, Aug. 25, 1978, abandoned, which is a continuation of Ser. No. 766,497, Feb. 7, 1977, abandoned. This application Jan. 26, 1982, Ser. No. 342,890
Claims priority, application Austria, Feb. 13, 1976, 1051/76
Int. Cl.³ A63C 5/04
U.S. Cl. 280—609 **4 Claims**



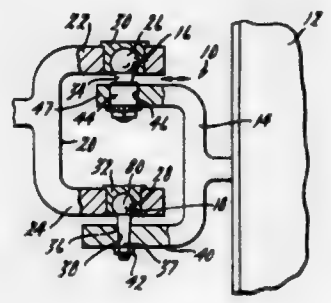
1. A ski having a front portion with a tip, a rear portion, and an intervening middle portion adapted to support a binding, said portions being provided with a continuous running surface which has mutually different grooved profiles in said front and rear portions and is substantially smooth and ungrooved in said middle portion, the profile of said front portion having only a single longitudinal groove, the profile of said rear portion having a plurality of side by side parallel longitudinal grooves for exerting a greater guiding effect upon the ski.

4,509,772

ONE-PIECE ADJUSTING SLEEVE

Frederick L. Drotar, Newport; David R. Wotton, Ann Arbor; Carroll D. Dickerson, New Hudson, and Lawrence A. Makowski, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 9, 1979, Ser. No. 28,627
Int. Cl.³ B62D 17/00
U.S. Cl. 280—661 **9 Claims**



1. A one-piece adjustable sleeve for a steerable wheel assembly including an axle with lower and upper vertically spaced

control arms connected to a supportive vehicle member, a spindle mounting a wheel assembly, said spindle having lower and upper arms pivotably connected to said control arms, ball joints connecting said control arms to said arms of said spindle; said sleeve comprising;

an outer surface centered about a central axis;

mounting means for mounting said sleeve into an aperture in one of the upper or lower arms for rotation about said central axis of said sleeve,

an aperture extending through said sleeve with the axis of said aperture angled with respect to said central axis of said sleeve;

said aperture sized to snugly receive an integral stud of one ball of one of said ball joints mounted to the other of said upper or lower arms;

said sleeve, ball joint, and stud being constructed to allow said stud to incline and extend through said angled aperture at any rotatably adjusted position of said sleeve; and

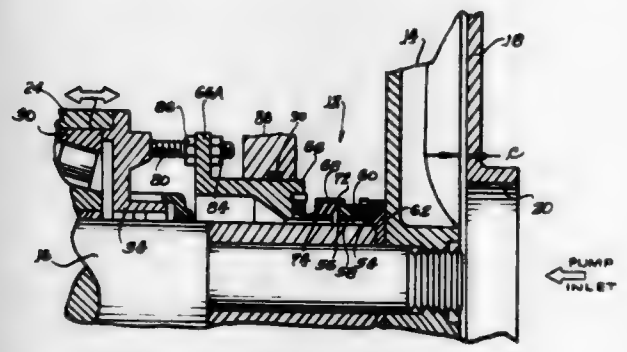
locking means for fixedly locking said stud within said sleeve and said sleeve within said aperture within said arm for securing said spindle in a desired position with respect to said control arms to mount said wheel assembly with a desired camber and castor or pneumatic trail.

4,509,773

PUMP-MECHANICAL SEAL CONSTRUCTION WITH AXIAL ADJUSTMENT MEANS

Robert S. Wentworth, Murrieta, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 9, 1984, Ser. No. 608,627
Int. Cl.³ F16J *15/38*
U.S. Cl. 277—82 **6 Claims**



1. A mechanical seal assembly especially adaptable for use with a rotating device housed in a stationary housing and in which the rotating device has a predetermined and desired spacial relationship with the housing and in which the axial position of the rotating device is adjustable to maintain the predetermined and desired spacial relationship with the housing; said mechanical seal assembly comprising a first seal ring connected to rotate and be axially fixed with respect to said rotating device and a second, non-rotating seal ring, said seal rings having lapped seal faces which oppose one another, said assembly also having means resiliently urging one seal ring toward the other seal ring;

means for adjusting the axial position of said rotating means with respect to said housing; and

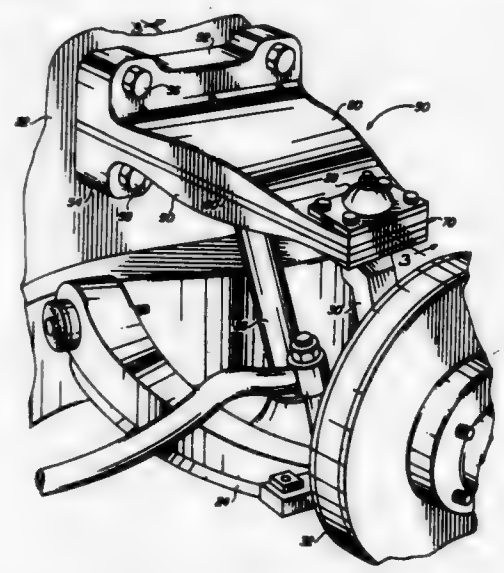
means fixing the axial position of said second seal ring with respect to said first seal ring and said rotating device, said means fixing the axial position of said second seal ring with respect to said first seal ring being so constructed and arranged that upon adjusting the axial position of said rotating means with respect to the housing, the axial position of said seal rings will remain the same with respect to the rotating device.

4,509,774

COMPOSITE CONTROL ARM APPARATUS

Benjamin V. Booher, 1721 Aldersgate, Leucadia, Calif. 92024

Filed Aug. 22, 1983, Ser. No. 525,011
Int. Cl.³ B16F *1/30*
U.S. Cl. 280—694 **7 Claims**



1. Control arm apparatus for a vehicle and adapted to be secured to the vehicle frame and to the vehicle wheel assembly, comprising, in combination:

first end means adapted to be fixedly secured to the vehicle frame;

second end means remote from the first end means and adapted to be secured to the vehicle wheel assembly and adapted to move vertically relative to the first end means;

a first portion for providing dimensional integrity extending between and connected to the first and second end means; and

a second portion connected to the first portion for providing flexibility extending between and connected to the first and second end means.

4,509,775

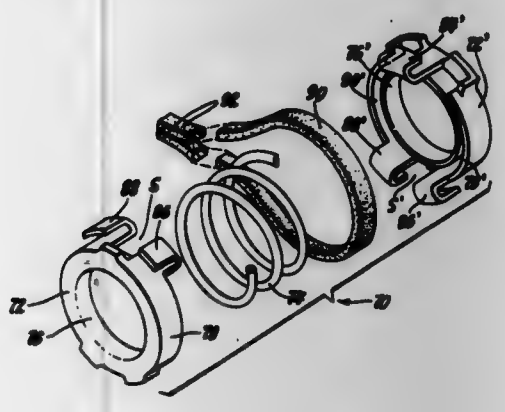
SPRING AND RETAINER ASSEMBLY AND SPRING DELASHED STEERING SHAFTS

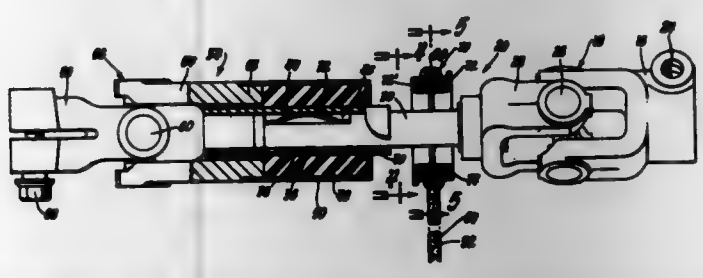
Frederick P. Arndt, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1983, Ser. No. 506,487
Int. Cl.³ B62D *1/16*
U.S. Cl. 280—779 **6 Claims**

1. A compression spring and spring retainer assembly comprising in combination a helical spring, first and second spring seats operatively mounted on opposite ends of said helical spring, loop means extending inwardly from said seats into adjoining position with respect to another when said seats are displaced adjacent to each other and said spring is compressively loaded therebetween, strap means extending through said loop means when said loop means are aligned, said strap having extending end portions providing pull means for releas-

ing said strap means from said loop means to allow said helical spring to expand to a working height and relatively move said





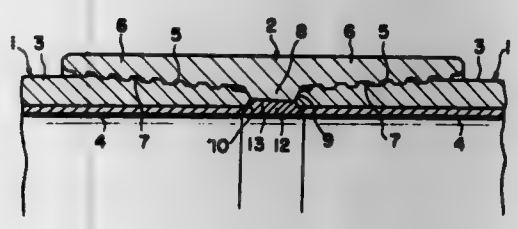
seat means in opposite directions to a predetermined extended position.

4,509,776

CORROSION-RESISTANT PIPE COUPLING STRUCTURES

Toshio Yoshida; Kouyu Itoga, both of Kobe; Shigetomo Matsui, Higashiosaka, and Toshio Atsuta, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Mar. 16, 1982, Ser. No. 358,801
Int. Cl.[3] F16L *15/00*
U.S. Cl. 285—55 1 Claim



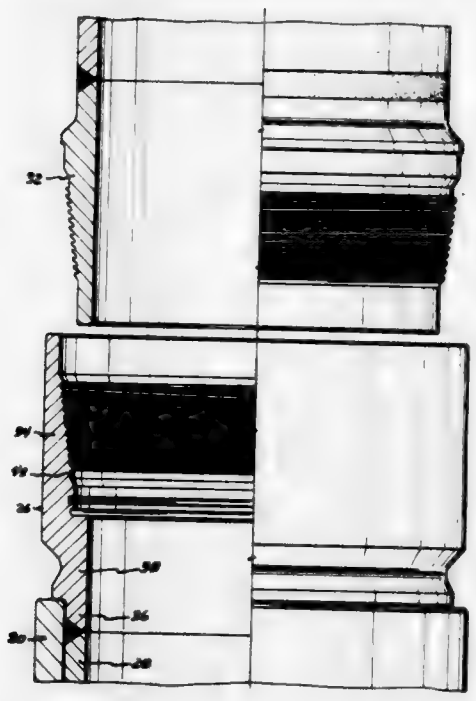
1. A corrosion-resistant pipe coupling structure comprising:
a tubular coupling member including an inner surface and axially opposite ends having internal screw threads for engaging male screw threads provided on axially opposing end parts of two pipes to be coupled, the internal surfaces of each of the pipes being lined with material resistant to corrosive fluids;
an unthreaded intermediate annular projection formed integrally with said inner surface of said coupling member and directed radially inward thereof to be abuttingly engaged by the opposing radial end surfaces of the pipes;
an annular member made of a corrosion-resistant material which is initially separate from said annular projection and welded thereto to be engaged by the opposing radial end surfaces of the pipes lined with said material;
the radially innermost surface of said annular projection forming a tapered bore; and
said annular member having a conical outer surface shaped complementarily to said tapered bore, whereby said annular member can be friction-welded to said annular projection by inserting said annular member into said tapered bore and thrusting it axially of said bore while rotating said annular member into frictional sliding contact with said surface of said bore.

4,509,777

WELD-ON CASING CONNECTOR

James M. Walker, Houston, Tex., assignor to Dril-Quip Inc., Houston, Tex.

Filed Nov. 1, 1982, Ser. No. 438,574
Int. Cl.[3] F16L *13/04*
U.S. Cl. 285—286 6 Claims



1. A weld-on female casing connector comprising a tubular body with an internally threaded section on its upper end having an outside diameter greater than the outside diameter of the casing to which it is to be connected and a minimum inside diameter substantially equal to the inside diameter of the casing to which it is to be connected and a cylindrical section at its lower end having an inside diameter and an outside diameter approximately equal to that of the casing to which the cylindrical section is to be welded, a connecting section between the threaded section and the cylindrical section that has a gradually decreasing cross-sectional area in the direction of the cylindrical section until the cross-sectional area of the section will be about equal to the cross-sectional area of an ideal transition section, said second then gradually increasing in cross-sectional area in the direction of the cylindrical section until it reaches an outside diameter that is large enough to provide sufficient bearing surface to support the casing and decreasing the cross-sectional area to form a downwardly facing shoulder having the minimum area required to support the casing on elevators to reduce the abrupt change in cross-sectional area at the shoulder to a minimum to provide a connecting section that reduces the stress in the cylindrical section in the plane of the elevator shoulder for a given tensile load.

4,509,778

DUCT JOINT ASSEMBLY

Peter J. Arnoldt, Clairton, Pa., assignor to Ductmate Industries, Pittsburgh, Pa.

Filed Dec. 6, 1982, Ser. No. 447,282
Int. Cl.[3] F16L *23/00*
U.S. Cl. 285—406 9 Claims

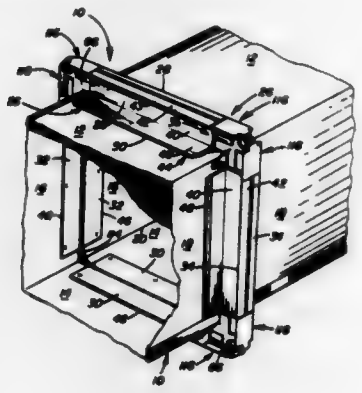
1. A duct joint assembly for connecting the end portion of generally rectangular ducts comprising,
a plurality of flange portions extending upwardly from the end portion of a duct,
each of said flange portions having an upstanding wall and a pair of opposite end portions,
a plurality of angular corner pieces for connecting adjacent flange portions and forming a rectangular frame around the duct end portions,
said corner pieces each having a body portion with a corner

section and a pair of leg portions extending angularly therefrom,

each of said leg portions arranged to extend into abutting relation with said upstanding wall of said flange portions to connect adjacent flange portions on the duct end portion,

said corner piece leg portions on adjacent duct end portions positioned adjacent to each other with said duct flange portion upstanding walls separating said corner piece leg portions,

said body portion of each of said corner pieces having an outer edge extending from said corner section to each of said leg portions,



a flange positioned on said outer edge of each said corner piece body portions and extending from each of said leg portions to said corner section,

a channel-shaped clamp forcibly slidable only on said flanges of said adjacent corner piece body portions to urge said adjacent corner piece body portions toward each other and connect said rectangular frames of adjacent rectangular ducts and exert a sealing force upon said respective duct adjacent flange portion upstanding walls, and

locking means to lock said channel-shaped clamp on said adjacent corner pieces.

4,509,779

LOCKING DEVICE FOR DOOR OF COOKING APPARATUS

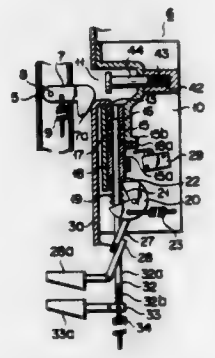
Takafumi Sasaki, Hokkaido, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 16, 1982, Ser. No. 418,835

Claims priority, application Japan, Sep. 21, 1981, 56-140043[U]

Int. Cl.³ E05C *3/32*

U.S. Cl. 292—254 **5 Claims**



1. A locking device for a door of a cooking apparatus, comprising:

a first moving member;

a first spring member operatively connected to said first moving member for elastically supporting said first moving member;

a second moving member having a projection at one end portion thereof;

a second spring member operatively connected to said second moving member for elastically supporting said second moving member, and wherein the urging force of said first spring member is greater than that of said second spring member;

means for movably supporting therein said first moving member, said first spring member and said second moving member in that order, said supporting means being fixed in a housing of the cooking apparatus and having a window in which said projection of said second moving member is movable;

an engaging member pivotally mounted in the housing to be engaged with the other end portion of said second moving member;

means for pivoting said engaging member within the limit of a predetermined rotation angle about a pivoting axis;

latch means pivotable mounted to an inside portion of the door;

means for pivoting said latch means within the limit of a predetermined rotation angle about a reference axis;

an engaging portion of the housing for engaging with said latch means and said first moving member;

means for releasing said latch means from being engaged with said engaging portion, said releasing means having door opening operation means and being incorporated with said first and second moving members, said first and second spring members and said pivoting means for moving said engaging member in order for said engaging member to be engaged with the other end portion of said second moving member while said releasing means releases said latch means from being engaged with said engaging portion upon operation of said door opening operation means; and

means for switching an energizing circuit of the cooking apparatus in response to the movement of said projection of said second moving member.

4,509,780

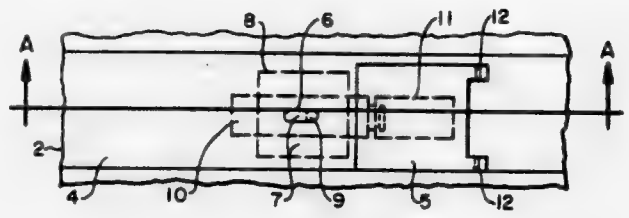
POSTAGE ACCESS DOOR FOR POSTAGE METERS

Timothy R. Erwin, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 28, 1982, Ser. No. 437,426

Int. Cl.³ B65D *27/30, 33/34, 55/06*

U.S. Cl. 292—307 R **15 Claims**



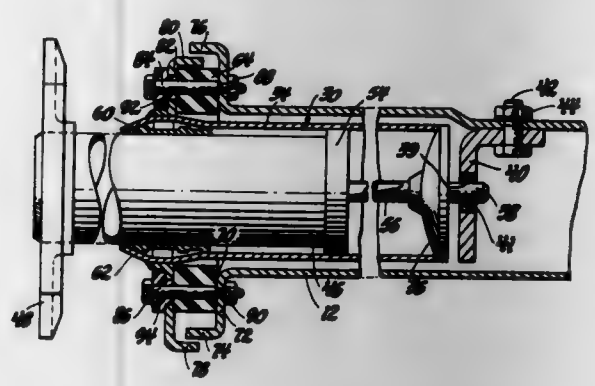
1. A security sealing means comprising in combination a container housing, an access door positioned in said housing, a door locking means and a destructible sealing membrane, said container housing having an aperture extending from the outside of said container housing to said door locking means located within and adjacent to the inside surface of said container housing, said locking means slidably positioned in contact with said access door and adapted to be moved out of contact with said door, said sealing membrane completely enclosing the inside container surface of said opening and sealing said aperture from the atmosphere, said door locking means being exposed only by puncturing said sealing membrane, said door locking means and said sealing membrane are in contact with each other at an intended fracture location, wherein movement of the door locking means to open the access door further rips the sealing membrane.

4,509,781

ISOLATED BUMPER FOR DAMPING VIBRATIONS IN VEHICLES

Melvin E. Dick, Fenton, and Linn A. Peterson, Milford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 20, 1982, Ser. No. 419,935
Int. Cl.[3] B60R *19/06*
U.S. Cl. 293—104 3 Claims



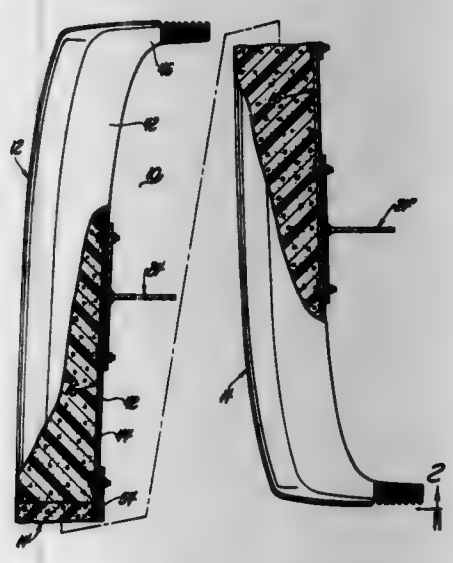
1. A tuned bumper for a motor vehicle having a vehicle body and a vehicle steering column therein to damp vibrations of said vehicle body and said steering column comprising in combination an external bumper disposed at one end of said vehicle body, said vehicle body having support structure for carrying the load of said bumper, connector means for operatively interconnecting said bumper to said support structure, said connector means comprising elongated and telescopic energy absorber means for absorbing the energy of an impact load on said bumper displacing said bumper from a first position outwardly of said vehicle body to a second position adjacent to said support structure, said shock absorber having an inner end spaced from and normally free from contact with said support structure, and resilient elastomer block means preloaded and operatively interposed only between an intermediate portion of said energy absorber means and said support structure to physically space and resiliently isolate said bumper and said energy absorber means from said support structure to allow said bumper to vibrate vertically and in pitch to act as a dynamic vibrating mass to damp vibrations of said vehicle body and components therein.

4,509,782

ENERGY ABSORBING VEHICLE BUMPER

Donald L. Manning, Orchard Lake, Mich., assignor to Transpec, Inc., Troy, Mich.

Filed Sep. 1, 1983, Ser. No. 528,403
Int. Cl.[3] B60R *19/08*
U.S. Cl. 293—121 13 Claims



1. An energy absorbing vehicle bumper system of the type including horizontally extending support beam means, bracket means for mounting said beams to the vehicle, and energy absorbing means supported upon said beam on the side thereof opposite from the bracket means, said energy absorbing means including a resilient member enclosed by an elastomeric outer cover means, the improvement comprising:

A. the support beam means comprising a pair of identical beam members adapted to be joined at their horizontally inner ends to provide a bumper structure for spanning the front end of a vehicle;

B. each beam having a generally U-shape cross-section with a vertical wall portion and a pair of horizontal leg portions projecting forwardly from the upper and lower edges of the vertical wall portion;

C. a plurality of bolt elements supported upon each beam member and having threaded shanks projecting rearwardly through aligned holes in the vertical wall portion and the bracket means;

D. said elastomeric cover means being molded about and enclosing each support beam and the resilient member such that the threaded bolt shanks project rearwardly beyond each beam member;

E. each resilient member being a cellular foam material entirely filling the volume defined by the U-shape beam and the elastomeric cover;

F. nut elements coacting with the threaded bolt shanks to mount the bracket means to each beam;

G. a plate member disposed adjacent the rear face of each beam vertical wall portion and spanning the horizontally adjacent inner ends of said beams; and

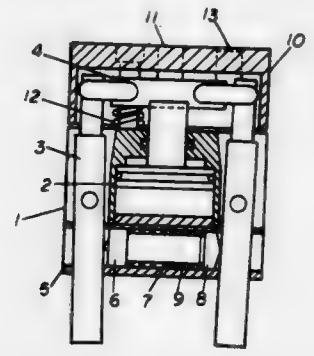
H. means for fastening said plate member to each support beam whereby said beams are joined and coact to provide a unitary bumper structure.

4,509,783

SMART HAND

Alexandru D. Ionescu, 190 Sport Hill Rd., Easton, Conn. 06612

Filed Dec. 29, 1982, Ser. No. 454,190
Int. Cl.[3] B66C *3/16;* F15B *13/42*
U.S. Cl. 294—88 4 Claims

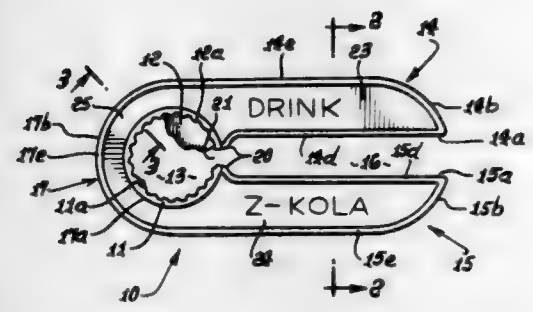


1. A gripper comprising; a body having a piston chamber formed therein, a piston means reciprocally mounted in said chamber, a pair of fingers pivotally mounted intermediate their ends thereof to said body, a cross-bar connected to said piston means, said cross bar being disposed between said fingers, a toggle link interconnecting said cross-bar to each of said fingers whereby the actuation of said piston means effects the displacement of said fingers accordingly, and a sensor means interposed between said fingers for measuring the lateral distance between said fingers upon the actuation of said piston means.

4,509,784
SCREW CAP REMOVER

Gary L. Vollers, 11471 Tampa Ave. No. 149, Northridge, Calif. 91326

Filed Sep. 28, 1982, Ser. No. 425,485
Int. Cl.[3] B25B 9/02
U.S. Cl. 294—99.1 2 Claims



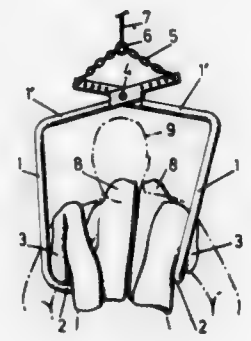
1. A container screw-on cap remover, comprising
(a) a split ring having a cap gripping inner surface about a central aperture adapted to receive a bottle cap,
(b) and a pair of handles attached to said ring and extending in generally the same direction away from said ring, said handles being manually graspable and movable relatively toward one another to draw said ring surface into forcible gripping engagement with the cap, whereby the handles may then be rotated to rotate and loosen the cap,
(c) the split ring consisting of an elastomer, and including a U-shaped integral extension of the handles extending part way about said elastomer split ring to provide a hinge and transfer torque to the split ring, the handles and U-shaped extension comprising a one-piece unit consisting of molded synthetic resin,
(d) said U-shaped extension of said handles being integrally attached to said split ring, to transfer handle torque to the ring, the handles and U-shaped extension defining a single web which in turn defines a plane normal to an axis of said ring,
(e) the handles being elongated and the web having flat sides for displaying indicia, the handles each having an I-shaped cross section in planes normal to the handle length dimension, and substantially throughout handle length,
(f) said split ring interior surface being corrugated, the handles and ring defining cusps that project relatively toward one another proximate the split defined by the ring,
(g) the handles and U-shaped extension having outer flanges that merge and define similar convex curvatures at opposite ends of the remover.

4,509,785
APPARATUS FOR MOVING AN INDIVIDUAL

René Van Raemdonck, Burchtstraat, 17, 9400 Ninove, and André Callaert, 4 Septemberdagenlaan, 24, St. Joost-Ten-Noode, both of Belgium

Filed May 13, 1983, Ser. No. 494,366
Claims priority, application Belgium, May 13, 1982, PV 0/208082
Int. Cl.[3] A47B 83/04
U.S. Cl. 294—118 7 Claims

1. Apparatus for moving an individual, the apparatus comprising two elements which are each bent to form an arm portion, the arm portions being essentially parallel to each other, said arm portions each bearing supporting members shaped so as to grip the individual to be moved underneath the armpits and sidewise partly about the thorax, and means for

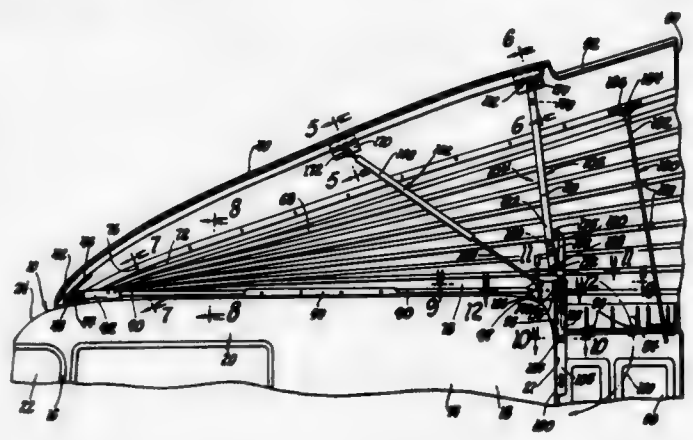


connecting the elements such that the arm portions are moved toward one another under the action of the individual's weight.

4,509,786
SUPPORT FOR COLLAPSIBLE DRAG REDUCER

Willard W. Gregg, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 8, 1982, Ser. No. 439,755
Int. Cl.[3] B62D 35/00
U.S. Cl. 296—1 S 4 Claims



1. In combination with a tractor having a cab roof and a cab rear wall, a support mechanism for moving an air deflector panel pivoted to the cab roof between a pivotally raised air deflecting position and a lowered storage position in which the deflector panel is stored adjacent the cab roof comprising:
a collapsible toggle linkage including a support link having an upper end pivotally connected to the deflector panel and a lower end, a pivot link having a lower end pivotally mounted on the cab rear wall below the roof for pivotal movement between a raised position standing vertically upwardly and a lowered position depending vertically downwardly, and pivot means acting between the pivot link and the lower end of the support link whereby rearward pivotal movement of the pivot link about the lower end from the raised position thereof effects rearward arcuate movement of the lower end of the support link in an arcuate path rearwardly of the rear cab wall to withdraw the support link from support of the deflector panel whereby the air deflector panel is lowered and the collapsible linkage is stored adjacent the rear wall of the cab.

4,509,787
TRUCK RACK

Howard L. Knaack, and Kenneth F. Weger, Jr., both of Cary, Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.

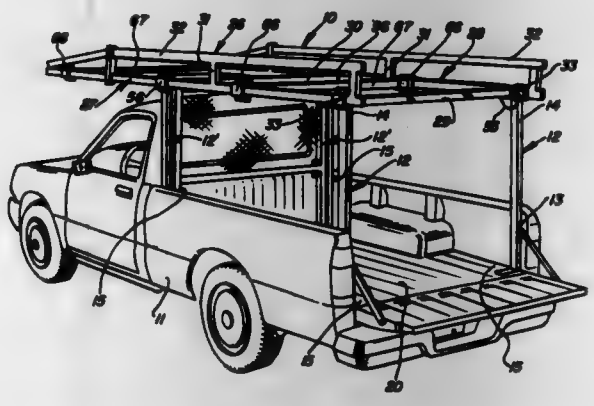
Filed Mar. 29, 1982, Ser. No. 363,107
Int. Cl.[3] B60D 3/00
U.S. Cl. 296—3 5 Claims

1. In a rack adapted to be mounted to a truck for providing

an overlying support for ladders and the like, an improved upright support leg structure comprising an elongated upright defining a lower end adapted to be secured to the truck to project vertically upwardly therefrom, and an upper end construction adapted to support a pair of elongated horizontal support elements, said upper end construction comprising:

a distal portion of the upright defining a horizontal support surface;

a socket member having a lower inner end surface resting on said horizontal support surface, and an outer portion cantilevered therefrom defining a horizontally opening channel for receiving an end of one of the elongated horizontal support elements;



an end plate closing an end of the socket member channel;

means securing the end plate to the socket member and said distal upper end of the upright;

retaining means removably associated with said end plate for defining with said end plate a through passage for extension of the other of the elongated horizontal support elements slidably therethrough; and

means for selectively causing said retaining means to clamp the support element in said passage fixedly to said end plate in alignment with the support element in said socket member channel, said end plate having a portion facially abutting said upper end of the upright subjacent said support surface.

4,509,788

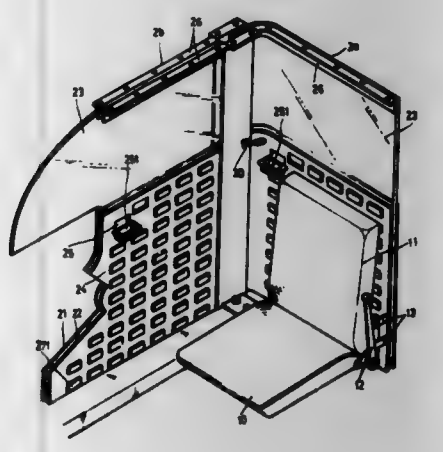
SAFETY ARRANGEMENT IN A TAXI

Ping-Shuenn Jan, No. 33-9, Pu-Tzu, Pu-Yun Tsun, Yung-Kang Hsiung, Tainan Hsieng, and Chung-Yieh Hong, No. 9, Lane 493, Yen-Ping I Rd., Ku-Shan Li, Chi-Shan Cheng, Kao-Hsiung Hsieng, both of Taiwan

Filed Dec. 14, 1982, Ser. No. 449,621

Int. Cl.³ B60R *27/00*

U.S. Cl. 296—24 R **7 Claims**



1. A safety compartment for separating the driver's seat from the occupants of a vehicle which comprises

a driver's seat having a seat portion and a back support portion, said driver's seat being provided with means for causing the back portion to recline toward a horizontal position,

a side vertical partition member mounted to the floor and to the ceiling at one side of the driver's seat,

a rear vertical partition member extending across the back of the driver's seat and extending from the floor to the ceiling and removably connected to the side vertical partition member, said rear vertical partition member being attached to the back support portion of the driver's seat, whereby the side and back partition member surround and separate the driver's seat from the remaining part of the vehicle but when the rear vertical partition member is detached from the side vertical partition member the back support portion of the seat can be placed in a reclining position together with the rear vertical partition member to which it is attached.

4,509,789

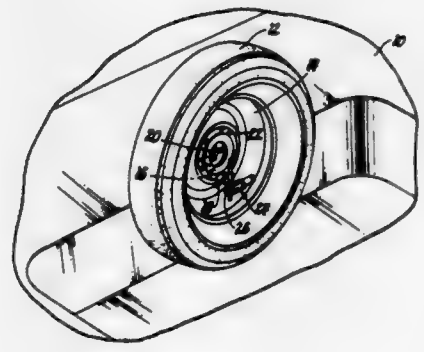
STORAGE RETAINER FOR WHEEL COVER WRENCH

John P. Bogosoff, Battle Creek, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1983, Ser. No. 541,421

Int. Cl.³ B62D *43/00*

U.S. Cl. 296—37.2 **4 Claims**



1. A storage retainer for storing a wheel cover wrench in a motor vehicle storage compartment having a spare tire mounted therein by a bolt passing through a hole in the spare tire, comprising:

a molded plastic body having an internally threaded bore adapted to screw onto the bolt mounting the spare tire and said molded plastic body having an opening therein adapted to receive the wheel cover wrench whereby the wheel cover wrench is effectively stored upon the spare tire mounting bolt.

4,509,790

LOWER BODY STRUCTURE OF CAB-OVER TYPE AUTOMOBILES

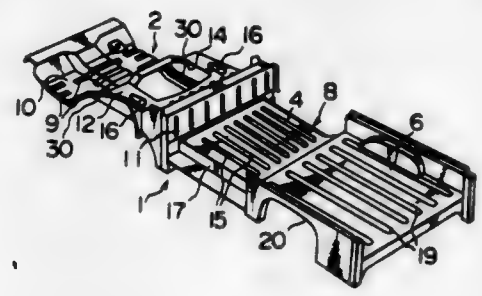
Yoshihito Nagamoto, and Sadao Ozeki, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 17, 1983, Ser. No. 458,710

Claims priority, application Japan, Jan. 18, 1982, 57-5834

Int. Cl.³ B62D *27/00*

U.S. Cl. 296—204 **16 Claims**



1. A lower body structure for a cab-over type automobile

including a pair of longitudinally extending side frame assemblies, each comprising a front side frame and a rear side frame, a cabin floor panel including a front floor panel connected at least at front and rear portions to said front side frame of each side frame assembly, a rear floor panel connected to said rear side frame of each side frame assembly, each said front side frame having a rearward extension extending rearwardly beyond said front floor panel, each said rear side frame having a forward extension extending forwardly beyond said rear floor panel and connected with said rearward extension of said front side frame, and a central floor panel connected to the rearward extension of the front side frames and the forward extensions of the rear side frames, said front floor panel having a raised portion and front and rear portions, said raised portion being located at a higher position than the front and rear portions of the front floor panel and seat means supported by said raised portion of said front floor panel.

4,509,791

RIGID COVER FOR A VEHICLE TOP

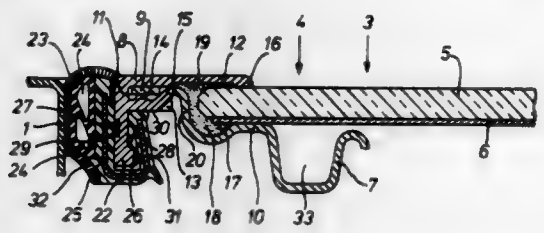
Horst Bienert, Gauting; Georg Kohlpaintner, Maisach, and Hans Jardin, Inning, all of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 317,983

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1980, 3041505

Int. Cl.³ B60J *7/00*

U.S. Cl. 296—216 **18 Claims**



18. In a rigid cover means for closing and at least partially opening an opening in a roof of a vehicle, the cover means including a cover plate formed of a translucent material and frame means for supporting a peripheral edge of the cover plate at the opening in the roof, the frame means including an upper frame member adapted to contact a top of the cover plate and a lower frame member adapted to support a bottom of the cover plate, the improvement for preventing deformations or warping of the cover plate comprising said upper and lower frame members being of a thickness and being rigidly interconnected in a fixed relationship with respect to each other so as to secure the peripheral edge of the cover plate, the lower frame member being a shaped sheet metal part and the upper frame member having an extrusion of light metal, wherein the means for rigidly interconnecting the upper and lower frame members comprises physically interengageable locking means on said frame members.

4,509,792

VENTILATED SEAT

Yen-Hsiung Wang, Industrial District, Tai Nan City, Taiwan

Filed Apr. 12, 1983, Ser. No. 484,265

Int. Cl.³ A47C *7/72*

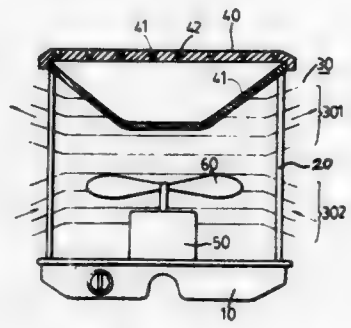
U.S. Cl. 297—180 **7 Claims**

1. A ventilated seat substantially comprising: a housing including a lateral wall having passages extending therethrough for air ventilation;

a fan rotatably mounted in said housing and being adapted to be driven by a motor; and

a seat member mounted on said housing and having a top surface;

wherein the top surface of said seat member is provided with a plurality of holes which communicate with the inside of said housing, and the top surface of said seat member is



provided with a plurality of annular grooves, and said holes communicate with the bottom of said grooves.

4,509,793

CHAIR

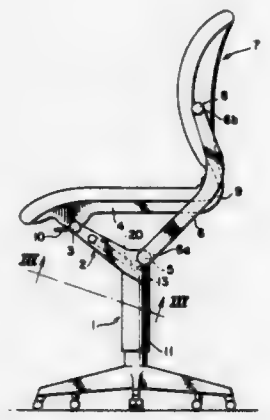
Herbert L. Wiesmann, Hameln, and Heinz P. Suhr, Wunstorf, both of Fed. Rep. of Germany, assignors to Wilkhahn Wilening + Hahne GmbH + Co., Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 495,077

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1982, 3232771

Int. Cl.³ A47G *1/00*

U.S. Cl. 297—355 **24 Claims**



1. A chair comprising a seat portion, a backrest portion flexibly joined to the seat portion, means for urging the backrest portion into a substantially vertical position, support means for supporting the seat portion and backrest portion including a front bearing means articulatingly connected to a front edge of the seat portion, a locking means for locking the backrest portion in the vertical position and at least one inclined position, lock operating lever means pivotably mounted to the support means for controlling an operation of the locking means, a lock operating sleeve means operatively connected to said locking means and extending through said front bearing means, force transmission means interposed between said lock operating sleeve means and said locking means, said locking means including catch means cooperable with said lever means for selectively locking the back rest portion in said vertical position and in said at least one inclined position upon actuation of said lock operating lever means.

4,509,794

PLANAR MEMBER JOINT

Billy F. Roland, 37805 Maple Hill, Mt. Clemens, Mich. 48043

Continuation-in-part of Ser. No. 125,961, Feb. 29, 1980, Pat. No. 4,348,052. This application Oct. 5, 1981, Ser. No. 308,918

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

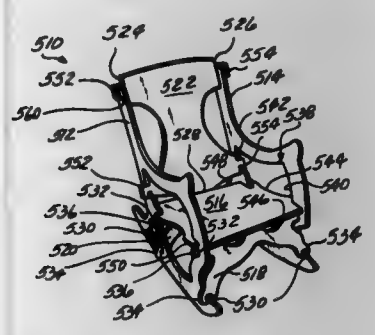
Int. Cl.³ A47C *4/02*

U.S. Cl. 297—440 **4 Claims**

1. A knock down chair made from an assembly of interlocking planar members comprising:

a first side member and a second side member;

a seat member;
a pair of transverse seat support members;
a back member having a first side edge, a second side edge; and a downward extending lower flange;
a first pair of spaced apart openings formed proximate a lower edge of the first and second side members;
a second pair of spaced apart openings formed in the first and second side members spaced above the first pair of openings;
a pair of opposed rotatingly engageable hook flanges formed at an outer lower portion of each transverse seat support member, each rotatingly engageable hook flange rotatingly engageable with a corresponding first opening;
a pair of opposed transverse flanges spaced above the pair of opposed rotatingly engageable hook flanges, aligned and snugly engageable with a corresponding second opening;
said hook flange and said transverse flange engage the first and second openings to interlock said transverse seat support with said side members;
an access opening including opposed front and rear edges formed in the first and second side members;
the seat member comprising opposed outer edges, a forward edge, a rearward edge, a pair of opposed side member engaging hooks open at the forward and rearward edges



respectively formed inward from each of the opposed outer edges snugly engageable with first and second side members, each side member engaging hook including an opening inner edge abutting an opposed edge of the access opening;
a first pair of spaced apart hook flanges disposed along the first side edge;
a second pair of spaced apart hook flanges disposed along the second side edge;
the first and second pairs of hook flanges comprising an upper portion projecting outward from and integral with its corresponding side edge, an outer portion extending downward from and integral with the upper portion spaced outward from its corresponding side edge,
an upper opening and a lower opening formed in the first and second side members aligned and snugly engageable with a corresponding pair of spaced apart hook flanges;
the lower opening in communication with said access opening along a rear edge thereof and sized to snugly receive said upper portion;
wherein when the hook flange upper portion has engaged the lower opening and said seat member is installed, a rear edge of said seat abuts said lower flange to prevent the unintended disassembly of the chair, and no fasteners are required to complete the chair assembly.

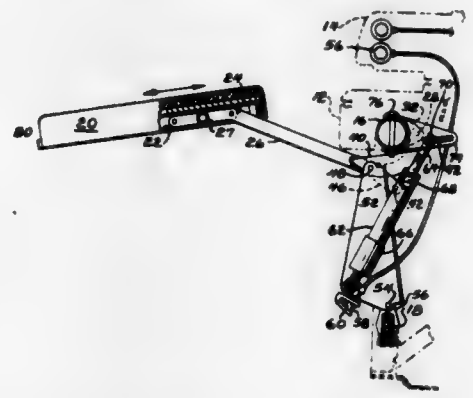
4,509,795

SELF-DEPLOYING LEGREST ASSEMBLY

Edward J. Brennan, Litchfield, and John H. Pratt, Jr., Bethlehem, both of Conn., assignors to PTC Aerospace Inc., Bantam, Conn.

Filed Sep. 9, 1982, Ser. No. 416,393
Int. Cl.³ A47C *7/50*
U.S. Cl. 297—434 **9 Claims**

1. A self-deploying legrest assembly for a vehicle seat comprising a cushioned legrest panel member; said seat having a seat frame including an upper transverse tubular front stretcher member, said panel member being supported for movement between a vertical storage position and a generally horizontal use position by a pair of elongated support arms which are pivotally mounted underneath the bottom cushion of the seat to said tubular stretcher member by a pivotable linkage means; cooperating slide means on said panel member and on said pair of support arms for mounting and permitting fore and aft movement of said legrest panel member relative to said bottom seat cushion of said vehicle seat; said pivotable linkage means including at least one member attached to a lower forward



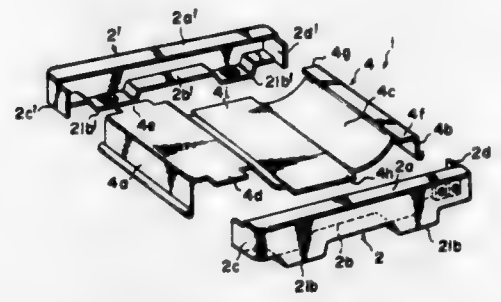
portion of the seat frame and at least one other member attached to said support arms; an extensible cylinder incorporating a spring biasing means, said cylinder being connected to one of the members of said pivotable linkage means and to said seat frame for normally urging said pair of support arms and the legrest panel carried thereby to their uppermost generally horizontal position; locking means for maintaining said extensible cylinder at any selected point in its movement range and manually actuated control means for momentarily releasing said locking means.

4,509,796

SEAT FRAME FOR VEHICLE SEAT

Genjiro Takagi, Tokyo, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 453,937
Claims priority, application Japan, Dec. 29, 1981, 56-195022[U]; Dec. 29, 1981, 56-195023[U]
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—452 **4 Claims**

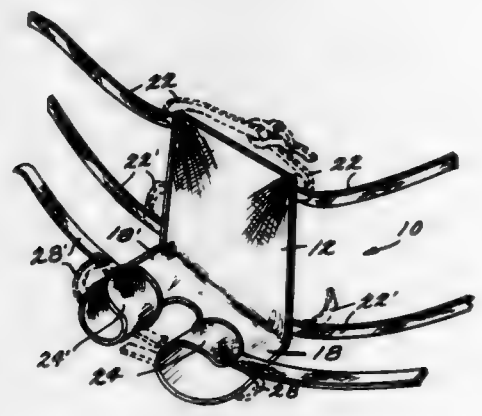


1. A frame for supporting a vehicle seat cushion comprising a substantially pan-shaped metallic frame, said frame having two distinct side frames and a central panel, the central panel being formed from metal which is thinner than metal from which said side frames are formed, each of said side frames having a substantially U-configured cross section and upper end lower parts, said side frames having ends which are curved, said center panel further comprising front and rear inclined margins and side welding projections, said side frames and said center panel being attached to each other wherein said center panel margins and said welding projections are are fitted to said side frames and welded to each side frame.

4,509,797
WHEEL CHAIR RESTRAINT

Maxine M. Mullaly, 64 Larch Rd., Sayre, Pa. 18840

Filed Jul. 18, 1983, Ser. No. 514,483
Int. Cl.³ A47C *31/00*
U.S. Cl. 297—466 4 Claims



1. A restraint for use with wheel chairs and other chairs having seats and backs, said restraint comprising:

a flexible first portion for placement against the back of said chair and against which a patient's back may rest;

first and second flexible and distinct extension portions integral with and projecting forwardly from said first portion for placement onto the seat of said chair and upon which the thighs of said patient may rest;

means in operative relationship with said first portion for removably securing said first portion to said chair;

a first flexible restraining strap portion integral with said first extension portion and positioned to be selectively wrapped upwardly about an inner portion of a first thigh of the patient;

means in operative relationship with said first strap portion for removably securing said first strap portion to said chair;

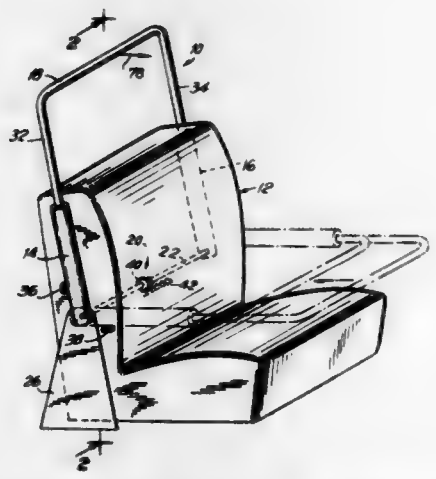
a second flexible restraining strap portion integral with said second extension portion and positioned to be selectively wrapped upwardly about an inner portion of a second thigh of the patient; and

means in operative relationship with said second strap portion for removably securing said second strap portion to said chair.

4,509,798
VEHICLE SEAT HARNESS

John Strothers, 175 W. 137th St., New York, N.Y. 10030

Filed Aug. 23, 1982, Ser. No. 411,086
Int. Cl.³ B60R *21/10*
U.S. Cl. 297—487 10 Claims



1. A vehicle seat harness assembly for use with a vehicle seat having a seat portion and back portion extending upwardly from a rear end of the seat portion, comprising:

a substantially U-shaped harness including a pair of pivot pivot arm portions and a body restraining portion extending between and interconnecting said pivot arm portions;

means for hingedly mounting said harness with respect to said vehicle seat so as to be freely pivotable around a pivot axis;

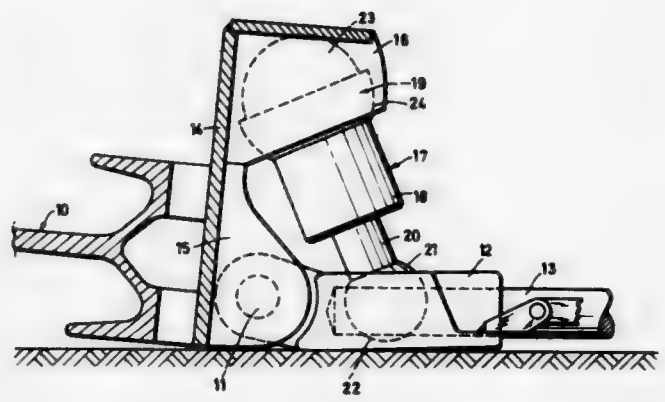
stop means for limiting the pivotal movement of said harness between an inoperative position wherein both of said pivot arm portions extend upwardly from said pivot axis and said body restraining portion is situated substantially over the back portion of the seat and wherein the center of gravity of said harness is situated above and at least slightly rearwardly of said pivot axis, and an operative position wherein both of said pivot arm portions extend forwardly of said pivot axis and said body restraining portion is situated substantially over the seat portion of the seat; and

actuating means in the vehicle seat for automatically pivoting said harness when in said inoperative position, in response to a vehicle occupant sitting in the seat, from said inoperative position to a position intermediate of said inoperative and operative positions wherein the center of gravity of said harness is situated above and at least slightly forwardly of said pivot axis, so that upon said harness being pivoted to said intermediate position by said actuating means, it will continue to freely pivot under the force of gravity until reaching said operative position.

4,509,799
APPARATUS FOR CONTROLLING THE POSITION OF A MINERAL MINING MACHINE

Franz Roling, Nordkirchen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 4, 1983, Ser. No. 455,609
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1982, 3200082
Int. Cl.³ E21C *35/12*
U.S. Cl. 299—42 14 Claims



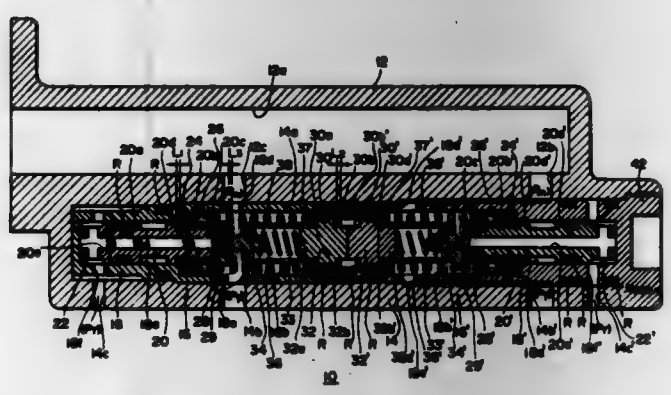
1. In apparatus for controlling the position of a mineral mining machine movable along guide means and comprising one or more elongate rods, connection means effecting pivotal connection between the guide means and said one or more rods, and at least one piston and cylinder unit connected between the guide means and the connection means with the aid of one or more ball-and-socket joints and operable to adjust the guide means; the improvements characterized by: the unit having a ball forming part of said one joint, said ball having a curvilinear end region and a curvilinear shoulder with a larger radius of curvature than that of the end region, and means for inhibiting the rotation of said unit about its longitudinal axis.

4,509,800

BRAKE PRESSURE CONTROL VALVE OF A DOUBLE PIPING SYSTEM

Hitoshi Kubota, Minami-ashigara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1982, Ser. No. 454,615
Claims priority, application Japan, Mar. 23, 1982, 57-46120
Int. Cl.³ B60T 8/26
U.S. Cl. 303—6 C 6 Claims



1. A brake pressure control valve for a double piping hydraulic braking system, comprising:

a housing having a bore formed therein;

a pair of substantially identical valve units coaxially and symmetrically arranged in said bore, each valve unit including a valve body, a pressure control piston and a spring, and being constructed to produce a controlled outlet hydraulic pressure in accordance with the magnitude of a hydraulic pressure applied thereto;

a pair of free pistons respectively associated with the paired value units and contacting each other to be movable therewith, said free pistons supporting the associated valve bodies and one end of the associated springs to cause one of said valve units to produce, when the other valve unit fails to operate, an outlet hydraulic pressure which is equal to the applied pressure in magnitude; and

a self-centering promoting means which causes each of the springs to apply no force to the corresponding free piston when said corresponding free piston moves away from its home position toward the other of said free pistons, said self-centering promoting means comprising:

associated with said each valve unit:

a valve casing;

a hollow member retained in said casing to retain substantially all essential parts of the associated valve unit in the casing, said hollow member having a shoulder portion which protrudes into the interior of said casing;

a radially outwardly projected portion of the associated free piston being axially slidably received in said hollow member, said associated free piston having an outside end contacting the other free piston of said pair of free pistons; and

an annular spring seat on which said one end of said spring is seated, said spring seat being in abutment with both said shoulder portion and said radially outwardly projected portion at the same time when said associated piston assumes its home position.

4,509,801

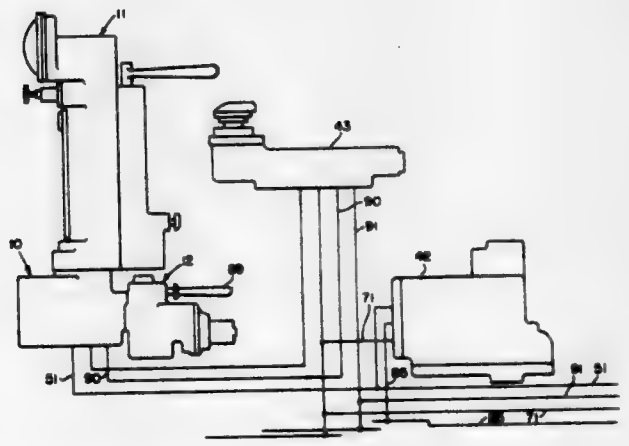
FLUID PRESSURE BRAKE CONTROL SYSTEMS FOR FREIGHT LOCOMOTIVES

Ronald O. Newton, Adams, and Eric Wright, Watertown, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 18, 1983, Ser. No. 553,332
Int. Cl.³ B60T 13/00
U.S. Cl. 303—8 7 Claims

1. A fluid pressure brake control system of the direct release type for a freight locomotive comprising a first pipe bracket having a manually controllable automatic brake valve device connected thereto on one side for governing fluid brake control pressure in a train pipe, and a manual controllable independent brake valve device connected thereto on another side for governing brakes of the locomotive independent of brakes of freight cars in a train, and a brake control valve device comprising a second pipe bracket governed in part by fluid in the brake pipe for controlling brakes of a locomotive, wherein an improved brake control device and second pipe bracket comprises:

(a) a service freight brake valve portion secured to one side of the second pipe bracket for controlling brakes of a locomotive,



(b) the service freight brake valve portion being the same as, and interchangeable with, service valve portion conventionally used on US freight cars to control brakes of such cars, and

(c) a quick release and emergency valve portion secured to another side of the second pipe bracket for governing emergency brake pressure and for governing independent direct release of brakes of a locomotive in response to actuation of the manually controllable independent brake valve device.

4,509,802

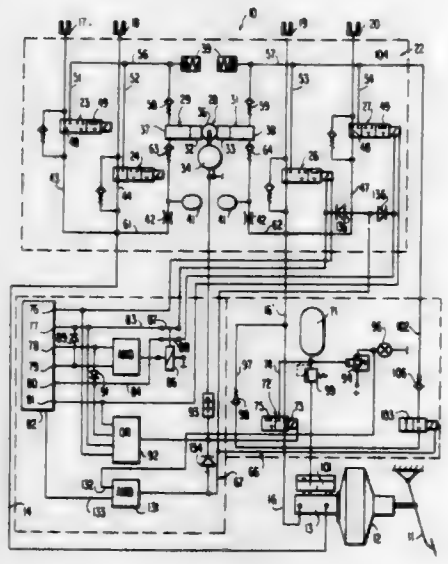
INSTALLATION FOR CHARGING A PRESSURE RESERVOIR PROVIDED AS A PRESSURE SOURCE WITHIN A PROPULSION CONTROL SYSTEM OF A MOTOR VEHICLE

Friedrich Solleder, Waiblingen; Helmut Krohn, Esslingen; Manfred Burckhardt, Wiblingen, and Franz Brugger, Winnenden, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 419,486
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137287; Sep. 18, 1981, 3137286
Int. Cl.³ B60T 8/02
U.S. Cl. 303—110 46 Claims

1. An installation for charging a pressure reservoir means which is provided as a pressure source in a propulsion control means of a motor vehicle, pressure being applied during control phases of the propulsion control means from said reservoir means to wheel brake means of the wheel which, at the instant in question, is tending to spin, an anti-blocking means in the vehicle having hydraulic control means for regulating the brake pressures at the wheel brake means, said hydraulic control means including brake-pressure regulating valve means individually coordinated to the wheel brake means and operable to be shifted into a pressure build-up position, a pressure-holding position, or a pressure-reduction position, a return pump means activated at least during the control phases in which pressure reduction occurs, electronic control means for shifting the brake-pressure regulating valve means in the sense of effecting propulsion control, the return pump means, activated during the pressure-reduction phases of the propulsion control, being also operable to recharge the pressure reservoir

means, characterized in that the pressure reservoir means is a high-pressure reservoir which can be charged to a pressure of about 160–200 bar required for the pressure actuation of the wheel brake means, a master brake cylinder means having an outlet pressure chamber means, solenoid valve means operable to connect in the normal position thereof the outlet pressure chamber means with a brake line means leading to the brake-pressure regulating valve means of the driven wheels, the pressure reservoir means being operatively connected to said brake line means, instead of the connection of the master brake



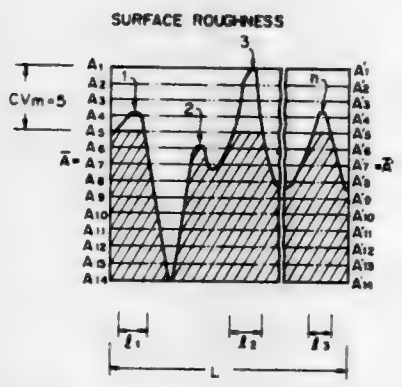
cylinder means to said brake line means, upon energization of said solenoid valve means, which is logically linked to activation of the propulsion control means, so that the reservoir means can be charged by the return pump means also operatively connected on its outlet side to said brake line means, and in that a pressure monitor means is provided responding to the pressure in the reservoir means and generating an electrical output signal operable to trigger an operation to charge the pressure reservoir means when the pressure therein drops below a minimum intended value.

4,509,803

SLIDING MEMBER HAVING A NOVEL PORE STRUCTURE ON THE SLIDING SURFACE THEREOF

Akira Takenaka; Keiichi Shimasaki, both of Nagoya, and Yasumitsu Kuwazuru, Toyota, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Filed Nov. 4, 1983, Ser. No. 548,760
Claims priority, application Japan, Nov. 8, 1982, 57-194559
Int. Cl.³ F16C *33/12*
U.S. Cl. 308—5 R **19 Claims**



1. A sliding member which has a hardness of at least HRc 50 and has micropores for determining the surface roughness of the sliding surface thereof, wherein said micropores, when measured with a particle counter, in an amount ranging from 5% to 40% based on an area of the sliding surface and ranging from 2,000 to 150,000 per mm^2 of the sliding surface have a diameter of at least 0.5 μm and further have a top portion of ridges which define said micropores and which have a high flatness in terms of the relative load curve, said relative load curve being defined by an accumulative percentage (t_k) and a cutting depth (CV_k) and said accumulative percentage (t_k) being defined by:

$$t_k = \frac{l_1 + l_2 + \ldots + l_k}{L} \times 100(\%),$$

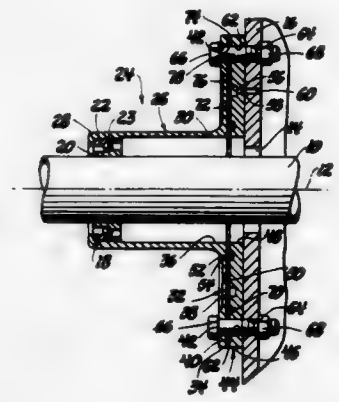
wherein L is the standard measuring length of the sliding member extending in a direction parallel to the sliding surface, k is a number not greater than a predetermined number of divided sections of the ridges which are divided by imaginary lines extending parallel to an average roughness line, the cutting depth (CV_k) is a distance between a top imaginary line which passes over a top of the highest ridge and a kth imaginary line which passes over one or more of the ridges, and l_k is a total length of the ridges which are cut by the knth imaginary line corresponding to the cutting length CV_k, said flatness in terms of the relative load curve being defined by both: an accumulative percentage (t_k) of 5% or less at a cutting depth (CV_k) of less than 1 μm and an accumulative percentage (t_k) of more than 5% but less than 40% at a cutting depth (CV_k) of less than 0.5 μm.

4,509,804

BEARING MOUNT WITH SQUEEZE FILM DAMPING

Steven A. Klusman, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 27, 1983, Ser. No. 498,969
Int. Cl.³ F16C *27/04*
U.S. Cl. 384—99 **4 Claims**



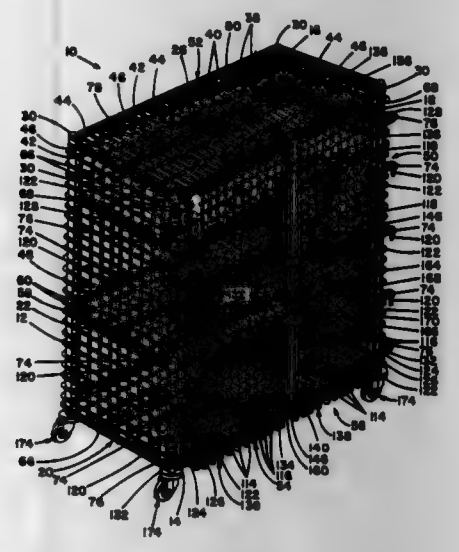
1. In a mount for a bearing on a shaft rotatable about a longitudinal axis and subject with said bearing to radial and axial vibratory displacement relative to said axis, the combination comprising, a tube aligned on said axis and including a first end and a second end, means mounting said bearing on said tube at said first end for vibratory displacement therewith, a diaphragm spring having an outer diameter and a resilient planar portion, means rigidly connecting said tube at said second end thereof to said diaphragm spring, means attaching said diaphragm spring at said outer diameter thereof to a structure fixed relative to said shaft so that each of said radial and axial vibratory deflections of said tube vibratorily distorts said diaphragm spring planar portion, wall means in spaced parallel relation to said diaphragm spring planar portion cooperating therewith in defining a planar squeeze film chamber, and means for maintaining said squeeze film chamber filled with fluid so that vibratory distortion of said diaphragm spring planar portion is resisted and damped by forces developed in said fluid.

4,509,805

ENCLOSED SHELVING

John H. Welsch, Moscow; John J. Chapko, Wilkes-Barre, and Robert J. Carver, Nanticoke, all of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Aug. 9, 1982, Ser. No. 406,251
Int. Cl.³ A47B *57/00*
U.S. Cl. 312—210 28 Claims



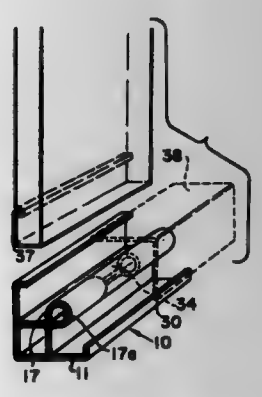
1. Enclosed shelving comprising:
a top shelf supported above a bottom shelf, each of said shelves having a peripheral lip;
side panels and a rear panel having an open wire construction disposed about said shelves;
retaining finger means extending from upper and lower ends of said panels for engaging said peripheral lip of each of said shelves to retain said panels in place about said shelves;
coupling means interconnecting said side panels and said rear panel;
a pair of front door panels having an open wire construction;
hinge means interconnecting each of said side panels to an associated one of said door panels;
closure means for closing said front door panels; and
said closure means including a vertically sliding bar secured onto one door panel of said pair, downwardly depending gripping fingers coupled to top and bottom portions of said bar for respectively engaging said peripheral lip of said top and bottom shelves when said bar is slid downwardly and releasing said peripheral lip when said bar is slid upwardly.

4,509,806

POST ASSEMBLY FOR KNOCK-DOWN FURNITURE

Jean-Paul Dudouyt, Les Camelias, Place des Palniers, 44500 La Baule les Pins, France

Filed Apr. 15, 1982, Ser. No. 368,775
Claims priority, application France, Apr. 16, 1981, 81 07706
Int. Cl.³ A47B *88/00*
U.S. Cl. 312—257 SK 10 Claims



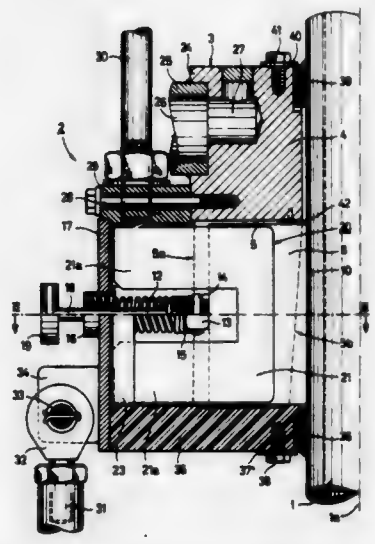
1. A post assembly for knock-down furniture comprising an exterior section having the general shape of an angle iron with intersecting sides which are intended to form the corresponding corners of a piece of furniture formed by partitions, and an interior section having upper and lower ends, said interior section connected to the exterior section, substantially receiving the plane bisecting the corner as a plane of symmetry and intended for preventing a transverse displacement of the partitions forming corresponding sides of the furniture by being applied against the internal faces of these partitions, in which said interior section includes, at least at each of its ends, one section of a tubular element which is in contact with the partitions and sufficiently closed to cooperate with a securing means for securing a cover means at a lower end of said post such as a lower partition pierced by said securing means and securing at an upper end of said post covering means and at least one section of said post is provided with detent means cooperating with lateral means carried by the partitions of the furniture for preventing the displacement of said partitions.

4,509,807

SLIDING CONTACT ARRANGEMENT FOR TRANSMITTING HEAVY CURRENTS FROM AND TO BUS BARS WITH SLIDE SURFACES

Uwe Reimpell, Hanau am Main, and Otto Stenzel, Gründau, both of Fed. Rep. of Germany, assignors to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,462
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134017
Int. Cl.³ H01R *41/00*
U.S. Cl. 339—9 R 14 Claims



1. In a sliding contact arrangement for transmitting a heavy current to or from a bus bar having a slide surface along which the arrangement is to be slidably movable, the arrangement having cage means (3) for mounting the arrangement on the bus bar slidably of the slide surface of the bus bar, the cage means (3) having prolongation means (5), the prolongation means (5) comprising at least one current-conducting contact face (7) extending toward the slide surface of the bus bar to an inner end (5*b*) thereby when the arrangement is mounted thereon and defining a space (6) from an adjacent portion of the cage means for receiving at least one current-conducting sliding contact (8) in the space (6), the sliding contact (8) having a slide face (10) for engaging the slide surface of the bus bar, whereby to transmit the heavy current thereto or therefrom, and a face (9) for engaging the contact face (7), the improvement comprising:
means in the cage means (3) for transmitting the heavy current to or from the prolongation means (5);
the current-conducting contact face (7) of the prolongation means (5) conducting the heavy current to or from the sliding contact (8) when engaged therewith; whereby to distribute the density of the heavy current over the engaged faces; and

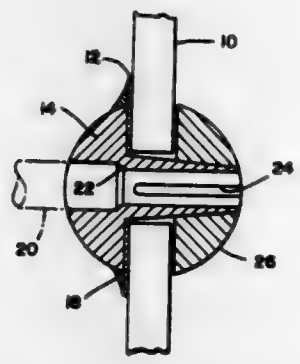
engaging means (21, 13) for engaging the face (9) of the sliding contact (8) with the contact face (7) of the prolongation means (5) and for engaging the face (10) of the sliding contact (8) and the slide surface of the bus bar (1) sufficiently for conducting the heavy current therebetween with the sliding contact (8) spaced from the adjacent portion of the cage means across the space (6) when the sliding contact is received in the arrangement and the arrangement is mounted the bus bar.

4,509,808

HIGH VOLTAGE, GAS TIGHT CONNECTOR

Leroy L. Heligren, Los Gatos, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1983, Ser. No. 476,749
Int. Cl.[3] H05K *1/00*
U.S. Cl. 339—17 R 2 Claims



2. A high-voltage electrical connector for high-voltage gas-tight coupling to an electrical circuit on a circuit board comprising:

(a) a socket portion having a smooth hemispherical upper surface and a flat lower surface for contact with the electrical circuit on the circuit board, said socket further having a central tapering extension from said flat surface sufficient to extend through and slightly beyond said circuit board, said socket and said tapering extension having a continuous central bore for receiving electrical wire;

(b) at least one slot in said tapering extension, said slot extending the length of said extension protruding beyond said circuit board; and

(c) a cap nut having an upper hemispherical surface and a lower flat surface and having a tapering central bore for compressably receiving said tapering extension whereby said cap nut is pressed upon said tapering extension with said flat surface facing said circuit board with predetermined force compressing said tapering extension to form a gas-tight electrical line-contact with said wire.

4,509,809

SIGNAL LEAD-OUT APPARATUS

Cheng-Shi Wang, Pai-Kou Village, Hua-Tan District, Chang-Hua Hsien, Taiwan

Filed Mar. 23, 1983, Ser. No. 478,117
Int. Cl.[3] H01R *4/66*
U.S. Cl. 339—14 R 9 Claims

1. An improved signal lead-out apparatus comprising:

(a) a base body (21) having an open groove (27) for receiving outgoing TV antenna wires (90), a plurality of notches (211) formed in one side of said body, and an accommodating housing (30) provided on another side of said body;

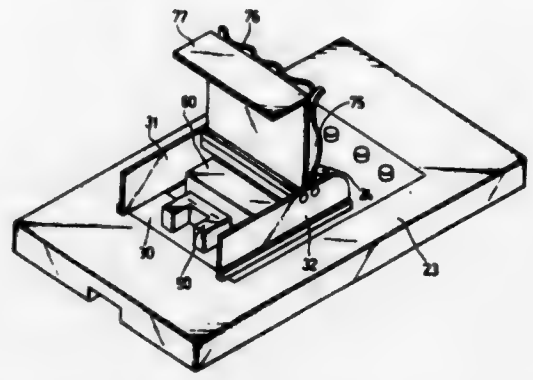
(b) pinch-in means (50) disposed in said open groove for the termination of said outgoing TV antenna wires;

(c) an elastic inserting means (40) installed in said accommodating housing for the termination of an incoming coaxial cable;

(d) a circuit device (60) provided in said accommodating housing for making electrical connections between said pinch-in means and said elastic inserting means; and

(e) a covering device (22) coupled with said base body in cooperation with said pinch-in means for accomplishing signal lead-out connections therewith, wherein

(f) said elastic inserting means comprises a housing body (41) of non-conductive material with a plurality of spaces (42, 43, 44) separately formed in a top side thereof and a plurality of apertures (471) horizontally formed in a frontal side thereof; and



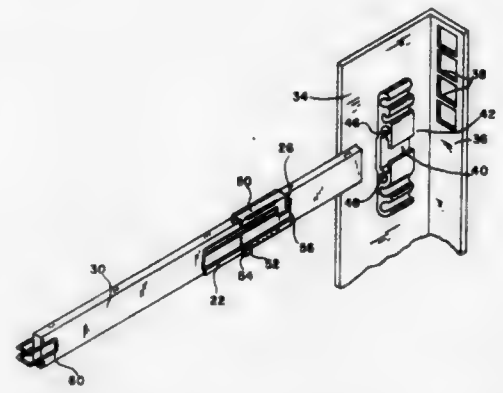
(g) a plurality of elastic chuck pieces (45) made of conductive material and each formed with a chuck end (46) and a flake end (48) respectively fixed in said spaces of said housing body with said chuck ends separately communicating with said apertures for making electrical connections with inner conductors of the incoming coaxial cable through inserting operations, and with said flake ends respectively extending out of the top side of said housing body for being connected to said circuit device thereof.

4,509,810

RACK WITH CARD FRAMES ADJUSTABLE ON LATERAL SLIDE GUIDES

David P. Erlam, and Arthur E. Carr, both of Winchester, England, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 486,991
Claims priority, application United Kingdom, Apr. 21, 1982, 8211566; Apr. 13, 1983, 8310016
Int. Cl.[3] H05K *7/14, 7/16*
U.S. Cl. 339—17 M 22 Claims



1. A rack for adjustable mounting of card frames provided with side plates, said rack comprising: two vertical angular mounting members in front and two vertical angular mounting members in back which have secured thereto for each card frame two lateral slide assemblies, oppositely oriented with respect to each other, each said lateral slide assembly comprising a support beam (30) the ends of which are inserted in receptacles (40) provided in each of two receptacle members (42) which are secured to the respective said front and back angular mounting members (32, 34) of said rack; a carriage (50, 50') adjustably mounted on each said support beam, each said

carriage being provided at its inner faces with an extending lower projection (52, 52') defining a supporting surface (54, 54') and with an extending upper projection (56, 56'); a rearwardly projecting cantilevr means (22, 22') is provided at each side plate (10, 12) of said card frame, said cantilever means (22, 22') having a recess (26, 26') on the upper edge of each free end for connection with said projection (56, 56') on said carriage (50, 50'); and said cantilever means (22, 22') when positioned in a tilted condition upon said supporting surfaces (54, 54') are slidably insertable, and by lowering said card frame engagement of said projections (56, 56') with said recesses (26, 26') is obtained and said card frame is secured to said carriage (50, 50') in a horizontally and axially non-displaceable relationship.

4,509,811

PRINTED-CIRCUIT BOARD CONNECTOR

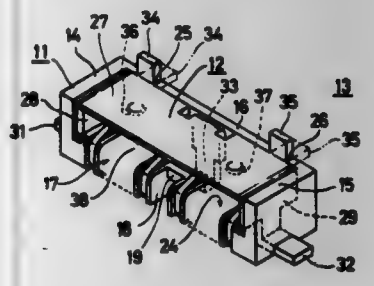
Katutoshi Amano, Yokohama, and Toshio Kakuta, Higashi-osaka, both of Japan, assignors to Sony Corporation, Tokyo and Hosiden Electronic Co. Ltd., Osaka, both of, Japan

Filed Aug. 12, 1983, Ser. No. 522,778

Claims priority, application Japan, Aug. 23, 1982, 57-127632[U]

Int. Cl.³ H01R *23/70*

U.S. Cl. 339—17 F 17 Claims



1. A printed-circuit board connector comprising:

a substantially rectangular elongated parallelepiped first body fabricated of a synthetic resinous material, said first body having contact receiving grooves formed in one of the rectangular faces thereof, said contact receiving grooves extending in the width direction of said first body and being arranged side by side to one another in the lengthwise direction of said first body, said first body also having first and second insertion slots formed in the opposing end portions thereof parallel to said grooves and in spaced relation thereto;

a second body comprising an elongated substantially rectangular metal plate having first and second integral leg portions extending at right angles to the plane of said plate at the opposing narrower ends of said plate, said second body further including first and second fixing pieces having widths narrower than the widths of said first and second leg portions and extending integrally from said first and second leg portions in parallel relation to one another and in directions perpendicular to the plane of said metal plate, said first and second fixing pieces being inserted into one end of said first and second insertion slots, respectively, from the side of said first body on which said contact receiving grooves are formed, said first and second fixing pieces extending completely through said insertion slots so that the free end portions of said first and second fixing pieces project out of the other ends of said first and second insertion slots, said free end portions of said first and second fixing pieces being deformed to fixedly attach said first and second bodies to one another to form a connector body having first and second elongated rectangular faces, first and second side faces connecting said first and second elongated rectangular faces at both ends thereof, and front and rear faces, all of which faces are defined respectively by the outer surfaces of said first and second bodies, said metal plate of said second body being spaced by said leg portions from the face of said first body having said contact receiving grooves to define an insertion opening in said connector body that is located between said first and second bodies for receiving therein a printed-circuit sheet; and

a plurality of contact members having intermediate portions which are embedded in said first body to extend in a direction parallel to the direction of insertion of the printed-circuit sheet into said insertion opening, one end portions of said contact members projecting outwardly from said front face of said connector body and being folded back into said contact receiving grooves to form contacts, and the other end portions of said contact members projecting outwardly from said rear face of said connector body for use as terminals.

4,509,812

PLUG CONNECTOR FOR DIL COMPONENTS

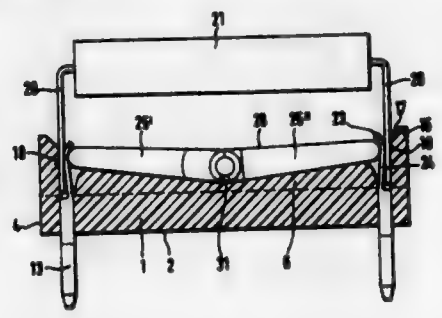
Karl Lotter, Falkenstr. 2, D-8959 Buching, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,844

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214841; Feb. 25, 1983, 8305384[U]

Int. Cl.³ H01R *13/629;* H05K *1/00*

U.S. Cl. 339—75 M 26 Claims



1. A multi-pin connector for use with a dual-in-line component having pins placed in two lines that are parallel to each other, comprising:

(a) an insulating socket body having a middle portion

(b) socket contacts in said body, said contacts

(1) being placed at points lined-up with the pins of a dual-in-line component to be fitted in said socket,

(2) each said contact having a soldering end part designed as a soldering pin and sticking out at a right angle from a side of said body that is to be placed on a printed circuit board,

(3) each said contact having a middle keeper part fitted at least partly with a locking fit in the socket body, said middle part running through the socket body,

(4) and each having a further end part opposite to said first noted end part, said further end sticking out from a side of the socket body opposite to the said board, said further end part being in the form of a spring element for at least part of its length that may be moved in a direction at a right angle to a lengthways axis of said body, said body further having support face means of which each is opposite to one of said further contact ends along sides of the said body, the spacing between the support face means and the further ends of the contacts being such that the pins of said dual-in-line component may be taken up therebetween.

(c) two clamping plates forming a clamping system having lengthways edges at which they are foldingly joined together along a folding line, said plates having outer plate edges parallel to said fold line, said socket having keeper lug elements fitted partly round said outer plate edges, said plates being able to be folded between an unclamped position and a clamping position with said plate edges resting against the said spring elements in these two said positions, the clamping plates being folded and sloped away from said board in said unclamped position like a roof and in the clamping position being in a plane that is

parallel to the side of said socket body next to said board, said spring elements being pressed towards said pins of said dual-in-line component in said clamping position to press said pins against said support faces with a clamping bias force

(d) said body further having a stop face on the side thereof facing away from said board, said stopface having two sloped surfaces that are sloped like the sides of a valley inward towards the socket body middle portion and towards the side of said socket body next to said board

(e) said clamping plates being able to be folded past the clamping position thereof into a locking position, in which the clamping plates are sloped like the sides of a valley towards said board and in which said clamping plates are at least partly rested against said sloped surfaces on said stop face and

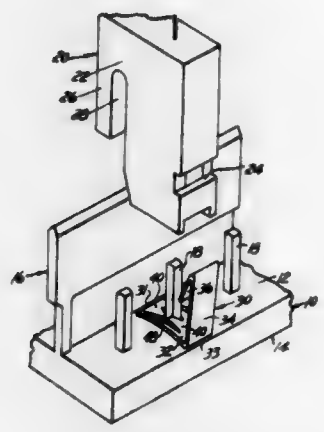
(f) each spring element is in the form of solid spring tonguepiece with a front face resting against one of said edges of said clamping plates and with a back face turned towards the support face, said tonguepiece and edges being shaped so that the bias force exerted by said edge against said tonguepiece in said locking position is less than said clamping bias force, but sufficient to clamp said pins within said socket body to thereby prevent said clamping plates from inadvertently moving back through said clamping position to said unclamped position once said clamping plates have been moved to said locking position.

4,509,813

RETAINING CLIP FOR HOLDING A CONNECTOR TO A PANEL

David L. Hesse, Chicago, Ill., assignor to Allied Corporation, Morristown, N.J.

Filed Nov. 1, 1983, Ser. No. 547,693
Int. Cl.³ H01R *13/627*
U.S. Cl. 339—91 R **4 Claims**



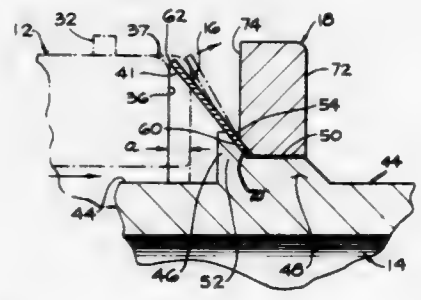
1. A retaining clip for releasably holding a socket electrical connector in engagement with a pin projecting from a circuit board, the socket electrical connector including a dielectric housing having an abutment shoulder and an aperture for fitting about the pin, said retaining clip being characterized by: a base adapted to seat on the circuit board and comprising a like pair of base members interconnected along one like lateral edge, means operative with each said base member for engaging one said pin, and means including a bracket extending upwardly from said interconnection for engaging one said abutment shoulder, each said base member including a pair of upwardly extending plate portions with each said plate portion having a V-shaped notch disposed therein to define a plurality of lances, said pin engaging means being defined by each respective pair of plate portions and associated notches cooperating to define an opening for receiving the respective pin with each said notch having an edge to frictionally engage an edge of the pin, and said bracket includes a pair of locking prongs each being directed downwardly from said bracket toward one respective base member.

4,509,814

ELECTRICAL CONNECTOR SHELL ASSEMBLY WITH CONTINUOUS ANNULAR SEAL

William R. Mattingly, Jr., Santa Ana, Calif., assignor to Matrix Science Corporation, Torrance, Calif.

Filed Sep. 30, 1982, Ser. No. 431,483
Int. Cl.³ H01R *4/00*
U.S. Cl. 339—93 R **11 Claims**



1. An electrical connector comprising:

a cylindrical first shell having a metal sealing surface with an annular, planar radially disposed end face and an annular, convex corner portion about the outermost terminus of the planar radially disposed end face;

a cylindrical second shell for being coupled with the first shell;

a frusto-conical metal ring having an annular inner edge region immoveably attached about the periphery of the second shell and axially spaced from the sealing surface, and having an annular mating edge region remote from the inner edge region, the mating edge region extending toward the sealing surface and being axially and radially spaced from the inner edge region, the mating edge region circumferentially contacting and the abutting sealing surface when the first and second shells are coupled together in full engagement effectuating resilient axial deflection of the annular mating edge region relative to the annular inner edge region whereby the metal ring is resiliently bent along its length between the inner edge region and the mating edge region, the mating edge region being moveable along the sealing surface;

means for clamping and holding the first and second shell members in mating relationship with the mating edge region of the frusto-conical metal ring pressed in axial deflection relationship against the metal sealing surface of the first shell for forming a continuous annular metal-to-metal seal between the metal sealing surface of the first shell and the annular mating edge region of the metal ring.

4,509,815

TEST HEAD MOUNTING FOR SINGLE OR MULTIPLE TEST HEADS

Gert Fischer, Mulheim, and Dieter Lather, Geldern, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,117
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3122036
Int. Cl.³ H01R *3/00*
U.S. Cl. 339—147 P **1 Claim**

1. A mounting assembly for test heads, comprising:

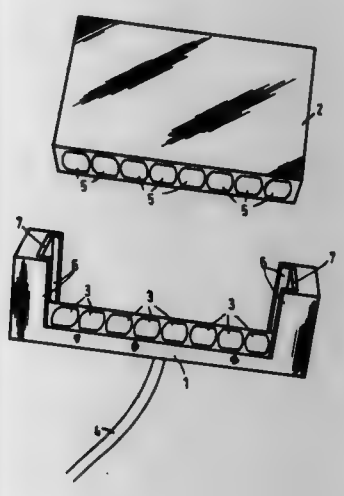
a holding element;

a replaceable test head adapted for receipt by said holding element;

condenser plates firmly fixed in said holding element;

condenser plates in said test head and having the same arrangement as those on the holding element when inserted into said holding element; and

stop elements in said holding element for setting a space between said condenser plates on said holding element



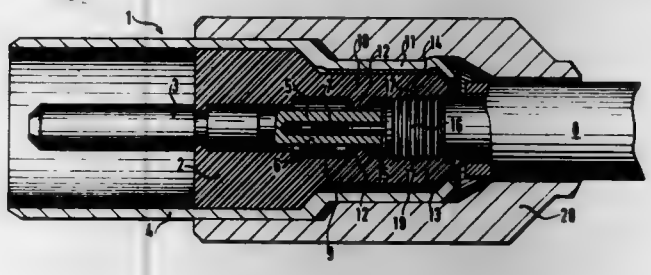
and said condenser plates on said test head and thereby defining a dielectrical distance.

4,509,816

PLUG CONNECTOR FOR CO-AXIAL ELECTRICAL CABLES

Wolfgang Freitag, Arndtstrasse 9-11, 2351 Trappenkamp, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,001
Int. Cl.[3] H01R *17/18*
U.S. Cl. 339—177 R **5 Claims**



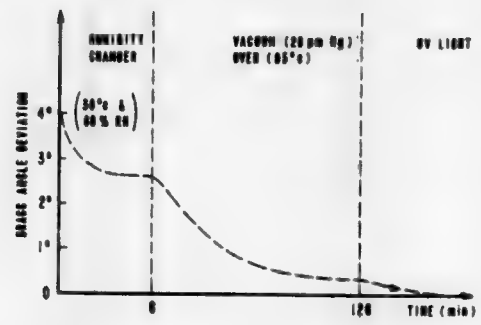
1. In a plug connector for co-axial electrical cables, in which a connector dielectric carrying a sleeve-like external conductor of the connector as well as a central internal conductor of the connector has a portion which, upon connecting the internal cable conductor electrically to a receiving section of the internal conductor of the connector, is pressed against the receiving section, wherein the external connector conductor has a cable connection portion for the outer cable conductor intended to be connected thereto, and wherein the electrical connection of the cable conductors to the connector conductors is established by crimping, the improvement which consists in that said portion of the connector dielectric projects at least partially into an axial area of the cable connection portion of the external connector conductor, in such manner that an inwardly exerted radial force on said connector dielectric portion applied by crimping of the cable connection portion complementarily acts via the connector dielectric portion on at least the radially yielding receiving portion of the inner connector conductor.

4,509,817

METHOD FOR CORRECTING VOLUME-PHASE-GELATIN HOLOGRAMS BRAGG'S ANGLE DEVIATION

Ping-Pei Ho, New Caanan, Conn.; Brian A. Gorin, Lakegrove, N.Y., and Nayana S. Bora, Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 1, 1983, Ser. No. 519,465
Int. Cl.[3] G03H *1/02*
U.S. Cl. 350—3.61 **7 Claims**



1. A process for the production of a phase hologram, comprising steps of:

exposing a developed phase hologram to a high concentration of water vapor;

drying the hologram at an elevated temperature and in a vapor pressure reduced vacuum;

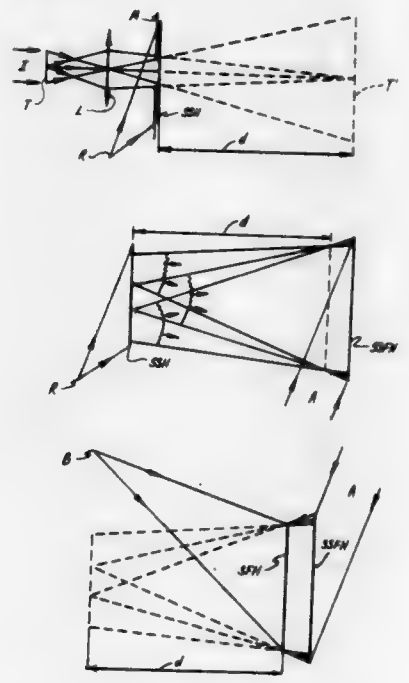
and exposing the dried hologram to an ultraviolet light for reducing the thickness of the hologram.

4,509,818

HOLOGRAM SYNTHESIS

Ivan Prikryl, 2170 Cram Pl. #1, Ann Arbor, Mich. 48105

Filed Dec. 17, 1981, Ser. No. 331,867
Int. Cl.[3] G03H *1/08*
U.S. Cl. 350—3.76 **4 Claims**



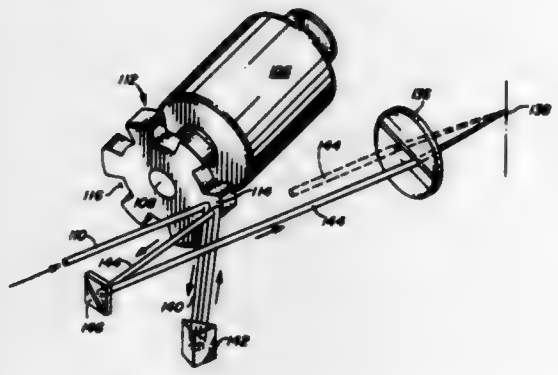
1. The method of making a final hologram from which can be reconstructed a three-dimensional image of a three-dimensional object without loss of either of two possible independent parallaxes comprising simultaneously reconstructing basic holograms arranged in a two-dimensional lattice without any substantial mutual overlap of these basic holograms, each basic hologram carrying an image of the object as viewed from a different direction; simultaneously reconstructing these basic holograms such that, in some location, the image beams reconstructed from these basic holograms are mutually and substantially fully overlapped; and placing a recording medium for the final hologram in the location where these image beams are mutually and substantially fully overlapped.

4,509,819

OPTICAL BEAM PULSE GENERATOR

Randy J. Sherman, and Derald F. Hanson, both of Phoenix, Ariz., assignors to Lincoln Laser Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 320,331, Nov. 12, 1981, Pat. No. 4,433,894. This application Jun. 6, 1983, Ser. No. 501,401
Int. Cl.³ G02B 27/17, 17/00
U.S. Cl. 350—6.7 6 Claims



1. An optical beam pulse generator comprising:
a. a segmented reflecting means aligned to receive an input light beam and including a plurality of circumferentially spaced apart mirror facets defining a gap between each pair of adjacent facets and having a centrally located, vertically oriented axis of rotation, the reflective surfaces of the mirror facets being oriented substantially perpendicular to the axis of rotation of said segmented reflecting means and including mirror facet to axis errors;
b. means for rotating said segmented reflecting means to sequentially reflect the input beam to generate a pulsed beam;
c. means for redirecting the pulsed beam back onto said segmented reflecting means to generate a redirected pulsed beam vertically displaced from the pulsed beam by a distance related to the mirror facet to axis error and laterally offset from the pulsed beam by a distance related to the angle between the mirror facet and the input light beam, wherein the redirected pulsed beam is reflected from each of said mirror facets to generate a pulsed reflected output beam; and
d. the input beam being aligned to alternatively pass through the gaps in said segmented reflecting means such that the optical beam pulse generator alternatively produces pulsed non-reflected output beams and pulsed reflected output beams.

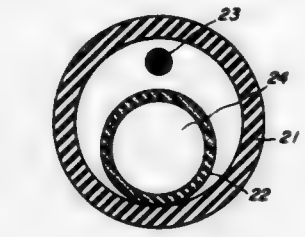
4,509,820

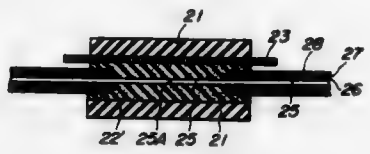
PROTECTIVE PACKAGING ASSEMBLY AND METHOD

Norio Murata; Mitsutoshi Hoshino, both of Mito, and Shinzo Yamakawa, Katsuta, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Apr. 28, 1982, Ser. No. 373,033
Claims priority, application Japan, May 7, 1981, 56-67605; Jul. 10, 1981, 56-106895; Jul. 17, 1981, 56-110779; Nov. 5, 1981, 56-176508; Nov. 5, 1981, 56-176509; Jan. 25, 1982, 57-9846
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.21 19 Claims

1. A protective packaging assembly for the spliced portions of optical fibers comprising:
an electrically insulative heat-shrinkable tube capable of shrinking in the radial direction thereof:
an extended form of an electrically insulative hot-melt adhesive disposed on the inner side of said heat-shrinkable tube;
an electrical resistance heating element having an electrical resistance distribution in its axial direction and so disposed on the inner side of said heat-shrinkable tube and extending in the axial direction of said heat-shrinkable tube so as to be capable of heating said heat-shrinkable tube and said extended form of hot-melt adhesive, said heating element being capable of shrinking said heat-shrinkable tube by heat and of melting said extended form of hot-melt adhesive around said spliced portions of said optical fibers; and





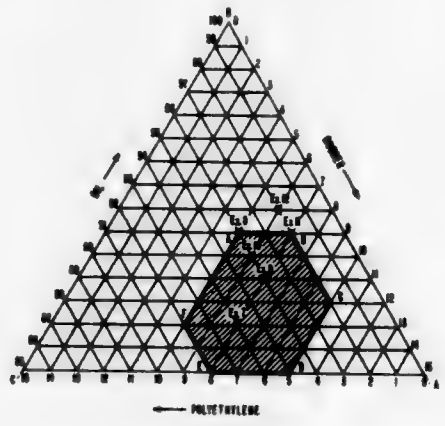
a space provided in said heat-shrinkable tube for allowing the passage of said optical fibers before heating.

4,509,821

FILLING MATERIAL FOR ELECTRIC CABLE

Richard J. Stenger, Wilmington, Del., assignor to Sun Tech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 507,955, Jun. 27, 1983, abandoned, which is a continuation of Ser. No. 300,789, Sep. 10, 1981, abandoned. This application Sep. 1, 1983, Ser. No. 528,489
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.23 8 Claims



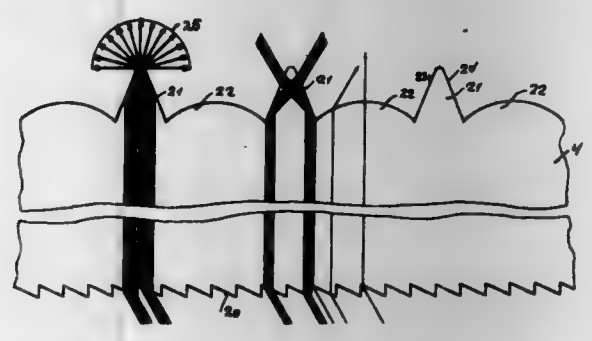
1. A cable comprising:
a plurality of conductors contained within a sheath leaving voids between the conductors, and between the conductors and the sheath, and a filling material filling the voids the invention characterized in that the filling material comprises a mixture of:
(X) ASTM Type 103, 104A or 104B, or mixtures thereof, (paraffinic or naphthenic) oil having a minimum sp. gr. of 0.860, a minimum SUS viscosity at 210 degrees F. of 45, a maximum pour point ASTM D 97 of 20 degrees F. and a maximum of 5 percent aromatic oils,
(Y) a styrene-ethylene butylene-styrene block copolymer having a styrene-rubber ratio of approximately 0.2 to 0.5, and
(Z) a linear polyethylene wax having an average molecular weight in the range of from about 1000 to 1500, the ingredients X, Y and Z having relative proportions falling within the shaded area bounded by ABCDEF of the FIGURE.

4,509,822

TRANSPARENT REAR PROJECTION SCREEN

Erik Clausen, and Johannes Clausen, both of Gentofte, Denmark, assignors to Scan Screen A/S, Roskilde, Denmark

Filed Aug. 2, 1983, Ser. No. 519,702
Claims priority, application Denmark, May 10, 1983, 2090/83
Int. Cl.[3] G03B *21/60*
U.S. Cl. 350—128 6 Claims



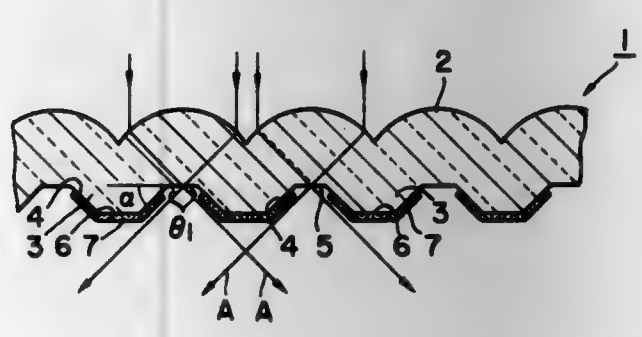
1. Transparent rear projection screen having a lense system for paralleling light arriving from behind and, on the front side of the screen, rectilinear lenses extending in the vertical direction in the position of use of the screen, the sides of the lenses having a small angle of inclination with respect to the normal to the screen and being, at least along a part of their width, totally reflecting to light arriving from behind, and comprising further lenses arranged between the reflecting lenses, wherein the tops of the reflecting lenses being so shaped and the totally reflecting parts of the sides of the reflecting lenses having such an inclination with respect to the normal to the screen and such a width that, at the most, 80% of the light, which from behind enters the reflecting lenses, is emitted through the tops of the reflecting lenses and that, at least, 20% of said light is emitted through the sides of the reflecting lenses.

4,509,823

REAR PROJECTION SCREEN

Yutaro Moriguchi, Tokyo; Makoto Honda, Kamifukuoka, and Akira Izawa, Kawasaki, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,297
Claims priority, application Japan, Oct. 15, 1982, 57-180790; Oct. 15, 1982, 57-155928[U]; Dec. 3, 1982, 57-183175[U]
Int. Cl.[3] G03B *21/60*
U.S. Cl. 350—128 10 Claims



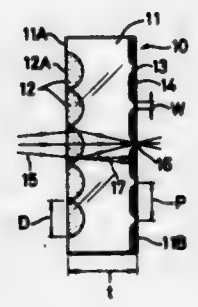
1. A rear projection screen of the type comprising a circular Fresnel lens consisting of a plurality of concentrically circular lens elements and a lenticular lens means having a plurality of corrugated parallel convex lens elements formed over one surface thereof, the other surface of said lenticular lens means being formed with a plurality of parallel projections or protrusions extended in the longitudinal direction of said lenticular lens elements, masking stripes being formed over said parallel projections or protrusions, the improvement wherein the side surfaces of each of said parallel projections or protrusions are so cut that they will not intercept the light rays emerging from said corrugated parallel convex lens elements of said lenticular lens means.

4,509,824

PLATE LENS AND A METHOD FOR MANUFACTURING THE SAME

Tetsuya Yamasaki; Eiji Okuda, and Noboru Yamamoto, all of Hyogo, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jan. 31, 1983, Ser. No. 462,146
Claims priority, application Japan, Feb. 1, 1982, 57-14589; Feb. 1, 1982, 57-14590
Int. Cl.[3] G02B *27/00;* B05D *5/06*
U.S. Cl. 350—167 35 Claims



1. A plate lens comprising:
a transparent base with two flat surfaces;
a plano-convex lens portion which is formed in the vicinity of one of said two flat surfaces of said transparent base to be integrally therewith, which has a refractive index greater than the refractive index of said transparent base, and which has a substantially semicircular section in a direction perpendicular to said two flat surfaces; and
a light-shielding layer which is formed in the vicinity of the other of said two flat surfaces, and which covers the other of said two flat surfaces such that a transparent portion is formed at a position to oppose a central point or line of said lens portion.

4,509,825

DIRECTING AND CONTROLLING THE DISTRIBUTION OF RADIANT ENERGY

Stanley W. Otto, Platte City, Mo.; Jack G. Rhoads, Leawood, and Michel A. Scrivan, Mission Hills, both of Kans., assignors to Hallmark Cards, Inc., Kansas City, Mo.

Filed Jun. 27, 1983, Ser. No. 508,523
Int. Cl.[3] G02B *17/00, 27/00*
U.S. Cl. 350—259 15 Claims



1. Apparatus for controllably directing radiant light comprising in combination
(a) holding means for a plurality of Fresnel lens light reflective elements adapted to be positioned in the path of radiant light,
(b) a plurality of Fresnel lens light reflective elements held by said holding means, said Fresnel lens light reflective elements having light reflective surfaces of differing angularity with respect to the horizontal plane so that light

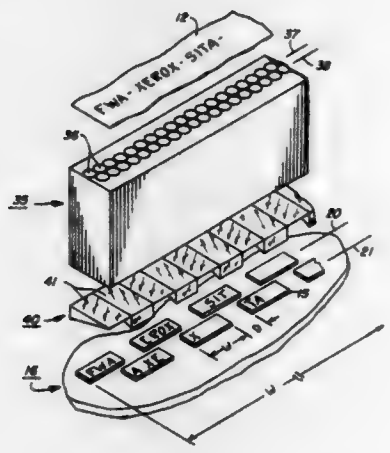
striking said reflective elements is reflected therefrom in different paths to a desired target area.

4,509,826

OPTICAL IMAGE STAGGERING/DESTAGGERING ARRANGEMENT FOR MULTIPLE ARRAY SCANNING SYSTEM

Mehdi N. Araghi, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1983, Ser. No. 484,092
Int. Cl.[3] G02B *5/04, 5/17, 17/00*
U.S. Cl. 350—286 **5 Claims**



1. An optical system for projecting images between an object plane and an image plane, comprising in combination:

(a) an array of individual lens elements disposed between said image plane and said object plane to project at least one image line therebetween;

(b) a plurality of relatively short scanning arrays at one of said image and object planes arranged in two discrete rows, the arrays in each row being separated from one another by a distance no greater than the length of the array with the arrays of said first row being axially offset from the arrays of the second row whereby said arrays form a periodically disconnected scan line pair; and

(c) a prism element associated with each of said arrays and disposed between said lens array and said scanning arrays, said prism elements being arranged in a row with each succeeding prisms reversed whereby to merge the disconnected scan line pair into a single continuous image line for transmission by said lens array.

4,509,827

REPRODUCIBLE STANDARD FOR ALIGNING FIBER OPTIC CONNECTORS WHICH EMPLOY GRADED REFRACTIVE INDEX ROD LENSES

Steven J. Cowen, and Christopher M. Young, both of San Diego, Calif., assignors to The United States of America as represented by the United States Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1983, Ser. No. 463,097
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—320 **5 Claims**

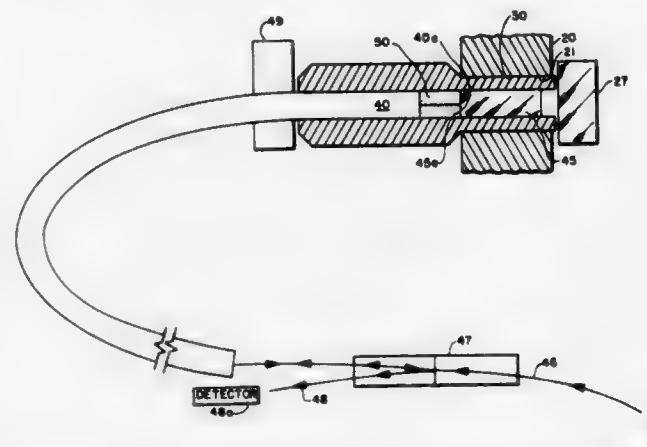
1. A method of fabricating an optically aligned coupling between an optical fiber and a connector having a precision-bored bushing comprising:

autocollimating a projected beam from a laser with a reflected beam emanating from the same laser and reflected from a surface through and parallel with the axis of the precision-bored bushing, the step of autocollimating includes the projecting of a beam from a laser through and parallel with the axis of the precision-bored bushing and disposing a mirror surface separated from and as nearly perpendicular to an axial projection of the axis of the precision-bored bushing as the state-of-the-art allows to reflect the projected beam back over its own path to result in autocollimation of the projected and reflected beams;

inserting a close fitting graded refractive index lens into an alignment ferrule sized to fit in the precision-bored bushing;

exciting the optical fiber by a light source;

positioning the excited optical fiber in the alignment ferrule and on an axially exposed surface of the graded refractive index lens;



monitoring the light intensity reflected through the graded refractive index lens and into the optical fiber from a mirror surface;

changing the fiber's position on the axially exposed surface; and

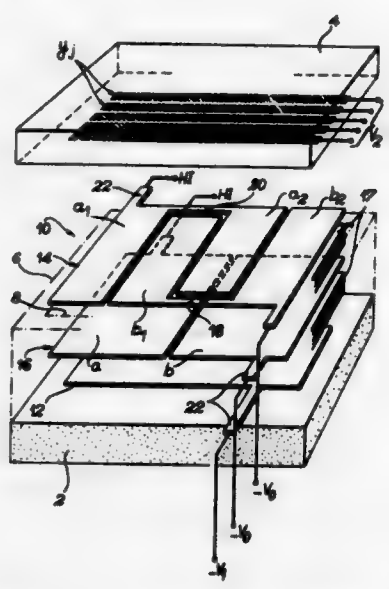
securing the optical fiber at a location on the axially exposed surface where the magnitude of the monitored light is maximum to assure the optically aligned coupling.

4,509,828

MATRIX DISPLAY DEVICE WITH MULTIPLE SCREEN ELECTRODES

Jean F. Clerc, Meylan, and Jacques Robert, Saint Egreve, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 26, 1982, Ser. No. 342,821
Claims priority, application France, Feb. 5, 1981, 81 02219
Int. Cl.[3] G02F *1/133*
U.S. Cl. 350—333 **13 Claims**



11. A cell having a controlable optical characteristic in a particular zone, comprising a combination of, a solid layer control electrode separated from a liquid crystal by a plurality of superimposed sets of electrodes of different configurations, said electrodes of different configurations being defined in such a way that a combination of electrodes of different configurations chosen in each of the superimposed sets coincides with said particular zone, each of the electrodes of different configurations of said combination being insulated and each of

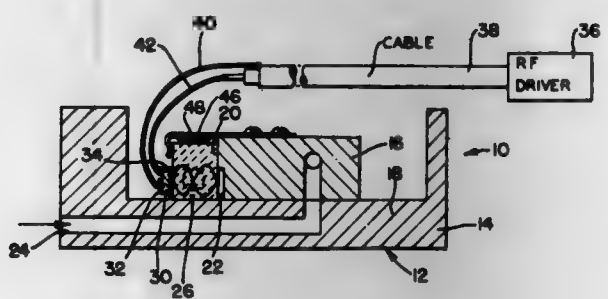
the other electrodes of different configurations being raised to a fixed potential.

4,509,829

AMPLITUDE MODULATOR FOR A HIGH POWERED BEAM OF INFRARED RADIATION

Lauren M. Peterson, Ann Arbor, Mich., assignor to The Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Sep. 21, 1981, Ser. No. 304,401
Int. Cl.³ G02F *1/11*
U.S. Cl. 350—358 10 Claims



1. A method of amplitude modulating a high powered light beam in the megahertz range, said method comprising:

using a laser to generate a beam with 4–40 watts of power;

passing the beam through an acousto-optical crystal having an acoustic transducer on one surface; and

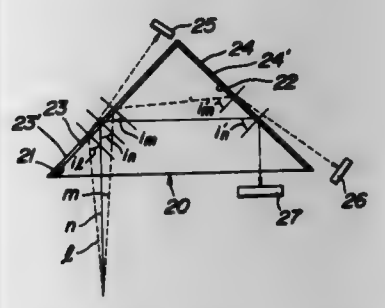
generating a standing acoustical wave front in the crystal generally perpendicular to the beam by applying a drive signal to the transducer at a frequency sufficient to insure operation in the Raman-Nath domain whereby the zeroth diffraction order of said beam is efficiently modulated at twice the frequency of the drive signal.

4,509,830

LIGHT BEAM SEPARATION METHOD

Kiichi Kato; Tohru Musha, and Kenichi Ito, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Feb. 2, 1982, Ser. No. 345,154
Claims priority, application Japan, Feb. 7, 1981, 56-16293
Int. Cl.³ G02B *27/10*
U.S. Cl. 350—394 8 Claims



1. A method of separating at least two light beams, at least one of which is plane polarized, propagating in substantially the same direction but which propagate with a small angle therebetween, comprising:

making said at least one plane-polarized light beam be incident upon an interface between a first isotropic optical medium having a first refractive index and a second isotropic optical medium having a second refractive index lower than said first refractive index at an incident angle substantially equal to the Brewster angle so that the light beam is substantially totally transmitted through said interface; and

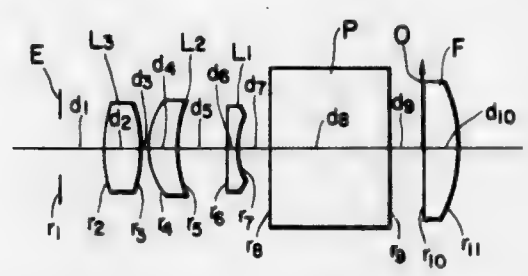
making the other light beam incident upon said interface at an incident angle equal to or greater than the critical angle so that the light beam is substantially totally reflected by said interface.

4,509,831

DIOPTER ADJUSTABLE EYEPIECE USED FOR VIEW-FINDERS OF SINGLE-LENS REFLEX CAMERAS OR THE LIKE

Kimihiko Nishioka, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,143
Claims priority, application Japan, Mar. 13, 1981, 56-36143
Int. Cl.³ G02B *3/00, 25/00*
U.S. Cl. 350—410 11 Claims



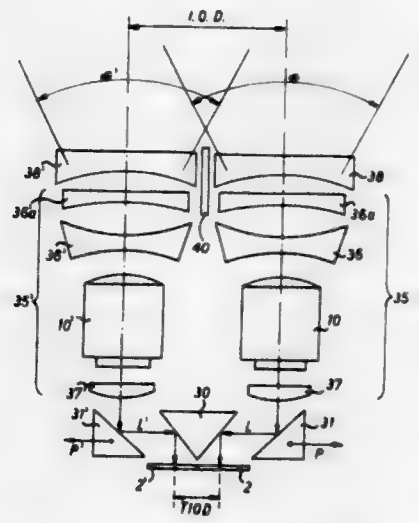
1. An eyepiece used for view finders of single-lens reflex cameras or the like comprising a first lens component of a power negative as a whole having a substantially aplanatic contour, and a second lens component of a power positive as a whole arranged on the side farther from an object than said first lens component and consisting of two lens elements each having a substantially aplanatic contour, at least one of said first lens component and second lens component being able to be moved along the optical axis to adjust the diopter.

4,509,832

OPTICAL ARRANGEMENT FOR PRODUCING TWO ANAMORPHOTICALLY COMPRESSED IMAGES CORRELATED BY AN INTEROCULAR BASE DISTANCE

Jan Jacobsen, Reutern, Fed. Rep. of Germany, assignor to Walter Meier, Birmensdorf, Switzerland

PCT No. PCT/CH81/00135, § 371 Date Jul. 26, 1982, § 102(e) Date Jul. 26, 1982, PCT Pub. No. WO82/02098, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 2, 1981, Ser. No. 403,662
Claims priority, application Switzerland, Dec. 8, 1980, 9041/80
Int. Cl.³ G02B *13/10*
U.S. Cl. 350—420 17 Claims



1. An optical arrangement for producing two anamorphotic images correlated by an interocular base distance, comprising:

first and second basic optical systems spaced laterally by an interocular base distance, each of said basic optical systems having an object space side and an image space side; and

first and second afocal anamorphotic systems mounted adjacent said first and second basic optical systems, respectively, each of said anamorphotic systems having a cylin-

drical negative lens system on the object space side of the respective basic optical system and a cylindrical positive lens system on the image space side of the respective basic optical system.

4,509,833

HIGH VARIABLE MAGNIFICATION WIDE ANGLE ZOOM LENS

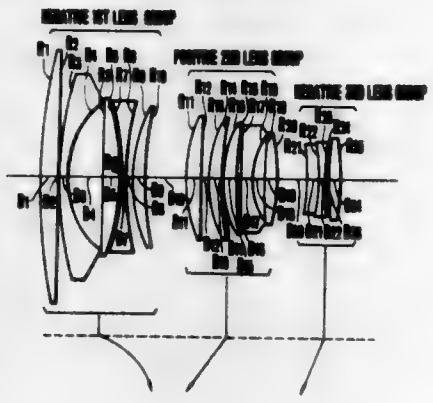
Keiji Ikemori, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,560

Claims priority, application Japan, Oct. 28, 1981, 56-173538; Nov. 5, 1981, 56-177451

Int. Cl.³ G02B *9/64, 15/14*

U.S. Cl. 350—427 **6 Claims**



1. A high varifocal range wide angle zoom objective having the following conditions:

having three lens groups with, from front to rear, a divergent 1st lens group, a convergent 2nd lens group and a divergent 3rd lens group,

zooming being performed by moving said three lens groups, said 2nd lens group moving in only one direction,

letting b_W and b_T denote the distances from the 2nd lens group to an image plane when in the wide angle and telephoto positions respectively, f2, the focal length of the 2nd lens group, c_W and c_T, the distances from said 3rd lens group to the image plane when in the wide angle and telephoto positions respectively, and f3, the focal length of the 3rd lens group, and putting

$$f2=b_T-b_W$$

$$f3=c_T-c_W$$

and wherein the following relationships are satisfied:

$$0.2<f3/f2<0.9$$

$$0.01<f2/|f3|<0.5.$$

4,509,834

POSITIONING APPARATUS FOR POSITIONING A WORKPIECE RELATIVE TO A FRAME OF REFERENCE

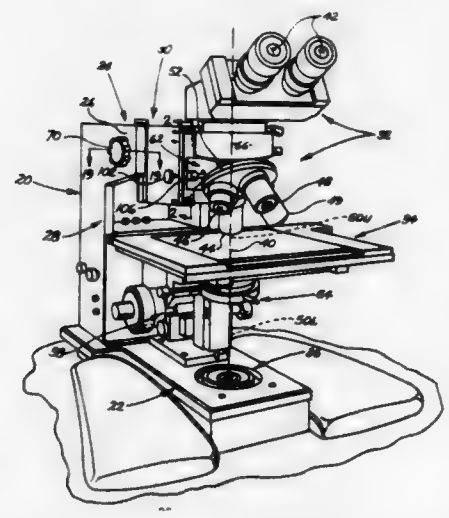
R. W. Hodgson, 1680 N. Vine St., #204, Hollywood, Calif. 90028

Filed Mar. 24, 1982, Ser. No. 361,420

Int. Cl.³ G02B *21/24*

U.S. Cl. 350—521 **14 Claims**

1. Positioning apparatus for positioning a workpiece holder relative to a frame of reference, comprising: an adjustable positioning head including an attachment portion and an adjustably movable coupling portion having connection part means provided with fastening and connection means cooperable for connection to a workpiece holder, said attachment portion and said coupling portion being provided with controllably adjustable relative movement-causing means effectively interconnected therebetween in a manner such as to selectively and controllably cause relative movement of said coupling portion with respect to said attachment portion in mutually perpendicular planes and directions with respect to an imaginary reference center point of an imaginary frame of reference having imaginary mutually perpendicular x, y, and z axes, said movement-causing means effectively interconnected between said attachment portion and said coupling portion being controllably selectively operable to position a workpiece so as to be vertically centered upon, and so as to have a workpiece upper vertical center axis portion thereof centered upon, and vertically aligned with, and coincident with, a workpiece lower vertical center axis portion which is parallel to and forwardly offset from a vertical reference axis of said imaginary frame of reference by movement in two mutually perpendicular directions lying in a horizontal plane and coincident with the imaginary y axis of said imaginary frame of reference in one case and parallel to and offset from the imaginary x axis of said imaginary frame of reference in the other case; said movement-causing means being of a translatory extendable and retractable type for causing said movement in said two mutually perpendicular directions lying in a horizontal plane and



coincident with the imaginary y axis and parallel to and offset from the imaginary x axis to be of a translatory type; said movement-causing means being also arranged to also selectively cause rotary movement of said coupling portion relative to said attachment portion in two mutually different perpendicular vertical planes around the imaginary x axis and the imaginary y axis of said imaginary frame of reference; said movement-causing means comprising a plurality of spaced translatory movement-causing means spaced apart so as to be on both sides of the imaginary center of said imaginary frame of reference and above and below said imaginary frame of reference whereby to be simultaneously and similarly controllably extended or retracted for causing either of said two different kinds of translatory movement and being cooperable for unequal extension or retraction or partial extension and partial retraction for causing any of said types of rotary movement in said two different vertical planes as desired and needed for aligning a workpiece upper vertical center axis portion, when held by a workpiece holder, with a pre-existing workpiece lower vertical center axis portion parallel to and forwardly offset from an imaginary vertical reference axis of said imaginary frame of reference.

4,509,835

THREE DIMENSIONAL CINEMA AND NOVEL PROJECTOR SYSTEM THEREFORE

Clarence E. Adler, 2809 Algonquin Pkwy., Toledo, Ohio 43606

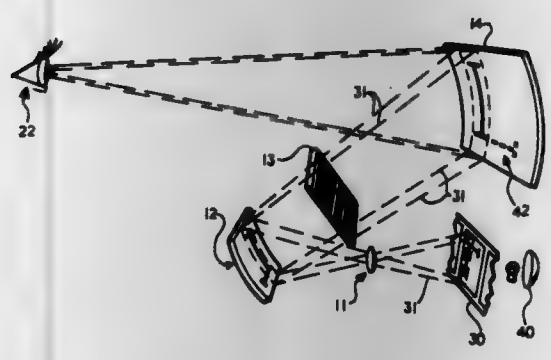
Filed Sep. 6, 1983, Ser. No. 529,223

Int. Cl.³ G03B *21/32*

U.S. Cl. 352—43 **17 Claims**

1. A method of creating viewable images as reflected from a mirror, which images are virtual and of three dimensional character which comprises:

(1) photographing, by suitable camera, a preselected scene but reversing the images as perceived by the camera lens before fixation of the images on a suitable medium;
(2) manipulating the medium to reverse the images;
(3) projecting said reversed images on said medium onto a first parabolic reflector; and



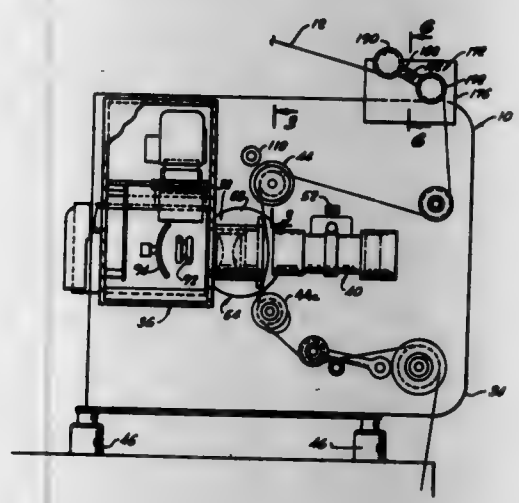
(4) causing the images or light rays reflected from said first parabolic reflector to pass through a light diffusion screen and onto a second parabolic reflector to thereby create the virtual images of three dimensional character.

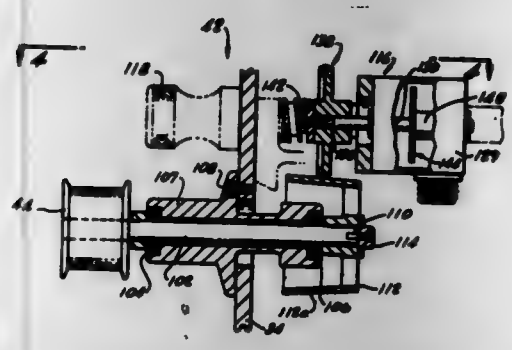
4,509,836

MULTI FORMAT SHUTTERLESS MOTION PICTURE INSPECTION PROJECTOR

Howard T. La Zare, 10825 Fullbright Ave., Chatsworth, Calif. 91311

Filed Feb. 1, 1983, Ser. No. 462,990
Int. Cl.[3] G03B *21/00, 41/00, 21/20*
U.S. Cl. 352—200 11 Claims





1. A multi format shutterless inspection projector for motion picture film said projection being capable of rapid continuous projection of entire film frames from margin to margin upon a screen for visual inspection thereof across the entire frame of said film after it is developed and processed to inspect for color, quality and damage including:

a projector housing;

lens means mounted on said housing including light condensing lenses and projecting lenses to project said film frames;

a shutterless film gate interposed between said condensing lenses and said projecting lenses, said gate includes two spaced apart smooth rails forming a film frame aperture therebetween whereby film for inspection will be guided over said rails past said aperture for projection and said space between said rails is of such width as to extend to the marginal edges of each of the said film;

a strobe light means on said housing behind and in line with said condensing lenses and said projecting lenses adapted to be activated and deactivated in fractions of seconds to project said frames;

multi format trigger roller means on said housing which is adjustable during the continuous operation of said projector to activate the frequency of firing said strobe light means as each film frame moves past said aperture dependent upon what format of film is passing said aperture, whereby said frames will each be illuminated and projected on said screen for viewing yet maintaining the motion created by sequentially viewing a series of frames;

said multi format trigger roller means includes a roller mounted on said housing above said shutterless film gate over which film will pass and rotate said roller, a trigger roller assembly associated with said roller and rotatable through rotation of said roller; and

manual means connected to said trigger roller assembly to change the rotational speed of said trigger roller assembly from said roller dependent upon what film format is passing said aperture;

a power source and control circuit forming a part of said strobe light means and said source and control circuit controlled by said trigger means, and

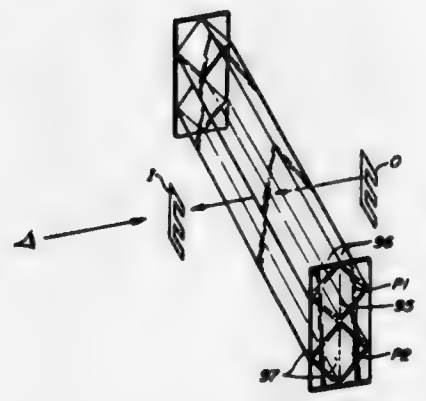
film take up means separate from said projector adapted to pull said film through said film gate to a storage film reel.

4,509,837

REAL IMAGE PROJECTION DEVICE

Michiel Kassies, Rozenstraat 184, 1016PA Amsterdam, Netherlands

Continuation-in-part of Ser. No. 182,550, Aug. 29, 1980, abandoned. This application Feb. 12, 1982, Ser. No. 348,375
Int. Cl.[3] G03B *21/06*
U.S. Cl. 353—10 7 Claims



1. A symmetrical imaging device for projecting an image of an illuminated object at a preselected distance from said imaging device, said symmetrical imaging device comprising in combination:

an illuminated object;

a matrix of retroreflectors for deflecting light rays from said illuminated object impinging on said matrix of retroreflectors back toward the object in an opposite direction along a same light path as said rays travelled toward said retroreflectors;

a beam splitter in said light path for projecting said image at a place other than said object;

a transparent medium between said beam splitter and said matrix of retroreflectors having an index of refraction

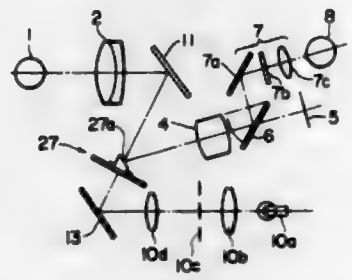
higher than that of air, for guiding said light rays along said light path from said object to said image.

4,509,838

OPTICAL SYSTEM FOR RETINAL CAMERAS

Youich Iba; Ken-ichi Nakahashi, and Masaki Matsubara, all of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 260,398, May 4, 1981, abandoned. This application Jan. 31, 1984, Ser. No. 575,580
Claims priority, application Japan, May 8, 1980, 55-59992
Int. Cl.³ G03B *29/00, 9/08*
U.S. Cl. 354—62 **36 Claims**



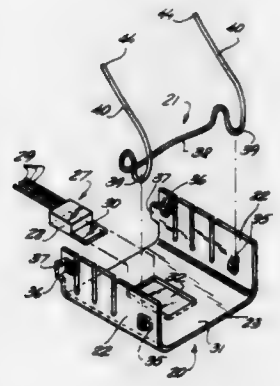
1. An optical system for retinal cameras comprising an objective for forming a retina image of an eye to be inspected, an illuminating optical system including therein a light source to illuminate the surface of the retina, a relay lens for leading to a film surface the retina image formed by said objective, a first reflector which can switch light paths and is arranged between said relay lens and the position of the retina image focused by said relay lens, an eyepiece arranged in the light path of the light reflected by said first reflector, characterized in that said optical system further comprises at least two light path bending second reflectors which are provided between said objective and relay lens, which bend the light path from the objective and then direct it to the relay lens, and an optical element arranged between said objective and relay lens and having one of said second reflectors and a transparent part by which the light from said illuminating optical system can be passed through around said one of said second reflectors.

4,509,839

HEAT DISSIPATOR FOR SEMICONDUCTOR DEVICES

Ronald B. Lavochkin, Commack, N.Y., assignor to IMC Magnetics Corp., Jericho, N.Y.

Filed Jun. 16, 1983, Ser. No. 504,726
Int. Cl.³ H01L *23/02, 23/42*
U.S. Cl. 357—81 **15 Claims**



1. A heat dissipator for use with a semiconductor device which is to be mounted on a support, comprising:

a body of thermally conductive material having a face adapted to contact the semiconductor device, the body including locating means for defining the position of the semiconductor device with respect to the contact face, and the body having an edge beyond which the electrical leads of the semiconductor device extend when the device is located in its predefined position, and

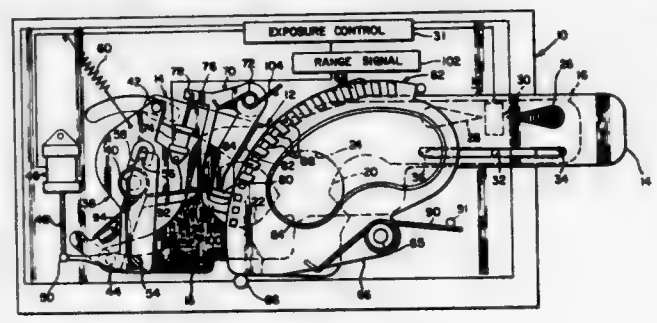
a clip for engaging the body and resiliently clamping the semiconductor device against the contact face, the clip being formed of a single length of bent spring wire, at least one of the free ends of the clip being an attachment element, which projects beyond said edge of the body when the clip is in its operative position on the body, for joining the body and hence the semiconductor device to the support.

4,509,840

LENS DRIVE FOR AUTO FOCUS CAMERA

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 21, 1984, Ser. No. 581,539
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—400 **7 Claims**



1. An auto focus camera of the type powered by a source of electrical energy and including means for determining camera-to-subject distance range and for providing an output range signal corresponding to said determined camera-to-subject distance, said camera also comprising:

an objective lens arrangement;

means for mounting at least part of said objective lens arrangement for displacement between a plurality of focal positions, said objective lens arrangement being adapted to focus an image of a subject located at a different distance from said camera within a given range of distances at the focal plane of said camera at each of its said focal positions;

energizeable drive means powered by the source of electrical energy for providing a driving movement by way of a drive member operatively associated therewith;

resilient drive means for imparting a substantially uniform driving movement directly to said lens mounting means in order to displace said lens mounting means between said plurality of focal positions in response to said driving movement of said drive member regardless of variations in the output of the source of electrical energy which would cause said drive member to provide a nonuniform drive movement; and

means for stopping said lens mounting means at the appropriate focal position in response to said range signal.

4,509,841

AUTOMATIC FOCUSING DEVICE

Shinji Sakai, Tokyo, and Takashi Kawabata, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

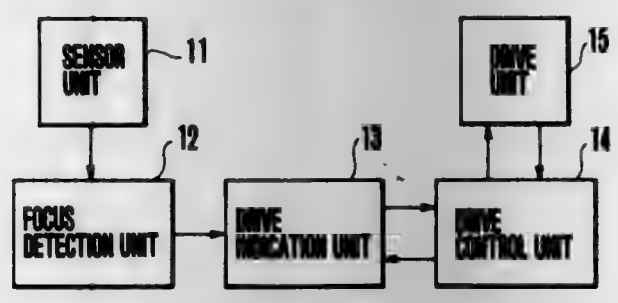
Filed Dec. 10, 1982, Ser. No. 448,693
Claims priority, application Japan, Dec. 17, 1981, 56-204953; Dec. 18, 1981, 56-205786; Dec. 18, 1981, 56-205789
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—400 **18 Claims**

1. An automatic focusing device, comprising:

(a) an automatic focusing circuit which performs distance adjustment by automatically shifting the position of a lens to an in-focus position, said focusing circuit including lens

driving means and said focusing circuit being arranged to have the lens driven by said driving means to a position determined by the output of the focusing circuit;

(b) monitor signal forming means for forming a monitor signal relative to the movement of said lens;



(c) a limit signal forming circuit arranged to detect said monitor signal and to form a limit signal when the monitor signal is not produced within a predetermined length of time, and

(d) reversing means for reversing the lens driving direction of said lens driving means in response to said limit signal.

4,509,842

CAMERA SYSTEM CAPABLE OF FOCUS DETECTION THROUGH AN INTERCHANGEABLE OBJECTIVE LENS

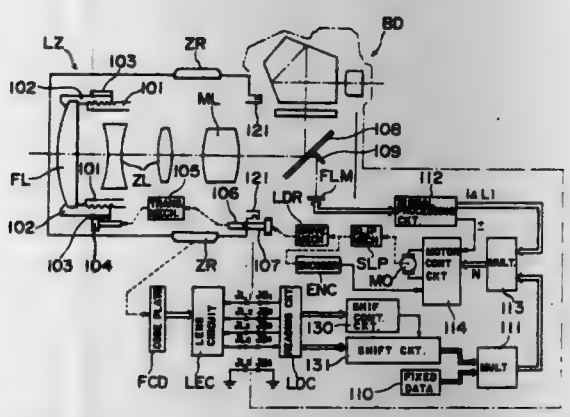
Nobuyuki Taniguchi, Tondabayashi; Norio Ishikawa, Osaka; Yasuaki Akada, Sakai; Takeshi Egawa, Sennan, and Kunio Kawamura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1984, Ser. No. 575,707

Claims priority, application Japan, Feb. 1, 1983, 58-15860; Jun. 23, 1983, 58-113937; Jun. 23, 1983, 58-113938; Jul. 6, 1983, 58-123994; Jul. 25, 1983, 58-136059; Jul. 25, 1983, 58-136060

Int. Cl.³ G03B *17/00, 3/10*

U.S. Cl. 354—402 **30 Claims**



1. In a camera system capable of focus detection by means of receiving light through an interchangeable objective lens, a camera body and an interchangeable objective lens selectively attachable to the camera body comprising:

an opening, located in the camera body for detachably connecting with the interchangeable objective lens;

means, located in the camera body, for receiving light through the opening to produce electric signals;

means, located in the camera body, for processing the electric signals to generate a defocusing information indicative of defocusing degree and defocusing direction relative to an ideal focal plane;

means, located in the camera body, for generating a driving power for automatic focus control, including a first movable member;

means, located in the camera body, for accepting digital data to be transmitted from the interchangeable objective lens, the digital data including a converting information necessary to convert the defocusing degree of the defocusing information into a degree of movement of the first movable member;

means, located in the camera body, for calculating the degree of movement of the first movable member in response to the defocusing degree of the defocusing information and the converting information;

means, located in the camera body, for controlling the generating means to move the first movable member in response to the defocusing direction of the defocusing information and the calculated degree of movement;

means, located in the camera body, for transmitting the driving power of the generating means to the interchangeable objective lens, the transmitting means including a second movable member connectable with the interchangeable objective lens and responsive to the movement of the first movable member;

an optical system, located in the interchangeable objective lens, for forming an image of an object;

means, located in the interchangeable objective lens, for adjusting the focus of the optical system, the adjusting means including a third movable member connectable with the second movable member for a coupled movement therewith;

a read only memory, located in the objective lens, for storing various digital data at a plurality of addresses, the stored digital data including the converting information;

means, located in the interchangeable objective lens, for selectively designating one of the addresses of the read only memory; and

means for sending digital data stored in the designated address to the accepting means,

wherein the converting information is formed as a digital data composed of n-bit of significant digits part and n-bit of floating point coefficient part.

4,509,843

APPARATUS FOR CONTROLLING A MICRO-PROCESSOR UNIT IN A CAMERA

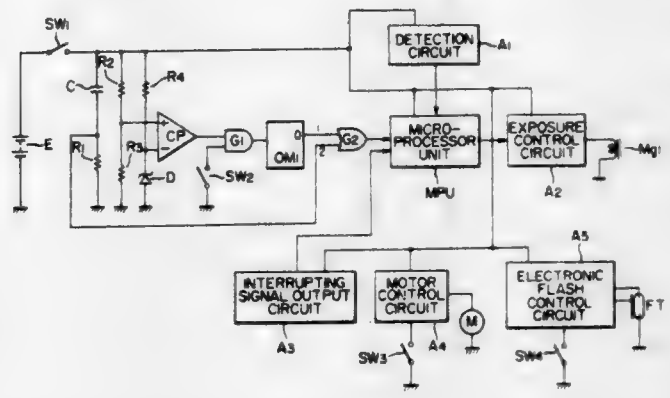
Hiroshi Hasegawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 9, 1982, Ser. No. 356,407

Claims priority, application Japan, Mar. 12, 1981, 56-35912

Int. Cl.³ G03B *7/00*

U.S. Cl. 354—412 **8 Claims**



1. In a camera of the type which includes a micro-processor unit operable in a first state where it can operate to carry out an arithmetic operation of data relating to an exposure to be controlled according to exposure factors and store said data in memory, and in a second state where it can hold said memorized data; an exposure control means for controlling a diaphragm device and/or a shutter device by an electromagnetic device according to said memorized data when a shutter releasing operation is conducted; and an electric power source for supplying a voltage to said micro-processor unit, exposure control means and electromagnetic device, and in which said micro-processor unit is operable in said first state when the source voltage applied to it is at least as high as a predetermined voltage level and said micro-processor unit is operable

only in said second state when the source voltage applied to it is lower than said predetermined level, apparatus for controlling said micro-processor unit comprising:

means responsive to initiation of said shutter releasing operation for supplying a set signal to said micro-processor unit that causes said micro-processor unit to change from said first state to said second state;

detection means for detecting the voltage of said power source and generating an output in response to a change of the voltage from a level lower than said predetermined value to a level as high as said predetermined value; and

resetting means for supplying a reset signal to said micro-processor unit that causes said micro-processor unit to change from said second state to said first state in response to the output from said detection means.

4,509,844

PHOTOMETRIC CIRCUIT IN A PHOTOGRAPHIC FLASH DEVICE

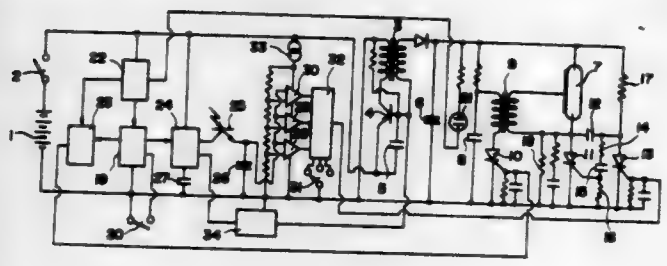
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 525,955

Claims priority, application Japan, Aug. 25, 1982, 57-146146

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—416 **11 Claims**



1. In a camera flash device having a photometric circuit to receive light reflected from a subject being photographed and to generate a photometric signal on the basis of which the amount of light to be emitted by a flash discharge tube is controlled, the improvement comprising:

a. a DC—DC converter having high and low tension circuits, said high tension circuit providing DC power to said flash discharge tube;

b. a synchronizing switch operably coupled with the shutter of said camera to close upon the opening thereof;

c. a starting circuit controlling by closure of said synchronizing switch to generate a starting signal; and

d. a timer powered by said low tension circuit of said DC—DC converter and activated by said starting signal to apply to said photometric circuit a substantially constant voltage for a predetermined period of time.

4,509,845

APPARATUS FOR CONTROLLING THE EMISSION OF AN ELECTRONIC FLASH

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jul. 15, 1983, Ser. No. 514,173

Claims priority, application Japan, Sep. 28, 1982, 57-147589[U]

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—420 **4 Claims**

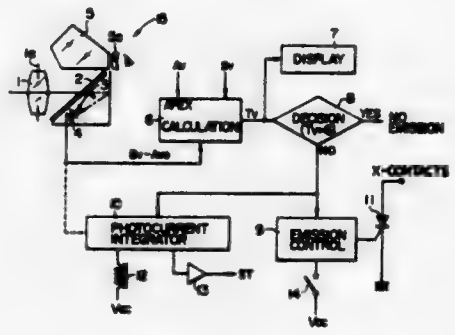
1. An apparatus for controlling the emission of an electronic flash used in a photographic camera of the type in which the photometry of reflection from a film surface is effected, comprising:

a photocurrent integrator for integrating a photocurrent which is produced by a photoelectric transducer element upon which light impinges as it is reflected from the surface of a first blind of a shutter and a film surface as it is exposed during the running of the first blind;

a calculation circuit for calculating an exposure period on the basis of a TTL photometric value which prevails before a shutter release;

a decision circuit to determine if the calculated exposure period is less or greater than a synchronized period of the shutter;

an emission control circuit for controlling the emission of an



electronic flash in accordance with a result of the decision; and

a delay circuit for delaying the initiation of an integrating operation of the photocurrent by a given time interval with respect to the beginning of running of the first blind if the result of the decision indicates that the emission of the electronic flash is allowed.

4,509,846

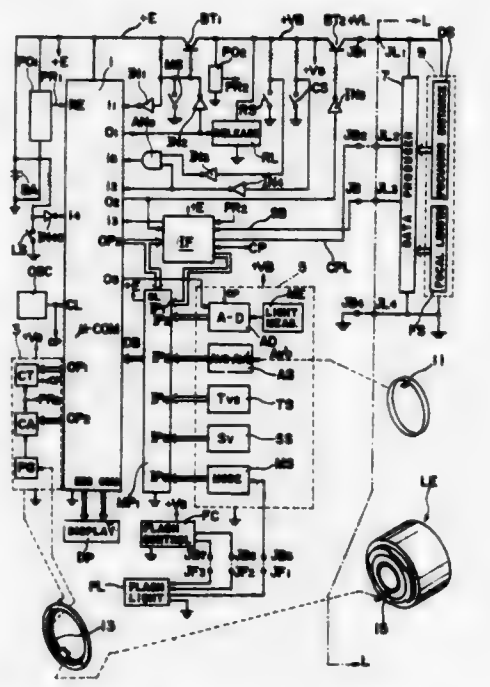
CAMERA SYSTEM

Masaaki Nakai, Nara; Masayoshi Sahara, Sennan, and Nobuyuki Taniguchi, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 21, 1983, Ser. No. 487,206

Int. Cl.³ G03B *7/091, 7/26, 17/00*

U.S. Cl. 354—442 **51 Claims**



1. In a camera system operable by means of a cooperation between a camera body having an opening and a camera accessory to be mounted on the camera body at the opening, the camera body comprising:

means for generating a start signal in response to a manual operation;

means for measuring light through the opening;

means for setting a data of film speed;

means for providing a data depending on the camera accessory;

means for certifying whether or not the mounting of the camera accessory on the camera body is completed; and

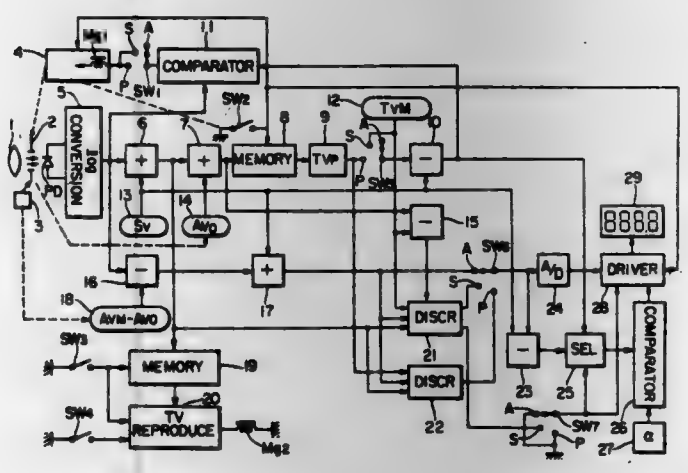
means responsive to said certifying means for controlling an exposure data calculation selectively in accordance with a first mode or a second mode, the exposure data being calculated in response to said measuring means, said setting means and said providing means in said first mode when the completion of the camera accessory mounting is certified, with the exposure data being calculated in response to said measuring means and said setting means in said second mode when the completion of the camera accessory mounting is not certified, wherein said controlling means is further responsive to said generating means to start its function in response to said start signal.

4,509,847

AUTOMATIC EXPOSURE CONTROL CAMERA HAVING A LOW BRIGHTNESS WARNING DEVICE

Osamu Maida, Tokyo; Mikio Takemae, Yokohama, and Yuji Okubo, Omiya, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,303
Claims priority, application Japan, May 10, 1982, 57-77737
Int. Cl.³ G03B *7/087, 17/18*
U.S. Cl. 354—442 **17 Claims**



1. A camera in which light-sensing means is exposed to the light from an object to be photographed passed through stop means, said camera including:

(a) means for setting the aperture value of said stop means;

(b) means for driving said stop means in a direction in which the aperture value of said stop means is coincident with the aperture value set by said setting means, prior to the exposure of said light-sensing means;

(c) metering means including a light-receiving element adapted to receive the light from said object passed through said stop means and produce an output corresponding to the intensity of the received light, said metering means producing a metering output corresponding to the brightness of said object on the basis of the output of said light-receiving element;

(d) means for controlling the exposure time of said light-sensing means in order that said light-sensing means may obtain a proper exposure, on the basis of the metering output after said stop means has been driven by said driving means; and

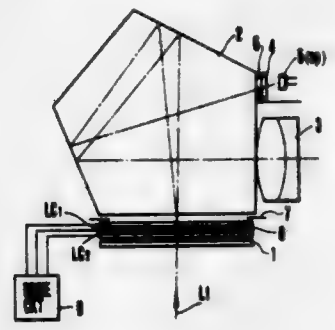
(e) discriminating means for discriminating, prior to the driving of said stop means, that the intensity of the light received by said light-receiving element after the termination of the driving of said stop means is lower than a predetermined value, on the basis of the metering output before said stop means is driven by said driving means, and putting out a discrimination signal.

4,509,848

LIGHT MEASURING DEVICE FOR CAMERA

Makoto Katsuma; Akira Hiramatsu, both of Kanagawa; Kazuhiko Arakawa, and Hiroyasu Murakami, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Jan. 31, 1983, Ser. No. 462,458
Claims priority, application Japan, Feb. 8, 1982, 57-17664; Feb. 8, 1982, 57-17665
Int. Cl.³ G03B *7/099, 17/20*
U.S. Cl. 354—473 **2 Claims**



1. A single-lens reflex camera comprising:

a reticle arranged to allow a light flux coming from an object to be photographed through a photo-taking lens to be imaged thereon;

an electro-optical element of two-layer construction disposed close to said reticle, one layer of said element being arranged to be shiftable between a partially light-shielding state and a non-light-shielding state for shifting a light measuring range, the other layer of the element being arranged to be shiftable between a partially light-shielding state and a non-light-shielding state for the purpose of making displays within a view finder;

control means for controlling the conduction of the first and second layers of said electro-optical element in time-displaced relation, said means operating in three time divisions for display, light metering and exposure, so that when displaying, the second layer is rendered conducting to present a finder display, when metering light, the first layer is rendered conducting in the spot-metering mode, and non-conducting in the average metering mode to perform light metering, and when making an exposure, the first and second layers are rendered conducting, so that said electro-optical element is made in the light shielding state;

view finder optical means for confirmation of an image of the object formed on said reticle through said electro-optical element, said optical means being arranged to make a display within a view finder by selecting the state of the other layer of said electro-optical element between the light-shielding state and the on-light-shielding state thereof; and

a light sensitive element arranged to measure the brightness of an image of said object formed on said reticle through said electro-optical element, the light measuring range of said light sensitive element being arranged to be shiftable according to the selection between said light-shielding state and said non-light-shielding state of the first layer of said electro-optical element.

4,509,849

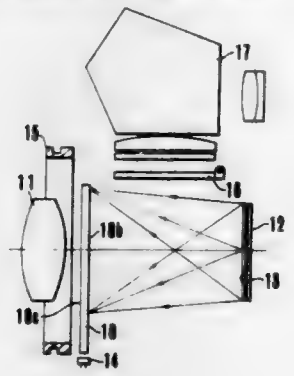
LIGHT MEASUREMENT DEVICE FOR SINGLE LENS REFLEX CAMERA

Kikuo Momiyama, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,509, Mar. 9, 1982, abandoned. This application Feb. 10, 1984, Ser. No. 578,321
Claims priority, application Japan, Mar. 20, 1981, 56-41127
Int. Cl.³ G03B *7/08, 7/00, 17/20*
U.S. Cl. 354—479 **9 Claims**

1. A single lens reflex camera system with a light measuring device, comprising:

a photographic optical system forming an image plane,
the image plane of the photographic optical system being arranged for receiving an object image sensor,
a mirror arranged to pivot into and out of the path between said photographic optical system and the image plane;
a finder system arranged in a direction along which light coming from an object and passing through said photographic optical system is reflected by the mirror when pivoted into the path between said optical system and the image plane;
a light conducting member arranged between the photographic optical system and the mirror,



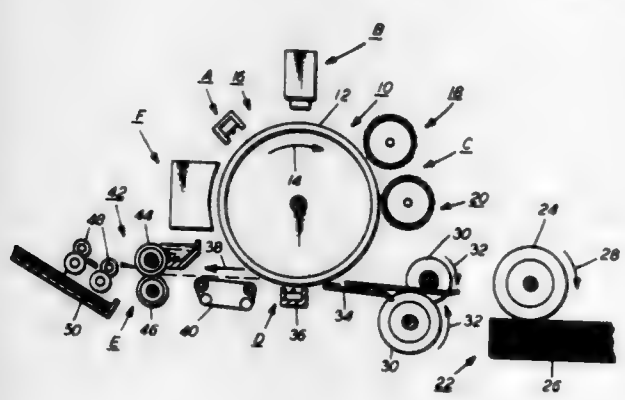
said light conducting member having an incident plane and a light projecting plane, said incident plane being arranged in an arc around the light from the object passing through the photographic system and opposing the object image sensor when the object image sensor is located at the image plane for receiving a part of light reflected from the object image sensor when the object image sensor is located at the image plane and subjecting the light to repeated internal reflections within the light conducting member and then projecting the received light from the projecting plane, and
light receiving means arranged near the light projecting plane to receive the light from the light projecting plane.

4,509,850

TWO-COLOR ELECTROPHOTOGRAPHIC PRINTING MACHINE

John W. Weigl, deceased, late of Webster, N.Y. (by Etta R. Weigl, executor), assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1983, Ser. No. 520,971
Int. Cl.³ G03G *15/01*
U.S. Cl. 355—4 **12 Claims**



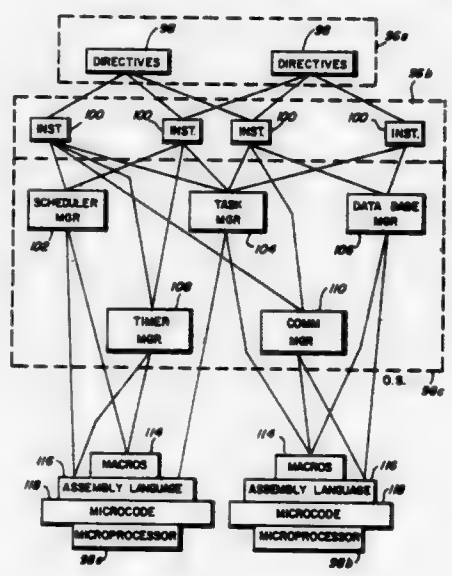
1. An electrophotographic printing machine of the type having a photoconductive member, including:
means for recording a modulated charged area and a continuously charged area on the surface of the photoconductive member;
means for developing the modulated charged area on the surface of the photoconductive member with polar or polarizable marking particles of one color and the continuously charged area on the surface of the photoconductive member with charged marking particles of another color; and
means for transferring the charged marking particles and the polar or polarizable marking particles to a copy sheet simultaneously to form a color highlighted document.

4,509,851

COMMUNICATION MANAGER

Ronald A. Ippolito, Rochester, and Michael T. Dugan, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 28, 1983, Ser. No. 479,623
Int. Cl.³ G03G *15/00*; G06F *1/00*
U.S. Cl. 355—14 C **10 Claims**



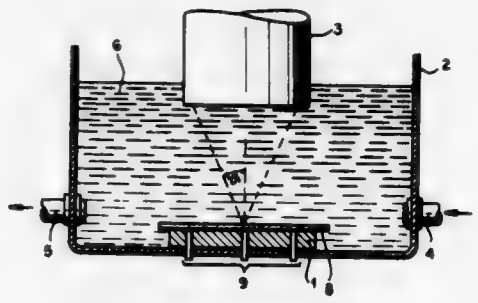
5. A multiprocessor machine control including a plurality of processors, said control executing a plurality of tasks, each of said tasks including at least one high level instruction, the control comprising
an operating system, said operating system including a plurality of managers, including a
Communication Manager for providing communication between the processors, and
a plurality of Instruction Modules invoking said Communication Manager to execute the high level instructions and provide the communication between processors.

4,509,852

APPARATUS FOR THE PHOTOLITHOGRAPHIC MANUFACTURE OF INTEGRATED CIRCUIT ELEMENTS

Werner Tabarelli, Schlosstr. 5, Vaduz, Liechtenstein (FL-9490), and Ernst W. Löbach, Tonagass 374, Eschen, Liechtenstein (FL-9492)

Division of Ser. No. 194,422, Oct. 6, 1980, Pat. No. 4,346,164. This application Aug. 17, 1982, Ser. No. 408,727
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—30 **4 Claims**



1. An apparatus for the photolithographic printing of a pattern onto a semiconductor substrate, comprising:

a substantially horizontal support for said semiconductor substrate;

means for horizontally moving said support in mutually orthogonal X and Y directions for step-by-step exposure of successive portions of said semiconductor substrate;

a projection lens disposed above said support and said semiconductor substrate for imaging a pattern of a mask upon each of the successive portions of said semiconductor substrate to activate a photosensitive layer thereon, as said portions are aligned with said lens by the movement of said support in said X and Y directions;

a basin carried by and movable with said support, receiving said semiconductor substrate and having an upper rim lying above at least a lower face of said lens whereby said lower face projects into said basin; and

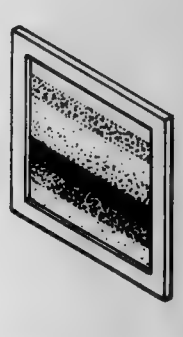
flexible pipe mens for feeding a transparent liquid having a refractive index close to that of said layer into said basin, for removing said liquid from said basin and for maintaining the level of liquid in said basin always above said lower face for imaging of said pattern upon said successive portions under constant conditions of filling of the space between said layer and said face with said liquid, said liquid being capable of wetting said layer and substantially incapable of attacking same.

4,509,853

SYSTEMATIC COLOR REFERENCE

Mark J. McGahan, 625 El Dorado Ave., Oakland, Calif. 94611

Filed Dec. 2, 1982, Ser. No. 446,097
Int. Cl.[3] G03B *27/72*
U.S. Cl. 355—35 **10 Claims**



1. In an optical printing system including a light source, a filter bay, and an optical printer for exposing graphic transparencies, a systematic reference for standardized color generation and matching, comprising:

a color palette matrix including a plurality of reference transparencies arranged in rows and columns;

said matrix having a hue shift axis wherein hue is progressively shifted from a primary color toward a secondary color by color filters;

said matrix having a value shift axis wherein light density of the hue is progressively shifted from a lighter density to a darker density by neutral density filters; and

each matrix location having a designation from which its hue axis and value shift axis values may be determined according to the code:

AB CD xxE,

wherein:

A=transparency exposure time,

B=optical printer aperture setting,

C=primary color filter color,

D=value of neutral density filter,

xx=amount of hue shift, and,

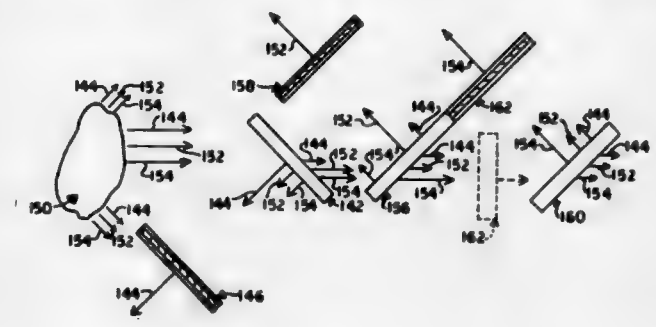
E=second primary color with which the primary color is mixed to shift the hue toward the secondary color.

4,509,854

MEANS AND METHOD FOR COLOR SEPARATION AND REPRODUCTION

Robert E. Pearson, 2000 NW. Wilson, Portland, Oreg. 97209

Continuation-in-part of Ser. No. 399,805, Sep. 24, 1973, Pat. No. 4,355,888. This application Sep. 17, 1982, Ser. No. 419,304
Int. Cl.[3] G03B *27/80*
U.S. Cl. 355—38 **38 Claims**



1. A means for controlling electromagnetic wave energy to realize desired wave length light waves, said means comprising:

a. a control responsive to light waves;

b. said control in response to said light waves, controlling the electromagnetic wave energy to realize said desired wave length light waves;

c. said desired wave length light waves having a wave length in the range of greater than 3900 A to a wave length in the range of about 4750 A to, approximately 5250 A; and,

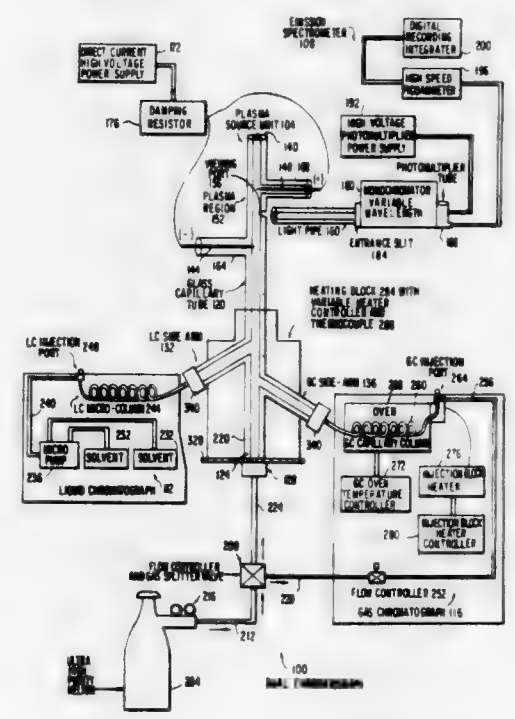
d. a photoscanner for determining the optical density and intensity of said desired wave length light waves and for converting said optical density to pulses of electricity and to pulses of electromagnetic waves.

4,509,855

DUAL LIQUID AND GAS CHROMATOGRAPH SYSTEM

Don D. Gay, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 407,538, Aug. 12, 1982, Pat. No. 4,470,699. This application Feb. 8, 1983, Ser. No. 464,840
Int. Cl.[3] G01N *21/73*
U.S. Cl. 356—72 **8 Claims**



1. A dual mode direct current plasma spectrometer which comprises, in combination:

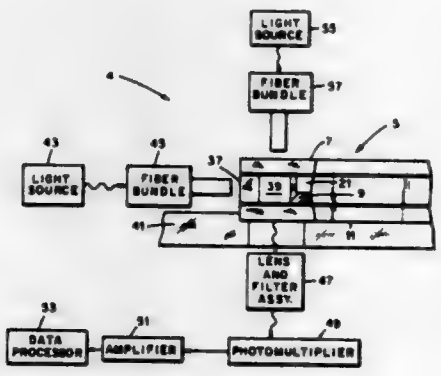
(a) a plasma source unit including
(i) a plasma source, (ii) eluant and gas inlet means, (iii) a plasma sustaining region, and (iv) a plasma viewing means in said region connected to said spectrometer;
(b) a micro-column liquid chromatograph connected to said eluant inlet means;
(c) a gas chromatograph connected to said gas inlet means; and
(d) heater means attached to said plasma source unit, said heater means being adapted to control the temperature of said plasma and the vapor phase from said chromatographs (b) and (c).

4,509,856

ROTOR FOR CENTRIFUGAL FAST ANALYZERS

Norman E. Lee, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1982, Ser. No. 442,065
Int. Cl.³ G01N *1/10*
U.S. Cl. 356—246 **9 Claims**



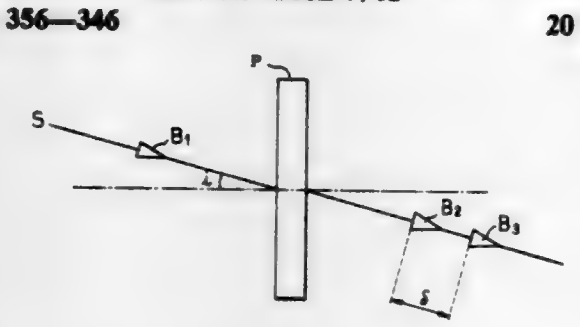
1. In a photometric analyzer of the rotary cuvette type:
a rotor comprising an assembly including a top plate, a bottom plate, and a central plate, the rim of said central plate being formed with circumferentially spaced indentations, and
a ring composed of UV-transmitting material sealably affixed to said rim and defining therewith a circular array of cuvettes.

4,509,857

IMAGING DEVICE, ESPECIALLY FOR PRODUCING IMAGES OF THE EARTH FROM A SATELLITE

Paul Vermande, Toulouse, France, assignor to Centre National d'Etudes Spatiales, Paris, France

Filed May 21, 1982, Ser. No. 380,926
Claims priority, application France, May 27, 1981, 81 10545
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—346 **20 Claims**



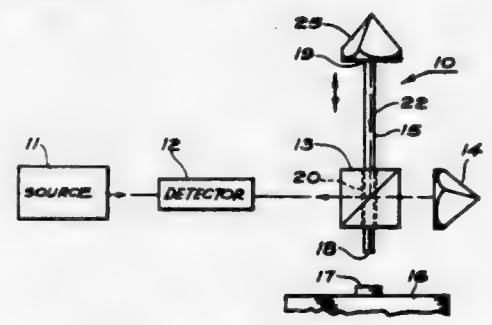
1. An apparatus for producing signals processable to obtain an interferogram of a zone of a heavenly body comprising:
a space vehicle for movement relative to the zone in a given direction;
optical means comprising fixed interferometric means statically located on the space vehicle while receiving light from such zone and while providing, in a plane, successive images of said zone as a result of such movement wherein the interferometric means comprises means for receiving the light and interfering portions of the light from the zone for producing each image as a function of phase differences in the light; and
a plurality of detectors mounted on the space vehicle coplanar with such plane and arranged in a line for successively detecting, at different times, the light intensity of each image of the successive images, each detector being adapted for providing an output signal representative of the light intensity of the image detected by such detector, the signals from all such detectors for a given zone being the signals processable to obtain the interferogram.

4,509,858

COMPACT, LINEAR MEASUREMENT INTERFEROMETER WITH ZERO ABBE ERROR

Robert A. Smythe, Pittsford; Joachim Bunkenburg, Victor, and Gunnar D. Richardson, Fairport, all of N.Y., assignors to GCA Corporation/Tropel Division, Fairport, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,709
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—358 **14 Claims**



1. An interferometer having a light source, a detection system, a beam splitter arranged to divide light from said source into test and reference beams that travel test and reference paths and recombine for detection by said detection system, said interferometer having a measurement axis directed toward a surface of a work piece, and said interferometer comprising:
a. said beam splitter being arranged on said measurement axis with said work piece surface on one side of said beam splitter and said test beam path straddling said measurement axis on an opposite side of said beam splitter;
b. a reference beam retroreflector mounted in said reference path for reflecting said reference beam from said beam splitter back to said beam splitter;
c. a test beam retroreflector mounted in said test path on said measurement axis for reflecting said test beam from said beam splitter back to said beam splitter without causing abbe error;
d. said test beam retroreflector being movable along said measurement axis on said opposite side of said beam splitter from said work piece surface;
e. means movable along said measurement axis for measuring said work piece surface; and
f. said test beam retroreflector being interconnected with said measuring means and movable with said measuring means to determine a distance moved in measuring said work piece surface.

4,509,859

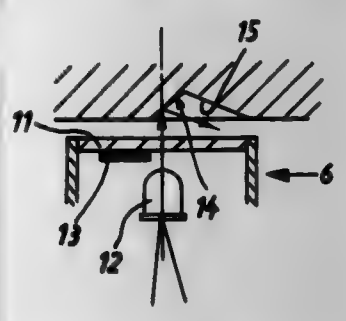
APPARATUS FOR OPTOELECTRONIC EVALUATION OF TEST STRIPS

Ernst Markart, Liebensteinstrasse 14, 8000 München 60; Reinhard Blümel, Strassberger Strasse 23, 8000 München 40, and Holger Eggert, Holzstrasse 20, 8000 München 5, all of Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,352
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3112028; Mar. 26, 1981, 3112031
Int. Cl.³ G01N *21/47*
U.S. Cl. 356—446 **14 Claims**

1. Test apparatus for optoelectronically evaluating test strips, for example those used in determining blood sugar levels, comprising means for holding a test strip to be evalu-

ated; a light source for illuminating the test strip; a sensor for receiving light which is reflected from the test strip; and calibrating means including a reflector disposed opposite said light source and sensor and defining therewith an elongated gap for



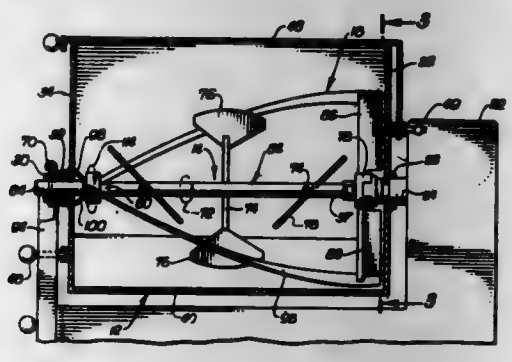
the test strip, said reflector having a reflector surface facing across said gap and being oriented to reflect light which issues from said source away from said sensor while said gap is empty.

4,509,860

DUAL ACTION MIXER

William Lasar, III, Downey, Calif., assignor to Lasar Manufacturing Co., Calif.

Filed May 3, 1983, Ser. No. 491,045
Int. Cl.[3] A21C *1/00;* B01F *7/08*
U.S. Cl. 366—99 31 Claims



1. A dual action mixer, comprising:

a mixer drum having opposed first and second end walls;

a drive shaft projecting through said first end wall and including a threaded end portion within said drum;

a drive sleeve disposed about said drive shaft and projecting through said first end wall into said drum;

a bearing block supported at said second end wall generally in coaxial alignment with said drive shaft and movable between a normal position projecting into said drum and a retracted position substantially withdrawn from said drum;

a first mixing element including a driven shaft having one end threaded for generally coaxial driving connection with said drive shaft threaded end portion and an opposite end rotatably supported by said bearing block when said block is in the normal position for sufficient axial sliding movement to permit connection and disconnection of said driven shaft with said drive shaft, said first mixing element further including a plurality of first mixing members radiating outwardly from said driven shaft;

a second mixing element including a pair of support hubs rotatably supported generally at opposite ends of said driven shaft, said support hubs being coupled for rotation together by a plurality of outwardly radiating and axially extending second mixing members; and

means for coupling one of said support hubs with said drive sleeve for rotation of said second mixing element when said driven shaft of said first mixing element is drivingly connected to said drive shaft;

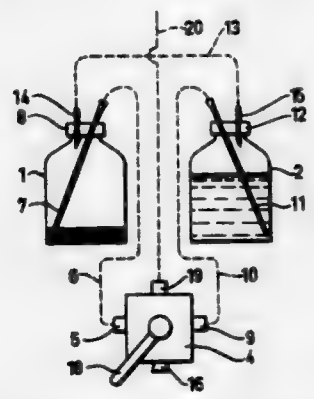
said first and second mixing elements being removable from said drum upon disconnection of said driven shaft from said drive shaft, movement of said bearing block to the retracted position, and uncoupling of said one support hub from driving relation with said drive sleeve.

4,509,861

METHOD OF MIXING ONE SUBSTANCE WITH ANOTHER SUBSTANCE

Göran Sjönell, 11 Askrikevägen, S-181 46 Lidingö, Sweden

Filed Jan. 27, 1983, Ser. No. 461,547
Int. Cl.[3] B01F *3/12, 15/02*
U.S. Cl. 366—131 9 Claims



9. A method of mixing one substance stored in a first container provided with first closure means with a second substance stored in a second container provided with second closure means, the method comprising the steps of:

(a) communicating interior portions of said first container with a first port of a multi-way valve;

(b) communicating interior portions of said second container below the level of said second substance with a second port of said multi-way valve;

(c) venting said interior portions of said first and second containers through said first and second closure means;

(d) connecting pump means to a third port of said multi-way valve;

(e) adjusting said valve to connect said second and third ports and actuating said pump means to draw some of said second substance into said pump means;

(f) adjusting said valve to close the connection between said second and third ports and to connect said first and third ports and pumping said some of said second substance from said pump means into said first container in mixture with said first substance;

(g) repeating steps (e) and (f) until all of said second substance has been pumped into said first container and has been mixed with said first substance to form a mixture; and

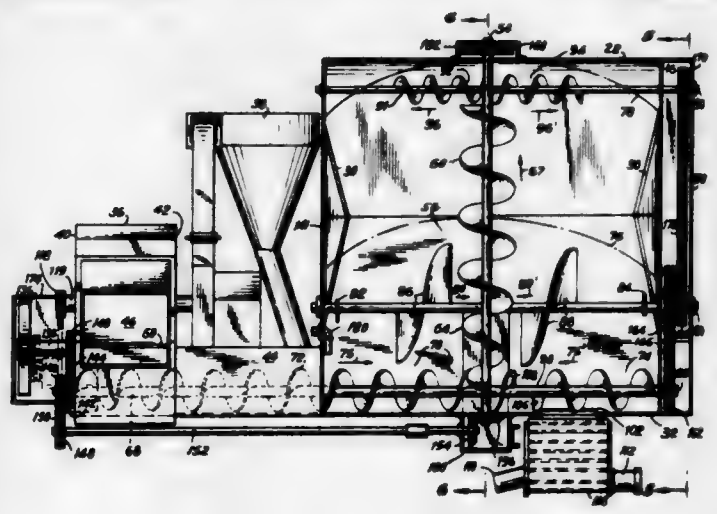
(h) with said valve adjusted to connect said first and third ports, sucking said mixture into said pump means.

4,509,862

FEED PROCESSING SYSTEM

Sam High, Lititz, and Aquila D. Mast, Lancaster, both of Pa., assignors to Feedmobile, Inc., Lititz, Pa.

Filed Aug. 29, 1983, Ser. No. 527,130
Int. Cl.[3] B01F *7/08;* B02C *19/00*
U.S. Cl. 366—158 14 Claims



1. A system for mixing high moisture industrial and feed materials, in combination, comprising:

a feed mixing tank having opposed upright end walls and opposed side walls secured to opposed top and bottom walls;

vertical auger means rotatably mounted between said top and bottom walls at the center portion of said tank for conveying feed materials upwards in said tank;

horizontal bottom auger means rotatably mounted between said end walls conveying said feed materials towards said auger means at the center portion of said tank;

horizontal agitating and conveying means rotatably mounted between said end walls axially aligned over and spaced from said bottom auger means for agitating said feed materials at areas proximate to said end walls and for conveying said feed material towards said vertical auger means at the center portion of said tank;

horizontal top auger means rotatably means rotatably mounted between said end walls axially aligned over said agitating and conveying means and spaced proximately below said top wall for generally leveling said feed materials at the top portion of said tank and for conveying said feed materials outwardly from said vertical auger means at the center top portion of said tank;

exit means disposed at said bottom wall proximate to said vertical auger means for discharging said feed materials from said tank, and

drive means associated with said tank for rotating said vertical auger means, said bottom auger means, said agitating and conveying means, and said top auger means,

whereby said feed materials are mixed by a general movement of said feed materials from the bottom and middle portions of said end walls of said tank towards the bottom center portion of said tank, upwardly towards the top center portion of said tank, outwardly towards the top portion of said end walls of said tank, by gravitational movement to said bottom and middle portion of said tank, and then to said bottom portions of said tank and to said exit means.

4,509,863

APPARATUS FOR MIXING MILK WITH FLAVORING AND FLUORIDE

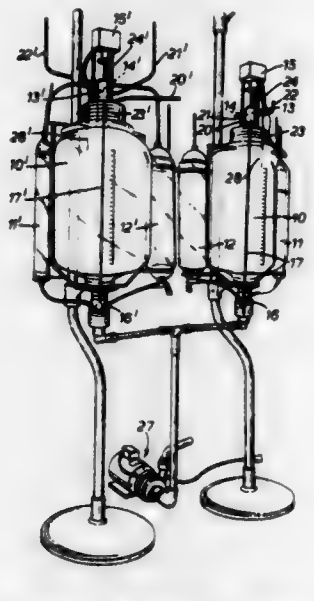
Edgar W. Borrow, Padnell Grange, Cowplain, Portsmouth, Hampshire, England

Filed Jun. 25, 1984, Ser. No. 623,937

Claims priority, application United Kingdom, Jun. 23, 1983, 8317059

Int. Cl.[3] **G05D** *11/00;* **B01F** *15/04*

U.S. Cl. 366—162 **9 Claims**



1. Apparatus for mixing together milk, a fluoride solution and a flavouring solution in a predetermined volume ratio to provide a fluoridated beverage, which comprises

a first set of three at least translucent vessels whose internal volumes are in the same ratio as the volume ratio of the three liquid components of the final beverage, having

outlet valve means of each vessel operable to permit the three liquids to flow out of the three vessels simultaneously and to mix together,

inlet valve means operable simultaneously to shut off the flow of the three liquids into the vessels, and

means coupling the outlet valve means and the inlet valve means, which enables closure of the inlet valve means to permit outflow through the outlet valve means,

a second set of three at least translucent vessels substantially identical to those of the first set and having

inlet valve means, operable simultaneously to shut off the flow of the three liquids into the vessels of the second set,

outlet valve means which permit the vessels of the second set to be filled as the vessels of the first set are emptied and vice-versa, thus providing a substantially continuous supply of the beverage

and means coupling the outlet valve means of the second set and the inlet valve means of the second set which enables closure of the inlet valve means to permit outflow through the outlet valve means,

the at least translucent vessels enabling an operator to check that the vessels are filled to a selected common level before the contents are discharged.

4,509,864

PROGRAM PLATE FOR A TIMER

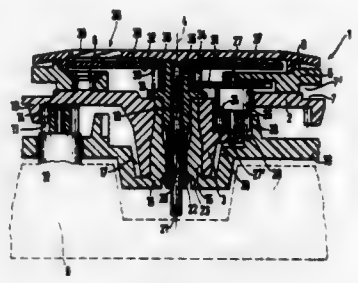
Oskar Oellig, Nuremberg; Horst Grimmer, Nuremberg-Oberasbach, and Alfred-Günther Lunz, Nuremberg, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jul. 10, 1984, Ser. No. 629,276

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325588

Int. Cl.[3] **H01H** *43/10;* **G04F** *8/00*

U.S. Cl. 368—108 **9 Claims**



1. In a program plate for a timer including setting means arranged along the circumference of the program plate for the determination of a switching program, said program plate being rotatably connected with a clockwork drive mechanism for driving said program plate, and an additional time display operable by a further drive mechanism, said additional time display possessing a higher timewise resolution than the program plate, and said further time display being integrated into the program plate; the improvement comprising a display disc centrally located and rotatably supported within the peripheral surface extent of the program plate for the higher resolved additional time display; said further drive mechanism being supported in the program plate; and the display disc being operated through the differential speed between the program plate and a housing portion of the clockwork drive mechanism by said further drive mechanism.

4,509,865

ELECTROMAGNETICALLY-INDUCED ROCKING CLOCK

Kuo-Chin Chu, 10-4 Fl., No. 62, Chang Chun Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 554,281, Nov. 22, 1983,. This application Apr. 20, 1984, Ser. No. 602,111

Int. Cl.[3] **G04B** *15/00*

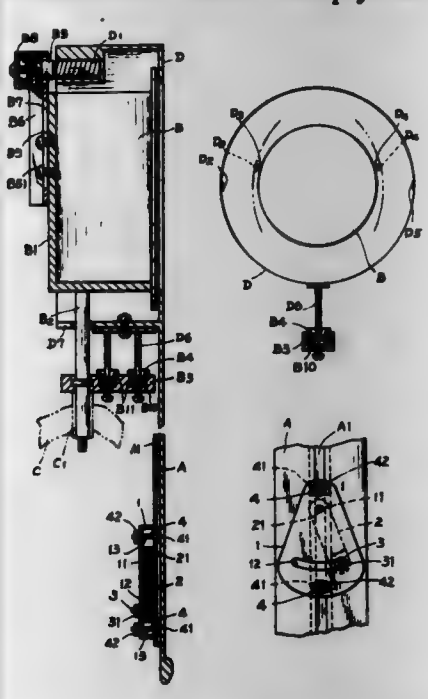
U.S. Cl. 368—134 **2 Claims**

1. An electromagnetically-induced rocking clock having a pendulum-adjustment means which comprises:

a casing adjustably fixed on said pendulum and being formed with an arcuated hole thereon;

an adjustable weight pivotedly fixed on said casing;

a transversely adjusting screw passing through said arcuated hole formed on said casing and being fastened by nut 31 to definitely fix said weight on a specific point on said casing so that said screw and said weight can be moved either rightward or leftward to obtain a sharply vertical pendulum; and



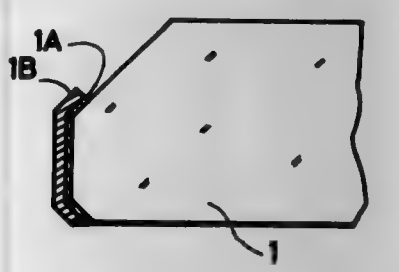
two longitudinally adjusting screws, formed on said casing, each adjusting screw being formed with an extension engaged with a vertical lengthy groove formed on said pendulum so that said casing may be vertically adjustably fixed on said pendulum by fixing a nut on each said longitudinally adjusting screw so as to adjust the gravity center and the arm of force of said pendulum.

4,509,866

WATERPROOF WATCHCASE WITH MULTI-LAYERED RESIN-COATED GLASS

Gen Mitamura, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Feb. 7, 1984, Ser. No. 577,862
Claims priority, application Japan, Feb. 7, 1983, 58-18512
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—296 **20 Claims**



1. A watchcase having a glass mounted thereon, the glass having an outer peripheral portion coated with more than two superimposed layers of resin of different hardness.

4,509,867

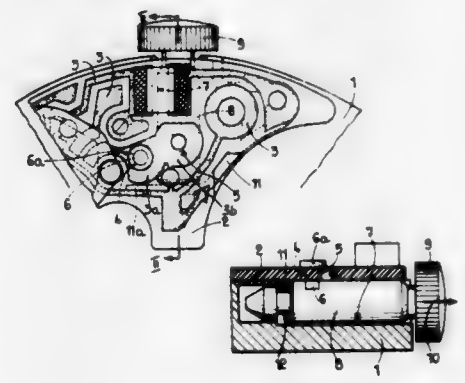
ELECTRONIC TIMEPIECE MOVEMENT

Willy Cleusix, Le Landeron, and Francois Niklès, Cornaux, both of Switzerland, assignors to Ebauches Electroniques S.A., Switzerland

Continuation of Ser. No. 253,576, Apr. 13, 1981, abandoned. This application Dec. 22, 1983, Ser. No. 564,747
Claims priority, application Switzerland, Apr. 30, 1980, 3329/80
Int. Cl.³ G04B *29/00*
U.S. Cl. 368—321 **6 Claims**

1. In an electronic timepiece movement having a base plate, a substrate plate supported on said base plate and a printed electrical circuit deposited on said substrate plate which includes a pair of electrically conductive leads each for specifically initiating the same timepiece setting functions by means of a manually actuable control mechanism which establishes electrical contact selectively with individual ones of said leads for performing said functions, the herein invention comprising:

1. said control mechanism including an electrically conductive contact member mounted on the substrate plate in electrical connection selectively with one of said leads of the printed circuit;
2. said base plate and substrate plate being spaced apart to form a radially extending passage opening to exterior of the timepiece;



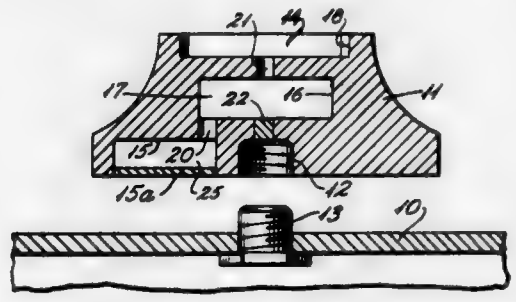
3. said mechanism including means axially movable in said passage and protruding outwardly from the passage for initiating said movement manually from exterior of the timepiece;
4. said mechanism also including an electrically conductive member selectively actuated by movement of said means into electrical contact with said contact member whereby to initiate said timepiece setting functions through the lead with which said contact is connected;
5. said printed circuit having said leads located in two independent positions on said substrate plate; and
6. said means being movable multi-directionally on its axis for selecting the one of said leads which is electrically connected to the contact member.

4,509,868

TEMPERATURE INDICATING DEVICE FOR A COOKING POT AND DEVICE-POT COMBINATION

Mario Ronconi, Via Goethe, 132, 24100 Bergamo, and Renzo Civitani, Via Conciliazione, 29, 20031 Cesano Maderno, both of Italy

Filed Jun. 8, 1982, Ser. No. 386,360
Claims priority, application Italy, Jun. 15, 1981, 22084/81[U]
Int. Cl.³ G01K *13/00, 7/14*
U.S. Cl. 374—141 **6 Claims**



1. A thermometer device for a cooking receptable, comprising in combination:

means, coacting with at least a portion of said cooking receptable, for sensing variations of temperature within said receptable;

transducer means, operatively connected with said sensing

means, for converting said temperature variations attained during said sensing to corresponding electrical variations;

A/D (analog-to-digital) circuit means, operatively associated with said transducer means, for converting said electrical variations from analog signals to digital signals; and

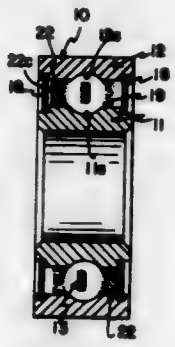
means, operatively associated with said A/D means, for displaying said temperature variations according to said electrical variations and displaying said temperature variations as digital display variations.

4,509,869

SELF-GREASING BEARING

Kenneth R. Johnston, 2517 43rd St., Bellingham, Wash. 98226

Filed Nov. 10, 1983, Ser. No. 550,369
Int. Cl.[3] F16C *33/58, 33/66*
U.S. Cl. 384—462 6 Claims



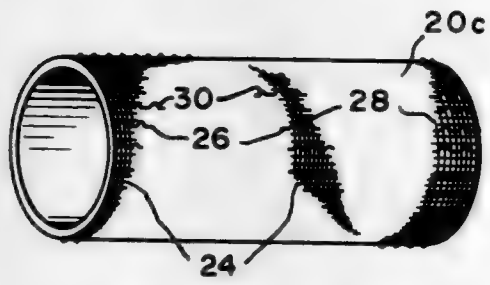
1. A bearing comprising, concentric inner and outer races, at least one of said races adapted to be rotatable, an annular cage member disposed concentrically between said races, said cage member having a plurality of spaced apart pockets, rolling elements received in said pockets and in rolling engagement with said races, lubricant consisting of grease between the races and over said cage member and rolling elements, annular seal members spaced outwardly of said cage member and rolling elements and between the races to prevent leakage of said lubricant, and means on one of the races for directing lubricant from locations or ordinary build-up back toward the cage member and rolling elements thereby maximizing lubrication of the bearing, said means including at least one diverter wiping the lubricant from the seal areas and forcing it back toward said rolling elements.

4,509,870

PLASTIC SLIDE BEARING

Kiyozi Taki, Gamagouri, Japan, assignor to Kabushiki Kaisha Miura Kumihimo Kogyo, Gamagouri, Japan

Filed Sep. 7, 1983, Ser. No. 529,961
Claims priority, application Japan, May 16, 1983, 58-85654
Int. Cl.[3] F16C *33/20*
U.S. Cl. 384—296 3 Claims



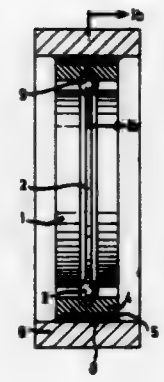
1. A plastic slide bearing comprising an inner cylindrical member and an outer cylindrical member of fiber reinforced thermosetting resin coaxially and integrally formed with the inner cylindrical member, characterized in that said inner cylindrical member is a cylindrical cloth woven by warps of fluoride fibers and loop threads and wefts of non-fluoride fibers, and loops formed in the loop threads of said non-fluoride fibers are provided only on the external surface of the cylindrical cloth to firmly grip the outer cylindrical member of fiber reinforced thermosetting resin.

4,509,871

PLAY-FREE ANTI-FRICTION BEARING CONSTRUCTION

Klaus Herzog, Oberkochen, and Franz Szenger, Konigsbronn, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 551,173
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244258
Int. Cl.[3] F16C *19/06*
U.S. Cl. 384—502 11 Claims



1. A radial anti-friction bearing having an outer ring (4; 14; 24; 44; 54; 64) which has a split (7) or break transverse to the running direction of anti-friction elements (3; 13; 23; 43; 53; 63) and having clamping rings or wires (5; 25; 45; 55; 65) placed over the outer ring, characterized by the fact that

(a) the inner ring of the bearing is formed directly by a shaft (1; 11; 21; 41; 51; 61) having an inner raceway developed therein,

(b) the diameter of the anti-friction elements is so selected that the slit (7) or break in the outer ring is characterized by a finite gap in the clamped condition of the bearing, and

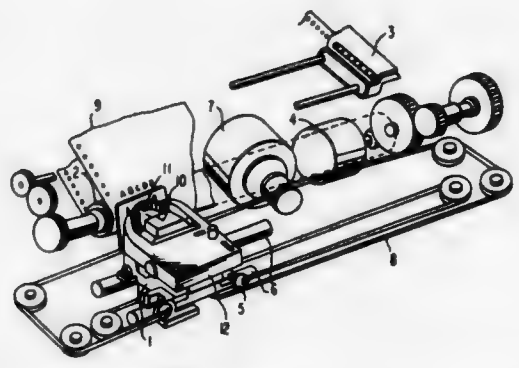
(c) the outer ring is thin-walled and is bedded by jointing means in the bore of an outer bearing part (6, 16).

4,509,872

CHARACTER SELECTING AND INKED RIBBON FEEDING MECHANISM FOR A SERIAL PRINTER

Jun Shimogawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 542,970
Claims priority, application Japan, Oct. 18, 1982, 57-182345
Int. Cl.[3] B41J *1/44;* H02K *7/20*
U.S. Cl. 400—144.1 15 Claims



1. A serial printer, comprising:

a print thimble having a set of elastic fingers disposed in the form of a petal, and a plurality of characters arrayed along plural circumferences of the set of said elastic fingers, said

circumferences having different heights in the vertical direction;
a first rotary motor having a shaft for rotating said print thimble, said shaft being allowed to move in its axial direction;
a plane cam engaging said shaft of said first motor, said cam enabling said shaft to shift in its axial direction in response to cam rotation;
a second rotary motor for feeding an inked ribbon, said inked ribbon being disposed near said circumferences of said print thimble; and
gear means coupled with the shaft of said second motor and said plane cam;
wherein the characters arrayed along a given circumference of said print thimble are selected by the rotation of said first motor, and wherein one of said plural circumferences arrayed along the vertical direction of said print thimble is selected by the rotation of said second motor.

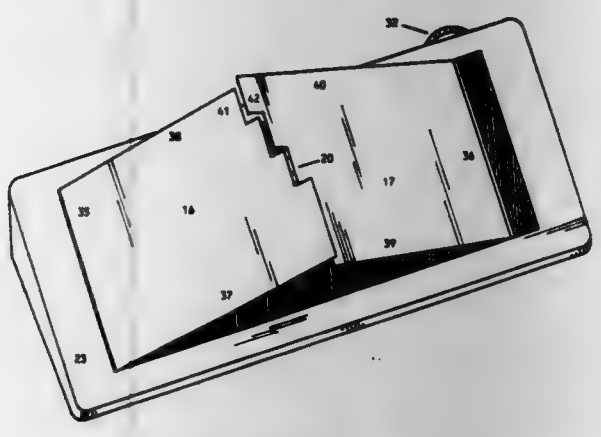
13. A motor shifting mechanism, comprising:
a first motor having a rotary shaft movable in its axial direction;
a plane cam engaging said rotary shaft for shifting said rotary shaft in its axial direction;
means for detecting the rotational angle of said plane cam in order to detect the location at which said rotary shaft engages said plane cam;
a second motor disposed substantially in parallel with said first motor and having a rotational load on a shaft thereof; and
a gear member fitted to said shaft of said second motor such that said gear member engages said plane cam via a clutch mechanism;
said second motor turning in one direction to move said rotary shaft of said first motor in its axial direction, and turning in the other direction to drive said rotational load of said second motor.

4,509,873

ALPHANUMERIC SECTION OF OFFICE MACHINE KEYBOARDS

W. Kenneth Ryan, c/o William F. Ryan, 3303 Lakeview, Cincinnati, Ohio 45211

Filed May 5, 1983, Ser. No. 491,752
Int. Cl.[3] B41J *5/08*
U.S. Cl. 400—489 1 Claim



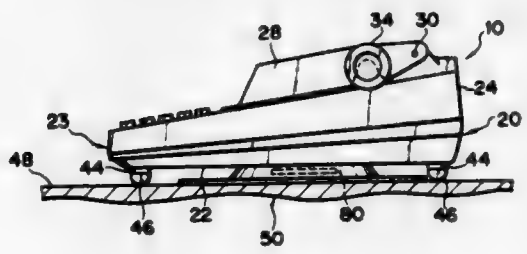
1. In a keyboard for typewriters, terminals and similar machines in which keys are arranged in general accord with International Organization for Standards recommendations for the alphanumeric sections of keyboards for office machines, an improvement comprising:
one left mounting board and one right mounting board, said mounting boards having front and rear edges, the mounting boards together having adjacent ends and outermost ends, and together corresponding to a standard keyboard, and said left and right mounting boards so shaped that they can be fitted with key contacts and keys as actuated by the left and right hands, respectively, in touch typing;
a hinge between and connecting said left mounting board and right mounting board, said hinge in a position approximately equidistant from the outermost ends of said mounting boards and likewise approximately equidistant from the front and rear edges of said mounting boards, said hinge permitting the adjacent edges of said mounting boards to be raised vertically at said hinge mounting position;
a second hinge connecting the outermost end of one of the said mounting boards to the keyboard chassis or case;
a means of locating the outermost end of the other said mounting board, permitting both lateral and pivotal movement;
a means of maintaining the lateral position of the mounting board outermost end that is permitted lateral and pivotal movement.

4,509,874

APPARATUS FOR SECURING A TYPEWRITER

Yutaka Hira; Yoshitaka Ukai; Yoshihide Akuzawa, all of Shizuoka; Osamu Aoki, Numazu, and Saburo Shimatani, Funabashi, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 508,064
Claims priority, application Japan, Mar. 3, 1983, 58-30972[U]
Int. Cl.[3] B41J *29/02*
U.S. Cl. 400—691 7 Claims



1. An apparatus for securing to a typewriter-mounting base a typewriter comprised of a case which includes a bottom plate and a wall having an opening for accessing printing means contained in the case, a cover which is movably attached to said case for at least partly closing said opening, said cover when opened, exposing a portion of said bottom plate facing the printing means, comprising:
locking means on at least one of said case and said cover for locking said cover to said case in a state wherein said cover is closed; and p1 fastening means associated with said bottom plate for detachably fastening the portion of said bottom plate which is exposed only when said cover is opened on to the mounting base, said fastening means being accessible only when said cover is opened;
said fastening means comprising a fastening member arranged to be fixed in advance at a fixing position on the mounting base and which the typewriter is to be subsequently secured, and a connecting member for connecting said fastening member to said bottom plate of said case, said connecting member having one end portion connected to said fastening member, said one end portion being completely enclosed by said fastening member and said mounting base, said connecting member not being accessible from the outside of the typewriter, said connecting member having another end portion connected to the exposed portion of said bottom plate, access to said other end portion being positively prevented by said cover when said cover is closed.

4,509,875

FELT PEN HAVING TWO END CAPS

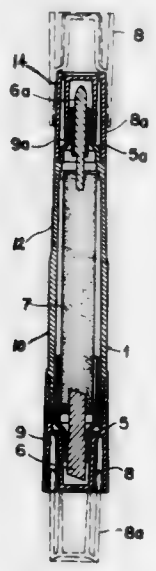
Koichi Shintani, Tokyo, Japan, assignor to Colleen Pencil Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,541

Claims priority, application Japan, Nov. 30, 1982, 57-180032[U]

Int. Cl.³ B43K 9/00, 8/02, 27/00

U.S. Cl. 401—34 3 Claims



1. A felt pen, comprising a bar-shaped hollow body; an ink-impregnated sponge supported within said body, said body having two opposite ends; two writing tips mounted at said opposite ends, respectively, in said body; and two caps detachably-attachable to said body at said opposite ends, respectively to close the respective tips, said body having an outer shape, said shape being defined by a linear line and a taper line merging into said linear line, said linear line defining a first grip portion of said body and said taper line defining a second grip portion of said body, one of said writing tips being of a larger size and of a square cross-section and another of said writing tips being of a smaller size and of a round cross-section, said caps having each an end surface so that when the cap is attached to said body the latter can stand on the end surface of the respective cap, one of said caps being of a larger outer diameter and another of said caps being of a smaller outer diameter, one of said caps being formed with one groove and another of said caps being formed with another groove, the cap of the smaller outer diameter being adapted to be mounted on the cap of the larger outer diameter such that said another cap is partially inserted into the respective groove of said one cap, the cap of the larger outer diameter being adapted to be mounted on the cap of the smaller outer diameter.

4,509,876

WRITING INSTRUMENT WITH OVERFLOW CHAMBER AND RETURN TO SUPPLY

Jiro Hori, 2-202, Glorious Manshions, 33-40, 3 chome Senbacho, Kawagoe-shi, Saitama-ken, Japan, assignor to Kotobuki & Co., Kyoto and Jiro Hori, Saitama, both of, Japan

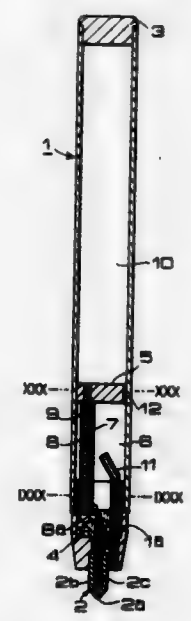
Filed Jun. 14, 1983, Ser. No. 504,314

Claims priority, application Japan, Jun. 15, 1982, 57-102476

Int. Cl.³ B43K 7/08, 7/10, 5/18

U.S. Cl. 401—217 10 Claims

1. A writing instrument using a low viscosity ink, comprising an ink occluding member having a strong capillary action, said ink occluding member being disposed inside a pen member mounting portion of a body of said writing instrument so that it is fluidly connected with said pen member for communication of ink therewith; a partitioning portion disposed in an inner position spaced from said ink occluding member for partitioning the interior of the body into an empty chamber of a small capacity and an ink chamber of a large capacity; an air-liquid exchange passage connecting for communication of ink between said ink chamber and said ink occluding member through said partitioning portion, said air-liquid exchange passage being normally closed with ink and adapted to open upon the sucking out of ink when writing, said air-liquid exchange passage having both strong and weak capillary actions; a notched portion formed in a fore end of said air-liquid exchange passage for communication between said passage and said empty chamber in the vicinity of said ink occluding member so that air can be introduced; an air intake tube disposed in the fore end of said writing instrument body for introducing outside air into said empty chamber, with an inner open end of said air intake tube being positioned so as not to be blocked with the stored jet ink extruded into said empty chamber; and further including at least one ink return passage between said empty chamber and said ink chamber having a strong capillary action, said ink return passage being formed between said partitioning portion and the inner wall surface of the body to thereby enable return of ink from said empty chamber to said ink chamber during sideways and inverted orientations of said writing instrument.



4,509,877

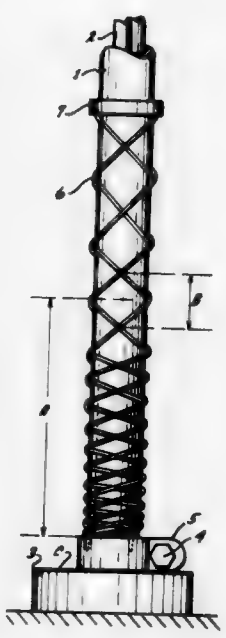
TAPERED TORQUE STRAIN RELIEF COUPLING

Sidney S. Sobin, 336 13th St., Del Mar, Calif. 92014, and Daniel J. Netto, 153 N. Vendome St., Los Angeles, Calif. 90026

Filed Nov. 9, 1983, Ser. No. 550,050

Int. Cl.³ F16C 1/00

U.S. Cl. 403—41 15 Claims



1. Reinforcing means adapted for reinforcing a flexible member extending from a rigid member, said reinforcing means comprising a plurality of strands braided in the shape of a

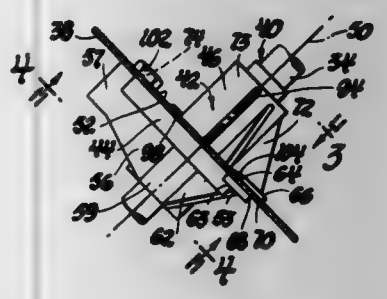
hollow tube adapted to be disposed around the flexible member, said strands being closedly braided adjacent to the rigid member and progressively more openly braided around the flexible member as the distance along the flexible member from the point of attachment between the flexible member and the rigid member increases.

4,509,878

WINDSHIELD WIPER TRANSMISSION

Bruce A. Bryson, Arcanum, and Jeffrey J. Buschur, Xenia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1983, Ser. No. 505,179
Int. Cl.[3] F16B 9/00; G12B 9/00; B60S 1/08; B23P 19/02
U.S. Cl. 403—71 5 Claims



1. In a mounting for a windshield wiper pivot shaft on a vehicle body panel for rotation about an axis of said panel, the combination comprising, a transmission housing having a base defining a base surface with a tower projecting therefrom, means defining a pivot shaft support bore through said tower on an axis of said housing, aperture means on said panel defining a pivot edge spaced from said panel axis in one direction and a plurality of datum edge points including one datum edge point on the opposite side of said panel axis from said pivot edge and a pair of datum edge points angularly spaced about 90° on opposite sides of said one datum, edge point, means on said housing defining a lip at an edge of said base engageable on said pivot edge and cooperable therewith in defining a fulcrum about which said housing pivots to an installed position wherein said base surface abuts said panel and said tower projects therethrough with said housing axis coinciding with said panel axis, and means defining a plurality of protuberances on said base surface spaced from said housing axis distances generally corresponding to but exceeding the spacing of said datum edge points from said panel axis to effect interference engagement with said plurality of datum edge points in said installed portion of said housing so that movement of said housing parallel to said panel is positively foreclosed.

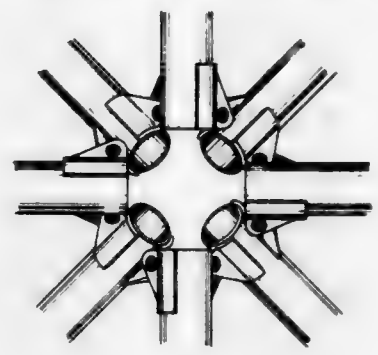
4,509,879

JOINING SYSTEM FOR TRIANGULATED STRUCTURES

Peter J. Pearce, 3838 Carpenter Ave., Studio City, Calif. 91604, assignor to Peter Pearce, Los Angeles, Calif.

PCT No. PCT/US78/00100, § 371 Date Jun. 4, 1979, § 102(e) Date Jun. 4, 1979, PCT Pub. No. WO79/00176, PCT Pub. Date Apr. 5, 1979
PCT Filed Oct. 3, 1978, Ser. No. 245,551
Claims priority, application United Kingdom, Oct. 3, 1977, 41000/77
Int. Cl.[3] F16B 7/00
U.S. Cl. 403—172 15 Claims

1. A triangulated structural assembly including a plurality of elongated structural elements, each of which elements is permanently provided with at least two integral connector means at each end thereof and in which each elongated structural element is pivotally connected directly to at least one further structural element in non-colinear alignment by their connector means about a pivot axis which is transverse to the longitudinal axes of the elongated structural elements, said pivot axis being displaced from the central axis of said structural element; each connector means comprising an axially elongated attaching portion about said structural element and an assymetrical



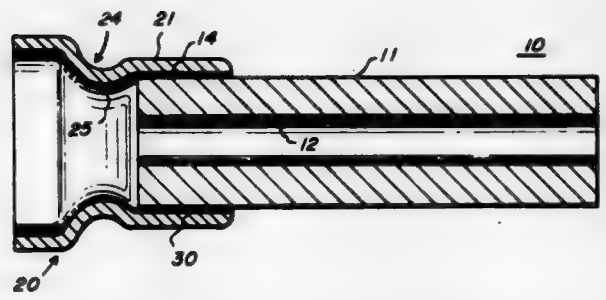
radially extending hinging portion along the length thereof and secured to said structural element and including a bore for a pivot pin.

4,509,880

VERY HIGH HERMETICITY GLASS TO METAL SEAL

David B. Wamstad, Roseville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 30, 1981, Ser. No. 248,135
Int. Cl.[3] F16B 11/00
U.S. Cl. 403—179 4 Claims



1. A highly hermetic glass to metal seal comprising:
a round cylindrically shaped glass member having an outside diameter;
a tubular sleeve of resilient metal having a first end with an inside diameter slightly larger than said outside diameter of said glass member, and said sleeve having a reduced diameter portion adjacent to said first end, said reduced diameter portion having an inside diameter slightly smaller than said outside diameter of said glass member;
a thin metalization layer having a first thin film layer of a titanium-tungsten alloy, a second thin film layer of nickel and a third thin film layer of gold, said metalization layer being on a first end of said glass member, said metalized first end of said glass member being inserted into said first end of said tubular metal sleeve so as to define an annular gap therebetween and into abutting relation with said reduced diameter portion of said sleeve so as to form a capillary gap therewith; and
solder mean flowed while in a molten form into said annular gap pursuant to a pulling-like force of said capillary gap.

4,509,881

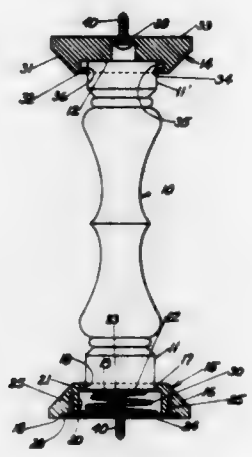
SPINDLE MOUNTING BASE

Thomas M. Welch, Cincinnati, Ohio, assignor to Duplex Lighting, Inc., Cincinnati, Ohio

Filed Jun. 9, 1982, Ser. No. 386,691
Int. Cl.[3] F16B 7/00
U.S. Cl. 403—229 5 Claims

1. A base for releasably securing a spindle in a desired position, the spindle having planar top and bottom surfaces, said base comprising a socket member having substantially parallel,

generally planar inner and outer surfaces when in the installed position, the perimeter of said inner surface in the installed position being less than the perimeter of said outer surface, an opening centrally of said inner surface dimensioned and configured to receive an end of said spindle, a passage centrally of said outer surface having a greater area than said opening in said inner surface, a shoulder having an inwardly facing right angle defining the intersection of said opening and said passage, a plate within said passage having substantially the same configuration as said passage and movable therein into abut-



ment with said shoulder, a planar closure member secured to said outer surface of said socket member and underlying said passage when in the installed position, spring means in said passage between said movable plate and said closure member urging said plate into engagement with said shoulder, a bore centrally of said closure member through which fastening means may be inserted for securing said base in a desired location, and an access opening centrally of said movable plate facilitating installation of said fastening means from said inner surface of said socket member.

4,509,882

JOINT FASTENER FOR THE ASSEMBLY OF MOLDINGS

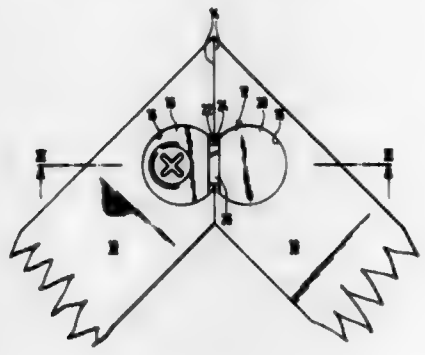
Karl Lautenschläger, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,827

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1982, 3236719

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—402 **16 Claims**



1. A clamping fastener for moldings, especially for cornice moldings on furniture, comprising: two plug-like fastening elements respectively insertable into two recesses in two moldings to be joined, means for respectively drawing said fastening elements together or apart, said fastening elements each having the external shape of a substantially cylindrical insert body provided on one side with a flat running parallel to the center axis of the cylindrical insert body, at least one of said insert bodies having an opening extending radially into said one insert body substantially at right angles from its flat, a coupling bar projecting substantially at right angles from the flat of the other insert body and matingly engaging said opening, said one insert body having a first bore with an axis which runs parallel to said central axis, said first bore opening into at least one of the end faces of said one cylindrical insert body, said coupling bar having a second bore adapted to be aligned with said first bore, and a turn pin having sections journaled in said two bores, said section in said second bore in the coupling bar being offset excentrically from said section journaled in said first bore in said one insert body.

4,509,883

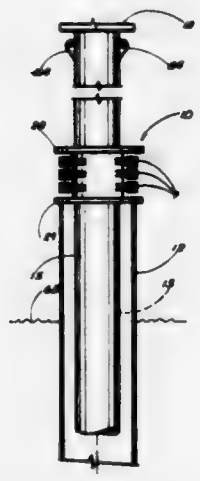
RIG PILING CLAMP APPARATUS

Emile Thibodeaux, Rte. 3, Box 512, and Robert Thibodeaux, 140 Samuel Dr., Lot 19, both of Eunice, La. 70535

Filed May 11, 1983, Ser. No. 493,552

Int. Cl.³ E02D *7/00*

U.S. Cl. 405—232 **7 Claims**



1. An apparatus for engaging and disengaging a rig piling being lowered into a rig jacket leg, which comprises:

a. first and second shell portions having continuous side walls and hingedly attached at a common edge, said shell portions supported on said jacket leg;

b. means interconnecting said first and second shell portions along a second edge for forcibly moving said first and second shell portions between a closed position engaging said rig piling and an open position disengaging said rig piling;

c. means contained on the inner wall of each of said shell portions for frictionally engaging the wall of said piling, and allowing controlled movement of said piling when said shell portion are forcibly moved into substantially closed positions.

4,509,884

INJECTION NOZZLE FOR ADHESIVE MATERIALS

John F. Trout, West Chicago, Ill., and John J. Hoffman, South Bend, Ind., assignors to Lily Corporation, Chicago, Ill.

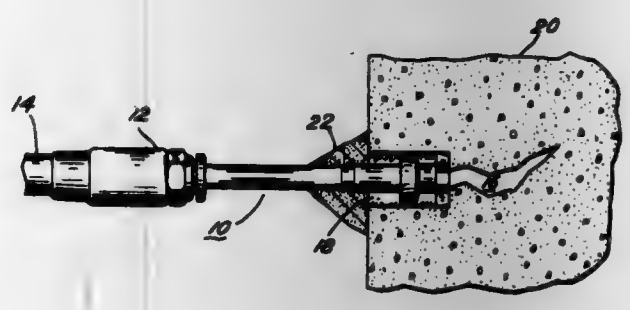
Filed May 2, 1983, Ser. No. 490,459

Int. Cl.³ B65B *3/04;* B29F *1/00;* E02D *5/18;* E04G *23/02*

U.S. Cl. 405—269 **5 Claims**

1. A nozzle for injecting an adhesive material into fissures and other voids intersecting a drilled hole in concrete and other building structures, comprising an elongated body portion having proximal and distal ends, said body portion having a hollow center channel connected to and communicating with said distal end for the flow of adhesive material into the drilled hole, a plurality of substantially rigid lugs extending radially outwardly on the distal end of said body portion for contacting the sides of the drilled hole, said lugs being spaced from one another to form a plurality of spaced slots for the flow of adhesive material therethrough, a plurality of spaced grooves disposed in said distal end around said channel and extending radially from said channel to said slots for evenly distributing

the adhesive material, and substantially rigid collar disposed around said body portion in spaced relation to said distal end



and said lugs for forming a seal with the side walls of the drilled hole.

4,509,885

SKIVING AND ROLLER BURNISHING TOOL

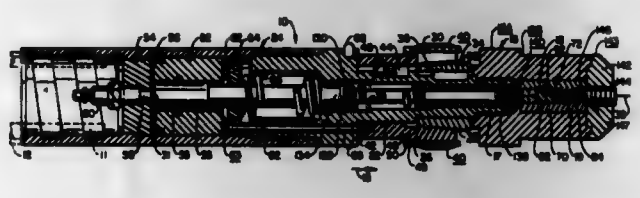
Lawrence C. Dickinson, 2255 Eva Adams, Reno, Nev. 89504

Continuation-in-part of Ser. No. 301,503, Sep. 14, 1981, Pat. No. 4,425,693, Ser. No. 205,026, Nov. 7, 1980, Pat. No. 4,380,851, and Ser. No. 183,664, Sep. 2, 1980, Pat. No. 4,367,576. This application Jul. 26, 1982, Ser. No. 401,580

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.[3] B24B *39/00, 39/02*

U.S. Cl. 407—1 15 Claims



1. A skiving and roller burnishing tool comprising:

an elongate drive tube having a central axis defining a forward and a rearward direction;

a retractable knife mounted at the forward end of the drive tube, said knife including a knife blade radially movable with respect to the axis of the drive tube, a push dart movable path along an axial path, and means for coupling the push dart to the blade so that the blade is retracted when the push dart is in a first axial position and extended when the blade is in a second axial position;

a roller race mounted coaxially on the drive tube to the rear of the retractable knife and having a frustoconical outer surface tapering radially outward in the axially forward direction;

a plurality of frustoconical tapered rollers each having a large end and a small end and being arranged about said outer surface with the small ends of the rollers facing forward so that the surface portion of each roller furthest from the roller race is generally parallel to said central axis and the rollers may be extended radially outward by moving forward along the roller race;

a roller cage having a plurality of slots, said roller cage circumscribing and being spaced apart from the roller race so that said slots and said roller race together define a plurality of cavities for receiving individual rollers; and

means for selectively biasing both the push dart and the rollers in (1) the forward direction so that the blade and the rollers may be simultaneously extended and (2) means for biasing both the push dart and the rollers in the rearward direction so that the blade and the rollers may be simultaneously retracted, said means for selectively biasing including a pair of concentric pistons mounted to reciprocate axially in the drive tube, one of the pistons being coupled to the push dart and the other being coupled to the rollers, and means for applying a preselected fluid pressure to both pistons simultaneously to bias said pistons in opposition to said rearward biasing means whereby the blade and the rollers may be simultaneously extended.

4,509,886

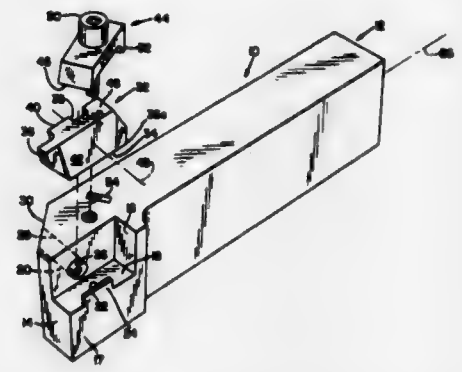
CUTTING TOOL WITH CUTTING INSERTS HAVING POSITIONING KEYWAYS

Harold W. Lindsay, 2451 NW. 30th, Portland, Oreg. 97210

Filed Nov. 25, 1983, Ser. No. 555,016

Int. Cl.[3] B23P *15/28;* B26D *1/00, 3/00*

U.S. Cl. 407—102 6 Claims



1. A cutting tool comprising:

a holder having a longitudinal mounting axis and a plurality of sides generally parallel thereto, the holder having a transverse axis perpendicular to the longitudinal axis, the holder having an end face generally parallel to the transverse axis, the end face being adapted to be placed adjacent a workpiece;

a cutting insert receiving slot extending inwardly of the holder from the end face generally in the direction of the longitudinal axis of the holder, the slot being adjacent one of the sides of the holder, the slot defining an end face and a bottom and a pair of walls within the holder, one of the pair of walls being adjacent the one side of the holder and flush therewith, the wall adjacent the one side of the holder being cut parallel to the bottom of the slot to form a retaining lip extending normal to the bottom and flush with the one side of the holder, the retaining lip being cut to a length less than the length of the slot, the retaining lip being disposed between the end face of the holder and the end face of the slot;

a cutting insert received in the slot, the insert having front and back faces and top and bottom sides and opposite ends which form cutting edges, the bottom side of the insert being supported by the bottom of the slot, a cutting edge of the insert extending outwardly of the slot in the direction of the longitudinal axis of the holder, the front face of the insert being provided with a centrally disposed keyway extending across the same from the top to the bottom sides, the keyway having a dimension in the direction of the longitudinal axis of the holder equal to the length of the lip, the keyway having a dimension in the direction of the transverse axis of the holder equal to the dimension of the lip in the direction of the transverse axis of the holder, the lip engaging the keyway longitudinally to locate the insert relative to the holder and to prevent movement thereof in the direction of the longitudinal axis of the holder, the lip preventing movement of the insert normal to its face; and

clamping means engaging the top side of the insert to clamp the insert into the slot and into engagement with the lip.

4. A cutting tool comprising:

a holder having a longitudinal mounting axis and a plurality of sides generally parallel thereto, the holder having a transverse axis perpendicular to the longitudinal axis, the holder having an end face generally parallel to the transverse axis, the end face being adapted to be placed adjacent a workpiece;

a cutting insert receiving slot extending inwardly of the holder from the end face generally in the direction of the longitudinal axis of the holder, the slot being adjacent one of the sides of the holder, the slot defining an end face and a bottom and a pair of walls within the holder, one of the pair of walls being adjacent the one side of the holder and flush therewith, the wall adjacent the one side of the holder being cut parallel to the bottom of the slot to form a retaining lip extending normal to the bottom and flush with the one side of the holder, the retaining lip being cut to a length less than the length of the slot, the retaining lip being disposed between the end face of the holder and the end face of the slot;

a key extending outwardly of the other of the pair of walls and into the slot normal to the longitudinal axis of the holder;

a cutting insert received in the slot, the insert having front and back faces and top and bottom sides and opposite ends which form cutting edges, the bottom side of the insert being supported by the bottom of the slot, a cutting edge of the insert extending outwardly of the slot in the direction of the longitudinal axis of the holder, the back face of the insert being provided with a centrally disposed keyway extending across the same from the top to the bottom sides, the key engaging the keyway longitudinally to locate the insert relative to the holder and to prevent movement thereof in the direction of the longitudinal axis of the holder, the lip preventing movement of the insert normal to its face; and

clamping means engaging the top side of the insert to clamp the insert into the slot and into engagement with the lip.

4,509,887

MEANS FOR CONNECTING A MALE PART TO A FEMALE PART

Mats E. Hofling, Sandviken, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

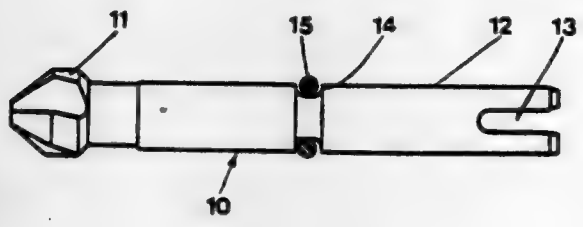
PCT No. PCT/SE81/00330, § 371 Date Jul. 12, 1982, § 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/01679, PCT Pub. Date May 27, 1982

PCT Filed Nov. 10, 1981, Ser. No. 403,520

Claims priority, application Sweden, Nov. 13, 1980, 8007963

Int. Cl.³ B23B *31/08*

U.S. Cl. 408—239 R **3 Claims**



1. The combination of a tool and a rotary tool holder for receiving said tool to rotate same, one of said tool and holder comprising a sleeve and the other a shaft, said shaft being insertable into said sleeve to an operating position, said shaft and said sleeve including first and second torque transfer means, respectively, which are interengageable for establishing a torque transmitting relationship between said sleeve and said shaft in response to insertion of said shaft into said sleeve with said torque transfer means properly aligned for interengagement, said first and second torque transfer means being mutually alignable in response to relative rotation between said shaft and sleeve and being interengageable into torque-transmitting relationship in response to relative axial, non-rotational movement between said shaft and sleeve, and friction means carried by one of said shaft and sleeve and being frictionally engageable with the other when said shaft is in said operating position so as to frictionally resist mutual separation of said shaft and sleeve, the location of said friction means relative to said first and second torque transfer means being such that said first and second torque transfer means interengage before said friction means engages said other of said shaft and sleeve, whereby said shaft and sleeve can be relatively rotated into proper alignment in the absence of the frictional resistance of said friction means, and said shaft can be thereafter moved to said operating position independently of relative rotation between said shaft and sleeve, said first interengageable torque transfer means comprising a diametrical slit in an end surface of said shaft which is inserted into said sleeve, said slit being open endwise, and said second torque transfer means comprising a diametrical pin disposed in said sleeve and arranged to be received in said slit.

4,509,888

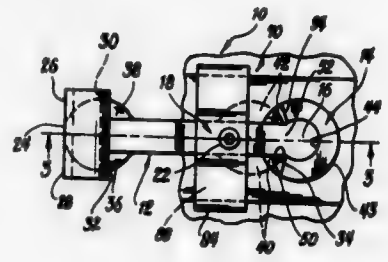
TRACK FASTENER

Roy S. Sheek, Yadkinville, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed Aug. 4, 1982, Ser. No. 405,043

Int. Cl.³ B60P *7/00*; B61D *45/00*; B64D *9/00*

U.S. Cl. 410—105 **9 Claims**



1. Track fastener apparatus for use with a locking track having an upper surface and sides comprising a track fastener body, means associated with said track fastener body for securing said track fastener body to said locking track and means associated with said track fastener body and having portions thereof locatable around at least portions of the sides of said locking track for reinforcing a portion of said locking track for preventing the side portions from bulging outward when forces are applied to said track fastener body.

4,509,889

METHOD OF ROCK BOLTING AND TUBE-FORMED EXPANSION BOLT

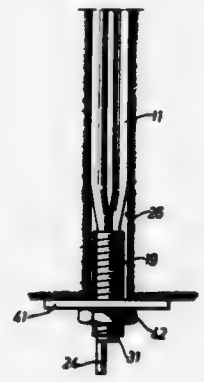
Bo T. Skogberg, Handen, and Gunnar V. R. Romell, Djursholm, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Division of Ser. No. 127,776, Mar. 6, 1980,. This application Jan. 23, 1984, Ser. No. 572,830

Claims priority, application Sweden, Mar. 9, 1979, 7902129

Int. Cl.³ E21D *21/00*

U.S. Cl. 411—19 **13 Claims**



1. A tube-formed elongated expansion bolt, comprising:

an expansible elongated tube having a deep continuous longitudinal depression which extends inwardly of the bolt toward the axis of the bolt, the tube having a major closed

cross-sectional portion in the area of the deep longitudinal depression, and the tube being closed at one end thereof which is the bottom end thereof;

said tube having a longitudinal portion in the area of the longitudinal depression which has a peripheral length in a cross-section which exceeds the periphery of a circle having a diameter equal to the largest transverse dimension of the bolt in the cross-section of the bolt;

said longitudinal portion being expandable to increase said largest transverse dimension of said bolt under the temporary application of high-pressure fluid to the interior of said tube without stretching the material of said tube; and

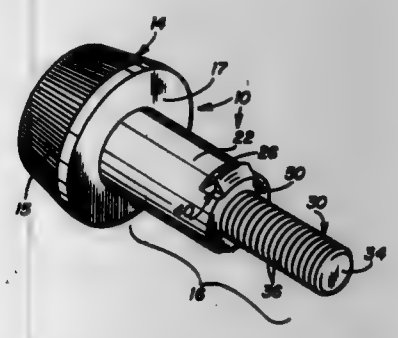
coupling means at the end portion of said bolt opposite said bottom end for applying high-pressure fluid to the interior of said tube to expand said tube against a borehole so as to cause permanent gripping action of the tube against the inner surface of the bore hole without stretching the material of the tube, the pressure being released after expansion of said bolt.

4,509,890

CAPTIVE PANEL SCREW

Royce W. Hill, Flippin, Ark., assignor to Micro Plastics Inc., Flippin, Ark.

Filed Oct. 13, 1981, Ser. No. 310,376
Int. Cl.³ F16B *39/00*
U.S. Cl. 411—337 1 Claim



1. A one-piece, plastic captive panel screw adapted to be fitted through a suitable first orifice in a first workpiece, said captive panel screw comprising:

a head having a diameter substantially greater than the diameter of said first orifice and a face adapted to contact said first workpiece when said screw is properly installed;

means for subsequently penetrating and snap fitting within a suitable second orifice aligned with said first orifice, said second orifice defined in a second workpiece, whereby to maintain said first and second workpieces in generally parallel, spaced-apart relation, said last mentioned means comprising an integral, elongated shaft assembly projecting axially outwardly from the center of said head, said shaft assembly comprising:

a spacer section having a diameter less than the diameter of said head, said spacer section extending a predetermined length from said head and terminating in a shoulder portion spaced-apart from said head, said shoulder portion adapted to contact said second workpiece when said screw is properly installed;

a relief section formed in said spacer section and adjoining said spacer shoulder portion, said relief section having two opposed, parallel flat sides and two arcuate sides and having a minor dimension less than the diameter of said spacer section diameter and a major dimension equal to the diameter of said spacer section diameter, and said relief section having a length substantially less than said length of said spacer section;

a terminal threaded section adapted to penetrate said second orifice and having a diameter smaller than said spacer section diameter and smaller than said minor dimension of said relief section, said threaded section having a length substantially greater than said length of said relief section, the threaded section being adapted to receive a suitable nut whereby to secure a third workpiece; and,

a flange section dividing said terminal threaded section from said relief section, said flange section having an outer effective diameter greater than the diameter of said spacer section but smaller than the diameter of said head, the flange section being of generally frusto-conical dimensions and comprising a pair of symmetrical wedges extending perpendicularly outwardly from the axis of the screw and separated from each other by equal radially spaced-apart intervals, the angularly inclined outer faces of said wedges tapering toward said threaded section in a reduced diameter portion of said flange section; and,

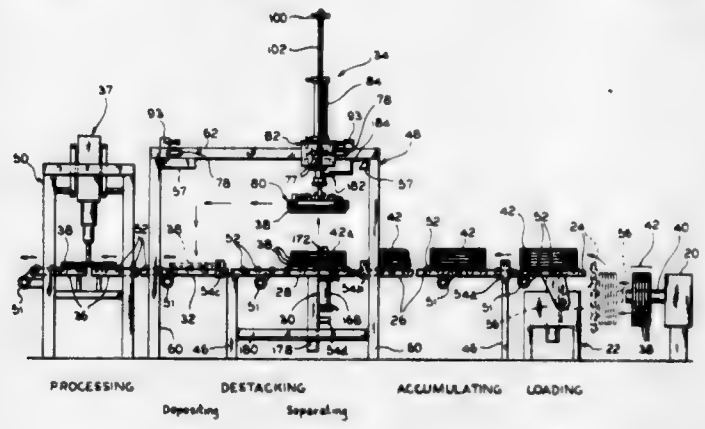
said flange section adapted to yieldably deform toward said relief section in response to forcible penetration of said second workpiece orifice by said shaft, said shaft operable to anchor said screw relative to said workpieces with said second workpiece maintained between said flange section and said shoulder portion of said spacer section, said relief section substantially captivated within said second orifice within said second workpiece.

4,509,891

METHOD AND APPARATUS FOR SUPPLYING METAL COILS TO A PROCESSING STATION

Robert J. Lipscomb, West Chicago, Ill., assignor to Precision Steel Warehouse, Inc., Franklin Park, Ill.

Filed Jun. 22, 1979, Ser. No. 51,217
Int. Cl.³ B65G *59/04*
U.S. Cl. 414—113 11 Claims



1. A method for supplying individually to a processing station annular metal coils which are provided in groups of adjacent side-by-side coils, which comprises the steps of:

providing a horizontal conveyor line including successive power-driven accumulating, separating, and depositing conveyor sections leading forwardly from a loading station towards a processing station, each of said conveyor sections being drivable independently of the others,

placing said groups of coils in following order on said conveyor line at said loading station with the coils thereof stacked vertically,

driving said accumulating and separating sections to convey said groups of coils forwardly to the separating section in turn,

providing a lifting head operatable to engage the top coil of a group of coils on said separating section for the purpose of lifting the coil off of the remainder of the group, and to deposit the coil therefrom,

inserting a stop member into each of said groups of coils on said separating section through the openings in the coils and into abutting engagement with the rear portions of the inner wall surfaces of the cells, while driving the separating section, thereby to orient the group beneath said lifting head for said engagement thereof with the top coil,

destacking each of said groups of coils in turn while the group is stationary on said separating section by operating

said lifting head to lift from the top of the group, carry forwardly, and deposit on said depositing section individual coils of the group successively,

driving said depositing section to convey each deposited coil forwardly out of its deposited position before depositing the next coil therein, and

driving said accumulating section while a group of coils is stationary on said separating section for destacking thereof, to accumulate following groups of coils on the accumulating section.

4,509,892

APPARATUS FOR MANIPULATING WORKPIECES HAVING PLANE PARALLEL SURFACES

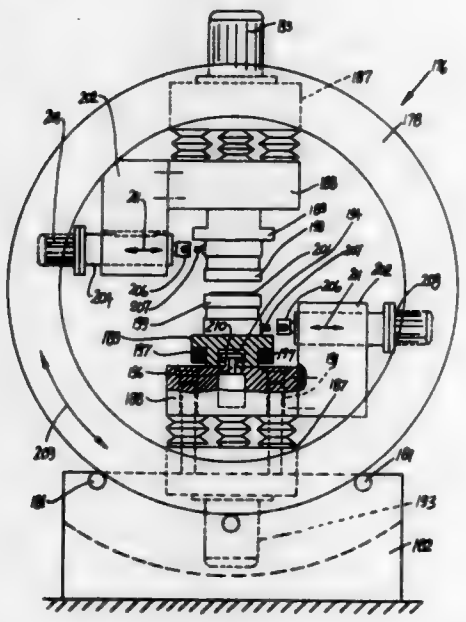
Werner Redeker, Börnsen, and Uwe Uhlig, Buchholz, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 328,861, Dec. 9, 1981, Pat. No. 4,453,347. This application Feb. 14, 1984, Ser. No. 580,095

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047035

Int. Cl.³ B23Q *7/14*

U.S. Cl. 414—223 **5 Claims**



1. Apparatus for supporting, locating and transferring workpieces, particularly workpieces having pairs of plane parallel surfaces, for removal of material at a succession of stations, comprising work holder means including at least two spaced-apart work carriers having fully overlapping parallel surfaces which face each other, each of said carriers being activatable to attract workpieces to its surface and deactivatable to release such workpieces so that a workpiece between the surfaces of the carriers can be transferred from one of said carriers to the other of said carriers by deactivating the one carrier while the other carrier is activated; means for moving said carriers relative to each other in directions to increase or reduce the distance between the surfaces of such carriers; a self-sustaining frame for said carriers; a pallet for each of said carriers; means for delivering pallets with carriers to said frame; means for removing pallets with carriers from said frame; and means for turning said frame about a predetermined axis to thereby reverse the positions of said carriers, said axis being parallel to the surfaces of said carriers.

4,509,893

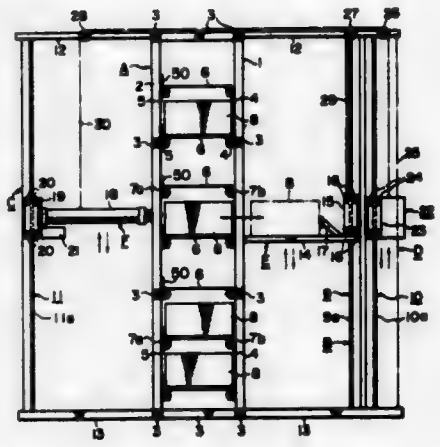
DEVICE FOR STORING AND RETRIEVING ARTICLES IN A SHELF STACK

Junichi Nashimoto, Yokosuka, and Zenkichi Kurokawa, Yokohama, both of Japan, assignors to Okamura Corporation, Japan

Filed Jan. 14, 1983, Ser. No. 457,958

Int. Cl.³ B65G *1/00*

U.S. Cl. 414—280 **2 Claims**



1. An article storing and retrieving device, for use with a stacked set of a plurality of shelves, comprising:

(a) an article handling and pushing device, located on one side of said set of stacked shelves, movable in the vertical direction, and comprising a transfer shelf which can be brought to oppose any selected one of said stacked set of shelves by said vertical motion, and a means for moving articles from said transfer shelf away from said article handling and pushing device onto said opposed one of said stacked shelves;

(b) an article pushing out device located on the other side of said set of stacked shelves, movable in the vertical direction, which can be brought to oppose any selected one of said stacked set of shelves by said vertical motion, and comprising a means for pushing articles off from said selected one of said stacked shelves away from itself; and

(c) a raising device, which moves both said article handling and pushing device and said article pushing out device in the vertical direction, and which keeps both said article handling and pushing device and said article pushing out device at substantially the same height at all times.

4,509,894

LOADING AND UNLOADING APPARATUS FOR A VEHICLE

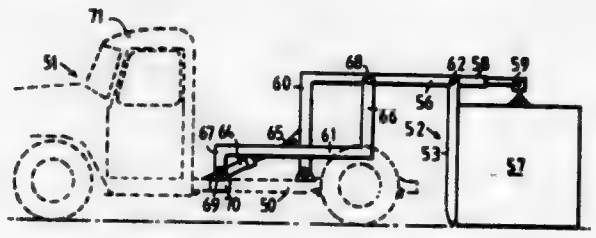
Keith O. Rolfe, 564 Zillmere Rd., Zillmere, Queensland, Australia 4034

Continuation-in-part of Ser. No. 169,028, Jul. 15, 1980, Pat. No. 4,355,942. This application May 13, 1982, Ser. No. 377,869

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—555 **6 Claims**



1. Loading and unloading apparatus for a vehicle, comprising:

(a) a lift assembly including a frame releasably connected to a load, said frame including a substantially vertical back frame having a pair of parallel side members intercon-

nected by a transverse top member, said back frame being adapted to engage a forward end of said load, and a pair of parallel arms rigidly attached to said top member and extending forwardly thereof relative to said vehicle;

(b) parallel motion links connecting said frame to said vehicle, said links comprising a pair of L-shaped lifting links each having one end pivotally connected to said frame and the other end pivotally connected to the vehicle, and a pair of stabilizing links each having an upper arm with two ends, one end of said upper arm being pivotally connected to one of the parallel arms of the frame, and a bottom arm extending substantially perpendicularly from said upper amr, said bottom arm having two ends, one of said bottom arm ends being fixedly connected to the other of said upper arm ends, and the other of said bottom arm ends being pivotally connected to said vehicle; and

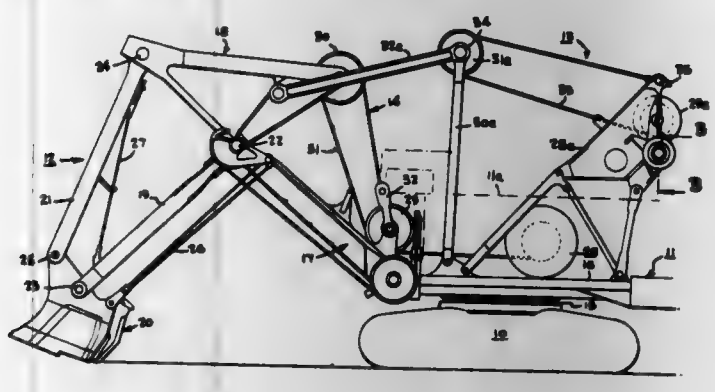
(c) means for moving said lifting and stabilizing links in parallelism to move the back frame to either a carrying or loaded position supported on the vehicle, or to a loading or unloading position at or near ground level behind the vehicle.

4,509,895

CROWD DRIVE ASSEMBLY FOR POWER SHOVELS

George B. Baron, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 6, 1978, Ser. No. 950,003
Int. Cl.[3] E02F *3/62*
U.S. Cl. 414—685 22 Claims



1. In a power shovel having a main support unit, a front end assembly operatively connected to said main support unit and a rope crowd system mounted on said main support unit and operatively connected to said front end assembly, a crowd drive assembly for said rope crowd system comprising a rope drum mounted on a support frame supported on said main support unit, a pinion drive shaft journaled in said support frame adjacent the tangential point of said crowd rope wound on said drum, transversely spaced means disposed on said pinion drive shaft for simultaneously transmitting torque to said rope drum and means supported on said main support unit for driving said pinion drive shaft.

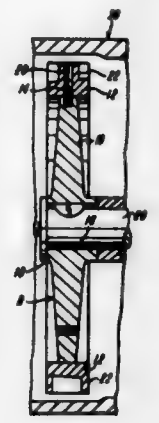
4,509,896

TURBINE ROTOR

Eugene Linsker, Dayton, Ohio, assignor to Tech Development Inc., Dayton, Ohio

Filed Mar. 1, 1982, Ser. No. 353,615
Int. Cl.[3] F01D *21/02*
U.S. Cl. 415—9 7 Claims

1. A rotor for placement within a substantially peripherally encompassing shield or protective wall structure, said rotor comprising a ring-shaped radially outermost part, a part radially inward thereof adapted for connection with a shaft, bearing means coupling said parts, said bearing means being constructed and arranged to provide means through which said ring-shaped part has a driving relation to said part radially inward thereof, said radially outermost part being mounted to normally move radially with respect to said radially inward part, in a direction and to a degree corresponding, substantially, to the speed of its rotation while maintaining, normally, when energized, a driving relation to said radially inward part, said radially outermost part being constructed and arranged for a deliberate radial fracture, a predictable expansion and displacement thereof relative said bearing means and an expanding substantial engagement of its outermost surface with the shield or protective wall structure within which it is placed upon the rotor reaching a predetermined level of the speed of its rotation beyond which a self destruction and fragmentation of the rotor or a part thereof might otherwise result.

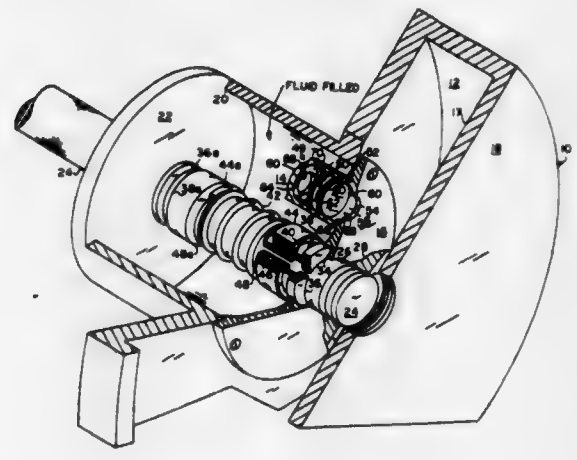


4,509,897

ROTARY PUMP ASSEMBLY CONTAINER

James O. Sims, Rte. 2, Box 246, Hartselle, Ala. 35640

Continuation-in-part of Ser. No. 302,643, Sep. 15, 1981, Pat. No. 4,384,820, which is a division of Ser. No. 945,558, Sep. 25, 1978, Pat. No. 4,289,445. This application May 23, 1983, Ser. No. 496,881
Int. Cl.[3] F04D *29/10*
U.S. Cl. 415—113 1 Claim



1. A rotary pump assembly comprising:

a generally circular pump enclosure;

a seal enclosure sharing a common wall with said pump enclosure, and said seal enclosure having a wall opposite to that of said common wall;

a lubricating fluid within said seal enclosure;

a rotary pump positioned within said pump enclosure and having a driven shaft which passes through said walls;

first and second stationary shaft sealing members positioned around said shaft in opposite walls of said seal enclosure, and said sealing members having facing planar seal surfaces;

first and second spaced rotating seal members around and rotating with said shaft, said first rotating seal member having a planar surface positioned adjacent to and adapted to frictionally engage said first stationary seal member, and said second rotating seal member having a planar surface adjacent to and adapted to frictionally engage

with the planar surface of said second stationary seal member;

spring bias means for applying a bias to said rotating sealing members for biasing and rotating sealing members against said stationary sealing members;

an opening in said common wall from said seal enclosure to said pump enclosure and intercepting a radial position in said pump enclosure which is intermediately between a said shaft opening and the circumference of said pump enclosure;

a piston casing positioned within said seal enclosure and projecting from and transverse with respect to said common wall, said casing having a first end region secured to said common wall around said opening, and a second end region opening into said seal enclosure; and

a piston axially movable within said casing adjacent said common wall, said piston being movable intermediately between said first and second end regions and sealably interrupting a passageway between said seal enclosure and said pump enclosure, whereby the fluid pressure in said pump enclosure adjacent to said opening, being a pressure in a basically intermediate radial region of said pump enclosure, is directly transmitted through said opening to said piston to said lubricating fluid in said seal enclosure, and then, as an additional bias, to said rotating seal members.

4,509,898

HELICOPTER ROTORS

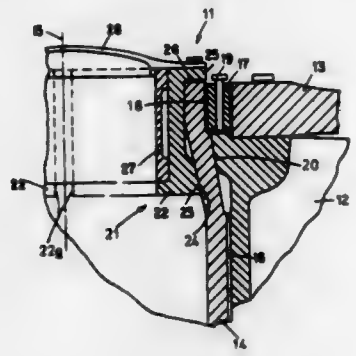
Alan Gormer, Yeovil, England, assignor to Westland plc, Yeovil, England

Filed Jun. 20, 1983, Ser. No. 505,860

Claims priority, application United Kingdom, Jul. 2, 1982, 8219139

Int. Cl.³ B64C *11/02*

U.S. Cl. 416—2 **5 Claims**



1. A helicopter rotor comprising a rotor hub, a plurality of rotor blades supported by said rotor hub and extending radially therefrom, a tubular rotor drive shaft disposed within said rotor hub, primary attachment means operatively interconnecting said hub and tubular rotor drive shaft to provide a primary thrust load path, and secondary attachment means disposed internally of said drive shaft comprising a multi-part collect including a plurality of identical collect parts for retaining the rotor hub in the event of failure of the primary thrust load path.

4,509,899

TRAVERSING BLADE-ROTARY PROPELLER

Larry J. Frederick, P.O. Box 794 SLU, Hammond, La. 70402

Filed Mar. 28, 1983, Ser. No. 460,032

Int. Cl.³ B64C *11/46*

U.S. Cl. 416—99 **13 Claims**

1. A traversing blade rotary propeller useful for the application of laterally acting forces upon a fluid medium to produce propulsion as by attachment via a mount to a craft for propulsion of the craft, which comprises:

a stationary main shaft, one end of which is suitable for attachment to the mount, the other of which is provided with gear means,

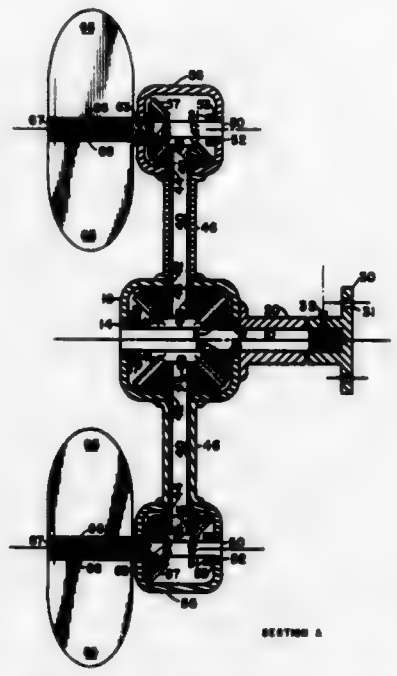
a housing, inclusive of

a central gear means housing into which the gear means end of said stationary main shaft is extended and supported, rotatably mounted upon said stationary main shaft, and

peripheral gear means housings alternately disposed and adjoined to said central gear means housing,

a pair of radial arm shafts each end of which carries gear means, alternately disposed, radially mounted, each extended from said central gear means housing to said peripheral gear means housings, a gear means end of each radial arm shaft extending into said central gear means housing to operatively engage the gear means end of said stationary main shaft such that relative movement between the engaged gear means ends of the radial arm shafts and the stationary main shaft will cause the radial arm shafts to rotate about their own axes one relative to the other in equal and opposite directions, the opposite end gear means of a radial arm shaft extending into the peripheral gear means housings,

a pair of propeller blade shafts each mounted perpendicular to a radial arm shaft, each being equally and oppositely deflected at an angle such that the axes thereof are non-



parallel with the axis of the stationary main shaft, and define equal and opposite angles relative to a line parallel with the axes of the radial arm shafts which perpendicularly intersects the stationary main shaft, one each of which carries an affixed gear means, the gear means end of each propeller blade shaft extending into the peripheral gear means housings such that a gear means thereof is operatively engaged with a gear means of each of said radial arm shafts,

a pair of flat propeller blades, one each of which is mounted upon an end of each of said propeller blade shafts, similarly directionally oriented one with respect to the other, and

a power means for applying force to rotate the central gear means housing relative to the stationary main shaft whereby the radial arm shafts are rotated to drive the propeller blade shafts in a direction opposite to that in which the central gear housing is rotated and to the same degree, the propeller blades one relative to the other in turn being maintained in fixed orientation as the central gear means housing is rotated relative to the stationary main shaft, while the flat propeller blades as they are moved along a continuous circular path around the axis of the stationary main shaft are oscillated in equal and opposite directions across the swath defined by the circle, each

like the caudal fin of a fish or the fluke of a whale in propulsion.

4,509,900

TURBINE ROTOR

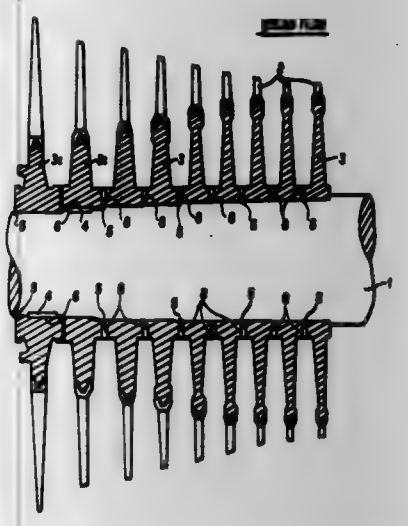
Masachika Odawara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 14, 1983, Ser. No. 542,216

Claims priority, application Japan, Oct. 14, 1982, 57-180376; Jan. 25, 1983, 58-11119

Int. Cl.³ F01D *5/06*

U.S. Cl. 416—198 A 5 Claims



1. In a turbine having a fluid flow, a turbine rotor comprising:

a shaft;

a plurality of wheel discs shrunk-fit on said shaft along the axial direction thereof, said wheel discs being provided with blades on the outer circumference thereof;

a plurality of first coupling members disposed between each of first wheel discs defined by at least the upsteam ones of said wheel discs for coupling said wheel discs to each other, and

at least one second coupling member disposed between at least one second wheel disc disposed at the downstream end of said shaft and said shaft.

4,509,901

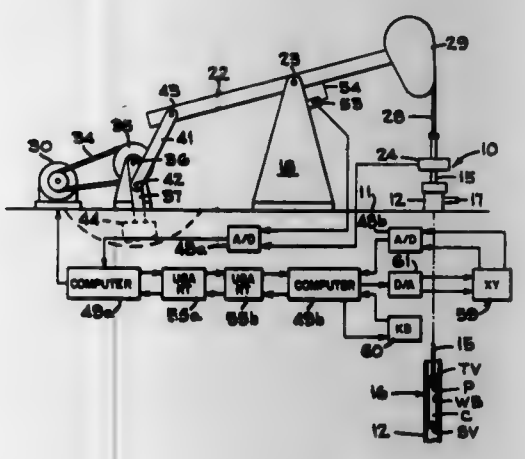
METHOD AND APPARATUS FOR DETECTING PROBLEMS IN SUCKER-ROD WELL PUMPS

Louis S. McTamaney, Cupertino; Allan B. Delfino, Sunnyvale, both of Calif., and Gary W. Bisbee, The Woodlands, Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 18, 1983, Ser. No. 470,021

Int. Cl.³ F04B *49/06;* E21B *47/00;* G06F *15/20*

U.S. Cl. 417—18 14 Claims



1. Apparatus for automatically detecting and classifying pump problems in a well pumping unit having a deep well pump connected to a sucker-rod string and a power unit to reciprocate said rod string to produce fluid from an underground location, said apparatus comprising:

first transducer means for generating a signal representative of a load on said rod string;

second transducer means for generating a signal representative of a position of said rod string;

means for using said load signals and said position signals to obtain a plurality of characteristic values from a calibration dynagraph with said pumping unit operating in an acceptable mode during a calibration period;

means for storing said characteristic values from said calibration dynagraph;

means for processing said load signals and said position signals to obtain a well dynagraph as said power unit operates to produce fluid from said underground location; and

means for comparing a plurality of predetermined characteristic values of said well dynagraph with corresponding characteristic values of said calibration dynagraph to detect and classify said pump problems.

4,509,902

POWER REGULATING DEVICE FOR A HYDROSTATIC PUMP

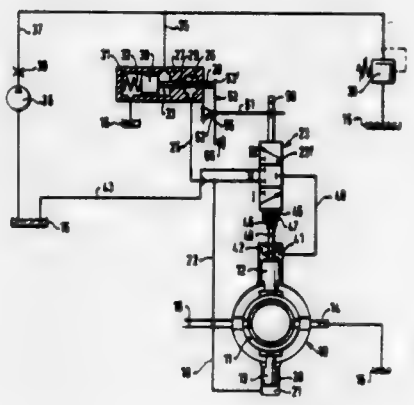
Emil Knodel, Stuttgart, and Gerhard Nonnenmacher, Korntal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,264

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213377

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—216 5 Claims



1. A power regulating device for a hydrostatic pump with a stroke-varying member, comprising

a pressure medium source;

at least one pressure-loaded piston adjusting the stroke-varying member against a counterforce and being pressure loaded by said pressure medium source;

a valve controlling said adjusting piston and having two sides;

two springs acting upon said valve at its one side;

a gauge piston loaded by a delivery pressure in a predetermined direction and a lever applying a force proportional to the delivery pressure to said valve at its other side via said gauge piston and said lever;

an intermediate member;

an additional spring acting upon said gauge piston via said intermediate member in the same direction in which the delivery pressure acts upon said gauge piston; and

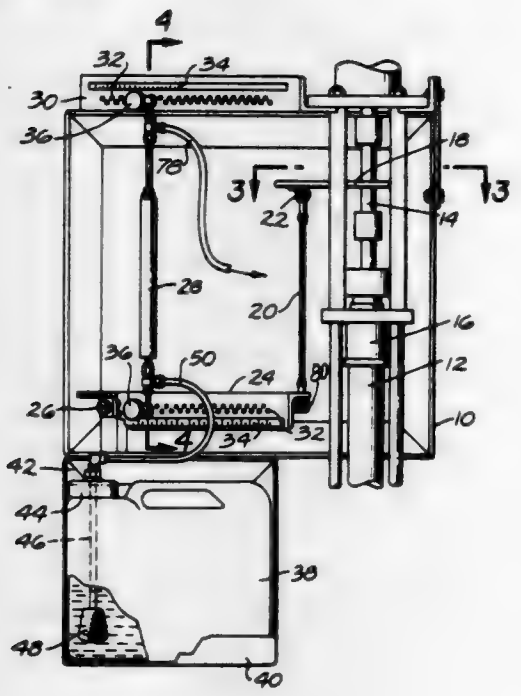
a second pressure medium source acting with a variable control pressure upon said intermediate member against said additional spring.

4,509,903

CATALYST SLAVE PUMP

Jerry R. Fram, 10627 Rochester Ave., Los Angeles, Calif. 90024

Filed Oct. 18, 1983, Ser. No. 543,089
Int. Cl.³ F04B 19/02, 23/04; F15B 15/24; B67D 5/52
U.S. Cl. 417—464 7 Claims



1. The combination comprising:
a supporting frame,
a master reciprocating pump for pumping a first liquid and fixed to said frame, said master pump having a cylinder and a piston and rod reciprocating within said cylinder,
a reciprocating slave pump for pumping a second liquid,
a first arm affixed to said frame, said first arm holding one end of said slave pump in a fixed pivoting position with respect to the master pump,
affixed to said piston rod, one end of a drive link,
a connecting link,
the other end of said drive link being joined to the upper end of said connecting link by a spherical bearing connection,
a second arm disposed in the same plane as said first arm,
the lower end of said connecting link being joined to said second arm by a spherical bearing joint, said second arm being pivotally connected at a point spaced apart from said spherical bearing joint, to said frame,
spherical bearing connections connecting said slave pump to said first arm and said second arm,
whereby as said piston rod reciprocates, said connecting link moves generally parallel to said piston rod and said second arm is moved by said connecting link in an arc about the end pivotally connecting to the frame and said slave pump is caused to reciprocate by the relative movement of said second arm with respect to said first arm.

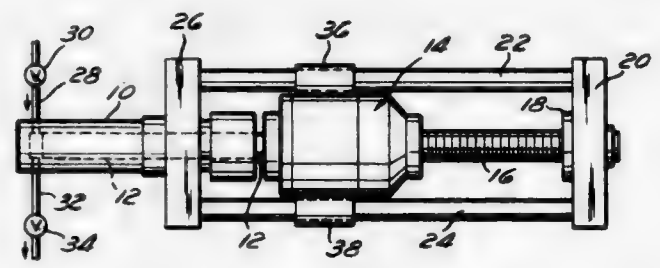
5. A reciprocating pump having:
a cylinder,
a piston within said cylinder,
a hollow rod connected to said piston, said piston and hollow rod being reciprocable within said cylinder, an opening in the face of said piston and a check valve for regulating fluid flow through said piston and into said hollow rod,
a first fixed plug forming one end of said cylinder, a check valve in the face of said plug for regulating flow through said plug, and a fluid inlet passage communicating with the valve in the plug for introducing liquid into said cylinder,
a second fixed plug at the opposite end of said cylinder, said hollow rod passing slidably therethrough,
a fluid discharge passage for said pump being in fluid communication with the interior of said hollow rod,
an annular fluid space within said cylinder between said piston and said second plug, said annular space surrounding the exterior of said rod,
the interior of said hollow rod communicating with both said discharge passage for said pump and said annular space,
an outer tube around the exterior of said cylinder, said outer tube being out of contact with said fluid passages and spaces, said first fixed plug and said second fixed plug being snuggly received in the opposite ends of said outer tube to seal said outer tube.
complementary interacting retaining means on said outer tube, said first fixed plug, and said second fixed plug for holding the pump together,
said check valves being disposed so that on the up stroke of the piston, the valve in the first plug is open while the valve in the piston is closed, and on the down stroke, the valve in said first plug is closed, and the valve in the piston is open whereby fluid is discharged from said discharge passage on both the up stroke and the down stroke of said piston and hollow rod, the fluid discharged on the up stroke being displaced through said hollow rod due to the flow of fluid from said annular space and the fluid discharged on the down stroke being due to displacement of fluid through said hollow rod from the space between said first plug and said piston, said down stroke also replenishing said annular space with fluid.

4,509,904

METERING PUMP

Christopher R. MacAskill, Sunnyvale, and Jared M. Potter, Mountain View, both of Calif., assignors to Petrophysical Services, Inc., Mountain View, Calif.

Filed Oct. 4, 1983, Ser. No. 538,774
Int. Cl.³ F04B 21/02, 39/10
U.S. Cl. 417—568 2 Claims



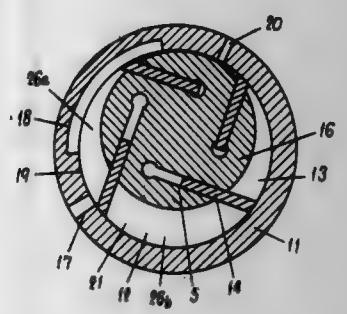
1. A coaxially aligned pumping machine comprising the combination of a fixed assembly and a moveable assembly; the fixed assembly comprising in combination at least one support means, a pump cylinder having means to permit inflow and outflow of fluid and a ballscrew, the ballscrew and cylinder being mounted by the support means coaxially with and spaced from each other proximate respective ends of the support means; and the moveable assembly comprising a drive mounted for reciprocal movement on the support means of the fixed assembly, a piston extending in one direction from the drive into the cylinder, the piston and cylinder comprising a pump, and a threaded shaft rotatably driven by the drive selective in two directions of rotation extending in the other direction from the drive through the ballscrew, the cylinder, piston, drive, shaft and ballscrew each having an axis and being coaxially aligned, the moveable assembly being so constructed and configured that when the drive rotates the shaft in one rotational direction, the moveable assembly moves in one reciprocal direction, and when the drive rotates the shaft in the other rotational direction, the moveable assembly moves in the other reciprocal direction to thereby cause the piston to reciprocate in the cylinder to pump fluid into and out of the cylinder.

4,509,905

COMPRESSOR WITH EXTENDED AREA BETWEEN SUCTION PORT AND SUCTION GROOVE

Teruo Maruyama, Hirakata, and Shinya Yamauchi, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP82/00420, § 371 Date Jun. 27, 1983, § 102(e) Date Jun. 27, 1983, PCT Pub. No. WO83/01659, PCT Pub. Date May 11, 1983
PCT Filed Oct. 27, 1982, Ser. No. 516,606
Claims priority, application Japan, Oct. 28, 1981, 56-173497
Int. Cl.[3] F04C *18/00*
U.S. Cl. 418—75 5 Claims



1. In a rotary compressor of the type including a cylinder, a rotor mounted eccentrically within the interior of said cylinder for rotation, a plurality of vanes mounted on said rotor for rotation therewith, said vanes having ends contacting said cylinder and dividing the interior thereof into vane chambers which progressively increase and then decrease in volume during rotation, and side plates fixed to opposite sides of said cylinder and closing the interior thereof, the improvement comprising:

suction port means for introducing refrigerant into a first said vane chamber during a suction stroke of said first vane chamber;

suction groove means for permitting refrigerant from said suction port means to pass from said first vane chamber to a second said vane chamber located immediately upstream of said first vane chamber with respect to the direction of rotation of said rotor during a first portion of said suction stroke of said first vane chamber; and

means positioned to be contacted by the said vane between said first and second vane chambers during a second portion of said suction stroke of said first vane chamber just prior to completion thereof, and thereby for restricting the passage of said refrigerant from said first vane chamber to said second vane chamber.

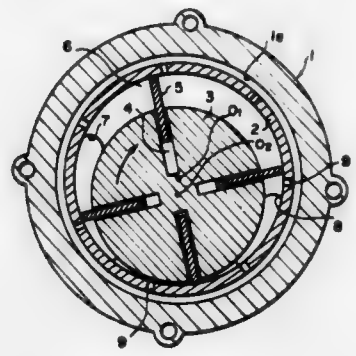
4,509,906

VANE TYPE ROTARY COMPRESSOR HAVING A WEAR RESISTANT RESIN COATING

Toshihiko Hattori; Yuji Akagi, and Hideo Kohara, all of Hiroshima, Japan, assignors to Toyo Kogo Co., Ltd., Hiroshima, Japan

Filed Mar. 30, 1984, Ser. No. 595,495
Claims priority, application Japan, Mar. 31, 1983, 58-56509
Int. Cl.[3] F04C *29/00*
U.S. Cl. 418—152 5 Claims

1. A rotary compressor comprising a housing having a cylindrical inner wall surface, a rotatable sleeve having an inner and outer surfaces and disposed in the housing for rotation about a first longitudinal axis, a rotor disposed in said sleeve for rotation about a second longitudinal axis which is offset from the first longitudinal axis, a plurality of vanes carried by said rotor to extend substantially in radial directions and having radially outer edges maintained in contact with the inner surface of the sleeve so that the sleeve is rotated as the rotor and the vanes rotate, at least one of the inner wall surface of the housing and the outer surface of the sleeve having a coating comprised of a wear-resistant resin dispersed with 10 to 120 volume part of a



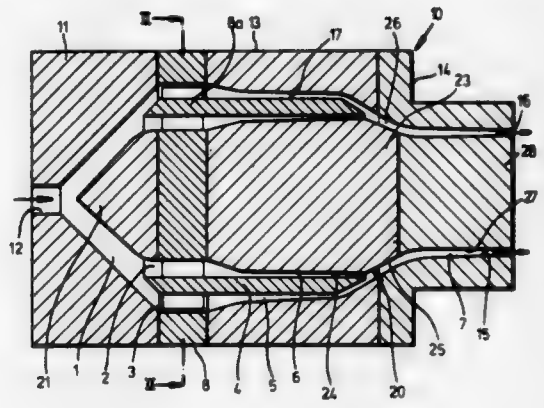
solid lubricant and 5 to 50 volume part of metal flakes for 100 volume part of the resin.

4,509,907

EXTRUSION HEAD FOR TUBULAR BODIES AND HOLLOW PROFILES

Heinz Ratheiser, Vienna, Austria, assignor to American Maplan Corporation, McPherson, Kans.

Filed May 13, 1983, Ser. No. 494,248
Int. Cl.[3] B29F *3/04*
U.S. Cl. 425—197 9 Claims



1. An extrusion head for the production of a hollow profile of a thermoplastic material comprising:

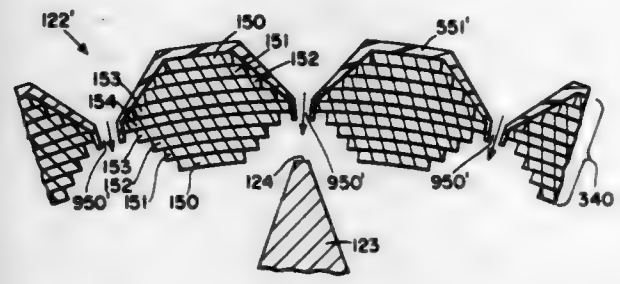
a housing formed with an inner mandrel and a hollow mandrel coaxial with said inner mandrel and defining in said housing a flow channel for said material which is annular over its entire length, said flow channel having an annular inlet at one axial end of said housing, an annular divergent portion downstream of said inlet for distributing said material outwardly, a pair of coaxial annular portions communicating with said divergent portion and subdividing said material into two annular streams, and an annular common portion receiving said annular streams and discharging said material in a continuous tubular strand at an annular mouth of said extrusion head at the opposite axial end thereof, said coaxial portions of the flow channel having a combined flow cross section greater than the flow cross section of said common portion, said flow channel progressively narrowing in cross section at least over the entire length thereof from said coaxial portions to said mouth.

4,509,908

APPARATUS FOR UNIFORMLY DEBOSSING AND APERTURING A RESILIENT PLASTIC WEB

William I. Mullane, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 230,488, Feb. 2, 1981, Pat. No. 4,441,952.
This application Aug. 2, 1983, Ser. No. 519,614
Int. Cl.[3] B29C *17/04*
U.S. Cl. 425—290 13 Claims



1. A forming cylinder for imparting an uninterrupted, uniformly apertured, fine scale three-dimensional pattern to a heated plastic film subjected to a fluid pressure differential while in contact with its surface, said cylinder comprising a tubular shaped structure exhibiting a three-dimensional continuum of capillary networks about its periphery, each of said capillary networks placing the outermost and innermost surfaces of said tubular member in exclusive fluid communication with one another, each of said capillary networks having an overall length greater than the maximum depth to which said film is drawn when subjected to said fluid pressure differential, each of said capillary networks also having a cross-sectional area which varies in size intermediate said outermost and innermost surfaces, said cross-sectional area reaching a minimum at a point intermediate said outermost and innermost surfaces and thereafter increasing in the direction of the innermost surface of said tubular member, said tubular member being supported at its innermost surface by a multiplicity of support members, each of said support members having a land which contacts the innermost surface of said tubular member, the width of said lands being insufficient to completely obstruct said capillary networks at their points of contact with the innermost surface of said tubular structure, said forming cylinder further including means for securing said multiplicity of support members in fixed relation to one another.

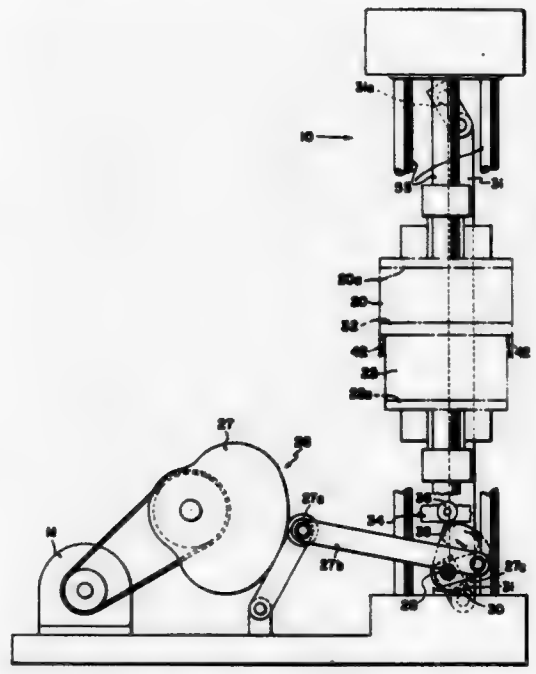
4,509,909

CLAMP MECHANISM FOR DIFFERENTIAL PRESSURE THERMOFORMER

Albert W. Arends, Gladwin, Mich., assignor to Leesona Corporation, Beaverton, Mich.

Filed Apr. 14, 1983, Ser. No. 484,858
Int. Cl.[3] B29C *17/00*
U.S. Cl. 425—388 8 Claims

1. In a differential pressure forming machine for forming articles in a web of thermoplastic material, said machine having a frame, a male mold and a female mold mounted on said frame for relative movement toward and away from each other, drive means including a rock shaft mounted on said frame for cyclically moving said molds toward and away from each other between a mold closed position wherein said molds are in opposed adjacent face-to-face relationship with each other and a mold open position wherein said molds are in spaced relationship to each other, said female mold having mold cavity defining means therein located within a given area on the face of said female mold facing said male mold, and said male mold having plug assist means adapted to project into said cavity means when said molds are in said mold closed position, means synchronized with said drive means for positioning an unformed section of a web of thermoplastic material between said molds when said molds are in said mold open position, and clamping means for clamping said section of said web against saidface of said female mold around the perimeter of said given area upon movement of said molds from said mold open position; the improvement wherein said clamping means comprises clamping ring means mounted on said frame for movement independently of said molds to and from a clamping position wherein said ring means is operable to clamp



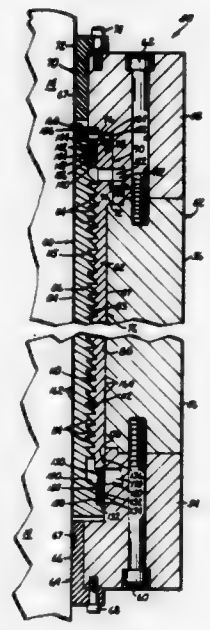
said web against said face of said female mold around the perimeter of said given area, and cam means mounted on said rock shaft engageable with cam follower means coupled to said clamping ring means for driving said clamping ring means to and from said clamping position in movement synchronized with the opening and closing of said molds.

4,509,910

COLUMN CLAMPING ASSEMBLY

Paul S. Petersen, Minnetonka, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Nov. 18, 1983, Ser. No. 553,363
Int. Cl.[3] B29F *1/00*
U.S. Cl. 425—451.9 20 Claims



1. A clamp assembly for securing a member from relative longitudinal movement with respect to a column comprises:

a clamp sleeve slidable longitudinally with respect to a column, the clamp sleeve having an outer surface and an inner surface having a cross-section mating the cross-section of said column for selectively engaging said column;

a housing portion adapted to be attached to a member and positioned about the clamp sleeve and having a first por-

tion mating with the clamp sleeve and which in combination with the outer surface of the clamp sleeve defines a sealed chamber therebetween surrounding the clamp sleeve;

means for limiting movement of the clamp sleeve longitudinally with respect to the housing portion including a plurality of longitudinally spaced, latterly engaged surfaces respectively on the outer surface of the clamp sleeve and on the first portion for the housing portion; and

means for selectively supplying pressurized fluid to the chamber between the housing and the clamp sleeve which causes the clamp sleeve to shrink so that the inner surface thereof engages the column to secure the clamp sleeve, housing portion and attached member with respect to the column.

4,509,911

COUPLING STRUCTURE AND METHOD AND APPARATUS FOR ITS MANUFACTURE

Larry A. Rosenbaum, Findlay, Ohio, assignor to Hancor, Inc., Findlay, Ohio

Division of Ser. No. 356,939, Mar. 11, 1982, Pat. No. 4,480,855. This application Jul. 11, 1983, Ser. No. 512,368

Int. Cl.³ B29C *17/07*; B29D *23/03*

U.S. Cl. 425—532 **4 Claims**



1. An apparatus for manufacturing a continuous length of internal plastic couplers interconnected end to end, the apparatus comprising:

extrusion means for extruding a softened plastic sleeve;

continuous molding means for molding the softened plastic sleeve into the continuous length of interconnected internal couplers, the continuous molding means including at least two runs of mold blocks which come together around the softened plastic sleeve for continuously blow-molding the softened plastic sleeve into the length of interconnected couplers, the mold blocks including:

a plurality of corrugation defining recesses disposed at regular intervals therealong and extending generally peripherally around the plastic sleeve for defining outward extending ribs centrally around each internal coupler,

a plurality of cleat defining recesses disposed to either side of the central corrugation defining recess for defining a plurality of outward projecting cleats,

a plurality of frangible portion defining recesses extending generally peripherally around the plastic sleeve, each frangible portion defining recess being disposed generally midway between adjacent central corrugation defining recesses, each frangible portion molding recess being relatively deep as compared to its longitudinal width such that a relatively short section of the softened plastic sleeve is spread over a relatively large surface area thinning the plastic received therein, and

a plurality of ridge defining recesses each partially circumscribing an associated cleat defining recess, each ridge defining recess extending in part between the associated cleat defining recess and the closest central corrugation defining recess.

4,509,912

COMBUSTION EFFICIENCY IMPROVING APPARATUS

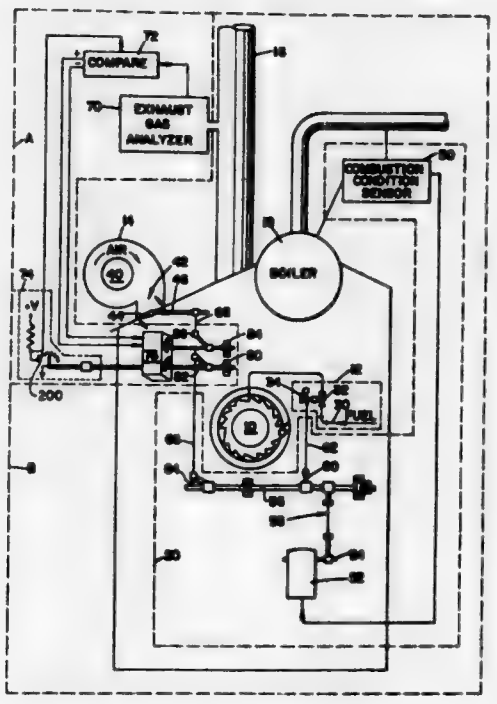
Robert A. VanBerkum, 117 Fernwood Rd., Chagrin Falls, Ohio 44022

Continuation-in-part of Ser. No. 162,628, Jun. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 949,899, Oct. 10, 1978, Pat. No. 4,264,297, which is a division of Ser. No. 750,647, Dec. 15, 1976, Pat. No. 4,157,238. This application Jan. 8, 1982, Ser. No. 338,080

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—76 **20 Claims**



1. A combustion apparatus comprising:

at least one combustion chamber adapted to oxidize fuel to produce heat and oxidation by-products at least partially in the form of exhaust gases;

a fuel supply for supplying fuel to said combustion chamber, said fuel supply including a fuel regulator for regulating the rate at which fuel is supplied to the combustion chamber;

an air supply for supplying air to said combustion chamber, said air supply including an air regulator for regulating the rate at which air is supplied to the combustion chamber;

a combustion control for controlling the combustion firing rate including controlling the fuel supply rate at which fuel is supplied to the combustion chamber and controlling the air supply rate at which air is supplied to the combustion chamber, said combustion control constraining said fuel supply rate and said air supply rate to a predetermined air-fuel volume relationship, said combustion control including a jackshaft, means for controlling angular displacement of the jackshaft in accordance with a selected combustion chamber load, a mechanical linkage means at least connecting the jackshaft with one of the fuel regulator and the air regulator;

an exhaust gas analyzer for analyzing at least a part of exhaust gases from the combustion chamber;

a comparing means for comparing results of the exhaust gas analysis with a preselected analysis and producing a difference signal indicative of a difference between the exhaust gas analysis and the preselected analysis;

a first rotatable shaft, the mechanical linkage means further connecting the jackshaft with the first shaft such that the first shaft is angularly displaced with angular displacement of the jackshaft to an angular position corresponding to the controlled combustion firing rate;

a second rotatable shaft which is connected by the mechanical linkage means with one of the fuel regulator and the air regulator for controlling the supply rate of said one of the

fuel and air supply in accordance with the angular position of the second shaft such that the fuel flow and airflow to the combustion chamber are constrained mechanically to a set air-fuel volume relationship and such that rotating the jackshaft changes the fuel and air supply rates while maintaining for each firing rate the preselected relationship between oxygen supplied for combustion and the supplied combustibles requirement for oxygen in the combustion process;

an angular displacement means connected with the first and second shafts such that angular displacement of the first shaft causes a corresponding angular displacement of the second shaft, the angular displacement means having an effective gear ratio which defines the correspondence between the angular displacement of the first and second shafts;

means for altering said predetermined air-fuel relationship by a selected percentage over all combusion firing rates and fuel supply rates, including a ratio adjusting means for adjusting the gear ratio between the first and second shafts by a percentage to alter said predetermined air-fuel relationship by a percentage, the ratio adjusting means being operatively connected with the angular displacement means and the comparing means for adjusting the gear ratio in response to a difference betwen the exhaust gas analysis and the preselected analysis at preselected firing rates to alter said predetermined air-fuel relationship in response to the comparison of the exhaust gas analysis with the preselected analysis such that the predetermined air-fuel relationship is altered by the same percentage over all combustion firing rates and fuel supply rates; and,

means for delivering the difference signal from the comparing means to the ratio adjusting means.

4,509,913

DEVICE FOR CONTROLLING THE AIR SUPPLY FOR A GAS BURNER

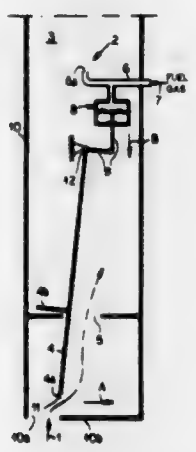
Werner Lorenz, Essen; Heinz Bathke, Borken, and Hans Sommers, Essen, all of Fed. Rep. of Germany, assignors to Gaswarme-Institut e.V. and Ruhrgas AG, both of Essen, Fed. Rep. of Germany

Division of Ser. No. 240,864, Mar. 5, 1981, Pat. No. 4,396,371. This application Jan. 4, 1983, Ser. No. 455,490

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010014

Int. Cl.³ F23N *1/00*

U.S. Cl. 431—90 **7 Claims**



1. A gas burner installation comprising:

housing means formed with an air intake at atmospheric pressure, a combustion chamber, a passage connecting said intake with said combustion chamber and a passage connected to said combustion chamber for discharging combustion gases;

a gas supply conduit opening into said housing in the region of said combustion chamber for supplying fuel gas thereto;

a flow control member cooperating with one of said passages and displaceable to control the air flow from said intake to said combustion chamber, said member being provided with means for displacing said member as a function of the air flow rate;

sensing means responsive to the gas flow in said conduit; and

means connected to said sensing means for displacing said member so as to maintain a substantially constant ratio of air to fuel gas supplied to said combustion chamber, said flow control member being formed as a rotatable flap, said passage between said intake and said combustion chamber being provided with a flow constricting disk connected to said flap, said sensing means including a manometer responsive to a gas pressure differential and connected to said disk.

4,509,914

APPARATUS FOR THE COMBUSTION OF LIQUID FUELS IN THE GASEOUS STATE

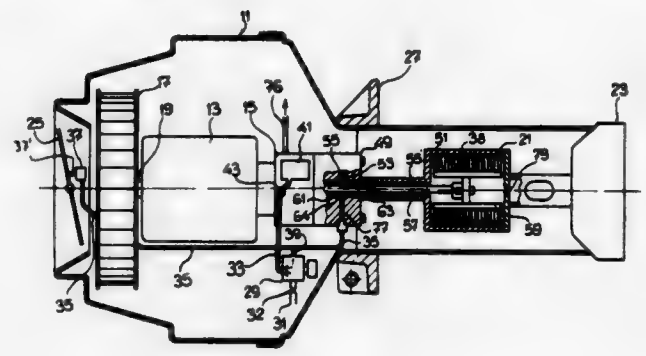
Adolf Frick, Balzers, Liechtenstein, assignor to Stoechio-Matic AG, Schaan, Liechtenstein

Filed Dec. 8, 1982, Ser. No. 447,848

Claims priority, application Switzerland, Dec. 14, 1981, 7960/81

Int. Cl.³ F23D *11/38*

U.S. Cl. 431—121 **3 Claims**



1. An apparatus for preventing the discharge of gasified fuel from an output nozzle of a gasification chamber of a fuel burning burner when said burner is switched off, comprising:

(a) a gasification chamber;

(b) heating means proximate said gasification chamber for gasifying liquid fuel in said gasification chamber;

(c) means for communicating liquid fuel to a first port of said gasification chamber;

(d) pump means having an input port selectively connectable to a second port of said gasification chamber and to a source of liquid fuel; and,

(e) valve means for selectively terminating the supply of liquid fuel to said pump means and connecting said second port of said gasification chamber to said input port of said pump, thereby sucking said gasified fuel from said gasification chamber.

4,509,915

LIQUID FUEL COMBUSTION APPARATUS

Hirosato Ito, Osaka, Japan, assignor to Osaka Gas Company Limited, Osaka, Japan

Filed Sep. 9, 1982, Ser. No. 416,249

Claims priority, application Japan, Sep. 21, 1981, 56-150331; Sep. 21, 1981, 56-150332

Int. Cl.³ F23D *11/00*

U.S. Cl. 431—215 **2 Claims**

1. A combustion apparatus comprising:

a combustion chamber;

a burner adapted to be installed in an opening in said combustion chamber, said burner comprising:

an external casing having a peripheral wall;

an internal casing having a peripheral wall and an outer end wall closing said internal casing peripheral wall, said internal casing being positioned within said exter-

nal casing and defining therewith a secondary air channel; and

a fuel spraying cylinder extending through said outer end wall and positioned within said internal casing and defining therewith a primary air channel;

a source of liquid fuel;

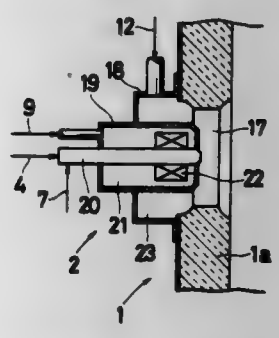
a source of gaseous fuel;

means for supplying liquid fuel from said liquid fuel source into said fuel spraying cylinder;

means for supplying gaseous fuel from said gaseous fuel source into said fuel spraying cylinder and thereby atomizing said liquid fuel, thus forming a mixture of atomized liquid fuel and gaseous fuel;

means for generating oxygen-enriched air, said generating means comprising an oxygen permselective membrane, and duct means for supplying air to an upstream side of said membrane, whereby oxygen-enriched air passes through said membrane to a downstream side thereof;

means for supplying said oxygen-enriched air as primary air from said downstream side of said membrane through said



outer end wall of said internal casing and into said primary air channel, and a fixed vane on the exterior of said fuel spraying cylinder, whereby said primary air travels along said fuel spraying cylinder and is agitated by said fixed vane, and whereby said mixture burns first in said combustion chamber with the thus agitated said primary air;

means for supplying atmospheric air as secondary air through said peripheral wall of said external casing and into said secondary air channel, whereby said secondary air spreads out into the entire interior of said external casing and is supplied to said opening, and whereby remaining of said mixture then burns in said combustion chamber with said secondary air;

exhaust means for withdrawing exhaust gases from said combustion chamber; and

means for passing said air in said duct means in heat exchange relation with said exhaust gases, thereby increasing the temperature of said air supplied to said upstream side of said membrane, and thereby increasing the amount of oxygen of said oxygen-enriched air at said downstream side of said membrane.

4,509,916

DEVICES FOR PRODUCING IGNITION SPARKS WHEN FALLING ON A PYROPHORIC FLINT

Guy Laforest Le Boudec, Barcelona, Spain, assignor to Laforest, S.A., Barcelona, Spain

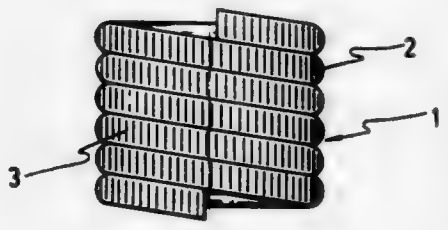
Filed Jan. 11, 1984, Ser. No. 570,026

Claims priority, application Spain, Mar. 11, 1983, 520.550

Int. Cl.³ F23Q *1/02*

U.S. Cl. 431—273 **1 Claim**

1. Improvements in devices for producing ignition sparks when falling on a pyrophoric flint, essentially characterised by a coil spring having one or various coils, which is provided with a pitting in a transversal or inclined direction made on the outer longitudinal line of the coils thereof, said pitting being formed of "saw-teeth" type projections which protrude from the original core of the coil, thereby forming on the outer surface of the coil spring cutting projections which, when falling on a pyrophoric flint applied to the outside of the coil spring and when said coil spring turns about its axis, produce a



tangential hauling of the pyrophoric flint thereby emitting the ignition spark.

4,509,917

DEVICE FOR REMOVING GRATE SCREENINGS

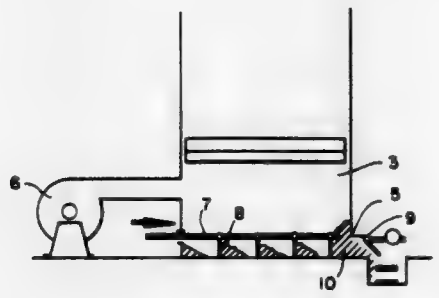
Hans-Jürgen Ubert, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,386

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3217969

Int. Cl.³ F23J *1/02*

U.S. Cl. 432—75 **2 Claims**



1. A device for removing grate screenings from a cooling chamber comprising:

a transfer channel beneath the grate;

a removal opening in the side of said cooling chamber which is fitted with a non-return door whereby air pressure is maintained;

a means for removing the grate screenings horizontally through said transfer channel comprising a thrust beam provided with scoops where said scoops fold about an articulated suspension on the return stroke; and

a plug of grate screenings formed in front of the removal opening which aids in maintaining air pressure.

4,509,918

APPARATUS FOR THE ORTHODONTIC TREATMENT OF TEETH

William J. Clark, Lundin Lea, Leven Rd., Lundin Links, Fife, KY8 6AJ, Scotland

Filed Apr. 22, 1983, Ser. No. 487,929

Claims priority, application United Kingdom, Apr. 22, 1982, 8211707; Mar. 7, 1983, 8306192

Int. Cl.³ A61C *7/00*

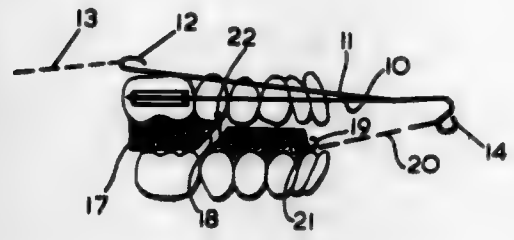
U.S. Cl. 433—5 **14 Claims**

1. Apparatus for the orthodontic treatment of teeth for the correction of malocclusion of a patient having upper and lower dental arches, said apparatus comprising:

(a) a face bow comprising an inner bow, an outer bow adapted when in use to be located externally of the patient for the application of traction thereto, and forwardly projecting first attachment means disposed externally of the patient;

(b) first and second securing means, said first securing means for securing said face bow to one of the upper or lower

dental arches of the patient, said second securing means secured to the other dental arch and comprising second attachment means disposed rearwardly of said first attachment means; and



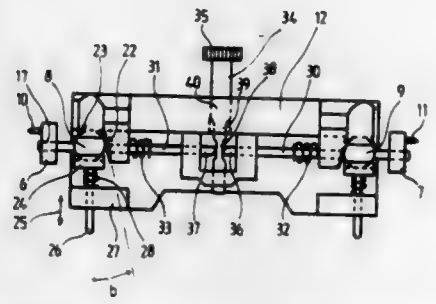
(c) elastic traction means connected between said first and second attachment means for effecting inter-maxillary traction between the upper and lower dental arches, while exerting a rearwardly directed force on said first securing means and a forwardly directed force on said second securing means.

4,509,919

ARTICULATOR FOR THE DENTAL ART

Pierre Gerbellot-Barrillon, Cluses, France, assignor to Fabrications Automatiques Gerbelot, Cluses, France

Filed Jan. 10, 1984, Ser. No. 569,768
Claims priority, application France, Jan. 12, 1983, 83 00793
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—57 **13 Claims**



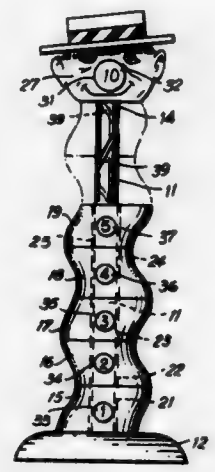
1. An articulator apparatus for the dental art, comprising a lower member whose front part forms a lower platen and supports an incisive plate, and whose rear part comprises two legs supporting two condylar balls forming ball joints on each of which is articulated a upper member comprising a rear hub having appropriate housings for housing the condylar balls, the upper member comprising an upper platen integral with the hub and whose front part receives an incisive rod bearing on the incisive plate, the housings of the hub being limited by a flat upper guide ramp slanting forwardly by an angle reproducing the condylar slope, by a lateral ramp and by a rear wall allowing the transverse movements of the condylar balls, the articulator further comprising means for selectively obtaining locking thereof in centered relation, wherein the centered relation locking is provided by means of two rods sliding transversely in the hub, moveable between a closed up position in which they release the condylar balls, allowing the immediate lateral displacement of the upper member due to the fact that the spacing between the condylar balls is greater than the spacing between the lateral ramps and a spaced apart position in which the rods bear without play against the condylar balls symmetrically with relation to the median longitudinal plane of the upper member, a control member for operating the rods and holding them in one or other position.

4,509,920

EDUCATIONAL TOY FOR TEACHING ALPHANUMERIC SEQUENCES

Robert Kaufmann, 84-11 168th Pl., Jamaica, N.Y. 11432

Filed May 7, 1984, Ser. No. 607,814
Int. Cl.³ G09B *1/06*
U.S. Cl. 434—159 **17 Claims**



1. A toy, comprising

support means having a rod-like support member and base means for maintaining said support member in substantially upright position, said support member having an axis, axial length, guide means extending along said length and a free top end at its farthest distance from said base means;

a plurality of body members each having an axial bore formed therethrough whereby each of said body members is removably slidably mounted on said support member and each having directing means for cooperating with said guide means in a manner whereby each of said body members rotates about the axis of said support member in a first direction of rotation when it slides on said support member toward said base means and in a second direction of rotation, opposite said first direction, when it slides on said support member away from said base means thereby providing variable motion of said body members to interest young children playing with said toy; and

a top member having an axial bore formed therein whereby said top member is removably slidably mounted on said support member and having directing means for cooperating with said guide means at said top end of said support member in a manner whereby said top member rotates about the axis of said support member in said first direction of rotation when it slides on said support member toward said base means and in said second direction of rotation when it slides on said support member away from said base means thereby providing variable motion of said top member to interest young children playing with said toy.

4,509,921

METHOD OF USING SKI TRAINING HALTER

Sue Buchheister, P.O. Box 80, and Ann Poulson, P.O. Box 132, both of Fraser, Colo. 80442

Division of Ser. No. 236,671, Feb. 20, 1981, Pat. No. 4,424,040. This application Dec. 19, 1983, Ser. No. 562,989
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—253 **1 Claim**

1. The method of restraining and controlling one skier on one set of skis by a second skier on a separate set of skis, comprising the steps of:

positioning the second skier behind the first skier a sufficient distance such that the respective first and second skier's skis cannot contact each other;

extending one elongated flexible member from the second skier to the first skier's right hip and across the first skier's

front abdomen to the first skier's left thigh and anchoring it there;

extending another elongated flexible member from the second skier to the first skier's left hip and across the first skier's front abdomen to the first skier's right thigh and anchoring it there;

applying rearward forces on both of said flexible members equally to restrain the first skier's forward motion;



applying a greater rearward force on the right flexible member than the left flexible member to induce the first skier to turn right; and

applying a greater rearward force on the left flexible member than the right flexible member to induce the first skier to turn left.

4,509,922

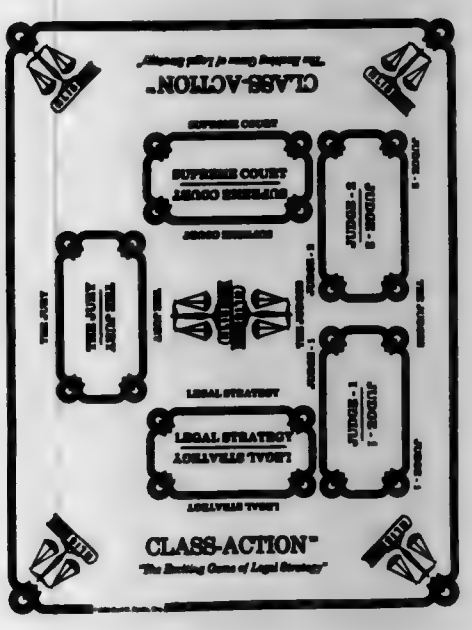
LEGAL EDUCATIONAL GAME AND METHOD OF TEACHING LEGAL SUBJECT MATTER

Carl W. Battle, 2681 Mull Ave., Akron, Ohio 44321

Filed May 14, 1984, Ser. No. 610,025

Int. Cl.[3] G09B *19/00;* A63F *9/18*

U.S. Cl. 434—322 **4 Claims**



1. A legal educational game for minors adaptable for teaching a variety of legal topics essentially comprising in combination

(1) a plurality of sets of cards each set being of a different color, wherein said cards contain printed thereon simple legal words or phrases, and each of said sets of cards individually represent a segment of the judicial system and contain printed thereon words or markings indicating said segment of the judicial system, said segments selected from the group consisting of the jury, judge, supreme court, lawyer and legal strategy;

(2) a gameboard means, wherein said gameboard contains a plurality of discrete and discontinuous demarcations which represent segments of the judicial system, and are used for the placement and holding said cards; and

(3) printed instructional means separate from said gameboard, whereby a plurality of participants pull one or more cards from one or more of said sets of cards, and use the simple legal words or phrases printed on the pulled cards to pull additional cards according to a predetermined non-random system, wherein said simple legal words or phrases have the simulated effect in said game as in an actual court case.

4,509,923

MARINE JET PROPULSION UNITS

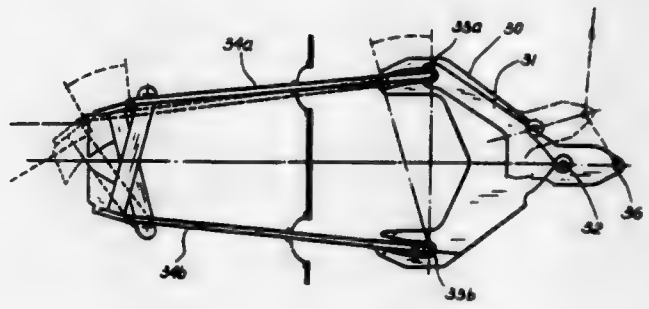
Robert S. Turnbull, Christchurch, New Zealand, assignor to C.W.F. Hamilton & Company Limited, Christchurch, New Zealand

Filed Nov. 10, 1981, Ser. No. 320,149

Claims priority, application New Zealand, Dec. 9, 1980, 195791

Int. Cl.[3] B63H *11/10*

U.S. Cl. 440—43 **7 Claims**



1. Hydraulic jet propulsion apparatus incorporating steering means comprising two steering deflectors diametrically opposed and operable to deflect horizontally in either direction a jetstream emerging from a discharge nozzle, each said steering deflector being pivotally mounted, each pivot being located adjacent to the discharge nozzle but forward of the mergence of the jetstream from the discharge nozzle and on the opposite side of the discharge nozzle to the deflector with the inner surface of each deflector (on the side adjacent to the jetstream) being a surface of revolution about an axis which is close to the pivot axis for the deflector and a control mechanism to control of the movement of said steering deflectors so that only one steering deflector is moved into the path of the jetstream at a time while the other steering deflector remains stationary or nearly stationary and clear of the jetstream and the steering deflector acting upon the jetstream has totally withdrawn before the other steering deflector is activated.

4,509,924

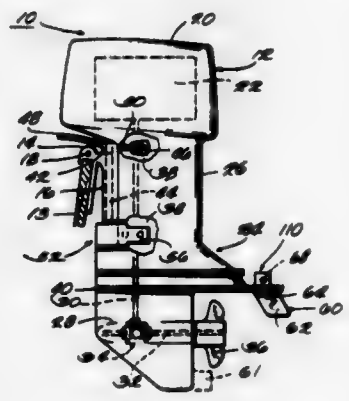
CONTROL SYSTEM FOR TORQUE CORRECTING DEVICE

Charles B. Hall, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 20, 1982, Ser. No. 451,438

Int. Cl.[3] B63H *21/26*

U.S. Cl. 440—51 **12 Claims**



1. A marine propulsion device comprising a propulsion unit, a transom bracket adapted to be fixedly connected to a boat

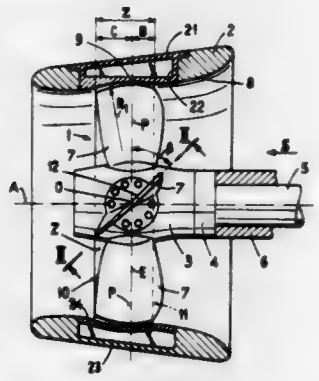
transom, a swivel bracket mounted on said transom bracket for pivotal movement about an axis which is horizontal when said transom bracket is boat mounted, king pin means mounted on said swivel bracket for pivotal steering movement of said propulsion unit, mounting means for mounting said propulsion unit on said king pin means and permitting limited rotational movement of said propulsion unit relative to said king pin means, torque correcting means, means for mounting said torque correcting means on said propulsion unit for pivotal movement about an axis transverse to said horizontal axis, and linkage means for displacing said torque correcting means about said transverse axis in response to rotational movement of said propulsion unit relative to said king pin means.

4,509,925

MARINE VESSEL PROPELLER WITH NOZZLE

Wolfgang Wührer, Ravensburg, Fed. Rep. of Germany, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed May 23, 1983, Ser. No. 496,926
Claims priority, application Switzerland, Jun. 1, 1982, 3352/82
Int. Cl.³ B63H *5/14*
U.S. Cl. 440—67 **18 Claims**



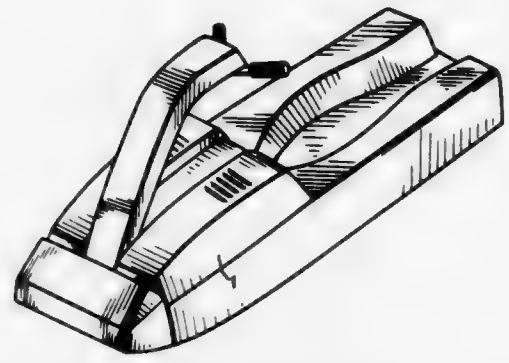
1. A marine vessel propeller with nozzle through which flows water comprising:
a propeller defining a propeller axis;
vanes each defining a vane axis and each pivotable about their corresponding vane axis into a selectable predetermined angular position to form a predetermined angle of attack;
said vane axes intersecting at an intersection point located on said propeller axis;
each said vane extending to both sides of said vane axis and forming an outer edge defined by a domed outer surface;
said domed outer surface substantially forming portions of a spherical surface possessing a central point and a radius;
said central point being located at said intersection point;
said nozzle comprising an inner surface provided with a substantially spherical zone possessing a radius and a central point which is also located at said intersection point;
said radius of said spherical zone being greater than said radius of said spherical surface of said domed outer surface in order to form a predetermined gap;
said spherical zone extending upstream and downstream of a circular intersection line formed by the intersection of a surface described by said vane axes during rotation of said vanes about said propeller axis and said spherical zone;
said domed outer surface of each pivotable vane and said spherical zone of said nozzle which form therebetween said predetermined gap coacting with one another such as to maintain said predetermined gap essentially constant throughout the region of said spherical zone irrespective of the angular position assumed by said pivotable vane;
said domed outer surface of each said vane possessing ends and said spherical zone provided at said inner surface of said nozzle forming margins; and
said ends and said margins substantially coinciding at the largest vane angle of attack.

4,509,926

SUPER VENTILATOR JET SKI ENGINE HOOD (BOAT)

Clayton J. Jacobson, Box 5338, Parker, Ariz. 85344

Filed Feb. 25, 1982, Ser. No. 352,084
Int. Cl.³ B63B *17/00*
U.S. Cl. 440—89 **1 Claim**



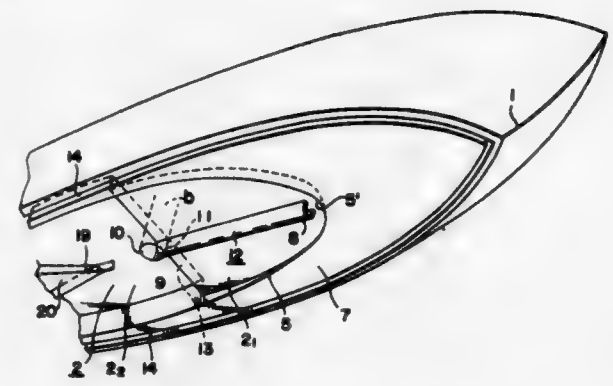
1. In a waterborne vehicle provided with a upwardly open engine compartment and a releasable hood characterized by a forward edge and lateral sides and dimensioned to form an upper closure for said engine compartment the improvement comprising;
a generally horizontal peripheral duct structure formed on the interior of said hood, characterized by lower collection cavities (traps) communicating with lateral raised aspiration cavities along the sides of said hood, said collection cavities being deployed at a lower level that said aspiration cavaties to collect water therefrom in the course of operation of said vehicle, each collection cavity in conjunction with the aspiration cavities transverse the hood structure and terminate on the opposite side of said hood;
drainage openings formed in said collection cavities for draining water collected therein;
ventilation openings formed in said hood in alignment over said lateral cavities;
an aspiration conduit connected to communicate with said lateral cavaties and said engine compartment.

4,509,927

BOTTOM EXHAUST HIGH SPEED BOAT

Akira Ikeda, 22-6, 4-Chome, Sonan, Sagamihara-shi, Kanagawa-ken, Japan

Filed Mar. 9, 1983, Ser. No. 473,749
Claims priority, application Japan, Mar. 9, 1982, 57-35747
Int. Cl.³ B63B *1/34*
U.S. Cl. 440—89 **4 Claims**



1. A bottom exhaust speed boat comprising:
a hull having a bow, a keel and a bottom;
an engine in said hull and having an exhaust pipe;

a grooved portion recessed in said hull bottom and symmetric about said hull keel line, said grooved portion being separated from the remainder of said bottom by a first stepped surface, said exhaust pipe opening into said grooved portion, whereby said grooved portion becomes filled with exhaust gas; and

a duct fixed to the surface of said hull and extending between said opening of said exhaust pipe and a portion of said grooved portion closest to said bow, said duct being open at both ends,

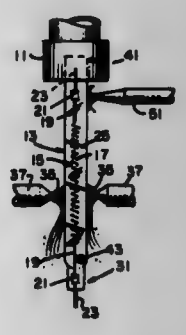
whereby exhaust gas from said exhaust pipe is transported through said duct to said portion closest to said bow.

4,509,928

METHOD OF MAKING HIGH PRESSURE TUNGSTEN HALOGEN LAMPS

Merle E. Morris, Lexington; Steven L. Meade, Winchester, and Lawrence M. Rice, Lexington, all of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 30, 1983, Ser. No. 480,529
Int. Cl.[3] H01J *9/395*
U.S. Cl. 445—27 22 Claims



1. A method of making a lamp having a tubular envelope with substantially regular and smooth outer surfaces, said method comprising:

providing a tubular member of vitreous material having first and second opposed open ends and substantially regular and smooth outer surfaces;

orienting a filament within said tubular member;

sealing said first opposed open end of said tubular member;

flowing a predetermined quantity of gas mixture including an inert gas and a halogen compound within said tubular member through said second open end;

cooling said predetermined quantity of said gas mixture within said tubular member to form a pool of liquified gas within said tubular member capable of producing a predetermined internal pressure within said tubular member upon sealing of said tubular member and gasifying of said pool, said cooling of said gas mixture creating a vacuum within said tubular member;

flowing a quantity of nitrogen gas established at a pressure of substantially one atmosphere into said tubular member through said second open end; and

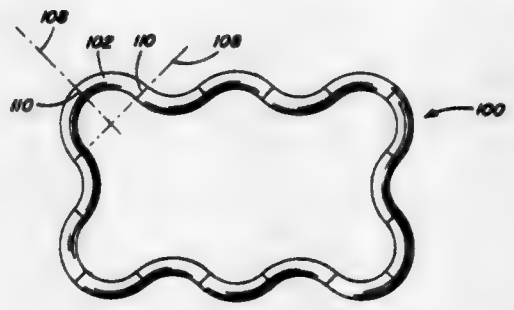
sealing said second open end of said tubular member having said pool of liquified gas therein to form said tubular envelope, said liquified pool thereafter gasifying within said envelope to produce said predetermined internal pressure within said envelope, the overall internal pressure within said sealed envelope being substantially equal to the sum of said one atmosphere of said nitrogen gas and said predetermined internal pressure produced by said pool of liquified gas, the combined atmosphere contained within said sealed envelope including said inert gas, halogen, and nitrogen.

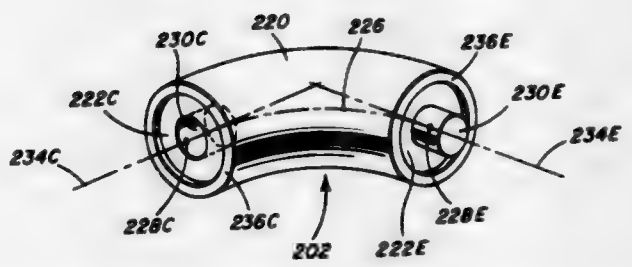
4,509,929

ANNULAR SUPPORT DEVICE WITH PIVOTAL SEGMENTS

Richard E. Zawitz, 109 Alton St., San Francisco, Calif. 94115

Filed Aug. 27, 1982, Ser. No. 412,118
Int. Cl.[3] A63H *33/12*
U.S. Cl. 446—102 20 Claims





1. A continuous annular device which may be twisted into an infinite variety of configurations, comprising:

a plurality of serially connected rigid segments having a first end pivotally secured to one of the two adjacent segments, and a second end pivotally secured to the other one of the two adjacent segment, permitting each segments to be twisted relative to the two adjacent segments causing the annular device to assume any one of an infinite number of configurations, each configuration having a continuous center line therearound;

a first end face on the first end of each segment, which end face is normal to the center line of the annular device defining a first interface plane for each segment, the first end of each segment forming a first interface with the cooperating end of the one of the two adjacent segments along the first interface plane with a pivot axis therethrough normal to the first interface plane;

a second end face on the second end of each segment, which end face is normal to the center line of the annular device defining a second interface plane for each segment, the second end of each segment forming a second interface with the cooperating end of the other one of the two adjacent segments along the first interface plane with a pivot axis therethrough normal to the first interface plane;

a first engagement means on the first end face of each segment; and

a second engagement means on the second end face of each segment for engaging the first engagement means on the other one of the two adjacent segments for securing the plurality of segments together;

the first engagement means is a cylindrical central extension means extending from the first end face;

the second engagement means is a cylindrical central channel means extending into the second end face for pivotally engaging the extension means on the other one of the two adjacent segments,

the extension means has an outward extending radial engagement means for engaging the channel means to pivotally secure the adjacent segments together;

the channel means has an outwardly extending radial surface for engaging the radial engagement means on the extension means;

the center axis of the cylindrical extension means is coinci-

dent with the center axis of the cooperating cylindrical channel means on the one adjacent segment forming a common pivot axis;

the continuous center line around the annular device is a line of radial symmetry around the annular device;

the coincident center axes are also coincident with the center line of radial symmetry at the interface plane between adjacent segments; and

both the first end face and the second end face on each segment have a central depression with a raised circumferential rim.

4,509,930

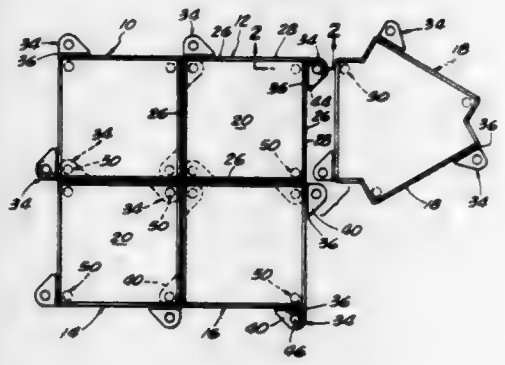
MODULAR STRUCTURES HAVING HINGE AND MATING PIN FASTENING MEANS

Lothar L. Schweigert, 3609 Cody Rd., Sherman Oaks, Calif. 91403, and Heimo A. Knaus, 1219 Via Sendero, Escondido, Calif. 92025

Continuation of Ser. No. 899,524, Apr. 24, 1978, abandoned. This application Nov. 28, 1979, Ser. No. 98,268

Int. Cl.³ A63H *33/08*

U.S. Cl. 446—109 **11 Claims**



1. A fastening device for releasably connecting one member to another, the combination including:

a. a member having surfaces terminating in a member edge,

b. a tab extending outwardly from but not overlapping said member edge, said tab having a tab edge positioned adjacent to said member edge, said tab being offset from the plane of said member and having an opening therethrough,

c. hinge means positioned where said member edge and said tab edge are adjacent to each other for hinging together said member and said tab, said hinge means permitting said tab to swing from planar alignment of said tab with said member, into various angular positions,

d. a pin extending and supported from the surface of said member, said pin being positioned inwardly from said member edge so that said pin is offset along said member edge from which said tab extends, and

e. said pin and said tab being adapted to be connected to respective tab and pin means similarly arranged on another member in order to secure said members together.

4,509,931

POWERED TOY VEHICLE WITH PIVOTABLE AXLE MOUNTING

Gérard L. Lambert, and Gary M. Saffer, both of Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

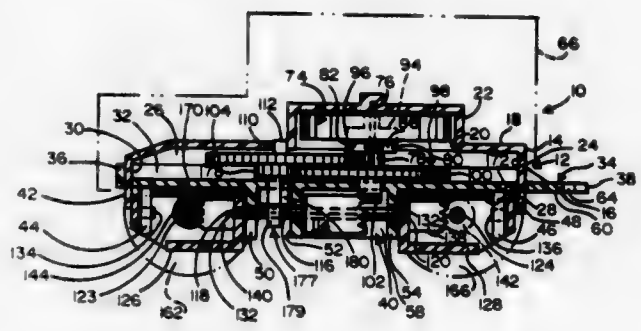
Filed Jan. 5, 1983, Ser. No. 455,686

Int. Cl.³ A63H *29/20, 17/26*

U.S. Cl. 446—462 **4 Claims**

1. In combination with a toy vehicle having a chassis, motion-imparting apparatus mounted in said chassis, said motion-imparting apparatus having an output member, said vehicle including an axle, at least one ground-engaging wheel coupled to said axle for rotation thereby, and means for coupling said axle to said output member for rotation thereby, the improvement which comprises;

means for coupling said axle to said chassis in a manner such that said axle is free to pivot about an axis normal to the major axis of said axle, and wherein said means for coupling said axle to said output member includes a drive shaft rotatably mounted to said chassis normal to said axle, and wherein said means for coupling said axle to said chassis, comprises:



a journal box for rotatably receiving said axle; a first journal bearing pivotably coupling said journal box to said drive shaft intermediate its ends; and

a second journal bearing pivotably coupling said journal box to said chassis on an axis coinciding with the major axis of said drive shaft.

4,509,932

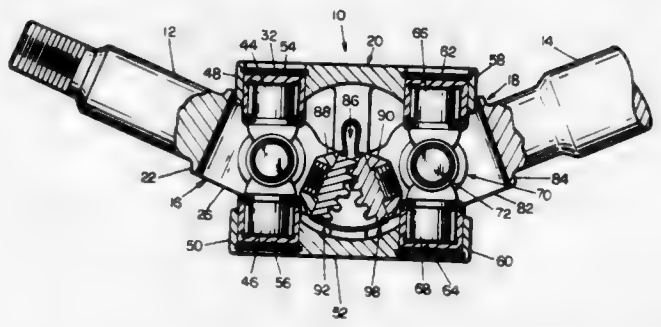
DOUBLE CARDAN UNIVERSAL JOINT WITH IMPROVED CENTERING MEANS

Warren W. Weible, Defiance, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Continuation of Ser. No. 254,270, Apr. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 040,774, May 21, 1979, abandoned. This application Jun. 8, 1983, Ser. No. 501,051

Int. Cl.³ F16D *3/32*

U.S. Cl. 464—109 **20 Claims**



1. In a double Cardan type universal joint for connecting two shafts, said universal joint comprising a first end yoke, a second end yoke, a connecting yoke between said first end yoke and said second end yoke, a first cross having two aligned trunnions rotatably held by said first end yoke and having two additional aligned trunnions rotatably held by said connecting yoke, a second cross having two aligned trunnions rotatably held by said second end yoke and having two additional aligned trunnions rotatably held by said connecting yoke, and centering means between said first yoke and said second yoke, the improvement comprising said centering means being at least one first circular tooth and a central tooth which is thicker in transverse cross section than the circular tooth with a first circular groove therebetween, said teeth and groove being carried by said first end yoke and located on a center line coaxial with the axis of rotation of said first end yoke, said teeth and groove also being disposed in the shape of a segment of a sphere with the center being on the point where the axes of the trunnions of said first cross intersect, and second circular teeth, a second circular groove therebetween, and a central recess which is wider in transverse cross section than said second groove, said second teeth, said second groove, and said recess being carried by said second end yoke and located on a

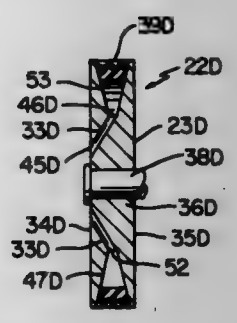
center line coaxial with the axis of rotation of said second end yoke and being disposed in the shape of a segment of a sphere with the center being on the point where the axes of the trunnions of said second cross intersect, outer portions of said teeth having generally involute profiles, said involute profiles being formed on base circles having radii which are from zero to 25% of the tooth height less than the radii of pitch circles of the teeth.

4,509,933

BELT PULLEY AND METHOD OF MAKING THE SAME

Joseph P. Miranti, Jr., Porter Township, Christian County, and James K. Brew, Greene County, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Jun. 1, 1982, Ser. No. 383,845
Int. Cl.³ F16H *57/04*
U.S. Cl. 474—93 **10 Claims**



1. In a belt pulley having a hub and a peripheral groove for receiving part of an endless belt therein that is to drive said pulley or be driven thereby whereby said pulley is adapted to be rotated about the axis of said hub, said groove of said pulley defining an annular bottom surface of said groove and a pair of spaced apart angled inside surfaces of said groove that join with said bottom surface and diverge away from each other as said angled surfaces extend away from said bottom surface, said angled surfaces being adapted to be engaged by opposed angled sides of said belt in such a manner that a bottom of said belt will be spaced from said bottom surface, said pulley having opposed outer sides, said pulley having means defining at least one passage means provided with an inlet interrupting one of said opposed outer sides adajcent said hub and an outlet interrupting said bottom surface of said peripheral groove whereby fluid passing through said passage means from said inlet to said outlet thereof will tend to cool said pulley and said belt as said pulley rotates about said axis, the improvement wherein said passage means comprises at least one substantially straight bore connecting the inlet and outlet and having a centerline, said bore being arranged such that upon extension of said centerline through the outlet it will intersect one of said angled side surfaces in close proximity to said bottom surface.

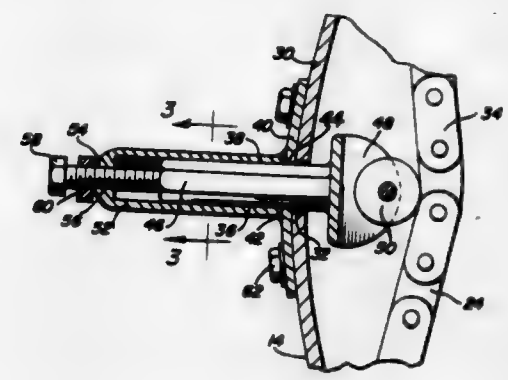
4,509,934

EXTERNAL TRANSFER CASE CHAIN SLACK ADJUSTMENT STRUCTURE

Donald G. Balius, 1003 Caillavet St., Biloxi, Miss. 39530

Filed Aug. 3, 1982, Ser. No. 404,842
Int. Cl.³ F16H *7/12*
U.S. Cl. 474—136 **1 Claim**

1. In combination with a vehicle of the type provided with a driving transfer case including a pair of generally parallel shafts having aligned sprocket wheels mounted thereon drivingly connected by a drive chain trained about said sprocket wheels and wherein said shafts are journalled from a housing enclosing said sprocket wheels and chain and including a downwardly facing lower housing wall generally paralleling a straight path extending between corresponding peripheral portions of said sprocket wheels and along which a reach of said chain extends, a transfer case chain slack adjustment structure, said structure including an elongated sleeve having one open end and a transverse mounting plate mounted on said open end of said sleeve and equipped with an opening formed therein registered with the sleeve open end, the other end of said sleeve being closed, said housing wall having an opening formed therein registered with a midportion of said chain reach, said mounting plate being mounted on the outer surface of said wall portion in position with said openings registered, an elongated shank member projecting through said openings and including a first end slidingly disposed in said sleeve and a second end disposed in said housing, said second end having a roller journalled therefrom for rotation about an axis extending transversely of said shank member and paralleling said shafts, means operably connected between said sleeve and shank



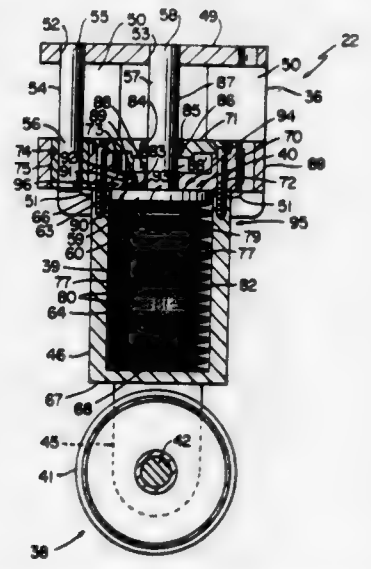
member first end adjustably limiting longitudinal displacement of said first end of said shank member toward the closed other end of said sleeve, said roller being rollingly engaged with and inwardly deflecting the midportion of said chain reach, said sleeve and shank member including coacting means guiding said shank member from said sleeve against angular displacement of said shank member about its longitudinal axis relative to said sleeve, said other end of said sleeve having a threaded bore formed therethrough, said means operably connected between said sleeve and shank comprising a bolt threaded through said bore and having an inner end abuttingly engaged with the opposing end of said shank member.

4,509,935

BELT TENSIONER AND METHOD OF MAKING THE SAME

Randy C. Foster, Springfield; Roger G. Hackard, Sparta, and Leslie B. Wilson, Reeds Spring, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Aug. 27, 1981, Ser. No. 296,697
Int. Cl.³ F16H *7/12;* F16D *57/00;* F16F *9/14, 9/48*
U.S. Cl. 474—138 **3 Claims**



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engag-

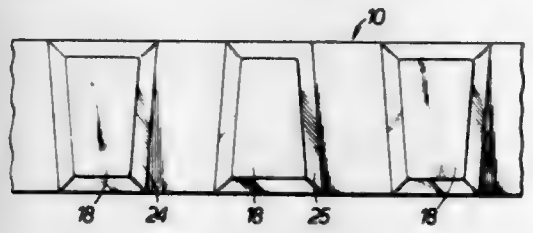
ing means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and fluid dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means, said dampening means comprising a piston means and a cylinder means having said piston means and a fluid therein, said piston means defining two chambers for said fluid in said cylinder means on opposite sides of said piston means and having a piston rod interconnected to one of said opposed sides thereof and extending through one of said two chambers, said piston means and cylinder means having means that fluidly interconnects said two chambers together in a restrictive manner to provide a dampening effect upon relative movement between said piston means and said cylinder means upon said movement of said belt engaging means relative to said support means, the improvement comprising means defining an accumulator chamber remote from said two chambers, said piston rod being the only piston rod carried by said piston means and not extending through the other of said two chambers, passage defining means leading from said one of said two chambers of said cylinder means to said accumulator chamber so that said accumulator chamber can compensate for the volume changes created in said one chamber by said piston rod that are different from the volume changes created in said other chamber during said relative movement between said piston means and said cylinder means, said passage defining means having a fluid flow restricting first passage means that interconnects said one of said two chambers to said accumulator chamber and a fluid flow non-restricting second passage means that interconnects said one of said two chambers to said accumulator chamber, and one-way check valve means in said second passage means that closes said second passage means only when said belt engaging means is being moved in one direction relative to said support means whereby said dampening means dampens the movement of said belt engaging means with a greater restricting force when said belt engaging means is being moved in said one direction relative to said support means than the restricting force of said dampening means when said belt engaging means is being moved in the opposite direction relative to said support means.

4,509,936

TOOTHED BELT DRIVES

Alexander Müller, Höxter, Fed. Rep. of Germany, assignor to Arntz-Optibelt KG, Höxter, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,497
Int. Cl.³ F16H *7/00*
U.S. Cl. 474—148 **3 Claims**



1. A toothed belt drive including

a strip-like belt having side edges and teeth projecting from a surface of said belt, said teeth being trapezoidal in plan and in cross-section perpendicular to the direction of motion of said belt, and

at least one belt pulley having recesses defined therein which are of substantially trapezoidal shape corresponding to the shape of said belt teeth and are adapted to mesh with said belt teeth,

said belt teeth each having a trapezoidal base in contact with the surface of said strip-like belt, said trapezoidal base having smaller and longer opposite parallel side edges which alternately extend parallel to a respective one of said side edges of said belt, and

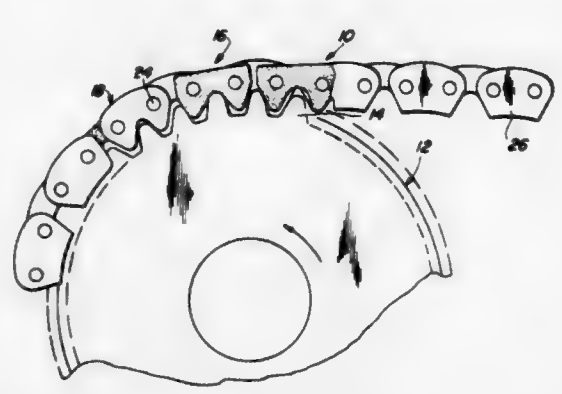
said recesses in said belt pulleys being laterally open at one side which is adjacent the larger side edge of the base of a tooth engaged therein, the other side of said recess being closed.

4,509,937

POWER TRANSMISSION CHAIN

Timothy J. Ledvina, and Robert H. Mead, both of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 332,032, Dec. 18, 1981, abandoned. This application Oct. 28, 1983, Ser. No. 546,667
Int. Cl.³ F16G *13/04*
U.S. Cl. 474—213 **3 Claims**



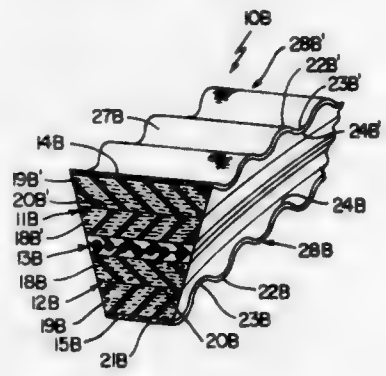
1. A power transmission chain adapted for use in a toothed sprocket drive system comprising: a plurality of links arranged in interleaved sets, pivot means interconnecting the link sets, each link having a back surface, and having a pair of toes defined by converging inside flanks and outside flanks, the inside flanks being joined by a crotch, the links of some of said sets of links being so constructed and arranged to drivingly contact the teeth of a sprocket on the inside flanks of the links and the links of other sets of links being so constructed and arranged to drivingly contact the teeth of a sprocket on the outside flanks of the links, characterized in that the links in one of said sets have an arcuate back surface and the links in others of said sets have a flat, generally planar back surface, thus to differentiate between the types of links.

4,509,938

ENDLESS POWER TRANSMISSION BELT HAVING A TOOTHED COMPRESSION SECTION AND METHOD OF MAKING THE SAME

Carl R. Woodland, Greene County, Mo., assignor to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 303,255, Sep. 17, 1981,. This application Sep. 4, 1984, Ser. No. 647,853
Int. Cl.³ F16G *5/00, 1/00, 9/00*
U.S. Cl. 474—264 **18 Claims**



1. In an endless power transmission belt having a toothed compression section, said belt being formed substantially of

polymeric materials and comprising a tension section, a compression section, and a load-carrying section disposed between said tension section and said compression section and having a transverse centerline, said compression section having an outer layer and an inner layer joined to said outer layer and defining an interface therewith that is substantially uniformly spaced from said load-carrying section by said outer layer throughout substantially the entire width and length of said belt, said compression section having an inner surface in the form of alternating transverse teeth and grooves with said grooves respectively defining the roots of said teeth, said inner layer of said compression section having a thickness from said interface to the tips of said teeth thereof that is approximately the same as the thickness of said outer layer of said compression section, the improvement wherein said inner layer of said compression section is softer than said outer layer thereof and said roots of said teeth are spaced inwardly from said interface of said layers so that said root of each tooth is spaced from said interface of said layers a distance that is approximately 25% of the distance of that root from said centerline of said load-carrying section whereby said inner layer tends to prevent cracking of said belt in the toothed area thereof.

4,509,939

FOLDING DEVICE FOR WEB-FED ROTARY PRINTING PRESSES

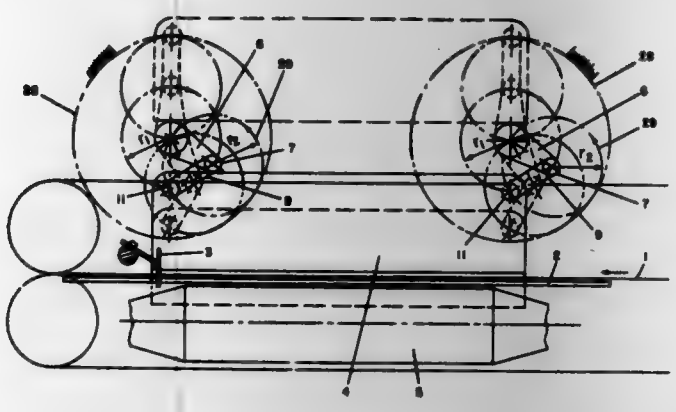
Hans Müller, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,008

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046051

Int. Cl.³ B65H *45/18*

U.S. Cl. 493—444 **7 Claims**



1. Folding device for web-fed rotary printing presses for forming a longitudinal fold in a direction wherein printed copies are conveyed, the longitudinal fold being producible, after a cylinder-crossfold, by an elongated folding blade disposed parallel to the conveying direction, the folding blade being suspended at opposite ends thereof from two drive cranks which are driven at the same speed of rotation and reciprocatingly movable by the latter; the folding blade, in a bottom position thereof, thrusting the printed copies between two driven folding rollers, the folding device comprising a respective additional crank suspending the folding blade at a respective end thereof from each of the drive cranks, each of the drive cranks having a crank pin and said additional crank, respectively, having a trunnion, said additional crank being supported by said trunnion thereof on and coaxial to said crank pin of the respective drive crank, and a gear train operatively connected with said additional crank for driving said additional crank at the same rotary speed as that of the respective drive crank and in opposite rotary direction thereof so that a crank pin of said additional crank suspending the respective end of the folding blade executes a vertical stroke moving the respective end of the folding blade in the same direction.

4,509,940

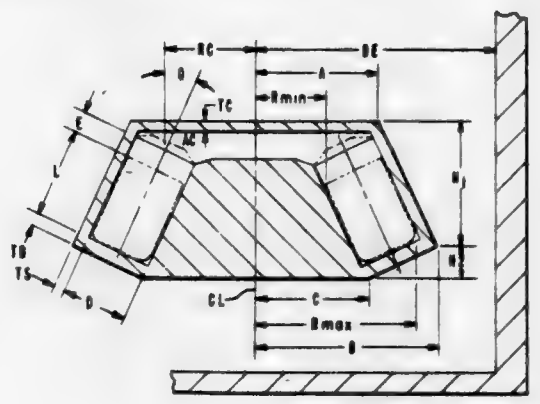
FIXED ANGLE PELLETING ROTOR CONFIGURED TO PROVIDE A MAXIMUM CLEARING RATE FACTOR

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 262,631, May 11, 1981, abandoned. This application Jul. 13, 1983, Ser. No. 512,950

Int. Cl.³ B04B *7/08*

U.S. Cl. 494—16 **4 Claims**



1. A rotor member rotatable about its central axis CL at an angular speed w, the rotor having n cavities each able to receive a bottle such that a number of bottles N, where N is from 1 to n, are insertable into the rotor, each bottle being able to receive a predetermined volume V of suspension of particles to be pelleted, the particles being responsive to a centrifugal force field to move from a radially inner point in each bottle disposed at a distance R_{min} from the axis CL to a radially outer point in each bottle disposed a distance R_{max} from the axis CL, the rotor member having a clearing rate factor K_R associated therewith, the values of w, V, N, R_{min} and R_{max} being determined such that the clearing rate factor K_R defined by the relationship

$$K_R = \frac{(V)\,(N)\,w^2}{\ln\left[R_{max}/R_{min}\right]}$$

is a maximum.

4,509,941

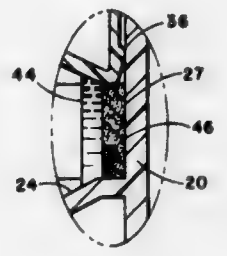
FRACTIONATION DEVICE AND METHOD

Leighton C. Johnson, deceased, late of Edwardsburg, Mich. (by Ann Johnson, Administratrix), assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 14, 1983, Ser. No. 551,109

Int. Cl.³ B04B *7/16*

U.S. Cl. 494—45 **6 Claims**



1. Centrifuge apparatus for fractionating and separating finely divided solid particulate material suspended in a liquid comprising:

(a) enclosure means having an opening only at the top for the introduction and removal of liquid;

(b) a liner for said enclosure means for trapping inside said liner particulate material present in said liquid; and

(c) means for rotating the enclosure means about the vertical axis thereof, said rotating means consisting essentially of a

holder for said enclosure means which holder is rotated by a motor;

wherein the enclosure means is retained by friction fit inside said holder and wherein the holder has U-shaped cut away surfaces on two opposite sides for the insertion and removal of said enclosure means.

4,509,942

FULLY JACKETED CENTRIFUGE WITH A HELICAL CONVEYOR

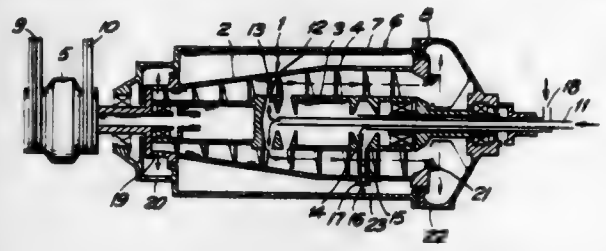
Hubert Gunnewig, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 629,938

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326310

Int. Cl.³ B04B *1/20*

U.S. Cl. 494—53 **11 Claims**



1. In a fully jacketed centrifuge with a helical conveyor for separating mixtures of solids and liquid, wherein the mixture of solids and liquid is fed into the conveyor through a first inlet space having a first access passage and at least some of the centrifuged solids are extracted through extraction apertures located below the surface of the liquid in the jacket of the drum, the improvement comprising: means forming a second inlet space in the vicinity of the extraction apertures and having a second access passage and outlet channels in communication therewith.

4,509,943

INFUSION CONTROL APPARATUS

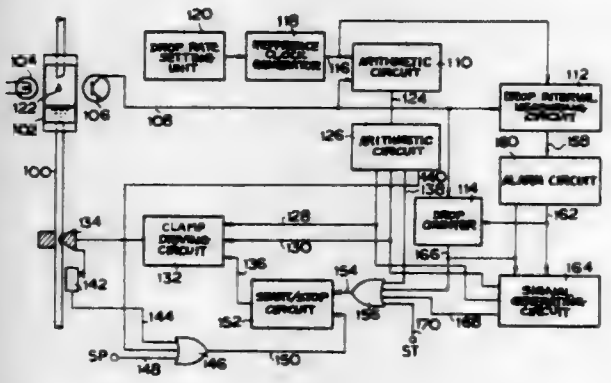
Yoshiki Hanzawa, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,860

Claims priority, application Japan, Aug. 10, 1981, 56/125045

Int. Cl.³ A61M *5/16*

U.S. Cl. 604—31 **7 Claims**



1. An apparatus for controlling drop-wise infusion of an infusion liquid through a flow passage, wherein a drop chamber is provided upstream of the flow passage, the apparatus comprising:

input means arranged to be operatively associated with the drop chamber for forming an input signal on the basis of a change in a quantity of light received by said input means after the light is passed through falling drops of the infusion liquid in the drop chamber, wherein an absence of said input signal indicates either one of an exhaustion in supply of the infusion liquid or a continuous stream of liquid falling in the drop chamber;

flow adjusting means arranged to interact with the flow passage for adjusting the flow of infusion liquid in the flow passage;

drop interval control means coupled to said input means adapted to evaluate the interval between successive falling drops of infusion liquid in the drop chamber in response to said input signal, for producing a control signal operative to establish a drop interval adjustment mode wherein said flow adjusting means adjusts the flow of infusion liquid to bring said interval into correspondence with a set value;

cut-off means coupled to said drop interval control means and to said flow adjusting means for establishing a liquid cut-off mode wherein the flow of infusion liquid through the flow passage is closed off by said flow adjusting means upon detecting the absence of said input signal over a predetermined period of time, said cut-off means providing a corresponding output to said flow adjusting means; and

drop count means coupled to said input means and to said cut-off means for detecting said input signal after initiation of said cut-off mode, wherein said drop count means produces a signal to restore said flow adjusting means to operate in said drop interval adjustment mode when said input signal indicates a set number of drops have fallen in the drop chamber after the flow of infusion liquid through the flow passage is closed off by said flow adjusting means in said cut-off mode, so that said flow adjusting means remains in said cut-off mode if the supply of infusion liquid is exhausted, and is restored to said drop interval adjustment mode if said set number of drops fall in the drop chamber after the flow passage is closed off in the absence of said input signal over said predetermined period of time.

4,509,944

CATHETER ASSEMBLY

Paul E. King, Ware, and Harold C. S. Wilson, Croydon, both of England, assignors to Hinders-Leslies Limited, Great Britain

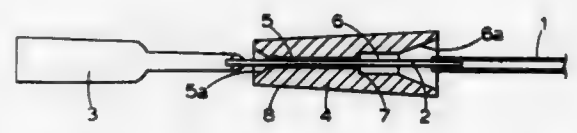
Continuation of Ser. No. 396,717, Jul. 9, 1982, abandoned, which is a continuation of Ser. No. 173,591, Jul. 30, 1980, abandoned.

This application Mar. 16, 1984, Ser. No. 590,191

Claims priority, application United Kingdom, Aug. 15, 1979, 7928375

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—53 **3 Claims**



1. A catheter assembly comprising a hollow needle, a length of catheter tubing with a distal end of said hollow needle removably held within the rearward end of the catheter tubing, the hollow needle itself having a connection hub at its proximal end, and a guide member having a first longitudinal bore communicating with the rearward end of the guide member, the first longitudinal bore being operable to removably fit around the hollow needle so that the guide member is slidable with respect thereto but leaves the distal end of the hollow needle extending beyond said first longitudinal bore in its assembled position, and said guide member further possessing a communicating second longitudinal bore operable to removably accept the catheter tubing extending back from the forward end of the guide member so that the second longitudinal bore of the guide member is slidable with respect to the catheter tubing to permit its removal from the guide member, the second longitudinal bore being of larger diameter than the first longitudinal bore, the interior end of said second longitudinal bore, where it meets the first longitudinal bore, being of the same dimension as the external diameter of the catheter tubing end to thereby form a shoulder in the guide member against which the catheter tubing is held during reconnection, and one

or both ends of the guide member has a portion which is steeply tapered inwards to the longitudinal bore to facilitate placement of the hollow needle and catheter tubing into their respective longitudinal bores and wherein the guide member is operable to grasp the catheter by providing the walls of the guide member with longitudinal slots which extend from the end of the guide member (with the broader portion of the bore) to near the shoulder where the broader and narrower portions of the bore meet so as to leave undistorted the region where the second longitudinal bore communicates with the first, narrow longitudinal bore whereby gradual displacement of the guide member in a forward direction relatively to the hollow needle smoothly disconnects the catheter tubing as the hollow needle distal end is retracted within the first longitudinal bore; while gradual displacement of the guide member and associated length of catheter tube held immobile in relation thereto with its free rearward end located as far as possible within the second bore ensures that the hollow needle reenters the bore of the catheter tubing for smooth reconnection.

4,509,945

CATHETER FOR CATHETERIZING CENTRAL VEINS

Bernhard Kramann, and Meinhard Rust, both of Munich, Fed. Rep. of Germany, assignors to Sterimed Gesellschaft für medizinischen Bedarf mbH, Saarbrücken, Fed. Rep. of Germany

PCT No. PCT/EP82/00270, § 371 Date Aug. 16, 1983, § 102(e) Date Aug. 16, 1983, PCT Pub. No. WO83/02064, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 17, 1982, Ser. No. 530,580

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150052

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—164 **15 Claims**



1. A catheter for catheterizing central veins via peripheral vein approaches, comprising a catheter tube (1) having an internal diameter of 0.5 to 2 mm, an external diameter of 0.7 to 2.4 mm and a length of 400 to 800 mm, a J-shaped guide wire (3) disposed axially displaceably in the catheter tube, the guide wire having a resilient distal end (4), which is curved over a length of 15 to 30 mm, and a means (9) for limiting the mutual displaceability of the catheter tube (1) relative to the guide wire (3) approximately to the length of the curved distal end (4) of the guide wire (3).

4,509,946

FLOW CONTROL DEVICE

Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Filed Sep. 23, 1982, Ser. No. 421,989

Int. Cl.³ A61M *5/00*; A61B *5/02*

U.S. Cl. 604—246 **9 Claims**

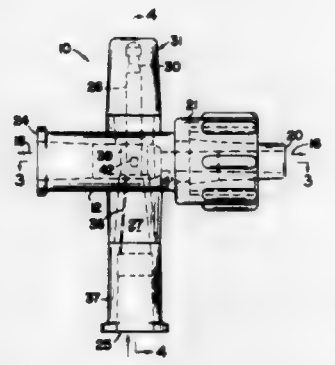
1. A flow control device of the type primarily designed for use with an intravascular pressure monitoring catheter system, said device comprising:

(a) a housing including a first flow channel and a second flow channel interconnected in fluid communication with one another,

(b) said first flow channel structured to establish fluid flow between a patient and a monitoring device, said second flow channel structured and disposed to establish fluid flow between a supply of infusion fluid and said first flow channel,

(c) flow regulator means movably mounted coaxially with said second flow channel for regulating flow of infusion fluid through said second flow channel to said first flow channel,

(d) a continuous path of fluid flow and an intermittent path of fluid flow both disposed along a substantially common path of travel defined between an interior surface of said second flow channel and an outer surface of said flow regulator means,



(e) said continuous path of fluid flow comprising a groove formed in said outer surface of said flow regulator means and said outer surface disposed in substantially mating engagement with said interior surface of said second flow channel along the length of said flow regulator means,

(f) said intermittent path of fluid flow being of greater cross sectional dimension than said continuous path of fluid flow and defined by spaced apart, non-mating disposition of said interior and outer surfaces of said second flow channel and said flow regulator means respectively and along the length of said flow regulator means, and

(g) whereby at least a minimal amount of fluid flow is maintained along said common path of travel independent of the position of said flow regulator means relative to said second flow channel.

4,509,947

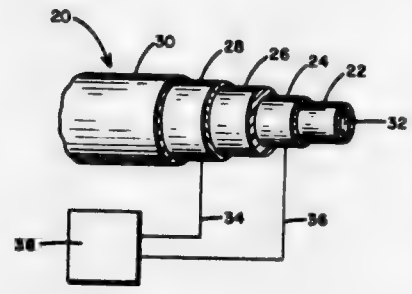
SELF-CLEANING DRUG DELIVERY CATHETER AND STORAGE BLADDER

Gary A. Lattin, Forest Lake, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 2, 1982, Ser. No. 404,081

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—266 **1 Claim**



1. A drug delivery catheter comprising a tubular catheter member having an interior surface; and piezoelectric means for cleaning the interior surface of said chamber by applying ultrasonic vibrations to said tubular catheter member; wherein said piezoelectric means comprises a layer of piezoelectric material applied to the tubular catheter member, a first metallized layer intermediate to said tubular catheter member and said layer of piezoelectric material and a second metallized layer external to said layer of piezoelectric material, and means whereby said piezoelectric material may be coupled to a source of ultrasonic electrical signals.

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4,509,948

CATIONIC MONO- AND DIS-AZO DYESTUFFS, AND THEIR PREPARATION AND USE FOR DYEING PAPER AND CATIONIC DYEABLE SUBSTRATES

Peter Wild, Odenthal, and Frank-Michael Stöhr, Burscheid, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,675

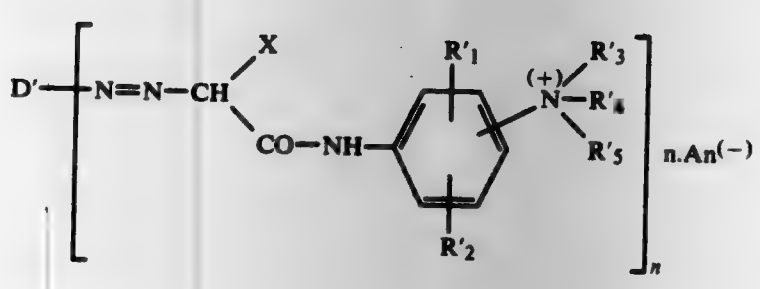
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231398

Int. Cl.³ C08J *3/20;* C09B *29/32;* D06P *1/41*

U.S. Cl. 8—539

9 Claims

1. Cationic dyestuffs of the formula



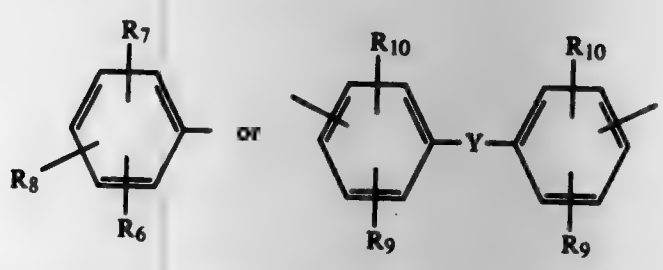
wherein

n is 1 or 2,

X is a radical of the formula $COCH_3$, CN, $COOCH_3$, $COOC_2H_5$, $CONH_2$ or COC_6H_5 and

$An^{(-)}$ is an anion.

D′ denotes a radical of the formula



R_1' and R_2' independently of each other denote hydrogen, fluorine, chlorine, bromine, C_1- to C_4-alkyl or C_1- to C_4-alkoxy, and

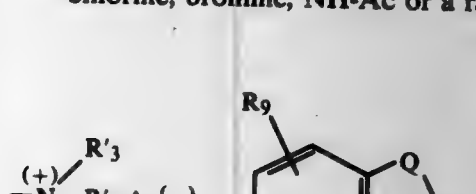
R_3', R_4' and R_5' independently of one another denote C_1- to C_4-alkyl, C_3- to C_4-alkenyl, benzyl or phenylethyl, either of which can be substituted by hydroxyl, C_1- to C_4-alkoxy, chlorine, bromine or cyano, and the benzyl and phenylethyl radicals additionally by C_1- to C_4-alkyl, or

R_3' and R_4', together with the nitrogen atom to which they are bonded, form an optionally C_1- to C_4-alkyl substituted pyrrolidine, morpholine, piperidine or piperazine ring,

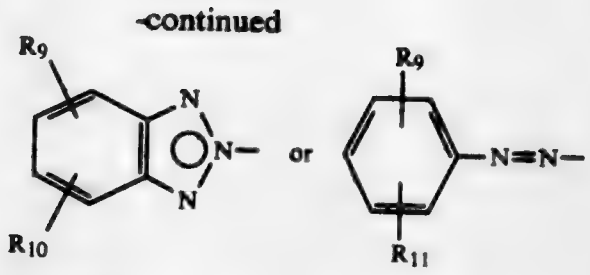
R_6 and R_7 independently of each other represent hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, fluorine, chlorine, bromine or NH-Ac,

Ac represents C_1- to C_4-alkylcarbonyl, -alkylsulphonyl or -alkylcarbamyl, benzoyl, toluoyl, phenylsulphonyl, phenylcarbamoyl, tolylsulphonyl, tolylcarbamyl or optionally substituted triazinyl,

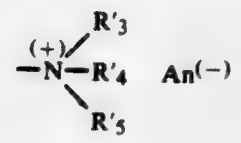
R^8 represents hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, chlorine, bromine, NH-Ac or a radical of the formula



-continued



R_9–R_{11} independently of one another represent hydrogen, C_1- to C_4-alkyl, C_1 to C_4-alkoxy, chlorine or bromine and R_{11} additionally represents.



Q represents O, S or NH and

Y represents a direct bond or a bridging link.

4,509,949

WATER THICKENING AGENTS CONSISTING OF COPOLYMERS OF CROSSLINKED ACRYLIC ACIDS AND ESTERS

Chor Huang, Avon Lake, and Robert K. Schlatzer, Chagrin Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

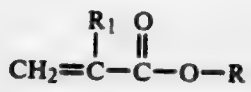
Filed Jun. 13, 1983, Ser. No. 503,957

Int. Cl.³ C08F *20/06;* D06P *1/52*

U.S. Cl. 586—558

7 Claims

1. Polymers of a monomeric mixture containing 95.9 to 98.8 weight percent of an olefinically unsaturated carboxylic monomer selected from the group consisting of acrylic, methacrylic and ethacrylic acids, about 1 to about 3.5 weight percent of an acrylate ester of the formula



wherein R is an alkyl radical containing 10 to 30 carbon atoms and R_1 is hydrogen, methyl or ethyl, and 0.1 to 0.6 weight percent of a polymerizable cross-linking polyalkenyl polyether of a polyhydric alcohol containing more than one alkenyl ether group per molecule wherein the parent polyhydric alcohol contains at least 3 carbon atoms and at least 3 hydroxyl groups.

4,509,950

EMULSIFYING AGENTS

Alan S. Baker, Slough, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Mar. 24, 1983, Ser. No. 478,550

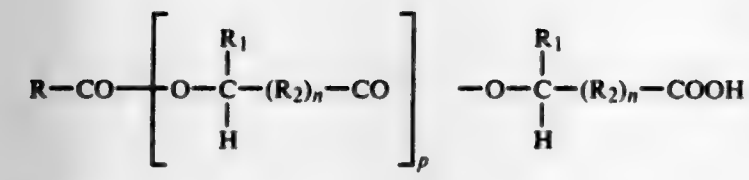
Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51

16 Claims

1. A surfactant composition suitable for the emulsification of methanol or ethanol in a hydrocarbon liquid, the composition being a blend of:

(i) from 10% to 90% by weight of a block or graft copolymer having the general formula $(A—COO)_m—B$, wherein m is an integer at least 2, wherein each polymeric component A has a molecular weight of at least 500 and is the residue of an oil-soluble complex monocarboxylic acid having the general structural formula



(I)

in which

R is hydrogen or a monovalent hydrocarbon or substituted hydrocarbon group;

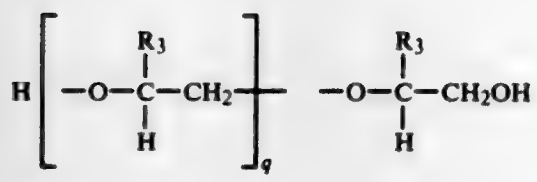
R_1 is hydrogen or a monovalent C_1 to C_{24} hydrocarbon group;

R_2 is a divalent C_1 to C_{24} hydrocarbon group;

n is zero or 1;

p is an integer from zero up to 200;

and wherein each polymeric component B has a molecular weight of at least 500 and, in the case where m is 2, is the divalent residue of a water-soluble polyalkylene glycol having the general formula



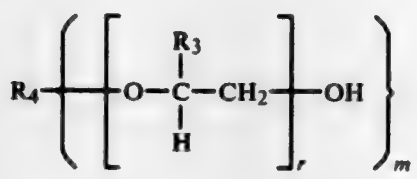
(II)

in which

R_3 is hydrogen or a C_1 to C_3 alkyl group;

q is an integer from 10 up to 500;

or in the case where m is greater than 2, is the residue of valency m of a water-soluble polyether polyol having the general formula

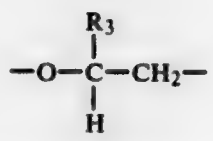


(III)

in which

R_3 and m have their previous significance;

r is zero or an integer from 1 to 500, provided that the total number of



units in the molecule is at least 10;

R_4 is the residue of an organic compound containing in the molecule m hydrogen atoms reactive with an alkylene oxide;

with (ii) from 90% to 10% by weight of a polyester which is the product of condensation of (a) a poly(isobutenyl)succinic acid of molecular weight in the range 500–5000, or anhydride thereof, with (b) a poly(alkylene glycol) of molecular weight in the range 400–4000 which is soluble in water to the extent of at least 5% by weight at 25° C.

12. An emulsion of methanol or ethanol in a liquid hydrocarbon fuel, the emulsion containing from 1% to 75% by weight of methanol or ethanol as the disperse phase, the methanol or ethanol containing at least 1% by weight of water, and from 25% to 99% by weight of the hydrocarbon fuel as the continuous phase, and in addition, an emulsifying agent; from 1% to 100% by weight, based on the disperse phase, of a surfactant as claimed in claim 1.

4,509,951

CORROSION INHIBITOR FOR ALCOHOL AND GASOHOL FUELS

Gordon G. Knapp, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 13, 1984, Ser. No. 619,976

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—53 **9 Claims**

1. A liquid fuel adapted for use in an internal combustion engine, said fuel consisting essentially of 5 to 100 weight percent of one or more alcohols, 0 to 95 weight percent gasoline and a corrosion inhibiting amount of a combination of (A) a polymer of one or more C_{16} to C_{18} polyunsaturated aliphatic monocarboxylic acids and (B) a polyisobutenyl succinimide of an alkylenepolyamine.

4,509,952

CHEMICAL COMPOSITION

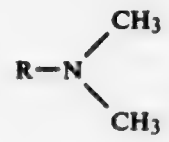
Henry G. Braxton, Jr., Franklin, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 1, 1981, Ser. No. 250,093

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—57 **3 Claims**

1. A fuel oil composition consisting essentially of a petroleum distillate fuel oil selected from the group consisting of furnace oil and diesel fuel and a minor amount of alkyldimethylamine, having the structure:



wherein R is a straight chain C_4–C_{20} alkyl or a mixture thereof, sufficient to stabilize said fuel oil against deterioration.

4,509,953

FUEL BLENDED WITH ALCOHOL FOR DIESEL ENGINE

Koichiro Itow, and Kunihiko Komiyama, both of Oyama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,478

Claims priority, application Japan, May 31, 1982, 57-92377

Int. Cl.³ C10L *1/08, 1/10*

U.S. Cl. 44—57 **1 Claim**

1. A fuel for use in a diesel engine, which consisting essentially of:

(a) 70–90% by volume of a petroleum fuel selected from the group consisting of gas oil and heavy oil, said volume being based on the volume of petroleum fuel and ethyl alcohol;

(b) ethyl alcohol in an amount of 10–30% by volume based on the volume of petroleum fuel and ethyl alcohol; and

(c) gasoline as a mutual solvent for said petroleum fuel and ethyl alcohol in an amount up to 30% by volume based on the total volume of the fuel, said gasoline being present in an amount sufficient to maintain the fuel in a single phase solution.

4,509,954

METHOD FOR IMPROVING COLD FLOW OF FUEL OILS

Takaharu Ishizaki, Nishinomiya; Tsuneo Kimura, Kitasoma, and Shingo Yamazaki, Amagasaki, all of Japan, assignors to Nippon Oil and Fats Company, Ltd., Tokyo, Japan

Filed Feb. 1, 1984, Ser. No. 575,797

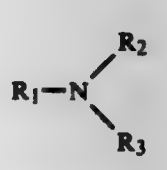
Claims priority, application Japan, Feb. 16, 1983, 58-22904

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—62 **8 Claims**

1. A method for improving the cold flow of fuel oils which

comprises, adding to fuel oils, esters of (a) an addition product of an epoxide selected from the group consisting of alkylene oxide, styrene oxide and glycidol and compounds having the formula (1),



(1)

wherein R_1, R_2, and R_3 are selected from the group consisting of H—, $CH_3(CH_2)_n$—, $CH_3(CH_2)_nCO$—, —CH_2CH_2OH, —$CH(CH_3)CH_2OH$ and —$CH_2CH(OH)CH_2OH$, wherein n represents a number from 0 to 25 and at least one of R_1, R_2 and R_3 is selected from the group consisting of —CH_2CH_2OH, —$CH(CH_3)CH_2OH$ and —$CH_2CH(OH)CH_2OH$; and, (b) linear saturated fatty acids.

4,509,955

COMBINATIONS OF CARBOXYLIC ACYLATING AGENTS SUBSTITUTED WITH OLEFIN POLYMERS OF HIGH AND LOW MOLECULAR WEIGHT MONO-OLEFINS, DERIVATIVES THEREOF, AND FUELS AND LUBRICANTS CONTAINING SAME

Katsumi Hayashi, Mentor, Ohio, assignor to The Lubrizol Corporation, Ohio

Division of Ser. No. 404,848, Aug. 9, 1982, Pat. No. 4,471,091. This application Jun. 21, 1984, Ser. No. 623,270

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—62 **32 Claims**

1. A concentrate comprising a normally liquid diluent and about 20% to about 90% by weight of a composition comprising

(A) the reaction product of

(A)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(A)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of mono-olefins of from 12 to 30 carbon atoms, and chlorinated or brominated analogs thereof; and

(B) the reaction product of

(B)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(B)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of mono-1-olefins of from 2 to 8 carbon atoms and chlorinated or brominated analogs thereof.

17. A fuel composition comprising a major amount of a normally liquid fuel and a minor amount of a composition comprising

(A) the reaction product of

(A)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(A)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of mono-olefins of from 12 to 30 carbon atoms, and chlorinated or brominated analogs thereof; and

(B) the reaction product of

(B)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(B)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of mono-1-olefins of from 2 to 8 carbon atoms and chlorinated or brominated analogs thereof.

4,509,956

FUEL ADDITIVE AND METHOD OF USE

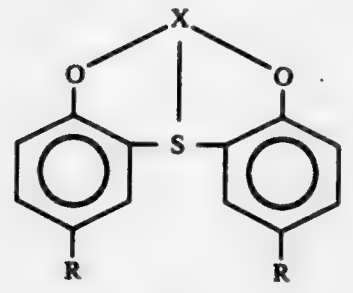
Milton Braid, Westmont, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 922,906, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 899,682, Apr. 24, 1978, abandoned. This application Oct. 7, 1980, Ser. No. 194,738

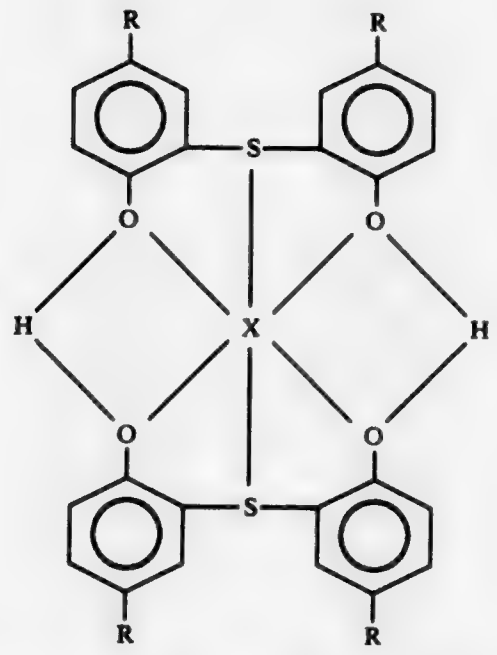
Int. Cl.³ C10L *1/30*

U.S. Cl. 44—68 **9 Claims**

1. The method of substantially reducing the formation of undesirable noxious nitrogen oxide compounds and particulate emissions in internal combustion engines comprising intimately admixing with the hydrocarbon base fuel used therein a minor effective amount of a thiobis (alkylphenolate) and/or a thiobis (alkylphenolphenolate) having the following general structures:



and



where R is hydrogen or an alkyl group having from 1 to about 30 carbon atoms and X is copper and wherein the hydrocarbon base fuel is selected from hydrocarbon fractions having an initial boiling point of at least about 75° to 100° F. and an end boiling point no higher than about 750° F. and boiling substantially continuously throughout their distillation range and wherein said hydrocarbon base fuel is a gasoline; a diesel fuel or a gas turbine fuel.

4,509,957

CYCLIC CHAR GASIFIER

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115

Continuation-in-part of Ser. No. 328,148, Dec. 7, 1981, abandoned, which is a continuation of Ser. No. 121,973, Feb. 15, 1980, abandoned. This application Nov. 16, 1983, Ser. No. 552,398

Int. Cl.³ C10J *3/00, 3/22, 3/30*

U.S. Cl. 48—61 **37 Claims**

1. A machine for gasifying char fuels comprising at least one cyclic char gasifier plant comprising:

at least one compressor means for compressing gases from a lower pressure to a higher pressure and each such com-

pressor comprising at least one stage and each such stage comprising a supply end and a delivery end;

means for driving each of said compressors;

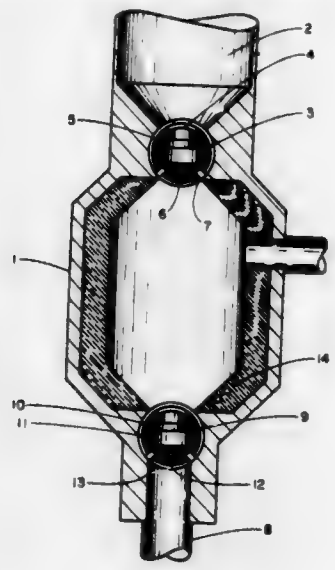
at least one expander means for expanding gas from a higher pressure to a lower pressure and each such expander comprising at least one stage and each such stage comprising an inlet end and a discharge end;

at least two separate containers for containing char fuel;

at least one product gas collector pipe;

at least one reactant gas supply source;

each such compressor whose number of stages exceeds one further comprising fixed open gas flow connections from the delivery end of each compressor stage, except one, to the supply end of one other stage of said compressor, whereby said stages of said compressor are connected in series so that the pressure of a particular gas mass, at delivery from each stage, increases as said gas mass is compressed through said series connected stages, from the supply end to the delivery end of each stage, with the first stage in said series through which a gas mass first flows being both the lowest pressure stage and also that one stage whose supply end does not have a fixed open gas flow connection from the delivery end of any other stage or said compressor, and with the last stage in said series through which a gas mass last flows being both the highest pressure stage and also that one stage whose delivery end does not have a fixed open gas flow connection to the supply end of any other stage of said compressor;



fixed open gas flow connections from the supply end of the lowest pressure stage of each of said compressors to at least one reactant gas supply source;

each such expander whose number of stages exceeds one further comprising fixed open gas flow connections from the discharge end of each expander stage, except one, to the inlet end of one other stage of said expander, whereby said stages of said expander are connected in series so that the pressure of a particular gas mass at discharge from each stage, decreases as said gas mass is expanded through said series connected stages, from the inlet end to the discharge end of each stage, with the first stage in said series through which a gas mass first flows being both the highest pressure stage and also that one stage whose inlet end does not have a fixed open gas flow connection from the discharge end of any other stage of said expander, and with the last stage in said series through which a gas mass last flows being both the lowest pressure stage and also that one stage whose discharge end does not have a fixed open gas flow connection to the inlet end of any other stage of said expander;

fixed open gas flow connections from the discharge end of the lowest pressure stage of each of said expanders to a separate product gas collector pipe;

changeable flow connections, which are openable and closeable, from each of said containers to each delivery end of each stage of each of said compressors and to each inlet end of each stage of each of said expanders;

each cyclic char gasifier plant comprising a number of said containers, with changeable gas flow connections to said compressors and to said expanders, at least equal to the sum of the number of compressor stages of all compressors and the number of expander stages of all expanders;

means for opening and closing said changeable gas flow connections so that, each container is opened for a time period to each delivery end of each stage of each of said compressors, in a sub-sequence of time periods of open gas flow connections to compressors, said sub-sequence proceeding in time order of increasing compressor stage delivery pressure, and is opened for a time period to each inlet end of each stage of said expanders, in a sub-sequence of time periods of open gas flow connections to expanders, said sub-sequence proceeding in time order of decreasing expander stage inlet pressure, said sub-sequence of connections to said compressor being followed by said sub-sequence of connections to said expanders, and these together comprise one sequence of time periods of open gas flow connections, each of said containers is opened to only one stage during any one time period of said sequence of time periods, said sequence of time periods of open gas flow connections to said compressors and to said expanders is repeated for each of said containers by said means for opening and closing;

means for controlling said means for opening and closing so that said repeated sequences of time periods of open gas flow connections are a continuous series of time periods for any one containing means, and so that the delivery end of each stage of each compressor has an open gas flow connection to at least one containing means, and the inlet end of each stage of each expander has an open gas flow connection to at least one containing means, during all time periods, whenever said plant is operating.

4,509,958

HIGH-EFFICIENCY ELECTROSTATIC FILTER DEVICE

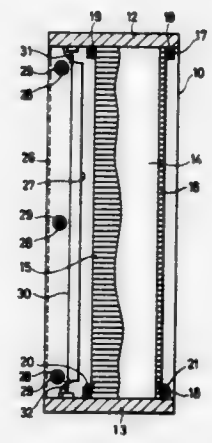
Senichi Masuda, 605, 40-10, Nishigahara 1-chome, Kita-ku, Tokyo, and Naoki Sugita, Kawaguchi, both of Japan, assignors to Senichi Masuda, Tokyo, Japan

Filed Oct. 8, 1982, Ser. No. 433,414

Claims priority, application Japan, Oct. 12, 1981, 56-162383; Dec. 28, 1981, 56-214150

Int. Cl.³ B03C *3/00*

U.S. Cl. 55—132 **12 Claims**



1. A high-efficiency electrostatic filter device comprising a charging section where the dust particles in a dust-laden gas passed therethrough are electrically charged by corona discharge, and a dust collecting section comprising a filter medium arranged meandering in the direction orthogonal to the direction of flow of the dust-laden gas emerging from said charging section and a first set of a plurality of upstream generally parallel separator electrodes on the upstream side of the filter medium and a second set of a plurality of downstream generally parallel separator electrodes on the downstream side

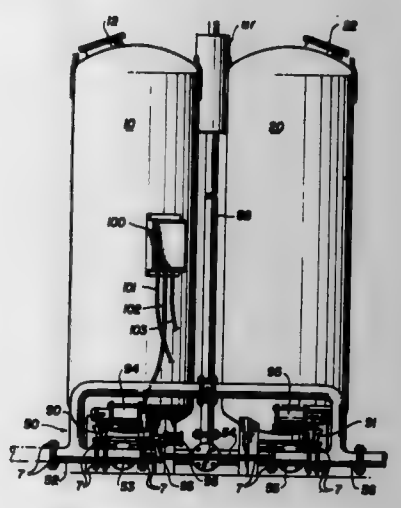
of the filter medium, the upstream and downstream separator electrodes being arranged to allow passage of the dust-laden gas in the spaces between every adjoining parts of said meandering filter medium from both the upstream side and the downstream side of said gas stream, first and second elongated electroconductive resistance elements electrically connecting the first and second sets of separator electrodes respectively, each said elongated resistance element being in contact with and electrically connecting the separator electrodes of the respective set of electrodes with electrical resistance between separator electrodes, a high voltage power source applied between said upstream separator electrodes and downstream separator electrodes via the electroconductive resistance elements, the electroconductive resistance elements having said electrical resistance between separator electrodes for preventing dissipation of the separator electrode charges by resisting movement of charges between said separator electrodes upon the occurrence of an electric discharge from one of the separator electrodes.

4,509,959

MODULAR INDUSTRIAL OXYGEN CONCENTRATOR

Norman R. McCombs, Tonawanda, N.Y., assignor to Greene & Kellogg, Inc., Tonawanda, N.Y.

Filed Jul. 28, 1983, Ser. No. 517,896
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—161 **22 Claims**



1. A modular pressure swing tonnage absorption apparatus for separating mixtures of gases into component parts, said apparatus being made substantially entirely of a plurality of pre-fabricated modules comprising;

a first module including at least one gas absorption means for effecting the gas separation;

a second module including a surge tank for collecting one component gas separated out of said gas mixture by said first module;

a third module including means for delivering the gas mixture to said first module and for conducting waste gas away from said first module;

a fourth module including means for transferring said one component gas away from said first module to said second module, and for directing gas to said first module for purging said first module;

electrically operated control means associated with at least one of said first through fourth modules;

means for pneumatically, electrically and mechanically interconnecting said first, second, third and fourth modules and said electrically operated control means, whereby said apparatus may be moved as individual modules to or from a site for PSA use, and assembled on-site by mechanically, pneumatically and electrically interconnecting said components, to thereby produce a relatively large such unit adapted to produce relatively large quantities said one component gas;

said means mechanically interconnecting said modules comprising flange means, and

said first, second, third and fourth modules being of dimensions sufficient to handle large enough quantities of said mixtures of gases to produce said large quantities of said one component of said gas on the order of tons per day of said one component gas.

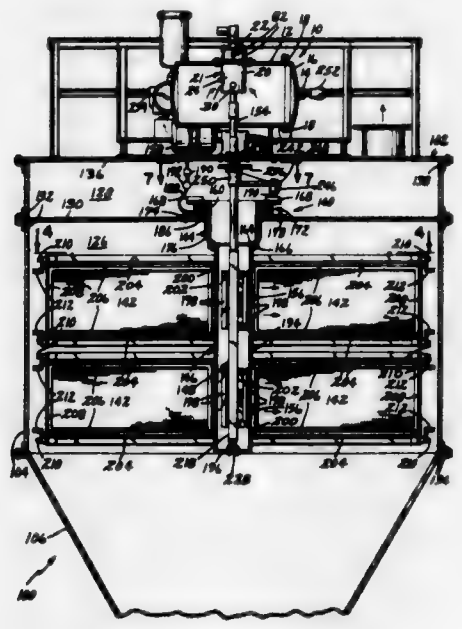
22. A relatively large capacity PSA machine adapted to be built up on-site of a plurality of preassembled modules, said modules comprising a gas absorption means module comprising at least one pressure vessel, a feed/waste gas manifold and valve assembly module, a purge/product gas manifold and valve assembly module, and a surge tank means module, electrically operated control means for the valves in said feed/-waste and said purge/product manifold modules, means to permit relatively fast and simple on-site mechanical, pneumatic and electrical assembly of said modules and control means into said PSA machine; said means to permit assembly comprising flange means interconnecting the gas handling portions of said at least one pressure vessel, said feed/waste gas module, said purge/product gas module, and said surge tank means module; and said capacity of said machine being on the order of tons per day of product gas.

4,509,960

DUST COLLECTOR

Mark R. Engel, Apple Valley, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 522,348, Aug. 11, 1983,. This application Oct. 7, 1983, Ser. No. 540,121
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—287 **6 Claims**



1. Dust collector apparatus, comprising:

a housing divided into inlet and clean gas chambers, said chambers being separated by a partition, said inlet chamber having an inlet port and said clean chamber having an outlet port, said housing having a top;

a clean gas drum hung vertically from said partition, said drum having an interior in fluid communication with said clean gas chamber, said drum having a bottom;

a plurality of filter elements attached to and in flow communication with said drum, the gas cleaned by each of said filter elements flowing into the interior of said drum and continuing to said clean gas chamber; and

means for producing a reverse gas pulse to clean said elements, said reverse gas pulse producing means including:

a gas pressure source including means for creating a gas pulse;

a blow pipe having an opening alignable with an end of each of said filter elements in flow communication with said drum for directing the gas pulse therein;

means for providing fluid communication between said blow pipe and said pulse creating means; and

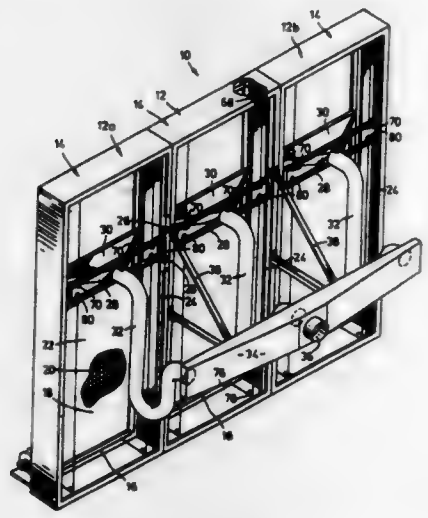
means for rotating said blow pipe with respect to said clean gas drum, said rotating means including first means for bearing said blow pipe at the bottom of said drum and second means for bearing said blow pipe at the top of said housing.

4,509,961

AIR FILTER ASSEMBLY

William H. Jones, Toronto, Canada, assignor to Armstrong Jones Inc., Toronto, Canada

Filed Jun. 17, 1983, Ser. No. 505,381
Int. Cl.³ B01D *35/16*
U.S. Cl. 55—294 **1 Claim**



1. An air filter assembly comprising

(a) a plurality of frames each defining a perimeter of a rectangular shaped air filtration passage having a minor dimension and a major dimension, each frame having an upstream side and a downstream side,

(b) a plurality of carriages, one carriage being mounted, independently of the other carriages, on the upstream side of each frame for movement therealong to traverse the filtration passage between first and second ends of the frame,

(c) a plurality of vacuum heads each having a width equal to the minor dimension of said filtration passage, said heads being mounted one on each carriage and extending across the width of one of said filtration passages for movement with the carriage on which it is mounted,

(d) said frames being arranged side-by-side to form filter modules each supporting a filter element in its air filtration passage,

(e) a first of said frames being adapted to suport a stationary vacuum manifold at the upstream side thereof and flexible conduit means connecting said vacuum manifold to each of said vacuum heads,

(f) a plurality of flexible conduits, one end of each conduit connecting with the stationary vacuum manifold and the other ends being connected one to each vacuum head,

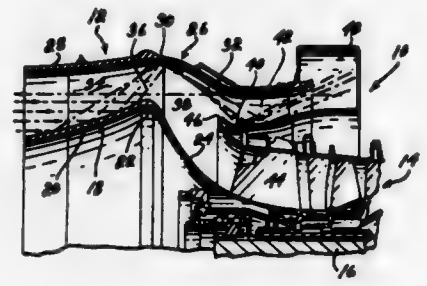
(g) a powered drive unit mounted on said first frame at the downstream side of said first frame, which means mounted at the downstream side of each of said frames, said powered drive means being releasably connected to the winch means of each frame, first and second power transmission cables extending from each winch through the first and second ends of its associated frame, respectively, and being connected to the carriage which is mounted on said associated frame such that, upon take-up of said first cable, its associated carriage is driven to said first end of its associated frame and upon take-up of the second cable, the carriage is driven to the second end of the associated frame to cause the carriage and vacuum head to traverse substantially the entire upstream end of its associated filter passage.

4,509,962

INERTIAL PARTICLE SEPARATOR

Daniel S. Breitman, Oakville, Canada, and Henrique Langenegger, Rio de Janeiro, Brazil, assignors to Pratt & Whitney Canada Inc., Lonqueuil, Canada

Filed Oct. 6, 1983, Ser. No. 539,748
Int. Cl.³ B01D *45/16*
U.S. Cl. 55—306 **6 Claims**



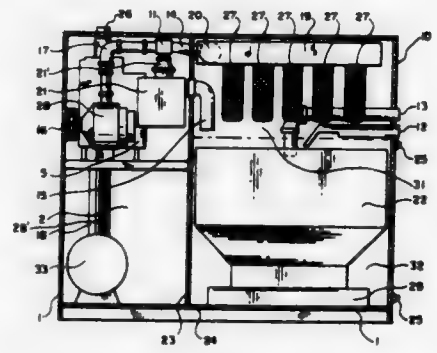
1. An airflow particle separator having an axis, the particle separator being provided for removing foreign particles and moisture from the air flow, said separator comprising an inner wall and an outer wall defining a passageway therebetween, said inner wall including an inner wall portion diverging in a downstream direction away from the separator axis while converging towards the outer wall to form a throat to accelerate incoming air to a higher velocity in a substantially axial direction; said inner wall at said throat area including a flow turning portion wherein the inner wall converges towards the separator axis downstream of the said turning portion and said turning portion being constructed and arranged so as to minimize boundary layer separation; splitter means disposed between the inner and outer walls for splitting said passageway into inner and outer passages, said outer passage adapted to bypass moisture and foreign particles, the leading edge of the splitter means being located downstream and inward of said throat; the diverging inner wall portion upstream of the throat area having a deflector surface and having an axial configuration in the form of a concave parabolic curve such that as particles strike the deflecting inner wall portion they will be focused in a predetermined bounce zone of the outer wall adjacent and downstream of the throat such that the particles will be bounced on top of and downstream of the splitter means into the outer passage.

4,509,963

INDUSTRIAL VACUUM CLEANER

Carroll V. Jackson, Northbrook, Ill., assignor to Wm. W. Meyer & Sons, Inc., Skokie, Ill.

Continuation-in-part of Ser. No. 364,423, Apr. 1, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 570,753
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—324 **12 Claims**



1. An industrial vacuum cleaner comprising a housing hav-

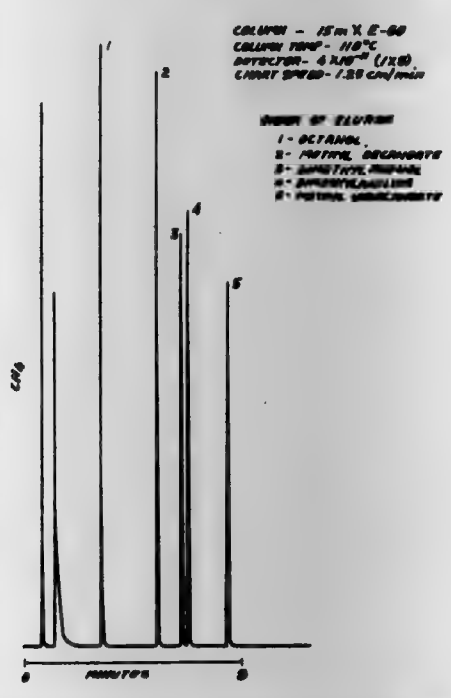
ing vacuum operated material intake means, a sealed vacuum chamber communicating with said intake means, said vacuum chamber having an upper and a lower portion, filter means for filtering matter operating in conjunction with blower intake means for generating vacuum in said vacuum chamber, and operative to draw material through said filter means, said blower intake means having an outlet for exhausting the airflow outwardly of the vacuum chamber coupled between said filter means and said blower intake means, means for channelling said airflow through said filter means, a partition being located within said housing and defining said vacuum chamber on one side thereof and the machinery chamber on the other side, and said blower being located within said machinery chamber, and isolated from said vacuum chamber and being in fluid communication with the vacuum chamber via said filter means, the improvement comprising; removable waste collection means disposed in the lower portion of said vacuum chamber, below said filter means for receiving the material drawn into the chamber through the intake means, the sealed vacuum chamber constituting an integral permanent component of said housing, said sealed vacuum chamber having sealing access means of larger dimensions than said waste collection means thereby permitting the removal of said waste collection means, said waste collection means being removably mounted in said vacuum chamber.

4,509,964

FUSED SILICA CAPILLARY COLUMN

John A. Hubball, Meriden, Conn., and Eugene F. Barry, Nashua, N.H., assignors to The Foxboro Company, Foxboro, Mass.

Filed Jan. 4, 1984, Ser. No. 568,074
Int. Cl.³ B01D *15/08*
U.S. Cl. 55—386 **10 Claims**



8. A chromatographic capillary column of fused silica prepared by a process comprising the steps of:

irradiating fused silica capillary tubing with gamma radiation while said fused silica is in a raw state, free of any coating; and thereafter

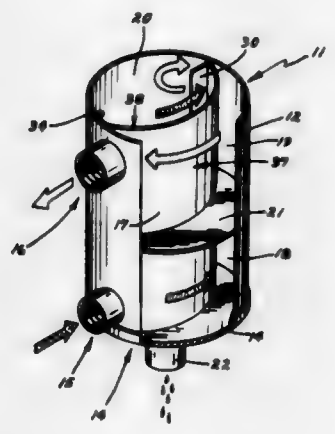
applying a polar stationary phase coating to the inner wall of said tubing to form the chromatographic column.

4,509,965

WATER-STEAM SEPARATOR

Willard Morton, 12272 17th Ave., South, Burnsville, Minn. 55337

Filed Feb. 14, 1983, Ser. No. 466,053
Int. Cl.³ B01D *45/16*
U.S. Cl. 55—399 **6 Claims**



1. A water-steam separator comprising:

(a) a body having a top end and a bottom end;

(b) a drain means in the body;

(c) an inlet means in the body;

(d) an outlet means in the body;

(e) a flow diverter in the body and positioned and arranged with respect to the inlet and outlet means and the drain means so as to divide the body into a condensate area having the drain means within the condensate area and an inlet-outlet area, the flow diverter extending substantially from the top end of the body to the bottom end of the body; and

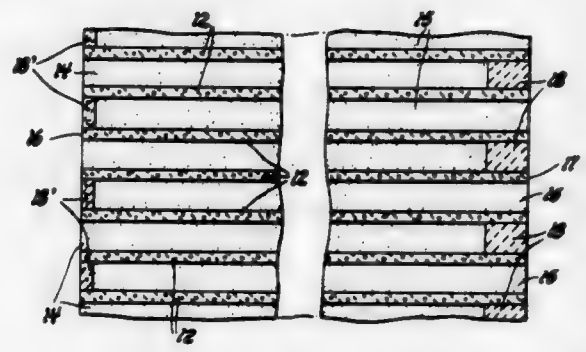
(f) a partition positioned inside the inlet-outlet area and positioned with respect to the diverter so as to divide the inlet-outlet area into a separate outlet area and a separate inlet area such that vapor entering through the inlet means is forced to travel first through the inlet area, then into the condensate area, and finally through the outlet area to the outlet means.

4,509,966

WALL-FLOW MONOLITH FILTER WITH POROUS PLUGS

David L. Dimick, Birmingham; Kenneth B. Bly, Pontiac, and Otto A. Ludecke, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1983, Ser. No. 495,579
Int. Cl.³ B01D *39/20*
U.S. Cl. 55—502 **4 Claims**



1. In a through flow exhaust particulate filter element of the type including a ceramic monolith structure having a plurality of thin interlaced gas filtering porous internal walls defining a plurality of parallel passages extending to opposite inlet and outlet ends thereof, said passages including a first group comprising inlet passages open at said inlet end of the element and

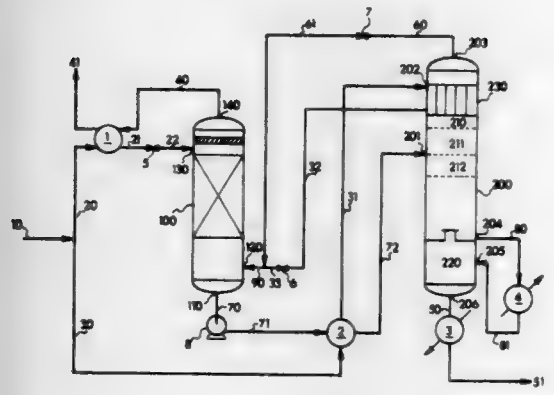
closed by plugs at the outlet end and a second group comprising outlet passages closed by plugs at said inlet end and open at said outlet end; the improvement wherein at least said plugs of said outlet passages at said inlet end of said element are of a ceramic porous material corresponding in porosity and thickness substantially to that of said porous internal walls whereby said plugs are permeable for exhaust gas flow therethrough so that particulates will also be trapped by said porous plugs to create paths of collected particulates in order to thus permit more rapid flame travel along said porous plugs to adjacent said inlet passages during incineration of collected particulates on the filter element.

4,509,967

PROCESS FOR DEVOLATILIZING NATURAL GAS LIQUIDS

Welby C. Sweet, Waterville, Ohio, assignor to Marathon Oil Company, Findlay, Ohio

Filed Jan. 3, 1984, Ser. No. 567,716
Int. Cl.[3] F25J *3/02*
U.S. Cl. 62—17 **16 Claims**



1. A process comprising:

retrofitting an existing natural gas separation process to obtain a retrofitted process for separating a natural gas feed selected from a broad range of compositions into a methane-rich gas product and a partially deethanized natural gas liquid product, said retrofitted process including the steps of:

(a) dividing said natural gas feed into a first stream and a second stream, the two streams having the same composition;

(b) reducing the temperature and pressure of said first and second streams such that each said stream has a distinct liquid phase and a distinct gas phase, said first stream has a temperature substantially lower than said second stream, and at least said first stream has a cryogenic temperature;

(c) feeding said first stream into the upper portion of a demethanizing absorption means and said second stream into the lower portion of said absorption means;

(d) recovering said methane-rich gas product from the top of said absorption means and a methane-lean natural gas liquid from the bottom of said absorption means;

(e) feeding said methane-lean natural gas liquid into a deethanizer means wherein an uncondensed vapor comprised of a portion of the ethane and substantially all of the methane in said methane-lean natural gas liquid is separated from said methane-lean natural gas liquid at a non-cryogenic temperature;

(f) recovering said uncondensed vapor from the top of said deethanizer means and recycling said vapor into said second stream of step (c) prior to feeding said second stream into said absorption means; and

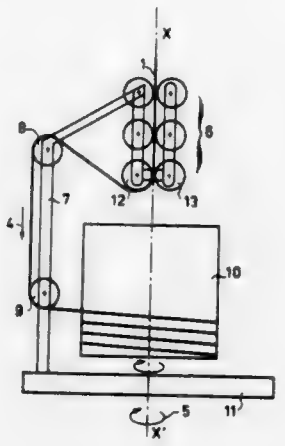
(g) recovering said partially deethanized natural gas liquid product from the bottom of said deethanizer means comprised of the remaining portion of ethane and heavier hydrocarbons in said methane-lean natural gas liquid and which is less volatile than said methane-lean natural gas liquid.

4,509,968

DEVICE FOR PROVIDING A DRAWN FIBER-LIKE OBJECT WITH A HELICAL STRUCTURE

Hervé Arditty; Yannic Bourbin; Jacques Dubos; Francis Gautnier, and Philippe Graindorge, all of Paris, France, assignors to Thomson - CSF, France

Filed Sep. 27, 1982, Ser. No. 424,293
Claims priority, application France, Nov. 3, 1981, 81 20595
Int. Cl.[3] C03B *37/03*
U.S. Cl. 65—10.1 **12 Claims**



1. A device for providing a drawn fiber-like object with a helical structure, said device comprising:

means for providing a softened material source to be drawn into said object;

a disk supported for rotational movement about a drawing axis for the drawing of said object;

guiding means fixed and supported via a gantry which is fixed to said disk for guiding and passing the drawn object from a softened material source;

gripping means for receiving said drawn object from said guiding means and gripping a solidified portion of the drawn object, said gripping means being supported by said gantry fixed to said disk for rotational movement around said drawing axis whereby rotation of said disk responsively subjects the drawn object to torsion in order to leave a residual stress state after hardening of the drawn object; and

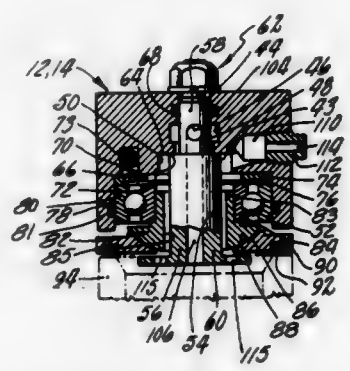
rotatable drawing and winding means for receiving said drawn object from said gripping means and thereby drawing the object from the softened material source along said drawing axis and for helically winding the thus drawn object around said drawing axis.

4,509,969

BLOWHEAD APPARATUS

Vaughan Abbott, North Granby, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Mar. 4, 1983, Ser. No. 472,361
Int. Cl.[3] C03B *9/36*
U.S. Cl. 65—300 **4 Claims**



1. A blowhead in a glassware forming machine comprising a blowhead body, at least one cavity in said body, a retaining

member secured in the cavity and extending therefrom, said retaining member having a body portion and a flange at the end of the body portion outside of said cavity, a seating member having a bore surrounding said body portion, the wall of said bore being spaced from said body portion, a sealed bearing having an inner and outer race, said inner race being sealingly secured to said seating member and said outer race having sliding engagement with the wall of said cavity, sealing means between said outer race and the wall of said cavity, said seating member having a seating surface, a sealing ring having a seating surface mating with said seating surface on said seating member, and means biasing said bearing, sealing member and sealing ring toward said flange.

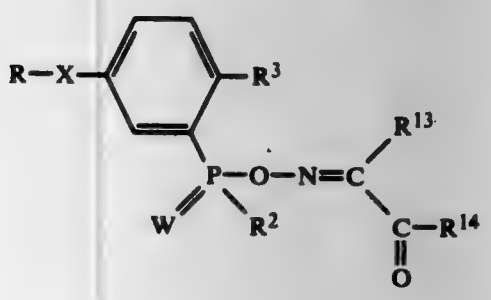
4,509,970

SUBSTITUTED PHENYLPHOSPHINYLOXY- AND PHOSPHINYLTHIO-IMINOCARBOXYLATES USEFUL FOR THE CONTROL OF WEEDS

Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Dec. 17, 1981, Ser. No. 331,496
Int. Cl.³ A01N *57/00*
U.S. Cl. 71—86 **12 Claims**

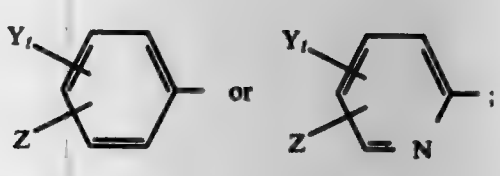
1. A compound of the formula:



(A)

wherein,

R is the group



W is oxygen or sulfur;

X is oxygen, sulfur, amino or methylene;

Y is hydrogen, lower alkyl, lower alkoxy, lower haloalkyl, lower haloalkoxy, halogen, cyano or nitro;

Z is independently selected from the values of Y; t is zero, one or two:

R^2 is hydrogen, lower alkyl or phenyl;

R^3 is cyano, nitro, nitroso, amino, hydroxyamino or chloro:

R^{13} is hydrogen, lower alkyl, lower cycloalkyl, phenyl, substituted phenyl, furyl or thienyl; and

R^{14} is OH, O^-Na^+, lower alkyl, lower alkoxy, lower alkylthio, phenyl, substituted phenyl, phenoxy, phenylthio or benzyloxy.

11. A method for the control of weeds which comprises treating said weed or its locus with a herbicidally effective amount of a compound of formula (A) as defined in claim 1.

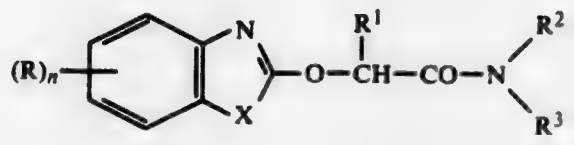
4,509,971

BENZOTHIAZOLE SUBSTITUTED CARBOXYLIC ACID AMIDE COMPOUNDS AND HERBICIDAL METHODS COMPOSITIONS THEREOF

Heinz Förster; Wolfgang Hofer; Volker Mues, all of Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 270,039, Jun. 3, 1981, abandoned, which is a continuation of Ser. No. 35,361, May 2, 1979, abandoned. This application Aug. 19, 1983, Ser. No. 524,698
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822155; Feb. 2, 1979, 2903966
Int. Cl.³ A01N *43/78, 43/90;* C07D *417/12, 277/68*
U.S. Cl. 71—90 **27 Claims**

1. Substituted carboxylic acid amide compound of the formula



(I)

wherein

n is 1 or 2;

each R is independently selected from hydrogen, halogen, trifluoromethyl, alkoxy with 1 to 2 carbon atoms, and trifluoromethoxy, and two R substituents taken together can form difluoromethylenedioxy;

R^1 is hydrogen;

R^2 and R^3 are individually selected from alkyl with 1 to 18 carbon atoms, allyl, alkynyl with 3 to 5 carbon atoms, phenylalkyl with 1 to 2 carbon atoms in the alkyl part, cyanoethyl, alkoxyalkyl with 2 to 3 carbon atoms, cyclohexyl, and aryl with 6 or 10 carbon atoms, or R^2 and R^3 together with the nitrogen atom to which they are bonded, form a pyrrolidinyl, piperidinyl, perhydroazepinyl or dodecamethyleneimino radical, which is optionally substituted by 1 to 3 alkyl groups with 1 to 2 carbon atoms per alkyl group; and

X is sulfur.

23. Method of combating weeds which method comprises applying to such weeds or their habitat a herbicidally effective amount of a substituted carboxylic acid amide compound as claimed in claim 1.

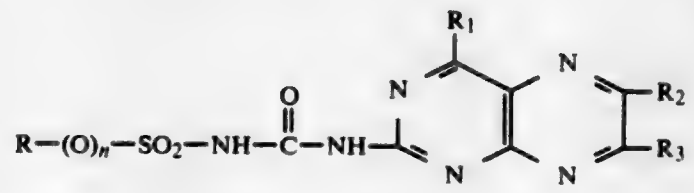
4,509,972

N-PTERIDINYL-UREAS

Rudolf Mengel; Ludwig Schröder, both of Ingelheim; Werner Stransky, Gau-Algesheim; Gerbert Linden, Ingelheim; Gerhart Schneider, Mühltal, and Sigmund Lust, Darmstadt, all of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Fed. Rep. of Germany

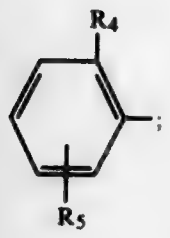
Filed Mar. 28, 1983, Ser. No. 479,708
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213507; May 21, 1982, 3219145; Jul. 28, 1982, 3228100
Int. Cl.³ A01N *43/90;* C07D *475/04, 475/08*
U.S. Cl. 71—92 **9 Claims**

1. A compound of the formula



wherein

R is 2,2,2-trichloroethyl or



R_1 is methoxy, amino, mono(alkyl of 1 to 2 carbon atoms)-amino or di(alkyl of 1 to 2 carbon atoms)-amino;

R_2 and R_3 are each independently hydrogen or methyl;

R_4 is halogen, methoxy, trifluoromethyl, lower alkoxy-carbonyl or dimethylcarbamoyl;

R_5 is hydrogen, lower alkyl, lower alkoxy or halogen; and

n is 0 or 1;

or a salt thereof.

4. An herbicidal composition consisting essentially of an inert carrier and an effective herbicidal amount of a compound of claim **1**.

4,509,973

PLANT GROWTH REGULATING COMPOSITIONS

Cyril Kust, Pennington, and Prithvi Bhalla, Hightstown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 13, 1984, Ser. No. 570,568
Int. Cl.³ D01N *43/50*
U.S. Cl. 71—92 **8 Claims**

1. A plant growth regulating composition for use on a crop, said composition comprising: (2-chloroethyl)trimethylammonium chloride and 2-(4-isopropyl-4-methyl(5-oxo-2-imidazolin-2-yl) 3-quinolinecarboxylic acid, as the active ingredients; wherein said (2-chloroethyl)trimethylammonium chloride and said 2-(4-isopropyl-4-methyl(5-oxo-2-imidazolin-2-yl) 3-quinolinecarboxylic acid are present in the ratio of about 3220:1 to 230:1 as provided to said crop.

4,509,974

S-N-BUTYL-N,N-DIISOPROPYL THIOCARBAMATE AS A SELECTIVE HERBICIDE IN COTTON

Reed A. Gray, Saratoga, and Grant K. Joo, Cupertino, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 4, 1982, Ser. No. 432,468
Int. Cl.³ A01N *37/00*; C07C *155/02*
U.S. Cl. 71—100 **3 Claims**

1. A method of selectively controlling undesirable vegetation in cotton comprising applying an herbicidally effective amount of S-n-butyl-N,N-diisopropylthiocarbamate.

2. S-n-butyl N,N-diisopropyl thiocarbamate.

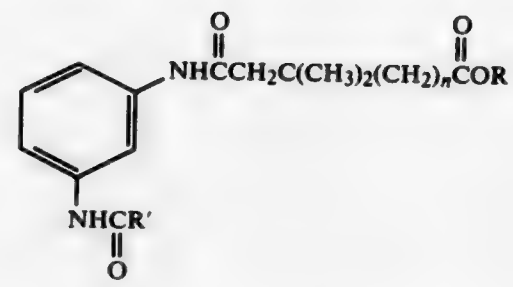
4,509,975

META-ANILIDE AND META-ANILIDE UREA HERBICIDAL COMPOUNDS AND METHODS OF USE

Eugene G. Teach, El Cerrito, and Jeffery T. Springer, El Sobrante, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 30, 1983, Ser. No. 567,283
Int. Cl.³ A01N *37/00, 37/44, 47/30*; C07C *155/02*
U.S. Cl. 71—100 **25 Claims**

1. A compound having the structural formula



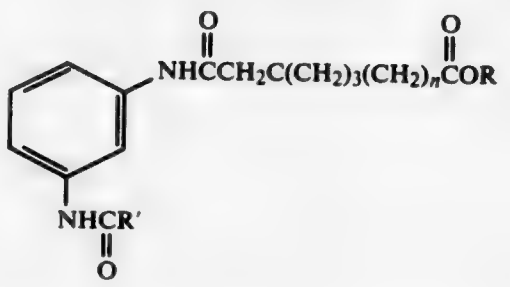
wherein

R is selected from the group consisting of C_1–C_5 alkyl, C_1–C_3 haloalkyl, phenyl and C_2–C_8 alkoxyalkyl;

R′ is selected from the group consisting of C_2–C_8 alkyl, C_1–C_3 alkoxy, cyclopropyl, methacryl, C_1–C_3 alkylmercapto, methylamino, ethylamino, C_2–C_4 dialkylamino, and C_2–C_4 alkylalkoxyamino; and

n equals the integer 0 or 1.

14. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein

R is selected from the group consisting of C_1–C_5 alkyl, C_1–C_3 haloalkyl, phenyl and C_2–C_8 alkoxyalkyl;

R′ is selected from the group consisting of C_2–C_8 alkyl, C_1–C_3 alkoxy, cyclopropyl, methacryl, C_1–C_3 alkylmercapto, methylamino, ethylamino, C_2–C_4 dialkylamino, and C_2–C_4 alkylalkoxyamino; and

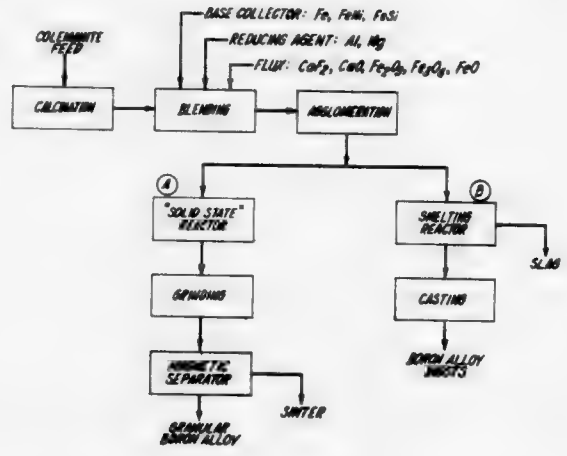
n equals the integer 0 or 1.

4,509,976

PRODUCTION OF FERROBORON

Adolfo R. Zambrano, Hibbing, Minn., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 22, 1984, Ser. No. 592,134
Int. Cl.³ C22C *33/00*
U.S. Cl. 75—21 **20 Claims**



1. A process for producing ferroboron including the step of reducing borate compounds with a material selected from the group consisting of uncombined aluminum, aluminum oxide, uncombined magnesium, and magnesium oxide in the presence of iron under an inert atmosphere at temperatures below the fusion temperature of slag forming constituents.

4,509,977

PROCESS AND DEVICE FOR SCAVENGING A METAL MELT, IN PARTICULAR STEEL, IN A CASTING LADLE OR THE LIKE PROVIDED WITH A PLUG CLOSURE

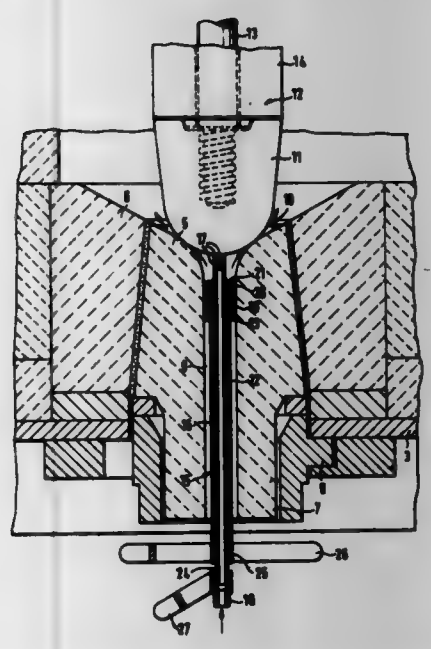
Hans Geber, Unkel, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,219

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311617

Int. Cl.[3] C21C *7/00*

U.S. Cl. 75—59 18 Claims



1. In a process for scavenging a metal melt especially of steel in a casting ladle or the like, which has an outlet at the bottom with a plug closing from the inside of the ladle whereby the scavenging gas is introduced in the melting bath through the bottom of the ladle, the improvement being in that the scavenging gas is introduced through the outlet with the plug in its closing position.

4,509,978

RECOVERABLE IMMOBILIZATION OF TRANSURANIC ELEMENTS IN SULFATE ASH

Wilbur O. Greenhalgh, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 7, 1982, Ser. No. 447,569

Int. Cl.[3] C22B *60/02*

U.S. Cl. 75—84.1 R 6 Claims

1. In a process for reclaiming transuranic elements from a sulfate ash made by digesting combustible wastes in sulfuric acid, an improved method of immobilizing said transuranic elements in a physically and chemically stable form, and of subsequently recovering said transuranic elements therefrom, comprising:

(1) adding to said ash metal selected from the group consisting of aluminum, cerium, samarium, europium, and mixtures thereof, in an amount sufficient to form alloys with said transuranic elements plus an additional amount sufficient to reduce said transuranic elements to elemental form;

(2) adding to said ash sufficient fluxing agent to lower the weight percentage of said transuranic element sulfates to about 1 to about 10%;

(3) heating the mixture of said ash, metal, and fluxing agent to a temperature sufficient to melt said fluxing agent and said metal;

(4) cooling said mixture to a solid;

(5) separating said alloys from the remainder of said mixture; and

(6) dissolving said alloy in a solution comprising nitric acid.

4,509,979

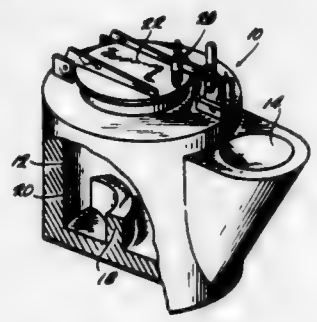
METHOD AND APPARATUS FOR THE TREATMENT OF IRON WITH A REACTANT

Gerd F. Bauer, Waldo, Wis., assignor to Modern Equipment Company, Port Washington, Wis.

Filed Jan. 26, 1984, Ser. No. 574,080

Int. Cl.[3] C22C *33/08*

U.S. Cl. 75—130 R 11 Claims



1. A ladle for treatment of molten iron with a reactant, said ladle comprising

a main chamber having sealed top and bottom ends,

a teapot spout communicating with said main chamber of said ladle through a spout opening at the bottom end of said ladle, said spout being operative both for receiving molten iron poured into said ladle and for pouring treated iron out of said ladle,

a dividing wall extending upwardly inside said main chamber from said bottom end of said ladle and forming a compartment within said main chamber adapted to contain the reactant,

an opening in said sealed top end of said main chamber to allow placement of the reactant in said ladle compartment,

a movable airtight cover mounted on said top end of said main chamber to provide said sealed top of said main chamber while said spout remains open to permit selective filling of molten iron into and dispensing of molten iron from said main chamber, and

said dividing wall having a height greater than the height of said spout opening such that said dividing wall extends upwardly to a level above said spout opening and molten iron poured into said ladle fills said spout opening before flowing over said dividing wall into said compartment to react with the reactant, so that gases resulting from the reaction between the molten iron and the reactant cannot escape from said main chamber.

4,509,980

ELECTRICAL CONTACT MATERIAL COMPRISING SILVER, CADMIUM OXIDE AND CUPRIC SALT

Ernest M. Jost, Plainville, Mass., assignor to Chemet Corporation, Attleboro, Mass. and Chemet Corporation, Attleboro, Mass.

Filed May 19, 1983, Ser. No. 496,236

Int. Cl.[3] C22C *00/00*

U.S. Cl. 75—234 9 Claims

1. A powder compact for use in making an electrical contact comprising

a mixture of silver powder and cadmium oxide powder in which the silver amounts to 70 to 95% by weight of the total and

from 100 to 500 ppm of copper, in the form of water soluble cupric salt, based on the total weight of silver and cadmium oxide.

7. An electrical contact comprising a sintered product of the compact claimed in claim 1.

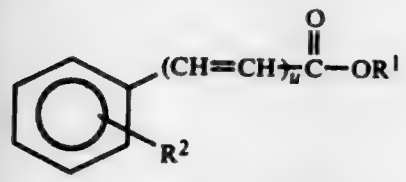
4,509,981

COATING COMPOSITIONS

Albert J. Sanders, Jr., Toledo, Ohio, and Michael J. Larson, Ypsilanti, Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

Filed Jun. 13, 1983, Ser. No. 503,920
Int. Cl.[3] C09D *3/49*; C09G *1/12*
U.S. Cl. 106—3 14 Claims

1. An aqueous emulsion consisting essentially of a mixture of (1) silicone fluids in an amount of from 1 to 60 percent by weight based on the weight of the emulsion, said silicone fluids consisting essentially of (a) from 1 to 99 percent by weight based on the weight of the silicone fluids of an aminofunctional silicone fluid and (b) from 99 to 1 percent by weight based on the weight of the silicone fluids of an organopolysiloxane fluid, (2) a nonionic emulsifying agent in an amount of from 2 to 10 percent by weight based on the weight of the emulsion, (3) an ultraviolet radiation absorbing compound selected from the group consisting of p-aminobenzoic acid and a compound having the formula



where R^1 is selected from the group consisting of a monovalent hydrocarbon radical having from 1 to 12 carbon atoms, an aminoalkyl radical having up to 6 carbon atoms; a monoalkanolaminoalkyl radical, a dialkanolaminoalkyl radical, an alkyl alkoxy radical having from 3 to 12 carbon atoms, a hydroxy substituted alkyl radical having from 2 to 6 carbon atoms, R^2 is selected from the group consisting of hydrogen, OH, OR^3, NH_2, NHR^3, NR_2^3 and R^3, R^3 represents an alkyl radical having from 1 to 4 carbon atoms and u is 0 or 1 with the proviso that when u is 0, R^2 is OH, OR^3, NH_2, NHR^3 and NR_2^3 and when u is 1, R^2 is hydrogen, OH, OR^3 and R^3, and (4) water.

4,509,982

INK COMPOSITION FOR WRITING INSTRUMENTS

Zenshiro Iijima, Abiko, Japan, assignor to Adger Kogyo Co., Ltd., Saitama, Japan

Filed Sep. 28, 1983, Ser. No. 536,758
Claims priority, application Japan, Nov. 29, 1982, 57-209149; Nov. 29, 1982, 57-209148; Jun. 2, 1983, 58-98456; Jun. 2, 1983, 58-98455
Int. Cl.[3] C09D *11/00*
U.S. Cl. 106—23 5 Claims

1. An ink composition comprising: 0.1 to 20 wt % of a water-insoluble coloring agent;
0.05 to 10 wt % of a water-soluble polymeric material which is a polyethylene oxide having a molecular weight of between about 1×10^5 and 5×10^6;
0.5 to 5 wt % of a nonionic or anionic surfactant having a polyoxyethylene group; and 50 to 90 wt % water.

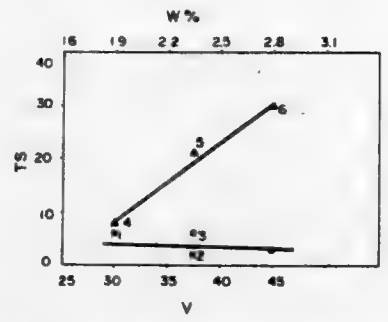
4,509,983

METHOD OF MANUFACTURING A FOUNDRY MOULD MIX CONTAINING A MOULD BINDER

Ervin I. Szabó, Manotic, and Laurence V. Whiting, Ottawa, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 427,678, Sep. 29, 1982, abandoned. This application Feb. 14, 1983, Ser. No. 580,016
Claims priority, application Canada, Dec. 7, 1983, 391636
Int. Cl.[3] B28B *7/34*
U.S. Cl. 106—38.2 5 Claims

1. A method of manufacturing a foundry mould mix containing a mould binder, comprising:
(a) mixing a binder with foundry sand in the range 15 to 150 grams of binder per kilogram of foundry sand, the binder consisting essentially of:
(i) at least one acid selected from the group consisting of glycolic acid, lactic acid, α-hydroxy butyric acid, valerolactic acid, α-hydroxy-caproic aicd, tartronic acid, tartaric acid, malic acid, mucic acid, citric acid, gluconic acid, and glyceric acid;
(ii) a precipitant for the acid, the amount of precipitant present in the binder components being equivalent to at least 50% of the stoichiometric requirement of the total acid content of the binder components, said precipitant



comprising at least one substance selected from the group consisting of calcium carbonate and substances composed essentially of calcium carbonate, said precipitant being substantially non-fluxing with the foundry sand, and substantially non-reactive with respect to other mould components than the said total acid content, and substantially non-reactive with respect to metal which is to be cast in the mould; and
(b) water, the water being present in an amount no greater than 2 times the weight of the total acid content, calculated on that acid content being in a water free state.

4,509,984

METHOD FOR PREPARING TIRE CURING BLADDER LUBRICANT

Robert F. Scheiderich, and Louis F. Comper, both of Danville, Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 212,658, Dec. 3, 1980, abandoned. This application Feb. 7, 1983, Ser. No. 464,522
Int. Cl.[3] B28B *7/36*
U.S. Cl. 106—38.22 1 Claim

1. A method of preparing an aqueous-based lubricant composition which consists essentially of:
(A) mixing under high shear mixing conditions about 10 to about 40 parts by weight bentonite clay having a mesh size in the range of about 100 to about 500 U.S. standard sieve size with about 500 to about 1500 parts by weight water until the mixture thickens where said water is preheated to a temperature in the range of 50° C. to about 85° C. prior to mixing said clay therewith
(B) mixing therewith while maintaining the mixture temperature in the range of about 20° C. to about 95° C., about 15 to about 45 parts by weight polydimethylsiloxane characterized by having a viscosity in the range of about 40,000 to about 120,000 centistokes at 25° C., about 12 to about 36 parts by weight of at least one of polyethylene glycol and polypropylene glycol having a molecular weight in the range of about 1500 to about 2500, and a surfactant for said polydimethylsiloxane and polyglycol and
(C) optionally mixing therewith about 2 to about 10 parts by weight additional surfactant; about 2 to about 8 parts by weight corrosion inhibitor; about 0.2 to about 1 part by weight defoamer; and about 2 to about 10 parts by weight stabilizer.

4,509,985

EARLY HIGH-STRENGTH MINERAL POLYMER

Joseph Davidovits, Saint-Quentin, France, and James L. Sawyer, Friendswood, Tex., assignors to Pyrament Inc., Houston, Tex.

Filed Feb. 22, 1984, Ser. No. 582,279
Int. Cl.³ C04B *19/04*
U.S. Cl. 106—84 6 Claims

1. An early high strength concrete composition obtained by adding ground blast furnace slag to a reactant mixture consisting of alumino-silicate oxide $(Si_2O_5,Al_2O_2)_n$ with the aluminum cation in four-fold coordination, strong alkalis selected from the group consisting of sodium hydroxide and potassium hydroxide, water and a member selected from the class consisting of sodium and potassium polisilicate solutions, said reactant mixture having the following oxide mole ratio:

M_2O/SiO_2: 0.20 to 0.36
SiO_2/Al_2O_3: 3.0 to 4.12
H_2O/M_2O: 12 to 20
M_2O/Al_2O_3: 0.6 to 1.36

where M_2O represents a member selected from the class consisting of Na_2O, K_2O, and the mixture (Na_2O,K_2O).

4,509,986

COMPOSITION OBTAINED BY MIXING FLY ASH, OXISLUDGE AND PHOSPHOGYPSUM

Carel W. J. Hooykaas, Rotterdam, Netherlands, assignor to Pelt & Hooykaas B.V., Rotterdam, Netherlands

Filed Oct. 19, 1983, Ser. No. 543,430
Claims priority, application Netherlands, Oct. 20, 1982, 8204052
Int. Cl.³ C04B *11/10*
U.S. Cl. 106—110 9 Claims

1. A composition obtained by mixing a compound presenting pozzolanic properties consisting of fly ash and a moisture-containing base composition consisting of calciumsulfate hemihydrate, the composition containing a reaction product of an inhibitor inhibiting the formation of a loose mass or granules when mixing the base composition and the compound presenting pozzolanic properties, and a compound inactivating this inhibitor consisting of a solid product caught from gases emanating from steel convertors and containing at least a volatile metal or a volatile metal compound.

4,509,987

CALCIUM CARBONATE DISPERSIONS

David Farrar, Bradford, and Malcolm Hawe, Huddersfield, both of England, assignors to Allied Colloids Limited, Bradford, England

Filed Nov. 17, 1982, Ser. No. 442,343
Int. Cl.³ C01F *11/18*; C09C *3/04*
U.S. Cl. 106—308 Q 16 Claims

1. A dispersion in water containing at least 72% by weight of the dispersion of inorganic particulate material comprising calcium carbonate in the form of ground particles of which at least 87% by weight are less than 2 μm in size and a dispersing agent comprising a copolymer of from 5 to 75% by weight AMPS and 95 to 25% by weight acrylic acid, or a water soluble salt thereof, having a molecular weight in the range 1,000 to 20,000, and the dispersion remains as a flowable dispersion upon standing.

4,509,988

NACREOUS PIGMENTS HAVING IMPROVED LIGHT FASTNESS, THEIR PREPARATION AND USE

Horst Bernhard, Schwarzenberg, Austria, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,044
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151355
Int. Cl.³ B32B *19/02*; C04B *31/26*; C09C *1/00, 3/06*
U.S. Cl. 106—308 R 15 Claims

13. In a composition comprising a base ingredient and a pearlescent pigment based on TiO_2 coated mica flakes, the improvement wherein the mica flakes are coated with a metal oxide layer, wherein the metal oxide layer comprises a homogeneous mixture of titanium dioxide, silicon dioxide and iron oxide containing about 0.1 to about 20 percent by weight of silicon dioxide and about 0.1 to about 60 percent by weight of iron oxide.

4,509,989

CLEANING METHOD FOR REMOVING SULFUR CONTAINING DEPOSITS FROM COKE OVEN GAS LINES

L. Walter Sumansky, South Park Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 25, 1983, Ser. No. 478,951
Int. Cl.³ B08B *9/02*; C11D *3/30*
U.S. Cl. 134—22.12 16 Claims

1. Process for removing from gas lines for handling coal conversion process gases having properties similar to coke oven gas, hard to remove deposits deposited from said gases, said deposits containing high elemental sulfur content and multivalent compounds comprising (1) contacting said deposits with a cleaning composition comprising (a) a major portion of aliphatic amine capable of dissolving said elemental sulfur in the presence of water, (b) water in sufficient quantities to dissolve said multivalent compounds, and (c) sufficient oxidizing or reducing agent to change the valence of said multivalent compounds to a more uniform valent state to thereby be more readily dissolved by said water, (2) allowing said cleaning composition to remain in contact with said deposits for sufficient time to allow sufficient dissolution of said deposits to take place to allow removal of said deposits to take place, and (3) applying such force as is necessary to remove these partially dissolved deposits from said surface.

4,509,990

SOLID PHASE EPITAXY AND REGROWTH PROCESS WITH CONTROLLED DEFECT DENSITY PROFILING FOR HETEROEPITAXIAL SEMICONDUCTOR ON INSULATOR COMPOSITE SUBSTRATES

Prahalad K. Vasudev, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

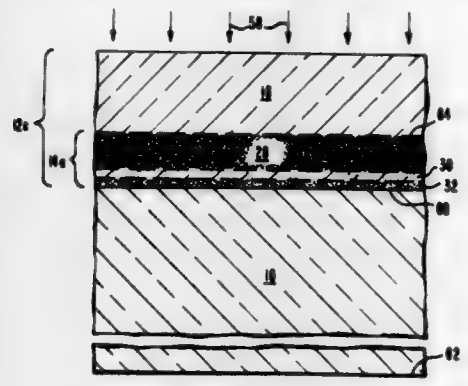
Filed Nov. 15, 1982, Ser. No. 441,477
Int. Cl.³ H07L *21/263, 21/225*
U.S. Cl. 148—1.5 23 Claims

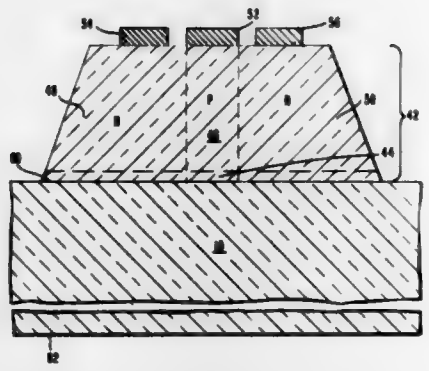
1. A method of fabricating a composite semiconductor/insulator substrate comprising the steps of:

(a) providing a thin layer of semiconductor material adjacent a surface of an insulator, said insulator having a given damage density threshold;

(b) implanting a given ion species into said thin semiconductor layer at an implant energy and dosage sufficient to amorphize a buried layer portion of said semiconductor layer, the average residual implant energy at the surface of said insulator being sufficiently low such that the product of the residual energy and dosage of those ions that pass into said insulator is less than the damage density threshold of said insulator; and

(c) regrowing said amorphous buried layer so as to form a recrystallized buried layer using the unamorphized portion of said thin semiconductor layer as a crystallization seed.



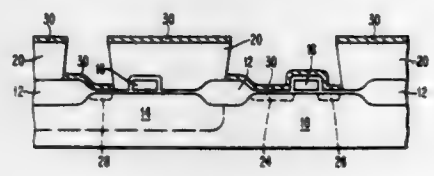


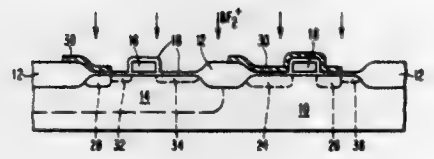
4,509,991

SINGLE MASK PROCESS FOR FABRICATING CMOS STRUCTURE

Yuan Taur, Armonk, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,516
Int. Cl.³ H01L *21/265, 21/26, 7/54*
U.S. Cl. 148—1.5 **7 Claims**





1. A process for implanting self-aligned source and drain regions in a complementary semiconductor structure of the type including a semiconductor substrate having recessed oxide isolation regions, defining at least one pair of device regions, a well region in said semiconductor substrate below one of said device regions, and gate electrodes in said device regions between said recessed oxide regions, said process comprising the steps of

(a) first depositing a layer of photoresist on the surface of said substrate and exposing said photoresist layer through a single lighographic mask, and etching openings in said photoresist layer in accordance with said single lithographic mask such that source and drain regions of a first device region of said at least one pair of device regions are covered by a discrete layer of said photoresist and source and drain regions of a second device region of said at least one pair of device regions adjacent to said first device region are located under said opening in said photoresist layer,

(b) implanting ions of a first conductivity type into said surface of said substrate through said opening in said photoresist layer to form ion implanted source and drain regions in said second device region, implantation of ions into said first device region being blocked by said photoresist layer,

(c) depositing a layer of ion implantation blocking material over said photoresist layer and through said openings in said photoresist layer onto said source and drain regions of said second device region of said substrate,

(d) removing said photoresist layer, thereby exposing said source and drain regions of said first device region of said substrate and maintaining said source and drain regions of said second device region covered by said ion implantation blocking material in a pattern which is the reverse of its first pattern of said photoresist layer in said single photolithographic masking step (a),

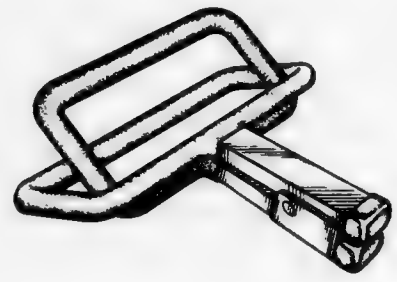
(e) and implanting ions of a second conductivity type into said surface of said substrate for forming ion implanted source and drain regions in said first device region, ion implantation of said second device region being blocked by said layer of ion implantation blocking material such that said source/drain regions of said first device region and said source/drain regions of said second device region are directly self-aligned.

4,509,992

PROCESSES AND COMPOSITIONS FOR THE TREATMENT OF ALUMINUM SURFACES

George L. Higgins, Windsor, England, assignor to Parker Chemical Company, Madison Heights, Mich.

Division of Ser. No. 339,958, Jan. 18, 1982, abandoned. This application Jul. 29, 1983, Ser. No. 518,508
Int. Cl.³ C23F *7/06*
U.S. Cl. 148—6.27 **6 Claims**



1. A process for coating aluminum which comprises contacting an aluminum surface with a composition which comrpises an aqueous solution having a pH of from about 9 to about 12.5 and containing an effective coating forming amount of a complexing agent which has at least one of a nitrogen atom with a lone pair of electrons and a carboxylate group, and an oxidizing agent which solution is substantially free of components which inhibit the coating formation, to form a paint-base coating on such surface having a thickness of at least about 0.5 g/m^2 and, thereafter, applying a siccative coating to the thus-formed paint-base coating.

4,509,993

REGENERATION AGENT FOR CARBURIZATION SALT BATH

Hans-Hermann Beyer, Kahl; Ulrich Bandis, Hanau, and Peter Biberbach, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 29, 1983, Ser. No. 566,811

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1983, 3300488

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—15.5 9 Claims

1. A process of regenerating a carburizing salt bath comprising regenerating the bath at a temperature of 800° to 950° C. by adding the polymeric organic compound of claim 1 thereto a polymeric compound having the over-all composition $(C_6H_xN_y)_z$, where

x is 3 to 5

y is 5 to 8

z is 10 to 10,000.

4,509,994

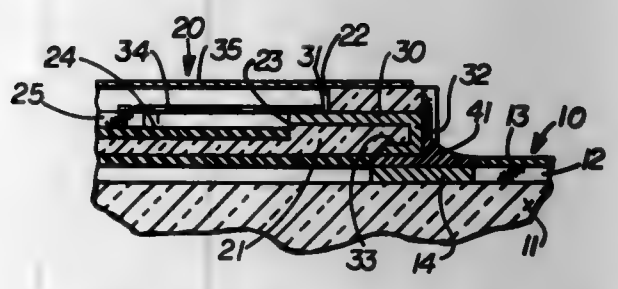
SOLDER COMPOSITION FOR HIGH-DENSITY CIRCUITS

Felix Barajas, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 4, 1984, Ser. No. 646,759

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—24 24 Claims



1. A solder composition especially adapted for soldering components in high-density electronic circuitry, whereby following soldering essentially no solder balls are formed, said solder composition comprising finely divided solder metal dispersed in a liquid vehicle containing (a) a thixotropic agent, (b) an organic solvent and (c) a flux, the particle size of said metal ranging from about 0.2 to about 35 microns, said liquid vehicle being present in an amount of 10 to 14%, and said solder metal being present in an amount of 86 to 90%, by weight of said composition.

4,509,995

METHOD AND APPARATUS FOR QUENCHING

Takeshi Hachisu; Keiji Taguchi, both of Ibaraki; Toshimi Sasaki, Mito; Tetsuo Matsumoto, Tsuchiura, and Nobuyoshi Hidao, Kashiwa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Const. Machinery Co., both of Tokyo, Japan

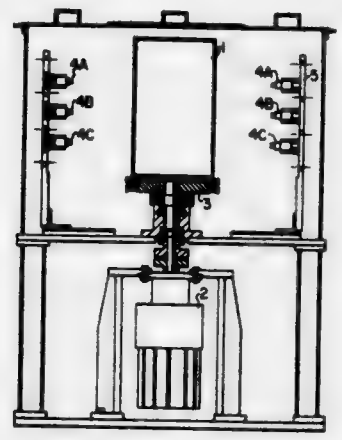
Filed Jan. 19, 1983, Ser. No. 459,148

Claims priority, application Japan, Feb. 12, 1982, 57-19567

Int. Cl.³ C21D *1/18*

U.S. Cl. 148—143 5 Claims

1. A batch-type quenching method wherein a mixed spray jet of a liquid and a gas is applied to at least one discrete object to be quenched during a period of cooling, comprising the steps of providing a supply of said liquid under pressure and a supply of said gas under pressure, providing nozzles around said object to be quenched for applying said mixed spray jet of said liquid and said gas to said object, said nozzles each including a first port in a surface opened to the atmosphere and a second port annularly formed around said first port, said first and second ports being formed on the same plane, directing liquid from said supply of pressure liquid through one of said first and second ports in said nozzle and at the same time directing gas from said supply of pressurized gas through the other of said first and second ports in said nozzle so that said liquid and said gas are jetted out from respective ones of said first and second ports to form a liquid-gas mixture spray jet which impinges upon said object to be quenched during said period of cooling, and varying the mixing ratio between said



liquid and said gas in said mixed spray jet during said period of cooling of said object to be quenched, the step of varying the mixing ratio including spraying only said gas and subsequently spraying a mixture of said liquid and said gas and wherein the diameter of droplets in said mixed spray jet is from 50 to 200 μm.

4,509,996

INJECTION LASER MANUFACTURE

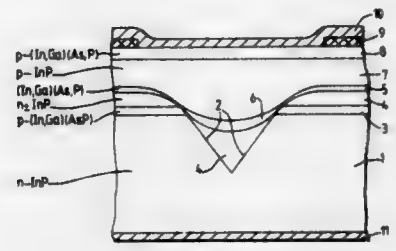
Peter D. Greene, and Stephen E. H. Turley, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

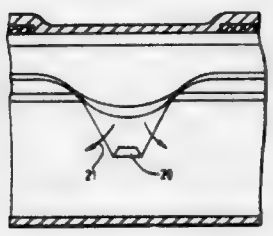
Filed Jun. 24, 1983, Ser. No. 508,293

Claims priority, application United Kingdom, Nov. 5, 1982, 8231655

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 9 Claims





1. A method of making an injection laser in which in operation of the completed laser current flow through the laser active layer is confined at least in part by reverse biassed junctions provided by spaced apart parts of a blocking layer, wherein the blocking layer is grown by liquid phase epitaxy upon a non-planar substrate presenting different crystal planes to the growth, the crystal planes being selected such that the growth takes place on spatially separated first surfaces parallel to one of the different crystal planes but not on any second surface situated between and interconnecting the first surfaces and extending along another of the different crystal planes to produce the spaced apart parts of the blocking layer without

recourse to masking thereby permitting this growth to be directly succeeded, without interruption by intermediate processing technology of a different type, by the growth of further layers of the laser structure by liquid phase epitaxy.

4,509,997

ORGANOMETALLIC CHEMICAL VAPOR DEPOSITION OF FILMS UTILIZING ORGANIC HETEROCYCLIC COMPOUNDS

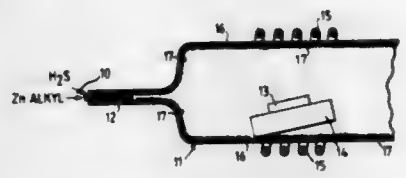
Brian Cockayne, Malvern; Richard J. M. Griffiths, and Peter J. Wright, both of Lower Wick, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

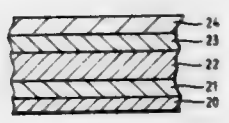
Filed Oct. 18, 1983, Ser. No. 543,003

Claims priority, application United Kingdom, Oct. 19, 1982, 8229830

Int. Cl.³ H01L *21/205, 21/365*

U.S. Cl. 148—175 **8 Claims**





1. In a method of inorganic thin film production including the steps of

(1) forming a vapor stream consisting at least partly of a mixture of the vapors of an organometallic compound and an organic compound incorporating a group V or group VI element, and

(2) passing the vapor mixture over a heated substrate for reaction and decomposition of the organometallic and organic compounds to deposit an inorganic thin film having metal and group V or group VI element constituents,

the improvement comprising using a heterocyclic organic compound incorporating the group V or VI element as a ring member, whereby undesired reaction between vapor stream constituents is inhibited.

4,509,998

EMULSION BLASTING AGENT WITH AMINE-BASED EMULSIFIER

Ernest A. Hajto, North Bay, Canada, assignor to Du Pont Canada Inc., Montreal, Canada

Filed Dec. 27, 1983, Ser. No. 565,775

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 **12 Claims**

1. A method for producing a water-in-oil emulsion type explosive composition comprising combining a liquid carbonaceous fuel and an aqueous solution of at least one inorganic oxidizing salt, with agitation, in the presence of ingredients A and B, ingredient A being selected from the group consisting of oleic acid, linoleic acid and mixtures thereof, and ingredient B being selected from the group consisting of C_1–C_6 alkylamines, C_1–C_6 alkyldiamines, hydrazine, C_2–C_6 alkanolamines, urea and mixtures thereof, incorporating dispersed gas bubbles into the resulting water-in-oil emulsion, one of said ingredients A and B being added before or during agitation and the remaining ingredient or ingredients A or B being added during agitation.

4,509,999

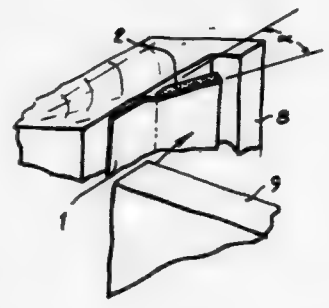
DRAUGHT EXCLUDING STRIPS

John Sandor, Spraylea, Sharmans Close, Harmer Green La., Welwyn, Hertfordshire, England (AL6 OAR)

Filed Feb. 13, 1984, Ser. No. 579,854

Int. Cl.³ B32B *1/00, 3/02, 3/10*

U.S. Cl. 156—71 **13 Claims**



13. A method of attaching a draught excluding strip, comprising the steps of:

providing a resilient foam strip having two parallel flat faces, a securing strip attached to the foam strip so that the foam strip is arranged at one side of the securing strip, the securing strip at least partially overlying one of the flat parallel faces of the foam strip and having a portion projecting beyond the foam strip along only one edge thereof, a coating of a self-adhesive material arranged on the portion of the securing strip projecting beyond the foam strip on the one side of the securing strip, and a cover strip protecting the coating of self-adhesive material;

pressing one region of the thus-exposed self-adhesive material onto a member to which the draught excluding strip is to be attached; and

reducing the width of another region of the securing strip, which is closest to the one edge of the foam strip and is not adhesively secured to anything, thereby increasing compression of the one edge of the foam strip and causing lifting up of the foam strip at an angle relative to the member to seal larger gaps.

4,510,000

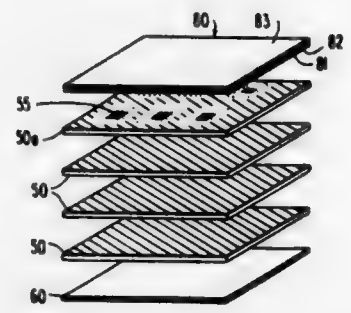
METHOD FOR PALLADIUM ACTIVATING MOLYBDENUM METALLIZED FEATURES ON A CERAMIC SUBSTRATE

Ananda H. Kumar, Wappingers Falls, and Bernard Schwartz, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1983, Ser. No. 556,732

Int. Cl.³ C04B *35/00, 39/00*

U.S. Cl. 156—89 **5 Claims**



1. A process for coating a molybdenum or tungsten metallurgical pattern on or in a dielectric green sheet with palladium, nickel, platinum or rhodium which comprises:

coating palladium, nickel, platinum or rhodium on a polyvinyl butyral resin layer on a polyester film;

superimposing said polyester coated film on the dielectric green sheet with the palladium, nickel, platinum or rhodium coating adjacent the molybdenum or tungsten metallurgical pattern and the dielectric green sheet;

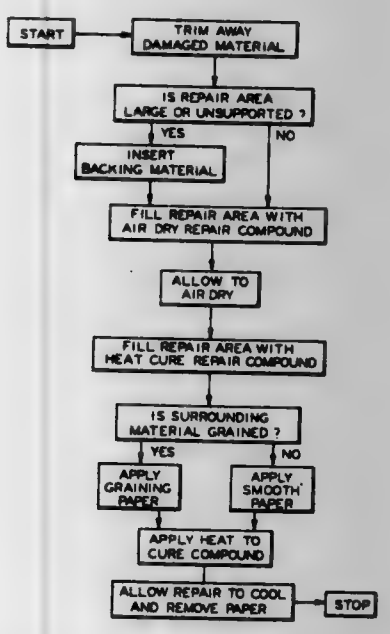
laminating the resulting assembly;
stripping the polyester film therefrom while permitting the polyvinyl butyral layer and palladium, nickel, platinum or rhodium layer to remain on the molybdenum or tungsten metallurgical pattern and the dielectric green sheet;
sintering the resulting composite to a fired structure, whereby said polyvinyl butyral is volatilized off and said palladium, nickel, platinum or rhodium is alloyed with the molybdenum or tungsten metallurgical pattern to result in a densified structure.

4,510,001

MULTIPLE FILLING METHOD OF REPAIRING DAMAGED MATERIAL

Lawrence L. Speer, 436 Hopocan Ave., Barberton, Ohio 43203

Filed Sep. 8, 1983, Ser. No. 531,174
Int. Cl.[3] B32B *35/00*
U.S. Cl. 156—98 11 Claims



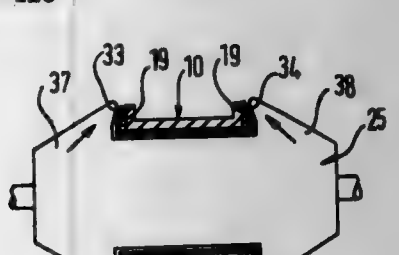
1. A method of repairing damaged vinyl and other material comprising the steps of:
trimming away damaged material to form a repair area in the undamaged material,
substantially filling said repair area with an air drying repair compound,
allowing said repair compound to air dry,
applying a layer of heat curable repair compound over said air drying repair compound, and
applying heat to said heat curable repair compound to cure said compound.

4,510,002

MANUFACTURE OF PNEUMATIC TIRES

Anthony G. Goodfellow, Maghull, England, assignor to W & A Bates Limited, London, England

Filed Oct. 20, 1983, Ser. No. 543,874
Claims priority, application United Kingdom, Nov. 2, 1982, 8231308
Int. Cl.[3] B29H *17/22, 17/16*
U.S. Cl. 156—126 12 Claims



1. A method of manufacturing a partially-built carcass for a pneumatic tyre comprising locating a pair of tyre bead elements coaxially at opposite ends of a bead tube in axially spaced relationship predetermined by the length of the tube, locating within the tube an expansible former around which tyre carcass material is wrapped so that the material extends axially within the tube and the bead elements and projects axially beyond the bead elements at each end, expanding the carcass material to engage the bead elements and turning the projecting ends of the material radially outwardly around the bead elements whilst the bead elements are supported by the tube.

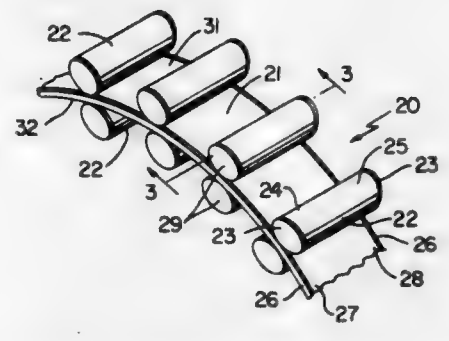
5. Apparatus for manufacturing a pneumatic tyre comprising a bead tube at opposite ends of which tyre bead elements may be located in axially spaced relationship predetermined by the length of the tube, and means for locating the bead tube in a predetermined axial position in coaxial relationship with an expansible former, the bead tube being constructed so as to be capable of supporting the bead elements in said axially spaced relationship during an operation to turn tyre carcass material radially outwardly around the bead elements and to be removable from a partially-built tyre carcass supported therein.

4,510,003

METHOD OF MAKING AN ENDLESS POWER TRANSMISSION BELT CONSTRUCTION

Larry R. Oliver, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 328,177, Dec. 7, 1981, Pat. No. 4,459,125.
This application May 14, 1984, Ser. No. 610,155
Int. Cl.[3] B29H *7/22*
U.S. Cl. 156—137 8 Claims



1. In a method of making an endless power transmission belt construction having power transmitting contact faces and comprising the steps of forming an axial tensioning means, forming a plurality of lateral stiffening means that are carried by said tensioning means, forming friction material that is carried by at least one of said tensioning means and said stiffening means, and forming said tensioning means and said stiffening means to be a one-piece construction from the same polymeric material that provides an axial and lateral stiffness in excess of that normally provided by polymeric friction material that normally forms the main body of a belt construction that is reinforced with such a tensioning means and stiffening means, the improvement comprising the step of disposing said friction material so that all of said friction material is located only at said contact faces thereof and thereby defines only said contact faces of said belt construction while said tensioning means and stiffening means define all other exposed areas of said belt construction.

4,510,004

APPARATUS AND METHOD FOR PRODUCING A TUBE FROM A CONTINUOUS FORMED EXTRUDED SUPPORTING MATERIAL AND A PROFILED MATERIAL

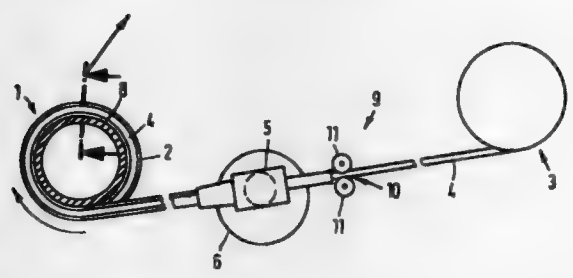
Manfred Hawerkamp, Altenrather Strasse 47, 5210 Troisdorf, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 452,012

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1982, 3213551

Int. Cl.[3] B31C *1/00, 3/00*

U.S. Cl. 156—143 3 Claims



1. A device for producing a tube, comprising:

a rotatable mandrel (8) over which the tube (1) is formed;

an extruder (5) alongside said mandrel having a nozzle with an opening therethrough for extruding a thermoplastic supporting material (2) which material has a hollow portion and is directed onto said mandrel in a selected angle, said mandrel and said extruder being relatively movable in relation to the axis of said mandrel so as to form a continuous helically wound strip on said mandrel with a welded together seam (7) between adjacent turns to form the tube (1);

a supply bobbin (3) of profiled reinforcing tube material (4) alongside said extruder;

a pair of traction rolls (11) for drawing off the profiled material (4) from said supply bobbin and directing it into said extruder nozzle for combining it with the supporting material (2) to form a combination and presenting the combination onto said mandrel, said roller being disposed between said supply bobbin and said extruder for pushing the profiled material into said nozzle, said rolls defining a feed passage (10) for the profiled material and at least one of said rolls being power driven to push the profiled material; and

means for rotating said mandrel by a relative force with respect to said power driven roll so that substantially no tension is applied to the combination between said extruder and said mandrel whereby the supporting material in the combination is not deformed.

3. A method of producing a tube using a mandrel and an extruder for forming a supporting strip material having a hollow portion, and a reel supply of reinforcement tube material alongside the extruder, the extruder having a nozzle with an opening therethrough for extruding the supporting strip material, comprising:

feeding the reinforcement tube material off the reel supply and passing it through the nozzle of the extruder by pushing the reinforcement tube material into the opening of the nozzle;

combining the reinforcement tube material with the supporting material which is extruded by the extruder to form the supporting strip material; and

presenting the strip material to the mandrel with substantially no tension on the strip material;

feeding the reinforcement tube material being accomplished by engaging the reinforcement tube material between a pair of traction rolls having a passage therein for receiving the reinforcement tube material and driving one of the traction rolls for pushing the reinforcement material into the opening of the nozzle.

4,510,005

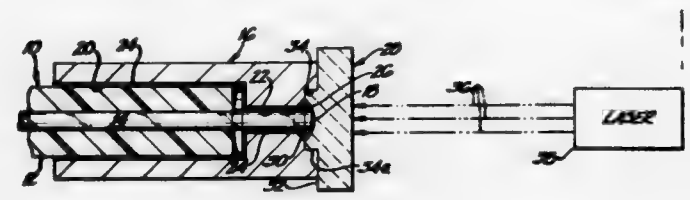
METHOD AND APPARATUS FOR RESHAPING AND POLISHING AN END FACE OF AN OPTICAL FIBER

John P. Nijman, Wheaton, Ill., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 28, 1982, Ser. No. 426,026

Int. Cl.[3] G02B *5/14*

U.S. Cl. 156—221 17 Claims



2. A method of terminating a fiber optic cable containing an optical fiber with an end face at one end of the cable, comprising the steps of:

providing a tubular member having an inner surface that is in close proximity to and surrounds the fiber optic cable and a heat bonding agent that is between the inner surface and the cable;

providing a mold having a rounded polished surface adapted for contacting the end face;

urging the end face and polished surface into contact;

directing radiation from a laser onto the mold in order to heat the end face to a temperature above the softening temperature of the fiber and, thereby, to cause the end face to conform to the polished surface; and

heating the heat bonding agent to bond the tubular member to the cable.

7. An apparatus for polishing the end face of an optical fiber comprising:

a mold having a rounded polished surface on at least one side;

means for holding the optical fiber and mold so that the end face and polished surface are urged into contact; and

laser means for heating the end face to a temperature above the softening temperature of the fiber to cause the end face to conform to the polished surface.

4,510,006

PERSONALIZED LAMINATED DISPLAY

A. David Lawson, 135 Suburban Rd., Knoxville, Tenn. 37923

Continuation of Ser. No. 095,110, Nov. 16, 1979, abandoned. This application Sep. 7, 1982, Ser. No. 415,374

Int. Cl.[3] B44C *1/16;* B32B *31/00;* G09F *7/16;* A61F *13/02*

U.S. Cl. 156—235 5 Claims

1. A method for fabricating on-the-spot personalized laminated displays comprising the steps of:

selecting a backing sheet having a first and second side, the first side being suitable for use as a background for a personalized display;

using a die to cut and form precisely shaped and precisely located lettes from a strip of letter material having a selected width, a top side and a bottom side, said bottom side having an adhesive applied thereto, said strip of letter material being sandwiched between a transparent strip and a backing strip, said transparent strip having an outside surface and an inside surface, said inside surface including an adhesive which forms a detachable bond with said top side of said strip of letter material, said backing strip including an adhesive resistant surface and a back surface, said adhesive resistant surface beng detachably bonded to said strip of letter material;

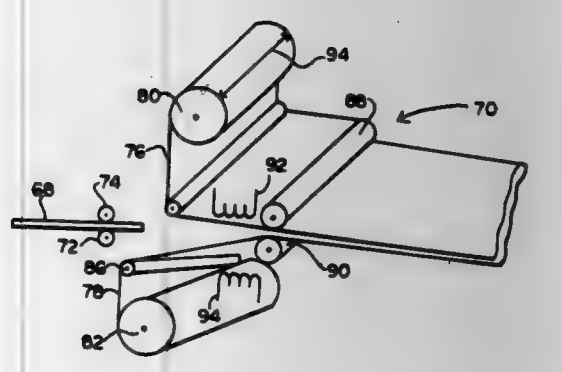
separating said transparent strip, and said formed letters from said letter material and said backing strip such that said precisely formed and spaced letters formed in said strip of letter material remain attached to said transparent strip, and all portions of said strip of letter material other

than said precisely formed letters remain attached to said backing strip;

applying said precisely cut and formed letters attached to said transparent strip to said backing sheet to form said on-the-spot presonalized display;

peeling off said transparent strip such that said precisely formed letters are secured adhesively to said backing sheet and precisely located;





applying decorative indicia to said backing sheet, said decorative indicia including an adhesive on the side contacting said backing sheet;

encasing said personalized display between two sheets of transparent plastic film; and

applying pressure and heat to said personalized display and said two sheets of plastic film to seal said personalized display therebetween to form said personalized laminated display.

4,510,007

METHOD OF JACKETING STEEL PIPES

Walter Stucke, Ratingen, Fed. Rep. of Germany, assignor to Mannesmann AG, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,200

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225646; Dec. 20, 1982, 3247510

Int. Cl.³ B29D *23/04*

U.S. Cl. 156—244.12 **9 Claims**

1. Method of jacketing an elongated cylindrical metallic object, comprising the steps of:

heating the object to a temperature of at least 80° Centigrade;

applying a powdery precondensated blend of an epoxy resin and a curing agent to said object, said blend having properties of curing within 50 to 70 minutes at a temperature of 145° to 155° Centigrade, the amount of blend so applied being sufficient to obtain a base layer thickness of 30 to 50 micrometers;

raising the temperature of the epoxy base layer from the outside to about 200° Centigrade by passing the object through a source of thermoenergy to evaporate reaction products from a melted and coherent epoxy coating;

extruding a double hose upon the hot base layer at an extrusion temperature between 165° Centigrade and 190° Centigrade, the double hose having two layers accordingly wherein the inner one of the two layers includes an adhesive of ethylene copolymer, the outer layer of the two-ply hose being a thermoplastic synthetic material, having a thickness so that the ratio of the relative volume of applied hose material to the relative volume of the base is at least 36 to 1;

subsequently curing the base layer by applying the thermoplastically coated object to a cooling medium for about an hour under conditions which limit the temperature of the thermoplastic layer to a temperature of 50° Centigrade to 60° Centigrade; and

subsequently permitting the object with jacket to cool to room temperature.

4,510,008

CONTINUOUS PRODUCTION OF COPPER-CLAD LAMINATE

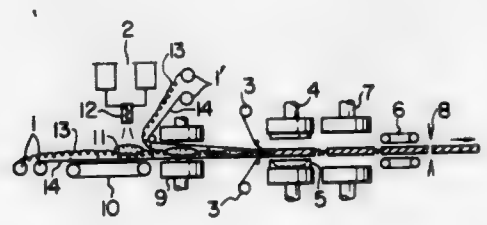
Ikuo Hoshi; Masami Arai, both of Shimodate; Kiyoshi Yokochi, Tochigi; Yasuo Miyadera; Atsushi Fujioka, both of Shimodate, and Takehisa Nakagawa, Yuki, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Oct. 6, 1982, Ser. No. 433,099

Claims priority, application Japan, Oct. 15, 1981, 56-165411

Int. Cl.³ B29C *19/00*

U.S. Cl. 156—245 **11 Claims**



1. A process for continuously producing a copper-clad laminate for printed wiring boards which comprises

running a continuous, fibrous substrate,

supplying partially and intermittently a solventless thermosetting resin mixture to a central portion of at least one surface of the running substrate,

laminating a copper foil to the at least one surface of the running substrate on which the thermosetting resin mixture is supplied,

pressure molding with heating the copper foil laminated substrate in a mold comprising a pair of flat plates at least one of which has projecting portions tapered to the center of the flat plate at the periphery of the flat plate so as not to cut the copper foil and to pinch the copper foil and the substrate,

taking off the molded laminate from the mold while opening the mold, and

cutting the molded laminate.

4,510,009

VENEER SPLICING APPARATUS

Yukio Takagi, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Japan

Filed Sep. 7, 1983, Ser. No. 530,049

Claims priority, application Japan, Sep. 25, 1982, 57-166969

Int. Cl.³ B65H *19/00*

U.S. Cl. 156—353 **6 Claims**

1. A veneer splicing apparatus comprising

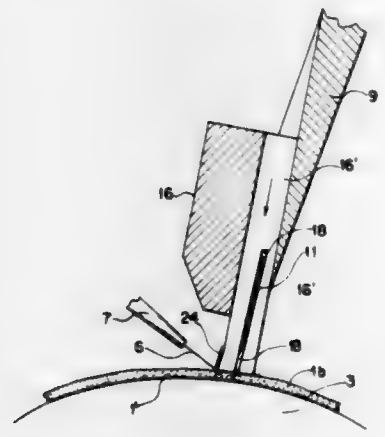
means for conveying veneer sheets having irregular portions along a feed path in a predetermined direction;

sensors for detecting an irregular end portions of a first veneer sheet to produce a trailing end cutting signal and an irregular leading end portion of a second veneer sheet to produce a leading end cutting signal;

cutting tool means provided above the feed path to cut respective veneer sheets in response to relevent signals, said conveying means being adapted to place said first and second veneer sheets in contacting train to define a splicing line;

means for feeding thermoplastic adhesive material along said feed path to cross said veneer splicing line; and

cold pressing means carried by said cutting tool means and adapted to slide relative to said cutting tool means toward



and away from splicing line such that said adhesive material is cold pressed on said first and second veneer sheets.

4,510,010

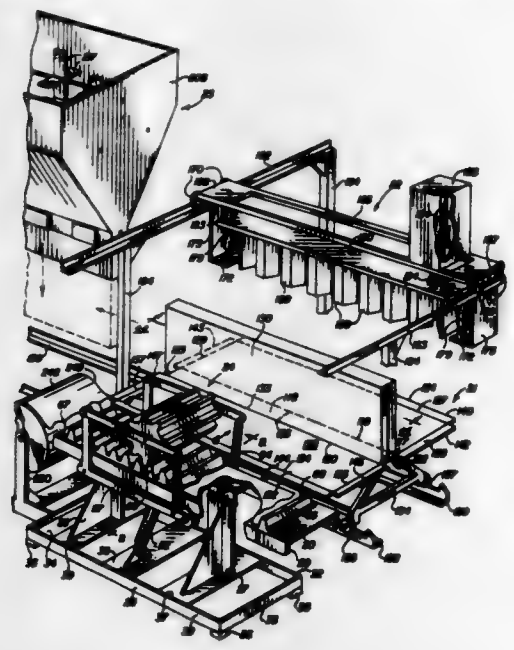
METHOD AND APPARATUS FOR FABRICATING INSULATIVE PANEL

Arthur G. Schramm, deceased, late of Scottsdale, Ariz.; by Doralyn A. Hardy, personal representative, 1522 E. San Juan, Phoenix, Ariz. 85014, and Jack C. Shaffer, 610 E. Montebello #36, Phoenix, Ariz. 85012

Division of Ser. No. 153,072, May 27, 1983, Pat. No. 4,416,715, and a continuation-in-part of Ser. No. 957,665, Nov. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 937,266, Aug. 31, 1978, abandoned. This application Aug. 8, 1983, Ser. No. 506,609

Int. Cl.[3] **B43M** *3/00;* **B32B** *3/00;* **B29C** *17/40;* **B31F** *5/00*

U.S. Cl. 156—383 **13 Claims**



1. An apparatus for receiving selected components including,

a rectangular filler sheet having a pair of parallel longitudinal edges, a pair of parallel lateral edges, and a pair of opposed faces,

an envelope sheet having a pair of opposed faces, and

a supply of granular loose fill insulative material, said insulative material being of the type conventionally intended for pneumatic or poured application on horizontal surface installations,

and for fabricating a rigid insulative panel from said components, said apparatus comprising:

a base;

a press supported by said base for receiving said filler sheet and impressing selected lateral sections thereof to form a laterally folded sheet therefrom,

wherein said press includes:

(a) a die for receiving said filler sheet and having a plurality of spaced apart die elements defining a plurality of spaced apart recesses therebetween;

(b) a punch having a plurality of spaced apart punch elements extending therefrom, said punch elements being matingly receivable within said recesses between said die elements; and

(c) means for moving said punch relative said die and for urging said punch elements into said recesses for impressing lateral portions of said filler sheet into said recesses and forming said folded sheet wherein said punch elements extend longitudinal of said punch, said punch being carried by a guide means for movement relative said die, said guide means includes:

(a) a frame movable along said press and secured against upward movement therefrom; and

(b) biasing means urging said punch elements downwardly against said die

a table supported by said base for receiving said envelope sheet and said folded sheet;

first and second rectangular panels, each having inner and outer longitudinal edges, first and second lateral edges, and an inner face,

said inner longitudinal edges being spaced apart and hingedly mounted on said table,

said first and said second panels being contractively movable to fold said envelope sheet against the faces of said folded sheet to form a partitioned structure having an open top,

a pair of lateral flaps, one hingedly secured along either lateral edge of said second panel and inwardly movable to fold said envelope sheet against a respective lateral edge of said folded sheet,

including a longitudinal flap hingedly secured along the outer longitudinal edge of said second panel and inwardly movable to fold said envelope sheet and close said opening, including:

(a) marginal anvil portions carried proximate the outer longitudinal edge and the first and second lateral edges of said first panel, said anvil portions extending beyond the respective edges of said folded sheet; and

(b) an abutment member carried by each of said flaps for pressing the respective marginal portion of said envelope sheet against the respective anvil portion;

a receptacle for holding said supply and loose fill insulative material; and

filler means cooperating between said receptacle and said partitioned structure for depositing said insulation into said structure through said open top.

4,510,011

STRIP DEFORMING APPARATUS

Yusaku Azuma; Yoshifumi Kitayama, both of Kodaira, and Shinji Kawaida, Shimonoseki, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 23, 1983, Ser. No. 565,176

Claims priority, application Japan, Dec. 28, 1982, 57-234593

Int. Cl.[3] **B32B** *31/00*

U.S. Cl. 156—407 **10 Claims**

1. A strip deforming apparatus for deforming a flexible strip into a looped endless band, comprising

a frame structure having longitudinal and lateral directions;

a first conveyor assembly comprising an endless belt having an upper travelling path portion;

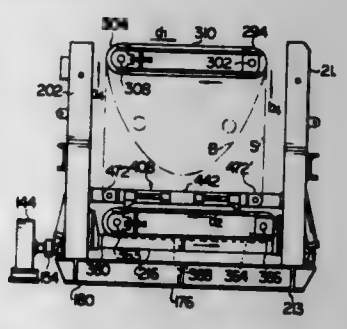
a second conveyor assembly positioned below the first conveyor assembly and comprising an endless belt having an upper travelling path portion substantially parallel with and spaced apart downwardly from the endless belt of the first conveyor assembly;

at least one of the first and second conveyor assemblies being

vertically movable toward and away from the other of the conveyor assemblies;

a third conveyor assembly positioned vertically between the first and second conveyor assemblies and comprising a pair of conveyor rolls elongated in longitudinal directions of said frame structure and each rotatable about the center axis thereof, the conveyor rolls being spaced apart substantially in parallel from each other in a lateral direction of said frame structure;

first conveyor drive means operative to drive at least one of said first and second conveyor assemblies vertically toward and away from the other of the first and second conveyor assemblies;



second conveyor drive means operative to drive the endless belt of the first conveyor assembly to travel in a lateral direction of said frame structure;

third conveyor drive means operative to drive the endless belt of the second conveyor assembly to travel in a direction opposite to the direction of travel of the endless belt of the first conveyor assembly; and

fourth conveyor drive means operative to drive said third conveyor assembly to move vertically between said first and second conveyor assemblies and comprising roll drive means operative to drive said conveyor rolls of the third conveyor assembly to move toward and away from each other in a lateral direction of said frame structure.

4,510,012

TIRE MOLDING APPARATUS

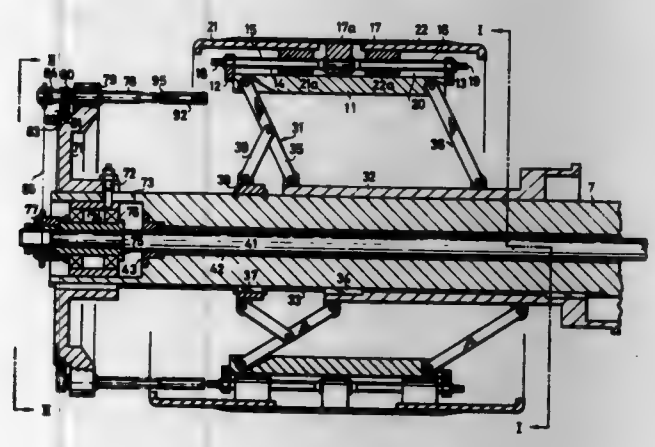
Shinji Kawaida, Yamaguchi; Yoshio Okitsu, and Kazunari Ikeda, both of Tokyo, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 602,982

Claims priority, application Japan, May 2, 1983, 58-77872

Int. Cl.³ B29H *17/16*

U.S. Cl. 156—415 **11 Claims**



1. A tire molding apparatus comprising:

a hollow rotary shaft having a drive shaft inserted therein;

first drum segments arranged around one end portion of said rotary shaft;

second drum segments arranged around the other end portion of said rotary shaft, said first and second drum segments being paired with each other to form a molding drum;

diameter changing means provided between said rotary shaft and first and second drum segments for transmitting rotation of said rotary shaft to said first and second drum segments;

threaded shafts screwed respectively into said first and second drum segments to form pairs, wherein rotation of said threaded shafts cause said first and second drum segments to move toward or away from each other and thereby vary the width of said molding drum;

supporting means coupled to one end of said rotary shaft for rotation with said rotary shaft;

a plurality of rotating shafts supported on said supporting means synchronously rotated by said drive shaft; and

transmission members for transmitting rotation of said rotary shafts to said threaded shafts.

4,510,013

APPARATUS FOR PRODUCING MULTI-WALLED THERMOPLASTIC TUBING

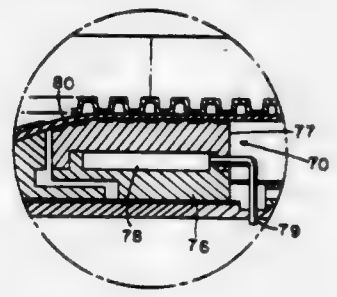
Manfred A. A. Lupke, 35 Ironshield Crescent, and Gerd P. H. Lupke, 46 Stornoway Crescent, both of Thornhill, Ontario, Canada

Filed Sep. 29, 1982, Ser. No. 427,624

Claims priority, application Canada, Jun. 16, 1982, 805321

Int. Cl.³ B32B *31/00*; B29B *7/14*; A01J *21/02*; A23G *1/02*

U.S. Cl. 156—498 **2 Claims**



1. An apparatus for producing multi-walled thermoplastic tubing, including an annular extension die for extruding an inner tube of thermoplastic material co-axially within an outer tube as the latter is advanced in an axial direction, and a mandrel mounted coaxially with said die, downstream thereof for urging said inner tube outwardly and pressing the same to secure it to the outer tube, the mandrel being provided with channels for a cooling fluid to cool its outer surface receiving said inner tube from the die, characterized in that said outer surface is provided with transverse ribs for said pressing in point contact manner, to insure high efficient heat transfer, to prevent sticking of the thermoplastic material to said mandrel and particularly for corrugated thermoplastic outer tubing to provide the penetration of the corrugations of the latter into the inner tube.

4,510,014

APPARATUS FOR SEALING A FILM OR FOIL OR THE LIKE ON TO A CONTAINER

Aldo Artusi, Mühleboden 661, CH-8461 Trüllikon, and Peter Hagmann, Bielstr. 95, CH-4500 Solothurn, both of Switzerland

Filed Nov. 23, 1983, Ser. No. 555,035

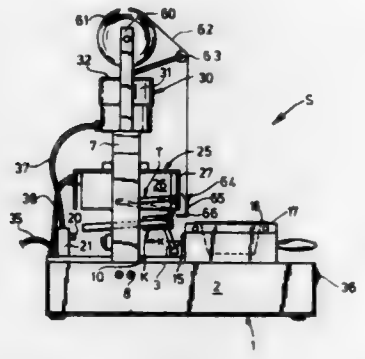
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1983, 3243634

Int. Cl.³ B31F *5/00*

U.S. Cl. 156—522 **7 Claims**

1. Apparatus for sealing a film or foil or the like on to a container, by means of a downwardly movable heating device which is arranged between two columns or pillars bridged by a transverse member and below which the container can be passed, in a carrier member, characterized in that a clamping means (K), for receiving the film or foil (62) or the like, is coupled to the carrier member (15), said clamping means com-

prises guide means (70) which are secured to the columns or pillars (5, 6) and on which are slidably disposed slide members (71) which are each traversed by a respective lever (72) provided with a beak-like projection or lug (73) and rotatable



about an axis (A), and, together therewith, form a clamping gap (74) for receiving the film or foil (62), wherein the lever (72) is connected to the carrier member (15) at the other end from the lug or projection.

4,510,015

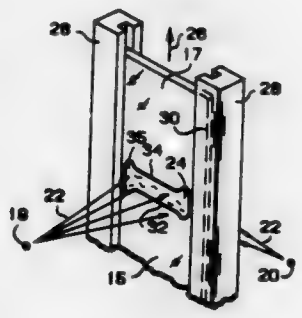
METHOD FOR SEMICONDUCTOR RIBBON-TO-RIBBON CONVERSION

Ralph J. Ellis; Richard W. Gurtler, both of Mesa, and Kalluri R. Sarma, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 301,627, Sep. 14, 1981, Pat. No. 4,427,638. This application Jun. 23, 1983, Ser. No. 506,587

Int. Cl.³ C30B *13/06*

U.S. Cl. 156—617 R **5 Claims**



1. In a process for converting a ribbon of polycrystalline material having major surfaces terminating at edges thereof to a ribbon of macrocrystalline material wherein a molten zone is formed in said material by an impinging energy beam and said molten zone is caused to traverse said polycrystalline material in a direction transverse to said edges, as said molten zone passes said material refreezing as macrocrystalline material having enhanced grain size, the improvement which comprises: placing said ribbon of polycrystalline material in a fixture contacting and supporting said ribbon in said fixture; and masking from said impinging energy beam with a portion of said fixture a portion of said material adjacent said edges to prevent said molten zone from extending to said edges.

4,510,016

METHOD OF FABRICATING SUBMICRON SILICON STRUCTURES SUCH AS PERMEABLE BASE TRANSISTORS

Jim-Yong Chi, Bedford, and Roger P. Holmstrom, Wayland, both of Mass., assignors to GTE Laboratories, Waltham, Mass.

Filed Dec. 9, 1982, Ser. No. 448,163

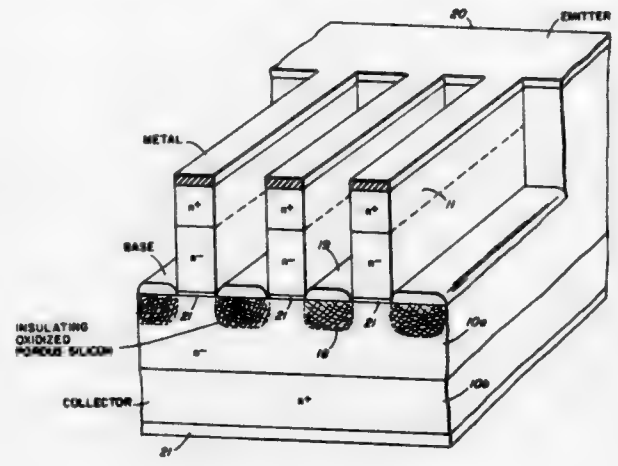
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **13 Claims**

1. A method of fabricating silicon structures, comprised of the following steps:

a. forming a plurality of U-grooves in a semiconductor wafer with adjacent grooves defining a structure with a width equal to the distance between said grooves;

b. forming an oxide layer upon the walls of said U-grooves;



c. stripping said oxide layer from said walls, thereby reducing the width of said structure; and

d. repeating steps b and c until the desired width of said structure is obtained.

4,510,017

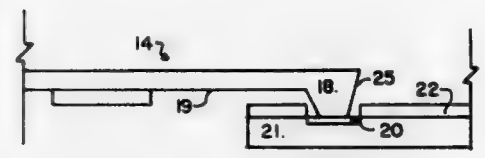
TESTABLE TAPE FOR BONDING LEADS TO SEMICONDUCTOR DIE AND PROCESS FOR MANUFACTURING SAME

Larry J. Barber, Sunnyvale, Calif., assignor to Mesa Technology, Mountain View, Calif.

Filed Feb. 9, 1984, Ser. No. 578,684

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—651 **5 Claims**



1. A process for manufacturing an article for use in forming bonds to conductive pads on a die, such bonds being testable before the die is mounted on the next level of packaging, comprising the steps of:

(1) providing a metal base tape with a first side and a second side;

(2) electroplating a lead pattern on said first side of said metal base tape to define for the bonding a lead pattern consisting of a plurality of leads with innerlead tips aligned for bonding to conductive pads on the die and separated from said tape and the others of said plurality of leads by interstices, using a dissimilar metal, said dissimilar metal being dissimilar to said metal base tape so that said dissimilar metal and said metal base tape may be selectively etched;

(3) selectively etching said metal base tape on said second side to form recesses defining a fill pattern corresponding to portions of said interstices;

(4) filling said recesses in said fill pattern with a dielectric fill to provide a dielectric support for said lead pattern; and

(5) selectively etching said base tape on said first side and said second side simultaneously to remove the portions of said base tape that are left exposed after said steps of electroplating and filling until said plurality of leads in said lead pattern are electrically isolated by interstices and supported across portions of said interstices by said dielectric fill.

4,510,018
SOLUTION AND PROCESS FOR TREATING COPPER AND COPPER ALLOYS

William M. McGowan, Dracut, Mass., assignor to The Lea Manufacturing Company, Waterbury, Conn.

Filed Feb. 21, 1984, Ser. No. 581,812
Int. Cl.[3] C23F *1/00*
U.S. Cl. 156—666 24 Claims

2. A solution for treating copper and copper alloy comprising an aqueous mixture of peroxide and sulfuric acid, a low molecular weight ammonium compound and a fatty acid amine.

4,510,019
LATEX CONTAINING PAPERS

René Bartelloni, Bar Le Duc, France, assignor to Papeteries de Jeand'heurs, Bar Le Duc, France

Continuation-in-part of Ser. No. 349,366, Feb. 16, 1982, Pat. No. 4,445,972, and a continuation-in-part of Ser. No. 397,195, Jul. 12, 1982, , and Ser. No. 441,172, Nov. 12, 1982,. This application Nov. 17, 1982, Ser. No. 442,621
Claims priority, application France, May 12, 1981, 81 09400; Jan. 8, 1982, 82 00224; Apr. 9, 1982, 82 06255
Int. Cl.[3] D21H *5/12*
U.S. Cl. 162—141 6 Claims

1. A method for the continuous manufacture of fibrous paper sheet material from an aqueous fibrous pulp containing at least 7% latex solids comprising the following steps:

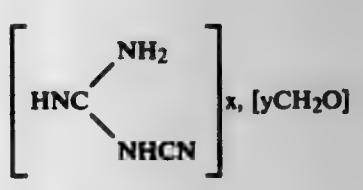
(1) providing water which contains no more than abut 22 mg/l of chlorine, no more than about 46 mg/l of sulfate, no more than about 0.2 mg/l of sulfamate and no more than about 0.2 mg/l of aluminum,

(2) suspending fibrous material having an anionic charge in said water,

(3) measuring the pH and the Zeta potential of said fibrous suspension,

(4) adding to said fibrous suspension a compound which will alter the pH of said fibrous suspension, to adjust the pH of said fibrous suspension to the pH value of the aqueous suspension of latex particles to be added later, the nature and amount of said compound which will alter the pH being such that the suspension will continue to contain no more than about 22 mg/l of chlorine, no more than about 46 mg/l of sulfate, no more than about 0.2 mg/l of sulfamate and no more than about 0.2 mg/l of aluminum,

(5) providing an aqueous solution comprising as bridging agent a condensate of diamide and formaldehyde having the formula:



the ratio x/y being between 0.1 and 3, the molecular weight being between 400 and 1500, and adjusting the Zeta potential of said agueous solution to an absolute value between 60–120% of that of the fibrous suspension and the latex suspension, said adjusting of the Zeta potential being effected by controlling the quantity of said condensate in said aqueous solution,

(6) adjusting the pH of said bridging agent solution to that of the aqueous suspension of latex and the fibrous suspension,

(7) adding the latex suspension to the fibrous suspension in an amount to provide, in the final paper product, at least 7% latex solids,

(8) adding the bridging agent solution to the obtained mixture of latex and fibrous suspension in a quantity such that the obtained mixture has a Zeta potential substantially equal to that of the aqueous starting fibrous suspension and the latex particles remain generally unflocculated, and

(9) forming a paper sheet from the resultant mixture.

4,510,020
LUMEN-LOADED PAPER PULP, ITS PRODUCTION AND USE

Harold V. Green, Dollard des Ormeaux; Thomas J. Fox, Kirkland, and Anthony M. Scallan, Pointe Claire, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

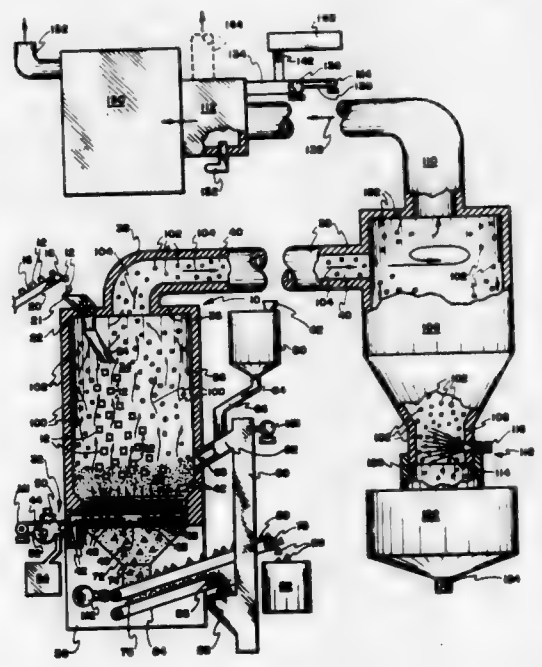
Filed Jun. 12, 1980, Ser. No. 158,753
Int. Cl.[3] D21H *3/40*
U.S. Cl. 162—169 20 Claims

1. Unbleached kraft paper in which substantially all of the filler is within the lumens of the cellulose fibers, said paper having improved strength properties compared to a corresponding conventionally-filled paper containing the same amount of the same filler.

4,510,021
FLUIDIZED BED CHARCOAL PARTICLE PRODUCTION SYSTEM

Norman K. Sowards, Coeur d'Alene, Id., assignor to Energy Products of Idaho, Coeur d'Alene, Id.

Division of Ser. No. 60,329, Jul. 25, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 245,874
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.[3] C10B *49/10, 49/22, 53/02*
U.S. Cl. 201—4 6 Claims



1. A method of obtaining charcoal from combustible waste comprising the steps of:

introducing combustible waste into a hot fluidized bed of inert non-carbonized material capable of enduring the bed temperature without physical or chemical change;

creating particles of charcoal from the combustible waste within the inert fluidized bed by pyrolytic action;

purging charcoal particles from the fluidized bed solely by elutriation caused solely by forced air passing upwardly through the fluidized bed thereby causing charcoal particles to be suspended above the bed in air and pyrolyzed gas;

maintaining the charcoal particles in said state of suspension while displacing the charcoal particles, the air and the pyrolyzed gas to a location remote from the purging site;

thereafter, separating the suspended charcoal particles from the air and pyrolyzed gas.

4,510,022

SEPARATION OF ISOPROPYL ETHER FROM ISOPROPANOL AND WATER BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., and An-I Yeh, 709 S. 12th Ave., both of Bozeman, Mont. 59715

Filed Aug. 8, 1983, Ser. No. 521,375
Int. Cl.[3] B01D *3/40*; C07C *41/42*
U.S. Cl. 203—51 2 Claims

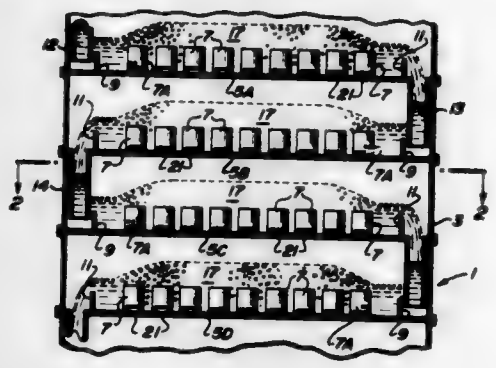
1. A method for recovering essentially anhydrous isopropyl ether from a mixture of isopropyl ether, isopropanol and water, which comprises distilling a mixture of isopropyl ether, isopropanol and water in a rectification column in the presence of an effective amount of an extractive agent, recovering essentially pure isopropyl ether as overhead and obtaining the extractive agent plus isopropanol and water from the stillpot or reboiler, the extractive agent comprises at least dimethylformamide.

4,510,023

PERFORATED BUBBLE CAPS FOR ENHANCED VAPOR/LIQUID CONTACT ON A DISTILLATION TRAY

Douglas L. Bennett, Macungie; Thomas J. Edwards, Allentown, and Howard C. Rowles, Center Valley, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 17, 1983, Ser. No. 505,548
Int. Cl.[3] B01D *3/20*
U.S. Cl. 203—99 16 Claims



1. In a distillation process wherein a volatile component is separated from a less volatile component in a multicomponent feed which comprises charging said multicomponent feed to a distillation column having a plurality of trays with a plurality of bubble caps thereon equipped with riser sections and first slot openings, converting said multicomponent feed into a liquid fraction and a vapor fraction, passing said liquid fraction from an inlet section to an outlet section on said trays and contacting said bubble caps, passing said vapor fraction through said riser sections and out said first slot openings in said plurality of bubble caps for contacting the liquid fraction on said trays, removing said volatile component as an overhead stream, and removing said less volatile component as a bottoms stream; the improvement for accommodating variable vapor and liquid loads to the trays resulting from the utilization of a multicomponent feed having a wide concentration range of said volatile component or resulting from varying rates of said feed to the distillation column without drastically reducing tray mass transfer efficiency comprising:

utilizing a plurality of unique bubble caps which have second slot openings in addition to said first slot openings, said unique bubble caps being disposed in one or more rows across the width of the liquid pathway from the inlet section to the outlet section on said trays, said first slot openings in all caps being at a level below the liquid level on said trays, such level defining a liquid head Z1 and said second slot openings in said unique caps being at a level below the liquid level on said tray, such level defining a liquid head Z2 with Z2 being less than Z1, and said second slot openings in each said unique cap having a total cross-sectional area of from about 5 to about 30% of the total cross-sectional slot area of said first slot openings in each said cap.

4,510,024

NOVEL POLYMER COMPOSITION

Kazuo Kishida; Isao Sasaki, both of Hiroshima; Nobuhiro Mukai, Ohtake, and Hajime Asai, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 542,950
Claims priority, application Japan, Oct. 19, 1982, 57-183294; Oct. 19, 1982, 57-183295; Dec. 27, 1982, 57-226652; Jan. 20, 1983, 58-6601
Int. Cl.[3] C25B *3/00*
U.S. Cl. 204—59 R 5 Claims

1. A process for producing a polymer composition, wherein an organic polymer is strongly bonded to carbon fiber, by the electrolytic polymerization of a reactive monomer using the carbon fiber as an electrode, the reactive monomer comprising an aliphatic epoxy compound, alicylic epoxy compound, or vinylsilane compound, as a part or all of the reactive monomer.

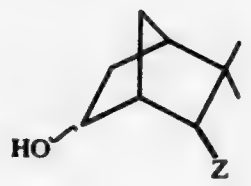
4,510,025

METHOD FOR PRODUCTION OF 3-SUBSTITUTED-2,2-DIMETHYLBICYCLO[2.2.1]HEPTAN-5-OLS AND ESTERS THEREOF

Yoshiharu Matsubara, Toyonaka; Tsuneaki Hirashima, Sakai, and Ikuzo Nishiguchi, Hirakata, all of Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

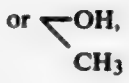
Filed Aug. 24, 1983, Ser. No. 525,898
Int. Cl.[3] C25B *3/02*
U.S. Cl. 204—78 15 Claims

1. A method of producing a 3-substituted-2,2-dimethylbicyclo[2.2.1]heptan-5-ol of general formula



(I)

wherein Z is $=CH_2$



a lower fatty acid ester thereof, or a combination thereof, which comprises subjecting tricyclene, camphene, or a mixture thereof to electrolytic oxidation in a lower fatty acid and isolating the resultant 3-substituted-2,2-dimethylbicyclo[2.2.1-]heptan-5-ol, lower fatty acid ester thereof, or combination thereof.

4,510,026

PROCESS FOR ELECTROLYSIS OF SEA WATER

Placido M. Spaziante, Lugano, Switzerland, assignor to Panclor S.A., Cemano, Switzerland

Filed Nov. 16, 1983, Ser. No. 552,484
Int. Cl.[3] C25B *1/26*
U.S. Cl. 204—95 5 Claims

1. In the process of electrolysis of sea water in a cell with an anode compartment and a cathode compartment to produce hypohalite, halogen, halate and/or perhalate, the improvement comprising effecting the electrolysis of sea water at least intermittently at a pressure less than 0.7 atmosphere in the cathode compartment.

4,510,027
SIMULTANEOUS LEACHING AND ELECTRODEPOSITION OF PRECIOUS METALS

Tadeusz Wiewiorowski, and Phillip D. Mollere, both of New Orleans, La., assignors to Freeport Minerals Company, New York, N.Y.

Continuation of Ser. No. 254,548, Apr. 15, 1981, abandoned. This application Jan. 4, 1984, Ser. No. 567,155
Int. Cl.³ C25C *1/20*
U.S. Cl. 204—110 28 Claims

1. Process for improving the recovery of a precious metal from an ore, comprising:

(a) preparing an aqueous slurry of said precious metal containing ore in ground form, said ore is a member selected from a group consisting of a carbonaceous ore and a mixture of a carbonaceous ore and an oxide ore;

(b) simultaneously leaching and electrodepositing said precious metal from said aqueous slurry of ore in ground form at a temperature between about 140° and 200° F. by:

(i) adding sufficient alkaline material to said aqueous slurry to maintain the liquid phase of said aqueous slurry at a pH between 9.5 and 12;

(ii) adding an effective amount of a precious metal-complexing agent to said aqueous slurry;

(iii) contacting said slurry for 1–48 hours with a cathode made of a metal selected from the group consisting of cadmium, iron, lead, molybdenum, tin, zinc, cobalt, nickel, silver, titanium, tungsten, vanadium, alloys of at least one of such metals and mixtures of at least one of such metals in an amount which provides a ratio of cathode metal surface to ore of 0.01 to 1.0 square foot per pound of dry ore; and

(iv) applying an external negative electric potential to said cathode, whereby simultaneous leaching and electrodeposition of said precious metal occur; and

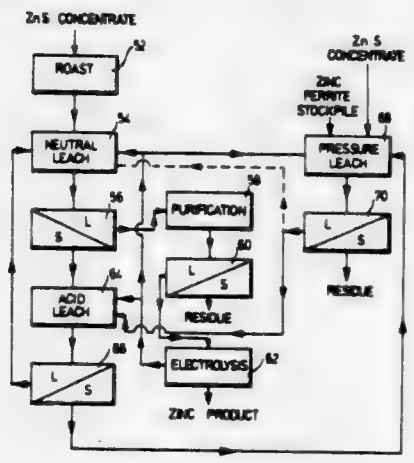
(c) separating said cathode and electrodeposited precious metal from said aqueous slurry whereby at least 75 percent of the precious metal originally present in said ore is recovered, and wherein said improvement in the recovery of said precious metal is the result of the use of said temperature of between about 140° and 200° F., and wherein said improvement in the recovery of said precious metal is independent of a rate of reaction of the process and a concentration of solubilized precious metal.

4,510,028
PROCESS FOR RECOVERING ZINC FROM ZINC FERRITE MATERIAL

Gerald L. Bolton, and Donald R. Weir, both of Fort Saskatchewan, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Continuation-in-part of Ser. No. 327,317, Dec. 4, 1981, abandoned. This application Jun. 28, 1983, Ser. No. 508,693
Claims priority, application Canada, Aug. 5, 1981, 383267
Int. Cl.³ C22B *19/22*
U.S. Cl. 204—119 11 Claims

1. A process for recovering zinc from iron-containing and zinc sulphide containing material comprising leaching the material in aqueous sulphuric acid solution at elevated pressure under oxidizing conditions and at a temperature in the range of from about 135° C. to about 175° C. with the starting sulphuric acid to zinc molar ratio being less than about 1.2:1 to cause dissolution of a substantial amount of zinc from the sulphide material and to produce a zinc-containing leach solution and an iron-containing undissolved residue, and separating the zinc-containing solution from the iron-containing undissolved residue, and also including the step of adding zinc ferrite containing material to said zinc sulphide containing material to cause the zinc present as zinc ferrite in said leaching to be in the range of from about 5% to about 40% of the total zinc content of the ferrite material and the zinc sulphide material, with the sulphuric acid to total zinc molar ratio being less than about 1.2:1, and to cause at least about 51.5% of zinc to be dissolved

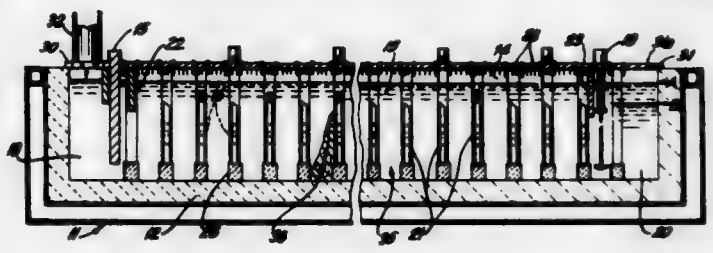


from the ferrite material in addition to the substantial amount of zinc dissolved from the sulphide material.

4,510,029
MOLTEN SALT ELECTROSTRIPPING CELL AND METHOD FOR PURIFYING MOLTEN SALT ELECTROLYTES

Ramaswami Neelameggham, Salt Lake City, Utah; John C. Priscu, Las Vegas, Nev., and Robert D. Toomey, Salt Lake City, Utah, assignors to AMAX Inc., Greenwich, Conn.

Filed May 18, 1984, Ser. No. 611,791
Int. Cl.³ C25C *3/04*
U.S. Cl. 204—130 10 Claims



1. The method for electolytically purifying molten magnesium chloride cell feed in a compartmentalized cell having inlet and outlet compartments which comprises establishing a bath of said magnesium chloride cell feed, passing electric current through said molten chloride at a current density less than that required to liberate magnesium from said molten bath to precipitate at least one impurity metal at a cathodic face disposed in a compartment of said cell and immersed in said molten magnesium chloride, while allowing said precipitated impurity to settle at a location beneath said cathodic face, removing purified magnesium chloride from the outlet compartment of said bath, introducing fresh impure molten magnesium chloride to the inlet compartment of said bath and transporting said molten chloride through said bath between said inlet and outlet compartments in a non-turbulent manner so as to avoid reincorporating said precipitated impurity material in said bath.

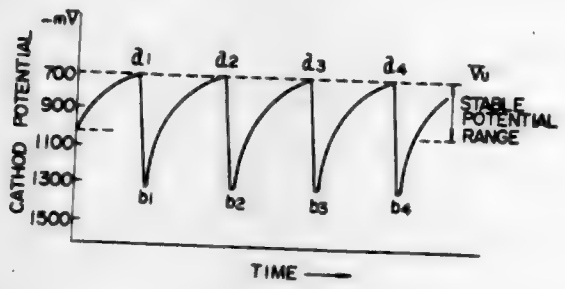
4,510,030
METHOD FOR CATHODIC PROTECTION OF ALUMINUM MATERIAL

Teruo Miyashita, and Koichi Yoshida, both of Ihara, Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed Aug. 9, 1983, Ser. No. 521,753
Claims priority, application Japan, Dec. 21, 1982, 57-222980; Dec. 21, 1982, 57-222981
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—147 7 Claims

1. A method for the cathodic protection of an aluminum article against electrochemical corrosive attack by an aqueous

medium with which the article is at least partially in contact, which method comprises the steps of observing the cathodic potential of said article relative to a reference electrode in contact with said medium; when the observed cathodic potential or said article approaches the potential at which pitting corrosion of the same is initiated, electrically connecting said article directly to a source of potential which is sufficiently



electronegative with respect to the observed potential of said article to repress the cathodic potential of said article to within the alkali corrosion range of said article; and after said cathodic potential is repressed to within the alkali corrosion rate but before said article undergoes sufficient alkali corrosion, disconnecting the article from said electronegative potential source whereby the cathodic potential of said article gradually rises to its natural potential in said medium.

4,510,031

HEAT-FOAMABLE OLEFINIC RESIN COMPOSITION AND PROCESS FOR PRODUCTION OF OLEFINIC RESIN FOAM FROM SAID COMPOSITION

Michio Matsumura, Saitama; Takao Inoue, Ageo, and Toshihiro Arai, Hasuda, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 25, 1984, Ser. No. 604,315
Int. Cl.³ C08J *9/10*
U.S. Cl. 204—159.20 **22 Claims**

1. A heat-foamable olefinic resin composition comprising
(a) an ethylene polymer selected from the group consisting of polyethylene and a copolymer derived from ethylene as a major component and at least one other ethylenically unsaturated monomer,
(b) a propylene/alpha-olefin copolymer having a melting point of 130° to 160° C.,
(c) a propylene polymer selected from the group consisting of polypropylene and a copolymer derived from propylene as the major component and at least one other ethylenically unsaturated monomer, having a melting point at least 10° C. higher than the melting point of the propylene/alpha-olefin copolymer, and
(d) a blowing agent, and optionally
(e) a crosslinking agent and/or a crosslinking promoting agent.

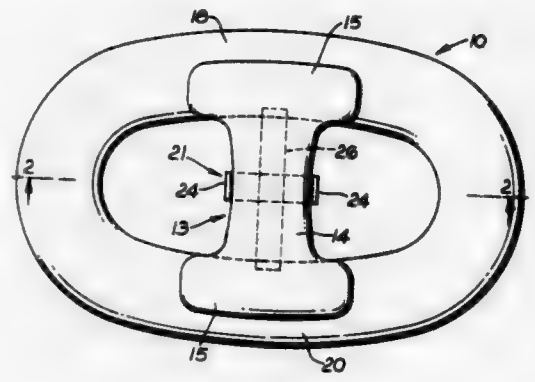
4,510,032

CHAINS

David A. Timmington, Shatterford Grange, Shatterford, Arley, Worcester, England

Continuation of Ser. No. 478,537, Mar. 25, 1983, abandoned.
This application Aug. 6, 1984, Ser. No. 638,533
Claims priority, application United Kingdom, Nov. 12, 1982, 8232420; Mar. 9, 1983, 8306518
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—197 **9 Claims**

1. A chain comprising a series of interconnected metal chain links, each link comprising a loop portion and a transverse central stud, with an opening on each side of the stud, and at least one link comprising at least one anode member composed of a metal which in corrosive conditions is consumed in preference to the metal of which the link is composed, characterized in that the anode member
(A) does not interfere appreciably with flexing and running of the chain in that the anode member is in the form of a wafer fitted against one side of a link, said wafer comprising
(a) an elongated central portion which fits against an outward facing side of said stud, extends throughout the length of the stud, and has a width not greater than the width of the stud so that it does not encroach on said openings, and
(b) two transverse portions, each of which is integral with the central portion, extends on both sides of the central



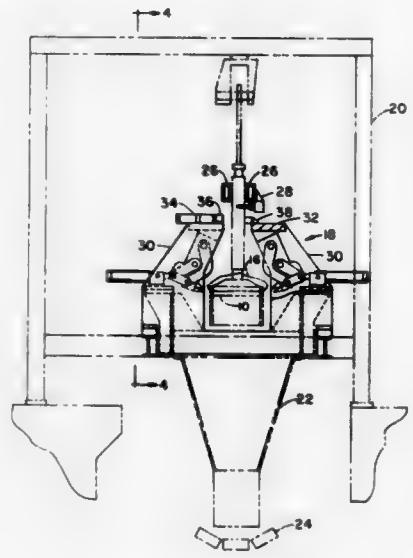
portion substantially beyond the width of the central portions, fits against an outward-facing side of said loop, and does not encroach significantly on said openings, and
(B) can be removed and replaced while the chain remains immersed in use, in that said wafer is connected to said link by means comprising a pair of legs projecting from said central portion and extending on both sides of said stud, said legs being composed of metal other than the metal of the anode member.

4,510,033

FROZEN ELECTROLYTE BATH REMOVAL APPARATUS

Robert J. Martin, Mars; Lawrence W. Cisko, Irwin, and Bernard C. Turley, Pittsburgh, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 18, 1984, Ser. No. 621,938
Int. Cl.³ C25C *3/10, 3/14*
U.S. Cl. 204—245 **10 Claims**



1. Apparatus for removing frozen electrolyte bath from an electrode body, the apparatus comprising:
a frame;
crust breaking means attached to said frame by linkage means adapted to move said crust breaking means along a predetermined line of travel, said crust breaking means adapted to penetrate and fracture electrolyte bath frozen on an electrode surface from application of a non-reciprocating unidirectional force to said crust breaking means; and

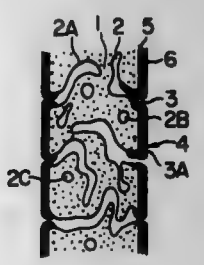
power means to actuate the linkage means and apply sufficient non-reciprocating unidirectional force to said crust breaking means to penetrate and fracture crust frozen on an electrode body as said crust breaking means moves along the line of travel and thereby breaks such crust into discrete pieces which separate from the electrode body.

4,510,034

COATING TYPE INSOLUBLE LEAD DIOXIDE ANODE

Shohzo Ohshima; Mikio Kusuda, and Toshiro Isoya, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1982, Ser. No. 413,230
Int. Cl.³ C25B *11/00, 1/02*
U.S. Cl. 204—290 F **11 Claims**



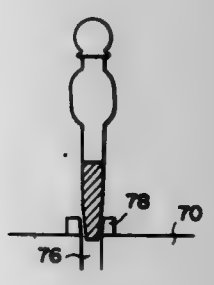
1. A coating type insoluble lead dioxide anode comprising a porous metal substrate consisting of titanium, zirconium or an alloy thereof with a plurality of pores, each having an opening or openings on the surface of the substrate, said substrate having directly coated thereon an intermediate coating layer composed mainly of a platinum group metal or an oxide thereof and an electrode layer of a lead dioxide, at least both the outer surface of the substrate and the peripheral edges of the openings of pores in the substrate being coated with the electrode layer through the intermediate layer.

4,510,035

LIQUID TRANSPORTING AND DISTRIBUTING DEVICE AND IONIC ACTIVITY MEASURING DEVICE USING THE SAME

Osamu Seshimoto, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 16, 1983, Ser. No. 466,961
Claims priority, application Japan, Feb. 16, 1982, 57-23149
Int. Cl.³ G01N *27/28*
U.S. Cl. 204—411 **1 Claim**



1. An ionic activity measuring device comprising:

(a) a liquid transporting and distributing device comprising an outer surface, at least two independent hollow liquid passages positioned in the interior, at least two independent liquid introducing holes which extend from said outer surface to each of said hollow liquid passages, liquid outlet openings extending from the respective hollow liquid passages to said outer surface, at least one liquid outlet opening being provided for each hollow liquid passage, and air discharging holes extending from respective hollow liquid passages to said outer surface, at least one air discharging hole being provided for each hollow liquid passage;

(b) solid electrodes which are in contact with said liquid outlet openings and which are provided in a number equal to the number of said liquid outlet openings; and

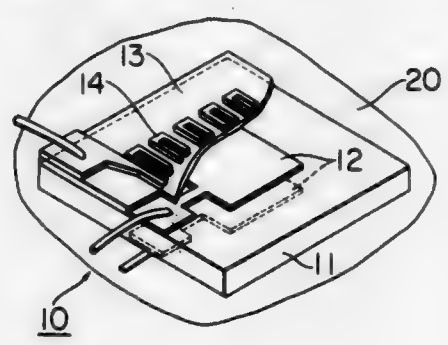
(c) at least one bridge extending between said liquid introducing holes, between said hollow liquid passages, or between said liquid outlet openings, wherein each of the sections of said liquid introducing holes intersecting with said outer surface or the vicinities of said sections comprises an annular projection extending above said outer surface which functions as an adapter means for receiving or fitting with a liquid supply port of a liquid introducing means in airtight relation therewith for liquid injection into the liquid introducing holes.

4,510,036

LIMITING ELECTRIC CURRENT TYPE OXYGEN SENSOR WITH HEATER AND LIMITING ELECTRIC CURRENT TYPE OXYGEN CONCENTRATION DETECTING DEVICE USING THE SAME

Takashi Takeuchi; Hideaki Takahashi; Keiichi Saji; Haruyoshi Kondo, and Kiyoharu Hayakawa, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chouo Kenkyusho, Aichi, Japan

Filed Jan. 14, 1983, Ser. No. 457,888
Claims priority, application Japan, Jan. 21, 1982, 57-6846
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—425 **8 Claims**



1. A limiting electric current type oxygen concentration detecting device, comprising:

a limiting electric current type oxygen sensor with a microheater including an oxygen ionic conductor, an anode and a cathode respectively formed on two major surfaces of said oxygen ionic conductor, an insulating film which has a porosity between 0.2 and 3.1%, an average pore diameter between 140 Å and 190 Å, and a thickness between 0.6 and 10 μm, and which is formed on one of said anode and said cathode to regulate the flow rate of oxygen gas to provide electrical insulation, said microheater being on said insulating film, whereby said oxygen ionic conductor is electrically insulated from said heater through said insulating film; and

constant temperature control circuit means for detecting the temperature of said microheater by measuring the resistance thereof so as to keep the heater temperature constant in accordance with the detection of the temperature.

4,510,037

HYDROGENATION PROCESS FOR SOLID CARBONACEOUS FEED MATERIALS USING THERMAL COUNTERCURRENT FLOW REACTION ZONE

Edwin S. Johanson, Princeton, and Paul D. Schuler, Hamilton Square, both of N.J., assignors to HRI, Inc., Gibbsboro, N.J.

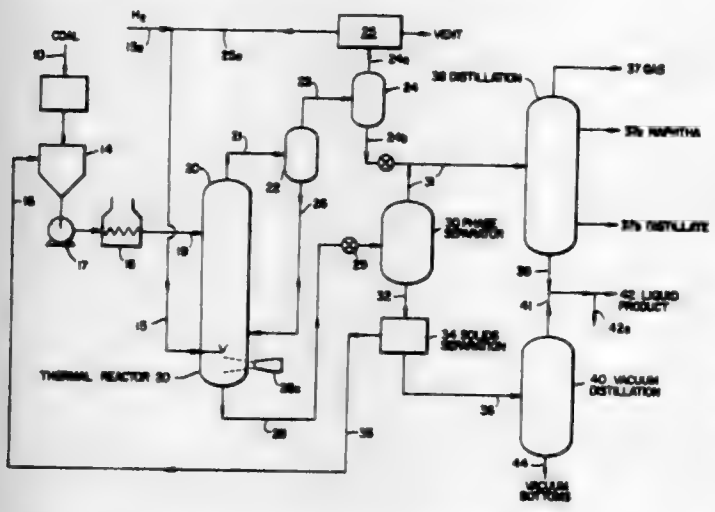
Filed Dec. 23, 1983, Ser. No. 565,248
Int. Cl.³ C10G *1/08*
U.S. Cl. 208—8 LE **12 Claims**

1. A continuous process for thermal hydrogenation and conversion of solid carbonaceous feed materials to produce

hydrocarbon gaseous and liquid products, and avoid accumulation of solids and agglomerates in the reaction zone, which process comprises:

(a) introducing a solid carbonaceous feed material into the upper portion of a thermal reaction zone, and introducing hydrogen and a recycled hydrocarbon liquid into the bottom portion of said reaction zone for upward flow therethrough countercurrent with said carbonaceous feed material so as to provide hindered settling of solids therein;

(b) hydrogenating the carbonaceous feed material in said reaction zone at conditions within ranges of 750°–900° F. temperature and 1000–5000 psi hydrogen partial pressure and without an added catalyst material to form a hydrocarbon gaseous and liquid effluent mixture;



(c) withdrawing said hydrocarbon effluent mixture from the top of the reaction zone, phase separating the mixture at near reaction conditions to recover separate gas and liquid fractions, and recycling all of the hydrocarbon liquid fraction to the lower portion of said reaction zone to provide said hindered settling of solids therein; and

(d) withdrawing from the bottom of the reaction zone a hydrocarbon liquid slurry material comprising solids and agglomerates not exceeding about 40 weight percent of the liquid slurry, and passing said liquid together with agglomerates and solids material to further processing steps to recover hydrocarbon liquid products, whereby accumulation of agglomerates and solids in the reaction zone lower end is prevented.

4,510,038

COAL LIQUEFACTION USING VACUUM DISTILLATION AND AN EXTERNAL RESIDUUM FEED

Christopher W. Kuehler, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 15, 1982, Ser. No. 434,656
Int. Cl.³ C10G *1/06, 1/00*
U.S. Cl. 208—10 **15 Claims**

1. A process for liquefying coal comprising:

(a) heating a slurry comprising a petroleum or petroleum-derived solvent and particulate coal in a dissolution zone to substantially dissolve the coal to produce a first effluent containing undissolved solids;

(b) adding petroleum residuum from an external source to at least a portion of the first effluent to produce a second effluent containing said solids; and

(c) distilling the second effluent under reduced pressure to produce an overhead fraction and a bottoms fraction containing said solids.

4,510,039

PROCESS FOR THE LIQUID PHASE HYDROGENATION OF COAL

Prégermain Simone, Paris; Charcosset Henri, and Andrés Michele, both of Villeurbanne, all of France, assignors to Charbonnages de France and Gaz de France, both of Paris, France

Filed Apr. 15, 1983, Ser. No. 485,247
Claims priority, application France, Apr. 15, 1982, 82 06492
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **12 Claims**

1. A process for the hydrogenation of coal in the liquid phase, comprising the step of hydrogenating said coal in the presence of a catalyst consisting essentially of an iron oxide obtained by decomposition of a vaporized iron compound in the flame of a torch.

4,510,040

COAL LIQUEFACTION PROCESS

Ronald W. Skinner, Allentown; John C. Tao, Perkiomenville, both of Pa., and Samuel Znaimer, Vancouver, Canada, assignors to International Coal Refining Company, Allentown, Pa.

Filed Nov. 7, 1983, Ser. No. 549,694
Int. Cl.³ C10G *1/06, 1/00, 7/00, 17/04*
U.S. Cl. 208—10 **5 Claims**

1. In a process for solvent refining coal, comprising forming a slurry of finely divided coal and a solvent therefor, contacting said slurry with hydrogen-rich gas, heating said slurry in the presence of said hydrogen-rich gas, reacting said heated slurry to dissolve at least some of said coal, adding fresh hydrogen as required to form a liquified coal slurry, passing said liquified coal slurry to a separator in which a vapor product stream and a condensed product stream are separated, passing the condensed product stream to a distillation system, and removing therefrom a residual bottoms product, passing said residual bottoms product to a critical solvent deashing process wherein said product is mixed with a deashing solvent to form a deashing stage slurry, passing said deashing stage slurry into deashing separators in which a light upper phase, a lower heavy phase, and a still heavier ash concentrate stream are separated, recycling said heavy lower phase to the head of the process, and passing said ash concentrate to a gasifier, the improvement wherein said light upper phase, consisting of Light Solvent Refined Coal is mixed with a suitable hydrocracker solvent in a ratio of at least 50:50 at a temperature of at least 250° F. (121° C.) and passed through a fixed catalyst bed hydrocracker operated at a temperature of at least 650° F. (343° C.) and a pressure of at least 1500 psig (1034 Kpa) the product of which is passed to a separator and then to a vacuum distillation apparatus, the fractions resulting therefrom constituting hydrocracker recycle solvent produced by the hydrocracking of said light solvent refined coal material and used as solvent for the hydrocracking of said Light Solvent Refined Coal and desired product materials.

4,510,041

METHOD FOR MINIMIZING FOULING OF HEAT EXCHANGER

Richard F. Miller, Humble, and Michael P. Nicholson, Houston, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 10, 1984, Ser. No. 639,893
Int. Cl.³ C10G *9/16*
U.S. Cl. 208—48 AA **5 Claims**

1. In a method of inhibiting fouling of hydrocarbon processing equipment during the processing of hydrocarbons at elevated temperatures comprising introducing into the equipment an amount of an antifoulant agent effective to substantially reduce the rate of fouling, the improvement comprising using as the agent a combination of:

(1) at least one dimer selected from the N,N′ dimers of phenothiazine, halo-substituted phenothiazine, alkyl-sub-

stituted phenothiazine and haloalkyl-substituted phenothiazines, and

(2) at least one alkylphenol.

4,510,042

HEAVY OIL PROCESS WITH HYDROVISBREAKING, HYDRODEMETALLATION AND HYDRODESULFURATION

Alain Billon, Orleans; Yves Jacquin, Sevres; Jean-Pierre Peries, Morsant, and Hervé Toulhoat, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 30, 1983, Ser. No. 567,208
Claims priority, application France, Dec. 30, 1982, 82 22210
Int. Cl.³ C10G *23/02*
U.S. Cl. 208—59 14 Claims

1. A process for converting a charge of an asphaltene-containing heavy oil fraction to a lighter oil, comprising the steps of:

(a) subjecting the charge, admixed with hydrogen, to hydrovisbreaking, at a pressure of 40–200 bar, a temperature of 420°–500° C., a ratio of the normalized volume of hydrogen to the volume of charge of 300–3000, and a residence time of 10 seconds to 15 minutes;

(b) passing the effluent from step (a), admixed with hydrogen, under hydrodemetallation conditions, over a catalyst containing alumina and at least one metal from at least one of groups V, VI and VIII (iron group), said catalyst consisting of juxtaposed conglomerates each formed of a plurality of acicular plates, the plates of each conglomerate being generally radially oriented with respect to one another and with respect to the center of the conglomerate, wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts; and

(c) treating the effluent from step (b) with hydrogen, in contact with a catalyst containing alumina, and at least one metal or metal compound selected from molybdenum, tungsten, nickel, cobalt, iron or compounds thereof, under hydrodesulfuration conditions.

4,510,043

PROCESS FOR DEWAXING OF PETROLEUM OILS PRIOR TO DEMETALATION AND DESULFURIZATION

Stephen M. Oleck, Moorestown, and Robert C. Wilson, Jr., Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 16, 1984, Ser. No. 580,924
Int. Cl.³ C10G *65/02, 45/64*
U.S. Cl. 208—97 20 Claims

1. In a process for demetalation and desulfurization of residual oil by contacting a residual oil with demetalation and desulfurization catalysts under hydrotreating conditions effective to significantly reduce the metals and sulfur contents of said residual oil, the improvement which comprises:

prior to contacting said residual oil with demetalation and desulfurization catalysts, contacting said residual oil, under hydrodewaxing operating conditions effective to significantly reduce the pour point of said residual oil and to cause substantially little demetalization of said residual oil, with a catalyst comprising about 1 to about 10 weight percent of an iron group metal and about 5 to about 25 weight percent of a Group VIB metal, said metals based on the total catalyst, and being present as the oxides or sulfides on a support comprising a composite of alumina and about 5 to about 25 weight percent of ZSM-5 crystalline zeolite based on the total composite, said catalyst having at least 60 percent of its pore volume in the 50 to 200 Angstroms diameter range.

9. In a process for demetalation and desulfurization of residual oil by contacting a residual oil with demetalation and desulfurization catalysts under hydrotreating conditions effective to significantly reduce the metals and sulfur contents of said residual oil, the improvement which comprises:

prior to contacting said residual oil with demetalation and desulfurization catalysts, contacting said residual oil, under hydrowaxing operating conditions effective to significantly reduce the pour point of said residual oil and to cause substantially little demetalization of said residual oil, with a catalyst comprising about 1 to about 10 weight percent of an iron group metal and about 5 to about 25 weight percent of a Group VIB metal, said metals based on the total catalyst, and being present as the oxides or sulfides on a support comprising a composite of alumina and about 5 to about 25 weight percent of ZSM-5 crystalline zeolite based on the total composite, said catalyst having at least 50 percent of its pore volume in the 30 to 100 Angstroms diameter range.

4,510,044

PROCESS FOR HYDROTREATING PETROLEUM RESIDUA AND CATALYST THEREFOR

Stephen M. Oleck, Moorestown, and Robert C. Wilson, Jr., Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 346,439, Feb. 8, 1982, Pat. No. 4,458,024.
This application Feb. 21, 1984, Ser. No. 582,212
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.³ C10G *45/12, 45/64*
U.S. Cl. 208—111 8 Claims

1. A process for simultaneously catalytically hydrodesulfurizing and hydrodewaxing a petroleum base stock, said process comprising contacting a mixture of hydrogen and said base stock at a hydrogen pressure of from about 500 to 3,000 psig, a temperature of from about 600° to 850° F. and a space velocity of from about 0.1 to 5.0 LHSV with a catalyst comprising 10–30 wt. % of a zeolite having a Constraint Index of from 1 to 12 and a silica/alumina mole ratio of at least 12, 70–90 wt. % of alumina, based on alumina plus zeolite, and 10–25 wt. %, expressed as oxides, of at least one Group VIII metal selected from the group consisting of nickel, cobalt and iron, and at least one Group VIB metal, based on total catalyst, said catalyst having about 80% of its pore volume in pores no greater than 100 Angstrom units in diameter and at least 90% of its pore volume in pores no greater than 150 Angstrom units in diameter.

4,510,045

HYDROCARBON DEWAXING PROCESS USING STEAM-ACTIVATED ALKALI METAL ZEOLITE CATALYST

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 382,863, May 28, 1982, Pat. No. 4,443,554.
This application Mar. 16, 1984, Ser. No. 590,237
Int. Cl.³ C10G *47/16*
U.S. Cl. 208—111 6 Claims

1. In a hydrodewaxing process wherein wax-containing hydrocarbon feedstock is passed over an alkali metal zeolite having a silica to alumina ratio greater than about 12, a constraint index of about 1 to 12, and an initial alpha value less than about 2 in the presence of hydrogen under dewaxing conditions of elevated temperature and pressure, the improvement which comprises:

forming a mixture of the alkali metal zeolite with alumina and steaming the mixture at a temperature of at least about 300° C. for at least two hours to increase alpha value.

4,510,046

CATALYTIC HYDRODENITROGENATION OF ORGANIC COMPOUNDS

Stephen L. Parrott, c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Dec. 6, 1983, Ser. No. 558,651
Int. Cl.³ C10G *45/04, 45/10*
U.S. Cl. 208—254 H **7 Claims**

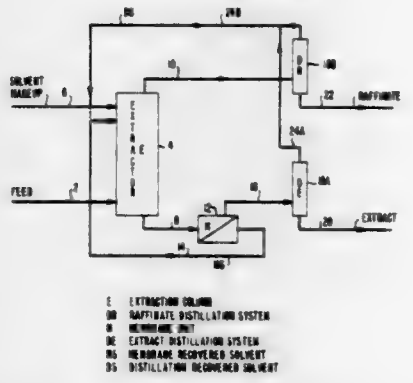
1. A process for the catalytic hydrodenitrogenation of an organic nitrogen compound comprising the step of contacting said organic nitrogen compound under suitable hydrodenitrogenation conditions with a catalyst composition consisting essentially of platinum, titanium and a of high purity gamma alumina support.

4,510,047

SELECTIVE EXTRACTION SOLVENT RECOVERY USING REGENERATED CELLULOSE MEMBRANE UNDER REVERSE OSMOSIS CONDITIONS

John A. Thompson, Wyoming, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1983, Ser. No. 561,169
Int. Cl.³ C07C *7/144*; C10G *31/00*
U.S. Cl. 208—321 **12 Claims**



1. In a process for the solvent extraction of aromatic hydrocarbon from a hydrocarbon feed stream comprising aromatic and non-aromatic hydrocarbons using an extraction solvent selective for aromatics wherein the hydrocarbon feed stream is contacted with said solvent resulting in the formation of an extract phase and a raffinate phase wherein the major concentration of the solvent and aromatic hydrocarbons is present in the extract and a minor concentration of the solvent is present in the raffinate phase and wherein said solvent is recovered from the solvent rich extract phase, the solvent lean raffinate phase or both for recycle to the solvent extraction process, the improvement comprising:

(a) recovering selective solvent by contacting at least a portion of the solvent rich extract phase, the solvent lean raffinate phase or both under pressure with a regenerated cellulose membrane under reverse osmosis conditions whereby the solvent selectively permeates through the membrane resulting in the formation of a solvent rich permeate phase and a solvent lean retentate phase; and

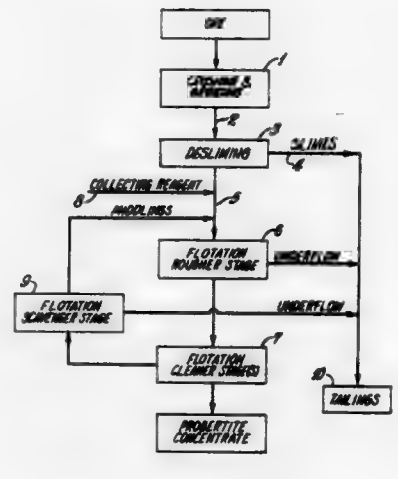
(b) recycling the recovered solvent rich permeate phase to the extraction process.

4,510,048

PROCESS FOR IMPROVING PROBERTITE CONCENTRATION IN PROBERTITE CONTAINING ORE

Anh Mai, Grand Rapids; Donald J. Kaczynski, Pengilly, both of Minn., and Lawrence W. Trainor, deceased, late of Portales, N. Mex. (by Marie L. Trainor, executrix), assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 26, 1983, Ser. No. 535,513
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—3 **7 Claims**



1. A process for recovering a probertite concentrate from borate ore in which the major borate mineral is probertite which comprises:

(a) crushing the ore;

(b) desliming the crushed ore at from about 14 to about 20 microns to produce a deslimed product;

(c) floating the deslimed product and a collecting agent into a flotation stage and separating a probertite concentrate as an overflow stream wherein said collecting agent is an anionic petroleum sulfonate or a mixture of anionic petroleum sulfonates; and,

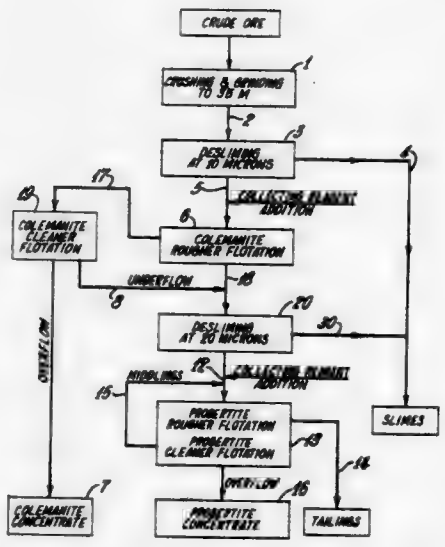
(d) recovering the probertite concentrate.

4,510,049

PROCESS FOR RECOVERY OF COLEMANITE AND PROBERTITE FROM MIXED LOW GRADE ORE

Anh Mai, Grand Rapids; Donald J. Kaczynski, Pengilly, both of Minn., and Lawrence W. Trainor, deceased, late of Portales, N. Mex. (by Marie L. Trainor, executor), assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 26, 1983, Ser. No. 535,521
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—3 **7 Claims**



1. A method of producing concentrates of colemanite and probertite from mixed low grade crude ore which comprises:

(a) crushing the ore;

(b) desliming the crushed ore at about 10 microns and recovering a combined product;

(c) floating the combined product to separate a colemanite-rich fraction and a probertite-rich fraction, removing the colemanite-rich fraction as an overflow stream and removing the probertite-rich fraction as an underflow stream, wherein said floatings are done in contact with a collecting agent, wherein said collecting agent is an anionic petroluem sulfonate or a mixture of anionic petroleum sulfonates.

(d) desliming the probertite-rich fraction at about 20 microns; and

(e) individually floating the probertite-rich fraction and the colemanite-rich fraction to produce a probertite concentrate and a colemanite concentrate, and recovering the probertite concentrate as an overflow stream and recovering the colemanite concentrate as an overflow stream, wherein said floatings are done in contact with a collecting agent, wherein said collecting agent is an anionic petroleum sulfonate or a mixture of anionic petroleum sulfonates.

4,510,050

METAL TRITHIOCARBONATES AS DEPRESSANTS

Robert M. Parlman; Clarence R. Bresson, and Tommy L. Young, all c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Oct. 26, 1982, Ser. No. 436,883
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—167 **12 Claims**

1. Process for depressing copper and/or iron minerals in a minerals containing mixture from which molybdenum is to be recovered in a flotation operation comprising treating the minerals containing mixture with charcoal and carrying out a flotation with a depressant composition present comprising at least one compound selected from the group consisting of M_2CS_3 and $M'CS_3$ wherein the components M which can be the same or different are selected from the group consisting of NH_4 and alkali metals and M' is an alkaline earth metal whereby molybdenum is recovered from a resulting flotation froth and copper and/or iron materials are recovered from a resulting flotation tail product.

4,510,051

FILTER DESIGNED FOR THE SIMULTANEOUS FILTRATION AND PREHEATING OF THE FUEL

Andre Diry, Lotissement en Boussoy, Saint Martin Sous Mointaigu (Saone et Loire), France

Filed Jul. 23, 1981, Ser. No. 286,238
Claims priority, application France, Jul. 24, 1980, 80 16629
Int. Cl.³ B01D *35/18*
U.S. Cl. 210—94 **15 Claims**

1. A fuel filter apparatus for heating fuel and filtering from said fuel particulate contaminants and remaining contaminants heavier than fuel prior to injecting said fuel into a combustion chamber of an internal combustion engine, said fuel filter apparatus comprising:

a barrel housing having an upper end and a lower end;

a first chamber in said barrel housing;

inlet passage means into said barrel housing at said upper end thereof, said inlet passage means further having an inlet aperture at one end thereof for interconnection with a source of fuel and an outlet aperture at the opposite end thereof opening into said first chamber in said barrel housing;

a transparent cover member removably mounted at said lower end of said barrel housing;

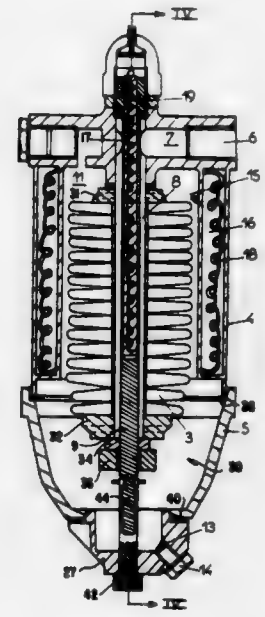
a collecting chamber formed in said transparent cover member and interposed between said transparent cover member and said first chamber of said barrel housing and communicating with said first chamber;

indicator means located in said collecting chamber comprising an indicator member having a specific gravity greater than that of said fuel;

means for securing and sealing said transparent cover member to said barrel housing so that said transparent cover member and said barrel housing together define a leak-proof assembly;

an annular filtering element positioned in said first chamber in said barrel housing, said annular filtering element having one end mounted adjacent to said outlet aperture of said inlet passage means of said barrel housing and further having an opposite end adjacent to said means for securing and sealing said transparent cover member;

a vertically disposed central passage in said annular filtering element having a first end and an oppositely disposed second end, said central passage communicating at said first end with said outlet aperture of said inlet passage means of said barrel housing and being sealed at said second end by said means for securing and sealing said transparent cover member such that said annular filtering element divides said first chamber into a first portion comprising said central passage and communicating with said inlet passage means and an outer annular portion external of said annular filtering element and communicating with said collecting chamber whereby fuel flows from



said central passage to said outer annular portion through said annular filtering element;

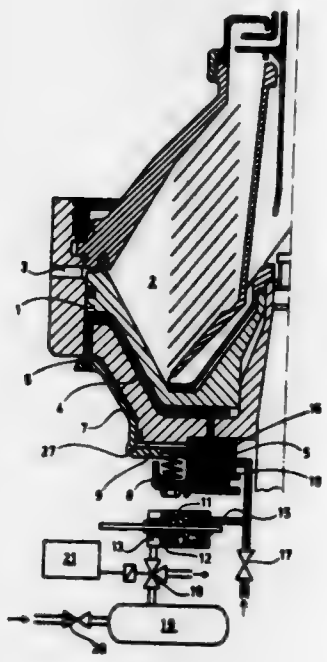
an outlet passage means in said barrel housing at said upper end thereof, said outlet passage means further having an inlet aperture at one end thereof opening into said outer annular portion of said first chamber and an outlet aperture at the opposite end thereof, such that said fuel entering said inlet aperture of said inlet passage means flows through said inlet passage means into said central passage of said annular filtering element and through said annular filtering element into said outer annular portion of said first chamber and through said outlet passage means to said outlet aperture thereof, said annular filtering element removing the undesired particulate contaminants from said fuel so that said fuel cleaned by said annular filtering element flows into said outer annular portion of said first chamber; and

means for heating said fuel flowing through said fuel filter apparatus, said heating means heating said fuel in said annular portion of said first chamber to melt any paraffin in said fuel, said remaining contaminants heavier than said fuel settling into said collecting chamber, said heated and filtered fuel thereafter flowing through said outlet passage of said outer annular portion of said first chamber.

4,510,052
OPERATING SYSTEM FOR CENTRIFUGAL SEPARATORS

Ulf Eklöf, Södertälje, Sweden, assignor to Alfa-Laval Separation AB, Tumba, Sweden

Filed Feb. 3, 1984, Ser. No. 576,549
Int. Cl.[3] B04B *11/00*
U.S. Cl. 210—139 6 Claims

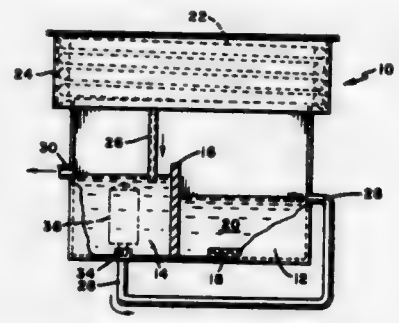


1. In combination with a centrifuge rotor having means defining a separating chamber and means defining peripheral outlets for discharging a separated heavy phase from said chamber, the rotor also having means defining an opening chamber and valve means operable to open said outlets in response to the presence of a certain amount of operating liquid in said opening chamber, the rotor also having means defining a central receiving chamber communicating with said opening chamber to provide it with a controlled supply of said liquid for operating said valve means to open and close the peripheral outlets, an injector device having a static outlet for supplying the operating liquid to said receiving chamber, said device being located outside the rotor and comprising a housing, a movable wall in the housing defining an operating liquid side and a compressed air side of the housing, said operating liquid side being connected with said static outlet, liquid source means connected to said operating liquid side and of sufficient pressure to provide hydraulic contact between said static outlet and said operating liquid side, said source means being operable to refill the injector housing and return said movable wall to an end position in preparation for a new opening and closing of said peripheral outlets, a venting valve associated with said compressed air side for venting air therefrom as the movable wall is returned to said end position, a pressure vessel, means for connecting said vessel to a compressed air source and for adjusting the air pressure in the vessel, and a time-controlled air valve through which said pressure vessel is connected with said compressed air side, the injector device being operable upon opening of said air valve to instantaneously transmit the air pressure in said vessel to hydraulic pressure in a body of the operating liquid extending continuously from said movable wall to said static outlet, and to instantaneously inject operating liquid into said receiving chamber at an injection velocity dependent upon the adjusted air pressure in said vessel.

4,510,053
VAPOR DEGREASER APPARATUS

Jeffrey C. Smith, Prospect, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Filed Jul. 20, 1983, Ser. No. 515,492
Int. Cl.[3] B01D *15/00*
U.S. Cl. 210—175 3 Claims

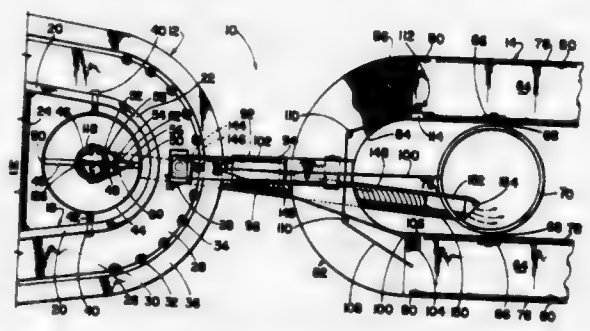


2. A vapor degreaser apparatus comprising a boiling sump and an adjacently disposed water separator sump, a drain pipe terminating in said water separator sump for removing dry solvent from said water separator sump and returning said dry solvent to said boiling sump, and a desiccant assembly mounted in said water separator sump and operative for receiving water contaminated solvent in said separator sump and discharging dry solvent from said desiccator assembly though said drain pipe to said boiling sump.

4,510,054
OIL RECOVERY APPARATUS

M. Martin Wylie, P.O. Box 271, Summerland, B.C., Canada V0H 1Z0

Filed Sep. 28, 1982, Ser. No. 425,793
Int. Cl.[3] B01D *23/00;* E02B *15/04*
U.S. Cl. 210—242.3 16 Claims



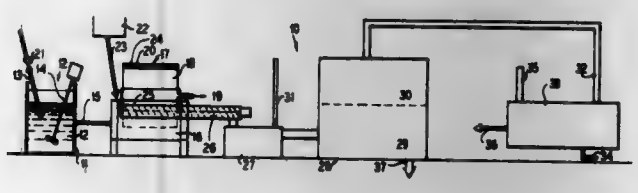
1. Apparatus for recovering oil from the surface of a body of water comprising: a collection unit; a separate recovery unit pivotally connected to said collection unit; and a pumping unit; said collection unit including generally vertically oriented wall means extending above and below the surface of the body of water for deflecting an oil/water mixture into a concentration area therein; said recovery unit including flotation tank means and a generally vertically oriented open-ended cylinder pivotally mounted to said flotation tank means and having a lower submerged portion; and said pumping unit including submerged conduit means leading from an inlet thereof maintained below the level of the oil on the surface of the water at said concentration area to an opening in the submerged portion of said cylinder and containing pump means therein operable to continuously draw a quantity of said oil/water mixture from said concentration area and to feed said quantity through said conduit means to the submerged portion of said cylinder, whereat oil rises to float and accumulate on the surface of water in said cylinder and uncontaminated water exits from the open lower portion of said cylinder.

4,510,055

FILTER AID

Harold R. White, New Lenox, Ill., assignor to Alar Engineering Corporation, Mokena, Ill.

Filed Aug. 25, 1981, Ser. No. 296,135
Int. Cl.[3] B01D *39/04*
U.S. Cl. 210—500.1 6 Claims



1. A filter aid for rotary vacuum pre-coat filter units effective to maintain a filter bed coating on the rotating filter drum sufficiently porous to pass the liquid of a slurry while retaining the slurry solids thereon, capable of being scraped off the filter bed in thin film form with the slurry solids thereon, being sufficiently rigid to maintain the structural dimensions of the filter bed on the filter drum and capable of being incinerated with the solids of the slurry which comprises: rigid, granular non-fibrous combustible material having a dry bulk density of 0.3 to 0.6 grams per cubic centimeter, a particle density of from about 1.4 to 1.5 grams per cubic centimeter, a particle size of about 30 to about 125 microns.

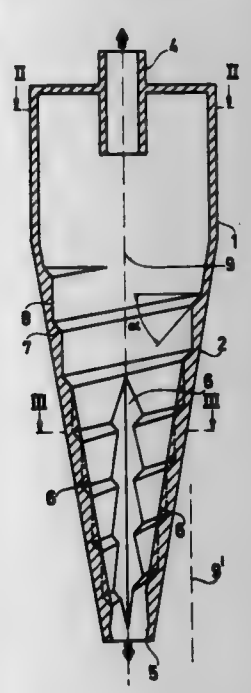
2. A filter aid comprising particles selected from the group consisting of charcoal and nut shells having a particle size of from 30 to 125 microns.

4,510,056

HYDROCYCLONE SEPARATOR

Rune H. Frykhult, Huddinge, and Lars-Goran Rundquist, Tumba, both of Sweden, assignors to AB Celleco, Stockholm, Sweden

Filed Nov. 30, 1982, Ser. No. 445,437
Claims priority, application Sweden, Dec. 4, 1981, 8107262
Int. Cl.[3] B04C *5/103, 5/14*
U.S. Cl. 210—512.1 8 Claims



1. A hydrocyclone separator for separating a mixture into a light fraction of relatively low density and a heavy fraction of relatively high density, the separator comprising a housing forming a separation chamber having a circular cylindrical part located at an enlarged end portion of the housing and a conical part tapering from the cylindrical part, said cylindrical and conical parts having a substantially common axis, said cylindrical part having a tangential inlet for the feed mixture and also having an axial outlet for said light fraction, said conical part having a heavy fraction outlet located at a reduced end portion of the housing, said chamber having a wall along which a stream of said mixture is adapted to flow from said inlet toward said heavy fraction outlet, said tangential inlet being positioned to direct said stream in a first screw path along said wall while rotating in one direction about said axis, said wall having outside said heavy fraction outlet, and along a substantial part of said walls axial extent, means forming a second screw path opposite to said first screw path and thereby create turbulence in said stream as it flows along said first screw path.

4,510,057

ROTATING DISK BIOTREATMENT OF SYNGAS WASTE WATER

Edward H. Rowe, and Lloyd J. Parcell, both of Beaumont, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,867
Int. Cl.[3] C02F *3/08*
U.S. Cl. 210—612 5 Claims

1. In a method for environmentally upgrading a waste water stream produced in the quench step of a process for the production of synthesis gas by reacting a carbonaceous fuel with an oxygen rich gas in a free flow, non catalytic synthesis gas generator at a temperature in the range of from a 1500° F. to 3000° F. and a pressure in the range of 1 to 250 atmospheres, the waste water stream being characterized by having toxic and corrosive properties due to the presence of 5 to 1,000 ppm cyanides, 100 to 20,000 ppm formates and 100 to 10,000 ppm ammonia, which method consists essentially of stripping ammonia and treating cyanides and formates with aerobic bacteria thereby degrading cyanides and formates and as a result environmentally upgrading the waste water stream; wherein the improvement comprises:

immobilizing the aerobic bacteria on a plurality of disks of a rotating disk contactor; positioning and rotating the disks relative to the waste water and air such that the immobilized bacteria are successively wetted with the waste water and exposed to air; rotating the disks at a velocity of 0.25 to 20 rpm; maintaining a waste water pH of 6 to 9.5, temperature of 5° C. to 40° C., residence time of 1 to 15 days and loading the disks with 0.3 to 0.7 lb BOD/(day-1000 ft.^{2}); thereby air stripping the ammonia and bacterially degrading the cyanides and formates.

4,510,058

METHOD FOR A NEW TYPE OF CHROMATOGRAPHY AND DEVICE THEREFOR

Michael Cais, and Moshe Shimoni, both of Haifa, Israel, assignors to Technion Research & Development Foundation, Ltd., Technion, Israel

Filed Jul. 29, 1983, Ser. No. 518,811
Claims priority, application Israel, Aug. 15, 1982, 66551
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—657 26 Claims

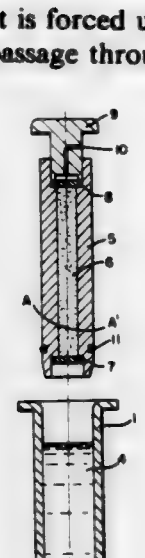
1. A method for separating separable components contained in a liquid sample, comprising the steps of

(a) adsorbing said separable components of said sample onto a movable chromatographic column comprising at least one dense-packed adsorbent bed, said column having an inlet end and on outlet end;

(b) placing said inlet end of said column into a container defining an elongated passage adapted to accept said column in a formfitting manner, said passage containing a predetermined amount of an eluant; and

(c) moving said column in said passage through said eluant,

whereby said eluant is forced under an intrinsic pressure developed in said passage through said adsorbent bed to



elute at least one of said separable components from said column at said outlet end.

4,510,059

CARBOXYLIC FUNCTIONAL POLYAMPHOLYTES AS SILICA POLYMERIZATION RETARDANTS AND DISPERSANTS

Zahid Amjad, West Lake, Ohio, and Monica A. Yorke, Coraopolis, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 411,182, Aug. 25, 1982, abandoned. This application Feb. 22, 1984, Ser. No. 582,403

Int. Cl.[3] C02F *5/12*

U.S. Cl. 210—701 2 Claims

1. A method for reducing the formation of silica deposits in an aqueous system comprising adding to said aqueous system an effective amount of a carboxylic functional polyampholyte or the salt thereof, having an intrinsic viscosity of at least 1.0 dl/g. in 1.0M sodium chloride, prepared from 30 to 32.5 percent, by weight, of acrylic acid; 17.5 to 30 percent, by weight, of a cationic-containing monomer selected from the group consisting of dimethyldiallyl ammonium chloride, diethyldiallyl ammonium chloride and mixtures thereof; and 40 to 50 percent, by weight, acrylamide to retard polymerization of silica and reduce the formation of silica deposits in said aqueous system.

4,510,060

MEASUREMENT OF BS&W IN CRUDE OIL STREAMS

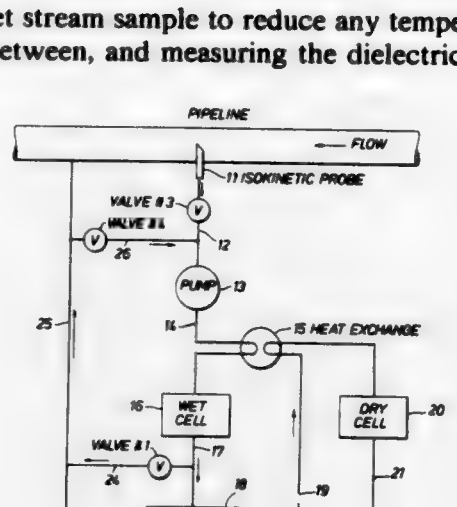
Thomas L. Stewart, Houston, and Florian C. Demny, Pasadena, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 10, 1981, Ser. No. 291,597

Int. Cl.[3] B01D *37/00*

U.S. Cl. 210—746 5 Claims

1. A process for measuring the water content of a wet stream which is predominantly non-aqueous, comprising, removing a sample of the wet stream, extracting a dry stream sample from the wet stream sample, heat exchanging the dry stream sample with the wet stream sample to reduce any temperature difference therebetween, and measuring the dielectric constants of



the wet stream sample and the dry stream sample to facilitate determining the water content of the wet stream.

4,510,061

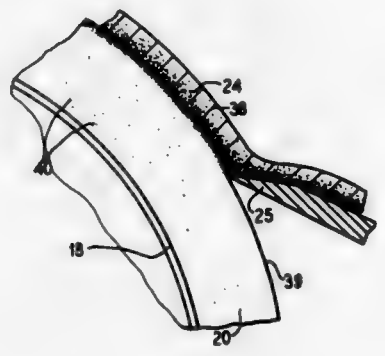
METHOD OF FILTERING

Harold R. White, New Lenox, Ill., assignor to Alar Engineering Corporation, Mokena, Ill.

Division of Ser. No. 296,135, Aug. 25, 1981,. This application Oct. 27, 1983, Ser. No. 546,184

Int. Cl.[3] B01D *37/02*

U.S. Cl. 210—769 6 Claims



1. The method of filtering and recovering heat values from industrial waste slurries which comprises providing filter aid material selected from the group consisting of particulate charcoal and nut shells having a dry bulk density of 0.3 to 0.6 grams per cubic centimeter, a particle density of from about 1.4 to 1.5 grams per cubic centimeter, and a particle size of about 30 to about 125 microns, forming a pre-coat layer of said material on a rotating filter drum, rotating the pre-coated filter drum through a part of the waste slurry, sucking liquid through the drum to build up a layer of slurry solids on the drum, scraping the layer of slurry solids with a thin underlying film of the pre-coat layer from the periphery of the drum, incinerating the scraped off slurry and film layer to burn off the filter aid material and combustibles in the slurry solids, and recovering heat values from the burning step.

4,510,062

REFRIGERATION OIL COMPOSITION

Masayuki Nakanishi, Ichihara, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,570

Claims priority, application Japan, May 12, 1983, 58-81722

Int. Cl.[3] C10M *3/32, 1/38*

U.S. Cl. 252—45 17 Claims

1. A refrigeration oil composition comprising:
at least one oil selected from the group consisting of mineral

oils and synthetic oils, said oil having a viscosity of from 1 to 500 cSt at 40° C.; and

a mercaptan of the formula RSH, wherein R is an alkyl group having 14 to 20 carbon atoms, said mercaptan being in an amount of from 5 to 5000 ppm, based on said oil composition, as calculated in terms of sulfur.

4,510,063

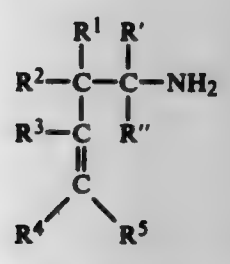
AMINE-POLYMER DISPERSANTS IN LUBRICATING OILS AND A METHOD OF IMPROVING THE DISPERSANCY OF A LUBRICATING OIL

Kechia J. Chou, Wappingers Falls, N.Y., and Phillip B. Valkovich, Spring, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,486
Int. Cl.³ C10M *1/20, 1/32*
U.S. Cl. 252—51.5 R **24 Claims**

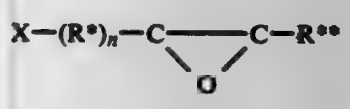
1. The method of improving the dispersancy of a lubricating oil which comprises adding to a major portion of a lubricating oil a minor dispersant amount of 0.01–10 w% of the reaction product at 50°–200° C. of substantially equivalent portions of

(i) a polymer containing carbon atoms in the backbone chain and characterized by the presence of at least one group of the formula



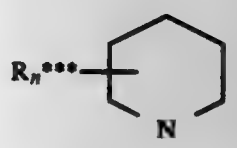
wherein R′ and R″ are hydrogen or alkyl, aralkyl, arlkaryl, aryl, or cycloalkyl hydrocarbon groups; and R^1, R^2, R^3, R^4, and R^5 are hydrogen or hydrocarbon groups, at least one of R^1 through R^5 being a portion of the polymer backbone; and

(ii) a haloepoxide



wherein X is halogen, R* is alkylene, alkarylene, aralkylene, cycloalkylene, or arylene; R** is selected from the same group as that from which R′ and R″ are selected, n is an integer ≧1; and

(iii) a tertiary heteroaromatic amine



wherein x is an integer 0–4 and R*** is hydrogen or alkyl, alkaryl, aralkyl, cycloalkyl, or aryl thereby forming product.

4,510,064

MIXTURE OF THREE REFRIGERANTS

Boris Ermak, Minneapolis, Minn., assignor to Robert D. Stevens, Chanhassen, Minn.

Filed Feb. 13, 1984, Ser. No. 579,486
Int. Cl.³ F25B *9/00*
U.S. Cl. 252—67 **11 Claims**

1. A refrigerant mixture consisting of Dichlorodifluoromethane (R12), Chlorodifluoromethane (R22) and Chlorodifluoroethane (R142b) in which said R142b is not in excess of 60% by weight of said mixture and said R12 and R22 are in ratios of about three parts to five parts respectively by weight of the 40% or more of the remaining weight of said mixture, the total of the three components being 100%.

4,510,065

SOFT CONTACT LENS PRESERVATIVE SYSTEM, PROPHYLACTIC CLEANER AND METHOD

Guy J. Sherman, Mandeville, La., assignor to Sherman Laboratories, Inc., Abita Springs, La.

Continuation-in-part of Ser. No. 384,110, Jun. 1, 1982, abandoned, which is a continuation-in-part of Ser. No. 53,758, Jul. 2, 1979, abandoned. This application Sep. 28, 1983, Ser. No. 537,257
Int. Cl.³ C11D *3/48, 1/72*
U.S. Cl. 252—106 **38 Claims**

1. A contact lens cleaning composition comprising:

(a) trimethoprim;

(b) a first adjuvant bactericide comprising ethylenediaminetetraacetic acid or a water soluble salt thereof and a second adjuvant bactericide selected from the group consisting of: sorbic acid; ascorbic acid; sodium ascorbate; calcium ascorbate; and mixtures thereof;

(c) at least one cleaning component suitable for cleaning contact lenses; and

(d) said trimethoprim and said first and second adjuvant bactericides present together in effective amounts for maintaining the sterility of the composition.

4,510,066

RETARDING SETTING OF CRUTCHER SLURRY FOR MANUFACTURING BASE BEADS FOR DETERGENT COMPOSITIONS

David C. Saar, Belle Mead, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,318
Int. Cl.³ C11D *3/04, 3/10, 3/12, 11/02*
U.S. Cl. 252—140 **9 Claims**

1. A process for retarding or preventing the setting of a miscible and pumpable crutcher slurry which is suitable for spray drying to base beads for a built nonionic detergent composition, which slurry comprises from 55 to 75% of solids and 45 to 25% of water, and comprises from 10 to 40% of a water softening zeolite, 30 to 50% of water soluble salt(s) selected from the group consisting of sodium bicarbonate, sodium carbonate, sodium sesquicarbonate, sodium sulfate and sodium silicate, and mixtures thereof, with the content of sodium silicate being no more than 2%, and 2 to 10% of a swelling bentonite, which comprises preparing a crutcher slurry which is of the described composition and which contains from 0.5 to 5% of magnesium sulfate, and 0% of citric material and mixing such composition in a crutcher during preparation thereof.

5. A miscible and pumpable crutcher slurry which is suitable for spray drying to base beads useful for the manufacture of a built nonionic detergent composition, which slurry comprises from 55 to 75% of solids and 45 to 25% of water and comprises from 10 to 40% of a water softening zeolite, 30 to 50% of water soluble salt(s) selected from the group consisting of sodium bicarbonate, sodium carbonate, sodium sesquicarbonate, sodium sulfate and sodium silicate, and mixtures thereof, with the content of sodium silicate being no more than 2%, 2 to 10% of a swelling bentonite, 0.5 to 5% of magnesium sulfate and 0% of citric material.

4,510,067

FOAM CONTROL COMPOSITION CONTAINING HIGH FOAMING NONIONIC SURFACTANT AND A POLYOXYALKYLENE COMPOUND

Ahmet C. Ozmeral, Baton Rouge, La., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jun. 27, 1983, Ser. No. 508,159

Int. Cl.³ B01F *17/16, 17/42;* C10M *1/20;* C11D *17/00*

U.S. Cl. 252—174.21 **9 Claims**

1. A composition comprising (a) a high-foaming, nonionic surfactant and (b) a foam-reducing amount of a polyoxyalkylene compound having the formula

$$Y[(A)_m—(B)_nH]_2$$

wherein Y is the residue formed by the removal of two atoms of active hydrogen from an initiator having a total of not more than 20 carbon atoms and free of elements other than carbon, hydrogen and oxygen, A is a hydrophobic, heteric mixture of an oxytetramethylene radical, derived from tetramethylene oxide and vicinal alkylene oxide radical derived from propylene oxide, said A being derived from the reaction of said oxides in the molar ratio of tetramethylene oxide:vicinal alkylene oxide of 3:1 to 1:1; B is C_2H_4O; m is an integer such that the total weight of said A is about 95 to 60 percent by weight of the total oxyalkylene residue weight of the compound; n is an integer such that the total weight of said B is about 5 to 40 percent by weight of the total oxyalkylene residue weight of the compound and the total molecular weight of the hydrophobe, 2 m is about 1000 to 3000.

4,510,068

N-(HYDROXY METHYL)-1-AMINO ALKANE-1,1-DIPHOSPHONIC ACIDS AS STABILIZING AGENTS IN PEROXIDE-CONTAINING BLEACHING BATHS

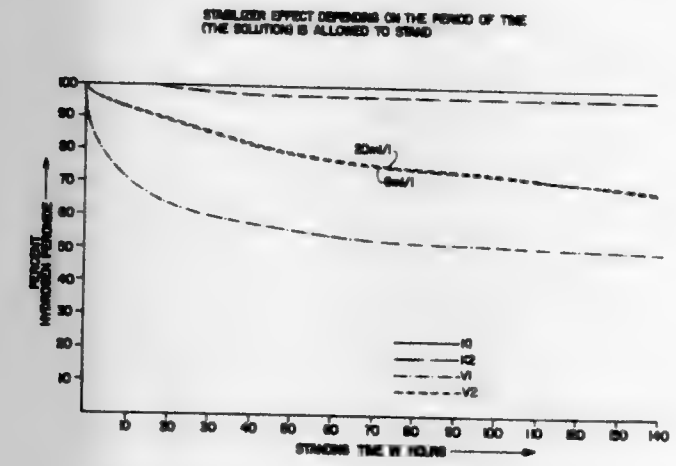
Hans-Adolf Rohlfs, Heidelberg; Alfred Kling, Ladenburg; Guenter Raab, Laudenbach; Michael Vogt, Moerlenbach; Viktor Specht, Dossenheim, and Ulrike Schaetzke, Weinheim-Sulzbach, all of Fed. Rep. of Germany, assignors to Benckiser-Knapsack GmbH, Landenburg am Neckar, Fed. Rep. of Germany

Division of Ser. No. 177,885, Aug. 14, 1980, Pat. No. 4,337,214. This application May 4, 1982, Ser. No. 374,683

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933969

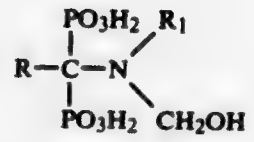
Int. Cl.³ C09K *3/00;* C07F *9/38*

U.S. Cl. 252—186.29 **7 Claims**



1. A composition of matter for stabilizing a peroxide-containing alkaline bleaching liquor, said composition comprising:

an N-(hydroxy methyl)-1-amino alkane-1,1-diphosphonic acid corresponding to the formula



wherein R represents a methyl group, and R_1 represents hydrogen or the hydroxy methyl group (—C_2OH), and the water-soluble salts of said acid, and

at least one substance selected from the group consisting of alkali metal hydroxides, alkali metal persulfates, wetting agents, alkali metal gluconates, alkali metal borates, boric acid, and N,N-bis-(carboxy alkyl)-1-amino ethane-1,1-diphosphonic acids wherein the alkyl group contains 1 to 3 carbon atoms.

5. A composition of matter comprising an alkaline hydrogen peroxide-containing bleaching bath for bleaching cellulose fibers alone or blended with synthetic fibers, said bleaching bath containing, as a bleaching agent, an effective amount of hydrogen peroxide and, as a peroxide stabilizing agent, an N-(hydroxy methyl)-1-amino ethane-1,1-diphosphonic acid or an N,N-Bis-(hydroxy methyl)-1-amino ethane-1,1-diphosphonic acid as defined in claim 1, or a mixture thereof, in an amount between about 4% and about 30% of the amount of 35% hydrogen peroxide present in the bleaching bath.

4,510,069

CYCLOHEXANE DERIVATIVES

Rudolf Eidenschink, Dieburg; Günther Haas, Neckargemünd; Ludwig Pohl, Darmstadt; Michael Römer, Rodgau; Bernhard Scheuble, Alsbach, and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,927

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231707; Jun. 3, 1983, 3320024

Int. Cl.³ G02F *1/13;* C09K *3/34;* C07C *121/46, 121/48, 121/64;* C07D *319/06*

U.S. Cl. 252—299.61 **18 Claims**

1. A liquid-crystal dielectric useful for electrooptical display elements and comprising at least two liquidcrystal components, wherein at least one of said components is a compound of the formula

$$R^1—(A^1)_m—Z^1—A—Z^2—(A^2)_n—R^2$$

wherein

R^1 and R^2 are each independently H; alkyl of 1–10 C atoms; alkyl of 1–10 C atoms in which one or two CH_2 groups is optionally replaced by 0 atoms; F; Cl; Br; CN; or —O—COR;

A^1 and A^2 are each independently 1,4-phenylene, 1,4-cyclohexylene, 1,3-dioxane-2,5-diyl, piperidine-1,4-diyl, 1,4-bicyclo(2,2,2)octylene or pyrimidine-2,5-diyl, each of which is unsubstituted or substituted by 1–4 F atoms;

A is 1,4-cyclohexylene which is substituted in the 1-position, the 4-position or the 1,4-positions by alkyl, alkoxy, fluorinated alkyl or fluorinated alkoxy, each of 1–5 C atoms, F, Cl, Br, CN or a combination thereof and which is optionally also substituted by 1 or 2 of F, Cl, Br or CN or a combination thereof;

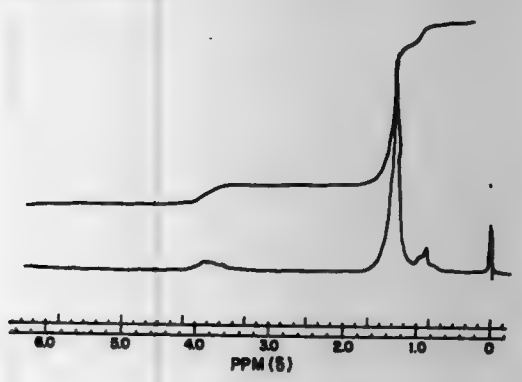
Z^1 and Z^2 are each independently —CO—O, —O—CO—, —CH_2CH_2—, —OCH_2—, —CH_2O or a single bond;

R is alkyl of 1–5 C atoms;

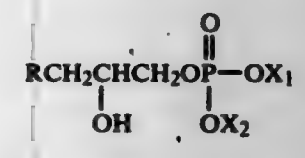
m is 1 or 2 and n is 0 or 1, wherein when m is 2, the two A^1 groups are identical or different from one another;

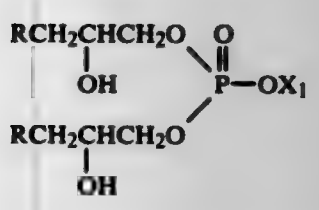
or an acid addition salt thereof for those compounds which are basic.

4,510,070
EMULSIFYING COMPOSITION
Hisao Tsutsumi, Miyashiro, and Tomoko Inoue, Yokohama, both of Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Nov. 22, 1982, Ser. No. 443,640
Claims priority, application Japan, Mar. 29, 1982, 57-49180
Int. Cl.³ C11D *3/36*
U.S. Cl. 252—351 14 Claims



1. An emulsifying composition comprising one or more of hydroxyalkyl or hydroxyalkenyl phosphates represented by the general formula (I) and/or (II)


(I)


(II)

in which R may be the same or different and represent an alkyl or alkenyl group having 5–21 carbon atoms, X_1 and X_2 independently represent a pair ion selected from the group consisting of hydrogen, alkali metal, ammonium, alkylammonium whose alkyl group has 1–5 carbon atoms, and alkanolamine which has a hydroxyalkyl group having 2 or 3 carbon atoms.

4,510,071
METHANOL CONVERSION PROCESS
Richard W. Joyner, Lightwater; John J. McCarroll, Camberley, and Stephen R. Tennison, Weybridge, all of England, assignors to The British Petroleum Company p.l.c., London, England
Filed Aug. 1, 1984, Ser. No. 636,570
Claims priority, application United Kingdom, Aug. 6, 1983, 8321255
Int. Cl.³ C01B *3/22*
U.S. Cl. 252—373 9 Claims

1. A process for the conversion of methanol to a mixture of carbon monoxide and hydrogen by passing methanol over a catalyst under conditions such that the concentration of methanol in the feed is higher than the concentration of methanol in the product, which process is characterised in that the catalyst contains palladium metal dispersed on a support and a promoter which is an alkali metal, alkaline earth metal, or a lanthanide, and the support is a graphite-containing carbon having
(a) a basal plane surface area of at least 100 m^2/g
(b) a ratio of BET surface area to basal plane surface area of not more than 5:1
(c) a ratio of basal plane surface area to edge surface area of at least 10:1.

4,510,072
COMPOSITION HAVING NEUTRALIZED DIFFERENTIAL INFRARED ABSORBENCY
Randall S. Young, Lafayette, and Ronald D. Fredericks, Jr., Oakland, both of Calif., assignors to Dairy & Food Labs, Inc., San Francisco, Calif.
Filed Jan. 28, 1983, Ser. No. 461,720
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—380 7 Claims

6. A preservative composition for adding to milk samples which will be subjected to infrared absorbence testing, said testing comprising:
measuring the relative absorbence of the sample at a first pair of wavelengths to determine fat content;
measuring the relative absorbence of the sample at a second pair of wavelengths to determine protein content; and
measuring the relative absorbence of the sample of a third pair of wavelengths to determine lactose content;
said composition comprising:
one or more components, including a biocide, which together exhibit differing absorbencies at each wavelength in the three pairs of wavelengths;
a first compensating component having absorbency characteristics and present in an amount so that the total increase in absorbency observed at both wavelengths of the first pair of wavelengths is substantially equal;
a second compensating component having absorbency characteristics and present in an amount so that the total increase in absorbency observed at both wavelengths of the second pair of wavelengths is substantially equal; and
a third compensating component having absorbency characteristics are present in an amount so that the total increase in absorbency observed at both wavelengths of the third pair of wavelengths is substantially equal.

4,510,073
METHOD FOR GRANULATING CATIONIC SURFACTANT
Noboru Hara, Tokyo; Shinichi Fukudome, Chiba; Nobuo Johna, Funabashi, and Masayoshi Nakamura, Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan
Filed Jul. 1, 1983, Ser. No. 510,243
Claims priority, application Japan, Jul. 5, 1982, 57-116594; May 24, 1983, 58-91370
Int. Cl.³ A23L *1/00*
U.S. Cl. 252—383 4 Claims

1. A method for granulating a cationic surfactant having good water dispersibility comprising the steps of:
(i) mixing 100 parts by weight of a powdered di (long-chain alkyl) quaternary ammonium salt having an average particle diameter of 150 μm or less with 10 to 30 parts by weight of finely divided silica having an average primary particle diameter of 0.1 μm or less;
(ii) adding 20 to 80 parts by weight of a self-adhesive substance to the resultant mixture in the step (i), followed by granulation; and
(iii) adding 30 to 150 parts by weight of at least one member selected from the group consisting of finely divided zeolite having an average primary particle diameter of 0.1 to 10 μm, finely divided calcium carbonate having an average primary particle diameter of 0.01 to 10 μm, and a mixture thereof, followed by granulation.

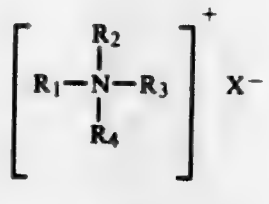
4,510,074

WOOD PRESERVATIVE COMPOSITION

Ryozo Nakai; Shigeo Inoue, both of Utsunomiya, and Sumio Arai, Yokohama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

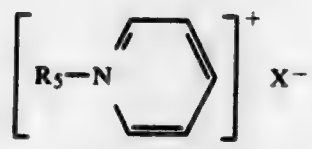
Filed Apr. 6, 1983, Ser. No. 482,440
Claims priority, application Japan, Apr. 30, 1982, 57-72962
Int. Cl.³ C09K *15/32, 15/22, 15/16;* B05D *1/18*
U.S. Cl. 252—400.23 20 Claims

1. A wood preservative composition comprising:
(A) an alkyl ammonium compound of the formula (I):



(I)

or a mixture thereof; and
(B) a polyacid salt of the formula II;



(II)

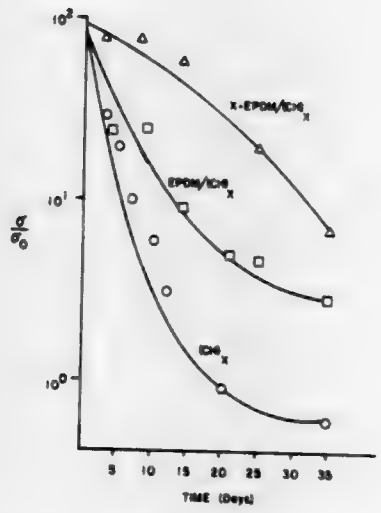
or a mixture thereof; as aqueous solution thereof, wherein:
R_1 represents an alkyl or alkenyl group of 8–20 carbon atoms,
R_2 and R_3 individually represent a hydrogen atom, an alkyl group of 1–5 carbon atoms, a hydroxyalkyl group of 1–5 carbon atoms or an aralkyl group, or R_2 and R_3 may be joined to form a ring containing a hetero-atom together with an adjacent nitrogen atom,
R_4 represents a hydrogen atom or an alkyl group of 1–20 carbon atoms,
R_5 represents an alkyl or alkenyl group of 8–20 carbon atoms, and
X represents a radical of an organic or inorganic acid.

4,510,075

ELECTRICALLY CONDUCTIVE BLENDS OF AN ACETYLENE POLYMER AND AN ELASTOMER HAVING LOW UNSATURATION

Kang I. Lee, Framingham, and Harriet Jopson, Dover, both of Mass., assignors to GTE Laboratories, Inc., Waltham, Mass.

Filed Nov. 23, 1983, Ser. No. 554,610
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 6 Claims



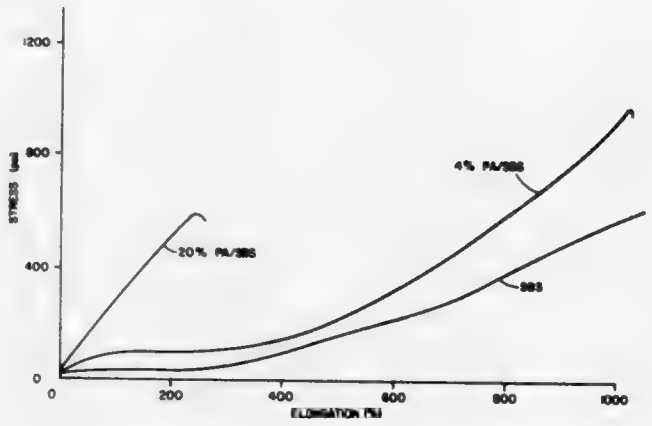
1. An electrically conductive polymer blend comprising a doped acetylene polymer dispersed within an elastomer having a low level of unsaturation, said elastomer comprising a copolymer of a monoethylenically unsaturated monomer with a diene.

4,510,076

ELECTRICALLY CONDUCTIVE POLYMER BLENDS OF AN ACETYLENE POLYMER AND A TRIBLOCK THERMOPLASTIC ELASTOMER

Kang I. Lee, Framingham, and Harriet Jopson, Weston, both of Mass., assignors to GTE Laboratories, Inc., Waltham, Mass.

Filed Nov. 23, 1983, Ser. No. 554,671
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 6 Claims



1. A polymer blend comprising a triblock thermoplastic elastomer having an elastomeric central block and glassy outer blocks with a conjugated acetylene polymer dispersed within the central block of said triblock thermoplastic elastomer, said conjugated acetylene polymer being present in a sufficient amount and doped with an electron doner or an electron acceptor to a sufficient level to provide said polymer blend with an electrical conductivity of at least about $10^{-6}ohm^{-1}cm^{-1}$.

4,510,077

SEMICONDUCTIVE GLASS FIBERS AND METHOD

Richard K. Elton, Altamont, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,338
Int. Cl.³ H01B *1/06, 5/02*
U.S. Cl. 252—502 27 Claims

1. A semiconductive material comprising glass fibers which are pyrolyzed in the substantial absence of oxygen in the presence of an effective amount of an organic compound to render said glass fibers semiconducting by forming carbon deposited glass fibers.

12. A process for producing a semiconductive material, comprising:
(a) depositing an effective amount of an organic compound on glass fibers;
(b) pyrolyzing the glass fibers and organic compound deposited thereon at a temperature of at least 600° C. in the substantial absence of oxygen to form carbon deposited glass fibers.

4,510,078

OILED, ELECTRICALLY CONDUCTIVE CARBON BLACK

Aspy K. Mehta, Baton Rouge, La., assignor to Union Carbide Corp., Danbury, Conn.

Division of Ser. No. 221,153, Dec. 29, 1980,. This application Aug. 15, 1983, Ser. No. 523,277
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—510 1 Claim

1. Carbon black having a surface area of about 1000 m^2/gram oiled with a white mineral oil of lubricating viscosity, by admixing said carbon black with said white mineral oil in a weight ratio of carbon black to oil of about 3:1 to about 1:1.

4,510,079

ELECTRICALLY-CONDUCTIVE RESIN COMPOSITION

Yoichi Kawai; Yoshihisa Gotoh, and Sachio Yokote, all of Yokohama; Masami Maki, Kawasaki; Kaisumi Sekiguchi, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Japan

Filed Apr. 7, 1982, Ser. No. 366,208
Claims priority, application Japan, Apr. 13, 1981, 56-54340
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—511 2 Claims

1. In an electrically conductive resin composition, suitable for electroplating, comprising (a) 100 parts by weight of a polyolefin resin selected from the group consisting of homopolymers of ethylene, homopolymers of propylene, copolymers of ethylene and propylene, copolymers of ethylene with other alphaolefins, copolymers of propylene with other alphaolefins, and mixtures thereof, (b) 0.1–10 parts by weight of sulfur, (c) 0.05–10 parts by weight of a plate adhesion promoter and (d) 10–70 parts by weight of an electrically conductive carbon black, the improvement which comprises adding to said composition a flow improver in an amount of 4–40 parts by weight per 100 parts by weight of (a) plus (d), said flow improver being selected from the group consisting of a softening agent derived from petroleum, a polyalkylene glycol and mixtures thereof, said softening agent being derived from petroleum which consists of naphthenic process oil, aromatic process oil, paraffinic process oil or liquid paraffin, said polyalkylene glycol having alkylene radicals of 1 to 4 carbon atoms.

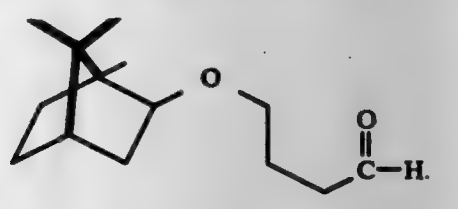
4,510,080

ORGANOLEPTIC USES OF HYDROCARBYLOXY ALKANALS

Richard M. Boden, Ocean; William L. Schreiber, Jackson; Futoshi Fujioka, Wanamassa, all of N.J.; Patrick Chant, Brooklyn, N.Y., and Lambert Dekker, Wyckoff, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 366,079, Apr. 6, 1982, Pat. No. 4,443,633. This application Sep. 26, 1983, Ser. No. 535,930
Int. Cl.[3] A01K *7/46;* C11D *17/00*
U.S. Cl. 252—522 R 5 Claims

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes, perfumed polymers, solid or liquid anionic, cationic nonionic or zwitterionic detergents, and fabric softener compositions or fabric sofener articles comprising the step of adding to a said consumable material an aroma augmenting or enhancing quantity of the norbornyl oxybutyraldehyde having the structure:



4,510,081

DRIFT CONTROL CONCENTRATE

James A. Bronner, Glendale; John D. Moore, Los Angeles, and Paul R. Dale, La Crescenta, all of Calif., assignors to Sanitek Products, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 298,249, Aug. 31, 1981,. This application Feb. 15, 1983, Ser. No. 466,592
Int. Cl.[3] C09K *3/28*
U.S. Cl. 252—603 6 Claims

1. A drift control concentrate admixed with an aqueous fire retardant preparation for application to vegetation or soil by aerial spraying or discharge and characterized by the admixture's ability to remain effective when made with hard or brackish water, by the admixture's ability not to clog spray nozzles, and by the concentrate's relative ease of solution into aqueous preparations, said concentrate consisting essentially of a mixture of effective amounts of a water soluble polymer, or mixtures of said polymer, which will increase the viscosity and thicken said aqueous preparation, and effective amounts of a water soluble polymer, or mixtures thereof, which will impart viscoelasticity to said aqueous preparation, wherein said viscoelasticity increasing polymer is selected from the group consisting of:

(a) Polyacrylamides or their copolymers or derivatives,
(b) Polymers and copolymers of acrylic acid and methacrylic acid or their salts,
(c) Polymethacrylamides or their copolymers or derivatives,
(d) Polyacrylonitriles, their hydrolysis products, copolymers, or derivatives; and
(e) Polymers of ethylene or alkylene oxide.

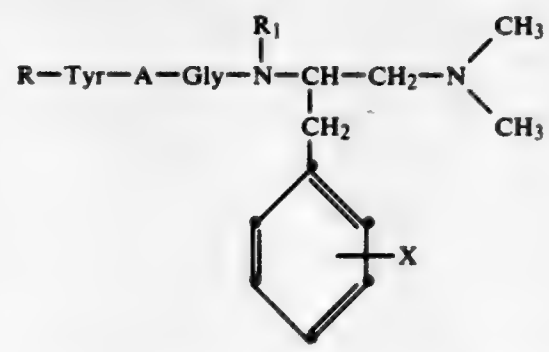
4,510,082

PHARMACOLOGICALLY ACTIVE PEPTIDES

Paul D. Gesellchen, Indianapolis, and Robert T. Shuman, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 7, 1983, Ser. No. 472,438
Int. Cl.[3] C07C *103/52*
U.S. Cl. 260—112.5 R 18 Claims

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which

R is hydrogen, methyl, ethyl, cyclopropylmethyl, or allyl;
A is a residue of a D-amino acid selected from the group consisting of Ala, Abu, Nva, Val, Nle, Leu, Ile, Gly(Al), Gly(Cp), Met, Cys(Me), Met(O), Cys(Me) (O), Ser Ser(Me), Thr, and Hse;
R_1 is hydrogen, C_1–C_3 primary alkyl, cyclopropylmethyl, allyl, ethylthiometryl, 2-fluoroethyl, or propargyl; and
X is hydrogen fluoro, bromo, iodo, chloro, hydroxy, C_1–C_3 alkyl, trifluoromethyl, or C_1–C_2 alkoxy.

4,510,083

PROCESS FOR PREPARING POLYPEPTIDES

Thomas J. Blacklock, Clark, and Richard F. Shuman, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 375,859, May 7, 1982, abandoned. This application May 31, 1983, Ser. No. 499,743
Int. Cl.[3] C07C *103/52*
U.S. Cl. 260—112.5 R 4 Claims

1. A process for sequentially producing polypeptides comprising:

(a) preparing a solvent system containing an amino acid or a peptide and an alkali metal carbonate, said alkali metal being selected from the group consisting of potassium, rubidium, and cesium; said amino acid or peptide being selected from the group consisting of alanine, arginine, asparagine, aspartic acid, cysteine, cystine, glutamic acid, glutamine, glycine, histidine, isoleucine, leucine, lysine, methionine, ornithine, phenylalanine, proline, serine, threonine, tyrptophan, tyrosine, valine, and admixtures and combinations thereof; and, said solvent system comprises only water or water and an aprotic organic co-solvent selected from the group consisting of acetonitrile, tetrahy-

drofuran, ethyl acetate, dimethylformamide, or combinations thereof;

(b) maintaining the temperature of said solvent system at about −10° to 10° C.;

(c) rapidly adding to said solvent system a solution of an amino acid N-carboxyanhydride (NCA) to form a reaction mixture, said amino acid being selected from those defined in (a) above and the excess molar concentration of said NCA, peptide, or amino acid in said reaction mixture being less than about 5%;

(d) stirring said reaction mixture for no more than about 10 minutes or until the reaction is complete; and,

(e) recovering the coupled reaction polypeptide product from said reaction mixture.

4,510,084

METHOD OF PRODUCING AN ANTITHROMBIN III-HEPARIN CONCENTRATE OR ANTITHROMBIN III-HEPARINOID CONCENTRATE

Johann Eibl; Ernst Hetzl, and Yendra Linnau, all of Vienna, Austria, assignors to Immuno Aktiengesellschaft für chemisch-medizinische Produkte, Vienna, Austria

Filed May 18, 1984, Ser. No. 611,639

Claims priority, application Austria, May 20, 1983, 1859/83

Int. Cl.³ C07G *7/00*; A61K *37/64, 31/725*; C08B *37/10*

U.S. Cl. 260—112 B **12 Claims**

1. In a method of producing an antithrombin III-heparin concentrate or an antithrombin III-heparinoid concentrate, which method includes adding heparin or heparinoid to human plasma or to antithrombin III-containing plasma fractions under formation of an antithrombin III-heparin complex or an antithrombin III-heparinoid complex, the improvement comprising

adsorbing the antithrombin III-heparin complex or the antithrombin III-heparinoid complex formed on an anion exchanger thus forming an adsorbate,

eluting said adsorbate with a salt solution thus forming an eluate,

separating said antithrombin III-heparin or antithrombin III-heparinoid complex contained in said eluate from salts and undesired proteins, and

lyophilizing the resulting product so as to bring it into stable form.

4,510,085

ANTIHYPERTENSIVE TETRAPEPTIDE AMIDES

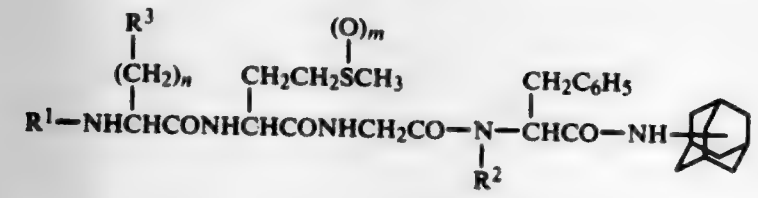
Donald W. Hansen, Jr., Chicago, and Stamatios Papaioannou, Morton Grove, both of Ill., assignors to G.D. Searle & Co., Skokie, Ill.

Filed Apr. 12, 1984, Ser. No. 599,313

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 E **40 Claims**

1. A compound of the formula:



wherein R^1 is:

(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive;

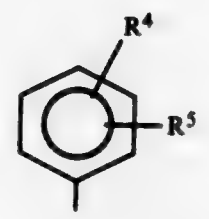
wherein R^2 is:

(a) hydrogen; or

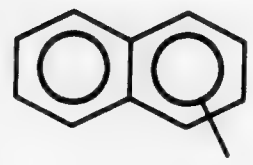
(b) alkyl of 1 to 6 carbon atoms, inclusive;

wherein R^3 is:

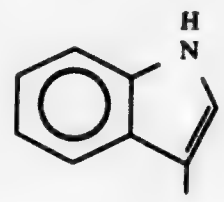
(a)



(b)



(c)



wherein R^4 and R^5, each being the same or different, are:

(a) hydrogen;

(b) alkyl of 1 to 6 carbon atoms, inclusive; or

(c) halogen;

wherein m is 0, 1, or 2;

wherein n is 0 or an integer of from 1 to 4; and the stereochemical configuration of each of the optically active amino acid residues may independently be D, l, or DL; and the pharmaceutically acceptable salts thereof.

4,510,086

2(4-ALLYLTHIOAZETIDIN-2-ON-1-YL)ACETIC ACID ESTER COMPOUNDS

Barry C. Ross, Luton; Graham Johnson, Milton Keynes, both of England, and Michael A. Yeomans, Liederbach, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

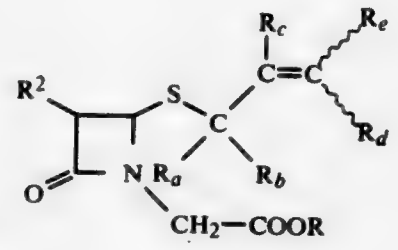
Continuation of Ser. No. 318,113, Nov. 4, 1981, Pat. No. 4,474,793. This application Aug. 22, 1983, Ser. No. 524,973

Claims priority, application United Kingdom, Nov. 6, 1980, 8035657

Int. Cl.³ C07D *205/08, 513/04*

U.S. Cl. 260—239 A **1 Claim**

1. A compound of the formula



wherein

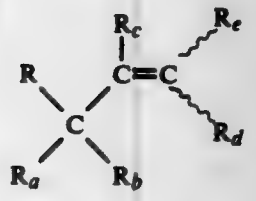
R is a carboxyl esterifying group removable by hydrolysis, photolysis, reduction, or enzyme action without substantial degradation of the rest of the molecule to give the free acid;

R^2 is hydrogen, lower alkyl, lower alkoxyalkyl, lower alkanoyloxyalkyl, or tri-lower alkylsilyloxyalkyl;

R_a, R_b, R_c, R_d, and R_e, taken alone, are the same or different and are hydrogen, alkyl or alkenyl having up to 8 carbon atoms, cycloalkyl or cycloalkenyl having up to 18 carbon atoms, halogen, cyano, carboxyl, or carboxyl esterified with an unsubstituted aliphatic alcohol having up to 20 carbon atoms;

any two of R_a, R_b, R_c, R_d, and R_e, taken together with the carbon atom or atoms to which they are attached, may form a cycloaliphatic ring having 3 to 10 carbon atoms,

said compound having none, one, or two of such rings present therein;
R_c is cis or trans with respect to R_d; and
R^2 is cis or trans with respect to

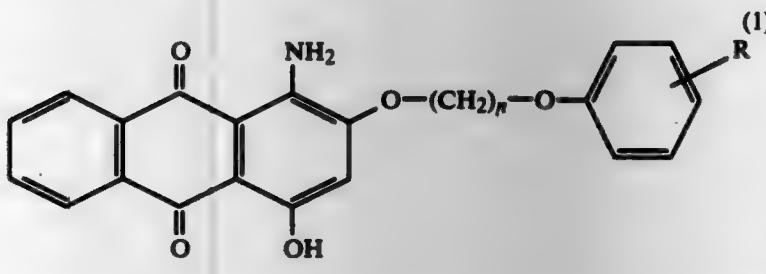


4,510,087
PROCESS FOR PRODUCING 1,4-DIAMINOANTHRAQUINONE-2-SULFONIC ACID
Makoto Hattori, Osaka; Akihiro Taguma, Hyogo, and Akira Takeshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Jul. 27, 1983, Ser. No. 518,177
Claims priority, application Japan, Aug. 4, 1982, 57-136484
Int. Cl.³ C07C *143/665*
U.S. Cl. 260—371 **6 Claims**

1. A process for producing 1,4-diaminoanthraquinone-2-sulfonic acid or a salt thereof comprising reacting 1-amino-4-bromoanthraquinone-2-sulfonic acid or a salt thereof with liquid ammonia in the presence of a copper catalyst, wherein the reaction is carried out in the presence of an inert organic solvent selected from the group consisting of a paraffinic saturated hydrocarbon, a naphthenic saturated hydrocarbon, and a mixture thereof.

4,510,088
DYE MIXTURES OF ANTHRAQUINONE DYES
Peter Möckli, Schönenbuch, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.
Filed Aug. 18, 1982, Ser. No. 409,211
Claims priority, application Switzerland, Aug. 28, 1981, 5544/81
Int. Cl.³ C07C *97/26*; C09B *5/62*
U.S. Cl. 260—380 **9 Claims**

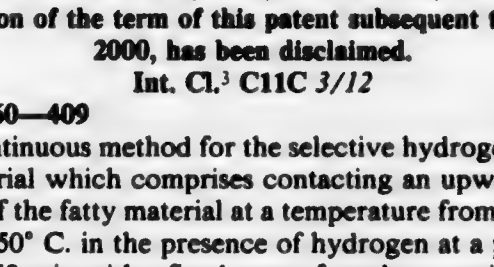
1. A dye mixture consisting of at least two dyes of the formula (1)



wherein R is hydrogen, methyl or ethyl, and n is an integer from 2 to 4.

4,510,089
OCTAHYDROTETRACYANOQUINODIMETHANE AND DERIVATIVES THEREOF
Shu Hotta, Hirakata; Tomiharu Hosaka, Yawata, and Wataru Shimotsuma, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan
Filed Jun. 8, 1982, Ser. No. 386,790
Claims priority, application Japan, Jun. 12, 1981, 56-91171; Jun. 12, 1981, 56-91172
Int. Cl.³ C07C *50/00*
U.S. Cl. 260—396 N **7 Claims**

1. A compound of the general formula



in which W, X, Y and Z independently represent hydrogen, halogen, hydroxyl group, hydrocarbon group having 1 to 8 carbon atoms, alkoxy group having 1 to 8 carbon atoms or acyloxy group having 1 to 8 carbon atoms provided that W=Y and X=Z or W=Z and X=Y.

4,510,090
METHOD FOR THE PRODUCTION OF PHENANTHRENEQUINONE
Dietrich Tonnius, Mannheim; Wolfgang Weiss, Neckarhausen; Winfried Orth, Hassloch; Heinrich Miele, Weinheim, and Emmerich Pastorek, Hemsbach, all of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jan. 30, 1984, Ser. No. 575,128
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305528
Int. Cl.³ C07C *50/16*
U.S. Cl. 260—396 R **4 Claims**

1. Method for the production of 9,10-phenanthrenequinone by oxidizing phenanthrene with the aid of chromic acid and by controlled addition of concentrated sulfuric acid to a mixture of phenanthrene suspended in water and alkali dichromate, comprising the steps of preparing a dispersion of phenanthrene, alkali dichromate and water at 95°–100° C., cooling said dispersion down to 80° to 85° C. and carrying out the oxidation reaction under cooling and controlled addition of concentrated sulfuric acid in a temperature range from 80° to 85° C.

4,510,091
CONTINUOUS REDUCTION OF EDIBLE OILS
Bruce I. Rosen, Skokie, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Mar. 19, 1982, Ser. No. 360,071
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.³ C11C *3/12*
U.S. Cl. 260—409 **13 Claims**

1. A continuous method for the selective hydrogenation of a fatty material which comprises contacting an upwardly flowing mass of the fatty material at a temperature from about 150° to about 250° C. in the presence of hydrogen at a pressure up to about 150 psig with a fixed mass of catalyst consisting essentially of catalytically active zerovalent nickel on alpha-alumina having a surface area less than about 10 m^2/g and a micropore volume less than about 0.1 ml/g, and recovering the resultant hydrogenated product.

4,510,092
CONTINUOUS REDUCTION OF EDIBLE OILS
Bruce I. Rosen, Skokie, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Mar. 19, 1982, Ser. No. 360,114
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.³ C11C *3/12*
U.S. Cl. 260—409 **11 Claims**

1. A method of selectively hydrogenating fatty materials

continuously comprising contacting a flowing mass of a fatty material with a fixed mass of catalyst, consisting essentially of catalytically active zerovalent nickel on alpha-alumina having a surface area less than about 10 m^2/g and a micropore volume less than about 0.1 ml/g, at a temperature from about 150° to 250° C. in the presence of hydrogen at a pressure up to about 150 psig, and recovering the resulting hydrogenated product.

4,510,093

SYNTHETIC LIQUID WAX ESTERS

Hans L. Hülsmann, Wetter, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,457

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3208930

Int. Cl.³ C11C *3/02*

U.S. Cl. 260—410.9 N **9 Claims**

1. A synthetic liquid wax ester substitute for jojoba oil, consisting essentially of ester mixtures of substantially equivalent amounts of an unsaturated carboxylic acid component (a) and an unsaturated alcohol component (b) wherein

(a) is a mixture of a_1, a_2 and a_3 wherein

a_1=straight-chain fatty acids including

5 to 95% monounsaturated C22 fatty acids,

0 to 10% monounsaturated C20 fatty acids,

0 to 60% monounsaturated C18 fatty acids,

0 to 25% diunsaturated C18 fatty acids, and

0 to 8% triunsaturated C18 fatty acids;

a_2=0 to 25% addition products of acrylic acid onto conjugated diunsaturated fatty acids; and

a_3=0 to 25% dimeric fatty acids; and

(b) is a mixture of 0 to 10% unsaturated C12 fatty alcohols

0 to 15% unsaturated C14 fatty alcohols,

0 to 40% unsaturated C16 fatty alcohols,

50 to 95% unsaturated C18 fatty alcohols,

0 to 10% unsaturated C20 fatty alcohols, and

0 to 10% unsaturated C22 fatty alcohols;

wherein all components of (a) and (b) total 100% in each case.

4,510,094

PLATINUM COMPLEX

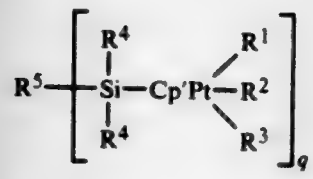
Timothy J. Drahnak, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 6, 1983, Ser. No. 558,617

Int. Cl.³ C07F *17/02*

U.S. Cl. 260—429 CY **2 Claims**

1. A platinum complex having the formula

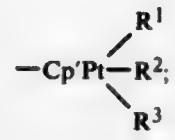


wherein

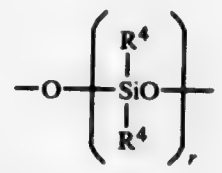
Cp′ represents a cyclopentadienyl group that is eta-bonded to the platinum atom and is also bonded to the silicon atom of an organosilyl group;

each of R^1, R^2, and R^3 represents an aliphatic group having from one to eighteen carbon atoms, said R^1, R^2, and R^3 groups being sigma-bonded to the platinum atom

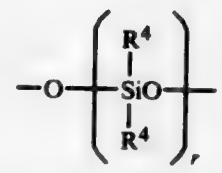
each R^4 can be the same or different and represents a monovalent hydrocarbyl group selected from the group consisting of saturated linear aliphatic groups having 1 to 18 carbon atoms, saturated branched aliphatic groups having 3 to 18 carbon atoms, alicyclic groups having 4 to 18 carbon atoms, aryl groups having 6 to 14 carbon atoms, and



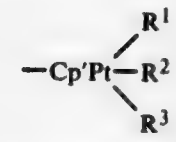
R^5 is R^4 or



where r is zero or an integer of 1 to 100; and q is one or two, with the proviso that when q is one, R^5 is R^4, and when q is two, R^5 is



and that in the complex no more than 50% of the R^4 groups are



groups.

4,510,095

PRODUCTION OF ORGANOTIN HALIDES

Frank S. Holland, Hazel Grove; Peter Womersley, Heaton Mersey, and John Curran, Clayton, all of England, assignors to Manchem Limited, Manchester, England

Filed Jan. 6, 1983, Ser. No. 456,316

Claims priority, application United Kingdom, Jan. 7, 1982, 8200353

Int. Cl.³ C07F *7/22*

U.S. Cl. 260—429.7 **16 Claims**

1. A process for the prredominant production of triorgano tin halides by the direct reaction of elemental tin with an organic halide to produce organo tin halides of the general formula:

$$R_aSnX_{(4-a)}$$

wherein

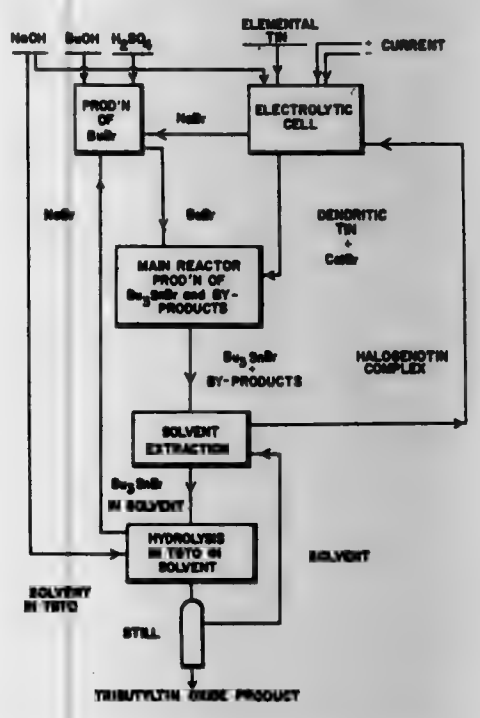
each R independently represents a hydrocarbyl radical covalently bonded to tin;

each X independently represents any chloride, bromide or iodide; and

a may be a number from 1 to 3, but in the majority is 3;

which process comprises reacting an organic halide of the formula RX added during the course of the reaction with a molar excess, relative thereto, of elemental tin in the presence of a reagent amount of an 'onium compound at an elevated temperature sufficient to maintain the same in the liquid state, while also maintaining the weight and molar concentration of said 'onium compound relative to said RX throughout the reaction period at a molar ratio of at least 1:5, whereby there is

obtained an organo tin halide product having R_3SnX as the molar predominant molecular species, while also forming as a



by-product a water-insoluble halogeno tin complex with the 'onium cation.

4,510,096

MAGNESIUM GROUP VIII TRANSITION METAL CARBONYL COMPLEX

Gary B. McVicker, Westfield, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 139,151, Apr. 11, 1980, Pat. No. 4,321,211, which is a division of Ser. No. 17,717, Mar. 5, 1979, abandoned, which is a division of Ser. No. 779,589, May 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 166,615, Jul. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 51,669, Jul. 1, 1970, abandoned. This application Jan. 4, 1982, Ser. No. 336,577

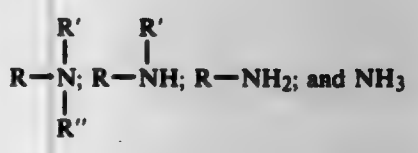
Int. Cl.³ C07F *15/02, 15/04, 15/06, 15/00*

U.S. Cl. 260—439 R **10 Claims**

1. A magnesium Group VIII transition metal carbonyl and substituted carbonyl complex having the following formula:

$$B_xMe[Me'(CO)_a(L)_b]_2$$

wherein B is a monofunctional nitrogenous base represented by the formulae:

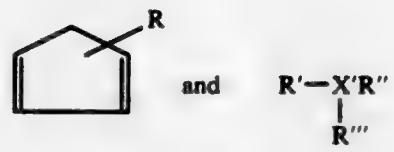


wherein R, R′ and R″ are hydrocarbyl radicals independently selected from the group consisting of C_1 to C_{10} alkyl, C_3 to C_{10} cycloalkyl, C_6 to C_{10} aryl and C_7 to C_{10} alkaryl and radicals;

Me is magnesium;

Me′ is a transition metal selected from the group consisting of the metals of Group VIII of the Periodic Table of the Elements;

L is a uni- or polydentate ligand or hydrocarbon residue which is selected from the group consisting of compounds of the following general formula:



and

wherein R, R′, R″ and R‴ are radicals independently selected from the group consisting of hydrogen, C_1 to C_{20} alkyl, C_3 to C_{20} cycloalkyl, C_6 to C_{20} aryl, C_7 to C_{20} aralkyl and alkaryl, and X is selected from the group consisting of N, P, As and Sb;

a is an integer ranging from 1 to 4;

b is an integer ranging from 0 to 3, with the proviso that the sum of a and b is 5 or less.

4,510,097

HINDERED ALIPHATIC MONOISOCYANATES

Clifton L. Kehr, Silver Spring; Walter R. Wszolek, Sykesville, and Nelson S. Marans, Silver Spring, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,543

Int. Cl.³ C07C *119/045*

U.S. Cl. 260—453 A **1 Claim**

1. 2,6-diethylcyclohexylisocyanate.

4,510,098

INSECTICIDAL PRODUCT

John Crosby, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 26, 1983, Ser. No. 535,624

Claims priority, application United Kingdom, Mar. 28, 1983, 8308507

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—465 D **5 Claims**

1. The enantiomeric pair of isomers represented by (S)-α-cyano-3-phenoxybenzyl 1R,cis-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate and (R)-α-cyano-3-phenoxybenzyl 1S,cis-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-yl)-2,2-dimethylcyclopropane carboxylate in racemic proportions and substantially free from any other isomer of α-cyano-3-phenoxybenzyl 3-(2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate in crystalline form having a melting point greater than 47° C.

4,510,099

PROCESS FOR PREPARING PURE DIACETONITRILE

Gerhard Stern, Linz, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Aug. 15, 1983, Ser. No. 523,623

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3231052

Int. Cl.³ C07C *121/45*

U.S. Cl. 260—465.5 R **6 Claims**

1. A process for preparing pure diacetonitrile, which comprises reacting acetonitrile with molten sodium at a temperature of 97° to 140° C. and under a pressure of 1 to 10 bar in an inert organic medium which is liquid under the reaction conditions, until the reaction is substantially complete, cooling down the mixture to 0°–50° C., hydrolyzing the sodium salt formed by adding water in an amount which is sufficient to dissolve all of the sodium hydroxide and sodium cyanide formed in the hydrolysis, to form a three-phase system from which the aqueous phase and the inert organic medium are separated off, admixing the remaining, third, middle phase, which is crude, liquid diacetonitrile, with 0.5 to 3 times the amount of water, and cooling the mixture down to −10° C. to +30° C., whereupon pure diacetonitrile crystallizes out of the cold mixture and is separated off.

4,510,100

PROCESS FOR THE PRODUCTION OF 2-AMINO-1-NAPHTHALENESULFONIC ACID

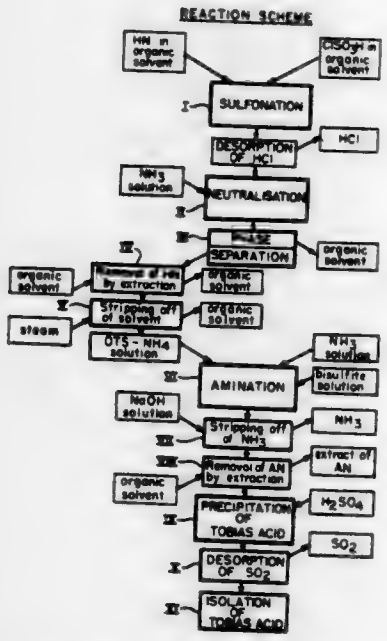
Eric Plattner, Seltisberg; Sebastian Stäubli, Magden, and Fred von Kaenel, Seltisberg, all of Switzerland, assignors to Ciba Geigy Ag, Basle, Switzerland

Continuation of Ser. No. 352,730, Feb. 26, 1982, abandoned. This application Dec. 7, 1983, Ser. No. 559,149

Claims priority, application Switzerland, Dec. 20, 1979, 11315/79

Int. Cl.³ C07C *143/60*

U.S. Cl. 260—508 **7 Claims**



1. A process for the production of 2-amino-1-naphthalenesulfonic acid (Tobias acid), which comprises

(a) introducing into a suitable reaction vessel, simultaneously and continuously, separate streams of a 20–30% suspension of 2-hydroxynaphthalene in a water-immiscible organic solvent which is inert to chlorosulfonic acid, and of chlorosulfonic acid which may be diluted with the same solvent, in the temperature range from −10° to +10° C., in such concentration and at such a rate of addition that an anhydrous reaction mixture having a molar ratio of chlorosulfonic acid to 2-hydroxynaphthalene of about 0.90 to about 1.05 to 1 is obtained, and leaving the reaction mixture for about 10 to 150 minutes in the reaction vessel to give 2-hydroxy-1-naphthalenesulfonic acid (oxy-Tobias acid),

(b) removing HCl from the reaction mixture by desorption under a pressure of 100–400 mbar in the temperature range from 0° to 60° C.,

(c) treating the residual oxy-Tobias acid containing reaction mixture for 10 to 60 minutes with an aqueous 25–35% ammonia solution in the temperature range from 40° to 80° C. until the pH value of the previously acid solution is at least 6, to get the ammonium salt of the oxy-Tobias acid and adding sufficient further water that two liquid phases clearly form, subsequently,

(d) separating the organic solvent phase from the aqueous phase and after removal of residual 2-hydroxynaphthalene by extraction with an organic water-immiscible solvent, stripping off remaining solvent from the aqueous phase in vacuo at 200–400 mbar and in the temperature range from 60° to 80° C.,

(e) treating the resultant aqueous solution of the ammonium salt of oxy-Tobias acid, without increasing the concentration beforehand, with NH_3 and concentrated $(NH_4)_2SO_3$ or $(NH_4)HSO_3$ solution in the temperature range from 120° to 150° C. and at a pressure of 10 to 20 bar for 4 to 12 hours until the pH value is 9 to 12, to give the ammonium salt of 2-amino-1-naphthalenesulfonic acid (Tobias acid), and, after stripping off NH_3 and removal of 2-naphthylamine by extraction with an aromatic hydrocarbon,

(f) adding to the reaction mixture, in the temperature range from 30° to 70° C., sufficient dilute 40–60% sulfuric acid to adjust the pH value to 1.2–1.75, removing SO_2 from the resultant suspension by desorption in vacuo at 0.1 to 0.9 bar and in the temperature range from 30° to 70° C., and, after cooling to about 30° C., isolating the pure Tobias acid by filtration and, if desired, drying it.

4,510,101

HALOGENATED PHOSPHORUS HYDROXY-ALKYL AND T-ALKOXYALKYL ESTERS

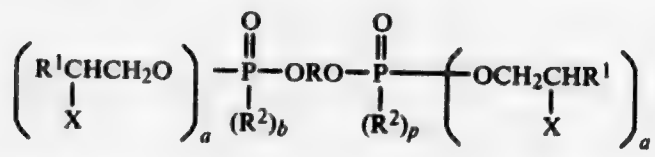
Chester E. Pawloski, Bay City, and Sally P. Ginter, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 18, 1983, Ser. No. 476,662

Int. Cl.³ C07F *9/11, 9/32*; C08G *18/00*

U.S. Cl. 260—928 **8 Claims**

1. Phosphorus compounds containing α-halo hydroxyalkyl or α-halo t-alkoxyalkyl groups corresponding to the formula



wherein

R independently in each occurrence is alkylene, haloalkylene, alkenylene, haloalkenylene, phenylene, diphenylene, halophenylene, dihalophenylene, and oxyalkylene;

R^1 independently in each occurrence is hydrogen, CH_2OR^3, CH_2OH, haloalkyl, phenyl, halophenyl or methyl phenoxy;

R^2 independently in each occurrence is haloalkyl, phenyl, haloaryl or alkyl;

R^3 independently in each occurrence is t-alkyl;

X independently in each occurrence is bromine or chlorine;

a is independently in each occurrence 1 or 2; and

b is independently in each occurrence 0 or 1, with the proviso that at least one R^1 is CH_2OR^3 or CH_2OH.

4,510,102

PHOSPHINIC ACID ESTERS AND PROCESS FOR PREPARING THE SAME

Nobuto Minowa, Yokohama; Shunzo Fukatsu, Tokyo; Taro Niida, Yokohama, and Sadaaki Mase, Tokyo, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

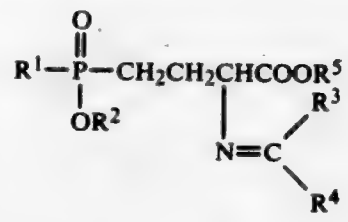
Filed Jan. 18, 1983, Ser. No. 458,946

Claims priority, application Japan, Jan. 29, 1982, 57-13985

Int. Cl.³ C07F *9/32*

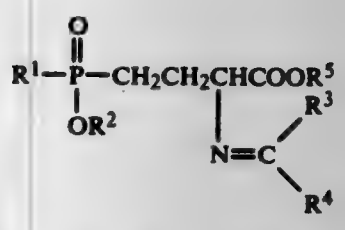
U.S. Cl. 260—941 **22 Claims**

1. A compound represented by the formula (V'):



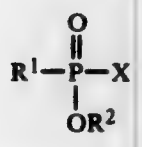
wherein R^1 and R^2 are same or different and each represent a straight or branched chain alkyl group having from 1 to 5 carbon atoms, an aryl group or an aralkyl group, R^3 and R^4 are same or different and R^3, R^4 and R^5 each represent a hydrogen atom, a straight or branched chain alkyl group having from 1 to 5 carbon atoms, an aryl group or an aralkyl group, provided that R^3 and R^4 are not hydrogen atoms at the same time.

2. A process for preparing a compound represented by the formula (V'):



(V')

wherein R^1 and R^2 are same or different and each represent a straight or branched chain alkyl group having from 1 to 5 carbon atoms, an aryl group or an aralkyl group, R^3 and R^4 are same or different and R^3, R^4 and R^5 each represent a hydrogen atom, a straight or branched chain alkyl group having from 1 to 5 carbon atoms, an aryl group or an aralkyl group, provided that R^3 and R^4 are not hydrogen atoms at the same time, which comprises the steps of; reacting a compound represented by the formula (I):



(I)

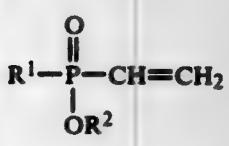
wherein, R^1 and R^2 are as defined above, and

X represents a chlorine atom or a bromine atom,

with a compound represented by the formula (II):

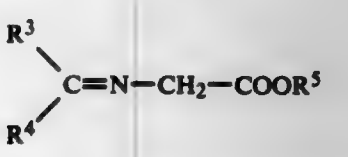
(II)

wherein, X' represents a chlorine atom or a bromine atom, to give a compound having the formula (III):



(III)

wherein, R^1 and R^2 are as defined above, reacting the compound having the formula (III) with a compound represented by the formula (IV):



(IV)

wherein, R^3, R^4 and R^5 are as defined above, in the presence of a base.

4,510,103

METHOD OF MOLDING A COMPOSITE BODY INVOLVING A THERMOSETTING RESIN

Yasuhiro Yamaguchi, and Yoshiaki Sakatani, both of Nagoya, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 19, 1983, Ser. No. 533,502

Claims priority, application Japan, Sep. 28, 1982, 57-167658

Int. Cl.³ B29C *11/00*; B29G *7/00*

U.S. Cl. 264—40.2 **5 Claims**

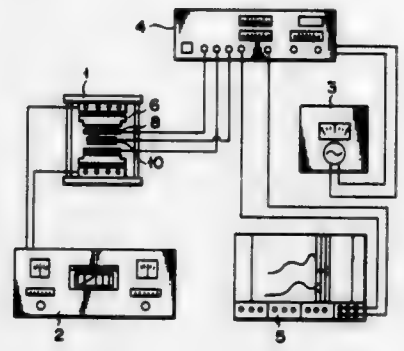
1. A method for forming a molded body from a material including at least a thermosetting resin, comprising:

disposing said material in a mold;

heating said material in a desired time-temperature sequence;

monitoring at least one of the capacitance and dielectric loss coefficient of said material while heating said material until an abrupt change occurs in at least said one of said capacitance and said dielectric loss coefficient;

determining an optimum pressure-starting time from said abrupt change; and



applying pressure to said material in said mold beginning substantially at said optimum pressure starting time.

4,510,104

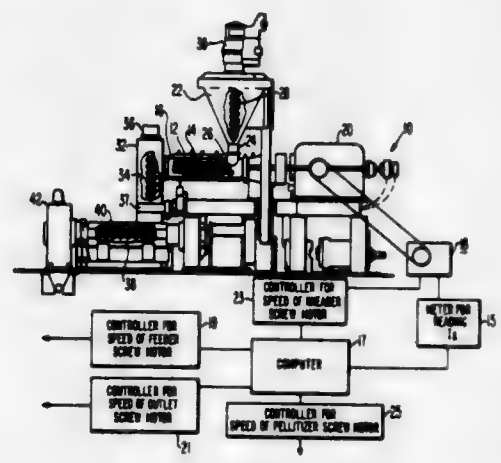
APPARATUS AND METHOD FOR AUTOMATICALLY CONTROLLING AN EXTRUDER FOR THERMOPLASTIC MATERIAL

Charles A. Weaver, Indianapolis, and Joseph W. Stephens, Plainfield, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 7, 1983, Ser. No. 539,933

Int. Cl.³ B29B *1/10, 3/02*

U.S. Cl. 264—40.7 **11 Claims**



1. A method of automatically controlling the output of an extruder for thermoplastic material which includes a kneader screw, an inlet feed screw for feeding dry particulate material to the inlet end of the kneader screw and an outlet feed screw for removing molten material from the outlet end of the kneader screw, each of said screws being rotated by a separate electric motor, said method comprising the steps of

continuously monitoring the current of the electric motor for the kneader screw as the thermoplastic material is fed along the kneader screw, and

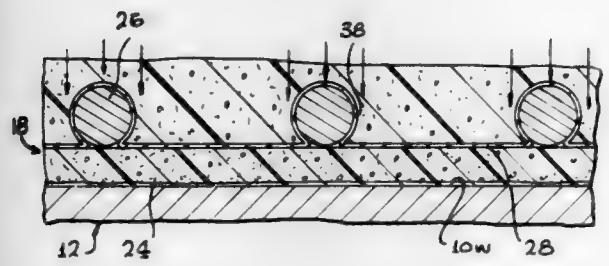
varying the speed of the inlet feed screw and/or outlet feed screw upon variations in the current of the kneader screw motor to maintain the current at a substantially uniform level.

8. In an extruder for thermoplastic material which includes a kneader screw, an inlet feed screw extending to the inlet end of the kneader screw for feeding dry particulate material to the inlet end of the kneader screw and an outlet feed screw at the outlet end of the kneader screw for removing molten material from the outlet end of the kneader screw, each of said screws being rotated by a separate electric means, the improvement comprising

means for automatically controlling the output of the extruder comprising means for continuously monitoring the current of the electric motor for the kneader screw as the thermoplastic material is fed along the kneader screw, and

means for varying the speed of the inlet feed screw and/or the outlet feed screw upon variations in the current of the kneader screw motor to maintain the current at a substantially uniform level.

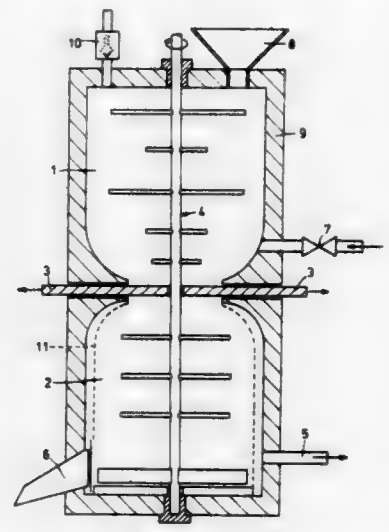
4,510,105
METHOD OF MANUFACTURING A SURFACE-REINFORCED FOAM ARTICLE
Kent Sherwood, 2612 Highland Ave., Santa Monica, Calif. 90405
Filed Aug. 19, 1982, Ser. No. 409,563
Int. Cl.³ B29D *27/04*; B32B *5/20*
U.S. Cl. 264—46.6 **8 Claims**



1. A method for constructing a surface-reinforced foam article comprising:
laying a substantially dry porous but flow-through resistant first layer of flexible material consisting of substantially only fine fibers on the walls of a mold cavity, said mold cavity walls being devoid of any geletaneous coating that could penetrate through said first layer;
laying a second layer of flexible easily permeated cloth material with openings, over the first layer, said second layer including fibers larger than those of said first layer;
laying a substantially dry porous third layer of flow-through resistant flexible material over the second layer; and
filling said mold cavity with foamable material which will form an expanding foaming liquid that solifiifies into a solid foam, and closing said mold;
the amount of foamable material in said cavity being chosen, that the foaming foamable material permeates completely through said third layer and the openings of said second layer and permeates at substantially all areas of the mold, into said first layer before solidifying.

4,510,106
PROCESS AND APPARATUS FOR PRE-FOAMING SYNTHETIC PLASTICS
Kurt Hirsch, Linsengasse 55, 9020 Klagenfurt, Kärnten, Austria
Filed Nov. 15, 1983, Ser. No. 551,858
Claims priority, application Austria, Nov. 15, 1982, 4154/82
Int. Cl.³ B29D *27/00*; F26B *13/30*
U.S. Cl. 264—53 **8 Claims**

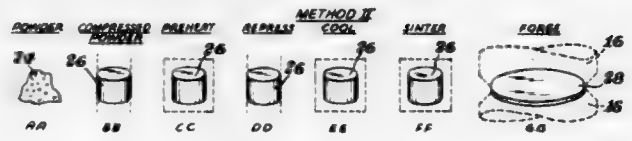
1. A process for pre-foaming a volatile liquid blowing agent-containing granular plastic material in which process the granular plastic material is heated by steam and foamed while being stirred, after which the pre-foamed plastic material particles are dried and stabilized, characterized in that the pre-foamed plastic material particles are transferred without an intermediate resting stage from a sealed pre-foaming chamber into a drying and stabilizing chamber, and in that a vacuum is maintained in this chamber during the drying and stabilizing operation.



4,510,107
METHOD OF MAKING DENSIFIED SI_3N_4/OXYNITRIDE COMPOSITE WITH PREMIXED SILICON AND OXYGEN CARRYING AGENTS
Andre Ezis, Grosse Ile, and Howard D. Blair, Romulus, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
PCT No. PCT/US83/01116, § 371 Date Jul. 19, 1983, § 102(e) Date Jul. 19, 1983
PCT Filed Jul. 19, 1983, Ser. No. 523,196
Int. Cl.³ C04B *35/58*
U.S. Cl. 264—65 **22 Claims**

1. In a method of making a densified silicon nitride comprising object, wherein silicon powder is subjected to sequential heating including first a nitriding heating to form silicon nitride and second a heating to fuse the resulting silicon nitride, the improvement comprising having yttrium silicon oxynitride present with said silicon or silicon nitride prior to said heating to fuse, a major proportion of the yttrium silicon oxynitride is of the $Y_{10}Si_6O_{24}N_2$ phase, said yttrium silicon oxynitride serving to dissolve said silicon nitride during said second heating to fuse and to convert to a more stable phase as a result of the second heating to fuse.

4,510,108
METHOD OF FORMING BLANKS FOR THE SOLID-PHASE FORMING OF THERMOPLASTIC ARTICLES
Kenneth J. Cleereman, Salida, Colo.; O. Carl Raspor, Saginaw, and Alan F. Burmester, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Sep. 29, 1982, Ser. No. 427,232
Int. Cl.³ B29C *25/00*
U.S. Cl. 264—119 **11 Claims**



1. A process for forming a plastic article from thermoplastic polymeric resinous powder wherein a sufficient quantity of said powder for making said article is compressed into a briquette having green strength, the improvement comprising the steps of:
(a) preheating said briquette such that the center thereof is somewhat less than the melt temperature of the resinous powder forming the briquette,

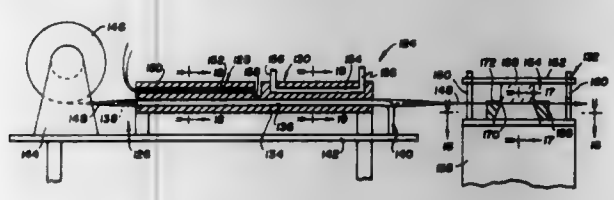
(b) repressing said briquette while at about the same temperature;
(c) applying additional heat to said briquette such that the center thereof is at a temperature higher than that of step (a) but still less than said melt temperature,
(d) maintaining said higher temperature for a period sufficient to soften said briquette and sinter the same short of complete melting thereof; and
(e) forging the briquette into said article while the briquette is at a temperature within said temperature range to effect substantial plug flow deformation of the briquette and obtain substantial fusion of the powder forming said briquette.

4,510,109

METHOD FOR MAKING ARROW FLETCHING

Richard F. Carella, 35572 Strathcona, Mount Clemens, Mich. 48043

Division of Ser. No. 275,167, Jun. 19, 1981, Pat. No. 4,392,654. This application Mar. 25, 1983, Ser. No. 478,783
Int. Cl.³ B28B *7/14*
U.S. Cl. 264—151 **12 Claims**



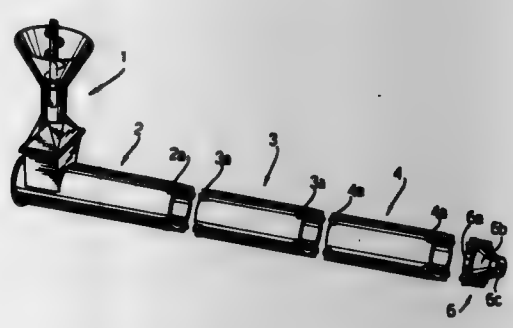
1. A method for making a curved array fletching from a plastic sheet comprising: bending the plastic sheet around a mandrel to a cylindrically curved shape without any abrupt fold; heating the bent plastic sheet to a softened condition while engaged with the mandrel; cooling the bent plastic sheet while engaged with the mandrel to maintain the curvature thereof; and cutting a curved arrow fletching from the curved plastic sheet.

4,510,110

HIGH EFFICIENCY, FAST EXTRUDERS FOR EXTRUDING AND REFINING SOAP AND DETERGENTS

Aldo Mazzoni, Busto Arsizio, Italy, assignor to Costruzioni Meccaniche G. Mazzoni S.p.A., Busto Arsizio, Italy

Division of Ser. No. 306,669, Sep. 29, 1981, abandoned. This application Sep. 28, 1983, Ser. No. 536,667
Claims priority, application Italy, Sep. 30, 1980, 25032 A/80
Int. Cl.³ B29F *3/02*
U.S. Cl. 264—176 R **4 Claims**



1. In a method of making soap, comprising supplying soap to one end of a helix disposed in a casing, and rotating the helix to move the soap lengthwise along the casing and out of the casing; the improvement comprising rotating the helix at a speed between 20 and 50 rpm, providing the length of the helix between 5 to 15 times its diameter, providing a winding angle for the helix between 15° and 25°, providing the helix diameter between about 150 mm, and providing the depth of the helix between 30 and 35 mm.

4,510,111

PROCESS FOR PRODUCING ACRYLIC FIBERS HAVING NON-CIRCULAR CROSS-SECTIONS

Shigeru Sawanishi; Yozo Shiomi, and Akira Yamane, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Aug. 26, 1983, Ser. No. 526,881
Claims priority, application Japan, Sep. 6, 1982, 57-155562
Int. Cl.³ D01D *5/06;* D01F *6/18, 11/04*
U.S. Cl. 264—177 F **7 Claims**

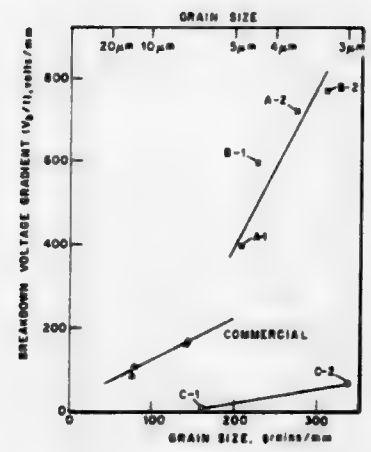
1. A process for producing acrylic fibers having non-circular cross-sections, of which the degree of flatness is more than 1.5, characterized by integrally combining the following process requirements:
(1) preparing an acrylonitrile polymer spinning solution of 40°–70° C. by dissolving an acrylonitrile polymer in an inorganic solvent, which spinning solution has a viscosity of 40–200 poises at 30° C.,
(2) wet-spinning the spinning solution through a spinnerette having circular spinning orifices, and holding it in a first coagulating bath, 5–35 weight % in solvent concentration and having a temperature of −5° C. to 5° C., for a duration of time of d×¼ to d seconds, wherein d is the single-filament denier number of the fibers to be finally obtained,
(3) holding the coagulated gel filaments in a second coagulating bath, 5–35 weight % in solvent concentration and having a temperature from 6° C. to 40° C., for a duration of time more than d seconds,
(4) washing the coagulated gel filaments with water and wet-heat stretching the filaments 4 times in length at a temperature higher than 80° C.

4,510,112

PROCESS FOR FABRICATING ZNO-BASED VARISTORS

Robert J. Lauf, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 21, 1983, Ser. No. 459,922
Int. Cl.³ H01B *1/08*
U.S. Cl. 264—234 **8 Claims**

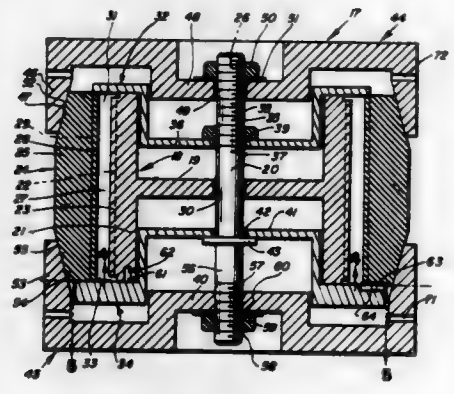


1. A process for producing a metal-oxide varistor, comprising:
providing a varistor sol-gel powder mix including ZnO and at least one metal-oxide dopant,
forming a densified compact of said mix by hot-pressing the same until the density of said compact exceeds about 50% of theoretical in a reducing atmosphere so as to reduce said ZnO to sub-stoichiometric zinc oxide, and
heating the resulting compact in an oxidizing atmosphere so as to effect restoration of said sub-stoichiometric oxide to stoichiometric ZnO.

4,510,113
BELT SLEEVE MANUFACTURING METHOD AND APPARATUS

Hiroshi Takano; Hiroshi Yokoyama, both of Hyogo, and Takahide Mizuno, Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Mar. 24, 1983, Ser. No. 478,444
Claims priority, application Japan, Mar. 25, 1982, 57-48292
Int. Cl.[3] B29C *1/14, 1/16;* B29D *29/02*
U.S. Cl. 264—257 18 Claims



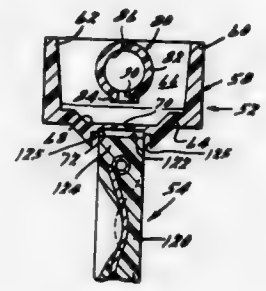
1. The method of forming a belt sleeve comprising:
providing an inner mold having a radially outer surface defining a preselected configuration for forming the inner surface of the desired belt sleeve;
providing a preform comprising layers of uncured rubber, fabric, and tensile cord concentrically about said inner mold;
providing end members at the axially opposite ends of said inner mold for effectively defining a molding space concentrically surrounding the inner mold in which said preform is disposed;
providing in spaced concentric relationship to said inner mold a split outer mold having a radially inner surface defining a preselected configuration for forming the outer surface of the desired belt sleeve;
forcibly urging the outer mold radially inwardly to compress said preform and cause radially inner and outer surfaces thereof to conform accurately to said mold inner and outer surfaces with said mold configuration maintained accurately in a preselected relationship with each other, thereby to form the configurations of the inner and outer surfaces of the belt sleeve preform in correspondingly accurate preselected relationship; and
curing said preform while maintaining said urging.

8. Apparatus for forming a belt sleeve comprising:
an inner mold having a radially outer surface defining a preselected configuration for forming the inner surface of a desired belt sleeve;
end members at the axially opposite ends of the inner mold for effectively defining a molding space concentrically surrounding the inner mold for receiving a preform formed of layers of uncured rubber, fabric and tensile cord;
a split outer mold in spaced concentric relationship to said inner mold having a radially inner surface defining a preselected configuration for forming the outer surface of the desired belt sleeve; and
means for forcibly urging the outer mold radially inwardly to compress the preform and cause radially inner and outer surfaces thereof to conform accurately to said mold inner and outer surfaces, said urging means including means for causing the mold configurations to be maintained accurately in a preselected relationship with each other while concurrently curing the preform and maintaining said urging and thereby form the configurations of the inner and outer surfaces of the belt sleeve preform in correspondingly accurate preselected relationship.

4,510,114
METHOD OF MAKING AN ICE MAKING APPARATUS

Kenneth L. Nelson, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Prospect Heights, Ill.

Division of Ser. No. 356,855, Mar. 10, 1982, Pat. No. 4,458,503, which is a division of Ser. No. 150,445, May 16, 1980, abandoned. This application Apr. 27, 1984, Ser. No. 604,590
Int. Cl.[3] B32B *31/06*
U.S. Cl. 264—261 34 Claims

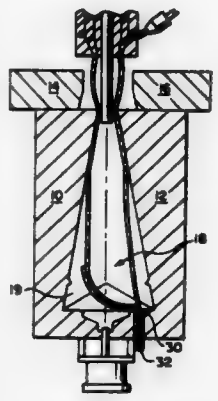


12. In the method of fabricating a combination evaporator and ice form for an ice making machine or the like, the steps which include,
providing a series of refrigerant conduit sections and arranging said sections in a generally spaced parallel relation,
providing heat transfer means for transferring heat into said conduit sections, said heat transfer elements being disposed between said parallel conduit sections,
providing mounting openings in said heat transfer elements and forming an aligned opening in said moldable material, whereby a fastening element may extend through said aligned openings for operatively securing said combination evaporator and ice form in an associated ice making machine,
molding a material adjacent at least portions of said conduit sections and said heat transferring means, and
forming ice make-up water receiving pockets in said material which are arranged in heat transfer relation to said heat transfer means, whereby when a suitable heat transfer media is circulated through said conduit sections and ice make-up water is introduced into said pockets, said water will freeze into ice products within said pockets.

4,510,115
METHOD FOR FORMING LAYERED THERMOPLASTIC ARTICLES

Cem Gokcen, Norwich, England, and Robert J. Williams, Chicago, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 3, 1982, Ser. No. 438,813
Int. Cl.[3] B29C *17/07*
U.S. Cl. 264—515 7 Claims



1. A method of forming a hollow thermoplastic article comprising the steps of:
continuously feeding a first thermoplastic material into a blow molding die while intermittently, simultaneously

feeding a second thermoplastic material into the blow molding die, the second material being incompatible with the first material;

extruding the first and second thermoplastic materials from the blow molding die to form a thermoplastic parison having a first section comprising a single layer of the first material and a second section comprising an inner layer of the first material and an overlying layer of the second material;

closing off the second section of the parison within a mold cavity to form a closed end wall comprising the inner first material layer covered by an overwrap formed by the overlying layer of the second material which, due to its incompatibility, can be selectively peeled away when desired to expose the inner first material layer without otherwise opening the end wall;

blow molding the closed off parison in the mold cavity to form the desired configuration of the hollow article comprising side walls formed from the first parison section and the closed end wall formed from the second parison section; and,

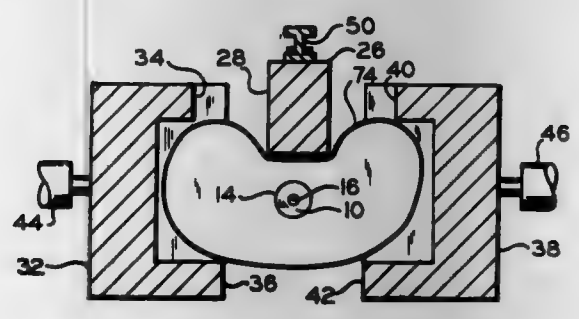
forming in the closed end wall of the hollow article an access port which is normally covered by the peel-away overwrap and which, upon peeling away of the overwrap, is exposed for use.

4,510,116

APPARATUS AND METHOD FOR BLOW MOLDING

Donald L. Peters; John R. Rathman, and Irvin L. Sumpter, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 27, 1983, Ser. No. 517,604
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—529 **10 Claims**



1. Apparatus comprising

a means for extruding a molten tubular parison from between a die and a ring into a closeable mold, said tubular parison to have a first end attached to said means and a second end;

a means for pinching closed the second end of the tubular parison prior to closing the mold;

a means for pneumatically pre-expanding the parison prior to closing the mold;

said closeable mold, when in the closed position, defining a chamber with at least one longitudinally extending rib protruding inwardly from the sidewall of the chamber in the range of from 2 to about 25 percent across the chamber;

said closeable mold comprising a first mold part which determines the rib, said first mold part having a first face and a second face;

a second mold part which determines a first side portion of the chamber, said second mold part having a first face and a second face; and

a third mold part which determines a second side portion of the chamber, said third mold part having a first face and a second face;

the first face of the first mold part matching with the first face of the second mold part and the second face of the first mold part matching with the first face of the third mold part;

a means for providing a closure between the second face of the second mold part and the second face of the third mold part;

a means for moving the second mold part into a position so that the first face of the second mold part matches with the first face of the first mold part; and

a means for moving the third mold part into a position so that the first face of the third mold part matches the second face of the first mold part.

8. A method for blow molding a plastic article from a parison comprising

extruding a molten tubular parison along the side of an elongated rib, said rib to be positioned along the parting line of a pair of mold parts to form a chamber having an inwardly protruding rib extending partway thereacross and then pinching shut the open end of the parison;

thereafter pneumatically expanding the parison partially around the elongated rib;

then moving the mold parts into contact with the elongated rib while pinching a flash line of said parison between the elongated rib and the mold parts; and

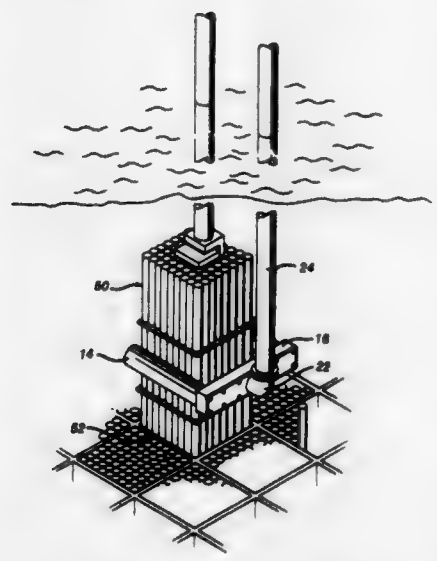
pneumatically expanding the inside of the parison to fit the chamber defined by the mold parts and the elongated rib.

4,510,117

APPARATUS FOR IN SITU DETERMINATION OF BURNUP, COOLING TIME AND FISSILE CONTENT OF AN IRRADIATED NUCLEAR FUEL ASSEMBLY IN A FUEL STORAGE POND

John R. Phillips; James K. Halbig; Howard O. Menlove, and Shirley F. Klosterbuer, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 10, 1983, Ser. No. 465,419
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—257 **7 Claims**



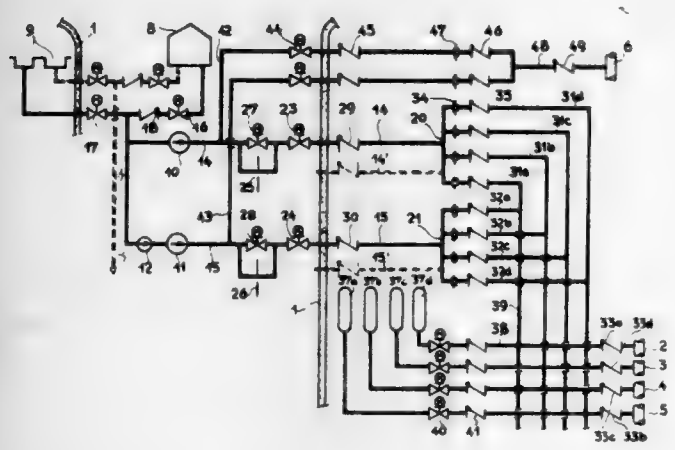
1. A detector head for determining the exposure, cooling time and fissile content of an irradiated nuclear fuel assembly submerged in a spent-fuel storage pond, comprising two spaced apart parallel detector arms extending from a housing, each detector arm including two fission chambers for detecting passive neutrons and an ionization chamber for detecting gross gamma radiation, one of the fission chambers in each detector arm being shielded by a cadmium shield such that the ratios of the outputs of the shielded and unshielded fission chambers can be utilized to determine and compensate for the presence of boron in the water of the storage pond, and whereby the outputs of the fission and ionization chambers can be utilized to verify the declared exposure, fissile content, and cooling time of the fuel assembly.

4,510,118

DEVICE FOR SAFETY INJECTION ON A PRESSURIZED-WATER NUCLEAR REACTOR

Mariana Esayan, Courbevoie, and Michel Vilain, Le Pecq, both of France, assignors to Framatome & Cie., Courbevoie, France

Filed Oct. 12, 1982, Ser. No. 434,139
Claims priority, application France, Oct. 16, 1981, 81 19478
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—282 **4 Claims**



1. Device for safety injection in a pressurized-water nuclear reactor, for the injection of cooling water into a primary circuit in the event of leakage therein, including at least two separate injection trains each consisting of at least one set of means (60, 61, 62) for pumping water at a given pressure from a reservoir (58, 59) arranged outside a safety enclosure (51) of said reactor and an injection pipe (64, 65), called the main pipe, which receives the water leaving said pumping means (60, 61, 62) and enters said safety enclosure (51) and is connected to a distributor drum (70, 70') arranged inside said enclosure (51) for the distribution of the water from main pipes (64, 65, 64', 65') into each of the cold arms (52, 53, 54, 55) of said primary circuit through distributor pipes (71, 72), at least one block valve (81, 82) being located in each of the main pipes (64, 65) outside said enclosure (51) and at least one non-return valve (76) being located in each of said distributor pipes (71, 72) between said drums (70, 70') and said cold arms (52, 53, 54, 55), from each of said main pipes (64, 65) there being tapped off outside said enclosure (51) an auxiliary pipe (84, 85) which enters said enclosure and in which is located a block valve (96, 97) outside said enclosure, and which has a branching-off (86, 87, 88, 89) inside said enclosure (51) for placing said auxiliary pipe (84, 85) into communication firstly with a hot arm (56, 56') by way of a first pipe and secondly with a distributor pipe connected to a cold arm (52, 53, 54, 55) downstream of a clack-valve (74) arranged in said distributor pipe (71, 72), by way of a second pipe, clack-valves (90) being arranged in each of said pipes (86, 87, 88, 89) of said branching-off.

4,510,119

DIAGNOSTIC TEST BEAD TRANSFER APPARATUS

Richard C. Hevey, Paoli, Pa., assignor to Centocor, Inc., Malvern, Pa.

Filed May 7, 1982, Ser. No. 376,023
Int. Cl.³ B01L *9/06;* G01N *33/56*
U.S. Cl. 422—71 **2 Claims**

1. A diagnostic test apparatus for use in an immunoassay, comprising:

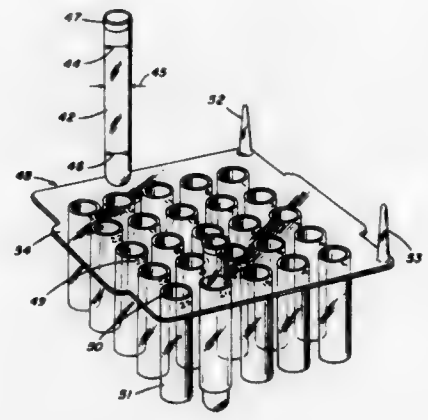
a. a receptacle tray of resilient material having a plurality of wells for receiving samples,

b. said receptacle tray having at the least one pilot hole,

c. a test tube rack of resilient material having a plurality of holes for insertion of test tubes, said test tube rack having at least one pin for insertion into the pilot hole of the receptacle tray,

d. test tubes of generally cylindrical shape composed of resilient material, said test tubes having a varying outside diameter so as to form a friction fit when pressed into test tube rack,

e. indicia of marking of correlating nature present on said test tube rack and receptacle tray, and



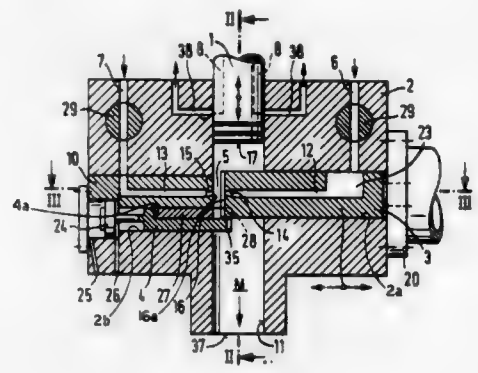
f. a plunger and precut plugboard means for inserting test tube plugs into several test tubes essentially simultaneously.

4,510,120

MIXING HEAD

Adolf Bauer, Olching, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,102
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3144920
Int. Cl.³ B01F *5/04, 15/02;* B01J *14/00*
U.S. Cl. 422—133 **12 Claims**



1. A mixing head for at least two reactive components comprising:

a housing formed with a bore defining a mixing chamber and having an outlet for discharge of a reaction mixture;

a control plunger displaceable in said bore from a position wherein said plunger is retracted from said outlet into a position wherein said plunger is proximal to said outlet thereby driving a reaction mixture from said mixing chamber out of said outlet;

at least two nozzles which form a pair of nozzles in said housing juxtaposed with one another in a direction along the path of said plunger for impinging streams of respective interreactive components against one another to form said reaction mixture;

a nozzle body carrying one of said nozzles and shiftable transversely of the direction of displacement of said plunger into said chamber toward the other of said nozzles; and

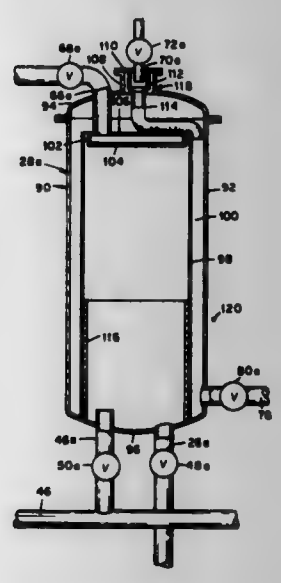
means for advancing said body into said chamber into said path of said plunger and retracting said body from said chamber out of said path.

4,510,121

POWER RECOVERY SYSTEM FOR COAL LIQUEFACTION PROCESS

Joel R. Horton, Maryville, and David M. Eissenberg, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 17, 1982, Ser. No. 442,331
Int. Cl.³ B01D *19/00*
U.S. Cl. 422—232 **3 Claims**



1. An apparatus for supplying feed material to a reactor vessel for treating said feed material at a high pressure and temperature to produce a gas-containing reactor product effluent at a relatively high pressure, feed material supply means, a flow work exchanger comprising an outer shell defined by (1) a vertically oriented tubular sidewall, an upper end cover and a lower end cover, and (2) a vertically oriented tubular inner shell disposed within said outer shell and radially inwardly spaced from said sidewall to define a vertically oriented annulus between the inner and outer shells, the lower end of said inner shell being attached to said lower end cover and the upper end of said inner shell extending to a location adjacent to but spaced from said upper end cover, first conduit means coupled to said feed material supply means and said lower end cover for conveying feed material at a relatively low pressure into said inner shell, second conduit means coupled to the reactor vessel and said upper end cover for conveying said reactor product effluent from the reactor vessel into the upper portion of said inner shell for displacing feed material from said inner shell, third conduit means coupled to said lower end cover and said reactor vessel for conveying feed material displaced from said inner shell to the reactor vessel, fourth conduit means coupled to said upper end cover for conveying gas released from said reactor product effluent from the upper portion of said outer shell, and a fifth conduit means coupled to said outer shell for releasing reactor product effluent from said annulus.

4,510,122

PROCESS FOR EXTRACTING URANIUM FROM PHOSPHORIC ACIDS BY MEANS OF ALKYLPYROPHOSPHORIC ACIDS

Antoine Floreancig, St Genis Laval, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Jul. 7, 1983, Ser. No. 511,478
Claims priority, application France, Jul. 30, 1982, 82 13820
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—10 **16 Claims**

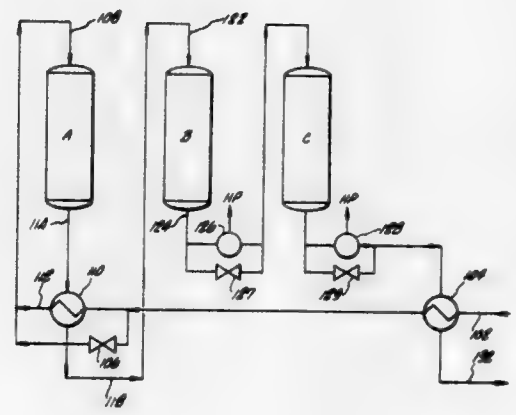
1. A process for extracting uranium contained in solutions of phosphoric acids by means of an extracting agent comprising an alkylpyrophosphoric acid, which process comprises bringing into contact, the inorganic, phosphoric acid phase and an organic phase containing the extracting agent, thereby producing an emulsion, wherein the emulsion is produced in a first step by simultaneously subjecting the two phases containing the phosphoric acid and the extracting agent for a period of time T_1 to an intense mechanical sheering action corresponding to a sheering coefficient of at least 5000 seconds^{-1}, thereby increasing the contact surfaces for contact between said two phases, and then abruptly breaking said emulsion, in a second step, in a time T_2, the sum T_1+T_2 of the times required for carrying out the two steps being at most 20 minutes.

4,510,123

TEMPERATURE CONTROLLED AMMONIA SYNTHESIS PROCESS

Bernard J. Grotz, Pasadena, Calif., assignor to C F Braun & Co., Alhambra, Calif.

Filed Nov. 26, 1982, Ser. No. 444,720
Int. Cl.³ C01C *1/04*
U.S. Cl. 423—360 **26 Claims**



19. A process for synthesizing ammonia from nitrogen and hydrogen carried out at a pressure greater than 100 atmospheres which process comprises (a) passing a mixture of hydrogen and nitrogen in continuous flow through a series of three catalyst beds; (b) heating at least a portion of the feed syngas prior to its entrance into the first catalyst bed by heat exchange with at least a portion of a final product effluent from the third catalyst bed in the series and with at least a portion of the effluent from the first catalyst bed in the series; and (c) cooling the effluent from each of the second and third catalyst beds in the series by means of a high pressure steam generator in series with the effluent from each of the second and third catalyst beds.

4,510,124

SYSTEM FOR RECOVERY OF CO_2 FROM FLUE GASES CONTAINING SO_2

John T. Sears, Bozeman, Mont., and Harish R. Anada, Morgantown, W. Va., assignors to Science Applications, Inc., La Jolla, Calif.

Filed Nov. 9, 1983, Ser. No. 549,895
Int. Cl.³ C01B *31/20;* B01D *53/34*
U.S. Cl. 423—437 **5 Claims**

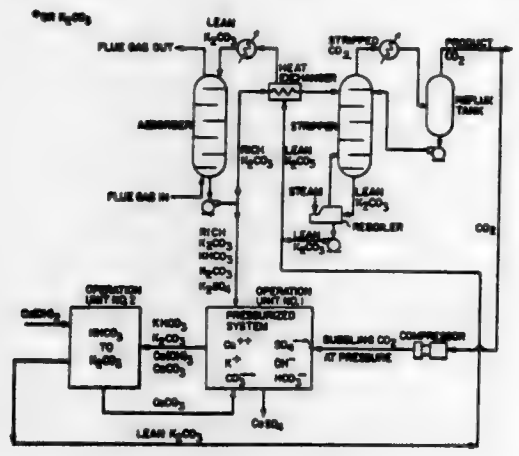
1. In a process for recovering CO_2 from flue gas containing CO_2 and SO_2 wherein the flue gas is contacted with potassium carbonate solution, the CO_2 and SO_2 components absorbed therein to form a liquor containing $KHCO_3$ and K_2SO_4, and the CO_2 removed from the said liquor, the improvement which comprises:

(a) converting the K_2SO_4 *L in the liquor to* $CaSO_4$ by incorporating Ca^{++} ions while adding CO_2 to the liquor in a pressurized vessel;

(b) removing $CaSO_4$ from the resulting liquor of step (a);

(c) conveying the liquor remaining from step (b) to a different container therefor;

(d) removing calcium ions from the liquor of step (c) by precipitating out $CaCO_3$ by raising the pH of the liquor;



(e) conveying the liquor remaining after step (d) to the potassium carbonate solution with which the flue gas is first contacted.

4,510,125

PROCESS FOR MAKING LYOPHILIZED RADIOGRAPHIC IMAGING KIT

Terry W. Grogg, Cincinnati; Joseph E. Bugaj, Harrison, and Paul E. Bates, Cincinnati, all of Ohio, assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Dec. 8, 1982, Ser. No. 447,863

Int. Cl.³ A61K *49/00, 49/02, 43/00*

U.S. Cl. 424—1.1 **13 Claims**

1. A process, for producing a dry-powder composition, useful for skeletal imaging, comprising the steps of:

(a) preparing a solution which comprises a stabilizer selected from the group consisting of gentisate, ascorbate, and reductate compounds, and mixtures thereof;

(b) contacting said solution with a metal selected from the group consisting of tin and tin-containing alloys; and

(c) lyophilizing said solution.

4,510,126

REAGENT FOR THE DETERMINATION OF RISTOCETIN COFACTOR (V.WILLEBRAND FACTOR)

Peter Fuhge, Lahntal; Konrad Braun, Ebsdorfergrund, and Udo Becker, Munich, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,748

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141894

Int. Cl.³ G01N *1/00, 1/30, 33/48*

U.S. Cl. 424—3 **4 Claims**

1. An agent for determining ristocetin cofactor, which agent is a freeze-dried suspension of human platelets treated with diisopropyl fluorophosphate as a proteinase inhibitor and with a tanning agent selected from the group consisting of C_1–C_4-alkanaldehydes and C_2–C_6-dialdehydes.

4,510,127

COMPOSITIONS AND METHOD FOR REDUCING ELUTION OF THERAPEUTIC AGENTS FROM TEETH

Robert W. H. Chang, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 303,206, Sep. 18, 1981, Pat. No. 4,366,146, which is a division of Ser. No. 176,680, Aug. 11, 1980, Pat. No. 4,304,766, which is a division of Ser. No. 26,402, Apr. 2, 1979, Pat. No. 4,243,658, which is a continuation-in-part of Ser. No. 865,681, Dec. 29, 1977, abandoned. This application Sep. 27, 1982, Ser. No. 424,579

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **6 Claims**

6. A method of substantially reducing elution of a therapeutic agent previously applied to teeth which comprises the steps of

applying said therapeutic agent to teeth, and

applying a dentifrice composition to said treated teeth, wherein said dentifrice composition comprises (1) at least one ingredient selected from the group consisting of therapeutic agents, polishing agents, surfactants, flavoring agents, sweetening agents, thickening agents and humectants, and (2) at least 0.05% by weight of a nonionic, water-dispersible, membrane-forming material which, when applied to the surface of the teeth in an oral environment, forms a substantially continuous hydrophobic barrier thereon which substantially reduces the elution of said previously applied therapeutic agent from said teeth, and which is selected from the group consisting of

$(R^8)_bSi(R^9)_{4-b}$

$(R^{10})_xTi(OR^{11})_{4-x}$

$(R^{12})_xTi(R^{11})_{4-x}$

wherein R^8 is selected from hydrocarbon and fluorocarbon groups which contain up to 25 carbon atoms optionally substituted by chlorine; R is an alkoxy group containing from 1 to 6 carbon atoms; R^{10} is selected from hydrocarbon groups containing from 1 to 20 carbon atoms; R^{11} is selected from hydrocarbon groups of from 1 to 20 carbon atoms; R^{12} is a heterocyclic group containing only carbon, oxygen and hydrogen; b and x are selected from 0, 1, 2 and 3.

4,510,128

RESINATE OF A SUBSTITUTED CARBOXYLIC ACID, THE PREPARATION AND USE THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT

Satish C. Khanna, Bottmingen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

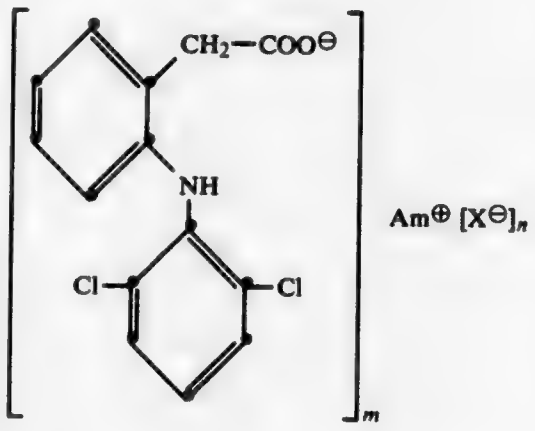
Filed Jan. 6, 1984, Ser. No. 568,976

Claims priority, application Switzerland, Jan. 12, 1983, 147/83

Int. Cl.³ A61K *31/74*

U.S. Cl. 424—79 **4 Claims**

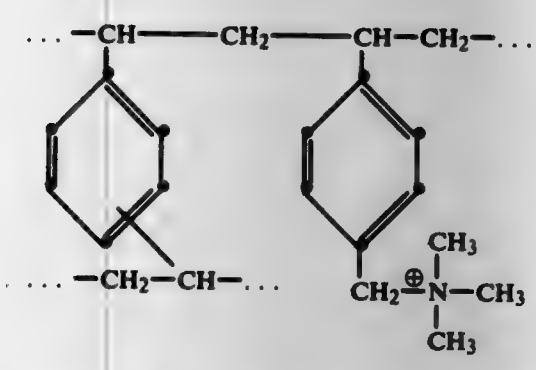
1. A resinate of the formula



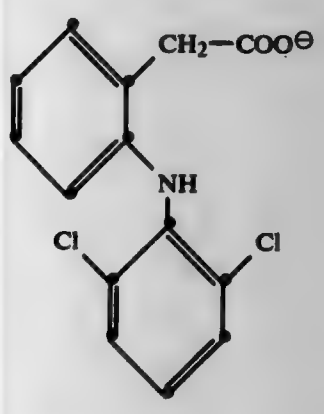
(I)

wherein

$Am^{\oplus}$ is a strongly basic copolymer of styrene and divinylbenzene which is in cationic form, said copolymer containing the sum of m+n quaternary ammonium groups and also containing, as main structural unit, the grouping of the formula



$X\ominus$ is the anion of an acid different from the anion of the formula



and m and n denote the entire ionic capacity of the copolymer.

4,510,129

IMMUNOSTIMULATING AGENT

Jürgen Knop, Caldern; Hans-Harald Sedlacek, and Friedrich R. Seiler, both of Marburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 11,944, Feb. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 795,233, May 9, 1977, abandoned. This application Aug. 9, 1982, Ser. No. 406,531

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620649

Int. Cl.[3] **A61K** *39/42, 39/40, 39/12, 39/02*

U.S. Cl. 424—86 **6 Claims**

1. An agent for stimulating immunologic reactivity, consisting essentially of a physical admixture of an antigen wherein said antigen is Escherichia Coli, Vibrio Cholerae, rubella virus, wether erythrocytes or s.typhimurium and an effective amount of neuraminidase as adjuvant therefor containing 0.01 to 150 units of neuraminidase per dosage of antigen.

4,510,130

PROMOTING ANIMAL AND PLANT GROWTH WITH LEUPEPTIN

Herbert Platt, Great Neck, and Alfred Stracher, Roslyn Est., both of N.Y., assignors to Genetic Diagnostics Corporation, Great Neck, N.Y.

Filed May 20, 1983, Ser. No. 496,717

Int. Cl.[3] **A61K** *37/00*

U.S. Cl. 514—2 **3 Claims**

1. A method of promoting the more rapid growth of a healthy animal, which comprises administering to said animal or to a food source of said animal a growth-promoting effective amount of leupeptin.

4,510,131

PURIFIED MULLERIAN INHIBITING SUBSTANCE AND METHOD OF USE

Patricia K. Donahoe, Weston; Gerald P. Budzik, Waltham, and David A. Swann, Lexington, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 287,943, Jul. 29, 1981, Pat. No. 4,404,188. This application Jul. 11, 1983, Ser. No. 512,553

Int. Cl.[3] **A61K** *37/02;* **C07G** *7/00;* **C12Q** *1/29*

U.S. Cl. 424—105 **3 Claims**

1. A composition comprising Mullerian Inhibiting Substance (MIS) derived from testicular tissue having an activity of at least 1 as measured by the Mullerian organ regression test being substantially free of albumen and being about 7,000–8,000-fold enriched in MIS activity over natural testicular tissue per dry weight of tissue.

2. A composition comprising Mullerian Inhibiting Substance (MIS) derived from testicular tissue having an activity of at least 2–2.5 as measured by the Mullerian regression organ test; being substantially free of albumen and of proteinaceous material having a molecular weight of 35,000±10,000 Daltons and 70,000±10,000 Daltons, being about 15,000-fold enriched in MIS activity over natural testicular tissue per dry weight of said tissue.

3. A method of suppressing the growth of human ovarian cancer cells which comprises contacting said cells with a growth suppressing amount of the MIS composition of any of claims 1 or 2.

4,510,132

COMPOUNDS FOR USE IN ANTIBACTERIAL THERAPY

Martti Vaara, A. Kannistontie 10, Helsinki, SF-00320, Finland

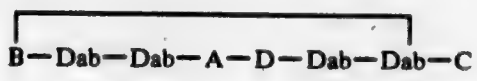
Filed Sep. 22, 1983, Ser. No. 534,617

Claims priority, application United Kingdom, Oct. 6, 1982, 8228545

Int. Cl.[3] **A61K** *37/00;* **C07C** *103/52*

U.S. Cl. 514—11 **9 Claims**

1. A compound having the general formula



in which Dab is diaminobutyric acid; A is selected from a group comprising leucine, iso-leucine and phenylalanine; B is selected from a group comprising leucine and threonine; D is selected from a group comprising D-leucine and D-phenylalanine; and C is a substituent selected from the group comprising —Dab—Thr, —Dab—Thr—Dab, —Dab, —Dab—Thr—Acyl and H, in which Thr is threonine and Dab is as defined above the Acyl is a lower acyl group of 1 to 5 carbon atoms provided that

when A is leucine, B is threonine and D is D-leucine, then C representing —Dab—Thr is excluded;

when A is leucine and B is threonine, then C representing H or —Dab—Thr—Dab is excluded.

4,510,133

METHOD FOR COMBATING PESTS

David D. Evans, Finchampstead, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Mar. 28, 1983, Ser. No. 479,915

Claims priority, application United Kingdom, Apr. 22, 1982, 8211706

Int. Cl.[3] **A61K** *31/71*

U.S. Cl. 514—30 **5 Claims**

1. A method for the control of insect pests of growing plants which comprises applying to the locus of the plant an insecticidally effective amount of an insecticidal composition comprising an insecticidally effective amount of a combination of at least one macrolide antibiotic substance selected from the group consisting of C-076 and B-41 antibiotics and acylated

derivatives and aglycones thereof and an insect feeding stimulant containing one or more of cottonseed flour, disaccharide and vegetable lipid oil in association with an insecticidally inert diluent or carrier material.

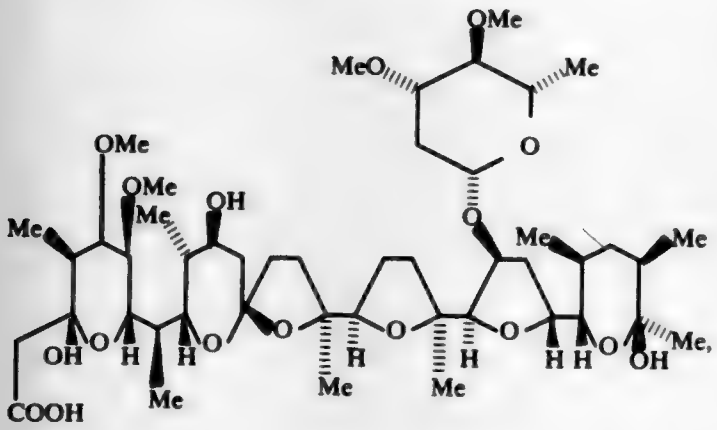
4,510,134

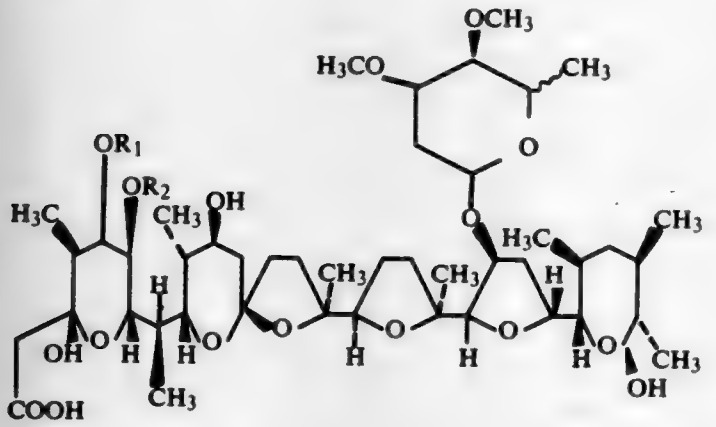
CONTROLLING NEMATODES IN ANIMALS AND SOIL WITH NEMATOCIDAL ANTIBIOTICS

Irwin B. Wood, Pennington, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Filed May 7, 1982, Ser. No. 376,046
Int. Cl.³ A61K *31/71, 31/70, 35/74, 31/35*
U.S. Cl. 514—27 **8 Claims**

1. A method of controlling nematodes in warm-blooded animals infested with nematodes and in soil containing the nematodes by introducing orally into the animals or applying to nematodes in nematode-infested soil, a nematocidally effective amount of a compound





wherein R_1 is H or CH_3, R_2 is H or CH_3 and R_1 does not equal R_2 or pharmaceutically acceptable salts of the compounds, mixtures of the compounds or salts, or fermentation broths or harvest mash solids from which the nematocidal antibiotics are obtained.

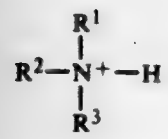
4,510,135

ORALLY ADMINISTERED HEPARIN

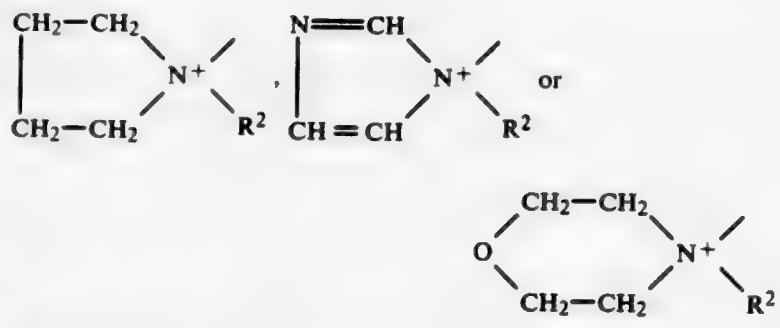
Lin-nar L. Teng, Bothell, Wash., assignor to Research Corporation, New York, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,155
Int. Cl.³ A61K *31/73, 31/725;* **C08B** *37/10*
U.S. Cl. 514—56 **19 Claims**

1. A complex of heparin with a protonated tertiary organic ammonium ion, wherein said ammonium ion has the formula:

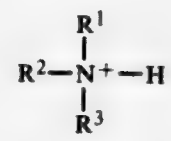


wherein R^1, R^2 and R^3 each independently represent a branched or unbranched alkyl group of 1 to 12 carbon atoms, which may be unsubstituted or substituted with hydroxy or alkoxy groups, or R^1 and R^3 together with the N atom can form a heterocyclic ring of the formula:

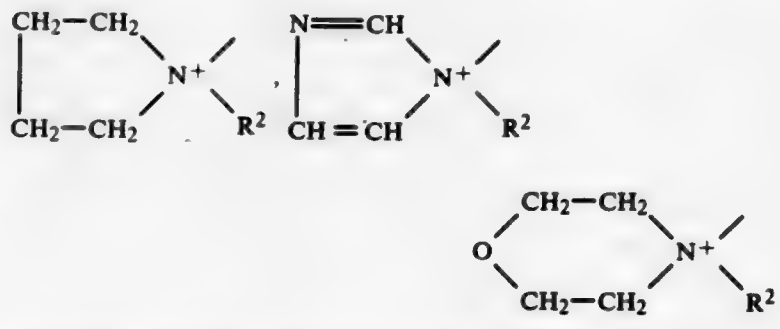


wherein R^2 has the meaning set forth above.

17. The process of orally administering a blood anticoagulant to a mammal which comprises orally administering in a blood anticoagulant effective amount a complex of heparin with a protonated tertiary organic ammonium ion, wherein said ammonium ion has the formula:



wherein R^1, R^2 and R^3 each independently represent a branched or unbranched alkyl group of 1 to 12 carbon atoms, which may be unsubstituted or substituted with hydroxy or alkoxy groups, or R^1 and R^3 together with the N atom can form a heterocyclic ring of the formula:



wherein R^2 has the meaning set forth above.

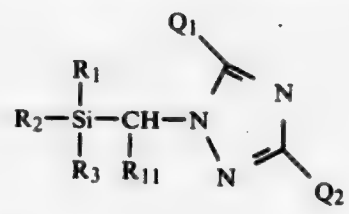
4,510,136

FUNGICIDAL 1,2,4-TRIAZOLE DERIVATIVES

William K. Moberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 473,321, Mar. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 377,122, May 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 349,261, Feb. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 276,986, Jun. 24, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 506,894
Int. Cl.³ A61K *31/41;* **C07D** *249/08*
U.S. Cl. 514—63 **36 Claims**

1. A compound of the formula:

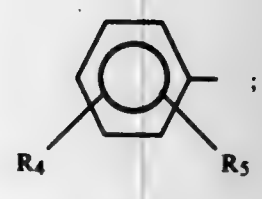


I

wherein

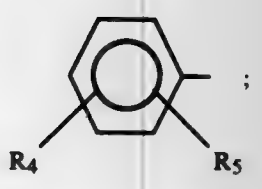
Q_1 and Q_2 are independently H or CH_3;

R_1 is C_2–C_{18} alkyl, C_3–C_6 cycloalkyl, naphthyl, or

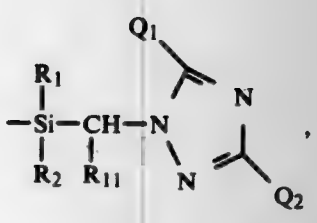


where R_4 and R_5 are independently —H, halogen, —OCH_3, —OCF_3, —SCH_3, —SO_2CH_3, phenyl, phenyl substituted with halogen and/or C_1–C_4 alkyl and/or —CF_3, phenoxy, phenoxy substituted with halogen and-/or C_1–C_4 alkyl and/or —CF_3, —CF_3, C_1–C_4 alkyl, or cyclohexyl; and

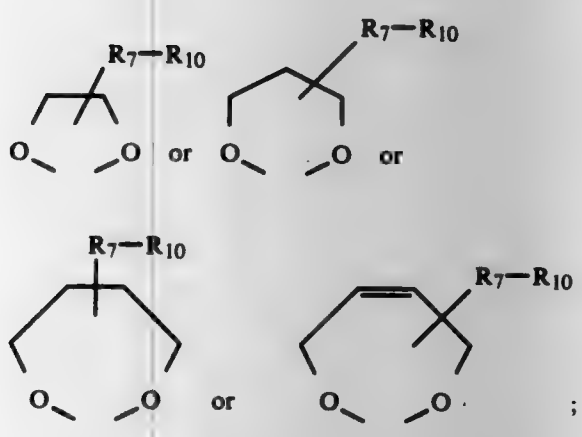
R_2 and R_3 are independently C_1–C_6 alkyl, C_3–C_6 cycloalkyl, OR_6, or



where R_6 is H, C_1–C_4 alkyl, or



with the proviso that when both R_2 and R_3 are OR_6, then R_6 must be C_1–C_4 alkyl; or R_2 and R_3 may be a 1,2- or 1,3- or 1,4-glycol bridge substituted by up to four alkyl groups R_7–R_{10} that have a total of up to four carbon atoms



R_{11} is H or C_1–C_4 alkyl;

and fungicidally active metal complexes or protic acid salts of said compounds.

25. A method for controlling fungus disease which comprises applying to the locus of infestation to be protected an effective amount of a compound of claim **1**.

4,510,137

INSECTION COMPOSITIONS CONTAINING QUINALPHOS AND THIOMETON

Peter Meyes, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 209,996, Nov. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 107,427, Dec. 26, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,605

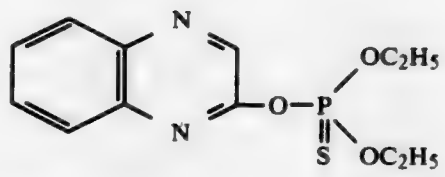
Claims priority, application United Kingdom, Jan. 2, 1979, 7900082

Int. Cl.[3] **A01N** *57/00, 57/26*

U.S. Cl. 514—80 **2 Claims**

1. An insecticidal composition comprising a non-phytotoxic solid carrier or a non-phytotoxic liquid diluent and in the aggregate an insecticidally effective amount of

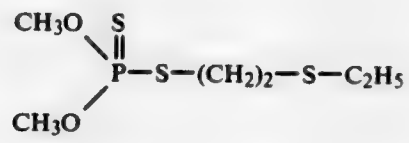
(a) the compound of formula I



I

in association with

(b) the compound of formula II



II

the weight ratio of the compound of the formula I to the compound of the formula II being in the range of from 1:1 to 1:4.

4,510,138

7-[2-(2-AMINOTHIAZOL-4-YL)-2-(SYN)-METHOXYIMINOACETAMIDO]CEPHALOSPORIN DERIVATIVES

Michihiko Ochiai, Suita; Akira Morimoto, Ikeda, and Yoshihiro Matsushita, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

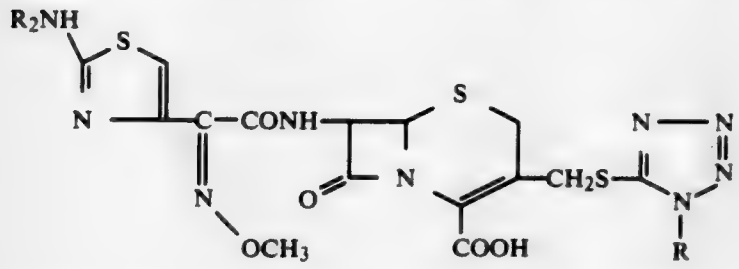
Division of Ser. No. 922,423, Jul. 6, 1978, , which is a division of Ser. No. 787,258, Apr. 13, 1977, abandoned. This application Sep. 29, 1982, Ser. No. 428,032

Claims priority, application Japan, Apr. 14, 1976, 51-42885; Sep. 8, 1976, 51-108102

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/56*

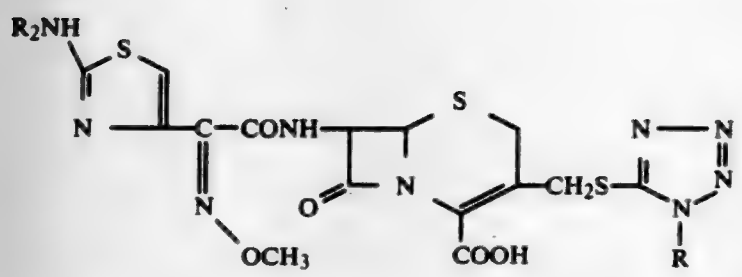
U.S. Cl. 514—206 **9 Claims**

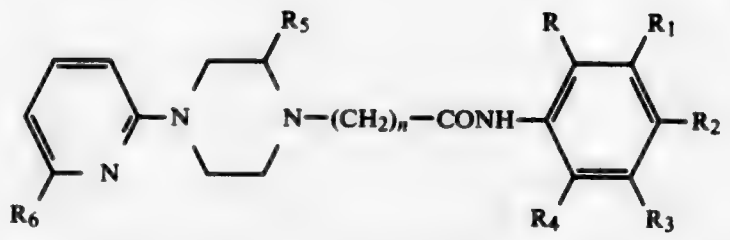
1. A 7-[2-(2-aminothiazol)-4-yl)-2-(syn)-methoxyiminoacetamido]cephalosporin compound of the formula



wherein R_2NH is amino or a protected amino group and R is a di-C_{1-3}alkyl amino-C_{2-3}alkyl, carboxymethyl, or sulfomethyl group, or a pharmaceutically acceptable salt or ester thereof.

9. An antibacterial composition which comprises (a) an antibacterially effective amount of a 7-[2-(2-aminothiazol)-4-yl)-2-(syn)-methoxyiminoacetamido]cephalosporin compound of the





(I)

wherein R_2NH is amino or a protected amino group and R is a di-C_{1-3}alkyl amino-C_{1-3}alkyl, carboxymethyl, or sulfomethyl group, or a pharmaceutically acceptable salt or ester thereof in admixture with (b) a pharmaceutically acceptable excipient or diluent therefor.

4,510,139

SUBSTITUTED AMINOBENZAMIDES AND THEIR USE AS AGENTS WHICH INHIBIT LIPOXYGENASE ACTIVITY

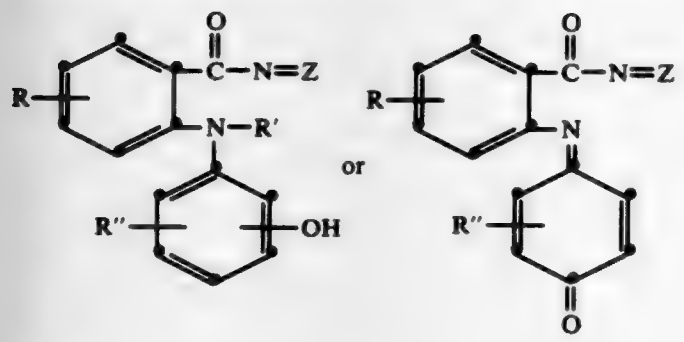
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,870

Int. Cl.[3] **C07D** *295/18; C07C 103/22, 103/29, 103/85*

U.S. Cl. 514—234 **18 Claims**

1. A compound of the formula



wherein:

R is hydrogen, lower-alkyl, halo or lower-alkoxy;

R′ is hydrogen or lower-alkyl;

R″ is hydrogen, lower-alkyl or halo; and

N=Z is a member of the group consisting of amino, alkylamino having from one to four carbon atoms, dialkylamino having from two to eight carbon atoms, benzylamino, N-benzyl-N-alkylamino having from eight to ten carbon atoms, 5- or 6-ring-membered cycloalkylamino having from five to eight carbon atoms, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, and lower-alkylated derivatives of said heterocyclic members.

4,510,140

THERAPEUTICALLY EFFECTIVE ω-(4-(2-PYRIDYL)-PIPERAZINO)-ALKANOYLANILIDES

Dante Nardi; Alberto Catto; Alberto Tajana; Pietro Cazzulani, and Gabriele Graziani, all of Milan, Italy, assignors to Recordati S.A., Chiasso, Switzerland

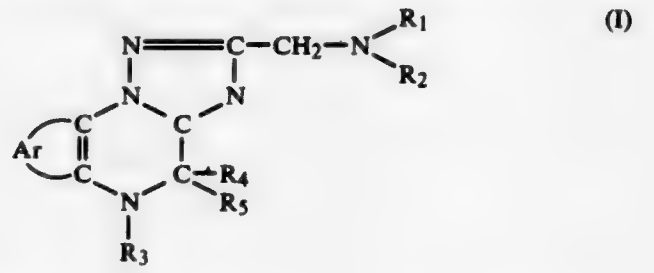
Filed Aug. 30, 1982, Ser. No. 412,818

Claims priority, application United Kingdom, Sep. 3, 1981, 8126754

Int. Cl.[3] **C07D** *241/04;* **A61K** *31/495*

U.S. Cl. 544—360 **19 Claims**

1. An ω-[4-(2-pyridyl)-piperazino]-alkanoylanilide compound having the structural formula (I):



(I)

wherein n is 2, a maximum of one of the substituents R, R_1, R_2, R_3 or R_4 is halogen, C_2 alkoxy, hydroxy, nitro, amino, C_1 alkylthio, 1-hydroxy (C_2) alkyl, C_2 alkanoyl, C_2 alkoxycarbonyl, 3-(C_1) alkylureido or C_2 alkoxyoxalylamido, or alternatively two or four of the substituents R, R_1, R_2, R_3 or R_4 is a C_1 alkyl, the substituents R, R_1, R_2, R_3 and R_4 which are not selected from the group identified above are all hydrogen, R_5 is hydrogen or C_1–C_4 alkyl, and R_6 is hydrogen or C_1–C_4 alkoxy, or a pharmaceutically acceptable salt thereof.

4,510,141

TRICYCLIC POLYAZAHETEROCYCLES FOR TREATING DEPRESSION OR ANXIETY

Roland Heckendorn, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,788

Int. Cl.[3] **C07D** *487/04, 471/14;* **A61K** *31/50, 31/535*

U.S. Cl. 514—250 **25 Claims**

1. A polycyclic polyazaheterocycle of the formula I

(I)

in which

R_1 and R_2 each represents, independently of one another, hydrogen, lower alkyl or hydroxy-lower alkyl, or together represent lower alkylene or ethyleneoxyethylene, ethyleneaza-ethylene or N-lower alkyl- or N-(2-hydroxy-lower alkyl)-ethyleneazaethylene;

R_3 represents a lower aliphatic hydrocarbon radical, a saturated lower cycloaliphatic hydrocarbon radical, or phenyl which is unsubstituted or substituted by halogen having an atomic number up to 35, lower alkyl, lower alkoxy, lower alkylthio, trifluoromethyl, cyano or nitro;

R_4 and R_5 represent hydrogen or lower alkyl; and Ar represents a benzo or pyrido(2,3-e) radical that are unsubstituted or substituted by halogen having an atomic number up to 35, lower alkyl, lower alkoxy, lower alkylthio, trifluoromethyl, cyano or nitro; and the pharmaceutically acceptable acid addition salts thereof.

2. A method for treating conditions of depression or anxiety in a mammal comprising administering to said mammal a therapeutically effective amount of a compound according to claim 1 or of a pharmaceutically acceptable acid addition salt thereof.

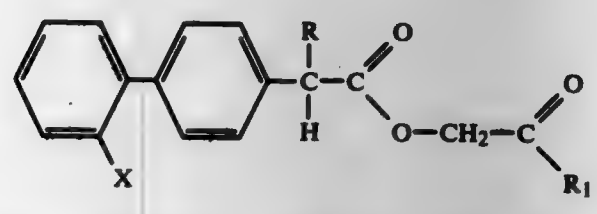
4,510,142

DERIVATIVES OF BIPHENYL ALKYL CARBOXYLATES AND THEIR USE AS MEDICAMENTS

Henry Cousse; Gilbert Mouzin; Jean-Pierre Tarayre, and Jean-Pierre Rieu, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

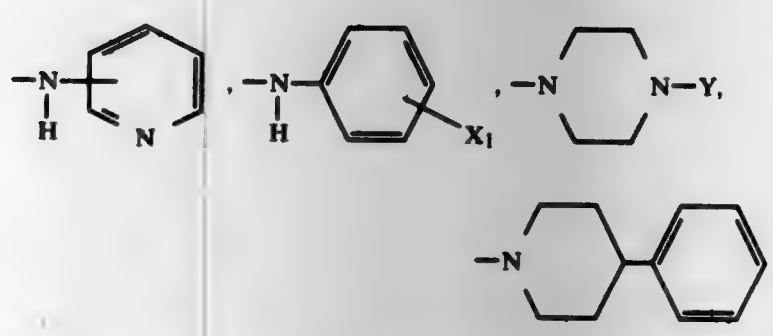
Filed Oct. 12, 1982, Ser. No. 433,987
Claims priority, application France, Oct. 14, 1981, 81 19316
Int. Cl.³ A61K *31/44, 31/495;* C07D *341/04, 213/75*
U.S. Cl. 514—255 12 Claims

1. A compound having the formula (I)



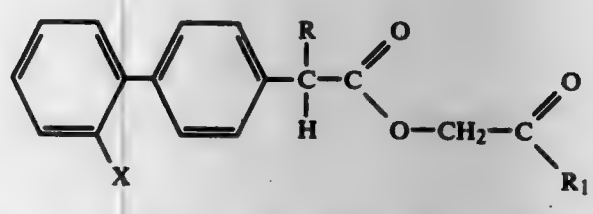
(I)

wherein x represents a monovalent group selected from a hydrogen atom and a halogen atom, R represents a monovalent group selected from a hydrogen atom or a straight or branched alkyl group having 1 to 4 carbon atoms, and R_1 represents a group selected from the following:

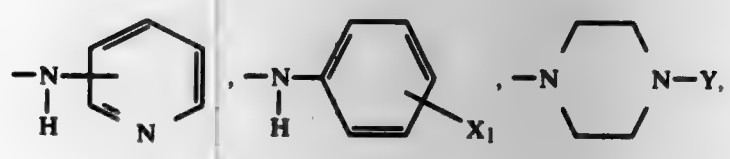


wherein X_1 represents a monovalent group selected from a hydrogen atom, a halogen atom and a CF_3 radical, and Y represents a monovalent group selected from a straight or branched alkyl group having 1 to 4 carbon atoms, a phenyl group and such group substituted by a substituent selected from a halogen atom and a CF_3 radical, and the therapeutically acceptable salts thereof.

11. A method for treatment of obstinate pains and painful inflammatory syndromes, in a subject selected from the group consisting of humans and animals, which comprises administration to said subject of an effective amount of a compound having the formula (I)

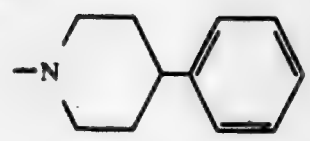


wherein X represents a monovalent group selected from a hydrogen atom and a halogen atom, R represents a monovalent group selected from a hydrogen atom or a straight or branched alkyl group having 1 to 4 carbon atoms, and R_1 represents a group selected from the following:



wherein X_1 represents a monovalent group selected from a hydrogen atom, a halogen atom and a CF_3 radical, and Y represents a monovalent group selected from a straight or branched alkyl group having 1 to 4 carbon atoms, a phenyl group and such group substituted by a substituent selected from a halogen atom and a CF_3 radical, and the therapeutically acceptable salts thereof.

-continued



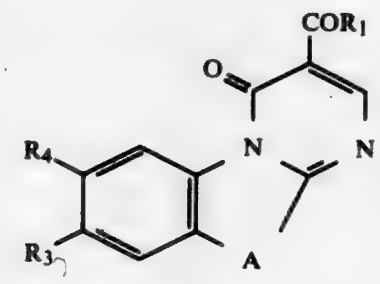
4,510,143

ANTIALLERGIC PYRIMIDO[1,2-A]QUINOXALIN-2-CARBOXYLIC ACID DERIVATIVES

Robert Westwood, Faringdon; Peter Miller; Ian R. Ager, both of Swindon, and David P. Kay, Purton, all of England, assignors to Roussel Uclaf, Paris, France

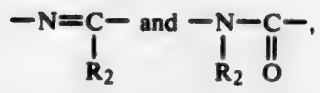
Filed Feb. 10, 1983, Ser. No. 465,669
Claims priority, application United Kingdom, Feb. 17, 1982, 8204634
Int. Cl.³ A61K *31/505;* C07D *487/04*
U.S. Cl. 514—250 18 Claims

1. A compound selected from the group consisting of the formula



I

wherein R_1 is selected from the group consisting of —OH, non-toxic, pharmaceutically acceptable cation of metals and organic bases, alkoxy of 1 to 5 carbon atoms, hydrazino and 1H-tetrazol-5-yl-amino, A is selected from the group consisting of



R_2 is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms and R_3 and R_4 are individually selected from the group consisting of hydrogen, halogen and alkyl or alkoxy of 1 to 5 carbon atoms with the proviso that when R_1 is alkoxy of 1 to 5 carbon atoms, R_2 is not hydrogen and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An antiallergic composition comprising an antiallergically effective amount of at least one compound of claim 1 and a pharmaceutical carrier.

13. A method of treating allergic symptoms in warm-blooded animals comprising administering to warm-blooded animals an antiallergically effective aamount of at least one compound of claim 1.

4,510,144

METHODS OF IMPARTING IMMUNOMODULATING ACTIVITY WITH DIHYDROTHIAZOLO PURINE DERIVATIVES

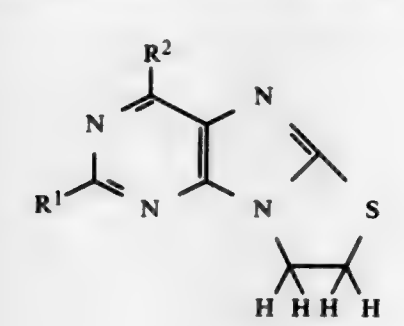
John W. Hadden, New York, N.Y.; Lionel N. Simon, Santa Ana, Calif., and Alfredo Giner-Sorolla, Riverside, Conn., assignors to Newport Pharmaceuticals International, Newport Beach, Calif.

Division of Ser. No. 296,557, Aug. 26, 1981, Pat. No. 4,387,226. This application Sep. 30, 1982, Ser. No. 429,421

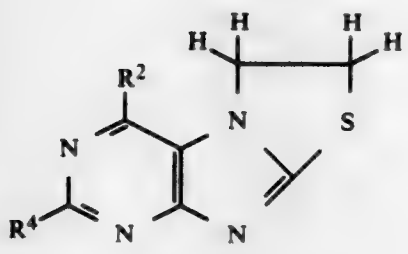
Int. Cl.³ A61K *31/52*

U.S. Cl. 514—257 **13 Claims**

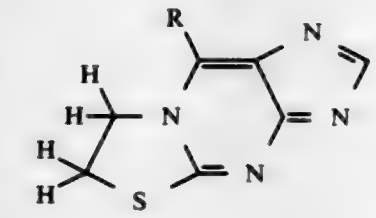
1. A method of imparting immunomodulating activity comprising administering to a mammal an effective amount for such purpose of a compound having one of the formula



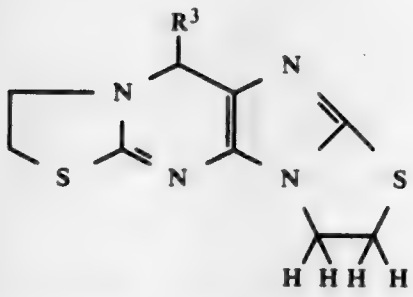
I



II



III



IV

where R^1 is hydrogen, lower alkylthio, lower alkylsulfinyl, amino or halogen, R^2 is hydroxy, lower alkylthio, halogen, amino, or mercapto, R is hydroxy, mercapto, lower alkylthio or halogen, and R^3 is hydroxy, mercapto, lower alkylthio, halogen, or amino.

4,510,145

METHOD FOR INHIBITING CONTRACTION OF OPHTHALMIC WOUNDS OR INCISIONS

Ronald A. Schacher, P.O. Box 145, Denison, Tex. 75020

Division of Ser. No. 212,315, Dec. 2, 1980, Pat. No. 4,390,542. This application Mar. 21, 1983, Ser. No. 477,009

Int. Cl.³ A61K *31/485, 31/52, 31/445, 31/365*

U.S. Cl. 514—415 **1 Claim**

1. A method for inhibiting contraction of an ophthalmic wound or incision which comprises administering to said wound or incision a pharmaceutically acceptable composition comprising an ophthalmological carrier and an effective amount of a smooth muscle relaxant to inhibit the contraction of myofibroblasts present in the wound or incision, and wherein said method additionally comprises administering to the wound or incision after said administration of the smooth muscle relaxant, an effective amount of a pharmaceutically acceptable composition comprising an ophthalmological carrier and a smooth muscle stimulant, to re-establish a desired configuration in the wound or incision, wherein said smooth muscle stimulant is serotonin.

4,510,146

GROWTH-PROMOTING FEED AND DRINK

Peter Lechtken, Frankenthal; Axel Nüerrenbach, Gruenstadt, and Juergen Schole, Wechmark, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

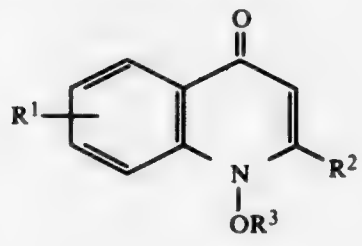
Filed May 10, 1982, Ser. No. 376,586

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119384

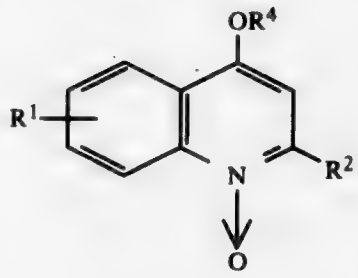
Int. Cl.³ A61K *31/47*

U.S. Cl. 514—312 **3 Claims**

1. A growth-promoting feed or drink which in addition to a conventional feed premix, feed concentrate or feed, or water, as the main constituent contains from 0.5 to 500 ppm of a compound of the formula Ia or Ib



Ia



Ib

where R^1 is hydrogen, low molecular weight alkyl or alkoxy, or halogen, R^2 is low molecular weight alkyl and R^3 and R^4 are hydrogen, a low molecular weight aliphatic radical or a benzyl radical.

4,510,147

COMPOSITIONS FOR AND MEDICAL USE OF WATER-SOLUBLE DERIVATIVES OF 6,6-METHYLENE-BIS-(2,2,4-TRIMETHYL-1,2-DIHYDROQUINOLINE)

Vilmos Bär; József Böszörmenyi; Péter Richter; Jenö Mercz, and Tamás Rozsnyai, all of Budapest, Hungary, assignors to Material Vegyipari Szövetkezet and Human Oltoanyagtermelo Es Kutato Intezet, both of Budapest, Hungary, a part interest

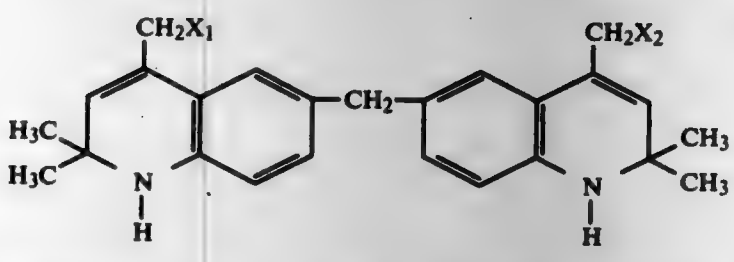
Division of Ser. No. 164,526, Jul. 2, 1980, Pat. No. 4,356,306. This application May 14, 1982, Ser. No. 378,256

Claims priority, application Hungary, Jul. 6, 1979, MA 3172

Int. Cl.³ A61K *31/47*

U.S. Cl. 514—314 **3 Claims**

1. A pharmaceutical composition which comprises a pharmaceutically effective amount of a compound of the Formula (I)



(I)

wherein X_1 and X_2 are each hydrogen, $-SO_3Me$, or $-SO_2NH_2$ and
wherein Me is an alkali metal ion, but where one of X_1 and X_2 is always different from hydrogen, and a pharmaceutically acceptable inert carrier.

2. A method of treating an animal subject for atheriosclerosis which comprises the step of administering a pharmaceutically effective amount of the compound of the Formula (I) defined in claim 1, to said animal subject.

3. A method of treating an animal subject affected by free-radical action which comprises administering a N-nitrosoamine-protective, free radical inhibiting effective amount of the compound in the formula I defined in claim 1.

4,510,148

2-HETEROCYCLIC-1,3-BIS(1H-1,2,4-TRIAZOL-1-YL)-PROPAN-2-OLS AS ANTIFUNGAL AGENTS

Kenneth Richardson, Canterbury, and Kelvin Cooper, Ramsgate, both of England, assignors to Pfizer Inc., New York, N.Y.

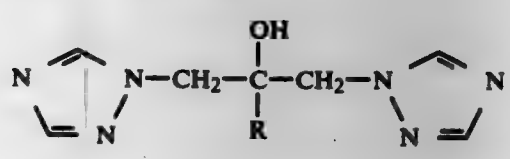
Filed May 27, 1983, Ser. No. 499,073

Claims priority, application United Kingdom, Jun. 12, 1982, 8217114

Int. Cl.³ A01N *43/64, 43/78;* C07D *401/14, 405/14*

U.S. Cl. 514—340 **2 Claims**

1. Compound of the formula



and the pharmaceutically acceptable salts thereof, wherein R is 5-chloro-2-pyridyl.

2. A pharmaceutical composition comprising a compound as claimed in claim 1 together with a pharmaceutically acceptable diluent or carrier.

4,510,149

N-IMIDAZOLYL DERIVATIVES CONTAINING NAPHTHALENE OR INDENE NUCLEUS

Paolo Cozzi; Germano Carganico; Antonio Pillan, all of Milan, and Umberto Branzoli, Pavia, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

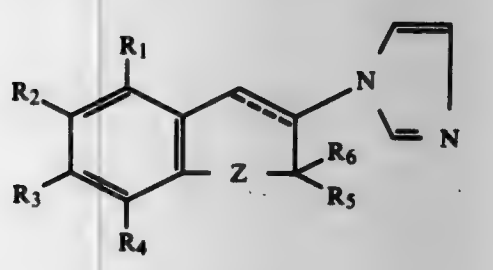
Filed Jul. 1, 1983, Ser. No. 510,358

Claims priority, application United Kingdom, Jul. 5, 1982, 8219412

Int. Cl.³ A61K *31/44;* C07D *233/56*

U.S. Cl. 514—341 **34 Claims**

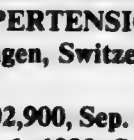
1. A compound of formula (I)



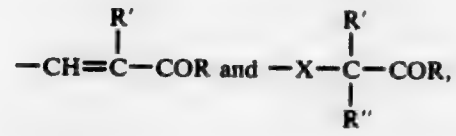
(I)

wherein
the symbol represents a single or a double bond;
Z completes a single bond or is a $-CH_2-$ group;
each of R_1, R_2, $R_3$and R_4, which may be the same or different, is
(a) hydrogen; hydroxy; halogen; cyano; C_1-C_6 alkyl; C_1-C_6alkoxy; a C_2-C_4 acyl or C_2-C_4 acylamino group; $-SR'$,

$-CH_2OR'$, $-COR$ or $-CH_2COR$, wherein R is $-OR'$ or



and each of R'0 and R", being the same or different, is hydrogen or C_1-C_6 alkyl; or
(b) one of R_1, R_2, R_3 and R_4 is 5-tetrazolyl or a group selected from $-COCH_2OR'$,



wherein R, R' and R" are as defined above, and X is —O—, —S— or —NH—, and the others are as defined above under (a);
one of R_5 and R_6 is hydrogen and the other is hydrogen, C_1-C_6 alkyl, C_3-C_6 cycloalkyl, or a phenyl or pyridyl ring, wherein the phenyl or pyridyl ring is unsubstituted or substituted by one to three substituents chosen from hydroxy and C_1-C_4 alkoxy; or a pharmaceutically acceptable salt thereof.

4,510,150

PHARMACEUTICAL COMPOSITIONS EFFECTIVE AGAINST CORONARY HEART DISEASE AND HYPERTENSION

Richard Berthold, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 302,900, Sep. 16, 1981, abandoned. This application Aug. 1, 1983, Ser. No. 519,002

Claims priority, application United Kingdom, Sep. 18, 1980, 8030226

Int. Cl.³ A61K *31/44*

U.S. Cl. 514—338 **18 Claims**

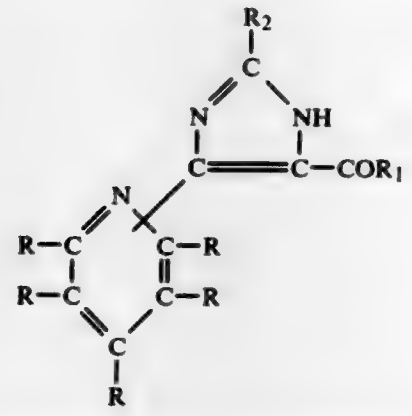
11. A method of treating coronary heart disease or hypertension which comprises administering to a subject in need of such treatment a composition comprising as the active agents: (1) as component (A), a member selected from the group consisting of 4-(2,1,3-benzoxadiazol-4-yl)-1,4-dihydro-2,6-dimethyl-pyridine-3,5-dicarboxylic acid diethylester, 4-(2,1,3-benzothiadiazole-4-yl)-1,4-dihydro-2,6-dimethyl-pyridine-3,5-dicarboxylic acid dimethylester and 4-(2,1,3-benzoxadiazol-4-yl)-1,4-dihydro-2,6-dimethyl-3-isopropyloxy carbonylpyridine-5-carboxylic acid methyl ester; and (2) as component (B), a β-adrenoceptor blocking agent possessing some degree of intrinsic sympathomimetic activity, the sum of components (A) and (B) in said composition being present in a therapeutically effective amount.

4,510,151
PYRIDINYLIMIDAZOLE PHARMACEUTICAL COMPOSITION

Thomas D. Lee, Scarsdale, N.Y., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Feb. 10, 1984, Ser. No. 578,918
Int. Cl.[3] A61K *31/44*
U.S. Cl. 514—341 5 Claims

1. A pharmaceutical composition useful for treatment of congestive heart failure and hypertension comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound selected from the group consisting of pyridinylimidazoles of the formulae:



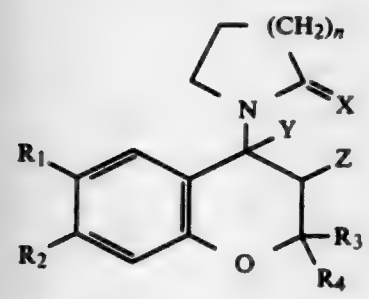
and pharmaceutically acceptable acid addition salts thereof,
wherein the imidazole radical is substituted on one of the R substituents and each of the remaining R substituents is hydrogen,
R_1 is hydroxy, amino, methoxy or ethoxy, and
R_2 is hydrogen, halo, or hydroxy.

4,510,152
ANTIHYPERTENSIVE CHROMENES AND CHROMANS

Erol A. Faruk, Enfield, England, assignor to Beecham Group p.l.c., England

Filed Apr. 21, 1983, Ser. No. 487,098
Claims priority, application United Kingdom, Apr. 28, 1982, 8212358
Int. Cl.[3] A61K *31/445, 31/40;* C07D *405/04*
U.S. Cl. 514—321 9 Claims

1. A compound of formula (I)



(I)

wherein:
either one of R_1 and R_2 is hydrogen and the other is selected from the class of C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyloxy, C_{1-6} alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, C_{1-6} alkoxysulphinyl, C_{1-6} alkoxysulphonyl, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkyl-thiocarbonyl, C_{1-6} alkoxy-thiocarbonyl, C_{1-6} alkyl-thiocarbonyloxy, C_{1-6} alkyl-thiolmethyl, formyl or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphinylamino, C_{1-6} alkylsulphonylamino C_{1-6} alkoxysulphinylamino or C_{1-6} alkoxysulphonylamino or ethylenyl terminally substituted by C_{1-6} alkylcarbonyl, nitro or cyano, or —C(C_{1-6} alkyl)-NOH or —C(C_{1-6} alkyl)NNH_2, or one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is methoxy or amino optionally substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl;
one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene;
X is oxygen or sulphur;
Y and Z are each hydrogen or together represent a bond;
n is 1 or 2; or when one or the other of R_1 and R_2 is an amino or an amino-containing group, a pharmaceutically acceptable salt thereof.

9. A method of treatment of hypertension in mammals including humans comprising the administration of an antihypertensive effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof to the sufferer.

4,510,153
TREATMENT OF PANIC DISORDERS WITH ADINAZOLAM

James H. Coleman, Cumberland, R.I., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 418,923, Sep. 16, 1982, abandoned. This application Aug. 4, 1983, Ser. No. 520,228
Int. Cl.[3] A61K *31/41*
U.S. Cl. 514—220 13 Claims

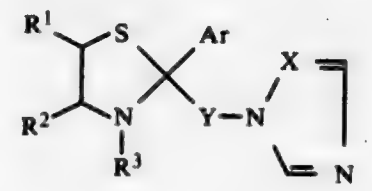
1. A process for preventing recurrent panic attacks comprising the administration to a human subject in need of such treatment, in unit dosage form, from about 0.01 mg to about 0.4 mg/kg body weight of 8-chloro-1-[(dimethylamino)methyl]-6-phenyl-4H-s-triazolo[4,3a][1,4]benzodiazepine or the pharmacologically acceptable acid addition salt or a (5) N-oxide thereof in association with a pharmaceutical carrier.

4,510,154
THIAZOLIDINE COMPOUND AND FUNGICIDAL COMPOSITION CONTAINING IT

Kenji Yoshida; Makoto Nakazawa, both of Sagamihara; Toyohiko Shike, Yokohama; Masayuki Tomida, Sagamihara; Masataka Tsuda, Machida, and Toru Teraoka, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,502
Claims priority, application Japan, Apr. 21, 1982, 57-66720; Oct. 19, 1982, 57-183346
Int. Cl.[3] C07D *417/06;* A01N *43/78*
U.S. Cl. 514—365 12 Claims

1. A thiazolidine compound represented by the formula I or its acid addition salt



(I)

wherein
X is —CH= or —N=;
Y is $—CH_2—CH_2—$ or



wherein R is a hydrogen atom, a methyl group, or an ethyl group;
Ar is a phenyl group which may be substituted by halogen, lower alkyl, lower alkoxy, phenyl, trifluoromethyl, a thienyl group or a naphthyl group;
R^1 is a hydrogen atom, a straight chain or branched chain

alkyl group having from 1 to 10 carbon atoms or a phenyl group which may be unsubstituted or substituted by a lower alkyl or halogen;

R^2 is a hydrogen atom, a straight chain or branched chain alkyl group having from 1 to 10 carbon atoms, a phenyl group which may be unsubstituted or substituted by a lower alkyl or halogen, a lower alkoxycarbonyl group, a lower alkylcarbamoyl group or a lower alkenylcarbamoyl group; and

R^3 is a hydrogen atom, a lower alkyl group, a lower carboxyacyl group, a lower alkylcarbamoyl group, a lower alkylthiocarbamoyl group or a phenylcarbamoyl group.

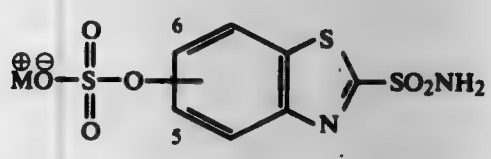
4,510,155

6(OR 5)-HYDROXYBENZOTHIAZOLE-2-SULFONAMIDE-O-SULFATE SALTS FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

Robert L. Smith, and Samuel L. Graham, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 2, 1983, Ser. No. 500,607
Int. Cl.[3] C07D *277/80;* A61K *31/425*
U.S. Cl. 514—276 10 Claims

1. A compound of the formula:



wherein $M^{\oplus}$ is an ophthalmologically acceptable cation selected from sodium, potassium, ammonium, tetra(C_{1-4}alkyl-)ammonium, pyridinium, imidazolium, pralidoxime or thiamine.

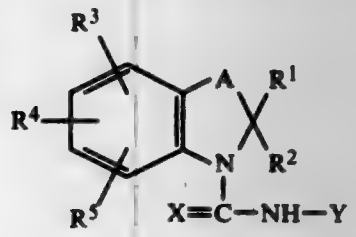
4,510,156

BISINDOLYL ALKYLENE UREAS LIPID ABSORPTION-INHIBITING AGENTS AND THEIR USE THEREAS

Hans-Joachim Kabbe, Leverkusen; Hans-Peter Krause, and Rüdiger Sitt, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 206,314, Oct. 31, 1980, abandoned. This application Feb. 10, 1982, Ser. No. 347,599
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945238; Aug. 8, 1980, 3030024
Int. Cl.[3] A61K *31/40;* C07D *403/12, 209/26*
U.S. Cl. 514—415 15 Claims

1. A pharmaceutical composition containing as an active ingredient a hypolipidemically effective amount of a compound which is an alkylurea of the formula



(I)

in which

X denotes oxygen or sulphur and

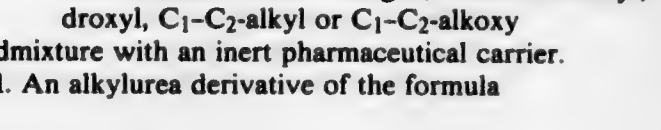
A represents



in which

R′ and R″ are identical or different and each denote a hydrogen atom or an alkyl radical with 1 to 4 carbon atoms,

Y represents R or a radical



in which

n_1 and n_2 denote integers from 3 to 9 and

1 denotes 0 or 1 and

in which

X and A are as defined above and in which all R–R5 radicals are as follows:

R represents a straight-chain, branched, cyclic, saturated or mono-unsaturated aliphatic hydrocarbon radical with 4 to 20 carbon atoms, which is optionally substituted by halogen, trifluoromethyl, hydroxyl or alkoxy or alkoxycarbonyl, with, in each case, 1 to 6 carbon atoms in the alkoxy radical, or by phenyl, the phenyl radical in turn optionally carrying 1 or 2 substituents selected from halogen, trifluoromethyl, hydroxyl, alkyl with 1 to 2 carbon atoms and alkoxy with 1 to 2 carbon atoms

R^1 represents a hydrogen atom or a non-steric-hinderable

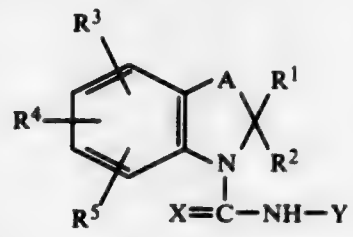
C_1–C_6 alkyl radical,

R^2 represents a non-steric hinderable C_1–C_6 alkyl radical and

R^3, R^4 and R^5 are identical or different and each represent a hydrogen or halogen atom or a hydroxyl, cyano, C_1–C_6 alkyl, C_1–C_6 alkoxy, (C_1–C_6 alkoxy)-carbonyl, (C_1–C_6-alkyl)-carbonyl, a phenyl or phenoxy radical, optionally substituted by 1 to 2 substituents selected from halogen, trifluoromethyl, hydroxyl, C_1–C_2-alkyl or C_1–C_2-alkoxy

in admixture with an inert pharmaceutical carrier.

11. An alkylurea derivative of the formula



(I)

in which

Y represents R and R represents a straight-chain, branched or cyclic alkyl or alkenyl radical, with in each case 6 to 18 carbon atoms, the said alkyl and alkenyl groups optionally being substituted by chlorine, bromine, fluorine, alkoxy with 1 to 4 carbon atoms, or by phenyl,

R^1 and R^2 are identical or different and each represent an alkyl radical with 1 or 2 carbon atoms,

R^3, R^4 and R^5 are identical or different and each represent a hydrogen, chlorine, or bromine atom or a trifluoromethyl, alkyl,

or alkoxy radical, the said alkyl and alkoxy radicals or moieties

each containing 1 to 4 carbon atoms, or represent a phenoxy or chlorophenoxy radical,

A represents



in which

R′ and R″ are identical or different and each denote a hydrogen atom or a methyl or ethyl radical, and X represents oxygen.

4,510,157

6,7,8,9-TETRAHYDRO-1H-BENZ(G)INDOL-8-AMINE DERIVATIVES

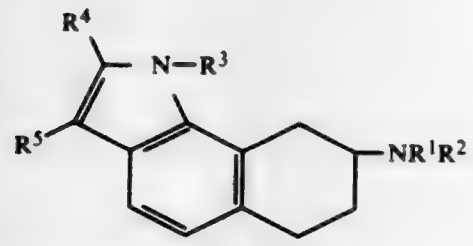
Andre A. Asselin, St. Laurent, and Leslie G. Humber, Dollard des Ormeaux, both of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

Filed Dec. 27, 1982, Ser. No. 453,306

Int. Cl.³ A61K *31/40*; C07D *209/56*

U.S. Cl. 514—411 **13 Claims**

1. A compound of the formula



(I)

in which R^1, R^2, R^3, R^4 and R^5 each is hydrogen or lower alkyl having 1 to 5 carbon atoms, or a therapeutically acceptable acid addition salt thereof.

4,510,158

2-PHENYLINDOLE DERIVATIVES, THEIR USE AS COMPLEMENT INHIBITORS

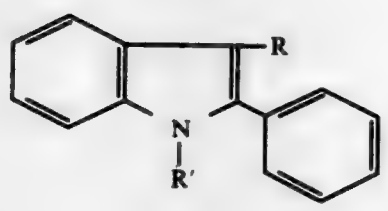
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,377

Int. Cl.³ C07D *209/18*; A61K *31/40*

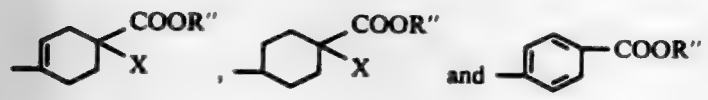
U.S. Cl. 514—415 **20 Claims**

1. A compound of the formula:



wherein:

R is selected from the group consisting of:



wherein R″ is hydrogen or lower-alkyl and X is hydrogen or —COOR‴, R‴ being hydrogen or lower-alkyl; and R′ is hydrogen or lower-alkyl;

or an alkali metal salt thereof.

4,510,159

(+)-CYANIDAN-3-OL DERIVATIVES, PHARMACEUTICAL PREPARATIONS THAT CONTAIN SUCH COMPOUNDS, AND THE USE OF THE LATTER TO TREAT LIVER OR VENOUS DISEASES

Alban I. Albert, Grand-Saconnex; Marc E. Ballenegger, Gimel, both of Switzerland; Jan C. Overeem, Scherpenzaal, Netherlands, and Robert G. Tyson, Prestatyn, Wales, assignors to Zyma SA, Nyon, Switzerland

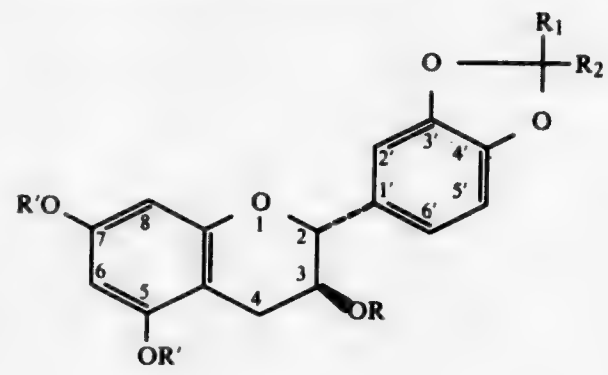
Filed May 31, 1983, Ser. No. 499,644

Claims priority, application United Kingdom, Jun. 1, 1982, 8215868

Int. Cl.³ A61K *31/36, 31/35*; C07D *311/62*

U.S. Cl. 514—456 **11 Claims**

1. A compound of the formula



(I)

wherein

R and R′ independently represent hydrogen; lower alkyl which is unsubstituted or substituted by hydroxy, oxo, amino, imino, di-lower alkylamino, halo, hydroxyimino, phenylimino, nitrophenylimino, acetylimino, cyano, carboxy or lower alkylsulfinyl; lower alkenyl which is unsubstituted or substituted by carboxy, lower alkylcarboxy, nitro, methylsulfinyl or acetoxymethylthio; lower alkynyl; cycloalkyl-lower alkyl wherein cycloalkyl has 3 to 6 ring carbon atoms; cycloalkenyl-lower alkyl wherein cycloalkenyl has 5 to 6 carbon atoms; phenyl or phenyl-lower alkyl which are unsubstituted or substituted by halo, lower alkyl, lower alkoxy, nitro or di-lower alkylamino; carboxy substituted lower alkanoyl; lower alkenoyl; carboxy substituted lower alkenoyl; trifluoroacetyl; or benzoyl or benzoyl substituted by hydroxy, halo, lower alkyl or lower alkoxy;

R_1 and R_2 independently represent phenyl or phenyl substituted by hydroxy, halo, lower alkyl, lower alkoxy, nitro, lower alkoxycarbonyl, lower alkanoyloxy, or dimethylamino; or R_1 and R_2 together represent biphenyl-2,2′-ylene which is unsubstituted or substituted by hydroxy, halo, lower alkyl, lower alkoxy, nitro, lower alkoxycarbonyl, lower alkanoyloxy or dimethylamino,

and therapeutically acceptable salts thereof.

3. A pharmaceutical composition for the treatment of liver or venous diseases containing an effective amount of a compound according to claim 1 and a pharmaceutical carrier.

4,510,160

INSECTICIDAL PRODUCT AND PREPARATION THEREOF

Michael J. Robson, Berkshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 26, 1983, Ser. No. 535,626

Claims priority, application United Kingdom, Oct. 11, 1982, 8228983

Int. Cl.³ A01N *53/00*; C07C *121/75*

U.S. Cl. 514—521 **8 Claims**

1. The enantiomeric pair of isomers represented by (S)-α-cyano-3-phenoxybenzyl 1R,cis-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate and (R)-α-cyano-3-phenoxybenzyl 1S,cis-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate

in racemic proportions and substantially free from any other isomer of α-cyano-3-phenoxybenzyl 3-(2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate.

4. An insecticidal and acaricidal composition comprising an insecticidally and acaricidally effective amount of the enantiomeric pair of isomers according to claim 1 in association with an agriculturally and horticulturally acceptable diluent or carrier material.

4,510,161

ANTIHYPERTENSIVE AGENTS AND PROCESS FOR PRODUCING THE SAME

Akira Fujimaki, Koganei, Japan, assignor to Zaidan Hojin Minsei Kagaku Kyokai, Koganei, Japan

Filed Oct. 20, 1982, Ser. No. 435,350
Claims priority, application Japan, Oct. 22, 1981, 56-169157
Int. Cl.³ A61K *35/78*
U.S. Cl. 514—54 **18 Claims**

1. A process for extraction and purification of a substance referred to as OSG having the following physicochemical properties:

(1) OSG is a slightly hygroscopic, white or slightly yellow powder;

(2) OSG exhibits a color reaction of sugar in α-naphthol reaction and orcinol reaction;

(3) OSG is negative to TCA reaction and ninhydrin reaction;

(4) OSG is positive in glycyrrhizin reaction;

(5) when OSG is analyzed by a paper chromatograph method no spots consistent with those of known sugars are observed;

(6) a hydrolyzate of OSG exhibits a spot consistent with that of glucose or sorbose and exhibits a retention time shorter than that of glucuronic acid; and

(7) OSG is confirmed to comprise polymeric sugars; having antihypretensive activity from a vegetable oil selected from the group consisting of soybean oil, corn oil, rape seed oil and cotton seed oil, which comprises

(a) extracting water-soluble components from the vegetable oil, thereby to obtain a first aqueous extract;

(b) concentrating the aqueous extract;

(c) adding alcohol to the resulting extract to prepare an alcoholic solution having an alcohol concentration of 85% or higher, thereby precipitating the insoluble matter;

(d) then removing the precipitate; and

(e) thereafter removing the alcohol to obtain an aqueous extract product, which contains said substance.

4,510,162

COMPOSITION FOR ABSORBING OXYGEN AND CARRIER THEREFORE

Jerry W. Nezat, Kalispell, Mont., assignor to Creative Research & Development, Inc., Whitefish, Mont.

Filed Mar. 7, 1983, Ser. No. 473,097
Int. Cl.³ C09K *15/00*; A23L *3/00*
U.S. Cl. 426—124 **19 Claims**

1. An oxygen absorbing composition mounted on a carrier for carrying the composition and said carrier being capable of being placed in a closable container for removing oxygen from the space within the container, said oxygen absorbing composition comprising iron particles and yeast mixed together with moisture in an amount sufficient to dampen the composition.

4,510,163

PROCESS FOR PREPARING A REHYDRATABLE DICED FROZEN FOOD PRODUCT

Frederik Gejl-Hansen, Aarhus, Denmark, assignor to Nestec S.A., Vevey, Switzerland

Filed Jul. 9, 1982, Ser. No. 396,836
Claims priority, application European Pat. Off., Aug. 28, 1981, 81106716.4
Int. Cl.³ A23L *3/16*; A23B *4/06*; A23K *1/18*
U.S. Cl. 426—241 **6 Claims**

1. A process for preparing a readily rehydratable diced frozen food product which upon rehydration is ready to eat and is resistant to crumbling comprising binding a mixture of food ingredients to form a compact solid foodstuff, treating the foodstuff with microwaves to remove water present in the foodstuff in an amount of from 15 to 25% by weight based on the total weight of the foodstuff, dicing the foodstuff before or after the microwave treatment, and then freezing the diced, microwave treated foodstuff.

4,510,164

PROCESS FOR PRODUCING INTERMEDIATE MOISTURE QUICK-COOKING BEANS

Lorie L. Staley, Baltimore, Md. and Joaquin Pelaez, Plymouth, Minn., assignors to McCormick & Company, Inc., Hunt Valley, Md.

Filed Sep. 7, 1983, Ser. No. 530,058
Int. Cl.³ A23L *1/20*
U.S. Cl. 426—331 **4 Claims**

1. A process for producing intermediate moisture quick-cooking and storage-stable whole beans comprising:

heating dried beans under about 15 psi to about 50 psi of pressure in the presence of a humectant solution comprising an aqueous solution containing 4.0–7.5 weight percent of a sugar or polyglycol, 4.0–9.0 weight percent of a salt, 2.0–3.0 weight percent propylene glycol and 0.3–0.6 weight percent potassium sorbate, for a period of time ranging from about 1.5 to about 4.0 hours at a temperature ranging from about 100° C. to about 140° C., to thereby increase the moisture level of said beans to about 50–60 percent;

reducing the moisture level of said beans from about 50–60% to an intermediate level of about 30–40 percent; and

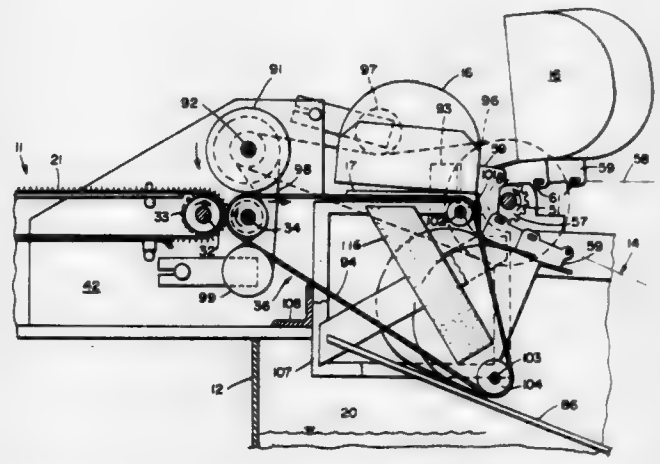
packaging the resulting intermediate moisture level whole beans in a low value vapor transmission container.

4,510,165

TACO SHELL FORMING AND COOKING METHOD

Andrew A. Caridis, Foster City; Clark K. Benson, Millbrae, and Lawrence F. Klein, Hillsborough, all of Calif., assignors to Heat and Control, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 332,743, Dec. 21, 1981, abandoned.
This application Feb. 10, 1984, Ser. No. 578,323
Int. Cl.³ A23L *1/01, 1/10*; A21C *11/00*
U.S. Cl. 426—439 **13 Claims**



1. A method of rapidly and continuously converting substantially flat uncooked tortillas into cooked substantially U-shaped taco shells, comprising the steps of: moving a plurality of closely adjacent molds at a set rate of conveyance toward a forming zone, each adjacent pair of said molds presenting cooperating convex leading and concave trailing surfaces; quickly reversing the direction of movement of said adjacent molds so as to instantaneously create in rapid succession a series of repeating angular window-like openings between the adjacent convex and concave surfaces of said closely adjacent

molds; simultaneously moving a succession of relatively flat tortillas toward said forming zone at a rate of conveyance which is substantially greater then said set rate of conveyance of said molds; decelerating and arresting the movement of each of said tortillas as of the moment of its arrival in said forming zone while simultaneously engaging opposed edges thereof on fixed supports on either side of said forming zone; instantaneously contacting unsupported central portions of each of said tortillas as they successively enter said window-like openings with a convex leading surfaces of one of said molds so as to initially deform the tortillas into said substantially U-shaped configuration; thereafter contacting and holding the formed tortillas between cooperating convex and concave surfaces of said pairs of closely adjacent molds, as said molds commence movement in reverse direction away from said forming zone; and contacting said formed tortillas and molds with a heated cooking liquid to a depth sufficient to effect cooking conversion of said newly formed tortillas into taco shells while cooperatively retaining the same between said closely adjacent molds through buoyancy of the tortillas within the cooking liquid.

4,510,166

CONVERTED STARCHES FOR USE AS A FAT- OR OIL-REPLACEMENT IN FOODSTUFFS

Julianne M. Lenchin, Cranbury; Paolo C. Trubiano, Somerville, and Stella Hoffman, Plainsboro, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jan. 19, 1984, Ser. No. 572,266

Int. Cl.³ A23L *1/195*

U.S. Cl. 426—565 **20 Claims**

1. A converted gelling starch suitable for use as a fat- and/or oil-replacement in foodstuffs, characterized in that the starch has a dextrose equivalent (DE) of less than 5 and characterized in that aqueous dispersions thereof at 10–50% by weight of starch solids have a hot flow viscosity of at least about 10 seconds at 55° C. and are capable of forming gels having a strength of at least 25 g. within 24 hours at 4° C.

4,510,167

MARGARINE FAT BLEND

Werner J. Schmidt, Hamburg, Fed. Rep. of Germany; Willem Dijkshoorn, Vlaardingen, Netherlands; Wilhelm Stratmann, Crema, Italy, and Leo F. Vermaas, Maassluis, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 22, 1983, Ser. No. 554,473

Claims priority, application United Kingdom, Nov. 22, 1982, 8233218

Int. Cl.³ A23D *5/00*

U.S. Cl. 426—607 **1 Claim**

1. A process for producing a margarine fat comprising:

(a) randomly interesterifying a mixture consisting of 35–84 wt.% of an oil (i) comprising an oil in which at least 20% of the fatty acid residues consist of linoleic acid and 16–65% of a fat (ii) in which at least 80% of the fatty acid residues are saturated and have a chain length of at least 16 carbon atoms, to obtain an interesterified mixture (A);

(b) fractionating interesterified mixture (A) at a temperature such as to yield a higher-melting stearin fraction which is enriched in triglycerides from trisaturated fatty acid residues and a lower-melting olein fraction (B) in which the level of triglycerides from trisaturated fatty acids ranges from 0 to 6%, based on the total mixture;

(c) mixing 20 to 100% of said olefin fraction (B) with 5 to 50% of the interesterified mixture (A) and 5 to 55% of an oil (C) comprising an oil which is substantially free from crystallized fat at 10° C., or a mixture of said oil with an oil having a melting point ranging from 28° to 43° C., the sum of A+B+C being 100%.

4,510,168

PROCESS FOR SEALING BODY AND CAP OF GELATIN HARD CAPSULE AND APPARATUS THEREFOR

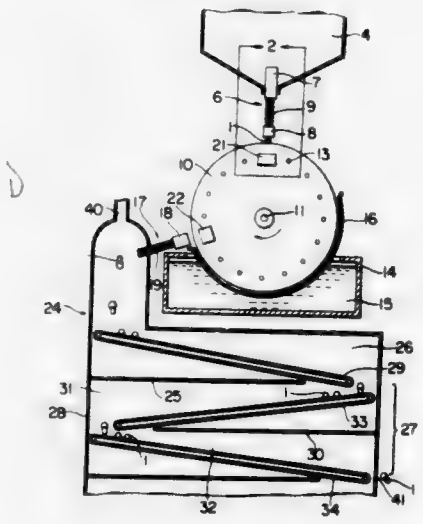
Shigeru Sakashita, Gifu; Takeshi Nakagawa, Kagamigahara; Takayuki Ohwaki, and Yasuo Miyake, both of Inuyama, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 589,976

Claims priority, application Japan, Mar. 24, 1983, 58-49579

Int. Cl.³ A01N *25/00*

U.S. Cl. 427—3 **1 Claim**



1. A process for sealing a body and a cap of a gelatin hard capsule containing drugs therein, wherein each capsule is continuously dipped for a time of 1–10 seconds, preferably 1–5 seconds, in a mixed solvent of water and ethanol whose volume ratio to water is in the range of 50–55%, thereafter taking each capsule out of this solvent, and drying each capsule separately by passing it first through a cold wind zone and in succession through a hot wind zone of 25°–35° C.

4,510,169

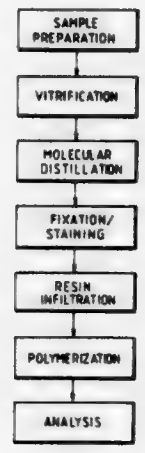
METHOD AND APPARATUS FOR CRYOPREPARING BIOLOGICAL TISSUE FOR ULTRASTRUCTURAL ANALYSIS

John G. Linner, Houston, Tex., assignor to The Board of Regents, The University of Texas, Austin, Tex.

Filed Aug. 23, 1983, Ser. No. 525,626

Int. Cl.³ F26B *5/06, 5/10;* A01G *5/06;* A01N *1/00*

U.S. Cl. 427—4 **31 Claims**



1. A method for cryopreparing a biological tissue sample for ultrastructural analysis comprising:

(a) vitrifying a biological tissue sample;

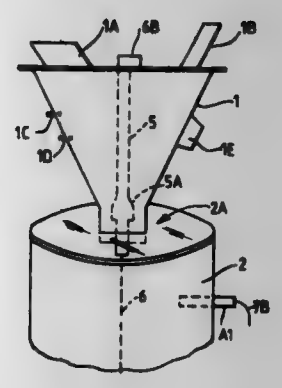
(b) depressurizing the atmosphere surrounding said sample;

(c) bringing said vitrified tissue sample to equilibrium at a temperature of less than −140° C.;

(d) dehydrating said vitrified tissue sample while said sample is maintained in a state of equilibrium;

(e) infiltrating said dehydrated tissue sample with a degassed resin;
(f) polymerizing said resin in said infiltrated tissue sample to form an embedded tissue sample.

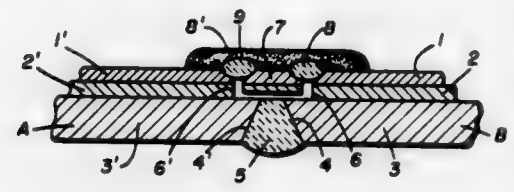
4,510,170
PROCESS AND APPARATUS FOR ELECTROSTATIC COATING OF POORLY CONDUCTIVE OR NON-CONDUCTIVE PRODUCTS
Roberto F. Cosentino, and Franco Bonapace, both of Milan, Italy, assignors to Pharmindev Limited, London, England
Filed May 21, 1984, Ser. No. 612,295
Claims priority, application United Kingdom, May 20, 1983, 8314025
Int. Cl.[3] B05B *5/02*; B05D *1/04*
U.S. Cl. 427—33 16 Claims



1. A process for the electrostatic application of a coating material on a product to be coated, comprising the steps of:
(a) causing the product to descend in free fall in the form of a thin cylindrical curtain around an elongate, vertical, centrally disposed, corona discharge electrode;
(b) applying a current of high voltage to said elongate vertical electrode so as to apply a high voltage electrostatic charge of one sign to said cylindrical curtain;
(c) applying coating material to the outer periphery of said cylindrical curtain, said coating material having applied to it a high voltage electrostatic charge of opposite sign to said one sign.

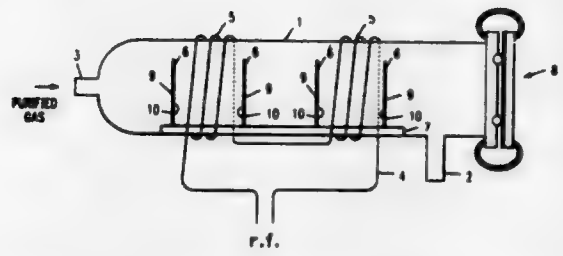
7. An apparatus for the electrostatic application of a coating material on a product to be coated, comprising:
(a) a feed device having an upper and lower end for receiving said product;
(b) means associated with said feed device at said lower end to cause said material to fall in the form of a thin cylindrical curtain;
(c) a chamber below said feed device;
(d) an elongate, vertical, corona discharge electrode disposed centrally within said chamber such that said curtain falls freely around said electrode and within said chamber;
(e) means to apply a high voltage current to said electrode whereby said curtain within said chamber receives a high voltage electrostatic charge of one sign;
(f) spraying devices mounted by said chamber for directing said material on to the outer periphery of said cylindrical curtain within said chamber; and
(g) means for applying a high voltage current to said spraying devices whereby said coating material receives a high voltage electrostatic charge of a sign opposite to said one sign.

4,510,171
CLAD METAL JOINT CLOSURE
Oliver W. Siebert, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 301,340, Sep. 11, 1981, Pat. No. 4,459,062.
This application Jun. 1, 1984, Ser. No. 616,093
Int. Cl.[3] B05D *1/10*
U.S. Cl. 427—34 7 Claims



1. A method of providing impervious closure joints for clad metals which comprises welding abutting portions of the backing metal layer of pieces of clad metals and applying an impervious coating over the joint between the pieces and over adjacent portions of the surface of the cladding metal layer of such pieces by plasma arc spray.

4,510,172
TECHNIQUE FOR THIN INSULATOR GROWTH
Asit K. Ray, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 29, 1984, Ser. No. 614,177
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—38 20 Claims



1. A method for controlling the thickness of plasma formed insulators on the surface of a substrate having first and second surfaces comprising the step of:
forming a first insulator layer on said first surface of said substrate said first layer having a predetermined thickness,
depositing on said second surface from a gas plasma a second insulator layer the thickness of which for a given time period decreases as said predetermined thickness of said first layer increases.

4,510,173
METHOD FOR FORMING FLATTENED FILM
Iwao Higashikawa, and Tsunetoshi Arikado, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 19, 1984, Ser. No. 601,934
Claims priority, application Japan, Apr. 25, 1983, 58-71367; Jun. 6, 1983, 58-100388
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—44 14 Claims

1. A method for forming a flat film on a functional structure having uneven surface formed on a semiconductor substrate comprising the steps of:
applying a film-forming organic material capable of being cured by energy beams and exhibiting fluidity by heat on said uneven surface of the functional structure;
fluidizing the organic material by applying heat to the applied organic material, thereby substantially flattening the surface of the organic material; and
irradiating energy beams to the flattened organic material to

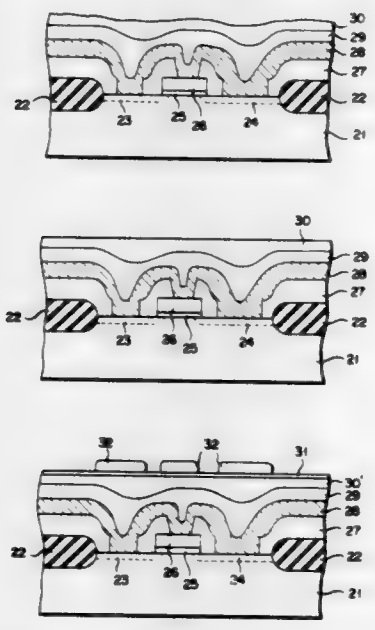
cure the flattened organic material, thereby converting the flattened organic material into a cured film which is not deformed by heat and energy beams.

8. A method for patterning a functional structure having uneven surface formed on a semiconductor substrate comprising the steps of:

forming a first film on said uneven surface of the functional structure;

applying a film-forming organic material capable of being cured by energy beams and exhibiting fluidity by heat on the first film surface;

fluidizing the organic material by applying heat to the applied organic material, thereby substantially flattening the surface of the organic material;



irradiating energy beams to the flattened organic material to cure the flattened organic material, thereby converting the flattened organic material into a second film which is not deformed by heat and energy beams;

forming a first pattern comprising a resist on the surface of said second film;

selectively etching said second film using said first pattern as a mask, thereby forming a second pattern;

selectively etching said first film using said second pattern as a mask, thereby forming a third pattern; and

patterning said functional structure using said third pattern as a mask.

4,510,174

METHOD OF MANUFACTURING A THIN LAYER DETECTOR FOR AN INTEGRATING SOLID STATE DOSIMETER

Georg Holzapfel, Berlin, and Jan Lesz, Brunswick, both of Fed. Rep. of Germany, assignors to Georg Dr. Holzapfel, Berlin, Fed. Rep. of Germany

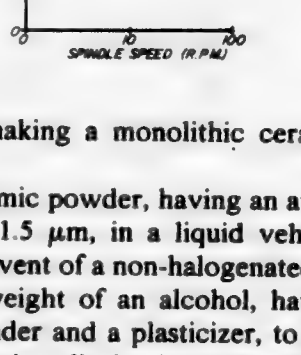
Filed Jul. 12, 1983, Ser. No. 513,022

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1982, 3226378

Int. Cl.³ G01T *1/11*; B05D *5/00*

U.S. Cl. 427—65 **21 Claims**

1. A method of manufacturing a thin layer detector for solid state thermoluminescence dosimeters comprising the steps of: providing a substrate with suitably prepared surface; depositing a layer of a powder of a suitable thermoluminescent material on said prepared surface of the substrate; and simultaneously applying high pressure and elevated temperature to the powder layer at pressure and temperature values sufficient to cause plastic flow of the powder grains and physico-chemical bonding of the powder material with said surface of the substrate, whereby a thin hot-pressed layer of the thermoluminescent material is formed on and bonded to said surface of said substrate.



4,510,175

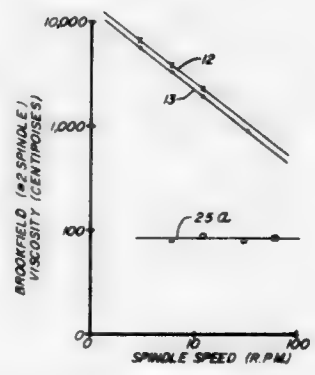
NEWTONIAN CERAMIC SLIP AND PROCESS FOR USING

Ian Burn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jun. 9, 1983, Ser. No. 502,878

Int. Cl.³ B05D *5/12*; H01G *13/00*

U.S. Cl. 427—79 **1 Claim**



1. A method for making a monolithic ceramic capacitor comprising:

(a) dispersing a ceramic powder, having an average particle size from 0.5 to 1.5 μm, in a liquid vehicle consisting essentially of a solvent of a non-halogenated hydrocarbon plus 0–70% by weight of an alcohol, having dissolved therein a resin binder and a plasticizer, to form a water-insensitive Newtonian slip having a Brookfield viscosity of less than 700 centipoises over the range of 3 to 30 revolutions per minute of a number 2 Brookfield spindle;

(b) providing a falling sheet of said Newtonian slip;

(c) passing a flat porous substrate horizontally through said falling sheet to coat said substrate with a first level layer of said slip, and drying said first layer;

(d) depositing film patches of an electroding ink in the pattern of a matrix on the surface of said first layer creating ink bumps on said first layer surface;

(e) passing said substrate again through said falling sheet to deposit another level layer of said slip over said electroded first layer, said second level layer flowing and leveling to acquire an upper surface that is planar and free of irregularities reflecting said pattern of the underlying ink, and drying said second level layer;

(f) repeating steps (d) and (e) as many times as is desired to produce a stack of dried level slip layers interleaved by patterns of electroding ink;

(g) separating said stack into pieces each having at least one buried electrode and at least another electrode extending respectively to two-spaced apart surface portions of said each piece;

(h) firing said pieces to burn out said binder and sinter said

ceramic to maturity to transform said pieces to monolithic ceramic capacitor bodies; and

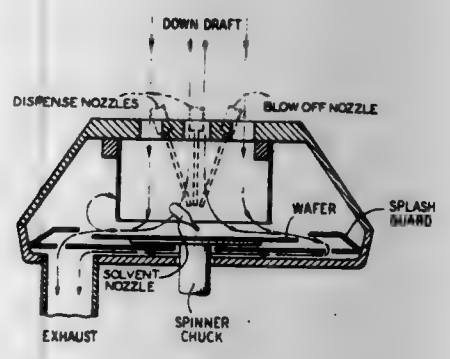
(i) applying two terminations to each of said bodies at said two surface portions, respectively, to form monolithic ceramic capacitors.

4,510,176

REMOVAL OF COATING FROM PERIPHERY OF A SEMICONDUCTOR WAFER

John D. Cuthbert, Bethlehem, and Nicholas A. Soos, Lower Macungie Township, Lehigh County, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 26, 1983, Ser. No. 535,916
Int. Cl.³ B05D *5/12*; B05C *11/12*
U.S. Cl. 427—82 **2 Claims**



1. Method for the manufacture of semiconductor wafers comprising the steps of:

spinning the semiconductor wafer,

applying a coating material to the spinning wafer,

directing a fluid onto the periphery of the spinning wafer to remove the coating material at the periphery of the wafer, and

creating a controlled positive flow of gas onto the surface of the wafer while the wafer is spinning, thus causing a centrifugal flow of gas over the surface of the wafer and across the periphery of the wafer and thereby carrying debris of the aforementioned fluid and/or loose material generated at the periphery away from the center of the spinning wafer, and

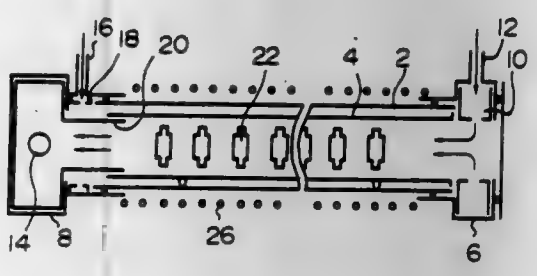
establishing a physical barrier separating the positive flow of gas onto the surface of the wafer from the flow of gas that crosses the periphery of the wafer.

4,510,177

METHOD AND APPARATUS FOR VAPOR PHASE DEPOSITION

Yuji Furumura, and Takeshi Nishizawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 4, 1982, Ser. No. 405,082
Claims priority, application Japan, Aug. 8, 1981, 56-124515
Int. Cl.³ H01L *21/365, 21/383*
U.S. Cl. 427—85 **11 Claims**



1. A method of vapor phase deposition for growing a semiconductor layer on a plurality of wafers having major surfaces and arranged in a reaction tube having a longitudinal axis, comprising the steps of:

(a) arranging the plurality of wafers in a deposition region in the reaction tube such that each of the major surfaces of the plurality of wafers is parallel to the others and is transverse to the longitudinal axis of the reaction tube;

(b) feeding a main gas flow containing a reaction gas and an impurity gas into a first end of the reaction tube;

(c) passing the main gas flow through the deposition region in a first direction along the longitudinal axis of the reaction tube from the first end to a second end of the reaction tube;

(d) reducing the pressure inside the reaction tube;

(e) heating the plurality of wafers at a temperature at which the impurity doped semiconductor layer is grown, the temperature in the reaction tube being maintained between two values, such that a first temperature exists at the first end of the reaction tube and a second temperature, greater than that of the first temperature, exists at the second end of the reaction tube, the temperature in the reaction tube gradually increasing in a direction from the first end to the second end; and

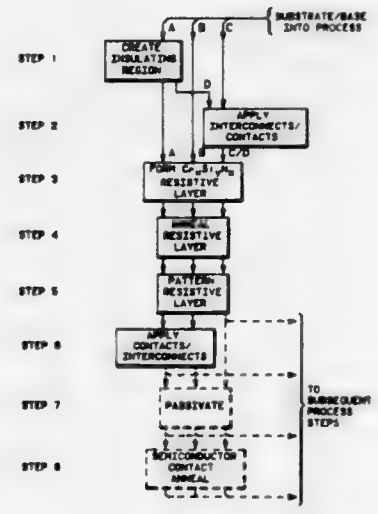
(f) introducing an auxiliary gas, containing an impurity gas, into the reaction tube at a position downstream of the deposition region at an introduction rate substantially lower than the feeding rate of the main gas flow, there by diffusing the impurity gas of the auxiliary gas in a second direction opposite that of the first direction.

4,510,178

THIN FILM RESISTOR MATERIAL AND METHOD

Wayne M. Paulson, Paradise Valley, and David W. Hughes, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 279,130, Jun. 30, 1981, Pat. No. 4,392,992.
This application Feb. 14, 1983, Ser. No. 466,234
Int. Cl.³ H01C *17/12*
U.S. Cl. 427—94 **19 Claims**



1. A process for fabricating a thin film resistor material on a surface of a substrate, comprising:

exposing said surface to one or more sources of Cr, Si, and nitrogen;

forming on said surface a thin film comprising a compound of Cr, Si, and nitrogen derived from said sources;

annealing said thin film to produce said resistor material.

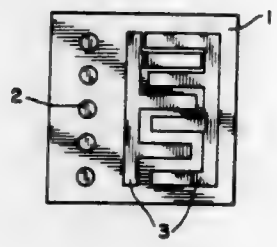
4,510,179
ELECTRODE ON HEAT-RESISTING AND ISOLATING SUBSTRATE AND THE MANUFACTURING PROCESS FOR IT

Katsuhiko Honjo, Takatsuki; Hiromitsu Taki, and Noriya Sato, both of Miyazaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 293,981, Aug. 18, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 509,594

Int. Cl.[3] C23C *3/02*

U.S. Cl. 427—96 13 Claims



1. A process for the manufacture of an electrode on a heat-resisting and isolating substrate which comprises

applying on the substrate a paste comprising 5 to 30 weight percent of a metal material and an organic vehicle, said metal material containing 5 to 60 weight percent of a silver component and 95 to 40 weight percent of a base metal component containing at least one member selected from the group consisting of nickel, copper, aluminum, zinc, tin iron and cobalt,

heating the substrate containing the applied paste at a temperature of 350° to 600° C. to form on the substrate a metallic particle layer of 0.2 to 1 micron in thickness, where the organic vehicle in the paste is consumed, and

subsequently building up on the metallic particle layer by electroless plating an electrode of nickel or copper having a thickness of 0.5 to 20 microns,

whereby the base metal component improves the adhesive force and the electrical characteristics including dielectric constant and the tan δ of the electrode, and whereby the base metal component prevents the migration of the silver component thereby to improve the useful life of the electrode under humid conditions.

4,510,180
METHOD OF COATING GEOLOGICAL FORMATIONS AS WELL AS AIR- AND FIRE BARRIERS

Wolfgang Cornely, Gladbeck; Heinz Esser, and Rudolf Schmidt, both of Burscheid, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,010

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3205997

Int. Cl.[3] B05C *1/16*; B05D *5/10*

U.S. Cl. 427—136 10 Claims

1. A method of coating geological formations as well as air- and fire barriers, comprising the steps of

providing an aqueous rubber or rubber-like dispersion; providing a dry hydraulic binding medium; and

spraying the aqueous rubber or rubber-like dispersions and the dry hydraulic binding medium simultaneously but via separate conduits by a pressure air onto an object to be coated.

4,510,181
METHOD FOR COATING METAL SURFACE

Toshimitsu Okuno; Yutaka Hori; Makoto Sunakawa, and Sadayuki Inagaki, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 28, 1983, Ser. No. 566,453

Claims priority, application Japan, Dec. 29, 1982, 57-228209

Int. Cl.[3] B32B *35/00*

U.S. Cl. 427—142 21 Claims

1. A method for coating a metal surface by forming a corrosion-protective layer on the metal surface or on defective areas of a corrosion-protective layer on a metal surface comprising:

(a) coating the metal surface, defective areas, or a coating material with a liquid material comprising a vinyl monomer and/or a vinyl group-containing oligomer;

(b) wrapping or bonding the coating material which is selected from the group consisting of a tape-like, sheet-like and chip-like polymerizable coating comprising a vinyl monomer and/or a vinyl group-containing oligomer, to the metal surface or defective area such that the liquid material is interposed between the coating material and the metal surface or defective area; and

(c) polymerizing the vinyl monomer and/or the vinyl group-containing oligomer to form the corrosion-protective layer; wherein the vinyl monomer and/or vinyl group-containing oligomer is selected from the group consisting of monofunctional monomer or oligomer and a polyfunctional monomer or oligomer; and wherein either the coating material or the liquid material contains a polymerization initiator and the material not containing the polymerization initiator contains a polymerization accelerator.

4,510,182
METHOD FOR THE PRODUCTION OF HOMOGENEOUS COATINGS OF TWO OR MORE METALS AND/OR METAL COMPOUNDS

Boy Cornils, Dinslaken; Bela Tihanyi; Jürgen Weber, both of Oberhausen; Werner DeWin, Dinslaken; Edwin Erben, Munich, and August Mühlratzer, Gliching, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft and Maschinenfabrik Augsburg-Nurnberg, both of, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 410,796, Aug. 23, 1982, abandoned. This application Apr. 26, 1984, Ser. No. 604,085

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133871

Int. Cl.[3] B05D *5/06*

U.S. Cl. 427—162 17 Claims

1. A method for the production of homogeneous coatings of a substance comprising at least two components selected from metals and metal compounds on a substrate comprising depositing said substance from a liquid phase from dinuclear or polynuclear mixed metal compounds by heating said dinuclear or polynuclear compounds to a first temperature about 85–90% of a final temperature over a period of about 5 to about 20 minutes, then heating at a second temperature about 62 to about 72% of said final temperature for about 1½ to about 2½ hours, then raising the temperature to the final temperature over about 20 to about 40 minutes and maintaining the final temperature for about 1 to about 2 hours, whereby said coating exhibits optical properties of at least 0.70 absorption and no greater than 0.30 emission.

10. The method of claim 1 wherein said substance is selected from

$FeCo_3H(CO)_{12}$	Bis[μ-tricarbonylcobalt](tricarbonyl iron)(tricarbohydridocobalt) (3 Co—Co; 2 Fe—Co)
$(CO)_2C_5H_5FeMoC_5H_5(CO)_3$	Dicarbonyl-η-cyclopentadienyl(tricarbonyl-η-cyclopentadienylmolybdo)iron.
$(CO)_2C_5H_5FeMn(CO)_5$	Dicarbonyl-η-cyclopentadienyl(pentacarbonylmangano)iron

-continued

$FeCo_2(CO)_9S$	Cyclo-(tricarbonylferro)-bis (tricarbonylcobalt)(2 Co—Fe; Co—Co)-sulphide
$(CO)_5MnCo(CO)_4$	Pentacarbonyl(Tetracarbonyl-cobalto)manganese
$(CO)_5ReCo(CO)_4$	Pentacarbonyl(tetracarbonyl-cobalto)rhenium
$(CO)_3C_5H_5MoMn(CO)_5$	Tricarbonyl-η-cyclopentadi-enyl(pentacarbonyl-mangano)molybdenum
$(CO)_3C_5H_5WMn(CO)_5$	Tricarbonyl-η-cyclopentadi-enyl(pentacarbonyl-mangano)tungsten
$(CO)_3C_5H_5MoWC_5H_5(CO)_3$	Tricarbonyl-η-cyclopentadi-enyl(tricarbonyl-η-cyclopenta-dienyltungsto)molybdenum
$TlCo(CO)_4$	Thallium-tetracarbonyl-cobaltate
$InCo_3(CO)_{12}$	Indium-dodecacarbonyltri-cobaltate
$Ph_3PAuCo(CO)_4$	Tetracarbonyl[(triphenylphos-phan)auro]cobalt
$(CO)_2C_5H_5FeHgCo(CO)_4$	Mercury (dicarbonyl-η-cyclo-pentadienylferro)(tetracar-bonylcobalt)
$Me_2Sn[Co(CO)_3PPh_3]_2$	Dimethyltin-bis[tricarbonyl (triphenylphosphan)cobaltate]
$Ph_3GeFeC_5H_5(CO)_2$	Dicarbonyl-η-cyclopentadi-enyl(triphenylgermanium)-iron
$PbFe(CO)_4$	Lead-tetracarbonylferrate
$Bi_2Fe_5(CO)_{20}$	Dibismuth-didecacarbonyl-pentaferrate
$SbFe(CO)_4$	Antimony-tetracarbonylferrate
$Ph_3GeMn(CO)_5$	Pentacarbonyl(triphenylger-manium)manganese
$Ph_3SnCrC_5H_5(CO)_3$	Tricarbonyl-η-cyclopentadi-enyl(triphenylstannan) chromium
$Ph_3SnWC_5H_5(CO)_3$	Tricarbonyl-η-cyclopentadi-enyl(tri-phenylstannan)-tungsten
$(CO)_3C_5H_5MoSnMe_2Mn(CO)_5$	Dimethylstannin(pentacar-bonylmanganese) tricarbonyl-η-cyclopentadi-enylmolybdenum
$[Co(CH_3COCH_3)_6][FeCo_3(CO)_{12}]_2$	Hexaacetonecobalt-bis(dodeca-carbonyl)iron tricobaltate

Cobalt nickel citrate
Molybdic acid-cobalt citrate
Manganese-cobalt oxide-2-ethylhexanoaten
Chromium-nickel oxide-3-ethylhexanoate
Nickel-aluminum isopropylate
Manganese-aluminum isopropylate
Chromium-aluminum isopropylate.

4,510,183

METHOD FOR APPLYING WEAR-RESISTANT COATINGS ON WORKING SURFACES OF TOOLS AND DEVICES

Atilla Akyol, Bad Essen-Linne, Fed. Rep. of Germany, assignor to Rabewerk Heinrich Clausing, Bad Essen, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,242
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234310
Int. Cl.³ B05D *1/22*
U.S. Cl. 427—185 **12 Claims**

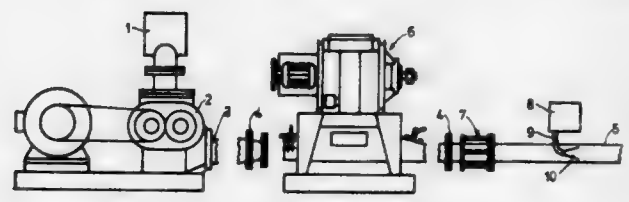
1. A method for applying a wear-resistant coating to a working surface of an object which is to be exposed to wear, comprising the step of dipping said object in a bath of molten metal having unmolten hard metal carbide particles dispersed therein, whereby a coating of said molten metal and said hard metal carbide particles is formed on said working surface of said object.

4,510,184

PROCESS AND APPARATUS FOR BONDING PARTICULATE MATERIAL, IN PARTICULAR CHIPS

Hermann Winkler, Sassenburg, and Hanns I. Sachs, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,132
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143895
Int. Cl.³ B05D *7/00*; B05B *17/00*; B05C *5/00*
U.S. Cl. 427—212 **7 Claims**



1. In a process for bonding particulate material by the spraying of bonding agent onto the material which material is in the form of a film of particles, the improvement wherein
(i) said particulate material is fed into a pneumatic material transport device at a first location,
(ii) said film of particles is uniformly diverted by at least one air conducting installation located within said pneumatic material transport device downstream of said first location, and
(iii) bonding agent is sprayed onto said material within said pneumatic material transport device downstream of said air conducting installation, whereby said bonding agent is dispersed in air before it comes into contact with said material.

4,510,185

PROCESS FOR THE SURFACE MODIFICATION OF SYNTHETIC FIBERS

Antonio Chiolle; Alfio Vecchi, both of Ferrara, and Lino Credali, Casalecchio di Reno, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 16, 1982, Ser. No. 450,268
Claims priority, application Italy, Dec. 18, 1981, 25665 A/81
Int. Cl.³ B05D *7/24*
U.S. Cl. 427—222 **6 Claims**

1. Process for obtaining water dispersible fibers of olefinic polymers, endowed with a high degree of cohesion, said process consisting in maintaining said fibers in contact with a stable emulsion formed by an aqueous solution of polyvinyl alcohol and a non-polar solvent in which the polyolefin is insoluble at the temperature at which said emulsion is used, under stirring in conditions of turbulence and at a temperature below the boiling temperature of the emulsion.

4,510,186

PROCESS FOR PREPARING A POROUS SHEET MATERIAL

Katsumi Kuriyama, Koshigaya; Isao Kondō, Ageo, and Iwao Misaizu, Kawaguchi, all of Japan, assignors to Dainichi Seika Color & Chemicals Mfg. Co., Ltd. and Ukima Colour & Chemicals Mfg. Co., Ltd., both of Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,437
Claims priority, application Japan, Apr. 3, 1982, 57-67239
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—381 **7 Claims**

1. A process for preparing a porous sheet material, which comprises:
(1) impregnating and/or coating on a substrate a water-in-oil type polyurethane emulsion (d) comprising a hydrophobic polyurethane (a), a hydrophilic polyurethane (b), an organic solvent (c) and water; said process characterized in that said hydrophobic polyurethane (a) is a hydrophobic polyurethane dispersion (e) obtained by reacting a hydro-

phobic polyol, an organic diisocyanate and a chain extender in an organic solvent (c) which has a limited compatibility with water and in which the polyurethane thereby formed is substantially insoluble; said hydrophilic polyurethane (b) is a polyurethane containing about 20 to about 40% by weight, based on the total polymer, of polyoxyethylene groups; and the weight ratio of (a):(b) is about 90–99:about 10–1; and

(2) drying at a temperature of 60° to 100° C. for about 1 to 3 minutes and 100° to 150° C. for about 1 to 3 minutes.

4,510,187

METHOD FOR CONDITIONING PHONOGRAPH RECORDS

Irwin Rowe, 4605 S. Balfour, Las Vegas, Nev. 89121

Continuation of Ser. No. 407,774, Aug. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 265,188, May 18, 1981, abandoned. This application May 7, 1984, Ser. No. 607,586

Int. Cl.[3] **B05D** *1/28;* **D06M** *13/46*

U.S. Cl. 427—429 **6 Claims**

1. A method of conditioning the surface of a phonograph record which comprises applying thereto a film of a composition consisting essentially of dimethyl ditallow ammonium chloride.

2. The method of claim 1 wherein a solution of quaternary ammonium salt in a volatile solvent is applied to a soft, nonabrasive applicator, and the applicator is subsequently contacted with the record surface with relative movement therebetween.

4,510,188

TEXTILE MATERIAL OF A DARK FABRIC, LEATHER OR HIDE WITH LAYER OF MICROENCAPSULATED LIQUID CRYSTALS

Cinzia Ruggeri, Via Fratelli Gabba 7, 20100 Milano, Italy

Filed Mar. 4, 1983, Ser. No. 472,093

Claims priority, application Italy, Mar. 11, 1982, 20097 A/82

Int. Cl.[3] **C09K** *3/34*

U.S. Cl. 428—1 **20 Claims**

1. A textile material useful for articles of clothing, curtains, or coatings in which the chromatic effect is variable with environmental conditions to produce decorative effects, comprising a support consisting of a dark fabric, leather or hide having on at least one surface thereof a layer of a microencapsulated liquid cholesteric crystal composition including:

cholesteryl nonanoate: 73–80 parts by weight

oleyl cholesteryl carbonate: 5–12 parts by weight

cholesteryl chloride: 15 to 15.6 parts by weight; and

said crystal composition being adapted to change from a transparent state to a colored state within a given temperature range in response to environmental conditions.

4,510,189

CHRISTMAS TREE ORNAMENT

Leroy Girard, 2701 Holland St., Erie, Pa. 16504

Filed Aug. 30, 1982, Ser. No. 412,821

Int. Cl.[3] **B42D** *15/02;* **G09F** *1/06*

U.S. Cl. 428—19 **2 Claims**

1. In combination, a Christmas tree and ornaments,

said ornaments each comprising,

two sheets of relatively rigid material,

said sheet each having at least one straight side, integral hinging the said straight sides of said sheets together,

a round central opening in each of said rigid sheets,

a plurality of generally transparent sheets of material,

each said central opening having one of said transparent sheets overlying it,

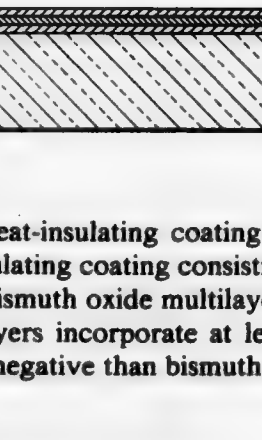
the central part of each said transparent sheet being generally convex and having a circular flange extending outwardly therefrom,

said central convex portion of each said transparent sheet overlying a said opening and said flange resting on the particular said rigid sheet around the particular opening,

and attaching means attaching said flanges to said rigid sheets,

pictures supported on said flanges,

and means on said ornament for attaching said ornament to said Christmas tree,



said means supporting said ornaments on said tree comprises holes in the sheets and supporting means in said holes for hanging said ornaments on said tree,

said rectangular sheets form a cubical shaped member with a top square insert.

4,510,190

TRANSPARENT, HEAT-INSULATING COATING FOR A TRANSPARENT SUBSTRATE

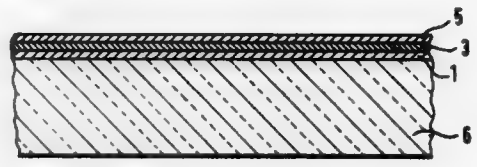
Hans J. Gläser, Beverungen, Fed. Rep. of Germany, assignor to Interpane Entwicklungs-und Beratungsgesellschaft mgH & Co. K.G., Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,258

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211753

Int. Cl.[3] **E06B** *3/24;* **B32B** *15/00*

U.S. Cl. 428—34 **16 Claims**



1. A transparent, heat-insulating coating for a transparent substrate, the heat-insulating coating consisting essentially of a bismuth oxide-silver-bismuth oxide multilayer system wherein said bismuth oxide layers incorporate at least one substance which is more electronegative than bismuth or bismuth oxide.

4,510,191

CASTING NOZZLE

Toshiro Kagami, Kanagawa, and Kuniaki Watanabe, Tokyo, both of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

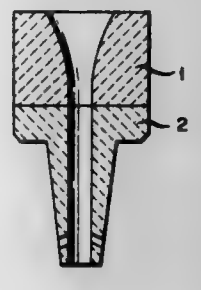
Filed Sep. 30, 1982, Ser. No. 429,014

Int. Cl.[3] **B22D** *0/1*

U.S. Cl. 428—36 **6 Claims**

1. A casting nozzle prepared by kneading a raw material consisting of 42 to 86% by weight of an alumina powder, 4 to 44% by weight of a graphite powder and 10 to 27% by weight of a fused silica powder after addition of a binder to said pow-

der components; pelletizing the resultant mixture; rubber pressing the resultant pellets and releasing a pressed casting



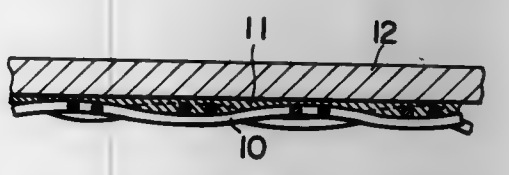
nozzle from said rubber press; and sintering the pressed casting nozzle at 800° to 1,100° C. after drying.

4,510,192

SYNTHETIC LEATHER FOR MOTORCARS HAVING A GROUND FABRIC KNITTED BY A PLURALITY OF STROKES

Setsuro Inoue, Ichikawa; Koichi Nikaido, and Makoto Nakagome, both of Tokyo, all of Japan, assignors to Yamato Chemical Industry Co. Ltd., Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,383
Claims priority, application Japan, Oct. 28, 1982, 57-163498
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—151 **4 Claims**



1. A synthetic leather comprising a base fabric knitted by a plurality of strokes, a synthetic resin lagyer bonded to one side of the base fabric, and an adhesive layer bonding the base fabric to the resin layer.

4,510,193

FILTER SHEET MATERIAL

Hubert Blücher, Freytagstrasse 45; Hasso von Blücher, Sohnstrasse 58, both of D-4000 Düsseldorf, and Ernest de Ruiter, Höhenstrasse 57a, D-5090 Leverkusen 3, all of Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,742
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 3304349
Int. Cl.³ B32B *3/16, 27/14*
U.S. Cl. 428—196 **16 Claims**

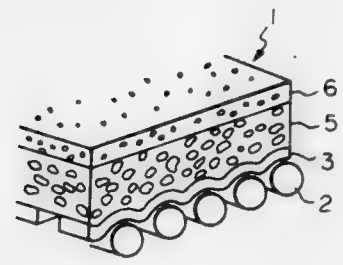
1. A filter sheet material comprising an air-permeable textile material, an adhesive uniformly covering about 20 to 80% of the surface of the textile, the applied adhesive having a height of about 0.05 to 0.5 mm and a diameter or width of about 0.1 to 5 mm, and about 10 to 250 g/m^2 of activated carbon adsorber particles anchored to the textile by the adhesive, the carbon particles having an internal surface of at least about 600 m^2/g and a diameter of at least about 0.1 mm.

4,510,194

HEAT-RETAINING MOISTURE-TRANSMISSIBLE WATER-RESISTANT FABRIC

Masao Miyake, Otsu, and Teruo Akita, Kusatsu, both of Japan, assignors to Asahi Kasei Textiles Ltd., Osaka, Japan

Filed Apr. 25, 1983, Ser. No. 487,949
Claims priority, application Japan, Apr. 28, 1982, 57-74365; Dec. 29, 1982, 57-233171; Jan. 14, 1983, 58-4722
Int. Cl.³ B32B *7/02, 3/26, 27/40*
U.S. Cl. 428—212 **18 Claims**



1. A heat-retaining moisture-transmissible water-resistant fabric comprising:

a fibrous substrate;

a microporous polymer layer (layer A) formed on at least one surface of the fibrous substrate;

a microporous polymer film layer (layer C) having a multiplicity of interconnecting fine pores communicating in all the directions in the interior of layer C, most of which have a size of at least 1 μm, said layer C being formed on said layer A, and

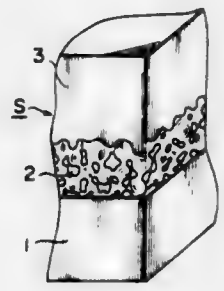
a polymer layer (layer D) containing 10 to 70% by weight; based on the polymer of layer D, of a heat ray-reflecting fine metal particles and having on the surface thereof fine pores having a size smaller than 0.5 μm and also having fine pores communicating with said fine surface pores, most of which have a size of not larger than 1 μm, said layer D being formed on said layer C.

4,510,195

FLEXIBLE INSULATIVE SUBSTRATES HAVING TWO GLASS LAYERS AT LEAST ONE SIDE THEREOF AND A METHOD FOR MAKING SUCH SUBSTRATES

Hideyo Iida; Koumei Kato; Toshio Mishuku, and Yukiko Fujimaki, all of Tokyo, Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Taito, Japan

Filed Jul. 19, 1984, Ser. No. 632,559
Claims priority, application Japan, Mar. 7, 1984, 59-44554
Int. Cl.³ B32B *3/26, 15/04, 17/06*
U.S. Cl. 428—215 **10 Claims**



1. A flexible, glass-covered substrate comprising a thin metal plate, a first glass layer formed on at least one side of said metal plate and having a multitude of pores therein, and a second glass layer formed on said first glass layer.

4. The flexible, glass-covered substrate according to claim 1, wherein said metal plate has a thickness of from 10 to 300 μm, said first glass layer has a thickness of from 5 to 50 μm, and said second glass layer has a thickness of from 5 to 50 μm.

4,510,196

POLYCARBONATE COMPOSITIONS CONTAINING POWDERED SULFATES

Russell P. Carter, Jr., New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 20, 1982, Ser. No. 423,928
Int. Cl.[3] C08K 3/30; C08L 69/00
U.S. Cl. 428—220 14 Claims

1. A clear film having a thickness of less than 10 mils comprising

(i) an aromatic thermoplastic polycarbonate resin, and

(ii) between 0.025 to about 1.0 phr of sulfate powder having an average particle size of about 0.5 to about 15 microns said film being characterized in that its moisture content is not in excess of 2% relative to its weight and in that its light transmission measured in accordance with ASTM D-1003-61 is not less than 91.4%.

12. The film of claim 1, wherein said sulfate powder is selected from the group consisting of calcium sulfate, barium sulfate, strontium sulfate and radium sulfate.

4,510,197

WATER VAPOR PERMEABLE PRESSURE SENSITIVE ADHESIVES INCORPORATING MODIFIED ACRYLATE COPOLYMERS

Kishore R. Shah, Chelmsford, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 1, 1983, Ser. No. 481,509
Int. Cl.[3] B32B 00/00; C08F 226/10
U.S. Cl. 428—220 4 Claims

1. A water vapor permeable, pressure-sensitive adhesive composition comprising:

an adhesive copolymer having a molecular weight from about 200,000 to about 500,000, further comprising:

(a) from about 79 to 89 percent by weight of n-butyl acrylate;

(b) from about 10 to 20 percent by weight of a hydrophilic N-vinyl lactam, selected from the group consisting of 1-vinyl-2-pyrrolidone, 1-vinyl-5-methyl-2-pyrrolidone, 1-vinyl-2-piperidinone and 1-vinyl-ϵ-caprolactum; and

(c) from about 1 to 5 percent by weight of an acidic comonomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, and 2-sulfoethyl methacrylate; and

said adhesive copolymer in the form of a coating of about 1.0 mil thickness having water vapor transmission rates of greater than 1,000 gms/meter^2/24 hours at 40° C. and 80 percent relative humidity; and further exhibiting a probe tack value of about 130 mg/cm^2, adhesion to steel of about 26.5 oz/inch width, and flat bar creep at 100° F. of about 4.5 hours.

4,510,198

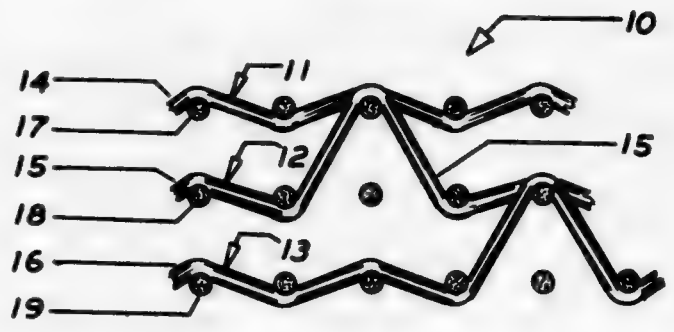
SHAPED STRUCTURES OF GRAPHITE FABRICS, AND THE LIKE, AND DEEP DRAWN MOLDED PRODUCTS THEREFROM

Walter A. Rheaume, Fullerton, Calif., assignor to Textile Products, Incorporated, Anaheim, Calif.

Filed Sep. 13, 1982, Ser. No. 417,123
Int. Cl.[3] B32B 7/00
U.S. Cl. 428—246 9 Claims

5. A woven, continuous, multi-layered, molded fabric shape impregnated with a thermosetting resin, the fabric having upper and bottom layers interwoven with an inner layer, thereby comprising three moveable layers with respect to each other, the interweave between an inner layer and the upper and bottom layers being about 5% of the total weave in a layer;

the fabric being applied to a mold while moving the fabric layers with espect to each other to conform the fabric uniformly with respect to the mold and any irregularities



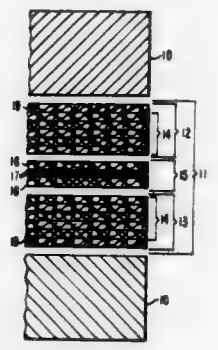
thereon, and continuing application of the fabric to the mold until the fabric has been built up to a final shape.

4,510,199

RELEASE SHEETS FOR LAMINATES WITH WAX AND ALGINATE SALT RELEASE LAYER

Lenon G. Brooker, Hampton, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 13, 1984, Ser. No. 599,899
Int. Cl.[3] B32B 31/00
U.S. Cl. 428—248 10 Claims



1. A release sheet useful in laminating assemblies comprising:

(A) a thermosetting resin impregnated fibrous core layer, and

(B) a release coating on at least one side of the core layer, the release coating consisting essentially of a mixture of wax and alginate salt, where the solids weight ratio of (wax):(alginate salt) in the coating is from about (3 to 15):(1).

4,510,200

BULLET-PROOF PROTECTIVE SHIELDING AND GARMENTS AND METHODS OF MAKING THE SAME AND USE THEREOF

Joseph J. Samowich, 33 Greenwich Ave., New York, N.Y. 10014

Continuation-in-part of Ser. No. 356,656, Mar. 10, 1982, Pat. No. 4,409,275, which is a continuation-in-part of Ser. No. 537,445, Dec. 30, 1974, Pat. No. 4,329,386. This application Aug. 30, 1982, Ser. No. 412,696
Int. Cl.[3] B32B 5/18
U.S. Cl. 428—252 29 Claims

1. A soft body armor protective shield or garment comprising a plurality of laminates superimposed one on the other, each laminate comprising a plastic surface film adhered to a layer of a cross-linked thermoset resilient emulsion adhered to a substrate of high force resistance fabric.

4,510,201

POLYVINYL CHLORIDE RESINOUS MOLDED SHEET PRODUCT

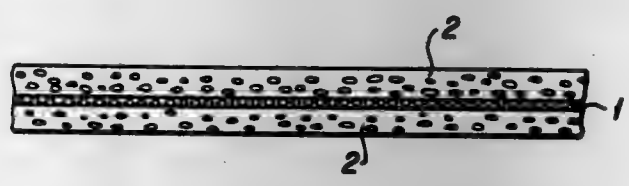
Tooru Takeuchi, Settsu; Masaru Nakamura, Hirakata, and Eiji Aoishi, Settsu, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1982, Ser. No. 386,184

Claims priority, application Japan, Jun. 9, 1981, 56-88966; Jun. 9, 1981, 56-88967; Jun. 22, 1981, 56-97272; Aug. 24, 1981, 56-133171

Int. Cl.³ B32B *27/22, 27/30, 5/18*

U.S. Cl. 428—285 **13 Claims**



1. A polyvinyl chloride resionous molded sheet product comprising:

(a) a polyvinyl chloride resinous molded sheet obtained by dry-blending at a temperature between 50° C. and 100° C., 100 parts by weight of a polyvinyl chloride resin having an average particle size of not more than 50 microns, 50 to 100 parts by weight of an inorganic cellular filler and 40 to 100 parts by weight of a plasticizer, then molding said blend under heat and pressure to form a sheet;

(b) a layer laminated to one side of the sheet, said layer being selected from the group consisting of a glass fiber non-woven fabric, a synthetic fiber non-woven fabric and a victoria lawn; and

(c) a surface layer laminated to the other side of the sheet, said surface layer comprising a non-foamed synthetic resinous layer.

4,510,202

ADHESION ACTIVATED ARAMID FIBER

William R. Hatchard, Hockessin, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1983, Ser. No. 563,226

Int. Cl.³ B32B *27/34*

U.S. Cl. 428—295 **5 Claims**

1. Adhesion activated yarn comprising aramid filaments coated with from about 1.0 to 5.0% by weight of a reaction product of an epoxide resin and an incompletely cured, thermosetting, aldehyde resin.

4,510,203

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa; Chiaki Mizuno, and Yasuo Tamai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 3, 1983, Ser. No. 500,709

Claims priority, application Japan, Jun. 3, 1982, 57-95244

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—425.9 **13 Claims**

1. A magnetic recording medium comprising a non-magnetic support having provided thereon a flexible magnetic layer comprising a ferromagnetic powder dispersed in a binder showing good dispersibility for the ferromagnetic powder, said binder comprising a copolymer of vinyl chloride-vinyl acetate-vinyl alcohol and a copolymer of ethylene-vinyl acetate which is graft-polymerized with vinyl chloride wherein said copolymer of vinyl chloride-vinyl acetate-vinyl alcohol is composed of 60 to 97 wt% of vinyl chloride up to 30 wt% of vinyl acetate and 3 to 15 wt% of vinyl alcohol and said copolymer of ethylene-vinyl acetate graft-polymerized with vinyl chloride is an ethylene-vinyl acetate copolymer composed of 90 to 30 wt% of ethylene and 10 to 70 wt% of vinyl acetate, which is further graft-polymerized with 20 to 90 wt% of vinyl chloride based on the ethylene-vinyl acetate copolymer.

4,510,204

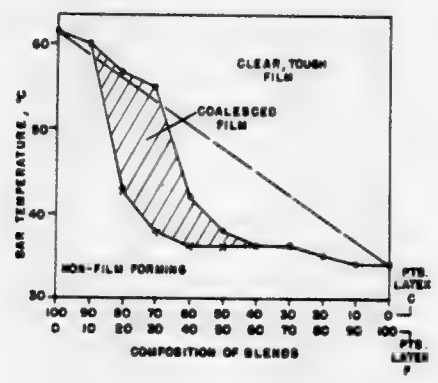
FILM-FORMING COMPOSITIONS OF NITRILE POLYMER LATEX BLENDS

June T. Duke, Chagrin Falls; Kenneth E. Samuels, Twin Lakes, and Mary-Catherine Brown, Bedford Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 434,134, Oct. 13, 1982, abandoned. This application Feb. 22, 1983, Ser. No. 468,181

Int. Cl.³ B05D *3/02;* B32B *15/08, 27/00*

U.S. Cl. 428—463 **30 Claims**



1. A film forming composition comprising a mixture of

(A) a first resin latex comprising

(i) a major proportion of an olefinically unsaturated nitrile monomer,

(ii) a minor amount of at least one other olefinically unsaturated monomer which is copolymerizable with the nitrile, and

(B) a second resin latex comprising

(i) about 20 to 60% of an olefinically unsaturated nitrile monomer, and

(ii) at least one other olefinically unsaturated monomer which is copolymerizable with the nitrile,

wherein the difference between the MFT of the first and second latexes is at least 10° C., and the weight ratio of the first latex to the second latex is from about 90/10 to 10/90.

26. A film forming composition comprising a mixture of

(A) a first resin latex comprising

(i) a major proportion of an olefinically unsaturated nitrile monomer,

(ii) a minor amount of at least one other olefinically unsaturated monomer which is copolymerizable with the nitrile, and

(B) A second resin latex comprising

(i) an olefinically unsaturated nitrile monomer, and

(ii) at least one other olefinically unsaturated monomer which is copolymerizable with the nitrile,

wherein the difference between the MFT of the first and second latexes is at least 10° C., and the weight ratio of the first latex to the second latex is from about 90/10 to 10/90, and the first or second latex or both latexes contain up to about 40 parts by weight on a solids basis, based on 100 parts on a solids basis the combination of the nitrile monomer and the other olefinic monomer in each latex, of a preformed homopolymer of a conjugated diene or a copolymer comprising a major proportion of a conjugated diene and a minor proportion of an olefinically unsaturated comonomer.

4,510,205

COPOLYESTERETHERS COATED WITH SARAN

Doyle A. Weemes, Greeneville, and Robert W. Seymour, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 26, 1983, Ser. No. 498,442

Int. Cl.³ B32B *27/30;* B05D *1/36;* B28B *3/20*

U.S. Cl. 428—483 **12 Claims**

1. A coated article comprising a substrate and a coating, said article having a decreased water vapor transmission rate and ability to withstand autoclaving conditions as evidenced by decreased tendency toward blistering, peeling and haze, said substrate comprising

copolyesterethers having an inherent viscosity of from about 0.8 to about 1.5 comprising

A. an acid component comprising at least one dicarboxylic acid selected from aliphatic dicarboxylic acids having 4–10 carbon atoms and phthalic acids, and

B. a glycol component comprising

(1) at least one glycol having 2–16 carbon atoms and

(2) from about 15 to about 50 weight percent, based on the weight of the polyesterether, of polytetramethyleneether glycol having a molecular weight of about 500 to about 1100,

said coating comprising a solution-deposited layer of a copolymer derived from about 70–99 weight % vinylidene chloride and having a relative viscosity of about 0.8–1.8 as determined in tetrahydrofuran at 1% concentration at 25° C.

4,510,206

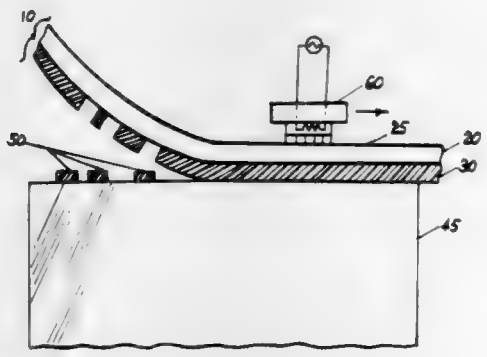
THERMAL INK TRANSFER RECORDING

Ralph J. Shuman, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Aug. 22, 1983, Ser. No. 525,188

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—488.1 **19 Claims**



1. In a thermal ink transfer laminate of the type comprising a heat transferable coating on a thermally conductive support member, said support member comprising material selected from the group consisting of paper and plastic film for transfer of images formed on said transferable coating at a temperature above the melt temperature of the coating by contact of a heated printing element to a side of the support opposite said coating, said support member essentially not electrically conductive, said formed images transferred to a receiving article in contact with the transferable coating, wherein the improved heat transferable coating is a hot melt comprising:

a wax binder comprising

a paraffin wax;

a resin binder; and

a coloring agent comprising

a dye dispersed in an unsaturated fatty acid having a carbon content between about C_{10} to C_{20}, said coloring agent effecting a sharp drop in the melt viscosity of the heat transferable coating to facilitate transfer of said formed images to the receiving article.

4,510,207

COMPOSITE ALUMINUM FOIL FOR USE AS ELECTRODE IN ELECTROLYTIC CAPACITOR

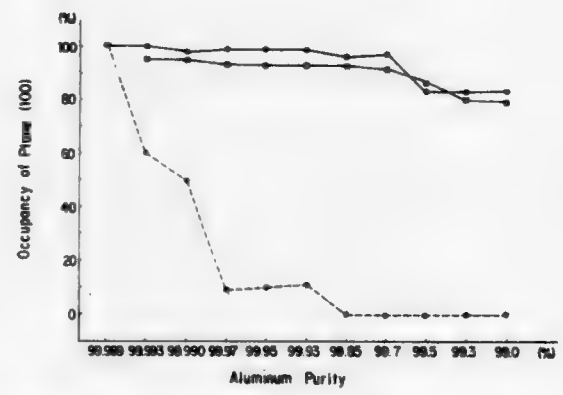
Masashi Mehada, Matsubara; Shozo Yoshimura, Osaka; Kenshiro Yamaguchi, Nara, and Osamu Iwao, Ashiya, all of Japan, assignors to Toyo Aluminium Kabushiki Kaisha, Osaka, Japan

Filed Sep. 30, 1983, Ser. No. 537,562

Claims priority, application Japan, Oct. 5, 1982, 57-174959; Mar. 15, 1983, 58-43811

Int. Cl.³ C22F *1/04*

U.S. Cl. 428—607 **14 Claims**



1. A composite aluminum foil for use as an electrode in an electrolyte capacitor, having an aluminum core layer of purity greater than 99.995% clad on each side with an aluminum outer layer of purity 99.0 to 99.99%, which has a rich proportion of a cubic texture.

4,510,208

DUPLEX METAL ALLOY/POLYMER COMPOSITIONS

Virgil B. Kurfman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 1, 1983, Ser. No. 510,029

Int. Cl.³ B32B *5/00, 15/08;* C23C *13/02*

U.S. Cl. 428—624 **16 Claims**

1. A duplex metal/organic polymer multilayer composite structure, the structure comprising:

(a) at least one normally solid, formable thermoplastic polymer layer, said polymer layer having a forming temperature in degrees Kelvin, a first planar surface and a second planar surface, the first and second planar surfaces being generally parallel to each other;

(b) a first normally solid metal layer, the first metal layer being intimately adhered to at least one planar surface of the polymer layer, said first metal layer being formed from an alloy of two or more metals, said first metal layer having a thickness within the range of from 0.01 micrometers to 0.5 micrometers, the alloy melting at a temperature, or over a range of temperatures, that is within a temperature range of from about 85 to about 150 percent of the forming temperature of the thermoplastic polymer layer, said temperatures being in degrees Kelvin, and

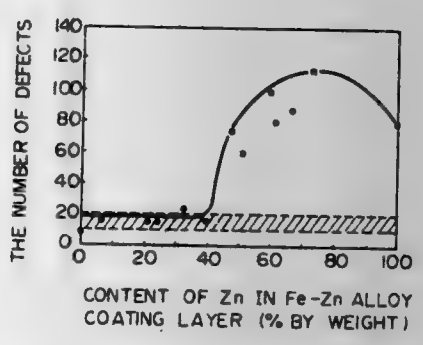
(c) a second normally solid metal layer, the second metal layer being intimately adhered to the first metal layer, said second metal layer being formed from a metal or an alloy of two or more metals that melts at a temperature, or over a range of temperatures, which is lower than that at which, or over which, melting of the metal alloy of the first metal layer occurs, said temperatures being in degrees Kelvin.

4,510,209

TWO LAYER-COATED STEEL MATERIALS AND PROCESS FOR PRODUCING THE SAME

Takashi Hada; Tatsuya Kanamaru, both of Tokai, and Yutaka Ogawa, Nagoya, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,974
Claims priority, application Japan, Sep. 12, 1980, 55-126013
Int. Cl.[3] B32B *15/01*
U.S. Cl. 428—659 6 Claims



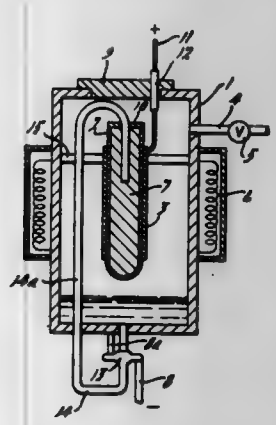
1. A two layer-coated steel material especially suitable for the cationic electrodeposition of a lacquer coating thereon which lacquer coating has few surface defects and excellent corrosion-resistant properties, said two-layer steel material comprising a steel substrate and a two layer-coating composed of (1) a base coating layer formed on a surface of said steel substrate, which base coating layer is zinc or a zinc-based alloy, said base coating capable of protecting the steel substrate from corrosion and (2) a surface coating layer formed on said base coating layer, which surface coating layer is an iron-zinc alloy having an effective amount of zinc up to 40% by weight sufficient to reduce the surface defects and enhance the corrosion resistance of said two layer coated material.

4,510,210

INTERNAL-INTEGRAL SODIUM RETURN LINE FOR SODIUM HEAT ENGINE

Thomas K. Hunt, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 25, 1984, Ser. No. 614,421
Int. Cl.[3] H01M *6/36*
U.S. Cl. 429—11 6 Claims



1. In a thermoelectric generator adapted to convert heat energy from a heat source to electrical energy and which comprises:

(1) means for enclosing a first reaction zone;

(2) means for enclosing a second reaction zone;

(3) a reaction zone separator which:

(a) separates and substantially completes enclosure of said first reaction zone and said second reaction zone, and

(b) comprises a cationically conductive, solid electrolyte that is essentially impermeable to elemental alkali metal and compounds thereof and ionically conductive with respect to cations of said alkali metals;

(4) elemental alkali metal within said first reaction zone and in fluid communication with said solid electrolyte;

(5) an electrode within said second reaction zone in electrical contact with said solid electrolyte and sufficiently permeable to permit alkali metal to pass therethrough;

(6) means for conducting electron flow between the elemental alkali metal within the first reaction zone and the electrode;

(7) means for maintaining a temperature in said first reaction zone at least 100° C. in excess of the lowest temperature in said second reaction zone; and

(8) means for returning condensed elemental alkali metal from said second reaction zone to said first reaction zone, which means comprise a return line for said condensed alkali metal and a means for pumping said condensed alkali metal through said return line;

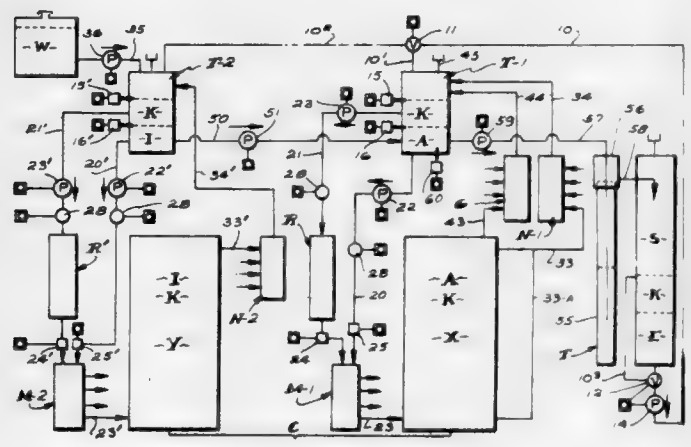
the improvement comprising that at least a portion of said return line is located within said second reaction zone, so that said portion of said return line receives sufficient heat from the heat source during operation of said generator to maintain said alkali metal within said portion of said return line at a temperature above the melting point of said alkali metal.

4,510,211

FUEL CELL ELECTROLYTE SUPPLY SYSTEM AND APPARATUS

Ralph C. Struthers, 39503 Calle El Fuente, Saugus, Calif. 91350

Filed Jun. 17, 1983, Ser. No. 505,305
Int. Cl.[3] H01M *8/24*
U.S. Cl. 429—18 14 Claims



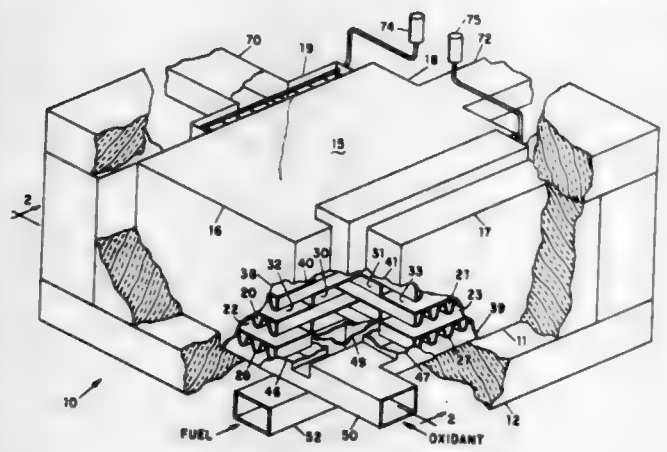
1. A fuel cell electrolyte control system and apparatus for a plurality of related fuel cells, each having an anode section filled with an aqueous anolyte solution and in which an anode electrode is immersed, an anolyte tank holding a supply of anolyte for the plurality of cells and a supply of hydrophobic liquid dielectric having a specific gravity which is less than the specific gravity of the anolyte, a liquid mixing supply manifold of dielectric material with anolyte and liquid dielectric inlets and an outlet for each cell, liquid delivery means moving anolyte and liquid dielectric from the anolyte tank to the anolyte and liquid dielectric inlets of said manifold, elongate tubular conductors of dielectric material connecting each outlet with a related cell and conducting commingled anolyte and liquid dielectric from the manifold to the cells; and liquid return means of dielectric material connected between and conducting the anolyte and liquid dielectric from the cells to the anolyte tank.

4,510,212

SOLID OXIDE FUEL CELL HAVING COMPOUND CROSS FLOW GAS PATTERNS

Anthony V. Fraioli, Hawthorn Woods, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 12, 1983, Ser. No. 541,176
Int. Cl.³ H01M *8/10*
U.S. Cl. 429—30 **20 Claims**



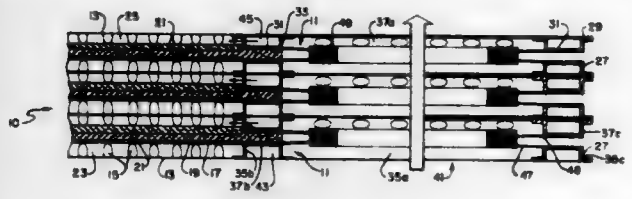
1. A fuel cell, comprising the combination of a core having a plurality of electrolyte and interconnect walls arranged to define a plurality of flow passageways, each electrolyte wall having cathode and anode materials sandwiching an electrolyte material, each interconnect wall having cathode and anode materials sandwiching an inert support material and many spaced small plugs of interconnect material extended therethrough which electrically connect the cathode and anode materials together, the walls being arranged whereby only anode material defines one set of the passageways suited for the fuel and whereby only cathode material defines another set of passageways suited for the oxidant, each interconnect wall being wavy and extended between adjacent pairs of generally parallel electrolyte walls and being proximate one another along spaced generally parallel line-like contact areas operable to define one tier of generally parallel alternately adjacent flow passageways for the fuel and oxidant gases, and alternate tiers of the passageways being arranged to have the passageways disposed transverse to one another, whereby the interconnect walls of adjacent tiers connect to the opposite sides of the common electrolyte wall therebetween only at spaced point-like contact areas where the previously mentioned line-like contact areas cross one another.

4,510,213

FUEL CELL STACK WITH INTERNAL MANIFOLDS FOR REACTANT GASES

Arthur W. Schnacke, Schenectady, N.Y., assignor to The Unites States of America as represented by the Department of Energy, Washington, D.C.

Filed Oct. 12, 1983, Ser. No. 541,185
Int. Cl.³ H01M *2/08*
U.S. Cl. 429—36 **13 Claims**



1. Sealing means for preventing cross leakage of reactant gases between electrodes of opposite polarity in an electrolytic cell, said cell includes, in an axially aligned stack of components, first and second electrodes of opposite polarity, a porous medium for electrolyte separating said electrodes, a separator sheet in electrical communication with at least one electrode for the separation of an adjacent cell in a stack of cells, and first and second manifold passages for providing first and second reactant fluids to said first and second electrodes respectively, said sealing means comprising:

first and second transition frames in said stack of components supporting marginal surfaces of said porous electrolyte medium beyond the electrode edges and extending outwardly beyond said medium edges to said manifold passages, said transition frames including base walls generally parallel to major surfaces in said stack of components and perimetric side walls extending axially from the base walls to circumscribe said manifold passages,

sealing rings disposed between said first and second transition frames outwardly from said porous electrolyte medium and generally coaxially with said manifold passages, and

first and second extension lips bonded at proximal portions thereof to base walls of said transition frames at the marginal surfaces of said electrolyte medium and extending outwardly beyond said medium edges to sealingly fasten at distal portions thereof to said sealing rings whereby cross leakage of said first and second reactant fluids in minimized.

13. A fuel cell stack comprising a plurality of fuel cells arranged in a stack with major surfaces facing adjacent cells and a plurality of electrically conductive separator sheets disposed at least one each between adjacent cells, said sheets having projective means at major surfaces extending into electrical contact with adjacent electrodes to provide distribution space for reactant gases, said sheets further including outwardly extending margins at opposite sides of the stack beyond the fuel cell edges, said separator sheet margins provided with axial arrays of aligned openings circumscribing manifold passages for reactant gas,

each of said fuel cells including first and second electrodes of opposite polarity separated by a porous tile for containing electrolyte, said tile having marginal extentions outwardly along major surfaces beyond the edges of the electrodes, said electrodes and tile are arranged in a stack with major surfaces facing, each cell further including extension lips from the marginal extension of the tile surfaces and a sealing ring engaging said lips at the perimeter of said manifold passages, said sealing ring comprising in combination a tapered shoe and a correspondingly tapered wedge for sealingly connecting said extension lips at said manifold passages; and

first and second transition frames sealingly engaging and supporting the marginal extensions of said porous electrolyte tile, said transition frames including axial side walls extending to said separator sheet defining a plenum for gas distribution into said first and second electrodes respectively, said side walls including perimetric side walls circumscribing and defining said manifold passages in axial alignment with said arrays of opening in said separator sheets and internal side walls with apertures communicating with said gas space between electrodes and separator sheets, said perimetric side walls including apertures in communication with said manifold passages, whereby gas flow is permitted from the manifold passage to the gas distribution plenum to the gas space between electrodes and separator sheets.

4,510,214

ELECTRODE WITH ELECTRON TRANSFER CATALYST

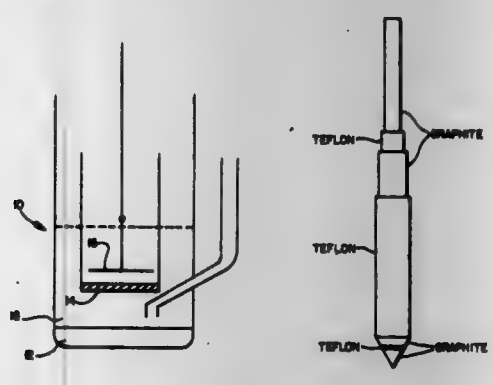
Dennis N. Crouse, Melrose; James C. Reynolds, Waltham, and Fraser M. Walsh, Arlington, all of Mass., assignors to Tracer Technologies, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 193,818, Oct. 3, 1980, abandoned, which is a continuation of Ser. No. 060,929, Jul. 16, 1979, abandoned. This application Aug. 16, 1983, Ser. No. 523,419

Int. Cl.[3] H01M *4/96*; B01J *31/12, 31/22*; C25B *11/12*

U.S. Cl. 429—43

3 Claims



1. In an electrochemical cell, the improvement comprising an electrode comprising an electroconductive carbon substrate, a ligand covalently bonded to said substrate, said ligand being selected from the group consisting of haloacyl and halomethyl, and an electron-transfer catalyst linked to said substrate by covalent bonding to said ligand, said electron-transfer catalyst serving to enhance electron transfer between said substrate and a molecule to be acted upon.

2. The electrode of claim 1 wherein said electron-transfer catalyst is a redox catalyst.

3. The electrode of claim 1 wherein said ligand is a bromoacyl group or a chloromethyl group.

4,510,215

CASING FOR A BATTERY OF CYLINDRICAL ELECTRIC CELLS

Michel Adam, Gournay, France, assignor to SAFT, Romainville, France

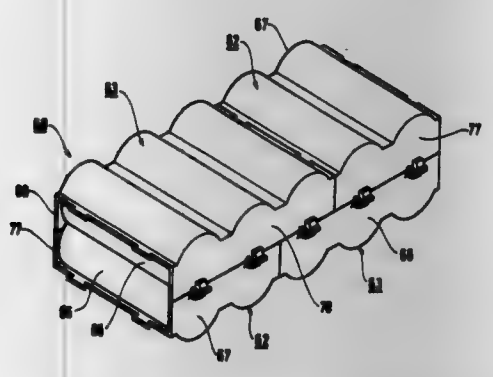
Filed Dec. 10, 1982, Ser. No. 448,628

Claims priority, application France, Jan. 14, 1982, 82 00528

Int. Cl.[3] H07M *2/10*

U.S. Cl. 429—99

14 Claims



1. A casing for a battery of cylindrical electric cells lying parallel to one another, wherein the casing comprises interconnected first and second insulating half casings with each half casing comprising at least one module having n and one module having n+1 part cylindrical cell-receiving cavities extending parallel to one another between base plates which are orthogonal to the axes of said part cylindrical cavities, the end edges of the cavities being provided with respective first complementary interfitting portions to enable a plurality of modules to be connected end-to-end to increase the number of side-by-side cell-receiving cavities in a half casing, and the base plates being provided with respective second complementary interfitting portions to enable the first and second half casings of any one battery to be assembled with the cavities facing each other.

4,510,216

ELECTROCHEMICAL BATTERY INCLUDING A PRODUCT OF ACTIVATED CARBON FIBER AS AN ELECTRODE

Takashi Nogami, Toyonaka, and Masayoshi Nawa, Wakayama, both of Japan, assignors to Kao Corporation, Tokyo, Japan

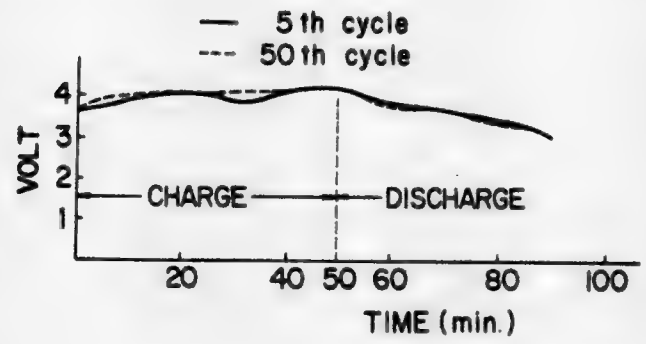
Filed Oct. 12, 1983, Ser. No. 541,024

Claims priority, application Japan, Feb. 8, 1983, 58-18160

Int. Cl.[3] H01M *6/14*

U.S. Cl. 429—101

4 Claims



1. An electrochemical battery including electrodes immersed in a solution which contains an electrolyte dissolved therein and capable of producing an electromotive force by doping or undoping one of the electrodes, characterized in that a metal is used as one electrode and a product of activated carbon fiber having a specific surface area of 1,000 to 2,500 m^2/g is used as the other electrode.

4,510,217

SODIUM-SULFUR STORAGE BATTERY

Hiroshi Kagawa, and Kazumasa Matsui, both of Takatsuki, Japan, assignors to Yuasa Battery Co. Ltd., Osaka, Japan

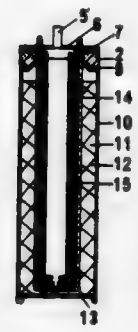
Filed Sep. 8, 1983, Ser. No. 530,240

Claims priority, application Japan, Sep. 17, 1982, 57-162961

Int. Cl.[3] H01M *4/36*

U.S. Cl. 429—104

3 Claims



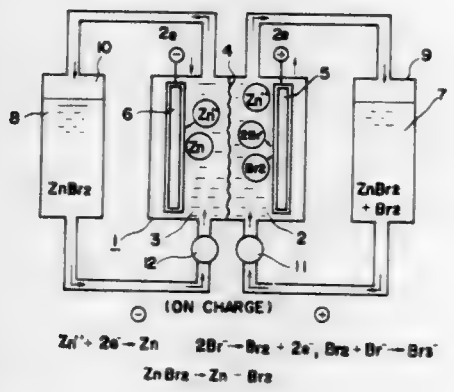
1. In a sodium-sulfur storage battery of the type utilizing an inside of a sodium-ion conductive solid electrolyte tube as a negative chamber and having an alpha-alumina ring jointed with solder glass to an upper open end of said solid electrolyte tube and an aluminum housing provided with a flange at its upper end and having a fine hole at its bottom incorporated in said solid electrolyte tube, the improvement comprising a negative auxiliary cover thermocompressively jointed through said flange of said aluminum housing to an upper surface of said alpha-alumina ring, a lower surface of said flange being jointed to an upper surface of said alpha-alumina ring and an upper surface of said flange being jointed to a lower surface of said negative auxiliary cover, and a negative cover provided with a negative current collector terminal welded to said negative auxiliary cover, wherein said aluminum housing is filled with sodium, except that an upper space between said solid electrolyte tube and said aluminum housing is under

vacuum or filled with sodium and an upper space inside said aluminum housing is filled with an inert gas.

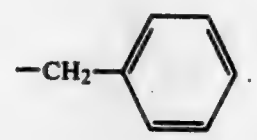
4,510,218
ELECTROLYTE FOR ZINC-BROMINE STORAGE BATTERIES

Yasuo Ando, and Toshihiko Ochiai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Nov. 1, 1983, Ser. No. 547,572
Claims priority, application Japan, Nov. 2, 1982, 57-191875
Int. Cl.³ H01M *4/58*
U.S. Cl. 429—198 **9 Claims**



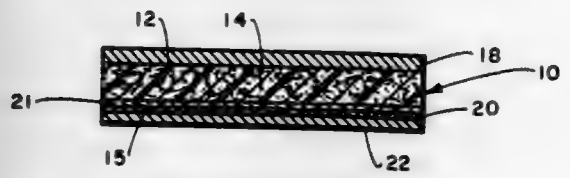
1. A negative electrolyte for an electrolyte circulation-type zinc-bromine storage battery comprising a mixture of an active material consisting of zinc bromide; a bromine complexing agent consisting of at least one of methyl ethyl morpholinium bromide and methyl ethyl pyrrolidinium bromide; a dendrite inhibitor including at least one compound selected from the group consisting of a quaternary ammonium salt of morpholine, pyridine, pyrrolidine and ammonia; and bivalent lead and tin ions, said ammonium salt having at least one ligand selected from the group consisting of $—CH_3$, $—C_4H_9$, $—C_{10}H_{21}$, $—C_{12}H_{25}$ and



4,510,219
BATTERY PLATE CONTAINING FILLER WITH CONDUCTIVE COATING

John J. Rowlette, Monrovia, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Nov. 14, 1983, Ser. No. 550,875
Int. Cl.³ H01M *4/60*
U.S. Cl. 429—212 **17 Claims**



1. A through-conductive plate for a lead-acid battery comprising:

a sheet of matrix resin containing a dispersion of particles containing a coating of conductive tin oxide that is insoluble in sulfuric acid electrolyte, has a high conductivity, and is thermodynamically stable during charge and discharge of said battery.

4,510,220
CELL WITH $PBCL_2$ CATHODE

Mysore L. Gopikanth; Han C. Kuo, both of Burlington, and Carl R. Schlaikjer, Winchester, all of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 30, 1983, Ser. No. 509,678
Int. Cl.³ H01M *4/56, 6/14*
U.S. Cl. 429—225 **12 Claims**

1. A non-aqueous, electrochemical cell comprising an anode comprised of an alkali or alkaline earth metal and an inorganic electrolyte comprised of SO_2 with an electrolyte salt dissolved therein, characterized in that said cell contains an active cathode comprised predominantly of $PbCl_2$ admixed with, from 10–30% by weight of said cathode, a conductive carbon material.

4,510,221
PROCESS FOR MAKING HIGH EFFICIENCY PHASE HOLOGRAMS

Brian A. Gorin, Columbus, and Ping-Pei Ho, Cambridge, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 1, 1983, Ser. No. 519,442
Int. Cl.³ G03H *1/04*; G03C *5/44*
U.S. Cl. 430—1 **4 Claims**

1. A process for the production of a phase hologram comprising the steps of:

exposing silver halide photographic material in the exposure plane of a holographic optical system;

developing the exposed photographic material with a non-tanning developer;

treating the developed photographic material with a stopping agent consisting of a solution of 5–10% by weight of sodium sulfate (Na_2SO_4) and 2–3% by weight of acetic acid (CH_3COOH) having a pH value of from 2.8 to 3.2;

rinsing the developed photographic material with deionized water having a pH value of 7;

bleaching the developed photographic material with a tanning bleach solution having a range of pH values of from 2.2 to 2.7 and which includes 0.2% by weight of ammonium dichromate ($(NH_4)_2Cr_2O_7$) and 0.01–0.1% by weight of Potassium Bromide (KBr) which removes the silver of the metallic silver image areas while tanning the gelatin in the metallic silver image areas;

rinsing the developed photographic material with deionized water having a pH value of 7;

fixing the bleached photographic material with a non-tanning fixing solution containing 7–15% of weight of sodium thiosulfate ($Na_2S_2O_3$) having a pH value of 7 to remove the silver halide from the photographic material;

washing the bleached and fixed photographic material in a 50/50 solution of water and isopropyl alcohol;

dehydrating the bleached and fixed photographic material in a 100% solution of isopropyl alcohol; and

drying the dehydrated material.

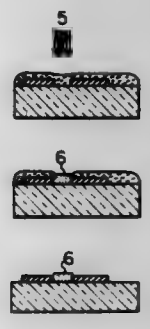
4,510,222
PHOTOMASK WITH CORRECTED WHITE DEFECTS

Masaaki Okunaka, Fujisawa; Katsuro Mizukoshi, Yokohama; Mikio Hongo, Yokohama, and Tateoki Miyauchi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,245
Claims priority, application Japan, May 24, 1982, 57-86604
Int. Cl.³ G03F *9/00*
U.S. Cl. 430—5 **9 Claims**

1. A photomask with corrected white defects which comprises the white defects having been coated with a film comprising a mixture of silver and tantalum oxide to form a light-

shielding film for the white defects which is sufficiently resistant to chemicals such that the photomask can be washed



without dissolution of said film and which exhibits good adhesion to the photomask substrate.

4,510,223

MULTICOLOR ELECTROPHOTOGRAPHIC IMAGING PROCESS

Manfred R. Kuehnle, New London, N.H.; Ferdinand Martinez, Belmont, Mass.; I. V. Runyan, Bedford, Mass., and Carol M. F. Barry, Maynard, Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 464,671, Feb. 7, 1983, abandoned. This application May 27, 1983, Ser. No. 498,825

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—44 **6 Claims**

1. A process of electrophotographic multiple color imaging comprising forming superimposed plural toner images one at a time in sequential order in registry on the photoconductive surface of a uniform microcrystalline wholly inorganic photoconductive coating of an electrophotographic medium to form a composite of superimposed toner images and transferring said of toner images to an image receptor medium to form a superimposed color composite image pattern in registry, the individual toner images being formed successively one at a time from electrically deadenable liquid toner, the images being superimposed on said electrophotographic medium, electrically deadening each color toner image by drying same after formation and before formation of a successive image, exposing each of the dried color toner images and the nonimaged areas of the photoconductive surface to corona originated charged ions subsequent to drying said prior deposited toner image permitting said ions to pass through said electrically deadened dried color toner image or images to thereby apply a uniform overall charge to the photoconductive coating juxtaposed both the dried color toner image-containing areas and the nonimaged areas of the surface of the photoconductive coating, exposing the said charged surfaces to a second color pattern from a source thereof to form a latent charge image of the second color image pattern superimposed on the electrically deadened first toner image, applying a second color electrically deadenable liquid toner corresponding to the second color pattern to the second latent charge image to form a second color toner image superimposed on the first color toner image and repeating the steps of drying, charging, exposing, toning and drying until the desired color composite toner image is formed and transferring the thus produced composite of superimposed toner images to a receptor medium in a single transfer step.

4,510,224

ELECTROPHOTOGRAPHIC PHOTORECEPTORS HAVING AMORPHOUS SILICON PHOTOCONDUCTORS

Toshinori Yamazaki; Hiroyuki Nomori, both of Hachioji; Masatoshi Matsuzaki, Fussa; Tetsuo Shima, and Isao Myokan, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,058

Claims priority, application Japan, May 6, 1982, 57-75658; Jun. 15, 1982, 57-102418

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—57 **22 Claims**

1. A photoreceptor comprising a photoconductive layer having a thickness of at least 2500 Å, said photoconductive layer being composed of at least one compound selected from the group consisting of hydrogenated amorphous silicon and fluorinated amorphous silicon, a surface modifying layer formed on an upper surface of said photoconductive layer and composed of at least one compound selected from the group consisting of hydrogenated amorphous silicon carbide and fluorinated amorphous silicon carbide wherein the thickness "t" of said surface modifying layer is in the range 400 Å$\leqq$t$<$2,000 Å, a charge transport layer formed on a lower surface of said photoconductive layer and composed of at least one compound selected from the group consisting of hydrogenated amorphous silicon carbide and fluorinated amorphous silicon carbide, and an electrically conductive substrate.

4,510,225

ELECTROPHOTOGRAPHIC METHOD FOR PRODUCING AN OPAQUE PRINT

Manfred R. Kuehnle, New London, N.H., and Ferdinand Martinez, Belmont, Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Filed Sep. 24, 1982, Ser. No. 423,021

Int. Cl.³ G03G *13/16, 13/24*

U.S. Cl. 430—126 **24 Claims**



1. A method of forming a print copy of an original image pattern comprising the steps of:

forming a dry toner image of the original image pattern electrophotographically on an electrophotographic medium,

providing an opaque substrate carrying a layer of light-transmissive thermoplastic polymer composition bonded to one surface thereof at an interface,

bringing the polymer layer and the toner image carrying surface into contact engagement,

simultaneously applying heat and pressure to the engaged surfaces, the heating being sufficient to bring the polymer layer to its softening temperature, thereby embedding and transparentizing the toner particles which define the toner image from the toner image carrier within the polymer layer entirely below the surface of said polymer layer and in the absence of relative lateral movement of said toner particles, maintaining the image density, resolution and integrity of the transferred image without loss to form a reflective print of the original image, and thereafter separating the engaged surfaces to recover said reflective print copy, whereby in viewing the reflective print, light passing through the light-transmissive polymer layer and the superimposed toner particles to the interface is reflected diffusingly back through the toner particles increasing the

intensity and furnishing brilliance and depth giving the viewer a pseudo three-dimensional image.

4,510,226

PHOTOSENSITIVE COMPOSITION AND PATTERN FORMING PROCESS USING SAME

Hajime Morishita; Motoo Akagi; Saburo Nonogaki, all of Tokyo; Nobuaki Hayashi, Saitama, and Shoichi Uchino, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,191

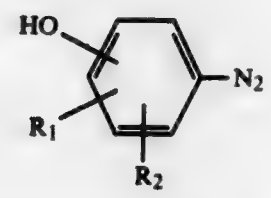
Claims priority, application Japan, Aug. 11, 1982, 57-138534

Int. Cl.³ G03C *1/58*

U.S. Cl. 430—144 **11 Claims**

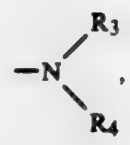
1. A process for forming a pattern of a powder coating layer which comprises:

a step of coating a substrate with a photosensitive composition comprising (a) at least one salt of a diazonium compound of the formula:

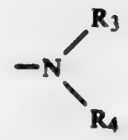


(1)

wherein R_1 and R_2 are independently —H, —CH_3, —OCH_3 or



but R_1 and R_2 cannot be



at the same time; and R_3 and R_4 are independently a straight-chain lower alkyl group, and (b) at least one salt of an aromatic diazonium compound having no —OH group directly bonding to a benzene ring, to form a thin coating layer on said substrate, the amount of the diazonium compound salt (a) in said photosensitive composition being 1 to 60% by weight based on the total weight of the diazonium compound salts (a) and (b);

a step of imagewisely exposing said thin coating layer to light to make the exposed portions of the film sticky; and

a step of contacting phosphor powder particles with the exposed thin coating layer to adhere the powder particles to the exposed portions.

4,510,227

LIGHT-SENSITIVE AQUEOUS DEVELOPABLE COPYING MATERIAL AND PRODUCT BY COATING PROCESS THEREOF UTILIZING POLYSILOXANE AND ALKYLENE OXIDE COPOLYMER AS COATING AID

Dieter Mohr, and Kurt Riess, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 273,004, Jun. 12, 1981, abandoned. This application Aug. 15, 1983, Ser. No. 523,358

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022473

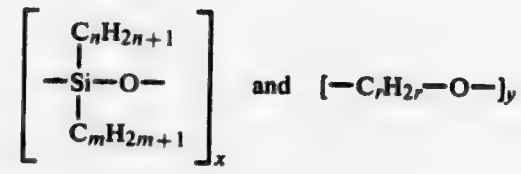
Int. Cl.³ G03C *1/60, 1/495, 1/68;* G03G *5/00*

U.S. Cl. 430—175 **10 Claims**

1. A light-sensitive copying material, comprising:

a support sheet; and

a dry light-sensitive layer which undergoes a change in solubility in an aqueous developer solution upon exposure to actinic light so that, when said layer is selectively exposed to a light image, selected areas of said layer can be dissolved in an aqueous developer solution and the remaining areas will resist dissolution in said aqueous developer solution to form a developed image corresponding to said light image, said light-sensitive layer comprising in admixture at least one light-sensitive component and from about 0.01 to about 10 percent by weight of a surface-active polysiloxane copolymer consisting essentially of dialkylsiloxane units and oxyalkylene units corresponding to the formulae



and $[-C_rH_{2r}-O-]_y$

in which

m and n are integers ranging from 1 to 4,

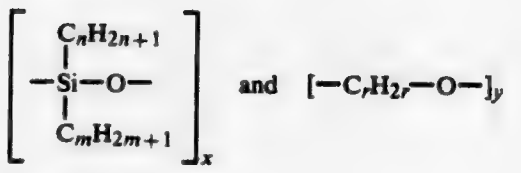
r is an integer ranging from 2 to 5,

x is an integer ranging from about 10 to 100 and

y is an integer ranging from about 25 to 350, wherein said aqueous developer solution is comprised predominantly by weight of water.

9. A light-sensitive copying material produced by a process comprising the steps of

(1) coating a support sheet with a solution comprising in admixture of at least one light-sensitive component and from about 0.005 to about 1 percent of a surfactant dissolved in a single organic solvent to form a thin layer of the solution on the support sheet, said surfactant comprising a surface-active polysiloxane copolymer consisting essentially of dialkylsiloxane units and oxyalkylene units corresponding to the formulae



and $[-C_rH_{2r}-O-]_y$

in which

m and n are integers ranging from 1 to 4,

r is an integer ranging from 2 to 5,

x is an integer ranging from about 10 to 100 and

y is an integer ranging from about 25 to 350; and

(2) drying the thin layer to remove the solvent therefrom to produce a cloud-free, optically homogeneous light-sensitive layer of uniform coloration and layer thickness on the support sheet, wherein said light-sensitive layer undergoes a change in solubility in an aqueous developer solution upon exposure to actinic light so that, when said layer is selectively exposed to a light image, selected areas of said layer can be dissolved in an aqueous developer solution and the remaining areas will resist dissolution in said aqueous developer solution to form a developed image corresponding to said light image, and wherein said aqueous developer solution is comprised predominantly by weight of water.

4,510,228

LITHOGRAPHIC PRINTING PLATE WITH GELATIN LAYERS HAVING PH VALUES BELOW ISOELECTRIC POINT

Yasuo Tsubai; Yoshikazu Takaya, and Eiji Kanada, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,837

Claims priority, application Japan, Apr. 22, 1982, 57-67763; May 13, 1982, 57-80784

Int. Cl.³ G03C *5/54, 1/30, 7/06*

U.S. Cl. 430—204 **13 Claims**

1. A photosensitive element for the production of lithographic printing plates comprising a support, a physical development nuclei layer, and at least one gelatin-containing layer including a hardener and a silver halide emulsion layer disposed under said nuclei layer, which is adapted to the silver complex diffusion transfer process to utilize the transferred silver image on said nuclei layer as ink-receptive areas, all of the gelatin-containing layers having a pH value below the isoelectric point of the gelatin used in each layer.

12. A method for making a lithographic printing plate, which comprises imagewise exposing the photosensitive element according to claim 1 and developing the exposed element with a silver complex diffusion transfer developer.

4,510,229

LITHOGRAPHIC PHOTOSENSITIVE MATERIAL

Yutaka Oka; Naomi Saeki, and Yoshiharu Fuseya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 392,911, Jun. 28, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 591,227

Claims priority, application Japan, Jun. 26, 1981, 56-99194

Int. Cl.³ G03C *1/06, 5/24, 1/02*

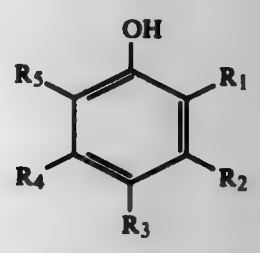
U.S. Cl. 430—265 **19 Claims**

1. A lithographic photosensitive material to provide high contrast half-tone dot or line silver images as final images for use in the graphic arts comprising:

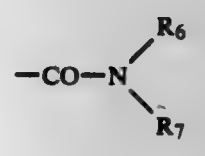
a support base;

a silver halide emulsion layer containing silver chlorobromide or silver chloroiodobromide, each containing up to 50 mol% silver bromide, and developed by a lithographic developer comprising a o- or p-dihydroxybenzene developing agent; and

a compound represented by the formula by the general formula (1):



wherein R_1 to R_5 may be the same or different, and each represents hydrogen, a halogen atom, an alkyl group, an alkoxy group, an aryl group,



wherein R_6 and R_7 each represents hydrogen or an alkyl group, or they may combine with each other to form a 5- or 6-membered nitrogen containing saturated hetero ring, —NH—CO—R_8 or —$NHSO_2$—R_9 wherein R_8 and R_9 each represents an alkyl group, an aryl group or an aralkyl group, or R_3 and R_4, or R_4 and R_5 may combine with each other to form a benzene ring and that, it is necessary to said compound that one and only one of substituents R_1, R_3 and R_5 represents —$NHSO_2$—R_9, or the benzene ring formed by combining R_3 with R_4, or by combining R_4 with R_5 is substituted with at least one —$NHSO_2$—R_9 group.

4,510,230

PHOTOPOLYMERIZABLE COMPOSITIONS AND ELEMENTS CONTAINING ACID TO REDUCE SCUM AND STAIN FORMATION

Richard A. Coveleskie, Sayre, Pa., and Shung-Yan L. Lee, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 367,763, Apr. 12, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,323

Int. Cl.³ G03C *1/94, 1/68*

U.S. Cl. 430—273 **10 Claims**

1. An element comprising a copper substrate contacting a film of an aqueous processable photopolymerizable resist composition comprising a photopolymerizable ethylenically unsaturated monomer, a photoinitiator or photoinitiator system, a binder with an acid number greater than 100, and an acid having a molecular weight not greater than 300 with a solubility of at least 0.01 grams acid in 100 grams of water at 20° C. and a disassociating constant in the range from 1×10^{-5} to 5×10^{-2}, said acid present in an amount sufficient to inhibit stain or scum formation of said composition on a copper surface whereby the film has the property that after areawise exposure to a scanning mercury arc and development with 0.04N NaOH at 105° F., it is adherent in areas exposed to the mercury arc and nonadherent in areas not exposed to the mercury arc.

9. The element of claim 1 with a cover sheet in contact with the film.

10. The element of claim 9 wherein the cover sheet comprises polyethylene or polyethylene terephthalate.

4,510,231

METHOD FOR MANUFACTURING A MAGNETIC BUBBLE MEMORY

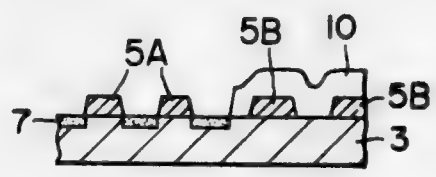
Masatoshi Takeshita; Naoki Kodama, both of Hachioji; Ryo Suzuki, Kodaira; Teruaki Takeuchi, Kokubunji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,229

Claims priority, application Japan, Jan. 29, 1982, 57-11636

Int. Cl.³ B05D *5/00;* H01F *10/06*

U.S. Cl. 430—312 **21 Claims**



1. A method for manufacturing a magnetic bubble memory comprising the steps of:

(1) depositing a conducting film on a magnetic film capable of holding a magnetic bubble, said conducting film being suitable as a mask against ions to be implanted on said magnetic film;

(2) forming a photoresist pattern of a desired pattern on said conducting film;

(3) removing the exposed area of said conducting film form a pattern of conducting film and expose a patterned area of magnetic film;

(4) removing said photoresist pattern;

(5) covering a portin of the exposed patterned area of magnetic film and a portion of said pattern of conducting film adjacent said patterned area of magnetic film with a mask

film suitable against ions to be implanted in said magnetic film; and

(6) implanting ions into the uncovered patterned area of said magnetic film to form a magnetic bubble propagation pattern while using the uncovered conducting film pattern as a mask.

4,510,232

OPTICAL DATA STORAGE ELEMENT

Arthur M. Gerber, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 454,069, Dec. 28, 1982, abandoned. This application Feb. 15, 1984, Ser. No. 580,430

Int. Cl.³ G03C *5/04*

U.S. Cl. 430—494 **4 Claims**

1. A method for optically recording digitally encoded information which comprises exposing an element to focussed radiation, said element comprising an array of discrete regular geometric spaced depressions in a surface, each of said depressions carrying a mixture of zinc and sulfur, said mixture capable of transformation in response to a level of radiation adapted to effect said transformation, wherein said transformation is optically detectable substantially immediately after exposure to said radiation.

4,510,233

ANTISTATIC AGENT CONTAINING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Shigeki Yokoyama; Akira Hibino; Yukio Maekawa, and Hiroshi Kawasaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 27, 1983, Ser. No. 499,066

Claims priority, application Japan, May 28, 1982, 57-90909

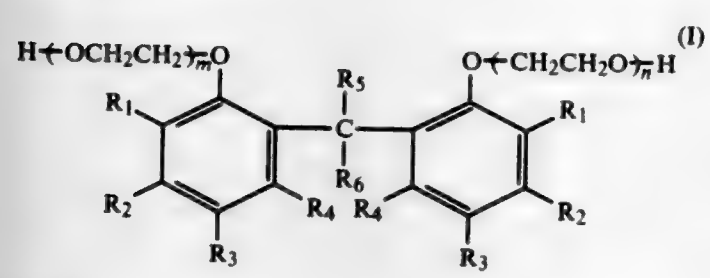
Int. Cl.³ G03C *1/84*

U.S. Cl. 430—527 **13 Claims**

1. A silver halide photographic light-sensitive material, comprising:

a support base having thereon a silver halide emulsion layer; and

an antistatic layer which contains a nonionic surface active agent in an amount of 5–500 mg per m^2 having two polyoxyethylene chains in a molecule, the agent being represented by the formula (I):



(I)

wherein R_1 and R_3 each represents a substituted or non-substituted alkyl, aryl, alkoxy, aryloxy, acyl, amido, sulfonamido, carbamoyl or sulfamoyl group, or a halogen atom, R_2 and R_4 each represents a hydrogen atom, a substituted or nonsubstituted alkyl, aryl, alkoxy, aryloxy, acyl, amido, sulfonamido, carbamoyl or sulfamoyl group, or a halogen atom, R_5 and R_6 each represents a hydrogen atom, or a substituted or nonsubstituted alkyl or aryl group, wherein the sum total of carbon atoms in R_5 and R_6 is 2 or more, or R_5 and R_6 may form a ring by linking with each other, and m and n independently represent an average degree of polymerization of ethylene oxide which is 2 to 40.

4,510,234

SILVER HALIDE PHOTOGRAPHIC EMULSION

Syoji Matsuzaka, Hino; Makoto Kajiwara; Masanobu Miyoshi, both of Odawara, and Kiyoshi Yamashita, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

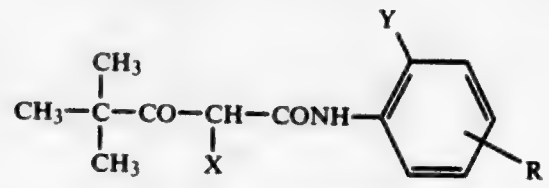
Filed Sep. 7, 1983, Ser. No. 530,024

Claims priority, application Japan, Sep. 10, 1982, 57/158463

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—557 **14 Claims**

1. A silver halide photographic emulsion, which comprises (i) a mono-dispersed silver halide emulsion comprising 3 to 50 mole % of silver chloride, 1 mole % or less of silver iodide and 50 to 97 mole % of silver bromide having a grain size distribution of 0.15 or less in terms of the coefficient of variation $S/\bar{r}$ (where S is standard deviation and $\bar{r}$ is mean grain diameter), and (ii) a coupler represented by the following formula:



wherein X represents an organic group which is bonded through an oxygen atom, a nitrogen atom or a sulfur atom to the coupler and is eliminable during the coupling reaction with an oxidized product of a color developing agent; Y represents a halogen atom, an alkoxy group, an aryloxy group, a diacylamino group or an alkyl group; R represents a trifluoromethyl group, an acylamino group, a sulfonamide group, a ureido group, an alkyl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group or an imide group, which is bonded to the anilide group at the 4- or 5-position.

4,510,235

SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Toshinao Ukai; Masaki Okazaki; Haruo Takei; Ichizo Toya, and Sadanobu Syuto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

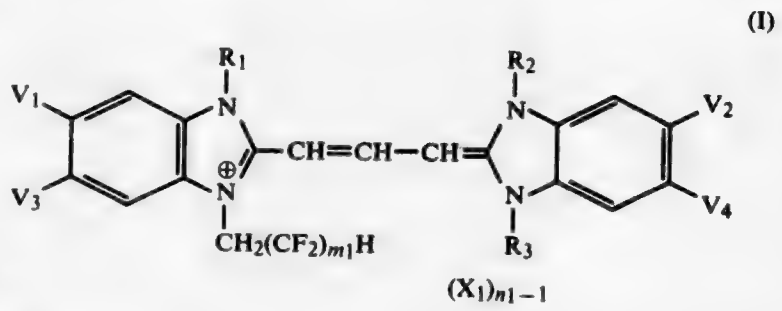
Filed Apr. 26, 1984, Ser. No. 604,184

Claims priority, application Japan, Apr. 28, 1983, 58-75401; Nov. 28, 1983, 58-223874

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—574 **21 Claims**

1. A silver halide photographic emulsion containing in combination at least one dye represented by the following formulae (I) and (II) and at least one dye represented by the following formulae (III) and (IV):

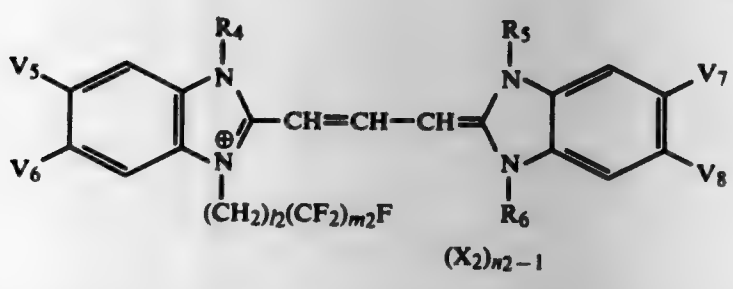


(I)

wherein m_1 is an integer having a value of 1 to 8, R_1, R_2 and R_3, which may be identical with or different from one another, independently represent a $-CH_2(CF_2)_{l_1}H$ group or a substituted or unsubstituted alkyl group, providing that at least one of R_1, R_2 and R_3 possesses an acid substituent (such as, for example, a sulfonic acid group or carboxylic acid group), l_1, which may be equal to or not equal to m_1, is an integer having a value of 1 to 8, V_1, V_2, V_3 and V_4, which may be identical with or different from one another, independently represent a hydrogen atom, a halogen atom, a substituted alkyl group, an

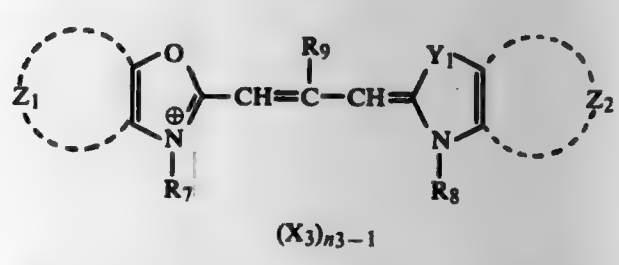
unsubstituted alkyl group, an alkoxy group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, a cyano group, or a trifluoromethyl group, X_1 represents an anion, and n_1 is 1 or 2, providing that n_1 where the dye forms an intramolecular salt;

(II)



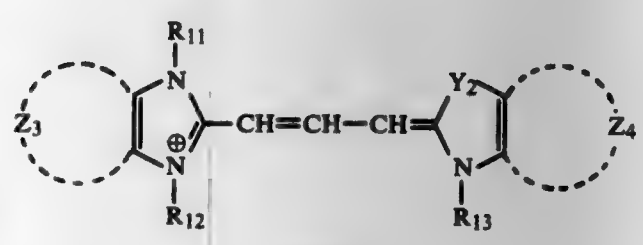
wherein l_2 is 0 or an integer having a value of 1 to 8, m_2 is 0 or an integer having a value of 1 to 8, providing that the total value of l_2 and m_2 is an integer greater than 0, R_4, R_5, and R_6, which may be identical with or different from one another, independently represent a $-(CH_2)_j(CF_2)_kF$ group or a substituted or unsubstituted alkyl group, providing that at least one of R_4, R_5 and R_6 represents an alkyl group containing an acid substituent (such as, for example, a sulfonic acid group or carboxylic acid group), j is 0 or an integer having a value of 1 to 8, k is 0 or an integer having a value of 1 to 8, providing that the total value of j and k is an integer greater than 0, V_5, V_6, V_7 and V_8, which may be identical with or different from one another, independently represent a hydrogen atom, a halogen atom, a substituted alkyl group, an unsubstituted alkyl group, an alkoxy group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, a cyano group or a trifluoromethyl group, X_2 represents an anion, and n_2 is 1 or 2, providing that n_2 is 1 where the dye forms an intramolecular salt;

(III)



wherein Y_1 represents an oxygen atom, a sulfur atom, a selenium atom, or $N—R_{10}$, Z_1 and Z_2, which may be identical with or different from each other, independently represent an atomic group necessary for the formation of an unsubstituted or substituted benzene ring or naphthalene ring, R_7, R_8 and R_{10} independently represent an unsubstituted or substituted alkyl group, providing that at least one of R_7, R_8 and R_{10} possesses an acid substituent, R_9 represents a hydrogen atom, an alkyl group, or an aralkyl group, X_3 represents an anion, and n_3 is 1 or 2, providing than n_3 is 1 where the dye forms an intramolecular salt;

(IV)



wherein Y_2 represents a sulfur atom, a selenium atom, or $N—R_{14}$, Z_3 and Z_4, which may be identical with or different from each other, independently represent an atomic group necessary for the formation of a unsubstituted or substituted benzene ring or naphthalene ring, R_{11}, R_{12}, R_{13} and R_{14} independently represent an unsubstituted or substituted alkyl group, providing that at least one of R_{11}, R_{12}, R_{13} and R_{14} possesses an acid substituent, X_4 represents an anion, and n_4 is 1 or 2, providing that n_4 is 1 where the dye forms an intramolecular salt.

4,510,236

THERMALLY GENERATED TONING AGENT SYSTEM FOR PHOTOTHERMOGRAPHIC IMAGING COMPOSITIONS

Gustav Gutman, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 20, 1983, Ser. No. 563,687
Int. Cl.³ G03C *1/00*
U.S. Cl. 430—619 **15 Claims**

1. A heat-developable light-sensitive article having on a support at least one layer comprising

(a) at least one light-sensitive silver halide or light-sensitive silver-halide forming component;

(b) at least one organic silver salt;

(c) at least one reducing agent for silver ion;

(d) 2-(hydroxymethyl)-1(2H)-phthalazinone as a toning agent precursor, and

(e) in a catalytically effective amount, an aromatic polycarboxylic acid or derivative thereof, an aromatic polycarboxylic anhydride or derivative thereof, or an heterocyclic polycarboxylic acid or derivative thereof as a catalyst for said toning agent precursor.

4,510,237

IN SITU FILM HARDENING WITH ALDEHYDE BISULFITE AND NONHARDENING ALDEHYDE

Reginald A. Booker, New Castle, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 11, 1983, Ser. No. 540,776
Int. Cl.³ G03C *1/30*
U.S. Cl. 430—621 **5 Claims**

1. A process of forming a hardened photographic film in wich a layer comprised of silver halide dispersed in gelatin is coated on a support in contact with another layer and dried, characterized in that an aldehyde hardening agent is formed in situ by reacting an aldehyde bisulfite in one layer and a nonhardening aldehyde in an adjacent layer.

4,510,238

PHOTOGRAPHIC MATERIAL AND A PROCESS FOR ITS MANUFACTURE

Samuel B. Kingston, Doddinghurst, and Graham Evans, Galleywood, both of England, assignors to Ciba Geigy AG, Basel, Switzerland and Ciba Geigy AG, Basle, Switzerland

Filed Mar. 2, 1983, Ser. No. 471,556
Claims priority, application United Kingdom, Mar. 11, 1982, 8207063
Int. Cl.³ G03C *1/72*
U.S. Cl. 430—627 **15 Claims**

1. Photographic material which comprises on a support at least one aqueous gelatino silver halide emulsion layer, the binder of which essentially consists of gelatin and of from 20 to 60% by weight of the binder material of the final dried silver halide emulsion layer of a polymer latex containing particles of a particle size of less than 0.05 microns, the polymer latex being obtained by emulsion polymerising of

(a) a monomer selected from the group consisting of an alkyl acrylate or an alkyl methacrylate or

(b) a monomer mixture essentially consisting of both an alkyl acrylate and an alkyl methacrylate or

(c) a monomer mixture essentially consisting of an alkyl acrylate and/or an alkyl methacrylate together with up to 5% by weight of an ethylenically unsaturated copolymerisable acid and/or up to 30% by weight of other ethylenically unsaturated comonomers

in the presence of at least 12% by weight of the monomers present of an anionic surfactant selected from the group con-

sisting of a sulphosuccinate or a sulphated or sulphonated polyethylene oxide compound at a temperature of from 15° to 90° C. by use of a redox initiator system which is present to the extent of from 0.1 to 3% by weight of the monomers present.

4,510,239

DOUBLE ANTIBODY IMMUNOASSAYS OF ENZYMES SUCH AS PROSTATIC ACID PHOSPHATASE

Steven P. Miller, Los Altos, and Stella S. M. Quan, Belmont, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 9, 1982, Ser. No. 406,644
Int. Cl.³ G01N *33/54*
U.S. Cl. 435—7 **38 Claims**

1. A method for assaying an enzyme in a sample comprising:
(a) contacting said sample with a first antibody (Ab_1) against said enzyme, wherein the amount of Ab_1 employed is at least sufficient to bind substantially all of said enzyme in said sample;
(b) incubating a first medium containing said Ab_1 and said enzyme for a time at least sufficient to enable said Ab_1 to bind to substantially all of said enzyme to form Ab_1~enzyme complexes;
(c) contacting said Ab_1~enzyme complex with a second antibody (Ab_2) capable of recognizing Ab_1, wherein the amount of Ab_2 employed is at least sufficient to bind substantially all of said Ab_1~enzyme complexes and form a precipitate with substantially all of said complexes;
(d) incubating a second medium containing said Ab_2 and said Ab_1~enzyme complexes for a time at least sufficient to enable (i) said Ab_2 to bind to substantially all of said Ab_1~enzyme complexes to form Ab_2~Ab_1~enzyme complexes and (ii) substantially all of said Ab_1~Ab_2~enzyme complexes to precipitate out of said second medium;
(e) separating said precipitated Ab_2-Ab_1-enzyme complexes from said second medium;
(f) contacting said separated, precipitated Ab_2~Ab_1~enzyme complexes with a solution (i) having a pH at least sufficient to solubilize substantially all of said Ab_2~Ab_1~enzyme complexes and (ii) comprising γ-globulin in an amount at least sufficient to prevent substantially any precipitation of Ab_2~Ab_1~enzyme complexes at a pH suitable for formation of said precipitate, thereby forming a resulting solution;
(g) contacting a sufficient amount of said resulting solution with a reaction medium, to thereby form a reaction environment containing various constituents, wherein said reaction medium is capable of being used to assay said enzyme; and
(h) assaying said enzyme.

4,510,240

HOMOGENEOUS ENZYME IMMUNOASSAY WITH HEATING STEP AFTER INCUBATION, THERESIA

Jürgen Schrenk, Wilzhofen, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannhein-Waldhof, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,278
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1981, 3134361
Int. Cl.³ G01N *33/54*
U.S. Cl. 435—7 **6 Claims**

1. In a method for the determination of an antigen or hapten in a homogeneous aqueous phase by incubation of a test sample in the presence of antigen- or hapten-specific antibodies and of a defined amount of enzyme-marked antigen or hapten in a reaction solution and measurement of the activity of the marker enzyme, the improvement consisting of heating the reaction solution, after incubation, at temperature conditions and for a time sufficient to inactivate the marker enzyme by at least 50% in the absence of the antigen- or hapten-specific antibody and measuring the enzyme activity thereafter.

4,510,241

PEPTIDE-TYPE SUBSTRATES USEFUL IN THE QUANTITATIVE DETERMINATION OF ENDOTOXIN

Donald F. Mills, University City, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 298,994, Sep. 3, 1981, Pat. No. 4,406,832. This application Jun. 24, 1983, Ser. No. 507,596
Int. Cl.³ C12Q *1/38, 1/00, 1/04, 1/06*
U.S. Cl. 435—23 **9 Claims**

1. A method for the determination of endotoxin in a sample comprising contacting the sample with a proclotting enzyme from Limulus amebocyte lysate and a chromogenic or fluorogenic compound of the formula:

$$R_1—A_1—A_2—A_3—A_4—B—R_2$$

wherein R_1 represents hydrogen, a blocking aromatic hydrocarbon or acyl; A_1 represents an L or D-amino acid selected from Ileu, Val or Leu; A_2 represents Glu or Asp; A_3 represents Ala or Cyst; A_4 represents Arg; B represents a linkage group selected form ester and amide linkage groups; and R_2 represents a chromogenic or fluorogenic group which is covalently attached to the C-carboxyl terminal of arginine through the B linkage group, the fluorogenic or chromogenic moiety being capable of being enzymatically cleaved from the remainder of the peptide-type compound in the presence of endotoxin and pro-clotting enzyme to form at least part of a marker compound, and detecting the presence or absence of the marker compound in the sample.

4,510,242

PROCESS FOR PRODUCING FUEL GRADE ALCOHOL BY SOLVENT EXTRACTION AND CARRIER GAS STRIPPING

Daniel W. Tedder, Marietta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation of Ser. No. 283,739, Jul. 15, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 544,813
Int. Cl.³ C12P *7/04, 7/06;* C07C *29/86;* B01D *1/14*
U.S. Cl. 435—157 **11 Claims**

1. A method of preparing alcohol, comprising:
fermenting a fermentable biomass feedstock in a fermentation unit at a temperature of between about 25° C. and about 95° C., thereby forming an aqueous fermentation liquor containing alcohol;
extracting said aqueous fermentation liquor with an organic hydrophobic solvent containing an extractant for said alcohol at a temperature of between about 25° C. and about 95° C., thereby forming an alcohol-organic solvent extract phase and an aqueous raffinate, said extractant being dissolved in said organic solvent and being selected from the group consisting of isodecanol, 2-ethylhexanol, 2-methyl-2-pentanol, 4-heptanol, 3-ethyl-3-pentanol, symmetrical and unsymmetrical alkyl phosphate, symmetrical and unsymmetrical aryl phosphate phosphonate, phosphine oxide, sulfoxide, sulfone, amine oxide, quaternary ammonium salt of a sterically hindered carboxylic acid; quaternary phosphonium salt of a sterically hindered carboxylic acid, ether, high boiling alcohol having an alkyl group of at least ten carbon atoms, and mixtures thereof;
removing said alcohol-organic solvent extract phase from said aqueous raffinate;
contacting said alcohol-organic solvent extract phase with a carrier gas thereby separating said alcohol from said alcohol solvent extract phase and forming an alcohol laden carrier gas vapor; and
separating said alcohol from said carrier gas.

4,510,243

ANAEROBIC DIGESTION PROCESS OF WASTES CONTAINING CELLULOSE

Ryoichi Haga; Masahiko Ishida, and Yoji Odawara, all of Hitachi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 14, 1982, Ser. No. 434,321
Claims priority, application Japan, Oct. 14, 1981, 56-162628
Int. Cl.³ C12P *5/02*; C12N *1/22*; C02F *3/30, 11/04*
U.S. Cl. 435—167 **4 Claims**

1. An anaerobic digestion process for wastes containing cellulose comprising the steps of:

(1) liquefying wastes containing cellulose in a slurry state by bringing said slurry into contact with facultative anaerobic bacteria, while adjusting the pH of said slurry to between 6.5 and 8.0 and controlling the oxidation-reduction potential of said slurry between −50 mV and −300 mV while supplying oxygen to said slurry,

(2) converting the slurry obtained in the first step (1) into methane and carbon dioxide by bringing said slurry into contact with obligatory anaerobic bacteria without supplying oxygen to said slurry, and

(3) separating the digested slurry obtained in the second step (2) into separate water and digested sludge.

4,510,244

CELL LABELING WITH ANTIGEN-COUPLED MICROSPHERES

David R. Parks, Stanford; Virginia M. Bryan, San Carlos, and Leonard A. Herzenberg, Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Continuation of Ser. No. 141,031, Apr. 17, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,668
Int. Cl.³ C12N *15/00, 5/00*; C12P *21/00*; G01N *33/54*
U.S. Cl. 435—172.2 **5 Claims**

1. A method for selectively isolating a hybridoma cell producing antibodies to a specific determinant site which comprises:

combining a heterogeneous mixture of hybridoma cells producing a variety of antibodies including an antibody for said determinant site with said determinant site bound fluorescent labeled microspheres, wherein said label permits mechanical selection of cells labeled with said microspheres as compared to cells which are unlabeled;

centrifuging said mixture of hybridoma cells and microspheres to provide a monolayer of sedimented cells, followed by separating bound microspheres from unbound microspheres;

selectively segregating by means of said microsphere label from cells having fewer microspheres than said predetermined number individual cells labeled with said microspheres at a predetermined minimum number of microspheres per cell; and

growing said selectively segregated cell.

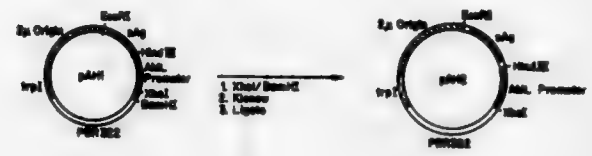
4,510,245

ADENOVIRUS PROMOTER SYSTEM

Lawrence S. Cousens; Graeme I. Bell, and Pablo D. T. Valenzuela, all of San Francisco, Calif., assignors to Chiron Corporation, Emeryville, Calif.

Filed Nov. 18, 1982, Ser. No. 442,687
Int. Cl.³ C12N *15/00, 1/20, 1/16, 1/18, 1/00*; C12P *21/00, 21/02, 19/34*; C07H *21/04*
U.S. Cl. 435—172.3 **6 Claims**

1. A yeast expression vector comprising a replication origin functional in yeast and a DNA coding segment and an adenovirus major late promoter segment adjacent to the 5′ end of the



coding segment, the promoter segment being oriented so as to initiate transcription of the coding segment.

4,510,246

ISOLATION OF CYCLASE, EPIMERASE AND A RING EXPANSION ENZYME FOR PRODUCING UNNATURAL CEPHALOSPORINS

Saul Wolfe, Kingston; Donald Westlake, and Susan Jensen, both of Edmonton, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Aug. 23, 1982, Ser. No. 410,302
Int. Cl.³ C12N *9/00, 9/06*; C12P *35/00, 35/06*
U.S. Cl. 435—183 **3 Claims**

1. A process for isolating cyclase, epimerase and a ring expansion enzyme from a cell-free extract of a prokaryotic beta-lactam producing organism comprising:

(a) precipitating contaminating proteins from said cell-free extract by addition of ammonium sulfate to 40% saturation;

(b) separating precipitated protein from a supernatant;

(c) adding ammonium sulfate to 70% saturation to said supernatant thereby precipitating desired enzymes;

(d) suspending said precipitated desired enzymes in pH 7 buffer;

(e) separating the epimerase by gel filtration chromatography; and

(f) separating the cyclase and ring expansion enzymes from each other by ion exchange chromatography.

4,510,247

USE OF GLUCOSE OXIME TO INCREASE GLUCOSE ISOMERASE ACTIVITY IN BACTERIAL CELLS

Beth E. Whitted, and George Boguslawski, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 9, 1983, Ser. No. 465,243
Int. Cl.³ C12N *9/92, 9/38*; C12R *1/19, 1/20*
U.S. Cl. 435—207 **3 Claims**

1. A method of increasing the production of enzymes involved in carbohydrate metabolism by a bacterium capable of producing such enzyme which bacterium is selected from the species of *Flavobacterium arborescens* or *Escherichia coli* which method comprises growing the bacterium in an aqueous nutrient medium containing glucose oxime, but employing a carbon source other than glucose, wherein the concentration of glucose oxime is sufficient to cause an increase in the production of the enzyme.

4,510,248

PROCESS FOR CONCENTRATING AND PURIFYING HUMAN URINARY KALLIKREIN

Koichiro Nakanishi, Ashiya, and Hajime Hiratani, Sennan, both of Japan, assignors to Japan Chemical Research Co., Ltd., Kobe, Japan

Filed Jun. 29, 1983, Ser. No. 509,030
Claims priority, application Japan, Jun. 30, 1982, 57-113364
Int. Cl.³ C12N *9/64, 9/48, 9/50*
U.S. Cl. 435—226 **7 Claims**

1. In the concentration and purification of human urine kallikrein, a process which comprises contacting chitosan with human urine at a pH from 4.0 to 7.0 to adsorb kallikrein in the urine on the chitosan, filtering off the chitosan from the urine

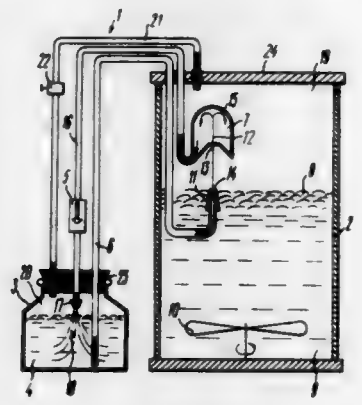
and eluting kallikrein from the chitosan with an aqueous alkaline solution.

4,510,249

APPARATUS FOR CHEMICAL FROTH SUPPRESSION IN A FERMENTER

Jury V. Redikultsev, Puschino, mikroraion "G", 19, kv. 113, and Leonid A. Litvinenko, Puschino, mikroraion "AB", 8, kv. 74, both of Moskovskaya oblast, U.S.S.R.

Filed Dec. 21, 1982, Ser. No. 451,755
Claims priority, application U.S.S.R., Dec. 22, 1981, 3364403
Int. Cl.[3] C12M *1/36*
U.S. Cl. 435—289 1 Claim



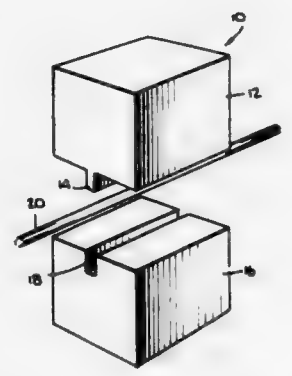
1. An apparatus for chemical froth suppression comprising:
a fermenter;
a vessel containing a chemical froth suppressor;
a pressure pipe connecting said vessel with said fermenter;
a first nozzle having an outlet opening and disposed in said fermenter, said nozzle being positioned on said pressure pipe at a preselected level of said froth so as to form a jet of froth suppressor which escapes through said outlet opening;
a chamber accommodated inside said fermenter above the level of said froth and having an inlet port coaxial with said outlet opening of said nozzle for said jet of froth suppressor escaping from said outlet opening to enter said inlet port, said chamber having an outlet, and a concave wall opposite to said inlet port for reflecting said jet of froth suppressor which enters said chamber through said inlet port thereof to said outlet;
a discharge pipe connecting the outlet of said chamber with said vessel containing said chemical froth suppressor to withdraw said jet of froth suppressor reflected from said concave wall and convey it to said vessel;
a pneumatic pump disposed in said discharge pipe to suck said chemical froth suppressor from said chamber;
a second nozzle secured on said discharge pipe in said vessel containing said chemical froth suppressor to form a jet of said chemical froth suppressor flowing along said discharge pipe into said vessel containing said chemical froth suppressor;
a third pipe communicating a gas zone of said fermenter overlying said froth with a gas zone of said vessel containing said chemical froth suppressor overlying the level of said chemical froth suppressor; and
a throttle means disposed in said third pipe and serving to maintain a predetermined pressure in said vessel containing said chemical froth suppressor during circulation therethrough by said pneumatic pump of said chemical froth suppressor to maintain thereby a required pressure in said pressure pipe.

4,510,250

METHOD OF HAIR DAMAGE ASSESSMENT

Bernard L. Kabacoff, Norwalk, Conn., and Alok K. Govil, Marlboro, N.J., assignors to Revlon, Inc., New York, N.Y.

Filed Sep. 2, 1983, Ser. No. 528,919
Int. Cl.[3] G01N *33/00*
U.S. Cl. 436—63 9 Claims



1. A method of measuring hair damage based on copper reaction with active negative sites on hair comprising the steps of:
(a) placing a known amount of hair into a sealed vial containing a water solution of a known amount of copper sulfate having Cu^{++} ions that is stabilized with the complexing agent ethanolamine and buffered with sodium tetraborate, said solution having a pH of about 9.0 to 9.5;
(b) reacting said solution with said hair by heating the vial; and
(c) determining the copper uptake by the hair.

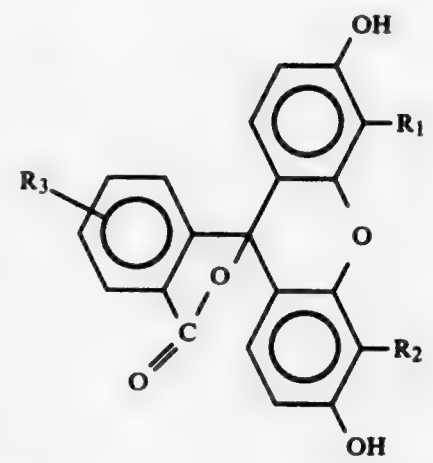
4,510,251

FLUORESCENT POLARIZATION ASSAY FOR LIGANDS USING AMINOMETHYLFLUORESCEIN DERIVATIVES AS TRACERS

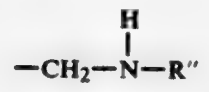
Curtis L. Kirkemo, Grunee, and Mohammed T. Shipchandler, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 8, 1982, Ser. No. 440,043
Int. Cl.[3] G01N *33/54, 33/58, 33/52, 33/74*
U.S. Cl. 436—536 5 Claims

1. A method for determining ligands in a sample comprising intermixing with said sample a tracer of the formula:



wherein
R_1 is a



group wherein R'' is a ligand-analog having at least one common epitope with a ligand so as to be specifically recognizable by a common antibody;
R_2 is hydrogen or a group represented by R_1; and

R_3 is hydrogen, amino or carboxyl; and biologically acceptable salts thereof; and an antibody capable of specifically recognizing said ligand and said tracer; and then determining the amount of tracer bound to antibody by fluorescence polarization techniques as a measure of the amount of ligand in the sample.

4,510,252

EASILY FORMED CHEMICALLY RESISTANT GLASS FIBERS

Russell M. Potter, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 18, 1983, Ser. No. 553,283
Int. Cl.³ C03C *13/00, 3/08*
U.S. Cl. 501—35 **4 Claims**

3. A devitrification resistant, sulfuric acid resistant and water resistant glass fiber consisting essentially of in approximate weight percent 67% to 70% SiO_2, 3% to 4% Al_2O_3, 10% to 13% CaO, 2% to 3% MgO, 7% to 10% of (Na_2O+K_2O), 3 to 6% B_2O_3, and less than 1% of each of Fe_2O_3, TiO_2 and F_2, said glass fiber having a delta T of at least about 395° F. and a durability (% fiber weight loss at 96° C.) in water for 24 hours of less than about 1.6% and in 10% H_2SO_4 for 24 hours of less than about 1.1%, said glass having a viscosity, in poise, of 10 to the 2.5 power at a temperature of about 2350° F. to about 2500° F.

4,510,253

ALUMINUM RESISTANT CERAMIC FIBER COMPOSITION

Frank T. Felice, Norristown, and Celeste B. Yonushonis, Paoli, both of Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 26, 1983, Ser. No. 498,379
Int. Cl.³ C04B *35/80*
U.S. Cl. 501—95 **10 Claims**

1. A lightweight, porous ceramic fiber composition resistant to wetting and attack by molten aluminum alloys comprising:
(a) from 20 to 65 weight % alumina silica ceramic fiber;
(b) an additive containing essentially crystalline $9Al_2O_3.2B_2O_3$ such that the ceramic fiber composition contains from 1 to 12 weight % $9Al_2O_3.2B_2O_3$; and
(c) the remainder comprising a refractory binder in a quantity at least sufficient to bind said ceramic fiber composition together.

4,510,254

METHOD OF TREATING ZEOLITE ORES TO REMOVE DISCOLORING IMPURITIES AND IMPROVE ITS BRIGHTNESS AND RESULTING FINELY GROUND ZEOLITE

Horton H. Morris, 1715 Waverland Dr., Macon, Ga. 31204; John R. Whyte, Jr., 1737 Graham Rd., Macon, Ga. 31211; Ellen Forbus, 96 Hardie St., Gordon, Ga. 31031; Catherine M. Dentan, 343 Orange St., Macon, Ga. 31201, and David R. Collins, Rte. 1, Box 54, Irwinton, Ga. 31042

Filed Jan. 23, 1984, Ser. No. 573,208
Int. Cl.³ C04B *33/02*
U.S. Cl. 501—146 **41 Claims**

1. A method of treating zeolite ores to remove therefrom discoloring impurities and improve the brightness characteristics thereof, said method comprising the steps of:
(a) mixing a pulverized zeolite ore with a dispersant and water to disperse said zeolite and form an aqueous zeolite slurry;
(b) degritting said aqueous zeolite slurry to remove grit having a particle size of 44 μm or more;
(c) removing fines having a particle size of at least 50% less than 2 μm or less and containing discoloring impurities from said degritted zeolite slurry;
(d) subjecting a mixture of the zeolite slurry after fines removal step (c) and a fine grinding media to rapid agitation to effect a fine milling of said zeolite to a particle size of at least 20% less than 2 μm and removing said grinding media from said fine milled zeolite slurry;
(e) removing fines having a particle size of at least 40% less than 2 μm or less and containing discoloring impurities from the fine milled zeolite slurry;
(f) subjecting said fine milled zeolite slurry after said fines removal step (e) to magnetic separation to remove magnetic discoloring impurities;
(g) bleaching the resulting zeolite slurry; and
(h) recovering the zeolite in dry form from the resulting slurry.

4,510,255

PROCESS FOR MANUFACTURING A SUPPORTED CATALYST FOR THE HYDROTREATMENT OF HYDROCARBON OILS

Hervé Toulhoat, Le Pecq; Jean-Claude Plumail, Le Vesinet; Marc Mercier, Ales, and Yves Jacquin, Sevres, all of France, assignors to Ste Francaise des Products pour Catalyse Pro-Catalyse chez Institut Francais du Petrole, Ruell-Malmaison, France

Filed Oct. 21, 1983, Ser. No. 544,148
Claims priority, application France, Oct. 21, 1982, 82 17769
Int. Cl.³ B01J *21/04, 35/08*
U.S. Cl. 502—10 **8 Claims**

1. In a process for manufacturing a catalyst comprising at least one carrier material whose base element is alumina, silica or silica-alumina and at least one active element selected from the metals of groups V, VI and VIII or compounds thereof, in which process the active elements are incorporated on the carrier and the resultant catalyst is dried and thermally activated, the improvement wherein, before or after introducing the active elements, the carrier is shaped into balls, said balls are calcined at about 300° to 1000° C. and then coarsely crushed and the resultant particles whose average size represents 0.2 to 0.8 time the average diameter of the balls are recovered, the process being followed, when the active elements or a portion thereof are not already present, with the introduction of said elements.

4,510,256

ZEOLITE SSZ-19

Stacey I. Zones, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 13, 1983, Ser. No. 494,244
Int. Cl.³ C01B *33/26;* B01J *29/28*
U.S. Cl. 502—62 **10 Claims**

1. A composition of matter comprising a crystalline solid having a mole ratio of an oxide selected from silicon oxide, germanium oxide and mixtures thereof to an oxide selected from aluminum oxide, gallium oxide, and mixtures thereof greater than about 6:1, and having the X-ray diffraction lines of Table 1.

9. A method for preparing the composition of claim 1, comprising:
(a) preparing an aqueous mixture containing sources of an organonitrogen compound, an oxide selected from aluminum oxide, gallium oxide, and mixtures thereof, and an oxide selected from silicon oxide, germanium oxide, and mixtures thereof, the aqueous mixture having the following composition in terms of mole ratio of oxides:

YO_2/W_2O_3	>6
R_2O/W_2O_3	0.5–40

wherein R is an organonitrogen cation selected from the group consisting of cyclopentyltrimethylammonium cations, 2,2-dimethylpropyl trimethylammonium cations, ethyl-1-azoniabicyclo [2.2.2.] octane cations, 1-azoniaspiro [4.4] nonane cations, or mixtures thereof, Y is silicon,

germanium or mixtures thereof, W is aluminum, gallium or mixtures thereof, wherein said aqueous mixture has a mole ratio of OH^-/YO_2 of 0.95 to 1:1 and

(b) maintaining the mixture at a temperature of at least 100° C. until crystals of said composition form.

4,510,257

SILICA-CLAY COMPLEXES

Robert M. Lewis, Sugarland, Tex.; Kevin C. Ott, Chatsworth, Calif., and Rutger A. Van Santen, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1983, Ser. No. 559,545
Int. Cl.³ B01J *21/16*
U.S. Cl. 502—63 **16 Claims**

1. A clay composition comprising silica pillars intercalated between the layers of an expandable, swelling layer, lattice clay mineral or synthetic analogue thereof wherein said silica pillars comprise at least two silicon atom layers.

7. A process for preparing a clay composition comprising clay having silica pillars intercalated between the interlayers of said clay wherein said silicon pillars comprise at least two silicon atom layers, which process comprises contacting a smectite type clay with a solution of a polyhedral oligosilsesquioxane of the following general formula $(ZSiO_{1.5})_n(OSiZ_2)_m$, where n and m are zero or integers and n+m does not equal zero and Z is an organic moiety containing an atom(s) possessing cationic and/or coordinating characteristics with the proviso that all of the Z's on a particular oligosilsesquioxane need not be the same.

11. A hydrocarbon conversion catalyst comprising the silica intercalated clay product of claim 1 admixed with a matrix material.

14. A hydrocarbon conversion catalyst, comprising the silica intercalated clay of claim 1 functionalized with a cation selected from the group consisting of hydrogen, ammonium, Group IB to VIII of the Periodic Table and mixtures thereof.

4,510,258

CATALYSTS CONTAINING MIXED OXIDES OF VANADIUM AND PHOSPHORUS

George D. Suciu, Ridgewood, N.J.; Giancarlo Stefani, and Carlo Fumagalli, both of Bergamo, Italy, assignors to The Lummus Company, Bloomfield, N.J.; Alusisse Italia S.p.A., Milan, Italy

Filed Aug. 17, 1983, Ser. No. 523,931
Int. Cl.³ B01J *27/14*; C07D *307/60*
U.S. Cl. 502—209 **21 Claims**

1. A catalyst, comprising:

mixed oxides of vanadium and phosphorus, said catalyst having a phosphorus to vanadium ratio of from 1:1 to 2:1, said catalyst having been pretreated by contacting a dried catalyst precursor comprising mixed oxides of vanadium and phosphorus, in finely divided form, with an acid solution and drying of the acid treated particles to produce a dried catalyst.

4,510,259

CATALYSTS FOR THE PRODUCTION OF MALEIC ANHYDRIDE BY THE OXIDATION OF BUTANE

Carl A. Udovich, Joliet, and Robert C. Edwards, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 382,180, May 26, 1982, Pat. No. 4,416,802. This application Aug. 25, 1983, Ser. No. 526,167
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ B01J *27/14, 31/12*
U.S. Cl. 502—209 **35 Claims**

1. A process for the manufacture of a phosphorus-vanadium catalyst suitable for use in the manufacture of maleic anhydride, which process comprises reacting in an aqueous medium a vanadium compound and inorganic acid, then adding orthophosphoric acid to form a soluble vanadium-phosphorus catalyst, removing the acidified water, and adding an aliphatic alcohol having about 1 to about 8 carbon atoms, and either an aromatic acid, or an aromatic anhydride, or a mixture of these, removing the alcohol, and removing the aromatic acid and aromatic anhydride, and drying the catalyst syrup under vacuum of about 0 to about 300 mm Hg at a temperature of about 90° to about 150° C. to produce the solid catalyst.

4,510,260

SELF-PROMOTED MOLYBDENUM AND TUNGSTEN SULFIDE HYDROTREATING CATALYSTS FROM BIS(TETRATHIOMETALLATE) PRECURSORS

Edward I. Stiefel, Bridgewater; Wie-Hin Pan, Fanwood, and Russell R. Chianelli, Somerville, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 29, 1983, Ser. No. 518,363
Int. Cl.³ B01J *27/02, 31/12*
U.S. Cl. 502—219 **15 Claims**

1. A self-promoted catalyst formed by heating one or more carbon-containing, bis(tetrathiometallate) catalyst precursor salts selected from the group consisting of $(NR_4)_2[M(WS_4)_2]$, $(NR_4)_x[M(MoS_4)_2]$ and mixtures thereof, in a non-oxidizing atmosphere in the presence of sulfur and hydrogen at elevated temperature for a time sufficient to form said catalyst, wherein (NR_4) is a carbon-containing, substituted ammonium cation and R is selected from the group consisting of (a) alkyl group, aryl group and mixture thereof and (b) mixtures of (a) with hydrogen, wherein promoter metal M is covalently bound in the anion and is Ni, Co or Fe and wherein x is 2 if M is Ni and x is i3 if M is Co or Fe.

4,510,261

CATALYST WITH HIGH GEOMETRIC SURFACE AREA

Carmo J. Pereira, Columbia; Louis Hegedus, Rockville, and James M. Maselli, Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,346
Int. Cl.³ B01J *21/04, 23/10, 23/40, 35/04*
U.S. Cl. 502—304 **13 Claims**

1. A catalyst suitable for auto emission control comprising a solid, transitional alumina extrudate support structure having a cylindrical, hollow annular configuration with internal reinforcing vanes, a nitrogen surface area of at least 50 m^2/g; a diameter of up to about 6.5 mm; an aspect ratio of the length to the diameter of from about 1 to 5; a geometric surface area of at least 25% greater than a hollow tube of the same inside and outside diameter; a porosity of at least 0.3 cm^3/g; a surface area per reactor volume of at least 5 cm^2/cm^3 and a catalytically-effective amount of one or more platinum group metals deposited directly on the support structure without having any washcoat present.

4,510,262

DOUBLY PROMOTED CATALYST WITH HIGH GEOMETRIC SURFACE AREA

Gwan Kim, Olney; Carmo J. Pereira, Columbia; Louis Hegedus, Rockville, and James M. Maselli, Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,440
Int. Cl.³ B01J *21/04, 23/10, 23/58, 35/04*
U.S. Cl. 502—304 **13 Claims**

1. A catalyst suitable for auto emission control comprising a solid, transitional alumina extrudate support structure having a cylindrical, hollow annular configuration with internal reinforcing vanes, a nitrogen surface area of at least 50 m^2/g; a diameter of up to about 6.5 mm; an aspect ratio of the length to the diameter of from about 1 to 5; a geometric surface area of at least 25% greater than a hollow tube of the same inside and outside diameter; a porosity of at least 0.3 cm^3/g; a surface area per reactor volume of at least 5 cm^2/cm^3 and deposited directly on the support structure without having any washcoat present from about 1–10 wt. % ceria, an alkali metal promoter

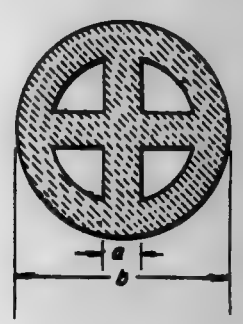
expressed as the wt. % of the oxide M_2O in an effective amount up to about 5% and a catalytically-effective amount of one or more platinum group metals.

4,510,263

CATALYST WITH HIGH GEOMETRIC SURFACE AREA ALUMINA EXTRUDATE AND CATALYST WITH HIGH GEOMETRIC SURFACE AREA

Carmo J. Pereira, Columbia, and Louis Hegedus, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,363
Int. Cl.[3] B01J *21/04, 23/85, 35/00*
U.S. Cl. 502—314 19 Claims



1. A transitional alumina extrudate having a cylindrical hollow annular configuration with internal reinforcing vanes, a nitrogen surface area of at least 50 m^2/g; a diameter of up to about 6.5 mm; and aspect ratio of the length to the diameter of from about 0.5 to 5; a geometric surface area of at least 25% greater than a hollow tube of the same inside and outside diameter; a porosity of at least 0.3 cm^3/g; and a surface area per reactor volume of at least 5 cm^2/cm^3.

4,510,264

PROCESS FOR THE PREPARATION OF A CATALYST FOR THE SYNTHESIS OF METHANE

Hiroo Matsuoka; Seiichi Matsuoka; Tsunekichi Yamabe; Hirokazu Fujie; Kenji Mori; Kouji Tamura; Masatoshi Yamada, and Akio Furuta, all of Handa, Japan, assignors to JGC Corporation, Otemachi, Japan

Filed Aug. 31, 1983, Ser. No. 528,107
Claims priority, application Japan, Oct. 1, 1982, 57-173085; Mar. 16, 1983, 58-42235; Apr. 22, 1983, 58-70085
Int. Cl.[3] B01J *23/74*
U.S. Cl. 502—328 1 Claim

1. A process for preparing a catalyst for the synthesis of methane by the hydrogenation of carbon monoxide and/or carbon dioxide, comprising adding a barium salt solution to alumina, pyrolyzing the barium salt to obtain barium oxide carried on alumina and then adding a nickel salt solution to said barium oxide carried on alumina, pyrolyzing the nickel salt to obtain nickel oxide carried thereon, the amount of barium oxide so carried being in the range of 0.27–8.06 wt. % of the alumina as barium, the amount of nickel oxide so carried being in the range of 0.05–30 wt. % as nickel of the total of the alumina and nickel.

4,510,265

PLATINUM/SILVER VANADATE CATALYZED DIESEL EXHAUST PARTICULATE FILTER

Michael M. Hartwig, Chatham, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed May 4, 1984, Ser. No. 607,048
Int. Cl.[3] B01J *23/64, 23/68*
U.S. Cl. 502—330 6 Claims

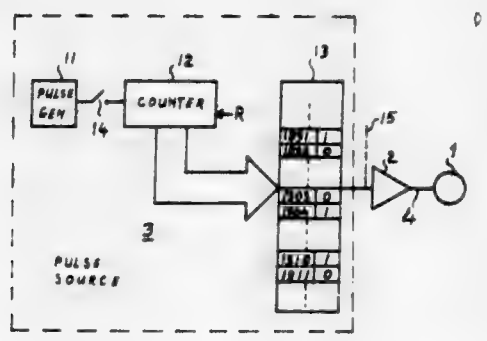
1. A diesel exhaust particulate filter comprising a high temperature resistant filter element having porous walls adapted to filter particulates present in the exhaust gases of diesel engines and collect the particulates from the gases flowed through the element on the surfaces of the porous walls, the surfaces of the walls having been first provided with a catalyst comprised of a mixture of a platinum group metal and silver vanadate, which catalyst mixture lowers the temperature at which the collected particulates are ignited and combustion thereof initiated, whereby the particulates are continuously removed by burning at the temperature of the exhaust gases with relatively high efficiency and low pressure drop.

4,510,266

STEPPING MOTOR CONTROLLER

Bastiaan B. B. Eertink, Grubbenvorst, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Oct. 4, 1982, Ser. No. 432,631
Claims priority, application Netherlands, Oct. 8, 1981, 8104590
Int. Cl.[3] H02K *29/04*
U.S. Cl. 318—696 15 Claims



1. Apparatus for generating signal pulses for controlling a stepping motor, comprising:

a pulse generator effective for producing a substantially constant frequency pulse signal;

a memory having a multiplicity of successively addressable memory locations, each of said memory locations having a content;

addressing means responsive to said pulse signal for successively addressing said memory locations;

said memory comprising output means responsive to the respective contents of said memory locations as they are addressed successively by said addressing means for producing electrical signals having frequencies to control said stepping motor; and

said contents being arranged to produce in response to said addressing at least one of an increase in the frequency of said electrical signals for starting of said stepping motor and a decrease in said frequency thereof for stopping of said stepping motor.

4,510,267

PREPARATION OF OLEFINS FROM SYNTHESIS GAS USING RUTHENIUM SUPPORTED ON CERIC OXIDE

Ronald Pierantozzi, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

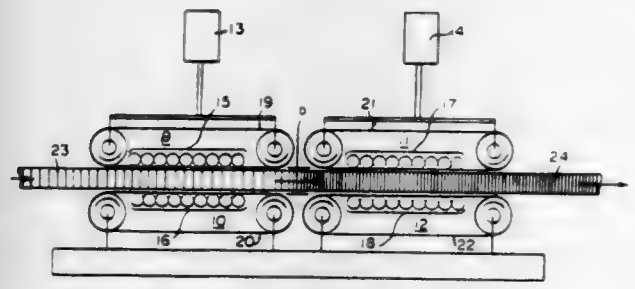
Continuation of Ser. No. 373,934, May 3, 1982, abandoned. This application Mar. 5, 1984, Ser. No. 573,433
Int. Cl.[3] C07C *1/04*
U.S. Cl. 518—715 10 Claims

1. In a process for the synthesis of hydrocarbons by reacting hydrogen and carbon monoxide over a ruthenium-containing catalyst, the method for selectively synthesizing olefins which comprises reacting the hydrogen and carbon monoxide under reaction conditions over a ruthenium catalyst made by preparing a solution of a ruthenium carbonyl compound in a solvent sufficient to wet the surface of a ceric oxide-containing support selected from the grouup consisting of CeO_2, Al_2O_3-CeO_2, SiO_2-CeO_2, CeO_2-carbon or CeO_2-other rare earth oxides, contacting the ceric oxide-containing support with the ruthenium carbonyl compound-containing solution and removing the solvent to yield the ruthenium carbonyl compound deposited on the ceric oxide-containing support.

4,510,268
DIRECTIONAL FLEXIBILIZATION OF EXPANDED THERMOPLASTIC FOAM SHEET FOR LOW TEMPERATURE INSULATION

Hiroshi Tonokawa, Suzuka, Japan, and Masao Nakamura, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 9, 1982, Ser. No. 367,183
Int. Cl.³ B29D *27/00*
U.S. Cl. 521—146 **12 Claims**



1. A process for flexibilization of a thermoplastic rigid, substantially closed-cell plastic foam sheet having a generally rectangular shape defined by the three-dimensional coordinates X (length), Y (thickness), Z (width) and the YZ, XZ and XY planes normal thereto by partial crushing of the foam sheet in a direction normal to the direction of desired flexibility, the improvement characterized by

A. selecting a freshly expanded foam sheet having (1) a bulk density of 20 to 100 kg/m^3, (2) an anisotropic cell structure oriented in the $\overline{Y}$-axial direction with an average $\bar{y}$ cell size of 0.05 to 1.00 mm, (3) $\overline{Y}$-axial compressive strength of at least 1.8 kg/cm^2, and (4) the sheet having a thickness of from about 10 to about 300 millimeters;

B. compressing said foam sheet within 0.25 to 240 hours of expansion in a short confined compression zone having a maximum length of 300 millimeters for a period of at least one second to form a directionally flexibilized foam; and thereafter

C. recovering of a directionally flexibilized foam having

(1) anisotropically wrinkled cell wall structure with wrinkles in the direction of flexibilization;

(2) average cell sizes $\bar{x}$, $\bar{y}$ and $\bar{z}$ measured in the axial directions $\overline{X}$, $\overline{Y}$ and $\overline{Z}$ satisfying the following conditions:

$\bar{y}$=0.05–1.0 mm, and

$\bar{y}/\bar{x}$ and $\bar{y}/\bar{z} \geqq 1.05$;

(3) a higher elongation at rupture in the direction of flexibilization;

(4) a $\overline{Y}$-axial water vapor permeability of not more than 1.5 g/m^2·hr by the water method of ASTM C-355, and

(5) with the further limitation that the flexibilized sheet is of generally closed cell structure.

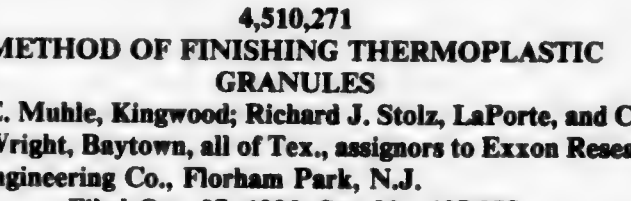
7. The directionally flexibilized closed-cell foam sheet prepared by the process of claim **1**.

4,510,269
PROCESS FOR THE PRODUCTION OF OPTIONALLY CELLULAR POLYURETHANES

Richard Kopp, Cologne, and Hans-Albrecht Freitag, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 638,160
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329452
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—166 **10 Claims**

1. A process for the production of an optionally cellular polyurethane by reacting at least one compound having at least two hydrogen atoms which are reactive with isocyanate groups and have a molecular weight of from about 400 to 10,000 with polyisocyanates in the presence of a poly-(dialkylaminolakyl) ether catalyst corresponding to the formula



wherein

A represents a straight-chain or branched-chain (x+1)-valent, optionally substituted C_2–C_6 alkyl radical,

x represents an integer of 1 to 4 and

R^1–R^4 represent the same or different C_1–C_4 alkyl radicals, which optionally form a heterocyclic radical with N.

4,510,270
ANAEROBIC ADHESIVES HAVING EXCELLENT ADHESIVE PROPERTY AND PRESERVATIVE STABILITY

Takanori Okamoto; Hisakazu Mori, and Hideaki Matsuda, all of Kagawa, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

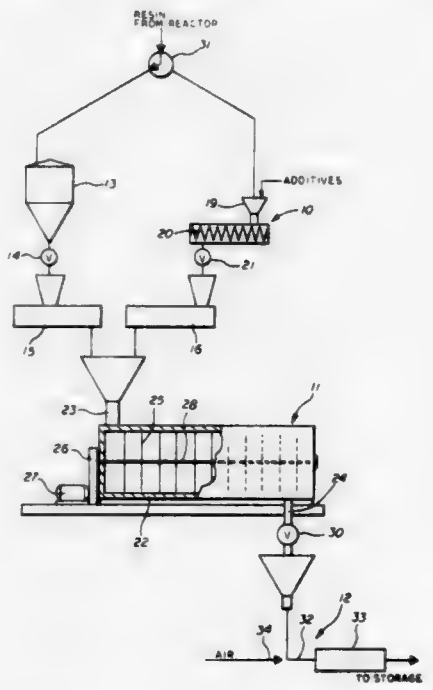
Filed Jun. 29, 1984, Ser. No. 626,115
Claims priority, application Japan, Jul. 30, 1983, 58-138730
Int. Cl.³ C08K *3/32;* C08L *33/06;* C09J *1/00, 3/14*
U.S. Cl. 523—176 **7 Claims**

1. A one-part type anaerobic adhesive, which comprises an organic peroxide, a hardening accelerator, an anaerobically polymerizable monomer which does not harden in the presence of air but hardens in the absence of air, and polyphosphoric acid in an amount of at least 0.001% by weight based on the total amount of the anaerobic adhesive.

4,510,271
METHOD OF FINISHING THERMOPLASTIC GRANULES

Mike E. Muhle, Kingwood; Richard J. Stolz, LaPorte, and Cecil W. Wright, Baytown, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 27, 1982, Ser. No. 437,055
Int. Cl.³ C08J *3/20*
U.S. Cl. 523—346 **16 Claims**



1. A method of finishing polyolefin thermoplastic granules which comprises:

(a) blending the thermoplastic granules with additive material at a ratio wherein the additive material comprises

from about 0.001 to 40 weight percent of the blend, and at a temperature below the softening point of the thermoplastic to form a masterblend;

(b) continuously introducing the masterblend and additional polyolefin thermoplastic resin into an intensive mixer in a resin/masterblend weight ratio of between about 5:1 to 50:1, and mixing the masterblend and additional thermoplastic granules therein under conditions (i) to increase the temperature of the thermoplastic to its softening point but below its fluxing temperature whereby additive material is embedded into or onto substantially all the granules and (ii) to increase the bulk density of the blend by at least 5 percent without producing excessive fines; and

(c) continuously withdrawing and cooling the mixture from the intensive mixer to from free-flowing discrete particles.

4,510,272

BIS-MALEIMIDE-EPOXY COMPOSITIONS AND PREPREGS

Raymond C. Loszewski, Windham, N.H., assignor to Avco Corporation, Wilmington, Mass.

Filed Mar. 16, 1983, Ser. No. 475,836
Int. Cl.³ C08G *59/40, 83/00*
U.S. Cl. 523—400 **76 Claims**

1. A resinous composition comprising an admixture of an unsaturated polyimide essentially free of terminal amine groups and an epoxy having a homopolymerization temperature greater than the temperature at which the polyimide polymerizes.

4,510,273

THIXOTROPIC AGENT

Yoshikazu Miura, Ichihara; Koji Horimoto, Iwakuni, and Takenori Sumida, Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 308,908, Oct. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 205,159, Nov. 10, 1980, abandoned. This application Dec. 2, 1982, Ser. No. 446,354
Claims priority, application Japan, Nov. 8, 1979, 54-144834
Int. Cl.³ C08K *3/20*
U.S. Cl. 523—406 **5 Claims**

1. A method of providing thixotropy to a liquid which comprises adding to the liquid 0.05 to 8 phr of a polyolefin fiber synthetic pulp having a D.F. (Drainage Factor) of 0.03 to 8 second/gramm, F.F. (Floating Factor) of 100 ml or less, an average diameter of 0.1 to 10 micron and a C.F.L. (Classified Fiber Length) of 0.01 to 0.2 mm.

4,510,274

VINYL ACETATE-ETHYLENE COPOLYMER EMULSION AND AQUEOUS EMULSION ADHESIVE COMPOSITION CONTAINING THE EMULSION

Haruo Okazaki, Ichihara, and Takashi Ohkubo, Chiba, both of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 277,451, Jun. 25, 1981, abandoned. This application Jan. 12, 1983, Ser. No. 457,613
Int. Cl.³ C08L *33/00*
U.S. Cl. 523—411 **23 Claims**

4. An aqueous emulsion adhesive comprising an emulsion of a quarterly vinyl acetate-ethylene copolymer emulsified in an aqueous medium, and containing 100 parts, by weight, based on solid contents, 2.5 to 30 parts, by weight, of a nitrogen-containing resin, said nitrogen-containing resin being polycondensation products of polyalkylenepolyamines and the polymerization products of the mixture substantially obtained from oleic acid, linoleic acid and tall oil, said polycondensation products and polymerization products having the amine values of from 20 to 900, and 2.5 to 50 parts, by weight, of an epoxy resin,

said quarterly copolymer comprising a formulation of

100 parts, by weight, of a vinyl acetate-ethylene copolymer prepared from 95 to 60 parts, by weight, of vinyl acetate monomer (I) and 5 to 40 parts, by weight, of ethylene monomer (II);

0.5 to 7 parts, by weight, of an acid monomer (III) selected from the group consisting of acrylic acid monomer, methacrylic acid monomer, itaconic acid monomer, maleic acid monomer, and fumaric acid monomer, and mixtures thereof; and

0.5 to 15 parts, by weight, of a water-insoluble acrylamide compound (IV) selected from the group consisting of N-N-butoxymethylacrylamide, N-isobutoxymethylacrylamide, and N-methylolacrylamide-2-ethylhexyl ether.

4,510,275

NOVEL AQUEOUS COATING COMPOSITION

Shinichi Ihikura, Kyoto; Kazunori Kanda, Yao, and Toshiharu Nakaya, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jul. 9, 1982, Ser. No. 396,864
Claims priority, application Japan, Jul. 21, 1981, 56-114686
Int. Cl.³ C08L *63/00*
U.S. Cl. 523—412 **6 Claims**

1. An aqueous coating composition consisting essentially of a water medium and, as film-forming components, at least one water soluble resin and at least one water-insoluble finely pulverized resin, the weight ratio, in terms of solid matter, of said water soluble resin to said water-insoluble resin being 98:2–45:55, and at least one of said water soluble resins fulfilling the requirements that the water tolerance, expressed in terms of the water dilution multiplicand of the resin for the solution, which is incapable of reading out a defined type, is more than 4, said water tolerance being measured by a test wherein 5 g of aqueous varnish having a normal viscosity as employed in the manufacture of coating compositions, are weighed in a 100 ml beaker, and mixed together, with an increasing amount of deionized water being added thereto and then a No. 1 type, 26 point type, is read through the beaker, to determine said water tolerance, and wherein the surface tension of a 1 wt. % aqueous solution is less than 51 dyne/cm, said water soluble resin being selected from the group consisting of an alkyd resin, a polyester resin, an acrylic resin, an epoxy resin, a maleic oil resin, a maleic polyalkadiene resin, a urethane resin, and an aminoplast resin, said water soluble resin having an average molecular weight of 500 to 20,000 and wherein said water soluble resin contains 0.3 to 5 m mol/g of hydrophilic functional groups in its structure which hydrophilic groups are neutralized with either an acid or basic solubilizing compound; and wherein the finely pulverized water-insoluble resin is selected from the group consisting of an epoxy resin, a polyester resin, an acrylic resin, an alkyd resin, an oil-free alkyd resin, a phenol resin, a polyether resin, a polyalkadiene resin, a vinyl resin, a polyamide resin, a polycarbonate resin, a fluorine resin, and an aminoplast resin, said finely pulverized water-insoluble resin having a softening point of 5° to 120° C. and wherein the mean diameter of the resin particles is in the range of 0.5 to 500μ.

4,510,276

EPOXY RESIN COATING COMPOSITIONS FOR PRINTED CIRCUIT BOARDS

Edward J. Leech, Oyster Bay, and Frank D. Russo, West Sayville, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 103,340, Dec. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 3,099, Jan. 12, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,600
Int. Cl.³ C08L *63/00, 63/10*
U.S. Cl. 523—427 **18 Claims**

1. In a permanent, protective coating composition useful in the manufacture of printed circuit boards, said coating composition comprised of a thermosetting epoxy resin and curing

composition dissolved in a solvent; and a flow promoter; said curing composition present in an amount sufficient to effect substantially complete cure of said thermosetting resin, said coating composition being in an initial state as a high viscosity solution and having an apparent viscosity between about 10,000 centipoise and about 200,000 centipoise, said coating composition upon curing, being transformed from said initial state into a final state as a solid, the improvement which comprises:

said composition further including a thickening agent in an amount sufficient to gel said high viscosity solution into a soft gel-like initial state, said composition, upon curing, being transformed from said soft gel-like initial state directly into a cross-linked solid;

said thermosetting epoxy resin being a solid at room temperature, having a melting point between 60° C. and about 200° C., and having an epoxide functionality greater than about 3;

said curing composition including:

a primary curing agent comprised of an alicyclic polyamine which is corrosive to copper surfaces, the primary curing agent being present in an amount sufficient to effect substantially complete cure of the thermosetting epoxy resin; and

a secondary curing agent comprised of an aromatic amine, said secondary curing agent being present in an amount sufficient to provide said cured coating composition with resistance to flux removal processes.

4,510,277

PROCESS FOR IMPROVING MOISTURE RESISTANCE OF EPOXY RESINS BY ADDITION OF CHROMIUM IONS

Anne K. St. Clair; Diane M. Stoakley; Terry L. St. Clair, all of Poquoson, and Jag J. Singh, Yorktown, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 3, 1983, Ser. No. 548,583

Int. Cl.³ C08G *59/40, 59/70*

U.S. Cl. 523—454 **14 Claims**

1. A method for preparing a chromium ion-containing epoxy resin comprising:

adding a quantity of chromium ions to an epoxide based upon the diglycidyl ether of bisphenol A (DGEBA) that has been previously preheated to the temperature of 130°–135° C.; and,

while maintaining this temperature range, adding an amine curing agent to the epoxide-chromium mixture and further heating to cure the mixture to obtain a chromium ion-containing epoxy useful as an adhesive, composite matrix or as a casting and that has improved moisture resistance over epoxies having no chromium ions therein.

4,510,278

MANUFACTURE OF CHIPBOARD AND A NOVEL SUITABLE BONDING AGENT

Jan J. Hoetjer, Ten Boer, Netherlands, assignor to Methanol Chemie Nederland V.o.F., Haren, Netherlands

Continuation of Ser. No. 366,309, Apr. 7, 1982,. This application Feb. 1, 1984, Ser. No. 576,164

Claims priority, application Netherlands, Apr. 7, 1981, 8101700

Int. Cl.³ B29J *5/00*

U.S. Cl. 524—14 **10 Claims**

1. In a method for the preparation of particleboard wherein a cellulose-containing particulate material is provided with a urea-formaldehyde resin bonding agent and thereafter shaped and hardened at an elevated temperature and pressure, the improvement wherein said bonding agent is a urea-formaldehyde resin solution additionally containing melamine in an amount of between 1.0 and 10 percent by weight, relative to the total amount of resin solids, wherein the molar ratio of formaldehyde to mole equivalents of amino groups is in the range of between 0.500:1 and 0.575:1.

4,510,279

METHACRYLATE RESIN COMPOSITION FOR OPTICAL INFORMATION RECORDING MEDIUM

Masaaki Kishimura, Iwakuni, and Nobuyuki Arakawa, Yokohama, both of Japan, assignors to Mitsubishi Rayon Co., Ltd. and Sony Corporation, both of Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 405,740

Claims priority, application Japan, Aug. 12, 1981, 56-126364

Int. Cl.³ C08L *33/10, 33/12*

U.S. Cl. 524—144 **6 Claims**

1. A transparent methacrylate resin composition consisting of a melt blended mixture of (A) 100 parts by weight of a transparent methyl methacrylate homopolymer or copolymer containing not less than 70% by weight of copolymerized methyl methacrylate and (B) 0.1 to 3.0 parts by weight of an organic compound which is a surface active agent having a perfluoroalkyl group of 3 to 12 carbon atoms, said composition being suitable for optical information recording medium, said perfluoroalkyl group containing organic surface active agent having the property of being melt blendable with component (A) in the above specified parts by weight to improve mold releasability of component (A) while retaining the transparency of the composition.

4,510,280

THERMOPLASTIC PVC MOLDING COMPOSITIONS

Jesse D. Jones, and Edwin D. Hornbaker, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 24, 1980, Ser. No. 209,843

Int. Cl.³ C08L *27/06, 25/08, 51/04, 55/02*

U.S. Cl. 524—178 **16 Claims**

1. A thermoplastic composition which comprises in intimate admixture:

(a) a vinyl chloride polymer having a relative viscosity as measured at a concentration of 1 gram per 100 grams of cyclohexanone at 25° C. falling within the range of about 1.50 to about 1.85; and

(b) a rubber-modified graft copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride in which the relative proportions of said compound and said anhydride fall within the range of about 91 to about 70 weight percent of said compound and about 9 to about 30 weight percent of said anhydride, and in which the graft copolymer contains up to 33 parts by weight of the rubber per 100 parts by weight of the copolymer; and

(c) a tin-containing stabilizer and an impact modifier for vinyl chloride polymers;

with the proviso that said admixture contains 60 to 35 weight percent of (a) and 40 to 65 weight percent of (b) and the further proviso that the blend has the following properties:

(d) an Izod impact strength (ASTM D 256, Method A) of at least 0.5 foot pound per inch;

(e) a heat deflection temperature (ASTM D 648) at 66 psi of at least 75° C.; and

(f) a dynamic thermal stability of at least 10 minutes.

4,510,281

TACK-FREE POLYMER PELLETS

Malcolm S. Smith, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 472,644, Mar. 7, 1983, abandoned, which is a continuation-in-part of Ser. No. 348,012, Feb. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 267,082, May 26, 1981, abandoned. This application Dec. 19, 1983, Ser. No. 563,231

Int. Cl.³ C08K *5/20*

U.S. Cl. 524—229 **14 Claims**

1. A pellet of a polymer selected from the group consisting of:

(a) copolymers of ethylene with vinyl acetate in which the amount of vinyl acetate is about 18–55 weight percent,
(b) terpolymers of ethylene with vinyl acetate and carbon monoxide in which the amount of vinyl acetate is about 20–40 weight percent and the amount of carbon monoxide is about 3–12 weight percent,
(c) copolymers of ethylene with methacrylic acid in which the amount of methacrylic acid is about 6–30 weight percent, the carboxyl groups of the copolymers being neutralized with zinc ions to an extent of 0 to about 50%,
(d) copolymers of ethylene with methyl methacrylate in which the amount of methyl methacrylate is about 18–40 weight percent, and
(e) terpolymers of ethylene with n-butyl acrylate and carbon monoxide in which the amount of n-butyl acrylate is about 20–40 weight percent, and the amount of carbon monoxide is about 3–15 weight percent;

the stick temperature of the copolymers of paragraph (a) being at most about 40° C., and the stick temperature of the polymers of paragraphs (b) through (e) being below about 60° C.;

said pellet having incorporated into the copolymer an effective amount from about 500 to about 10000 parts by weight per million parts by weight of the polymer (ppm) of an additive selected from the group consisting of N,N'-ethylenebisoleamide, N,N'-ethylenebiserucamide, N,N'-dioleyladipamide, and N,N'-dierucyladipamide to reduce the tackiness of the pellet;

with the proviso that when the polymer in the pellet is a dipolymer with vinyl acetate, it may also contain blended therewith wax in an amount of up to about 13% of the copolymer weight.

4,510,282

AQUEOUS DISPERSIONS FOR COATING MATERIALS

Werner Goll, Garching, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Continuation of Ser. No. 340,472, Jan. 18, 1982, abandoned. This application May 10, 1983, Ser. No. 491,345
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102169
Int. Cl.³ C08L *27/16*
U.S. Cl. 524—337 **36 Claims**

1. An aqueous dispersion for the production of corrosion- and weather-resistant coatings on work materials, especially synthetic fiber fabrics, said aqueous dispersion comprising:
20 to 50% by weight polyvinylidene fluoride,
20 to 50% by weight water,
1.5 to 25% by weight of an acrylic co-polymer in the form of a water-soluble co-polymer of acrylic acid and/or methacrylic acid and one or more monomers co-polymerizable therewith and selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, butyl acrylate, butyl methacrylate, styrene, butadiene and vinyl acetate,
1.5 to 5% by weight of a pigment and/or a filling material,
0.05 to 0.75% by weight, referred to the polyvinylidene fluoride, of a UV-light-protection agent and
4 to 20% by weight of a low boiling alcohol or of a mixture of a low boiling alcohol and of a high boiling solvent said mixture containing up to 50% of the high boiling solvent.

4,510,283

SILICONE-TYPE COATING RESIN SOLUTION

Shiro Takeda, and Minoru Nakajima, both of Sagamihara, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Dec. 12, 1983, Ser. No. 560,170
Claims priority, application Japan, Dec. 16, 1982, 57-219174
Int. Cl.³ C08K *5/07*
U.S. Cl. 524—356 **18 Claims**

1. A silicone coating resin organic solvent solution comprising
30 to 60 parts by weight of a hydrolytic condensation polymer of tetramethoxysilane or tetra-ethoxysilane having a weight average molecular weight of 1,000 to 6,000,
70 to 40 parts by weight of a polysilsesquioxane prepolymer having a weight average molecular weight of 2,500 to 7,000, in which each of 5 to 50 mole% of the organic groups attached directly to the silicon atoms of the polysilsesquioxane prepolymer is a phenyl group and the remaining organic groups are methyl, ethyl, or vinyl groups, and
said solvent being an organic compound having a boiling point of not less than 100° C. under a pressure of 760 mmHg.

4,510,284

HIGH SOLIDS BAKING FINISHES

Jürgen Gimpel, Ludwigshafen; Klaus-Peter Jäckel, Limburgerhof, and Hans Sander, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 446,065, Dec. 1, 1982, abandoned. This application Aug. 7, 1984, Ser. No. 638,540
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148051
Int. Cl.³ C08F *20/04*
U.S. Cl. 524—379 **12 Claims**

1. A baking finish dissolved in conventional organic solvents, which baking finish is based on hydroxyl-containing copolymers and is useful as a top coat for multilayer coatings, wherein the binder of said finish is a copolymer obtained from
(A) from 18 to 27% by weight of one or more monoacrylate or monomethacrylate of an alkanediol of 2 to 4 carbon atoms,
(B) from 28 to 45% by weight of an acrylate or methacrylate of a monoalcohol of 3 to 8 carbon atoms, the homopolymer of which ester has a glass transition temperature of below −40° C.,
(C) from 32 to 50% by weight of an acrylate or methacrylate whose homopolymer has a glass transition temperature of above 35° C. and
(D) from 0.5 to 3% by weight of acrylic or methacrylic acid, with the proviso that the sum of the percentages given under (A) to (D) is 100 and the Fikentscher K value of the copolymer is from 13 to 17.

4,510,285

TERPOLYMERIC ANTITUMOR AGENT

Edward H. Mottus, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 274,596, Jun. 17, 1981,. This application Oct. 7, 1983, Ser. No. 540,088
Int. Cl.³ C08K *3/16*; C08F *222/06*
U.S. Cl. 524—401 **6 Claims**

1. An antitumor active, water-soluble composition of matter selected from the group consisting of amide and imide derivatives of a low molecular weight terpolymer of butyl vinyl ether, maleic anhydride and maleimide wherein said molecular weight is less than about 3000, the maleimide comprises from about 5 mol % to about 40 mol % of the total of maleic anhydride and maleimide and the derivatized groups comprise from about 5 weight % to about 25 weight % imide, and the phar-

maceutically acceptable cationic salt derivatives of said derivatized terpolymer.

4,510,286

BONDING RESIN COMPOSITION

Chia-Seng Liu, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 414,695, Sep. 3, 1982, abandoned. This application Apr. 25, 1984, Ser. No. 603,804

Int. Cl.³ C08L *35/00, 51/06*

U.S. Cl. 525—71 **8 Claims**

1. A bonding resin composition composed of a blend consisting essentially of

(a) maleic anhydride-modified, stereoregular polypropylene in which the combined maleic anhydride is from about 0.2 to about 0.8 percent by weight of said modified polypropylene; and

(b) base polymer material at a concentration of from about 4 to about 70 parts by weight per part by weight of said maleic anhydride-modified polypropylene, and selected from the group consisting of

(i) stereoregular polypropylene and essentially crystalline, sequentially polymerized propylene-ethylene product comprising a blend of propylene homopolymer, ethylene homopolymer, and random copolymers of propylene and ethylene, and having a combined ethylene content of from about 15 to about 30 percent by weight, the weight ratio of said polypropylene to said product being about 1:4 to about 4:1, and

(ii) essentially crystalline sequentially polymerized propylene-ethylene product having a combined ethylene content of from about 0 to about 14 percent by weight, and essentially crystalline sequentially polymerized propylene-ethylene product comprising a blend of propylene homopolymer, ethylene homopolymer, and random copolymers of propylene and ethylene, and having a combined ethylene content of from about 15 to about 30 percent by weight, the weight ratio of these two products being about 1:4 to about 4:1.

4,510,287

ABS COMPOSITIONS AND PROCESS FOR PREPARING SAME

Wan C. Wu, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 21, 1983, Ser. No. 553,717

Int. Cl.³ C08L *55/02*

U.S. Cl. 525—84 **4 Claims**

1. An ABS intermediate for use in a polyblend, said intermediate consisting essentially of a copolymer of styrene and acrylonitrile grafted onto a preformed rubber substrate which is dispersed in ungrafted matrix copolymer of styrene and acrylonitrile, said copolymer of the graft and said matrix copolymer each containing 60 to 85 weight styrene and 15 to 40 weight % polymerized acrylonitrile, the weight percent of surface-grafted acrylonitrile in the copolymer being different by at least 2.0% from the weight percent polymerized acrylonitrile in the matrix copolymer.

4,510,288

CYCLIC AMIDINES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS CATALYSTS IN THE HARDENING OF EPOXIDE RESINS

Rolf-Volker Meyer; Hans-Joachim Kreuder, and Erwin Hohl, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

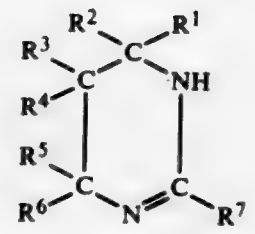
Filed Mar. 16, 1983, Ser. No. 475,710

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211301

Int. Cl.³ C08L *59/58*; C07D *239/02*

U.S. Cl. 525—111 **6 Claims**

1. Compounds corresponding to the following formula (2):



(2)

in which

R^1 to R^6 independently of one another represent a hydrogen atom, a C_1–C_4-alkyl, C_5–C_{10}-cycloalkyl, C_7–C_{13}-aralkyl or a C_6–C_{18}-aryl group or two substituents R^1/R^2, R^3/R^4, R^5/R^6,

R^1/R^3 or R^1/R^5 together represent a C_1–C_5-alkylene radical,

R^7 represents an aliphatic, cycloaliphatic, araliphatic or aromatic radical containing from 1 to 36 carbon atoms which is either substituted by COOH or NR^9R^{10}, or interrupted by a keto group or by 1 to 10 amide or ester groups;

R^9 and R^{10} independently of one another represent a hydrogen atom or a C_1–C_{12}-alkyl or C_6–C_8-cycloalkyl group or both substituents together represent a C_4–C_6-alkylene group.

4,510,289

POLYCARBONATE/CONDENSATION POLYMER BLENDS

Daniel W. Fox, Pittsfield; Edward N. Peters, Lenox, and Gary F. Smith, Pittsfield, all of Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 259,524, May 1, 1981, abandoned. This application Dec. 20, 1982, Ser. No. 451,180

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—148 **17 Claims**

1. A thermoplastic resin composition comprising:

(a) a mixed polycarbonate consisting of units derived from a first dihydric phenol, which is a bis(hydroxyaryl)sulfone, and a second dihydric phenol, said first and second dihydric phenols being in a mole ratio of 1:5 to 7:3; and

(b) a thermoplastic condensation polymer comprising an aromatic polycarbonate, said composition having been admixed to produce a compatible composition.

4,510,290

ACID-CURABLE COMPOSITION CONTAINING A MASKED CURING CATALYST, AND A PROCESS FOR THE CURING THEREOF

Rudolf Kirchmayr, Aesch, and Werner Rutsch, Reinach, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,173

Claims priority, application Switzerland, Jan. 11, 1982, 123/82; Aug. 31, 1982, 5174/82

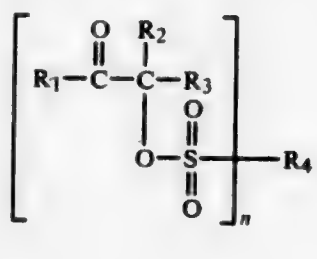
Int. Cl.³ C08L *61/28*

U.S. Cl. 525—162 **14 Claims**

1. A curable composition which comprises

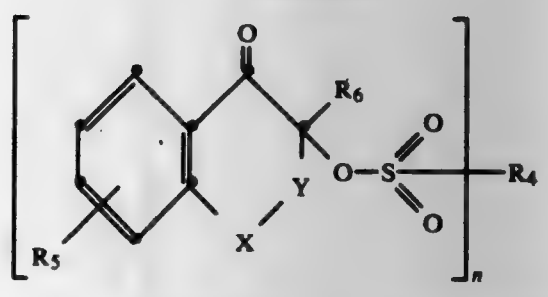
(a) an acid-curable resin which is an amino resin or a phenolic resin, or a mixture of an amino resin or a phenolic resin with an alkyd, polyester or acrylic resin, and

(b) an effective amount of a curing catalyst which is a compound of formula I or II



I

-continued



in which n is the number 1 or 2 and R_1 is phenyl or naphthyl which is unsubstituted or substituted by 1, 2 or 3 radicals belonging to the group comprising —Cl, —Br, —CN, —NO_2, C_1–C_{12}-alkyl, C_1–C_4-alkoxy, phenoxy, tolyloxy, phenylthio, tolylthio, C_1–C_8-alkylthio, —SCH_2CH_2OH, C_1–C_4-alkylsulfonyl, phenylsulfonyl, C_2–C_4-alkoxycarbonyl, C_1–C_4-alkylamino, C_2–C_4-dialkylamino, phenyl—CONH, C_1–C_4-alkyl-CONH— or benzoyl, or R_1 is also anthryl, phenanthryl, thienyl, pyridyl, furyl, indolyl or tetrahydronaphthyl, and R_2 is hydrogen or C_1–C_8-alkyl which is unsubstituted or substituted by —OH, —Cl, C_1–C_4-alkoxy, —CN, C_2–C_5-alkoxycarbonyl, phenyl, chlorophenyl, C_7–C_{10}-alkylphenyl or C_7–C_{10}-alkoxyphenyl, or is also benzoyl, R_3 is as defined for R_2 and is also phenyl which is unsubstituted or substituted by —Cl, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkylthio, C_2–C_8-alkoxycarbonyl, —CN, C_1–C_4-alkyl-NHCO—, phenyl-NHCO— or —$CONH_2$, or R_2 and R_3, together with the carbon atom to which they are attached, constitute a C_4–C_6-cycloalkyl ring, X is —O—, —S—, —SO_2—, —CH_2—, —$C(CH_3)_2$— or >N-COR_7, R_7 being C_1–C_4-alkyl or phenyl, and Y is a direct bond or —CH_2—, and, if n=1, R_4 is C_1–C_{18}-alkyl, phenyl which is unsubstituted or substituted by halogen, C_1–C_{12}-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkyl-CONH—, phenyl-CONH—, —NO_2 or benzoyl, naphthyl which is unsubstituted or substituted by halogen, C_1–C_{12}-alkyl or C_1–C_4-alkoxy, C_5–C_6-cycloalkyl, C_7–C_9-aralkyl, camphoryl, —CF_3, —CCl_3, —F or —NH_2, and, if n=2, R_4 is a —$(CH_2)_m$— group in which m is the number 2 to 8, or R_4 is phenylene or naphthylene which is unsubstituted or substituted by C_1–C_{12}-alkyl, R_5 is H or 1, 2 or 3 radicals belonging to the group comprising —Cl, —Br, —NO_2, C_1–C_{12}-alkyl, C_1–C_4-alkoxy, phenoxy, phenylthio, C_1–C_8-alkylthio or —SCH_2CH_2OH, and R_6 is hydrogen or C_1–C_8-alkyl which is unsubstituted or substituted by —OH, —Cl, C_1–C_4-alkoxy, —CN, C_2–C_5-alkoxycarbonyl, phenyl, chlorophenyl, C_7–C_{10}-alkylphenyl or C_7–C_{10}-alkoxy-phenyl, phenyl which is unsubstituted or substituted by —Cl, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkylthio, C_2–C_8-alkoxycarbonyl or —CN.

4,510,291

RUBBER COMPOSITIONS FOR TIRE TREADS

Kinya Kawakami, Ninomiya, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1983, Ser. No. 529,962
Claims priority, application Japan, Sep. 9, 1982, 57-155853
Int. Cl.³ C08L *9/00, 9/06*
U.S. Cl. 525—237 **2 Claims**

1. A rubber composition for tire treads which comprises as the rubber ingredients (I) a styrene-butadiene copolymer rubber having a styrene content of 30–60% by weight, (II) a polybutadiene rubber having a trans 1,4-bonded butadiene content of at least 60% by weight and a glass transition temperature of from −100° C. to −50° C. and (III) a styrene-butadiene copolymer rubber having a styrene content of 5–25% by weight and a 1,2-bonded butadiene content of 20–60% by weight of the butadiene portion of the rubber (III), in such amounts that the styrene-butadiene copolymer rubber (I) and polybutadiene rubber (II) are present in a total amount of 20–80% by weight of the whole of the rubber ingredients, the styrene-butadiene copolymer rubber (III) is present in an amount of 80–20% by weight of the whole of the rubber ingredients and the styrene content of the rubber (I) is equal to 5–25% by weight of the total of the rubbers (I) and (II).

4,510,292

ETHYLENE-PROPYLENE COPOLYMERS FOR FOAMING AND PROCESS FOR PRODUCING THE SAME

Hiromasa Chiba; Kenjiro Obama; Shunji Kawazoe; Takahiro Oka, and Akihiro Satoh, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Aug. 11, 1983, Ser. No. 522,013
Claims priority, application Japan, Aug. 24, 1982, 57-146592
Int. Cl.³ C08F *297/08*
U.S. Cl. 525—247 **4 Claims**

1. In a process for producing a block copolymer by copolymerizing propylene with ethylene in the presence of a catalyst comprising a titanium trichloride composition and an organoaluminum compound and a molecular weight modifier, the improvement which comprises:

(a) polymerizing propylene in two steps so that the resulting propylene homopolymer portion will consist of a lower molecular weight portion and a higher molecular weight portion, the intrinsic viscosity $[\eta]_H$ of said higher molecular portion and the intrinsic viscosity $[\eta]_L$ of said lower molecular weight portion having the relationship expressed by the following equation:

$$3.5 \leqq [\eta]_H - [\eta]_L \leqq 7.0$$

said propylene homopolymerization is carried out so that the proportions of said lower molecular weight portion and said higher molecular weight portion are 40 to 60% and 60 to 40% by weight, respectively,

(b) in a subsequent stage copolymerizing ethylene with propylene, in the presence of said propylene homopolymer portion, into a block copolymer consisting of said propylene homopolymer portion and an ethylene-propylene copolymer portion, the ethylene being polymerized with propylene so that the molecular weight of said ethylene-propylene copolymer portion will have a value between the molecular weights of said lower molecular weight portion and said higher molecular portion in said propylene homopolymer portion, and so that ethylene-propylene copolymer portion will have an ethylene content of 60–95% by weight based on said copolymer portion, and

(c) controlling the amounts of the respective polymer portions polymerized and the MFR and the HMFR of the total polymer so that:

(i) the relationship between the melt flow rate (MFR) under a load of 2.16 Kg at 230° C. of the resulting block copolymer and the melt flow rate (HMFR) of the block copolymer under a load of 10.20 Kg at 230° C. is log HMFR ≧ 0.922 log MFR + 1.44,

(ii) said block copolymer has an ethylene content of 10 to 40% by weight.

4,510,293

PROCESS FOR HYDROGENATING CONJUGATED DIENE POLYMERS

Yoichiro Kubo; Takaaki Kohtaki, both of Yokohama, and Kiyomori Oura, Kamakura, all of Japan, assignors to Nippon Zenn Co. Ltd., Tokyo, Japan

Filed Dec. 13, 1983, Ser. No. 561,033
Claims priority, application Japan, Dec. 23, 1982, 57-225023
Int. Cl.³ C08F *8/04*
U.S. Cl. 525—338 **7 Claims**

1. In a process for catalytically hydrogenating a carbon-carbon double bond of a conjugated diene polymer by introducing hydrogen in the solution of said polymer, the improvement

wherein a palladium salt of the hydrogenation carboxylic acid is used as the essential hydrogenation catalyst.

4,510,294

POLYMERIZATION OF MONOMERIC HYDROGEN-BLOCKED OXIME DERIVATIVES

Lloyd D. Taylor, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 2, 1982, Ser. No. 394,543
Int. Cl.³ C08F 8/12
U.S. Cl. 525—369 **17 Claims**

1. A process for preparing a polymeric oxime which comprises polymerizing a polymerizable hydrogen-blocked derivative of an ethylenically unsaturated monomeric oxime to provide a polymer comprising recurring units from said polymerizable hydrogen-blocked derivative, said hydrogen-blocked derivative having the formula



wherein R is hydrogen, lower alkyl, aryl, aralkyl or alkaryl, R^1 is hydrogen or lower alkyl, L is a divalent organic linking group and Z is a hydrogen-blocking group capable of being replaced by a hydrogen atom; and replacing hydrogen-blocking Z groups of said polymer with hydrogen atoms to provide a polymer containing oximino groups.

4,510,295

ABSORBABLE POLYMERS OF SUBSTITUTED BENZOIC ACID

Rao S. Bezwada, Whitehouse Station; Shalaby W. Shalaby, Mountainville, and Dennis D. Jamiolkowski, Long Valley, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 20, 1983, Ser. No. 459,428
Int. Cl.³ C08G 63/18, 63/66
U.S. Cl. 525—437 **22 Claims**

1. An absorbable, radiation sterilizable, normally solid polymer comprising a copolyester comprising the repeating divalent units of the formula:

—O—CO—Ph—X—CHR—CO—O—, (A)

—G—, (B)

and

—O—CO—CHR′— (D)

wherein Ph represents 1,2-, 1,3-, or 1,4-phenylene, or lower alkyl- or lower alkoxy-substituted phenylene, wherein R represents hydrogen, lower alkyl, phenyl, or benzyl, wherein X represents oxy, thio, or sulfonyl, wherein G represents the residue after removal of the alcohol groups of a dihydric alcohol, wherein R′ represents hydrogen or methyl, and wherein said divalent units (A), (B), and (D) are bonded to each other through ester groups formed by linking said units, wherein the units (A) plus (B) are present in said polymer in an amount of from about 1 to about 70 parts by weight per 100 parts by weight of the units (D).

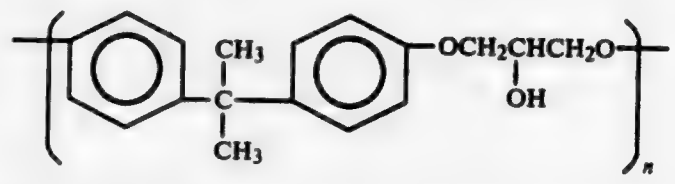
4,510,296

PHENOXY RESINS CONTAINING PENDENT ETHYNYL GROUPS AND CURED RESINS OBTAINED THEREFROM

Paul M. Hergenrother, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 10, 1984, Ser. No. 608,741
Int. Cl.³ C08G 65/32
U.S. Cl. 525—534 **11 Claims**

1. A phenoxy resin composition having long shelf-life and undergoes branching and crosslinking upon the application of heat to yield a cured product having improved solvent resistance and high use temperature and formed as the reaction product of a phenoxy resin having the general formula of



where n=20–200 repeating units and at least 10 mole % of an ethynyl-substituted aryl acid chloride.

4,510,297

MELT CURING ARYLENE SULFIDE POLYMERS WITH OXYGEN

Charles W. Moberly, c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Jan. 12, 1984, Ser. No. 570,108
Int. Cl.³ C08G 75/14
U.S. Cl. 525—537 **8 Claims**

1. A method for treating arylene sulfide polymer comprising stirring melted polymer in a vessel while contacting said polymer with oxygen for a time sufficient to decrease the melt flow to obtain a product of increased viscosity.

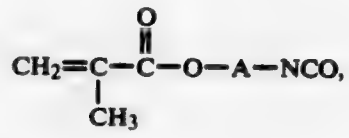
4,510,298

PROCESS FOR MAKING ISOCYANATE-FUNCTIONAL POLYMERS CONTAINING LOW RESIDUAL MONOMERIC ISOCYANATE

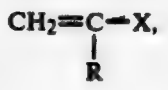
Roland G. Lindsey, Springfield, Pa., and John A. Simms, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 313,585, Oct. 21, 1981, abandoned. This application Apr. 13, 1983, Ser. No. 484,558
Int. Cl.³ C08F 6/10, 120/00
U.S. Cl. 526—87 **5 Claims**

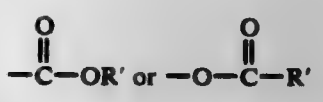
1. In the process of polymerizing a substantially anhydrous mixture containing at least one polymerizable monomer having the formula



in which A is alkylene of 2–14 carbons, the monomer being polymerized alone or with at least one compound of the formula



in which R is hydrogen or methyl and X is phenyl, tolyl, cyano,



R' being alkyl of 1–8 carbons; the improvement comprising supplying to and reacting with the reacting polymerizing mixture at reaction temperature when the polymerization is about 98% complete a quantity at least equal to the quantity of unreacted isocyanate monomer of an active monomer selected from the group consisting of methyl, ethyl and butyl acrylates and fumarates.

4,510,299

POLYMERIZATION METHOD

Michael W. Lynch, Schaumburg, and Thomas J. Pullukat, Hoffman Estates, both of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 363,105, Mar. 29, 1982, Pat. No. 4,455,386. This application Jul. 29, 1983, Ser. No. 518,776

Int. Cl.³ C08F *4/44*

U.S. Cl. 526—129 **15 Claims**

1. The method of making polymers and interpolymers from polymerizable 1-olefins which comprises polymerizing at least one of said olefins under polymerizing conditions with a catalyst system comprising an alkyl or aryl aluminum compound cocatalyst and a catalyst prepared by:

(1) reacting a metal oxide support containing silica or alumina having surface hydroxyl groups or both with a functional organophosphorus compound which is a reactive towards said surface hydroxyl groups;

(2) reacting the product of (1) with a Group IIA organometallic compound, or Group IIA organometallic complex with alkyl aluminum, alkyl boron or alkyl zinc, or mixtures; and

(3) reacting the product of (2) with a Group IVB, VB or VIB metal halide, alkoxy-halide, alkoxide or mixtures of these, or reacting the product of (1) with a Group IVB, VB or VIB metal halide, alkoxy-halide or alkoxide or mixtures and then with a Group IIA organometallic compound, or Group IIA organometallic complex with alkyl aluminum, alkyl boron or alkyl zinc, or mixtures.

4,510,300

PERFLUOROCARBON COPOLYMER FILMS

Stanley B. Levy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 366,660, Apr. 8, 1982, abandoned. This application Mar. 3, 1983, Ser. No. 469,899

Int. Cl.³ C08F *14/26*

U.S. Cl. 526—247 **39 Claims**

1. A film of a melt fabricable perfluorocarbon copolymer, having a shrinkage of 0 to 10 percent in a first direction in the plane of the film, and a shrinkage of at least 20 percent in a second direction in the same plane as the first and which is perpendicular to the first direction when heated for two minutes at about 50° C. below the crystalline melting point of the polymer.

4,510,301

FLUOROCARBON COPOLYMER FILMS

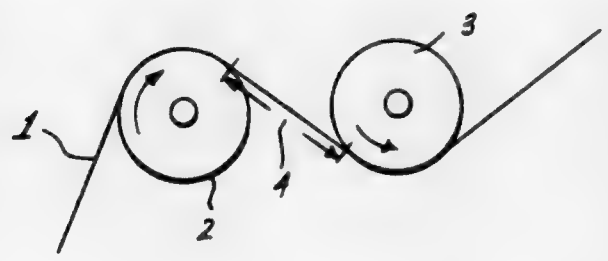
Stanley B. Levy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 383,454, Jun. 1, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 485,821

Int. Cl.³ C08F *10/02*

U.S. Cl. 526—254 **20 Claims**

1. A film of a melt fabricable fluorocarbon copolymer of 40 to 60 mole percent ethylene copolymerized with tetrafluoroethylene or chlorotrifluoroethylene, and optionally a minor amount of at least one other copolymerizable monomer; said film when heated for two minutes at 200° C. having a shrinkage of 0 to 10 percent in a first direction in the plane of the film, and a shrinkage of at least 5 percent in a second direction in the



same plane as the first and which is perpendicular to the first direction.

4,510,302

FORMULATIONS AND THEIR USE FOR PIGMENTING AND/OR DELUSTRING DRESSING AGENTS FOR LEATHER AND LEATHER IMITATIONS

Günter Kolb, deceased, late of Leverkusen (by Ingeborg Kolb, heiress); Leo Tork, Leverkusen, and Wolfgang Höhne, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 459,006

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203817

Int. Cl.³ C08F *220/12, 226/10*

U.S. Cl. 526—264 **4 Claims**

1. A composition comprising a pigment or delustrant and a binder therefore which binder is a copolymer having an intrinsic viscosity (η) of 0.05–0.35 which copolymer is prepared by copolymerizing the following components:

10–40% by weight of an acrylic acid ester having 1–12 C atoms in the alcohol chain,

10–40% by weight of a methacrylic acid ester having 1–4 C atoms in the alcohol chain,

10–30% by weight of N-vinylpyrrolidone,

5–15% by weight of acrylic acid and

10–20% by weight of a vinyl ester having 1–4 C atoms in the acid chain,

in an organic solvent which is miscible with water in the presence of a per-compound or an azo compound which donates free radicals at the polymerization temperature.

4,510,303

ETHYLENE-ALPHA-OLEFIN-POLYENE RANDOM COPOLYMER RUBBER

Hidekuni Oda, Iwakuni; Syuji Minami, Otake; Hiroshi Inoue, Iwakuni; Akira Matsuda, and Yohzoh Yamamoto, both of Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,244

Claims priority, application Japan, May 6, 1982, 57-74613

Int. Cl.³ C08F *210/18*

U.S. Cl. 526—282 **7 Claims**

1. Ethylene-alpha-olefin-polyene random copolymer rubber comprising ethylene, an alpha-olefin having 3 to 10 carbon atoms, and a polyene, wherein:

(A) a molar ratio of ethylene/alpha-olefin is 55/45 to 95/5;

(B) the polyene is a mixture of 5-ethylidene-2-norbornene (ENB) and 5-vinyl-2-norbornene (VNB) in a molar ratio of ENB/VNB of 1/1 to 20/1;

(C) an iodine value of the copolymer rubber is 2 to 40;

(D) an intrinsic viscosity [η] of the copolymer rubber is 1.0 to 6.0 dl/g measured in decalin at 135° C.; and

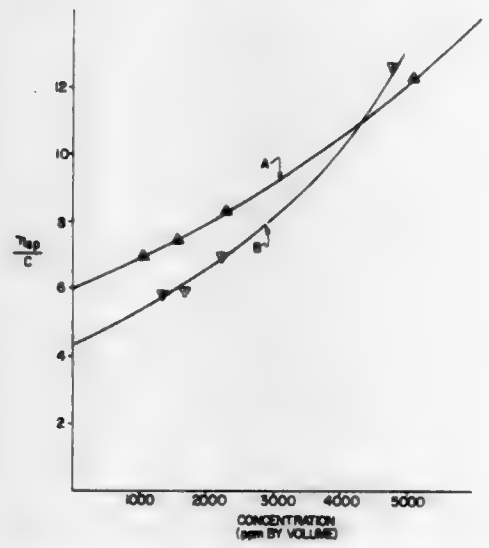
(E) g_η^* defined by a ratio of the intrinsic viscosity [η] to an intrinsic viscosity [η]l of a linear ethylene-propylene random copolymer having an ethylene content of 70 mole % and the same weight-average molecular weight determined by a light-scattering method as that of the copolymer rubber is 0.2 to 0.8.

4,510,304

POLYMER FRACTIONATION

Albert F. Hadermann, Ijamsville, Md., assignor to General Technology Applications, Inc., Reston, Va.

Filed Sep. 30, 1982, Ser. No. 429,804
Int. Cl.³ C08F *6/04*
U.S. Cl. 528—481 **10 Claims**



1. A method for obtaining a high molecular weight fraction of a hydrocarbon soluble, rubbery, thermoplastic polymer which comprises:

cryogenically comminuting said polymer to obtain discrete particles displaying a high surface energy state;

admixing said polymer particles while still in said high energy state with a liquid of adjusted solvent power toward said polymer so as to obtain upon admixing said polymer with the liquid a high molecular weight, polymer-rich coacervate fraction and a lower molecular weight polymer solution; and

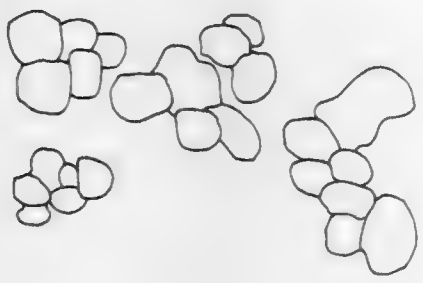
separating said coacervate fraction from said polymer solution.

4,510,305

PROCESS FOR THE PRODUCTION OF POLYPROPYLENE POWDERS

Hans H. Körsgen, Praroman-le Mouret, and Wolfgang Weller, Bulle, both of Switzerland, assignors to Coathylene S.A., Fribourg, Switzerland

Continuation of Ser. No. 369,295, Apr. 16, 1982, abandoned, which is a continuation of Ser. No. 157,700, Jun. 9, 1980, abandoned, which is a continuation of Ser. No. 957,946, Nov. 6, 1968, abandoned, which is a continuation of Ser. No. 801,449, May 27, 1977, abandoned, which is a continuation of Ser. No. 682,547, May 3, 1976, abandoned, which is a continuation of Ser. No. 523,284, Nov. 13, 1974, abandoned, which is a continuation of Ser. No. 446,884, Feb. 28, 1974, abandoned, which is a continuation of Ser. No. 777,565, Nov. 21, 1968, abandoned. This application Dec. 22, 1983, Ser. No. 564,655
Claims priority, application Austria, Nov. 21, 1967, 10518/67
Int. Cl.³ C08F *6/00*; C08G *00/00*; C08J *3/00*
U.S. Cl. 528—494 **14 Claims**



1. A process for the production of finely divided polypropylene powders of grain size below 100μ which comprises the following steps:

(a) dissolving polypropylene in a single liquid phase consisting of 45 to 95 parts of weight of perchlorethylene and 55 to 5 parts by weight of non-solvent of the polypropylene, said non-solvent being the methyl half ether of ethylene glycol, at a temperature above 115° C., employing a sufficient amount of said single phase liquid to completely dissolve said polypropylene and up to 20 liters of said single phase liquid per kg of polypropylene;

(b) cooling this solution or allowing it to cool, under quiescent conditions, to a temperature below about 80° C. so that the polypropylene precipitates in the form of agglomerates of preformed individual particles of polypropylenes;

(c) separating the precipitated polypropylene from the liquid phase and drying it; and

(d) subjecting the dried polypropylene to mechanical comminution,

said polypropylene being high molecular weight polypropylene as is produced with Ziegler catalyst, said high molecular weight polypropylene being one which during precipitation from solvents or a mixture of solvents and non-solvents is obtained as a non-pulverulous lumpy mass.

4,510,306

METHOD FOR PURIFYING REACTION PRODUCTS CONTAINING HIGHER-ALKYL GLYCOSIDES

William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 327,341, Dec. 4, 1981, abandoned. This application Sep. 13, 1983, Ser. No. 531,927
Int. Cl.³ C07H *1/06, 15/04*
U.S. Cl. 536—127 **2 Claims**

1. A process for purifying crude higher-alkyl glycosides containing residual free higher alcohols, said glycosides obtained by the acid catalyzed reaction of C_8–C_{18} aliphatic monohydric alcohols with a source of monosaccharide, which comprises partially distilling a mixture of the crude higher-alkyl glycoside and a hydroxyl containing solvent selected from the group consisting of:

(a) glycerol,

(b) polyoxyalkylene glycols having an average of 3 to about 5 oxyalkylene units selected from oxyethylene and oxypropylene,

(c) C_1–C_4 alkyl ethers of polyoxyalkylene glycols having about 2 to about 5 oxyalkylene units selected from oxyethylene and oxypropylene, and

(d) C_1–C_4 alkyl ethers of aliphatic diols, triols, and tetrols having no more than 4 carbon atoms,

wherein further, the boiling point of the solvent is at least 10° C. higher than that of the higher alcohol used in the preparation of the higher-alkyl glycoside.

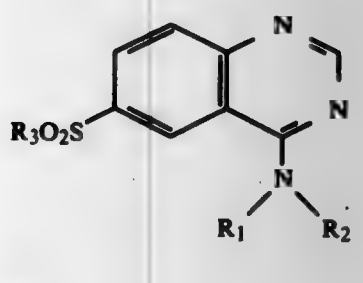
4,510,307

6-QUINAZOLINESULFONYL DERIVATIVES AND PROCESS FOR PREPARATION THEREOF

Hiroyoshi Hidaka, Tsu; Takanori Sone, Nobeoka; Yasuharu Sasaki, Nobeoka; Taisuke Sugihara, Nobeoka; Seiji Takagi, Nobeoka, and Kiyohide Sako, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Aug. 17, 1981, Ser. No. 293,192
Claims priority, application Japan, Aug. 20, 1980, 55-113401; Aug. 22, 1980, 55-114658; Jan. 29, 1981, 56-10847
Int. Cl.³ C07D *265/00, 247/00, 403/00*
U.S. Cl. 544—283 **74 Claims**

1. A compound of Formula (I):



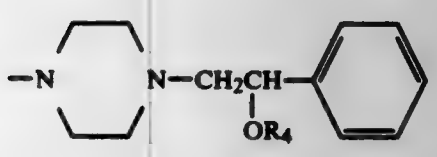
wherein

R_1 is a hydrogen atom or a C_{1-12} alkyl group;

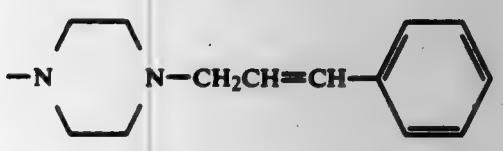
R_2 is a hydrogen atom, a C_{1-12} alkyl group, a C_{4-10} cycloalkyl group, an aryl group or an aralkyl group; and

R_1 and R_2 may be linked directly or through an oxygen atom to form a 5- to 7-membered heterocyclic ring together with the adjacent nitrogen atom; and

R_3 is a



group wherein R_4 is a C_{1-8} alkyl group; a $—NH(CH_2)_nNH_2$ group wherein n is an integer of 2 to 10; or a



group;

and the pharmaceutically acceptable acid addition salt thereof.

4,510,308

PROCESS FOR PREPARING CARBOLINE DERIVATIVES

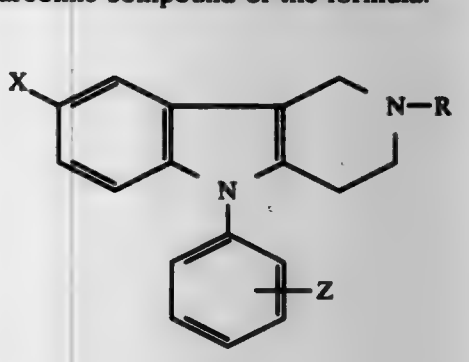
Willard M. Welch, Jr., Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,494

Int. Cl.³ C07D *471/04*

U.S. Cl. 546—85 **4 Claims**

1. A process for preparing a 2-substituted-5-aryl-1,2,3,4-tetrahydro-γ-carboline compound of the formula:

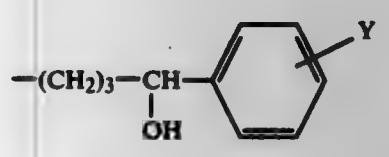


wherein

X is hydrogen, fluorine, chlorine or bromine;

Z is hydrogen, fluorine, chlorine or methoxy; and

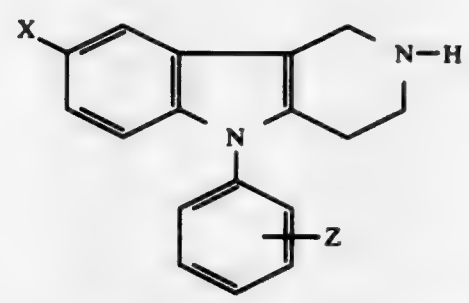
R is of the formula



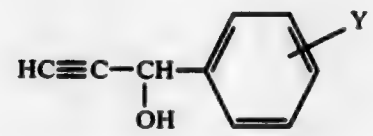
wherein

(I) Y is hydrogen, methyl, fluorine or chlorine, which comprises

(a) contacting a corresponding 2-unsubstituted-5-aryl-1,2,3,4-tetrahydro-γ-carboline of the formula



wherein X and Z are each as previously defined, in a reaction-inert polar organic solvent with at least an equimolar amount of an acetylenic compound of the formula



wherein Y is as aforesaid, in the presence of an equimolar amount of formaldehyde with respect to said acetylenic compound and in the presence of a catalytically-effective amount of cuprous chloride or cuprous bromide at a temperature that is in the range of from about 20° C. up to about 100° C. until the condensation reaction to form the desired unsaturated intermediate product is substantially complete; and thereafter

(b) contacting the acetylenic condensation product formed in step (a) in a reaction-inert organic solvent with hydrogen at a pressure of up to about 75 p.s.i.g. in the presence of a catalytically-effective amount of a noble metal catalyst and at a temperature that is in the range of from about 15° C. up to about 75° C. until the reduction reaction to form the desired final product is substantially complete.

4,510,309

HISTAMINE H_2-ANTAGONISTS

Ronnie R. Crenshaw, Dewitt, and Aldo A. Algieri, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 240,034, Mar. 3, 1981, Pat. No. 4,394,508, which is a continuation-in-part of Ser. No. 163,831, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 117,182, Jan. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 72,517, Sep. 4, 1979, abandoned.

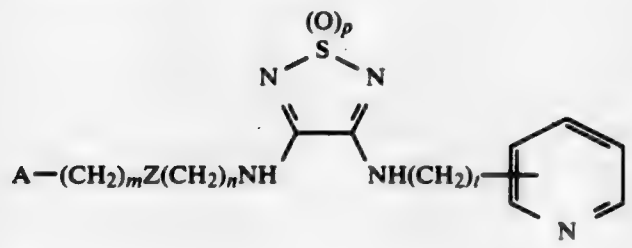
This application May 19, 1983, Ser. No. 496,169

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ C07D *417/12, 417/14*

U.S. Cl. 546—194 **25 Claims**

1. A compound of the formula



wherein

p is 1 or 2;

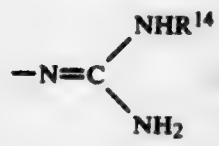
m is an integer of from zero to 2, inclusive;

n is an integer of from 2 to 4, inclusive;

t is 1 or 2;

Z is sulfur, oxygen or methylene;

A is phenyl, imidazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadiazolyl, oxadiazolyl, furyl, thienyl or pyridyl; provided that A may contain one or two substituents, the first substituent being selected from (lower)alkyl,



and $-(CH_2)_qNR^5R^6$,

and the second substituent being selected from (lower)alkyl, halogen and (lower)alkoxy;

q is an integer of from 0 to 6, inclusive; R^{14} is hydrogen, (lower)alkyl, (lower)alkanoyl or benzoyl; and

R^5 and R^6 each are independently hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, (lower)alkoxy(lower)alkyl or cyclo(lower)alkyl, provided that R^5 and R^6 may not both be cyclo(lower)alkyl; or R^5 and R^6, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, piperidino, methylpiperidino, dimethylpiperidino, hydroxypiperidino, homopiperidino, heptamethyleneimino or octamethyleneimino;

or a nontoxic, pharmaceutically acceptable salt, hydrate or solvate thereof.

4,510,310

1,4-DIHYDRO-2,6-DIMETHYL-4-(2'-CHLOROPHENYL)-3,5-DICARBOXYLIC ACID,METHYL OR ETHYL,TRIFLUOROETHYL ESTER

Egbert Wehinger, Velbert; Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Leverkusen; Robertson Towart, Wuppertal; Kurt Stoepel, Wuppertal, and Stanislay Kazda, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 181,453, Aug. 25, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,732

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935451

Int. Cl.³ C07D *213/55, 211/90;* A61K *31/44*

U.S. Cl. 546—321 **2 Claims**

1. The compound, which is 1,4-dihydro-2,6-dimethyl-4-(2'-chlorophenyl)-pyridine-3,5-dicarboxylic acid, methyl, 2,2,2-trifluoroethyl ester.

4,510,311

WATER-INSOLUBLE AZOLYSTYRYL OPTICAL BRIGHTENERS

Udo Eckstein, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

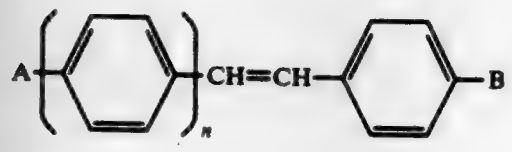
Filed Jan. 14, 1983, Ser. No. 458,085

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1982, 3203058

Int. Cl.³ C07D *451/00, 217/00, 213/08, 253/00*

U.S. Cl. 548—132 **8 Claims**

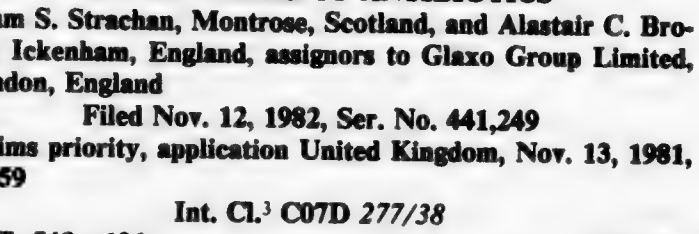
1. A water-insoluble compound of the formula



wherein

A is an oxazole, imidazole, 1,2,4-oxadiazole, 1,3,4-oxadiazole, 1,3,4-thiadiazole, 1,2,3-, 1,2,4- and 1,3,4-triazole, pyrimidine, 1,3,5-triazine, benzoxazole, benzothiazole, benzimidazole, naphthoxazole, benzo-s-triazole, naphtho-s-triazole, benzo(b)-furan, quinazoline, or quinoxaline radical,

B is



n is 1, 2 or 3,

R_1 is hydrogen, CN, R, —COR, SO_2R, COOR, CONHR or $CON(R')_2$,

R_2 is hydrogen, chlorine, bromine, —OR, —NHR, $—N(R')_2$ or NHCOR,

R' is alkyl having 1 to 6 carbon atoms and being optionally substituted by hydroxyl, C_1–C_4-alkoxy, CN, carboxyl, C_1–C_4-alkoxycarbonyl, $CONH_2$, chlorine or bromine, or trifluoromethyl, and

R is R'', alkenyl having 2 to 5 carbon atoms, phenyl —C_1–C_4-alkyl, phenyl C_1–C_4-alkyl substituted on the phenyl ring by chlorine, methyl and/or methoxy, cyclohexyl optionally substituted by up to three times by methyl and/or chlorine, or phenyl which is optionally substituted by C_1–C_4-alkyl, trifluoromethyl, chlorine, bromine, carboxyl, cyano, C_1–C_4-alkoxycarbonyl and/or C_1–C_4-alkoxy.

4,510,312

MANUFACTURE OF ANTIBIOTICS

William S. Strachan, Montrose, Scotland, and Alastair C. Brodie, Ickenham, England, assignors to Glaxo Group Limited, London, England

Filed Nov. 12, 1982, Ser. No. 441,249

Claims priority, application United Kingdom, Nov. 13, 1981, 8134359

Int. Cl.³ C07D *277/38*

U.S. Cl. 548—194 **8 Claims**

1. Crystalline ethyl (Z)-2-hydroxyimino-2-(2-triphenylmethylaminothiazol-4-yl)acetate hydrochloride N,N-dimethylformamide solvate.

4,510,313

2-GUANIDINO-4-HETEROARYLTHIAZOLES

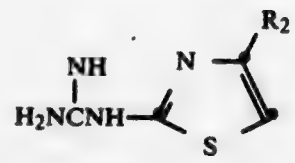
John L. LaMattina, Ledyard, and Christopher A. Lipinski, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 449,129, Dec. 13, 1982, Pat. No. 4,452,987, which is a division of Ser. No. 293,547, Aug. 20, 1981, Pat. No. 4,374,843, which is a continuation-in-part of Ser. No. 196,231, Oct. 14, 1980,. This application Mar. 27, 1984, Ser. No. 593,791

Int. Cl.³ C07D *277/48*

U.S. Cl. 548—194 **9 Claims**

1. A compound of the formula



and the acid addition salts thereof, wherein R_2 is $—COCH(R'')R_3$ or $—CONHR_4$, wherein R'' is hydrogen or methyl, R_3 is halo, N_3 or $—NH_2$ and R_4 is $—NH_2$ or

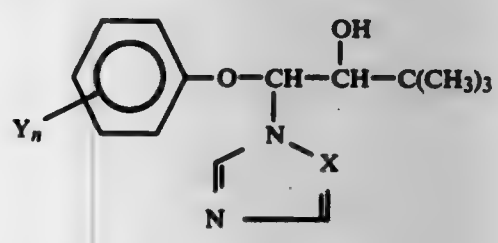


4,510,314
PREPARATION OF 1-AZOLYL-3,3-DIMETHYL-1-PHENOXYBUTAN-2-OLS

Wolf-Dietrich Pflugbeil, and Wolfgang Krämer, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 21, 1983, Ser. No. 516,171
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228867
Int. Cl.³ C07D *233/60, 249/08, 233/61*
U.S. Cl. 548—262 9 Claims

1. A process for the preparation of a 1-azolyl-3,3-dimethyl-1-phenoxybutan-2-ol of the formula



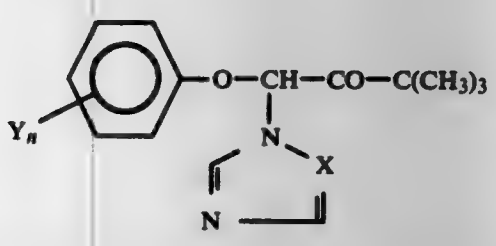
in which

X is a nitrogen atom or the CH group,

Y is halogen, alkyl, alkoxycarbonyl, nitro or phenyl which is optionally monosubstituted or disubstituted by fluorine, chlorine, bromine and/or methyl, and

n is 0,1,2 or 3,

comprising reacting a 1-azolyl-3,3-dimethyl-1-phenoxybutan-2-one of the formula



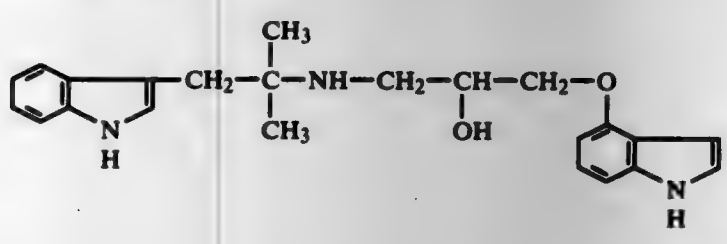
with an aluminum isopropylate or sec-butoxide under an excess pressure of about 1.5 to 5 bar in the presence of a diluent.

4,510,315
4[3-(1,1-DIMETHYL-2-3(3-INDOLYL)ETHYLAMINO)-2-HYDROXYPROPOXY]INDOLE

Henri Demarne, and Jean Wagnon, both of Montpellier, France, assignors to Sanofi, S.A., Paris, France

Division of Ser. No. 178,550, Aug. 15, 1980, Pat. No. 4,404,217. This application Sep. 9, 1983, Ser. No. 530,699
Claims priority, application France, Sep. 17, 1979, 70 20907
Int. Cl.³ C07D *403/12*
U.S. Cl. 548—455 2 Claims

1. A 4-[3-(1,1-dimethyl-2-(3-indolyl) ethylamino)-2-hydroxypropoxy] indole of formula



or a pharmaceutically acceptable acid addition salt thereof.

4,510,316
PURIFICATION OF N-METHYLPYRROLIDONE

James W. Cleary; Fred T. Sherk, and Afif M. Nesheiwat, all c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Jun. 7, 1982, Ser. No. 385,756
Int. Cl.³ C07D *207/267*
U.S. Cl. 548—555 16 Claims

1. A method for purification of N-methylpyrrolidone from a mixture comprising N-methylpyrrolidone, phenol and water, said method comprising:

extracting phenol with a chlorinated aromatic extractant from said mixture; wherein said chlorinated aromatic extractant has a density of at least about 1.10 g/cm³.

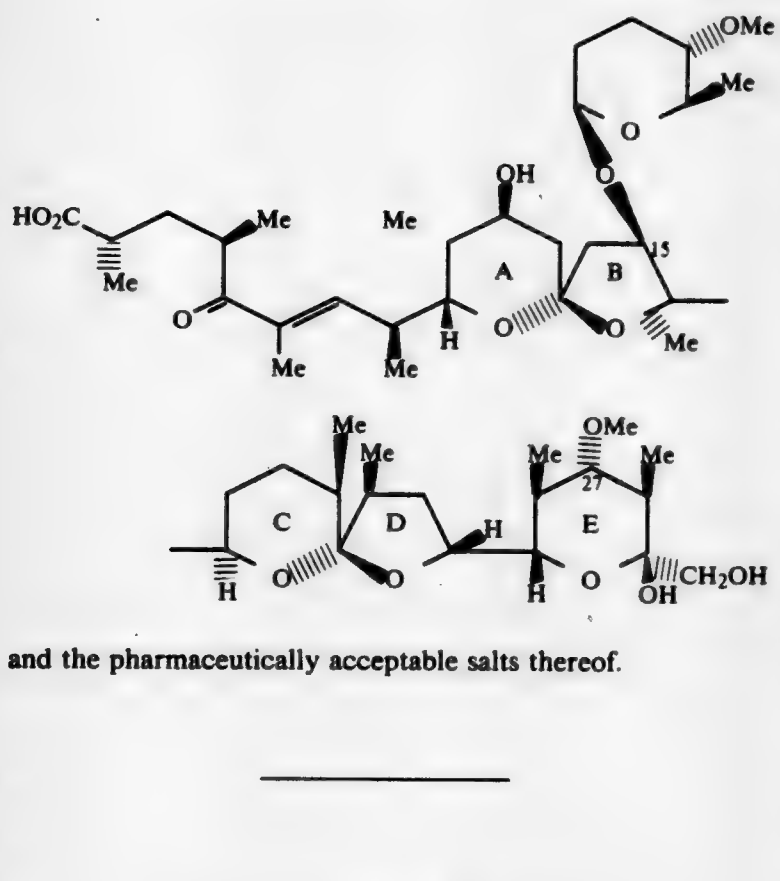
4,510,317
ANTIBIOTIC X-14934A

Chao-Min Liu, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 28, 1983, Ser. No. 518,233
Int. Cl.³ C07D *309/10*
U.S. Cl. 549—343 2 Claims

1. A compound of the formula

I



and the pharmaceutically acceptable salts thereof.

4,510,318
DITHIODIACYL CARNITINES

Maria O. Tinti; Emma Quaresima; Carlo Bagolini, and Paolo de Witt, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Division of Ser. No. 359,732, Mar. 19, 1982,. This application Jan. 12, 1984, Ser. No. 570,190
Claims priority, application Italy, Mar. 31, 1981, 48167 A/81
Int. Cl.³ C07C *149/20;* A61K *31/22*
U.S. Cl. 560—147 1 Claim

1. Dithio diacyl carnitines selected from the group consisting of 3,3'-dithiodipropionyl L-carnitine, 3,3'-dithiodipropionyl L-dicarnitine, 3,3'-dithiodibutyryl dicarnitine, 4,4'-dithiodibutyryl L-carnitine and 4,4'-dithiodibutyryl L-dicarnitine and the hydrochloride salts thereof.

4,510,319
FUNCTIONALIZATION OF TERMINAL TRISUBSTITUTED ALKENES AND DERIVATIVES THEREOF

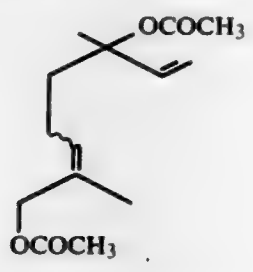
Brian J. Willis, Ramsey, N.J.; Robert G. Eilerman, Merrick, N.Y.; Philip A. Christenson, Midland Park, and John M. Yurecko, Jr., Bayonne, both of N.J., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,139

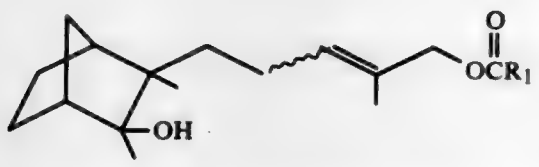
Int. Cl.³ C07C *69/02, 67/02*

U.S. Cl. 560—231 **5 Claims**

1. A compound having the structure:



4. A compound having the structure:



wherein R_1 is hydrogen or an alkyl group containing between about 1 and about 4 carbon atoms.

4,510,320
PREPARATION OF ALIPHATIC CARBOXYLIC ACID ESTERS

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Co. (Ohio), Cleveland, Ohio

Filed Dec. 24, 1981, Ser. No. 334,484

Int. Cl.³ C07C *1/06, 1/253, 9/04, 9/06, 9/08, 67/36, 69/14*

U.S. Cl. 560—265 **8 Claims**

1. A process for the production of aliphatic acetate esters containing up to 12 carbon atoms and gaseous alkanes comprising contacting acetic acid, carbon monoxide and hydrogen in the vapor phase at a temperature of about 250° C. to about 400° C. and a pressure of about 250 psi to about 5,000 psi in the presence of a catalyst containing the mixed oxides of ruthenium, nickel, an alkali metal selected from Na, Li, K, Rb and Cs, and optionally a promoter metal selected from cobalt, cadmium, zinc, or mixtures thereof.

4,510,321
AUTOXIDATIVE CLEAVAGE OF KETONES IN THE PRESENCE OF PULVERIZED ALKALI METAL HYDROXIDE

Divakaran Masilamani, Morristown, and Edward H. Manahan, Morris Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 31, 1983, Ser. No. 462,295

Int. Cl.³ C07C *27/00, 45/33, 51/245, 51/255*

U.S. Cl. 562—421 **18 Claims**

1. A process for autoxidation of a C_4–C_{10} cycloalkanone having at least one hydrogen on a carbon alpha to the carbonyl carbon which comprises contacting, under nonhomogeneous conditions, a liquid phase comprising said C_4–C_{10} cycloalkanone and an aprotic ether with elemental oxygen gas in the presence of a pulverized alkali metal hydroxide at a temperature of no more than about 50° C. for a time sufficient to cleave the bond between the alpha carbon and the carbonyl carbon to produce a reaction mixture of an insoluble alkali metal salt of an oxidized product, substantially free of further oxidation products, the alkali metal salt of the oxidized product being selected from an alkali metal salt of a keto-alkanoic acid, a dialkali metal salt of a dicarboxylic acid, or an alkali metal salt of a benzoate and a liquid phase comprising the the aprotic ether and said C_4–C_{10} cycloalkanone, separating the reaction mixture into the insoluble alkali metal salt of the oxidized product and said liquid phase, and recovering the alkali metal salt of the oxidized product.

4,510,322
INDACRINONE HAVING ENHANCED URICOSURIC

Edward H. Blaine, Chalfont; Edward J. Cragoe, Jr., Lansdale; Ralph F. Hirschmann, Blue Bell; John F. Nancarrow, deceased, late of Montgomery County; by Elisabeth M. Nancarrow, executrix, Wyndmoor, all of Pa., and Jonathan A. Tobert, New York, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 282,360, Jul. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 244,508, Mar. 16, 1981, abandoned. This application Feb. 3, 1983, Ser. No. 463,685

Int. Cl.³ C07C *59/80*

U.S. Cl. 514—255 **13 Claims**

1. A composition of matter comprising, in combination:
(a) the (+) enantiomer of indacrinone; and
(b) the (−) enantiomer of indacrinone;
wherein the weight ratio of (a):(b) is from about 8:1 to 10:1, that is, the (+) enantiomer is from 89% to 91% by weight of the total, and the (−) enantiomer is from 11% to 9% by weight of the total weight of indacrinone.

4,510,323
CIS-BICYCLO[3.3.0]OCTANE DERIVATIVES, MEDICAMENTS CONTAINING THEM AND PROCESSES FOR THEIR PREPARATION AND USE

Horst R. E. Boehlke; Gerriet K. H. Loschen, both of Stolberg; Gudrun E. Michel, Aachen, and Bernd Müller, Roetgen, all of Fed. Rep. of Germany, assignors to Gruenenthal GmbH, Stolberg, Fed. Rep. of Germany

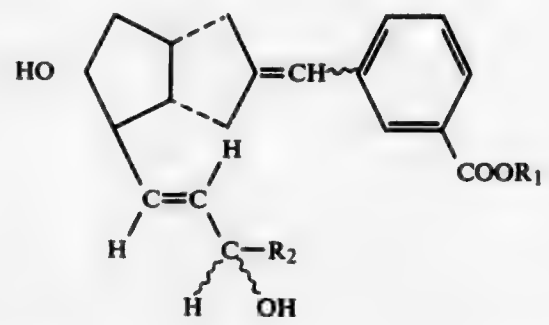
Filed Nov. 17, 1982, Ser. No. 442,240

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146278

Int. Cl.³ C07C *69/76, 65/24*

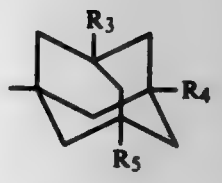
U.S. Cl. 514—530 **25 Claims**

1. Cis-bicyclo[3.3.0]octane derivatives corresponding to the formula:



(I)

wherein
the phenyl radical has the EZ- or the E-configuration with respect to the double bond and at the carbon atom which carries the group R_2 the molecule has the RS- or S-configuration, and wherein
R_1 represents hydrogen, a straight or branched alkyl radical containing 1 to 4 carbon atoms or a pharmaceutically acceptable cation, and
R_2 represents cyclohexyl, 4-methylcyclohexyl or an 1-adamantyl group having the structure



wherein R_3, R_4 and R_5 have the same or a different meaning and each represents hydrogen or methyl.

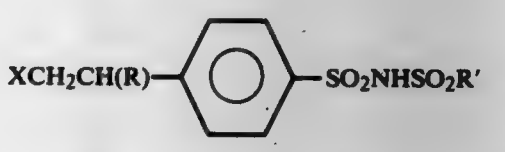
4,510,324

MONOMERIC DISULFONIMIDES

Robert D. Rossi, Levittown, Pa., and Dilip K. Ray-Chaudhuri, Bridgewater, N.J., assignors to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Apr. 28, 1983, Ser. No. 489,665
Int. Cl.³ C07C *143/78*
U.S. Cl. 564—82 **4 Claims**

1. A compound of the formula:



wherein X is bromine, chlorine, or iodine, R is hydrogen or methyl and R′ is alkyl, aryl, toluene or mesitylene.

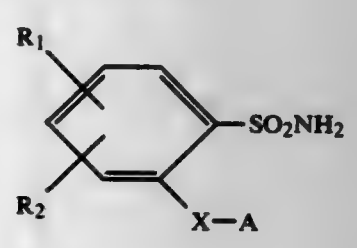
4,510,325

PHENYL SULFONAMIDES

Willy Meyer, Riehen, and Werner Füry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 282,847, Jul. 13, 1981, abandoned. This application Sep. 13, 1982, Ser. No. 417,743
Claims priority, application Switzerland, Jul. 17, 1980, 5481/80; Nov. 5, 1980, 8216/80; Jun. 17, 1981, 3991/81
Int. Cl.³ C07C *143/78*
U.S. Cl. 564—89 **12 Claims**

1. A compound of the formula:



wherein

X is —O—, —S—, —SO— or —SO_2—; and

A is alkenyl of 2 to 6 carbon atoms; haloalkenyl of 2 to 6 carbon atoms; or alkyl of 1 to 6 carbon atoms substituted with (i) alkoxy or haloalkoxy of 1 to 4 carbon atoms; (ii) alkylthio or haloalkylthio of 1 to 4 carbon atoms; (iii) alkylsulfinyl or haloalkylsulfinyl of 1 to 4 carbon atoms; or (iv) alkylsulfonyl or haloalkylsulfonyl of 1 to 4 carbon atoms;

R_1 is hydrogen; halo; alkyl of 1 to 5 carbon atoms; or alkenyl of 2 to 5 carbon atoms; and

R_2 is hydrogen; halo; alkyl of 1 to 5 carbon atoms; alkenyl of 2 to 5 carbon atoms; alkoxy of 1 to 5 carbon atoms or carbalkoxy wherein alkoxy contains 1 to 5 carbon atoms.

4,510,326

PROCESS FOR THE PREPARATION OF FORMYLALKANOLAMINES

Clifford L. Lambert, Jr., and Roger G. Duranleau, both of Georgetown, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,712
Int. Cl.³ C07C *102/00*
U.S. Cl. 564—132 **9 Claims**

1. A process for the preparation of a formylalkanolamine which comprises reacting carbon monoxide with an alkanolamine at a temperature ranging from about 60° to 300° C. and a pressure ranging from about 100 to 10,000 psig, said alkanolamine being represented by the formula:

$$RNH_x—(CH_2—(X)_z—CH_2—OH)_y$$

in which x is 0 or 1, R is hydrogen, a methyl, or an aminoethyl radical with the proviso that R is hydrogen when x is 0, y is 1 or 2 and the sum of x and y is 2, X is a divalent radical from the group consisting of —CH_2— and —CHOH—, and z is 0 or 1.

4,510,327

PROCESS FOR MAKING ALKALI-METAL TETRAORGANYLBORATES

William G. Peet, Elkton, Md., and Frederick N. Tebbe, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1983, Ser. No. 482,597
Int. Cl.³ C07F *5/02*
U.S. Cl. 568—1 **18 Claims**

1. A process for making alkali-metal tetraorganyl borates of the formula MBR_4, comprising reacting a triorganylborane of the formula R_3B with a compound of the formula MOR^1 at a temperature sufficient to result in formation of a compound of the formula MBR_4, wherein

R is an alkyl group of 1 to 6 carbons, an aryl or substituted aryl group of 6 to 12 carbons, or an aralkyl group of 7 to 9 carbons;

R^1 is hydrogen or an alkyl group having from 1 to 6 carbons; and

M is Li, Na, K or Cs.

4,510,328

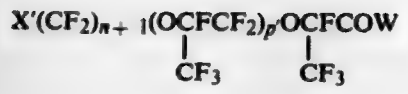
FLUORINATED VINYL ETHER COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Kyoji Kimoto, Kanagawa; Hirotsugu Miyauchi, Tokyo; Jukichi Ohmura, Kanagawa; Mikio Ebisawa, Kanagawa, and Toshioki Hane, Kanagawa, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 152,847, May 23, 1980, Pat. No. 4,329,434. This application Sep. 3, 1981, Ser. No. 299,164
Claims priority, application Japan, May 31, 1979, 54-67888; May 31, 1979, 54-67889; Jul. 9, 1979, 54-85852; Jul. 18, 1979, 54-90301; Jul. 18, 1979, 54-90302
Int. Cl.³ C07C *43/16*
U.S. Cl. 568—32 **6 Claims**

1. A process for producing a fluorinated vinyl ether compound having the formula

$$X'(CF_2)_{n+1}(OCFCF_2)_{p'}OCF=CF_2$$
$$\quad\quad\quad



wherein X', n and p' have the same meanings as defined above and wherein W is F or OM', M' being an alkali metal, to pyrolysis at a temperature of from 100° to 600° C.

4,510,329

PROCESS FOR PREPARING CYCLOPENTENOLONES

Kenji Saito, Toyonaka, and Hiroshi Yamachika, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

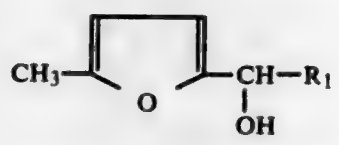
Filed Nov. 28, 1980, Ser. No. 211,225

Claims priority, application Japan, Dec. 7, 1979, 54-159454; May 26, 1980, 55-70456; Jul. 11, 1980, 55-95368

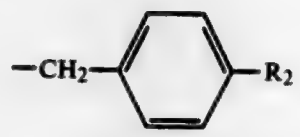
Int. Cl.³ C07C *45/59*

U.S. Cl. 568—310 **5 Claims**

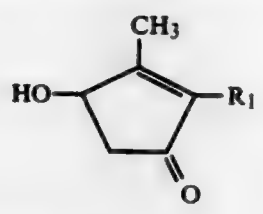
1. A one-step process for preparing a cyclopentenolone which consists essentially of treating a furan-carbinol of the formula:



wherein R_1 is an alkyl group having not more than 6 carbon atoms, an alkenyl or alkynyl group having not more than 6 carbon atoms or a group of the formula:



in which R_2 is a hydrogen atom, a methyl group or a halogen atom at a temperature of 120° to 200° C. in an aqueous medium at a pH of 3 to 8 in the presence or absence of a catalyst to obtain the corresponding cyclopentenolone of the formula:



wherein R_1 is as defined above.

4,510,330

PROCESS FOR THE PREPARATION OF δ-ETHYLENIC CARBONYL COMPOUNDS

Norbert Bluthé, Villeurbanne; Jacques Goré, Caluire, and Max Malacria, Villeurbanne, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

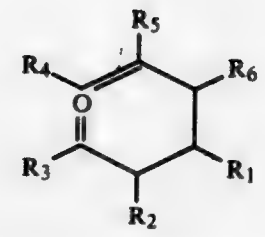
Filed Jun. 21, 1982, Ser. No. 390,700

Claims priority, application France, Jun. 23, 1981, 81 12301

Int. Cl.³ C07C *45/51*

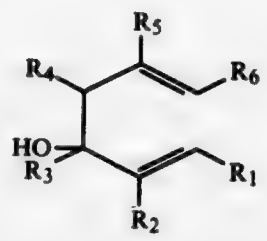
U.S. Cl. 568—403 **8 Claims**

1. A process for the preparation of δ-ethylenic carbonyl compounds of the general formula:



(I)

wherein R_1, R_4 and R_6 each represent a hydrogen atom or an acyclic radical containing 1 to 20 carbon atoms, the chain of which can contain one or more double or triple bonds, R_2 represents a hydrogen atom and R_3 and R_5 each represent an acyclic radical containing 1 to 20 carbon atoms, the chain of which can contain one or more double or triple bonds, or R_3 and R_4 together represent an alkylene radical $(—CH_2—)_n$ (wherein n represents an integer from 3 to 20 inclusive) in which one or more carbon atoms can optionally carry as substituent(s) one or more alkyl radicals containing 1 to 4 carbon atoms, by the rearrangement of a diethylenic alcohol of the general formula:



(II)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are as hereinbefore defined, which comprises carrying out the rearrangement at a temperature between −40° C. and the boiling point of the reaction mixture in the presence of a catalytic amount of a divalent palladium complex, and isolating the δ-ethylenic carbonyl product obtained.

4,510,331

PROCESSES FOR PRODUCING 7-OCTEN-1-AL AND DERIVATIVES THEREOF

Noriaki Yoshimura, and Masuhiko Tamura, both of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Jun. 22, 1982, Ser. No. 390,984

Int. Cl.³ C07C *45/67*

U.S. Cl. 568—450 **4 Claims**

1. A process for producing 7-octen-1-al which comprises isomerizing 2,7-octadiene-1-ol in the presence of a catalyst comprising oxides of at least two metals selected from the group consisting of copper, chromium and zinc at a reaction temperature of 100°–250° C.

4,510,332

PROCESS FOR PRODUCING 1,9-NONANEDIAL

Mitsuo Matsumoto; Noriaki Yoshimura, and Masuhiko Tamura, all of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Feb. 25, 1983, Ser. No. 469,699

Claims priority, application Japan, Mar. 12, 1982, 57-39695

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **9 Claims**

1. A process for producing 1,9-nonanedial, which comprises the steps of:

(I) hydroformylating 7-octen-1-al with a mixture of hydrogen and carbon monoxide in an aqueous solution of sulfolane or 1,4-butanediol in which the weight ratio of sulfolane or 1,4-butanediol to water is 15/85 to 75/25, in the presence of (a) a rhodium complex and (b) the sodium, potassium or lithium salt of m-(diphenylphosphino)-benzenesulfonic acid at a temperature of 40° C. to 110° C.;

(II) extracting 1,9-nonanedial from the reaction mixture obtained in step (I) with a saturated aliphatic primary

alcohol containing about 5 to 11 carbon atoms or a mixture of said primary alcohol and a saturated aliphatic hydrocarbon containing about 5 to 10 carbon atoms; and

(III) recycling the extraction residue containing the catalyst components obtained in step (II) to the hydroformylation step (I).

4,510,333

METHOD FOR PREPARING POLY(TETRAMETHYLENE ETHER) GLYCOL HAVING NARROW MOLECULAR WEIGHT DISTRIBUTION

Gerfried Pruckmayr, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 5, 1984, Ser. No. 617,607
Int. Cl.³ C07C *41/14*
U.S. Cl. 568—617 **5 Claims**

1. A method for preparing poly(tetramethylene ether)glycol having a molecular weight distribution of 1.1–1.4, the method comprising

(a) bringing tetrahydrofuran and a cationic initiator together

(1) in a mol ratio such that the degree of polymerization will be at about a minimum, and

(2) at a temperature which will promote generation of about a maximum number of tertiary oxonium ions;

(b) keeping the resulting mixture at the temperature in (a 2) until the tertiary oxonium ion concentration is at or near a maximum, and then cooling the reaction mass in (a) to within the range −25° C. through +25° C.;

(c) then adding enough THF to the reaction mass to allow the polymerization to proceed to the desired point;

(d) then holding the reaction mass within the range −25° C. through +25° C. until the desired molecular weight and MWD have been reached; and then

(e) quenching the polymerization.

4,510,334

METHOD OF PREPARING ALKALIHALIDE FREE OLIGOMERIC, BROMINOUS XYLYLENE BISPHENOL ETHERS

Dirk Glembin, St. Augustin; Kurt Huhn, Lohmar; Günter Meyer, Troisdorf-Sieglar, and Manfred Thallmeier, Troisdorf-Eschmar, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Apr. 15, 1983, Ser. No. 485,343
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214199
Int. Cl.³ C07C *41/36, 41/16, 43/275;* C08G *65/30*
U.S. Cl. 568—643 **4 Claims**

1. A method of removing alkali halides in a washing step from a reaction mixture of the reaction products of xylylene dichlorides and/or xylylene dibromides with bisphenols in the presence of alkaline compounds or alkali salts, at 85° to 160° C. and, in some cases, under addition of end-group blocking monophenols or monohalogen alkyl compounds, in the presence of ketones exhibiting a miscibility gap with water, comprising adding a ketone-water mixture to the reaction mixture wherein the ketone is of 3 to 10 carbon atoms, subjecting the reaction mixture to filtration to obtain a filtrate; separating the filtrate into a ketonous phase and an aqueous phase and separately evaporating and condensing each of the separated phases to form first and second condensates, combining the condensates to form the ketone-water mixture, using said ketone water mixture as washing media in the washing step, stirring the filter cake in the ketone water mixture and again filtering the resultant mixture.

4,510,335

PERFLUORINATED BRANCHED ETHER COMPOUNDS

Richard J. Lagow, 6204 Shadow Mountain, Austin, Tex. 78731, and Daniel F. Persico, 908 Hermitage Dr., Austin, Tex. 78753

Filed Mar. 29, 1982, Ser. No. 363,113
Int. Cl.³ C07C *43/12;* B01J *13/00*
U.S. Cl. 568—683 **5 Claims**

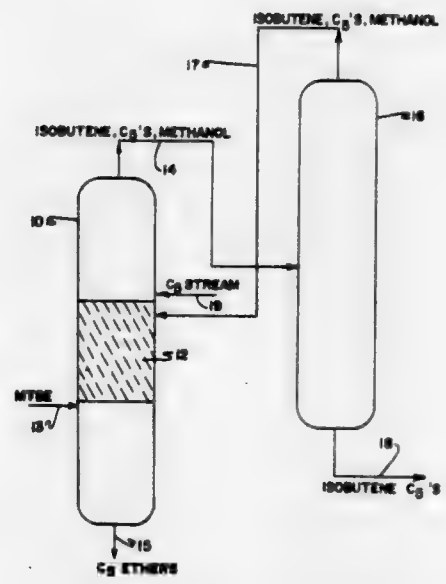
1. Perfluorinated bis-neopentyl ether.
2. Perfluorinated bis-isopropyl ether.
3. Perfluorinated bis-isobutyl ether.
4. Perfluorinated bis-isopentyl ether.
5. Perfluorinated bis-tertiary-butyl ether.

4,510,336

TRANSETHERIFICATION METHOD

Dennis Hearn, Houston, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.

Filed Oct. 20, 1982, Ser. No. 435,459
Int. Cl.³ C07C *41/14*
U.S. Cl. 568—697 **14 Claims**



1. A method of transetherification comprising concurrently:

(a) feeding a first ether capable of dissociating into a first olefin and an alcohol and having a boiling point at pressure in the range of 0 to 400 psig to a distillation column reactor,

(b) contacting said first ether with a fixed bed acidic cation exchange resin which is a distillation structure to thereby at least partially dissociate said first ether into an alcohol and first olefin,

(c) feeding a second olefin having 3 to 10 carbon atoms and a higher boiling point than said first olefin to said fixed bed, whereby said second olefin reacts with said alcohol to form a second ether having a higher boiling point than said first ether,

(d) fractionating the resultant second ether from unreacted materials,

(e) withdrawing said second ether from the distillation column reactor as a bottoms,

(f) withdrawing unreacted materials as an overhead.

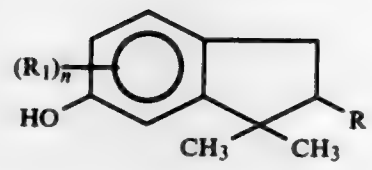
4,510,337

PROCESS FOR PRODUCTION OF 1,1-DIMETHYL-6-HYDROXYINDANS

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

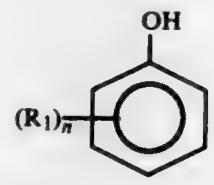
Filed Jan. 31, 1984, Ser. No. 575,593
Int. Cl.³ C07C *39/12*
U.S. Cl. 568—734 **8 Claims**

1. A process for preparing compounds of the formula

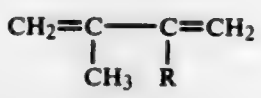


wherein R is a member selected from H and CH_3 and R_1 is a member selected from alkyl radicals containing up to 5 carbon atoms and n is 0 or an integer of 1 or 2 which comprises:

(A) reacting a phenol of the formula



wherein in R_1 and n are as above defined with a diene of the formula



wherein R is as above defined in the presence of first phosphoric acid having a concentration in the range of from 85 to 100% at a temperature within the range of from about 25° to 175° C.;

(B) separating the resulting reaction product of Step (A);

(C) admixing the separated indane containing product with a second phosphoric acid having a concentration in the range of 85 to 100%; and

(D) thereafter recovering the desired indane by distillation of the mixture of Step (C) at a temperature in the range of 150° to 220° C.

4,510,338

RESORCIN DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Toth; Jozsef Torley; Gyorgy Fekete; Laszlo Szporny; Laszlo Vereczkey; Eva Palosi; Imre Klebovich; Pal Vittay; Sandor Gorog, and Istvan Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

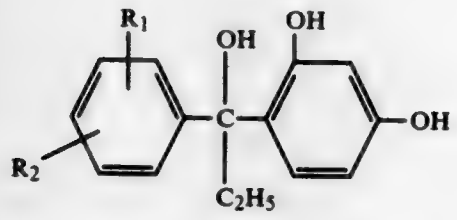
Filed Dec. 27, 1983, Ser. No. 565,839

Claims priority, application Hungary, Dec. 28, 1982, 4189/82

Int. Cl.³ C07C *39/11*

U.S. Cl. 568—766 **4 Claims**

1. A compound of the formula (I)



(I)

wherein R_1 and R_2 independently represent hydrogen, halogen, trihalomethyl, alkyl having from one to 3 carbon atoms or alkoxy having from one to 3 carbon atoms.

4,510,339

INCREASING CATALYST LIFETIME IN HYDROGENATION OF A CARBOHYDRATE IN AQUEOUS SOLUTION

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 457,546, Jan. 12, 1983, abandoned. This application Jul. 9, 1984, Ser. No. 629,151

Int. Cl.³ C07C *29/136, 29/14, 31/18, 31/26*

U.S. Cl. 568—863 **9 Claims**

1. In the method of hydrogenating a feedstock containing a carbohydrate in aqueous solution to its polyols using a group VIII metal as a hydrogenation catalyst, the improvement wherein said feedstock immediately prior to contacting with catalyst under hydrogenation conditions contains less than about 0.5 ppm dissolved oxygen.

4,510,340

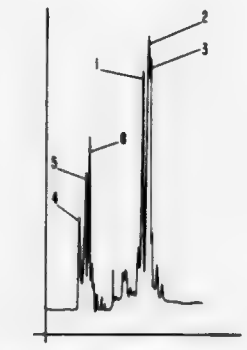
METHYL SUBSTITUTED PINYL OXOPENTENES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Robin K. Wolff, Point Pleasant; Richard M. Boden, Ocean, and Takao Yoshida, West Long Branch, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Division of Ser. No. 396,485, Jul. 8, 1982, Pat. No. 4,424,378, which is a continuation-in-part of Ser. No. 362,237, Mar. 26, 1982, Pat. No. 4,428,387. This application May 20, 1983, Ser. No. 496,651

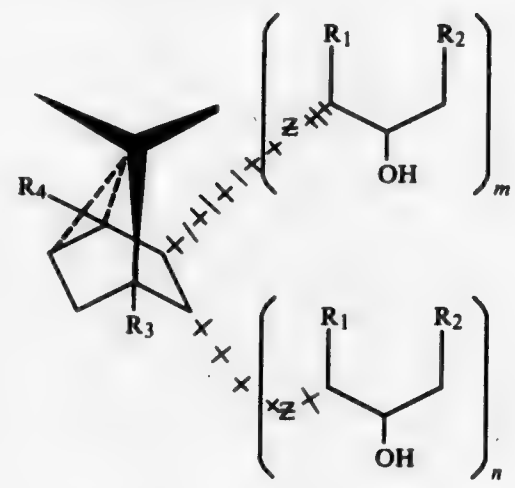
Int. Cl.³ C07C *29/16, 27/04*

U.S. Cl. 568—884 **1 Claim**

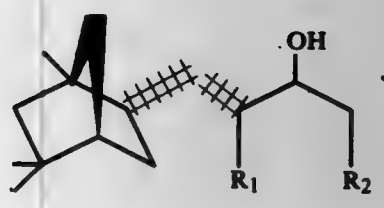


GLC PROFILE FOR EXAMPLE II

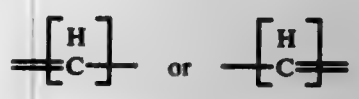
1. A mixture of compound containing at least one alcohol defined according to the structure:



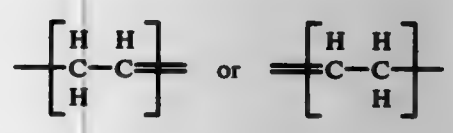
or defined according to the structure:



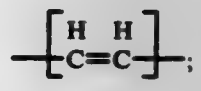
wherein in the mixture Z represents methylidene defined according to the structure:



or ethylidene defined according to the structure:



or ethylenyl defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents no bond; wherein n is 0 or 1 and m is 0 or 1 with the sum of n+m being equal to 1; wherein R_1, R_2, R_3 and R_4 represent hydrogen or methyl; wherein one of the lines:

++++

represents a carbon-carbon single bond and the other of the lines:

++++

represents a carbon-carbon single bond or a carbon-carbon double bond; wherein one of the lines:

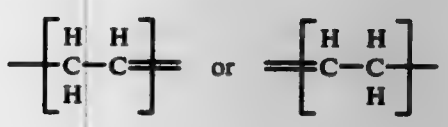
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represents a carbon-carbon single bond and the other of the lines:

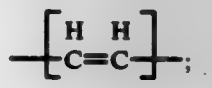
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represents a carbon-carbon single bond or a carbon-carbon double bond; with the provisos that:

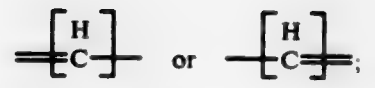
(i) when R_3 and R_4 are each hydrogen, the dashed line at the 7–5 position is a carbon-carbon single bond; n=0 and m is 1; Z represents ethylidene having the structure:



or ethylenyl having the structure:



(ii) when one of R_3 or R_4 is methyl, then either the dashed line at the 7–5 position or the dashed line at the 7–4 position is a carbon-carbon single bond; and Z represents methylidene defined according to the structure:



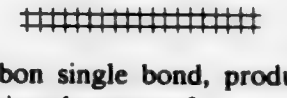
(iii) when R_3 is methyl, then n is 1 and m is 0 and R_4 is hydrogen; and

(iv) when R_4 is methyl, then R_3 is hydrogen, n is 0 and m is 1

and wherein one of the lines:

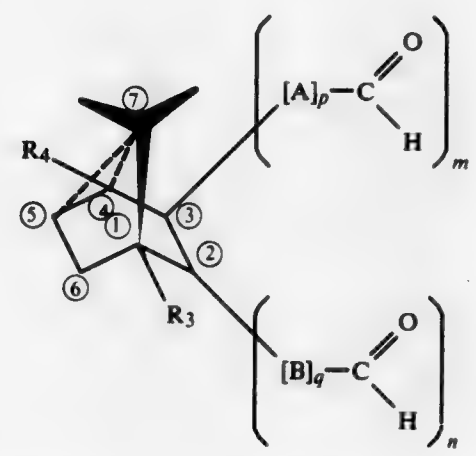


is a carbon-carbon double bond and the other of the lines:

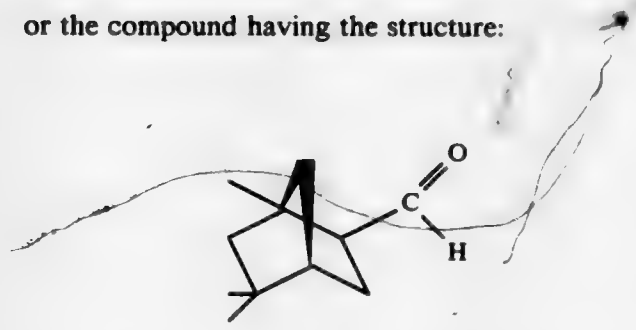


is a carbon-carbon single bond, produced according to the process comprising the steps of:

(1) reacting alpha pinene or beta pinene with a mixture of carbon monoxide and hydrogen in the presence of a hydroformalytion catalyst selected from the group consisting of rhodium, $Co_2(CO)_8$ and organophosphorous polydentate ligand at a pressure of from about 3 atmospheres up to about 1000 atmospheres, the reaction temperature being between 70° C. and 100° C. when using a rhodium catalyst; the reaction temperature being between 110° C. and 120° C. when using a $Co_2(CO)_8$ catalyst; and the reaction temperature being from 90° C. up to 120° C. when using an organophosphorous polydentate ligand; whereby at least one compound is produced, defined according to the structure:



or the compound having the structure:



wherein in the mixture one of the dashed lines at the 7–5 or 7–4 positions represents a carbon-carbon single bond and the other of the dashed lines at the 7–5 or 7–4 position represents no bond; wherein one of R_3 or R_4 represents hydrogen and the other of R_3 or R_4 represents hydrogen or methyl; wherein m=0 or 1 and n=0 or 1 with the sum of m+n being equal to 1; wherein A and B each represents a methylene defined according to the structure:



wherein p=0 or 1 and q=0 or 1 with the provisos that:

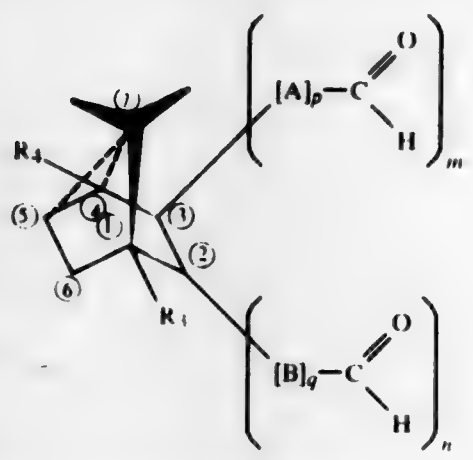
(i) when the dashed line at the 7-5 position is a carbon-carbon single bond, then R_3 and R_4 are both hydrogen, m is 0, n is 1 and q is 1;

(ii) when one of R_3 or R_4 is methyl and the other of R_3 or R_4 is hydrogen, then p and q are both 0;

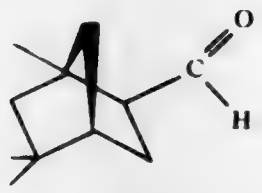
(iii) when R_3 is methyl, then R_4 is hydrogen and the dashed line at the 7-5 position or the dashed line at the 7-4 position is a carbon-carbon signel bond; and m is 0; n is 1 and q is 0;

(iv) when R_4 is methyla nd R_3 is hydrogen, then n is 0 and m is 1 and p is 0 and one of the dashed lines at the 7-5 position or the 7-4 position is a carbon-carbon single bond,

(2) reacting the compound having the structure:



or the compound having the structure:



with methyl ethyl ketone in the presence of a basic catalyst selected from the group consisting of sodium hydroxide, potassium hydroxide, lithium hydroxide, barium hydroxide and calcium hydroxide at reflux conditions and atmospheric pressure; and

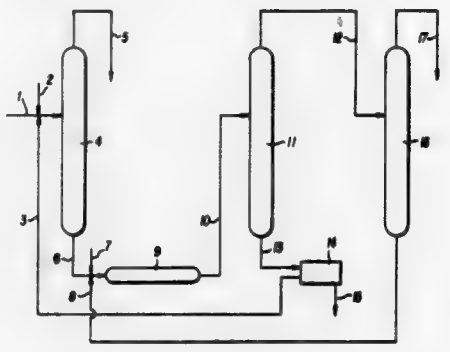
(3) reacting the resulting product with a reducing agent selected from the group consisting of alkali metal borohydrides and lithium aluminum hydride, the reaction being carried out in a solvent inert to the reaction mass under reflux conditions at atmosphereic pressure.

4,510,341

PROCESS FOR PRODUCING CHLOROPRENE

Itsuo Tabata, and Seiichi Watanabe, both of Ohmi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,524
Claims priority, application Japan, Jun. 4, 1979, 54-69724
Int. Cl.³ C07C *17/34*
U.S. Cl. 570—229 **8 Claims**



1. A process for producing chloroprene which comprises a dehydrochlorination of 3,4-dichlorobutene-1 by contacting 3,4-dichlorobutene-1 with the sodium alkoxide of tetrahydrofurfuryl alcohol.

4,510,342

HIGH VISCOSITY INDEX SYNTHETIC OILS AND SYNTHESIS THEREOF

Janie K. Currie, Russell Township, Geauga County, and J. Robert Mooney, Chagrin Falls, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 29, 1982, Ser. No. 454,338
Int. Cl.³ C07C *3/02*
U.S. Cl. 585—524 **15 Claims**

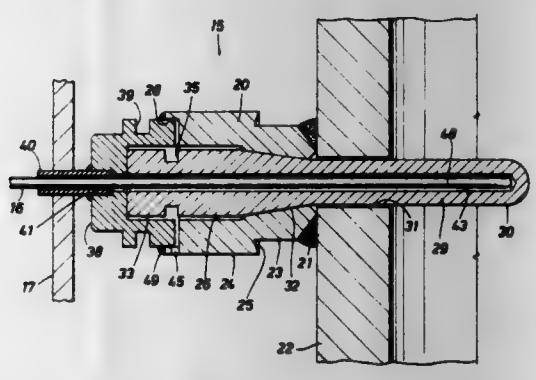
1. A process for preparing high viscosity index synthetic oils from 1-olefins which comprises polymerizing a 1-olefin or mixture of 1-olefins in the presence of

(a) at least one transition metal halide catalyst,

(b) at least one alkyl aluminum compound containing up to about 15 carbon atoms in each alkyl group and up to about 40 carbon atoms per molecule as a co-catalyst, and

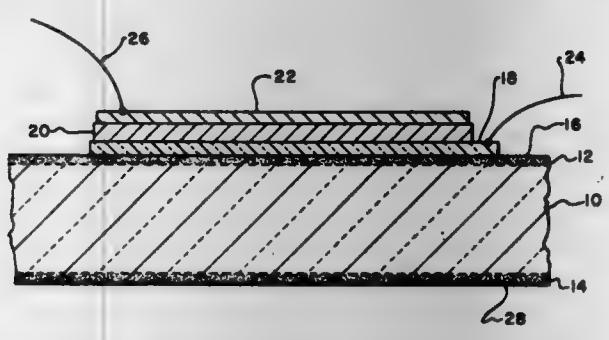
(c) a saturated alkyl fluoride.

4,510,343
THERMOWELL APPARATUS
Robert B. Sivyer, 1314 Beutel Dr., Houston, Tex. 77055
Filed Apr. 9, 1984, Ser. No. 598,052
Int. Cl.[3] H01L *35/02*
U.S. Cl. 136—242 9 Claims



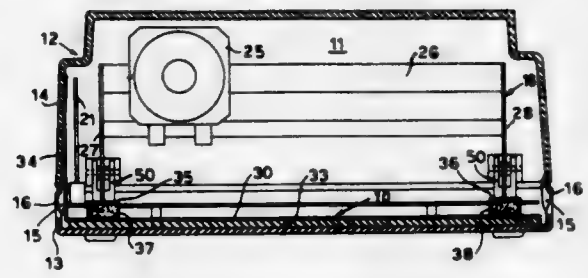
1. A thermowell apparatus for sensing temperature in a flow pipe in a petrochemical furnace including,
a tubular housing member adapted to be welded to the outer wall of a pipe for use in a cracking furnace, said housing member having a bore aligned with an opening in the wall of a pipe, said bore in said housing member having a frusto-conical section.,
a tubular, closed end insert member having an outer frusto-conical surface adapted to engage the frusto-conical section of the housing member with the closed end of the insert member extended midway into a pipe;
a closure member adapted to close the open end of said housing member and enclose the insert member within said housing member; and
said closure member having a central opening for insertion of a thermocouple into the interior of the insert member and being removably welded to said housing member with a seal weld.

4,510,344
THIN FILM SOLAR CELL SUBSTRATE
Elliot Berman, Los Angeles, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Dec. 19, 1983, Ser. No. 562,942
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—256 2 Claims



1. In a photovoltaic solar cell of the type including a glass substrate, a tin oxide transparent conductor deposited on said substrate, a thin film semiconductor layer deposited on said transparent conductor, and a second conductor deposited on said semiconductor layer, the improvement comprising:
said glass substrate containing a substantial percentage of sodium oxide, which substrate has been chemically treated, on at least the surface selected to support the transparent conductor, to:
(a) replace sodium ions with potassium ions to a depth of about 100 microns and
(b) thereafter, remove any remaining sodium ions from said surface to a depth of at least about 0.1 micron.

4,510,345
SCREEN FOR ELECTRICAL CIRCUITS
Armando Costa, Ivrea, and Federico Morbin, Candelo, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Jul. 20, 1982, Ser. No. 400,113
Claims priority, application Italy, Jul. 23, 1981, 68022 A/81
Int. Cl.[3] H05K *9/00*
U.S. Cl. 174—35 R 9 Claims



1. An office machine comprising a casing of non-metallic material, a plurality of metal mechanical parts mounted into said casing, at least one electrical circuit mounted into said casing, and means for screening said electrical circuit, said screening means comprising a flexible sheet having a first layer of insulating material and a second layer of metallic material carried by said first layer of insulating material, said flexible sheet being interposed between said casing and said electrical circuit in such a manner that said electrical circuit is disposed between said plurality of metal mechanical parts and said flexible sheet.

4,510,346
SHIELDED CABLE
Talmage P. Bursh, Jr., Marietta, Ga.; Dean I. Davis; John T. Slominski, both of Omaha, Nebr., and Raymond K. Swartz, Lilburn, Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J. and AT&T Technologies, Inc., New York, N.Y.
Filed Sep. 30, 1983, Ser. No. 538,067
Int. Cl.[3] H01B *11/06*
U.S. Cl. 174—36 14 Claims

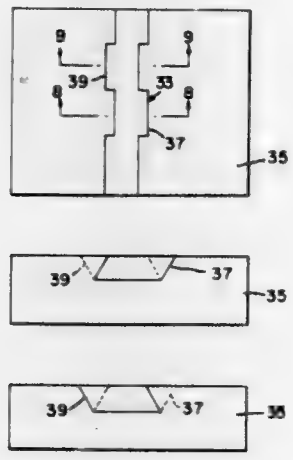
1. A shielded cable, which comprises:
a core comprising at least one conductor;
a layer of dielectric material which encloses said core;
an inner shield which is disposed about said layer of dielectric material and which has an unjoined, longitudinal overlapped seam, said inner shield being made of a suitable metallic shielding material having a relatively high electrical conductivity;
an outer shield which encloses and which engages said inner shield, said outer shield comprising a suitable metallic shielding material which has a relatively high electrical conductivity and having an unjoined, longitudinally overlapped seam which is diametrically opposed to said seam of said inner shield to insure substantially continuous shielding of said cable; and
a jacket which is made of a plastic material and which encloses said outer shield.

4,510,347

FORMATION OF NARROW CONDUCTIVE PATHS ON A SUBSTRATE

Raymond E. Wiech, Jr., San Diego, Calif., assignor to Fine Particles Technology Corporation, Calif.

Filed Dec. 6, 1982, Ser. No. 447,159
Int. Cl.³ H05K *1/02*
U.S. Cl. 174—68.5 **9 Claims**



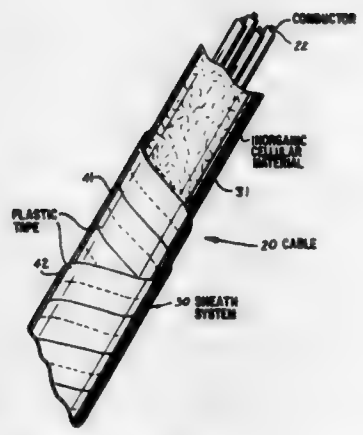
1. A ceramic substrate having paths thereon comprising:
(a) a molded unitary substrate having a surface and a molded continuous groove therein;
(b) said groove having substantially parallel opposing side walls and a bottom; and
(c) a predetermined opposing portion of the side walls forming the continuous groove extending from the bottom of the groove to the surface of the substrate at a different angle with respect to the bottom than other opposing portions of said side walls.

4,510,348

NON-SHIELDED, FIRE-RESISTANT PLENUM CABLE

Candido J. Arroyo, Lilburn; Nicholas J. Cogelia, Duluth, and Ralph J. Darsey, Lawrenceville, all of Ga., assignors to AT&T Technologies, Inc., Berkeley Heights and AT&T Bell Laboratories, Murray Hill, both of, N.J.

Filed Mar. 28, 1983, Ser. No. 479,249
Int. Cl.³ H01B *7/00*
U.S. Cl. 174—121 A **14 Claims**



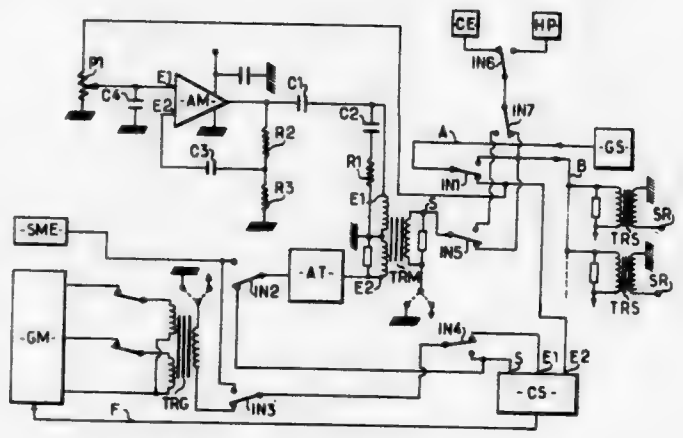
1. A cable which resists flame spread and smoke evolution, said cable comprising:
a core which includes at least one conductor enclosed in a plastic coating; and
a non-metallic sheath system having a relatively low thermal conductivity which encloses said core and which is effective to provide a predetermined time delay prior to thermal decomposition of the conductor coating when the cable is subjected to a relatively high temperature, said sheath system including:
a layer of an inorganic cellular material which encloses said core and which has a relativley low air permeability; and
a tape which is wrapped about said layer and which comprises a flame retardant thermosetting material, said sheath system in the vicinity of the interface between said layer of cellular material and said tape including a material having a relatively high heat absorptivity.

4,510,349

SYSTEM AND METHOD FOR TRANSMITTING MESSAGES TO A TELEPHONE SET THROUGH THE SUBSCRIBER'S LINE IN A TELEPHONE SYSTEM

Leonello Segre-Amar, 26, avenue de la Grande-Bretagne, Monte-Carlo, Monaco

Continuation-in-part of Ser. No. 452,072, Dec. 22, 1982, abandoned. This application Aug. 4, 1983, Ser. No. 520,246
Claims priority, application France, Dec. 30, 1981, 81 24542; Nov. 17, 1982, 82 19239; Jun. 29, 1983, 83 10782
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 A **30 Claims**

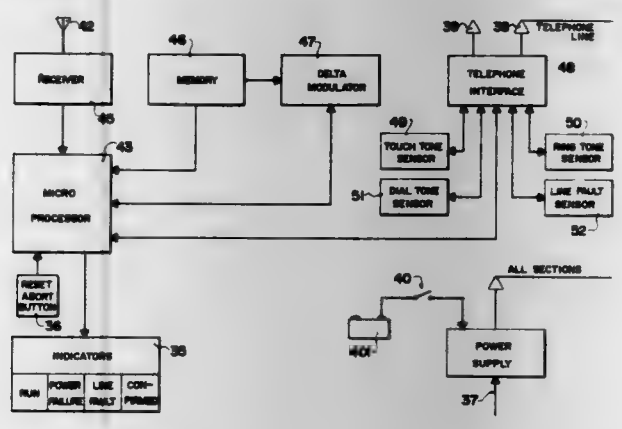


1. In a telephone system, comprising a plurality of subscriber stations each provided with a subscriber terminal including a telephone set, a telephone transmission network, each of said subscriber stations being interconnectible to another of said subscriber stations via said transmission network, service signal generating means for generating and emitting service signals relating to the establishing of a telephone connection between two subscriber stations, and telephone line means connecting the output of said service signal generating means to said subscriber stations for transmitting said service signals to a subscriber station emitting a call for the establishment of a telephone connection with another subscriber station,
a message transmitting system for transmitting messages to a subscriber station calling for the establishment of a telephone connection during the period of establishing said connection, said message transmitting system comprising message generator means for generating and emitting said messages, service signal transmitting circuit means, message transmitting circuit means, and a mixer having a first input connectible to said service signal generating means through said service signal transmitting circuit means and a second input connectible to said message generator means through said message transmitting circuit means, said mixer having an output connected to said telephone line means and said mixer, first and second inputs being simultaneously connectible to said service signal generating means and said message generator means.

4,510,350
PERSONAL ALARM APPARATUS INCLUDING WRIST SUPPORTED TRANSMITTER AND RECEIVER/TELEPHONE INTERFACE CIRCUIT

Peter Wagner, and Victor Shkawrytko, both of Winnipeg, Canada, assignors to Almicro Electronics Inc., Winnipeg, Canada

Filed Mar. 7, 1983, Ser. No. 472,759
Claims priority, application United Kingdom, Mar. 11, 1982, 8207192
Int. Cl.[3] H04M *11/04*
U.S. Cl. 179—5 P 7 Claims



1. A personal alarm apparatus comprising an alarm signalling device having a casing and strap adapted for ready transport on the wrist of the person, a manually operable switch mounted on the casing and a transmitter responsive to operation of the switch for transmitting a radio frequency alarm signal, and a relay station mounted within a single housing and comprising means responsive to the alarm signal, interface means for connection to a telephone line, means for opening said line and dialling telephone numbers on said line, a memory, means for storing in said memory a plurality of telephone numbers with an order of priority whereby said dialling means can dial each of said numbers in turn, means for transmitting a repeated message on said line and means responsive to a signal on the line for ceasing said message, said interface means comprising;

means responsive to a dial tone on said line and arranged such that on detection of said dial tone said numbers are dialled and on failure to detect said dial tone said line is hung up and on three failures to so detect said dial tone said numbers are dialled,

means to detect an extension phone on said line off hook and arranged to actuate said transmitting means in response thereto,

means responsive to a ring tone on said line and arranged on receipt of a ring tone at any time subsequent to an alarm signal to actuate said transmitting means, and means for counting ring tone up to a predetermined number before actuating said transmitting means, and

means for repeatedly checking for a line fault and for indicating a fault when detected.

4,510,351
ACD MANAGEMENT INFORMATION SYSTEM

Peter E. Costello, Matawan; Lawrence D. Fossett, Morganville; Michael S. Lane, Colts Neck; Terrence T. Quin, Holmdel, and Nicholas K. Smith, Middletown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

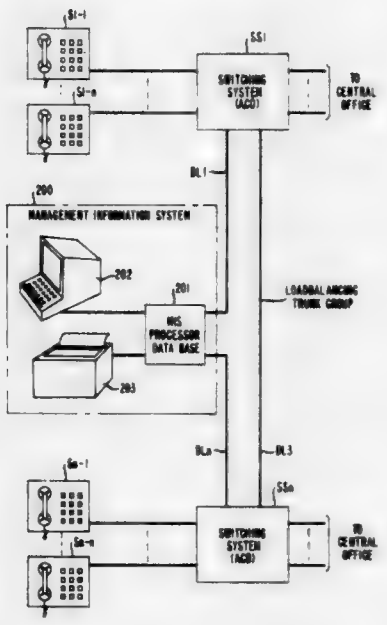
Filed Oct. 28, 1982, Ser. No. 437,433
Int. Cl.[3] G06F *3/147;* H04M *3/50;* H04Q *3/64*
U.S. Cl. 179—27 D 15 Claims

1. A management information system (MIS) for use with an automatic call distribution (ACD) system having a plurality of attendant positions operable to answer incoming calls from a plurality of trunks, said MIS system comprising

a display,

means for continuously receiving from said ACD certain ACD data, said data corresponding to current call answering activity at said attendant positions,

means for comparing said data to previously received data to determine which data is to be displayed,



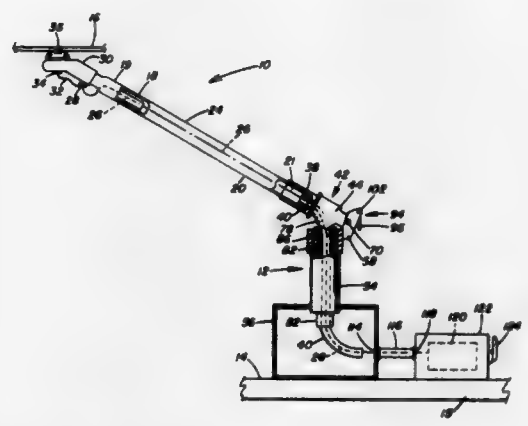
means for formatting any said data determined to be displayed, and

means for presenting said formatted data to said display substantially concurrent with the reception of said ACD data.

4,510,352
TROLLEY POLE

Francis A. May, Pittsburgh, and Larry Patts, McMurray, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed Aug. 19, 1982, Ser. No. 409,648
Int. Cl.[3] B60L *5/12*
U.S. Cl. 191—64 11 Claims



1. A trolley pole assembly comprising,

a hollow pole having an upper end portion and a lower end portion,

a passageway extending the length of said pole from said upper end portion of said lower end portion,

a trolley wire contact shoe mounted on said pole upper end portion,

a base member adapted to support said pole for movement of said trolley wire contact shoe into and out of contact with a trolley wire,

said base member including a tubular housing having a bracket positioned adjacent said pole lower end portion, said tubular housing having a bore therethrough,

connector means for connecting said pole lower end portion to said base member, said connector means having a pas-

sageway communicating with said pole passageway at said pole lower end portion,
means for sealingly connecting said connector means to said pole lower end portion,
said connector means being pivotally connected at one end to said bracket and adapted at an opposite end to receive said pole lower end portion,
said base member tubular housing bore communicating in a sealed relation with said connector means passageway to provide an impact resistant enclosure extending from said pole upper end portion through said pole passageway to said pole lower end portion and therefrom through said communicating arrangement of said connector means passageway and said tubular housing bore,
an electrical conductor extending through said impact resistant enclosure from connection to said trolley wire contact shoe at said pole upper end portion through said pole passageway to said pole lower end portion,
said electrical conductor extending from said pole lower end portion through said connector means passageway and through said base member tubular housing bore,
a flexible conduit positioned in said impact resistant enclosure and having an upper end and a lower end, said upper end being positioned in said pole passageway,
said flexible conduit extending out of said pole lower end portion and through said connector means passageway to said base member, said flexible conduit extending through said base member tubular housing bore,
said flexible conduit forming an arcuate path through said connector means passageway to said tubular housing bore to guide said electrical conductor along said arcuate path as said electrical conductor extends through said impact resistant enclosure from said pole lower end portion, said connector means, and into said base member,
resilient means positioned within said base member tubular housing for applying an upward force upon said connector means to pivot said trolley pole upwardly for contact of said trolley wire contact shoe with the trolley wire,
said resilient means surrounding said flexible conduit having a lower end compressed against said base member and an upper end applying an upward force upon said connector means,
a sleeve member positioned in said base member between said resilient means and said flexible conduit,
said sleeve member having an upper end portion and a lower end portion,
said sleeve member upper end portion abutting said resilient means and urged into contact with said connector means to pivot said connector means on said base member to move said trolley pole to a raised position,
said sleeve member lower end portion extending through said base member and being extended and retracted relative to said base member upon expansion and contraction of said resilient means as said trolley pole is raised and lowered, and
said electrical conductor sealingly enclosed within said flexible conduit along the path of said electrical conductor through said impact resistant enclosure from said hollow trolley pole through said base member.

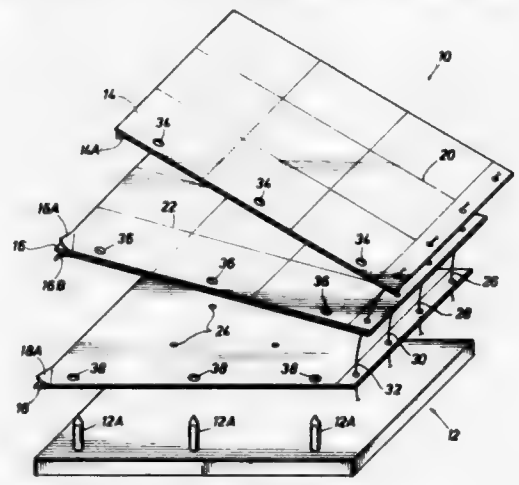
4,510,353

METHOD AND KIT FOR CONSTRUCTION OF CUSTOM PROTOTYPE MEMBRANE SWITCH PANEL

Anthony R. Nemitz, Houston, Tex., assignor to Arrow Display Company, Inc., Harris County, Tex.

Filed Jan. 31, 1983, Ser. No. 462,314
Int. Cl.³ H01H *9/00, 11/00, 13/70*
U.S. Cl. 200—5 A **30 Claims**

1. A membrane switch comprising:
an upper membrane;
a lower membrane;
a spacer disposed between said upper and lower membranes and defining an aperture therethrough;
a first conductive path disposed between said spacer and said upper membrane;
a second conductive path disposed between said spacer and said lower membrane;
at least a portion of one of said first and second conductive paths moving through said aperture and into electrical contact with the other of said first and second conductive paths upon relative inward displacement of one of said membranes toward the other of said membranes; and wherein
at least a portion of said first conductive path is comprised of:
a first conductive element disposed between said spacer and said upper membrane and comprising:
a first insulative base; and
a first conductive trace bonded to and forming an integral part of said first insulative base prior to



said first conductive path being disposed between said spacer and said upper membrane.

10. A kit capable of being assembled into a prototype membrane switch comprising the combination of:
an upper membrane;
a lower membrane;
a spacer adapted to be disposed between said upper and lower membranes and to receive an aperture therethrough;
a first conductive element adapted to be disposed between said upper membrane and said spacer; and
a second conductive element adapted to be disposed between said lower membrane and said spacer, at least one of said first and second conductive elements comprising an insulative base and a conductive trace bonded to said base prior to said disposing of said at least one of said first and second conductive elements between said upper or lower membrane and said spacer, respectively.

4,510,354

CURRENT TAP SELECTING SWITCH

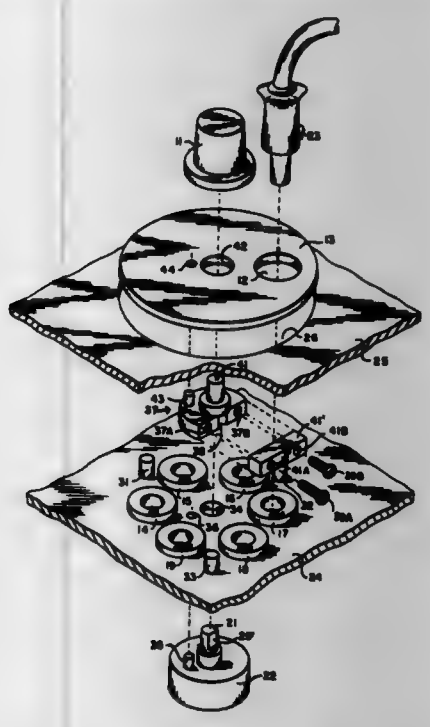
Lars P. Allfather, Guilderland, N.Y., assignor to Doble Engineering Company, Watertown, Mass.

Filed Apr. 12, 1984, Ser. No. 599,463
Int. Cl.³ H01H *19/54*
U.S. Cl. 200—11 R **4 Claims**

1. Apparatus for selecting a tap of a high power current source and providing a signal representative of the tap selected comprising,
a plurality of terminal means for carrying current,
means for supporting said plurality of terminal means spaced along a predetermined path and equiangularly disposed about an axis for connection to a respective tap of the current source and for receiving an external connector for connection to an external load,
tap select means formed with an opening for selectively

exposing one of said terminal means while covering the others,

a rotary switch having its shaft centered about said axis comprising an actuating member mechanically connected to said tap select means for providing an electrical signal representative of the terminal means then exposed by said opening and electrically isolated from said



and means for displacing said tap select means relative to said terminal means to move said opening to positions exposing any selected one of said terminal means while correspondingly moving said actuating member to enable said rotary switch to provide an electrical conducting path representative of the terminal means then exposed by said opening.

4,510,355

ROTARY SHAFT - PUSH BUTTON SWITCH ANCHOR ASSEMBLY

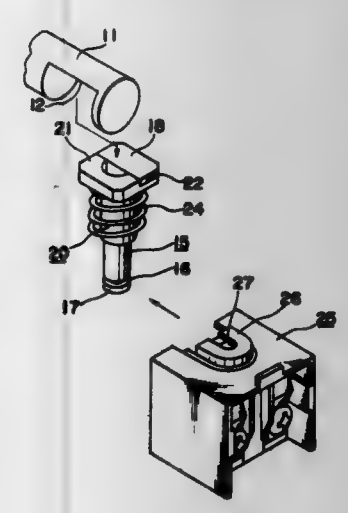
Haruo Atsumi, Otsu, and Haruyuki Koizumi, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 328,682, Dec. 8, 1981,. This application Nov. 30, 1983, Ser. No. 557,409

Claims priority, application Japan, Dec. 15, 1980, 55-177534

Int. Cl.³ H01H *3/16, 3/54*

U.S. Cl. 200—47 **4 Claims**



1. A switch assembly which comprises in combination:

(A) a switch casing having a cylindrical through hole therein and an actuator head mounted on the switch casing, said casing and head together defining a chamber coaxial with said through hole;

(B) a push-button switch having contact elements and a push button supported for movement between projected and depressed positions, said push-button switch being housed within said switch casing on one side of a wall portion of said switch casing opposite to the actuator head;

(C) a switch operating mechanism operatively housed within said actuator head and including;

(1) a rotary actuator shaft movable between at least operative and inoperative positions, said rotary actuator shaft having a flattened portion near one end thereof facing in the direction of said push button when in the inoperative position;

(D) a plunger and sleeve assembly having a plurality of operative capabilities and mounted in said through hole and chamber;

(1) a rotary cylindrical sleeve slidingly mounted in said chamber and said through hole, said sleeve having a radially outwardly projecting flange at the upper end thereof, and said flange having a recessed portion; and

(2) a rotary plunger for transmitting the movement of the actuator to the push button, said plunger being slidingly mounted in said sleeve and having a flange at a first end thereof radially outwardly extending to one side and of a size equal to said recessed portion and being juxtaposed therewith, said flanges together abutting said flattened portion of said actuator shaft, and a second end of said plunger movably extending through the wall portion of the switch casing and terminating adjacent said push button;

(3) Whereby the rotation of said plunger and sleeve assembly within said through hole and chamber provide at least first and second operative capabilities of said switch assembly when said rotary actuator shaft is rotated;

(E) means for removably connecting the second end of the plunger to said push button in axially non-removable and rotatable fashion; and

(F) a biasing element for biasing the sleeve upwardly whereby the contact elements of said switch may be forcibly separated from each other by the action of the biasing element.

4,510,356

LIQUID METAL SWITCH APPARATUS

John A. Malm, 19731 Frazier Dr., Rocky River, Ohio 44116

Filed Sep. 30, 1983, Ser. No. 537,952

Int. Cl.³ H01H *31/00*

U.S. Cl. 200—48 R **22 Claims**

1. A high amperage electrical switching apparatus comprising:

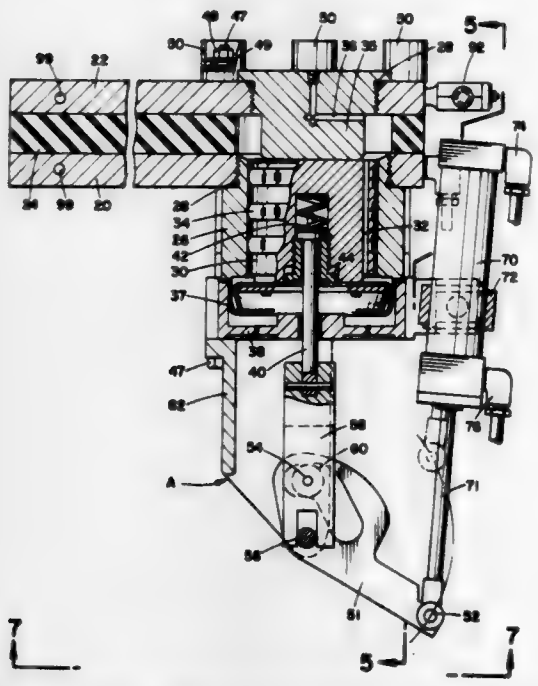
a first terminal member including a piston chamber and a movable piston contact member housed therein;

a second terminal member;

an insulating member secured between said first terminal and said second terminal to prevent electrical contact therebetween unless said piston is in electrical contact with said second terminal member;

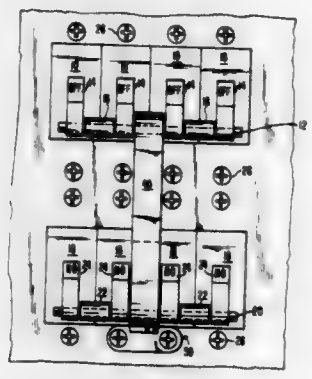
at least one sliding contact current transfer means provided on said movable piston member for continuously main-

taining contact between said piston member and said first terminal member; and



actuating means for selectively actuating said movable piston to establish electrical contact between said first and second terminal members.

4,510,357
ACTUATOR FOR TRANSFER CIRCUIT BREAKER SWITCH
Bruce Winterbottom, Box 46, River Rd.-Lower Bank, Egg Harbor, N.J. 08215
Filed Jan. 26, 1984, Ser. No. 574,136
Int. Cl.[3] H01H *9/20*
U.S. Cl. 200—50 R **3 Claims**



1. In a circuit breaker configuration of the type in which individual switch components are aligned adjacent one another and whose condition of operation is determined by the respective positionings of the control arms thereof, in which a first plurality of such switch components are interconnected together for a simultaneous tandem operation of a first type, in which a second plurality of such switch components are interconnected together for a simultaneous tandem operation of a second, different type, and in which said first and second pluralities of switch components include first and second control arms oriented so that said arms are positioned away from each other when said switch components are on and towards each other when said switch components are off, apparatus comprising:

rod means, coupled between the control arms of adjacent switch components in each of said first and second switch component pluralities, and linking said arms of each plurality together;

an interlock;

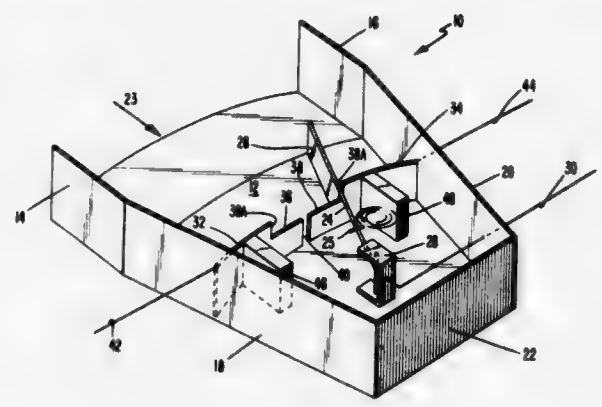
with a first end of said interlock being apertured to receive said rod means of one of said switch component pluralities, and to transfer to said rod means substantially any lineal movement imparted to said interlock;

with an opposite end of said interlock being slotted to receive said rod means of the other of said switch component pluralities, in affording a degree of lineal movement therein;

with the length of said slot being slightly less than the lineal distance between the positionings of said first and second control arms when in "ON" and "OFF" conditions, respectively;

and with one end of said slot being co-linear with the position of the switch control arm when in either of its states of on-off operation.

4,510,358
FLUID ACTUATED SWITCH
John Cook, Cottontown, Tenn., assignor to J. W. Graves and Harold Tate, Jr., part interest to each
Filed Dec. 16, 1983, Ser. No. 562,062
Int. Cl.[3] H01H *35/24*
U.S. Cl. 200—81 R **9 Claims**



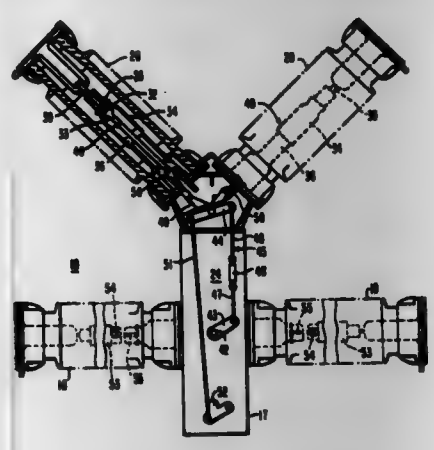
1. A fluid actuated switch comprising fluid receiving means having two spaced fluid directing side walls forming a channel, a fluid actuated vane movable between said side walls in said channel in response to fluid directed by said side walls, movable switch contact means connected to said vane, electrically conductive stationary contact means adjacent each of said side walls within said channel for selective engagement with said vane, said movable switch contact means closing a first electrical circuit and opening a second electrical circuit when said vane is actuated from one side to the other side of said channel and means adjustably holding said vane and said movable switch contact means into contact with either one of said stationary contact means, said adjustable holding means comprising a permanent magnet mounted adjacent each of said stationary contact means in said channel and bendable tabs on said moveable contact means engaging by magnetic force the appropriate said magnet.

4,510,359
CIRCUIT INTERRUPTER HAVING IMPROVED CLOSING RESISTOR CONTROL MEANS
Ben J. de Calvino y Teijeiro, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 8, 1983, Ser. No. 549,856
Int. Cl.[3] H01H *33/16*
U.S. Cl. 200—144 AP **8 Claims**

1. In a circuit interrupter having a pair of interrupter contacts that are movable into and out of engagement with one another in predetermined synchronized timed-sequence with a pair of impedance contacts that are also movable into and out of engagement with one another and, when engaged, connect a closing impedance means in parallel relationship with the interrupter contacts a controlled interval of time prior to the closing of said interrupter contacts, the combination comprising;

means for actuating the interrupter contacts including a first rotatable lever,

means for actuating the impedance contacts including a second rotatable lever and a coupled timer-latch assembly that is adapted to control the opening and closing of the impedance contacts in accordance with said predetermined synchronized timed-sequence and is resettable so that the predetermined synchronized timed-sequence actuation of said interrupter and impedance contacts can be repeated each time the circuit interrupter is operated



through a full cycle of circuit-opening and circut-closing operations, and

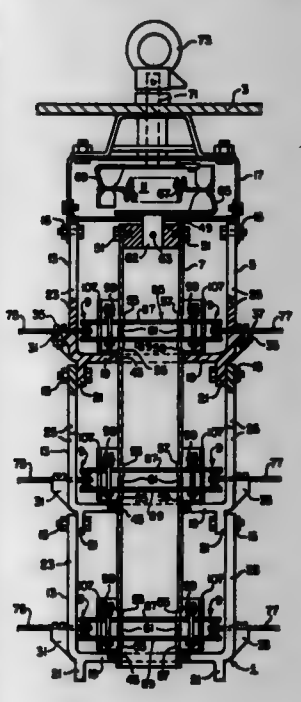
means mechanically coupling said first and second rotatable levers to one another and having a component that automatically compensates for variations in the relative positions of said levers during the operation of the circuit interrupter which would prevent the timer-latch assembly from being reset and thus rendered inoperative to connect the closing impedance means in the circuit prior to the next closure of the interrupter contacts.

4,510,360

CIRCUIT BREAKER WITH ARC SHIELD

Gregory J. Golub, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1983, Ser. No. 502,373
Int. Cl.[3] H01H *9/30, 33/04*
U.S. Cl. 200—151 2 Claims



1. An electrical switching contact assembly comprising:

(a) a housing member having a base plate with a circular opening;

(b) first and second stationary contacts;

(c) means disposed on the base plate for mounting the first and second stationary contacts symmetrically about the circular opening and in a plane substantially perpendicular to the longitudinal axis of the circular opening;

(d) a longitudinal shaft extending into the circular opening;

(e) external means connected to the shaft for rotating the shaft between open and closed circuit positions;

(f) a movable contact assembly on the shaft and including a pair of parallel conductors having first and second end portions, the end portions of the first pair of conductors being engagable with opposite sides of the first stationary contact and the end portions of the second pair of conductors being engagable with opposite sides of the second stationary contact;

(g) spring clamping means on each pair of end portions for holding the end portion in clamping engagement with the corresponding stationary contacts;

(h) a cylindrical shielding member of electrically insulating material surrounding the shaft and the spring clamping means; and

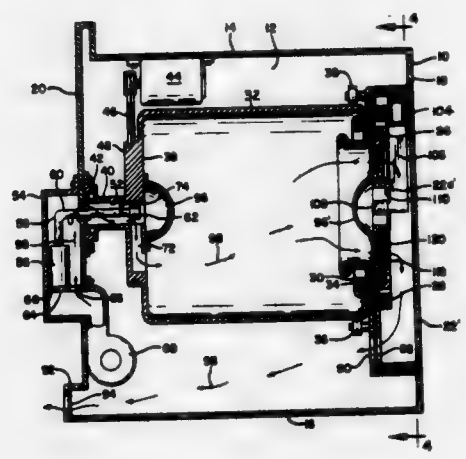
(i) mounting means for mounting the shielding member and including holes through which the end portions extend and support the member in place whereby the shielding member increases the dielectric strength between the contacts in the open position.

4,510,361

HORIZONTAL AXIS TUMBLER TYPE MICROWAVE DRYING MECHANISM

Douglas P. Mahan, 4300 SW. 188th, Aloha, Oreg. 97007

Filed May 3, 1982, Ser. No. 374,508
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.[3] H05B *6/78*
U.S. Cl. 219—10.55 A 4 Claims



1. Microwave drying mechanism for removing moisture from articles comprising

a housing including front and rear portions,

a hollow tumbler-type microwave opaque drum having a front loading opening, a rear wall, and an inner cavity arranged to receive articles from which moisture is to be removed,

said housing also having a front opening for access to said drum opening,

support means rotatably supporting said drum on substantially a horizontal axis,

drive means arranged to rotate said drum whereby articles being dried tumble laterally across the interior of said drum,

first microwave power means disposed with the output thereof directed into the rear of said cavity for applying its radiation energy to tumbling articles in said drum,

a door on said housing at said housing opening,

second microwave power means mounted on said door and disposed with the output thereof directed into the front of said cavity for applying its radiation energy to tumbling articles in said drum,

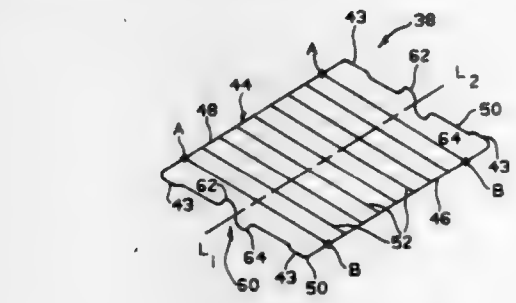
an electric circuit for said power means,
control means in said circuit for said power means,
auxiliary housing means enclosing said first microwave power means and auxiliary housing means enclosing said second microwave power means,
and forced air means directed into said auxiliary housing means from the rear of said housing to flow along said first power means, then through said cavity, and then along said second power means whereby to cool both said power means and also to remove moisture.

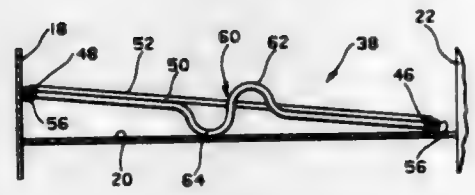
4,510,362

MICROWAVE OVEN RACK DESIGN

Matthew S. Miller, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 21, 1984, Ser. No. 612,143
Int. Cl.³ H05B 6/64
U.S. Cl. 219—10.55 E **14 Claims**





1. A microwave oven cooking rack construction adapted to be supported in a substantially horizontal position in spaced parallel relationship above the bottom wall of said oven comprising:
a support surface defining a plane on said rack including front, rear and side edge portions;
each of said side edges being provided with a pair of projections, one of each pair of projections extends upwardly and the other one of each pair of projections extends downwardly relative to the plane of said rack, said one of each pair of said projections being positioned forwardly and said other one of each pair of said projections positioned rearwardly of a line dividing said rack between a fore and aft portion, whereby in the event said rack is placed on said bottom wall either said one or said other one of each pair of projections will contact said bottom wall and cause said rack to pivot thereabout so that said support surface defining said plane will lay at an angle relative to said substantially flat bottom wall to thereby prevent inadvertent use of said rack when it is positioned on said bottom wall.

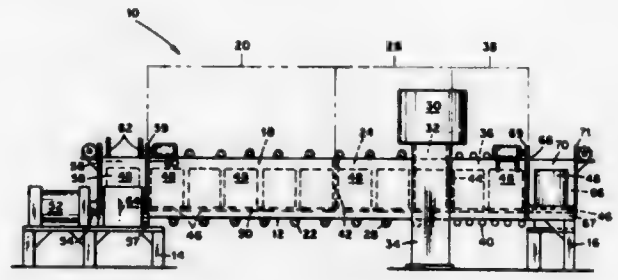
4,510,363

KILN FOR HOT-PRESSING COMPACTS IN A CONTINUOUS MANNER

Carl D. Reynolds, Jr., Clinton, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 8, 1983, Ser. No. 521,496
Int. Cl.³ H05B 6/02
U.S. Cl. 219—10.71 **7 Claims**

1. A hot pressing kiln for heating, hot pressing, and cooling compacts in a continuous manner, comprising:
an elongated, horizontally disposed housing;
a plurality of chambers serially arranged in said housing;
a first chamber of said plurality of chambers disposed in registry with one end of said housing for defining a preheating zone;
heating means for heating said preheating zone;
a second chamber of said plurality of chambers disposed in registry with the first chamber for defining a heating stabilization and hot-pressing zone;
at least one die means for containing hot-pressable material;
further heating means and press means operatively associated with said second chamber with said press means being disposed in said second chamber and comprising a hydraulic press with a ram penetrating said housing and contactable with the heated contents of said die means for effecting the hot pressing thereof;



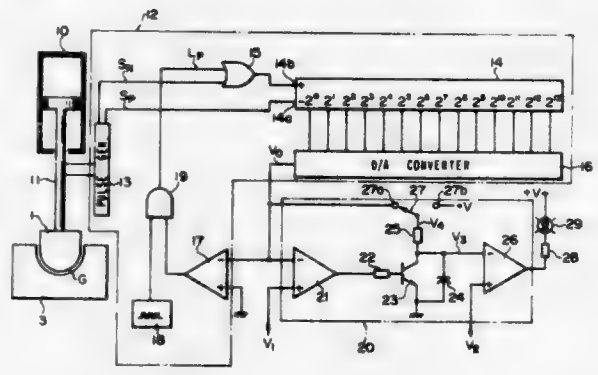
a third chamber of said plurality of chambers disposed in registry with the second chamber and the other end of said housing opposite said one end for defining a cooling zone; and
means for displacing said at least one die means sequentially through said chambers while sequentially preheating the contents of said die means in the first chamber, providing temperature equilibration and hot pressing of the contents of said die means in the second chamber, and cooling the hot pressed contents of said die means in the third chamber.

4,510,364

ELECTRIC DISCHARGE MACHINING APPARATUS

Tetsuro Ito, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00014, § 371 Date Sep. 10, 1981, § 102(e) Date Sep. 10, 1981, PCT Pub. No. WO81/02127, PCT Pub. Date Aug. 6, 1981
PCT filed Sep. 10, 1981, Ser. No. 302,480
Claims priority, application Japan, Jan. 22, 1980, 55-6109; Apr. 23, 1980, 55-53868; Apr. 23, 1980, 55-53869; Apr. 23, 1980, 55-53870; Apr. 23, 1980, 55-53872; Apr. 23, 1980, 55-53873
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 G **81 Claims**



1. An electric discharge machining apparatus of the type in which a workpiece is machined by generating an electric discharge across a machining gap between a confronting electrode and said workpiece through an insulating machining solution while feeding said electrode to said workpiece, said apparatus comprising: electrode position detecting means for detecting, during a present electric discharge machining operation, a difference value between the present position of said electrode relative to said workpiece and a most advanced position of said electrode detected during said present electric discharge of machining operation; first means for outputting a signal by identifying the interelectrode state on the basis of said difference value detected by said electrode position detecting

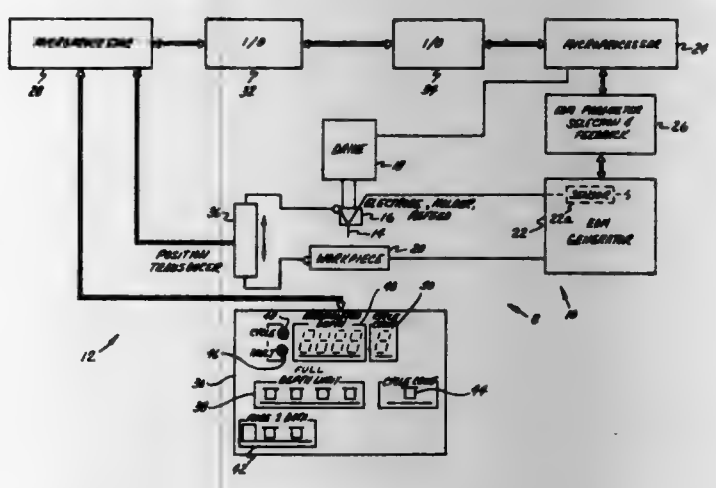
means; and means for controlling the operation of said electric discharge machining apparatus in accordance with said signal output from said first means.

4,510,365

ELECTRONIC DEPTH CONTROLLER FOR EDM APPARATUS

John R. MacGregor; Gary F. Rupert, both of Ann Arbor, and Thomas M. Kennedy, Chelsea, all of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Filed May 6, 1982, Ser. No. 375,501
Int. Cl.[3] B23P *1/08, 1/14*
U.S. Cl. 219—69 G 6 Claims



1. In EDM apparatus for machining holes in conductive workpieces via electrode means mounted on a holder which is advanced toward such a workpiece by a drive means, said apparatus including a main control system comprising means for controlling the advance of said drive means including means for causing said drive means to advance said electrode means at an advance rate toward the workpiece, sensing means for sensing the initiation of machining as said electrode means approaches the workpiece, said main control system comprising means responsive to said sensing means for causing said drive means to reduce the advance rate of said electrode means to a slower one in response to initiation of machining, and an electronic depth control system operatively coupled with said main control system comprising input means for setting a desired hole depth to be machined by said electrode means in the workpiece, means for setting a reference datum from which the desired hole depth is to be measured, and position sensing means for providing a signal of the position of said holder relative to the workpiece, the improvement which comprises means for establishing said reference datum by detection of the occurence of a particular characteristic of the signal of said position sensing means caused by reduction in the advance rate of said electrode means by said main control system upon initiation of machining.

4,510,366

FLUID DELIVERY RATE CONTROL TW ELECTRICAL MACHINING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

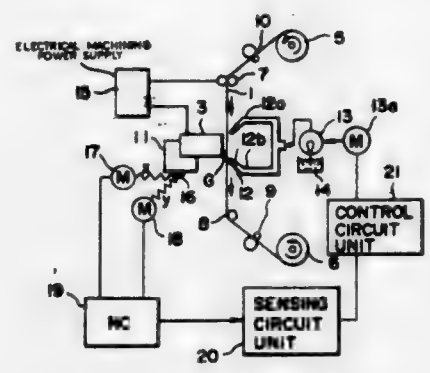
Filed Jul. 30, 1982, Ser. No. 403,708
Claims priority, application Japan, Jul. 31, 1981, 56-121198
Int. Cl.[3] B23P *1/08*
U.S. Cl. 219—69 M 12 Claims

1. A method of electrical-machining an electrically conductive workpiece, comprising the steps of:

axially transporting a continuous wire-electrode from a supply side to a takeup side to cause the wire electrode to continuously traverse the workpiece while defining a machining gap therewith supplied with a machining liquid;

passing an electrical machining current through the liquid flooded machining gap between the traveling wire electrode and the workpiece to electroerosively remove material from the latter;

relatively displacing the workpiece and the traveling wire electrode transversely to the axis of the wire electrode along a programmed cutting path of a predetermined shape corresponding to a desired contour to be formed in the workpiece; and



varying the rate of supply of said machining liquid into sad machining gap as a function of the shape of said programmed cutting path, said programmed cutting path including successive sections intersecting at an angle and said supply rate is increased selectively in a region of said intersection

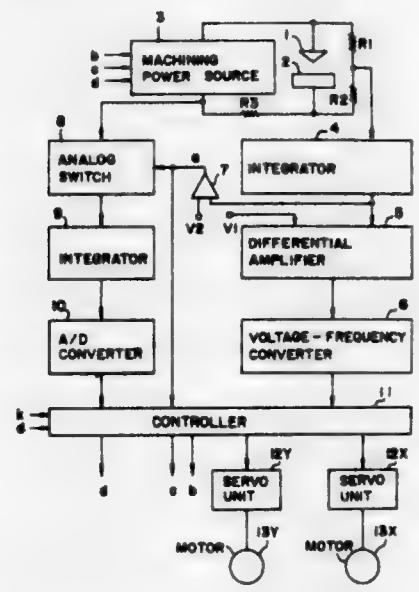
at least immediately prior to arrival of the axis of said wire electrode at a turning point defining said intersection.

4,510,367

WIRE-CUT ELECTRIC DISCHARGE MACHINE

Haruki Obara, Sagamihara, Japan, assignor to Fanuc Ltd., Tokyo, Japan

Filed Jun. 17, 1983, Ser. No. 505,478
Claims priority, application Japan, Jun. 30, 1982, 57-112807
Int. Cl.[3] B23P *1/08*
U.S. Cl. 219—69 W 4 Claims



1. A wire-cut electric discharge machine having a servo feed system in which a workpiece and a wire electrode are moved relative to each other to cut, in accordance with electric cutting conditions, the workpiece via a discharge into a desired shape, said machine comprising:

cutting current detecting means for detecting a true cutting current;

feed rate detecting means for detecting the relative feed rate of the workpiece and the wire electrode;

input means for inputting the width of a cutting groove;

thickness detecting means for detecting the thickness of the workpiece on the basis of the current detected by the cutting current detecting means, the feed rate detected by

the feed rate detecting means and the width of the cutting groove from the input means; and

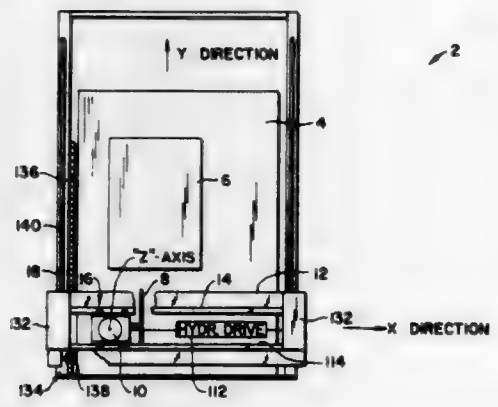
control means for changing over the electric cutting conditions on the basis of the thickness determined by the thickness detecting means.

4,510,368

HIGH SPEED ELECTRIC ARC SAW AND METHOD OF OPERATING SAME

Max P. Schlienger, Ukiah, and Whalun Szeto, Novato, both of Calif., assignors to Retech, Inc., Ukiah, Calif.

Filed May 5, 1977, Ser. No. 793,991
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 M **44 Claims**



1. A method for cutting a metal object comprising the steps of providing a saw member; applying a voltage differential between the object and the member; advancing the saw member into close proximity with the object; determining a threshold current I_o between the member and the object which equals

$$a \cdot s \cdot 10^6 \text{ amps}$$

wherein

a is in the range of between about 2 and about 16;

s is the effective surface area of the cut (arc segment length × kerf width) in m^2;

and passing a cutting current I between the member and the object which is at least as large as the threshold current I_o so that cutting of the object through melting of the metal commences substantially instantaneously upon the commencement of current flow between the member and the object.

4,510,369

ROTARY FURNACE

William S. Harrison, Marion, Mass., assignor to Engelhard Corporation, Iselin, N.J.

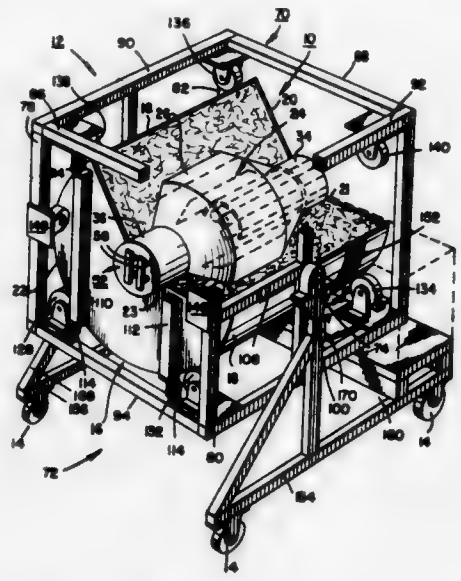
Filed Aug. 15, 1983, Ser. No. 523,234
Int. Cl.³ F27B *7/10*
U.S. Cl. 219—389 **34 Claims**

1. A rotary furnace for the heat treating of materials comprising,

(a) a drum means for containing materials to be heat treated,

(b) said drum means including an outer member having an outer shell and opposite base members, the outer shell having an outer surface, an inner member having an inner shell spaced from the outer shell, means for freely supporting said inner shell with respect to said outer member to permit free expansion and contraction of said inner shell with respect to said outer member,

(c) means for rotating said drum means, which includes means for rotating said outer member, and further including, an insulating means disposed between said inner and outer members, said insulating means having a pre-determined joining contact with said inner and outer members such that rotation of said outer member causes rotation of said inner member by virtue of set pre-determined joining contact, and



(d) non-rotatable heat supply means extending into said drum means for supplying heat to the contents of said drum means while said drum means is rotating.

4,510,370

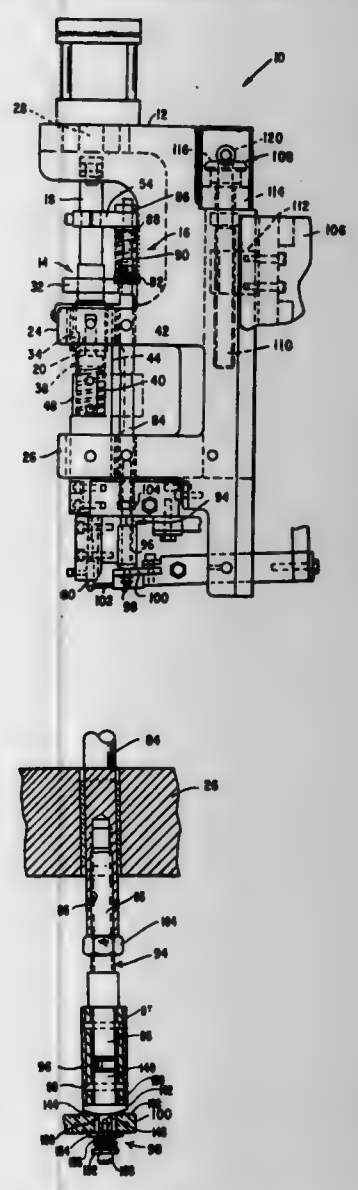
FUSING MACHINE

Charles F. Szantho, Roselle Park, and Edward D. Riordan, S. Somerville, both of N.J., assignors to Joyal Products, Inc., Linden, N.J.

Division of Ser. No. 364,218, Apr. 1, 1982, , which is a division of Ser. No. 203,446, Nov. 3, 1980, Pat. No. 4,371,772. This application Aug. 11, 1983, Ser. No. 522,099
Int. Cl.³ B23K *9/28*
U.S. Cl. 219—86.25 **9 Claims**

1. A fusing machine, comprising a frame; a fusing electrode assembly mounted for reciprocating movement relative to said frame in a first direction, in which said fusing electrode assembly moves towards a workpiece, and a second direction opposite to said first direction; and a ground electrode assembly suspended from said fusing electrode assembly, said ground electrode assembly including a ground electrode shaft mounted for reciprocating movement relative to said frame in said first and second directions, pivotable supporting means for supporting a ground electrode such that said ground electrode is pivotable relative to said ground electrode shaft, said supporting means being positioned below said ground electrode shaft, and adjusting means connected between said ground electrode shaft and said supporting means for adjusting the position of said ground electrode in said first and second directions by pivoting said supporting means relative to said ground electrode shaft, said adjusting means including rolling means for rolling along said supporting means as said adjusting means

moves in said first and second directions to pivot said supporting means relative to said ground electrode shaft and maintaining means for maintaining said rolling means in engagement with said supporting means.

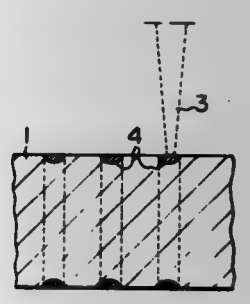


4,510,371

METALLIC SCALES AND METHOD OF MANUFACTURING THE SAME

Hiromi Nakamura, Ebina; Zenichi Mochizuki, Fuji; Noriyuki Motomura, and Sadayoshi Yamada, both of Zama, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,530
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LM **16 Claims**



1. A method of preparing a metallic scale comprising the steps of:

preparing a linear metallic blank provided with a plated layer of a metal alloy consisting of 92–95% by weight of nickel and 5–8% by weight of phosphorus; and

applying, at a definite spacing, high density energy in the form of a fine line onto a surface of said plated layer so as to change permeability of portions of said plated layer subjected to said high density energy;

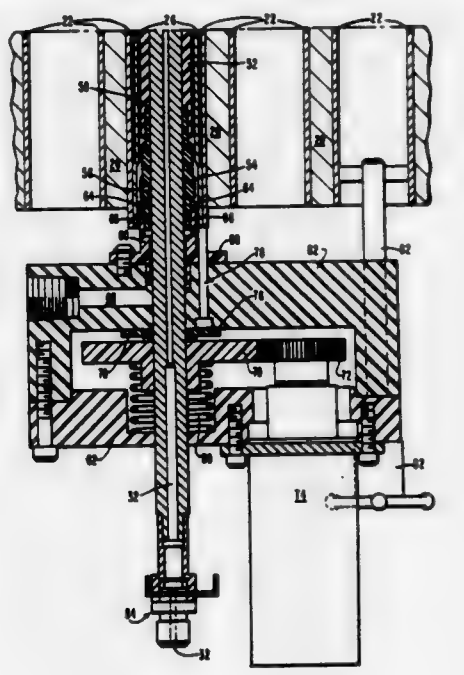
said permeability changed portions forming graduations of said metallic scale.

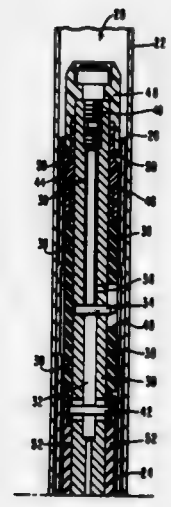
4,510,372

SLEEVE-TO-TUBE WELDER

Richard M. Kobuck, Delmont, and Arthur F. Jacobs, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 18, 1982, Ser. No. 409,209
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—125.11 **14 Claims**





1. A welding apparatus for welding within a tubular member comprising:

an electrically conductive central shaft capable of being disposed in a tubular member with said central shaft having a welding electrode attached thereto for establishing a weld on the internal surface of said tubular member and with said central shaft having a channel therethrough for conducting an inert gas to near said electrode;

a first sealing means disposed on said central shaft on one side of said electrode and a second sealing means disposed on said central shaft on the other side of said electrode for defining a sealed chamber between said welding apparatus and said tubular member when said first sealing means and said second sealing means are actuated by movement of said central shaft relative to said tubular member; and

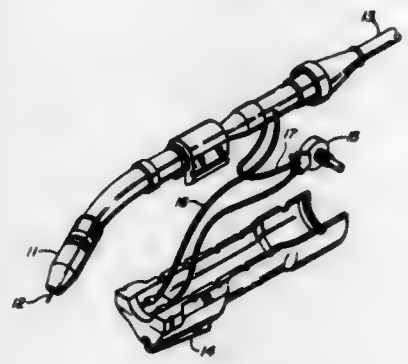
rotation means connected to said central shaft for rotating said central shaft and said electrode in said tubular member.

4,510,373

CONTROL FOR WELDING SYSTEM

Ron Cox, 2208 Victoria St., Windsor, Ontario, Canada, and Elzi Pettovello, 6326 Appoline Dr., Dearborn, Mich. 48233

Filed Feb. 17, 1984, Ser. No. 581,151
Claims priority, application Canada, Sep. 23, 1983, 437440
Int. Cl.³ B23K 9/10
U.S. Cl. 219—137.71 10 Claims



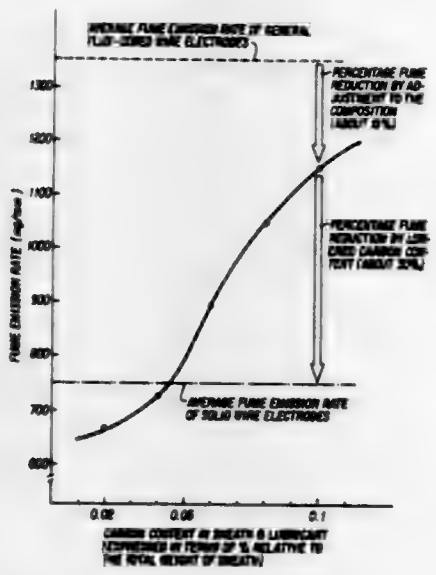
1. A welding control for use in an arc welding assembly of the type having: a welding control unit including a power supply for supplying power to an electrode and to feeding means for said electrode; a weld gun; and a flexible conduit interconnecting said welding control unit and said weld gun, said welding control unit including a first single potentiometer means connected to said power supply to produce a variable output voltage to regulate both the power supplied to said electrode and the rate at which said electrode feeding means advances said electrode through said weld gun.

4,510,374

FLUX-CORED WIRE ELECTRODE SUITABLE FOR USE IN GAS-SHIELDED ARC-WELDING

Minoru Kobayashi; Yoshiya Sakai; Shoji Minato; Tsuguo Ooe; Katsumi Arai, all of Kanagawa, and Tetsuo Suga, Yokohama, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 30, 1983, Ser. No. 556,602
Claims priority, application Japan, Dec. 6, 1982, 57-213764
Int. Cl.³ B23K 35/00
U.S. Cl. 219—146.1 10 Claims



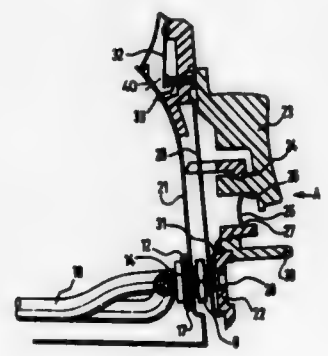
1. A flux-cored wire electrode suitable for use in gas-shielded arc-welding comprising a sheath of soft steel, a lubricant and a flux-core, wherein the sum of the carbon content of said sheath and lubricant is 0.045 wt.% or less of the total weight of said sheath, and wherein said sheath is filled with said flux to an amount of 10–30 wt.% of the total weight of said electrode, said flux consisting essentially of 20–50 wt.% of TiO_2, 1–15 wt.% of SiO_2, 2.5–10 wt.% of ZrO_2, 0.1–5 wt.% of an arc-stabilizing agent, 10–45 wt.% of a deoxidizer and up to 50 wt.% of iron powder.

4,510,375

ELECTRIC IMMERSION HEATER ASSEMBLY FOR LIQUID HEATING APPLIANCES

Michael Inskip, Stoke on Trent, and Alan Warren, Western Downs, both of England, assignors to Tl Russell Hobbs Limited, United Kingdom

Filed May 20, 1982, Ser. No. 380,445
Claims priority, application United Kingdom, May 28, 1981, 8116219
Int. Cl.³ H05B 1/02, 3/82; A47J 27/21
U.S. Cl. 219—328 16 Claims



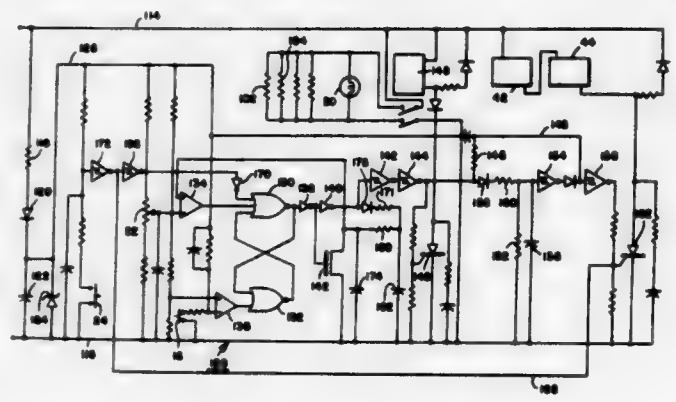
1. An electrical immersion heater for a liquid heating appliance, comprising a mounting plate, a metal sheathed heating element having two end portions which extend through an opening in and which are secured to the mounting plate and an active heating portion between the end portions, and a single fastening device for fixing the mounting plate and hence the heating element to a body shell of the appliance, at least part of the fastening device including a thermally conductive stud secured to said mounting plate so as to project to the outside of the body shell for acting as a heat conductor from the heating element to a safety cut-out device for the appliance supported on the outside of the body shell, and a part of the active portion of the heating element being directly connected only to said thermally conductive stud of said fastening device.

4,510,376

VARIABLE TIMING SYSTEM FOR TOASTERS AND SIMILAR APPLIANCES

William C. Schneider, Toms River, N.J., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jul. 22, 1982, Ser. No. 400,893
Int. Cl.³ H05B 1/02
U.S. Cl. 219—492 7 Claims



1. An appliance which operates by applying heat to one or more articles in a compartment comprising: heating means; means for initiating operation of the heating means; timing means for establishing a heating cycle and for automatically shutting off the heating means at the end of the heating cycle;

and means providing a signal responsive to the duration of the interval between every two successive heating cycles, said signal being independent of the temperature within said compartment and also independent of the temperature of the heating means, the timing means being connected to receive said signal and being responsive to said signal and operative to shorten the second of said two successive heating cycles when said signal indicates that the immediately preceding interval is shortened.

4,510,377

SMALL CARTRIDGE HEATER

Francis L. Merritt, Redondo Beach, and Charles H. Taylor, Rolling Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 6, 1984, Ser. No. 577,391
Int. Cl.³ H05B *3/02*
U.S. Cl. 219—550 **5 Claims**



1. A heater in the form of a small cartridge of the order of one inch long; with a smaller diameter, for use as a catalyst bed heater in a spacecraft thruster, to maintain the bed at a predetermined temperature greater than 200° F., said heater comprising:

a cylindrical core made of an insulating refractory ceramic, said core having grooves in the form of a double lead helical thread formed in the surface thereof;

a wire element in the form of a helical coil located in said grooves, starting in one lead and returning in the other lead in a single layer, the coil axis being along the length of the grooves;

said wire element located near the heat emitting surface of the heater and the wire element positioned an equal distance from the surface of said core;

an outer ring of electrically insulating but heat conducting refractory ceramic material in tubular form surrounding said core, said outer ring being split and formed from two symmetrical halves lengthwise, having inner and outer surfaces of simple cylindrical form at least for the portion surrounding the helical thread; and

a housing having a tubular portion surrounding said outer ring;

the size of the wire element, and the heat conduction from the wire element through the outer ring and the housing, being adequate to maintain said temperature at the bed.

4,510,378

PORTABLE VOTING BOOTH

Richard G. Dolson, Canton, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Oct. 19, 1983, Ser. No. 543,392
Int. Cl.³ G07C *13/00*
U.S. Cl. 235—50 R **40 Claims**

1. A portable voting booth expandable from a storage mode to a voting mode and collapsable from said voting mode to said storage mode comprising:

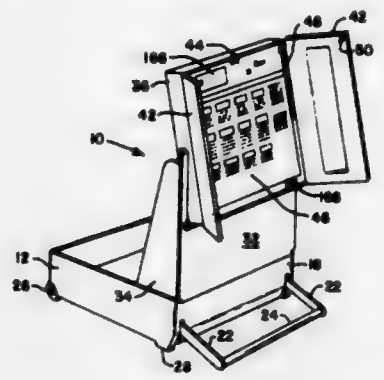
a base storage container;

a support console pivotally mounted to said container;

a voting console having a ballot display means and pivotally mounted to said support console;

a booth means connected to said voting console and expandable to visually isolate said ballot display means;

said booth means, voting console, and support console being receivable in nestled relationship within said storage container in a storage mode and being expandable to a stable voting mode wherein said ballot display means is presented in a generally upright position relative to said container and said ballot display means is visually isolatable by said booth means.

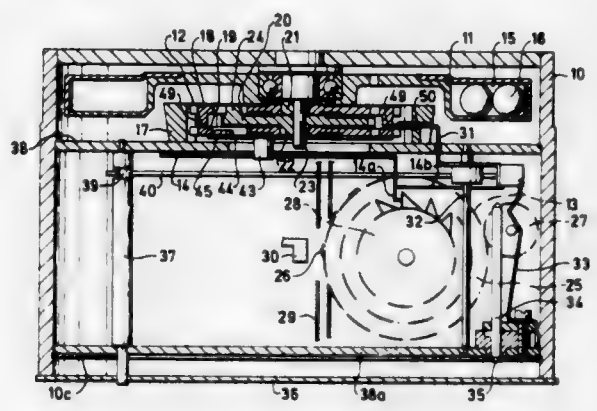


4,510,379

CONTROL DEVICE FOR RECORDING DISTANCE MEASURING INSTRUMENT ATTACHED TO A VEHICLE HUB

Sven Wallqvist, and Rune Sund, both of Halmstad, Sweden, assignors to Haldex AB, Halmstad, Sweden

Filed Nov. 7, 1983, Ser. No. 549,467
Claims priority, application Sweden, Nov. 11, 1982, 8206418
Int. Cl.³ G01C *22/00*
U.S. Cl. 235—95 C **10 Claims**

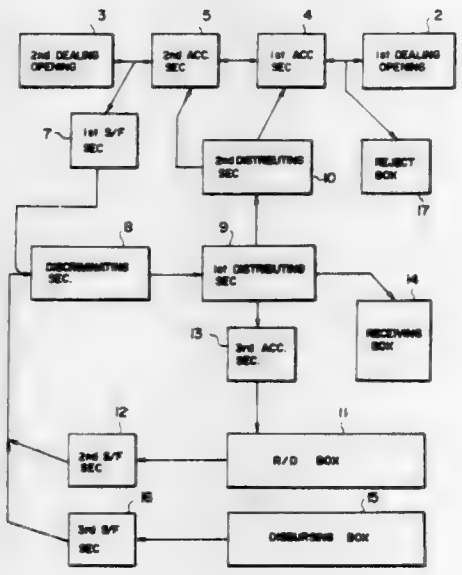


1. A control device for an instrument (10) attached to a vehicle wheel for recording the distance covered by a vehicle, which instrument comprises a counting mechanism with several number-carrying wheels (25), a stamping mechanism (29,30) for stamping cards, a means for advancing number-carrying wheels of the counting mechanism in response to the distance covered, and a pendulum (11) having an oscillation axis which coincides with the vehicle wheel axle, and which by substantially standing still effects a relative movement in relation to the instrument, which movement is utilized for driving via a gear unit (12) the means for advancing the number-carrying wheels of the counting mechanism, characterized in that the means for advancing the number-carrying wheels (25) of the counting mechanism comprise a feed hook (14), which is deformed permanently when the number-carrying wheels of the counting mechanism are blocked, and thereby effects permanent closing of a first electric contact (14*b*-35), and that a movable member (18) in the gear unit (12) is provided with at least one signal shoulder (49), which is capable at a certain movement transfer of the gear unit to alternatingly open and close a second electric contact (33-34), and that an element (34,35) of said first and second electric contact is provided for scanning the condition of the first electric contact when said vehicle wheel is stationary or moving and the second electric contact when said vehicle wheel is moving.

4,510,380
AUTOMATIC MONEY RECEIVING AND DISBURSING MACHINE

Isamu Uchida, deceased, late of Chigasaki, Japan (by Kazuko Uchida, heiress); by Chigusa Fujii, heiress, Tokyo, Japan; Eiichi Kokubo, Tokyo, Japan; Kyoichi Osako, Tokyo, Japan; Makoto Yamazaki, Tokyo, Japan; Shinichi Imura, Tokyo, Japan; Junichi Arikawa, Tokyo, Japan; Kowichi Goi, Tokyo, Japan; Hiroshi Hongou, Tokyo, Japan; Takashi Shinozaki, Tokyo, Japan, and Hiroshi Emori, Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 388,983
Claims priority, application Japan, Jun. 19, 1981, 56-95109
Int. Cl.[3] G06F *15/30*
U.S. Cl. 235—379 5 Claims



1. An automatic receiving and disbursing machine, said machine comprising:

at least one opening defined by the machine for movement of notes therethrough;

at least one accumulating means for accumulating the notes, said at least one accumulating means being in communication with said at least one opening;

a discriminating means for discriminating the notes received in said at least one accumulating means, said discriminating means selectively making one of a first discrimination wherein the notes are discriminated as to whether the notes are normal and a second discrimination wherein the notes are discriminated as to whether the notes are of a particular kind of note;

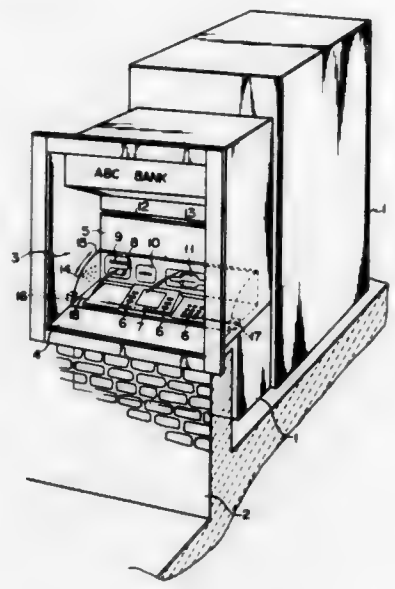
at least one receiving means for receiving the notes, the notes received by said at least one receiving means having been discriminated by the first discrimination of the discriminating means to be normal;

at least one distributing means for distributing the notes, the notes distributed by said at least one distributing means being distributed to said at least one accumulating means and to one of said at least one receiving means, the notes being distributed into said one of said receiving means being firstly distributed by said at least one distributing means to said at least one accumulating means after said first discrimination being effected by said discriminating means and then said second discrimination being effected to the notes having been discriminated by said first discrimination to be normal so as to select a particular kind of note to be distributed to said one receiving means.

4,510,381
AUTOMATIC TRANSACTION MACHINE

Kunio Fukatsu, Ebina, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 5, 1983, Ser. No. 492,032
Claims priority, application Japan, May 6, 1982, 57-75844
Int. Cl.[3] G06F *15/30*
U.S. Cl. 235—379 9 Claims



1. An automatic transaction machine comprising:

a housing having an outer portion and an inner portion with respect to a wall;

a transaction medium insertion port disposed as said outer portion for inserting thereat a transaction medium on which transaction information is recorded;

reading means for reading the transaction information from the transaction medium inserted at said transaction medium insertion port;

an operation section for entering a sequence of transaction data associated with the transaction information on the transaction medium;

means for dispensing a negotiable medium in accordance with the transaction information read by said reading means from the transaction medium and with the transaction data entered at said operation section;

a shutter disposed to be opened/closed with respect to said operation section, said shutter having an arcuated shape so as to extend over said outer portion of said housing;

a shutter driving section for driving said shutter so as to open/close said shutter; and

a storage section for storing said shutter in said inner portion of said housing.

4,510,382
METHOD OF DETECTING FALSE DATA RECORDING MEDIA AND A DATA RECORDING MEDIUM THEREFOR

Hans-Jürgen Walter, Weil der Stadt, Fed. Rep. of Germany, assignor to Mico Datensysteme GmbH, Weil der Stadt, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,686
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1982, 3223034
Int. Cl.[3] G06K *5/00*
U.S. Cl. 235—380 11 Claims

1. A method for detecting false data recording media, particularly copies of magnetic cards which are adapted to store credit data in addition to identification and other information and used for presentation to one of a pre-determined plurality of automatic service rendering or product vending machines set up in an allowed area for eliciting a selective service or the dispensing of a product from any of said machines, with the value of said service or product elicited being subtracted from

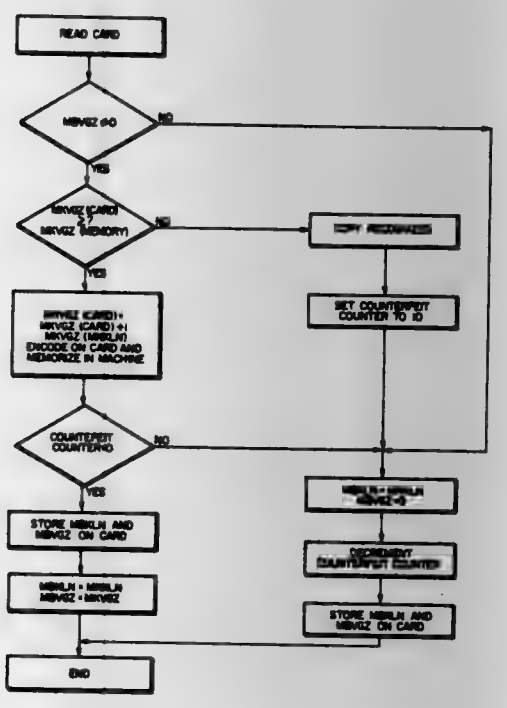
the user's existing credit and the remaining credit being restored on said data recording medium, characterized by the currently presented one of said automatic service machines, upon presentation of a data recording medium, performing the following steps in addition to those required for rendering said selected service or dispensing said selected product and for the associated credit subtraction, said steps comprising:

first, reading and memorizing a serial number encoded on said currently presented data recording medium to identify the same;

secondly, reading and memorizing the number of prior uses of said currently presented data recording medium as encoded thereon;

thirdly, reading the serial number of at least one other of said data recording media which during prior use of said currently presented data recording medium was encoded thereon by said automatic service machine then used, said serial number being encoded on said currently presented data recording medium;

fourthly, reading the number of previous uses of said at least one other data recording medium which was encoded on said currently presently data recording medium by said



automatic service machine priorly presented said current data recording medium, said number of previous uses thus being currently encoded on said data recording medium;

incrementing by one of the number of uses encoded on said currently presented data recording medium;

firstly, encoding on said currently presented data recording medium a serial number of at least one data recording medium previously presented to said automatic service machine currently used, said serial number having been memorized in said machine;

secondly encoding on said currently presented data recording medium the number of uses of said at least one data recording medium previously presented to said automatic service machine currently used, said number of uses having been memorized in said machine;

comparing the number of previous uses of said currently presented data recording medium as memorized in said currently used automatic service machine with the number of its previous uses as read; and

triggering a counterfeit detection signal in the event that the number of uses read by said automatic service machine is lower than the number of uses memorized.

4,510,383

DEVICE FOR THE OPTICAL IDENTIFICATION OF A CODING ON A DIAGNOSTIC TEST STRIP

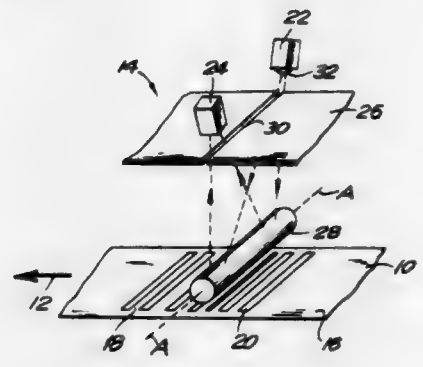
Uwe Ruppender, Mannheim, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,293

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137174

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—462 **8 Claims**



1. In an evaluation device into which a diagnostic test strip with a high information density bar coding of at least 10 bits per cm on a surface thereof is positively longitudinally movable relative to an optical bar code reader therein having a transmitter comprising light irradiating means and a receiver comprising light-sensitive means, the improvement wherein: the transmitter and the receiver are disposed on the same side of the test strip and wherein the reader comprises a single cylindrical lens disposed between the transmitter and the test strip and the receiver and the test strip with the lens axis running substantially parallel to the test strip surface carrying the coding and to the code bars, means forming a slit aperture between the cylindrical lens and the transmitter and between the cylindrical lens and the receiver, wherein the slit aperture for the transmitter and for the receiver lie in a plane defined by the cylindrical axis of the lens and the transmitter with the distance between the lens axis and the test strip surface being substantially such that the focus lines of the lens lie approximately in the test strip surface.

4,510,384

AUTOMATIC FOCUSING DEVICE WITH FREQUENCY WEIGHTED AMPLIFICATION

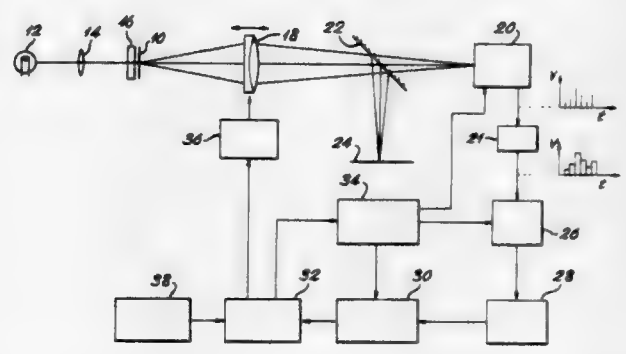
James B. Grimbleby, Reading, and Christopher G. Talbot, Cheltenham, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 16, 1982, Ser. No. 408,282

Claims priority, application United Kingdom, Aug. 17, 1981, 8125084

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **10 Claims**



4. Focusing apparatus for focusing an optical system comprises receiving means for receiving an image from a focusing

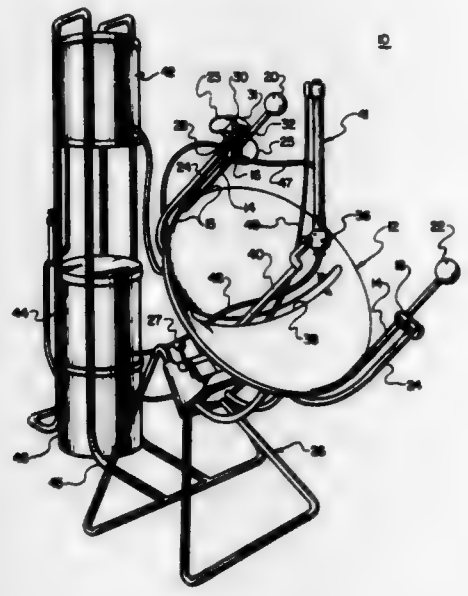
means; circuit means for deriving from the receiving means an electrical signal having a frequency distribution which corresponds to the spatial frequency disribution of said image; amplification means for applying to the electrical signal an amplification which is greater at high frequencies than at low frequencies; and adjusting means for adjusting the optical system in accordance with variations in the amplified signal.

4,510,385

SOLAR TRACKING SYSTEM EMPLOYING INERTIAL COASTING

Cornelis M. Welman, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 8, 1982, Ser. No. 439,659
Int. Cl.³ G01J *1/24*
U.S. Cl. 250—203 R 8 Claims



1. In a solar tracking system including a fixed-support, collector means for collecting the sun's rays along an axis, pivot bearings for rotatably attaching the collector means to the support, motive means for applying a force to rotate the collector means, and sun sensor means for energizing the motive means when exposed to sunlight, the improvement comprising:

shadow producing means mounted to rotate with the collector means for preventing the exposure of the sun sensor to sunlight when the axis of the collector means approaches the position of the sun to within a predetermined angle; and

means for coupling the motive means to the collector means so that the inertia of the motive means, the collector means and the shadow producing means causes the collector means to coast about the pivot bearings an amount substantially equal to the predetermined angle when the motive means is de-energized.

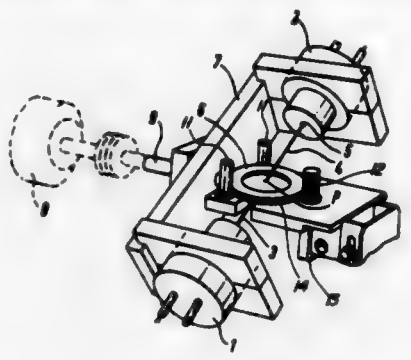
4,510,386

THINNING OF SPECIMENS FOR EXAMINATION UNDER THE ELECTRON MICROSCOPE

Joseph Franks, London, England, assignor to Ion Tech Limited, Middlesex, England

Filed Mar. 29, 1982, Ser. No. 362,531
Claims priority, application United Kingdom, Mar. 31, 1981, 8110073
The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.
Int. Cl.³ G01N *1/32*
U.S. Cl. 250—251 7 Claims

1. A method of preparing specimens suitable for examination by electron micrscopy techniques comprising providing a source for producing a beam consisting substantially exclusively of energetic or neutral particles, and irradiating a specimen by the beam thereby to erode the specimen to penetration



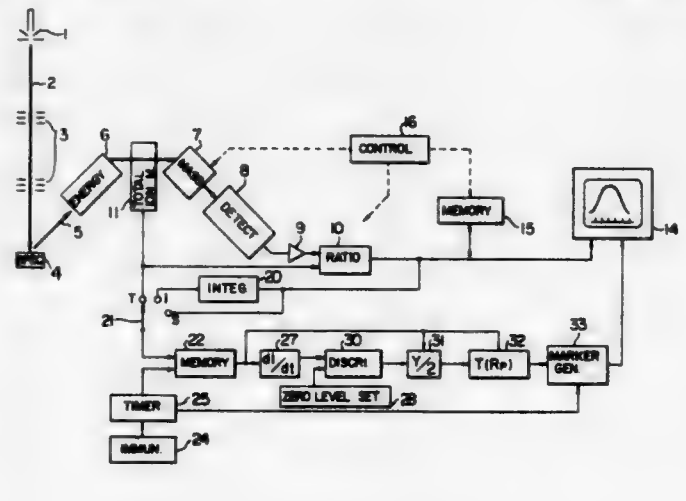
and produce an area surrounding the penetration of suitable thickness for transmission electrons.

4,510,387

ION MICRO-ANALYSIS

Eiichi Izumi, Takahagi, and Hifumi Tamura, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1982, Ser. No. 435,728
Claims priority, application Japan, Oct. 23, 1981, 56-170585
Int. Cl.³ H01J *37/256;* G01N *23/225*
U.S. Cl. 250—309 20 Claims



1. An ion micro-analyzer (IMA) in which the surface of a specimen is bombarded with a primary ion beam and secondary ions generated thereby are mass-analyzed, comprising:

means for generating a primary ion beam and bombarding the surface of a specimen with the primary ion beam;

means for detecting at least one species of secondary ions emitted from the specimen, and generating a monitoring signal corresponding to the species of secondary ions;

means for processing the monitoring signal to provide a relation between an implanted depth of the primary ions and an etching time corresponding to the implanted depth on the basis of a profile of the monitoring signal; and

means for providing an output indicative of a depth of an analyzed site in the specimen on the basis of said relation.

4,510,388

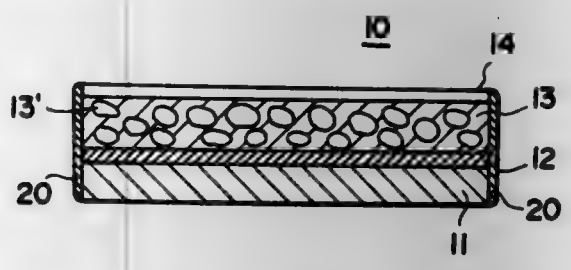
RADIATION IMAGE STORAGE PANEL

Hisashi Yamazaki, and Takeji Ochiai, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 18, 1982, Ser. No. 434,885
Claims priority, application Japan, Oct. 21, 1981, 56-168141
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.2 11 Claims

1. A radiation image storage panel comprising a substrate, a fluorescent layer provided on said substrate and composed of a

binder and a stimulable phosphor dispersed therein, and a protective layer provided on said fluorescent layer, characterized in that edge faces of said panel are coated with a polymer material comprising polyurethane or acrylic resin.

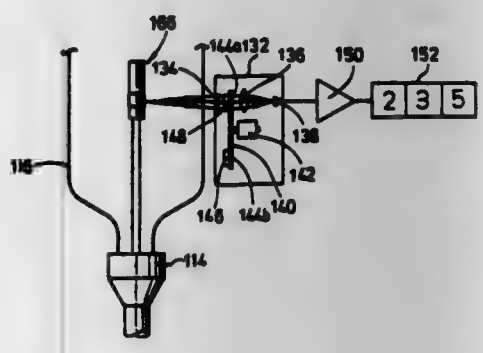


4,510,389

INFRARED FILM THICKNESS GAGE

Takabumi Fumoto, Kanagawa, Japan, assignor to Fuji Electric Company, Ltd. and Fuji Electric Corporate Research and Development, Ltd., both of, Japan

Filed Sep. 22, 1982, Ser. No. 421,323
Claims priority, application Japan, Oct. 17, 1981, 56-153463
Int. Cl.[3] G01N *21/35*
U.S. Cl. 250—339 9 Claims



1. An infrared film thickness gage for measuring the thickness of film in a generally tubular shape during production by a film blowing process comprising a source of infrared radiation for irradiating a test film with infrared rays, a photodetector for receiving the infrared rays of reference and measurement wavelengths after the infrared rays have passed through the test film alternately, and means for converting an intensity of the received infrared rays into an electrical signal and for converting the electrical signal into an indication signal indicating film thickness, the source of infrared radiation comprising a radiating element supported only at one location and having electrical conductors attached only at the supported location to provide uniform directional distribution characteristics of radiation intensity over 360° from a region spaced from the support location and concentrically positioned in a film tube, and wherein said photodetector is positioned outside of said film tube in confronting relation to said source of infrared radiation, whereby the error in measuring the thickness of the film is no greater than about 1 μm.

4,510,390

ELECTRONIC METHOD AND APPARATUS FOR DISTANCE MEASUREMENT THROUGH THE USE OF EQUIDISTANT THERMAL FIDUCIAL MARKINGS

Jan Rajchman, 268 Edgerstoune, Princeton, N.J. 08540

Continuation-in-part of Ser. No. 338,505, Jan. 11, 1982,. This application Jun. 7, 1982, Ser. No. 385,781
Int. Cl.[3] H04N *1/024;* G01J *1/00*
U.S. Cl. 250—341 31 Claims

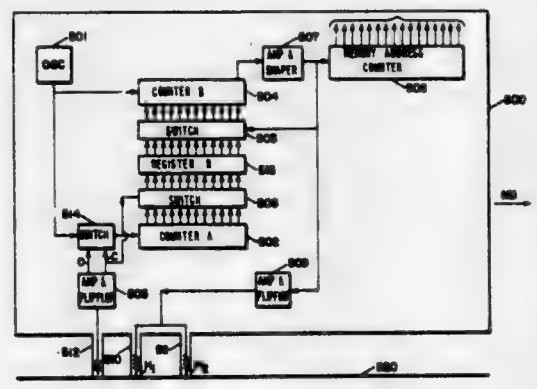
1. In a hand-holdable electronic copying apparatus that copies a document by first sweeping said apparatus across said document and, at substantially constant intervals, senses information to be copied by a plurality of optical sensors and stores said information in a memory at addresses corresponding to specific positions, and then subsequently, in a second sweep of said apparatus over the material on which the copy is to be made, energizes a plurality of writing elements in accordance with the information stored in said memory at addresses corresponding to the same relative positions of said apparatus on its first sweep, the improvement comprising:

heat producing means for hot spots on a surface;

hot spot detecting means for substantially directly contacting said surface and for detecting said hot spots produced by said heat producing means;

electronic control circuit means for controlling said heat producing means so as to produce a trail of substantially equidistant hot spots;

counter means for counting the hot spots detected by said hot spot detecting means; and,



means to address said memory according to the count in said counter means thereby causing said apparatus to accurately reproduce during said second sweep information sensed during said first sweep.

31. An apparatus for producing countable, disappearing, equidistant fiducial markings on a surface, said marking comprising hot spot areas produced one after another as said device is moved along a path over said surface, said apparatus comprising:

means for substantially directly contacting said surface and for detecting one marking by its temperature characteristics; and,

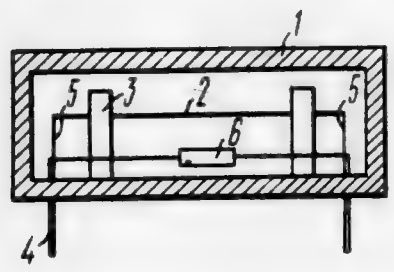
heat producing means for producing the next marking spaced apart from said detecting means by a predetermined spacing equal to the spacing between adjacent fiducial markings, said predetermined spacing being in the neighborhood of several hundred microns.

4,510,391

GAS-DISCHARGE POSITION-SENSITIVE IONIZING-RADIATION DETECTOR

Dmitry A. Goganov, and Evgeny K. Ovchinnikov, both of Leningrad, U.S.S.R., assignors to NPO "Burevestnik", Leningrad, U.S.S.R.

Filed Jan. 21, 1983, Ser. No. 459,971
Int. Cl.[3] G01T *1/185*
U.S. Cl. 250—374 4 Claims



1. A gas-discharge position-sensitive ionizing-radiation detector comprising:

a gas-tight gas-filled housing;

an anode electrode mounted inside said housing and includ-

ing a threadlike substrate of insulating material and a layer of resistive material extending along said substrate and receiving electric charges created by ionization of gas in said housing under the influence of the ionizing radiation to be detected, said layer of resistive material having two end portions;

two electric leads attached to said housing and respectively connected to said end portions of said layer of resistive material;

a shunting resistive element connected in parallel with said layer of resistive material, the resistance of said shunting resistive element being greater than or equal to one third of the resistance between said end portions of said layer of resistive material.

4,510,392

AUTORADIOGRAM MARKING PROCESS

Gerald J. Litt, and Lloyd C. Litt, both of Wellesley, Mass., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 8, 1983, Ser. No. 483,127
Int. Cl.³ G01T *1/08*
U.S. Cl. 250—475.2 **4 Claims**

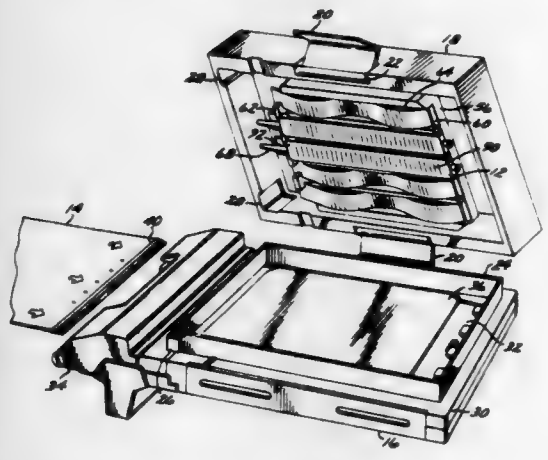
1. A process comprising forming on a substrate containing therein a distribution of radioactively tagged material indicia of a nexagonal Wurtzite form of zinc sulfide doped with trace metals phosphor, exposing the indicia to actinic radiation to charge the phosphor, exposing an X-ray film to the thusly marked substrate and developing the X-ray film to provide an X-ray film containing indicia corresponding to the phosphor ink indicia made on the substrate.

4,510,393

PHOTO CHAMBER FOR RECORDING CHEMICAL REACTIVITY

William J. Sell, San Francisco, Calif.; Joel M. Peisach, Madden, Mass., and David H. Riege, Newark, Calif., assignors to Mast Immunosystems, Ltd., Mt. View, Calif.

Filed Apr. 15, 1983, Ser. No. 485,172
Int. Cl.³ G01N *23/00*; G01T *1/167, 7/00*
U.S. Cl. 250—475.2 **4 Claims**



1. A self-contained, portable photo chamber for preparing an instant photographic record on visible-light-sensitive film contained in a film cassette having a film envelope over the film, of the activity of a carrier emitting invisible radiation, the carrier being mounted in a pipette having a flat face thereon, the photo chamber comprising:

a film back having a flat inner surface;

a flat intensifying screen joined to said flat inner surface of said film back;

instant-film processing means attached to said film back, said processing means allowing the inserting of the film cassette with the emulsion side of the film in facing relation to said intensifying screen, the withdrawing and subsequent reinserting of the envelope over the film, the withdrawing of the film cassette, and the breaking of a chemical sack containing developer chemicals as the film cassette is withdrawn;

a cover for installation to said film back, said cover and said back being light tight when installed together;

a plurality of retainers within said cover, each of said retainers being adapted for receiving a pipette with the flat face thereof oriented toward said intensifying screen when said cover is installed to said film back;

a translator mechanism supporting said plurality of retainers, said translator mechanism having at least a first position whereat said retainers are spaced apart from the film, and a second position whereat said retainers are positioned adjacent the film so that the flat faces of the pipettes in said retainers are pressed against the side of the film not having an emulsion, said translator mechanism having a control extending externally to said cover to move said retainers between the first and second positions, whereby said retainers may be moved to the first position to allow the withdrawing of the envelope over the film, moved to the second position to expose the film, and again moved to the first position to allow reinserting of the envelope over the film and withdrawing and processing of the film cassette; and

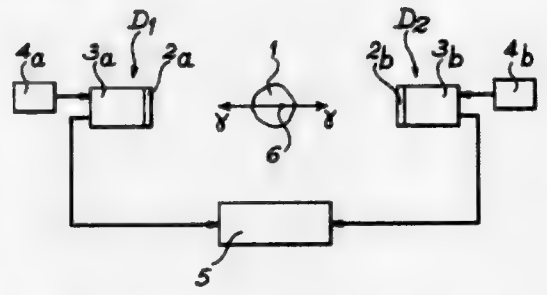
biasing means for urging the entire length of the pipettes into contact with the film with said translator mechanism in the second position.

4,510,394

MATERIAL FOR SCINTILLATORS

Robert Allemand, Saint Ismier, and Michel Laval, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 16, 1982, Ser. No. 388,992
Claims priority, application France, Jun. 23, 1981, 81 12314
Int. Cl.³ G01J *1/58*; G01N *21/64*
U.S. Cl. 250—483.1 **5 Claims**



1. A very fast scintillator for the detection of high energy photons, said scintillator being comprised of barium fluoride material, said material being transmissive to light at least in the wavelength range of 2000 Å to 2500 Å, said material being excited by said high energy photons to emit a first component and a second component of light, said first component being a slow component and having a wavelength above 2500 Å, said second component being a fast component in the wavelength range of 2000 Å to 2500 Å with a time constant of 0.8 ns.

4,510,395

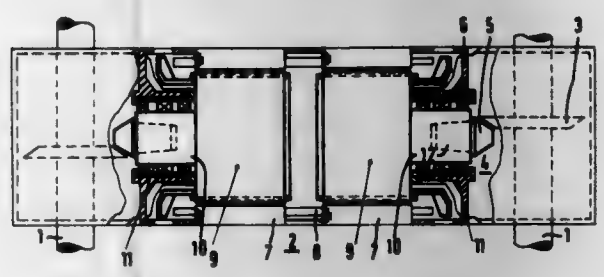
DOUBLE-AXLE DRIVE FOR ELECTRIC SELF-PROPELLED RAILWAY VEHICLE

Christian Sohrt, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,866
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1981, 3140167
Int. Cl.³ B61C *17/00*
U.S. Cl. 290—3 **4 Claims**

1. In a longitudinal double-axle drive for an electric, track-bound, self-propelled vehicle which includes an electric pro-

pulsion motor longitudinally disposed between two drive axles of the vehicle, an angle transmission for each axle including a large gear elastically coupled to each axle and a pinion gear connected to the rotor shaft of the electric propulsion motor and meshing with the large gear, and a transmission housing for each angle transmission, the improvement comprising the electric propulsion motor being a double motor with two



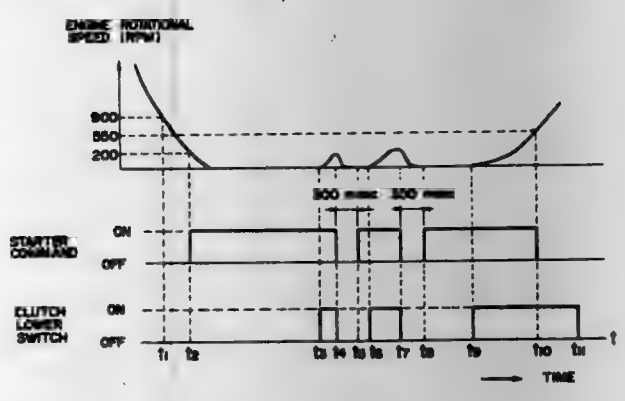
electrically independent rotors of equal length and a common stator comprised of two separate stator lamination stacks of correspondingly equal length and a continuous stator winding, and support means including a pair of overhung arrangements for separately and completely supporting each rotor, on a side thereof facing its associated transmission, from the respective transmission housing, each pinion gear being rigidly attached to a respective one of said two electrically independent rotors.

4,510,396

METHOD OF CONTROLLING AUTOMATIC STOP AND RESTART OF AN ENGINE

Shigekatsu Uchida; Takao Akatsuka, and Takahide Kawamura, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 2, 1982, Ser. No. 394,728
Claims priority, application Japan, Jul. 24, 1981, 56-115990
Int. Cl.³ F02N *11/08*
U.S. Cl. 290—30 R **6 Claims**



1. Method of controlling automatic stop and restart of an engine of a motor vehicle, wherein said method comprises the steps of:

(a) detecting operating conditions of various components of said motor vehicle;

(b) judging as to whether or not first predetermined conditions for automatic engine stop are fulfilled based on detected operating conditions;

(c) judging as to whether or not second predetermined conditions for automatic engine restart are fulfilled based on detected operating conditions, said second predetermined conditions including a restarting operation;

(d) automatically stopping said engine when said first predetermined conditions are fulfilled;

(e) generating a starter command when an engine rotational speed is lowered to reach a first predetermined value, said starter command being discontinued to be generated when the engine rotational speed is increased to reach a second predetermined value;

(f) feeding the engine start signal to a starting means when a judgement is made that the second predetermined conditions are fulfilled druing said starter command being generated;

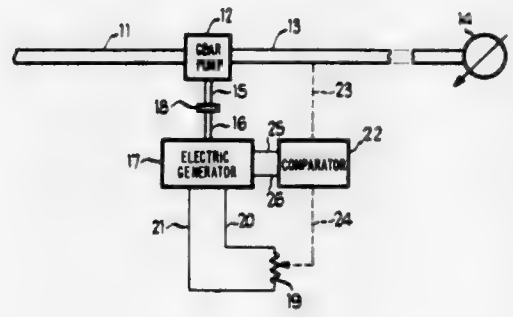
(g) masking said starter command for a predetermined period of time in synchronism with interruption of said restarting operation.

4,510,397

POLYMER FLOW CONTROL APPARATUS

Donald E. Schroeder, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jul. 20, 1983, Ser. No. 515,407
Int. Cl.³ F03B *13/00*; H02K *7/18*
U.S. Cl. 290—43 **7 Claims**



3. A method for controlling the flow of aqueous partially hydrolyzed polyacrylamide solutions of the type employed as drive fluids and/or mobility control agents in the recovery of oil from subterranean oil-bearing reservoirs to prevent shear degradation of the polyacrylamide prior to introducing the solution into an input well of an oil-bearing reservoir: comprising the steps of diluting the aqueous partially hydrolyzed polyacrylamide solution to provide a concentration of the partially hydrolyzed poplyacrylamide in the solution sufficient to enable the solution to substantially meet the permeability requirements of the oil-bearing reservoir; passing the diluted solution at one fluid pressure through flow control means to effect a lowering of the fluid pressure of the solution while at the same time extracting from the flow control means the mechanical energy resulting from the lowering of the fluid pressure of the solution; converting the mechanical energy extracted from the flow control means to electrical energy; and utilizing a portion at least of the electrical energy to regulate the rate at which the solution passes through the flow control means so as to minimize any shear degradation of the partially hydrolyzed polyacrylamide as it undergoes a change in fluid pressure.

4,510,398

ADD/SHED LOAD CONTROL ACCORDING TO MULTIPLE ADD/SHED SEQUENCES

Charles H. Culp, Mundelein, and Denise J. Downar, Palatine, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

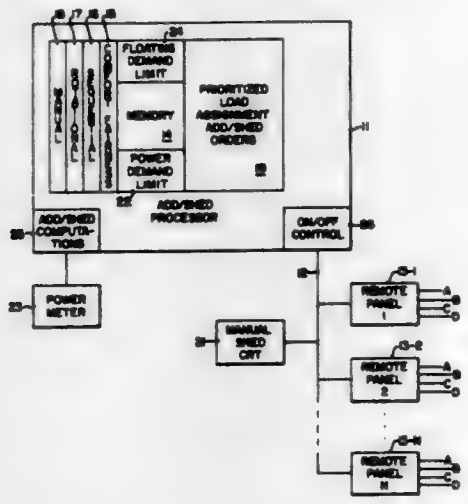
Filed Dec. 13, 1983, Ser. No. 561,002
Int. Cl.³ H02J *3/14*
U.S. Cl. 307—35 **17 Claims**

1. An add/shed system for adding/shedding loads to maintain a building's power consumption below a predetermined level, each load being assigned to at least one of multiple types of add/shed routines, each routine controlling the adding/shedding of said loads in a different sequence, said system comprising:

a plurality of loads; and,

processor means connected to said plurality of loads and adapted to be connected to a power meter for determining which of said plurality of loads should be added/shed to maintain power consumption below said predetermined

level and for determining which type of the multiple types of add/shed routine is assigned to each load, said proces-



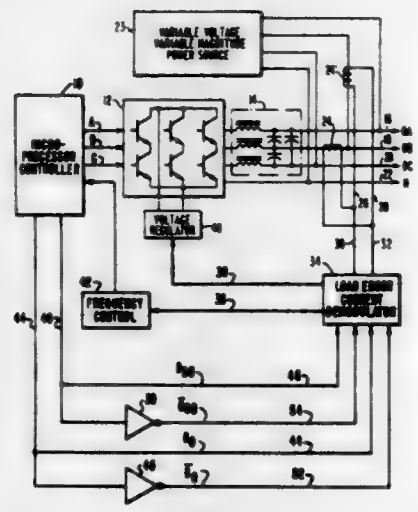
sor means for adding/shedding each load according to its assigned routine.

4,510,399

DEMODULATOR CIRCUIT FOR PARALLEL AC POWER SYSTEMS

Donal E. Baker, Elida, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1982, Ser. No. 433,325
Int. Cl.³ H02V *3/16*
U.S. Cl. 307—57 **22 Claims**



1. A demodulator circuit comprising:

a first input terminal for receiving a first time varying electrical signal whose waveform is subject to variation;

a second input terminal for receiving a first pulse wave control signal;

means for switching said first time varying signal to a first output terminal when said first pulse wave control signal is at a first predetermined voltage level, thereby producing a voltage on said first output terminal which is representative of the real component of said first time varying signal;

a third input terminal for receiving a second pulse wave control signal being phase displaced from said first pulse wave control signal by 90°; and

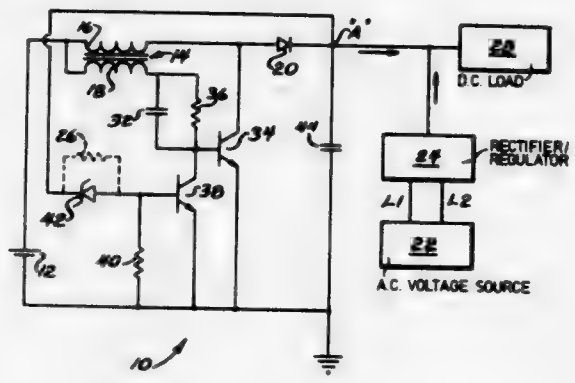
means for switching said first time varying signal to a second output terminal when said second pulse wave control signal is at a second predetermined voltage level, thereby producing a voltage on said second output terminal which is representative of the reactive component of said first time varying signal.

4,510,400

SWITCHING REGULATOR POWER SUPPLY

Kenneth J. Kiteley, Schaumburg, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 12, 1982, Ser. No. 407,417
Int. Cl.³ H02J *9/06*
U.S. Cl. 307—66 **9 Claims**



1. A power supply circuit for driving a DC load device comprising:

a primary DC voltage source subject to interruptions in operation coupled to an input terminal of said DC load device for providing power thereto; and

a standby DC voltage source coupled to said input terminal for providing power to said load device during interruptions in the operation of said primary DC voltage source, said standby DC voltage source including:

a charged storage battery for generating a standby DC voltage;

self-oscillating control means responsive to the output voltage of said primary DC voltage source and coupling said storage battery to said DC load device for increasing the DC output voltage therefrom and providing said standby DC voltage to said DC load device when the output of said primary DC voltage source drops below a predetermined voltage level and wherein said storage battery does not provide an output to said DC load device when the output of said primary DC voltage source exceeds said predetermined voltage level; and

regulation means coupled to said storage battery and said control means for comparing said standby DC voltage and said predetermined voltage level and adjusting said standby DC voltage so as to equal said predetermined voltage level.

4,510,401

PROCESSES AND DEVICES FOR PROVIDING A LOAD WITH AN ELECTRIC AC SUPPLY WITHOUT DISCONTINUITY OF THE AC SIGNAL

Michel Legoult, Dammarie les Lys, France, assignor to Etablissements-Pierre Fontaine, Chilly Mazarin, France

Filed Mar. 28, 1983, Ser. No. 479,179
Int. Cl.³ H02J *9/06*
U.S. Cl. 307—66 **11 Claims**

3. An electric supply device capable of delivering AC electric energy to a load without interruption, comprising

a transformer (1) having a secondary assembly connectable to the load to be supplied,

first means (13,14) for connection to a main AC electric source, these first connection means being connected to the primary assembly of the transformer,

second means (15,16) for connection to an auxiliary DC electric source, these second means being connected to power oscillator means (18,19) themselves connected to the primary assembly of the transformer,

means (22) for detecting a failure of the main source,

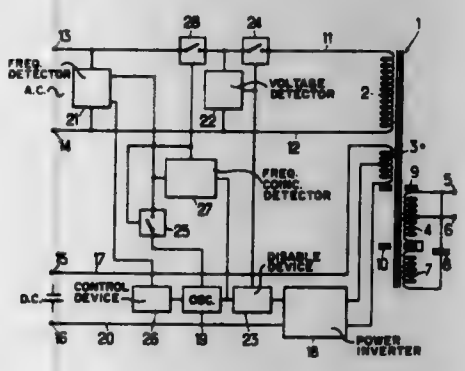
control means (23,24), made dependent on said detecting means, for selectively controlling the power supply of the

primary assembly of the transformer either from the main source when this latter is in the operating condition, or from the auxiliary source when the main source is broken down (cut off),

and synchronizing means associated with said control means for synchronizing the switching of the supply from one source to the other so that there results therefrom no discontinuity in the AC power supply to the load, characterized in that, for switching from the supply from the auxiliary source to the supply from the main source when a failure of this latter disappears, the synchronizing means comprise:

means (21) for detecting the frequency of the main source,

means for detecting the frequency of the power oscillator means,



means (26) for controlling the frequency drift of the power oscillator means (18,19), these frequency drift controlling means being under the dependence of the means (21) for detecting the frequency of the main source,

means (27) for detecting the coincidence of the frequencies of the main source and of the power oscillator means,

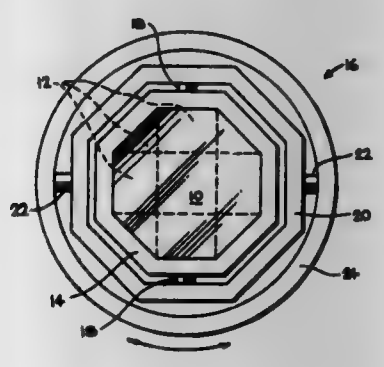
and synchronous switch means (28) placed under the control of said frequency coincidence detection means, for disconnecting the main source from the primary assembly of the transformer when a failure of the main source occurs and for reconnecting the main source to the primary assembly of the transformer when said failure has disappeared and when said frequencies coincide.

4,510,402

OPTICAL HARMONIC GENERATOR

Mark A. Summers, Livermore; David Eimerl, Pleasanton, and Robert D. Boyd, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 10, 1982, Ser. No. 387,060
Int. Cl.³ G02F *1/35*
U.S. Cl. 307—427 **14 Claims**



1. An optical frequency generator in the path of a fundamental frequency input wave, said generator selectively passing a fundamental frequency output wave, generating a second-harmonic frequency output wave or generating a third-harmonic frequency output wave in response to the fundamental frequency input wave, the input wave having a propagation vector k and an electric-field polarization vector, comprising:

first and second serially arranged birefringent uniaxial crystal elements, each having an optic axis, ordinary and extraordinary directions;

means for fixedly positioning said uniaxial crystal elements into an integral assembly with the crystal elements oriented so that the ordinary polarization direction of the first uniaxial crystal element is parallel with the extraordinary polarization direction of the second uniaxial crystal element and so that the extraordinary direction of the first uniaxial crystal element is parallel to the ordinary direction of the second uniaxial crystal element, said fixedly positioning means providing for said elements to move together as a single unit and to be mounted closely adjacent together;

means for aligning the electric-field polarization vector of the input wave with respect to the first of the serially-arranged uniaxial crystal elements such that the ordinary-direction component and the extraordinary-direction component of the input wave are substantially equal in each uniaxial crystal;

means for aligning the propagation vector k of the input wave at a phase-matching angle with respect to the optic axis of the first uniaxial crystal element and with respect to the optic axis of the second uniaxial crystal elements such that quadrature second-harmonic output waves are produced by the first and second uniaxial crystal elements when a fundamental input wave of sufficient intensity irradiates the integral assembly;

wherein the means for aligning the electric-field polarization vector of the input wave with respect to the first unaxial crystal element is adjustable such that the ordinary-direction component and the extraordinary-direction component in the first uniaxial crystal element are provided in the ratio of two-to-one so that the first uniaxial crystal element produces second-harmonic frequency waves having an electric-field polarization vector parallel to the ordinary direction of the second uniaxial crystal element;

wherein the means for aligning the propagation vector k of the input wave at a phase-matching angle with respect to the optic axis of the second uniaxial crystal element is adjustable such that the second-harmonic wave and the residual fundamental wave from the first uniaxial crystal element mix in the second uniaxial crystal element to generate a third harmonic wave when a fundamental input wave of sufficient intensity is provided;

wherein the means for aligning the propagation vector k of the input wave at a phase-matching angle with respect to the optic axis of the first and second uniaxial crystal elements is variably adjustable for controlling the amount of phase-matching for each crystal element to selectively control the amount of second-harmonic generated in each crystal for providing an elliptically-polarized second-harmonic output wave; and

wherein the means for aligning the propagation vector k of the input wave is adjustable to pass the fundamental wave through the crystal elements and wherein the means for aligning the electric-field polarization vector of the fundamental wave is adjustable to obtain a selected degree of elliptical polarization state after passage through the birefringent uniaxial crystal elements.

4,510,403

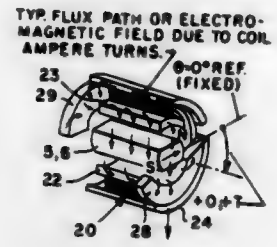
LIMITED ANGLE TORQUE MOTOR WITH MAGNETIC CENTERING AND STOPS

Robert D. Vanderlaan, and Richard Grau, both of Kalamazoo, Mich., assignors to Pneumo Corporation, Boston, Mass.

Filed Feb. 13, 1984, Ser. No. 579,784
Int. Cl.³ H02K *33/00*
U.S. Cl. 310—36 **30 Claims**

1. A limited angle torque motor comprising a rotor assembly and a stator assembly surrounding said rotor assembly, said

rotor assembly and stator assembly being mounted for relative rotation, said rotor assembly including a permanent rotor magnet magnetized in the diametrical direction, and said stator assembly including a pair of circumferentially spaced axially extending stator magnetic poles having magnetic flanges at opposite ends thereof, a stator coil extending circumferentially around said stator magnetic poles, an outer magnetic housing surrounding said stator coil, said magnetic flanges extending radially outwardly toward said outer magnetic housing, said stator coil when energized by direct or pulse width modulated



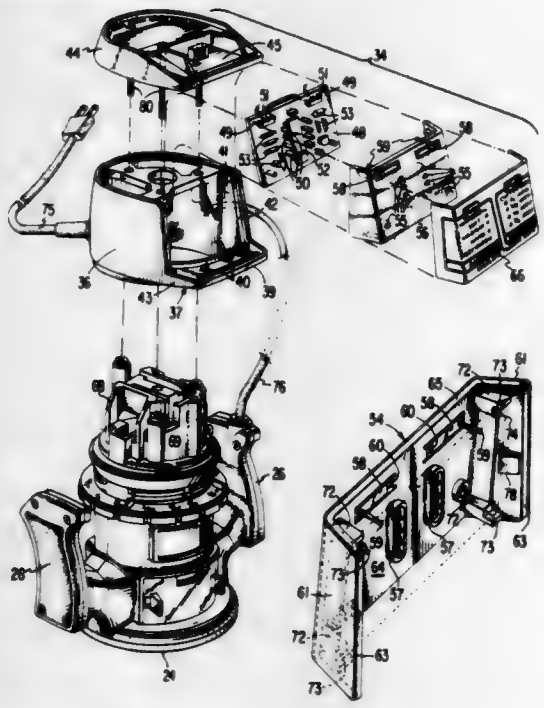
current providing a cross flux between said stator assembly and rotor magnet which causes said rotor shaft to rotate through a limited rotational angle range, and air gap means in the flux path between said outer magnetic housing and said stator magnetic poles which causes the magnetic flux produced by said permanent rotor magnet to follow a path from said permanent rotor magnet through said stator magnetic poles that produces a magnetic reluctance torque having a strong tendency to center said rotor shaft at the midpoint of such limited rotational angle range.

4,510,404

MOUNTING FOR ELECTRONIC CIRCUIT BOARD IN POWER HAND TOOL

Michael E. Barrett, Easley; Randy G. Koon, Pickens, both of S.C., and Thomas C. Laughon, Alpharetta, Ga., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 31, 1983, Ser. No. 480,982
Int. Cl.³ H02K *7/14*
U.S. Cl. 310—50 **7 Claims**



1. In a power hand tool, a mounting arrangement for an electronic control comprising:

a printed circuit board carrying electronic components thereon to implement said electronic control;

a bezel fabricated from an insulating material and formed with stand off ribs extending substantially normal thereto, said stand off ribs having rabbetted surfaces spaced apart to receive said printed circuit board, means for selectively retaining said printed circuit board on said rabbetted surfaces of said stand off ribs of said bezel;

a support housing of said power tool fabricated from an insulating material, said support housing as carried on said power tool having an outwardly directed opening therein, means on said opening for supporting an edge portion of said bezel in the interior of said housing with said printed circuit board in said support housing;

a cap fabricated from an insulating material and covering with said bezel said opening in said support housing, means on said cap for sustaining the remaining edge portion of said bezel in the interior of said cap; and,

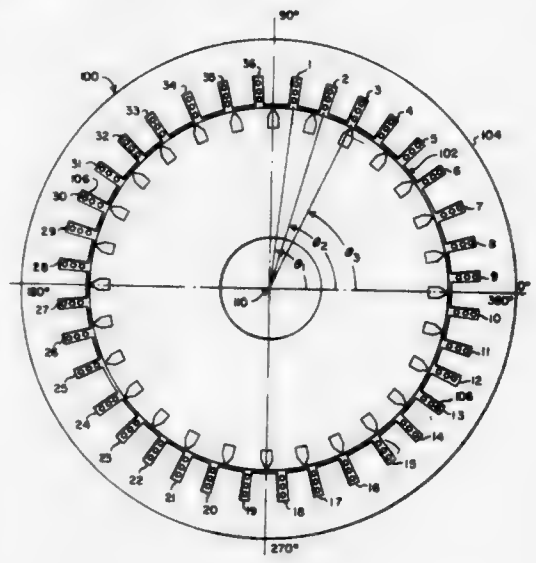
means for retaining said cap, bezel and support housing in an assembled condition to said power hand tool.

4,510,405

MOTOR LOCK DEVICE

Noel Carroll, Sherbrooke, and Colin J. Phelps, Fountain Gate, both of Australia, assignors to Secton Pty. Ltd., Dandenong, Australia

Filed Jun. 8, 1982, Ser. No. 386,180
Claims priority, application Australia, Jun. 12, 1981, PE9276; Sep. 30, 1981, PF0980
Int. Cl.³ H02K *1/10*
U.S. Cl. 310—76 **4 Claims**



1. An electric motor having a locking device for an output shaft, said locking device comprising a clutch element mounted to the output shaft by means permitting the clutch element to move axially relative to the shaft whilst constraining the clutch element to rotate with the shaft when the shaft rotates in one direction but permitting the shaft to rotate freely relative to the clutch element when the shaft rotates in the other direction, resilient means axially biasing the clutch element to engage a surface of the motor to lock the clutch element against rotation thereby preventing rotation of the shaft in said one direction whilst permitting rotation thereof in said other direction and electromagnet means selectively energizable to axially move the clutch element relative to the shaft whereby to disengage the clutch element from said surface of the motor whereby to permit free rotation of said shaft.

4,510,406

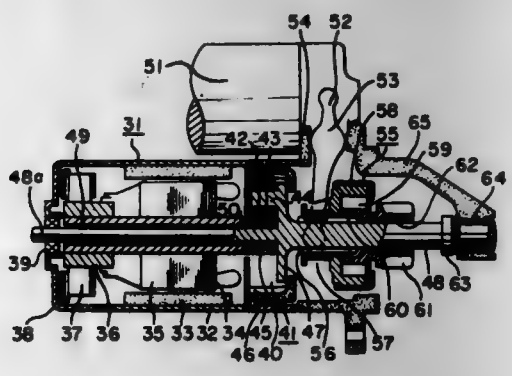
MULTI-USE STARTING DEVICE

Akira Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1984, Ser. No. 574,260
Claims priority, application Japan, Feb. 4, 1983, 58-15561[U]
Int. Cl.³ H02K *7/10*
U.S. Cl. 310—99 **3 Claims**

1. A starting device in combination with an internal combustion engine and a mechanical load comprising:

a cylindrical driving shaft;
a front bracket;
a rear bracket;
an armature of a D.C. motor supported on the outer periphery of said cylindrical driving shaft;
a rotary output shaft placed contiguous to one end of said cylindrical driving shaft and extending in alignment therewith, wherein a free end of said rotary output shaft is supported by a bearing means fitted to said front bracket;
a slidable overrunning clutch operatively associated with said rotary output shaft through a spline structure;
a speed reduction means for reducing revolution of said cylindrical driving shaft to transmit power from said cylindrical driving shaft to said rotary output shaft;



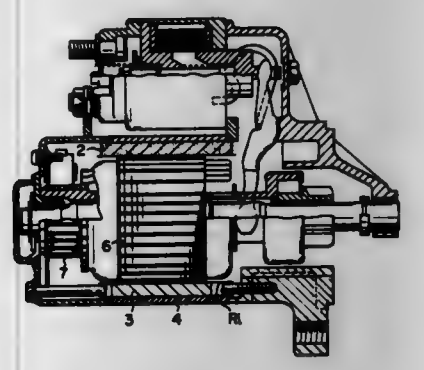
a power transmitting shaft firmly connected in alignment with said rotary output shaft and passed through said cylindrical driving shaft so as to be rotatable therein, one end of said power output shaft extended from the other end of said cylindrical driving shaft and wherein a free end of said power output shaft is supported by a bearing means fitted to said rear bracket;
a shift lever having its pivotal point set by a grommet formed in said front bracket, with one end of said shift lever operatively associated with said overrunning clutch;
first means for supplying electric power to said D.C. armature and for activating said shift lever in response to said internal combustion engine's starting requirements; and
second means for supplying power to said D.C. armature in response to mechanical load requirements.

4,510,407

PERMANENT MAGNET TYPE MOTOR HAVING IMPROVED POLE STRUCTURE

Tosio Tomite, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,632
Claims priority, application Japan, Jun. 11, 1982, 57-100048
Int. Cl.[3] H02K *21/26*
U.S. Cl. 310—154 21 Claims



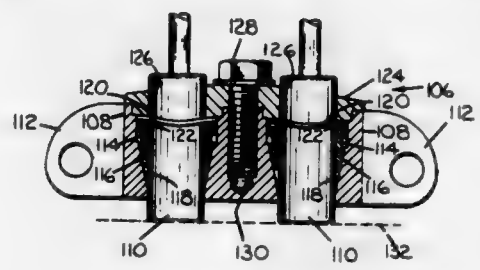
1. A permanent magnet type motor having a stator which comprises a yoke, a plurality of main magnetic poles made of permanent magnets, and a plurality of auxiliary magnetic poles, each of said main magnetic poles and each of said auxiliary magnetic poles being juxtaposed on the inner peripheral surface of said yoke to form respective pairs of juxtapsed main and auxiliary magnetic poles spaced in the circumferential direction by an air gap from other pairs of juxtaposed main and auxiliary magnetic poles, wherein each of said auxiliary magnetic poles has an axial length larger than an axial length of an armature core and smaller than an axial length of each of said main magnetic poles.

4,510,408

MOUNTING DEVICE FOR CYLINDRICAL MAGNETIC SENSOR

Raymond J. Jovick, Troy; Roger J. Malott, Union Lake, and Thomas E. Evans, Farmington Hills, all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 734,149, Oct. 20, 1976, abandoned, which is a continuation of Ser. No. 577,243, May 13, 1975, abandoned. This application Jun. 5, 1978, Ser. No. 912,789
Int. Cl.[3] H02K *21/26*
U.S. Cl. 310—168 10 Claims



1. A magnetic sensor mounting device for a wheel speed sensor assembly which said assembly is capable of being installed in association with a wheel rotatably mounted on an axle assembly and includes an annular rotor means mounted relative to said wheel for rotation about its axis corresponding to rotation of said wheel and a generally cylindrical magnetic sensor alignable with said annular rotor means, said magnetic sensor mounting device comprising:

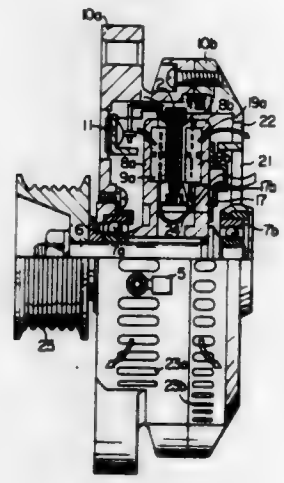
a support structure for said magnetic sensor adapted to be fixedly mounted on said axle assembly in alignment with said annular rotor means;
a resilient plastic sleeve member having a generally cylindrical opening to closely receive said magnetic sensor therein, said sleeve member having an outer surface at a first end thereof which is gradually tapered inwardly;
said support structure having a first end which has an interior surface which is tapered to mate with said outer surface of said first end of said magnetic sensor;
said support structure including means for selectively applying an axial force to said sleeve member when said magnetic sensor is positioned at a predetermined axial location therein to cause said first end of said support structure to inwardly wedge said first end of said sleeve member against said magnetic sensor to produce frictional contact therebetween; and
said resilient plastic sleeve member being generally noncompressible to cause only said first end thereof to be deformed inwardly against said magnetic sensor to produce said frictional contact therebetween.

4,510,409

HEAT INSULATION AND HEAT DISSIPATION CONSTRUCTION FOR FLAT ELECTRIC ROTARY MACHINE

Kenji Kanayama, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 12, 1983, Ser. No. 522,737
Claims priority, application Japan, Sep. 28, 1982, 57-169220; Oct. 6, 1982, 57-174648; Jan. 21, 1983, 58-8245
Int. Cl.³ H02K *1/32, 9/06*
U.S. Cl. 310—268 **4 Claims**



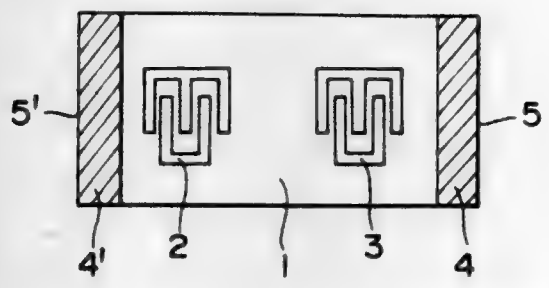
1. An electric rotory machine in flat discoidal form as a whole, comprising:
an armature coil secured to a housing of said electric rotory machine; and
a rotor rotatably supported in said housing for producing a rotary magnetic field; wherein the improvement resides in that said armature coil comprises:
a discoidal base formed of insulating material and provided with a multiplicity of substantially radially arranged slits,
a multiplicity of coil segments located on opposite surfaces of said base and arranged substantially radially between said slits,
connecting means for connecting said coil segments to said base, said connecting means including inner rings and outer rings located along inner and outer peripheral edges of the base respectively with open spaces left between radially inward ends of said coil segments and said inner rings and between radially outward ends of said coil segments and said outer rings respectively, and with resilient material interposed between said inner and outer rings and said coil segments.

4,510,410

ELASTIC SURFACE WAVE ABSORBERS COMPRISING ULTRAVIOLET LIGHT CURABLE RESIN

Akitsuna Yuhara, Yokohama; Kazuo Nate, Machida; Tatsuro Toyama, Kanagawa, and Jun Yamada, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 507,463
Claims priority, application Japan, Jul. 7, 1982, 57-116791
Int. Cl.³ H03H *9/25*
U.S. Cl. 310—313 D **15 Claims**



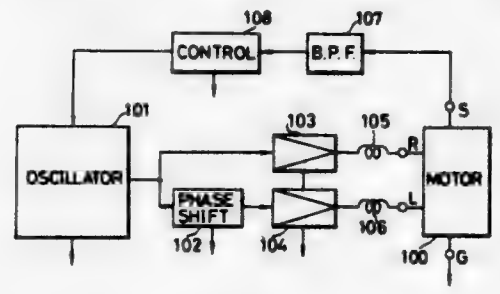
1. An elastic surface wave device comprising a piezoelectric substrate, at least one pair of transmitting and receiving electrodes on the surface of said substrate, and elastic surface wave absorbers formed by curing a composition, the main component of which is a resin curable by ultraviolet radiation, disposed on at least part of the zone on said piezoelectric substrate that propagates unwanted elastic surface waves, wherein said composition used to form said elastic surface wave absorbers comprises at least one photopolymerizable resin selected from the group consisting of 1,2-polybutadiene resin with terminal acryloyloxy or methacryloyloxy groups, organopolysiloxanes with terminal acryloyloxy or methacryloyloxy groups, epoxyacrylate-based resin, unsaturated polyester resins, and unsaturated urethane resin, an addition-polymerizable monomer having at least one $CH_2{=}C$ group and a boiling point at normal pressure of not less than 100° C., and a photosensitizer, said composition being used to form single surface wave absorbers, disposed on said at least part of the zone on said piezoelectric substrate that propagates unwanted elastic surface waves, whereby an elastic surface wave device using single elastic surface wave absorbers can be provided.

4,510,411

DRIVE CIRCUIT FOR SURFACE-WAVE DRIVEN MOTOR UTILIZING ULTRASONIC VIBRATION

Kazuo Hakamata, Kawasaki; Tadao Takagi, Yokohama, and Yukio Hyodo, Hiratsuka, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,693
Claims priority, application Japan, May 4, 1983, 58-77380
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—316 **10 Claims**



1. A surface-wave driven motor comprising:
a moving member for being displaced;
a resilient member having a surface urged against said moving member;
a piezo-electric member provided in contact with said resilient member to impart vibration to said resilient member and create an elastic wave in said surface;
means having electrode means provided on said piezo-electric member and applying an AC voltage to said piezo-electric member through said electrode means;
means for detecting an electrical output produced in said piezo-electric member from an area on said piezo-electric member which is electrically insulated from said electrode means; and
means for determining the frequency of said AC voltage on the basis of the detected electrical output.

4,510,412

PIEZOELECTRIC DISPLACING DEVICE

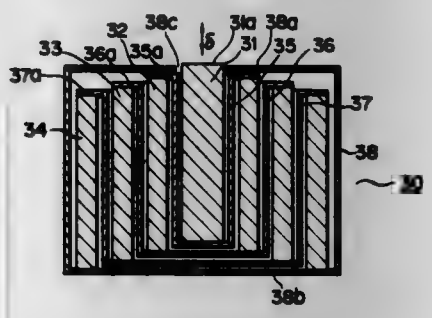
Yoshiyuki Suda, Yokohama; Katsunori Yokoyama, Ebina, and Chiaki Tanuma, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 2, 1983, Ser. No. 528,841
Claims priority, application Japan, Sep. 3, 1982, 57-152554
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 **6 Claims**

1. A piezoelectric displacing device comprising:
displacing means including a plurality of displacing members each including a plurality of stacked longitudinal effect type piezoelectric elements, said piezoelectric elements in

each displacing member being stacked such that displacement axes thereof are in the same direction, said displacing members being arranged juxtaposed to each other in a direction normal to the displacement axes of said piezoelectric elements and converting a voltage applied thereto to a mechanical displacement; and

a plurality of connecting means for mechanically connecting adjacent displacing members in series with each other, each of said connecting members having a first member extending parallel to said displacement axes and arranged



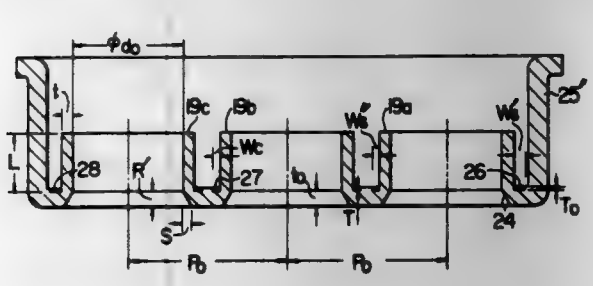
between said adjacent displacing members, a second member extending from said first member to one of said adjacent displacing members and a third member extending from said first member to the other of said adjacent displacing members, second and third members being connected at different positions along the displacement axis of said adjacent displacing members for deriving a sum of amounts of displacement of said piezoelectric displacing members along the displacement axes thereof to give an amount of displacement of said device.

4,510,413

ELECTRODE STRUCTURE FOR ELECTRON GUN

Minoru Yabe; Kenichi Noda; Satoru Endo, all of Mobara, and Masaaki Yamauchi, Tohgane, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1980, Ser. No. 214,693
Claims priority, application Japan, Jan. 18, 1980, 55-3471
Int. Cl.[3] H01J *29/46*
U.S. Cl. 313—460 15 Claims



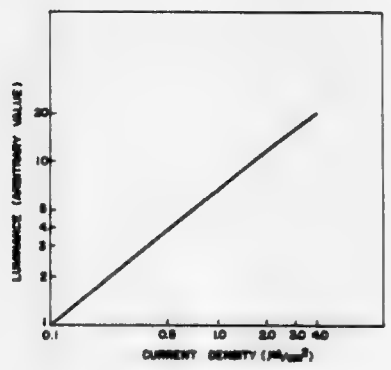
1. An electrode structure for an electron gun, having three closely arranged hollow cylindrical members extending in parallel from a base plate having apertures in alignment with respective cylindrical members, the base plate and the cylindrical members being formed integrally, wherein the inner edge of the bottom portion of each of said hollow cylindrical members is provided with a tapering surface having a precise circular cross section which is concentric with the centers of said apertures, whereby there is obtained a predetermined concentricity of said apertures with respect to the axes of said respective cylindrical members.

4,510,414

ELECTRON EXCITED FLUORESCENT DISPLAY DEVICE INCLUDING SCREEN WITH RARE EARTH PHOSPHOR EXHIBITING SUBLINEAR CURRENT DENSITY-EMISSION LUMINANCE CHARACTERISTICS

Sigeo Fujino, Hiratsuka; Takashi Hase, Ebina, and Akio Toshinai, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan

PCT No. PCT/JP82/00286, § 371 Date Mar. 9, 1983, § 102(e) Date Mar. 9, 1983, PCT Pub. No. WO83/00342, PCT Pub. Date Feb. 3, 1983
PCT Filed Jul. 23, 1982, Ser. No. 474,600
Claims priority, application Japan, Jul. 23, 1981, 56-115663; Aug. 13, 1981, 56-127104
Int. Cl.[3] H01J *29/20, 29/26;* C09K *11/08*
U.S. Cl. 313—468 9 Claims



1. An electron excited fluorescent display device including a fluorescent screen, and comprising, as the main part of the fluorescent screen, a rare earth yellow to red emitting phosphor represented by the following general formula:

$$(Ln_{1-x-y},Eu_x,Ce_y)_2O_2S$$

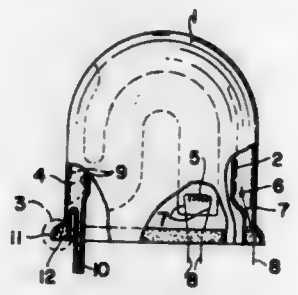
in which Ln is at least one of yttrium, gadolinium, lanthanum and luetetium, x is a number satisfying $10^{-4} \leqq x \leqq 9 \times 10^{-2}$, and y is a number satisfying $10^{-6} \leqq y \leqq 2 \times 10^{-3}$, and exhibiting sublinear current density-emission luminance characteristics when current density of an excitation electron beam is increased, said electron excited fluorescent display device being a current modulation type multi-color cathode ray tube provided with at least one current modulation electron gun for changing the current density of the electron beam emitted therefrom, a non-pattern fluorescent screen positioned in an advancing direction of said electron beam so as to stand face to face with said current modulation electron gun, and a deflecting coil or coils for generating a magnetic field in a direction normal to the advancing direction of said electron beam, deflecting said electron beam, and causing the entire surface of said non-pattern fluorescent screen to be excited by said electron beam and to emit light, and said non-pattern fluorescent screen comprising a yellow to red emitting phosphor as defined above exhibiting the sublinear current density-emission luminance characteristics when the current density of said electron beam is increased, and a phosphor exhibiting an emission color different from said yellow to red emitting phosphor and exhibiting superlinear or linear current density-emission luminance characteristics when the current density of said electron beam is increased.

4,510,415

FLUORESCENT LAMP AND PROCESS FOR FABRICATING THE SAME

Yoshiro Ogata, Osaka; Haruo Yamazaki, Shiga, and Hidezoh Akutsu, Hyogo, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 263,575, May 14, 1981, Pat. No. 4,423,350. This application Oct. 6, 1983, Ser. No. 539,671
Claims priority, application Japan, May 14, 1980, 55-64510
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.³ H01J *63/04, 9/00*
U.S. Cl. 313—493 **2 Claims**



1. A fluorescent lamp of the type in which a lamp envelope comprises:

an outer bulb having generally a spherical or a partially spherical or a cylindrical configuration with a generally planar open end having a circumferential end portion, an inner bulb inserted into said outer bulb in predetermined nested relationship with said outer bulb, said inner bulb having a peripheral end portion adjacent the circumferential end portion of said outer bulb, and a stem or a circular sealing disk adapted to close the open end of said outer bulb;

either the inner surface of said outer bulb or the outer surface of said inner bulb being formed with a groove which defines a discharge groove between said outer and inner bulbs;

a phosphor formed at least over the wall surfaces of said groove on either the inner surface of the outer bulb or the outer surface of the inner bulb;

an electrode disposed at each end of said discharge groove; and

a radiation emitting discharge gas consisting of mercury gas vapor and a rare gas or a rare gas mixture filled in said discharge groove,

wherein

the circumferential end portion of said outer bulb is flared radially outwardly so that glass frit can be filled in the annular space defined between the radially outwardly flared circumferential end portion of said outer bulb and the periphery of said stem or said circular sealing disk, whereby the radially outwardly flared circumferential end portion of said outer bulb and the periphery of said stem or said circular sealing disk can be gas-tightly sealed with said glass frit when the latter is heated and then solidified.

4,510,416

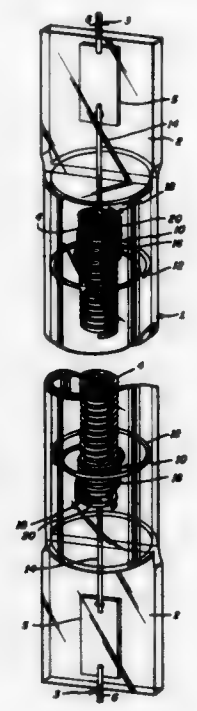
FILAMENT SUPPORT FOR TUBULAR LAMP

Steven L. Meade, Winchester; Merle E. Morris, and Lawrence M. Rice, both of Lexington, all of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 21, 1983, Ser. No. 515,745
Int. Cl.³ H01K *1/14*
U.S. Cl. 313—579 **10 Claims**

1. In an electric incandescent lamp of the double-ended type including a tubular envelope sealed at each end thereof, a helically coiled filament extending longitudinally through the interior of said envelope, and lead-in conductor means located at each of said sealed ends of said tubular envelope and extending exteriorly thereof, the improvement comprising;

a filament support in the form of a wire having a first end portion extending in a loop which is circumferentially engageable with the inner wall of said envelope around at least one-half of the circumference thereof, a second end portion extending substantially axially of said envelope and defining an inner power lead conductively coupled to



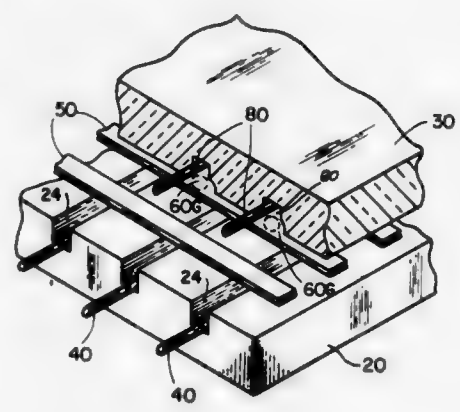
one of said lead-in conductor means, a third portion adjacent said first portion and defining at least one coil of outer diameter less than the diameter of said first portion loop and having an inner diameter dimensioned to snugly receive an end of said helically coiled filament, and a fourth portion disposed intermediate said second and third portions and having a turned section forming an abutment for limiting the position of said filament relative to said filament support.

4,510,417

SELF-SCAN GAS DISCHARGE DISPLAY PANEL

Edgar L. Harvey, Jamesburg, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,496
Int. Cl.³ H01J *17/49*
U.S. Cl. 313—585 **2 Claims**



1. A display panel comprising

a gas-filled envelope made up of a base plate and a face plate sealed together hermetically,

a plurality of parallel, longitudinal scan slots formed in the top surface of said base plate, there being a land between adjacent slots,

a scan anode secured in each of said scan slots,

a plurality of cathodes in the form of strips, each having a

top surface and a bottom surface, seated parallel to each other adjacent to the top surface of said base plate and oriented transverse to said scan anodes so that each crossing of a cathode with the scan anodes forms a scan cell made up of the scan anode and the lower surface of the cathode above it,

an array of depressions formed in the lower surface of said base plate inside said envelope, there being one depression for each scan cell, the depressions being arrayed in rows and columns,

a plurality of parallel, longitudinal display slots in the lower surface of said face plate, said display slots being parallel to said scan slots and extending along and through the rows of depressions, and

a display anode secured in each display slot and oriented parallel to the scan anodes and transverse to said cathodes so that each crossing of said display anodes by a cathode forms a display cell made up of the display anode and the portion of the top surface of the cathode beneath it,

said display slots and said depressions being oriented along and overlying the lands between the scan slots, and said depressions overlying cathode electrodes, said depressions being smaller in diameter than the cathodes are wide,

said panel being operated by turning on said scan cells column-by-column and generating cathode glow between the scan cathodes and the lower surface of each cathode and simuntaneously energizing selected display anodes to cause glow to transfer from a scan cell along the edge of a cathode and onto the top surface of the cathode beneath a selected display anode where the glow remains.

4,510,418

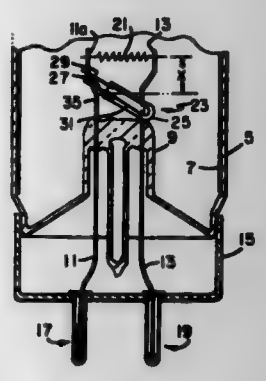
RAPID START FLUORESCENT LAMP WITH A BIMETAL ELECTRODE DISCONNECT SWITCH

John W. Anderson, Jr., Ipswich, and William J. Roche, Merrimac, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 632,262, Jul. 18, 1984, abandoned, which is a continuation of Ser. No. 546,072, Oct. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 494,841, May 16, 1983, abandoned. This application Aug. 28, 1984, Ser. No. 644,905

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*

U.S. Cl. 315—73 **11 Claims**



1. A 40-watt type rapid start fluorescent lamp operable at a current in the range of about 350 to 475 ma and having an envelope with a phosphor-coated inner wall surface, a low pressure fill gas, an electrode within each end of the envelope and a pair of electrically conductive leads passing through each end of said envelope for coupling each of said electrodes to an energization source, said fluorescent lamp characterized by the improvement wherein an electrode disconnect switch is affixed to at least one of said pair of electrical leads associated with at least one of said electrodes within said envelope, said electrode disconnect switch including a bimetal switch operable at temperatures in the range of about 75° C. to 300° C. and normally closed at room temperature and open at a predetermined temperature higher than room temperature and spaced at least 8.0 mm from said electrode and a pair of electrical conductors coupled to said bimetal switch, one of said pair of electrical conductors of said disconnect switch connected to one of said pair of electrically conductive leads of said lamp and the other of said pair of electrical conductors of said disconnect switch connected to said electrode with the other of said pair of electrically conductive leads of said lamp coupling said electrode to said energization source.

4,510,419

GRIP-TYPE PHOTOGRAPHIC FLASH DISCHARGE DEVICE

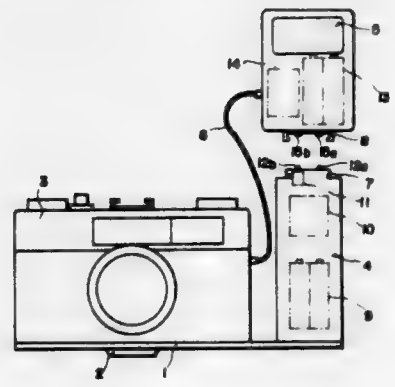
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Kabushiki Kaisha, Tokyo, Japan, a part interest

Filed Jun. 17, 1983, Ser. No. 505,449

Claims priority, application Japan, Jun. 23, 1982, 57/106765

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—241 P **4 Claims**



1. A grip portion type photographic flash discharge device, comprising:

a. a main discharge capacitor for storing charge with which to effect discharge of said flash device;

b. a grip portion provided with a first DC-DC converter and adapted to receive a first battery power source for activating said first DC-DC converter;

c. a flash unit provided with a second DC-DC converter and adapted to receive a second battery source for activating said second DC-DC converter, said flash unit being removably attachable to said grip portion; and

d. electrical interconnection means for connecting said first and second DC-DC converters by attachment of said flash unit to said grip portion, said main discharge capacitor being chargeable by the cooperation of said connected converters.

4,510,420

SERVO ROTARY MOTOR

Bill J. Sasso, Houston, Tex., assignor to Servo Technology Corp., Houston, Tex.

Continuation of Ser. No. 215,920, Dec. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 71,949, Sep. 4, 1979, abandoned. This application Feb. 7, 1984, Ser. No. 577,792

Int. Cl.³ H02K *33/12*

U.S. Cl. 318—37 **6 Claims**

1. A multicylinder electromagnetic engine comprising:

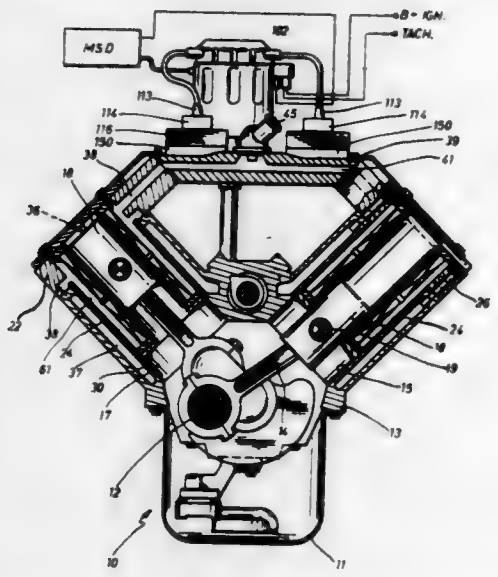
(a) an engine block including a water cooling system, a plurality of cylinders having an inner end in communication with the interior of the engine block and a crankshaft means;

(b) an engine block head having a plurality of cylindrical receptacles projecting downwardly from a bottom surface of said head, said receptacles being closed at the lower end and open at the upper end thereof and sized to be received in said cylinders;

(c) a magnetizable plunger reciprocally disposed in each of said receptacles, said plunger being operatively connected to said crankshaft means;

(d) coil means disposed in each of said receptacles;

(e) a cooling manifold in fluid communication with the water cooling system of the engine, said manifold including a plurality of fluid passages in communication with a plurality of passages formed in said engine block head



providing a closed loop cooling system for cooling said coil means;

(f) an electrical power source; and

(g) means for selectively energizing said coil means to cause rotary motion of said crankshaft means.

4,510,421

LINEAR MAGNET

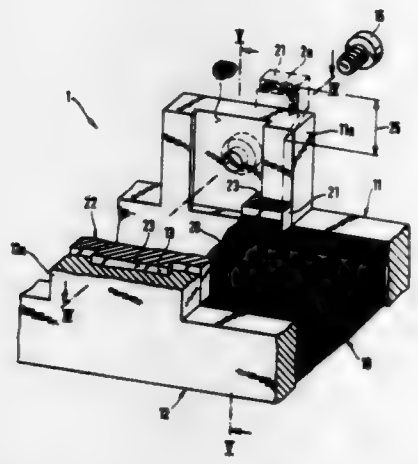
Peter Schwarzler, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 8, 1983, Ser. No. 512,414

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225948

Int. Cl.³ H02K *41/02*

U.S. Cl. 318—135 **10 Claims**



1. A linear stator magnet adapted to be juxtaposed with an armature rail, comprising:

a sheet stack yoke formed with a plurality of longitudinally spaced codirectionally extending sheet stack pole shanks;

respective cheek plates flanking each of said pole shanks, said pole shanks each being formed with a pole shoe remote from continuous portions of said yoke, said pole shoes having pole faces adapted to be juxtaposed with said rail;

respective yoke plates flanking said continuous portion of said yoke and overlapping said cheek plates and form and force-locked thereto;

respective main excitation coils surrounding said shanks; and

respective auxiliary excitation coils surrounding each of said pole shoes and locked in the gaps between said pole shoes while being connected in circuit with the main excitation coil to a source of excitation current.

4,510,422

DC MOTOR SOFT-START CIRCUIT

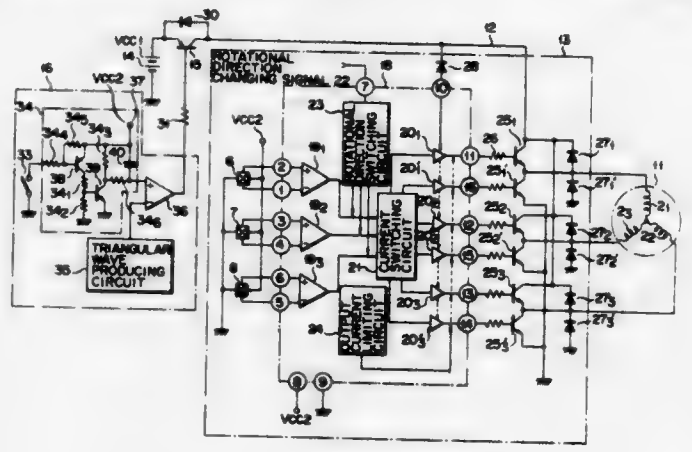
Masahiko Ogura, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 6, 1984, Ser. No. 577,337

Claims priority, application Japan, Feb. 9, 1983, 58-20106

Int. Cl.³ H02P *1/18*

U.S. Cl. 318—254 **4 Claims**



1. A DC motor driving circuit comprising:

a motor having polyphase exciting coils;

a DC power supply;

an excitation current supply line for supplying excitation current from the DC power supply to the polyphase exciting coils;

exciting coil switching means connected to the excitation current supply line and the polyphase exciting coils, for sequentially switching the polyphase exciting coils;

excitation current control means for controlling the magnitude of the excitation currents to be supplied to the exciting coils; and

timing signal producing means for producing a timing signal which, when the motor is started, is supplied to the excitation current control means so as to suppress the magnitude of the excitation current, said timing signal producing means including a start switch adapted to be turned ON when the motor is started; a time constant circuit for producing a signal which is lowered from a predetermined level to a ground level during a predetermined period of time following the turning on of the start switch; a triangular wave producing circuit; and a comparator connected to receive an output signal of the time constant circuit and an output signal of the triangular wave producing circuit and supply pulses which successively decrease in their widths, to the excitation current control means.

4,510,423

MOTOR APPARATUS

Teruo Iwasawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,726

Claims priority, application Japan, Aug. 12, 1981, 56-126359

Int. Cl.³ G05B *5/00*

U.S. Cl. 318—331 **17 Claims**

1. A motor apparatus comprising:

motor means for providing a rotating motion with a given output torque and at a given rotating speed, said motor means generating a back electromotive force with a magnitude corresponding to said rotating speed;

first means coupled to said motor means for sensing said back electromotive force to provide a first signal with a magnitude corresponding to said electromotive force;

second means coupled to said motor means for sensing the rotating motion of said motor means to provide a second

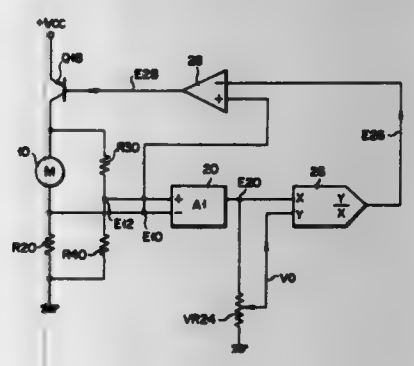
signal with a magnitude corresponding to said rotating motion;

third means coupled to said first and second means and being responsive to said first and second signals, for providing a third signal with a magnitude corresponding to said first and second signals;

said third means including:

divider means responsive to said first and second signals for dividing said second signal by said first signal to provide a divided signal representing a ratio of said first signal to said second signal; and

a first circuit having inputs coupled to said motor means and to said divider means, and for providing at an output thereof said third signal with a magnitude corresponding to a potential difference between a potential



corresponding to said back electromotive force and a potential of said divided signal; and

fourth means coupled to said motor means and to said output of said first circuit of said third means for providing a drive current to said motor means, said drive current having a magnitude corresponding to said third signal, the kinetic energy of the rotating motion of said motor means being derived from said drive current; and

wherein said motor means, said first means, said second means, said third means and said fourth means are coupled to form a negative feedback loop for setting up a proportional relationship of said second signal to the product of said rotating speed and said output torque, and said second means changes said second signal proportionally to said rotating speed.

4,510,424

NUT RUNNER CONTROL CIRCUIT

Tabito Doniwa, Hachioji, Japan, assignor to Daiichi Dentsu Kabushiki Kaisha, Chofu, Japan

Filed Sep. 8, 1983, Ser. No. 530,212

Int. Cl.³ G05D *17/00*

U.S. Cl. 318—432 **3 Claims**

1. A nut runner control circuit for controlling a nut runner comprising:

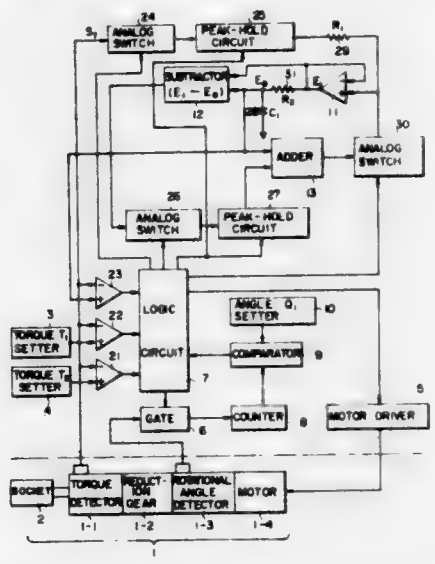
a torque detector of the nut runner for detecting a torque for tightening a screw;

a rotational angle detector coupled to the shaft of the nut runner for providing an output representative of the rotational angle of the nut runner;

memory means operatively connected to the torque detector and the rotational angle detector for temporarily storing a rate of increase in the torque in a second rotational angle during screw-tightening in an elastic region at the end of the second rotational angle and for storing the output value of the torque detector at the end of the second rotational angle;

adding means connected to the memory and the rotational angle detector for increasing the output value of the torque detector at the end of the second rotational angle at the rate of increase of torque to provide an added value from the time when a rotation of a first rotational angle neccessary for plastic region tightening has completed after the end of the second rotational angle;

a comparator connected to the adding means and the torque detector for comparing the added value of the adding means with the output value of the torque detector to provide a coincidence output when they coincide with each other;



motor stop control means connected to the comparator and the nut runner for stopping a motor of the nut runner by the coincidence output of the comparator.

4,510,425

CONTROL DEVICE FOR PUMP APPARATUS FOR VEHICULAR USE

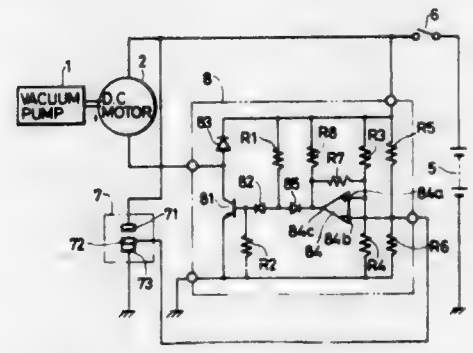
Mitsuyoshi Yokota, and Akio Matsumoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 552,193

Claims priority, application Japan, Nov. 15, 1982, 57-173654[U]

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—484 **6 Claims**



1. A control device for a vacuum pump apparatus for vehicular use, comprising: a d.c. motor; a pump coupled to be driven by said d.c. motor for producing a negative pressure; and pressure switch means for detecting a negative pressure generated by said pump and for controlling said d.c. motor in response to the detected pressure, said pressure switch means comprising three contacts for providing driving of said d.c. motor with a hysteretic characteristic.

4,510,426

MEMORY POWER SEAT CONTROLLER

Paul A. Michaels, Livonia, and David L. Kaleita, Sterling Heights, both of Mich., assignors to Lectron Products, Inc., Rochester, Mich.

Filed Jul. 30, 1982, Ser. No. 403,530

Int. Cl.³ G05B *23/02;* **H02H** *3/027*

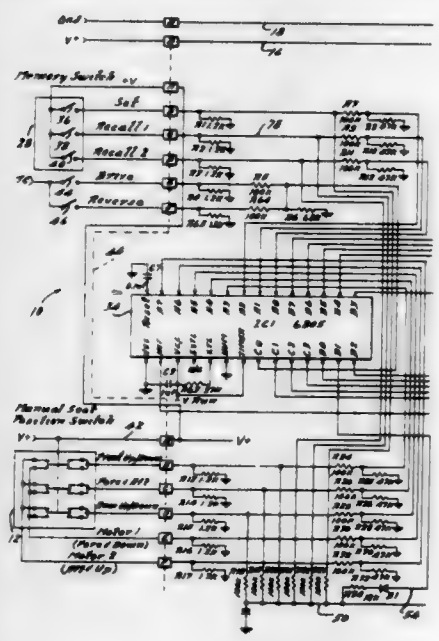
U.S. Cl. 318—565 **17 Claims**

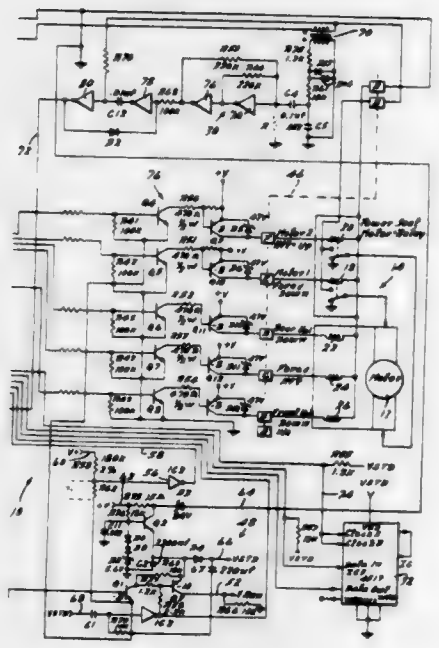
1. In a system for controlling the position of a movable

apparatus, having motive power means including at least one motor operable from a d.c. power source and adapted to adjust the position of said movable apparatus, and first operator actuable switch means for generating manual adjustment command signals, the improvement comprising:

second operator actuable switch means for generating automatic adjustment command signals;

monitoring circuit means for generating a pulse signal indicative of the position of said movable apparatus by monitoring predetermined current fluctuations in the supply line from said d.c. power source to said motor during an adjustment in the position of said movable apparatus;





memory means for storing a plurality of positions for subsequent recall in response to said automatic adjustment command signals; and

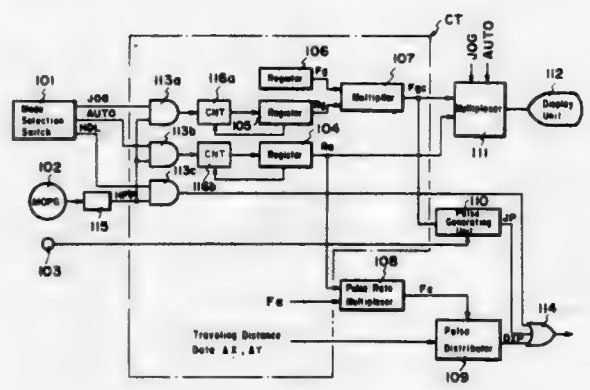
microcomputer means, interconnecting said first and second operator actuable switch means, said monitoring circuit means, said memory means and said motive power means, for tracking the position of said movable apparatus by counting the number of said pulse signals, for selectively generating control signals in response to said command signals operable to cause said motive power means to adjust the position of said movable apparatus, and for detecting a stall condition by monitoring the time between said pulse signals during an adjustment in the position of said movable apparatus.

4,510,427

METHOD AND APPARATUS FOR CONTROLLING FEED SPEED IN NUMERICAL CONTROL SYSTEM

Ryoichiro Nozawa, Tokyo; Nobuyuki Kiya, Hachioji, and Kunihiko Murakami, Hino, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Mar. 25, 1983, Ser. No. 478,730
Claims priority, application Japan, Mar. 29, 1982, 57-50306
Int. Cl.³ G05B *11/18*
U.S. Cl. 318—590 **20 Claims**



1. A method of controlling feed speed of a machine in a numerical control system having a manual pulse generator for generating pulses in response to a manual operation, wherein the numerical control system numerically controls the machine by supplying the machine with the generated pulses as feed pulses in a manual feed mode and with feed pulses corresponding to a commanded feed speed in modes other than the manual feed mode, the commanded feed speed being modified in accordance with an override quantity stored in a register, said method comprising the steps of:

(a) selectively designating a mode other than the manual feed mode;

(b) changing the override quantity, which is stored in the register, based on the pulses generated by the manual pulse generator and in accordance with the designated mode; and

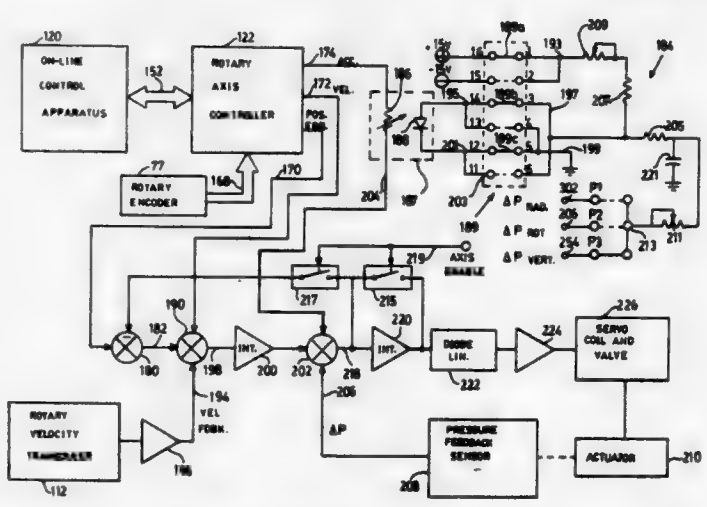
(c) modifying the commanded feed speed in accordance with the override quantity stored in the register.

4,510,428

CONTROL SYSTEM FOR MANIPULATOR APPARATUS WITH INITIALIZING STABILIZATION AND INERTIA SCALING

Maurice J. Dunne, Newtown, Conn., assignor to Unimation, Inc., Danbury, Conn.

Filed Mar. 25, 1983, Ser. No. 478,646
Int. Cl.³ G05D *23/275*
U.S. Cl. 318—632 **22 Claims**



1. A control system for manipulator apparatus having an arm movable in a plurality axes and including control apparatus

that provides command signals in response to program data and arm position data, said control system comprising:

means for providing a scaling signal derived from one or more of said axes and correlated to the inertial mass system of said arm;

means responsive to said command signals and said scaling signal for modifying one or more of said command signals; and

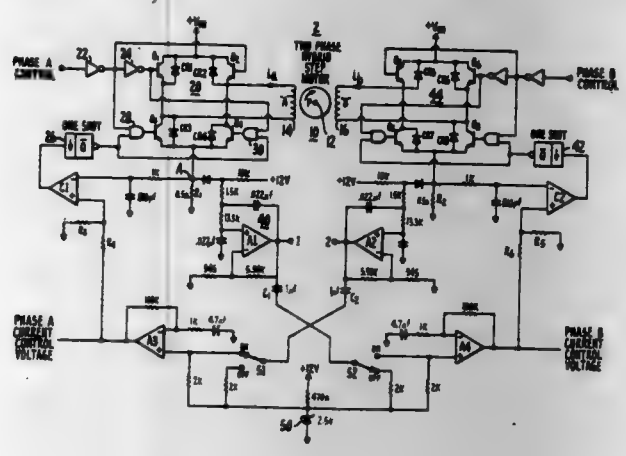
means responsive to said command signals for moving said arm in said plurality of axes.

4,510,429

STEPPER MOTOR DAMPING CIRCUIT AND A METHOD THEREFOR

John S. Squire, San Mateo, Calif., assignor to Tulin Corporation, San Jose, Calif.

Filed Aug. 19, 1983, Ser. No. 524,837
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **19 Claims**



1. A method of damping a stepper motor having a rotor and a first and a second stator, said method comprising the steps of:

applying a first voltage to said first stator;

detecting the total voltage from said first stator;

filtering the back voltage generated by said motor from said total voltage and

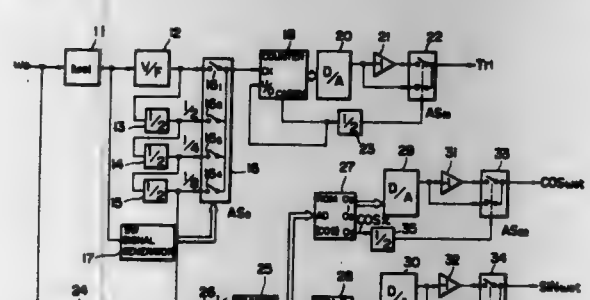
applying a drive current to said second stator to damp said motor, said drive current being proportional to said back voltage.

4,510,430

VECTOR CONTROL METHOD AND SYSTEM FOR AN INDUCTION MOTOR

Tadashi Ashikaga, Tokyo, and Masayuki Terashima, Sakura, both of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Filed Mar. 1, 1984, Ser. No. 585,599
Claims priority, application Japan, Mar. 28, 1983, 58-51906
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—800 **2 Claims**



1. An induction motor decoupled vector control system, which comprises:

(a) speed sensing means (4) for detecting a rotor angular frequency w_r of an induction motor;

(b) proportional integrating means (5) for generating a primary reference current $i_{1\beta}^*$ corresponding to a secondary reference driving current on the basis of a difference between a reference rotor angular frequency w_r^* and a detected rotor angular frequency w_r in order to obtain a reference torque;

(c) supply voltage angular frequency calculating means (6) for calculating a primary supply voltage angular frequency w_0 on the basis of the primary reference current $i_{1\beta}^*$, a primary reference current $i_{1\alpha}^*$ corresponding to a secondary magnetic flux, a detected rotor angular frequency w_r, and a ratio τ_2 of a secondary inductance L_2 to a secondary resistance r_2;

(d) SIN/COS signal generating means (8) for generating a sine wave signal with an angular frequency w_0 and a cosine wave signal with an angular frequency w_0, independently;

(e) first calculating means (3D) for calculating fixed d-q coordinate primary voltages e_{1d} and e_{1q} on the basis of the primary reference currents $i_{1\alpha}^*$ and $i_{1\beta}^*$ and the sine and cosine wave signals in accordance with following expressions:

$$e_{1d}=(r_1+L_1S)\cos w_0t\cdot i_{1\alpha}^*-(r_1+L_\sigma S)\sin w_0t\cdot i_{1\beta}^*$$

$$e_{1q}=(r_1+L_1S)\sin w_0t\cdot i_{1\alpha}^*+(r_1+L_\sigma S)\cos w_0t\cdot i_{1\beta}^*$$

where r_1 denotes a primary resistance; L_1 denotes a primary inductance; L_σ denotes an equivalent leakage inductance $(L_1L_2-M^2)/L_2$ M: mutual inductance; S denotes a Laplace operator;

(f) second calculating means (7D) for calculating three-phase primary reference voltages e_a^*, e_b^*, e_c^* on the basis of the calculated 2-phase primary reference voltages e_{1d}, e_{1q} in accordance with the following expressions:

$$e_a^* = e_{1d}$$

$$e_b^* = -\frac{1}{2}e_{1d}-\frac{\sqrt{3}}{2}e_{1q}$$

$$e_c^* = -\frac{1}{2}e_{1d}+\frac{\sqrt{3}}{2}e_{1q}$$

(g) triangular signal generating means (9) for generating a triangular wave signal in synchronization with said SIN/-COS wave signals said triangular signal generating means including:

(1) an absolute value detecting unit (11) for generating a signal the voltage level of which is proportional to the magnitude of supply voltage angular frequency w_0 irrespective of the plus or minus sign thereof;

(2) a voltage-frequency converter (12) for converting the output of said absolute value detection unit into a signal with a frequency proportional to the output voltage level of said absolute value detection unit;

(3) a plurality of series-connected dividers (13, 14, 15) for dividing the frequency of the signal outputted from said voltage-frequency converter;

(4) a switching signal generator (17) for outputting a plurality of switching signals according to the magnitude of supply voltage angular frequency w_0;

(5) a switching unit (16) selectively connected to said series-connected dividers for selectively outputting the signal outputted from said voltage-frequency converter in such a way that less-times divided converter signals are outputted when the supply voltage frequency is low and many-times divided converter signals are outputted when the supply voltage frequency is high;

(6) a second up-down counter (18) for counting the con-

verter signals up or down repeatedly in response to carry signals generated therefrom;

(7) a third digital-analog converter (20) for converting the counted digital value into analog values corresponding thereto; and

(8) a pulse generator (37) for outputting a pulse signal with a predetermined frequency to said switching unit (16) when the supply voltage angular frequency is substantially zero or when the motor stops in order to apply an initial secondary magnetic flux; and

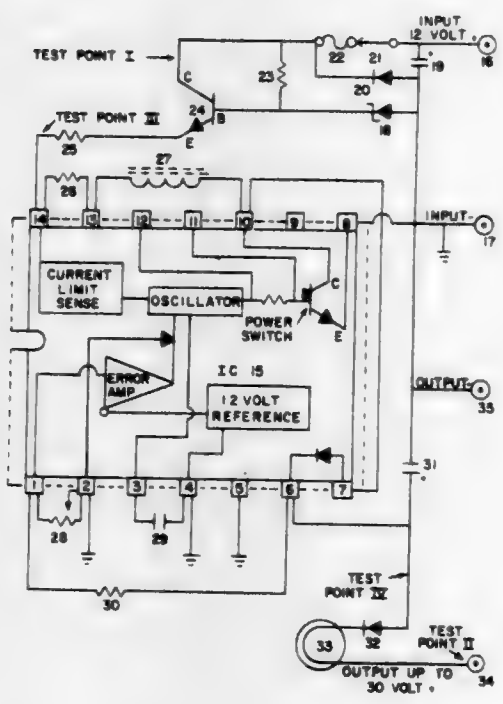
(h) PWM inverter means (2C) for generating three PWM (pulse width modulated) control signals in response to the calculated three-phase primary voltages e_a^*, e_b^*, e_c^* and the generated triangular wave signals, in order to drive a 3-phase induction motor.

4,510,431

D.C. STEPPED-UP VOLTAGE TRANSFORMERLESS BATTERY CHARGER

Harry L. Winkler, P.O. Box 632, Pinehurst, Id. 83850

Continuation of Ser. No. 163,926, Jun. 27, 1980, abandoned.
This application Feb. 25, 1982, Ser. No. 352,110
Int. Cl.³ H02J 7/00
U.S. Cl. 320—1 **1 Claim**



1. An apparatus for charging a battery from a direct current voltage source comprising:

a filter capacitor connected across the input voltage terminals with the positive lead of said capacitor connected to the positive voltage terminal of said voltage source and the negative lead of said capacitor connected to the negative terminal of said voltage source;

a two-position single-pole power switch with means for connecting said switch to be in a conductive mode when said switch is in the ON position and further means for connecting said switch to terminate the power from said voltage source when said switch is in the OFF position;

a circuit protector comprising a fuse and a first rectifier, means for connecting one end of said fuse to said power switch and means for connecting said rectifier to be poled to blow said fuse upon receiving reverse polarity of said voltage source;

an input voltage regulating system comprising a first and a second resistor, one power transistor and one zener diode, means for connecting one end of the first resistor to the cathode end of the first rectifier, to the far side of said fuse, and the collector of said transistor, further means for connecting the other end of said resistor to the base of said transistor as well as to the cathode end of said zener diode, means for connecting the anode end of said zener diode to the ground, means for connecting the emitter of said transistor in series with the second resistor and to the input of the current limiter resistor, means for controlling said regulator, the said zener diode has a pre-determined voltage break-down region upon conduction, diverts current from the base of said transistor thereby controlling said transistor's emitter voltage;

an oscillator having first, second, and third inputs and having an output, said first input of said oscillator is controlled by a first control means comprising a current limiter resistor and a current limit sense, means for connecting said current limiter resistor to said current limit sense, further means for connecting said current limit sense to said first input of said oscillator and means for said first control to turn off a power switch transistor in the switching system upon said current limit sense detecting a predetermined voltage drop across said current limiting resistor thus protecting the battery charger's circuit from an overload;

a switching system comprising a fourth resistor, said power switch transistor, an inductor, a second rectifier, and an output capacitor, means for connecting said fourth resistor in series between said output of said oscillator and the base of said power switch transistor, means for connecting the emitter of said power switch transistor to ground, means for connecting said inductor in series between said current limit resistor and the collector of said power switch transistor, means for connecting said rectifier in series between said collector of said power switch transistor and said output capacitor, further means for connecting the negative terminal of said output capacitor to ground, means for said inductor to receive energy from said voltage source, means for said inductor to store energy and further means for transmitting said inductor's received and stored energy through said rectifier to charge said output capacitor, electronic switching means having an ON-state and an OFF-state, means for connecting said electronic switch to provide a current path to load said inductor when in the ON-state condition and further means for providing said inductor a current path to charge said output capacitor with said stored energy when said electronic switch is in the OFF-state condition, in normal operation said electronic switch is cycled ON and OFF at the same rate as the frequency of said oscillator;

means for regulating the charge level of said output capacitor comprises a resistive voltage divider network comprising a fifth resistor and a potentiometer, means for connecting one end of said resistor to said output capacitor and means for connecting the other end of said resistor to the first part of said potentiometer, further means for connecting the second and last parts of said potentiometer to the ground, further comprising a second control means for said second input of said oscillator wherein said second control means comprises an error amp, a 1.2 volt reference and a third rectifier, means for connecting the first part of said error amp to said first part of said potentiometer and means for connecting the second part of said error amp to the first part of said 1.2 volt reference and means for connecting the last part of said 1.2 volt reference to ground and further means for connecting the last part of said error amp to said second input of said oscillator, means for connecting said rectifier anode end to the ground and cathode end to said second input of said oscillator, said second control means wherein the voltage at the noninverting input is more negative than the 1.2 volt reference, the oscillator is gated ON, when the voltage at the noninverting input is more positive than the 1.2 volt reference, the oscillator is gated OFF thus regulating the charge level of the output capacitor;

a third control means for said third input of said oscillator wherein said third control means comprises a frequency timing capacitor, means for connecting said capacitor in series between said third input of said oscillator and ground, means wherein said timing capacitor is used to

determine the frequency of said oscillator and further means for controlling said oscillator's frequency whether increased or decreased by said first control means or said second control means of said oscillator;

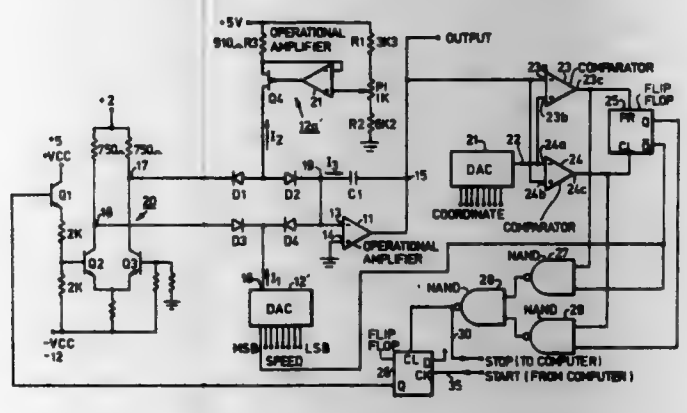
a system of transferring energy from said output capacitor to charge a battery comprising a fourth rectifier and a lamp, means for connecting said rectifier and said lamp in series between said output capacitor and said battery to be charged, means for transferring said energy from said output capacitor to said battery to be charged.

4,510,432

GENERATION OF VECTORS

Francois G. Desjardins, Maryhill, Canada, assignor to Electrohome Limited, Kitchener, Canada

Filed Feb. 7, 1983, Ser. No. 464,490
Int. Cl.³ G06F *3/13*; H03K *13/02*
U.S. Cl. 320—1 **16 Claims**



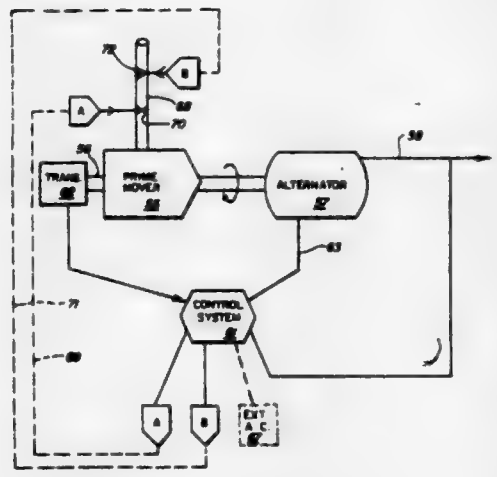
1. A vector generator comprising first means for providing a signal indicative of the rate at which said vector is to be drawn, said first means comprising an operational amplifier having an output terminal and first and second input terminals, means connecting said first input terminal to a source of reference potential, a capacitor connected between said output terminal and said second input terminal, a constant current DAC having multiple input terminals and an output terminal at which a constant but variable output current is derived and a second constant current generator providing a constant current of opposite polarity to that of said DAC and one-half the magnitude of the maximum output current of said DAC, said DAC and said second constant current generator being connected to said second terminal and said capacitor in such a way that, depending on the magnitude of said output current of said DAC, said capacitor can be charged either positively or negatively; switching means having a first state and a second state, said switching means interconnecting said capacitor with both said DAC and said second constant current generator and enabling said capacitor to be charged in said first state of said switching means but preventing said capacitor from being charged in said second state of said switching means; second means for providing a signal indicative of the length of said vector to be drawn, said second means comprising a constant voltage DAC having multiple input terminals and an output terminal at which a constant but variable output voltage indicative of said length is derived; third means for comparing said output voltage of said constant voltage DAC and the voltage across said capacitor and generating a control signal when said voltages are equal; fourth means for utilizing said control signal to charge said state of said switching means from said first state thereof to said second state thereof to prevent further charging of said capacitor; fifth means for supplying to said input terminals of said constant current DAC a first signal that determines the rate at which said vector is to be drawn, to said input terminals of said constant voltage DAC a second signal that determines the length of said vector to be drawn and to said switching means a third signal that changes said state of said switching means from said second state to said first state thereof to enable said capacitor to be charged.

4,510,433

VARIABLE-SPEED CONSTANT-FREQUENCY ALTERNATOR

Maurice G. Gamze, 1077 Ridgewood Dr., and Louis H. Sprung, 570 Rambler La., both of Highland Park, Ill. 60035

Filed Mar. 23, 1983, Ser. No. 478,505
Int. Cl.³ H02P *9/42, 9/48*
U.S. Cl. 322—32 **29 Claims**



1. A variable-speed, predetermined frequency of x Hz., where $x>0$, alternating-current generating device comprising:

(A) an alternator having:

(1) a wound rotor with n magnetic pole pairs; and

(2) a stator having n magnetic pole pairs, where n is a positive integer;

(B) prime mover means, coupled to said rotor, for moving said rotor at a rotational velocity of z rps., where z is a variable real number, relative to said stator;

(C) transducer means, coupled to said rotor, for producing h pulses per revolution of said rotor, where h is a positive integer;

(D) driving means, coupled to said transducer means and to said rotor pole pairs, for electromagnetically rotating said rotor pole pairs about said rotor at a rotational velocity of $y=(x-z)/n$ rps. relative to said rotor, said driving means including:

(1) for each of said n rotor pole pairs three windings spaced substantially equidistant about said center of rotation;

(2) for each particular winding of the three particular windings of a particular pole pair, current means, coupled to said particular windings for creating an ac., sinusoidal current in each of said particular windings with a frequency of v Hz., said current in any one particular winding being 120° in phase ahead of the ac. current in one of the remaining two particular windings and 120° in phase behind the current in the other of the remaining two particular windings, said current means including for each one of said particular windings:

(a) a current controller, coupled to the leads of said one particular winding, having k configurations, where k is a positive integer, and producing a predetermined magnitude of substantially steady amplitude current through said one particular winding for each of said configurations, the ratio of said magnitude of said current with said current controller in the ith configuration to said magnitude of said current with said current controller in the jth configuration, where i and j are positive integers not greater than k, substantially equals the ratio of the values of said sinusoidal wave at the phase angle positions i/k and j/k through a cycle of said wave;

(b) current switching means coupled to said current controller, for switching, for each $1 \leqq i \leqq k$ said current controller from said i^{th} configuration to said $(i+1)^{th}$ configuration where the $(k+1)^{th}$ configuration is the first configuration;

(c) current timing means, coupled to said current switching means and to said transducer means, for inducing said switching means to switch from said i^{th} configuration to said $(i+1)^{th}$ configuration at an instantaneous rate equal to the absolute value of (ky) switches per second; and

(d) current reversing means, coupled to said controller and said transducer for inverting the direction of the change of phase of the current in said particular three windings when y goes from positive to negative and when v goes from negative to positive.

4,510,434

METHOD AND APPARATUS FOR THE AUTOMATIC SETTING OF THE OPTIMUM OPERATING POINT OF A D-C VOLTAGE SOURCE

Franz Assbeck, Erlangen, and Volker Fleckenstein, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

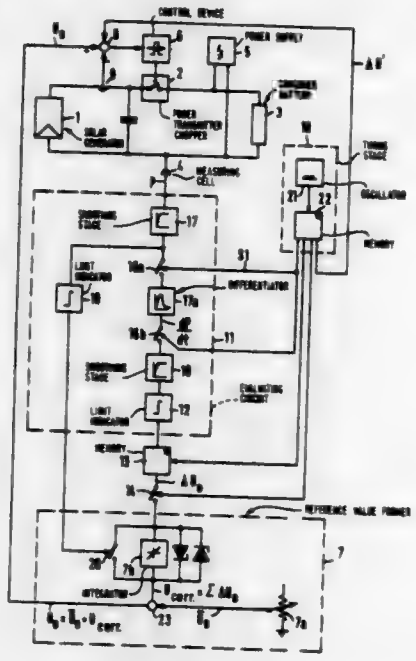
Filed Mar. 24, 1983, Ser. No. 478,343

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3212022

Int. Cl.³ H02J *3/12*

U.S. Cl. 323—237

10 Claims



7. Apparatus for automatically setting the optimum operating point of a d-c voltage source having internal resistance, especially of a solar generator, comprising

(a) a controllable energy transmitter connected to the d-c voltage source;

(b) a control device for the energy transmitter, having an input for accepting a command variable as a reference value for an electrical state variable of the d-c voltage source;

(c) a reference value former for forming a reference value, having its output coupled to said command variable input;

(d) a timing stage for generating a supplemental value output signal;

(e) means to temporarily add said supplemental reference value to said reference value;

(f) means for sensing the output power of said energy transmitter;

(g) an evaluating circuit for determining the derivative with respect to time of the power output, having the output of said means for sensing as an input as it changes due to the addition of said supplemental reference value; and

(h) means, providing an input to said reference value former, for readjusting the reference value furnished by said reference value former as a function of the sign of the differential power change determined by said evaluating circuit.

4,510,435

APPARATUS FOR ELECTRICALLY TESTING MULTI-CORE CABLES

Shogo Tanno, Itami, Japan, assignor to Dainichi-Nippon Cables, Ltd., Hyogo, Japan

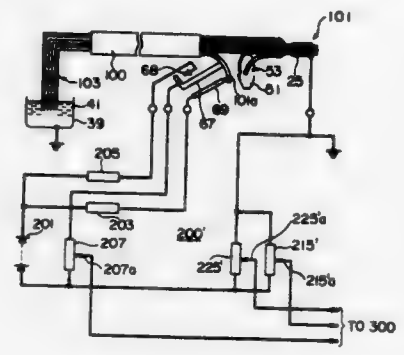
Filed Aug. 19, 1982, Ser. No. 409,551

Claims priority, application Japan, Sep. 2, 1981, 56-139009

Int. Cl.³ G01R *31/02, 31/12*

U.S. Cl. 324—52

12 Claims



1. An apparatus for electrically testing a multi-core cable (100) for different types of defects, said multi-core cable including a plurality of cores each core having a conductor wire and an insulation covering said conductor wire, comprising:

first connecting means (25, 25') for collectively rendering conductive said conductor wires of all of a plurality of cores of said multi-core cable at one end thereof,

second connecting means (41) providing a current flow path for collectively rendering conductive said conductor wires of all of said plurality of cores of said multi-core cable at the other end thereof,

resistance means operatively coupled to said second connecting means for providing a predetermined resistance value in said current flow path for causing a change in the magnitude of a current flowing through said current flow path in response to different defects in the respective core,

core pick-up and transferring means (6) mounted at said one end of said multi-core cable for picking up cores separately on a one by one basis and for transferring a picked up core,

separating means (57) for electrically separating the core picked up and transferred by said core pick-up and transferring means, from said first connecting means,

pick-up detecting means (67, 68, 207, 301) for detecting whether a core is picked up and transferred by said pick-up and transferring means,

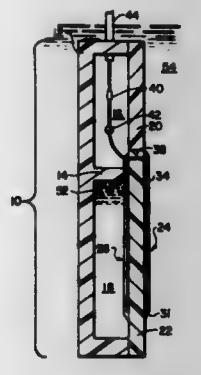
power supply means (69, 201) for supplying electricity to the conductor wire of said electrically separated picked up core so that a current of different magnitude may flow through the conductor wire of said picked up core, through said predetermined value resistance means operatively coupled to said second connecting means, through conductor wires of other cores, and through said first connecting means for enabling detection of different defects in accordance with said different current magnitude, and evaluating means (200, 300) including first and second threshold defining means for defining first smaller and second larger predetermined threshold values, conductor means operatively connecting said evaluating means to said power supply means through said resistance means for determining said different defects in the form of an insulation breakdown state or in the form of a discontinuity state, or for indicating a normal state of said picked up core as a function of a relative magnitude of said current with respect to said first and second threshold values.

4,510,436

DIELECTRIC MEASURING SYSTEMS

Leonard S. Raymond, Tucson, Ariz., assignor to Southwest Medical Products, Incorporated, Tucson, Ariz.

Filed Jul. 15, 1982, Ser. No. 399,126
Int. Cl.[3] G01R *27/26*
U.S. Cl. 324—61 P 22 Claims



1. A transducer for measuring a property related to the dielectric properties of a sample fluid, said transducer being adapted for at least partial immersion in said sample fluid and comprising in combination:

a first capacitive sensor comprising a plurality of interdigitated coplanar electrically conductive metal film electrodes deposited on an electrically insulating substrate;

a second capacitive sensor comprising a plurality of intedigitated coplanar electrically conductive metal film electrodes deposited on an electrically insulating substrate;

said first and second sensors being mounted so as to be (a) mechanically and electrostatically isolated from one another and (b) in direct thermal communication with one another; and

an enclosure surrounding said second capacitive sensor for containing a reference fluid so that said reference fluid is (a) in contact with said second capacitive sensor, (b) in fluid and electrical isolation from said first capacitive sensor and a fluid sample contacted by said first capacitive sensor and (c) in thermal communication with a fluid sample contacting said first capacitive sensor.

4,510,437

APPARATUS AND METHOD FOR MEASURING THE PERMITTIVITY OF A SUBSTANCE

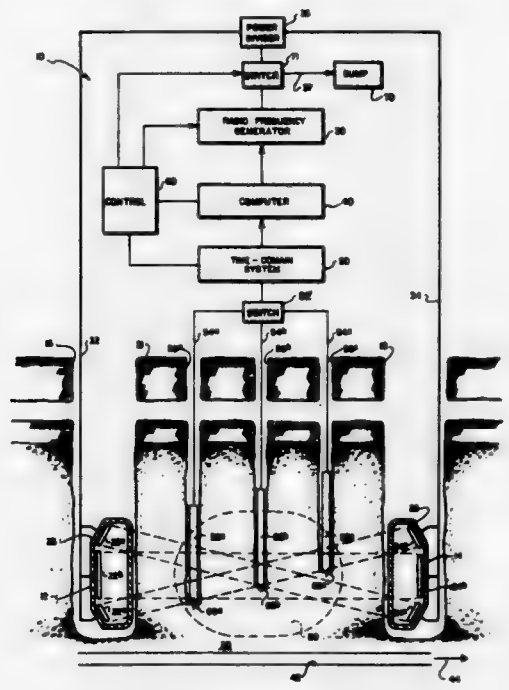
Magdy F. Iskander, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Division of Ser. No. 194,153, Oct. 6, 1980, Pat. No. 4,396,062.
This application Jul. 29, 1983, Ser. No. 518,532
Int. Cl.[3] G01R *27/26*
U.S. Cl. 324—61 R 29 Claims

1. An apparatus for measuring in situ the complex permittivity of a substance, the apparatus comprising:

a hollow ground plane conductor; and

a center conductor, said center conductor being mounted within the hollow ground plane conductor and said center conductor being adjustable relative to the hollow ground plane conductor such that the capacitance of the apparatus can be varied, thereby measuring the complex permittivity of varying volumes of the substance.

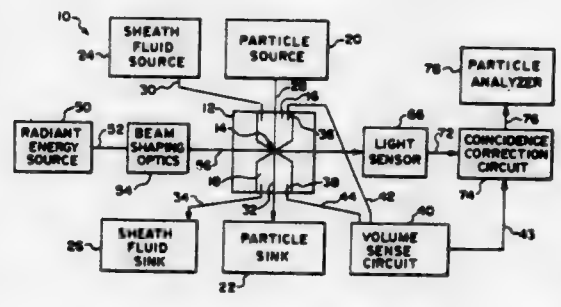


4,510,438

COINCIDENCE CORRECTION IN PARTICLE ANALYSIS SYSTEM

Robert Auer, Miami, Fla., assignor to Coulter Electronics, Inc., Ill.

Filed Feb. 16, 1982, Ser. No. 348,822
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—71.4 29 Claims



1. Apparatus for correcting coincidence error occurring in parametric data obtained from a particle analysis system producing parametric data from particles, the correction being effected substantially at the time that the coincidence error occurs in a parametric datum of said data, the parametric datum representing at least one particle analysis parameter and the error being introduced into the datum at the time of measurement and resulting from coincidence of at least two particles in the length of a measurement aperture as said particles pass through the aperture, the apparatus comprising:

A. measurement means producing said parametric datum in response to a measurement made through the lenth of said aperture as at least one particle passes through the length of the aperture, said measurement means being incapable of distinguishing between coincidence and non-coincidence of particles in the aperture;

B. detection means producing a detection signal in response to sensing the presence of an individual particle in said aperture, the detection means sensing the presence of individual particles other than through the length of said aperture; and

C. correction means for modulating said parametric datum in response to said detection signal after the production of

said parametric datum and said detection signal to obtain corrected parametric data free of said coincidence error.

4,510,439

DIGITAL CIRCUIT MULTI-TEST SYSTEM WITH AUTOMATIC SETTING OF TEST PULSE LEVELS

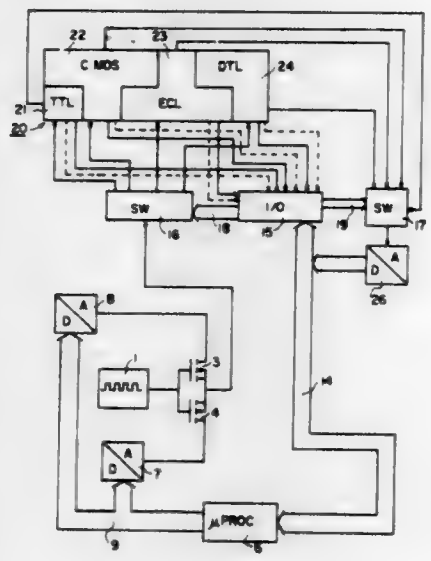
Rolf Roth, Plochingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 346,508, Feb. 8, 1982,. This application Sep. 18, 1984, Ser. No. 652,153

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109711

Int. Cl.³ G01R *31/28;* H03K *19/08*

U.S. Cl. 324—73 AT **2 Claims**



1. Apparatus for testing electronic equipment by a sequence of tests respectively requiring the presence of d.c. supply voltages subject to variation from test to test in d.c. supply voltage value requirement, and having a test signal pulse generator automatically adaptable to said d.c. supply voltage value requirement, said apparatus comprising:

a microprocessor (6) associated with an input/output unit having input connections for receiving signals from electronic equipment under test for evaluation thereof under control of said microprocessor (6);

first (16) and second (17) controllable switch units connected to said input/output unit (15) for control thereof by said microprocessor (6) said first switch unit (16) being connected for selective supply of switched test signals to said electronic equipment and said second switch unit (17) being connected for selective pick-up of d.c. supply voltage levels from portions of said equipment to be tested;

an analog-to digital converter (26) connected to said second switch unit (17) and to said microprocessor (6) for furnishing to said microprocessor (6), in digital form, d.c. supply voltage levels selectively picked up by said second switch unit (17);

a pulse generator (1) and a limit-level-controllable output stage therefor for supplying test pulses to said first switch unit (16) for selective application of said test pulses to said electronic equipment under test, said limit-level-controllable output stage comprising a push-pull transistor-pair (3,4) stage having their respective control electrodes connected to said pulse generator and having their switched-path electrodes connected for alternate switching on of said transistors by operation of said generator;

a first digital-to-analog converter connected to said microprocessor and connected for applying a first d.c. voltage of a magnitude controlled by said microprocessor to a first switching path electrode of a first transistor of said transistor-pair stage, and

a second digital-to-analog converter connected to said microprocessor and connected for applying a second d.c. voltage of a magnitude controlled by said microprocessor to a first switching path electrode of the second transistor of said transistor-pair stage,

said transistors each having a second switching path electrode, said second switching path electrodes of the respective transistors being connected to each other and also to said first switching unit (16) for supplying test pulses thereto in the form of pulse-like alternating transitions between voltages controlled by said microprocessor (6) through said first and second digital-to-analog converters.

4,510,440

METHODS AND APPARATUS FOR FREQUENCY RESPONSE ANALYSIS

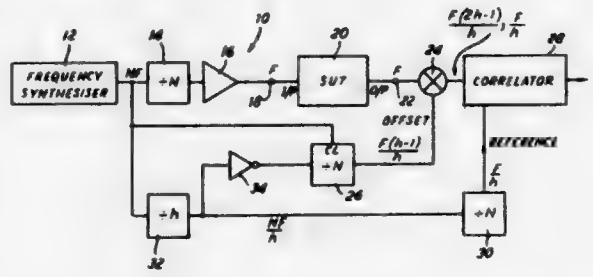
Alan Ryder, Church Crookham, England, assignor to Schlumberger Electronics (U.K.) Limited, Farnborough, England

Filed Dec. 1, 1982, Ser. No. 445,791

Claims priority, application United Kingdom, Dec. 3, 1981, 8136536

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 G **6 Claims**



1. A method for testing the response of a system to an input signal at a frequency F using a correlator capable of operating at a lower frequency F/h, where h is a number greater than 1, comprising the steps of:

generating a first signal at said frequency F;

generating a second signal at a frequency F/h;

generating a third signal at a frequency F(h−1)/h;

applying said first signal to the system under test;

multiplying the output signal from the system by the third signal to produce a product signal;

and comparing the product signal in the correlator with the second signal to analyze system response to said input signal.

4,510,441

ELECTRIC FIELD DETECTOR

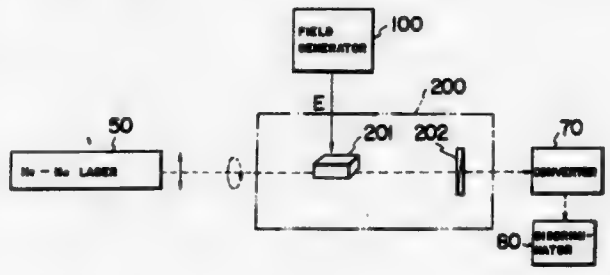
Tomio Yasuda, Kasukabe, and Toshiyuki Ichiyama, Higashimine, both of Japan, assignors to Kabushiki Kaishi Meidensha, Japan

Filed Jun. 14, 1982, Ser. No. 388,477

Claims priority, application Japan, Jun. 12, 1981, 56-90537; Jun. 15, 1981, 56-91914

Int. Cl.³ G01R *31/00*

U.S. Cl. 324—96 **11 Claims**



1. An electric field detector comprising:

(a) an electric field generating means for generating an electric field,

(b) a light source for generating light,

(c) an electric field detecting means for detecting change of

electric field strength in said electric field generating means,

(d) a photoelectric converting means for converting an output light signal from said electric field detecting means to an electric signal,

(e) a discriminating means for discriminating changes in the electric field strength of the electric field generating means, and

(f) said electric field detecting means being provided in the vicinity of said electric field generating means, said electric field detecting means optically connected to both said light source and said photoelectric converting means, and said discriminating means being electrically connected to said photoelectric converting means,

(g) said electric field detecting means comprising an electric field-sensitive means for transmitting linearly polarized light from said light source in a Z-direction and/or approximately in a Z-direction of a quartz crystal and for changing the phase difference between two specific oscillations in said quartz crystal, and

(h) said electric field-sensitive means comprising a Pockels cell made from Z-cut quartz and/or approximately-z-cut quartz.

4,510,442

MEASURING SYSTEM FOR EXCEEDINGLY WEAK CURRENTS

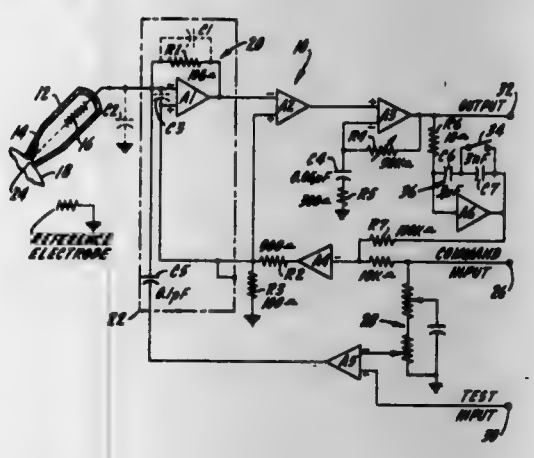
Erwin Neher, Gottingen, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,604

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3144003

Int. Cl.³ G01R *17/06*

U.S. Cl. 324—99 R **5 Claims**



1. In a precision measurement system for measuring electrical currents of the order of a few pico-amperes, adapted to measurement of the currents in individual ionic channels in biological membranes, of the kind comprising:

a pipette, incorporating an internal electrode;

a current-to-voltage converter, including a very high resistance precision resistor, having an input connected to the pipette electrode, for generating a voltage representative of a current flowing in the electrode;

a source of reference potential, connected to the converter;

and an output amplifier responsive to the voltage on the precision resistor;

the improvement comprising:

feedback amplifier means, having an input connected to the output amplifier and having an output connected to the source of reference potential, for controlling the reference potential source, and thus the pipette potential, so that the average current from the pipette electrode, over a characteristic time interval, is maintained at approximately zero.

4,510,443

VOLTAGE MEASURING DEVICE

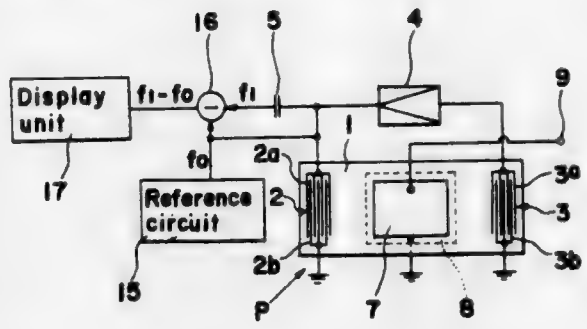
Ritsuo Inaba, Hirakata, and Kiyotaka Wasa, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 187,079, Sep. 15, 1980, abandoned. This application May 11, 1983, Ser. No. 492,160

Claims priority, application Japan, Sep. 19, 1979, 54-121176

Int. Cl.³ G01R *19/26, 29/12*

U.S. Cl. 324—120 **3 Claims**



1. A voltage measuring device for receiving and measuring a voltage to be measured and for providing an output signal corresponding thereto, said device comprising:

a first medium of the double layer type for propagating surface acoustic waves, said first medium comprising a piezoelectric thin film which is laminated on a substrate comprising a non-piezoelectric material;

a first transducer means coupled to said first medium for launching surface acoustic waves through said first medium when an input a.c. signal is applied thereto;

a second transducer means coupled to said first medium for receiving surface acoustic waves propagated thereto from the first transducer means and for converting the received acoustic waves into a first output a.c. signal;

electrode members for receiving said voltage to be measured and for effecting an electric field change in the first medium by said received voltage, said electrode members comprising a continuous body which is disposed so as to cover an area located between said first and second transducers, wherein said first medium is interposed therebetween; and

a detecting means for detecting the frequency change in said first output a.c. signal caused by the distortion of said piezoelectric thin film which is in turn caused by the change in said electric field in said first medium and for providing an output signal corresponding thereto, said frequency change being representative of said voltage to be measured;

wherein said output signal from said detecting means comprises said output signal of said device.

4,510,444

DIGITAL MEASURING DEVICE WITH LIQUID-CRYSTAL PICTURE SCREEN

Werner Haussel, Feucht; Günter Roppelt, and Robert Kindermann, both of Nuremberg, all of Fed. Rep. of Germany, assignors to Metrawatt GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,003

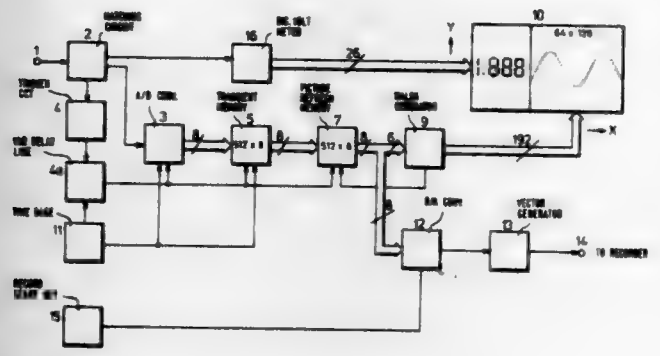
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122558

Int. Cl.³ G01R *13/20*

U.S. Cl. 324—121 R **5 Claims**

1. Digital measuring device, comprising a trigger generator having an input for receiving an analog measuring input signal, a variable delay line being connected to said trigger generator and having an output, an analog/digital converter receiving the analog measuring input signal, a transient memory connected to said analog/digital converter, a picture refresh memory connected to said transient memory for storing the measur-

ing input signal, a Walsh function generator connected to said picture refresh memory, a liquid-crystal picture screen being connected to and addressed by said Walsh function generator, the output of said variable delay line being connected to said



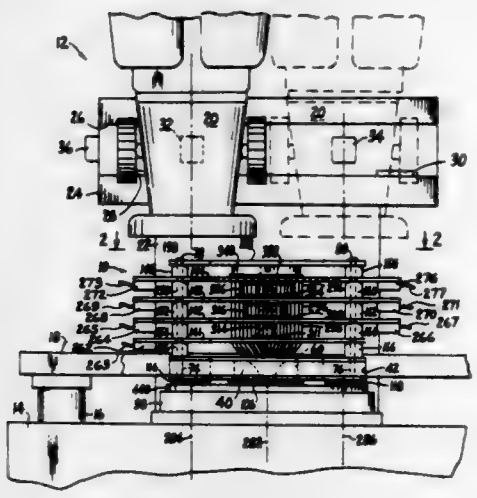
analog/digital converter, said transient memory and said picture refresh memory, and a selectable time base being connected to said variable delay line, said analog/digital converter and said transient memory.

4,510,445

MINIATURE CIRCUIT PROCESSING DEVICES AND MATRIX TEST HEADS FOR USE THEREIN

Joseph Kvaternik, 19366 McCourtney, Grass Valley, Calif. 95945

Filed Nov. 2, 1981, Ser. No. 317,413
Int. Cl.³ G01R *31/02, 1/06*
U.S. Cl. 324—158 F **11 Claims**



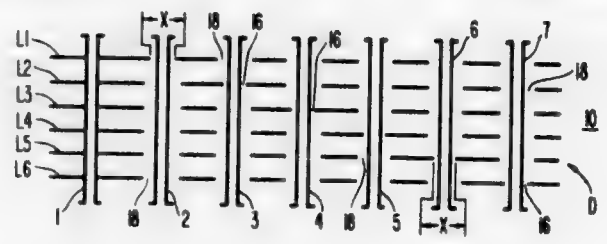
1. A miniature circuit processing device, comprising:
means forming a base plate;
a chuck disposed beneath said base plate and adapted to hold a silicon wafer or other means having an ordered array of contiguously disposed and regularly spaced indentical miniature circuits to be tested;
servomechanism means for positioning said chuck with respect to said base plate;
manual control means for controlling the operation of said servomechanism means;
first and second alignment means carried by said base plate and defining first and second optical axes which are precisely separated by a distance that is an integer multiple of the center-to-center spacing of said miniature circuits;
a test head carried by said base plate and disposed above said chuck and including a plurality of elongated conductive test probe means each of which has a first tip portion and a second tip portion, the latter being disposed in a predetermined array arranged about a test head axis located midway between said first and second optical axes and each being adapted to make electrical contact with a predetermined area of a miniature circuit to be tested, and a plurality of elongated test probe guide means including tube means adapted to slideably receive and frictionally engage an associated one of said test probe means and to provide electrical connection therewith; and
optical means for viewing said miniature circuits along said optical axes, whereby the alignment of one of said optical axes with a particular point on a first miniature circuit and the alignment of the other optical axis with a corresponding point on a second miniature circuit causes said test head axis and said probe means to be aligned in a predetermined manner with a third miniature circuit to be tested.

4,510,446

TEST COUPONS FOR DETERMINING THE REGISTRATION OF SUBSURFACE LAYERS IN A MULTILAYER PRINTED CIRCUIT BOARD

Robert E. Braun, Norristown, and John E. Benasutti, North Wales, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 3, 1982, Ser. No. 438,768
Int. Cl.³ G01R *31/22*
U.S. Cl. 324—158 R **5 Claims**



1. A test arrangement for a multilayer printed circuit board for determining the registration of the electrically conductive subsurface layers thereof relative to a multiplicity of active plated-through holes wherein predetermined ones of said active holes are electrically connected to a desired layer and insulated from electrical contact with the other layers by voids in the latter, said test arrangement comprising:
at least one test coupon incorporated within said multilayer board at the time of its manufacture, said test coupon having a plurality of test plated-through holes,
a first of said test holes being electrically connected in common to all of said subsurface layers of said printed circuit board, the remaining ones of said plurality of test holes being associated respectively with said subsurface layers, each of said last mentioned test holes being specified at the time of board manufacture as being centrally disposed with respect to a void of first predetermined size in its associated layer, and similarly disposed with respect to voids of second predetermined size in the remaining layers,
the electrical circuit resistance present between said first of said test holes and a given one of the remaining test holes providing an indication of the registration of the layer associated with said given test hole.

4,510,447

INSPECTION APPARATUS FOR ELECTROMAGNETICALLY DETECTING FLAWS IN THE WALL OF A PIPE

Mark C. Moyer, Missouri City, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Oct. 26, 1981, Ser. No. 315,329
Int. Cl.³ G01N *27/72*; G01R *33/12*
U.S. Cl. 324—225 **10 Claims**

8. Apparatus for detecting flaws in the wall of a ferromagnetic pipe, comprising:
an electromagnet comprising a coil, a ferromagnetic center portion extending axially through the coil, two ferromagnetic end portions extending on both sides of the coil from said center portion generally radially with respect to the axis of the coil, a ferromagnetic wheel connected to each of said end portions on the end away from the center

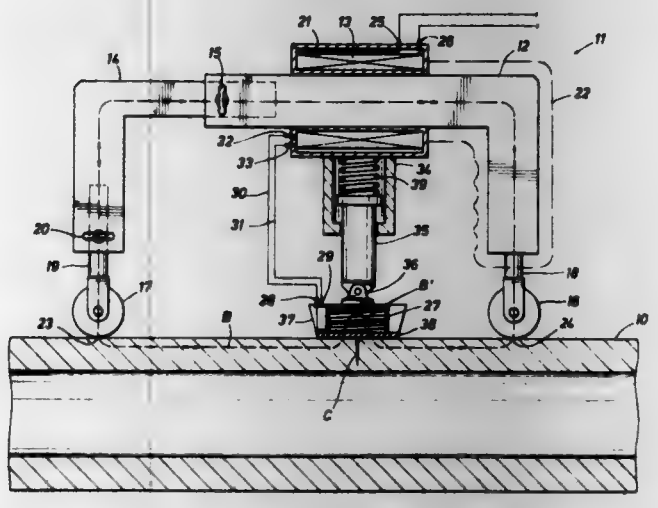
portion to function as poles for the electromagnet when said wheels are in contact with the surface of the wall of the ferromagnetic pipe;

means for electrically connecting the coil of said electromagnet to an input source of alternating current to generate a fluctuating magnetic field;

first detecting means for sensing a magnetic field and generating a signal corresponding thereto;

compensating detecting means positioned on the side of said first detecting means for sensing a magnetic field and generating a signal corresponding thereto;

mounting means extending from said center portion of said electromagnet and supporting said first detecting means and said compensating detecting means, and adapted to



yieldingly urge said first detecting means and compensating detection means against the pipe surface so that said first detecting means is between said poles and said compensating detecting means is positioned on the side of said first detecting means and between said poles when the poles are placed against the pipe surface;

means for subtracting the signal generated by the compensating means from the signal generated by the first detecting means thereby generating an output signal;

means for electrically connecting the output signal to a readable output device; and

means for adjusting the spacing between the two end portions of said electromagnet and the length of at least one of said end portions so that said apparatus may be adapted for detecting flaws in different size pipe.

4,510,448

DEVICE FOR GENERATING IMAGES OF AN EXAMINATION SUBJECT

Hermann Riedl, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

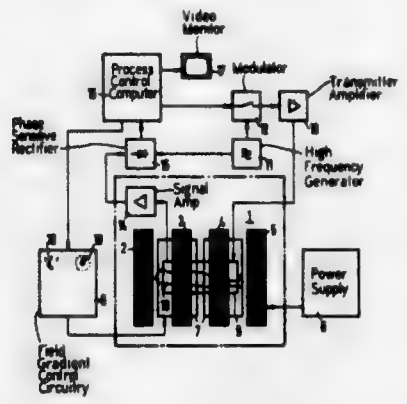
Filed Sep. 22, 1982, Ser. No. 421,290

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139137

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **3 Claims**

1. Device for generating images of an examination subject with nuclear magnetic resonance in which means are present for applying magnetic fields to the examination subject and for detecting the excursion of the nuclear spins of the examination subject out of a state of equilibrium due to a high frequency magnetic excitation pulse and in which the means for applying magnetic fields comprises gradient coils, a control device for supplying the gradient coils and thereby establishing the position of the examined layer in the examination subject with reference to a three-dimensional coordinate system with a x-, y- and z-axis, characterized in that the control device comprises first setting means for the selection of the axis of the coordinate system which lies in the examined plane, and com-



prises second setting means for the selection of the inclination of the examined plane.

4,510,449

METHOD FOR RECORDING TWO-DIMENSIONAL NUCLEAR MAGNETIC RESONANCE SPECTRA AND A DEVICE FOR CARRYING OUT THE SAME

Richard R. Ernst, Winterthur; Kurt Wüthrich, Wallisellen, both of Switzerland, and Slobodan Macura, Belgrade, Yugoslavia, assignors to Spectrospin AG, Switzerland

Filed Nov. 1, 1982, Ser. No. 438,181

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143625

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **3 Claims**



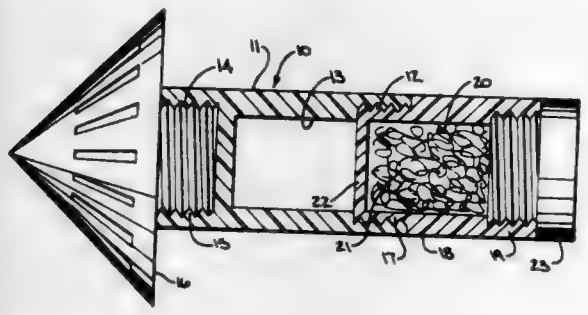
1. A method for recording two-dimensional nuclear magnetic resonance spectra of a nuclear spin system having spins between which a coupling exists, said coupling causing a shift of the resonance frequency of said spins, in which method said nuclear spin system is excited by three successive 90° pulses and an interferogram obtained after application of the third 90° pulse is subjected to Fourier analysis, in which further a plurality of such measurements is taken with different intervals between the first and the second 90° pulses known as the evolution period t_1 and the resulting different amplitudes of the resonance lines obtained by the said Fourier analysis are stored as instantaneous values of an additional interferogram and subjected to a second Fourier analysis, and in which simultaneously with each repetition of the measurement with a varied evolution period t_1 the time interval between the second and the third 90° pulses, which is known as the mixing time t_m, is systematically varied by increments covering the domain defined by the period of the frequency shifts caused by said couplings, characterized in that starting from an initial value t_{m0}, the mixing time t_m is varied proportionally to the evolution period t_1 whereby $t_m = t_{m0} + \chi t_1$ so that with an envisaged number of n measurements the time variation of the mixing time $t_{mn} - t_{m0}$, which is relatively small compared to t_{m0}, is substantially equal to the period of frequency displacements caused by said coupling, and in that the two-dimensional spectrum thus obtained is subjected to the techniques of triangular multiplication or symmetrization whereby all peaks which do not possess counterparts at the mirror symmetry position with respect to a main diagonal are eliminated.

4,510,450

APPARATUS AND ASSAY METHOD FOR THE QUANTITATIVE DETERMINATION OF MINERAL CONTENT IN BONE

Charles E. Brown, Hubertus, Wis., assignor to The Medical College of Wisconsin, Inc., Milwaukee, Wis.

Filed Sep. 28, 1982, Ser. No. 426,147
Int. Cl.[3] G01R 33/08
U.S. Cl. 324—321 4 Claims



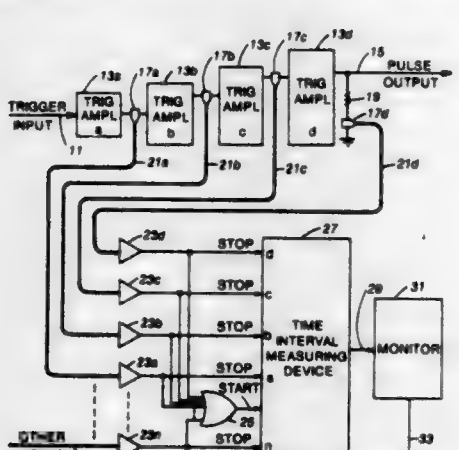
1. A rotor for an NMR spectrometer, said rotor having a cone shaped nose portion in a main body portion, said main body portion having a sample compartment for receiving a sample to be analyzed, such as unfractioned bone, a removable cover for the sample container and a reference material compartment, said sample and reference material compartment being positioned end to end along a longitudinal axis and being separated by a wall.

4,510,451

PREFIRE IDENTIFICATION FOR PULSE POWER SYSTEMS

Jerry L. Longmire, Los Alamos; Michael E. Thuot, Espanola, and David S. Warren, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1982, Ser. No. 410,787
Int. Cl.[3] G01R 29/02; H03K 5/26
U.S. Cl. 328—130.1 10 Claims



1. A prefire detection system for a high-power, high-frequency, multi-stage pulse generator, said prefire detection system comprising:

a plurality of pulse timing transmitters, each pulse timing transmitter thereof associated with and tailored to an individual stage of the multi-stage pulse generator, each pulse transmitter for sending an optical signal upon detection of a pulse;

a plurality of fiber optic cables, each fiber optic cable thereof associated with an individual pulse timing transmitter in said plurality thereof for receiving and transmitting therefrom said optical signal sent upon detection of a pulse;

a plurality of pulse timing receivers, each pulse timing receiver thereof associated with an individual fiber optic cable in said plurality thereof, each pulse timing receiver for receiving an optical signal transmitted by its associated individual fiber optic cable and for converting each received optical signal into an electrical pulse;

an OR gate inputted by all pulse timing receivers in said plurality thereof for combining all electrical pulses therefrom;

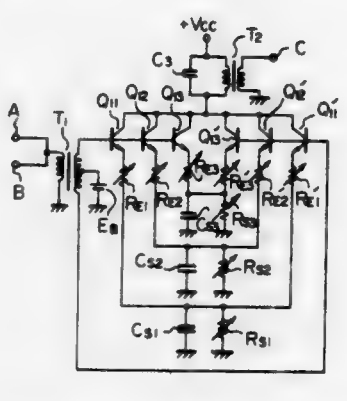
a time interval measuring device having a plurality of time interval measuring channels, each time interval measuring channel thereof associated with an individual pulse timing receiver in said plurality thereof for receiving therefrom an electrical pulse for stopping a time interval measurement therewith, said time interval measuring device also associated with said OR gate for starting all time interval measurements with the first electrical pulse combined therein, wherein said time interval measuring device provides an output signal representative of the time interval measurement for each channel.

4,510,452

CIRCUIT HAVING SQUARE-LAW TRANSFER CHARACTERISTIC

Kohji Ishida, and Masaharu Sakamoto, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 389,770
Claims priority, application Japan, Jun. 18, 1981, 56-94451
Int. Cl.[3] G06G 7/12
U.S. Cl. 328—144 2 Claims



1. A circuitry having square-law characteristics comprising:

(a) a first and second group of active elements, each of said first and second group comprising a plurality of active elements, each active element having a control input and at least one controlled output and a controlled terminal other than said controlled output, said control inputs and said controlled outputs are respectively commonly connected with each other, and a plurality of characteristic adjusting means each of which includes an adjustable feedback resistor connected between said controlled terminal and a reference potential point and a capacitor for bypassing an AC potential developed across a portion of said adjustable feedback resistor, and distinct adjusting means provided for a pair including one of said plurality of active elements of said first group and a corresponding one of said plurality of active elements of said second group; and

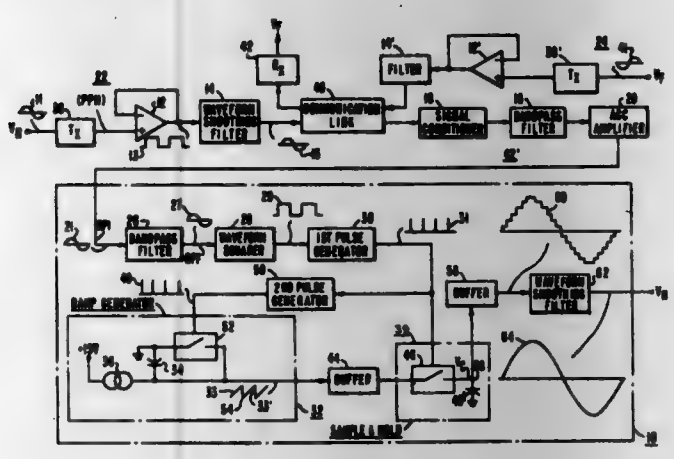
(b) means for applying said control inputs of said active elements of said first and second groups with in-phase and anti-phase input signals respectively delivered from an input signal, wherein said controlled outputs of said active elements of first and second groups are commonly connected, and wherein said characteristic adjusting means are adjusted so that input/output transfer characteristic of the circuitry is an approximate square-law characteristic.

4,510,453

FREQUENCY MODULATION OR PULSE MODULATION DEMODULATOR

Shan C. Sun, Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1982, Ser. No. 397,944
Int. Cl.[3] H03D *3/18*; H03K *9/06*; H04B *1/16*
U.S. Cl. 329—106 8 Claims



1. A demodulator for demodulating an alternating signal modulated by frequency modulation, or by pulse modulation, comprising:

means having a gain of K_m providing an alternating modulated signal,

means generating a first pulse train in response to said modulated signal,

means generating a second pulse train in response to said first pulse train,

means having a gain of K_d generating a ramp signal having a magnitude proportional to time,

sample-and-hold means for sampling and holding said ramp signal in response to pulses in said first pulse train,

and means resetting said ramp signal generating means in response to said second pulse train, following each sampling of said ramp signal by said sample-and-hold means,

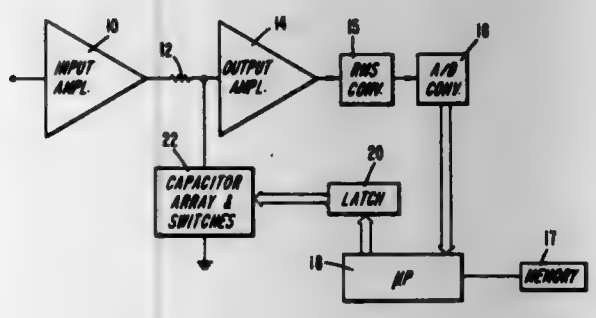
wherein the gains K_m and K_d are selected such that their product is unity, resulting in the voltage held by said sample-and-hold means being the demodulated signal.

4,510,454

APPARATUS FOR DIGITALLY CONTROLLED CALIBRATION OF FREQUENCY RESPONSE OF AMPLIFIERS

David M. Sherman, Everett, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Nov. 14, 1983, Ser. No. 551,713
Int. Cl.[3] G01R *23/00*
U.S. Cl. 330—2 5 Claims



1. An apparatus for calibrating the frequency response of a system, comprising:

means for receiving an input signal;

amplifier means;

means for measuring an output signal developed by said amplifier means;

adjustable filter means composed of components that are selectively interconnectable to have a variable frequency response; and

microprocessor means responsive to said measuring means for controlling said adjustable filter means to have a predetermined, ideal frequency characteristic of the system, said microprocessor means including memory means for storing a value of the ideal frequency response of said system, means for reading the present frequency response of the system from said output measuring means and control output means for modifying the frequency response of said filter means to approach the ideal frequency response.

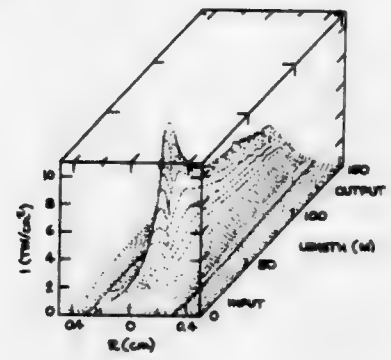
5. The apparatus of claim 1, wherein said microprocessor means further includes means for selectively amplifying or attenuating signals at an output of said filter means.

4,510,455

TWO-DIMENSIONAL OPTIMIZATION OF FREE ELECTRON LASER DESIGNS

Donald Prosnitz, Walnut Creek, and Roger A. Haas, Pleasanton, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 4, 1982, Ser. No. 374,655
Int. Cl.[3] H01S *3/10*
U.S. Cl. 330—4.3 6 Claims



1. A method for amplification of the optical radiation of predetermined wavelength $\lambda_s = 2\pi/k_s = 2\pi c/\omega_s$ and local electric field strength $E_s = \sqrt{2}\ mc^2\ e_s/e$, where e is the unit of electron charge and γmc^2 is relativistic energy of an electron propagating along a predetermined z-axis, the method comprising the steps of:

providing a transverse wiggler magnetic field of alternating polarity along the predetermined z-axis, the magnetic field having local field strength $B_w = \sqrt{2}\ mc\ b_w/e$ and local period $\lambda_w = 2\pi/k_w$;

directing a collimated beam of electrons having relativistic energy γmc^2 initially exceeding 2 MeV along the predetermined axis, in timed relationship with propagation of the optical radiation;

providing a substantially constant stable phase angle $\psi = \int (k_s + k_w)\ dz - \omega_s t + \phi_s$ associated with the electron beam so that ψ substantially satisfies the relation

$$\frac{d\psi}{dz} = k_w - \frac{k_s}{2\gamma^2}\left[1 + \frac{b_w^2}{k_w^2} - 2\frac{b_w e_s}{k_w k_s}\cos\psi + \frac{e_s^2}{k_s^2}\right] + \frac{d\phi_s}{dz} = 0$$

at a radius substantially

$$r \approx r_d \approx \left[\frac{2\Delta\gamma}{\gamma}\left(\frac{1}{b_w^2}+\frac{1}{k_w^2}\right)\right]^{\frac{1}{4}},$$

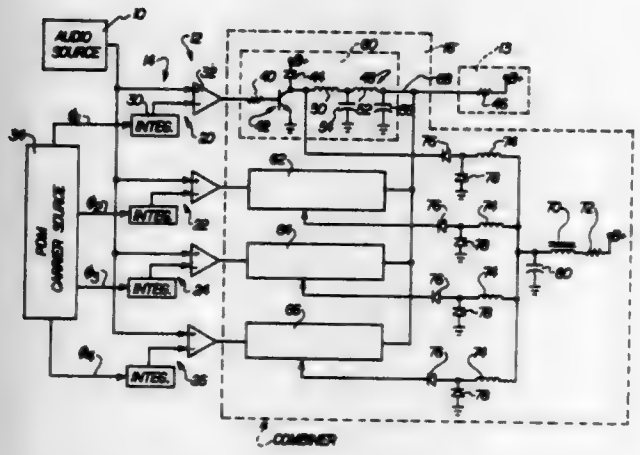
measured transversely from the predetermined electron beam axis, where $(2\Delta\gamma)\ m_e c^2$ is the representative initial energy spread in the electron beam.

4,510,456

PDM AMPLIFIER HAVING DISTORTION REDUCTION CIRCUIT

Hilmer I. Swanson, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 28, 1983, Ser. No. 536,783
Int. Cl.³ H03F 3/38
U.S. Cl. 330—10 **14 Claims**



1. An amplifier comprising:

pulse duration modulator means for providing a train of pulses exhibiting a fixed repetition rate and a fixed amplitude and having varying widths dependent upon an input signal;

switching means having an input circuit for receiving said pulses and being responsive thereto so that said switching means is on for a duration corresponding with the pulse width and having an output circuit connected in series with a load circuit which includes filter means for connection with a DC source so as to provide an amplified signal to said load circuit, said output circuit exhibiting stray capacitance thereacross so that said amplified signal is distorted at its leading edge relative to said pulse when the pulse on time of a said pulse is short relative to its off time causing the current flowing from said source through said load circuit to exhibit a low value delaying the charging of said stray capacitance; and

distortion reduction means in parallel with said load circuit including current insertion means for increasing the magnitude of the current flowing to said output circuit when the on time of a said received pulse is short to more rapidly charge said stray capacitance.

4,510,457

SWITCHING AMPLIFIER

Andreas Furrer, Turgi, and Johann Milavec, Windisch, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 10, 1983, Ser. No. 456,977
Claims priority, application Switzerland, Jan. 11, 1982, 116/82
Int. Cl.³ H03F 3/387
U.S. Cl. 330—10 **6 Claims**

1. A switching amplifier comprising:

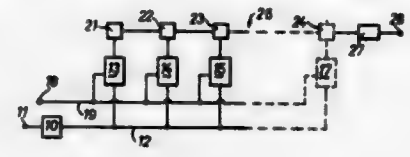
a signal converter adapted to convert an analog input signal into at least one pulse sequence;

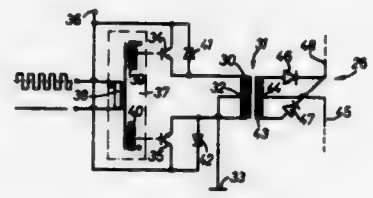
at least two switching stages each comprising,

at least one control transformer having at least one primary winding coupled to said at least one pulse sequence, and plural secondary windings;

plural controllable switching elements each adapted to be coupled to a supply voltage source and each having a respective control electrode coupled to a respective secondary winding of said control transformer;

a drive transformer having a primary winding connected in circuit with at least two of said switching elements to connect the drive transformer primary winding in push-pull sequence with said supply voltage source in accordance with said at least one pulse sequence, and a secondary winding separated from said drive transformer primary winding such that no conductive connection exists therebetween; and





a rectifier assembly comprising a full wave rectifier coupled to the secondary winding of said drive transformer;

wherein each switching stage is parallel connected via the primary winding circuit of said drive transformer to said supply voltage source, and the rectifier assemblies of said switching stages are connected in series; and

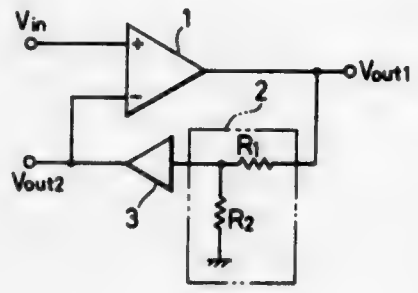
a low pass filter connected in series with said rectifier assemblies for filtering a signal generated by said series connected rectifier assemblies, wherein the filtered signal corresponds to the amplified output signal of said switching amplifier.

4,510,458

AMPLIFIER CIRCUIT

Tetsuo Sato; Yasuo Kominami, both of Takasaki; Yoshiyuki Takizawa, Tokorozawa, and Akira Haeno, Iruma, all of Japan, assignors to Hitachi, Ltd. and Pioneer Electronic Corp., both of Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,051
Claims priority, application Japan, Aug. 28, 1981, 56-134000
Int. Cl.³ H03F 3/45
U.S. Cl. 330—260 **5 Claims**



1. An amplifier circuit for producing first and second output signals of low distortion comprising an operational amplifier having a noninverting input terminal to which an input signal is to be applied, an inverting input terminal, and an output terminal from which a first output signal is derived; means for

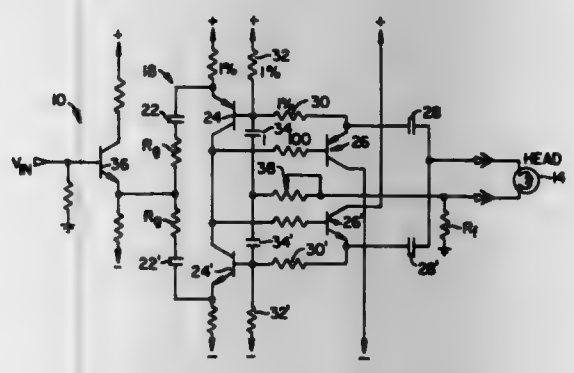
feeding back the first output signal from said output terminal of said operational amplifier to the inverting input terminal thereof, including a negative feedback circuit having its input connected to said output terminal of said operational amplifier and an impedance converter connected between the output of said negative feedback circuit and said inverting input terminal of said operational amplifier, wherein said negative feedback circuit comprises a first resistor connected between the input and output of the negative feedback circuit and a second resistor connected between the output of the negative feedback circuit and a ground potential; and means for deriving a second output signal from the output of said impedance converter.

4,510,459

WIDEBAND RECORD AMPLIFIER

Barrett E. Guisinger, Saratoga, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,445
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—265 **5 Claims**



1. A wideband amplifier for driving a load which is primarily inductive in response to an input signal, said amplifier comprising;

a circuit ground;

a pair of common-base configured transistor amplifier stages operating in push-pull fashion, the transistors being of opposite polarity and each having a separate emitter input for receiving the input signal, a separate base input for receiving a feedback signal and a separate collector output the two collector outputs being directly connected together;

a pair of buffer amplifier stages, each having an input coupled to said connected together collector outputs of said common-base configured amplifier stages and an output connected in series with the load to the circuit ground;

a feedback resistor connected in series between the load and the circuit ground such that substantially all of the current passing through the load also passes through the feedback resistor; and

means for applying the voltage developed across the feedback resistor to the base inputs of the common base configured transistor amplifier stages.

4,510,460

OUTPUT POWER CONTROL CIRCUIT FOR POWER AMPLIFIER

Yoshiharu Tamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,708
Claims priority, application Japan, Nov. 25, 1982, 57-177244[U]
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—285 **8 Claims**

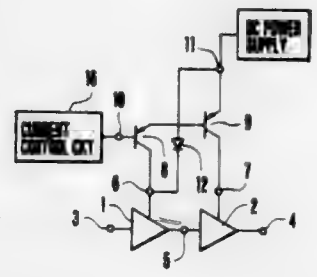
1. An output power control circuit for a power amplifier comprised of an input amplifier for reception of an input signal having a power supply terminal and an output amplifier for delivery of a power output signal also having a power supply terminal, said input and output amplifiers being connected in series, said control circuit comprising:

a DC power supply;

at least first and second transistors, said first transistor being operative to supply power from said DC power supply to the power supply terminal of said output amplifier, said second transistor being operative to supply power from said DC power supply to the power supply terminal of said input amplifier and responsive to an external current control signal for controlling the supply of power to said input amplifier;

means for passing the base current of said first transistor as part of the power supply current of said input amplifier to minimize the current value of the current control signal at a maximum output; and

means connected between said DC power supply and said power supply terminal of input amplifier, for preventing degradation of power efficiency when the output is set to be lower than the maximum output.

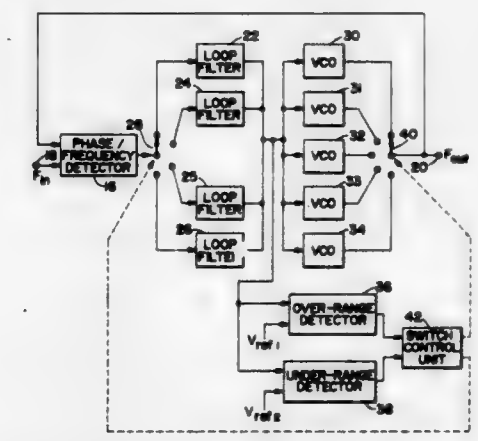


4,510,461

PHASE LOCK LOOP HAVING SWITCHABLE FILTERS AND OSCILLATORS

Eric J. Dickes, Hillsboro; Thomas C. Hill, III, and Robert T. Flegal, both of Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 22, 1982, Ser. No. 401,051
Claims priority, application Japan, Sep. 1, 1981, 56-137677
Int. Cl.³ H03L *7/10*
U.S. Cl. 331—1 A **5 Claims**



1. A phase lock circuit, comprising:

means for detecting phase and frequency differences between an input signal and an output signal and generating a detection signal representative of said differences;

filter means responsive to said detection signal for producing a control voltage, said filter means having a plurality of selectable frequency ranges;

variable-frequency signal generation means responsive to said control voltage for producing said output signal, said variable-frequency signal generation means having a plurality of selectable frequency ranges matchable with those of said filter means; and

selection means responsive to said control voltage for select-

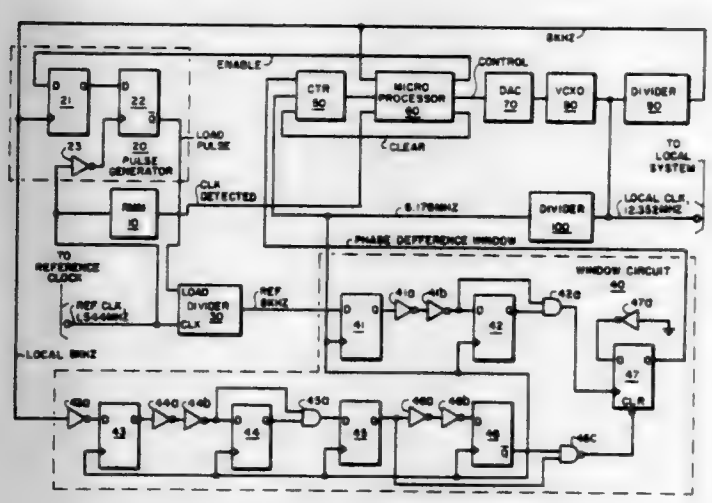
ing filter means and variable-frequency signal generation means having matched frequency ranges.

4,510,462

CIRCUIT TO MINIMIZE LOCAL CLOCK FREQUENCY DISTURBANCES WHEN PHASE LOCKING TO A REFERENCE CLOCK CIRCUIT

Ivan L. Edwards, Westmont; Robert C. McLaughlin, Bloomingdale, and Max S. Macrander, Warrenville, all of Ill., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 23, 1983, Ser. No. 507,436
Int. Cl.³ H03L *7/10*
U.S. Cl. 331—1 A **30 Claims**



1. A clock signal phase locking arrangement for use in a switching system which includes a source of reference clock signals, said phase locking arrangement comprising:

a control circuit operative to provide a plurality of local clock frequency control signals, said control circuit being connected to said reference clock signal source and further operative in response to an absence of said reference clock signals for a predetermined time to maintain the local clock frequency control signal in its current state;

a local clock circuit connected to said control circuit and operative in response to said plurality of local clock frequency control signals to provide a plurality of local clock signals each having a frequency associated with a different one of said control signals;

said control circuit being further operative in response to detection of said reference clock signals after said absence to generate a synchronization signal;

a first frequency divider connected to said source of reference clock signals and said control circuit, and operative in response to said synchronization signal to provide counted down reference clock signals of the same frequency as said local clock signals; and

a phase difference measurement circuit, connected to said first frequency divider, said control circuit and said local clock circuit, and operative in response to said counted down reference clock signals and said local clock signals to provide a phase difference signal representative of the phase difference between each of said counted down reference clock signals and an associated one of said local clock signals;

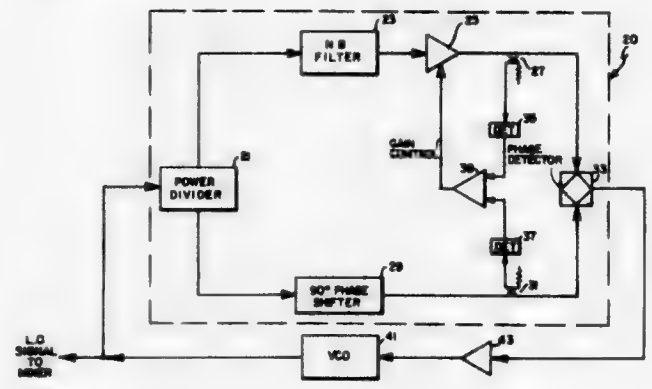
said control circuit being further operative in response to each of said phase difference signals to provide an associated one of said control signals of a characteristic representative of the duration of said phase difference signal, whereby the frequency of said local clock circuit is adjusted to eliminate the difference in phase between said local clock signals and said counted down reference clock signals.

4,510,463

AUTOMATIC GAIN CONTROLLED FREQUENCY DISCRIMINATOR FOR USE IN A PHASE LOCKED LOOP

Zvi Galani, Bedford, and Raymond C. Waterman, Jr., Westford, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 22, 1983, Ser. No. 487,778
Int. Cl.³ H03L *7/02*
U.S. Cl. 331—15 **2 Claims**



1. In a frequency discriminator wherein the frequeny of a signal relative to the center frequency of a tuned circuit is to be determined by passing the signal through two channels to a phase detector, the first one of the channels incorporating the tuned circuit and the second one of the channels being arranged to shift the phase of the signal by a fixed amount independently of the frequency of the signal, the improvement comprising:

(a) a variable gain amplifier disposed in the first one of the channels between the tuned circuit and the phase detector;

(b) means for sensing the amplitudes of the signal out of each one of the two channels; and

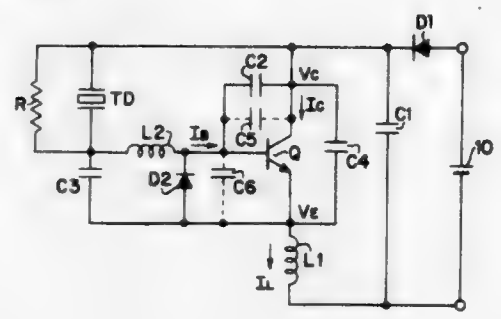
(c) means, responsive to the difference between the amplitudes of the signals out of the two channels, for producing a gain control signal applied to the variable gain amplifier to change the amplitude of the signal out of the amplifier to null the difference between the amplitudes of the signals out of the two channels.

4,510,464

LC-SWITCHED TRANSISTOR OSCILLATOR FOR VIBRATOR EXCITATION

Minoru Takahashi, Funabashi, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,772
Claims priority, application Japan, May 29, 1982, 57-90509
Int. Cl.³ H03B *5/36*
U.S. Cl. 331—116 R **5 Claims**



1. A vibrator exciting circuit comprising a self-oscillation circuit wherein a drive transistor operates in a switching mode, the ON-period of said transistor being determined by inductance and capacitance between the base and the emitter of said transistor and capacitance between the base and the collector of said transistor, the OFF-period of said transistor being deter-

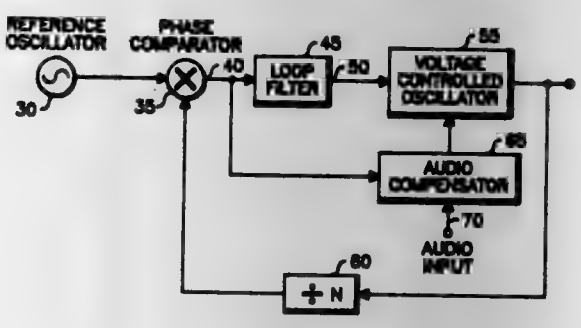
mined by inductance and capacitance between the collector and the emitter of said transistor, the vibrator being connected between the collector and the emitter of said transistor, the frequency of the ON-period of said transistor being set in the neighborhood of the resonance frequency of said vibrator so that said vibrator exciting circuit oscillates with its oscillation frequency pulled in said resonance frequency of said vibrator.

4,510,465

LINEAR GAIN VOLTAGE CONTROLLED OSCILLATOR WITH MODULATION COMPENSATION

Craig W. Rice, Ft. Lauderdale, and Marc H. Popek, Tamarac, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 12, 1983, Ser. No. 522,623
Int. Cl.³ H03C *3/08, 3/09*
U.S. Cl. 332—16 T **9 Claims**



1. A compensated voltage controlled oscillator arrangement for providing a substantially constant modulation level over a wide frequency band, comprising:

a linear gain voltage controlled oscillator (VCO) having a control input and responsive to a control voltage for providing a substantially constant change in VCO gain factor K_0 for a fixed change in said control voltage over a predetermined range of frequencies;

input means for receiving an input modulating signal; and

linear compensation means, coupled to said input means and said control input of said voltage controlled oscillator and responsive to said control voltage for providing a compensated output signal to said contol input of said VCO having a substantially constant change in signal level for a fixed change in said control voltage over said predetermined range of frequencies, so that the product of said compensated output signal and said VCO gain factor K_0 is substantially constant over said predetermined range of frequencies.

4,510,466

SWITCHED CAPACITOR SSB MODULATOR

Chieh Chang, Belmont, and Man S. Lee, San Mateo, both of Calif., assignors to GTE Lenkurt Incorporated, Phoenix, Ariz.

Filed Jun. 28, 1982, Ser. No. 392,971
Int. Cl.³ H03C *1/02*; H03K *7/00*
U.S. Cl. 332—31 R **24 Claims**

1. An integrable switched capacitor single-sideband modulator comprising:

an operational amplifier having an input terminal and an output terminal;

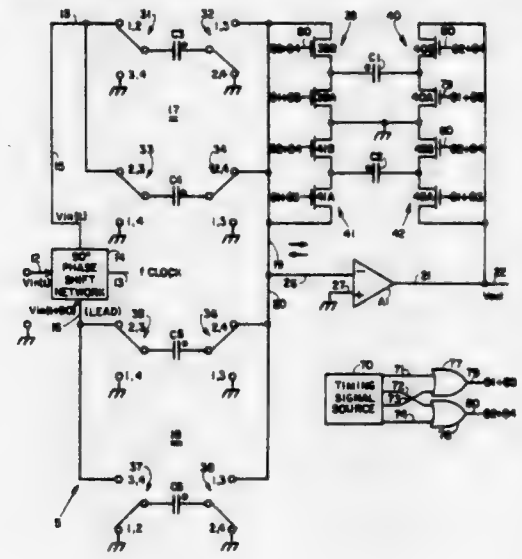
first and second capacitors C1 and C2;

first switch means operating at a prescribed rate in first and second non-overlapping switch states for alternately (1) discharging one of C1 and C2 while connecting the other of C1 and C2 as a feedback capacitor across said amplifier, and (2) connecting said one of C1 and C2 as a feedback capacitor across said amplifier while discharging said other of C1 and C2;

first means responsive to a baseband input signal for producing first and second quadrature-phase signal voltages on associated first and second lines;

second means for converting the first signal voltage into a first representative electrical charge flow signal on said input terminal that is a function of the product of said first signal voltage and a first digital pulse train of format +K, +K, −K, −K, etc., where K is a constant and said first pulse train has a repetition rate that is equal to the prescribed rate; and

third means for converting the second signal voltage into a second representative electrical charge flow signal on said input terminal that is a function of the product of said



second signal voltage and a second digital pulse train that is of the same format and the same repetition rate as said first pulse train and is 90° out of phase with respect to said first pulse train;

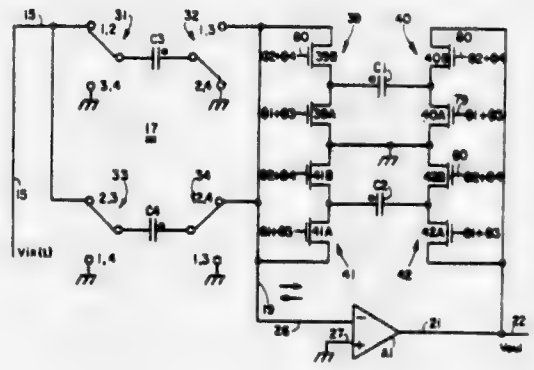
said operational amplifier and switched-feedback capacitors C1 and C2 combining the first and second charge flow signals on said input terminal for producing a single-sideband signal on said output terminal.

4,510,467

SWITCHED CAPACITOR DSB MODULATOR/DEMODULATOR

Chieh Chang, Belmont, and Man S. Lee, San Mateo, both of Calif., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Jun. 28, 1982, Ser. No. 393,221
The portion of the term of this patent subsequent to Apr. 9, 2002, has been disclaimed.
Int. Cl.³ H03K *1/02, 7/00*
U.S. Cl. 332—31 R **17 Claims**



1. An integrable switched capacitor circuit for operating in an amplitude modulator and/or demodulator comprising:

an operational amplifier having an input terminal and an output terminal;

first and second capacitors C1 and C2;

first switch means operating at a prescribed rate in non-overlapping switch states for alternately discharging one of C1 and C2 while connecting the other of C1 and C2 as a feedback capacitor across said amplifier, and connecting

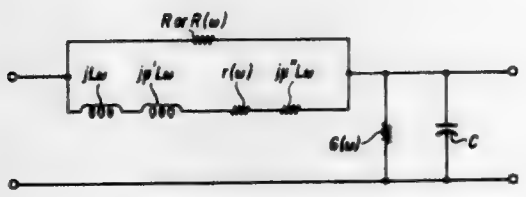
said one of C1 and C2 as a feedback capacitor across said amplifier while discharging said other of C1 and C2; and second means periodically operative in combination with said amplifier and feedback capacitors in a plurality of non-overlapping switch states at the prescribed rate for converting an input signal voltage into a representative electrical charge flow signal on said input terminal of said amplifier that is proportional to the product of representations of said input voltage in switch state time intervals and sequential values of a digital pulse train +K, +K, −K, −K, etc., where K is a constant and said pulse train has a repetition rate that is equal to the prescribed rate.

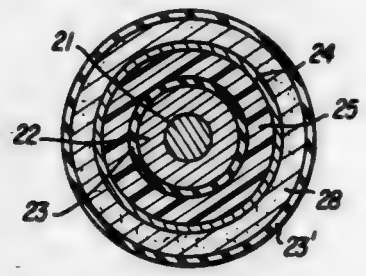
4,510,468

RF ABSORPTIVE LINE WITH CONTROLLED LOW PASS CUT-OFF FREQUENCY

Ferdy Mayer, 43 rue du 11 Novembre 1918, 94700 Maisons Alfort, France

Filed Sep. 30, 1982, Ser. No. 429,032
Int. Cl.³ H01P *1/215, 1/23*
U.S. Cl. 333—12 **41 Claims**





1. A cable for the transmission of electrical energy and signals, comprising:

at least one electrical conductor exhibiting high frequency skin effect;

a low conductivity magnetic composite layer surrounding said at least one conductor and in combination therewith exhibiting an inductance characteristic greater than that of the conductor alone;

a resistive layer coupled to said magnetic composite layer and exhibiting a longitudinal resistance characteristic (R) matched at least to the inductance characteristic (L) of said magnetic composite layer combined with the conductor to obtain a correspondingly determined low pass frequency characteristic α (attenuation per meter of cable), wherein α/f (f=frequency) has a maximum value at a frequency f_{max}, where

$f_{max} \geq 0.28\ (R/L)$

such that within a predetermined transition frequency range, current flow switches from said at least one conductor to said resistive layer; and

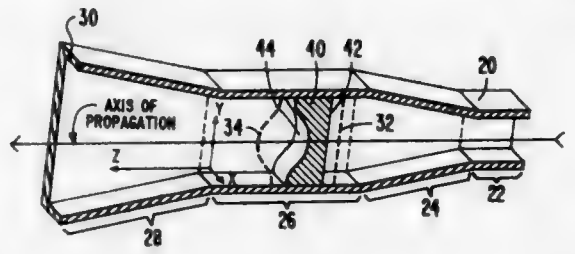
an artificial skin effect layer adjacent said magnetic composite layer for increasing the inductance of said magnetic composite layer and conductor combination.

4,510,469

SELECTIVE WAVEGUIDE MODE CONVERTER

David F. Bowman, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 31, 1983, Ser. No. 499,395
Int. Cl.³ H01P *1/16*
U.S. Cl. 333—21 R **8 Claims**



1. A waveguide mode converter for performing mode conversion between an incident wave and an emergent wave, each of said waves being propagated in at least a first mode and at least one of said waves propagating in at least one additional mode which is a higher order mode than said first mode, said mode converter comprising:

a waveguide having an axis of propagation; and

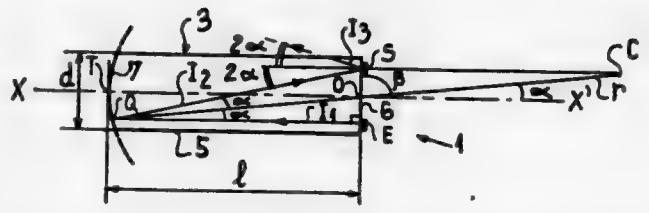
a mode conversion body disposed within said waveguide, said mode conversion body having a different effective dielectric constant (EDC) than adjacent regions within said waveguide, said mode conversion body having a thickness parallel to said axis of propagation and an EDC/thickness profile which varies across said waveguide in a manner which is effective for producing a phase displacement in said incident propagating wave which is in phase quadrature with said incident wave and has an amplitude profile across said waveguide which is proportional to the amplitude profile across said waveguide of said at least one additional propagating mode.

4,510,470

ELECTRO-ACOUSTIC DELAY LINE OPERATING IN TRANSMISSION

Jean C. Resneau; Jean Puyhaubert; Evelyne Da Silva, and Claude Lamontagne, all of Paris, France, assignors to Thomson CSF, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,598
Claims priority, application France, Feb. 26, 1982, 82 03263
Int. Cl.³ H03H *9/36*
U.S. Cl. 333—142 **9 Claims**



1. An electro-acoustic delay line operating in transmission, comprising:

an acoustic wave propagation medium having a longitudinal axis and being delimited by at least one lateral surface, a first plane terminal surface and a second terminal surface of revolution ensuring a focusing of said acoustic wave;

an input transducer and an output transducer transforming an electromagnetic wave into an acoustic wave and vice versa, said two transducers being positioned on said plane terminal surface and being symmetrical with respect to the middle of said plane surface, the acoustic wave produced by said input transducer being perpendicular to said plane terminal surface; wherein the angle formed by the axis of revolution of said second terminal surface passing through

the middle of said plane terminal surface and the acoustic wave produced by said input transducer has a value such that said acoustic wave undergoes a single reflection on said focusing surface of revolution and such that the acoustic wave reflected on said surface of revolution is concentrated at the level of said output transducer, thus allowing the obtainment of a single echo delayed signal.

4,510,471

ACOUSTIC SURFACE WAVE DEVICE INCLUDING A REFLECTIVE MULTISTRIP COUPLER

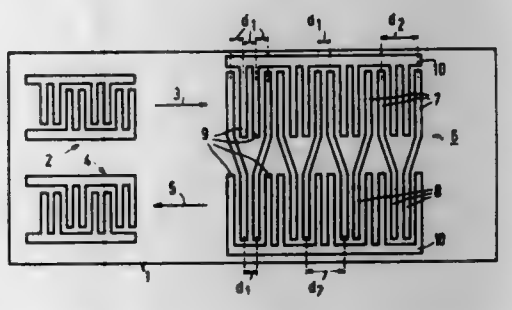
Ian Flinn, deceased, late of Crawley (by Heather Anne Flinn, executrix), and Robert Murray, Horley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 1, 1983, Ser. No. 510,093

Claims priority, application United Kingdom, Jul. 5, 1982, 8219373

Int. Cl.³ H03H *9/145, 9/64*

U.S. Cl. 333—195 **16 Claims**



1. An acoustic surface wave device comprising a piezoelectric substrate for propagating an acoustic surface wave at a surface thereof, transducer means for launching acoustic surface wave energy so as to propagate over said surface and for converting acoustic surface wave energy propagating over said surface into an electrical signal, and electrical coupling means for receiving acoustic surface wave energy propagating along a first propagation track and relaunching at least part of that energy as acoustic surface wave energy along a second propagation track, said electrical coupling means comprising a first array of electrically conductive strips across said first track and a second array of electrically conductive strips across said second track, each array including discrete parallel electrically conductive strips each of which is electrically insulated from the other said discrete conductive strips of that array and is electrically connected to a respective said discrete conductive strip of the other array such that the successive said discrete conductive strips of each array are electrically connected to the successive said discrete conductive strips of the other array, the centre-to-centre spacings of the successive said discrete conductive strips of each array being alternately relatively large and relatively small, the said discrete conductive strips of the two arrays being interconnected such that, in each array, the said discrete conductive strips of each pair which have a said relatively large centre-to-centre spacing are connected to the respective strips of a pair in the other array which have a said relatively small centre-to-centre spacing, characterised in that each array includes a plurality of further electrically conductive strips which are parallel to the said discrete conductive strips of that array, in that said further strips are situated between the respective discrete conductive strips forming substantially every pair having a said relatively large centre-to-centre spacing, and in that all said further electrically conductive strips in both said arrays are electrically interconnected.

4,510,472

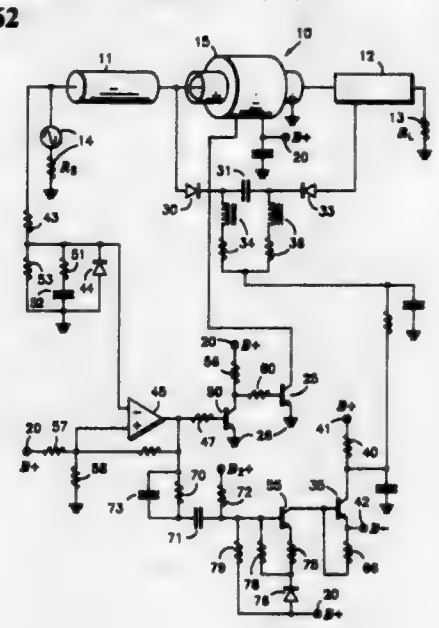
HIGH POWER RF RELAY SWITCH TRIGGER

Robert H. Bickley; Charles A. Bucher, both of Scottsdale, and David M. Yee, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1983, Ser. No. 510,716

Int. Cl.³ H01P *1/10, 1/15*

U.S. Cl. 333—262 **8 Claims**



1. In a high power RF switch of the type including a relay connected to carry the input high power RF and having at least two pin diodes connected in opposed polarity relationship in parallel with the relay, trigger apparatus for operating the two pin diodes comprising:

detector means coupled to receive the input high power RF and supply a detected output signal in response thereto:

comparator means, having an input coupled to the output of said detector means, a reference level input and an output, for supplying an output signal at the output thereof whenever the detected output signal exceeds the reference level; and

a one shot circuit coupled to the output of said comparator means and having an output coupled to the two pin diodes for causing the pin diodes to conduct high power RF only for a predetermined length of time after the output signal is supplied by said comparator means.

4,510,473

ELECTROMAGNETIC RELAY

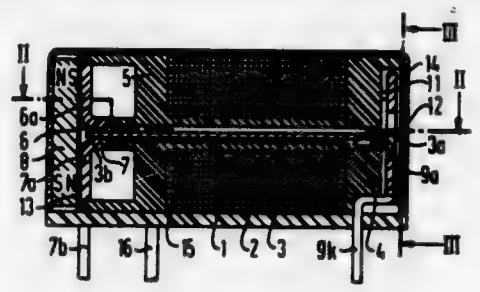
Josef Schweiger, and Bernhard Hering, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,348

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1982, 3240215

Int. Cl.³ H01H *51/27*

U.S. Cl. 335—86 **5 Claims**



1. An electromagnetic relay comprising:

a hollow coil body having two end flanges and a central section therebetween about which a coil having a coil axis is wound;

at least one pole piece disposed at one of said flanges;

a tongue armature extending through said coil body substantially along said coil axis having a free end movable relative to said pole piece and a fixed end;

a carrier plate disposed substantially perpendicular to said coil axis at the other end of said coil flanges to which said fixed end of said tongue armature is attached, said carrier plate having a magnetically displaceable adjustment plate; and

a securing means rigidly connecting said carrier plate to said coil body including torsion stay means connected to said adjustment plate,

whereby the position of said tongue armature relative to said pole plate may be adjusted by the application of an external magnetic field to said adjustment plate for displacing said adjustment plate and permanently deforming said torsion stay means.

4,510,474

INDUCTIVE PICKUP FOR FLUID CONTROL ELEMENT

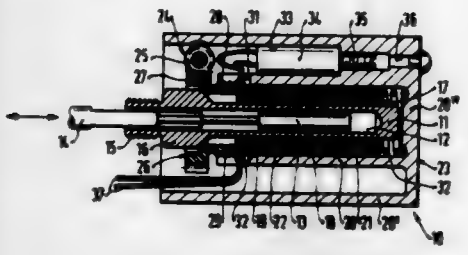
Roman Romes, Friolzheim; Wolfgang Schilling, Schwieberdingen, and Jürgen Werner, Moglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,518

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127470

Int. Cl.³ H01F *21/06*

U.S. Cl. 336—30 **15 Claims**



1. A pressure medium-tight inductive pickup for a fluid control element, particularly for a displacement, pressure or flow valve, comprising a pressure pipe composed of a non-magnetic material and having an open end; a magnetic core received in said pressure pipe; means provided at said open end of said pressure pipe for pressure-tight connection of said pressure pipe with a control element; a spool body surrounding said pressure pipe; a housing surrounding said spool body and having an axis; and adjustment means for adjusting zero position of the pickup, said spool body being axially displaceable on said pressure pipe and in said housing, said adjustment means being formed as a worm drive adjustable from outside and coupled with said spool body so that the latter is play-free in an axial direction, said worm drive of said adjusting means including a worm and a worm wheel arranged adjacent to said open end of said pressure pipe and so that said worm extends in said housing transverse to said pressure pipe, whereas said worm wheel extends in said housing concentric to said pressure pipe and transverse to said worm.

4,510,475

DISK COIL WINDING OF INTERWOUND SINGLE OR DOUBLE COILS

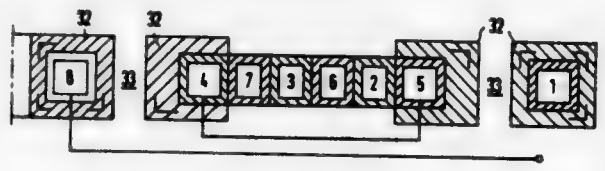
Gottfried Broszat, Waiblingen-Hegnach, Fed. Rep. of Germany, assignor to Transformatoren Union Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,880

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105317

Int. Cl.³ H01F *27/08, 15/14*

U.S. Cl. 336—60 **12 Claims**



1. Disk coil winding comprising interwound disk coils formed of conductor turns having normal insulation thereon, the spacing of only two outermost and only two innermost turns of at least one disk coil being greater than the spacing between turns in the remainder of said at least one disk coil, auxiliary insulations only on said two outermost and two innermost turns angularly surrounding one edge and providing greater insulation thickness than the normal insulation on said turns in the remainder of said at least one disk coil, said at least one disk coil the disposed at an input of the winding, starting from inner and outer generated surfaces, turn capacitance between turns free of auxiliary insulation being increased with respect to turn capacitance at turns provided with said auxiliary insulations.

4,510,476

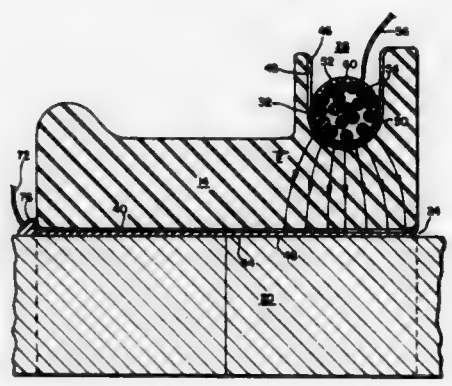
HIGH VOLTAGE ISOLATION TRANSFORMER

Carroll H. Clatterbuck, Silver Spring, and Arthur P. Ruitberg, Germantown, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 21, 1983, Ser. No. 506,477

Int. Cl.³ H01F *15/04*

U.S. Cl. 336—84 C **16 Claims**



1. An isolation transformer, comprising:

core means (16) for concentrating lines of magnetic flux in a ferromagnetic path including a pair of legs (18, 20);

a pair (12, 14) of electrically insulating means encircling different ones of said legs;

coating means (47, 48) having a first electrical conductivity adhering to said insulating means for separating said insulating means from said concentrating means;

primary (30) and secondary (32) electrical conducting means having a second and greater electrical conductivity wound around different ones of said insulating means for generating a magnetic flux in said legs; and

other coating means (49,59,50,60) having said first electrical conductivity for encasing respective ones of said primary

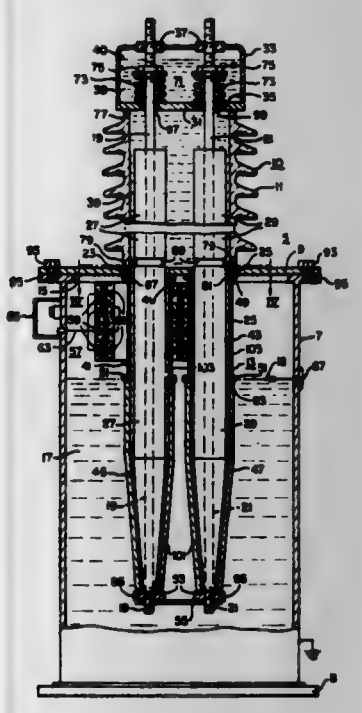
and secondary conducting means to separate said conducting means from said insulating means.

4,510,477

CURRENT TRANSFORMER

Joseph R. Rostron, Franklin Township, and John R. Perulfi, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1983, Ser. No. 543,644
Int. Cl.[3] H01F *27/02*
U.S. Cl. 336—92 7 Claims



1. A current transformer comprising:
(a) a transformer tank having a cover on the tank forming a first chamber of a first oil system;
(b) a pair of elongated conductors extending through the cover and into the tank with each conductor having external and internal end portions within the tank;
(c) tubular shell means around each conductor forming separate and intercommunicating portions of a second chamber of a second oil system;
(d) a connector interconnecting the internal end portions of the conductors;
(e) the assembly of the pair of conductors and the connector forming primary conductor means;
(f) a magnetic core in inductive relation with windings around the primary conductor means; and
(g) said cover forming a common interface between the first and second oil systems to enable separate assembly of the second oil system prior to its placement in the tank.

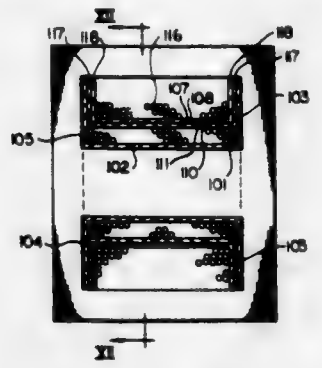
4,510,478

COIL BODY

Ernest Finkbeiner, Grayslake, Ill., assignor to Mid-West Transformer Company, Grayslake, Ill.

Division of Ser. No. 293,199, Aug. 17, 1981, Pat. No. 4,405,913. This application May 18, 1983, Ser. No. 495,647
Int. Cl.[3] H01F *27/30*
U.S. Cl. 336—198 2 Claims

1. An electrical coil of the type having primary and secondary windings wrapped on a coil body, the coil body including a hollow core defining tube member having outwardly projecting axial end walls at axial ends thereof defining a winding area between the axial end walls and radially outwardly of the tube, primary and secondary windings received in the coil winding area, said primary and secondary windings being concentric and radially spaced from one another, dividing members for dividing the primary and secondary winding areas, said dividing members comprising two body members, each of said body members being U-shaped in cross section with the section taken normal to the axis of the tube, the body members being received in opposed overlapping relationship with the bights of each of the body members lying on opposite sides of the tube, the body members received around one of said primary or secondary coils and being radially spaced from said tube, each of the body members consisting of a bight and two projecting legs, one of said body members being dimensioned to be received with its legs substantially completely interior of the other of said body members with the bights of said one and said other of said body members being opposed to one another on opposite sides of the tube, with the legs of the



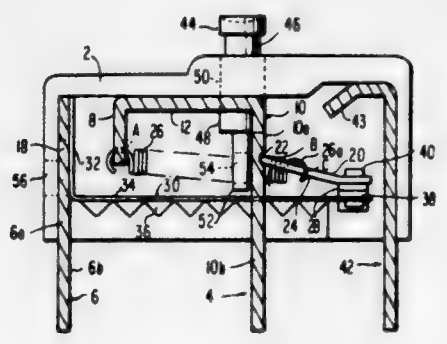
one body member being spaced apart less than the legs of the other body member and being inserted between the legs of said other body member in full telescoping relationship, each of said legs and bights having a cross section in a plane parallel to the axis of the tube which is U-shaped with said leg and said bight forming the bight of the cross section in the plane parallel to the tube and having outwardly projecting leg portions extending therefrom adjacent axial ends thereof terminating equal distance from the axis of said tube with the outer periphery of the axial end walls of said tube defining a second winding area therein, the other of said primary and said secondary coils wound in said second winding area.

4,510,479

PC-BOARD MOUNTED THERMAL BREAKER

Donald K. Merchant, Cambridge, Md., assignor to Airpax Corporation, Cambridge, Md.

Continuation-in-part of Ser. No. 480,285, Mar. 30, 1983, abandoned. This application Nov. 10, 1983, Ser. No. 550,462
Int. Cl.[3] H01H *61/00, 71/16*
U.S. Cl. 337—91 28 Claims



7. A circuit breaker, comprising:
an electrically insulating housing having a sawtooth surface formed in the lower portion thereof;
first and second terminal means extending through said housing for connecting the breaker to an electrical circuit;
a bimetallic element located in said housing and electrically coupled to said first terminal, wherein said bimetallic element rests on said sawtooth surface when not in a deformed state;
a first contact member coupled to said bimetallic element;
a second contact member located in said housing and electrically coupled to said second terminal;
means for mounting said second contact member for move-

ment into and out of contact with said first contact member; and

biasing means coupled to said second contact member to alternately bias said second contact member in opposite directions between first and second positions, wherein in said first position, said second contact member is biased into electrical contact with said first contact member, and in said second position, said second contact member is biased out of electrical contact with said first contact member;

said bimetallic element being deformed upon application of a sufficient overcurrent therethrough to move said second contact member from said first position toward said second position against the action of said biasing means.

4,510,480

THERMOSTAT WITH TEMPERATURE PULL-DOWN FACILITY

Guglielmo Rossi, D-Stutensee-Freidrichstal, and Mario Gemma, Linkenheim-Hochstetten, both of Fed. Rep. of Germany, assignors to Ranco Incorporated, Dublin, Ohio

PCT No. PCT/GB82/00171, § 371 Date Feb. 7, 1983, § 102(e) Date Feb. 7, 1983, PCT Pub. No. WO82/04497, PCT Pub. Date Dec. 23, 1982

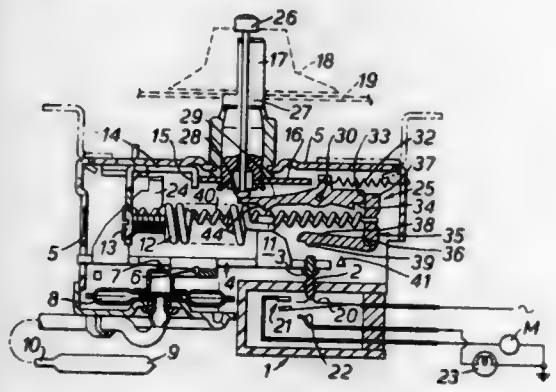
PCT Filed Jun. 9, 1982, Ser. No. 465,859

Claims priority, application United Kingdom, Jun. 9, 1981, 8117560

Int. Cl.[3] H01H *37/38*

U.S. Cl. 337—321

14 Claims



1. A thermostat unit for a refrigeration or freezer apparatus comprising:

(a) a switch for controlling the operation of the apparatus, said switch having an open condition and a closed condition wherein the apparatus is operated;

(b) a single temperature sensing element for producing actuating forces in response to sensed temperature in the apparatus;

(c) a thermostat mechanism reacting between said sensing element and said switch, said thermostat mechanism comprising:

(i) a switch operating lever for transmitting force between said sensing element and said switch;

(ii) a first spring acting in opposition to said sensing element; and

(iii) adjustment means for adjusting the force of said first spring to adjust the normal working temperature of the apparatus between upper and lower limits; and

(d) rapid refrigeration means for closing said switch to cause continuous operation of said apparatus until said sensing element senses an apparatus temperature below said lower limit of said normal working temperature, said rapid refrigeration means comprising:

(i) a latch mechanism;

(ii) a pre-loaded element which is normally retained by the latch mechanism in an inoperative position, said pre-loaded element movable to an operative position of engagement with said thermostat mechanism;

(iii) a second spring acting upon the pre-loaded element and effective, when said pre-loaded element is in said operative position, to oppose said first spring for effecting closure of said switch at sensed temperatures within said normal working temperature range; and

(iv) a push-button connected to the latch mechanism to trip the latter upon manual operation of the push-button to release the pre-loaded element into the operative position;

(e) said thermostat mechanism effective, in response to a sensed temperature below said normal working temperature lower limit, to return said pre-loaded element to said inoperative position, relatching said pre-loaded element and said latch mechanism and returning said switch to said open condition.

4,510,481

SNAP ACTION TYPE THERMALLY RESPONSIVE SWITCHING STRUCTURE

Susumu Ubukata, 549-banchi, Nakasuna-cho, Tempaku-ku, Nagoya; Yasukazu Mizutani, Nagoya, and Syozo Iyoda, Nagoya, all of Japan, assignors to Susumu Ubukata, Nagoya, Japan

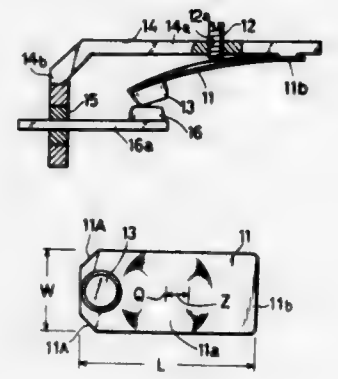
Filed Sep. 29, 1983, Ser. No. 536,999

Claims priority, application Japan, Oct. 12, 1982, 57-178628

Int. Cl.[3] H01H *37/20*

U.S. Cl. 337—368

5 Claims



1. A snap action type thermally responsive switching structure comprising;

a fixed contact secured via a suitable support blade to a stationary means in electrically insulated relationship therewith;

a thermally responsive element which is formed into a generally rectangular shape with a substantially circular dish-shaped portion therein, the element being secured at one lengthwise end to said stationary means, and a movable contact carried at the other end to make and break contact against said fixed contact when snapped in response to the temperature,

said thermally responsive element being determined by the ratio of its length to its width to be two or more than two; and

a calibrator means provided with said stationary means to project toward the convex side of said dish-shaped portion so as to depress thereagainst at the normal temperature,

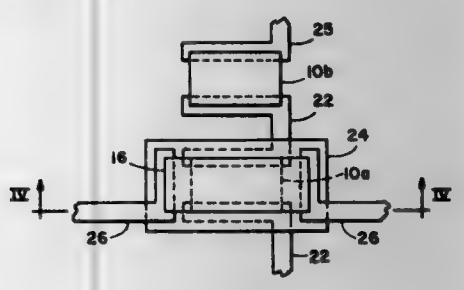
said calibrator means being positioned to contact said dish-shaped portion within the region defined between its central point and a point spaced away from said central point in a lengthwise direction equal to one-third of the width of the said thermally responsive element toward the secured end thereof.

4,510,482

PROTECTIVE CIRCUIT FOR ELECTRONIC TEST PROBES

John B. McClanahan, Hillsboro; Marvin E. LaVoie, Aloha; Wayne E. Kelsoe, Beaverton, and James Wrobel, Banks, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 15, 1982, Ser. No. 449,900
Int. Cl.³ G01K *7/16*; H02H *5/04*
U.S. Cl. 338—24 **4 Claims**



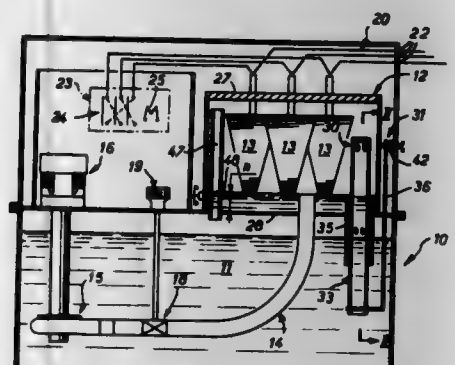
1. An electrical device comprising:
a dielectric substrate;
an input terminal formed upon said dielectric substrate for receiving an input signal having a potential different from a ground potential level,
a load resistor formed upon said dielectric substrate and connectable between said input terminal and the ground potential level, said load resistor including at least two load resistor portions connected together and having a combined resistance equal to a desired value, wherein said load resistor is constituted by a first film of resistive material formed on a main face of the dielectric substrate in first and second discrete portions, corresponding to said first and second load resistor portions respectively,
a temperature sensitive member in good thermally conductive contact with one, but not all, of said load resistor portions, said temperature sensitive member being constituted by a second film of resistive material formed on a main face of the substrate,
switch means which are actuable to isolate the load resistor from the input terminal, and
a protective circuit connected to and operable by said temperature sensitive member for actuating said switch means.

4,510,483

LIQUID RHEOSTAT FOR STARTING AN ELECTRIC MOTOR WITH IMPROVED SILL STRUCTURE

Michel Bensadoun, Couzeix, France, assignor to Electricite de France Service National, Paris, France

Filed Aug. 5, 1983, Ser. No. 520,849
Claims priority, application France, Aug. 23, 1982, 82 14474
Int. Cl.³ H01C *10/02*
U.S. Cl. 338—80 **13 Claims**



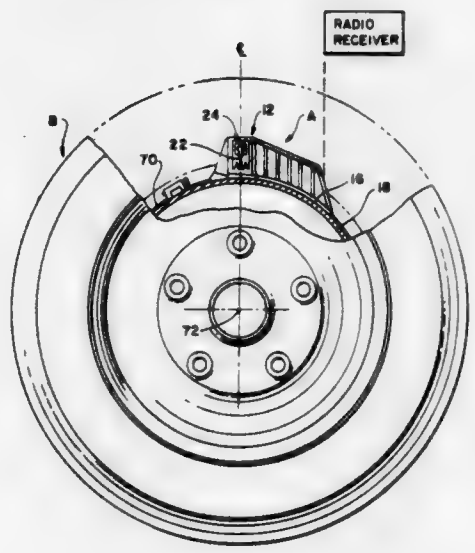
1. A variable-level liquid rheostat for starting an electric motor, comprising a tank which contains electrolyte, a starting chamber which is arranged above said tank, electrodes arranged in the upper part of said starting chamber, connecting terminals adapted to link said electrodes with the excitation circuit of the motor to be started, a feed pipe fitted between said tank and said starting chamber for the introduction of electrolyte into said chamber, a discharge sill arranged in said starting chamber and adapted to limit, at least temporarily, the level of electrolyte therein, wherein said discharge sill is mounted adjustably in height in the starting chamber under the control of an actuating means available to the user, said discharge sill is formed by the conjuction of two mutually nested coaxial tubes which each contains a slot and of which at least one is mounted rotatably about the axis of the assembly under the control of the actuating means available to the user, and the slot of at least one of said tubes being generally oblique relative to said axis.

4,510,484

PIEZOELECTRIC REED POWER SUPPLY FOR USE IN ABNORMAL TIRE CONDITION WARNING SYSTEMS

Daniel S. Snyder, Norwalk, Ohio, assignor to Imperial Clevite Inc., Glenview, Ill.

Filed Mar. 28, 1983, Ser. No. 479,504
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.³ B60C *23/02*
U.S. Cl. 340—58 **9 Claims**



1. A device for sensing a condition of a pneumatic tire preferably of the type used on a motor vehicle wherein the tire is mounted on a tire rim and the tire is subject to normal wheel vibrations, said device comprising:
a housing;
a means for mounting said housing to said tire rim;
sensing means associated with said housing for monitoring a condition within the tire;
circuit means associated with said housing including a radio transmitter circuit operatively connected to said sensing means for generating radio signals indicative of said tire condition;
power supply means associated with said housing operatively connected to said circuit means, said power supply means including a piezoelectric reed having a base portion and an end portion, said base portion being fixedly attached to said housing, and a tuning mass member mounted to said end portion, said power supply further including opposed stop members spaced from said tuning mass member to permit flexure of said reed therebetween, said stop members and said tuning mass member being configured for mating abutment to inhibit compound bending of said reed during flexure; and
means for receiving said radio signals.

4,510,485

SOUND GENERATING DEVICE FOR JOGGER

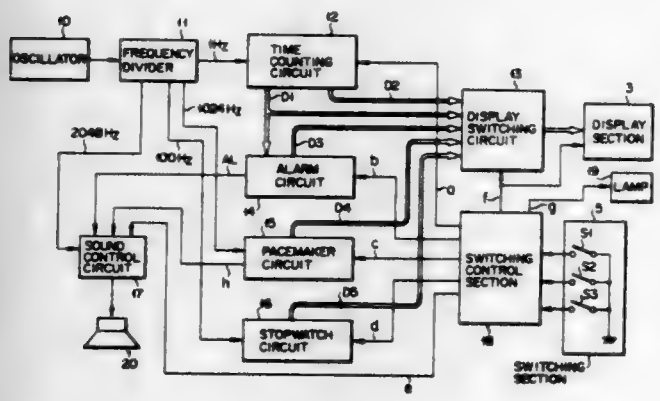
Iwao Tahara, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 361,473, Mar. 23, 1982, abandoned. This application Aug. 21, 1984, Ser. No. 643,089

Claims priority, application Japan, Mar. 31, 1981, 56-47992; Mar. 31, 1981, 56-47999; Mar. 31, 1981, 56-48003

Int. Cl.³ G08B *23/00*

U.S. Cl. 340—323 R **5 Claims**



1. A sound generating device for a jogger, comprising:

reference signal generating means (**10**, **11**) for generating frequency-divided time counting reference signals;

switching means (S_2, S_3, **18**) for selectively supplying start and stop instruction signals and select instruction signal in accordance with at least one switching operation;

time counting means (**44**) for controlling a start and stop of a counting operation of said time counting reference signals in accordance with the start and stop instruction signals from said switching means (S_2, S_3, **18**) and for producing count time data;

means (**3**, **13**) for displaying time data which is output from said time counting means (**44**);

pace signal generating means (**41**) for receiving said time counting reference signal and for generating a plurality of pace signals of a different cycle;

pace signal selecting means (**42**, **47**, **48**, **49**, **50**, **51**, **55**) for selecting a pace signal of a desired cycle from said plurality of pace signals produced from said pace signal generating means, by said select instruction signal, and for producing it as an output signal;

first pace signal supply controlling means (**46**, **56**) connected to said pace signal selecting means for producing the selected pace signal as a desired signal in accordance with said start instruction signal;

sound generating means (**17**, **20**) for receiving said desired pace signal from said first pace signal supply controlling means and for generating a pace sound; and

a second pace signal supply controlling means (**71**, **72**) connected to said pace signal selecting means for supplying said desired pace signal to said sound generating means when said pace signal selecting means is operated upon receipt of said select instruction signal.

4,510,486

DIGITAL-TO-ANALOG CONVERTER

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 26, 1982, Ser. No. 372,009

Claims priority, application Japan, Apr. 25, 1981, 56-63007

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **3 Claims**

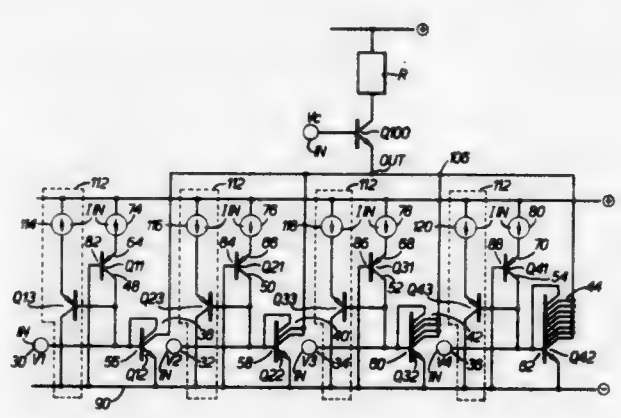
1. A digital-to-analog converter which converts an input digital signal consisting of a plurality of bits into an analog output signal comprising:

a plurality of stages equal in number to the number of bits of said input digital signal, each stage having an input terminal and an output terminal respectively, including:

(a) a first transistor having a base, an emitter, and a plurality of collector electrodes, one of said collector electrodes being connected to said base electrode, the remaining collector electrodes being connected to said output terminal, and the base electrode being connected to said input terminal,

(b) a first reference voltage source connected to the emitter electrode of said first transistor,

(c) current means including a first current source and a second transistor having a base electrode connected to the emitter electrode of said first transistor, a collector electrode connected to the base electrode of said first transistor, and an emitter electrode connected to said first current source, and



(d) an α-adjusting circuit including a second current source and a third transistor having a base electrode connected to the collector electrode of said second transistor, a collector electrode connected to the emitter electrode of said first transistor, and an emitter electrode connected to the second current source,

each of said bits of said input signal being applied to a respective input terminal of said plurality of stages and the respective output terminals of said stages being connected together to produce said analog output signal.

4,510,487

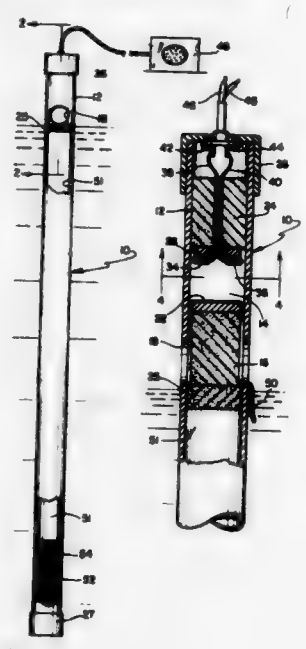
POOL ALARM

Earle C. Wolfe, deceased, late of Marion (by M. Christine Wolfe, administrator); William G. Jobsky, Hopedale, both of Mass., and Thomas P. Smith, Miami, Fla., assignors to Aaron Alarm Systems, Inc., New Bedford, Mass.

Filed Mar. 10, 1982, Ser. No. 356,831

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—566 **13 Claims**



1. A switching device for effecting electrical continuity in an alarm circuit in response to wave motion in a fluid comprising:

a. an elongated member having an open interior chamber adjacent an end thereof and a passage which provides communication between said chamber and the exterior of said device, said elongated member being floatable in said fluid with the top portion of said chamber above the surface of said fluid and with the lower portion of said elongated member extending to a depth of at least two feet beneath the surface of said fluid, whereby said elongated member is responsive to wave motion in said fluid which extends to a depth of at least two feet in said fluid to provide a bobbing effect on said elongated member but it is relatively unresponsive to surface wave motion which is substantially confined to the surface areas of said fluid;

b. a float disposed within said chamber and movable therein in a longitudinal direction with respect to said elongated member in response to bobbing movement of said elongated member, said float being movable in said chamber between lower and upper positions therein; and

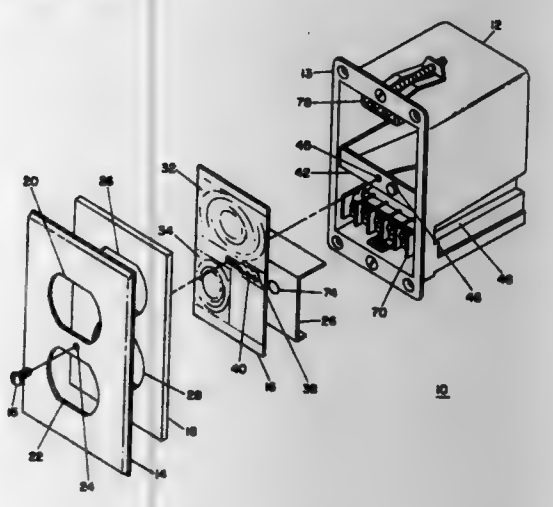
c. sensing means in said chamber responsive to movement of said float from said lower position to said upper position to effect continuity in said alarm circuit.

4,510,488

PASSIVE INFRARED INTRUSION DETECTOR

Herbert N. St. Jean, New Milford, and Richard Settanni, Bethel, both of Conn., assignors to Cerberus AG, Switzerland

Filed Feb. 10, 1982, Ser. No. 347,633
Int. Cl.³ G01J *1/00*
U.S. Cl. 340—567 **19 Claims**



1. An infrared intrusion detector, for mounting within a wall, and arranged to resemble an electrical outlet, comprising:

an enclosure for insertion into an opening in said wall;

a cover plate for mounting to said enclosure, said cover plate having first and second apertures formed therein, said apertures resembling corresponding apertures in an electrical outlet cover plate;

an infrared radiation detector, mounted in said enclosure adjacent said first aperture;

a first light source, mounted within said enclosure adjacent said second aperture; and

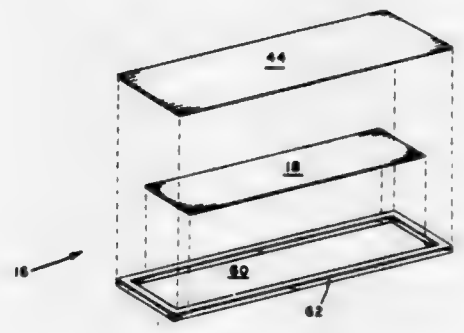
a lens unit, for mounting between said enclosure and said cover plate, said lens unit including a first lens, for focusing infrared radiation from a region of space and passing through said first aperture onto said detector and a second lens, for focusing light emitted by said light source into a light beam corresponding to said region of space.

4,510,489

SURVEILLANCE SYSTEM HAVING MAGNETOMECHANICAL MARKER

Philip M. Anderson, III, Chatham; Gerald R. Bretts, Livingston, both of N.J., and James E. Kearney, New Hyde Park, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 29, 1982, Ser. No. 373,061
Int. Cl.³ G08B *13/26*
U.S. Cl. 340—572 **32 Claims**



1. For use in a magnetic article surveillance system, a marker adapted to (i) mechanically resonate at a single frequency provided by an incident magnetic field applied within an interrogation zone, and (ii) undergo a substantial change in effective magnetic permeability at said frequency that provides said marker with signal identity, said marker comprising a strip of magnetostrictive ferromagnetic material adapted to be magnetically biased and thereby armed to resonate at said frequency, said strip having a magnetomechanical coupling factor, k, greater than 0, where

$$k = \sqrt{(1 - f_r^2/f_a^2)} \ ,$$

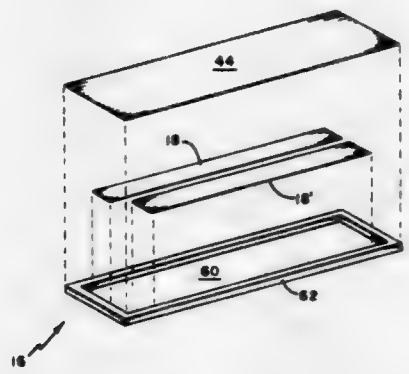
f_r and f_a being the resonant and anti-resonant frequencies, respectively.

4,510,490

CODED SURVEILLANCE SYSTEM HAVING MAGNETOMECHANICAL MARKER

Philip M. Anderson, III, Chatham, N.J.; James E. Kearney, New Hyde Park, N.Y., and Gerald R. Bretts, Livingston, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 373,061, Apr. 29, 1982,. This application Jun. 3, 1982, Ser. No. 384,814
Int. Cl.³ G08B *13/26*
U.S. Cl. 340—572 **33 Claims**



1. For use in a magnetic article surveillance system, a marker adapted to (i) mechanically resonate at preselected frequencies provided by an incident magnetic field applied within an interrogation zone, and (ii) undergo a substantial change in effective magnetic permeability at each of said preselected frequencies that provides said marker with signal identity, said marker

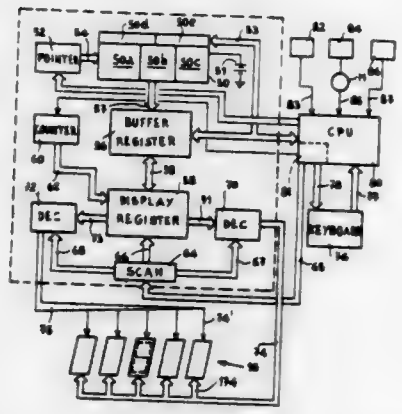
comprising a plurality of strips of magnetostrictive ferromagnetic material, each of said strips being adapted to be magnetically biased and thereby armed to resonate at a single, different one of said preselected frequencies, and having a magnetomechanical coupling factor, k, greater than 0, where $k=\sqrt{(1-f_r^2/f_a^2)}$, f_r and f_a being the resonant and antiresonant frequencies, respectively.

4,510,491

DISPLAY DEVICE FOR PHOTOCOPIERS

Francesco Prato, Vialfré , Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jan. 21, 1982, Ser. No. 341,220
Claims priority, application Italy, Jan. 22, 1981, 67070 A/81
Int. Cl.[3] G09G *3/04*
U.S. Cl. 340—792
7 Claims



1. A display device for displaying control messages on a photocopier, comprising

a microprocessor unit (80) arranged to handle program instructions and including a read only memory (50) permanently loaded with the character codes of said control messages,

a multicell display unit, selectively actuated by said microprocessor to cyclically display said messages,

a display register connected to said display unit to contain said characters to be displayed,

sensing means responsive to predetermined operating conditions of said photocopier for supplying the microprocessor with activations signals,

means cyclically shifting the actuation of the cells of said multicell display unit, each cell being of the seven segment type and adapted to be directly actuated by said character codes, and

a pointer register (52) being activated by said microprocessor at the occurrence of said signals to select successively and cyclically from said read only memory (50) each character code of the message to be displayed at a predetermined rate, the microprocessor being so programmed as

(a) firstly to transfer one selected character code at a time to a buffer register (56) connected between said memory and said display register,

(b) to transfer character code from said buffer register to a corresponding location of the display register and then exchange temporarily the contents of all the locations of said display register back to said buffer register, and again

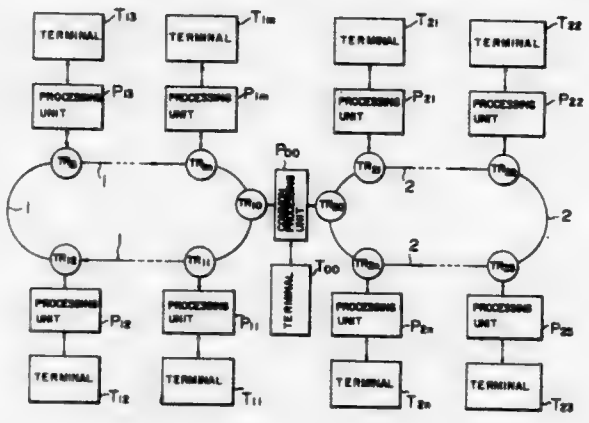
(c) to transfer the contents of the buffer register to the display register in locations shifted by one position whereby all character codes of the message to be displayed are shifted successively and cyclically across the locations of the display register.

4,510,492

MESSAGE COMMUNICATION METHOD AND SYSTEM

Kinji Mori, Kawasaki; Makoto Nohmi, Sagamihara; Shoji Miyamoto, Kawasaki; Hirokazu Ihara, Machida; Hiroshi Matsumaru, Katsuta, and Katuaki Ikeda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,782
Claims priority, application Japan, Apr. 8, 1981, 56-51786
Int. Cl.[3] H04Q *9/00;* H04J *3/08*
U.S. Cl. 340—825.05
6 Claims



1. A message communication method in a network system including a plurality of communication lines a plurality of intra-line equipment blocks and at least one common equipment block, each of said intra-line equipment blocks being connected to one of said communication lines, at least a first one of said communication lines being coupled to at least a second one of said communication lines through a common equipment block which is connected to both of the coupled first and second communication lines, said common equiment block having a first network control unit connected to said first communication line and a second network control unit connected to said second communication line, each message signal to be communicated via the communication lines having a format including a function code signal portion and a data signal portion, the function code signal portion being an index to the meaning of the data signal portion and forming in combination with the data signal portion control data constituting the substance of the message signal, the method comprising the steps of:

registering second function codes and first function codes in said first and second network control units of said common equipment block, respectively, said first and second function codes being indices to the meaning of the data required to be processed in the equipment blocks connected to said first communication lines and said second communication line, respectively;

sending a message signal from any one of said equipment blocks to the communication line to which it is connected;

receiving message signals in said common equipment block from said coupled communication lines;

comparing in said first and second network control units of said common equipment block the function code signal portions of received message signals with those ones of said second and first function codes having been registered in said first and second network control units, respectively, which are indices to the meaning of data required to be processed by one of the equipment blocks connected to one of the coupled communication lines with which said sending equipment block is not connected;

tranferring the received message from one of said coupled communication lines to the other only when said comparison results in concurrence; and

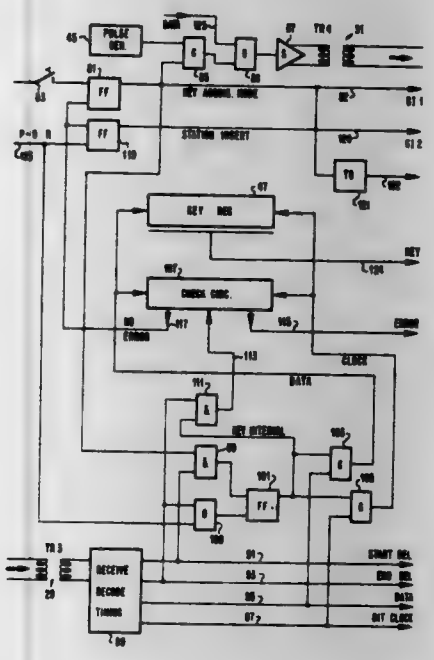
receiving a message signal in any of said equipment blocks only when one of the function codes registered in said receiving equipment block is concurrent with the function code signal portion of the message signal received on the communication line to which the receiving equipment block is connected.

4,510,493

METHOD AND ARRANGEMENT FOR LOCAL ADDRESS ACQUISITION BY A STATION IN A COMMUNICATION SYSTEM

Werner K. Bux, Richterswil; Heinrich J. Keller, Ruschlikon, and Hans R. Mueller, Langnau, all of Switzerland, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,935
Claims priority, application European Pat. Off., Dec. 29, 1981, 81.11.0820.8
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.05 10 Claims



4. Arrangement for loading a local identification key into a station when it is connected to a transmission network by a connecting port, characterized in that it comprises

in said station (FIG. 4, FIG. 5):

means (45, 85, 86, 87) for transmitting an idling signal pattern,

means (81, 82, 129, 131, 135, 137) for generating a key demand indication signal, and

means (47, 101, 103, 105) for storing a local identification key when it is received from said connecting port;

in said connecting port (FIG. 3):

means (51) for storing a local identification key for the respective port,

means (39, 55, 57) for deriving a timing signal from an idling signal pattern received from a station being connected, and

means (43, 53) for reading the local identification key from said storing means under control of said timing signal and for transmitting it to said station when said demand indication signal is received.

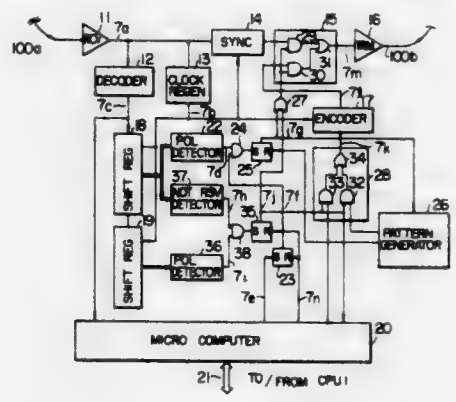
4,510,494

LOOP TYPE DATA HIGHWAY SYSTEM

Sadao Mizokawa; Takuji Hamada; Hiroshi Tomizawa, and Hitoshi Fushimi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,327
Claims priority, application Japan, Jul. 6, 1981, 56-104483
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.05 4 Claims

1. A loop type data highway system in which a plurality of stations are connected in cascade to a loop transmission line so that any station may transmit data on said transmission line to another station in response to receipt of a polling frame inquiring of a need by the station for reservation of said transmission for exclusive use in transmitting data, said polling frame including at least a first polling field and a second field indicating reservation status; wherein each of said stations comprises first means for receiving signals on said transmission line from the station located upstream therefrom on said line and for repeating sequentially the received signals on said transmission line to the station located downstream therefrom on said line; second means responsive to detection of the first field of the polling frame in the received signal to generate a reservation signal pattern indicative of the line being reserved when the station has a need for reservation of the line and for causing said generated reservation signal pattern to be sent out by said first



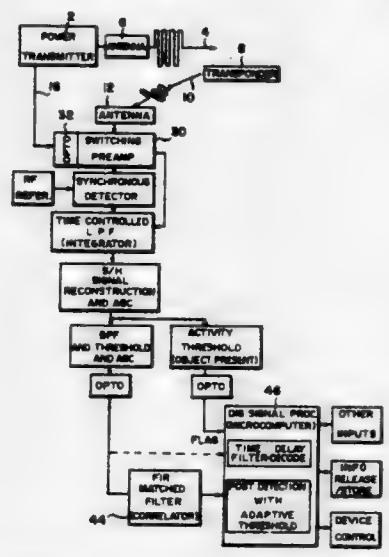
means without delay in place of the second field of the received polling frame on the transmission line downstream of said station; third means for providing data to be sent on said transmission line to another station; and fourth means responsive to detection of the second field of said received polling frame indicative of the line being non-reserved for causing said first means to sent out on said transmission line said data provided by said third means subsequent to the sending out of said generated reservation pattern.

4,510,495

REMOTE PASSIVE IDENTIFICATION SYSTEM

Nick A. Sigrimis, Athens, Greece, and Norman R. Scott, Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,471
Int. Cl.³ H04Q 9/00; G01S 9/56
U.S. Cl. 340—825.54 15 Claims



1. A system for passively identifying remote objects, comprising

(a) power transmitter means for transmitting a plurality of radio frequency burst signals at a given frequency;

(b) passive transponder means associated with the object to be identified, said transponder means producing a plurality of uniquely coded identification signals at said given frequency in response to said burst signals;

(c) receiver means for receiving said uniquely coded identification signals from said transponder means to identify the object; and

(d) time division multiplexing means for alternately operat-

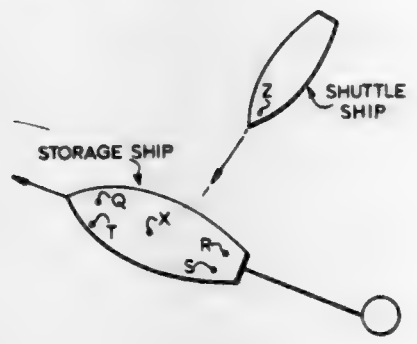
ing said transmitter and receiver means, whereby when the object is to be identified, said transmitter means transmits said burst signals for a limited period of time, thereby activating said transponder means to produce said uniquely coded identification signals, said time division multiplexing means operable to switch off said transmitter means following transmission and to switch on said receiver means to receive said uniquely coded identification signals from said transponder for identifying the object.

4,510,496

BASEBAND RADAR DOCKING SYSTEM

Gerald F. Ross, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,700
Int. Cl.³ G01S *13/14, 13/42, 13/70*
U.S. Cl. 343—5 BD **12 Claims**



1. A system for guiding a vehicle to a predetermined position at a predetermined location comprising:

means on said vehicle responsive to a sequence of first trigger pulses for transmitting a sequence of reference baseband pulse signals;

means on said vehicle and responsive to second trigger pulses for generating a sequence of coded enabling signals;

means on said vehicle responsive to said sequence of first trigger pulses and said coded enabling signals for transmitting a plurality of position baseband pulse signals time delayed with respect to said reference baseband pulse signals by a time delay selected from a plurality of time delays by one of said coded enabling signals;

relay means at said predetermined location for transmitting baseband pulse signals therefrom in response to receptions of said reference baseband pulse signals and said position baseband pulse signals;

ranging means coupled to said code generator means and to receive said baseband pulse signals from said relay means for providing signals representative of transit times between said transmission of said position baseband pulse signals and said signals received from said relay means; and

means coupled to said ranging means and to said, code generator means for processing said transit time signals from said ranging means to determine relative positions of said vehicle with respect to said predetermined location and for providing said trigger pulses for altering said coded enabling signals upon reception of a transit time representative signal.

4,510,497

RAMARK BEACON APPARATUS

Kazuo Onozawa, Tokyo, Japan, assignor to OKI Electric Industry Co. Ltd., Japan

Filed Jul. 13, 1982, Ser. No. 397,691
Claims priority, application Japan, Jul. 20, 1981, 56-112312
Int. Cl.³ G01S *7/22, 13/80*
U.S. Cl. 343—5 EM **5 Claims**

1. A remark beacon apparatus for providing a marker line on a radar screen comprising:

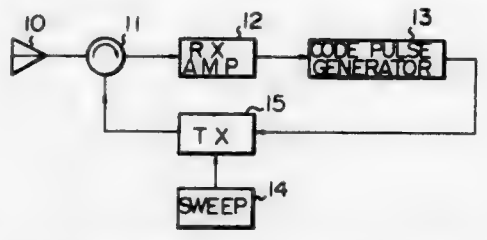
a transmitter,

a code pulse generator for providing a predetermined code to said transmitter to amplitude-modulate the same, and

an antenna coupled with said transmitter, characterized in that

a receiver coupled with said antenna is provided, and

said code pulse generator is operative to be initiated every



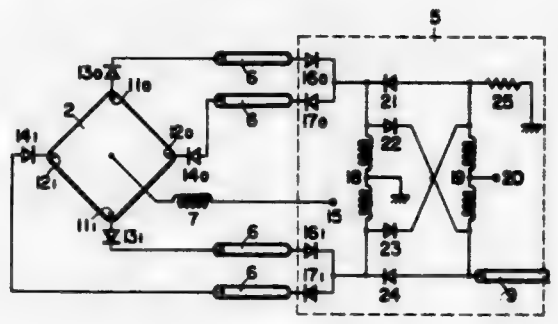
time said receiver provides a received radar pulse to said code pulse generator so that the code pulse is synchronized with the radar pulse, said code pulse having almost the same pulse repetition period as that of the radar pulse, said code pulse generator further being operative such that said code pulse continues until the next radar pulse is received, and said code pulse transmits a basic code repetitively.

4,510,498

PLATE ANTENNA FOR DIRECTION FINDER

Kenzo Mori; Hyo Yasuda, both of Tokyo, and Minoru Suzuki, Yamato, all of Japan, assignors to Taiyo Musen Co. Ltd., Tokyo, Japan

Filed Mar. 14, 1983, Ser. No. 475,358
Claims priority, application Japan, Dec. 14, 1982, 57-217886
Int. Cl.³ G01S *5/04*
U.S. Cl. 343—435 **3 Claims**

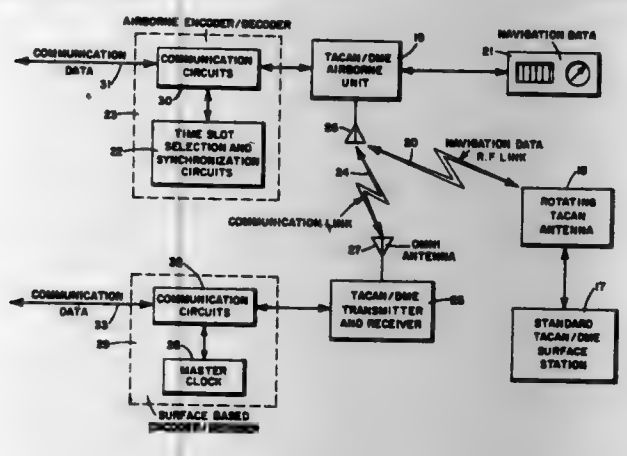


1. An antenna device for a direction finder comprising an electrically conductive base plate connected to a ground, an electrically conductive plate of a configuration symmetrical with respect to a central point thereof, which is disposed in parallel with the base plate with a predetermined space maintained between said base plate and said conductive plate, a plurality of pairs of connecting portions provided around the periphery of said electrically conductive plate so that one portion in each pair of the connecting portions is provided at a position opposite to the other portion in the pair with respect to the central point of said electrically conductive plate, and an electronic switch sequentially transferring the connection with the connecting portions such that one in each pair of the connecting portions thus transferred is grounded through a resistor having a resistance substantially equal to a characteristic impedance of said electrically conductive plate while the other in the pair is connected to a receiver through a cable having an impedance substantially equal to the characteristic impedance.

4,510,499
TACAN DATA LINK SYSTEM

John P. Chisholm, Olympic Valley, Calif., and Donald G. Morgan, Reston, Va., assignors to Vega Precision Laboratories, Inc., Vienna, Va.

Filed May 7, 1981, Ser. No. 261,619
Int. Cl.³ H04B 7/00
U.S. Cl. 343—456 52 Claims



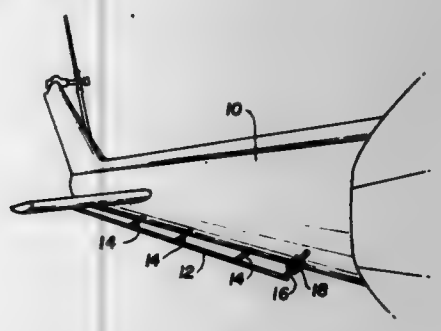
1. In a navigation system having a plurality of remote stations each having a navigational unit for transmitting to and receiving replies from a corresponding master navigational station to obtain navigational information on a corresponding navigational channel, a communication system having a master communication station for transmitting communication information to and receiving communication information from said remote stations on a common communication channel different than each of said corresponding navigational channels, said communication system comprising:

tuning means at each of said remote stations for momentarily tuning its navigation unit from its corresponding navigational channel to said common communication channel during a synchronized assigned discrete time interval and then back to its navigational channel whereby only a single remote station communicates during its assigned time interval.

4,510,500
AIRCRAFT SHORTED LOOP ANTENNA WITH IMPEDANCE MATCHING AND AMPLIFICATION AT FEED POINT

John F. Brune, Tinton Falls, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 28, 1983, Ser. No. 461,766
Int. Cl.³ H01Q 1/28
U.S. Cl. 343—708 15 Claims



1. An active antenna system coupled to remotely located radio apparatus comprising:

an electrically short antenna element having an inductive electrical characteristic mounted on a ground plane and including a feedpoint;

capacitance means, variable in accordance with the application of an electrical voltage signal thereto, coupled to said feedpoint for electronically tuning the antenna element to resonance at a selected operating frequency, said voltage variable capacitance means comprising sets of voltage variable capacitors selectively connected together in parallel with said antenna element to provide different values of composite capacitance for tuning the antenna element and being physically located in close proximity to said feedpoint;

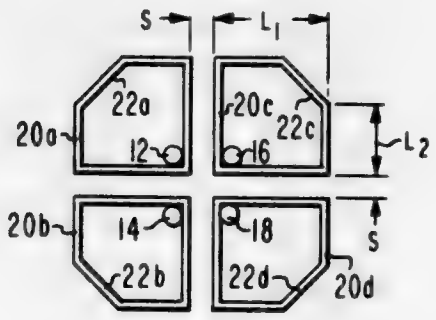
means for controlling the amplitude of the electrical voltage signal applied to said capacitance means, said voltage controlling means being remotely located from said feedpoint; and

RF amplifier means coupled between said feedpoint and said radio apparatus for amplifying high frequency electrical signals derived from said antenna element, said RF amplifier means being physically located in close proximity to said feedpoint.

4,510,501
BROADBAND LOOP ANTENNA WITH LOW WIND RESISTANCE

Oakley M. Woodward, Jr., Princeton, N.J., and Milton P. Greaves, Jr., Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 19, 1983, Ser. No. 496,311
Int. Cl.³ H01Q 11/14
U.S. Cl. 343—742 14 Claims

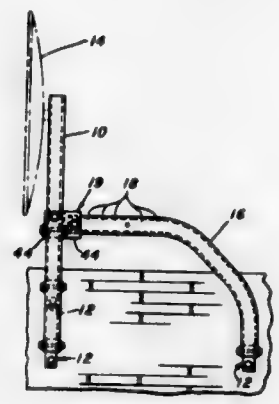


1. An antenna comprising a reflector, a feed means extending generally perpendicular from said reflector, and four truncated square loops coupled to said feed means, each of said loops having a truncated corner opposite said feed means.

4,510,502
DISH ANTENNAE MOUNTING STRUCTURE

Lyle W. Hovland, Murrysville, and James D. Klingensmith, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 7, 1983, Ser. No. 473,018
Int. Cl.³ H01Q 1/22
U.S. Cl. 343—880 9 Claims



1. A lightweight mounting structure combination for dish antennae comprising:

an upright vertically extending mast for supporting said dish antennae, said mast having an upper end for attachment to

said dish and a lower end for anchoring to a rigid-type structure;

a bent strut having a lower end for anchoring to a rigid-type structure and an upper end for attachment to said mast;

a second strut having a lower end for anchoring to a rigid-type structure and an upper end for attachment to said mast;

means for anchoring the respective ends of the mast, the bent strut and the second strut to the rigid-type structure, said means including for each respective lower end an anchor bracket, a threaded bolt having a shank portion for extending through said bracket and respective lower end, and a nut threaded on said bolt for drawing said anchor bracket and respective lower end tightly together, said bolt, nut, anchor bracket and respective lower end cooperating to indicate to one tightening the nut and bolt when a predetermined extent of tightness is attained, said predetermined extent of tightness being characterized by said respective lower end having undergone a predetermined extent of deformation such that relative movement between the bracket and respective lower end is minimized;

means for attaching the upper ends of the bent strut and the second strut to the mast's midsection, said means including a bracket, a threaded bolt having a shank portion for extending through the respective upper end and at least a portion of the bracket and a nut threaded on said bolt for drawing said bracket and respective upper end tightly together, said bolt, nut, bracket and respective upper end cooperating to indicate to one tightening the nut and bolt when a predetermined extent of tightness is attained, said predetermined extent of tightness being characterized by said respective upper end having undergone a predetermined amount of deformation such that relative movement between the bracket and respective strut is minimized;

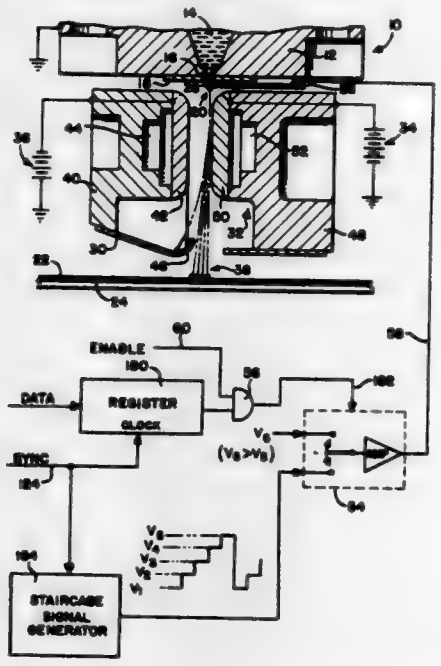
the anchoring and attaching means allowing the mounting structure to be mounted on vertically and horizontally extending rigid-type structures, and on structures disposed at all angles in between.

4,510,503

INK JET PRINTER CONTROL CIRCUIT AND METHOD

Suresh C. Paranjpe, Dallas, and Robert B. McJohnson, Pilot Point, both of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 25, 1982, Ser. No. 392,195
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **19 Claims**



1. In an ink jet printer having an electromechanical transducer for mechanical stimulation of jet drop stream breakup and at least one charge electrode driver which, when enabled, provides drop charging signals to at least one charge electrode for selectively charging drops in a jet drop stream, said printer including a transport for moving a print receiving medium past a print station, a circuit for providing print enable signal pulses to said charge electrode driver and for providing a drop clock signal pulse train to said electromechanical transducer, comprising:

oscillator means for producing a drop clock signal pulse train for application to said electromechanical transducer,

edge detector means, responsive to said drop clock signal pulse train, for providing an edge detection pulse at the leading edge of each pulse in said drop clock signal pulse train,

means for providing a synchronization signal in dependence upon the speed at which a print receiving medium is transported past said print station, said synchronization signal consisting of a train of synchronization pulses, each such pulse signifying an increment of movement of said medium, and

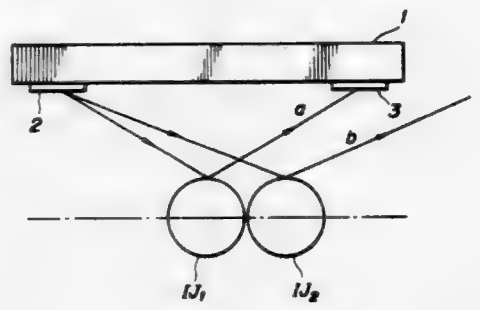
state controller means, responsive to edge detection pulses and to said synchronization signal, for providing a print enable pulse only upon receipt of the first edge detection pulse next following receipt of each synchronization pulse.

4,510,504

METHOD AND DEVICE FOR DETECTING DEFLECTION AMOUNT OF INK JET IN INK JET PRINTER

Masayoshi Tamai; Tetsuo Iyoda, and Yukihisa Koizumi, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1983, Ser. No. 538,565
Claims priority, application Japan, Oct. 7, 1982, 57-176625
Int. Cl.³ G01D *15/18*; G01V *9/04*
U.S. Cl. 346—75 **8 Claims**



1. A method for detecting a deflection amount of ink jets in an ink jet printer comprising the steps of projecting light upon a flying ink drop, and detecting a deflection amount of said ink drop on the basis of behavior of the light reflected by said ink drop.

4,510,505

THERMAL PRINTER

Hiroshi Fukui, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,555
Claims priority, application Japan, Jul. 3, 1981, 56-103235
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **12 Claims**

1. A thermal printer, comprising:

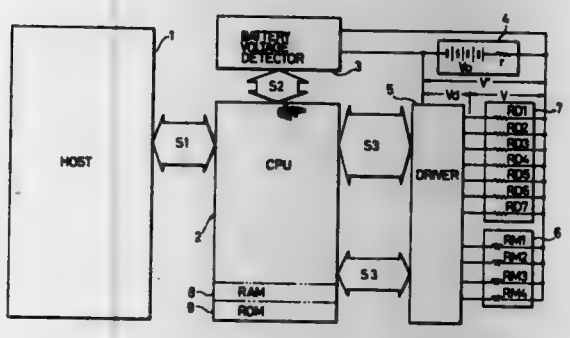
a thermal head having a plurality of heating elements;

a power supply for supplying power to said thermal head;

power supply voltage detecting means for detecting a voltage of said power supply a predetermined number of times; and

control means for determining an average voltage of the voltages detected by said power supply voltage detecting

means the predetermined number of times, and for controlling the heating value of said thermal head in accor-



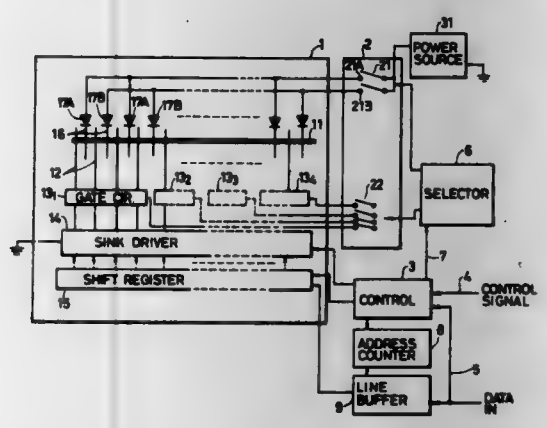
dance with said average voltage and the number of heating elements of said thermal head to be simultaneously heated in accordance with predetermined print data.

4,510,506

RECORDING APPARATUS

Haruhiko Moriguchi; Fujio Moriguchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1982, Ser. No. 440,055
Claims priority, application Japan, Nov. 6, 1981, 56-177131
Int. Cl.³ G01D *15/10, 15/24*
U.S. Cl. 346—76 PH **12 Claims**



1. In a printer of the type in which successive lines of data are printed successively by a print means onto a print medium, the direction on said medium from line to successive lines being the sub-scanning direction, said printer further being of the type having means for scanning said print means relative to said print medium in said sub-scanning direction at a first normal speed and a second faster than normal speed for printing lines having data to be printed and for skipping lines having no data to be printed, respectively, the improvement comprising,

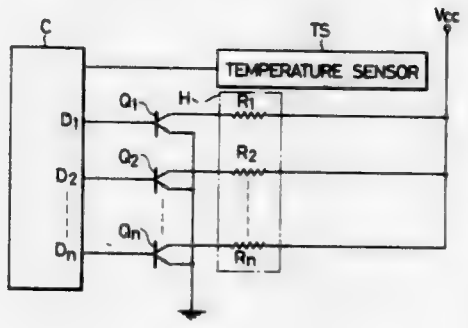
first means responsive to a plurality of successive lines of data for detecting for each said line of data the presence or absence of data to be printed, second means responsive to said first means for causing said scanning means to scan in said sub-scanning direction at said second speed for each line having an absence of data which is followed by a predetermined number of successive lines having an absence of data, and to scan at said first speed for all other lines of data.

4,510,507

THERMAL RECORDING APPARATUS

Yuji Ishikawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 516,963
Claims priority, application Japan, Aug. 5, 1982, 57-135757; Aug. 10, 1982, 57-137918
Int. Cl.³ A05B *1/00*
U.S. Cl. 346—76 PH **5 Claims**



1. A thermal recording apparatus, comprising:

a thermal head including a plurality of heating elements arranged in a first direction for recording information on a thermal recording medium; and

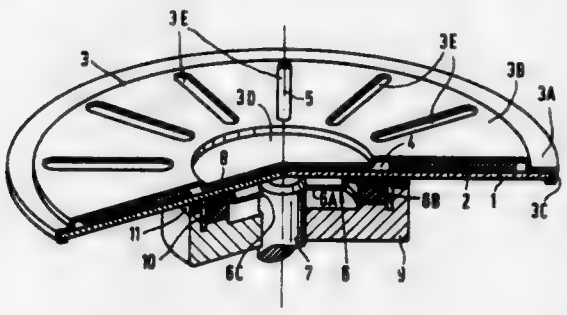
control means for controlling said thermal head, wherein said control means (a) applies first recording pulses of a predetermined voltage and a predetermined width to said thermal head in response to input picture signals upon scanning of said plurality of heating elements in the first direction, (b) counts the number of said first recording pulses applied to said thermal head, and (c) applies to said thermal head second recording pulses, having one of the voltage and width thereof different from that of said first recording pulses, in response to the counted number of said first recording pulses when said thermal head is scanned in a second direction different from the first direction and is further scanned in the first direction.

4,510,508

OPTICAL DISC PRESSURE-COLLAPSIBLE COVER

Peter J. M. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,530
Claims priority, application Netherlands, Feb. 9, 1983, 8300478
Int. Cl.³ G01D *15/34*; G11B *7/24*
U.S. Cl. 346—135.1 **5 Claims**



1. An optically readable information storage disc comprising a transparent disc-shaped substrate, a recording layer disposed on the substrate, said layer being locally modifiable by a beam of radiation, and a cover disc secured to said substrate in a substantially gas-tight manner and having a portion which is spaced from at least that part of said recording layer on which information is to be recorded so as to form a sealed space therebetween, said cover disc being sufficiently flexible so that its resistance to deformations due to differences between gas pressure in said sealed space and ambient barometric pressure

is substantially lower than that of said substrate so as to reduce deformations of said substrate due to said pressure differences.

4,510,509

INK EJECTION HEAD

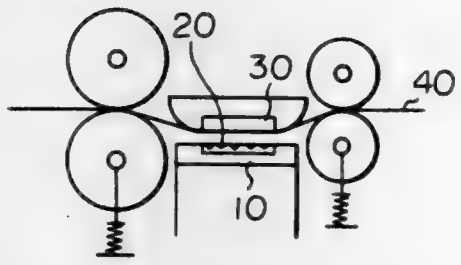
Masanori Horike, Tokyo; Tatsuya Furukawa; Takuro Sekiya, both of Yokohama; Yutaka Ebi, Kawasaki; Takuro Isayama, and Masaaki Tachiki, both of Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,530

Claims priority, application Japan, Mar. 9, 1982, 57-37007; Mar. 9, 1982, 57-37008

Int. Cl.[3] G01D *15/18*

U.S. Cl. 346—140 R 5 Claims



1. An ink ejection head for an ink jet printer which prints out data on a sheet of paper by ejecting droplets of ink under the effect of an electric field, comprising:

a nozzle plate;

a plurality of nozzles formed through said nozzle plate to form a matrix in the widthwise direction and feed direction of the sheet;

a plurality of first electrodes each being integrally located on the inner periphery of one of the nozzles adjacent to an ink ejection port thereof, said first electrodes facing the sheet;

a plurality of lead terminals each being commonly connected to the first electrodes which are integral with the nozzles which form an array in the sheet feed direction;

a plurality of second electrodes each being commonly connected to the nozzles which form an array in the widthwise direction of the sheet, said second electrodes being located at the rear of the first electrodes; and

a counter electrode assembly positioned in front of the first electrodes and at the back of the sheet, said counter electrode assembly constituting a third electrode;

each nozzle ejecting droplets of ink in response to first, second and third predetermined voltages applied to the first electrode and second electrode associated with said nozzle and the third electrode respectively.

4,510,510

INKJET PRINTER

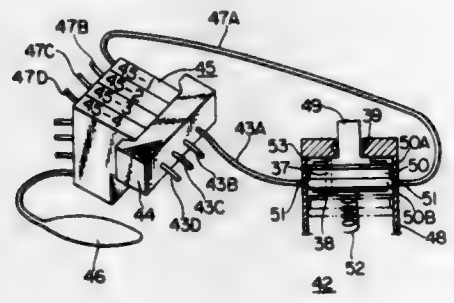
Koji Terasawa, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,744

Claims priority, application Japan, Apr. 13, 1982, 57-61528; Apr. 13, 1982, 57-61529; Apr. 13, 1983, 57-61530

Int. Cl.[3] G01D *15/18*

U.S. Cl. 346—140 R 9 Claims



1. An inkjet printer comprising:

a plurality of storing means storing inks of different colors;

a plurality of recording means for ejecting the inks stored in said storing means;

a plurality of air suction paths which are disposed in correspondence with said storing means for drawing air in said storing means and which are independent from each other and do not communicate with each other; and

single suction means for drawing by suction the air from said storing means through said air suction paths in a suction mode, and for sealing said air suction paths to seal communication between said air suction paths in a non-suction mode.

4,510,511

PICTURE RECORDING METHOD AND APPARATUS

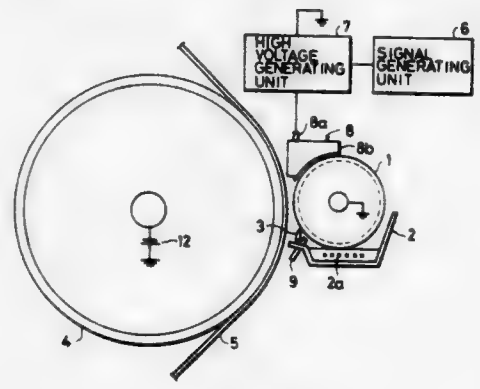
Makoto Akutsu, Saiwai-cho 7-10, Kuroiso-shi, Tochigi-ken, Japan

Filed Oct. 6, 1983, Ser. No. 539,609

Claims priority, application Japan, Oct. 6, 1982, 57-175752

Int. Cl.[3] G01D *15/18*; B41L *13/08*

U.S. Cl. 346—140 R 8 Claims



1. A picture recording method comprising a step for supplying an ink containing an evaporable coloring matter to an ink transporting means, a step for cooling said ink below the melting point of the bonding agent of said ink, and a step for applying a discharge energy controlled by the picture information to the ink on said ink transporting means brought to a predetermined position in order to evaporate the evaporable coloring matter of the ink and in order to fly said coloring matter to a recording medium opposedly disposed near said ink transporting means and in order to thereby form a picture on said recording medium.

4,510,512

HEAT-SENSITIVE RECORD MATERIAL

Tosaku Okamoto, Osaka; Tomoyuki Okimoto, Amagasaki, and Katsuhiko Ishida, Takatsuki, all of Japan, assignors to Kanzaki Paper Manufacturing Company, Limited, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,266

Claims priority, application Japan, Dec. 25, 1981, 56-214692; Feb. 22, 1982, 57-27818; Jul. 5, 1982, 57-118090

Int. Cl.[3] B41M *5/18*

U.S. Cl. 346—209 19 Claims

1. A heat-sensitive record material for use with an infrared laser containing

(a) a color forming material,

(b) a color developing material, and

(c) a light absorbing material selected from the group consisting of (1) natural silicate compounds selected from the group consisting of the olivine group, garnet group, pyroxene group, amphibole group, serpentine group, plagioclase series of fledspar group, feldspathoid group, willemite, phenacite, zircon, cyanite and benitoite, (2) synthetic silicate compounds comprising, as the metal element, at least one of the bivalent or trivalent metal elements selected from the group consisting of magnesium, calcium, zinc, barium, aluminum, tin, lead, manganese, iron, nickel

and cobalt and baked at a temlperature of at least 500° C., and (3) baked products obtained by baking a zinc compound and a clay mineral at a temperature of at least 500° C., and

(d) the color forming material, color developing material and light absorbing material being dispersed in a binder resin and a color being formed when at least one of the color forming material and color developing material melts by heat.

4,510,513

HEAT SENSITIVE RECORD SHEET

Masahiko Yamaguchi; Michihiro Gonda; Yutaka Satoh, and Mikiko Kanasugi, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1983, Ser. No. 513,344
Claims priority, application Japan, Apr. 14, 1983, 58-64569
Int. Cl.³ B41M *5/18, 5/22*
U.S. Cl. 346—214 **4 Claims**

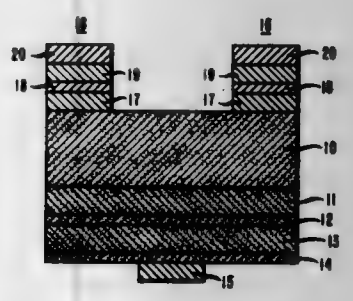
1. A heat sensitive record sheet which comprises a substrate having a coated layer comprising 2-anilino-3-methyl-6-dibutylaminofluoran.

4,510,514

OHMIC CONTACTS FOR SEMICONDUCTOR DEVICES

Irfan Camlibel, Stirling, and Aland K. Chin, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 8, 1983, Ser. No. 521,443
Int. Cl.³ H01L *23/54*
U.S. Cl. 357—17 **5 Claims**



1. An indium-containing semiconductor device, including an ohmic contact to a surface of the device comprising:

an alloy region comprising indium, gold and tin formed in the said surface of the device; a layer comprising chromium formed over the alloy region; and a layer comprising gold formed over the chromium layer.

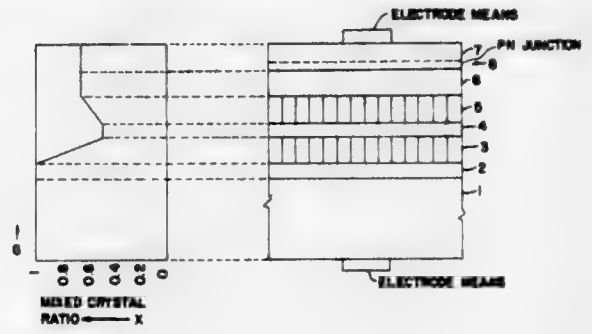
4,510,515

EPITAXIAL WAFER OF COMPOUND SEMICONDUCTOR DISPLAY DEVICE

Masaki Kajita, Hatano; Tomio Nakaya, Yokohama; Shinichi Hasegawa, and Hisanori Fujita, both of Tsuchiura, all of Japan, assignors to Stanley Electric Co., Ltd. and Mitsubishi Monsanto Chemical Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 229,197, Jan. 28, 1981,. This application Feb. 10, 1984, Ser. No. 578,600
Int. Cl.³ H01L *29/161, 29/205, 33/00*
U.S. Cl. 357—17 **2 Claims**

1. In an epitaxial GaP wafer green light-emitting display device, comprising (a) a single crystalline semiconductor substrate consisting of GaP, (b) an active layer of N-doped GaP having a PN junction therein, (c) a GaP epitaxial layer formed on said single crystalline semiconductor substrate, and (d) electrode means coupled to said active layer for applying a voltage across said P-N junction, the improvement comprising a light-absorbing layer disposed between the GaP epitaxial layer and the active layer, said light-absorbing layer consisting of $GaAs_{1-x}P_x$ having a mixed crystal ratio (x) of 0.6 or less, a first graded epitaxial layer consisting of $GaAs_{1-x}P_x$ and formed between said light absorbing layer and said active layer, the mixed crystal ratio (x) of said $GaAs_{1-x}P_x$ first graded epitaxial layer continuously increasing in a growth direction extending from said substrate to said active layer, and



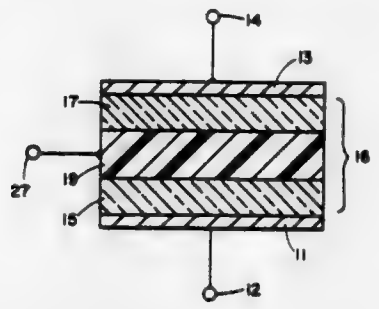
a second graded epitaxial layer consisting of $GaAs_{1-x}P_x$ and formed between said light-absorbing layer and said GaP epitaxial layer, the mixed crystal ratio (x) of said second graded $GaAs_{1-x}P_x$ epitaxial layer continuously decreasing in said growth direction.

4,510,516

THREE-ELECTRODE MOS ELECTRON DEVICE

Dirk J. Bartelink, 391 San Domingo Way, Los Altos, Calif. 94022

Filed Feb. 1, 1982, Ser. No. 343,954
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—23.1 **21 Claims**



1. A three-terminal, two-port circuit element comprising,

first and second spaced-apart conductive electrodes disposed in a capacitive relationship, the electrodes terminating in respective first and second electrical terminals,

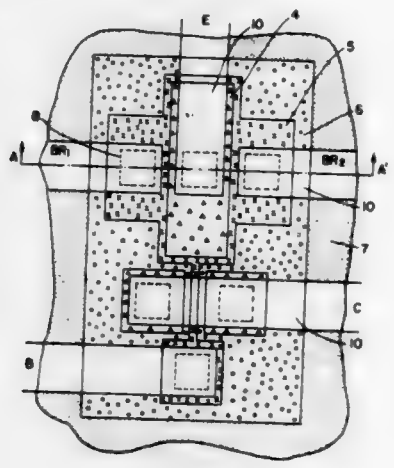
a semiconductor control electrode spaced between the first and second electrodes in a dielectrically insulated relation, the semiconductor control electrode connected to a third electrical terminal and having a thickness dimension such that two opposed depletion zones may be formed by electric fields in the semiconductor control electrode one proximate to each of the conductive electrodes, and

voltage supply means connected to the first, second and third terminals for forming and controlling said two opposed depletion zones in the semiconductor control electrode so that they proximately approach and recede from each other corresponding to charge depletion and accumulation, two of the three terminals combined into each of two circuits forming input and output ports permitting a.c. current flow in circuits connected to said terminals.

4,510,517
ELECTRONICALLY CONTROLLED VARIABLE SEMICONDUCTOR RESISTOR

Kenzo Tanabe, Katano, and Keiichiro Shimizu, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 14, 1982, Ser. No. 449,732
Claims priority, application Japan, Dec. 15, 1981, 56-202713
Int. Cl.[3] H01L *29/72*
U.S. Cl. 357—34 7 Claims



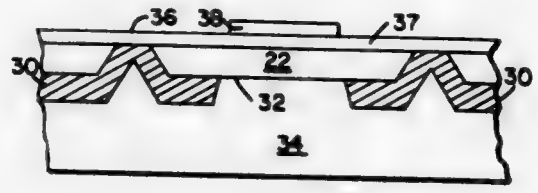
1. An electronically controlled variable semiconductor resistor comprising a semiconductor of a first conductivity type forming an emitter region having a high carrier density, a semiconductor of a second conductivity type which is opposite to said first conductivity type forming a base region adjoining said emitter region and having a lower carrier density than said emitter region, and a semiconductor of said first type of conductivity forming a collector region adjoining said base region, wherein said base region adjoining said emitter region is respectively expanded in a first direction on one side thereof and a second direction on another side thereof, said expanded base regions being respectively provided with two resistive electrodes for using said base region adjoining said emitter region as a resistor; and wherein said base region adjoining said emitter region is also expanded in a third direction at a different side thereof so as to have a high impedance, said expanded portion being provided with a base electrode for enabling the application of a forward bias to said base region and said emitter region; and wherein said emitter region and collector region are respectively provided with an emitter electrode and a collector electrode.

5. An electronically controlled variable semiconductor resistor comprising a semiconductor of a first conductivity type forming an emitter region of a high impurity carrier density, a semiconductor of a second conductivity type which is opposite to said first conductivity type forming a base region adjoining said emitter region and having a lower impurity carrier density than said emitter region, and a semiconductor of said second conductivity type forming a collector region adjoining said base region and having lower impurity carrier density than said emitter region, wherein a width of said base is made sufficiently small to allow minority carriers which are injected from said emitter region to said base region to reach said collector region almost without disapperaring; and wherein said collector region adjoining said base region is respectively expanded in a first direction on one side thereof and a second direction on another side thereof, said expanded collector regions being respectively provided with two resistive electrodes for using said collector region adjoining said base region as a resistor; and wherein said collector region adjoining said base region is also expanded in a third direction at a different side thereof, said expanded portion being provided with a collector electrode; and wherein said base region and emitter region are respectively provided with a base electrode and an emitter electrode.

4,510,518
DIELECTRIC ISOLATION FABRICATION FOR LASER TRIMMING

N. W. VanVonno, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 518,725, Jul. 29, 1983, Pat. No. 4,468,414.
This application May 9, 1984, Ser. No. 608,507
Int. Cl.[3] H01L *27/12, 27/02, 10/00;* B23K *9/00*
U.S. Cl. 357—49 1 Claim

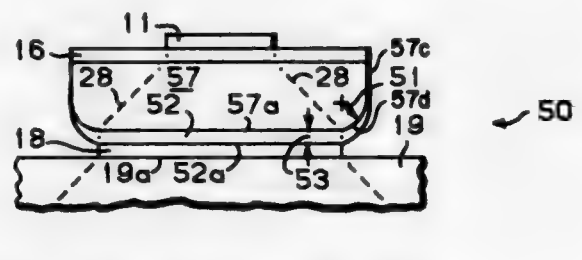


1. An integrated circuit with a thin film resistor comprising:
a plurality of single crystal islands dielectrically isolated from a polycrystalline support, one or more of which include an opening in the bottom of said dielectric isolation to optically expose a portion of said polycrystalline support from the top surface of said single crystalline island;
an isolation layer on said top surface of said single crystal island; and
a thin film resistor on said surface isolation layer juxtaposed with said opening in said bottom of said dielectric isolation.

4,510,519
ELECTRICALLY ISOLATED SEMICONDUCTOR POWER DEVICE

Jerry M. Dubois, Mesa, and Keith G. Spanjer, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 26, 1982, Ser. No. 362,723
Int. Cl.[3] H01L *23/02, 39/02, 23/30, 29/06*
U.S. Cl. 357—81 13 Claims



1. An electrical device suitable for removable mounting on an external heat sink, comprising:
a metallic heat spreader having a base portion of a first predetermined thickness and a base lead portion of a second predetermined thickness, said base portion having a first surface, a second surface opposed to said first surface, and a side coupled to a portion of said first and second surfaces, wherein said first surface has a device mounting portion and a lead mounting portion, and wherein said side and said second surface are joined by a substantially smooth curved surface having a predetermined minimum radius of curvature;
at least one additional lead, coupled to but electrically isolated from said lead mounting portion of said first surface of said base portion of said heat spreader;
dielectric means, intimately bonded to said second surface and said substantially smooth curved surface, exposed on said second surface, and having a third predetermined uniform thickness on said second surface less than said predetermined minimum radius of curvature.

4,510,520

TELEVISION TRANSMISSION SYSTEM

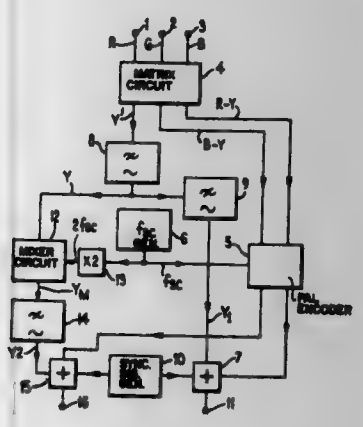
David W. Parker, Redhill, England, and Leendert J. van de Polder, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1983, Ser. No. 456,236

Claims priority, application United Kingdom, Jan. 25, 1982, 8201998

Int. Cl.[3] H04N *9/36*

U.S. Cl. 358—12 9 Claims



1. A high definition color television transmission system comprising means for dividing wide band luminance information into a first luminance portion containing lower frequency components of said luminance information and a second luminance portion containing higher frequency components of said luminance information, means for transmitting said first luminance portion by way of a first transmission path, means for frequency shifting said second luminance portion such that the resulting frequency-shifted second luminance portion lies within the bandwidth of a second transmission path which bandwidth is substantially equal to that of the first transmission path, and means for transmitting the frequency-shifted second luminance portion by way of the second transmission path, characterized in that said first luminance portion has a bandwidth which is narrower than that of said second luminance portion, while a color subcarrier modulated by color information is also transmitted by way of said first transmission path, the color subcarrier being located outside the bandwidth of said first luminance portion but within the bandwidth of said first transmission path, the system being such that the transmissions from the first and second transmission paths may be received together and the first and second luminance portions of the luminance information recombined for reproduction as a high definition color television display or the transmission from the first transmission path may be received alone for reproduction as a color television display of acceptable quality.

4,510,521

CIRCUIT FOR ADJUSTING THE AMPLITUDE OF A COLOR SIGNAL

Jürgen Ruprecht, Norderstedt, and Wolfgang Weltersbach, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

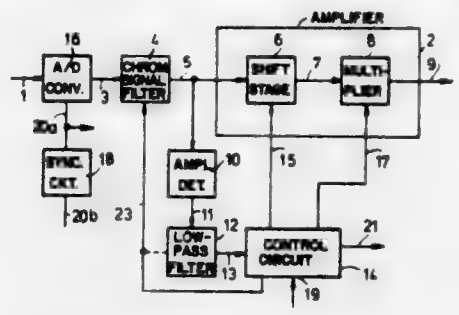
Filed Sep. 10, 1982, Ser. No. 416,726

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136216

Int. Cl.[3] H04N *9/44*

U.S. Cl. 358—27 19 Claims

1. A circuit for adjusting a fixed amplitude ratio between a chrominance signal, separated from a composite television signal, and a luminance signal by means of a variable-gain amplifier, the gain of which being controlled in dependence on the amplitude of a color synchronizing signal, characterized in that said circuit comprises, in addition to said variable-gain amplifier to which said chrominance signal, in the form of binary digitized samples, is applied and which comprises a shift stage for shifting a sample over a controllable integral number of bit positions, and an adjustable multiplier coupled to an output of said shift stage, an amplitude detector for measuring the amplitude of the color synchronizing signal contained in the chrominance signal applied to said variable-gain amplifier, and a control circuit, coupled to an output of said amplitude detector, having means for forming a shift control signal for



said shift stage from the quotient of a predetermined value and a measured amplitude value for said color synchronizing signal, and means for generating a multiplying factor for said adjustable multiplier.

4,510,522

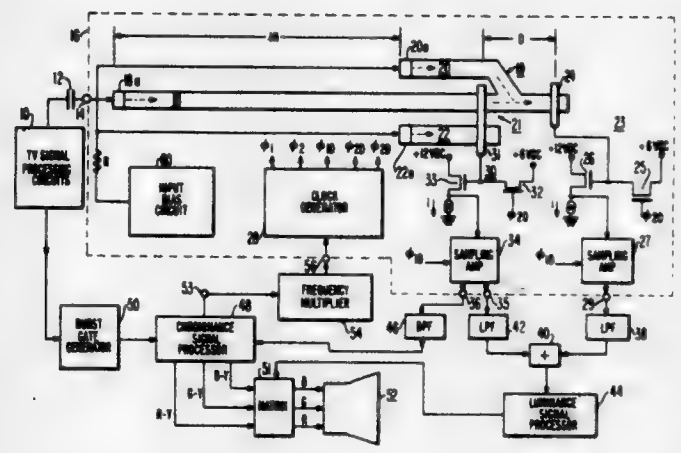
CCD COMB FILTER EMPLOYING FLOATING GATE SUBTRACTOR TECHNIQUES

Dalton H. Pritchard, Princeton, and Donald J. Sauer, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 383,301

Int. Cl.[3] H04N *9/535*

U.S. Cl. 358—31 12 Claims



1. A comb filter for processing a composite video signal containing image representative luminance and chrominance components in a horizontal scanning interval, said luminance and chrominance components disposed within a frequency spectrum in an interleaved relation, said chrominance components alternating in phase between consecutive horizontal intervals, comprising:

a substrate;

a first delay line including a first channel formed in said substrate;

a second delay line including a second channel formed in said substrate;

a floating gate overlying both of said first and second channels;

said first delay line also including a first number of gates overlying said first channel between a first gate thereof and said floating gate;

said second delay line also including a second number, different from said first number, of gates overlying said second channel between a first gate thereof and said floating gate;

first and second input means each responsive to said composite video signal for coupling charge packets representing

samples of said composite video signal to said first and second channels, respectively;

means for applying clock signals to said gates of said first and second delay lines for transferring said charge packets under said gates so that the charge packets of one of said first and second delay lines arrive under said floating gate delayed in time with respect to the charge packets arriving under the gate preceding said floating gate of the other of said first and second delay lines by an amount equal to an integer multiple of said horizontal scanning interval; and

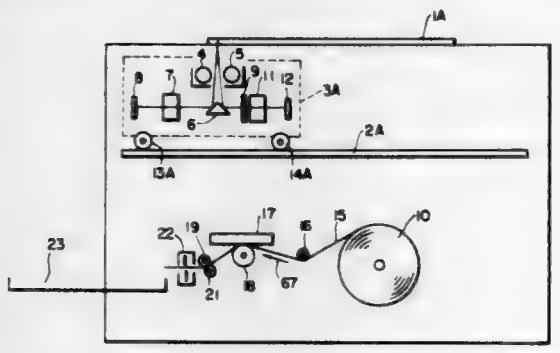
means responsive to said clock signals for periodically clamping said floating gate to a reference potential to sense a voltage at said floating gate when not clamped to said reference potential which is representative of a subtractive combination of said charge packets under said floating gate and said charge packets under said gate preceding said floating gate and thereby representative of said chrominance components of said composite video signal.

4,510,523

TWO-COLOR COPYING MACHINE

Masami Kurata; Toshiharu Inui, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1981, Ser. No. 334,199
Claims priority, application Japan, Dec. 26, 1980, 55-183840
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **18 Claims**



1. A two-color copying machine, comprising:

a platen on which an original document is placed, said original document having an image thereon;

recording signal generation means, including a scanner unit, for reading image data from said original and producing recording signals representing different colors of said image, said scanner unit and platen being mounted for relative movement with respect to one another;

a thermal recording medium which records in a first color when heated to a first temperature range and records in a second color when heated to a second temperature range;

thermal head means responsive to said recording signals for selectively heating portions of said recording medium to temperatures within at least one of said first and second ranges; and

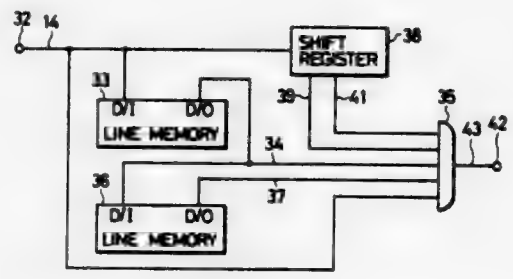
said scanner unit providing output signals representing said image with a resolution of X picture elements per millimeter and said thermal head selectively heating said recording medium at Y locations for every X picture elements, said recording signal generating means including means for varying the value of Y to thereby vary a magnification ratio of said copying machine.

4,510,524

COLOR PICTURE READING SYSTEM

Masami Kurata, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1982, Ser. No. 401,432
Claims priority, application Japan, Jul. 24, 1981, 56-115322
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—80 **8 Claims**



1. A color separation system comprising:

means for electrooptically scanning an original to develop at least one binary first color picture information signal, each bit in said signal corresponding to a picture element of said original and having a first and second value representing first color and not first color, respectively, said signal comprising a successive line of bits representing scanned lines of said picture elements, and

color correction means responsive to said binary first color picture information signal for generating a corrected first color picture information signal wherein certain noise bits of said first value in said uncorrected signal are changed to bits of said second value in said corrected signal, said color correction means comprising:

present bit detecting means for detecting the bit value of the present bit, representing a given picture element, occurring in said uncorrected signal,

previous bit detecting means for detecting the bit values of selected previous bits, representing neighboring picture elements with respect to said given picture element, occurring in said uncorrected signal,

means responsive to said latter two detecting means for correcting said present bit from a first value representing first color to a second value representing the absence of said first color unless said present bit in said uncorrected signal is said first value and selected ones of said previous bits have said first value,

said previous bit detecting means comprises means for detecting the n preceding successive bits in the same scanning line as said present bit and for detecting one bit in each of the preceding m lines, each of said bits in said m lines being in positions in their respective lines corresponding to the positions of said present bit in its line, and wherein said numbers m and n need not be equal.

4,510,525

STEREOSCOPIC VIDEO IMAGERY GENERATION

Gilbert G. Kuperman, and Fred R. Bodine, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 361,016
Int. Cl.³ H04N *3/02*
U.S. Cl. 358—88 **3 Claims**

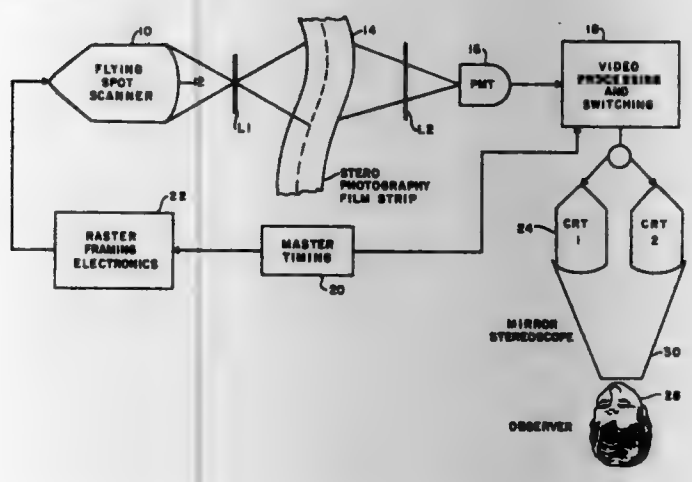
1. A system for generation of stereoscopic video imagery from photographic film which has stereoscopic pairs on first and second separate parallel strips along its length, said system comprising:

flying spot scanner means for producing first and second unmodulated rasters which respectively alternately transilluminate said first and second strips in its film plane to modulate the light; in which the flying spot scanner means includes raster forming means and a single scanner face, wherein the raster forming means generates raster lines at

a double rate, and alternate lines have a lateral offset corresponding to the physical separation between stereo photographic pairs on said first and second strips, to thereby provide said first and second rasters on the single scanner face, with each raster having a given line and frame rate with both horizontal sweep and vertical sweep according to a conventional standard;

light detecting means comprising a single photomultiplier tube for detecting the modulated light;

video processing means coupled to the light detecting means to produce video signals corresponding to the modulated light;



switching means for separating the video signals into first signals which result from illumination of said first strip by the first raster and second signals which result from illumination of said second strip by the second raster, so that said video processing means and said switching means generates two channels of video at said given video field and frame rates, and for supplying the first and second signals to provide imagery respectively on the first display area and the second display area;

means for moving said film through the film plane of the flying spot scanner means so that successive images are illuminated in successive frames; and

stereoscopic means for viewing said first and second display areas.

4,510,526

SURVEILLANCE SYSTEM

John M. Coutta, 22054 La Brisas Cir., Boca Raton, Fla. 33433, and Paul A. Van Dusen, Lithonia, Ga. 30058

Filed Apr. 19, 1983, Ser. No. 486,511
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—108 **3 Claims**

1. A surveillance system comprising:

an elongated track positioned along a path;

a carriage adapted to be supported on and be movable along said track;

electromotive means coupled to said carriage for selectively moving said carriage along said track;

a television camera having a video output signal;

mounting means for pivotally supporting said camera on said carriage about an axis lying along and central to said track, and wherein the direction of view of said camera generally lies along said axis;

pivot drive means interconnected to said mounting means and responsive to a pivot drive signal for rotating said mounting means and thereby said camera about said axis;

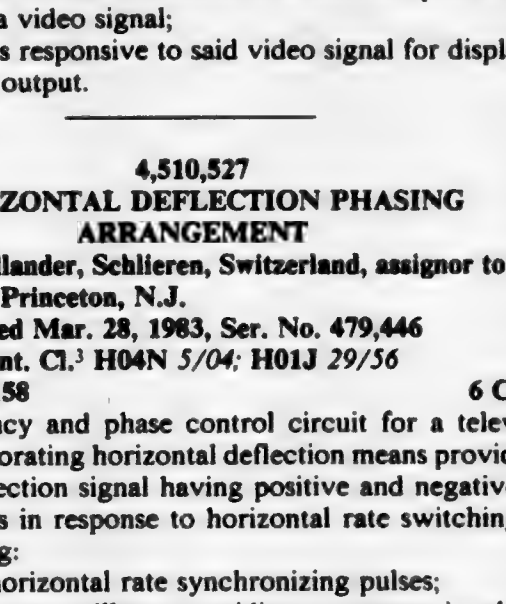
a mirror supported by said mounting means and angularly positionable within a selected range between a position wherein at lest one of its reflective surfaces is normal to the axis of view of said camera and a position wherein a reflective surface is parallel with said axis, and said mirror being positionable to intercept the view of said camera and enabling viewing of a region generally to one side of said axis;

carriage control means coupled to said electromotive means and responsive to a carriage control signal for selectively positioning said carriage, and thereby said camera, along said track;

fixed mounted control means for developing pivot input and carriage control signals;

first wireless transmission means, fixed mounted and responsive to said pivot input and carriage control signals from said control means for developing a first wireless signal modulated by said pivot input and carriage control signals and directing said wireless signal toward said carriage;

first wireless receiving means mounted on said carriage for



receiving said first wireless signals from said first wireless transmission means, demodulating said first wireless signals, and providing pivot input signals to said pivot drive means and carriage control signals to said carriage control means;

second wireless transmission means mounted on said carriage and responsive to said video output signal for developing second wireless signals modulated by said video output signal and transmitting said second wireless signals;

second wireless receiving means, fixed mounted, and including means for receiving said second wireless signals from said second wireless transmission means and providing as an output a video signal;

display means responsive to said video signal for displaying said video output.

4,510,527

HORIZONTAL DEFLECTION PHASING ARRANGEMENT

Willem den Hollander, Schlieren, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 28, 1983, Ser. No. 479,446
Int. Cl.³ H04N *5/04*; H01J *29/56*
U.S. Cl. 358—158 **6 Claims**

6. A frequency and phase control circuit for a television receiver incorporating horizontal deflection means providing a horizontal deflection signal having positive and negative amplitude portions in response to horizontal rate switching signals, comprising:

a source of horizontal rate synchronizing pulses;

a horizontal rate oscillator providing an output signal;

frequency control means responsive to said horizontal rate synchronizing pulses for adjusting the frequency of said horizontal rate oscillator;

means responsive to the occurrence of the zero amplitude

crossing of said horizontal deflection signal for producing zero crossing indicative signal pulses;

synchronizing control means coupled to said horizontal rate oscillator and responsive to said zero crossing indicative signal pulses for providing said horizontal rate switching signals to said horizontal deflection means, said horizontal rate switching signals occurring after a predetermined interval following said zero crossing indicative signal pulses.

4,510,528

SMEAR REDUCTION FOR A TELEVISION PICKUP

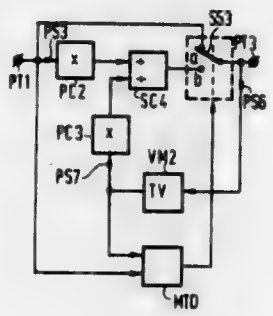
Franciscus H. M. Bergen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 12, 1982, Ser. No. 407,674

Claims priority, application Netherlands, Sep. 4, 1981, 8104103

Int. Cl.³ H04N *5/34*

U.S. Cl. 358—213 **7 Claims**



1. A correction arrangement for reducing smear in a raw television picture signal to produce as an output a corrected television picture signal, said arrangement comprising:

delay means having an input and an output, the input for receiving the corrected television picture signal, the output supplying an output signal which is equal to the corrected television picture signal after a delay of one field period;

comparator means for measuring the difference between the raw television picture signal and the delayed corrected television picture signal, said comparator means producing a first output signal if the measured difference exceeds a preselected threshold value and producing a second output signal if the measured difference is less than the preselected threshold value; and

signal averaging means for producing a corrected output signal in response to the output of the comparator means, said corrected output signal being equal to the raw television picture signal if the output of the comparator means is the first output signal, said corrected output signal being equal to a weighted average of the raw television picture signal and the delayed corrected television picture signal if the output of the comparator means is the second output signal, said corrected output signal being the corrected television picture signal.

4,510,529

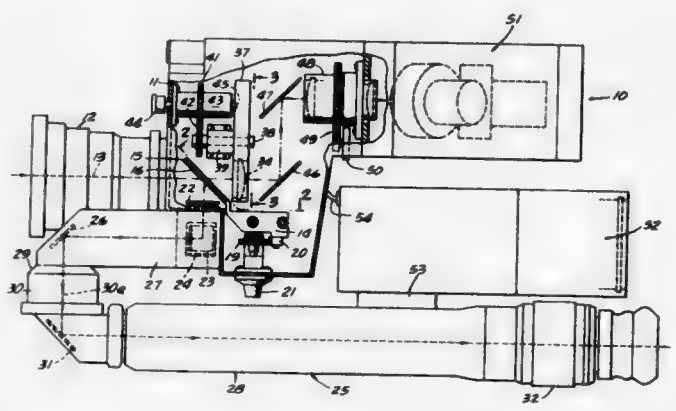
ELECTRONIC CINEMA CAMERA

Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Continuation of Ser. No. 285,157, Jul. 20, 1981, Pat. No. 4,437,126. This application Aug. 19, 1983, Ser. No. 505,594

Int. Cl.³ H04N *5/30*

U.S. Cl. 358—224 **5 Claims**



1. A camera device for electronic cinematography comprising, in combination: a housing, an objective lens assembly removably mounted on said housing and having an optical axis, a fixed mirror in said housing, a movable turret having a plurality of lenses each movable into alignment with said optical axis to transmit light to said fixed mirror, a television camera, an optical viewfinder assembly, a movable iris device optically interposed between said fixed mirror and said television camera, a television monitor connected to receive electrical impulses derived from said television camera, and multi-mode means for transmitting all light from said objective lens assembly to said optical viewfinder assembly in a first mode, and transmitting all light from said objective lens assembly to said television camera in a second mode.

4,510,530

SIGNAL REPRODUCING CIRCUIT FOR A VIDEO TAPE RECORDER

Kuniaki Miura, Yokosuka; Akira Shibata, Katsuta; Jun Yamada, Yokohama, and Katashi Hazama, Zushi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 389,968

Claims priority, application Japan, Jun. 26, 1981, 56-98222; Jan. 11, 1982, 57-1827

Int. Cl.³ H04N *9/48*

U.S. Cl. 358—314 **10 Claims**

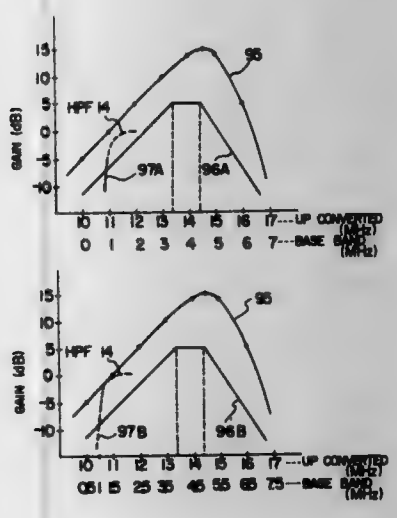
3. A signal reproducing circuit in a video tape recorder comprising in an FM luminance signal circuit,

an up-converter for up-converting a reproduced signal;

a surface acoustic wave filter connected to an output of said up-converter, and said surface acoustic wave filter having a parallel circuit of a first filter for mainly peaking a high frequency component and a second filter for mainly peaking a low frequency component;

a limiter connected to an output of said first filter of said surface acoustic wave filter;

an amplifier connected to an output of said second filter of said acoustic surface wave filter; and



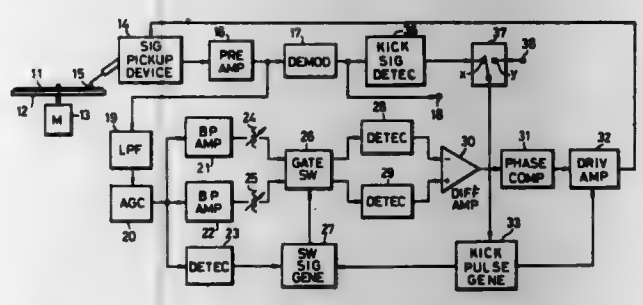
an adder for adding an output of said limiter and an output of said amplifier.

4,510,531

ROTARY RECORDING MEDIUM AND REPRODUCING APPARATUS THEREOF

Hiroyuki Sugiyama, Isehara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 14, 1982, Ser. No. 398,230
Claims priority, application Japan, Jul. 15, 1981, 56-110586
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—342 **6 Claims**



1. A rotary recording medium to be played on a reproducing apparatus having a reproducing element for reproducing recorded signals from the rotary recording medium,

said rotary recording medium having a spiral track made up of a plurality of track turns on which a video signal, a kick instruction signal, and an audio signal are recorded,

said video signal being recorded on the track turns in terms of units, and the video signal of an identical unit being repeatedly recorded in one track turn whereby a still picture reproduction is performed from the track turn when the reproducing element repeatedly scans over the same track turn, and whereby a normal reproduction is performed from the track turns which are scanned by the reproducing element along a predetermined scanning locus,

said kick instruction signal being modulated and causing the reproducing element to shift from one track turn to another track turn, and said kick instruction signal being recorded during vertical blanking intervals of the video signal with an interval which is equal to a predetermined number of units of the video signal and is in accordance with the kind of video signal program source from which the video signal is supplied,

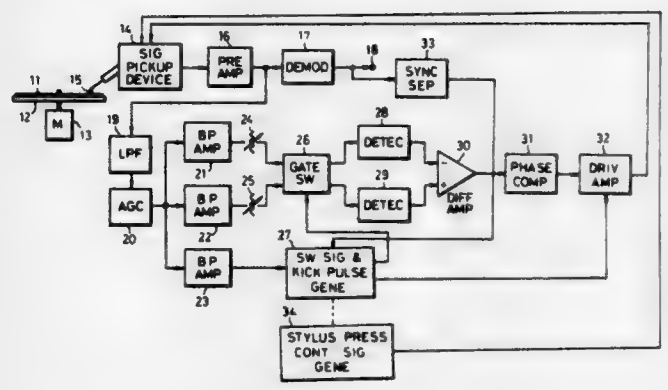
said audio signal being made up of divided audio signal parts each having a duration of one unit of the video signal, said divided audio signal parts being distributively recorded on the track turns so that a continuous audio signal is reproduced by the reproducing element as the reproducing element scans over the track turns along said predetermined scanning locus during the normal reproduction.

4,510,532

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Atsumi Hirata, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Apr. 5, 1983, Ser. No. 482,064
Claims priority, application Japan, Apr. 6, 1982, 57-56970
Int. Cl.³ G11B *3/30*
U.S. Cl. 358—342 **6 Claims**



1. A rotary recording medium reproducing apparatus comprising:

a reproducing stylus for reproducing recorded signals from a rotary recording medium which is recorded with an information signal on a spiral track, by tracing over said spiral track on the rotary recording medium;

reproducing mode setting means for setting a reproducing mode of said reproducing apparatus to a special reproduction mode such as a quick-motion reproduction mode in which said reproducing stylus successively shifts to and traces over adjacent track turns of said spiral track, and a still picture reproduction mode in which said reproducing stylus repeatedly traces over the same track turn of said spiral track, besides a normal reproduction mode in which said reproducing stylus successively and continuously traces over the said spiral track;

stylus pressure control signal generating means for generating a stylus pressure control signal of a voltage having a magnitude in accordance with the set reproducing mode, according to the reproducing mode set by said reproducing mode setting means; and

stylus pressure applying means applied with the stylus pressure control signal generated by said stylus pressure control signal generating means, for applying a stylus pressure to said reproducing stylus.

4,510,533

SYSTEM FOR REPRODUCING A VIDEO SIGNAL IN A SLOW MOTION OR STILL PICTURE REPRODUCTION

Yoshio Tokuyama, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 267,083, May 26, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,881
Claims priority, application Japan, May 26, 1980, 55-69870
Int. Cl.³ G11B *21/10*
U.S. Cl. 360—10.2 **11 Claims**

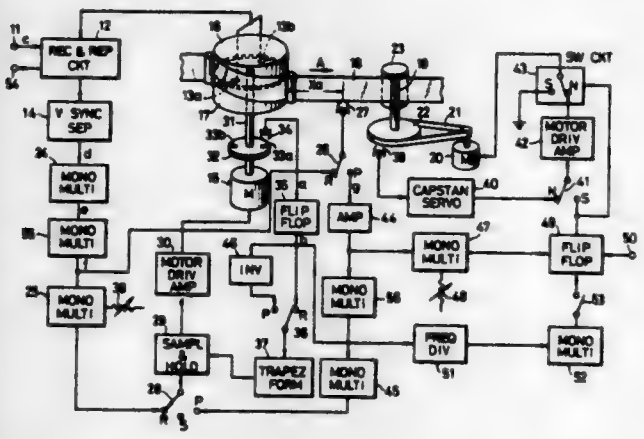
1. A reproducing system for carrying out both a normal reproduction and a still-picture reproduction, said reproducing system comprising:

an elongated tape on which video signals are recorded in a frame format on video tracks extending obliquely with respect to the longitudinal direction of the tape, and on which a control signal is recorded along a control track extending in the longitudinal direction along the tape, said control track and said video tracks having a fixed spatial

relationship with respect to each other along the length of said tape, said video tracks being recorded by a plurality of rotary video head means of a recording system, each of said video head means of the recording system having a gap with a mutually different azimuth angle, control head means in said recording system for recording said control signal along the control track, said control head means of said recording system being positioned at a first and pre-established location which is displaced from a certain location where said video heads of the recording system terminates scanning over a video track on the tape which is running away from the certain location, and said control head recording the control signal without subjecting the control signal to a time delay;

tape transport comprising a capstan rotated by a motor for driving or stopping said tape, said tape being driven to move at a speed which is identical to a moving speed of said tape at a time of recording during the normal reproduction and being stopped during the still-picture reproduction;

first reproducing means comprising a plurality of rotary video head means similar to said plurality of rotary video head means of the recording system for successively scanning over the recorded video tracks to pick up and reproduce the video signals recorded on said tracks, each of said plurality of rotary video head means of said first reproducing means having a gap with said mutually different azimuth angles similar to the gaps of said video head means of the recording system;



second reproducing means including control head means for reproducing the recorded control signal from the control track while the driven tape is moving, said control head means of said second reproducing means being positioned at a location which is displaced by a predetermined distance upstream on the tape with respect to said pre-established location of said control head means of the recording system;

variable delay means enabled only at the time of still-motion reproduction for delaying the reproduced control signal by a first delay time, said first delay time being variable within a specific range so that a reproduced video signal output becomes a minimum value within a vertical blanking period in the video when said rotary video head means of said first reproducing means are actively scanning over said tape at a position where the tape finally stops after having moved due to inertia of said tape transport means, said inertia occurring while the tape is being stopped after said first delay time responsive to said reproduced control signal in order to carry out a still-picture reproduction; and

fixed delay means only at the time of normal reproduction for delaying the reproduced control signal by a second delay time during the normal reproduction, said second delay time corresponding to the time required for said tape to move said predetermined distance

to compensate for a time advancement of the reproduced control signal caused by the control head means of said second reproducing means displaced upstream of the tape by said predetermined distance.

4,510,534

STILL-MODE MAGNETIC REPRODUCING DEVICE

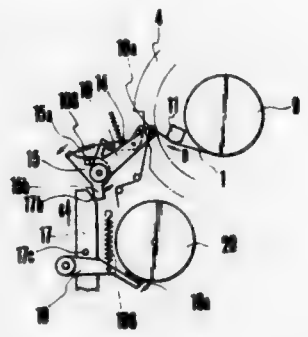
Masaya Maeda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 310,873, Oct. 13, 1981, abandoned. This application Feb. 9, 1984, Ser. No. 578,342

Claims priority, application Japan, Oct. 13, 1980, 55-143242

Int. Cl.³ H04N *5/783;* G11B *15/43*

U.S. Cl. 360—10.3 **31 Claims**



1. A reproduction device for reproducing picture information on a tape in a cassette, comprising:

a tape guide body having a reproducing rotary head and guiding said tape;

tape loading means for pulling said tape out of said cassette and for winding said tape around said guide body, including first and second tape pullout pins for pulling said tape out of said cassette when in contact with said tape;

a loading ring rotatable around the tape guide body for moving said first tape pullout pin;

a loading member attached with said second tape pullout pin;

a moving member for moving said loading member in response to the rotation of said loading ring so as to move said second tape pullout pin in a direction different from said first tape pullout pin;

operation means for instructing still picture reproduction;

tape feeding means for feeding the tape at a constant speed and to stop the tape feeding operation in response to operation of said operation means;

prohibition means for prohibiting the supplying of the tape out from the cassette and rewinding of the tape in response to operation of the operation means; and

tension means for increasing the spring force given to the second guide pin so as to impart tension to the tape between the guide body and the cassette in response to operation of the operation means.

4,510,535

VIDEO INSERT EDITING WITH CONTROL SIGNALS DERIVED OFF TAPE OR FROM THE INSERT

Junsuke Tokumitsu, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Dec. 14, 1982, Ser. No. 449,828

Claims priority, application Japan, Dec. 22, 1981, 56-191414[U]

Int. Cl.³ H04N *5/782;* G11B *27/02*

U.S. Cl. 360—14.2 **5 Claims**

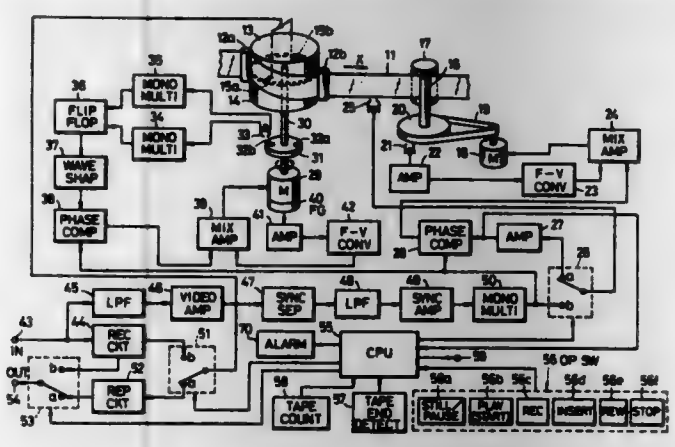
1. A magnetic recording and reproducing apparatus comprising:

editing means for editing and recording a new video signal within a predetermined section of a magnetic tape which has already recorded thereon a video signal on video tracks and a control signal on a control track, respectively;

control signal producing means for producing a new control signal having a frequency identical to that of the recorded control signal;

control signal recording and reproducing means for reproducing the recorded control signal from said magnetic tape while said editing means is operating; and

control signal recording control means for detecting existence of a control signal reproduced by said control signal



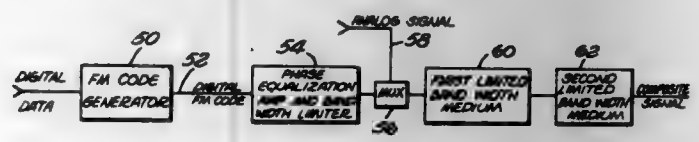
recording and reproducing means, and for supplying the new control signal produced by said control signal producing means to said control signal recording and reproducing means when non-existence of the reproduced control signal is detected, to record said new control signal on the control track of said magnetic tape.

4,510,536

SIGNAL CONDITIONING METHOD AND APPARATUS FOR FM CODE SIGNAL

George K. Tabata, Wilmington, and Raymond Yardy, Irvine, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Jul. 16, 1982, Ser. No. 399,049
Int. Cl.[3] G11B 5/45, 15/02
U.S. Cl. 360—65 3 Claims



1. A method of encoding a digital FM code signal and an analog signal as an FM signal of limited bandwidth without distortion caused by phase distortion introduced in an intermediate recording step and without separate processing of the digital signal between the recording and the encoding, comprising the steps of:

generating the desired FM code signal;

limiting the bandwidth of the FM code signal;

altering the phase equalization of the FM code signal;

recording the bandwidth-limited and phase-equalization-altered FM code signal as an AM signal on a recording track;

recording non-overlapping analog information on said recording track;

recovering the recorded FM code signal and the recorded analog signal, said step of altering the phase equalization being performed such that the phase distortion of said phase-equalization-altered signal occurring during said recording and recovering steps results in a signal having substantially no phase distortion relative to the generated FM code signal; and

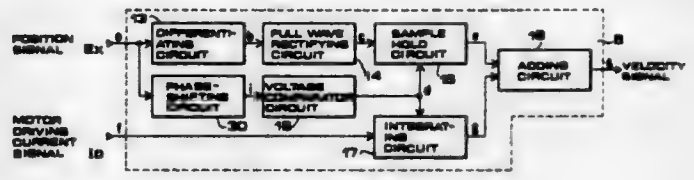
frequency modulating a carrier signal over a predetermined limited bandwidth to thereby encode the recovered FM code signal and the recovered analog signal as an FM signal.

4,510,537

MAGNETIC HEAD MOVING VELOCITY DETECTOR

Shigemasa Yoshida, and Ichiro Araki, both of Kanagawa, Japan, assignors to Computer Basic Technology Research Assoc., Japan

Filed May 3, 1983, Ser. No. 491,185
Claims priority, application Japan, May 4, 1982, 57-74721; Sep. 28, 1982, 57-168733
Int. Cl.[3] G11B 5/55
U.S. Cl. 360—78 16 Claims



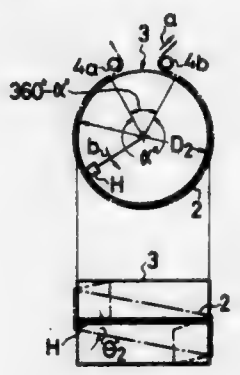
5. A magnetic head moving velocity detector of the type wherein velocity is detected by electrically processing a position signal of a magnetic head, characterized in that said detector comprises a differentiating circuit for differentiating the position signal, a full-wave rectifying circuit for rectifying an output of said differentiating circuit, a sample hold circuit for sampling and holding an output of said full-wave rectifying circuit, delaying means for delaying the position signal, and a timing pulse generating circuit for detecting the level of an output of said delaying means to determine the timing for sampling, the phase delaying characteristic of the transfer characteristic of said differentiating circuit being substantially coincided with the phase delaying characteristic of the transfer characteristic of said delaying circuit.

4,510,538

MAGNETIC RECORDING APPARATUS

Seiji Sato, Yokohama, and Koichi Takeuchi, Kamakura, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,781
Claims priority, application Japan, Dec. 14, 1981, 56-201397
Int. Cl.[3] G11B 5/52
U.S. Cl. 360—84 12 Claims



1. In helical scan type magnetic recording apparatus having a rotary magnetic head with at least one magnetic gap and disposed on a reduced-size guide drum of a diameter D_2 about which a magnetic tape is wound for a wrapping angle α for recording of fields of a video signal having a standard vertical synchronizing frequency f_V in slant tracks on the tape arranged at a recording angle θ_0 with respect to the longitudinal direction of the tape when the tape is advanced at a tape running speed V, with the length of the tracks being l'_N, such that the recorded tape is compatible with standard video playback apparatus having a standard-sized rotary drum of diameter D_1, greater than the diameter D_2, and with the tape being wrapped thereabout for a wrapping angle of substantially 180° and at a still angle of θ_1 with the video signal reproduced from said tape having said standard vertical synchronizing frequency f_V and a standard horizontal scanning frequency f_H, the improvement

wherein said diameter D_2 of the reduced-size guide drum is selected to satisfy the equation

$$D_2 = \frac{1}{\pi} \sqrt{\left(\frac{360^\circ}{\alpha} \cdot f_N\right)^2 + \left(\frac{V}{f_V}\right)^2 + 2 \cdot \frac{360^\circ}{\alpha} \cdot \frac{f_N V}{f_V} \cos\theta_0} \; ;$$

the tape is wrapped about the reduced-size guide drum at a still angle of θ_2 selected to satisfy the equation

$$\theta_2 = \arcsin\left(\frac{180^\circ}{\alpha} \cdot \frac{D_1}{D_2} \cdot \sin\theta_1\right) \; ;$$

and means are provided to produce the video signal to be recorded by the apparatus having the reduced-size guide drum with a non-standard horizontal scanning frequency f_H selected to satisfy the equation

$$f_H = \frac{360^\circ}{\alpha} f_H.$$

4,510,539

CONTINUOUS LOOP CASSETTE CHANGER APPARATUS FOR A DICTATION/TRANSCRIPTION SYSTEM

Jeffrey E. Young, Atlanta, Ga., assignor to Lanier Business Products, Inc., Ga.

Filed Dec. 28, 1981, Ser. No. 334,975

Int. Cl.³ G11B *15/68*; B65G *43/10, 37/00*

U.S. Cl. 360—92 **2 Claims**

1. In a dictation/transcription apparatus including a first storage location for storing a plurality of recording cassettes, a dictation record/listen station, first conveying means for conveying individual cassettes from said first storage location to said dictation record/listen station, a second storage location for storing a plurality of said cassettes, and second conveying means for conveying said individual cassettes from said dictation record/listen station to said second storage location, the improvement comprising:

a transcription listen station;

third conveying means for conveying individual cassettes from said second storage location to said transcription listen station;

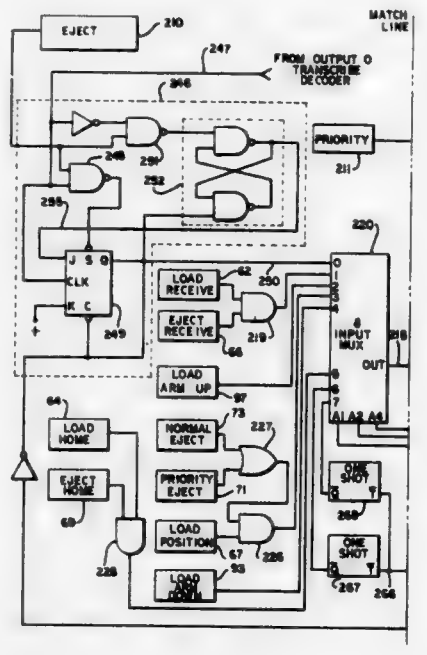
fourth conveying means for conveying said individual cassettes from said transcription listen station to said first storage location;

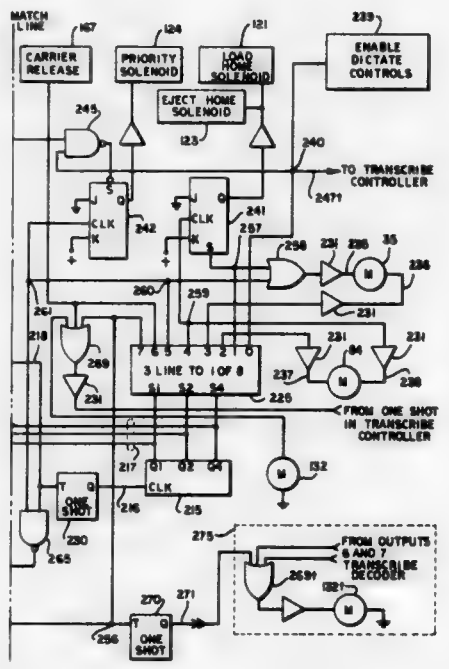
dictate eject means for initiating operation of said first conveying means and said second conveying means;

means for providing a first input signal during operation of said third conveying means or said fourth conveying means;

means for providing a second input signal during the absence of operation of said third conveying means and said fourth conveying means; and

means responsive to said first input signal for preventing initiation of operation of said first conveying means and





said second conveying means by said dictate eject means until said second input signal is provided.

4,510,540

CASSETTE EJECTION MECHANISM FOR A CASSETTE TAPE RECORDER

Toshikazu Kato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1982, Ser. No. 393,784

Claims priority, application Japan, Jul. 13, 1981, 56-103520[U]

Int. Cl.³ G11B *15/00*

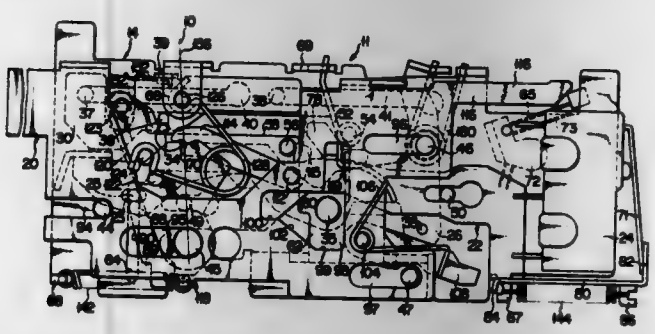
U.S. Cl. 360—93 **5 Claims**

1. A cassette ejection mechanism of a cassette tape recorder comprising a pair of guide plates facing each other, a cassette holder disposed between the guide plates to be movable between an up position and a down position and containing a tape cassette therein, and slide means disposed to be slidable substantially horizontally along the cassette holder and being slidable together with the tape cassette in the cassette holder, wherein the tape cassette inserted in the cassette holder, along with the cassette holder, is moved to its down position after the tape cassette slides in the cassette holder, and further comprising:

an ejecting plate attached to one of the guide plates to be movable between a first position and a second position,

whereby the cassette holder is pushed up from the down position to the up position thereof as the ejecting plate moves from the first position to the second position, and the tape cassette in the cassette holder slides to be ejected as the ejecting plate moves from the second position to the first position;

a coupling plate rockably attached to said one guide plate, said coupling plate engaging the slide means, said coupling plate having an engaging portion, and said coupling plate being rockable in response to the slide motion of the slide means;



a toggle spring having one end attached to said one guide plate and having another end attached to the coupling plate to apply an urging force to the coupling plate in rocking motion; and

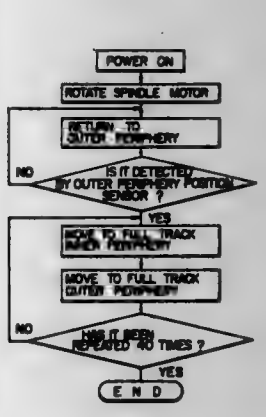
a swinging strip swingably attached to the ejecting plate, the swinging strip having a holding portion to engage the engaging portion of the coupling plate to cause the coupling plate to rock against the urging force of the toggle spring as the ejecting plate moves from the second position to the first position and to be disengaged from the engaging portion after the toggle spring passes its neutral point.

4,510,541

MAGNETIC DISK STORAGE UNIT WITH RECIPROCATING MAGNETIC HEAD FOR CLEANING THE MAGNETIC DISC

Asao Sasamoto, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,303
Claims priority, application Japan, Jun. 1, 1981, 56-82481
Int. Cl.³ G11B *5/41, 5/012*
U.S. Cl. 360—97 **11 Claims**



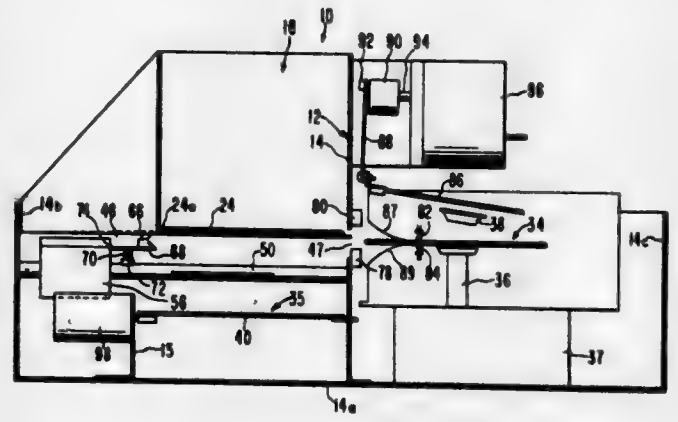
1. A magnetic disk storage unit including a magnetic head and a disk for recording and reproducing information, means for controlling said magnetic head to be in contact with a surface of said magnetic disk when said magnetic disk is stationary or rotated at a low speed and to float away from the surface of said magnetic disk as the revolution rate of said magnetic disk increases, and drive control means for enabling reciprocating movement of said magnetic head in a radial direction of said magnetic disk when said magnetic disk starts to rotate, whereby dust on at least one of said magnetic disk surface and said magnetic head is removed.

4,510,542

METHOD AND APPARATUS FOR HANDLING MAGNETIC RECORDING DISKS

Michael J. Aggeler, Byron, Calif., assignor to Texor Corporation, Mountain View, Calif.

Filed Dec. 22, 1982, Ser. No. 452,276
Int. Cl.³ G11B *17/10*
U.S. Cl. 360—98 **14 Claims**



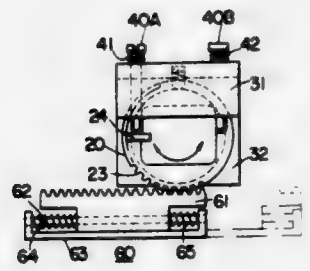
1. Disk handling apparatus comprising: a support; means on the support for forming a bin adapted to receive a stack of disks, said bin having a lower, open end and means permitting the lowermost disk to be moved laterally of the bin as the other disks of the stack remain in the bin; means adjacent to the bin forming means for moving the lowermost disk laterally of the bin to a first location at which the lowermost disk is exteriorly of the bin, whereby at least one task can be performed with the lowermost disk, said moving means having means for shifting the lowermost disk to a second location beneath the bin and laterally of the first location, there being means for separating the disk from the moving means; means adjacent to said second location for forming a pair of collection stations; a selector plate pivotally mounted on the support at said second location; and means coupled with the selector plate for selectively pivoting the same relative to the support, whereby a separated disk can be directed to one or the other collection station as a function of the results of the task performed with the disk at said first location.

4,510,543

MAGNETIC HEAD SYSTEM FOR TAPE PLAYER

Hiroyuki Ohta, and Yutaka Masumoto, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,519
Claims priority, application Japan, Oct. 31, 1980, 55-154820[U]; Dec. 3, 1980, 55-172672[U]; Dec. 3, 1980, 55-172674[U]; Dec. 9, 1980, 55-175554[U]; Dec. 29, 1980, 55-187930[U]; Jan. 16, 1981, 56-004288[U]
Int. Cl.³ G11B *5/55*
U.S. Cl. 360—106 **6 Claims**



1. A magnetic head system for a tape player capable of changing tracks in association of the magnetic tape by rotating the magnetic head comprising

a substantially cylindrical rotary member having a bore

axially extending to enclose a magnetic head therein and having an arm attached thereto, said rotary member further having gear means therearound;

a housing to hold said rotary member closely fit therewithin for axial rotation;

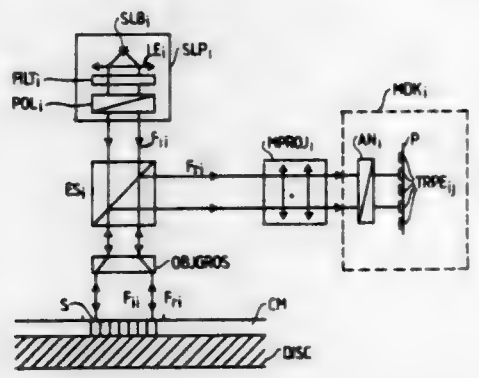
drive means in mesh with said gear means of said rotary member; said rotary member being adapted to be rotated by the driving means by substantially 180 degrees about an axis thereof whereas said housing is adapted to control the rotation of the rotary member by way of said arm.

4,510,544

OPTOELECTRONIC DEVICE FOR READING DATA CONTAINED ON A MAGNETIC MEDIUM

Jean-Pierre Lazzari, Montfort l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

Filed Sep. 14, 1982, Ser. No. 417,904
Claims priority, application France, Oct. 16, 1981, 81 19543
Int. Cl.³ G11B *5/32*
U.S. Cl. 360—114 **7 Claims**



1. An optoelectronic reading device for reading data contained on a magnetic surface SM within a plurality of tracks TR_j, of a carrier adapted to be driven past the reading device comprising:

a source (SLP_i) emitting a beam of polarized light F_{il} onto the magnetic surface of the carrier at a particular area on said surface where direction of the magnetic state of the carrier at said surface area produces a rotation of the plane of polarization of the light;

means positioned to receive light reflected from the surface SM for detecting the angle of rotation of said plane comprising an analyzer (AN_i) of light and photoelectric transducer means ($TRPE_{ij}$) for delivering an electric signal in response to the reflected beam of light whose voltage or current is a function of the values of the data stored at said point;

optical means OBJGEROS for focussing the beam of light F_{ii} on a large field of observation on said surface area, enabling simultaneous observation of a plurality of tracks and a plurality of data on each track; and

projection means ($MPROJ_i$) for projecting the image of the carrier surface being viewed by said optical means through said analyzer and on.to a plane P where said photoelectronic transducers are positioned.

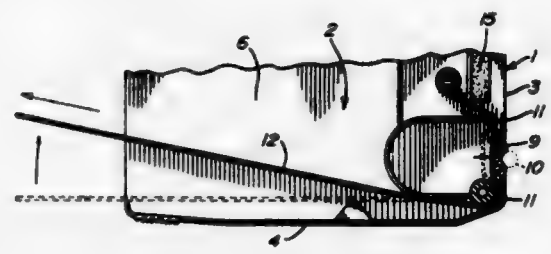
4,510,545

CAPSTAN CLEANER FOR EIGHT-TRACK CASSETTES

Normand Boudreau, P.O. Box 29, Lac-des-Iles, Canada J0W 1J0

Filed Sep. 13, 1982, Ser. No. 416,942
Int. Cl.³ G11B *5/41*
U.S. Cl. 360—128 **3 Claims**

1. A capstan cleaner for audio cassette players having a cylindrical capstan for moving the tape in the cassette during a playing mode, said cleaner comprising an elongated casing having open front and rear ends, a bottom wall, a cover with side walls extending between and connecting the bottom wall to the cover, said casing adapted to be inserted into an audio cassette player to replace a standard cassette with its front end adjacent said capstan, said cover having a cutout portion adjacent said front end and one of said side walls which is positioned to be aligned with said capstan, said cutout portion being arranged to allow a capstan cleaning wad within said casing, and forward biasing means to manually push said wad in contact with said capstan with said wad curved around a portion of said capstan, said biasing means including first and second upright members generally extending parallel to said capstan and a peg rigidly secured to and located within said casing adjacent said front end, said first and second upright members disposed on opposite sides of said cutout portion, said



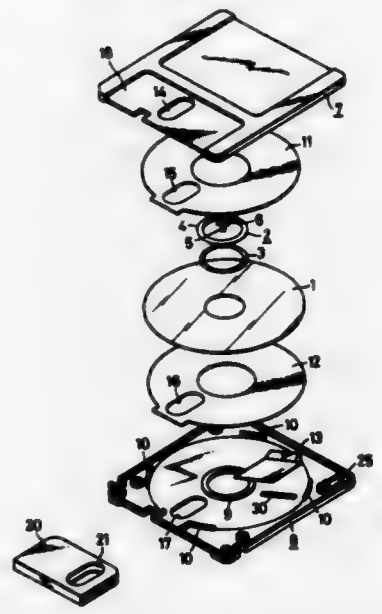
first upright member located between one of said side walls and said cutout portion transversely of said casing, said second upright member spaced from said first upright member along a line transverse of said casing, said peg disposed rearwardly of said line and near said second upright member, an elongated flexible band having an end attached to said peg and passing around and forwardly of both upright members with the portion of said band between said upright members disposed behind and in contact with a wad inserted within said casing through said cutout portion, said band then extending rearwardly within said casing and having its other end protruding from the rear open end of said casing to be manually grasped for exerting an adjustable pressure of said wad on said capstan.

4,510,546

FLEXIBLE MAGNETIC DISC CASSETTE

Shojiro Asami, Atsugi; Kazuo Ozawa, and Tetsuo Sawa, both of Tagajyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,722
Claims priority, application Japan, May 30, 1981, 56-79828; Aug. 31, 1981, 56-129066
Int. Cl.³ G11B *5/016, 5/82, 3/62*
U.S. Cl. 360—133 **19 Claims**



1. A flexible magnetic disc cassette, comprising:

a flexible magnetic disc,

a cover means having an upper and lower half for containing said flexible magnetic disc,

a cleaning sheet having dimensions similar to the disc interposed as a liner between said lower half of the cover and said flexible magnetic disc so as to line an inside of the cover with respect to a surface of said disc, and

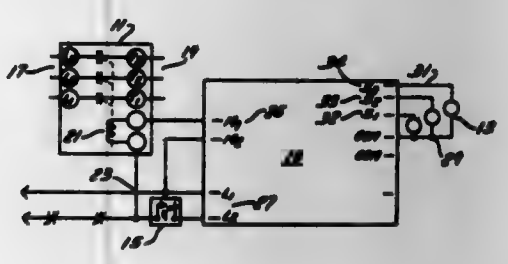
a flexible pressure means separate from the liner provided on an inner surface of said lower half for pressing a portion of said cleaning sheet against said flexible magnetic disc.

4,510,547

MULTI-PURPOSE COMPRESSOR CONTROLLER

George Rudich, Jr., Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 12, 1982, Ser. No. 440,863
Int. Cl.[3] H02H 7/00, 5/04
U.S. Cl. 361—22 8 Claims



1. A controller for refrigeration and air conditioning compressor applications comprising:

hot motor detector means adapted to be coupled to a plurality of temperature sensors for detecting an over-temperature condition of a compressor motor, said hot motor detector means including the first logic switching means for generating a motor control signal;

sensor detector means coupled to said hot motor detector means and including a comparator and diodes connected to be conductive from sensor to comparator, said sensor detector means detecting only the simultaneous electrically shorted condition of all of said temperature sensors;

low voltage detector means coupled to said hot motor detector means for detecting a low line voltage condition;

short cycle protective means coupled to said first logic switching means for preventing short cycle operation of said controller;

pressure detector means coupled to said hot motor detector means for sensing a signal representative of lubrication oil pressure of said compressor, said pressure detector means being adapted for connection to a pressure transducer having a protective resistor internal thereto;

said pressure detector means further including means for providing a first starting time delay before enablement of said detector means and a second time delay for preventing disablement of said controller in the event of temporary diminishment of said oil pressure, said second time delay being significantly less than said first time delay;

power supply means coupled to said low voltage detector means for providing a source of electrical power to said compressor controller, and;

isolated output means coupled to said pressure detector means for controllably energizing said compressor motor.

4,510,548

ROTOR PROTECTION APPARATUS AND METHOD

David R. Boothman, Ennismore, Canada, assignor to General Electric Company, Salem, Va.

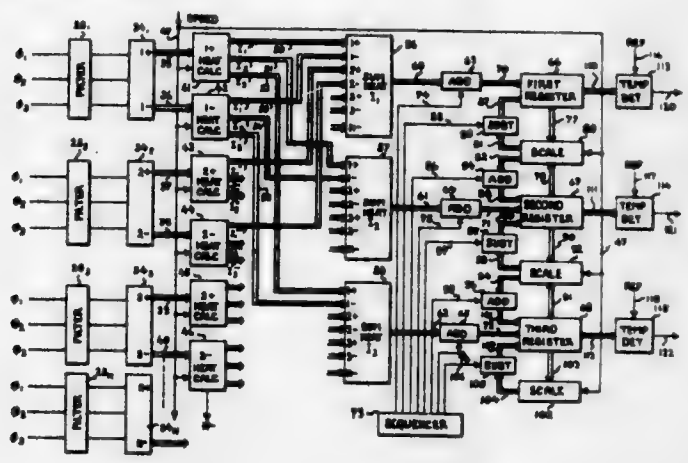
Filed Feb. 1, 1984, Ser. No. 575,751
Claims priority, application Canada, Feb. 11, 1983, 421423
Int. Cl.[3] H02H 7/08
U.S. Cl. 361—25 17 Claims

1. Apparatus for protecting an induction motor including a stator having a stator winding for connection to an alternating current supply of two or more phases and a squirrel cage rotor, said rotor having a plurality of conductors each having a starting portion and a main portion, currents of higher frequency induced in said conductors tending to be in said starting portion and currents of lower frequency tending to be in said main portion, said apparatus comprising:

means connected to said supply to said stator winding for determining values for positive sequence current components supplied to said stator winding and for providing first signals representing the positive sequence components,

means for providing a second signal as a function of the rotational speed of said rotor,

heat calculation means for receiving said first and second signals and deriving equivalent current values for each said component for at least said starting portions and main portions of said conductors that would generate equivalent heat therein,



summing means for summing the equivalent current values for each of said at least starting portions and said main portions of said conductors,

storage means for each of said at least said starting portions and said main portions of said conductors for receiving the respective equivalent current to store a value representing the temperature,

means connected between each said storage means representing thermal resistance to adjust the value in each storage means according to a heat transfer relationship,

means connected to at least one of said storage means representing thermal resistance to ambient to adjust the respective storage means for heat lost to ambient, and

temperature detector means connected to each storage means to determine if the value stored therein representing temperature exceeds a predetermined value representing a maximum temperature and for providing, when said stored value exceeds said predetermined value, and indication thereof.

4,510,549

POWER SUPPLY VOLTAGE MONITOR AND CONTROL SYSTEM

Jack Tedesco, Manhattan Beach, Calif., assignor to Econolite Control Products, Inc., Anaheim, Calif.

Filed Apr. 23, 1984, Ser. No. 602,684
Int. Cl.[3] H02H 3/24
U.S. Cl. 361—86 4 Claims

1. A voltage monitoring and control system for monitoring the voltage output of a power source for an electrically operative device and providing predetermined operative controls for said device when said voltage is not within a predetermined "normal" range or returns to said "normal" range comprising

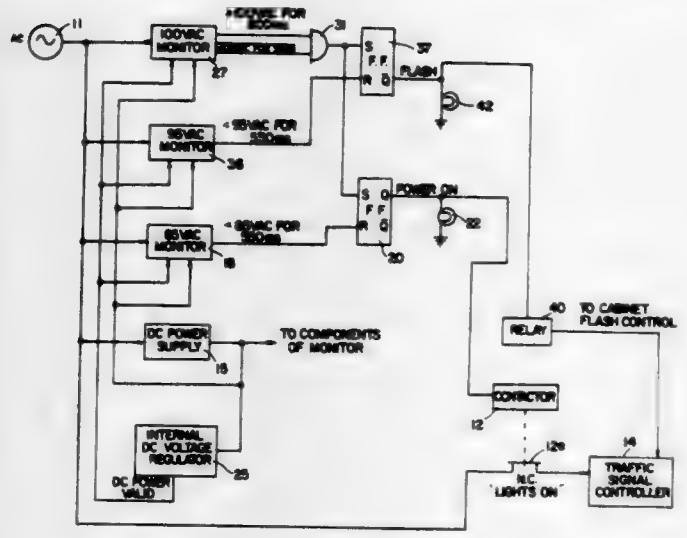
a first voltage monitor for sensing when the voltage goes below a first predetermined value below said "normal" range for a predetermined minimum time and providng a first output signal under such conditions,

a second voltage monitor for sensing when the voltage reaches a second predetermined value within said "normal" range for a predetermined minimum time and providng a second output signal under such conditions,

a third voltage monitor for sensing when the voltage goes below a third predetermined value between said first and second values and outside said "normal" range for a predetermined minimum time and providing a third output signal under such conditions,

first control means operatively connected to said first monitor and responsive to said first output signal for disconnecting said power source from said electrically operative device,

second control means operatively connected to said second monitor and responsive to said second output signal for reconnecting said power source to said device,



third control means operatively connected to said third monitor and responsive to said third output signal for initiating a predetermined mode of operation of said device,

a power supply for supplying a reference and operative voltage for said system, and

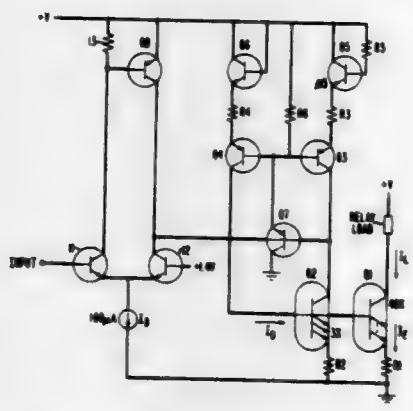
a fourth voltage monitor for sensing the voltage output of said last mentioned power supply, said first, second and third voltage monitors each being connected to said fourth voltage monitor to receive a reference voltage and a validating signal indicating that the output of said last mentioned power supply has at least a predetermined minimum value, said first control means operating to disconnect the power when the validating signal is not present.

4,510,550

RELAY DRIVER

Dewayne A. Spires, Plaistow, N.H., assignor to AT&T Bell Laboratories, Murray Mill, N.J.

Filed Dec. 16, 1982, Ser. No. 450,376
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—152 **6 Claims**



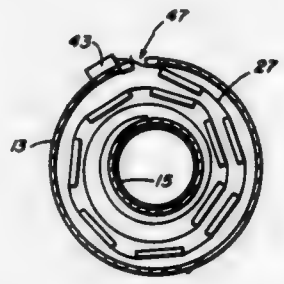
1. A relay driver circuit comprising a first transistor (Q1) having a relay load connected in its collector path, a second transistor (Q2) of similar conductivity type being coupled across the first transistor, the bases of said first and second transistors being connected together, and current mirror means (Q3–Q6) coupled from the collector of said second transistor to said bases to provide the additional base drive necessary to drive the first transistor towards saturation regardless of its Beta when maximum load current is required.

4,510,551

PORTABLE MEMORY MODULE

Edward C. Brainard, II, Marion, Mass., assignor to ENDECO Canada Limited, Halifax, Canada

Filed May 21, 1984, Ser. No. 612,459
Int. Cl.³ H05K *5/00*
U.S. Cl. 361—398 **6 Claims**



5. A portable memory module comprising:

a cylindrical outer casing;

a cylindrical inner casing generally concentric with said outer casing;

an end cap closing off said inner and outer casings at one end;

between said inner and outer casings, a helically rolled flexible printed circuit carrying and interconnecting a multiplicity of dual-in-line integrated circuit memory components oriented in columns with the pin lines parallel to the axes of said casings;

an annular cap closing off, at the other ends of said casings, the space between said casings

within said inner casing, a battery for powering said memory components; and a removable cap for closing off the other end of said inner casing.

4,510,552

DEVICE FOR HOUSING COMMUNICATION CIRCUITS AND EQUIPMENT

Takashi Kanno, Yokohama; Akira Oka, Tokyo; Ituo Okamoto, Kawasaki; Kouji Mizushima, Machida, and Shinji Oguro, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1982, Ser. No. 442,757
Claims priority, application Japan, Nov. 18, 1981, 56-183646; Nov. 19, 1981, 56-184361; Nov. 21, 1981, 56-186116
Int. Cl.³ H05K *1/14*
U.S. Cl. 361—413 **5 Claims**

1. A device for housing communication circuits formed of a plurality of printed boards, each printed board having a print pattern formed thereon, front and rear ends and a connector disposed at the rear end of the printed board, and equipment, comprising:

a frame, for receiving the plurality of printed boards, having a plurality of frame connectors mounted thereon, said frame connectors being operatively connected to the connectors of the printed boards;

a plurality of circuit cables disposed along said frame, each said circuit cable having at least one connector attached thereto;

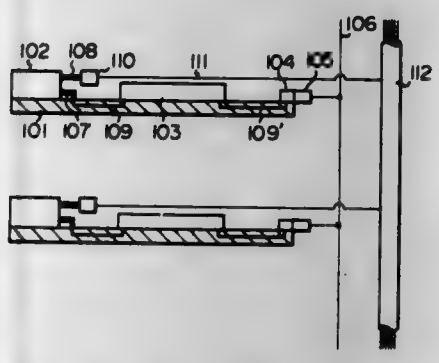
a test jack device, for testing the circuit formed on the printed board, disposed at the front end of each of the

a pair of light transmitting panels mounted on the pedestal and mounting said retainer means to hold the parallel

4,510,557

HEADLAMP DEVICE FOR BICYCLE, MOTORCYCLE

printed boards, said test jack device including a plurality of jacks, each jack comprising a molded body having first and second leads extending therefrom, front and rear ends and an opening, said opening in said molded body being disposed at the front end of the printed board, said first and second leads being formed so that they are in electri-



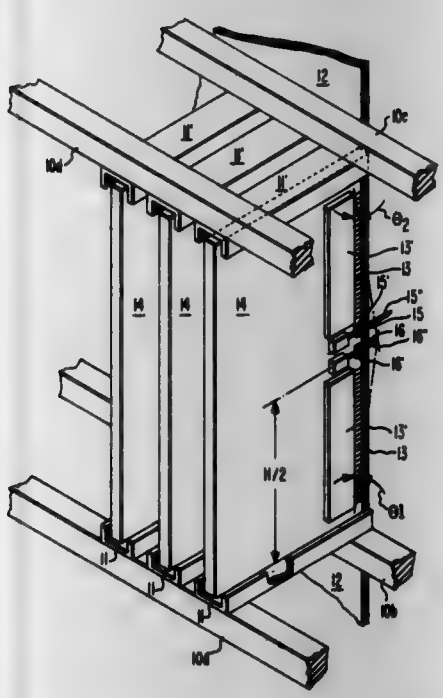
cal contact with each other in the opening of the jack and project from said rear end of said molded body, said first lead of said jack being connected to a circuit formed on the printed board by a print pattern printed thereon and said second lead of said jack being directly connected to one of said circuit cables.

4,510,553

ELECTROMECHANICAL ASSEMBLY FOR ALIGNING, DISCHARGING, AND SEQUENTIALLY ENGAGING CONDUCTORS OF A P.C. BOARD WITH A BACKPLANE

David D. Faultersack, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 24, 1983, Ser. No. 460,142
Int. Cl.³ H02H *7/20*
U.S. Cl. 361—413 **11 Claims**



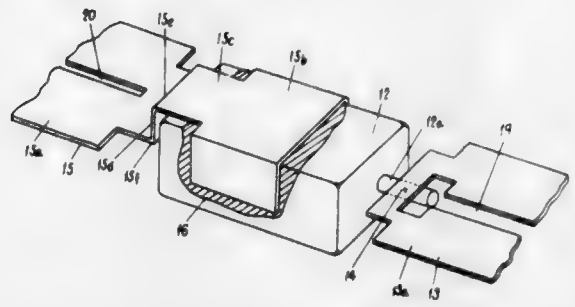
10. An electromechanical assembly comprised of: a printed circuit board and a backplane, said backplane having first and second passages that extend completely through said backplane, ground and power conductors on said backplane that respectively border said passages, said board having only a single ground pin and a single power pin, said single ground and power pins extending in a cantilevered fashion past said board by relatively long and relatively short distances for sliding through said passages in a sequential fashion such that said circuit board receives a ground signal from said ground conductor before receiving any power signal from said power conductor.

4,510,554

CHIP-LIKE SOLID ELECTROLYTE CAPACITOR

Tsutomu Irikura, Joyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00048, § 371 Date Oct. 22, 1982, § 102(e) Date Oct. 22, 1982, PCT Pub. No. WO82/02978, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 23, 1982, Ser. No. 440,219
Claims priority, application Japan, Feb. 23, 1981, 56-25776
Int. Cl.³ H01G *9/00, 1/14, 5/01*
U.S. Cl. 361—433 **4 Claims**



1. A chip-like solid electrolyte capacitor comprising:
a capacitor element constituted by an anode body, and a sequentially deposited semiconductor metal oxide layer and a cathode layer on the anode body;
an anode lead-out line having a dielectric oxidizing film on one surface thereof and extending out of said capacitor element;
an anode terminal connected to said anode lead-out line and having an anode connecting portion on the free end thereof;
a cathode terminal connected to said cathode layer;
said terminals extending outwardly from the opposite end faces of said body of insulating resin;
said cathode terminal having a U-shaped fixing portion soldered to the cathode layer, a neck portion smaller in width than the fixing portion extending along and spaced from the surface of said capacitor element and having at most only a short length thereof adjacent said fixing portion soldered to said capacitor element, said cathode terminal further having a vertical portion extending along the end portion of said capacitor element and spaced therefrom and having first and second bent portion at the opposite ends, the first bent portion connecting said vertical portion to said neck portion, and an external cathode connecting portion extending from said second bent portion away from said capacitor element; and
a body of encapsulating insulating resin around said capacitor element, said anode lead-out line, and parts of said anode and cathode terminals, the anode and cathode connecting portions extending outside said body of insulating resin.

4,510,555

ORNAMENTAL LIGHTING DEVICE

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

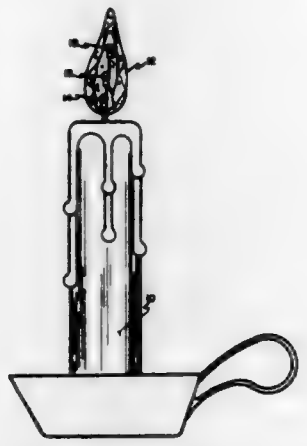
Filed Feb. 27, 1984, Ser. No. 584,270
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—32 **12 Claims**

1. An ornamental lighting device for radiating condensed light which propagates through a fiber optic cable, comprising:
a pedestal;
a plurality of optical fibers supported by said pedestal and optically coupled with the fiber optic cable to be supplied with the condensed light;
retainer means for retaining said optical fibers substantially parallel to each other and at a predetermining spacing from each other; and

lamp envelope and being secured there to a metal lamp cap provided with a pin, the lamp holder having a metal tube for

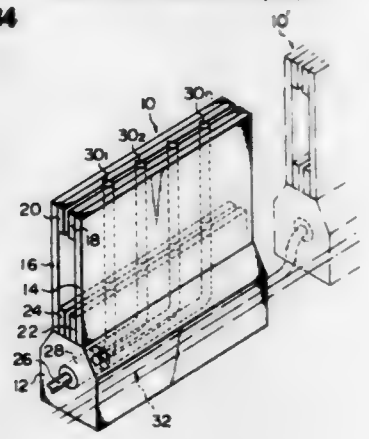
ridges, the angles of the surfaces of the ridges causing the light to be reflected therefrom in non-parallel directions

a pair of light transmitting panels mounted on the pedestal and mounting said retainer means to hold the parallel



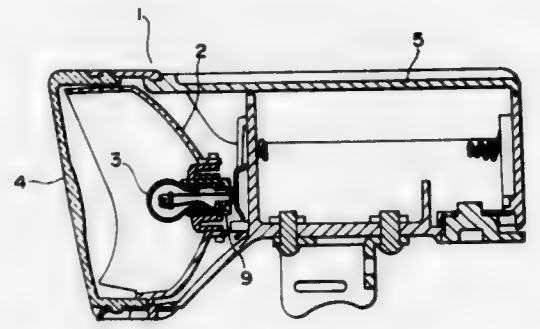
optical fibers in sandwich array between said light transmitting panels.

4,510,556
ELECTRONIC LIGHTING APPARATUS FOR SIMULATING A FLAME
David C. Johnson, 4190 Rochester Rd., San Diego, Calif. 92116
Filed Nov. 30, 1983, Ser. No. 557,347
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—184 **7 Claims**



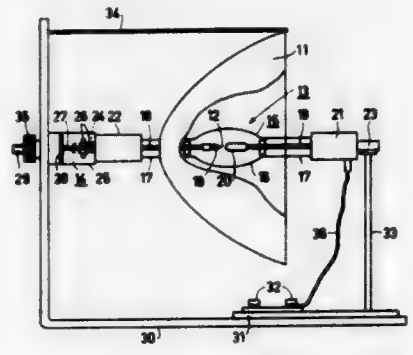
1. An electronic lighting apparatus for simulating a flame, comprising a plurality of electric lamps arranged vertically in spaced apart relationship, and control signal generator means for generating respective control signals for turning said lamps on and off in a manner so as to simulate both the illumination intensity distribution and the gas turbulence of a natural flame, said control signals operating to turn said lamps on and off in a random sequence, with the average proportion of time during which said lamps are turned on progressively increasing toward the lowermost of said plurality of lamps so as to obtain an average illumination intensity which progressively increases toward the lowermost of said plurality of lamps, and with the average duration of the intermittent periods during which said lamps are turned off decreasing progressively toward the lowermost of said plurality of lamps, whereby a flickering effect is obtained which is progressively more pronounced toward the uppermost of said plurality of lamps, thereby simulating the gas turbulence distribution of a natural flame.

4,510,557
HEADLAMP DEVICE FOR BICYCLE, MOTORCYCLE AND THE LIKE
Sadaharu Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Japan
Filed Oct. 19, 1983, Ser. No. 543,309
Int. Cl.³ F21L *9/00*
U.S. Cl. 362—188 **7 Claims**



1. A headlamp device for bicycles and the like vehicles, which includes a reflector, a bulb having its end fixedly inserted through an opening formed in said reflector, an illumination covering mounted on the front face of said reflector, and a casing attached integrally to the rear portions of these members, the improvement comprising an outwardly extending locking piece affixed to said end of said bulb, a cylindrical extension for the insertion of said end of said bulb is provided to the rear edge of said opening in said reflector, and the rear periphery of said cylindrical extension is stepped to define locking portions differing in axial length, said locking portions being engaged within said locking piece, there being two pairs of locking portions, each pair being of different axial length, whereby, when said bulb is fixedly inserted into said opening in said reflector, said locking piece can selectively be locked onto said locking portions differing in axial length.

4,510,558
DEVICE FOR PRODUCING AND PROJECTING LIGHT
Hans G. van den Brink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 2, 1984, Ser. No. 576,492
Claims priority, application Netherlands, Feb. 21, 1983, 8300632
Int. Cl.³ F21V *7/20*
U.S. Cl. 362—263 **9 Claims**



1. A device for producing and projecting light, provided with a concave reflector with an optical centre, a short arc discharge lamp arranged with its discharge path near the optical centre and a lamp holder for at least mechanically securing the short arc discharge lamp, the lamp comprising a lamp envelope sealed in a vacuum-tight manner, filled with ionizable gas and having an ovoidal part enclosing the discharge space and two tubular parts extending therefrom at opposite ends thereof, each of which parts accommodates a respective current conductor having an electrode at its end located in the discharge space and at its other end being passed out of the

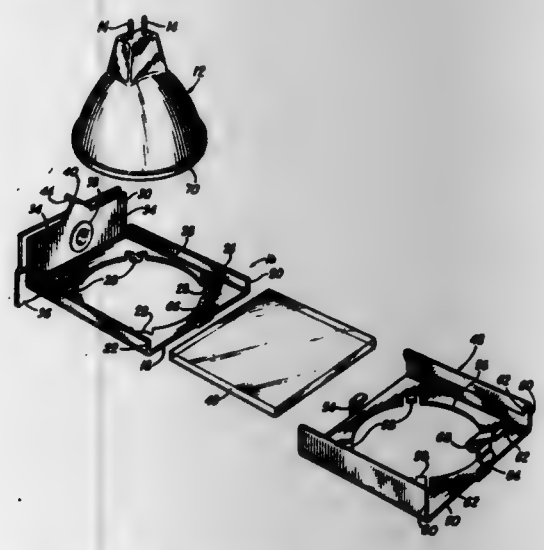
lamp envelope and being secured there to a metal lamp cap provided with a pin, the lamp holder having a metal tube for receiving the pin of the lamp cap and in the wall of said tube being provided with substantially radially directed screws for fixing the pin in the lamp holder, characterized in that the tube of the lamp holder has in its wall a substantially longitudinally extending gap, and a respective fixing screw in the proximity of the gap and on either side thereof.

4,510,559

LAMP AND FILTER MOUNTING ASSEMBLY

Paul J. Kristofek, Hickory Hills, Ill., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Aug. 8, 1983, Ser. No. 521,037
Int. Cl.³ F21V *21/26*
U.S. Cl. 362—269 **26 Claims**



1. A lamp mounting assembly, comprising:
a lamp,
a lamp holder defining a planar lamp mounting plate,
an aperture in said mounting plate to allow the passage of light therethrough,
a substantially vertically inclined back wall on said lamp holder,
a substantially vertically inclined mounting bracket with a portion thereof being substantially flat and co-extensive with said back wall, and
means for rotatably mounting said back wall of said lamp holder to said mounting bracket,
to permit rotation of said lamp holder on said mounting bracket.

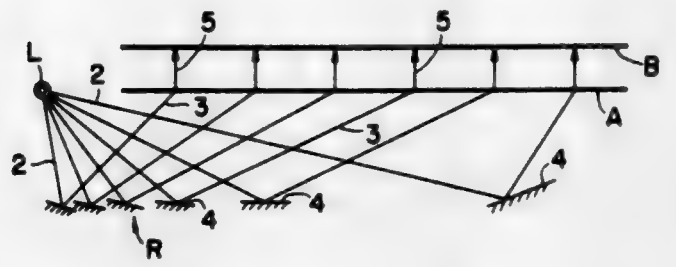
4,510,560

DEVICE FOR CONTROLLING LIGHT IMAGES

Masataka Negishi, 1000, Oaza Ryoke, Urawa-shi, Saitama-Ken, Japan

PCT No. PCT/JP82/00130, § 371 Date Dec. 7, 1982, § 102(e) Date Dec. 7, 1982, PCT Pub. No. WO82/03676, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 20, 1982, Ser. No. 448,918
Claims priority, application Japan, Apr. 20, 1981, 56-58419
Int. Cl.³ F21V *13/04*; G02B *19/00*
U.S. Cl. 362—299 **24 Claims**

1. A device for controlling light images comprising:
light source means forming a light spot or light spot group;
reflection means positioned relative to said light source means for receiving all of the light rays from the light source means and reflecting the light rays; and
light direction changing surface means positioned relative to said reflection means for receiving the reflected light rays from the reflection means;
said reflection means having a generally planar fresnel mirror type reflecting surface having thereon a plurality of minute prism-shaped elements disposed in minute parallel ridges, the angles of the surfaces of the ridges causing the light to be reflected therefrom in non-parallel directions



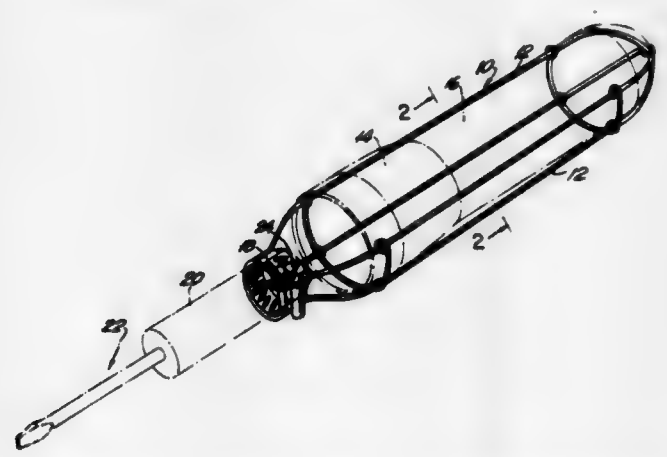
for spreading the light rays in a uniform light intensity distribution on the light direction changing surface means.

4,510,561

FLASHLIGHT-SCREWDRIVER COMBINATION

Raymond A. Peters, 521 W. 159th St., New York, N.Y. 10032

Filed Mar. 19, 1984, Ser. No. 591,271
Int. Cl.³ F21L *15/12*
U.S. Cl. 362—399 **1 Claim**



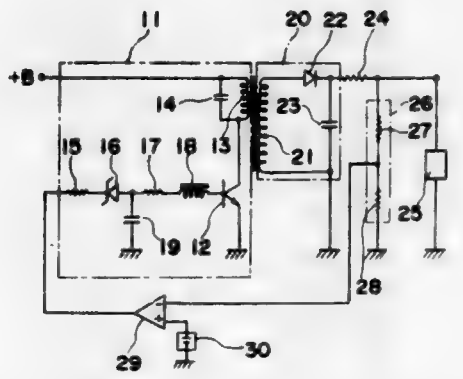
1. A flashlight holder comprising a wire basket of the approximate size and shape of the flashlight it is to contain, said basket being flexible and having an opening of the size and shape of the flashlight it is to contain, said opening being devoid of basket frame members permitting the flashlight to be manually squeezed therein and held thereby, said holder having an axially mounted screwdriver extending from its front end.

4,510,562

STABILIZING POWER-SUPPLY CIRCUIT

Yukio Maeba, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 27, 1983, Ser. No. 536,198
Claims priority, application Japan, Sep. 28, 1982, 57-170617
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—19 **14 Claims**



1. A stabilizing power-supply circuit comprising an oscillation circuit of collector tuning type including a base circuit of

an oscillation transistor and a tuning coil, an output circuit including an output coil, which is magnetically coupled to the tuning coil of the oscillation circuit, for producing an output voltage, a detection circuit for detecting the variation in the output of the output circuit, a comparison amplifier of single ended supply type for the comparison between the signal from the detection circuit and a reference voltage, and for amplifying the difference therebetween, and a zener diode of which cathode is connected to the comparison amplifier, the output voltage of the comparison amplifier being adapted to be applied upon the base circuit of the oscillation transistor through the zener diode and being set to become lower than the zener voltage of the zener diode in the no-load condition.

4,510,563

SWITCHING POWER SUPPLY

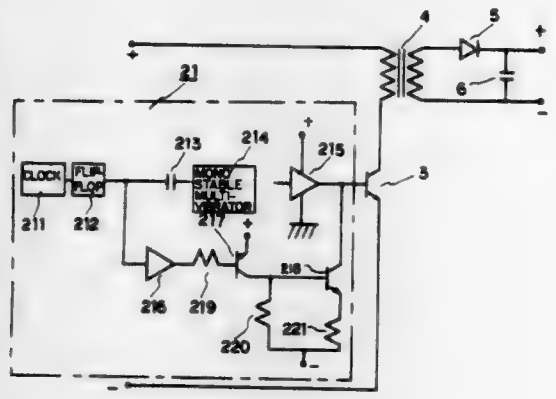
Takehisa Sato, Ora, Japan, assignor to Sanyo Electric Co. Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Oizumimachi, both of, Japan

Filed Dec. 9, 1983, Ser. No. 560,196

Claims priority, application Japan, Feb. 25, 1983, 58-31436; Mar. 2, 1983, 58-35132

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—20 **7 Claims**



1. A switching power supply comprising:

a transformer having a primary winding which receives a DC input voltage,

a switching means comprising a switching transistor which periodically interrupts the primary current of said transformer,

a regulation means for regulating said switching means and for providing said switching transistor with a reverse base current a predetermined interval after the termination of a forward base current, said interval being approximately equal to the storage time of said transistor, whereby the base charge of said transistor is discharged during said interval,

a rectifier for rectifying the AC output of said transformer, and

a smoothing circuit for smoothing the DC output of said rectifier.

4,510,564

SYNCHRONOUSLY DETECTED DC/DC CONVERTER FOR REGULATED POWER SUPPLY

Harold G. Seer, Jr., Woodbury, N.J., assignor to RCA Corporation, New York, N.Y.

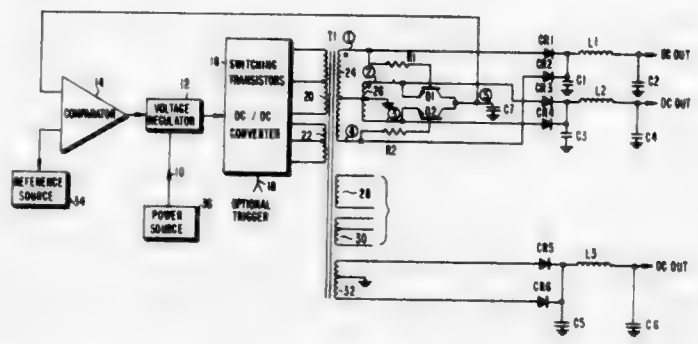
Filed Jul. 14, 1983, Ser. No. 513,400

Claims priority, application United Kingdom, Mar. 24, 1983, 8308100

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—23 **6 Claims**

1. A regulated power supply for operation from an unregulated DC power source, said supply comprising a reference voltage source; a comparator having a first input coupled to said reference source, a second input, and an output; a voltage regulator having a first input coupled to said comparator output, a second input adapted to be coupled to said power source, and an output; switching means having an input coupled to said voltage regulator output, and an output; a transformer having a primary winding coupled to said switching means output, and a first secondary winding; coupling means for coupling to



said secondary; and a synchronous detector having a control input coupled to said secondary, a signal input coupled to said coupling means, and a signal output coupled to said comparator second input.

4,510,565

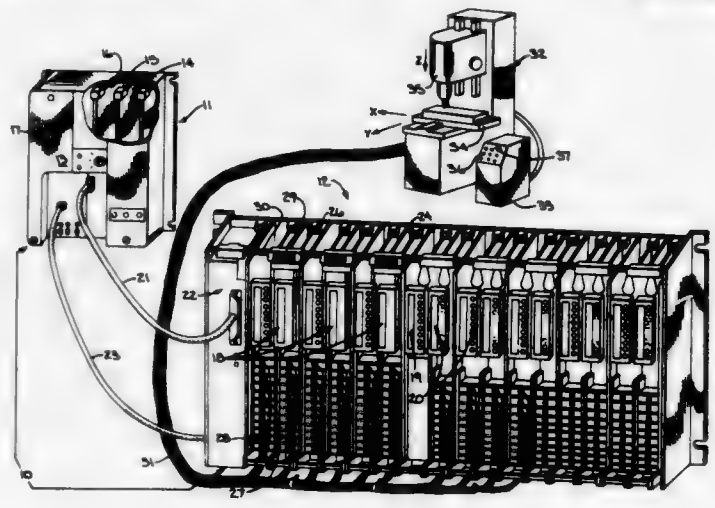
PROGRAMMABLE CONTROLLER WITH INTELLIGENT POSITIONING I/O MODULES

Ernst Dummermuth, Chesterland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 20, 1982, Ser. No. 420,561

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—136 **18 Claims**



1. An electrical controller for controlling machine motion through a plurality of electromechanical I/O positioning devices, the controller comprising:

a plurality of I/O circuits each connectable to a respective I/O positioning device to generate output drive signals thereto in response to move data, and to transmit a move request signal when move data is needed;

main processing means for storing and transmitting (i) user-selectable parameter data, including a user-selected mode of axis coupling designating coupled I/O circuits and independent I/O circuits and (ii) user-selectable move data, including coupled move data applicable to coupled I/O circuits and independent move data applicable to independent I/O circuits; and

master I/O processing means coupled to the main processing means for receiving the parameter data and the move data, and coupled to the I/O circuits for receiving move request signals, the master I/O processing means being responsive to the parameter data from the main processing means and to move request signals from any coupled I/O circuits to receive coupled move data in a single transmission from the main processing means and to distribute portions of the coupled move data to each of the coupled I/O circuits, the master I/O processing means also being responsive to

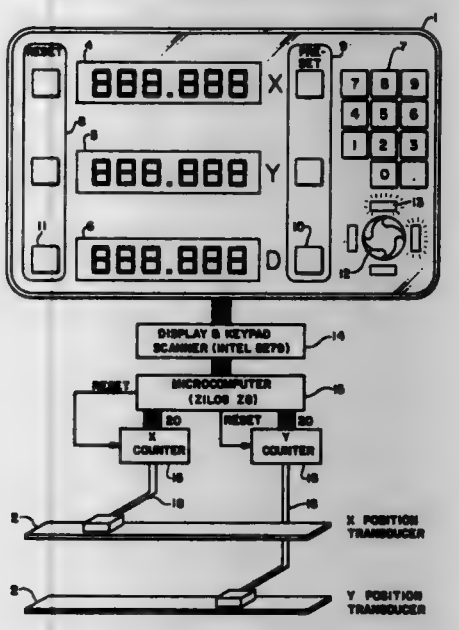
the parameter data from the main processing means and to move request signals from any independent I/O circuits to receive independent move data in a separate transmission from the main processing means and to couple the independent move data to the independent I/O circuit associated with that separate transmission.

4,510,566

MACHINE TOOL READOUT WITH AUTOMATIC CUTTER RADIUS OFFSET

Gary B. Gordon, 21112 Bank Mill Rd., Saratoga, Calif. 95070

Filed Sep. 27, 1982, Ser. No. 424,390
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—190 **4 Claims**



1. Machine-tool digital position readout apparatus with automatic offset to compensate for a radius of a cutter moving relative to a workpiece, the apparatus comprising:

position-sensing means for determining a position of the centerline of the cutter;

input means for entering the size of the cutter;

direction-sensing means for sensing the direction of the motion of the cutter;

automatic-decision means responsive to the direction-sensing means for assigning a sign to the cutter radius depending on the sensed direction of motion, and for arithmetically combining the signed cutter radius with the position of the centerline of the cutter, to produce offset coordinates; and

display means for displaying the offset coordinates.

4,510,567

QUALIFYING AND SORTING FILE RECORD DATA

Philip Y. Chang, and John W. McInroy, both of Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,797
Int. Cl.³ G06F *7/00, 7/24*
U.S. Cl. 364—300 **8 Claims**

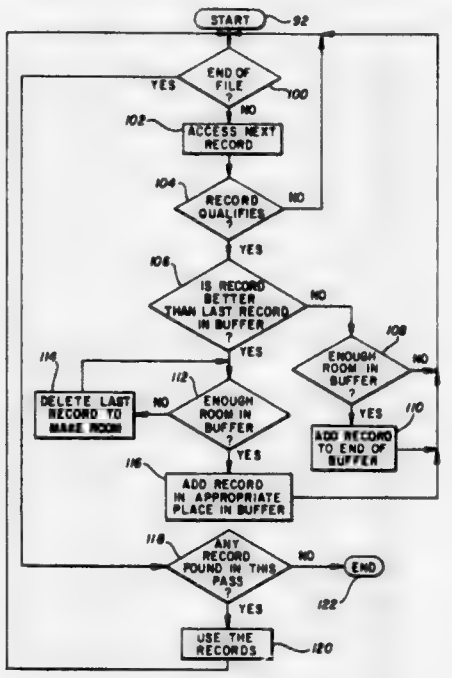
1. A method of qualifying and sorting file records from a mass storage means into a sort buffer memory for use in an office processing environment whereby the sort buffer memory provides a temporary retention of the file records in an order based on a selected ranking, comprising the steps of:

(a) accessing each of said file records in said mass storage means;

(b) evaluating an accessed file record in accordance with a chosen sort algorithm to determine if it qualifies for transfer to the sort buffer memory;

(c) if the accessed file record qualifies, then comparing a rank of the qualified file record in the mass storage means with the rank of a lowest ranked file record in the sort buffer memory;

(d) if the rank of the qualified file record is higher than the rank of the lowest ranked file record in the sort buffer memory, then the qualified file record is transferred to unused space in the sort buffer memory; and if the rank of the qualified record is lower than the rank of the lowest ranked file record, then the qualified file record is not transferred to the sort buffer memory if the buffer is full;



(e) placing the qualified file record transferred to the sort buffer memory at a level based on the rank determined by the chosen sorting algorithm;

(f) repeating steps (c)—(e) for each qualified file record in the storage means until the sort buffer has been loaded with the highest ranked records in the storage means without overflowing; and

(g) outputting said highest ranked records from said sort buffer.

4,510,568

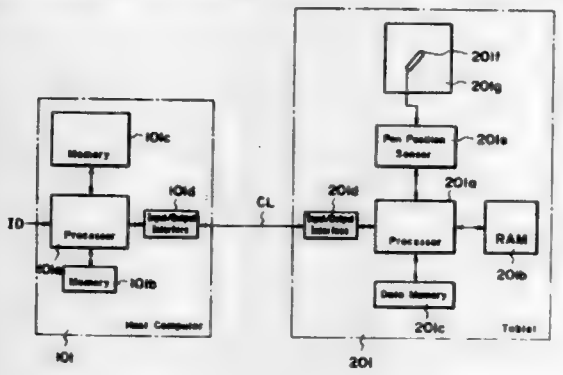
GRAPHIC PROCESSING METHOD

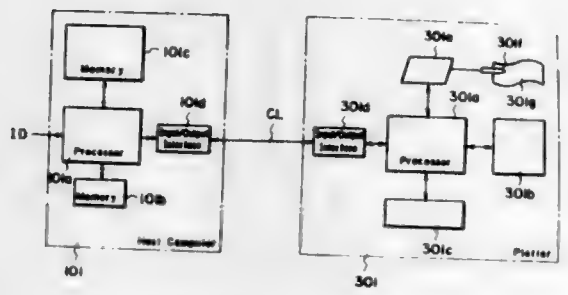
Hajimu Kishi, Hino, and Masaki Seki, Tokyo, both of Japan, assignors to Fanuc Ltd., Tokyo, Japan

PCT No. PCT/JP82/00192, § 371 Date Jan. 25, 1983, § 102(e) Date Jan. 25, 1983, PCT Pub. No. WO82/04339, PCT Pub. Date Dec. 9, 1982
PCT Filed May 25, 1981, Ser. No. 463,881
Claims priority, application Japan, May 25, 1981, 56-079045; May 29, 1981, 56-082894
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—300 **4 Claims**

1. A graphic processing method for entering data into a host computer from a graphic input device and executing predetermined processing based on the entered graphic data, in which a processing unit in the graphic input device for entering the graphic data into the host computer comprising a computer, said method is characterized by a first step of storing a plurality of processing programs in a memory of the host computer, a second step of requesting a predetermined processing program in accordance with graphic processing to be executed in the graphic input device, a third step of transferring the requested processing program from the host computer to a rewritable

memory of the graphic input device, and a fourth step of executing graphic processing based on the transferred process-





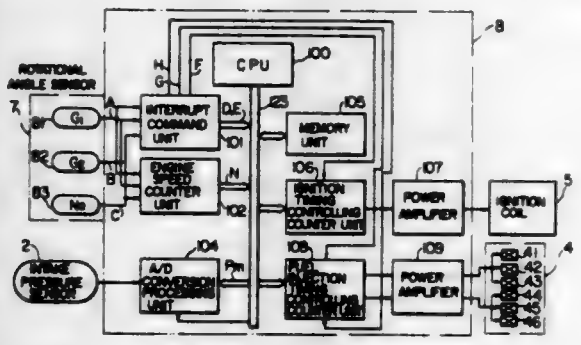
ing program and entering the obtained graphic data into the host computer.

4,510,569

A/D CONVERSION PERIOD CONTROL FOR INTERNAL COMBUSTION ENGINES

Mitsunori Takao, Kariya, and Toshika Ban, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 22, 1982, Ser. No. 390,966
Claims priority, application Japan, Jun. 23, 1981, 56-96913
Int. Cl.³ G06F *15/20*; G05B *15/02*; H03K *13/02*
U.S. Cl. 364—431.12 **14 Claims**



1. In a method of controlling operation of internal combustion engine having an arrangement for analog-to-digital converting at least one analog type pulsating control variable indicative of engine operation including at least one of intake air pressure and intake air quantity, said method comprising the steps of:

detecting a cycle to cycle period of pulsation of the control variable;

determining a conversion interval for the analog-to-digital converting corresponding to the detected cycle to cycle period of pulsation and controlling analog-to-digital conversion in accordance with the determined conversion interval;

sampling the analog type pulsating control variable during a first cycle and during a second cycle immediately following the first cycle and analog-to-digital converting the samples in accordance with the determined conversion interval;

determining a difference between converted digital values of the first and second cycles;

updating the conversion interval previously determined so as to reduce the detected difference to update a next cycle conversion timing; and

sampling the control variable during a third cycle and analog-to-digital converting the third cycle sample in accordance with the updated conversion interval.

8. In an arrangement for controlling the operation of an internal combustion engine which includes a system for analog-to-digital converting at least one analog type pulsating control variable indicative of engine operation including at least one of intake air pressure and intake air quantity, said arrangement comprising:

means for detecting a cycle to cycle period of pulsation of the control variable;

means for determining a conversion interval for analog-to-digital converting corresponding to the detected cycle to cycle period of pulsation and controlling analog-to-digital conversion in accordance with the determined conversion interval;

means for sampling the analog type pulsating control variable during a first cycle and during a second cycle immediately following the first cycle and analog-to-digital converting the samples in accordance with the determined conversion interval;

means for determining a difference between converted digital values of the first and second cycles;

means for updating the conversion interval previously determined so as to reduce the detected difference to update a next cycle conversion timing; and

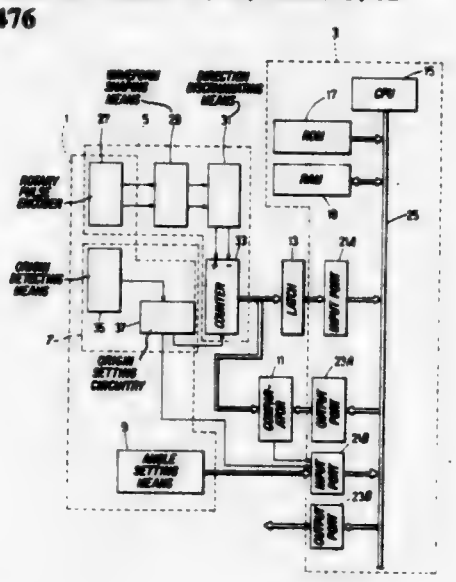
means for sampling the control variable during a third cycle and analog-to-digital converting the third cycle sample in accordance with the updated conversion interval.

4,510,570

CONTROL SYSTEM FOR PRESSES

Mikio Yonekura, Odawara, Japan, assignor to Amada Company Limited, Isehara, Japan

Filed Aug. 9, 1982, Ser. No. 406,170
Claims priority, application Japan, Aug. 12, 1981, 56-125257
Int. Cl.³ G06F *15/46*; B21D *5/02*
U.S. Cl. 364—476 **7 Claims**



1. A method for controlling a press by means of a microcomputer, comprising the steps of:

(a) generating a signal from a rotational angle detector mounted on a rotary driving means of said press;

(b) comparing the rotational angle detector signal with a predetermined stored rotational angle signal;

(c) storing a signal in said microcomputer when said rotational angle detector and predetermined stored signals coincide with each other; and

(d) actuating said press by means of said microcomputer

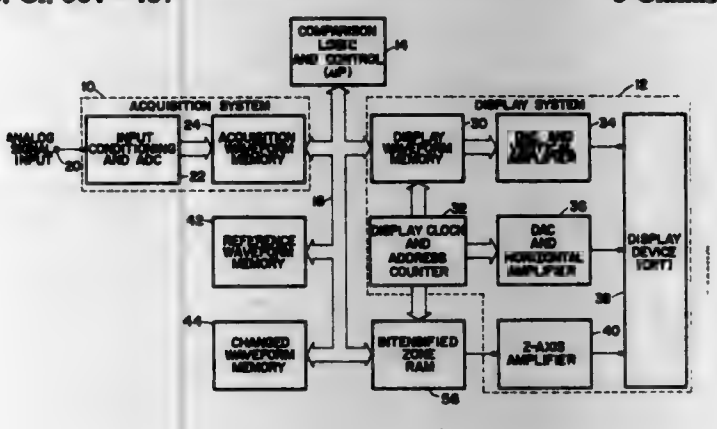
executing a program stored therein upon the performance of said storing step (c) such that said press performs a desired preprogrammed operation.

4,510,571

WAVEFORM STORAGE AND DISPLAY SYSTEM

Thomas P. Dagostino, Beaverton, and John D. Tradel, Tigard, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 8, 1981, Ser. No. 309,651
Int. Cl.³ G06F *3/14, 7/02;* G11C *15/00*
U.S. Cl. 364—487 **8 Claims**



1. A method of storing and displaying waveforms comprising the steps of:

receiving electrical signals and converting said signals to digital representations thereof to provide acquired waveforms;

storing a first acquired waveform as a reference in a reference waveform memory;

storing subsequently-acquired waveforms in an acquisition memory;

electronically comparing by comparison logic means said subsequently-acquired waveforms with said reference waveform and detecting a changed waveform with respect to said reference waveform; and

storing said changed waveform in a third waveform memory automatically upon said detection, wherein any of said memories may be coupled to a display system to display the contents thereof.

4. A waveform storage and display system, comprising:

means for receiving electrical signals and converting said signals to digital representations thereof to provide acquired waveforms;

a first waveform memory for storing a first acquired waveform as a reference waveform;

a second waveform memory for storing subsequently-acquired waveforms;

means for electronically comparing said subsequently-acquired waveforms with said reference waveform and detecting a changed waveform with respect to said reference waveform; and

means for storing said changed waveform in a third waveform memory automatically upon said detection.

4,510,572

SIGNATURE ANALYSIS SYSTEM FOR TESTING DIGITAL CIRCUITS

John M. Reece, King County; Robert G. Martin, Snohomish County, and John R. Franzel, King County, all of Wash., assignors to Data I/O Corporation, Redmond, Wash.

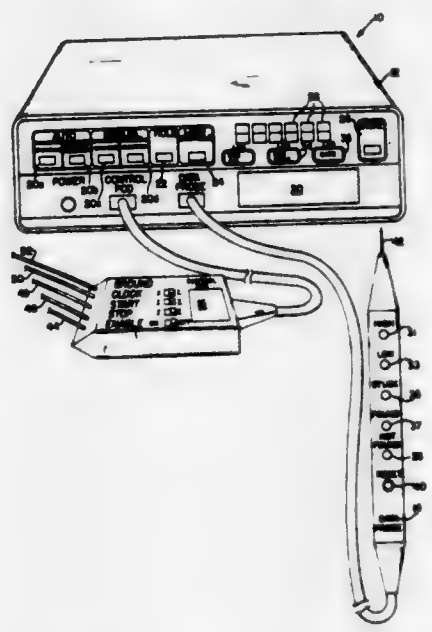
Filed Dec. 28, 1981, Ser. No. 334,880
Int. Cl.³ G06F *11/00;* G01R *31/28*
U.S. Cl. 364—489 **17 Claims**

1. A system for testing a digital circuit, comprising:

signature generation means receiving a digital signal from a node of said circuit for generating a signature word from said digital signal by combining each of a selected plurality of bits of said digital signature with preselected other ones of the selected plurality of bits of said digital signal;

control means for allowing said signature generation means to respond to said digital signal during a gate period which is synchronized to the operation of said digital circuit so that, at the conclusion of said gate period, said signature generation means provides a signature which characterizes said digital signal during said gate period;

signature memory means for storing respective signatures from a plurality of nodes of said digital circuit indicative



of the digital signals on the nodes of said digital circuit when it is operating correctly during said gate period; and

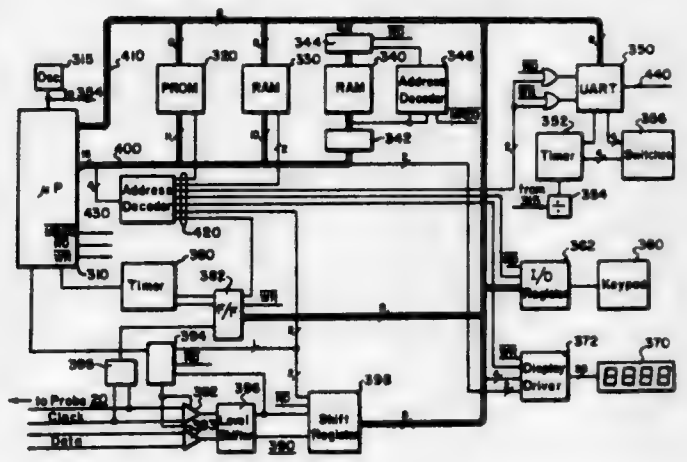
signature comparator means comparing the signature from said signature generation means with the signatures stored in said memory means until either a positive comparison is found or no positive comparison has been found after all of the signatures stored in said memory means have been compared, said signature comparator means generating a signature found indication in response to said positive comparison in response to all of said signatures being compared without a positive comparison.

4,510,573

METHOD FOR X-RAY FLUORESCENCE SPECTROSCOPY

William C. Boyce; Warren D. Wittekind, both of Richland; Leroy C. Howard, West Richland; Thomas E. Hall, Richland, and Wayne M. Lechelt, Benton City, all of Wash., assignors to UNC Nuclear Industries, Inc., Richland, Wash.

Filed May 6, 1981, Ser. No. 260,984
Int. Cl.³ G06F *15/46;* G01N *23/00*
U.S. Cl. 364—498 **58 Claims**



1. An X-ray fluorescence method for assaying the concen-

tration of a chemical element in an object using a source of particles or electromagnetic radiation having sufficient energy to produce X-ray fluorescence of said element and a detector capable of detecting a spectrum of X-ray fluorescence from said element, said method comprising the steps of:

calibrating the source and detector by:

irradiating with said source a group of samples of different known concentrations of the element to be assayed;

measuring with said detector the X-ray radiation received at the detector from said samples having energies in a first range which encompasses at least one X-ray fluorescence spectral line associated with said element, whereby a plurality of measurements are obtained corresponding to the different samples;

fitting a first equation to said measurements, said equation relating the concentration of the samples of known concentration to said measurements using at least a first correction factor; and

storing said correction factor or a function thereof;

irradiating an object having an unknown concentration of said chemical element with said source of particles or electromagnetic radiation, said source and object having a geometrical relationship that need not be controlled and is not necessarily the same as that of the source and samples in said calibrating step;

measuring with said detector the X-ray radiation received from said object having energies in the same range as that in which said X-ray fluorescence spectral line was measured in said calibrating step, whereby an assay measurement is obtained; and

using an equation of the same general form as said first equation to calculate from said assay measurement and said stored correction factor or function thereof the concentration of said chemical element in said object.

4,510,574

SERVOSYSTEM BETWEEN A MASTER ACTUATOR AND A SLAVE ACTUATOR

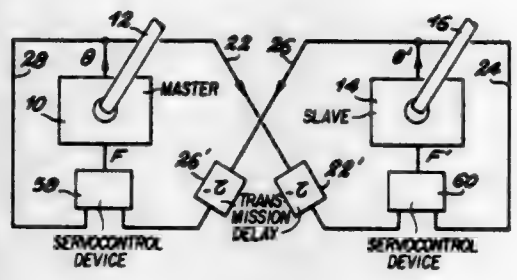
Jack Guittet, Les Ulis; Paul Marchal, Gif sur Yvette; Alain Micaelli, Arcueil, and Jean Vertut, Issy-les Moulineaux, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 23, 1982, Ser. No. 410,556

Claims priority, application France, Sep. 9, 1981, 81 17103

Int. Cl.[3] **G08C** *19/00;* **G05B** *11/00;* **G05D** *3/00;* **B25J** *3/04*

U.S. Cl. 364—513 **6 Claims**



1. A servosystem comprising:

a master actuator;

a slave actuator;

a first control device associated with each of said master actuator and said slave actuator for controlling the associated actuator;

each of said actuators having an output, said output being connected to a first input of the first control device associated with the other actuator through a first delay device and to a second input of the first control device associated with the actuator, each of said actuators producing a first signal at said output;

each of said first control devices comparing the delayed first signal received at said first input and the first signal received at said second input and producing a first force signal in response thereto;

a second delay device connected to the output of the master actuator for delaying the first signal by an amount equal to the sum of the delay amounts of the two first delay devices; and

a second control device receiving and comparing said delayed first signal from said second delay device and said delayed first signal from said slave actuator for producing a second force signal in response thereto.

4,510,575

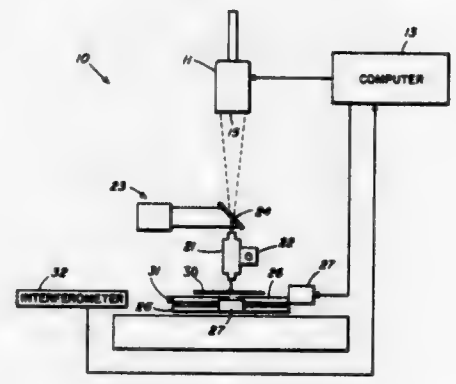
METHOD FOR WRITING HOLOGRAMS

Peter F. Mueller, Concord, and H. John Caulfield, Nagog Woods, both of Mass., assignors to Aerodyne Research, Inc., Billerica, Mass.

Filed Aug. 24, 1982, Ser. No. 410,901

Int. Cl.[3] **G06F** *15/46;* **G03H** *1/22*

U.S. Cl. 364—518 **2 Claims**



1. A method of forming a hologram comprising

storing in a computer a program corresponding to a hologram to be produced in precise geometric arrangement throughout said hologram,

forming on an electronic display surface in response to signals from said computer corresponding to said stored program a first portion of said pattern and optically projecting said first portion in micro size to a precisely positioned portion of a photoreceptor,

mechanically moving said photoreceptor with respect to said electronic display surface essentially the required pattern distance for the projection of a next portion of said pattern and optically sensing the distance of the mechanical motion,

forming on said electronic display surface a next portion of said pattern while compensating in the position on said electronic display surface for the difference between the sensed portion of said photoreceptor and the required position of said receptor, and

repeatedly repeating a large multiplicity of times the steps of mechanically moving said photoreceptor, sensing the distance of motion, forming a next image on said display surface and compensating for the difference between sensed position and required position to form an entire hologram having constant geometric characteristics throughout the hologram.

4,510,576

SPECIFIC COEFFICIENT OF PERFORMANCE MEASURING DEVICE

J. Ward MacArthur, and James V. Radomski, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

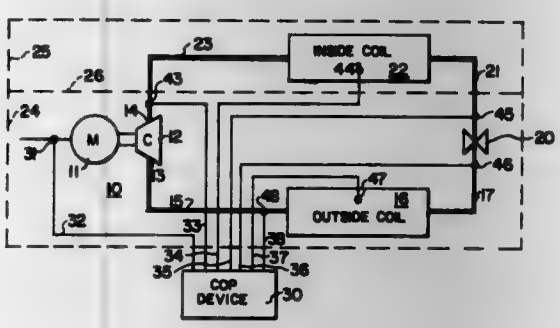
Filed Jul. 26, 1982, Ser. No. 401,993

Int. Cl.[3] **G01L** *25/00, 3/26*

U.S. Cl. 364—551 **9 Claims**

1. A specific coefficient of performance measuring device for a mechanical vapor-compression system having a motor, a compressor driven by said motor, inside coil means, outside coil means, and fluid expansion means with said specific coeffi-

cient of performance measuring device including: power transducer means connected to said motor to measure the power supplied to said motor with said power transducer means having an electrical output indicative of the power drawn by said motor; a plurality of temperature sensing means connected to measure temperatures including the temperatures of an inlet and an outlet of said compressor, and an inlet and an outlet of said fluid expansion means with all of said measured temperatures being represented by electrical signals as outputs from said temperature sensing means; power loss storage means to store losses typical of said motor; pressure-enthalpy storage means to store the pressure versus enthalpy characteristics of



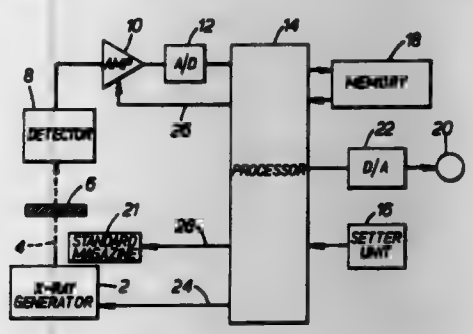
the mechanical vapor-compression system under test; temperature-entropy storage means to store the temperature versus entropy characteristics of the mechanical vapor-compression system under test; processor means having a plurality of input means connected to receive signals from said power loss storage means, said pressure-enthalpy storage means, said temperature-entropy storage means, said power transducer means, and said plurality of temperature sensing means; and output means for said coefficient of performance device connected to said processor means to provide a specific coefficient of performance for said system by said processor means determining the power delivered by said motor and by said processor means continuously determining said coefficient of performance.

4,510,577

NON-CONTACT RADIATION THICKNESS GAUGE

Tatsuo Tsujii, Tokyo, and Takaaki Okino, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 18, 1982, Ser. No. 349,979
Int. Cl.³ G01B *15/02*
U.S. Cl. 364—563 **26 Claims**



26. A noncontact radiation thickness gauge system for measuring the thickness of a material which uses a plurality of movable standards of predetermined thickness values comprising:

a source of penetrating radiation;

means for detecting radiation from said source and producing output signals V functionally related to the level of radiation received where said level of received radiation is a function of the radiation absorption characteristic and thickness of material located in the radiation path between said source and said detecting means;

means for automatically inserting standards and the material to be measured into said radiation path;

memory means for storing calibration curve-defining parameters for a plurality of curves which correspond to respective ranges of thickness relating to corresponding output signals of said detecting means when said standards having respective thicknesses of calibration points are in said radiation path, where said calibration point are selected to approximate a geometric series of thickness values over all said ranges;

means for setting a nominal thickness and alloy compensation coefficient for the material to be measured which is within one of said plurality of ranges, said means providing an output signal indicative of said nominal thickness and alloy compensation coefficient; and

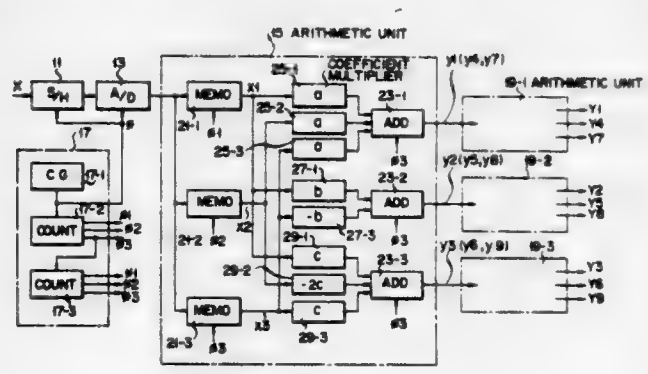
means for processing output signals of said detecting means and said setting means when said material to be measured is in said radiation path with a calibration curve stored in said memory means representing said one of said plurality of ranges to determine the thickness of said material, wherein the calibration curve used in said processing means is selected based on the thickness of the material to be measured belonging in the range which corresponds to said calibration curve.

4,510,578

SIGNAL ENCODER USING ORTHOGONAL TRANSFORM

Hiroshi Miyaguchi, Yokohama, and Hisaharu Takeuchi, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 25, 1982, Ser. No. 352,236
Claims priority, application Japan, Mar. 4, 1981, 56-31042
Int. Cl.³ G06F *15/332*
U.S. Cl. 364—725 **8 Claims**



1. An encoder comprising:

means for sampling an input signal at a sampling frequency three times the frequency of the input signal to obtain a sampled signal, and

orthogonal transform means for concentrating the frequency components of the input signal into transform outputs by subjecting the sampled signal to an orthogonal transform using an orthogonal matrix function of the order of 3n (where n is an integer larger than unity), said orthogonal transform means performing the orthogonal transform using as a coefficient an orthogonal matrix of the order of 3n which has as a minor matrix an orthogonal matrix M of the order of 3 having given numbers a, b and c as matrix elements and defined as:

$$M = \begin{pmatrix} a & a & a \\ b & 0 & -b \\ c & -2c & c \end{pmatrix},$$

wherein said orthogonal transform means includes first means for performing an arithmetic operation of the following minor matrix arithmetic operation,

$$\begin{pmatrix} y1 \\ y2 \\ y3 \end{pmatrix} = \begin{pmatrix} a & a & a \\ b & 0 & -b \\ c & -2c & c \end{pmatrix} \cdot \begin{pmatrix} x1 \\ x2 \\ x3 \end{pmatrix},$$

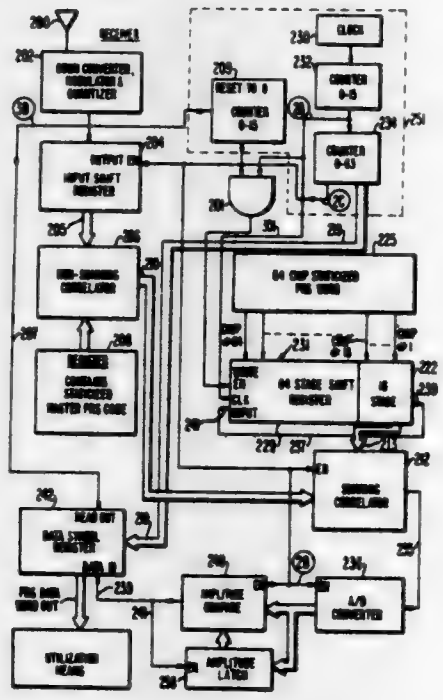
where y1 to y3 are transform outputs, and x1 to x3 are first to third sampled signals respectively sampled at different timings by clock signals each having a frequency one third that of the input signal sampling frequency.

4,510,579

FAST CORRELATION SYSTEM

Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,820
Int. Cl.[3] G06F *11/08*
U.S. Cl. 364—728 4 Claims



1. In a communication receiver system for receiving and decoding an encoded PRS signal consisting of M Pseudo Random Signal (PRS) data codes each being N chips long with each data code being multiplied by an N chip master PRS code to form an N chip encoded PRS code and with a plurality of said N chip encoded PRS codes forming an encoded PRS signal, and with said M, N chip PRS data codes also forming a reference source PRS code comprised of overlapping and partially-in-common overlapping segments with said reference PRS code segments arranged in an order so that each of said received PRS data codes corresponds to a PRS reference code segment and in which the first chip of each received PRS data code segment begins correlation with that chip in said PRS reference source code which is removed X chips from the prior adjacent PRS reference PRS code segment and arranged in the same order as the PRS data codes in said source data code segments and correlating means for comparing each PRS reference code received segment with each received PRS data code, and comprising:

means for reproducing said master PRS code at said receiver;

means for correlating each successive group of N chips of said encoded PRS signal with a group of N chips, said group of N chips being defined as occurring when each new chip is received, means for multiplying each new group of N chips by said reproduced master PRS code to remove said master PRS code from the received encoded signal when a new group of N chips forms a new received encoded PRS code to thereby leave an N chip PRS data code;

means for generating said PRS reference source codes at said receiver; and

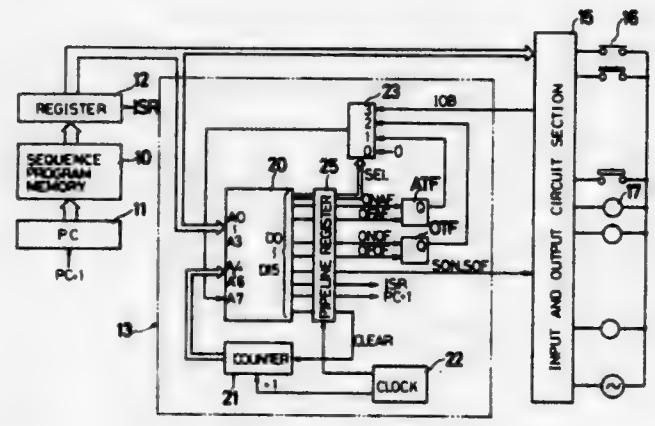
means for correlating each successive group of N chips, after being correlated with said master PRS code, with each successive segment of said PRS reference source code to determine the particular segment of said generated PRS reference source codes which has the greatest correlation with any group of N input chips, after correlation with said master PRS code, over N input chips.

4,510,580

PROGRAMMABLE SEQUENCE CONTROLLER

Toshihiko Yomogida, Kariya; Yasuo Suzuki, Ohbu, and Kyoji Ito, Aichi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 3, 1982, Ser. No. 384,763
Claims priority, application Japan, Jun. 19, 1981, 56-95524
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—900 7 Claims



1. A programmable sequence controller comprising:

instruction generating means for successively and cyclically generating a plurality of sequence instructions each composed of an operation code for designating a type of instruction and an operand for designating one of input and output elements;

an I/O circuit section connected to said input and output elements and responsive to said operand of each generated sequence instruction for selecting one of said input and output elements;

a microprogram memory having a plurality of memory sections, address input terminals and signal output terminals, each of said memory sections comprising a plurality of memory addresses for respectively storing microinstructions;

a counter;

counter control means connected to said counter for successively incrementing the content of said counter;

test flag means responsive to signals output from a first part of said signal output terminals for temporarily storing the result of a test on the ON-OFF state of at least one of said input and output elements;

first line means for applying said operation code from said instruction generating means to a first part of said address input terminals so as to select one of said memory sections;

second line means for applying the content of said counter to a second part of said address input terminals;

third line means for applying the status of said test flag means and the ON-OFF state of one of said input and output elements selected by said I/O circuit section, to a third part of said address input terminals, said second and third line means enabling said microprogram memory to select one of said memory addresses composing a selected one of said memory stations;

fourth line means for applying a signal from a second part of said signal output terminals to said counter so as to reset the same; and

fifth line means for applying a signal from a third part of said

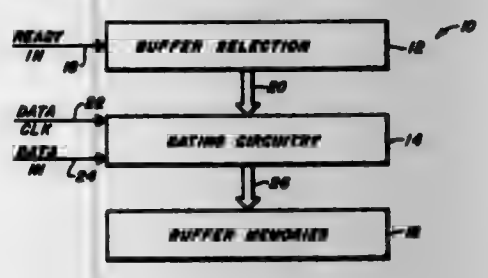
signal output terminals to said I/O circuit section so as to energize or deenergize one of said output elements selected by said I/O circuit section.

4,510,581

HIGH SPEED BUFFER ALLOCATION APPARATUS

Paul B. Cohen, Ashland, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1983, Ser. No. 466,079
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—900 8 Claims



1. A data buffer array allocation circuit for directing incoming data to an available one of a plurality of buffer memories, said circuit comprising

a plurality of buffer selection circuits, each selection circuit being associated with one of said buffer memories and having

a clear input line,

a data ready input line,

a data ready output line, and

a buffer available line,

means for connecting said selection circuits in an ordered linear array, the data ready output line of an earlier buffer selection circuit of the linear array being connected to the data ready input line of a next succeeding buffer selection circuit, and

each said buffer selection circuit further comprising

means responsive to said data ready input line and said buffer available line, and

operable in a first state for effectively connecting said data ready input line to said data ready output line when said associated buffer has available data therein, and

operable in a second state for effectively isolating said data ready input line from said data ready output line when said associated buffer has no available data therein,

means responsive to an activating clear signal applied over said clear input line for setting said buffer available line to a signal indicating the absence of data in the associated buffer, and

means responsive to a data ready signal on said data ready input line for setting said buffer available line from said signal indicating the absence of data to a signal indicating the availability of data.

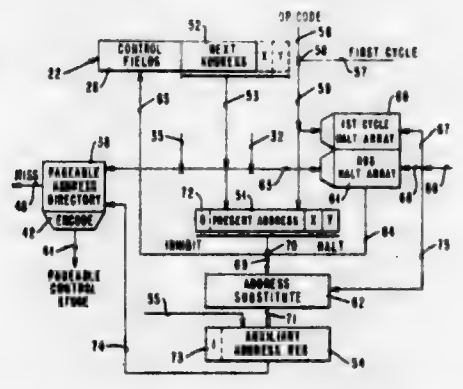
4,510,582

BINARY NUMBER SUBSTITUTION MECHANISM

Frederick T. Blount, Hopewell Junction, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 269,147, Jun. 1, 1981,. This application Jul. 13, 1984, Ser. No. 630,917
Int. Cl.[3] G11C *7/00;* G08B *29/00*
U.S. Cl. 364—900 2 Claims

1. A binary number substitution mechanism including first and second storage arrays comprised of 2^n storage locations and 2^p storage locations respectively, each first and second storage array including access means for addressing and readout of data stored in the storage locations, m input binary signal lines, including an n-bit portion and a p-bit portion, for representing 2^m binary numbers, gate means, selectively and simultaneously interconnecting the n-bit portion to the access means of the first storage array, and the p-bit portion to the access means of the second storage array, and enabling means having an output signal connected to the gate means, and connected and responsive to one or more binary number representations of the m input binary signal lines, for causing readout of a substitute binary number from the first and second storage arrays comprised of n parallel output binary signal lines from the first storage array and p parallel output binary



signal lines from the second storage array, the improvement comprising:

register means comprised of m binary storage positions; and

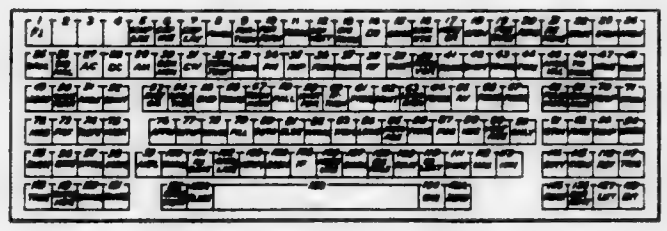
means simultaneously connecting the n parallel output binary signal lines from the first storage array to said register means in every other one of said binary storage positions, and the p parallel output binary signal lines from the second storage array to said register means in the other of said binary storage positions.

4,510,583

KEYBOARD TERMINAL

George A. Walz, East Islip, and Donald H. Kump, East Northport, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 340,699, Jan. 19, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,845
Int. Cl.[3] G06F *3/02*
U.S. Cl. 364—900 6 Claims



1. An ATLAS language keyboard terminal specifically designed for automatically entering ATLAS language test programs into computerized automatic test equipment utilized for testing various electronic systems, comprising:

programmable keyboard means including a plurality of user activated definable keys for initiating single key activation of the unique keywords used in composing the ATLAS language test programs; and

preprogrammed microprocessor control means operatively connected to the computerized automatic test equipment and operatively connected and responsive to said plurality of user activated definable keys of said programmable keyboard means, said preprogrammed microprocessor control means generating a plurality of word character strings representing unique words of the ATLAS language test programs, each word character string of said plurality of word character strings representing a unique word of the ATLAS language test program and being initiated by a single stroke of a respective key of said plurality of user activated definable keys and automati-

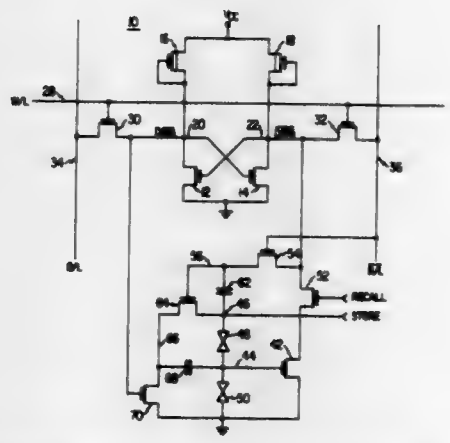
cally transferred by said preprogrammed microprocessor control means to a control computer associated with the computerized automatic test equipment so that ATLAS language test programs are inputted into the computerized automatic test equipment and automatic testing of the various electronic systems may be readily conducted by allowing the entry of ATLAS language test program words into the computerized automatic test equipment to be relatively error free and requiring a reduced amount of physical time and effort since the generation of an entire word of the ATLAS language test programs and its automatic transfer to the computerized automatic test equipment is accomplished in response to one keystroke entry on said programmable keyboard means.

4,510,584

MOS RANDOM ACCESS MEMORY CELL WITH NONVOLATILE STORAGE

Donald R. Dias, Carrollton; Daniel C. Guterman; Robert J. Proebsting, both of Plano, and Horst Leuschner, Lewisville, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Dec. 29, 1982, Ser. No. 454,418
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **37 Claims**



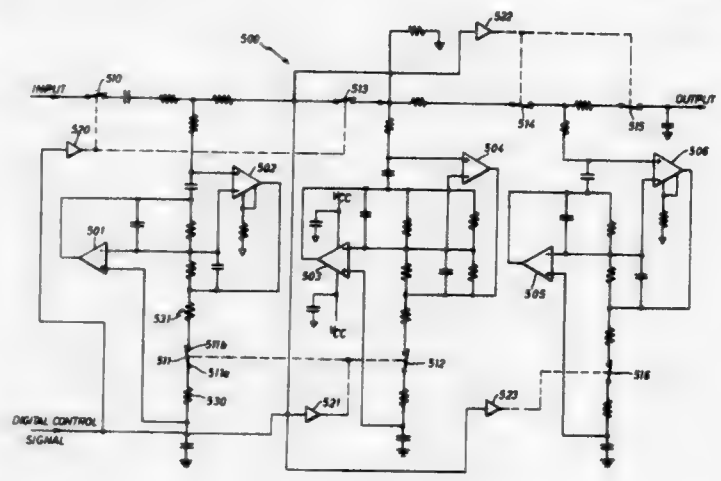
29. A nonvolatile random access memory cell comprising:
first and second power terminals,
a volatile memory circuit having first and second data nodes which are driven to opposite data states, said nonvolatile memory circuit receiving data through first and second bit lines and having one of said data states as a predetermined default state,
a first transistor having a floating gate and having the source terminal thereof connected to said second power terminal,
a first current tunneling element connected between said floating gate and said second power terminal,
a second current tunneling element connected between said floating gate and a first node which receives a store command signal,
a first capacitor connected between said floating gate and a second node,
a second transistor having the gate terminal thereof connected to said first data node, the source terminal thereof connected to said second power terminal and the drain terminal thereof connected to said second node,
a third transistor having the drain and source terminals thereof connected between said first node and said second node,
a second capacitor connected between said first node and the gate terminal of said third transistor,
a fourth transistor having the source terminal thereof connected to the drain terminal of said first transistor, the drain terminal thereof connected to said second data node and the gate terminal thereof connected to receive a recall command signal, and
a fifth transistor having the source and drain terminals thereof connected between said second data node and the gate terminal of said third transistor and having the gate terminal thereof connected to one of said bit lines.

4,510,585

ELECTRONIC FILTER

Franklin W. Mayo, and Miles A. Smither, both of Houston, Tex., assignors to Geosource Inc., Houston, Tex.

Filed Oct. 22, 1980, Ser. No. 199,536
Int. Cl.³ G01V *1/22*; H03K *17/16*
U.S. Cl. 367—43 **5 Claims**



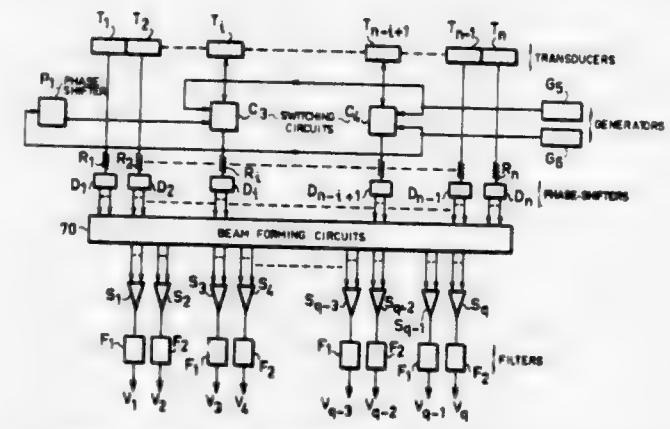
4. A multi-channel seismic exploration system having a plurality of groups of seismic detectors, the output of each group being connected to an input channel of said system, each input channel having a filter of order greater than one associated therewith, each of said filters comprising:
resistance elements;
capacitance elements, at least a portion of which are coupled to at least a portion of said resistance elements to form resistance-capacitance time constant circuits;
amplifier elements coupled to said time constant circuits; and
switches coupled to said time constant circuits, which switches open and close in response to a periodic switching signal and wherein said switches change the effective time constants of the filter by changing the effective resistance in said resistance-capacitance time constant circuits and wherein each amplifier terminal is isolated by a resistance element from each switch element in a circuit path with that terminal.

4,510,586

ARRAY SYSTEM WITH HIGH RESOLVING POWER

Georges Grall; Jacques Joseph, and Claude Lemoine, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 28, 1982, Ser. No. 425,703
Claims priority, application France, Jan. 8, 1982, 82 00236
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—87 **6 Claims**



1. An array system for detecting waves, such as sonar waves, with high resolving power, comprising:
a transmitting array having a length L_E and including two transducers;
a receiving array having a length L_R which is longer than

L_E and wherein said receiving array includes a plurality of transducers placed along said length L_R;

a plurality of multiple-terminal phase shifters connected to said receiving transducers;

adding means connected to said receiver transducers to perform wave-detection beams covering transmission lobes one by one whereby said array system has an overall diagram with increased resolving power for each preformed beam; and

weighting means connected to said receiver transducers and to said phase shifters for weighting the amplitude of the input of said receiving transducers, for calculating a weighted function and for calculating the ratio of L_E/L_R in order to ensure that the secondary lobe maxima on the transmission-reception diagram will be less than −16 dB and that the angular width at 3 dB of the main lobe of said diagram will not be greater than $1.3\Delta\theta_1$ is the angular width without weighting for a ratio L_E/L_R equal to 1.

4,510,587

METHOD AND ARRANGEMENT FOR THE EVALUATION OF SIGNALS FROM AN ULTRASONIC DISPLACEMENT PATH MEASURING SYSTEM

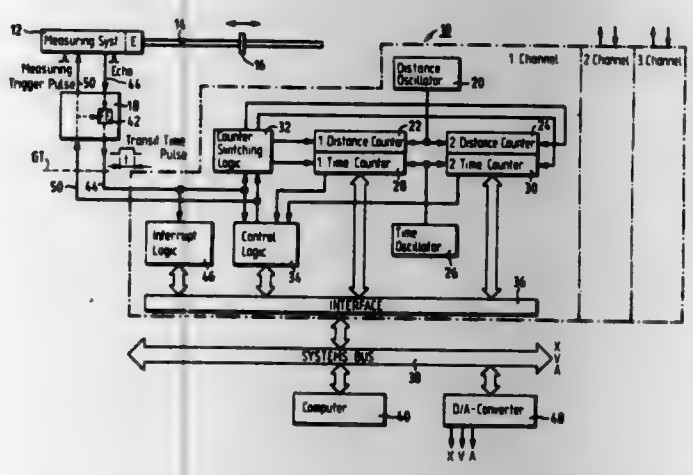
Otto Schneider, Gränichen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Oct. 19, 1982, Ser. No. 435,328

Claims priority, application Switzerland, Oct. 30, 1981, 6933/81

Int. Cl.³ G01B *7/14, 17/00*

U.S. Cl. 367—118 **9 Claims**



1. In a method for the evaluation of signals from an ultrasonic distance measuring system, especially for machine tools, comprising a magnetostrictive conductor along with which there can be displaced a measuring head containing permanent magnet means and by means of which there are transmitted trigger pulses which set a flipflop and lead to echo pulses in the permanent magnet means which reset the flipflop and are received by a stationary receiver at the measuring system, and within a signal transit time (herein referred to as transit time pulse) corresponding to the time between each trigger pulse and the received echo pulse there are counted in a distance counter the pulses generated by a distance oscillator as a measure for the displacement path between the permanent magnet means and a fixed reference point, the improvement which comprises the steps of:

(a) externally triggering the trigger pulses;

(b) counting in addition to the distance oscillator pulses counted during a transit time pulse the pulses of a time oscillator between a first trigger pulse and a second trigger pulse by means of a time counter;

(c) counting by means of a further distance counter the pulses of the distance oscillator during the next transit time pulse and counting by means of a further time counter the pulses of the time oscillator between the second trigger pulse and a third trigger pulse;

(d) computing from the determined counter states:

(i) the position of the measuring head

$$XG_n = NX_n \cdot \Delta x$$

wherein:

n = the last of a plurality of transit time pulses

XG_n = the measured position value after n-transit time pulses

NX = the number of distance counter pulses within a transit time pulse

Δx = distance increment = V_L/f_W = $\frac{\text{ultrasonic propagation velocity}}{\text{distance oscillator frequency}}$

(ii) the mean velocity of the measuring head

$$V_n = \frac{\Delta x}{\Delta t} \cdot \frac{NX_n - NX_{n-1}}{NT_n}$$

wherein:

V_n = the velocity of the measuring head after n-transit time pulses

Δt = the time increment = $1/f_T$ = 1/time oscillator frequency

NT_n = number of time counter pulses between the (n−1) and the n-th trigger pulse; and

(iii) a velocity-correction term for the position XG_n of the measuring head computed during step (i)

$$XV = V_n \cdot T_{Ln} = V_n \cdot (NX_n/f_W)$$

wherein: T_L = the time duration of the n-th transit time pulse; and

(e) delivering as the evaluation result the velocity-corrected measuring head position

$$XA = XG + XV$$

and/or the mean measuring head velocity V.

4,510,588

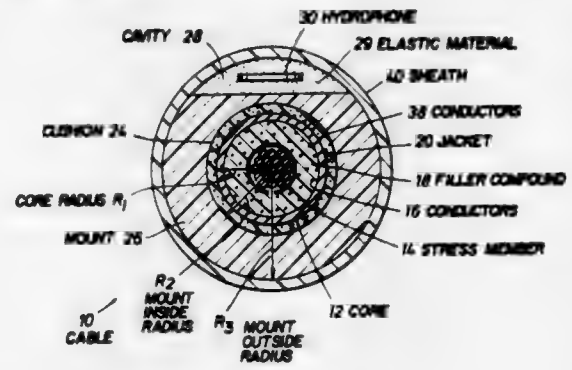
HYDROPHONE CABLE DECOUPLER

Vitold R. Kruka; Robert M. Kipp, and Edward R. Cadena, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 22, 1981, Ser. No. 333,526

Int. Cl.³ G01V *1/38*

U.S. Cl. 367—165 **4 Claims**



1. A marine seismic cable comprising:

a cable core that is substantially cylindrical,

a housing adapted for holding an acoustic energy transducer that is substantially curved and the sizes of said cable core and said housing are defined by the equation

$$R_1R_3^2 + R_1R_2^2 - 2R_2^3 = 0$$

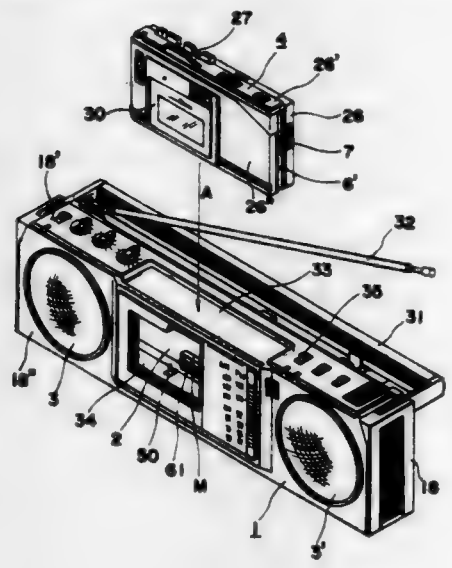
where,
R_1: radius of said cable core;
R_2: inside radius of said housing; and
R_3: outside radius of said housing, and
a body of elastic material positioned between said cable core and said housing.

4,510,589

SYSTEM FOR SECURING COMBINATION RADIO AND TAPE RECORDER

Hisao Ito, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 31, 1981, Ser. No. 336,082
Claims priority, application Japan, Jan. 20, 1981, 56-7449
Int. Cl.³ G11B *31/00*
U.S. Cl. 369—11 5 Claims



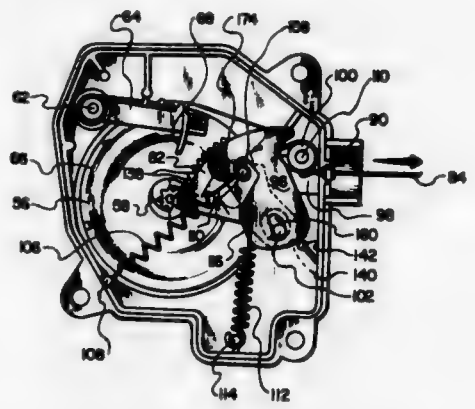
1. A coupling/uncoupling device for use in a combination appliance including a main appliance combined with an auxiliary appliance, with said main appliance and said auxiliary appliance being arranged to be usable independently of each other, comprising:
an accommodation recess for accommodating said auxiliary appliance therein, which is formed in said main appliance;
a first locking member having a locking portion which is projected into said accommodation recess so as to lock said auxiliary appliance at an accommodating position thereof when said auxiliary appliance has been fully accommodated into said accommodation recess;
a supporting member having supporting portions which are urged at all times by urging means in a direction opposite to that of accommodation of said auxiliary appliance so as to project into said accommodation recess;
said supporting portions being arranged to hold said auxiliary appliance temporarily at a temporary accommodating position thereof through an urging force of said urging means so that a part of said auxiliary appliance may project out of said accommodation recess in the direction opposite to that of accommodation of said auxiliary appliance when said auxiliary appliance is initially accommodated into said accommodation recess so deeply as to come into contact with said supporting portions and, being arranged to be ejected out of said accommodation recess in the direction of accommodation of said auxiliary appliance so as to be moved to an ejecting position thereof when said auxiliary appliance is further accommodated into said accommodation recess so as to reach said accommodating position, with a force greater than the urging force of said urging means being applied to said auxiliary appliance in the direction of accommodation of said auxiliary appliance;
a second locking member for locking said supporting member at the ejecting position of said supporting portions; and
a lock releasing member associated with a lock releasing button, which actuates said first locking member and said second locking member so as to release locking of said auxiliary appliance at the accommodating position and locking of said supporting member at the ejecting position, respectively when said lock releasing button is operated;
all of said first locking member, said supporting member, said second locking member and said lock releasing member being provided in said main appliance;
whereby said auxiliary appliance is locked at the accommodating position by said first locking member and said supporting member is locked at the ejecting position by said second locking member when said auxiliary appliance has been fully accommodated into said accommodation recess so as to reach the accommodating position; and the locking of said auxiliary appliance through said first locking member and the locking of said supporting member through said second locking member are released simultaneously by said lock releasing member so as to push said auxiliary appliance up to the temporary accommodating position in the direction opposite to that of accommodation of said auxiliary appliance by said supporting member through the urging force of said urging means when said lock releasing button is operated.

4,510,590

PULL STRING INERTIAL VOICE UNIT

Virgil M. Girton, Castaic; Gabriel Marason, Jr., and Lawrence C. Wang, both of Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jun. 6, 1983, Ser. No. 501,686
Int. Cl.³ G11B *3/00*
U.S. Cl. 369—63 7 Claims



1. In a phonograph device including a needle for tracking a sound track, a speaker cone and a tone arm having said needle depending therefrom, said tone arm transmitting vibrations from said needle to said speaker cone;
a flywheel rotatably mounted within said device including a shaft portion with a pinion;
actuating means including a sector gear pivotably mounted within said device for selectively engaging said pinion to suddenly impart a predetermined rotational force to said flywheel, said flywheel running down at a predetermined rundown speed subsequent to cessation of said force;
a record disc mounted on said flywheel and having at least one sound track engageable by said needle, said sound track being pre-recorded to match the rundown speed of said flywheel;
a spring operatively coupled to said sector gear; and
means coupled to said actuating means for engaging said needle with said sound track upon the imparting of said rotational force thereby to reproduce said sound track in response to rotation of said flywheel, the improvement comprising a pull string to operate said actuating means coupled to a sector clutch releasably attached to said

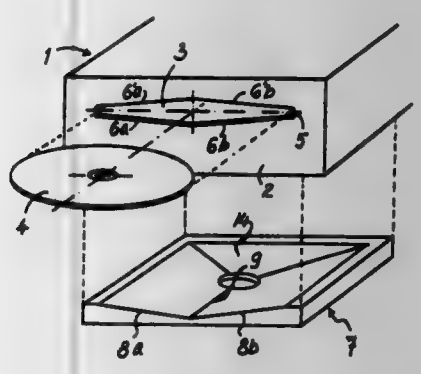
sector gear, said sector clutch moving from a rest position to an operating position upon pulling of said pull string and, said sector clutch moving said sector gear against the force of said spring until said sector clutch reaches its operating position where it contacts means to release said sector clutch, to thereby rotate said flywheel without releasing said pull string.

4,510,591

SLOT TYPE DISC RECORDER AND/OR PLAYER APPARATUS

Etienne A. Schatteman, Wemmel, Belgium, assignor to Staar S.A., Brussels, Belgium

Filed Nov. 15, 1982, Ser. No. 441,923
Claims priority, application Belgium, Dec. 10, 1981, 891428
Int. Cl.³ G11B *17/04, 19/16*
U.S. Cl. 369—77.1 **5 Claims**



1. In a disc recorder and/or player apparatus having a disc drive wherein a disc is rotated by a spindle,

a support for in-and-out sliding movement of a disc in its own plane in a transverse path relative to the spindle axis, said support including a member having a V-shaped surface with first portions extending to the spindle which are smoothly inclined and substantially symmetrically located with respect to said spindle which are engaged only by the edge of the the disc during in-and-out sliding movement, and a further portion extending transverse to said path and inclined toward said spindle into which said first portions merge so as to provide clearance between the surface of a disc and the surface of said member except at the edge of the disc to support the disc at the edge for relative movement with respect to the spindle, and

means for mounting said member and said spindle for relative movement axially of said spindle.

4,510,592

DISK CLAMPING DEVICE

Hitashi Kanamaru, and Fumio Kadoo, both of Saitama, Japan, assignors to Universal Pioneer Corporation, Tokyo, Japan

Continuation of Ser. No. 453,672, Dec. 27, 1982, which is a continuation of Ser. No. 225,090, Jan. 14, 1982, which is a continuation-in-part of Ser. No. 55,120, Jul. 5, 1979. This application Sep. 12, 1984, Ser. No. 649,973
Claims priority, application Japan, Jul. 5, 1978, 53-92501; Nov. 7, 1978, 53-152989
Int. Cl.³ G11B *3/62, 17/00*
U.S. Cl. 369—270 **22 Claims**

1. A disk clamping device, comprising:

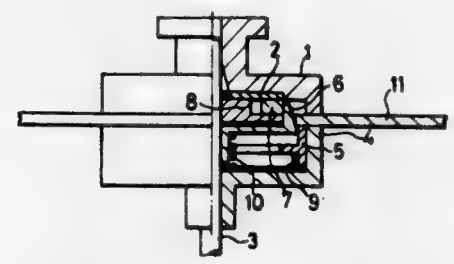
a turntable adapted to rotate a disk loaded thereon, and a spindle secured to said turntable for rotation therewith, said turntable being secured to said spindle at a predetermined height;

clamping means adapted to depress said disk against said turntable, said clamping means including a plate member;

a magnet and positioning means for positioning said magnet relative to said spindle, said magnet and said plate member forming a magnetic circuit in which magnetic flux is extended to clamp said disk to said turntable;

conical centering means for causing a center of said disk to coincide with an axis of rotation of said spindle when said disk is moved downwardly by said clamping means, whereby, said disk is clamped at a second predetermined height when said disk is brought into contact with said turntable; and

a movable ring having a substantially planar upper surface for supporting said disk, said movable ring being movably



supported on said turntable for parallel movement relative to said spindle, said movable ring being operable to maintain said disk horizontal as said clamping means depresses said disk into engagement with said turntable, first and second means for upwardly biasing said centering means and said movable ring, respectively, relative to said turntable.

4,510,593

INFORMATION DISK OF GROOVED, METAL-COATED CROSSLINKED POLYMERIC LAYER

Michael P. Daniels, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 18, 1982, Ser. No. 434,970
Int. Cl.³ C08F *2/50*; B32B *27/08, 27/30*
U.S. Cl. 369—283 **7 Claims**

1. An information carrying structure comprising a circular disc having information encoded in grooves on at least one metal coated surface thereof, the composition of the surface beneath the metal comprising the crosslinked reaction product of:

a polymerizable composition free of non-polymerizable solvents comprising

(a) 7.5 to 45 percent by weight of a monoethylenically unsaturated monomer having a molecular weight between 80 and 500,

(b) 7.5 to 80 percent by weight of a diethylenically unsaturated monomer having a molecular weight between 100 and 3000,

(c) 7.5 to 50 percent by weight of an organic polymer, non-reactive with (a) and (b), having a molecular weight of at least 10,000 which is soluble in a solution of (a) and (b), and

(d) an effective amount of a latent free-radical initiator,

the ratio of said monoethylenically unsaturated monomer to said diethylenically unsaturated monomer being greater than 1 to 7 and less than 6 to 1, and the viscosity of the composition being between 20 and 20,000 centipoise at 20° C.

4,510,594

LOOP-AROUND TESTING FACILITIES FOR A MULTILINE PROTOCOL CONTROLLER

James M. Johnson, Jr., Glen Ellyn, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1983, Ser. No. 481,055
Int. Cl.³ H04J *3/14*
U.S. Cl. 370—15 **11 Claims**

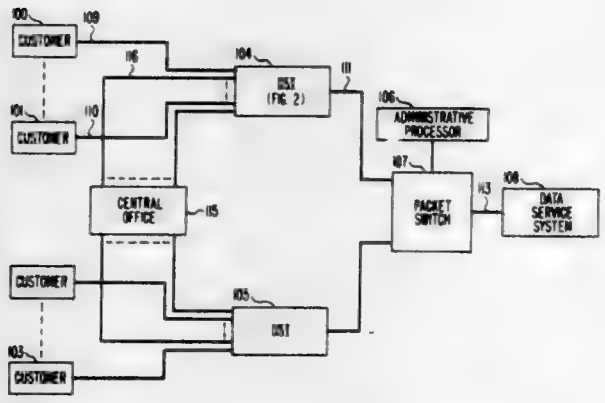
1. In a packet communication system having a plurality of customer interface units, a loop-around arrangement comprising

means responsive to a receipt of bit signals from said units

for forming said bit signals into receive byte signals associated with individual ones of said units;

means responsive to a receipt of transmit byte signals associated with individual ones of said units for disassembling said transmit byte signals into transmit bit signals;

means storing each of the transmit bit signals in association with individual ones of said units;



means responsive to a receipt of a loop signal for accessing the stored transmit bit signals associated with one of said units to transfer the accessed transmit bit signals to said forming means; and

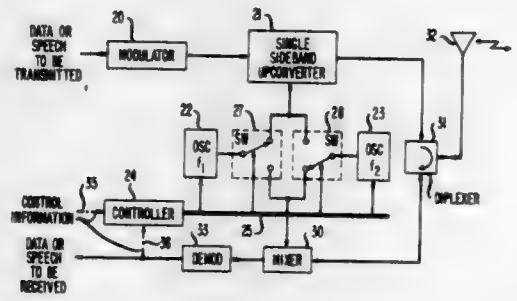
said forming means being further responsive to said transferred transmit bit signals for forming the transferred transmit bit signals into looped byte signals.

4,510,595

MODIFIED TIME-DIVISION TRANSMISSION TECHNIQUE FOR DIGITAL MOBILE RADIO SYSTEMS

Bernard Glance, Colts Neck, and Lawrence J. Greenstein, Edison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 3, 1983, Ser. No. 538,329
Int. Cl.³ H04J *4/00*
U.S. Cl. 370—32 **9 Claims**



1. A method of transmitting digital radio signal bursts between two remotely located transceivers on a time-division basis, the method comprising the steps of:

at a first transceiver,

(a) receiving a first digital signal burst from a second remote transceiver on a first channel centered on a first radio frequency;

(b) after step (a), transmitting a second digital signal burst to the second remote transceiver on the first channel while concurrently receiving a third digital signal burst from the second remote transceiver on a second channel centered on a second radio frequency during at least a portion of the transmission period of the second signal burst, the second radio frequency being different than the first radio frequency;

(c) after step (b), transmitting a fourth digital signal burst to the second remote transceiver on the second channel while concurrently receiving a fifth digital signal burst from the second remote transceiver on the first channel during at least a portion of the transmission period of the fourth signal burst; and

(d) after step (c), repeating steps (b) and (c) for subsequent digital signal bursts six through nine corresponding in steps (b) and (c) to that of digital signal bursts two through five, respectively.

4,510,596

TIME SLOT ASSIGNMENT FACILITIES

Philip W. Hartmann, Boulder; Dwight W. Kohs, Broomfield; Douglas A. Spencer, Boulder, and Garry V. Turnbow, Northglenn, all of Colo., assignors to AT&T Bell Labs, Murray Hill, N.J.

Filed Oct. 12, 1982, Ser. No. 433,821
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 **30 Claims**



1. In a PCM switching system having a plurality of port circuits and means for controllably establishing communication connections between selected ones of said port circuits, said establishing means including:

means for generating a plurality of unique time slots in a series of cyclically recurring time slots,

a first and a second and a third group of M port boards each having N of said port circuits mounted thereon,

means for providing a first type of communication service by applying N pairs of said time slots to each board of said first group wherein each port circuit on said boards receives a unique pair of said time slots, and

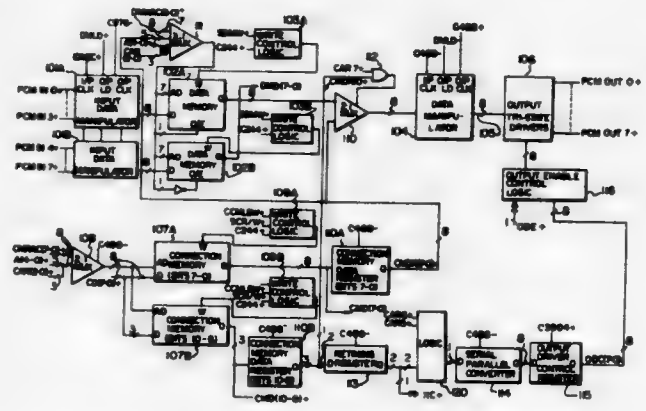
means for providing a second type of communication service by applying a first time slot of a different unique pair of said time slots to each port circuit on the ones of said port boards comprising a first half of said second and third groups of port boards and for applying the second time slot of each of said last named pairs to different ones of the port circuits on the port boards comprising a second half of said second and third groups of port boards.

4,510,597

TIME DIVISION SWITCHING MATRIX

Conrad Lewis, Nepean, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed Dec. 3, 1981, Ser. No. 327,196
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—66 **13 Claims**



1. A time division switching matrix comprising:

(a) means for receiving input signals divided into serial time slots according to a first sequence over a plurality of input lines;

(b) switching means for switching said signals to a plurality of output lines according to a second sequence,

(c) means for receiving control signals of one or more of first, second and third forms separately from said input signals from one or a plurality of control lines,

(d) means for controlling said switching means to establish said second sequence upon receipt of said control signals of a first form, and for controlling said switching means upon receipt of a second form of said control signals to output a third form of said received control signals to one or more of said plurality of output lines.

4,510,598

DIGITAL TRANSMULTIPLEXER

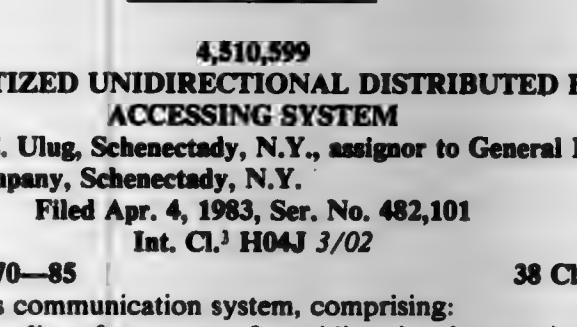
Heinz Göckler, and Helmut Scheuermann, both of Backnang, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,583

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132378

Int. Cl.³ H04J *4/00*

U.S. Cl. 370—50 **5 Claims**



1. In a system for digital conversion between time division multiplex signals and frequency division multiplex signals comprising: an input terminal for receiving a digital multiplex signal to be converted; a plurality of digital bandpass filters, one for each channel of a frequency multiplex signal, with each said bandpass filter including means for changing the sampling rate of the multiplex channel signal received by the associated bandpass filter to the sampling rate of the converted multiplex channel signal; means connecting said input terminal to the input of each of said bandpass filters; and means for combining the output signals from each of said bandpass filters to provide the digitally converted multiplex signal; the improvement wherein each of said bandpass filters comprises a recursive filter and has a transfer function

$$H(z) = U2(z)/U1(z) = P(z)/Q(z^N)$$

wherein U1(z) and U2(z) represent the filter input spectra and filter output spectra respectively, P(z) and $Q(z^N)$ are the numerator polynomial and the denominator polynomial respectively of the transfer function H(z), $z = e^{j2\pi f/fA}$, f is the signal frequency processed in the bandpass fitter, fA is the sampling rate for the digital frequency multiplex signal, and fA/N is the sampling rate for the time division multiplex signal.

4,510,599

PRIORITIZED UNIDIRECTIONAL DISTRIBUTED BUS ACCESSING SYSTEM

Mehmet E. Ulug, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1983, Ser. No. 482,101

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—85 **38 Claims**

1. A bus communication system, comprising:

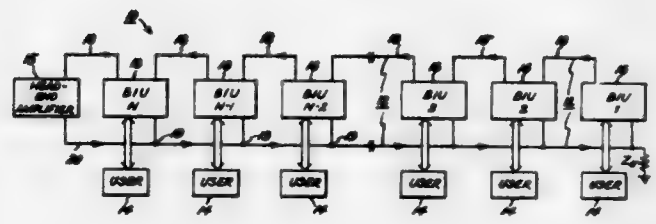
(a) a plurality of segments of a unidirectional transmit bus;

(b) a unidirectional receive bus such that information packets from said transmit bus are placed on said receive bus; and

(c) a plurality of bus interface units (BIUs) coupled in series with successive segments, respectively, of said transmit bus, each said BIU including a transmit bus input and a transmit bus output, said transmit bus input of each BIU being coupled, respectively, to the transmit bus output of the next upstream BIU, each said BIU also including a receive bus input connected to said receive bus, each said BIU being capable of transmitting an information packet of predetermined priority on said transmit bus, each said BIU including:

(1) a memory for storing a plurality of information packets to be transmitted; and

(2) a control circuit associated with said memory for



selectively operating said BIU in an active and a passive mode, said control circuit causing said BIU to operate as a repeater during said passive mode such that packets received on said transmit bus input are retransmitted on said transmit bus output and causing said BIU to operate as a transmitter during said active mode such that said BIU sequentially transmits said information packets stored in its said memory in accordance with said predetermined priority.

4,510,600

DIGITAL SIGNAL TRANSMISSION SYSTEM

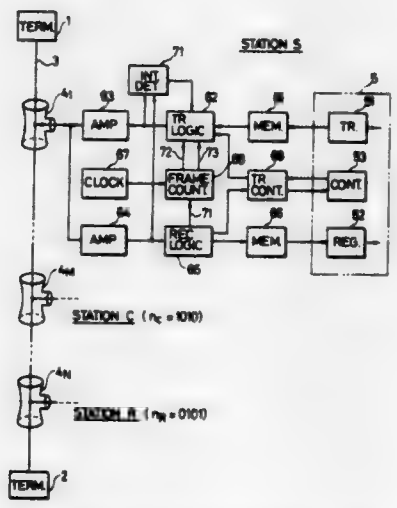
Yoichi Tan, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,718

Claims priority, application Japan, Oct. 30, 1981, 56-172895

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—94 **7 Claims**



1. A digital signal transmission system of the type wherein a plurality of stations transmit and receive digital information in packet form in a time division multiplex mode over a communication cable, each of said plurality of stations including transmitting means for transmitting a packet of information having a designation code representing a signal propagation delay time between said each station and a reference position on said cable, receiving means at each station for detecting said designation code, and means for determining the transmission tim-

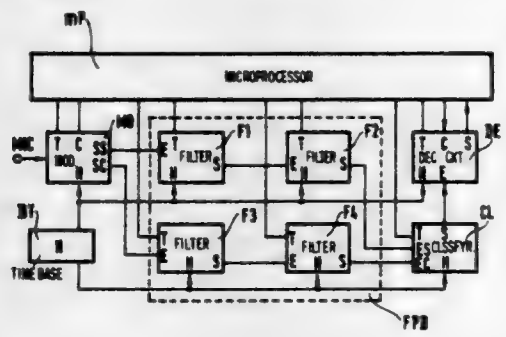
ing of each station in accordance with the detection of the designation code of another of said plurality of stations.

4,510,601

DIGITAL FREQUENCY RECEIVER

Philippe Delpit, Paris; Philippe Duplessis, Colombes, and Yves Renaudin, Bougival, all of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

PCT No. PCT/FR81/00084, § 371 Date Feb. 12, 1982, § 102(e) Date Feb. 12, 1982
PCT Filed Jun. 25, 1981, Ser. No. 348,543
Claims priority, application France, Jun. 25, 1980, 80 14090
Int. Cl.³ H04J *3/12*
U.S. Cl. 370—110.3 **9 Claims**



1. A digital frequency receiver connected to a processor for the recognition of multifrequency code signals received in signalling time slots and transmitted to the receiver in digital form by at least one PCM time multiplex link, the receiver including means for modulating the received signals with signals whose frequencies correspond to the code used and which are supplied by a digital generator modulating the signal in each of plural time-slots of the time multiplex link by the sine and cosine components of each code frequency, means for low-pass filtering the modulated signals and means for analysing the energy contained in the spectrum of the signals received in the neighborhood of the code frequency;

said receiver comprising:

a time base generator synchronized with data on said PCM time multiplex link for supplying in each time slot (BT) phase signals (ba to bd, A) for successively enabling circuits of the receiver;

means for testing predetermined conditions respecting energy levels for each time slot using a processor operating in response to said time base generator, said testing means including an energy-analysis unit, a generator control memory and injection and sampling means; and

two groups of low-pass filter cells coupled to said testing controlling means each corresponding to one of the sine and cosine components, each cell comprising a recurrence calculation circuit operating based on a finite difference equation and a memory circuit for storing intermediate values which correspond to each time slot and to each frequency.

4,510,602

PROGRAMMABLE LOGIC APPARATUS FOR ENTERING, PROCESSING AND TRANSMITTING DATA

Jean Engdahl, and Jérome Formaz, both of Bienne, Switzerland, assignors to Fordahl S.A.R.L., Bienne, Switzerland

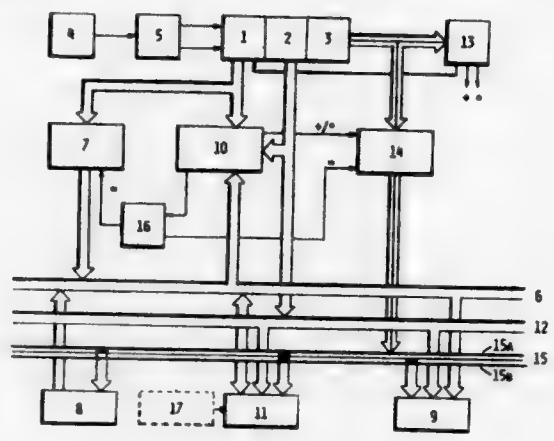
Filed Jun. 9, 1982, Ser. No. 386,798
Claims priority, application France, Jun. 24, 1981, 81 12908
Int. Cl.³ G11C *13/00*
U.S. Cl. 371—21 **10 Claims**

1. Programmable logic apparatus comprising

first memory means for storing only instruction signals;

second memory means, separate from said first memory means, for storying only grid signals which permit said instruction signals to be taken partly or completely into account; third memory means, separate from said first memory means and said second memory means, for storing only pairs of address signals at each storage location of said third memory means;

means for addressing said first memory means, said second memory means and said third memory means cyclically and in synchronism for simultaneously extracting (1) a set



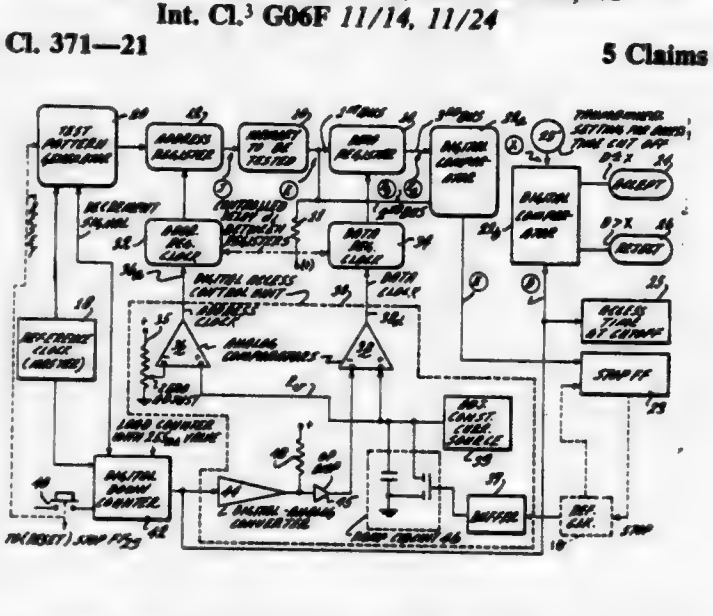
of instruction signals, (2) a set of grid signals for partly or completely modifying said instruction signals and (3) a pair of different address signals; and means for comparing said instruction signals and said grid signals for determining if a prescribed condition is satisfied for the continuation of processing.

4,510,603

TESTING SYSTEM FOR RELIABLE ACCESS TIMES IN ROM SEMICONDUCTOR MEMORIES

Robert D. Catiller, Garden Grove, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 267,072, May 26, 1981, abandoned.
This application Nov. 25, 1983, Ser. No. 555,441
Int. Cl.³ G06F *11/14, 11/24*
U.S. Cl. 371—21 **5 Claims**



1. In a testing system for determining the reliable access time of a ROM memory being tested, the combination comprising:

(a) address means to apply address-data to a ROM memory-being-tested at a time T_a and to decrement a down counter;

(b) means to place output memory data from said memory-being-tested on a first and second data output bus each of said memory data being respectively designated as first memory output data and second memory output data;

(c) means to temporarily store said output memory data on said first data output bus in a data latching register means;

(d) means to connect said second output bus to a second input port of a digital comparison means;

(e) third bus means to transmit said memory output data from said data latching register means to a first input port of said digital comparison means at a time T_d;

(f) said digital comparison means including:

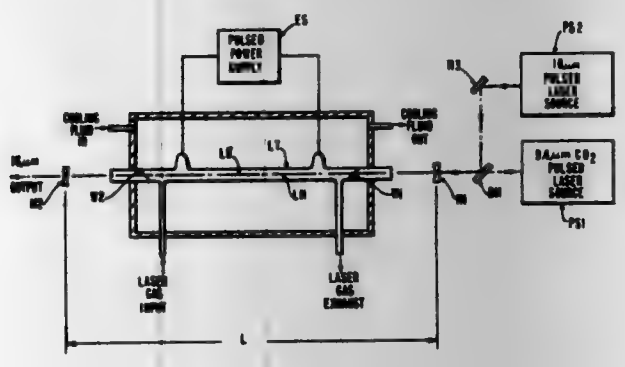
(f1) a second input port for receiving said memory output data after a moment in time, T_a when said ROM memory is addressed;
(f2) a first input port for receiving said memory output data at a time T_d;
(f3) means for comparing each bit of data on said second input port with each corresponding bit of data on said first input port;
(f_4) means for generating an error signal when corresponding data bits on said first and second input ports fail to indicate an equality;
(g) timing control means including:
(g1) means to generate a first time-control signal, T_a, for enabling said address means to apply address-data to said ROM memory and for enabling said memory output data to be received by said second input port of said comparison means;
(g2) means to generate a second time control signal, T_d, for enabling transfer of memory output data from said data latching register means, via said third bus means to said first input port of said digital comparison means;
(g3) master clock means for clocking said address means and said down counter means;
(g4) said down counter means being decremented from a preset value by said address means and including:
(g4a) means to sequentially diminish the time interval period between time T_d and T_a in discrete steps;
(g5) a stop flip-flop connected to receive said error signal and including:
(g5a) means to stop said master clock means upon occurrence of said error signal;
(h) said ROM memory being tested having connections to receive address-data from said address means and connections to respectively convey said first and second memory output data to said first and second output bus;
(i) said first and second data output bus connected to said ROM memory for respectively transmitting, simultaneously, said memory output data to said data latching register means and to said second input port of said comparison means;
(j) said data latching register means for temporarily storing said memory output data for a time interval period, T_d minus T_a, said latching register means including:
(j1) means to receive said first memory output data via said first data output bus;
(j2) means to convey said first memory output data via said third bus means to said comparison means.

4,510,604

OPERATION OF A TWO-PHOTON THREE LEVEL LASER

Lyle H. Taylor, Murrysville, and William H. Kasner, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 195,906, Oct. 10, 1980, Pat. No. 4,375,689. This application Nov. 12, 1982, Ser. No. 441,129
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—4 **2 Claims**



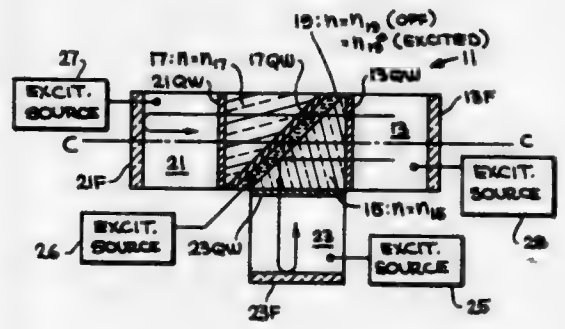
1. A method for improving the performance of two-photon, three level laser system including a laser medium disposed within a laser discharge region including spaced apart optical elements defining an optical cavity within said laser discharge region, wherein lasing occurs at two wavelengths with the lower laser level of the first lasing transition being the upper laser level of the second lasing transition, the intensity I of the second photon laser flux within the laser cavity defined by spaced apart optical elements being approximately equal to $I_o e^{N\alpha\ell/L}$ where α is the gain of the laser medium; l is the length of the laser medium; L is the distance between the optical elements; N corresponds to the number of passes within the laser cavity; and I_o is the initial intensity, comprising the step of:
positioning said spaced apart optical elements at a distance L which approximates but is not equal to or less than l in order to reduce the buildup time of the laser flux of the second lasing transition in the laser discharge region of said laser system.

4,510,605

DUAL FREQUENCY OPTICAL CAVITY

E. Victor George, Livermore, and John F. Schipper, Palo Alto, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 21, 1983, Ser. No. 477,456
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—23 **6 Claims**



1. Apparatus for generating two distinct laser frequencies ν_1 and ν_2 in an optical cavity, the apparatus comprising:
a T-shaped optical cavity comprising two arms, a base and a junction region lying between the two arms and the base and having two substantially 45°-45°-90° prisms of material of refractive index n_1 positioned in the junction region of said T-shaped cavity, each prism having a hypotenuse face being adjacent and parallel to but spaced apart from the other by a gap region, with the prisms' hypotenuse faces being oriented at 45° to a horizontal line defined by a first and second arm of said T-shaped cavity;
a first excitable gas positioned in the gap region between the two prisms and, having a predetermined refractive index n_2 in its unexcited state and a predetermined refractive index $n_2^* > n_2$ in its electrically or optically excited state, the refractive indexes n_1,n_2 and n_2^* satisfying the relations $n_1/n_2 > \sqrt{2}$ and $n_1/n_2^* < \sqrt{2}$;
first excitation means for controllably and intermittently exciting the first gas;
a second excitable gas, contained in the first arm of said T-shaped cavity for amplifying optical radiation of frequency ν_2 when the second gas is excited;
second excitation means for controllably and intermittently exciting the second gas;
a third, excitable gas, contained in the base of said T-shaped cavity for amplifying optical radiation of frequency ν_1 when the third gas is excited;
third excitation means for controllably and intermittently exciting the third gas;
a first mirror, positioned on an exposed vertical face of the arm of said T-shaped cavity containing the second excit-

able gas and being substantially 100 percent reflecting for incident optical radiation of frequency ν_2; and

a second mirror, positioned on an exposed horizontal face of the base of said T-shaped cavity and being substantially 100 percent reflecting for incident optical radiation of frequency ν_1.

4,510,606

SILENT DISCHARGE TYPE PULSE LASER DEVICE

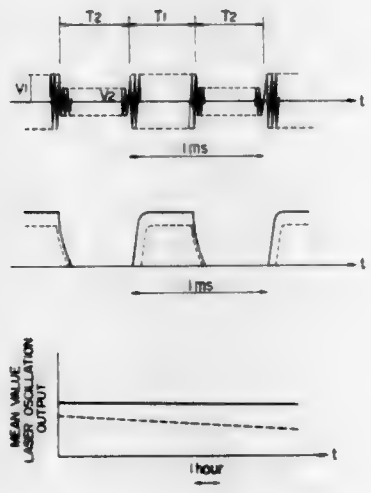
Shigenori Yagi, Kobe; Masaki Kuzumoto, Amagasaki; Masaaki Tanaka, Nagaokakyo, and Shuji Ogawa, Nishinomiya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 387,262

Claims priority, application Japan, Jun. 17, 1981, 56-93137

Int. Cl.³ H01S *3/097*

U.S. Cl. 372—25 **8 Claims**



1. A silent discharge type pulse laser device, comprising:

a pair of opposing electrodes, at least one of which is an electrode with a dielectric cover thereon, said pair of electrodes having a silent discharge section therebetween;

a laser resonator consisting of a total reflection mirror and a partial reflection mirror mounted opposite to each other with said silent discharge section in between;

a source of high frequency voltage for supplying to said pair of electrodes a high frequency voltage having a predetermined period for silent discharge;

and a control means for controlling said high frequency voltage from said source with respect to a first interval and a second interval that form a period which is longer than said period for silent discharge;

wherein said high frequency voltage being supplied to said silent discharge section across said pair of electrodes is at a first peak voltage value during said first interval and at a second peak voltage value during said second interval, said first peak voltage value being sufficient to excite laser oscillation and said second peak voltage value being sufficient to cause a discharge but insufficient to excite laser oscillation.

4,510,607

SEMICONDUCTOR LASER END-FACET COATINGS FOR USE IN SOLID OR LIQUID ENVIRONMENTS

Graham A. Garcia, and Steven J. Cowen, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

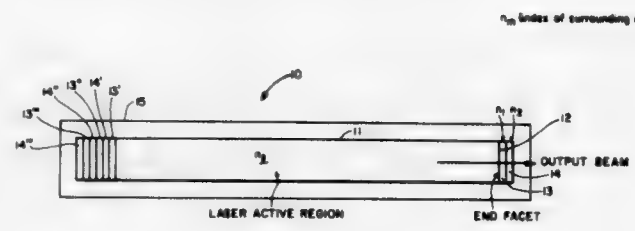
Filed Jan. 3, 1984, Ser. No. 567,594

Int. Cl.³ H01S *3/18*

U.S. Cl. 372—49 **4 Claims**

1. An improved semiconductor laser having improved transmission characteristics when transmitting in a liquid or a transparent solid medium having an index of refraction n_m comprising:

a first dielectric coating disposed on an end-facet of the semiconductor laser having an index of refraction n_1; and



a second dielectric coating disposed on the first dielectric coating having an index of refraction n_2, the materials of the dielectric coatings are selected such that $n_1/n_2=n_m$.

4,510,608

LASER TUBE UTILIZING NEGATIVE GLOW

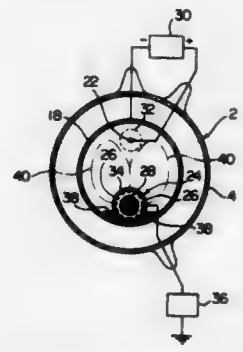
Kanichi Fujii, and Masahiro Otaka, both of Hitachi, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Feb. 22, 1982, Ser. No. 350,965

Claims priority, application Japan, Aug. 28, 1981, 56-134337

Int. Cl.³ H01S *3/097*

U.S. Cl. 372—87 **25 Claims**



1. In a laser tube including an anode and a hollow cathode and adapted for laser oscillation utilizing a negative glow generated in a space within the hollow cathode, the improvement wherein said laser tube includes an elongate cylindrical member in which the anode and the hollow cathode are disposed opposite to each other, means are included electrically insulating the anode from the cylindrical member, an active vaporizable metal is provided in the cylindrical member closely adjacent the outer surface of the hollow cathode, and in contact with said cylindrical member and a plurality of holes for communication between the internal space of the hollow cathode and the space outside thereof are formed in the hollow cathode.

4,510,609

FURNACE FOR VERTICAL SOLIDIFICATION OF MELT

Jaroslav L. Caslavsky, Lexington, Mass.; Gerald H. Lavoie, Pembroke, N.H.; William H. Earle, Randolph, and Dennis J. Viechnicki, Wellesley, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 31, 1984, Ser. No. 575,613

Int. Cl.³ H05B *3/40*

U.S. Cl. 373—110 **7 Claims**

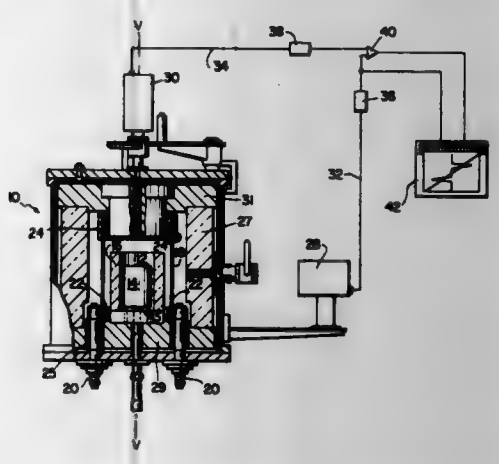
1. A gas-tight furnace for growing crystals from high temperature melts using the vertical solidification of melt technique comprising:

(A) a cylindrical crucible open at its top, mounted on a heat sink, for containing said melt;

(B) a cylindrical muffle spaced from and surrounding said crucible;

(C) vertically mounted heating rods spaced from said muffle and essentially uniformly spaced around the exterior of said muffle in a circular configuration;

(D) an electrically conducting continuous top ring which is electrically connected to the top of all of said heating rods;
(E) separate semi-circular ring sections electrically connecting said heating rods at their bottom ends;
(F) a thermal insulating layer of electrically conductive graphite completely enclosing elements (A) through (E) within said furnace; and,
(G) more than two electrically conducting power feeds brought from the exterior of said furnace and passing



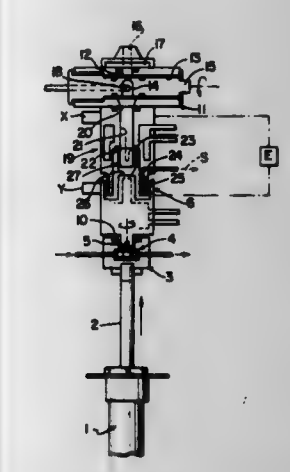
vertically through openings in said electrically conductive insulation in the bottom of said furnace to essentially vertical electrical connection with said separate semi-circular rings and having essentially uniformly spaced distances between each power feed to deliver electric current into and out of said furnace to develop heat in the heating rods, wherein the thermal environment is maintained so that there are essentially no thermal gradients in planes perpendicular to the vertical axis of the crucible.

4,510,610

EXTRACTIVE FURNACE FOR EXTRACTING GASEOUS COMPONENTS FROM MATERIAL SAMPLES

Yoshinori Hosokawa; Masahiro Tanimoto, and Katsuya Tsuji, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Oct. 13, 1983, Ser. No. 541,733
Claims priority, application Japan, Oct. 30, 1982, 57-191702
Int. Cl.³ H05B *3/00*
U.S. Cl. 373—118 **7 Claims**



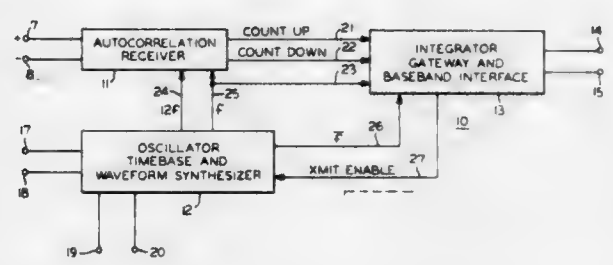
1. An extractive furnace for extracting gaseous components from material samples, which gaseous components are then to be analyzed, said furnace comprising:
upper and lower electrodes mounted to press therebetween a crucible of electrically conductive material, such that the application of an electric current to said electrodes will cause heating of a material sample adapted to be contained in the crucible, thereby extracting gaseous components from the material sample; and
means rotating at least one of said upper and lower electrodes about a vertical axis, and thereby causing surfaces of the crucible contacting respective surfaces of said upper and lower electrodes to rotate under friction against said respective surfaces, thereby improving electrical contact between the crucible and said electrodes.

4,510,611

TRANSCEIVER CIRCUIT FOR INTERFACING BETWEEN A POWER LINE COMMUNICATION SYSTEM AND A DATA PROCESSOR

John J. Dougherty, Avon, Conn., assignor to General Electric Company, Portsmouth, Va.

Filed Nov. 19, 1982, Ser. No. 442,982
Int. Cl.³ H04B *1/38;* H03D *1/00*
U.S. Cl. 375—8 **14 Claims**



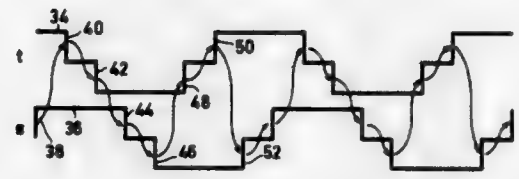
9. An autocorrelation receiver for connection between a power line and a data processing bus in a power line communication system employing amplitude shift keying modulation of broadband signals on the power line and base band signals on the data processing bus, said autocorrelation receiver comprising:
digital autocorrelation means connectable to said power line for receiving amplitude shift keyed signals of a carrier frequency signal and providing an output indicative of the detection of said carrier frequency signal;
digital filter means connected to said digital autocorrelation means for rejecting detached harmonics of said carrier signal in the output of said digital autocorrelation means;
sampling means connected to the output of said digital filter means for sampling the output thereof at a rate which is an integral multiple of said carrier frequency signal; and
digital averaging means connected to the output of said sampling means for averaging the output thereof over one period of said carrier frequency signal.

4,510,612

SYSTEM COMPRISING MUTUALLY SYNCHRONIZING FIRST AND SECOND ACTIVE FUNCTIONAL UNITS

Carel S. Scholten; Arie Slob, and Pierre G. Jansen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1982, Ser. No. 358,752
Claims priority, application Netherlands, Apr. 3, 1981, 8101666
Int. Cl.³ H04L *7/02*
U.S. Cl. 375—106 **6 Claims**



1. A synchronization system comprising a first station having a first clock generator, a first signal generator and a first detector; a second station having a second clock generator, a second signal generator and a second detector, said first generator and said second detector being interconnected by a single first interconnecting wire; said second signal generator and said first detector being interconnected by a single second interconnecting wire;

wherein said first signal generator has means for producing under stepwise control by said first clock generator a first stepwise succession of three discrete signal values on said first interconnecting wire from a first extreme signal value to a second extreme signal value and vice versa, two successive discrete signal values being separated by an associated signal transition;

wherein said second signal generator has means for producing under stepwise control by said second clock generator a second stepwise succession of three discrete signal values on said second interconnecting wire from a first extreme signal value to a second extreme signal value of said second signal generator and vice versa, two successive discrete signal values being separated by an associated signal transition;

wherein said second detector has means for detecting a transition to either of said first and second extreme signal values of said first signal generator and thereupon enabling said second signal generator to start a second succession from the prevailing one of said first and second extreme signal values of said second signal generator;

and wherein said first detector has means for detecting a transition to either of the first and second extreme signal values of said second signal generator and thereupon enabling said first signal generator to start a first succession from the prevailing one of first and second extreme signal values of said first signal generator.

4,510,613

DIAPHRAGM FOR DEFINING A RADIATION BEAM

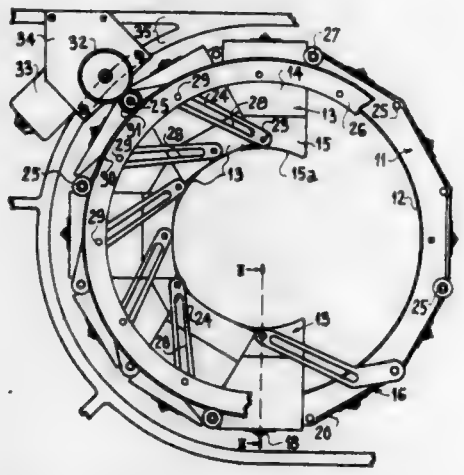
Jean Caugant, and Jacques Dale, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 28, 1983, Ser. No. 489,353

Claims priority, application France, Apr. 30, 1982, 82 07522

Int. Cl.³ A61B *6/00*; G21K *1/04*

U.S. Cl. 378—152 **10 Claims**



1. A diaphragm for defining a beam, particularly an X-ray beam at the input of an image receiver such as an image intensifier, comprising a frame in which there is an opening and a plurality of elements partly overlapping the said opening, wherein the overlap elements consist of flexible material plates and the rear parts thereof extending beyond the outer edge of the frame are turned down, preferably substantially perpendicular to the plane of the said opening.

4,510,614

PREDISTORTED AM STEREO TRANSMISSION

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec H3R 1K3, both of Canada

Filed Feb. 7, 1984, Ser. No. 577,686

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—16 **1 Claim**

1. The method of generating a compatible AM stereo wave, which comprises:

receiving a first signal and a second signal and forming a first combination of said first and said second signals, and forming a second combination of said first and said second signals, wherein one of said combinations is the sum of said signals, and the other of said combinations is the difference of said signals, and

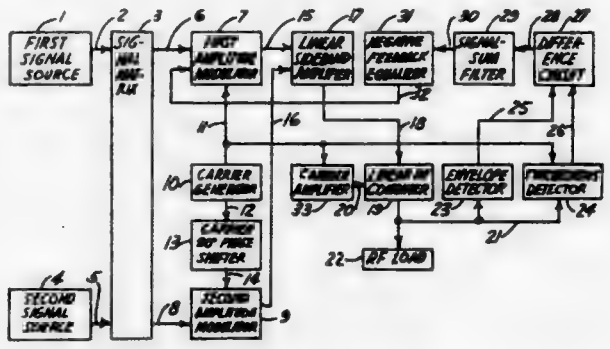
generating a carrier of substantially constant amplitude and substantially constant frequency, and

forming in-phase amplitude-modulation sidebands, of said first combination with predistortion, on said carrier suppressed, and

forming quadrature amplitude-modulation sidebands of said second combination on said carrier shifted 90° and suppressed, and

linearly combining said carrier, said in-phase sidebands, and said quadrature sidebands;

wherein the improvement comprises the predistorting of said first combination, so that said predistortion is substantially equal in amplitude, and substantially opposed in phase, to the distortion of said first combintion due to the presence of said quadrature sidebands, at the output of an envelope detector which receives said carrier, said in-



phase sidebands and said quadrature sidebands, due to delivering said carrier, said distorted in-phase sidebands, and said quadrature sidebands, to an envelope detector, and to a synchronous detector, and

obtaining the difference of the outputs of said said envelope detector and said synchronous detector by a difference circuit, and

passing the output of said difference circuit through a filter with a pass-band substantially the same as the frequency band of said first combination of signals, and

passing the output from said filter through an equalizer which adjusts the phase over a wide range of frequencies in accordance with negative-feedback theory, so as to prevent positive feedback around the negative-feedback loop which includes said filter and said equalizer, and

adding the output of said equalizer to said first combination as said predistortion, and

delivering said carrier, said in-phase sidebands generated by said predistorted first combination of said signals, and said quadrature sidebands generated by said second combination of said signals, to an RF load, as said compatible stereo wave.

4,510,615

MAGNETIC CHARACTER READER WITH DOUBLE DOCUMENT DETECTION

Gene D. Rohrer, Concord, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1981, Ser. No. 335,482

Int. Cl.³ G06K *9/00, 13/067*; B07C *5/344*

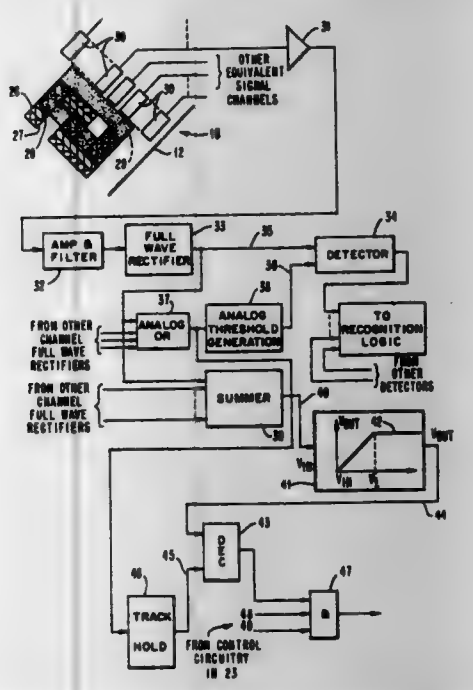
U.S. Cl. 382—7 **10 Claims**

1. Magnetic ink character recognition apparatus including a transport for moving documents bearing magnetic ink characters along a path successively past a character magnetizing station and a read station, said read station comprising a plurality of magnetic sensors arranged to encounter flux from differ-

ent portions of characters borne by documents transported along said path, and wherein the improvement comprises:

first circuit means for producing a reference signal as a function of the output of a small portion of said magnetic sensors,

second circuit means for producing a cumulative signal that



is porportional to the sum of the output of a large portion of said magnetic sensors when said sum is relatively small, and

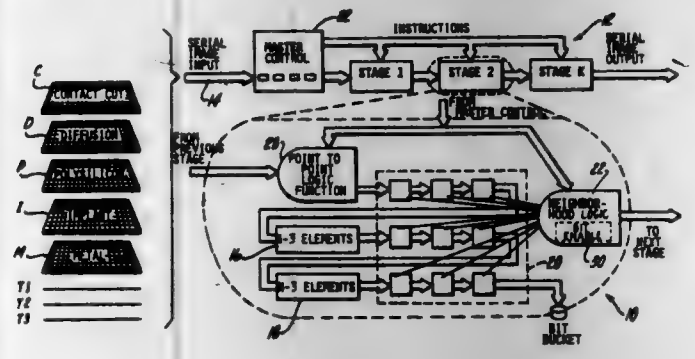
comparison means responsive to a predetermined relationship between said reference and cumulative signals for indicating a multi-document error condition whenever said predetermined relationship exists.

4,510,616

DESIGN RULE CHECKING USING SERIAL NEIGHBORHOOD PROCESSORS

Robert M. Lougheed, and Trevor N. Mudge, both of Ann Arbor, Mich., assignors to The Environmental Research Institute of Michigan, Ann Arbor, Mich.

Division of Ser. No. 340,609, Jan. 19, 1981, Pat. No. 4,441,207.
This application Feb. 6, 1984, Ser. No. 577,003
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.³ G06K *9/36*
U.S. Cl. 382—8 **3 Claims**



1. A method of checking bit-map representations of an article for compliance with preselected geometrical constraints, said method comprising:

feeding said bit-map representations in a raster scan line format to an input of a system having at least one serial neighborhood transformation stage;

performing a series of neighborhood transformations in said system to detect regions in the bit-map not complying with said geometrical constraints; and

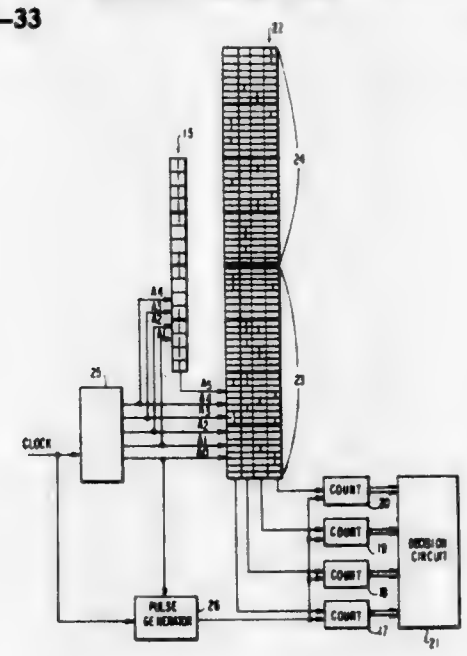
generating an output of the system flagging said detected regions in noncompliance.

4,510,617

CHARACTER RECOGNITION SYSTEM UTILIZING PATTERN MATCHING METHOD

Nobuhiko Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 351,080
Claims priority, application Japan, Feb. 20, 1981, 56-23966
Int. Cl.³ G06K *9/68*
U.S. Cl. 382—33 **5 Claims**



1. A character recognition system for recognizing an input pattern by comparing with a plurality of standard masks, said input pattern being composed of input black and white meshes, each of said standard masks having standard black and white meshes which are to be black and white, respectively, said system comprising:

first memory means for storing said standard masks in the form of standard meshes weighted in plural steps, said first memory means having at least two memory areas, said standard black and white meshes being stored in different memory areas;

means for producing first read out address data;

means for reading out the stored data from said first memory means in response to said first read out address data and input mesh data of said input pattern as second read out address data, the reading out of said standard black and white meshes from said memory areas being selected in response to said input mesh data;

means for counting the read out data from said first memory means.

4,510,618

NOISE CLEANER FOR BINARY IMAGES

Ergin' Ataman, Istanbul, Turkey, and J. Thomas King, Waterloo, Canada, assignors to NCR Canada Ltd - NCR Canada LTEE, Mississauga, Canada

Filed Dec. 27, 1982, Ser. No. 453,561
Int. Cl.³ G06K *9/40*
U.S. Cl. 382—54 **10 Claims**

1. Apparatus for removing noise from signals representing a square matrix of binary picture elements comprising:

(a) computing matrix means for providing column sums from the square matrix of binary signals, each having a state corresponding to the color level of a portion of a scanned image;

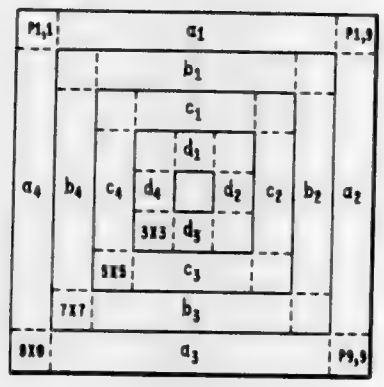
(b) means operatively coupled to said computing matrix means for providing row sums from said binary signals;

(c) modifying matrix means for receiving the matrix of bi-

nary signals from said computing matrix means and for changing the state of the binary signals in select combinations of connected rows and columns in response to a clean signal; and

(d) logic means comprised of:

(i) means for determining a first sum of all the binary signals, of one state, present in the two innermost adjacent rows and columns of the square matrix; and



(ii) means for determining a second sum of all the binary signals, of one state, present in the rows and columns adjacent the two innermost rows and columns and the first sum, said first and second sums being compared against pre-selected values to identify the presence of spurious binary signals that do not correspond to the scanned image and to provide a clean signal to said modifying matrix means for deleting said spurious binary signals from said modifying matrix means.

4,510,619

DOCUMENT PROCESSING SYSTEM

Thomas Q. LeBrun; John Torkelson, both of Dallas; Roy E. Dempster, and Richard G. Van Tyne, both of Richardson, all of Tex., assignors to BancTec, Incorporated, Dallas, Tex.

Filed Oct. 1, 1981, Ser. No. 307,809

Int. Cl.³ G06K *9/00*

U.S. Cl. 382—57 **1 Claim**

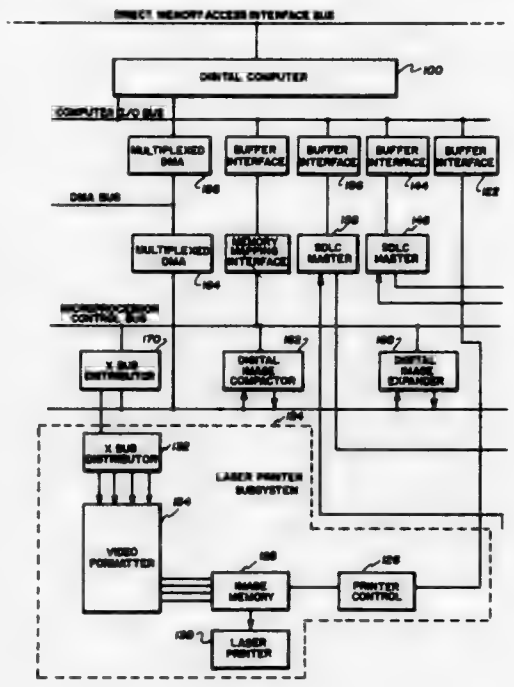
1. Apparatus for processing documents, comprising:

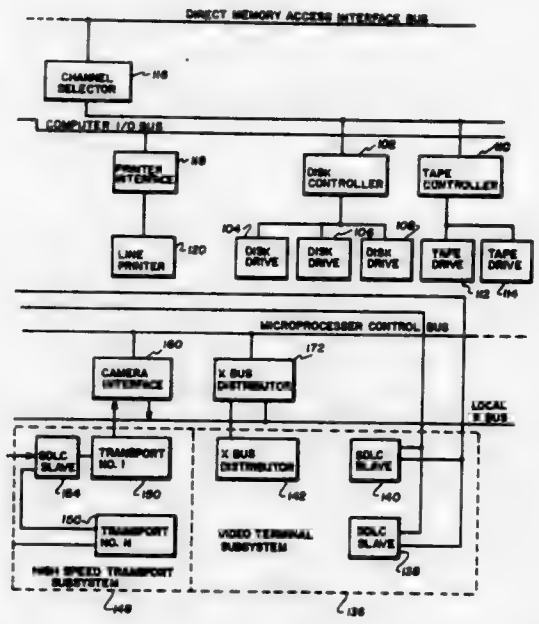
(a) transport means for continuously transporting said documents along a transport path;

(b) encoding means disposed adjacent said transport path for selectively encoding machine readable data upon said documents, said encoding means comprising a plurality of fixed dies, a plurality of electronically controlled hammers, and a magnetic ink bearing ribbon interposed between said documents and said dies and being transported at the same velocity as the velocity of transport of said documents;

(c) reader means disposed adjacent said transport path for reading machine readable data on said documents while said documents are transported, without interruption, past said reader means; and

(d) image capture means disposed adjacent said transport path for capturing and digitizing an image of at least a portion of said documents, said image capture means comprising means for vertically scanning said documents, means for horizontally analyzing consecutive vertical scans to identify black and white sections as well as repeti-





tive patterns of said image, and means for generating distinctive codes representative of said analyzing.

4,510,620

HANDLE FOR CARRIER BAG AND METHOD OF MAKING HANDLED CARRIER BAG

Marinus J. M. Langen, 21 Chilcot Ave., Rexdale, Ontario, Canada (M9W 1T9); Edgars H. Strauss, deceased, late of Scarborough, Canada, and by Leida Strauss, administrator, 125 Hildenboro Sq., Scarborough, Ontario, Canada (M1W 1Y2)

Filed Feb. 25, 1983, Ser. No. 469,748

Claims priority, application Canada, Feb. 23, 1982, 396889

Int. Cl.³ B65D *33/12*

U.S. Cl. 383—14 **3 Claims**

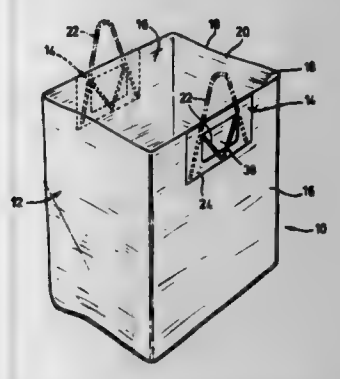
1. In a carrier bag which has a container portion having a pair of oppositely disposed side walls each having an upper edge; the improvement of;

a handle comprising;

(a) an elongated band of flexible material having a high tensile strength, said elongated band being initially arranged in an M-shaped configuration having a pair of outer leg portions and a V-shaped bridge portion which extends therebetween,

(b) a mounting panel having a mounting face secured to said outer leg portions and to the lower end of the V-shaped

bridge portion, said mounting panel also being secured to one of said side walls in a position in which it initially retains the elongated band in its M-shaped configuration and in which the M-shaped configuration extends down-



wardly from said upper edge of said side wall, said mounting panel being severable on both sides of lower end of the V-shaped bridge portion to release the bridge portion to permit it to extend upwardly from said upper edge to form a manually engagable handle.

4,510,621

SELF-SEALING POUCH FOR FORMING ADHESIVE-TO-ADHESIVE SEAL

Dennis A. Sak, Hinsdale, and Thomas Mestetsky, St. Charles, both of Ill., assignors to Arvey Corporation, Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,396
Int. Cl.³ B65D *33/20, 77/12*
U.S. Cl. 383—89 **17 Claims**



1. A self-sealing pouch, comprising:

first and second generally coextensive webs joined together along marginal edge portions thereof, said first web comprising plastic film material;

an elongated access opening defined by said first web generally adjacent one end thereof for providing access to the interior of said pouch, said access opening extending generally transversely of said pouch; and

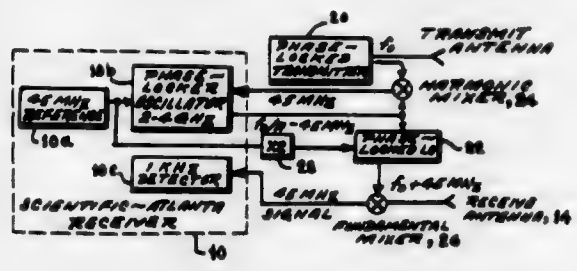
pressure-sensitive adhesive sealing means provided on said first web on opposite sides of said access opening so that said opening can be sealed by folding said pouch to bring said adhesive means into confronting relation with itself to form an adhesive-to-adhesive seal for closing said access opening.

4,510,622

HIGH SENSITIVITY MILLIMETER-WAVE MEASUREMENT APPARATUS

Tsutomu T. Mori, Gardena; Robert B. Dybdal, Palos Verdes Estates, both of Calif., and Robert D. Etcheverry, Hawthorne, Calif. (by Nancy Etcheverry, guardian), assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 14, 1982, Ser. No. 388,327
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—67 **4 Claims**



1. A high sensitivity millimeter wave measurement apparatus comprising in combination:

means for transmitting a millimeter wave at a predetermined operating frequency, said transmitting means including a crystal oscillator to provide a phase-locked transmitter, said transmitting means providing a transmitter signal;

means for receiving a millimeter wave, said receiving means including a phase-locked local oscillator and a fundamental mixer unit;

a harmonic mixer unit operatively connected to said phase-locked transmitter to sample transmitter frequency deviations; and,

a microwave receiver unit operatively connected to said harmonic mixer unit to receive said transmitter frequency deviations, said microwave receiver unit including a phase-locked oscillator to track said transmitter frequency deviations, said phase-locked oscillator providing a reference signal to both said harmonic mixer unit and said phase-locked local oscillator of said receiving means, said microwave receiver unit generating an internal 45 MHz reference signal, said 45 MHz reference signal being applied to said phase-locked oscillator in said microwave receiver unit, said 45 MHz reference signal being doubled by a times 2 multiplier unit and applied as a reference signal to said phase-locked local oscillator in said receiving means, said phase-locked local oscillator providing a local oscillator signal to said fundamental mixer unit, said receiving means receiving and applying said millimeter wave to said fundamental mixer unit, said fundamental mixer unit mixing said local oscillator signal and said said millimeter wave to provide a first IF signal to said microwave receiver unit for detection and measurement.

4,510,623

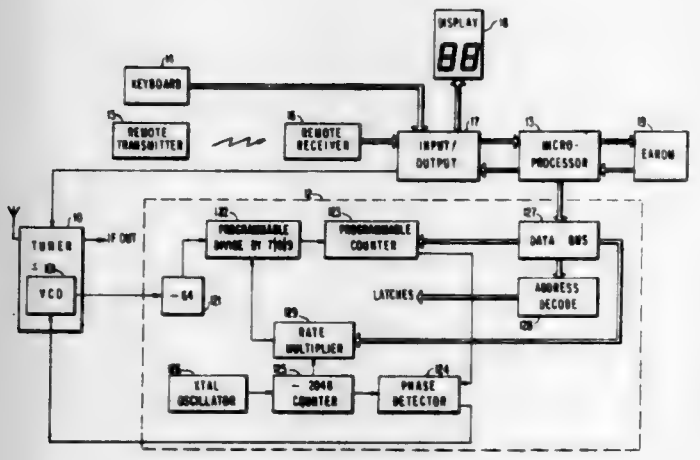
TELEVISION CHANNEL LOCKOUT

Paul Bonneau, Portsmouth; Howard E. Holshouser, Suffolk, and Terrence E. Rogers, Portsmouth, all of Va., assignors to General Electric Company, Portsmouth, Va.

Filed Jul. 23, 1982, Ser. No. 401,175
Int. Cl.³ H04B *1/16;* H04N *5/44, 7/16*
U.S. Cl. 455—181 **23 Claims**

1. A receiver of the type which is electronically tunable to any of a plurality of modulated carrier signals, said receiver comprising a tuner local oscillator the oscillating frequency of which is controlled by a phase lock loop having a programmable frequency divider, a microprocessor responsive to an input indicating the selection of a modulated carrier signal to which the receiver should tune for loading said programmable frequency divider with a programmable constant to cause said local oscillator to oscillate at the required frequency to tune the receiver to the selected modulated carrier signal, and a

non-volatile memory connected to said microprocessor for storing information, said microprocessor being responsive to a user entered lockout code sequence for storing in said non-volatile memory information identifying at least one of said plurality of modulated carrier signals the reception of which is to be inhibited and also for storing in said non-volatile memory said user entered lockout code sequence, timing means, said



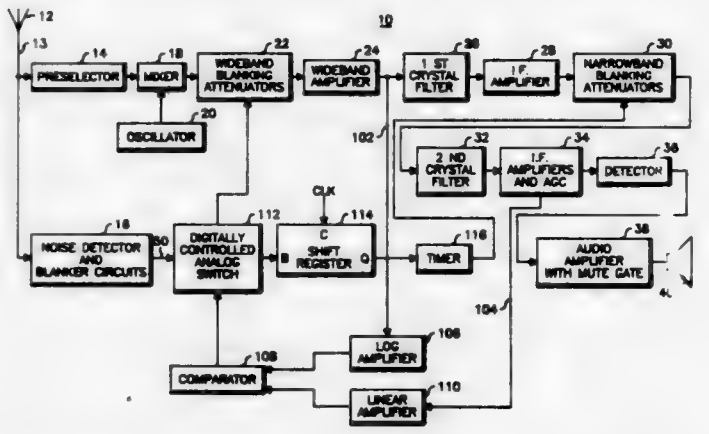
microprocessor being responsive to said timing means to thereafter for a predetermined period of time prohibiting the loading of a corresponding programmable constant in said programmable frequency divider whenever a user input indicates the selection of a modulated carrier signal the reception of which is to be inhibited and when said predetermined period of time has expired, said micrprocessor erasing the information in said non-volatile memory.

4,510,624

NOISE BLANKING ARRANGEMENT TO MINIMIZE BLANKER SPLATTER

Sharon E. Thompson, Rolling Meadows, and Bruce C. Eastmond, Downers Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 22, 1983, Ser. No. 535,001
Int. Cl.³ H04B 1/10
U.S. Cl. 455—223
26 Claims



1. An impulse noise blanking control arrangement for use in a radio receiver having a wideband, prefilter stage, a narrowband, postfilter stage and a filter coupled in between said wideband and narrowband stages, said control arrangement comprising:

a. means for sensing the signal level in the wideband stage and providing a corresponding first output signal;
b. means for sensing the signal level in the narrowband stage and providing a corresponding second output signal;
c. means for comparing said first and said second output signals and producing a control signal; and
d. means for selectively blanking impulse noise in either the wideband, prefilter stage or narrowband postfilter stage in response to said control signal.

DESIGNS

APRIL 9, 1985

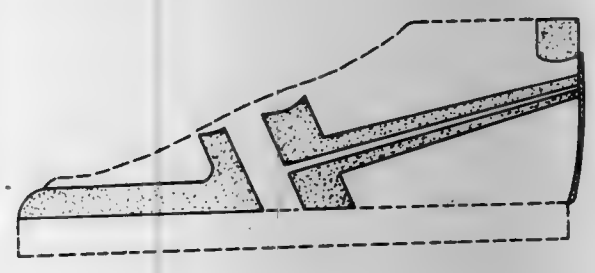
278,279
THIGH PROTECTOR
Eugene J. Vacanti, Edina, Minn., assignor to Sports Marketing, Inc., Minneapolis, Minn.
Filed Aug. 17, 1982, Ser. No. 408,855
Term of patent 14 years
U.S. Cl. D2—27



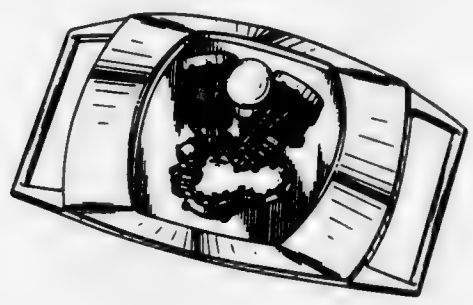
278,280
CHEST AND SHOULDER PROTECTOR
John R. Gregory, 303 W. 35th St., Ste. C, National City, Calif. 92050; Gerald R. Parks, Denver, Colo., and John D. Dondero, Sun Valley, Id., assignors to John R. Gregory, National City, Calif.
Filed Mar. 10, 1983, Ser. No. 474,053
Term of patent 14 years
U.S. Cl. D2—27



278,281
STRIPES PORTION OF AN ATHLETIC SHOE
Stanley A. Dreir, and Jeffrey Dreir, both of 58 Independence Dr., East Brunswick, N.J. 08816
Filed Aug. 23, 1982, Ser. No. 410,347
Term of patent 14 years
U.S. Cl. D2—314



278,282
PANHEAD ENGINE BELT BUCKLE
Thomas H. Rudd, Wayzata, Minn., assignor to Drag Specialties, Inc., Minnetonka, Minn.
Filed Feb. 9, 1983, Ser. No. 465,300
The portion of the term of this patent subsequent to Sep. 27, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—394



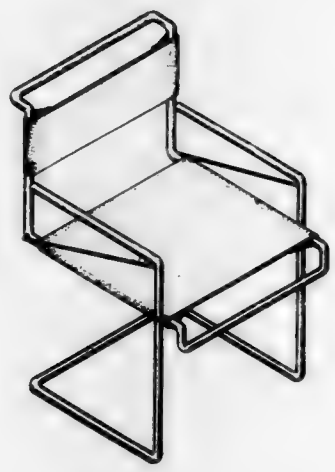
278,283
ROCKING CHAIR
Carlos Riart, Palma De Mallorca, Spain, assignor to Knoll International, Inc., New York, N.Y.
Filed Oct. 6, 1982, Ser. No. 433,164
Term of patent 14 years
U.S. Cl. D6—348



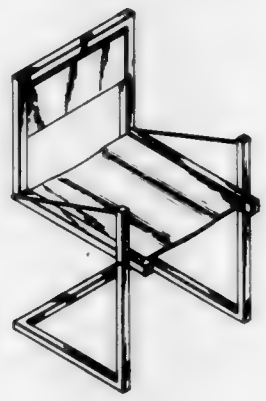
278,284
SPOOL AND SPINDLE ROCKING CHAIR
Michael W. Bowen, 1847 Parr Hwy., Adrian, Mich. 49221
Filed Nov. 17, 1982, Ser. No. 442,311
Term of patent 14 years
U.S. Cl. D6—348



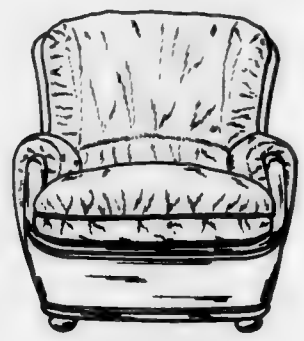
278,285
CHAIR
Charles Lowrey, 770 Park Ave, New York, N.Y. 10021
Filed Jan. 11, 1983, Ser. No. 457,238
Term of patent 14 years
U.S. Cl. D6—372



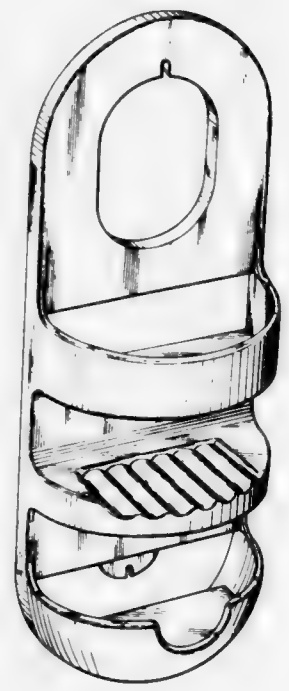
278,286
CHAIR
Charles Lowrey, 770 Park Ave., New York, N.Y. 10021
Filed Jan. 11, 1983, Ser. No. 457,239
Term of patent 14 years
U.S. Cl. D6—372



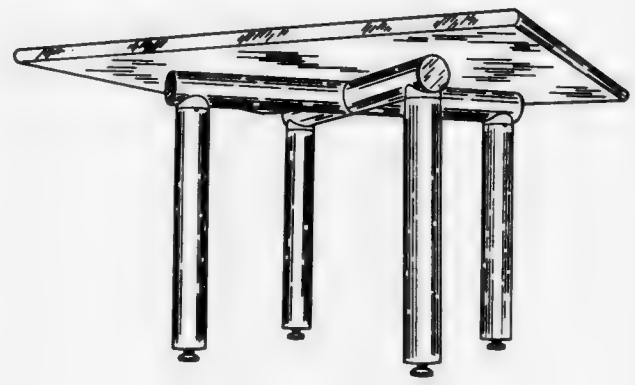
278,287
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti, s.r.l., Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,686
Claims priority, application Italy, Mar. 9, 1982, 21084/82[U]
Term of patent 14 years
U.S. Cl. D6—381



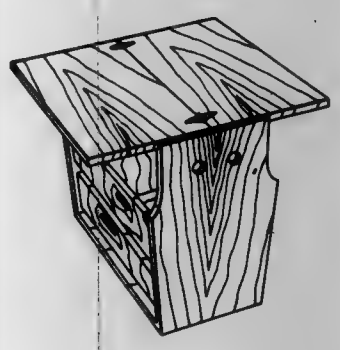
278,288
SHOWER CADDY
Giovanna Talocci, and Fabio Lenci, both of Rome, Italy, assignors to F. LLI Guzzini S.p.A., Recanati, Italy
Filed Jan. 19, 1982, Ser. No. 340,633
Claims priority, application Italy, Jul. 24, 1981, 22460/81[U]
Term of patent 14 years
U.S. Cl. D6—525



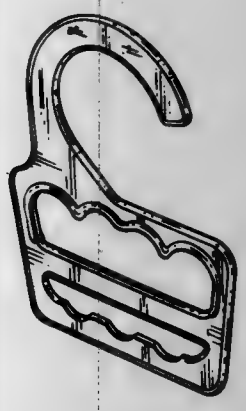
278,289
TABLE
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Filed Jan. 10, 1983, Ser. No. 456,771
Claims priority, application Italy, Jul. 8, 1982, 53486/82[U]
Term of patent 14 years
U.S. Cl. D6—487



278,290
EXTENDIBLE TABLE
Marvin H. Morton, Jr., Rte. 1, Box E, Albemarle, N.C. 28001
Filed Jun. 30, 1982, Ser. No. 393,689
Term of patent 14 years
U.S. Cl. D6—430



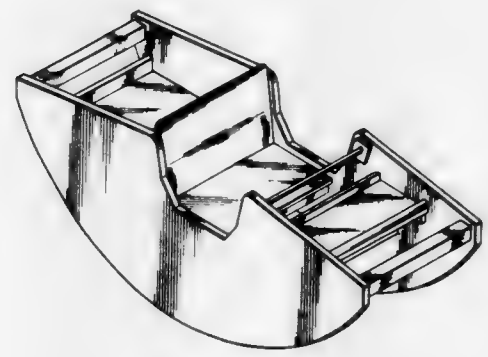
278,291
CLOTHING HANGER SUPPORT
Jack L. Gurule, 1250 Adams #D-101, Costa Mesa, Calif. 92626
Filed Oct. 13, 1983, Ser. No. 541,773
Term of patent 14 years
U.S. Cl. D6—328



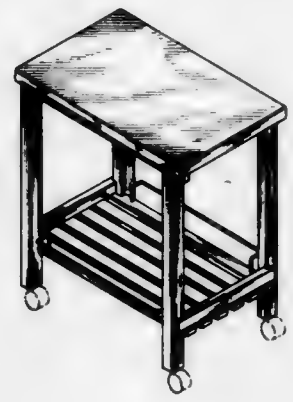
278,292
HAMMOCK
James T. Newby, 2624 Belle Meade Dr., Huntsville, Ala. 35811
Filed Jul. 9, 1982, Ser. No. 396,791
Term of patent 14 years
U.S. Cl. D6—347



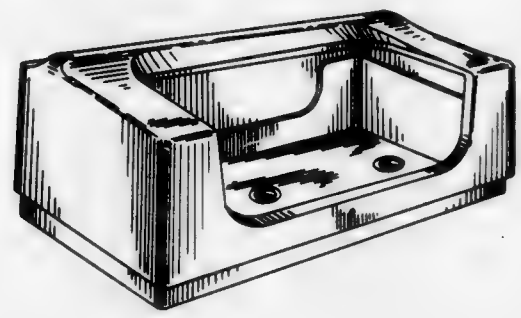
278,293
ROCKER
Mark J. Strang, 1209 Sonoma, Carson City, Nev. 89701
Filed Mar. 15, 1983, Ser. No. 475,616
Term of patent 14 years
U.S. Cl. D6—348



278,294
TABLE
John J. Dau, P.O. Box 188, Bally, Pa. 19503
Filed Mar. 4, 1983, Ser. No. 472,177
Term of patent 14 years
U.S. Cl. D6—477



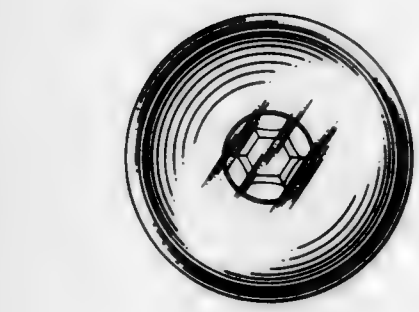
278,295
TISSUE BOX HOLDER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Nov. 1, 1982, Ser. No. 438,050
Claims priority, application Australia, May 5, 1982, 302/82
Term of patent 14 years
U.S. Cl. D6—518



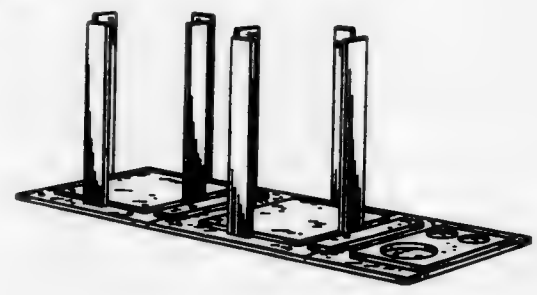
278,296
WINE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,946
Term of patent 14 years
U.S. Cl. D7—13

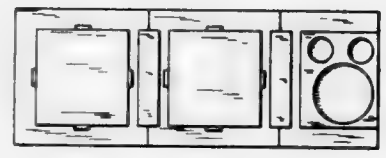


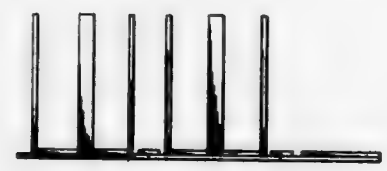
278,297
PLATE OR THE LIKE
Ming-Ter Chen, 1232-1236 E. Factory Pl., Los Angeles, Calif. 90013
Filed Jun. 13, 1983, Ser. No. 492,886
Term of patent 14 years
U.S. Cl. D7—24



278,298
COMBINED HOLDER FOR SLICED BREAD AND CONDIMENT CONTAINERS OR THE LIKE
Eldor N. Schuman, 9633 10th Ave., Carney, Md. 21234
Filed Apr. 29, 1982, Ser. No. 373,210
Term of patent 14 years
U.S. Cl. D7—52







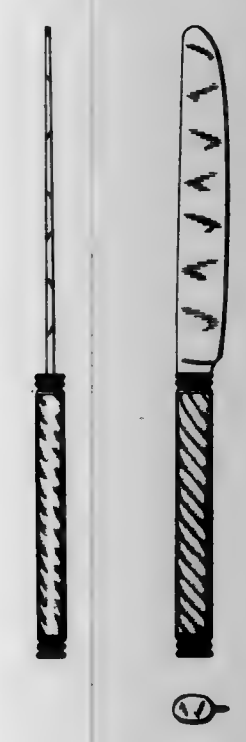
278,299
FORK
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,467
Term of patent 14 years
U.S. Cl. D7—151



278,300
SPOON
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,470
Term of patent 14 years
U.S. Cl. D7—151



278,301
KNIFE
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,472
Term of patent 14 years
U.S. Cl. D7—151



278,302
KNIFE
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,474
Term of patent 14 years
U.S. Cl. D7—151



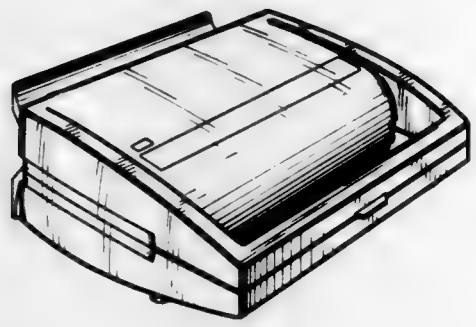
278,303
FORK
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,479
Term of patent 14 years
U.S. Cl. D7—151



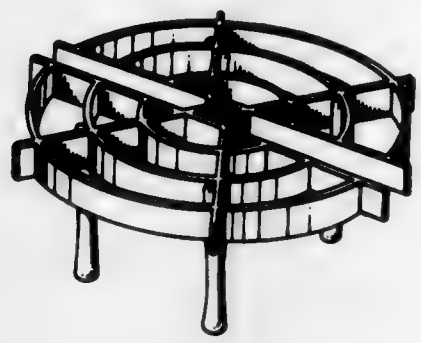
278,304
SPOON
Larry R. Lazlo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,487
Term of patent 14 years
U.S. Cl. D7—151



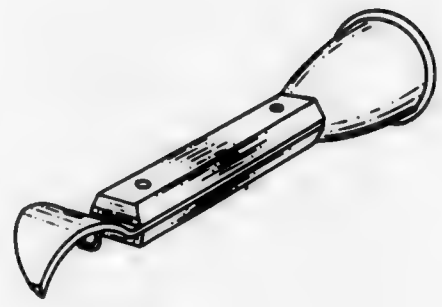
278,305
WAFFLE MAKER
Alfred W. Madl, Glendale, and Charles J. Kirschling, Whitefish Bay, both of Wis., assignors to Sunbeam Corporation, Oak Brook, Ill.
Filed Jan. 13, 1983, Ser. No. 457,798
Term of patent 14 years
U.S. Cl. D7—352



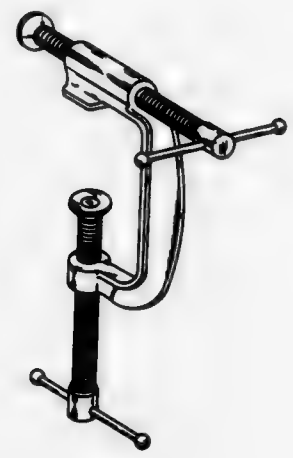
278,306
MICROWAVE OVEN RACK
Lois A. McIntosh, P.O. Box 1842, Calgary, Alberta, Canada T2G 4X3
Filed Dec. 19, 1980, Ser. No. 218,036
Claims priority, application Canada, Jun. 30, 1980, 30-06-80-1
Term of patent 14 years
U.S. Cl. D7—409



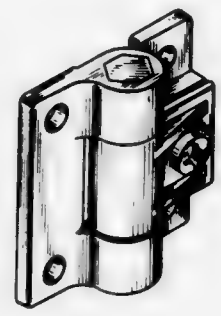
278,307
COMBINED CAN OPENER AND SHOT MEASURER
Richard W. Birchenall, P.O. Box 24847 Way, San Jose, Calif. 95154
Filed Dec. 27, 1982, Ser. No. 453,504
Term of patent 14 years
U.S. Cl. D8—34



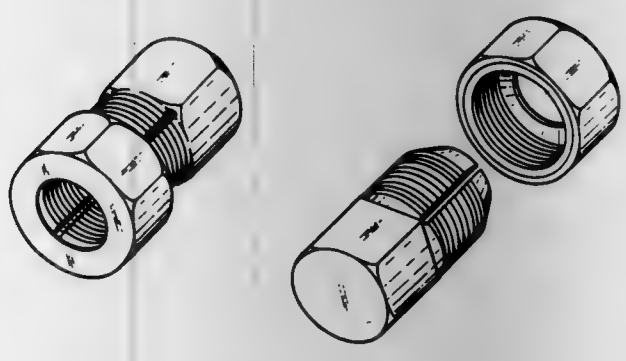
278,308
MULTIPLE HOLD-DOWN CLAMP
Victor P. Garvis, 2315 12th St. Pl., Moline, Ill. 61265
Filed Aug. 2, 1982, Ser. No. 404,187
Term of patent 14 years
U.S. Cl. D8—73



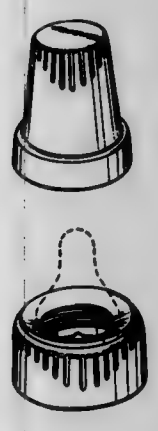
278,309
HINGE
James H. Vickers, Middletown, Pa., assignor to Southco. Inc., Concordville, Pa.
Filed Jul. 13, 1983, Ser. No. 513,370
Term of patent 14 years
U.S. Cl. D8—327



278,310
STUD BOLT WRENCH
Dennis M. Allen, 3850 Hiawatha Way, San Diego, Calif. 92117
Filed Apr. 28, 1982, Ser. No. 372,627
Term of patent 14 years
U.S. Cl. D8—21



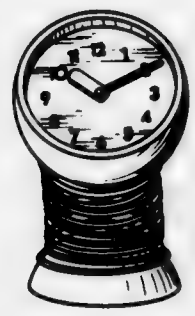
278,311
COMBINED HOOD AND COLLAR
John M. Brown; Donald Herritz, both of Reedsburg, Wis.; Barbara L. Ottinger, Newaygo, Mich., and Leland D. Westmas, Reedsburg, Wis., assignors to Gerber Products Company, Fremont, Mich.
Filed Sep. 28, 1982, Ser. No. 426,037
Term of patent 14 years
U.S. Cl. D9—436



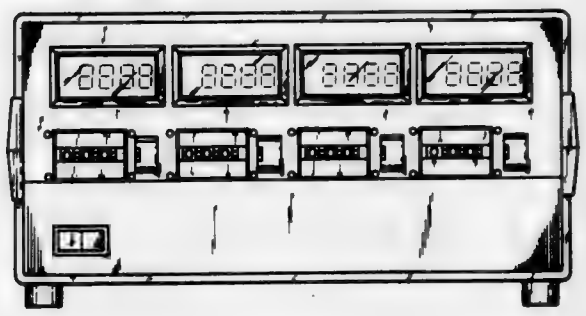
278,312
DISPENSING CLOSURE
Bruce T. Cleevely, and Robert A. Adam, both of Pittsburgh, Pa., assignors to General Foods Corporation, White Plains, N.Y.
Filed Mar. 11, 1983, Ser. No. 474,400
Term of patent 14 years
U.S. Cl. D9—449



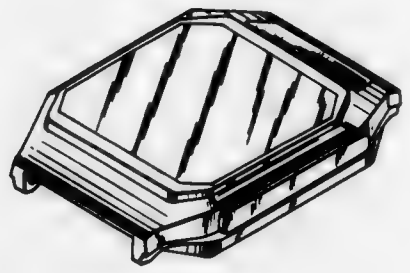
278,313
CLOCK
Maurice Progin, ch. de la Vauchère 20, P.O. Box 42, 1000 Lausanne 5, Switzerland
Filed Oct. 22, 1982, Ser. No. 436,080
Claims priority, application Hague, Apr. 26, 1982, 72330
Term of patent 14 years
U.S. Cl. D10—23



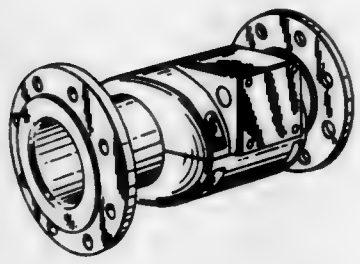
278,314
SURGICAL TEMPERATURE MONITOR AND ALARM SYSTEM
Allen L. Van Beek, Minneapolis, and Alfred L. Iversen, Minnetonka, both of Minn., assignors to PMT Inc., Hopkins, Minn.
Filed Sep. 16, 1982, Ser. No. 418,805
Term of patent 14 years
U.S. Cl. D10—53



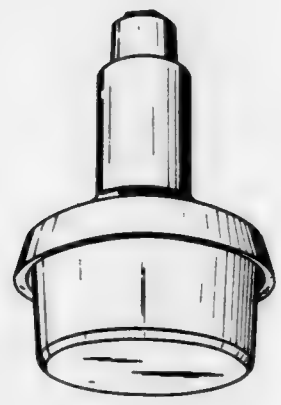
278,315
WATCH CASE
John T. Houlihan, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.
Filed Mar. 30, 1983, Ser. No. 480,629
Term of patent 14 years
U.S. Cl. D10—30



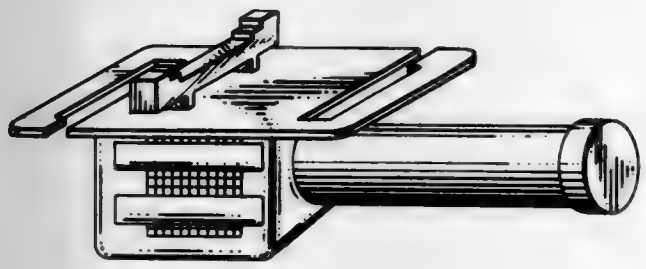
278,316
FLOWMETER FLOW TUBE
Darroll D. Bengtson, New Brighton, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.
Filed Jul. 26, 1982, Ser. No. 401,889
Term of patent 14 years
U.S. Cl. D10—96



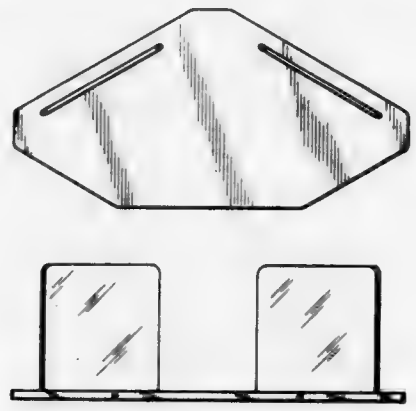
278,317
SUPERSONIC TRANSCEIVER LEVEL MEASURE DEVICE
Roland E. Jelvestam, Björnidegränd 29, S-162 46 Vällingby, Sweden
Filed Nov. 30, 1982, Ser. No. 445,719
Claims priority, application Sweden, Jun. 28, 1982, 82-1713
Term of patent 14 years
U.S. Cl. D10—101



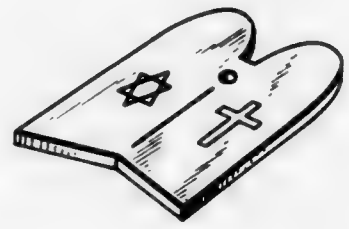
278,318
PURSE ALARM
William Levin, 166 Nelson Rd., Scarsdale, N.Y. 10583, and Kenneth Skyer, 2 Edgewood Dr., Goshen, N.Y. 10924
Filed May 18, 1983, Ser. No. 495,746
Term of patent 14 years
U.S. Cl. D10—106



278,319
REFLECTOR FOR DASH MOUNTED VEHICLE EMERGENCY FLASHING LIGHT OR THE LIKE
Stephen Crane, Penfield, and Douglas A. Crane, Fairport, both of N.Y., assignors to Crane Manufacturing and Plastics Corp., Fairport, N.Y.
Filed Oct. 15, 1982, Ser. No. 434,706
Term of patent 14 years
U.S. Cl. D10—114



278,320
RELIGIOUS MEDAL
Eugene H. Primoff, 15 Whitfield Ter., New Rochelle, N.Y. 10801
Filed Sep. 20, 1982, Ser. No. 420,400
Term of patent 14 years
U.S. Cl. D11—96



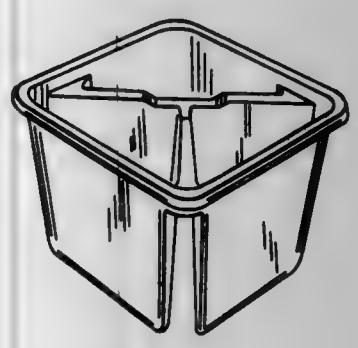
278,321
ZODIACAL CUSP MEDALLION
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. 263,384. This application Mar. 24, 1981, Ser. No. 247,130
Term of patent 14 years
U.S. Cl. D11—100



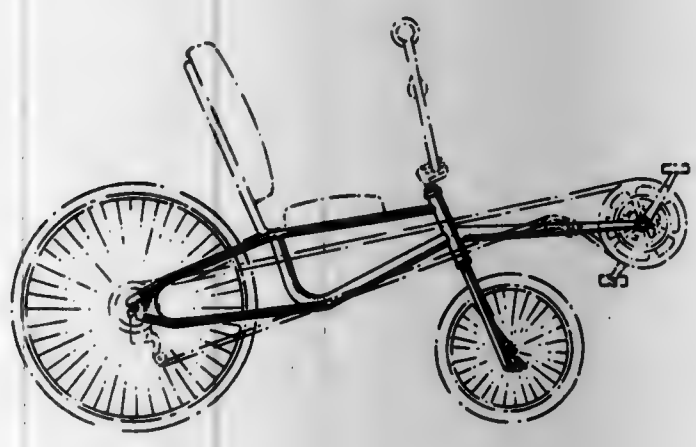
278,322
ZODIACAL CUSP MEDALLION
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. 263,384. This application Mar. 24, 1981, Ser. No. 247,110
Term of patent 14 years
U.S. Cl. D11—105



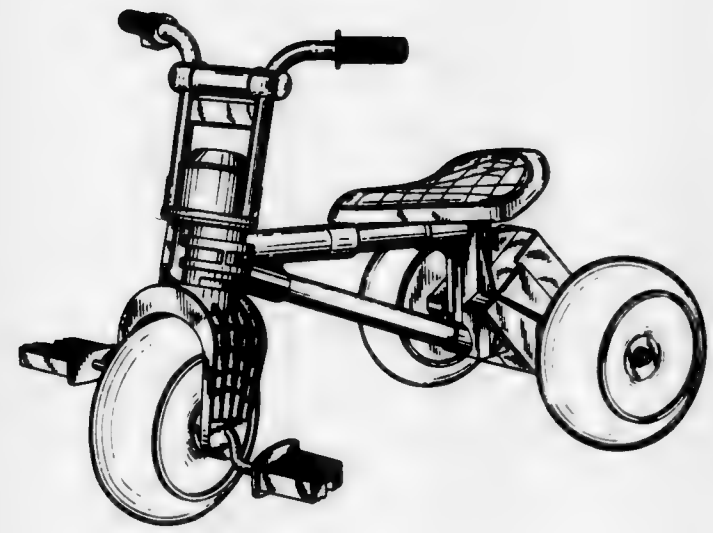
278,323
SEGMENTED PLANT CONTAINER
Fred N. Blackmore, Jr., 4300 Braun, Saline, Mich. 48176
Filed Mar. 10, 1983, Ser. No. 473,901
Term of patent 14 years
U.S. Cl. D11—155



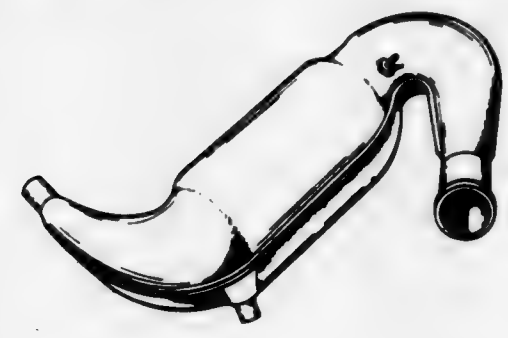
278,324
BICYCLE FRAME
John D. Breen, Antioch, Tenn., assignor to The Murray Ohio Manufacturing Co., Brentwood, Tenn.
Filed Apr. 5, 1982, Ser. No. 365,865
Term of patent 14 years
U.S. Cl. D12—111



278,325
TRICYCLE
Dietmar Nagel, Chester, N.J., assignor to Nagel/Kennedy/Arad & Associates, New York, N.Y.
Filed Jul. 27, 1983, Ser. No. 517,663
Term of patent 14 years
U.S. Cl. D12—112



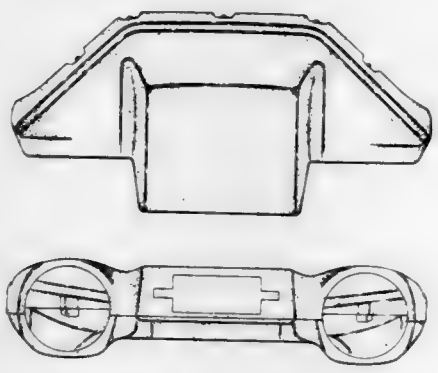
278,326
EXPANSION CHAMBER
John E. Equi, 3116 Acklen Dr., Huntsville, Ala. 35805
Filed Oct. 11, 1983, Ser. No. 540,542
Term of patent 14 years
U.S. Cl. D12—194



278,327
RADIO MOUNTING FAIRING FOR A MOTORCYCLE FAIRING
William E. Willis, 13362 Jessica Dr., Garden Grove, Calif. 92643
Filed Mar. 3, 1982, Ser. No. 354,366
Term of patent 14 years
U.S. Cl. D12—114



278,328
MOTORCYCLE RADIO HOUSING
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163
Filed May 26, 1982, Ser. No. 382,188
Term of patent 14 years
U.S. Cl. D12—114



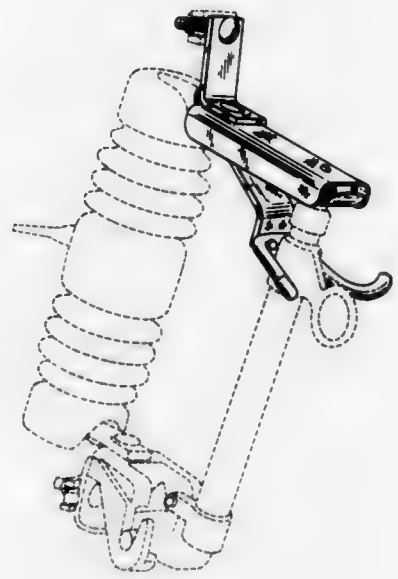
278,329
MOTOR VEHICLE RUNNING BOARD
Dennis O. Baker, Sherman Township, St. Joseph County, and James E. Anderson, Sturgis, both of Mich., assignors to Owens-Classic, Inc., Sturgis, Mich.
Filed Jan. 14, 1983, Ser. No. 458,092
Term of patent 14 years
U.S. Cl. D12—203



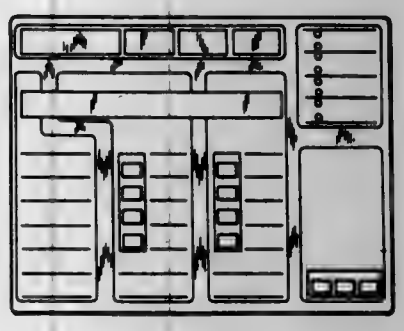
278,330
PRINTED CIRCUIT BOARD STANDOFF
Royce W. Hill, Flippin, Ark., assignor to Micro Plastics Inc., Flippin, Ark.
Filed Sep. 13, 1982, Ser. No. 416,867
Term of patent 14 years
U.S. Cl. D13—24



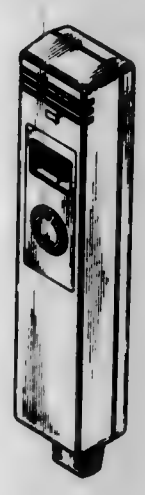
278,331
SHIELD AND FUSE CONTACT ASSEMBLY FOR ELECTRICAL CUTOUT
Delmar E. McNaghten; Dennis C. Kent, and Robert A. Brown, all of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Filed Apr. 30, 1982, Ser. No. 373,748
Term of patent 14 years
U.S. Cl. D13—35



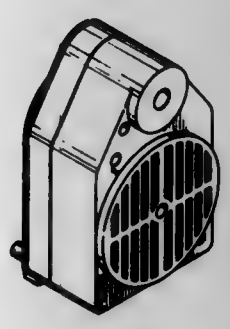
278,332
TERMINAL FOR DETECTING, SIGNALING AND EVALUATING VARIOUS HAZARD CRITERIA, SUCH AS FIRE OR INTRUSION CONDITIONS
Otto Meier, Hombrechtikon, and Felix Huber, Meilen, both of Switzerland, assignors to Cerberus A.G., Mannedorf, Switzerland
Filed Sep. 29, 1982, Ser. No. 427,135
Term of patent 14 years
U.S. Cl. D13—35



278,333
MICROPHONE
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1983, Ser. No. 470,469
Claims priority, application Japan, Sep. 6, 1982, 57-40638
Term of patent 14 years
U.S. Cl. D14—12



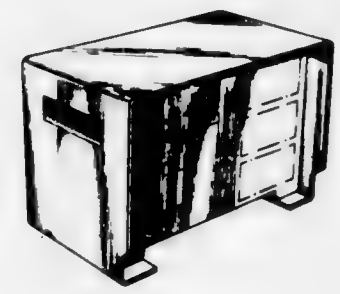
278,334
ELECTRIC MOTOR DRIVEN PHONOGRAPH FOR INTERNAL PLACEMENT IN TOYS OR THE LIKE
Katsumi Watanabe, deceased, late of Kawasaki, Japan (by Shizuko Watanabe, legal heir), assignor to Ozen Corporation, Tokyo, Japan
Filed Aug. 27, 1981, Ser. No. 296,918
Claims priority, application Japan, May 12, 1981, 56-20110
Term of patent 14 years
U.S. Cl. D14—14

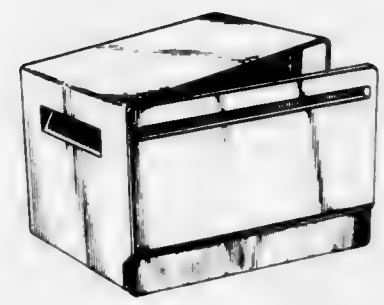


278,335
LOUDSPEAKER FRONT PANEL ASSEMBLY
Hari Matsuda, Evanston; Anthony J. Cascarano, Lake Forest, and Charles M. Schwimmer, Chicago, all of Ill., assignors to International Jensen Incorporated, Schiller Park, Ill.
Filed Jun. 2, 1982, Ser. No. 384,399
Term of patent 14 years
U.S. Cl. D14—39

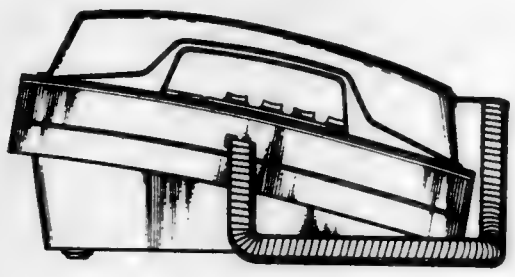


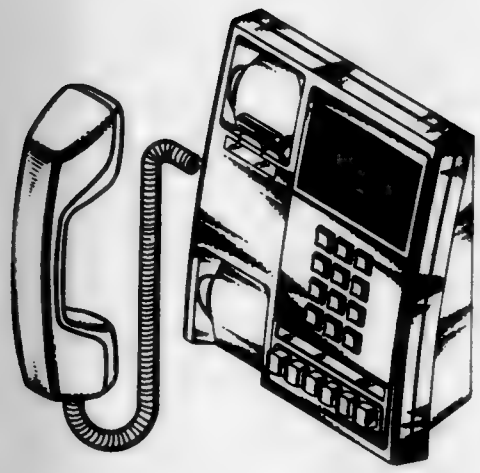
278,336
COMMUNICATION APPARATUS ENCLOSURE
Joseph Girardi, Edison, N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 15, 1982, Ser. No. 418,204
Term of patent 14 years
U.S. Cl. D14—52



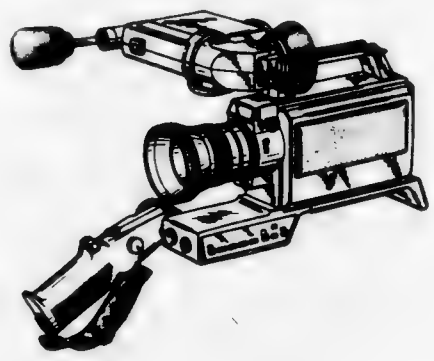


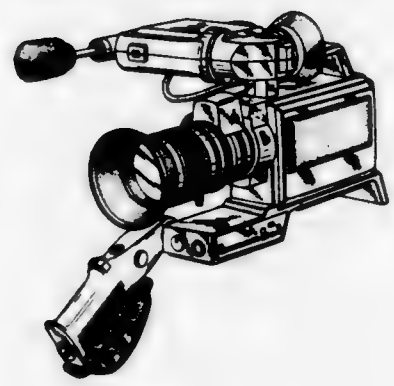
278,337
TELEPHONE
Ronald C. Banko, North Wales, Pa., assignor to Comdial Telephone Systems, Inc., Charlottesville, Va.
Filed Jan. 27, 1983, Ser. No. 461,574
Term of patent 14 years
U.S. Cl. D14—58

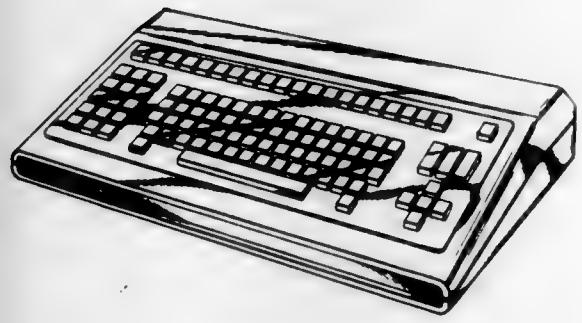




278,338
CAMERA FOR VIDEO TAPE RECORDER
Koya Kurokawa, and Noriyuki Arai, both of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 29, 1982, Ser. No. 428,516
Claims priority, application Japan, Apr. 1, 1982, 57-13981; Apr. 1, 1982, 57-13982
Term of patent 14 years
U.S. Cl. D14—78

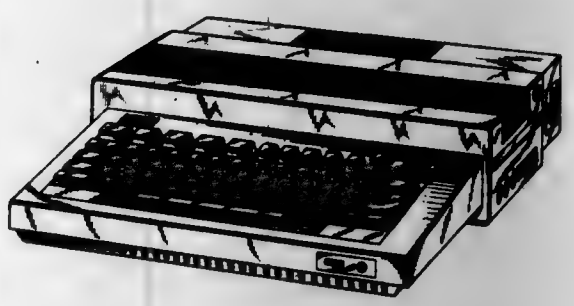




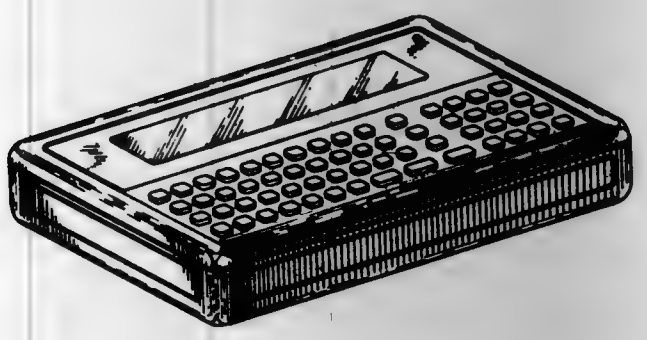


278,339
KEYBOARD FOR A DATA TERMINAL
Terence T. Caven, Beeston, England, assignor to Plessey Overseas Limited, Ilford, England
Filed Apr. 28, 1982, Ser. No. 372,710
Claims priority, application United Kingdom, Oct. 28, 1981, 1003268
Term of patent 14 years
U.S. Cl. D14—100

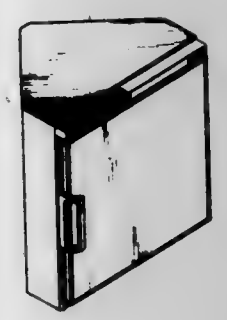
278,340
COMPUTER
Haruyuki Enomoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 24, 1982, Ser. No. 410,990
Claims priority, application Japan, Mar. 2, 1982, 57-8518
Term of patent 14 years
U.S. Cl. D14—100



278,341
PORTABLE TERMINAL OR SIMILAR ARTICLE
William J. Scheid, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 19, 1983, Ser. No. 459,162
Term of patent 14 years
U.S. Cl. D14—100



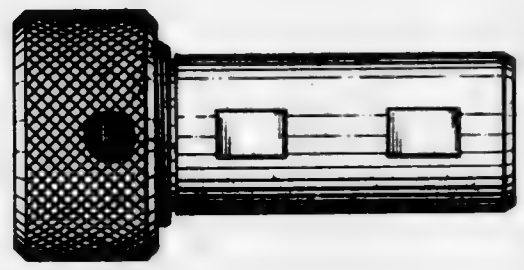
278,342
REFRIGERATOR CABINET
Erling Damkjaer, Esbjerg, Denmark, assignor to A/S Vestfrost, Esbjerg, Denmark
Filed Dec. 9, 1982, Ser. No. 448,510
Claims priority, application Denmark, Feb. 7, 1982, 634/82
Term of patent 14 years
U.S. Cl. D15—88



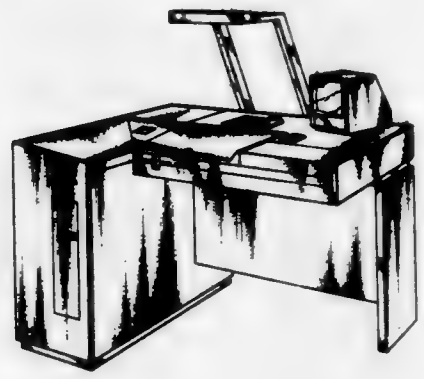
278,343
GAUGE BAR
Gerald V. Roch, Marion County, Ind., assignor to Hurco Manufacturing Co., Inc., Indianapolis, Ind.
Filed Jul. 30, 1982, Ser. No. 403,467
Term of patent 14 years
U.S. Cl. D15—123



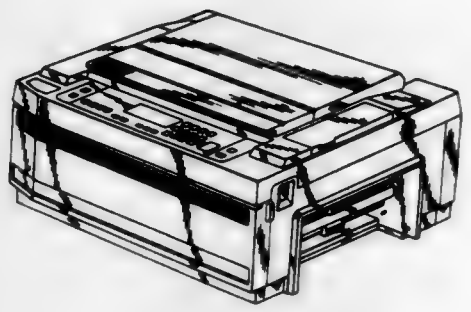
278,344
COLLET HOLDER
Roger R. Smith, Erin, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Mar. 9, 1982, Ser. No. 356,813
Term of patent 14 years
U.S. Cl. D15—140



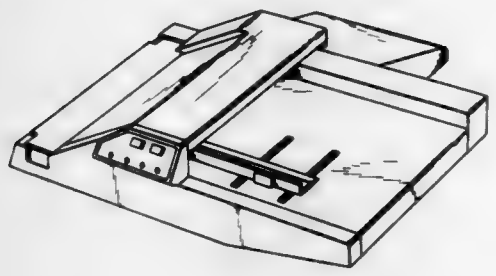
278,345
PRINTED CIRCUIT BOARD COMPONENT MOUNTING MACHINE
F. Scott Gordon, San Gabriel; Derek H. Fender, Altadena, both of Calif., and Michael J. Dolan, New York, N.Y., assignors to CAPS Industries, San Marino, Calif.
Filed Dec. 17, 1982, Ser. No. 450,681
Term of patent 14 years
U.S. Cl. D15—199



278,346
ELECTROSTATIC COPIER
Yasuhiro Saito, Tokyo; Tetsuya Goto, and Toshio Umino, both of Kanagawa, all of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Aug. 25, 1982, Ser. No. 413,222
Claims priority, application Japan, Feb. 25, 1982, 57-7802
Term of patent 14 years
U.S. Cl. D16—31

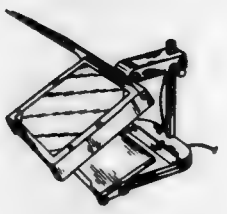


278,347
AUTOMATIC ORIGINAL FEED FOR COPYING APPARATUS
Hideyuki Kawazu, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan
Filed Jun. 21, 1982, Ser. No. 390,341
Claims priority, application Japan, Jan. 12, 1982, 57-690
Term of patent 14 years
U.S. Cl. D16—32



278,348
MAGNIFIER VIEWING UNIT
Robert H. R. Horgan, West Beach, Australia, assignor to Horgan Investments Pty. Ltd., Medindie, Australia
Filed Nov. 14, 1983, Ser. No. 551,177
Term of patent 14 years
U.S. Cl. D16—135

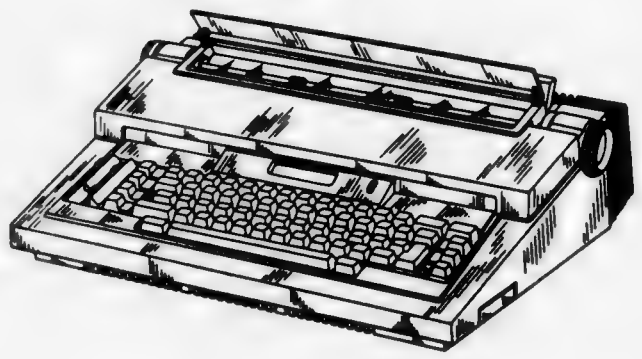




278,349
GUITAR BODY OR SIMILAR ARTICLE
Hartley D. Peavey, and Michael V. Powers, both of Meridian, Miss., assignors to Peavey Electronics Corp., Meridian, Miss.
Filed Jun. 22, 1982, Ser. No. 390,826
Term of patent 14 years
U.S. Cl. D17—20



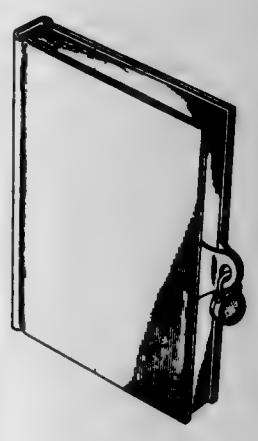
278,350
ELECTRONIC TYPEWRITER
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Sep. 8, 1982, Ser. No. 416,019
Claims priority, application Italy, Mar. 8, 1982, 5301082[U]
Term of patent 14 years
U.S. Cl. D18—1



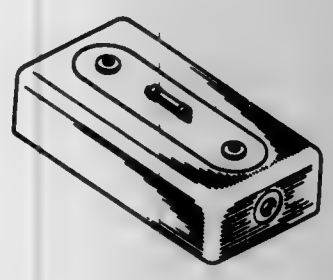
278,351
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,339
Claims priority, application Japan, Jan. 11, 1983, 58-504
Term of patent 14 years
U.S. Cl. D18—1



278,352
DIARY
Roger A. Wenstrom; William W. Holes, and Leon C. Raiter, all of St. Cloud, Minn., assignors to The Holes-Webway Company, St. Cloud, Minn.
Filed Aug. 9, 1982, Ser. No. 406,388
Term of patent 14 years
U.S. Cl. D19—26



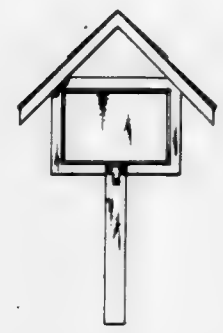
278,353
BLOCK FOR ELECTRICAL CIRCUITRY ASSEMBLY KITS
Yechiel Salit, 12 Alexander Yanai St., Tel Aviv, Israel
Filed Aug. 30, 1982, Ser. No. 412,937
Term of patent 14 years
U.S. Cl. D19—62



278,354
RACK FOR HANGING SOFT COVER BOOKS
John E. Mahowald, 1401 Klepper Ave., Kingsburg, Calif. 93631
Filed Jul. 18, 1983, Ser. No. 514,560
Term of patent 14 years
U.S. Cl. D19—91



278,355
SIGN FRAME
Kenneth L. Williams, SRA Box 489, Anchorage, Ak. 99507
Filed Nov. 22, 1982, Ser. No. 443,188
Term of patent 14 years
U.S. Cl. D20—38



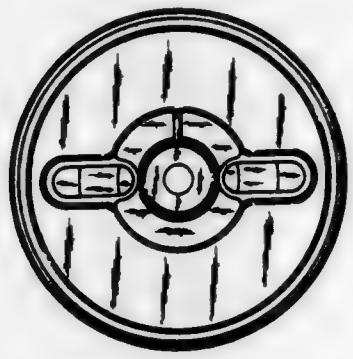
278,356
TIRE FOR TOY VEHICLE
Adolph E. Goldfarb, 1432 SE. Wind Cir., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.
Filed Dec. 20, 1982, Ser. No. 451,105
Term of patent 14 years
U.S. Cl. D21—141



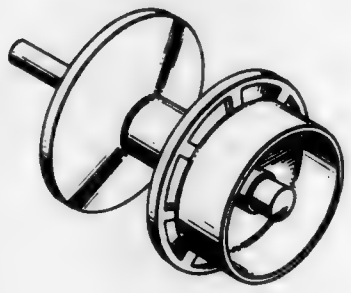
278,357
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,641
Term of patent 14 years
U.S. Cl. D21—190



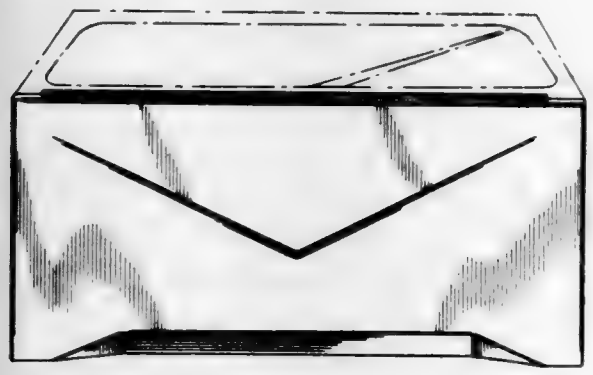
278,358
BARBELL WEIGHT
Brian R. Zwilling, Longmeadow, Mass., assignor to Spalding & Evenflo Company, Inc., Tampa, Fla.
Filed Jun. 1, 1983, Ser. No. 499,948
Term of patent 14 years
U.S. Cl. D21—196



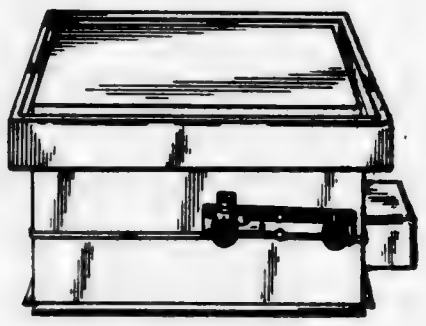
278,359
FISHING REEL SPOOL
Tatsuo Sugimoto, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Division of Ser. No. 402,735, Jul. 28, 1982, Pat. No. Des. 247,832. This application Mar. 2, 1984, Ser. No. 585,505
Claims priority, application Japan, Feb. 25, 1982, 57-7844; Feb. 25, 1982, 57-7845
Term of patent 14 years
U.S. Cl. D22—25



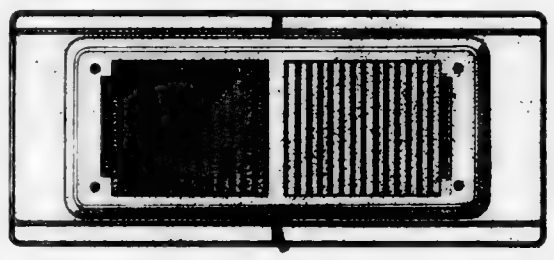
278,360
BATHTUB APRON
Herbert V. Kohler, Jr., Kohler, and Donald W. Doman, Janesville, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 17, 1983, Ser. No. 458,629
Term of patent 14 years
U.S. Cl. D23—55



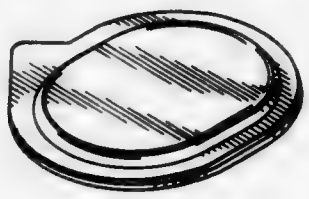
278,361
HEAT EXCHANGER
Richard J. Pernosky, 1121 Contempo Ct., Ontario, Calif. 91761
Filed Sep. 2, 1982, Ser. No. 414,491
Term of patent 14 years
U.S. Cl. D23—136



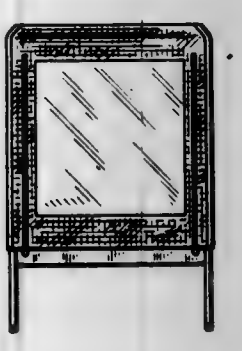
278,362
REGISTER FAN
Thomas Rattray, Cincinnati, Ohio, assignor to Con-Serv Incorporated, Cincinnati, Ohio
Filed Jun. 17, 1982, Ser. No. 389,244
Term of patent 14 years
U.S. Cl. D23—155



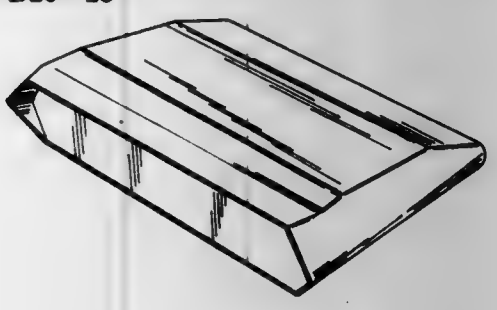
278,363
BANDAGE
Lotte Schenkel, Basel, and Peter Fankhauser, Ettingen, both of Switzerland, assignors to ALZA Corporation, Palo Alto, Calif.
Filed Mar. 9, 1982, Ser. No. 356,261
Term of patent 14 years
U.S. Cl. D24—49



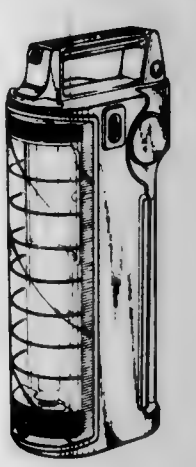
278,364
GREENHOUSE
Sigvard G. Karlsson, Korpralsgatan 9, S-371 41 Karlskrona, Sweden
Filed Apr. 22, 1982, Ser. No. 370,969
Claims priority, application Sweden, Oct. 12, 1981, 81-2281
Term of patent 14 years
U.S. Cl. D25—15



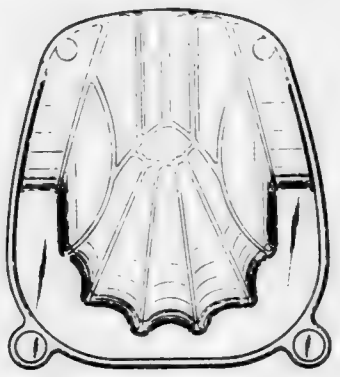
278,365
VEHICLE WARNING LIGHT
Stanton M. Cagney, New York, N.Y., assignor to First National Precision Products, Inc., New York, N.Y.
Filed Oct. 30, 1981, Ser. No. 316,929
Term of patent 14 years
U.S. Cl. D26—28

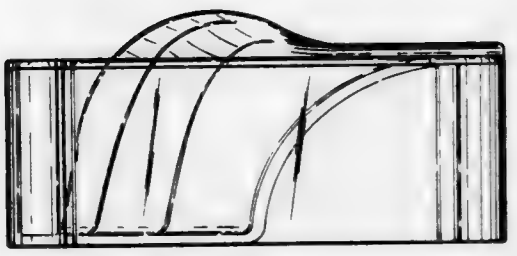


278,366
FLUORESCENT LANTERN
Keitchi Ohashi, Shizuoka, Japan, assignor to Skylight Industry Co., Ltd., Japan
Filed Dec. 13, 1982, Ser. No. 449,554
Term of patent 14 years
U.S. Cl. D26—42

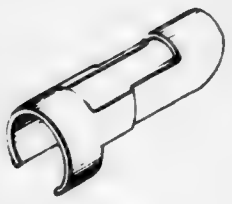


278,367
MANICURE BOWL
Howard Sussman, 3101 NW. 25th St., Pompano Beach, Fla. 33060
Filed Jun. 27, 1983, Ser. No. 508,150
Term of patent 14 years
U.S. Cl. D28—61





278,368
FINGERNAIL MOLD
Karin E. Valentiner, 23726 Alliene Ave., Torrance, Calif. 90501
Filed Nov. 8, 1982, Ser. No. 439,890
Term of patent 14 years
U.S. Cl. D28—56

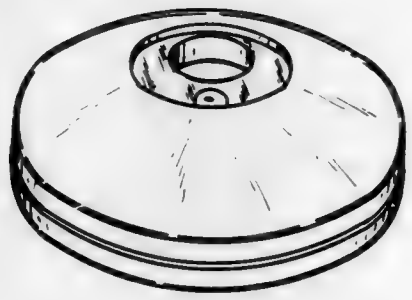


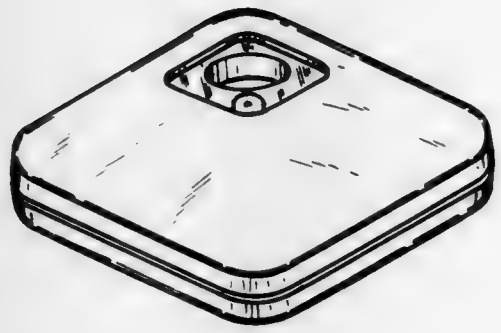
278,369
HANGING LIGHTER HOLDER WITH CLIPPER
Larry E. Pringle, and Marsha S. Franklin, both of 1101 N. Pennsylvania, Oklahoma City, Okla. 73107
Filed Aug. 6, 1982, Ser. No. 406,085
Term of patent 14 years
U.S. Cl. D28—60



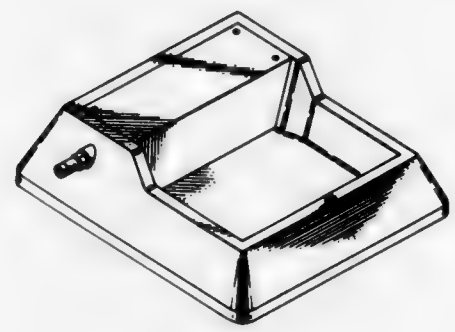


278,370
POCKET PERFUME ATOMIZER
Francois X. Speitel, Connerre, France, assignor to Societe Teleplastics Industries S.A., Parigne l'Eveque, France
Filed Dec. 21, 1982, Ser. No. 451,968
Claims priority, application France, Jun. 21, 1982, DM 001559
Term of patent 14 years
U.S. Cl. D28—91.1

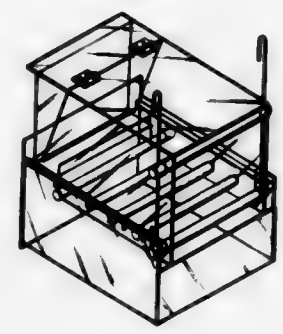




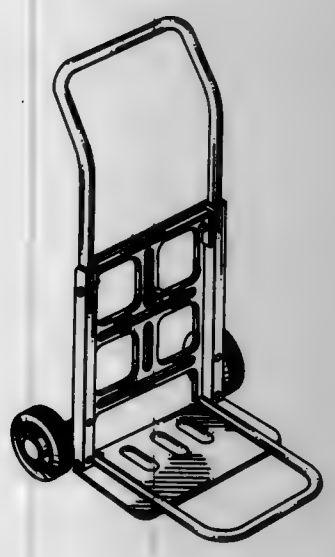
278,371
PET WATERING DISH OR SIMILAR ARTICLE
George B. Strickland, P.O. Box 2343, Fayetteville, N.C. 28302
Filed Mar. 29, 1983, Ser. No. 479,891
Term of patent 14 years
U.S. Cl. D30—13



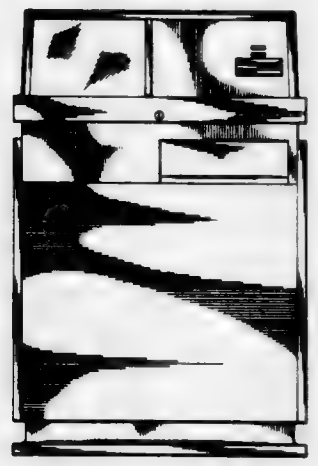
278,372
FEEDER ACCESSORY FOR A BIRD CAGE
Don Hartwick, 624 Ashland, Granite City, Ill. 62040
Filed Jan. 28, 1983, Ser. No. 461,857
Term of patent 14 years
U.S. Cl. D30—14



278,373
HAND TRUCK
Kenneth E. Rousseau, Wichita, Kans., assignor to Harper Truck, Inc., Wichita, Kans.
Filed Sep. 30, 1982, Ser. No. 432,117
Term of patent 14 years
U.S. Cl. D34—26



278,374
COUPON DISTRIBUTION MACHINE
Floyd H. Haker, 6546 Linden La., Dallas, Tex. 75230
Filed Aug. 12, 1982, Ser. No. 407,359
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BancTec, Incorporated: *See—*
LeBrun, Thomas Q.; Torkelson, John; Dempster, Roy E.; and Van Tyne, Richard G., 4,510,619, Cl. 382-57.000.

Bando, Niro; Kurohara, Kazuaki; Fujima, Yasuo; Ikeda, Fumihiro; Usiro, Kenzo; and Ogasawara, Hiroyuki, to Kubota Ltd. Working vehicle equipped with engine automatic stop device. 4,509,614, Cl. 180-273.000.

Bar, Vilmos; Boszormenyi, Jozsef; Richter, Peter; Mercz, Jeno; and Rozsnyai, Tamas, to Material Vegyipari Szovetkezet; and Human Oltoanyagtermelo Es Kutato Intezet, a part interest. Compositions for and medical use of water-soluble derivatives of 6,6-methylene-bis-(2,2,4-trimethyl-1,2-dihydroquinoline). 4,510,147, Cl. 514-314.000.

Barajas, Felix, to McDonnell Douglas Corporation. Solder composition for high-density circuits. 4,509,994, Cl. 148-24.000.

Barber, Larry J., to Mesa Technology. Testable tape for bonding leads to semiconductor die and process for manufacturing same. 4,510,017, Cl. 156-651.000.

Barber, Michael; and Lloyd, Charles F., to CTS Corporation. Electromagnetically operated hydraulic valve device with snap-together valve housing. 4,509,716, Cl. 251-141.000.

Barnes, Stephen R.; Tarbox, Gary L.; Huntsman, Lee L.; and McLaren, Barry D., to Lawrence Medical Systems, Inc. Method and system for non-invasive ultrasound Doppler cardiac output measurement. 4,509,526, Cl. 128-663.000.

Baron, George B., to Dresser Industries, Inc. Crowd drive assembly for power shovels. 4,509,895, Cl. 414-685.000.

Barr, William A. Parking brake safety mechanism for automatic transmissions. 4,509,624, Cl. 192-4.00A.

Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., to Singer Company, The. Mounting for electronic circuit board in power hand tool. 4,510,404, Cl. 310-50.000.

Barry, Carol M. F.: *See—*
Kuehnle, Manfred R.; Martinez, Ferdinand; Runyan, I. V.; and Barry, Carol M. F., 4,510,223, Cl. 430-44.000.

Barry, Eugene F.: *See—*
Hubball, John A.; and Barry, Eugene F., 4,509,964, Cl. 55-386.000.

Barry, Terrence J. Headache relief method. 4,509,521, Cl. 128-421.000.

Bartelink, Dirk J. Three-electrode MOS electron device. 4,510,516, Cl. 357-23.100.

Bartelloni, Rene , to Papeteries de Jeand'heurs. Latex containing papers. 4,510,019, Cl. 162-141.000.

Barth, Walter; and Kremser, Harald H., to Bleistiftmaschinenfabrik Dipl. Ing. Karl Zuber GmbH & Co. KG. Apparatus for securing parts on elongated writing instruments, in particular for securing an eraser for a sheath receiving it on a pencil. 4,509,245, Cl. 29-525.000.

BASF Aktiengesellschaft: *See—*
Gimpel, Jurgen; Jackel, Klaus-Peter; and Sander, Hans, 4,510,284, Cl. 524-379.000.
Lechtken, Peter; Nuerrenbach, Axel; and Schole, Juergen, 4,510,146, Cl. 514-312.000.

BASF Wyandotte Corporation: *See—*
Langdon, William K., 4,510,306, Cl. 536-127.000.
Ozmeral, Ahmet C., 4,510,067, Cl. 252-174.210.

Batchelor, Douglas R., to Libman Broom Company. Refill sponge mop assembly. 4,509,224, Cl. 15-244.00R.

Bates, H. John, to NL Industries, Inc. Control valve system for blowout preventers. 4,509,405, Cl. 91-420.000.

Bates, Paul E.: *See—*
Grogg, Terry W.; Bugaj, Joseph E.; and Bates, Paul E., 4,510,125, Cl. 424-1.100.

Bathke, Heinz: *See—*
Lorenz, Werner; Bathke, Heinz; and Sommers, Hans, 4,509,913, Cl. 431-90.000.

Battle, Carl W. Legal educational game and method of teaching legal subject matter. 4,509,922, Cl. 434-322.000.

Baudis, Ulrich: *See—*
Beyer, Hans-Hermann; Baudis, Ulrich; and Biberbach, Peter, 4,509,993, Cl. 148-15.500.

Bauer, Adolf, to Krauss-Maffei Aktiengesellschaft. Mixing head. 4,510,120, Cl. 422-133.000.

Bauer, Gerd F., to Modern Equipment Company. Method and apparatus for the treatment of iron with a reactant. 4,509,979, Cl. 75-130.00R.

Baxter Travenol Laboratories, Inc.: *See—*
Gokcen, Cem; and Williams, Robert J., 4,510,115, Cl. 264-515.000.

Bayer Aktiengesellschaft: *See—*
Eckstein, Udo, 4,510,311, Cl. 548-132.000.
Forster, Heinz; Hofer, Wolfgang; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,509,971, Cl. 71-90.000.
Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, 4,510,156, Cl. 514-415.000.
Kolb, Gunter, deceased; Tork, Leo; and Hohne, Wolfgang, 4,510,302, Cl. 526-264.000.
Kopp, Richard; and Freitag, Hans-Albrecht, 4,510,269, Cl. 521-166.000.
Meyer, Rolf-Volker; Kreuder, Hans-Joachim; and Hohl, Erwin, 4,510,288, Cl. 525-111.000.
Pflugbeil, Wolf-Dietrich; and Kramer, Wolfgang, 4,510,314, Cl. 548-262.000.
Wehinger, Egbert; Meyer, Horst; Bossert, Friedrich; Vater, Wulf; Towart, Robertson; Stoepel, Kurt; and Kazda, Stanislay, 4,510,310, Cl. 546-321.000.
Wild, Peter; and Stohr, Frank-Michael, 4,509,948, Cl. 8-539.000.
Winkler, Hermann; and Sachs, Hanns I., 4,510,184, Cl. 427-212.000.

Bayerische Motoren Werke AG: *See—*
Minner, Willy; Krappel, Alfred; and Guggenmos, Johannes, 4,509,482, Cl. 123-418.000.

Baynes, Gene P.; and Melinat, Wolfgang, to General Motors Corporation. Shoe mounted disc brake caliper and shoe support structure. 4,509,619, Cl. 188-73.390.

BBC Brown, Boveri & Company, Limited: *See—*
Furrer, Andreas; and Milavec, Johann, 4,510,457, Cl. 330-10.000.

Beasley, Robert L. Aquatic exercise device with rigid fluid resistance member. 4,509,744, Cl. 272-116.000.

Beaudet, Emilien, to Exxon Research and Engineering Co. Heat insulating panel. 4,509,307, Cl. 52-309.400.

Bebeau, Jerald R.: *See—*
Austin, Forrest L.; and Bebeau, Jerald R., 4,509,690, Cl. 239-429.000.

Becker, Udo: *See—*
Fuhge, Peter; Braun, Konrad; and Becker, Udo, 4,510,126, Cl. 424-3.000.

Beckman Instruments, Inc.: *See—*
Miller, Steven P.; and Quan, Stella S. M., 4,510,239, Cl. 435-7.000.

Beckman, John A.: *See—*
Davis, Kevin M.; Wahl, Timothy M.; Beckman, John A.; and Isele, Karl J., Jr., 4,509,727, Cl. 266-44.000.

Beecham Group p.l.c.: *See—*
Faruk, Erol A., 4,510,152, Cl. 514-321.000.

Bell, Graeme I.: *See—*
Cousens, Lawrence S.; Bell, Graeme I.; and Valenzuela, Pablo D. T., 4,510,245, Cl. 435-172.300.

Bell & Howell Company: *See—*
Kosner, Jerry J., 4,509,735, Cl. 271-11.000.

Bell Manufacturing Company: *See—*
Cockburn, Harrold; Weatherly, Darrel; and Yarbro, Earl, 4,509,468, Cl. 123-90.380.

Bell Telephone Laboratories, Inc.: *See—*
Shevchuk, George J., 4,509,647, Cl. 211-41.000.

Bellows, James C., to Westinghouse Electric Corp. Apparatus for monitoring corrosive salt solutions in a low pressure steam turbine. 4,509,332, Cl. 60-660.000.

Benasutti, John E.: *See—*
Braun, Robert E.; and Benasutti, John E., 4,510,446, Cl. 324-158.00R.

Benckiser-Knapsack GmbH: *See—*
Rohlfs, Hans-Adolf; Kling, Alfred; Raab, Guenter; Vogt, Michael; Specht, Viktor; and Schaetzke, Ulrike, 4,510,068, Cl. 252-186.290.

Bendall, Brian; and Flannery, Stephen W., to Meynell Valves Limited. Mixing valve. 4,509,677, Cl. 236-122.000.

Bennett, Douglas L.; Edwards, Thomas J.; and Rowles, Howard C., to Air Products and Chemicals, Inc. Perforated bubble caps for enhanced vapor/liquid contact on a distillation tray. 4,510,023, Cl. 203-99.000.

Bennett, Jackie D.; Bennett, Johnnie R.; and Bennett, Jimmie D., Jr., to 3-J-Co., Inc. Tobacco stripper. 4,509,536, Cl. 130-30.00R.

Bennett, Jimmie D., Jr.: *See—*
Bennett, Jackie D.; Bennett, Johnnie R.; and Bennett, Jimmie D., Jr., 4,509,536, Cl. 130-30.00R.

Bennett, Johnnie R.: *See—*
Bennett, Jackie D.; Bennett, Johnnie R.; and Bennett, Jimmie D., Jr., 4,509,536, Cl. 130-30.00R.

Bensadoun, Michel, to Electricite de France Service National. Liquid rheostat for starting an electric motor with improved sill structure. 4,510,483, Cl. 338-80.000.

Benson, Clark K.: *See—*
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., 4,510,165, Cl. 426-439.000.

Berg, Lloyd; and Yeh, An-I. Separation of isopropyl ether from isopropanol and water by extractive distillation. 4,510,022, Cl. 203-51.000.

Bergen, Franciscus H. M., to U.S. Philips Corporation. Smear reduction for a television pickup. 4,510,528, Cl. 358-213.000.

Bergwerksverband GmbH: *See—*
Cornely, Wolfgang; Esser, Heinz; and Schmidt, Rudolf, 4,510,180, Cl. 427-136.000.

Berman, Elliot, to Atlantic Richfield Company. Thin film solar cell substrate. 4,510,344, Cl. 136-256.000.

Bernardoni, Luigi; and Invernizzi, Umberto, to Alfa Romeo Auto S.p.A. Diesel engine with an effective compression ratio substantially equal to the geometrical compression ratio. 4,509,466, Cl. 123-52.0MF.

Bernhard, Horst, to Merck Patent Gesellschaft mit beschrankter Haftung. Nacreous pigments having improved light fastness, their preparation and use. 4,509,988, Cl. 106-308.00R.

Bertec Inc.: *See—*
Therrien, Gaston, 4,509,217, Cl. 5-430.000.

Berthold, Richard, to Sandoz Ltd. Pharmaceutical compositions effective against coronary heart disease and hypertension. 4,510,150, Cl. 514-338.000.

Bessman, Samuel P., to Spectrum Medical Industries, Inc. Tissue pulverizer. 4,509,695, Cl. 241-2.000.

Beta Technology, Inc.: *See—*
Livingston, James W.; and Schontzler, James G., 4,509,543, Cl. 134-57.00D.

Bettcher Industries, Inc.: *See—*
Bettcher, Louis A., 4,509,261, Cl. 30-276.000.

Bettcher, Louis A., to Bettcher Industries, Inc. Boning and trimming knife and housing. 4,509,261, Cl. 30-276.000.

Betz, Dieter; and Issler, Jorg, to Robert Bosch GmbH. Ignition coil for a multi-cylinder internal combustion engine. 4,509,495, Cl. 123-643.000.

Beyer, Hans-Hermann; Baudis, Ulrich; and Biberbach, Peter, to Degussa Aktiengesellschaft. Regeneration agent for carburization salt bath. 4,509,993, Cl. 148-15.500.

Bezak, Michael J. Foot holding apparatus for sit-ups and like exercises. 4,509,748, Cl. 272-145.000.

Bezdicek, Jan: *See—*
Pajgrt, Jan; Bezdicek, Jan; and Novak, Jiri, 4,509,629, Cl. 192-0.098.

Bezwada, Rao S.; Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Absorbable polymers of substituted benzoic acid. 4,510,295, Cl. 525-437.000.

Bhalla, Prithvi: *See—*
Kust, Cyril; and Bhalla, Prithvi, 4,509,973, Cl. 71-92.000.

Biberbach, Peter: *See—*
Beyer, Hans-Hermann; Baudis, Ulrich; and Biberbach, Peter, 4,509,993, Cl. 148-15.500.

Bickley, Robert H.; Bucher, Charles A.; and Yee, David M., to Motorola, Inc. High power RF relay switch trigger. 4,510,472, Cl. 333-262.000.

Bielomatik Leuze GmbH & Co.: *See—*
Schall, Walter; Negro, Guido; Hipp, Martin; and Albrecht, Hans, 4,509,396, Cl. 83-126.000.

Bienert, Horst; Kohlpaintner, Georg; and Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Rigid cover for a vehicle top. 4,509,791, Cl. 296-216.000.

Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , to Institut Francais du Petrole. Heavy oil process with hydrovisbreaking, hydrodemetallation and hydrodesulfuration. 4,510,042, Cl. 208-59.000.

Biolectron, Inc.: *See—*
Dugot, Richard S., 4,509,520, Cl. 128-419.00F.

Bisbee, Gary W.: *See—*
McTamaney, Louis S.; Delfino, Allan B.; and Bisbee, Gary W., 4,509,901, Cl. 417-18.000.

Blacklock, Thomas J.; and Shuman, Richard F., to Merck & Co., Inc. Process for preparing polypeptides. 4,510,083, Cl. 260-112.50R.

Blaine, Edward H.; Cragoe, Edward J., Jr.; Hirschmann, Ralph F.; Nancarrow, John F., deceased; by Nancarrow, Elisabeth M., executrix; and Tobert, Jonathan A., to Merck & Co., Inc. Indacrinone having enhanced uricosuric. 4,510,322, Cl. 514-255.000.

Blair, Howard D.: *See—*
Ezis, Andre; and Blair, Howard D., 4,510,107, Cl. 264-65.000.

Blecherman, Sol S., to United Technologies Corporation. Acoustical liners. 4,509,616, Cl. 181-214.000.

Bleistiftmaschinenfabrik Dipl. Ing. Karl Zuber GmbH & Co. KG: *See—*
Barth, Walter; and Kremser, Harald H., 4,509,245, Cl. 29-525.000.

Blevins, Theodore J.; and Swiderski, Paul R., to Hoover Universal, Inc. Sofa bed mechanism. 4,509,216, Cl. 5-13.000.

Blin, Jean H. P. Variable volume fluid induction and delivery machine. 4,509,410, Cl. 92-89.000.

Bloo, Johann: *See—*
Schonberger, Johann; Bloo, Johann; Mistlberger, Bruno; and Gehmaier, Johann, 4,509,562, Cl. 139-13.00R.

Blossfeld, Lothar, to ITT Industries, Inc. Process for manufacturing a monolithic integrated circuit comprising at least one bipolar planar transistor. 4,509,250, Cl. 29-578.000.

Blount, Frederick T., to International Business Machines Corp. Binary number substitution mechanism. 4,510,582, Cl. 364-900.000.

Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernest. Filter sheet material. 4,510,193, Cl. 428-196.000.

Blumel, Reinhard: *See—*
Markart, Ernst; Blumel, Reinhard; and Eggert, Holger, 4,509,859, Cl. 356-446.000.

Bluthe, Norbert; Gore, Jacques; and Malacria, Max, to Rhone-Poulenc Sante. Process for the preparation of δ-ethylenic carbonyl compounds. 4,510,330, Cl. 568-403.000.

Bly, Kenneth B.: *See—*
Dimick, David L.; Bly, Kenneth B.; and Ludecke, Otto A., 4,509,966, Cl. 55-502.000.

Board of Regents, The University of Texas, The: *See—*
Linner, John G., 4,510,169, Cl. 427-4.000.

Boday, Otto ; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, to Villamosipari Kutato Intezel. Procedure and equipment for destroying waste by plasma technique. 4,509,434, Cl. 110-238.000.

Boden, Richard M.; Schreiber, William L.; Fujioka, Futoshi; Chant, Patrick; and Dekker, Lambert, to International Flavors & Fragrances Inc. Organoleptic uses of hydrocarbyloxy alkanals. 4,510,080, Cl. 252-522.00R.

Boden, Richard M.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,510,340, Cl. 568-884.000.

Bodine, Fred R.: *See—*
Kuperman, Gilbert G.; and Bodine, Fred R., 4,510,525, Cl. 358-88.000.

Boehlke, Horst R. E.; Loschen, Gerriet K. H.; Michel, Gudrun E.; and Muller, Bernd, to Gruenenthal GmbH. Cis-bicyclo[3.3.0]octane derivatives, medicaments containing them and processes for their preparation and use. 4,510,323, Cl. 514-530.000.

Boehringer Mannheim GmbH: *See—*
Ruppender, Uwe, 4,510,383, Cl. 235-462.000.
Schrenk, Jurgen, 4,510,240, Cl. 435-7.000.

Boggs, William G.; VanDenburgh, David S.; and Valdez, Gabriel A., to American Security Fence Company. Barrier. 4,509,726, Cl. 256-8.000.

Bogosoff, John P., to General Motors Corporation. Storage retainer for wheel cover wrench. 4,509,789, Cl. 296-37.200.

Boguslawski, George: *See—*
Whitted, Beth E.; and Boguslawski, George, 4,510,247, Cl. 435-207.000.

Boilard, Raynald, to Fernand Flamand Ltee. Door frame assembly. 4,509,294, Cl. 49-504.000.

Bolton, Edgar A., to Registration Control Systems. Combination badge and card holder. 4,509,277, Cl. 40-1.500.

Bolton, Gerald L.; and Weir, Donald R., to Sherritt Gordon Mines Limited. Process for recovering zinc from zinc ferrite material. 4,510,028, Cl. 204-119.000.

Bonapace, Franco: *See—*
Cosentino, Roberto F.; and Bonapace, Franco, 4,510,170, Cl. 427-33.000.

Boniface, Edmund A.: *See—*
Morgan, Walter R.; Boniface, Edmund A.; and Huben, Clayton A., 4,509,325, Cl. 60-39.141.

Bonneau, Paul; Holshouser, Howard E.; and Rogers, Terrence E., to General Electric Company. Television channel lockout. 4,510,623, Cl. 455-181.000.

Booher, Benjamin V. Composite control arm apparatus. 4,509,774, Cl. 280-694.000.

Booker, Reginald A., to Du Pont de Nemours, E. I., and Company. In situ film hardening with aldehyde bisulfite and nonhardening aldehyde. 4,510,237, Cl. 430-621.000.

Boothman, David R., to General Electric Company. Rotor protection apparatus and method. 4,510,548, Cl. 361-25.000.

Bora, Nayana S.: *See—*
Ho, Ping-Pei; Gorin, Brian A.; and Bora, Nayana S., 4,509,817, Cl. 350-3.610.
Borg-Warner Corporation: *See—*
Ledvina, Timothy J.; and Mead, Robert H., 4,509,323, Cl. 59-8.000.
Ledvina, Timothy J.; and Mead, Robert H., 4,509,937, Cl. 474-213.000.
Wentworth, Robert S., 4,509,773, Cl. 277-82.000.
Borlinghaus, Hans J.: *See—*
Colautti, Albert J.; and Borlinghaus, Hans J., 4,509,382, Cl. 74-424.80R.
Bormioli, Giorgio. Ball valve with rotary-translatory movement for fluid products at very high or very low temperature. 4,509,718, Cl. 251-163.000.
Borrow, Edgar W. Apparatus for mixing milk with flavoring and fluoride. 4,509,863, Cl. 366-162.000.
Bossert, Friedrich: *See—*
Wehinger, Egbert; Meyer, Horst; Bossert, Friedrich; Vater, Wulf; Towart, Robertson; Stoepel, Kurt; and Kazda, Stanislay, 4,510,310, Cl. 546-321.000.
Boszormenyi, Jozsef: *See—*
Bar, Vilmos; Boszormenyi, Jozsef; Richter, Peter; Mercz, Jeno; and Rozsnyai, Tamas, 4,510,147, Cl. 514-314.000.
Bottcher, Wolfgang; Juttner, Heinz; Maurer, Albrecht; and Stutzinger, Ferdinand, to Estel Hoesch Werke Aktiengesellschaft. Controlled grinding of rollers for elimination of cracks. 4,509,295, Cl. 51-49.000.
Bouchard, Kenneth J.: *See—*
Cooper, David C.; and Bouchard, Kenneth J., 4,509,220, Cl. 10-86.00A.
Boudreau, Normand. Capstan cleaner for eight-track cassettes. 4,510,545, Cl. 360-128.000.
Boudreaux, Harry J.; Card, David C.; and Hanson, Bernard M., to UOP Inc. Pipe base well screen and system for joining a plurality of well screen segments. 4,509,600, Cl. 166-381.000.
Bourbin, Yannic: *See—*
Arditty, Herve ; Bourbin, Yannic; Dubos, Jacques; Gautnier, Francis; and Graindorge, Philippe, 4,509,968, Cl. 65-10.100.
Bourque, Rene, to Warrington Inc. Composite skate boot and method of making the same. 4,509,276, Cl. 36-115.000.
Boutant, Jean-Jacques: *See—*
Lamy, Jean-Michel; and Boutant, Jean-Jacques, 4,509,384, Cl. 74-473.00R.
Bouvet, Jean; and Teasdale, Robert D. Apparatus for treating the joints of the human body. 4,509,509, Cl. 128-24.100.
Bowman, David F., to RCA Corporation. Selective waveguide mode converter. 4,510,469, Cl. 333-21.00R.
Boyce, William C.; Wittekind, Warren D.; Howard, Leroy C.; Hall, Thomas E.; and Lechelt, Wayne M., to UNC Nuclear Industries, Inc. Method for X-ray fluorescence spectroscopy. 4,510,573, Cl. 364-498.000.
Boyd, Robert D.: *See—*
Summers, Mark A.; Eimerl, David; and Boyd, Robert D., 4,510,402, Cl. 307-427.000.
Boyer, Paul K.: *See—*
Collins, George J.; Thompson, Lance R.; Rocca, Jorge J.; and Boyer, Paul K., 4,509,451, Cl. 118-50.100.
Bozza, Ireneo. Band wrapping machine for the packaging of parcels of boxes or products. 4,509,314, Cl. 53-586.000.
Braid, Milton; and Landis, Phillip S., to Mobil Oil Corporation. Fuel additive and method of use. 4,509,956, Cl. 44-68.000.
Brain, Archibald I. J. Artificial airway device. 4,509,514, Cl. 128-207.150.
Brainard, Edward C., II, to ENDECO Canada Limited. Portable memory module. 4,510,551, Cl. 361-398.000.
Brandenstein, Manfred; Hans, Rudiger; and Kiener, Heinz, to SKF Kugellagerfabriken GmbH. Sealing arrangement. 4,509,764, Cl. 277-166.000.
Brandt, Eckhard; and Wolf, Wolfram, to E.C.H. Will (GmbH & Co.). Apparatus for expelling air from stacks of paper sheets or the like. 4,509,417, Cl. 100-90.000.
Branson Ultrasonics Corporation: *See—*
Smith, Jeffrey C., 4,510,053, Cl. 210-175.000.
Branzoli, Umberto: *See—*
Cozzi, Paolo; Carganico, Germano; Pillan, Antonio; and Branzoli, Umberto, 4,510,149, Cl. 514-341.000.
Braun, Konrad: *See—*
Fuhge, Peter; Braun, Konrad; and Becker, Udo, 4,510,126, Cl. 424-3.000.
Braun, Robert E.; and Benasutti, John E., to Burroughs Corporation. Test coupons for determining the registration of subsurface layers in a multilayer printed circuit board. 4,510,446, Cl. 324-158.00R.
Braxton, Henry G., Jr., to Ethyl Corporation. Chemical composition. 4,509,952, Cl. 44-57.000.
Breidenbach, Heribert; and Strauss, Udo, to Steag AG. Process for cleaning of flue gases of a power plant with the aid of a coal dust burning flame and apparatus for carrying out the process. 4,509,437, Cl. 110-345.000.
Breitman, Daniel S.; and Langenegger, Henrique, to Pratt & Whitney Canada Inc. Inertial particle separator. 4,509,962, Cl. 55-306.000.
Brennan, Edward J.; and Pratt, John H., Jr., to PTC Aerospace Inc. Self-deploying legrest assembly. 4,509,795, Cl. 297-434.000.
Bresson, Clarence R.: *See—*
Parlman, Robert M.; Bresson, Clarence R.; and Young, Tommy L., 4,510,050, Cl. 209-167.000.
Breston, Michael P. Gravity-actuated thermal engines. 4,509,329, Cl. 60-531.000.
Bretts, Gerald R.: *See—*
Anderson, Philip M., III; Bretts, Gerald R.; and Kearney, James E., 4,510,489, Cl. 340-572.000.
Anderson, Philip M., III; Kearney, James E.; and Bretts, Gerald R., 4,510,490, Cl. 340-572.000.
Breuser, Erich; Grozinger, Wilhelm; Latsch, Reinhard; and Wurfel, Gernot, to Robert Bosch GmbH. Spark-plug assembly for internal-combustion engine. 4,509,476, Cl. 123-266.000.
Brew, James K.: *See—*
Miranti, Joseph P., Jr.; and Brew, James K., 4,509,933, Cl. 474-93.000.
Bridges, Charles D.: *See—*
Milberger, Lionel J.; and Bridges, Charles D., 4,509,594, Cl. 166-208.000.
Bridgestone Tire Company Limited: *See—*
Azuma, Yusaku; Kitayama, Yoshifumi; and Kawaida, Shinji, 4,510,011, Cl. 156-407.000.
Kawaida, Shinji; Okitsu, Yoshio; and Ikeda, Kazunari, 4,510,012, Cl. 156-415.000.
Brilando, Frank P., to Schwinn Bicycle Company. Bicycle chain hangar. 4,509,767, Cl. 280-289.00R.
Briner, Emil; and Hieronymi, Richard, to Rieter Machine Works Limited. False twist unit. 4,509,322, Cl. 57-333.000.
Brister, Beryle D. Apparatus for inserting a flexible bag into a fluid transmission line. 4,509,343, Cl. 62-514.00R.
Bristol-Myers Company: *See—*
Crenshaw, Ronnie R.; and Algieri, Aldo A., 4,510,309, Cl. 546-194.000.
British Petroleum Company p.l.c., The: *See—*
Brookes, David A., 4,509,546, Cl. 137-74.000.
Jorgensen, Pierre, 4,509,326, Cl. 60-39.182.
Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., 4,510,071, Cl. 252-373.000.
Brodie, Alastair C.: *See—*
Strachan, William S.; and Brodie, Alastair C., 4,510,312, Cl. 548-194.000.
Bronner, James A.; Moore, John D.; and Dale, Paul R., to Sanitek Products, Inc. Drift control concentrate. 4,510,081, Cl. 252-603.000.
Brooker, Lenon G., to Westinghouse Electric Corp. Release sheets for laminates with wax and alginate salt release layer. 4,510,199, Cl. 428-248.000.
Brookes, David A., to British Petroleum Company p.l.c., The. Firesafe seal. 4,509,546, Cl. 137-74.000.
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Duke, June T.; Samuels, Kenneth E.; and Brown, Mary-Catherine, 4,510,204, Cl. 428-463.000.
Brown, Steven L.: *See—*
Mullally, Charles J.; Brown, Steven L.; Anderson, David L.; and Hitchcock, Robert F., 4,509,340, Cl. 62-503.000.
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Brundin, Jan-Olof, to Medline AB. Occlusion of body channels. 4,509,504, Cl. 128-1.00R.
Brune, John F., to United States of America, Army. Aircraft shorted loop antenna with impedance matching and amplification at feed point. 4,510,500, Cl. 343-708.000.
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Councilman, Richard R.; Swisher, Steven L.; and Carpenter, Robert L., 4,509,705, Cl. 242-84.21R.
Slattery, Gordon C., 4,509,472, Cl. 123-179.00G.
Bryan, Horace. Electrode apparatus. 4,509,535, Cl. 128-798.000.
Bryan, Virginia M.: *See—*
Parks, David R.; Bryan, Virginia M.; and Herzenberg, Leonard A., 4,510,244, Cl. 435-172.200.
Bryson, Bruce A.; and Buschur, Jeffrey J., to General Motors Corporation. Windshield wiper transmission. 4,509,878, Cl. 403-71.000.
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Grogg, Terry W.; Bugaj, Joseph E.; and Bates, Paul E., 4,510,125, Cl. 424-1.100.
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Smythe, Robert A.; Bunkenburg, Joachim; and Richardson, Gunnar D., 4,509,858, Cl. 356-358.000.

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Burmester, Alan F.: *See—*
Cleereman, Kenneth J.; Raspor, O. Carl; and Burmester, Alan F., 4,510,108, Cl. 264-119.000.
Burn, Ian, to Sprague Electric Company. Newtonian ceramic slip and process for using. 4,510,175, Cl. 427-79.000.
Burroughs Corporation: *See—*
Braun, Robert E.; and Benasutti, John E., 4,510,446, Cl. 324-158.00R.
Catiller, Robert D., 4,510,603, Cl. 371-21.000.
Faultersack, David D., 4,510,553, Cl. 361-413.000.
Harvey, Edgar L., 4,510,417, Cl. 313-585.000.
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C. E. Shepherd Company, Inc.: *See—*
Shepherd, C. Barrett, 4,509,288, Cl. 43-102.000.
C F Braun & Co.: *See—*
Grotz, Bernard J., 4,510,123, Cl. 423-360.000.
C.W.F. Hamilton & Company Limited: *See—*
Turnbull, Robert S., 4,509,923, Cl. 440-43.000.
Cadena, Edward R.: *See—*
Kruka, Vitold R.; Kipp, Robert M.; and Cadena, Edward R., 4,510,588, Cl. 367-165.000.
Cais, Michael; and Shimoni, Moshe, to Technion Research & Development Foundation, Ltd. Method for a new type of chromatography and device therefor. 4,510,058, Cl. 210-657.000.
Calgon Corporation: *See—*
Amjad, Zahid; and Yorke, Monica A., 4,510,059, Cl. 210-701.000.
California Institute of Technology: *See—*
Rowlette, John J., 4,510,219, Cl. 429-212.000.
Callaert, Andre : *See—*
Van Raemdonck, Rene ; and Callaert, Andre , 4,509,785, Cl. 294-118.000.
Camlibel, Irfan; and Chin, Aland K., to AT&T Bell Laboratories. Ohmic contacts for semiconductor devices. 4,510,514, Cl. 357-17.000.
Cammarata, Edward. Soldering station with automatic dross removal. 4,509,670, Cl. 228-34.000.
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Wright, Dennis C.; and Camodeca, Ernest J., 4,509,717, Cl. 251-144.000.
Canadian Liquid Air Ltd/Air Liquide: *See—*
Savard, Guy; and Lee, Robert G. H., 4,509,595, Cl. 166-261.000.
Canadian Patents & Development Limited: *See—*
Inculet, Ion I.; and Hodgson, Kenneth J., 4,509,694, Cl. 239-697.000.
Szabo, Ervin I.; and Whiting, Laurence V., 4,509,983, Cl. 106-38.200.
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Fukui, Hiroshi, 4,510,505, Cl. 346-76.0PH.
Ikemori, Keiji, 4,509,833, Cl. 350-427.000.
Ishikawa, Yuji, 4,510,507, Cl. 346-76.0PH.
Katsuma, Makoto; Hiramatsu, Akira; Arakawa, Kazuhiko; and Murakami, Hiroyasu, 4,509,848, Cl. 354-473.000.
Maeda, Masaya, 4,510,534, Cl. 360-10.300.
Momiyama, Kikuo, 4,509,849, Cl. 354-479.000.
Sakai, Shinji; and Kawabata, Takashi, 4,509,841, Cl. 354-400.000.
Terasawa, Koji, 4,510,510, Cl. 346-140.00R.
Tezuka, Nobuo, 4,509,240, Cl. 29-227.000.
Card, David C.: *See—*
Boudreaux, Harry J.; Card, David C.; and Hanson, Bernard M., 4,509,600, Cl. 166-381.000.
Carella, Richard F. Method for making arrow fletching. 4,510,109, Cl. 264-151.000.
Carganico, Germano: *See—*
Cozzi, Paolo; Carganico, Germano; Pillan, Antonio; and Branzoli, Umberto, 4,510,149, Cl. 514-341.000.
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., to Heat and Control, Inc. Taco shell forming and cooking method. 4,510,165, Cl. 426-439.000.
Carl Manufacturing Co., Ltd.: *See—*
Mori, Chuzo; Watanabe, Jun; and Kudo, Katsutaka, 4,509,397, Cl. 83-453.000.
Carl Schmale KG: *See—*
Freermann, Johannes, 4,509,440, Cl. 112-153.000.
Carl-Zeiss-Stiftung: *See—*
Leitz, Helmut, 4,509,269, Cl. 33-293.000.
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Herzog, Klaus; and Szenger, Franz, 4,509,871, Cl. 384-502.000.
Carlson, Franklin B.; and Hall, Robert N., to Tosco Corporation. Circulating bed heat exchanger for cooling shale ash. 4,509,589, Cl. 165-95.000.
Carney, George T.; and Heath, Gary C., to Energy Control Products, Inc. Energy management control system. 4,509,585, Cl. 165-12.000.
Carpenter, James H.; and Corderman, Donald G., to Kennecott Corporation. Vane retention apparatus for abrasive blasting machine. 4,509,300, Cl. 51-435.000.
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Carr, Arthur E.: *See—*
Erlam, David P.; and Carr, Arthur E., 4,509,810, Cl. 339-17.00M.
Carrier Corporation: *See—*
Wellman, Donald C., 4,509,371, Cl. 73-861.000.
Carroll, Noel; and Phelps, Colin J., to Secton Pty. Ltd. Motor lock device. 4,510,405, Cl. 310-76.000.
Carter, Russell P., Jr., to Mobay Chemical Corporation. Polycarbonate compositions containing powdered sulfates. 4,510,196, Cl. 428-220.000.
Carver, Robert J.: *See—*
Welsch, John H.; Chapko, John J.; and Carver, Robert J., 4,509,805, Cl. 312-210.000.
Casio Computer Co., Ltd.: *See—*
Tahara, Iwao, 4,510,485, Cl. 340-323.00R.
Caslavsky, Jaroslav L.; Lavoie, Gerald H.; Earle, William H.; and Viechnicki, Dennis J., to United States of America, Army. Furnace for vertical solidification of melt. 4,510,609, Cl. 373-110.000.
Castiglione, Frank J. Drive attachment for J-hook. 4,509,393, Cl. 81-121.00A.
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Melocik, Kurt B., 4,509,406, Cl. 91-453.000.
Catiller, Robert D., to Burroughs Corporation. Testing system for reliable access times in ROM semiconductor memories. 4,510,603, Cl. 371-21.000.
Catto, Alberto: *See—*
Nardi, Dante; Catto, Alberto; Tajana, Alberto; Cazzulani, Pietro; and Graziani, Gabriele, 4,510,140, Cl. 544-360.000.
Caugant, Jean; and Dale, Jacques, to Thomson-CSF. Diaphragm for defining a radiation beam. 4,510,613, Cl. 378-152.000.
Caulfield, H. John: *See—*
Mueller, Peter F.; and Caulfield, H. John, 4,510,575, Cl. 364-518.000.
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Celamerck GmbH & Co. KG: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,509,972, Cl. 71-92.000.
Centocor, Inc.: *See—*
Hevey, Richard C., 4,510,119, Cl. 422-71.000.
Centre National d'Etudes Spatiales: *See—*
Vermande, Paul, 4,509,857, Cl. 356-346.000.
Cerberus AG: *See—*
St. Jean, Herbert N.; and Settanni, Richard, 4,510,488, Cl. 340-567.000.
Chalmers, Stephen P. Temperature/time limit indicator. 4,509,449, Cl. 116-218.000.
Championship Electronics (USA) Inc.: *See—*
Yeh, Gregory Y. S., 4,509,383, Cl. 74-471.0XY.
Chandra, Rangasami S.: *See—*
Eineichner, Donald E.; Chandra, Rangasami S.; and Tucci, James M., 4,509,365, Cl. 73-151.000.
Chang, Chieh; and Lee, Man S., to GTE Lenkurt Incorporated. Switched capacitor SSB modulator. 4,510,466, Cl. 332-31.00R.
Chang, Chieh; and Lee, Man S., to GTE Communication Systems Corporation. Switched capacitor DSB modulator/demodulator. 4,510,467, Cl. 332-31.00R.
Chang, Philip Y.; and McInroy, John W., to International Business Machines Corp. Qualifying and sorting file record data. 4,510,567, Cl. 364-300.000.
Chang, Robert W. H., to Minnesota Mining and Manufacturing Company. Compositions and method for reducing elution of therapeutic agents from teeth. 4,510,127, Cl. 424-52.000.
Chant, Patrick: *See—*
Boden, Richard M.; Schreiber, William L.; Fujioka, Futoshi; Chant, Patrick; and Dekker, Lambert, 4,510,080, Cl. 252-522.00R.
Chapko, John J.: *See—*
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Simone, Pregermain; Henri, Charcosset; and Michele, Andres, 4,510,039, Cl. 208-10.000.
Chatanooga Corporation: *See—*
Lie, Hakon, 4,509,743, Cl. 272-97.000.
Cheatham, James S. Versatile plurality mixer with rapid chance lot cycling and locking means. 4,509,755, Cl. 273-144.00B.
Cheetham, Ivan C.; and Pope, George A., to Dunlop Limited. Fire-barriers. 4,509,559, Cl. 138-121.000.
Chemet Corporation: *See—*
Jost, Ernest M., 4,509,980, Cl. 75-234.000.
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Chemfix Technologies, Inc.: *See—*
Donaldson, David L., 4,509,696, Cl. 241-15.000.
Chemical Research & Licensing Company: *See—*
Hearn, Dennis, 4,510,336, Cl. 568-697.000.
Chemie Linz Aktiengesellschaft: *See—*
Stern, Gerhard, 4,510,099, Cl. 260-465.50R.
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Schonberger, Johann; Bloo, Johann; Mistlberger, Bruno; and Gehmaier, Johann, 4,509,562, Cl. 139-13.00R.

Chemplex Company: *See—*
Lynch, Michael W.; and Pullukat, Thomas J., 4,510,299, Cl. 526-129.000.

Chenoweth, David V.; and McStravick, David M., to Baker Oil Tools, Inc. Gas well liquid removal system and process. 4,509,599, Cl. 166-370.000.

Chervitz, Melvin. Fever thermometer. 4,509,533, Cl. 128-736.000.

Chesnut, M. Gaines. Cartridge clip. 4,509,283, Cl. 42-50.000.

Chevron Research Company: *See—*
Kuehler, Christopher W., 4,510,038, Cl. 208-10.000.
Zones, Stacey I., 4,510,256, Cl. 502-62.000.

Chi, Jim-Yong; and Holmstrom, Roger P., to GTE Laboratories. Method of fabricating submicron silicon structures such as permeable base transistors. 4,510,016, Cl. 156-643.000.

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Stiefel, Edward I.; Pan, Wie-Hin; and Chianelli, Russell R., 4,510,260, Cl. 502-219.000.

Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, to Chisso Corporation. Ethylene-propylene copolymers for foaming and process for producing the same. 4,510,292, Cl. 525-247.000.

Chicago Bridge & Iron Company: *See—*
Ludwigsen, John S.; Ludwigsen, Jill L.; and Gallagher, Terry A., 4,509,344, Cl. 62-76.000.

Chin, Aland K.: *See—*
Camlibel, Irfan; and Chin, Aland K., 4,510,514, Cl. 357-17.000.

Chiolle, Antonio; Vecchi, Alfio; and Credali, Lino, to Montedison S.p.A. Process for the surface modification of synthetic fibers. 4,510,185, Cl. 427-222.000.

Chiron Corporation: *See—*
Cousens, Lawrence S.; Bell, Graeme I.; and Valenzuela, Pablo D. T., 4,510,245, Cl. 435-172.300.

Chisholm, John P.; and Morgan, Donald G., to Vega Precision Laboratories, Inc. TACAN' data link system. 4,510,499, Cl. 343-456.000.

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Chiu, Tony T.; Coatney, Charles W.; and Hirahara, Katsuji, to Magnuson Corporation. Stemming and peeling apparatus. 4,509,414, Cl. 99-585.000.

Chou, Kechia J.; and Valkovich, Phillip B., to Texaco Inc. Amine-polymer dispersants in lubricating oils and a method of improving the dispersancy of a lubricating oil. 4,510,063, Cl. 252-51.50R.

Chow, Edmund E., to Reed Industries, Inc. Electronic coin validator with improved diameter sensing apparatus. 4,509,633, Cl. 194-100.00A.

Christenson, Philip A.: *See—*
Willis, Brian J.; Eilerman, Robert G.; Christenson, Philip A.; and Yurecko, John M., Jr., 4,510,319, Cl. 560-231.000.

Chrysler Corporation: *See—*
Krowl, William G., 4,509,358, Cl. 72-476.000.

Chu, Kuo-Chin. Electromagnetically-induced rocking clock. 4,509,865, Cl. 368-134.000.

Ciba Geigy AG: *See—*
Kingston, Samuel B.; and Evans, Graham, 4,510,238, Cl. 430-627.000.
Kingston, Samuel B.; and Evans, Graham, 4,510,238, Cl. 430-627.000.
Plattner, Eric; Staubli, Sebastian; and von Kaenel, Fred, 4,510,100, Cl. 260-508.000.

Ciba-Geigy Corporation: *See—*
Heckendorn, Roland, 4,510,141, Cl. 514-250.000.
Khanna, Satish C., 4,510,128, Cl. 424-79.000.
Kirchmayr, Rudolf; and Rutsch, Werner, 4,510,290, Cl. 525-162.000.
Meyer, Willy; and Fury, Werner, 4,510,325, Cl. 564-89.000.
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Cisko, Lawrence W.: *See—*
Martin, Robert J.; Cisko, Lawrence W.; and Turley, Bernard C., 4,510,033, Cl. 204-245.000.

Citizen Watch Company Limited: *See—*
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; Masuda, Katuya; Moriya, Takashi; and Oosawa, Seiichi, 4,509,421, Cl. 101-93.040.

Civitani, Renzo: *See—*
Ronconi, Mario; and Civitani, Renzo, 4,509,868, Cl. 374-141.000.

Clark, Thomas S.; and Kennedy, William S. Passive temperature control shipment container. 4,509,587, Cl. 165-61.000.

Clark, William J. Apparatus for the orthodontic treatment of teeth. 4,509,918, Cl. 433-5.000.

Clatterbuck, Carroll H.; and Ruitberg, Arthur P., to United States of America, National Aeronautics and Space Administration. High voltage isolation transformer. 4,510,476, Cl. 336-84.00C.

Claudius Peters AG: *See—*
Ubert, Hans-Jurgen, 4,509,917, Cl. 432-75.000.

Clausen, Erik; and Clausen, Johannes, to Scan Screen A/S. Transparent rear projection screen. 4,509,822, Cl. 350-128.000.

Clausen, Johannes: *See—*
Clausen, Erik; and Clausen, Johannes, 4,509,822, Cl. 350-128.000.

Cleary, James W.; Sherk, Fred T.; and Nesheiwat, Afif M. Purification of N-methylpyrrolidone. 4,510,316, Cl. 548-555.000.

Cleereman, Kenneth J.; Raspor, O. Carl; and Burmester, Alan F., to Dow Chemical Company, The. Method of forming blanks for the solid-phase forming of thermoplastic articles. 4,510,108, Cl. 264-119.000.

Clerc, Jean F.; and Robert, Jacques, to Commissariat a l'Energie Atomique. Matrix display device with multiple screen electrodes. 4,509,828, Cl. 350-333.000.

Cleusix, Willy; and Nikles, Francois, to Ebauches Electroniques S.A. Electronic timepiece movement. 4,509,867, Cl. 368-321.000.

Cloutier, Richard; and Vissani, Carlo. Portable liquid measuring and dispensing device. 4,509,659, Cl. 222-41.000.

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Korsgen, Hans H.; and Weller, Wolfgang, 4,510,305, Cl. 528-494.000.

Coatney, Charles W.: *See—*
Chiu, Tony T.; Coatney, Charles W.; and Hirahara, Katsuji, 4,509,414, Cl. 99-585.000.

Coats & Clark, Inc.: *See—*
McKibben, Jerry, 4,509,399, Cl. 84-216.000.

Cobb, Raymond L., to Phillips Petroleum Company. Process for production of 1,1-dimethyl-6-hydroxyindans. 4,510,337, Cl. 568-734.000.

Cockayne, Brian; Griffiths, Richard J. M.; and Wright, Peter J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Organometallic chemical vapor deposition of films utilizing organic heterocyclic compounds. 4,509,997, Cl. 148-175.000.

Cockburn, Harrold; Weatherly, Darrel; and Yarbro, Earl, to Bell Manufacturing Company. Cylinder oiler assembly. 4,509,468, Cl. 123-90.380.

Coffman, Randall R.; and Mitchell, James E., to Norman Dryer Company, Inc. Dryer having top pivot for tumbler. 4,509,275, Cl. 34-126.000.

Cogelia, Nicholas J.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,510,348, Cl. 174-121.00A.

Cohen, Ilan: *See—*
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Cohen, Paul B., to Prime Computer, Inc. High speed buffer allocation apparatus. 4,510,581, Cl. 364-900.000.

Colautti, Albert J.; and Borlinghaus, Hans J., to General Motors Corporation. Preloaded screw actuator. 4,509,382, Cl. 74-424.80R.

Cole, Joycene L. Cryptographic game apparatus and mode of play. 4,509,758, Cl. 273-240.000.

Coleman, James H., to Upjohn Company, The. Treatment of panic disorders with adinazolam. 4,510,153, Cl. 514-220.000.

Coles Cranes Limited: *See—*
Thomasson, William R., 4,509,376, Cl. 73-862.560.

Colgate-Palmolive Company: *See—*
Saar, David C., 4,510,066, Cl. 252-140.000.

Colleen Pencil Co., Ltd.: *See—*
Shintani, Koichi, 4,509,875, Cl. 401-34.000.

Collins, David R.: *See—*
Morris, Horton H.; Whyte, John R., Jr.; Forbus, Ellen; Dentan, Catherine M.; and Collins, David R., 4,510,254, Cl. 501-146.000.

Collins, George J.; Thompson, Lance R.; Rocca, Jorge J.; and Boyer, Paul K., to Colromm, Inc. Electron beam induced chemical vapor deposition. 4,509,451, Cl. 118-50.100.

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Combustion Engineering, Inc.: *See—*
Felice, Frank T.; and Yonushonis, Celeste B., 4,510,253, Cl. 501-95.000.
Kuljis, Zoran; and Lareau, John P., 4,509,369, Cl. 73-628.000.

Commissariat a l'Energie Atomique: *See—*
Allemand, Robert; and Laval, Michel, 4,510,394, Cl. 250-483.100.
Andrie, Philippe; and Mimeur, Jacques, 4,509,263, Cl. 33-169.00R.
Clerc, Jean F.; and Robert, Jacques, 4,509,828, Cl. 350-333.000.
Guittet, Jack; Marchal, Paul; Micaelli, Alain; and Vertut, Jean, 4,510,574, Cl. 364-513.000.

Commonwealth of Australia, The: *See—*
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Lazzari, Jean-Pierre, 4,510,544, Cl. 360-114.000.

Comper, Louis F.: *See—*
Scheiderich, Robert F.; and Comper, Louis F., 4,509,984, Cl. 106-38.220.

Computer Basic Technology Research Assoc.: *See—*
Yoshida, Shigemasa; and Araki, Ichiro, 4,510,537, Cl. 360-78.000.

Cones, Charles F. Exercise bicycle. 4,509,742, Cl. 272-73.000.

Conover, Michael S., to Welding, K. C. MIG Welding gun. 4,509,247, Cl. 29-527.400.

Consolidation Coal Company: *See—*
May, Francis A.; and Patts, Larry, 4,510,352, Cl. 191-64.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Funk, Heinrich; Pakur, Henryk; and Seitz, Hans, 4,509,575, Cl. 152-356.00R.

Cook, John, to Graves, J. W.; and Tate, Harold, Jr., part interest to each. Fluid actuated switch. 4,510,358, Cl. 200-81.00R.

Cooper, David C.; and Bouchard, Kenneth J., to Stelco Inc. Prevailing torque nut. 4,509,220, Cl. 10-86.00A.

Cooper, Kelvin: *See—*
Richardson, Kenneth; and Cooper, Kelvin, 4,510,148, Cl. 514-340.000.

Cooper, Merton G.; Kerns, William R.; Filley, Daniel E.; and Koschnick, Gary A., to United States of America, Navy. Hydraulic powered gate valve. 4,509,549, Cl. 137-327.000.
Cooper, Ralph M.; and Mena, Walter M., to AMP Incorporated. Cable clamp. 4,509,710, Cl. 248-73.000.
Corbett, Warren J. Food container. 4,509,653, Cl. 215-231.000.
Corderman, Donald G.: *See—*
Carpenter, James H.; and Corderman, Donald G., 4,509,300, Cl. 51-435.000.
Cornelius Company, The: *See—*
Austin, Forrest L.; and Bebeau, Jerald R., 4,509,690, Cl. 239-429.000.
Cornell Research Foundation, Inc.: *See—*
Sigrimis, Nick A.; and Scott, Norman R., 4,510,495, Cl. 340-825.540.
Cornely, Wolfgang; Esser, Heinz; and Schmidt, Rudolf, to Bergwerksverband GmbH. Method of coating geological formations as well as air- and fire barriers. 4,510,180, Cl. 427-136.000.
Cornils, Boy; Tihanyi, Bela; Weber, Jurgen; DeWin, Werner; Erben, Edwin; and Muhlratzer, August, to Ruhrchemie Aktiengesellschaft; and Maschinenfabrik Augsburg-Nurnberg. Method for the production of homogeneous coatings of two or more metals and/or metal compounds. 4,510,182, Cl. 427-162.000.
Corning Glass Works: *See—*
Prindle, William A., 4,509,651, Cl. 211-70.600.
Cosentino, Roberto F.; and Bonapace, Franco, to Pharmindev Limited. Process and apparatus for electrostatic coating of poorly conductive or non-conductive products. 4,510,170, Cl. 427-33.000.
Costa, Armando; and Morbin, Federico, to Ing. C. Olivetti & C., S.p.A. Screen for electrical circuits. 4,510,345, Cl. 174-35.00R.
Costello, Peter E.; Fossett, Lawrence D.; Lane, Michael S.; Quin, Terrence T.; and Smith, Nicholas K., to AT&T Bell Laboratories. ACD Management information system. 4,510,351, Cl. 179-27.00D.
Costello, Samuel J.; and Sohne, Eric R., to Allied Corporation. Apparatus for crimping brush contacts. 4,509,255, Cl. 29-753.000.
Costruzioni Meccaniche G. Mazzoni S.p.A.: *See—*
Mazzoni, Aldo, 4,510,110, Cl. 264-176.00R.
Coulter Electronics, Inc.: *See—*
Auer, Robert, 4,510,438, Cl. 324-71.400.
Coulter Systems Corporation: *See—*
Kuehnle, Manfred R.; Martinez, Ferdinand; Runyan, I. V.; and Barry, Carol M. F., 4,510,223, Cl. 430-44.000.
Kuehnle, Manfred R.; and Martinez, Ferdinand, 4,510,225, Cl. 430-126.000.
Councilman, Richard R.; Swisher, Steven L.; and Carpenter, Robert L., to Brunswick Corporation. Surfcasting spinning reel. 4,509,705, Cl. 242-84.21R.
Cousens, Lawrence S.; Bell, Graeme I.; and Valenzuela, Pablo D. T., to Chiron Corporation. Adenovirus promoter system. 4,510,245, Cl. 435-172.300.
Cousse, Henry; Mouzin, Gilbert; Tarayre, Jean-Pierre; and Rieu, Jean-Pierre, to Pierre Fabre S.A. Derivatives of biphenyl alkyl carboxylates and their use as medicaments. 4,510,142, Cl. 514-255.000.
Coutta, John M.; and Van Dusen, Paul A. Surveillance system. 4,510,526, Cl. 358-108.000.
Coveleskie, Richard A.; and Lee, Shung-Yan L., to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions and elements containing acid to reduce scum and stain formation. 4,510,230, Cl. 430-273.000.
Cowen, Steven J.; and Young, Christopher M., to United States of America, Navy. Reproducible standard for aligning fiber optic connectors which employ graded refractive index rod lenses. 4,509,827, Cl. 350-320.000.
Cowen, Steven J.: *See—*
Garcia, Graham A.; and Cowen, Steven J., 4,510,607, Cl. 372-49.000.
Cox, Ron; and Pettovello, Elzi. Control for welding system. 4,510,373, Cl. 219-137.710.
Cozzi, Paolo; Carganico, Germano; Pillan, Antonio; and Branzoli, Umberto, to Farmitalia Carlo Erba S.p.A. N-Imidazolyl derivatives containing naphthalene or indene nucleus. 4,510,149, Cl. 514-341.000.
Cragoe, Edward J., Jr.: *See—*
Blaine, Edward H.; Cragoe, Edward J., Jr.; Hirschmann, Ralph F.; Nancarrow, John F., deceased; Nancarrow, Elisabeth M., executrix; and Tobert, Jonathan A., 4,510,322, Cl. 514-255.000.
Creative Research & Development, Inc.: *See—*
Nezat, Jerry W., 4,510,162, Cl. 426-124.000.
Credali, Lino: *See—*
Chiolle, Antonio; Vecchi, Alfio; and Credali, Lino, 4,510,185, Cl. 427-222.000.
Creissels, Denis C. Twin suspension/haulage cable gondola lift. 4,509,430, Cl. 104-173.00R.
Crenshaw, Ronnie R.; and Algieri, Aldo A., to Bristol-Myers Company. Histamine H_2-antagonists. 4,510,309, Cl. 546-194.000.
Crosby, John, to Imperial Chemical Industries PLC. Insecticidal product. 4,510,098, Cl. 260-465.00D.
Croswhite, Howard L.: *See—*
Vahratian, Adam; Maynard, Roosevelt, Jr.; Croswhite, Howard L.; and Liang, Po-Lung, 4,509,389, Cl. 74-695.000.
Crouse, Dennis N.; Reynolds, James C.; and Walsh, Fraser M., to Tracer Technologies, Inc. Electrode with electron transfer catalyst. 4,510,214, Cl. 429-43.000.
CTS Corporation: *See—*
Barber, Michael; and Lloyd, Charles F., 4,509,716, Cl. 251-141.000.
Culp, Charles H.; and Downar, Denise J., to Honeywell Inc. Add/shed load control according to multiple add/shed sequences. 4,510,398, Cl. 307-35.000.
Curran, John: *See—*
Holland, Frank S.; Womersley, Peter; and Curran, John, 4,510,095, Cl. 260-429.700.
Currie, Janie K.; and Mooney, J. Robert, to Standard Oil Company, The. High viscosity index synthetic oils and synthesis thereof. 4,510,342, Cl. 585-524.000.
Curtis, Huntington W.; Dodge, Frederick A.; Francis, David B.; and Mizzi, John V., to International Business Machines Corporation. System for plotting a miniature ECG. 4,509,530, Cl. 128-710.000.
Cusack, Robert F., to GTE Valeron Corporation. Touch probe. 4,509,266, Cl. 33-174.00L.
Cushing, Donald S., to General Electric Company. Multiple spray distribution system for a domestic dishwasher. 4,509,687, Cl. 239-245.000.
Cuthbert, John D.; and Soos, Nicholas A., to AT&T Bell Laboratories. Removal of coating from periphery of a semiconductor wafer. 4,510,176, Cl. 427-82.000.
Dagostino, Thomas P.; and Trudel, John D., to Tektronix, Inc. Waveform storage and display system. 4,510,571, Cl. 364-487.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Moriguchi, Yutaro; Honda, Makoto; and Izawa, Akira, 4,509,823, Cl. 350-128.000.
Daiichi Dentsu Kabushiki Kaisha: *See—*
Doniwa, Tabito, 4,510,424, Cl. 318-432.000.
Daimler-Benz Aktiengesellschaft: *See—*
Forster, Hans-Joachim; Lubbing, Bernd-Eric; and Letsche, Ulrich, 4,509,488, Cl. 123-481.000.
Solleder, Friedrich; Krohn, Hellmut; Burckhardt, Manfred; and Brugger, Franz, 4,509,802, Cl. 303-110.000.
Dainichi-Nippon Cables, Ltd.: *See—*
Tanno, Shogo, 4,510,435, Cl. 324-52.000.
Dainichi Seika Color & Chemicals Mfg. Co., Ltd.: *See—*
Kuriyama, Katsumi; Kondo, Isao; and Misaizu, Iwao, 4,510,186, Cl. 427-381.000.
Dairy & Food Labs, Inc.: *See—*
Young, Randall S.; and Fredericks, Ronald D., Jr., 4,510,072, Cl. 252-380.000.
Dale, Jacques: *See—*
Caugant, Jean; and Dale, Jacques, 4,510,613, Cl. 378-152.000.
Dale, Paul R.: *See—*
Bronner, James A.; Moore, John D.; and Dale, Paul R., 4,510,081, Cl. 252-603.000.
Damrow, Paul A.; and Tsang, Floris Y., to Dow Chemical Company, The. Method for molybdenum-coated aluminum current collector for alkali metal/sulfur battery cells. 4,509,254, Cl. 29-623.500.
Daniels, Michael P., to Minnesota Mining and Manufacturing Company. Information disk of grooved, metal-coated crosslinked polymeric layer. 4,510,593, Cl. 369-283.000.
Dardis, Richard E., to Olin Corporation. Soda-anthraquinone lignin sacrificial agents in oil recovery. 4,509,597, Cl. 166-274.000.
Darsey, Ralph J.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,510,348, Cl. 174-121.00A.
Da Silva, Evelyne: *See—*
Resneau, Jean C.; Puyhaubert, Jean; Da Silva, Evelyne; and Lamontagne, Claude, 4,510,470, Cl. 333-142.000.
Data I/O Corporation: *See—*
Reece, John M.; Martin, Robert G.; and Franzel, John R., 4,510,572, Cl. 364-489.000.
Davich, Luke J.; Erickson, Jack A.; and Proulx, Richard W., to Federal Cartridge Corporation. Shotshell casing with partially telescoped basewad. 4,509,428, Cl. 102-466.000.
David, Tom, to Tom David, Inc. Condiment grinder-dispenser. 4,509,698, Cl. 241-169.100.
Davidovits, Joseph; and Sawyer, James L., to Pyrament Inc. Early high-strength mineral polymer. 4,509,985, Cl. 106-84.000.
Davis, Dean I.: *See—*
Bursh, Talmage P., Jr.; Davis, Dean I.; Slominski, John T.; and Swartz, Raymond K., 4,510,346, Cl. 174-36.000.
Davis, Kevin M.; Wahl, Timothy M.; Beckman, John A.; and Isele, Karl J., Jr., to Nalco Chemical Company. Off-gas monitor for steel processes. 4,509,727, Cl. 266-44.000.
Davis, Toby L. Torque meter. 4,509,375, Cl. 73-862.320.
Dayco Corporation: *See—*
Foster, Randy C.; Hackard, Roger G.; and Wilson, Leslie B., 4,509,935, Cl. 474-138.000.
Miranti, Joseph P., Jr.; and Brew, James K., 4,509,933, Cl. 474-93.000.
Oliver, Larry R., 4,510,003, Cl. 156-137.000.
Woodland, Carl R., 4,509,938, Cl. 474-264.000.
De la Rue Giori S.A.: *See—*
Germann, Albrecht J., 4,509,424, Cl. 101-177.000.
de Broqueville, Axel. Transportation system utilizing a stretchable train of cars and stretchable bandconveyors. 4,509,429, Cl. 104-25.000.
de Calvino y Teijeiro, Ben J., to Westinghouse Electric Corp. Circuit interrupter having improved closing resistor control means. 4,510,359, Cl. 200-144.0AP.
Deflecta-Shield Corporation: *See—*
Parham, Fred, 4,509,588, Cl. 165-80.00R.
de Gruchy, Robert S.: *See—*
Govang, James A.; Mee, William W.; and de Gruchy, Robert S., 4,509,648, Cl. 211-70.600.

Degussa Aktiengesellschaft: *See—*
Beyer, Hans-Hermann; Baudia, Ulrich; and Biberbach, Peter, 4,509,993, Cl. 148-15.500.

Dekker, Lambert: *See—*
Boden, Richard M.; Schreiber, William L.; Fujioka, Futoshi; Chant, Patrick; and Dekker, Lambert, 4,510,080, Cl. 252-522.00R.

Delfino, Allan B.: *See—*
McTamaney, Louis S.; Delfino, Allan B.; and Bisbee, Gary W., 4,509,901, Cl. 417-18.000.

Delpit, Philippe; Duplessis, Philippe; and Renaudin, Yves, to Compagnie Industrielle Des Telecommunications Cit-Alcatel. Digital frequency receiver. 4,510,601, Cl. 370-110.300.

Delta-X Corporation: *See—*
Eicher, Dean A.; and McKee, Fount E., 4,509,552, Cl. 137-557.000.

Demarne, Henri; and Wagnon, Jean, to Sanofi, S.A. 4[3-(1,1-Dimethyl-2-3(3-indolyl)ethylamino)-2-hydroxypropoxy]indole. 4,510,315, Cl. 548-455.000.

Demny, Florian C.: *See—*
Stewart, Thomas L.; and Demny, Florian C., 4,510,060, Cl. 210-746.000.

Dempster, Roy E.: *See—*
LeBrun, Thomas Q.; Torkelson, John; Dempster, Roy E.; and Van Tyne, Richard G., 4,510,619, Cl. 382-57.000.

den Hollander, Willem, to RCA Corporation. Horizontal deflection phasing arrangement. 4,510,527, Cl. 358-158.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Okazaki, Haruo; and Ohkubo, Takashi, 4,510,274, Cl. 523-411.000.
Tabata, Itsuo; and Watanabe, Seiichi, 4,510,341, Cl. 570-229.000.

Dennison Manufacturing Company: *See—*
Shuman, Ralph J., 4,510,206, Cl. 428-488.100.

Densmore, John C.; and Watkins, Charles W., to Tuftco Corporation. Clamp insert for tufting elements in narrow gauge tufting machine. 4,509,439, Cl. 112-79.00R.

Dentan, Catherine M.: *See—*
Morris, Horton H.; Whyte, John R., Jr.; Forbus, Ellen; Dentan, Catherine M.; and Collins, David R., 4,510,254, Cl. 501-146.000.

de Ruiter, Ernest: *See—*
Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernest, 4,510,193, Cl. 428-196.000.

Desjardins, Francois G., to Electrohome Limited. Generation of vectors. 4,510,432, Cl. 320-1.000.

Desjardins, Stanley P.; and Warrick, James C., to Simula Inc. Variable-load energy absorber and method for making energy absorbers having variable-load capability. 4,509,621, Cl. 188-372.000.

Dessau, Ralph M., to Mobil Oil Corporation. Hydrocarbon dewaxing process using steam-activated alkali metal zeolite catalyst. 4,510,045, Cl. 208-111.000.

Detsch, Steven G. Oral electrical treatment apparatus and method. 4,509,519, Cl. 128-419.00F.

Dettfurth, Bernd: *See—*
Dettfurth, Karl; and Dettfurth, Bernd, 4,509,308, Cl. 52-787.000.

Dettfurth, Karl; and Dettfurth, Bernd, to Messerschmitt-Boelkow-Blohm GmbH. Mounting assembly and method for installing dowels in compound panels. 4,509,308, Cl. 52-787.000.

DeVries, James H., to DLP, Inc. Cardioplegia temperature indicator. 4,509,532, Cl. 128-736.000.

DeWin, Werner: *See—*
Cornils, Boy; Tihanyi, Bela; Weber, Jurgen; DeWin, Werner; Erben, Edwin; and Muhlratzer, August, 4,510,182, Cl. 427-162.000.

de Witt, Paolo: *See—*
Tinti, Maria O.; Quaresima, Emma; Bagolini, Carlo; and de Witt, Paolo, 4,510,318, Cl. 560-147.000.

Dias, Donald R.; Guterman, Daniel C.; Proebsting, Robert J.; and Leuschner, Horst, to Mostek Corporation. MOS Random access memory cell with nonvolatile storage. 4,510,584, Cl. 365-203.000.

Dick, Melvin E.; and Peterson, Linn A., to General Motors Corporation. Isolated bumper for damping vibrations in vehicles. 4,509,781, Cl. 293-104.000.

Dickerson, Carroll D.: *See—*
Drotar, Frederick L.; Wotton, David R.; Dickerson, Carroll D.; and Makowski, Lawrence A., 4,509,772, Cl. 280-661.000.

Dickes, Eric J.; Hill, Thomas C., III; and Flegal, Robert T., to Tektronix, Inc. Phase lock loop having switchable filters and oscillators. 4,510,461, Cl. 331-1.00A.

Dickinson, Lawrence C. Skiving and roller burnishing tool. 4,509,885, Cl. 407-1.000.

Diehl GmbH & Co.: *See—*
Oellig, Oskar; Grimmer, Horst; and Lunz, Alfred-Gunther, 4,509,864, Cl. 368-108.000.

Diesel Kiki Company, Ltd.: *See—*
Ito, Satoru; and Endo, Masatoshi, 4,509,470, Cl. 123-179.00L.
Kawatei, Hisatsugu, 4,509,491, Cl. 123-502.000.
Ochiai, Kouji; and Tomita, Hitoshi, 4,509,492, Cl. 123-569.000.

Dijkshoorn, Willem: *See—*
Schmidt, Werner J.; Dijkshoorn, Willem; Stratmann, Wilhelm; and Vermaas, Leo F., 4,510,167, Cl. 426-607.000.

Dimick, David L.; Bly, Kenneth B.; and Ludecke, Otto A., to General Motors Corporation. Wall-flow monolith filter with porous plugs. 4,509,966, Cl. 55-502.000.

Diry, Andre. Filter designed for the simultaneous filtration and preheating of the fuel. 4,510,051, Cl. 210-94.000.

Discovision Associates: *See—*
Tabata, George K.; and Yardy, Raymond, 4,510,536, Cl. 360-65.000.

Dixie-Narco, Inc.: *See—*
Oden, Kenneth W., 4,509,658, Cl. 221-115.000.

DLP, Inc.: *See—*
DeVries, James H., 4,509,532, Cl. 128-736.000.

Doble Engineering Company: *See—*
Allfather, Lars P., 4,510,354, Cl. 200-11.00R.

Dr. Johannes Heidenhain GmbH: *See—*
Feichtinger, Kurt, 4,509,264, Cl. 33-169.00R.
Nelle, Guenther, 4,509,262, Cl. 33-125.00R.

Dodge, Frederick A.: *See—*
Curtis, Huntington W.; Dodge, Frederick A.; Francis, David B.; and Mizzi, John V., 4,509,530, Cl. 128-710.000.

Dohner, Jeffrey L.: *See—*
Erwin, Lewis; and Dohner, Jeffrey L., 4,509,360, Cl. 73-61.00R.

Doi, Hiyoshi: *See—*
Kawaguchi, Toshihiro; Ishizaka, Mineo; and Doi, Hiyoshi, 4,509,568, Cl. 141-129.000.

Doi, Yuji: *See—*
Matsushita, Shigetada; and Doi, Yuji, 4,509,366, Cl. 73-861.020.

Dolson, Richard G., to Veeder Industries Inc. Portable voting booth. 4,510,378, Cl. 235-50.00R.

Donahoe, Patricia K.; Budzik, Gerald P.; and Swann, David A., to General Hospital Corporation, The. Purified Mullerian Inhibiting Substance and method of use. 4,510,131, Cl. 424-105.000.

Donaldson, Charles W., to General Electric Company. Turbine blade measurement. 4,509,265, Cl. 33-174.0PA.

Donaldson Company, Inc.: *See—*
Engel, Mark R., 4,509,960, Cl. 55-287.000.

Donaldson, David L., to Chemfix Technologies, Inc. Method for treating liquid and semi-solid organic waste materials. 4,509,696, Cl. 241-15.000.

Donatelli, Eugene R. Building structure. 4,509,302, Cl. 52-82.000.

Doniwa, Tabito, to Daiichi Dentsu Kabushiki Kaisha. Nut runner control circuit. 4,510,424, Cl. 318-432.000.

Dougherty, John J., to General Electric Company. Transceiver circuit for interfacing between a power line communication system and a data processor. 4,510,611, Cl. 375-8.000.

Dow Chemical Company, The: *See—*
Cleereman, Kenneth J.; Raspor, O. Carl; and Burmester, Alan F., 4,510,108, Cl. 264-119.000.
Damrow, Paul A.; and Tsang, Floris Y., 4,509,254, Cl. 29-623.500.
Earl, Robert B.; Larson, David B.; and Nguyen, Huy X., 4,509,598, Cl. 166-308.000.
Kurfman, Virgil B., 4,510,208, Cl. 428-624.000.
Pawloski, Chester E.; and Ginter, Sally P., 4,510,101, Cl. 260-928.000.
Tonokawa, Hiroshi; and Nakamura, Masao, 4,510,268, Cl. 521-146.000.

Downar, Denise J.: *See—*
Culp, Charles H.; and Downar, Denise J., 4,510,398, Cl. 307-35.000.

Draft Systems, Inc.: *See—*
Fallon, Merton R., 4,509,663, Cl. 222-400.700.

Drahnak, Timothy J., to Minnesota Mining and Manufacturing Company. Platinum complex. 4,510,094, Cl. 260-429.0CY.

Draw-Tite, Inc.: *See—*
Young, David A.; and Hummel, William H., 4,509,770, Cl. 280-507.000.

Dreiling, Ronald; and Perrella, Blaine. Gun trigger lock. 4,509,281, Cl. 42-1.00Y.

Dresser Industries, Inc.: *See—*
Baron, George B., 4,509,895, Cl. 414-685.000.
Saxman, William C.; and Parker, Larry J., 4,509,607, Cl. 175-227.000.
Verbos, Stephen P., 4,509,620, Cl. 188-171.000.

Dril-Quip Inc.: *See—*
Walker, James M., 4,509,777, Cl. 285-286.000.

Drotar, Frederick L.; Wotton, David R.; Dickerson, Carroll D.; and Makowski, Lawrence A., to Ford Motor Company. One-piece adjusting sleeve. 4,509,772, Cl. 280-661.000.

Du Pont Canada Inc.: *See—*
Hajto, Ernest A., 4,509,998, Cl. 149-2.000.

Dubois, Jerry M.; and Spanjer, Keith G., to Motorola, Inc. Electrically isolated semiconductor power device. 4,510,519, Cl. 357-81.000.

Dubos, Jacques: *See—*
Arditty, Herve ; Bourbin, Yannic; Dubos, Jacques; Gautnier, Francis; and Graindorge, Philippe, 4,509,968, Cl. 65-10.100.

Ductmate Industries: *See—*
Arnoldt, Peter J., 4,509,778, Cl. 285-406.000.

Dudouyt, Jean-Paul. Post assembly for knock-down furniture. 4,509,806, Cl. 312-257.0SK.

Dugan, Michael T.: *See—*
Ippolito, Ronald A.; and Dugan, Michael T., 4,509,851, Cl. 355-14.00C.

Dugot, Richard S., to Biolectron, Inc. Electrical stimulating apparatus. 4,509,520, Cl. 128-419.00F.

Duke, June T.; Samuels, Kenneth E.; and Brown, Mary-Catherine, to Standard Oil Company, The. Film-forming compositions of nitrile polymer latex blends. 4,510,204, Cl. 428-463.000.

Dummermuth, Ernst, to Allen-Bradley Company. Programmable controller with intelligent positioning I/O modules. 4,510,565, Cl. 364-136.000.

Dunlop Limited: *See—*
Cheetham, Ivan C.; and Pope, George A., 4,509,559, Cl. 138-121.000.
Slater, Christopher J., 4,509,558, Cl. 138-104.000.

Dunne, Maurice J., to Unimation, Inc. Control system for manipulator apparatus with initializing stabilization and inertia scaling. 4,510,428, Cl. 318-632.000.

Duplessis, Philippe: *See*—
Delpit, Philippe; Duplessis, Philippe; and Renaudin, Yves, 4,510,601, Cl. 370-110.300.

Duplex Lighting, Inc.: *See*—
Welch, Thomas M., 4,509,881, Cl. 403-229.000.

Du Pont de Nemours, E. I., and Company: *See*—
Booker, Reginald A., 4,510,237, Cl. 430-621.000.
Coveleskie, Richard A.; and Lee, Shung-Yan L., 4,510,230, Cl. 430-273.000.
Hatchard, William R., 4,510,202, Cl. 428-295.000.
Levy, Stanley B., 4,510,300, Cl. 526-247.000.
Levy, Stanley B., 4,510,301, Cl. 526-254.000.
Lindsey, Roland G.; and Simms, John A., 4,510,298, Cl. 526-87.000.
Litt, Gerald J.; and Litt, Lloyd C., 4,510,392, Cl. 250-475.200.
Moberg, William K., 4,510,136, Cl. 514-63.000.
Peet, William G.; and Tebbe, Frederick N., 4,510,327, Cl. 568-1.000.
Pruckmayr, Gerfried, 4,510,333, Cl. 568-617.000.
Romanauskas, William A., 4,509,940, Cl. 494-16.000.
Smith, Malcolm S., 4,510,281, Cl. 524-229.000.

Duracell Inc.: *See*—
Gopikanth, Mysore L.; Kuo, Han C.; and Schlaikjer, Carl R., 4,510,220, Cl. 429-225.000.

Duranleau, Roger G.: *See*—
Lambert, Clifford L., Jr.; and Duranleau, Roger G., 4,510,326, Cl. 564-132.000.

Durbye, Hartmut, to Mars Inc. Animal litter and process for the production thereof. 4,509,457, Cl. 119-1.000.

Dybdal, Robert B.: *See*—
Mori, Tsutomu T.; Dybdal, Robert B.; and Etcheverry, Robert D., 4,510,622, Cl. 455-67.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Glembin, Dirk; Huhn, Kurt; Meyer, Gunter; and Thallmeier, Manfred, 4,510,334, Cl. 568-643.000.
Hulsmann, Hans L., 4,510,093, Cl. 260-410.90N.

E.C.H. Will (GmbH & Co.): *See*—
Brandt, Eckhard; and Wolf, Wolfram, 4,509,417, Cl. 100-90.000.

Earl, Robert B.; Larson, David B.; and Nguyen, Huy X., to Dow Chemical Company, The. Fracturing fluids containing bouyant inorganic diverting agent and method of use in hydraulic fracturing of subterranean formations. 4,509,598, Cl. 166-308.000.

Earle, William H.: *See*—
Caslavsky, Jaroslav L.; Lavoie, Gerald H.; Earle, William H.; and Viechnicki, Dennis J., 4,510,609, Cl. 373-110.000.

Eastman Kodak Company: *See*—
Weemes, Doyle A.; and Seymour, Robert W., 4,510,205, Cl. 428-483.000.

Eastmond, Bruce C.: *See*—
Thompson, Sharon E.; and Eastmond, Bruce C., 4,510,624, Cl. 455-223.000.

Ebauches Electroniques S.A.: *See*—
Cleusix, Willy; and Nikles, Francois, 4,509,867, Cl. 368-321.000.

Eberle, Kelly L. Method for manufacture of a storage battery. 4,509,253, Cl. 29-623.100.

Eberline, William C.; Radtke, Norman H.; and Van Camp, Robert L., to Walbro Corporation. Start system for internal combustion engines. 4,509,471, Cl. 123-179.00G.

Ebi, Yutaka: *See*—
Horike, Masanori; Furukawa, Tatsuya; Sekiya, Takuro; Ebi, Yutaka; Isayama, Takuro; and Tachiki, Masaaki, 4,510,509, Cl. 346-140.00R.

Ebihara, Tadashi, to Nippon Piston Ring Co., Ltd. Composite valve seat. 4,509,722, Cl. 251-359.000.

Ebisawa, Mikio: *See*—
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,510,328, Cl. 568-32.000.

Eby, Jeffrey; and Spector, George. Elastic top bag. 4,509,570, Cl. 141-390.000.

Eckstein, Udo, to Bayer Aktiengesellschaft. Water-insoluble azolystyryl optical brighteners. 4,510,311, Cl. 548-132.000.

Econolite Control Products, Inc.: *See*—
Tedesco, Jack, 4,510,549, Cl. 361-86.000.

Economics Laboratory, Inc.: *See*—
Salmonson, Duane L., 4,509,402, Cl. 91-275.000.

Edelmann, Karl R. Thermostat housing assembly. 4,509,465, Cl. 123-41.020.

Eden, J. Gary: *See*—
Manuccia, Thomas J.; and Eden, J. Gary, 4,509,522, Cl. 128-634.000.

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Bennett, Douglas L.; Edwards, Thomas J.; and Rowles, Howard C., 4,510,023, Cl. 203-99.000.

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Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,509,842, Cl. 354-402.000.

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Markart, Ernst; Blumel, Reinhard; and Eggert, Holger, 4,509,859, Cl. 356-446.000.

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Tamiya, Yoshimichi; and Eguchi, Yasukata, 4,509,441, Cl. 112-158.00B.

Eibl, Johann; Hetzl, Ernst; and Linnau, Yendra, to Immuno Aktiengesellschaft fur chemisch-medizinische Produkte. Method of producing an antithrombin III-heparin concentrate or antithrombin III-heparinoid concentrate. 4,510,084, Cl. 260-112.00B.

Eicher, Dean A.; and McKee, Fount E., to Delta-X Corporation. Gas gun for determining the liquid level of a well. 4,509,552, Cl. 137-557.000.

Eidenschink, Rudolf; Haas, Gunther; Pohl, Ludwig; Romer, Michael; Scheuble, Bernhard; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Cyclohexane derivatives. 4,510,069, Cl. 252-299.610.

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Summers, Mark A.; Eimerl, David; and Boyd, Robert D., 4,510,402, Cl. 307-427.000.

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Sakashita, Shigeru; Nakagawa, Takeshi; Ohwaki, Takayuki; and Miyake, Yasuo, 4,510,168, Cl. 427-3.000.

Eissenberg, David M.: *See*—
Horton, Joel R.; and Eissenberg, David M., 4,510,121, Cl. 422-232.000.

Eitzinger, Robert, to Mid-West Automation Inc. Inspection, rejection and sorting machine. 4,509,646, Cl. 209-573.000.

Eklof, Ulf, to Alfa-Laval Separation AB. Operating system for centrifugal separators. 4,510,052, Cl. 210-139.000.

Electricite de France Service National: *See*—
Bensadoun, Michel, 4,510,483, Cl. 338-80.000.

Electrohome Limited: *See*—
Desjardins, Francois G., 4,510,432, Cl. 320-1.000.

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Gesellchen, Paul D.; and Shuman, Robert T., 4,510,082, Cl. 260-112.50R.

Elkem Metals Company: *See*—
Wright, Dennis C.; and Camodeca, Ernest J., 4,509,717, Cl. 251-144.000.

Elliesen, Wolfgang, to Joh. Friedrich Behrens AG. Sound-dampened driving apparatus for fasteners. 4,509,669, Cl. 227-130.000.

Ellis, Ralph J.; Gurtler, Richard W.; and Sarma, Kalluri R., to Motorola, Inc. Method for semiconductor ribbon-to-ribbon conversion. 4,510,015, Cl. 156-617.00R.

Elton, Richard K., to General Electric Company. Semiconductive glass fibers and method. 4,510,077, Cl. 252-502.000.

Elwood Manufacturing Company: *See*—
Jones, Donald D., 4,509,626, Cl. 192-85.0AA.

Emery, Leonard W., to Atlantic Richfield Company. Enhanced oil recovery. 4,509,596, Cl. 166-263.000.

Emhart Industries, Inc.: *See*—
Abbott, Vaughan, 4,509,969, Cl. 65-300.000.

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Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.

Emsley, Robert M.; and Pitt, Derek C., to Post Office, The. Sorting system. 4,509,635, Cl. 198-365.000.

ENDECO Canada Limited: *See*—
Brainard, Edward C., II, 4,510,551, Cl. 361-398.000.

Endo, Masatoshi: *See*—
Ito, Satoru; and Endo, Masatoshi, 4,509,470, Cl. 123-179.00L.

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Yabe, Minoru; Noda, Kenichi; Endo, Satoru; and Yamauchi, Masaaki, 4,510,413, Cl. 313-460.000.

Energy Control Products, Inc.: *See*—
Carney, George T.; and Heath, Gary C., 4,509,585, Cl. 165-12.000.

Energy Products of Idaho: *See*—
Sowards, Norman K., 4,510,021, Cl. 201-4.000.

Energy Recovery Group, Inc.: *See*—
Adams, Jack C., 4,509,435, Cl. 110-344.000.

Enga, Bernard E., to Johnson Matthey, Inc. Regenerating catalytic particulate filters and apparatus therefor. 4,509,327, Cl. 60-274.000.

Engdahl, Jean; and Formaz, Jerome, to Fordahl S.A.R.L. Programmable logic apparatus for entering, processing and transmitting data. 4,510,602, Cl. 371-21.000.

Engel, Mark R., to Donaldson Company, Inc. Dust collector. 4,509,960, Cl. 55-287.000.

Engelhard Corporation: *See*—
Harrison, William S., 4,510,369, Cl. 219-389.000.
Hartwig, Michael M., 4,510,265, Cl. 502-330.000.

England, W. Dean; and Enneking, Gerald J. Damper control. 4,509,498, Cl. 126-288.000.

Enneking, Gerald J.: *See—*
England, W. Dean; and Enneking, Gerald J., 4,509,498, Cl. 126-288.000.
Environmental Research Institute of Michigan, The: *See—*
Lougheed, Robert M.; and Mudge, Trevor N., 4,510,616, Cl. 382-8.000.
Peterson, Lauren M., 4,509,829, Cl. 350-358.000.
Epes, Jack R. Method and apparatus for inserting insulation in preexisting building structures. 4,509,304, Cl. 52-127.300.
Erben, Edwin: *See—*
Cornils, Boy; Tihanyi, Bela; Weber, Jurgen; DeWin, Werner; Erben, Edwin; and Muhlratzer, August, 4,510,182, Cl. 427-162.000.
Erickson, Jack A.: *See—*
Davich, Luke J.; Erickson, Jack A.; and Proulx, Richard W., 4,509,428, Cl. 102-466.000.
Erlam, David P.; and Carr, Arthur E., to Rittal-Werk Rudolf Loh GmbH & Co. KG. Rack with card frames adjustable on lateral slide guides. 4,509,810, Cl. 339-17.00M.
Ermak, Boris, to Stevens, Robert D. Mixture of three refrigerants. 4,510,064, Cl. 252-67.000.
Ernst, Hans-Hellmut; and Seel, Holger, to AUTOFLUG GmbH. Self-locking belt reeling device for motor vehicle safety belts. 4,509,707, Cl. 242-107.40A.
Ernst, Richard R.; Wuthrich, Kurt; and Macura, Slobodan, to Spectrospin AG. Method for recording two-dimensional nuclear magnetic resonance spectra and a device for carrying out the same. 4,510,449, Cl. 324-309.000.
Erwin, Lewis; and Dohner, Jeffrey L., to Massachusetts Institute of Technology. On-line measurement of fluid mixtures. 4,509,360, Cl. 73-61.00R.
Erwin, Timothy R., to Pitney Bowes Inc. Postage access door for postage meters. 4,509,780, Cl. 292-307.00R.
Esayan, Mariana; and Vilain, Michel, to Framatome & Cie. Device for safety injection on a pressurized-water nuclear reactor. 4,510,118, Cl. 376-282.000.
Escher Wyss Aktiengesellschaft: *See—*
Volz, Karl; Link, Christoph; Stotz, Wolf-Gunter; and Heitmann, Peter, 4,509,237, Cl. 29-116.0AD.
Esmet, Inc.: *See—*
Shaw, Charles R., 4,509,233, Cl. 24-136.00R.
Esser, Heinz: *See—*
Cornely, Wolfgang; Esser, Heinz; and Schmidt, Rudolf, 4,510,180, Cl. 427-136.000.
Estel Hoesch Werke Aktiengesellschaft: *See—*
Bottcher, Wolfgang; Juttner, Heinz; Maurer, Albrecht; and Stutzinger, Ferdinand, 4,509,295, Cl. 51-49.000.
Etablissements-Pierre Fontaine: *See—*
Legoult, Michel, 4,510,401, Cl. 307-66.000.
Etablissements Rondolotti: *See—*
Rolin, Guy; and Rabizzoni, Jacques, 4,509,351, Cl. 72-19.000.
Etcheverry, Robert D.: *See—*
Mori, Tsutomu T.; Dybdal, Robert B.; and Etcheverry, Robert D., 4,510,622, Cl. 455-67.000.
Ethicon, Inc.: *See—*
Bezwada, Rao S.; Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,510,295, Cl. 525-437.000.
Ethyl Corporation: *See—*
Braxton, Henry G., Jr., 4,509,952, Cl. 44-57.000.
Jones, Jesse D.; and Hornbaker, Edwin D., 4,510,280, Cl. 524-178.000.
Knapp, Gordon G., 4,509,951, Cl. 44-53.000.
Eue, Ludwig: *See—*
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Evans, David D., to Imperial Chemical Industries PLC. Method for combating pests. 4,510,133, Cl. 514-30.000.
Evans, Graham: *See—*
Kingston, Samuel B.; and Evans, Graham, 4,510,238, Cl. 430-627.000.
Evans, Robert J., to Aurora Equipment Company. Cart with plastic toolholder. 4,509,649, Cl. 211-70.600.
Evans, Thomas E.: *See—*
Jovick, Raymond J.; Malott, Roger J.; and Evans, Thomas E., 4,510,408, Cl. 310-168.000.
Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,509,760, Cl. 273-380.000.
Everlite A/S: *See—*
Sokoler, Henryk; and Pedersen, Eigil, 4,509,306, Cl. 52-302.000.
Exxon Production Research Co.: *See—*
Moyer, Mark C., 4,510,447, Cl. 324-225.000.
Exxon Research and Engineering Co.: *See—*
Beaudet, Emilien, 4,509,307, Cl. 52-309.400.
McVicker, Gary B., 4,510,096, Cl. 260-439.00R.
Muhle, Mike E.; Stolz, Richard J.; and Wright, Cecil W., 4,510,271, Cl. 523-346.000.
Stiefel, Edward I.; Pan, Wie-Hin; and Chianelli, Russell R., 4,510,260, Cl. 502-219.000.
Thompson, John A., 4,510,047, Cl. 208-321.000.
Ezis, Andre; and Blair, Howard D., to Ford Motor Company. Method of making densified Si_3N_4/oxynitride composite with premixed silicon and oxygen carrying agents. 4,510,107, Cl. 264-65.000.
Fabrications Automatiques Gerbelot: *See—*
Gerbellot-Barrillon, Pierre, 4,509,919, Cl. 433-57.000.
Failla, William G. High and low pressure, quick-disconnect coupling. 4,509,554, Cl. 137-614.050.
Fairchild Industries, Inc.: *See—*
Sheek, Roy S., 4,509,888, Cl. 410-105.000.
Fallon, Merton R., to Draft Systems, Inc. Locking mechanism and valve assembly. 4,509,663, Cl. 222-400.700.
Fanuc Ltd.: *See—*
Kishi, Hajimu; and Seki, Masaki, 4,510,568, Cl. 364-300.000.
Nozawa, Ryoichiro; Kiya, Nobuyuki; and Murakami, Kunihiko, 4,510,427, Cl. 318-590.000.
Obara, Haruki, 4,510,367, Cl. 219-69.00W.
Farmitalia Carlo Erba S.p.A.: *See—*
Cozzi, Paolo; Carganico, Germano; Pillan, Antonio; and Branzoli, Umberto, 4,510,149, Cl. 514-341.000.
Farr, Kenneth. Collapsible expansible handling facility for unitized and unit loads. 4,509,433, Cl. 108-52.100.
Farrar, David; and Hawe, Malcolm, to Allied Colloids Limited. Calcium carbonate dispersions. 4,509,987, Cl. 106-308.00Q.
Faruk, Erol A., to Beecham Group p.l.c. Antihypertensive chromenes and chromans. 4,510,152, Cl. 514-321.000.
Faultersack, David D., to Burroughs Corporation. Electromechanical assembly for aligning, discharging, and sequentially engaging conductors of a P.C. board with a backplane. 4,510,553, Cl. 361-413.000.
Federal Cartridge Corporation: *See—*
Davich, Luke J.; Erickson, Jack A.; and Proulx, Richard W., 4,509,428, Cl. 102-466.000.
Feedmobile, Inc.: *See—*
High, Sam; and Mast, Aquila D., 4,509,862, Cl. 366-158.000.
Feichtinger, Kurt, to Dr. Johannes Heidenhain GmbH. Sensing head with overload protection. 4,509,264, Cl. 33-169.00R.
Feintool AG Lyss: *See—*
Haack, Johannes, 4,509,395, Cl. 83-55.000.
Fekete, Gyorgy: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.
Felice, Frank T.; and Yonushonis, Celeste B., to Combustion Engineering, Inc. Aluminum resistant ceramic fiber composition. 4,510,253, Cl. 501-95.000.
Fernand Flamand Ltee: *See—*
Boilard, Raynald, 4,509,294, Cl. 49-504.000.
Filipot, Hermann: *See—*
Schrofelbauer, Herbert; Kakl, Josef; Staudinger, Gernot; and Filipot, Hermann, 4,509,436, Cl. 110-345.000.
Filley, Daniel E.: *See—*
Cooper, Merton G.; Kerns, William R.; Filley, Daniel E.; and Koschnick, Gary A., 4,509,549, Cl. 137-327.000.
Fine Particles Technology Corporation: *See—*
Wiech, Raymond E., Jr., 4,510,347, Cl. 174-68.500.
Finkbeiner, Ernest, to Mid-West Transformer Company. Coil body. 4,510,478, Cl. 336-198.000.
Firey, Joseph C. Cyclic char gasifier. 4,509,957, Cl. 48-61.000.
Fischer, Artur; and Walther, Horst, to Fischer, Artur. Method and a device for securing double-wall panels to substructures. 4,509,246, Cl. 29-526.00R.
Fischer, Gert; and Lather, Dieter, to Mannesmann Aktiengesellschaft. Test head mounting for single or multiple test heads. 4,509,815, Cl. 339-147.00P.
Fischer, Richard J., to Gates Rubber Company, The. Radially extensible joint packing with helical spring support means. 4,509,763, Cl. 277-163.000.
Fisher, Charles B.; and Fisher, Sidney T. Predistorted AM stereo transmission. 4,510,614, Cl. 381-16.000.
Fisher Controls International, Inc.: *See—*
Gassman, George W.; and Varnum, Gerald F., 4,509,403, Cl. 91-365.000.
Fisher, Sidney T.: *See—*
Fisher, Charles B.; and Fisher, Sidney T., 4,510,614, Cl. 381-16.000.
Fisons plc: *See—*
Altounyan, Roger E. C.; and Auty, Richard M., 4,509,515, Cl. 128-200.230.
Flannery, Stephen W.: *See—*
Bendall, Brian; and Flannery, Stephen W., 4,509,677, Cl. 236-122.000.
Flaten, James F., to Tobin-Arp Manufacturing Company. Preset indicator assembly. 4,509,267, Cl. 33-185.00R.
Fleck, Frank: *See—*
Heiman, Gerald R.; and Fleck, Frank, 4,509,682, Cl. 239-60.000.
Fleckenstein, Volker: *See—*
Assbeck, Franz; and Fleckenstein, Volker, 4,510,434, Cl. 323-237.000.
Flegal, Robert T.: *See—*
Dickes, Eric J.; Hill, Thomas C., III; and Flegal, Robert T., 4,510,461, Cl. 331-1.00A.
Flinn, Heather Anne, executrix: *See—*
Flinn, Ian, deceased; and Murray, Robert, 4,510,471, Cl. 333-195.000.
Flinn, Ian, deceased (by Flinn, Heather Anne, executrix); and Murray, Robert, to U.S. Philips Corporation. Acoustic surface wave device including a reflective multistrip coupler. 4,510,471, Cl. 333-195.000.
Floreancig, Antoine, to Uranium Pechiney Ugine Kuhlmann. Process for extracting uranium from phosphoric acids by means of alkylpyrophosphoric acids. 4,510,122, Cl. 423-10.000.
FMC Corporation: *See—*
Eineichner, Donald E.; Chandra, Rangasami S.; and Tucci, James M., 4,509,365, Cl. 73-151.000.

McTamaney, Louis S.; Delfino, Allan B.; and Bisbee, Gary W., 4,509,901, Cl. 417-18.000.

Focke & Co.: *See—*
Focke, Heinz; and Mutschall, Hugo W., 4,509,310, Cl. 53-170.000.

Focke, Heinz; and Mutschall, Hugo W., to Focke & Co. Apparatus for the production of packs, especially cigarette cartons. 4,509,310, Cl. 53-170.000.

Fogelson, Seymour, to Fogelson, Seymour. Apparatus for stabilizing plant support stakes in pots. 4,509,289, Cl. 47-70.000.

Fohl, Artur, to REPA Feinstanzwerk GmbH. Mechanism in roll-up device for safety belts in motor vehicles. 4,509,708, Cl. 242-107.700.

Forbus, Ellen: *See—*
Morris, Horton H.; Whyte, John R., Jr.; Forbus, Ellen; Dentan, Catherine M.; and Collins, David R., 4,510,254, Cl. 501-146.000.

Ford Motor Company: *See—*
Drotar, Frederick L.; Wotton, David R.; Dickerson, Carroll D.; and Makowski, Lawrence A., 4,509,772, Cl. 280-661.000.
Ezis, Andre; and Blair, Howard D., 4,510,107, Cl. 264-65.000.
Hunt, Thomas K., 4,510,210, Cl. 429-11.000.
Schowiak, Duane C., 4,509,684, Cl. 239-112.000.
Ufrecht, Martin; and Rest, Heinz, 4,509,293, Cl. 49-502.000.
Vahratian, Adam; Maynard, Roosevelt, Jr.; Croswhite, Howard L.; and Liang, Po-Lung, 4,509,389, Cl. 74-695.000.

Fordahl S.A.R.L.: *See—*
Engdahl, Jean; and Formaz, Jerome, 4,510,602, Cl. 371-21.000.

Foresi, Anthony; and Naysmith, Peter, to Anthony Foresi & Associates, Inc. Sheet stacking system. 4,509,740, Cl. 271-224.000.

Formaz, Jerome: *See—*
Engdahl, Jean; and Formaz, Jerome, 4,510,602, Cl. 371-21.000.

Forster, Hans-Joachim; Lubbing, Bernd-Eric; and Letsche, Ulrich, to Daimler-Benz Aktiengesellschaft. Process and apparatus for intermittent control of a cyclically operating internal combustion engine. 4,509,488, Cl. 123-481.000.

Forster, Heinz; Hofer, Wolfgang; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Benzothiazole substituted carboxylic acid amide compounds and herbicidal methods compositions thereof. 4,509,971, Cl. 71-90.000.

Fossett, Lawrence D.: *See—*
Costello, Peter E.; Fossett, Lawrence D.; Lane, Michael S.; Quin, Terrence T.; and Smith, Nicholas K., 4,510,351, Cl. 179-27.00D.

Foster, Randy C.; Hackard, Roger G.; and Wilson, Leslie B., to Dayco Corporation. Belt tensioner and method of making the same. 4,509,935, Cl. 474-138.000.

Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., to General Electric Company. Polycarbonate/condensation polymer blends. 4,510,289, Cl. 525-148.000.

Fox, Thomas J.: *See—*
Green, Harold V.; Fox, Thomas J.; and Scallan, Anthony M., 4,510,020, Cl. 162-169.000.

Foxboro Company, The: *See—*
Hubball, John A.; and Barry, Eugene F., 4,509,964, Cl. 55-386.000.

Fraden, Jacob, to Timex Medical Products Corporation. Cardio-respiration transducer. 4,509,527, Cl. 128-671.000.

Fraioli, Anthony V., to United States of America, Energy. Solid oxide fuel cell having compound cross flow gas patterns. 4,510,212, Cl. 429-30.000.

Fram, Jerry R. Catalyst slave pump. 4,509,903, Cl. 417-464.000.

Framatome & Cie.: *See—*
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Francis, David B.: *See—*
Curtis, Huntington W.; Dodge, Frederick A.; Francis, David B.; and Mizzi, John V., 4,509,530, Cl. 128-710.000.

Franks, Joseph, to Ion Tech Limited. Thinning of specimens for examination under the electron microscope. 4,510,386, Cl. 250-251.000.

Franzel, John R.: *See—*
Reece, John M.; Martin, Robert G.; and Franzel, John R., 4,510,572, Cl. 364-489.000.

Frederick, Larry J. Traversing blade-rotary propeller. 4,509,899, Cl. 416-99.000.

Fredericks, Ronald D., Jr.: *See—*
Young, Randall S.; and Fredericks, Ronald D., Jr., 4,510,072, Cl. 252-380.000.

Freeland, John A.; and Freeland, Robert D. Combination bearing removal and installation tool. 4,509,241, Cl. 29-263.000.

Freeland, Robert D.: *See—*
Freeland, John A.; and Freeland, Robert D., 4,509,241, Cl. 29-263.000.

Freeport Minerals Company: *See—*
Wiewiorowski, Tadeusz; and Mollere, Phillip D., 4,510,027, Cl. 204-110.000.

Freermann, Johannes, to Carl Schmale KG. Stitching assembly for selvedging machine. 4,509,440, Cl. 112-153.000.

Frei, Max, to Schenker Maschinen AG. Spring coiling machine. 4,509,352, Cl. 72-138.000.

Freitag, Hans-Albrecht: *See—*
Kopp, Richard; and Freitag, Hans-Albrecht, 4,510,269, Cl. 521-166.000.

Freitag, Wolfgang. Plug connector for co-axial electrical cables. 4,509,816, Cl. 339-177.00R.

Freyssinet International (STUP): *See—*
Guinard, Pierre, 4,509,305, Cl. 52-223.00R.

Frick, Adolf, to Stoechio-Matic AG. Apparatus for the combustion of liquid fuels in the gaseous state. 4,509,914, Cl. 431-121.000.

Fritzsche Dodge & Olcott Inc.: *See—*
Willis, Brian J.; Eilerman, Robert G.; Christenson, Philip A.; and Yurecko, John M., Jr., 4,510,319, Cl. 560-231.000.

Frost, John G.: *See—*
Money, David K.; Swift, Stephen; MacLaurin, Andrew; and Frost, John G., 4,509,529, Cl. 128-708.000.

Frykhult, Rune H.; and Rundquist, Lars-Goran, to AB Celleco. Hydrocyclone separator. 4,510,056, Cl. 210-512.100.

Fuhge, Peter; Braun, Konrad; and Becker, Udo, to Hoechst Aktiengesellschaft. Reagent for the determination of ristocetin cofactor (v.Willebrand factor). 4,510,126, Cl. 424-3.000.

Fuji Electric Company, Ltd.: *See—*
Fumoto, Takabumi, 4,510,389, Cl. 250-339.000.
Matsushita, Shigetada; and Doi, Yuji, 4,509,366, Cl. 73-861.020.

Fuji Electric Corporate Research and Development, Ltd.: *See—*
Fumoto, Takabumi, 4,510,389, Cl. 250-339.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Takahashi, Toshio, 4,509,363, Cl. 73-118.000.

Fuji Koeki Kabushiki Kaisha: *See—*
Takematsu, Yoshiyuki, 4,509,844, Cl. 354-416.000.
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Fuji Photo Film Co., Ltd.: *See—*
Fujino, Sigeo; Hase, Takashi; and Toshinai, Akio, 4,510,414, Cl. 313-468.000.
Ogawa, Hiroshi; Mizuno, Chiaki; and Tamai, Yasuo, 4,510,203, Cl. 428-425.900.
Oka, Yutaka; Saeki, Naomi; and Fuseya, Yoshiharu, 4,510,229, Cl. 430-265.000.
Seshimoto, Osamu, 4,510,035, Cl. 204-411.000.
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; Toya, Ichizo; and Syuto, Sadanobu, 4,510,235, Cl. 430-574.000.
Yamazaki, Hisashi; and Ochiai, Takeji, 4,510,388, Cl. 250-327.200.
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, 4,510,233, Cl. 430-527.000.

Fuji Xerox Co., Ltd.: *See—*
Kurata, Masami; Inui, Toshiharu; and Ohmori, Takashi, 4,510,523, Cl. 358-75.000.
Kurata, Masami, 4,510,524, Cl. 358-80.000.
Moriguchi, Haruhiko; Moriguchi, Fujio; and Ohmori, Takashi, 4,510,506, Cl. 346-76.0PH.
Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihisa, 4,510,504, Cl. 346-75.000.
Tan, Yoichi, 4,510,600, Cl. 370-94.000.

Fujie, Hirokazu: *See—*
Matsuoka, Hiroo; Matsuoka, Seiichi; Yamabe, Tsunekichi; Fujie, Hirokazu; Mori, Kenji; Tamura, Kouji; Yamada, Masatoshi; and Furuta, Akio, 4,510,264, Cl. 502-328.000.

Fujii, Chigusa, heiress: *See—*
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.

Fujii, Kanichi; and Otaka, Masahiro, to Mita Industrial Co., Ltd. Laser tube utilizing negative glow. 4,510,608, Cl. 372-87.000.

Fujikawa, Katsuhiro; and Gohda, Osamu, to Mitsubishi Denki K.K. Sewing machine control device. 4,509,445, Cl. 112-317.000.

Fujima, Yasuo: *See—*
Bando, Niro; Kurohara, Kazuaki; Fujima, Yasuo; Ikeda, Fumihiro; Usiro, Kenzo; and Ogasawara, Hiroyuki, 4,509,614, Cl. 180-273.000.

Fujimaki, Akira, to Zaidan Hojin Minsei Kagaku Kyokai. Antihypertensive agents and process for producing the same. 4,510,161, Cl. 514-54.000.

Fujimaki, Yukiko: *See—*
Iida, Hideyo; Kato, Koumei; Mishuku, Toshio; and Fujimaki, Yukiko, 4,510,195, Cl. 428-215.000.

Fujino, Sigeo; Hase, Takashi; and Toshinai, Akio, to Fuji Photo Film Co., Ltd. Electron excited fluorescent display device including screen with rare earth phosphor exhibiting sublinear current density-emission luminance characteristics. 4,510,414, Cl. 313-468.000.

Fujioka, Atsushi: *See—*
Hoshi, Ikuo; Arai, Masami; Yokochi, Kiyoshi; Miyadera, Yasuo; Fujioka, Atsushi; and Nakagawa, Takehisa, 4,510,008, Cl. 156-245.000.

Fujioka, Futoshi: *See—*
Boden, Richard M.; Schreiber, William L.; Fujioka, Futoshi; Chant, Patrick; and Dekker, Lambert, 4,510,080, Cl. 252-522.00R.

Fujita, Hisanori: *See—*
Kajita, Masaki; Nakaya, Tomio; Hasegawa, Shinichi; and Fujita, Hisanori, 4,510,515, Cl. 357-17.000.

Fujitsu Limited: *See—*
Furumura, Yuji; and Nishizawa, Takeshi, 4,510,177, Cl. 427-85.000.
Goto, Hiroshi; and Tabata, Akira, 4,509,249, Cl. 29-576.00W.
Kanno, Takashi; Oka, Akira; Okamoto, Ituo; Mizushima, Kouji; and Oguro, Shinji, 4,510,552, Cl. 361-413.000.
Miwa, Hirohide, 4,509,524, Cl. 128-660.000.
Takeda, Shiro; and Nakajima, Minoru, 4,510,283, Cl. 524-356.000.

Fukatsu, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic transaction machine. 4,510,381, Cl. 235-379.000.

Fukatsu, Shunzo: *See—*
Minowa, Nobuto; Fukatsu, Shunzo; Niida, Taro; and Mase, Sadaaki, 4,510,102, Cl. 260-941.000.

Fukaya, Hirokazu: *See—*
Nishitoba, Shigeo; and Fukaya, Hirokazu, 4,509,494, Cl. 123-609.000.

Fukuda, Kikuo: *See—*
Yoshida, Tatsuo; Fukuda, Kikuo; and Tomiguchi, Akihiko, 4,509,319, Cl. 57-218.000.

Fukudome, Shinichi: *See—*
Hara, Noboru; Fukudome, Shinichi; Johna, Nobuo; and Nakamura, Masayoshi, 4,510,073, Cl. 252-383.000.
Fukui, Hiroshi, to Canon Kabushiki Kaisha. Thermal printer. 4,510,505, Cl. 346-76.0PH.
Fumagalli, Carlo: *See—*
Suciu, George D.; Stefani, Giancarlo; and Fumagalli, Carlo, 4,510,258, Cl. 502-209.000.
Fumoto, Takabumi, to Fuji Electric Company, Ltd.; and Fuji Electric Corporate Research and Development, Ltd. Infrared film thickness gage. 4,510,389, Cl. 250-339.000.
Funk, Heinrich; Pakur, Henryk; and Seitz, Hans, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire. 4,509,575, Cl. 152-356.00R.
Furrer, Andreas; and Milavec, Johann, to BBC Brown, Boveri & Company, Limited. Switching amplifier. 4,510,457, Cl. 330-10.000.
Furukawa, Tatsuya: *See—*
Horike, Masanori; Furukawa, Tatsuya; Sekiya, Takuro; Ebi, Yutaka; Isayama, Takuro; and Tachiki, Masaaki, 4,510,509, Cl. 346-140.00R.
Furumura, Yuji; and Nishizawa, Takeshi, to Fujitsu Limited. Method and apparatus for vapor phase deposition. 4,510,177, Cl. 427-85.000.
Furuta, Akio: *See—*
Matsuoka, Hiroo; Matsuoka, Seiichi; Yamabe, Tsunekichi; Fujie, Hirokazu; Mori, Kenji; Tamura, Kouji; Yamada, Masatoshi; and Furuta, Akio, 4,510,264, Cl. 502-328.000.
Furuya, Katusuke: *See—*
Watanabe, Kenkichi; and Furuya, Katusuke, 4,509,542, Cl. 133-8.00A.
Fury, Werner: *See—*
Meyer, Willy; and Fury, Werner, 4,510,325, Cl. 564-89.000.
Fuseya, Yoshiharu: *See—*
Oka, Yutaka; Saeki, Naomi; and Fuseya, Yoshiharu, 4,510,229, Cl. 430-265.000.
Fushimi, Hitoshi: *See—*
Mizokawa, Sadao; Hamada, Takuji; Tomizawa, Hiroshi; and Fushimi, Hitoshi, 4,510,494, Cl. 340-825.050.
G.D. Searle & Co.: *See—*
Hansen, Donald W., Jr.; and Papaioannou, Stamatios, 4,510,085, Cl. 260-112.50E.
Gagne, Roger A.; and Orchard, Rolf O., to Puritan-Bennett Corporation. One-piece nebulizer jet. 4,509,688, Cl. 239-338.000.
Gaitten, Dorothy A., executrix: *See—*
Gaitten, Walden M., deceased, 4,509,574, Cl. 144-208.00E.
Gaitten, Walden M., deceased (by Gaitten, Dorothy A., executrix), to Kockums Cancar, Corp. Feed roll spikes with plus-shaped cutting edges. 4,509,574, Cl. 144-208.00E.
Galani, Zvi; and Waterman, Raymond C., Jr., to Raytheon Company. Automatic gain controlled frequency discriminator for use in a phase locked loop. 4,510,463, Cl. 331-15.000.
Gallagher, Terry A.: *See—*
Ludwigsen, John S.; Ludwigsen, Jill L.; and Gallagher, Terry A., 4,509,344, Cl. 62-76.000.
Gambro Engstrom AB: *See—*
Gedeon, Andras; and Mathiasson, Lennart, 4,509,359, Cl. 73-23.000.
Gamze, Maurice G.; and Sprung, Louis H. Variable-speed constant-frequency alternator. 4,510,433, Cl. 322-32.000.
Ganoe, Oscar L.: *See—*
Mentzell, Walter J.; and Ganoe, Oscar L., 4,509,377, Cl. 73-862.560.
Garcia, Graham A.; and Cowen, Steven J., to United States of America, Navy. Semiconductor laser end-facet coatings for use in solid or liquid environments. 4,510,607, Cl. 372-49.000.
Garrett, Keith C., to AES Engineering Limited. Stationary assembly for mechanical shaft seal. 4,509,762, Cl. 277-81.00R.
Gartner, Klaus W. Protective lock mounting plate for safe door locks. 4,509,350, Cl. 70-333.00R.
Garvison, Geary L. Bowstring release mechanism. 4,509,497, Cl. 124-35.00A.
Gas Research Institute: *See—*
Schneider, William R.; and Smith, Robert B., 4,509,243, Cl. 29-402.020.
Gassman, George W.; and Varnum, Gerald F., to Fisher Controls International, Inc. Positioner having user-adjustable dynamic response. 4,509,403, Cl. 91-365.000.
Gaswarme-Institut e.V.: *See—*
Lorenz, Werner; Bathke, Heinz; and Sommers, Hans, 4,509,913, Cl. 431-90.000.
Gates Rubber Company, The: *See—*
Fischer, Richard J., 4,509,763, Cl. 277-163.000.
Gautnier, Francis: *See—*
Arditty, Herve ; Bourbin, Yannic; Dubos, Jacques; Gautnier, Francis; and Graindorge, Philippe, 4,509,968, Cl. 65-10.100.
Gay, Don D., to United States of America, Energy. Dual liquid and gas chromatograph system. 4,509,855, Cl. 356-72.000.
Gaz de France: *See—*
Simone, Pregermain; Henri, Charcosset; and Michele, Andres, 4,510,039, Cl. 208-10.000.
GCA Corporation/Tropel Division: *See—*
Smythe, Robert A.; Bunkenburg, Joachim; and Richardson, Gunnar D., 4,509,858, Cl. 356-358.000.
Geber, Hans, to Messer Griesheim GmbH. Process and device for scavenging a metal melt, in particular steel, in a casting ladle or the like provided with a plug closure. 4,509,977, Cl. 75-59.000.
Gedeon, Andras; and Mathiasson, Lennart, to Gambro Engstrom AB. Method and apparatus for measuring the concentration of a given component in a gas inhaled and/or exhaled by a patient. 4,509,359, Cl. 73-23.000.
Gehmaier, Johann: *See—*
Schonberger, Johann; Bloo, Johann; Mistlberger, Bruno; and Gehmaier, Johann, 4,509,562, Cl. 139-13.00R.
Geiger, Robert W.: *See—*
Tschanz, August E.; and Geiger, Robert W., 4,509,387, Cl. 74-505.000.
Geisthardt, Alan C., to Jack Walters & Sons Corp. Horizontally sliding door. 4,509,291, Cl. 49-409.000.
Gejl-Hansen, Frederik, to Nestec S.A. Process for preparing a rehydratable diced frozen food product. 4,510,163, Cl. 426-241.000.
Gemma, Mario: *See—*
Rossi, Guglielmo; and Gemma, Mario, 4,510,480, Cl. 337-321.000.
General Electric Company: *See—*
Bonneau, Paul; Holshouser, Howard E.; and Rogers, Terrence E., 4,510,623, Cl. 455-181.000.
Boothman, David R., 4,510,548, Cl. 361-25.000.
Cushing, Donald S., 4,509,687, Cl. 239-245.000.
Donaldson, Charles W., 4,509,265, Cl. 33-174.0PA.
Dougherty, John J., 4,510,611, Cl. 375-8.000.
Elton, Richard K., 4,510,077, Cl. 252-502.000.
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., 4,510,289, Cl. 525-148.000.
Griffin, James R.; and White, James A., 4,509,335, Cl. 62-77.000.
Lee, Lester H.; Johnson, Kathryn M.; and Jones, Richard W., 4,509,238, Cl. 29-156.80R.
Miller, Matthew S., 4,510,362, Cl. 219-10.55E.
Ulug, Mehmet E., 4,510,599, Cl. 370-85.000.
General Foods Corporation: *See—*
Hartl, Carroll P., 4,509,311, Cl. 53-202.000.
General Hospital Corporation, The: *See—*
Donahoe, Patricia K.; Budzik, Gerald P.; and Swann, David A., 4,510,131, Cl. 424-105.000.
General Motors Corporation: *See—*
Ament, Frank; Peden, Richard A.; and Ausen, John E., 4,509,478, Cl. 123-339.000.
Arndt, Frederick P., 4,509,775, Cl. 280-779.000.
Baynes, Gene P.; and Melinat, Wolfgang, 4,509,619, Cl. 188-73.390.
Bogosoff, John P., 4,509,789, Cl. 296-37.200.
Bryson, Bruce A.; and Buschur, Jeffrey J., 4,509,878, Cl. 403-71.000.
Colautti, Albert J.; and Borlinghaus, Hans J., 4,509,382, Cl. 74-424.80R.
Dick, Melvin E.; and Peterson, Linn A., 4,509,781, Cl. 293-104.000.
Dimick, David L.; Bly, Kenneth B.; and Ludecke, Otto A., 4,509,966, Cl. 55-502.000.
Gertiser, Kevin M., 4,509,484, Cl. 123-436.000.
Gregg, Willard W., 4,509,786, Cl. 296-1.00S.
Griffin, Michael D.; Gural, John A.; and Lamirande, Donald J., 4,509,720, Cl. 251-308.000.
Hahn, Sangman, 4,509,553, Cl. 137-596.000.
Hamparian, Nshan, 4,509,473, Cl. 123-188.0SC.
Harrison, Bobby J.; and Ashurkoff, Peter, 4,509,567, Cl. 141-97.000.
Kade, Alexander; and Karadsheh, Sam M., 4,509,611, Cl. 180-79.100.
Kimberlin, Dan R., 4,509,386, Cl. 74-492.000.
Klusman, Steven A., 4,509,804, Cl. 384-99.000.
Pirrallo, Frank G., 4,509,579, Cl. 164-159.000.
Shaw, Daniel, 4,509,578, Cl. 164-155.000.
General Signal Corporation: *See—*
Newton, Ronald O.; and Wright, Eric, 4,509,801, Cl. 303-8.000.
General Technology Applications, Inc.: *See—*
Hadermann, Albert F., 4,510,304, Cl. 528-481.000.
Genetic Diagnostics Corporation: *See—*
Platt, Herbert; and Stracher, Alfred, 4,510,130, Cl. 514-2.000.
George, E. Victor; and Schipper, John F., to United States of America, Energy. Dual frequency optical cavity. 4,510,605, Cl. 372-23.000.
Georgia Tech Research Corporation: *See—*
Tedder, Daniel W., 4,510,242, Cl. 435-157.000.
Geosource Inc.: *See—*
Mayo, Franklin W.; and Smither, Miles A., 4,510,585, Cl. 367-43.000.
Gerbellot-Barrillon, Pierre, to Fabrications Automatiques Gerbelot. Articulator for the dental art. 4,509,919, Cl. 433-57.000.
Gerber, Arthur M., to Polaroid Corporation. Optical data storage element. 4,510,232, Cl. 430-494.000.
Germann, Albrecht J., to De la Rue Giori S.A. Convertible, multicolor, rotary printing press. 4,509,424, Cl. 101-177.000.
Gertiser, Kevin M., to General Motors Corporation. Closed loop lean air/fuel ratio controller. 4,509,484, Cl. 123-436.000.
Geselchen, Paul D.; and Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,510,082, Cl. 260-112.50R.
Gewerkschaft Eisenhutte Westfalia: *See—*
Roling, Franz, 4,509,799, Cl. 299-42.000.
Giguere, Noelli. Bushwood mowing apparatus. 4,509,315, Cl. 56-10.700.
Gimpel, Jurgen; Jackel, Klaus-Peter; and Sander, Hans, to BASF Aktiengesellschaft. High solids baking finishes. 4,510,284, Cl. 524-379.000.
Giner-Sorolla, Alfredo: *See—*
Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, 4,510,144, Cl. 514-257.000.
Ginter, Sally P.: *See—*
Pawloski, Chester E.; and Ginter, Sally P., 4,510,101, Cl. 260-928.000.

Giovanni, Serafini. Sunshade fitting convertible into veranda curtain fitting. 4,509,576, Cl. 160-66.000.
Girard, Leroy. Christmas tree ornament. 4,510,189, Cl. 428-19.000.
Girton, Virgil M.; Marason, Gabriel, Jr.; and Wang, Lawrence C., to Mattel, Inc. Pull string inertial voice unit. 4,510,590, Cl. 369-63.000.
Glance, Bernard; and Greenstein, Lawrence J., to AT&T Bell Laboratories. Modified time-division transmission technique for digital mobile radio systems. 4,510,595, Cl. 370-32.000.
Glaser, Hans J., to Interpane Entwicklungs-und Beratungsgesellschaft mgH & Co. K.G. Transparent, heat-insulating coating for a transparent substrate. 4,510,190, Cl. 428-34.000.
Glaxo Group Limited: *See*—
Strachan, William S.; and Brodie, Alastair C., 4,510,312, Cl. 548-194.000.
Glembin, Dirk; Huhn, Kurt; Meyer, Gunter; and Thallmeier, Manfred, to Dynamit Nobel Aktiengesellschaft. Method of preparing alkalihalide free oligomeric, brominous xylylene bisphenol ethers. 4,510,334, Cl. 568-643.000.
GNB Batteries Inc.: *See*—
Sabatino, Anthony; Stanefski, Eugene F.; Romanchuk, Ronald N.; and Schaumburg, Edward G., 4,509,252, Cl. 29-623.100.
Gockler, Heinz; and Scheuermann, Helmut, to Licentia Patent-Verwaltungs-GmbH. Digital transmultiplexer. 4,510,598, Cl. 370-50.000.
Godbois, Arthur G. Diverting roller system. 4,509,636, Cl. 198-372.000.
Goganov, Dmitry A.; and Ovchinnikov, Evgeny K., to NPO "Burevestnik". Gas-discharge position-sensitive ionizing-radiation detector. 4,510,391, Cl. 250-374.000.
Gohda, Osamu: *See*—
Fujikawa, Katsuhiro; and Gohda, Osamu, 4,509,445, Cl. 112-317.000.
Goi, Kowichi: *See*—
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.
Gokcen, Cem; and Williams, Robert J., to Baxter Travenol Laboratories, Inc. Method for forming layered thermoplastic articles. 4,510,115, Cl. 264-515.000.
Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Target structure. 4,509,760, Cl. 273-380.000.
Goll, Werner, to SKW Trostberg Aktiengesellschaft. Aqueous dispersions for coating materials. 4,510,282, Cl. 524-337.000.
Golub, Gregory J., to Westinghouse Electric Corp. Circuit breaker with arc shield. 4,510,360, Cl. 200-151.000.
Gonda, Michihiro: *See*—
Yamaguchi, Masahiko; Gonda, Michihiro; Satoh, Yutaka; and Kanasugi, Mikiko, 4,510,513, Cl. 346-214.000.
Goodall, Donald T. Pouring device. 4,509,665, Cl. 222-478.000.
Goodfellow, Anthony G., to W & A Bates Limited. Manufacture of pneumatic tires. 4,510,002, Cl. 156-126.000.
Goodrich, David G., to Kaiser Aluminum & Chemical Corporation. Bottom block. 4,509,580, Cl. 164-445.000.
Goodyear Tire & Rubber Company, The: *See*—
Houck, Richard C.; and Lundell, Dennis A., 4,509,244, Cl. 29-516.000.
Rogister, Carl, 4,509,317, Cl. 57-58.320.
Scheiderich, Robert F.; and Comper, Louis F., 4,509,984, Cl. 106-38.220.
Gopikanth, Mysore L.; Kuo, Han C.; and Schlaikjer, Carl R., to Duracell Inc. Cell with $PbCl_2$ cathode. 4,510,220, Cl. 429-225.000.
Gordon, Gary B. Machine tool readout with automatic cutter radius offset. 4,510,566, Cl. 364-190.000.
Gore, Jacques: *See*—
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Gorin, Brian A.; and Ho, Ping-Pei, to NCR Corporation. Process for making high efficiency phase holograms. 4,510,221, Cl. 430-1.000.
Gorin, Brian A.: *See*—
Ho, Ping-Pei; Gorin, Brian A.; and Bora, Nayana S., 4,509,817, Cl. 350-3.610.
Gormer, Alan, to Westland plc. Helicopter rotors. 4,509,898, Cl. 416-2.000.
Gorog, Sandor: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.
Gosciniak, Guy; Juillard, Yves; Menissier, Pierre; and Moessinger, Albert, to Mecaniques de Mulhouse Societe Alsacienne de Constructions. Device for the insertion of a weft thread into the shed between two lines of warp thread in a weaving loom. 4,509,563, Cl. 139-443.000.
Goto, Hiroshi; and Tabata, Akira, to Fujitsu Ltd. Method for fabricating isolation region in semiconductor devices. 4,509,249, Cl. 29-576.00W.
Gotoh, Yoshihisa: *See*—
Kawai, Yoichi; Gotoh, Yoshihisa; and Yokote, Sachio, 4,510,079, Cl. 252-511.000.
Gottschalk, Robert E., to Panavision, Incorporated. Electronic cinema camera. 4,510,529, Cl. 358-224.000.
Gould, Eugene J. Condensation elimination tank. 4,509,338, Cl. 62-288.000.
Govang, James A.; Mee, William W.; and de Gruchy, Robert S., to Stanley Works, The. Merchandising display system and components therefor. 4,509,648, Cl. 211-70.600.
Govil, Alok K.: *See*—
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Graff, Roderich W. Method and apparatus for drying moist exhaust air from one or more bulk material drying hoppers. 4,509,272, Cl. 34-27.000.
Graham, Anne M.: *See*—
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Graham, Samuel L.: *See*—
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Grall, Georges; Joseph, Jacques; and Lemoine, Claude, to Thomson-CSF. Array system with high resolving power. 4,510,586, Cl. 367-87.000.
Granberg, Carl-Gustav; and Kauppi, Heikki, to MKT-tehtaat Oy. Procedure for treating curd particles and cheese mould for applying the procedure. 4,509,413, Cl. 99-453.000.
Grapha-Holding AG: *See*—
Grunder, Roland, 4,509,703, Cl. 242-59.000.
Grasso, Albert P., to United States of America, National Aeronautics and Space Administration. Reactant pressure differential control for fuel cell gases. 4,509,548, Cl. 137-99.000.
Grau, Richard: *See*—
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Gray, Reed A.; and Joo, Grant K., to Stauffer Chemical Company. S-n-Butyl-N,N-diisopropyl thiocarbamate as a selective herbicide in cotton. 4,509,974, Cl. 71-100.000.
Graziani, Gabriele: *See*—
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Greek Powder and Cartridge Co., S.A.: *See*—
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Green, Harold V.; Fox, Thomas J.; and Scallan, Anthony M., to Pulp and Paper Research Institute of Canada. Lumen-loaded paper pulp, its production and use. 4,510,020, Cl. 162-169.000.
Greenberger, William, to Hopp Press, The. Interchangeable digital display sign. 4,509,279, Cl. 40-447.000.
Greene & Kellogg, Inc.: *See*—
McCombs, Norman R., 4,509,959, Cl. 55-161.000.
Greene, Peter D.; and Turley, Stephen E. H., to International Standard Electric Corporation. Injection laser manufacture. 4,509,996, Cl. 148-171.000.
Greenhalgh, Wilbur O., to United States of America, Energy. Recoverable immobilization of transuranic elements in sulfate ash. 4,509,978, Cl. 75-84.10R.
Greenstein, Lawrence J.: *See*—
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Gregg, Willard W., to General Motors Corporation. Support for collapsible drag reducer. 4,509,786, Cl. 296-1.00S.
Gregory, Lee W., to Marvel Specialty Company. Acoustical shield assembly for a sewing machine. 4,509,442, Cl. 112-261.000.
Gress, Josef: *See*—
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Grewal, Gurbachan S.: *See*—
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Griffin, James R.; and White, James A., to General Electric Company. Pre-assembled cooling and air circulating module for a household refrigerator. 4,509,335, Cl. 62-77.000.
Griffin, Michael D.; Gural, John A.; and Lamirande, Donald J., to General Motors Corporation. Valve shaft end float control. 4,509,720, Cl. 251-308.000.
Griffin, Robert F., Jr.: *See*—
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Griffiths, Richard J. M.: *See*—
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Grimbleby, James B.; and Talbot, Christopher G., to National Research Development Corporation. Automatic focusing device with frequency weighted amplification. 4,510,384, Cl. 250-201.000.
Grimmer, Horst: *See*—
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Gringer, Donald. Knife handle for accommodating different adjustable blade types. 4,509,260, Cl. 30-162.000.
Grogg, Terry W.; Bugaj, Joseph E.; and Bates, Paul E., to Mallinckrodt, Inc. Process for making lyophilized radiographic imaging kit. 4,510,125, Cl. 424-1.100.
Grondalen, Svein, to Moss Rosenberg Verft A/S. Insulation embodiment in a wedge-shaped space between two structural members. 4,509,657, Cl. 220-436.000.
Grotz, Bernard J., to C F Braun & Co. Temperature controlled ammonia synthesis process. 4,510,123, Cl. 423-360.000.
Grozinger, Wilhelm: *See*—
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Gruenenthal GmbH: *See—*
Boehlke, Horst R. E.; Loschen, Gerriet K. H.; Michel, Gudrun E.; and Muller, Bernd, 4,510,323, Cl. 514-530.000.

Grumman Aerospace Corporation: *See—*
Walz, George A.; and Kump, Donald H., 4,510,583, Cl. 364-900.000.

Grunder, Roland, to Grapha-Holding AG. Method and apparatus for transporting and storing partially overlapping sheets. 4,509,703, Cl. 242-59.000.

GTE Automatic Electric Inc.: *See—*
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,510,462, Cl. 331-1.00A.

GTE Communication Systems Corporation: *See—*
Chang, Chieh; and Lee, Man S., 4,510,467, Cl. 332-31.00R.

GTE Laboratories: *See—*
Chi, Jim-Yong; and Holmstrom, Roger P., 4,510,016, Cl. 156-643.000.

GTE Laboratories, Inc.: *See—*
Lee, Kang I.; and Jopson, Harriet, 4,510,075, Cl. 252-500.000.
Lee, Kang I.; and Jopson, Harriet, 4,510,076, Cl. 252-500.000.

GTE Lenkurt Incorporated: *See—*
Chang, Chieh; and Lee, Man S., 4,510,466, Cl. 332-31.00R.

GTE Products Corporation: *See—*
Anderson, John W., Jr.; and Roche, William J., 4,510,418, Cl. 315-73.000.
Meade, Steven L.; Morris, Merle E.; and Rice, Lawrence M., 4,510,416, Cl. 313-579.000.
Morris, Merle E.; Meade, Steven L.; and Rice, Lawrence M., 4,509,928, Cl. 445-27.000.

GTE Valeron Corporation: *See—*
Cusack, Robert F., 4,509,266, Cl. 33-174.00L.

Guardian Products Company, Inc.: *See—*
Smith, Alfred A., 4,509,741, Cl. 272-69.000.

Guertin, Joseph R., to United Technologies Corporation. Means for refacing a fuel nozzle and method thereof. 4,509,299, Cl. 51-237.00R.

Guggenmos, Johannes: *See—*
Minner, Willy; Krappel, Alfred; and Guggenmos, Johannes, 4,509,482, Cl. 123-418.000.

Guinard, Pierre, to Freyssinet International (STUP). Device for connecting isostatic elements in line. 4,509,305, Cl. 52-223.00R.

Guisinger, Barrett E., to Sony Corporation. Wideband record amplifier. 4,510,459, Cl. 330-265.000.

Guittet, Jack; Marchal, Paul; Micaelli, Alain; and Vertut, Jean, to Commissariat a l'Energie Atomique. Servosystem between a master actuator and a slave actuator. 4,510,574, Cl. 364-513.000.

Gunnewig, Hubert, to Westfalia Separator AG. Fully jacketed centrifuge with a helical conveyor. 4,509,942, Cl. 494-53.000.

Gural, John A.: *See—*
Griffin, Michael D.; Gural, John A.; and Lamirande, Donald J., 4,509,720, Cl. 251-308.000.

Gurtler, Richard W.: *See—*
Ellis, Ralph J.; Gurtler, Richard W.; and Sarma, Kalluri R., 4,510,015, Cl. 156-617.00R.

Guterman, Daniel C.: *See—*
Dias, Donald R.; Guterman, Daniel C.; Proebsting, Robert J.; and Leuschner, Horst, 4,510,584, Cl. 365-203.000.

Gutman, Gustav, to Minnesota Mining and Manufacturing Company. Thermally generated toning agent system for photothermographic imaging compositions. 4,510,236, Cl. 430-619.000.

Guttinger, Peter: *See—*
Langen, Marinus J. M.; and Guttinger, Peter, 4,509,309, Cl. 53-142.000.

Gyi, Ko K.; and Grewal, Gurbachan S., to Magnetic Information Technology, Inc. Apparatus and method for orienting a magnetic gap in a slider head in a carriage. 4,509,251, Cl. 29-603.000.

H. D. Hudson Manufacturing Company: *See—*
Petersen, Walter E., 4,509,664, Cl. 222-402.000.

H. J. Langen & Sons Limited: *See—*
Langen, Marinus J. M.; and Guttinger, Peter, 4,509,309, Cl. 53-142.000.

Haack, Johannes, to Feintool AG Lyss. Process for precision cutting. 4,509,395, Cl. 83-55.000.

Haacker, Heinz: *See—*
Vollhardt, Frohmut; and Haacker, Heinz, 4,509,463, Cl. 122-7.00R.

Haas, Gunther: *See—*
Eidenschink, Rudolf; Haas, Gunther; Pohl, Ludwig; Romer, Michael; Scheuble, Bernhard; and Weber, Georg, 4,510,069, Cl. 252-299.610.

Haas, Roger A.: *See—*
Prosnitz, Donald; and Haas, Roger A., 4,510,455, Cl. 330-4.300.

Hachisu, Takeshi; Taguchi, Keiji; Sasaki, Toshimi; Matsumoto, Tetsuo; and Hidao, Nobuyoshi, to Hitachi, Ltd.; and Hitachi Const. Machinery Co. Method and apparatus for quenching. 4,509,995, Cl. 148-143.000.

Hackard, Roger G.: *See—*
Foster, Randy C.; Hackard, Roger G.; and Wilson, Leslie B., 4,509,935, Cl. 474-138.000.

Hada, Takashi; Kanamaru, Tatsuya; and Ogawa, Yutaka, to Nippon Steel Corporation. Two layer-coated steel materials and process for producing the same. 4,510,209, Cl. 428-659.000.

Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, to Newport Pharmaceuticals International. Methods of imparting immunomodulating activity with dihydrothiazolo purine derivatives. 4,510,144, Cl. 514-257.000.

Hadermann, Albert F., to General Technology Applications, Inc. Polymer fractionation. 4,510,304, Cl. 528-481.000.

Haeno, Akira: *See—*
Sato, Tetsuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,510,458, Cl. 330-260.000.

Haga, Ryoichi; Ishida, Masahiko; and Odawara, Yoji, to Agency of Industrial Science and Technology, The. Anaerobic digestion process of wastes containing cellulose. 4,510,243, Cl. 435-167.000.

Hagmann, Peter: *See—*
Artusi, Aldo; and Hagmann, Peter, 4,510,014, Cl. 156-522.000.

Hahn, Sangman, to General Motors Corporation. Fluid flow selector valve. 4,509,553, Cl. 137-596.000.

Hahn, Ulrich; Straube, Peter; and Koch, Michael, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Arrangement for adjusting the cylinders in rotary printing presses. 4,509,425, Cl. 101-216.000.

Hajdu, Istvan: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.

Hajto, Ernest A., to Du Pont Canada Inc. Emulsion blasting agent with amine-based emulsifier. 4,509,998, Cl. 149-2.000.

Hakamata, Kazuo; Takagi, Tadao; and Hyodo, Yukio, to Nippon Kogaku K.K. Drive circuit for surface-wave driven motor utilizing ultrasonic vibration. 4,510,411, Cl. 310-316.000.

Halbig, James K.: *See—*
Phillips, John R.; Halbig, James K.; Menlove, Howard O.; and Klosterbuer, Shirley F., 4,510,117, Cl. 376-257.000.

Haldex AB: *See—*
Wallqvist, Sven; and Sund, Rune, 4,510,379, Cl. 235-95.00C.

Hall, Charles B., to Outboard Marine Corporation. Control system for torque correcting device. 4,509,924, Cl. 440-51.000.

Hall, Robert N.: *See—*
Carlson, Franklin B.; and Hall, Robert N., 4,509,589, Cl. 165-95.000.

Hall, Steven J.: *See—*
Manciocchi, William D., Jr., 4,509,541, Cl. 132-90.000.

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Boyce, William C.; Wittekind, Warren D.; Howard, Leroy C.; Hall, Thomas E.; and Lechelt, Wayne M., 4,510,573, Cl. 364-498.000.

Hallmark Cards, Inc.: *See—*
Otto, Stanley W.; Rhoads, Jack G.; and Scrivan, Michel A., 4,509,825, Cl. 350-259.000.

Hamada, Takuji: *See—*
Mizokawa, Sadao; Hamada, Takuji; Tomizawa, Hiroshi; and Fushimi, Hitoshi, 4,510,494, Cl. 340-825.050.

Hammerle AG Maschinenfabrik: *See—*
Zbornik, Vaclav, 4,509,357, Cl. 72-384.000.

Hamparian, Nshan, to General Motors Corporation. Spring damper with controlled wear area. 4,509,473, Cl. 123-188.0SC.

Hancor, Inc.: *See—*
Rosenbaum, Larry A., 4,509,911, Cl. 425-532.000.

Hane, Toshioki: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,510,328, Cl. 568-32.000.

Hans, Rudiger: *See—*
Brandenstein, Manfred; Hans, Rudiger; and Kiener, Heinz, 4,509,764, Cl. 277-166.000.

Hansen, Donald W., Jr.; and Papaioannou, Stamatios, to G.D. Searle & Co. Antihypertensive tetrapeptide amides. 4,510,085, Cl. 260-112.50E.

Hansen, Herbert N. W. High efficiency internal combustion steam engine. 4,509,464, Cl. 123-1.00A.

Hanson, Bernard M.: *See—*
Boudreaux, Harry J.; Card, David C.; and Hanson, Bernard M., 4,509,600, Cl. 166-381.000.

Hanson, Derald F.: *See—*
Sherman, Randy J.; and Hanson, Derald F., 4,509,819, Cl. 350-6.700.

Hanson, Raymond: *See—*
Tout, Nigel R.; and Hanson, Raymond, 4,509,271, Cl. 34-12.000.

Hanzawa, Yoshiki, to Terumo Kabushiki Kaisha. Infusion control apparatus. 4,509,943, Cl. 604-31.000.

Hara, Noboru; Fukudome, Shinichi; Johna, Nobuo; and Nakamura, Masayoshi, to Lion Corporation. Method for granulating cationic surfactant. 4,510,073, Cl. 252-383.000.

Hardin, Philip J. Autoreversing dual axial speed ink roller. 4,509,426, Cl. 101-348.000.

Hardy, Doralyn A., personal representative: *See—*
Schramm, Arthur G., deceased; Hardy, Doralyn A., personal representative; and Shaffer, Jack C., 4,510,010, Cl. 156-383.000.

Harris Corporation: *See—*
Swanson, Hilmer I., 4,510,456, Cl. 330-10.000.
VanVonno, N. W., 4,510,518, Cl. 357-49.000.

Harrison, Bobby J.; and Ashurkoff, Peter, to General Motors Corporation. Oil filter and cap. 4,509,567, Cl. 141-97.000.

Harrison, William S., to Engelhard Corporation. Rotary furnace. 4,510,369, Cl. 219-389.000.

Hartl, Carroll P., to General Foods Corporation. Method and apparatus for loading and unloading package-forming machine. 4,509,311, Cl. 53-202.000.

Hartmann, Philip W.; Kohs, Dwight W.; Spencer, Douglas A.; and Turnbow, Garry V., to AT&T Bell Labs. Time slot assignment facilities. 4,510,596, Cl. 370-58.000.

Hartwig, Michael M., to Engelhard Corporation. Platinum/silver vanadate catalyzed diesel exhaust particulate filter. 4,510,265, Cl. 502-330.000.

Harvey, Edgar L., to Burroughs Corporation. Self-scan gas discharge display panel. 4,510,417, Cl. 313-585.000.

Harvey, Marc. Rain cover for motorcyclist's legs. 4,509,213, Cl. 2-22.000.
Harvey, Vernon B. W. Irrigation apparatus. 4,509,685, Cl. 239-186.000.
Hase, Takashi: *See*—
Fujino, Sigeo; Hase, Takashi; and Toshinai, Akio, 4,510,414, Cl. 313-468.000.
Hasegawa, Hiroshi, to Nippon Kogaku K.K. Apparatus for controlling a micro-processor unit in a camera. 4,509,843, Cl. 354-412.000.
Hasegawa, Shinichi: *See*—
Kajita, Masaki; Nakaya, Tomio; Hasegawa, Shinichi; and Fujita, Hisanori, 4,510,515, Cl. 357-17.000.
Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Method and device for back pressure-dependent correction of air/fuel ratio for internal combustion engines. 4,509,485, Cl. 123-440.000.
Hasegawa, Shumpei; Otobe, Yutaka; Kishi, Noriyuki; and Koumura, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control method for an internal combustion engine, adapted to improve operational stability, etc., of the engine during operation in particular operating conditions. 4,509,489, Cl. 123-489.000.
Hatchard, William R., to Du Pont de Nemours, E. I., and Company. Adhesion activated aramid fiber. 4,510,202, Cl. 428-295.000.
Hattori, Makoto; Taguma, Akihiro; and Takeshita, Akira, to Sumitomo Chemical Company, Limited. Process for producing 1,4-diaminoanthraquinone-2-sulfonic acid. 4,510,087, Cl. 260-371.000.
Hattori, Toshihiko; Akagi, Yuji; and Kohara, Hideo, to Toyo Kogo Co., Ltd. Vane type rotary compressor having a wear resistant resin coating. 4,509,906, Cl. 418-152.000.
Haug, Walter, to Karl Kassbohrer Fahrezeugwerke GmbH. Vehicle with detachable implement. 4,509,768, Cl. 280-479.00R.
Haugen, Orville C., to Minnesota Mining and Manufacturing Company. Pressure roll cleaning system. 4,509,225, Cl. 15-256.510.
Hauni-Werke Korber & Co. KG: *See*—
Redeker, Werner; and Uhlig, Uwe, 4,509,892, Cl. 414-223.000.
Haussel, Werner; Roppelt, Gunter; and Kindermann, Robert, to Metrawatt GmbH. Digital measuring device with liquid-crystal picture screen. 4,510,444, Cl. 324-121.00R.
Hawe, Malcolm: *See*—
Farrar, David; and Hawe, Malcolm, 4,509,987, Cl. 106-308.00Q.
Hawerkamp, Manfred. Apparatus and method for producing a tube from a continuous formed extruded supporting material and a profiled material. 4,510,004, Cl. 156-143.000.
Hayakawa, Kiyoharu: *See*—
Takeuchi, Takashi; Takahashi, Hideaki; Saji, Keiichi; Kondo, Haruyoshi; and Hayakawa, Kiyoharu, 4,510,036, Cl. 204-425.000.
Hayashi, Junichi, to Yamato Scale Company, Limited. Weighing device of load cell type. 4,509,610, Cl. 177-211.000.
Hayashi, Katsumi, to Lubrizol Corporation, The. Combinations of carboxylic acylating agents substituted with olefin polymers of high and low molecular weight mono-olefins, derivatives thereof, and fuels and lubricants containing same. 4,509,955, Cl. 44-62.000.
Hayashi, Nobuaki: *See*—
Morishita, Hajime; Akagi, Motoo; Nonogaki, Saburo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,510,226, Cl. 430-144.000.
Hazama, Katashi: *See*—
Miura, Kuniaki; Shibata, Akira; Yamada, Jun; and Hazama, Katashi, 4,510,530, Cl. 358-314.000.
Head, Robert L. Modular shooting range. 4,509,301, Cl. 52-79.800.
Hearn, Dennis, to Chemical Research & Licensing Company. Transetherification method. 4,510,336, Cl. 568-697.000.
Heat and Control, Inc.: *See*—
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., 4,510,165, Cl. 426-439.000.
Heath, Gary C.: *See*—
Carney, George T.; and Heath, Gary C., 4,509,585, Cl. 165-12.000.
Hebert, Alfred M. Energy efficient damper for a furnace. 4,509,499, Cl. 126-292.000.
Heckendorn, Roland, to Ciba-Geigy Corporation. Tricyclic polyazaheterocycles for treating depression or anxiety. 4,510,141, Cl. 514-250.000.
Hegedus, Louis: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,510,262, Cl. 502-304.000.
Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,510,261, Cl. 502-304.000.
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Heidelberger Druckmaschinen AG: *See*—
Muller, Hans, 4,509,939, Cl. 493-444.000.
Heiman, Gerald R.; and Fleck, Frank, to Pestcon Systems, Inc. Method and apparatus for fumigating grain and other commodities in bulk storage compartments. 4,509,682, Cl. 239-60.000.
Heimel, Helmut; Schlosser, Willy; and Luttenberger, Alfred, to Maschinenfabrik Andritz Actiengesellschaft. Equipment for drying lengths of materials. 4,509,274, Cl. 34-114.000.
Heitmann, Peter: *See*—
Volz, Karl; Link, Christoph; Stotz, Wolf-Gunter; and Heitmann, Peter, 4,509,237, Cl. 29-116.0AD.
Hellgren, Leroy L., to United States of America, Navy. High voltage, gas tight connector. 4,509,808, Cl. 339-17.00R.
Henri, Charcosset: *See*—
Simone, Pregermain; Henri, Charcosset; and Michele, Andres, 4,510,039, Cl. 208-10.000.
Hercules Incorporated: *See*—
Liu, Chia-Seng, 4,510,286, Cl. 525-71.000.
Hergenrother, Paul M., to United States of America, National Aeronautics and Space Administration. Phenoxy resins containing pendent ethynyl groups and cured resins obtained therefrom. 4,510,296, Cl. 525-534.000.
Hering, Bernhard: *See*—
Schweiger, Josef; and Hering, Bernhard, 4,510,473, Cl. 335-86.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Koch, Klaus; Schaeffer, Hans-Joachim; and Syrbius, Gerhard, 4,509,419, Cl. 100-117.000.
Hermanns, Bernd: *See*—
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Herzenberg, Leonard A.: *See*—
Parks, David R.; Bryan, Virginia M.; and Herzenberg, Leonard A., 4,510,244, Cl. 435-172.200.
Herzog, Klaus; and Szenger, Franz, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Play-free anti-friction bearing construction. 4,509,871, Cl. 384-502.000.
Hesse, David L., to Allied Corporation. Retaining clip for holding a connector to a panel. 4,509,813, Cl. 339-91.00R.
Hetzl, Ernst: *See*—
Eibl, Johann; Hetzl, Ernst; and Linnau, Yendra, 4,510,084, Cl. 260-112.00B.
Hevey, Richard C., to Centocor, Inc. Diagnostic test bead transfer apparatus. 4,510,119, Cl. 422-71.000.
Hibino, Akira: *See*—
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, 4,510,233, Cl. 430-527.000.
Hidaka, Hiroyoshi; Sone, Takanori; Sasaki, Yasuharu; Sugihara, Taisuke; Takagi, Seiji; and Sako, Kiyohide, to Asahi Kasei Kogyo Kabushiki Kaisha. 6-Quinazolinesulfonyl derivatives and process for preparation thereof. 4,510,307, Cl. 544-283.000.
Hidao, Nobuyoshi: *See*—
Hachisu, Takeshi; Taguchi, Keiji; Sasaki, Toshimi; Matsumoto, Tetsuo; and Hidao, Nobuyoshi, 4,509,995, Cl. 148-143.000.
Hieronymi, Richard: *See*—
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Higashikawa, Iwao; and Arikado, Tsunetoshi, to Kabushiki Kaisha Toshiba. Method for forming flattened film. 4,510,173, Cl. 427-44.000.
Higgins, George L., to Parker Chemical Company. Processes and compositions for the treatment of aluminum surfaces. 4,509,992, Cl. 148-6.270.
High, Sam; and Mast, Aquila D., to Feedmobile, Inc. Feed processing system. 4,509,862, Cl. 366-158.000.
Hikita, Michiyasu, to Kabushiki Kaisha Ishida Koki Seisakusho. Method of selecting electronic scale operating mode, and electronic scale using said method. 4,509,608, Cl. 177-1.000.
Hill, Royce W., to Micro Plastics Inc. Captive panel screw. 4,509,890, Cl. 411-337.000.
Hill, Thomas C., III: *See*—
Dickes, Eric J.; Hill, Thomas C., III; and Flegal, Robert T., 4,510,461, Cl. 331-1.00A.
Hinders-Leslies Limited: *See*—
King, Paul E.; and Wilson, Harold C. S., 4,509,944, Cl. 604-53.000.
Hipp, Martin: *See*—
Schall, Walter; Negro, Guido; Hipp, Martin; and Albrecht, Hans, 4,509,396, Cl. 83-126.000.
Hira, Yutaka; Ukai, Yoshitaka; Akuzawa, Yoshihide; Aoki, Osamu; and Shimatani, Saburo, to Tokyo Electric Co., Ltd. Apparatus for securing a typewriter. 4,509,874, Cl. 400-691.000.
Hirabayashi, Yuji, to Nissan Motor Company, Limited. Knock-free engine control system for turbocharged automotive engine. 4,509,331, Cl. 60-602.000.
Hirahara, Katsuji: *See*—
Chiu, Tony T.; Coatney, Charles W.; and Hirahara, Katsuji, 4,509,414, Cl. 99-585.000.
Hiramatsu, Akira: *See*—
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Hirashima, Tsuneaki: *See*—
Matsubara, Yoshiharu; Hirashima, Tsuneaki; and Nishiguchi, Ikuzo, 4,510,025, Cl. 204-78.000.
Hirata, Atsumi, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus. 4,510,532, Cl. 358-342.000.
Hiratani, Hajime: *See*—
Nakanishi, Koichiro; and Hiratani, Hajime, 4,510,248, Cl. 435-226.000.
Hirsch, Kurt. Process and apparatus for pre-foaming synthetic plastics. 4,510,106, Cl. 264-53.000.
Hirschfeld, Tomas B., to University of California, Regents of the. Pressure-sensitive optrode. 4,509,370, Cl. 73-705.000.
Hirschmann, Ralph F.: *See*—
Blaine, Edward H.; Cragoe, Edward J., Jr.; Hirschmann, Ralph F.; Nancarrow, John F., deceased; Nancarrow, Elisabeth M., executrix; and Tobert, Jonathan A., 4,510,322, Cl. 514-255.000.
Hisaka Works, Ltd.: *See*—
Yamada, Ken'ichi; Sumitomo, Hiroyuki; Horiguchi, Akira; and Masutani, Kenzo, 4,509,592, Cl. 165-166.000.
Hitachi Chemical Company, Ltd.: *See*—
Hoshi, Ikuo; Arai, Masami; Yokochi, Kiyoshi; Miyadera, Yasuo; Fujioka, Atsushi; and Nakagawa, Takehisa, 4,510,008, Cl. 156-245.000.

Hitachi Const. Machinery Co.: *See*—
Hachisu, Takeshi; Taguchi, Keiji; Sasaki, Toshimi; Matsumoto, Tetsuo; and Hidao, Nobuyoshi, 4,509,995, Cl. 148-143.000.

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Hachisu, Takeshi; Taguchi, Keiji; Sasaki, Toshimi; Matsumoto, Tetsuo; and Hidao, Nobuyoshi, 4,509,995, Cl. 148-143.000.
Izumi, Eiichi; and Tamura, Hifumi, 4,510,387, Cl. 250-309.000.
Miura, Kuniaki; Shibata, Akira; Yamada, Jun; and Hazama, Katashi, 4,510,530, Cl. 358-314.000.
Mizokawa, Sadao; Hamada, Takuji; Tomizawa, Hiroshi; and Fushimi, Hitoshi, 4,510,494, Cl. 340-825.050.
Mori, Kinji; Nohmi, Makoto; Miyamoto, Shoji; Ihara, Hirokazu; Matsumaru, Hiroshi; and Ikeda, Katuaki, 4,510,492, Cl. 340-825.050.
Morishita, Hajime; Akagi, Motoo; Nonogaki, Saburo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,510,226, Cl. 430-144.000.
Okunaka, Masaaki; Mizukoshi, Katsuro; Hongo, Mikio; and Miyauchi, Tateoki, 4,510,222, Cl. 430-5.000.
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Sato, Tetsuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,510,458, Cl. 330-260.000.
Suzuki, Akio; Akiyama, Mitsuo; Uzuhashi, Hideo; Ochiai, Izumi; Yamashita, Hitoshi; Sekine, Youji; Matsui, Katsuo; and Tomita, Syuji, 4,509,354, Cl. 72-294.000.
Takeshita, Masatoshi; Kodama, Naoki; Suzuki, Ryo; Takeuchi, Teruaki; and Sugita, Yutaka, 4,510,231, Cl. 430-312.000.
Tomite, Tosio, 4,510,407, Cl. 310-154.000.
Yabe, Minoru; Noda, Kenichi; Endo, Satoru; and Yamauchi, Masaaki, 4,510,413, Cl. 313-460.000.
Yuhara, Akitsuna; Nate, Kazuo; Toyama, Tatsuro; and Yamada, Jun, 4,510,410, Cl. 310-313.00D.

Hitchcock, Robert F.: *See*—
Mullally, Charles J.; Brown, Steven L.; Anderson, David L.; and Hitchcock, Robert F., 4,509,340, Cl. 62-503.000.

Ho, Ping-Pei; Gorin, Brian A.; and Bora, Nayana S., to NCR Corporation. Method for correcting volume-phase-gelatin holograms Bragg's angle deviation. 4,509,817, Cl. 350-3.610.

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Gorin, Brian A.; and Ho, Ping-Pei, 4,510,221, Cl. 430-1 000.

Hockmuth, Richard L., to Petroleum Meter & Pump Co., Inc. Differential summing mechanism. 4,509,390, Cl. 74-705.000.

Hodgson, Kenneth J.: *See*—
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Hodgson, R. W. Positioning apparatus for positioning a workpiece relative to a frame of reference. 4,509,834, Cl. 350-521.000.

Hodogaya Chemical Co., Ltd.: *See*—
Yamaguchi, Masahiko; Gonda, Michihiro; Satoh, Yutaka; and Kanasugi, Mikiko, 4,510,513, Cl. 346-214.000.

Hoechst Aktiengesellschaft: *See*—
Fuhge, Peter; Braun, Konrad; and Becker, Udo, 4,510,126, Cl. 424-3.000.
Knop, Jurgen; Sedlacek, Hans-Harald; and Seiler, Friedrich R., 4,510,129, Cl. 424-86.000.
Mohr, Dieter; and Riess, Kurt, 4,510,227, Cl. 430-175.000.
Ross, Barry C.; Johnson, Graham; and Yeomans, Michael A., 4,510,086, Cl. 260-239.00A.

Hoetjer, Jan J., to Methanol Chemie Nederland V.o.F. Manufacture of chipboard and a novel suitable bonding agent. 4,510,278, Cl. 524-14.000.

Hofer, Wolfgang: *See*—
Forster, Heinz; Hofer, Wolfgang; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,509,971, Cl. 71-90.000.

Hoffman, John J.: *See*—
Trout, John F.; and Hoffman, John J., 4,509,884, Cl. 405-269.000.

Hoffman, Stella: *See*—
Lenchin, Julianne M.; Trubiano, Paolo C.; and Hoffman, Stella, 4,510,166, Cl. 426-565.000.

Hoffmann-La Roche Inc.: *See*—
Liu, Chao-Min; and Westley, John, 4,510,317, Cl. 549-343.000.

Hofling, Mats E., to Santrade Ltd. Means for connecting a male part to a female part. 4,509,887, Cl. 408-239.00R.

Hogg, James W. Locking wall hanger. 4,509,713, Cl. 248-546.000.

Hohl, Erwin: *See*—
Meyer, Rolf-Volker; Kreuder, Hans-Joachim; and Hohl, Erwin, 4,510,288, Cl. 525-111.000.

Hohne, Wolfgang: *See*—
Kolb, Gunter, deceased; Tork, Leo; and Hohne, Wolfgang, 4,510,302, Cl. 526-264.000.

Holland, Frank S.; Womersley, Peter; and Curran, John, to Manchem Limited. Production of organotin halides. 4,510,095, Cl. 260-429.700.

Holmstrom, Roger P.: *See*—
Chi, Jim-Yong; and Holmstrom, Roger P., 4,510,016, Cl. 156-643.000.

Holshouser, Howard E.: *See*—
Bonneau, Paul; Holshouser, Howard E.; and Rogers, Terrence E., 4,510,623, Cl. 455-181.000.

Holzapfel, Georg; and Lesz, Jan, to Holzapfel, Georg Dr. Method of manufacturing a thin layer detector for an integrating solid state dosimeter. 4,510,174, Cl. 427-65.000.

Holzapfel, Georg Dr.: *See*—
Holzapfel, Georg; and Lesz, Jan, 4,510,174, Cl. 427-65.000.

Holzer, Walter. Thermo-electric responsive device. 4,509,328, Cl. 60-528.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hasegawa, Shumpei, 4,509,485, Cl. 123-440.000.
Hasegawa, Shumpei; Otobe, Yutaka; Kishi, Noriyuki; and Koumura, Takashi, 4,509,489, Cl. 123-489.000.
Yamaguchi, Ken, 4,509,613, Cl. 180-219.000.

Honda, Makoto: *See*—
Moriguchi, Yutaro; Honda, Makoto; and Izawa, Akira, 4,509,823, Cl. 350-128.000.

Honeywell Inc.: *See*—
Culp, Charles H.; and Downar, Denise J., 4,510,398, Cl. 307-35.000.
MacArthur, J. Ward; and Radomski, James V., 4,510,576, Cl. 364-551.000.
Wamstad, David B., 4,509,880, Cl. 403-179.000.

Hong, Chung-Yieh: *See*—
Jan, Ping-Shuenn; and Hong, Chung-Yieh, 4,509,788, Cl. 296-24.00R.

Hongo, Mikio: *See*—
Okunaka, Masaaki; Mizukoshi, Katsuro; Hongo, Mikio; and Miyauchi, Tateoki, 4,510,222, Cl. 430-5.000.

Hongou, Hiroshi: *See*—
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.

Honjo, Katsuhiko; Taki, Hiromitsu; and Sato, Noriya, to Matsushita Electric Industrial Co., Ltd. Electrode on heat-resisting and isolating substrate and the manufacturing process for it. 4,510,179, Cl. 427-96.000.

Hood, Edwin I. Fish trolling device. 4,509,287, Cl. 43-19.200.

Hook, Clarence L. Massage tread for human skin. 4,509,510, Cl. 128-25.00R.

Hoover Universal, Inc.: *See*—
Blevins, Theodore J.; and Swiderski, Paul R., 4,509,216, Cl. 5-13.000.

Hooykaas, Carel W. J., to Pelt & Hooykaas B.V. Composition obtained by mixing fly ash, oxisludge and phosphogypsum. 4,509,986, Cl. 106-110.000.

Hopp Press, The: *See*—
Greenberger, William, 4,509,279, Cl. 40-447.000.

Hori, Jiro, to Kotobuki & Co.; and Hori, Jiro. Writing instrument with overflow chamber and return to supply. 4,509,876, Cl. 401-217.000.

Hori, Yutaka: *See*—
Okuno, Toshimitsu; Hori, Yutaka; Sunakawa, Makoto; and Inagaki, Sadayuki, 4,510,181, Cl. 427-142.000.

Horiba, Ltd.: *See*—
Hosokawa, Yoshinori; Tanimoto, Masahiro; and Tsuji, Katsuya, 4,510,610, Cl. 373-118.000.

Horiguchi, Akira: *See*—
Yamada, Ken'ichi; Sumitomo, Hiroyuki; Horiguchi, Akira; and Masutani, Kenzo, 4,509,592, Cl. 165-166.000.

Horike, Masanori; Furukawa, Tatsuya; Sekiya, Takuro; Ebi, Yutaka; Isayama, Takuro; and Tachiki, Masaaki, to Ricoh Company, Ltd. Ink ejection head. 4,510,509, Cl. 346-140.00R.

Horimoto, Koji: *See*—
Miura, Yoshikazu; Horimoto, Koji; and Sumida, Takenori, 4,510,273, Cl. 523-406.000.

Hornbaker, Edwin D.: *See*—
Jones, Jesse D.; and Hornbaker, Edwin D., 4,510,280, Cl. 524-178.000.

Horton, Joel R.; and Eissenberg, David M., to United States of America, Energy. Power recovery system for coal liquefaction process. 4,510,121, Cl. 422-232.000.

Hosaka, Tomiharu: *See*—
Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, 4,510,089, Cl. 260-396.00N.

Hoshi, Ikuo; Arai, Masami; Yokochi, Kiyoshi; Miyadera, Yasuo; Fujioka, Atsushi; and Nakagawa, Takehisa, to Hitachi Chemical Company, Ltd. Continuous production of copper-clad laminate. 4,510,008, Cl. 156-245.000.

Hoshino, Mitsutoshi: *See*—
Murata, Norio; Hoshino, Mitsutoshi; and Yamakawa, Shinzo, 4,509,820, Cl. 350-96.210.

Hosiden Electronic Co. Ltd.: *See*—
Amano, Katutoshi; and Kakuta, Toshio, 4,509,811, Cl. 339-17.00F.

Hosokawa, Yoshinori; Tanimoto, Masahiro; and Tsuji, Katsuya, to Horiba, Ltd. Extractive furnace for extracting gaseous components from material samples. 4,510,610, Cl. 373-118.000.

Hotta, Masashi, to Shimano Industrial Company Limited. Portable constant temperature box. 4,509,645, Cl. 206-545.000.

Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, to Matsushita Electric Industrial Company, Limited. Octahydrotetracyanoquinodimethane and derivatives thereof. 4,510,089, Cl. 260-396.00N.

Houck, Richard C.; and Lundell, Dennis A., to Goodyear Tire & Rubber Company, The. Air spring assembly apparatus and method. 4,509,244, Cl. 29-516.000.

Houminer, Yoram; and Podraza, Kenneth F., to Philip Morris Incorporated. Smoking compositions. 4,509,537, Cl. 131-276.000.

Hovland, Lyle W.; and Klingensmith, James D., to Aluminum Company of America. Dish antennae mounting structure. 4,510,502, Cl. 343-880.000.

Howard, Leroy C.: *See*—
Boyce, William C.; Wittekind, Warren D.; Howard, Leroy C.; Hall, Thomas E.; and Lechelt, Wayne M., 4,510,573, Cl. 364-498.000.

Howe, Clarice M.; and Mack, Audrey, to Singer Company, The. Foot leveling sewing aid and method of use. 4,509,444, Cl. 112-262.100.

HRI, Inc.: *See—*
Johanson, Edwin S.; and Schuler, Paul D., 4,510,037, Cl. 208-8.0LE.
Hruby, John O. Multi-chamber enclosure for loudspeakers. 4,509,615, Cl. 181-148.000.
HSS Industries, Inc.: *See—*
Stacy, George F., 4,509,676, Cl. 232-43.400.
Hsu, S. P. Device for automatic lock. 4,509,348, Cl. 70-131.000.
Huang, Chor; and Schlatzer, Robert K., to B. F. Goodrich Company, The. Water thickening agents consisting of copolymers of crosslinked acrylic acids and esters. 4,509,949, Cl. 586-558.000.
Hubball, John A.; and Barry, Eugene F., to Foxboro Company, The. Fused silica capillary column. 4,509,964, Cl. 55-386.000.
Huben, Clayton A.: *See—*
Morgan, Walter R.; Boniface, Edmund A.; and Huben, Clayton A., 4,509,325, Cl. 60-39.141.
Hughes Aircraft Company: *See—*
Vasudev, Prahalad K., 4,509,990, Cl. 148-1.500.
Hughes, David W.: *See—*
Paulson, Wayne M.; and Hughes, David W., 4,510,178, Cl. 427-94.000.
Hughes, Richard: *See—*
Traver, Jack L.; Palmer, C. Dale; and Hughes, Richard, 4,509,593, Cl. 166-63.000.
Huhn, Kurt: *See—*
Glembin, Dirk; Huhn, Kurt; Meyer, Gunter; and Thallmeier, Manfred, 4,510,334, Cl. 568-643.000.
Hulsmann, Hans L., to Dynamit Nobel Aktiengesellschaft. Synthetic liquid wax esters. 4,510,093, Cl. 260-410.90N.
Human Oltoanyagtermelo Es Kutato Intezet: *See—*
Bar, Vilmos; Boszormenyi, Jozsef; Richter, Peter; Mercz, Jeno; and Rozsnyai, Tamas, 4,510,147, Cl. 514-314.000.
Humber, Leslie G.: *See—*
Asselin, Andre A.; and Humber, Leslie G., 4,510,157, Cl. 514-411.000.
Hummel, William H.: *See—*
Young, David A.; and Hummel, William H., 4,509,770, Cl. 280-507.000.
Hunt, Thomas K., to Ford Motor Company. Internal-integral sodium return line for sodium heat engine. 4,510,210, Cl. 429-11.000.
Hunter, Larry D. Solar energy collecting system using a primary reflector based on a pyramid structure. 4,509,501, Cl. 126-439.000.
Huntsman, Lee L.: *See—*
Barnes, Stephen R.; Tarbox, Gary L.; Huntsman, Lee L.; and McLaren, Barry D., 4,509,526, Cl. 128-663.000.
Hyodo, Yukio: *See—*
Hakamata, Kazuo; Takagi, Tadao; and Hyodo, Yukio, 4,510,411, Cl. 310-316.000.
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, to Olympus Optical Co., Ltd. Optical system for retinal cameras. 4,509,838, Cl. 354-62.000.
Ichiyama, Toshiyuki: *See—*
Yasuda, Tomio; and Ichiyama, Toshiyuki, 4,510,441, Cl. 324-96.000.
Idemitsu Kosan Co., Ltd.: *See—*
Nakanishi, Masayuki, 4,510,062, Cl. 252-45.000.
Iguchi, Yoji: *See—*
Kakumoto, Hiromi; Ihara, Shinji; Iguchi, Yoji; and Miyata, Makoto, 4,509,259, Cl. 30-34.100.
Ihara, Hirokazu: *See—*
Mori, Kinji; Nohmi, Makoto; Miyamoto, Shoji; Ihara, Hirokazu; Matsumaru, Hiroshi; and Ikeda, Katuaki, 4,510,492, Cl. 340-825.050.
Ihara, Shinji: *See—*
Kakumoto, Hiromi; Ihara, Shinji; Iguchi, Yoji; and Miyata, Makoto, 4,509,259, Cl. 30-34.100.
Ihikura, Shinichi; Kanda, Kazunori; and Nakaya, Toshiharu, to Nippon Paint Co., Ltd. Novel aqueous coating composition. 4,510,275, Cl. 523-412.000.
Iida, Hideyo; Kato, Koumei; Mishuku, Toshio; and Fujimaki, Yukiko, to Taiyo Yuden Kabushiki Kaisha. Flexible insulative substrates having two glass layers at least one side thereof and a method for making such substrates. 4,510,195, Cl. 428-215.000.
Iijima, Zenshiro, to Adger Kogyo Co., Ltd. Ink composition for writing instruments. 4,509,982, Cl. 106-23.000.
Ike, Masahide; and Arita, Masashi, to Nissan Motor Company, Limited. Method of and apparatus for forming gears. 4,509,353, Cl. 72-267.000.
Ikeda, Akira. Bottom exhaust high speed boat. 4,509,927, Cl. 440-89.000.
Ikeda, Fumihiro: *See—*
Bando, Niro; Kurohara, Kazuaki; Fujima, Yasuo; Ikeda, Fumihiro; Usiro, Kenzo; and Ogasawara, Hiroyuki, 4,509,614, Cl. 180-273.000.
Ikeda, Katuaki: *See—*
Mori, Kinji; Nohmi, Makoto; Miyamoto, Shoji; Ihara, Hirokazu; Matsumaru, Hiroshi; and Ikeda, Katuaki, 4,510,492, Cl. 340-825.050.
Ikeda, Kazunari: *See—*
Kawaida, Shinji; Okitsu, Yoshio; and Ikeda, Kazunari, 4,510,012, Cl. 156-415.000.
Ikemori, Keiji, to Canon Kabushiki Kaisha. High variable magnification wide angle zoom lens. 4,509,833, Cl. 350-427.000.
Ikemoto, Kazuhito; Terakura, Yukio; Miyake, Takashi; and Yamamoto, Takashi, to Toyota Jidosha Kabushiki Kaisha. Splined press fit connection in gear wheel assembly. 4,509,381, Cl. 74-413.000.
IMC Magnetics Corp.: *See—*
Lavochkin, Ronald B., 4,509,839, Cl. 357-81.000.
Immuno Aktiengesellschaft fur chemisch-medizinische Produkte: *See—*
Eibl, Johann; Hetzl, Ernst; and Linnau, Yendra, 4,510,084, Cl. 260-112.00B.
Impact Systems, Inc.: *See—*
Stephansen, Erik, 4,509,270, Cl. 34-4.000.
Imperial Chemical Industries PLC: *See—*
Baker, Alan S., 4,509,950, Cl. 44-51.000.
Crosby, John, 4,510,098, Cl. 260-465.00D.
Evans, David D., 4,510,133, Cl. 514-30.000.
Robson, Michael J., 4,510,160, Cl. 514-521.000.
Imperial Clevite Inc.: *See—*
Shtarkman, Emile M., 4,509,730, Cl. 267-35.000.
Snyder, Daniel S., 4,510,484, Cl. 340-58.000.
Imura, Shinichi: *See—*
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.
Inaba, Ritsuo; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Voltage measuring device. 4,510,443, Cl. 324-120.000.
Inagaki, Masaaki. Cosmetic puff. 4,509,540, Cl. 132-79.00R.
Inagaki, Sadayuki: *See—*
Okuno, Toshimitsu; Hori, Yutaka; Sunakawa, Makoto; and Inagaki, Sadayuki, 4,510,181, Cl. 427-142.000.
Inculet, Ion I.; and Hodgson, Kenneth J., to Canadian Patents & Development Limited. Cross-current airfoil electrostatic nozzle. 4,509,694, Cl. 239-697.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Costa, Armando; and Morbin, Federico, 4,510,345, Cl. 174-35.00R.
Prato, Francesco, 4,510,491, Cl. 340-792.000.
Inoue, Hiroshi: *See—*
Oda, Hidekuni; Minami, Syuji; Inoue, Hiroshi; Matsuda, Akira; and Yamamoto, Yohzoh, 4,510,303, Cl. 526-282.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,510,366, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Fluid delivery rate control TW electrical machining method and apparatus. 4,510,366, Cl. 219-69.00M.
Inoue, Setsuro; Nikaido, Koichi; and Nakagome, Makoto, to Yamato Chemical Industry Co. Ltd. Synthetic leather for motorcars having a ground fabric knitted by a plurality of strokes. 4,510,192, Cl. 428-151.000.
Inoue, Shigeo: *See—*
Nakai, Ryozo; Inoue, Shigeo; and Arai, Sumio, 4,510,074, Cl. 252-400.230.
Inoue, Takao: *See—*
Matsumura, Michio; Inoue, Takao; and Arai, Toshihiro, 4,510,031, Cl. 204-159.200.
Inoue, Tomoko: *See—*
Tsutsumi, Hisao; and Inoue, Tomoko, 4,510,070, Cl. 252-351.000.
Inoue, Yoichi, to Kabushiki Kaisha Kobe Seiko Sho. Hot isostatic pressing apparatus. 4,509,729, Cl. 266-252.000.
Inskip, Michael; and Warren, Alan, to Ti Russel Hobbs Limited. Electric immersion heater assembly for liquid heating appliances. 4,510,375, Cl. 219-328.000.
Institut Francais du Petrole: *See—*
Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , 4,510,042, Cl. 208-59.000.
International Business Machines Corp.: *See—*
Blount, Frederick T., 4,510,582, Cl. 364-900.000.
Bux, Werner K.; Keller, Heinrich J.; and Mueller, Hans R., 4,510,493, Cl. 340-825.050.
Chang, Philip Y.; and McInroy, John W., 4,510,567, Cl. 364-300.000.
Curtis, Huntington W.; Dodge, Frederick A.; Francis, David B.; and Mizzi, John V., 4,509,530, Cl. 128-710.000.
Kumar, Ananda H.; and Schwartz, Bernard, 4,510,000, Cl. 156-89.000.
Ray, Asit K., 4,510,172, Cl. 427-38.000.
Rohrer, Gene D., 4,510,615, Cl. 382-7.000.
Taur, Yuan, 4,509,991, Cl. 148-1.500.
International Coal Refining Company: *See—*
Skinner, Ronald W.; Tao, John C.; and Znaimer, Samuel, 4,510,040, Cl. 208-10.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Schreiber, William L.; Fujioka, Futoshi; Chant, Patrick; and Dekker, Lambert, 4,510,080, Cl. 252-522.00R.
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,510,340, Cl. 568-884.000.
International Standard Electric Corporation: *See—*
Greene, Peter D.; and Turley, Stephen E. H., 4,509,996, Cl. 148-171.000.
International Telephone and Telegraph Corp.: *See—*
Randle, Ronald E.; and Milbright, Arnold M., 4,509,303, Cl. 52-98.000.
Interpane Entwicklungs-und Beratungsgesellschaft mgH & Co. K.G.: *See—*
Glaser, Hans J., 4,510,190, Cl. 428-34.000.
Inui, Masaki; and Yasui, Yasuyoshi, to Toyota Jidosha Kabushiki Kaisha. Construction for preventing wear of shift fork in transmission manipulation device for manual transmission. 4,509,385, Cl. 74-477.000.

Inui, Toshiharu: *See—*
Kurata, Masami; Inui, Toshiharu; and Ohmori, Takashi, 4,510,523, Cl. 358-75.000.

Invernizzi, Umberto: *See—*
Bernardoni, Luigi; and Invernizzi, Umberto, 4,509,466, Cl. 123-52.0MF.

Ion Tech Limited: *See—*
Franks, Joseph, 4,510,386, Cl. 250-251.000.

Ionescu, Alexandru D. Smart hand. 4,509,783, Cl. 294-88.000.

Ippolito, Ronald A.; and Dugan, Michael T., to Xerox Corporation. Communication manager. 4,509,851, Cl. 355-14.00C.

Irikura, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Chip-like solid electrolyte capacitor. 4,510,554, Cl. 361-433.000.

Isayama, Takuro: *See—*
Horike, Masanori; Furukawa, Tatsuya; Sekiya, Takuro; Ebi, Yutaka; Isayama, Takuro; and Tachiki, Masaaki, 4,510,509, Cl. 346-140.00R.

Isele, Karl J., Jr.: *See—*
Davis, Kevin M.; Wahl, Timothy M.; Beckman, John A.; and Isele, Karl J., Jr., 4,509,727, Cl. 266-44.000.

Ishida, Katsuhiko: *See—*
Okamoto, Tosaku; Okimoto, Tomoyuki; and Ishida, Katsuhiko, 4,510,512, Cl. 346-209.000.

Ishida, Kohji; and Sakamoto, Masaharu, to Pioneer Electronic Corporation. Circuit having square-law transfer characteristic. 4,510,452, Cl. 328-144.000.

Ishida, Masahiko: *See—*
Haga, Ryoichi; Ishida, Masahiko; and Odawara, Yoji, 4,510,243, Cl. 435-167.000.

Ishida, Shigetoshi, to Tanaka Kogyo Company, Ltd. Ignition circuit for internal combustion engine having alternately operable high and low speed control devices. 4,509,496, Cl. 123-651.000.

Ishikawa, Norio: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,509,842, Cl. 354-402.000.

Ishikawa, Yuji, to Canon Kabushiki Kaisha. Thermal recording apparatus. 4,510,507, Cl. 346-76.0PH.

Ishizaka, Mineo: *See—*
Kawaguchi, Toshihiro; Ishizaka, Mineo; and Doi, Hiyoshi, 4,509,568, Cl. 141-129.000.

Ishizaki, Takaharu; Kimura, Tsuneo; and Yamazaki, Shingo, to Nippon Oil and Fats Company, Ltd. Method for improving cold flow of fuel oils. 4,509,954, Cl. 44-62.000.

Iskander, Magdy F., to University of Utah. Apparatus and method for measuring the permittivity of a substance. 4,510,437, Cl. 324-61.00R.

Isoya, Toshiro: *See—*
Ohshima, Shohzo; Kusuda, Mikio; and Isoya, Toshiro, 4,510,034, Cl. 204-290.00F.

Issler, Jorg: *See—*
Betz, Dieter; and Issler, Jorg, 4,509,495, Cl. 123-643.000.

Ito, Hirosato, to Osaka Gas Company Limited. Liquid fuel combustion apparatus. 4,509,915, Cl. 431-215.000.

Ito, Hisao, to Sanyo Electric Co., Ltd. System for securing combination radio and tape recorder. 4,510,589, Cl. 369-11.000.

Ito, Kenichi: *See—*
Kato, Kiichi; Musha, Tohru; and Ito, Kenichi, 4,509,830, Cl. 350-394.000.

Ito, Kyoji: *See—*
Yomogida, Toshihiko; Suzuki, Yasuo; and Ito, Kyoji, 4,510,580, Cl. 364-900.000.

Ito, Satoru; and Endo, Masatoshi, to Diesel Kiki Company, Ltd. Fuel injection pump. 4,509,470, Cl. 123-179.00L.

Ito, Tetsuro, to Mitsubishi Denki Kabushiki Kaisha. Electric discharge machining apparatus. 4,510,364, Cl. 219-69.00G.

Itoga, Kouyu: *See—*
Yoshida, Toshio; Itoga, Kouyu; Matsui, Shigetomo; and Atsuta, Toshio, 4,509,776, Cl. 285-55.000.

Itow, Koichiro; and Komiyama, Kunihiko, to Kabushiki Kaisha Komatsu Seisakusho. Fuel blended with alcohol for diesel engine. 4,509,953, Cl. 44-57.000.

ITT Industries, Inc.: *See—*
Blossfeld, Lothar, 4,509,250, Cl. 29-578.000.

Iwao, Osamu: *See—*
Mehada, Masashi; Yoshimura, Shozo; Yamaguchi, Kenshiro; and Iwao, Osamu, 4,510,207, Cl. 428-607.000.

Iwasawa, Teruo, to Olympus Optical Co., Ltd. Motor apparatus. 4,510,423, Cl. 318-331.000.

Iyoda, Syozo: *See—*
Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Syozo, 4,510,481, Cl. 337-368.000.

Iyoda, Tetsuo: *See—*
Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihisa, 4,510,504, Cl. 346-75.000.

Izawa, Akira: *See—*
Moriguchi, Yutaro; Honda, Makoto; and Izawa, Akira, 4,509,823, Cl. 350-128.000.

Izumi, Eiichi; and Tamura, Hifumi, to Hitachi, Ltd. Ion micro-analysis. 4,510,387, Cl. 250-309.000.

Jack, James M.; and Mitchell, Stanley W., to Northern Vibrator Manufacturing Limited. Apparatus for breaking up solidified material in a storage container. 4,509,701, Cl. 241-292.000.

Jack Walters & Sons Corp.: *See—*
Geisthardt, Alan C., 4,509,291, Cl. 49-409.000.

Jackel, Klaus-Peter: *See—*
Gimpel, Jurgen; Jackel, Klaus-Peter; and Sander, Hans, 4,510,284, Cl. 524-379.000.

Jackson, Carroll V., to Wm. W. Meyer & Sons, Inc. Industrial vacuum cleaner. 4,509,963, Cl. 55-324.000.

Jacobs, Arthur F.: *See—*
Kobuck, Richard M.; and Jacobs, Arthur F., 4,510,372, Cl. 219-125.110.

Jacobsen, Jan, to Meier, Walter. Optical arrangement for producing two anamorphotically compressed images correlated by an interocular base distance. 4,509,832, Cl. 350-420.000.

Jacobson, Clayton J. Super ventilator jet ski engine hood (boat). 4,509,926, Cl. 440-89.000.

Jacquin, Yves: *See—*
Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , 4,510,042, Cl. 208-59.000.
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, 4,510,255, Cl. 502-10.000.

Jaffe, Myron I., to Sintered Metals, Inc. Token and acceptance mechanism. 4,509,632, Cl. 194-4.00D.

Jahn, Franz: *See—*
Schmidt, Werner; and Jahn, Franz, 4,509,673, Cl. 228-212.000.

Jamiolkowski, Dennis D.: *See—*
Bezwada, Rao S.; Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,510,295, Cl. 525-437.000.

Jan, Ping-Shuenn; and Hong, Chung-Yieh. Safety arrangement in a taxi. 4,509,788, Cl. 296-24.00R.

Janome Sewing Machine Co. Ltd.: *See—*
Tamiya, Yoshimichi; and Eguchi, Yasukata, 4,509,441, Cl. 112-158.00B.

Jansen, Pierre G.: *See—*
Scholten, Carel S.; Slob, Arie; and Jansen, Pierre G., 4,510,612, Cl. 375-106.000.

Janssen, Peter J. M., to U.S. Philips Corporation. Optical disc pressure-collapsible cover. 4,510,508, Cl. 346-135.100.

Japan Chemical Research Co., Ltd.: *See—*
Nakanishi, Koichiro; and Hiratani, Hajime, 4,510,248, Cl. 435-226.000.

Japan Exlan Company Limited: *See—*
Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, 4,510,111, Cl. 264-177.00F.

Japan Life Company Limited: *See—*
Yagi, Toshizo, 4,509,219, Cl. 5-481.000.

Jardin, Hans: *See—*
Bienert, Horst; Kohlpaintner, Georg; and Jardin, Hans, 4,509,791, Cl. 296-216.000.

Jensen, Susan: *See—*
Wolfe, Saul; Westlake, Donald; and Jensen, Susan, 4,510,246, Cl. 435-183.000.

Jeumont-Schneider Corporation: *See—*
Wiart, Albert; and Paeye, Gerard, 4,509,337, Cl. 62-235.100.

JGC Corporation: *See—*
Matsuoka, Hiroo; Matsuoka, Seiichi; Yamabe, Tsunekichi; Fujie, Hirokazu; Mori, Kenji; Tamura, Kouji; Yamada, Masatoshi; and Furuta, Akio, 4,510,264, Cl. 502-328.000.

Jobsky, William G.: *See—*
Wolfe, Earle C., deceased; Jobsky, William G.; and Smith, Thomas P., 4,510,487, Cl. 340-566.000.

Joh. Friedrich Behrens AG: *See—*
Elliesen, Wolfgang, 4,509,669, Cl. 227-130.000.

Johanson, Edwin S.; and Schuler, Paul D., to HRI, Inc. Hydrogenation process for solid carbonaceous feed materials using thermal countercurrent flow reaction zone. 4,510,037, Cl. 208-8.0LE.

John Fluke Mfg. Co., Inc.: *See—*
Sherman, David M., 4,510,454, Cl. 330-2.000.

John, Martin. Trawl shrimp cage. 4,509,286, Cl. 43-9.000.

Johna, Nobuo: *See—*
Hara, Noboru; Fukudome, Shinichi; Johna, Nobuo; and Nakamura, Masayoshi, 4,510,073, Cl. 252-383.000.

Johnson, Ann, Administratrix: *See—*
Johnson, Leighton C., deceased, 4,509,941, Cl. 494-45.000.

Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Lens drive for auto focus camera. 4,509,840, Cl. 354-400.000.

Johnson, David C. Electronic lighting apparatus for simulating a flame. 4,510,556, Cl. 362-184.000.

Johnson, Graham: *See—*
Ross, Barry C.; Johnson, Graham; and Yeomans, Michael A., 4,510,086, Cl. 260-239.00A.

Johnson, James M., Jr., to AT&T Bell Laboratories. Loop-around testing facilities for a multiline protocol controller. 4,510,594, Cl. 370-15.000.

Johnson, Kalin S., to Colt Industries Operating Corp. Fuel injection apparatus and system. 4,509,483, Cl. 123-432.000.

Johnson, Kathryn M.: *See—*
Lee, Lester H.; Johnson, Kathryn M.; and Jones, Richard W., 4,509,238, Cl. 29-156.80R.

Johnson, Leighton C., deceased (by Johnson, Ann, Administratrix), to Miles Laboratories, Inc. Fractionation device and method. 4,509,941, Cl. 494-45.000.

Johnson, Lonnie G. Soil moisture potential determination by weight measurement. 4,509,361, Cl. 73-73.000.

Johnson Matthey, Inc.: *See—*
Enga, Bernard E., 4,509,327, Cl. 60-274.000.

Johnson Service Company: *See—*
Rudich, George, Jr., 4,510,547, Cl. 361-22.000.

Johnston, Kenneth R. Self-greasing bearing. 4,509,869, Cl. 384-462.000.

Jondahl, Joseph S. Sanitary food dispenser. 4,509,450, Cl. 118-20.000.

Jones, Donald D., to Elwood Manufacturing Company. Hydraulically actuated high torque, quick engagement clutch assembly. 4,509,626, Cl. 192-85.0AA.

Jones, Jesse D.; and Hornbaker, Edwin D., to Ethyl Corporation. Thermoplastic PVC molding compositions. 4,510,280, Cl. 524-178.000.

Jones, Richard W.: *See—*
Lee, Lester H.; Johnson, Kathryn M.; and Jones, Richard W., 4,509,238, Cl. 29-156.80R.

Jones, William H., to Armstrong Jones Inc. Air filter assembly. 4,509,961, Cl. 55-294.000.

Joo, Grant K.: *See—*
Gray, Reed A.; and Joo, Grant K., 4,509,974, Cl. 71-100.000.

Jopson, Harriet: *See—*
Lee, Kang I.; and Jopson, Harriet, 4,510,075, Cl. 252-500.000.
Lee, Kang I.; and Jopson, Harriet, 4,510,076, Cl. 252-500.000.

Jorgensen, Pierre, to British Petroleum Company p.l.c., The. Energy extraction from hot gases. 4,509,326, Cl. 60-39.182.

Joseph, Jacques: *See—*
Grall, Georges; Joseph, Jacques; and Lemoine, Claude, 4,510,586, Cl. 367-87.000.

Jost, Ernest M., to Chemet Corporation; and Chemet Corporation. Electrical contact material comprising silver, cadmium oxide and cupric salt. 4,509,980, Cl. 75-234.000.

Jovick, Raymond J.; Malott, Roger J.; and Evans, Thomas E., to Rockwell International Corporation. Mounting device for cylindrical magnetic sensor. 4,510,408, Cl. 310-168.000.

Joyal Products, Inc.: *See—*
Szantho, Charles F.; and Riordan, Edward D., 4,510,370, Cl. 219-86.250.

Joyce, Michael F. Carton with separaters, its blank and apparatus facilitating its erection for use. 4,509,640, Cl. 206-175.000.

Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., to British Petroleum Company p.l.c., The. Methanol conversion process. 4,510,071, Cl. 252-373.000.

Juillard, Yves: *See—*
Gosciniak, Guy; Juillard, Yves; Menissier, Pierre; and Moessinger, Albert, 4,509,563, Cl. 139-443.000.

Junginger, Erich; Rittsmannsberger, Norbert; and Schnaibel, Eberhard, to Robert Bosch GmbH. Free-wheeling control system for a motor vehicle. 4,509,628, Cl. 192-0.094.

Juttner, Heinz: *See—*
Bottcher, Wolfgang; Juttner, Heinz; Maurer, Albrecht; and Stutzinger, Ferdinand, 4,509,295, Cl. 51-49.000.

K. R. Associates; Inc.: *See—*
Rines, Robert H.; and Knowles, Albert H., 4,509,458, Cl. 119-3.000.

Kabacoff, Bernard L.; and Govil, Alok K., to Revlon, Inc. Method of hair damage assessment. 4,510,250, Cl. 436-63.000.

Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, to Bayer Aktiengesellschaft. Bisindolyl alkylene ureas lipid absorption-inhibiting agents and their use thereas. 4,510,156, Cl. 514-415.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Hikita, Michiyasu, 4,509,608, Cl. 177-1.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Inoue, Yoichi, 4,509,729, Cl. 266-252.000.
Kobayashi, Minoru; Sakai, Yoshiya; Minato, Shoji; Ooe, Tsuguo; Arai, Katsumi; and Suga, Tetsuo, 4,510,374, Cl. 219-146.100.
Tanaka, Tsuyoshi; and Yoshikawa, Kazuhisa, 4,509,699, Cl. 241-268.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Itow, Koichiro; and Komiyama, Kunihiko, 4,509,953, Cl. 44-57.000.

Kabushiki Kaisha Meidensha: *See—*
Ando, Yasuo; and Ochiai, Toshihiko, 4,510,218, Cl. 429-198.000.
Ashikaga, Tadashi; and Terashima, Masayuki, 4,510,430, Cl. 318-800.000.

Kabushiki Kaisha Miura Kumihimo Kogyo: *See—*
Taki, Kiyozi, 4,509,870, Cl. 384-296.000.

Kabushiki Kaisha Toshiba: *See—*
Higashikawa, Iwao; and Arikado, Tsunetoshi, 4,510,173, Cl. 427-44.000.

Kabushiki Kaisha Toyota Chouo Kenkyusho: *See—*
Takeuchi, Takashi; Takahashi, Hideaki; Saji, Keiichi; Kondo, Haruyoshi; and Hayakawa, Kiyoharu, 4,510,036, Cl. 204-425.000.

Kabushiki Kaishi Meidensha: *See—*
Yasuda, Tomio; and Ichiyama, Toshiyuki, 4,510,441, Cl. 324-96.000.

Kaczynski, Donald J.: *See—*
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,048, Cl. 209-3.000.
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,049, Cl. 209-3.000.

Kade, Alexander; and Karadsheh, Sam M., to General Motors Corporation. Adaptive controller for electric power steering. 4,509,611, Cl. 180-79.100.

Kadoo, Fumio: *See—*
Kanamaru, Hitashi; and Kadoo, Fumio, 4,510,592, Cl. 369-270.000.

Kagami, Toshiro; and Watanabe, Kuniaki, to Toshiba Ceramics Co., Ltd. Casting nozzle. 4,510,191, Cl. 428-36.000.

Kagawa, Hiroshi; and Matsui, Kazumasa, to Yuasa Battery Co. Ltd. Sodium-sulfur storage battery. 4,510,217, Cl. 429-104.000.

Kaiser Aluminum & Chemical Corporation: *See—*
Goodrich, David G., 4,509,580, Cl. 164-445.000.

Kajita, Koji; Nakayama, Takashi; and Yamagata, Seiichi, to Toray Industries, Inc. Apparatus for manufacturing fasciated yarn. 4,509,321, Cl. 57-328.000.

Kajita, Masaki; Nakaya, Tomio; Hasegawa, Shinichi; and Fujita, Hisanori, to Stanley Electric Co., Ltd.; and Mitsubishi Monsanto Chemical Co., Ltd. Epitaxial wafer of compound semiconductor display device. 4,510,515, Cl. 357-17.000.

Kajiwara, Makoto: *See—*
Matsuzaka, Syoji; Kajiwara, Makoto; Miyoshi, Masanobu; and Yamashita, Kiyoshi, 4,510,234, Cl. 430-557.000.

Kakl, Josef: *See—*
Schrofelbauer, Herbert; Kakl, Josef; Staudinger, Gernot; and Filipot, Hermann, 4,509,436, Cl. 110-345.000.

Kakumoto, Hiromi; Ihara, Shinji; Iguchi, Yoji; and Miyata, Makoto, to Matsushita Electric Works, Ltd. Electric shaver. 4,509,259, Cl. 30-34.100.

Kakuta, Toshio: *See—*
Amano, Katutoshi; and Kakuta, Toshio, 4,509,811, Cl. 339-17.00F.

Kaleita, David L.: *See—*
Michaels, Paul A.; and Kaleita, David L., 4,510,426, Cl. 318-565.000.

Kals, Walter, to Niagara Blower Company. Vacuum producing condenser. 4,509,591, Cl. 165-122.000.

Kanada, Eiji: *See—*
Tsubai, Yasuo; Takaya, Yoshikazu; and Kanada, Eiji, 4,510,228, Cl. 430-204.000.

Kanamaru, Hitashi; and Kadoo, Fumio, to Universal Pioneer Corporation. Disk clamping device. 4,510,592, Cl. 369-270.000.

Kanamaru, Tatsuya: *See—*
Hada, Takashi; Kanamaru, Tatsuya; and Ogawa, Yutaka, 4,510,209, Cl. 428-659.000.

Kanasugi, Mikiko: *See—*
Yamaguchi, Masahiko; Gonda, Michihiro; Satoh, Yutaka; and Kanasugi, Mikiko, 4,510,513, Cl. 346-214.000.

Kanayama, Kenji, to Nippondenso Co., Ltd. Heat insulation and heat dissipation construction for flat electric rotary machine. 4,510,409, Cl. 310-268.000.

Kanda, Kazunori: *See—*
Ihikura, Shinichi; Kanda, Kazunori; and Nakaya, Toshiharu, 4,510,275, Cl. 523-412.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Tooru; Nakamura, Masaru; and Aoishi, Eiji, 4,510,201, Cl. 428-285.000.

Kanno, Tadaaki; Ukai, Takeshi; Akahoshi, Yutaka; and Shibata, Katsuji, to Ricoh Company, Ltd. Document handling apparatus for producing folded and bound stacks of documents. 4,509,732, Cl. 270-37.000.

Kanno, Takashi; Oka, Akira; Okamoto, Ituo; Mizushima, Kouji; and Oguro, Shinji, to Fujitsu Limited. Device for housing communication circuits and equipment. 4,510,552, Cl. 361-413.000.

Kanzaka, Yoshihiro, to Nippon Notion Kogyo Co., Ltd. Attaching post for snap fastener elements. 4,509,232, Cl. 24-113.00R.

Kanzaki Paper Manufacturing Company, Limited: *See—*
Okamoto, Tosaku; Okimoto, Tomoyuki; and Ishida, Katsuhiko, 4,510,512, Cl. 346-209.000.

Kao Corporation: *See—*
Nakai, Ryozo; Inoue, Shigeo; and Arai, Sumio, 4,510,074, Cl. 252-400.230.
Nogami, Takashi; and Nawa, Masayoshi, 4,510,216, Cl. 429-101.000.
Tsutsumi, Hisao; and Inoue, Tomoko, 4,510,070, Cl. 252-351.000.

Karadsheh, Sam M.: *See—*
Kade, Alexander; and Karadsheh, Sam M., 4,509,611, Cl. 180-79.100.

Karkkainen, Jouko: *See—*
Uomala, Vilho; Karkkainen, Jouko; and Sandstrom, Kjell, 4,509,719, Cl. 251-214.000.

Karl Kassbohrer Fahrezeugwerke GmbH: *See—*
Haug, Walter, 4,509,768, Cl. 280-479.00R.

Karl Lautenschlager KG Mobelbeschlagfabrik: *See—*
Lautenschlager, Karl, Jr., 4,509,882, Cl. 403-402.000.

Karmazin Products Corporation: *See—*
Woodhull, Ivan D., Jr.; and Liedel, Thomas H., 4,509,672, Cl. 228-175.000.

Kasner, William H.: *See—*
Taylor, Lyle H.; and Kasner, William H., 4,510,604, Cl. 372-4.000.

Kassies, Michiel. Real image projection device. 4,509,837, Cl. 353-10.000.

Kastle Gesellschaft m.b.H.: *See—*
Nussbaumer, Wolfgang, 4,509,771, Cl. 280-609.000.

Kato, Kiichi; Musha, Tohru; and Ito, Kenichi, to Olympus Optical Co., Ltd. Light beam separation method. 4,509,830, Cl. 350-394.000.

Kato, Koumei: *See—*
Iida, Hideyo; Kato, Koumei; Mishuku, Toshio; and Fujimaki, Yukiko, 4,510,195, Cl. 428-215.000.

Kato, Toshikazu, to Olympus Optical Co., Ltd. Cassette ejection mechanism for a cassette tape recorder. 4,510,540, Cl. 360-93.000.

Kato, Yoshinori; Matsui, Makoto; and Nonaka, Zenichiro, to Aida Engineering, Ltd. Conveying system for press work materials. 4,509,638, Cl. 198-486.000.

Katsuma, Makoto; Hiramatsu, Akira; Arakawa, Kazuhiko; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Light measuring device for camera. 4,509,848, Cl. 354-473.000.

Kaufmann, Robert. Educational toy for teaching alphanumeric sequences. 4,509,920, Cl. 434-159.000.

Kauppi, Heikki: *See—*
Granberg, Carl-Gustav; and Kauppi, Heikki, 4,509,413, Cl. 99-453.000.

Kawabata, Takashi: *See—*
Sakai, Shinji; and Kawabata, Takashi, 4,509,841, Cl. 354-400.000.

Kawaguchi, Toshihiro; Ishizaka, Mineo; and Doi, Hiyoshi, to Takeda Chemical Industries, Ltd. Granular material processing apparatus with seal for stirrer shaft or the like formed by the granular material. 4,509,568, Cl. 141-129.000.

Kawahara, Masakatsu; and Takeda, Masaru, to Kobe Steel, Limited. Master/slave fluid pressure apparatus. 4,509,404, Cl. 91-388.000.

Kawai, Yoichi; Gotoh, Yoshihisa; and Yokote, Sachio, to Mitsui Toatsu Chemicals, Inc. Electrically-conductive resin composition. 4,510,079, Cl. 252-511.000.

Kawaida, Shinji; Okitsu, Yoshio; and Ikeda, Kazunari, to Bridgestone Tire Co., Ltd. Tire molding apparatus. 4,510,012, Cl. 156-415.000.

Kawaida, Shinji: *See*—
Azuma, Yusaku; Kitayama, Yoshifumi; and Kawaida, Shinji, 4,510,011, Cl. 156-407.000.

Kawakami, Kinya, to Yokohama Rubber Co., Ltd., The. Rubber compositions for tire treads. 4,510,291, Cl. 525-237.000.

Kawamoto, Matsumi, to Aisin Warner Kabushiki Kaisha. Hydraulic centrifugal clutch. 4,509,627, Cl. 192-85.00F.

Kawamura, Kunio: *See*—
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,509,842, Cl. 354-402.000.

Kawamura, Takahide: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,510,396, Cl. 290-30.00R.

Kawasaki, Hiroshi: *See*—
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, 4,510,233, Cl. 430-527.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Yoshida, Toshio; Itoga, Kouyu; Matsui, Shigetomo; and Atsuta, Toshio, 4,509,776, Cl. 285-55.000.

Kawatei, Hisatsugu, to Diesel Kiki Co., Ltd. Overflow valve for distributor-type fuel injection pumps. 4,509,491, Cl. 123-502.000.

Kawazoe, Shunji: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,510,292, Cl. 525-247.000.

Kay, David P.: *See*—
Westwood, Robert; Miller, Peter; Ager, Ian R.; and Kay, David P., 4,510,143, Cl. 514-250.000.

Kazda, Stanislav: *See*—
Wehinger, Egbert; Meyer, Horst; Bossert, Friedrich; Vater, Wulf; Towart, Robertson; Stoepel, Kurt; and Kazda, Stanislav, 4,510,310, Cl. 546-321.000.

Keane, James W., to Whirlpool Corporation. Three-piece swivel caster having a force transfer roller. 4,509,227, Cl. 16-23.000.

Kearney, James E.: *See*—
Anderson, Philip M., III; Bretts, Gerald R.; and Kearney, James E., 4,510,489, Cl. 340-572.000.
Anderson, Philip M., III; Kearney, James E.; and Bretts, Gerald R., 4,510,490, Cl. 340-572.000.

Kehr, Clifton L.; Wszolek, Walter R.; and Marans, Nelson S., to W. R. Grace & Co. Hindered aliphatic monoisocyanates. 4,510,097, Cl. 260-453.00A.

Keller, Heinrich J.: *See*—
Bux, Werner K.; Keller, Heinrich J.; and Mueller, Hans R., 4,510,493, Cl. 340-825.050.

Kelly Bushing Tools, Inc.: *See*—
Tullos, Homan C.; and Woods, Dewey W., 4,509,605, Cl. 175-57.000.

Kelsoe, Wayne E.: *See*—
McClanahan, John B.; LaVoie, Marvin E.; Kelsoe, Wayne E.; and Wrobel, James, 4,510,482, Cl. 338-24.000.

Kendall Company, The: *See*—
Shah, Kishore R., 4,510,197, Cl. 428-220.000.

Kennecott Corporation: *See*—
Carpenter, James H.; and Corderman, Donald G., 4,509,300, Cl. 51-435.000.

Kennedy, Thomas M.: *See*—
MacGregor, John R.; Rupert, Gary F.; and Kennedy, Thomas M., 4,510,365, Cl. 219-69.00G.

Kennedy, William S.: *See*—
Clark, Thomas S.; and Kennedy, William S., 4,509,587, Cl. 165-61.000.

Kerns, William R.: *See*—
Cooper, Merton G.; Kerns, William R.; Filley, Daniel E.; and Koschnick, Gary A., 4,509,549, Cl. 137-327.000.

Kesseli, James B.: *See*—
Nussdorfer, Theodore J.; and Kesseli, James B., 4,509,333, Cl. 60-723.000.

Khanna, Satish C., to Ciba Geigy Corporation. Resinate of a substituted carboxylic acid, the preparation and use thereof, and pharmaceutical compositions containing it. 4,510,128, Cl. 424-79.000.

Kiener, Heinz: *See*—
Brandenstein, Manfred; Hans, Rudiger; and Kiener, Heinz, 4,509,764, Cl. 277-166.000.

Killmann, Peter A., to Marsteller & Killman GmbH & Co. KG. Bottle or similar container, especially for readily combustible liquids, with a screw-on closure. 4,509,655, Cl. 215-309.000.

Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., to W. R. Grace & Co. Doubly promoted catalyst with high geometric surface area. 4,510,262, Cl. 502-304.000.

Kim, Syng N., to Wico Corporation. Coin door assembly. 4,509,631, Cl. 194-1.00A.

Kimberlin, Dan R., to General Motors Corporation. Lash-free telescopic steering shaft assembly and method of making the assembly. 4,509,386, Cl. 74-492.000.

Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, to Asahi Kasei Kogyo Kabushiki Kaisha. Fluorinated vinyl ether compounds and process for producing the same. 4,510,328, Cl. 568-32.000.

Kimura, Takahiko: *See*—
Takao, Mitsunori; and Kimura, Takahiko, 4,509,477, Cl. 123-339.000.

Kimura, Tsuneo: *See*—
Ishizaki, Takaharu; Kimura, Tsuneo; and Yamazaki, Shingo, 4,509,954, Cl. 44-62.000.

Kindermann, Robert: *See*—
Haussel, Werner; Roppelt, Gunter; and Kindermann, Robert, 4,510,444, Cl. 324-121.00R.

King, J. Thomas: *See*—
Ataman, Ergin'; and King, J. Thomas, 4,510,618, Cl. 382-54.000.

King, Paul E.; and Wilson, Harold C. S., to Hinders-Leslies Limited. Catheter assembly. 4,509,944, Cl. 604-53.000.

King-Seeley Thermos Co.: *See*—
Nelson, Kenneth L., 4,510,114, Cl. 264-261.000.

Kingston, Samuel B.; and Evans, Graham, to Ciba Geigy AG; and Ciba Geigy AG. Photographic material and a process for its manufacture. 4,510,238, Cl. 430-627.000.

Kipp, Robert M.: *See*—
Kruka, Vitold R.; Kipp, Robert M.; and Cadena, Edward R., 4,510,588, Cl. 367-165.000.

Kirchmayr, Rudolf; and Rutsch, Werner, to Ciba Geigy Corporation. Acid-curable composition containing a masked curing catalyst, and a process for the curing thereof. 4,510,290, Cl. 525-162.000.

Kirkemo, Curtis L.; and Shipchandler, Mohammed T., to Abbott Laboratories. Fluorescent polarization assay for ligands using aminomethylfluorescein derivatives as tracers. 4,510,251, Cl. 436-536.000.

Kirkpatrick, John A.: *See*—
Budrean, John D.; and Kirkpatrick, John A., 4,509,356, Cl. 72-349.000.

Kishi, Hajimu; and Seki, Masaki, to Fanuc Ltd. Graphic processing method. 4,510,568, Cl. 364-300.000.

Kishi, Noriyuki: *See*—
Hasegawa, Shumpei; Otobe, Yutaka; Kishi, Noriyuki; and Koumura, Takashi, 4,509,489, Cl. 123-489.000.

Kishida, Kazuo; Sasaki, Isao; Mukai, Nobuhiro; and Asai, Hajime, to Mitsubishi Rayon Co., Ltd. Novel polymer composition. 4,510,024, Cl. 204-59.00R.

Kishimura, Masaaki; and Arakawa, Nobuyuki, to Mitsubishi Rayon Co., Ltd.; and Sony Corporation. Methacrylate resin composition for optical information recording medium. 4,510,279, Cl. 524-144.000.

Kitayama, Yoshifumi: *See*—
Azuma, Yusaku; Kitayama, Yoshifumi; and Kawaida, Shinji, 4,510,011, Cl. 156-407.000.

Kiteley, Kenneth J., to Zenith Electronics Corporation. Switching regulator power supply. 4,510,400, Cl. 307-66.000.

Kiya, Nobuyuki: *See*—
Nozawa, Ryoichiro; Kiya, Nobuyuki; and Murakami, Kunihiko, 4,510,427, Cl. 318-590.000.

Klaus, Artur; and Wilhelm, Hans, to Signode Corporation. Pneumatically operable fastener driving tool. 4,509,668, Cl. 227-8.000.

Klebovich, Imre: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.

Klein, Lawrence F.: *See*—
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., 4,510,165, Cl. 426-439.000.

Kleinert, Michael; Moller, Rainer; and Stelzer, Horst, to VEB Zentrum fur Forschung und Technologie Mikroelektronik. Apparatus for guiding gas for LP CVD processes in a tube reactor. 4,509,456, Cl. 118-715.000.

Klievoneit, Harold R., to St. Florian Company, Ltd. Pneumatic clamp mounting for a disc. 4,509,298, Cl. 51-237.00R.

Kling, Alfred: *See*—
Rohlfs, Hans-Adolf; Kling, Alfred; Raab, Guenter; Vogt, Michael; Specht, Viktor; and Schaetzke, Ulrike, 4,510,068, Cl. 252-186.290.

Klingensmith, James D.: *See*—
Hovland, Lyle W.; and Klingensmith, James D., 4,510,502, Cl. 343-880.000.

Klosterbuer, Shirley F.: *See*—
Phillips, John R.; Halbig, James K.; Menlove, Howard O.; and Klosterbuer, Shirley F., 4,510,117, Cl. 376-257.000.

Kluck, Robert S. Multi-positional handle for serographic screen. 4,509,423, Cl. 101-127.100.

Klusman, Steven A., to General Motors Corporation. Bearing mount with squeeze film damping. 4,509,804, Cl. 384-99.000.

Knaack, Howard L.; and Weger, Kenneth F., Jr., to Knaack Manufacturing Company. Truck rack. 4,509,787, Cl. 296-3.000.

Knaack Manufacturing Company: *See*—
Knaack, Howard L.; and Weger, Kenneth F., Jr., 4,509,787, Cl. 296-3.000.

Knapp, Gordon G., to Ethyl Corporation. Corrosion inhibitor for alcohol and gasohol fuels. 4,509,951, Cl. 44-53.000.

Knapp, Kenneth M. Pig featuring foam filled cavity. 4,509,222, Cl. 15-104.06R.

Knaus, Heimo A.: *See*—
Schweigert, Lothar L.; and Knaus, Heimo A., 4,509,930, Cl. 446-109.000.

Knodel, Emil; and Nonnenmacher, Gerhard, to Robert Bosch GmbH. Power regulating device for a hydrostatic pump. 4,509,902, Cl. 417-216.000.

Knop, Jurgen; Sedlacek, Hans-Harald; and Seiler, Friedrich R., to Hoechst Aktiengesellschaft. Immunostimulating agent. 4,510,129, Cl. 424-86.000.

Knowles, Albert H.; and Rines, Robert H. Process and apparatus for fish growth acceleration. 4,509,459, Cl. 119-3.000.

Knowles, Albert H.: *See*—
Rines, Robert H.; and Knowles, Albert H., 4,509,458, Cl. 119-3.000.

Kobayashi, Minoru; Sakai, Yoshiya; Minato, Shoji; Ooe, Tsuguo; Arai, Katsumi; and Suga, Tetsuo, to Kabushiki Kaisha Kobe Seiko Sho. Flux-cored wire electrode suitable for use in gas-shielded arc-welding. 4,510,374, Cl. 219-146.100.

Kobe Steel, Limited: *See*—
Kawahara, Masakatsu; and Takeda, Masaru, 4,509,404, Cl. 91-388.000.

Kobuck, Richard M.; and Jacobs, Arthur F., to Westinghouse Electric Corp. Sleeve-to-tube welder. 4,510,372, Cl. 219-125.110.

Koch, Klaus; Schaeffer, Hans-Joachim; and Syrbius, Gerhard, to Hermann Berstorff Maschinenbau GmbH. Worm press for mechanically separating liquid/solid mixtures. 4,509,419, Cl. 100-117.000.

Koch, Michael: *See*—
Hahn, Ulrich; Straube, Peter; and Koch, Michael, 4,509,425, Cl. 101-216.000.

Koch, Rolf H. L.: *See*—
Whiting, James F.; and Koch, Rolf H. L., 4,509,368, Cl. 73-624.000.

Kockums Cancar, Corp.: *See*—
Gaitten, Walden M., deceased, 4,509,574, Cl. 144-208.00E.

Kodama, Hisashi: *See*—
Arai, Fuminao; Kodama, Hisashi; and Ono, Takuro, 4,509,467, Cl. 123-90.160.

Kodama, Naoki: *See*—
Takeshita, Masatoshi; Kodama, Naoki; Suzuki, Ryo; Takeuchi, Teruaki; and Sugita, Yutaka, 4,510,231, Cl. 430-312.000.

Kogut, Jimmy A. Control unit for make-up and combustion air circulation. 4,509,681, Cl. 237-53.000.

Kohara, Hideo: *See*—
Hattori, Toshihiko; Akagi, Yuji; and Kohara, Hideo, 4,509,906, Cl. 418-152.000.

Kohlpaintner, Georg: *See*—
Bienert, Horst; Kohlpaintner, Georg; and Jardin, Hans, 4,509,791, Cl. 296-216.000.

Kohs, Dwight W.: *See*—
Hartmann, Philip W.; Kohs, Dwight W.; Spencer, Douglas A.; and Turnbow, Garry V., 4,510,596, Cl. 370-58.000.

Kohtaki, Takaaki: *See*—
Kubo, Yoichiro; Kohtaki, Takaaki; and Oura, Kiyomori, 4,510,293, Cl. 525-338.000.

Koizumi, Haruyuki: *See*—
Atsumi, Haruo; and Koizumi, Haruyuki, 4,510,355, Cl. 200-47.000.

Koizumi, Yukihisa: *See*—
Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihisa, 4,510,504, Cl. 346-75.000.

Kokubo, Eiichi: *See*—
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.

Kolb, Gunter, deceased (by Kolb, Ingeborg, heiress); Tork, Leo; and Hohne, Wolfgang, to Bayer Aktiengesellschaft. Formulations and their use for pigmenting and/or delustring dressing agents for leather and leather imitations. 4,510,302, Cl. 526-264.000.

Kolb, Ingeborg, heiress: *See*—
Kolb, Gunter, deceased; Tork, Leo; and Hohne, Wolfgang, 4,510,302, Cl. 526-264.000.

Kollmorgen Technologies Corporation: *See*—
Leech, Edward J.; and Russo, Frank D., 4,510,276, Cl. 523-427.000.

Kominami, Yasuo: *See*—
Sato, Tetsuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,510,458, Cl. 330-260.000.

Komiyama, Kunihiko: *See*—
Itow, Koichiro; and Komiyama, Kunihiko, 4,509,953, Cl. 44-57.000.

Kommanditbolaget Aldolf: *See*—
Adolfsson, Bengt O., 4,509,569, Cl. 141-360.000.

Kondo, Haruyoshi: *See*—
Takeuchi, Takashi; Takahashi, Hideaki; Saji, Keiichi; Kondo, Haruyoshi; and Hayakawa, Kiyoharu, 4,510,036, Cl. 204-425.000.

Kondo, Isao: *See*—
Kuriyama, Katsumi; Kondo, Isao; and Misaizu, Iwao, 4,510,186, Cl. 427-381.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Aoki, Naoki, 4,509,738, Cl. 271-160.000.
Matsuzaka, Syoji; Kajiwara, Makoto; Miyoshi, Masanobu; and Yamashita, Kiyoshi, 4,510,234, Cl. 430-557.000.
Shiozawa, Takao, 4,509,737, Cl. 271-125.000.
Yamazaki, Toshinori; Nomori, Hiroyuki; Matsuzaki, Masatoshi; Shima, Tetsuo; and Myokan, Isao, 4,510,224, Cl. 430-57.000.

Konle, Robert L., to Arthur Smith Industries, Inc. Door gasket. 4,509,292, Cl. 49-499.000.

Koon, Randy G.: *See*—
Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., 4,510,404, Cl. 310-50.000.

Kopp, Richard; and Freitag, Hans-Albrecht, to Bayer Aktiengesellschaft. Process for the production of optionally cellular polyurethanes. 4,510,269, Cl. 521-166.000.

Koppe, Robert G. Pouch forming and filling apparatus. 4,509,313, Cl. 53-570.000.

Korsgen, Hans H.; and Weller, Wolfgang, to Coathylene S.A. Process for the production of polypropylene powders. 4,510,305, Cl. 528-494.000.

Koschnick, Gary A.: *See*—
Cooper, Merton G.; Kerns, William R.; Filley, Daniel E.; and Koschnick, Gary A., 4,509,549, Cl. 137-327.000.

Kosner, Jerry J., to Bell & Howell Company. Variable width envelope feeder. 4,509,735, Cl. 271-11.000.

Kotobuki & Co.: *See*—
Hori, Jiro, 4,509,876, Cl. 401-217.000.

Koumura, Takashi: *See*—
Hasegawa, Shumpei; Otobe, Yutaka; Kishi, Noriyuki; and Koumura, Takashi, 4,509,489, Cl. 123-489.000.

Kowa Shoji, Ltd.: *See*—
Kuroda, Takeshi, 4,509,408, Cl. 92-2.000.

Kozponti Valto: *See*—
Zimber, Bela; and Molnar, Imre, 4,509,330, Cl. 60-537.000.

Krajcsovics, Ferenc: *See*—
Boday, Otto ; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,509,434, Cl. 110-238.000.

Kramann, Bernhard; and Rust, Meinhard, to Sterimed Gesellschaft fur medizinischen Bedarf mbH. Catheter for catheterizing central veins. 4,509,945, Cl. 604-164.000.

Kramer, Wolfgang: *See*—
Pflugbeil, Wolf-Dietrich; and Kramer, Wolfgang, 4,510,314, Cl. 548-262.000.

Krappel, Alfred: *See*—
Minner, Willy; Krappel, Alfred; and Guggenmos, Johannes, 4,509,482, Cl. 123-418.000.

Krause, Hans-Peter: *See*—
Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, 4,510,156, Cl. 514-415.000.

Krauss-Maffei Aktiengesellschaft: *See*—
Bauer, Adolf, 4,510,120, Cl. 422-133.000.
Schwarzler, Peter, 4,510,421, Cl. 318-135.000.

Kremser, Harald H.: *See*—
Barth, Walter; and Kremser, Harald H., 4,509,245, Cl. 29-525.000.

Kreuder, Hans-Joachim: *See*—
Meyer, Rolf-Volker; Kreuder, Hans-Joachim; and Hohl, Erwin, 4,510,288, Cl. 525-111.000.

Kriegner, Othmar, to Voest-Alpine Aktiengesellschaft. Method of and arrangement for, recovering the sensible heat of a continuously cast strand. 4,509,582, Cl. 164-486.000.

Kristofek, Paul J., to McGraw-Edison Company. Lamp and filter mounting assembly. 4,510,559, Cl. 362-269.000.

Krohn, Hellmut: *See*—
Solleder, Friedrich; Krohn, Hellmut; Burckhardt, Manfred; and Brugger, Franz, 4,509,802, Cl. 303-110.000.

Krowl, William G., to Chrysler Corporation. Urethane dies. 4,509,358, Cl. 72-476.000.

Kruka, Vitold R.; Kipp, Robert M.; and Cadena, Edward R., to Shell Oil Company. Hydrophone cable decoupler. 4,510,588, Cl. 367-165.000.

Kubach, Hans, to Robert Bosch GmbH. Pressure control valve. 4,509,715, Cl. 251-138.000.

Kubiatowicz, David O.: *See*—
Windorski, David C.; and Kubiatowicz, David O., 4,509,506, Cl. 128-1.200.

Kubo, Yoichiro; Kohtaki, Takaaki; and Oura, Kiyomori, to Nippon Zenn Co. Ltd. Process for hydrogenating conjugated diene polymers. 4,510,293, Cl. 525-338.000.

Kubota, Hitoshi, to Nissan Motor Co., Ltd. Brake pressure control valve of a double piping system. 4,509,800, Cl. 303-6.00C.

Kubota Ltd.: *See*—
Bando, Niro; Kurohara, Kazuaki; Fujima, Yasuo; Ikeda, Fumihiro; Usiro, Kenzo; and Ogasawara, Hiroyuki, 4,509,614, Cl. 180-273.000.

Kudo, Katsutaka: *See*—
Mori, Chuzo; Watanabe, Jun; and Kudo, Katsutaka, 4,509,397, Cl. 83-453.000.

Kuehler, Christopher W., to Chevron Research Company. Coal liquefaction using vacuum distillation and an external residuum feed. 4,510,038, Cl. 208-10.000.

Kuehnle, Manfred R.; Martinez, Ferdinand; Runyan, I. V.; and Barry, Carol M. F., to Coulter Systems Corporation. Multicolor electrophotographic imaging process. 4,510,223, Cl. 430-44.000.

Kuehnle, Manfred R.; and Martinez, Ferdinand, to Coulter Systems Corporation. Electrophotographic method for producing an opaque print. 4,510,225, Cl. 430-126.000.

Kuhn, Falk, to Roser, Erich. Oil lubrication system, especially for knitting machines. 4,509,618, Cl. 184-6.400.

Kulick, John M. Watch crystal cover and package assembly. 4,509,644, Cl. 206-461.000.

Kuljis, Zoran; and Lareau, John P., to Combustion Engineering, Inc. Near surface inspection system. 4,509,369, Cl. 73-628.000.

Kull, Hermann; Wessel, Wolf; and Stumpp, Gerhard, to Robert Bosch GmbH. Safety arrangement for an internal combustion engine. 4,509,480, Cl. 123-359.000.

Kumar, Ananda H.; and Schwartz, Bernard, to International Business Machines Corporation. Method for palladium activating molybdenum metallized features on a ceramic substrate. 4,510,000, Cl. 156-89.000.

Kump, Donald H.: *See*—
Walz, George A.; and Kump, Donald H., 4,510,583, Cl. 364-900.000.

Kunita, Masao: *See*—
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; Masuda, Katuya; Moriya, Takashi; and Oosawa, Seiichi, 4,509,421, Cl. 101-93.040.
Kuo, Chuan-Ming. Cutting torch. 4,509,689, Cl. 239-407.000.
Kuo, Han C.: *See*—
Gopikanth, Mysore L.; Kuo, Han C.; and Schlaikjer, Carl R., 4,510,220, Cl. 429-225.000.
Kuperman, Gilbert G.; and Bodine, Fred R., to United States of America, Air Force. Stereoscopic video imagery generation. 4,510,525, Cl. 358-88.000.
Kuramochi, Kojiro: *See*—
Sumiya, Koji; and Kuramochi, Kojiro, 4,509,391, Cl. 74-869.000.
Kuraray Company, Ltd.: *See*—
Matsubara, Yoshiharu; Hirashima, Tsuneaki; and Nishiguchi, Ikuzo, 4,510,025, Cl. 204-78.000.
Matsumoto, Mitsuo; Yoshimura, Noriaki; and Tamura, Masuhiko, 4,510,332, Cl. 568-454.000.
Yoshimura, Noriaki; and Tamura, Masuhiko, 4,510,331, Cl. 568-450.000.
Kurata, Masami; Inui, Toshiharu; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Two-color copying machine. 4,510,523, Cl. 358-75.000.
Kurata, Masami, to Fuji Xerox Co., Ltd. Color picture reading system. 4,510,524, Cl. 358-80.000.
Kurfman, Virgil B., to Dow Chemical Company, The. Duplex metal alloy/polymer compositions. 4,510,208, Cl. 428-624.000.
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; Masuda, Katuya; Moriya, Takashi; and Oosawa, Seiichi, to Citizen Watch Company Limited. Printer head for a dot line printer. 4,509,421, Cl. 101-93.040.
Kuriyama, Katsumi; Kondo, Isao; and Misaizu, Iwao, to Dainichi Seika Color & Chemicals Mfg. Co., Ltd.; and Ukima Colour & Chemicals Mfg. Co., Ltd. Process for preparing a porous sheet material. 4,510,186, Cl. 427-381.000.
Kuroda, Takeshi, to Kowa Shoji, Ltd. Fluid pressure actuator. 4,509,408, Cl. 92-2.000.
Kurohara, Kazuaki: *See*—
Bando, Niro; Kurohara, Kazuaki; Fujima, Yasuo; Ikeda, Fumihiro; Usiro, Kenzo; and Ogasawara, Hiroyuki, 4,509,614, Cl. 180-273.000.
Kurokawa, Koji, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for stacking letter mail. 4,509,739, Cl. 271-176.000.
Kurokawa, Zenkichi: *See*—
Nashimoto, Junichi; and Kurokawa, Zenkichi, 4,509,893, Cl. 414-280.000.
Kust, Cyril; and Bhalla, Prithvi, to American Cyanamid Company. Plant growth regulating compositions. 4,509,973, Cl. 71-92.000.
Kusuda, Mikio: *See*—
Ohshima, Shohzo; Kusuda, Mikio; and Isoya, Toshiro, 4,510,034, Cl. 204-290.00F.
Kuwazuru, Yasumitsu: *See*—
Takenaka, Akira; Shimasaki, Keiichi; and Kuwazuru, Yasumitsu, 4,509,803, Cl. 308-5.00R.
Kuzumoto, Masaki: *See*—
Yagi, Shigenori; Kuzumoto, Masaki; Tanaka, Masaaki; and Ogawa, Shuji, 4,510,606, Cl. 372-25.000.
Kvaternik, Joseph. Miniature circuit processing devices and matrix test heads for use therein. 4,510,445, Cl. 324-158.00F.
La Calhene Societe Anonyme: *See*—
Mercey, Gilles; Picard, Claude; and Saint-Martin, Bernard, 4,509,505, Cl. 128-1.00B.
Labavia S.G.E.: *See*—
Marandet, Andre , 4,509,623, Cl. 192-4.00A.
Lacrex Brevetti S.A.: *See*—
Pasbrig, Max, 4,509,469, Cl. 123-154.000.
Ladouceur, Lawrence C., to Rockwell International Corporation. Manufacturing apparatus for laminate structure. 4,509,256, Cl. 29-802.000.
Laforest Le Boudec, Guy, to Laforest, S.A. Devices for producing ignition sparks when falling on a pyrophoric flint. 4,509,916, Cl. 431-273.000.
Laforest, S.A.: *See*—
Laforest Le Boudec, Guy, 4,509,916, Cl. 431-273.000.
Lagow, Richard J.; and Persico, Daniel F. Perfluorinated branched ether compounds. 4,510,335, Cl. 568-683.000.
Laitram Corporation, The: *See*—
Lapeyre, James M., 4,509,617, Cl. 182-93.000.
LaMattina, John L.; and Lipinski, Christopher A., to Pfizer Inc. 2-Guanidino-4-heteroarylthiazoles. 4,510,313, Cl. 548-194.000.
Lambert, Clifford L., Jr.; and Duranleau, Roger G., to Texaco Inc. Process for the preparation of formylalkanolamines. 4,510,326, Cl. 564-132.000.
Lambert, Gerard L.; and Saffer, Gary M., to Mattel, Inc. Powered toy vehicle with pivotable axle mounting. 4,509,931, Cl. 446-462.000.
Lamirande, Donald J.: *See*—
Griffin, Michael D.; Gural, John A.; and Lamirande, Donald J., 4,509,720, Cl. 251-308.000.
Lamontagne, Claude: *See*—
Resneau, Jean C.; Puyhaubert, Jean; Da Silva, Evelyne; and Lamontagne, Claude, 4,510,470, Cl. 333-142.000.
Lamy, Jean-Michel; and Boutant, Jean-Jacques, to Regie Nationale des Usines Renault. Manual gearbox ratio change control device. 4,509,384, Cl. 74-473.00R.
Landis, Phillip S.: *See*—
Braid, Milton; and Landis, Phillip S., 4,509,956, Cl. 44-68.000.
Landsberger, Kurt. Inflatable implement handle. 4,509,228, Cl. 16-114.00R.
Lane, Michael S.: *See*—
Costello, Peter E.; Fossett, Lawrence D.; Lane, Michael S.; Quin, Terrence T.; and Smith, Nicholas K., 4,510,351, Cl. 179-27.00D.
Langdon, William K., to BASF Wyandotte Corporation. Method for purifying reaction products containing higher-alkyl glycosides. 4,510,306, Cl. 536-127.000.
Langen, Marinus J. M.; and Guttinger, Peter, to H. J. Langen & Sons Limited. Load orienting receptacles for carton loading machines. 4,509,309, Cl. 53-142.000.
Langen, Marinus J. M.; Strauss, Edgars H., deceased; and by Strauss, Leida, administrator. Handle for carrier bag and method of making handled carrier bag. 4,510,620, Cl. 383-14.000.
Langenegger, Henrique: *See*—
Breitman, Daniel S.; and Langenegger, Henrique, 4,509,962, Cl. 55-306.000.
Lanier Business Products, Inc.: *See*—
Young, Jeffrey E., 4,510,539, Cl. 360-92.000.
Lapeyre, James M., to Laitram Corporation, The. Stair having alternate half treads. 4,509,617, Cl. 182-93.000.
L'Archer, Germain. Woodworking press. 4,509,572, Cl. 144-84.000.
Lareau, John P.: *See*—
Kuljis, Zoran; and Lareau, John P., 4,509,369, Cl. 73-628.000.
Larsen, Donald R. Water sprinkling apparatus. 4,509,686, Cl. 239-239.000.
Larson, David B.: *See*—
Earl, Robert B.; Larson, David B.; and Nguyen, Huy X., 4,509,598, Cl. 166-308.000.
Larson, Michael J.: *See*—
Sanders, Albert J., Jr.; and Larson, Michael J., 4,509,981, Cl. 106-3.000.
Lasar Manufacturing Co.: *See*—
Lasar, William, III, 4,509,860, Cl. 366-99.000.
Lasar, William, III, to Lasar Manufacturing Co. Dual action mixer. 4,509,860, Cl. 366-99.000.
Laskowski, Gordon J., to United States of America, Navy. Bridge crane hoist stop system. 4,509,431, Cl. 104-250.000.
Lasley, Robert A. Portable and collapsible hyperbaric chamber assembly. 4,509,513, Cl. 128-202.120.
Lassally, Gunter M., to Amstelstaal B.V. Operating mechanism for a high-pressure valve having a valve passage of relatively small width. 4,509,721, Cl. 251-335.00B.
Last, Anthony J. Surface vibration absorbing strap. 4,509,750, Cl. 273-29.00A.
Lather, Dieter: *See*—
Fischer, Gert; and Lather, Dieter, 4,509,815, Cl. 339-147.00P.
Latsch, Reinhard: *See*—
Breuser, Erich; Grozinger, Wilhelm; Latsch, Reinhard; and Wurfel, Gernot, 4,509,476, Cl. 123-266.000.
Lattin, Gary A., to Medtronic, Inc. Self-cleaning drug delivery catheter and storage bladder. 4,509,947, Cl. 604-266.000.
Lauf, Robert J., to United States of America, Energy. Process for fabricating ZnO-based varistors. 4,510,112, Cl. 264-234.000.
Laughon, Thomas C.: *See*—
Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., 4,510,404, Cl. 310-50.000.
Laurel Bank Machine Co., Ltd.: *See*—
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.
Watanabe, Kenkichi; and Furuya, Katusuke, 4,509,542, Cl. 133-8.00A.
Lautenschlager, Karl, Jr., to Karl Lautenschlager KG Mobelbeschlagfabrik. Joint fastener for the assembly of moldings. 4,509,882, Cl. 403-402.000.
Laval, Michel: *See*—
Allemand, Robert; and Laval, Michel, 4,510,394, Cl. 250-483.100.
Lavochkin, Ronald B., to IMC Magnetics Corp. Heat dissipator for semiconductor devices. 4,509,839, Cl. 357-81.000.
Lavoie, Gerald H.: *See*—
Caslavsky, Jaroslav L.; Lavoie, Gerald H.; Earle, William H.; and Viechnicki, Dennis J., 4,510,609, Cl. 373-110.000.
LaVoie, Marvin E.: *See*—
McClanahan, John B.; LaVoie, Marvin E.; Kelsoe, Wayne E.; and Wrobel, James, 4,510,482, Cl. 338-24.000.
Lawrence Medical Systems, Inc.: *See*—
Barnes, Stephen R.; Tarbox, Gary L.; Huntsman, Lee L.; and McLaren, Barry D., 4,509,526, Cl. 128-663.000.
Lawson, A. David. Personalized laminated display. 4,510,006, Cl. 156-235.000.
La Zare, Howard T. Multi format shutterless motion picture inspection projector. 4,509,836, Cl. 352-200.000.
Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull. Optoelectronic device for reading data contained on a magnetic medium. 4,510,544, Cl. 360-114.000.
Lea Manufacturing Company, The: *See*—
McGowan, William M., 4,510,018, Cl. 156-666.000.
LeBrun, Thomas Q.; Torkelson, John; Dempster, Roy E.; and Van Tyne, Richard G., to BancTec, Incorporated. Document processing system. 4,510,619, Cl. 382-57.000.
Lechelt, Wayne M.: *See*—
Boyce, William C.; Wittekind, Warren D.; Howard, Leroy C.; Hall, Thomas E.; and Lechelt, Wayne M., 4,510,573, Cl. 364-498.000.
Lechtken, Peter; Nuerrenbach, Axel; and Schole, Juergen, to BASF Aktiengesellschaft. Growth-promoting feed and drink. 4,510,146, Cl. 514-312.000.

LeClercq, Marion J. Support undergarment for penile prothesis implant patient. 4,509,512, Cl. 128-160.000.
Lectron Products, Inc.: *See*—
Michaels, Paul A.; and Kaleita, David L., 4,510,426, Cl. 318-565.000.
Ledvina, Timothy J.; and Mead, Robert H., to Borg-Warner Corporation. Power transmission chain. 4,509,323, Cl. 59-8.000.
Ledvina, Timothy J.; and Mead, Robert H., to Borg-Warner Corporation. Power transmission chain. 4,509,937, Cl. 474-213.000.
Lee, Kang I.; and Jopson, Harriet, to GTE Laboratories, Inc. Electrically conductive blends of an acetylene polymer and an elastomer having low unsaturation. 4,510,075, Cl. 252-500.000.
Lee, Kang I.; and Jopson, Harriet, to GTE Laboratories, Inc. Electrically conductive polymer blends of an acetylene polymer and a triblock thermoplastic elastomer. 4,510,076, Cl. 252-500.000.
Lee, Lester H.; Johnson, Kathryn M.; and Jones, Richard W., to General Electric Company. Method for fabricating a steam turbine diaphragm. 4,509,238, Cl. 29-156.80R.
Lee, Man S.: *See*—
Chang, Chieh; and Lee, Man S., 4,510,466, Cl. 332-31.00R.
Chang, Chieh; and Lee, Man S., 4,510,467, Cl. 332-31.00R.
Lee, Norman E., to United States of America, Energy. Rotor for centrifugal fast analyzers. 4,509,856, Cl. 356-246.000.
Lee, Robert G. H.: *See*—
Savard, Guy; and Lee, Robert G. H., 4,509,595, Cl. 166-261.000.
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Loszewski, Raymond C., to Avco Corporation. Bis-maleimide-epoxy compositions and prepregs. 4,510,272, Cl. 523-400.000.
Lotter, Karl. Plug connector for dil components. 4,509,812, Cl. 339-75.00M.
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Maag Gear-Wheel & Machine Company Limited: *See—*
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Mack, Audrey: *See—*
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Maeba, Yukio, to Murata Manufacturing Co., Ltd. Stabilizing power-supply circuit. 4,510,562, Cl. 363-19.000.
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Maeda, Senichi. Elastic covered yarn and method and apparatus for producing the same. 4,509,320, Cl. 57-225.000.
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Mahan, Douglas P. Horizontal axis tumbler type microwave drying mechanism. 4,510,361, Cl. 219-10.55A.
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Mains, Gilbert L., Jr. Tube bundle cleaning apparatus. 4,509,544, Cl. 134-144.000.
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Manciocchi, William D., Jr., to Manciocchi, William D., Jr.; Allison, Lawrence S.; Griffin, Robert F., Jr.; and Hall, Steven J. Antiseptic toothpick. 4,509,541, Cl. 132-90.000.
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Marra, Gerardo J. Tool for quick removal of knock-out plugs. 4,509,242, Cl. 29-267.000.
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Martin, Edward T., to Axis Products Limited. Fluid handling device. 4,509,411, Cl. 98-34.500.
Martin, Michael L., to Martin Research & Development. Arm wrestling apparatus. 4,509,747, Cl. 272-136.000.
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Matsubara, Yoshiharu; Hirashima, Tsuneaki; and Nishiguchi, Ikuzo, to Kuraray Company, Ltd. Method for production of 3-substituted-2,2-dimethylbicyclo[2.2.1]heptan-5-ols and esters thereof. 4,510,025, Cl. 204-78.000.

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Matsumura, Michio; Inoue, Takao; and Arai, Toshihiro, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Heat-foamable olefinic resin composition and process for production of olefinic resin foam from said composition. 4,510,031, Cl. 204-159.200.

Matsuoka, Hiroo; Matsuoka, Seiichi; Yamabe, Tsunekichi; Fujie, Hirokazu; Mori, Kenji; Tamura, Kouji; Yamada, Masatoshi; and Furuta, Akio, to JGC Corporation. Process for the preparation of a catalyst for the synthesis of methane. 4,510,264, Cl. 502-328.000.

Matsuoka, Seiichi: *See—*
Matsuoka, Hiroo; Matsuoka, Seiichi; Yamabe, Tsunekichi; Fujie, Hirokazu; Mori, Kenji; Tamura, Kouji; Yamada, Masatoshi; and Furuta, Akio, 4,510,264, Cl. 502-328.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Honjo, Katsuhiko; Taki, Hiromitsu; and Sato, Noriya, 4,510,179, Cl. 427-96.000.
Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, 4,510,089, Cl. 260-396.00N.
Inaba, Ritsuo; and Wasa, Kiyotaka, 4,510,443, Cl. 324-120.000.
Irikura, Tsutomu, 4,510,554, Cl. 361-433.000.
Maruyama, Teruo; and Yamauchi, Shinya, 4,509,905, Cl. 418-75.000.
Tanabe, Kenzo; and Shimizu, Keiichiro, 4,510,517, Cl. 357-34.000.

Matsushita Electric Works, Ltd.: *See—*
Kakumoto, Hiromi; Ihara, Shinji; Iguchi, Yoji; and Miyata, Makoto, 4,509,259, Cl. 30-34.100.

Matsushita Electronics Corporation: *See—*
Ogata, Yoshiro; Yamazaki, Haruo; and Akutsu, Hidezoh, 4,510,415, Cl. 313-493.000.

Matsushita, Shigetada; and Doi, Yuji, to Fuji Electric Co., Ltd.; and Nippon Steel Corporation. Flow meter for a two-phase fluid. 4,509,366, Cl. 73-861.020.

Matsushita, Yoshihiro: *See—*
Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, 4,510,138, Cl. 514-206.000.

Matsuzaka, Syoji; Kajiwara, Makoto; Miyoshi, Masanobu; and Yamashita, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic emulsion. 4,510,234, Cl. 430-557.000.

Matsuzaki, Masatoshi: *See—*
Yamazaki, Toshinori; Nomori, Hiroyuki; Matsuzaki, Masatoshi; Shima, Tetsuo; and Myokan, Isao, 4,510,224, Cl. 430-57.000.

Mattel, Inc.: *See—*
Girton, Virgil M.; Marason, Gabriel, Jr.; and Wang, Lawrence C., 4,510,590, Cl. 369-63.000.
Lambert, Gerard L.; and Saffer, Gary M., 4,509,931, Cl. 446-462.000.
Welman, Cornelis M., 4,510,385, Cl. 250-203.00R.

Mattingly, William R., Jr., to Matrix Science Corporation. Electrical connector shell assembly with continuous annular seal. 4,509,814, Cl. 339-93.00R.

Mauch, Gunter: *See—*
Schutz, Karl H.; and Mauch, Gunter, 4,509,364, Cl. 73-118.000.

Maurer, Albrecht: *See—*
Bottcher, Wolfgang; Juttner, Heinz; Maurer, Albrecht; and Stutzinger, Ferdinand, 4,509,295, Cl. 51-49.000.

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See—*
Neher, Erwin, 4,510,442, Cl. 324-99.00R.

May, Francis A.; and Patts, Larry, to Consolidation Coal Company. Trolley pole. 4,510,352, Cl. 191-64.000.

Mayer, Albert: *See—*
Pflaum, August; and Mayer, Albert, 4,509,733, Cl. 270-41.000.

Mayer, Ferdy. RF Absorptive line with controlled low pass cut-off frequency. 4,510,468, Cl. 333-12.000.

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Vahratian, Adam; Maynard, Roosevelt, Jr.; Croswhite, Howard L.; and Liang, Po-Lung, 4,509,389, Cl. 74-695.000.

Mayo, Franklin W.; and Smither, Miles A., to Geosource Inc. Electronic filter. 4,510,585, Cl. 367-43.000.

Mazda Motor Company: *See—*
Oishi, Masatoshi, 4,509,355, Cl. 72-325.000.

Mazda Motor Corporation: *See—*
Nagamoto, Yoshihito; and Ozeki, Sadao, 4,509,790, Cl. 296-204.000.

Mazzoni, Aldo, to Costruzioni Meccaniche G. Mazzoni S.p.A. High efficiency, fast extruders for extruding and refining soap and detergents. 4,510,110, Cl. 264-176.00R.

McCarroll, John J.: *See—*
Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., 4,510,071, Cl. 252-373.000.

McClanahan, John B.; LaVoie, Marvin E.; Kelsoe, Wayne E.; and Wrobel, James, to Tektronix, Inc. Protective circuit for electronic test probes. 4,510,482, Cl. 338-24.000.

McCombs, Norman R., to Greene & Kellogg, Inc. Modular industrial oxygen concentrator. 4,509,959, Cl. 55-161.000.

McCormick & Company, Inc.: *See—*
Staley, Lorie L.; and Pelaez, Joaquin, 4,510,164, Cl. 426-331.000.

McCormick, David D.: *See—*
Whittenburg, Stephen L.; McCormick, David D.; Tweed, William J.; Ozgunay, A. Aykut; and Williams, James T., 4,509,412, Cl. 99-331.000.

McDonnell Douglas Corporation: *See—*
Barajas, Felix, 4,509,994, Cl. 148-24.000.

McFarlane, Richard H. Flow control device. 4,509,946, Cl. 604-246.000.

McGahan, Mark J. Systematic color reference. 4,509,853, Cl. 355-35.000.

McGarry, Richard A.; and Noiles, Douglas G., to United States Surgical Corporation. Apparatus for applying surgical clips. 4,509,518, Cl. 128-325.000.

McGowan, William M., to Lea Manufacturing Company, The. Solution and process for treating copper and copper alloys. 4,510,018, Cl. 156-666.000.

McGraw-Edison Company: *See—*
Kristofek, Paul J., 4,510,559, Cl. 362-269.000.

McInroy, John W.: *See—*
Chang, Philip Y.; and McInroy, John W., 4,510,567, Cl. 364-300.000.
McInturff, Joe A.; and Patterson, David W., to Lockheed Corporation. Tachometer generator indexing device. 4,509,367, Cl. 73-457.000.
McJohnson, Robert B.: *See—*
Paranjpe, Suresh C.; and McJohnson, Robert B., 4,510,503, Cl. 346-75.000.
McKee, Fount E.: *See—*
Eicher, Dean A.; and McKee, Fount E., 4,509,552, Cl. 137-557.000.
McKibben, Jerry, to Coats & Clark, Inc. Vibration damper for string musical instrument. 4,509,399, Cl. 84-216.000.
McLane, Jack E.; Schenk, Raymond L.; Rader, Robert R.; and Wirtz, John W., to Wirtz Manufacturing Company, Inc. Machine for continuously casting battery grids. 4,509,581, Cl. 164-479.000.
McLaren, Barry D.: *See—*
Barnes, Stephen R.; Tarbox, Gary L.; Huntsman, Lee L.; and McLaren, Barry D., 4,509,526, Cl. 128-663.000.
McLaughlin, Robert C.: *See—*
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,510,462, Cl. 331-1.00A.
McMillon, Carlos H., to Mack's Guns. Sight and scope conversion mounting. 4,509,282, Cl. 42-1.0ST.
McStravick, David M.: *See—*
Chenoweth, David V.; and McStravick, David M., 4,509,599, Cl. 166-370.000.
McTamaney, Louis S.; Delfino, Allan B.; and Bisbee, Gary W., to FMC Corporation. Method and apparatus for detecting problems in sucker-rod well pumps. 4,509,901, Cl. 417-18.000.
McVicker, Gary B., to Exxon Research and Engineering Company. Magnesium group VIII transition metal carbonyl complex. 4,510,096, Cl. 260-439.00R.
Mead Corporation, The: *See—*
Paranjpe, Suresh C.; and McJohnson, Robert B., 4,510,503, Cl. 346-75.000.
Mead, Robert H.: *See—*
Ledvina, Timothy J.; and Mead, Robert H., 4,509,323, Cl. 59-8.000.
Ledvina, Timothy J.; and Mead, Robert H., 4,509,937, Cl. 474-213.000.
Meade, Steven L.; Morris, Merle E.; and Rice, Lawrence M., to GTE Products Corporation. Filament support for tubular lamp. 4,510,416, Cl. 313-579.000.
Meade, Steven L.: *See—*
Morris, Merle E.; Meade, Steven L.; and Rice, Lawrence M., 4,509,928, Cl. 445-27.000.
Mecaniques de Mulhouse Societe Alsacienne de Constructions: *See—*
Gosciniak, Guy; Juillard, Yves; Menissier, Pierre; and Moessinger, Albert, 4,509,563, Cl. 139-443.000.
Medical College of Wisconsin, Inc., The: *See—*
Brown, Charles E., 4,510,450, Cl. 324-321.000.
Medline AB: *See—*
Brundin, Jan-Olof, 4,509,504, Cl. 128-1.00R.
Medlock, Dan. Radiator filler neck refacing tool. 4,509,394, Cl. 82-4.00R.
Medtronic, Inc.: *See—*
Lattin, Gary A., 4,509,947, Cl. 604-266.000.
Mee, William W.: *See—*
Govang, James A.; Mee, William W.; and de Gruchy, Robert S., 4,509,648, Cl. 211-70.600.
Mehada, Masashi; Yoshimura, Shozo; Yamaguchi, Kenshiro; and Iwao, Osamu, to Toyo Aluminium Kabushiki Kaisha. Composite aluminum foil for use as electrode in electrolytic capacitor. 4,510,207, Cl. 428-607.000.
Mehlan, Bernd; and Gress, Josef, to Sielaff GmbH & Co. Automatenbau Herrieden. Automatic dispensing machine having a cooling unit. 4,509,339, Cl. 62-450.000.
Mehta, Aspy K., to Union Carbide Corp. Oiled, electrically conductive carbon black. 4,510,078, Cl. 252-510.000.
Meier, Walter: *See—*
Jacobsen, Jan, 4,509,832, Cl. 350-420.000.
Meiji Seika Kaisha Ltd.: *See—*
Minowa, Nobuto; Fukatsu, Shunzo; Niida, Taro; and Mase, Sadaaki, 4,510,102, Cl. 260-941.000.
Meinan Machinery Works, Inc.: *See—*
Takagi, Yukio, 4,510,009, Cl. 156-353.000.
Meiring, Willem J., to Tobacco Research & Development Institute Limited. Weighbelt apparatus. 4,509,609, Cl. 177-1.000.
Meldrum, Kent J. Wrist or armband for holding camera. 4,509,667, Cl. 224-250.000.
Melinat, Wolfgang: *See—*
Baynes, Gene P.; and Melinat, Wolfgang, 4,509,619, Cl. 188-73.390.
Melocik, Kurt B., to Caterpillar Tractor Co. Pressure reducing valve for dead engine lowering. 4,509,406, Cl. 91-453.000.
Mena, Walter M.: *See—*
Cooper, Ralph M.; and Mena, Walter M., 4,509,710, Cl. 248-73.000.
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, to Celamerck GmbH & Co. KG. N-Pteridinyl-ureas. 4,509,972, Cl. 71-92.000.
Menissier, Pierre: *See—*
Gosciniak, Guy; Juillard, Yves; Menissier, Pierre; and Moessinger, Albert, 4,509,563, Cl. 139-443.000.
Menlove, Howard O.: *See—*
Phillips, John R.; Halbig, James K.; Menlove, Howard O.; and Klosterbuer, Shirley F., 4,510,117, Cl. 376-257.000.
Mentzell Electric Co., Inc.: *See—*
Mentzell, Walter J.; and Ganoe, Oscar L., 4,509,377, Cl. 73-862.560.
Mentzell, Walter J.; and Ganoe, Oscar L., to Mentzell Electric Co., Inc. Load testing. 4,509,377, Cl. 73-862.560.
Mercey, Gilles; Picard, Claude; and Saint-Martin, Bernard, to La Calhene Societe Anonyme. Isolator for confining and transporting human beings in a sterile atmosphere. 4,509,505, Cl. 128-1.00B.
Merchant, Donald K., to Airpax Corporation. PC-board mounted thermal breaker. 4,510,479, Cl. 337-91.000.
Mercier, Marc: *See—*
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, 4,510,255, Cl. 502-10.000.
Merck & Co., Inc.: *See—*
Blacklock, Thomas J.; and Shuman, Richard F., 4,510,083, Cl. 260-112.50R.
Blaine, Edward H.; Cragoe, Edward J., Jr.; Hirschmann, Ralph F.; Nancarrow, John F., deceased; Nancarrow, Elisabeth M., executrix; and Tobert, Jonathan A., 4,510,322, Cl. 514-255.000.
Smith, Robert L.; and Graham, Samuel L., 4,510,155, Cl. 514-276.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Bernhard, Horst, 4,509,988, Cl. 106-308.00R.
Eidenschink, Rudolf; Haas, Gunther; Pohl, Ludwig; Romer, Michael; Scheuble, Bernhard; and Weber, Georg, 4,510,069, Cl. 252-299.610.
Mercz, Jeno: *See—*
Bar, Vilmos; Boszormenyi, Jozsef; Richter, Peter; Mercz, Jeno; and Rozsnyai, Tamas, 4,510,147, Cl. 514-314.000.
Merritt, Francis L.; and Taylor, Charles H., to United States of America, Air Force. Small cartridge heater. 4,510,377, Cl. 219-550.000.
Mesa Technology: *See—*
Barber, Larry J., 4,510,017, Cl. 156-651.000.
Messer Griesheim GmbH: *See—*
Geber, Hans, 4,509,977, Cl. 75-59.000.
Messerschmitt-Boelkow-Blohm GmbH: *See—*
Dettfurth, Karl; and Dettfurth, Bernd, 4,509,308, Cl. 52-787.000.
Mestetsky, Thomas: *See—*
Sak, Dennis A.; and Mestetsky, Thomas, 4,510,621, Cl. 383-89.000.
Methanol Chemie Nederland V.o.F.: *See—*
Hoetjer, Jan J., 4,510,278, Cl. 524-14.000.
Metrawatt GmbH: *See—*
Haussel, Werner; Roppelt, Gunter; and Kindermann, Robert, 4,510,444, Cl. 324-121.00R.
Metropolitan Wire Corporation: *See—*
Welsch, John H.; Chapko, John J.; and Carver, Robert J., 4,509,805, Cl. 312-210.000.
Meyer, Gunter: *See—*
Glembin, Dirk; Huhn, Kurt; Meyer, Gunter; and Thallmeier, Manfred, 4,510,334, Cl. 568-643.000.
Meyer, Horst: *See—*
Wehinger, Egbert; Meyer, Horst; Bossert, Friedrich; Vater, Wulf; Towart, Robertson; Stoepel, Kurt; and Kazda, Stanislay, 4,510,310, Cl. 546-321.000.
Meyer, Rolf-Volker; Kreuder, Hans-Joachim; and Hohl, Erwin, to Bayer Aktiengesellschaft. Cyclic amidines, a process for their production and their use as catalysts in the hardening of epoxide resins. 4,510,288, Cl. 525-111.000.
Meyer, Willy; and Fury, Werner, to Ciba-Geigy Corporation. Phenyl sulfonamides. 4,510,325, Cl. 564-89.000.
Meyes, Peter, to Sandoz Ltd. Insection compositions containing quinalphos and thiometon. 4,510,137, Cl. 514-80.000.
Meynell Valves Limited: *See—*
Bendall, Brian; and Flannery, Stephen W., 4,509,677, Cl. 236-122.000.
Micaelli, Alain: *See—*
Guittet, Jack; Marchal, Paul; Micaelli, Alain; and Vertut, Jean, 4,510,574, Cl. 364-513.000.
Michaels, Paul A.; and Kaleita, David L., to Lectron Products, Inc. Memory power seat controller. 4,510,426, Cl. 318-565.000.
Michalak, Stanislaw; and Hermanns, Bernd, to Apparatebau Rothemuhle Brandt & Kritzler GmbH. Heat-transferring elements for regenerative heat exchange in gas-gas fluidized bed heat exchangers. 4,509,584, Cl. 165-10.000.
Michel, Gudrun E.: *See—*
Boehlke, Horst R. E.; Loschen, Gerriet K. H.; Michel, Gudrun E.; and Muller, Bernd, 4,510,323, Cl. 514-530.000.
Michele, Andres: *See—*
Simone, Pregermain; Henri, Charcosset; and Michele, Andres, 4,510,039, Cl. 208-10.000.
Mico Datensysteme GmbH: *See—*
Walter, Hans-Jurgen, 4,510,382, Cl. 235-380.000.
Micro Plastics Inc.: *See—*
Hill, Royce W., 4,509,890, Cl. 411-337.000.
Microdynamics, Inc.: *See—*
Martell, Charles R.; Leslie, Elmer N.; and Treadwell, Stephen S., 4,509,443, Cl. 112-262.100.
Mid-West Automation Inc.: *See—*
Eitzinger, Robert, 4,509,646, Cl. 209-573.000.
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Finkbeiner, Ernest, 4,510,478, Cl. 336-198.000.
Miele, Heinrich: *See—*
Tonnius, Dietrich; Weiss, Wolfgang; Orth, Winfried; Miele, Heinrich; and Pastorek, Emmerich, 4,510,090, Cl. 260-396.00R.
Miisho, Kazuyuki: *See—*
Nagumo, Shinichi; Ofuji, Hiromichi; and Miisho, Kazuyuki, 4,509,481, Cl. 123-407.000.
Milavec, Johann: *See—*
Furrer, Andreas; and Milavec, Johann, 4,510,457, Cl. 330-10.000.

Milberger, Lionel J.; and Bridges, Charles D., to Vetco Offshore, Inc. Mudline casing hanger assembly. 4,509,594, Cl. 166-208.000.
Milbright, Arnold M.: *See—*
Randle, Ronald E.; and Milbright, Arnold M., 4,509,303, Cl. 52-98.000.
Miles Laboratories, Inc.: *See—*
Johnson, Leighton C., deceased, 4,509,941, Cl. 494-45.000.
Whitted, Beth E.; and Boguslawski, George, 4,510,247, Cl. 435-207.000.
Miller, Matthew S., to General Electric Company. Microwave oven rack design. 4,510,362, Cl. 219-10.55E.
Miller, Peter: *See—*
Westwood, Robert; Miller, Peter; Ager, Ian R.; and Kay, David P., 4,510,143, Cl. 514-250.000.
Miller, Richard F.; and Nicholson, Michael P., to Atlantic Richfield Company. Method for minimizing fouling of heat exchanger. 4,510,041, Cl. 208-48.0AA.
Miller, Richard L.: *See—*
Scieri, Frank; and Miller, Richard L., 4,509,641, Cl. 206-219.000.
Miller, Steven P.; and Quan, Stella S. M., to Beckman Instruments, Inc. Double antibody immunoassays of enzymes such as prostatic acid phosphatase. 4,510,239, Cl. 435-7.000.
Mills, Donald F., to Mallinckrodt, Inc. Peptide-type substrates useful in the quantitative determination of endotoxin. 4,510,241, Cl. 435-23.000.
Mimeur, Jacques: *See—*
Andrie, Philippe; and Mimeur, Jacques, 4,509,263, Cl. 33-169.00R.
Minami, Syuji: *See—*
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Minato, Shoji: *See—*
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Minner, Willy; Krappel, Alfred; and Guggenmos, Johannes, to Telefunken Electronic GmbH; and Bayerische Motoren Werke AG. Electronically controlled ignition system. 4,509,482, Cl. 123-418.000.
Minnesota Mining and Manufacturing Company: *See—*
Chang, Robert W. H., 4,510,127, Cl. 424-52.000.
Daniels, Michael P., 4,510,593, Cl. 369-283.000.
Drahnak, Timothy J., 4,510,094, Cl. 260-429.0CY.
Gutman, Gustav, 4,510,236, Cl. 430-619.000.
Haugen, Orville C., 4,509,225, Cl. 15-256.510.
Windorski, David C.; and Kubiatowicz, David O., 4,509,506, Cl. 128-1.200.
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Nakai, Masaaki; Sahara, Masayoshi; and Taniguchi, Nobuyuki, 4,509,846, Cl. 354-442.000.
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,509,842, Cl. 354-402.000.
Minowa, Nobuto; Fukatsu, Shunzo; Niida, Taro; and Mase, Sadaaki, to Meiji Seika Kaisha Ltd. Phosphinic acid esters and process for preparing the same. 4,510,102, Cl. 260-941.000.
Miranti, Joseph P., Jr.; and Brew, James K., to Dayco Corporation. Belt pulley and method of making the same. 4,509,933, Cl. 474-93.000.
Misaizu, Iwao: *See—*
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Mishuku, Toshio: *See—*
Iida, Hideyo; Kato, Koumei; Mishuku, Toshio; and Fujimaki, Yukiko, 4,510,195, Cl. 428-215.000.
Mistlberger, Bruno: *See—*
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Mita Industrial Co., Ltd.: *See—*
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Mitamura, Gen, to Seiko Instruments & Electronics Ltd. Waterproof watchcase with multi-layered resin-coated glass. 4,509,866, Cl. 368-296.000.
Mitchell, James E.: *See—*
Coffman, Randall R.; and Mitchell, James E., 4,509,275, Cl. 34-126.000.
Mitchell, Stanley W.: *See—*
Jack, James M.; and Mitchell, Stanley W., 4,509,701, Cl. 241-292.000.
Mitel Corporation: *See—*
Lewis, Conrad, 4,510,597, Cl. 370-66.000.
Mitsubishi Chemical Industries Ltd.: *See—*
Yoshida, Kenji; Nakazawa, Makoto; Shike, Toyohiko; Tomida, Masayuki; Tsuda, Masataka; and Teraoka, Toru, 4,510,154, Cl. 514-365.000.
Mitsubishi Denki K.K.: *See—*
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Mitsubishi Denki Kabushiki Kaisha: *See—*
Ito, Tetsuro, 4,510,364, Cl. 219-69.00G.
Morishita, Akira, 4,510,406, Cl. 310-99.000.
Sugimoto, Akinori; and Sugimoto, Hiroshi, 4,509,374, Cl. 73-862.170.
Yagi, Shigenori; Kuzumoto, Masaki; Tanaka, Masaaki; and Ogawa, Shuji, 4,510,606, Cl. 372-25.000.
Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,510,425, Cl. 318-484.000.
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Mitsubishi Monsanto Chemical Co., Ltd.: *See—*
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Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsubishi Rayon Co., Ltd.: *See—*
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Kishimura, Masaaki; and Arakawa, Nobuyuki, 4,510,279, Cl. 524-144.000.
Mitsuboshi Belting Ltd.: *See—*
Takano, Hiroshi; Yokoyama, Hiroshi; and Mizuno, Takahide, 4,510,113, Cl. 264-257.000.
Mitsuchi Corporation: *See—*
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Mitsui Petrochemical Industries, Ltd.: *See—*
Miura, Yoshikazu; Horimoto, Koji; and Sumida, Takenori, 4,510,273, Cl. 523-406.000.
Oda, Hidekuni; Minami, Syuji; Inoue, Hiroshi; Matsuda, Akira; and Yamamoto, Yohzoh, 4,510,303, Cl. 526-282.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Kawai, Yoichi; Gotoh, Yoshihisa; and Yokote, Sachio, 4,510,079, Cl. 252-511.000.
Miura, Kuniaki; Shibata, Akira; Yamada, Jun; and Hazama, Katashi, to Hitachi, Ltd. Signal reproducing circuit for a video tape recorder. 4,510,530, Cl. 358-314.000.
Miura, Yoshikazu; Horimoto, Koji; and Sumida, Takenori, to Mitsui Petrochemical Industries, Ltd. Thixotropic agent. 4,510,273, Cl. 523-406.000.
Miwa, Hirohide, to Fujitsu Limited. Ultrasonic medium characterization system. 4,509,524, Cl. 128-660.000.
Miyadera, Yasuo: *See—*
Hoshi, Ikuo; Arai, Masami; Yokochi, Kiyoshi; Miyadera, Yasuo; Fujioka, Atsushi; and Nakagawa, Takehisa, 4,510,008, Cl. 156-245.000.
Miyaguchi, Hiroshi; and Takeuchi, Hisaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal encoder using orthogonal transform. 4,510,578, Cl. 364-725.000.
Miyake, Masao; and Akita, Teruo, to Asahi Kasei Textiles Ltd. Heat-retaining moisture-transmissible water-resistant fabric. 4,510,194, Cl. 428-212.000.
Miyake, Takashi: *See—*
Ikemoto, Kazuhito; Terakura, Yukio; Miyake, Takashi; and Yamamoto, Takashi, 4,509,381, Cl. 74-413.000.
Miyake, Yasuo: *See—*
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Miyamoto, Shoji: *See—*
Mori, Kinji; Nohmi, Makoto; Miyamoto, Shoji; Ihara, Hirokazu; Matsumaru, Hiroshi; and Ikeda, Katuaki, 4,510,492, Cl. 340-825.050.
Miyashita, Teruo; and Yoshida, Koichi, to Nippon Light Metal Company Limited. Method for cathodic protection of aluminum material. 4,510,030, Cl. 204-147.000.
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Miyauchi, Hirotsugu: *See—*
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Matsuzaka, Syoji; Kajiwara, Makoto; Miyoshi, Masanobu; and Yamashita, Kiyoshi, 4,510,234, Cl. 430-557.000.
Mizokami, Kazunori, to Olympus Optical Company Ltd. Apparatus for controlling the emission of an electronic flash. 4,509,845, Cl. 354-420.000.
Mizokawa, Sadao; Hamada, Takuji; Tomizawa, Hiroshi; and Fushimi, Hitoshi, to Hitachi, Ltd. Loop type data highway system. 4,510,494, Cl. 340-825.050.
Mizukoshi, Katsuro: *See—*
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Mizuno, Chiaki: *See—*
Ogawa, Hiroshi; Mizuno, Chiaki; and Tamai, Yasuo, 4,510,203, Cl. 428-425.900.
Mizuno, Takahide: *See—*
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Mizushima, Kouji: *See—*
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Mizutani, Yasukazu: *See—*
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Mizzi, John V.: *See—*
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Granberg, Carl-Gustav; and Kauppi, Heikki, 4,509,413, Cl. 99-453.000.
Mobay Chemical Corporation: *See—*
Carter, Russell P., Jr., 4,510,196, Cl. 428-220.000.

Moberg, William K., to Du Pont de Nemours, E. I., and Company. Fungicidal 1,2,4-triazole derivatives. 4,510,136, Cl. 514-63.000.
Moberly, Charles W. Melt curing arylene sulfide polymers with oxygen. 4,510,297, Cl. 525-537.000.
Mobil Oil Corporation: *See*—
Braid, Milton; and Landis, Phillip S., 4,509,956, Cl. 44-68.000.
Dessau, Ralph M., 4,510,045, Cl. 208-111.000.
Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,510,043, Cl. 208-97.000.
Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,510,044, Cl. 208-111.000.
Win, Michael M., 4,509,432, Cl. 108-51.100.
Mochizuki, Zenichi: *See*—
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Mockli, Peter, to Ciba Geigy Corporation. Dye mixtures of anthraquinone dyes. 4,510,088, Cl. 260-380.000.
Modern Equipment Company: *See*—
Bauer, Gerd F., 4,509,979, Cl. 75-130.00R.
Moessinger, Albert: *See*—
Goeciniak, Guy; Juillard, Yves; Meinsier, Pierre; and Moessinger, Albert, 4,509,563, Cl. 139-443.000.
Mohr, Dieter; and Riess, Kurt, to Hoechst Aktiengesellschaft. Light-sensitive aqueous developable copying material and product by coating process thereof utilizing polysiloxane and alkylene oxide copolymer as coating aid. 4,510,227, Cl. 430-175.000.
Moller, Carl. Easel formed by two crossed tabs at back of display object. 4,509,712, Cl. 248-464.000.
Moller, Rainer: *See*—
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Mollere, Phillip D.: *See*—
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Molnar, Imre: *See*—
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Momiyama, Kikuo, to Canon Kabushiki Kaisha. Light measurement device for single lens reflex camera. 4,509,849, Cl. 354-479.000.
Money, David K.; Swift, Stephen; MacLaurin, Andrew; and Frost, John G., to Telectronics Pty. Ltd. Physiological event recognition techniques for use with a delta modulator. 4,509,529, Cl. 128-708.000.
Mongelli, Julio. Multi-coin coin chute. 4,509,630, Cl. 194-1.00G.
Monk, Kermit R. Water temperature display and flow control apparatus. 4,509,550, Cl. 137-551.000.
Monsanto Company: *See*—
Mottus, Edward H., 4,510,285, Cl. 524-401.000.
Siebert, Oliver W., 4,510,171, Cl. 427-34.000.
Wu, Wan C., 4,510,287, Cl. 525-84.000.
Montedison S.p.A.: *See*—
Chiolle, Antonio; Vecchi, Alfio; and Credali, Lino, 4,510,185, Cl. 427-222.000.
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, to International Flavors & Fragrances, Inc. Methyl substituted pinyl oxopentenes, organoleptic uses thereof and process for preparing same. 4,510,340, Cl. 568-884.000.
Mooney, J. Robert: *See*—
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Moore, John D.: *See*—
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Morgan Flotation Systems: *See*—
Rhoton, Albert L., 4,509,218, Cl. 5-450.000.
Morgan, Walter R.; Boniface, Edmund A.; and Huben, Clayton A., to United States of America, Navy. Turbine engine cold temperature starting system. 4,509,325, Cl. 60-39.141.
Mori, Chuzo; Watanabe, Jun; and Kudo, Katsutaka, to Carl Manufacturing Co., Ltd. Punch and perforation jig assembly having position maintaining feature. 4,509,397, Cl. 83-453.000.
Mori, Hisakazu: *See*—
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Mori, Kei. Solar energy collection apparatus. 4,509,500, Cl. 126-425.000.
Mori, Kei. Ornamental lighting device. 4,510,553, Cl. 362-32.000.
Mori, Kenji: *See*—
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Mori, Kenzo; Yasuda, Hyo; and Suzuki, Minoru, to Taiyo Musen Co. Ltd. Plate antenna for direction finder. 4,510,498, Cl. 343-435.000.
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Mori, Nobuhiko, to Nippon Electric Co., Ltd. Character recognition system utilizing pattern matching method. 4,510,617, Cl. 382-33.000.
Mori, Tsutomu T.; Dybdal, Robert B.; and Etcheverry, Robert D., to United States of America, Air Force. High sensitivity millimeter-wave measurement apparatus. 4,510,622, Cl. 455-67.000.
Moriguchi, Fujio: *See*—
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Moriguchi, Haruhiko; Moriguchi, Fujio; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Recording apparatus. 4,510,506, Cl. 346-76.0PH.
Moriguchi, Yutaro; Honda, Makoto; and Izawa, Akira, to Dai Nippon Insatsu Kabushiki Kaisha. Rear projection screen. 4,509,823, Cl. 350-128.000.
Morimoto, Akira: *See*—
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Morin, Rene' , to Renault Vehicules Industriels. Built-in hydraulic automatic device for advancing the injection of a diesel engine. 4,509,490, Cl. 123-502.000.
Morishita, Akira, to Mitsubishi Denki Kabushiki Kaisha. Multi-use starting device. 4,510,406, Cl. 310-99.000.
Morishita, Hajime; Akagi, Motoo; Nonogaki, Saburo; Hayashi, Nobuaki; and Uchino, Shoichi, to Hitachi, Ltd. Photosensitive composition and pattern forming process using same. 4,510,226, Cl. 430-144.000.
Morita, Seiichiro; Yuasa, Akihiko; and Arai, Takao, to Toshiba Kikai Kabushiki Kaisha. Boring machines. 4,509,236, Cl. 29-26.00A.
Moriya, Takashi: *See*—
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Moriyama, Takashi. Method of and apparatus for baring the end of sheathed multicore cable. 4,509,257, Cl. 29-825.000.
Morris, Horton H.; Whyte, John R., Jr.; Forbus, Ellen; Dentan, Catherine M.; and Collins, David R. Method of treating zeolite ores to remove discoloring impurities and improve its brightness and resulting finely ground zeolite. 4,510,254, Cl. 501-146.000.
Morris, Merle E.; Meade, Steven L.; and Rice, Lawrence M., to GTE Products Corporation. Method of making high pressure tungsten halogen lamps. 4,509,928, Cl. 445-27.000.
Morris, Merle E.: *See*—
Meade, Steven L.; Morris, Merle E.; and Rice, Lawrence M., 4,510,416, Cl. 313-579.000.
Morszeck, Dieter. Suitcase. 4,509,622, Cl. 190-119.000.
Morton, Willard. Water-steam separator. 4,509,965, Cl. 55-399.000.
Moscovich, Ivan. Puzzle with elements transferable between closed-loop paths. 4,509,756, Cl. 273-153.00S.
Moss, Lionel V. Drip or trickle irrigation. 4,509,692, Cl. 239-542.000.
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Mostek Corporation: *See*—
Dias, Donald R.; Guterman, Daniel C.; Proebsting, Robert J.; and Leuschner, Horst, 4,510,584, Cl. 365-203.000.
Motomura, Noriyuki: *See*—
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Motorola, Inc.: *See*—
Bickley, Robert H.; Bucher, Charles A.; and Yee, David M., 4,510,472, Cl. 333-262.000.
Dubois, Jerry M.; and Spanjer, Keith G., 4,510,519, Cl. 357-81.000.
Ellis, Ralph J.; Gurtler, Richard W.; and Sarma, Kalluri R., 4,510,015, Cl. 156-617.00R.
Paulson, Wayne M.; and Hughes, David W., 4,510,178, Cl. 427-94.000.
Rice, Craig W.; and Popek, Marc H., 4,510,465, Cl. 332-16.00T.
Thompson, Sharon E.; and Eastmond, Bruce C., 4,510,624, Cl. 455-223.000.
Utton, Charles G.; and Stratman, Bill D., 4,509,709, Cl. 244-118.100.
Mottus, Edward H., to Monsanto Company. Terpolymeric antitumor agent. 4,510,285, Cl. 524-401.000.
Mount, Bruce E., to Perkin-Elmer Corporation, The. Acoustical wave flowmeter with increased density capability. 4,509,372, Cl. 73-861.280.
Mouzin, Gilbert: *See*—
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Mowbray, Dorian F., to Lucas Industries Public Limited Company. Fuel system for multi-cylinder engine. 4,509,487, Cl. 123-458.000.
Moyer, Mark C., to Exxon Production Research Co. Inspection apparatus for electromagnetically detecting flaws in the wall of a pipe. 4,510,447, Cl. 324-225.000.
MTS Systems Corporation: *See*—
Petersen, Paul S., 4,509,910, Cl. 425-451.900.
Mudge, Trevor N.: *See*—
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Mueller, Hans R.: *See*—
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Mueller, Peter F.; and Caulfield, H. John, to Aerodyne Research, Inc. Method for writing holograms. 4,510,575, Cl. 364-518.000.
Mues, Volker: *See*—
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Muhle, Mike E.; Stolz, Richard J.; and Wright, Cecil W., to Exxon Research & Engineering Co. Method of finishing thermoplastic granules. 4,510,271, Cl. 523-346.000.

Muhlratzer, August: *See—*
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Mullally, Charles J.; Brown, Steven L.; Anderson, David L.; and Hitchcock, Robert F., to Sealed Power Corporation. Accumulator-dehydrator assembly for an air conditioning system. 4,509,340, Cl. 62-503.000.
Mullaly, Maxine M. Wheel chair restraint. 4,509,797, Cl. 297-466.000.
Mullane, William I., Jr., to Procter & Gamble Company, The. Apparatus for uniformly debossing and aperturing a resilient plastic web. 4,509,908, Cl. 425-290.000.
Muller, Alexander, to Arntz-Optibelt KG. Toothed belt drives. 4,509,936, Cl. 474-148.000.
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Muller, Hans, to Heidelberger Druckmaschinen AG. Folding device for web-fed rotary printing presses. 4,509,939, Cl. 493-444.000.
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Murakami, Hiroyasu: *See—*
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Murakami, Kunihiko: *See—*
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Murata, Norio; Hoshino, Mitsutoshi; and Yamakawa, Shinzo, to Nippon Telegraph & Telephone Public Corporation. Protective packaging assembly and method. 4,509,820, Cl. 350-96.210.
Murray, Robert: *See—*
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Naber, James R. Shotgun speed loader. 4,509,284, Cl. 42-87.000.
Nagamoto, Yoshihito; and Ozeki, Sadao, to Mazda Motor Corporation. Lower body structure of cab-over type automobiles. 4,509,790, Cl. 296-204.000.
Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital-to-analog converter. 4,510,486, Cl. 340-347.0DA.
Nagatani, Kazuo, to Sakurai Machine Trading Co., Ltd. Paper discharger in cylinder screen printing machine. 4,509,422, Cl. 101-118.000.
Nagumo, Shinichi; Ofuji, Hiromichi; and Miisho, Kazuyuki, to Nissan Motor Co., Ltd. Internal combustion engine with cooling system. 4,509,481, Cl. 123-407.000.
Nakagawa, Takehisa: *See—*
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Nakagome, Hideki; and Yasuda, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic refrigerator. 4,509,334, Cl. 62-6.000.
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Nakai, Kenji, to Aisan Kogyo Kabushiki Kaisha. Electromagnetic fuel injector. 4,509,693, Cl. 239-585.000.
Nakai, Masaaki; Sahara, Masayoshi; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Camera system. 4,509,846, Cl. 354-442.000.
Nakai, Ryozo; Inoue, Shigeo; and Arai, Sumio, to Kao Corporation. Wood preservative composition. 4,510,074, Cl. 252-400.230.
Nakajima, Minoru: *See—*
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Nakajima, Mutsuhiko, to Ace Pak Company Incorporated. Automatic carton packing machine. 4,509,312, Cl. 53-375.000.
Nakamura, Hiromi; Mochizuki, Zenichi; Motomura, Noriyuki; and Yamada, Sadayoshi, to Toshiba Kikai Kabushiki Kaisha. Metallic scales and method of manufacturing the same. 4,510,371, Cl. 219-121.0LM.
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Nakanishi, Koichiro; and Hiratani, Hajime, to Japan Chemical Research Co., Ltd. Process for concentrating and purifying human urinary kallikrein. 4,510,248, Cl. 435-226.000.
Nakanishi, Masayuki, to Idemitsu Kosan Co., Ltd. Refrigeration oil composition. 4,510,062, Cl. 252-45.000.
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Nardi, Dante; Catto, Alberto; Tajana, Alberto; Cazzulani, Pietro; and Graziani, Gabriele, to Recordati S.A. Therapeutically effective ω-(4-(2-pyridyl)-piperazino)-alkanoylanilides. 4,510,140, Cl. 544-360.000.
Nash, Donald R., to Allied Corporation. Small engine ignition system with spark advance. 4,509,493, Cl. 123-602.000.
Nashimoto, Junichi; and Kurokawa, Zenkichi, to Okamura Corporation. Device for storing and retrieving articles in a shelf stack. 4,509,893, Cl. 414-280.000.
Nate, Kazuo: *See—*
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National Research Development Corporation: *See—*
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National Starch and Chemical Corporation: *See—*
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NEC Corporation: *See—*
Shimogawara, Jun, 4,509,872, Cl. 400-144.100.
Tamura, Yoshiharu, 4,510,460, Cl. 330-285.000.
Neelameggham, Ramaswami; Priscu, John C.; and Toomey, Robert D., to AMAX Inc. Molten salt electrostripping cell and method for purifying molten salt electrolytes. 4,510,029, Cl. 204-130.000.
Negishi, Masataka. Device for controlling light images. 4,510,560, Cl. 362-299.000.
Negro, Guido: *See—*
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Neher, Erwin, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Measuring system for exceedingly weak currents. 4,510,442, Cl. 324-99.00R.
Nelle, Guenther, to Dr. Johannes Heidenhain GmbH. Mounting arrangement for length measuring device. 4,509,262, Cl. 33-125.00R.
Nelson, Kenneth L., to King-Seeley Thermos Co. Method of making an ice making apparatus. 4,510,114, Cl. 264-261.000.
Nelson, Stewart C., to Automatic Orange Juicer Corp., The. Surface for supporting cut fruit in fruit juicer. 4,509,418, Cl. 100-97.000.
Nemitz, Anthony R., to Arrow Display Company, Inc. Method and kit for construction of custom prototype membrane switch panel. 4,510,353, Cl. 200-5.00A.
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Nestec S.A.: *See—*
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Svengren, Anders G., 4,509,700, Cl. 241-280.000.
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Neufeld, John A. Method and apparatus for corrective osteotomy. 4,509,511, Cl. 128-92.00H.

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Newport Pharmaceuticals International: *See—*
Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, 4,510,144, Cl. 514-257.000.

Newton, Ronald O.; and Wright, Eric, to General Signal Corporation. Fluid pressure brake control systems for freight locomotives. 4,509,801, Cl. 303-8.000.

Nezat, Jerry W., to Creative Research & Development, Inc. Composition for absorbing oxygen and carrier therefore. 4,510,162, Cl. 426-124.000.

Nguyen, Huy X.: *See—*
Earl, Robert B.; Larson, David B.; and Nguyen, Huy X., 4,509,598, Cl. 166-308.000.

Niagara Blower Company: *See—*
Kals, Walter, 4,509,591, Cl. 165-122.000.

Nicholson, Michael P.: *See—*
Miller, Richard F.; and Nicholson, Michael P., 4,510,041, Cl. 208-48.0AA.

Niida, Taro: *See—*
Minowa, Nobuto; Fukatsu, Shunzo; Niida, Taro; and Mase, Sadaaki, 4,510,102, Cl. 260-941.000.

Nijman, John P., to Allied Corporation. Method and apparatus for reshaping and polishing an end face of an optical fiber. 4,510,005, Cl. 156-221.000.

Nikaido, Koichi: *See—*
Inoue, Setsuro; Nikaido, Koichi; and Nakagome, Makoto, 4,510,192, Cl. 428-151.000.

Nikles, Francois: *See—*
Cleusix, Willy; and Nikles, Francois, 4,509,867, Cl. 368-321.000.

Nippon Electric Co., Ltd.: *See—*
Mori, Nobuhiko, 4,510,617, Cl. 382-33.000.
Nishitoba, Shigeo; and Fukaya, Hirokazu, 4,509,494, Cl. 123-609.000.

Nippon Kogaku K.K.: *See—*
Hakamata, Kazuo; Takagi, Tadao; and Hyodo, Yukio, 4,510,411, Cl. 310-316.000.
Hasegawa, Hiroshi, 4,509,843, Cl. 354-412.000.
Maida, Osamu; Takemae, Mikio; and Okubo, Yuji, 4,509,847, Cl. 354-442.000.

Nippon Light Metal Company Limited: *See—*
Miyashita, Teruo; and Yoshida, Koichi, 4,510,030, Cl. 204-147.000.

Nippon Notion Kogyo Co., Ltd.: *See—*
Kanzaka, Yoshihiro, 4,509,232, Cl. 24-113.00R.

Nippon Oil and Fats Company, Ltd.: *See—*
Ishizaki, Takaharu; Kimura, Tsuneo; and Yamazaki, Shingo, 4,509,954, Cl. 44-62.000.

Nippon Paint Co., Ltd.: *See—*
Ihikura, Shinichi; Kanda, Kazunori; and Nakaya, Toshiharu, 4,510,275, Cl. 523-412.000.

Nippon Piston Ring Co., Ltd.: *See—*
Ebihara, Tadashi, 4,509,722, Cl. 251-359.000.

Nippon Sheet Glass Co., Ltd.: *See—*
Yamasaki, Tetsuya; Okuda, Eiji; and Yamamoto, Noboru, 4,509,824, Cl. 350-167.000.

Nippon Steel Corporation: *See—*
Hada, Takashi; Kanamaru, Tatsuya; and Ogawa, Yutaka, 4,510,209, Cl. 428-659.000.
Matsushita, Shigetada; and Doi, Yuji, 4,509,366, Cl. 73-861.020.

Nippon Telegraph & Telephone Public Corporation: *See—*
Murata, Norio; Hoshino, Mitsutoshi; and Yamakawa, Shinzo, 4,509,820, Cl. 350-96.210.

Nippon Zenn Co. Ltd.: *See—*
Kubo, Yoichiro; Kohtaki, Takaaki; and Oura, Kiyomori, 4,510,293, Cl. 525-338.000.

Nippondenso Co., Ltd.: *See—*
Kanayama, Kenji, 4,510,409, Cl. 310-268.000.
Takao, Mitsunori; and Kimura, Takahiko, 4,509,477, Cl. 123-339.000.
Takao, Mitsunori; and Ban, Toshika, 4,510,569, Cl. 364-431.120.

Nishiguchi, Ikuzo: *See—*
Matsubara, Yoshiharu; Hirashima, Tsuneaki; and Nishiguchi, Ikuzo, 4,510,025, Cl. 204-78.000.

Nishioka, Kimihiko, to Olympus Optical Co., Ltd. Diopter adjustable eyepiece used for view-finders of single-lens reflex cameras or the like. 4,509,831, Cl. 350-410.000.

Nishitoba, Shigeo; and Fukaya, Hirokazu, to Nippon Electric Company, Ltd. Pulse width control circuit. 4,509,494, Cl. 123-609.000.

Nishizawa, Takeshi: *See—*
Furumura, Yuji; and Nishizawa, Takeshi, 4,510,177, Cl. 427-85.000.

Nissan Motor Company, Limited: *See—*
Hirabayashi, Yuji, 4,509,331, Cl. 60-602.000.
Ike, Masahide; and Arita, Masashi, 4,509,353, Cl. 72-267.000.
Kubota, Hitoshi, 4,509,800, Cl. 303-6.00C.
Nagumo, Shinichi; Ofuji, Hiromichi; and Miisho, Kazuyuki, 4,509,481, Cl. 123-407.000.

Nitto Electric Industrial Co., Ltd.: *See—*
Okuno, Toshimitsu; Hori, Yutaka; Sunakawa, Makoto; and Inagaki, Sadayuki, 4,510,181, Cl. 427-142.000.

NL Industries, Inc.: *See—*
Bates, H. John, 4,509,405, Cl. 91-420.000.

Noda, Kenichi: *See—*
Yabe, Minoru; Noda, Kenichi; Endo, Satoru; and Yamauchi, Masaaki, 4,510,413, Cl. 313-460.000.

Nogami, Takashi; and Nawa, Masayoshi, to Kao Corporation. Electrochemical battery including a product of activated carbon fiber as an electrode. 4,510,216, Cl. 429-101.000.

Nohmi, Makoto: *See—*
Mori, Kinji; Nohmi, Makoto; Miyamoto, Shoji; Ihara, Hirokazu; Matsumaru, Hiroshi; and Ikeda, Katuaki, 4,510,492, Cl. 340-825.050.

Noiles, Douglas G.: *See—*
McGarry, Richard A.; and Noiles, Douglas G., 4,509,518, Cl. 128-325.000.

Noll, Robert W. Thermally-powered control mechanism. 4,509,678, Cl. 236-49.000.

Nomori, Hiroyuki: *See—*
Yamazaki, Toshinori; Nomori, Hiroyuki; Matsuzaki, Masatoshi; Shima, Tetsuo; and Myokan, Isao, 4,510,224, Cl. 430-57.000.

Nonaka, Zenichiro: *See—*
Kato, Yoshinori; Matsui, Makoto; and Nonaka, Zenichiro, 4,509,638, Cl. 198-486.000.

Nonnenmacher, Gerhard: *See—*
Knodel, Emil; and Nonnenmacher, Gerhard, 4,509,902, Cl. 417-216.000.

Nonogaki, Saburo: *See—*
Morishita, Hajime; Akagi, Motoo; Nonogaki, Saburo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,510,226, Cl. 430-144.000.

Norman Dryer Company, Inc.: *See—*
Coffman, Randall R.; and Mitchell, James E., 4,509,275, Cl. 34-126.000.

Northern Vibrator Manufacturing Limited: *See—*
Jack, James M.; and Mitchell, Stanley W., 4,509,701, Cl. 241-292.000.

Nossen, Edward J., to RCA Corporation. Fast correlation system. 4,510,579, Cl. 364-728.000.

Novak, Jiri: *See—*
Pajgrt, Jan; Bezdicek, Jan; and Novak, Jiri, 4,509,629, Cl. 192-0.098.

Nowak, Florian I. Force transmitting wedge structure. 4,509,765, Cl. 279-50.000.

Nozawa, Ryoichiro; Kiya, Nobuyuki; and Murakami, Kunihiko, to Fanuc Ltd. Method and apparatus for controlling feed speed in numerical control system. 4,510,427, Cl. 318-590.000.

NPO "Burevestnik": *See—*
Goganov, Dmitry A.; and Ovchinnikov, Evgeny K., 4,510,391, Cl. 250-374.000.

Nuerrenbach, Axel: *See—*
Lechtken, Peter; Nuerrenbach, Axel; and Schole, Juergen, 4,510,146, Cl. 514-312.000.

Nussbaumer, Wolfgang, to Kastle Gesellschaft m.b.H. Ski. 4,509,771, Cl. 280-609.000.

Nussdorfer, Theodore J.; and Kesseli, James B., to Sanders Associates, Inc. Brayton engine burner. 4,509,333, Cl. 60-723.000.

Obama, Kenjiro: *See—*
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,510,292, Cl. 525-247.000.

Obara, Haruki, to Fanuc Ltd. Wire-cut electric discharge machine. 4,510,367, Cl. 219-69.00W.

Oce-Nederland B.V.: *See—*
Eertink, Bastiaan B. B., 4,510,266, Cl. 318-696.000.

Ochiai, Izumi: *See—*
Suzuki, Akio; Akiyama, Mitsuo; Uzuhashi, Hideo; Ochiai, Izumi; Yamashita, Hitoshi; Sekine, Youji; Matsui, Katsuo; and Tomita, Syuji, 4,509,354, Cl. 72-294.000.

Ochiai, Kouji; and Tomita, Hitoshi, to Diesel Kiki Co., Ltd. Diesel engine with EGR control. 4,509,492, Cl. 123-569.000.

Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, to Takeda Chemical Industries, Ltd. 7-[2-(2-Aminothiazol-4-yl)-2-(syn)-methoxyiminoacetamido]cephalosporin derivatives. 4,510,138, Cl. 514-206.000.

Ochiai, Takeji: *See—*
Yamazaki, Hisashi; and Ochiai, Takeji, 4,510,388, Cl. 250-327.200.

Ochiai, Toshihiko: *See—*
Ando, Yasuo; and Ochiai, Toshihiko, 4,510,218, Cl. 429-198.000.

Oda, Hidekuni; Minami, Syuji; Inoue, Hiroshi; Matsuda, Akira; and Yamamoto, Yohzoh, to Mitsui Petrochemical Industries, Ltd. Ethylene-alpha-olefin-polyene random copolymer rubber. 4,510,303, Cl. 526-282.000.

Odawara, Masachika, to Tokyo Shibaura Denki Kabushiki Kaisha. Turbine rotor. 4,509,900, Cl. 416-198.00A.

Odawara, Yoji: *See—*
Haga, Ryoichi; Ishida, Masahiko; and Odawara, Yoji, 4,510,243, Cl. 435-167.000.

Oden, Kenneth W., to Dixie-Narco, Inc. Anti-theft device for tandem column vendor. 4,509,658, Cl. 221-115.000.

Oellig, Oskar; Grimmer, Horst; and Lunz, Alfred-Gunther, to Diehl GmbH & Co. Program plate for a timer. 4,509,864, Cl. 368-108.000.

Ofuji, Hiromichi: *See—*
Nagumo, Shinichi; Ofuji, Hiromichi; and Miisho, Kazuyuki, 4,509,481, Cl. 123-407.000.

Ogasawara, Hiroyuki: *See—*
Bando, Niro; Kurohara, Kazuaki; Fujima, Yasuo; Ikeda, Fumihiro; Usiro, Kenzo; and Ogasawara, Hiroyuki, 4,509,614, Cl. 180-273.000.

Ogata, Yoshiro; Yamazaki, Haruo; and Akutsu, Hidezoh, to Matsushita Electronics Corporation. Fluorescent lamp and process for fabricating the same. 4,510,415, Cl. 313-493.000.

Ogawa, Hiroshi; Mizuno, Chiaki; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,510,203, Cl. 428-425.900.

Ogawa, Shuji: *See—*
Yagi, Shigenori; Kuzumoto, Masaki; Tanaka, Masaaki; and Ogawa, Shuji, 4,510,606, Cl. 372-25.000.
Ogawa, Yutaka: *See—*
Hada, Takashi; Kanamaru, Tatsuya; and Ogawa, Yutaka, 4,510,209, Cl. 428-659.000.
Ogletree, Robert H.: *See—*
Powers, Frank M.; and Ogletree, Robert H., 4,509,728, Cl. 266-44.000.
Ogura, Masahiko, to Tokyo Shibaura Denki Kabushiki Kaisha. DC Motor soft-start circuit. 4,510,422, Cl. 318-254.000.
Oguro, Shinji: *See—*
Kanno, Takashi; Oka, Akira; Okamoto, Ituo; Mizushima, Kouji; and Oguro, Shinji, 4,510,552, Cl. 361-413.000.
Ohkubo, Takashi: *See—*
Okazaki, Haruo; and Ohkubo, Takashi, 4,510,274, Cl. 523-411.000.
Ohmori, Takashi: *See—*
Kurata, Masami; Inui, Toshiharu; and Ohmori, Takashi, 4,510,523, Cl. 358-75.000.
Moriguchi, Haruhiko; Moriguchi, Fujio; and Ohmori, Takashi, 4,510,506, Cl. 346-76.0PH.
Ohmura, Jukichi: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,510,328, Cl. 568-32.000.
Ohshima, Shohzo; Kusuda, Mikio; and Isoya, Toshiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Coating type insoluble lead dioxide anode. 4,510,034, Cl. 204-290.00F.
Ohta, Hiroyuki; and Masumoto, Yutaka, to Pioneer Electronic Corporation. Magnetic head system for tape player. 4,510,543, Cl. 360-106.000.
Ohwaki, Takayuki: *See—*
Sakashita, Shigeru; Nakagawa, Takeshi; Ohwaki, Takayuki; and Miyake, Yasuo, 4,510,168, Cl. 427-3.000.
Oishi, Masatoshi, to Mazda Motor Company. Apparatus for forming a sheet metal product having an opening. 4,509,355, Cl. 72-325.000.
Oka, Akira: *See—*
Kanno, Takashi; Oka, Akira; Okamoto, Ituo; Mizushima, Kouji; and Oguro, Shinji, 4,510,552, Cl. 361-413.000.
Oka, Takahiro: *See—*
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,510,292, Cl. 525-247.000.
Oka, Yutaka; Saeki, Naomi; and Fuseya, Yoshiharu, to Fuji Photo Film Co., Ltd. Lithographic photosensitive material. 4,510,229, Cl. 430-265.000.
Okada, Hiroshi, to Mitsuchi Corporation. Pantagraph type jack. 4,509,724, Cl. 254-126.000.
Okamoto, Ituo: *See—*
Kanno, Takashi; Oka, Akira; Okamoto, Ituo; Mizushima, Kouji; and Oguro, Shinji, 4,510,552, Cl. 361-413.000.
Okamoto, Takanori; Mori, Hisakazu; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Anaerobic adhesives having excellent adhesive property and preservative stability. 4,510,270, Cl. 523-176.000.
Okamoto, Tosaku; Okimoto, Tomoyuki; and Ishida, Katsuhiko, to Kanzaki Paper Manufacturing Company, Limited. Heat-sensitive record material. 4,510,512, Cl. 346-209.000.
Okamura Corporation: *See—*
Nashimoto, Junichi; and Kurokawa, Zenkichi, 4,509,893, Cl. 414-280.000.
Okazaki, Haruo; and Ohkubo, Takashi, to Denki Kagaku Kogyo Kabushiki Kaisha. Vinyl acetate-ethylene copolymer emulsion and aqueous emulsion adhesive composition containing the emulsion. 4,510,274, Cl. 523-411.000.
Okazaki, Masaki: *See—*
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; Toya, Ichizo; and Syuto, Sadanobu, 4,510,235, Cl. 430-574.000.
OKI Electric Industry Co. Ltd.: *See—*
Onozawa, Kazuo, 4,510,497, Cl. 343-5.0EM.
Okimoto, Tomoyuki: *See—*
Okamoto, Tosaku; Okimoto, Tomoyuki; and Ishida, Katsuhiko, 4,510,512, Cl. 346-209.000.
Okino, Takaaki: *See—*
Tsujii, Tatsuo; and Okino, Takaaki, 4,510,577, Cl. 364-563.000.
Okitsu, Yoshio: *See—*
Kawaida, Shinji; Okitsu, Yoshio; and Ikeda, Kazunari, 4,510,012, Cl. 156-415.000.
Okubo, Yuji: *See—*
Maida, Osamu; Takemae, Mikio; and Okubo, Yuji, 4,509,847, Cl. 354-442.000.
Okuda, Eiji: *See—*
Yamasaki, Tetsuya; Okuda, Eiji; and Yamamoto, Noboru, 4,509,824, Cl. 350-167.000.
Okunaka, Masaaki; Mizukoshi, Katsuro; Hongo, Mikio; and Miyauchi, Tateoki, to Hitachi, Ltd. Photomask with corrected white defects. 4,510,222, Cl. 430-5.000.
Okuno, Toshimitsu; Hori, Yutaka; Sunakawa, Makoto; and Inagaki, Sadayuki, to Nitto Electric Industrial Co., Ltd. Method for coating metal surface. 4,510,181, Cl. 427-142.000.
Okura Kogyo Kabushiki Kaisha: *See—*
Okamoto, Takanori; Mori, Hisakazu; and Matsuda, Hideaki, 4,510,270, Cl. 523-176.000.
Oleck, Stephen M.; and Wilson, Robert C., Jr., to Mobil Oil Corporation. Process for dewaxing of petroleum oils prior to demetalation and desulfurization. 4,510,043, Cl. 208-97.000.
Oleck, Stephen M.; and Wilson, Robert C., Jr., to Mobil Oil Corporation. Process for hydrotreating petroleum residua and catalyst therefor. 4,510,044, Cl. 208-111.000.
Olin Corporation: *See—*
Dardis, Richard E., 4,509,597, Cl. 166-274.000.
Oliver, Larry R., to Dayco Corporation. Method of making an endless power transmission belt construction. 4,510,003, Cl. 156-137.000.
Olympus Optical Co., Ltd.: *See—*
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, 4,509,838, Cl. 354-62.000.
Iwasawa, Teruo, 4,510,423, Cl. 318-331.000.
Kato, Kiichi; Musha, Tohru; and Ito, Kenichi, 4,509,830, Cl. 350-394.000.
Kato, Toshikazu, 4,510,540, Cl. 360-93.000.
Mizokami, Kazunori, 4,509,845, Cl. 354-420.000.
Nishioka, Kimihiko, 4,509,831, Cl. 350-410.000.
Tsukaya, Takashi, 4,509,508, Cl. 128-6.000.
Yabe, Hisao, 4,509,507, Cl. 128-4.000.
Omron Tateisi Electronics Co.: *See—*
Atsumi, Haruo; and Koizumi, Haruyuki, 4,510,355, Cl. 200-47.000.
Ono, Takuro: *See—*
Arai, Fuminao; Kodama, Hisashi; and Ono, Takuro, 4,509,467, Cl. 123-90.160.
Onozawa, Kazuo, to OKI Electric Industry Co. Ltd. Ramark beacon apparatus. 4,510,497, Cl. 343-5.0EM.
Ooe, Tsuguo: *See—*
Kobayashi, Minoru; Sakai, Yoshiya; Minato, Shoji; Ooe, Tsuguo; Arai, Katsumi; and Suga, Tetsuo, 4,510,374, Cl. 219-146.100.
Oosawa, Seiichi: *See—*
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; Masuda, Katuya; Moriya, Takashi; and Oosawa, Seiichi, 4,509,421, Cl. 101-93.040.
Orchard, Rolf O.: *See—*
Gagne, Roger A.; and Orchard, Rolf O., 4,509,688, Cl. 239-338.000.
Orth, Winfried: *See—*
Tonnius, Dietrich; Weiss, Wolfgang; Orth, Winfried; Miele, Heinrich; and Pastorek, Emmerich, 4,510,090, Cl. 260-396.00R.
Osaka Gas Company Limited: *See—*
Ito, Hirosato, 4,509,915, Cl. 431-215.000.
Ouchi, Yasumasa; and Otoshi, Shoji, 4,509,336, Cl. 62-112.000.
Osako, Kyoichi: *See—*
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.
Osterreichische Draukraftwerke Aktiengesellschaft: *See—*
Schrofelbauer, Herbert; Kakl, Josef; Staudinger, Gernot; and Filipot, Hermann, 4,509,436, Cl. 110-345.000.
Otaka, Masahiro: *See—*
Fujii, Kanichi; and Otaka, Masahiro, 4,510,608, Cl. 372-87.000.
Otobe, Yutaka: *See—*
Hasegawa, Shumpei; Otobe, Yutaka; Kishi, Noriyuki; and Koumura, Takashi, 4,509,489, Cl. 123-489.000.
Otoshi, Shoji: *See—*
Ouchi, Yasumasa; and Otoshi, Shoji, 4,509,336, Cl. 62-112.000.
Ott, Kevin C.: *See—*
Lewis, Robert M.; Ott, Kevin C.; and Van Santen, Rutger A., 4,510,257, Cl. 502-63.000.
Otto, Stanley W.; Rhoads, Jack G.; and Scrivan, Michel A., to Hallmark Cards, Inc. Directing and controlling the distribution of radiant energy. 4,509,825, Cl. 350-259.000.
Ouchi, Yasumasa; and Otoshi, Shoji, to Osaka Gas Company Limited. Air conditioning apparatus. 4,509,336, Cl. 62-112.000.
Oura, Kiyomori: *See—*
Kubo, Yoichiro; Kohtaki, Takaaki; and Oura, Kiyomori, 4,510,293, Cl. 525-338.000.
Outboard Marine Corporation: *See—*
Hall, Charles B., 4,509,924, Cl. 440-51.000.
Ovchinnikov, Evgeny K.: *See—*
Goganov, Dmitry A.; and Ovchinnikov, Evgeny K., 4,510,391, Cl. 250-374.000.
Overeem, Jan C.: *See—*
Albert, Alban I.; Ballenegger, Marc E.; Overeem, Jan C.; and Tyson, Robert G., 4,510,159, Cl. 514-456.000.
Owens-Corning Fiberglas Corporation: *See—*
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,048, Cl. 209-3.000.
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,049, Cl. 209-3.000.
Potter, Russell M., 4,510,252, Cl. 501-35.000.
Zambrano, Adolfo R., 4,509,976, Cl. 75-21.000.
Oy Wartsila Ab: *See—*
Uomala, Vilho; Karkkainen, Jouko; and Sandstrom, Kjell, 4,509,719, Cl. 251-214.000.
Ozaki, Kiyomi; and Tunoda, Kikuo, to Ryobi Ltd. Fishing line engaging and releasing mechanism in a closed-face type reel. 4,509,704, Cl. 242-84.20A.
Ozawa, Kazuo: *See—*
Asami, Shojiro; Ozawa, Kazuo; and Sawa, Tetsuo, 4,510,546, Cl. 360-133.000.
Ozeki, Sadao: *See—*
Nagamoto, Yoshihito; and Ozeki, Sadao, 4,509,790, Cl. 296-204.000.

Ozgunay, A. Aykut: *See—*
Whittenburg, Stephen L.; McCormick, David D.; Tweed, William J.; Ozgunay, A. Aykut; and Williams, James T., 4,509,412, Cl. 99-331.000.

Ozmeral, Ahmet C., to BASF Wyandotte Corporation. Foam control composition containing high foaming nonionic surfactant and a polyoxyalkylene compound. 4,510,067, Cl. 252-174.210.

Paeye, Gerard: *See—*
Wiart, Albert; and Paeye, Gerard, 4,509,337, Cl. 62-235.100.

Pajgrt, Jan; Bezdicek, Jan; and Novak, Jiri, to ZVS Vyzkumnevyvojovy Ustav, koncernova ucelova organizace. Plural motor plural clutch with worm drive. 4,509,629, Cl. 192-0.098.

Pakur, Henryk: *See—*
Funk, Heinrich; Pakur, Henryk; and Seitz, Hans, 4,509,575, Cl. 152-356.00R.

Palmer, C. Dale: *See—*
Traver, Jack L.; Palmer, C. Dale; and Hughes, Richard, 4,509,593, Cl. 166-63.000.

Palosi, Eva: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.

Pan, Wie-Hin: *See—*
Stiefel, Edward I.; Pan, Wie-Hin; and Chianelli, Russell R., 4,510,260, Cl. 502-219.000.

Panavision, Incorporated: *See—*
Gottschalk, Robert E., 4,510,529, Cl. 358-224.000.

Panclor S.A.: *See—*
Spaziante, Placido M., 4,510,026, Cl. 204-95.000.

Paolantonio, Vito J.: *See—*
Stroffolino, Leon C., 4,509,420, Cl. 101-35.000.

Papaioannou, Stamatios: *See—*
Hansen, Donald W., Jr.; and Papaioannou, Stamatios, 4,510,085, Cl. 260-112.50E.

Papeteries de Jeand'heurs: *See—*
Bartelloni, Rene , 4,510,019, Cl. 162-141.000.

Paranjpe, Suresh C.; and McJohnson, Robert B., to Mead Corporation, The. Ink jet printer control circuit and method. 4,510,503, Cl. 346-75.000.

Parcell, Lloyd J.: *See—*
Rowe, Edward H.; and Parcell, Lloyd J., 4,510,057, Cl. 210-612.000.

Parham, Fred, to Deflecta-Shield Corporation. Heat reclaimer. 4,509,588, Cl. 165-80.00R.

Parker Chemical Company: *See—*
Higgins, George L., 4,509,992, Cl. 148-6.270.

Parker, David W.; and van de Polder, Leendert J., to U.S. Philips Corporation. Television transmission system. 4,510,520, Cl. 358-12.000.

Parker, Larry J.: *See—*
Saxman, William C.; and Parker, Larry J., 4,509,607, Cl. 175-227.000.

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Richmond, James W., to Stryker Corporation. Ligament tunneling instrument. 4,509,516, Cl. 128-303.00R.
Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.
Richter, Peter: *See—*
Bar, Vilmos; Boszormenyi, Jozsef; Richter, Peter; Mercz, Jeno; and Rozsnyai, Tamas, 4,510,147, Cl. 514-314.000.
Rickrode, James A.: *See—*
Locati, Ronald P.; and Rickrode, James A., 4,509,258, Cl. 29-876.000.
Ricoh Company, Ltd.: *See—*
Horike, Masanori; Furukawa, Tatsuya; Sekiya, Takuro; Ebi, Yutaka; Isayama, Takuro; and Tachiki, Masaaki, 4,510,509, Cl. 346-140.00R.
Kanno, Tadaaki; Ukai, Takeshi; Akahoshi, Yutaka; and Shibata, Katsuji, 4,509,732, Cl. 270-37.000.
Riedl, Hermann, to Siemens Aktiengesellschaft. Device for generating images of an examination subject. 4,510,448, Cl. 324-309.000.
Riege, David H.: *See—*
Sell, William J.; Peisach, Joel M.; and Riege, David H., 4,510,393, Cl. 250-475.200.
Riemann, Hanns-Helmut; Sonnenschein, Hans; and Skaletz, Heinz, to Mannesmann Veba Umwelttechnik GmbH. Rotary drum screen for waste material and its method of operation. 4,509,697, Cl. 241-72.000.
Riess, Kurt: *See—*
Mohr, Dieter; and Riess, Kurt, 4,510,227, Cl. 430-175.000.
Rieter Machine Works Limited: *See—*
Briner, Emil; and Hieronymi, Richard, 4,509,322, Cl. 57-333.000.
Wuermli, Arthur, 4,509,230, Cl. 19-245.000.
Rieu, Jean-Pierre: *See—*
Cousse, Henry; Mouzin, Gilbert; Tarayre, Jean-Pierre; and Rieu, Jean-Pierre, 4,510,142, Cl. 514-255.000.
Rijkeboer, Rudolf C., to Robert Bosch GmbH. Apparatus for air-injection of liquid gas. 4,509,479, Cl. 123-525.000.
Rines, Robert H.; and Knowles, Albert H., to K. R. Associates, Inc. Process of sea-ranching salmon and the like. 4,509,458, Cl. 119-3.000.
Rines, Robert H.: *See—*
Knowles, Albert H.; and Rines, Robert H., 4,509,459, Cl. 119-3.000.
Riordan, Edward D.: *See—*
Szantho, Charles F.; and Riordan, Edward D., 4,510,370, Cl. 219-86.250.
Rittal-Werk Rudolf Loh GmbH & Co. KG: *See—*
Erlam, David P.; and Carr, Arthur E., 4,509,810, Cl. 339-17.00M.
Rittsmannsberger, Norbert: *See—*
Junginger, Erich; Rittsmannsberger, Norbert; and Schnaibel, Eberhard, 4,509,628, Cl. 192-0.094.
Rival Manufacturing Company: *See—*
Whittenburg, Stephen L.; McCormick, David D.; Tweed, William J.; Ozgunay, A. Aykut; and Williams, James T., 4,509,412, Cl. 99-331.000.
Robert Bosch GmbH: *See—*
Betz, Dieter; and Issler, Jorg, 4,509,495, Cl. 123-643.000.
Breuser, Erich; Grozinger, Wilhelm; Latsch, Reinhard; and Wurfel, Gernot, 4,509,476, Cl. 123-266.000.
Junginger, Erich; Rittsmannsberger, Norbert; and Schnaibel, Eberhard, 4,509,628, Cl. 192-0.094.
Knodel, Emil; and Nonnenmacher, Gerhard, 4,509,902, Cl. 417-216.000.
Kubach, Hans, 4,509,715, Cl. 251-138.000.
Kull, Hermann; Wessel, Wolf; and Stumpp, Gerhard, 4,509,480, Cl. 123-359.000.
Rijkeboer, Rudolf C., 4,509,479, Cl. 123-525.000.
Romes, Roman; Schilling, Wolfgang; and Werner, Jurgen, 4,510,474, Cl. 336-30.000.

Roth, Rolf, 4,510,439, Cl. 324-73.0AT.
Schaal, Gunter; and Schramm, Heribert, 4,509,731, Cl. 269-78.000.
Robert, Jacques: *See—*
Clerc, Jean F.; and Robert, Jacques, 4,509,828, Cl. 350-333.000.
Robinson, Philip I. Tennis net tie down and height measurement device. 4,509,749, Cl. 273-29.0BA.
Robson, Michael J., to Imperial Chemical Industries PLC. Insecticidal product and preparation thereof. 4,510,160, Cl. 514-521.000.
Rocca, Jorge J.: *See—*
Collins, George J.; Thompson, Lance R.; Rocca, Jorge J.; and Boyer, Paul K., 4,509,451, Cl. 118-50.100.
Roche, William J.: *See—*
Anderson, John W., Jr.; and Roche, William J., 4,510,418, Cl. 315-73.000.
Rockwell International Corporation: *See—*
Jovick, Raymond J.; Malott, Roger J.; and Evans, Thomas E., 4,510,408, Cl. 310-168.000.
Ladouceur, Lawrence C., 4,509,256, Cl. 29-802.000.
Liggett, John V., 4,509,239, Cl. 29-159.00A.
Weisert, Edward D., 4,509,671, Cl. 228-157.000.
Rogers, Terrence E.: *See—*
Bonneau, Paul; Holshouser, Howard E.; and Rogers, Terrence E., 4,510,623, Cl. 455-181.000.
Rogister, Carl, to Goodyear Tire & Rubber Company, The. Apparatus and method for making metallic cord. 4,509,317, Cl. 57-58.320.
Rohlfs, Hans-Adolf; Kling, Alfred; Raab, Guenter; Vogt, Michael; Specht, Viktor; and Schaetzke, Ulrike, to Benckiser-Knapsack GmbH. N-(hydroxy methyl)-1-amino alkane-1,1-diphosphonic acids as stabilizing agents in peroxide-containing bleaching baths. 4,510,068, Cl. 252-186.290.
Rohrer, Gene D., to International Business Machines Corporation. Magnetic character reader with double document detection. 4,510,615, Cl. 382-7.000.
Roisen, David. Combine grain dryer and drying attachment. 4,509,273, Cl. 34-86.000.
Roland, Billy F. Planar member joint. 4,509,794, Cl. 297-440.000.
Rolfe, Keith O. Loading and unloading apparatus for a vehicle. 4,509,894, Cl. 414-555.000.
Rolin, Guy; and Rabizzoni, Jacques, to Etablissements Rondolotti. Spinning lathe. 4,509,351, Cl. 72-19.000.
Roling, Franz, to Gewerkschaft Eisenhutte Westfalia. Apparatus for controlling the position of a mineral mining machine. 4,509,799, Cl. 299-42.000.
Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Fixed angle pelleting rotor configured to provide a maximum clearing rate factor. 4,509,940, Cl. 494-16.000.
Romanchuk, Ronald N.: *See—*
Sabatino, Anthony; Stanefski, Eugene F.; Romanchuk, Ronald N.; and Schaumburg, Edward G., 4,509,252, Cl. 29-623.100.
Romell, Gunnar V. R.: *See—*
Skogberg, Bo T.; and Romell, Gunnar V. R., 4,509,889, Cl. 411-19.000.
Romer, Michael: *See—*
Eidenschink, Rudolf; Haas, Gunther; Pohl, Ludwig; Romer, Michael; Scheuble, Bernhard; and Weber, Georg, 4,510,069, Cl. 252-299.610.
Romes, Roman; Schilling, Wolfgang; and Werner, Jurgen, to Robert Bosch GmbH. Inductive pickup for fluid control element. 4,510,474, Cl. 336-30.000.
Ronconi, Mario; and Civitani, Renzo. Temperature indicating device for a cooking pot and device-pot combination. 4,509,868, Cl. 374-141.000.
Roppelt, Gunter: *See—*
Haussel, Werner; Roppelt, Gunter; and Kindermann, Robert, 4,510,444, Cl. 324-121.00R.
Rose-Plastic GmbH: *See—*
Rosler, Peter, 4,509,656, Cl. 220-8.000.
Rosen, Bruce I., to UOP Inc. Continuous reduction of edible oils. 4,510,091, Cl. 260-409.000.
Rosen, Bruce I., to UOP Inc. Continuous reduction of edible oils. 4,510,092, Cl. 260-409.000.
Rosenbaum, Larry A., to Hancor, Inc. Coupling structure and method and apparatus for its manufacture. 4,509,911, Cl. 425-532.000.
Roser, Erich: *See—*
Kuhn, Falk, 4,509,618, Cl. 184-6.400.
Rosler, Peter, to Rose-Plastic GmbH. Variable length packing container assembly. 4,509,656, Cl. 220-8.000.
Ross, Barry C.; Johnson, Graham; and Yeomans, Michael A., to Hoechst Aktiengesellschaft. 2(4-Allylthioazetidin-2-on-1-yl)acetic acid ester compounds. 4,510,086, Cl. 260-239.00A.
Ross, Gerald F., to Sperry Corporation. Baseband radar docking system. 4,510,496, Cl. 343-5.0BD.
Ross Operating Valve Company: *See—*
Scanlon, James E., 4,509,556, Cl. 137-884.000.
Rossi, Guglielmo; and Gemma, Mario, to Ranco Incorporated. Thermostat with temperature pull-down facility. 4,510,480, Cl. 337-321.000.
Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corp. Monomeric disulfonimides. 4,510,324, Cl. 564-82.000.
Rosso Industrie S.p.A.: *See—*
Rosso, Pietro, 4,509,666, Cl. 223-39.000.
Rosso, Pietro, to Rosso Industrie S.p.A. Stocking turning device. 4,509,666, Cl. 223-39.000.
Rostron, Joseph R.; and Perulfi, John R., to Westinghouse Electric Corp. Current transformer. 4,510,477, Cl. 336-92.000.
Roth, Rolf, to Robert Bosch GmbH. Digital circuit multi-test system with automatic setting of test pulse levels. 4,510,439, Cl. 324-73.0AT.
Roussel Uclaf: *See—*
Westwood, Robert; Miller, Peter; Ager, Ian R.; and Kay, David P., 4,510,143, Cl. 514-250.000.
Rowe, Edward H.; and Parcell, Lloyd J., to Texaco Inc. Rotating disk biotreatment of syngas waste water. 4,510,057, Cl. 210-612.000.
Rowe, Irwin. Method for conditioning phonograph records. 4,510,187, Cl. 427-429.000.
Rowell, Frank J. Containers of flexible material. 4,509,642, Cl. 206-219.000.
Rowles, Howard C.: *See—*
Bennett, Douglas L.; Edwards, Thomas J.; and Rowles, Howard C., 4,510,023, Cl. 203-99.000.
Rowlette, John J., to California Institute of Technology. Battery plate containing filler with conductive coating. 4,510,219, Cl. 429-212.000.
Rozsnyai, Tamas: *See—*
Bar, Vilmos; Boszormenyi, Jozsef; Richter, Peter; Mercz, Jeno; and Rozsnyai, Tamas, 4,510,147, Cl. 514-314.000.
Rudich, George, Jr., to Johnson Service Company. Multi-purpose compressor controller. 4,510,547, Cl. 361-22.000.
Ruggeri, Cinzia. Textile material of a dark fabric, leather or hide with layer of microencapsulated liquid crystals. 4,510,188, Cl. 428-1.000.
Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; Tihanyi, Bela; Weber, Jurgen; DeWin, Werner; Erben, Edwin; and Muhlratzer, August, 4,510,182, Cl. 427-162.000.
Ruhrgas AG: *See—*
Lorenz, Werner; Bathke, Heinz; and Sommers, Hans, 4,509,913, Cl. 431-90.000.
Ruitberg, Arthur P.: *See—*
Clatterbuck, Carroll H.; and Ruitberg, Arthur P., 4,510,476, Cl. 336-84.00C.
Rundquist, Lars-Goran: *See—*
Frykhult, Rune H.; and Rundquist, Lars-Goran, 4,510,056, Cl. 210-512.100.
Runyan, I. V.: *See—*
Kuehnle, Manfred R.; Martinez, Ferdinand; Runyan, I. V.; and Barry, Carol M. F., 4,510,223, Cl. 430-44.000.
Rupert, Gary F.: *See—*
MacGregor, John R.; Rupert, Gary F.; and Kennedy, Thomas M., 4,510,365, Cl. 219-69.00G.
Ruppender, Uwe, to Boehringer Mannheim GmbH. Device for the optical identification of a coding on a diagnostic test strip. 4,510,383, Cl. 235-462.000.
Ruprecht, Jurgen; and Weltersbach, Wolfgang, to U.S. Philips Corporation. Circuit for adjusting the amplitude of a color signal. 4,510,521, Cl. 358-27.000.
Russ, David E., to Allis-Chalmers Corp. Agricultural implement with hinge connection for folding cross shaft. 4,509,602, Cl. 172-311.000.
Russo, Frank D.: *See—*
Leech, Edward J.; and Russo, Frank D., 4,510,276, Cl. 523-427.000.
Rust, Meinhard: *See—*
Kramann, Bernhard; and Rust, Meinhard, 4,509,945, Cl. 604-164.000.
Rutgerswerke Aktiengesellschaft: *See—*
Tonnius, Dietrich; Weiss, Wolfgang; Orth, Winfried; Miele, Heinrich; and Pastorek, Emmerich, 4,510,090, Cl. 260-396.00R.
Rutishauser, Albert. Mechanically-operated magazine-unloading, sheet-feeding mechanism for sheet processing apparatus. 4,509,734, Cl. 271-10.000.
Rutsch, Werner: *See—*
Kirchmayr, Rudolf; and Rutsch, Werner, 4,510,290, Cl. 525-162.000.
Ryan, W. Kenneth. Alphanumeric section of office machine keyboards. 4,509,873, Cl. 400-489.000.
Ryder, Alan, to Schlumberger Electronics (U.K.) Limited. Methods and apparatus for frequency response analysis. 4,510,440, Cl. 324-77.00G.
Ryobi Ltd.: *See—*
Ozaki, Kiyomi; and Tunoda, Kikuo, 4,509,704, Cl. 242-84.20A.
Saar, David C., to Colgate-Palmolive Company. Retarding setting of crutcher slurry for manufacturing base beads for detergent compositions. 4,510,066, Cl. 252-140.000.
Sabatino, Anthony; Stanefski, Eugene F.; Romanchuk, Ronald N.; and Schaumburg, Edward G., to GNB Batteries Inc. Method and apparatus for assembling battery components. 4,509,252, Cl. 29-623.100.
Sachs, Hanns I.: *See—*
Winkler, Hermann; and Sachs, Hanns I., 4,510,184, Cl. 427-212.000.
Sachs-Systemtechnik GmbH: *See—*
Tellert, Rudy, 4,509,625, Cl. 192-0.033.
Saeki, Naomi: *See—*
Oka, Yutaka; Saeki, Naomi; and Fuseya, Yoshiharu, 4,510,229, Cl. 430-265.000.
Saffer, Gary M.: *See—*
Lambert, Gerard L.; and Saffer, Gary M., 4,509,931, Cl. 446-462.000.
SAFT: *See—*
Adam, Michel, 4,510,215, Cl. 429-99.000.
Sahara, Masayoshi: *See—*
Nakai, Masaaki; Sahara, Masayoshi; and Taniguchi, Nobuyuki, 4,509,846, Cl. 354-442.000.
Sahota, Harvinder. Hemostat with blood flow sensor. 4,509,528, Cl. 128-691.000.
St. Clair, Anne K.; Stoakley, Diane M.; St. Clair, Terry L.; and Singh, Jag J., to United States of America, National Aeronautics and Space

Administration. Process for improving moisture resistance of epoxy resins by addition of chromium ions. 4,510,277, Cl. 523-454.000.

St. Clair, Terry L.: *See—*
St. Clair, Anne K.; Stoakley, Diane M.; St. Clair, Terry L.; and Singh, Jag J., 4,510,277, Cl. 523-454.000.

St. Florian Company, Ltd.: *See—*
Klievoneit, Harold R., 4,509,298, Cl. 51-237.00R.

St. Jean, Herbert N.; and Settanni, Richard, to Cerberus AG. Passive infrared intrusion detector. 4,510,488, Cl. 340-567.000.

Saint-Martin, Bernard: *See—*
Mercey, Gilles; Picard, Claude; and Saint-Martin, Bernard, 4,509,505, Cl. 128-1.00B.

Saito, Kenji; and Yamachika, Hiroshi, to Sumitomo Chemical Company, Limited. Process for preparing cyclopentenolones. 4,510,329, Cl. 568-310.000.

Saji, Keiichi: *See—*
Takeuchi, Takashi; Takahashi, Hideaki; Saji, Keiichi; Kondo, Haruyoshi; and Hayakawa, Kiyoharu, 4,510,036, Cl. 204-425.000.

Sak, Dennis A.; and Mestetsky, Thomas, to Arvey Corporation. Self-sealing pouch for forming adhesive-to-adhesive seal. 4,510,621, Cl. 383-89.000.

Sakai, Shinji; and Kawabata, Takashi, to Canon Kabushiki Kaisha. Automatic focusing device. 4,509,841, Cl. 354-400.000.

Sakai, Yoshiya: *See—*
Kobayashi, Minoru; Sakai, Yoshiya; Minato, Shoji; Ooe, Tsuguo; Arai, Katsumi; and Suga, Tetsuo, 4,510,374, Cl. 219-146.100.

Sakamoto, Masaharu: *See—*
Ishida, Kohji; and Sakamoto, Masaharu, 4,510,452, Cl. 328-144.000.

Sakamoto, Shinichiro, to Toyoda Koki Kabushiki Kaisha. Tool changer. 4,509,235, Cl. 29-26.00A.

Sakamoto, Yoshisuke: *See—*
Sugizaki, Takashi; and Sakamoto, Yoshisuke, 4,509,661, Cl. 222-190.000.

Sakashita, Shigeru; Nakagawa, Takeshi; Ohwaki, Takayuki; and Miyake, Yasuo, to Eisai Co., Ltd. Process for sealing body and cap of gelatin hard capsule and apparatus therefor. 4,510,168, Cl. 427-3.000.

Sakatani, Yoshiaki: *See—*
Yamaguchi, Yasuhiro; and Sakatani, Yoshiaki, 4,510,103, Cl. 264-40.200.

Sako, Kiyohide: *See—*
Hidaka, Hiroyoshi; Sone, Takanori; Sasaki, Yasuharu; Sugihara, Taisuke; Takagi, Seiji; and Sako, Kiyohide, 4,510,307, Cl. 544-283.000.

Sakurai Machine Trading Co., Ltd.: *See—*
Nagatani, Kazuo, 4,509,422, Cl. 101-118.000.

Salice, Luciano, to Arturo Salice, S.p.A. Concealed hinge having a spring biased U-shaped slider. 4,509,229, Cl. 16-327.000.

Salmonson, Duane L., to Economics Laboratory, Inc. Magnetic reversing mechanism. 4,509,402, Cl. 91-275.000.

Samowich, Joseph J. Bullet-proof protective shielding and garments and methods of making the same and use thereof. 4,510,200, Cl. 428-252.000.

Samuels, Kenneth E.: *See—*
Duke, June T.; Samuels, Kenneth E.; and Brown, Mary-Catherine, 4,510,204, Cl. 428-463.000.

Sander, Hans: *See—*
Gimpel, Jurgen; Jackel, Klaus-Peter; and Sander, Hans, 4,510,284, Cl. 524-379.000.

Sanders, Albert J., Jr.; and Larson, Michael J., to SWS Silicones Corporation. Coating compositions. 4,509,981, Cl. 106-3.000.

Sanders Associates, Inc.: *See—*
Nussdorfer, Theodore J.; and Kesseli, James B., 4,509,333, Cl. 60-723.000.

Sandor, John. Draught excluding strips. 4,509,999, Cl. 156-71.000.

Sandoz Ltd.: *See—*
Berthold, Richard, 4,510,150, Cl. 514-338.000.
Meyes, Peter, 4,510,137, Cl. 514-80.000.

Sandstrom, Kjell: *See—*
Uomala, Vilho; Karkkainen, Jouko; and Sandstrom, Kjell, 4,509,719, Cl. 251-214.000.

Sanitek Products, Inc.: *See—*
Bronner, James A.; Moore, John D.; and Dale, Paul R., 4,510,081, Cl. 252-603.000.

Sanofi, S.A.: *See—*
Demarne, Henri; and Wagnon, Jean, 4,510,315, Cl. 548-455.000.

Santmyer, Kenneth R., Jr. Convertible log splitting device. 4,509,573, Cl. 144-193.00D.

Santrade Ltd.: *See—*
Hofling, Mats E., 4,509,887, Cl. 408-239.00R.

Sanyo Electric Co., Ltd.: *See—*
Ito, Hisao, 4,510,589, Cl. 369-11.000.
Sato, Takehisa, 4,510,563, Cl. 363-20.000.

Sarma, Kalluri R.: *See—*
Ellis, Ralph J.; Gurtler, Richard W.; and Sarma, Kalluri R., 4,510,015, Cl. 156-617.00R.

Sasaki, Isao: *See—*
Kishida, Kazuo; Sasaki, Isao; Mukai, Nobuhiro; and Asai, Hajime, 4,510,024, Cl. 204-59.00R.

Sasaki, Takafumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Locking device for door of cooking apparatus. 4,509,779, Cl. 292-254.000.

Sasaki, Toshimi: *See—*
Hachisu, Takeshi; Taguchi, Keiji; Sasaki, Toshimi; Matsumoto, Tetsuo; and Hidao, Nobuyoshi, 4,509,995, Cl. 148-143.000.

Sasaki, Yasuharu: *See—*
Hidaka, Hiroyoshi; Sone, Takanori; Sasaki, Yasuharu; Sugihara, Taisuke; Takagi, Seiji; and Sako, Kiyohide, 4,510,307, Cl. 544-283.000.

Sasamoto, Asao, to Hitachi, Ltd. Magnetic disk storage unit with reciprocating magnetic head for cleaning the magnetic disc. 4,510,541, Cl. 360-97.000.

Sasib S.p.A.: *See—*
Payne, Kenneth G., 4,509,634, Cl. 198-347.000.

Sasso, Bill J., to Servo Technology Corp. Servo rotary motor. 4,510,420, Cl. 318-37.000.

Sato, Noriya: *See—*
Honjo, Katsuhiko; Taki, Hiromitsu; and Sato, Noriya, 4,510,179, Cl. 427-96.000.

Sato, Seiji; and Takeuchi, Koichi, to Sony Corporation. Magnetic recording apparatus. 4,510,538, Cl. 360-84.000.

Sato, Takehisa, to Sanyo Electric Co. Ltd.; and Tokyo Sanyo Electric Co., Ltd. Switching power supply. 4,510,563, Cl. 363-20.000.

Sato, Tetsuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, to Hitachi, Ltd.; and Pioneer Electronic Corp. Amplifier circuit. 4,510,458, Cl. 330-260.000.

Satoh, Akihiro: *See—*
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,510,292, Cl. 525-247.000.

Satoh, Yutaka: *See—*
Yamaguchi, Masahiko; Gonda, Michihiro; Satoh, Yutaka; and Kanasugi, Mikiko, 4,510,513, Cl. 346-214.000.

Sauer, Donald J.: *See—*
Pritchard, Dalton H.; and Sauer, Donald J., 4,510,522, Cl. 358-31.000.

Savard, Guy; and Lee, Robert G. H., to Canadian Liquid Air Ltd/Air Liquide. In situ combustion for oil recovery. 4,509,595, Cl. 166-261.000.

Sawa, Tetsuo: *See—*
Asami, Shojiro; Ozawa, Kazuo; and Sawa, Tetsuo, 4,510,546, Cl. 360-133.000.

Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, to Japan Exlan Company Limited. Process for producing acrylic fibers having non-circular cross-sections. 4,510,111, Cl. 264-177.00F.

Sawyer, James L.: *See—*
Davidovits, Joseph; and Sawyer, James L., 4,509,985, Cl. 106-84.000.

Saxman, William C.; and Parker, Larry J., to Dresser Industries, Inc. Compressible pressure compensator within closed lubricant volume of an earth boring apparatus. 4,509,607, Cl. 175-227.000.

Scallan, Anthony M.: *See—*
Green, Harold V.; Fox, Thomas J.; and Scallan, Anthony M., 4,510,020, Cl. 162-169.000.

Scan Screen A/S: *See—*
Clausen, Erik; and Clausen, Johannes, 4,509,822, Cl. 350-128.000.

Scanlon, James E., to Ross Operating Valve Company. Flow control for valve interface. 4,509,556, Cl. 137-884.000.

Schaal, Gunter; and Schramm, Heribert, to Robert Bosch GmbH. Workbench with removable vise. 4,509,731, Cl. 269-78.000.

Schacher, Ronald A. Method for inhibiting contraction of ophthalmic wounds or incisions. 4,510,145, Cl. 514-415.000.

Schaeffer, Hans-Joachim: *See—*
Koch, Klaus; Schaeffer, Hans-Joachim; and Syrbius, Gerhard, 4,509,419, Cl. 100-117.000.

Schaetzke, Ulrike: *See—*
Rohlfs, Hans-Adolf; Kling, Alfred; Raab, Guenter; Vogt, Michael; Specht, Viktor; and Schaetzke, Ulrike, 4,510,068, Cl. 252-186.290.

Schafer, Gunter, to Security Lumber & Supply Co. Locking detent for corrugated tube. 4,509,560, Cl. 138-122.000.

Schall, Walter; Negro, Guido; Hipp, Martin; and Albrecht, Hans, to Bielomatik Leuze GmbH & Co. Apparatus for making holes in thick stacks of paper. 4,509,396, Cl. 83-126.000.

Schatteman, Etienne A., to Staar S.A. Slot type disc recorder and/or player apparatus. 4,510,591, Cl. 369-77.100.

Schaumburg, Edward G.: *See—*
Sabatino, Anthony; Stanefski, Eugene F.; Romanchuk, Ronald N.; and Schaumburg, Edward G., 4,509,252, Cl. 29-623.100.

Scheiderich, Robert F.; and Comper, Louis F., to Goodyear Tire & Rubber Company, The. Method for preparing tire curing bladder lubricant. 4,509,984, Cl. 106-38.220.

Schenk, Raymond L.: *See—*
McLane, Jack E.; Schenk, Raymond L.; Rader, Robert R.; and Wirtz, John W., 4,509,581, Cl. 164-479.000.

Schenker Maschinen AG: *See—*
Frei, Max, 4,509,352, Cl. 72-138.000.

Scheuble, Bernhard: *See—*
Eidenschink, Rudolf; Haas, Gunther; Pohl, Ludwig; Romer, Michael; Scheuble, Bernhard; and Weber, Georg, 4,510,069, Cl. 252-299.610.

Scheuermann, Helmut: *See—*
Gockler, Heinz; and Scheuermann, Helmut, 4,510,598, Cl. 370-50.000.

Schilling, Wolfgang: *See—*
Romes, Roman; Schilling, Wolfgang; and Werner, Jurgen, 4,510,474, Cl. 336-30.000.

Schipper, John F.: *See—*
George, E. Victor; and Schipper, John F., 4,510,605, Cl. 372-23.000.

Schlaikjer, Carl R.: *See—*
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Schlatzer, Robert K.: *See—*
Huang, Chor; and Schlatzer, Robert K., 4,509,949, Cl. 586-558.000.
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Heimel, Helmut; Schlosser, Willy; and Luttenberger, Alfred, 4,509,274, Cl. 34-114.000.
Schlumberger Electronics (U.K.) Limited: *See—*
Ryder, Alan, 4,510,440, Cl. 324-77.00G.
Schlumberger Technology Corporation: *See—*
Upchurch, James M., 4,509,604, Cl. 175-4.520.
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Cornely, Wolfgang; Esser, Heinz; and Schmidt, Rudolf, 4,510,180, Cl. 427-136.000.
Schmidt, Werner; and Jahn, Franz, to Motoren-und Turbinen-Union Munchen GmbH. Process for creating a support means for a component part to be reworked and/or repaired and a welding device obtained according to said process. 4,509,673, Cl. 228-212.000.
Schmidt, Werner J.; Dijkshoorn, Willem; Stratmann, Wilhelm; and Vermaas, Leo F., to Lever Brothers Company. Margarine fat blend. 4,510,167, Cl. 426-607.000.
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Schnacke, Arthur W., to United States of America, Energy. Fuel cell stack with internal manifolds for reactant gases. 4,510,213, Cl. 429-36.000.
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Junginger, Erich; Rittsmannsberger, Norbert; and Schnaibel, Eberhard, 4,509,628, Cl. 192-0.094.
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Schneider, Otto, to Maag Gear-Wheel & Machine Company Limited. Method and arrangement for the evaluation of signals from an ultrasonic displacement path measuring system. 4,510,587, Cl. 367-118.000.
Schneider, William C., to Alco Foodservice Equipment Company. Variable timing system for toasters and similar appliances. 4,510,376, Cl. 219-492.000.
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Scholten, Carel S.; Slob, Arie; and Jansen, Pierre G., to U.S. Philips Corporation. System comprising mutually synchronizing first and second active functional units. 4,510,612, Cl. 375-106.000.
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Livingston, James W.; and Schontzler, James G., 4,509,543, Cl. 134-57.00D.
Schowiak, Duane C., to Ford Motor Company. Color change apparatus. 4,509,684, Cl. 239-112.000.
Schramm, Arthur G., deceased; by Hardy, Doralyn A., personal representative; and Shaffer, Jack C. Method and apparatus for fabricating insulative panel. 4,510,010, Cl. 156-383.000.
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Boden, Richard M.; Schreiber, William L.; Fujioka, Futoshi; Chant, Patrick; and Dekker, Lambert, 4,510,080, Cl. 252-522.00R.
Schrenk, Jurgen, to Boehringer Mannheim GmbH. Homogeneous enzyme immunoassay with heating step after incubation, THERESIA. 4,510,240, Cl. 435-7.000.
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Schroeder, Donald E., Jr., to Marathon Oil Company. Polymer flow control apparatus. 4,510,397, Cl. 290-43.000.
Schrofelbauer, Herbert; Kakl, Josef; Staudinger, Gernot; and Filipot, Hermann, to Osterreichische Draukraftwerke Aktiengesellschaft. Method of and apparatus for the desulfurization of flue gas of a coal-fired combustion process. 4,509,436, Cl. 110-345.000.
Schuler, Paul D.: *See—*
Johanson, Edwin S.; and Schuler, Paul D., 4,510,037, Cl. 208-8.0LE.
Schutz, Karl H.; and Mauch, Gunter, to SKF Kugellagerfabriken GmbH. Wear measuring arrangement for bearings. 4,509,364, Cl. 73-118.000.
Schwartz, Bernard: *See—*
Kumar, Ananda H.; and Schwartz, Bernard, 4,510,000, Cl. 156-89.000.
Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Linear magnet. 4,510,421, Cl. 318-135.000.
Schweiger, Josef; and Hering, Bernhard, to Siemens Aktiengesellschaft. Electromagnetic relay. 4,510,473, Cl. 335-86.000.
Schweigert, Lothar L.; and Knaus, Heimo A. Modular structures having hinge and mating pin fastening means. 4,509,930, Cl. 446-109.000.
Schwinn Bicycle Company: *See—*
Brilando, Frank P., 4,509,767, Cl. 280-289.00R.
Science Applications, Inc.: *See—*
Sears, John T.; and Anada, Harish R., 4,510,124, Cl. 423-437.000.
Scieri, Frank; and Miller, Richard L., to Scieri, Frank. Two part mixable component storage container for whipped cream in flavors and corresponding colors, and the like. 4,509,641, Cl. 206-219.000.
Scott, Norman R.: *See—*
Sigrimis, Nick A.; and Scott, Norman R., 4,510,495, Cl. 340-825.540.
Scrivan, Michel A.: *See—*
Otto, Stanley W.; Rhoads, Jack G.; and Scrivan, Michel A., 4,509,825, Cl. 350-259.000.
Sealed Power Corporation: *See—*
Mullally, Charles J.; Brown, Steven L.; Anderson, David L.; and Hitchcock, Robert F., 4,509,340, Cl. 62-503.000.
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Secton Pty. Ltd.: *See—*
Carroll, Noel; and Phelps, Colin J., 4,510,405, Cl. 310-76.000.
Security Lumber & Supply Co.: *See—*
Schafer, Gunter, 4,509,560, Cl. 138-122.000.
Sedgewick, Richard D. Method for winding annular zig-zag windings. 4,509,564, Cl. 140-92.200.
Sedlacek, Hans-Harald: *See—*
Knop, Jurgen; Sedlacek, Hans-Harald; and Seiler, Friedrich R., 4,510,129, Cl. 424-86.000.
Seel, Holger: *See—*
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Seely, James R., to Marketing Displays, Inc. Portable wind-resistant sign stand with flexible bow-type legs. 4,509,714, Cl. 248-618.000.
Seer, Harold G., Jr., to RCA Corporation. Synchronously detected DC/DC converter for regulated power supply. 4,510,564, Cl. 363-23.000.
Segre-Amar, Leonello. System and method for transmitting messages to a telephone set through the subscriber's line in a telephone system. 4,510,349, Cl. 179-2.00A.
Seiko Instruments & Electronics Ltd.: *See—*
Mitamura, Gen, 4,509,866, Cl. 368-296.000.
Seiler, Friedrich R.: *See—*
Knop, Jurgen; Sedlacek, Hans-Harald; and Seiler, Friedrich R., 4,510,129, Cl. 424-86.000.
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Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
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Sekiya, Takuro: *See—*
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Sell, William J.; Peisach, Joel M.; and Riege, David H., to Mast Immunosystems, Ltd. Photo chamber for recording chemical reactivity. 4,510,393, Cl. 250-475.200.
Seltzer, Leonard W. Watering device for animals. 4,509,460, Cl. 119-74.000.
Sensormedics Corporation: *See—*
Luper, Charles R., 4,509,551, Cl. 137-554.000.
Seo, Yasutsugu, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnostic equipment. 4,509,525, Cl. 128-663.000.
Servo Technology Corp.: *See—*
Sasso, Bill J., 4,510,420, Cl. 318-37.000.
Seshimoto, Osamu, to Fuji Photo Film Co., Ltd. Liquid transporting and distributing device and ionic activity measuring device using the same. 4,510,035, Cl. 204-411.000.
Settanni, Richard: *See—*
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Seymour, Robert W.: *See—*
Weemes, Doyle A.; and Seymour, Robert W., 4,510,205, Cl. 428-483.000.
Shaffer, Jack C.: *See—*
Schramm, Arthur G., deceased; Hardy, Doralyn A., personal representative; and Shaffer, Jack C., 4,510,010, Cl. 156-383.000.
Shah, Kishore R., to Kendall Company, The. Water vapor permeable pressure sensitive adhesives incorporating modified acrylate copolymers. 4,510,197, Cl. 428-220.000.

Shalaby, Shalaby W.: *See—*
Bezwada, Rao S.; Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,510,295, Cl. 525-437.000.
Shaw, Charles R., to Esmet, Inc. Rope clamp construction. 4,509,233, Cl. 24-136.00R.
Shaw, Daniel, to General Motors Corporation. Stationary continuous automatic pouring apparatus. 4,509,578, Cl. 164-155.000.
Shea, Lance L. Weight lifter's belt incorporating pulley mechanism. 4,509,214, Cl. 2-322.000.
Sheek, Roy S., to Fairchild Industries, Inc. Track fastener. 4,509,888, Cl. 410-105.000.
Shell Oil Company: *See—*
Kruka, Vitold R.; Kipp, Robert M.; and Cadena, Edward R., 4,510,588, Cl. 367-165.000.
Lewis, Robert M.; Ott, Kevin C.; and Van Santen, Rutger A., 4,510,257, Cl. 502-63.000.
Stewart, Thomas L.; and Demny, Florian C., 4,510,060, Cl. 210-746.000.
Shelton, Joseph T.: *See—*
Pease, Floyd T.; and Shelton, Joseph T., 4,509,448, Cl. 114-293.000.
Shepherd, C. Barrett, to C. E. Shepherd Company, Inc. Shellfish trap. 4,509,288, Cl. 43-102.000.
Sherk, Fred T.: *See—*
Cleary, James W.; Sherk, Fred T.; and Nesheiwat, Afif M., 4,510,316, Cl. 548-555.000.
Sherman, David M., to John Fluke Mfg. Co., Inc. Apparatus for digitally controlled calibration of frequency response of amplifiers. 4,510,454, Cl. 330-2.000.
Sherman, Guy J., to Sherman Laboratories, Inc. Soft contact lens preservative system, prophylactic cleaner and method. 4,510,065, Cl. 252-106.000.
Sherman Laboratories, Inc.: *See—*
Sherman, Guy J., 4,510,065, Cl. 252-106.000.
Sherman, Randy J.; and Hanson, Derald F., to Lincoln Laser Company. Optical beam pulse generator. 4,509,819, Cl. 350-6.700.
Sherritt Gordon Mines Limited: *See—*
Bolton, Gerald L.; and Weir, Donald R., 4,510,028, Cl. 204-119.000.
Sherwood, Kent. Method of manufacturing a surface-reinforced foam article. 4,510,105, Cl. 264-46.600.
Shevchuk, George J., to Bell Telephone Laboratories, Inc. Unitary construction circuit pack carrier. 4,509,647, Cl. 211-41.000.
Shibata, Akira: *See—*
Miura, Kuniaki; Shibata, Akira; Yamada, Jun; and Hazama, Katashi, 4,510,530, Cl. 358-314.000.
Shibata, Katsuji: *See—*
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Shima, Tetsuo: *See—*
Yamazaki, Toshinori; Nomori, Hiroyuki; Matsuzaki, Masatoshi; Shima, Tetsuo; and Myokan, Isao, 4,510,224, Cl. 430-57.000.
Shimano Industrial Company Limited: *See—*
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Shimasaki, Keiichi: *See—*
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Shimatani, Saburo: *See—*
Hira, Yutaka; Ukai, Yoshitaka; Akuzawa, Yoshihide; Aoki, Osamu; and Shimatani, Saburo, 4,509,874, Cl. 400-691.000.
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Tanabe, Kenzo; and Shimizu, Keiichiro, 4,510,517, Cl. 357-34.000.
Shimogawara, Jun, to NEC Corporation. Character selecting and inked ribbon feeding mechanism for a serial printer. 4,509,872, Cl. 400-144.100.
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Cais, Michael; and Shimoni, Moshe, 4,510,058, Cl. 210-657.000.
Shimotsuma, Wataru: *See—*
Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, 4,510,089, Cl. 260-396.00N.
Shimura, Tatsuo, to Yasui Sangyo Co., Ltd. Portable hydraulic lifting jack, 4,509,723, Cl. 254-93.00H.
Shinko Kosen Kogyo Kabushiki Kaisha: *See—*
Yoshida, Tatsuo; Fukuda, Kikuo; and Tomiguchi, Akihiko, 4,509,319, Cl. 57-218.000.
Shinozaki, Takashi: *See—*
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.
Shintani, Koichi, to Colleen Pencil Co., Ltd. Felt pen having two end caps. 4,509,875, Cl. 401-34.000.
Shiomi, Yozo: *See—*
Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, 4,510,111, Cl. 264-177.00F.
Shiozawa, Takao, to Konishiroku Photo Industry Co., Ltd. Sheet feeding means. 4,509,737, Cl. 271-125.000.
Shipchandler, Mohammed T.: *See—*
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Shirataki, Kenji, to Tokai Shoji Co. Ltd. Apparatus for applying emulsion onto screen printing plate. 4,509,455, Cl. 118-696.000.
Shkawrytko, Victor: *See—*
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Shtarkman, Emile M., to Imperial Clevite Inc. Flexible wall spring damper. 4,509,730, Cl. 267-35.000.
Shuman, Ralph J., to Dennison Manufacturing Company. Thermal ink transfer recording. 4,510,206, Cl. 428-488.100.
Shuman, Richard F.: *See—*
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Siebert, Oliver W., to Monsanto Company. Clad metal joint closure 4,510,171, Cl. 427-34.000.
Sielaff GmbH & Co. Automatenbau Herrieden: *See—*
Mehlan, Bernd; and Gress, Josef, 4,509,339, Cl. 62-450.000.
Siemens Aktiengesellschaft: *See—*
Assbeck, Franz; and Fleckenstein, Volker, 4,510,434, Cl 323-237.000.
Riedl, Hermann, 4,510,448, Cl. 324-309.000.
Schweiger, Josef; and Hering, Bernhard, 4,510,473, Cl. 335-86.000.
Sohrt, Christian, 4,510,395, Cl. 290-3.000.
Siff, Bradford E.; and Siff, Elliott J. Mail box. 4,509,675, Cl. 232-17.000.
Siff, Elliott J.: *See—*
Siff, Bradford E.; and Siff, Elliott J., 4,509,675, Cl. 232-17.000.
Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
Tinti, Maria O.; Quaresima, Emma; Bagolini, Carlo; and de Witt, Paolo, 4,510,318, Cl. 560-147.000.
Signode Corporation: *See—*
Klaus, Artur; and Wilhelm, Hans, 4,509,668, Cl. 227-8.000.
Sigrimis, Nick A.; and Scott, Norman R., to Cornell Research Foundation, Inc. Remote passive identification system. 4,510,495, Cl. 340-825.540.
Simich, Emil, to A.J. Gerrard & Company. Bale tie joining devices. 4,509,416, Cl. 100-25.000.
Simms, John A.: *See—*
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Simon, Lionel N.: *See—*
Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, 4,510,144, Cl. 514-257.000.
Simone, Pregermain; Henri, Charcosset; and Michele, Andres, to Charbonnages de France; and Gaz de France. Process for the liquid phase hydrogenation of coal. 4,510,039, Cl. 208-10.000.
Simpson, Raymond A., Jr. Water driven scrubber for hand held shower head. 4,509,221, Cl. 15-29.000.
Sims, James O. Rotary pump assembly container. 4,509,897, Cl. 415-113.000.
Simula Inc.: *See—*
Desjardins, Stanley P.; and Warrick, James C., 4,509,621, Cl. 188-372.000.
Singer Company, The: *See—*
Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., 4,510,404, Cl. 310-50.000.
Howe, Clarice M.; and Mack, Audrey, 4,509,444, Cl. 112-262.100.
Singh, Jag J.: *See—*
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Sintered Metals, Inc.: *See—*
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Sitt, Rudiger: *See—*
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Sivyer, Robert B. Thermowell apparatus. 4,510,343, Cl. 136-242.000.
Sjonell, Goran. Method of mixing one substance with another substance. 4,509,861, Cl. 366-131.000.
Skaletz, Heinz: *See—*
Riemann, Hanns-Helmut; Sonnenschein, Hans; and Skaletz, Heinz, 4,509,697, Cl. 241-72.000.
SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; Hans, Rudiger; and Kiener, Heinz, 4,509,764, Cl. 277-166.000.
Schutz, Karl H.; and Mauch, Gunter, 4,509,364, Cl. 73-118.000.
Skinner, Robert T. J., to Lucas Industries Public Limited Company. Fuel injection nozzles. 4,509,691, Cl. 239-533.900.
Skinner, Ronald W.; Tao, John C.; and Znaimer, Samuel, to International Coal Refining Company. Coal liquefaction process. 4,510,040, Cl. 208-10.000.
Skogberg, Bo T.; and Romell, Gunnar V. R., to Atlas Copco Aktiebolag. Method of rock bolting and tube-formed expansion bolt. 4,509,889, Cl. 411-19.000.
SKW Trostberg Aktiengesellschaft: *See—*
Goll, Werner, 4,510,282, Cl. 524-337.000.
Slater, Christopher J., to Dunlop Limited. Flexible hose. 4,509,558, Cl. 138-104.000.
Slattery, Gordon C., to Brunswick Corp. Starting enrichment of alternate firing two cycle internal combustion engine. 4,509,472, Cl. 123-179.00G.
Slob, Arie: *See—*
Scholten, Carel S.; Slob, Arie; and Jansen, Pierre G., 4,510,612, Cl. 375-106.000.
Slominski, John T.: *See—*
Bursh, Talmage P., Jr.; Davis, Dean L.; Slominski, John T.; and Swartz, Raymond K., 4,510,346, Cl. 174-36.000.
Small, Maynard E. Bingo game involving promotional coupons. 4,509,759, Cl. 273-269.000.

Smith, Alfred A., to Guardian Products Company, Inc. Height adjustable crutch. 4,509,741, Cl. 272-69.000.
Smith, C. Bruce. Aquaculture harvester. 4,509,285, Cl. 43-9.000.
Smith, Edgar L. Device for extracting valve packing. 4,509,392, Cl. 81-8.100.
Smith, Gary F.: *See—*
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., 4,510,289, Cl. 525-148.000.
Smith, Jane E.; and Whitford, Rowland E., to Babcock & Wilcox Company, The. Control system for an electro-pneumatic converter. 4,509,547, Cl. 137-85.000.
Smith, Jeffrey C., to Branson Ultrasonics Corporation. Vapor degreaser apparatus. 4,510,053, Cl. 210-175.000.
Smith, Malcolm S., to Du Pont de Nemours, E. I., and Company. Tack-free polymer pellets. 4,510,281, Cl. 524-229.000.
Smith, Morley L.: *See—*
Allison, Philip J.; and Smith, Morley L., 4,509,226, Cl. 15-257.060.
Smith, Nicholas K.: *See—*
Costello, Peter E.; Fossett, Lawrence D.; Lane, Michael S.; Quin, Terrence T.; and Smith, Nicholas K., 4,510,351, Cl. 179-27.00D.
Smith, Richard H., Sr., to Universal Spiralweld Enterprises, Inc. Helical seamed structural vessel and method of forming same. 4,509,447, Cl. 114-65.00R.
Smith, Robert B.: *See—*
Schneider, William R.; and Smith, Robert B., 4,509,243, Cl. 29-402.020.
Smith, Robert L.; and Graham, Samuel L., to Merck & Co., Inc. 6(or 5)-Hydroxybenzothiazole-2-sulfonamide-O-sulfate salts for the topical treatment of elevated intraocular pressure. 4,510,155, Cl. 514-276.000.
Smith, Thomas P.: *See—*
Wolfe, Earle C., deceased; Jobsky, William G.; and Smith, Thomas P., 4,510,487, Cl. 340-566.000.
Smith, Veronica. Three-dimensional greeting card. 4,509,280, Cl. 40-486.000.
Smith, Walter E. Slide bar guitar. 4,509,400, Cl. 84-293.000.
Smither, Miles A.: *See—*
Mayo, Franklin W.; and Smither, Miles A., 4,510,585, Cl. 367-43.000.
Smythe, Robert A.; Bunkenburg, Joachim; and Richardson, Gunnar D., to GCA Corporation/Tropel Division. Compact, linear measurement interferometer with zero abbe error. 4,509,858, Cl. 356-358.000.
Snyder, Daniel S., to Imperial Clevite Inc. Piezoelectric reed power supply for use in abnormal tire condition warning systems. 4,510,484, Cl. 340-58.000.
Sobin, Sidney S.; and Netto, Daniel J. Tapered torque strain relief coupling. 4,509,877, Cl. 403-41.000.
Sohne, Eric R.: *See—*
Costello, Samuel J.; and Sohne, Eric R., 4,509,255, Cl. 29-753.000.
Sohrt, Christian, to Siemens Aktiengesellschaft. Double-axle drive for electric self-propelled railway vehicle. 4,510,395, Cl. 290-3.000.
Sokoler, Henryk; and Pedersen, Eigil, to Everlite A/S. Panel for self-supporting roof structures comprising elongated extruded profile elements of plastics material closed at their ends, and closing member for such profile elements. 4,509,306, Cl. 52-302.000.
Solleder, Friedrich; Krohn, Hellmut; Burckhardt, Manfred; and Brugger, Franz, to Daimler-Benz Aktiengesellschaft. Installation for charging a pressure reservoir provided as a pressure source within a propulsion control system of a motor vehicle. 4,509,802, Cl. 303-110.000.
Sommers, Hans: *See—*
Lorenz, Werner; Bathke, Heinz; and Sommers, Hans, 4,509,913, Cl. 431-90.000.
Sonat Offshore Drilling Inc.: *See—*
Pease, Floyd T.; and Shelton, Joseph T., 4,509,448, Cl. 114-293.000.
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Sonnenschein, Hans: *See—*
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Asami, Shojiro; Ozawa, Kazuo; and Sawa, Tetsuo, 4,510,546, Cl. 360-133.000.
Guisinger, Barrett E., 4,510,459, Cl. 330-265.000.
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Young, Quentin H., 4,509,347, Cl. 70-129.000.
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Southwire Company: *See—*
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Sowards, Norman K., to Energy Products of Idaho. Fluidized bed charcoal particle production system. 4,510,021, Cl. 201-4.000.
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Spaziante, Placido M., to Panclor S.A. Process for electrolysis of sea water. 4,510,026, Cl. 204-95.000.
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Spector, Yehiel; and Cohen, Ilan, 4,509,601, Cl. 169-61.000.
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Spectrum Medical Industries, Inc.: *See—*
Bessman, Samuel P., 4,509,695, Cl. 241-2.000.
Speer, Lawrence L. Multiple filling method of repairing damaged material. 4,510,001, Cl. 156-98.000.
Speich, Francisco, to Textilma AG. Gear unit transforming a uniform driver to a non-uniform power take-off. 4,509,380, Cl. 74-394.000.
Spencer, Douglas A.: *See—*
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Sperry Corporation: *See—*
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Spires, Dewayne A., to AT&T Bell Laboratories. Relay driver. 4,510,550, Cl. 361-152.000.
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Squire, John S., to Tulin Corporation. Stepper motor damping circuit and a method therefor. 4,510,429, Cl. 318-696.000.
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Stahl, Werner; and Muller, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Apparatus for manipulating stacked X-ray sheets or the like. 4,509,736, Cl. 271-11.000.
Staley, Lorie L.; and Pelaez, Joaquin, to McCormick & Company, Inc. Process for producing intermediate moisture quick-cooking beans. 4,510,164, Cl. 426-331.000.
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Stanefski, Eugene F.: *See—*
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Stanfield, Alvin M., Jr. Shutter construction. 4,509,290, Cl. 49-92.000.
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Weaver, Charles A.; and Stephens, Joseph W., 4,510,104, Cl. 264-40.700.
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Bailey, Denis M., 4,510,139, Cl. 514-234.000.
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Stern, Gerhard, to Chemie Linz Aktiengesellschaft. Process for preparing pure diacetonitrile. 4,510,099, Cl. 260-465.50R.
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Stewart, Thomas L.; and Demny, Florian C., to Shell Oil Company. Measurement of bs&w in crude oil streams. 4,510,060, Cl. 210-746.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
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Stiefel, Edward I.; Pan, Wie-Hin; and Chianelli, Russell R., to Exxon Research and Engineering Co. Self-promoted molybdenum and tungsten sulfide hydrotreating catalysts from bis(tetrathiometallate) precursors. 4,510,260, Cl. 502-219.000.
Stirbis, James S., to Adolph Coors Company. Disk transfer system. 4,509,555, Cl. 137-625.110.
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Strauss, Leida, administrator: *See—*
Langen, Marinus J. M.; Strauss, Edgars H., deceased; and Strauss, Leida, administrator, 4,510,620, Cl. 383-14.000.
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Stroffolino, Leon C., to Paolantonio, Vito J. Umbrella silk screening fixture. 4,509,420, Cl. 101-35.000.
Strothers, John. Vehicle seat harness. 4,509,798, Cl. 297-487.000.
Struthers, Ralph C. Fuel cell electrolyte supply system and apparatus. 4,510,211, Cl. 429-18.000.
Stryker Corporation: *See—*
Richmond, James W., 4,509,516, Cl. 128-303.00R.
Stuart, Thomas G., to Applied Power Inc. Latch mechanism for a tilt-cab truck. 4,509,612, Cl. 180-89.140.
Stucke, Walter, to Mannesmann AG. Method of jacketing steel pipes. 4,510,007, Cl. 156-244.120.
Stumpp, Gerhard: *See—*
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Stutzinger, Ferdinand: *See—*
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Suciu, George D.; Stefani, Giancarlo; and Fumagalli, Carlo, to Lummus Company, The. Catalysts containing mixed oxides of vanadium and phosphorus. 4,510,258, Cl. 502-209.000.
Suda, Yoshiyuki; Yokoyama, Katsunori; and Tanuma, Chiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Piezoelectric displacing device. 4,510,412, Cl. 310-328.000.
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Sugimoto, Akinori; and Sugimoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Electric dynamometer. 4,509,374, Cl. 73-862.170.
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Sugimura, Nobuyuki. Accumulator. 4,509,557, Cl. 138-30.000.
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Sugizaki, Takashi; and Sakamoto, Yoshisuke, to Toyo Seikan Kaisha, Ltd. Squeezable container for dispensing foamed sol. 4,509,661, Cl. 222-190.000.
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Sulzer-Escher Wyss GmbH: *See—*
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Sumansky, L. Walter, to United States Steel Corporation. Cleaning method for removing sulfur containing deposits from coke oven gas lines. 4,509,989, Cl. 134-22.120.
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Sumitomo Chemical Company, Limited: *See—*
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Saito, Kenji; and Yamachika, Hiroshi, 4,510,329, Cl. 568-310.00.
Sumitomo, Hiroyuki: *See—*
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Sumiya, Koji; and Kuramochi, Kojiro, to Aisin Warner Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic pressure regulating system for a vehicle automatic transmission. 4,509,391, Cl. 74-869.000.
Summers, Mark A.; Eimerl, David; and Boyd, Robert D., to United States of America, Energy. Optical harmonic generator. 4,510,402, Cl. 307-427.000.
Sumpter, Irvin L.: *See—*
Peters, Donald L.; Rathman, John R.; and Sumpter, Irvin L., 4,510,116, Cl. 264-529.000.
Sun, Shan C., to Westinghouse Electric Corp. Frequency modulation or pulse modulation demodulator. 4,510,453, Cl. 329-106.000.
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Sutton, John R., to Marine Concepts, Inc. Drydocking device having a moment resisting arrangement. 4,509,446, Cl. 114-45.000.
Suzuki, Akio; Akiyama, Mitsuo; Uzuhashi, Hideo; Ochiai, Izumi; Yamashita, Hitoshi; Sekine, Youji; Matsui, Katsuo; and Tomita, Syuji, to Hitachi, Ltd. Method of manufacturing fan guard. 4,509,354, Cl. 72-294.000.
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Suzuki, Ryo: *See—*
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Suzuki, Yasuo: *See—*
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Svengren, Anders G., to Nestec S.A. Method of and a machine for disintegrating materials. 4,509,700, Cl. 241-280.000.
Svetlik, Harvey E., to Phillips Petroleum Company. Heat transfer device and method of manufacture. 4,509,590, Cl. 165-104.270.
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Swanson, Hilmer I., to Harris Corporation. PDM Amplifier having distortion reduction circuit. 4,510,456, Cl. 330-10.000.
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Sweet, Welby C., to Marathon Oil Company. Process for devolatilizing natural gas liquids. 4,509,967, Cl. 62-17.000.
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Swift, Joseph E. Continuous flow fuel injection system. 4,509,486, Cl. 123-453.000.
Swift, Stephen: *See*—
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Swisher, Steven L.: *See*—
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SWS Silicones Corporation: *See*—
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Syrbius, Gerhard: *See*—
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Szabo, Ervin I.; and Whiting, Laurence V., to Canadian Patents and Development Limited. Method of manufacturing a foundry mould mix containing a mould binder. 4,509,983, Cl. 106-38.200.
Szantho, Charles F.; and Riordan, Edward D., to Joyal Products, Inc. Fusing machine. 4,510,370, Cl. 219-86.250.
Szczepanek, Thaddeus J., to Universal Tool Company, Inc. Handcuff lock construction. 4,509,346, Cl. 70-16.000.
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T. S. Simms & Co. Limited: *See*—
Allison, Philip J.; and Smith, Morley L., 4,509,226, Cl. 15-257.060.
Tabarelli, Werner; and Lobach, Ernst W. Apparatus for the photolithographic manufacture of integrated circuit elements. 4,509,852, Cl. 355-30.000.
Tabata, Akira: *See*—
Goto, Hiroshi; and Tabata, Akira, 4,509,249, Cl. 29-576.00W.
Tabata, George K.; and Yardy, Raymond, to Discovision Associates. Signal conditioning method and apparatus for FM code signal. 4,510,536, Cl. 360-65.000.
Tabata, Itsuo; and Watanabe, Seiichi, to Denki Kagaku Kogyo Kabushiki Kaisha. Process for producing chloroprene. 4,510,341, Cl. 570-229.000.
Tabet, Michael A. Golfer's wind indicator and ball retriever. 4,509,751, Cl. 273-32.00H.
Tachikawa Spring Co., Ltd.: *See*—
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Tachiki, Masaaki: *See*—
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Taguchi, Keiji: *See*—
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Taguma, Akihiro: *See*—
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Tahara, Iwao, to Casio Computer Co., Ltd. Sound generating device for jogger. 4,510,485, Cl. 340-323.00R.
Taiho Kogyo Co., Ltd.: *See*—
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Taiyo Musen Co. Ltd.: *See*—
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Taiyo Yuden Kabushiki Kaisha: *See*—
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Tajana, Alberto: *See*—
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Takagi, Genjiro, to Tachikawa Spring Co., Ltd. Seat frame for vehicle seat. 4,509,796, Cl. 297-452.000.
Takagi, Seiji: *See*—
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Takagi, Yukio, to Meinan Machinery Works, Inc. Veneer splicing apparatus. 4,510,009, Cl. 156-353.000.
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Takahashi, Minoru, to TDK Corporation. LC-switched transistor oscillator for vibrator excitation. 4,510,464, Cl. 331-116.00R.
Takahashi, Toshio, to Fuji Jukogyo Kabushiki Kaisha. System for diagnosing a device of an internal combustion engine. 4,509,363, Cl. 73-118.000.
Takano, Hiroshi; Yokoyama, Hiroshi; and Mizuno, Takahide, to Mitsuboshi Belting Ltd. Belt sleeve manufacturing method and apparatus. 4,510,113, Cl. 264-257.000.
Takao, Mitsunori; and Kimura, Takahiko, to Nippondenso Co., Ltd. Idle operation control for internal combustion engines. 4,509,477, Cl. 123-339.000.
Takao, Mitsunori; and Ban, Toshika, to Nippondenso Co., Ltd. A/D Conversion period control for internal combustion engines. 4,510,569, Cl. 364-431.120.
Takaya, Yoshikazu: *See*—
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Takeda Chemical Industries, Ltd.: *See*—
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Takeda, Masaru: *See*—
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Takeda, Shiro; and Nakajima, Minoru, to Fujitsu Ltd. Silicone-type coating resin solution. 4,510,283, Cl. 524-356.000.
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Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; Toya, Ichizo; and Syuto, Sadanobu, 4,510,235, Cl. 430-574.000.
Takemae, Mikio: *See*—
Maida, Osamu; Takemae, Mikio; and Okubo, Yuji, 4,509,847, Cl. 354-442.000.
Takematsu, Yoshiyuki, to Fuji Koeki Kabushiki Kaisha. Photometric circuit in a photographic flash device. 4,509,844, Cl. 354-416.000.
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Takeshita, Akira: *See*—
Hattori, Makoto; Taguma, Akihiro; and Takeshita, Akira, 4,510,087, Cl. 260-371.000.
Takeshita, Masatoshi; Kodama, Naoki; Suzuki, Ryo; Takeuchi, Teruaki; and Sugita, Yutaka, to Hitachi, Ltd. Method for manufacturing a magnetic bubble memory. 4,510,231, Cl. 430-312.000.
Takeuchi, Hisaharu: *See*—
Miyaguchi, Hiroshi; and Takeuchi, Hisaharu, 4,510,578, Cl. 364-725.000.
Takeuchi, Koichi: *See*—
Sato, Seiji; and Takeuchi, Koichi, 4,510,538, Cl. 360-84.000.
Takeuchi, Takashi; Takahashi, Hideaki; Saji, Keiichi; Kondo, Haruyoshi; and Hayakawa, Kiyoharu, to Kabushiki Kaisha Toyota Chouo Kenkyusho. Limiting electric current type oxygen sensor with heater and limiting electric current type oxygen concentration detecting device using the same. 4,510,036, Cl. 204-425.000.
Takeuchi, Teruaki: *See*—
Takeshita, Masatoshi; Kodama, Naoki; Suzuki, Ryo; Takeuchi, Teruaki; and Sugita, Yutaka, 4,510,231, Cl. 430-312.000.
Takeuchi, Tooru; Nakamura, Masaru; and Aoishi, Eiji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyvinyl chloride resinous molded sheet product. 4,510,201, Cl. 428-285.000.
Taki, Hiromitsu: *See*—
Honjo, Katsuhiko; Taki, Hiromitsu; and Sato, Noriya, 4,510,179, Cl. 427-96.000.
Taki, Kiyozi, to Kabushiki Kaisha Miura Kumihimo Kogyo. Plastic slide bearing. 4,509,870, Cl. 384-296.000.
Takizawa, Yoshiyuki: *See*—
Sato, Tetsuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,510,458, Cl. 330-260.000.
Talavera Corporation: *See*—
Talavera, Victor T., 4,509,725, Cl. 254-212.000.
Talavera, Victor T., to Talavera Corporation. Carpet repair mechanism. 4,509,725, Cl. 254-212.000.
Talbot, Christopher G.: *See*—
Grimbleby, James B.; and Talbot, Christopher G., 4,510,384, Cl. 250-201.000.
Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihisa, to Fuji Xerox Co., Ltd. Method and device for detecting deflection amount of ink jet in ink jet printer. 4,510,504, Cl. 346-75.000.
Tamai, Yasuo: *See*—
Ogawa, Hiroshi; Mizuno, Chiaki; and Tamai, Yasuo, 4,510,203, Cl. 428-425.900.

Tamiya, Yoshimichi; and Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Sewing machine with an automatic buttonhole stitching device. 4,509,441, Cl. 112-158.00B.

Tamura, Hifumi: *See—*
Izumi, Eiichi; and Tamura, Hifumi, 4,510,387, Cl. 250-309.000.

Tamura, Kouji: *See—*
Matsuoka, Hiroo; Matsuoka, Seiichi; Yamabe, Tsunekichi; Fujie, Hirokazu; Mori, Kenji; Tamura, Kouji; Yamada, Masatoshi; and Furuta, Akio, 4,510,264, Cl. 502-328.000.

Tamura, Masuhiko: *See—*
Matsumoto, Mitsuo; Yoshimura, Noriaki; and Tamura, Masuhiko, 4,510,332, Cl. 568-454.000.
Yoshimura, Noriaki; and Tamura, Masuhiko, 4,510,331, Cl. 568-450.000.

Tamura, Yoshiharu, to NEC Corporation. Output power control circuit for power amplifier. 4,510,460, Cl. 330-285.000.

Tan, Yoichi, to Fuji Xerox Co., Ltd. Digital signal transmission system. 4,510,600, Cl. 370-94.000.

Tanabe, Kenzo; and Shimizu, Keiichiro, to Matsushita Electric Industrial Co., Ltd. Electronically controlled variable semiconductor resistor. 4,510,517, Cl. 357-34.000.

Tanaka Kogyo Company, Ltd.: *See—*
Ishida, Shigetoshi, 4,509,496, Cl. 123-651.000.

Tanaka, Masaaki: *See—*
Yagi, Shigenori; Kuzumoto, Masaki; Tanaka, Masaaki; and Ogawa, Shuji, 4,510,606, Cl. 372-25.000.

Tanaka, Tsuyoshi; and Yoshikawa, Kazuhisa, to Kabushiki Kaisha Kobe Seiko Sho. Compression crusher having an optimized jaw configuration. 4,509,699, Cl. 241-268.000.

Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, to Minolta Camera Kabushiki Kaisha. Camera system capable of focus detection through an interchangeable objective lens. 4,509,842, Cl. 354-402.000.

Taniguchi, Nobuyuki: *See—*
Nakai, Masaaki; Sahara, Masayoshi; and Taniguchi, Nobuyuki, 4,509,846, Cl. 354-442.000.

Tanimoto, Masahiro: *See—*
Hosokawa, Yoshinori; Tanimoto, Masahiro; and Tsuji, Katsuya, 4,510,610, Cl. 373-118.000.

Tanno, Shogo, to Dainichi-Nippon Cables, Ltd. Apparatus for electrically testing multi-core cables. 4,510,435, Cl. 324-52.000.

Tanuma, Chiaki: *See—*
Suda, Yoshiyuki; Yokoyama, Katsunori; and Tanuma, Chiaki, 4,510,412, Cl. 310-328.000.

Tao, John C.: *See—*
Skinner, Ronald W.; Tao, John C.; and Znaimer, Samuel, 4,510,040, Cl. 208-10.000.

Tarayre, Jean-Pierre: *See—*
Cousse, Henry; Mouzin, Gilbert; Tarayre, Jean-Pierre; and Rieu, Jean-Pierre, 4,510,142, Cl. 514-255.000.

Tarbox, Gary L.: *See—*
Barnes, Stephen R.; Tarbox, Gary L.; Huntsman, Lee L.; and McLaren, Barry D., 4,509,526, Cl. 128-663.000.

Tassin, Myron J., Jr. Blood withdrawal apparatus and method of using same. 4,509,534, Cl. 128-764.000.

Tate, Harold, Jr.: *See—*
Cook, John, 4,510,358, Cl. 200-81.00R.

Taur, Yuan, to International Business Machines Corporation. Single mask process for fabricating CMOS structure. 4,509,991, Cl. 148-1.500.

Taus, Christian: *See—*
Rau, Willy; and Taus, Christian, 4,509,438, Cl. 111-13.000.

Taylor, Charles H.: *See—*
Merritt, Francis L.; and Taylor, Charles H., 4,510,377, Cl. 219-550.000.

Taylor, Lloyd D., to Polaroid Corporation. Polymerization of monomeric hydrogen-blocked oxime derivatives. 4,510,294, Cl. 525-369.000.

Taylor, Lyle H.; and Kasner, William H., to Westinghouse Electric Corp. Operation of a two-photon three level laser. 4,510,604, Cl. 372-4.000.

TDK Corporation: *See—*
Takahashi, Minoru, 4,510,464, Cl. 331-116.00R.

Teach, Eugene G.; and Springer, Jeffery T., to Stauffer Chemical Company. Meta-anilide and meta-anilide urea herbicidal compounds and methods of use. 4,509,975, Cl. 71-100.000.

Teasdale, Robert D.: *See—*
Bouvet, Jean; and Teasdale, Robert D., 4,509,509, Cl. 128-24.100.

Tebbe, Frederick N.: *See—*
Peet, William G.; and Tebbe, Frederick N., 4,510,327, Cl. 568-1.000.

Tech Development Inc.: *See—*
Linsker, Eugene, 4,509,896, Cl. 415-9.000.

Technion Research & Development Foundation, Ltd.: *See—*
Cais, Michael; and Shimoni, Moshe, 4,510,058, Cl. 210-657.000.

Tedder, Daniel W., to Georgia Tech Research Corporation. Process for producing fuel grade alcohol by solvent extraction and carrier gas stripping. 4,510,242, Cl. 435-157.000.

Tedesco, Jack, to Econolite Control Products, Inc. Power supply voltage monitor and control system. 4,510,549, Cl. 361-86.000.

Tektronix, Inc.: *See—*
Dagostino, Thomas P.; and Trudel, John D., 4,510,571, Cl. 364-487.000.
Dickes, Eric J.; Hill, Thomas C., III; and Flegal, Robert T., 4,510,461, Cl. 331-1.00A.
McClanahan, John B.; LaVoie, Marvin E.; Kelsoe, Wayne E.; and Wrobel, James, 4,510,482, Cl. 338-24.000.

Telectronics Pty. Ltd.: *See—*
Money, David K.; Swift, Stephen; MacLaurin, Andrew; and Frost, John G., 4,509,529, Cl. 128-708.000.

Teledyne Industries, Inc.: *See—*
Ward, John W., 4,509,531, Cl. 128-736.000.

Teleflex Incorporated: *See—*
Tschanz, August E.; and Geiger, Robert W., 4,509,387, Cl. 74-505.000.

Telefunken Electronic GmbH: *See—*
Minner, Willy; Krappel, Alfred; and Guggenmos, Johannes, 4,509,482, Cl. 123-418.000.

Tellert, Rudy, to Sachs-Systemtechnik GmbH. Automatic friction clutches and controls therefor. 4,509,625, Cl. 192-0.033.

Teng, Lin-nar L., to Research Corporation. Orally administered heparin. 4,510,135, Cl. 514-56.000.

Tennison, Stephen R.: *See—*
Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., 4,510,071, Cl. 252-373.000.

Terakura, Yukio: *See—*
Ikemoto, Kazuhito; Terakura, Yukio; Miyake, Takashi; and Yamamoto, Takashi, 4,509,381, Cl. 74-413.000.

Teraoka, Toru: *See—*
Yoshida, Kenji; Nakazawa, Makoto; Shike, Toyohiko; Tomida, Masayuki; Tsuda, Masataka; and Teraoka, Toru, 4,510,154, Cl. 514-365.000.

Terasawa, Koji, to Canon Kabushiki Kaisha. Inkjet printer. 4,510,510, Cl. 346-140.00R.

Terashima, Masayuki: *See—*
Ashikaga, Tadashi; and Terashima, Masayuki, 4,510,430, Cl. 318-800.000.

Terumo Kabushiki Kaisha: *See—*
Hanzawa, Yoshiki, 4,509,943, Cl. 604-31.000.

Texaco Inc.: *See—*
Chou, Kechia J.; and Valkovich, Phillip B., 4,510,063, Cl. 252-51.50R.
Lambert, Clifford L., Jr.; and Duranleau, Roger G., 4,510,326, Cl. 564-132.000.
Rowe, Edward H.; and Parcell, Lloyd J., 4,510,057, Cl. 210-612.000.

Texor Corporation: *See—*
Aggeler, Michael J., 4,510,542, Cl. 360-98.000.

Textile Products, Incorporated: *See—*
Rheaume, Walter A., 4,510,198, Cl. 428-246.000.

Textilma AG: *See—*
Speich, Francisco, 4,509,380, Cl. 74-394.000.

Tezuka, Nobuo, to Canon Kabushiki Kaisha. Spring installing device. 4,509,240, Cl. 29-227.000.

Thallmeier, Manfred: *See—*
Glembin, Dirk; Huhn, Kurt; Meyer, Gunter; and Thallmeier, Manfred, 4,510,334, Cl. 568-643.000.

Therrien, Gaston, to Bertec Inc. Guardrail assembly for hospital bed. 4,509,217, Cl. 5-430.000.

Thibodeaux, Emile; and Thibodeaux, Robert. Rig piling clamp apparatus. 4,509,883, Cl. 405-232.000.

Thibodeaux, Robert: *See—*
Thibodeaux, Emile; and Thibodeaux, Robert, 4,509,883, Cl. 405-232.000.

Thomas, Rudy V., to Allied Corporation. Safety belt system with tension eliminating mechanism. 4,509,706, Cl. 242-107.40A.

Thomasson, William R., to Coles Cranes Limited. Safe load indicator. 4,509,376, Cl. 73-862.560.

Thompson, John A., to Exxon Research and Engineering Co. Selective extraction solvent recovery using regenerated cellulose membrane under reverse osmosis conditions. 4,510,047, Cl. 208-321.000.

Thompson, Lance R.: *See—*
Collins, George J.; Thompson, Lance R.; Rocca, Jorge J.; and Boyer, Paul K., 4,509,451, Cl. 118-50.100.

Thompson, Mortimer S., to Tri-Tech Systems International Inc. Multicontainer carrier package and a method of assembly therefor. 4,509,639, Cl. 206-159.000.

Thompson, Sharon E.; and Eastmond, Bruce C., to Motorola, Inc. Noise blanking arrangement to minimize blanker splatter. 4,510,624, Cl. 455-223.000.

Thomson - CSF: *See—*
Arditty, Herve ; Bourbin, Yannic; Dubos, Jacques; Gautnier, Francis; and Graindorge, Philippe, 4,509,968, Cl. 65-10.100.
Caugant, Jean; and Dale, Jacques, 4,510,613, Cl. 378-152.000.
Grall, Georges; Joseph, Jacques; and Lemoine, Claude, 4,510,586, Cl. 367-87.000.
Resneau, Jean C.; Puyhaubert, Jean; Da Silva, Evelyne; and Lamontagne, Claude, 4,510,470, Cl. 333-142.000.

3-J-Co., Inc.: *See—*
Bennett, Jackie D.; Bennett, Johnnie R.; and Bennett, Jimmie D., Jr., 4,509,536, Cl. 130-30.00R.

Thuot, Michael E.: *See—*
Longmire, Jerry L.; Thuot, Michael E.; and Warren, David S., 4,510,451, Cl. 328-130.100.

Ti Russel Hobbs Limited: *See—*
Inskip, Michael; and Warren, Alan, 4,510,375, Cl. 219-328.000.

Tihanyi, Bela: *See—*
Cornils, Boy; Tihanyi, Bela; Weber, Jurgen; DeWin, Werner; Erben, Edwin; and Muhlratzer, August, 4,510,182, Cl. 427-162.000.

Timex Medical Products Corporation: *See—*
Fraden, Jacob, 4,509,527, Cl. 128-671.000.
Timmington, David A. Chains. 4,510,032, Cl. 204-197.000.
Tinti, Maria O.; Quaresima, Emma; Bagolini, Carlo; and de Witt, Paolo, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Dithiodiacyl carnitines. 4,510,318, Cl. 560-147.000.
Tobacco Research & Development Institute Limited: *See—*
Meiring, Willem J., 4,509,609, Cl. 177-1.000.
Tobert, Jonathan A.: *See—*
Blaine, Edward H.; Cragoe, Edward J., Jr.; Hirschmann, Ralph F.; Nancarrow, John F., deceased; Nancarrow, Elisabeth M., executrix; and Tobert, Jonathan A., 4,510,322, Cl. 514-255.000.
Tobin-Arp Manufacturing Company: *See—*
Flaten, James F., 4,509,267, Cl. 33-185.00R.
Tokai Shoji Co. Ltd.: *See—*
Shirataki, Kenji, 4,509,455, Cl. 118-696.000.
Tokumitsu, Junsuke, to Victor Company of Japan, Ltd. Video insert editing with control signals derived off tape or from the insert. 4,510,535, Cl. 360-14.200.
Tokusen Kogyo Kabushiki Kaisha: *See—*
Yoneda, Osamu, 4,509,318, Cl. 57-212.000.
Tokuyama, Yoshio, to Victor Company of Japan, Ltd. System for reproducing a video signal in a slow motion or still picture reproduction. 4,510,533, Cl. 360-10.200.
Tokyo Electric Co., Ltd.: *See—*
Hira, Yutaka; Ukai, Yoshitaka; Akuzawa, Yoshihide; Aoki, Osamu; and Shimatani, Saburo, 4,509,874, Cl. 400-691.000.
Tokyo Sanyo Electric Co., Ltd.: *See—*
Sato, Takehisa, 4,510,563, Cl. 363-20.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fukatsu, Kunio, 4,510,381, Cl. 235-379.000.
Kurokawa, Koji, 4,509,739, Cl. 271-176.000.
Miyaguchi, Hiroshi; and Takeuchi, Hisaharu, 4,510,578, Cl. 364-725.000.
Nagano, Katsumi, 4,510,486, Cl. 340-347.0DA.
Nakagome, Hideki; and Yasuda, Satoshi, 4,509,334, Cl. 62-6.000.
Odawara, Masachika, 4,509,900, Cl. 416-198.00A.
Ogura, Masahiko, 4,510,422, Cl. 318-254.000.
Sasaki, Takafumi, 4,509,779, Cl. 292-254.000.
Seo, Yasutsugu, 4,509,525, Cl. 128-663.000.
Suda, Yoshiyuki; Yokoyama, Katsunori; and Tanuma, Chiaki, 4,510,412, Cl. 310-328.000.
Tsujii, Tatsuo; and Okino, Takaaki, 4,510,577, Cl. 364-563.000.
Tom David, Inc.: *See—*
David, Tom, 4,509,698, Cl. 241-169.100.
Tomida, Masayuki: *See—*
Yoshida, Kenji; Nakazawa, Makoto; Shike, Toyohiko; Tomida, Masayuki; Tsuda, Masataka; and Teraoka, Toru, 4,510,154, Cl. 514-365.000.
Tomiguchi, Akihiko: *See—*
Yoshida, Tatsuo; Fukuda, Kikuo; and Tomiguchi, Akihiko, 4,509,319, Cl. 57-218.000.
Tomita, Hitoshi: *See—*
Ochiai, Kouji; and Tomita, Hitoshi, 4,509,492, Cl. 123-569.000.
Tomita, Syuji: *See—*
Suzuki, Akio; Akiyama, Mitsuo; Uzuhashi, Hideo; Ochiai, Izumi; Yamashita, Hitoshi; Sekine, Youji; Matsui, Katsuo; and Tomita, Syuji, 4,509,354, Cl. 72-294.000.
Tomite, Tosio, to Hitachi, Ltd. Permanent magnet type motor having improved pole structure. 4,510,407, Cl. 310-154.000.
Tomizawa, Hiroshi: *See—*
Mizokawa, Sadao; Hamada, Takuji; Tomizawa, Hiroshi; and Fushimi, Hitoshi, 4,510,494, Cl. 340-825.050.
Tonnius, Dietrich; Weiss, Wolfgang; Orth, Winfried; Miele, Heinrich; and Pastorek, Emmerich, to Rutgerswerke Aktiengesellschaft. Method for the production of phenanthrenequinone. 4,510,090, Cl. 260-396.00R.
Tonokawa, Hiroshi; and Nakamura, Masao, to Dow Chemical Company, The. Directional flexibilization of expanded thermoplastic foam sheet for low temperature insulation. 4,510,268, Cl. 521-146.000.
Toomey, Robert D.: *See—*
Neelameggham, Ramaswami; Priscu, John C.; and Toomey, Robert D., 4,510,029, Cl. 204-130.000.
Toray Industries, Inc.: *See—*
Kajita, Koji; Nakayama, Takashi; and Yamagata, Seiichi, 4,509,321, Cl. 57-328.000.
Tork, Leo: *See—*
Kolb, Gunter, deceased; Tork, Leo; and Hohne, Wolfgang, 4,510,302, Cl. 526-264.000.
Torkelson, John: *See—*
LeBrun, Thomas Q.; Torkelson, John; Dempster, Roy E.; and Van Tyne, Richard G., 4,510,619, Cl. 382-57.000.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.
Tosco Corporation: *See—*
Carlson, Franklin B.; and Hall, Robert N., 4,509,589, Cl. 165-95.000.
Toshiba Ceramics Co., Ltd.: *See—*
Kagami, Toshiro; and Watanabe, Kuniaki, 4,510,191, Cl. 428-36.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Morita, Seiichiro; Yuasa, Akihiko; and Arai, Takao, 4,509,236, Cl. 29-26.00A.
Nakamura, Hiromi; Mochizuki, Zenichi; Motomura, Noriyuki; and Yamada, Sadayoshi, 4,510,371, Cl. 219-121.0LM.
Toshinai, Akio: *See—*
Fujino, Sigeo; Hase, Takashi; and Toshinai, Akio, 4,510,414, Cl. 313-468.000.
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Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, to Ste Francaise des Products pour Catalyse Pro-Catalyse chez Institut Francais du Petrole. Process for manufacturing a supported catalyst for the hydrotreatment of hydrocarbon oils. 4,510,255, Cl. 502-10.000.
Toulhoat, Herve : *See—*
Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , 4,510,042, Cl. 208-59.000.
Tout, Nigel R.; and Hanson, Raymond, to USM Corporation. Treatment of articles having a coating of a moisture-curable composition. 4,509,271, Cl. 34-12.000.
Towart, Robertson: *See—*
Wehinger, Egbert; Meyer, Horst; Bossert, Friedrich; Vater, Wulf; Towart, Robertson; Stoepel, Kurt; and Kazda, Stanislay, 4,510,310, Cl. 546-321.000.
Towmotor Corporation: *See—*
Reeves, Jerry L., 4,509,409, Cl. 92-80.000.
Toya, Ichizo: *See—*
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; Toya, Ichizo; and Syuto, Sadanobu, 4,510,235, Cl. 430-574.000.
Toyama, Tatsuro: *See—*
Yuhara, Akitsuna; Nate, Kazuo; Toyama, Tatsuro; and Yamada, Jun, 4,510,410, Cl. 310-313.00D.
Toyo Aluminium Kabushiki Kaisha: *See—*
Mehada, Masashi; Yoshimura, Shozo; Yamaguchi, Kenshiro; and Iwao, Osamu, 4,510,207, Cl. 428-607.000.
Toyo Kogo Co., Ltd.: *See—*
Hattori, Toshihiko; Akagi, Yuji; and Kohara, Hideo, 4,509,906, Cl. 418-152.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Sugizaki, Takashi; and Sakamoto, Yoshisuke, 4,509,661, Cl. 222-190.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Sakamoto, Shinichiro, 4,509,235, Cl. 29-26.00A.
Yomogida, Toshihiko; Suzuki, Yasuo; and Ito, Kyoji, 4,510,580, Cl. 364-900.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Tracer Technologies, Inc.: *See—*
Crouse, Dennis N.; Reynolds, James C.; and Walsh, Fraser M., 4,510,214, Cl. 429-43.000.
Trainor, Lawrence W., deceased: *See—*
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,048, Cl. 209-3.000.
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,049, Cl. 209-3.000.
Trainor, Marie L., executor: *See—*
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,049, Cl. 209-3.000.
Trainor, Marie L., executrix: *See—*
Mai, Anh; Kaczynski, Donald J.; and Trainor, Lawrence W., deceased, 4,510,048, Cl. 209-3.000.
Transformatoren Union Aktiengesellschaft: *See—*
Broszat, Gottfried, 4,510,475, Cl. 336-60.000.
Transpec, Inc.: *See—*
Manning, Donald L., 4,509,782, Cl. 293-121.000.
Traver, Jack L.; Palmer, C. Dale; and Hughes, Richard, to Traver Tool Company. Downhole mobility and propulsion apparatus. 4,509,593, Cl. 166-63.000.
Traver Tool Company: *See—*
Traver, Jack L.; Palmer, C. Dale; and Hughes, Richard, 4,509,593, Cl. 166-63.000.
Treadwell, Stephen S.: *See—*
Martell, Charles R.; Leslie, Elmer N.; and Treadwell, Stephen S., 4,509,443, Cl. 112-262.100.
Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,510,340, Cl. 568-884.000.
Tri-Tech Systems International Inc.: *See—*
Thompson, Mortimer S., 4,509,639, Cl. 206-159.000.
Trotter, Lamar S. Portable washing and spray assembly. 4,509,545, Cl. 134-199.000.
Trout, John F.; and Hoffman, John J., to Lily Corporation. Injection nozzle for adhesive materials. 4,509,884, Cl. 405-269.000.
Trubiano, Paolo C.: *See—*
Lenchin, Julianne M.; Trubiano, Paolo C.; and Hoffman, Stella, 4,510,166, Cl. 426-565.000.

Trudel, John D.: *See—*
Dagostino, Thomas P.; and Trudel, John D., 4,510,571, Cl. 364-487.000.
Tsang, Floris Y.: *See—*
Damrow, Paul A.; and Tsang, Floris Y., 4,509,254, Cl. 29-623.500.
Tschanz, August E.; and Geiger, Robert W., to Teleflex Incorporated. Actuator assembly for remotely controlling a valve. 4,509,387, Cl. 74-505.000.
Tsiriggakis, Theodoros, to Greek Powder and Cartridge Co., S.A. Differential gear. 4,509,388, Cl. 74-650.000.
Tsubai, Yasuo; Takaya, Yoshikazu; and Kanada, Eiji, to Mitsubishi Paper Mills, Ltd. Lithographic printing plate with gelatin layers having pH values below isoelectric point. 4,510,228, Cl. 430-204.000.
Tsuda, Masataka: *See—*
Yoshida, Kenji; Nakazawa, Makoto; Shike, Toyohiko; Tomida, Masayuki; Tsuda, Masataka; and Teraoka, Toru, 4,510,154, Cl. 514-365.000.
Tsuji, Katsuya: *See—*
Hosokawa, Yoshinori; Tanimoto, Masahiro; and Tsuji, Katsuya, 4,510,610, Cl. 373-118.000.
Tsujii, Tatsuo; and Okino, Takaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Non-contact radiation thickness gauge. 4,510,577, Cl. 364-563.000.
Tsukaya, Takashi, to Olympus Optical Co., Ltd. Endoscope system. 4,509,508, Cl. 128-6.000.
Tsutsumi, Hisao; and Inoue, Tomoko, to Kao Corporation. Emulsifying composition. 4,510,070, Cl. 252-351.000.
Tsuyama Mfg. Co., Ltd.: *See—*
Tsuyama, Sadaharu, 4,510,557, Cl. 362-188.000.
Tsuyama, Sadaharu, to Tsuyama Mfg. Co., Ltd. Headlamp device for bicycle, motorcycle and the like. 4,510,557, Cl. 362-188.000.
Tucci, James M.: *See—*
Eineichner, Donald E.; Chandra, Rangasami S.; and Tucci, James M., 4,509,365, Cl. 73-151.000.
Tuftco Corporation: *See—*
Densmore, John C.; and Watkins, Charles W., 4,509,439, Cl. 112-79.00R.
Tulin Corporation: *See—*
Squire, John S., 4,510,429, Cl. 318-696.000.
Tullos, Homan C.; and Woods, Dewey W., to Kelly Bushing Tools, Inc. Wireline protector with improved clamping mechanism. 4,509,605, Cl. 175-57.000.
Tunoda, Kikuo: *See—*
Ozaki, Kiyomi; and Tunoda, Kikuo, 4,509,704, Cl. 242-84.20A.
Turley, Bernard C.: *See—*
Martin, Robert J.; Cisko, Lawrence W.; and Turley, Bernard C., 4,510,033, Cl. 204-245.000.
Turley, Stephen E. H.: *See—*
Greene, Peter D.; and Turley, Stephen E. H., 4,509,996, Cl. 148-171.000.
Turnbow, Garry V.: *See—*
Hartmann, Philip W.; Kohs, Dwight W.; Spencer, Douglas A.; and Turnbow, Garry V., 4,510,596, Cl. 370-58.000.
Turnbull, Robert S., to C.W.F. Hamilton & Company Limited. Marine jet propulsion units. 4,509,923, Cl. 440-43.000.
Tweed, William J.: *See—*
Whittenburg, Stephen L.; McCormick, David D.; Tweed, William J.; Ozgunay, A. Aykut; and Williams, James T., 4,509,412, Cl. 99-331.000.
Tyson, Robert G.: *See—*
Albert, Alban I.; Ballenegger, Marc E.; Overeem, Jan C.; and Tyson, Robert G., 4,510,159, Cl. 514-456.000.
Ubert, Hans-Jurgen, to Claudius Peters AG. Device for removing grate screenings. 4,509,917, Cl. 432-75.000.
Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Syozo, to Ubukata, Susumu. Snap action type thermally responsive switching structure. 4,510,481, Cl. 337-368.000.
Uchida, Isamu, deceased (by Uchida, Kazuko, heiress); by Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, to Laurel Bank Machine Co., Ltd. Automatic money receiving and disbursing machine. 4,510,380, Cl. 235-379.000.
Uchida, Kazuko, heiress: *See—*
Uchida, Isamu, deceased; Fujii, Chigusa, heiress; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,510,380, Cl. 235-379.000.
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, to Toyota Jidosha Kabushiki Kaisha. Method of controlling automatic stop and restart of an engine. 4,510,396, Cl. 290-30.00R.
Uchino, Shoichi: *See—*
Morishita, Hajime; Akagi, Motoo; Nonogaki, Saburo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,510,226, Cl. 430-144.000.
Udovich, Carl A.; and Edwards, Robert C., to Standard Oil Company (Indiana). Catalysts for the production of maleic anhydride by the oxidation of butane. 4,510,259, Cl. 502-209.000.
Ufrecht, Martin; and Rest, Heinz, to Ford Motor Company. Vehicle door, in particular for passenger motor car. 4,509,293, Cl. 49-502.000.
Uhlig, Uwe: *See—*
Redeker, Werner; and Uhlig, Uwe, 4,509,892, Cl. 414-223.000.
Ukai, Takeshi: *See—*
Kanno, Tadaaki; Ukai, Takeshi; Akahoshi, Yutaka; and Shibata, Katsuji, 4,509,732, Cl. 270-37.000.
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; Toya, Ichizo; and Syuto, Sadanobu, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions. 4,510,235, Cl. 430-574.000.
Ukai, Yoshitaka: *See—*
Hira, Yutaka; Ukai, Yoshitaka; Akuzawa, Yoshihide; Aoki, Osamu; and Shimatani, Saburo, 4,509,874, Cl. 400-691.000.
Ukima Colour & Chemicals Mfg. Co., Ltd.: *See—*
Kuriyama, Katsumi; Kondo, Isao; and Misaizu, Iwao, 4,510,186, Cl. 427-381.000.
Ulug, Mehmet E., to General Electric Company. Prioritized unidirectional distributed bus accessing system. 4,510,599, Cl. 370-85.000.
UNC Nuclear Industries, Inc.: *See—*
Boyce, William C.; Wittekind, Warren D.; Howard, Leroy C.; Hall, Thomas E.; and Lechelt, Wayne M., 4,510,573, Cl. 364-498.000.
Unimation, Inc.: *See—*
Dunne, Maurice J., 4,510,428, Cl. 318-632.000.
Union Carbide Corp.: *See—*
Mehta, Aspy K., 4,510,078, Cl. 252-510.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Cockayne, Brian; Griffiths, Richard J. M.; and Wright, Peter J., 4,509,997, Cl. 148-175.000.
United States of America
Air Force: *See—*
Kuperman, Gilbert G.; and Bodine, Fred R., 4,510,525, Cl. 358-88.000.
Merritt, Francis L.; and Taylor, Charles H., 4,510,377, Cl. 219-550.000.
Mori, Tsutomu T.; Dybdal, Robert B.; and Etcheverry, Robert D., 4,510,622, Cl. 455-67.000.
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Brune, John F., 4,510,500, Cl. 343-708.000.
Caslavsky, Jaroslav L.; Lavoie, Gerald H.; Earle, William H.; and Viechnicki, Dennis J., 4,510,609, Cl. 373-110.000.
Energy: *See—*
Fraioli, Anthony V., 4,510,212, Cl. 429-30.000.
Gay, Don D., 4,509,855, Cl. 356-72.000.
George, E. Victor; and Schipper, John F., 4,510,605, Cl. 372-23.000.
Greenhalgh, Wilbur O., 4,509,978, Cl. 75-84.10R.
Horton, Joel R.; and Eissenberg, David M., 4,510,121, Cl. 422-232.000.
Lauf, Robert J., 4,510,112, Cl. 264-234.000.
Lee, Norman E., 4,509,856, Cl. 356-246.000.
Longmire, Jerry L.; Thuot, Michael E.; and Warren, David S., 4,510,451, Cl. 328-130.100.
Phillips, John R.; Halbig, James K.; Menlove, Howard O.; and Klosterbuer, Shirley F., 4,510,117, Cl. 376-257.000.
Prosnitz, Donald; and Haas, Roger A., 4,510,455, Cl. 330-4.300.
Reynolds, Carl D., Jr., 4,510,363, Cl. 219-10.710.
Schnacke, Arthur W., 4,510,213, Cl. 429-36.000.
Summers, Mark A.; Eimerl, David; and Boyd, Robert D., 4,510,402, Cl. 307-427.000.
National Aeronautics and Space Administration: *See—*
Clatterbuck, Carroll H.; and Ruitberg, Arthur P., 4,510,476, Cl. 336-84.00C.
Grasso, Albert P., 4,509,548, Cl. 137-99.000.
Hergenrother, Paul M., 4,510,296, Cl. 525-534.000.
St. Clair, Anne K.; Stoakley, Diane M.; St. Clair, Terry L.; and Singh, Jag J., 4,510,277, Cl. 523-454.000.
Navy: *See—*
Andreoli, Charles R., 4,509,427, Cl. 102-261.000.
Cooper, Merton G.; Kerns, William R.; Filley, Daniel E.; and Koschnick, Gary A., 4,509,549, Cl. 137-327.000.
Cowen, Steven J.; and Young, Christopher M., 4,509,827, Cl. 350-320.000.
Garcia, Graham A.; and Cowen, Steven J., 4,510,607, Cl. 372-49.000.
Hellgren, Leroy L., 4,509,808, Cl. 339-17.00R.
Laskowski, Gordon J., 4,509,431, Cl. 104-250.000.
Manuccia, Thomas J.; and Eden, J. Gary, 4,509,522, Cl. 128-634.000.
Morgan, Walter R.; Boniface, Edmund A.; and Huben, Clayton A., 4,509,325, Cl. 60-39.141.
U.S. Philips Corporation: *See—*
Bergen, Franciscus H. M., 4,510,528, Cl. 358-213.000.
Flinn, Ian, deceased; and Murray, Robert, 4,510,471, Cl. 333-195.000.
Janssen, Peter J. M., 4,510,508, Cl. 346-135.100.
Parker, David W.; and van de Polder, Leendert J., 4,510,520, Cl. 358-12.000.
Ruprecht, Jurgen; and Weltersbach, Wolfgang, 4,510,521, Cl. 358-27.000.
Scholten, Carel S.; Slob, Arie; and Jansen, Pierre G., 4,510,612, Cl. 375-106.000.
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van den Brink, Hans G., 4,510,558, Cl. 362-263.000.
United States Steel Corporation: *See—*
Sumansky, L. Walter, 4,509,989, Cl. 134-22.120.
United States Surgical Corporation: *See—*
McGarry, Richard A.; and Noiles, Douglas G., 4,509,518, Cl. 128-325.000.
United Technologies Corporation: *See—*
Blecherman, Sol S., 4,509,616, Cl. 181-214.000.
Guertin, Joseph R., 4,509,299, Cl. 51-237.00R.

Universal Pioneer Corporation: *See—*
Kanamaru, Hitashi; and Kadoo, Fumio, 4,510,592, Cl. 369-270.000.
Universal Spiralweld Enterprises, Inc.: *See—*
Smith, Richard H., Sr., 4,509,447, Cl. 114-65.00R.
Universal Tool Company, Inc.: *See—*
Szczepanek, Thaddeus J., 4,509,346, Cl. 70-16.000.
University of California, Regents of the: *See—*
Hirschfeld, Tomas B., 4,509,370, Cl. 73-705.000.
University of Utah: *See—*
Iskander, Magdy F., 4,510,437, Cl. 324-61.00R.
Uomala, Vilho; Karkkainen, Jouko; and Sandstrom, Kjell, to Oy Wartsila Ab. Valve cover sealing. 4,509,719, Cl. 251-214.000.
UOP Inc.: *See—*
Arena, Blaise J., 4,510,339, Cl. 568-863.000.
Boudreaux, Harry J.; Card, David C.; and Hanson, Bernard M., 4,509,600, Cl. 166-381.000.
Rosen, Bruce I., 4,510,091, Cl. 260-409.000.
Rosen, Bruce I., 4,510,092, Cl. 260-409.000.
Upchurch, James M., to Schlumberger Technology Corporation. Pressure responsive perforating and testing system. 4,509,604, Cl. 175-4.520.
Upjohn Company, The: *See—*
Coleman, James H., 4,510,153, Cl. 514-220.000.
Uranium Pechiney Ugine Kuhlmann: *See—*
Floreancig, Antoine, 4,510,122, Cl. 423-10.000.
Urbach, Herman B.; and Quandt, Earl R. Direct open loop Rankine engine system and method of operating same. 4,509,324, Cl. 60-39.170.
Usiro, Kenzo: *See—*
Bando, Niro; Kurohara, Kazuaki; Fujima, Yasuo; Ikeda, Fumihiro; Usiro, Kenzo; and Ogasawara, Hiroyuki, 4,509,614, Cl. 180-273.000.
USM Corporation: *See—*
Tout, Nigel R.; and Hanson, Raymond, 4,509,271, Cl. 34-12.000.
USV Pharmaceutical Corporation: *See—*
Lee, Thomas D., 4,510,151, Cl. 514-341.000.
Utton, Charles G.; and Stratman, Bill D., to Motorola, Inc. Swinging pod antenna mount. 4,509,709, Cl. 244-118.100.
Uzuhashi, Hideo: *See—*
Suzuki, Akio; Akiyama, Mitsuo; Uzuhashi, Hideo; Ochiai, Izumi; Yamashita, Hitoshi; Sekine, Youji; Matsui, Katsuo; and Tomita, Syuji, 4,509,354, Cl. 72-294.000.
Vaara, Martti. Compounds for use in antibacterial therapy. 4,510,132, Cl. 514-11.000.
Vahratian, Adam; Maynard, Roosevelt, Jr.; Croswhite, Howard L.; and Liang, Po-Lung, to Ford Motor Company. Four speed ratio transaxle with overdrive. 4,509,389, Cl. 74-695.000.
Valdez, Gabriel A.: *See—*
Boggs, William G.; VanDenburgh, David S.; and Valdez, Gabriel A., 4,509,726, Cl. 256-8.000.
Valenzuela, Pablo D. T.: *See—*
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Valkovich, Phillip B.: *See—*
Chou, Kechia J.; and Valkovich, Phillip B., 4,510,063, Cl. 252-51.50R.
Van Antwerpen, Hubrecht C., to U.S. Philips Corporation. Infrared receiver having a cooled radiation detector. 4,509,342, Cl. 62-514.00R.
VanBerkum, Robert A. Combustion efficiency improving apparatus. 4,509,912, Cl. 431-76.000.
Van Camp, Robert L.: *See—*
Eberline, William C.; Radtke, Norman H.; and Van Camp, Robert L., 4,509,471, Cl. 123-179.00G.
van den Brink, Hans G., to U.S. Philips Corporation. Device for producing and projecting light. 4,510,558, Cl. 362-263.000.
VanDenburgh, David S.: *See—*
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van de Polder, Leendert J.: *See—*
Parker, David W.; and van de Polder, Leendert J., 4,510,520, Cl. 358-12.000.
Vanderlaan, Robert D.; and Grau, Richard, to Pneumo Corporation. Limited angle torque motor with magnetic centering and stops. 4,510,403, Cl. 310-36.000.
Van Dusen, Paul A.: *See—*
Coutta, John M.; and Van Dusen, Paul A., 4,510,526, Cl. 358-108.000.
Van Raemdonck, Rene ; and Callaert, Andre . Apparatus for moving an individual. 4,509,785, Cl. 294-118.000.
Van Santen, Rutger A.: *See—*
Lewis, Robert M.; Ott, Kevin C.; and Van Santen, Rutger A., 4,510,257, Cl. 502-63.000.
Van Tyne, Richard G.: *See—*
LeBrun, Thomas Q.; Torkelson, John; Dempster, Roy E.; and Van Tyne, Richard G., 4,510,619, Cl. 382-57.000.
VanVonno, N. W., to Harris Corporation. Dielectric isolation fabrication for laser trimming. 4,510,518, Cl. 357-49.000.
Varnum, Gerald F.: *See—*
Gassman, George W.; and Varnum, Gerald F., 4,509,403, Cl. 91-365.000.
Vasudev, Prahalad K., to Hughes Aircraft Company. Solid phase epitaxy and regrowth process with controlled defect density profiling for heteroepitaxial semiconductor on insulator composite substrates. 4,509,990, Cl. 148-1.500.
Vater, Wulf: *See—*
Wehinger, Egbert; Meyer, Horst; Bossert, Friedrich; Vater, Wulf; Towart, Robertson; Stoepel, Kurt; and Kazda, Stanislay, 4,510,310, Cl. 546-321.000.
Vaughan, Philip M., Jr. Hidden passage ball puzzle. 4,509,753, Cl. 273-110.000.
VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Hahn, Ulrich; Straube, Peter; and Koch, Michael, 4,509,425, Cl. 101-216.000.
VEB Zentrum fur Forschung und Technologie Mikroelektronik: *See—*
Kleinert, Michael; Moller, Rainer; and Stelzer, Horst, 4,509,456, Cl. 118-715.000.
Vecchi, Alfio: *See—*
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Veeder Industries Inc.: *See—*
Dolson, Richard G., 4,510,378, Cl. 235-50.00R.
Vega Precision Laboratories, Inc.: *See—*
Chisholm, John P.; and Morgan, Donald G., 4,510,499, Cl. 343-456.000.
Verbos, Stephen P., to Dresser Industries, Inc. Hoist or the like. 4,509,620, Cl. 188-171.000.
Vereczkey, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.
Vereinigte Flugtechnische Werke GmbH: *See—*
Balaskas, Spyros, 4,509,407, Cl. 91-466.000.
Vermaas, Leo F.: *See—*
Schmidt, Werner J.; Dijkshoorn, Willem; Stratmann, Wilhelm; and Vermaas, Leo F., 4,510,167, Cl. 426-607.000.
Vermande, Paul, to Centre National d'Etudes Spatiales. Imaging device, especially for producing images of the earth from a satellite. 4,509,857, Cl. 356-346.000.
Verson Allsteel Press Co.: *See—*
Budrean, John D.; and Kirkpatrick, John A., 4,509,356, Cl. 72-349.000.
Vertegaal, Jacobus G., to Stork Brabant B.V. Printing apparatus, particularly adapted to apply a varnish. 4,509,454, Cl. 118-681.000.
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Guittet, Jack; Marchal, Paul; Micaelli, Alain; and Vertut, Jean, 4,510,574, Cl. 364-513.000.
Vetco Offshore, Inc.: *See—*
Milberger, Lionel J.; and Bridges, Charles D., 4,509,594, Cl. 166-208.000.
Victor Company of Japan, Ltd.: *See—*
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Viechnicki, Dennis J.: *See—*
Caslavsky, Jaroslav L.; Lavoie, Gerald H.; Earle, William H.; and Viechnicki, Dennis J., 4,510,609, Cl. 373-110.000.
Vilain, Michel: *See—*
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Boday, Otto ; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,509,434, Cl. 110-238.000.
Visek, Tomas, to Steyr-Daimler-Puch Aktiengesellschaft. Reciprocating internal combustion engine. 4,509,475, Cl. 123-195.00A.
Vissani, Carlo: *See—*
Cloutier, Richard; and Vissani, Carlo, 4,509,659, Cl. 222-41.000.
Vittay, Pal: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,510,338, Cl. 568-766.000.
Voest-Alpine Aktiengesellschaft: *See—*
Kriegner, Othmar, 4,509,582, Cl. 164-486.000.
Voglaire, Franz. Auto-regenerable capacitor and method of manufacture thereof. 4,509,234, Cl. 29-25.420.
Vogt, Michael: *See—*
Rohlfs, Hans-Adolf; Kling, Alfred; Raab, Guenter; Vogt, Michael; Specht, Viktor; and Schaetzke, Ulrike, 4,510,068, Cl. 252-186.290.
Vollers, Gary L. Screw cap remover. 4,509,784, Cl. 294-99.100.
Vollhardt, Frohmut; and Haacker, Heinz, to M.A.N. Maschinenfabrik Ausburg-Nurnberg Aktiengesellschaft. Upright apparatus for cooling high pressure gases containing a high dust content. 4,509,463, Cl. 122-7.00R.
Volz, Karl; Link, Christoph; Stotz, Wolf-Gunter; and Heitmann, Peter, to Escher Wyss Aktiengesellschaft. Arrangement containing a controlled deflection roll and related regulator. 4,509,237, Cl. 29-116.0AD.
von Blucher, Hasso: *See—*
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W & A Bates Limited: *See—*
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W. R. Grace & Co.: *See—*
Kehr, Clifton L.; Wszolek, Walter R.; and Marans, Nelson S., 4,510,097, Cl. 260-453.00A.

Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,510,262, Cl. 502-304.000.
Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,510,261, Cl. 502-304.000.
Pereira, Carmo J.; and Hegedus, Louis, 4,510,263, Cl. 502-314.000.

Wagner, Peter; and Shkawrytko, Victor, to Almicro Electronics Inc. Personal alarm apparatus including wrist supported transmitter and receiver/telephone interface circuit. 4,510,350, Cl. 179-5.00P.

Wagnon, Jean: *See—*
Demarne, Henri; and Wagnon, Jean, 4,510,315, Cl. 548-455.000.

Wahl, Timothy M.: *See—*
Davis, Kevin M.; Wahl, Timothy M.; Beckman, John A.; and Isele, Karl J., Jr., 4,509,727, Cl. 266-44.000.

Walbro Corporation: *See—*
Eberline, William C.; Radtke, Norman H.; and Van Camp, Robert L., 4,509,471, Cl. 123-179.00G.

Walker, James M., to Dril-Quip Inc. Weld-on casing connector. 4,509,777, Cl. 285-286.000.

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Willis, Clyde A., 4,509,606, Cl. 175-69.000.

Wallqvist, Sven; and Sund, Rune, to Haldex AB. Control device for recording distance measuring instrument attached to a vehicle hub. 4,510,379, Cl. 235-95.00C.

Wallther, Harry, to Stallningsgruppen i Goteborg Aktiebolag. Device for detachably supporting a work stand on a wall surface or the like. 4,509,711, Cl. 248-235.000.

Walsh, Fraser M.: *See—*
Crouse, Dennis N.; Reynolds, James C.; and Walsh, Fraser M., 4,510,214, Cl. 429-43.000.

Walter, Hans-Jurgen, to Mico Datensysteme GmbH. Method of detecting false data recording media and a data recording medium therefor. 4,510,382, Cl. 235-380.000.

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Walz, George A.; and Kump, Donald H., to Grumman Aerospace Corporation. Keyboard terminal. 4,510,583, Cl. 364-900.000.

Wamstad, David B., to Honeywell Inc. Very high hermeticity glass to metal seal. 4,509,880, Cl. 403-179.000.

Wang, Cheng-Shi. Signal lead-out apparatus. 4,509,809, Cl. 339-14.00R.

Wang, Lawrence C.: *See—*
Girton, Virgil M.; Marason, Gabriel, Jr.; and Wang, Lawrence C., 4,510,590, Cl. 369-63.000.

Wang, Yen-Hsiung. Ventilated seat. 4,509,792, Cl. 297-180.000.

Ward, John W., to Teledyne Industries, Inc. Personal physiological monitor. 4,509,531, Cl. 128-736.000.

Warnke, Wayne L.: *See—*
Yasui, Toshihiro; and Warnke, Wayne L., 4,509,766, Cl. 280-21.00R.

Warren, Alan: *See—*
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Warren, David S.: *See—*
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Warrick, James C.: *See—*
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Warrington Inc.: *See—*
Bourque, Rene, 4,509,276, Cl. 36-115.000.

Wasa, Kiyotaka: *See—*
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Watabe, Shin, to Mitsubishi Jukogyo Kabushiki Kaisha. Temperature control device for a refrigerating apparatus having both a heating means and a cooling means. 4,509,586, Cl. 165-29.000.

Watanabe, Jun: *See—*
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Watanabe, Kenkichi; and Furuya, Katusuke, to Laurel Bank Machine Co., Ltd. Coin counting and packaging machine. 4,509,542, Cl. 133-8.00A.

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Watanabe, Seiichi: *See—*
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Waterman, Raymond C., Jr.: *See—*
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Weaver, Charles A.; and Stephens, Joseph W., to RCA Corporation. Apparatus and method for automatically controlling an extruder for thermoplastic material. 4,510,104, Cl. 264-40.700.

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Bienert, Horst; Kohlpaintner, Georg; and Jardin, Hans, 4,509,791, Cl. 296-216.000.

Weber, Arthur E. Vehicle hitch. 4,509,769, Cl. 280-491.00R.

Weber, Georg: *See—*
Eidenschink, Rudolf; Haas, Gunther; Pohl, Ludwig; Romer, Michael; Scheuble, Bernhard; and Weber, Georg, 4,510,069, Cl. 252-299.610.

Weber, Jurgen: *See—*
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Weemes, Doyle A.; and Seymour, Robert W., to Eastman Kodak Company. Copolyesterethers coated with saran. 4,510,205, Cl. 428-483.000.

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Wehinger, Egbert; Meyer, Horst; Bossert, Friedrich; Vater, Wulf; Towart, Robertson; Stoepel, Kurt; and Kazda, Stanislay, to Bayer Aktiengesellschaft. 1,4-Dihydro-2,6-dimethyl-4-(2'-chlorophenyl)-3,5-dicarboxylic acid,methyl or ethyl,trifluoroethyl ester. 4,510,310, Cl. 546-321.000.

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Weigl, Etta R., executor: *See—*
Weigl, John W., deceased, 4,509,850, Cl. 355-4.000.

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Weir, Donald R.: *See—*
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Weisert, Edward D., to Rockwell International Corporation. Method of producing diffusion bonded superplastically formed structures. 4,509,671, Cl. 228-157.000.

Weiss, Sherman L. Caulking gun. 4,509,662, Cl. 222-391.000.

Weiss, Wolfgang: *See—*
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Welch, Thomas M., to Duplex Lighting, Inc. Spindle mounting base. 4,509,881, Cl. 403-229.000.

Welch, Willard M., Jr., to Pfizer Inc. Process for preparing carboline derivatives. 4,510,308, Cl. 546-85.000.

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Wellman, Donald C., to Carrier Corporation. Venturi flow measuring device and method. 4,509,371, Cl. 73-861.000.

Welman, Cornelis M., to Mattel, Inc. Solar tracking system employing inertial coasting. 4,510,385, Cl. 250-203.00R.

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Baker, Donal E., 4,510,399, Cl. 307-57.000.
Bellows, James C., 4,509,332, Cl. 60-660.000.
Brooker, Lenon G., 4,510,199, Cl. 428-248.000.
de Calvino y Teijeiro, Ben J., 4,510,359, Cl. 200-144.0AP.
Golub, Gregory J., 4,510,360, Cl. 200-151.000.
Kobuck, Richard M.; and Jacobs, Arthur F., 4,510,372, Cl. 219-125.110.
Rostron, Joseph R.; and Perulfi, John R., 4,510,477, Cl. 336-92.000.
Sun, Shan C., 4,510,453, Cl. 329-106.000.
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Westmoreland, Julius C. Rotary to reciprocating motion converter. 4,509,379, Cl. 74-58.000.

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Keane, James W., 4,509,227, Cl. 16-23.000.

White, Harold R., to Alar Engineering Corporation. Filter aid. 4,510,055, Cl. 210-500.100.

White, Harold R., to Alar Engineering Corporation. Method of filtering. 4,510,061, Cl. 210-769.000.

White, James A.: *See—*
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Whitford, Rowland E.: *See—*
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Whiting, James F.; and Koch, Rolf H. L., to Commonwealth of Australia, The. Ultrasound tomography. 4,509,368, Cl. 73-624.000.

Whiting, Laurence V.: *See—*
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Whitted, Beth E.; and Boguslawski, George, to Miles Laboratories, Inc. Use of glucose oxime to increase glucose isomerase activity in bacterial cells. 4,510,247, Cl. 435-207.000.

Whittenburg, Stephen L.; McCormick, David D.; Tweed, William J.; Ozgunay, A. Aykut; and Williams, James T., to Rival Manufacturing Company. Food steaming device. 4,509,412, Cl. 99-331.000.

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Wiart, Albert; and Paeye, Gerard, to Jeumont-Schneider Corporation. Solar energy refrigeration device. 4,509,337, Cl. 62-235.100.

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Wiewiorowski, Tadeusz; and Mollere, Phillip D., to Freeport Minerals Company. Simultaneous leaching and electrodeposition of precious metals. 4,510,027, Cl. 204-110.000.

Wild, Peter; and Stohr, Frank-Michael, to Bayer Aktiengesellschaft. Cationic mono- and dis-azo dyestuffs, and their preparation and use for dyeing paper and cationic dyeable substrates. 4,509,948, Cl. 8-539.000.

Wilgosz, Robert. Combined firewood rack and fumigator. 4,509,650, Cl. 211-60.100.

Wilhelm, Hans: *See—*
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Wm. W. Meyer & Sons, Inc.: *See—*
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Williams, Robert J.: *See—*
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Willis, Brian J.; Eilerman, Robert G.; Christenson, Philip A.; and Yurecko, John M., Jr., to Fritzsche Dodge & Olcott Inc. Functionalization of terminal trisubstituted alkenes and derivatives thereof. 4,510,319, Cl. 560-231.000.

Willis, Clyde A., to Walker-Neer Manufacturing Co., Inc. Axial return hammer. 4,509,606, Cl. 175-69.000.

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Wilson, Leslie B.: *See—*
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Wilson, Robert C., Jr.: *See—*
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Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,510,044, Cl. 208-111.000.

Win, Michael M., to Mobil Oil Corporation. Block and stringer type lift truck pallet. 4,509,432, Cl. 108-51.100.

Windorski, David C.; and Kubiatowicz, David O., to Minnesota Mining & Manufacturing Co. Shielding device for radioactive seed. 4,509,506, Cl. 128-1.200.

Winkler, Harry L. D.C. Stepped-up voltage transformerless battery charger. 4,510,431, Cl. 320-1.000.

Winkler, Hermann; and Sachs, Hanns I., to Bayer Aktiengesellschaft. Process and apparatus for bonding particulate material, in particular chips. 4,510,184, Cl. 427-212.000.

Winterbottom, Bruce. Actuator for transfer circuit breaker switch. 4,510,357, Cl. 200-50.00R.

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Wolfe, M. Christine, administrator: *See—*
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Woodhull, Ivan D., Jr.; and Liedel, Thomas H., to Karmazin Products Corporation. Method of constructing headers of heat exchangers. 4,509,672, Cl. 228-175.000.

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Wright, Peter J.: *See—*
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Wuermli, Arthur, to Rieter Machine Works Ltd. Drafting mechanism for a spinning machine. 4,509,230, Cl. 19-245.000.

Wuhrer, Wolfgang, to Sulzer-Escher Wyss GmbH. Marine vessel propeller with nozzle. 4,509,925, Cl. 440-67.000.

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Yabe, Hisao, to Olympus Optical Co., Ltd. Endoscope apparatus. 4,509,507, Cl. 128-4.000.

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Yagi, Shigenori; Kuzumoto, Masaki; Tanaka, Masaaki; and Ogawa, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Silent discharge type pulse laser device. 4,510,606, Cl. 372-25.000.

Yagi, Toshizo, to Japan Life Company Limited. Sleeping mattress. 4,509,219, Cl. 5-481.000.

Yamabe, Tsunekichi: *See—*
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Yamada, Ken'ichi; Sumitomo, Hiroyuki; Horiguchi, Akira; and Masutani, Kenzo, to Hisaka Works, Ltd. Plate type evaporator. 4,509,592, Cl. 165-166.000.

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Yomogida, Toshihiko; Suzuki, Yasuo; and Ito, Kyoji, to Toyoda Koki Kabushiki Kaisha. Programmable sequence controller. 4,510,580, Cl. 364-900.000.
Yoneda, Osamu, to Tokusen Kogyo Kabushiki Kaisha. Steel cord. 4,509,318, Cl. 57-212.000.
Yonekura, Mikio, to Amada Company Limited. Control system for presses. 4,510,570, Cl. 364-476.000.
Yonushonis, Celeste B.: *See*—
Felice, Frank T.; and Yonushonis, Celeste B., 4,510,253, Cl. 501-95.000.
Yorke, Monica A.: *See*—
Amjad, Zahid; and Yorke, Monica A., 4,510,059, Cl. 210-701.000.
Yoshida, Kenji; Nakazawa, Makoto; Shike, Toyohiko; Tomida, Masayuki; Tsuda, Masataka; and Terasoka, Toru, to Mitsubishi Chemical Industries Ltd. Thiazolidine compound and fungicidal composition containing it. 4,510,154, Cl. 514-365.000.
Yoshida, Koichi: *See*—
Miyashita, Teruo; and Yoshida, Koichi, 4,510,030, Cl. 204-147.000.
Yoshida, Shigemasa; and Araki, Ichiro, to Computer Basic Technology Research Assoc. Magnetic head moving velocity detector. 4,510,537, Cl. 360-78.000.
Yoshida, Takao: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,510,340, Cl. 568-884.000.
Yoshida, Tatsuo; Fukuda, Kikuo; and Tomiguchi, Akihiko, to Shinko Kosen Kogyo Kabushiki Kaisha. Wire rope. 4,509,319, Cl. 57-218.000.
Yoshida, Toshio; Itoga, Kouyu; Matsui, Shigetomo; and Atsuta, Toshio, to Kawasaki Jukogyo Kabushiki Kaisha. Corrosion-resistant pipe coupling structures. 4,509,776, Cl. 285-55.000.
Yoshikawa, Kazuhisa: *See*—
Tanaka, Tsuyoshi; and Yoshikawa, Kazuhisa, 4,509,699, Cl. 241-268.000.
Yoshimura, Noriaki; and Tamura, Masuhiko, to Kuraray Company, Ltd. Processes for producing 7-octen-1-al and derivatives thereof. 4,510,331, Cl. 568-450.000.
Yoshimura, Noriaki: *See*—
Matsumoto, Mitsuo; Yoshimura, Noriaki; and Tamura, Masuhiko, 4,510,332, Cl. 568-454.000.
Yoshimura, Shozo: *See*—
Mehada, Masashi; Yoshimura, Shozo; Yamaguchi, Kenshiro; and Iwao, Osamu, 4,510,207, Cl. 428-607.000.
Youcha, Jack. Multiple lens cover for solar heating panel. 4,509,502, Cl. 126-440.000.
Young, Christopher M.: *See*—
Cowen, Steven J.; and Young, Christopher M., 4,509,827, Cl. 350-320.000.
Young, David A.; and Hummel, William H., to Draw-Tite, Inc. Drawbar cover. 4,509,770, Cl. 280-507.000.
Young, James E. Solar heating system. 4,509,503, Cl. 126-452.000.
Young, Jeffrey E., to Lanier Business Products, Inc. Continuous loop cassette changer apparatus for a dictation/transcription system. 4,510,539, Cl. 360-92.000.
Young, Quentin H., to Southern Steel Company. Door locking system. 4,509,347, Cl. 70-129.000.
Young, Randall S.; and Fredericks, Ronald D., Jr., to Dairy & Food Labs, Inc. Composition having neutralized differential infrared absorbency. 4,510,072, Cl. 252-380.000.
Young, Tommy L.: *See*—
Parlman, Robert M.; Bresson, Clarence R.; and Young, Tommy L., 4,510,050, Cl. 209-167.000.

Yuasa, Akihiko: *See*—
Morita, Seiichiro; Yuasa, Akihiko; and Arai, Takao, 4,509,236, Cl. 29-26.00A.

Yuasa Battery Co. Ltd.: *See*—
Kagawa, Hiroshi; and Matsui, Kazumasa, 4,510,217, Cl. 429-104.000.

Yuhara, Akitsuna; Nate, Kazuo; Toyama, Tatsuro; and Yamada, Jun, to Hitachi, Ltd. Elastic surface wave absorbers comprising ultraviolet light curable resin. 4,510,410, Cl. 310-313.00D.

Yuhara, Mitsuho. Golf swing diagnosing device. 4,509,757, Cl. 273-186.00A.

Yurecko, John M., Jr.: *See*—
Willis, Brian J.; Eilerman, Robert G.; Christenson, Philip A.; and Yurecko, John M., Jr., 4,510,319, Cl. 560-231.000.

Zaccheroni, Giulio. Apparatus for continuously dip-zincing of metallic wire or strip material. 4,509,453, Cl. 118-420.000.

Zaidan Hojin Minsei Kagaku Kyokai: *See*—
Fujimaki, Akira, 4,510,161, Cl. 514-54.000.

Zambrano, Adolfo R., to Owens-Corning Fiberglas Corporation. Production of ferroboron. 4,509,976, Cl. 75-21.000.

Zawitz, Richard E. Annular support device with pivotal segments. 4,509,929, Cl. 446-102.000.

Zbornik, Vaclav, to Hammerle AG Maschinenfabrik. Tool arrangement for a bending press. 4,509,357, Cl. 72-384.000.

Zeller Corporation, The: *See*—
Weible, Warren W., 4,509,932, Cl. 464-109.000.

Zenith Electronics Corporation: *See*—
Kiteley, Kenneth J., 4,510,400, Cl. 307-66.000.

Zibelin, Henry S. Kidney stone instrument. 4,509,517, Cl. 128-319.000.

Zimber, Bela; and Molnar, Imre, to Kozponti Valto. Pneumatically controlled pressure transducer for operating hydraulic work tools. 4,509,330, Cl. 60-537.000.

Zimmern, Bernard. Economizer device for a refrigerating machine, a heat-pump or the like. 4,509,341, Cl. 62-512.000.

Znaimer, Samuel: *See*—
Skinner, Ronald W.; Tao, John C.; and Znaimer, Samuel, 4,510,040, Cl. 208-10.000.

Zoecon Corporation: *See*—
Lee, Shy-Fuh, 4,509,970, Cl. 71-86.000.

Zones, Stacey I., to Chevron Research Company. Zeolite SSZ-19. 4,510,256, Cl. 502-62.000.

ZVS Vyzkumnevyvojovy Ustav, koncernova ucelova organizace: *See*—
Pajgrt, Jan; Bezdicek, Jan; and Novak, Jiri, 4,509,629, Cl. 192-0.098.

Zyma SA: *See*—
Albert, Alban I.; Ballenegger, Marc E.; Overeem, Jan C.; and Tyson, Robert G., 4,510,159, Cl. 514-456.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF APRIL, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

IDR, Inc.: *See*—
Saylor, Richard; and Nagel, Robert H., Re. 31,863, Cl. 358-141.000.

Logan, Kenneth C.; and Ludhe, Friedrich O. B., to Sunds Defibrator, Inc. Apparatus for the treatment of lignocellulosic material. Re. 31,862, Cl. 241-41.000.

Ludhe, Friedrich O. B.: *See*—
Logan, Kenneth C.; and Ludhe, Friedrich O. B., Re. 31,862, Cl. 241-41.000.

Nagel, Robert H.: *See*—
Saylor, Richard; and Nagel, Robert H., Re. 31,863, Cl. 358-141.000.

Outboard Marine Corporation: *See*—
Prince, Anthony P., Re. 31,861, Cl. 192-0.096.

Prince, Anthony P., to Outboard Marine Corporation. Single lever remote control for engine throttle and clutch. Re. 31,861, Cl. 192-0.096.

Saylor, Richard; and Nagel, Robert H., to IDR, Inc. Row grabbing system. Re. 31,863, Cl. 358-141.000.

Shannon, Alan J.: *See*—
van Bavel, Michael G.; and Shannon, Alan J., Re. 31,864, Cl. 371-20.000.

Sunds Defibrator, Inc.: *See*—
Logan, Kenneth C.; and Ludhe, Friedrich O. B., Re. 31,862, Cl. 241-41.000.

Texas Instruments Incorporated: *See*—
van Bavel, Michael G.; and Shannon, Alan J., Re. 31,864, Cl. 371-20.000.

van Bavel, Michael G.; and Shannon, Alan J., to Texas Instruments Incorporated. Self-test feature for appliance or electronic systems operated by microprocessor. Re. 31,864, Cl. 371-20.000.

LIST OF DESIGN PATENTEES

A. B. Chance Company: *See*—
McNaghten, Delmar E.; Kent, Dennis C.; and Brown, Robert A., 278,331, Cl. D13-35.000.

A/S Vestfrost: *See*—
Damkjaer, Erling, 278,342, Cl. D15-88.000.

Adam, Robert A.: *See*—
Cleevely, Bruce T.; and Adam, Robert A., 278,312, Cl. D9-449.000.

Allen, Dennis M. Stud bolt wrench. 278,310, 4-9-85, Cl. D8-21.000.

Altena Salotti, s.r.l.: *See*—
Giudici, Gianbattista, 278,287, Cl. D6-381.000.

ALZA Corporation: *See*—
Schenkel, Lotte; and Fankhauser, Peter, 278,363, Cl. D24-49.000.

American Commercial, Incorporated: *See*—
Laslo, Larry R., 278,299, Cl. D7-151.000.
Laslo, Larry R., 278,300, Cl. D7-151.000.
Laslo, Larry R., 278,301, Cl. D7-151.000.
Laslo, Larry R., 278,302, Cl. D7-151.000.
Laslo, Larry R., 278,303, Cl. D7-151.000.
Laslo, Larry R., 278,304, Cl. D7-151.000.
Seibel, Ben, 278,296, Cl. D7-13.000.

Anderson, James E.: *See*—
Baker, Dennis O.; and Anderson, James E., 278,329, Cl. D12-203.000.

Arai, Noriyuki: *See*—
Kurokawa, Koya; and Arai, Noriyuki, 278,338, Cl. D14-78.000.

AT&T Bell Laboratories: *See*—
Girardi, Joseph; and Sylvester, Gordon E., 278,336, Cl. D14-52.000.

Baker, Dennis O.; and Anderson, James E., to Owens-Classic, Inc. Motor vehicle running board. 278,329, 4-9-85, Cl. D12-203.000.

Banko, Ronald C., to Comdial Telephone Systems, Inc. Telephone. 278,337, 4-9-85, Cl. D14-58.000.

Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter. 278,350, 4-9-85, Cl. D18-1.000.

Bengtson, Darroll D., to Rosemount Inc. Flowmeter flow tube. 278,316, 4-9-85, Cl. D10-96.000.

Birchenall, Richard W. Combined can opener and shot measurer. 278,307, 4-9-85, Cl. D8-34.000.

Blackmore, Fred N., Jr. Segmented plant container. 278,323, 4-9-85, Cl. D11-155.000.

Bowen, Michael W. Spool and spindle rocking chair. 278,284, 4-9-85, Cl. D6-348.000.

Breen, John D., to Murray Ohio Manufacturing Co., The. Bicycle frame. 278,324, 4-9-85, Cl. D12-111.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,351, Cl. D18-1.000.

Brown, John M.; Herritz, Donald; Ottinger, Barbara L.; and Westmas, Leland D., to Gerber Products Company. Combined hood and collar. 278,311, 4-9-85, Cl. D9-436.000.

Brown, Robert A.: *See*—
McNaghten, Delmar E.; Kent, Dennis C.; and Brown, Robert A., 278,331, Cl. D13-35.000.

Cagney, Stanton M., to First National Precision Products, Inc. Vehicle warning light. 278,365, 4-9-85, Cl. D26-28.000.

CAPS Industries: *See*—
Gordon, F. Scott; Fender, Derek H.; and Dolan, Michael J., 278,345, Cl. D15-199.000.

Cascarano, Anthony J.: *See*—
Matsuda, Hari; Cascarano, Anthony J.; and Schwimmer, Charles M., 278,335, Cl. D14-39.000.

Caven, Terence T., to Plessey Overseas Limited. Keyboard for a data terminal. 278,339, 4-9-85, Cl. D14-100.000.

Cerberus A.G.: *See*—
Meier, Otto; and Huber, Felix, 278,332, Cl. D13-35.000.

Chen, Ming-Ter. Plate or the like. 278,297, 4-9-85, Cl. D7-24.000.

Cleevely, Bruce T.; and Adam, Robert A., to General Foods Corporation. Dispensing closure. 278,312, 4-9-85, Cl. D9-449.000.

Comdial Telephone Systems, Inc.: *See*—
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Con-Serv Incorporated: *See*—
Rattray, Thomas, 278,362, Cl. D23-155.000.

Crane, Douglas A.: *See*—
Crane, Stephen; and Crane, Douglas A., 278,319, Cl. D10-114.000.

Crane Manufacturing and Plastics Corp.: *See*—
Crane, Stephen; and Crane, Douglas A., 278,319, Cl. D10-114.000.

Crane, Stephen; and Crane, Douglas A., to Crane Manufacturing and Plastics Corp. Reflector for dash mounted vehicle emergency flashing light or the like. 278,319, 4-9-85, Cl. D10-114.000.

Daiwa Seiko, Inc.: *See*—
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Damkjaer, Erling, to A/S Vestfrost. Refrigerator cabinet. 278,342, 4-9-85, Cl. D15-88.000.

Dau, John J. Table. 278,294, 4-9-85, Cl. D6-477.000.

De Lucchi, Michele: *See*—
Sottsass, Ettore; and De Lucchi, Michele, 278,289, Cl. D6-487.000.

Dolan, Michael J.: *See*—
Gordon, F. Scott; Fender, Derek H.; and Dolan, Michael J., 278,345, Cl. D15-199.000.

Doman, Donald W.: *See*—
Kohler, Herbert V., Jr.; and Doman, Donald W., 278,360, Cl. D23-55.000.

Dondero, John D.: *See*—
Gregory, John R.; Parks, Gerald R.; and Dondero, John D., 278,280, Cl. D2-27.000.

Drag Specialties, Inc.: *See*—
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Dreir, Jeffrey: *See*—
Dreir, Stanley A.; and Dreir, Jeffrey, 278,281, Cl. D2-314.000.

Dreir, Stanley A.; and Dreir, Jeffrey. Stripes portion of an athletic shoe. 278,281, 4-9-85, Cl. D2-314.000.

Enomoto, Haruyuki, to Sony Corporation. Computer. 278,340, 4-9-85, Cl. D14-100.000.

Equi, John E. Expansion chamber. 278,326, 4-9-85, Cl. D12-194.000.

Everitt, Delmar K.: *See*—
Goldfarb, Adolph E.; and Everitt, Delmar K., 278,356, Cl. D21-141.000.

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Fankhauser, Peter: *See*—
Schenkel, Lotte; and Fankhauser, Peter, 278,363, Cl. D24-49.000.

Fender, Derek H.: *See*—
Gordon, F. Scott; Fender, Derek H.; and Dolan, Michael J., 278,345, Cl. D15-199.000.
First National Precision Products, Inc.: *See*—
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Franklin, Marsha S.: *See*—
Pringle, Larry E.; and Franklin, Marsha S., 278,369, Cl. D28-60.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,351, 4-9-85, Cl. D18-1.000.
Garvis, Victor P. Multiple hold-down clamp. 278,308, 4-9-85, Cl. D8-73.000.
General Foods Corporation: *See*—
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Gerber Products Company: *See*—
Brown, John M.; Herritz, Donald; Ottinger, Barbara L.; and Westmas, Leland D., 278,311, Cl. D9-436.000.
Girardi, Joseph; and Sylvester, Gordon E., to AT&T Bell Laboratories. Communication apparatus enclosure. 278,336, 4-9-85, Cl. D14-52.000.
Giudici, Gianbattista, to Altena Salotti, s.r.l. Seat. 278,287, 4-9-85, Cl. D6-381.000.
Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Tire for toy vehicle. 278,356, 4-9-85, Cl. D21-141.000.
Gordon, F. Scott; Fender, Derek H.; and Dolan, Michael J., to CAPS Industries. Printed circuit board component mounting machine. 278,345, 4-9-85, Cl. D15-199.000.
Goto, Tetsuya: *See*—
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, 278,346, Cl. D16-31.000.
Gregory, John R.; Parks, Gerald R.; and Dondero, John D., to Gregory, John R. Chest and shoulder protector. 278,280, 4-9-85, Cl. D2-27.000.
Gurule, Jack L. Clothing hanger support. 278,291, 4-9-85, Cl. D6-328.000.
Haker, Floyd H. Coupon distribution machine. 278,374, 4-9-85, Cl. D99-99.000.
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Harper Truck, Inc.: *See*—
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Huber, Felix: *See*—
Meier, Otto; and Huber, Felix, 278,332, Cl. D13-35.000.
Hurco Manufacturing Co., Inc.: *See*—
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Itoh, Masafumi: *See*—
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Jelvestam, Roland E. Supersonic transceiver level measure device. 278,317, 4-9-85, Cl. D10-101.000.
Karlsson, Sigvard G. Greenhouse. 278,364, 4-9-85, Cl. D25-15.000.
Kawazu, Hideyuki, to Olympus Optical Company, Ltd. Automatic original feed for copying apparatus. 278,347, 4-9-85, Cl. D16-32.000.
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Kohler, Herbert V., Jr.; and Doman, Donald W., to Kohler Co. Bathtub apron. 278,360, 4-9-85, Cl. D23-55.000.
Koper, Barry R. Facial appliance for makeup. 278,357, 4-9-85, Cl. D21-190.000.
Kurokawa, Koya; and Arai, Noriyuki, to Matsushita Electric Industrial Co., Ltd. Camera for video tape recorder. 278,338, 4-9-85, Cl. D14-78.000.
Laslo, Larry R., to American Commercial, Incorporated. Fork. 278,299, 4-9-85, Cl. D7-151.000.
Laslo, Larry R., to American Commercial Incorporated. Spoon. 278,300, 4-9-85, Cl. D7-151.000.
Laslo, Larry R., to American Commercial Incorporated. Knife. 278,301, 4-9-85, Cl. D7-151.000.
Laslo, Larry R., to American Commercial Incorporated. Knife. 278,302, 4-9-85, Cl. D7-151.000.
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Lowrey, Charles. Chair. 278,286, 4-9-85, Cl. D6-372.000.
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Martignette, Patricia A. Zodiacal cusp medallion. 278,321, 4-9-85, Cl. D11-100.000.
Martignette, Patricia A. Zodiacal cusp medallion. 278,322, 4-9-85, Cl. D11-105.000.
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Primoff, Eugene H. Religious medal. 278,320, 4-9-85, Cl. D11-96.000.
Pringle, Larry E.; and Franklin, Marsha S. Hanging lighter holder with clipper. 278,369, 4-9-85, Cl. D28-60.000.
Progin, Maurice. Clock. 278,313, 4-9-85, Cl. D10-23.000.

Raiter, Leon C.: *See—*
Wenstrom, Roger A.; Holes, William W.; and Raiter, Leon C., 278,352, Cl. D19-26.000.
Rattray, Thomas, to Con-Serv Incorporated. Register fan. 278,362, 4-9-85, Cl. D23-155.000.
Riart, Carlos, to Knoll International, Inc. Rocking chair. 278,283, 4-9-85, Cl. D6-348,000.
Ricoh Company, Ltd.: *See—*
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, 278,346, Cl. D16-31.000.
Roch, Gerald V., to Hurco Manufacturing Co., Inc. Gauge bar. 278,343, 4-9-85, Cl. D15-123.000.
Rosemount Inc.: *See—*
Bengtson, Darroll D., 278,316, Cl. D10-96.000.
Rousseau, Kenneth E., to Harper Truck, Inc. Hand truck. 278,373, 4-9-85, Cl. D34-26.000.
Rudd, Thomas H., to Drag Specialties, Inc. Panhead engine belt buckle. 278,282, 4-9-85, Cl. D2-394.000.
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, to Ricoh Company, Ltd. Electrostatic copier. 278,346, 4-9-85, Cl. D16-31.000.
Salit, Yechiel. Block for electrical circuitry assembly kits. 278,353, 4-9-85, Cl. D19-62.000.
Scheid, William J., to Motorola, Inc. Portable terminal or similar article. 278,341, 4-9-85, Cl. D14-100.000.
Schenkel, Lotte; and Fankhauser, Peter, to ALZA Corporation. Bandage. 278,363, 4-9-85, Cl. D24-49.000.
Schuman, Eldor N. Combined holder for sliced bread and condiment containers or the like. 278,298, 4-9-85, Cl. D7-52.000.
Schwimmer, Charles M.: *See—*
Matsuda, Hari; Cascarano, Anthony J.; and Schwimmer, Charles M., 278,335, Cl. D14-39.000.
Seibel, Ben, to American Commercial, Incorporated. Wine glass. 278,296, 4-9-85, Cl. D7-13.000.
Skyer, Kenneth: *See—*
Levin, William; and Skyer, Kenneth, 278,318, Cl. D10-106.000.
Skylight Industry Co., Ltd.: *See—*
Ohashi, Keitchi, 278,366, Cl. D26-42.000.
Smith, Roger R., to Hardinge Brothers, Inc. Collet holder. 278,344, 4-9-85, Cl. D15-140.000.
Societe Teleplastics Industries S.A.: *See—*
Speitel, Francois X., 278,370, Cl. D28-91.100.
Sony Corporation: *See—*
Enomoto, Haruyuki, 278,340, Cl. D14-100.000.
Sottsass, Ettore; and De Lucchi, Michele, to Olivetti Synthesis, S.p.A. Table. 278,289, 4-9-85, Cl. D6-487.000.
Southco. Inc.: *See—*
Vickers, James H., 278,309, Cl. D8-327.000.
Spalding & Evenflo Company, Inc.: *See—*
Zwilling, Brian R., 278,358, Cl. D21-196.000.
Speitel, Francois X., to Societe Teleplastics Industries S.A. Pocket perfume atomizer. 278,370, 4-9-85, Cl. D28-91.100.
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Vacanti, Eugene J., 278,279, Cl. D2-27.000.
Strang, Mark J. Rocker. 278,293, 4-9-85, Cl. D6-348.000.
Strickland, George B. Pet watering dish or similar article. 278,371, 4-9-85, Cl. D30-13.000.
Sugimoto, Tatsuo, to Daiwa Seiko, Inc. Fishing reel spool. 278,359, 4-9-85, Cl. D22-25.000.
Sunbeam Corporation: *See—*
Madl, Alfred W.; and Kirschling, Charles J., 278,305, Cl. D7-352.000.
Sussman, Howard. Manicure bowl. 278,367, 4-9-85, Cl. D28-61.000.
Sylvester, Gordon E.: *See—*
Girardi, Joseph; and Sylvester, Gordon E., 278,336, Cl. D14-52.000.
Takata, Kazuaki, to Olympus Optical Co., Ltd. Microphone. 278,333, 4-9-85, Cl. D14-12.000.
Talocci, Giovanna; and Lenci, Fabio, to F. LLI Guzzini S.p.A. Shower caddy. 278,288, 4-9-85, Cl. D6-525.000.
Thompson, Bruce R. Tissue box holder. 278,295, 4-9-85, Cl. D6-518.000.
Timex Corporation: *See—*
Houlihan, John T., 278,315, Cl. D10-30.000.
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Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, 278,346, Cl. D16-31.000.
Vacanti, Eugene J., to Sports Marketing, Inc. Thigh protector. 278,279, 4-9-85, Cl. D2-27.000.
Valentiner, Karin E. Fingernail mold. 278,368, 4-9-85, Cl. D28-56.000.
Van Beek, Allen L.; and Iversen, Alfred L., to PMT Inc. Surgical temperature monitor and alarm system. 278,314, 4-9-85, Cl. D10-53.000.
Vickers, James H., to Southco. Inc. Hinge. 278,309, 4-9-85, Cl. D8-327.000.
Watanabe, Katsumi, deceased (by Watanabe, Shizuko, legal heir), to Ozen Corporation. Electric motor driven phonograph for internal placement in toys or the like. 278,334, 4-9-85, Cl. D14-14.000.
Watanabe, Shizuko, legal heir: *See—*
Watanabe, Katsumi, deceased, 278,334, Cl. D14-14.000.
Wenstrom, Roger A.; Holes, William W.; and Raiter, Leon C., to Holes-Webway Company, The. Diary. 278,352, 4-9-85, Cl. D19-26.000.
Westmas, Leland D.: *See—*
Brown, John M.; Herritz, Donald; Ottinger, Barbara L.; and Westmas, Leland D., 278,311, Cl. D9-436.000.
Williams, Kenneth L. Sign frame. 278,355, 4-9-85, Cl. D20-38.000.
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Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de La Londe. Carnation named Lonkorpi. 5,433, 4-9-85, Cl. 70.000.
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Bruno Imazio Partnership: *See—*
Imazio, Bruno L., 5,430, Cl. 54.000.
Ducloux, Yves: *See—*
Barberet, Nicole; and Ducloux, Yves, 5,432, Cl. 70.000.
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Imazio, Bruno L., to Bruno Imazio Partnership. Heather named Erica Pacifica. 5,430, 4-9-85, Cl. 54.000.
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Baratta, Nicoletta; and Nobbio, Giacomo, 5,435, Cl. 73.000.
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Nobbio, Giacomo: *See—*
Baratta, Nicoletta; and Nobbio, Giacomo, 5,435, Cl. 73.000.
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576 W	4,509,249
578	4,509,250
603	4,509,251
623.1	4,509,252
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623.5	4,509,254
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293	4,509,269

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12	4,509,271
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86	4,509,273
114	4,509,274
126	4,509,275

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447	4,509,279
486	4,509,280

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1 Y	4,509,281
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87	4,509,284

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787	4,509,308

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170	4,509,310
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375	4,509,312
570	4,509,313
586	4,509,314

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294	4,509,961
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324	4,509,963
386	4,509,964
399	4,509,965
502	4,509,966

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250	4,509,316

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58.32	4,509,317
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218	4,509,319
225	4,509,320
328	4,509,321
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39.17	4,509,324
39.182	4,509,326
274	4,509,327
528	4,509,328
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537	4,509,330
602	4,509,331
660	4,509,332
723	4,509,333

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77	4,509,335
112	4,509,336
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288	4,509,338
450	4,509,339
503	4,509,340
512	4,509,341
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300	4,509,969

CLASS 68

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90	4,509,971
92	4,509,972
	4,509,973
100	4,509,974
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138	4,509,352
267	4,509,353
294	4,509,354
325	4,509,355
349	4,509,356
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476	4,509,358

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61 R	4,509,360
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79	4,509,362
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	4,509,364
151	4,509,365
457	4,509,367
624	4,509,368
628	4,509,369
705	4,509,370
861	4,509,371
861.02	4,509,366
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477	4,509,385
492	4,509,386
505	4,509,387
650	4,509,388
695	4,509,389
705	4,509,390
869	4,509,391

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21	4,509,976
59	4,509,977
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130 R	4,509,979
234	4,509,980

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121 A	4,509,393

CLASS 82

4 R	4,509,394

CLASS 83

55	4,509,395
126	4,509,396
453	4,509,397
745	4,509,398

CLASS 84

216	4,509,399
293	4,509,400

CLASS 86

48	4,509,401

CLASS 91

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365	4,509,403
388	4,509,404
420	4,509,405
453	4,509,406
466	4,509,407

CLASS 92

2	4,509,408
80	4,509,409
89	4,509,410

CLASS 98

34.5	4,509,411

CLASS 99

331	4,509,412
453	4,509,413
585	4,509,414

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25	4,509,416
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97	4,509,418
117	4,509,419

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35	4,509,420
93.04	4,509,421
118	4,509,422
127.1	4,509,423
177	4,509,424
216	4,509,425
348	4,509,426

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173 R	4,509,430
250	4,509,431

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23	4,509,982
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84	4,509,985
110	4,509,986
308 Q	4,509,987
308 R	4,509,988

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52.1	4,509,433

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344	4,509,435
345	4,509,436
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	4,509,444
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65 R	4,509,447
293	4,509,448

CLASS 116

218	4,509,449

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50.1	4,509,451
234	4,509,452
420	4,509,453
681	4,509,454
696	4,509,455
715	4,509,456

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3	4,509,458
	4,509,459
74	4,509,460
103	4,509,461
117	4,509,462

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1 A	4,509,464
41.02	4,509,465
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154	4,509,469
179 G	4,509,471
	4,509,472
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188 SC	4,509,473
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359	4,509,480
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489	4,509,489
502	4,509,490
	4,509,491
525	4,509,479
569	4,509,492
602	4,509,493
609	4,509,494
643	4,509,495
651	4,509,496

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292	4,509,499
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6	4,509,508
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25 R	4,509,510
92 H	4,509,511
160	4,509,512
200.23	4,509,515
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691	4,509,528
708	4,509,529
710	4,509,530
736	4,509,531
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	4,509,533
764	4,509,534
798	4,509,535

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79 R	4,509,540
90	4,509,541

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CLASS 134

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199	4,509,545

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256	4,510,344

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85	4,509,547
99	4,509,548
327	4,509,549
551	4,509,550
554	4,509,551
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625.11	4,509,555
884	4,509,556

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CLASS 203

51 4,510,022
99 4,510,023

CLASS 204

59 R 4,510,024
78 4,510,025
95 4,510,026
110 4,510,027
119 4,510,028
130 4,510,029
147 4,510,030
159.20 4,510,031
197 4,510,032
245 4,510,033
290 F 4,510,034
411 4,510,035
425 4,510,036

CLASS 206

159 4,509,639
175 4,509,640
219 4,509,641
4,509,642
315.8 4,509,643
461 4,509,644
545 4,509,645

CLASS 208

8 LE 4,510,037
10 4,510,038
4,510,039
4,510,040
48 AA 4,510,041
59 4,510,042
97 4,510,043
111 4,510,044
4,510,045
254 H 4,510,046
321 4,510,047

CLASS 209

3 4,510,048
4,510,049
167 4,510,050
573 4,509,646

CLASS 210

94 4,510,051
139 4,510,052
175 4,510,053
242.3 4,510,054
500.1 4,510,055
512.1 4,510,056
612 4,510,057
657 4,510,058
701 4,510,059
746 4,510,060
769 4,510,061

CLASS 211

41 4,509,647
60.1 4,509,650
70.6 4,509,648
4,509,649
4,509,651
126 4,509,652

CLASS 215

231 4,509,653
253 4,509,654
309 4,509,655

CLASS 219

10.55 A 4,510,361
10.55 E 4,510,362
10.71 4,510,363
69 G 4,510,364
4,510,365
69 M 4,510,366
4,510,368
69 W 4,510,367
86.25 4,510,370
121 LM 4,510,371
125.11 4,510,372
137.71 4,510,373
146.1 4,510,374
328 4,510,375
389 4,510,369
492 4,510,376
550 4,510,377

CLASS 220

8 4,509,656
436 4,509,657

CLASS 221

115 4,509,658

CLASS 222

41 4,509,659
107 4,509,660
190 4,509,661
391 4,509,662
400.7 4,509,663
402 4,509,664
478 4,509,665

CLASS 223

39 4,509,666

CLASS 224

250 4,509,667

CLASS 227

8 4,509,668
130 4,509,669

CLASS 228

34 4,509,670
157 4,509,671
175 4,509,672
212 4,509,673

CLASS 229

23 R 4,509,674

CLASS 232

17 4,509,675
43.4 4,509,676

CLASS 235

50 R 4,510,378
95 C 4,510,379
379 4,510,380
4,510,381
380 4,510,382
462 4,510,383

CLASS 236

49 4,509,678
94 4,509,679
122 4,509,677

CLASS 237

2 B 4,509,680
53 4,509,681

CLASS 239

60 4,509,682
77 4,509,683
112 4,509,684
186 4,509,685
239 4,509,686
245 4,509,687
338 4,509,688
407 4,509,689
429 4,509,690
533.9 4,509,691
542 4,509,692
585 4,509,693
697 4,509,694

CLASS 241

2 4,509,695
15 4,509,696
41 Re.31,862
72 4,509,697
169.1 4,509,698
268 4,509,699
280 4,509,700
292 4,509,701

CLASS 242

18 G 4,509,702
59 4,509,703
84.2 A 4,509,704
84.21 R 4,509,705
107.4 A 4,509,706
4,509,707
107.7 4,509,708

CLASS 244

118.1 4,509,709

CLASS 248

73 4,509,710
235 4,509,711
464 4,509,712
546 4,509,713
618 4,509,714

CLASS 250

201 4,510,384
203 R 4,510,385
251 4,510,386
309 4,510,387
327.2 4,510,388
339 4,510,389
341 4,510,390
374 4,510,391
475.2 4,510,392
4,510,393
483.1 4,510,394

CLASS 251

138 4,509,715
141 4,509,716
144 4,509,717
163 4,509,718
214 4,509,719
308 4,509,720
335 B 4,509,721
359 4,509,722

CLASS 252

45 4,510,062
51.5 R 4,510,063
67 4,510,064
106 4,510,065
140 4,510,066
174.21 4,510,067
186.29 4,510,068
299.61 4,510,069
351 4,510,070
373 4,510,071
380 4,510,072
383 4,510,073
400.23 4,510,074
500 4,510,075
4,510,076
502 4,510,077
510 4,510,078
511 4,510,079
522 R 4,510,080
603 4,510,081

CLASS 254

93 H 4,509,723
126 4,509,724
212 4,509,725

CLASS 256

8 4,509,726

CLASS 260

112 B 4,510,084
112.5 E 4,510,085
112.5 R 4,510,082
4,510,083
239 A 4,510,086
371 4,510,087
380 4,510,088
396 N 4,510,089
396 R 4,510,090
409 4,510,091
4,510,092
410.9 N 4,510,093
429 CY 4,510,094
429.7 4,510,095
439 R 4,510,096
453 A 4,510,097
465 D 4,510,098
465.5 R 4,510,099
508 4,510,100
928 4,510,101
941 4,510,102

CLASS 264

40.2 4,510,103
40.7 4,510,104
46.6 4,510,105
53 4,510,106
65 4,510,107
119 4,510,108
151 4,510,109
176 R 4,510,110
177 F 4,510,111
234 4,510,112
257 4,510,113
261 4,510,114
515 4,510,115
529 4,510,116

CLASS 266

44 4,509,727
4,509,728
252 4,509,729

CLASS 267

35 4,509,730

CLASS 269

78 4,509,731

CLASS 270

37 4,509,732
41 4,509,733

CLASS 271

10 4,509,734
11 4,509,735
4,509,736
125 4,509,737
160 4,509,738
176 4,509,739
224 4,509,740

CLASS 272

69 4,509,741
73 4,509,742
97 4,509,743
116 4,509,744
130 4,509,745
134 4,509,746
136 4,509,747
145 4,509,748

CLASS 273

29 BA 4,509,749
29A 4,509,750
32 H 4,509,751
49 4,509,752
110 4,509,753
142 J 4,509,754
144 B 4,509,755
153 S 4,509,756
186 A 4,509,757
240 4,509,758
269 4,509,759
380 4,509,760
417 4,509,761

CLASS 277

81 R 4,509,762
82 4,509,773
163 4,509,763
166 4,509,764

CLASS 279

50 4,509,765

CLASS 280

21 R 4,509,766
289 R 4,509,767
479 R 4,509,768
491 R 4,509,769
507 4,509,770
609 4,509,771
661 4,509,772
694 4,509,774
779 4,509,775

CLASS 285

55 4,509,776
286 4,509,777
406 4,509,778

CLASS 290

3 4,510,395
30 R 4,510,396
43 4,510,397

CLASS 292

254 4,509,779
307 R 4,509,780

CLASS 293

104 4,509,781
121 4,509,782

CLASS 294

88 4,509,783
99.1 4,509,784
118 4,509,785

CLASS 296

1 S 4,509,786
3 4,509,787
24 R 4,509,788
37.2 4,509,789
204 4,509,790
216 4,509,791

CLASS 297

180 4,509,792
355 4,509,793
434 4,509,795
440 4,509,794
452 4,509,796
466 4,509,797
487 4,509,798

CLASS 299

42 4,509,799

CLASS 303

6 C 4,509,800
8 4,509,801
110 4,509,802

CLASS 307

35 4,510,398
57 4,510,399
66 4,510,400
4,510,401
427 4,510,402

CLASS 308

5 R 4,509,803

CLASS 310

36 4,510,403
50 4,510,404
76 4,510,405
99 4,510,406
154 4,510,407
168 4,510,408
268 4,510,409
313 D 4,510,410
316 4,510,411
328 4,510,412

CLASS 312

210 4,509,805
257 SK 4,509,806

CLASS 313

460 4,510,413
468 4,510,414
493 4,510,415
579 4,510,416
585 4,510,417

CLASS 315

73 4,510,418
241 P 4,510,419

CLASS 318

37 4,510,420
135 4,510,421
254 4,510,422
331 4,510,423
432 4,510,424
484 4,510,425
565 4,510,426
590 4,510,427
632 4,510,428
696 4,510,266
4,510,429
800 4,510,430

CLASS 320

1 4,510,431
4,510,432

CLASS 322

32 4,510,433

CLASS 323

237 4,510,434

CLASS 324

52 4,510,435
61 P 4,510,436
61 R 4,510,437
71.4 4,510,438
73 AT 4,510,439
77 G 4,510,440
96 4,510,441
99 R 4,510,442
120 4,510,443
121 R 4,510,444
158 F 4,510,445
158 R 4,510,446
225 4,510,447
309 4,510,448
4,510,449
321 4,510,450

CLASS 328

130.1 4,510,451
144 4,510,452

CLASS 329

106 4,510,453

CLASS 330

2 4,510,454
4.3 4,510,455

10 4,510,456
4,510,457
260 4,510,458
265 4,510,459
285 4,510,460

CLASS 331

1 A 4,510,461
4,510,462
15 4,510,463
116 R 4,510,464

CLASS 332

16 T 4,510,465
31 R 4,510,466
4,510,467

CLASS 333

12 4,510,468
21 R 4,510,469
142 4,510,470
195 4,510,471
262 4,510,472

CLASS 335

86 4,510,473

CLASS 336

30 4,510,474
60 4,510,475
84 C 4,510,476
92 4,510,477
198 4,510,478

CLASS 337

91 4,510,479
321 4,510,480
368 4,510,481

CLASS 338

24 4,510,482
80 4,510,483

CLASS 339

9 R 4,509,807
14 R 4,509,809
17 F 4,509,811
17 M 4,509,810
17 R 4,509,808
75 M 4,509,812
91 R 4,509,813
93 R 4,509,814
147 P 4,509,815
177 R 4,509,816

CLASS 340

58 4,510,484
323 R 4,510,485
347 DA 4,510,486
566 4,510,487
567 4,510,488
572 4,510,489
4,510,490
792 4,510,491
825.05 4,510,492
4,510,493
4,510,494
825.54 4,510,495

CLASS 343

5 BD 4,510,496
5 EM 4,510,497
435 4,510,498
456 4,510,499
708 4,510,500
742 4,510,501
880 4,510,502

CLASS 346

75 4,510,503
4,510,504
76 PH 4,510,505
4,510,506
4,510,507
135.1 4,510,508
140 R 4,510,509
4,510,510
4,510,511
209 4,510,512
214 4,510,513

CLASS 350

3.61 4,509,817
3.76 4,509,818
6.7 4,509,819
96.21 4,509,820
96.23 4,509,821
128 4,509,822
4,509,823
167 4,509,824
259 4,509,825
286 4,509,826
320 4,509,827
333 4,509,828
358 4,509,829
394 4,509,830
410 4,509,831
420 4,509,832

427 4,509,833
521 4,509,834

CLASS 352

43 4,509,835
200 4,509,836

CLASS 353

10 4,509,837

CLASS 354

62 4,509,838
400 4,509,840
4,509,841
402 4,509,842
412 4,509,843
416 4,509,844
420 4,509,845
442 4,509,846
4,509,847
473 4,509,848
479 4,509,849

CLASS 355

4 4,509,850
14 C 4,509,851
30 4,509,852
35 4,509,853
38 4,509,854

CLASS 356

72 4,509,855
246 4,509,856
346 4,509,857
358 4,509,858
446 4,509,859

CLASS 357

17 4,510,514
4,510,515
23.1 4,510,516
34 4,510,517
49 4,510,518
81 4,509,839
4,510,519

CLASS 358

12 4,510,520
27 4,510,521
31 4,510,522
75 4,510,523
80 4,510,524
88 4,510,525
108 4,510,526
141 Re.31,863
158 4,510,527
213 4,510,528
224 4,510,529
314 4,510,530
342 4,510,531
4,510,532

CLASS 360

10.2 4,510,533
10.3 4,510,534
14.2 4,510,535
65 4,510,536
78 4,510,537
84 4,510,538
92 4,510,539
93 4,510,540
97 4,510,541
98 4,510,542
106 4,510,543
114 4,510,544
128 4,510,545
133 4,510,546

CLASS 361

22 4,510,547
25 4,510,548
86 4,510,549
152 4,510,550
398 4,510,551
413 4,510,552
4,510,553
433 4,510,554

CLASS 362

32 4,510,555
184 4,510,556
188 4,510,557
263 4,510,558
269 4,510,559
299 4,510,560
399 4,510,561

CLASS 363

19 4,510,562
20 4,510,563
23 4,510,564

CLASS 364

136 4,510,565
190 4,510,566
300 4,510,567
4,510,568
431.12 4,510,569

476 4,510,570
487 4,510,571
489 4,510,572
498 4,510,573
513 4,510,574
518 4,510,575
551 4,510,576
563 4,510,577
725 4,510,578
728 4,510,579
900 4,510,580
4,510,581
4,510,582
4,510,583

CLASS 365

203 4,510,584

CLASS 366

99 4,509,860
131 4,509,861
158 4,509,862
162 4,509,863

CLASS 367

43 4,510,585
87 4,510,586
118 4,510,587
165 4,510,588

CLASS 368

108 4,509,864
134 4,509,865
296 4,509,866
321 4,509,867

CLASS 369

11 4,510,589
63 4,510,590
77.1 4,510,591
270 4,510,592
283 4,510,593

CLASS 370

15 4,510,594
32 4,510,595
50 4,510,598
58 4,510,596
66 4,510,597
85 4,510,599
94 4,510,600
110.3 4,510,601

CLASS 371

20 Re.31,864
21 4,510,602
4,510,603

CLASS 372

4 4,510,604
23 4,510,605
25 4,510,606
49 4,510,607
87 4,510,608

CLASS 373

110 4,510,609
118 4,510,610

CLASS 374

141 4,509,868

CLASS 375

8 4,510,611
106 4,510,612

CLASS 376

257 4,510,117
282 4,510,118

CLASS 378

152 4,510,613

CLASS 381

16 4,510,614

CLASS 382

7 4,510,615
8 4,510,616
33 4,510,617
54 4,510,618
57 4,510,619

CLASS 383

14 4,510,620
89 4,510,621

CLASS 384

99 4,509,804
296 4,509,870
462 4,509,869
502 4,509,871

CLASS 400

144.1 4,509,872
489 4,509,873
691 4,509,874

CLASS 401

34 4,509,875

217 4,509,876

CLASS 403

41 4,509,877
71 4,509,878
172 4,509,879
179 4,509,880
229 4,509,881
402 4,509,882

CLASS 405

232 4,509,883
269 4,509,884

CLASS 407

1 4,509,885
102 4,509,886

CLASS 408

239 R 4,509,887

CLASS 410

105 4,509,888

CLASS 411

19 4,509,889
337 4,509,890

CLASS 414

113 4,509,891
223 4,509,892
280 4,509,893
555 4,509,894
685 4,509,895

CLASS 415

9 4,509,896
113 4,509,897

CLASS 416

2 4,509,898
99 4,509,899
198 A 4,509,900

CLASS 417

18 4,509,901
216 4,509,902
464 4,509,903
568 4,509,904

CLASS 418

75 4,509,905
152 4,509,906

CLASS 422

71 4,510,119
133 4,510,120
232 4,510,121

CLASS 423

10 4,510,122
360 4,510,123
437 4,510,124

CLASS 424

1.1 4,510,125
3 4,510,126
52 4,510,127
79 4,510,128
86 4,510,129
105 4,510,131

CLASS 425

197 4,509,907
290 4,509,908
388 4,509,909
451.9 4,509,910
532 4,509,911

CLASS 426

124 4,510,162
241 4,510,163
331 4,510,164
439 4,510,165
565 4,510,166
607 4,510,167

CLASS 427

3 4,510,168
4 4,510,169
33 4,510,170
34 4,510,171
38 4,510,172
44 4,510,173
65 4,510,174
79 4,510,175
82 4,510,176
85 4,510,177
94 4,510,178
96 4,510,179
136 4,510,180
142 4,510,181
162 4,510,182
185 4,510,183
212 4,510,184
222 4,510,185
381 4,510,186
429 4,510,187

CLASS 428

1 4,510,188
19 4,510,189
34 4,510,190
36 4,510,191
151 4,510,192
196 4,510,193
212 4,510,194
215 4,510,195
220 4,510,196
4,510,197
246 4,510,198
248 4,510,199
252 4,510,200
285 4,510,201
295 4,510,202
425.9 4,510,203
463 4,510,204
483 4,510,205
488.1 4,510,206
607 4,510,207
624 4,510,208
659 4,510,209

CLASS 429

11 4,510,210
18 4,510,211
30 4,510,212
36 4,510,213
43 4,510,214
99 4,510,215
101 4,510,216
104 4,510,217
198 4,510,218
212 4,510,219
225 4,510,220

CLASS 430

1 4,510,221
5 4,510,222
44 4,510,223
57 4,510,224
126 4,510,225
144 4,510,226
175 4,510,227
204 4,510,228
265 4,510,229
273 4,510,230
312 4,510,231
494 4,510,232
527 4,510,233
557 4,510,234
574 4,510,235
619 4,510,236
621 4,510,237
627 4,510,238

CLASS 431

76 4,509,912
90 4,509,913
121 4,509,914
215 4,509,915
273 4,509,916

CLASS 432

75 4,509,917

CLASS 433

5 4,509,918
57 4,509,919

CLASS 434

159 4,509,920
253 4,509,921
322 4,509,922

CLASS 435

7 4,510,239
4,510,240
23 4,510,241
157 4,510,242
167 4,510,243
172.2 4,510,244
172.3 4,510,245
183 4,510,246
207 4,510,247
226 4,510,248
289 4,510,249

CLASS 436

63 4,510,250
536 4,510,251

CLASS 440

43 4,509,923
51 4,509,924
67 4,509,925
89 4,509,926
4,509,927

CLASS 445

27 4,509,928

CLASS 446

102 4,509,929
109 4,509,930
462 4,509,931

CLASS 455

67 4,510,622
181 4,510,623
223 4,510,624

CLASS 464

109 4,509,932

CLASS 474

93 4,509,933
136 4,509,934
138 4,509,935
148 4,509,936
213 4,509,937
264 4,509,938

CLASS 493

444 4,509,939

CLASS 494

16 4,509,940
45 4,509,941
53 4,509,942

CLASS 501

35 4,510,252
95 4,510,253
146 4,510,254

CLASS 502

10 4,510,255
62 4,510,256
63 4,510,257
209 4,510,258
4,510,259
219 4,510,260
304 4,510,261
4,510,262
314 4,510,263
328 4,510,264
330 4,510,265

CLASS 514

2 4,510,130
11 4,510,132
27 4,510,134
30 4,510,133
54 4,510,161
56 4,510,135
63 4,510,136
80 4,510,137
206 4,510,138
220 4,510,153
234 4,510,139
250 4,510,141
4,510,143
255 4,510,142
4,510,322
257 4,510,144
276 4,510,155
312 4,510,146
314 4,510,147
321 4,510,152
338 4,510,150
340 4,510,148
341 4,510,149
4,510,151
365 4,510,154
411 4,510,157
415 4,510,145
4,510,156
4,510,158
456 4,510,159
521 4,510,160
530 4,510,323

CLASS 518

715 4,510,267

CLASS 521

146 4,510,268
166 4,510,269

CLASS 523

176 4,510,270
346 4,510,271
400 4,510,272
406 4,510,273
411 4,510,274
412 4,510,275
427 4,510,276
454 4,510,277

CLASS 524

14 4,510,278
144 4,510,279
178 4,510,280
229 4,510,281
337 4,510,282
356 4,510,283
379 4,510,284
401 4,510,285

CLASS 525

71 4,510,286
84 4,510,287
111 4,510,288

CLASSIFICATION OF PATENTS

148	4,510,289	264	4,510,302	194	4,510,309		**CLASS 560**	32	4,510,328		**CLASS 570**
162	4,510,290	282	4,510,303	321	4,510,310	147	4,510,318	310	4,510,329	229	4,510,341
237	4,510,291		**CLASS 528**		**CLASS 548**	231	4,510,319	403	4,510,330		**CLASS 585**
247	4,510,292	481	4,510,304	132	4,510,311	265	4,510,320	450	4,510,331	524	4,510,342
338	4,510,293	494	4,510,305	194	4,510,312		**CLASS 562**	454	4,510,332		**CLASS 586**
369	4,510,294		**CLASS 536**		4,510,313	421	4,510,321	617	4,510,333	558	4,509,949
437	4,510,295	127	4,510,306	262	4,510,314		**CLASS 564**	643	4,510,334		**CLASS 604**
534	4,510,296		**CLASS 544**	455	4,510,315	82	4,510,324	683	4,510,335	31	4,509,943
537	4,510,297	283	4,510,307	555	4,510,316	89	4,510,325	697	4,510,336	53	4,509,944
	CLASS 526	360	4,510,140		**CLASS 549**	132	4,510,326	734	4,510,337	164	4,509,945
87	4,510,298		**CLASS 546**	343	4,510,317		**CLASS 568**	766	4,510,338	246	4,509,946
129	4,510,299	85	4,510,308			1	4,510,327	863	4,510,339	266	4,509,947
247	4,510,300							884	4,510,340		
254	4,510,301										

CLASSIFICATION OF DESIGNS

D2—	27	278,279		525	278,288	D9—	436	278,311			278,328		123	278,343	D22—	25	278,359
		278,280	D7—	13	278,296		449	278,312		194	278,326		140	278,344	D23—	55	278,360
	314	278,281		24	278,297	D10—	23	278,313		203	278,329		199	278,345		136	278,361
	394	278,282		52	278,298		30	278,315	D13—	24	278,330	D16—	31	278,346		155	278,362
D6—	328	278,291		151	278,299		53	278,314		35	278,331		32	278,347	D24—	49	278,363
	347	278,292			278,300		96	278,316			278,332		135	278,348	D25—	15	278,364
	348	278,283			278,301		101	278,317	D14—	12	278,333	D17—	20	278,349	D26—	28	278,365
		278,284			278,302		106	278,318		14	278,334	D18—	1	278,350		42	278,366
		278,293			278,303		114	278,319		39	278,335			278,351	D28—	56	278,368
	372	278,285			278,304	D11—	96	278,320		52	278,336	D19—	26	278,352		60	278,369
		278,286		352	278,305		100	278,321		58	278,337		62	278,353		61	278,367
	381	278,287		409	278,306		105	278,322		78	278,338		91	278,354		91.1	278,370
	430	278,290	D8—	21	278,310		155	278,323		100	278,339	D20—	38	278,355	D30—	13	278,371
	477	278,294		34	278,307	D12—	111	278,324			278,340	D21—	141	278,356		14	278,372
	487	278,289		73	278,308		112	278,325			278,341		190	278,357	D34—	26	278,373
	518	278,295		327	278,309		114	278,327	D15—	88	278,342		196	278,358	D99—	99	278,374

CLASSIFICATION OF PLANTS

P.—	54	5,430	68	5,431	70	5,432		5,433		5,434	73	5,435

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,509,574		4,509,652		4,510,385		4,510,250		4,509,406	20 :	4,509,412
	4,509,897		4,509,662		4,510,393		4,510,308		4,509,416	21 :	4,509,216
02 :	4,509,301		4,509,663		4,510,402		4,510,313		4,509,460		4,509,335
04 :	4,509,214		4,509,671		4,510,429		4,510,378		4,509,464		4,509,394
	4,509,298		4,509,678		4,510,445		4,510,428		4,509,602		4,509,687
	4,509,570		4,509,682		4,510,455		4,510,488		4,509,626		4,509,928
	4,509,621		4,509,688		4,510,459		4,510,611		4,509,631		4,510,362
	4,509,667		4,509,695		4,510,466	10 :	4,509,223		4,509,646		4,510,416
	4,509,709		4,509,741		4,510,467		4,509,821		4,509,649	22 :	4,509,286
	4,509,726		4,509,749		4,510,499		4,510,136		4,509,725		4,509,534
	4,509,819		4,509,758		4,510,516		4,510,202		4,509,735		4,509,593
	4,509,926		4,509,760		4,510,529		4,510,237		4,509,745		4,509,600
	4,510,010		4,509,773		4,510,536		4,510,286		4,509,767		4,509,605
	4,510,015		4,509,774		4,510,542		4,510,300		4,509,787		4,509,617
	4,510,178		4,509,784		4,510,549		4,510,301		4,509,813		4,509,696
	4,510,436		4,509,808		4,510,553	12 :	4,509,253		4,509,884		4,509,883
	4,510,472		4,509,814		4,510,556		4,509,316		4,509,891		4,509,899
	4,510,519		4,509,827		4,510,566		4,509,332		4,509,924		4,509,951
05 :	4,509,890		4,509,834		4,510,590		4,509,362		4,509,946		4,510,027
06 :	4,509,218		4,509,836		4,510,603		4,509,393		4,509,963		4,510,065
	4,509,251		4,509,853		4,510,605		4,509,401		4,510,005		4,510,067
	4,509,254		4,509,860		4,510,607		4,509,435		4,510,055		4,510,078
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CHANGE OF ADDRESS FORM

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06 : 5,430

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Vol. 1053 Number 3

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April 16, 1985

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 25/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

Note that the amount of the international search fee for the European Patent Office will change effective May 7, 1985 and the amounts of the International PCT fees will change effective May 28, 1985. For information on these fee changes see the notice appearing in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	No charge

Mar. 20, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Patent Cooperation Treaty (PCT) Update

Change in international search fee charged by the European Patent Office (EPO) effective May 7, 1985 and change in International Fees effective May 28, 1985.

The International Bureau of the World Intellectual Property Organization has informed the US Patent and Trademark Office that, due to the favorable exchange rate of the US dollar with regard to the Deutschmark and the Swiss franc, the dollar amount of the international search fee charged by the European Patent Office and the International Fees for PCT applications filed in the United States Receiving Office will decrease.

Effective May 7, 1985 the amount of the international search fee charged by the European Patent Office for PCT applications filed in the United States Receiving Office will be $620.00.

Effective May 28, 1985 the amount of the International Fees for PCT applications filed in the United States Receiving Office will be:

Basic Fee (first 30 pages)	$230.00
Basic Supplemental Fee (each page over 30)	4.00
Designation Fee (per country or region up to ten)	55.00
Designation Fee (for 11th and subsequent countries or regions)	No Charge

Mar. 20, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 13, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,324,003 through 4,325,147

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) $ 50.00
By other than a small entity $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,642,742, Re. S.N. 706,313, Filed Feb. 27, 1985, Cl. 526/206, TOUGH, STABLE TETRAFLUOROETHYLENE-FLUOROALKYL PERFLUOROVINYL ETHER COPOLYMERS, Dana P. Carlson, Owner of Record: *E. I. duPont de Nemours and Co., Wilmington, Del.,* Attorney or Agent: Gary A. Samuels, Ex. Gp.: 155

3,921,273, Re. S.N. 623,398, Filed June 22, 1984, Cl. 29/157R, METHOD OF FILLING A CASING WITH HEAT INSULATING FIBERS, Katsumi Kondo, et al., Owner of Record: *Toyota Jidosha Kabushiki Kaisha, Aichi-Ken, Japan,* Attorney or Agent: David R. Murphy, et al., Ex. Gp.: 326

4,228,424, Re. S.N. 700,778, Filed Feb. 12, 1985, Cl. 340/506, CENTRAL STATION ALARM, Tom W. Lenay, et al., Owner of Record: *Baker Protective Services, Inc., Beverly Hills, Calif.,* Attorney or Agent: Frank F. Scheck, et al., Ex. Gp.: 268

4,428,759, Re. S.N. 704,180, Filed Feb. 22, 1985, Cl. 62/017, DISTILLATIVE SEPARATION EMPLOYING BOTTOM ADDITIVES, James M. Ryan, et al., Owner of Record: *Koch Process Systems, Inc., Westboro, Mass.,* Attorney or Agent: Richard P. Crowley, Ex. Gp.: 133

4,448,815, Re. S.N. 706,206, Filed Feb. 25, 1985, Cl. 427/387, MULTI-COMPONENT SOLVENTLESS SILICONE RELEASE COATING SYSTEM, Maurice E. Grenoble, et al., Owner of Record: *General Electric Co., Waterford, N.Y.,* Attorney or Agent: John L. Young, et al., Ex. Gp.: 152

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,485,120, Reexam. No. 90/000,739, Requested: Mar. 14, 1985, Cl. 83/37, METHOD AND APPARATUS FOR CUTTING ELONGATED MATERIAL, Garland B. Keith, Owner of Record: *Lummus Industries, Inc., Columbus, Ga.,* Attorney or Agent: Richards, Harris & Medlock, Ex. Gp.: 320, Requester: D. M. & E. Corp., Shelby, N.C.

4,285,349, Reexam. No. 90/000,741, Requested: Mar. 15, 1985, Cl. 131/17, USE OF CERTAIN BRIDGED KETONES IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF SMOKING TOBACCO, Mark A. Sprecker, et al., Owner of Record: *International Flavors & Fragrances, Inc., New York, N.Y.,* Attorney or Agent: Arthur L. Liberman, Ex. Gp.: 330, Requester: Owner

4,288,327, Reexam. No. 90/000,737, Requested: Mar. 11, 1985, Cl. 210/698, COPOLYMERS FOR THE CONTROL OF THE FORMATION AND DEPOSITION OF MATERIALS IN AQUEOUS MEDIUMS, Irene T. Godlewski, et al., Owner of Record: *Betz Laboratories, Inc., Trevose, Pa.,* Attorney or Agent: Alexander D. Ricci, Ex. Gp.: 130, Requester: Epstein & Edell, Arlington, Va.

4,381,855, Reexam. No. 90/000,735, Requested: Mar. 11, 1985, Cl. 266/248, TECHNIQUE FOR CONSERVING HOT METAL TEMPERATURE, John P. Ryan, Owner of Record: *Industrial Machine Works, Inc., Etna, Pa.,* Attorney or Agent: Yeager & Cornelius, Ex. Gp.: 110, Requester: Owner

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Marks Published for Opposition

The Apr. issues of the Official Gazette (Trademark Section) will present marks published for opposition in two separate sections.

Each section will contain both multiple class and single class applications. The first section will be printed at the beginning of the Official Gazette and the second section will be printed at the end of the Official Gazette, after the Index of Registrants.

The second section will be numbered separately from the first section, and each page will bear the notation Ap.

Jan. 10, 1985.

MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

XEROX LICENSE OFFER

This notice is published pursuant to a CONSENT ORDER TO CEASE AND DESIST dated July 29, 1975, as modified Sept. 10, 1982, between Xerox Corp. and the Federal Trade Commission.

TERMS *contained in this notice are defined in the Consent Order. All interested parties should refer to that document for the definitions and additional details of Xerox' patent and know-how licensing obligations thereunder.* A copy of the Consent Order and a list of PATENTS licensed to Xerox which are subject to the provisions of paragraphs II and IV (C) (9) of the Order, if any, are available from Xerox upon written request. All such requests and any request relating to the licensing of PATENTS pursuant to the Consent Order should be made in writing and addressed to:

The Manager of Patent Licensing
Xerox Corp.
P.O. Box 1600
Stamford, Conn. 06904

Xerox shall, in accordance with the terms of the Consent Order, grant licenses under

(a) its ORDER PATENTS to make, have made, use and vend OFFICE COPIER PRODUCTS under the terms of the Consent Order; and

(b) patents which are required to be licensed pursuant to the terms of paragraph X of the Consent Order, if any.

The following is a list of patents which is believed to include all of the PATENTS available for licensing in accordance with the terms of the Consent Order issued since the publication of the last notice by Xerox (1036 OG 3). A copy of the classification index for the listed patents also appears at 1012 OG–55. Since the classification system is not restricted solely to OFFICE COPIER PRODUCTS, there are several patents included in the list to which the Consent Order is not applicable.

XEROX PATENTS

CLASS: 10A

4,459,013.—DUPLEX/SIMPLEX PRECOLLATION COPYING SYSTEM. July 10, 1984. BEL. 869,792, CAN. 1,128,970, FRA. 7,823,869, GRB. 1,605,090.

CLASS: 10F

4,459,013.—DUPLEX/SIMPLEX PRECOLLATION COPYING SYSTEM. July 10, 1984. BEL. 869,792, CAN 1,128,970, FRA. 7,823,869, GRB. 1,605,090.

Amendments to Patent Cooperation Treaty

The 11th session of the PCT Union Assembly held in Geneva, Switzerland from 30 Jan. to 3 Feb. 1984 decided to amend two time limits in the Treaty (Articles 22(2) and 39(1)(a)) and to revise approximately one hundred provisions in the PCT Regulations.

The assembly decided that all amendments would enter into force on Jan. 1, 1985, subject to the following:

(i) the amendments to Rules 12.1(c) and (d), 34.1 and 48.3(a) and (b) will become applicable at the same time that the PCT will enter into force in respect of the first Spanish speaking country to ratify or accede to the PCT;

(ii) the deletion of Rule 80.6(b) will become effective on Jan. 1, 1986;

(iii) some countries may, under certain circumstances, delay, for a transitory period, the application, by them, of some of the amendments. Delays required by U.S. law are noted below.

The purpose and a brief description of the most important amendments are indicated below.

Making the Procedure During the International Phase Under Chapter I of the PCT Safer and Simpler for the Applicant.

The Assembly adopted very important amendments giving the applicant the means to ensure that his or her international application will not be lost because the record copy has not reached the International Bureau in due time (see Rules 20.5 and 22.1). The time limit at the expiration of which the international application would be considered withdrawn under Article 12(3) if the record copy had not reached the International Bureau will start running only when a notification is sent by the International Bureau to the applicant (see Rule 22.3), and the new system as resulting from those various amendments will completely replace the "alternative" procedure previously provided by Rule 22.2.

Other amendments will have the effect that the one-month grace period for the payment of the international fee and the search fee will be granted by all Receiving Offices, subject to some transitional provisions, (see Rule 15.4).

Amendments were adopted which will expressly allow the time limits fixed by the Receiving Office for the correction of defects to be extended and will ensure that no international application will be considered withdrawn by the Receiving Office for lack of compliance with physical requirements if it complies with those requirements to the extent necessary for the purpose of reasonably uniform international publication (see Rule 26).

The time limit within which the applicant may amend the claims during the international phase will be longer in certain cases. Furthermore, the applicant will have the possibility to state more in his or her explanations of amendments and will be permitted to submit the amendments in the language of publication only. (See Rule 46).

The amendments to Rules 32 and 32 bis, make it possible to withdraw the international application, designations, or the priority claim by filing a notice with the Receiving Office even after the latter has sent the record copy to the International Bureau. The Assembly noted that the international application would not be published if the withdrawal reached the International Bureau before the completion of the technical preparation for international publication, which is not earlier than 15 days before the expiration of 18 months from the priority date.

The rules concerning the rectification, during the international phase, of obvious errors in documents were liberalized by allowing the rectification of obvious errors which are not errors of transcription (see Rule 91). Furthermore, the applicant may, if the rectification has been refused during the international phase, obtain publication of the request for rectification in the pamphlet publishing the international application. Such publication, however, will not relieve the applicant from the need to request, during the national phase, the Designated Offices to authorize the rectification.

New rules were adopted which deal with Designated States excusing delays in meeting certain time limits, in particular, time limits pertaining to the international phase and the time limit for entering the national phase (see Rule 82bis). In that connection, it was understood by the Assembly that the excusing of the delay may take place only during the national phase and under the conditions set forth by the national law.

Making the Procedure Under Chapter II of the PCT More Attractive for the Applicant.

A very important amendment adopted by the Assembly consisted of modifying the time limit under Article

Article 39(1)(a) for entering the national phase before elected Offices. Subject to some transitory provisions, the 25 month time limit has been extended to 30 months. The Assembly also decided to extend the time limit to 28 months from the priority date to establish the international preliminary examination report: where preliminary examination has been demanded before the expiration of the 19th month from the priority date. The said extensions give applicants more opportunities to present arguments to the International Preliminary Examining Authority and more time for thorough international preliminary examination. (See Article 39 and Rules 66.4 and 69.)

Note that Chapter II procedure is *not* currently available to United States residents or nationals filing in the United States Receiving Office or to international applications as to designations of the United States of America.

Making it Safer and Simpler for the Applicant to Enter the National Phase.

The Assembly modified the time limit under Article 22(2) in order to harmonize it with the time limit under Article 22(1). This amendment means that, subject to some transitory provisions, the time limit for entering the national phase before the Designated Offices will be 20 months from the priority date in *all* cases, even where the International Searching Authority declares that no international search report will be established. In the latter case, under the previous text, the time limit was shorter.

The Assembly adopted new rules specifying the requirements for entering the national phase, in particular, the contents of the translation of the international application to be furnished when entering the national phase. (see Rules 49.3 to 49.5, 51 bis and 74). It is now clear that the applicant must be given an opportunity *after* entering the national phase before the Designated Office, for furnishing evidence—where evidence is required under the national law—as to the identity of the inventor if not the applicant, the applicant's right to file when he or she is not the inventor or circumstances making an earlier disclosure non-prejudicial. Also, if the applicant did not appoint a local agent when the national phase is entered, that he or she must be given an opportunity, *after* entering the national phase, to appoint a local agent where he or she is, under the national law, obliged to be represented by such an agent.

Including Certain Patent Documents Published in the Spanish Language into the PCT Minimum Documentation and Including the Spanish Language Among the Languages of Publication of International Applications.

It is expected that the very important amendments adopted by the Assembly in that connection will make it easier for Spain and for Spanish-speaking countries of Latin America to join the PCT Union (see Rules 12.1(c) and (d), 34.1 and 48.3(a) and (b)).

Simplifying the Tasks of the International Authorities Involved in the PCT Procedure and Simplifying the PCT Regulations in General.

The Assembly adopted a number of amendments in that connection, in particular, through the transfer of Rules or parts of Rules which are of no direct interest to applicants to the Administrative Instructions under the PCT and the deletion of some obsolete Rules. It is to be expected that after this very comprehensive revision of the Regulations, there will be a longer period during which no, or only very few, changes will be necessary in the PCT system.

Comments on particular changes:

Decisions Concerning Articles 22(2) and 39(1)(a)

Decision concerning Article 22(2)

The Assembly, in order to make the same time limit applicable under paragraphs (1) and (2) of Article 22, decided as follows:

Article 22(2) is modified as follows:

"*Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be *the same as that provided for in paragraph (1)*."

The modification consists of replacing the words "two months from the date of the notification sent to the applicant of the said declaration" by the underlined, it also consists of deleting, before the word "Where," the words "Notwithstanding the provisions of paragraph (1)".

The modification entered into force on Jan. 1, 1985. However, as long as that time limit is incompatible with the national law applied by the Designated Office, a time limit of two months from the date of the notification sent to the applicant of the said declaration shall, during that transitory period, apply with respect to that Designated Office, provided that such Office has made a notification to that effect to the International Bureau.

Decision Concerning Article 39(1)(a)

The Assembly, in order to extend the time limit under Article 39(1)(a) from 25 to 30 months from the priority date, decided as follows:

Article 39(1)(a) is modified as follows:

"if the selection of any Contracting State has been effected prior to the expiration of the 19th month from the priority date, the provisions of Article 22 shall not apply to such State and the applicant shall furnish a copy of the international application (unless the communication under Article 20 has already taken place) and a translation thereof (as prescribed), and pay the national fee (if any), to each elected Office not later than at the expiration of 30 months from the priority date."

The modification consists of changing "25" to "30".

As noted above, Article 39 relates to procedures under Chapter II which are not currently available to applicants filing in the United States Receiving Office or in international applications when entering the United States as a Designated Office.

The modification of Article 39 entered into force on January 1, 1985. However as long as the said time limit of 30 months is incompatible in all cases with the national law applied by the elected Office, a time limit of 25 months from the priority date shall, during that transitory period, apply with respect to that elected Office, provided that such Office has made a notification to that effect to the International Bureau.

Attention is Directed to Important Amendments to the Regulations Affecting United States Applicants.

Rule 4 relates to the contents of the Request. The changes provide for correction of any obvious errors and correction of the application number of the priority application before the Receiving Office.

Rule 15.4: The amendment sets the period for payment of the basic fee and the international search fee to all the Receiving Offices at one month from the date on which the international application was received; the same applies to the period for payment of designation fees when the application is filed on expiry of the priority period. The provisions in paragraphs (a) and (b) are not yet in effect in the United States under the provisions of Rule 15.4(d).

The amendment makes it clear that the amount to be paid when the fees or their equivalents are increased between the date of filing of the application and the date of payment; the amount to be paid is the lower amount.

Rules 22.1(b) and 22.3 together with Rule 20.5(c): These amendments provide for a system whereby the International Bureau monitors the receipt of the record copy of the international application, and the Receiving Office, and where appropriate the applicant, is notified so that the record copy can be produced if the Receiving Office is late in sending it; at the same time, the

amended version of Rule 22.3 introduces a new time limit under Article 12(3) of the Treaty, which begins when such notifications are sent out.

Rule 26.2: Under certain circumstances, the rule now provides that the Receiving Office can extend the time limit for the correction of certain elements in the international application.

Rule 46: The amended Rule makes it easier to submit amended claims within the time limit during the international phase.

Rules 49.5 and 51bis: The new Rules set out the conditions applying to entry into the national or regional phase and in particular those concerning the contents of and physical requirements for the translation under Article 22(1) or 39(1) of the Treaty and the national requirements dealt with in Article 27.

Rule 91: The main purpose of the amendments to this Rule is to enable the applicant, on payment of a fee, to request the publication, at the same time as the international application, of a request for rectification which has been rejected during the international phase.

A copy of the amendments to the PCT Articles and Rules appears below.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Mar. 8, 1985.

Decisions of the Assembly Concerning Articles 22(2) and 39(1)(a) of the Patent Cooperation Treaty (PCT) and Amendments to the Regulations Under the PCT as Adopted by the Assembly

Decisions Concerning Articles 22(2) and 39(1)(a)
Decision Concerning Article 22(2)

The Assembly, in order to make the same time limit applicable under paragraphs (1) and (2) of Article 22, decides as follows:

(1) Article 22(2) is modified as follows:

"Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be *the same as that provided for in paragraph (1)*."

(2) The modification enters into force on Jan. 1, 1985. However, as long as that time limit is incompatible with the national law applied by the designated Office, a time limit of two months from the date of the notification sent to the applicant of the said declaration shall, during that transitory period, apply with respect to that designated Office, provided that such Office has made a notification to that effect to the International Bureau.

(3) The notification referred to in paragraph (2) shall be addressed to the International Bureau before Oct. 1, 1984. It shall be promptly published by the International Bureau in the Gazette, and it shall become effective on Jan. 1, 1985.

(4) Any notification effected under paragraph (3) may be withdrawn at any time. Such withdrawal shall be promptly published by the International Bureau in the Gazette, and it shall be effective 2 months after its publication in the Gazette or at any later date as indicated in the notice of withdrawal.

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*The modification consists of replacing the words "two months from the date of the notification sent to the applicant of the said declaration" by the words underlined; it also consists of deleting, before the word "Where," the words "Notwithstanding the provisions of paragraph (1),"

Decision Concerning Article 39(1)(a)

The Assembly, in order to extend the time limit under Article 39(1)(a) from 25 to 30 months from the priority date, decides as follows:

(1) Article 39(1)(a) is modified as follows:

"If the election of any Contracting State has been effected prior to the expiration of the 19th month from the priority date, the provisions of Article 22 shall not apply to such State and the applicant shall furnish a copy of the international application (unless the communication under Article 20 has already taken place) and a translation thereof (as prescribed), and pay the national fee (if any), to each elected Office not later than at the expiration of *30** months from the priority date."

(2) The modification enters into force on Jan. 1, 1985. However, as long as the said time limit of 30 months is incompatible in all cases with the national law applied by the elected Office, a time limit of 25 months from the priority date shall, during that transitory period, apply with respect to that elected Office, provided that such Office has made a notification to that effect to the International Bureau.

(3) The notification referred to in paragraph (2) shall be addressed to the International Bureau before Oct. 1, 1984. It shall be promptly published by the International Bureau in the Gazette, and it shall become effective on Jan. 1, 1985.

(4) Any notification effected under paragraph (3) may be withdrawn at any time. Such withdrawal shall be promptly published by the International Bureau in the Gazette, and it shall be effective 2 months after its publication in the Gazette or at any later date as indicated in the notice of withdrawal.

*The modification consists of changing "25" to "30."

Amendments to the Regulations*
Rule 4
The Request (Contents)

4.1 to 4.9 [No change]

4.10 Priority Claim
(a) [No change]
(b) If the request does not indicate both
(i) When the earlier application is not a regional or an international application, the country in which it was filed; when the earlier application is a regional or an international application, at least one country for which it was filed, and
(ii) the date on which it was filed,
the priority claim shall, for the purpose of the procedure under the Treaty, be considered not to have been made except where, resulting from an obvious error **, the indication of the said country or the said date is missing or is erroneous; whenever the identity or correct identity of the said country, or the said date or the correct date, may be established on the basis of the copy of the earlier application which reaches the receiving Office before it transmits the record copy to the International Bureau, the error shall be considered as an obvious error.
(c) If the application number of the earlier application is not indicated in the request but is furnished by the applicant to the International Bureau *or to the receiving Office* prior to the expiration of the 16th month from the priority date, it shall be considered by all designated States to have been furnished in time.***
(d) If the filing date of the earlier application as indicated in the request does not fall within the period of one year preceding the international filing date, the receiving Office, or, if the receiving Office has failed to do so, the International Bureau, shall invite the applicant to ask either for the cancellation of the declaration made under Article 8(1) or, if the date of the earlier application was indicated erroneously, for the correction of the date so indicated. If the applicant fails to act accordingly within 1 month from the date of the invitation, the declaration made under Article 8(1) shall be cancelled ex officio.****
(e) [No change]

4.11 to 4.16 [No change]

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*Where the amendment consists of one or more new words, it or they are underlined (the word or words which is or are replaced are not indicated). Where the amendment consists of deleting one or more words, without replacing it or them, this fact is indicated in footnotes.
**The amendment consists of deleting, after the word "error," the words "of transcription."
***The amendment also consists of deleting the last two sentences of this paragraph.
****The amendment consists of deleting the last two sentences of the present text of this paragraph.

4.17 Additional* Matter

(a) The request shall contain no matter other than that specified in Rules 4.1 to 4.16, *provided that the Administrative Instructions may permit, but cannot make mandatory, the inclusion in the request of any additional matter specified in the Administrative Instructions.*

(b) If the request contains matter other than that specified in Rules 4.1 to 4.16 *or permitted under paragraph (a) by the Administrative Instructions,* the receiving Office shall ex officio delete the additional matter.

*The amendment consists of deleting the word "No" before the word "Additional."

Rule C
The Claims

6.1 to 6.3 [No change]

6.4 Dependent Claims

(a) Any claim which includes all the features of one or more other claims (claim in dependent form, hereinafter referred to as "dependent claim") shall do so by a reference, if possible at the beginning, to the other claim or claims and shall then state the additional features claimed. Any dependent claim which refers to more than one other claim ("multiple dependent claim") shall refer to such claims in the alternative only. Multiple dependent claims shall not serve as a basis for any other multiple dependent claim. *Where the national law of the national Office acting as International Searching Authority does not allow multiple dependent claims to be drafted in a manner different from that provided for in the preceding two sentences, failure to use that manner of claiming may result in an indication under Article 17(2)(b) in the international search report. Failure to use the said manner of claiming shall have no effect in a designated State if the manner of claiming actually used satisfies the national law of that State.*

(b) and (c) [No change]

6.5 [No Change]

Rule 8
The Abstract

8.1 [No change]

8.2 Figure

(a) If the applicant fails to make the indication referred to in Rule 3.3(a)(iii), or if the International Searching Authority finds that a figure or figures other than that figure or those figures suggested by the applicant would, among all the figures of all the drawings, better characterize the invention, it shall, *subject to paragraph (b),* indicate the figure or figures which *should accompany the abstract when the latter is published by the International Bureau. In such case, the abstract* shall *be accompanied by* the figure or figures so indicated by the International Searching Authority. Otherwise, the *abstract shall, subject to paragraph (b), be accompanied by* the figure or figures suggested by the applicant.

(b) *If the International Searching Authority finds that none of the figures of the drawings is useful for the understanding of the abstract, it shall notify the International Bureau accordingly. In such case, the abstract, when published by the International Bureau, shall not be accompanied by any figure of the drawings even where the applicant has made a suggestion under Rule 3.3(a)(iii).*

8.3 [No change]

Rule 11
Physical Requirements of the International Application

11.1 to 11.14 [No change]

11.15 Translations
[*Deleted*]

Rule 12
Language of the International Application

12.1 *Admitted Languages*

(a) Any international application shall be filed in the language, or one of the languages, specified in the agreement concluded between the International Bureau and the International Searching Authority competent for the international searching of that application, provided that, if the agreement specifies several languages, the receiving Office may prescribe among the specified languages that language in which or those languages in one of which the international application must be filed.

(b) *If the international application is filed in a language other than the language in which it is to be published, the request may, notwithstanding paragraph (a), be filed in the language of publication.*

(c) *Subject to paragraph (d), where the official language of the receiving Office is one of the languages referred to in Rule 48.3(a) but is a language not specified in the agreement referred to in paragraph (a), the international application may be filed in the said official language. If the international application is filed in the said official language, the search copy transmitted to the International Searching Authority under Rule 23.1 shall be accompanied by a translation into the language, or one of the languages, specified in the agreement referred to in paragraph (a); such translation shall be prepared under the responsibility of the receiving Office.*

(d) *Paragraph (c) shall apply only where the International Searching Authority has declared, in a notification addressed to the International Bureau, that it accepts to search international applications on the basis of the translation referred to in paragraph (c).*

12.2 Language of Changes in the International Application

Any changes in the international application, such as amendments and corrections, shall, *subject to Rules 46.3 and 66.9*, be in the same language as the said *application.**

*The amendment also consists of deleting, after the word "application," the expression "(cf. Rule 66.5)."

Rule 13bis
Microbiological Inventions

13bis.1 to 13bis.6 ([No change]

13bis.7 National Requirements: Notification and Publication

(a) [No change]

(b) Each national Office shall notify the International Bureau* of the depositary institutions with which the national law permits deposits of microorganisms to be made for the purposes of patent procedure before that Office or, if the national law does not provide for or permit such deposits, of that fact.

(c) [No change]

*The amendment consists of deleting, after the word "Bureau," the following words: "a first time before entry into force of this Rule and then each time a change occurs."

Rule 15
The International Fee

15.1 to 15.3 [No change]

15.4 Time of Payment

(a) *The basic fee shall be paid within one month from the date of receipt of the international application.*

(b) *The designation fee shall be paid:*

(i) *where the international application does not contain a priority claim under Article 8, within one year from the date of receipt of the international application.*

(ii) *where the international application contains a priority claim under Article 8, within one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date.*

(c) *Where the basic fee or the designation fee is paid later than the date on which the international application was received and where the amount of that fee is, in the currency in which it is payable, higher on the date of payment ("the higher amount") than it was on the date on which the international application was received ("the lower amount"),*

(i) *the lower amount shall be due if the fee is paid within one month from the date of receipt of the international application.*

(ii) *the higher amount shall be due if the fee is paid later than one month from the date of receipt of the international application.*

(d) *If, on Feb. 3, 1984, paragraphs (a) and (b) are not compatible with the national law applied by the receiving Office and as long as they continue to be not compatible with that law, the basic fee shall be paid on the date of receipt of the international application and the designation fee shall be paid within one year from the priority date.*

15.5 [No change: remains *deleted*]

15.6 [No change]

Rule 16bis
Advancing Fees by the International Bureau

16bis.1 Guarantee by the International Bureau

(a) Where, by the time they are due under Rule 14.1(b), Rule 15.4(a)* and Rule 16.1(f), the receiving Office finds that in respect of an international application no fees were paid to it by the applicant, or that the amount paid to it by the applicant is less than what is necessary to cover the transmittal fee, the basic fee and the search fee, the receiving Office shall charge the amount required to cover those fees, or the missing part thereof, to the International Bureau and shall consider the said amount as if it had been paid by the applicant at the due time.

(b) Where, by the time** they are due under Rule 15.4(b)*, the receiving Office finds that in respect of an international application the payment made by the applicant is insufficient to cover the designation fees necessary to cover the designations, the receiving Office shall charge the amount required to cover those fees to the International Bureau and shall consider that amount as if it had been paid by the applicant at the due time.

(c) [No change]

(d) [*Deleted*]

16 bis .2 Obligations of the Applicant, Etc.

(a) to (c) [No change]

(d) to (g) [*Deleted*]

16bis.3 Notifications

[*Deleted*]

*The amendment consists of deleting the reference to paragraph (c).
**The amendment consists of deleting, after the word "time," the words "it or."

Rule 17
The Priority Document

17.1 Obligation to Submit Copy of Earlier National Application

(a) Where the priority of an earlier national application is claimed under Article 8 in the international application, a copy of the said national application, certified by the authority with which it was filed ("the priority document"), shall, unless already filed with the receiving Office together with the international application, be submitted by the applicant to the International Bureau or to the receiving Office not later than 16 months after the priority date or, in the case referred to in Article 23(2), not later than at the time the processing or examination is requested.*

(b) Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to transmit the priority document to the International Bureau. Such request shall be made not later than the expiration of the applicable time limit referred to under paragraph (a) and may be subjected by the receiving Office to the payment of a fee.**

(c) [No change]

(d) [*Deleted*]

17.2 [No change]

*The amendment consists of deleting the last two sentences of this paragraph.
**The amendment consists of deleting the last sentence of this paragraph.

Rule 20
Receipt of the International Application

20.1 to 20.4 [No change]

20.5 Positive Determination
(a) [No change]
(b) [No change]
(c) The receiving Office shall promptly notify the applicant of the international application number and the international filing date. *At the same time, it shall send to the International Bureau a copy of the notification sent to the applicant, except where it has already sent, or is sending at the same time, the record copy to the International Bureau under Rule 22.1(a).*

20.6 to 20.9 [No change]

Rule 22
Transmittal of the Record Copy

22.1 Procedure

(a) [No change]

(b) *If the International Bureau has received a copy of the notification under Rule 20.5(c) but is not, by the expiration of 13 months from the priority date, in possession of the record copy, it shall remind the receiving Office that it should transmit the record copy to the International Bureau promptly.*

(c) *If the International Bureau has received a copy of the notification under Rule 20.5(c) but is not, by the expiration of 14 months from the priority date, in possession of the record copy, it shall notify the applicant and the receiving Office accordingly.*

(d) *After the expiration of 14 months from the priority date, the applicant may request the receiving Office to certify a copy of his international application as being identical with the international application as filed and may transmit such certified copy to the International Bureau.*

(e) *Any certification under paragraph (d) shall be free of charge and may be refused only on any of the following grounds:*

(i) *the copy which the receiving Office has been requested to certify is not identical with the international application as filed;*

(ii) *prescriptions concerning national security prevent the international application from being treated as such;*

(iii) *the receiving Office has already transmitted the record copy to the International Bureau and that Bureau has informed the receiving Office that it has received the record copy.*

(f) *Unless the International Bureau has received the record copy, or until it receives the record copy, the copy certified under paragraph (e) and received by the International Bureau shall be considered to be the record copy.*

(g) *If, by the expiration of the time limit applicable under Article 22, the applicant has performed the acts referred to in that Article but the designated Office has not been informed by the International Bureau of the receipt of the record copy, the designated Office shall inform the International Bureau. If the International Bureau is not in possession of the record copy, it shall promptly notify the applicant and the receiving Office unless it has already notified them under paragraph (c).*

22.2 Alternative Procedure

[*Deleted*]

22.3 Time Limit under Article 12(3)

The time limit referred to in Article 12(3) shall be *3 months from the date of the notification sent by the International Bureau to the applicant under Rule 22.1(c) 21 or (g).*

22.4 Statistics Concerning Non-Compliance with Rules 22.1 and 22.2

[*Deleted*]

22.5 Documents Filed with the International Application

[*Deleted*]

Rule 23
Transmittal of the Search Copy

23.1 Procedure

(a) The search copy shall be transmitted by the receiving Office to the International Searching Authority at the latest on the same day as the record copy is transmitted to the International Bureau.*

(b) If the International Bureau has not received, within 10 days from the receipt of the record copy, information from the International Searching Authority that that Authority is in possession of the search copy, the International Bureau shall promptly transmit a copy of the international application to the International Searching Authority.**

(c) [*Deleted*]

*The amendment consists of deleting, at the end of the present text of this paragraph, the words "or, under Rule 22.2(d), to the applicant."

**The amendment consists of deleting the second sentence of this paragraph.

Rule 24
Receipt of the Record Copy by the International Bureau

24.1 Recording of Date of Receipt of the Record Copy
[*Deleted*]

24.2 [No change]

Rule 26

Checking *By*, and Correcting *Before, the Receiving Office of* Certain Elements of the International Application

26.1 [No change]26.2 Time Limit for Correction

The time limit referred to in Article 14(1)(b) shall be reasonable under the circumstances* and shall be fixed in each case by the receiving Office. It shall not be less than 1 month** from the date of the invitation to correct. *It may be extended by the receiving Office at any time before a decision is taken.*

26.3 Checking of Physical Requirements under Article 14(1)(a)(v)

The physical requirements referred to in Rule 11 shall be checked *only* to the extent that compliance therewith is necessary for the purpose of reasonably uniform international publication.

26.3*bis Invitation to Correct Defects under Article 14(1)(b)*

The receiving Office shall not be required to issue the invitation to correct a defect under Article 14(1)(a)(v) where the physical requirements referred to in Rule 11 are complied with to the extent necessary for the purpose of reasonably uniform international publication.

26.4 Procedure

(a) [No change]

(b) to (d) [*Deleted*]

26.5 *Decision of the Receiving Office*

(a) The receiving Office shall decide whether the applicant has submitted the correction within the *time limit under Rule 26.2 and, if* the correction has been submitted within *that time limit,* whether the international application so corrected is or is not to be considered withdrawn *provided that no international application shall be considered withdrawn for lack of compliance with the physical requirements referred to in Rule 11 if it complies with those requirements to the extent necessary for the purpose of reasonably uniform international publication.*

(b) [*Deleted*]

26.6 [No change]

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*The amendment consists of deleting, after the word "circumstances," the words "of the particular case."

**The amendment consists of deleting, after the word "month," the words "and normally not more than 2 months."

Rule 28
Defects Noted by the International Bureau*

28.1 Note on Certain Defects

(a) If, in the opinion of the International Bureau**, the international application contains any of the defects referred to in Article 14(1)(a)(i), (ii) or (v), the International Bureau*** shall bring such defects to the attention of the receiving Office.

(b) [No change]

*The amendment consists of deleting, after the word "Bureau," the words "or the International Searching Authority."

**The amendment consists of deleting, after the word "Bureau," the words "or of the International Searching Authority."

***The amendment consists of deleting, after the word "Bureau," the words "or the International Searching Authority, respectively."

Rule 29
International Applications or Designations Considered Withdrawn under Article 14(1), (3) or (4)

29.1 [No change]

29.2 Finding by Designated Office
[*Deleted*]

29.3 and 29.4 [No change]

Rule 32
Withdrawal of the International Application or of Designations

32.1 Withdrawals

(a) and (b) [No change]

(c) Withdrawal shall be effected by a signed notice from the applicant to the International Bureau or* to the receiving Office. In the case of Rule 4.8(b), the notice shall require the signature of all the applicants.

(d) [*Deleted*]

(e) *There shall be no international publication of the international application or of the designation, as the case may be, if the notice effecting withdrawal reaches the International Bureau before the technical preparations for publication have been completed.*

Rule 32bis
Withdrawal of the Priority Claim

32*bis*.1 Withdrawals

(a) and (b) [No change]

(c) Where the withdrawal of the priority claim, or, in the case of more than one such claim, the withdrawal of any of them, causes a change in the priority date of the international application, any time limit which is computed from the original priority date and which has not already expired shall be computed from the priority date resulting from that change. In the case of the time limit of 18 months referred to in Article 21(2)(a), the International Bureau may nevertheless proceed with the international publication on the basis of the said time limit as computed from the original priority date if the *notice effecting* withdrawal *reaches the International Bureau* during the period of 15 days preceding the expiration of that time limit.

(d) For any withdrawal under paragraph (a), the provisions of Rule 32.1(c)** shall apply *mutatis mutandis*.

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*The amendment consists of deleting, after the word "or," the following words: ", if the record copy has not yet been sent to the International Bureau."

**The amendment also consists of deleting, after the words "Rule 32.1(c)," the words "and (d) and Rule 74bis.1."

Rule 34
Minimum Documentation

34.1 Definition
(a) and (b) [No change]
(c) Subject to paragraphs (d) and (e), the "national patent documents" shall be the following:
(i) to (v) [No change]
(vi) such patents issued by, and such patent applications published in, any other country after 1920 as are in the English, French, German or Spanish languages and in which no priority is claimed, provided that the national Office of the interested country sorts out these documents and places them at the disposal of each International Searching Authority.
(d) [No change]
(e) Any International Searching Authority whose official language, or one of whose official languages is not Japanese, Russian or Spanish is entitled not to include in its documentation those patent documents of Japan and the Soviet Union *as well as those patent documents in the Spanish language,* respectively, for which no abstracts in the English language are generally available. English abstracts becoming generally available after the date of entry into force of these Regulations shall require the inclusion of the patent documents to which the abstracts refer no later than 6 months after such abstracts become generally available. In case of the interruption of abstracting services in English in technical fields in which English abstracts were formerly generally available, the Assembly shall take appropriate measures to provide for the prompt restoration of such services in the said fields.
(f) [No change]

Rule 42
Time Limit for International Search

42.1 Time Limit for International Search
The time limit for establishing the international search report or the declaration referred to in Article 17(2)(a) *shall be* 3 months from the receipt of the search copy by the International Searching Authority, or 9 months from the priority date, whichever time limit expires later.*

*The amendment also consists of deleting the last sentence of Rule 42.1.

Rule 46
Amendment of Claims Before the International Bureau

46.1 Time Limit
The time limit referred to in Article 19 shall be 2 months from the date of transmittal of the international search report to the International Bureau and to the applicant by the International Searching Authority or *16 months from the priority date, whichever time limit expires later, provided that any amendment made under Article 19 which is received by the International Bureau after the expiration of the applicable time limit shall be considered to have been received by the Bureau on the last day of that time limit if it reaches it before the technical preparations for international publication have been completed.*

46.2 Dating of Amendments
[*Deleted*]

46.3 Language of Amendments
If the international application has been filed in a language other than the language in which it is published*, any amendment made under Article 19 shall be** in the language *of publication.*

46.4 Statement
(a) The statement referred to in Article 19(1) shall be in the language in which the international application is published and shall not exceed 500 words if in the English language or if translated into that language. *The statement shall be identified as such by a heading, preferably by using the words "Statement under Article 19(1)" or their equivalent in the language of the statement.*
(b) The statement shall contain no *disparaging* comments on the international search report or the relevance of*** citations contained in that report. *Reference* to citations, *relevant to a given claim,* contained in the international search report *may be made only in connection with an amendment of that claim.*

46.5 Form of Amendments
(a) [No change]
(b) and (c) [*Deleted*]

*The amendment also consists of deleting, after the word "published," the words "by the International Bureau."
**The amendment also consists of deleting, after the word "be," the word "both."
***The amendment also consists of deleting, after the word "of," the word "the."

Rule 47
Communication to Designated Offices

47.1 Procedure
(a) [No change]
(b) Such communication shall be effected promptly after the international publication of the international application and, in any event, by the end of the 19th month after the priority date. *Any amendment received by the International Bureau within the time limit under Rule 46.1 which was not included in the communication shall be communicated promptly to the designated Offices by the International Bureau, and the latter shall notify the applicant accordingly.**
(c) to (e) [No change]

47.2 and 47.3 [No change]

*The amendment also consists of deleting the last sentence of Rule 47.1(b).

Rule 48
International Publication

48.1 [No change]

48.2 Contents
(a) The pamphlet shall contain:
(i) to (v) [No change]
(vi) any statement filed under Article 19(1), unless the International Bureau finds that the statement does not comply with the provisions of Rule 46.4,
(vii) *any request for rectification referred to in the third sentence of Rule 91.1(f).*
(b) Subject to paragraph (c), the front page shall include:
(i) [No change]
(ii) a figure or figures where the international application contains drawings, *unless Rule 8.2(b) applies,*
(iii) [No change]
(c) to (f) [No change]
(g) If, at the time *of the completion of the technical preparations for international publication,* the international search report is not yet available (for example, because of publication on the request of the applicant as provided in Articles 21(2)(b) and 64(3)(c)(i)), the pamphlet shall contain, in place of the international search report, an indication to the effect that that report was not available and that either the pamphlet (then also including the international search report) will be republished or the international search report (when it becomes available) will be separately published.
(h) If, at the time *of the completion of the technical preparations for international publication,* the time limit for amending the claims under Article 19 has not expired, the pamphlet shall refer to that fact and indicate that, should the claims be amended under Article 19, then, promptly after such amendments, either the pamphlet (containing the claims as amended) will be republished or a statement reflecting all the amendments will be published. In the latter case, at least the front page and the claims shall be republished and, if a statement under Article 19(1) has been filed, that statement shall be published as well, unless the International Bureau finds that the statement does not comply with the provisions of Rule 46.4.
(i) [No change]

48.3 *Languages*
(a) If the international application is filed in English, French, German, Japanese, Russian *or Spanish,* that application shall be published in the language in which it was filed.
(b) If the international application is filed in a language other than English, French, German, Japanese, Russian or Spanish, that application shall be published in English translation. The translation shall be prepared under the responsibility of the International Searching Authority, which shall be obliged to have it ready in time to permit *international publication by the prescribed date, or, where Article 64(3)(b) applies, to permit the communication under Article 20 by the end of the 19th month after the priority date.* Notwithstanding Rule 16.1(a), the International Searching Authority may charge a fee for the translation to the applicant. The International Searching Authority shall give the applicant an opportunity to comment on the draft translation. The International Searching Authority shall fix a time limit reasonable under the circumstances of the case for such comments. If there is no time to take the comments of the applicant into account before the translation is communicated or if there is a difference of opinion between the applicant and the said Authority as to the correct translation, the applicant may send a copy of his comments, or what remains of them, to the International Bureau and each designated Office to which the translation was communicated. The International Bureau shall publish the essence of the comments together with the translation of the International Searching Authority or subsequently to the publication of such translation.
(c) If the international application is published in a language other than English, the international search report to the extent that it is published under Rule 48.2(a)(v), or the declaration referred to in Article 17(2)(a), *the title of the invention,* the abstract *and any text matter pertaining to the figure or figures accompanying the abstract* shall be published both in that language and in English. The translations shall be prepared under the responsibility of the International Bureau.

48.4 and 48.5 [No change]

48.6 Announcing of Certain Facts
(a) [No change]
(b) [*Deleted*]
(c) If the international application *or the designation of any designated State* is withdrawn *under Rule 32.1, or if the priority claim is withdrawn under Rule 32bis.1,* after *the technical preparations for* international publication *have been completed,* this fact shall be published in the Gazette.

Rule 49
Copy, Translation and Fee under Article 22

49.1 Notification
(a) [No change]
(a-bis) *Any Contracting State not requiring the furnishing, under Article 22, by the applicant of a copy of the international application (even though the communication of the copy of the international application by the International Bureau under Rule 47 has not taken place by the expiration of the time limit applicable under Article 22) shall notify the International Bureau accordingly.*
(a-ter) *Any Contracting State which, pursuant to Article 24(2), maintains, if it is a designated State, the effect provided for in Article 11(3) even though a copy of the international application is not furnished by the applicant by the expiration of the time limit applicable under Article 22 shall notify the International Bureau accordingly.*
(b) Any notification received by the International Bureau under *paragraphs (a), (a-bis) or (a-ter)* shall be promptly published by the International Bureau in the Gazette.
(c) [No change]

49.2 [No change]

49.3 Statements under Article 19; Indications under Rule 13bis.4
For the purpose of Article 22 and the present Rule, any statement made under Article 19(1) and any indication furnished under Rule 13*bis*.4 shall, *subject to Rule 49.5(c) and (h),* be considered part of the international application.

49.4 *Use of National Form*
No applicant shall be required to use a national form when performing the acts referred to in Article 22.

49.5 *Contents of and Physical Requirements for the Translation*
(a) *For the purposes of Article 22, the translation of the international application shall contain the description, the claims, any text matter of the drawings and the abstract. If required by the designated Office, the translation shall also, subject to paragraphs (b) and (e),*
(i) *contain the request,*
(ii) *if the claims have been amended under Article 19, contain both the claims as filed and the claims as amended, and*
(iii) *be accompanied by a copy of the drawings.*
(b) *Any designated Office requiring the furnishing of a translation of the request shall furnish copies of the request form in the language of the translation free of charge to the applicants. The form and contents of the request form in the language of the translation shall not be different from those of the request under Rules 3 and 4; in particular, the request form in the language of the translation shall not ask for any information that is not in the request as filed. The use of the request form in the language of the translation shall be optional.*
(c) *Where the applicant did not furnish a translation of any statement made under Article 19(1), the designated Office may disregard such statement.*
(d) *If any drawing contains text matter, the translation of that text matter shall be furnished either in the form of a copy of the original drawing with the translation pasted on the original text matter or in the form of a drawing executed anew.*
(e) *Any designated Office requiring under paragraph (a) the furnishing of a copy of the drawing shall, where the applicant failed to furnish such copy within the time limit applicable under Article 22,*
(i) *invite the applicant to furnish such copy within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation, or*
(ii) *disregard the said drawing if such invitation, on Feb. 3, 1984, is not compatible with the national law applied by that Office and as long as it continues to be not compatible with that law.*
(f) *The expression "Fig." does not require translation into any language.*
(g) *Where any copy of the drawings or any drawing executed anew which has been furnished under paragraph (d) or (e) does not comply with the physical requirements referred to in Rule 11, the designated Office may invite the applicant to correct the defect within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation.*
(h) *Where the applicant did not furnish a translation of any indication furnished under Rule 13bis.4, the designated Office shall invite the applicant to furnish such translation, if it deems it to be necessary, within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation.*
(i) *Information on any requirement and practice of designated Offices under the second sentence of paragraph (a) shall be published by the International Bureau in the Gazette.*
(j) *No designated Office shall require that the translation of the international application comply with physical requirements other than those prescribed for the international application as filed.*

Rule 51
Review by Designated Offices

51.1 to 51.3 [No change]

51.4 Notification to the International Bureau
[*Deleted*]

Rule 51bis

Certain National Requirements Allowed under Article 27(1), (2), (6) and (7)

51*bis*.1 *Certain National Requirements Allowed*

(a) *The documents referred to in Article 27(2)(ii), or the evidence referred to in Article 27(6), which the applicant may be required to furnish under the national law applicable by the designated Office include, in particular:*

(i) *any document relating to the identity of the inventor,*

(ii) *any document relating to any transfer or assignment of the right to the application,*

(iii) *any document containing an oath or declaration by the inventor alleging his inventorship,*

(iv) *any document containing a declaration by the applicant designating the inventor or alleging the right to the application,*

(v) *any document containing any proof of the right of the applicant to claim priority where he is different from the applicant having filed the earlier application the priority of which is claimed,*

(vi) *any evidence concerning non-prejudicial disclosures or exceptions to lack of novelty, such as disclosures resulting from abuse, disclosures at certain exhibitions and disclosures by the applicant during a certain period of time.*

(b) *The national law applicable by the designated Office may, in accordance with Article 27(7), require that*

(i) *the applicant be represented by an agent having the right to represent applicants before that Office and/or have an address in the designated State for the purpose of receiving notifications,*

(ii) *the agent, if any, representing the applicant be duly appointed by the applicant.*

(c) *The national law applicable by the designated Office may, in accordance with Article 27(1), require that the international application, the translation thereof or any document relating thereto be furnished in more than one copy.*

(d) *The national law applicable by the designated Office may, in accordance with Article 27(2)(ii), require that the translation of the international application furnished by the applicant under Article 22 be verified by the applicant or the person having translated the international application in a statement to the effect that, to the best of his knowledge, the translation is complete and faithful.*

51*bis*.2 *Opportunity to Comply with National Requirements*

(a) *Where any of the requirements referred to in Rule 51bis.1, or any other requirement of the national law applicable by the designated Office which that Office may apply under Article 27(1), (2), (6) or (7), is not already fulfilled during the same period within which the requirements under Article 22 must be complied with, the applicant shall have an opportunity to comply with the requirement after the expiration of that period.*

(b) *The national law applicable by the designated Office may, in accordance with Article 27(2)(ii), require that the applicant, upon invitation by the designated Office, furnish a certification of the translation of the international application by a public authority or a sworn translator, if the designated Office deems such certification to be necessary under the circumstances, within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation.*

(c) *If, on Feb. 3, 1984, paragraph (a) is, with respect to the requirements referred to in Rule 51bis.1 (a)(iii) and (vi), (b)(i) and (d), not compatible with the national law applied by the designated Office and as long as it continues to be not compatible with that law, the applicant shall have no opportunity to comply with any of the requirements after the expiration of the time limit applicable under Article 22. Information on such national laws shall be published by the International Bureau in the Gazette.*

Rule 53
The Demand

53.1 Form
(a) to (c) [No change]
(d) [*Deleted*]

53.2 to 53.8 [No change]

Rule 54
The Applicant Entitled to Make a Demand

54.1 and 54.2 [No change]

54.3 Several Applicants: Different for Different Elected States
(a) [No change]
(b) [*Deleted*]

54.4 *Applicant Not Entitled to Make a Demand or an Election*
(a) *If the applicant does not have the right or, in the case of several applicants, if none of them has the right to make a demand under Article 31(2), the demand shall be considered not to have been submitted.*
(b) *If the requirement under Rule 54.3(a) is not fulfilled in respect of any elected State, the election of that State shall be considered not to have been made.*

Rule 55
Languages (International Preliminary Examination)

55.1 The Demand
The demand shall be in the language of the international application or, *if the international application has been filed in a language other than the language in which it is published, in the language of publication.*

55.2 The International Application
[*Deleted*]

Rule 58
The Preliminary Examination Fee

58.1 and 58.2 [No change]

58.3 Refund

The International Preliminary Examining Authorities shall inform the International Bureau of the extent, if any, to which, and the conditions, if any, under which, they will refund any amount paid as a preliminary examination fee where the demand is considered as if it had not been submitted*, and the International Bureau shall promptly publish such information.

*The amendment consists of deleting, after the word "submitted," the words "under Rule 57.4(c), Rule 58.2(c) or Rule 60.1(c)."

Rule 60
Certain Defects in the Demand or Elections

60.1 and 60.2 [No change]

60.3 Attempted Elections
[*Deleted*]

Rule 62
Examination of Applications

62.1 [No change]

62.2 Time for Examination
[*Deleted*]

Rule 61
Notification of the Demand and Elections

61.1 Notifications to the International Bureau, the Applicant, and the International Preliminary Examining Authority

(a) The International Preliminary Examining Authority shall indicate on* the demand the date of receipt or, where applicable, the date referred to in Rule 60.1(b). The International Preliminary Examining Authority shall promptly send the *demand* to the International Bureau, *and* shall *prepare and* keep *a* copy in its files.

(b) The International Preliminary Examining Authority shall promptly inform the applicant in writing of the date of receipt of the demand. Where the demand has been considered under Rules *54.4(a),* 57.4(c), 58.2(c) or 60.1(c) as if it had not been submitted *or where an election has been considered under Rule 54.4(b) as if it had not been made,* the International Preliminary Examining Authority shall notify the applicant *and the International Bureau* accordingly.

(c) [No change]

61.2 and 61.3 [No change]

*The amendment consists of deleting, after the word "on," the words "both copies of."

Rule 62
Copy for the International Preliminary Examining Authority

62.1 The International Application
[*Deleted*]

62.2 [No change]

Rule 66
Procedure Before the International Preliminary Examining Authority

66.1 [No change]

66.2 First Written Opinion of the International Preliminary Examining Authority
(a) If the International Preliminary Examining Authority
(i) considers that the international application has any of the defects described in Article 34(4).
(ii) considers that the international preliminary examination report should be negative in respect of any of the claims because the invention claimed therein does not appear to be novel, does not appear to involve an inventive step (does not appear to be non-obvious), or does not appear to be industrially applicable,
(iii) notices that there is some defect in the form of contents of the international application under the Treaty or these Regulations,
(iv) considers that any amendment goes beyond the disclosure in the international application as filed, or
(v) wishes to accompany the international preliminary examination report by observations on the clarity of the claims, the description, and the drawings, or the question whether the claims are fully supported by the description,
the said Authority shall notify the applicant accordingly in writing. *Where the national law of the national Office acting as International Preliminary Examining Authority does not allow multiple dependent claims to be drafted in a manner different from that provided for in the second and third sentences of Rule 6.4(a), the International Preliminary Examining Authority may, in case of failure to use that manner of claiming, apply Article 34(4)(b). In such case, it shall notify the applicant accordingly in writing.*
(b) [No change]
(c) The notification shall invite the applicant to submit a written reply together, where appropriate, with amendments*.
(d) [No change]

66.3 Formal Response to the International Preliminary Examining Authority
(a) The applicant may respond to the invitation referred to in Rule 66.2(c) of the International Preliminary Examining Authority by making amendments* or—if he disagrees with the opinion of that Authority—by submitting arguments, as the case may be, or do both.
(b) [No change]

66.4 Additional Opportunity for *Submitting Amendments or Arguments*
(a) [No change]
(b) On the request of the applicant, the International Preliminary Examining Authority may give him one or more additional opportunities to submit amendments or *arguments.*

66.5 Amendment
Any change, other than the rectification of obvious errors**, in the claims, the description, or the drawings, including cancellation of claims, omission of passages in the description, or omission of certain drawings, shall be considered an amendment.

66.6 [No change]

66.7 Priority Document
(a) If the International Preliminary Examining Authority needs a copy of the application whose priority is claimed in the international application, the International Bureau shall, on request, promptly furnish such copy. *If that copy is not furnished to the International Preliminary Examining Authority because the applicant failed to comply with the requirements of Rule 17.1, the international preliminary examination report may be established as if the priority had not been claimed.*
(b) If the application whose priority is claimed *in the international application* is in a language other than the language or one of the languages of the International Preliminary Examining Authority, *that Authority may invite the applicant to furnish* a translation in the said language or one of the said languages *within 2 months from the date of the invitation. If the translation is not furnished within that time limit, the international preliminary examination report may be established as if the priority had not been claimed.*
(c) [*Deleted*]

66.8 Form of*** Amendments
(a) The applicant shall be required to submit a replacement sheet for every sheet of the international application which, on account of **** an amendment, differs from the sheet originally filed. The letter accompanying the replacement sheets shall draw attention to the differences between the replaced sheets and the replacement sheets. To the extent that any amendment results in the cancellation of an entire sheet, that amendment shall be communicated in a letter.
(b) [*Deleted*]

66.9 *Language of Amendments*
If the international application has been filed in a language other than the language in which it is published, any amendment, as well as any letter referred to in Rule 66.8(a), shall be submitted in the language of publication.

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*The amendment consists of deleting, after the word "amendments," the words "or corrections."
**The amendment consists of deleting, after the word "errors," the words "of transcription."
***The amendment consists of deleting, after the word "of," the words "Corrections and."
****The amendment consists of replacing, after the word "of," the words "a correction or" by the word "an."

Rule 69
Time Limit for International Preliminary Examination

69.1 Time Limit for International Preliminary Examination

(a) *The time limit for establishing the international preliminary examination report shall be:*

(i) *28 months from the priority date if the demand was filed prior to the expiration of 19 months from the priority date;*

(ii) *9 months from the start of the international preliminary examination if the demand was filed after the expiration of 19 months from the priority date.*

(b) and (c) [No change]

Rule 70
The International Preliminary Examination Report

70.1 [No change]

70.2 Basis of the Report
(a) [No change]
(b) If, pursuant to Rule *66.7(a) or (b)*, the report is established as if the priority had not been claimed, the report shall so indicate.
(c) [No change]

70.3 to 70.10 [No change]

70.11 Mention of Amendments*
If, before the International Preliminary Examining Authority, amendments* have been made, this fact shall be indicated in the report. *Where any amendment has resulted in the cancellation of an entire sheet, this fact shall also be specified in the report.*

70.12 to 70.15 [No change]

70.16 Annexes of the Report
If the claims, the description, or the drawings, were amended** before the International Preliminary Examining Authority, each replacement sheet *under Rule 66.8(a)* shall be *annexed* to the report.*** Replacement sheets superseded by later replacement sheets *and letters under Rule 66.8(a)* shall not be annexed.****

70.17 Languages of the Report and the Annexes
(a) The report *and any annex* shall be in the language in which the international application to which *they relate* is published.
(b) [*Deleted*]

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*The amendment consists of deleting, in the title, after the word "Amendments," the words "or Correction of Certain Defects" and, in the Rule itself, after the word "amendments," the words "or corrections."
**The amendment also consists of deleting, after the word "amended", the words "or any part of the international application was corrected."
***The amendment also consists of deleting, after the word "report," the words "as an annex thereto."
****The amendment also consists of deleting the last sentence of Rule 70.16.

Rule 74
Translations of Annexes of the International Examination Report and Transmittal Thereof

74.1 *Contents of Translation and* Time Limit *for Transmittal Thereof*
Where the furnishing of a translation of the international application is required by the elected Office under Article 39(1), the applicant shall, within the time limit applicable under Article 39(1), transmit a translation of any replacement sheet referred to in Rule 70.16 which is annexed to the international preliminary examination report. The same time limit shall apply where the furnishing of a translation of the international application to the elected Office must, because of a declaration made under Article 64(2)(a)(i), be effected within the time limit applicable under Article 22.

Rule 74bis
Notification of Withdrawal under Rule 32

74*bis*.1 Notification of the International Preliminary Examining Authority
[*Deleted*]

Rule 75
Withdrawal of the Demand, or of Elections

75.1 Withdrawals
(a) Withdrawal of the demand or all the elections may be effected prior to the expiration of *30* months from the priority date except as to any elected State in which national processing or examination has already started. Withdrawal of the election of any elected State may be effected prior to the date on which examination and processing may start in that State.
(b) [No change]

75.2 Notification of Elected Offices
[*Deleted*]

75.3 Notification of the International Preliminary Examining Authority
[*Deleted*]

75.4 [No change]

Rule 76
Copy, Translation and Fee under Article 39(1); Translation of Priority Document

76.1 Notification
[*Deleted*]

76.2 Languages
[*Deleted*]

76.3 Statements under Article 19; Indications under Rule 13bis.4
[*Deleted*]

76.4 [No change]

76.5 *Application of Rules 22.1(g), 49 and 51bis*
Rules 22.1(g), 49 and 51bis shall apply, provided that:
(i) *any reference in the said Rules to the designated Office or to the designated State shall be construed as a reference to the elected Office or to the elected State, respectively;*
(ii) *any reference in the said Rules to Article 22 shall be construed as a reference to Article 39(1);*
(iii) *the words "international applications filed" in Rule 49.1(c) shall be replaced by the words "a demand submitted."*

Rule 80
Computation of Time Limits

80.1 to 80.5 [No change]

80.6 Date of Documents
(a) [No change]
(b) [*Deleted*]

80.7 [No change]

Rule 82
Irregularities in the Mail Service

82.1 Delay or Loss in Mail

(a) and (b) [No change]

(c) In the cases provided for in paragraph (b), evidence of mailing within the prescribed time limit, and, where the document or letter was lost, the substitute document or letter as well *as the evidence concerning its identity with the document or letter lost* shall be submitted within 1 month after the date on which the interested party noticed—or with due diligence should have noticed—the delay or the loss, and in no case later than 6 months after the expiration of the time limit applicable in the given case.

82.2 [No change]

Rule 82bis
Excuse by the Designated or Elected State of Delays in Meeting Certain Time Limits

82*bis*.1 *Meaning of "Time Limit" in Article 48(2)*
The reference to "any time limit" in Article 48(2) shall be construed as comprising a reference:
(i) *to any time limit fixed in the Treaty or these Regulations;*
(ii) *to any time limit fixed by the receiving Office, the International Searching Authority, the International Preliminary Examining Authority or the International Bureau or applicable by the receiving Office under its national law;*
(iii) *to any time limit fixed by, or in the national law applicable by, the designated or elected Office, for the performance of any act by the applicant before that Office.*

82*bis*.2 *Reinstatement of Rights and Other Provisions to which Article 48(2) Applies*
The provisions of the national law which is referred to in Article 48(2) concerning the excusing, by the designated or elected State, of any delay in meeting any time limit are those provisions which provide for reinstatement of rights, restoration, *restitutio in integrum* or further processing in spite of non-compliance with a time limit, and any other provision providing for the extension of time limits or for excusing delays in meeting time limits.

Rule 82ter
Rectification of Errors Made by the Receiving Office or by the International Bureau

82*ter*.1 *Errors Concerning the International Filing Date and the Priority Claim*

If the applicant proves to the satisfaction of any designated or elected Office that the international filing date is incorrect due to an error made by the receiving Office or that the declaration made under Article 8(1) has been erroneously cancelled or corrected by the receiving Office or the International Bureau, and if the error is an error such that, had it been made by the designated or elected Office itself, that Office would rectify it under the national law or national practice, the said Office shall rectify the error and shall treat the international application as if it had been accorded the rectified international filing date or as if the declaration under Article 8(1) had not been cancelled or corrected, as the case may be.

Rule 88
Amendment of the Regulations

88.1 [No change]

88.2 Requirement of Unanimity During a Transitional Period
[*Deleted*]

88.3 [No change]

88.4 Procedure
Any proposal for amending a provision referred to in Rules 88.1* or 88.3 shall, if the proposal is to be decided upon in the Assembly, be communicated to all Contracting States at least 2 months prior to the opening of that session of the Assembly which is called upon to make a decision on the proposal.

*The amendment consists of deleting, after the expression "Rule 88.1," the expression "88.2."

Rule 90
Representation

90.1 and 90.2 [No change]

90.3 Appointment
(a) and (b) [No change]
(c) If the separate power of attorney is not signed*, or if the required separate power of attorney is missing, or if the indication of the name or address of the appointed person does not comply with Rule 4.4, the power of attorney shall be considered non-existent unless the defect is corrected.
(d) [No change]

90.4 [No change]

*The amendment consists of deleting, after the word "signed," the words "as provided in paragraph (a)."

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Rule 91
Obvious Errors in Documents

91.1 Rectification

(a) Subject to paragraphs (b) to *(g-quater)*, obvious errors* in the international application or other papers submitted by the applicant may be rectified.

(b) Errors which are due to the fact that something other than what was obviously intended was written in the international application or other paper shall be regarded as obvious errors*. The rectification itself shall be obvious in the sense that anyone would immediately realize that nothing else could have been intended than what is offered as rectification.

(c) [No change]

(d) Rectification may be made on the request of the applicant. The authority having discovered what appears to be an obvious error** may invite the applicant to present a request for rectification as provided in paragraphs (e) to *(g-quater). Rule 26.4(a) shall apply mutatis mutandis to the manner in which rectifications shall be requested.*

(e) [No change]

(f) *Any authority which authorizes or refuses any rectification shall promptly notify the applicant of the authorization or refusal and, in the case of refusal, of the reasons therefor. The authority which authorizes a rectification shall promptly notify the International Bureau accordingly. Where the authorization of the rectification was refused, the International Bureau shall, upon request made by the applicant prior to the time relevant under paragraph (g-bis), (g-ter) or (g-quater) and subject to the payment of a special fee whose amount shall be fixed in the Administrative Instructions, publish the request for rectification together with the international application. A copy of the request for rectification shall be included in the communication under Article 20 where a copy of the pamphlet is not used for that communication or where the international application is not published by virtue of Article 64(3).*

(g) The authorization for rectification referred to in paragraph (e) shall, subject to paragraphs (g-bis), (g-ter) and (g-quater), be effective:

(i) *where it is given by the receiving Office or by the International Searching Authority, if its notification to the International Bureau reaches that Bureau before the expiration of 17 months from the priority date;*

(ii) *where it is given by the International Preliminary Examining Authority, if it is given before the establishment of the international preliminary examination report;*

(iii) *where it is given by the International Bureau, if it is given before the expiration of 17 months from the priority date.*

(g-bis) If the notification made under paragraph (g)(i) reaches the International Bureau, or if the rectification made under paragraph (g)(iii) is authorized by the International Bureau, after the expiration of 17 months from the priority date but before the technical preparations for international publication have been completed, the authorization shall be effective and the rectification shall be incorporated in the said publication.

(g-ter) Where the applicant has asked the International Bureau to publish his international application before the expiration of 18 months from the priority date, any notification made under paragraph (g)(i) must reach, and any rectification made under paragraph (g)(iii) must be authorized by, the International Bureau, in order for the authorization to be effective, not later than at the time of the completion of the technical preparations for international publication.

(g-quater) Where the international application is not published by virtue of Article 64(3), any notification made under paragraph (g)(i) must reach, and any rectification made under paragraph (g)(iii) must be authorized by, the International Bureau, in order for the authorization to be effective, not later than at the time of the communication of the international application under Article 20.

(h) [*Deleted*]

91.2 Manner of Carrying Out Rectifications

[*Deleted*]

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*The amendment consists of deleting, after the word "errors," the words "of transcription."
**The amendment consists of deleting, after the word "error," the words "of transcription."

Rule 92
Correspondence

92.1 [No change]

92.2 Languages

(a) Subject to *Rules 55.1 and 66.9 and to paragraph (b) of this Rule,* any letter or document submitted by the applicant to the International Searching Authority or the International Preliminary Examining Authority shall be in the same language as the international application to which it relates.

(b) [No change]

(c) [*Deleted*]

(d) and (e) [No change]

92.3 and 92.4 [No change]

Rule 92bis
Recording of Changes in Certain Indications in the Request or the Demand

92*bis*.1 Recording of Changes by the International Bureau

(a) The International Bureau shall, on the request of the applicant or the receiving Office, record changes in the following indications appearing in the request or demand:

(i) person, name, residence, nationality or address of the applicant,

(ii) person, name or address of the agent, the common representative or the inventor.

(b) *The International Bureau shall not record the requested change if the request for recording is received by it after the expiration:*

(i) *of the time limit referred to in Article 22(1), where Article 39(1) is not applicable with respect to any Contracting State;*

(ii) *of the time limit referred to in Article 39(1)(a), where Article 39(1) is applicable with respect to at least one Contracting State.*

92*bis*.2 Notifications

[*Deleted*]

PATENT NOTICES

Certificates of Correction for the Week of Apr. 16, 1983

Re. 31,570	4,452,837	4,471,716	4,478,753
3,455,675	4,452,954	4,472,270	4,478,883
4,139,619	4,452,984	4,472,416	4,478,970
4,172,140	4,454,217	4,472,519	4,479,042
4,254,823	4,455,298	4,472,695	4,479,067
4,258,931	4,455,464	4,472,842	4,479,245
4,291,037	4,456,201	4,473,185	4,479,328
4,360,522	4,458,691	4,473,277	4,479,528
4,369,222	4,459,171	4,473,412	4,480,160
4,375,083	4,459,543	4,474,102	4,480,180
4,379,454	4,460,097	4,474,120	4,480,243
4,379,759	4,460,241	4,474,187	4,480,531
4,386,912	4,460,387	4,474,247	4,480,913
4,389,542	4,460,493	4,474,269	4,480,934
4,393,405	4,460,911	4,474,311	4,481,144
4,397,000	4,462,069	4,474,367	4,481,194
4,404,926	4,462,080	4,474,493	4,481,411
4,405,031	4,462,700	4,474,524	4,481,588
4,407,045	4,463,000	4,474,743	4,482,015
4,407,951	4,463,044	4,475,276	4,482,026
4,409,678	4,463,764	4,475,278	4,482,113
4,410,430	4,463,813	4,475,324	4,482,158
4,413,022	4,464,358	4,475,876	4,482,498
4,413,715	4,464,618	4,475,913	4,482,561
4,415,780	4,465,591	4,476,045	4,482,922
4,416,673	4,465,732	4,476,104	4,483,009
4,419,402	4,465,779	4,476,144	4,483,242
4,421,729	4,465,834	4,476,180	4,483,334
4,422,641	4,466,169	4,476,298	4,483,728
4,423,648	4,466,417	4,476,792	4,483,893
4,424,465	4,466,746	4,476,858	4,483,951
4,428,086	4,466,952	4,476,880	4,484,270
4,429,375	4,467,633	4,476,946	4,484,926
4,432,746	4,467,757	4,477,239	4,485,024
4,433,833	4,467,830	4,477,244	4,485,100
4,438,116	4,467,865	4,477,337	4,487,091
4,441,189	4,467,880	4,477,401	4,487,995
4,441,825	4,468,092	4,477,551	4,488,559
4,441,847	4,468,169	4,477,579	4,488,647
4,443,333	4,468,344	4,477,869	4,489,971
4,443,513	4,469,663	4,478,140	4,490,138
4,443,794	4,469,720	4,478,206	4,490,491
4,444,933	4,470,070	4,478,269	4,490,653
4,445,334	4,470,446	4,478,329	4,490,718
4,447,357	4,470,763	4,478,423	4,490,880
4,447,738	4,471,355	4,478,468	4,491,090
4,449,810	4,471,481	4,478,621	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4277
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 2, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-20-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	1-06-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	8-10-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-30-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-20-81
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	7-19-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-20-82
DESIGN, GROUP 290—K. L. CAGE, Director	11-08-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	10-28-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	3-22-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-30-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-21-83

Expiration of patents: The patents within the range of numbers indicated below expire during March 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,371,351 to 3,375,528, inclusive

Plant Patents . . . . . Numbers 2,797 to 2,801 inclusive

REEXAMINATIONS

APRIL 16, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 2,978,437 (334th)

WATER-INSOLUBLE CONDENSATION PRODUCTS OF ALDEHYDES AND ACRYLAMIDE INTERPOLYMERS

Roger M. Christenson, Richland Township, Allegheny County, Pa., assignor to Pittsburgh Plate Glass Company, Allegheny County, Pa.

Reexamination Request No. 90/000,467, Nov. 14, 1983.

Reexamination Certificate for Patent No. 2,978,437, issued Apr. 4, 1961, Ser. No. 665,109, Jun. 12, 1957.

Continuation-in-part of Ser. No. 562,595, Jan. 31, 1956, abandoned.

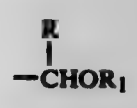
Int. Cl.[3] **C08L** *63/02, 61/20*

U.S. Cl. 525—163

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–11 is confirmed.

1. A resinous composition which is insoluble in water, and which comprises an interpolymer of (A) an amide selected from the group consisting of acrylamide, methacrylamide and itaconic diamide, (B) a monoethylenically unsaturated aliphatic carboxylic acid consisting of atoms of carbon, hydrogen and oxygen, and (C) at least one other monomer containing a $C{=}CH_2$ group, said interpolymer containing about 5 to about 50 percent by weight of said amide based upon the total weight of said interpolymer, and about 1 to about 30 percent upon a like basis of said monoethylenically unsaturated aliphatic carboxylic acid, said interpolymer being characterized by having amido hydrogen atoms replaced by the structure



wherein R is a member selected from the group consisting of hydrogen, furyl and a saturated lower aliphatic hydrocarbon radical and R_1 is a member selected from the group consisting of hydrogen, lower alkyl and butoxyethyl, said monoethylenically unsaturated aliphatic carboxylic acid functioning as an internal curing catalyst in said resinous composition.

B1 3,037,963 (335th)

RESINOUS MATERIALS

Roger M. Christenson, Richland Township, Allegheny County, Pa., assignor to Pittsburgh Plate Glass Company, Allegheny County, Pa.

Reexamination Request No. 90/000,468, Nov. 14, 1983.

Reexamination Certificate for Patent No. 3,037,963, issued Jun. 5, 1962, Ser. No. 749,583, Jul. 21, 1958.

Continuation-in-part of Ser. No. 584,473, May 14, 1956, which is a continuation-in-part of Ser. No. 490,409, Feb. 24, 1955, abandoned.

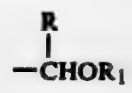
Int. Cl.[3] **C08F** *8/28;* **C08L** *61/20*

U.S. Cl. 525—154

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–15 is confirmed.

1. A thermosetting, ungelled, water insoluble resinous composition comprising an interpolymer of monomers consisting essentially of an unsaturated amide selected from the class consisting of acrylamide, methacrylamide, itaconic diamide, maleuric acid, alkyl esters of maleuric acid and N-carbamyl maleimide, with at least one other monomer containing a terminal $CH_2{=}C<$ group, said interpolymer containing from about 5 percent to 50 percent of said amide, substantially all of the nitrogen atoms in said interpolymer being trivalent nitrogen atoms, said interpolymer being characterized by having at least about 50 percent of the amido groups thereof having a hydrogen atom replaced by the structure



wherein R is a member of the class consisting of hydrogen, furyl, and a saturated lower aliphatic hydrocarbon radical, and R_1 is a member of the class consisting of alkyl radicals containing from about 1 to 12 carbon atoms, and benzyl radicals.

B1 3,527,969 (336th)

SOUNDPROOFED HOUSING FOR ELECTRIC MOTORS

Hermann Papst, Saint Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, Saint Georgen, Fed. Rep. of Germany

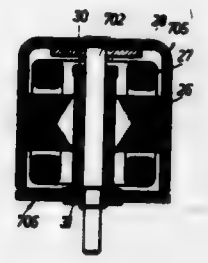
Reexamination Request No. 90/000,522, Mar. 7, 1984.

Reexamination Certificate for Patent No. 3,527,969, issued Sep. 8, 1970, Ser. No. 773,976, Oct. 28, 1968.

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1967, 1,613,343

Int. Cl.[3] **H02K** *5/02, 5/24, 5/14*

U.S. Cl. 310—51



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–18 are cancelled.

New claims 19–37 are added and determined to be patentable.

19. An external-rotor motor having an improved motor housing, the motor comprising an internal, wound stator and an external, non-wound rotor, the stator and rotor together defining a generally cylindrical air gap, the improved motor housing comprising

a rotatable, cupped main body portion forming part of the rotor and having an open end,

a stationary, generally disk-like cover portion secured to the stator and positioned at said open end,

the cupped main body portion and the cover portion each comprising at least one respective layer of a flux-conducting ferromagnetic material through which pass magnetic lines of force of the magnetic field produced by the wound stator,

nearly all magnetic force lines of the magentic field produced by the wound stator passing generally radially through said air gap and thus through the layer of flux-conducting ferromagnetic material of the cupped main body portion, stray lines of

magnetic force accordingly passing through the layer of flux-conducting ferromagnetic material of the cover portion,

at least one of said portions of the motor housing comprising a plural-layer sandwich which includes two layers of metallic material of which one is said respective layer of a flux-conducting ferromagnetic material, and a liner of soundproofing material sandwiched between the layers of metallic material.

B1 3,654,638 (337th)

OUTPUT COMMODE PAN

Alice W. Nye, 7534 Greendows, Houston, Tex. 77017

Reexamination Request No. 90/000,316, Jan. 14, 1983.
Reexamination Certificate for Patent No. 3,654,638, issued Apr. 11, 1972, Ser. No. 885,811, Dec. 17, 1969.
Continuation-in-part of Ser. No. 828,307, May 27, 1969, abandoned.

Int. Cl.[3] **A47K** *11/00*

U.S. Cl. 4—144.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

New claims **5–10** are added and determined to be patentable.

1. A receptacle for waste matter discharged from the body for use in association with a toilet bowl comprising:

a. a hollow open topped receptacle of generally semi-elliptical shape for fitting within and selectively covering only that portion of the toilet bowl in which said receptacle is positioned while leaving the remainder of the toilet bowl uncovered;

b. said semi-elliptical shaped container including flange means for resting upon the rim of the toilet bowl,

c. said flange means having surfaces thereon to thereby be clamped between the toilet bowl rim and seat when the receptacle is in use, and

d. said receptacle including a chamber therein formed by walls depending from said rim and connected with a bottom wall that extends in a plane transversely relative to the toilet bowl opening.

B1 3,963,842 (338th)

DEPOSITION OF COPPER

Christian Sivertz, London, Canada, and Anthony J. Basilone, Guilford, Conn., assignors to London Laboratories Limited Co., Woodbridge, Conn.

Reexamination Request No. 90/000,286, Nov. 10, 1982.
Reexamination Certificate for Patent No. 3,963,842, issued Jun. 15, 1976, Ser. No. 521,338, Nov. 6, 1974.
Continuation-in-part of Ser. No. 481,332, Jun. 20, 1974, abandoned.

Int. Cl.[3] **C23C** *3/02*

U.S. Cl. 427—305

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–13** are cancelled.

[1. In a process for the deposition of metallic copper on a catalytically activated surface by disproportionation of cuprous ions in an aqueous solution to effect deposition of metallic copper on said surface, the improvement which comprises rapidly reducing cupric tetraamino ions in aqueous solution substantially completely to cuprous diammino ions and thereafter effecting controlled disproportionation of the resultant cuprous ions by adding an activator-modifier, which activator-modifier brings about the deposition of metallic copper principally on said catalytically activated surface.]

[11. In a process for the deposition of metallic copper on a catalytically activated surface by disproportionation of cuprous ions in an aqueous solution to effect deposition of metallic copper on said surface, the improvement which comprises effecting controlled disproportionation of the cuprous ions by adding an activator-modifier which activator-modifier brings about the deposition of metallic copper principally on said catalytically activated surface.

a. a chelating amine selected from the group consisting of ethylene diammine, triethylene tetraammine, and analogous alkylamines, or

b. a suitable acid or salt selected from the group consisting of sulfamic acid, hydroxy-carboxylic acids, carboxylic acids, and combinations thereof; or

c. an acid activator selected from the group consisting of sulfuric and phosphoric acids used with modifiers selected from the group consisting of said suitable acids or salts, said chelating amines, and combinations thereof.]

[12. In a process for the deposition of metallic copper on a catalytically activated surface by disproportionation of cuprous ions in an aqueous solution to effect deposition of metallic copper on said surface, the improvement which comprises rapidly reducing cupric tetraammino ions in aqueous solution substantially completely to cuprous diammino ions and effecting disproportionation of the resulting cuprous ions to bring about the deposition of metallic copper principally on said catalytically activated surface.]

B1 4,316,579 (339th)

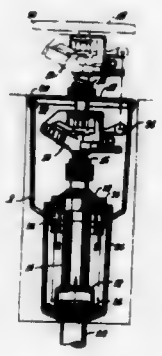
MULTI-PURPOSE SEAL FOR POP-UP SPRINKLER

Charles A. Ray, Arcadia, and John L. Kent, Ontario, both of Calif., assignors to Anthony Manufacturing Company, Azusa, Calif.

Reexamination Request No. 90/000,592, Jul. 12, 1984.
Reexamination Certificate for Patent No. 4,316,579, issued Feb. 23, 1982, Ser. No. 138,868, Apr. 11, 1980.

Int. Cl.[3] **B05B** *15/10*

U.S. Cl. 239—123



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** and **18–22** is confirmed.

Claim **9** is determined to be patentable as amended.

Claims 10–17, dependent on an amended claim, are determined to be patentable.

9. A seal to be interposed between a moveable stem and a stationary housing in a pop-up type irrigation sprinkler, said seal assuming a fixed position with respect to said housing; said seal comprising:

means adjacent one end of said seal for wiping grit from an exterior surface of said stem during movement of said stem in a first direction;

a bearing adjacent said grit wiping means and arranged to slidingly engage said exterior surface of said stem; and

pressure-responsive means adjacent the opposite end of said seal for slidingly engaging said exterior surface of said stem and providing a seal between said stem and said housing during movement of said stem in a second, opposite direction.

B1 4,338,757 (340th)

DEVICE FOR CONNECTING A STRUCTURE WITH A WALL TO BE POURED WITH CONCRETE

Heinz Witschi, Eigerweg 14, 3073 Gümligen, Berne, and Peter Fankhauser, Sonnrainstrasse 13, 3510 Konolfingen, Berne, both of Switzerland

Reexamination Request No. 90/000,393, Jun. 10, 1983.
Reexamination Certificate for Patent No. 4,338,757, issued Jul. 13, 1982, Ser. No. 140,782, Apr. 16, 1980.
Claims priority, application Switzerland, May 1, 1979, 4073/79
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—699



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is cancelled.

Claims 2, 4–6 and 11 are determined to be patentable as amended.

Claims 3, 7–10 and 12–15, dependent on an amended claim, are determined to be patentable.

New claims 16–21 are added and determined to be patentable.

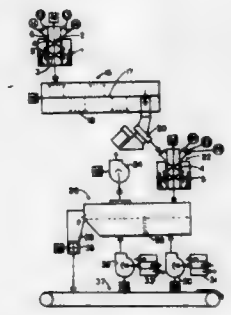
16. A device for connecting two poured concrete structures, such as a partition, a staircase or a false floor with a wall to be poured with concrete in a planking, said device comprising at least one profile element comprising a malleable sheet the surface of which is provided with roughening means for optimizing adhesion of said sheet with said concrete structures, said profile element having two side walls with laterally projecting flanges and at least one bottom connected with said two side walls to form a channel-shaped strip, each of said side walls enclosing an acute angle with said bottom, at least one anchoring steel rod extended through said bottom such that a first portion of said rod to be concreted with a first one of said two concrete structures is disposed on one side of said profile element and a second portion of said rod to be concreted with the second of said two concrete structures is disposed on the other side of said profile element, said second portion having a bend at a substantially right angle from said first portion such that said second rod portion lies against the bottom of said profile element confined by said side walls, said second rod portion being adapted to be bent outwardly away from said bottom for concreting with said second concrete structure, said profile element being fitted to the inside wall of said planking such that said side walls bear on the planking and form a cavity between said bottom and said planking, the length of said second rod portion being greater than the distance between said bottom and said planking.

B1 4,427,417 (341st)

PROCESS FOR PREPARING DETERGENT COMPOSITIONS CONTAINING HYDRATED INORGANIC SALTS

Paul A. Porasik, Southfield, Mich., assignor to The Korex Company, Wixom, Mich.

Reexamination Request No. 90/000,574, Jun. 13, 1984.
Reexamination Certificate for Patent No. 4,427,417, issued Jan. 24, 1984, Ser. No. 341,130, Jan. 20, 1982.
Int. Cl.³ B01J *2/10, 2/16;* C11D *11/00, 17/06*
U.S. Cl. 23—313 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–17 is confirmed.

1. A continuous process for agglomerating and hydrating an anhydrous hydratable detergent salt which comprises continuously feeding and agglomerating particles of a hydratable detergent salt by turbulently dispersing said salt particles into an inert gaseous medium while wetting the dispersed particles with an atomized stream of water metered to provide at least a stoichiometric amount of water but not in excess of about 20% over said stoichiometric amount for hydration of the turbulently dispersed salt particles, depositing the resultant wet agglomerated salt particles into a closed container, retaining the agglomerated particles in said container until they have been substantially hydrated to a degree of hydration between 70% and 100% of theoretical while continuously gently stirring the agglomerates to prevent formation of oversize agglomerates, discharging the substantially hydrated agglomerates from said container and then drying the hydrated agglomerates to a free moisture content less than 5 percent by weight.

REISSUES

APRIL 16, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,865

ARTIFICIAL JOINTS, IN PARTICULAR COXO-FEMORAL JOINTS

Christiane Roux, Noisy sur Ecole, 77123 Le Vaudoue, Seine-et-Marne, France

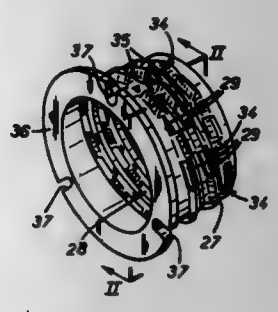
Original No. 4,262,369, dated Apr. 21, 1981, Ser. No. 49,905, Jun. 19, 1979. Application for reissue Apr. 18, 1983, Ser. No. 486,037

Claims priority, application France, Jun. 21, 1978, 78 18619

Int. Cl.[3] A61F *1/03*

U.S. Cl. 3—1.912

24 Claims



24. An articular prosthesis for an artificial joint comprising two distinct parts, including an inner cupule and an outer ring, said inner cupule being received on said outer ring, said outer ring being provided with at least one external self-tapping thread, and with an inner collecting volume, which is at least partly formed within the inner volume of said outer ring, between said outer ring and said inner cupule, and which opens to the outside, at spaced locations, through openings in said self-tapping thread, said collecting volume being adapted to receive bone chips, the outer ring internally comprises a helical groove which forms a hollow complementary to said self-tapping thread, said groove following the contour of said thread and being at least partly formed in the thickness thereof, said collecting volume being at least partly formed by said helical groove.

Re. 31,866

IMMOBILIZING ANIMALS

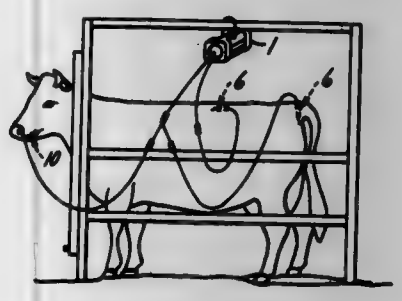
Lancelot H. Lines, Mount Bryan, and John R. Baxter, Salisbury Heights, both of Australia, assignors to Senil Nominees Pty. Ltd. and Australian Merino Wool Harvesting Ltd., both of, Australia

Original No. 4,237,896, dated Dec. 9, 1980, Ser. No. 62,640, Aug. 1, 1979. Continuation of Ser. No. 920,239, Jun. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 900,139, Apr. 26, 1978, abandoned, which is a continuation of Ser. No. 708,934, Jul. 27, 1976, abandoned. Application for reissue Dec. 8, 1982, Ser. No. 447,981

Int. Cl.[3] A61N *1/32*

U.S. Cl. 128—419 R

9 Claims



1. A method of producing temporary immobilization of an animal undergoing animal husbandry without rendering the animal unconscious, including the step of [implanting] *placing* electrodes [subcutaneously and clipping them to the hindquarters and forwardly thereof along the spine of the animal, the electrodes piercing the skin and the fatty tissue beneath thereby to contact] *in electrical conductive relationship with* the ionized fluid beneath the skin *at spaced apart locations along the spine of the animal* allowing a low voltage to be used, *one of said spaced points being in the hindquarters of the animal and the other being in the head, neck or forequarters thereof,* subjecting the electrodes to a current flow driven by a potential of up to about 55 volts maximum to produce immobilizing simultaneous [muscular] tetanic contraction [in] *of the major skeletal muscles of* the animal and, while the animal is thus immobilized, performing animal husbandry on the animal.

Re. 31,867

ELECTROSTATIC SPRAY GUN

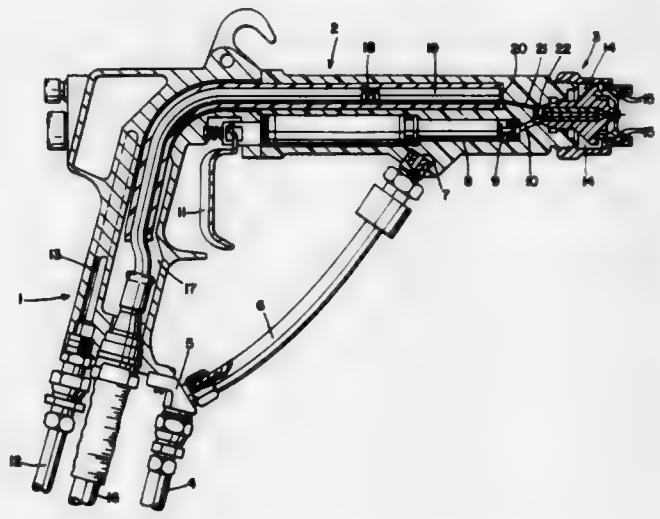
James L. Kennon, Avon, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Original No. 4,182,490, dated Jan. 8, 1980, Ser. No. 877,445, Feb. 13, 1978. Application for reissue Mar. 12, 1982, Ser. No. 357,403

Int. Cl.[3] B05B *5/02*

U.S. Cl. 239—3

25 Claims



27. An electrostatic coating apparatus comprising:

a nozzle portion made from substantially nonconductive material, having a fluid discharge opening and effective to project a dispersed cloud of coating material therefrom;

a small electrode extending through said fluid discharge opening and forwardly from said nozzle portion;

a coating material conduit in communication with said fluid discharge opening;

a high voltage electrical path passing through the nozzle portion and adapted to connect said electrode to a source of high voltage electrical power; and

at least a first series resistor in said electrical path located in said nozzle portion directly behind said electrode and being connected thereto, said first series resistor being in at least the megohm range.

29. A method of electrostatic spray coating comprising the steps of:

dispensing a disperse cloud of coating material toward an object to be coated from a substantially electrically nonconductive nozzle;

imparting an electrical charge to said coating material by means of a small electrode extending from the nozzle, said electrode being disposed in the flow path of said coating material as it leaves the nozzle;

supplying high voltage electrical power to said electrode from an electrical power source sufficient to impart said charge on said coating material, through at least a first resistor in at least the megohm range having one end connected to the electrode and being located in said nozzle and in the flow path of said coating material directly behind said electrode.

Re. 31,868

LOW ATTENUATION OPTICAL FIBER OF DEUTERATED POLYMER

John K. Beasley, Greenville; Richard Beckerbauer, Wilmington, both of Del.; Henry M. Schleinitz, Kennett Square, Pa., and Frank C. Wilson, Wilmington, Del., assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Original No. 4,138,194, dated Feb. 6, 1979, Ser. No. 842,301, Oct. 14, 1977. Application for reissue Mar. 28, 1983, Ser. No. 479,472

Int. Cl.[3] **G02B** *5/172*

U.S. Cl. 350—96.30 **13 Claims**

1. An optical fiber comprising a core and cladding which consist essentially of organic high polymers, said core being a [deuterated acrylate] polymer *selected from the group consisting of a deuterated methacrylate homopolymer, a deuterated methacrylate copolymer and a deuterated methacrylate/acrylate copolymer* and containing less than 20 mg of hydrogen per gram of polymer as measured by nuclear magnetic resonance of 60 MHz.

PLANT PATENTS

GRANTED APRIL 16, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,436

COTTONTAIL—MINIATURE ROSE PLANT

Leslie E. Strawn, Garden Grove, Calif., assignor to Cecelia Lucy Daphne Bennett, Chula Vista, Calif.

Filed Sep. 1, 1983, Ser. No. 528,652
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of miniature rose plant named "Cottontail" of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by its abundance of white blooms and having an extremely vigorous growth habit, easy to propagate from cuttings, with flowers usually borne in sprays of 6 to 12 or more.

5,437

MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Aug. 22, 1983, Ser. No. 525,497
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of miniature rose plant named 'My Delight' of hardy, dwarf, vigorous growth, attractive in appearance, substantially as illustrated and described, characterized by its blooms of pale pink with slightly deeper pink inner petals and exhibition form, easy to propagate from cuttings, with flowers borne usually one to a stem, but occasionally in sprays of 3 to 5 or more.

5,438

NECTARINE TREE - EARLY DIAMOND

Norman G. Bradford, 11875 E. Savana Rd., LeGrand, Calif. 95333

Filed Aug. 1, 1983, Ser. No. 518,964
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 1 Claim

1. A very early fresh market nectarine distinguishable by its full red color, excellent firmness, excellent shelf life and shipping quality, and good eating, which ripens six to seven days before the parent plant Aurelio Grand (U.S. Plant Pat. No. 3,755) and among earliest commercial varieties.

5,439

CARNATION NAMED LONDONIE

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,513
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—73 1 Claim

1. A new and distinct spray carnation, substantially as herein shown and described, characterized by the bright red color of its small blooms borne on thin, erect stems, a vigorous growth habit with abundant foliage, and a habit of blooming profusely during its Spring and Fall flowering seasons.

5,440

CHRYSANTHEMUM PLANT NAMED BALLERINA

William E. Duffett, Salinas, Calif., and Grace H. Mack, 108 Wahackme Rd., New Canaan, Conn. 06840, assignors to Grace H. Mack, New Canaan, Conn.

Filed Jul. 15, 1983, Ser. No. 514,320
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—77 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant named Ballerina, as illustrated and described, and identified by the combined characteristics of spider capitulum form, with tubular shaped ray florets, decorative capitulum type, white ray floret color, diameter across face of capitulum up to 85 mm., medium plant height, upright branching pattern, average natural season flowering date of Sept. 15, and average flowering response period of seven weeks in photoperiodic controlled short day programs.

5,441

CHRYSANTHEMUM PLANT NAMED CAMELOT

William E. Duffett, Salinas, Calif., and Grace H. Mack, 108 Wahackme Rd., New Canaan, Conn. 06840, assignors to Grace H. Mack, New Canaan, Conn.

Filed Jul. 15, 1983, Ser. No. 514,318
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—80 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant named Camelot, illustrated and described, and identified by the combined characteristics of flat capitulum form, decorative capitulum type, lavender ray floret color, diameter across face of capitulum up to 55 mm., tall plant height, upright branching pattern, average natural season flowering date of September 28, and average flowering response period of seven weeks in photoperiodic controlled short day programs.

PATENTS

GRANTED APR. 16, 1985

ERRATA

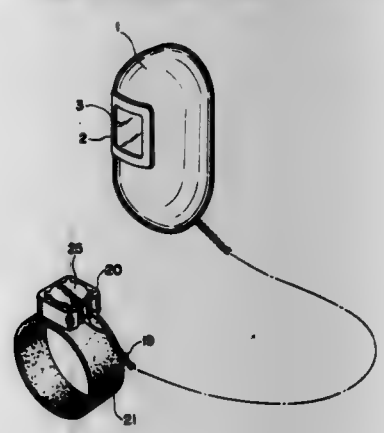
For CLASS	See PATENT NO.
083–176	4,510,841
175–007	4,510,985
384–536	4,511,191
384–543	4,511,192
384–611	4,511,193
333–189	4,511,202
358–261	4,511,213
432–106	4,511,333
534–631	4,511,506
534–629	4,511,507
426–665	4,511,508
514–743	4,511,556
514–263	4,511,557
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514–490	4,511,579
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548–215	4,511,714
514–601	4,511,735

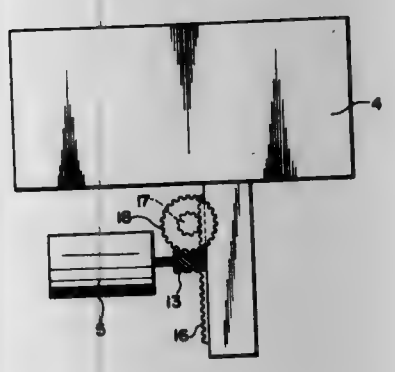
PATENTS

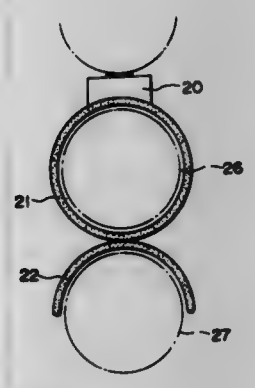
GRANTED APRIL 16, 1985

GENERAL AND MECHANICAL

4,510,625
LIGHT-SHIELDING PROTECTIVE MASK
Nobuo Mizuki, 886-55 Hiratocho, Totsuka-ku, Yokohama City, Kanagawa Prefecture, Japan
Filed Oct. 22, 1981, Ser. No. 313,645
Int. Cl.[3] A61F *9/06*
U.S. Cl. 2—8 5 Claims

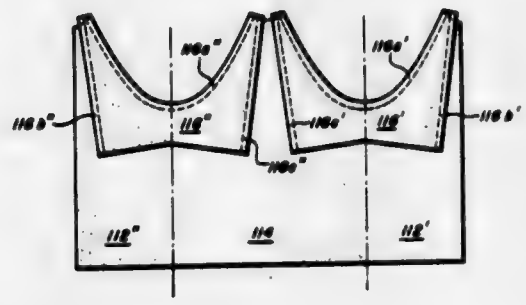






1. A welder's mask comprising:
(a) a mask body having a viewing window;
(b) a light-shielding plate having a low light transmitting coefficient and having dimensions greater than said window, slidably mounted on said mask body for movement between a first position where said plate covers said window and a second position where said plate uncovers said window;
(c) a motor mounted on said mask body;
(d) a conversion means mounted on said mask body and connected to said plate and to said motor for moving said plate between said first and second positions;
(e) a switch holder having an arcuate portion adapted to fit a finger of the welder;
(f) electric push button switch means having a movable button, said switch being mounted on said holder in position with said button immediately adjacent the side of an adjacent finger of said welder to move to a first position when pressure above a predetermined level is exerted upon said button by said adjacent finger and into a second position when said pressure is reduced below said predetermined level;
(g) said mask having first electrical switching means operative to rotate said motor in a first direction to activate said conversion means and move said plate into a first position and to stop said motor when said plate moves into said first position when said button is in said first position;
(h) said mask having second electronic switching means operated to rotate said motor in a second opposite direction to activate said conversion means and move said plate in opposite direction into a second position and to stop said motor when said plate moves into said second position when said button is in said second position; and
(i) electric lead wire means for connecting said switch to said first and second means for rotating said motor.

4,510,626
FLAT PLANE SEAM GARMENT AND METHOD OF MAKING
Philip N. Bowditch, Cohasset, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Jun. 1, 1983, Ser. No. 500,080
Int. Cl.[3] A41B *1/00*
U.S. Cl. 2—115 2 Claims



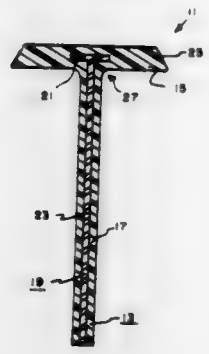
1. A garment comprising:
body portions including front and back portions with a shoulder hole between those front and back portions,
a generally tubular sleeve and shoulder portion having a sleeve and shoulder seam extending along its length, one end of said sleeve and shoulder portion being joined to the perimeter of said shoulder hole along a sleeve-to-shoulder seam,
wherein the regions of said body portions adjacent to said sleeve-to-shoulder seam are substantially parallel to the regions of said shoulder and sleeve portion adjacent to said sleeve-to-shoulder seam, when said regions of said body portions adjacent to said sleeve-to-shoulder seam are positioned in a plane without the sleeve and shoulder seam being joined, and wherein the regions of said body portions adjacent to said sleeve-to-shoulder seam are non-parallel with respect to the regions of said shoulder and sleeve portion adjacent to said sleeve-to-shoulder seam when said regions of said body portions adjacent to said sleeve-to-shoulder seam are positioned in a plane with said sleeve and shoulder seam being joined.

4,510,627

OSSICULAR PROSTHESIS

Harry T. Treace, Hohenwald, and Calvin Griggs, Memphis, both of Tenn., assignors to Treace Medical, Inc., Memphis, Tenn.

Filed Oct. 25, 1982, Ser. No. 436,501
Int. Cl.³ A61F 1/00
U.S. Cl. 3—1
10 Claims



1. An ossicular replacement implant comprising:

(a) a body including an elongated shaft having a first end forming an enlarged and substantially flat head portion, said head portion and said shaft being molded out of a biocompatible porous material as an integral one piece unit; and

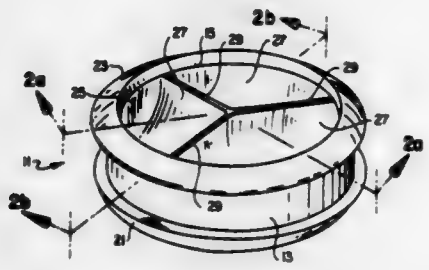
(b) a core encased within said body, said core having substantially higher sound transmitting qualities than said body, said core including an elongated core shaft aligned substantially concentric within said shaft of said body and further including a first end forming an enlarged and substantially flat head positioned within and substantially concentric within said head portion of said body; and wherein said body and said core being permanently bendable to allow said implant to be permanently bent to a specific shape by a surgeon during the implantation thereof to conform to the patient's middle ear structure, said core being stationary with respect to the body.

4,510,628

ARTIFICIAL HEART VALVE MADE BY VACUUM FORMING TECHNIQUE

Willem J. Kolff, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed May 3, 1982, Ser. No. 374,051
Int. Cl.³ A61F 1/00
U.S. Cl. 3—1.5
13 Claims



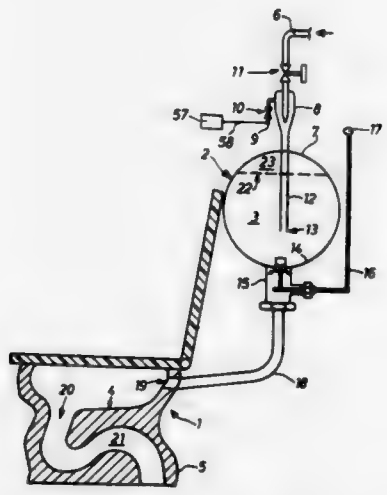
1. An aritifical heart valve comprising means for forming an annular frame which defines an inflow end and an outflow end of said heart valve, and a plurality of thin leaflet members supported by said frame such that adjacent edges of each said leaflet member project radially inward toward the center of said frame to form a narrow slit between each leaflet pair through which blood flows from said inflow end to said outflow end, each leaflet member comprising a first discrete sheet of elastomeric material and a second discrete sheet of elastomeric material formed over said first sheet such that the only seam between said first and second sheets which occurs in the path of the blood as it flows from said inflow end to said outflow end occurs at said slits formed between each leaflet pair.

4,510,629

METHOD OF FLUSHING A WATER CLOSET

Herbert Jovy, Irschenhausen, and Wilhelm Schuster, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Ermital AG, Liechtenstein

Continuation-in-part of Ser. No. 298,345, Aug. 31, 1981, abandoned. This application Jun. 24, 1982, Ser. No. 391,499
Claims priority, application European Pat. Off., Mar. 30, 1982, 82102657.2
Int. Cl.³ E03D 1/24
U.S. Cl. 4—332
4 Claims



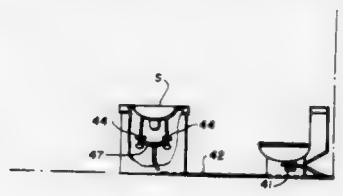
1. A method of flushing a water closet by simultaneously feeding water and air from a pressure vessel into a toilet bowl, comprising the steps of filling the pressure vessel by discharging a jet of water at elevated pressure into the pressure vessel and causing the jet of water to aspirate air to deliver a larger amount of air than water air at elevated pressure into the pressure vessel; continuing the discharging of the jet of water to obtain a pressure within the pressure vessel of the order of three atmospheres; forming a pressure cushion of air in the pressure vessel above the water, where the feeding of water only at a water pressure higher than about three atmospheres into the pressure cushion space of the pressure vessel and initiating a flushing valve to thereby release the combined pressurized air/water medium to affect a highly accelerated water/air column whereby more air is employed in the flushing action.

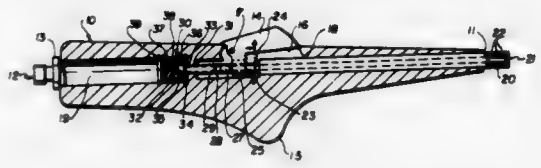
4,510,630

MINI-BIDET

R. W. Osgood, P.O. Box 1062, Cameron Park, Calif. 95682

Filed Apr. 1, 1983, Ser. No. 481,356
Int. Cl.³ A61H 35/00; A47K 3/22
U.S. Cl. 4—443
19 Claims





1. In a bathroom facility including a toilet having a seat and

further having a sidewall beneath the seat, the facility further including a sink having a conventional source of pressurized water, a bidet apparatus comprising in combination:

a hand-held housing, holder means attached to the sidewall of the toilet for storing the housing, whereby the bidet apparatus is convenient to the user, yet outside the toilet bowl and relatively free from contamination, the housing having contained therein,

a spray tube,

the spray tube being slidably removable from the housing and readily replaced with an interchangeable spray tube, whereby the bidet apparatus may perform the functions of a douche implement, enema device or the like,

valving means and

actuation means operatively associated with said valving means,

a flexible conduit means connected on one end to, and interposed between, said housing and attachment means on an opposed end of said conduit means,

whereby said attachment means taps the source of pressurized water supplying same to said housing through said conduit means.

4,510,631

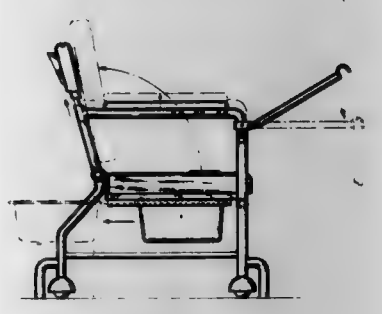
COMMODE

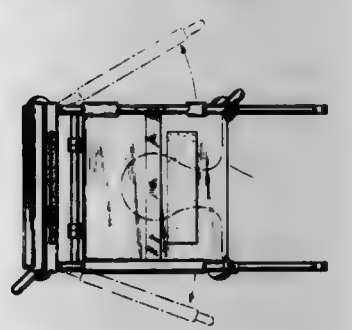
Marilyn Grady, 7541 S. Crane Dr., Oak Creek, Wis. 53154

Filed Nov. 17, 1983, Ser. No. 552,697

Int. Cl.[3] A47K *11/04*

U.S. Cl. 4—478 6 Claims





1. A bedside commode having a seat, a wheel mounted support structure for the seat and a pair of side armrests and a backrest on the support structure, said commode comprising,

a connector arm extending outwardly from the front of said commode with one end of said arm having means for pivotally connecting said arm to said commode and the other end of said arm having means for releasably securing said commode to a bed and maintaining said commode a predetermined distance from said bed so that said commode is maintained in a position with the forward edge of said seat parallel to and a predetermined distance from the side of said bed so that the user of said commode may position his legs in the space between said bed and said commode.

4,510,632

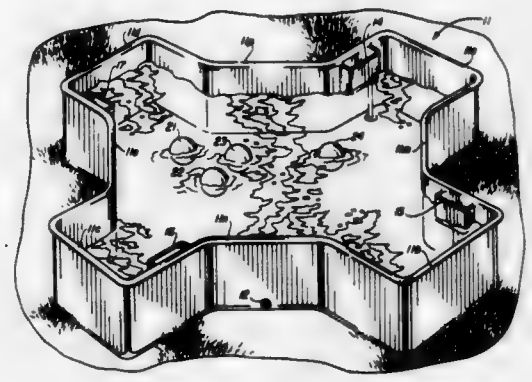
CHILDREN'S GAME POOL

Christopher C. Elsis, 3720 19th Ave. SW., Naples, Fla. 33999

Filed Oct. 12, 1982, Ser. No. 433,716

Int. Cl.[3] E04H *3/18*

U.S. Cl. 4—488 4 Claims



1. A children's game pool comprising:

a flat bottomed pool constructed essentially entirely of plastic material, said pool having vertical side walls and being shaped in plan view like a modified Greek cross so as to form four similar three-sided compartments within the interior of said pool,

said four compartments each having permanently affixed to the interior of one side wall of the compartment an open topped storage bin, and

a toy water pistol storable within said bin and permanently attached to said pool by a flexible hose.

4,510,633

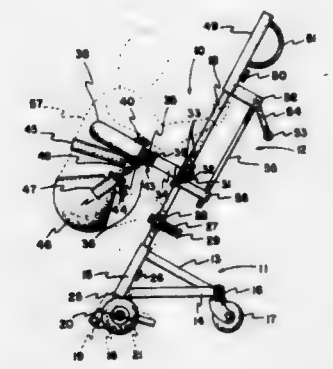
INVALID TRANSFER MEANS

Mark W. Thorne, 3216-6 Stonesthrow La., Durham, N.C. 27713

Filed Dec. 20, 1982, Ser. No. 432,332

Int. Cl.[3] A61G *7/08*

U.S. Cl. 5—81 R 13 Claims

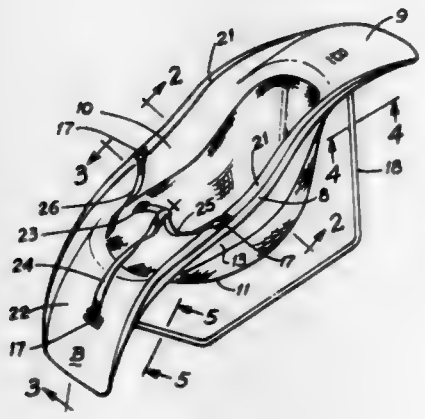


1. A transfer means for invalid type persons comprising: a carriage means; lever means connected to and extending above said carriage means and movable between an initial inclined transport position in which said lever means extends over the center of gravity of said carriage means and a generally vertical loading position; means adjustably mounted on said lever means for supporting said person from both the posterior and anterior of the person's body; and means for tilting said lever means and its supported person between said loading position and said transport position in which said person is disposed generally above the center of gravity of said carriage means whereby a relatively simple and yet highly efficient device for moving invalid type persons is provided.

4,510,634
INFANT CARRIER

Brian J. Diedrich, 10570 E. Oakwood Dr., Tucson, Ariz. 85715, and Leslie G. Wolf, II, 1967 W. Riverview, Tucson, Ariz. 85745

Filed Sep. 30, 1983, Ser. No. 537,502
Int. Cl.[3] A47C *29/00;* A47D *7/00*
U.S. Cl. 5—98 B 6 Claims



1. An infant carrier, comprising:

a frame assembly comprised of an upper frame member and a lower frame member, said assembly being suitably constructed for the attachment of an infant supporting means, a body harness and a support stand; and

means attached between said upper frame member and said lower frame member for supporting an infant in a supine position; and

said upper frame member is suitably contoured at opposed topmost and bottommost portions to facilitate said infant carrier being transported by the utilization of an adult's wrists and forearms, wherein said upper frame member includes:

an inner side wall extending continously along the inner periphery; and

a pair of marginal flanges formed along opposed outer lateral sides; and

opposed lateral top surfaces suitably molded so as to blend with said inner side wall, said marginal flanges and said topmost and bottommost portions; and

a complement of slots adapted for attaching a body harness and suitably located on opposed sides of said top lateral surfaces and on said bottommost portion; and

a plurality of male locking pins suitably located and spaced on the undermost part beneath said top lateral surfaces and beneath said topmost and bottommost portions, whereby said male locking pins will provide a means for attaching to said lower frame member and securing an infant supporting means therebetween; and

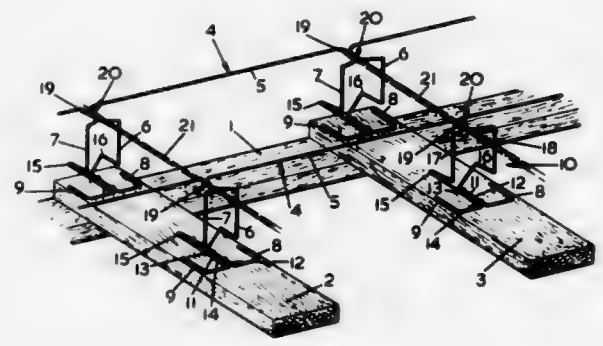
a pair of rearwardly projecting sockets horizontally and laterally spaced on the backside of the topmost portion and suitably on said backside so as to provide a means of attachment of the ends of a tubular support stand; and

a pair of rearway projections clips horizontally and laterally spaced on the backside of the bottommost portion and suitably located on said backside so as to provide a means of attaching a crossbar portion of a tubular support stand, said clips and said sockets are suitably located so as not to cause a tubular support stand to interfere with transporting said infant carrier by means of said contoured topmost and bottommost portions.

4,510,635
BOX SPRING ASSEMBLIES

Arnold Woffendin, Colne, England, assignor to Silentnight Holdings PLC, Lancashire, United Kingdom

Filed Jun. 14, 1983, Ser. No. 504,371
Claims priority, application United Kingdom, Jun. 18, 1982, 8217733; Apr. 9, 1983, 8309711
Int. Cl.[3] A47C *23/02, 23/00;* F16F *3/00*
U.S. Cl. 5—247 9 Claims

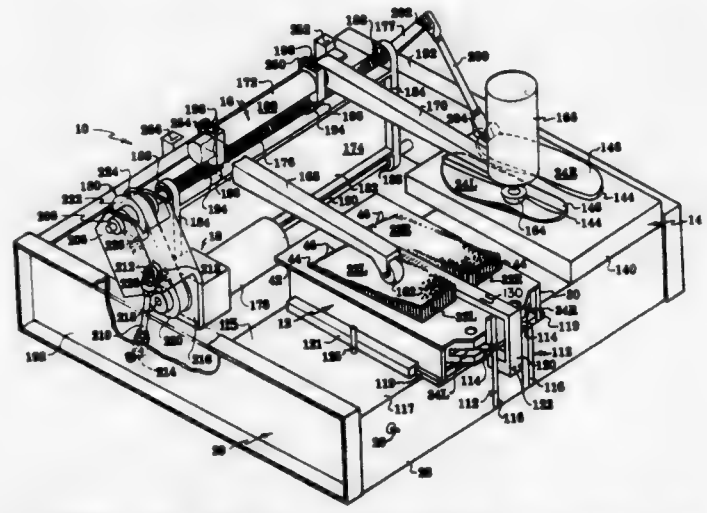


1. A box spring assembly including a foundation and defining a deck for receiving a bedding load, comprising a plurality of deck elements each formed from a single length of wire having an elongate central section terminating in curved sections extending at least in some elements into spring legs, the deck elements being arranged in parallel lengthwise rows with adjacent elements of each row having aligned central sections and adjacent curved sections being secured to each other and to adjacent rows by transverse helical connecting elements, whereby the central sections of the spring elements and the transverse helical connecting elements together form the deck, the deck being supported by the spring legs which are secured at their lower ends to the foundation.

4,510,636
SYSTEM AND METHOD FOR FORMING CUSTOM-MADE SHOE INSERTS

Edward H. Phillips, Middletown, Calif., assignor to Amfit Incorporated, Sunnyvale, Calif.

Filed Jul. 23, 1981, Ser. No. 286,244
Int. Cl.[3] A43B *7/14, 13/38;* A43D *1/02;* C14B *1/44*
U.S. Cl. 12—1 R 28 Claims



1. A system for forming a custom-made shoe insert for a person's foot, said system comprising:

impression means for forming and releasably retainng an impression of the contour of the undersurface of the person's foot;

holding means for holding a blank;

sensing and shaping means for sensing the impression and removing material from the blank in conformance with the sensed impression; and

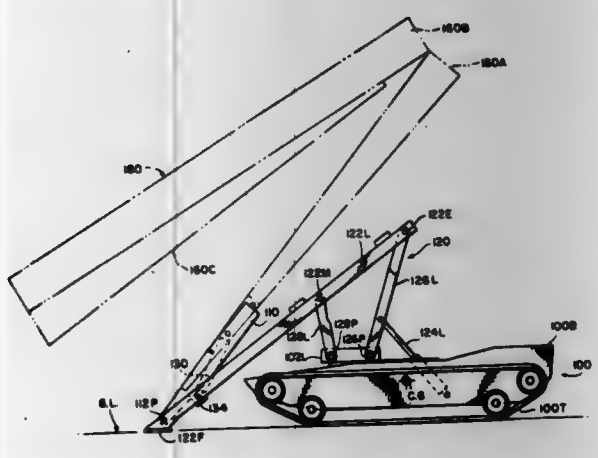
drive means for automatically driving the sensing and shaping means both laterally and to-and-fro across the impression and the blank to automatically form the custom-made shoe insert from the blank in conformance with the impression.

4,510,637

BRIDGE LAUNCHER

Lucjan Zlotnicki, R.D. 3, Box 3591, Spring Grove, Pa. 17362

Filed Mar. 14, 1983, Ser. No. 475,371
Int. Cl.³ E01D *15/12*
U.S. Cl. 14—2.4 **31 Claims**



31. A bridge transporting, launching and retrieving vehicle comprising:

(a) a vehicle body and chassis;

(b) support means rotatable about a vertical axis mounted to said vehicle; and

(c) a bridge launching and retrieving mechanism attached to the support means and operative to launch bridges in different directions relative to the vehicle body; and

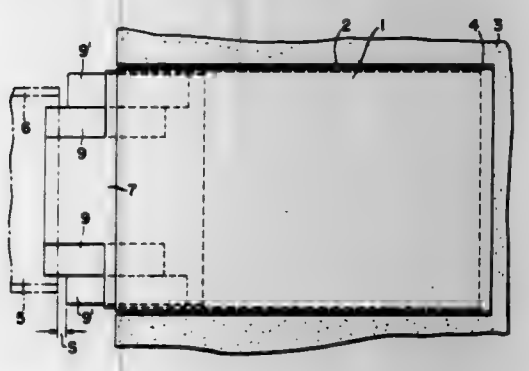
wherein said vehicle body has an opening and said rotatable support means comprises a basket mounted and rotatable in said opening.

4,510,638

TRANSFER BRIDGE FOR RAMPS

Kurt Alten, Ringstr. 14, D-3015 Wennigsen, Fed. Rep. of Germany

Filed Jun. 2, 1982, Ser. No. 384,349
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121994
The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.7 **3 Claims**



1. A transfer bridge for use between a ramp and a platform, said bridge comprising:

a bridge plate having a first end and a second end, said first end being pivotably connected to said ramp in such a way as to be pivotable about a horizontal axis;

a retractable and extendable extension provided in said second end of said bridge plate for placement on said platform;

tongues supported by and extending from said extension, and capable of being respectively pushed in, i.e., of being pushed toward said first end of said bridge plate; means to hold said tongues, in the pushed-in state, structurally arrested in position;

double-acting drive means associated with said extension and said tongues respectively for extending same, and for retracting same subsequent to a pushing-in of said tongues, to form a gap between said pushed-in tongues and said platform;

first operating elements associated with said drive means for respective actuation of the extension and retraction functions thereof, and a second operating element associated with said bridge plate for actuation of a lowering pivotal movement thereof; and

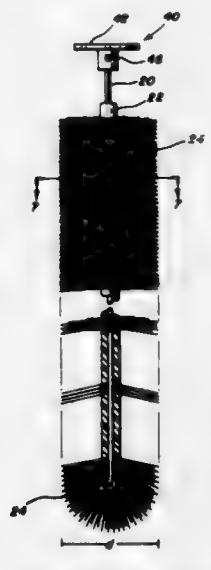
a time switch associated with either of said first operating elements serving to actuate the extension function of said drive means or said second operating element bringing about the lowering pivotal movement of said bridge plate, upon the release of one of said operating elements, said time switch effecting a partial retraction of said extension and said tongues.

4,510,639

VEHICLE WASHING APPARATUS HAVING FLEXIBLE BRUSHES

James W. Roncaglione, 9807 Bridleridge Ct., Vienna, Va. 22180

Filed May 10, 1983, Ser. No. 493,345
Int. Cl.³ G60S *3/06*
U.S. Cl. 15—53 AB **9 Claims**



1. A vehicle washing apparatus, comprising:

overhead support means located above the path of a vehicle to be washed;

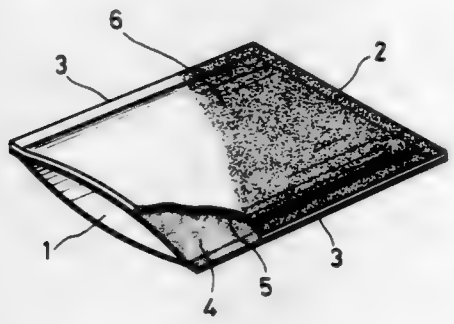
a plurality of elongate vertically disposed flexible and rotatable washing members connected with said overhead support means arranged to wash at least one end and the top or sides of a vehicle passing through said apparatus, each of said washing members comprising flexible elongate substantially non-resilient axial support means consisting essentially of a braided cable for supporting washing material thereon and washing material arranged on said axial support means, said elongate flexible washing members having a free lower end whereby when a vehicle contacts said washing members, said washing members are free to flex and move from the path of the vehicle and to conform to the surface contours of the vehicle being washed; and

rotating means for individually rotating each of said washing members to enhance the scrubbing action thereof.

4,510,640
DUSTER-POLISHER MADE OF PLASTIC FILM

Shogo Omori, 17-23, Mino 8-chome, Mino City, Osaka 562, Japan

Filed Jan. 6, 1984, Ser. No. 568,617
Int. Cl.[3] A47L *13/18, 13/38*
U.S. Cl. 15—104 A 4 Claims

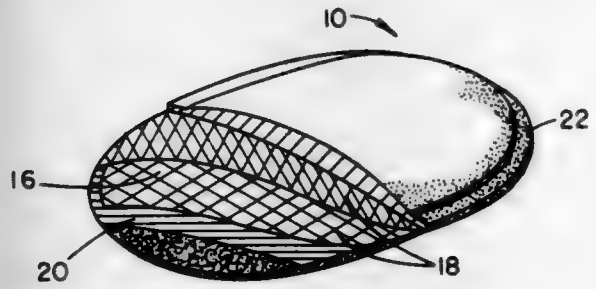


1. A duster-polisher made of plastic film which comprises a duster part and a polisher part of the same size separably overlapped one upon the other with an alienating adhesive layer interposed therebetween; said duster part being substantially two sheets of plastic film overlapped and connected at each opposing side such that a pocket without bottom is formed, one face of said pocket being coated with a pressure sensitive adhesive to define an adhesive layer; said polishing part consisting of, at least, one sheet of plastic film, one face thereof being attached to the adhesive layer of the duster part as a protector film with said alienating adhesive layer interposed therebetween, the other face being soft and rough to define a polishing face.

4,510,641
SCRUBBING PAD

Kenneth L. Morris, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 9, 1983, Ser. No. 549,851
Int. Cl.[3] A47L *13/17*
U.S. Cl. 15—118 11 Claims

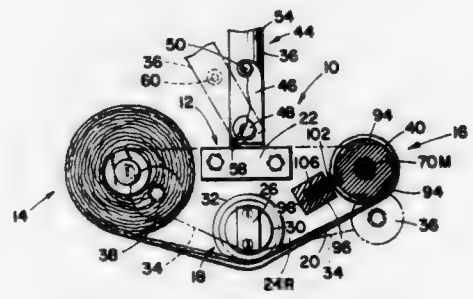


1. A scouring pad comprising:
an elongated flattened body having two major surfaces of appropriately the same size, the first of said surfaces being composed of randomly oriented metallic fibers forming a non-woven cloth layer and the second major surface being composed of a reticulated plastics foam material;
means adhesively securing the edges of said first and second major surfaces together only around a major portion of their mating peripheries so as to form a pocket therebetween, said pocket being accessible through a portion of said periphery which is not adhesively secured;
two layers of netting of plastics material sandwiched between said major surfaces and lining said pocket to form a permeable holder for a cleaning substance therebetween, the edges of the netting being also adhesively secured together around a major portion of their peripheries.

4,510,642
COMBINATION BOWLING LANE STRIPPER AND DUSTER

Donald E. Ingermann, Arvada; Ronald L. Smith, Boulder; Jimmie L. Knoll; Stephen F. Caffrey, both of Arvada; Endre Barsi, Northglenn, and Joseph C. Dechant, Aurora, all of Colo., assignors to Century International Corp., Golden, Colo.

Filed Dec. 19, 1983, Ser. No. 563,074
Int. Cl.[3] A47L *13/20*
U.S. Cl. 15—231 8 Claims

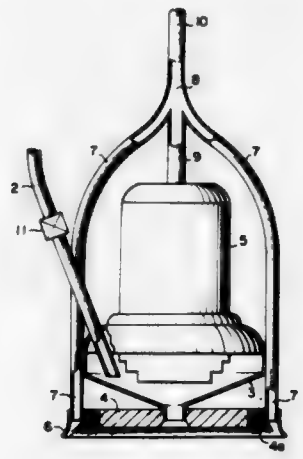


1. In a manually-operated bowling lane cleaning apparatus of the type having a frame made up of sideplates held spaced apart to span the lane by a crossframe structure, supply and take-up rollers journalled for rotation in longitudinally-spaced parallel relation fore and aft within the crossframe structure, a pressure roller disposed between and beneath the supply and take-up rollers paralleling the latter, a handle attached to the frame for pushing same along the lane, a web of fabric reaved from the supply roller underneath the pressure roller and onto the take-up roller, the pressure roller cooperating with one of the other rollers to maintain the section of fabric stretched therebetween in area contact with the lane surface, and front and rear pairs of wheels disposed at the outside corners of the frame, at least one pair of wheels being positioned to enter the ball gutters alongside the lane for keeping the pressure roller centered therebetween when the roll of fabric on one of the supply and take-up rollers is a size to lift the other pair free of the ball gutters, the improvement which comprises: tapering the pressure roller from the middle toward both ends and providing same with a compressible cushioned surface.

4,510,643
VACUUM FLOOR POLISHER

Hisao Kitada, 3115 Oaza Kitano, Tokorozawa-shi, Saitama-ken, Japan

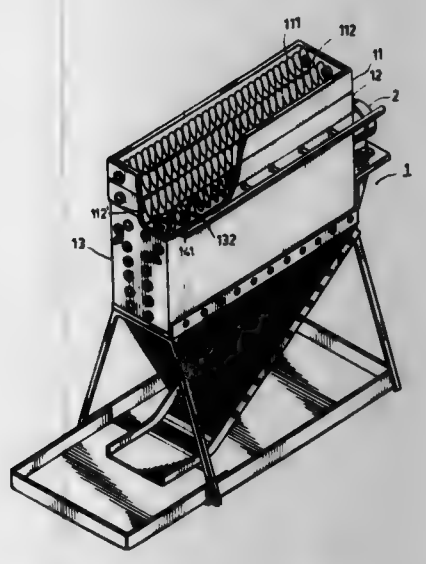
Filed May 2, 1983, Ser. No. 490,847
Claims priority, application Japan, Jun. 1, 1982, 57-93584
Int. Cl.[3] A47L *11/03*
U.S. Cl. 15—320 5 Claims



1. A vacuum floor polisher comprising:
(a) a rotary polishing disc which rotates polishing material and polishes the floor, the bottom of said rotary polishing

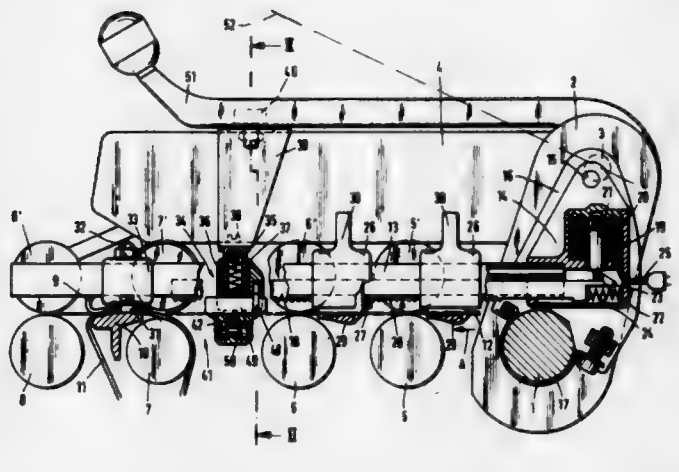
disc being provided with grooves for guiding the polishing material outwardly;
(b) a tank for the polishing material;
(c) a first conduit which guides the polishing material fed from the tank into the center of the rotary polishing disc;
(d) a skirt provided at the periphery of the rotary polishing disc forming an enclosure about said disc, said skirt preventing the polishing material from being spread outwardly beyond the periphery of said disc by the rotation of said disc; and
(e) a second conduit extending from said enclosure to said tank; and means cooperating with said second conduit to create a suction flow into said second conduit in said enclosure thereby introducing atmospheric air under the inner edge of the skirt and causing the polishing material to be recovered in the tank.

4,510,644
FISHING SCALING APPARATUS
Chen-Piau Sheh, No. 56, Taiping Rd., Yuanbei Subward, Homei Town, Changhua, Taiwan
Filed Aug. 20, 1982, Ser. No. 410,023
Int. Cl.[3] A22C *25/02*
U.S. Cl. 17—64 2 Claims



1. A fish scaling apparatus comprising:
(A) a housing;
(B) flexible guide entry means,
(i) means mounting said flexible guide entry means in the housing,
(ii) said flexible guide entry means receiving and feeding downstream fish introduced into the fish scaling apparatus;
(C) a pair of flexible elongated scaler members of transverse circular cross-section,
(i) means mounting said scaler members for rotation in the housing downstream of the flexible guide entry,
(ii) said mounting means for said scaler members supporting said scaler members in parallel spaced apart relationship,
(iii) means to rotate said scaler members in opposite directions so as to jointly provide
(a) a linear transportation force to transport downstream fish fed between them by the flexible guide entry means and
(b) remove scales from said fish; and
(D) conveying means,
(i) means mounting said conveying means in the housing downstream of the flexible scaler members in a position to receive scaled fish from said flexible scaler members and to transport scaled fish away therefrom;
(E) the linear transporting speed of said conveying means being less than the linear transporting speed of said flexible scaler members so as to generate a hindering force to fish while they still are being transported and being scaled by said pair of flexible scaler members;
(F) said conveying means comprising two flat belts having reaches in parallel and spaced from one another,
(i) means to drive said reaches at the same speed and in the same downstream direction,
(ii) so as to provide a passage for receiving scaled fish from the pair of flexible scaler members;
(G) said flexible guide entry means comprising at least two elongated parallel first coil spring members mutually spaced apart to provide a passage for engagingly passing fish therethrough and delivering them to the scaler members;
(H) each said pair of flexible scaler members comprising a second elongated coil spring member,
(i) means to mount the ends of each coil spring member for rotation in the housing,
(ii) a plurality of scalers carried by, and radially projecting from, convolutions of the second coil spring members,
(iii) individual ones of the scalers being spaced apart from adjacent scalers angularly along the spiral length of each of the second coil spring members.

4,510,645
CONSTRUCTION OF DRAW FRAMES FOR SPINNING MACHINES
Alfred Glock, Stuttgart, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Jul. 11, 1983, Ser. No. 512,909
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226151
Int. Cl.[3] D01H *13/16*
U.S. Cl. 19—0.25 7 Claims



1. A drawing frame for a thread spinning machine comprising at least a set of inlet rollers for receiving a roving from a source, a set of exit rollers spaced from the inlet rollers and between which said roving is drawn, each of said inlet and exit roller sets comprising a lower driven roller and a pair of axial spaced upper rollers permitting the drawing of two rovings side by side, said upper rollers being journalled in ranked pairs on a common supporting arm journalled at its upstream and extending operatively in a horizontal direction to cause said upper roller to engage with said lower rollers and being liftable therefrom to remove said upper rollers from engagement with the lower rollers, a bearing rail extending along each side of said supporting arms, said bearing rails being journalled at their downstream ends to be freely movable to a position parallel to the operative horizontal position of said supporting arm and to a position lifted upwards therefrom, and blocking means mounted on each rail for holding said roving to said upper roller responsive to the sensing of a breakage of the thread, and means for causing said supporting arm to freely weigh on said bearing rails, and means disengageably maintaining said supporting arm and bearing rails parallel in operative position,

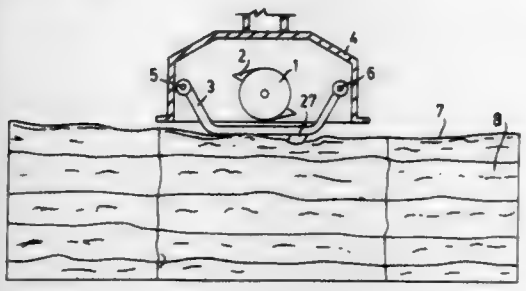
while permitting disengagement and independent lifting movement of said supporting arm and said bearing rails.

4,510,646

DEVICE FOR CONTROL OF CONDUCTIVE MATERIALS IN BALE-BREAKER MACHINES

Claudio Locatelli, Capriolo, and Claudio Dragagna, Pavia, both of Italy, assignors to F. LLI Marzoli & C. S.P.A., Palazzio Sull'Oglio, Italy

Filed Jun. 6, 1983, Ser. No. 501,570
Claims priority, application Italy, Jun. 8, 1982, 21750 A/82
Int. Cl.³ D01G *7/06*
U.S. Cl. 19—80 R **11 Claims**



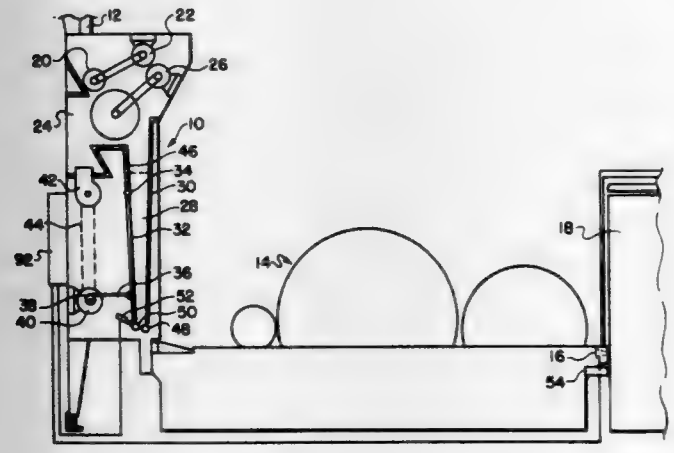
1. An improvement in a device for detecting the presence of conductive materials in bales of textile fibers for bale-breaker machines having rotating take-off members and elongate bale-pressure elements arranged parallel to each other between said take-off members and substantially perpendicularly to a rotation axis of said take-off members, wherein the improvement comprises conductance sensors associated with said bale-pressure elements and sensitive to the conductance existing between any two adjacent of said bale-pressure elements, each control means responsive to the conductance sensed by each of said sensors to cause the bale-breaker machine to be operative when the conductance between any two adjacent of said bale-pressure elements exceeds a pre-set value, thereby preventing damage to said rotating take-off members by said conductive materials.

4,510,647

METHOD AND APPARATUS FOR CONTROLLING FIBER DENSITY

Alex J. Keller, 75 Ridgeport Rd., Clover, S.C. 29710, and Akiva Pinto, 525 Eastwood Dr., Gastonia, N.C. 28052

Filed Oct. 13, 1982, Ser. No. 434,009
Int. Cl.³ D01G *15/40*
U.S. Cl. 19—105 **11 Claims**



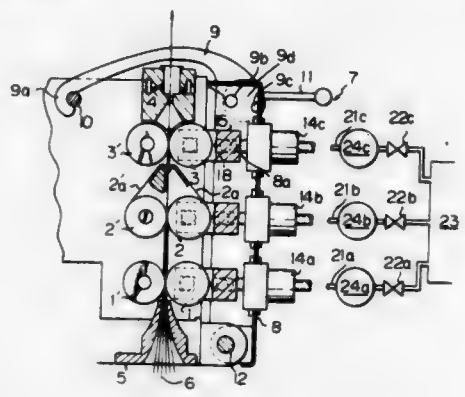
1. Apparatus for processing textile materials, including:
(a) fiber feeding means for receiving fiber and forming said fiber into a batt, said fiber feeding means including chute means for collecting said fiber, selectively variable pneumatic means for exerting a pneumatic compressing force on said collected fiber in said chute means, and selectively variable mechanical means for mechanically compressing said collected fiber in said chute means;
(b) carding means receiving said batt of fiber from said fiber feeding means and forming said fiber into a sliver; and
(c) regulating means including:
(i) first signaling means for sensing the density of said sliver and for generating high and low signals indicating, respectively, that said sliver density is above or below a predetermined level; and
(ii) control means for receiving said generated signals and for varying the operation of said pneumatic means and said mechanical means to decrease the compression of said collected fiber in said chute means upon receipt of said high signal and to increase the compression of said collected fiber upon receipt of said low signal.

4,510,648

WEIGHTING DEVICE FOR DRAFTING MEANS

Mitsuo Mori, Toyota; Yoshihisa Suzuki, Chiryu; Shigeru Muramatsu, Okazaki, and Sigeru Takasu, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jul. 14, 1983, Ser. No. 513,410
Claims priority, application Japan, Jul. 15, 1982, 57-122166
Int. Cl.³ D01H *5/52*
U.S. Cl. 19—266 **3 Claims**



1. A weighting device for a drafting means of a textile machine such as a spinning frame having a plurality of spinning units, said drafting means being a plurality of pairs of a bottom side roller and a top side roller, comprising a plurality of pressing units exerting weighting force onto said top side roller, each of which units is provided above each said pair of rollers, wherein said pressing unit comprises a loading means utilizing fluid pressure wherein said pressing units are classified into at least two groups according to positions of said pairs of rollers to which said pressing unit engages and wherein each group of said pressing units, at least in one textile machine, is provided with common piping for supplying fluid of uniform pressure to branches extending to said pressing units belonging to said group and wherein each of said branches has an automatic valve operatively connected to a yarn sensor of each of said spinning units whereby the pressure to the pressing units can be released in response breakage of the yarn.

4,510,649

TIE STRIP

Donald W. Yudis, 322 Grimes Bridge Rd., Roswell, Ga. 30075, and Roy A. Moody, 755 Ash St., Flossmoor, Ill. 60439

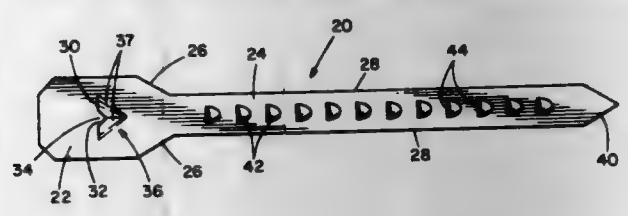
Filed Jun. 3, 1983, Ser. No. 500,660
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—16 PB **16 Claims**

1. An integral tie strip formed from sheet stock, comprising:
a substantially planar elongated flexible strap;
a plurality of raised portions formed on and projecting from the plane of said strap, said raised portions being spaced along the length of said strap with each of said raised portions being formed from a portion of said planar strap

immediately adjacent a strap slit, said strap slit including first and second opposing edges which are spaced apart transverse to the plane of said strap to define a mouth in said strap;

a substantially planar head formed at one end of said strap, having a head slit extending through said head of a width to accommodate receipt of said strap such that a strap inserted therein retains its substantially planar configuration; and

locking means affixed to said head for preventing inadvertent disengagement of one of said raised portions from said head upon retrograde movement of said strap, at least one of said head and said raised portions being flexible to permit movement of said raised portions through said head slit whereby movement of said strap toward said head and through said head slit causes said raised portions to pass therethrough and retrograde movement of said strap causes said head to engage one of said raised portions preventing withdrawal of said strap from said head, with said locking means ensuring that said raised portion is not inadvertently removed from said head slit.

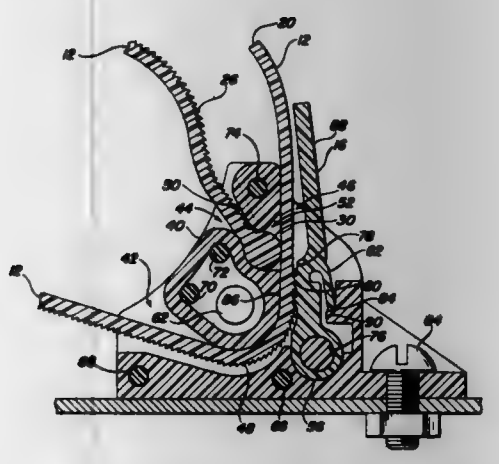


4,510,650

CABLE CLAMP ASSEMBLY

Cesar Espinoza, Buena Park, Calif., assignor to Hollingsead International, Inc., Santa Fe Springs, Calif.

Filed Dec. 28, 1983, Ser. No. 566,273
Int. Cl.[3] B65D *63/00*; F16L *33/08*
U.S. Cl. 24—16 PB 13 Claims



1. In a clamp assembly adapted for clamping wire bundles and attaching the same to a housing or the like, the combination comprising:

a flexible elongated strap member having a first, a second end, and serrations on a major portion of one side, the second end defining a securing means;

a substantially rigid strap receiving member having a pair of sidewalls, a bundle receiving surface disposed substantially at right angles to the sidewalls, first and second slot-like openings on either side of the bundle receiving surface, a third slot-like opening spaced from the first opening, a first passageway including a bearing surface and extending inside the sidewalls between the first and third openings for receiving the first end of the strap member and a second passageway extending from the second opening for receiving the second end of the strap when inserted in a direction generally perpendicular to the sidewalls, the second passageway being dimensioned to engage the securing means on the second end of the strap member and prevent the second end of the strap member from passing therethrough in response to a pulling force on the first end of the strap member, one of said sidewalls defining an opening aligned with the second passageway so that the second end of the strap member may be inserted into the second passageway in a direction generally perpendicular to the sidewalls and be held captive therein; and

a pawl member having serrations complementary to the serrations on the strap member and secured to the strap receiving member adjacent the first passageway and on the opposite side thereof from the bearing surface; and

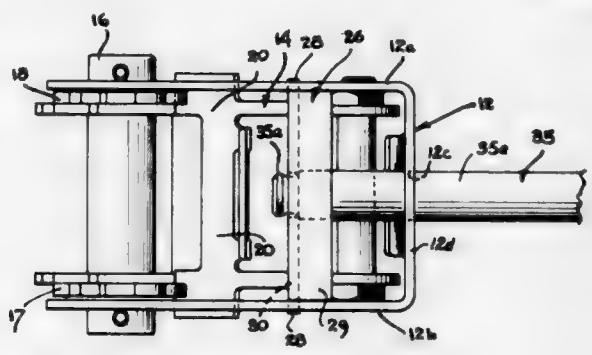
means for biasing the pawl member against the strap member whereby the serrations on the pawl member releasably engage the serrations on the strap member.

4,510,651

RATCHET BUCKLE WITH A REMOVABLE OPERATING LEVER

Ernest Prete, Jr., Woodland Hills, and Howard Knox, Simi, both of Calif., assignors to Ancra Corporation, El Segundo, Calif.

Filed Jan. 21, 1983, Ser. No. 460,078
Int. Cl.[3] B25B *25/00*
U.S. Cl. 24—68 R 3 Claims



1. In a ratchet buckle for tightening and tensioning straps having a reel and a pair of ratchet wheels fixedly connected therto, a bifurcated handle member having a pair of oppositely positioned parallel arms connected together by a cross arm, said parallel arms being rotatably mounted on the reel and a ratchet drive plate which engages the ratchet wheels such that when the handle member is actuated the wheel is rotatably driven, the improvement being means for manipulating the handle member comprising:

a cross member extending between the arms of the handle member and connected thereto, said cross member having an aperture formed therein, and

an elongated operating lever having one end portion thereof fitted into the aperture formed in the cross member, a main body portion greater in diameter than said aperture, a knob portion at said one end portion and a recessed portion between the knob portion and main body portion, the knob portion having a diameter approximately equal to that of said aperture and said recessed portion having a diameter less than that of said aperture, the recessed portion being opposite the edges of said aperture with the lever in its installed portion, the cross arm of the handle member having an aperture formed therein through which the main body portion of the lever is fitted.

4,510,652

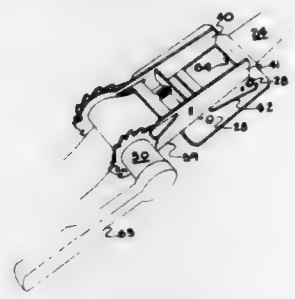
CARGO RESTRAINING DEVICE

Willem H. P. van Iperen, Westfield, N.J., assignor to Sea-Land Industries, Inc., Elizabeth, N.J.

Filed Feb. 7, 1983, Ser. No. 464,338
Int. Cl.[3] B65D *67/00*
U.S. Cl. 24—68 CD 2 Claims

1. A cargo restraining device having a tension plate for

secure mounting on a platform for a flexible strap, web or the like, said plate having side walls and end walls, spaced-apart strap-receiving openings in said plate, and an intermediate strap-supporting web extending from said side walls between said openings, said side walls having plate-retaining means in said side walls to retain said tension plate on a platform, said plate having at least one upturned strap-receiving lip edge and said plate end walls each having an upturned strap-receiving lip edge; said walls having spaced-apart plate-retaining openings therethrough for receiving fastening means therethrough and retaining said tension plate on a platform, and a removable



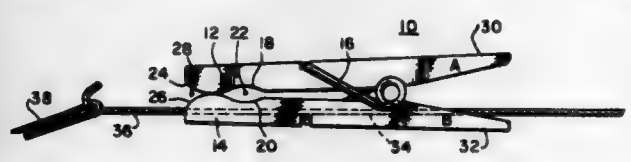
fixture having a strap-tightening ratchet means releasably mounted on said plate, said fixture having laterally spaced guide rails straddling said spaced-apart strap-receiving openings in said plate, said ratchet having a strap retaining cylinder rotatably mounted in said guide rails, means on said guide rails for releasably locking said ratchet means whereby a strap threaded through said strap openings may be fastened to said strap-retaining cylinder for tightening upon actuation of said ratchet means for securing said strap in the tightened position while inserting fasteners through said strap positioned in said strap-receiving openings.

4,510,653

METHOD AND APPARATUS FOR TYING BALLOONS AND THE LIKE

Mark Semanko, 47 West Levering Mill Rd., Bala Cynwyd, Pa. 19004

Filed Sep. 30, 1982, Ser. No. 431,265
Int. Cl.[3] A44B *21/00*; A63H *3/06*
U.S. Cl. 24—131 C **5 Claims**



1. An apparatus for tying a knot in a neck of a balloon, the knot being wrapped around a string, comprising:

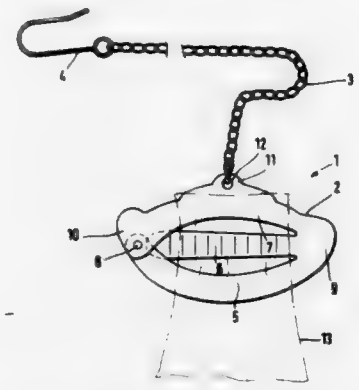
a clothspin having two members resiliently pivotally attached to one another intermediate to the ends of said members, the jaws when closed forming a channel aligned perpendicular to an axis defined by the members for receiving the neck of the balloon to be tied, one of the members having a longitudinal bore adapted to slidably receive the string, the bore being aligned parallel to said axis and opening adjacent the channel at an end of said one of the members, whereby the neck of the balloon is tied in a knot around and through the channel, and the knot slid easily from the apparatus onto the string.

4,510,654

HOLDER FOR FILTER BAGS FOR PREPARING TEA AND THE LIKE

Herbert Müller, Im Elm 24a, 5450 Neuwied 21, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,857
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224355
Int. Cl.[3] A44B *21/00*
U.S. Cl. 24—344 **3 Claims**



1. A holder having a generally oblong configuration for filter bags which are to be used in the preparation of tea and similar beverages; said holder comprising:

a clamping body including handles at each end of the oblong configuration and also including three legs which extend approximately parallel to one another in intermediate location between the handles at each end of the oblong configuration with one of said legs being a central leg having only one end connected with said clamping body and having a gripping means for retaining the tea bag filter therewith, and the other two legs being outer legs, one of which is disposed on each of the opposite longitudinal edges of said central leg; said two outer legs being preloaded relative to one another in such a way that said two outer legs can be brought into either one of two different stable end positions, namely an open position, and a closed position; in said open position, an angular aperture existing between said central leg on the one hand, and said outer legs on the other hand, with said central leg projecting out of a curved plane formed by said outer legs; in said closed position, a narrow slot-like opening existing between each of said longitudinal edges of said central leg, and the adjacent longitudinal inner edges of the adjacent outer legs;

a chain-like member having two ends, one of which is fastened to said clamping body at a location substantially centrally of one of said outer legs so that consequently said chain-like member engages substantially above center of gravity of said holder for filter bags used in preparation of tea and the like; and

a hook-like member connected to the other end of said chain-like member for fastening the latter to components of a brewing container.

4,510,655

SLIDE FASTENER ASSEMBLY FOR CASE OR FOLDER

Sadaho Asahi, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,517
Claims priority, application Japan, Jun. 18, 1982, 57-91106
Int. Cl.[3] A44B *19/02*
U.S. Cl. 24—382 **2 Claims**

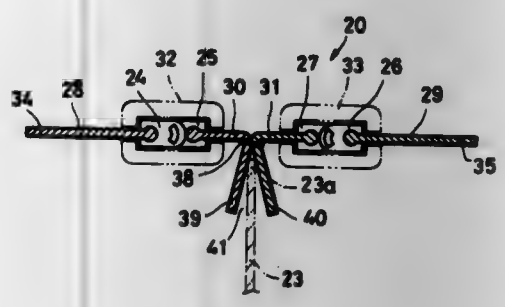
1. A slide fastener assembly for a case having a pair of outer walls and at least one intermediate wall, comprising:

(a) a plurality of laterally spaced pairs of rows of only single-headed coupling elements;

(b) a pair of outer tapes carrying, on their respective inner edges, outermost rows of said coupling elements and

adapted to be attached to the respective outer walls of the case; and

(c) a pair of L-shaped intermediate tapes having leg portions disposed between two adjacent pairs of said coupling element rows, and other leg portions transverse to and



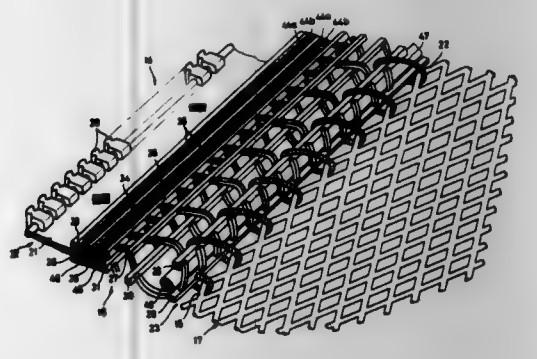
sewn to said first-named leg portions the latter carrying, on opposite longitudinal edges, respective inner rows of said adjacent two pairs of coupling element rows, said other leg portions of said intermediate tapes being adapted to be attached astride the intermediate wall of the case.

4,510,656

SLIDE FASTENER ASSEMBLY

Hiroshi Yoshida, Kurobe; Yoshio Matsuda, Nyuzen, and Akira Komeya, Kurobe, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,293
Int. Cl.³ A44B *19/00*
U.S. Cl. 24—390 **13 Claims**



1. A slide fastener assembly for joining together a pair of confronting edges of net structure, comprising:

(a) a slide fastener having a pair of stringers; and

(b) a pair of warp-knitted net adapters having a number of rectangular meshes therein, each of said adapters including

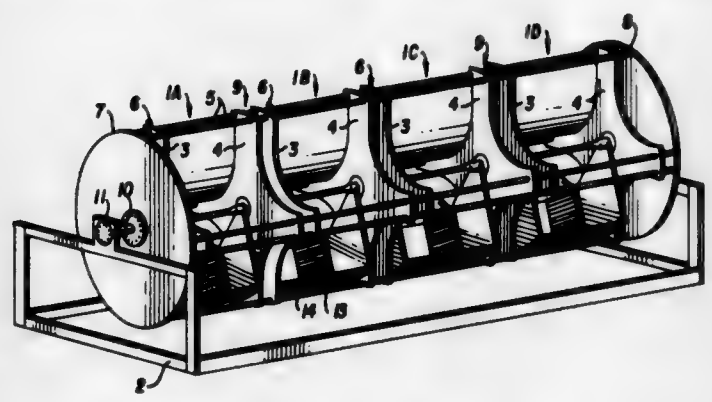
(c) a net transition region arranged for connection to one of the confronting edges of the net structure, and a pair of superimposed web regions connected to a longitudinal edge of said net transition region and jointly supporting one of said stringers, said net transition region having a first portion disposed remotely from said longitudinal edge, a pair of second portions extending adjacent to said web regions, and a pair of third portions extending between said first and said second portions, said third portions having a mesh size larger than that of said first and second portions, said web regions having a mesh size smaller than that of said first and second portions.

4,510,657

ROTATING CREEL FOR A NONWOVEN FABRIC MACHINE

Jean Curinier, and Philippe Pinet, both of Le Cheylard, France, assignors to Etablissements les Fils d'Auguste Chomarat & Cie, France

Filed Dec. 9, 1982, Ser. No. 448,328
Claims priority, application France, Dec. 23, 1981, 81 24346
Int. Cl.³ D04H *3/00*; B65H *49/00*
U.S. Cl. 28—100 **3 Claims**



1. A yarn creel device in combination with a means for producing a textile web characterized by yarns extending cross-wise with respect to the length of said web, said yarn creel device comprising:

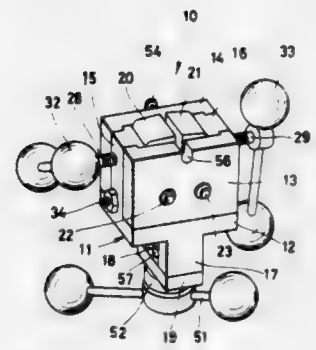
means for storing yarn feed bobbins, characterized by a plurality of rotating compartments wherein the feed bobbins are fixedly mounted inside said compartments by means of supporting cradles mounted within said compartments for free rotation about the same axis of rotation as the compartments, said cradles being immobilized by the actual weight of the feed bobbins.

4,510,658

CLAMPING UNIT

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,477
Claims priority, application Japan, Jun. 29, 1981, 56-95213[U]
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—33.2 **4 Claims**



1. A manually powered portable clamping apparatus for clamping a replacement slotted hollow body on a beaded edge, comprising:

(a) a recessed frame;

(b) a pair of opposite clamping arms pivotably disposed in said recessed frame and having a pair of clamping jaws at their upper end, respectively, for receiving the slotted hollow body with the beaded edge inserted therein;

(c) a pair of opposite manually movable threaded rods threaded through said recessed frame respectively against said clamping arms and longitudinally movable to reciprocate said clamping jaws toward and away from each other for forming and releasing the hollow body;

(d) a pair of opposite adjustable stops mounted on said re-

cessed frame for adjustably limiting the movement of said clamping jaws toward each other;

(e) a central presser slidably supported on said recessed frame and having an upwardly facing presser edge located between said clamping arms below said jaws for receiving thereon the slotted hollow body;

(f) a manually movable central threaded rod threaded through said recessed frame against said central presser and vertically movable to move said presser upwardly toward or downwardly away from said clamping jaws, whereby the slotted hollow body supported on said raised presser edge can be clamped on the beaded edge by said clamping jaws as manually forced toward each other by said opposite threaded rods; and

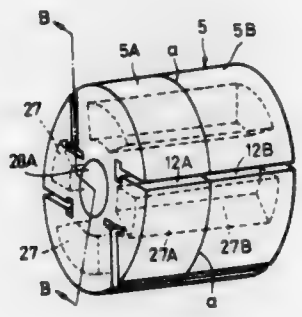
(g) three means respectively attached to each of said opposite threaded rods and said central threaded rod for enabling manual rotation of said threaded rods about their own axes to reshape said body.

4,510,659

METHOD FOR MANUFACTURING A VANE COMPRESSOR HAVING A LIGHTWEIGHT ROTOR

Michio Okazaki, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan

Division of Ser. No. 244,804, Mar. 17, 1981, Pat. No. 4,415,321. This application Mar. 25, 1983, Ser. No. 478,790
Claims priority, application Japan, Mar. 15, 1980, 55-36855
Int. Cl.³ B23P *15/04, 15/00*
U.S. Cl. 29—156.8 R **18 Claims**



1. A method of manufacturing a rotor for use in a vane compressor, comprising forming said rotor having a central through bore extending therethrough along an axis thereof and through which said rotary shaft extends, a plurality of axial slits formed in an outer peripheral surface thereof in a circumferentially spaced arrangement and extending along a whole length thereof and in which vanes are inserted, and a plurality of cavities formed between adjacent ones of said axial slits,

the forming method comprising:

preparing iron base metal powder containing copper;

charging said metal powder into a plurality of molds each having a predetermined cavity shape;

compressing said metal powder within said molds to form a plurality of green compacts each having a predetermined shape;

arranging said green compacts in an abutting manner so as to assume the shape of said rotor and simultaneously applying at least one brazing member to said green compacts along at least one abutting portion thereof;

heating said green compacts and said brazing member under a reducing atmosphere to a temperature higher than the melting point of said brazing member, to cause said green compacts to be integrally joined together to obtain an integral piece of sintered alloy compacts; and

finish grinding surfaces of said integral piece of sintered alloy compacts to form a finished rotor;

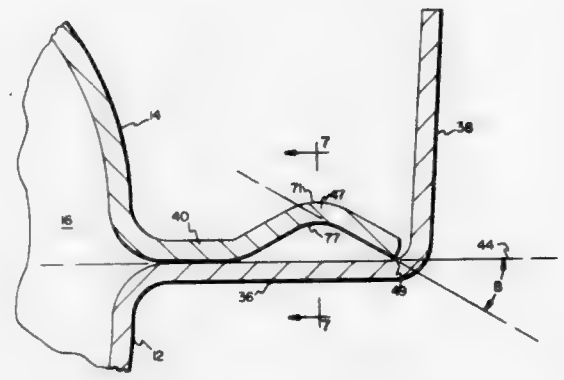
said rotor being formed with a back pressure chamber therein which intersects with said central through bore at an axially central portion thereof, said back pressure chamber having a diameter larger than that of said central through bore, and said plurality of axial slits having axially central portions thereof communicating with said back pressure chamber, said back pressure chamber also being in communication with said plurality of cavities.

4,510,660

METHOD OF MANUFACTURING A TWO-PLATE HEAT EXCHANGER

Russell W. Hoeffken, Belleville, Ill., assignor to Snyder General Corporation, Red Bud, Ill.

Continuation-in-part of Ser. No. 295,041, Aug. 21, 1981, Pat. No. 4,441,241, which is a division of Ser. No. 178,338, Aug. 15, 1980, Pat. No. 4,298,061. This application Sep. 13, 1982, Ser. No. 417,672
Int. Cl.³ B21D *53/04*
U.S. Cl. 29—157.3 D **7 Claims**



1. A method of joining opposed sheet metal sections of a heat exchanger unit along an edge thereof wherein each of said sections is provided with a flange adapted to be joined to the cooperating flange of the other section, comprising the steps of:

forming a generally elongated continuous bead on the flange of one of said sections extending adjacent to an outer longitudinal edge of said flange of said one section by displacing a portion of said flange of said one section away from a plane coincident with said flange of said one section to form a ridge which is elastically displaceable by a portion of said flange of said other section;

forming said other section with a flange of sufficient width to permit folding said portion of said flange of said other section over the flange of said one section;

placing said sections opposite each other with said flanges aligned;

folding said portion of said flange of said other section over said flange of said one section and pressing said portion of said flange of said other section against said bead sufficiently to elastically displace said ridge toward said plane coincident with said flange of said one section and said longitudinal edge into engagement with said flange of said other section to form a seal between said flanges at said ridge and at said longitudinal edge.

4,510,661

APPARATUS FOR DISASSEMBLING A UNIVERSAL JOINT

Eddie L. Campa, 122 Shirley Ct., Colton, Calif. 92324

Filed Aug. 8, 1983, Ser. No. 520,892
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—259 **2 Claims**

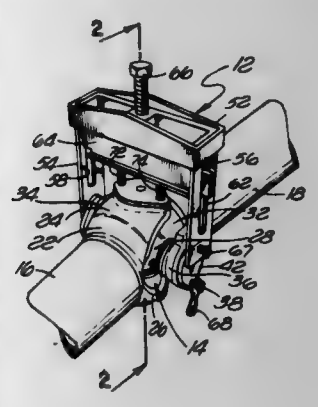
1. Apparatus for disassembling a universal joint formed of a first and second yoke, each yoke having a pair of yoke arms, said yokes each being connected to a shaft, each of said yokes being secured to a journal assembly by means of cap screws threaded into openings in said yoke arms comprising:

a generally U-shaped member having a base and a pair of arms each extending at one end from said base along generally parallel axes in the same direction from opposite ends of said base;

means for securing the other ends of said U-shaped member arms to the arms of one of said pair of yokes, respectively, comprising a threaded bolt insertable in said openings of said yoke arms of said first yoke when said cap screw is removed from said yoke arm openings;

a drive bar secured to said U-shaped member arms and movable with respect to said U-shaped member arms;

a pair of drive studs threadably positioned in said openings formed in an arm of said second yoke when its securing



cap screws are removed therefrom, said drive studs extending from said openings and being positioned adjacent said drive bar; and

means for moving said drive bar and said drive studs simultaneously comprising a bolt positioned in said base and movable generally parallel to the axes of said U-shaped arms for enabling movement of one of said yokes with respect to the other of said yokes along an axis parallel to the axes of said U-shaped member arms.

4,510,662

APPARATUS AND A METHOD FOR FORMING SPACE SECTIONS IN A SLIDE FASTENER CHAIN HAVING COUPLING ELEMENTS IN THE FORM OF CONTINUOUS COIL

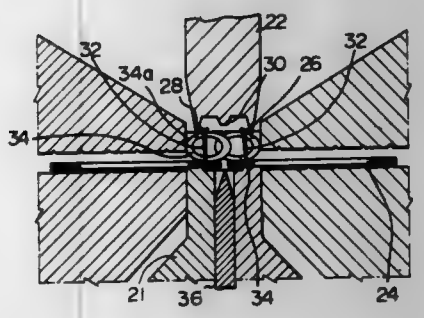
Masao Matsumoto, and Shigeru Imai, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,614

Claims priority, application Japan, Dec. 29, 1981, 56-197537[U]

Int. Cl.³ B21D *53/50;* A41H *37/06*

U.S. Cl. 29—408 **4 Claims**



1. An apparatus for forming spaced sections at predetermined intervals in a slide fastener chain having a pair of interengaged coupling elements in the form of continuous coil in which the predetermined span of the coupling elements secured to a pair of fastener tapes by sewing threads is cut and the coupling elements are pulled out of the sewing threads and removed therefrom, said apparatus comprising:

die means confronting the fastener tapes for supporting the slide fastener chain horizontally;

punch means disposed on the coupling elements side of said tape and being reciprocably movable toward the coupling elements, said punch means having at the end surface a pair of laterally spaced apart cutting edges for cutting the lateral outer side upper leg portion of the pair of interengaged coupling elements at the connecting reserved portion side of the sewing thread and a gripping projection disposed centrally between the pair of the cutting edges for pressing the upper leg portions adjacent the interengaging head portions of the interengaged coupling elements to flatten out the coupling elements being cut;

ejector means disposed in the die means reciprocably movable toward the gripping projection of the punch means, said punch means being upwardly movable in response to the upward movement of the ejector means while the upper leg portions adjacent to the interengaging head portions of the interengaged coupling elements is gripped between the edge of the ejector means and the gripping projection of the punch means to draw the flattened, cut coupling elements away from the sewing thread; and

means for holding the pair of fastener tapes.

4,510,663

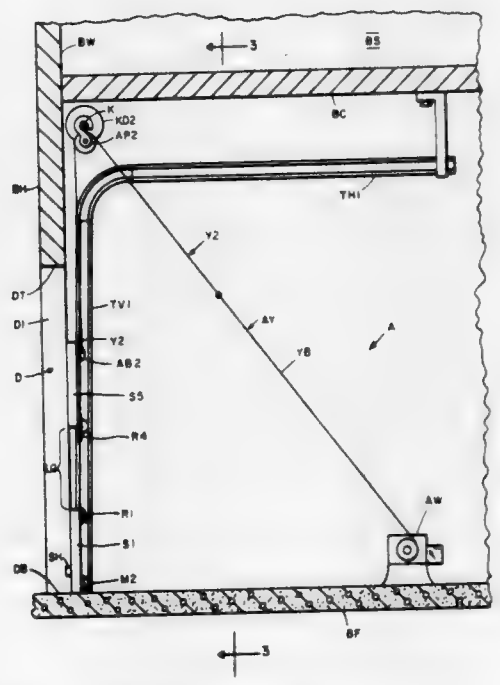
METHOD OF INSTALLING MULTI-SECTIONS VERTICALLY ACTING DOORS

Robert E. Friesz, Omaha, Nebr., assignor to Leo R. Murnan and Omaha Door Company, both of Omaha, Nebr., part interest to each

Filed Jan. 21, 1983, Ser. No. 459,770

Int. Cl.³ B21D *39/03;* B23P *11/00;* B66D *1/36*

U.S. Cl. 29—429 **4 Claims**



1. Method for installing a multi-sections vertically acting overhead type door for a vertically extending rectangular door opening of a building structural wall, said door opening having a floor as its horizontal bottom-border, a wall header as its horizontal top-border, and longitudinally separated and vertical left-border and right-border, said overhead type door comprising a plurality of vertically aligned and longitudinally horizontally extending upright sections pivotably attached together and including a bottom-section, a top-section, and a plurality of intervening medial-sections, said method comprising the following steps:

A. attaching vertical trackway lengths to the structural wall alongside the door opening left-border and right-border;

B. attaching longitudinally separated pulley support means to the wall header above the door opening;

C. providing a hoisting apparatus by: attaching a left-pulley and a right-pulley in removable condition to said pulley support means, engaging the left-length and the right-length of a Y-shaped liftcable with said left-pulley and right-pulley, engaging the liftcable base-length with a floor supported dual-directional winch means, and attaching left-bracket and right-bracket to depending portions of said liftcable left-length and right-length;

D. positioning the door bottom-section uprightly at the door

opening bottom-border and into rollable engagements with the vertical trackway lengths;

E. uprightly suspending the door top-section from the left-bracket and right-bracket terminii of said hoisting apparatus, said top-section being in rollable engagement with said vertical trackway lengths;

F. hoisting the top-section a lofty-gap above said uprightly positioned bottom-section;

G. positioning the door uppermost medial-section uprightly upon said bottom-section and pivotably attach and medial-section to the top-section, said uppermost medial-section being in rollable engagement with the vertical trackway lengths;

H. hoistably suspending the top-section and pivotably attached uppermost medial-section a lofty-gap above said uprightly positioned bottom-section;

I. positioning the door next lower medial-section uprightly upon said bottom-section and pivotably attach said medial-section to the medial-section thereabove, said next lower medial-section being in rollable engagement with the vertical trackway lengths;

J. repeating steps H and I in order, and terminating with the lowermost medial-section in said suspended condition; and

K. pivotably attaching said uprightly positioned bottom-section to the lowermost suspended medial-section, and removing the left-bracket and right-bracket from the door top-section.

4,510,664

METHOD OF PRODUCING A PACKING RING

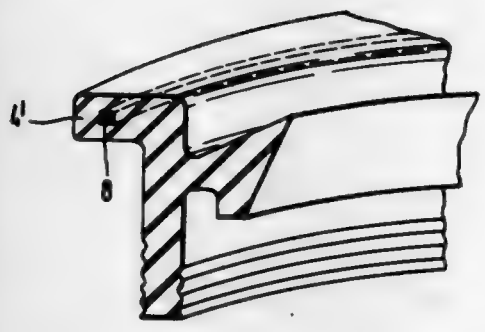
Pieter J. Lock, Koelweg, Netherlands, assignor to Rubber-en Kunststoffabriek ENBI B.V., Nuth, Netherlands

Filed Feb. 18, 1983, Ser. No. 467,928

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206677

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—450 **3 Claims**



1. The method of producing an annular or other configuration packing ring which comprises the steps of forming a length of elastomeric material having uniform cross-sectional configuration corresponding to the desired cross-section of the packing ring, said length corresponding substantially to the circumferential extent of said ring, said length including a lengthwisely extending cavity, providing a length of wire corresponding generally to the length of the cavity in said length of elastomeric material, said wire being relatively rigid as compared to said elastomeric material and having cross-sectional configuration sized to be intimately received in said cavity, bending said wire to a desired configuration, thereafter introducing said wire into said cavity, to thereby cause said length of elastomeric material to be deformed into said annular or other configuration, causing the free ends of said wire to be mutually interconnected and thereafter causing the free ends of said length of elastomeric material to be juxtaposed in abutting relation.

4,510,665

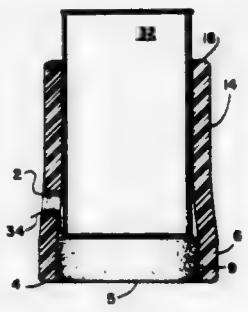
CONTAINER INSULATION APPARATUS

Stephen M. Scheurer, Wichita Falls, Tex., assignor to Texas Recreation Corporation, Wichita Falls, Tex.

Continuation of Ser. No. 217,922, Dec. 18, 1980, abandoned, and Ser. No. 69,146, Aug. 23, 1979, abandoned. This application Apr. 18, 1983, Ser. No. 486,044

Int. Cl.³ B23P *3/00, 19/04*

U.S. Cl. 29—460 **16 Claims**



1. A method of manufacturing a container insulation apparatus comprising wrapping a generally cylindrical sheet element around a cylindrical base in one end of the element, securing an outer cylindrical surface of the base to a corresponding inner surface of the cylindrical element, securing edges of said sheet element to form a longitudinal seam forming a recessed annular space adjacent the base, coating exposed surfaces of the base and the cylindrical element and forming an opening through the container insulation apparatus in a portion thereof near the base.

4,510,666

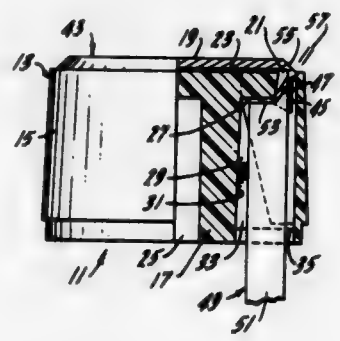
KNOB WITH DECORATIVE END CAP AND METHOD OF MANUFACTURING IT

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Continuation of Ser. No. 439,330, Nov. 5, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 646,046

Int. Cl.³ B21D *39/00;* B23P *11/00*

U.S. Cl. 29—511 **7 Claims**



5. A method for fastening a decorative disc shaped end cap to a tubular knob body including the steps of:

forming the decorative disc shaped end cap with a depending skirt,

positioning the cap on one end of the tubular body with the skirt extending into an annular groove formed in one end of the tubular body,

inserting a bending tool with at least one bending finger into the tubular body from the opposite end thereof into engagement with the depending skirt, and

deforming the depending skirt with the bending finger in at least two spaced locations to lock the cap to the tubular body.

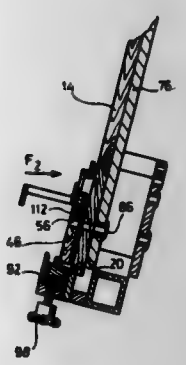
4,510,667

PROCESS FOR PRE-SETTING MOUNTING HOLES FOR CUTTING AND EJECTION TOOLS OF AN AUTOMATIC PLATEN PRESS

Jacques Nassoy, 14, rue Capitaine, Dumont, St. Quentin, and Bernard Protin, 3, ch. Croix Etienne, F-21600 Seanay, both of France

Filed Feb. 3, 1982, Ser. No. 345,354
Claims priority, application France, Feb. 3, 1981, 81 02006
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—526 R 5 Claims





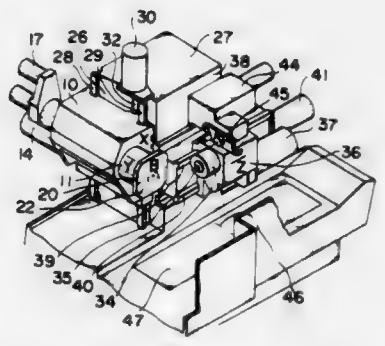
1. A method for presetting mounting holes for cutting and ejection tools of an automatic platen press, which tools are used for cutting cardboard box blanks in sheets and to strip waste therefrom, said cutting tool being a cutting form made up of a wooden board, which on one face has a plurality of cutting rules and creasing rules arranged in a pattern, said ejection tools including a first ejection board of the same dimension as the cardboard box blank being produced and a second ejection board of the same dimension as the part of the sheet acting as a gripping engagement by which the sheet is seized in order to be moved from one tool to the other in the press, said method comprising the steps of providing a pre-mounting template having means for longitudinal positioning of the tools on the template, which means is identical to the corresponding means for mounting each of the tools in the press, said template having a plurality of holes disposed in a distribution identical to that of the corresponding means for mounting of the press; positioning the cutting form on the template; drilling at least one centering hole and a series of mounting holes in the cutting form by using the holes in the template to guide the drill bit; positioning one of the first and second ejection boards on the template in alignment with the cutting form; then drilling at least one centering hole in said one board by drilling through the centering hole of the cutting form and then drilling mounting holes in said one board; removing the one board and positioning the other of the first and second ejection boards on the template in alignment with the cutting form; and then forming at least one centering hole in said other board by drilling through each centering hole of the cutting form and then forming mounting holes in said other board.

4,510,668

MACHINING CENTER

Kenichi Ishida, Nagaoka, and Tetsuro Takahashi, Ojiya, both of Japan, assignors to Tsugami Corporation, Japan

Filed May 3, 1982, Ser. No. 374,510
Claims priority, application Japan, May 13, 1981, 56-70673; Dec. 11, 1981, 56-198467
Int. Cl.[3] B23Q *5/22*
U.S. Cl. 29—561 6 Claims



1. A machining center comprising a vertical bed (27) having a first vertical surface (26) and a second vertical surface (38) at right angles to said first vertical surface (26), a pallet slide (10), first means (28, 29, 30, 32, 33) connecting said pallet slide (10) for vertical movement on said first vertical surface (26), a spindle slide (36), second means (30, 40, 41, 42, 43) connecting said spindle slide (36) for horizontal movement on said second vertical surface (38), a supporting shaft (11) having a first horizontal axis (Y) parallel to said first vertical surface (26) connected to said pallet slide (10) for axial movement along said first horizontal axis (Y), means (12, 13, 14) to axially move said supporting shaft (11) along said first horizontal axis (Y), an indexing shaft (15) connected coaxially in said supporting shaft (11) and for shifting movement in the direction of said first horizontal axis (Y), means (18) to shift said indexing shaft (15) in the direction of said first horizontal axis (Y), coupling means (19) between said supporting shaft (11) and indexing shaft (15) engaged to connect said shafts when the indexing shaft (15) is shifted in one direction and disengaged to release said shafts from each other when the indexing shaft (15) is shifted in the other direction, transmission means (16) connected to rotate said indexing shaft (15) relative to said supporting shaft (11) when said indexing shaft (15) is shifted in said other direction, a clamping shaft (23) included in and axially shiftable in the direction of said first horizontal axis (Y) in said indexing shaft (15) between two positions, means (24) to shift said clamping shaft (23) between said two positions, a clamping plate (21) connected on the end of the clamping shaft (23) toward said spindle slide (36), a pallet (20) having a vertical pallet surface (22) for carrying a workpiece removably engageable with said clamping plate (21), a positioning coupling (25) engaged between said pallet (20) and indexing shaft (15) in one of said two positions of said clamping shaft (23) and released in the other of said two positions of said clamping shaft (23) for removal of said pallet (20) from said clamping plate (21), a spindle (34) for carrying a tool connected in said spindle slide (36) for rotation about a second horizontal axis (Z) disposed at right angles with said first horizontal axis (Y), said second horizontal axis (Z) positioned parallel with said second vertical surface (38), whereby said pallet is axially movable along said first horizontal axis (Y) by said means (12, 13, 14) to axially move said supporting shaft (11), by said means (18) to shift said indexing shaft (15) and by said means (24) to shift said clamping shaft (23), and is rotatable about said first horizontal axis by said transmission means (16) for indexing, said first horizontal axis is movable in a vertical plane, said spindle is rotatable about and axially shiftable along said second horizontal axis (Z), and a wide space is formed beneath the machining position for a workpiece.

4,510,669

REPLACEABLE GANG HEAD MACHINE TOOL

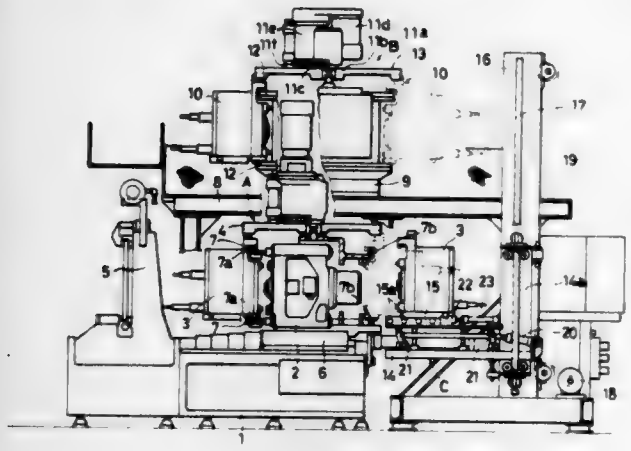
Jinsei Ida, Sayama; Tsutomu Fujita, Kawagoe; Ichiho Yamada, Kawagoe; Fumio Higuchi, Kawagoe, and Keazaburo Matsuo, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,879

Claims priority, application Japan, Oct. 21, 1981, 56-167022; Oct. 23, 1981, 56-168807

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 5 Claims



1. A replaceable gang head machine tool including a machine base, a working unit thereon, plural gang heads on the periphery of the working unit, and an index table on the upper side of the working unit for selecting any desired one of the gang heads, further comprising a supporting base positioned above the machine tool, stock means mounted on said supporting base and comprising a center support, plural gang heads on the periphery of the center support, and an index table on the upper side thereof for selecting any desired one of the gang heads, and a replacing means positioned away from said machine tool and the stock means extending between the machine tool and the stock means for effecting a replacement between the gang heads on the machine tool and the gang heads on the stock means, the replacing means comprising an elevating table which is moveable upwards and downwards between a lowered position facing the stock means, a supporting table which is extendable towards an index position for the gang head positioned on one side of the periphery of the machine tool and serves to support the gang head at that index position from below, means for extending the support table, the supporting table being supported separately moveably upwards and downwards on the elevating table so as to be given a stroke of upward and downward movements necessary for attaching and detaching of the gang head to and from each of the machine tool and the stock means, and means for separately moving the support table up and down on the elevating table.

4,510,670

METHOD FOR THE MANUFACTURE OF INTEGRATED MOS-FIELD EFFECT TRANSISTOR CIRCUITS SILICON GATE TECHNOLOGY HAVING DIFFUSION ZONES COATED WITH SILICIDE AS LOW-IMPEDANCE PRINTED CONDUCTORS

Ulrich Schwabe; Franz Neppl, and Konrad Hieber, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 17, 1983, Ser. No. 458,533

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211761

Int. Cl.³ H01L *21/285*

U.S. Cl. 29—571 14 Claims

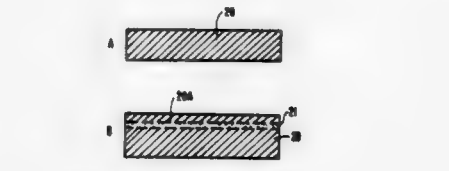
1. A method for the manufacture of integrated MOS field effect transistor circuits in silicon gate technology, in which diffused zones are rendered low-impedance by use of a layer lying thereon in physical contact therewith comprised of a metal silicide having a high melting point, and which are useful as printed conductors, comprising the steps of:

producing insulation regions on a surface of a silicon substrate to define an active transistor region with source and drain zones, and providing an insulating layer for a gate above the active region;

providing a polysilicon gate above the gate insulating layer and providing an insulation layer on side-walls of the gate;

providing the source and drain zones in the substrate;

producing by use of the previously provided insulation layers in self-adjusting fashion without deposition occurring on the insulation layers a metal silicide layer in direct



contact with and only on the source and drain zones and gate comprised of silicon through selective deposition from a gas phase and by use of a reaction gas mixture having a silane compound and a metal halide along with a hydrogen halide during thermal decomposition, a crystal nucleus formation in the insulation layers being suppressed so that etching is not needed;

providing an insulating layer over the metal silicide layer; and

providing appropriate exterior contact printed conductors which are in contact with a portion of the metal silicide layer where necessary through holes selectively etched in the oxide layer.

4,510,671

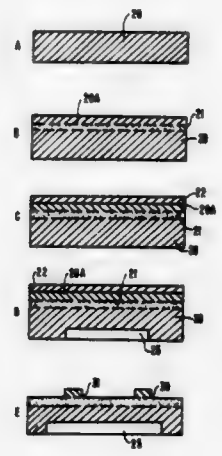
DIELECTRICALLY ISOLATED TRANSDUCER EMPLOYING SINGLE CRYSTAL STRAIN GAGES

Anthony D. Kurtz, Englewood; Timothy A. Nunn, Ridgewood, and Joseph R. Mallon, Franklin Lakes, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Division of Ser. No. 298,275, Aug. 31, 1981, Pat. No. 4,456,901. This application Nov. 21, 1983, Ser. No. 537,100

Int. Cl.³ H01L *29/84;* G01L *1/22*

U.S. Cl. 29—571 7 Claims



1. A method of fabricating a semiconductor transducer comprising the steps of:

ion-implanting high doses of oxygen in a single crystal semiconductor wafer surface to form a buried silicon dioxide layer;

epitaxially growing an additional layer of silicon on the implanted surface of said wafer to form a composite single crystal layer with said implanted surface included,

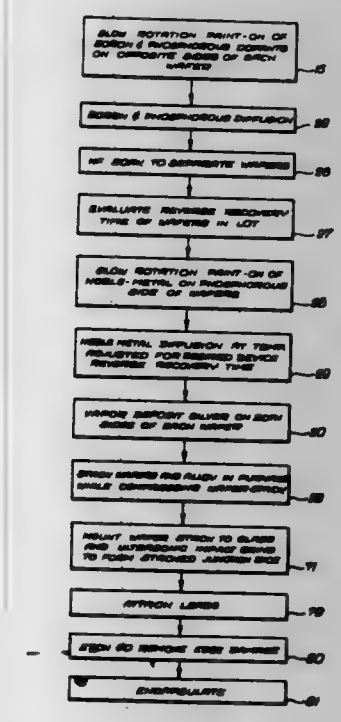
forming a gage pattern on the composite single layer including said implanted surface of said wafer to provide a single crystal gage configuration.

4,510,672

PROCESS FOR MAKING STACKED HIGH VOLTAGE RECTIFIERS

John Yakura, Visalia, Calif., assignor to California Linear Circuits, Inc., La Mirada, Calif.

Filed Sep. 23, 1982, Ser. No. 421,811
Int. Cl.[3] H01L *21/225, 21/50, 21/68, 25/08*
U.S. Cl. 29—574 6 Claims



1. In a process for making stacked high voltage rectifiers, the improvement comprising:

coating each of a plurality of silicon wafers with paint-on P-type and N-type dopants respectively on opposite sides of each wafer, said coating being carried out by:

slowly rotating the wafer at a speed of less than about twenty revolutions per minute while said wafer is supported at its edge, in a horizontal plane, by a set of radially widely spaced support fingers,

applying one of said dopants with an applicator that is gradually moved from the center to the outer edge of one side of said wafer while said wafer is being slowly rotated,

repeating said slowly rotating and applying steps with the wafer inverted, for applying the other of said dopants to the opposite side of said wafer,

said slow rotation limiting spin-off and runover of each dopant onto the reverse side of said wafer, and

thereafter tightly coin stacking a plurality of wafers, each coated in accordance with the preceding steps, with similary doped sides facing each other, and diffusing said wafers by heating said tightly coin stacked wafers in a diffusion furnace.

4,510,673

LASER WRITTEN CHIP IDENTIFICATION METHOD

Alan J. Shils, Yorktown Heights, and John P. Ianni, Jr., Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1983, Ser. No. 507,311
Int. Cl.[3] H01L *21/66*
U.S. Cl. 29—574 10 Claims

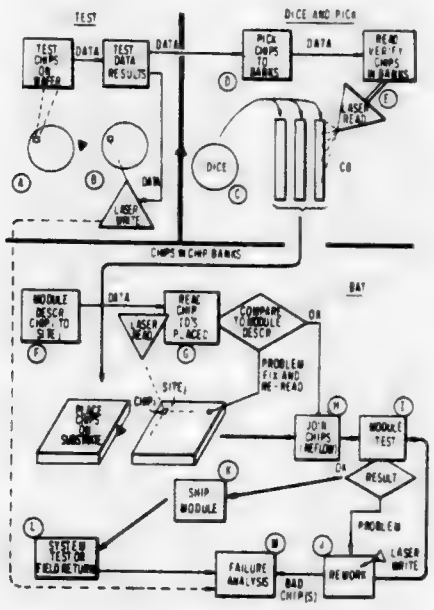
1. A method of producing a semiconductor device comprising the steps of:

providing a plurality of semiconductor chips on a wafer and testing said chips on said wafer to determine their useability;

writing on each chip identification data that may be read by a human or a machine;

dicing said wafer to separate said chips;

selecting and placing said chips into a storage device and reading said identification data to verify the proper location and orientation of said chips in said storage device;



removing said chips from said storage device and placing said chips on a substrate;

reading said identification data to verify the correct location and orientation of each chip on said substrate and, if incorrect, re-locating and/or re-orienting said chip; and

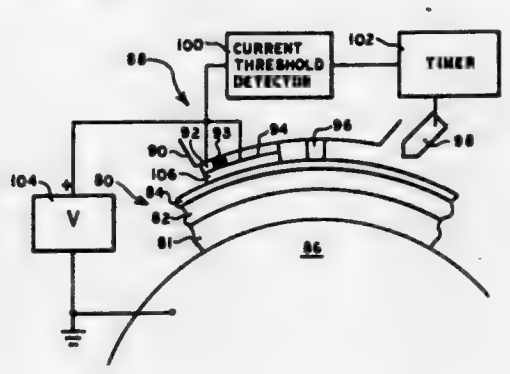
joining said chips to said substrate.

4,510,674

SYSTEM FOR ELIMINATING SHORT CIRCUIT CURRENT PATHS IN PHOTOVOLTAIC DEVICES

Masatsugu Izu, Southfield, and Vincent D. Cannella, Detroit, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Division of Ser. No. 435,890, Oct. 21, 1982, Pat. No. 4,451,970.
This application Mar. 23, 1984, Ser. No. 592,610
Int. Cl.[3] H01L *21/306, 31/18*
U.S. Cl. 29—574 19 Claims



1. A system for eliminating a short circuit current path through a photovoltaic device of the type including at least one active semiconductor region overlying a substrate and a layer of transparent conductive material overlying said at least one active region, said short circuit current path extending from the substrate through the semiconductor region to said transparent conductive layer, said system comprising means for detecting the location of said short circuit current path and means for increasing substantially the resistivity of said short circuit current path selectively at the interface between said transparent conductive material and said semiconductor region.

4,510,675

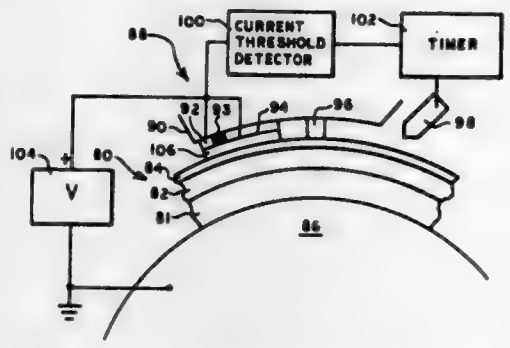
SYSTEM FOR ELIMINATING SHORT AND LATENT SHORT CIRCUIT CURRENT PATHS IN PHOTOVOLTAIC DEVICES

Masatsugu Izu, Birmingham, and Vincent D. Cannella, Detroit, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Division of Ser. No. 520,054, Aug. 3, 1983, Pat. No. 4,464,823, which is a continuation-in-part of Ser. No. 435,890, Oct. 21, 1982, Pat. No. 4,451,970. This application May 14, 1984, Ser. No. 610,198

Int. Cl.[3] H01L *31/18*

U.S. Cl. 29—574 16 Claims



1. A system for actuating potential short circuits and then eliminating the actuated and existing short circuit current paths through a photovoltaic device of the type including a semiconductor region overlying a substrate having an interface surface opposite said substrate and a layer of transparent conductive material overlying said semiconductor region interface surface, said potential and existing short circuit current paths extending from the substrate through the semiconductor region to said interface surface, said system comprising:

bias means for applying a bias to said device to convert latent potential short circuits to existing short circuit current paths;

detecting means for detecting the location of said short circuit current paths; and

resistivity increasing means for increasing substantially the resistivity of said short circuit current paths selectively at the interface surface of said semiconductor region.

4,510,676

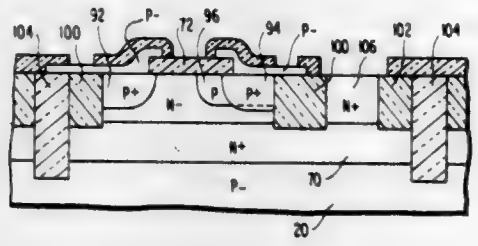
METHOD OF FABRICATING A LATERAL PNP TRANSISTOR

Narasipur G. Anantha; Santosh P. Gaur, both of Hopewell Junction; Yi-Shiou Huang, and Paul J. Tsang, both of Poughkeepsie, all of N.Y., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Dec. 6, 1983, Ser. No. 558,740

Int. Cl.[3] H01L *21/265*

U.S. Cl. 29—577 C 4 Claims



1. A method for making an asymmetrical lateral PNP transistor having a graded collector junction simultaneously with the process steps for making NPN transistors and P-type resistors, comprising the steps of:

forming a semiconducting region into which said PNP and NPN transistors and said resistors are to be formed, by forming said semiconducting region containing isolated N^+ regions and overlying N^- regions;

forming at least one P^- region, simultaneously with forming said resistors, one of said P^- layers being adjacent a portion of one of said N^- regions to define a collector-base junction of said PNP transistor;

forming a first P^+ region, simultaneously with forming bases of said NPN transistors, adjacent another portion of said N^- region to define an emitter-base junction of said PNP transistor;

forming a second P^+ region substantially to the depth of said P^- region, simultaneously with forming said first P^+ region, adjacent said P^- region for establishing a collector contact region of said PNP transistor; and

forming an N^+ region, simultaneously with forming collector reach-throughs of said PNP transistors, extending from the surface of said semiconducting region to said isolated N^+ region for establishing a base contact region of said PNP transistor.

4,510,677

CASES WITH FLAT TERMINAL LUGS FOR MEDIUM POWER SEMI-CONDUCTOR COMPONENTS AND A PROCESS FOR MANUFACTURING SAME

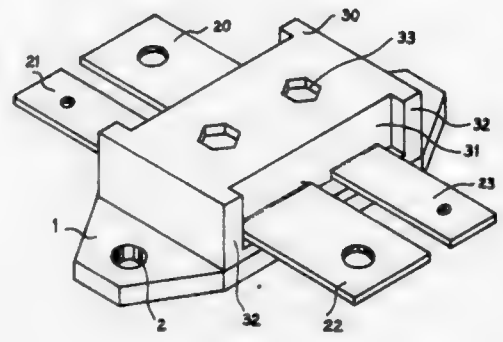
Yoland Collumeau, Paris, France, assignor to Thomson CSF, Paris, France

Filed Apr. 1, 1982, Ser. No. 364,207

Claims priority, application France, Apr. 8, 1981, 81 07035

Int. Cl.[3] H01L *23/10, 23/12, 23/02*

U.S. Cl. 29—588 5 Claims



1. A process for manufacturing a case for encapsulating power semiconductor components, said case including a metal base having two parallel sides, at least one semiconductor component mounted on said base, said component having connecting lugs in the form of small metal plates projecting beyond the edges of said parallel sides of the base, said process comprising the following steps:

molding plastic material onto the metal base allowing said plastic material to surround and encapsulate the semiconductor components and a proximal part of each lug, so as to form a block of plastic material having lateral walls from which protrudes a flat distal part of each lug, said block totally surrounding the lugs at the places where they protrude therefrom, said lateral walls of said block each having a lower portion below the lugs and an upper portion above the lugs, said lower portion being formed normal to the metal base and flush with said parallel sides of the metal base between the metal base and the lugs, said upper portion being recessed with respect to the edges of said metal base, said recess extending the entire height of the lateral walls above the lugs, and

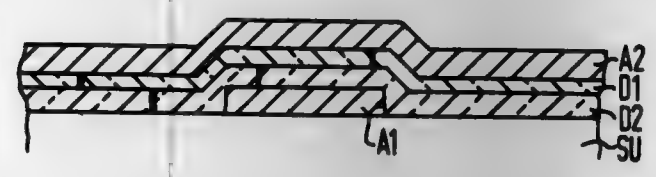
cutting and shaping said lugs in accordance with a chosen pattern subsequent to molding said block.

4,510,678

METHOD FOR MANUFACTURING A MONOLITHICALLY INTEGRABLE CIRCUIT WITH A MULTILAYER WIRING STRUCTURE

Harald Eggers, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,144
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228399
Int. Cl.[3] H01L *21/90, 21/94*
U.S. Cl. 29—590 5 Claims



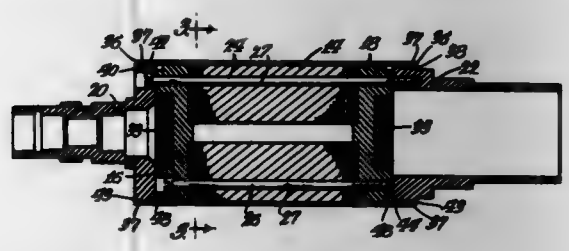
1. Method of manufacturing a monolithically integrable circuit, which comprises depositing an SiO_2 layer on the surface of a semiconductor substrate containing p-n junctions of the circuit, at least partially covering the SiO_2 layer with a first metallization supported by the SiO_2 layer and containing conductor runs and electrodes capacitively coupled to the surface of the semiconductor substrate through the SiO_2 layer, directly covering the first metallization with a sputtered-on SiO_2 insulating layer after the first metallization is completed, covering the sputtered-on SiO_2 layer with a further inorganic insulating layer generated by the plasma method, structuring the further inorganic insulating layer and the sputtered-on SiO_2 layer, forming cutouts in the further inorganic insulating layer and the sputtered-on SiO_2 layer above intended contact locations of the first metallization, applying a second metallization to the surface of the further inorganic insulating layer after completing the first metallization, the sputtered-on SiO_2 layer and the further inorganic insulating layer, bringing the second metallization into electrical contact with the contact locations of the first metallization through the cutouts, and forming the second metallization into conductor runs.

4,510,679

METHOD OF REFURBISHING A HIGH SPEED ROTOR

Mohd A. Aleem, Roscoe; James L. Lobsinger, and Jerry D. Wefel, both of Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 17, 1983, Ser. No. 523,923
Int. Cl.[3] H02K *15/14*
U.S. Cl. 29—598 10 Claims



1. A method of removing a protective can disposed over a core subassembly having a peripheral outer surface and a rotational axis comprising the steps of:

providing at least one relief in the peripheral outer surface of the core subassembly;

cutting the can along the relief to define at least one access section;

said relief permitting extension of a cutting means entirely through the can and accommodating the cutting means so that the cutting means will not damage the core subassembly; and

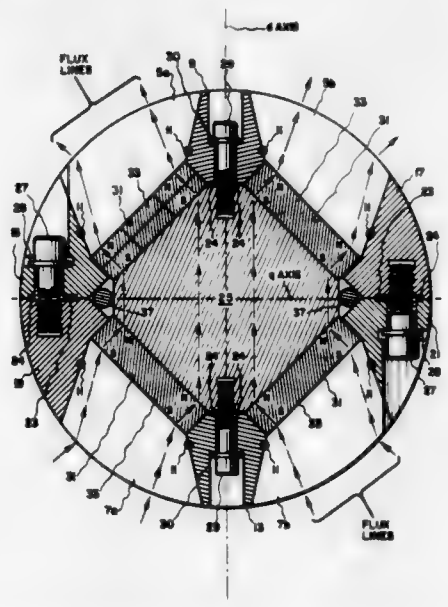
removing the access section to expose the core subassembly so that the core subassembly can be repaired or refurbished.

4,510,680

METHOD OF MAKING A PERMANENT MAGNET ROTOR

Timothy J. E. Miller, Schenectady; Donald W. Jones, Burnt Hills, and Gary L. Kalan, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 453,666, Dec. 27, 1982, Pat. No. 4,480,207.
This application Dec. 5, 1983, Ser. No. 558,211
Int. Cl.[3] H02K *15/02*
U.S. Cl. 29—598 6 Claims



1. A method of assembling a permanent magnet rotor comprising the steps of:

rigidly securing a central nonmagnetic insert between two arcuately shaped sections of a north pole piece;

rigidly securing another central nonmagnetic insert between two arcuately shaped sections of a south pole piece;

rigidly securing a nonmagnetic segment to each end of each of said north and south pole piece sections not secured to said central inserts, respectively, to form two half rings;

surrounding the central portion of a shaft of magnetic material with the two half rings, the central portion of the shaft having a substantially rhombic cross section, one corner of said substantially rhombic shaped shaft central portion adjacent one central nonmagnetic insert and the diagonally opposite corner of said shaft central portion adjacent the other central nonmagnetic insert;

adjusting the clearance between said shaft and said central inserts to a predetermined value and adjusting the clearance between adjacent nonmagnetic segments to a predetermined value by machining or shimming the junction of said nonmagnetic segments;

joining said ring halves together;

affixing said central inserts to said shaft;

inserting magnetized permanent magnets into axially extending apertures formed between said shaft faces and the inner faces of said half rings; and

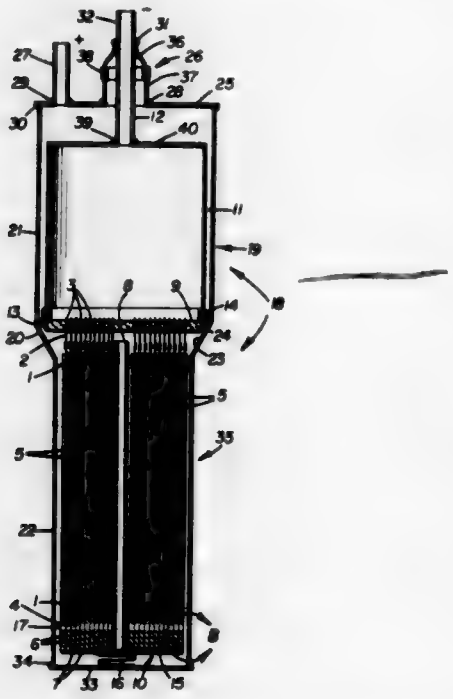
securing end rings at either axial end of said pole pieces to hold said magnets in their apertures.

4,510,681

HIGH TEMPERATURE BATTERY CELL COMPRISING STRESS-FREE HOLLOW FIBER BUNDLE

Joginder N. Anand, Clayton; Timothy T. Revak, and Frank J. Rossini, both of Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 939,156, Sep. 1, 1978, Pat. No. 4,332,868.
This application Jan. 11, 1982, Ser. No. 338,759
Int. Cl.[3] H01M *26/02*
U.S. Cl. 29—623.1 4 Claims



1. A process for fabricating an essentially stress-free battery cell comprising a closed casing having two external electrical terminals and an inner assembly disposed within said casing and electrically connected to said terminals,

said process comprising steps I, II and III as defined below, step I being carried out and then one of steps II and III, followed by the other;

I. providing, as said assembly, an assembly which includes (1) a plurality of hollow fibers adapted to function as the electrolyte/separator in a battery cell and (2) an element incorporated in and extending from said assembly and engaged with said casing to provide the sole support and positioning of the assembly within the casing so that the assembly does not otherwise contact the casing in a manner which imposes a potentially damaging stress on any part of the assembly or which will result in such stressing if thermally induced dimensional changes occur in the assembly;

II. so engaging said element with said casing, and

III. forming a separate, electrical connection from each of said terminals to said assembly, at least one of the connections comprising a limp link and each terminal connected to said assembly by a limp link not being connected by any non-limp member to said assembly.

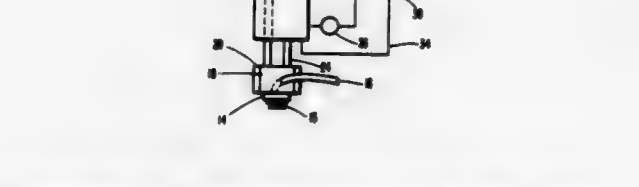
4,510,682

APPARATUS AND METHOD FOR ASSEMBLING BATTERY CELL ELEMENTS

Anthony Sabatino, St. Paul; Edward G. Schaumburg, Askov; Peter A. Recht, Minneapolis; Douglas J. Olszewski, Inver Grove Heights, and Richard T. Strait, St. Paul, all of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed May 24, 1982, Ser. No. 381,227
Int. Cl.[3] H01M *6/00;* B23P *19/00*
U.S. Cl. 29—623.1 59 Claims

1. A method of assembling battery cell elements comprising the steps of positioning a first set of electrode plates of common polarity in a predetermined longitudinal array, positioning an elongated separator sheet over said first set of plates without affixing said plates to said separator sheet with permanent attaching means, positioning a second set of electrode plates of common polarity opposite to that of said first set onto said separator sheet in a predetermined longitudinal array without affixing said second set of plates to said separator sheet with permanent attaching means, and folding said separator sheet



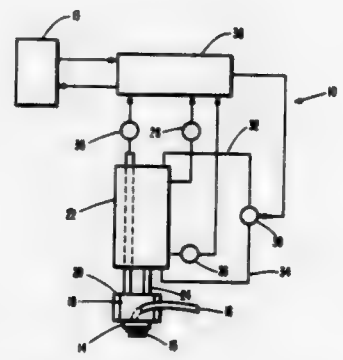
into accordion folds without said first and second sets of plates being affixed to said separator sheet with permanent attaching means and with the plates of said first set all occupying folds on one side of said separator sheet and the plates of said second set all occupying folds on the other side of said sheet.

4,510,683

FORCE ASSEMBLER APPARATUS FOR ROBOTS

George A. Fedde, Perkiomenville, and Kenneth H. Kirk, Harleysville, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 27, 1983, Ser. No. 546,148
Int. Cl.[3] B23P *21/00;* B23Q *15/00*
U.S. Cl. 29—701 6 Claims



1. Force assembler apparatus for robots comprising:

a movable slide member;

a bi-directional actuator connected to the slide member;

microprocessor means programmable for controlling insertion force independent of distance moved by the slide member;

position indicator means connected to the slide member and coupled to send slide member distance signals and velocity information to the microprocessor;

pressure transducer means connected to the bi-directional actuator and coupled for sending signals to the microprocessor; and

supply valve means connected to the bi-directional actuator and coupled for receiving signals from the microprocessor in response to the position indicator signals and pressure transducer signals.

4,510,684

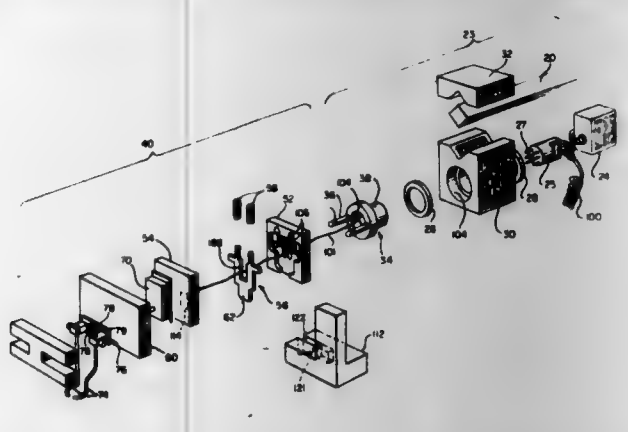
ROBOT TOOL SYSTEM

Burleigh M. Hutchins, Hopkinton, and Louis Abrahams, Worcester, both of Mass., assignors to Zymark Corporation, Hopkinton, Mass.

Filed Dec. 8, 1981, Ser. No. 328,727
Int. Cl.[3] B23P *11/00*
U.S. Cl. 29—703 6 Claims

1. A tool assembly apparatus for use in connection with a robot, said tool comprising (1) a robot connector subassembly permanently attached to an arm of said robot and (2) a tool; said tool assembly comprising means to automatically connect

and disconnect, both mechanically and electrically, said tool from said permanently attached subassembly in response to relative movement of said tool and said robot arm, and code



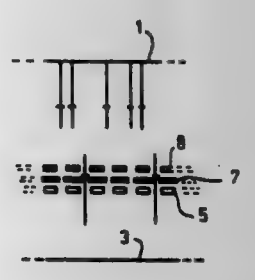
means positioned on said tool to communicate information specific to its identity and condition from said tool, through said robot.

4,510,685

METHOD OF ASSEMBLING MAGNETIC PINS INTO PRINTED CIRCUIT BOARDS

Richard Chu, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1983, Ser. No. 563,328
Int. Cl.[3] H05K *3/30*
U.S. Cl. 29—837 6 Claims



1. A method of assembling asymmetrically preswaged pins into a pattern of perforations in a printed circuit board, each perforation in the printed circuit board being of such a size that the shank of a pin is a free fit therein but the swage of the pin will not pass into the perforation, the method comprising the successive steps of:

(a) providing a sheet of magnetic material having a pattern of perforations corresponding to the pattern of perforations in the printed circuit board, each perforation in the sheet of magnetic material allowing free passage of the shank of a pin therein;

(b) placing the printed circuit board over the perforated sheet of magnetic material so that the perforations in the printed circuit board are aligned with the perforations in the sheet of magnetic material, the distance between the lower surface of the sheet of magnetic material and the upper surface of the printed circuit board being arranged to be substantially equal to or greater than the distance between the swage on each pin and the end of the pin closer to the swage and less than the distance between the swage on each pin and the end of the pin further from the swage;

(c) placing on top of said circuit board a template provided with a pattern of perforations corresponding to a particular pin pattern for said circuit board with the perforations in said template aligned with those in said circuit board;

(d) scattering pins over the template;

(e) generating a first magnetic field generally perpendicular to the printed circuit board so that the pins are aligned with the lines of force of the magnetic field, the strength of the first magnetic field being sufficient to align the pins but insufficient to levitate the pins so that the pins drop into the perforations in the printed circuit board;

(f) generating a second magnetic field generally perpendicular to the printed circuit board of such a strength and direction that the pins which are oriented so that their shanks do not extend beyond the lower surface of the sheet of magnetic material are ejected from the printed circuit board;

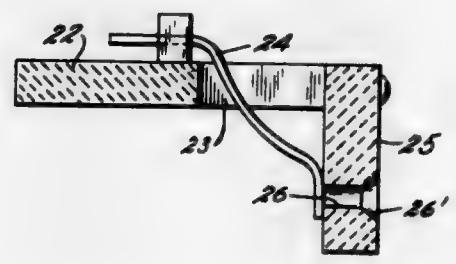
and repeating steps (e) and (f) until there is in essentially each of the perforations in the printed circuit board corresponding to the perforations in the perforation pattern in the template, a pin oriented so that its shank extends beyond the lower surface of the sheet of magnetic material.

4,510,686

METHOD AND APPARATUS FOR STRAIGHTENING AND ALIGNING LEADS AND TESTING ELECTRICAL FUNCTIONING OF COMPONENTS

James E. Foster, Endwell, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,700
Int. Cl.[3] H05K *3/30*; B23P *19/00*; B21F *1/07*
U.S. Cl. 29—838 14 Claims



1. An automated method of sequentially handling electrical components of the type having a body and a single row of in-line leads projecting from said body, each of said leads having a longitudinal axis said method comprising the steps for each of said components of:

mechanically straightening each of said leads which is bent along said axis while aligning said leads substantially parallel to each other in a row; and

testing electrical functioning of said component substantially simultaneously with said straightening and aligning.

10. An apparatus for performing an automated method of sequentially handling electrical components having a body and leads projecting from said body, each of said leads having a lead axis, said apparatus comprising:

means for straightening and aligning said leads substantially parallel to each other each of said leads which are bent along each axis; and

means, operatively associated with said straightening and aligning means, for testing electrical functioning of said component substantially simultaneously with said straightening and aligning.

4,510,687

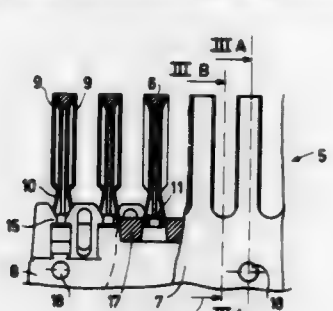
SHAVING APPARATUS

Gerrit J. Groothuis; Atze de Haan; Hendrik Poel; Eduard W. Tietjens, and Jochem J. de Vries, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,425
Claims priority, application Netherlands, Jan. 13, 1982, 8200101
Int. Cl.[3] B26B *19/42*
U.S. Cl. 30—34.2 2 Claims

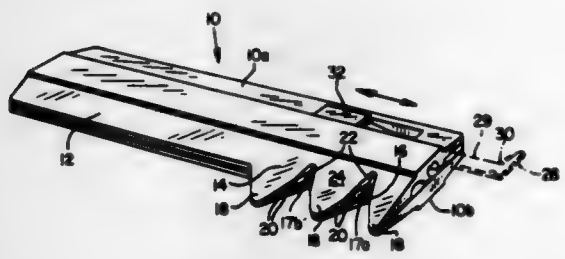
1. A shaving apparatus comprising a shear plate with hair-entry apertures; a cutting unit associated with and reciprocatory relative to the shear plate, said cutting unit including a frame; cutters extending from said frame toward the shear plate, each cutter having a trapezoidal cross section and being

in contact along its base with the shear plate; two hair-pulling blades respectively associated with and movable relative to the opposite sloping sides of each cutter, each hair-pulling blade normally being in contact at one end with the shear plate; and a pair of resilient arms connecting the respective other ends of



the hair-pulling blades to the frame, said resilient arms extending transversely of the direction of movement of the cutting unit and being arranged substantially in line with each other, the ends of the arms nearer one another being supported on a central portion of the frame, the other end of each arm engaging a hook-shaped portion of the frame.

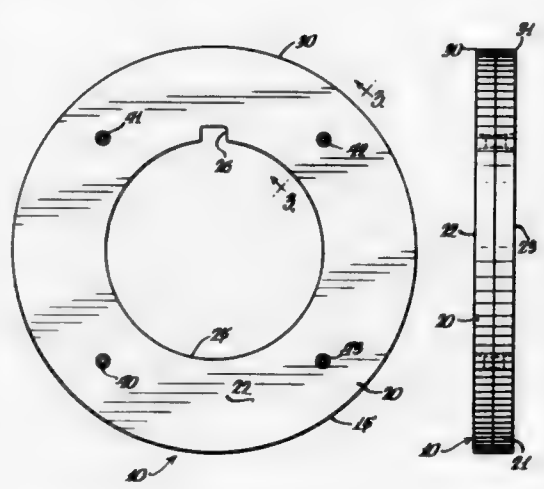
4,510,688
SEAM RIPPER
Leola E. White, 6811 SW. Florence La., Portland, Oreg. 97223
Filed Jul. 8, 1983, Ser. No. 511,764
Int. Cl.[3] B26B *27/00*
U.S. Cl. 30—294 6 Claims



1. A cutting tool comprising a holder and a blade, the forward edge of said holder having at least one V-shaped notch for exposing a portion of the cutting edge of said blade, said blade edge extending across said notch perpendicular to a line bisecting its vertex and deeply recessed within said notch, said holder having a guide portion with upper and lower substantially planar surfaces obliquely disposed with respect to the plane of said blade, wherein the planes of said surfaces converge in a line disposed transversely forwardly of the blade so that said surfaces form a wedge to separate materials sewn together by a seam prior to engagement of said seam by said blade when said tool is moved along said seam with said blade oriented substantially perpendicular thereto, wherein said V-shaped notch includes a pair of inner walls whose planes intersect with the planes of said upper and lower holder surfaces, further including a plurality of beveled surfaces extending along a portion of the juncture between said upper and lower surfaces and said inner walls adjacent the vertex of said notch.

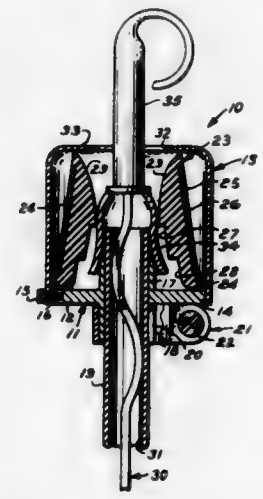
4,510,689
SIDE TRIMMER KNIFE
Julius Lorince, Crete, Ill., assignor to Modern Machine and Grinding, Inc., Dyer, Ind.
Filed Jun. 23, 1983, Ser. No. 507,280
Int. Cl.[3] B26B *25/00*
U.S. Cl. 30—347 8 Claims

1. A side trimmer knife having a body with a pair of opposite exposed faces comprising, two juxtaposed cylindrical disks each having one of said faces, a cutting edge defined by the periphery of at least one of said faces, aligned openings in said disks, and threaded means in said openings for locking said disks together and maintaining said disks in locked relation



after repeated grinding of a body face, to renew the peripheral cutting edge.

4,510,690
DIPSTICK GUIDE DEVICE FOR AUTOMOTIVE VEHICLES
Anthony R. Attler, 74 Price St., Dobbs Ferry, N.Y. 10522
Filed Feb. 8, 1984, Ser. No. 577,983
Int. Cl.[3] G01F *23/04*
U.S. Cl. 33—126.7 R 8 Claims

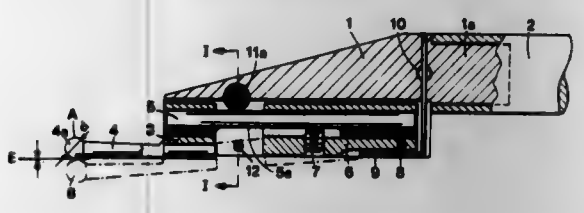


1. A dipstick guide device for automotive vehicles, comprising, a bottom sleeve for securing said device to a dipstick tube of an engine, a housing received on said sleeve, a split sleeve received in said housing, providing quick and smooth insertion of said dipstick into said dipstick tube, and a clamp received on said bottom sleeve, for retaining said guide device to said dipstick tube.

4,510,691
DEVICE FOR MEASURING DISTANCES BETWEEN TWO OPPOSITE SURFACES
Hans Meyer, Rue du Bugnon 24, 1020 Renens, Switzerland
Filed Oct. 3, 1983, Ser. No. 538,518
Claims priority, application Switzerland, Oct. 8, 1982, 5939/82
Int. Cl.[3] G01B *5/02*
U.S. Cl. 33—169 R 6 Claims

1. A measuring device, especially for measuring the distance between opposite surfaces, comprising a body in which a lever provided with a feeler head is pivotably supported, characterized in that the angular movement of said lever is limited by

stops positioned so that the body always takes the same position in each of two opposed measuring directions on alternate



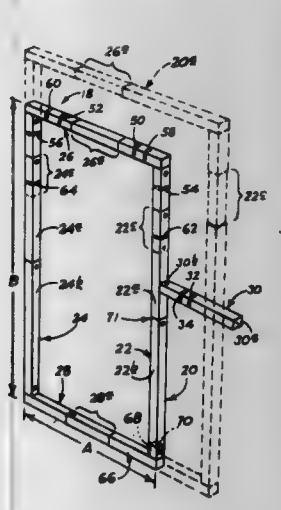
measuring of two surfaces facing in opposite directions and lying in the same plane.

4,510,692

COMBINED BATTERS' AND CATCHER'S BOX MARKING FRAME

Duane J. Overholser, 427 NE. Yamhill, and Craig M. Prough, 359 NE. Elm, both of Sheridan, Oreg. 97378

Filed Mar. 18, 1983, Ser. No. 476,823
Int. Cl.[3] A63C *19/06*
U.S. Cl. 33—174 G 16 Claims



1. A template usable for marking each of two batter's boxes and a catcher's box with reference to a home plate of a ball diamond, where such boxes have predetermined widths and lengths as set by regulations of a particular league and where each side of such catcher's box contacts an end of a batter's box, said template comprising

a rectangular frame having a pair of spaced-apart parallel sides and a pair of spaced-apart parallel ends, said frame sides and ends being structured with dimensions having a preselected relationship to those of a batter's box and a catcher's box,

means for positioning said frame in a regulation position relative to a home plate for marking a batter's box, and

indicia formed on said frame for referencing said frame relative to at least one first-marked batter's box for marking a catcher's box in a regulation position.

4,510,693

PROBE WITH STYLUS ADJUSTMENT

Robert F. Cusack, Grosse Pointe, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 388,187, Jun. 14, 1982, Pat. No. 4,451,987. This application Jun. 14, 1983, Ser. No. 504,149
Int. Cl.[3] G01B *7/02*
U.S. Cl. 33—174 L 18 Claims

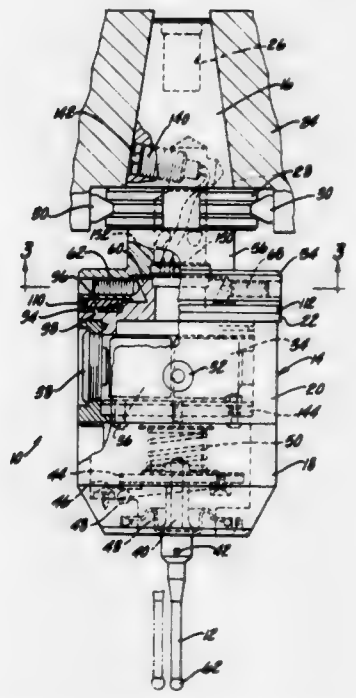
1. In a probe assembly including an adapter detachably connected to a probe housing having a stylus projecting from one end thereof for contacting an object, the improvement comprising:

means defining a well of a given radial dimension in an end face of the adapter;

the opposite end of the housing having a member projecting therefrom with a radial dimension less than that of the well and being insertable therein; and

radially adjustable means for contacting sides of said member and radially shifting said housing to position the stylus at a desired location relative to a major axis of the adapter.

16. In a probe assembly including an adapter detachably connected to a probe housing having a stylus projecting from one end thereof for contacting an object, the improvement comprising:



means for engaging mutually opposing end faces of the adapter and probe housing, operative to adjust the tilt of the probe housing to thereby position the longitudinal axis of the stylus at a desired orientation, said means including a pair of beveled washers having nonparallel surfaces mounted between the opposing end faces of the probe housing and adapter, said washers being adapted to be rotated with respect to each other to effect adjustment of the tilt of the stylus.

4,510,694

VEHICLE ALIGNMENT APPARATUS AND METHODS

William A. Boyce, Huntington Beach, Calif., assignor to Macaster Controls, Inc., Huntington Beach, Calif.

Continuation-in-part of Ser. No. 337,252, Jan. 1, 1982, Pat. No. 4,433,489. This application Dec. 27, 1983, Ser. No. 566,632
Int. Cl.[3] G01B *5/255*
U.S. Cl. 33—203.18 15 Claims



1. Wheel alignment measuring apparatus comprising:

a pair of frames, each adapted for engaging a sidewall of a tire; and,

biasing means for engaging said frames with the tire sidewalls of coaxially mounted tires while the coaxially

mounted tires are supporting the vehicle on a road surface or the like,

said biasing means including a spring and an eleastic member, said spring and elastic member being connected in parallel between the frames.

4,510,695

METHOD OF CALIBRATION FOR THE MEASURING OF OBJECTS BY PAIRS OF THEODOLITES

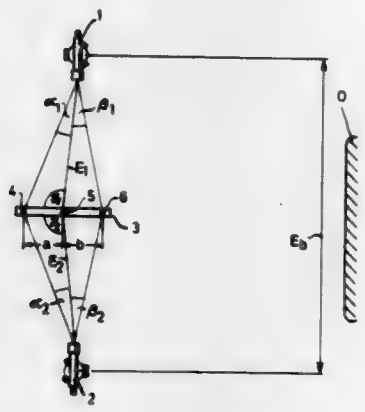
Helmut Leitz, Konigsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 480,810

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3215038

Int. Cl.³ G01C *15/02*

U.S. Cl. 33—293 **10 Claims**



4. Apparatus for determining the base length (E_b) between two angle-measuring instruments used for triangulation measurement of one or more points offset from the geometric alignment of the angle-measuring instruments, said apparatus comprising a calibrating device mounting at least three fixedly spaced and aligned optical targets in the form of balls on a single fixed axis of alignment, said targets being adapted to be sightable by each of the respective angle-measuring instruments when said calibrating device is fixedly positioned at a location generally intermediate the angle-measuring instruments, whereby said balls may be correctly sighted from each of the respective angle-measuring instruments, within a range of elevation differences between sighting and calibration locations, and regardless of whether the calibration device is above or below the elevation of either of the angle-measuring instruments.

4,510,696

SURVEYING OF BOREHOLES USING SHORTENED NON-MAGNETIC COLLARS

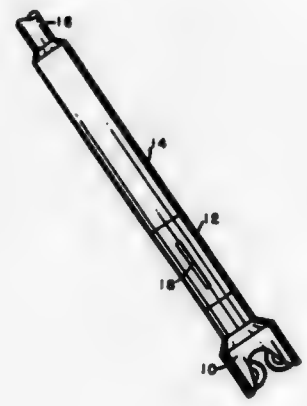
Richard F. Roesler, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

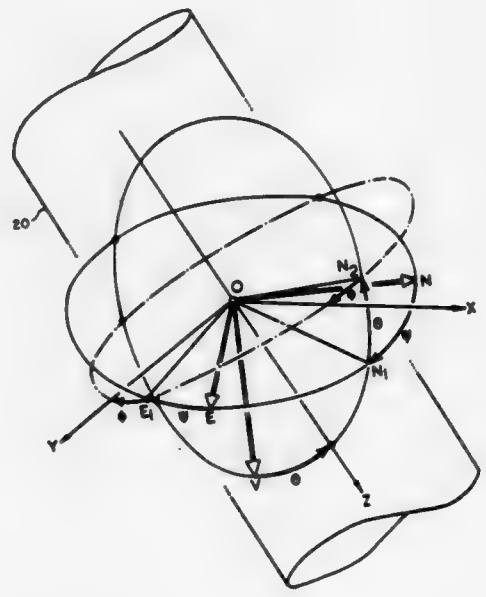
Filed Jul. 20, 1983, Ser. No. 515,716

Int. Cl.³ E21B *47/022*

U.S. Cl. 33—304 **4 Claims**

1. A system for determining the orientation of a downhole instrument positioned in a drill collar in a borehole comprising: a means for determining inclination angle of the instrument at a location thereof in said borehole; a means for determining the highside angle of said instrument at said location; a means for determining the true horizontal and vertical components of the earth's magnetic field at the location of the borehole; a means for determining components of the local magnetic field perpendicular to the direction of a primary axis of the instrument aligned with the borehole at said location, said drill collar being constructed of non-magnetic material, and having a minimum length, L, determined from the equation:





$$L = 2\left[\frac{(|Pu| + |PL|)2d}{4\pi\ Bn\ \delta\psi}\right]^{\frac{1}{3}}$$

where P_u is the magnetic pole created by the magnetic material above the sensor, P_L is the magnetic pole created by the magnetic material below the sensor, d is the displacement of the poles P_u and P_L from the axis of the instrument, B_n is the North component of the earth's magnetic field at the tinstrument, and $\delta\psi$ is the error in the azimuth angle.

4,510,697

MICROWAVE CLOTHES DRYER

Gary Beasley, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

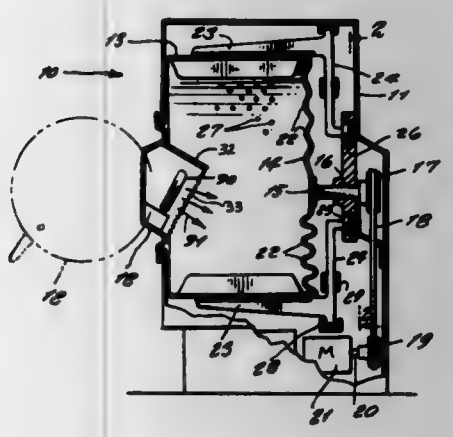
Filed Jan. 19, 1983, Ser. No. 459,366

Int. Cl.³ F26B *23/04*

U.S. Cl. 34—1 **3 Claims**

1. A microwave clothes dryer, comprising in combination,a housing having a door on its front side, a flexible tumbler secured to a shaft inside said housing, said tumbler being formed of material allowing for shape change of said tumbler as it rotates and a microwave heater on an inner side of said door for radiating microwaves toward clothes inside said umbler, said shaft being rotatably driven by a motor, wherein

said tumbler includes a flexible rear wall and a flexible cylindrical side wall whereby said cylindrical side wall is attached to



transverse ribs integral with arms that transcribe an elliptical course, said shaft being secured to said rear wall.

4,510,698

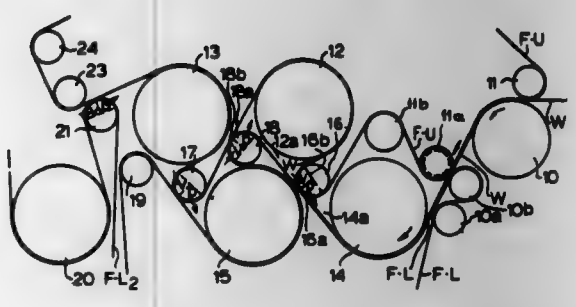
DRYER FELT RUN

Donald A. Ely, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 426,609, Sep. 29, 1982, Pat. No. 4,485,567. This application Dec. 7, 1982, Ser. No. 447,701

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—117 **9 Claims**



1. A paper or board dryer for the removal of liquid from a traveling web comprising in combination:

a plurality of rotatably mounted upper dryer drums adapted to be heated to carry a web and evaporate moisture therefrom;

a plurality of rotatably mounted lower dryer drums adapted to be heated to carry the web and evaporate moisture therefrom;

said drums positioned to carry the web in a sinuous path passing successively between the upper and lower drums with the web wrapping the upper and lower surfaces of the drums respectively;

upper and lower looped felts formed of a pervious material accommodating the escape of water vapor from the web and wrapping the web on the upper and lower surfaces of the upper and lower drums respectively;

upper and lower felt rolls for the upper and lower felts respectively with one felt roll between each pair of adjacent drums for the upper drums and for the lower drums;

said lower felt rolls positioned to carry the portion of the upper felt between the adjacent lower drums into the spaces between the lower drums;

said upper felt rolls positioned to carry the portions of the lower felt between adjacent upper drums into the spaces between said upper drums;

said felt rolls being formed of perforate roll shells;

glands inside of said roll shells dividing the shells into a first portion exposed to the oncoming web and a second portion exposed to the offrunning web;

pressure means connected to one of said portions of said glands; and

vacuum means connected to the other of said portions of said glands so that the web is subjected to pressure and vacuum in its travel across the felt roll and the spaces between the drums and the felt rolls are subjected to pressure and vacuum;

said felt rolls and drums positioned so that the felt and web runs are arranged to eliminate any open unsupported web runs and the web is automatically transferred between top and bottom dryer felts without subjecting the web to an open unsupported web run.

4,510,699

INSOLE

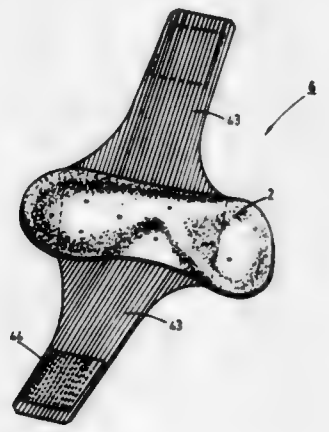
Toshiro Nakamura, 132, Omori-cho-ka, Oda-shi, Shimane 694-03, and Tetsuya Watanabe, Oda, both of Japan, assignors to Toshiro Nakamura, Oda, Japan

Filed Oct. 28, 1982, Ser. No. 437,300

Claims priority, application Japan, Oct. 26, 1981, 56-195741[U]; Oct. 29, 1981, 56-162981[U]; Mar. 30, 1982, 57-52709

Int. Cl.³ A43B *13/40, 13/38*

U.S. Cl. 36—43 **7 Claims**



1. An insole of wedge-shaped, irregular or curved section which insole comprises:

inorganic filler in the range of five to seventy-five parts;

hydrousilicate powder in the range of five to thirty parts;

heat vulcanized silicone rubber of substantially one hundred parts; and

silicone rubber vulcanizing agent of substantially ten parts.

4,510,700

VARIABLY ADJUSTABLE SHOE INSERTS

Dennis N. Brown, 1091 Fir Ave., Blaine, Wash. 98230

Filed Sep. 30, 1982, Ser. No. 431,291

Int. Cl.³ A43B *13/38, 13/40*

U.S. Cl. 36—44 **7 Claims**





1. An orthotic appliance adapted to be placed as an insert

within or form a part of a boot, shoe, or the like comprising in combination:

an initial blank having an upper surface that generally follows the contour of the plantar surface of a foot,

a bottom surface of said blank having a zone of disparate resiliency relative to areas adjacent said zone,

cap means underlying said bottom surface,

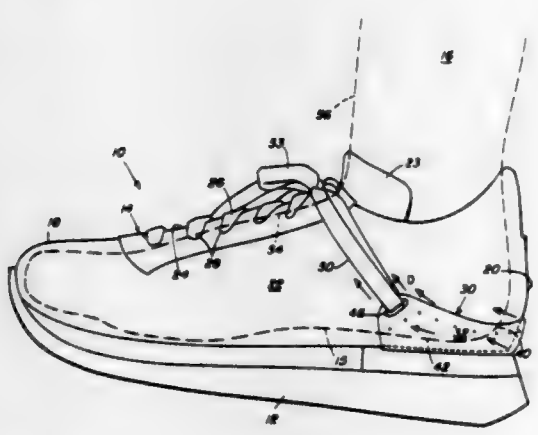
and means for interfitting said cap to said blank wherein said interfitting means comprises a peripheral wall extending up from said cap engaging side walls of said blank, said side walls including a stepped in shelf portion complemental to the thickness of said perpheral wall so that the outer side edges of said appliance is substantially smooth.

4,510,701

ATHLETIC SHOE AND COUNTER

Avi Schour, and Igal Bloch, both of Boca Raton, Fla., assignors to H. H. Brown Shoe Co., Inc., New York, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,614
Int. Cl.[3] A43B *13/41*
U.S. Cl. 36—68 **6 Claims**



1. In a laced athletic shoe comprising

a sole, and

a shoe upper connected to said sole and adapted to receive and confine a wearer's foot,

said upper having a toe portion, a heel portion and an intermediate connecting portion therebetween,

said intermediate connecting portion including a U-shaped opening extending rearwardly from proximate the toe portion secured by laces extending between lace-engaging eyelets along the periphery of said opening,

said heel portion including a counter having at least a rearward portion and forwardly extending side portions, and

said heel portion further including a pair of side eyelets affixed to the forwardly extending side portions of said counter for receiving the end portion of said laces therethrough,

whereby when said laces are drawn tightly through said eyelets, said intermediate connecting portion and said heel portion in the vicinity of said side eyelets are drawn close to the wearer's foot,

the improvement wherein

said counter is a rigid external counter of cup-form configuration, including a base portion extending from said rearward and forwardly extending side portions beneath the wearer's foot above the sole, and said heel portion side eyelets are defined in the forwardly extending surfaces of said external cup-form counter,

the height of each said side portion of said external counter above the sole in the region of the respective side eyelet being greater than the height of said side portion at a point more remote from said eyelet,

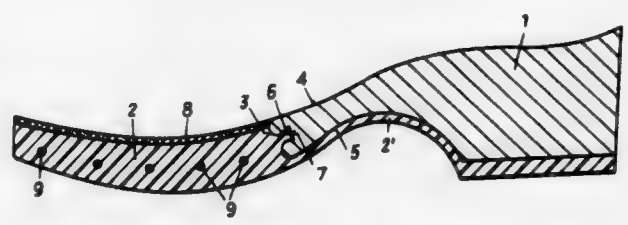
whereby when said laces are drawn tightly, said rigid cup-form counter is drawn against the immediate bottom rear portion of the wearer's foot and the rearward and upwardly extending side portions of said counter are drawn against the rear and side portions of the wearer's foot, all in the direction of the laced upper intermediate connecting portion of the shoe to snugly grip the shoe about opposed sides of the wearer's foot to eliminate movement of said foot within said shoe.

4,510,702

SOLE FOR SHOES AND PROCESS FOR PRODUCING SAID SOLE

Johann Ehrlich, Jr., Krems/Weinzierl, Austria, assignor to Patoflex Corporation, Cave Creek, Ariz.

Filed Jul. 1, 1981, Ser. No. 279,237
Claims priority, application Austria, Jul. 1, 1980, 3443/80
Int. Cl.[3] A43B *13/08, 13/14*
U.S. Cl. 36—86 **25 Claims**



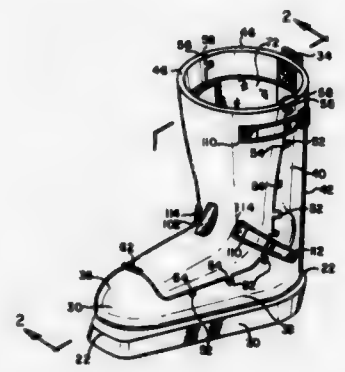
1. A sole for shoes and the like comprising a substantially rigid rear portion, a flexible front portion connected to said rear portion approximately at the area of the ball of the foot, and a protrusion which integrally extends from the bottom side of said front portion along at least a portion of the bottom side of said rear portion, said rear portion comprising a substantially rigid material having a porous cellular structure and having an at least partially open porous cellular structure in at least the generally forwardly facing portion of the area of interconnection thereof to said front portion, said front portion and said protrusion comprising a flexible synthetic plastic material, and both being connected to said rear portion by foaming.

4,510,703

SKI BOOT

Harrison Eiteljorg, 142 Grays La., Haverford, Pa. 19041

Filed Dec. 17, 1982, Ser. No. 450,764
Int. Cl.[3] A43B *5/04*
U.S. Cl. 36—119 **10 Claims**



1. A boot for wear by a user while skiing, comprising:

a sole member for attachment to a ski binding;

a first half shell rigidly affixed to the sole member and forming a toe, sides and a back for the boot, said first half shell extending in use under and alongside the user's foot and lower leg;

a second half shell, mountable on the first half shell, and extending in use over and in front of the user's foot and lower leg, the first and second half shells being rigidly engageable along complementary mating edges thereof, the first and second half shells together enclosing the user's foot and lower leg when in use;

a first means including a belt attached to the sole member for tightly affixing the user's foot to the sole member at the instep; and,

a second means including a belt attached to the first half shell at a point above the sole member, for tightly affixing the user's lower leg at the shin to the first half shell at said point, said first and second means affixing the user's foot to the first half shell and spacing the user's lower leg from the second half shell.

4,510,704

BOOT OR SHOE INCORPORATING PEDOMETER OR THE LIKE

William N. Johnson, Barnet House, Totteridge, London N.20, England

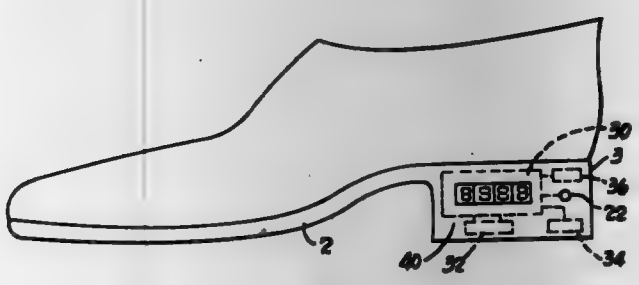
PCT No. PCT/GB82/00119, § 371 Date Dec. 2, 1982, § 102(e) Date Dec. 2, 1982, PCT Pub. No. WO82/03753, PCT Pub. Date Nov. 11, 1982

PCT Filed Apr. 23, 1982, Ser. No. 451,166

Claims priority, application United Kingdom, Apr. 25, 1981, 8112807; Sep. 28, 1981, 8129212; Apr. 7, 1982, 8210351

Int. Cl.[3] A43B *3/00;* G01C *22/00*

U.S. Cl. 36—136 8 Claims



1. A boot or shoe incorporating an electronic transducer for detecting when a step is made with the foot wearing the boot or shoe by the wearer thereof, said transducer being arranged to provide an electrical signal for each step detected, the boot or shoe further incorporating electrical circuitry embodying electronic counting and processing means for counting such signals, and electrical or electronic display means operable by said counting and processing means to display numerical quantities derived thereby, said display means including a display element visible from the exterior of the shoe through a transparent window, and user-operable selection means operable to control the operation of said counting and processing means and the operation of the display means by the counting and processing means, said electrical circuitry further including electronic or electrical timing means connected with said counting and processing means, the counting and processing means being operable to record elapsed time as well as the number of signals received from said step detecting means, the counting and processing means being operable by said user-operable selection means to cause said display means to display optionally time or distance-related data.

4,510,705

WATER-BOTTOM RUBBLES LEVELING APPARATUS

Yoshitane Ishino, Odawara; Toshihisa Naruse, and Toshiyuki Sawano, both of Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 563,731

Int. Cl.[3] E02F *5/00*

U.S. Cl. 37—54 7 Claims

1. A water-bottom rubbles leveling apparatus, comprising:

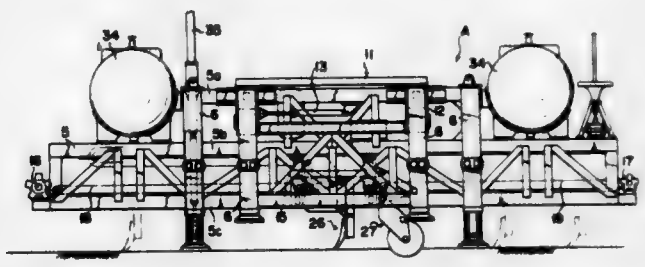
a main body frame having a plurality of telescopic legs mounted thereto;

a first movable frame mounted on said main body frame for movement in the longitudinal direction of said main body frame;

a second movable frame mounted on said first movable frame for movement in the lateral direction of said main body frame, said second movable frame having a plurality of telescopic legs mounted thereto;

means for effecting movement of said first movable frame relative to said main body frame;

means for effecting movement of said second movable frame relative to said first movable frame;



means for extending and retracting said telescopic legs of said main body frame and said second movable frame;

a carrier mounted to said main body frame for movement in the longitudinal direction of said main body frame;

means for effecting movement of said carrier; and

a rake mounted to said carrier projecting downwardly therefrom.

4,510,706

CUTTING-TOOTH ANCHOR FOR SUCTION DREDGE AND METHOD OF MAKING SAME

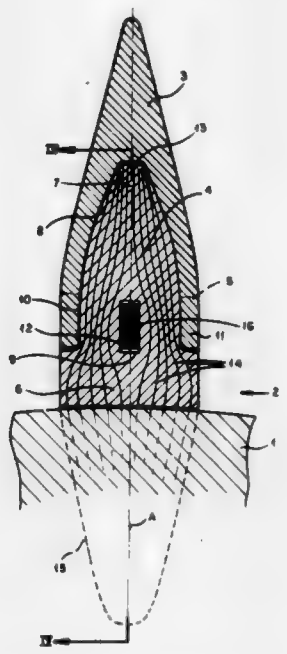
Rütger Berchem, Gelsenkirchen, Fed. Rep. of Germany, assignor to Berchem & Schaberg GmbH, Gelsenkirchen, Fed. Rep. of Germany

Filed Jan. 6, 1984, Ser. No. 568,607

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1983, 3300467

Int. Cl.[3] E02F *9/28*

U.S. Cl. 37—64 6 Claims

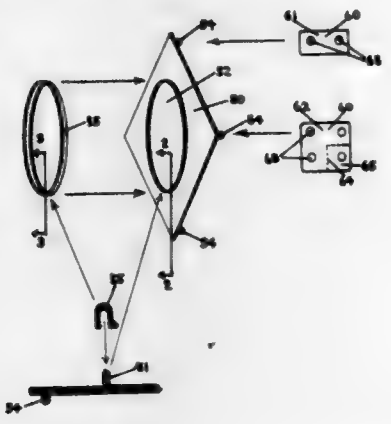


1. In a suction dredge provided with a suction head bearing a multiplicity of cutting-tooth anchors welded to the periphery thereof,

the improvement wherein each of said anchors comprises an elongate unitary body of ductile steel with a yield strength of at least 120 kp/mm^2, said body having a base welded onto said periphery, a crenellated rim adjacent said base with radially outwardly open indentations, and a nose rising from said base beyond said rim within the crenellations thereof, said nose tapering toward a tip remote from said base and having a throughgoing transverse slot opening onto two diametrically opposite indentations of said rim, said body having an oriented structure with grains

bending around said indentations and said slot, said base having a pair of radially inwardly extending prongs straddling a peripheral zone of said suction head, said grains extending along substantially continuous lines from the free ends of said prongs to said tip while also bending around said peripheral zone.

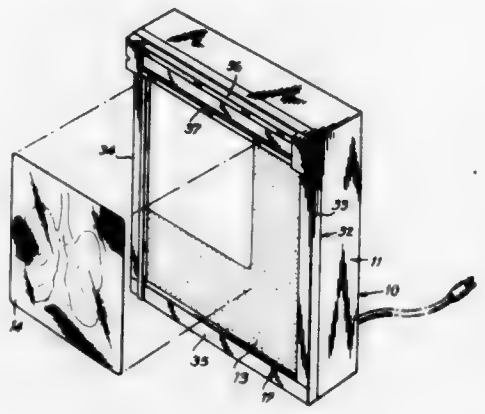
4,510,707
ORNAMENTAL ASSEMBLY
Leroy Girard, 2701 Holland St., Erie, Pa. 16504
Filed Aug. 16, 1982, Ser. No. 408,185
Int. Cl.³ G09F 1/12
U.S. Cl. 40—152 **7 Claims**



1. In combination, an ornamentation for a Christmas tree and means to support said ornamentation on a Christmas tree comprising, a plurality of square shaped picture frame units,
each said frame unit comprising: a generally circular raised rim disposed adjacent to the central part of a sheet on a first side thereof and defining a circular space and extending substantially entirely around said circular space,
a ring, U-shaped in cross section at each side of said ring,
said U-shaped cross section frictionally receiving said rim and releasably holding said rim in place,
a picture disposed within said rim,
said U-shaped ring being snapped on said rim, said ring overlying an edge of said picture, holding said picture in position,
means to connect said picture frame units together,
said means to connect said picture frame units comprising raised pins on the back of said picture frame units,
and assembly links having spaced holes for receiving said raised pins holding said frame units together providing an assembly of pictures in said frames for display on said tree, whereby a plurality of pictures can be supported on said tree as ornaments thereon,
one said assembly link being adapted to link together one said corner form each of two said units,
said assembly link being rectangular with at least two holes, each adapted to receive one said raised pin,
one said assembly link is adapted to link together one said corner of each of four said units.

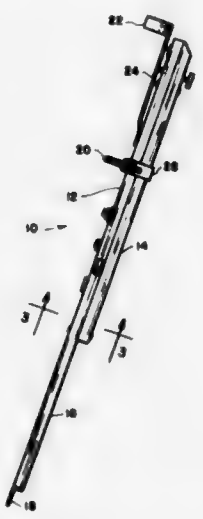
4,510,708
VIEWER FOR X-RAY AND LIKE FILMS
Jordan J. Pokrinchak, Shelton, Conn., assignor to Bar-Ray Products, Inc., Brooklyn, N.Y.
Filed Jul. 27, 1984, Ser. No. 635,170
Int. Cl.³ G02B 27/02
U.S. Cl. 40—361 **14 Claims**

1. In a viewing device for X-ray films or the like including a housing, a light source in said housing, a diffuser plate mounted on said housing and holder means for supporting a film to be viewed against said diffuser plate, the improvement comprising a masking assembly for blocking light from said source from passing through said plate except in the areas of said film, said assembly including an elongate scroll member interposed between said light source and said diffuser plate, said scroll member including a plurality of linearly spaced apart light transmitting areas sized to correspond to the standard dimensions of films to be viewed, the spaces between said light transmitting areas being opaque, motor means operatively connected to said scroll member for shifting said scroll member linearly thereof in either direction, sensor means positioned in the path of an edge portion of a film disposed in predetermined



position in said holder means for sensing the dimension of said edge portion, and control means triggered by said sensor means and operatively connected to said motor means for causing said motor to drive said scroll member linearly to align a light transmitting area of said scroll of dimension corresponding to the sensed dimension of said film into registry with said predetermined position.

4,510,709
FISHING ROD HOLDER WITH BITE SIGNALING MEANS
Alton R. Melcher, 40262 Santa Teresa Common, Fremont, Calif. 94539
Filed Sep. 15, 1983, Ser. No. 532,453
Int. Cl.³ A01K 97/12
U.S. Cl. 43—17 **12 Claims**



1. A fishing rod holder with bite signalling means comprising:
an elongated tubular housing having moisture sealing means in first and second ends thereof and at least one outer side surface;
a generally U-shaped fishing rod supporting yoke connected to the outer surface of an elongated resilient strap having an inner and outer surface, said yoke being connected at the first end of said strap, the second end of said strap being connected to the housing outer side surface at a location that extends said yoke adjacent and beyond the first end of said housing, said strap being substantially parallel with said housing side surface with the inner surface thereof facing said housing side surface;
an electrical switch mounted within said tubular housing

having switch closing means extending from said outer housing side surface, said closing means being located adjacent said housing first end and positioned to contact the inner surface of said strap;

electrical alarm means mounted within said tubular housing responsive to a closing of said electrical switch; and

sensitivity adjustment means including an adjustable screw extending from said outer housing side surface and located in one of a plurality of threaded holes through said housing between the first end thereof and the point of connection of said elongated resilient strap to said side surface, the end of said screw extending from said side surface being adjustable to contact the inner surface of said strap.

4,510,710

FISHING LURE

Thomas J. Hanna, 685 Johnson Rd., Jonesboro, Ga. 30236; Bill C. Logsdon, and Elmer E. Meredith, both of Radcliff, Ky., assignors to Thomas J. Hanna, Jonesboro, Ga.

Filed May 25, 1983, Ser. No. 497,968

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.13 **1 Claim**



1. A fishing lure comprising:

(a) a shank with barbed hook means at its rear end and eyelet means at its front end;

(b) a body with a skirt attached to the shank adjacent the hook means;

(c) a plurality of arms attached to the shank adjacent the eyelet means and having rear portions extending generally toward the body from the eyelet means;

(d) propeller means rotatably mounted on the arms' rear portions and wherein the arms' rear portions are spaced apart and the propellers are dimensioned so that when the propellers turn in response to movement of the lure in the water, the propellers strike each other only as a result of their rotation and provide lift to the lure; and

(e) flotation devices mounted on the arms' rear portions rearward of the propellers.

4,510,711

DECORATIVE FLY-SWATTING DEVICE

David C. Bucek, 324 Lazy La., Wharton, Tex. 77488

Filed May 5, 1983, Ser. No. 491,906

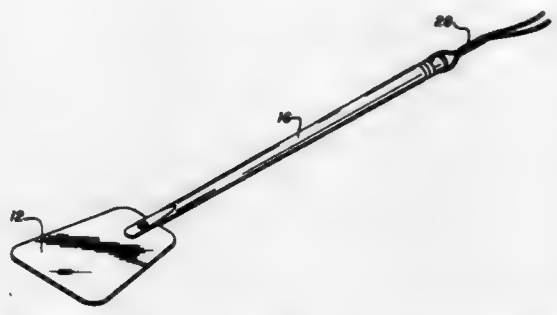
Int. Cl.³ A01M *3/02*

U.S. Cl. 43—137 **4 Claims**

1. A combination tool having the external configuration of a flyswatter when in its assembled condition, comprising:

(a) a generally planar blade having an approximately rectangular shape and being generally devoid of perforations but having an aperture near one edge thereof for receiving a fastener, and the blade being formed of a leathery material having sufficient stiffness as to be essentially self-supporting, and the blade being decorated and being treated with a water-repellant compound so as to render it impervious to moisture and to preserve the decoration, whereby the blade may be repeatedly rinsed with water for cleaning purposes;

(b) a rigid handle having a length about three times as long as the length of the blade, and the first end of said handle having a longitudinal slot of sufficient thickness to snugly receive the blade within said slot, and the orientation of the slot being generally parallel to the longitudinal axis of the handle so as to create two cantilevered end portions that lie respectively above and below the slot, and there



being a transverse bore through the two cantilevered end portions at a location to coincide with the blade aperture when the blade is inserted fully into the slot; and

(c) a mechanical fastener for insertion into the transverse bore so as to removably attach the blade to the elongated handle by passing through the juxtaposed openings that are defined by the bore and the blade aperture.

4,510,712

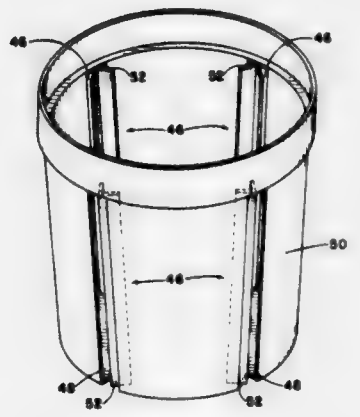
AIR-ROOT-PRUNING CONTAINER

Carl E. Whitcomb, Stillwater, Okla., assignor to Board of Regents for the Oklahoma Agriculture and Mechanical Colleges Acting for and in Behalf of Oklahoma State University, Stillwater, Okla.

Continuation-in-part of Ser. No. 309,085, Nov. 9, 1981,. This application May 17, 1982, Ser. No. 379,149

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—66 **9 Claims**



1. A container adapted to contain a growing medium and a plant comprising:

(a) a bottom wall;

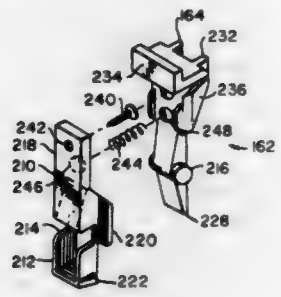
(b) a circumferentially upwardly extending sidewall attached to the perimeter of said bottom wall thus forming an open-topped container; and

(c) one or more vertical air-root-pruning means displaced in said sidewall forming an off-set air gap to air-prune roots of said plant thus inhibiting the tendency of said roots to grow in a spiral and stimulating additional root branching and wherein at least one of said air-root-pruning means is bidirectional.

4,510,713
WINDOW STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.

Division of Ser. No. 50,818, Jun. 21, 1979, Pat. No. 4,398,372.
This application Aug. 16, 1983, Ser. No. 523,677
Int. Cl.[3] E05D *15/22*
U.S. Cl. 49—175 8 Claims



1. Tilt release and upper sash guide structure for use with a tiltable window sash having two ends and a tilting and a pivoted edge guided in movement between frame jamb members including a sash guide member having a hollow generally rectangular lower end including an open front and back and a generally flat rectangular upper end at the back thereof having a notch extending into the generally rectangular lower end from the back thereof which sash guide member is adapted to be secured to the sash adjacent the tilting edge of the sash at one end thereof and a tilt release member having pivot bosses extending from one end thereof on both sides of the tilt release member positioned within the notches in the sash guide member to mount the tilt release member on the sash guide member for pivotal movement about the one end of the tilt release member, guide fins on the tilt release member at the other end thereof extending away from the sash guide member engageable with a frame jamb member for guiding the sash in movement in the plane of the frame, resilient means positioned between the sash guide member and tilt release member for urging the other end of the tilt release member away from the sash guide member and into engagement with the frame jamb and an operating tab on the other end of the tilt release member for facilitating grasping and pivoting of the other end of the tilt release member toward the sash guide member to remove the guide fins from contact with the frame and permit pivoting of the window sash about the pivoted edge thereof.

4,510,714
POWERED OUTWARD-OPENING CARGO DOOR

James R. Kasper, Seattle, and Allan W. Opsahl, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 431,193
Int. Cl.[3] E05D *15/40*
U.S. Cl. 49—249 8 Claims

1. A door assembly for closing an opening in a wall, said opening including a periphery, said door assembly comprising:

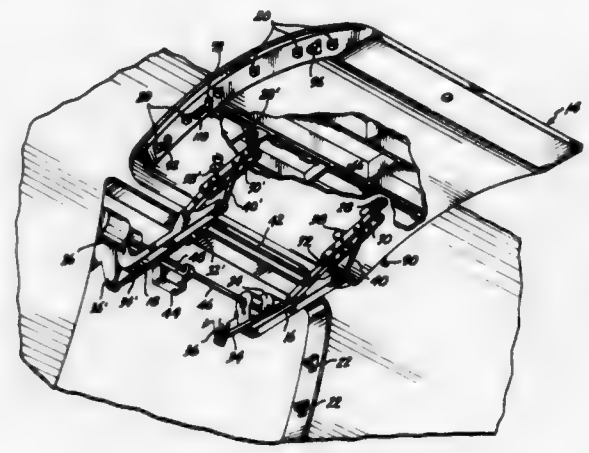
a door;

hinge means associated with said door and said opening to mount said door to the periphery of said opening for swinging movement of said door between a first position in which said door is within said opening, and a second position in which said door is spaced from said opening and positioned above said opening in a canopy orientation;

hinge drive means drivingly coupled to said hinge means for driving said door between said first and second positions;

power means drivingly coupled to said hinge drive means for providing power to said hinge drive means, said hinge drive means being constructed and arranged such that said hinge drive means drives said hinge means only under power, said hinge means being immovable by manual operation while coupled to said hinge drive means;

latch means associated with said door and manually operable when said door is in said first position, to move said door upwardly a predetermined distance prior to initiation of movement of said door toward said second position by said hinge drive means, said latch means including a handle means movable between a latched position and an unlatched position, movement of said handle means between said latched and unlatched position causing movement of said door upwardly within said opening; and,

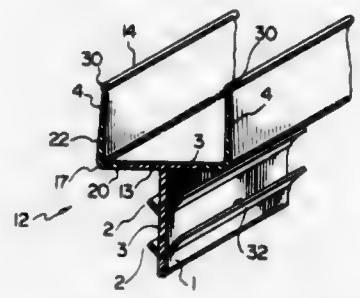


latch lock-out means associated with said handle means and operable when said door is spaced from said opening to prevent movement of said handle means from said unlatched position to said latched position, and constructed and arranged such that when said door is within said opening, said latch lock-out means is inoperative, thereby permitting movement of said handle means from said unlatched position to said latched position.

4,510,715
COMPOSITE WEATHER STRIP FOR WINDOWS AND DOORS

Jean P. Giguère, St-Agapit, Canada, assignor to Donat Flamand Inc., Lotbiniere, Canada

Filed Mar. 30, 1983, Ser. No. 480,307
Claims priority, application Canada, Nov. 12, 1982, 415437; Jan. 12, 1983, 419291
Int. Cl.[3] E06B *7/16*
U.S. Cl. 49—488 9 Claims



1. Weather strip for use on the periphery of the hinged panel of a window or door opening being of constant cross-section and comprising a T-shaped base made of relatively rigid plastic material, said T-shaped base having a horizontal bar and a depending vertical gripping leg, said horizontal bar carrying along each edge thereof and functionally integral therewith a generally vertical wing which extends outwardly, laterally from the base and then curves upwardly away from said base, in a direction opposite from said gripping leg, said two wings being generally parallel to each other and spaced by a distance of the order of ⅛ of an inch, said wings being made of a rubber-like plastic material which is more supple and flexible than the material of said T-shaped base, whereby said wings may bend easily when said hinged panel closes or opens and yet when said panel is in its fully closed position said wings confine a volume of air which constitutes an efficient barrier between inside and outside conditions, said wings being sufficiently supple as to regain their initial shape upon opening of said

hinged panel and having sufficient resistance to cracking and tearing in spite of frequent panel opening and closing operations, said gripping leg having gripping means for holding said weather strip to the periphery of said panel by means of a continuous groove in the peripheral edges of said hinged panel.

4,510,716

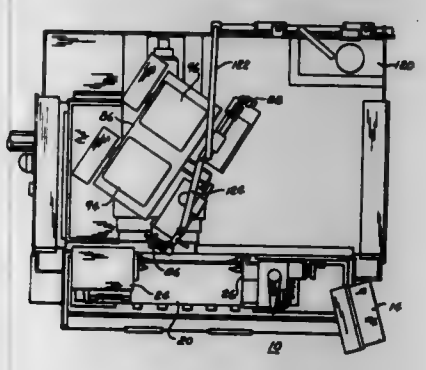
GRINDING MACHINE HAVING IMPROVED DRESSING MEANS

Martin A. German, Holden, Mass., and Joseph F. Volk, Chagrin Falls, Ohio, assignors to The Warner & Swasey Co., Cleveland, Ohio

Division of Ser. No. 228,424, Jan. 26, 1981, Pat. No. 4,443,975. This application Jun. 20, 1983, Ser. No. 506,076

Int. Cl.³ B24B *5/12*

U.S. Cl. 51—5 D **8 Claims**



1. A grinding machine for grinding a workpiece comprising:

a base;

workpiece support means for supporting a workpiece to be ground from said base;

an indexible plate;

a first driven grinding wheel disposed on said plate;

a second driven grinding wheel, spaced apart from said first driven grinding wheel, disposed on said plate;

indexible plate support means for supporting said indexible plate for movement to a first position where said first driven grinding wheel can engage the workpiece and said second driven grinding wheel cannot and to a second position where said second driven grinding wheel can engage the workpiece and said first driven grinding wheel cannot;

a carriage supporting said indexible plate and being movable with respect to said base to move the properly positioned one of said first or second driven grinding wheels into engagement with the workpiece; and

one of said first driven grinding wheel and said second driven grinding wheel is a straight feed grinding wheel and the other is an angled feed grinding wheel and further including drive means for moving said carriage along an x-axis and a z-axis;

at least a first dressing diamond supported from said base;

a programmable controller controlling said drive means for programmed movement of said carriage to dress a desired shape into said first and second driven grinding wheels.

4,510,717

LENS FINISHING APPARATUS

Dewayne J. Sherwin, Imlay City, Mich., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Dec. 16, 1982, Ser. No. 450,502

Int. Cl.³ B24B *7/00*

U.S. Cl. 51—58 **22 Claims**

1. An apparatus for finishing a surface of a lens with a finishing tool, said apparatus comprising:

a main frame;

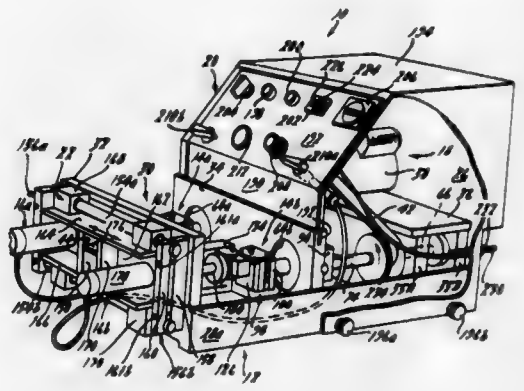
a non-rotatable shaft mounted to said main frame, said non-rotatable shaft having a central longitudinal axis, a first end, a second end and an intermediate portion between said first end and said second end;

universal mounting means mechanically interposed said intermediate portion of said non-rotatable shaft and said main frame, said universal mounting means fixing said intermediate portion of said non-rotatable shaft relative to said main frame and pivotally interconnecting said non-rotatable shaft with said main frame, said universal mounting means having a pivot point about which said non-rotatable shaft pivots, said pivot point lying on said central longitudinal axis;

eccentric drive means interconnected with said first end of said non-rotatable shaft to drive said first end of said non-rotatable shaft around a first predetermined circular path, said first predetermined circular path having a center of curvature axially aligned with said pivot point of said universal mounting means such that as said first end of said non-rotatable shaft moves about said first circular predetermined path and said non-rotatable shaft pivots about said pivot point, said second end of said non-rotatable shaft moves in a second predetermined circular path, said motion of said non-rotatable shaft having an orbital axis extending through said pivot point of said universal mounting means, said second predetermined circular path having a center of curvature axially aligned with said pivot point of said universal mounting means;

first means for mounting said finishing tool to said second end of said non-rotatable shaft;

first carrier means spaced a predetermined distance from



said second end of said non-rotatable shaft and slidably mounted to said main frame such as to be reciprocable along a predetermined path perpendicular to said orbital axis of said non-rotatable shaft, said perpendicular path of reciprocation further being in a common plane with said orbital axis of said non-rotatable shaft, said pivot point of said universal mounting means, and said centers of curvature of said first and second predetermined circular path;

second carrier means reciprocably interconnected with said first carrier means such as to be reciprocable relative to said first carrier means along a reciprocation axis parallel to said orbital axis of said non-rotatable shaft and having a portion near said second end of said non-rotatable shaft;

reciprocal drive means mechanically interposed said first carrier means and said main frame selectively operable to reciprocate said first carrier means relative to said second predetermined circular path relative to said main frame;

second means for mounting said lens to said portion of said second carrier means near said second end of said non-rotatable shaft, said second mounting means pivotally interconnecting said lens with said second end of said non-rotatable shaft; and

biasing means interposed said first carrier means and said second carrier means, said biasing means biasing said second carrier means toward said non-rotatable shaft and, thereby, biasing said second means for mounting towards said first means for mounting; said lens being removably interconnected to one of said mounting means and said finishing tool being removably interconnected to the

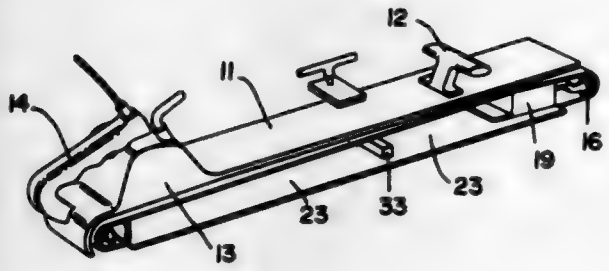
other end of said tool mounting means, whereby a combination of movements between said lens and said finishing tool is the sum of the orbiting of said non-rotatable shaft about said pivot point of said universal mounting means, and the reciprocable movement of said first carrier means along said predetermined path perpendicular to said orbital axis.

4,510,718

HULL SANDING DEVICE

Carl Eichenlaub, San Diego, Calif., assignor to Irving Loube, Oakland, Calif., a part interest

Filed Feb. 15, 1983, Ser. No. 466,438
Int. Cl.³ B24B *23/06*
U.S. Cl. 51—170 EB **6 Claims**



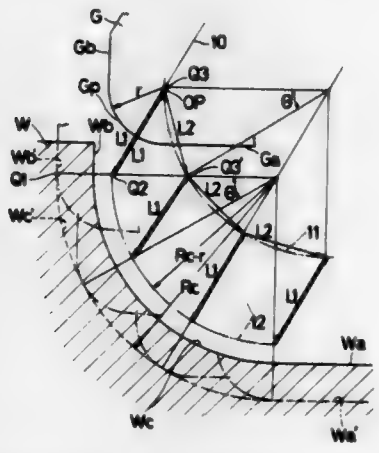
1. A device for sanding curved workpieces, comprising an elongated, longitudinally extending support member, pulley means for supporting an endless sanding belt, said pulley means including a pair of pulleys joined to opposed ends of said support member, motor means for driving one of said pulleys and said sanding belt, flexible pressure plate means for supporting said sanding belt between said pulleys and conforming to curved surfaces upon which said belt is impinged, said last mentioned means including a flexible and resilient pressure plate extending substantially the length of said support member, bracket means extending from opposed end portions of said support member for supporting said pressure plate, said pressure plate being sufficiently flexible to be deformable by manual impingement of said belt on the curved surface of the workpiece to conform to the curved surface, and pressure adjustment means for resiliently and yieldingly biasing a medial portion of said pressure plate with respect to said support member.

4,510,719

METHOD OF GRINDING A CURVED CORNER PORTION

Takao Yoneda, Toyoake, and Yasuji Sakakibara, Hekinan, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 8, 1982, Ser. No. 396,332
Claims priority, application Japan, Aug. 28, 1981, 56-135834
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—289 R **8 Claims**



1. A method of grinding a curved corner portion of a workpiece by a grinding wheel having a curved edge surface whose curvature radius is smaller than that of said curved corner portion, said method comprising the steps of:

rotating said workpiece about a first axis, said workpiece being movable relative to said grinding wheel along a first path parallel to said first axis;

rotating said grinding wheel which is movable relative to said workpiece along a second path extending at an acute angle to said first path;

effecting relative movement between said rotating workpiece and said rotating grinding wheel along said first and second paths so as to position said rotating grinding wheel at a first grinding start position;

moving said grinding wheel inwardly by a predetermined distance from said grinding start position to an advanced position along said second path so as to permit said curved edge surface of said grinding wheel to grind a part of said curved corner portion of said workpiece;

moving said grinding wheel outwardly by said predetermined distance from said advanced position to said grinding start position along said second path;

moving simultaneously said workpiece and said grinding wheel respectively along said first and second paths so as to move said grinding start position to a next grinding start position along a path approximating a first curved arc which is offset from a second curved arc in a direction of said second path, said second curved arc being in concentric relation with the desired profile of said curved corner portion; and

repeating the steps of moving said grinding wheel inwardly, of moving said grinding wheel outwardly, and of moving said grinding start position to a subsequent next grinding start position;

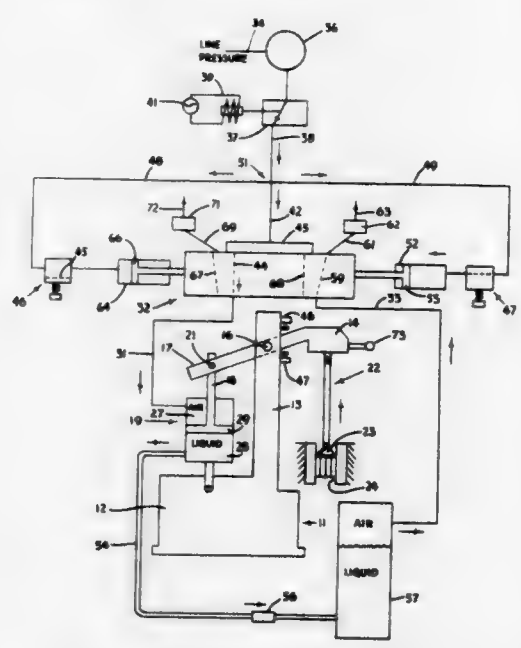
said first curved arc being so defined that said grinding wheel is prevented from engaging said workpiece when moved from one of said grinding start positions to a next grinding start position along said first curved arc.

4,510,720

HONING CONTROL SYSTEM

Russell C. Westberg, 5100 W. 106th St., Bloomington, Minn. 55435

Filed Mar. 28, 1983, Ser. No. 479,554
Int. Cl.³ B24B *33/02*
U.S. Cl. 51—34 J **4 Claims**



1. A honing machine system comprising a base assembly, a power unit pivotally mounted on said base assembly and having a first and second end, a honing tool assembly connected to a first end of said power unit for vertical reciprocal movement, a cylinder means mounted on said base assembly, a piston in

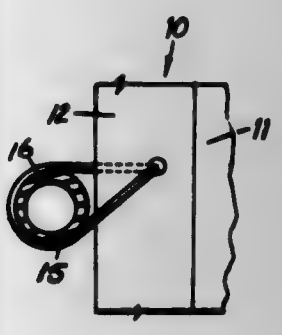
said cylinder connected at a second end to said power unit for reciprocally moving a first end and honing tool in a vertical direction, said piston separating said cylinder means into an air chamber and a liquid chamber, an air and liquid reservoir, means for interconnecting the liquid sides of said reservoir with the liquid chamber of said cylinder means, a reciprocating control valve, a first control valve actuator for moving said control valve in a first direction, a second control valve actuator for moving said control valve in a second direction, air source means for supplying air pressure to said control valve and said first and second actuators, said control valve interconnecting said air source means and said air chamber and said reservoir, said control valve having first and second air exhaust ports, a lower limit valve mounted on said base assembly operated by contact with said power unit and interconnecting said first actuator and said air source means, and an upper limit valve mounted on said base assembly operated by contact with said power unit and interconnecting said second actuator and said air source means, said power unit engages said upper and lower limit valves to operate said first and second actuators to reciprocate said control valve and direct air pressure into and out of said air chamber and reservoir and exhaust the air through said first and second air exhaust ports against the dampening action of liquid flowing between the liquid side of reservoir and said liquid chamber.

4,510,721

FENCE DROPPER

Michael F. Murphy, 12 Bond St., Norwood, State of South Australia, Australia

Filed Feb. 18, 1983, Ser. No. 467,929
Claims priority, application Australia, Feb. 19, 1982, PF2785
Int. Cl.³ E04H *12/00*
U.S. Cl. 52—40 **6 Claims**



1. A fence droper having been formed from a strip of sheet metal to have a pair of webs in a "V" formation, terminating in respective flanges which are substantially parallel to each other,

at least one pair of aligned apertures in said parallel flanges;

at least one wire retaining loop of such shape as to support a conduit, and having inturned ends engaging said pair of aligned apertures, said wire loop comprises a pair of legs and a bridge portion defining a general "U" shaped in plan and a tear drop shape in side elevation, one of said legs bearing against a flange edge when the loop supports a conduit, the shape and size of the wire loop being such that the wire loop thereby holds the conduit clear of the flange edges, and

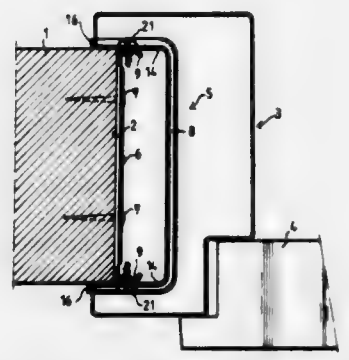
notch defining surfaces also in said parallel flanges defining at least one pair of notches extending into the flanges and of such shape as to retain a fence wire.

4,510,722

DEVICE ADAPTED TO MOUNT A METAL JAMB OR FRAME, MORE PARTICULARLY A DOOR JAMB, INTO A WALL OPENING

Gijsbertus L. van Wieringen, Amersfoort, Netherlands, assignor to N.V. Nederlandse Metaalindustrie Polynorm, Netherlands

Filed Feb. 28, 1983, Ser. No. 470,099
Claims priority, application Netherlands, Mar. 3, 1982, 8200848
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—213 **4 Claims**



1. A device adapted to mount a metal frame or jamb, more particularly a door jamb, into a wall opening, said door jamb having a substantially U-shaped cross-section and comprising:

a fixing plate to be mounted on the reveal of a wall opening and formed by an oblong strip-shaped plate, extending over almost the entire width of said reveal; each end of the fixing plate comprising relatively short side flanges projecting from the wall; each side flange being provided with a bore hole;

an adjustable bracket;

means for connecting said adjustable bracket to said fixing plate in a slidable and fixable relation;

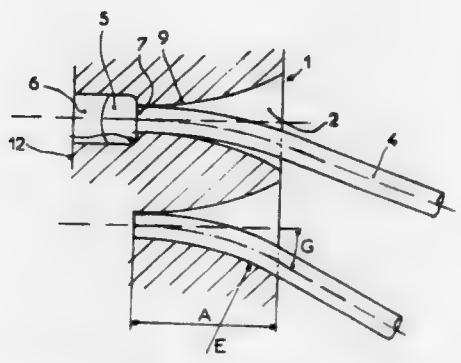
the bracket having a U-shape and two legs embracing the wall in the mounted position; said legs being provided with slot-shape openings for adjustably mounting the bracket to the side flanges of the fixing plate, said legs further being provided with receiving members for the receipt of a frame to be mounted.

4,510,723

PRESTRESSED CABLE ANCHORAGE SYSTEM

Rene P. Soum, 33 rue Montcabrier, 31500 Toulouse, France

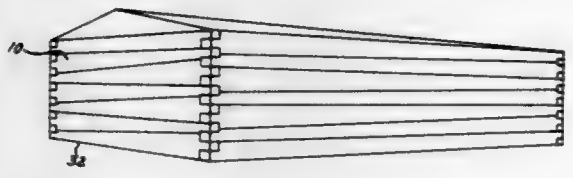
Continuation of Ser. No. 369,792, Apr. 19, 1982, abandoned. This application Jun. 8, 1984, Ser. No. 618,327
Claims priority, application France, Apr. 24, 1981, 81 08616; Mar. 22, 1982, 82 05138
Int. Cl.³ F04C *3/10*
U.S. Cl. 52—223 R **8 Claims**



1. An anchorage block and a prestressed cable, said block comprising at least one orifice bore extending from an anchoring point at which said cable is anchored to said block to an outlet of the block through which said cable extends when it is attached to said block, said orifice bore having a generally

increasing cross section beginning at said point and extending to the outlet of the block for supporting the prestressed cable, said orifice bore being curved and having a generatrix in the form of the arc of a circle.

4,510,724
BUILDING STRUCTURE
Karl Magnuson, Rte. 1, Ewen, Mich. 49925
Filed Oct. 13, 1981, Ser. No. 310,890
Int. Cl.³ E04B *1/10*
U.S. Cl. 52—233 **4 Claims**



1. A building having interconnecting walls of horizontally stacked tapered timber members of substantially uniform thickness, each member having a large end and a small end, the large ends of such members varying ordinarily in height from one member to another and the small ends varying likewise in height from one member to another, each member having a tongue notched in each of its ends for corner joinder in a staggered relationship with like-formed members of adjoining walls, comprising:

a. said members being of the same degree of taper;

b. each member being tapered on one side throughout its length in relation to a substantially horizontal opposing side;

c. said members being arranged for uniform stacking in pairs of a fixed height, tapered side facing tapered side, large end on top of small end and small end on top of large end, producing two-member assemblages wherein top and bottom sides are parallel and substantially horizontal, said facing tapered sides of members being likewise parallel with facing tapered sides of other assemblages in the wall;

d. said members of assemblages having a tongue notched in each end for joinder in a staggered relationship with like-formed assemblages of adjoining walls;

e. said tongues being notched in the small ends of said members at a fixed vertical distance from the plane of the horizontal sides of said members;

f. said tongues being notched in the large ends of said members at a fixed vertical distance from the plane of the horizontal sides of said members;

g. said notches and tongues of stacked assemblages in one building wall being joined to fit the like-formed and equally placed tongues and notches of stacked assemblages of the same fixed height in adjoining walls.

4,510,725
BUILDING BLOCK AND CONSTRUCTION SYSTEM
Mark E. Wilson, 2314 Kingston Dr., Houston, Tex. 77019
Filed Sep. 17, 1981, Ser. No. 303,179
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—309.1 **9 Claims**

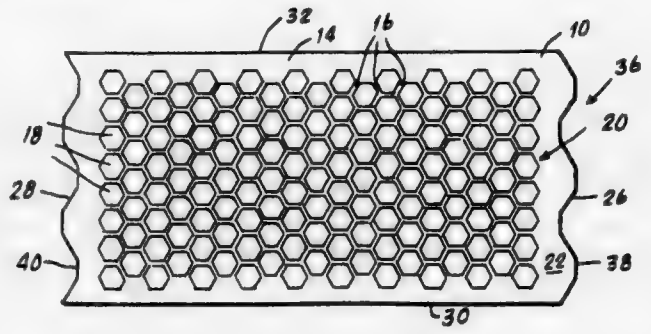
1. A substantially rectangular building block formed from a composition of wood fiber and a resin, comprising:

(a) a solid shell having first and second bearing faces;

(b) a web disposed centrally of the shell and extending between the first and second bearing faces;

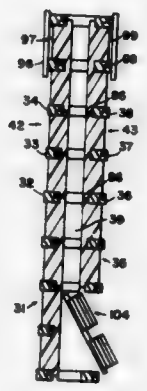
(c) a plurality of elongated openings defined by the web, the openings each having a substantially hexagonal cross-section and having their longitudinal axes arranged in parallel and terminating at the first and second bearing faces;

(d) said shell having first and second engaging faces adapted to mate with second and first engaging faces, respectively, of horizontally adjacent building blocks in an array of blocks; and



(e) said first and second engaging faces having solid keys extending therefrom.

4,510,726
INSULATED BUILDING STRUCTURE AND METHOD FOR ASSEMBLING SAME
Milton H. MacDonald, Jr., 5 Holly St., Woodsville, N.H. 03785
Filed Jun. 9, 1983, Ser. No. 502,760
Int. Cl.³ E04B *2/32*
U.S. Cl. 52—309.8 **13 Claims**



1. A wall insulation unit comprising:

a pair of laterally spaced, identical, elongated, blocks of plastic cellular foam insulation material, one block in mirror relationship to the other but spaced apart therefrom by at least the thickness of a block;

each block having one side face with a central, vertical recess of predetermined width and depth and a pair of vertical recesses, each at an opposite end thereof and equal in depth to said predetermined depth and equal in width to one half the predetermined width of said central recess for receiving the major portion of the depth of vertical wall studs with the minor portions thereof protruding from said recesses and

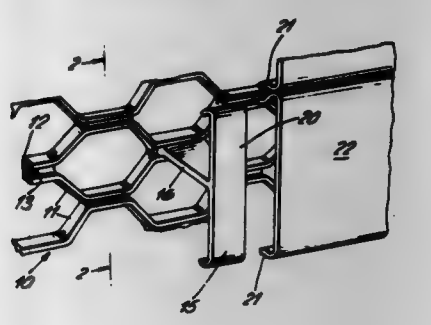
each block having a top face a bottom face and two opposite end faces, each with a tongue and groove configuration thereon adapted to mate and interengage with corresponding tongue and groove configurations of juxtaposed blocks to seal the joints therebetween;

4,510,727
GRID SUPPORTED STRUCTURE
Harold R. Jury, Glynde, Australia, assignor to Ampliform Pty. Ltd., Royal Park, Australia
Filed Jul. 1, 1982, Ser. No. 394,280
Claims priority, application Australia, Jul. 8, 1981, PE9646
The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—508 **7 Claims**

1. Grid supported structure comprising:

an expanded metal grid having a plurality of beads which are non-rectilinear and are interconnected by rows of webs,

the webs of any one row being staggered with respect to the webs of the next adjacent row, the said beads comprising narrow-mouth grooves, each groove comprising side faces which slope with respect to one another forming re-entrant faces running from the mouth of each groove;



a plurality of panel support brackets having a relatively narrow portion entering the mouth of said groove and a head engaging and retained by said re-entrant faces, and panels carried by said support brackets.

4,510,728

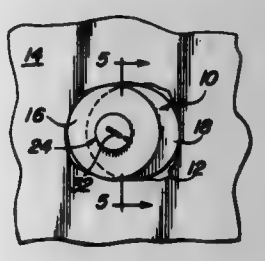
WALL-PATCH ADAPTER

Clyde Key, 11426 Coriender Ave., Fountain Valley, Calif. 92708

Filed Jul. 8, 1983, Ser. No. 511,871

Int. Cl.[3] E04G *23/02*

U.S. Cl. 52—514 1 Claim



1. A wall-patch-plug device adapted to aid in the patching of a hole in a damaged gypsum-type wallboard, the device comprising:

a pair of juxtaposed plate members adapted to be laterally adjustable relative to each other, so as to be secured within said hole in said wallboard to allow patch material to be supported therein;

wherein said pair of plate members includes:

a first plate member having a central bore disposed therein; and

a second plate member having an eccentrically disposed hole therein;

said plates being superposed on each other and adapted to be laterally moved relative to each other; and

means engaging said plates for adjusting and securing said plates within said hole of said wallboard;

wherein said adjusting-and-securing means comprises:

a keeper means which is formed having an enlarged, annular, head member;

a reduced-diameter boss adapted to be rotatably received in said central bore of said first plate member;

a projecting, eccentrically positioned, pin member adapted to be received in said eccentrically positioned hole of said second plate member; and

a central keyway formed in said keeper means, whereby said keeper means is rotated, thereby causing said first and second plate members to move laterally with respect to each other, so as to lockingly engage said patch plug within said hole in said wallboard.

4,510,729

METHOD AND TEMPLATE FOR APPLYING RELIEF PLASTERING ON A WALL SURFACE

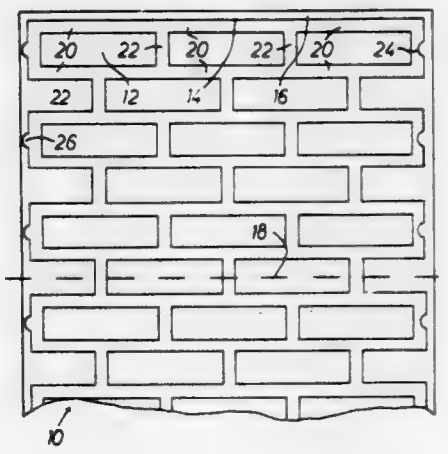
Ewald Syring, Brinker Weg 4a, D-5620 Velbert-Langenberg, Fed. Rep. of Germany

Filed Apr. 7, 1983, Ser. No. 483,075

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234481; Oct. 27, 1982, 3239761

Int. Cl.[3] E04F *21/04*

U.S. Cl. 52—741 17 Claims



1. Method for applying relief plastering with joints on a surface, wherein

(a) a network of lands made of a moisture-resistant material and corresponding to the structure of the joints is applied to the surface by means of a removable adhesive layer, the lands, when applied, defining a series of apertures spaced by the lands,

(b) subsequently, mineral plaster is applied to the surface which is provided with the network, and

(c) next, the network is pulled off the surface so that in the areas of the apertures projecting surface portions, and in the areas of the lands receding, joint-like surface portions are obtained,

characterized in that,

(d) the network of lands is formed into a continuous template which adheres by means of an adhesive layer to a width of continuous, removable carrier film that also covers the apertures,

(e) to apply the template to the surface, the carrier film is removed at one end from the template and this end is applied to the surface,

(f) the carrier film is then further removed to the same extent as the template is pressed onto the surface.

4,510,730

APPARATUS FOR SEAL-TESTING SACHETS, PACKETS AND THE LIKE

Alan S. Edmondson, Hinckley, England, assignor to Hulbritt Developments Limited, Leicestershire, England

Filed Feb. 16, 1982, Ser. No. 348,756

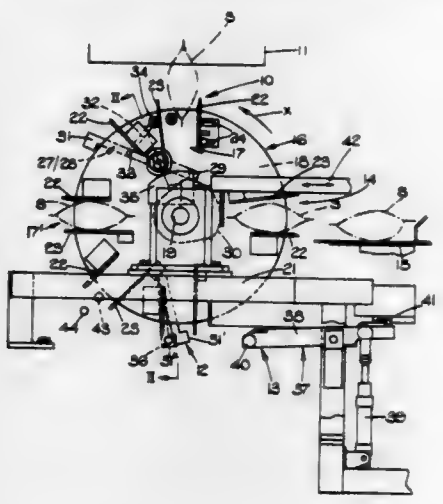
Claims priority, application United Kingdom, Dec. 18, 1981, 8138256

Int. Cl.[3] B07C *1/10*

U.S. Cl. 53—53 10 Claims

1. Apparatus for seal-testing packages, comprising a receiving station at which said packages are received for testing, a delivery station at which the tested packages are delivered from the apparatus, at least one carrier device operative to receive said packages at the receiving station and carry same to the delivery station, the or each carrier device including a pair of opposed pressure members between which a package is received in use, moving means operative during movement of the or each carrier device between the receiving and delivery stations to effect relative movement between said pair of opposed pressure members such that said package is compressed

therebetween, and detection means operative to produce an output signal in the event that said pair of members are moved



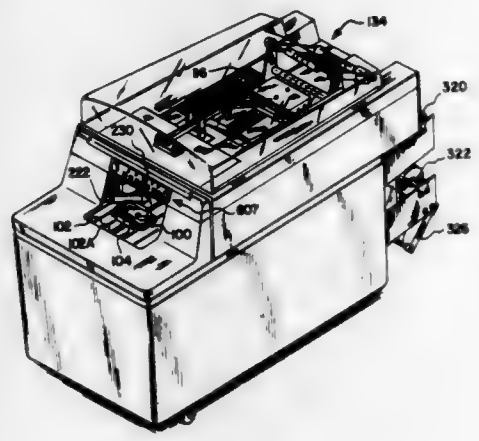
towards one another by more than a predetermined amount by the time the respective carrier device reaches the delivery station.

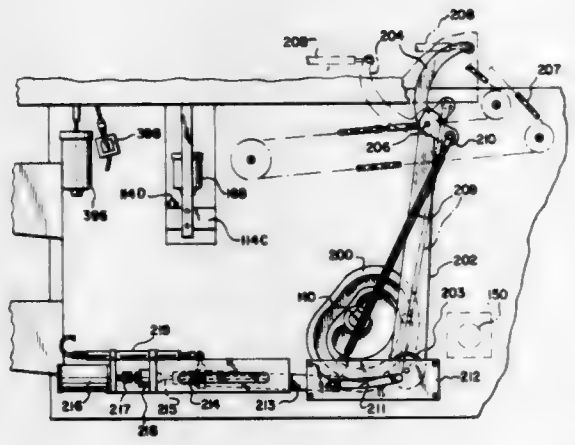
4,510,731

FILM WRAPPING MACHINE INCLUDING FILM LENGTH SELECTION

Raymond J. Mathieu, Ludlow Falls, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Apr. 26, 1982, Ser. No. 371,892
Int. Cl.³ B65B 59/02
U.S. Cl. 53—66 **12 Claims**





1. In a film wrapping machine including a source of continuous film, an adjustable mechanism for controlling the reciprocating stroke of a film gripper between a fixed film end engaging position and a variable film extension position to thereby selectively pull appropriate lengths of film from the film source for wrapping a variety of package sizes, said adjustable mechanism comprising:

an output lever arm having first and second ends and being pivotally mounted at said first end to said wrapping machine;

an adjustable lever arm pivotally mounted to said output lever arm at said second end of said output lever arm and being coupled to the film gripper; and

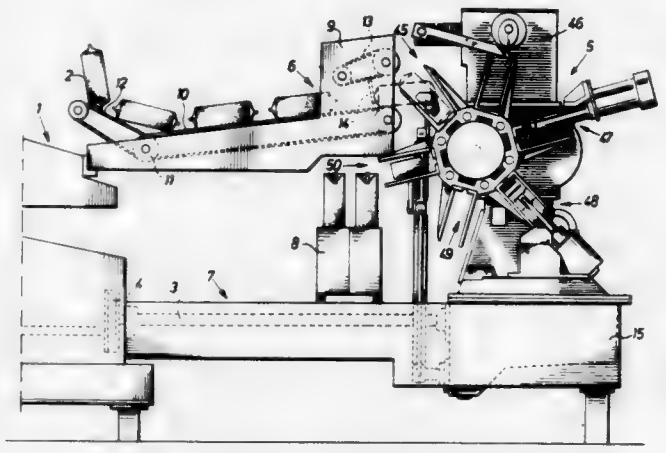
stroke adjustment control means coupled to said adjustable lever arm for controlling the pivotal motion of said adjustable lever arm relative to said output lever arm so that the same angular relation is defined therebetween for all adjustments of said adjustable lever arm when the gripper is moved to the film end engaging position and different angular relations are defined therebetween for each adjustment of said adjustable lever arm when the gripper is moved to the film extension position, the differing angular relations corresponding to the desired stroke and film length set by said stroke adjustment control means.

4,510,732

MACHINE FOR THE PROCESSING OF PACKING CONTAINERS

Stig A. Löthman, Veberöd, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Mar. 22, 1982, Ser. No. 360,562
Int. Cl.³ B65B 7/20
U.S. Cl. 53—168 **33 Claims**



1. A machine for processing packing containers having corner lugs extending from the bottom and top of said containers, said machine comprising:

a first processing station for prefolding the corner lugs on each packing container, comprising a bottom corner lug folding plate for engaging the bottom of the containers and a pair of top corner lug folding plates, a supporting arm for supporting the plates;

a second processing station including nozzle means for applying adhesive means to the corner lugs for adhering the corner lugs to the container;

a third processing station for finally folding the corner lugs, comprising two co-operating lateral pressure plates and a bottom pressure plate, the three pressure plates being synchronously movable between a working and a non-working position; and

a container transport device which transports the packing containers between the processing stations, including:

a selectively rotating drum which rotates in incremental steps,

a plurality of holding means operably attached to the outer periphery of the drum and spaced around the periphery of the drum for holding said containers, wherein the processing stations are spaced around the periphery of the drum and wherein the spacing of the processing station coincides with the spacing of the holding means whereby the holding means are indexable from one processing station to the next;

radially outer guide rails extending along the path of said holder means, said radially outer guide rails being posi-

tioned on opposite sides of said holding means at said first station; and

radially inner guide rails extending along the path of travel of said holder means, said radially inner guide rails being positioned on opposite sides of said holding means at said first station;

drive means for radially moving said supporting arm to synchronously move the corner lug folding plates radially between a working position and a non-working position so that the motion of said bottom corner lug folding plate pushes a respective packing container into the holder element between said inner and outer guide rails so as to urge the bottom lugs against the radially outer guide rails and the top lugs against the radially inner guide rails to thereby radially outwardly prefold the bottom and top corner lugs.

4,510,733

METHOD AND AN APPARATUS FOR CLOSING PACKING BAGS FOR SLAUGHTERED POULTRY

Erik Hansen, Hörning, and Heinrich W. Lambach, Horsens, both of Denmark, assignors to Brdr. Schur International A/S, Horsens, Denmark

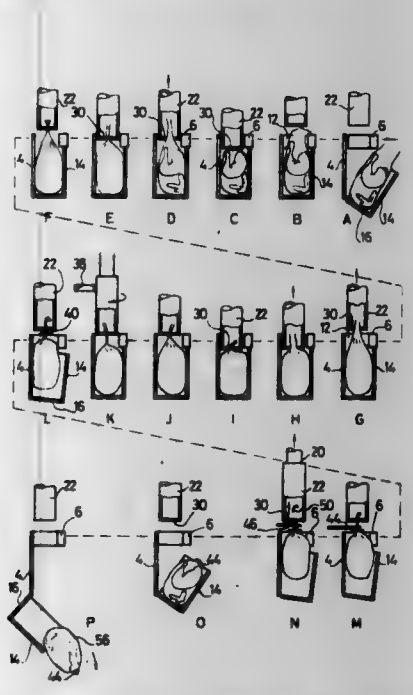
PCT No. PCT/DK81/00044, § 371 Date Dec. 29, 1981, § 102(e) Date Dec. 29, 1981, PCT Pub. No. WO81/03160, PCT Pub. Date Nov. 12, 1981

PCT Filed Apr. 28, 1981, Ser. No. 336,348

Claims priority, application Denmark, Apr. 29, 1980, 1832/80

Int. Cl.³ B65B *31/00*

U.S. Cl. 53—434 9 Claims



1. A method of closing bag packings for slaughtered poultry introduced head first into a flexible bag member comprising the steps of:

arranging the flexible bag member with the poultry therein in a bag holder means with an open mouth end of the bag member being at least located adjacent to a tubular portion of said bag holder means, introducing a tubular pressing piston means into said tubular portion, causing the free end of the open mouth end of the bag member to be sucked into an open end portion of said tubular piston means by effecting a suction therethrough, forcing said piston means against the leg ends of the poultry so that the leg ends are forwardly compressed in the flexible bag member, effecting a further suction action on the open mouth end of the bag member through said piston means, clamping the open mouth end of the bag member by clamping means located adjacent the front poultry engaging end of said piston means and rotating said clamping means relative to said bag holder means to twist said open mouth end of the flexible bag member outside said leg ends of the poultry, and fixing the twisted mouth end of the flexible bag member.

3. Apparatus for closing bag packings for slaughtered poultry, the apparatus comprising a bag holder means for receiving a bag member in which the poultry is head first introduced, a tubular bag holder means for receiving an open bag mouth portion and a leg end portion of the poultry, a piston means operable to be introduced into said tubular bag holder means for compacting the poultry by pressing the leg ends of the poultry inwardly in the bag member so that the leg ends of the poultry are forwardly compressed, a suction tube means operable to be introduced into said tubular holder means for causing a portion of the open bag mouth projecting beyond a rump portion of the poultry to be sucked into an outer end of said suction tube means, clamping means for mechanically seizing the bag mouth portion at a short distance outside the rump portion of the poultry, and means for mounting said clamping means so as to be rotatable relative to said bag holder means to effect a twisting of the bag mouth portions so as to enable a fixation of the twisted bag portion.

4,510,734

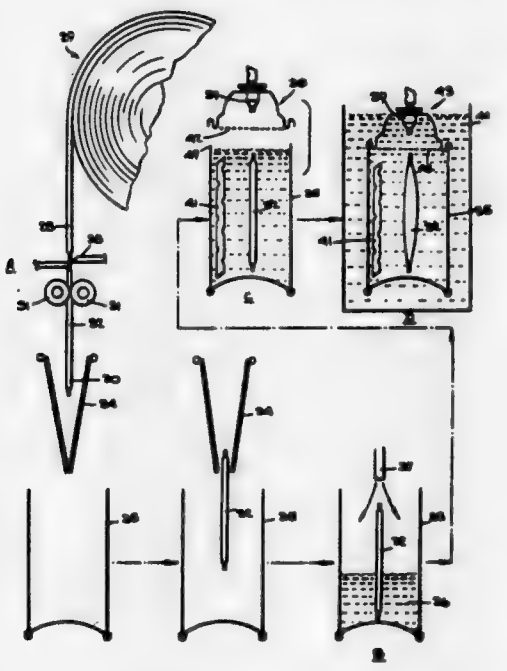
EXPANDABLE BAG AND METHOD OF MANUFACTURE

Russell Banks, Pawling, N.Y., and David J. Magid, Doylestown, Pa., assignors to Enviro-Spray Systems Incorporated, Montgomeryville, Pa.

Division of Ser. No. 172,357, Jul. 25, 1980, Pat. No. 4,376,500. This application Sep. 16, 1982, Ser. No. 419,073

Int. Cl.³ B65B *31/10, 5/02*

U.S. Cl. 53—449 15 Claims



1. The method of fabricating a fluid impervious expandable enclosed bag containing separately compartmented first and second gas generating components which, upon admixture in successive amounts, generate gas causing said bag to expand gradually from a collapsed condition to an ultimate fully expanded condition comprising the steps of:

(a) forming a group of pockets in a first plastic sheet, said pockets being aligned in a staggered series;

(b) fabricating a rupturable solvent containing means associated with said first sheet;

(c) introducing measured amounts of said first component into each pocket of said group;

(d) placing a second plastic sheet over said first group of pockets and releasably sealing it at least at its marginal areas to said first sheet;

(e) placing time release capsule containing said first component, and a measured amount of said second component on a portion of said first sheet spaced from all of said pockets; and

(f) permanently sealing a third plastic sheet to said first sheet

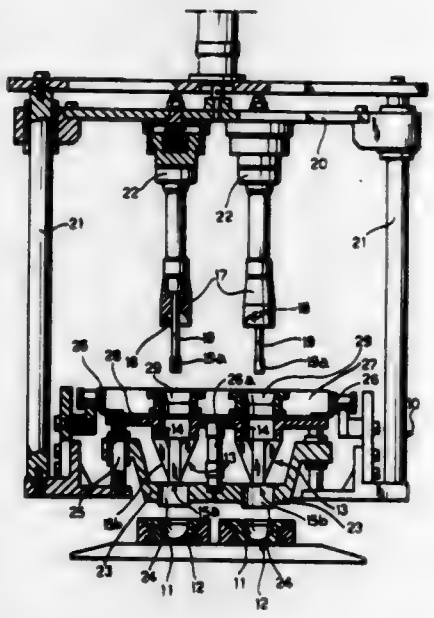
at the marginal areas of both and to said second sheet to provide a bag-like enclosure containing within its interior all of said compartments, and said second compartment.

4,510,735

WRAPPING OF SPHERICAL OBJECTS HAVING SMALL PROTRUSIONS

Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy

Filed Dec. 28, 1982, Ser. No. 454,065
Claims priority, application Italy, Dec. 30, 1981, 68723 A/81
Int. Cl.³ B65B *11/00*
U.S. Cl. 53—464 **6 Claims**



1. A machine for wrapping a spherical object having small protrusions distributed over its surface in alumium foil, comprising:

a supporting framework;

a first half-mould supported by the framework and having a hemispherical cavity;

a forming device comprising an annulus coaxial with the cavity of the first half-mould and a plurality of resilient blades each fixed at one end to the annulus and converging at their other, free ends towards the first half-mould;

a punch slidable axially through the forming device and having a hemispherical cavity constituting a second half-mould at its end facing the first half-mould, the punch comprising a central rod and an outer tubular body slidable axially relative to the rod, and

actuator means acting on the central rod and the outer tubular body to advance the central rod and the tubular body through the forming device in a predetermined periodic sequence between a withdrawn position, in which the punch and the first half-mould lie on opposite sides of the forming device, and an advanced position in which the second half-mould is in contact with the first half-mould.

6. A process for wrapping a spherical object having small protrusions distributed over its surface in thin aluminum foil, comprising the steps of:

(a) placing aluminum foil over a forming device including an annulus and a plurality of resilient blades each fixed at one end to the annulus, the resilient blades having free ends which converge below the annulus;

(b) depositing the object to be wrapped on the aluminum foil;

(c) pushing the object and the aluminum foil through the annulus and between the free ends of the resilient blades to cause adherence of the aluminum foil to the leading surface of the object and to partially wrap the object by affecting a first moulding of the aluminum foil around the trailing surface of the object;

(d) expelling the partially wrapped object through the converging blades, thereby first causing the blades to open out resiliently and thereafter to close due to the passage of the object through the converging free ends, to affect a second moulding of the aluminum foil around the trailing surface of the object and to form a rear, tail-like projection constituted by that part of the aluminum foil not adhering to the object;

(e) transferring the expelled object to a hemispherical cavity of a first half-mould; and

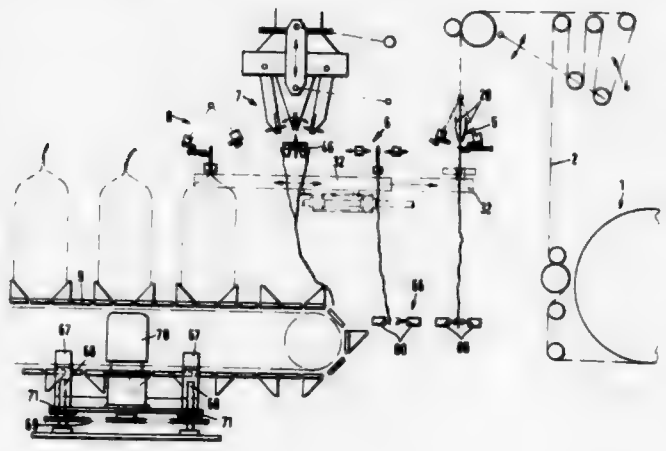
(f) squashing the rear projection of aluminum foil against the object by contacting the rear projection with a hemispherical cavity of a second half-mould.

4,510,736

MACHINE FOR FILLING AND CLOSING BAGS OF SYNTHETIC PLASTIC MATERIAL

Mathias Müller, Viersen, Fed. Rep. of Germany, assignor to Haver & Becker, Oelde, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,844
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118866
Int. Cl.³ B65B *9/10*
U.S. Cl. 53—567 **30 Claims**



1. A machine for filling and closing bags of synthetic plastic material, comprising

lowerable filling means;

transporting means spaced downwardly from said lowerable filling means and intermittently movable in a longitudinal direction to support and transport the bags;

a pair of carriages mounted in a space between said transporting means and said lowerable filling means at a distance corresponding to a bag width, means for reciprocatingly moving said carriages in a horizontal plane between two end positions and synchronously with said transporting means parallel to said longitudinal direction so that the bags are arranged transverse to the movement direction of said pair of carriages;

stations for forming opening, filling and welding;

feeding means on said pair of carriages and having two feeding arms which are provided with gripping plates, means for moving said feeding arms in said opening station from an upper position to a central position toward each other to be inserted into a bag mouth, then to a lower position in the bag and then away from each other to spread the bag and after spreding the bag, moving said feeding arms with said gripping plates further downwardly mounted to a lower transporting position; and

two pairs of grippers arranged on said pair of carriages one pair being mounted on each side of said feeding means to grip bags below their mouth edges, one of said pairs of grippers being a front pair and arranged to bring an empty bag to said opening station, the feeding arms being arranged to bring a bag from said opening station to said filling station, and the other of said pairs of grippers being a rear pair and arranged for bringing a filled bag from said filling station to said welding station, so that three bags are

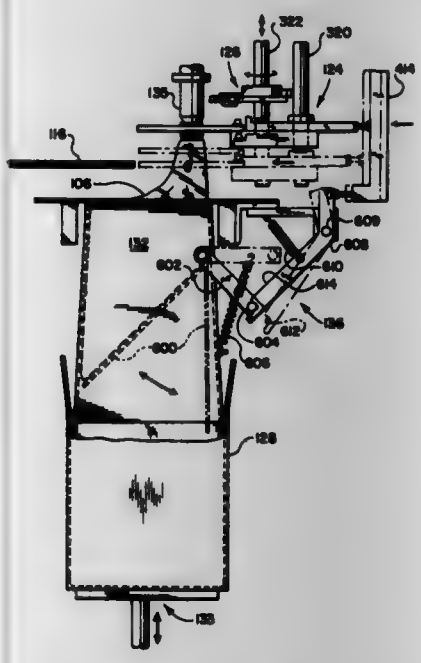
simultaneously transported by said pair of carriages so that during the filling of the central bag one bag is opened and the already filled bag is welded.

4,510,737

MACHINE AND METHOD FOR FILLING FLEXIBLE CONTAINERS

Roger H. Ellert, San Clemente, Calif., assignor to B-Bar-B, Inc., New Albany, Ind.

Filed Nov. 13, 1981, Ser. No. 321,153
Int. Cl.[3] B65B *3/04, 43/40, 43/54*
U.S. Cl. 53—570 4 Claims



1. Apparatus for filling individual flexible containers severed from a continuous web of said containers and depositing containers so filled into supporting cartons, said containers each including a spout communicating with the interior of its associated container and having a separable capping device connected to said spout, said apparatus comprising:

means for receiving said continuous web of containers from a supply force, including means for engaging the spouts of said containers to position and align said web of containers and means for retaining said web of containers within said apparatus;

pusher means adapted to engage the spout of the leading container of said web for advancing said web so that the the spout of said leading container is positioned at a filling station;

container separating means for severing said leading container from said web;

filling means at said filling station for filling said severed leading container;

cap handling means for removing said capping device from said leading container prior to being filled and for replacing said capping device onto said leading container after it has been filled;

container discharge means, expanding in cross-sectional area toward the discharge end, for discharging a filled container under the influence of gravity; and

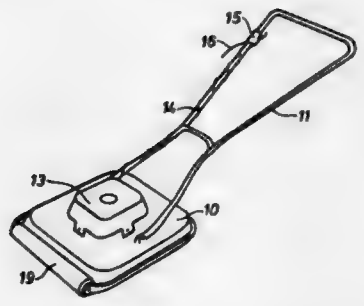
carton receiving means positioned under said discharge means for positioning a rigid carton such that the open end of said carton surrounds the expanded cross-sectional area end of said discharge means so as to receive a filled container within said carton.

4,510,738

AIR CUSHION LAWN MOWER

Kenneth Dunn, 70 Fulthorpe Ave., Mowden Park, Darlington, Co. Durham, England

Filed May 22, 1979, Ser. No. 41,533
Claims priority, application United Kingdom, May 22, 1978, 21042
Int. Cl.[3] A01D *46/00*
U.S. Cl. 56—12.8 6 Claims



1. An air cushion lawn mower comprising:

a housing forming an air cushion hood;

a grass cutting blade shrouded by the housing and rotatable about a generally vertical axis;

a fan wheel rotatable about said axis for generating an air cushion beneath the hood;

a drive unit coupled to the blade and fan;

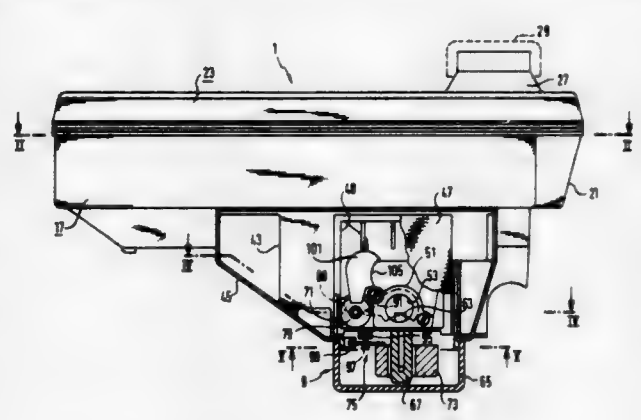
a non-weight bearing roller mounted on the housing adjacent one edge thereof and freely rotatable about an axis extending transversely to the normal direction of travel, which edge constitutes the front edge of the housing when the motor is propelled in its normal direction of travel, and said housing is provided with a peripheral lower rim which lies generally in a horizontal plane and has an upstanding lip, and wherein said roller axis is situated above said plane.

4,510,739

LAWN MOWER

Kurt Dluhosch, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs Ag, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 20, 1983, Ser. No. 516,116
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 8221022[U]
Int. Cl.[3] A01D *53/02*
U.S. Cl. 56—17.5 9 Claims



1. Lawn mower comprising:

(a) a vertical cutter shaft **3**, an internal combustion engine **5** for driving said vertical cutter shaft,

(b) a monolithic first shaped plastics part **17** in the form of a shell positioned above the top of said internal combustion engine **5**, said part **17** including a bottom, a circumferential wall **21** extending upwardly from said bottom, and a partition **25** dividing the interior of said part **17** into a fuel tank **7**, an air intake chamber **11, 15, 39**, air suction opening **33, 41** and air passage openings **31, 43** in said air intake cham-

ber **11**, **15**, **39**, and a fuel duct **69** extending downwardly from said fuel tank **7** and having a lower outlet opening **95**,

(c) monolithic second shaped plastics part **23** positioned on and above said first shaped plastics part **17**, said second part **23** secured in a liquid-tight and inseparable manner to said first shaped plastics part along said circumferential wall **21** and said partition **25**,

(d) a fan wheel arranged on the upper side of said internal combustion engine **5** for drawing air from said air intake chamber **11**, **15**, **39** arranged on the upper side of the internal combustion engine, and said fan wheel is driven about a vertical axis of rotation by said internal combustion engine **5**,

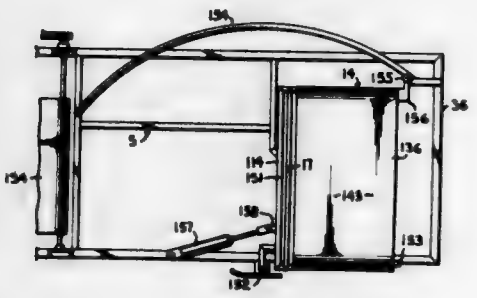
(e) a carburetor **9** having an intake pipe body **51** attached to said fuel duct **69** in said first shaped plastics part **17**, said carburetor comprising a fuel nozzle **63**, a float valve arrangement fastened to said first shaped plastics part and controlling the lower outlet opening **95** of said fuel duct **69**,

(f) a cover part removably mounted on said first shaped plastics part **17**, said cover part together with said first shaped plastics part **17** forming an air intake duct which connects said air intake chamber **11**, **15**, **39** with said intake pipe body **51**,

(g) an air filter arranged in said air intake duct formed by said cover part **45** and said first shaped plastics part **17**, and

(h) a shut-off valve **71** located in said fuel duct **69**, said shut-off valve **71** having a valve body **79** rotatably mounted on said first shaped plastics part **17**.

4,510,740
TOBACCO HARVESTER
Ronald L. Foster, Rte. 1, Box 89, Dearborn, Mo. 64439
Filed Feb. 3, 1984, Ser. No. 576,881
Int. Cl.³ A01D *45/16*
U.S. Cl. 56—27.5 **33 Claims**



1. A tobacco harvesting apparatus comprising:

(a) a mobile frame;

(b) cutter means for severing the stalks of tobacco plants;

(c) impaler means for impaling said plants through their stalks onto a horizontally supported tobacco stick;

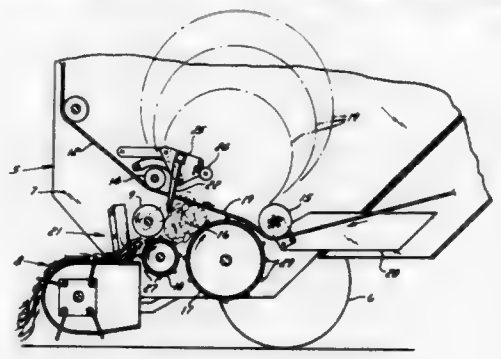
(d) stick pivot means for pivoting the plant loaded stick to a vertical orientation; and

(e) stick setter means for placing the plant loaded stick upstanding into the ground.

4,510,741
ROTARY CROP BALER
Hallis D. Campbell, and Donald E. Burrough, both of West Bend, Wis., assignors to Gehl Company, West Bend, Wis.
Filed Mar. 19, 1984, Ser. No. 591,275
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **9 Claims**

1. A rotary baler for cut crop, comprising a mobile frame having crop pickup means on a front portion thereof, crop guiding means near a front portion of the frame, behind the pickup means, to which crop is discharged by the pickup means and which comprises a feed roller over which the discharged crop passes and which is driven for rotation in a direction to deliver the crop rearwardly to a baling zone wherein the crop is rolled to form a cylindrical core that develops into a bale of growing diameter, endless bale compacting belt means, and a plurality of spaced apart belt rollers around which said belt means is trained, one of said belt rollers being located over said feed roller and another being spaced to the rear of said one, and said belt means being engaged upwardly against said one and said other of the belt rollers to have an expandable stretch extending between them that continuously embraces a growing bale, said baler being characterized by:

A. a bale forming roller that cooperates with said feed roller to support and roll crop in the baling zone, said bale forming roller



(1) having a diameter substantially larger than that of the said feed roller and

(2) having its periphery

(a) rearwardly adjacent to the periphery of said feed roller and

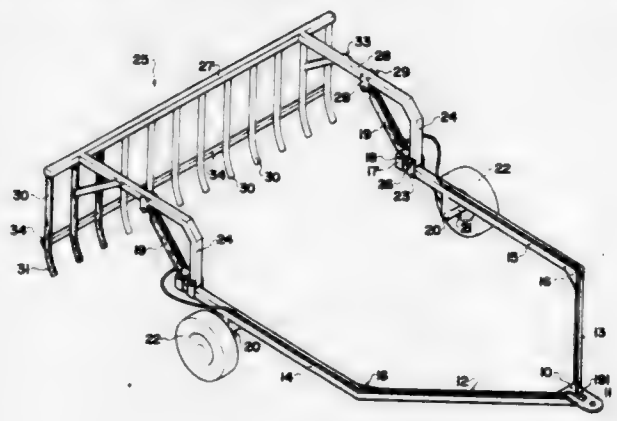
(b) forwardly adjacent to the periphery of said other belt roller; and

B. means for rotatably driving said bale forming roller

(1) in the same direction as said feed roller and

(2) at a peripheral speed which is at least as high as that of said feed roller.

4,510,742
FLAX STRAW BUNCHER
Alexander Lypka, Box 212, Abernethy, Saskatchewan, Canada S0A 0A0
Filed Apr. 20, 1984, Ser. No. 602,458
Claims priority, application Canada, Apr. 26, 1983, 426716
Int. Cl.³ A01D *85/00*
U.S. Cl. 56—384 **7 Claims**



1. A flax straw buncher comprising a hitch for attachment to a combine, a frame structure including a pair of hitch bars extending rearwardly and outwardly from the hitch, a pair of spaced side frame members extending rearwardly from said hitch bars in spaced parallel relationship, a pair of ground wheels each attached separately to a respective one of said side frame members for supporting the frame structure at spaced positions rearwardly of and on either side of the hitch, a transverse rake portion including plurality of depending fingers for engaging and raking the ground, means mounting the rake

portion on the frame structure including a pair of arms each extending forwardly from the rake portion such that the space defined upwardly and in front of the rake portion and inwardly of the hitch bars and side frame members is free from encumbrances whereby the rake portion provides the only transverse interconnecting member across the frame structure adjacent the ground wheels, whereby a bunch of said flax straw can be formed in said space in front of the rake portion, and means mounting each of said forwardly extending arms for pivotal movement on a respective one of the side frame members whereby the whole of the rake portion can be raised relative to the frame structure to release a bunch formed in front of the rake portion.

4,510,743

ROPE COMPRISING TWO OR MORE POLYMER COMPONENTS

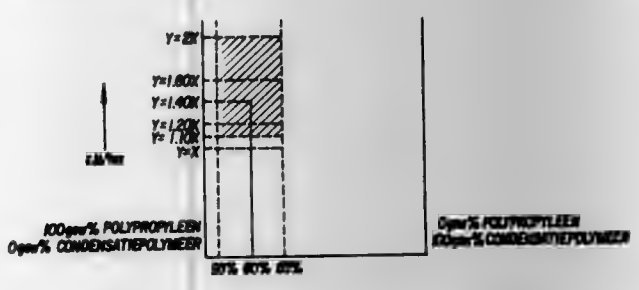
Jan de Kroon, Wijk bij Duurstede, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 128,090, Mar. 7, 1980, abandoned, which is a continuation of Ser. No. 851,769, Nov. 15, 1977, abandoned. This application Jul. 2, 1982, Ser. No. 394,657

Claims priority, application Netherlands, Nov. 26, 1976, 7613193

Int. Cl.³ D02G *3/02, 3/22*

U.S. Cl. 57—260 **4 Claims**



1. A split-fiber rope composed of at least one helically extending bundle of threads, said threads consisting of a composite elongated product comprising at least two synthetic polymer components, one of the polymer components being present in an amount of from 75 to 85% by weight of polypropylene and the second polymer component in an amount of from 25 to 15% by weight, based on the total weight of the composite product, of a polyester substantially formed of polyethylene terephthalate having a melting point which is at least 15 Centigrade degrees higher than the melting point of said polypropylene, said polyester being distributed in the polypropylene with at least a part thereof being in the form of fibrils, a large number of the fibrils having a length of at least 0.1 mm and a thickness of not more than 0.005 mm, said composite elongated product having been drawn in at least two stages, the draw ratio in the first stage not being higher than 4 and the total draw ratio not being higher than 14, which composite elongated product is present in the rope substantially in the form of split fibers and in its oriented state having a tensile strength of 1.2 times to 2 times the tensile strength of a practically 100 percent polypropylene product having a melt index of 3 and a tensile strength of at least 45 cN/tex and made in the same way as the said composite elongated product.

4,510,744

APPARATUS FOR FALSE TWISTING YARN

Christopher J. Lawrence, Macclesfield; Philip M. Wilkinson, Cheadle, and Colin Atkinson, Macclesfield, all of England, assignors to Rieter-Scragg Limited, Cheshire, England

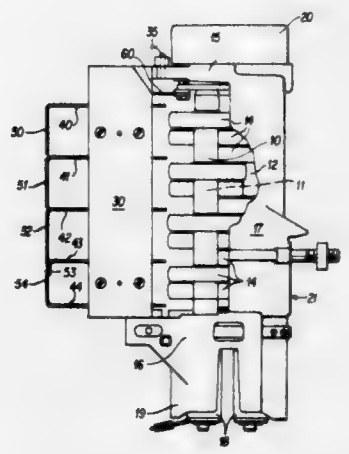
Filed Jun. 1, 1983, Ser. No. 500,002

Claims priority, application United Kingdom, Jun. 1, 1982, 8215876

Int. Cl.³ D02G *1/08;* D01H *15/00*

U.S. Cl. 57—280 **25 Claims**

1. In an apparatus for false twisting yarn comprising three rotatable, parallel shafts arranged at the apices of an equilateral triangle, a plurality of mutually parallel coaxial discs forming a disc stack carried by each shaft and said discs being arranged on a helix around a central axis parallel with said shafts with consecutive discs on two shafts being separated by a space and a disc on the third shaft being disposed in said space; a threading device comprising a body secured in said apparatus to extend substantially in parallel with said axis and having a plurality of yarn engaging tines mounted thereon and spaced longitudinally thereof, each tine being movable relative to said body from a respective first position outside the extent of said plurality of discs to a respective second position within the said space, at least some of said tines being movable independently of the remaining ones of said tines.



14. For use with false twisting apparatus of the kind comprising three rotatable parallel shafts arranged at the apices of a triangle and having a plurality of parallel discs on each shaft which interdigitate with the discs on the other two shafts, a threading device comprising a plurality of yarn engaging tines each of which is movable from an inoperative position outside the extent of the series of discs to an operative position in which it extends into a space between consecutive discs on two of the shafts as separated by a disc on the third shaft, at least some of the tines being movable into their operative positions independently of the other tines, whereby, during use of the threading device, a false twisting apparatus with which the device is being used can be threaded in sequential stages.

4,510,745

OPEN-END SPINNING UNIT

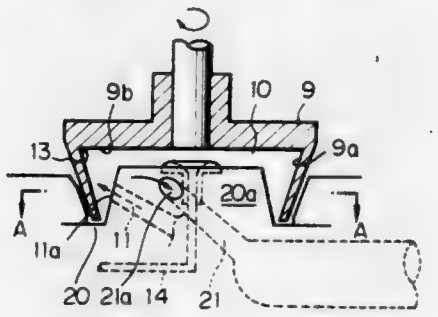
Susumu Kawabata, Aichi; Tetsuzo Inoue, Nagoya; Noriaki Miyamoto, Toyota; Masanobu Shibuya, Kariya, and Masashi Kaneko, Tokai, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, both of Aichi, Japan

Filed Jun. 21, 1983, Ser. No. 506,327

Claims priority, application Japan, Jun. 21, 1982, 57-105471

Int. Cl.³ D01H *7/882, 7/898*

U.S. Cl. 57—415 **9 Claims**



1. An open-end spinning unit comprising a spinning rotor open on one side thereof and having a bottom wall and an inner wall which define a chamber; and a closing element covering the open side of the rotor and containing a fiber supply duct

having an utlet opening which opens into the chamber of said closing element, and at least one suction opening disposed downstream, relative to the rotation of said rotor, of said outlet opening of said fiber supply duct and which opens into said chamber, whereby an airstream directed in the same direction as the rotation of said rotor is generated from said outlet opening to said at least one suction opening.

4,510,746

FLEXIBLE BAND

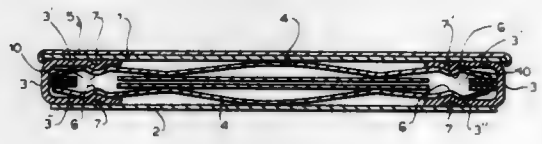
Gerhard Ratz, Keltern, Fed. Rep. of Germany, assignor to Rodi & Wienenberger, Pforzheim, Fed. Rep. of Germany

Filed Aug. 29, 1983, Ser. No. 527,310

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 8224660[U]

Int. Cl.³ F16G *13/00*

U.S. Cl. 59—79.1 **2 Claims**



1. A flexible band, in particular a wristwatch strap, comprising: an upper and lower layer of link members; a plurality of U-shaped clips, each of which connecting an upper and a lower link member and having two shanks respectively provided with an inwardly directed flexure; and a plurality of leaf springs each of which extending within an associated link member and having a further inwardly directly flexure at opposing end portions thereof for cooperating with an associated flexure of the clip and the end portions of each of the leaf springs are downwardly inclined so as to facilitate insertion of the respective clips and connection of the upper and lower link, wherein each of the link members has an inner side provided with a recess at each end thereof, wherein each of the link members is provided with an additional cut-out at each end and in the vicinity of each recess with each cut-out being separated from each other so that upon stretching of the band the ends of the respective leaf spring protrude into the recess and the further flexure of each leaf spring protrudes into the cut-out.

4,510,747

LOCKUP CONTROL DEVICE FOR A TORQUE CONVERTER

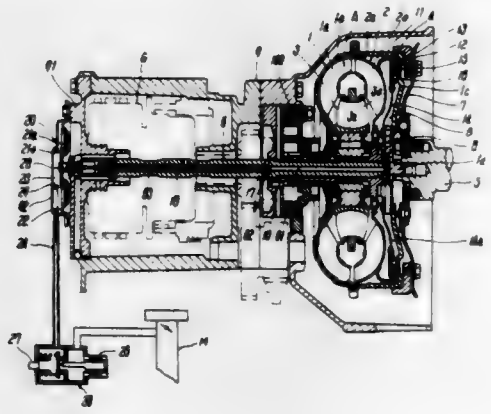
Ryo Yoshida, Ikeda, Japan, assignor to Daihatsu Motor Company Limited, Osaka, Japan

Filed Nov. 23, 1981, Ser. No. 324,052

Claims priority, application Japan, Dec. 12, 1980, 55-176184; Dec. 28, 1980, 55-188086

Int. Cl.³ F16D *33/00*

U.S. Cl. 60—343 **7 Claims**



1. A lockup control device for a torque converter provided with a pump coupled with an output shaft of an engine and a turbine coupled with an input shaft of a transmission gear, comprising:

a lockup clutch for connecting said pump directly with said turbine at said torque converter, said lockup clutch comprising a clutch piston, a clutch disc engageable therewith, and a lockup clutch control chamber which is positioned between the piston and the disc and controls the engagement of said piston with said disc;

a clutch operating device provided with a control member for engaging or disengaging said clutch;

an operating member for operating said control member, said input shaft coupling with said turbine being provided with an oil passage having a drain, said oil passage communicating with said lockup clutch control chamber and having an on-off valve for opening or closing said drain;

an actuating device for electrically actuating said operating member, said actuating device being provided with a car speed detector for detecting a car speed to output a plurality of car speed signals, a negative pressure detector for detecting a negative pressure in a suction pipe at said engine, and an actuating member which electrically actuates said operating member in response to said car speed signals and negative pressure signals output from said car speed and negative pressure detectors, so that said clutch is engaged when said car speed is greater than or equal to a predetermined speed and said suction pipe negative pressure is greater than or equal to a predetermined pressure, and is disengaged when said car speed is less than said predetermined speed and said suction pipe negative pressure is less than said predetermined pressure; and

said input shaft extending in axial alignment with said output shaft so that said transmission gear is incorporated with the extension of said input shaft, said input shaft being supported at one axial end thereof to a side cover of a transmission case housing therein said transmission gear, and having an insertion bore in continuation of said oil passage and open at the axial end of said input shaft at the side cover side, said insertion bore supporting an operating rod acting as said operating member which controls said on-off valve to open and close the same.

4,510,748

COMPRESSION WAVE FORMER

Joseph S. Adams, 404-1617 W. Fourth Ave., Vancouver, British Columbia, Canada

Division of Ser. No. 091,150, Nov. 5, 1979, Pat. No. 4,365,471. This application Sep. 20, 1982, Ser. No. 419,749

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.³ F02C *5/02*

U.S. Cl. 60—39.02 **8 Claims**

1. A method of dynamically compressing and detonating a fuel and air mixture, said method comprising:

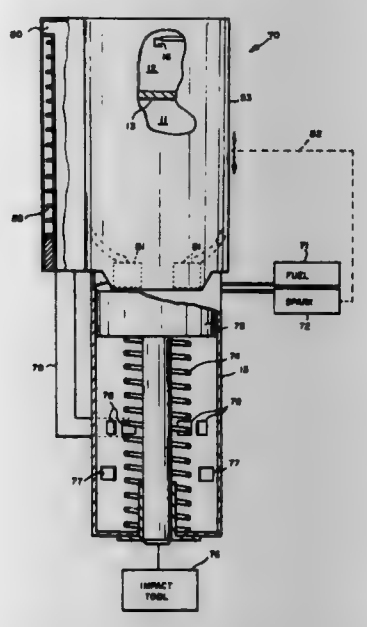
a. confining said fuel and air mixture within an ignition chamber and an adjacent detonation chamber having a constricted output opening spaced from said ignition chamber;

b. igniting said mixture within said ignition chamber;

c. directing flames from combustion within said ignition chamber into said detonation chamber through at least three passageways to form at least three flame jets jutting into said detonation chamber; and

d. directing said flame jets along spaced-apart regions of an outer periphery of said detonation chamber to initiate combustion of said fuel and air mixture simultaneously in each of said spaced-apart peripheral regions, said simultaneously initiated combustion starting a combustion expansion that widens said combustion regions to join each other and advances said combustion regions toward a central region of said detonation chamber where said advancing combustion dynamically compresses said fuel and air mixture so that said advancing combustion accelerates through said dynamically compressed mixture, result-

ing in shortening the time lapse from said ignition to peak pressure in said detonation chamber and concentrating the



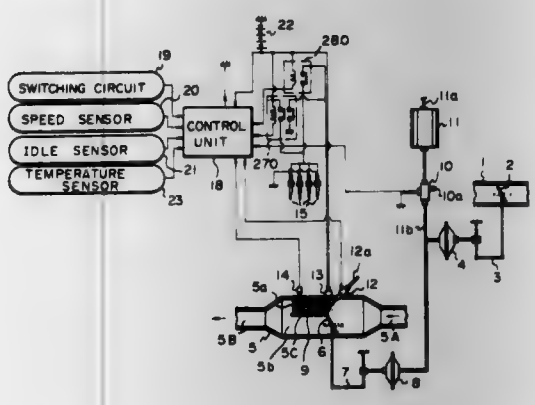
heat of said combustion in said central region where it is spaced from said outer periphery of said detonation chamber.

4,510,749

EXHAUST GAS PURIFIER FOR A DIESEL ENGINE

Masahiro Taguchi, Okazaki; Satosi Kuwakado, Aichi, and Noboru Tsuge, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 1, 1982, Ser. No. 438,345
Claims priority, application Japan, Nov. 5, 1981, 56-176417
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—286 **4 Claims**



1. An exhaust gas purifier for a diesel engine having a throttle valve provided in an intake passage for reducing the flow rate of intake air during engine idling, said exhaust gas purifier comprising:

a housing having an exhaust gas inlet and outlet, said housing having a main passage extending from said inlet to said outlet and a passage bypassing at least part of said main passage;

means disposed in said bypass passage for oxidizing unburned combustibles in the exhaust gas passed therethrough;

a control valve arranged in said main passage to close said main passage such that all of the exhaust gas is forced to flow through said bypass passage; and

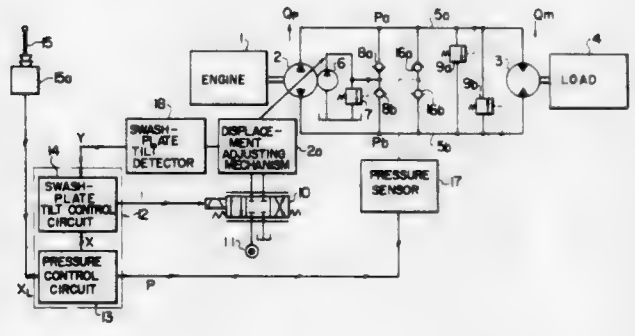
means for closing said control valve in synchronization with a closure of said throttle valve during engine idling.

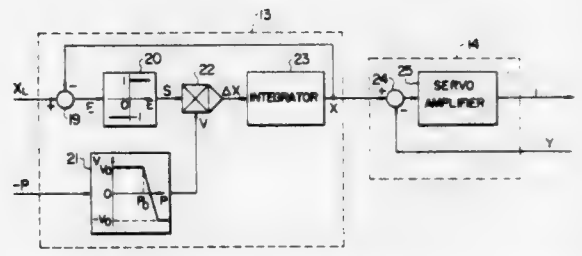
4,510,750

CIRCUIT PRESSURE CONTROL SYSTEM FOR HYDROSTATIC POWER TRANSMISSION

Eiki Izumi; Hiroshi Watanabe; Yukio Aoyagi; Kazuo Honma, and Kichio Nakajima, all of Ibaraki, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,569
Claims priority, application Japan, Jun. 4, 1980, 55-74220; Aug. 6, 1980, 55-107143; Aug. 22, 1980, 55-114773
Int. Cl.³ F16D *33/02*
U.S. Cl. 60—443 **5 Claims**





1. A circuit pressure control system for a hydrostatic power transmission including a variable-displacement hydraulic pump driven by a prime mover, a hydraulic actuator for actuating a load and a displacement adjusting mechanism for the hydraulic pump, the hydraulic pump and hydraulic actuator being connected together in a closed or a semi-closed circuit, and the displacement adjusting mechanism being actuated by a signal indicative of an operating lever manipulated variable and a signal indicative of the actual displacement of the hydraulic pump to control the speed of the hydraulic actuator, said circuit pressure control system comprising:

means for sensing at least a higher one of a circuit pressure in discharge and suction sides of the hydraulic pump and generating a signal indicative of the sensed circuit pressure;

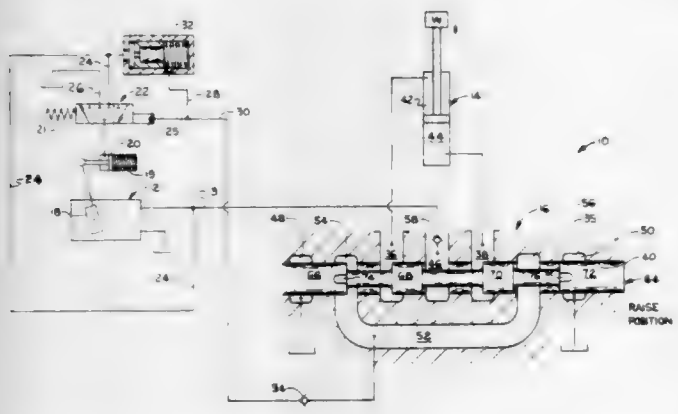
means for calculating, based on said manipulated variable signal and said signal indicative of the sensed circuit pressure, a hydraulic pump displacement command which causes the displacement of the hydraulic pump to be changed at a maximum rate when the circuit pressure is below a predetermined value and causes the rate of change of the pump displacement to be reduced when the predetermined value is exceeded thereby said means for calculating the hydraulic pump displacement command including first means for converting said sensed circuit pressure signal to a value indicative of the rate of change in the displacement of the hydraulic pump based on a preset function whih predetermines the above relations between the circuit pressure and the rate of change in the displacement of the hydraulic pump, and second means for converting said value indicative of the rate of change in the pump displacement to a value indicative of the displacement of the hydraulic pump to thereby obtain said hydraulic pump displacement command; and

means for comparing the displacement command with the actual displacement of the hydraulic pump and producing a signal for decreasing the difference between them and supplying such signal to said displacement adjusting mechanism.

4,510,751
OUTLET METERING LOAD-SENSING CIRCUIT

Alan D. Jackson, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Apr. 22, 1982, Ser. No. 370,887
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—450 **5 Claims**



1. A load sensing meter-out hydraulic system controlling a motor, supplied by the output of a variable displacement pump through a directional control valve, the system including:

a pilot flow pressure source comprising a line connected to the output of the variable displacement pump with a flow restriction means in the line;

a flow control cylinder attached to the pump for varying the flow output of the pump;

a servo actuated pump compensating means connected to the output of the variable displacement pump and a drain for controlling the flow to and from the control cylinder;

a directional control valve having a bore which is intersected by a pump pressure cavity supplied by the variable displacement pump, first and second motor port cavities, a return cavity and a signal cavity between each of the motor port cavities and the return cavity;

a signal line connecting the servo of the pump compensating means to the signal cavity of the valve including a check valve blocking flow from the signal cavity to the servo;

a supply line from said pilot flow pressure source supplying the signal line between the check valve and said servo whereby the pressure in the signal cavity of the valve is sensed at the servo of the pressure compensating means, so that the pump discharge can be varied through the compensating cylinder to maintain a constant pressure in the signal cavity of the valve; and

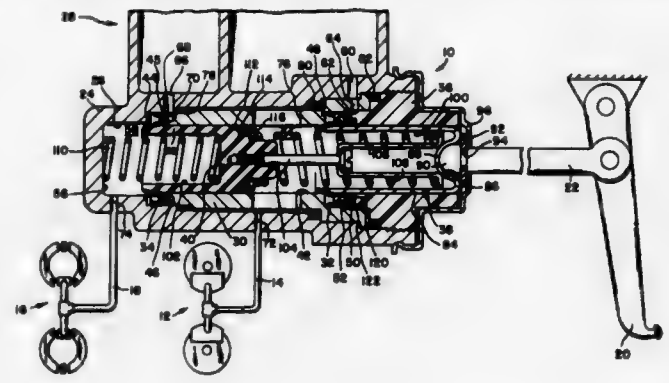
a spool means in the directional control valve having a first position opening pump pressure to a first motor port while opening the second motor port to the signal cavity and metering the signal cavity to drain.

4,510,752
MASTER CYLINDER

Robert F. Gaiser, Stevensville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 10, 1981, Ser. No. 282,346
Int. Cl.³ B60T *11/20*
U.S. Cl. 60—562 **4 Claims**

1. A master cylinder for a brake system having a housing defining an axially extending bore, a first piston movable within the bore by an input member engaged therewith, and a second piston movably disposed within the bore and cooperating with the first piston to form a first pressure chamber, the second piston also cooperating with the housing to form a second pressure chamber, characterized by said first piston comprising a thin walled cup shaped member with a longitudinal body extending axially from a base, said longitudinal body defining a cavity forming a portion of said first pressure chamber, said cup shaped member being stamped from a metal to form a substantially uniform dimension for said thin wall, said second piston being made from a molded plastic whereby the master cylinder provides different materials for said first and second pistons, and said first and second pistons are made by different processes, the housing including a sleeve fixedly disposed within the bore in order to define fixed positions for a first lip seal engaging the first piston and a second lip seal

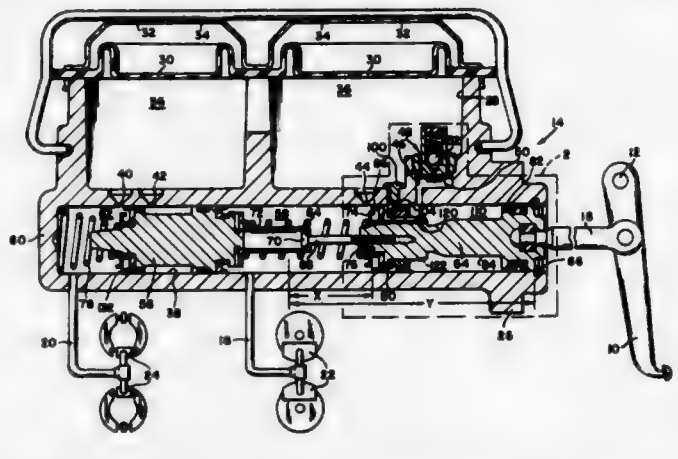


engaging the second piston, said sleeve defining a uniform diameter bore between said first and second lip seals and said first and second pistons slidably engage the wall of said uniform diameter bore.

4,510,753
MASTER CYLINDER

John E. Steer, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 274,336, Jun. 17, 1981, abandoned.
This application Apr. 11, 1984, Ser. No. 599,101
Int. Cl.³ B60T *11/08*
U.S. Cl. 60—578 **2 Claims**



1. A master cylinder comprising a housing defining a cylinder bore therein, a piston member movably diposed within a portion of said cylinder bore for axial reciprocation therein, said piston member sealingly cooperating with said housing to bound a pair of variable-volume chambers for holding a fluid, passage means for communicating said pair of variable-volume chambers, said piston member being movable relative said housing to contract said pair of variable-volume chambers and to communicate pressurized fluid from one of said pair of variable-volume chambers to the other of said pair of variable-volume chambers, means cooperating with said piston to provide for contraction of said one variable-volume chamber when said piston is movable relative to said housing, characterized in that said bore portion is of a constant diameter, said means comprising an annular partition member disposed substantially immovably within said bore portion and circumscribing said piston member, said partition member sealingly cooperating with said housing and with said piston member via a sealing member to bound said one variable-volume chamber, with said partition member including a pair of identical C-shaped members which each include cooperating means for interlocking with the other and said pair of C-shaped members cooperating with said sealing member to form coacting means

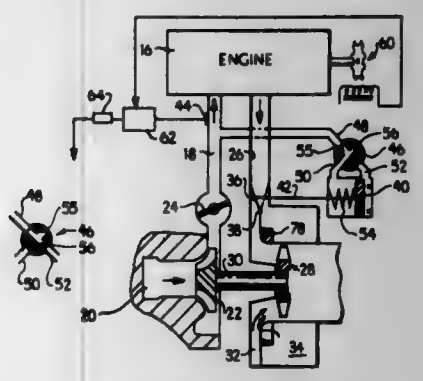
for interlocking said C-shaped members with said sealing member, said cooperating means includes a radially extending tongue defined at one end of said C-shaped members and a radially extending groove defined at the opposite end of said C-shaped members, said groove of each C-shaped member receiving the tongue of the other C-shaped member to axially interlock therewith and prevent axial movement between said pair of identical C-shaped members.

4,510,754

TURBOCHARGER AND EXHAUST GAS CONTROL THEREFOR

Christian J. Rahnke, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 2, 1983, Ser. No. 500,488
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—602 **14 Claims**



1. A turbocharger for boosting the pressure of gas inducted by an internal combustion engine having an exhaust gas outlet comprising:

a driveshaft mounted for rotation;

a turbine inlet

a turbine rotor and a compressor rotor fixed to the driveshaft;

passage means including first and second passages for connecting the engine exhaust gas outlet to the turbine inlet; and

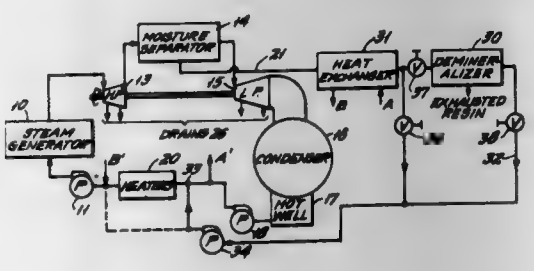
closing means for alternately connecting the engine exhaust gas outlet to the first passage and disconnecting the engine exhaust gas outlet to the second passage and for connecting the engine exhaust gas outlet to the second passage and disconnecting the engine exhaust gas outlet to the first passage.

4,510,755

DEMINERALIZATION OF FEED WATER IN A STEAM SYSTEM

Russell J. Gartmann, Delran, N.J., and James S. Brown, St. Simons Island, Ga., assignors to Transamerica DeLaval Inc., Princeton, N.Y.

Filed Aug. 10, 1983, Ser. No. 521,659
Int. Cl.³ F01K *13/00*
U.S. Cl. 60—657 **12 Claims**



1. In a feed water-recovering steam-generating system (a) wherein a moisture-separator processes the exhaust products of one stage of steam utilization for use at another stage at reduced temperature and pressure, (b) wherein one of the outputs of the moisture-separator is mechanically separated liquid at relatively high temperature and pressure, (c) wherein another of the outputs of the moisture-separator is steam used in the other stage before discharge to a condenser for condensing the utilized steam to a relatively low-temperature condensate, and (d) wherein the condensate is accumulated in a hot well prior to pumped extraction for recycled use via the feed water line to the steam generator,

the improvement in which:

(1) a filter demineralizer has an inlet-line connection to the mechanically separated liquid output of said moisture separator, and

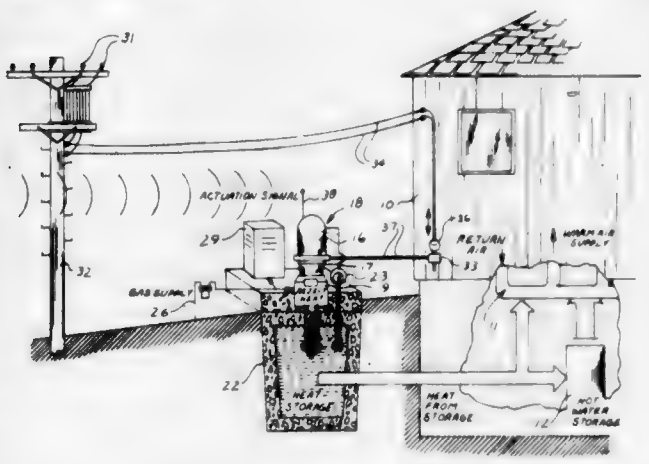
(2) the outlet of said filter demineralizer is connected to the feed water line at a location downstream from where the accumulated hot-well condensate is pumped into the feed water line.

4,510,756

COGENERATION

Ralph E. Hise, and Paul F. Swenson, both of Shaker Hts., Ohio, assignors to Consolidated Natural Gas Service Company, Inc., Cleveland, Ohio

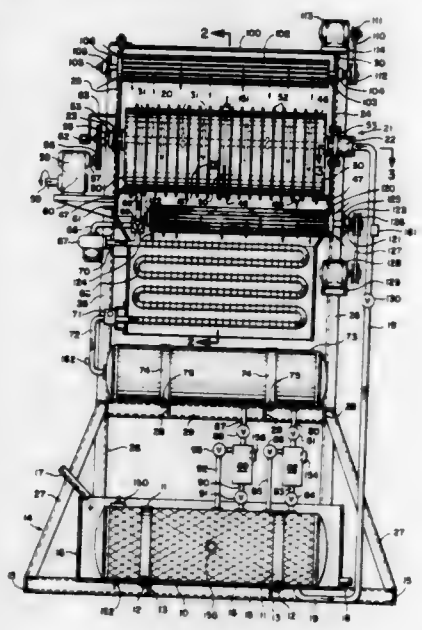
Continuation-in-part of Ser. No. 323,174, Nov. 20, 1981, abandoned. This application Nov. 8, 1982, Ser. No. 439,520
Int. Cl.³ B60H *1/02*; H02P *9/04*; F24D *3/02*
U.S. Cl. 60—659 **18 Claims**



1. A cogeneration plant at a local site operating under the priority of supplying substantially all of its expected daily thermal load requirement which varies throughout a 24-hour period, the plant including a heat engine, a source of combustible fuel for driving the engine, electric power generating means for converting mechanical energy of the heat engine to electrical power, means interconnecting the electrical power generating means to an electrical utility grid, the utility grid experiencing a load that regularly varies significantly in magnitude throughout a 24-hour period and is characterized by a peak demand period which is substantially less than 24 hours, a heat storage unit having a capacity sized in accordance with the expected daily thermal load requirement, first means thermally connecting the engine to the heat storage unit for conducting heat energy rejected by the heat engine to the storage unit, second means thermally connecting the heat storage unit to the thermal load, control means for energization of the heat engine and generating means ordinarily exclusively during the peak rate period of the utility, and sensing means monitoring the heat value stored in the storage unit and arranged to normally override said control means when said storage unit contains a desired capacity of heat to discontinuous operation of said heat engine and generating means, said heat engine and generating means forming a set sized to run primarily through the peak rate period to develop a quantity of rejected heat equivalent to the modified design day thermal load of the site, said sensing means and control means being mutually arranged to normally assign priority of operation of said heat engine and generating means ordinarily exclusively to the condition where, during the peak demand period, the expected following

24-hour heat demand is greater than the quantity of heat contained in the heat storage unit.

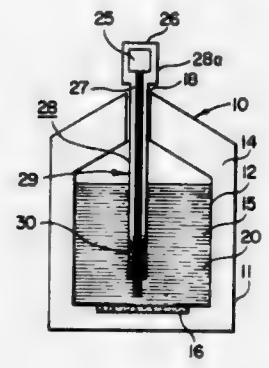
4,510,757
HEAT ENGINE
Merrill E. Graham, Jr., P.O. Box 545, Tehachapi, Calif. 93561
Filed Jan. 3, 1984, Ser. No. 567,799
Int. Cl.³ F22D *5/00*
U.S. Cl. 60—667 **18 Claims**



1. An engine powered by a source of heat, comprising a heating tank operatively positioned with respect to a source of heat so that the contents of the tank is heated; a working fluid within the tank, such fluid having a boiling point below the temperature of the source of heat so that when the fluid is heated in the tank, it becomes pressurized; a turbine having a hollow central shaft mounted for rotation and adapted to receive pressurized fluid from the tank and a plurality of hollow vanes extending radially outwardly from the central shaft, said hollows of the vanes communicating with the hollow of the shaft and being open at their opposite ends so that said pressurized fluid flows from the shaft through the vanes and out the ends of the vanes, the openings at the ends of the vanes directing said fluid from the vanes to cause rotational movement of the vanes and shaft; a housing about the turbine to collect and confine the fluid flowing from the turbine; storage means for storing the collected fluid; means for connecting the turbine housing and storage means so said fluid can flow from the turbine housing into the storage means; at least one pressure equalization tank in flow communication with both the storage means and the heating tank; first valve means to control the flow of fluid from the storage means into the pressure equalization tank; second valve means to control the flow of fluid from the pressure equalization tank into the heating tank; equalizing means connecting the top of the heating tank and the top of the pressure equalization tank to allow for pressure equalization between the two tanks; and third valve means in the equalizing means to control when pressure equalization takes place so that the fluid in the storage tank can flow into the equalizing tank, be pressure equalized, and flow into the heating tank to be again heated and circulated through the system.

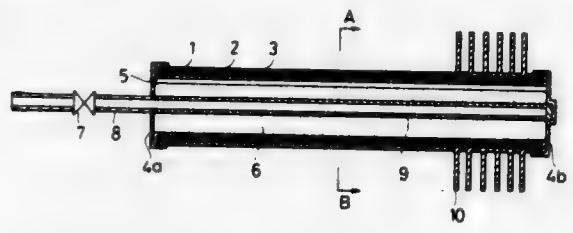
4,510,758
CONVERTIBLE CRYOSTAT
Orren K. Tench, Jr., Wethersfield, Conn., assignor to Canberra Industries, Inc., Meriden, Conn.
Filed Jun. 20, 1983, Ser. No. 505,725
Int. Cl.³ F17C *1/00*
U.S. Cl. 62—45 **5 Claims**

1. An improved cryostat having a plurality of ports for accepting devices to be maintained at low temperature comprising a Dewar container having an inner vessel for containing a cryogen in a liquid state and an outer vessel joined to said inner vessel to define a volume therebetween for evacuation, said Dewar having a top opening through which the cryogen may evaporate and into which a device chamber may be inserted to become at least partially immersed in the cryogen and at least one additional port for accepting a device chamber which port extends through said inner and outer vessels, said



second port including a tube structure closed at its inner end, sealed to the inner wall so as to be isolated from the interior of said inner vessel and terminating at its inner end in a heat sink, said port including a tubular member affixed and sealed to said tube and to the other vessel wall of said cryostat thereby maintaining the intergrity of the vacuum between the inner and outer vessel walls, said tube extending into the inner container to be at least partially immersed in the cryogen.

4,510,759
METALHYDRIDE CONTAINER AND METAL HYDRIDE HEAT STORAGE SYSTEM
Takashi Sakai; Naojiro Honda, and Ikuo Yonezu, all of Hirakata, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Sep. 14, 1982, Ser. No. 418,029
Claims priority, application Japan, Sep. 17, 1981, 56-145601; Sep. 17, 1981, 56-145602
Int. Cl.³ F17C *13/02*; F28D *13/00*
U.S. Cl. 62—48 **4 Claims**

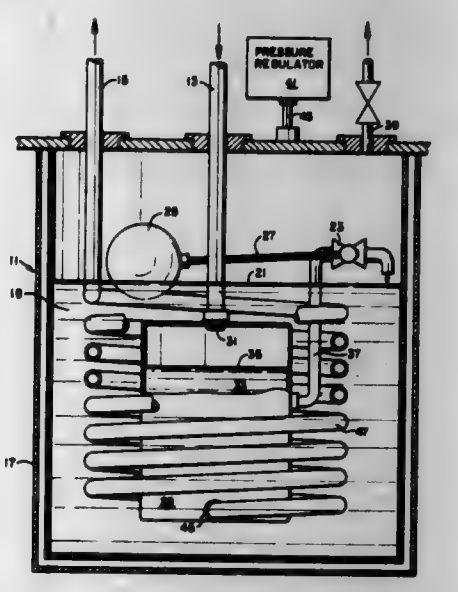


1. A metal hydride container for use in storing heat from and releasing heat to a medium in a heat exchanger, comprising a heat pipe of annular cross section, said heat pipe comprising an outer tube and an inner tube together defining a sealed space between said tubes, a wick inserted in said space and a working fluid filling said space, a metal hydride filling the central cavity of said inner tube, closure members serving to close the openings at the opposite ends of said central cavity, a hydrogen passage tube possessed of a shut-off valve and fitted into an aperture formed in one of said closure members, and communicated with the central cavity of the inner tube through a partition member pervious to hydrogen gas and ipervious to said metal hydride.

4,510,760
COMPACT INTEGRATED GAS PHASE SEPARATOR AND SUBCOOLER AND PROCESS

Rolf H. Wieland, Norristown, Pa., assignor to Messer Griesheim Industries, Inc., Valley Forge, Pa.

Filed Mar. 2, 1984, Ser. No. 585,523
Int. Cl.³ F17C *13/02*
U.S. Cl. 62—49 8 Claims



1. A compact integrated gas phase separator and subcooler for removing gas phases from a liquid gas and subcooling the liquid gas, comprising

subcooler means for subcooling a liquid gas,

said subcooler means including a subcooler container having a cold bath of liquid gas,

gas separator means for removing gas phases from a liquid gas,

said separator means including a separator container positioned inside the subcooler container in the cold bath,

means for passing a liquid gas from a liquid gas supply line into the phase separator container,

heat exchanger means for subcooling the liquid gas including coils extending from the phase separator through the cold bath in the subcooler container,

transfer means for passing the gas phases and liquid gas from the separator including a float valve extending from the separator container into the subcooler container with a float floating on the surface of the cold bath in the subcooler,

said heat exchanger means also being adapted for opening the float valve by heating the liquid gas in the subcooler bath to evaporate some of it and lower the level of the surface of the subcooler bath,

said transfer means also being adapted for closing the float valve by passing liquid gas from the separator container into the subcooler to raise the level of the surface of the subcooler bath.

4,510,761
ICE MAKING MACHINE WITH REVERSE DIRECTION HOT GAS THAWING AND PRESSURIZED GAS DISCHARGE

James H. Quarles, 818 Woodmore La., Chattanooga, Tenn. 37411

Continuation-in-part of Ser. No. 379,830, May 19, 1982, Pat. No. 4,455,843, which is a continuation-in-part of Ser. No. 236,432, Jun. 21, 1981, abandoned. This application Apr. 12, 1983, Ser. No. 484,347
Int. Cl.³ F25C *5/10*
U.S. Cl. 62—73 24 Claims

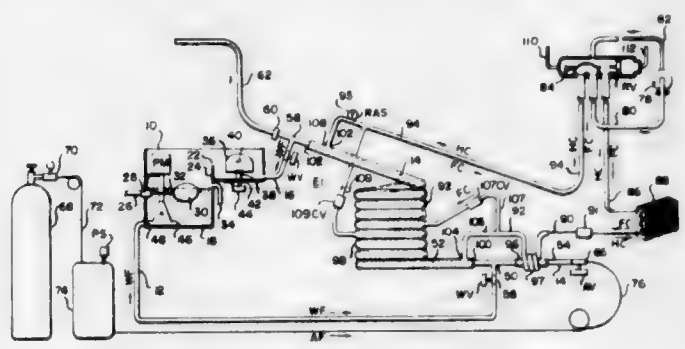
1. An ice making machine including:

means defining a water circuit, said water circuit including a tube wherein ice is formed;

means for introducing water into said water circuit;

means defining a refrigeration circuit, at least a portion of said refrigeration circuit disposed in heat exchange relationship about at least a portion of said tube;

means for circulating a refrigerant through said refrigerant circuit, wherein in a freezing cycle said refrigerant circulation means is adapted to circulate cold refrigerant in a first direction through said refrigerant circuit, whereby heat exchange between water in said tube and said refrigerant causes the formation of a deposit of ice on an inner wall of said tube, said first direction being from a first end of said tube to a discharge end thereof, wherein in a harvest cycle said refrigerant circulation means is further adapted to circulate hot refrigerant in a second direction through said refrigerant circuit, whereby the outer periphery of ice formed in said tube is sufficiently thawed and loosened to facilitate the discharge of ice from said tube, wherein said first direction is opposite said second direction, said means for circulating said refrigerant through said refrigerant circuit comprising a four-way valve having a first port connected to a condensor included in said refrigerant circuit, a second port connected to a first port of a refrigerant compressor, a third port connected to a



second port of a refrigerant compressor, and a fourth port connected to a portion of said refrigerant circuit which is in heat exchange relation with said water circuit, said first port of said four-way valve being selectively communicable with said second and third ports thereof, said second port of said four-way valve being selectively communicable with said first and fourth ports thereof, and said third port of said four-way valve being selectively communicable with said first and fourth ports thereof;

a one-directional pressure valve and a refrigerant reservoir connected between said condensor and said portion of said refrigerant circuit which is in heat exchange relation with said water circuit, said one-directional pressure valve being adapted to permit refrigerant to flow therethrough and into said refrigerant reservoir when a sufficiently high pressure differential exists across said one-directional pressure valve, said refrigerant reservoir being connected to said condensor;

sensor means for determining when ice is sufficiently formed in said tube;

means for initiating said harvest cycle; and,

means for discharging ice from said tube.

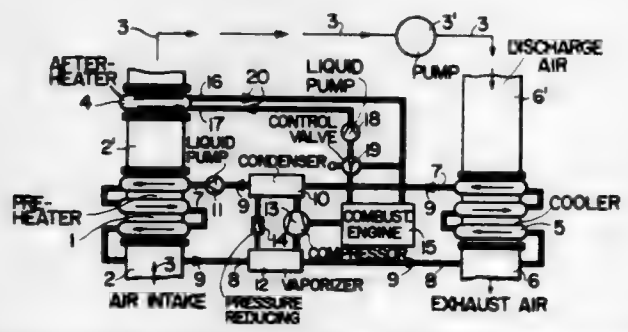
4,510,762
HEAT RECOVERY METHOD

Fritz Richarts, Stolberg-Breinig, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,106
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1982, 3222406
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—79 6 Claims

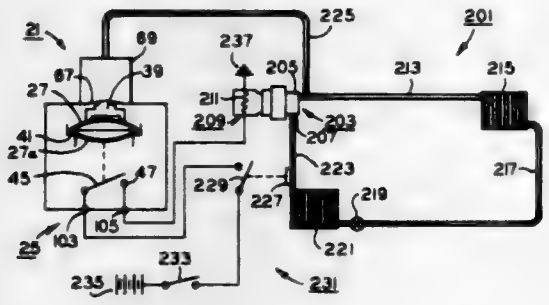
1. A method for recovering heat by means of a heat carrier circulatory system from a fluid passing through different temperature stages, wherein the entrance temperatures of a heat carrier into a preheater and into a cooling device in said circulatory system are changed by means of a heat pumping process, comprising the following steps:

(a) passing the heat carrier through a discharge air cooling device (5) for heating the heat carrier;
(b) further passing said heat carrier from said discharge air cooling device (5) through a condenser (10) of a heat pump (13) for further heating said heat carrier,
(c) passing said further heated heat carrier through a preheater (1) for cooling the heat carrier; and



(d) further passing the cooled heat carrier from the preheater (1) through a vaporizer (12) of said heat pump for further cooling said heat carrier before returning the heat carrier to said discharge air cooling device (5), whereby the heat carrier is heated twice and cooled twice in a closed circulatory system.

4,510,763
AUTOMOTIVE TYPE AIR CONDITIONING SYSTEM AND METHOD OF OPERATING SUCH
Ronald L. Johnson, Prophetstown, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 411,296, Aug. 25, 1982, Pat. No. 4,458,117.
This application Dec. 29, 1983, Ser. No. 566,846
Int. Cl.³ F25B *49/00*
U.S. Cl. 62—115 **8 Claims**



2. A method of operating an automotive type air conditioning system having a refrigerant compressor with a discharge side and a suction side connected in the system and operable generally for circulating refrigerant through the system, a clutch device adapted for actuation in driving relation with the compressor, coil means associated with the clutch device and adapted for energization to actuate the clutch device, an electrical circuit device, an electrical circuit having a DC power source arranged in circuit relation with the coil means, and a control device including an expansible chamber connected in refrigerant pressure fluid communication in the system at least generally at the discharge side of the compressor, a pair of snap action members adapted for operation with discrete snap action movement between a stable configuration and an unstable configuration, the snap action members having a pair of peripheral portions engaged at least in part with each other and a pair of generally dome-shaped sections integral with the peripheral portions arranged in opposite facing relation with each other, respectively, means for seating at least in part generally about one of the dome-shaped sections of one of the snap action members, diaphragm means defining a part of the chamber, a spacer arranged in force transmitting engagement between the diaphragm means and the other of the dome-shaped sections of the other of the snap action members, at least one switch element movable between a closed circuit position and an open circuit position, and abutment means associated in following engagement between the one dome-shaped section of the one snap action member and the one switch element and with the one switch element being connected in the electrical circuit in circuit relation between the DC power source and the coil means, the method comprising the steps of:

subjecting the diaphragm means to the refrigerant fluid pressure in the chamber with the refrigerant fluid pressure acting on the effective area of the diaphragm to establish an applied force;

biasing conjointly the spacer and the diaphragm means in response to the applied force acting thereon and transmitting the applied force onto the other dome-shaped section of the other snap action member with the one dome-shaped section of the one snap action member being seated by the seating means therefor;

operating the one snap action member through its discrete snap action movement from the stable configuration to the unstable configuration thereof when the applied force transmitted onto the other snap action member attains at least a preselected low value therefor and is less than a preselected high value therefor and effecting the movement of the switch element from the open circuit position to the closed circuit position thereof upon the operation of the one snap action member to its unstable configuration;

completing the circuit from the DC power source to the coil means when the switch element is in its closed circuit position and energizing the coil means in the circuit;

actuating the clutch device into the driving relation thereof with the compressor in response to the energization of the coil means in the circuit and effecting thereby the operation of the compressor in the system to circulate refrigerant therethrough from the discharge side to the suction side of the compressor;

operating the other snap action member through its discrete snap action movement from the stable configuration to the unstable configuration thereof so as to drivingly engage and return the one snap action member to its stable configuration in the event the applied force transmitted onto the other snap action member is increased to the preselected high value thereof and alternatively effecting the return of the one snap action member to its stable configuration in the event the applied force transmitted onto the other snap action member is decreased to the preselected low value thereof without operating the other snap action member;

effecting the return of the switch element from the closed circuit position to the open circuit position thereof in response to the return of the one snap action member to its stable configuration;

interrupting the circuit from the DC power source to the coil means when the switch element is in its open circuit position and deenergizing the coil means; and

deactuating the clutch device so as to effect its uncoupling from the compressor in response to the deenergization of the coil means in the circuit and terminating thereby the operation of the compressor in the system.

4,510,764
CONTROL METHOD FOR AIR CONDITIONING SYSTEMS FOR VEHICLES
Nobuhiko Suzuki, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan
Filed Nov. 28, 1983, Ser. No. 555,475
Claims priority, application Japan, Dec. 3, 1982, 57-212530
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—133 **7 Claims**

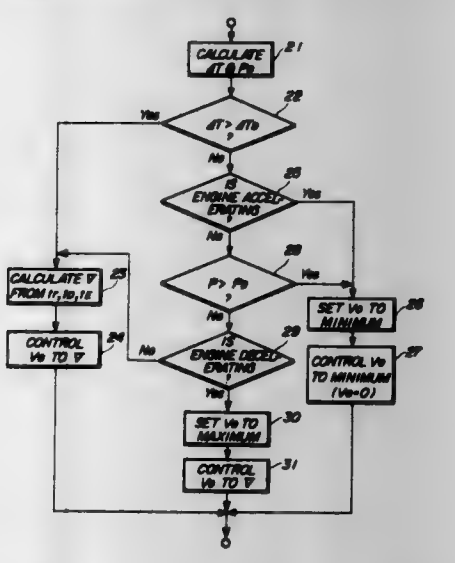
1. A method for controlling an air conditioning system for a vehicle, including a compressor of a variable delivery type disposed to be driven by an engine installed in said vehicle, for compressing refrigerant, a condenser for cooling said refrigerant compressed by said compressor into a liquefied state, an

expansion valve for regulating the flow rate of said liquefied refrigerant to a proper value corresponding to a thermal load on said air conditioning system, and an evaporator for evaporating said liquefied refrigerant supplied from said expansion valve, for cooling air to be discharged from said air conditioning system through heat exchange of said refrigerant being evaporated with said air, the method comprising the steps of:

(a) setting a first control manner of controlling the delivery quantity of said compressor in response to operating conditions of said engine, in a manner irrespective of thermal load conditions of said air conditioning system, for preferential achievement of required driveability of said engine;

(b) setting a second control manner of controlling the delivery quantity of said compressor in response to thermal load conditions of said air conditioning system, in a manner irrespective of operating conditions of said engine, for preferential achievement of required cooling capacity of said air conditioning system;

(c) selecting one of said first control manner and said second control manner; and



(d) controlling said air conditioning system in accordance with said selected one of said first and second control manners;

said first control manner comprising the steps of: (i) detecting operating conditions of said engine; (ii) controlling the delivery quantity of said compressor to a predetermined minimum value when said engine is in a first predetermined operating condition wherein a high engine output is required; (iii) controlling the delivery quantity of said compressor to a predetermined maximum value when said engine is in a second predetermined operating condition wherein a low engine output suffices; and (iv) calculating a value of the delivery quantity of said compressor appropriate to a third operating condition of said engine other than said first and second predetermined operating conditions and required for achieving a desired value of the temperature of a compartment in said vehicle and controlling the delivery quantity of said compressor to said calculated value in a manner gradually varying the delivery quantity of said compressor toward said calculated value, when said engine is in said third operation condition.

4,510,765

CONTROL UNIT FOR REFRIGERATORS OR FREEZERS

Guglielmo Rossi, Linkenheim, Fed. Rep. of Germany, assignor to Ranco Incorporated, Dublin, Ohio

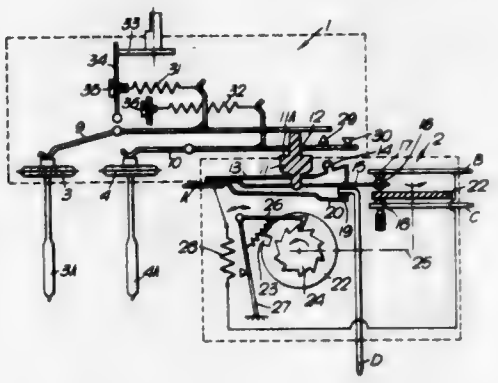
Filed Feb. 2, 1983, Ser. No. 463,118

Claims priority, application United Kingdom, Feb. 5, 1982, 8203377; Apr. 26, 1982, 8211974

Int. Cl.³ F25D *21/06*

U.S. Cl. 62—154 **16 Claims**

1. A control unit for a refrigerator or freezer of the type including an evaporator, a compressor having a drive motor, and an electrical defrost heater associated with the evaporator, the said control unit including a switch device having a first pair of contacts controlling the cyclic cutting-in and cutting-out of the compressor drive motor, wherein the switch device has a second pair of contacts and a movable contact common to the first and second pair of contacts, the second pair of contacts controlling the periodic energisation of the defrost heater, a stop member associated with the second pair of contacts and normally obstructing closure thereof, actuator means acting on the stop member, said actuator means being responsive to a predetermined number of switching cycles of the compressor motor to move the stop member to a defrost



position in which it permits movement of said movable contact to close the second pair of contacts and thereby energise the defrost heater, first operating means acting upon the common movable contact to open and close the first pair of contacts and to close the second pair of contacts, said first operating means being responsive to an ambient temperature in the apparatus, and second operating means for effecting movement of said movable contact in a sense to open the second pair of contacts to terminate energisation of the defrost heater, said second operating means being responsive to the evaporator temperature.

4,510,766

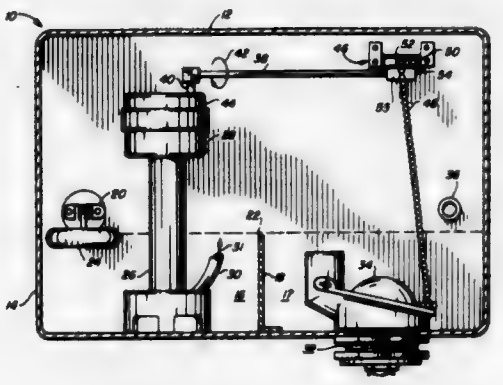
WATER EXCHANGER AND METHOD FOR EVAPORATIVE COOLER

Thad C. Curtis, Sr., 5820 S. Hopdown La., Tucson, Ariz. 85746

Filed Mar. 14, 1983, Ser. No. 474,840

Int. Cl.³ F28D *3/00*

U.S. Cl. 62—171 **13 Claims**



1. Water exchange apparatus for use with an evaporative cooler which comprises:

a water-tight tank having a bottom, said tank being divided into first and second portions;

means operably secured to said tank for controlling water height within said tank;

pump means operably secured to said tank for pumping water from said first portion of said tank to said evaporative cooler;

water return means operably coupled to said tank for returning water from said evaporative cooler to said tank;

drain means positioned on said bottom of said tank for draining water from said tank;

timing means for periodically actuating said drain means; and

damming means operably secured to said tank for dividing said tank into said first and second portions such that said pump means and said means for controlling water height are located in said first portion and said drain means and water return are located in said second portion.

4,510,767

COLD STORAGE AND REFRIGERATION SYSTEM

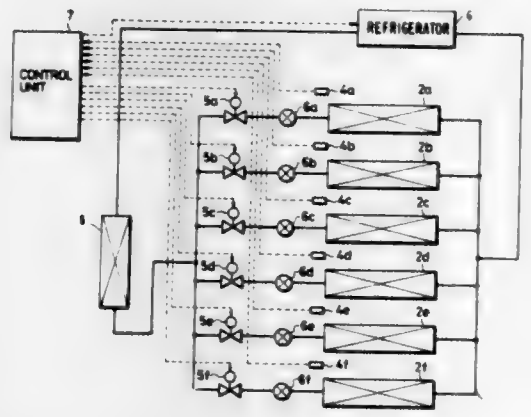
Fumiaki Komatsu; Kazuyuki Saegusa; Yu Seshimo, and Norio Yamashita, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 401,046

Claims priority, application Japan, Jul. 3, 1981, 56-104645; Jul. 23, 1981, 56-115587; Aug. 10, 1981, 56-125017; Aug. 10, 1981, 56-125018; Apr. 23, 1982, 57-69061

Int. Cl.³ F25B *41/04*

U.S. Cl. 62—200 **4 Claims**



1. A cold storage and refrigeration system comprising:

a refrigerator;

a plurality of cold storage and refrigeration units divided into two groups, one relatively heavily loaded and the other relatively lightly loaded, and having evaporators, respectively, connected to said refrigerator for passage therethrough of a refrigerant when said refrigerator is in operation;

a plurality of temperature sensors installed respectively in said cold storage and refrigeration units for detecting first and second levels of temperature respectively therein;

a plurality of valves connected respectively to said evaporators and closable for stopping the flow of said refrigerant in response to a detection of said second temperature level by said temperature sensors and openable for allowing said refrigerant to flow through said evaporators in response to a detection of said first temperature level by said temperature sensors; and

a control unit responsive to signals supplied from said temperature sensors for controlling said refrigerator and said valves such that one of said valves which belongs to one of said groups and which is earliest closed is again opened if any of the other valves associated with said one of said groups is open when the cold storage and refrigeration unit coupled with said one of said valves has a temperature increased from below said second temperature level to higher than the latter; that any of said valves associated with said one of said groups and coupled with those cold storage and refrigeration units which have temperatures higher than said second temperature level is opened when any of said cold storage and refrigeration units in said one of said groups has a temperature which has become higher than a predetermined temperature level between said first and second temperature levels after having reached said second temperature level and when at least one of said valves remains open; and that said refrigerator is deenergized when all of said valves are closed; and all of said valves are opened and said refrigerator is energized when at least one of said valves is opened at said first temperature level.

4,510,768

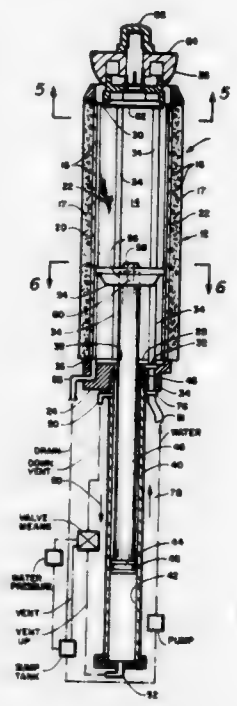
ADJUSTABLE ICE BREAKER FOR AN ICE MACHINE PRODUCING SHEET ICE

Paul Keller, 1004 94th Ave. NW., Coon Rapids, Minn. 55433

Filed Jun. 30, 1983, Ser. No. 509,322

Int. Cl.³ F25C *5/12*

U.S. Cl. 62—320 **13 Claims**



1. In a sheet ice making machine of the type having a dispensing end for dispensing sheet ice,

an improvement for enabling sheet ice pieces of any size within a range of sizes to be selectably produced, comprising:

ice breaker means spaced from said dispensing end, and

adjustment means for selectively adjusting the spatial distance of said ice breaker means to any of a plurality of different fixed postions from said dispensing end so as to be able to break said ice sheet dispensed by said dispensing end into chips of selectively variable size.

4,510,769

THERMALLY INSULATING DEVICE FOR A BEVERAGE-CONTAINING BOTTLE

Robert D. McClellan, Jr., 326 Olive Ave., Horsham, Pa. 19044

Filed Apr. 5, 1984, Ser. No. 597,073

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **6 Claims**

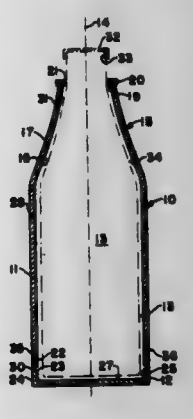
1. An adjustable container for maintaining a long-necked beverage containing bottle at a low temperature comprising:

(a) an upper member elongated about a center axis of symmetry and comprised of an outer shell of circular cross section in planes perpendicular to said axis and having interior and exterior surfaces, a layer of thermally insulative material of uniform thickness disposed upon said interior surface, an open upper extremity provided with an inwardly disposed resilient gasket of annular contour, and an open lower extremity of larger diameter than said upper extremity and provided with spiral threading, and

(b) a base member of cup-shaped structure comprised of an outer shell of circular cylindrical configuration having interior and exterior surfaces and having a lower extremity and an open upper extremity, a flat panel serving to close said lower extremity and having interior and exterior surfaces, a layer of thermally insulative material of

uniform thickness disposed upon said interior surfaces, and spiral threading disposed upon said outer shell adjacent its upper extremity and adapted to engage the complementary threading of said upper member whereby,

(c) when said base member threadably engages said upper



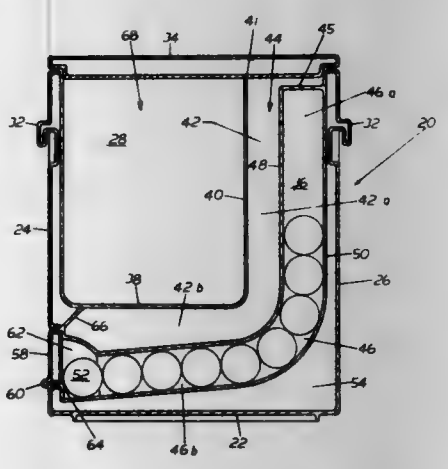
member about an intervening long-necked bottle, rotation of one member with respect to the other causes both members to be drawn into closer engagement, causing said gasket to firmly grip the bottle and thereby form a stagnant air envelope between the bottle and the thermally insulative material.

4,510,770

CHEST FOR STORING, COOLING AND DISPENSING COMESTIBLES

Paul L. Vella, Westland, Mich., assignor to Thomas K. Ziegler and David J. Lucas, both of Detroit, Mich.

Filed Mar. 25, 1983, Ser. No. 478,927
Int. Cl.³ F25D *3/02*
U.S. Cl. 62—464 **21 Claims**



1. An ice chest for storing and cooling comestibles, comprising:

an enclosure including two opposing sidewalls, a front wall, a rear wall and bottom;

a cover removably mounted on the top of said enclosure;

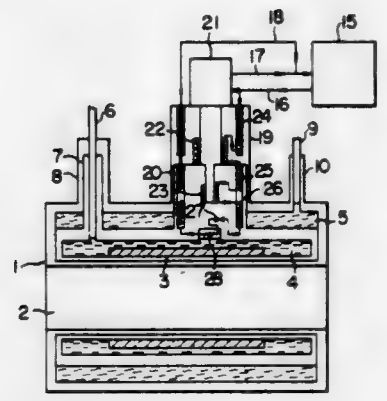
a downwardly extending chute within said enclosure, said chute being adapted to store and dispense a plurality of beverage containers and including an upper end and a lower end, said lower end having an opening and therein through which said containers are dispensed, said chute further including first and second portions disposed laterally in side-by-side relationship to each other and each defining an individual path along which a group of said containers may travel during dispensing thereof and a partition in said chute between said first and second portions thereof.

4,510,771

CRYOSTAT WITH REFRIGERATING MACHINE

Toshiharu Matsuda, Kudamatsu; Minoru Imamura, and Norihide Saho, both of Yamaguchi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1983, Ser. No. 520,515
Claims priority, application Japan, Aug. 16, 1982, 57-141113
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **9 Claims**



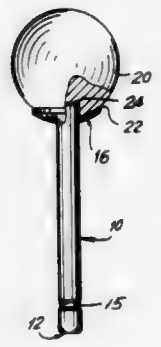
1. A cryostat with a refrigerating machine, comprising a first liquefied gas reservoir containing therein a first liquefied gas, a second liquefied gas reservoir containing therein a second liquefied gas, said second liquefied gas having a boiling point higher than that of the first liquiefied gas and said second liquefied gas reservoir being provided around the first liquefied gas reservoir, an outer wall adapted to surround the second liquefied gas reservoir through a vacuum space, said refrigerating machine including a heat exchanger and an expansion device and having a first section which is kept at a temperature higher that that of said second liquiefied gas reservoir, said first section being provided between the second liquefied gas reservoir and said outer wall; said refrigerating machine having a second section which is kept at a temperature lower than that of said second liquefied gas reservoir, said second section being provided between said first liquefied gas reservoir and said second liquefied gas reservoir, and said cryostat further comprising at least one condenser heat exchanger for recondensing the evaporated gas with a cooled coolant generated in the refrigerating machine, said at least one heat exchanger being provided at least in said first liquefied gas reservoir, and thermal contact means in contact with the refrigerating machine for cooling the second liquefied gas reservoir.

4,510,772

HOLLOW EARRING POST

Philip J. Alley, and Thomas R. Ireland, both of Warwick, R.I., assignors to Hallmark Findings, Inc., Warwick, R.I.

Filed Mar. 17, 1983, Ser. No. 476,051
Int. Cl.³ A44C *7/00*
U.S. Cl. 63—12 **8 Claims**



1. A metal post for a pierced earring produced by the steps of providing an elongated hollow, tubular member having a closed rounded end; providing a disk shaped member having

an upper face and a centrally positioned hole for receiving an end portion of said tubular member remote from said closed rounded end; coating said disk shaped member with a layer of solder flush on said upper face; positioning said remote end portion in said hole; and heating and subsequently melting said solder flush so that said disk shaped member is fastened thereby to said hollow tubular member.

5. A pierced earring produced by the steps of providing an elongated hollow, tubular member having a closed rounded end; providing a disk shaped member having an upper face and a centrally positioned hole for receiving an end portion of said tubular member remote from said rounded end; providing an ornamental member having a socket formed to receive said remote end portion of said tubular member with said ornamental member seating against said disk shaped member; coating said disk shaped member with a layer of solder flush on the face directed toward said ornamental member; positioning said remote end portion of said tubular member in said hole; positioning said ornamental member such that said remote end portion is within said socket and said ornamental member is seated against said face of said disk shaped member; and heating and subsequently melting said solder flush so that said ornamental member, said tubular member and said disk shaped member are secured to each other thereby.

4,510,773

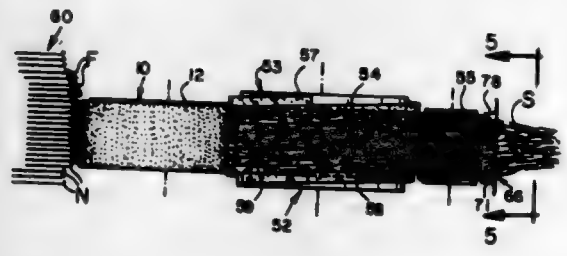
FIBER TRANSFER SYSTEM FOR SLIVER HIGH PILE FABRIC CIRCULAR KNITTING MACHINES

Earl R. Quay, and Alan L. Tilson, both of Orangeburg, S.C., assignors to Mayer, Rothkopf Industries, Inc., Orangeburg, S.C.

Continuation-in-part of Ser. No. 539,802, Oct. 7, 1983, abandoned. This application May 31, 1984, Ser. No. 615,801

Int. Cl.³ D01G *15/40, 15/84;* D04B *9/12*

U.S. Cl. 66—9 B **19 Claims**



1. A fiber transfer system for a sliver high pile fabric knitting machine, said system including a doffer, a main cylinder and sliver feeding elements, characterized by a doffer having an axial width less than the axial width of the main cylinder.

4,510,774

CONTROL DEVICE FOR A KNITTING MACHINE

Wolfgang Rose, Karl Marx Stadt, German Democratic Rep., assignor to VEB Kombinat Textima, German Democratic Rep.

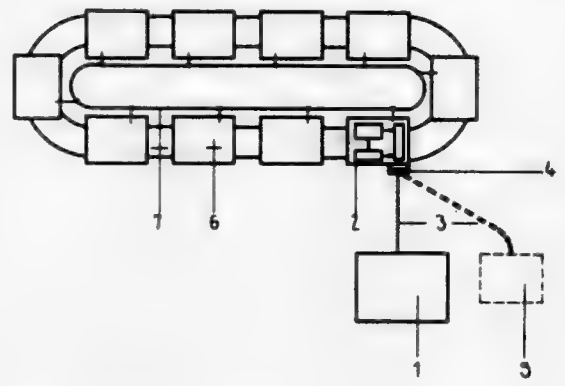
Filed Dec. 21, 1983, Ser. No. 564,227

Claims priority, application German Democratic Rep., Dec. 27, 1982, 246604

Int. Cl.³ D04B *7/00, 15/00*

U.S. Cl. 66—75.2 **1 Claim**

1. A control device for a knitting machine including stationary structural components and a plurality of carriages adapted to run in a knitting cycle over a predetermined path and provided with control elements for controlling functions of the carriages, the control device comprising a stationary control part and a movable control part movable together with at least one of said carriages, each of said control parts being provided with a microprocessor and data processing units, said stationary and movable control parts being both operated during the entire knitting process independently from each other, said stationary control part storing information data for the stationary structural components, said movable control part storing information data for pattern cords of at least one knitted piece; a first cable; a special laser, said first cable for connecting said movable control part with the laser and the stationary control part so that an application of the information data to the movable control part is effected from said laser and said stationary control part through said first cable; and a second cable connecting said movable control part to at least one of said carriages so that information data are transmitted from said movable control part to the control elements of said carriages for a selection of needles in accordance with required patterns and for changing functions of said carriages whereby an application of the information data to the movable control part can be effected selectively from said laser, or said stationary control part through said first cable.



4,510,775

FLAT KNITTING MACHINE CAPABLE OF CHANGING STITCH DENSITY

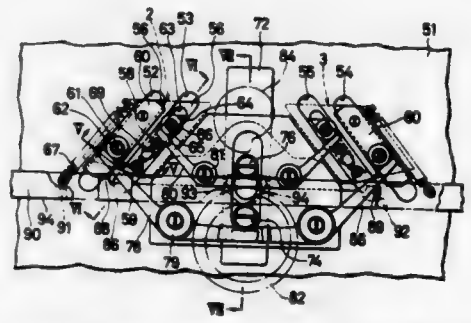
Masahiro Shima, Wakayamashi, Japan, assignor to Shima Idea Center Co., Ltd., Wakayama, Japan

PCT No. PCT/JP80/00233, § 371 Date May 27, 1982, § 102(e) Date May 27, 1982, PCT Pub. No. WO82/01199, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 30, 1980, Ser. No. 385,375

Int. Cl.³ D04B *7/00*

U.S. Cl. 66—77 **20 Claims**



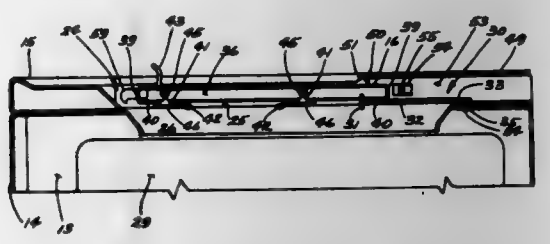
1. A flat knitting machine including a needle bed having a plurality of needle grooves therein, needles in the needle grooves, a carriage positioned over the needle bed for movement thereacross and engagement with selected needles on the needle bed to effect knitting of different size stitches and means for changing stitch size comprising selector means positioned on the needle bed for selecting predetermined needles in the needle grooves for movement to an upper and a lower position, means carried by the carriage and engageable with the selected needles for moving the selected needles to the upper or lower position, cam means engageable with the selected needles in the upper or lower position to effect knitting different size stiches therewith and means for adjusting the cam means to vary the size of the stitches effected by the selected needles engaged with the cam means.

4,510,776

SLIDING ACCESS DOOR FOR WASHING MACHINE

William J. McNally, and John C. Mellinger, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa

Filed Dec. 27, 1983, Ser. No. 565,730
Int. Cl.[3] D06F *29/02, 39/14*
U.S. Cl. 68—3 R 6 Claims



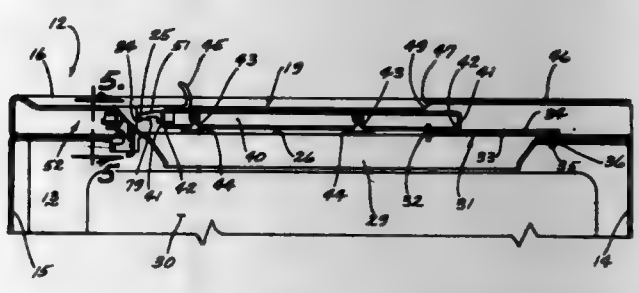
1. The combination including a top cover assembly for a washing machine and comprising: a horizontally disposed top cover associated with said washing machine and defining an access opening in said top cover for providing access to within said washing machine; means defining guideways at the sides of said access opening; access door means cooperable with said guideways for forward and rearward sliding movement to close said access opening in a first forward posture and to uncover said access opening in a second rearward posture; and panel means for limiting movement of said access door means and including a first portion fixed to said top cover generally below said access door means and at least partially restricting said access opening.

4,510,777

CONTROL SYSTEM FOR AN ACCESS DOOR

David I. Ellingson, and James D. Wilson, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa

Filed Dec. 27, 1983, Ser. No. 565,734
Int. Cl.[3] D06F *33/02, 37/28*
U.S. Cl. 68—12 R 6 Claims



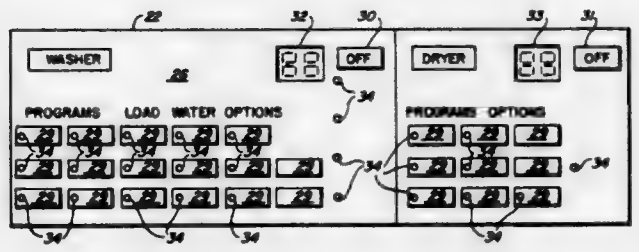
1. A washing machine including a control system for operation of said washing machine through a cycle of operations and for ensuring that an access door is closed and locked during predetermined portions of said cycle of operations and for ensuring that sensor switches associated therewith are properly operable, the combination comprising: cabinet means associated with said washing machine including a top cover defining an access into washing apparatus; an access door mounted on said top cover and movable between access-open and access-closed positions; circuit means including microcontroller-based program means for controlling said washing machine through said cycle of operations; latch means operable under control of said program means with said access door in the access-closed position for locking said access door in said access-closed position; switch means associated with said circuit means and actuatable from a first posture to a second posture by said latch means upon locking of said access door to provide a door-latched signal to said program means; and means for interrogating said switch means prior to said actuation and for receiving a verification signal with said switch means in said first posture to confirm the proper operability of said switch means upon receiving the door-latched signal, said program means being operable for verifying the second posture of said switch means throughout at least preselected portions of said cycle of operations whereby said circuit means is operable for interrupting operation of the washing machine upon detecting an inoperable switch means or an unlocked access door during said preselected portions.

4,510,778

CONTROL SYSTEM FOR A COMBINED APPLIANCE

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 27, 1983, Ser. No. 565,735
Int. Cl.[3] D06F *29/00, 33/02*
U.S. Cl. 68—12 R 9 Claims



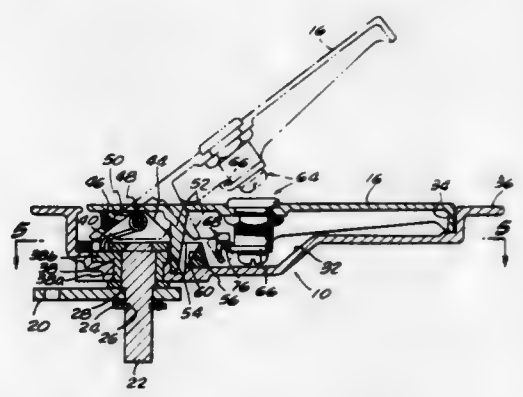
1. A control system for controlling the operation of a plurality of associated appliances, comprising: power supply means providing line current to each of said appliances; control panel means including selection means for inputting cycle information corresponding to each of said appliances and further including display means for each of said appliances; a single control means including microcontroller means in communication with said selection means and said power supply means and operable for controlling each of said appliances through independent cycles of operations; and low voltage interconnecting means between said control means and each of said appliances for carrying operational data signals from said control means to each of said appliances to effect selective and independent operation of one or concurrent and independent operation of more than one of said appliances.

4,510,779

AIRCRAFT DOOR LOCK ACTUATING MECHANISM

Munir J. Ahad, Valencia, Calif., assignor to Adams Rite Products, Inc., Glendale, Calif.

Filed Jul. 16, 1982, Ser. No. 399,056
Int. Cl.[3] E05B *13/10, 65/10*
U.S. Cl. 70—208 14 Claims



1. In a locking mechanism for an aircraft door having an outside actuating handle supported for movement between a normal flush position and a non-flush position, and an inside actuating handle, the improvement comprising:

means operable in response to the selective actuation of said outside handle and said inside handle for moving said locking mechanism into locked and unlocked positions;

manually releasable means operable to normally oppose movement of said outside handle from said flush position to a non-flush position;

means operable in response to a predetermined movement of

the inside actuating handle in an unlocking direction including:

a bolt actuating bell crank for moving said locking mechanism into an unlocked position; and

camming means for releasing said releasable means comprising a comming surface on said bell crank and a cam follower operatively associated with said releasable means; and

other means operable in response to said predetermined movement of the inside handle for moving the outside handle to a non-flush position in which it serves as a visual indicator that said door locking mechanism is in an unlocked position.

4,510,780

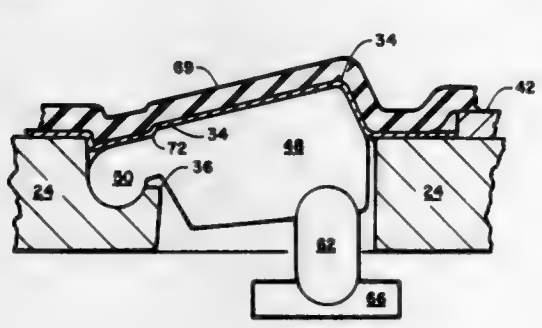
ROTATING PUNCH DIE SYSTEM

Gilbert C. Cadwell, San Diego County, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 16, 1983, Ser. No. 494,870

Int. Cl.³ B21D *39/08*

U.S. Cl. 72—57 **6 Claims**



1. A die for cold forming sheet metal comprising:

a male die member having metal forming surfaces a cylindrical end surface and a striker surface opposite one of said metal forming surfaces, said striker surface includes a curvilinear indentation;

a female die member with a central aperture therethrough and a curvilinear socket adjacent thereto, said socket receiving and securing said cylinder end surface of said male die member therein; and

resilient diaphragm means overlying the female die member for holding said sheet metal to be formed in position on the surface of said female die adjacent said forming surfaces of said male die member, whereby said male die member pivots about said cylindrical end surface within said aperture when impacted in the curvilinear indention on the striking surface by a driving force means thereby forming said sheet metal.

4,510,781

RING ROLLING

Peter J. Holt, Cheltenham, England, assignor to Formflo Limited, Cheltenham, England

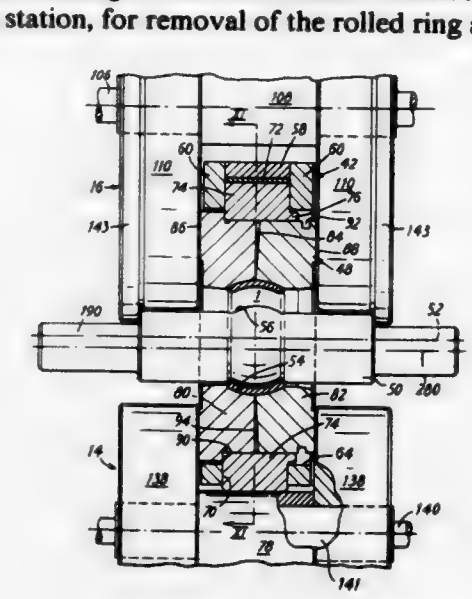
Filed Jul. 25, 1983, Ser. No. 517,025

Claims priority, application United Kingdom, Jul. 31, 1982, 8222149

Int. Cl.³ B21D *15/04*

U.S. Cl. 72—105 **17 Claims**

1. Apparatus for forming rings to a predetermined profile from a succession of annular blanks by cold rolling the blank, the apparatus being of the kind having an annular die, a mandrel for cooperating with the annular die, die drive means for rotating the die about the axis of the die, and force-applying means for applying a radial force to the mandrel when the mandrel extends through the die with the annular blank surrounding the mandrel and surrounded by the die, so as to squeeze the blank along an axial cross-section thereof to one side of the axis of the blank but not the other, said mandrel, die drive means and force-applying means being situated at, and defining, a working station of the apparatus, the apparatus comprising means for rotating the mandrel whereby the said radial force causes the section of the blank so squeezed to be deformed to conform with an internal profile of the die and an external profile of the mandrel, the apparatus further comprising means defining at least one transfer station remote from the working station, for removal of the rolled ring and insertion of



a fresh blank, and a shuttle having a through opening for accommodating the die, means for moving the shuttle so as to transfer the through opening between the working station and said at least one transfer station, the shuttle comprising means for so mounting the die as to cause the die drive means to be in operative engagement with the die when the latter is at the working station.

4,510,782

TORSION COILER

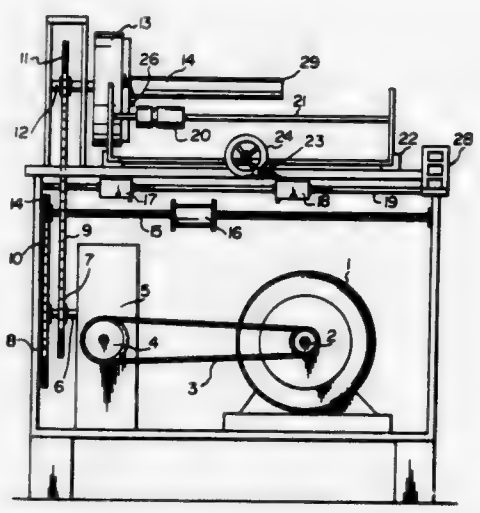
Alfred Risi, 117 East Ave., Brantford, Ontario, Canada N3S 1M1

Continuation of Ser. No. 221,809, Dec. 31, 1980, abandoned. This application Nov. 2, 1983, Ser. No. 548,037

Claims priority, application Canada, Jun. 24, 1980, 354674

Int. Cl.³ B21F *3/04*

U.S. Cl. 72—142 **4 Claims**



1. An apparatus for producing from high carbon spring steel feedstock helically coiled torsion springs of the type having leg members at predetermined radial positions with respect to the longitudinal axis of the springs, said apparatus comprising in combination:

a chuck including a cylindrical mandrel mounted in a lathe for rotational movement;

pick-up pin means positioned on the face of said chuck at a predetermined radial dimension relative to the elongated axis of said mandrel for holding a portion of said stock in a fixed position during rotation of said chuck and for

establishing an initial feed point of said stock adjacent said mandrel;

feed guide means for guiding said stock to said mandrel during rotation of said mandrel and for establishing successive stock feed points adjacent said mandrel along the longitudinal axis thereof, said successive stock feed points corresponding to successive convolutions of said stock around said mandrel, said guide means including spool means defining a guide groove in which said stock is accepted and advanced towards said mandrel, and carriage means disposed adjacent said mandrel, means for slideably mounting said spool means on said carriage means to permit unrestrained rectilinear movement of said spool means thereon in a direction substantially parallel to said elongated axis of said mandrel while yet permitting said mandrel to freely rotate to permit feeding of said stock towards said mandrel and to permit rectilinear feeding movement of said feedstock in a direction substantially parallel to said elongated axis so that successive stock feed points are established for each successive convolution of said feedstock around said mandrel during rotation of said chuck;

drive means operatively connected to said chuck for rotating said chuck;

control means operatively connected to said drive means for establishing the periods in which said chuck is permitted to rotate thereby establishing the axial length of said spring coiled around said mandrel and the radial positions of said leg members, said control means including first switch means for establishing said initial stock feed point and for stopping said drive means when said first switch means is activated, and second switch means for establishing the end of said coiled spring and for stopping said drive means when said second switch means is activated, means mounting said first and second switch means for movable positioning along an axis substantially parallel to said elongated axis of said mandrel for permitting said first and second switch means to be positioned relative to one another to define an axial space therebetween; and

switch activation means operatively connected to said drive means and disposed in said axial space for movement between said first and second switch means, said switch activation means being movable between said first switch means and second switch means at a linear rate proportional to the rate of axial advance of said successive feedstock points along said mandrel for permitting coiling of said feedstock around said mandrel when said activation means is traversing said axial space and for activating said first or second switch means to stop rotation of said drive means and thus to responsively stop coiling of said feedstock around said mandrel; whereby

said leg members of said coiled spring can be formed while said chuck is stopped and thereby said positioning of said first and second switch means relative to one another not only establishes the axial length of said coiled spring but also the radial positions of said leg members.

4,510,783

CHANGING ROLLS IN SIX-HIGH ROLL STAND

Hans Römmen, Dormangen, and Hans Frosch, Neuss, both of Fed. Rep. of Germany, assignors to SMS-Schloemann Siemag AG, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,458

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244200

Int. Cl.³ B21B *28/00, 31/10*

U.S. Cl. 72—200 **11 Claims**

1. An apparatus for changing the rolls of a six-high roll stand having:

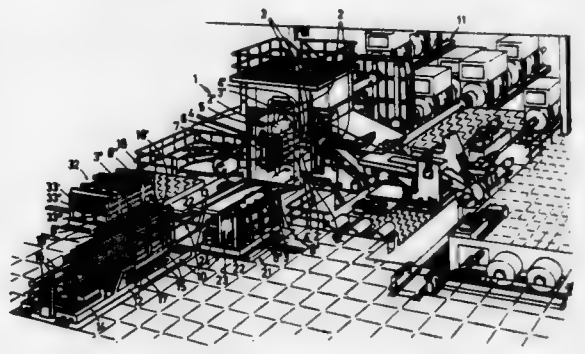
a frame,

a pair of vertically spaced nip-defining working rolls journaled in the frame for rotation about respective working-roll axes and having axially spaced working-roll journal blocks,

respective upper and lower inner backup rolls normally bearing respectively down and up toward the nip on the respective working rolls and journaled in the frame for rotation about respective backup-roll axes and having axially spaced backup-roll journal blocks, and

respective upper and lower outer backup rolls bearing toward the nip on the respective inner backup rolls and journaled in the frame for rotation about respective backup-roll axes and having axially spaced backup-roll journal blocks, the axes all normally lying in a common vertical plane, the changing apparatus comprising:

a changing carriage having a pair of similar full-set holders spaced horizontally and perpendicular to the plane and each provided with two vertically spaced working-roll supports and two vertically spaced backup-roll supports flanking the respective working-roll supports, the supports being vertically spaced like the respective rolls in



the stand, whereby a full set of two working and two backup rolls can be held in either of the holders;

means for displacing the changing carriage between upstream and downstream positions in each of which a respective one of the holders is axially aligned with the rolls in the stand;

a loading carriage having a working-roll holder provided with two vertically spaced working-roll supports and a backup-roll holder provided with two vertically spaced backup-roll supports, the carriage being displaceable into a position with the working-roll supports of the working-roll holder aligned with the working-roll supports of one of the full-set holders and a position with the backup-roll supports of the backup-roll holder aligned with the backup-roll supports of the one full-set holder; and

means for axially shifting rolls from the holders of the loading carriage into the one full-set holder, for axially shifting rolls from the stand into the other full-set holder, and for axially shifting the rolls in the one full-set holder into the roll stand.

4,510,784

ROLLING MILL SPRAY BAR

Yu-Wen Hsu, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 11, 1983, Ser. No. 540,964

Int. Cl.³ B21B *27/10, 45/02*

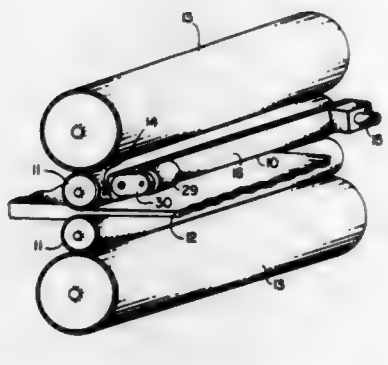
U.S. Cl. 72—201 **5 Claims**

1. In a rolling mill having rolls for use in the reduction in thickness of a metal workpiece an improved device for applying liquid to a roll and/or the workpiece comprising

(a) an elongated housing provided with a plurality of nozzles for spraying liquid onto a roll and/or the workpiece and having conduits disposed in open fluid communication with the nozzles for directing liquid thereto;

(b) an elongated manifold rotatably mounted within the housing and having an arcuate wall which is provided with a plurality of apertures disposed in a predetermined array, said wall defining at least in part an interior chamber for containing liquid;

(c) sealing means arranged between the conduits disposed in open liquid communication with the nozzles and the outer surface of the arcuate wall of the manifold and providing sealed liquid passageways to the said conduits from the interior of the manifold;
(d) means for directing liquid to the interior chamber of the manifold;
(e) means for effecting the controlled rotation of the manifold within the housing to selectively align certain apertures in the arcuate wall of the manifold with selected conduits in open fluid communication with the nozzles so that liquid can be sprayed from the nozzles onto the rolls and/or the workpiece in a predetermined pattern;



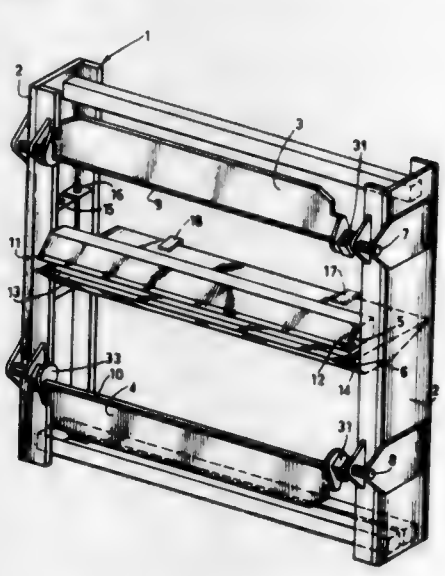
(f) said manifold rotation means including motor means for rotating said manifold and a controlling panel element associated with said motor means and manifold, said controlling panel element being divided into a plurality of pie-shaped sectors, each of which represents a given width of liquid spray, and said sectors being further subdivided into subsections which represent particular combinations of opened and closed nozzles which provide a selected spray width pattern; and
(g) means associated with said panel element and motor means for selecting a given controlling panel element sector and thereby effecting a corresponding rotation of the motor means and manifold as determined by the panel element sector selected.

4,510,785

AUTOMATIC SHEET METAL FOLDING MACHINE

Jean Triouleyre, Meriel; Jean Rousselin, Jouy en Josas; Patrick Schmit, Bouzonville, and Philippe Gondry, Saint Quentin, all of France, assignors to Ets. Y. Jouanel S.A., Gentilly, France

Filed Jul. 6, 1982, Ser. No. 395,833
Claims priority, application France, Jul. 7, 1981, 81 13349
Int. Cl.³ B21D *5/04*
U.S. Cl. 72—323 **15 Claims**



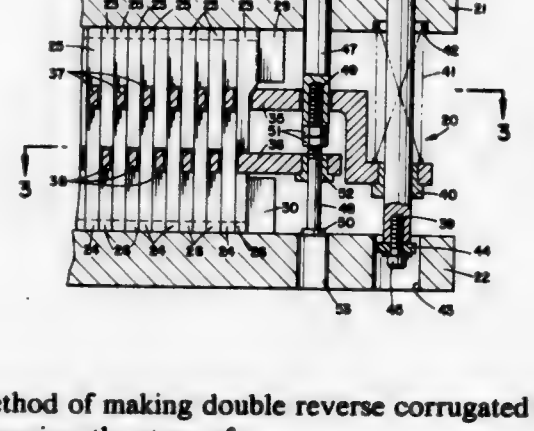
1. An automatic sheet metal folding machine comprising a fixed frame, two gripping members aligned in one direction relative to said frame for clamping a metal sheet to be folded and having parallel working edges and parallel gripping surfaces with said gripping surfaces extending perpendicular to said one direction, each of said folding members including a folding tool having a surface defining a work plane on said folding machine, means for positioning the desired folding lines of a metal sheet with respect to the working edge of a gripping member, drive means able to move said gripping members for clamping a metal sheet to move said gripping members together with a clamped metal sheet as a unit with respect to said frame successively in said one direction towards each different one of said folding members, means for fixedly supporting the pivots of said folding members during folding operations, and means for adjusting the position of said pivots by small magnitude movements.

4,510,786

METHOD AND APPARATUS OF MAKING DOUBLE REVERSE CORRUGATED MATERIAL

William J. Strangward, Rocky River, Ohio, assignor to The Langenau Manufacturing Company, Cleveland, Ohio

Filed May 19, 1983, Ser. No. 496,088
Int. Cl.³ B21D *28/10, 45/08*
U.S. Cl. 72—326 **10 Claims**



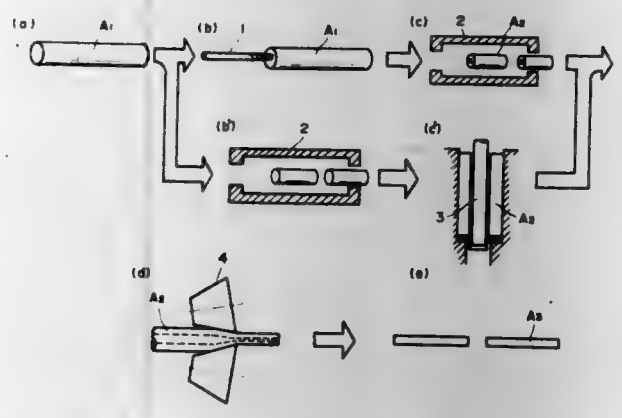
1. A method of making double reverse corrugated material which comprises the steps of:
(a) feeding sheet metal material between two opposed dies, each die having laterally spaced projections, the projections on one of the dies being opposite the space between the projections on the other of the dies, each of the dies also having a stripper positioned in the spaces between the projections of the die;
(b) moving one die toward the other die to form the corrugations in the double reverse corrugated material;
(c) moving one die away from the other die while maintaining said other die and both strippers substantially fixed with respect to each other;
(d) moving the stripper associated with said one die with respect to said other die;
(e) after step (d) and after the formed doubled reverse corrugated material has been stripped from said one die and before the double reverse corrugated material has been stripped from said other die, moving the stripper associated with said other die with respect to said other die to strip the formed double reverse corrugated material from said other die; and
(f) moving the formed material out from between the dies.

4,510,787

METHOD OF MANUFACTURING HOLLOW RODS

Chihiro Hayashi, and Kazuyuki Nakasuji, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 28, 1983, Ser. No. 508,718
Claims priority, application Japan, Jun. 30, 1982, 57-114363; Apr. 22, 1983, 58-71739
Int. Cl.³ B21B *27/02, 19/04*
U.S. Cl. 72—368 12 Claims



1. A method for manufacturing hollow rods, comprising:

a piercing step in which a round billet is pierced into a hollow piece by machining or plastic working, and an elongating step in which the hollow piece is reduced in both outside diameter and wall thickness in order to obtain the desired dimensional values so that it is turned into a hollow rod having a wall thickness to diameter ratio of 25% or above,

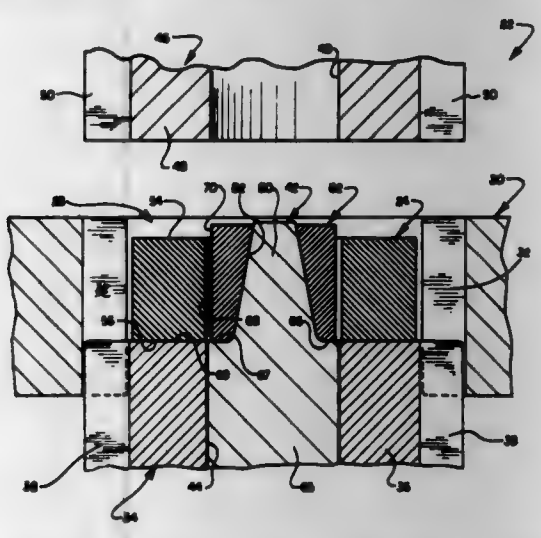
said elongating step being carried out by means of a rotary mill having three or four cone-type rolls arranged around a pass line for the hollow piece being worked and without any internal sizing tool, said rolls being such that their diameters may be varied straightly along the axes thereof, said rotary mill being of such cross-roll type that the axes of the rolls are inclined or inclinable by a cross angle γ so that the shaft ends on either side of the rolls stay close to or stay away from the pass line, the axes of the rolls being inclined by a feed angle β so that the shaft ends on the respective sides of the rolls face in the peripheral direction on the one and same side of the hollow piece being worked.

4,510,788

METHOD OF FORGING A WORKPIECE

Blake L. Ferguson, Broadview Heights, and Donald J. Moracz, Garfield Heights, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Jun. 21, 1983, Ser. No. 506,305
Int. Cl.³ B21D *53/28, 31/00*
U.S. Cl. 72—377 5 Claims



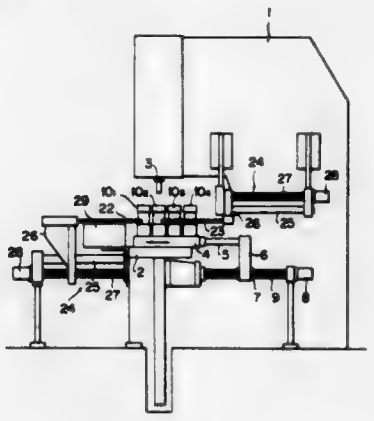
1. A method of forging a metal workpiece in a press having a working chamber partially defined by a side wall which extends around a removable center section which is hollow, said method comprising the steps of placing the workpiece in the chamber, telescoping the center section over a support member, thereafter, applying force against opposite sides of the workpiece to press the metal of the workpiece against the side wall of the chamber and against the outer side surface of the center section, supporting the center section with the support member during the application of force against opposite sides of the workpiece, removing the workpiece and center section from the chamber with the workpiece gripping the center section, and, thereafter, separating the center section from the workpiece.

4,510,789

PRESS BRAKE

Kunio Tomioka, Kawasaki; Shigeru Tokai, Komatsu, and Tatsuo Tsuchida, Tokyo, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,604
Claims priority, application Japan, Dec. 16, 1981, 56-186219[U]
Int. Cl.³ B21D *5/02, 43/26*
U.S. Cl. 72—442 3 Claims



1. A press brake adapted to apply bending on metal blanks in the form of a sheet or plate comprising:

a bed extending along a longitudinal direction in a horizontal plane;

a vertically movable ram mounted on a body of the press brake oppositely to the bed;

a die holder mounted on the bed so as to be reciprocatingly movable in the direction perpendicular to a longitudinal direction of the bed;

a plurality of die assemblies separate from said die holder and located on said die holder at intervals of a predetermined distance in the direction perpendicular to the longitudinal direction of the bed, each die assembly being provided with an upper die and a lower die which are associated with each other and held correspondingly while leaving a predetermined space and can be moved vertically towards and away from each other, each said die assembly further comprising a die shoe for supporting said upper die with each shoe being separate from the other shoes and wherein each upper die and associated lower die is provided with opposed working faces within said space; and

a front stopper and an inside stopper located on opposite sides of the press brake body, and means for moving said front stopper and inside stopper freely towards and away from each other so as to pass through the spaces between the upper dies and the lower dies, said front stopper and inside stopper being movable across the entire working faces of at least one die assembly within said space.

4,510,790

BODY AND FRAME STRAIGHTENING SYSTEM

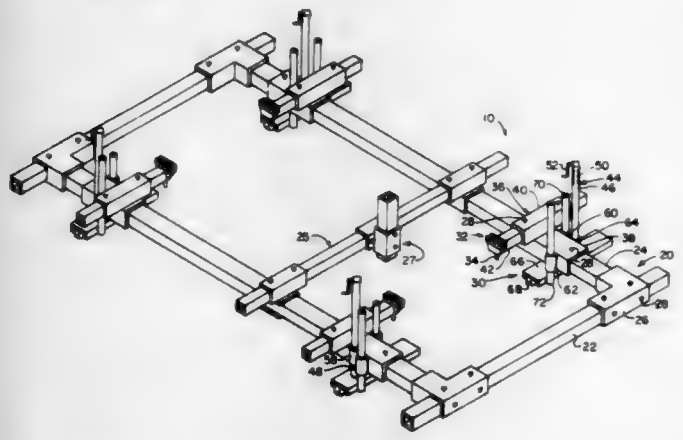
Charles E. Hare, 23 Franklin Valley Cir., Baltimore, Md. 21136

Continuation-in-part of Ser. No. 286,086, Jul. 23, 1981, Pat. No. 4,404,838. This application Aug. 26, 1982, Ser. No. 411,660

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ B21D *1/12*

U.S. Cl. 72—457 **1 Claim**



1. In a system for body and frame straightening, having: a plurality of rails, means for adjustably assembling said plurality of rails as a rectangular frame, a plurality of jacking means for carrying and raising and lowering said plurality of rails, a base on each jacking means, a first member on each jacking means, each first member mounted on a said rail and permitting positioning each jacking means by movement along said rail, a plurality of means for gripping a said body, and means for permitting laterally positioning each said gripping means laterally of a said rail, the improvement comprising: means for requiring movement of a said means for permitting laterally positioning, upon any said movement of a jacking means along a said rail; each means for requiring movement including: a second member fixed on each first member transverse to said rail and each said jacking means base fixed to a respective first member parallel to said second member, each means for gripping including a pair of grippers laterally aligned, and each means for permitting laterally positioning including an arm slidably mounted in said second member and having an upright flange thereon mounting said pair of grippers.

4,510,791

METHOD AND APPARATUS FOR TESTING THE AIR-TIGHTNESS OF A BUILDING USING TRANSIENT PRESSURIZATION

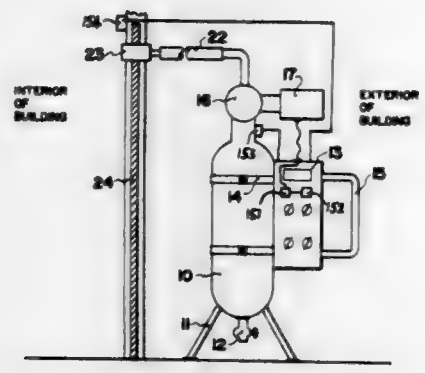
Grenville K. Yuill, Winnipeg, Canada, assignor to Lion Industries Ltd., Winnipeg, Canada

Continuation-in-part of Ser. No. 414,449, Sep. 2, 1982, abandoned. This application May 14, 1984, Ser. No. 610,036

Claims priority, application United Kingdom, Sep. 3, 1981, 8126658

Int. Cl.³ G01M *3/26*

U.S. Cl. 73—40 **16 Claims**



1. A method for use in the determination of the air-tightness of a structure comprising introducing into the structure gas at a rapid rate and for a short period of time so as to create in the air pressure within the structure a pressure pulse defining a profile which rapidly rises from an ambient pressure within the structure to a peak and then declines back to the ambient pressure without reaching a steady state, and detecting information concerning the profile of the pulse.

4,510,792

APPARATUS FOR MEASURING AND DISPLAYING LEAKAGE RATES IN A TRACER GAS LEAKAGE DETECTOR

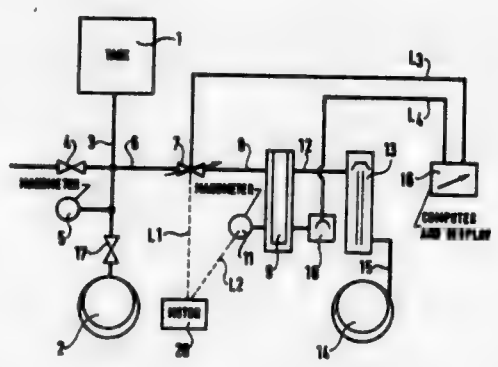
Jacques Morel, and Jacques Tallon, both of Annecy, France, assignors to Compagnie Industrielle des Telecommunications Cita-Alcatel, Paris, France

Filed Aug. 24, 1983, Ser. No. 525,902

Claims priority, application France, Aug. 27, 1982, 82 14699

Int. Cl.³ G01M *3/22*

U.S. Cl. 73—40.7 **4 Claims**



1. Apparatus for measuring and displaying leakage flow rate Q in a tracer gas leakage detector of the type mainly comprising a primary vacuum pump which is selectably connectable to a unit to be tested for leakage, an inlet valve also connectable to said unit to be tested and communicating with a measurement cell capable of being evacuated by pumping means including a primary pump and a secondary pump, said inlet valve including a motor-driven, displaceable valve member forming a variable size valve aperture, means for controlling said motor to vary the position of said valve member to change the aperture size of the inlet valve correlated to the inlet pressure of said measurement cell, and conversion means providing an electrical signal representative of said aperture size, the improvement wherein said apparatus for measuring and displaying the leakage flow rate is connected to receive said aperture size-representing electrical signal and includes a display system for displaying, as a function of said aperture size-representing electrical signal, a valid sub-range of n decades of possible valid measurements taken from a total measuring range of N decades for the apparatus as a whole, thereby warning users that any indicated leakage flow rate values outside said valid sub-range are spurious.

4,510,793

METHOD OF MONITORING THE WEAR OF A REFRACTORY LINING OF A METALLURGICAL FURNACE WALL

Hendrikus T. Ploegaert, Castricum; Ronald N. Molenaar, Heemskerk, and Johannes A. M. Butter, Uitgeest, all of Netherlands, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands

Filed May 25, 1983, Ser. No. 498,152

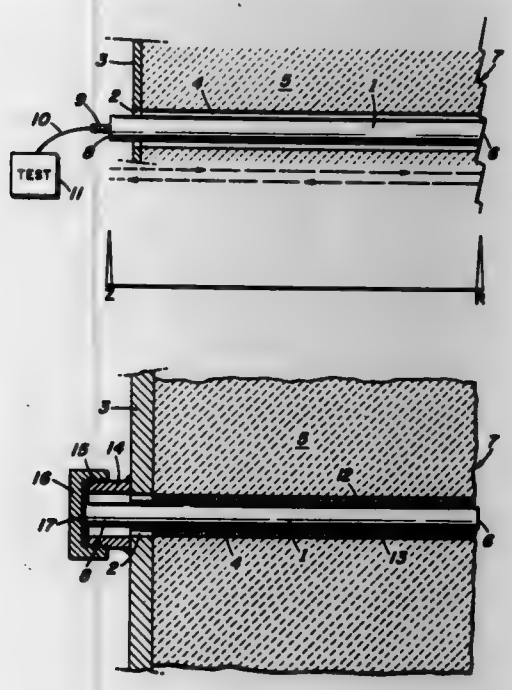
Claims priority, application Netherlands, Jun. 3, 1982, 8202239

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—86 **7 Claims**

1. A method of monitoring the wear of a refractory lining of a metallurgical furnace wall during use of the furnace, comprising the steps of:

(1) arranging a bar of ceramic material in said wall so that the bar has an inner end at the inner face of the lining and extends to the exterior of the wall, the bar thus being subjected to wear at its inner end as the lining wears and



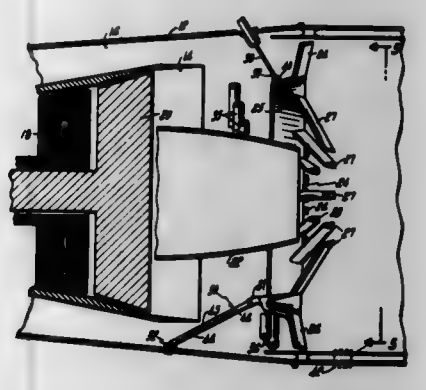
(2) determining the position of the worn inner end of the bar ultrasonically by generating ultrasonic pulses in the bar and detecting the reflection of said pulses from the worn inner end of the bar.

4,510,794

AFTERBURNER FLAMEHOLDER ION PROBE

Robert P. Couch, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,116
Int. Cl.[3] G01M *15/00*; F23N *5/24*
U.S. Cl. 73—116 3 Claims



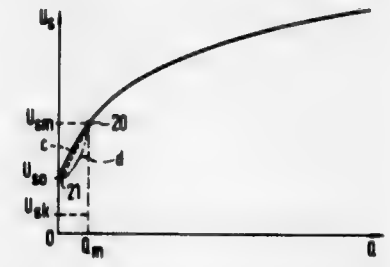
1. An ion/electrostatic probe for an afterburning gas turbine jet engine comprising a conductive flameholder totally electrically insulated from other engine parts and an electrical connection from said flameholder to a point external to the engine case.

4,510,795

METHOD FOR MEASURING AIR FLOW

Jaihind S. Sumal, Vaihingen-Ensingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,977
Claims priority, application Fed. Rep. of Germany, May 19, 1982, 3218930
Int. Cl.[3] G01M *15/00*
U.S. Cl. 73—118 4 Claims



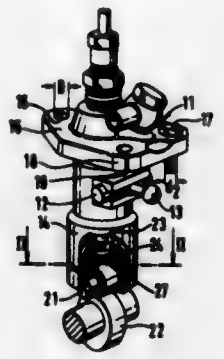
1. A method for measuring the air flow of the air aspirated by an internal combustion engine in a flow cross section by means of an air flow measuring device which has a characteristic curve determined by the association of an air flow value Q with an air flow measurement value U_s of the air flow measureing device, and for the purpose of correction of the air flow measurement value U_s in the case of a pulsating flow, comprising the steps of, establishing a selected range of the characteristic curve of the air flow measuring device located below a minimum air flow measurement value (U_{sm}) corresponding to a minimum flowthrough value (Q_m) and extending from an air flow value of zero, having an air flow measurement value (U_{so}), as far as the minimum flowthrough value (Q_m), and modifying the air flow measurement value (U_s) within the selected range defined in the previous step, whereby an error in the air flow measurement value (U_s) resulting from the pulsating flow is reduced.

4,510,796

METHOD FOR MOUNTING AT LEAST ONE SINGLE-CYLINDER PLUG-IN FUEL INJECTION PUMP ON A DIESEL INTERNAL COMBUSTION ENGINE

Günter Kampichler, Mühlacker, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 417,738, Sep. 13, 1982, Pat. No. 4,455,868.
This application Feb. 23, 1984, Ser. No. 582,690
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210988
Int. Cl.[3] G01M *15/00*
U.S. Cl. 73—119 A 5 Claims



1. A plug-in fuel injection pump for use in an internal combustion engine, said engine provided with a pump fitting in which said injection pump is to be placed and said injection pump comprises a body portion, said body portion including a supply quantity adjusting member, a coupling element associated with said supply quantity adjusting member cooperative with an engine governor rod in said engine, said engine gover-

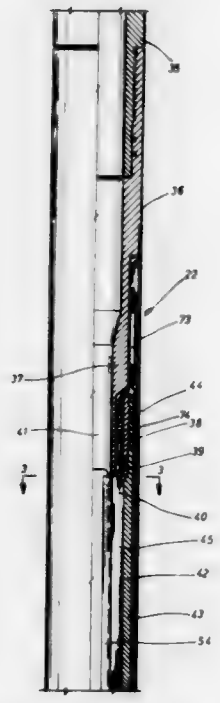
nor rod being provided with a mating element, a first reference indication on said body portion of said pump for indicating an adjusted rotary position of said pump and a second positional alignment reference indication on the pump fitting in said engine for aligning said injection pump in said pump fitting of said engine, said coupling element engaging said mating element of said engine governor rod, said supply quantity adjusting member engages said coupling element cooperative with said governor rod and a limiting stop for adjusting the engine governor rod.

4,510,797

FULL-BORE DRILL STEM TESTING APPARATUS WITH SURFACE PRESSURE READOUT

Shelby L. Guidry, Houston, Tex., and Perry J. DeCuir, Sr., New Iberia, La., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,246
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **26 Claims**



1. Apparatus adapted for use in well testing comprising:
a tubular housing having an open bore therethrough;
a downwardly facing recess in the wall of said housing laterally offset from and opening into said open bore;
a first electrical contact mounted in said recess; and
guide means below said recess for guiding a second electrical contact carried by an associated running tool upwardly through said opening into said recess and into engagement with said first electrical contact.

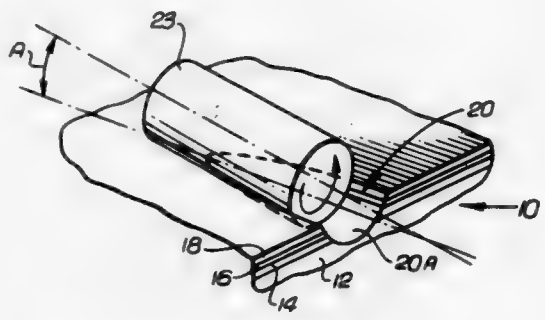
4,510,798

SHALLOW JUNCTION DEPTH MEASUREMENT METHOD

Simon A. Prussin, Los Angeles, and Boris L. Hikin, Playa del Ray, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 20, 1982, Ser. No. 451,373
Int. Cl.³ G01B *11/02*
U.S. Cl. 73—150 R **11 Claims**

1. A method for determination of depths of junctions between successive layers in an integrated circuit wafer, said method comprising the steps of:
forming in the surface of the wafer a groove that is tapered in depth and width whereby each interlayer junction appears as a part-elliptical line having a peak at the center of the groove indicative of the perpendicular junction depth; and



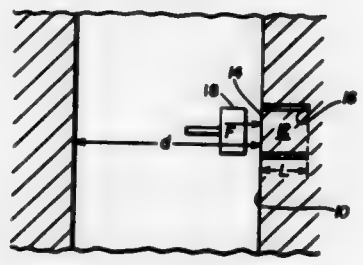
directly measuring the depth of a junction of interest at a point in the groove identified by a peak in the junction line on the groove surface.

4,510,799

METHOD OF MEASURING MATERIAL PROPERTIES OF ROCK IN THE WALL OF A BOREHOLE

David K. Overmier, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1983, Ser. No. 488,826
Int. Cl.³ E21B *49/02*; G01N *33/24, 3/02*
U.S. Cl. 73—151 **8 Claims**



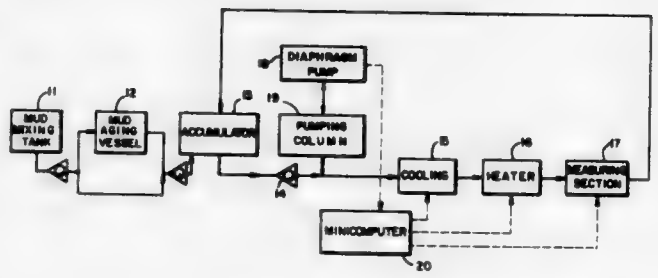
1. An in-situ method of measuring elastic properties of rock surrounding a borehole, comprising the steps of cutting into a wall of the borehole along a closed path to form a plug having an exposed top surface and a base that is integral with underlying rock; applying a force to the plug; measuring resultant deformation of the plug within the elastic range of the rock and combining the applied force and resultant plug deformation to obtain a measurement of the mechanical property.

4,510,800

DRILLING MUD TESTING SYSTEM HAVING A THERMALLY ISOLATED PUMP

Maurice Prior, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,565
Int. Cl.³ G01N *25/00*
U.S. Cl. 73—153 **10 Claims**



1. A system for testing drilling mud comprising:
measuring means for testing the parameters of said drilling mud;

means for heating said drilling mud to an elevated temperature; and

means for pumping heated drilling mud through a flow path to said measuring means including:

a pump which successively withdraws mud from said flow path and discharges mud into said flow path;

a pumping column between said flow path and said pump, said column containing drilling mud which thermally isolates said pump from the heated drilling mud in said flow path; and

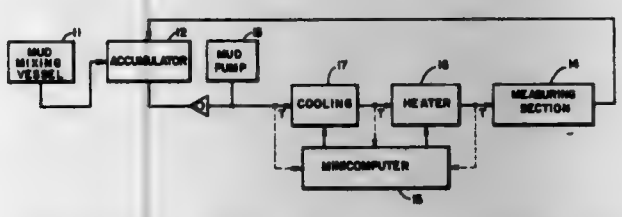
a heat exchanger between said flow path and said pump for cooling drilling mud therein, said drilling mud reciprocating in said pumping column as said pump successively withdraws and discharges said mud.

4,510,801

CONTROLLED HEATER FOR DRILLING MUD TESTING SYSTEM

M. Scott Quigley, Garland, and Gordon A. Russell, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,568
Int. Cl.[3] G01N *25/00*
U.S. Cl. 73—153 6 Claims



1. A temperature control apparatus for a system for testing drilling mud comprising:

means for measuring the parameters of said drilling mud

means for pumping said drilling mud in a recirculating path through said means for measuring;

a mud heater in said recirculating path;

cooling means connected in front of said heater in said recirculating path; and

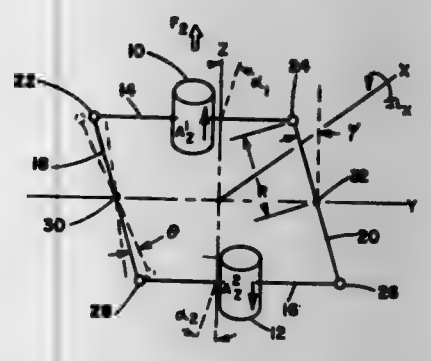
means for controlling said heater and said cooling means to maintain a constant temperature differential across said heater.

4,510,802

ANGULAR RATE SENSOR UTILIZING TWO VIBRATING ACCELEROMETERS SECURED TO A PARALLELOGRAM LINKAGE

Rex B. Peters, Woodinville, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Sep. 2, 1983, Ser. No. 528,774
Int. Cl.[3] G01C *19/56, 23/00;* G01P *15/08*
U.S. Cl. 73—505 28 Claims



1. An apparatus for generating a signal representing the angular rate motion of a structure comprising:

a first accelerometer having a first force sensing axis;

a second accelerometer having a second force sensing axis;

a parallelogram mechanism including a first accelerometer support member secured to said first accelerometer, a second accelerometer support member secured to said second accelerometer and a linkage mechanism attached to said first and said second accelerometer support members and secured to the structure such that said first and said second force sensing axes are aligned in parallel;

drive means operatively connected to said parallelogram mechanism for vibrating said first and second accelerometer support members in a direction substantially normal to said first and second force sensing axes at a frequency ω; and

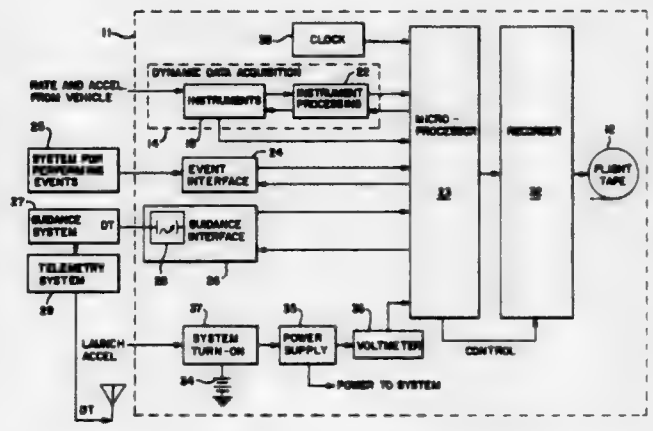
signal processing means operatively connected to said first and second accelerometers for generating a rate signal representing the angular rate motion of the structure.

4,510,803

FLIGHT RECORDER HAVING CAPABILITY OF STORING INTERMEDIATE DATA

Thomas E. Perara, Union, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 27, 1982, Ser. No. 453,554
Int. Cl.[3] G06F *15/50*
U.S. Cl. 73—178 R 13 Claims



1. Test equipment for a unit under test characterized by:

(a) means for transmitting a discrete telemetry signal associated with the units;

(b) a first component, associated with the unit, for sensing a plurality of conditions, the first component including:

(i) a clock for providing a timing signal,

(ii) a plurality of sensors for providing signals in response to predetermined conditions of the unit under test, and

(iii) memory means for storing the signals in coordination with the timing signal;

(iv) means for supplying an indication of the discrete telemetry signal to the memory means;

(c) tracking means for receiving the discrete telemetry signal and for measuring a real time difference between the transmission of the discrete telemetry signal and a separate event observed to occur with the unit under test;

(d) a second component remotely disposed from the first component for receiving the data from the memory means and for providing an indication of the conditions sensed by the first component, the second component including:

(i) means for receiving said real time measurement, and

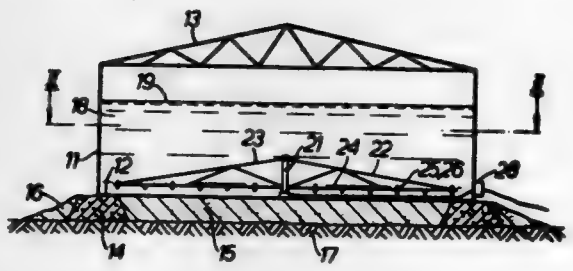
(ii) means for correlating the real time measurement with the information stored in the memory means in order to provide an output relating to the unit under test.

4,510,804

DISTANCE MEASURING

Dennis W. G. Byatt, Great Baddow, and John W. Walker, Danbury, both of England, assignors to The Marconi Co. Ltd., Chelmsford and Occidental Refineries Ltd., London, both of, England

Filed Sep. 30, 1982, Ser. No. 432,401
Int. Cl.[3] G01N *23/28*
U.S. Cl. 73—290 V **16 Claims**



1. A method of detecting the settlement or distortion of the floor of a liquid-containing vessel, which method is particularly applicable to detecting or measuring baseplate distortion in soil-supported oil storage tanks of the type wherein the peripheral areas only of the tank are supported upon a rigid base, in which method there is employed a sonic echo sounding procedure utilizing sound transmitting and receiving transducer means, said method comprising the steps of:

transmitting a sonic signal towards the vessel floor from each of a plurality of spaced points which are disposed beneath the surface of the liquid at generally-preselected locations within the vessel above the vessel floor and in known relationship with one another;

receiving the sonic echo signal reflected back from the floor beneath each of the plurality of spaced points;

using the time difference between the time of transmitting the sonic signal at each point and the time of receiving the sonic echo signal at the same point to furnish a measurement of the distance from each said point to the vessel floor; and,

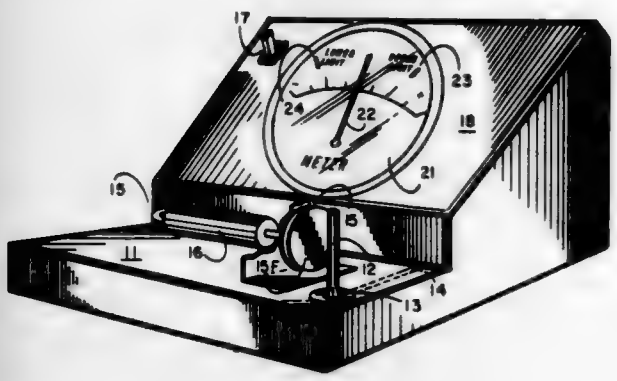
detecting any settlement or distortion of the vessel floor from said furnished measurements.

4,510,805

FLUID GAUGING

John D. Saint-Amour, 158 E. Main St., Westborough, Mass. 01581

Filed Sep. 21, 1983, Ser. No. 534,495
Int. Cl.[3] G01B *13/10*
U.S. Cl. 73—37.9 **6 Claims**



1. Fluid gauging apparatus comprising,

pin means for receiving a hollow item whose cross sectional area is to be measured,

reference valve means for developing a hydraulic impedance representative of a predetermined reference cross sectional area for a hollow item to be tested,

a source of fluid pressure,

means including test conduit means for coupling said fluid under pressure from said source to said pin means to develop fluid flow along the axis of said pin means between said pin means and a hollow item when seated thereon characterized by a hydraulic impedance representative of the inside cross sectional area of the hollow item then seated on said pin means,

indicating means responsive to a predetermined parameter differential between said test conduit and said reference conduit for providing an indication of the deviation of the cross sectional area of the hollow item then seated on said pin means relative to said reference value,

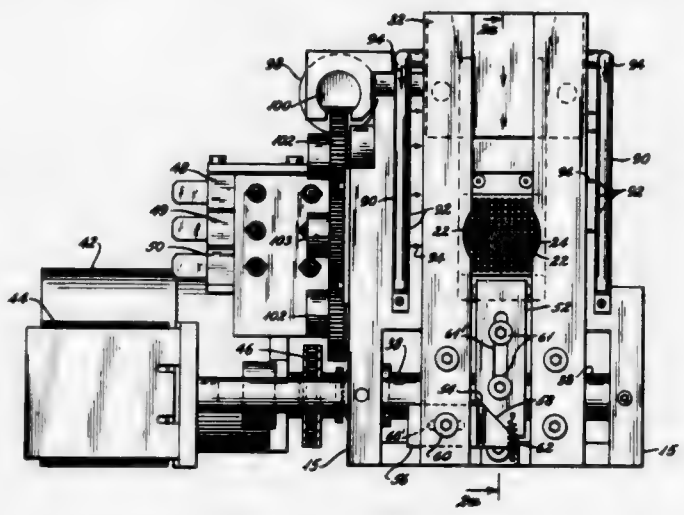
and pressing means for urging one side of the hollow item against said pin means to establish a fluid passage between said pin means and the hollow item seated on said pin means for at least nearly the entire length of said passage so that said parameter differential is accurately representative of the difference between the inside cross sectional area of said hollow item and said reference cross sectional area.

4,510,806

GAUGING METHOD AND APPARATUS FOR COMPONENTS HAVING LEADS

Stanley W. Janisiewicz, Endwell, and Emery L. Rose, Chenango Bridge, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 27, 1983, Ser. No. 489,203
Int. Cl.[3] G01R *31/26*
U.S. Cl. 73—432 R **33 Claims**



1. A method of handling electrical components of the type having a body and multiple rows of leads protruding out through one surface of said body with each of said leads defineable by a longitudinal axis intended to be substantially perpendicular to said one surface; said method comprising the steps for each component of:

straightening each lead of said component which is bent from said axis along at least a portion of a length thereof in order to facilitate subsequent handling of said component;

testing electrical functioning of said component, during said straightening, in order to determine said subsequent handling; and

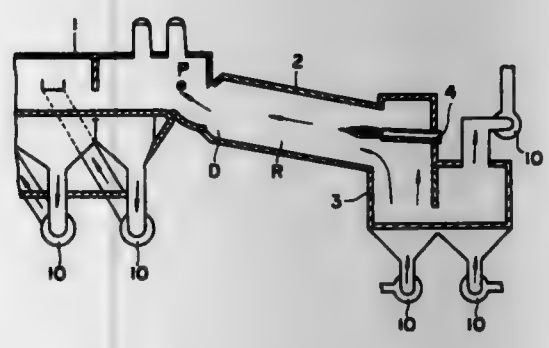
controlling said handling of electrical components according to an automated controller in order to effect said straightening and testing.

4,510,807

DIAGNOSIS METHOD OF ROTARY KILN INTERIOR

Kunihiko Tokutake, Kakogawa; Nobuo Mizokami, Ono, and Hiroyuki Tanaka, Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 22, 1983, Ser. No. 506,612
Claims priority, application Japan, Jun. 28, 1982, 57-111957
Int. Cl.[3] G01D *21/02;* G01M *19/00;* G01N *33/18*
U.S. Cl. 73—432 R 11 Claims



1. A method for diagnosing the interior of a rotary kiln operated using flames from pulverized coal burners as its heat source by estimating the extent of deposition of ash and its analogous substances on the inner wall of the rotary kiln upon, after charging the rotary kiln with a principal charging material composed of a mixture of the principal charging material in a pellet like state and in a powdery or fine state, said charging material supplied to the kiln in a travelling grate, in order to subject the charging material thus supplied to the rotary kiln to heating therein, thereby indurating said material, which method comprises:

inserting detector means for estimating the build-up of ash and its analogous substances inside the rotary kiln, at a position adjacent to the discharge end of the travelling grate, into a gas stream being blown from the rotary kiln;

taking out the detector means after an elapsed time of a predetermined period;

determining the measured deposit weight (Wi) on the detector means, the deposit density (ρm) and the percentage contribution of each of a plurality of components of the deposit, respectively;

calculating (a) a corrected ash deposit weight (Wa) by correcting the measured deposit weight (Wi) in view of the ash weight percentage (CA) present in pulverized coal used as fuel for the burners, (b) a corrected weight accounting for deposited fine charging material (Wd) by correcting the measured deposit weight (Wi) in accordance with the fine charging material percentage (F) present in the prefired material in the vicinity of the discharge end of the travelling grate and the percentage (C) of the deposit resulting from the fine charging material which was determined on the basis of the determined portions of the composition of the deposit and corresponding portions of the composition of the prefired fine charging material, and (c) the ash deposit weight (Ri) for estimating the extent of the deposit at an elevated temperature region in the rotary kiln, said ash deposit weight (Ri) being determined from the corrected weight accounting for deposited fine charging material (Wd) and the deposit density (ρm), respectively; and

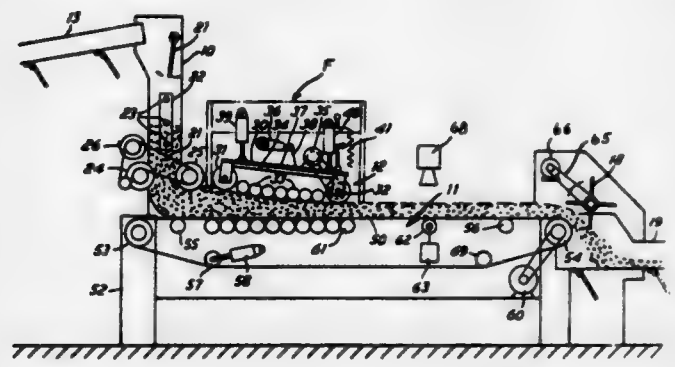
estimating the extent of deposition of ash and its analogous substances on the inner wall of the rotary kiln by choosing either any one of Wi, Wa or Wd and comparing it with a corresponding preset reference value thereof and similarly comparing the value of ρm with a corresponding preset reference value thereof and judging the value thereof or optionally further taking Ri into consideration.

4,510,808

APPARATUS FOR THE CONTINUOUS MEASUREMENT OF BULK DENSITY MATERIAL SUCH AS CUT TOBACCO

Richard E. G. Neville, Salisbury, England, assignor to AMF Incorporated, White Plains, N.Y.

Filed May 26, 1983, Ser. No. 498,354
Claims priority, application United Kingdom, Jun. 2, 1982, 8216028
Int. Cl.[3] G01N *9/02*
U.S. Cl. 73—433 11 Claims



1. An apparatus for the continuous measurement of the bulk density of particulate material comprising:

a weighing conveyor having a compression zone and a weigh span downstream of the compression zone;

means for feeding the material to said compression zone;

a compression unit at said compression zone;

a series of rollers in said compression unit disposed on axes extending traverse to the direction of movement of the weighing conveyor;

transducer means provided at the weigh span for producing signals proportional to the material weight; and

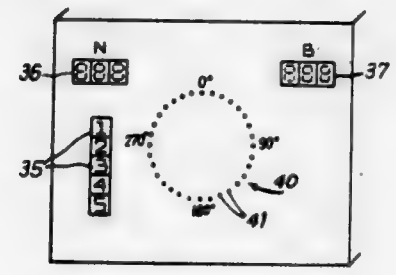
an endless belt embracing said series of rollers to provide a continuous surface adjacent to said weighing conveyor in the compression zone.

4,510,809

DEVICE FOR MEASUREMENT OF AMPLITUDE AND ANGULAR POSITION OF AN UNTRUE RUNNING IN A REVOLVING SYSTEM

Jean-Claude Fillion, Paris, France, assignor to S.N.E.C.M.A., Paris, France

Filed Dec. 22, 1983, Ser. No. 564,178
Claims priority, application France, Apr. 3, 1983, 83 00004
Int. Cl.[3] G01M *1/16*
U.S. Cl. 73—457 7 Claims



1. Apparatus for measuring the amplitude of an untrue running of a revolving system and the angular position of the imbalance causing said untrue running, from output signals provided by a vibratory acceleration sensor and a speed of rotation and position sensor associated with the revolving system, the apparatus including

a first processing circuit having an input which is adapted to receive the output signals from the vibratory acceleration and the speed of rotation and position sensors, said circuit including integration and filter means for providing a first

output signal representative of the amplitude of any untrue running of the revolving system,

a second processing circuit having two inputs which are respectively adapted to receive the output signal from the speed of rotation and position sensor and said first output signal, and which circuit includes means for determining the phase difference between said input signals,

a memory in which is stored information at different locations for different revolving systems and/or different test conditions, representative of the difference between said determined phase difference and a true angular position of an imbalance causing untrue running with reference to a predetermined origin on the revolving system,

means adapted to combine said determined phase difference with information read from the memory in order to provide a second output signal representative of the angular position of the imbalance causing the untrue running; and

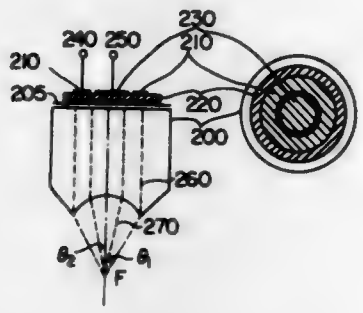
selection means selectively actuable to control which stored information is read from said memory for use by said combining means.

4,510,810

ULTRASONIC MICROSCOPE

Hiroshi Kanda, Tokorozawa, and Isao Ishikawa, Hino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 454,026
Claims priority, application Japan, Jan. 14, 1982, 57-3449
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—606 **4 Claims**



1. An ultrasonic microscope comprising:

a single transducer for generating an ultrasonic beam to be focused at a single focal point and for detecting a reflected echo of said ultrasonic beam, said single transducer including an acoustic lens having opposite surfaces, one of said surfaces being a spherical surface and the other of said surfaces being a planar surface, and a thin piezoelectric film formed on said planar surface of said acoustic lens;

driving means for driving said transducer;

receiving means for receiving the echo detected in said transducer;

scanning means for two-dimensionally scanning a relative position of a sample with respect to said ultrasonic beam at least in a plane normal to a direction of travel of said ultrasonic beam;

display means for selectively displaying a first image obtained by scanning an output of said receiving means in synchronism with the two-dimensional scan by said scanning means, and a second image obtained by scanning the output of said receiving means in synchronism with a time axis scan of a received signal and a scan synchronized with the scan in one direction of said two-dimensional scan, said first image being an ultrasonic image of said sample in a plane parallel to said plane, and said second image being an ultrasonic image of a cross-section of said sample normal to said plane; and

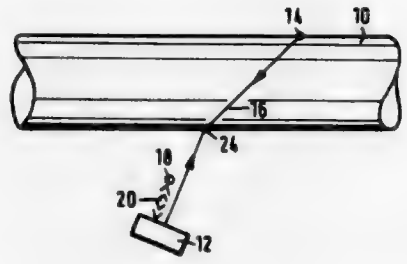
switching means for changing over an effective aperture of said transducer so that a first effective aperture is provided when the display of said first image is selected, sand a second effective aperture is provided with the display of said second image is selected, said first effective aperture being larger than said second effective aperture.

4,510,811

METHOD FOR DISTINGUISHING BETWEEN INTERFERING SIGNALS AND SIGNALS INDICATING DEFECTS OF WORKPIECES DURING ULTRASONIC TESTING

Walter Sternberg, Alzenau; Fritz Schreyer, Langenselbold, and Ursula Ruth, Ronneburg, all of Fed. Rep. of Germany, assignors to NUKEM GmbH, Hanau, Fed. Rep. of Germany

Filed Jan. 4, 1983, Ser. No. 455,554
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204797
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—611 **2 Claims**



1. A process for the ultrasonic, non-destructive testing of a workpiece disposed in a liquid medium where a transducing means is employed to expose the workpiece to acoustic waves traveling through the liquid medium and an interference member is disposed in the liquid medium between the workpiece and the transducer, comprising the steps of:

transmitting a first impulse wave from the transducing means,

detecting the first echo of said first impulse wave from the surface of the workpiece and noting the elapsed time period between the transmission and detection of the echo of said first impulse wave, said elapsed time period defining a time zone and corresponding to an area of wave transmission wherein unwanted obstructions could be located resulting in an unwanted echo signal,

establishing with said interference member an adjustable threshold signal level, and

suppressing, during a test cycle, any signal which exceeds said threshold signal level and which falls within said time zone.

4,510,812

APPARATUS FOR ACOUSTIC EMISSION DETECTION INCLUDING A WAVEGUIDE MADE OF ALUMINUM OR BERYLLIUM OXIDE

Ching C. Feng, San Juan Capistrano, Calif., assignor to Dunegan Corporation, Knoxville, Tenn.

Filed Dec. 20, 1982, Ser. No. 451,581
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—644 **5 Claims**

1. Waveguide apparatus for examining acoustic emission signals from objects of interest, comprising:

(a) an elongated solid waveguide body having first and second ends;

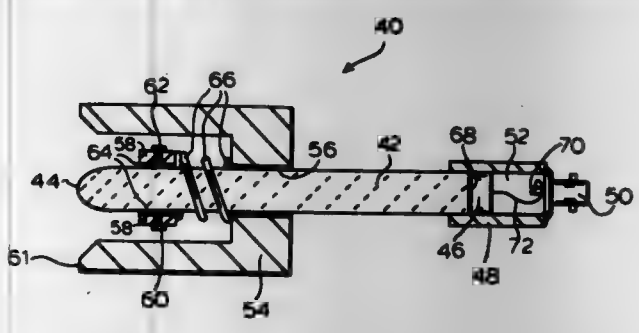
(b) a piezoelectric sensor mounted on said first end of said body;

(c) electrical connection means connected to said sensor for containing said apparatus to acoustic emission signal response mechanisms;

(d) a cup-shaped magnetic hold-down fixture connected to said body for holding said second end of said body against an object to be examined said hold-down fixture being connected one the end of said body opposite said sensor

with said body being mounted for relative longitudinal movement in said hold-down fixture;

(e) said body being made of a material selected from the group consisting of aluminum oxide and beryllium oxide;



(f) resilient means mounted between said hold-down fixture and said body for urging one end of said body against in object of interest.

4,510,813

TEMPERATURE COMPENSATION CIRCUIT FOR STRAIN GAUGES

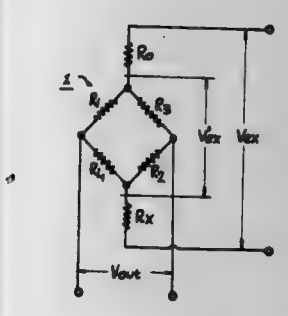
Jitsuo Kanazawa, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Shiga, Japan

Filed Dec. 9, 1982, Ser. No. 448,205

Claims priority, application Japan, Dec. 23, 1981, 56-194440[U]

Int. Cl.³ G01B *7/16*

U.S. Cl. 73—766 **8 Claims**



1. A temperature compensation circuit for strain gauges adapted to produce an output conforming to a strain by being fed with a constant voltage, said circuit being characterized in that compensation resistors comprising a combination of two or more kinds of resistors each made of pure single metal material and having a resistance versus temperature characteristic equivalent to the output voltage versus temperature characteristic of a bridge circuit of said strain gauges are connected to the bridge circuit of strain gauges, thereby compensating for variations in strain gauge output due to variations in temperature.

4,510,814

SNAP-IN FORCE SENSOR WITH BELLOWS

Eugenio Espiritu Santo; Kenneth D. Baxter, both of Cedar Falls, Iowa, and Gary R. Bluem, Wayzata, Minn., assignors to Deere & Company, Moline, Ill.

Filed Apr. 1, 1982, Ser. No. 364,372

Int. Cl.³ G01L *5/13*

U.S. Cl. 73—862.57 **7 Claims**

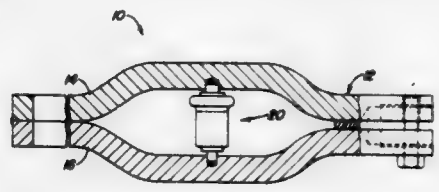
1. A force sensor comprising:

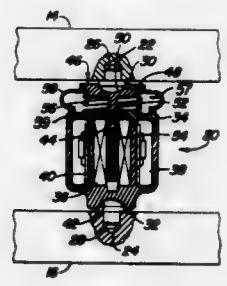
a deformable frame having spaced-apart portions having a variable separation depending on force-induced deformation of the frame;

a housing enclosing a transducer chamber therein, one end of the housing having means for coupling to one of the spaced-apart portions, the other end of the housing having a bore extending completely therethrough and communicating with the chamber;

a position transducer disposed entirely within the chamber and having first and second relatively movable parts, the first part being carried for movement with the housing, the housing also enclosing an outer chamber for sealingly enclosing elements of a transducer circuit operably coupled to the transducer;

a plunger member having a coupling part engageable with the other of the spaced-apart portions and a shaft slidably received by the bore and extending through the bore from the coupling part to an end fixed to the second transducer part; and





a resilient bellows member spaced apart from the frame, exterior to the housing and flexibly and sealingly interconnecting the plunger member and the housing to prevent contamination of the transducer, the bellows being biased to urge the plunger member and the housing away from each other and the bellows being deformable to permit the housing and plunger member to be inserted into and removed from the frame.

4,510,815

FLYWEIGHT VIBRATOR DESIGNED AS DIRECTIONAL VIBRATOR

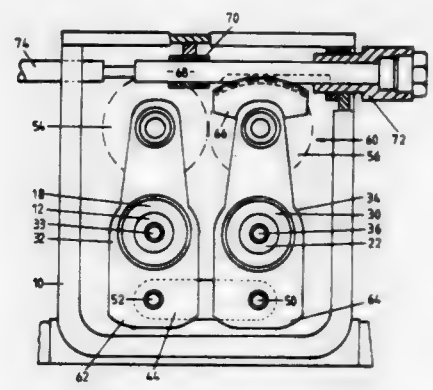
Johannes Bäumers; Werner Lisken, both of Düsseldorf, and Heinz Lietzke, Neuss, all of Fed. Rep. of Germany, assignors to Losenhausen Maschinenbau AG, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 2, 1982, Ser. No. 394,717

Claims priority, application European Pat. Off., Jul. 18, 1981, 81710026.6

Int. Cl.³ F16H *33/00, 33/20*

U.S. Cl. 74—61 **4 Claims**



1. A flyweight vibrator designed as a directional vibrator with the direction of oscillation being adjustable, comprising

(a) a housing (10)

(b) A first flyweight shaft (12), which

(b_1) is mounted in the housing (10),

(b_2) carries a first flyweight (16),

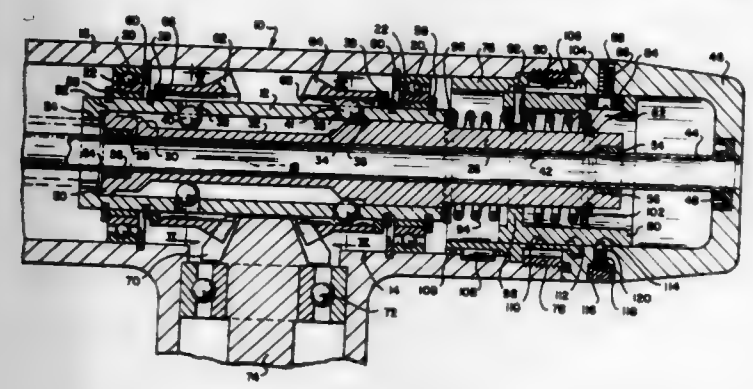
(b_3) is connected to a first gear (18) and
(b_4) is adapted to be driven by a motor,
(c) a second flyweight shaft (22), which
(c_1) is mounted in the housing (10) parallel to the first flyweight shaft (12),
(c_2) carries a second flyweight (28) and
(c_3) is connected to a second gear (30),
(d) a first oscillating crank (32) pivotably mounted about the axis (33) of the first flyweight shaft (12),
(e) a second oscillating crank (34) mounted for pivoting about the axis (36) of the second flyweight shaft (22),
(f) a connecting rod (44)
(f_1) which is coupled to the first and the second oscillating crank (32,34) at equal distances from the axes (33,36) of the associated flyweight shafts (12,22) and
(f_2) the effective length of which is equal to the distance of these axes (33,36) from each other,
(g) a first intermediate gear (54), which
(g_1) is mounted for rotation on the first oscillating crank (32) at a distance from the axis (33) of the first flyweight shaft (12) and
(g_2) meshes with the first gear (18),
(h) a second intermediate gear (56), which
(h_1) is mounted for rotation on the second oscillating crank (34) at a distance from the axis (36) of the second flyweight shaft (22) equal to the distance of the first intermediate gear (54) from the axis (33) of the first flyweight shaft (12),
(h_2) meshes with the second gear (30) and
(h_3) meshes with the first intermediate gear (54) and
(i) a shifting mechanism (60) arranged to rotate the two oscillating cranks characterized in that
(j) each of the oscillating cranks has a counterweight on the side opposite the intermediate gear and is individually mass-balanced thereby with respect to its pivotal axis, such that oscillations of the vibrator, even if they do not fall into the longitudinal direction of the oscillating cranks, do not exert any torque upon the oscillating cranks about the axes of the flyweight shafts.

4,510,816

APPARATUS FOR CHANGING THE DIRECTION OF ROTATION OF A ROTATING SHAFT

Harry A. Linden, Santa Barbara, Calif., assignor to American Sterilizer Company, Erie, Pa.

Filed Dec. 31, 1981, Ser. No. 336,050
Int. Cl.³ F16H *3/08, 3/14*
U.S. Cl. 74—372 **5 Claims**



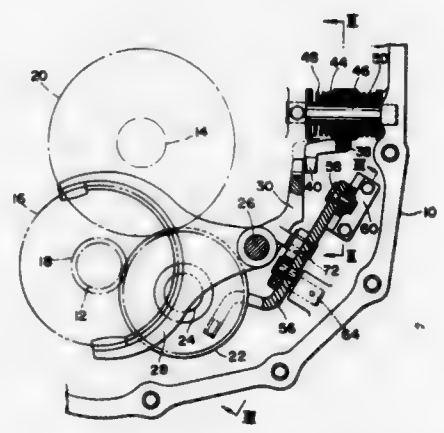
1. Apparatus for changing the direction of rotation of a driven shaft comprising:
a frame to which the shaft is mounted for rotation about its longitudinal axis;
two members disposed on the shaft for rotational movement thereabout;
means for engaging said members and rotating each said member in a direction opposite to that of the other said member;
means for mechanically coupling a first said member to the shaft when said coupling means assumes a first position relative to said frame to permit said first member to rotate the shaft in a first direction, and for mechanically coupling a second said member to the shaft when said coupling means assumes a second position relative to said frame to permit the second member to rotate the shaft in a second direction, said coupling means remaining rotationally stationary with respect to said frame when the driven shaft rotates;
means for mounting said coupling means to said frame to permit movement of said coupling means between its two said positions and to prevent rotation of said coupling means about its longitudinal axis relative to said frame; and
means for moving said coupling means between its two said positions.

4,510,817

GEAR OPERATING MECHANISM OF AN AUTOMOTIVE MANUAL TRANSMISSION

Tamio Kawamoto, and Kazuyoshi Hiraiwa, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed May 18, 1982, Ser. No. 379,507
Claims priority, application Japan, May 19, 1981, 56-74097
Int. Cl.³ G05G *5/10, 9/12*
U.S. Cl. 74—477 **8 Claims**



1. In a selected gear sliding type manual transmission having a case, a speed shift gear lever, and a gear which is axially slidable from its neutral position where it disengages from the associated gears to its operating position where it engages with the associated gears, a gear operating mechanism, comprising:
a first lever pivotally connected to said case to be pivoted about a first axis to move said gear between said neutral position and said operating position;
a second lever pivotally connected to said case to be pivoted about a second axis which extends parallel with said first axis;
a third lever having one end pivotally connected at a third axis to said first lever and its other end pivotally connected at a fourth axis to said second lever, so that during the pivotal movement of said first lever about said first axis said third lever pivots about said third axis and said fourth axis which are respectively arranged on said first and second levers; and
means for pivotally moving said second lever about said second axis in response to the movement of said speed change shift lever of the transmission,
wherein said first, second and third levers are so arranged and constructed that when they assume their respective positions to cause said gear to assume said operating position, said second, fourth and third axes are located substantially on a straight line in this order, whereas when they assume their respective positions to cause said gear to assume said neutral position, said second, fourth and third axes are located at the apexes of a predetermined triangle.

4,510,818

DEVICE FOR PREVENTING REVERSE GEAR BUZZING IN A MANUAL TRANSMISSION

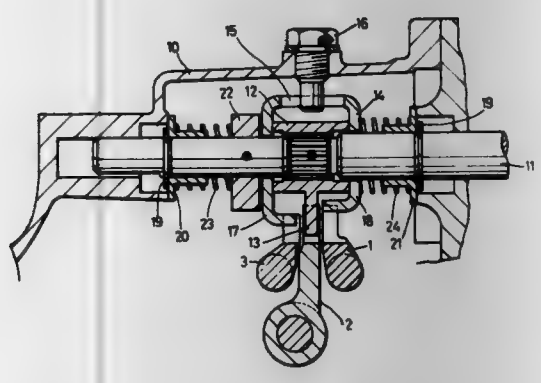
Masaki Inui, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 29, 1983, Ser. No. 479,876

Claims priority, application Japan, Nov. 19, 1982, 57-175760[U]

Int. Cl.³ G05G *9/12, 5/10*

U.S. Cl. 74—477 6 Claims



1. In combination with a manual transmission for automotive vehicles including a transmission casing, a forward speeds unit provided with a plurality of synchromesh mechanisms and having shift heads for the forward speeds, a reverse unit provided with a selective sliding mesh mechanism of a reverse idler gear and having a reverse shift head, a shift-and-select lever shaft mounted in said transmission casing, an inner lever attached to said shift-and-select lever shaft and an interlocking plate relatively rotatably mounted to said shift-and-select lever shaft and holding said inner lever at its both ends, said interlocking plate serving to hold immovable at the neutral position the remaining shift heads other than one of said shift heads which is selected by the select operation of said inner lever; a device for preventing reverse gear buzzing comprising:

a first front engaging member of the forward speed shift head adjacent to said reverse shift head for releasably engaging with said inner lever when said inner lever is selected into the reverse position;

a first rear engaging member provided on said forward shift head adjacent to said reverse shift head;

a second front and rear engaging members provided on said reverse shift head;

first means for contacting with said interlocking plate at the reverse select position, moving said reverse shift head and said forward shift head with said inner lever by a predetermined amount in the reverse shifting direction and thereafter disengaging said inner lever from said forward speed shift head, said first means being provided on said reverse shift head; and

second means for preventing said interlocking plate from abutting against said rear engaging member of said forward speed shift head when said forward speed shift head moves in the reverse shifting direction by said predetermined amount.

4,510,819

DEVICE FOR PREVENTING REVERSE GEAR BUZZING IN A MANUAL TRANSMISSION

Masaki Inui, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 29, 1983, Ser. No. 479,879

Claims priority, application Japan, Nov. 15, 1982, 57-173435[U]

Int. Cl.³ G05G *9/12, 5/10*

U.S. Cl. 74—477 8 Claims

1. A device for preventing reverse gear buzzing in a manual transmission comprising:

a transmission casing;

a forward speeds unit provided with a plurality of synchromesh mechanisms and having shift heads for the forward speeds;

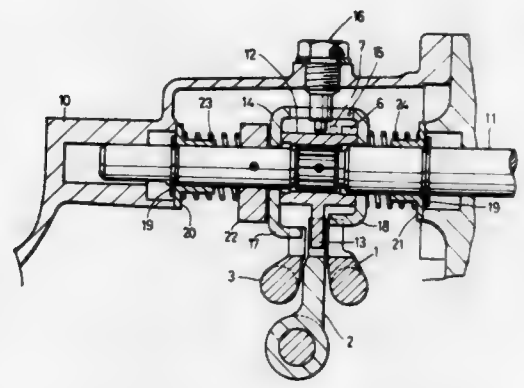
A reverse unit provided with a selective sliding mesh mechanism of a reverse idler gear and having a reverse shift head;

a shift-and-select lever shaft mounted in said transmission casing;

an inner lever attached to said shift-and-select lever shaft;

an interlocking plate loosely mounted to said shift-and-select lever shaft and holding said inner lever at its both ends, said interlocking plate serving to hold immovable at the neutral position the remaining shift heads other than one of said shift heads which is selected by the select operation of said inner lever;

a locking means fixed to said transmission casing and adapted to hold said interlocking plate in such a manner that said interlocking plate is permitted to axially move together with said lever shaft and to rotate relative to said lever shaft;



stopper formed on the shift head adjacent to said reverse shift head and adapted to be engaged with and disengaged from said inner lever; and

means mounted on said inner lever for abutting against said locking means at the reverse select position of said inner lever in such a manner that after abutting of said abutting means against said locking means said inner lever is permitted to slightly move in the shift and select directions and subsequently move only in the shift direction, whereby said reverse shift head and said shift head adjacent thereto are moved together slightly in the shift direction because of engagement of said interlocking plate with said reverse shift head and said stopper, and thereafter said reverse shift head alone is moved in the shift direction because of disengagement of said interlocking plate from said stopper and engagement thereof only with said reverse shift head.

4,510,820

DRUM TYPE SWITCH-OVER MECHANISM FOR A SPEED CHANGE DEVICE

Masaharu Tsuboi, Sayama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1983, Ser. No. 481,392

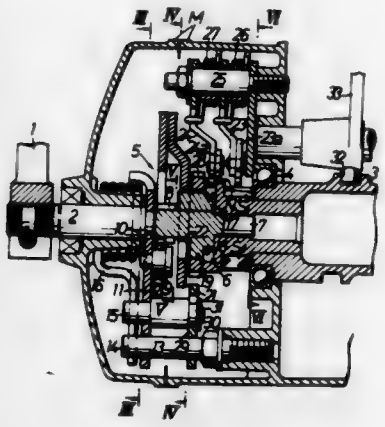
Claims priority, application Japan, Apr. 1, 1982, 57-54433

Int. Cl.³ G05G *1/14;* F16H *1/28;* F16D *41/16*

U.S. Cl. 74—474 9 Claims

1. In a drum type switch-over mechanism for a speed change device comprising a transmission case, a speed change pedal shaft, a speed change drum, said speed change pedal shaft and said speed change drum being rotatably supported on the transmission case, a speed-up mechanism and an intermittent feed mechanism for operatively connecting said pedal shaft and said speed change drum together via said speed-up mechanism, the speed change drum being adapted to rotate by a unit angle in a predetermined direction on every reciprocatable rotation of the pedal shaft by a predetermined angle, the improvement wherein the pedal shaft is located in axial alignment

with an input shaft of said intermittent feed mechanism, said speed-up mechanism comprises a sun gear formed on said input shaft, a plurality of planet gears mounted on said pedal shaft for meshing engagement with the sun gear, and a ring gear meshing with said planet gears and fixedly secured to the transmission case, said speed-up mechanism and said intermittent feed mechanism being disposed on different planes in the axial direction of said input shaft.



4,510,821

DEVICE FOR MAKING A FIRM, BUT RELEASABLE JOINT BETWEEN A STEERING WHEEL AND A LOCKING BOLT

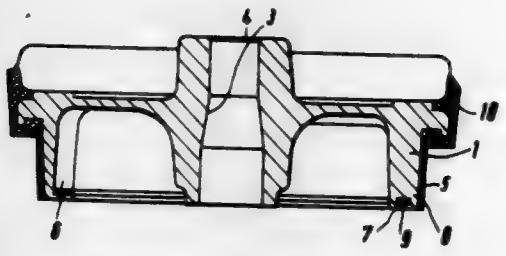
Wolfgang Bauer, Karlsting, and Werner Grosser, Sulzbach, both of Fed. Rep. of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Continuation of Ser. No. 207,096, Nov. 14, 1980, abandoned. This application Sep. 23, 1983, Ser. No. 534,932

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2945937

Int. Cl.³ B62D *1/04*

U.S. Cl. 74—552 **1 Claim**



1. A steering wheel of the type connected to a steering column and which is engageable by a locking bolt movable by a locking cylinder to lock said steering wheel with respect to said column, wherein said steering wheel comprises a diecast steering wheel hub which has a central opening and one side of which faces a steering column during use, said one side being concave and having a cylindrical flange attached thereto and having a free end, said cylindrical flange being concentric to said central opening and having means including lands provided on its inside peripheral surface forming a multiplicity of axial grooves for receiving a locking bolt, each of said axial grooves extending to the free end of the flange, and a ring disposed at the free end of the flange and facing the axial grooves and firmly connected to said lands.

4,510,822

CONTINUOUSLY VARIABLE V-BELT TRANSMISSION INCLUDING HYDRODYNAMIC TRANSMISSION UNIT WITH LOCK-UP MEANS

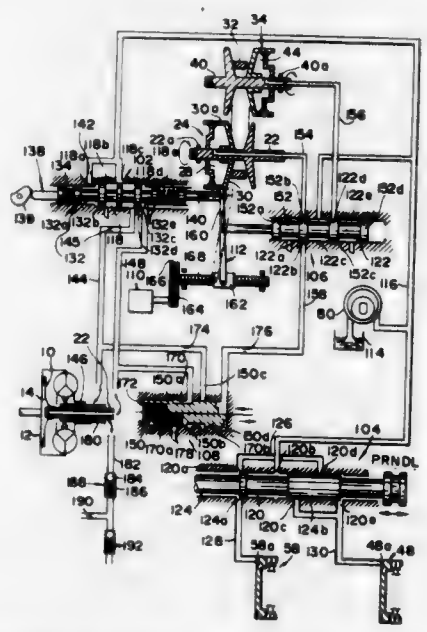
Sigeaki Yamamuro, Zushi; Hiroyuki Hirano; Yoshiro Morimoto, both of Yokosuka, and Yoshikazu Tanaka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1982, Ser. No. 362,491

Claims priority, application Japan, Mar. 28, 1981, 56-44746; Mar. 28, 1981, 56-44751

Int. Cl.³ F16H *47/00, 55/52;* F16D *33/00, 35/00*

U.S. Cl. 74—733 **10 Claims**



1. A continuously variable V-belt transmission comprising:

a continuously variable V-belt transmission unit having a drive shaft and a driven shaft;

a hydrodynamic transmission unit having an input member and an output member drivingly connected to said drive shaft of said continuously variable V-belt transmission unit, said hydrodynamic transmission unit including a lock-up clutch having an engaged state wherein said input member is mechanically connected to said output member so as to place said hydrodynamic transmission unit in a lock-up mode, said lock-up clutch having a disengaged state wherein said input member is out of mechanical connection with said output member, said lock-up clutch including a lock-up chamber and being shiftable responsive to fluid pressure in said lock-up chamber to one of said engaged and disengaged states;

said continuously variable V-belt transmission unit having a V-belt running over a drive and a driven pulley, each having a cylinder chamber and two conical discs, one conical disc of said drive pulley being secured to said drive shaft, one conical disc of said driven pulley being secured to said driven shaft, the other conical disc of said drive pulley being controllably movable in an axial direction of said drive shaft in response to fluid pressure in said cylinder chamber of said drive pulley, the other conical disc of said driven pulley being controllably movable in an axial direction of said driven shaft in response to fluid pressure in said cylinder chamber of said driven pulley;

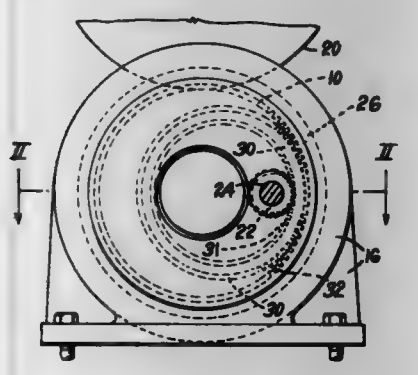
a switch valve including means defining a valve chamber communicating with said cylinder chamber of said drive pulley, a valve element and means, including a spring, for biasing said valve element toward said valve chamber, said valve element being movable responsive to fluid pressure within said cylinder chamber of said drive pulley between a first position wherein fluid pressure is discharged from said lock-up chamber and a second position wherein fluid pressure is supplied to said lock-up chamber.

4,510,823

DRIVE FOR SHELL TYPE ROLLS

Francis Leech, Seymour, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 21, 1981, Ser. No. 332,482
Int. Cl.[3] F16H *57/10*; B60B *15/16*
U.S. Cl. 74—789 5 Claims



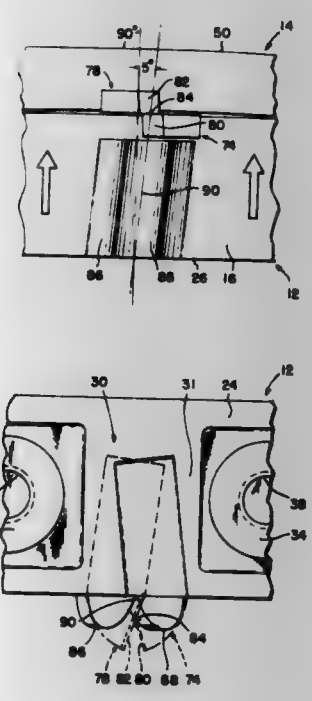
1. A mechanism for driving a deflectable rotary member including:
a driven pinion;
a support for mounting the pinion for rotation on a fixed axis and for mounting the rotary member on a deflectable axis;
a first ring gear secured to the rotary member;
a second ring gear having internal and external gear teeth supported by meshing engagement between the teeth of the pinion and the first ring gear for rotation about an axis which oscillates bodily according to deflection of the rotary member for maintaining meshing engagement with the teeth of the pinion and the first ring gear.

4,510,824

SHARPENER DEVICE WITH GUIDE MEANS

John E. Byers, P.O. Box 556, Whitefish, Mont. 59937

Filed Feb. 28, 1983, Ser. No. 462,743
Int. Cl.[3] B21K *5/12*
U.S. Cl. 76—86 8 Claims



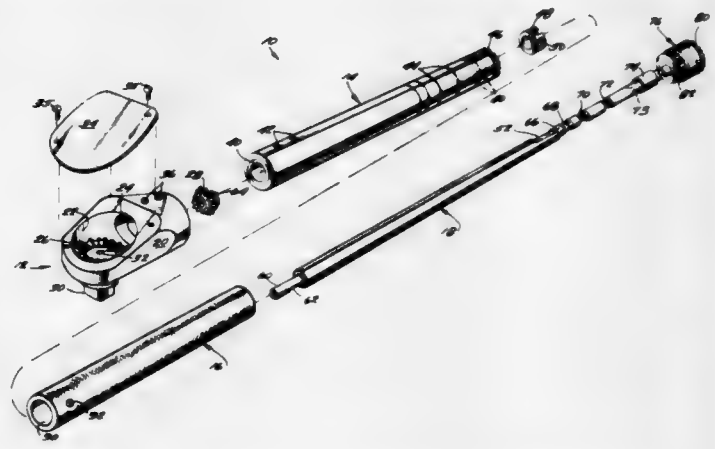
1. A sharpening device, comprising:
(a) a body which includes flat, removable sharpening blade means which are supported in and extend out of said body and which define a generally V-shaped sharpening notch for blades to be sharpened,
(b) guide slot means on said body aligned with and for guiding said blades to be sharpened through said V-shaped sharpening notch, said guide slot means being disposed at a predetermined angle to a line which is normal to the sharpening blade means and said guide slot means being in the same general perpendicular plane as the bottom of said V-shaped sharpening notch, said bottom of said V-shaped sharpening notch being spaced above said guide slot means a slight predetermined distance.

4,510,825

MULTI-POSITION DRIVE RATCHET WRENCH

Joseph Neron, 4 Minnesota Ave., West Glen Falls; William S. Hudson, 5 Terra Cotta Ave., Glens Falls, both of N.Y. 12801, and Ronald L. Miller, R.D. #1 Box #62, Geer Rd., Hudson Falls, N.Y. 12839

Continuation of Ser. No. 202,428, Oct. 30, 1980, abandoned.
This application Apr. 22, 1983, Ser. No. 485,759
Int. Cl.[3] B24B *17/00*
U.S. Cl. 81—57.29 6 Claims



1. A right angle socket wrench having a plurality of operating modes comprising housing means for providing the main support for the wrench, drive system means movably positioned with respect to said housing means for providing a plurality of operational modes and for transmitting driving forces applied thereto, said drive system means including a drive lug, a drive shaft, gearing means for connecting said drive shaft to said drive lug and handle means adjustably mounted to said housing means and said drive shaft so as to be axially and rotatably movable with respect thereto for selecting one of said plurality of operational modes and for applying clockwise or counterclockwise driving forces to said drive shaft in only one of at least five predetermined operational modes, respectively, said plurality of operation modes includes clockwise and counterclockwise ratcheting together with complementary counterclockwise and clockwise drives, respectively, a fully locked condition in which said drive shaft, said housing means and said handle means are locked together as an integral unit, an idle condition mode for said drive shaft and said handle means where said drive shaft can be driven independently of said handle means and a partially locked condition where said handle means and said drive shaft are locked together independently of said housing means.

4,510,826

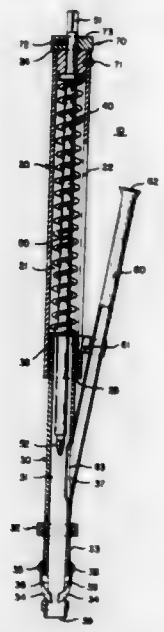
EXTENSION FOR A SCREWGUN

Milton Marks, Pittsburgh, Pa., assignor to Guardian Fasteners and Closure Systems, Coraopolis, Pa.

Filed Mar. 7, 1983, Ser. No. 472,579
Int. Cl.[3] B25B *23/02*
U.S. Cl. 81—57.37 11 Claims

1. An attachment for a screwgun comprising:
a hollow barrel having a portal in its side for receiving a fastener;
a hollow sleeve adapted for sliding movement relative to said barrel;
a drive member disposed within the hollow portions of said barrel and said sleeve and adapted to coact with the drive of the screwgun to transfer the driving force of the screwgun to the fastener;

means for biasing said barrel and said sleeve apart; and
means hingedly connected to said barrel for delivering a fastener through said portal into said barrel;
said delivering means being capable of assuming a first position in which an outlet end of said delivering means is in communication with said portal and a second position in



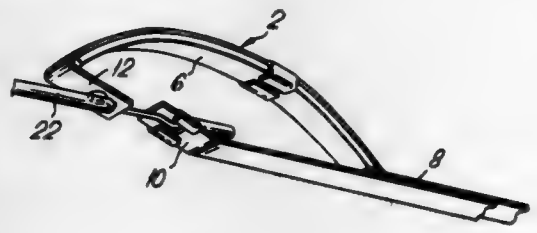
which said outlet end is spaced from said portal, said delivering means being eased from said first position to said second position by the sliding movement of said sleeve relative to said barrel past the area of communication between said portal and said outlet end of said delivering means.

4,510,827

WIRE STRIPPING ARRANGEMENT

Regis Flot, Eragny, France, and Jean Patrick Hine, San Carlos, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 24, 1982, Ser. No. 444,129
Claims priority, application United Kingdom, Nov. 27, 1981, 8135940
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.4 **14 Claims**



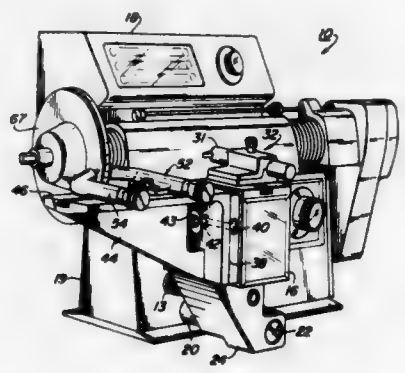
1. An arrangement for stripping the insulation of an elongate, insulated electrical conductor, the arrangement comprising:
at least two stripping members, each having a cut-out portion defined by an edge; and
a recoverable member in cooperative engagement with each of said stripping members, said recoverable member having an original undeformed shape and a deformed shape wherein the original undeformed shape is recoverable from the deformed shape by application of heat thereto, said recoverable member being in the deformed shape;
said stripping members positioned prior to recovery of the recoverable member opposed to one another with their cut-out portions aligned so as to form an aperture for receiving the conductor;
the recovery of said recoverable member effecting relative movement of said stripping members (a) laterally of the conductor so that the aperture is effectively reduced in size, the edges of the cut-out portions penetrating the insulation of the insulated conductor, and (b) longitudinally of the conductor so that the edges of the cut-out portions cooperate to displace at least a portion of the insulation longitudinally of the conductor;
wherein said stripping members are arranged to interengage each other such that said longitudinal movement is effected after said lateral movement has substantially been completed, wherein said interengagement is effected by one of said members being slidably disposed within a channel provided on the other of said members.

4,510,828

LATHE CROSS FEED ASSEMBLY

Leo C. Bogaerts, Antioch, and John W. Murphy, Waukegan, both of Ill., assignors to Ammco Tools, Inc., North Chicago, Ill.

Filed Mar. 23, 1984, Ser. No. 592,899
Int. Cl.³ B23B *3/22, 5/04, 7/00, 21/00*
U.S. Cl. 82—4 A **12 Claims**



1. A cross feed assembly for use with a lathe having an arbor and drive means for rotating the arbor, comprising in combination
a boring bar assembly,
first and second facing tool cutter assemblies,
said cross feed member having a first planar surface parallel with the longitudinal axis of said arbor and a second planar surface perpendicular to said first planar surface,
first mounting means for mounting said boring bar assembly to said cross feed member to permit rotational linear adjustment of said boring bar assembly within a plane parallel with the longitudinal axis of said arbor for positioning said boring bar assembly relative to a work piece mounted on said arbor,
second mounting means for mounting said first and second facing tool cutter assemblies to said cross feed member to permit simultaneous rotational and linear adjustment of said facing tool cutter assemblies within a plane parallel to the axis of rotation of said arbor for positioning said cutter assemblies relative to a work piece mounted on said arbor,
said first mounting means including a slot in said first planar surface extending across said first planar surface in a direction perpendicular to the longitudinal axis of said arbor,
a first elongated, adjustable attachment member,
said slot having a configuration adapted to receive and retain said attachment member,
a clamp member adapted to engage said boring bar assembly and having a planar surface resting on said first planar surface, and also having a hole therethrough aligned with said slot in said first planar surface through which said attachment member passes to engage said slot,
whereby said clamp member and said boring bar assembly are rotationally and linearly positionable on said first planar surface throughout the length of said slot,
said first and second mounting means including means for adjustably positioning said boring bar assembly and said facing tool cutter assemblies relative to one another for allowing selective use of said assemblies while all of said assemblies are mounted to said lathe,
said second mounting means including a slot in said second

planar surface extending across said second planar surface in a direction perpendicular to the longitudinal axis of said arbor,

a second elongated adjustable attachment member,

said slot in said second planar surface having a configuration adapted to receive and retain said second elongated attachment member,

a tool secured to said second planar surface by said second elongated adjustable attachment member and being adjustably positionable on said second planar surface throughout the length of said slot in said second planar surface,

said tool including a third planar surface parallel to the longitudinal axis of said arbor and having a slot therein extending across said third planar surface in a direction parallel to the longitudinal axis of said arbor,

a third elongated adjustable attachment member,

said slot in said third planar surface having a configuration adapted to receive and retain said third attachment member, and

at least one tool holder for holding one of said facing tool cutter assemblies,

said at least one tool holder being mounted on said third planar surface by said third attachment member,

whereby said tool holder is rotationally and linearly positionable on said third planar surface throughout the length of said slot in said third planar surface.

4,510,829

CLAMPING DEVICE FOR TOOL ASSEMBLIES

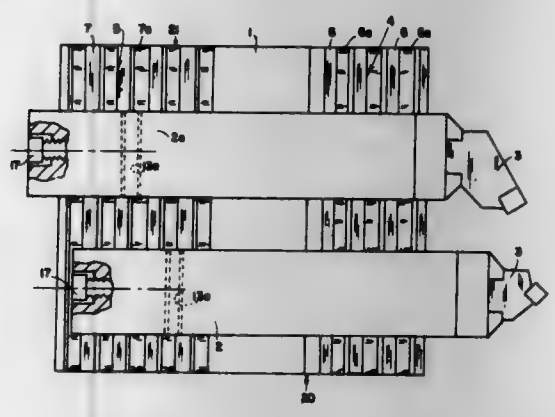
Gerhard Kintzel, and Edmund Heilmann, both of Schweinfurt, Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,398

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151275

Int. Cl.³ B23B *29/08*

U.S. Cl. 82—36 R **8 Claims**



1. A tool assembly comprising a tool, a support base (1) having first guideways formed by at least two groups of spaced first rib-like projections (*6a, 7a*) and grooves (6, 7) disposed at an oblique angle relative to the base and extending generally transversely to the feed direction of said tool, at least one tool holder (2) mounted on the base (1) having a main section (10) and a clamping section (11), means securing said tool to said main section, complementary second guideways formed by a series of spaced second rib-like projections (8, 9) complementing the first rib-like projections and interengageable therewith, said second rib-like projections (8, 9) projecting from said main section and clamping section, means (12, 22) to allow limited relative movement of said main section and clamping section and actuator means (16, 26, 33) operable to effect said relative displacement of said main section and clamping section and thereby displacement of said second rib-like projections in a direction generally parallel to the base to effect pressure applying relation of said second rib-like projections of the tool holder and at least some of said first rib-like projections of the base so that the side faces of the ribs interengage in a manner providing a clamping component between the interengaging ribs of said first and second guideways.

4,510,830

APPARATUS FOR CUTTING THROUGH OR TRIMMING A PIPE OR CAN IN A PLANE TRANSVERSE TO ITS LONGITUDINAL AXIS

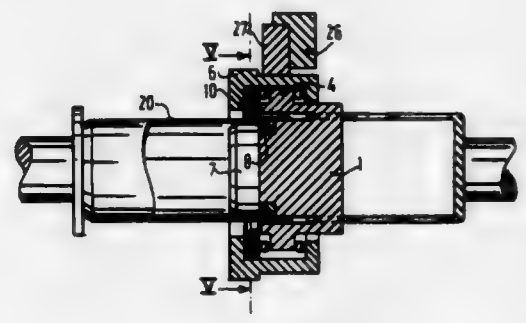
Willem P. Post, Bl Diepenveen, Netherlands, assignor to Thomassen & Drijver-Verblifa N.V., Deventer, Netherlands

Filed Apr. 20, 1983, Ser. No. 486,715

Claims priority, application Netherlands, Apr. 27, 1982, 8201746

Int. Cl.³ B23D *21/00*

U.S. Cl. 83—114 **13 Claims**



1. Apparatus for cutting circumferentially through the wall of a tubular workpiece such as a can body, comprising an inner shearing member presenting a continuous, outwardly directed, outer peripheral cutting edge received within the workpiece and an outer shearing member presenting a continuous, inwardly directed, inner peripheral cutting edge surrounding the workpiece, and means for moving said cutting edges relative to each other substantially only in radial directions with respect to the workpiece in continuous, progressive fashion completely around the circumference of the workpiece to effect the cutting thereof.

4,510,831

DEVICE FOR CUTTING SHEET METAL AND THE LIKE

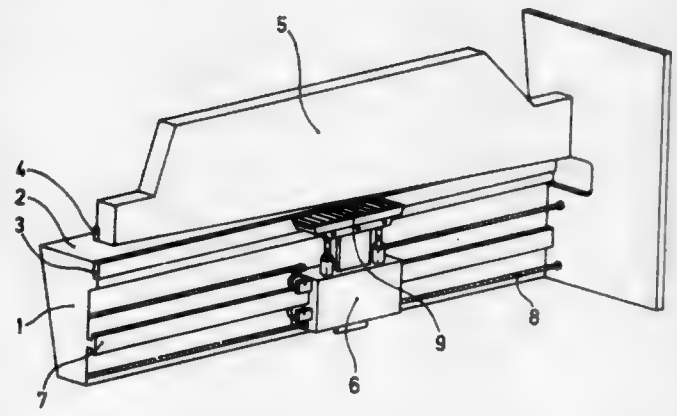
Theo Jäger, Huttenheimer Str. 46, and Helmut Schmid, Kronenstrasse 10, both of 7522 Philippsburg-Rheinsheim, Fed. Rep. of Germany

Filed Nov. 21, 1983, Ser. No. 553,858

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243257

Int. Cl.³ B26D *7/18, 7/20*

U.S. Cl. 83—157 **12 Claims**



1. Device for cutting sheet metal and similar materials, having a lower cutting blade and a cooperating upper cutting blade that is lowerable so as to run at a certain cutting angle relative to the lower cutting blade, having also a support lying below the upper cutting blade for bracing a strip to be cut off against the cutting force, said support being guided so as to be

yieldable in the vertical direction, and having also the improvement comprising;

a carriage for said support mounted for travel below said upper cutting blade along the length thereof, so that said carriage performs the function of said support for bracing said strip, and

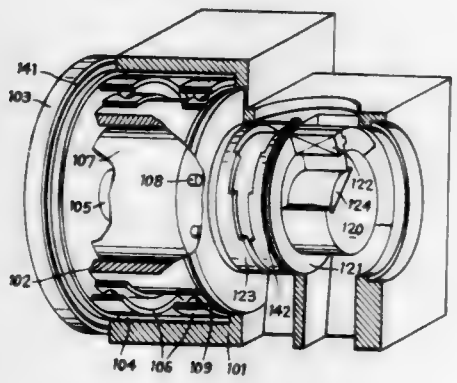
means for causing said carriage to move along its path of travel substantially in synchronism with the shift of the location of cutting by said blades along the length of said blades and in the same direction.

4,510,832

ROTARY DEVICE FOR SHEARING A BUNDLE OF TUBES CONTAINING BURNT NUCLEAR FUELS

René Guilloteau, Verrieres Le Buisson, France, assignor to Societe Generale pour les Techniques Nouvelles S.G.N., Montigny-Le-Bretonneux, France

Filed Mar. 24, 1982, Ser. No. 361,285
Claims priority, application France, Mar. 24, 1981, 81 05880
Int. Cl.[3] B26D *1/25, 1/34, 1/38, 3/16*
U.S. Cl. 83—168 10 Claims



1. Apparatus for removing first the foot and then successive lengths of the tubes of a bundle of tubes containing nuclear fuel, comprising:

(a) means for supporting a bundle of tubes with the tubes in vertical position,

(b) means for moving the bundle from a first position in which the foot of the bundle is removed to a second position in which sections of the tubes are successively removed,

(c) means for cutting the foot of the bundle while it is in the first position, comprising:

i. a horizontal shaft and a motor for rotating the shaft,

ii. a ring connected to the shaft below the first position of the bundle and having a recess therein vertically aligned with the first position of the bundle to receive the lower end of the bundle,

iii. a rotor on the shaft having a cutter bar extending axially therefrom overhanging the recess in the ring and operable when the lower end of the bundle is in the recess and the rotor is turned to sever the foot of the bundle, and

(d) means for progressively removing sections of the tubes of the bundle while it is in the second position comprising:

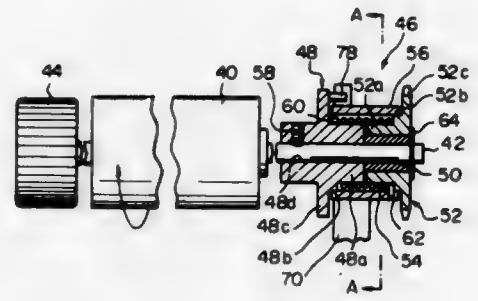
i. a circumferential series of teeth on the rotor positioned axially of said cutter bar and below the second position of the bundle and operable upon rotation of the rotor and positioning of the bundle in the second position to successively remove sections of the lower parts of the tubes as the bundle is lowered by gravity through said bundle moving means.

4,510,833

ONE-ROTATION CLUTCH

Osamu Uozumi, Zushi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 28, 1983, Ser. No. 566,468
Claims priority, application Japan, Dec. 29, 1982, 57-229854
Int. Cl.[3] B26D *5/08*
U.S. Cl. 83—205 11 Claims



1. A one-rotation clutch for selectively establishing and interrupting transmission of a drive force from a drive source to a driven object, comprising:

a driven shaft integral with the driven object;

driven means rigidly mounted on said driven shaft and having a locking member;

drive means located to face said driven means and movably coupled over the driven shaft to be rotatable in a predetermined direction;

sleeve means rotatably disposed between the driven means and the drive means and having a locked member on an outer periphery thereof;

spring means disposed in said sleeve means with one end thereof retained by the driven means and the other end thereof retained by the sleeve means, said spring means being wound in such a direction that when the sleeve means is rotated in the predetermined direction with the driven means held in a halt, a coil diameter of the spring is reduced to bind the driven member and the drive member; and

locking means selectively engageable with the locked member of the sleeve means, whereby when the driven means is rotated in the predetermined direction while the locking means is in engagement with the locked member of the sleeve means, the locking member of the driven means abuts against the locking means to immediately release the locking means and the locked member from each other.

4,510,834

SIDING CUTTER

Dennis T. Greene, 612 Butler Springs Rd., Greenville, S.C. 29615, and Glen M. Salyers, P.O. Box 231, Lyman, S.C. 29365

Filed May 9, 1983, Ser. No. 492,507
Int. Cl.[3] B23D *23/02*
U.S. Cl. 83—453 5 Claims

1. A vinyl and aluminum siding cutter comprising:

an elongated blade support;

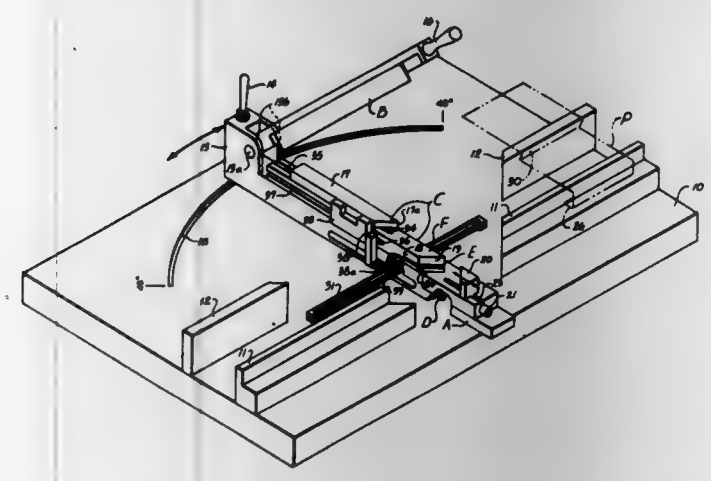
a manually depressable elongated upper blade carried by said support;

an elongated lower blade in alignment with said upper blade carried by said support;

a pivotal mounting means carrying said elongated blade support for angular adjustment in respect to said siding;

stop means carried adjacent said lower blade fixing said siding during cutting;

a surface carried by said lower blade and said stop means supporting said siding during cutting; and



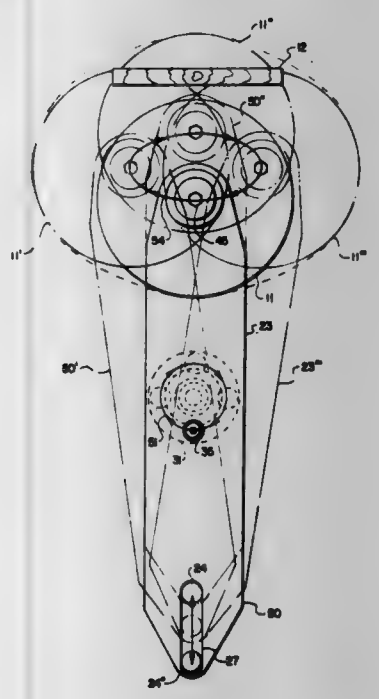
said stop means and said pivotal mounting means being in vertical alignment.

4,510,835

APPARATUS FOR GUIDING A POWERED CIRCULAR SAW ALONG AN ELLIPTICAL CUTTING PATH

Jeff Y. Cromeens, Mesquite, Tex., assignor to Industrial Woodworking Machine Co. Inc., Garland, Tex.

Filed Feb. 25, 1983, Ser. No. 469,821
Int. Cl.[3] B27B *5/18*
U.S. Cl. 83—471.2 2 Claims



1. Apparatus for controlling the operating relationship of a rotatably driven saw blade to an adjacent workpiece comprising:

a base member,

an elongated slide member adjacent the base member and carrying the saw blade,

indexing means between said base member and one end of the slide member to constrain said one end of said slide member to linear movement,

a first motor mounted at the opposite end of said slide member for driving the blade,

the indexing means having guide means extending longitudinally of said slide plate,

said guide means comprising an elongated recess in one of said base and slide members, a roller mounted on the other of said members and oriented to engage the recess in said one of said members to constrain the movement of said one end of said slide member to linear movement,

crank means rotatably connected to the center portion of said slide member, and

a second motor carried by said base member for rotating the crank means to move the said slide member from side to side and up and down relative to said base member to move the center of the blade along an elliptical path,

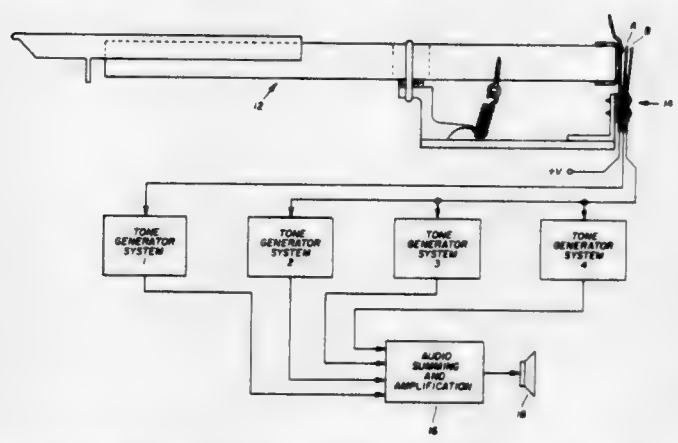
whereby operation of the second motor causes the blade to be brought into contact with the workpiece along a path generally parallel with a major axis of the elliptical path.

4,510,836

TOUCH SENSITIVITY IN AN ELECTRONIC MUSICAL INSTRUMENT HAVING NON-POSITIVE ATTACK

Jerome Markowitz, Allentown, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Dec. 1, 1983, Ser. No. 557,031
Int. Cl.[3] G10H *1/02, 1/08*
U.S. Cl. 84—1.26 8 Claims



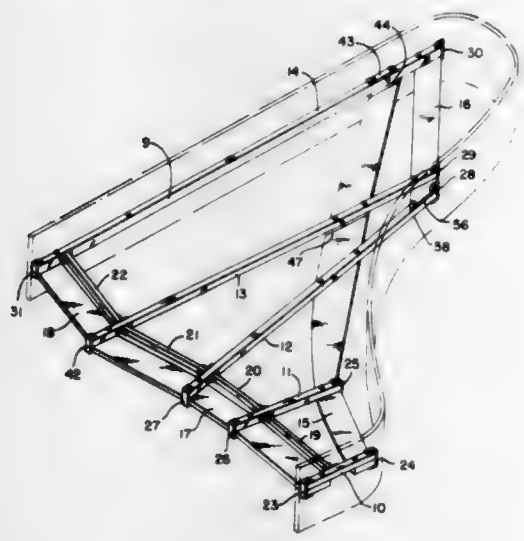
7. Method for providing touch sensitivity to the keys of an electronic musical instrument comprising the steps of: providing a plurality of tone generators for causing a poredetermined tonal output upon the actuation of a key, operating each of said tone generators sequentially by successively causing a delay of the predetermined tonal output from one or more additional tone generators after the first of said tone generators begins to sound, each of the sequentially and successively actuated additional tone generators having envelope characteristics containing an increasingly greater delay time than any previously actuated tone generator resulting in the combined tonal output varying in amplitude and tonal response in accordance with the speed or length of play of the key.

4,510,837

METHOD OF MANUFACTURING A PIANO PLATE ASSEMBLY AND THE ASSEMBLY

Keith T. Keller, 3614 Woodlawn Ave. N., Seattle, Wash. 98103

Filed Jan. 17, 1983, Ser. No. 458,868
Int. Cl.[3] G10C *3/04, 3/08*
U.S. Cl. 84—184 33 Claims



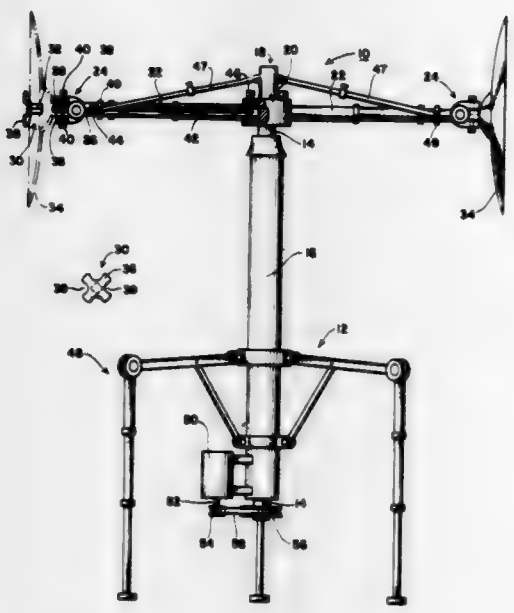
1. A piano plate assembly comprising: composite material bars, composite material plate elements and fastenings means, said bars and plate elements being selectively fastened together by said fastening means to form said plate assembly.

4,510,838

CYMBAL STAND WITH ROTATING HEAD

Raoul H. Alexis, Jr., Vallejo, Calif., assignor to Keith Alexis, Davis, Calif.

Filed Jun. 6, 1983, Ser. No. 501,525
Int. Cl.[3] G10D *13/06;* G10G *5/00*
U.S. Cl. 84—422 R 2 Claims



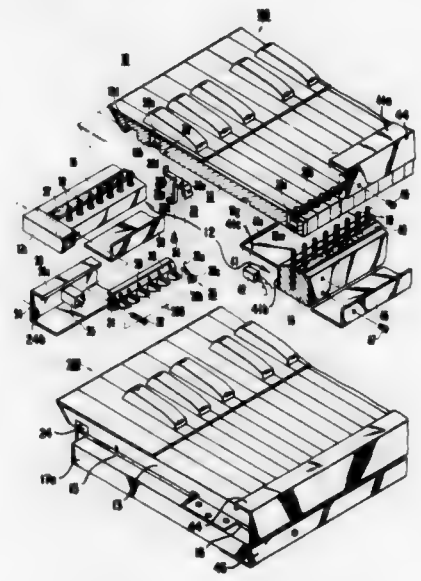
1. A cymbal support assembly, comprising a stand, a head configured to hold at least one cymbal, said head being rotatably mounted on said stand, and a motive means connected to rotate said head, said head being configured to hold a plurality of cymbals and including a plurality of arms extending radially from a vertical shaft centrally disposed on said stand, each arm being configured to hold one of the plurality of cymbals at an end remote from said shaft with a clamping means for the one cymbal, said motive means being operable to rotate the plurality of cymbals about said vertical shaft.

4,510,839

KEYBOARD STRUCTURES OF ELECTRONIC MUSICAL INSTRUMENTS

Shinji Kumano, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 24, 1981, Ser. No. 334,288
Claims priority, application Japan, Dec. 25, 1980, 55-184464
Int. Cl.[3] G10C *3/12*
U.S. Cl. 84—434 14 Claims



1. A keyboard structure for an electronic musical instrument, said keyboard structure comprising:

a keyboard frame comprising a front rail, a back rail parallel to and spaced from said front rail, and means for interconnecting said front and back rails;

a plurality of keys juxtaposed said keyboard frame, each of said plurality of keys having a forward end portion extending across said front rail and a rearward end portion contiguous said back rail of said keyboard frame, said rearward end portion of each of said plurality of keys being pivotally interconnected with said back rail of said keyboard frame such that each of said plurality of keys is tiltable in a vertical direction about said pivotable interconnection;

a plurality of stop block members secured to said front rail such as to be located between said front and back rails, each of said plurality of stop block members further comprising a plurality of projections projecting in a first predetermined direction toward said back rail, said plurality of projections further being spaced along each of said plurality of stop block members in consecutive pairs, each of said pairs of said plurality of projections having a predetermined space therebetween;

a plurality of key return spring engaging members attached to said respective plurality of keys, each one of said plurality of key return spring engaging members being associated respectively with each one of said plurality of keys, each one of said plurality of key return spring engaging members having a subtending portion secured to said respectively associated each one of said plurality of keys, said subtending portion of each one of said plurality of key return spring engaging members further being spaced in close proximity to each of said pairs of said plurality of projections of each of said plurality of stop block members, each one of said plurality of key return spring engaging members further having a depending portion complementary with said subtending portion, said depending portion depending from said subtending portion secured to said respectively associated each one of said plurality of keys in a predetermined direction towards said plurality of stop block members;

said subtending portion of each one of said plurality of key return spring engaging members further having a forward end portion, an intermediate portion and a rearward end

portion, said forward end portion being selectively formed along a plane normal to said intermediate portion to engage said respectively associated each one of said plurality of keys, said intermediate portion being secured to said respectively associated each one of said plurality of keys, said rearward end portion being pivotally attached to said intermediate portion at a selectively predetermined angular position;

said depending portion of each of said plurality of key return spring engaging members further having an adjustable pivotable end portion defining an upper limit stop member, said upper limit stop member intimately engaging each of said plurality of stop block members between consecutive pairs of said plurality of projections spaced along each of said plurality of stop block members; said upper limit stop member being adjustable pivotally to limit the vertical tilting motion of said respectively associated each one of said plurality of keys to selectively adjust the key stroke of said respectively associated each one of said plurality of keys; and

a plurality of key return spring members, each of said plurality of key return spring members having one end interconnected with said rearward end portion of said subtending portion of each one of said plurality of key return spring engaging members; an opposite end attached neighboring a respective pair of each of said plurality of projections spaced along each of said plurality of stop block members; said opposite end of each of said plurality of key return spring members further extending into said predetermined space between each pair of projections of said plurality of projections for cooperation therewith; and an intermediate biasing portion between said one end and said opposite end, said intermediate biasing portion exerting a biasing force on said respectively associated each one of said plurality of keys to bias each of said plurality of keys away from said front rail whereby said one end of each of said key return spring members being interconnected with said rearward end portion of said subtending portion of each one of said plurality of key return spring engaging members and said adjustable pivotable end portion defining an upper limit stop member, of said depending portion of each of said plurality of key return spring engaging members being in close proximity to one another to permit quick and reliable adjustment for the key touch and key stroke for each of said plurality of keys.

4,510,840

MUSICAL NOTE DISPLAY DEVICE

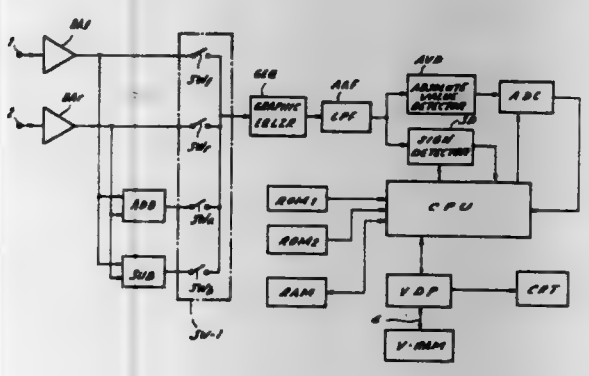
Mamoru Inami, Yokohama; Yoshiaki Tanaka, Fujisawa, and Zenju Otsuki, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Dec. 30, 1983, Ser. No. 567,175

Claims priority, application Japan, Dec. 30, 1982, 57-232457; Jan. 13, 1983, 58-3670; Jan. 20, 1983, 58-7696; Jan. 26, 1983, 58-10994; Jan. 31, 1983, 58-14364

Int. Cl.[3] **G10G** *1/00;* **G09B** *15/02;* **G01R** *23/16*

U.S. Cl. 84—477 R **35 Claims**



1. A musical note display device for displaying musical notes, each note being indicative of a pitch of an input audio signal on a displayed staff, comprising:

(a) analog-to-digital converting means for converting said input audio signal into digital data by using sampling pulses having a sampling frequency;

(b) computing means for effecting FFT operation by using said digital data, for executing power spectrum calculation by using the result of FET operation, for determining a pitch of each sound by using spectrum data obtained by said power spectrum calculation, and determining a pattern to be displayed in accordance with each pitch;

said computing means determining the pitch by obtaining a fundamental tone by obtaining a frequency component whose level is lowest within a predetermined level range from a highest level, and whose frequency is lower than a frequency at which the level is the highest, and determining the pitch, in the case such a frequency component is not detected, by regarding the frequency component, whose level is the highest, as the fundamental tone; and

(c) display means including a video display processor, a video RAM and a display unit, said video display processor being controlled by said computing means to store data indicative of said pattern into said video RAM, and said display unit being responsive to a video signal from said video display processor for indicating musical notes displayed at appropriate position on a displayed staff.

4,510,841

MECHANISM FOR CUTTING SINGLE THICKNESS PAPER OR LIKE SHEET MATERIAL AND APPARATUS INCLUDING SUCH MECHANISM

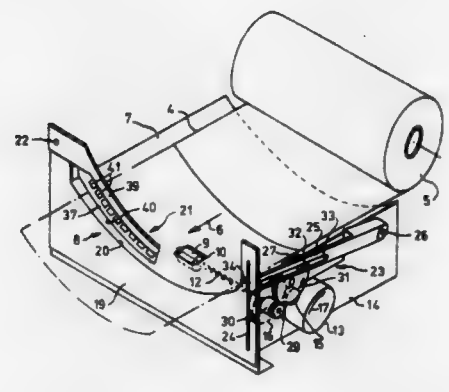
John Farran; Michael R. Hatchett, both of Eastleigh, and John S. Heath, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1983, Ser. No. 560,083

Claims priority, application European Pat. Off., Dec. 10, 1982, 82306596.6

Int. Cl.[3] **B26D** *1/30*

U.S. Cl. 83—176 **10 Claims**



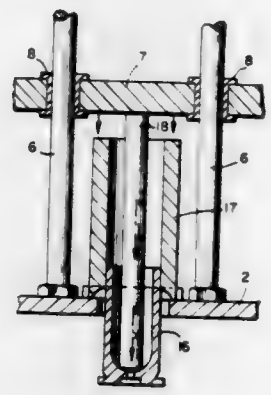
1. In a mechanism for cutting single thickness paper or like sheet material including a fixed blade and a pivoted blade, the pivoted blade having a cutting member blanked from sheet steel to a shape that provides a cutting edge that gives a desired nip angle along the length of the cut and is supported on a rigid backing member, an improvement comprising an elongated spring biasing means located between the blanked cutting member and the rigid backing member to impart a lateral force to the blanked cutting member along its length, the blanked cutting member being sufficiently flexible, and the construction and arrangement of the spring biasing means in relation to the blanked cutting member being such that the cutting edge of the cutting member is resiliently deflected towards the fixed member along its length whereby contact between the cooperating cutting edges is maintained along the length of the cut and relief between the facing surfaces of the blades is provided during cutting operations.

4,510,842

MANUALLY OPERABLE RESIZING CARTRIDGE PRESS AND METHOD FOR OPERATING SAME

Edward G. Hlusko, 5312 Marlinton Dr., Virginia Beach, Va. 23462

Filed Aug. 18, 1983, Ser. No. 524,334
Int. Cl.³ F42B *33/10, 35/02*
U.S. Cl. 86—25 **16 Claims**



11. A die press for resizing spent firearm cartridges, said press comprising:

(a) a parallelepipedic block, one end of said block having a generally cylindrical bore with a diameter greater than that of the cartridges to be resized;

(b) a back brace attached to said block adjacent to said one end of said block, said brace being angled forwardly in the direction of the end of the block opposite to said one end and upwardly from the upper surface of said block;

(c) a flat, generally rectangular plate attached to said brace above said block and substantially parallel to the upper surface of said block;

(d) two thin cylindrical guide rods bolted in substantially parallel, vertical fashion to the top surface of said block on either side thereof, equidistant from and colinear with said block bore, said rods being fastened at top ends thereof to said rectangular plate;

(e) a pressure bar comprising means for forcing a spent cartridge into and through a die, said pressure bar comprising a thin rectangular bar having one cylindrical aperture therethrough at each of its ends, reinforcing sleeves being inserted in said cylindrical apertures, said pressure bar being slidably mounted upon said guide rods which pass through said sleeves and said bar apertures;

(f) a U-shaped handle, each arm of which is fastened to an end of said rectangular pressure bar adjacent to respective ends of said arms, said arms having apertures therethrough which are closer to said arm ends than to the fastening points of said arms to said bar;

(g) connecting rods, each rod pivotably mounted to said arm apertures at one end and to sides of said block at a second end;

(h) a generally cylindrical die having a central bore with a diameter selected to produce a resized cartridge, said die adapted to be positioned on the upper surface of said block so that the bore through said die is directly above and co-axial with said block bore hole; and

(i) a cartridge extractor rod comprising means for removing the cartridge from said die after it has been resized.

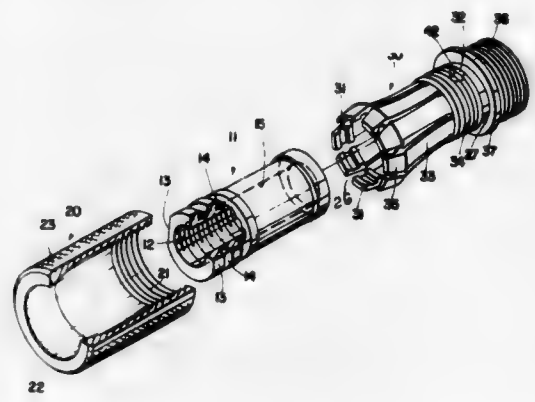
4,510,843

SOUND SUPPRESSOR ATTACHING DEVICE FOR GUNS

Robert U. Rabatin, 11181 Fairlawn Dr., Parma, Ohio 44130

Filed Aug. 24, 1983, Ser. No. 525,934
Int. Cl.³ F41C *21/18*
U.S. Cl. 89—14.4 **6 Claims**

1. A gun sound suppressor attaching device comprising a tubular connecting nipple, means for attaching said nipple to a gun barrel end, said nipple having at least one circular groove formed in one end, a generally tubular collet, means to attach said collet to a sound suppressor at one end, a plurality of elongated segments at the other end of said collet with each segment separated by a slit from each other, at least one row of lug members formed on the inward side of each segment tip for seating in said connecting nipple circular groove, said tips have a cam surface on the outward side opposite said lugs, a cylindrical tube centrally formed within said collet extending axially in alignment with said gun barrel end for sealing and



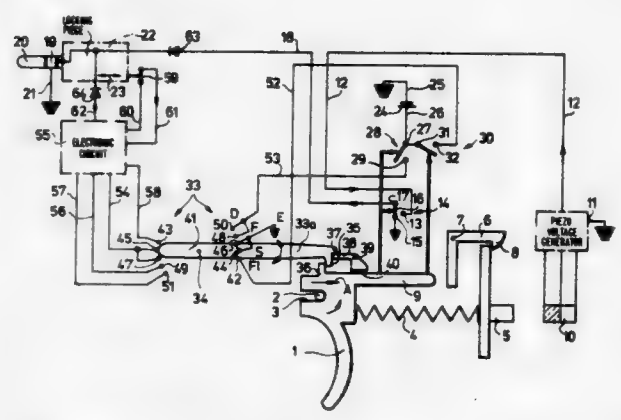
transmitting gas emission from said gun through said device, and a tubular cam locking nut for inserting around said collet, means at one end of said locking nut for locking to said collet, a cam at the other end formed on the inward side of said nut for engaging said cams on said collet segment tips for pressing said collet lug members into locking engagement with said nipple circular groove.

4,510,844

ELECTRONIC FIRING MECHANISM FOR WEAPONS

Raimund Fritz, Trossingen, and Fritz Zeyher, Alpirsbach, both of Fed. Rep. of Germany, assignors to Heckler & Koch GmbH, Oberndorf, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,322
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138456
Int. Cl.³ F41D *11/02*
U.S. Cl. 89—135 **15 Claims**

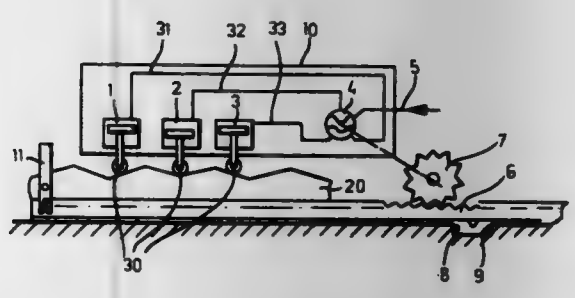


1. A firing mechanism for an automatic weapon having explosive charges fired by an electrical detonator receiving electrical energy for firing singular ones of said charges from a piezo voltage generator actuated by a trigger mechanism, means for operating said detonator in other modes such as at least a burst mode and a sustained fire mode wherein said charges are fired repetitively, comprising an additional source of electric energy, switch means connected to the output of said additional source actuatable by said trigger for delivery of electrical energy from said additional source and firing mode selecting means for conducting said delivered electrical energy to said detonator for the second and each successive charge to be fired in said sustained fire and burst modes.

4,510,845
PRESSURE-MEDIUM-DRIVEN LINEAR DRIVING ARRANGEMENT

Bruno Kägi, Meilen, Switzerland, assignor to Bachofen AG, Uster, Switzerland

Filed May 28, 1982, Ser. No. 383,162
Claims priority, application Switzerland, Jun. 18, 1981, 4025/81
Int. Cl.³ F01L *33/02*
U.S. Cl. 91—180 7 Claims

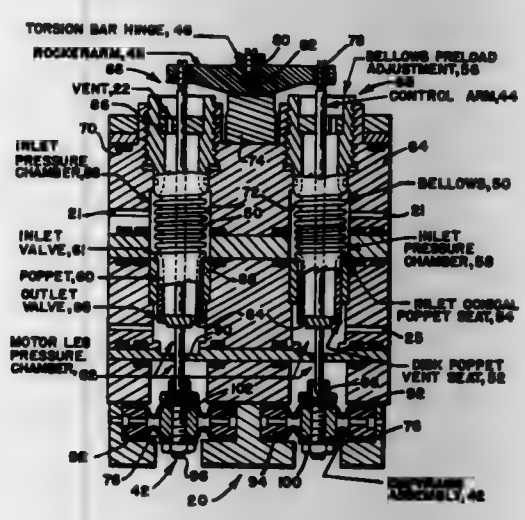


1. A linear drive apparatus comprising:
a support member formed with a row of pressure units each having a displaceable piston and a pressurizable cylinder cooperating with the respective piston;
a rack member formed with a cam profile, said pistons being braced against said profile at respective points of attack along said row, said members being relatively displaceable linearly parallel to said rack member upon step-by-step pressurization of said cylinders and the actions of the pistons thereof in succession upon said cam profile;
valve means responsive to the relative displacement of said members for successively pressurizing said cylinders with a pressure medium to effect a step-by-step actuation of said pistons; and
a first lever pivotally connected to said support and to one of said pistons, and at least one further lever pivotally connected both to said first lever and to another of said pistons for self-centering points of attack of said piston upon said cam profile.

4,510,846
PNEUMATIC ACTUATOR DEVICE

Raymond W. Gazzera, Scottsdale, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 16, 1982, Ser. No. 418,947
Int. Cl.³ F15B *17/02, 13/16*
U.S. Cl. 91—460 9 Claims



1. An actuator control device in combination with a pneumatic actuation system having an actuator comprising:
a housing composed of a material able to withstand high pressure and having two first voids positioned longitudinally therein with openings on the top and the bottom of said housing, said housing having one inlet port for each of said first voids communicating between the exterior of said housing and said first voids, and having one inlet/outlet port for each of said first voids communicating between the exterior of said housing and said first voids;
means for controlling the flow of high pressure gas to and from said actuator, said controlling means includes two means for valving, each of said valving means mounted in each of said first voids; each of said valving means includes an inlet valve and an outlet valve and a control arm connected to said outlet valve, said valving means provides a two-way valve capability, said control arm being adjustably secured to said interconnecting means at the top of said housing and being fixedly connected to amplifying means near the bottom of said housing; said outlet valve having a disk poppet fixedly attached to said control arm and a disk poppet set positioned on said inlet valve; said inlet valve having a cylindrical poppet with said disk poppet seat on the bottom and a conically shaped top, an inlet conical poppet set into which said conically shaped top movably contacts, a bellows having a bottom fixedly attached to the top of said cylindrical poppet, a bellow preload adjustment device having the top of said bellows attached to the bottom thereon and said adjustment device movably attached to said housing so that the amount of force applied through said adjustment device having a vent therein and having said control arm axially located therein, and a lower control arm guide attached to said housing having said control arm axially located therein;
means for movably interconnecting said valving means directly connected to said control arm of each of said outlet valves; and said outlet valves operably connected to said inlet valves, respectively, so that when one valving means is inputting high pressure gas to said actuator, the other of said valving means is venting gas from said actuator; and
said amplifying means operably connected to said control arms of said valving means for amplifying actuating forces applied to said actuator control device by a torque motor-driver assembly.

4,510,847
APPARATUS FOR ADJUSTING THE POSITION OF AN ADJUSTABLE ELEMENT

Norbert Mucheyer, Rechtenbach, and Wolfgang Kauss, Lohr-Wombach, both of Fed. Rep. of Germany, assignors to Mannesman Rexroth GmbH, Lohr, Fed. Rep. of Germany

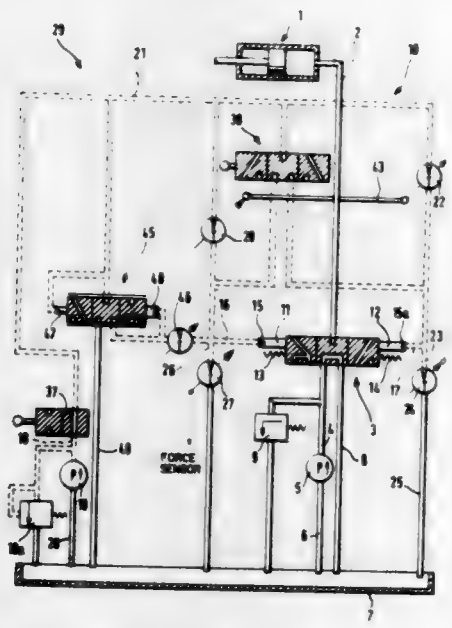
Filed Feb. 8, 1982, Ser. No. 347,071
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106086
Int. Cl.³ F15B *11/08*
U.S. Cl. 91—461 3 Claims

1. An apparatus for controlling the position of an adjustable member in response to a command signal and an actual value signal comprising the combination of
a source of fluid under pressure;
an operating circuit including a bidirectionally operable multi-way valve for controlling the flow of pressurized fluid to the adjustable member and first and second pressure responsive control devices for actuating said multi-way valve;
a control fluid circuit connected to operate said first and second control devices, said control circuit including
first and second adjustable throttles having the same maximum flow-through cross-sections, being adjustable in the same manner and being connected in series with each other,
means for connecting the series circuit including said first and second throttles between said pressure source and a tank with the junction therebetween connected to said first control device,
third and fourth adjustable throttles connected in series with each other, having the same maximum flow-

through cross sections and being adjustable in the same manner,

means for connecting the series circuit including said third and fourth throttles between said pressure source and said tank with the junction between said throttles connected to said second control device;

a pressure ratio valve connected between said pressure source and said tank, said pressure ratio valve having third



and fourth control devices having pressure responsive surfaces of different sizes;

means for connecting said third control device with the smaller surface to said pressure source;

a fifth adjustable throttle; and

means for connecting said fourth control device with the larger surface through said fifth adjustable throttle to said first control device.

4,510,848

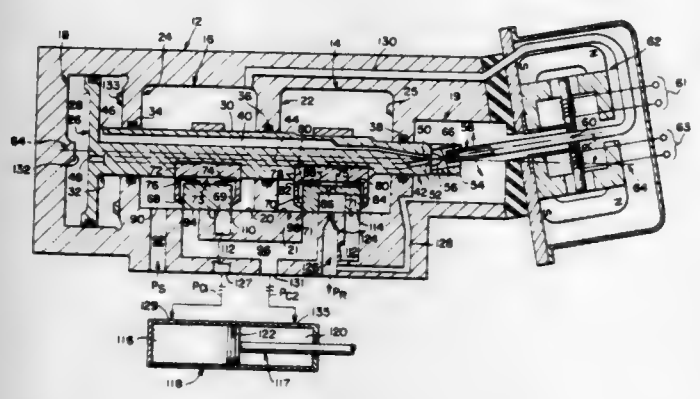
SHEAR-TYPE FAIL-FIXED SERVOVALVE

Howard B. Kast, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 30, 1982, Ser. No. 431,433

Int. Cl.[3] **F15B** *13/043*

U.S. Cl. 91—461 **3 Claims**



1. A servovalve comprising:

a housing including a plurality of chambers, a plate, a first and a second one of said chambers being defined in part by a substantially planar surface of said plate and by chamber walls normal to said surface, said housing including a plurality of passageways, each adapted to pass fluid therethrough, a first one of said passageways communicating between said first and second chambers through a first port in each of said last-recited chambers, a second passageway communicating between said first and second chambers through a second port in each of said last-recited chambers, a third passageway communicating between a low pressure fluid sump and said first chamber through a third port in said first chamber, a fourth passageway communicating between a high pressure fluid supply and said second chamber through a third port in said second chamber;

a piston including a piston head connected to a piston rod, said piston being movable along its axis in a direction substantially parallel to said platc surface, said piston head being disposed in a third one of said chambers, said piston rod extending into each of said plurality of chambers and engaging said chamber walls in slideably sealing relationship;

at least a portion of said piston rod including first and second internal passages extending between first input and output orifices and second input and output orifices respectively, said first and second output orifices communicating with said third chamber on opposite sides of said piston head, said first and second input orifices being positioned proximate each other at one end of said piston rod disposed in a fourth one of said chambers;

a shroud extending from said one end of said piston rod within said fourth chamber;

an angularly moveable jet pipe extending into said shroud from outside said fourth chamber and terminating in a nozzle spaced from said first and second input orifices, said nozzle being adapted to direct a jet of fluid at said input orifices, said jet pipe having a null angular position in which said jet pipe assumes a predetermined offset angle with respect to said piston axis, whereby fluid is supplied in predetermined relative amounts to said first and second input orifices;

means responsive to a selectively variable control signal for changing the angular position of said jet pipe, the angular displacement of said jet pipe relative to said null position being effective to produce a magnified linear piston displacement along said axis by varying the relative amounts of fluid supplied to said first and second input orifices;

first and second shoes supported by said piston rod and disposed in said first and second chambers respectively, each shoe including a first shoe surface adapted to make sliding contact with said plate surface and a second shoe surface opposite said first shoe surface;

means for yieldingly urging said first shoe surface against said plate surface, said urging means including means for admitting pressurized fluid effective to exert a force on each of said second shoe surfaces, said urging means further including spring means interposed between said piston rod and each of said second shoe surfaces;

a plurality of ports in said plate surface, predetermined ones of said ports being adapted to be opened and closed by said shoes upon the occurrence of said linear piston displacement;

a servopiston chamber;

a servopiston movably disposed in said servopiston chamber, said servopiston including a servopiston head which divides said last-recited chamber into first and second variable chamber portions, said servopiston further including a servopiston rod affixed to said servopiston head and slidably extending through a wall of said servopiston chamber; and

means including a pair of ports in said housing and in said servopiston chamber respectively, for communicating respectively between said first passageway and said first chamber portion and between said second passageway and said second chamber portion;

whereby said servopiston is adapted to move in a linear direction within said servopiston chamber upon the admission of pressurized fluid from said first or second passageway into one of said chamber portions simultaneously with the venting of fluid from the other chamber portion to said low pressure sump.

4,510,849

APPARATUS FOR SYNCHRONIZING ACTUATORS

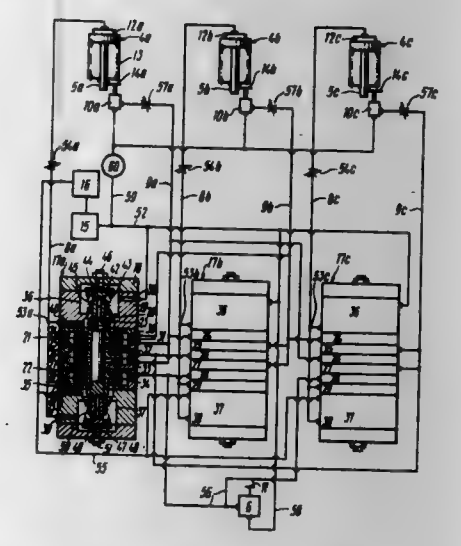
Alexandr A. Khramtsov, Novocherkassky prospekt, 55, kv. 38; Mikhail I. Tsyrkin, ulitsa Oberli, 13/21, kv. 40, and Ilya E. Shinder, Bolotnaya ulitsa, 14, kv. 41, all of Leningrad, U.S.S.R.

PCT No. PCT/SU80/00176, § 371 Date Jun. 17, 1982, § 102(e) Date Jun. 17, 1982, PCT Pub. No. WO82/01572, PCT Pub. Date May 13, 1982

PCT Filed Oct. 24, 1980, Ser. No. 395,027

Int. Cl.³ F15B *11/00*

U.S. Cl. 91—515 **3 Claims**



1. An apparatus for synchronizing actuators, comprising a pressure fluid source associated with a setting device adapted to set a common control action on the movement of the operating member of each actuator, said movement providing the energy medium supply to the prime or secondary movers, and also associated with transmitters of the movements of the operating members of the actuators and with a comparing device adapted to produce a control action on the actuators, said comparing device being associated with the actuators and with the transmitters and representing a multichamber adding element having a housing closed at opposite ends and accommodating a stem movable axially in opposite directions relative to its center position and secured to a plurality of diaphragms disposed within the housing, one part of said diaphragms having an effective area of each diaphragm larger than that of the other part, said diaphragms being mounted within the housing in such a manner that the diaphragms with different effective area alternate and divide the interior of the housing into positive control chambers providing the movement of the stem off center in one direction in response to the pressure build up therein, into negative control chambers providing the movement of the stem in the opposite direction in response to the pressure build up therein, an inlet chamber which connects the pressure fluid source with the actuator when the stem is moved is said one direction by the sum of the pressures in the positive control chambers exceeding the sum of the pressures in the negative control chambers, an outlet chamber connected with an inlet chamber and communicated, when the stem is moved in said opposite direction by the sum of the pressures in the negative control chambers exceeding the sum of the pressures in the positive control chambers, with a pressure fluid drain means, characterized in that it further comprises adding elements (17) of the above type and in such a quantity that the total number of the adding elements (17) is equal to the number of synchronized actuators (4), the inlet chamber (36) of each adding element (17) being communicated with one of the negative control chambers (25), (27), (29) of the same adding element (17), one of the positive control chambers (24,), (26), (28) of each adding element (17) being connected with the output of the setting device (6) and the output of the transmitter (10) of the movement of the operating member (5) of each actuator (4) being connected with such a number of negative control chambers (25), (27), (29) of the adding element (17) associated with the same actuator (4), which is one unit less than the number of synchronized actuators (4), and with one of the positive control chambers (24), (26), (28) of the rest of the adding elements (17).

4,510,850

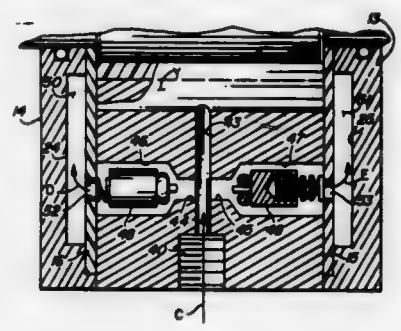
SEAL FOR ROTARY ACTUATOR

James F. Mack, 541 N. Bertrand, Flagstaff, Ariz. 86001

Filed Nov. 22, 1982, Ser. No. 443,324

Int. Cl.³ F01C *9/00*

U.S. Cl. 92—125 **2 Claims**



1. A rotary actuator comprising

(a) a housing having an inner actuator chamber including a pair of side walls;

(b) a pair of seals each fixedly positioned adjacent at least a portion of one of said side walls and having a generally planar surface area facing the interior of said actuator chamber;

(c) a wingshaft rotatably carried inside said housing and having

a hub rotatably contacting said housing, and

at least one vane extending radially from said hub,

said vane and hub rotating between at least a first and second operative position during operation of said actuator, said vane having a pair of end walls each contacting and moving over said planar surface area of one of said seals during rotation of said vane from said first to said second operative position; and,

(d) means for forcing said seals away from said side wall of said housing and against said end walls of said vane.

4,510,851

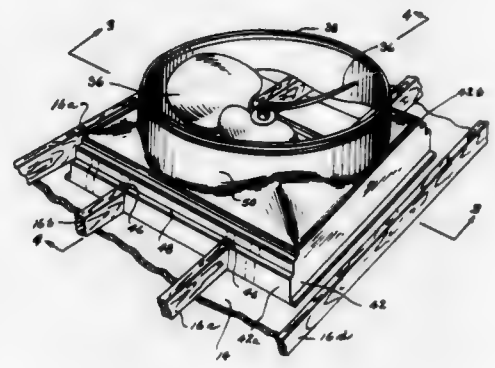
VENTILATION FAN

Joseph R. Sarnosky, Fort Atkinson; David W. Wolbrink, Hartford, and Dieter W. Otte, Rubicon, all of Wis., assignors to Broan Mfg. Co., Inc., Hartford, Wis.

Continuation of Ser. No. 324,459, Nov. 24, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 584,307

Int. Cl.³ F24F *7/06*

U.S. Cl. 98—42.08 **7 Claims**



1. A ventilation fan structure positionable across an opening in a building member, said opening having parallel structural elements extending thereacross, said fan structure comprising:

mounting member means mountable on said structural elements in the opening therein;

rotary drive means fastened to said mounting member means;

rotatable axial flow fan blade means drivingly coupled to said rotary drive means and positionable in alignment with the building member opening for moving air through the opening; and

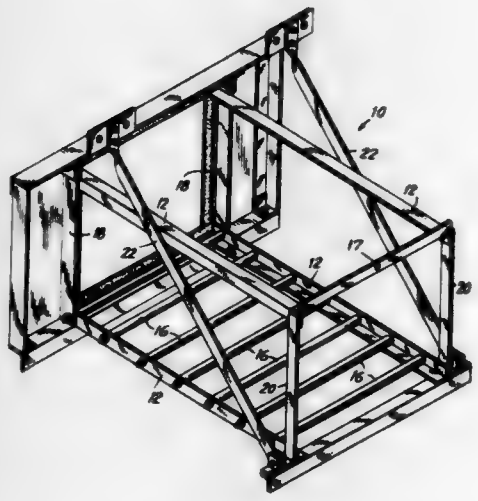
shroud means separate and unconnected from said mounting member means, drive means, and fan blade means, said shroud means being affixable to the building member independently of said mounting member means, drive means, and fan blade means, said shroud means being formed to surround the building member opening and said mounting member means, drive means, and fan blade means said shroud means having a first portion mateable with the periphery of the building member opening and a second portion formed to embrace said fan blade means, said second portion of said shroud providing a generally tubular venturi-like element adjacent the plane of rotation of said fan blade means formed to enhance the aerodynamic efficiency of the fan blade means.

4,510,852

WINDOW-TYPE AIR CONDITIONER MOUNTING ASSEMBLY

Anthony A. Sorrentino, 21 Henry St., South Farmingdale, N.Y. 11735

Filed Aug. 5, 1983, Ser. No. 520,548
Int. Cl.³ F24F *5/00*
U.S. Cl. 98—94.2 **4 Claims**



1. An apparatus for mounting an air conditioner for operative disposition with respect to a moveable sash window of a room, said apparatus comprising:

elongated rail means for supporting the air conditioner and along which the air conditioner is moveable between a first, nonoperative position within the room and remote from the window to enable the window sash to be fully closed and thereby sealed against substantial ambient air leakage thereabout, and a second, operative position in which the air conditioner is disposed in projecting relation through the open window sash, said rail means comprising a plurality of elongated rails unitarily joined to define a fixed, cross-sectionally rectangular frame along and within which the air conditioner is moveable between said first and second positions;

moveable flap means on said rail means adjacent the window for contact with the sash in its open condition to define a barrier against ambient air leakage between the operatively disposed air conditioner and the open window sash;

roller means on said rail means for facilitating movement of the air conditioner between said first and second positions thereof;

stop means mounted at opposite ends along the elongation of said rail means; and

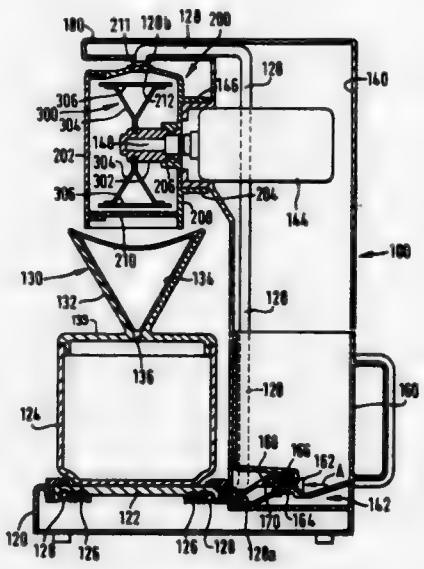
tab means predeterminately mountable on the air conditioner for cooperative engagement with said stop means to limit the maximum movement of the air conditioner along said rail means and thereby define siad first and second positions of the air conditioner.

4,510,853

COFFEE MAKING APPARATUS

Syoji Takagi, Toyoake, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 7, 1984, Ser. No. 577,815
Claims priority, application Japan, Apr. 20, 1983, 58-58937[U]; Apr. 26, 1983, 58-62814[U]; May 6, 1983, 58-68288[U]
Int. Cl.³ A47J *31/42*
U.S. Cl. 99—286 **9 Claims**



1. A coffee making apparatus comprising:

a housing;

a case, installed on said housing, for receiving coffee-beans, said case having at least a cylindrical bottom and a plurality of apertures;

an electric motor mounted on the housing, said motor having a drive shaft disposed horizontally and extending into the case;

a grinder, disposed on said drive shaft and within the case, for rotating in a vertical plane and along said cylindrical bottom of the case, said grinder crushing coffee-beans to make coffee powder said grinder comprising cutter parts disposed parallel to said bottom of the case, and arm parts arranged between each of said cutter parts and said drive shaft for securing said cutter parts;

means for providing hot water to the case, said means including a heater for heating water, said hot water and coffee powder passing through said apertures; and

means, positioned adjacent said apertures, for extracting coffee from said coffee powder by said hot water.

4,510,854

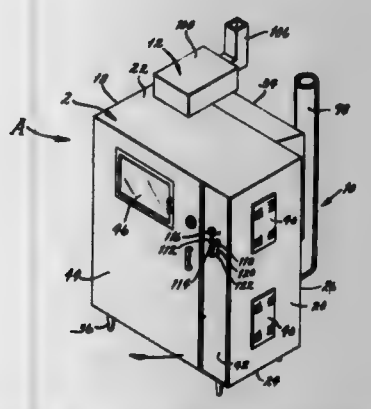
COMPACT BARBECUE OVEN

Michael L. Robertson, Marion, Ill., assignor to B. B. Robertson Company, Marion, Ill.

Filed Apr. 25, 1983, Ser. No. 488,180
Int. Cl.³ A47J *37/04*
U.S. Cl. 99—337 **15 Claims**

1. A barbecue oven comprising: a cabinet having walls and a door all provided with surfaces which enclose an oven chamber, some of the enclosing surfaces being upright and one of the upright surfaces being on the door; support means for supporting food in an upper portion of the oven chamber, the support means being accessible when the cabinet door is open, so that food may be loaded onto or removed from the support means; a firebox located in a lower portion of the oven chamber generally directly below the support means and also being accessible when the cabinet door is open, the firebox having at

least one longitudinal wall and two end walls and a door that together enclose a space in which a fire is contained, the firebox door being in the longitudinal wall and being accessible when the cabinet door is open so that a solid fuel may be loaded into the firebox, the firebox containing apertures which open into the oven chamber to enable smoke to pass from the firebox to the oven chamber, the firebox having its longitudinal and both of its end walls and its door spaced from all of the cabinet walls and from the cabinet door such that air and smoke within the oven chamber may circulate past sides, ends, top, and bottom of the firebox, the firebox further having a sleeve which extends to one of the cabinet walls, the combustion which occurs in the firebox being the sole source of heat for the oven chamber; a burner mounted on the cabinet and



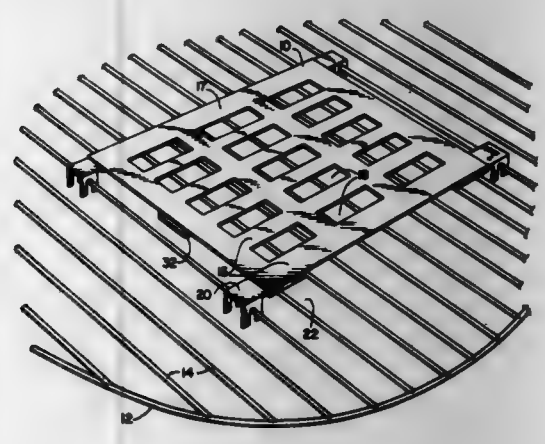
being aligned with and extended into the sleeve on the firebox, the burner being capable of producing a flame which passes into the interior of the firebox to impinge on solid fuel in the firebox; and a baffle wall located in the oven chamber between the support means and the firebox such that it shields food that is on the support means from the firebox, the baffle wall extending only partially across the oven chamber and being spaced from opposite upright surfaces of the oven chamber so that air and smoke may circulate between the upper and lower portions of the oven chamber; and a fan located in the oven chamber for moving air and smoke between the upper and lower portions of the oven chamber and past the baffle wall as it does and for further causing air and smoke to circulate past the firebox.

4,510,855

SECONDARY GRILLING APPARATUS

Correy B. Avner, 241 S. Beverly Dr., Beverly Hills, Calif. 90212

Continuation of Ser. No. 378,991, May 17, 1982, abandoned. This application Feb. 29, 1984, Ser. No. 583,783
Int. Cl.³ A47J *37/06*
U.S. Cl. 99—450 **5 Claims**



1. A secondary grilling apparatus for use with a primary grill formed by a plurality of spaced elements, comprising:

(a) a plurality of interconnected surface having upper and lower surfaces, said surface members defining apertures therebetween wherein the apertures on each surface member define a plurality of spaced, aligned apertures formed into a predetermined pattern with the area of the surface member between apertures being approximately equal to the area thereof having apertures, the width of said apertures being substantially smaller than the space between spaced elements forming the primary grill and sufficiently narrow to permit foodstuffs having a flaked structure when cooked to be cooked on the secondary grilling apparatus without falling through the apertures;

(b) means for supporting said interconnected surface members, said supporting means being movably adjustable relative to said surface members and having a selected fixed height whereby said supporting means maintain said surface members in a selected spaced relation from the surface of the primary grill;

(c) means on said supporting means being in the form of depending prong-shaped means for engaging and resting on and receiving the elements of the primary grill therein; and

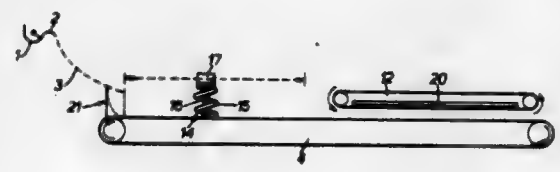
(d) a handle removably connected to the secondary grilling apparatus, including an open-ended bracket on said surface members for receiving a portion of said handle therein.

4,510,856

MANUFACTURE OF CHEDDAR AND LIKE CHEESE

Leslie A. Hammond, Beaumaris, and Norman H. Freeman, Moorabbin, both of Australia, assignors to Australian Dairy Corporation, Australia

Filed Nov. 23, 1982, Ser. No. 444,025
Claims priority, application Australia, Dec. 9, 1981, PF1885
Int. Cl.³ A01J *25/00*
U.S. Cl. 99—457 **10 Claims**



1. Apparatus for draining residual whey from a previously drained and stirred cheese curd/whey mixture, comprising a conveyor belt for conveying cheese curd in the form of a substantially continuous mat to a cutting or milling station and a weighted shear assembly means for simultaneously applying a shear force substantially in the lengthwise extending direction of the conveyor belt and a compression force, said shear assembly being spaced from and overlying a portion of the conveyor belt, said weighted shear assembly and conveyor belt being arranged such that when the curd is conveyed by the conveyor belt beneath the weighted shear assembly in use, the curd is simultaneously subjected to the compression force and the shear force as it passes between the conveyor belt and shear assembly in use to expel the residual whey and accelerate fusion and fibrous development in the curd.

4,510,857

CONTAINER RECYCLING APPARATUS HAVING SHOCK MOUNTED MANUALLY ROTATABLE CARRIER

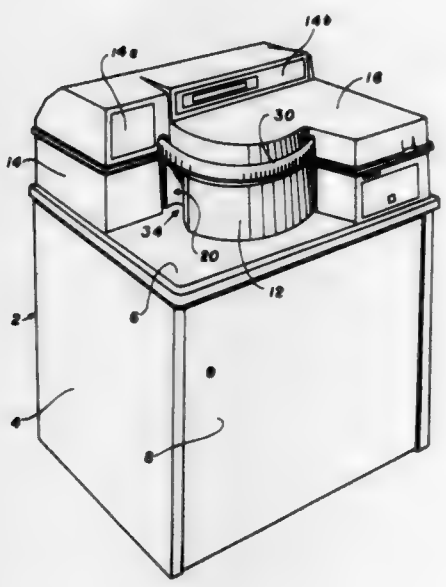
Robert L. LaBarge, Ben Avon; Frank J. Horansky, Apollo; Eric D. Arndt, New Kensington; Jerrold D. Green, Murrysville, all of Pa.; Ronald G. Hawkins, Massena, N.Y.; Charles J. Leftault, Jr., Murrysville, Pa.; Elmer E. Pohlenz, Richmond, Ind., and Thomas W. Scherf, Vandergrift, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 8, 1983, Ser. No. 559,374
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—53 **23 Claims**

1. Apparatus for receiving and crushing containers consisting essentially of recyclable material comprising:

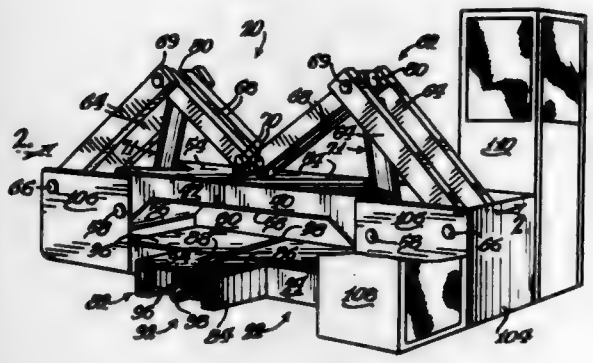
(a) an enclosure:

(b) a manually operated rotatable carrier associated with said enclosure;
(c) a first station comprising a pocket in said carrier to receive a container;
(d) means for detecting the presence of a container in said pocket;



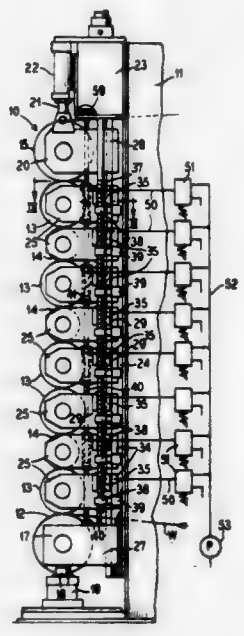
(e) shock absorbing means coupling said rotatable carrier to said apparatus to inhibit damage to the apparatus by rapid or jerking motions: and
(f) means for eventually crushing a container inserted into said carrier and transported to a crushing station by manual rotation of said carrier.

4,510,858
VEHICLE COMPACTOR
Richard E. Woods, and Marvin D. Bradburn, both of Markle, Ind., assignors to Car-Go, Corp., Muncie, Ind.
Division of Ser. No. 347,489, Feb. 10, 1982, Pat. No. 4,426,928.
This application Sep. 22, 1983, Ser. No. 534,805
Int. Cl.[3] B30B *9/32*
U.S. Cl. 100—35 8 Claims



8. A method of compacting a vehicle having a length in a direction of movement of the vehicle during compaction comprising the steps of:
providing a compacting device with a frame having a bed with front and rear portions, a door movable toward and away from the bed and a winch mechanism entirely and integrally disposed on the frame adjacent the front portion of the bed and having a line with a free end;
connecting the free end of the line to the vehicle adjacent a trailing end of the vehicle;
actuating the winch to draw the line in a straight line and advance the vehicle from the rear portion toward the front portion of the bed; and
moving the door toward the bed to effect compaction of the vehicle;
whereby the entire vehicle can be drawn over the bed with the winch spaced from the front portion of the bed by a distance less than the length of the vehicle.

4,510,859
SUPERCALENDER NIP RELIEVING ARRANGEMENT
Kenneth W. Berry, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Jan. 23, 1984, Ser. No. 573,109
Int. Cl.[3] B30B *3/04*
U.S. Cl. 100—35 20 Claims



1. A method of operating a calender having a vertical stack of a plurality of rotary rolls, each of said rolls having at each end a bearing structure with slide block means, means for guiding said slide block means and thereby said bearing structures for vertical movement, and means for vertically shifting said rolls between a spaced apart independent suspension mode and a nipping mode relation to one another, and comprising:
in said nipping mode of said rolls relieving the overhung weight of said bearing structures by imposing such weight onto load transfer means extending upwardly from a load-supporting base and along said slide block means and, thereby thrusting said weight through said load transfer means downwardly against said load-supporting base;
and thus maintaining said rolls in straight and parallel nip relation in said nipping mode.

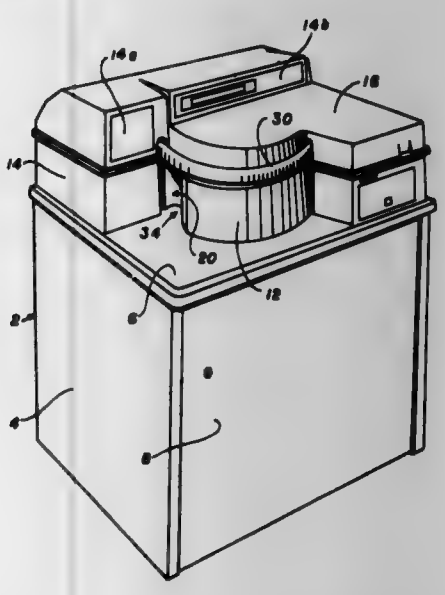
6. A calender having a vertical stack of a plurality of rotary rolls, each of said rolls having a bearing structure at each opposite end provided with slide block means, means for guiding said slide block means and thereby said bearing structures for vertical movement, and means for vertically shifting said rolls between a spaced apart independent suspension mode and a nipping mode relation to one another, and comprising:
load transfer means extending upwardly along said slide block means and thrusting downwardly against a load supporting base;
and means carried by said slide block means for selectively imposing the overhung weight of said bearing structures to said load transfer means in said nipping mode for thereby maintaining said rolls in straight and parallel nip relation.

4,510,860

LATCHING MECHANISM FOR MANUALLY ROTATABLE CARRIER IN APPARATUS FOR PROCESSING RECYCLABLE CONTAINERS

Robert L. LaBarge, Ben Avon, Pa.; Elmer E. Pohlenz, Richmond, Ind.; Eric D. Arndt, New Kensington; Jerrold D. Green, Murrysville, both of Pa.; Ronald G. Hawkins, Massena, N.Y.; Frank J. Horansky, Apollo, Pa.; Charles J. Leftault, Jr., Murrysville, Pa., and Thomas W. Scherf, Vandergrift, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 8, 1983, Ser. No. 559,424
Int. Cl.[3] B30B *9/32*
U.S. Cl. 100—49 25 Claims



1. Recycling apparatus for receiving and crushing recyclable containers comprising:

(a) an enclosure;

(b) a manually operated rotatable carrier associated with said enclosure and having at least one open pocket therein for receiving a vertically oriented container;

(c) detector means for determining whether an object in said pocket is an upright container;

(d) means for locking said rotatable carrier to substantially prevent rotation thereof unless an upright container has been inserted in said pocket:

(e) means for releasing said locking means in response to actuation by said detector means when an upright container has been inserted into said pocket: and

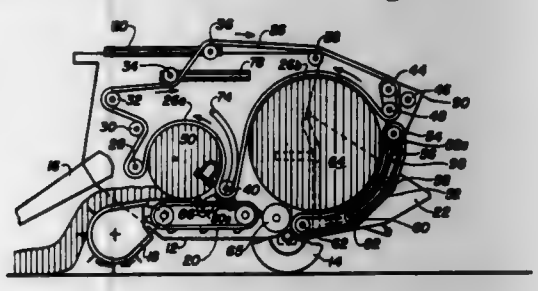
(f) means for crushing a container after rotation of said carrier to carry a container inserted into said pocket to a crushing station.

4,510,861

CONTINUOUS ROLL BALING MACHINE

Willis R. Campbell, Ephrata, and Allison W. Blanshine, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Nov. 29, 1983, Ser. No. 556,227
Int. Cl.[3] B30B *5/06;* A01D *43/02*
U.S. Cl. 100—88 12 Claims



6. In a roll baling machine having a lower bale forming apron, a first upper bale forming apron, and a second upper bale forming apron, the improvement comprising:

said first upper bale forming apron cooperating with said lower bale forming apron to define a first bale forming chamber:

said first upper bale forming apron cooperating with said second upper bale forming means to define a second bale forming chamber therebetween; and

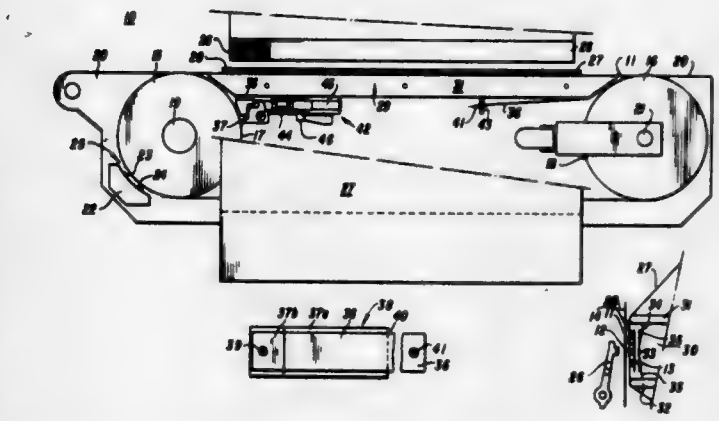
said first and second upper bale forming apron each including a course which is expandable in length around a roll bale during formation thereof in said second bale forming chamber.

4,510,862

DISPOSABLE STRIP ASSEMBLY AND RETENTION DEVICE FOR A LINE PRINTER

Richard C. Alt, Vestal, and Joseph Pinter, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1984, Ser. No. 577,642
Int. Cl.[3] B41J *1/16, 1/20*
U.S. Cl. 101—93.14 20 Claims



1. In a printing apparatus having rotatably mounted drive and idler pulleys with friction drive surfaces, an endless flexible metal type band being engaged and partially wrapped around said drive surfaces of said drive and idler pulleys and in tension therebetween, hammer means placed at one side of said endless type band for striking a print medium against type faces carried by said type band, and a platen placed at an opposite side of said endless type carrier between said pulleys to provide an impact surface for printing, a strip assembly for use in said printing apparatus comprising

a wear strip of plastic material removably attachable to said platen to form a barrier to reduce wear of said type band between said type band and said platen,

said wear strip having a portion with a surface in sliding contact with said opposite side of said type band whereby residue from said wear strip as well as other debris become deposited on said drive surface of said drive pulley during printing, and

a wiper strip of plastic material attached to said wear strip at an end attachable in the vicinity of said drive pulley,

said wiper strip having a wiper portion extending away from the attachment point with said wear strip and terminating in a scraping edge,

said wiper portion being sufficiently long to permit said wiper strip to be deflected outwardly from said wear strip to bring said scraper edge into continuous contact with the drive surface of said drive pulley whereby said scraper edge of said wiper strip operates to scrape deposited material from said drive surface of said drive pulley for cleaning said type band and said drive surface.

4,510,863

SYSTEM ADAPTED TO DISTRIBUTE A VISCOUS SUBSTANCE

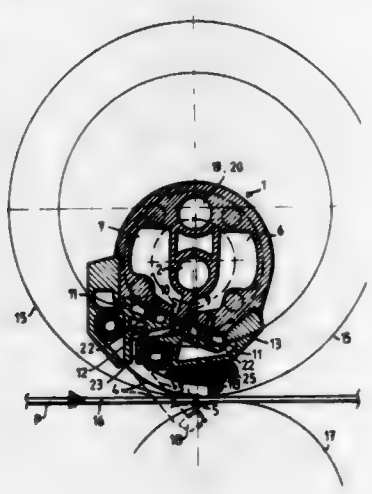
Cornelis Blaak, Boxmeer, and Gerardus H. van Mondfrans, Sambeek, both of Netherlands, assignors to Stork Brabant B.V., Netherlands

Filed Mar. 30, 1983, Ser. No. 480,396

Claims priority, application Netherlands, Apr. 8, 1982, 8201505

Int. Cl.³ B41L *13/18*

U.S. Cl. 101—119 11 Claims



1. Apparatus for evenly distributing a viscous substance into an elongated common passage comprising:

(a) first and second distribution passages extending lengthwise along said common passage;

(b) each said distribution passage having a first end and a second end, the distribution passages being aligned with their first ends in proximity to each other and with their second ends in proximity to each other;

(c) feed means for supplying viscous substance to each said distribution passage, said feed means supplying said first distribution passage at said first end thereof and said feed means supplying said second distribution passage at said second end thereof;

(d) each said distribution passage having an outflow opening tapered along the length of the distribution passage, the tapered outflow opening of the first distribution passage increasing from the first end to the second end thereof and the tapered outflow opening of the second distribution passage increasing from the second end to the first end thereof.

4,510,864

SCREEN PRINTING MACHINE

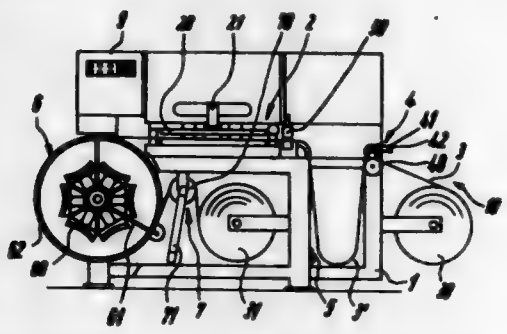
Gerhard Klemm, Am Rehwinkel 37, 4800 Bielefeld 1, Fed. Rep. of Germany

Continuation of Ser. No. 344,782, Feb. 1, 1982, abandoned. This application Jan. 31, 1984, Ser. No. 575,452

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1981, 3103421

Int. Cl.³ B41L *13/02*

U.S. Cl. 101—123 11 Claims



1. A screen printing machine of the type wherein a flexible web, particularly an impermeable web of paper or the like, is arranged to move forwardly and rearwardly along an elongated path, comprising a printing station having means for applying ink to one side of the web in a first portion of the path while the web moves forwardly; a driven rotary ink heating and drying device having a peripheral surface arranged to contact the other side of the web in a second portion of said path downstream of the first portion, as considered in the direction of forward movement of the web, said device having a permeable jacket and a stationary suction chamber disposed within the confines of said jacket and arranged to attract the web to said jacket along an arc of at least 90°; and means for moving the web forwardly and rearwardly to gain added printing time for repeated application of ink to the web, always while the latter moves forwardly, including rotary takeup means for collecting the dried web in a third portion of the path downstream of the second portion, as considered in the direction of forward movement of the web.

4,510,865

GRAVURE PRESSURE ROLLERS WITH AXIS OF VARIABLE SHAPE

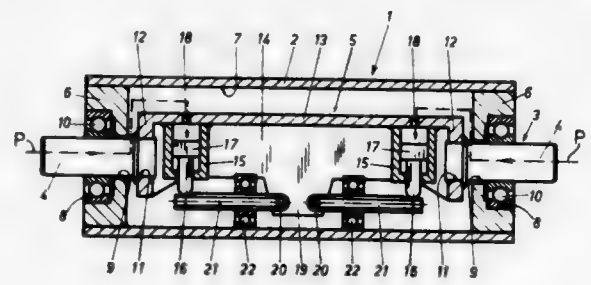
Bruno Molinatto, Turin, Italy, assignor to Componenti Grafici S.r.l., Turin, Italy

Filed Feb. 24, 1983, Ser. No. 469,526

Claims priority, application Italy, Mar. 3, 1982, 67238 A/82

Int. Cl.³ B41F *9/00*

U.S. Cl. 101—153 14 Claims



1. A pressure roller having a variable shape, comprising:

a central shaft having a central part;

an outer cylindrical jacket having opposite ends rotatably mounted on said central shaft and having a longitudinal axis;

actuator means, located within said outer jacket, for transmitting a deflecting force onto said axis of said outer jacket, said actuator means including a first lever pivotally coupled to said central part about a first pivot axis perpendicular to said longitudinal axis and including a first thrust means for applying pressure to said first lever in a direction radially outwardly of said outer jacket, said first lever extending substantially parallel to said shaft; and

first bearing means, between said first lever and an inner surface of said outer jacket, for transmitting radially outwardly directed forces from said first lever to said outer jacket.

4,510,866

APPARATUS FOR MEASURING THE AREA OF IMAGE PORTION OF IMAGE-BEARING MEMBER

Hidekazu Sekizawa, Yokohama; Akito Iwamoto, Kamakura; Kousaku Togashi, Yokohama, and Hideo Fujie, Shizuoka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo and Toshiba Machine Co., Ltd., Kawasaki, both of, Japan

Filed Dec. 13, 1982, Ser. No. 449,201

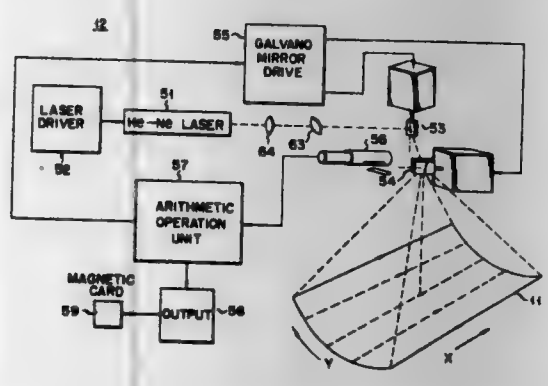
Claims priority, application Japan, Dec. 17, 1981, 56-202421

Int. Cl.³ B41F *31/04*

U.S. Cl. 101—365 5 Claims

1. Apparatus for measuring the area of an image portion and a non-image portion of an image-bearing bearing member

which have different reflectivities, said apparatus having a light source for emitting a light beam; scanning means for optically scanning said image-bearing member by deflecting said light beam from said light source along the X axis direction and the Y axis direction of said image-bearing member; a photoelectric converting unit for receiving light reflected from said image-bearing member and converting it to an electrical signal; and calculating means responsive to the electrical signal from said Photoelectric converting unit to calculate the area of one of the image portion and the non-image portion of said image-bearing member, wherein said scanning means comprises:



a scanning mirror for irradiating the light beam onto said image-bearing member;

a main scanner for rotating said scanning mirror to deflect the light beam along the X axis direction of said image-bearing member; and

a subscanner for holding said scanning mirror and said photoelectric converson unit in close priority to each other thereon, said subscanner being disposed rotatably so that said scanning mirror deflects the light beam from said light source along the X axis direction and the Y axis direction of said image-bearing member.

4,510,867

CONTROL SYSTEM FOR INK ZONE ADJUSTERS

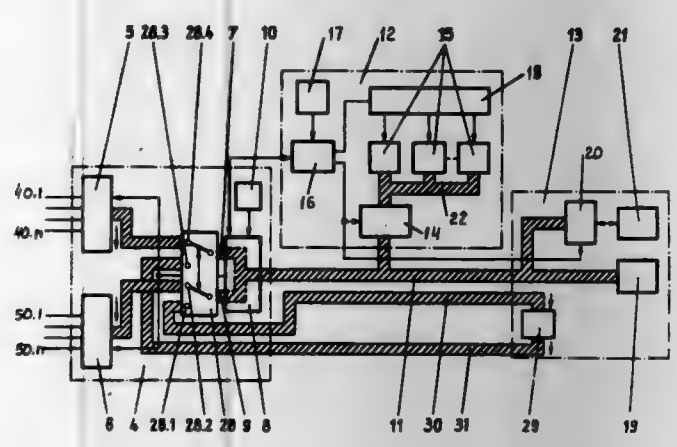
Karl-Heinz Förster, Dresden; Helmut Schuck, Coswig; Hans Johne, Radebeul, and Arndt Jentzsch, Coswig, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Dec. 7, 1983, Ser. No. 558,852

Claims priority application German Democratic Rep., Dec. 8, 1982, 245693

Int. Cl.³ B41F *31/04*; B41L *27/04*

U.S. Cl. 101—365 **1 Claim**



1. In a printing machine, a control system for ink zone adjusters including position setting motors, position sensors, operation control circuit and a main control circuit which is connected via a first bidirectional address and data bus to an input and output unit, an input terminal control connected to the position sensors, an output terminal control circuit connected to the position setting motors, an additional storage control circuit connected to said first bidirectional address and data bus and including a program control circuit cooperating with the main control circuit and with the operation control circuit, an addressing circuit controlled by the program control circuit, a processing circuit controlled by the program control circuit and connected to said first bidirectional address and data bus, a plurality of additional storing circuits assigned individually to corresponding printing units of the machine, and having their inputs connected to said addressing circuit and each being connected via a second bidirectional address and data bus and said processing unit to the first bidirectional address and data bus and therefrom to the input and output unit, the input and output unit including a semiconductive read-only memory and a parallel-connected magnetic tape memory, an improvement comprising a recording-reading storing device included in said input and output unit, and double switch having four contacts and connected to said main control circuit, the input of said recording-reading storing device being connected to a firt contact of said double switch via an input address and data bus and the output of said recording-reading storing device being connected to a third contact of the double switch via an output address and data bus, said input terminal control circuit being connected to a fourth contact of said double switch and said output terminal control circuit being connected to a second contact of said double switch.

4,510,868

CIRCUMFERENTIALLY CONTINUOUS CYLINDER FOR A ROTARY PRINTING MACHINE

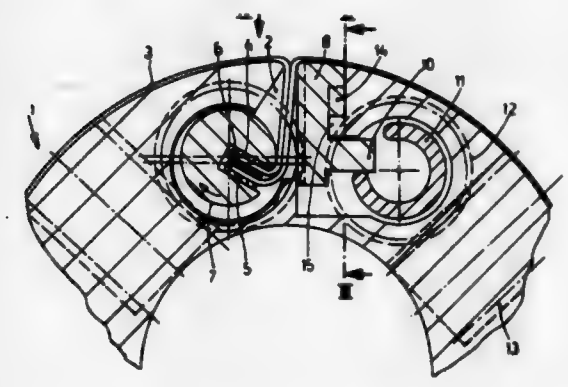
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,078

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326215

Int. Cl.³ B41F *7/22, 27/12*

U.S. Cl. 101—415.1 **15 Claims**



1. Circumferentially essentially continuous printing cylinder (**1, 21**) for a rotary printing machine having an axial groove (**23**) extending from the circumference thereof to permit insertion of end regions (**5, 6, 24, 25, 34, 35**) of a cover, such as a blanket (**3, 30**) or a plate (**22**), over the circumference of the cylinder,

and an axially extending filler strip (**8**) for closing the groove at the circumference of the cylinder to provide an essentially closed circumference beneath the cover after insertion of the ends of the cover in the groove,

comprising, in accordance with the invention,

a plurality of comb-like fingers (**14**) extending from the filler strip in generally circumferential direction within the groove;

a plurality of matching support fingers (**15**) projecting from the cylinder and located within the groove, the comb fingers (**14**) and the support fingers (**15**) being dimensioned and positioned to locate the circumference of the strip essentially flush with the circumference of the cylinder when the comb fingers (**14**) are located in supported position above the support fingers (**15**),

said comb fingers and support fingers being spaced from each other by a distance which is at least as great as the width of the respective fingers to permit, upon axial sliding of the filler strip, disengagement of the comb fingers from the support fingers and movement of the filler strip radially inwardly of the cylinder to a dropped or retracted position within the groove;

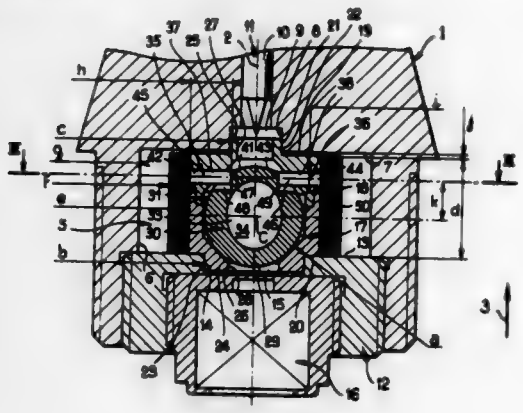
and two-part interengaging, externally operable lifting means (10, 11), one part, each, being located respectively on the filler strip and in the cylinder in the region of the groove to effect radial movement of the strip and hence of the fingers between the dropped position in which the strip is within the circumference of the cylinder, and a raised position in which the strip is essentially flush with the circumference of the cylinder, while permitting axial shifting of the strip to place the comb fingers in supported position on the support fingers within the groove.

4,510,869

ROTATING CAGE SECURITY DEVICE FOR A GYRATORY PROJECTILE

Jacques Nicolas, Riom, and Roland Raso, Vichy, both of France, assignors to Manufacture de Machines du Haut-Rhin, "Manurhin", Mulhouse, France

Filed Sep. 22, 1983, Ser. No. 534,554
Claims priority, application France, Sep. 24, 1982, 82 16097
Int. Cl.³ F42C *15/04, 15/22, 15/34*
U.S. Cl. 102—240 **6 Claims**



1. Security device for a gyratory projectile presenting a definite axis of gyration parallel to the definite direction of translation of the projectile, comprising a movable organ in the interior of the body of the projectile, at least one securing pin for such movable organ, said pin being movable, under the action of centrifugal force which accompanies the gyration of the projectile, from one position of security of the movable organ in which it cooperates with such organ to immobilize said organ in such one position of security, to a second position, of freedom of the movable organ in which such cooperation between the organ and the pin ceases,

the said organ being movable in the interior of a cage which is mounted in the body of the projectile for free rotation around the axis of gyration with respect to the body, means mounting the cage so as to permit a play of the cage with respect to the body in a direction parallel to the axis of gyration of the projectile between two abutment faces respectively before and behind the body with reference to the direction of translation of the projectile, whereby the acceleration and the deceleration to which the body is successively subjected respectively during its trajectory in the barrel of the weapon and after the exit of the weapon from the barrel puts the cage and the body respectively in relationship to the driving of the cage by the body by their conjoint gyration by friction of the cage against the rear abutment and in relation by friction of the first by the second by the gyration by friction of the cage against the forward abutment face, with a transitory period corresponding to the passing through the play by the cage during which such last is free from the gyration with respect to the body and turns around the axis of gyration at a speed of gyration which decreases less rapidly than that of the body and is superior to such speed,

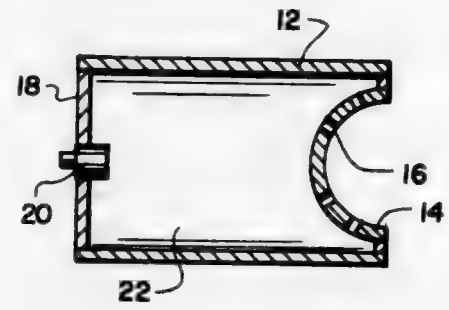
the said pin being mounted to slide radially in the cage in reference to the axis of gyration between on the one hand a position of locking in which its radially inner end more nearly approaches the axis of gyration and cooperates with the mobile organ in the interior of the cage, to immobilize such organ in said definite position with respect to the cage and in which the radially outer end of the pin, the more distant from the axis of gyration lies substantially even with the exterior peripheral face of the cage to form a cylinder of revolution around the axis of gyration, and on the other hand a position of liberation further from the axis of gyration and in which the formerly radially inner end of the pin more closely approaches the free mobile organ, and there is provided at least a spiral elastic band interposed between the external peripheral face of the cage and an inner peripheral face of the body, the mass, the form, the rigidity, and the prestress of the spiral elastic band being such that they are rolled around the external peripheral face of the cage and grip it in such manner as to be become solid by friction with it in repose and such that it sustains, in abutting against the rear abutment of the body upon the acceleration of the projectile in the barrel of the weapon, a conjoint gyration with the body with a speed ranging from the value zero to a maximum value, the spiral elastic band expanding exteriorally to become disengaged from the cage under the action of centrifugal force having a value slightly less than or equal to such maximum value in order to engage the peripheral inner face of the body and become solid with it by friction, whereby during said transitory period and when the cage engages against the forward abutment face of the body in the deceleration of the projectile outside the muzzle of the barrel of the weapon, the difference between respective speeds of gyration of the cage and the body, introduced during said transitory period, provokes a centrifugal unwinding of the spiral elastic band with the liberation of the pin or pins in the direction of a movement of unlocking of the mobile organ to a position of liberation thereof.

4,510,870

CHARGE LINER CONSTRUCTION AND METHOD

William P. Walters, Newark, Del., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 286,744
Int. Cl.³ F42B *1/00*
U.S. Cl. 102—307 **11 Claims**



1. In the method of reducing the jet-tip velocity gradient of an exploding shaped-charge concave liner, the improvement consisting essentially of forming a plurality of holes in spaced relation around the central axis of said liner during construction of said explosive device incorporating said liner, distributing said holes at polar angles of 30 and 60 degrees and at azimuthal angles of 90 degrees to each other.

4,510,871

RAILROAD VEHICLE BOGIE

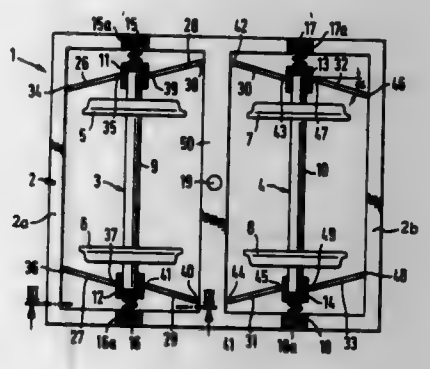
Reinhold Habeck, Eichenau; Norbert Mackiol; Franz Mautner, both of Munich, and Peter Schwärzler, Fürstenfeldbruck, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,245

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119332; Mar. 6, 1982, 3208168

Int. Cl.³ B61F *3/08, 5/30, 5/46*

U.S. Cl. 105—167 **6 Claims**



1. A bogie for a railway vehicle, comprising:

a frame pivotally mounted on said vehicle for angular displacement about an upright pivot axis relative to said vehicle, said frame having a central bar in a vertical plane of said pivot axis and a pair of outer limbs parallel to said bar and disposed on opposite sides therein in a spaced relation to said bar;

a pair of wheel sets disposed on opposite sides of said axis in said frame between said bar and respective ones of said limbs, each of said wheel sets comprising a pair of wheels engaging respective rails of a railroad track, a shaft interconnecting said wheels, and respective bearing blocks engaging the ends of said shafts for journaling said wheel sets in said frame;

resilient means interposed between said frame and said wheel sets for enabling lateral axial displacement of said wheel sets in said frame; and

respective guide means between said frame and said wheel sets for guiding said wheel sets on said frame, each of said guide means including a trapezoidal linkage having said bar as a broad base thereof and links converging away from said bar toward said limb, said links of each trapezoidal linkage including first links pivotally connected to said bar and to the bearing blocks of the respective wheel sets and converging toward the respective limb and second links pivotally connected to the respective bearing bars and to the respective limb and converging toward said limb with the same angle of convergence of said first links, the pivots of said links to the respective bearing block being vertically offset.

4,510,872

DRAFTING EQUIPMENT HOLDER

James L. Parry, 1730 Byron, Madison Heights, Mich. 48071

Filed Jul. 15, 1982, Ser. No. 398,689

Int. Cl.³ A47B *85/00*

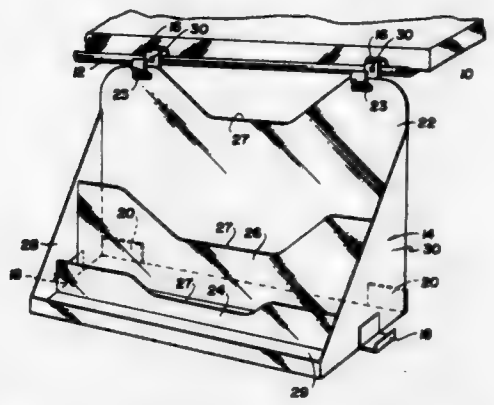
U.S. Cl. 108—25 **2 Claims**

1. A template holder for a plurality of templates for use in conjunction with a drafting table having a frontwardly oriented eraser trough, comprising;

a holder container including a back wall, a floor inclined to horizontal and slated frontwardly to provide a lean-over of all the templates in a like inclining direction and a pair of side walls;

a plurality of spaced dividers of increasing height front to back mounted intermediate said side walls substantially parallel to said back wall for providing separate open compartments for receiving and holding said inclined templates in place, each of said dividers having a liked shaped central cutout portion to facilitate the grasp of the articles carried therein; and

a mounting means for slidably mounting said holder on the forward edge of said eraser trough, said mounting means



comprising a pair of spaced s-shaped hooks each being open at both ends, the upper end of which overlaps said trough and the lower end of which extends through a mating slot formed in the rear wall of said holder.

4,510,873

STOKER TYPE FIRING EQUIPMENT FOR USE WITH CITY REFUSE INCINERATOR

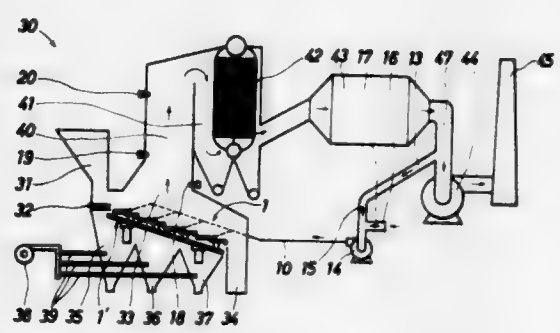
Masanobu Shigaki, Ibaraki, Japan, assignor to Kabushiki Kaisha Takuma, Osaka, Japan

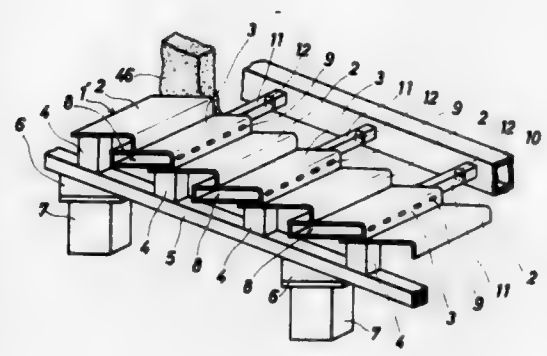
Filed Mar. 19, 1984, Ser. No. 590,823

Claims priority, application Japan, Mar. 30, 1983, 58-56271

Int. Cl.³ F23G *5/00*; F22B *1/22*

U.S. Cl. 110—289 **1 Claim**





1. A stoker type firing apparatus for use with a city refuse incinerator comprising:

a step type stoker for receiving refuse to be incinerated, said stoker formed by combining movable fire grates which move back and forth and fixed fire grates, across which said refuse moves alternately in a step like manner, said movable fire grates sliding over said fixed fire grates to move said refuse thereacross;

gas injectors at said aforementioned fixed fire grates to inject low temperature inert gas onto refuse while burning on the stoker, said fixed grates having box shapes, being hollow, and being coupled to a source of low temperature

inert gas, wherein said fixed grates have gas injection holes at front walls thereof so that the fixed fire grates receive inert gas which is injected from said gas injection holes so that they are utilized as said gas injectors;

a dust collector for receiving and treating combustion waste gas exhausted from a waste heat boiler of said incinerator to thereby purify said waste gas; and,

a pipe system for channelling said purified waste gas to said hollow fixed grates so that it can be utilized as said low temperature inert gas.

4,510,874

BURNER AND PROCESS FOR THE PARTIAL COMBUSTION OF SOLID FUEL

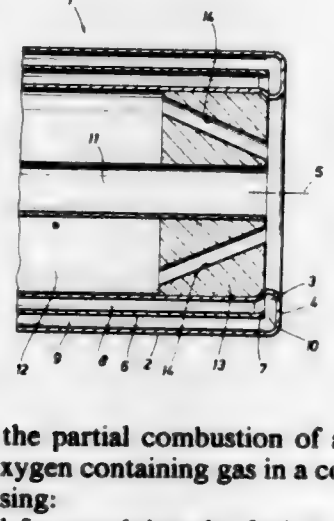
Hendrikus J. A. Hasenack, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 16, 1984, Ser. No. 590,090

Claims priority, application United Kingdom, Mar. 18, 1983, 8307519

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **12 Claims**



1. A burner for the partial combustion of a finely divided solid fuel with an oxygen containing gas in a combustion zone, said burner comprising:

a central channel for supplying the fuel to the combustion zone;

an annular channel disposed coaxially with said central channel for supplying an oxygen containing gas;

a primary outlet means, said primary outlet means communicating with said annular channel and disposed to direct a high velocity oxygen containing gas flow into the fuel discharged from said central channel; and secondary outlet means, said secondary outlet means communicating with said annular channel and surrounding said primary outlet means, said secondary outlet means being disposed to supply a low velocity oxygen containing shielding gas flow to the combustion zone.

4,510,875

SYSTEM FOR PROCESSING WORKPIECES FOR SEWING

Alan M. Peck, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Aug. 31, 1983, Ser. No. 528,120

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **10 Claims**

1. A system for automatically processing a plurality of workpieces wherein each workpiece is to have one or more predefined stitch patterns sewn thereon, said system comprising:

means for automatically identifying each workpiece that is presented to the system;

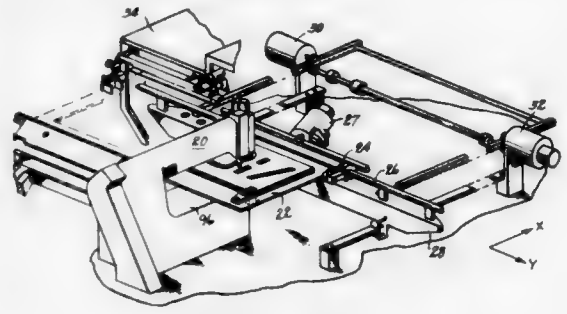
means for accessing, in a predetermined sequence, the stitch patterns that are to be sewn on the automatically identified workpiece whereby one of the stitch. patterns is accessed each time the workpiece is presented to the system; and

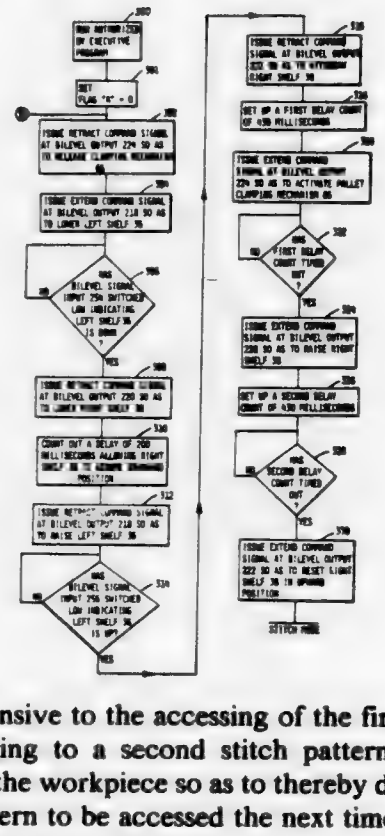
means for automatically sewing the particularly accessed stitch pattern on the workpiece.

7. A system for automatically processing a plurality of workpieces wherein each workpiece is to have one or more predefined stitch patterns sewn thereon, said system comprising:

means for automatically identifying each workpiece that is presented to the system;

means for accessing a first stitch pattern previously assigned to the workpiece in response to the automatic identification of the workpiece; and





means responsive to the accessing of the first stitch pattern for changing to a second stitch pattern previously assigned to the workpiece so as to thereby define a different stitch pattern to be accessed the next time the workpiece is presented to the system.

4,510,876

METHOD FOR POSITIONING TWO WORKPIECE PORTIONS FOR STITCHING TOGETHER ALONG A DESIRED STITCHING PATH

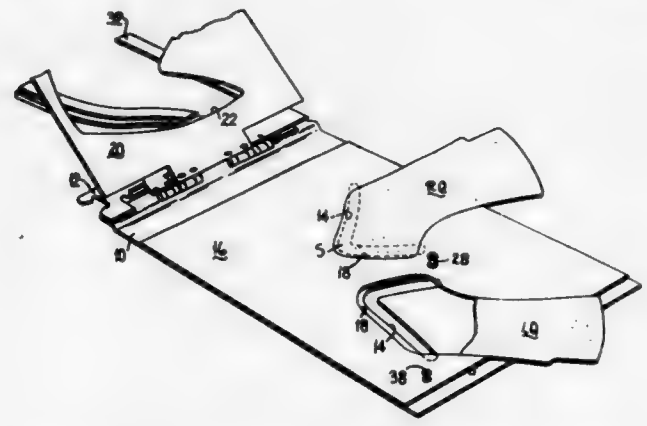
Anthony M. Garley, Oakham, and Rita A. Stafford, Birstall, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Jan. 18, 1984, Ser. No. 571,721

Claims priority, application United Kingdom, Jan. 20, 1983, 8301542

Int. Cl.³ D05B *1/00*

U.S. Cl. 112—262.1 **11 Claims**



1. A method of positioning two workpiece portions for stitching together along a desired stitching path, said work-

piece portions each having a region corresponding to said stitching path, which regions do not overlap along the whole of their length when the workpiece portions are in a flat condition, the method comprising the steps of:

positioning the two workpiece portions, in a substantially flat condition, with part of said region of each thereof in an overlapping relationship;

clamping the portions so as to maintain such overlapping relationship of said parts of the regions;

distorting thereafter at least one of the workpiece portions to bring the remainder of the regions of each of the portions into overlapping relationship; and

clamping the portions so as to maintain such overlapping relationships of the remainder of said regions.

4,510,877

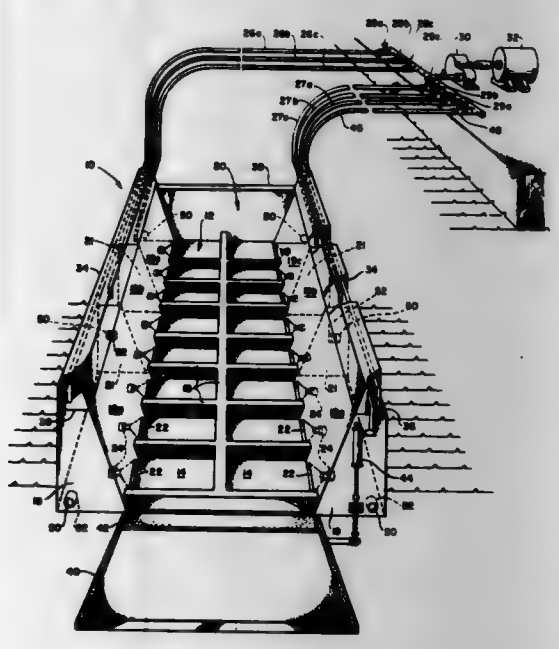
FLOATING DRY DOCK

Roger W. Bloxham, P.O. Box 8321, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 889,454, Mar. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 847,341, Oct. 31, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,591

Int. Cl.³ B63C *1/02*

U.S. Cl. 114—45 **14 Claims**



8. A method for placing a boat into a dry dock having a hold and a flotation chamber, comprising:

submerging said dry dock by flooding said hold and said flotation chamber with water;

positioning said dry dock and said boat so that said hold directly underlies said boat;

evacuating the water from said flotation chamber exteriorly by pumping air into said chamber;

drawing water from said hold into said chamber by pumping air out of said chamber; and

evacuating the water from said chamber exteriorly by pumping air into said chamber.

4,510,878

VOLUME-ADJUSTABLE DIVERS LIFT BAG

James W. Breedlove, 424 E. Pine #5, Santa Ana, Calif. 92701

Filed Sep. 27, 1983, Ser. No. 536,301

Int. Cl.³ B63B *21/52*

U.S. Cl. 114—54 **5 Claims**

1. A device for lifting objects from the floor of a body of water to the surface with a constant preset lifting force, comprising;

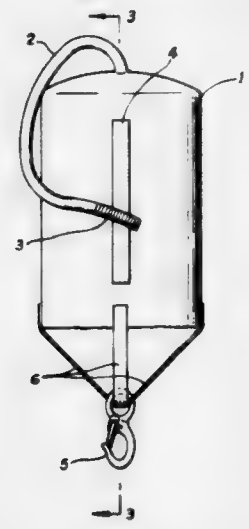
an inverted bag of substantially gas-tight material, and

a plurality of first components of a hose attachment means distributed along the height dimension of said bag and fixed to the outer surface thereof, and

a hose one end of which is communicably attached to the closed end of said bag, and

a second component of the hose attachment means fixed to the side of said hose adjacent the other end, said second component being capable of engaging said first component to create the hose attachment means, and

cargo attachment means fastened to said bag at two or more points on the periphery of the open end,



whereby the object to be lifted may be secured to said cargo attachment means, said inverted bag filled with gas, and said second component of the hose attachment means engaged successively with the plurality of first components of the hose attachment means, starting with the lowest first component and proceeding until the desired lifting force is obtained, whereupon when released the device will lift the object to the surface with the desired lifting force while spilling excess gas through said hose.

4,510,879

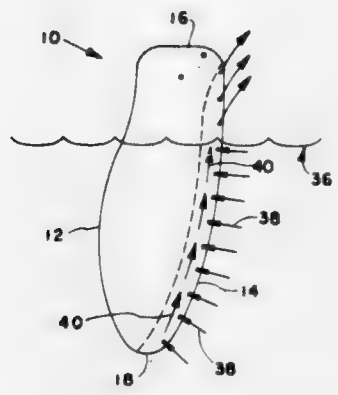
ANTI-CAVITATION RUDDER BLADE

Richard T. Weaver, 6881 Circle Creek Dr., Pinellas Park, Fla. 33565, and Gregory A. Weaver, 136 Arlington Ave., Oldsmar, Fla. 33557

Filed Sep. 28, 1982, Ser. No. 425,320

Int. Cl.³ B63H *25/38*

U.S. Cl. 114—162 **3 Claims**



1. An apparatus for steering a boat through water, comprising,

a rudder means,

said rudder means operatively mounted to said boat and operable to steer said boat,

said operatively mounted rudder means having an upper portion and a lower portion,

the upper portion of said rudder means being disposed generally out of contact with said water when said boat is under way,

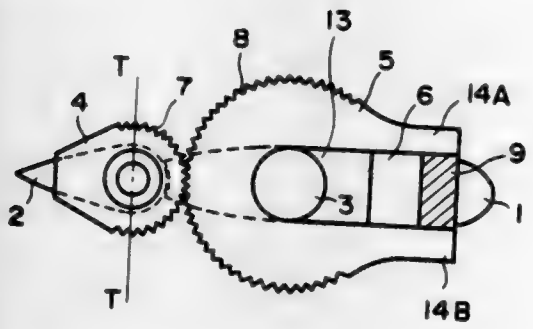
the lower portion of said rudder means being generally submerged within said water when said boat is under way,
said rudder means provided with passive maneuverability enhancing means operated by passage of the boat through water,
said rudder means provided with a hollow interior,
said passive maneuverability enhancing means including means to allow water to gain entrance into the interior of said rudder means, below the water line, when said boat is under way and to allow said water to be discharged, subsequent to said entrance, from said rudder means above the water line,
said passive maneuverability enhancing means including a vertically disposed bore means formed interiorly of said rudder means,
said bore means disposed in fluid communication with a major portion of the trailing edge of said rudder means,
said bore means extending from the lower end of said rudder means to a position downwardly of the upper end thereof,
said bore configured to admit water thereinto on a continuous basis when said boat is under way and to discharge water therefrom above the water line to thereby enhance the maneuverability of said boat,
said discharge of said water imparting a center line thrust to the rudder means.

4,510,880

RUDDER ARRANGEMENT FOR SHIPS

Sadatomo Kuribayashi, 21-22,2-chome, Kakinokizaka, Tokyo 152, Japan

Filed Mar. 10, 1983, Ser. No. 473,789
Claims priority, application Japan, Mar. 24, 1982, 57-46208
Int. Cl.³ B63H *25/38*
U.S. Cl. 114—162 **4 Claims**



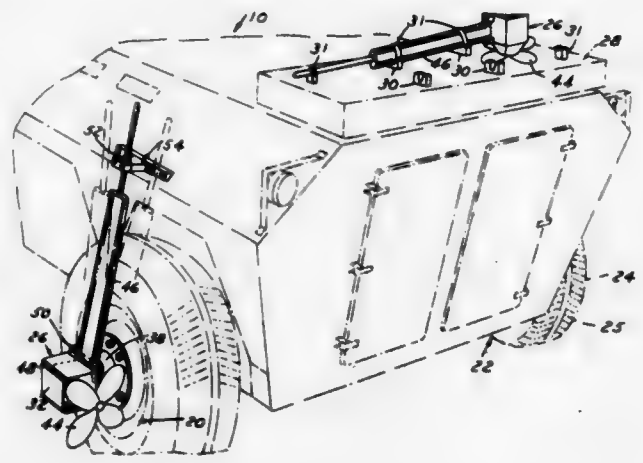
1. A rudder arrangement adapted to be mounted on the hull of a ship comprising:
a rudder having a top end and a trailing edge,
a shaft depending from the hull and being connected to said rudder for rotatably driving the same,
a flap member disposed adjacent the trailing edge of said rudder,
pivot pin means aligned on a vertical axis and pivotably mounting said flap member on said rudder,
a support member depending from the hull in spaced relation to said shaft,
a guide member having a generally U-shaped defined by a pair of spaced leg portions joined by an arcuate section,
said shaft extending through said guide member between said leg portions and adjacent said arcuate section,
said guide member being fixed to said support member in engagement with said leg portions whereby said guide member is rendered stationary,
a plurality of drive teeth on the periphery of the arcuate section of said guide member,
a sector member fixedly mounted on a top portion of said flap member for unitary movement therebetween,
said sector member having a semi-circular periphery facing the periphery of the arcuate section of said guide member, and
interconnecting means between said semi-circular periphery and the teeth on said arcuate section to cause actuation of said flap member.

4,510,881

MARINE PROPULSION UNIT

John D. Gill, Edgewater, Md., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Aug. 1, 1983, Ser. No. 519,426
Int. Cl.³ B63B *35/00*
U.S. Cl. 114—270 **8 Claims**



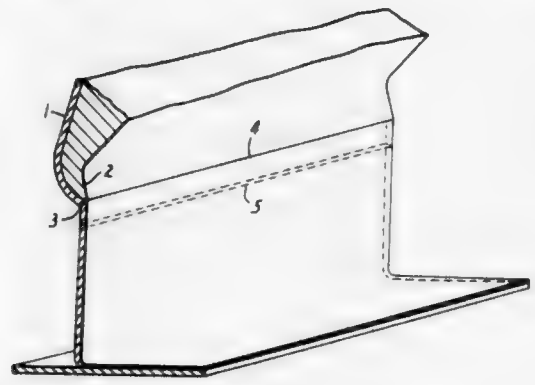
1. A marine propulsion unit for an amphibious vehicle having a hull and a pair of motor driven wheels comprising: a wheel hub extension on each wheel, a gear box with an input connected to each wheel hub extension, said gear box having an outboard propeller connected to face in a direction to enhance marine propulsion, and anti-torque means to hold the gear box and connected propeller in a desired propulsion location, said anti-torque means including a gear box stabilization strut connected between the gear box and the vehicle hull to hold the gear box in a fixed relationship to locate the propeller in a desired outboard marine drive position with respect to the motor driven wheels.

4,510,882

COATING APPARATUS AND METHOD FOR THE CURTAIN COATING OF LIQUID COMPOSITIONS USING IT

Pietro Prato, Carcare, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 3, 1983, Ser. No. 538,227
Claims priority, application Italy, Oct. 6, 1982, 65212 A/82
Int. Cl.³ B05C *5/00*
U.S. Cl. 118—300 **7 Claims**



1. An improved coating apparatus for use in curtain coating including a feeding body, a slide body determining a front surface for the sliding of the coating composition associated with it and a lip body where such composition leaves the apparatus along a negative slide surface, the improvement

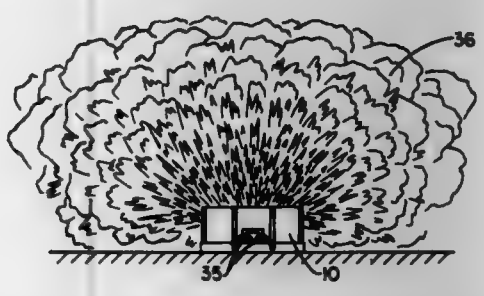
consisting of having such negative slide surface associated with a negative non-slide surface of said lip body.

4,510,883

APPARATUS FOR DISTRIBUTING POWDERED MATERIAL

Donald C. Estes, Winchester, Ky., assignor to Speedco, Incorporated, Lexington, Ky.

Filed Jan. 3, 1984, Ser. No. 567,652
Int. Cl.³ B05B *1/02*
U.S. Cl. 118—305 **21 Claims**



1. Apparatus for discharging powdered mineral material in a generally vertical pattern, including a hopper for a supply of powdered mineral material, conveyor means in the base of said hopper, means for entraining said material in a stream of air, rotatable impeller means for discharging the entrained material, means for rotating said impeller means, said impeller means comprising a pair of contra-rotating, side-by-side blade assemblies, each blade assembly having a plurality of blades each inclined rearwardly from a radius of the axis relative to the direction of rotation, the tip of each blade being bent forwardly relative to the direction of rotation, a cylindrical housing surrounding each said blade assembly with clearance around a major portion of the circumference of each said blade assembly, said housing projecting beyond said blade assembly toward said conveyor means, an arcuate opening in each said housing subtending an arc of about 120°, said arcuate openings being oppositely disposed with respect to one another and having an upper edge positioned about 30° before top dead center with respect to the direction of rotation of each said blade assembly, and a substantially planar, generally vertical panel on which said blade assemblies and housings are mounted so as to project toward said hopper and conveyor means, said panel extending outwardly in all directions beyond said blade assemblies and housings, whereby said entrained material is impelled outwardly by said rotating blade assemblies and distributed uniformly by said arcuate openings and said panel in a generally vertical plane laterally and upwardly throughout an arc of about 180°.

4,510,884

DEVICE FOR PROVIDING A DUAL COATING ON AN OPTICAL FIBER

Nathan B. Rosebrooks, West Thompson, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,700
Int. Cl.³ B05C *3/172*
U.S. Cl. 118—405 **6 Claims**

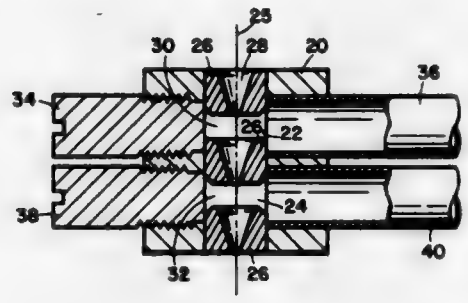
1. A device for coating optical fibers with at least two coatings, said device comprising:

a holding block having an outer surface with first and second ends, and having an inner surface defining a channel extending from the first end to the second end, said channel having an axis extending from the first end to the second end; and

at least first, second, and third coating dies arranged in the channel in the holding block, said first and second coating dies being axially separated in the channel by a first resin chamber, said second and third coating dies being axially separated in the channel by a second resin chamber;

characterized in that:

the holding block is further provided with a first passage providing fluid communication between the first resin chamber and the outer surface of the holding block, and a second passage providing fluid communication between the second resin chamber and the outer surface of the holding block;



each coating die has a first end and a second end;

each coating die is press fit into the channel in the holding block with its first end disposed toward the first end of the holding block; and

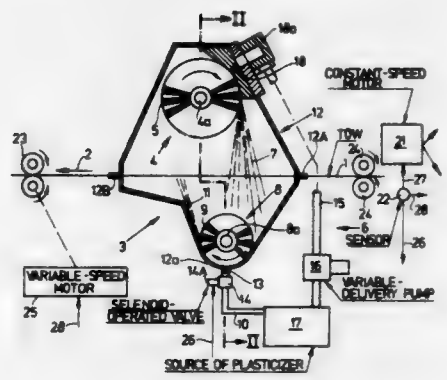
the second end of each coating die which is adjacent to a resin chamber has a substantially planar end face and is substantially perpendicular to the channel axis.

4,510,885

APPARATUS FOR APPLYING ATOMIZED LIQUID PLASTICIZER TO A RUNNING TOW OF FILAMENTARY FILTER MATERIAL

Heinz Greve, Hamburg, and Günter Wahle, Reinbek, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 25,040, Mar. 29, 1979, abandoned. This application Aug. 12, 1980, Ser. No. 177,406
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814681
Int. Cl.³ B05B *9/00*
U.S. Cl. 118—674 **6 Claims**



1. Apparatus for applying droplets of liquid plasticizer to successive increments of a foraminous tow of filamentary material, comprising means for transporting the tow lengthwise along a substantially horizontal path; a source of liquid plasticizer; means for supplying plasticizer from said source to one side of said path; first means for propelling droplets of the thus supplied plasticizer against successive increments of the running tow at said one side of said path whereby certain droplets adhere to the filamentary material and the remaining droplets penetrate through the running tow to the other side of said path, said first propelling means being located at a level above said path; means for intercepting said remaining droplets; and second means for propelling, exclusively, at least some of said remaining droplets against the running tow at said other side of said path so that the plasticizer which contacts the tow at said other side of said path consists solely of plasticizer

which has penetrated through the tow from said one side of said path, said second propelling means comprising a rotary brush and said intercepting means including a trough-shaped portion partially surrounding said brush.

4,510,886

DEVICE FOR EMPTYING A CONTAINER FILLED WITH LIVE POULTRY

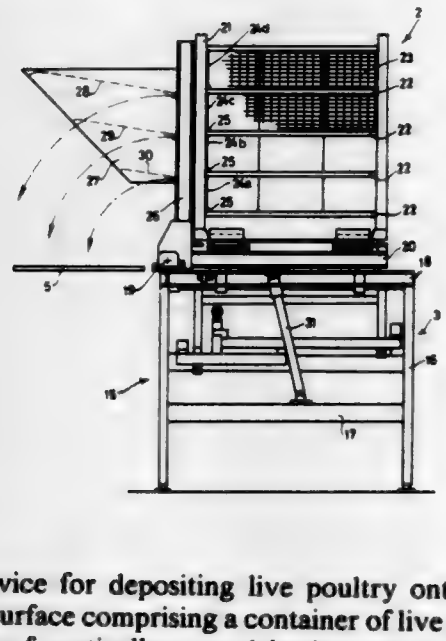
Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT B.V., Netherlands

Filed Apr. 10, 1984, Ser. No. 598,816

Claims priority, application Netherlands, Apr. 18, 1983, 8301348

Int. Cl.³ A01K *31/07*

U.S. Cl. 119—82 **4 Claims**



1. A device for depositing live poultry onto a horizontal receiving surface comprising a container of live poultry having a plurality of vertically spaced horizontal floors and having hinged unloading doors adjacent to said floors at an unloading side of said container, means forming a pivotal support for the container whereby the container can be swung from a level poultry retaining position to a tilted poultry unloading position with relation to said receiving surface, and a poultry unloading chute connected with said means adjacent to said unloading side of the container and including poultry guide surface elements within the chute adjacent to the respective floors of the container, the guide surface elements being of progressively increasing lengths from the bottom to the top of said chute and constituting continuations of said floors, whereby tilting of the container with said chute and means will deposit poultry onto said receiving surface over substantially the entire width of the receiving surface and not in a single location thereon.

4,510,887

ANIMAL FECAL COLLECTION SYSTEM

Kay L. Lincoln, and Ricardo Ochoa, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 11, 1983, Ser. No. 522,433

Int. Cl.³ A01K *23/00*

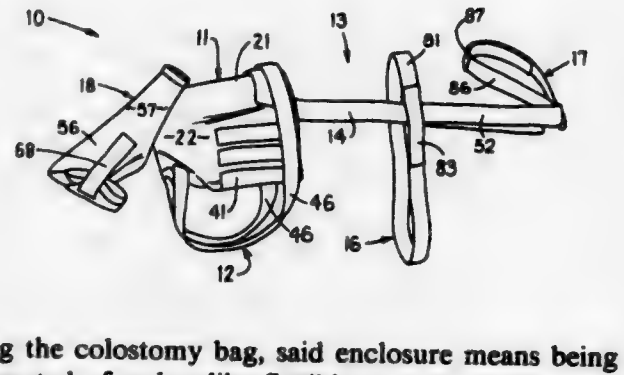
U.S. Cl. 119—95 **16 Claims**

1. A fecal collection system for attachment to a four-legged animal, comprising:

supporter means adapted to be positioned on and conformed to the hips of the animal, said supporter means being constructed of a sheetlike flexible material having a center portion which is positioned closely adjacent but rearwardly of the hips, said supporter means also including right and left portions which are joined to the center portion and extend forwardly therefrom so as to respectively wrap around the right and left hips of the animal, said right and left portions also extending upwardly across the animal's back in the vicinity of the rear legs, said center portion having opening means formed therein for permitting a colostomy bag attached to the rear of the animal to extend therethrough so as to be positionable adjacent the outer face of said supporter means;

leg strap means attached to said supporter means for assisting in holding said supporter means in contoured engagement with said animal, said leg strap means including a pair of leg straps which have one end thereof attached to said center portion with said leg straps projecting forwardly between the rear legs and then upwardly adjacent the opposite outer sides of the animal's body for engagement with the right and left portions of said supporter means; and

enclosure means attached to said supporter means and positioned rearwardly from the outer face thereof for enclos-



ing the colostomy bag, said enclosure means being constructed of a sheetlike flexible material which assumes a substantially flat condition when the enclosure means is in an open position, said enclosure means having a portion thereof fixedly attached to said supporter means, said enclosure means being movable between said open position providing access to said colostomy bag and a closed position wherein the enclosure means defines a pocket for enclosing and supporting said colostomy bag, said enclosure means having releasable fastener means associated therewith for holding the enclosure means in said closed position but permitting opening of the enclosure means when access to the colostomy bag is desired.

4,510,888

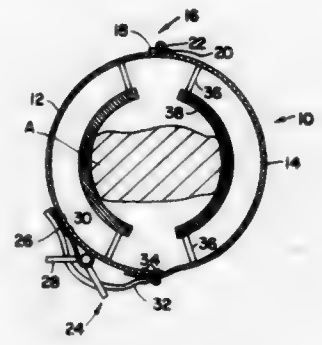
SHIELD ASSEMBLY FOR AN AREA OF AN ANIMAL TO BE PROTECTED

Barbara DeAngelis, 1218 80th St., Brooklyn, N.Y. 11228; Howard Jacobsen, 190 72nd St., and Edwin Jacobsen, 4 Bayridge Pl., both of Brooklyn, N.Y. 11209

Filed Dec. 23, 1981, Ser. No. 333,648

Int. Cl.³ B68C *5/00*; A01K *29/00*; A61F *13/00*

U.S. Cl. 119—143 **8 Claims**



1. A protective shield assembly for positioning on a limb of an animal about an area to be protected from access by the animal to such area, which comprises:

elongated sleeve member means including an inner surface wherein said sleeve member means are mounted to one another which when applied to said limb of said animal define a chamber in a closed position;

arm member means positioned and secured to said inner surface of at least one of said sleeve member having arm

means extending radially inwardly into said chamber and including are shaped means for contacting said limb of said animal; and

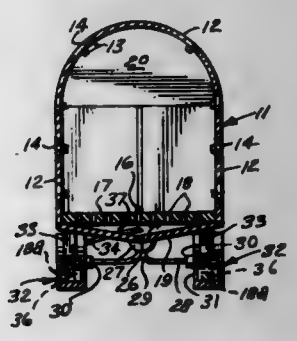
means for securing said elongated sleeve member means to one another about said limb of said animal proximate said area to be protected, said elongated sleeve member means being in spaced apart relationship to said area to be protected of said limb of said animal within said chamber thereby defining an opened zone between said elongated sleeve member means and said area to be protected to prevent animal access to the area to be protected and allow for healing of a wound in said protected area.

4,510,889

PARASITE CONTROL BATH UNIT

A. Louise Jobe, Rte. 2, Box 116, Guymon, Okla. 73942

Filed Apr. 26, 1984, Ser. No. 604,176
Int. Cl.[3] A01K *13/00*
U.S. Cl. 119—159 1 Claim



1. A parasite control bath unit, comprising, in combination, an elongated housing including a pair of opposite side walls, an upwardly rounded roof, and horizontal floor, a pair of adjacent hinged gates at each opposite end of said housing, for admitting and exiting a plurality of cattle, and a partial end wall between said roof and an upper edge of each said pair of adjacent gates; a sub-floor of "V"-shaped transverse configuration under said floor, and opposite end walls between said floor and said sub-floor defining a chamber therebetween; a pair of longitudinally extending runners in spaced relation below said sub-floor, and a plurality of posts between said runners and said sub-floor, for supporting said housing thereupon; and a chemical spraying system on said unit, for controlling parasites on said cattle, said spraying system comprising chemical storage tanks inside said runners, a plurality of spray openings in said side walls, said roof and said floor, spray nozzles in said spray openings for spraying said cattle when inside said housing, a plurality of hose lines between said tanks and said nozzles, pump means along said hose lines moving a parasite control chemical from said tanks to said nozzles; a plurality of drain holes through said floor for sprayed said chemical draining down into said chamber, and drain hoses from said chamber to said tanks.

4,510,890

INFRARED WATER HEATER

Edwin J. Cowan, 22 Swift Ct., Newport Beach, Calif. 92663

Filed Apr. 11, 1983, Ser. No. 484,097
Int. Cl.[3] F22B *5/00*
U.S. Cl. 122—17 3 Claims

1. Fluid heater comprising:

a tank adapted to hold fluid to be heated;

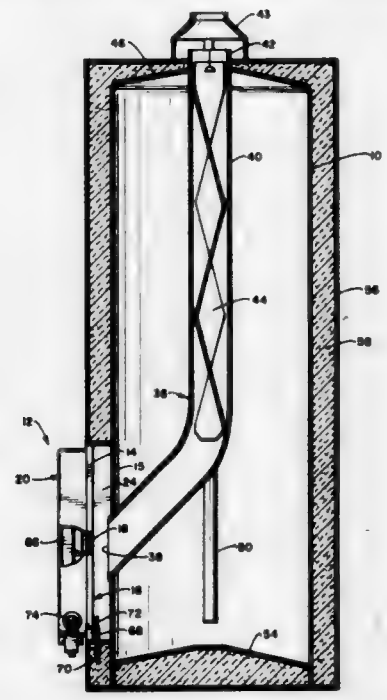
an infrared burner mounted at the side of said tank and comprising:

a housing having a permeable, vertical, interior panel dividing the interior of said housing into a combustion chamber means and a mixing chamber means, said combustion chamber means being between said panel and said tank, the face of said panel contiguous to said combustion chamber means constituting a radiating surface facing said tank,

burnable gas input means communicating with said mixing chamber means, for supplying burnable gas to said burner,

air input means for admitting primary ambient air to said mixing chamber means,

whereby gas and air pass from said mixing chamber means into said combustion chamber means, and are ignited and burn therein, thereby heating said radiating surface;



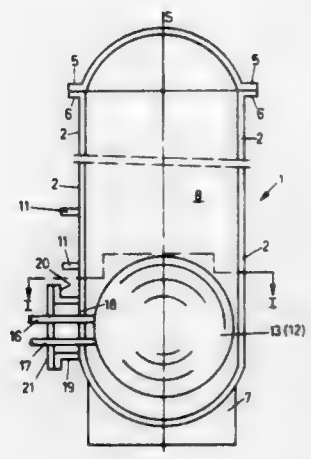
flue means communicating at one end with said combustion chamber means, thence extending upward in heat exchange relation with fluid in said tank, and exiting at the top of said tank.

4,510,891

LIQUID BOILER, PARTICULARLY UTILITY-WATER BOILER

Max Bindl, Wernberger Strasse 41, D-8473 Pfreimd, and Heinz Reusch, Lerchenstrasse 4a, D-8450 Amberg, both of Fed. Rep. of Germany

Filed Jan. 4, 1984, Ser. No. 567,962
Int. Cl.[3] F22B *1/02*
U.S. Cl. 122—32 5 Claims



1. A liquid boiler, particularly a utility-water boiler, comprising a tank whose inner space is closed by a cylindrical circumferential wall having a vertical axis, by a cover and by a convexly outwardly curved bottom and which has connections extending into the inner space for the feeding and removal of the liquid, and at least one heat exchanger forming at least one closed conduit for a heat-carrier fluid, said heat exchanger being arranged in said inner space of the tank and formed by at least one planar pipe coil of spiral or meandering, non-helical, development, the turns of which lie in a single plane said plane being parallel to or in the direction of the axis of said cylindrical circumferential wall, at least one connection

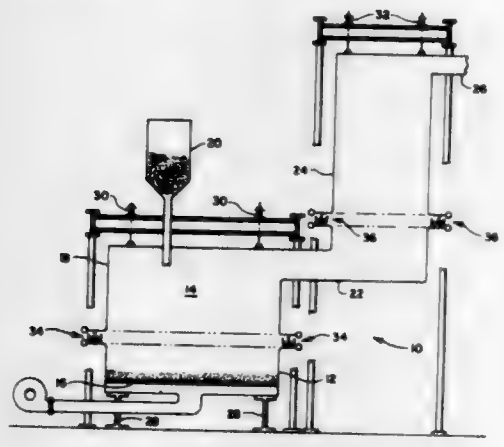
socket being provided on said cylindrical circumferential wall, said socket being closed by a plate at the end thereof protruding from the outer surface of said cylindrical circumferential wall, and the forward and return runs of said at least one heat exchanger extending in sealed fashion through said plate.

4,510,892

SEAL FOR BOILER WATER WALL

Steven P. Wincze, Windsor, and Earl K. Rickard, East Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 18, 1984, Ser. No. 621,973
Int. Cl.³ F22B *37/24*
U.S. Cl. 122—510 **5 Claims**



1. In combination, a boiler including a furnace having four enclosing sidewalls, a roof, and a perforated floor, means for introducing combustible material onto the perforated floor to be burned thereon, opening means in one of the sidewalls through which combustion gases can be exhausted from the furnace, first means for supporting a first section including the furnace floor and the lower portion of the sidewalls from the bottom, second means for supporting a second section including the upper portion of the sidewalls from the top, seal means located between the first and second sections for preventing the furnace interior from being exposed to the atmosphere when the two sections are subjected to thermal growth, said seal comprising a fluid cooling trough connected to the first section, the trough being filled with granular sealing material, and a fluid cooled plate connected to the second section and extending down into the granular sealing material, both the trough and the plate extending around the entire periphery of the furnace.

4,510,893

COOLING CIRCUIT FOR INTERNAL COMBUSTION ENGINES

Erwin Schweiger, Dachau; Erwin Starmuehler, Munich, and Axel Temmesfeld, Bad Feilnbach, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,802
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226508
Int. Cl.³ F01P *7/16*
U.S. Cl. 123—41.02 **28 Claims**

1. A cooling circuit for internal combustion engines, comprising

a coolant pump at an inlet to a cooling jacket of an engine,

a radiator constructed as a heat-exchanger for the transference of heat between engine coolant and surrounding air,

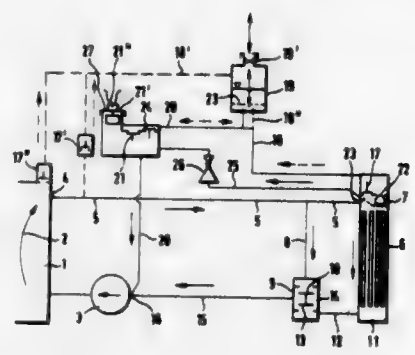
an inlet of said radiator being connected to an outlet of the cooling jacket, and a return of said radiator being connected to the suction side of the coolant pump,

a radiator valve of a thermostat arranged between the outlet of the cooling jacket and the suction side of the coolant pump in one of the inlet and return of the radiator, and

an excess-pressure valve means operable for limiting maximum pressure,

the excess-pressure valve means being controlled by the area between the cooling jacket and at least one of the radiator valve and a radiator inlet water box,

the excess-pressure valve means having an excess pressure opening value which lies above the boiling pressure of the



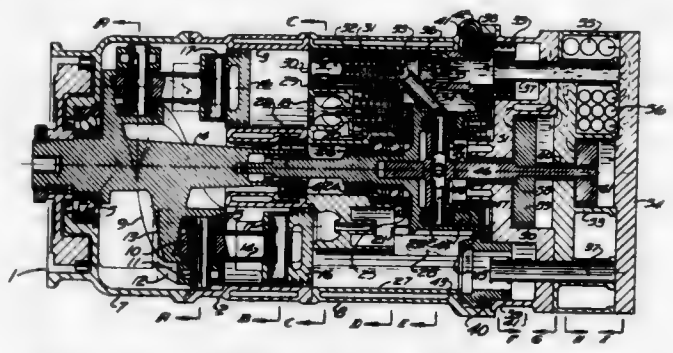
coolant, at a maximum permissive coolant temperature on the suction side of the coolant pump, by at least approximately that pressure difference which occurs between the suction side of the coolant pump and a connecting point of the excess-pressure valve means when essentially the maximum delivery output of the coolant pump occurs with a fully opened radiator valve of the thermostat.

4,510,894

CAM OPERATED ENGINE

Gerald J. Williams, R.R. #2, Nolalu, Canada

Filed Apr. 12, 1982, Ser. No. 367,244
Int. Cl.³ F02B *75/26*
U.S. Cl. 123—48 R **3 Claims**



1. In an internal combustion engine having a separate compressor for compressing an air charge to a fixed precombustion pressure, a cylinder block having a number of cylinders with a number of pistons, one piston in each cylinder, said pistons operatively connected to cause rotation of a shaft rotatably supported in said block with movement of said pistons, and a cylinder head means secured to said block to close said cylinders, said cylinder head means including cylinder heads associated with and closing each cylinder and freely moveable between a fixed end position and an adjustable end position, each cylinder head sliding within a bore of said cylinder head means to vary a volume of a combustion chamber defined between each cylinder head and the piston in said associated cylinder, each cylinder head including an admission port communicating with said cylinder and said separate compressor for admission of said air charge into said combustion chamber, an admission valve for closing of said admission port, and an admission valve mechanical actuator including a connecting means moveable with each cylinder head and in engagement with a cam actuated valve control mechanism secured in said cylinder block for opening of said admission port by movement of said admission valve determined by said cam actuated valve control mechanism, said admission valve when seated with said admission port causes said cylinder head to move to said fixed

end position due to a pressure bias created by said air charge prior entry into said cylinder and exerted on said cylinder head as said piston moves toward said cylinder head in an exhaust stroke to increase positive exhaust, said adjustable end position of said cylinder head defining a desired combustion chamber volume, said cylinder head being biased to move to said adjustable end position by said compressed charge when said admission valve is open, said fixed end position being determined by a stop face provided in said bore for engagement with a stop face provided on said cylinder head, said adjustable end position being determined by a mechanical actuator provided with a stop face for contact with a further stop face of said cylinder head, said mechanical actuator adjusting the position of the stop face thereof which determines said desired combustion chamber volume, the power output of said engine being controlled by controlling said mechanical actuator by means of adjusting said combustion chamber volume.

4,510,895

PISTONS FOR INTERNAL COMBUSTION ENGINES

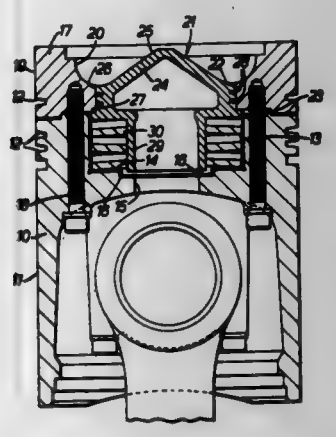
Roger H. Slee, Warwick, England, assignor to AE PLC, London, England

Filed Sep. 9, 1983, Ser. No. 530,683

Claims priority, application United Kingdom, Sep. 11, 1982, 8225967

Int. Cl.³ F02B *9/10*

U.S. Cl. 123—48 B **6 Claims**



1. A Diesel engine piston comprising:
a crown,
a combustion bowl provided in said crown,
a radially inner annular surface extending around the crown and forming a fixed portion of said combustion bowl,
an annular bore provided in said crown and leading from a radially inner edge of said fixed portion,
a member having a generally cylindrical surface which is a sliding fit in said annular bore for movement between first and second positions,
an upper surface to said member providing a central portion of said combustion bowl inwardly of said fixed portion,
biassing means providing a biassing force on said member to bias said member towards said first position in which said fixed portion and central portion form said combustion bowl, said member being moved against said biassing force to said second position in each compression stroke of the diesel engine when the pressure in the combustion bowl reaches a predetermined level, in which second position the volume of the combustion bowl is increased, the second position being maintained until a second predetermined position is reached on each expansion stroke, when the member returns to said first position.

4,510,896

MULTI-CYLINDER COMBUSTION ENGINE INTAKE MANIFOLD

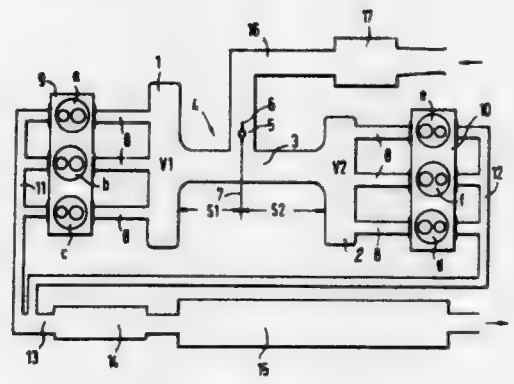
Erwin Rutschmann, Bad Hezzenalb, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.f. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 548,832

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1983, 3309373

Int. Cl.³ F02B *27/00*

U.S. Cl. 123—52 MB **13 Claims**



1. An air intake manifold arrangement for an internal combustion engine of the type having two similar groups of cylinders arranged spaced from one another in V-shaped relation, said manifold arrangement comprising:
first and second resonance chambers connected to one another by a straight connecting pipe at opposite ends of the straight connecting pipe, the first and second resonance chambers and the straight connecting pipe cooperating to form a H-shaped air intake manifold,
a suction connection fitting extending perpendicularly to the connecting pipe and including a single air jupply opening into the connecting pipe,
respective individual first suction pipes leading from the first resonance chamber to respective cylinders of a first group, and
respective individual second suction pipes leading from the second chamber to respective cylinders of a second group,
said first and second suction pipes extending parallel to the connecting pipe and outwardly of the respective resonance chambers at their sides opposite the connecting pipe.

4,510,897

MECHANISM FOR ACTUATING THE VALVE ROCKERS OF AN INTERNAL COMBUSTION ENGINE

Ernst Hatz, Ruhstorf, and Erich Absenger, Passau, both of Fed. Rep. of Germany, assignors to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,298

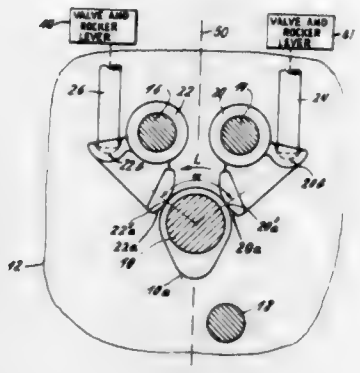
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221134; Nov. 24, 1982, 3243509

Int. Cl.³ F01L *1/46*

U.S. Cl. 123—90.48 **17 Claims**

10. A mechanism for actuating two valves of an internal combustion engine, comprising: two axially movably supported push rods; two movably supported rocker levers, each said rocker lever cooperating at one end with the associated valve and at the other end with a respective said push rod which, through its axial movement, effects movement of the associated valve; a rotatably supported shaft having a cam thereon; two pivotally supported intermediate levers, said push rods each being operatively coupled to and moved by a respective one of said intermediate levers, pivotal movement of said intermediate levers being effected by said cam on said shaft; and a first pivot pin, a second pivot pin and a third pivot pin arranged at angularly spaced locations about said control shaft and each adapted to pivotally support one of said intermediate

levers, the axis of each said pivot pin being substantially parallel to the axis of said shaft, said first and second pivot pins each being disposed approximately on one side of said shaft and being arranged symmetrically on opposite sides of a plane which contains the axis of said control shaft and which extends between said push rods, said third pivot pin being disposed on a side of said shaft opposite from said first and second pivot pins; wherein the engine is assembled in one of a first configuration and a second configuration; wherein in said first configuration said shaft rotates in a first direction, said first pivot pin pivotally supports one of said intermediate levers, and said second pivot pin pivotally supports the other of said intermediate levers, the point of engagement with said cam of said intermediate lever supported on said second pivot pin being spaced a predetermined angular distance in a second direction opposite said first direction from the point of engagement with said cam of said intermediate lever supported on said first pivot pin; and wherein in said second configuration said shaft rotates in said second direction, said first pivot pin pivotally supports one of said intermediate levers, and said third pivot pin pivotally supports the other of said intermediate levers, the point of engagement with said cam of said intermediate lever supported on said third pivot pin being spaced by said predetermined angular distance in said first direction from the point of engagement with said cam of said intermediate lever supported on said first pivot pin.



4,510,898

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE, PREFERABLY OF FOUR-CYLINDER CONSTRUCTION

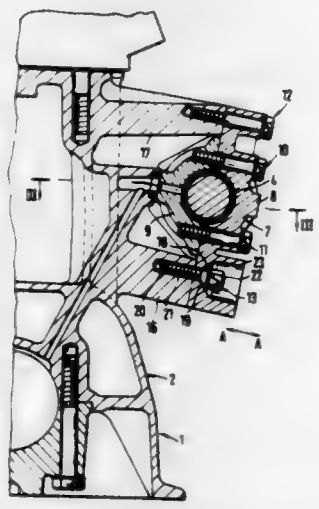
Herbert Ampferer, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.f. Porsche AG, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,372

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138165

Int. Cl.[3] **F16F** *15/26*

U.S. Cl. 123—192 R **5 Claims**



1. A reciprocating piston internal combustion engine with a cylinder crankcase comprising at least one balancing shaft means for damping of vibration rotatably supported by a bearing housing retained relative to a cylinder crankcase by a threaded connection means, at least one part of the threaded connection means being a bolt, said bolt being a stud bolt which is connected with a bolt nut having the conically shaped neck cooperating with a corresponding chamfered area of one of the bearing housing and crankcase.

4,510,899

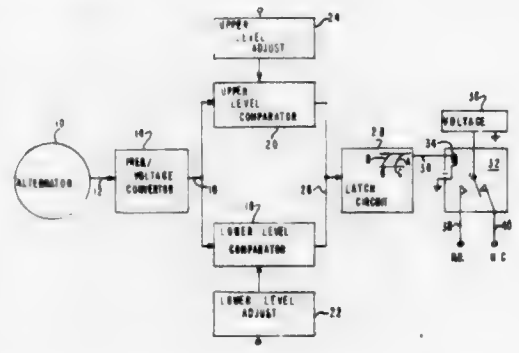
ELECTRONIC OVERSPEED SWITCH

Lawrence E. Macy, Daleville, Ind., assignor to Muncie Power Product Inc., Muncie, Ind.

Continuation of Ser. No. 75,778, Sep. 17, 1979, abandoned. This application May 1, 1984, Ser. No. 605,842

Int. Cl.[3] **F02P** *11/00;* **F02B** *77/08*

U.S. Cl. 123—198 D **13 Claims**



1. An electrical speed control system for selectively connecting an accessory to an engine having a rotating electric signal producing device and a rotating shaft, said speed control system comprising:

means connected to receive a signal from said signal producing device for producing a speed signal indicative of the rotational speed of said shaft;

signal level sensing means connected to receive said speed signal for determining if said speed signal is indicative of a speed below a preselected first level and if said speed signal is indicative of a speed above a preselected second level, and for producing an energization signal whenever said speed signal is below said first preselected threshold level, for interrupting said energizing signal when said speed signal is above said second level for maintaining said interruption of said energization signal until said speed signal falls below said first preselected level and for reestablishing said energizing signal when said speed signal again falls below said first preselected level; and

switch means connected to said accessory means, and a source of electrical power, said energization signal actuating said switch whenever said energization signal is present.

4,510,900

HYDRAULIC PULSE ENGINE RETARDER

Raymond N. Quenneville, Suffield, Conn., assignor to The Jacobs Manufacturing Company, Bloomfield, Conn.

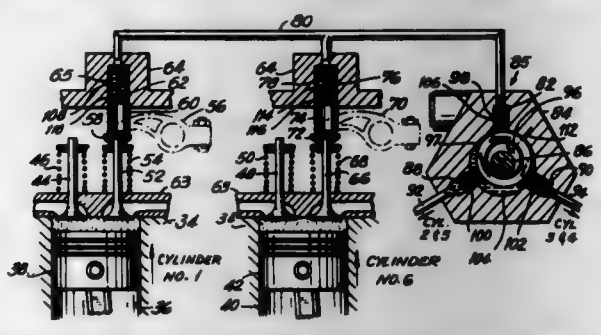
Continuation-in-part of Ser. No. 448,350, Dec. 9, 1982, abandoned. This application Jul. 9, 1984, Ser. No. 629,101

Int. Cl.[3] **F02D** *31/00*

U.S. Cl. 123—321 **15 Claims**

1. A compression release engine retarder for use in a multicylinder four cycle internal combustion engine having a crankshaft, intake and exhaust manifolds, intake valves, and at least one exhaust valve for each cylinder comprising a rotary hydraulic pulse generator positively driven in synchronism with said engine crankshaft, at least one slave piston operatively communicating with an exhaust valve and adapted to open said exhaust valve near the beginning of the expansion stroke of the engine cylinder with which said exhaust valve is associated when actuated by an hydraulic pulse produced by said pulse generator, duct means communicating between each said slave piston and said pulse generator to deliver said hydraulic pulse from said pulse generator to said slave piston, means to supply

hydraulic fluid to said pulse generator, control valve means communicating with each said duct means and pressure control means communicating with said duct means, said pressure control means comprising a cylinder communicating with said



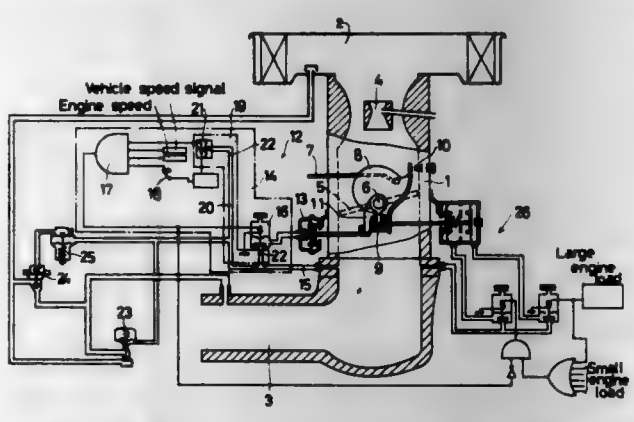
duct means, a piston mounted within said cylinder for reciprocating motion therewith and spring means biasing said piston against the hydraulic fluid pressure in said cylinder and duct means.

4,510,901

THROTTLE VALVE CONTROL APPARATUS

Fumio Yatabe, Kawagoe, and Syunzaburo Ozaki, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,605
Claims priority, application Japan, Mar. 17, 1982, 57-41898
Int. Cl.³ F02M *3/00*
U.S. Cl. 123—325 **4 Claims**



1. A throttle valve control apparatus in an internal combustion engine having an intake passage and a throttle valve therein, said apparatus comprising:

stopper means for stopping closing movement of the throttle valve at an idling position thereof, means for removing the first stopper means at the time of deceleration from operation, thereby allowing throttle valve to move further in its closing direction beyond the idling position to a closed-valve position thereof, and a second stopper means for stopping closing movement of the throttle valve at the closed-valve position;

said means for removing including delay means for delaying the foregoing removal of the first stopper means at the time of deceleration.

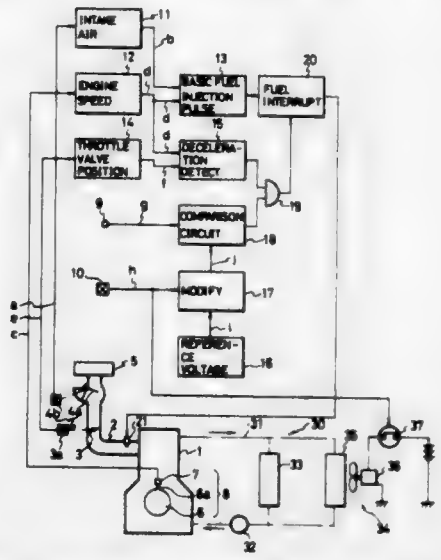
4,510,902

FUEL SUPPLY CONTROL IN DECELERATION OF AN INTERNAL COMBUSTION ENGINE FOR VEHICLES

Tsuyoshi Tsuchida, and Yoshinobu Kido, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 4, 1983, Ser. No. 481,908
Claims priority, application Japan, Apr. 6, 1982, 57-57771
Int. Cl.³ F02D *5/02*
U.S. Cl. 123—325 **5 Claims**

1. A motor vehicle including an internal combustion engine having a fuel supply system for providing a supply of fuel, deceleration detecting means for detecting that the engine is in deceleration, heating means having heat exchanging means for bringing air in the vehicle into a heat exchange relationship with an engine cooling medium so that said air in the vehicle is heated by the engine cooling medium, heater operation detecting means for detecting that the heating means is in operation,



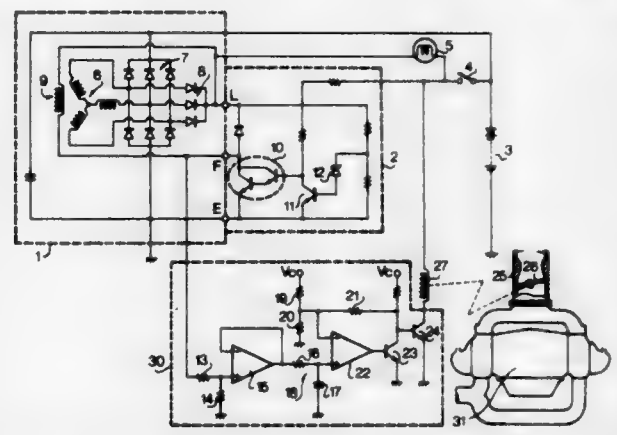
fuel supply control means responsive to outputs of said deceleration detecting means and said heater operation detecting means for interrupting the supply of fuel when the engine is in deceleration and the heating means is not in operation.

4,510,903

SYSTEM FOR REGULATING THE IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE

Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan and Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1983, Ser. No. 557,094
Claims priority, application Japan, Dec. 3, 1982, 57-212445
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—339 **10 Claims**



1. A system for regulating the idle speed of an internal combustion engine having a throttle valve, an alternator, and a voltage regulator having a control circuit responsive to the output voltage of said alternator for controlling the current flowing through a field winding of said alternator so as to regulate the output voltage of said alternator, comprising:

means comprising an integrator for integrating the voltage across said control circuit;

means comprising a comparator for comparing the output voltage of said integrator with a reference voltage and for producing an output voltage dependent on the comparison;

means comprising a solenoid operatively connected to said throttle valve for actuating the throttle valve;

switching means responsive to said output voltage of said comparator for allowing current to pass through the solenoid and for actuating said throttle valve to regulate the idle speed, and

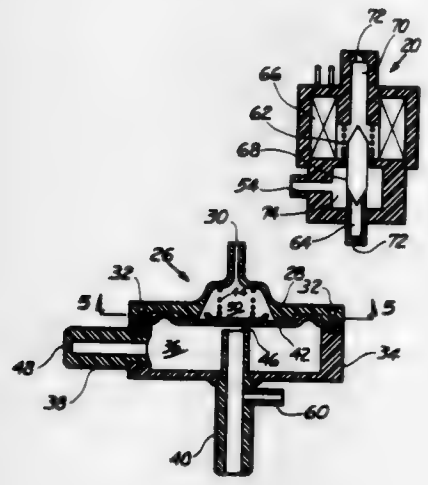
means comprising a resistor for providing hysteresis effect on said comparator in order to prevent hunting of the operation of said solenoid.

4,510,904

VACUUM OPERATED IDLE SPEED CONTROL DEVICE

Gary L. Casey, Troy, Mich., assignor to Allied Corporation, Morristown, N.J.

Filed Aug. 6, 1984, Ser. No. 638,188
Int. Cl.[3] F02D *11/08*
U.S. Cl. 123—339 4 Claims



1. A vacuum operated idle speed control device for an internal combustion engine having an intake manifold, the device for supplying bypass air around the throttle blade in the throttle body and to the intake manifold to maintain engine idle speed at the lowest engine speed, the vacuum operated idle speed control device characterized by:

a housing;

a diaphragm dividing the interior of said housing into an upper chamber for receiving control pressure and a lower chamber;

an input port member for receiving bypass air in said lower chamber;

an output port member adapted to be connected to the intake manifold;

a valve means including a valve seat on said output member, said diaphragm operable to open and close said valve means; and

a controlled orifice in said input port member having a size proportional to the displacement of the engine and operable to allow bypass air to flow therethrough to said output port member when the diaphragm opens the valve means and to provide a controlled pressure drop thereacross to equalize the pressure in said lower chamber with the intake manifold causing said diaphragm to close said valve means.

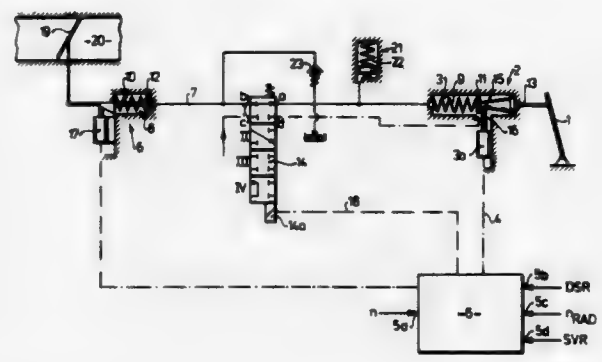
4,510,905

SPEED CONTROL APPARATUS FOR VEHICLES

Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,249
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228455
Int. Cl.[3] F02D *9/02*
U.S. Cl. 123—360 8 Claims

1. A speed control apparatus for motor vehicles driven by internal combustion engines, having a first final control element actuatable by the vehicle driver and a second final control element engaging a fuel control means for influencing the operating status of the engine, the improvement comprising a first hydraulic adjusting cylinder for said first final control element, and a second hydraulic adjusting cylinder for said second final control element for mechanically adjusting said fuel control means, said first and second hydraulic adjusting cylinders being connected via a hydraulic connecting line, an electrohydraulic multiple-position valve having at least two switching positions being interposed into said hydraulic connecting line, and a control circuit for determining the particular switching position assumed by said multiple-position valve



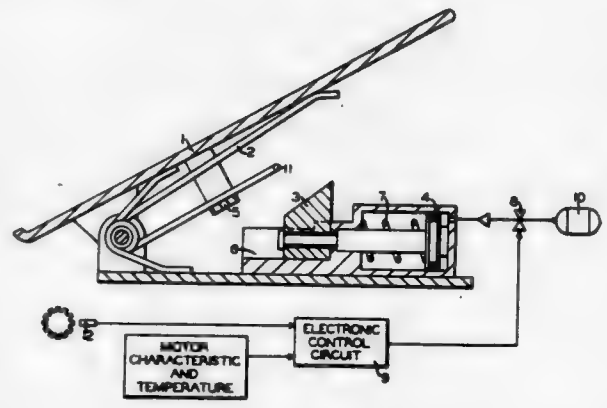
and having at least one signal derived from the operation of the engine supplied thereto.

4,510,906

ACCELERATOR PEDAL MECHANISM FOR OPTIMIZING FUEL ECONOMY

Alfred Klatt, Wathlingen, Fed. Rep. of Germany, assignor to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,286
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234479
Int. Cl.[3] F02D *31/00*
U.S. Cl. 123—396 6 Claims



1. An accelerator control mechanism for a motor vehicle comprising:

(a) an operator's accelerator pedal movable within a range extending between a fully retracted position and a depressed position to regulate the supply of fuel to the vehicle engine;

(b) a positionable stop with which said pedal is engageable during acceleration for restraining movement of said pedal toward said depressed position, whereby a desired pedal position is established in which optimum fuel economy is attained;

(c) a spring cage fixed to said pedal;

(d) a limit spring supported between said spring cage and said pedal, said limit spring being engageable with said stop to provide said restraining of said pedal in said desired pedal position, and upon said engagement with said stop being compressible to permit further movement of said pedal beyond said desired pedal position toward said depressed position; and

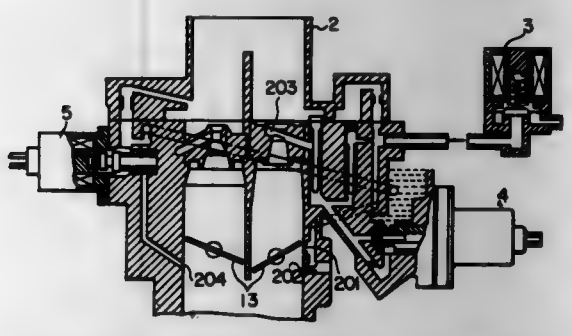
(e) means for controlling the position of said stop in accordance with different speeds of the vehicle engine.

4,510,907

ELECTRONIC CONTROL SYSTEM FOR CONTROLLING AIR-FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

Takeshi Atago, and Toshio Manaka, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,420
Claims priority, application Japan, May 19, 1981, 56-74170
Int. Cl.³ F02M 7/10
U.S. Cl. 123—435 10 Claims



1. An electronic control system for controlling a carburetor equipped with first control means for a slow main system and second control means for an enrichment system, said first and second control means having different control ranges and respective openings which are electromagnetically controlled to control the air-fuel ratio of a mixture supplied to an internal combustion engine, said system comprising:

means for generating signals representative of the engine operating states including at least that an engine temperature is below a predetermined value;

a control unit receiving the signals representative of the engine operating states from said signal generating means and reading data regarding the air-fuel ratio required dependent on the engine operating states to generate control signals for controlling the first and second control means of the carburetor; and

means responsive to the control signals from said control unit to generate drive signals for driving the first and second control means of the carburetor;

said control unit being constructed such that the data regarding the required air-fuel ratio is compared with a predetermined value, the comparison results determining whether the first control means or the first and second control means of the carburetor control the air-fuel ratio, and the control signal necessary for controlling the corresponding control means of the carburetor is generated on the basis of the comparison result.

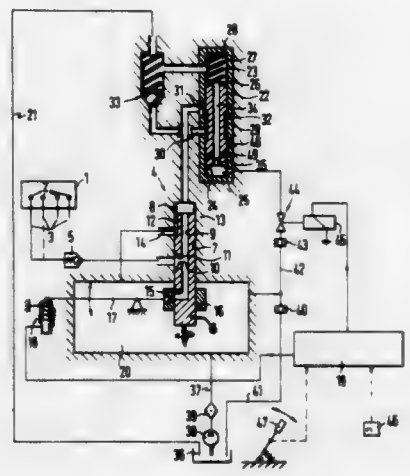
4,510,908

FUEL INJECTION PUMP

Hermann Eisele, Vaihingen-Enz, and Volkhard Stein, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,975
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211877
Int. Cl.³ F02M 59/20
U.S. Cl. 123—449 11 Claims

1. A fuel injection pump comprising a pump piston movable in a closed chamber and a pump work chamber defined thereby, which during a pump intake stroke is supplied with fuel from a pump suction chamber filled with fuel under pressure from a pressure source and which during a pump piston supply stroke can be made to communicate with a fuel injection location, further having a device for adjusting an effective pump piston supply stroke and a relief line leading away from the pump work chamber, a throttle device disposed in a cylinder in the relief line with an end face enclosing a control chamber, which communicates via a pressure line with said pump suction chamber, wherein the pressure line includes a variable throttle therein controlled in accordance with operating parameters and made to communicate with the relief chamber via a relief line in said throttle device containing a first fixed throttle, characterized in that the variable throttle is variable by



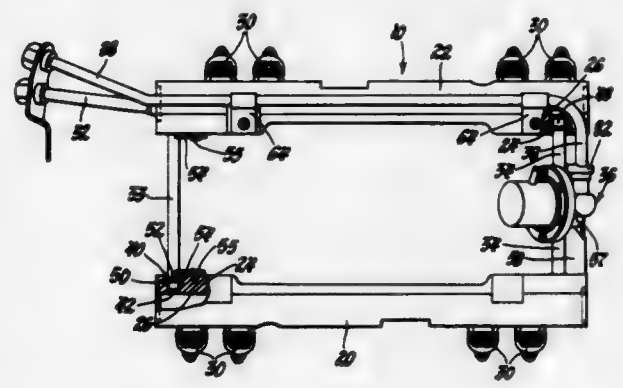
means of an electrical control unit in accordance with rpm, and a second fixed throttle is disposed between the suction chamber and the variable throttle.

4,510,909

FUEL RAIL ASSEMBLY

Thomas G. Elphick, Hilton; Edgar S. Eshleman, Holcomb, and Martin J. Field, Churchville, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 5, 1984, Ser. No. 597,080
Int. Cl.³ F02M 55/00; F02B 75/22
U.S. Cl. 123—470 7 Claims



7. A fuel rail assembly for an engine, said fuel rail assembly comprising a body having a fuel passage and a socket intersected by said fuel passage, said socket having a stepped bore with an outer portion of larger diameter than an inner portion, a tube having an end slidably received in said inner portion of said socket, an O-ring engaged between said tube and said outer portion of said socket, said tube further having a shoulder disposed in said outer portion of said socket for preventing displacement of said O-ring out of said outer portion of said socket, and means for permitting relative motion between said tube and said body while limiting such motion to preclude withdrawal of said tube end from said inner portion of said socket and to further preclude withdrawal of said shoulder from said outer portion of said socket, whereby said fuel body and said tube may experience relative motion without loss of fuel from said socket.

4,510,910

IGNITION TIMING CONTROL METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINES

Masakazu Ninomiya, Kariya; Toshi Suda, Nagoya; Norio Omori; Susumu Akiyama, both of Kariya, and Hiroyasu Fukaya, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

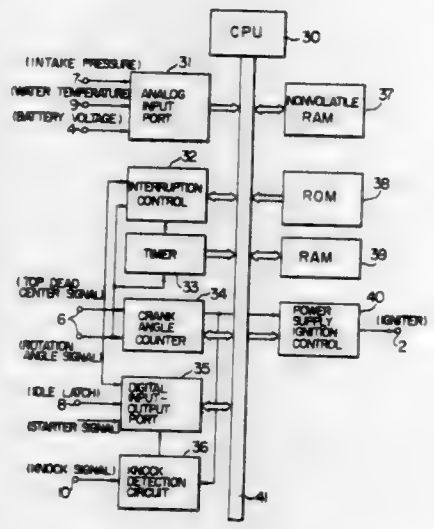
Continuation of Ser. No. 289,997, Aug. 4, 1981, abandoned. This application Feb. 8, 1984, Ser. No. 578,295

Claims priority, application Japan, Aug. 8, 1980, 55-109705

Int. Cl.[3] F02B *3/00*; F02D *5/00*; G06F *15/20*; F02P *5/04*

U.S. Cl. 123—486

6 Claims



1. A method of controlling an ignition timing of an internal combustion engine including an ignition means and a control computer having a non-volatile memory, said control computer being connected to said ignition means, said method comprising the steps of:

detecting a first driving state of the engine to produce a first signal;

detecting a second driving state of the engine to produce a second signal indicative of a knock signal;

detecting a third driving state of the engine to produce a third signal indicative of a MBT signal;

calculating a base ignition timing value in accordance with the detection of said first signal;

correcting said base ignition timing value with a learning correction value stored in said non-volative memory;

updating the learning correction value in said non-volatile memory by determining whether correction of said ignition timing is required in accordance with the detection of said knock signal and independently of said MBT signal, said knock signal having a higher priority than said MBT signal; and

updating the learning correction value in said non-volatile memory by determining whether the correction of said ignition timing is required in accordance with the detection of said MBT signal and independently of said knock signal.

4,510,911

METHOD FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE AFTER TERMINATION OF FUEL CUT

Yutaka Otobe, Shiki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1984, Ser. No. 597,792

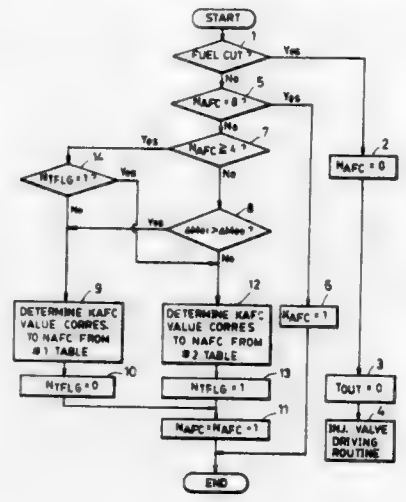
Claims priority, application Japan, Apr. 6, 1983, 58-60565

Int. Cl.[3] F02D *5/02*

U.S. Cl. 123—493

4 Claims

1. A method of controlling the quantity of fuel being supplied to an internal combustion engine after termination of a fuel cut operation of said engine at deceleration, wherein the fuel quantity is increased to desired values, by the use of fuel increments set in synchronism with generation of pulses of a predetermined control signal which are generated at predetermined crank angle positions of said engine, the method comprising the steps of: (1) setting beforehand a plurality of groups of fuel increments as said fuel increments, which have different fuel quantity increasing characteristics from each other; (2) determining whether or not there occurs a transition of the operative state of the engine from said fuel cut operation wherein fuel supply is cut off to a normal operation wherein fuel supply is effected; (3) detecting the magnitude of change



of the rotational speed of said engine for a period of time after the occurrence of said transition has been determined and before a predetermined number of pulses of said predetermined control signal are generated; (4) selecting one of said plurality of groups of fuel increments which corresponds to the detected magnitude of change of the rotational speed of said engine; and (5) effecting said increase of the fuel quantity by the use of the selected group of fuel increments.

4,510,912

FUEL SYSTEM

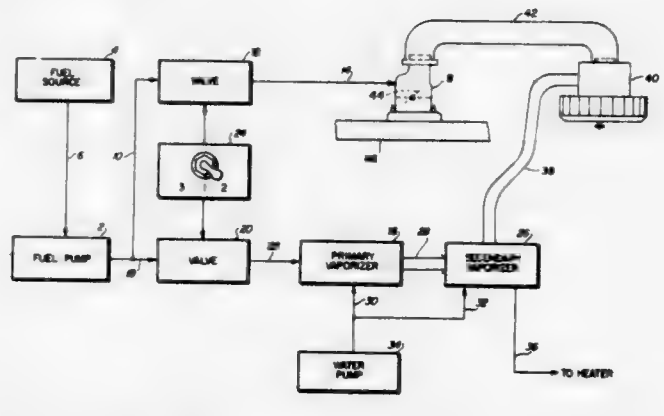
David E. Gamble, 435 S. Stewart St., Mesa, Ariz. 85202

Filed Feb. 18, 1983, Ser. No. 467,756

Int. Cl.[3] F02M *31/00*

U.S. Cl. 123—525

4 Claims



1. In an internal combustion engine of the type which receives alcohol from a source by means of a fuel pump and of the type which has associated therewith an engine cooling system including a water pump, wherein the improvement comprises an improved fuel system including:

a primary carburetor for receiving alcohol in liquid form from said fuel pump and supplying the alcohol to the engine for combustion;

vaporizing means for vaporizing alcohol to form a vapor fuel;

selection means for selectively supplying alcohol to said primary carburetor and to said vaporizing means and for blocking the flow of alcohol to said primary carburetor and to said vaporizing means, said selection means including:

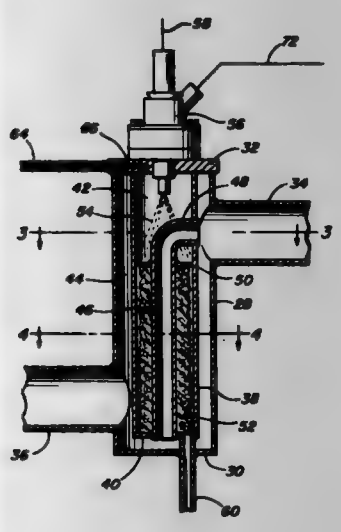
a first electrically operated solenoid valve coupled between said fuel pump and said primary carburetor;
a second electrically operated solenoid valve coupled between said fuel pump and said vaporizing means;
switch means for opening only one or neither of said first and second valves; and
a secondary carburetor for receiving vaporized alcohol from said vaporizing means and supplying it to the air intake upstream of said primary carburetor wherein said switch means comprises a three position switch having a first position for opening only said first electrically operated solenoid valve, a second position for opening only said second electrically operated solenoid valve, and a third position for maintaining said first and second electrically operated solenoid valves closed.

4,510,913

VAPORIZING FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Charles W. deCelle, Montgomery, Ala., assignor to Ralph A. Franco and Lila K. Franco, both of Montgomery, Ala., part interest to each

Filed Mar. 20, 1984, Ser. No. 591,981
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 9 Claims



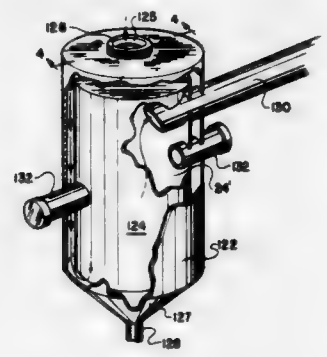
1. A vaporizing fuel system for an internal combustion engine having an intake manifold, a carburetor with a venturi and throttle valve controlling flow of a combustible mixture into the intake manifold, a plurality of vaporizing chambers, each vaporizing chamber including a fuel injector for injecting a predetermined quantity of fuel into each vaporizing chamber in a timed sequence and in a spray pattern, each vaporizing chamber including means in heat exchange relation to the exhaust products from the internal combustion engine to vaporize the fuel in the vaporizing chamber and means communicating the vaporizing chambers with the venturi for discharging vaporized fuel to the venturi with the reduced pressure in the venturi inducing flow of vaporized fuel into the venturi from the vaporizing chambers, and means responsive to airflow through the venturi and the throttle valve setting to control injection of fuel by the injectors, said means controlling injection of fuel into the vaporizing chambers including a transducer associated with the venturi for sensing airflow and throttle valve condition and a microprocessor receiving data from the transducer and providing a signal to each of injectors for operating the injectors to discharge fuel into the vaporizing chambers, each vaporizing chamber including an outer casing defined by a cylindrical outer wall closed by a bottom wall and a top wall, said means in heat exchange relation to the exhaust products including an exhaust inlet communicating with the interior of the outer wall and an exhaust outlet communicating with the interior of the outer wall to provide flow of exhaust products through the vaporizing chamber, each vaporizing chamber also including a inner casing including an inner wall spaced concentrically from the outer wall and having the lower end closed by a bottom wall spaced from the bottom wall of the outer casing and the upper end secured to the top wall forming a closure for the outer wall, the lower portion of the inner casing being filled with copper wool with a plate engaging the upper surface of the copper wool with fuel being sprayed on the plate for initial vaporization with the partially vaporized fuel then passing downwardly around the edges of the plate and through the copper wool, said inner casing being provided with a discharge tube for vaporized fuel for communication with a common manifold extending to the venturi of the carburetor.

4,510,914

APPARATUS AND METHOD FOR PREPARING A MIXTURE OF COMBUSTIBLE LIQUID FUEL AND AIR

Ben D. Purser, 6659 Alanbrook Dr., Charlotte, N.C. 28215

Filed Jul. 27, 1981, Ser. No. 287,078
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—590 11 Claims

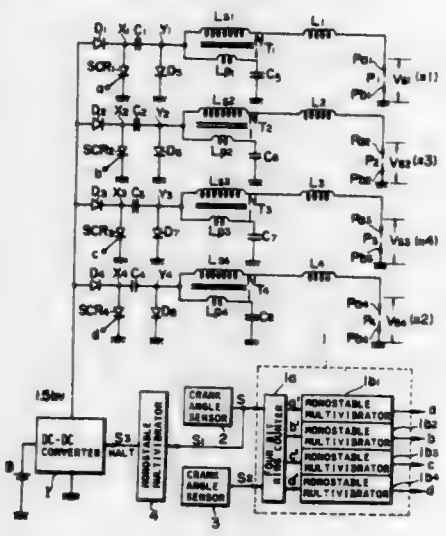


1. A method of preparing a mixture of a combustible liquid fuel and air for supply to an internal combustion engine, comprising the steps of:
(a) atomizing said fuel into droplets including droplets of a sufficiently small size for substantially complete combustion in said internal combustion engine and entraining said fuel droplets in a moving airstream,
(b) providing conduit means for directing said fuel entrained airstream to said engine, said conduit means including an enlarged droplet separation chamber.
(c) conveying said fuel entrained airstream through said conduit means to said engine while separating therefrom fuel droplets larger than said small size, said separation chamber of said conduit means being of a selected cross-sectional area sufficiently enlarged in relation to the remainder of said conduit means for causing said fuel entrained airstream to expand volumetrically in said chamber to reduce the velocity of said fuel entrained airstream sufficiently to allow said larger droplets to separate gravitationally therefrom and to maintain the entrainment therein of said small droplets for direction to said engine for efficient and substantially complete combustion in said engine, said conveying including withdrawing said fuel entrained airstream from said chamber at a location therewithin spaced inwardly from the walls thereof, and
(d) collecting said separated larger fuel droplets, removing said separated larger fuel droplets from said separation chamber and recycling said larger fuel droplets by reatomizing them and entraining them in said airstream in advance of said separation chamber.

4,510,915
PLASMA IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yasuki Ishikawa; Hiroshi Endo, both of Yokosuka; Masazumi Sone, Tokyo, and Iwao Imai, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Sep. 29, 1982, Ser. No. 428,229
Claims priority, application Japan, Oct. 5, 1981, 56-157398
Int. Cl.[3] F02P *3/08*
U.S. Cl. 123—620 7 Claims



1. A plasma ignition system for an internal combustion engine, comprising:

(a) a plurality of plasma spark plugs each having a discharge gap between a central electrode and a grounded side electrode, said discharge gap being located in a corresponding engine cylinder;

(b) a DC-DC converter for boosting a low DC voltage into a high DC voltage;

(c) a plurality of ignition energy charging means, each having a first diode connected to said DC-DC converter, a first capacitor having a first terminal connected to said first diode and a second terminal connected to ground via a second diode, the first capacitor being charged by the high DC voltage from said DC-DC converter via a series path including said first and second diodes;

(d) a plurality of reverse blocked triode thyristors, each having an anode connected to the first terminal of said first capacitor and a grounded cathode, each thryistor being selectively turned on so as to discharge the energy stored in the said first capacitor therethrough;

(e) a plurality of voltage boosting transformers, each having a primary winding and secondary winding and a magnetic core that couples the primary and secondary windings to each other, the magnetic core having a tendency to saturate in response to current resulting from discharges of the first capacitor, first and second ends of said primary winding of each transformer being respctively connected in series with the second terminal of said first capacitor and to ground via a second capacitor having a capacitance value smaller than said first capacitor whereby a damped oscillation is generated in the second capacitor when the capacitive energy is discharged from said first capacitor through said thyristor, first and second ends of said secondary winding being respectively connected in series with the second terminal of said first capacitor and to the central electrode of the corresponding plasma spark plug, whereby the voltage applied to said corresponding primary winding is boosted and the boosted voltage is applied to the corresponding spark plug;

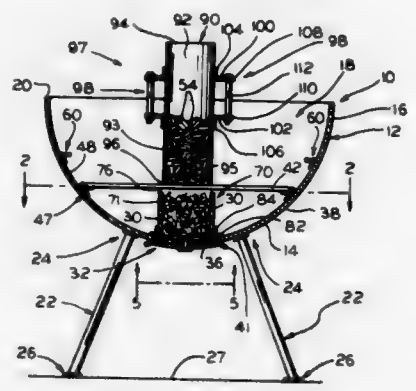
(f) an ignition trigger signal generator for (1) circularly generating and coupling a trigger signal to a gate of said corresponding thyristor according to a predetermined ignition order of the engine cylinders in response to the engine revolving through a predetermined angle and (2) generating and coupling another pulse signal having a predetermined pulsewidth to said DC-DC converter in synchronization with the ignition trigger signal for halting derivation of the high DC voltage for a period of time determined by said pulsewidth of the pulse signal; and

(g) a plurality of core-less inductors each connected in series with the secondary winding of said corresponding voltage boosting transformer and the electrodes for restricting an abrupt large discharge current flow through the corresponding plasma spark plug discharge gap so as to extend the ignition energy flow through said gap by the corresponding plasma ignition plug.

4,510,916
BARBEQUE GRILL WITH PAPER START FACILITY

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

Continuation-in-part of Ser. No. 502,705, Jun. 9, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 617,076
Int. Cl.[3] A47J *37/07;* F24B *3/00*
U.S. Cl. 126—25 B 12 Claims



1. In a barbeque grill that includes a receptacle of open top bowl configuration having a central portion centered on same, at a central axis that extends normally of the plane of the receptacle top, with the receptacle defining a floor that is centered on the axis, and including a charcoal support grid and means for removably mounting same in the receptacle above and in operative overlying relation to the receptacle floor, and a food cooking grid and means for removably mounting same above and in operative overlying relation to the charcoal support grid, with the grids being respectively proportioned to be substantially centered on the central axis when mounted in the receptacle in their respective operative relations, and with the grids being disposed normally of the central axis when mounted in the receptacle in their respective operative relations, and means for mounting the receptacle for cooking purposes with the central axis of the receptacle substantially vertically disposed,

the improvement wherein said grill includes:

a tinder receiver located below the level of the charcoal support grid, when the latter is in its said operative relation, and defining a tinder receiving chamber that is substantially centered on the central axis and that is proportioned transversely of said central axis to receive a tinder charge of predetermined size,

said tinder receiver defining an open upper end through which the tinder charge may be inserted into said tinder receiving chamber when the grids are removed from the receptacle for charging said tinder receiver with tinder,

said tinder receiver underlying the charcoal support grid across said tinder receiving upper end thereof when said charcoal support grid is in its operative relation,

a combination charcoal receiver and distributing device that is discrete with respect to said grill and comprises an elongate annular sleeve having an open center extending therethrough and open upper and lower end portions defining a charcoal receiving chamber that is open at the upper and lower ends of same and has a central axis extending longitudinally of said sleeve,

said charcoal receiver device lower end being formed to rest

on the charcoal support grid, when the charcoal support grid is mounted in the receptacle in its said operative relation,

said charcoal receiver device being proportioned transversely of its central axis to receive in said chamber thereof a charcoal charge that transversely of said charcoal receiver central axis approximates the corresponding dimensioning of said tinder receiver chamber,

and means for venting ambient air exterior of said receptacle into said tinder chamber for providing for igniting and supporting combustion of a tinder charge received therein,

said charcoal receiver device having a pair of oppositely disposed handles fixed to said sleeve adjacent said upper end thereof and each comprising a hand grip portion disposed externally of said sleeve for gripping by the grill user's right and left hands respectively, for shifting said receiver device lower end relative to and over the charcoal support grid,

whereby, when the grill is to be used for charcoal food cooking, and on removal of both the grids from the receptacle to expose said tinder receiving chamber upper end, the tinder charge may be applied to said tinder chamber and the charcoal grid returned to its operative relation, whereupon said charcoal receiver device may be rested on the charcoal grid in substantial vertical alignment with said tinder receiver and with said lower end portion of said charcoal receiver device engaging the charcoal grid, a charcoal charge may be applied to said charcoal receiver device chamber through said charcoal receiving chamber upper end, and the tinder charge may be ignited through said venting means to effect ignition and burning of the charcoal charge by chimney effect through said charcoal receiver device chamber,

and after the charcoal charge is ignited, the user, facing the grill, may grasp said charcoal receiver device handles with his right and left hands, respectively, to sufficiently lift same upwardly of the charcoal support grid and shift the lower end of the charcoal receiver device over the charcoal grid, for controlled discharge of the ignited charcoal from said device, and spreading of the charcoal, onto the charcoal grid, after which said charcoal receiver device is moved out of the grill and set to one side, and said cooking grid may be disposed in said operative relation thereof for food cooking purposes over the ignited charcoal.

4,510,917

PASSIVE MODE SOLID FUEL BURNING FURNACE

Paul Runquist, 1030 Neil Creek Rd., Ashland, Oreg. 97502

Continuation-in-part of Ser. No. 335,701, Dec. 30, 1981, abandoned. This application Jan. 18, 1984, Ser. No. 572,160

Int. Cl.³ F24B *5/02*

U.S. Cl. 126—76 **16 Claims**

1. A downdraft solid fuel-burning furnace comprising:

(a) a shell;

(b) a primary combustion chamber defined in said shell;

(c) means for supporting fuel in said primary combustion chamber, with at least a portion of the bottom surface of said fuel being exposed for combustion;

(d) a primary air inlet located in said primary combustion chamber;

(e) a secondary combustion chamber defined in said shell and separated from said primary combustion chamber;

(f) a throat fluidly connecting said primary combustion chamber to said secondary combustion chamber;

(g) an exhaust flue exiting from said secondary combustion chamber; and

(h) channel means for receiving and directing air flowing between said air inlet and said throat along only said bottom surface of said fuel.

9. A down draft solid fuel-burning furnace comprising:

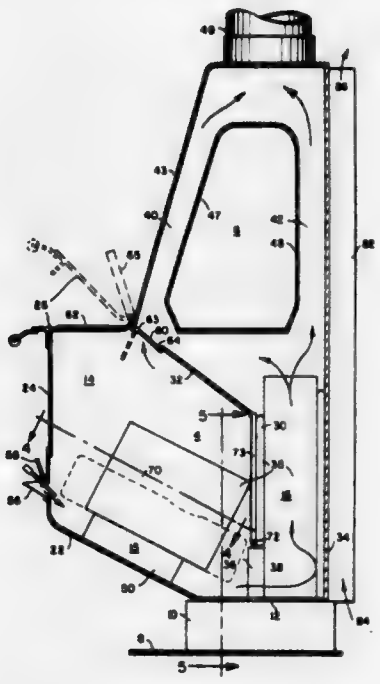
(a) a shell;

(b) a primary combustion chamber defined in said shell;

(c) said primary combustion chamber having a bottom surface which slopes downwardly, thereby forming an upper end and a lower end;

(d) a primary air inlet located in said primary combustion chamber proximate the upper end of said bottom surface;

(e) a secondary combustion chamber defined in said shell and separated from said primary combustion chamber;



(f) a throat fluidly connecting said primary combustion chamber to said secondary combustion chamber, said throat being located proximate the lower end of said bottom surfaces; and

(g) an exhaust flue exiting from said secondary combustion chamber.

4,510,918

WOODBURNING HEATING APPARATUS

Robert W. Ferguson, South Royalton; Derik K. Andors, and William W. Croesman, Jr., both of Randolph, all of Vt., assignors to Vermont Castings, Inc., Randolph, Vt.

Filed Nov. 28, 1983, Ser. No. 555,511

Int. Cl.³ F24C *1/14*

U.S. Cl. 126—79 **9 Claims**

1. Woodburning heating apparatus comprising:

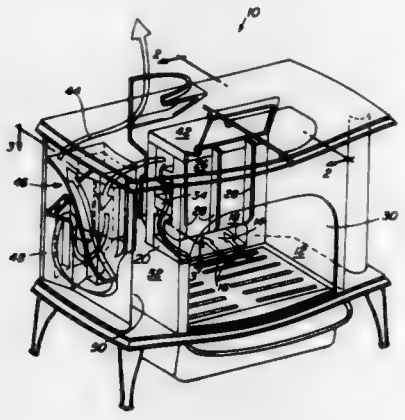
a primary combustion chamber for burning a supply of wood contained therein;

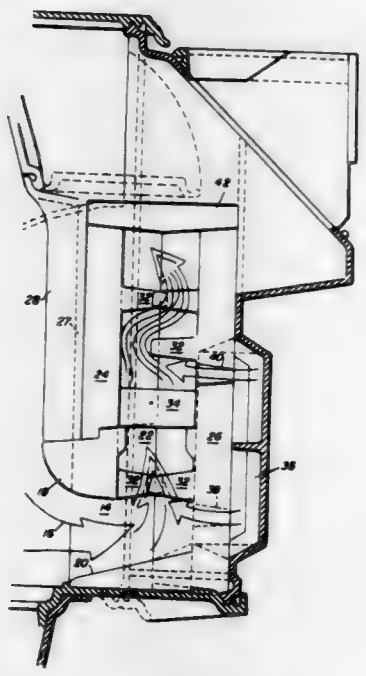
a secondary combustion chamber in gaseous communication with said primary combustion chamber;

said secondary combustion chamber being lined with a refractory material and including a perforate catalytic igniter therein through which combustion gases from said primary combustion chamber flow;

said secondary combustion chamber further including refractory baffles arranged to enhance mixing of said combustion gases and located to re-radiate heat onto said catalytic igniter; and

means for introducing secondary combustion air into said secondary combustion chamber;





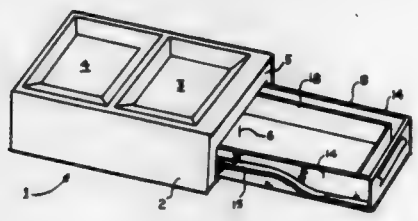
whereby said combustion gases are more completely burned to improve heating efficiency and reduce emissions.

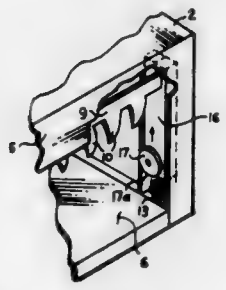
4,510,919

SELF HEATING RECEPTACLE

Simon Benmussa, 94 Bd - Pape Jean XXIII, 06300 Nice, France

Filed Nov. 5, 1982, Ser. No. 439,409
Int. Cl.[3] F24J *1/00*
U.S. Cl. 126—263 3 Claims





1. In a self heating receptacle of the type having a food vessel for foods and at least two chemicals disposed adjacent to said food vessel that can react exothermically, the improvement comprising:

a pouch containing one of said at least two chemicals;

a drawer containing said pouch, said food vessel including an opening therein for accepting said drawer;

a guiding ramp disposed on the side of said drawer;

cutting means disposed inside of said opening for opening said pouch to permit said two chemicals to produce an exothermic reaction; and

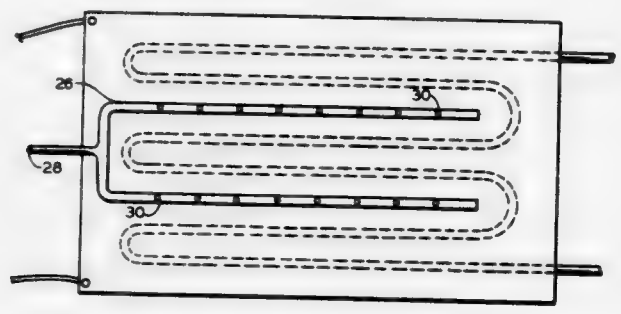
roller means operatively connected to said cutting means for engaging said guiding ramp whereby upon the engaging of the guiding ramp on said roller means said cutting means moves toward the pouch to open said pouch thereby setting off an exothermic reaction.

4,510,920

HEAT EXCHANGER MAT

Gunnar E. Walmet, Rexford, N.Y., assignor to New York State Energy Research and Development Authority, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,982
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—415 16 Claims



1. An improved heat exchanger mat for placement upon the bottom surface of a solar pond comprising:

a flexible membrane having

a first conduit for the reception, circulation and discharge of a heat exchanging fluid,

a second conduit for the reception and discharge of a dislodging medium, said conduit having a plurality of outlets opening on one side of the membrane; and

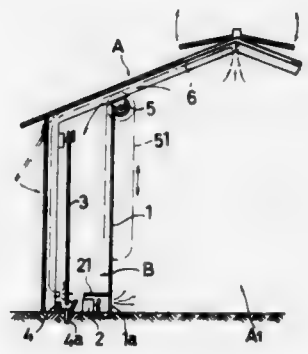
means for withdrawing the mat from the solar pond without disturbing the thermal gradient within the pond.

4,510,921

LATENT HEAT ACCUMULATING GREENHOUSE

Naomichi Yano; Isao Makido, and Hajime Ito, all of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

PCT No. PCT/JP82/00064, § 371 Date Sep. 10, 1982, § 102(e) Date Sep. 10, 1982
PCT Filed Mar. 8, 1982, Ser. No. 416,358
Claims priority, application Japan, Mar. 13, 1981, 56-37146
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—429 1 Claim



1. A latent heat accumulating greenhouse, wherein a heat accumulating chamber is created by a transparent sheet provided between a top and a floor surface on the north side in the

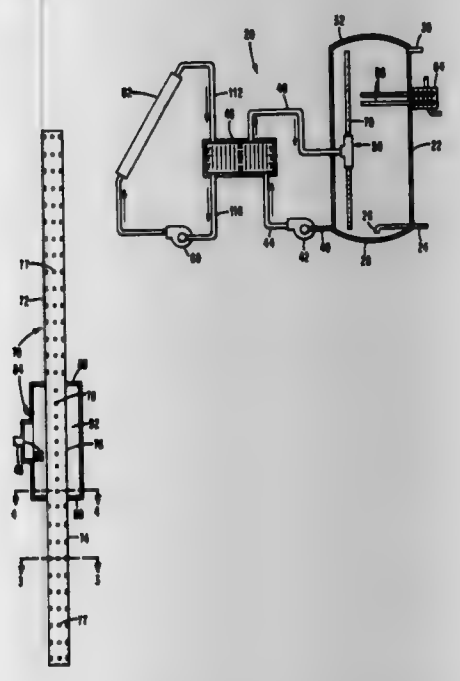
greenhouse, and a blower fan is disposed to confront an opening provided at the lower portion of said heat accumulating chamber, while, in the heat accumulating chamber, a heat accumulating unit in the form of a bag-like member is positioned, said heat accumulating unit having a large number of light transmitting windows and enclosing a phase transformation heat accumulating material therein, said heat accumulating unit is detachably suspended in a position close to the window panes at the north side of the greenhouse, the heat accumulating unit comprises a rectangular flat bag-like container of flexible material which is partitioned into a plurality of sections by checklike pattern heat seals, and a duct is provided in the greenhouse to lead the high temperature air at the upper part of the greenhouse into the heat accumulating chamber.

4,510,922

ENERGY STORAGE SYSTEM HAVING THERMALLY STRATIFIED LIQUID

Theodore Roussos, and Ravinder K. Sakhuja, both of Lexington, Mass., assignors to Thermo Electron Corporation, Waltham, Mass. and Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 10, 1983, Ser. No. 456,936
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—435 **3 Claims**



1. Apparatus for achieving thermal stratification of potable water comprising:

a tank for storing water;

means for withdrawing water from said tank;

a solar heat exchange system for heating water withdrawn from said tank including a solar collector, heat exchange means for permitting heat transfer between a solar fluid and water circulated therethrough and for providing double-wall-separation between said solar fluid and said water during said heat transfer, means for circulating water withdrawn from said tank through said heat exchange means, and means for circulating a solar working fluid through said solar collector and thereafter through said heat exchange means; and

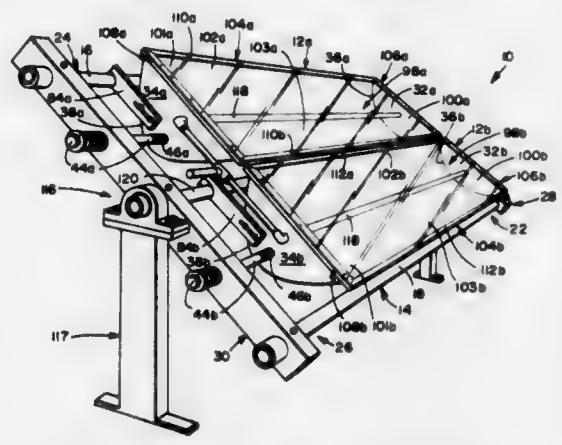
a header assembly for returning water from said heat exchange means to said tank at a level containing water whose temperature most nearly approximates the temperature of the returning water, said header assembly including an inlet extending through a wall of said tank, a vertical header pipe whose wall has a plurality of perforations distributed along its length and about its circumference, and wall means enclosing a portion of said header pipe intermediate between its upper and lower ends and forming a cavity for receiving returning water from said inlet.

4,510,923

SOLAR REFLECTOR

Allen I. Bronstein, 715 Florales, Palo Alto, Calif. 94306

Filed Aug. 26, 1983, Ser. No. 526,632
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **17 Claims**



1. A solar reflector (12*a*, 12*b*), comprising:

a longitudinally extending frame structure (14) having first (20, 22) and second (24, 26) ends and a second frame end closure (30);

a first form member (32*a*, 32*b*) attached generally across said first end (20, 22);

a second form member (34*a*, 34*b*) parallel to said first form member (32*a*, 32*b*) and in-board of said second end closure (30), said first (32*a*, 32*b*) and second (34*a*, 34*b*) form members (32*a*, 32*b*, 34*a*, 34*b*) having peripheries (36*a*, 36*b*, 38*a*, 38*b*) having identical form surfaces (40*a*, 40*b*, 42*a*, 42*b*) along portions thereof;

a support member (44*a*, 44*b*) attached to a respective one (30 or 34*a*, 34*b*) of said second end closure (30) and said second form member (34*a*, 34*b*) and extending toward a respective other (34*a*, 34*b*, or 30) thereof, said support member (44*a*, 44*b*) being adapted for transferring the weight of said second form member (34*a*, 34*b*) to said second end closure (30);

a flexible sheet (60*a*, 60*b*) of a material having a reflective in-facing surface (62) having opposite edges (64*a*, 64*b*, 66*a*, 66*b*) adapted for attachment to said identical form surfaces (40*a*, 40*b*, 42*a*, 42*b*) and having lateral edges (68*a*, 68*b*, 70*a*, 70*b*) generally perpendicular to said first and second form members (32*a*, 32*b*, 34*a*, 34*b*);

securing means (72*a*, 72*b*, 74*a*, 74*b*) for securing said opposite edges (64*a*, 64*b*, 66*a*, 66*b*) to said identical form surfaces (40*a*, 40*b*, 42*a*, 42*b*); and

stretching means (55) for stretching said flexible sheet (60*a*, 60*b*) between said first (32*a*, 32*b*) and second (34*a*, 34*b*) form members (32*a*, 32*b*, 34*a*, 34*b*).

4,510,924

BRACHYTHERAPY DEVICES AND METHODS EMPLOYING AMERICIUM-241

Laurence A. Gray, New Haven, Conn., assignor to Yale-New Haven Hospital, Inc., New Haven, Conn.

Continuation of Ser. No. 168,270, Jul. 10, 1980, abandoned, which is a continuation of Ser. No. 157,057, Jun. 6, 1980, abandoned. This application Jan. 13, 1983, Ser. No. 457,731
Int. Cl.³ A61N *5/00*
U.S. Cl. 128—1.2 **9 Claims**

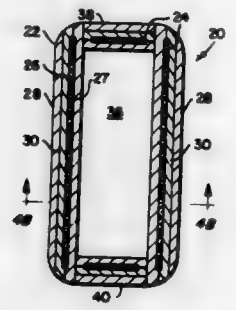
1. A radiation source for brachytherapy consisting essentially of:

a sealed capsule having a cavity therein; and

a brachytherapeutically effective quantity of americium-241 radioisotope disposed within said cavity,

wherein the walls of said capsule consist essentially of a material having a thickness which (1) will transmit brachytherapeutically effective dosages of gamma radiation generated by said quantity of americium-241 and, (2) will

contain the helium gas resulting from the decay of the alpha particles generated by said quantity of americium-241, and (3) which provides a neutron component of no more than approximately 1% of the total radiation dose provided by said source.

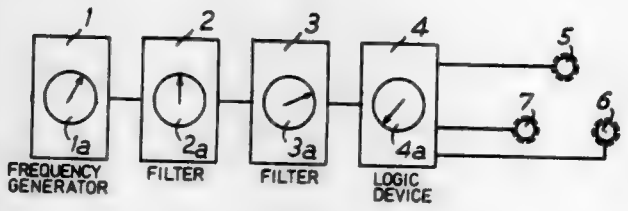


4,510,925

METHOD AND APPARATUS FOR TREATING A LIVING BODY

Dan Constantinescu, 60 rue des Mathurins, Paris, France (75008), assignor to Dan Constantinescu, Paris, France

Continuation of Ser. No. 300,690, Sep. 9, 1981, abandoned, which is a continuation of Ser. No. 038,943, May 14, 1979, abandoned. This application Apr. 1, 1983, Ser. No. 481,153
Claims priority, application France, May 17, 1978, 78 14615
Int. Cl.³ A61N *1/42*
U.S. Cl. 128—1.3 **10 Claims**



1. A method of treating living tissues by subjecting them to a magnetic field having a variable orientation produced by at least three electromagnetic means, the method comprising the steps of:

providing an electrical signal comprising a plurality of pulse trains occurring at a transmission frequency of between 1 and 600 trains per second, each said pulse train including a plurality of electrical pulses occurring at a signal frequency of between 40 KHz and 80 KHz and each said pulse train having a duration of between 100 and 200 microseconds;

selectively applying said pulses to said electromagnetic means to produce said magnetic field and change the orientation thereof with the occurrence of each said pulse; and

limiting the strength of said magnetic field to between 1 and 100 gauss, whereby the living tissue interprets said magnetic field as an internal informational signal for altering its behavior and the magnetic field causes substantially no direct physical action on the living tissue.

4,510,926

SUPPORT DEVICE FOR MEDICAL INSTRUMENTS

Yutaka Inaba, Tokyo, Japan, assignor to Tokyo Medical and Dental University, Tokyo, Japan

Continuation of Ser. No. 25,194, Mar. 29, 1979, abandoned. This application Aug. 8, 1983, Ser. No. 521,101
Claims priority, application Japan, Oct. 12, 1978, 53-125297
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **9 Claims**

9. A support device for medical instruments comprising a pair of semicircular track frames positionable to form a generally circular frame, and respective means for independently adjustably supporting said track frames for substantial universal orientation with respect to one another, each track frame having a trapezoidal cross-section, and each means for supporting including a holder having a dovetail groove in which the respective track frame is slidably fitted, and means for clamping the track frame to the holder with the aid of a gib.

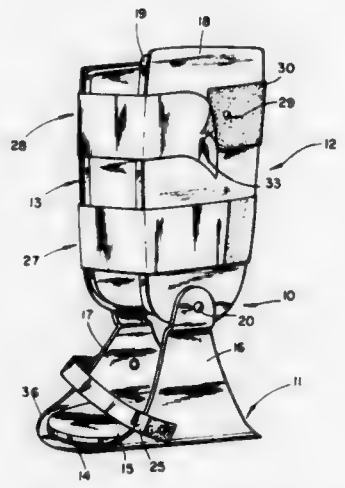


4,510,927

ANKLE BRACE

Rick E. Peters, R.R. #3, Batesville, Ind. 47006

Filed Apr. 14, 1983, Ser. No. 484,880
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 H **14 Claims**



1. An ankle brace apparatus for restricting inversion and eversion while permitting plantoflexion and dorsiflexion, said apparatus comprising:

a substantially rigid heel stirrup having a heel portion and a pair of upstanding inner and outer side portions, the heel portion and side portions being configured to be received about a person's foot with the side portions extending upwardly along opposite sides of the foot and overlying the ankle bones;

an inner padded member pivotally connected with the inner side portion of said heel stirrup and configured to be received adjacent the inside of the lower portion of the person's leg, said inner padded member including a substantially rigid support member and padding mounted to the support member and facing the person's leg;

an outer padded member pivotally connected with the outer side portion of said heel stirrup and configured to be received and adjacent the outside of the lower portion of the person's leg, said outer padded member including a substantially rigid support member and padding mounted to the support member and facing the person's leg;

first connection means for pivotally connecting the inner padded member with the inner side portion of said stirrup

with a first pivotal axis located adjacent and extending through the person's inner ankle bone;

second connection means for pivotally connecting the outer padded member with the outer side portion of said stirrup with a second pivotal axis located adjacent and extending through the person's outer ankle bone, the first pivotal axis being spaced closer than the second pivotal axis to the heel portion of said heel stirrup;

first attachment means for attaching said heel stirrup to the person's foot, said first attachment means including strap means for connection to each of the side portions and for being secured together overlying the front, upper surface of the person's foot; and

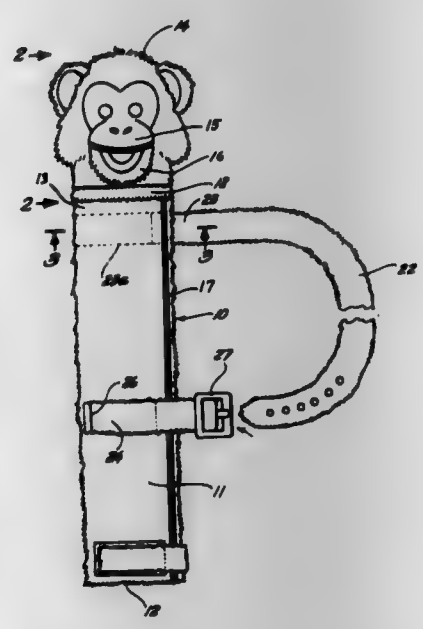
second attachment means for attaching said inner and outer padded members to the person's leg with the padding resting against the inner and outer portions, respectively, of the lower leg.

4,510,928

COMBINATION SLING AND THERAPY DEVICE

John B. Ackley, 430 Ridgewood Ave., Glen Ridge, N.J. 07028

Filed Oct. 24, 1983, Ser. No. 544,901
Int. Cl.[3] A61F *5/40*
U.S. Cl. 128—94 15 Claims



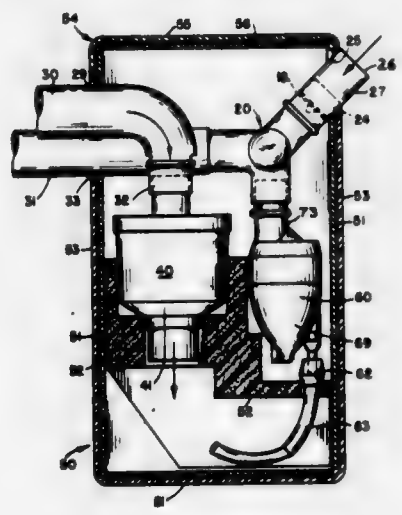
1. A combination sling and therapy device comprising an elongated tubular member of pliable material, open at one end and closed at the other end, and having a slit portion extending throughout the major portion of its length incorporating adjustable fastener means whereby the tubular member can closely envelop an arm and cast assemblage from a point adjacent the fingers to at least the elbow of the user, an elongated band member having opposed ends engaging spaced portions of the tubular member, said band member being of a length to extend over the shoulder of a user and having adjustable means for providing the desired angular support for the forearm and cast, the closed end of said tubular member having a puppet-like characterization in which protruding movable lip portions are positioned to receive the thumb and fingers of the user, and at least one of said lip portions having a pressure actuated sound device for encouraging periodic manipulation of the thumb and fingers.

4,510,929

DISPOSABLE RADIOACTIVE AEROSOL INHALATION APPARATUS

Maurice E. Bordoni, R.D. #1 (Horton Rd.), Westtown, N.Y. 10998, and Ephraim Lieberman, 1 Victory Rd., Suffern, N.Y. 10901

Continuation of Ser. No. 360,370, Apr. 30, 1982, abandoned.
This application Aug. 22, 1984, Ser. No. 642,718
Int. Cl.[3] A61M *11/00*
U.S. Cl. 128—200.14 8 Claims



1. An aerosol inhalation apparatus for supplying an aerosol mist containing radioactive tagged particles and air to a subject, comprising a reusable lead-shielded container having lid means, whereby the contents of the container are readily accessible, and a disposable radioactive aerosol inhalation device, the device including first and second conduit means in said said container and passing therethrough, mouthpiece means connected to the first and second conduit means externally of said container, valve means for controlling inhalation from said first conduit means and exhalation to said second conduit means, respectively, a nebulizer within said container and connected to said first conduit means, means positioned at least in part within the container and in fluid communication with said nebulizer for allowing introduction of radioactive solution from outside said container into said nebulizer, means associated with said nebulizer for generating an aerosolized mist carrying airborne radioactive tagged particles, means in fluid communication with a source of air and with said nebulizer for introducing a mixture of air and the mist into said first conduit means, and entrapping filter means in said container and connected to said second conduit means for removing the aerosol exhaled whereby the container may be reused and the device may be discarded after each use.

4,510,930

BREATHABLE GAS DISTRIBUTION APPARATUS

Elmer D. Garcia, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,390
Int. Cl.[3] A62B *7/02*
U.S. Cl. 128—202.22 9 Claims

1. An apparatus for safely supplying breathable gas to personnel at a controlled pressure and flow rate from a source of very high pressure, said apparatus comprising:

first pressure regulator means operably connected to said gas source for reducing pressure from said high pressure source to a greatly reduced pressure, well above atmospheric pressure;

second pressure regulator means operably connected to said first pressure regulator means for reducing gas pressure further;

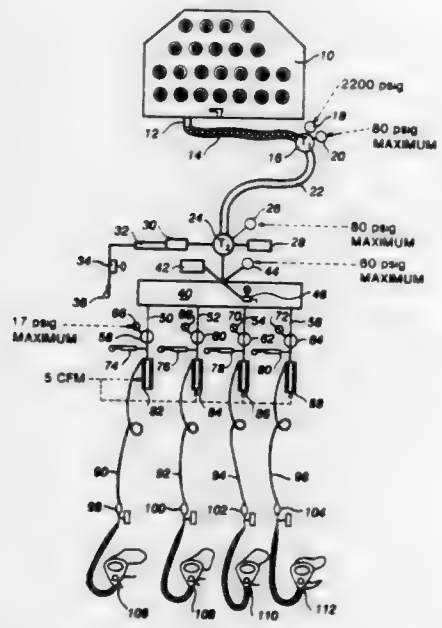
first overpressure relief means operably connected to said second pressure regulator means;

low pressure audible alarm means operably connected to said second pressure regulator means;

manifold means operably connected to said second pressure regulator means for receiving said breathable gas;

a plurality of conduits operably connected to said manifold means, each conduit in said plurality thereof for conducting said breathable gas;

second overpressure relief valve means and overpressure valve audible alarm means operably connected to each of said plurality of conduits;



flow meter means connected to each of said conduits for controlling the flow of breathable gas through each of said conduits at a desired flow rate and pressure; and

a plurality of individual breathing apparatuses, each individual breathing apparatus therein being singularly connected to one conduit in said plurality thereof for receiving said breathable gas conducted from said manifold means.

4,510,931

BARRIER FOR USE DURING CARDIOPULMONARY RESUSCITATION

Deborah Henderson, Elkton, Md., and Norman Street, Wilmington, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Oct. 26, 1983, Ser. No. 545,659
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—202.28 4 Claims



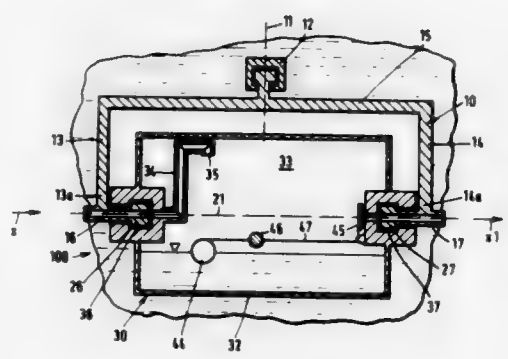
1. During cardiopulmonary mouth to mouth resuscitation, using by placing a laminate of expanded, porous polytetrafluoroethylene bonded to a porous fabric substrate, the laminate acting as a sanitary barrier between the mouth of the victim and the mouth of the CPR practitioner.

4,510,932

APPARATUS FOR SUPPLYING DIVERS WITH ARTIFICIAL RESPIRATORY GAS MIXTURES

Günter Luther, Wangelau; Peter Loebel, Toppenstedt; Gerhard Risse, Lübeck, and Volker Leiser, Cuxhaven, all of Fed. Rep. of Germany, assignors to GKSS-Forschungszentrum-Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 422,691
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139039
Int. Cl.[3] A62B *7/00*
U.S. Cl. 128—204.29 1 Claim



1. An apparatus for supplying divers with artificial respiratory gas mixtures, comprising a counterlung arranged to be worn by a diver, support means for said counterlung including swivel bearings for adjusting the position of said counterlung independently of the floating position of the diver, said counterlung comprises walls forming a chamber having a bottom and a top spaced upwardly from the bottom, said bottom having an opening communicating with the chamber for admitting ambient water into the chamber so that a water level is formed within the chamber dividing the chamber into a lower water space and an upper gas space, means within said chamber for forming an exhaled gas inlet communicating with the gas space with the exhaled gas flowing from the exhaled gas inlet into direct contact with the water level, means within said chamber for forming a gas outlet for removing gas from the gas space in the chamber and conveying the gas out of the chamber, said gas inlet located adjacent the top of said chamber and said gas outlet located between said gas inlet and the water level, means in said chamber for closing said gas outlet in response to the water level within said chamber, said means for closing said gas outlet comprises a valve positioned within said chamber and arranged to close said gas outlet, a control rod having opposite ends and pivotally mounted in said chamber at a point intermediate said opposite ends, said pivot dividing said control rod into first and second leg portions each terminating in said opposite ends, said valve being attached to said end of said first leg portion, a float attached to said end of said second leg portion, a weight attached to said second leg portion intermediate said pivot and float, said control rod being oriented within said chamber such that said second leg portion moves toward and away from said opening whereby said float follows the movement of the water level within said chamber, said means for forming the exhaled gas inlet includes a tube forming said exhaled gas inlet within said chamber and extending upwardly from the gas inlet and then downwardly toward and spaced from the water level where said tube extends outwardly from said chamber in axial alignment within said gas outlet.

4,510,933

SUCTION ADAPTER AND MEDICAL DRAINING SET AND METHOD OF USING A TRACHEAL DRAINING DEVICE

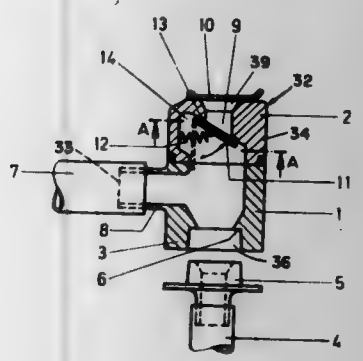
Michael Wendt, Münster-Nienberge, and Erik Schwanbom, Lübeck, both of Fed. Rep. of Germany, assignors to Dräger-werk Aktiengesellschaft, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,526

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222539

Int. Cl.[3] A61M *16/00*

U.S. Cl. 128—207.14 15 Claims



1. A suction adapter for connecting a suction catheter to a tracheal tube and which is also adapted to be connected to a respirator, comprising a hollow body having a first opening with a tracheal tube receiving fitting, a second opening having a respiratory line connection, and a third opening defining a drainage catheter introductory passage, the interior of said body defining a flow passage having a larger cross-section than said introductory passage and fluidically connecting said first opening and said third opening and fluidically connected to said second opening, the interior of said body defining a valve seat between the introductory passage and said flow passage, a valve member pivotally mounted in said body and engageable with said valve seat to close said introductory passage, spring means urging said valve member into engagement with said seat, a catheter assembly including a suction catheter having first and second end portions and a stop sleeve and means for slidably mounting said stop sleeve over said first end portion of said suction catheter, said stop sleeve having first and second ends and an exterior cross-section substantially the same as the cross-section of said introductory passage whereby said stop sleeve is slidably mounted therein with said first and extending into said flow passage, said stop sleeve also being provided with an exterior radially outwardly extending knurling at a spaced location from said first end thereof wider than said introductory passage such that when said stop sleeve is inserted into the said introductory passage up to said knurling, said first thereof forces said valve member back away from said seat.

4,510,934

SUTURE

Subhash K. Batra, 3465 Leonard St., Raleigh, N.C. 27607

Filed May 13, 1983, Ser. No. 494,243

Int. Cl.[3] A61L *17/00*

U.S. Cl. 128—335.5 8 Claims

1. A surgical suture having

a removable monofilament core extending the entire length of the suture, and

a braided flexible sheath surrounding said core,

said core and said sheath being separably fastened together at one end,

said combination of core and sheath having sufficient stiffness to permit penetration of flesh,



whereby said core is removed after penetration of flesh permitting tying of said sheath into a secure knot.

4,510,935

CARDIAC DEFIBRILLATOR

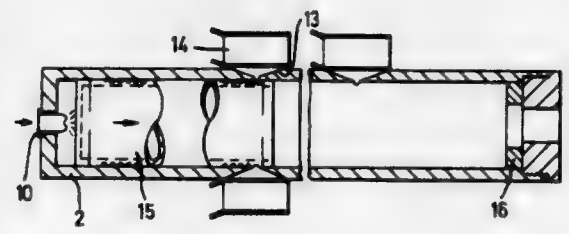
Joseph Spencer, London, England, assignor to Cardiac Recorders Limited, London, England

Filed Sep. 30, 1982, Ser. No. 430,251

Claims priority, application United Kingdom, Oct. 28, 1981, 8132459

Int. Cl.[3] A61N *1/36*

U.S. Cl. 128—419 D 16 Claims



1. An electrical energy source comprising:

(a) a chamber with which at least one piezoelectric transducer is operatively associated;

(b) an explosive cartridge associated with said chamber for generating gases therein in response to actuation of said cartridge;

(c) a member movably mounted in said chamber for displacement relative to the transducer in response to said gases; and

(d) means on said member for repeatedly striking said transducer when said member is displaced in the chamber by said gases thereby causing the transducer to produce a train output pulses.

4,510,936

APPARATUS FOR THE ELECTRICAL STIMULATION OF NERVES

Adrian J. Fourcin; David M. Howard, both of London, and John R. Walliker, Epsom, all of England, assignors to National Research Development Corporation, London, England

Filed Jan. 20, 1984, Ser. No. 572,402

Claims priority, application United Kingdom, Jan. 20, 1983, 8301526

Int. Cl.[3] A61N *1/36*

U.S. Cl. 128—419 R 17 Claims

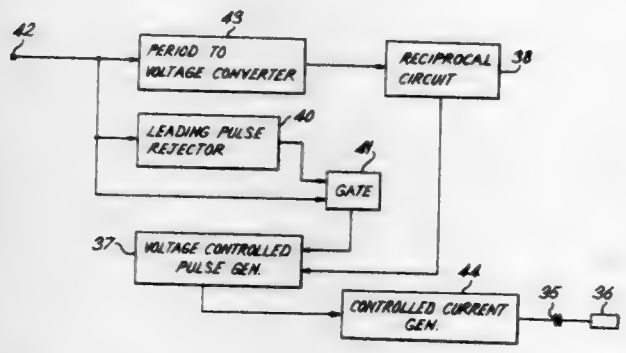
1. Apparatus for the electrical stimulation of nerves comprising

stimulus means for generating an electrical stimulus of alternating polarity and varying periods, which is non-zero for most of the duration of most of the said periods,

an electrode for location in a position where a nerve can be stimulated, and

charge control means for ensuring that the net charge ap-

plied to the electrode is zero in each of successive intervals substantially throughout stimulation, each interval



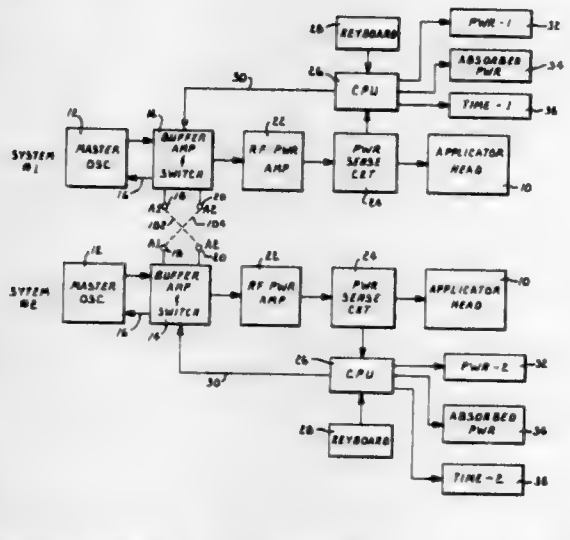
having a duration equal to an integral number of said periods not greater than three.

4,510,937

METHOD AND APPARATUS FOR OPERATING DUAL DIATHERMY APPLICATOR HEADS IN CLOSE PROXIMITY TO ONE ANOTHER

Noel A. Rogers, Shawnee Mission, Kans., assignor to International Medical Electronics, Ltd., Kansas City, Mo.

Filed Oct. 28, 1983, Ser. No. 546,559
Int. Cl.[3] A61N *1/40*
U.S. Cl. 128—422 9 Claims



1. A method of using a pair of diathermy applicator heads each driven by an oscillator and a drive circuit coupling the oscillator to the corresponding applicator head to apply RF energy thereto, said method comprising the steps of:

disabling one oscillator while enabling the other oscillator; and

electrically coupling the drive circuits together to effect application of RF energy from said other oscillator to both drive circuits to drive each applicator head with RF energy which is coherent in phase and frequency, thereby permitting the applicator heads to be used simultaneously in close proximity to one another without substantial interaction caused by phase or frequency differences.

4,510,938

BODY-MOUNTED LIGHT SOURCE-DETECTOR APPARATUS

Frans F. Jöbsis; Hans H. Keizer, and Ronald F. Overaker, all of Durham, N.C., assignors to Duke University, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 289,413, Aug. 3, 1981, Pat. No. 4,380,240. This application Jan. 24, 1983, Ser. No. 460,578
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—633 2 Claims

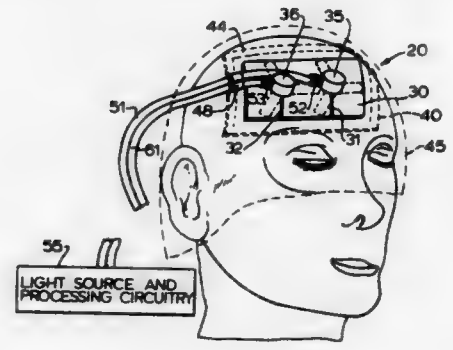
1. Spectrophotometric measuring apparatus for measuring a selected activity of a selected portion of a human body where such activity bears a measurable relation to an absorption characteristic of the selected portion for a particular wavelength of light, including in combination:

(a) first optical cable means providing a bundle of optical fibers with selected fibers connected for receiving and transmitting the output light emissions of light sources at measuring and reference wavelengths to a selected point of light entry on said selected portion of said body and other selected fibers connected for receiving and transmitting light emissions reflected directly back from said selected point of light entry to a processing means;

(b) second optical cable means providing a bundle of optical fibers connected for receiving and transmitting light emissions reflected and scattered to a selected point of light exit on said selected portion of said body to a processing means;

(c) a first preformed optical module comprising a molded cylindrical hollow housing enclosing first light guide means formed by a right-angle-shaped bundle of optical fibers optically coupled at one end to said first optical cable means and at the opposite end having a first optical light emitting face centrally positioned in an outer face of said housing and adapted to be mated in a substantially pressed fit relation with said selected point of light entry;

(d) a second preformed optical module comprising a second molded cylindrical hollow housing of the same size as said first housing and enclosing second light guide means formed by a right-angle-shaped bundle of optical fibers optically coupled at one end to said second optical cable means and at the opposite end having a second optical



light receiving face centrally positioned in an outer face of said second module housing and adapted to be mated in a substantially pressed-fit relation with said selected point of light exit;

(e) first and second socket structures of similar size, each being molded as an integral internally-hollow structure having a cylindrical side wall with an open base end and an opposite closed end, a slot in the wall structure for passing therethrough a respective optical fiber bundle leading from a respective said module, and a plurality of thin flexible tab members of uniform size and length extending radially outward from and circumferentially spaced on said base end, said first socket structure being adapted to receive in snug-fit relation said first optical module housing with the optical cable connected end portion of the fiber bundle associated with said first optical module passing through the slot of said first socket side wall and the said second socket structure being adapted to receive in snug-fit relation said second optical module with the optical cable connected portion of the fiber bundle associated with said second optical module passing through the slot of the said second socket side wall, and including adhesive means on the bottom surfaces of said tab members enabling the tab members of said first socket structure to be secured to the body in laterally spaced relation with respect to the tab members of the second socket structure whereby to secure said optical modules in correspondingly-spaced relation; and

(f) a flexible light-shielding pad having one adhesive sur-

faced side, having a pair of apertures formed to receive said socket structures in a predetermined spaced relation, having slit portions of said pad connecting said apertures to an outer edge thereof thereby enabling said shielding pad to be fitted over said tab members while allowing the optical cables associated with said modules to lead away from said shielding pad over and above the outer surface thereof and in a manner enabling said adhesive surfaced side to be adhesively secured to the body and the respective optical faces of said modules to be light shielded by said adhesively faced side of said panel.

4,510,939

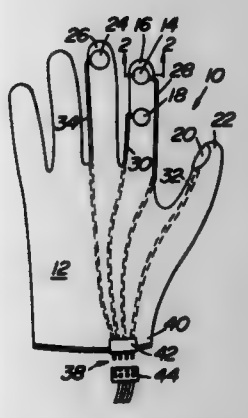
MEANS FOR TRANSFERRING ELECTRICAL ENERGY TO AND FROM LIVING TISSUE

Henry S. Brenman, Cinnaminson; Philip Katz, Princeton Junction, and Mark Singer, Moorestown, all of N.J., assignors to Biosonics, Inc., Philadelphia, Pa.

Filed Dec. 22, 1982, Ser. No. 452,319

Int. Cl.³ A61H *39/00*

U.S. Cl. 128—639 **12 Claims**



1. Apparatus for selectively transferring electrical energy to and from critical localities in living tissue for diagnostic purposes, comprising a glove of flexible fluid impervious elastomeric material, said material being sufficiently thin and flexible to afford to the wearer substantially unimpeded feel and manual dexterity so as to enable use of said glove for digital palpation while transferring energy to and from tissue, an electrode affixed to the index finger of said glove and covering the area of the glove beneath the tip of the distal phalange of the index finger of a wearer of said glove, thereby to facilitate application of said electrode directly to a palpated locality of tissue, a second electrode disposed adjacent to the tip of the thumb of said glove, an electrical connector coupled to said glove and adapted to be electrically connected to electrical circuitry external to said glove, and a plurality of flexible electrical conductors adhesively coupled to said glove and electrically connecting said electrodes and said connector.

4,510,940

PLETHYSMOGRAPH PRESSURE CORRECTING ARRANGEMENT

Karel H. Wesseling, Bunnik, Netherlands, assignor to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

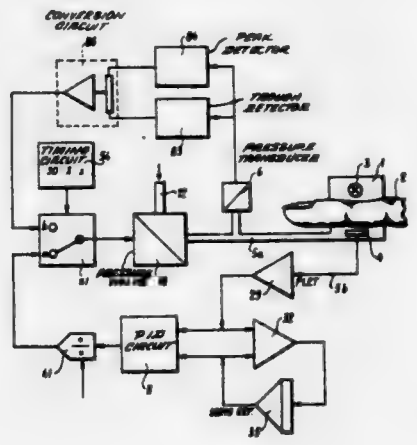
Filed Nov. 26, 1982, Ser. No. 444,363

Claims priority, application Netherlands, Nov. 27, 1981, 8105381

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—667 **33 Claims**

1. A method for correcting the cuff pressure in a plethysmographic arrangement for the indirect, non-invasive and continuous measurement of blood pressure in a body extremity by using a plethysmograph in a fluid-filled pressure cuff to be wrapped about said extremity, an electronic control circuit connected to the plethysmograph, and an electric pressure valve and a pressure transducer connected to said cuff, the cuff pressure being controlled by a plethysmographic signal from said plethysmograph in closed-loop operation with the aid of a servo-reference level obtained via a memory circuit in the control circuit, which servo-reference level is initially adjusted such that the cuff pressure corresponds substantially with the momentary arterial pressure, said method comprising the steps of:



opening the closed loop of the control circuit for a short interval,

in open-loop operation, adjusting the cuff pressure with the pressure valve at an intermediate pressure derived from the pressure last measured at the pressure transducer, and

adjusting the servo-reference level via the memory circuit.

4,510,941

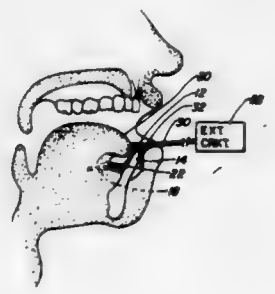
TEMPERATURE, PULSE AND RESPIRATION MOUTHPIECE PROBE

Carolyn M. Semrow, Island Lake; Mark W. Kolstedt, Cary, and William J. Dunn, Libertyville, all of Ill., assignors to The Kendall Company, Walpole, Mass.

Filed Aug. 30, 1982, Ser. No. 412,535

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—671 **48 Claims**



1. A probe, comprising:

a mouthpiece having a portion contoured to fit over a substantial portion of at least some of a patient's teeth; and

means for electronically sensing the temperature of the patient's gum within the patient's mouth,

said temperature sensing means being mounted to said mouthpiece in sensing relationship with the interior of the patient's mouth,

said contoured portion, when fitted over the patient's teeth, holding the mouthpiece and thus the sensing means against any substantial movement relative to said teeth, and

said contoured portion also being fitted over the patient's gum and said temperature sensing means being held against the patient's gum by said contoured portion to sense the temperature of the patient's gum.

4,510,942
ELECTRONIC SPHYGMOMANOMETER

Ryuichi Miyamae, Osaka, and Haruo Yasuda, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

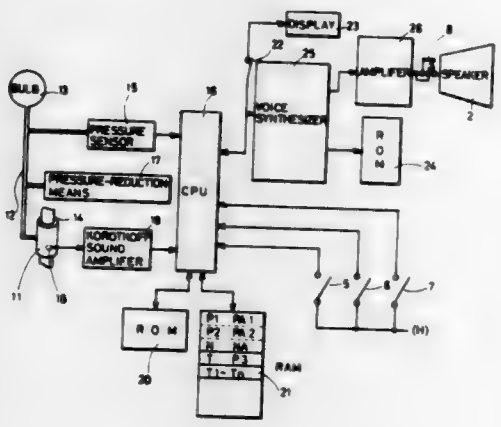
Filed Feb. 14, 1983, Ser. No. 466,136

Claims priority, application Japan, Feb. 15, 1982, 57-20297[U]; Feb. 16, 1982, 57-20861[U]; Feb. 17, 1982, 57-21913[U]

Int. Cl.³ A61B 5/02

U.S. Cl. 128—680

4 Claims



1. A sphygmomanometer comprising:

a pressure cuff;

pressure detection means for detecting the pressure in said cuff;

means associated with said cuff for detecting Korotkoff sounds;

means for determining systolic and diastolic pressure values in accordance with outputs from the pressure detection means and Korotkoff sound detection means;

memory means for storing data representing the systolic and diastolic pressure values determined by said determining means;

end detection means for detecting the end of a measuring operation;

output means for audibly outputting the data stored in said memory means representing said pressure values in response to output from the measuring operation end detection means; and

repeat signal input means for actuating said output means to audibly repeat output of the data stored in said memory means;

wherein said output means is responsive to said repeat signal input means for audibly repeating the data stored in said memory means.

4,510,943
DISPLAY INHIBITION IN AN ELECTRONIC SPHYGMOMANOMETER

Ryuichi Miyamae, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1983, Ser. No. 468,882

Claims priority, application Japan, Feb. 24, 1982, 57-26430[U]

Int. Cl.³ A61B 5/02

U.S. Cl. 128—680

8 Claims

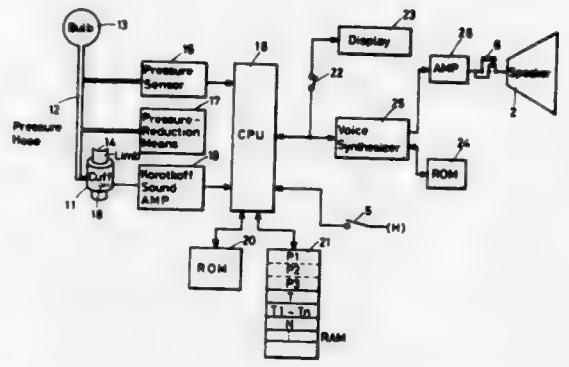
1. An electronic sphygmomanometer comprising:

pressure detection means;

determination means operatively connected to said pressure detection means for determining a person's systolic pressure and diastolic pressure;

digital display means for visually displaying said systolic pressure and said diastolic pressure; and

inhibition means for selectively preventing said person from receiving an indication of said systolic pressure and said



diastolic pressure during detection thereof by inhibiting the operation of said digital display means.

4,510,944
METHOD AND APPARATUS FOR EVALUATING RHYTHMIC OSCILLATIONS IN APERIODIC PHYSIOLOGICAL RESPONSE SYSTEMS

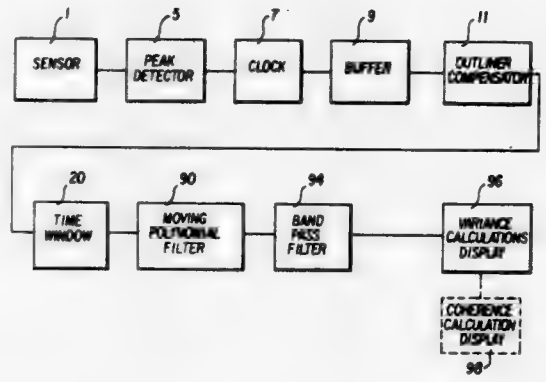
Stephen W. Porges, 1407 Grandview, Champaign, Ill. 61820

Filed Dec. 30, 1982, Ser. No. 454,536

Int. Cl.³ A61B 5/02

U.S. Cl. 128—687

35 Claims



1. A system for detecting amplitude variations in the rhythmic oscillations of heart period in a predetermined frequency band of interest, comprising:

sensor means for detecting an occurrence of an event in the cycle of a heartbeat;

timing means for determining time intervals between the occurrence of said event in successive heartbeats;

buffer means for storing said time intervals between the occurrence of said event in successive heartbeats;

means for reading out said intervals stored in said buffer means at predetermined time intervals;

first filter means responsive to the intervals read out from said buffer means, including a means for determining an aperiodic portion of said intervals read out from said buffer means and a subtraction means for subtracting said aperiodic portion from said intervals read out from said buffer means and for producing a corresponding output;

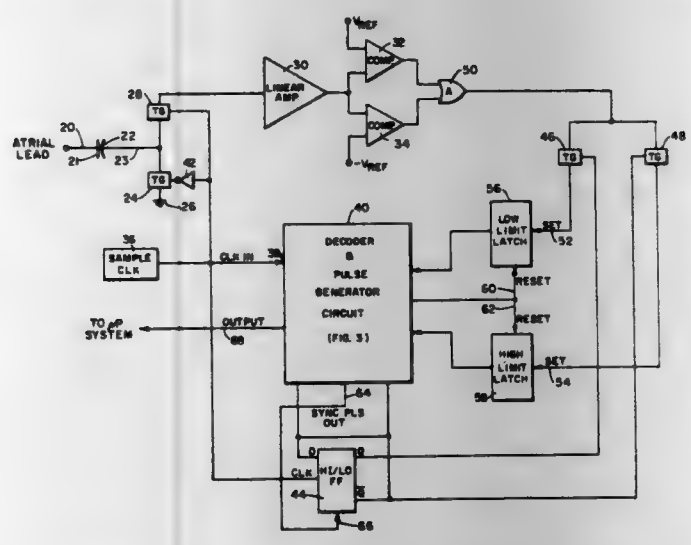
second filter means for receiving and filtering the output of said first filter means and for outputting a signal in a bandpass region determined by said predetermined frequency band of interest; and

output means for calculating the variance of rhythmic oscillations in the signal outputted by said second filter means.

4,510,945
P WAVE DETECTION SYSTEM

Francisco J. Barreras, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jul. 12, 1982, Ser. No. 397,026
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696 3 Claims



1. A system for detecting the P wave on an intracardiac lead, comprising

means for synchronously generating a test signal proportional to the signal on the cardiac lead, thus having approximately the same slew rate as the intracardiac signal,

sample timing means for establishing alternately long and short relative sample time windows,

means for resetting said test signal to a known level at the beginning of each of said sample windows,

means for registering whether the test signal exceeded a predetermined threshold during said sample windows, respectively, and

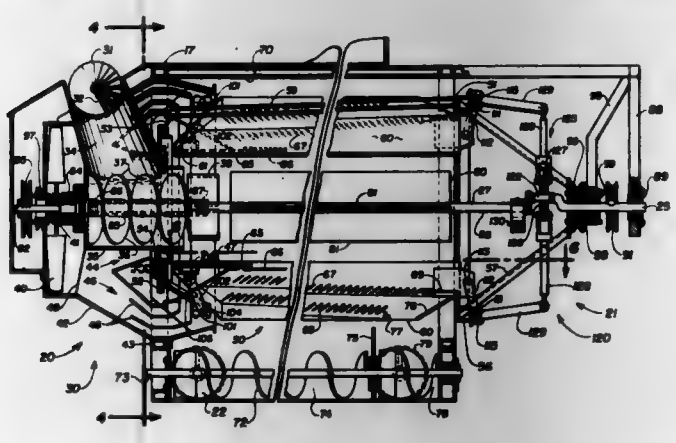
means responsive to said registering means for producing a good sample signal when said test signal exceeded the threshold during the long sample window but did not exceed the threshold during the short sample window,

whereby the good sample signal indicates that the corresponding intracardiac signal waveform was within a predetermined range of slew rates characteristic of the patient's P wave.

4,510,946
INFEED MECHANISM FOR ROTARY CLEANING DEVICE IN COMBINES

Frans J. G. C. Decoene; Gilbert J. I. Strubbe, both of Zedelgem, Belgium, and Robert R. Todd, Leola, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1982, Ser. No. 408,997
Int. Cl.³ A01F 12/44
U.S. Cl. 130—27 T 30 Claims



1. In a combine having a frame; a threshing and separating means mounted on said frame for separating threshed grain from unthreshed crop material; a crop gathering means mounted on said frame adjacent said threshing and separating means for collecting unthreshed crop material and conveying said crop material to said threshing and separating means; a rotary cleaning means for cleaning unwanted residue from said threshed grain, said rotary cleaning means including a cleaning cylinder rotatably mounted on said frame about an axis of rotation, said cleaning cylinder having sieve means rotatable about said axis of rotation for separating clean grain from unwanted residue by permitting the passage of clean grain therethrough, said sieve means being spaced radially outwardly from said axis of rotation to define an axial opening through said cleaning cylinder, and an infeed mechanism mounted forwardly of said cleaning cylinder for feeding said threshed grain into said cleaning cylinder; fan means mounted on said frame proximate to said cleaning cylinder to create a flow of air through said sieve means to assist in cleaning said unwanted residue from said threshed grain by urging said residue into an airborne state; and drive means for operatively powering said crop gathering means, said threshing and separating means, said fan means and said rotary cleaning means, an improved infeed mechanism comprising:

an infeed auger mounted for rotation, said auger having at least one flight terminating in an outwardly extending distributing paddle, said paddle being disposed within the axial opening of said cleaning cylinder and operable to distribute said threshed grain outwardly onto said cleaning cylinder, said paddle being spaced inwardly of said cleaning cylinder to permit the flow of air from said fan means through said threshed grain before being received on said cleaning cylinder, said cleaning cylinder including a grain pan positioned radially outwardly from said paddle to receive threshed grain thrown outwardly therefrom;

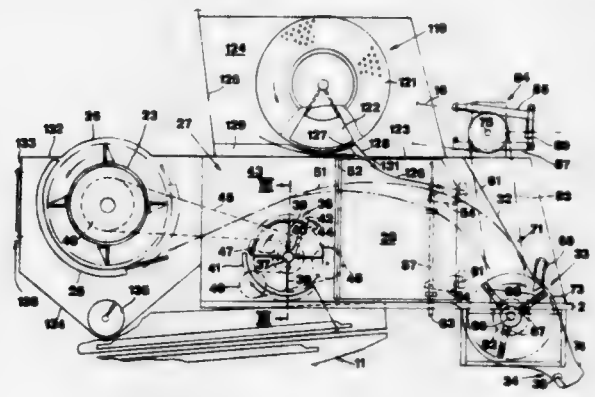
an infeed housing concentric with said infeed auger and cooperable therewith to convey threshed grain onto said at least one distributing paddle; and

grain delivery means for feeding threshed grain to said infeed auger.

4,510,947
COMBINE HARVESTER STRAW HOOD

Thierry E. G. Devriese, Brugge, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 22, 1984, Ser. No. 582,247
Claims priority, application United Kingdom, Feb. 25, 1983, 8305218
Int. Cl.³ A01F 12/00
U.S. Cl. 130—27 B 3 Claims



1. In a combine harvester having a mobile frame; threshing and separating means supported on said frame to harvest crop material fed thereto, said threshing and separating means including rotary means for propelling crop material discharged from said threshing and separating means; a straw hood mounted on said frame rearwardly of said rotary means to guide the propelled crop material for discharge from the combine harvester, said straw hood having an upper generally horizontal surface under which the crop material is propelled by said rotary means; a rotary air screen supported by said

frame adjacent and above said generally horizontal surface, said rotary air screen having a perforated surface and a stationary impervious member mounted adjacent said perforated surface; means to draw air inwardly through said perforated surface, said stationary member serving to block the flow of air through the perforated surface and permit foreign matter collected thereon to fall from the air screen, the improvement comprising:

an aperture formed in the horizontal surface of said straw hood proximate to the rearward edge of said stationary member so that the movement of air induced by the operation of the rotary air screen and the flow of propelled crop material beneath the straw hood will effect a discharge of said foreign matter through said aperture into the flow of propelled crop material; and

a deflector mounted on said straw hood along the rearward edge of said aperture to deflect said foreign matter into said aperture.

4,510,948

DISCHARGE ASSIST MEANS FOR COMBINE HARVESTERS

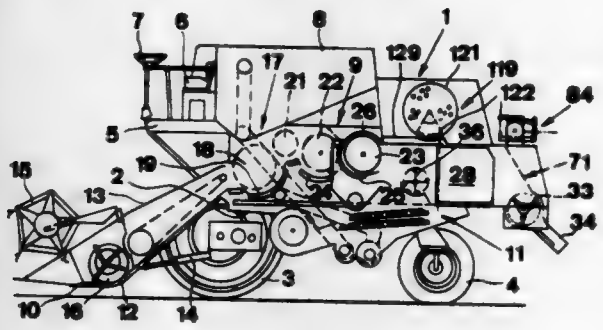
Marcel A. Dekeyzer, Brugge, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 22, 1984, Ser. No. 582,498

Claims priority, application United Kingdom, Feb. 25, 1983, 8305258

Int. Cl.³ A01F *12/00*

U.S. Cl. 130—27 R **9 Claims**



1. A combine harvester comprising a main frame adapted for movement over a field; a rotary separating mechanism transversely mounted on said main frame and being operable to separate grain from crop material by moving said crop material spirally therearound to respective ends of the separating means; means operable to project straw in a desired path for discharge from the machine through a discharge opening; rotary straw discharge assist means located below said desired path and between the separating mechanism and the discharge opening; chopping means associated with the respective ends of said separating means, but spaced therefrom, so as to be capable of receiving crop material from the separating means; and deflector means pivotable about generally vertical axes and disposed between each respective end of the separating means and the associated chopping means, said deflector means being selectively positionable to direct the flow of crop material to the chopping means from the separating means and to deflect crop material inwardly of the machine for discharge from the latter in a central windrow.

4,510,949

FEEDING PARTICULATE MATERIAL, ESPECIALLY TOBACCO

Edward G. Preston, Orpington, England, and David B. Stewart, Dundee, Scotland, assignors to Molins, PLC, London, England

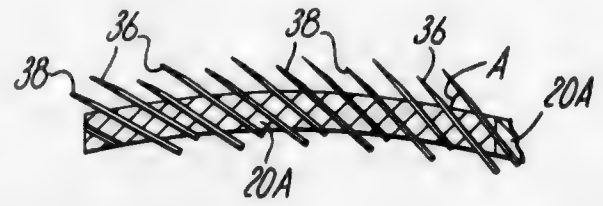
PCT No. PCT/GB82/00258, § 371 Date Apr. 25, 1983, § 102(e) Date Apr. 25, 1983, PCT Pub. No. WO83/00604, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 26, 1982, Ser. No. 491,334

Claims priority, application United Kingdom, Aug. 26, 1981, 8126005

Int. Cl.³ A24C *5/39*

U.S. Cl. 131—109 R **11 Claims**



11. Apparatus for feeding a metered stream of particulate material, including a pinned feed roller having forwardly inclined pins and arranged to feed material from a supply and past a pinned refuser roller whereby the feed roller will convey a metered stream of the material, the pins of the feed roller comprising relatively high pins which lie in obliquely extending rows between rows of relatively low pins.

4,510,950

FOAMED, EXTRUDED, TOBACCO-CONTAINING SMOKING ARTICLE AND METHOD OF MAKING SAME

Gus D. Keritsis, and Walter A. Nichols, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 457,505

Int. Cl.³ A24B *3/14*

U.S. Cl. 131—353 **17 Claims**

1. A method of making a foamed, extruded, tobacco-containing smoking article, comprising the steps of:

(a) dry blending from about 5 to about 98 wt. % of tobacco particles having a particle size of up to about 5 mesh and an OV value of from about 3 to about 20%, with from 0 to about 60 wt. % of a filler having a particle size of up to about 350 μm, and from about 2 to about 40 wt. % of a cellulosic binder selected from the group consisting of hydroxypropyl cellulose, carboxymethyl cellulose, and its sodium, potassium and ammonium salts, cross-linked carboxymethyl cellulose, and its sodium, potassium and ammonium salts, hydroxyethyl cellulose, ethyl hydroxyethyl cellulose, hydroxypropyl methyl cellulose, methyl cellulose, ethyl cellulose, and mixtures thereof;

(b) admixing the dry blend with water to form a wet blend containing from about 15 to about 50 wt. % of water; then

(c) extruding the wet blend from step (b) under extrusion conditions of temperature and pressure such that as the wet blend is extruded the moisture in said blend is converted to steam, thereby foaming the article.

4,510,951

METHOD AND APPARATUS FOR DIAGNOSIS OF HAIR FOR PERMANENT WAVING

Katsuhiro Watanabe, Tochigi; Masayuki Minei, Saitama, and Toshio Horikoshi, Tokyo, all of Japan, assignors to San-Ei Kagaku Co., L.T.D., Japan

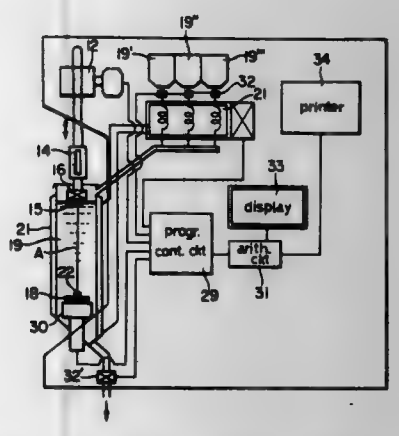
Division of Ser. No. 434,861, Oct. 18, 1982, Pat. No. 4,474,193. This application Sep. 19, 1983, Ser. No. 533,235

Int. Cl.³ A45D *7/00*

U.S. Cl. 132—7 **4 Claims**

1. An apparatus for diagnosis of hair for permanent waving comprising means capable of holding a swatch of hair in a liquid bath while fixing the hair swatch at its both ends, a

rotating member disposed on one side of said hair swatch holding means for imparting twists to the hair swatch, counter means arranged for making interlocking operation with said rotating member, tension adjusting means disposed on the



other side of said hair swatch holding means for adjusting the tension imparted to the hair swatch, and means including a movable arm to which said hair swatch holding means is connected through said tension adjusting means.

4,510,952

HAIR TREATING ARTICLE AND A METHOD OF ITS USE

Giorgos X. Gikas, Washington, D.C., assignor to The Gillette Company, Boston, Mass.

Filed May 20, 1982, Ser. No. 380,156
Int. Cl.³ A45D *2/24*
U.S. Cl. 132—37 R **7 Claims**

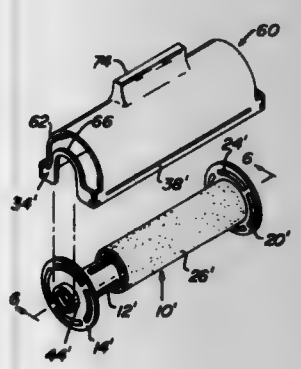
1. A flexible tubular sleeve for use in conjunction with a source of heat for the application of a treating composition to the hair, said sleeve comprising an inner layer of a liquid impermeable material and an outer reservoir layer, said reservoir layer being impregnated with a hair treating composition having a melting point of about 22°–100° C.

4,510,953

HAIR CURLER

Richard Caruso, 7801 Montgomery Ave., Elkins Park, Pa. 19117

Filed Sep. 23, 1983, Ser. No. 535,114
Int. Cl.³ A45D *2/00*
U.S. Cl. 132—40 **12 Claims**



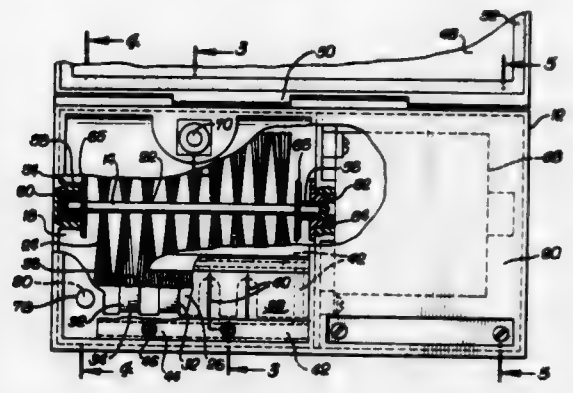
1. A hair curler for use with steam comprising a hollow perforated core, said core having an opening only at one end, a porous sleeve around said core, a rim at each end of the core, the diameter of the rim being greater than the diameter of the core, a shield which is generally semi-circular, said shield having end walls, said shield having a slot at each end, each slot receiving one of said rims so that the core is between said end walls.

4,510,954

APPARATUS AND METHOD FOR AUTOMATICALLY REMOVING FINGERNAIL POLISH

Richard J. Miller, 19009 Laurel Park Rd. #460, Dominguez Hills, Calif. 90220

Filed May 12, 1982, Ser. No. 377,381
Int. Cl.³ A45D *29/20*
U.S. Cl. 132—75 **6 Claims**



1. A device for removing fingernail polish simultaneously from a plurality of fingernails using fingernail polish removing fluid comprising:

a housing having a fluid compartment and a motor compartment, said fluid compartment receiving nail polish removing fluid;

a generally-cylindrical rotatable brush having a central core and a periphery, said brush being mounted with its axis disposed horizontally in the fluid compartment, said periphery being positionable in the polish removing fluid during rotation of the brush to wet said periphery with the fluid;

a motor mounted in the motor compartment and having a shaft connected to the central core of the brush so as to rotate the brush about its axis when the motor is energized;

means sealing the two compartments from one another so that polish removing fluid in the fluid compartment cannot leak into the motor compartment;

a top wall in part defining the fluid compartment and having an elongated opening therein parallel to the brush axis and aligned vertically with the periphery of the brush;

finger-positioning platforms extending downwardly from the top wall adjacent the side of the opening remote from the brush axis for positioning the fingernails of fingers inserted through the opening in a substantially vertical plane so that the wetted periphery of the brush brushes along the length of the fingernails and so that the inserted fingers are not immersed in the fluid;

said motor rotating in a direction so that the periphery of the brush moves generally downwardly with respect to the platforms; and

a finger-penetratable flexible member mounted on the top wall and covering the elongated opening for closing around the fingers when the fingers are inserted through the opening onto the platform and preventing polish removing fluid in the fluid compartment from splashing out of the fluid compartment through the opening.

4,510,955

FOLDABLE UMBRELLA

Terry Hermanson, New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,692
Int. Cl.³ A45B *19/00*
U.S. Cl. 135—25 R **14 Claims**

1. An umbrella comprising

a canopy,

flexible canopy supporting booms attached to said canopy at

their ends and at spaced intervals along the upper surface of said booms with the umbrella in the open condition,

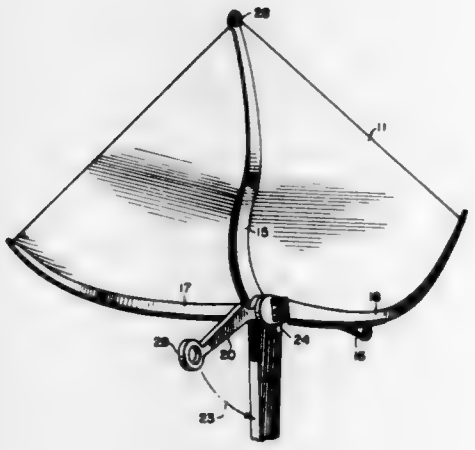
a handle portion,

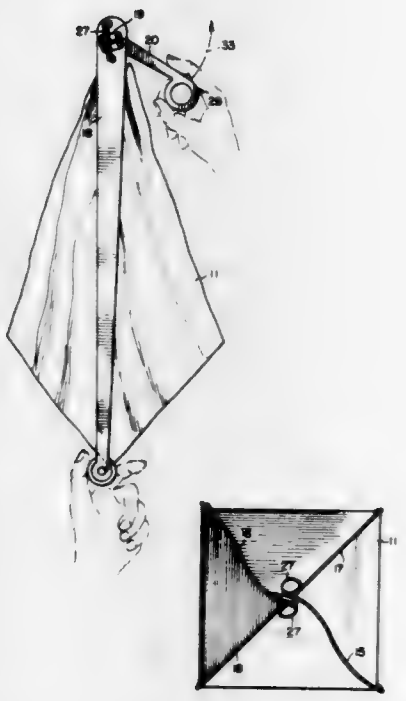
a connecting means at one end of said handle portion pivotally connecting said booms to said handle portion,

a control lever extending from and pivotally connected to said handle portion at said connecting means to pivot about an axis substantially perpendicular to the longitudinal axis of said handle portion,

at least a first one of said booms rigidly connected to said control lever to pivot at said connecting means with a pivotal movement of said control lever,

a second one of said booms pivotally connected to said connecting means in a manner to pivot freely relative to





said control lever about substantially the same perpendicular axis of rotation as said first one of said booms upon being pulled by said canopy which is pulled by rotation of said first one of said booms,

third and fourth ones of said booms hingedly connected respectively to said first and second ones of said booms and extending with the umbrella in the open condition with said first and second ones in a plane perpendicular to said third and fourth ones of said booms,

said booms and handle lying parallel to each other and extending in the same direction from said connecting means, and said control lever extending from said connecting means, when the umbrella is in the collapsed condition.

4,510,956

WALKING AID, PARTICULARLY FOR HANDICAPPED PERSONS

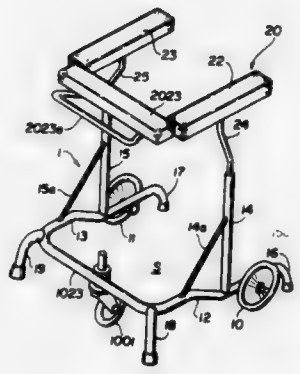
Lorraine King, 201 W. 89th St., New York, N.Y. 10024

Filed Aug. 15, 1983, Ser. No. 522,999

Int. Cl.[3] A61H *3/04*

U.S. Cl. 135—67

19 Claims



1. Walking aid for handicapped persons, having

a frame (1);

wheel means (10, 11, 1001) on the frame for rolling movement thereof over a surface (S);

and a support structure adapted for engagement by the upper extremities of the using person secured to the frame;

wherein, in accordance with the invention, the wheel means comprise

three wheels (10, 11, 1001);

the frame comprises

a lower, generally U-shaped structure having a pair of parallel legs (12, 13) and a connecting frame element (1023),

one each of the wheels (10, 11) being mounted laterally of the respective legs (12, 13) on the free end portions thereof for rotation in a plane essentially perpendicular to said surface, and about fixed axes of rotation, transverse to the U-shaped structure, the third wheel (1001) being a caster wheel means secured to the connecting element (1023) centrally thereof for rotation about an axis parallel to said surface and for swiveling about an axle which is freely movable about a vertical swivel axis,

and projecting spurs (16–19) extending downwardly and terminating short of contact with the surface (S) leaving a clearance,

two spurs (16, 17) each being positioned at one of the respective free end portions of the U-shaped structure and extending rearwardly and downwardly therefrom, and two spurs (18, 19) each being secured to one of the respective laterally spaced portions of the legs adjacent the connecting element (1023) and extending outwardly and downwardly therefrom, the lower end of each spur being positioned a slight distance above the surface to provide assurance against accidental tipping and provide braking on controlled tipping of the walking aid;

and wherein the support structure comprises

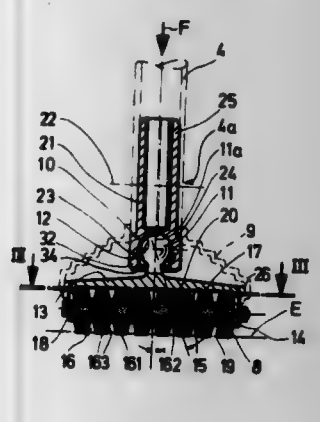
a pair of upright struts (14, 15; 24, 25) each extending upwardly from a location behind the center of a respective one of the parallel legs (12, 13) of the generally U-shaped structure,

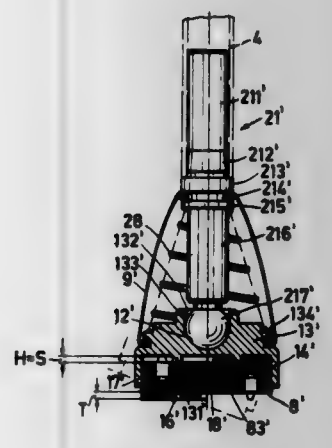
and a support surface (20) of generally U-shaped planar outline, secured to the upright struts and positioned in approximate alignment with the U-shaped structure, and adapted for supporting and partly surrounding the person.

4,510,957
RESILIENT SUPPORT FOOT FOR WALKING AIDS, PARTICULARLY CRUTCHES

Xaver Frank, Lengenwang, Fed. Rep. of Germany, assignor to S & F Orthopädietechnik GmbH, Görlaried, Fed. Rep. of Germany

Filed Jul. 28, 1982, Ser. No. 402,594
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3131027; Mar. 30, 1982, 3211732
Int. Cl.³ A45B *9/04*
U.S. Cl. 135—84 32 Claims





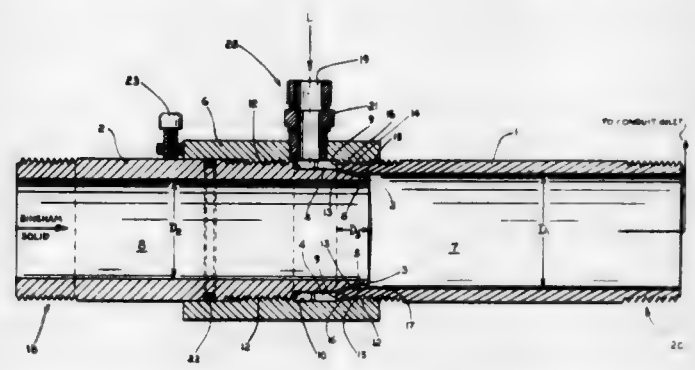
1. A resilient support foot for a walking aid comprising:
a resilient sole body having a first surface for establishing contact with the ground;
a support plate having a bordering skirt and a support plate face, the sole body being loosely fitted within the skirt, the skirt providing lateral support for the sole body;
a second sole body surface remote from the first surface cooperating with the plate face to support the sole body;
universal joint means for linking the support plate to a support shaft of the walking aid; and
fastening means for releasably securing the sole body within the skirt, the fastening means penetrating through the skirt and through the sole body.

4,510,958
APPARATUS AND METHOD FOR TRANSFERRING A BINGHAM SOLID THROUGH A LONG CONDUIT

David L. Coursen, Mercersburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 375,543, May 6, 1982, Pat. No. 4,462,429. This application Apr. 16, 1984, Ser. No. 590,839
Int. Cl.³ F17D *1/16*
U.S. Cl. 137—13 35 Claims

1. A method of transferring a Bingham solid through a conduit comprising:
(a) exerting a pressure on the Bingham solid to force it axially through an upstream cylindrical chamber having a substantially uniform diameter, from which the Bingham solid moves axially into and through an adjoining downstream cylindrical chamber having a substantially uniform diameter larger than that of the upstream chamber, and from which it then moves into and through a conduit of substantially uniform diameter substantially equal to that of said downstream cylindrical chamber; and
(b) simultaneously injecting a lubricating fluid into an annular chamber coaxial with said upstream and downstream cylindrical chambers, said annular chamber being connected to said downstream chamber by an annular passageway coaxial with said cylindrical chambers, said annular passageway having a constricted annular throat portion of adjustable width and a wider annular exit portion that ends facing in the downstream direction in a plane that delimits said cylindrical chambers and is normal to their common axis, said annular exit portion having an

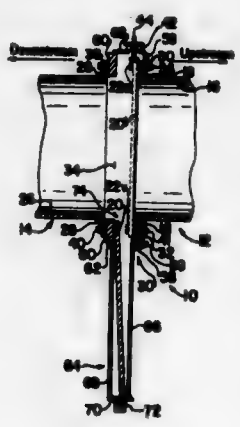


outside diameter substantially equal to the diameter of said downstream chamber and an inside diameter substantially greater than the diameter of said upstream chamber;
(1) the rate at which the Bingham solid is forced through said chambers and conduit, (2) the rate of injection of said lubricating fluid, and (3) the width of said constricted annular throat being selected to give a lubricating fluid flow rate which is no greater than about 5% of the Bingham solid flow rate, on a weight basis, and a drag force on the Bingham solid moving through a given section of said conduit which is no greater than the motive force of gravity on the Bingham solid when said given section of conduit is made vertical.

4,510,959
METHOD FOR INSTALLATION OF AN EXTENDED HEADER

Ward F. Gidick, West Newton, Pa., assignor to Rayn. nd Kaiser Engineers Inc., Oakland, Calif.

Division of Ser. No. 375,392, May 6, 1982,. This application Feb. 21, 1984, Ser. No. 582,098
Int. Cl.³ F16L *23/00*
U.S. Cl. 137—15 9 Claims



1. A method for extending in a downstream direction an existing fluid containing pipe having an annular flange on which a terminal closure plate is retained in juxtaposed relation by a plurality of peripherally arranged, downstream oriented bolts, each of which bolts passes through a pair of aligned longitudinal aperatures in the flange and closure plate to engage a retaining nut on its downstream end and wherein a portion of said pairs of aligned longitudinal aperatures are

designated as even retaining positions and the remainder of said pairs of aligned aperatures are designated as odd retaining positioning, said method comprising the steps of:

(a) replacing the downstream oriented bolts and nuts engaged therewith at the even retaining positions with upstream oriented bolts;

(b) independently fixing to the closure plate the nuts engaged with the downstream oriented bolts at the odd retaining positions and then removing said bolts from the odd retaining positions;

(c) fixing an annular pipe connecting apparatus at its upstream end to the annular flange of the existing pipe by first engaging said apparatus with downstream oriented bolts emplaced at the odd retaining positions and then engaging said bolts with the nuts independently fixed to the closure plate in step (b);

(d) replacing the upstream oriented bolts emplaced at the even retaining positions in step (a) with downstream oriented bolts engaging the annular pipe connecting apparatus but not engaging the closure plate;

(e) fixing, at its downstream end, the annular pipe connecting apparatus to an extension pipe; and

(f) replacing the downstream oriented bolts installed at the odd retaining positions in step (c) with shorter downstream oriented bolts not engaging the closure plate or the nuts independently fixed thereto in step (c), such that the closure plate may be disengaged and displaced from the existing pipe.

4,510,960

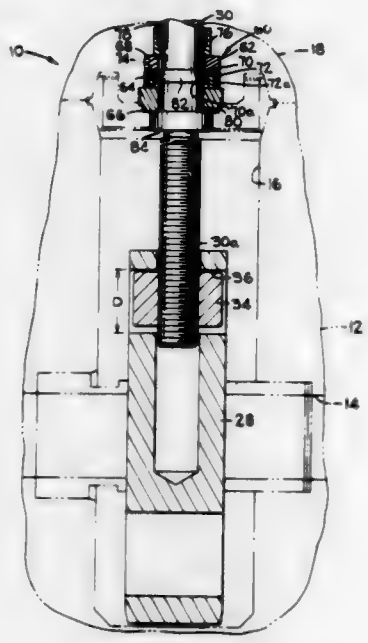
VALVE STEM-TO-BONNET BACKSEAT

Charles E. Jennings; Claud C. Barrington, both of Houston; Lien-Yan Chen, Spring; Bob C. Hopkins, Houston; John N. McIntyre, Spring, and Alfred P. Regitz, Houston, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 30, 1983, Ser. No. 538,002

Int. Cl.³ F16K *41/16, 17/38*

U.S. Cl. 137—75 **21 Claims**



1. A valve comprising a body with a flow passage extending therethrough and a chamber intersected by said flow passage;

a valve closure element positioned in said chamber to control flow through said flow passage;

a bonnet secured to said body and having a bore communicating with said chamber;

a valve stem extending through said bore and connected to said closure elements; and

means for backseating said stem on said bonnet in response to axial movement of said stem and respect to said bonnet, said backseating means comprising an annular metal seal element of generally U-shape in cross-section, said seal element including inner and outer annular sealing lips having a round sealing surface configuration, said inner and outer lips functioning to establish a metal-to-metal seal with said valve stem and said bonnet.

4,510,961

PNEUMATIC CONTROLLER

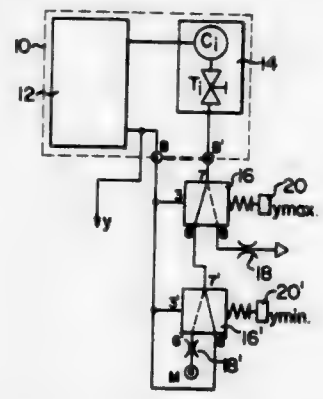
Vladimir Multrus, Limeshain, Fed. Rep. of Germany, assignor to Honeywell GmbH, Offenbach, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,000

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218230

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—86 **8 Claims**



1. A pneumatic controller having automatic switching of its time behavior as a function of a control pressure, said controller comprising:

pneumatic controller means having an output for providing a control pressure in response to a controlled variable, said pneumatic controller means having a feedback input;

pneumatic integrator means connected to said feedback input and having an integrator input for establishing an integrating feedback path between said integrator input and said feedback input; and,

relay means connected to said pneumatic controller means output, to said integrator input and to atmosphere for normally connecting said integrator input to said pneumatic controller means output and for connecting said integrator input to atmosphere when said control pressure attains an upper limit.

4,510,962

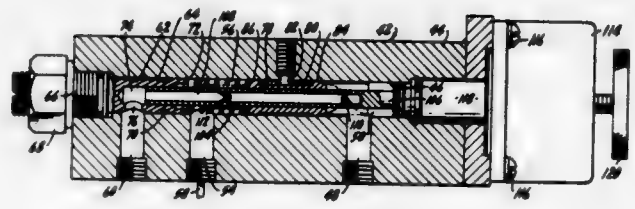
PRECISE PRESSURE REGULATOR FOR A VARIABLE OUTPUT PUMP

Philip J. Mott, Des Plaines, and Kenneth R. Gallaher, Lake in the Hills, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,553

Int. Cl.³ F04B *49/08*

U.S. Cl. 137—102 **17 Claims**



1. A precise pressure regulator suitable for use with a variable output pump, said precise pressure regulator comprising a housing defining a bore having pressure and relief zones, a

pressure port communicating with said pressure zone and adapted for communication with a pump pressure to be regulated, a relief port communicating with said relief zone and adapted for communication with a reservoir, a control port adapted for communication with a pump control pressure, follower and spool members movable in said bore, one of said members defining passage means including a first hole for communicating said pressure zone with said control port and a second hole for communicating said control port with said relief zone, and biasing means providing a force tending to move said follower member in a direction which blocks said first hole and unblocks said second hole, pressure in said pressure zone providing a force tending to move said follower member in a direction which unblocks said first hole and blocks said second hole, said members being constructed and arranged such that the position of said spool member in said bore determines the level at which pressure is regulated.

4,510,963

PROPORTIONAL-FLOW ELECTROHYDRAULIC CONTROL

Glen T. Presley, Angola, Ind., and Lloyd L. Lautzenhiser, Ridgecrest, Calif., assignors to Electro-Hydraulic Controls, Inc., Angola, Ind.

Division of Ser. No. 339,483, Jan. 15, 1982, Pat. No. 4,430,486. This application Nov. 21, 1983, Ser. No. 553,561

Int. Cl.³ G05D *11/12, 16/20*

U.S. Cl. 137—117 **31 Claims**

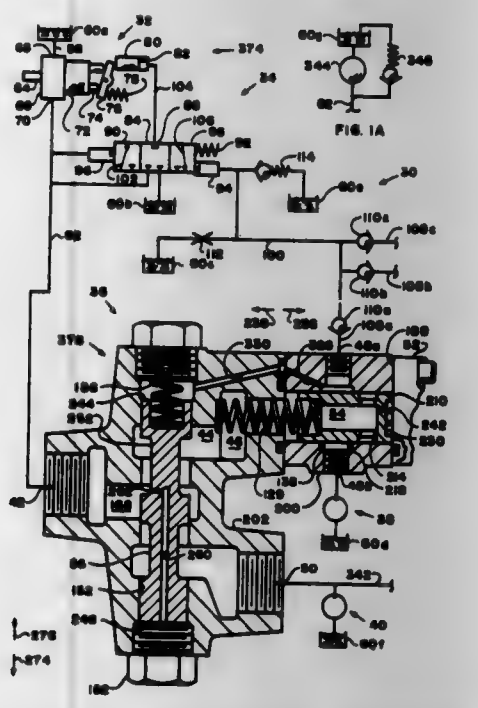


FIG. 1A

1. An electrohydraulic control which comprises a first port (42 or 46);

a second port (50, 172 or 48*b*);

first valve section means (122); comprising a flow path (240), and comprising a first valving element (54) that is selectively positionable between minimum-conductance (FIG. 2) and maximum-conductive (FIG. 6) positions, for selectively controlling the conductance of said flow path and for developing a differential pressure through said flow path that is proportional both to a selected conductance and to the instantaneous rate of fluid flow through said flow path;

second valve section means (126), being operatively connected to said first and second ports, being operatively connected to said first valve section means, and comprising a second valving element (56), for selectively positioning said second valving element and for controlling fluid flow from said first port to said second port in response to said differential pressure;

means (129) for urging said first valving element to said minimum-conductance position with a first offset force;

electrical force-motor means (52), operatively engaging said first valving element, for receiving an effective driving voltage, for applying a second offset force to said first valving element that is equal in magnitude and opposite in direction to said first offset force in response to an effective null voltage applied to said force-motor means, and for moving said first valving element from said minimum-conductance position toward said maximum-conductance position proportional to the portions of said effective driving voltages applied to said force-motor means that are in excess of said effective null voltage; and

electronic control means (382), having offsetting means (622), and being operatively connected to said force-motor means, for receiving a varying input signal (410), for producing a cyclic driving voltage (406) whose effective voltage is greater than a predetermined proportional relationship to said input signal by a predetermined effective offset voltage, and for applying said cyclic driving voltage to said force-motor means for use as said effective driving voltage.

4,510,964

VALVE FOR PRESSURIZED CYLINDERS FOR LIQUIFIED GAS

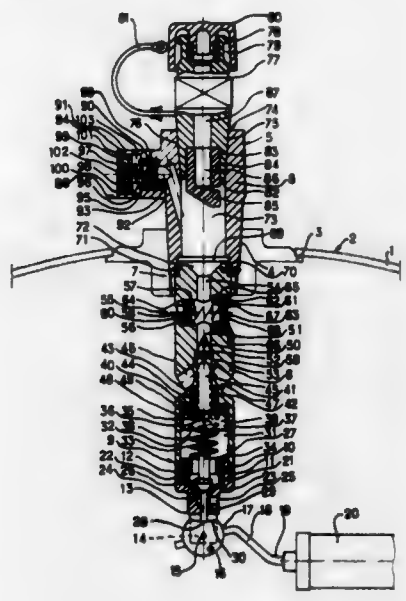
Jean Wendling, 490, Rue Jeanne d'Arc, 67410 Drusenheim (Bas-Rhin), France

Filed Jun. 29, 1983, Ser. No. 509,185

Claims priority, application France, Feb. 9, 1983, 83 02169

Int. Cl.³ F04F *5/54*

U.S. Cl. 137—210 **19 Claims**



1. A valve for a pressurized cylinder for liquified gases, such as butane, propane, and similar gases, comprising in a combination: first safety means for preventing said cylinder from being overfilled with gas in a liquid phase; means for releasing gas in a gaseous phase which is intended for ordinary use; flow shut-off means, which shall close whenever the flow of gas in a gaseous phase exceeds a predetermined level; and second safety means situated ahead of said shut-off means according to the direction in which gas is released, for opening whenever pressure from gas stored within the cylinder exceeds the operating pressure.

4,510,965

ELASTOMER COATED BUTTERFLY VALVE BODY

Bernard Peroux, Toul; Jean Santy, Pont-a-Mousson, and Jean Sutter, Villers les Nancy, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Mar. 25, 1982, Ser. No. 361,634

Claims priority, application France, Apr. 27, 1981, 81 08513

Int. Cl.³ F16K *1/22*

U.S. Cl. 137—375 **3 Claims**

1. A butterfly valve body (1) for a butterfly valve having an

axle and a control shaft, said body being annular and comprising, diametrically opposed cylindrical passages (12,13) for the axle and the control shaft, said body being completely covered on both its inside and its outside, including the passages (12,13), by a coating (2) molded on the body and made of a flexible single elastomeric material of uniform type and having the



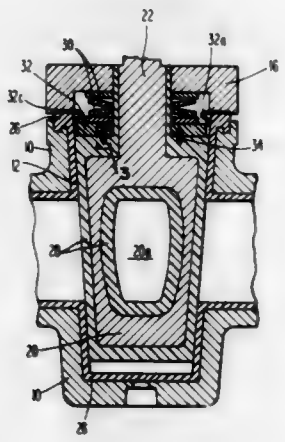
same characteristics and the same hardness at all points of the body (1), said coating forming a single continuous skin over the entire body of the valve, and said coating (2) forming thickened collars (16) in widened cylindrical bores (14) in the radially interior ends of the passages (12,13), and wherein the collars (16) have ends (17) which face the interior of the body (1) and which are spherically concave.

4,510,966

PLUG VALVE WITH FLOATING STEM SEAL

William Parsons, Jr., Boothwyn, Pa., assignor to Garlock, Inc., Longview, Tex.

Filed Mar. 28, 1983, Ser. No. 479,578
Int. Cl.³ F16K *27/12*
U.S. Cl. 137—375 **15 Claims**



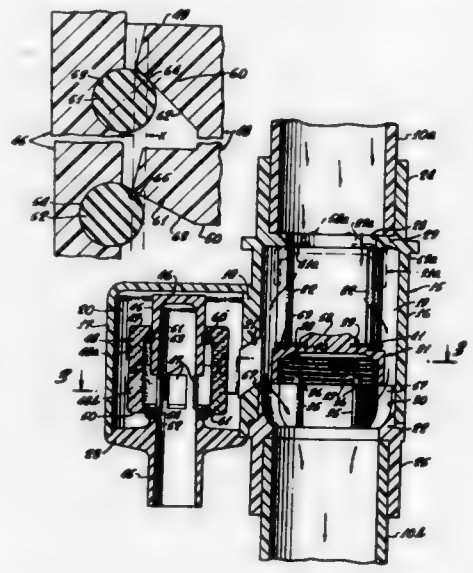
1. In a plug valve of the type comprising a tapered plug biased into engagement with a correspondingly tapered bore formed in a valve body, whereby a seal is formed between said plug and said bore, said plug being rotatable between open and closed positions by means of a stem extending out of said body, a stem seal additionally being provided, the improvement comprising said stem seal being formed by a ring seal member captured in mating annular grooves formed in said plug and in a floating seal member, said floating seal member being biased axially into engagement with said ring seal member and with said plug, whereby axial movement of said plug does not destroy said stem seal, and said ring seal member being biased radially outwardly into engagement with said floating seal member and with said plug.

4,510,967

ANTI-BACKFLOW VALVE FOR THERAPY TUBS AND THE LIKE

Raymond G. Spinnett, Santa Ana, Calif., assignor to KDI American Products, Inc., North Hollywood, Calif.

Filed Jun. 20, 1983, Ser. No. 505,786
Int. Cl.³ A61H *9/00*
U.S. Cl. 137—389 **15 Claims**



1. An anti-backflow valve adapted to be installed in a pipe to permit gas flow in one direction and to preclude flow of a liquid in the pipe in the opposite direction, said valve comprising:

(a) a housing having a gas inlet, a gas outlet, and a chamber communicating with said inlet and outlet;

(b) means for preventing fluid flow outwardly through said inlet;

(c) means for venting said chamber in response to a pressure therein greater than a predetermined relief pressure; and

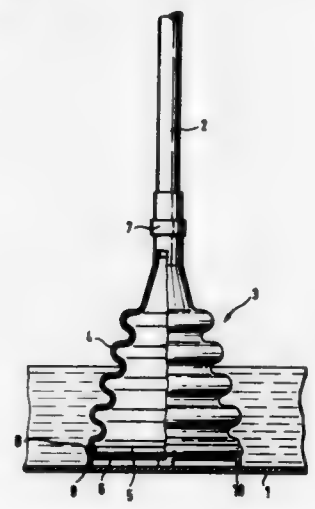
(d) means for draining said chamber in response to the presence of liquid therein above a predetermined level, said means for venting said chamber comprising said means for draining said chamber.

4,510,968

SUCTION DEVICE

Karl Rau, Mühlheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,416
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206721; Jul. 27, 1982, 3227929
Int. Cl.³ F03B *11/00*; F17D *1/00*
U.S. Cl. 137—590 **17 Claims**



1. In a suction device for a fuel feed unit in a fuel tank, the

suction device having a rigid suction tube, on which tube there is arranged a suction head, the latter being formed with a suction opening provided with a screen and being held under resilient pretension against a bottom of the fuel tank, the improvement wherein

said suction head comprises a conically widening elastic bellows having its large said suction opening facing the bottom,

said screen is arranged at said suction opening,

said screen has a rigid radially directed circumferential edge region snapable into the bellows,

said bellows has an inner wall defining the suction opening of the bellows, and

said inner wall is approximately cylindrical and has a radially directed annular groove, said radially directed circumferential edge region of the screen is joinable into said radially directed annular groove.

4,510,969

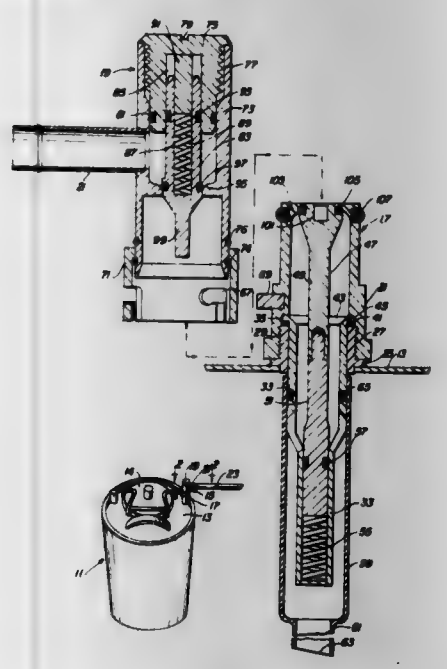
CONNECTOR FOR PRESSURIZED SOURCE OF BEVERAGE CONCENTRATE

Joseph J. Rodth, Pleasant Valley, Conn., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jan. 15, 1982, Ser. No. 339,717

Int. Cl.³ F16L *37/28*

U.S. Cl. 137—614.05 **1 Claim**



1. A separable connector for releasably securing a pressurized source of concentrate to a line leading to a dispenser valve comprising:

a conduit tube to receive concentrate from the pressurized source;

a first poppet valve retainer mounted in said conduit tube, a larger diameter portion sealingly contacting said conduit tube and a smaller diameter portion extending downwardly into said conduit tube;

a first bias spring located in the bottom of said smaller diameter portion of said first retainer;

a first poppet valve actuating member extending into said smaller diameter portion of said first retainer to contact said first bias spring;

fluid-tight seal means between said first actuating member and said smaller diameter portion;

at least one relatively large opening having sloped sides to minimize congregation of pulpy concentrate extending to the interior of said retainer;

an opening in the end of the larger diameter portion of said retainer having sloped sides;

a first housing in which said first poppet valve retainer is mounted;

a fitting secured to the pressurized source of concentrate, said first housing releasably attached to said fitting;

an extending shoulder at the other end of said first housing forming a first valve seat;

sealing means adjacent the end of said first actuating member away from said first bias spring to engage said first valve seat when said first poppet valve is closed;

a second housing;

a rotatable slip ring mounted on said second housing;

at least one stepped opening formed in said slip ring;

at least one projecting pin on said first housing to fit into said stepped opening to engage said first and second housings;

a second poppet valve retainer releasably fastened in said second housing;

a generally cylindrical opening formed in said second retainer;

a second poppet valve actuating member extending into the opening in said second retainer;

sealing means to preclude concentrate obtaining access to the opening in said second retainer between said second actuating member and said second retainer;

a generally cylindrical opening in said second actuating member extending the major portion of the length of said second actuating member;

a second bias spring located in the opening in said second actuating member;

a plunger located in the opening in said second actuating member over said bias spring;

an extending shoulder on the interior of said second housing forming a second valve seat;

sealing means on the exterior of said second actuating member to engage said second valve seat when said second poppet valve is closed;

a projecting arm on the end of said second actuating member; and

a chamber on the end of said first actuating member to receive said projecting arm on said second actuating member.

4,510,970

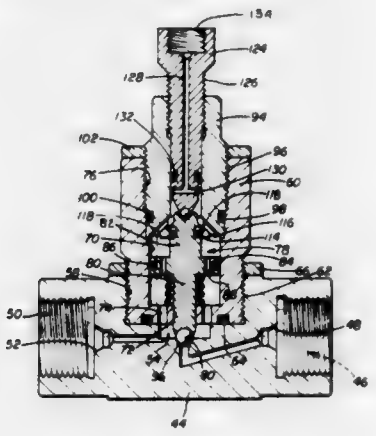
DUAL SEAL IN-LINE TEST VALVE

Terry G. Young, Longview, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 10, 1983, Ser. No. 456,900

Int. Cl.³ G01L *27/00*

U.S. Cl. 137—625.4 **4 Claims**



1. A test valve structure for closing a first fluid pressure source acting on a valve means and communicating an alternate fluid pressure source to act on the valve means for testing the valve means comprising;

a. a test valve for positioning between the first fluid pressure source and the valve means to be tested, said test valve including a body having fluid inlet and outlet passageways communicating with a valve chamber having a valve seat therein;

b. an elongated housing secured to said body and having a central bore therein in fluid communication with the valve chamber, the central bore having an enlarged diameter outer bore portion adjacent a restricted diameter inner

bore portion relative to and communicating directly with the valve chamber, said housing having a bottom portion bordering the valve chamber with a plurality of passages circumferentially located about the inner bore portion in fluid communication between the valve chamber and the outer bore portion of the central bore;

c. a piston mounted within the central bore of said housing having inner and outer end portions relative to the valve chamber connected by an intermediate radial flange of an enlarged diameter, the radial flange fitting closely within the enlarged outer bore portion of said housing and having a plurality of circumferentially spaced ports extending through the enlarged portion of the flange with longitudinal axes running generally parallel with the longitudinal axis of the central bore, the inner end portion of said piston fitting closely within the restricted diameter inner bore portion of said housing and having a valve member on its innermost end extending within the valve chamber of said body, said piston being movable between a projected seated position of the valve member on the valve seat within the valve chamber to block fluid flow between the inlet and outlet passageways and a retracted unseated position of the valve member permitting fluid flow between the inlet and outlet passageways;

d. an annular plug mounted within the central bore of said housing outwardly of said piston with respect to the valve chamber having an axial bore extending therethrough and an inwardly bottom planar surface extending radially of the axial bore with a circumferential groove formed therein intermediately between the axial bore and an outer perimeter of said plug, said plug having a plurality of conduits in fluid communication between the axial bore and the circumferential groove, the axial bore receiving the outer end portion of said piston for movement between the seated and unseated positions of the valve member of said piston;

e. a spring mounted within the outer bore portion of said housing and urging said piston continuously into the retracted unseated position of the valve member so that the flow of fluid is maintained between the inlet and outlet passageways through the valve chamber, the radial flange of said piston contacting the bottom planar surface of said plug and forming a metal-to-metal primary seal such that fluid communication is blocked between the ports of said piston and the circumferential groove of said plug to close off fluid communication to the alternate fluid pressure source from the first fluid pressure source, said piston being movable to a seated position of the valve member breaking the primary seal between the radial flange of said piston and the bottom planar surface of said plug such that fluid communication is opened between the circumferential groove of said plug and the ports of said piston to allow fluid communication from the alternate fluid pressure source to the valve means to be tested; and

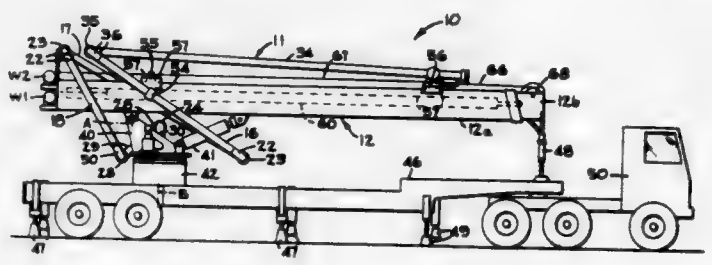
f. an annular sealing means about the outer end portion of said piston adjacent its outermost end providing a secondary seal between said piston and the axial bore of said plug such that when said piston is in its retracted position said annular sealing means is positioned outwardly of the conduit openings in the axial bore to block fluid communication between the conduits and the axial bore of said plug outwardly of said annular sealing means, said annular sealing means being positioned inwardly of the conduit openings in the axial bore when the valve member is seated in the seated position of the valve member to allow fluid communication between the axial bore and the conduits of said plug for testing of the valve means.

4,510,971

CIRCUITRY FOR OPERATING AN EXTENDIBLE BOOM AND A SERVICE LINE

Philip R. Bunnelle, Santa Clara, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 22, 1983, Ser. No. 516,232
Int. Cl.³ F16L *3/00*; F15B *15/26*
U.S. Cl. 137—615 **13 Claims**



1. A hydraulic circuit for extending and retracting a telescoping service line and for independently extending and retracting a telescoping boom for supporting said service line, said circuit comprising:

a hydraulic ram having first and second input ports, said hydraulic ram being connected to said boom for extending and retracting said boom;

first and second winches each having braking means to lock said winches against rotational movement in a first direction unless a releasing pressure is applied to said means;

first cable means connected between said first winch and an outer end of said service line for extending said service line;

second cable means connected between said second winch and said outer end of said service line for retracting said service line;

means for releasing a first braking means to allow said first winch to rotate in a first direction and to unwind a portion of said first cable means when said boom is being extended; and

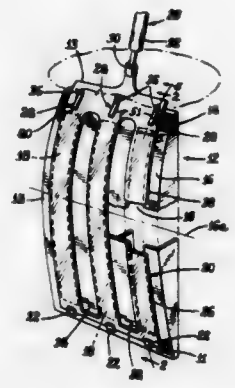
means for applying a pressurized fluid to energize said first winch causing said first winch to apply to take up force to said first cable and for simultaneously applying said pressurized fluid to said second braking means to allow said second winch to unwind said second cable and to extend said service line when said boom is in an extended position.

4,510,972

BOW ACTION VALVE

Richard L. Creedon, San Diego, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed Sep. 28, 1982, Ser. No. 425,568
Int. Cl.³ F16K *7/12*
U.S. Cl. 137—625.28 **15 Claims**



1. A flow control valve apparatus for controlling the flow of material comprising

a valve body having a substantially parabolic curved surface with at least one orifice,

resilient plate means comprising a flat metal plate adapted to be bowed into a substantially parabolic curved shape and having two opposite ends and a substantially impervious surface therebetween,

means for mounting said resilient metal plate relative to said valve body with said substantially impervious surface opposite said orifice, with one of said opposite ends secured at a substantially fixed location relative to said valve body, and with the other of said opposite ends free to move relative to said valve body with at least a component of motion in the direction of said substantially fixed opposite end, and

means for applying an endwise compressive force to said metal plate for moving said free opposite end with a component of motion in the direction of said fixed opposite end to bow said resilient plate means so as to alter the curvature of said resilient plate and thereby vary the distance between said substantially impervious surface and said valve body to control the flow of material through said orifice, said metal plate being bowed into a substantially parabolic shape to seal against the substantially parabolic curved surface on said valve body.

4,510,973

HYDRAULIC CONTROL VALVES

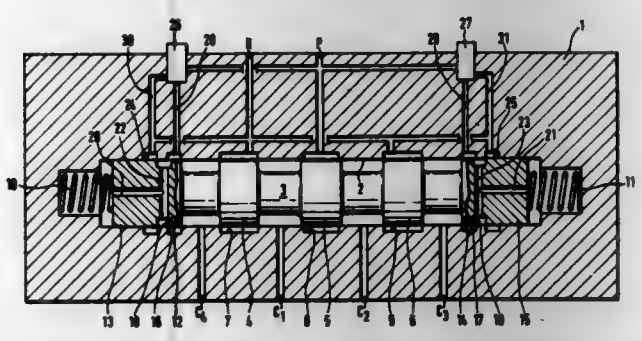
Spyros Balaskas, Bremen, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,200

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150252

Int. Cl.³ F15B *13/06*

U.S. Cl. 137—625.64 **7 Claims**



2. A control valve having a housing being provided with a bore further having a pair of input ducts being under different pressure and leading to said bore, and still further having a second pair of output ducts there being a slide element slidably disposed in the bore the improvement comprising:

central portions of the slide element and of the bore being constructed for causing the first pair of ducts to be conductively connected to the second pair of ducts at an order depending upon the axial position of the slide element;

the ends of the slide element being constructed as pistons;

means including a pair of precontrol valves included in the control valve housing and constructed for providing actuating pressure to the slide element for shifting it axially to one side or the opposite side depending upon which one of the precontrol valves is actuated thereby disabling the respective other precontrol valve from applying pressure for shifting the slide element in the opposite direction; and

additional duct means including a secondary output receiving particular pressure conditions upon actuation of one of the precontrol valves as a secondary valve, depending upon the previously attained axial position of the slide element and further dependent upon actuation of one of the precontrol valves as primary control element.

4,510,974

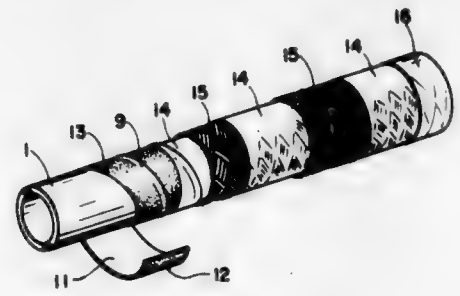
FLUID CONVEYING HOSE

Takeshi Natori; Yoji Kobayashi; Shigetaka Watanabe; Katsumi Shimizu; Ikuei Matsumura; Yoshihiro Namekawa, and Satoshi Miyanaga, all of Ibaragi, Japan, assignors to Hitachi Cable Ltd., Tokyo, Japan

Continuation of Ser. No. 180,176, Aug. 21, 1980, abandoned. This application Nov. 8, 1982, Ser. No. 440,048

Int. Cl.³ F16L *9/16*

U.S. Cl. 138—137 **10 Claims**



1. A fluid conveying hose comprising:

an inner layer of plastic;

an impermeable layer formed on said inner layer, said impermeable layer being made of a material which is lower in fluid permeability than that of said inner layer, said impermeable layer comprising a plastic film having an overlapping seam and having a surface which is integrally evaporated with a metal film;

a first plastic coating layer and a first reinforcing layer of fibers formed on said impermeable layer; and

an outermost coating means adapted to resist battery acid and comprising a battery acid resistant material.

4,510,975

WOVEN FRINGED TEXTILE PRODUCT AND A METHOD FOR MAKING SAID MANUFACTURING PRODUCT

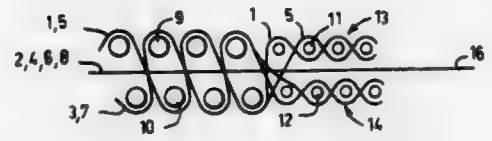
Heimo K. Ojanperä, Kp 5, 62900 Alajärvi, Finland

Filed Mar. 31, 1983, Ser. No. 480,708

Claims priority, application Finland, Apr. 5, 1982, 821190

Int. Cl.³ D03D *3/00*

U.S. Cl. 139—384 R **2 Claims**



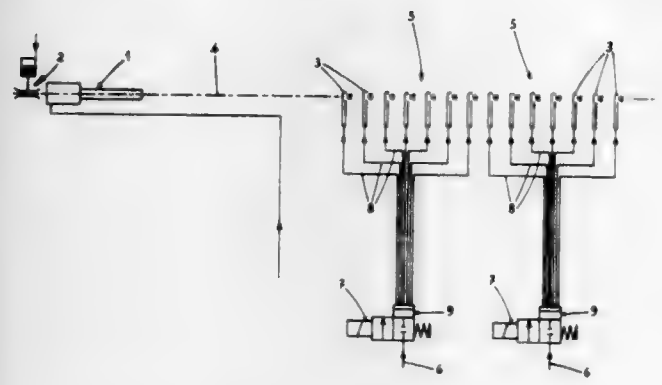
1. A woven textile product having fringes on the edges and, on each side of a plane defined by supporting warp threads, weft threads which are bound to each other by means of binding warp threads crossing said plane, edges of the product being provided with two adjoining edge strips which are folded over to form a selvedge, said edge strips being formed such that in the edge area of the product, a part of the binding warp threads binds the weft threads on one side of said plane defined by the supporting warp threads to each other and the remainder of the binding warp threads binds the weft theads on the opposite side of said plane to each other, the supporting warp threads not included in said edge strips extending between said edge strips beyond said selvedge as fringes.

4,510,976

FLOW DISTRIBUTOR FOR FLUID CIRCUIT AND ITS APPLICATION TO SHUTTLELESS LOOMS WITH PNEUMATIC INSERTION OF THE WEFT

Albert H. Deborde, and Gilles Grandvallet, both of Bourgoin Jallieu, France, assignors to Saurer Diederichs (Societe Anonyme), Bourgoin Jallieu, France

Filed Oct. 13, 1983, Ser. No. 541,669
Claims priority, application France, Oct. 26, 1982, 82 18360
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **12 Claims**



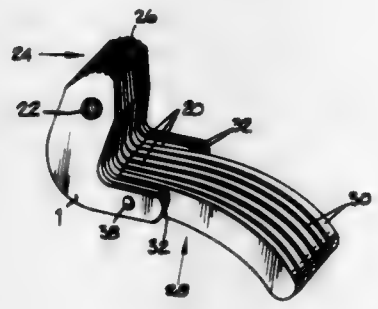
1. A flow distributor for a compressed air fluid circuit, comprising a body of revolution with an annular inner chamber defined by an inner circumferentially continuous conical wall and an outer circumferentially continuous frustoconical wall centered on a common axis, the annular chamber connecting a fluid inlet orifice disposed along said axis at one end of said body opposite the point of the conical wall, said body being provided with a plurality of axial outlet passages distributed in a circular array concentrically and at regular angular intervals around the central axis at an opposite end of said body remote from the central inlet orifice and communicating directly with said chamber.

4,510,977

APPARATUS FOR APPLYING A FORCE

John E. Crowley, Boulder, Colo., assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Filed Jul. 21, 1983, Ser. No. 515,593
Int. Cl.³ B21F *9/00*
U.S. Cl. 140—123 **3 Claims**



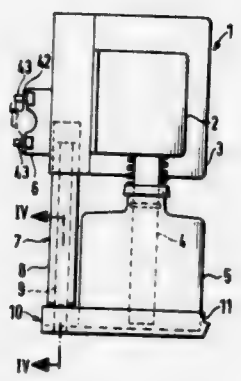
1. Apparatus for applying a substantially equal force to an object comprising:
a fixed base having a slot adapted to support an object having longitudinal and transverse directions;
cam gripping means comprising a plurality of levers;
means pivotally mounting said plurality of levers on said fixed base;
each of said levers having a portion extending from said pivot means in one direction, each of said portions having a gripping surface which in operative position faces said slot of said fixed base;
each of said levers having an arm extending from said pivot means in a direction opposite to said one direction so that an independent force may be selectively applied to each of said arms to pivot each of said levers around said pivot means and to move said gripping surface of each of said portions toward said slot of said fixed base to apply said force to an object which may be supported therein; and
said pivot means holding said arms in an assembled relationship but permitting relative movement between said arms to compensate for uneven wear of said gripping surfaces on said portions comprising:
means defining an opening in each of said arms;
a pin extending through each of said openings;
means adjacent each end of said pin for holding said pin in its relationship extending through said openings; and
said pin having a cross-sectional area substantially less than the cross-sectional area of each of said openings so that said pin is loosely fitted in each of said openings so that said arms may be moved relative to each other in response to said force.

4,510,978

DOSING APPLIANCE

Hans Arens, Wertingen, Fed. Rep. of Germany, assignor to Grunbeck Wasseraufbereitung GmbH, Hochstadt, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,268
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210839
Int. Cl.³ B65B *31/06*
U.S. Cl. 141—65 **18 Claims**

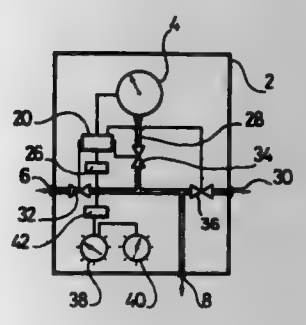


18. A dosing appliance comprising a housing; a pump means within said housing; a suction pipe extending from said pump means downwards out of said housing; fastening means for fixedly mounting said housing; and supporting means for supporting a dosing-medium vessel, wherein said supporting means comprises a supporting element for receiving the dosing-medium vessel and a supporting device extending downwards from said housing and connecting said supporting element with said housing, wherein the length of said supporting device is adjustable, whereby the distance of said supporting element from said suction pipe may be adjusted to a predetermined value and wherein said supporting element is adjustable to a first position, in which the distance between said supporting element and said suction tube is at least equal to the height of a dosing-medium vessel to be received, and to a second position, in which said suction tube extends sufficiently far into said dosing-medium vessel, said supporting device comprising a guide tube fixedly connected to said housing and a moveable tube slideable in said guide tube, a guide part connected to said guide tube, said guide part having two engagement noses which project on opposite sides, sloping planes extending from the bottom upwards in relation to one another and horizontal retaining planes, said supporting element having first and second pivotal latches having pawls, said pawls interacting with said engagement noses to lock said supporting means in a fixed position, and said latches being pivotally moveable to permit movement of said supporting means.

4,510,979
APPARATUS FOR CONTROLLING THE INFLATION OF TIRES

Arne Hjorth-Hansen, Virringvej 2, DK-8660 Skanderborg, Denmark

Filed May 24, 1983, Ser. No. 497,600
Claims priority, application PCT Int'l Appl., May 24, 1982, PCT/DK82/00047
Int. Cl.³ B60C *23/00*
U.S. Cl. 141—95 **7 Claims**



1. An apparatus for inflating pneumatic tires by first inflating a tire to a predetermined overpressure and then bleeding it to a desired tire pressure, comprising an inlet and an outlet for pressurized air and pressure regulating means mounted therebetween, said outlet being connectable with a tire, the pressure regulating means comprising a pressure gauge and switch valve means, which are controlled by a timer so as to alternatingly, during the inflation, connect the said outlet with the said inlet and the pressure gauge, respectively, to thereby produce alternating inflation periods and measuring periods, until the attainment of the predetermined overpressure is detected by the pressure gauge, which is operatively connected with control means for causing the switch valve means to alternatingly connect the said outlet with the pressure gauge and an exhaust opening, respectively, in response to said attainment to produce alternating bleeding periods and measuring periods until the desired tire pressure is detected by the pressure gauge, wherein the improvement comprises selector means for reading in the volume of the tire to be inflated, said selector means being operatively connected with the said timer in such a manner that the timer causes the length of the said inflation periods to be variably adjusted substantially in accordance with the read in volume of the tire, and wherein said selector means comprises separate selectors for enabling a direct reading in the diameter and width of said tire.

4,510,980
TABLE ASSEMBLY FOR A MULTIPURPOSE TOOL

Robert L. Bartlett, Dayton, and Robert N. McKee, Huber Heights, both of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio

Filed Nov. 16, 1983, Ser. No. 552,599
Int. Cl.³ B21C *9/02*
U.S. Cl. 144—1 C **14 Claims**

14. In a multipurpose tool of the type having a frame, a pair of parallel way tubes mounted on said frame, and a headstock slidably mounted on said tubes, said headstock having a motor-driven quill spindle spaced from and parallel to said tubes, the improvement comprising:

a plate-shaped table top;

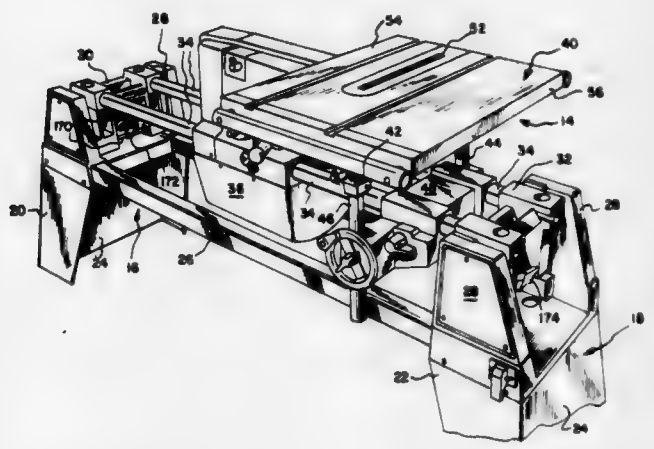
pivot means attached to an underside of said table top and defining a pivot axis which extends transversely of said table top and said way tubes, such that said table top may be pivoted in a tilted mode to lie in a plane perpendicular to a rotational axis of said quill spindle;

a pair of parallel, cylindrically-shaped support legs attached to and extending downwardly from said pivot means, each of said legs having a pair of toothed racks extending along opposing longitudinal sides thereof;

a carriage slidably mounted on said way tubes and having a pair of channels spaced transversely thereof and shaped to receive said support legs therethrough, and a pair of pinion gears associated with said holes, each positioned to mesh with one of said racks on an associated one of said legs whereby said legs may be removed from said holes so that said racks disengage said pinions, said table and legs reversed relative to said carriage, and said legs reinserted into said holes so that opposite ones of said racks engage said pinions;

crank means for rotating and selectively locking said pinion gears to displace said table top relative to said carriage;

said table top having first and second transverse edges at opposite ends thereof, and a transverse slot therethrough shaped to receive a tool mounted on said quill spindle and



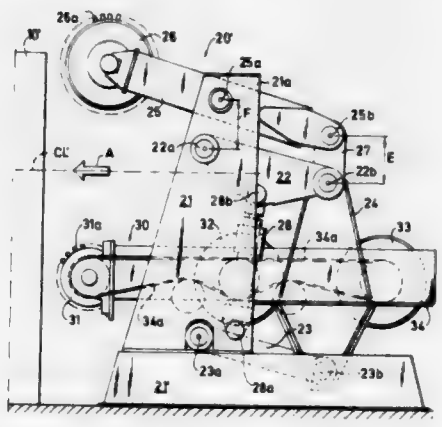
spaced from said first edge a distance less than a clearance distance from a top of said carriage to said quill spindle, and spaced from said second edge a distance greater than said clearance distance; and

means for pivotally attaching said way tubes to said frame such that said tubes may be pivoted about ends thereof to a substantially vertical position and said table top pivoted to said tilted mode such that said headstock is above said table top, whereby said tool is in a vertical drill press mode; and said tubes may be pivoted about opposite ends thereof to a substantially vertical position and said table top and legs reversed in orientation relative to said carriage such that said headstock is below said table top, whereby said tool is in an under-the-table shaping mode.

4,510,981
SELF-CENTERING FEEDING DEVICE

Sven-Olov Biller, Söderhamn, Sweden, assignor to KOCKUMS Industri AB, Söderhamn, Sweden

Filed Sep. 20, 1982, Ser. No. 420,692
Claims priority, application Sweden, Dec. 21, 1981, 8107654
Int. Cl.³ B27C *1/12*
U.S. Cl. 144—246 F **10 Claims**



1. A device for feeding elongated objects such as logs into a processing machine having a center line (C_L') about which processing functions are carried out, said elongated objects

being centered relative to said center line at least vertically, said feeding device including a vertically extending stand member, a horizontally extending, vertically adjustable conveyor means mounted in said stand member including pivotally attached carrier means, a rotatable engagement means adapted to engage from above an object on said conveyor means, said engagement means being mechanically coupled to said carrier means for movement through the same distance above said center line as the conveyor means is moved thereunder, and a driving means, supplied by energy from an outer source, for lifting the conveyor means towards said center line, said feeding device comprising;

two elongate link members having first and second ends, said link members both extending in the same direction from said stand member and having said first ends pivotally attached to the stand member, at a predetermined vertical spacing (a) one from another, said link members pivotally carrying at said second ends, having the same vertical spacing (a) as the first ends, said carrier means to which the conveyor means is firmly attached,

parallel means, including a stationary portion located on said stand member, for vertically adjustably carrying said conveyor means,

an arm member carrying said engagement means, said arm member being pivoted to the vertical stand member and extending in a direction opposite to the direction of said link members, and

sensor means having the function of a limit switch for triggering the supply of energy to the driving means when the leading end of said conveyor means-supported object has reached a position beneath said engagement means, said sensor means including means for discontinuing the supply of energy when the trailing end of the object has passed said position,

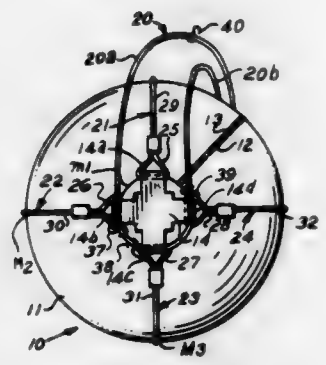
said conveyor means-supported object being positively clamped between the conveyor means and the engagement means during the entire feeding procedure by the force generated by the driving means, and having its longitudinal center line centered relative to said processing machine center line when said leading end of said conveyor means-supported object reaches said processing machine.

4,510,982

BALL CARRIER SYSTEM

Roberto Sangroni, 1570 E. New York Ave., Brooklyn, N.Y. 11212

Filed Oct. 31, 1983, Ser. No. 546,946
Int. Cl.³ A63B *47/00;* A45C *3/12, 13/26*
U.S. Cl. 150—52 A **15 Claims**



1. A ball carrier system, comprising:

a ball bag of pliable material having an opening and configured to receive a spherical ball therein and thereupon assume a substantially spherical shape;

a first cord for carrying the ball bag; and

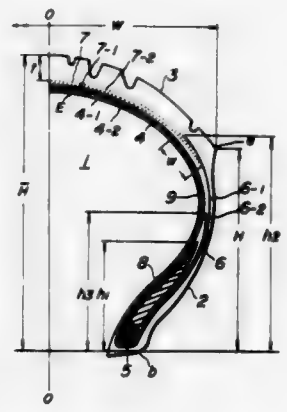
means connecting the first cord to the ball bag comprising a plurality of cords on the spherical outside surface of the ball bag extending along major circles from a first common minor circle to a diametrically opposite second common minor circle.

4,510,983

PAIR OF PNEUMATIC BELTED TIRES FOR MOTORCYCLE

Shinichiro Ohkuni, Akishima, and Yoichi Kitazawa, Higashiyamato, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,608
Claims priority, application Japan, Oct. 18, 1982, 57/182623
Int. Cl.³ B60C *9/20, 15/04, 9/08*
U.S. Cl. 152—361 R **13 Claims**



1. A motorcycle having a front tire and a rear tire defining a pair of pneumatic belted tires, each tire comprising; a tread, a pair of sidewalls toroidally extending from said tread, a pair of bead portions each located at each radially inward edge of said sidewalls and containing a bead core therein, a carcass wrapped around said bead core from inside toward outside to reinforce the tread and sidewalls and composed of at least one rubberized ply containing organic fiber cords inclined at an angle of 50°–90° with respect to the equatorial plane of each tire, said tread being extended between said sidewalls up to both portions corresponding to the maximum width of each tire at substantially an equal thickness or that thickness which slightly reduces from the tread center toward both sidewalls, and a belt disposed between said tread and said carcass at a width substantially corresponding to a tread width and composed of at least two rubberized plies each containing cords with a modulus of elasticity of at least 600 kg/mm^2 arranged at a certain inclination angle with respect to the equatorial plane of each tire, the rear tire having a section height and a section width larger than those of the front tire, said cords crossed with each other, and an inclination angle α of cord in said belt of the rear tire for a rear wheel of the motorcycle and an inclination angle β of cord in the belt of the front tire for a front wheel of the motorcycle satisfy the following relationship:

$$(\alpha-\beta)\geqq 4°$$

when

$$15°\leqq\alpha\leqq 26°,$$

or

$$(\alpha-\beta)\geqq -0.3\alpha+11.8°$$

when

$$26°\leqq\alpha\leqq 36°.$$

4,510,984

PNEUMATIC RADIAL TIRE HAVING DURABLE BEAD STRUCTURE

Katsuji Kishida, Takatsuki; Tetsuto Ueno, Hyogo; Masakazu Onishi, and Keijiro Oda, both of Kawanishi, all of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Jun. 22, 1982, Ser. No. 390,921
Claims priority, application Japan, Jun. 24, 1981, 56-98839
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.³ B60C *15/06*
U.S. Cl. 152—362 CS **4 Claims**



1. A pneumatic radial tire comprising:
one or more carcass ply layers of steel cords extending from one bead portion to another bead portion across a crown portion and disposed at an angle of 90° relative to the equatorial line of the tire whose opposite ends being turned up around a respective annular bead core from the inside to the outside and terminating at the bead region;
a reinforcing strip of steel cords positioned axially outwardly adjacent to the turn-ups of carcass plies and extending radially outwardly beyond the turn-ups;
a bead filler of approximately triangular sectional shape consisting of high hardness rubber stock of approximately triangular sectional shape and medium hardness rubber stock with a shore hardness of 55° to 70° having a radial dimension longer than that of the high hardness rubber stock and positioned axially outwardly adjacent to the high hardness rubber stock and being disposed at the region enclosed by the carcass plies, the turn-ups of the carcass plies and the reinforcing strip of steel cords with a top portion extending to an upper portion of a side wall;
a cap of organic textile cord fabric covering an upper end of the reinforcing strip of steel cords; and
a fin-shaped rubber buffer having a shore hardness lower than that of the medium hardness rubber stock by 3° to 20° disposed radially outwardly of the capped end and axially outwardly adjacent to the medium hardness rubber stock.

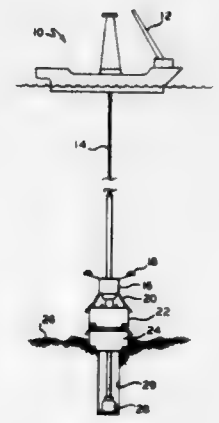
4,510,985

STACKED OPEN BOTTOM TEMPORARY GUIDE BASE FOR OFFSHORE DRILLING

Robert C. Arnim, II, Borger, Tex., and Gregory D. Bourne, London, England, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 20, 1983, Ser. No. 534,060
Int. Cl.³ E21B *7/128*
U.S. Cl. 175—7 **19 Claims**

1. A temporary guide base assembly comprising:
(a) at least one lower box having vent pipe means and having a central hole adapted to receive casing, said at least one lower box being closed on the sides and top except for said central hole and being open at the bottom;
(b) an upper box in stacked relationship with said at least one lower box, said upper box having vent pipe means and having a central hole adapted to receive casing, said upper box being closed on the sides and top except for said central hole and being open at the bottom; and



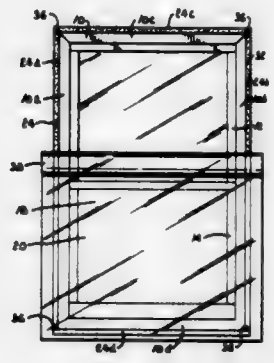
(c) a seal pad around said central hole of each of said at least one lower boxes.

4,510,986

MAGNETICALLY ATTACHED STORM WINDOWS AND THE LIKE

Rose M. Schwankl, 9604 W. 106th St., Overland Park, Kans. 66212

Continuation of Ser. No. 173,969, Jul. 31, 1980,. This application Nov. 26, 1982, Ser. No. 444,660
Int. Cl.³ A47H *23/01*; E06B *3/28*
U.S. Cl. 160—354 **4 Claims**



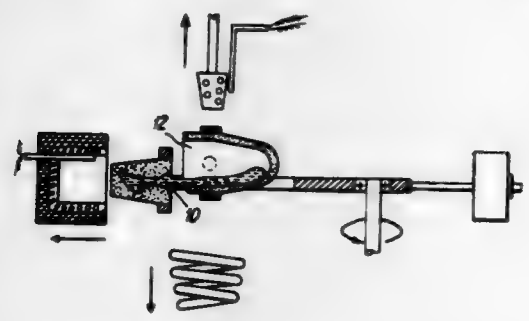
1. A method of releasably attaching an aperture covering panel to a frame surrounding the aperture; said method comprising the steps of:
(a) selecting a continuous and generally planar surface on said frame enclosing said aperture;
(b) providing first and second strips, each strip having an adhesive side and an opposite magnetic side, said magnetic side having spatially alternating north and south magnetic poles thereon;
(b) applying the adhesive side of said first strip to a first of said surface or said panel in a pattern to generally continuously surround said aperture;
(c) positioning the magnetic side of said second strip on the magnetic side of said first strip such that said second strip is generally coextensive with said first strip;
(d) adjusting said second strip in relation to said first strip to position the magnetic poles of said second strip in registration with opposite magnetic poles of said first strip to maximize the magnetic attraction between said first and second strips; and
(e) thereafter placing a second of said surface or said panel in contact with the adhesive side of said second strip such that said panel is removably held so as to cover said aperture by the magnetic attraction between the magnetic sides of said first and second magnetic strips.

4,510,987

METHOD AND APPARATUS FOR CASTING METAL ALLOYS IN THE THIXOTROPIC STATE

Jean Collot, Antibes, France, assignor to Association pour la Recherche et le Developpemente des Methods et Processus Industrieles (Armines), Paris, France

Filed Feb. 7, 1983, Ser. No. 464,403
Claims priority, application France, Feb. 12, 1982, 82 02344
Int. Cl.[3] B22D *27/08, 13/00*
U.S. Cl. 164—71.1 13 Claims



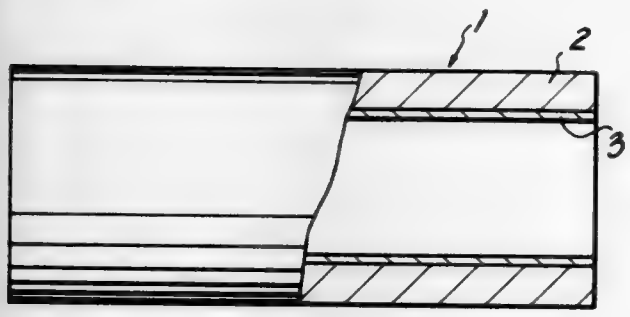
1. A method of casting a metal alloy in a thixotropic state, said method comprising the steps of agitating said alloy in a crucible to render said alloy thixotropic, and then transferring said thixotropic alloy from said crucible directly into a mold by virtue of centrifugal force produced by rotating said crucible and said mold.

4,510,988

TUBE FOR THERMAL CRACKING OR REFORMING HYDROCARBON AND MANUFACTURING METHOD THEREOF

Keizo Konoki, Takaidohigashi; Takanobu Shinohara; Ikuyoshi Kochi, both of Chiba; Keiichi Shibata, Mobara; Hisakatsu Nishihara, Hirakata; Toshiaki Morichika, Hirakata; Junichi Sugitani, Hirakata, and Koji Tsuchida, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka and Toyo Engineering Corporation, Tokyo, both of, Japan

Filed Aug. 17, 1982, Ser. No. 408,820
Claims priority, application Japan, Aug. 21, 1981, 56-131899; Aug. 21, 1981, 56-131900; Aug. 21, 1981, 56-131901
Int. Cl.[3] B22D *19/08*
U.S. Cl. 164—102 17 Claims



1. A method of manufacturing reactor tube for thermally cracking or reforming a hydrocarbon characterized by;

casting tube member from molten Fe-Cr-Ni heat resisting steel by means of centrifugal casting, and

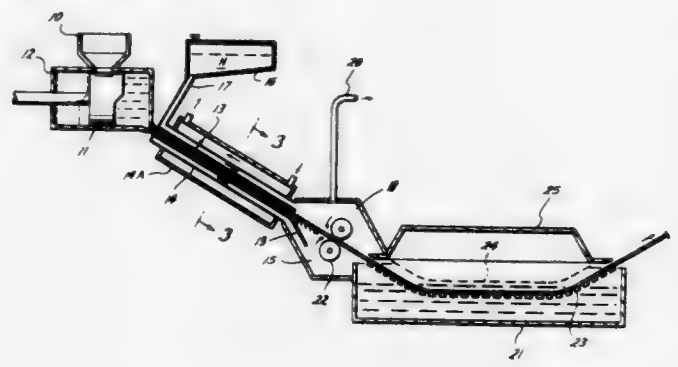
scattering self-fluxing alloy powder free from or with a low Ni content on the inner surface of tube body during such stage when the inner surface of the tube member has solidified but high temperature in the tube member is retained, the self-fluxing alloy being molten by the heat of the cast tube member and layer of self-fluxing alloy being formed over and fused to the inner surface of the tube member.

4,510,989

PRODUCTION OF METAL RODS

Frederic C. Mayer, 1407 W. Brooklake Dr., Houston, Tex. 77077

Continuation of Ser. No. 246,675, Mar. 23, 1981, abandoned.
This application Oct. 21, 1983, Ser. No. 543,235
Int. Cl.[3] B22C *21/02, 11/00*
U.S. Cl. 164—415 7 Claims



1. Apparatus for continuously pressure casting metal rods, comprising a press to receive the metal in a molten state, an elongate tube having an inlet at one end connected to the press and an inner lining of a heat resistant material having a low coefficient of friction with respect to the metal and through which the molten metal from the press may be forced to form a continuous rod, a sheath of highly heat conductive material about the lining, a housing of highly heat conductive material surrounding the sheath to form a first annular space thereabout extending along a substantial portion of the length of the tube, means for supplying a cooling medium to one end of the first annular space near the tube inlet, a jacket surrounding the housing to provide a second annular space between them, means for circulating water through the second annular space, and a bath of molten metal having an enclosure above the bath, and an inlet to the enclosure connected to the end of the housing so that the rod may pass from the housing into the enclosure and the cooling medium may circulate from the first annular space about the tube into the enclosure above the bath, and means within the bath to guide the rod into and through the molten bath metal in a straight, substantially horizontal path, said bath also having an outlet from the enclosure through which the rod may emerge and the cooling medium may pass upon circulating through the enclosure.

4,510,990

CONTINUOUS CASTING APPARATUS WITH SHRINKAGE COMPENSATION

Gerd Artz, Ratingen; Dieter Figge, Essen, and Clemens Philipp, Meerbusch, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

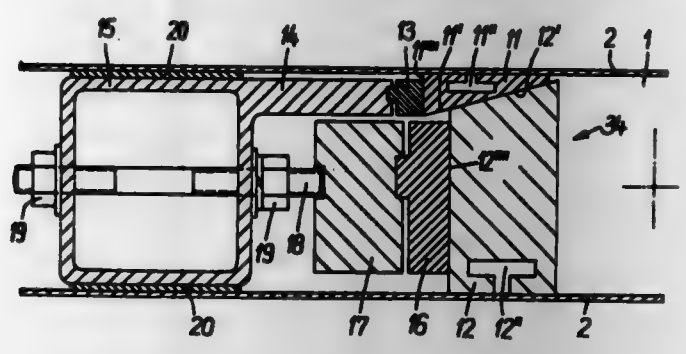
Filed Aug. 30, 1983, Ser. No. 527,949
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232147
Int. Cl.[3] B22D *11/10*
U.S. Cl. 164—431 19 Claims

1. A continuous casting apparatus for a metal casting arranged to compensate for shrinkage of the casting in a cross sectional plane of the casting normal to the casting direction, said apparatus comprising:

a pair of endless casting belts each spaced from and facing the other to form respective mold walls and arranged for movement in the casting direction;

a pair of endless articulated mold walls each spaced from and facing the other, disposed between said casting belts and arranged to move with said casting belts in the casting direction, the spacing between said articulated mold walls and between said casting belts being greater upstream than downstream relative to the casting direction, wherein each said articulated mold wall includes a plurality of dam

blocks, each said dam block has an inner face disposed at an angle relative to said casting belts and defining a surface of the casting transverse to said casting belts and an outer face disposed at an angle relative to said casting belts



and facing a direction opposite to that of said inner face, and at least one of the faces of each said dam block is adjustable in height between said casting belts; and

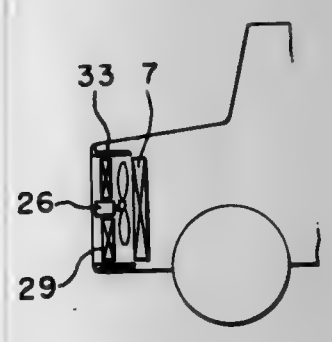
guide means for adjusting the height of said at least one face of each said dam block.

4,510,991

HEAT EXCHANGER AND FAN MOTOR IN A FRONT WHEEL DRIVE VEHICLE

Hiroto Kawahira, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,442
Claims priority, application Japan, May 31, 1982, 57-92847
Int. Cl.³ F28F *3/02*
U.S. Cl. 165—41 **8 Claims**



1. A front-wheel drive motor vehicle comprising:

(a) a horizontal engine, said horizontal engine being mounted at at least substantially a right angle with respect to the moving direction of said motor vehicle;

(b) an exhaust manifold operatively associated with said horizontal engine;

(c) a radiator located adjacent to said horizontal engine and to said exhaust manifold, said radiator being located to one side of said horizontal engine with respect to the moving direction of said motor vehicle; and

(d) a heat exchanger unit located adjacent to said radiator but spaced therefrom in the moving direction of said motor vehicle, said heat exchanger unit comprising:

(i) a plurality of flat pipes in at least substantially circular form provided with passages for coolant inside thereof, said flat pipes being concentrically arranged, being radially spaced from one another, and having an axial central space within the innermost one of said plurality of flat pipes;

(ii) an inlet header connected to the inlets of each of said plurality of flat pipes;

(iii) an outlet header connected to the outlets of each of said plurality of flat pipes;

(iv) corrugated heat exchanger fins interposed in at least some of the spaces between said plurality of flat pipes, said heat exchanger fins being in thermal contact with adjacent ones of said plurality of flat pipes and being at least generally coplanar with said plurality of flat pipes;

(v) a fan motor positioned in said axial central space, said fan motor having a rotory shaft which extends axially outwardly of said plurality of flat pipes and said corrugated heat exchanger fins; and

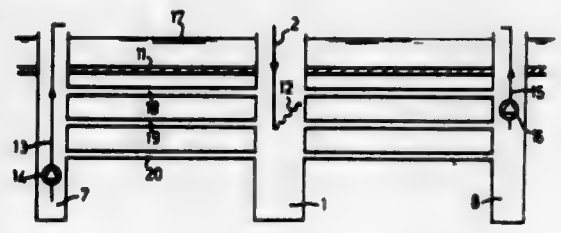
(vi) a propeller fan mounted on said rotory shaft and sized and position to draw cooling air between said radially spaced flat pipes and over said corrugated heat exchanger fins.

4,510,992

SOLAR ENERGY SYSTEM

Jón Kristinsson, 10 Noordenbergsingel, Deventer, Netherlands

Continuation of Ser. No. 187,225, Sep. 15, 1980, abandoned, which is a continuation of Ser. No. 890,338, Mar. 27, 1978, abandoned. This application Sep. 20, 1983, Ser. No. 533,978
Claims priority, application Netherlands, Apr. 5, 1977, 7703701
Int. Cl.³ F24J *3/02*
U.S. Cl. 165—45 **7 Claims**



1. A heat storage system for a building, comprising a plurality of networks of imperforate-walled plastic ducts for conveying a fluid heat transfer medium, said ducts being embedded in the ground beneath the building whereby the heat transfer medium passes through the ducts in thermally-conductive contact therewith and heat may thereby be delivered for storage in the ground and subsequently removed from storage for use, each network being positioned in a horizontal plane and said networks each having different temperature being disposed in the ground at different vertical levels, to utilize a stratification of the earth temperature, so that each said network positioned at a higher vertical level having a temperature substantially higher than a temperature of said network positioned at a lower vertical level, and said system also comprising a sealing layer of thermally insulating material disposed above said networks and extending thereover, and an input riser, for introducing heat transfer medium into said networks, and at least one output riser, for withdrawing heat transfer medium from said networks, each of said risers being in open communication with all of the networks and the input riser being distant from each output riser so as to avoid direct heat exchange between heat transfer medium entering and leaving said networks.

4,510,993

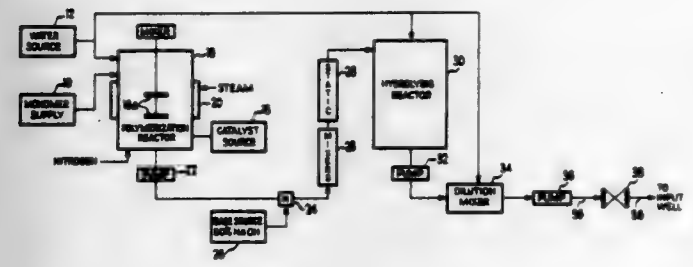
FLOW CONTROL APPARATUS AND METHOD

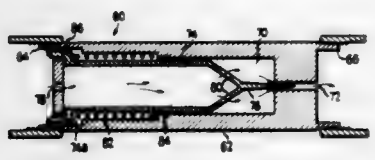
Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 25, 1982, Ser. No. 361,622
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—75 R **7 Claims**

1. Apparatus for use in transporting an aqueous solution of a polyacrylamide to be used as a drive fluid and/or mobility buffer in the secondary or tertiary recovery of oil from an oil-bearing subterranean formation, said apparatus including a polymerization reactor for polymerizing an aqueous solution of an acrylamide monomer and a hydrolysis reactor in communication with the polymerization reactor for hydrolyzing the polyacrylamide produced in the polymerization reactor, and dilution means in communication with a source of water, said dilution means having an inlet in communication with the hydrolysis reactor and an outlet, the improvement comprising: conduit means in communication with the outlet of the dilution

means for conveying diluted aqueous hydrolyzed polyacrylamide solution from the dilution means to storage means or to an input well of an oil-bearing subterranean formation; and flow control means in said conduit means and across which a substantial fluid pressure differential exists in said conduit means, said flow control means being located downstream with relation to the dilution means and upstream with relation to said storage means or said input well of the oil-bearing subterranean formation, said flow control means including a





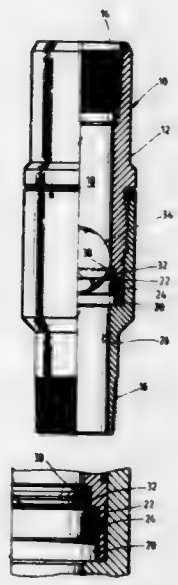
needle valve-like fluid flow control element which is movable to a substantially fluid flow limiting position and to a fluid flow open position, said needle valve-like fluid flow control element in its fluid flow open position enabling the diluted aqueous hydrolyzed polyacrylamide solution from the dilution means to undergo, a substantial lowering in fluid pressure as it flows across the flow control means while at the same time substantially preventing shear degradation of the hydrolyzed polyacrylamide comprising said diluted aqueous hydrolyzed polyacrylamide solution.

4,510,994

PUMP OUT SUB

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Apr. 6, 1984, Ser. No. 597,285
Int. Cl.[3] E21B *34/10*
U.S. Cl. 166—156 **8 Claims**



1. A pump out sub for use in a well tubing for receiving a plug for sealing the tubing and applying pressure to the tubing and thereafter pumping out the plug comprising,

a tubular body adapted to be connected in the well tubing, said body including a recess,

shearable means positioned in the recess,

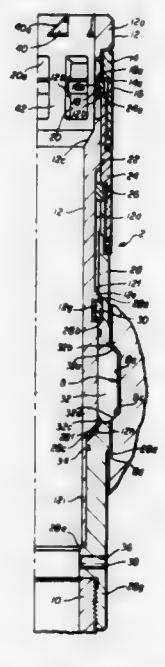
an expandable seat positioned in the body above and supported from the shearable means whereby when the plug is seated on the seat pressure may be applied to the tubing and when sufficient pressure is applied to the plug the shearable means and the seat moves downwardly and the seat expands into the recess.

4,510,995

DOWNHOLE LOCKING APPARATUS

William F. Krause, Jr., Spring, and Mark E. Hopmann, Houston, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Feb. 22, 1983, Ser. No. 468,421
Int. Cl.[3] E21B *23/02*
U.S. Cl. 166—217 **17 Claims**



1. A lock for anchoring a well tool in a nipple in a subterranean well, comprising:

radially expandable locking dog means for engaging the nipple;

an inner mandrel axially movable relative to the locking dog means and having a surface engaging the locking dog means upon relative axial movement to radially shift the locking dog means;

an outer housing surrounding the inner mandrel;

an inwardly biased member engaging the inner mandrel and the outer housing when inwardly flexed to prevent relative movement therebetween when the locking dog means are expanded; and

at least one radially extending opening extending through the inner mandrel aligned with the inwardly biased member, whereby the inwardly biased member is expanded when engaged by a releasing member expanding through the radially extending opening to release the inner mandrel for axial movement relative to the outer housing, the locking dog means being freed for retraction to release the lock.

4,510,996

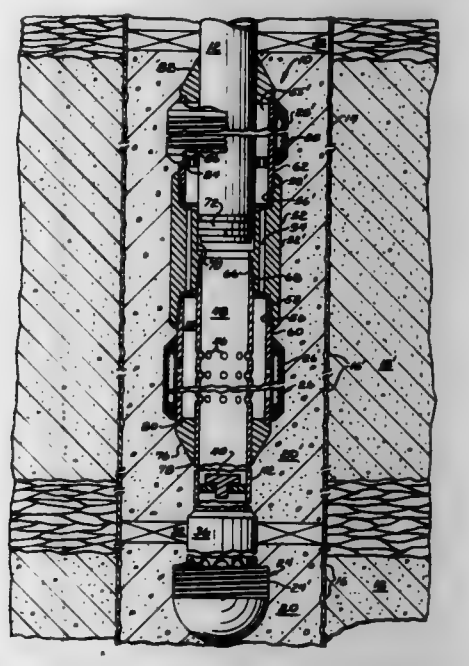
WELL SCREEN ASSEMBLY WITH LONGITUDINALLY PORTED CONNECTOR SUB

James R. Hardin, Lafayette, La., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 3, 1983, Ser. No. 538,727
Int. Cl.[3] F21B *43/08*
U.S. Cl. 166—227 **4 Claims**

1. A well screen assembly comprising a plurality of vertically spaced screen sections having internal support pipes and being adapted to be positioned in a well between a pair of spaced gravel packs, said assembly including at least a pair of upper and lower screen sections which are joined by an axially elongated, generally cylindrical connector sub having end

openings and relatively large diameter threaded end wall portions at each of its ends to which said screen sections are joined, said connector having an intermediate wall portion located between said end openings which is substantially thicker than the end wall portions surrounding said end openings, the inner surface of said intermediate wall portion including a lower threaded portion adapted to be threaded to at least one pipe which is adapted to be concentrically positioned



within and radially inwardly spaced from the lower one of said screen sections, said intermediate wall portion having longitudinal ports formed therein in a direction parallel to the connector axis, said ports being located so as to permit fluid to flow through the connector from a radial annular space which is inboard of said lower screen section attched to the lower end of the connector and outboard of said at least one pipe to a similar annular space which is inboard of a second screen section attached to the upper end of the connector.

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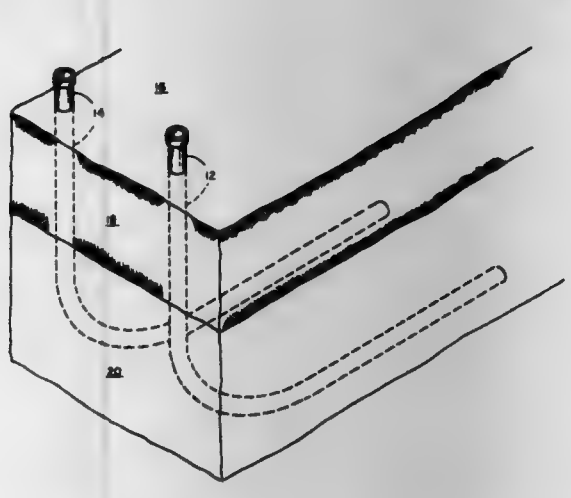
SOLVENT FLOODING TO RECOVER VISCOUS OILS

John L. Fitch, Dallas, and Lynn D. Mullins, De Soto, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 308,755, Oct. 5, 1981, abandoned. This application Oct. 25, 1983, Ser. No. 544,814

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—263 **7 Claims**



1. A method of recovering viscous oil from a subterranean viscous oil-containing formation having no significant vertical permeability barrier therein comprising the steps of:

(a) providing at least one injection well extending downwardly from the earth's surface to the bottom of said oil-containing formation and then extending outwardly a substantial distance through said formation in a generally straight horizontal direction;

(b) providing at least one production well extending downwardly from the earth's surface to the bottom of said oil-containing formation and then extending outwardly a substantial distance through said formation in a generally straight horizontal direction;

(c) said production well being spaced from said injection well and the generally straight horizontal portion of said production well being generally at the same level as, and being generally parallel to, the generally straight horizontal portion of said injection well;

(d) said injection well and said projection well being in fluid communication with the formation over the distance of each well extending through said formation in a generally straight horizontal direction;

(e) injecting a predetermined amount of hydrocarbon solvent into the formation via said injection well, said solvent having a specific gravity less than the specific gravity of the oil contained in the formation and a viscosity not greater than 1/100 the viscosity of the oil contained in the formation under formation conditions and recovering fluids including oil from the formation via said production well;

(f) thereafter, shutting-in said injection well and said production well to permit said formation to undergo a soak period for a predetermined period of time wherein the solvent mixes with the oil in the formation by gravity-driven convection to reduce the viscosity of the oil; and

(g) thereafter injecting a driving fluid into the formation via said injection well and recovering fluids including oil of reduced viscosity from said formation via said production well until the fluid being recovered from the production well comprises an unfavorable amount of driving fluid.

4,510,998

FLUID LOSS ADDITIVE FOR WELL DRILLING

Dennis G. Peiffer, East Brunswick; Robert D. Lundberg, Bridgewater, both of N.J., and Thad O. Walker, Humble, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 374,252, May 3, 1982, abandoned. This application Nov. 30, 1983, Ser. No. 556,398

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—295 **18 Claims**

1. A process for plugging the pores of a porous formation of a well with a water-in-water pseudo-emulsion solution having a viscosity of at least about 50 cps which includes the steps of:

(a) forming a solvent system of an organic liquid and a polar cosolvent, said polar cosolvent being less than about 15 weight percent of said solvent system, a viscosity of said solvent system being less than about 100 cps;

(b) dissolving a water insoluble, neutralized sulfonated polymer in said solvent system to form a solution, a concentration of said unneutralized or neutralized sulfonated polymer in said solution being about 0.01 to about 0.5 weight percent, a viscosity of said solution being less than about 200 cps;

(c) adding about 5 to about 500 volume percent water to said solution, said water being immiscible with said solution, with said polar cosolvent and said water insoluble, neutralized sulfonated polymer transferring from said organic liquid to said water causing the viscosity of said water to increase to at least 50 cps to form said water-in-water pseudo-emulsion solution;

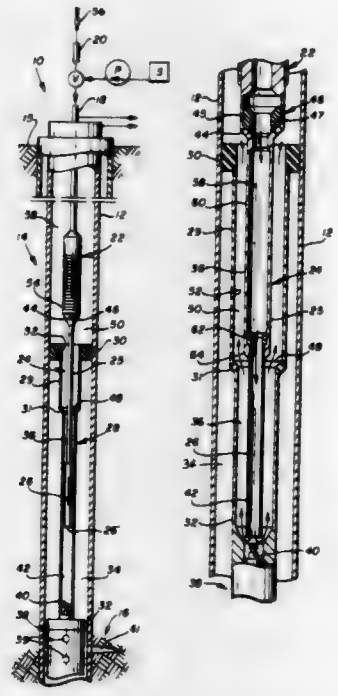
(d) injecting said water-in-water psuedo-emulsion solution into said well having said porous formation; and

(e) penetration of said porous formation by the water-in-water pseudo-emulsion solution to plug the pores of said porous formation of said well.

4,510,999
WELL CLEANUP AND COMPLETION METHOD AND APPARATUS

Flint R. George, Katy, Tex., and Emmet F. Brieger, Albuquerque, N. Mex., assignors to Geo Vann, Inc., Houston, Tex.

Filed Jun. 7, 1982, Ser. No. 385,708
Int. Cl.[3] E21B 43/11
U.S. Cl. 166—297 9 Claims



1. Method of completing a formation located downhole in a cased borehole comprising the steps of:

(1) connecting a casing gun in underlying relationship relative to a packer device and suspending the gun adjacent to a formation to be completed;

(2) forming a passageway from the gun to the packer, and placing a gun firing device within the passageway;

(3) forming a seal housing within said passageway; running a seal assembly having an attached extension tube downhole on the end of a tubing string such that the extension tube is positioned within the seal housing and forms an annulus therebetween;

(4) forming a flow path which extends from the surface of the ground, down through the tubing string, to said gun firing device, back up the annulus formed between the seal housing and extension tube, up the upper annulus between the casing and the tubing string, and to the surface of the ground, and flowing a washing fluid through the flow path thereby washing debris from about the firing device;

(5) seating the seal assembly within the seal housing; isolating the seal housing annulus from the upper annulus by lowering the tubing string until the seal assembly is seated within the seal housing;

(6) perforating the formation by passing a gun firing device actuator downhole through the tubing string to the gun firing device; and

(7) producing the well by flowing the production from the formation, into the lower borehole annulus, into the seal housing, through the seal assembly, and up the tubing string to the surface of the ground.

4,511,000
BITUMEN PRODUCTION AND SUBSTRATE STIMULATION

Donald S. Mims, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,678
Int. Cl.[3] E21B 36/00, 43/12, 43/24
U.S. Cl. 166—303 8 Claims

1. Well completion in a substrate for producing viscous hydrocarbon by thermal stimulation of the substrate in which said hydrocarbon is retained, with a hot stimulating fluid, which completion includes;

an elongated well liner which is disposed in a first well bore formed in the substrate, at least a portion of said elongated well liner being perforated and extending in a substantially horizontal disposition through said layer, and having a well head at the liner production end,

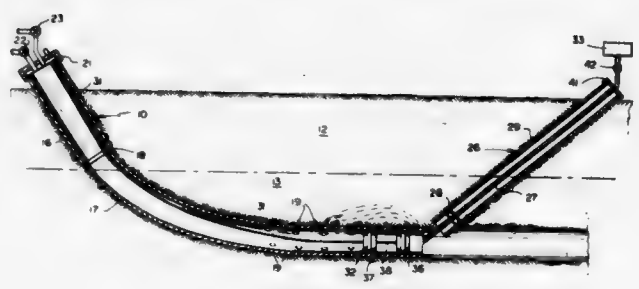
at least one secondary well formed in the substrate and terminating in a region adjacent to a portion of the first well bore,

a diverter means movably positioned within said well liner and being operable between expanded and contracted modes, and said diverter means having a peripheral edge disposed contiguous with the inner wall of said liner and being adapted when in the expanded mode to contact said liner inner wall to prevent flow of fluid therethrough,

a substrate stimulating system including a conduit disposed in said at least one secondary well and adapted at one end to communicate with a hot, pressurized source of said hot stimulating fluid, said conduit other end opening in a region of the first well bore, whereby to direct a pressurized flow of the hot stimulating fluid into the vicinity of the elongated well liner and into the liner remote end,

diverter positioning means communicated with said diverter means, and being operable to longitudinally adjust the location of said diverter means along the well liner in a direction toward the well head,

said diverter means including longitudinally spaced apart terminal pieces which are communicated with said diverter positioning means, each terminal piece being operable between contracted and expanded positions whereby each of said terminal pieces is independently operable for progressively lengthening the spacing between the respective terminal pieces.



3. Method for producing viscous hydrocarbons by thermal stimulation of a substrate layer which holds said hydrocarbons, which method includes the steps of;

providing a first well bore, which extends from the surface, into the substrate layer, being disposed in a substantially horizontal disposition through the latter, and having a perforated liner which extends substantially the length of said well bore between the surface, and the well remote end,

forming a second well bore through the substrate in a direction to establish communication with the remote end of said first well,

providing a stimulating fluid diverter member within said perforated liner, having opposed diverter end pieces which are independently operable within said liner to divide said liner into adjustable length injection segments, and production segments, and

introducing a flow of hot, pressurized stimulating fluid into said liner injection segment, whereby said hot fluid will contact one of said diverter member end pieces and be directed from the perforated liner, outwardly into the substrate thereby to heat the latter and to enhance production of an aqueous hydrocarbon mixture therefrom by establishing a flow path pattern for said hydrocarbon mixture through the substrate and which pattern terminates intermediate the other of said diverter end piece in said liner producing end.

4,511,001

COMPOSITION AND METHOD FOR CORROSION INHIBITION

Yulin Wu, c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Division of Ser. No. 298,445, Sep. 1, 1981, Pat. No. 4,460,482.
This application Feb. 13, 1984, Ser. No. 579,333
Int. Cl.³ C21F *11/14*; E21B *41/02*
U.S. Cl. 166—310 **20 Claims**

1. A method for treating a metal surface to inhibit corrosion thereof, comprising contacting the metal surface with a composition which is the product of introducing carbon dioxide under greater than atmospheric pressure into a vessel containing an amine in a diluent selected from the group consisting of liquid hydrocarbons, alcohols and mixtures of these, and maintaining the resulting carbon dioxide-containing composition at greater than atmospheric pressure for a finite period of time prior to contacting the metal surface to be treated with the thus prepared composition.

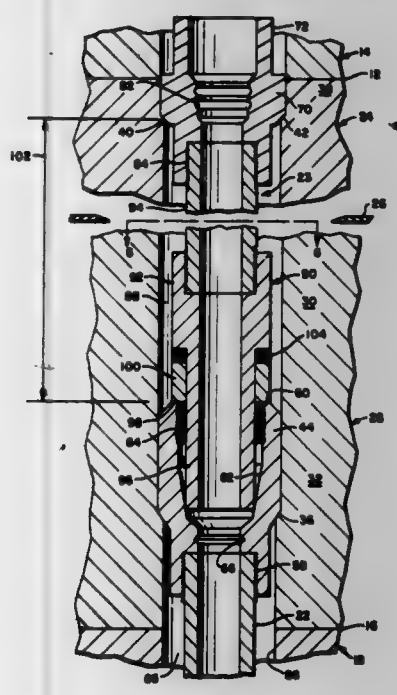
16. A method for treating metal surface of equipment in a well for the recovery of natural fluids from a subterranean reservoir, the method comprising injecting a composition comprising (a) a primary or secondary amine, (b) a diluent selected from the group consisting of liquid hydrocarbons, alcohols and mixtures of these, and (c) carbon dioxide into the well and allowing the composition to contact the metal surfaces for a time sufficient to form a corrosion-inhibiting film thereon.

4,511,002

MULTIPLE TUBING HANGER TIE BACK SYSTEM AND METHOD

Frank C. Adamek, Pasadena; James V. Bonds, and Charles D. Bridges, both of Houston, all of Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Oct. 21, 1983, Ser. No. 544,143
Int. Cl.³ E21B *33/04, 29/00*
U.S. Cl. 166—382 **13 Claims**



8. An oil well tubing head system for installation between a rigidly supported wellhead (18) and a Xmas tree (14), comprising:

a system housing (10) including an upper tubing head (24) connected to the Xmas tree (14), a lower tubing head (28) connected to the wellhead (18) and a tubing shear ram (26) connected between the upper and lower tubing heads, the interior of said housing including a stack (30) containing a generally cylindrical vertical passageway (25) therethrough;

a lower tubing hanger (44) supported within the lower tubing head (28) for carrying a tubing string (22), said lower hanger including a control shoulder (60) at its upper end and a tapered interior surface (62);

an upper tubing hanger (70) supported within the upper tubing head (24);

a tie back subassembly (90) connecting said upper and lower tubing hangers, including a tubing section (94) passing through the bore of the shear ram (26), and being secured to the lower end of the upper tubing hanger, and further including a spacer member (92) secured to the lower end of the tubing section, said spacer member including a downwardly projecting inner stab nipple (96) in interference engagement with said tapered inner surface (62) and a downwardly facing, outer load transfer surface (98) abutting said control shoulder (60);

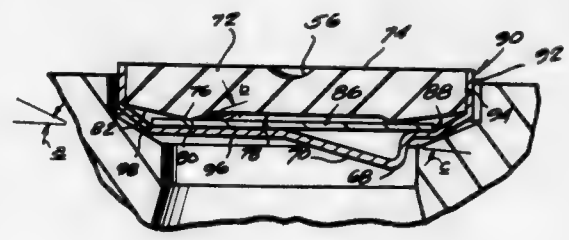
whereby upon actuation of the shear ram (26), the tubing section (94) is severed without downward movement of the tubing string (22).

4,511,003

SPRINKLER

Lowell N. Randall, 249 S. Miranda, Las Cruces, N. Mex. 88005

Filed Jul. 29, 1983, Ser. No. 518,759
Int. Cl.³ A62C *37/10*
U.S. Cl. 169—38 **15 Claims**



1. A sprinkler, comprising:

a body having a bore with an inlet and an outlet;

surface means circumferentially providing an annular valve seat in said bore of said body;

a disk-like valve member constructed and arranged to be normally held in resilient, circumferential sealing engagement with said valve seat;

a heat-failing compression strut having two opposite ends;

bail means provided on said body for retaining said compression strut in compression against the valve member in a sense to urge the valve member into circumferential sealing engagement with said valve seat, with the compression strut having one end bearing against the bail and the other end bearing against the valve member;

means acting between said strut and said body for adjusting the amount of sealing force applied by the strut to the valve member;

said disk-like valve member including a disk-like stiffly resilient wafer having a central region, an annular radially intermediate region, and an outer peripheral margin with an outer edge, said wafer having an inner side facing upstream and an outer side facing externally;

said wafer outer peripheral margin being arranged to circumferentialy, resiliently, sealingly bear against said valve seat;

said wafer central region being arranged to face upstream pressure such that increasing pressure on the wafer central region tends to resiliently dome said wafer;

fulcrum means arranged to annularly bear against said wafer radially intermediate region, against the outer side of said wafer, so that as increasing upstream pressure tends to dome said wafer central region, said wafer outer peripheral margin tends to pivot about said fulcrum means for increasing the force and area of sealing contact between the valve member and the valve seat; and

stop means constructed and arranged to limit axial move-

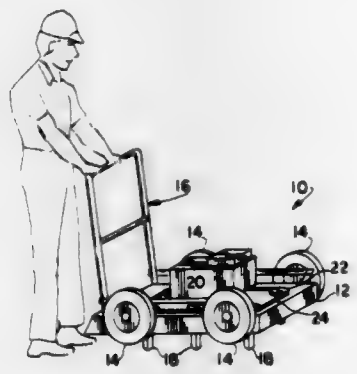
ment of the fulcrum means in the upstream direction to a predetermined amount and thus prevent application of excessive force to the peripheral margin of the wafer.

4,511,004

APPARATUS FOR DRILLING A PLURALITY OF BORES IN A LAWN

Michael Deneen, 4112 W. Driftwood Dr., Holiday, Fla. 33590

Filed Apr. 28, 1983, Ser. No. 489,511
Int. Cl.³ A01B *45/02*
U.S. Cl. 172—21 **8 Claims**



1. An apparatus of the type designed to drill a plurality of equidistantly spaced bores in a lawn or other support surface, comprising,

a flat, generally planar in configuration base member,

a plurality of aperture members formed in said base member in equidistantly spaced relation to one another,

a handle member pivotally mounted to said base member,

a plurality of wheel members rotatably mounted to said base member and adapted to transport said base member relative to a support surface,

a linkage means adapted to lower or raise said base member relative to a support surface when said handle member is in a first or second position, respectively,

said linkage means including a pair of linkage members mounted in transversely spaced, substantially parallel relation to one another on opposite sides of said base member,

each of said linkage members including an elongate interconnecting rod having its proximal end pivotally connected to said handle member,

each of said linkage members including a pair of longitudinally spaced offset members,

each of said offset members having an elongate major body portion and a truncate offset portion disposed substantially normal to and rearward of said major body portion at a first end thereof,

said respective offset portions pivotally connected to an associated one of said interconnecting rods

an axle member formed at a second end of said major body portion of said respective offset members rotatably mounting one of said wheel members to said base member,

and said respective major body portions of said offset members being pivotally connected to said base member so that rearward pivoting of said handle member effects raising of said base member and forward pivoting thereof effects lowering of said base member.

4,511,005

CENTERLINE SIGHT WITH REVERSE PENDULUM

Sam J. Brown, Cozad, Nebr., assignor to Sam J. Brown Land & Cattle Company, Inc., Cozad, Nebr.

Filed Nov. 7, 1983, Ser. No. 548,993
Int. Cl.³ A01B *69/00*
U.S. Cl. 172—430 **7 Claims**

1. A row follower guidance apparatus for a tractor having front and rear ends and a forwardly facing operator seat thereon, said apparatus comprising,

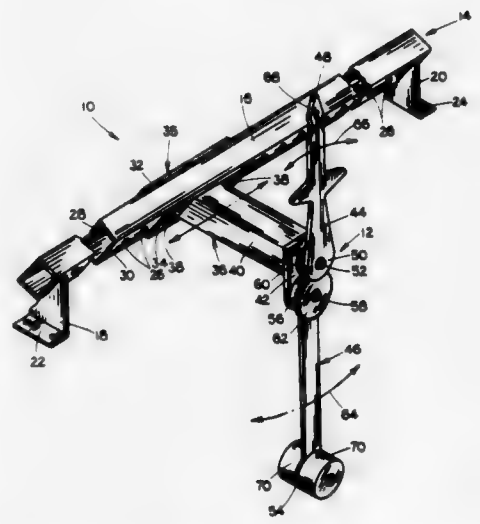
a sighting device,

mounting means for supporting said sighting device on the tractor forwardly of the operator seat, said mounting means providing for adjustment of said sighting device transversely of the tractor,

lock means for securing said sighting device in a selected transverse position along said mounting means,

said sighting device including,

a base,



an upstanding sight having an upper end and a lower end pivotally connected to the base for transverse pivotal movement of the upper end thereof,

a pendulum having a lower end and an upper end pivotally connected to the base for transverse pivotal movement of the lower end thereof, and

coacting drive means on said sight and pendulum, said coacting drive means being operative to move the upper end of said sight in the same transverse direction as the lower end of said pendulum in response to pivotal movement of said pendulum.

4,511,006

DRILL BIT AND METHOD OF USE THEREOF

Alfred J. Grainger, 66 Oxstalls La., Long Leven, Gloucestershire, England

Filed Jan. 17, 1983, Ser. No. 458,503
Claims priority, application United Kingdom, Jan. 20, 1982, 8201609; Jan. 20, 1982, 8201610; Jan. 20, 1982, 8201611
Int. Cl.³ E21B *10/50, 10/56*
U.S. Cl. 175—57 **12 Claims**

1. A method of making a small diameter hole in a substrate such as the face of a mine, the method comprising (1) advancing to the mine face a rotary drill having a drill bit of a diameter of from about 50 mm to about 100 mm, the bit having a body including at least one socket, one end of a shank being received in the socket, a cutting element being held in a holder at the free end of the shank, the shank being free to rotate and thereby rotate the cutting element to form a small diameter hole in the substrate, the cutting element comprising a backing part and a facing part, the backing part being received and held by mechanical pressure of the shank, the facing part comprising an agglomerate of natural or synthetic diamond which

provides the cutting edge, and (2) rotating the drill bit at a speed of from about 200 to 600 rpm, with the cutting element



being caused or allowed to rotate to cut into the substrate and so drill the hole.

4,511,007

LOCKING DEVICE FOR A TOOL WITH TELESCOPICALLY DISPLACEABLE PARTS

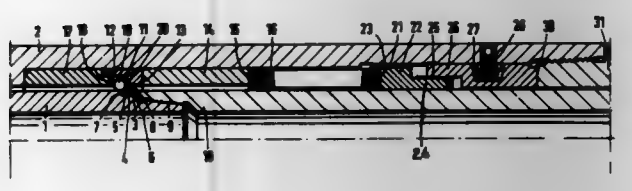
Thomas Jung, Isernhagen, and Gerhard Heidemann, Celle, both of Fed. Rep. of Germany, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 10, 1983, Ser. No. 521,877

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3234003

Int. Cl.³ E21B *4/14*

U.S. Cl. 175—297 **15 Claims**



1. A locking device for a telescopic tool comprising:

relatively telescopically displaceable spindle and sleeve portions including an annular chamber in which the locking device is disposed between the spindle and sleeve portions;

rollable locking elements adapted for radial displacement in the annular chamber and situated adjacent an abutment supported by one of the spindle and sleeve portions opposing and preventing axial displacement of the rollable locking elements during radial displacement thereof and unlocking of the tool;

an axially displaceable counter element with a beveled surface thereon situated on one side of the locking elements, engageable and displaceable relative to one of the spindle and sleever portions by radial displacement and engagement of the locking elements with the beveled surface;

spring means of predetermined force opposing and biasing the axially displaceable counter element and bevel surface thereon toward one side of the locking elements; and

another rigid counter element with a beveled surface of sufficient rigidity to resist radial stress, carried by the other one of the spindle and sleeve portions on an opposite side of the locking elements and adapted upon the application of sufficient axial force between the spindle and sleeve portions to radially displace the locking elements against the bevel surface of and displace the axially displaceable counter element against and compress the spring means a sufficient axial distance whereby the bevel surface on and moving axially with the axially displaceable counter element allows the locking elements to move radially away from and the rigid counter element to pass by and selectively place the telescopic spindle and sleeve portions of the tool in a locked or unlocked state.

4,511,008

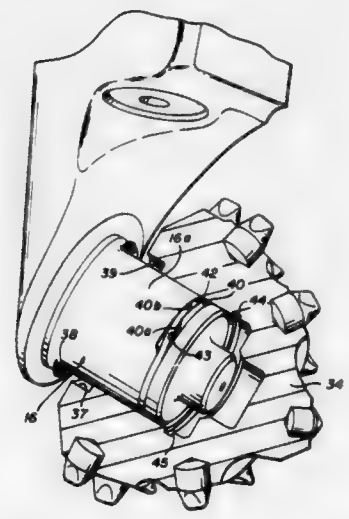
ROTARY CUTTER DRILL BIT WITH PERMANENT SNAP RING CUTTER RETENTION

David T. Brunson, Arlington, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 6, 1984, Ser. No. 568,979

Int. Cl.³ E21B *10/08*

U.S. Cl. 175—369 **8 Claims**



1. In an earth boring apparatus including an earth engaging cutter rotatably mounted on a journal, said cutter having an internal annular surface in opposed axial alignment with an annular surface of said journal, an improved cutter retention means disposed therebetween and cooperating with said opposed annular surfaces to retain said cutter on said journal, and wherein said improved cutter retention means comprises:

a first groove in said internal annular surface of said cutter, said first groove having a first axial width;

a second groove in said annular surface of said journal, said second groove having one portion defining a like first axial width in axial alignment with said first groove and the remainder thereof having an enlarged axial width;

a resilient split ring of generally said first axial width and having a circumference when the ends of said ring abut, greater than the circumference of said annular surface of said journal, and wherein the radial depth of said ring is greater than the radial dimension of said first groove and not greater than the radial dimension of said second groove;

whereby during assembly of said cutter on said journal, said ring is disposed within said second groove and compressed to be generally coextensive with the surface of said journal by the ends of said ring being axially overlapped in said axially enlarged remainder of said second groove, whereupon said ring, upon axial alignment of said first groove with said one portion of said second groove, snaps into said first groove radially extending between the opposed first and second grooves and prevented from again assuming a compressed condition coextensive with said journal so that the cutter is permanently retained on said journal.

4,511,009
COMBINATORIAL WEIGHING APPARATUS AND METHOD

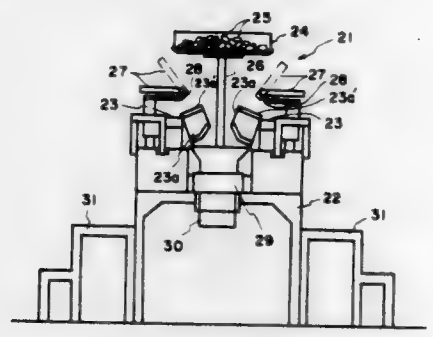
Koichi Kataoka, Shiga, Japan, assignor to Kabushika Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 30, 1983, Ser. No. 537,570

Claims priority, application Japan, Jan. 10, 1982, 57-149852[U]

Int. Cl.³ G01G *19/00, 19/22*

U.S. Cl. 177—1 **8 Claims**



1. A combinatorial weighing apparatus having a plurality of weighing machines each provided with a weighing hopper, wherein the weighing hoppers are supplied with articles, combinations are computed based on weight values provided by the weighing machines, and a selected combination of articles is discharged from the weighing hoppers, said apparatus comprising:

weighing hoppers provided for respective ones of the plural weighing machines, said weighing hoppers being arranged in at least a single row;

a plurality of tiltable pool trays located diagonally above corresponding ones of said weighing hoppers and provided at a height at which each can be viewed from outside the apparatus, said pool trays temporarily retaining a batch of received articles, wherein, after articles are discharged from selected weighing hoppers, the pool trays corresponding thereto are tilted to automatically resupply these weighing hoppers; and

a collecting conveyor for collecting articles discharged from the selected weighing hoppers.

4,511,010
COMBINATORIAL WEIGHING METHOD AND APPARATUS THEREFOR

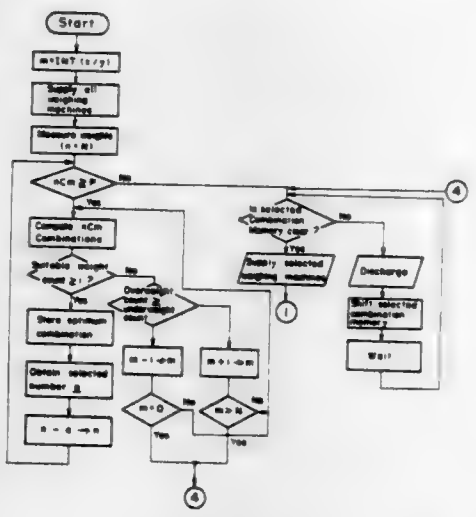
Takashi Sashiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 12, 1983, Ser. No. 531,401

Claims priority, application Japan, Sep. 11, 1982, 57-158347

Int. Cl.³ G01G *19/04, 19/00*

U.S. Cl. 177—25 **9 Claims**



1. A combinatorial weighing method in which weight data from a plurality of weighing machines containing articles, are combined to obtain an optimum combination of weighing machines giving a total combined weight value of articles equal to a target value or closest to the target value within preset allowable limits, and in which the articles are discharged from the obtained optimum combination of weighing machines, comprising the steps of:

(a) predicting and entering a limit value p, p being an integer greater than or equal to one, for a number of combinations giving at least one total combined weight value within the preset allowable limits;

(b) comparing a number ${}_nC_m$ of combinations and the limit value p, where n, being an integer greater than or equal to one, represents a number of weighing machines that have been supplied with articles, and ${}_nC_m$ represents a number of combinations that select m weighing machines, m being an integer greater than or equal to one, from the n weighing machines;

(c) obtaining, when ${}_nC_m > p$ holds, an optimum combination of weighing machines giving a total combined weight value of articles equal to a target value or closest to the target value within the preset allowable limits, the optimum combination being obtained from among the combinations that select the m weighing machines from the n weighing machines;

(d) discharging the articles from the obtained optimum combination of weighing machines;

(e) performing the following operation:

$$n - a \rightarrow n$$

where a is an integer greater than or equal to one and represents a number of weighing machines selected as the optimum combination, and repeating said steps from step (b) onward without resupplying weighing machines with articles;

(f) when ${}_nC_m < p$ holds, supplying articles afresh to the weighing machines that have discharged their articles, and repeating said steps from step (b) onward.

7. A combinatorial weighing apparatus in which weight data from a plurality of weighing machines containing articles are combined to obtain an optimum combination of weighing machines giving a total combined weight value of articles equal to a target value or closest to the target value within preset allowable limits, and in which the articles are discharged from the obtained optimum combination of weighing machines, comprising:

limit value setting means for predicting and entering a limit p, p being an integer greater than or equal to one, of a number of combinations giving at least one total combined weight value within the preset allowable limits;

comparison means, operatively connected to said limit value setting means, for comparing a number ${}_nC_m$ of combinations and the limit value p, wherein n is an integer greater than or equal to one and represents a number of weighing machines that have been supplied with articles, and ${}_nC_m$ is an integer greater than or equal to one which represents a number of combinations that selects m weighing machines, m being an integer greater than or equal to one, from the n weighing machines;

combinatorial computing means, operatively connected to said weighing machines, for obtaining, when ${}_nC_m > p$ holds, an optimum combination of weighing machines giving the total combined weight value equal to the target value or closest to the target value within preset allowable limits, said optimum combination of weighing machines being obtained from among the combinations that select the m weighing machines from the n weighing machines;

means for discharging the articles from the obtained optimum combination of weighing machines;

means, operatively connected to said combinatorial computing means, for performing the following operation:

$$n - a \rightarrow n$$

wherein a is an integer greater than or equal to one and represents a number of weighing machines selected as the optimum combination, and for repeating the foregoing combinatorial weighing operation without resupplying the weighing machines with articles; and

means, operatively connected to the weighing machines, for supplying articles afresh to the weighing machines that have discharged their articles, and for repeating the foregoing combinatorial weighing operation, when ${}_nC_m < p$ holds.

4,511,011

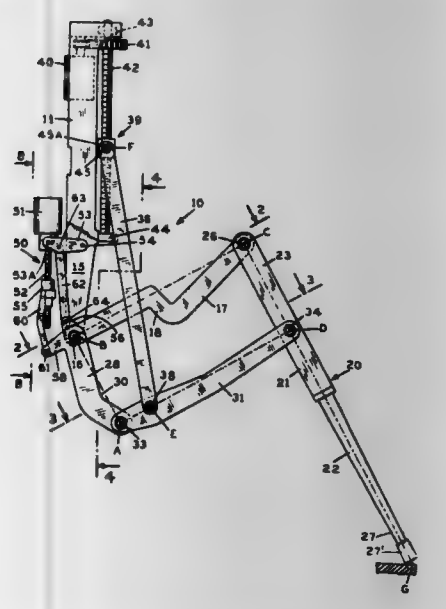
LEG MECHANISM FOR WALKING MACHINE

Stephen J. Bartholet, Orange, Calif., assignor to Odetics, Inc., Anaheim, Calif.

Filed Mar. 18, 1983, Ser. No. 476,558

Int. Cl.³ B62D *57/02*

U.S. Cl. 180—8.6 **6 Claims**



1. A leg mechanism for a walking machine comprising:

a frame member;

a first elongate link, a first end of said first link being pivotally connected to said frame member;

a pair of second elongate links, first ends of said links being pivotally connected to a second end of said first link, on opposite sides thereof, to permit positioning of said first link between said second links, second ends of said second links being interconnected to form a foot;

a pair of third elongate links, first ends of said third links being pivotally conntected to said frame member and said first end of said first link, with said first link between said third links; and

a pair of fourth elongate links, first ends of said fourth links being pivotally connected to second ends of said third links with said third links between said fourth links, second ends of said fourth links being pivotally connected to an intermediate point on said second links, with said second links between said fourth links, to permit positioning of said second links between said fourth links.

4,511,012

DRIVE AXLE FOR A MOTOR VEHICLE

Josef Rauneker, Ostfildern-Ruit, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,816

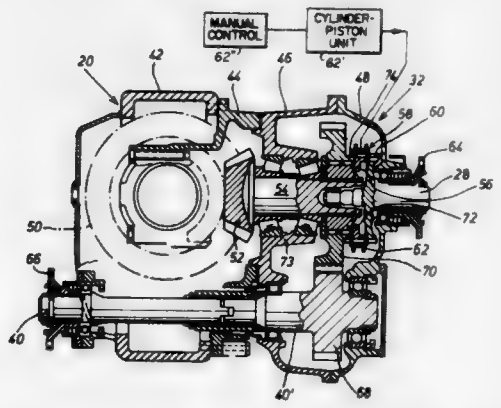
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211621

Int. Cl.³ B62D *25/00*

U.S. Cl. 180—65.2 **22 Claims**

1. A drive axle system for a motor vehicle, wherein a drive axle can be driven by a drive unit comprising one of an internal combustion engine and an electric motor, and to which axle a gear unit is assigned, this gear unit possessing gear unit input shafts which can be driven by one of the drive units in each case, a gear unit output shaft which is coupled to the drive axle, as well as a shifting clutch for coupling the gear unit output shaft to one of the gear unit input shafts, the shifting clutch interacting with tooth systems which function as driving devices, the gear unit shafts being installed axially parallel to one another and at right angles to the lengthwise direction of the axle beam of the drive axle, characterized in that

the gear unit is a changeover gear unit which is installed on the axle beam of the drive axle, and which serves for alternative selection of one of the drive units, internal combustion engine and electric motor, in that



the drive ends of the gear unit input shafts, which are mounted, spaced apart, one above the other, are led out of the changeover gear unit on opposite sides, and in that

one of the gear unit input shafts is mounted beneath the gear unit output shaft and carries a spur pinion which is installed in a manner preventing rotation with respect to said one input shaft and which meshes with a spur pinion which is installed on the gear unit output shaft, it being possible to couple the latter spur pinion to the gear unit output shaft by means of the shifting clutch, while simultaneously decoupling the other gear unit input shaft from the gear unit output shaft.

4,511,013

REAR SUSPENSION SYSTEM FOR MOTORCYCLES

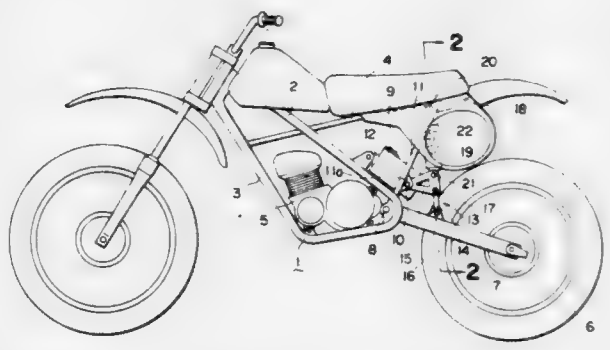
Shinichi Miyakoshi, and Kazuhiko Tsunoda, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,935

Claims priority, application Japan, Jul. 23, 1981, 56-109981[U]

Int. Cl.³ B62K *25/20*

U.S. Cl. 180—227 **11 Claims**



1. In a motorcycle having a relatively stationary rigid structure, a rear wheel and a pivotable element which is pivotable with respect to said rigid structure together with vertical movement of said rear wheel, a rear wheel suspension system comprising:

a pivotable-shaft actuated type damper fixedly mounted on

said rigid structure in stationary relation thereto, said damper being provided with actuating means therefor;

said damper actuating means comprising a pivotable operating shaft, said damper operatively cooperating with said pivotable operating shaft so as to generate a damping force, while remaining stationary relative to said rigid structure, upon pivotal movement of said operating shaft about its own axis;

a link mechanism operatively connected between said pivotable element and said damper, said link mechanism comprising a rod connected with a pivotable link member;

said operating shaft of said damper being integrally connected with said link member so as to define a pivot shaft for said link member which pivots integrally therewith;

a coil spring tensioned between said rigid structure and said link member such that said spring, said link member and said rod are operatively connected and arranged in series; and

said damper and said coil spring being mounted separately and independently of each other.

4,511,014

SYSTEM FOR CONTROLLING A POWER TRANSMISSION OF A FOUR-WHEEL DRIVE VEHICLE

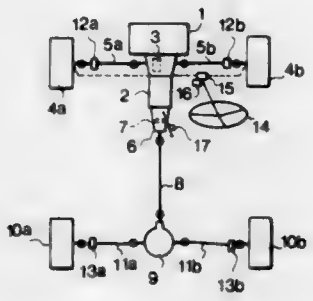
Fujio Makita, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,188

Claims priority, application Japan, Jul. 7, 1981, 56-106648

Int. Cl.³ B60Q *1/00*; B60K *31/00*

U.S. Cl. 180—233 **8 Claims**



1. A system for controlling a power transmission of a four-wheel drive vehicle powered by an engine comprising:

the transmission being arranged for transmitting a power of said engine to two main driving wheels;

a clutch for selectively transmitting said power to two wheels other than said two main driving wheels;

speed sensors for producing output signals dependent on speeds of the four wheels;

a steering-angle sensor for producing an output signal dependent on the steering-angle;

a first computing circuit for computing an actual slip rate from output signals of said speed sensors;

a second computing circuit for computing a theoretical slip rate from said output signal of said steering-angle sensor;

a comparing circuit for comparing the actual slip rate and the theoretical slip rate with each other for producing an output signal when the difference between the slip rates exceeds a predetermined level;

a first circuit means responsive to said output signal of said comparing circuit to produce an output signal for a predetermined time; and

a second circuit means responsive to said output signal of said first circuit means for operating said clutch for the engagement thereof. whereby four-wheel driving power transmission is established.

4,511,015

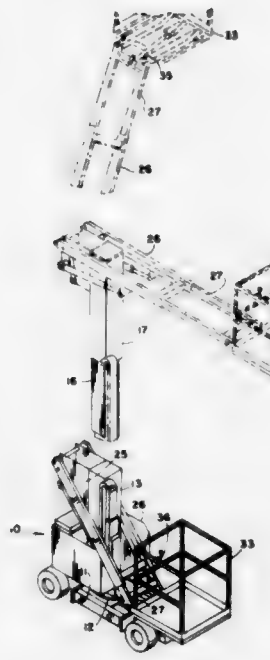
MANLIFT

Paul J. Purdy, 608 Morningside Dr., Trenton, Mo. 64683

Filed Jun. 15, 1983, Ser. No. 504,429

Int. Cl.³ B66F *11/04*

U.S. Cl. 182—2 **4 Claims**



1. In a manlift apparatus of the type including a wheeled chassis, a vertical mast, a telescoping boom, and an aerial platform, the improvements comprising:

a fully hydraulic, telescoping, vertical mast, mounted on a rotating base plate on the wheeled chassis slightly offset from the center line of rotation of said base plate;

said fully hydraulic mast including at least two telescoping sections driven to reciprocate by a package of plural equal area cylinders, integrally attached to each other and attached to said telescoping sections, said package of cylinders located within the innermost telescoping section so as to be removable therefrom without disassembly of said telescoping sections; and

a telescoping boom mounted to one side of the uppermost section of the vertical mast and extending beyond the other side of said mast in a straddling manner to the aerial platform, said telescoping boom being operated by cylinders located substantially on the said one side of said vertical mast opposite from the aerial platform.

4,511,016

LUBRICATING SYSTEM FOR GAS TURBINE ENGINES

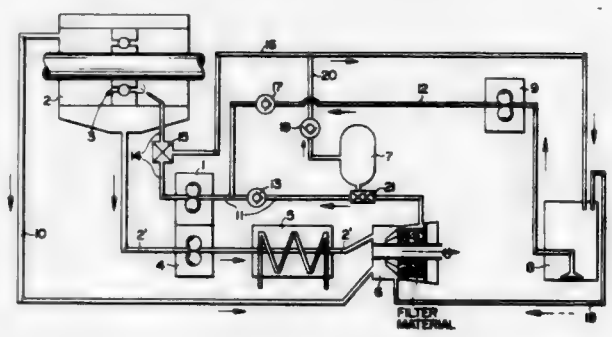
Hermann Döëll, Munich, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,413

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242366

Int. Cl.³ F16N *29/02*; F01M *11/12*

U.S. Cl. 184—6.11 **8 Claims**



1. A lubricating system for gas turbine engines, comprising a

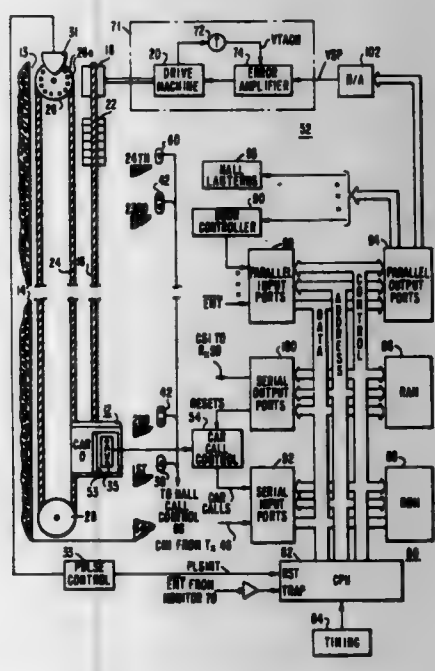
lubricant circulating circuit including lubricating chamber means (2), lubricant pressure pump means (1) and a main supply conduit means (14) operatively connecting said pressure pump means to a pressure input of said lubricating chamber means for lubricating an engine component in said lubricating chamber means, suction pump means (4) operatively connected to a suction output of said lubricating chamber means (2), lubricant air separator means (6) vented to the atmosphere, conduit means (2') operatively connecting said lubricant air separator means (6) to said suction pump means (4), return conduit means (11) operatively connecting said lubricant air separator means (6) back to said pressure pump means (1), and lubricant storage accumulator means (7) operatively connected to said return conduit means (11), said system comprising a further pressure pump means (9), lubricant supply container means (8), and auxiliary conduit means (12) operatively connecting said further pressure pump means (9) to said main supply conduit means (14) of said lubricant circulating circuit for replenishing lubricant from said supply container means (8) only during engine starting and during engine operation under normal flight conditions, said main supply conduit means (14) comprising first valve means (15), said return conduit means (11) comprising second valve means (13, 21), and said auxiliary conduit means (12) comprising third valve means (17), said first, second and third valve means being responsive to variable oil pressures occurring in said respective conduit means for assuring a lubrication in said lubricating chamber means (2) independently of gravity, especially zero gravity, influences under critical flight conditions.

4,511,017

ELEVATOR SYSTEM

Robert C. MacDonald, West Caldwell, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 20, 1983, Ser. No. 534,005
Int. Cl.³ B66B *5/02*
U.S. Cl. 187—29 R **21 Claims**



1. A method of providing emergency elevator service for each floor of a building having a bank of elevator cars and a plurality of floors, including a main floor, comprising the steps of:

pre-assigning a predetermined different pattern of floors to each elevator car of the bank,

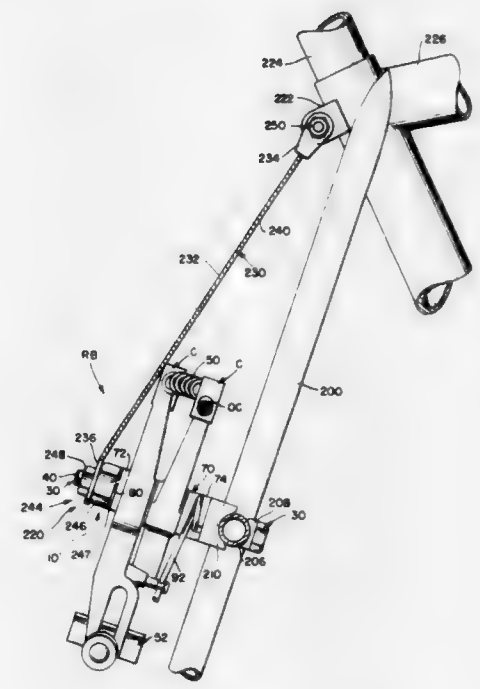
and revising the assignment for each car after a predetermined occurrence.

4,511,018

BICYCLE BRAKE MECHANISM

Edward Scott, S. Hwy. 75, P.O. Box 323, Ketchum, Id. 83340

Filed Feb. 11, 1982, Ser. No. 347,953
Int. Cl.³ B62L *1/12*
U.S. Cl. 188—24.12 **6 Claims**



1. An improvement in a bicycle brake of the type having a caliper means, a mounting bolt attaching the caliper means to a bicycle frame, the improvement comprising:

an adaptor means abutting the bicycle frame and having a bore defined therethrough through which the mounting bolt extends; and

a mounting post having a trunk section and a head section, said head section abutting said adaptor means and being larger in cross-sectional area than said trunk section, said trunk section and said head section having a bore defined therethrough through which the mounting bolt extends, sdid trunk section having caliper mounting means thereon for attaching the caliper means to said mounting post and mounting bolt attaching means for attaching said mounting post to the mounting bolt, further including means attaching said mounting post to seat stays of the bicycle, together with adjustable means for bracing said mounting post including a brace rod attaching the trunk section of said mounting post to a seat post of the bicycle.

4,511,019

SPOT-TYPE DISC BRAKE, IN PARTICULAR FOR AUTOMOTIVE VEHICLES

Vlad Marianu, Frankfurt-Griesheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 446,849
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 3209389
Int. Cl.³ F16D *55/224, 65/00*
U.S. Cl. 188—72.2 **9 Claims**

1. A spot-type disc brake for use in conjunction with a brake disc mounted on a support for rotation at least in one direction about an axis, comprising:

a support member stationarily mounted on the support;

first and second brake shoes respectively mounted on said support member at one and the other axial side of the brake disc for movement toward and away from the brake disc; and

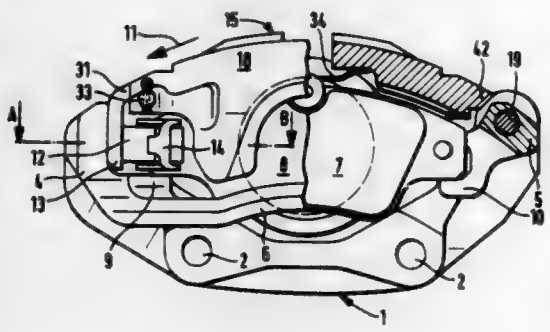
means for moving said brake shoes at least toward the brake disc, including a caliper member,

means for mounting said caliper member on said support member for movement relative thereto so that said caliper member extends past the brake disc and said brake shoes,

including a first guide element mounted on one of said members for movement relative thereto substantially parallel to the axis of the brake disc, and

a second guide element mounted on the other of said members and rigidly connected to said first guide element so as to permit said caliper member to conduct movement relative to said support member substantially in and opposite to said one direction while preventing said caliper member from turning relative to said support member about an axis extending radially of the brake disc,

an actuating unit mounted on said caliper member at said one axial side and acting on said first brake shoe directly and



on said second brake shoe indirectly through said caliper member, wherein said members include respective guiding bores; and wherein said guide pins slidably received in the respective guiding bores, and

wherein said guiding bores are centered on bore axes one of which is parallel to, and more remote from the axis of the brake disc than the other in the mounted condition of the disc brake; wherein said guide pins are coaxially received in said guiding bores for turning about said bore axes; and wherein said mounting means further includes a lever rigidly interconnecting said guide pins and keeping the same a predetermined distance apart.

4,511,020

DISC BRAKES

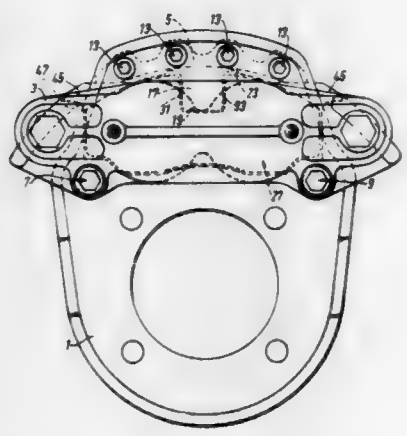
Francis V. Williams, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 26, 1982, Ser. No. 401,557

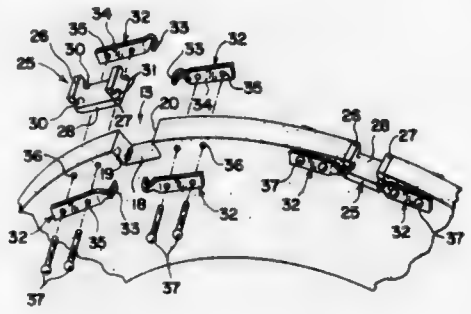
Claims priority, application United Kingdom, Aug. 4, 1981, 8123757

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—73.39 **11 Claims**



1. A pin sliding caliper disc brake, comprising a caliper and a first torque taking member, said caliper and first torque taking member being slidable relative to each other by means of a sliding connection, the caliper being open-topped for the insertion of friction pad assemblies, and a supplementary torque taking member detachably secured to said first torque taking member, said supplementary torque taking member having a pair of projections each of which, in use, engages a friction pad assembly at a position where said projection takes all of the braking forces exerted on said friction pad assembly



while relieving said caliper of braking forces, said pair of projections being in the form of shaped fingers which project generally radially of the brake disc, one on either side thereto, and engage in recesses in the friction pad assemblies.

4,511,021

BRAKE APPARATUS

Bruce A. Grider, Troy, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 21, 1983, Ser. No. 487,344

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—218 XL **12 Claims**

6. In a friction brake disc having a pair of annular flat wall surfaces, an inner peripheral wall surface, and an outer peripheral wall surface, said disc having a plurality of circumferentially spaced slots along one of said periphery wall surfaces for engagement by a spline of a torque device; each of said slots having two generally radially extending walls and a bottom surface extending between and interconnecting said walls; an insert located within each of said slots for reinforcing said slots; each of said inserts having a general U-shaped configuration with two spaced end sections and an interconnecting bridging section; each of said end sections having a pair of spaced side edges and an outer edge; said outer edge terminating at said one peripheral wall surface; all of said side edges of said inserts being recessed; a clip secured to said disc adjacent to each of said recesses; each of said clips having a curved projection extending into an adjacent recess of said inserts to retain said insert within said slots; there being four clips for each of said inserts; and there being a clearance space between said curved projections of said clips and said recesses of said inserts to provide a floating action of said inserts within their respective slots.

4,511,022

VALVE ARRANGEMENT FOR REGULATING VEHICLE SUSPENSION DAMPING PRESSURES

Alan Thomas, Stratford on Avon, and Stanley G. Glaze, Brierley Hill, both of England, assignors to Lucas Industries, England

Filed Jan. 13, 1983, Ser. No. 457,576

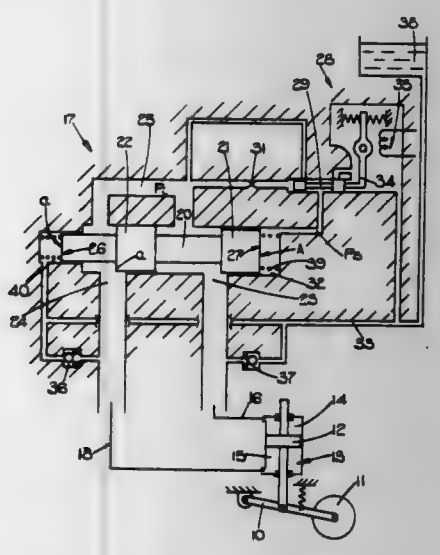
Claims priority, application United Kingdom, Jan. 20, 1982, 8201550

Int. Cl.³ F16F *9/20*

U.S. Cl. 188—299 **7 Claims**

1. A valve arrangement for regulating the pressures on opposite sides of a damping piston in a road vehicle suspension, said valve arrangement comprising two identical valve devices in series and connected, in use, between zones on opposite sides of said damping piston, said devices including substantially identical flow control elements which are coupled for movement in unison so that the effective flow areas of the devices are substantially equal to each other in all operating positions of their flow control elements and the fluid pressure intermediate the devices is substantially equal to the arithmetic mean of said pressures on opposite sides of the damping piston, a further valve for regulating a servo pressure in accordance with the magnitude of said intermediate pressure and the magnitude of an electrical input signal, and means for positioning said flow control elements in response to said servo pressure so that, for a given value of said input signal a change in said

intermediate pressure causes said servo pressure to move said control elements in a sense to oppose said change, whereby



said intermediate pressure, and hence the force acting on said damping piston, is dependent on the magnitude of said electrical input signal.

4,511,023

CLUTCH BRAKE APPARATUS FOR FARM WORK MACHINERY OR OTHER APPARATUS

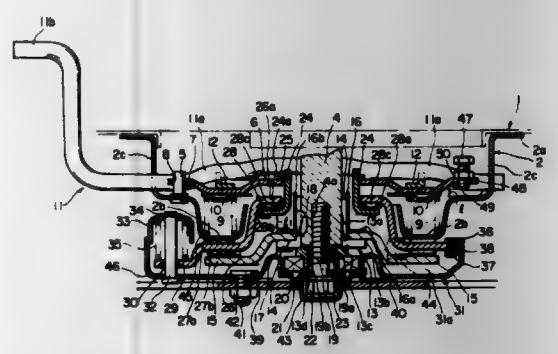
Shigeo Nagai, Nagano, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed Apr. 16, 1981, Ser. No. 254,591

Claims priority, application Japan, Apr. 28, 1980, 55-56827; Apr. 28, 1980, 55-56828; Apr. 28, 1980, 55-56829; Apr. 28, 1980, 55-58750[U]; Apr. 30, 1980, 55-57668; Apr. 30, 1980, 55-59592[U]; Apr. 30, 1980, 55-59593[U]; Apr. 30, 1980, 55-59594[U]; Apr. 30, 1980, 55-59595[U]; Apr. 30, 1980, 55-59596[U]; Apr. 30, 1980, 55-59597[U]; Sep. 24, 1980, 55-135609[U]; Sep. 26, 1980, 55-136863[U]; Sep. 26, 1980, 55-136864[U]; Sep. 26, 1980, 55-136865[U]; Sep. 30, 1980, 55-139471[U]; Sep. 30, 1980, 55-139472[U]; Sep. 30, 1980, 55-139473[U]

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—18 R **27 Claims**



1. A clutch brake apparatus, comprising:

a fixed member secured to an engine mounting;

an engine output shaft projecting from the fixed member;

a rotating member rotatably mounted on the output shaft;

a pressure plate mounted on said fixed member and movable in a direction parallel to the output shaft;

a pressure spring between the pressure plate and the fixed member;

an operation rod adjacent said pressure plate, upon which said pressure plate is urged by said pressure spring, for moving said pressure plate against the force of said pressure spring;

a disc plate integrally rotatable with said output shaft, opposite said fixed member with respect to said pressure plate;

a clutch plate between the disc plate and the fixed member, having inner and outer peripheries, movable in the direction parallel to the output shaft, rotatable with said rotating member;

means for urging said clutch plate toward said fixed member;

a clutch spring for urging the clutch plate toward the disc plate; and

means for engaging the inner periphery of said clutch plate with said pressure plate while allowing relative rotation therebetween, so that, when said pressure plate is moved against the force of said pressure spring by said operation rod, said clutch plate is separated from said fixed member and is urged upon said disc plate by said clutch spring.

4,511,024

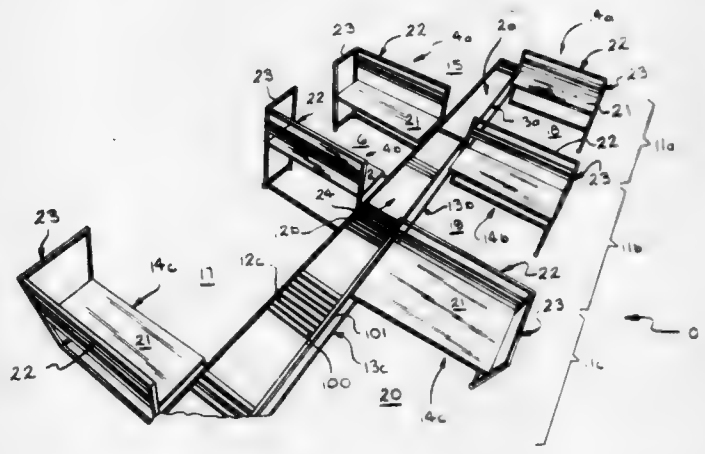
MODULAR UNIT WITH FOLDABLE PANELS

Dennis L. Long, 2524 Santigo SE., Grand Rapids, Mich. 49506

Filed Jul. 29, 1983, Ser. No. 518,480

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—346 **14 Claims**



1. A portable and unfoldable modular unit (11) including a combined conveyor and work station (15, 16, 17, 18, 19, 20) which comprises:

(a) a conveyor including a frame (13) supporting a conveyor surface (12) between opposite ends (24) of the frame at a pre-selected height of the frame;

(b) a vertically oriented first panel (22) mounted on the frame by first hinge means (201) so as to be unfoldable on a vertical axis into an open position at a 90° angle away from the conveyor surface and so as to be foldable on the vertical axis into a position parallel to a line (2—2) between the ends of the conveyor surface;

(c) a vertically oriented second panel (23) mounted on the first panel by second hinge means (200) so as to be in an open position at a 90° angle from the first panel and parallel to the line between the ends of the conveyor surface and so as to be foldable into a position parallel to the line between the ends of the conveyor surface;

(d) a work surface (21) hinged on the first panel by first retaining means (202) such that when the work surface is folded the surface is parallel to the first panel and when in an open position is at approximately a 60° to 90° angle to the first panel; and

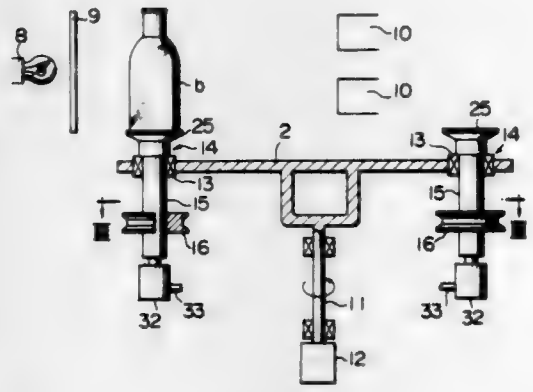
(e) second retaining means (204) mounted on the work surface which detachably connect to the frame and second panel to hold the work surface in the open position, wherein when the work surface is folded the first and second panels can be folded to be positioned parallel with the line between the ends of the conveyor surface in order to provide the unit in a folded portable configuration.

4,511,025

ARTICLE HOLDING APPARATUS OF ROTARY TYPE

Toshikazu Nakayama, Yokohama, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1982, Ser. No. 432,269
Claims priority, application Japan, Oct. 6, 1981, 56-148655[U]
Int. Cl.³ B65G *29/00*
U.S. Cl. 198—377 9 Claims



1. An apparatus for firmly holding bottle like containers to rotate about a center axis of each of a plurality of supporting mechanisms at high speed while they revolve around a center axis of the apparatus comprising in combination:

a rotating means adapted to rotate about the center axis of the apparatus:

a plurality of supporting mechanisms rotatably held on said rotating means to hold a bottom of each container thereon so that the container is in an upright position, said supporting mechanisms being located at an equal distance along a periphery of a circle on the rotating means;

an endless belt for rotating each of said supporting mechanisms in one direction about the axis of the latter while the latter revolve around the axis of the apparatus;

means for controlling the tension in the endless belt;

said endless belt being disposed along a part of a periphery of the rotating means so as to contact each support mechanism to thereby rotate the support mechanism when the support mechanism passes within a region where the endless belt is disposed; and

a plurality of holding means for firmly holding the containers thereon with the aid of attractive force generated under reduced pressure, a vacuum source generating said reduced pressure, a suction cup being in communication with said vacuum source and cooperating with a frictional disc disposed on a top end part of each supporting mechanism.

4,511,026

APPARATUS FOR THE STORAGE AND MECHANICAL TRANSFER OF STOCK OR MATRIX CAPACITORS

Arno Adler, Bagnolet, France, assignor to L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Dec. 29, 1982, Ser. No. 454,391
Claims priority, application France, Dec. 31, 1981, 81 24582
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—469 1 Claim

1. A system for conveying stock or matrix capacitors in the form of bars, the system comprising:

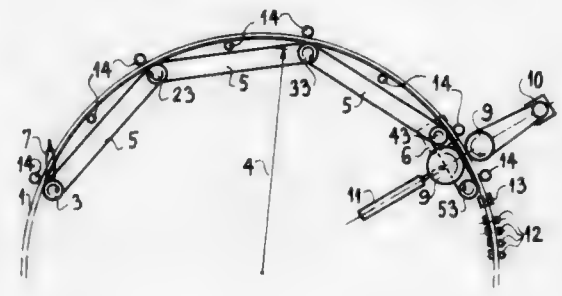
a plurality of threaded means arranged in an arc for supporting a plurality of parallel spaced arcuate bent bars thereon, the bars being transversely oriented with respect to the threaded means;

grooves formed in the threads of the threaded means for receiving the bars therein and retaining them in parallel spaced relation;

means for stopping longitudinal movement of all the bars except an innermost positioned bar;

means for longitudinally moving the innermost bar from an innermost thread of the threaded member to a work station;

control means for detecting longitudinal movement of the innermost bar from the innermost thread to the work station;



drive means connected to the control means for actuating the threaded means simultaneously to transfer all the remaining bars to respective immediately adjacent inward threads thus enabling cyclical operation; and

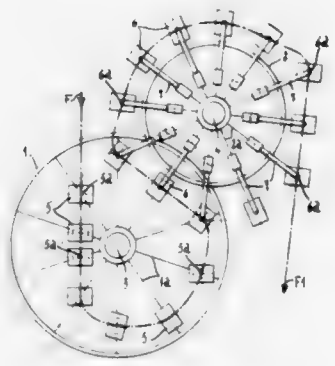
roller means contacting the bars for ensuring they retain an arcuate shape as they are moved from the threaded means to the work station.

4,511,027

METHOD OF AND APPARATUS FOR THE HANDLING OF PRODUCTS BY OPERATIVE MEANS CARRIED IN CONTINUOUS MOVEMENT

Alderino Zamboni, Budrio, Italy, assignor to RISVIN - Ricerche e Sviluppo Industriale - S.r.l., Budrio, Italy

Filed Oct. 8, 1982, Ser. No. 433,552
Claims priority, application Italy, Oct. 23, 1981, 3557 A/81
Int. Cl.³ B65G *29/00*
U.S. Cl. 198—478 10 Claims



1. A method of handling articles which comprises the steps of:

mounting said articles in succession upon a plurality of angularly equispaced holders on a first wheel rotatable about an axis by shifting said holders as said wheel rotates to ensure that said holders describe a linear path section during the mounting of said articles on said holders;

thereafter rotating said wheel to arcuately sweep said holders and said articles thereon along at least one further path section including at least one arcuate portion;

thereafter shifting said holders radially as said wheel continues to rotate about said axis while rotating said holders about respective holder axes parallel to the axis of said wheel to maintain a given orientation of said holders along a further linear path section;

rotating a second wheel about a second wheel axis parallel to but spaced from the first mentioned axis of the first mentioned wheel and radially displacing respective holders of said second wheel to align said holders of said second wheel with said holders of the first wheel along said further linear section while angularly displacing said holders of said second wheel about respective holder axes parallel to the axis of said second wheel to maintain a given orien-

tation of said holders of said second wheel during movement along said further linear path section whereby said articles are transferred to said holders of said second wheel; and

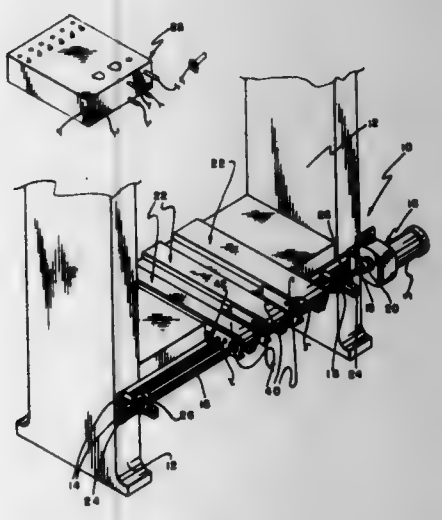
thereafter continuing to rotate said second wheel to displace said holders of said second wheel and the articles therein along still another path section including at least one curve.

4,511,028

GANG CONVEYOR DRIVE MOUNT AND METHOD FOR TRANSPORTING

Richard P. Meister, Newton, Kans., assignor to Bunting Magnetics Company, Newton, Kans.

Filed Apr. 4, 1983, Ser. No. 481,588
Int. Cl.³ B65G *21/00*
U.S. Cl. 198—497 **9 Claims**



1. A gang conveyor drive mount means mountable on a frame base comprising in combination;

a pair of rail means generally securable superimposedly spacedly with respect to each other to the frame base;

a motor-gear box means attached to said pair of rail means;

a drive shaft means drove by and engaged to said motor-gear box means;

at least one conveyor means slidably mounted along said drive shaft means and the upper one of said pair of rail means and extending when mounted over said frame base such that the results of work falls on said conveyor means in order to be transported to a storage or use area;

at least one bracket means slidably mounted along said pair of rail means;

at least one bearing means fixed to said bracket means and slidably mounted along said drive shaft means;

said conveyor means and combined bracket-bearing means adapted in operation of the invention to be slidably adjusted along the drive shaft means and said pair of rail means in order that the gang conveyor drive mount means can be mounted on any given frame base.

4,511,029

APPARATUS FOR TRANSFERRING ARTICLES

Masao Okawa, Niihama, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,342
Claims priority, application Japan, Sep. 28, 1981, 56-153306
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—621 **4 Claims**

1. An apparatus for transferring articles comprising:

a stationary main frame;

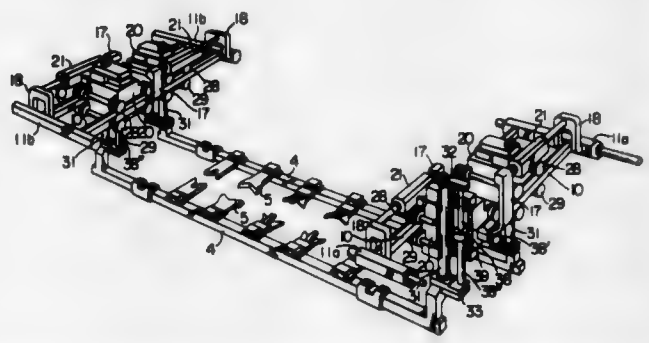
a pair of substantially parallel feed bars;

at least one pair of opposed jaws or claws adapted to hold said article therebetween, each said jaw or claw being provided on each said feed bar;

a pair of movable frames, each being movable with respect to said main frame in a plane in parallel with a plane in which said feed bars extend and including a pair of first beams extending in parallel with said feed bars and a pair of second beams extending perpendicularly to and securely fixed at their ends to said first beams;

a plurality of paired means mounted on said main frame for guiding said first beams, respectively, of each said movable frame to move said movable frame in the direction in parallel with said feed bars;

a pair of carriers movably supported on said second beams of each said movable frame for movement in the direction perpendicular to the movement of said movable frame;



a supporting member movably supported on each said carrier for movement in the direction perpendicular to said plane and securely supporting each end of each said feed bar;

at least one first fluid-operated cylinder for driving at least one of said movable frames;

a second fluid-operated cylinder for driving each said carrier; and

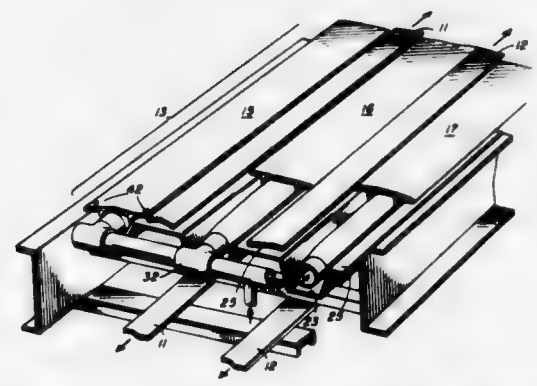
a third fluid-operated cylinder for driving each said supporting member.

4,511,030

ARTICLE ACCUMULATING CONVEYOR SYSTEM

Hans J. Lem, Mahwah, N.J., assignor to Air Lane Systems Inc., Fairfield, N.J.

Filed Mar. 28, 1983, Ser. No. 479,254
Int. Cl.³ B65G *47/74*
U.S. Cl. 198—633 **5 Claims**



1. In a conveyor system of the type in which articles are transported on continuously moving parallel belts, article accumulation apparatus comprising:

interleaved with said belts, a plurality of elongate lifting assemblies each of which includes,

an elongate air bag;

an upwardly facing U-shaped rigid channel member for receiving said air bag;

an inverted U-shaped channel member overlying said air bag, said inverted channel member being relatively flexible in the longitudinal direction;

at each end of each inverted channel member, means for securing the upper surface of the respective end of the

inverted channel member at a level below that of the moving belts;

whereby, when the air bags are inflated, the moving belts can drive successive articles up onto the resulting ramped surface of the inverted channels;

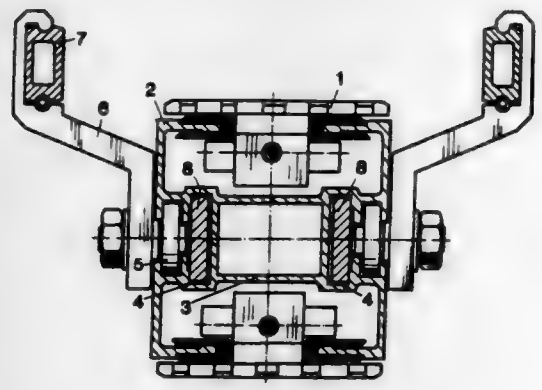
and further comprising respective, mutually engageable lip means on said rigid and flexible channel members for limiting upward movement of said flexible channel member upon inflation of the respective air bag.

4,511,031

CONVEYOR COMPRISING EASILY MOUNTABLE GIRDER SECTIONS

Leif Lachonius, Surte, Sweden, assignor to Aktiobolaget SKF, Goteborg, Sweden

Filed Nov. 3, 1982, Ser. No. 438,915
Claims priority, application Sweden, Dec. 9, 1981, 8107357
Int. Cl.³ B65G *21/20*
U.S. Cl. 198—836 **1 Claim**



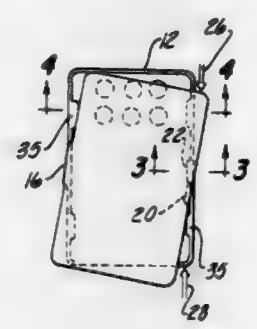
1. A conveyor assembly comprising a series of girders adapted to be mounted in end-to-end relation, each girder being symmetrical about horizontal and vertical planes and defining conveyor belt forward and return paths on opposing horizontal outer sides of each girder, each girder having an integral transverse web portion having at each end, adjacent to a respective upright wall of the girder, a pair of open longitudinally extending side-by-side inner and outer channels, said channels being situated one inside the other, an elongated connecting member engageable in said inner channels and spanning adjacent girders, first mounting means for securing the connecting member to the vertical inner wall of the inner channel and second mounting means for mounting a railing or the like in the outer channels independently of the first mounting means.

4,511,032

CHILD RESISTANT SAFETY CONTAINER

Randall G. Bush, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Apr. 25, 1983, Ser. No. 488,231
Int. Cl.³ B65D *43/10, 85/56*
U.S. Cl. 206—1.5 **15 Claims**



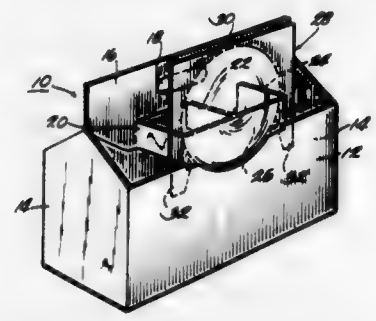
1. A child resistant safety container comprising: a receptacle having a predetermined perimeter, a cover member having a mating perimeter to said predetermined perimeter, a pliable living hinge means holding said cover on said receptacle for pivotal movement between closed and opened positions about a first axis and permitting limited movement of said receptacle and cover about a second axis transverse to said first axis, said receptacle, said cover member and said hinge means being formed as a single unit, and latch means concealed within said container and holding said cover member in closed position relative to said receptacle, said latch means including a hook member having a cam surface for cooperatively engaging a tab formed integrally with said receptacle whereby closing of the container by relative movement of the cover and the receptacle about said first axis causes the cam surface to engage said tab means and push the tab means and latch means away from each other until said hook portion engages the underside of said tab portion with a distinctive sound alerting the operator that the container is closed properly, said cover being releasable from said closed position upon sequential relative twisting movement of said receptacle and cover about said second axis of said hinge means to a position in which said perimeters of said cover member and receptacle are misaligned and overlap each other to permit subsequent lifting of said cover member to an open position, and said cover being engageable with said receptacle in a closed position upon simple pivotal movement of said cover relative to said receptacle about said first axis.

4,511,033

PROMOTIONAL ATTACHMENT FOR BEVERAGE PACKAGES

Ronald J. May, Waukesha, Wis., assignor to American Audiographics, Inc., Waukesha, Wis.

Filed Jan. 16, 1984, Ser. No. 571,114
Int. Cl.³ B65D *77/24;* G09F *3/00*
U.S. Cl. 206—216 **8 Claims**



1. Combination with a beverage container carrier of the type having a multiplicity of individual container retaining means and spaced webs extending between said means and connecting portions of the carrier, of a promotional device attached to the package, the device including a planar message bearing surface and an arm extending therefrom, said arm having a tab which engages one of the webs to resist removal of the arm from engagement with the web.

4,511,034

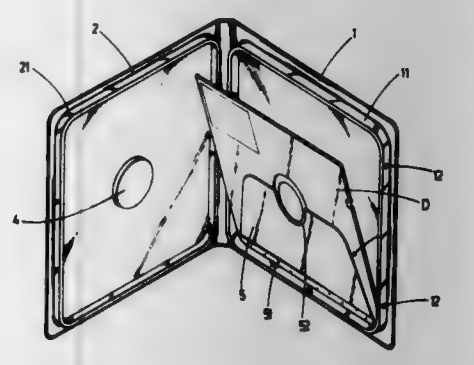
COMPUTER DISKETTE CASES

You-Chwen Pan, 3 Fl-5, No. 28, Jen Ai Rd. Sec. 3, Taipei, Taiwan

Filed Apr. 23, 1984, Ser. No. 603,062
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—310 **3 Claims**

1. A computer diskette case, comprising a left case body (2) and a right case body (1), wherein a flange (11), (21) is set around a periphery of each case body such that said flanges (11), (21) can mate tightly with each other when said case is closed, and provided with a first cylinder (3) centrally disposed on said right case body (1) and having a top surface and a diameter smaller than the diameter of a center hole of a diskette and a second cylinder (4) centrally disposed on said left case body (2) and having a top surface and a diameter larger than the diameter of said center hole of said diskette, and an elastic tongue plate (5) connected on a lower portion (51) of said right

case body and having a semi-circular opening (52) centrally formed in an upper end thereof, said semi-circular opening (52) having a diameter larger than said first cylinder (3) but smaller than said second cylinder (4), whereby when said case is closed said top surfaces of said first and second cylinders (3), (4) contact one another in cooperation with said elastic tongue plate (5) such that a diskette contained in said case is clamped between said elastic tongue plate (5) and said right case body (1) by the pressing of said second cylinder (4) thereon while said first cylinder (3) is encircled by a center hole of said diskette and when said case is opened said elastic tongue plate is released to a set angle with respect to said right case body to allow said diskette to be removed from said case.

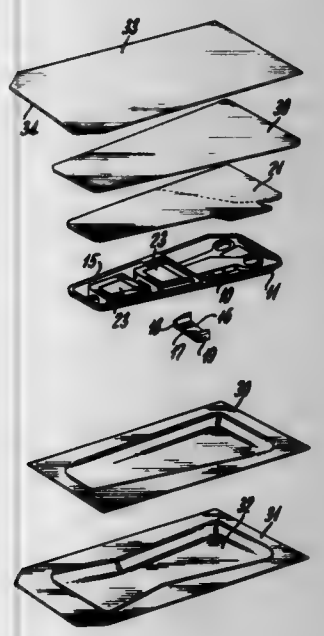


4,511,035

PACKAGE FOR SURGICAL INSTRUMENT

Marvin Alpern, Glen Ridge, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Jan. 13, 1983, Ser. No. 457,821
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—363 **10 Claims**



1. A package for a sterile instrument, said instrument having a repeating type operation utilizing a flexible driver, said package comprising;

semi-rigid formed means for holding said instrument;

rigid means mounted on said formed means for maintaining said instrument in a position wherein the driver is maintained in an unstressed state to prevent it from taking a permanent set;

an insert covering one side of said semi-rigid formed means for providing ready access to said instrument; and

encasing means for completely surrounding said instrument, semi-rigid formed means, rigid means, insert, and access means for maintaining said instrument sterile.

4,511,036

TIDY ELEMENT PROVIDED WITH SEVERAL COMPARTMENTS

Renato Castelli, Ghent, Belgium, assignor to Samsonite Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 213,736, Dec. 5, 1980, abandoned. This application Sep. 10, 1982, Ser. No. 416,477
Claims priority, application Belgium, Dec. 18, 1979, 880684
The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 206—371 **8 Claims**



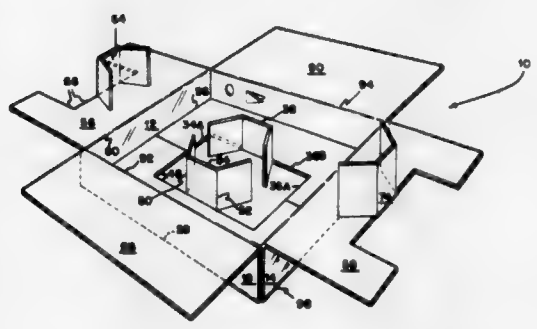
1. A tidy element comprising a substantially flat molded rectangular plastic base adapted to fit in the lid of a traveling case, means for securing said base in said case lid, said base having a bottom, top, sides and partitions dividing said base into a plurality of compartments, a molded lid for at least one of said compartments, said lid having a bottom, top and sides, means at sides of said lid for pivotally connecting said lid to said base to pivot about an axis spaced upwardly from the bottom of said lid, cooperating molded catch portions on the top of said base adapted to interengage with one another to secure said lid releasably in closed condition, molded release means on the top of said lid manually engageable to release said catch means and open said lid extending below the pivot axis of the lid and being engageable with the bottom of said base to limit the opening of said lid.

4,511,037

BOX FOR WRAPPING AND TRANSPORTING FLEXIBLE CORDLIKE STRUCTURE

Robert W. Lucous, 1690 S. Shiloh Rd., Laura, Ohio 45337

Filed Jan. 16, 1984, Ser. No. 570,931
Int. Cl.³ B65D *85/67*
U.S. Cl. 206—396 **6 Claims**



1. A box for transporting and storing a flexible cord-like material, comprising:

(a) four sidewalls, said sidewalls being perpendicular to a first predetermined plane and arranged in end to end relationship to form an endless enclosure with front and rear openings, each of the sidewalls being perpendicular to adjacent sidewalls;

(b) a first flap panel hingedly secured to one of the sidewalls about a first fold line extending parallel to said first predetermined plane, said first flap panel being foldable into the rear opening and at least partially closing the rear opening when positioned in parallel relationship to said first predetermined plane;

(c) a second flap panel hingedly secured to another of the sidewalls about a second fold line parallel to the first fold line, said second flap panel being foldable into the rear

opening and at least partially closing the rear opening when positioned in parallel relationship to said first predetermined plane, said first and second fold lines defining a second plane parallel to the first predetermined plane; and

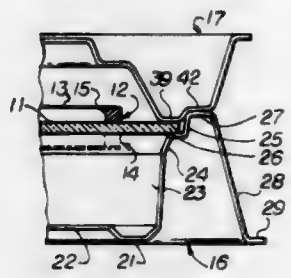
(d) a foldable core panel formed in both the first and second flap panels, each of said core panels being formed by opposing L-shaped slits, each of the L-shaped slits including a first leg extending inwardly toward the corresponding fold line from the side of the flap panel opposite the fold line with a second leg of each L-shaped slit extending parallel to the fold lines toward the opposing L-shaped slit, said foldable core panels being foldable along core fold lines extending parallel to the first and second fold lines and joining the second legs of the two opposing L-shaped slits, said core panels including a pair of fold lines extending from the ends of the second legs in a direction perpendicular to the core fold lines.

4,511,038

CONTAINER FOR MASKS AND PELLICLES

Anne K. M. Miller, Redwood City, and Richard Mason, Campbell, both of Calif., assignors to EKC Technology, Inc., Hayward, Calif.

Filed Jan. 30, 1984, Ser. No. 574,743
Int. Cl.[3] B65D *85/48, 81/16*
U.S. Cl. 206—454 **16 Claims**



1. A container for a mask of the type having a thin, fragile body having a regular peripheral first shape comprising a first part and a second part, one of said parts being a base and the other said part being a cover,

said first part comprising a first surface, first inner sides extending from said first surface, a first ledge beyond said first inner sides having a second shape complementary to said first shape, a peripheral first edge, first means spacing said first edge spaced from said first ledge farther from said first surface than the thickness of a conventional mask and also outwardly, said first inner sides being higher than the thickness of a conventional pellicle used with a conventional mask,

said second part comprising a second surface, second inner sides extending from said second surface, a second ledge generally complementary to said first shape said second ledge being spaced from said first ledge a distance equal to the thickness of said mask, whereby said body when positioned on said first ledge is clamped only at its outer edges between said first and second ledges, a second ledge dimensioned to abut said first edge in the assembled condition of said container, and second means spacing said second edge spaced from said second ledge closer to said second surface than said second ledge and also outwardly, said second inner sides being higher than the thickness of a conventional pellicle.

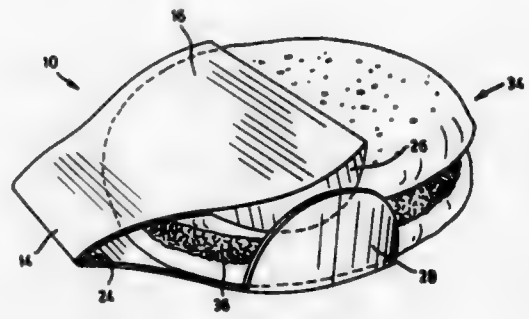
4,511,039

HAMBURGER HOLDER

Stanislaw Siemek, 58 Elsfield Rd., Toronto, Ontario, Canada

Filed Sep. 22, 1983, Ser. No. 534,882
Int. Cl.[3] B65D *5/36, 85/00*
U.S. Cl. 206—525 **4 Claims**

1. A hamburger holder comprising a body member formed of a semi-rigid material, the body member having a central portion, a first end portion formed with a first generally U-shaped open jaw, and a second end portion formed with a second generally U-shaped open jaw, the first jaw being narrower and shallower than the second jaw to enable the first jaw to enter the second jaw, and the body member being adapted to permit pivoting of the first jaw about the central portion towards the second jaw between an open position in



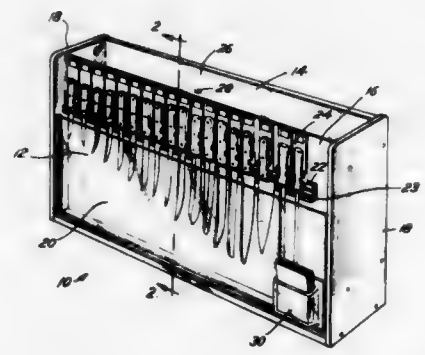
which a hamburger can be received in the jaws and a closed position in which the jaws are orientated substantially in aligned opposing relationship with the first jaw contacting one of the top and the bottom of the hamburger and overlaying the side of the hamburger and with the second jaw contacting the other of the top and bottom of the hamburger and overlaying the side of the hamburger.

4,511,040

DISPLAY CASE

John Tolentino, Muskego, Wis., assignor to Chicago Cutlery Consumer Products, Inc., Minneapolis, Minn.

Filed Apr. 7, 1983, Ser. No. 482,923
Int. Cl.[3] B65D *1/22;* A47F *7/00*
U.S. Cl. 206—553 **6 Claims**



1. A display case for exhibiting cutlery or similar articles comprising, in combination:

a container having a forward display portion and a rearward storage portion;

a divider separating the forward and rearward portions;

means for carrying cutlery in the rearward storage portion, said means comprising a plurality of slotted blocks mounted within the rearward storage portion, the slotted blocks being slidably insertable within the rearward storage portion of the display case;

means for supporting cutlery on the divider, said means mounted on the divider and comprising a cutlery support frame having a groove, and a complementary tongue affixed to the divider, the tongue being T-shaped in cross-section and the groove being T-shaped in a size complementary to the T-shaped tongue; and

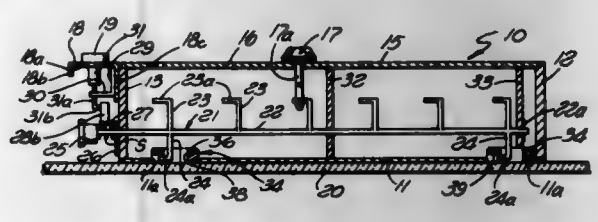
a transparent cover for the forward display portion positionable on the container, the transparent cover screening the sharp portions of the displayed cutlery, the transparent cover further comprising a generally transparent sheet slidably attached to the container forward of both the divider and the means for supporting cutlery on the divider.

4,511,041

JEWELRY DISPLAY TRAY AND SECURITY SYSTEM

Michael D. Waitzman, 11762 Iowa Ave., No. 8, West Los Angeles, Calif. 90025

Filed Jan. 30, 1984, Ser. No. 575,074
Int. Cl.³ B65D *1/34*; A47F *7/24*; E05B *73/00*
U.S. Cl. 206—566 **6 Claims**



1. A store display tray for ring or loop shaped jewelry items including a security system for protecting against the theft of such items comprising:

(a) a display tray formed of a base member, a front wall, a rear wall, side walls and a top display member, said top member having a multiplicity of rows of slots therein for receiving the ring or loop shaped jewelry items to be displayed on said tray;

(b) a multiplicity of shiftable lock means within said tray and each positioned below and in alignment with a row of slots in said top display member, said shiftable lock means each having a portion thereof extending through the rear wall of said tray, said lock means bearing upwardly extending catch elements for locking engagement with the downwardly extending ring or loop shaped portion of the items displayed on the tray in the slots thereof when said lock means are in their respective lock positions, and one or more of said lock means bearing downwardly extending tray security elements for engagement with mounting means affixed to a counter top when said one or more lock means are in their respective lock position for locking said tray to said counter top;

(c) force biasing means comprising springs associated with each of said shiftable lock means and surrounding the extending portion thereof for maintaining said lock means in their lock positions; and

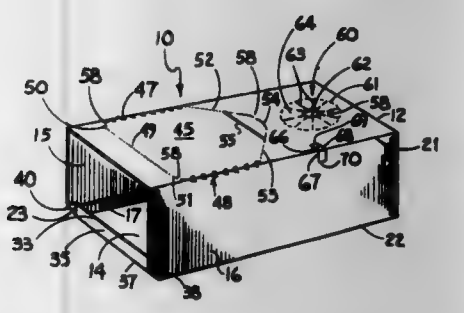
(d) push knobs affixed to the end of the extending portion of each shiftable lock means for shifting said lock means to their respective unlock positions, said knobs positioned so that when a pushing force is applied thereto the springs surrounding said extending portions of said lock means are compressed and said lock means are shifted to their respective unlocked positions until said pushing force is terminated.

4,511,042

COMBINATION SNACK FOOD TRAY

Henry Wischusen, III, Lilburn, Ga., assignor to Rock-Tenn Company, Norcross, Ga.

Continuation of Ser. No. 414,952, Sep. 3, 1982, abandoned. This application May 21, 1984, Ser. No. 611,931
Int. Cl.³ B65D *5/54*
U.S. Cl. 206—611 **4 Claims**



1. A tray of paperboard or the like, for receiving a drink container and a food container, comprising:

a top panel and a bottom panel, held in spaced apart relation by a pair of side panels foldably connected along linear scores to said top and bottom panels, a glue flap extending from said bottom panel and being adhered to the adjacent side panel, said panels and glue flap forming a collapsible tubular enclosure having a substantially open interior, said enclosure having first and second ends each defined by coplanar edges of said top, bottom and side panels;

said first end being closed by automatic end closure flaps extending from said edges of said top, bottom and side panels;

said second end being substantially open and comprising a retaining panel defined in said bottom panel by a transverse score spaced inwardly from the coplanar edge of said bottom panel and extending between said side panels, said side panels each defining a diagonal score extending from an end of said transverse score to meet the coplanar edge of said side panel intermediate the foldably connected edges thereof, and said glue flap defining a diagonal score matching the diagonal score of the side panel to which said glue flap is adhered;

drink-receiving means defining in said top panel adjacent to said first end, for receiving a drink container, comprising a circular score and a plurality of radial break-away cuts extending from said circular score essentially to the center of said circular score, said drink-receiving means substantially enclosing the area within said circular score; and

a tear-away panel comprising an area of said top panel between said circular score and said second end, said tear-away panel being defined by parallel zipper rules extending along the foldable connections between said top panel and said side panels, a first transverse line of perforation extending across said top panel adjacent to said second end to join said zipper rules, and a second transverse line of perforation extending across said top panel adjacent to said circular score to join said zipper rules;

said second transverse line of perforation defining intermediate the ends thereof a tab connected to said tear-away panel by a transverse fold line, said tab being foldable into said enclosure to enable grasping of said tear-away panel;

said zipper rules comprising a plurality of spaced apart linear cut scores defining a path of tearing, and a plurality of semi-circular cut scores, each semi-circular cut score intersecting an end of one of said linear cut scores intermediate the ends of said semi-circular score, and extending such that both ends of said semi-circular score intersect a line drawn normal to the near end of the next adjacent linear cut score;

whereby said food container can be inserted into said enclosure through the open second end thereof, retained by folding said retaining panel into the open end, and protected by said top panel until being exposed by removal of said tear-away panel, and whereby said drink-deceiving means protects said food container prior to insertion of said drink container therein.

4,511,043

EASY OPENING CARTON

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 19, 1983, Ser. No. 533,214
Int. Cl.³ B65D *5/72*
U.S. Cl. 206—620 **16 Claims**

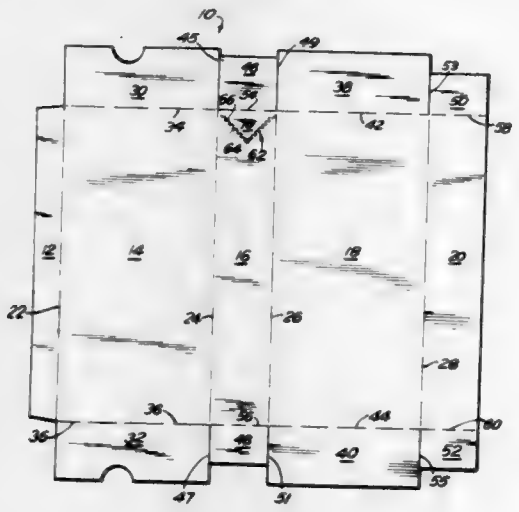
1. A generally rectangular easy opening carton made from a single sheet of paperboard material, said carton comprising:

opposed rectangular front and back walls, opposed rectangular first and second side walls, said first and second side walls being perpendicular to and extending between said front and back walls, and opposed rectangular top and bottom walls, said top and bottom walls being perpendicular to and extending between said front, back and first and second side walls;

said top and bottom walls including opposed dust flaps articulated to each said first and second side walls, a back

end flap articulated to said back wall and a front end flap articulated to said front wall; and

said first side wall being of a single thickness of paperboard material and including a spaced parallel array of perforation lines, each perforation in each line of perforations being alternately offset from each perforation in each adjacent and parallel line of perforations along the longitudinal axis of said parallel array of perforation lines thereby weakening a wide area of said paperboard material, the perforations of said perforation lines extending



into the paperboard material from the same exterior surface of the paperboard material said parallel array of perforation lines being adjacent said top wall and extending toward said bottom wall thereby defining means including an easy opening area whereby when the easy opening area is pressed inwardly in said carton the wide weakened area permits the paperboard material to be easily broken thereby separating the easy opening area from said first side wall along the parallel array of perforation lines thus allowing said top wall and adjacent dust flap to be torn back to easily open said carton.

4,511,044

SEAL FORCE MONITOR APPARATUS, SYSTEM, AND METHOD FOR IN-PROCESS DETERMINATION OF INTEGRITY OF SEALED CONTAINERS

John T. Connor, Norristown; Charles P. Halsted, Oreland, both of Pa., and Jacob Ravn, Solvang, Calif., assignors to The West Company, Phoenixville, Pa.

Filed Feb. 24, 1982, Ser. No. 351,660
Int. Cl.³ B07C *5/34*; G01M *3/00*
U.S. Cl. 209—522 **10 Claims**

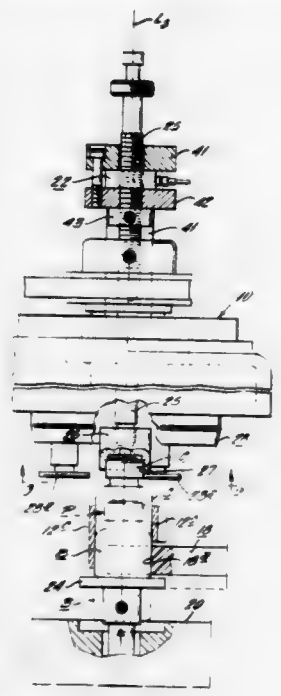
2. A system for determining the integrity of sealed container-closure assemblies in a system for applying closures having a resilient sealing element to a container, said system comprising force applying means for positioning said container and for securing said closure to said container in a closure operation and apparatus for monitoring said closure operation, said apparatus comprising:

force sensing means, connected to said force applying means, for sensing the force used in securing said closure to said container and for generating a force signal reflective of said force;

reference means for generating a reference signal reflective of the force used during a closure operation of an acceptably sealed container-closure assembly;

comparison means, connected to said force sensing means and said reference means, for comparing the force signal generated at a plurality of points during said closure operation to corresponding points of said reference signal and for generating a comparison signal each time said force signal and said reference signal are not within a predetermined range; and

counting means, connected to said comparison means, for counting the comparison signals and generating an indica-



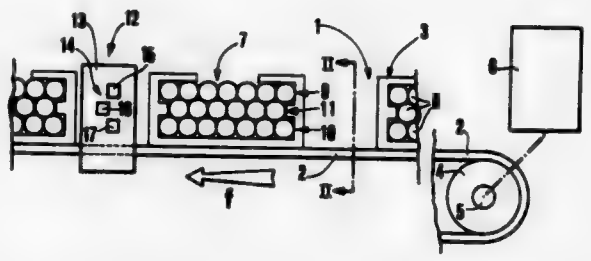
tion signal when the number of comparison signals for single closure operation, exceeds a preselected number.

4,511,045

DEVICE FOR TRANSFERRING AND VERIFYING BATCHES OF CIGARETTES

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Società Per Azioni, Bologna, Italy

Filed Jan. 28, 1982, Ser. No. 343,753
Claims priority, application Italy, Mar. 6, 1981, 3358 A/81
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—535 **2 Claims**



1. A device for transferring and verifying batches of cigarettes, comprising:

conveyor means for moving said batches, said means having compartments for holding said batches of cigarettes placed transversely with respect to the direction in which the conveyor means moves forward, and arranged in layers at different levels with respect to said conveyor means;

means for checking at least one end of each of said cigarettes; and

means for ejecting batches that are incomplete or contain at least one faulty cigarette;

said means for checking comprising:

a detecting element for each of said layers of cigarettes arranged to detect the continguous ends of the grouped cigarettes of a batch,

a first circuit block means for each of the said detecting elements, for producing a signal corresponding to an operation of checking a layer for indicating the existence of a faulty cigarette in a batch,

link means, connected to mechanical means for driving said conveyor, for producing a cyclic signal for synchronizing the checking operation of a layer, said cyclic

signal comprising a succession of impulses synchronizing the moments when said detector elements examine central areas of the ends of the cigarettes,

a second circuit block means for synchronizing with said cyclic signal and for operating said ejector means in response to said first circuit block means signals, and

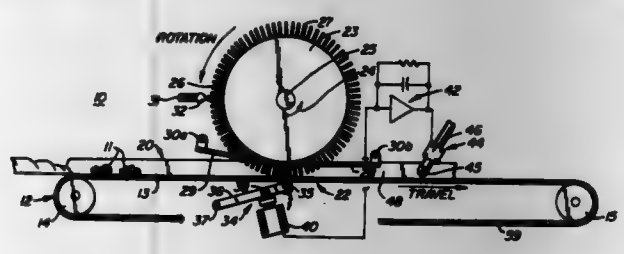
circuit means for selectively inhibiting the response of said second block means to the signal produced by one of said first circuit block means.

4,511,046

METHOD AND APPARATUS FOR DETECTING AN IRREGULAR PRODUCT IN A PRODUCT FLOW

Richard J. Walsh, Yuba City, and Darrell D. Gyles, Sutter City, both of Calif., assignors to Sunsweet Growers of California, Calif.

Filed Mar. 7, 1983, Ser. No. 472,428
Int. Cl.³ B07C 5/09, 5/34
U.S. Cl. 209—539 **17 Claims**



1. Apparatus for detecting and intercepting an irregular product in a product flow, comprising:

means for conveying said product flow along a path;

means along said path for aligning said product flow in a single file manner;

a cylinder positioned along said path downstream of said aligning means, said cylinder being rotatable in the same direction as that of said product flow about an axis transverse to said path;

a plurality of elongate pin-like projections extending radially from said cylinder at spaced locations, said projections capable of impaling each acceptable product coming in contact therewith;

means for detecting a pressure increase on said conveying means caused by downward deflection thereof due to resistance of an irregular product to impaling by said pin-like projections, and for generating a signal upon detection of said pressure increase; and

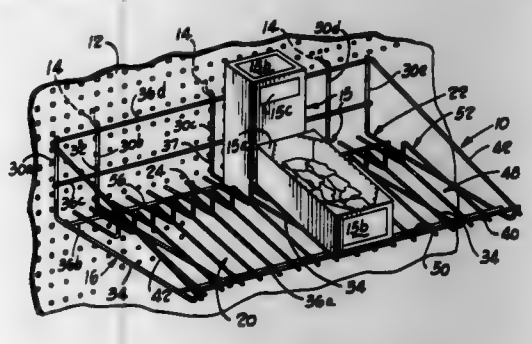
means for removing said irregular product from said product flow in response to said signal.

4,511,047

PRODUCT DISPLAY AND STORAGE SHELF SYSTEM

Howard S. Elinsky, University Heights, Ohio, assignor to Electroline Manufacturing Company, Cleveland, Ohio

Filed Nov. 24, 1982, Ser. No. 444,453
Int. Cl.³ A47F 5/08
U.S. Cl. 211—90 **12 Claims**



1. A product display and storage shelf connectable to a shelf supporting structure comprising:

(a) connecting structure by which the shelf is attachable to a shelf supporting structure;

(b) product supporting display means spaced from and projecting away from the connecting structure when the shelf is installed to define sides distal and proximal the connecting structure, said display means constructed to support product thereon between said distal and proximal sides for removal by users from said distal side;

(c) product supporting storage means disposed between said display means and said connecting structure;

(d) fulcrum means between said storage means and said display means for enabling product supported by said storage means to be moved into engagement with the fulcrum means, tipped and slid onto said display means; and,

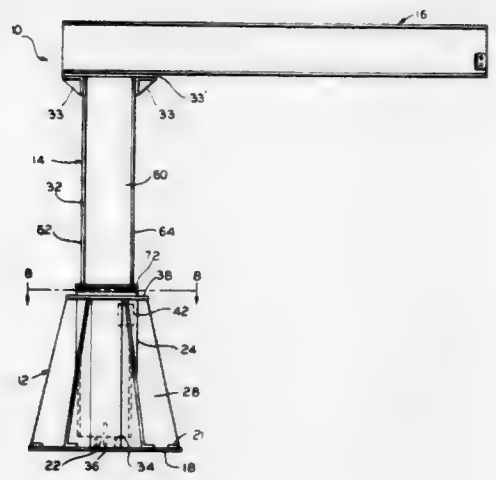
(e) stop means for preventing product from falling from the distal side of said display means.

4,511,048

JIB CRANE SYSTEM HAVING A ROTATABLE MAST

John G. Volakakis, La Grange; Robert L. McNelis, Glen Ellyn, and Burt H. Wallentin, La Grange, all of Ill., assignors to Handling Systems, Inc., La Grange, Ill.

Filed Jun. 4, 1982, Ser. No. 384,883
Int. Cl.³ B66C 23/84
U.S. Cl. 212—253 **4 Claims**



1. A crane comprising:

a base means;

a rotatable mast having a lower end portion and upper end, said mast being I-shaped and having a body portion sandwiched between and integrally formed to opposed side portions;

a load beam rigidly secured to the upper end of the mast and extending laterally outward therefrom to a free end, said load beam rotating with the mast as the mast is rotated;

a hollow pipe secured to the base means, said pipe being spaced from and surrounding said lower end portion of the mast;

a bearing means;

a pin extending downward from said lower end portion of the mast and operatively received in said bearing means;

a bearing cup mounted on said base means and operative to hold said bearing means for rotating said mast and load beam;

a notch formed in one of said side portions and in an adjacent section of said body portion of said mast;

a substantially rectangular cage; and

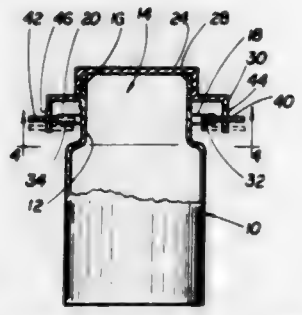
a pair of rollers means rotatably attaching said rollers to the inside of said cage for rotation about spaced vertical axes, said cage being received in said notch and attached to said body portion, said rollers contacting the inside surface of said pipe on the side thereof facing the free end of the load beam and revolving therearound as the mast is rotated.

4,511,049

SAFETY CLOSURE AND CONTAINER

Fred G. Aboud, 3812 Taylorsville Rd., Louisville, Ky. 40220

Filed Mar. 19, 1984, Ser. No. 591,052
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—216 **19 Claims**



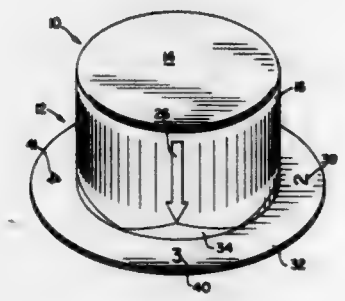
1. A safety closure and container, the safety closure for sealingly closing the opening into the container, comprising:
the container having a generally cylindrical neck defining the opening into the container;
threads formed in the outer peripheral surface of the container neck;
at least one locking lug projecting generally radially outwardly from the container neck, the locking lug being located below the threads on the container neck;
the closure having a first generally cylindrical flange of a diameter larger than the diameter of the container neck;
threads formed in the inner peripheral surface of the closure first flange adapted to threadably engage the threads of the container neck;
the closure having a second generally cylindrical flange of a diameter larger than the diameter of the container neck by an amount at least equal to twice the distance by which the locking lug projects radially from the container neck;
at least one lug engagement finger projecting generally radially inwardly from the second closure flange, the engagement finger being adapted to abut the locking lug when the closure is threaded in place over the container neck;
means for resiliently mounting the engagement finger to the second closure flange; and,
means associated with the resilient mounting means for selectively displacing the finger out of abutment with the locking finger thereby allowing the closure to be unthreaded from the container neck.

4,511,050

DOSE INDICATOR CLOSURE

Irene L. Nicol, 225 Cloverdale, Villas, N.J. 08251

Filed May 2, 1984, Ser. No. 606,402
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—219 **4 Claims**



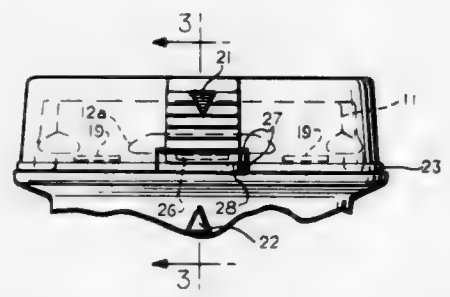
1. A closure for containers having an exteriorly threaded portion comprising, in combination: An outer cap member having a circular top panel integrally formed with a substantially cylindrical-shaped skirt portion depending perpendicalarly downward to an open bottom, the face of said bottom being formed in the contour of a plurality of general dyhedrals, said outer cap member having an indicator means; an inner cap member having substantially a circular top panel integrally formed with a depending skirt portion, said depending skirt portion of said inner cap member loosely nested within said depending skirt portion of said outer cap member to allow relative rotary and axial movement between said inner and outer cap members, said inner cap member having threads formed on the interior surface thereof for engagement with said threaded finish portion of said container, a radially formed flange portion extending outwardly from an open bottom of said inner cap member, said flange portion having formed in combination, a set of graduated indicia clearly observable on the top face, an annular track being formed on the upper face of said flange portion, said annular track beginning at the hub of said flange portion and extending outwardly to substantially the width of the thickness of the depending skirt portion of said outer cap member, said annular track being formed with an alternating dyhedral configuration matching the contour of the base of said outer cap member.

4,511,051

CHILD-RESISTANT PACKAGE WITH TAMPER INDICATING DEVICE

Kirit C. Desai, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 21, 1984, Ser. No. 612,498
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—225 **20 Claims**



1. A child-resistant package with a snap-on closure comprising
a container having a neck finish,
said neck finish including a retaining bead having at least one notch therein,
a closure having a top and a peripheral skirt,
a first radially inwardly extending locking lug on the inner surface of said skirt adapted to be aligned with said notch to permit removal of said closure,
said skirt having a portion with a radially inwardly extending lug thereon spaced circumferentially from said locking lug on said closure and underlying said first mentioned bead on said container such that when the first mentioned locking lug is aligned with a notch in the annular bead, the closure cannot be removed until the portion of the skirt having the lug thereon is moved away from its relationship with the remainder of the skirt of the closure and in order that the lug thereon will not interfere with removal of the closure.

4,511,052

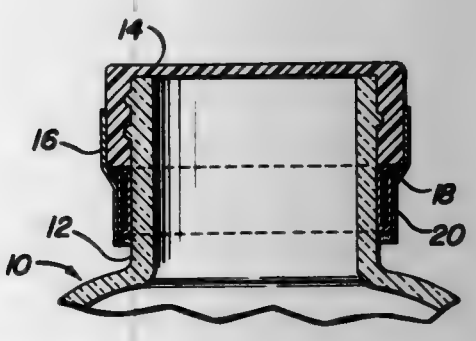
CONTAINER SEAL WITH TAMPER INDICATOR

Howard J. Klein, 14212 Matisse Ave., Irvine, Calif. 92714, and Gabor L. Szekeres, 18082 Dorchester Cir., Villa Park, Calif. 92667

Filed Mar. 3, 1983, Ser. No. 471,870
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—230 **15 Claims**

1. A sealing device for a container having removable closure means placed on a neck of the container, comprising:
a peelable band sealingly engaging the periphery of said closure means;
a hermetically sealed frangible envelope disposed between

the neck of the container and the peelable band and being adhesively attached to both the band and the neck, and indicating means, for changing appearance in response to exposure to the ambient environment, contained within



the sealed frangible envelope whereby the removal of said band ruptures the sealed envelope and exposes said indicating means to the ambient environment, the resultant change of appearance being visible from exterior of the container.

4,511,053

LID FOR A CONTAINER NECK PROVIDED WITH A THREAD OR UNDERCUT SHOULDER

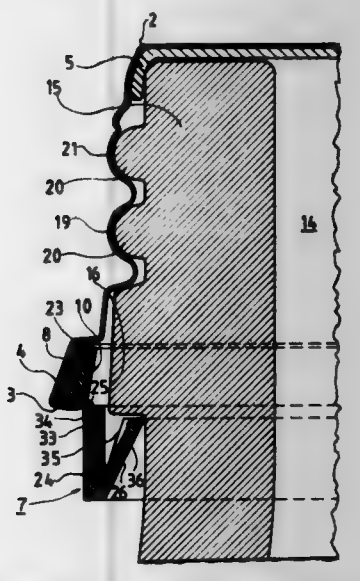
Carlos E. Brandes, Worms, and Gunter Spatz, Biblis, both of Fed. Rep. of Germany, assignors to Alcoa Deutschland GmbH, Worms, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,081

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206245; Jul. 23, 1982, 3227510

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—252 **26 Claims**



1. A two-piece lid for a container neck provided with a thread or undercut shoulder comprising:

(a) a lid member having a lower circumferential side edge and a circumferential sidewall protrusion extending outwardly at the lower edge of the lid member for defining therein a ring-positioning space; and

(b) a ring of synthetic material of a substantially Z-shaped cross-section including (i) an upper part, the upper part having a circumferential protrusion for fitting into the ring-positioning space and acting outwardly against the sidewall protrusion, (ii) a lower part having a lip protruding obliquely upwardly and inwardly for acting beneath the container neck shoulder, the lower part having no outwardly extending protrusion, and (iii) an intermediate circumferential region of reduced tear resistance during opening of the lid, the intermediate region being located between the upper and lower parts of the ring and positioned at or below the lower edge of the lid member.

4,511,054

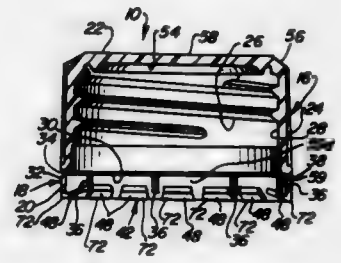
TAMPER-EVIDENT CLOSURE AND METHOD OF MANUFACTURE

Brian E. Shank, Rothsville, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Apr. 13, 1984, Ser. No. 600,161

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—252 **13 Claims**



1. A method of manufacturing a tamper-evident closure, the method comprising the steps of:

molding a blank which comprises an internally threaded cap, a generally cylindrical ring disposed beneath the cap and spaced therefrom, breakable connecting posts extending downward from the cap radially inward of the ring, and a plurality of gaging posts, each disposed adjacent one of the connecting posts and having a radial dimension smaller than that of the adjacent connecting post, and

making a circumferential cut through the ring to divide the ring into an upper portion and a lower portion, the cut extending through the thickness of the ring and partially but not entirely through the gaging posts.

4,511,055

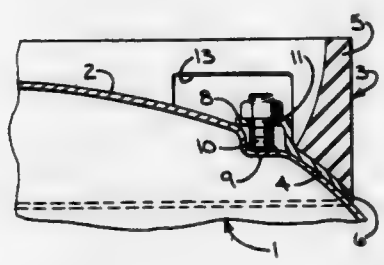
REMOVABLE PROTECTIVE SKIRT FOR A TANK

Franklin J. Carlson, 1081 Wisconsin Ave., Okauchee, Wis. 53069

Filed Jan. 10, 1983, Ser. No. 456,625

Int. Cl.³ F17C *13/08*

U.S. Cl. 220—69 **3 Claims**



1. A tank assembly, comprising a steel tank having a dome-shaped head, a plurality of threaded studs extending outwardly from the head and arranged in a generally circular pattern, a metal ring having a plurality of outwardly extending projecting areas with each area having an opening to receive one of said studs, an annular resilient skirt bonded to the outer surface of said ring, and a plurality of nuts each engaged with one of said studs to secure said ring and said skirt to said head said head being provided with a plurality of flats aligned with said areas, each flat being disposed in a plane perpendicular to the axis of said tank, each of said studs being secured to a flat and extending axially of said tank.

4,511,056

CLOSURE ASSEMBLY PARTICULARLY FOR A RADIATOR FILLER TUBE OF A MOTOR VEHICLE

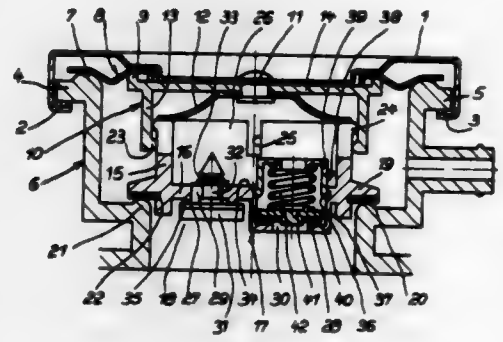
Heinrich Reutter, Waiblingen, Fed. Rep. of Germany, assignor to Reutter Metallwarenfabrik GmbH, Waiblingen, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,612

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150231

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—204 **8 Claims**



1. A closure assembly particularly useful as a radiator cap for a radiator filler tube of a motor vehicle comprising connecting means for removably fastening said closure assembly upon a member to be sealed, an inner cap assembly including means adapted to be brought in sealing engagement with said member to be sealed, and valve means operatively mounted in said inner cap assembly, said valve means comprising both a vacuum valve and an excess pressure valve, wherein said inner cap assembly comprises a plate member, wherein said vacuum valve and said excess pressure valve each include seat means and a valve member adapted to engage said seat means to open and close said valve, wherein said seat means of said excess pressure valve and of said vacuum valve are formed on said plate member of said inner cap member, and wherein said plate member includes a cupped portion defining a cupped recess, said cupped portion having said seat means of said excess pressure valve defined thereon with said seat means being arranged to define orifice means formed in said cupped recess, with a cover member being provided in snapped engagement with said inner cap assembly, said cupped portion and said cover member defining therebetween said excess pressure valve.

4,511,057

CAP FOR THE TEMPORARY HERMETIC CLOSURE OF CYLINDRICAL TIN CANS WITH PULL-OFF OPENING TAB

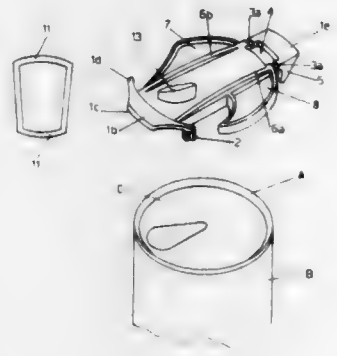
Sergio Tontarelli, Via Mordini Ciriaco, 37, Castelfidardo (AN), Italy

Filed Dec. 8, 1983, Ser. No. 559,280

Claims priority, application Italy, Dec. 15, 1982, 17929 A/82

Int. Cl.³ B65D *41/16, 41/18*

U.S. Cl. 220—306 **7 Claims**



1. Cap for the temporary hermetical closure of cans with a pull-off opening tab, characterized by an irregularly shaped, molded plastic piece, where there can be found a fairly large central body from which jut two diametrically opposed parts; a head-part with two side curved projections, and the other part consisting of an almost rectangular bracket attached to the central body by two thin, narrow bridges having flexing action under pressure accentuated by means of two transversal grooves provided oppositely in the center of the same, and from the curved projections which jut laterally from the said head-part, protrude two hooked teeth completely rigid given their thickness and their solid fixing in said head-part.

4,511,058

SPOKE DISPENSER FOR SPOKED WHEELS IN A SPOKE-FITTING MACHINE

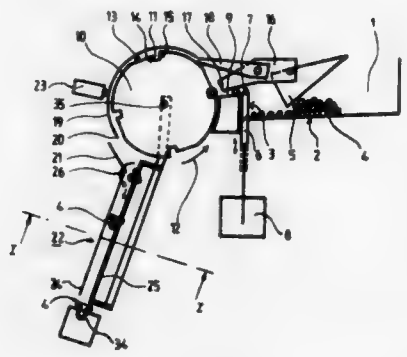
Julien Carminati, Annecy-le-Vieux, France, assignor to Centre de Production Mecanique, Epagny, France

Filed Jul. 28, 1982, Ser. No. 402,745

Claims priority, application France, Aug. 3, 1981, 81 15318

Int. Cl.³ B23Q *7/18*

U.S. Cl. 221—2 **8 Claims**



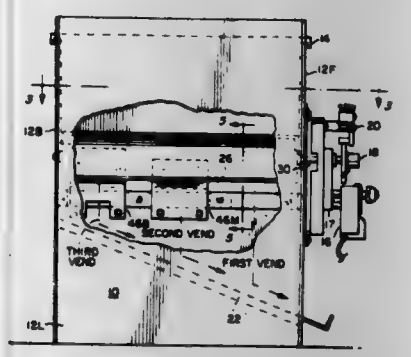
1. A dispenser of spokes for spoked wheels, each spoke formed by a cylindrical rectilinear rod having a head at one end thereof of a diameter larger than that of the rod, comprising a spoke reservoir, a knife selection device positioned at the outlet end of the reservoir for selecting spokes and disposing them on a downward guide ramp, a rotary drum mounted adjacent the outlet end of said guide ramp for rotational movement about a transverse axis with respect to the feed travel direction of the spokes, peripheral grooves arranged on the surface of said drum and extending parallel to the axis of rotation of said drum, the cross-section of said grooves being greater than the cross-section of the spoke rods, the drum being disposed down-stream of said guide ramp for introduction of the spokes into said grooves, and a discharge ramp disposed on the side of said drum opposite said guide ramp to collect and guide the spokes after their travel on the drum, so that rotation of the drum transports the spokes from said downward guide ramp to said discharge ramp, said discharge ramp comprising two inclined and substantially parallel guide surfaces facing one another at a predetermined distance apart so as to allow a spoke to slide there between, the first guide surface being smooth and having a width at least equal to the length of the spoke, the second guide surface being made from an adherent material and having a smaller width than said first guide surface so as to allow free rotation of the spoke head, the distance between the two surfaces being greater than the diameter of the spoke rod and less than half the sum of the diameter of the rod and the distance of the end of the spoke head to the axis of the rod, so that the second surface creates a rotation torque on said spoke during sliding thereof whereby the spoke head slidingly engages the first guide surface and remains in a position upwards with respect to said rod.

4,511,059

VENDING MACHINE WITH SIDE MOUNTED ESCROWS

Marvin R. Manzer, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed May 26, 1983, Ser. No. 498,560
Int. Cl.³ G07F *11/10*
U.S. Cl. 221—115 **26 Claims**



1. A dispensing assembly comprising:
(a) a storage zone including a plurality of group zones and adapted to store articles in each group zone;
(b) an escrow zone below said storage zone;
(c) a gating member blocking movement of articles from said storage zone to said escrow zone and operable for simultaneously releasing one article from each group zone for movement into said escrow zone;
(d) a dispensing zone disposed below said escrow zone;
(e) a first escrow member in said escrow zone and operable:
I. in a holding position to prevent an article released by said gating member from dropping through said escrow zone to said dispensing zone, and
II. in a free position to allow an article released by said gating member to drop from said escrow zone to said dispensing zone; and
(f) an actuator for causing movement of said gating member; and
wherein said gating member is disposable in a first position to block movement of said first escrow member from its holding position to its free position such that, when said gating member releases a plurality of articles simultaneously, at least one article is held in said escrow zone by said first escrow member and at least one article freely moves from said storage zone to said dispensing zone; and wherein said gating member is disposable in a second position to release said first escrow member for movement from its holding position to its free position to free any article held by said first escrow member for dropping into said dispensing zone.

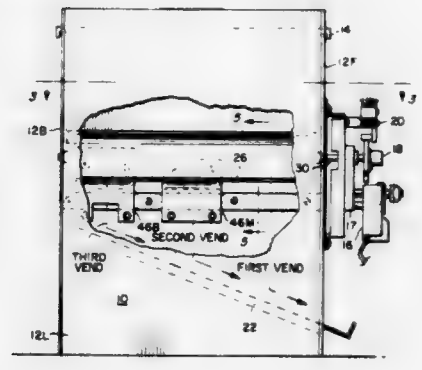
4,511,060

ANTITHEFT SIDE MOUNTED ESCROWS FOR VENDING MACHINE

James C. Lindsey, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Jun. 9, 1983, Ser. No. 502,626
Int. Cl.³ G07F *11/10*
U.S. Cl. 221—115 **25 Claims**

1. A dispensing assembly comprising:
(a) a compartment with front, back, right side side, and left side walls;
(b) a storage zone in said compartment and adapted to selectively store a plurality of cylindrical articles in:
I. an n column mode with the articles disposed in n axially-aligned vertical column zones extending from said front wall to said back wall, n is an integer ≧2, and
II. an (n−1) column mode with the articles disposed in (n−1) vertical column zone(s), each said (n−1) column zone overlapping at least two of said n column zones;
(c) a dispensing zone below said storage zone; and
(d) a first gate removably mounted in said compartment and operable to gate cylindrical articles into said dispensing zone, said first gate movable between:
I. a holding position wherein it prevents an article from dropping into said dispensing zone, and
II. a free position wherein it allows an article to drop into said dispensing zone; and



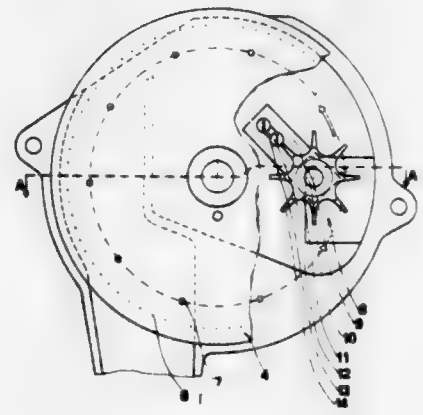
wherein said first gate can not be removed when it is disposed in said holding position and can not be removed when it is disposed in said free position and said first gate can be removed when disposed in between said holding position and said free position.

4,511,061

STIRRER-FEEDER FOR PNEUMATIC DISTRIBUTORS DRILLS

Luigi Gaspardo, Via Mussons 7, Morsano Al Tagliamento (PN), Italy

Filed Apr. 25, 1983, Ser. No. 488,262
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—200 **5 Claims**



1. A stirr-feeder for seeds, comprising:
a housing (1) defining a space;
a disc (4) rotatably mounted in said space and dividing said space into a seed chamber (2) on one side of said disc adapted to receive a supply of seeds, and a reduced pressure chamber (3) on an opposite side of said disc adapted to be subject to a reduced pressure, said disc having a plurality of holes (6) therethrough distributed around said disc near an outer periphery thereof;
a star-shaped body (8) rotatably mounted to said housing and disposed in said seed chamber for rotation in said seed chamber, said body having a plurality of radial flexible extensions, said body disposed in said seed chamber so that flexible extensions glide adjacent said holes as said holes pass said body with rotation of said disc; and
drive means engaged with said star-shaped body for rotating said star-shaped body with rotation of said disc whereby seeds in said seed chamber are stirred by said radial flexible extension to cause no more than one seed to be engaged with each hole.

4,511,062

CANISTERS FOR PRESSURIZED GAS AND PERSONAL SECURITY DEVICES UTILIZING SAME

William E. Wilkerson, 10201 Harwin, Iown Park-110, Houston, Tex. 77036

Filed Sep. 28, 1981, Ser. No. 306,528
Int. Cl.[3] B67D *5/08*; B65D *83/14*
U.S. Cl. 222—47 1 Claim



1. A personal security device comprising, in combination, an elongate canister having a discharge nozzle with an operating plunger at the top of the canister adapted to be depressed by thumb pressure for discharging from the canister contents such as tear gas, and an elongate holster in which the canister is received snugly with the nozzle having a discharge opening at one side of the holster, the holster including a main body part and a fold-over flap with fastener means to secure an end of the flap to the main body part with the flap extending over the nozzle and with the flap and the main body part defining an opening by which the contents of the canister may be discharged through the nozzle at said one side of the holster, the flap being sufficiently flexible to permit the thumb of a user's hand to depress the plunger of the nozzle while the canister is in the holster, the fastener means comprising a pair of snap fasteners having cooperating parts spaced along the length of the flap and the main body part, the flap being of a length to fit over top of the plunger and to preclude pivoting of the flap by thumb pressure that could cause the flap to obscure the discharge opening, the main body part of the holster having an elongate ridge extending along the length of said one side of the holster to engage fingers of said hand and the opposite side of the holster being smoothly curved along its length to fit the palm of the hand, whereby when the device is grasped in the user's hand in an emergency, the fingers engage said ridge by feel and the smoothly curved side of the holster fits in the palm of the user's hand, with the thumb on the flap, and the discharge opening is aimed toward an assailant automatically when the ridge is oriented toward the assailant.

4,511,063

SELF SUPPLYING HAWK

Glenn C. Krause, Humble, Tex., and Joseph Blounts, Las Vegas, Nev., assignors to The Hoddie Corporation, Inc., Houston, Tex.

Filed Jun. 6, 1983, Ser. No. 501,109
Int. Cl.[3] B67D *5/12*
U.S. Cl. 222—75 2 Claims

1. An apparatus for supplying cementatious material to a workman, which comprises:

(a) a flat plate having a hole therethrough;

(b) a handle having a bore therethrough rigidly affixed to said plate at one end, said bore being aligned with said hole in said plate;

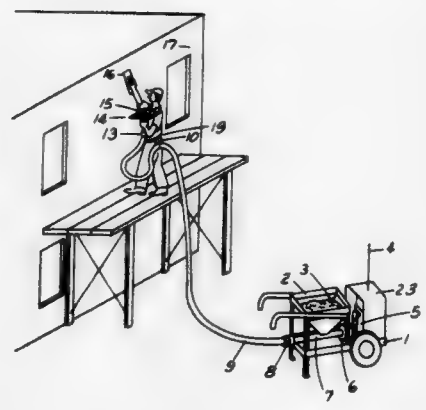
(c) a flexible hose having one end connected to the other end of said handle;

(d) a hopper with a hole therethrough at its bottom;

(e) a pump drawing cementitious material through said hole in said hopper and supplying said material to said hose;

(f) a rotating power source;

(g) a clutch releasably connecting said power source to said pump; and



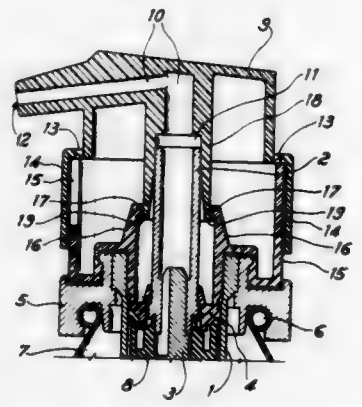
(h) a switch affixed to said handle controlling engagement of said clutch.

4,511,064

VALVE AND CAP ASSEMBLY FOR DISPENSING FLUID MATERIALS UNDER PRESSURE WITH WARRANTY SEAL

Tomaso Ruscitti; Giovanni Albini; Roberto Torretta, and Andrea Incerti Baldi, all of Milan, Italy, assignors to S.A.R. S.p.A., Chieti, Italy

Filed Mar. 2, 1983, Ser. No. 471,348
Claims priority, application Italy, Mar. 18, 1982, 21182/82[U]
Int. Cl.[3] B67B *5/00*
U.S. Cl. 222—153 1 Claim



1. A dispensing valve and cap assembly for fluid materials under pressure for providing an assured seal, comprising:

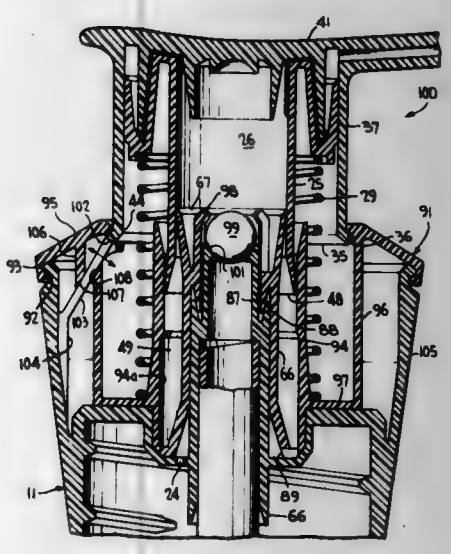
a valve having a body made of plastic material attachable onto the inlet of a container for the material to be dispensed;

a cap which includes a conduit formed therein opening at a first end thereof into a seat for accomodating a free end of a valve stem, and at a second end thereof into an outlet nozzle for material to be dispensed, said cap having integrally formed therewith a skirt and a plurality of breakable finger-like elements interconnecting said cap with said skirt and extending so as to overlap an exterior portion of said valve, wherein said valve body further comprises an inner cylindrical wall adjacent said skirt and a tubular wall defining with the valve stem a cylindrical cavity, said tubular wall having at least one inwardly projecting edge member, and wherein said seat accomodating the free end of a valve stem is defined by an extension projecting from said cap and extending within said cylindrical cavity, an outer surface of said extension having at least one outwardly projecting ridge member engaging said inwardly projecting edge member to prevent said cap from being removed from said stem.

4,511,065
MANUALLY ACTUATED PUMP HAVING PLIANT PISTON

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Continuation-in-part of Ser. No. 121,223, Feb. 13, 1980, Pat. No. 4,402,432. This application Jun. 8, 1983, Ser. No. 502,273
Int. Cl.[3] B05B *11/00*
U.S. Cl. 222—153 13 Claims

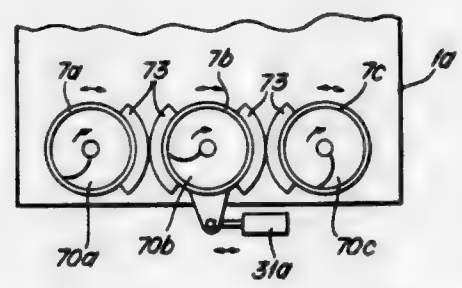


1. A pressure accumulating dispensing pump comprising, an assembly comprising a pump body and a separate piston member, said body including a closure cap for securing said assembly in fluid tight communication with the opening of a container of flowable product to be dispensed, said assembly having a container vent opening therein, and said piston sealingly engaging said body and lying along the central axis thereof, plunger means comprising an annular plunger resiliently urged into a fully raised position and mounted for reciprocation on said piston member to define therewith a variable volume pump chamber, said piston member including an inlet valve, said plunger means further comprising a plunger head slideably disposed on said plunger and having a discharge passage adapted to be opened and closed by said plunger upon changes in pressure within said chamber upon reciprocation of said head, said assembly and said plunger head having cooperating means for limiting said head at said fully raised position, said piston having an annular lip seal in sealing engagement with said plunger, said assembly further comprising a cylindrical wall spaced from and surrounding said piston member to therewith define a vent chamber which includes said vent opening, an annular vent seal on said plunger means in sealing engagement with an inner surface of said wall for closing said vent chamber while said plunger is in its raised position and during an initial downstroke reciprocation thereof, said vent seal being further adapted to open said vent chamber upon a further downstroke reciprocation of said plunger, said plunger head and said body each being of a first material having a predetermined hardness for durability and strength, and said piston and said plunger each being of a second material which is softer and more compliant than said first material, for thereby enhancing said sealing engagements between said lip seal and said plunger and between said vent seal and said wall, to positively prevent leakage of product from said chambers.

4,511,066
DEVICE USED IN CONNECTION WITH CONTAINERS FOR BULK MATERIAL

Lennart G. Forsberg, Hagagatan 24 C, S-665 00 Kil, Sweden

PCT No. PCT/SE81/00210, § 371 Date Feb. 25, 1982, § 102(e) Date Feb. 25, 1982, PCT Pub. No. WO82/00284, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 8, 1981, Ser. No. 355,723
Claims priority, application Sweden, Jul. 21, 1980, 8005279
Int. Cl.[3] B65G *33/20*
U.S. Cl. 222—189 2 Claims

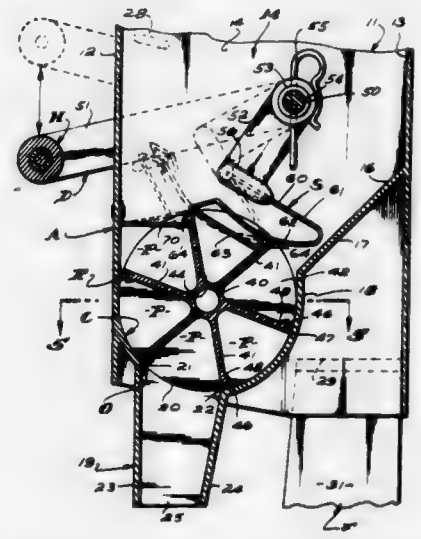


1. In a device in a container for bulk material for chipped wood, pellets and similar material, said container including a main part with mainly rectangular walls, and a feed-out part for securing an even flow of material from the container, the improvement comprising a plurality of tubes arranged in parallel side by side relation in the main part of the container, said tubes having a number of openings distributed over their surfaces for permitting the passing through of bulk material, said tubes being arranged to carry the passing through of bulk material, means to provide reciprocating movements to said tubes in the container with the upper part of said tubes protruding into the main part of the container, a feeding screw arranged co-axially inside said at least one tube and means for rotating said screw within said tube.

4,511,067
PARTICULATE MATERIAL DISPENSING DEVICE

Ernest N. Martin, 287 Industrial St., San Marcus, Calif. 92069; William H. Barner, 969 Tia Juana St., Laguna Beach, Calif. 92651, and Don M. Martin, P.O. Box 814, San Marcus, Calif. 92069

Filed Aug. 30, 1983, Ser. No. 527,684
Int. Cl.[3] G01F *11/24*
U.S. Cl. 222—230 19 Claims



1. A particulate material dispenser comprising an elongate, vertical body with front, rear and side walls, a bottom wall and defining an upwardly opening material holding compartment, an elongate, laterally extending semicylindrical chamber at the bottom wall and opening upwardly into the compartment, an elongate, laterally extending vertical discharge opening with front, rear and end edges at the bottom of said chamber, an

elongate rotor with a plurality of circumferentially spaced, longitudinally extending, radially outwardly projecting webs with outside edges and defining a plurality of circumferentially spaced radially outwardly opening material receiving and transporting pockets of predetermined volume, said rotor is positioned in and extends longitudinally of the chamber with the outside edges of two adjacent webs at the lower half of the rotor in sliding sealing engagement with the inside surface of the chamber adjacent the front and rear edges of the opening and with the pocket therebetween communicating with said opening, spring means normally yieldingly urging the rotor down in the chamber and intermittently operable to rotate the rotor to sequentially advance the pockets into and out of communication with the opening and including an elongate spring positioned above the rotor and having a lower rear end in driving engagement with a trailing side of a substantially upwardly projecting leading web, a forward portion engaging the outside edge of a next trailing web, an intermediate portion releasably engaging the outer edge of said leading web and yieldingly urging the rotor down in the chamber and an upper portion, drive means connected with the upper portion and operating to move the spring forwardly and to move its rear end from engagement with said leading web into engagement with said trailing web and to move the spring rearwardly and drive said trailing web rearwardly and rotate the rotor to move the pocket rearward of and adjacent the pocket communicating with said opening into communication with said opening.

4,511,068

DISPENSER FOR PASTE-LIKE PRODUCTS

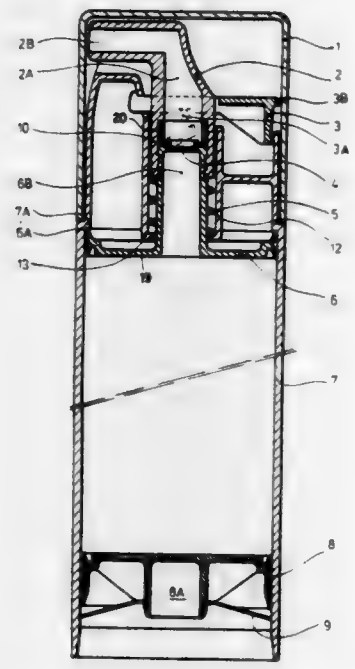
Jaap Bossina, Bussum, Netherlands, assignor to Gap Gesselschaft fuer Auswertungen und Patente AG, Glarus, Switzerland

Filed Jan. 7, 1983, Ser. No. 456,449

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1982, 3201356; Jun. 22, 1982, 3223267

Int. Cl.³ G01F *11/00*

U.S. Cl. 222—257 **8 Claims**



6. A dispenser for paste-like products comprising a container for holding a supply of product to be dispensed, said container having a lower cylindrical wall portion that is closed by a closure piston which is slideable upwardly therein and is displaced upwardly by atmospheric pressure as product is dispensed from the container, and repetitively actuatable delivery means at an upper portion of the container whereby a limited amount of product can be dispensed at each actuation, said dispenser being characterized by:

A. said delivery means comprising

(1) a delivery piston

(a) which has a peripheral portion that axially slidably and sealingly engages an upper cylindrical wall portion of the container all around the same and

(b) which substantially closes said upper wall portion of the container, opposes said closure piston and cooperates with it in defining the interior of the container so that downward movement of the delivery piston decreases the volume of said interior,

(2) an upwardly projecting dispensing portion on the delivery piston,

(a) the exterior of which comprises means whereby the delivery piston can be manually displaced downward and

(b) which has an outlet at its top that is communicable through its interior and through an aperture in the delivery piston with the interior of the container, and

(3) a non-return valve in said dispensing portion for controlling communication between the interior of the container and said outlet and whereby product displaced from the container by downward movement of the delivery piston is permitted to flow upward to said outlet but displaced product is prevented from flowing back into the container upon upward movement of the delivery piston; and

B. locking means on said closure piston cooperating with the container to prevent downward movement of the closure piston but permit upward movement thereof.

4,511,069

DISPENSING SYSTEM

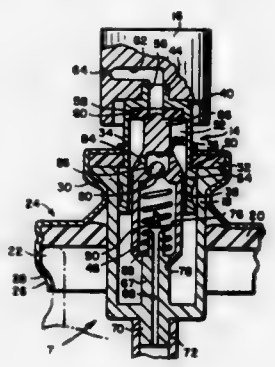
Edwin F. Kalat, Thomaston, Conn., assignor to The Pharmasol Corporation, Randolph, Mass.

PCT No. PCT/US82/00748, § 371 Date Jan. 17, 1983, § 102(e) Date Jan. 17, 1983, PCT Pub. No. WO82/04203, PCT Pub. Date Dec. 9, 1982

Continuation-in-part of Ser. No. 270,554, Jun. 4, 1981, abandoned. This PCT application Jun. 2, 1982, Ser. No. 465,689

Int. Cl.³ B05B *9/04*; B65D *83/14*

U.S. Cl. 222—263 **11 Claims**



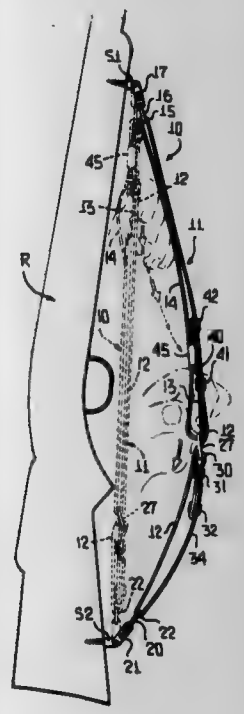
1. A pump especially adapted to be mounted in and on an hermetically sealed container and to remove and discharge fluid contained therein at an elevated discharge pressure, said pump having a discharge chamber, an intake chamber and a reciprocating valve body characterized in that the said intake chamber is mounted on said valve body and is contained entirely within said discharge chamber, said valve body is spring loaded, said discharge chamber comprises a housing having an open end and a closed end mounted on said container, a cooperating piston having an open ended bottom mounted in the open end of said housing, said spring loaded valve body is positioned between said housing and said piston, an upstanding stem is provided in the closed end of said housing and the lower end of said valve body comprises an open ended chamber forming said intake chamber and is mounted on said stem in sliding but sealed relation thereto, whereby said pump is pressure actuated and said discharge pressure is substantially independent of the pressure within said hermetically sealed container.

4,511,070

ADJUSTABLE SLING FOR RIFLES, SHOTGUNS OR THE LIKE

Floyd Hightower, 5617 Lake Highlands Dr., Waco, Tex. 76710

Filed Jul. 13, 1983, Ser. No. 513,310
Int. Cl.³ F41C *27/00*
U.S. Cl. 224—150 **12 Claims**



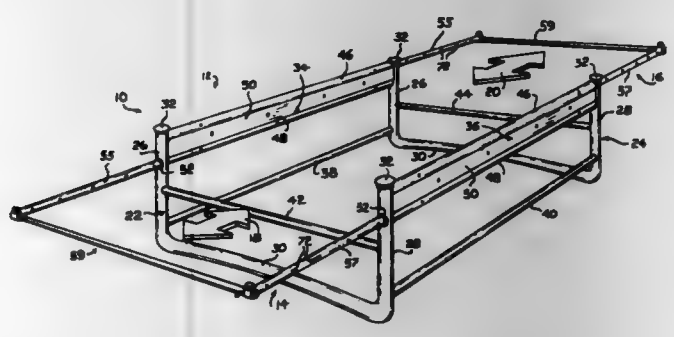
1. A sling for a rifle, shotgun or the like comprising an elongated web of material folded upon itself to define axially opposite first and second overfolded end portions, a separate loop disposed between said overfolded end portions, means for connecting said separate loop to a first end of said web immediately adjacent said first overfolded end portion, said web including first second and third web portions disposed at least partially in superposed adjacent relatively sliding relationship, said first web portion passing through said separate loop and forming an integral extension between said opposite overfolded end portions, said second web portion being sandwiched between said first and third web portions, said second and third web portions collectively defining a third overfolded end portion passing through and partially entraining said separate loop, and said first web portion being in sandwiched relationship to said third overfolded end portion and said web first end whereby said first web portion can be slid through said separate loop in either of two opposite directions to selectively lengthen or shorten the distance between said connecting means and thereby effectively lengthen or shorten said sling.

4,511,071

COMBINATION BACKPACK FRAME AND COT

Richard F. Curran, 1956 W. Bradley Pl., Chicago, Ill. 60613

Filed Nov. 28, 1983, Ser. No. 555,566
Int. Cl.³ A45F *4/06*
U.S. Cl. 224—156 **5 Claims**



1. A combination backpack and cot comprising:
a main frame assembly including a first U shaped end member having a pair of upwardly extending leg portions and a connection portion, a second U shaped member having a pair of upwardly extending leg portions and a connection portion, a first pair of connecting tubes attached between a first leg portion of said first U shaped member and a first leg portion of said second U shaped member, and a second pair of connecting tubes attached between a second leg portion of said first U shaped member and a second leg portion of said second U shaped member;
a substantially rectangular main frame web having a pair of opposing longer sides and a pair of opposing shorter sides, said main frame web being supported on a first longer side by said first pair of connecting tubes, and supported on a second longer side by said second pair of connecting tubes, said first shorther side terminating proximate said first U shaped member of said main frame assembly, and said second shorter side terminating proximate said second U shaped member of said main frame assembly, said main frame web being provided with at least two elongated slots parallel to said pair of shorter sides;
first U shaped extension frame assembly having a pair of leg portions and a connecting portion, where a first leg portion of said first U shaped extension frame assembly is engagable with a first tube of said first pair of connecting tubes, and where a second leg portion of said first U shaped extension frame assembly is engagable with a first tube of said second pair of connecting tubes, such that said first U shaped extension frame may slide in and out of said main frame assembly between a retracted position and an extended, cantilever position;
first locking means for selectively affixing said first U shaped extension frame to said main frame assembly;
a second U shaped extension frame assembly having a pair of leg portions coupled together by a connecting portion, where a first leg portion of said second U shaped extension frame assembly is engagable with a second tube of said first pair of connecting tubes, and where a second leg portion of said second U shaped extension frame assembly is engagable with a second tube of said second pair of connecting tubes, such that said second U shaped extension frame may slide in and out of said main frame assembly between a retracted position and an extended, cantilever position;
second locking means for selectively affixing said second U shaped extension frame to said main frame assembly;
an elongated extension frame web engaging said two elongated slots of said main frame web, a first end of said extension frame web being supported by said connecting portion of said first U shaped extension frame, and a second end of said extension frame web being supported by said connecting portion of said second U shaped extension frame; and
tensioning means for providing tension to said extension frame web.

4,511,072

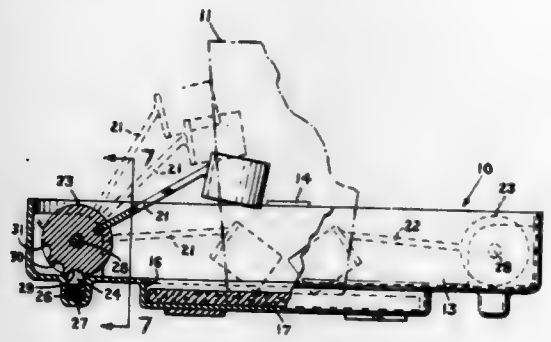
DRINKING CUP HOLDER FOR AUTOMOBILES

Burgess Owens, 35 Northcote Dr., Dix Hills, N.Y. 11747

Filed Jun. 22, 1984, Ser. No. 623,496
Int. Cl.³ A47B *37/00*; B65D *25/22*
U.S. Cl. 224—273 **9 Claims**

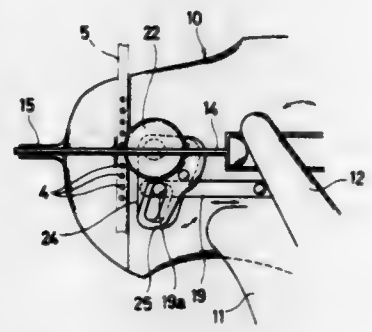
1. A cup holder for use in an automobile and characterized in combination by the following:
a pair of trays connected each to the other and foldable between a spread operable mode and a closed mode wherein the trays are adjacent each other for storage;

mounting means for connecting at least one of the trays to a support surface of the automobile convenient to a user;
each of the trays adapted to seat a cup therein;



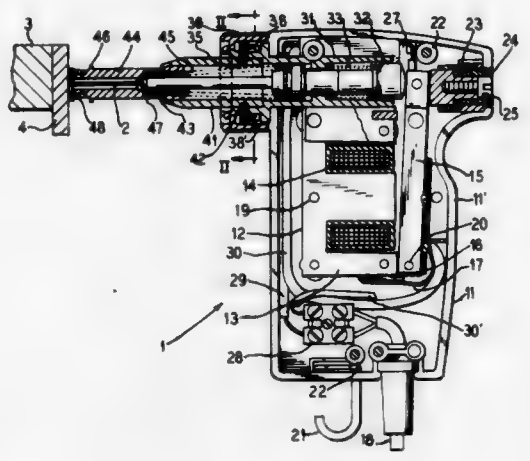
each of the trays provided with a pair of oppositely disposed arms for engaging a cup.

4,511,073
FASTENER DISPENSING DEVICE
Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.
Filed Jul. 23, 1982, Ser. No. 401,181
Int. Cl.³ B25C *1/00*
U.S. Cl. 227—67 **7 Claims**



1. A device for dispensing a plurality of fasteners one at a time for each operation of the device, each said fastener including a filament having a head at one end thereof and a crossbar integrally formed at the other end thereof and also having a connection neck protruding beyond said crossbar away from said head, said fasteners being connected through said connection necks respectively thereof on a carrier bar to form an integral fastener assembly, comprising a main body having a front end including a side-slotted hollow needle removably mounted at said front end and a guide groove formed at the tail end of said hollow needle for receiving and guiding said fasteners loaded in the device, said guide groove extending substantially perpendicular to said hollow needle, an operation lever pivotably coupled to said main body, a pushing rod to be driven into the hollow needle through operation of said operation lever to dispense fasteners through the needle relative to objects in a manner such that the pushing rod drives the crossbar of the fastener through the hollow needle and through an object, and a fastener feeding mechanism for delivering fasteners of a fastener assembly loaded in the device successively one at a time for each operation of the operation lever to a prescribed discharge position within said main body in alignment with said hollow needle, said fastener feeding mechanism including a friction wheel with a smooth peripheral face having a high coefficient of friction rotatably supported on said main body adjacent said guide groove and abutting against said connection necks of said fasteners but not extending therebetween, a support plate mounted coaxially with said friction wheel and adapted to pivot when said operation lever is pivoted, and a wheel driving member pivotably supported on said support plate having a projecting portion which selectively engages said friction wheel, said projecting portion engaging and rotating said friction wheel when said operation lever is pivoted to cause said friction wheel to move said fastener assembly by friction so that the next fastener is moved to said prescribed discharge position to be pushed through said hollow needle.

4,511,074
ELECTRICALLY-OPERATED MANUAL DEVICE
Ewald Kille, and Heinrich Griebel, both of Friedrichshafen, Fed. Rep. of Germany, assignors to J. Wagner GmbH, Friedrichshafen, Fed. Rep. of Germany
Filed Jun. 30, 1982, Ser. No. 393,661
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125860
Int. Cl.³ B25C *1/06*
U.S. Cl. 227—113 **24 Claims**

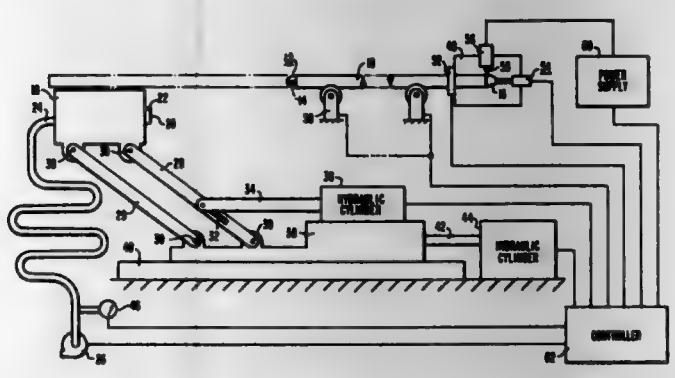


1. A vibratory impact driving device comprising:
support means including a front and a rear;
a forwardly extending rearwardly biased, impact body supported by said support means;
element holding means supported by said support means for holding an element to be driven;
means defining at least one groove in said element holding means;
a rotatably mounted ring on said support means;
at least one clamping device within said ring;
a spring within said ring and connected to said clamping device and urging the same away from said groove;
at least one cam surface on said ring for camming said clamping device into said groove upon rotation of said ring;
a pivotally mounted member including a free end adjacent said impact body; and
drive means supported by said support means and operable to vibrate said member against said impact body and cause the same to repetitively strike the element to be driven.

4,511,075
WELDING NUCLEAR REACTOR FUEL ROD END PLUGS
Denis Yeo, Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 1, 1983, Ser. No. 471,114
Int. Cl.³ B23K *9/00*
U.S. Cl. 228—7 **15 Claims**

1. Apparatus for applying a vacuum to the interior of a nuclear fuel rod cladding tube through an open end of said tube while girth welding an inserted end plug to the other end of said tube, all when said tube is in position for said welding and wherein said inserted end plug and said tube have an exposed common boundary of generally circular shape, said apparatus comprising:
(a) an airtight housing, said housing having a generally circular orifice with a seal hermetically engageable with said open end of said tube;

(b) a vacuum hose having one end connected to said housing;
(c) a vacuum pump connected to the other end of said hose;
(d) means for measuring the vacuum within the interior of said welding-positioned tube when said seal of said coaxially aligned orifice is hermetically engaged with said welding-positioned tube;
(e) mechanized means for disposing said housing between a first site hermetically engaging said seal of said orifice with said open end of said welding-positioned tube and a second site disengaging said seal of said orifice from said open end of said welding-positioned tube;
(f) means for transporting said tube, with said inserted end plug, to and from said welding position;



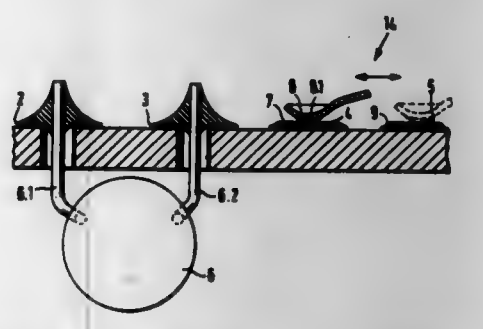
(g) means for sensing when said tube is in said welding position;
(h) means for rotating said welding-positioned tube about its longitudinal axis;
(i) a welding machine having a welding tip disposed proximate said exposed common boundary of said inserted end plug and said welding-positioned tube, and said welding machine also having a power supply; and
(j) means for monitoring said vacuum measuring means and said tube sensing means and for controlling said housing disposing means, said vacuum pump, said tube transporting means, said tube rotating means, and said welding power supply, all in a predetermined manner.

4,511,076

METHOD OF SOLDERING CIRCUIT BOARDS WITH SOLDER-REPELLENT CONTACTS

Johann Roth, Schwabhausen, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

PCT No. PCT/DE82/00082, § 371 Date Dec. 6, 1982, § 102(e) Date Dec. 6, 1982, PCT Pub. No. WO82/03723, PCT Pub. Date Oct. 28, 1982
Continuation of Ser. No. 448,916, Dec. 6, 1982, abandoned. This PCT application Apr. 8, 1982, Ser. No. 613,749
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114607
Int. Cl.³ H05K *3/34*
U.S. Cl. 228—180.1 **4 Claims**



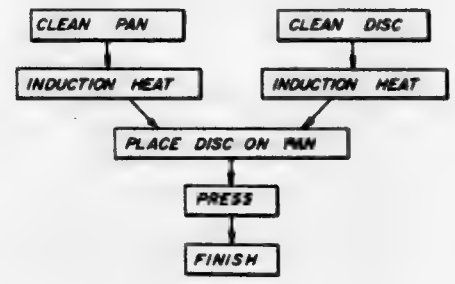
1. A method for the manufacture of a printed circuit board having electrical components mounted thereupon by being mechanically soldered to lands adjacent through holes provided in said printed circuit board, said lands being electrically interconnected to conductive tracks, said printed circuit board also being provided on a designated surface thereof with at least a first electrically exposed and corrosion-resistant contact surface for controlling the operation of said printed circuit board, said method of manufacture comprising the steps of:
(a) applying a solder-repellant but electrically conductive, corrosion-resistant and self-lubricating coating to said at least one contact surface;
(b) inserting said electrical components into said lands, and
(c) thereafter, exposing said designated surface and said solder-repellant coating to solder to mechanically and electrically connect said electrical components to said lands.

4,511,077

COOKWARE AND METHOD OF MAKING THE SAME

Al S. Rummelsburg, Scarsdale, N.Y., assignor to Kidde Consumer Durables Corp., Bronx, N.Y.

Filed Jul. 30, 1982, Ser. No. 403,828
Int. Cl.³ B23K *20/02*
U.S. Cl. 228—228 **13 Claims**



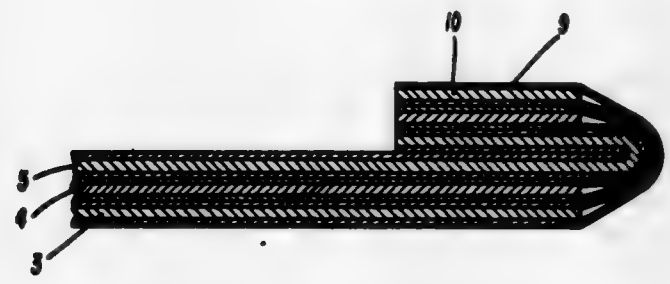
1. A method of making cookware comprising the steps of cleaning one surface of a preshaped stainless steel utensil having a bottom wall and an aluminum disk, separately heating said utensil bottom wall and disk in a manner which avoids hot spots until the temperature of the utensil is between 800°–1200° F. and the temperature of the disk is between 500°–750° F., positioning the heated disk with its cleaned surface overlying the cleaned bottom wall surface of said utensil and in direct contact therewith, and immediately thereafter bonding said surfaces directly together by applying pressure to the heated disk and utensil bottom wall.

4,511,078

PACKING CONTAINER WITH A CRACK-RESISTANT LAMINATE

Jan A. I. Rausér, Lomma, and Renato Cetrelli, Lund, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Division of Ser. No. 923,103, Jul. 10, 1978,. This application Jan. 20, 1983, Ser. No. 459,682
Claims priority, application Sweden, Jul. 11, 1977, 7708027
Int. Cl.³ B65D *5/42*
U.S. Cl. 229—17 R **5 Claims**



1. A packing container formed from a packing laminate of the type having a carrier layer and at least an outer layer laminated to each side surface of the carrier layer, the container including a wall portion having two portions of said

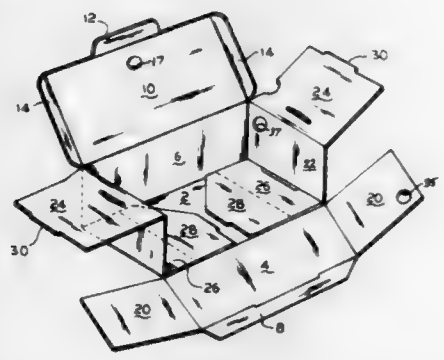
laminate joined together to form a sealing fin, a first fold line along which the sealing fin is folded down against one of said portions of said laminate, a second fold line extending transversely across said first fold line, said sealing fin being folded against itself along the second fold line, an opening being provided in a portion of the carrier layer at a predetermined location only in the carrier layer of one of the portions of said laminate, said location coinciding with and including an area completely encompassing the point where said first and second fold lines intersect, said opening being provided before said carrier layer and said outer layers are laminated, and subsequently joining said laminate to form the sealing fin, folding along said first fold line and folding along said second fold line.

4,511,079

VARIABLE DIMENSION CONTAINER

Louis Lopez, Leominster, Mass., assignor to Container Corporation of America, Chicago, Ill.

Filed Nov. 3, 1983, Ser. No. 548,238
Int. Cl.³ B65D *5/22*
U.S. Cl. 229—34 R **3 Claims**



1. A self-contained, variable inner dimension, collapsible container formed from a unitary blank of foldable sheet material, such as paperboard, comprising:

(a) a bottom wall panel;

(b) front and rear side wall panels foldably joined to and upstanding from front and rear side edges of said bottom wall panel;

(c) a pair of opposed end walls each including:

(i) an intermediate panel foldably joined to an end edge of one of said side wall panels;

(ii) an outer panel foldably joined to an end edge of the other of said side wall panels;

(iii) an inner panel foldably joined to an upper edge of said outer panel;

(d) means for varying an inner dimension of said container, to accomodate alternate packaging of items of different lengths, said means including a pair of anchor panels extending inwardly from respective end wall outer panels;

(e) each of said anchor panels including:

(i) a first panel section foldably joined at its outer edge to a lower edge of a related end wall and disposed to overlie an adjacent end portion of said bottom wall panel;

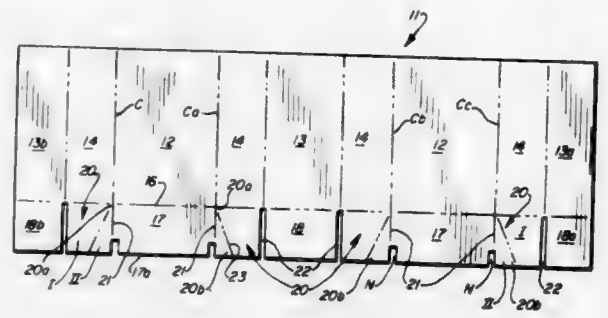
(ii) a second panel section foldably joined at its outer edge to an adjacent inner edge of said first panel section and adapted alternately to either overlie said bottom wall panel or be folded upwardly and outwardly to extend over said first section to said related end wall inner panel to shorten an inner dimension of said container.

4,511,080

INTERLOCKING END CLOSURE FLAPS ON COLLAPSIBLE EIGHT-SIDED RECEPTACLE

Roger E. Madsen, Council Bluffs, Iowa, and Michael M. Williams, Arlington, Tex., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Oct. 17, 1983, Ser. No. 542,351
Int. Cl.³ B65D *5/08*
U.S. Cl. 229—41 C **8 Claims**



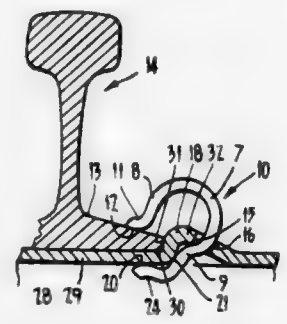
1. A collapsible receptacle formed from a blank of foldable sheet material, comprisng upright first wall panels and second wall panels separated from one another by upright corner panels, each corner panel being angularly disposed relative to the adjacent first and second wall panels and interposed same and being foldably connected thereto, said corner and wall panels delimiting a predetermined area; and bottom-forming first, second, and third flaps foldably connected, respectively, to bottom edges of said first and second wall panels and said corner panels, each third flap having one side edge thereof connected by a first foldline to an adjacent side edge of one of said first flaps, an opposite side edge of each third flap being separated from the adjacent second flap by an elongated slot, the outer end of said first foldline terminating in a notch, each third flap being provided with an outwardly angularly extending second foldline forming said third flaps into contiguous major and minor portions; when forming the receptacle bottom, said first and third flaps being first folded as a unit into the predetermined area whereby the major and minor portions of each third flap are folded relative to one another into face to face relation with the minor portion being sandwiched between the major portion and an adjacent side edge portion of said first flap and then the second flaps being folded into the predetermined area whereby said edge portions of said second flaps extend through and interlockingly engage corresponding notches and are sandwiched between corresponding side edge portions of said first flaps and the minor portions of said third flaps.

4,511,081

RAIL ANCHORING CLIP AND ASSOCIATED SLEEPER

Peter K. Wilson, Croydon, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Filed Jan. 20, 1983, Ser. No. 459,659
Claims priority, application Australia, Jan. 21, 1982, PF2385
Int. Cl.³ A44B *21/00*
U.S. Cl. 238—59 **22 Claims**



1. A rail and sleeper assembly comprising a sleeper, a rail, and a rail anchoring clip for anchoring said rail on said sleeper, said rail having a vertical axis and a foot having an upper

surface, said sleeper comprising a longitudinally extending member which is substantially U-shaped in lateral cross-section with downwardly disposed sides extending from a bearing surface portion, said bearing surface portion having an upper face and a lower face, said upper face including a pair of longitudinally spaced apart stop means thereon for restraining lateral movement of said rail on said sleeper, a pair of apertures each positioned on said sleeper at a position such that said stop means is between a respective aperture and said rail, said aperture being proximate to said stop means, said clip being of resilient material and in substantially U-shape having a first leg and a second leg joined by a bridging portion, said clip extending through said aperture in the sleeper and having an end of one leg abutting tightly against the upper surface of the rail foot and having the end of the other leg abutting tightly against the lower face of said bearing surface portion to compressibly anchor the rail on to the sleeper.

4,511,082

FUEL-INJECTION SYSTEMS AND ASSOCIATED METHODS

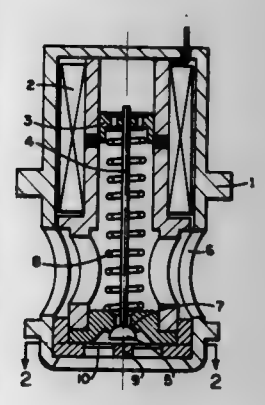
Rainer Ballik, Moers, and Heinrich Hütten, Kaarst, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co., KG, Neuss, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,962

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228323

Int. Cl.³ B05B *15/06*

U.S. Cl. 239—8 **9 Claims**



1. A fuel-injection valve for injecting liquid fuel into the induction pipe of an internal combustion engine, comprising an electromagnetically actuated armature, a stem attached to said armature for movement therewith, a valve head on said stem, a valve seat on which said valve head is seated in closed position in which fuel flow is blocked, the arrangement of said valve head and seat being such that the valve is opened by lifting the valve head off its seat in the direction of flow of the fuel, and a mechanical stop situated downstream of the valve seat for engaging the valve head in its open position to limit the stroke of the valve head.

4,511,083

SELF-REGULATING HYDRANT

Otto Muller-Girard, Rochester, N.Y., assignor to Ratnik Industries, Inc., Victor, N.Y.

Filed May 16, 1983, Ser. No. 494,968

Int. Cl.³ F25C *3/04*

U.S. Cl. 239—14 **12 Claims**

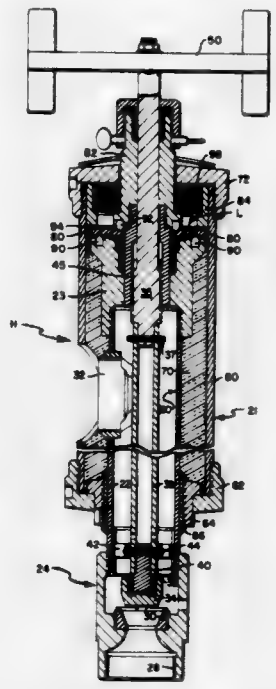
1. Self-adjusting hydrant for automatically varying the flow of a fluid in response to changes in ambient air temperature, said hydrant comprising:

(a) a first housing including means defining (i) a valve seat through which a fluid can enter said housing and (ii) an outlet through which a fluid within said housing can exit therefrom;

(b) a plug adapted to cooperate with the said valve seat for controlling the flow of fluid into said housing through said seat;

(c) means for adjusting the position of said plug relative to said seat to provide an initial predetermined flow of fluid into said housing;

(d) a second housing substantially surrounding said first housing, said second housing being adapted to change in



at least one dimension in response to changes in ambient air temperature; and

(e) linking means operatively coupling said second housing and said plug for varying the position of said plug relative to said valve seat in response to dimensional changes in said second housing as occasioned by changes in ambient air temperature.

4,511,084

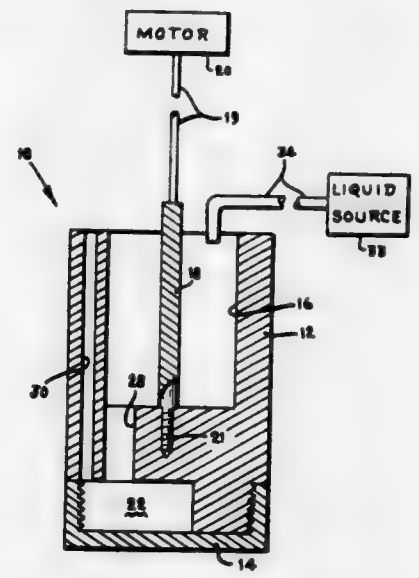
TOP FEEDING LIQUID ATOMIZER

Vann Y. Won, 6697 Gloria Dr., Sacramento, Calif. 95831

Filed May 12, 1983, Ser. No. 493,885

Int. Cl.³ B05B *3/02*

U.S. Cl. 239—223 **7 Claims**



1. A top feeding liquid atomizer comprising:

an elongated body, said body having a top first end and closed second end;

a cutout portion situated adjacent said first end of said body, said cutout portion having an open top;

a chamber situated adjacent said second end of said body, said chamber having a plurality of spaced apart, radially extending, wedge-shaped ribs therein, with the spaces

between adjacent pairs of said wedge-shaped ribs defining a plurality of radially extending flow channels, respectively;

means within said body for interconnecting said cutout portion with said chamber;

a plurality of longitudinally extending, elongated passageways formed in said body and having openings positioned adjacent the periphery of the top of said first end of said body, said passageways extending from the top of said first end of said body into said chamber such that each of said passageways is situated within each of said flow channels, respectively, and each of said wedge-shaped ribs intercept said chamber at a location between adjacent pairs of said passageways, said passageways having their longitudinal axes substantially parallel to the longitudinal axis of said body; and

means operably connected to said body for rotating said body at a preselected speed;

whereby continual rotation of said body, while liquid is fed into said open top of said cutout portion forces said liquid through said interconnecting means into said chamber, through said flow channels, and up said passageways into the surrounding atmosphere adjacent the top of said first end of said body in the form of a fine globular spray.

4,511,085

SWIVEL DRIVE FOR FAN-JET SPRINKLER

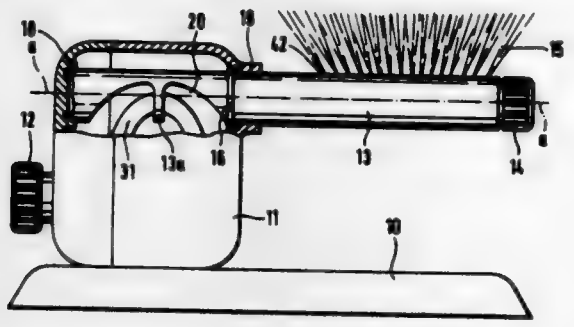
Friedrich Schanz; Emil Schucker; Eberhard Schucker, all of Calw, and Alexander Perrot, Althengstett, all of Fed. Rep. of Germany, assignors to Perrot-Regnerbau GmbH & Co., Calw, Fed. Rep. of Germany

Filed Apr. 8, 1982, Ser. No. 366,678

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114095

Int. Cl.³ B05B 3/16

U.S. Cl. 239—242 **9 Claims**



1. In a swiveling fan-jet sprinkler which comprises a closed sprinkler housing, an elongated nozzle cylinder journalled in the housing and extending outwardly therefrom, a series of nozzle bores arranged in a fan-tail pattern on the exposed length portion of the nozzle cylinder, and a hose connector on the housing serving as an inlet for pressurized water, in such a sprinkler, a drive mechanism capable of deriving a rotary motion from the pressurized water and of translating this motion into a swiveling motion of the nozzle cylinder about its rotational axis, the sprinkler drive mechanism comprising in combination:

an inlet nozzle as part of the hose connector adapted to produce a water jet, when pressurized water enters the sprinkler housing through the hose connector;

a turbine wheel arranged inside the sprinkler housing in such a way that the water jet causes the turbine wheel to rotate;

a reduction gear drive arranged inside the sprinkler housing, said drive having its input side connected to the turbine wheel and including, on its output side, a final drive shaft with an axis which is arranged at a distance from and substantially perpendicular to the axis of the nozzle cylinder and to an axial plane through the nozzle cylinder;

a rotary cam member mounted on the final drive shaft so as to rotate therewith, the cam member being so arranged that a median position thereof is in substantial alignment with said axial plane through the nozzle cylinder axis; and

a cam follower connected to the nozzle cylinder and cooperating with the cam member in such a way that the rotary motion of the cam member is translated into a reciprocating swiveling motion of the nozzle cylinder.

4,511,086

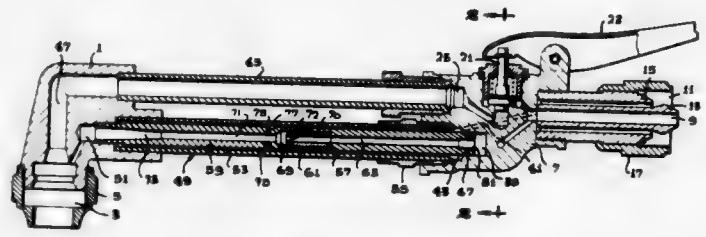
CUTTING TORCH

Chuan M. Kuo, 2nd Fl., No. 10, Lane 222, Tung Hwa, N. Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 395,164, Jul. 6, 1982,. This application Oct. 1, 1982, Ser. No. 432,169

Int. Cl.³ B05B 7/12

U.S. Cl. 239—416.3 **24 Claims**



1. A cutting torch comprising:

a cutting head for receiving a removable cutting tip;

a valve body having an oxygen inlet, a fuel inlet, a cutting oxygen outlet, a preheat oxygen outlet, and a preheat fuel outlet communicating with said fuel inlet;

a cutting oxygen control valve for controlling the flow of oxygen from said oxygen inlet to said cutting oxygen outlet;

a preheat oxygen control valve for controlling the flow of oxygen from said oxygen inlet to said preheat oxygen outlet;

a cutting oxygen tube connecting said cutting oxygen outlet to said cutting head; and

a preheat tube connecting said preheat oxygen outlet and said preheat fuel outlet with said cutting head, said preheat tube including:

an outer tube having a first end connected to said valve body and a second end connected to said cutting head;

an inner tube the majority of which is within said outer tube and having a first end extending beyond the first end of said outer tube and a second end within said outer tube;

a nozzle fitting having a first end sealing connected to said second end of said inner tube;

a mixer tube having a first end sealingly connected to a second end of said nozzle fitting, said mixer tube having a second end sealingly connected to said cutting head,

the outer surfaces of said inner tube and said mixer tube and the inner surface of said outer tube defining a fuel channel communicating with said preheat fuel outlet; and

sealing means adjacent the first end of said inner tube for isolating said fuel channel from said preheat oxygen outlet,

said inner tube and said nozzle fitting including a central bore defining an oxygen channel communicating with said preheat oxygen outlet, said nozzle fitting having a nozzle of smaller diameter than to said oxygen bore, said nozzle being disposed at the second end of said fitting;

said second end of said nozzle fitting and said first end of said mixer tube defining a chamber of larger diameter than said oxygen channel,

said mixer tube including a central bore defining a mixing channel communicating with said chamber and said cutting head,

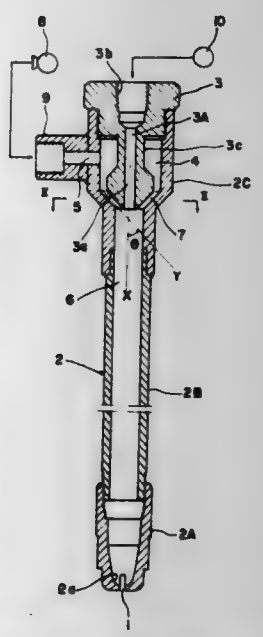
said mixer tube also including a plurality of transverse passageways communicating with said fuel channel and said mixing channel at a point adjacent to but spaced from said chamber.

4,511,087

AIR MIST NOZZLE APPARATUS

Kozo Matsumoto, Nishinomiya, Japan, assignor to Kyoritsu Gokin Mfg. Co., Ltd., Hyogo, Japan

Filed Apr. 4, 1983, Ser. No. 482,034
Claims priority, application Japan, Apr. 8, 1982, 57-51500[U]
Int. Cl.[3] B05B *7/06*
U.S. Cl. 239—433 4 Claims



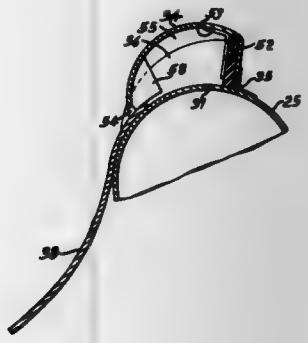
1. A nozzle apparatus for atomizing a liquid, said apparatus consisting of a jet pipe having a nozzle tip at one end thereof, a casing connected to the other end of said jet pipe, a liquid supply connector directly mounted in a sidewall of said casing and having a liquid supply port provided therethrough, and a nozzle member having a gas jet passage for injecting pressurized gas into a reduced diameter portion of said casing, wherein a recessed portion of said nozzle member and an enlarged diameter portion of said casing define a chamber for receiving a liquid in communication with said liquid supply port, and wherein a constricted middle portion of said casing defines a liquid outflow passage means around said nozzle in communication with said liquid receiving chamber, said liquid outflow passage means having liquid outflow directions crossing at a predetermined angle in relation to the flow of pressurized gas jetted out of said jet passage of said nozzle member into said reduced diameter casing portion.

4,511,088

LIQUID DISTRIBUTION DEVICE

Henry E. Wilt, Neptune Beach, and Larry N. Murray, Fernandina Beach, both of Fla., assignors to Fabralloy, Inc., Jacksonville, Fla.

Filed Dec. 6, 1982, Ser. No. 446,867
Int. Cl.[3] B05B *1/32;* D21C *9/02*
U.S. Cl. 239—455 16 Claims



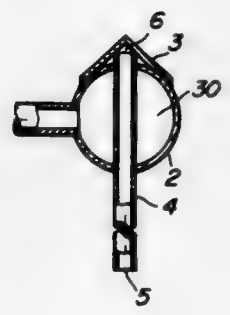
1. A liquid distribution device comprising an elongated tubular horizontal reservoir for holding liquid to be distributed, an elongated arcuate cap member extending substantially along said reservoir, a plurality of passageways through the upper wall of said reservoir and communicating with an elongated generally arcuate space substantially enclosed by said cap member for receiving liquid from said reservoir, said cap member having an elongated outlet edge which is spaced from said passageways and adjustable with respect to the outside surface of said reservoir to define an elongated substantially continuous narrow slit outlet through which the liquid flows in the form of a thin sheet substantially throughout the length of said cap member.

4,511,089

NOZZLE HEADER FOR COOLING PLATES

Sadao Ebata, and Seiji Bando, both of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 30, 1983, Ser. No. 509,957
Claims priority, application Japan, Jul. 7, 1982, 57-102917[U]
Int. Cl.[3] B05B *1/14*
U.S. Cl. 239—553.3 5 Claims



1. A nozzle header comprising a lower cylindrical header to form a lower header chamber therein and having cooling water supply means for supplying a cooling water into said lower header chamber, an upper header in the form of a roof mounted on said lower cylindrical header therealong to form an upper header chamber therein substantially triangular in section with an upper wall of said lower cylindrical header, said upper wall being formed with communicating apertures for communicating said lower and upper header chambers, and nozzles extending through said lower header chamber and having upper ends communicating with said upper header chamber and lower ends forming nozzle outlets for jetting said cooling water against a surface to be cooled.

4,511,090

MATERIAL SPREADER

Paul M. Morgan, Middletown, Ohio, assignor to Lakeshore Equipment & Supply Co., Elyria, Ohio

Filed Apr. 14, 1983, Ser. No. 485,029
Int. Cl.[3] A01C *17/00*
U.S. Cl. 239—666 9 Claims



1. In a spreader for particulate material adapted to be advanced in a given direction and having discharge means for discharging the particulate material downwardly from the spreader and a rotary distributor in association with the discharge means for broadcasting the discharged material out-

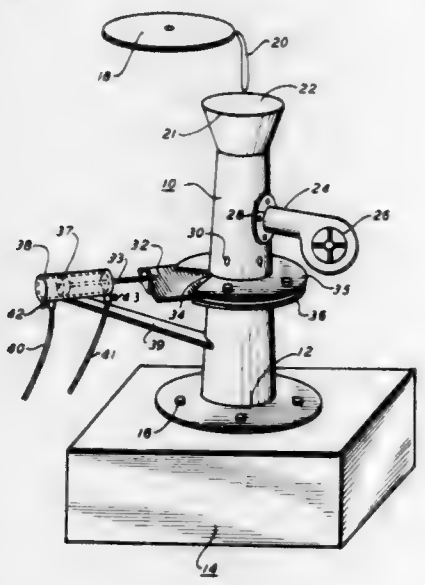
wardly of the spreader, a particulate material deflector means on one side of the spreader and movable between first and second positions, said deflector means being located radially adjacent said rotary distributor when in said first position to intercept material broadcast by said rotary distributor and being spaced from said first position so as not to intercept material broadcast by said rotary distributor when in said second position, said deflector means having a surface against which the material broadcast by said distributor impinges when said deflector means is in said first position, and said deflector means having a nose end portion for directing the intercepted material across the front of the spreader and to the side of the spreader opposite that side where the deflector is located, said surface against which the material broadcast by said rotary distributor impinges comprising a surface which is curved in a direction circumferentially of said rotary distributor.

4,511,091

METHOD AND APPARATUS FOR RECYCLING THERMOPLASTIC SCRAP

Augusto Vasco, 7 E. Beech St., Central Islip, N.Y. 11722

Filed Jan. 6, 1983, Ser. No. 456,282
Int. Cl.³ B02C *23/18*
U.S. Cl. 241—18 **18 Claims**



1. A device for immediately recycling hot thermoplastic scrap extruded out of the edges of newly formed phonograph records comprising:

a vertically oriented tubular member having a passageway and upper and lower ends said tubular member adapted to receive hot thermoplastic scrap at the upper end thereof;

platform means located between the upper and lower ends of said tubular member and drive means to move said platform means between a first position within said tubular member which blocks the passageway so that said scrap can fall onto said platform means and a second position at least partially without said tubular member so that said scrap can fall through said tubular member; said platform means being wide enough to permit the hot thermoplastic scrap to spread out and expose much of its surface area to the surrounding temperature when in said first position;

fluid circulating means located between said platform means and the upper end of said tubular member for cooling said thermoplastic scrap when said platform means is in said first position; and

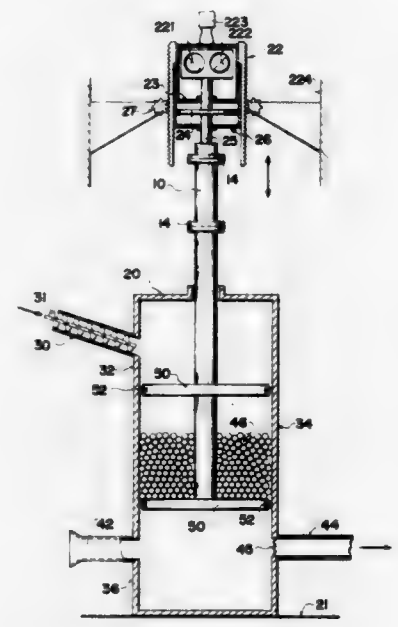
pulverizing means coupled to the lower end of said tubular member for pulverizing said cooled thermoplastic scrap.

4,511,092

MILLING APPARATUS

Henry North, R.R. #16, Thunder Bay, Ontario, Canada P7B 6B3, and William R. Fauconnier, 1759 Meryle St., Thunder Bay, Ontario, Canada (P0T 2Z0)

Filed Apr. 27, 1983, Ser. No. 489,043
Int. Cl.³ B02C *19/16*
U.S. Cl. 241—49 **9 Claims**



1. Apparatus for milling particulate material comprising a container having a peripheral wall for receiving and confining the particulate material, means for maintaining said container stationary, a planar plate mounted within the peripheral wall of the container and having a periphery substantially coextensive therewith for movement relative thereto in a direction longitudinally of the container and transversely to an original plane of the plate, the container including an inlet arranged on one side of the plate and an outlet arranged on an opposed side of the plate, a plurality of grinding elements within the container on at least one side of the plate and arranged to be confined thereby to said one side, an oscillator including an eccentric member and means for rotating the eccentric member to provide oscillatory movement at a frequency, and means for communicating oscillation from said oscillator to the plate to oscillate the plate relative to the container in said direction to agitate the grinding elements, said communicating means being arranged such that its natural frequency of vibration is tuned to the frequency of the oscillator so that the frequency of oscillation of the oscillator is substantially the same as the natural frequency of vibration of said communicating means.

4,511,093

MIXER-GRANULATOR DRIER

Tatsuo Ohkoshi, and Chikara Kobayashi, both of Tokyo, Japan, assignors to Nara Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 347,669, Feb. 10, 1982, abandoned.
This application Apr. 24, 1984, Ser. No. 603,468
Claims priority, application Japan, Jun. 23, 1981, 56-97004
Int. Cl.³ B02C *23/20*
U.S. Cl. 241—60 **5 Claims**

1. A mixer-granulator drier, comprising:

a vessel;

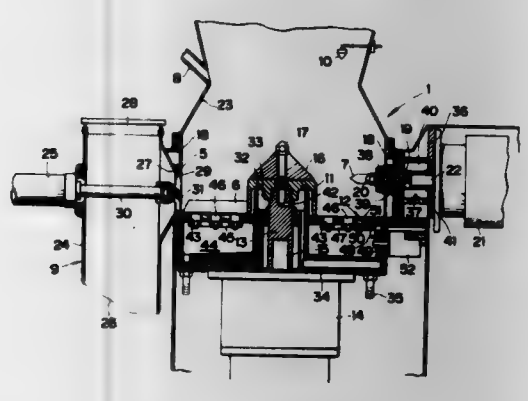
a mixing-granulating mechanism mounted in said vessel and including main and auxiliary rotary mixing granulating blades which are caused to revolve so as to accomplish mixing and granulation of powders as desired;

said main rotary mixing granulating blades being provided at a bottom of said vessel and said auxiliary rotary mixing granulating blades being provided at an internal lateral surface of said vessel just above a proximity of ends of said main rotary mixing granulating blades;

a valve means for opening and closing a number of slots

formed in a bottom plate of said vessel, said valve means including movable pieces adapted to open and close said slots, and means for raising and lowering said movable pieces so that said valve means may be closed during mixing-granulating;

said valve means includes each of said slots having a constriction at a top thereof and movable pieces of contour adapted to fit fluid-tightly in respective constrictions of said slots;



said means for raising and lowering said movable pieces includes a movable disk located opposite an under surface of said bottom plate, said movable disk carrying said movable pieces fixedly thereon, and further includes means for raising and lowering said movable disk; and

means for supplying drying-air into said vessel through said slots when said valve means is open.

4,511,094

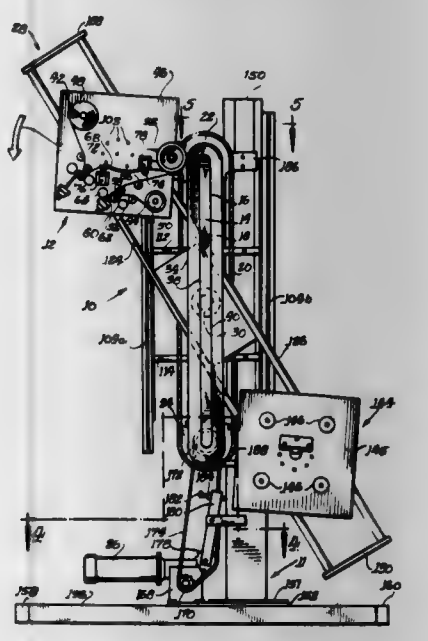
WINDING APPARATUS

Henry R. Kent, San Diego, Calif., assignor to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Nov. 22, 1982, Ser. No. 443,292

Int. Cl.³ H01F *41/08, 41/12*

U.S. Cl. 242—7.08 **4 Claims**



1. Winding apparatus for depositing successive layers of ribbon upon a mandrel to form a winding, comprising:

frame means,

a mandrel supported by said frame means and having a peripheral support surface,

a ribbon dispensing assembly,

drive means operatively associated with said frame means and said dispensing assembly to transport said dispensing assembly through a predetermined path about the periphery of said mandrel, and

a counterbalanced rotating track which engages said dispensing assembly as it travels through said predetermined path,

said dispensing assembly depositing successive layers of ribbon on said peripheral support surface as it travels through said predetermined path,

said dispensing assembly including means for applying transverse pressure to an outer exposed surface of the winding as each successive layer of ribbon is applied thereto.

4,511,095

METHOD AND APPARATUS FOR WINDING GLASS FIBERS

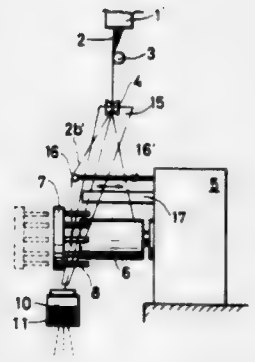
Eizo Ideno; Shinichi Fukushi; Masahiko Tai, all of Kyoto; Koji Nakazawa, and Toshihito Fujita, both of Fukushima, all of Japan, assignors to Shimadzu Corporation and Nitto Boseki Co., Ltd., both of, Japan

Filed Feb. 22, 1983, Ser. No. 468,550

Claims priority, application Japan, Feb. 27, 1982, 57-31392; Feb. 27, 1982, 57-31393; Jul. 15, 1982, 57-122148; Jul. 27, 1982, 57-129695; Aug. 7, 1982, 57-136825; Aug. 14, 1982, 57-140490

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 G **18 Claims**



1. A method of winding a strand of glass fiber filaments on a takeup collet, comprising the steps of:

(a) guiding an end portion of the strand being drawn off from the spinning bushing, on a stream of fluid, to a strand pulling mechanism;

(b) automatically engaging said guided strand with said strand pulling mechanism and pulling the strand therewith;

(c) automatically moving an auxiliary winding mechanism from a standby position to a winding position, and moving said pulled strand into winding engagement with said auxiliary winding mechanism and winding said strand on said auxiliary winding mechanism;

(d) automatically moving said strand from said auxiliary winding mechanism into winding engagement with an empty takeup collet and winding said strand on said takeup collet and moving said auxiliary winding mechanism back to said standby position;

(e) winding said strand on said takeup collet until a predetermined amount of said strand is wound on said takeup collet to fill said takeup collet;

(f) automatically moving said auxiliary winding mechanism from said standby position to said winding position, and moving said strand into winding engagement with said auxiliary winding mechanism and winding said strand on said auxiliary winding mechanism;

(g) automatically moving said auxiliary winding mechanism back to said standby position, while continuing to wind said strand thereon;

(h) replacing said filled takeup collet with an empty takeup collect;

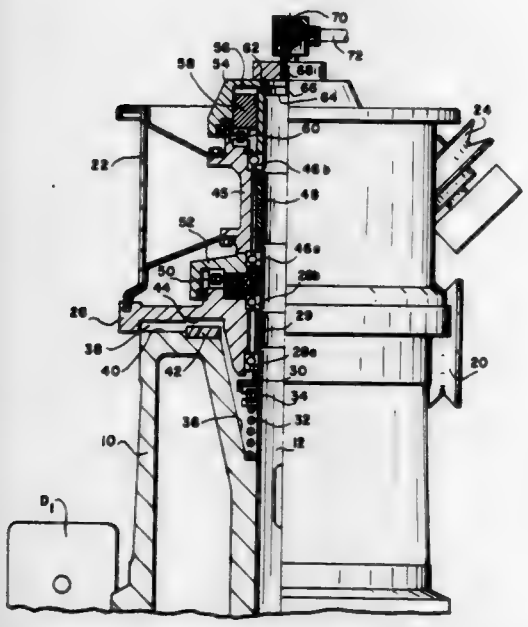
(i) automatically moving said auxiliary winding mechanism from said standby position to said winding position, while continuing to wind said strand thereon;

repeating steps (d)–(i) sequentially until said strand accidentally breaks and then repeating steps (a)–(i).

4,511,096
SPINNER DRIVE FOR DOUBLE BLOCK WIRE DRAWING MACHINE

Ronald W. DuFries, Westboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Nov. 14, 1983, Ser. No. 551,332
Int. Cl.[3] B65H *51/20;* B21C *1/14*
U.S. Cl. 242—47.01 7 Claims



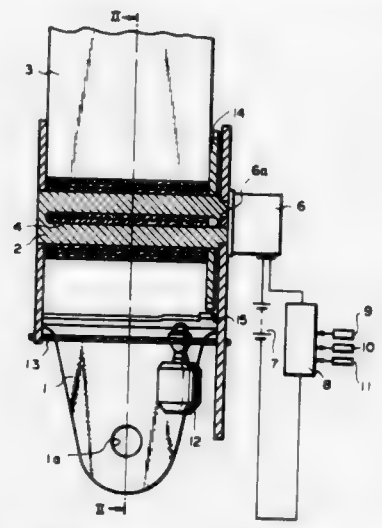
1. In a wire drawing machine having at least one station with a rotatably driven shaft on which are arranged upper and lower blocks and an associated spinner carrying a transfer sheave, the upper block and spinner being rotatable relative to each other on said shaft and the lower block being driven by said shaft to draw wire through a die, the thus drawn wire being temporarily accumulated as a plurality of windings on the driven lower block before passing via the transfer sheave to the upper block where the wire is again temporarily accumulated as a plurality of windings before leaving the station, the improvement comprising: means for mounting the spinner for axial movement on said shaft in relation to the lower block; separating means for yieldably urging the spinner axially away from the lower block to maintain a spacing therebetween; and control means acting in opposition to the separating means to axially urge the spinner into contact with the lower block, thereby causing the spinner to be frictionally driven by the lower block.

4,511,097
AUTOMOBILE SEAT BELT WINDING DEVICE

Noboru Tsuge, Kariya; Masahiro Taguchi, Okazaki, and Satosi Kuwakado, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 9, 1982, Ser. No. 448,326
Claims priority, application Japan, Dec. 14, 1981, 56-201873; Apr. 3, 1982, 57-54779; Apr. 7, 1982, 57-49425[U]; Apr. 26, 1982, 57-68757; Oct. 1, 1982, 57-173440; Oct. 21, 1982, 57-183683
Int. Cl.[3] A62B *35/00*
U.S. Cl. 242—55 15 Claims

1. An automobile seat winding device, comprising:
a seat belt retractor, said retractor having a rotatable winding shaft for the seat belt to be wound thereonto;
a means for driving said shaft for winding said seat belt;
a first sensor for sensing whether said seat belt is being worn or not;
a second sensor for sensing a slack in said seat belt;
a slip joint, rotatably provided around a predetermined axis, for guiding said seat belt and being pivotally provided so that it can move between a first position, in which it hangs freely from a pivot shaft means, and a second position, in which it is tapered relative to said first position due to the belt tension, and said second sensor is a switch which is operated due to the change of the angular position around said predetermined axis of said slip joint; and
a control means responsive to said first and second sensors

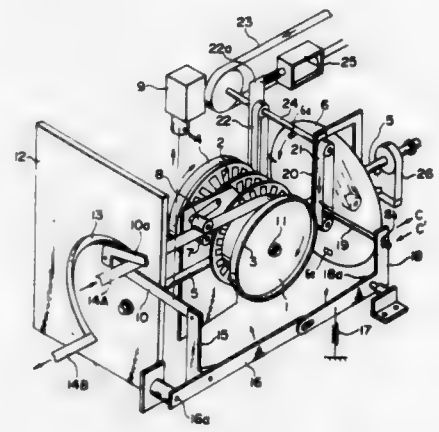


for controlling said driving means so that said driving means winds said seat belt after said seat belt is taken off and where there is a slack in said seat belt while said seat belt is being worn.

4,511,098
FILM STORAGE DEVICE

Yoshikazu Konaya, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 7, 1983, Ser. No. 549,530
Claims priority, application Japan, Nov. 8, 1982, 57-194513; Dec. 6, 1982, 57-212775
Int. Cl.[3] G03B *1/58;* G03D *3/12*
U.S. Cl. 242—56 R 7 Claims



1. A film storage device comprising: first and second rotatable reels for storing a film, a rotatable shaft, said first and second reels being coupled to said rotatable shaft and being rotatable about an axis extending perpendicular to a longitudinal axis of said rotary shaft; a rotary plate coupled to said rotary shaft and having a plane extending perpendicular to said longitudinal axis of said rotary shaft; and movable driving means, said movable driving means being selectively positionable to engage either at least one of said reels or to said rotary plate supplying driving power.

4,511,099

HUB OF A TAPE CASSETTE

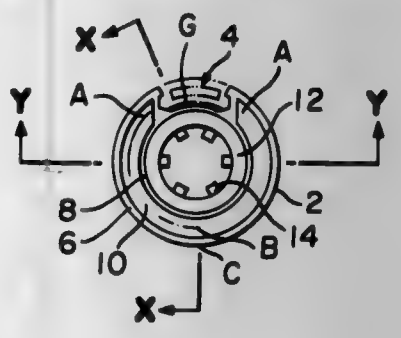
Eiichi Nunokawa, Saku; Toshihiko Ishida, Komoro, and Yasuo Ohira, Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 552,027

Claims priority, application Japan, Nov. 30, 1982, 57-180042[U]

Int. Cl.[3] B65H *75/18, 75/28*

U.S. Cl. 242—71.8 2 Claims



1. A hub of a tape cassette, comprising:

a generally circular outer ring portion,

an inner ring portion concentric with the outer portion, and

a generally annular rib connecting the outer and inner ring portions,

wherein said annular rib is formed having a tapered wall with a thickness which increases gradually and continuously from a first position adjacent to a gate portion for injection molding towards a second position most furthest from the gate portion, along the circumferential direction.

4,511,100

RAILLESS VECHICLE FOR UNDERGROUND MINING

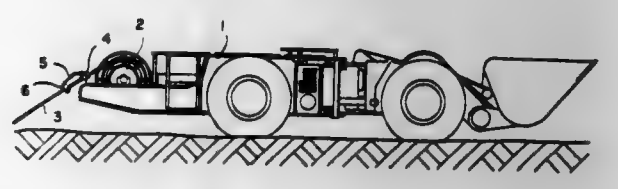
Walter G. Oetringhaus, Oberhausen, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Aktiengesellschaft, Augsburg-Nuremberg, Fed. Rep. of Germany

Filed Mar. 9, 1983, Ser. No. 473,606

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209294

Int. Cl.[3] B60L *9/04;* H02G *11/00*

U.S. Cl. 242—86.51 1 Claim



1. An electrically operated railess underground vehicle which is adapted to be supplied with electrical power from a stationary energy source of electrical power, comprising:

a vehicle body (1);

a rotatable magazine drum (2) mounted on said body;

a power line (3) adapted to be connected to a power source for operating said vehicle and windable on said drum in a winding direction and in an unwinding direction;

a three phase asynchronous motor (7) mounted on said body;

a power distributor (8) mounted on said body and connected to said asynchronous motor, said distributor having at least two rotary power outputs (9*d*,9*c*) rotatable by said asynchronous motor;

a controllable hydrostatic drum drive (10) connected to one of said outputs (9*d*) and including a hydraulic pump (12) and a hydraulic motor (11) rotatable by said pump to rotate said drum in the winding direction and in the unwinding direction;

a torque control (13) connected to said hydrostatic drum drive for controlling a speed and a direction of rotation of said hydraulic motor;

a controllable hydrostatic vehicle travel drive connected to the other output (9*c*) of said distributor for causing said vehicle to travel in a selected direction;

a travel drive control (24) connected to said vehicle travel drive and to said torque control for stopping travel of the vehicle in response to a limiting signal from said torque control;

a converter (14) connected to said torque control for supplying signals to said torque control including a signal for rotating said drum in the winding direction, a signal for rotating said drum in the unwinding direction and a limitation signal for causing said torque control to generate its limiting signal to stop the travel of said vehicle;

a lever member (5) connected to said converter and engaged with said power line, said lever member being pivotable upwardly and downwardly with changes in a relative angular position between said power line and said vehicle body for causing said converter to supply signals to said torque control for winding and unwinding said drum, said lever member movable out of a selected range of upward and downward positions to cause said converter to generate said limitation signal for stopping travel of said vehicle, said lever member being movable in a selected lateral angular range, said lever member causing said converter to generate said limitation signal when said cable moves out of said lateral range to stop travel of said vehicle; and

a brake line connected to said torque control for carrying said limiting signal of said torque control for braking travel of said vehicle.

4,511,101

REELING DEVICE

William King, 79 Allison Rd., Elsternwick 3185 Victoria, Australia

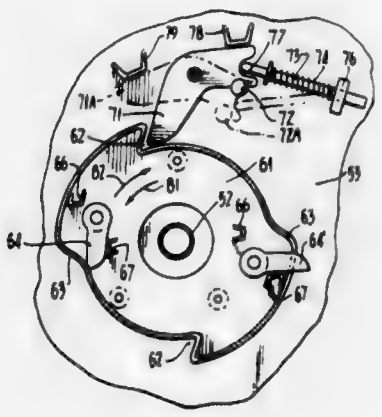
PCT No. PCT/AU81/00195, § 371 Date Aug. 31, 1982, § 102(e) Date Aug. 31, 1982, PCT Pub. No. WO82/02376, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 31, 1982, Ser. No. 414,380

Claims priority, application Australia, Jan. 2, 1981, PE07118

Int. Cl.[3] B65H *75/48*

U.S. Cl. 242—107.7 5 Claims



1. A reeling device including a casing, a reel for holding, paying-out and winding-in a linearly extendible, flexible member, means for biasing said reel in a direction of rotation for winding-in said member and a latching mechanism for preventing and permitting winding-in of said member, the latching mechanism comprising

a pawl (71) mounted solely to pivot between a first position and a second position about a pivot axis fixed to the casing,

a body (61) mounted to the reel for rotation therewith, said body having a cam surface (63) which, when the reel rotates in a first part of a rotation in the pay-out direction, moves the pawl from the first position, in which it is in contact with the cam surface, to the second position, in which it is remote from the body, said body having an abutment (64, 64') which, when the reel rotates in a second

part of said rotation in the pay-out direction, moves the pawl from the second position to the first position, said abutment being pivotally mounted on said body to extend therefrom when the reel is rotated in the pay-out direction;

said cam surface and the abutment operating as the reel rotates in the pay-out direction to put the pawl sequentially and repetitively into the second position and the first position; and

said body having a pawl engaging means (62) adapted to engage the pawl, when the pawl is in the first position and the reel rotates in the winding-in direction whereby to prevent winding-in and which does not engage the pawl when the pawl is in the second position when the reel rotates in the winding-in direction so that winding-in is not prevented and can take place.

4,511,102

BOBBIN HOLDER

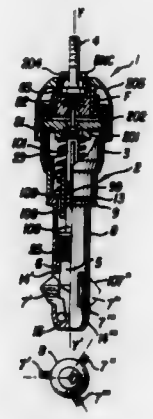
Zenzaburo Tsukumo; Masae Tsukumo, and Shinsuke Tsukumo, all of 5-5, Sakuradai 3-chome, Nakayama, Takarazuka, Hyogo 665, Japan

PCT No. PCT/JP81/00140, § 371 Date Feb. 16, 1983, § 102(e) Date Feb. 16, 1983, PCT Pub. No. WO82/04433, PCT Pub. Date Dec. 23, 1982

PCT Filed Jun. 16, 1981, Ser. No. 474,679

Int. Cl.³ B65H *49/02;* D03J *5/08*

U.S. Cl. 242—130.2 **4 Claims**



1. A bobbin holder comprising:

(a) an upper suspending structure;

(b) a hanging member being suspended by said upper suspending structure, being rotatable around a center axis, and being rockable with respect to said upper suspending structure;

(c) said hanging member having a cylindrical outer surface, a chamber, three guide grooves, and three rockably supporting portions;

(d) said three guide grooves opening into said chamber, extending in a direction of said axis, and being arranged radially and symmetrically with respect to said axis;

(e) three rockable elements; each rockable element having a triangle-like profile and a bottom portion supported with said each rockably supporting portion; an upper outside surface of said rockable element being formed as an inclined shoulder; and an upper inside surface of said rockable element being formed as an engaging surface,

(f) said rockable elements being rockable in a limited range outwardly or inwardly around said bottom portions; in an outward position, said upper outside surfaces being arranged along a conical surface of an immaginary cone; said immaginary cone having a top angle of 60 to 90 degrees;

(g) said three rockably supporting portions formed at the bottom of said chamber, being arranged near the outer surface of the hanging member and beneath said guide grooves, in a radial and symmetric arrangement with respect to said center axis;

(h) a core member contained in said chamber; said core member being shiftable along said center axis;

(i) a control means for locking said core member in an upper shifted position or a lower shifted position;

(j) whereby, when said core member is shfited into lower position, said core member is engaged with said engaging surfaces of said rockable elements in order to hold said rockable elements opened outwardly; and

when said core member is shifted into upper position, said core member is disengaged from said engaging surfaces of said rockable elements in order to allow said rockable elements to be rockable freely.

4,511,103

TAPE END DETECTING DEVICE IN A TAPE PLAYER

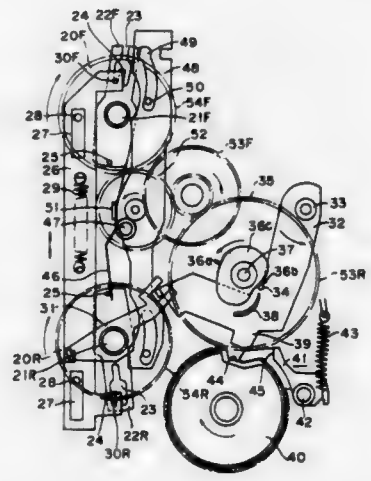
Hideki Hayashi; Yukio Ito; Yukio Akiike, and Shigeo Kinoshita, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 533,373

Claims priority, application Japan, Sep. 24, 1982, 57-164991

Int. Cl.³ B65H *59/38;* G03B *1/04;* G11B *15/32*

U.S. Cl. 242—186 **6 Claims**



1. A tape end detecting device in a tape player which comprises:

a pair of reel bases;

a check plate operatively linked to one of said reel bases;

a guide hole formed in said check plate and divided into a reset region and a set region by a projection extending into said guide hole;

a check pin slidably engaging said guide hole;

a detection plate formed at one end thereof with said check pin;

a rotation plate;

first cam formed on said rotation plate;

second cam formed on said rotation plate radially outwardly of said first cam;

a cam follower operatively linked to the other end of said detection plate and moved by said first cam to reciprocate said check pin from said set region to said reset region of said guide hole or, alternatively, moved by said second cam when said check pin engages said projection in said guide hole;

said first cam including a set cam surface to reciprocate said check pin in said set region of said guide hole, a reset cam surface to reciprocate said check pin in said reset region beyond said projection of said guide hole, said set cam surface having a larger revolution angle than that of said reset cam surface.

4,511,104

TABLE-LIKE SUPPORT INSTALLATION FOR PAPERS, ESPECIALLY AT A COVERING FRAME OF A SLIDING WINDOW

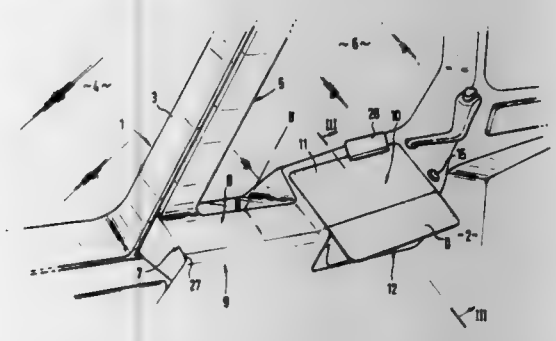
Juergen Meyer, Vaihingen/Enz, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,515

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 3209408

Int. Cl.³ B64D *11/00*

U.S. Cl. 244—118.5 **18 Claims**



1. A table-like support installation providing a substantially planar surface associated with a frame of a movable window, the movable window including a first frame section and a second frame section extending generally perpendicularly to said first frame section, the support installation comprising a plurality of support element means for forming a substantially planar surface, one of said support element means being fixedly mounted to the first frame section and a second of said support element means being movable from a rest position extending along the second frame section into an operating position forming an extension of the fixed first support element means, and latching means for locking said second support section in said operating position, said latching means being releasably manually and releasable by movement of said movable window thereby allowing said second support section to move from said operating position to said rest position.

4,511,105

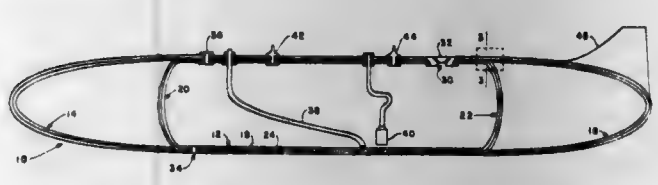
COMPARTMENTED, FILAMENT WOUND, ONE-PIECE AIRCRAFT FUEL TANKS

Edward J. Morrisey, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 339,258, Jan. 13, 1982, Pat. No. 4,453,995. This application Feb. 22, 1984, Ser. No. 582,514

Int. Cl.³ B64D *37/04*

U.S. Cl. 244—135 R **6 Claims**



1. A fuel tank for external mounting on an aircraft which comprises:

a. at least one elongated, generally cylindrical fuel cell having generally dome-shaped end portions, said fuel cell being formed of a plurality of layers of adhesive resin-impregnated filament wrappings, and having an imaginary central longitudinal axis;

b. first and second aerodynamic end shapes, each having an open end having an outer diameter approximately equal to the outer diameter of said fuel cell, said open end of each of said end shapes having an inside bevel having a slope complimentary to the shape of said end portion of said cell, and each end shape having an imaginary central longitudinal axis, said first and second end shapes being positioned at each end of said fuel cell with the open ends of said end shapes over the endmost portions of said fuel cell and with the axes of said end shapes juxtaposed with the axis of said fuel cell;

c. a plurality of outer layers of adhesive resin-impregnated filament wrappings surrounding said fuel cell and said end shapes, thereby providing an integral structure;

d. fuel filling and transfer fitments comprising means for filling said cell, means for draining said cell, fuel level sensing means, means for venting said cell and means for withdrawing fuel from said cell;

e. means for detachably mounting said tank to an aircraft; and

f. means attached to at least one of said end portions for imparting aerodynamic stability to said fuel tank.

4,511,106

HEAT EXCHANGER SUPPORT SYSTEM PROVIDING FOR THERMAL ISOLATION AND GROWTH

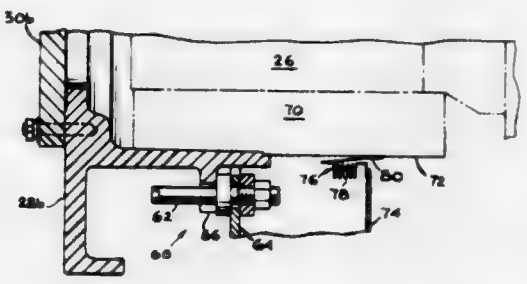
Richard F. Graves, Huntington Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 955,117, Oct. 26, 1978,. This application Aug. 14, 1981, Ser. No. 293,914

The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ F16L *21/00*

U.S. Cl. 248—65 **9 Claims**



1. A thermally isolating member for joining a high temperature component to a support structure with minimal heat transfer comprising:

a circumferential member having a thin metal wall to restrict the heat flow; and

means for connecting the thin-walled member at opposite ends respectively to the high temperature component and the support structure, said means further including means for accommodating relative movement from thermal growth of the high temperature component;

the circumferential member comprising a thin-walled wishbone-shaped member in combination with a circumferential bellows portion which is attached to the support structure, the bellows portion being aligned generally parallel to the axis of the high temperature component, extending circumferentially about said component, and being spaced therefrom, the wishbone-shaped member formed of two thin-walled metal collar portions joined together along a common edge, the opposite edges thereof being connected respectively to the high temperature component and to the circumferential bellows portion at a point remote from the support structure.

4,511,107

ONE-PIECE CLAMP

Richard J. Funk, 393 Valleybrook, Lancaster, Pa. 17601

Filed Aug. 27, 1982, Ser. No. 412,235

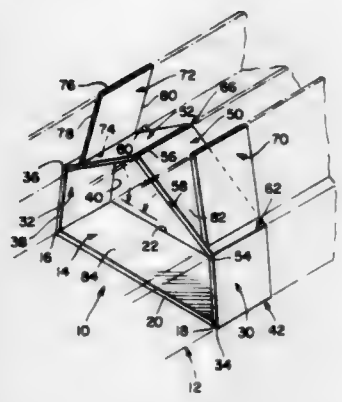
Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74.1 **6 Claims**

1. A clamp comprising:

a unitary, one-piece body having an elongate bottom panel which includes side edges and end edges, a pair of elongate side panels each including side edges and end edges one of which is integrally attached to a corresponding one of said bottom panel end edges to form a corner, a pair of

elongate top panels each including side edges and end edges one end edge of which is integrally and flexibly attached to another end edge of a corresponding one of said side panels to form a hinge, and a pair of elongate top crosspanels each including side edges and end edges one of which is integrally attached to a corresponding one of said top panels to form an angle therewith;



said top panels being hingably connected together at the other said end edges thereof; and

said top cross-panels being located and said angles being selected so that when said top panels are oriented to have the other of their respective end edges contacting said bottom panel, said top cross-panels will be essentially co-planar and have the other of their respective end edges located closely adjacent to each other.

4,511,108

LOCKING DEVICE FOR THE ASSEMBLING OF MODULAR ELEMENTS OF PIECES OF FURNITURE

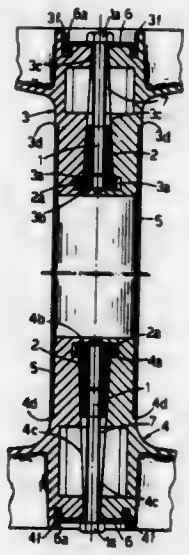
Giulio Ponzellini, Bologna, Italy, assignor to Castelli S.p.A., Bologna, Italy

Continuation of Ser. No. 243,714, Mar. 16, 1981, abandoned. This application Aug. 23, 1984, Ser. No. 644,134

Claims priority, application Italy, Mar. 18, 1980, 48194 A/80

Int. Cl.[3] F16M *11/20*

U.S. Cl. 248—188.7 **6 Claims**



1. In a standard or support for furniture comprising a column which is hollow at least at its ends; a plurality of independent radial arm members and a plurality of independent radial foot members, each of said arm and foot members defining discrete, unitary elements, and having an inner end portion in the form of a sector of a cylinder having a tapered axial hole and being adapted to be partially received in the inside of the hollow end portion of the column together with other sector-like elements, a locking device for each of said arm and foot members, said locking device comprising a threaded bolt having an enlarged head including a washer resting on the upper ends of the inner sector-like elements of the arm members or on the lower ends of the inner sector-like elements of the foot members respectively, each sector-like element having an outer annular partial shoulder by means of which said sector-like elements of the arm members and foot members abut against the upper or lower end of the column respectively, said bolt being screwed at its inner portion in an axial threaded hole of a rigid frusto-conical body having its greatest base towards the inner portion of this bolt, said tapered hole being formed by the axial hole sectors of the inner sector-like elements of the arm members and foot members respectively being tapered to correspond to the outer surface of the body, and means for preventing any rotary movement of the body with respect to the arm or foot members, but enabling the body to move axially to and from the head along the bolt cooperating therewith as the bolt is screwed.

4,511,109

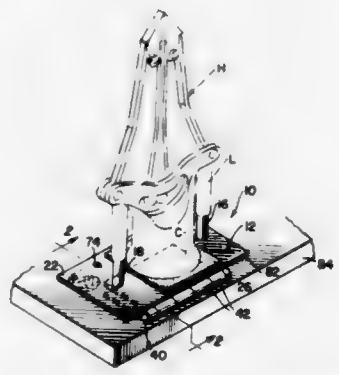
MOUNT FOR A POWER RESCUE TOOL

Joseph A. Cadillac, 192 Chestnut Ridge Rd., Saddle River, N.J. 07458

Filed Feb. 19, 1982, Ser. No. 350,277

Int. Cl.[3] F16M *11/00*

U.S. Cl. 248—310 **11 Claims**



1. A mount for a power rescue tool comprising:

a hinge having one leaf thereof fixed on a mounting surface and a second leaf pivotably connected thereto;

an elongate mounting plate fixed to said hinge second leaf for movement therewith;

a pair of spaced leg holders mounted on said plate on opposite sides of a centerline of said plate for slidingly accommodating legs of a power rescue tool;

a cushion mounted on said plate between said leg holders;

a catch means for maintaining said plate releasably attached to said mounting surface;

a tool movement limiting means for limiting the pivotal movement of said plate so that a power rescue tool can be mounted thereon for expeditious removal thereof without the danger of flipping over too far;

said catch means including a pair of anchors mounted on the mounting surface and a pair of backstops mounted on said plate to abut said anchors; and

said hinge mounting further including an edge of said plate located to abut an edge of the mounting surface when said plate is in a level orientation and essentially coplanar with the mounting surface.

4,511,110

SCISSORS LIFT TABLE

Reinfried Möller, Weinheim, Fed. Rep. of Germany, assignor to Expert Maschinenbau GmbH, Lorsch, Fed. Rep. of Germany

Filed Mar. 8, 1983, Ser. No. 473,350

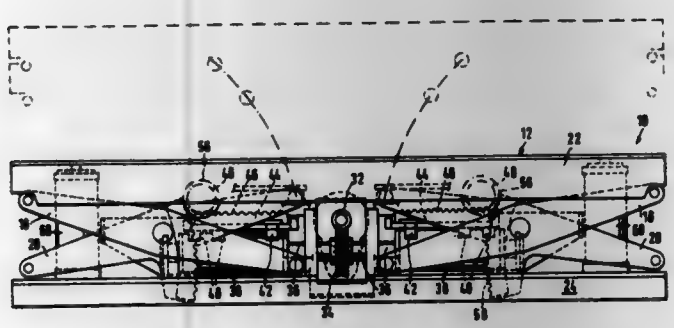
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208400

Int. Cl.[3] F16M *13/00*

U.S. Cl. 248—421 **6 Claims**

1. A scissors lift table comprising a lift platform, a scissors mechanism for raising said platform above and for lowering said platform onto a base frame in a vertical direction, said

scissors mechanism comprising at least two laterally adjacent scissors arm pairs, each comprising two scissors arms mutually pivotably coupled in their median region and pivotable relative to each other, drive means for pivoting said arms, one end of each arm of each arm pair being mounted stationarily but rotatably on the lift platform or the base frame respectively and the other end of each arm of each pair being slidably guided in the base frame or the lift platform respectively, said drive means comprising an elongate cylindrical roller adapted to be motor-driven in rotation, which is mounted stationarily



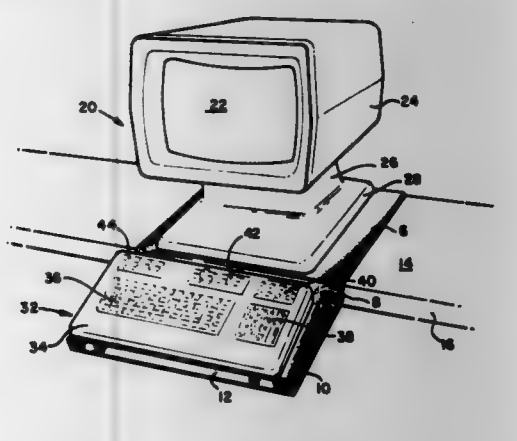
relative to the base frame and has an indexing groove provided in its cylindrical surface as a driving member, an indexing pin which engages in the groove and is arranged on a driven member forming an elongate carriage which is guided for longitudinal sliding movement, the carriage carrying a rack which meshes with a first toothed pinion which is operatively coupled with a second toothed pinion which meshes with a toothed segment on one of the scissors arms, the center of the pitch circle radius of the toothed segment coinciding with the stationary pivot point of said scissors arm on the base frame.

4,511,111

PORTABLE KEYBOARD SUPPORT

Steven W. Godfrey, Florence, Ky.; Allen M. Stern, Havertown, Pa., and Fran W. MacGregor, New Britain, Conn., assignors to Hunt Manufacturing Co., Philadelphia, Pa.

Filed Feb. 10, 1983, Ser. No. 465,668
Int. Cl.[3] A47G *29/10*
U.S. Cl. 248—459 3 Claims



1. An integral portable keyboard support for use with a table and a weight such as a display screen, computer or printer for supporting a keyboard comprising:

a single sheet of material with,

means for holding the keyboard support in place including a first flat rear laterally extending planar member adapted to lie on a table surface and support a weight for holding the first member to the table surface,

said first member having a front edge and a rear edge,

means for supporting a keyboard including a second flat laterally extending planar member in front of and below the first member,

said second member having a front edge and a rear edge,

said second member sloping downwardly from the rear thereof to the front thereof for supporting a keyboard,

a third laterally extending planar member connecting the first and second members and adapted to abut against the front end of the table,

said third member depending downwardly from the front edge of the first member to the rear edge of the second member, and

an upstanding flange at the front edge of the second member acting as a stop to hold a keyboard on the second member,

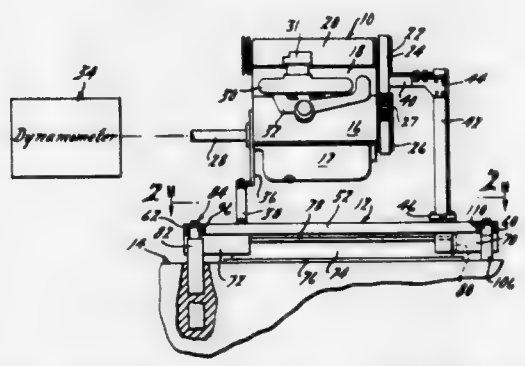
whereby the keyboard support may be placed on a table with its first flat member positioned flat against the table top and a display placed on top of the first flat member to anchor the keyboard support in place, the third member may be placed to abut the edge of the table, and a keyboard may be placed on the sloped second member and supported thereby.

4,511,112

ENGINE TEST STAND

Edward A. Ruehle, Redford Township, Wayne County, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 22, 1982, Ser. No. 360,279
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—544 8 Claims



1. For test mounting an engine in accurate alignment and proximity to a dynamometer; an engine support means comprising; a frame including longitudinally extending members in substantial parallelism one with the other and generally aligned with the engine crankshaft; laterally extending end members directed substantially normal to the longitudinally extending members, all members being attached rigidly to one another in a single plane; engine bracket support means attaching to the longitudinal members and extending upward for attachment to the test engine; a plurality of ground post means to support the frame structure at least three points about its perimeter, the post supports extending into the ground sufficiently to provide a solid attachment of the frame to the ground; spacer means between the frame structure and the post supports constructed to provide a level surface of the frame; means between at least two of the spacer means and the respective post supports relating thereto being configured with matching surface configurations so that when the frame moves into approximate location with respect to the post support and is lowered thereto, the surfaces engage to align the frame structure with respect to the post supports so that an accurate positioning of the frame structure is formed with respect to the posts and an associated dynamometer; fastener means extending through the spacer means to rigidly secure the frame to the post structure.

4,511,113

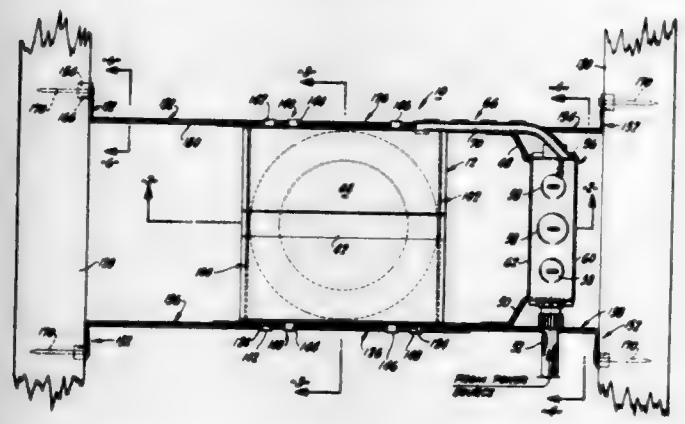
HANGAR DEVICE FOR A RECESSED LIGHTING UNIT

James B. Druffel, and Joel S. Cohen, both of Oakland, Calif., assignors to Prescolite, a division of U.S. Industries, San Leandro, Calif.

Continuation-in-part of Ser. No. 222,042, Jan. 2, 1981, Pat. No. 4,388,677. This application Apr. 8, 1982, Ser. No. 351,877

Int. Cl.³ F16M *1/00*

U.S. Cl. 248—546 **4 Claims**



1. A hanger device for holding a body to a pair of beams comprising:

a. a pair of elongated members slidable in relation to one another, each of said pair of elongated members including a shaft having side portions, and means for fastening each of said pair of elongated members to each of the beams said means including at least one of said elongated members including an end portion having an end piece fixed at an angle to said shaft, said end piece further including a split member having a first and a second portion in side-by-side relationship; said first portion of said split member including first and second sections said first section including an end portion being capable of penetrating any of the beams, and

b. a lip fixed to said second portion of said split member laterally beyond said side portions of said shafts of elongated members, and fixed at an angle in relation to said first portion of said end piece.

4,511,114

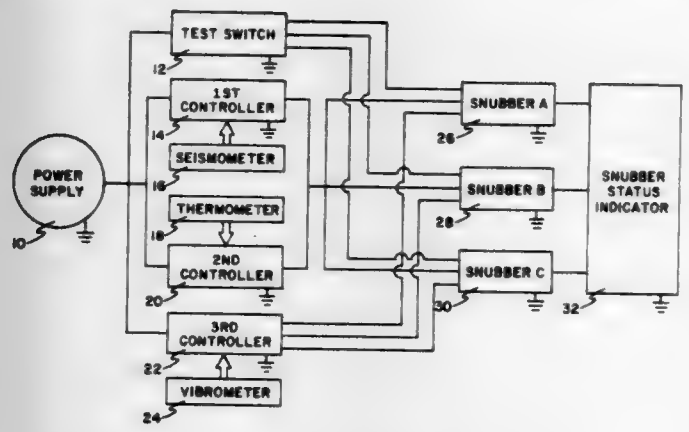
CENTRALLY ACTIVATED PIPE SNUBBING SYSTEM

William E. Cawley, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 18, 1982, Ser. No. 340,450

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—550 **11 Claims**



1. A pipe support system comprising:

a plurality of snubbers for supporting a pipe system, each of said snubbers including means operable to lock the associated snubber in a position restraining pipe displacements and to unlock said associated snubber in a position permitting normal pipe displacements, each said snubber mounted between a pipe member and a structural support member and comprising a housing connected to one of said members and a shaft connected to the other of said members, said shaft mounted within said housing for relative reciprocal movemment thereto upon relative movement between said members, means for locking said shaft to said housing, said locking means comprising at least one gripping member mounted on said housing for movement relative thereto and engagable with said shaft to prevent movement between said housing and said shaft, and means on said housing connected to said gripping member for moving said gripping member into engagement with said shaft;

means for sensing an abnormal condition possibly effecting excessive pipe displacements; and

control means responsive to said sensing means for actuating said operable means to simultaneously lock all of said snubbers in unison and thereby restrain said pipe system against pipe displacements.

4,511,115

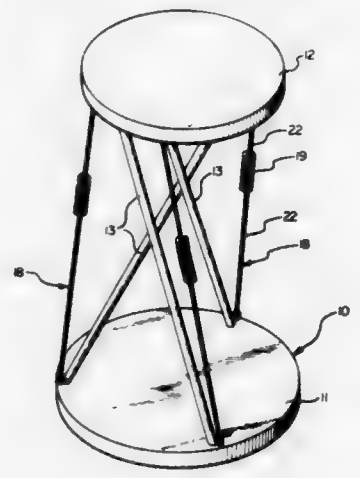
PASSIVE STRUCTURE WITH ENERGY ABSORBING CAPACITY

John S. Ludwigsen, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jan. 27, 1984, Ser. No. 574,348

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—562 **5 Claims**



1. A support structure comprising:

a lower base member;

an upper support member spaced from said base member and adapted to support a load;

at least three elongated rigid compression members each having its lower end pivoted on said base member and its upper end pivoted on said support member, the points of pivotal connection of said compression members to each of said base and support members being spaced about a closed curve; and

at least three elastic tension members interconnecting said base and support members.

4,511,116

VARIABLE OPENING PINCH SLEEVE VALVE

Lawrence D. A. Jackson, Quebec, Canada, assignor to Linatex Canada Inc., Montreal, Canada

Filed Mar. 17, 1980, Ser. No. 131,195

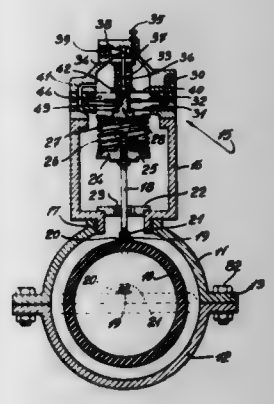
Int. Cl.³ F16L *55/14*; F16K *31/126*

U.S. Cl. 251—5 **4 Claims**

1. A pinch sleeve valve controllable opening positions regardless of internal sleeve pressure, comprising

a flexible sleeve having a passageway therethrough, the sleeve having variable positions from a round cross section when fully open, to a collapsed cross section when closed,

a rigid pressure sealed housing containing the sleeve,
sensing means connected to the flexible sleeve adapted to sense whether the sleeve is fully open, partially open or closed,
a valve positioner connected to the sensing means to supply fluid to the housing at a pressure sufficiently higher than



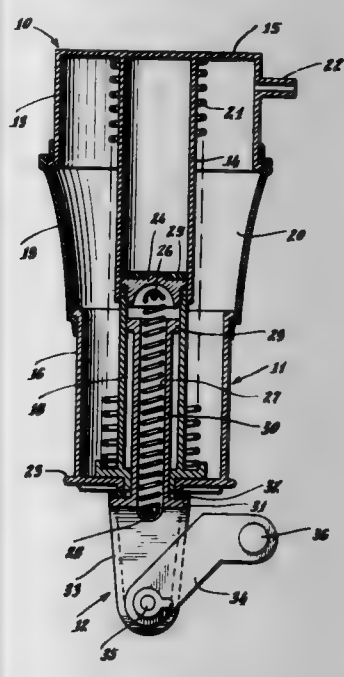
the internal sleeve pressure to close the sleeve to the desired opening position, said valve positioner including a control means to adjust the pressure of the fluid supplied to the housing to maintain the desired opening position of the sleeve regardless of variations in the internal sleeve pressure.

4,511,117

ACTIVATING APPARATUS IN A LIQUID CONVEYING SYSTEM OPERATED BY VACUUM, PREFERABLY A SO-CALLED VACUUM SEWAGE SYSTEM

Sigvard V. Söderström, Hägersten, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Dec. 8, 1983, Ser. No. 559,476
Claims priority, application Sweden, Dec. 15, 1982, 8207172
Int. Cl.³ F15B *15/26*; F16K *31/56*
U.S. Cl. 251—73 **2 Claims**



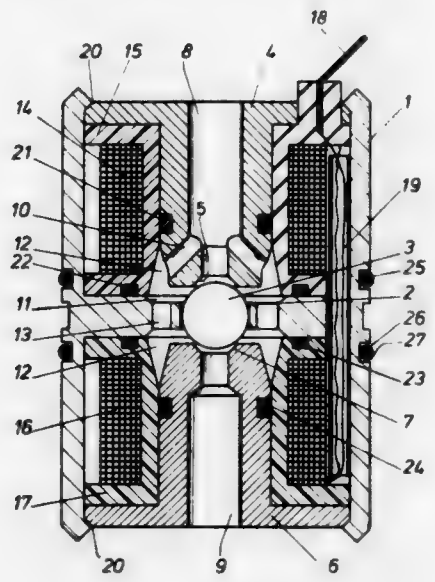
1. In an actuating apparatus for a liquid conveying system operated by means of a vacuum, such as a vacuum sewage system having a valve, the improvement comprising: an operating device for said valve movable between a first and second position, a housing, a chamber, a force accumulator which is movable with respect to said housing, the housing and the force accumulator forming parts of said chamber which is connected to the vacuum of said system and is contractable under the influence of the vacuum in said chamber, means being coupled between said operating device and said force accumulator, a latching member coacting with said operating device by retaining the latter in said first position, while said force accumulator initially is actuated by means of the vacuum, said force accumulator being operatively connected to said operating device in such a manner that when said latching member is released, the operating device is moved to said second position by said means, said operating device being provided with a movable arm having a projection at a free end, said latching member being in the form of a second arm, said projection being latched by means of a spring biasing said second arm into engagement therewith, and said second arm during the movement of said force accumulator being acted upon by said force accumulator whereby said projection is released from said second arm and the operating device moves to the second position to cause said valve to operate.

4,511,118

ELECTROMAGNETIC BALL VALVE

Uwe Kühl, Mustin; Andreas Krause, Lubeck, and Horst Krüger, Stockelsdorf, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,263
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231172
Int. Cl.³ F16K *31/02*
U.S. Cl. 251—137 **4 Claims**



1. An electromagnetic ball valve for a flow medium under pressure, comprising an exterior cylindrical sheath having an opening at each end, an upper and a lower pole piece having aligned axial bores opened at each of their outer ends and being spaced apart at their inner ends arranged within said sheath, the inner ends being spaced apart to define a ball guideway therebetween, an abutment defined at the lower end of the upper pole piece axial bore and a seat defined at the upper end of the lower pole piece axial bore, a ball positioned in said guideway between said abutment and said seat, said guideway including a space around said ball, said upper pole bore having an always open communication passage connecting said bore to the space surrounding said ball, an upper and a lower magnet coil disposed around respective upper and lower poles, said ball being movable in said guideway between said seat and said abutment under the control of said coils.

4,511,119

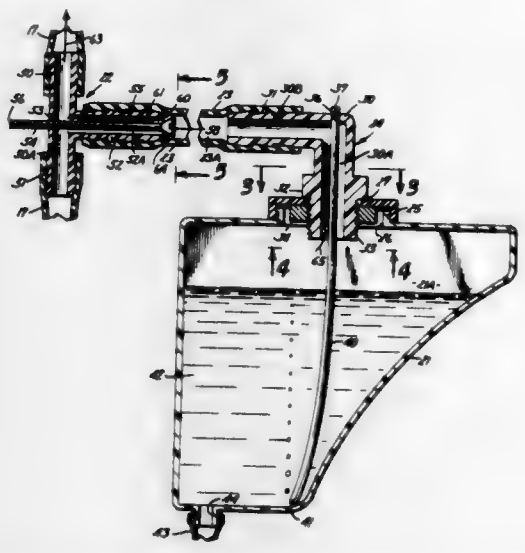
ADJUSTABLE VALVE ASSEMBLY

Robert V. Albertson, 2100 Shadywood Rd., Wayzata, Minn. 55391

Filed Jul. 26, 1982, Ser. No. 402,055
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—216 **6 Claims**

1. In combination: a first fitting having a wall comprising first and second conduits having axes intersecting at generally a right angle, and a tube co-axial with said first conduit and

passing in sealed relation through a hole in the wall of said fitting; a second fitting comprising a first conduit having a wall and a first axis, a branch conduit having a second axis and intersecting said first conduit so that axes are generally perpendicular, a first valving surface at the outer end of said branch conduit, a valving member including means having a second valving surface movable relative to said first valving surface for controlling the flow of fluid through the branch conduit, and a stem joined to the means having the second valving



surface, said stem extending through said branch conduit and threaded through the wall of said first conduit, and means outside said first fitting on the stem usable to rotate the stem to adjust the position of said valving member to change the distance between said first and second valving surfaces and maintain said changed distance thereby controlling the flow of fluid through the branch conduit and; tubular means connecting said second conduit of said first fitting with said branch conduit of said second fitting.

4,511,120

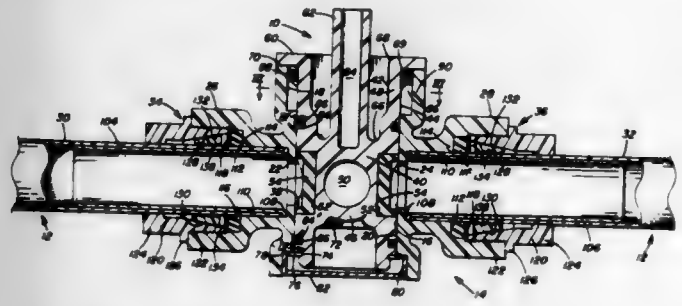
PLASTIC SERVICE VALVE

Richard W. Conley; Richard P. Tremblay, both of Pittsburgh; Charles W. Bolam, Canonsburg; James E. Logan, Pittsburgh, and David A. Krueger, Harleysville, all of Pa., assignors to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed Mar. 11, 1983, Ser. No. 474,468

Int. Cl.³ F16K *51/00*

U.S. Cl. 251—288 **24 Claims**



1. A service valve comprising,

a valve body molded of plastic material and having a chamber with an upper portion and a lower portion,

said lower portion having an inlet opening and an outlet opening,

a valve seat in said chamber lower portion between said inlet and outlet openings,

a valve member positioned in said valve seat between said inlet and outlet openings,

said valve member being molded of plastic material to form a unitary body including a plug portion and an actuator portion,

said plug portion having a flow passage therethrough,

said plug portion being rotatable in said valve seat between an open position where said flow passage is aligned with said inlet and outlet openings and a closed position where said flow passage is out of alignment with said inlet and outlet openings to control the flow of fluid through said chamber lower portion,

said actuator portion extending upwardly from said plug portion through said chamber upper portion, said actuator portion including a flange and a stem,

said flange and said stem being integral with said plug portion to form said valve member unitary body,

said flange being spaced circumferentially around said stem and including a first portion extending upwardly between said valve body and said stem and a second portion positioned in overlying relation with said valve body and thereby closing said chamber upper portion,

said stem projecting upwardly from within said flange and above said valve body,

said valve body including an upper shoulder forming a bearing surface extending circumferentially around said chamber upper portion for receiving said flange second portion, and

said flange second portion being positioned on said upper shoulder to support said actuator portion on said valve body so that impact forces applied to said actuator portion are transmitted from said flange to said valve body bearing surface and distributed throughout said valve body away from said stem and said plug.

4,511,121

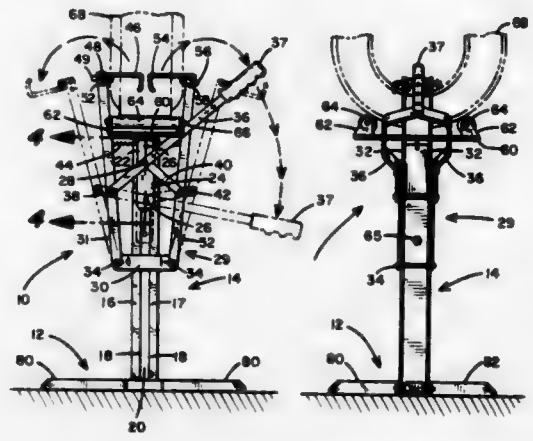
TIRE SPREADER

Marshall R. Bulle, 917 2nd St., Farmington, Minn. 55024, and Dale A. Johnson, 6336-19th Ave. S., Richfield, Minn. 55423

Filed May 25, 1984, Ser. No. 614,314

Int. Cl.³ B60C *25/14*

U.S. Cl. 254—50.4 **5 Claims**



1. A device for spreading the side walls of a cord-reinforced vehicle tire casing to facilitate the inspection and repair of the interior of said casing, comprising:

(a) a stand having a vertically extending post member;

(b) carriage means slideably mounted on said post member for a reciprocal motion therealong;

(c) a pair of elongated arms pivotably coupled at one end thereof to a common spacer member and having rotatable hook members operatively coupled to the other end of said elongated arms;

(d) an operating lever pivotably coupled at one end to one of said pair of elongated arms at a point on said one of said pair of elongated arms intermediate said one and other ends thereof; said operating lever being movable between a raised and a lowered position;

(e) linkage means pivotably joined to the other of said pair of elongated arms at a point intermediate said one and other ends thereof and pivotably joined to said operating lever and to said carriage means;

(f) means for supporting a tire casing in a generally vertical plane such that said hook members can be made to engage

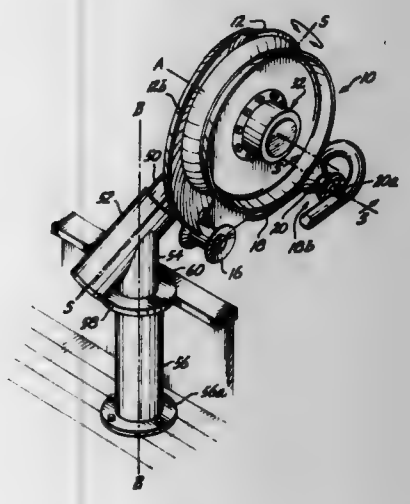
the bead of said tire when said operating lever is in said raised position and said hook members apply a separating force when said operating lever is moved to its lowered position.

4,511,122

DEEPWATER KING CRAB POT LINE HAULER

Robert A. Svendsen, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Sep. 30, 1983, Ser. No. 537,863
Int. Cl.³ B66D *1/08*
U.S. Cl. 254—332 **9 Claims**



6. A deep water line hauler comprising a hauler head assembly including a V-grooved line hauler sheave, power means for driving the sheave for rotation in a sheave plane, and line guide means for leading line to and from the sheave during operation of the hauler, a first cantilever support member carrying the hauler head assembly, a second cantilever support member rotatably mounting said first cantilever support member as a continuation thereof, an upright base member fixedly mounted on the vessel, and a third cantilever support member rotatably engaging the base member and providing support to the second cantilever support member, the first cantilever support member projecting from said second cantilever support member and being rotatable about an inclined swivel axis transverse to said base member, said swivel axis formed by said first and second cantilever support members intersecting said sheave plane formed by the roational plane of the sheave at an acute angle so as to offset said sheave plane from said upright base member.

4,511,123

SAFETY DEVICE

Meyer Ostrobrod, 6723 Castor Ave., Philadelphia, Pa. 19149

Filed Jun. 2, 1983, Ser. No. 500,342
Int. Cl.³ B66D *1/06, 5/14*
U.S. Cl. 254—364 **4 Claims**

1. A safety device comprising:

a housing including support means adjacent the upper end and a cable outlet adjacent the lower end thereof;

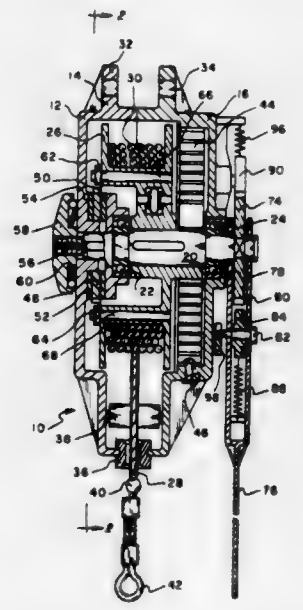
a drum within said housing, said drum being secured to a shaft which is coaxial therewith and which shaft is mounted for rotation;

a cable adapted to be wound around said drum, one end of said cable extending through said outlet and being adapted to be connected to a harness worn by a workman;

a spiral spring coaxially arranged with respect to said shaft, one end of said spring being fixed to said housing and the other end being attached to said shaft whereby said spring acts to rotate said drum to wind the cable thereon whenever said cable is withdrawn from said housing;

braking means mounted within said housing and being coaxially arranged with respect to said shaft, said braking means including a braking ratchet;

a centrifugally operated braking pawl mounted for rotation with said drum, spring means biasing said braking pawl into an inoperative position wherein it does not engage said braking ratchet so that said drum can rotate freely to allow said cable to be freely drawn into or out of said housing through said cable outlet, said braking pawl being automatically movable into an operative position at a predetermined drum speed wherein it engages said braking ratchet to activate said braking means which initially slows said drum down thereby slowing down the withdrawal of said cable from said housing and which braking means then fully stops the withdrawal of said cable further



including means mounted on said housing for locking said manually operated lever against pivotal movement;

means carried by said housing for manually rewinding said cable into said drum, said rewinding means including a rewinding ratchet fixedly secured directly to said shaft and a manually operated lever pivotally mounted on said housing, said lever carrying a rewinding pawl which is movable between an inoperative position and an operative position wherein said rewinding pawl engages said rewinding ratchet to rewind said cable onto said drum when said lever is manually operated.

4,511,124

METHOD AND COMPOSITION FOR FLUIDIZATION OF ACCUMULATED PIT SCRAP IN SOAKING PITS

Charles D. Roberts, Longview, and Ben R. Cave, Avinger, both of Tex., assignors to Lone Star Steel Company, Dallas, Tex.

Filed May 3, 1983, Ser. No. 491,166
Int. Cl.³ B08B *7/04*
U.S. Cl. 266—44 **4 Claims**

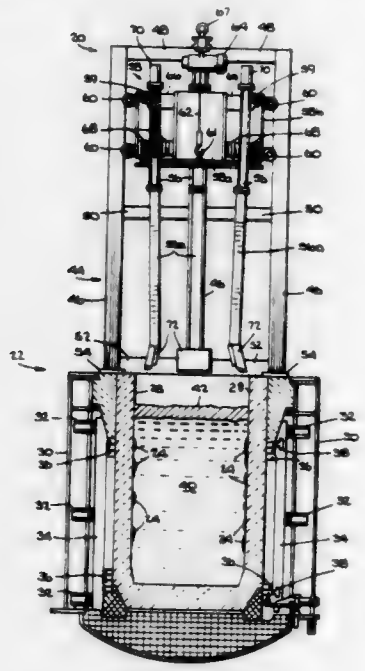
1. A method of fluidizing accumulated pit scrap, primarily mixtures of FeO, Fe_3O_4 and SiO_2, in a soaking pit, comprising adding to the soaking pit an effective fluidizing amount of a composition consisting essentially of about 38 to about 56 wt. % SiO_2 in the form of clean silica sand, from about 38 to 56 wt. % scarfing kerf containing about 85% FeO, and from about 2 to about 4 wt. % C, and maintaining the soaking pit at a temperature and for a time sufficient to fluidize the accumulated pit scrap.

4,511,125

LADLE SCRAPER MECHANISM

Otto Hochstrasser, Franklin Park; Hans G. Heine, Little Silver, and Heinz Buechi, North Brunswick, all of N.J., assignors to BBC Brown Boveri, Inc., North Brunswick, N.J.

Filed Nov. 18, 1983, Ser. No. 553,144
Int. Cl.³ F27D *23/02*
U.S. Cl. 266—135 **19 Claims**



1. A ladle scraper mechanism for scraping incrustations off the interior wall of a ladle containing a molten metal, said mechanism comprising:

a frame constructed to be mounted over said ladle and having at least one vertical guide;

a carrier assembly mounted to be moved up and down in said frame and to be guided by said vertical guide;

at least one elongated scraper leg having a scraper element at its lower end;

scraper leg mounting means for mounting the upper end of said scraper leg to said carrier assembly so that said scraper leg extends down into said ladle, said mounting means including a flexible element permitting limited vertical movement of said scraper leg relative to said carrier assembly and limited pivotal movement of said scraper leg about a horizontal axis;

an actuator mounted on said carrier assembly and arranged to exert a horizontal force on said scraper leg at a location vertically displaced from said horizontal axis to cause the lower end of the scraper leg to swing toward or away from the ladle wall being scraped; and

a vibrator mounted on the upper end of said scraper leg to induce vertical vibratory motion to said leg.

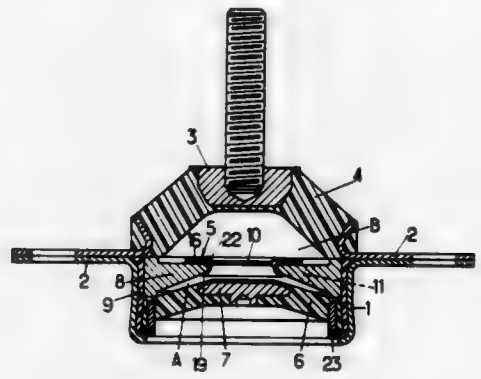
4,511,126

HYDRAULIC MEMBRANE SHOCK ABSORBERS

Marc Bernuchon, Saint Leu La Foret; Michel Pompei, Paris, and Daniel Gregoire, Chateaudun, all of France, assignors to Hutchinson, Paris, France

Filed Mar. 2, 1983, Ser. No. 471,303
Claims priority, application France, Mar. 3, 1982, 82 03546
Int. Cl.³ F16M *13/00*; B60G *11/62*; F16J *15/52*
U.S. Cl. 267—140.1 **10 Claims**

1. A device for damping the relative movements between two rigid elements, formed by a sealed case interposed between the two rigid elements, which case comprises two rigid pieces (1,3) interlockable respectively with the two rigid elements, a dividing wall (5) in which is formed a restricted passage (11), dividing the inside of the case into first and second compartments, a liquid mass filling the first compartment and at least the part of the second compartment adjacent the dividing wall, means (4) for connecting sealingly together the two rigid pieces while allowing relative reciprocating movements thereof with corresponding modification of the volume of at least the first compartment, a deformable membrane (10) delimiting a part of the first compartment and means for limiting to a low amplitude, which is less than 0.5 mm, the deformations of this membrane, said membrane being formed by a continuous impervious and flexible foil whose edge is sealingly mounted on a rigid seat forming part of the case and the restricted passage being formed in a rigid zone of the case spaced from the membrane, characterized in that the peripheral annular zone (13) of one of the two faces of the membrane (10) is applied axially and bonded against a flat annular rigid bearing surface (14) forming the seat of this membrane, and in that an annular peripheral zone (15) of the other face of the membrane is covered by a rigid washer (16) bonded floatingly to this zone.

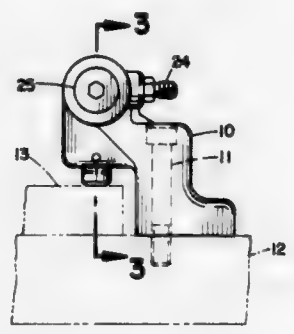


4,511,127

HYDRAULIC-MECHANICAL CLAMPING DEVICE

Jack H. Schron, Chagrin Falls, and Lawrence H. Seidel, Mentor, both of Ohio, assignors to Jergens, Inc., Cleveland, Ohio

Filed Apr. 18, 1983, Ser. No. 485,861
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 **4 Claims**



1. A compact self-locking hydraulic clamping device comprising a body, a primary bore extending from an end of said body, a secondary bore intersecting said primary bore intermediately and extending normally to said primary bore from said primary bore to a face of said body, a piston slidably received in said primary bore and including a shank passing back and forth past the intersection between the primary and secondary bores, piston chamber defining means associated with said primary bore, compound camming surface means extending non-reentrantly across one side of said piston shank and positioned to pass back and forth over said secondary bore during said back and forth movement of said piston to present different stages of said compound camming surface means, a clamping pin in said secondary bore, said pin being biased toward said camming surface means by a spring located in said secondary bore, a key preventing rotation of said clamping pin with respect to said body, follower means on the inner end of said clamping pin, said follower means engaging said compound camming surface in following relationship, said compound camming surface including a first stage which wedges said follower means and clamping pin relatively rapidly and in a non-self-locking manner during the earlier part of the piston's

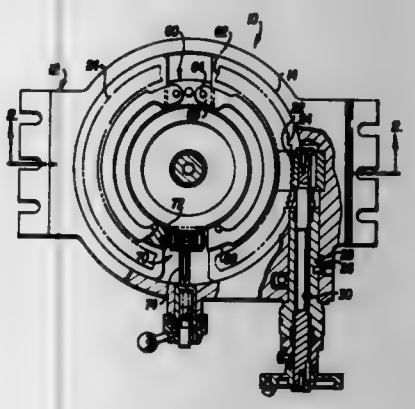
movement in the pin-extending direction, said compound camming surface including a second stage which wedges said follower means and clamping pin relatively slowly and in a self-locking manner during the latter part of the piston's movement in the pin-extending direction.

4,511,128

ROTARY TABLE

Joseph J. Dancsik, 37970 Pointe Rosa, Mt. Clemens, Mich. 48045

Filed Jul. 25, 1983, Ser. No. 517,073
Int. Cl.³ F16C *29/00*
U.S. Cl. 269—61 **5 Claims**



1. A rotary table for holding a workpiece for machining comprising: a base, a rotary member supported by the base, a transversely movable member carried by the rotary member, a laterally movable member carried by the transversely movable member, means for displacing the transversely movable member linearly relative to the rotary member, means for displacing the laterally movable member linearly relative to the transversely movable member, and a worm and worm gear means for selectively rotating the rotary member relative to the base, the invention comprising:

a thrust bearing for supporting the rotary member against the base, a biasing means abutting said thrust bearing at one end and abutting the rotary member at another end, whereby the rotary member lightly abuts the base and is supported by said thrust bearing with a minimum of friction;

an adjustable thrust bearing for selectively adjusting said biasing means to bring the rotary member into light contact with the base and allow the rotary member to rotate relative to the base with a minimum of friction;

said adjustable thrust bearing comprising:

a central post projecting axially from the rotary member, having a threaded end;

a central step bore having a shoulder formed in the base;

one end of said adjustable thrust bearing abutting said shoulder;

a threaded collar engaging said threaded end and abutting another end of said adjustable thrust bearing; and

whereby rotation of said threaded collar in one direction moves the rotary member against said biasing means and toward the base, and rotation of said threaded collar in a counter direction allows said biasing means to displace the rotary member away from the base.

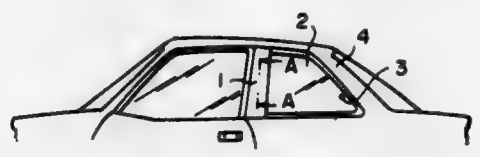
4,511,129

QUARTER-WINDOW STRUCTURE FOR VEHICLE

Kohji Kishino, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Oct. 25, 1983, Ser. No. 545,188
Claims priority, application Japan, Oct. 25, 1982, 57-161997[U]; Dec. 1, 1982, 57-210997
Int. Cl.³ B60J *1/08*
U.S. Cl. 296—146 **11 Claims**

1. A quarter-window structure for a vehicle comprising a windowpane fitted on a side window frame, an opening-closing device which is connected between the rear end portion of the windowpane and the side window frame, a hinge which is fixed to the front end portion of the windowpane and extends substantially in parallel to the surface of the windowpane, a holder which is fixed to a center pillar of the vehicle and is provided with a hinge receiving opening, the hinge being



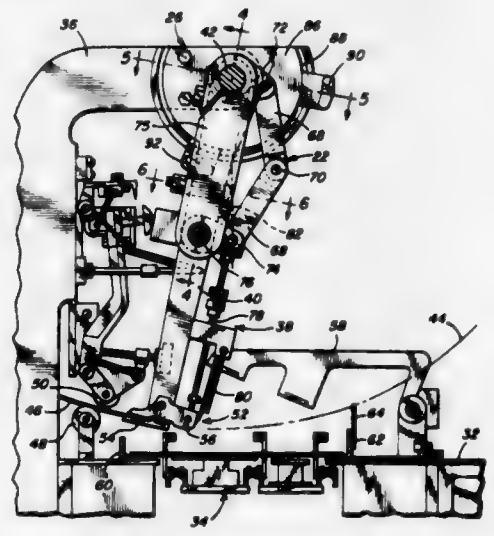
adapted to be passed through the hinge receiving opening of the holder by being moved forwardly with respect to the vehicle body, a fastener for fixing the free end portion of the hinge projecting forwardly from the hinge receiving opening of the holder to the center pillar from outside the vehicle body, and a garnish which covers the free end portion of the hinge and the holder.

4,511,130

PHASE CONTROLLED GRIPPER OPERATING SYSTEM FOR COLLATOR

Delmar O. Barton, Salem, and Loran R. Simpson, Ames, both of Iowa, assignors to Metromail Corporation, Mount Pleasant, Iowa

Filed Jul. 28, 1983, Ser. No. 518,038
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—54 **12 Claims**



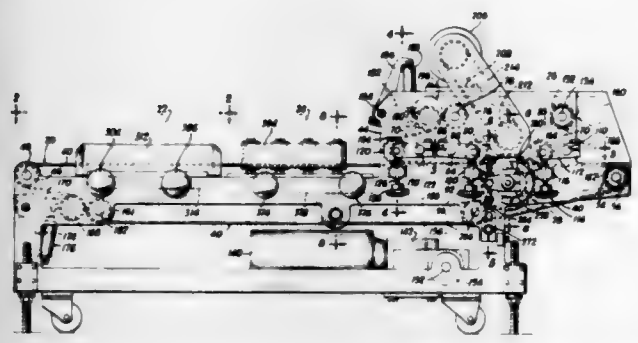
1. In combination with a cyclically displaceable gripper and mechanical drive means connected to the gripper for displacement thereof through a travel stroke of fixed amplitude, the improvement comprising mechanical linkage means connected to the gripper for cyclic operation thereof, and phase control means engageable with the linkage means for establishing a predetermined phase relationship between the cyclic operation of the gripper and the travel stroke, said phase control means including at least two trip elements engageable with said linkage means for imparting gripping and release movements thereto at selected phase locations during said displacement of the gripper.

4,511,131

METHOD AND APPARATUS FOR ALIGNING AND TRIMMING OVERLAPPED SIGNATURES

William B. Raybuck, Cocoa, Fla., assignor to Trimmer Machine Co., Inc., Dorset, Vt.

Filed Oct. 19, 1983, Ser. No. 543,362
Int. Cl.[3] B65H *43/02*
U.S. Cl. 270—54 56 Claims



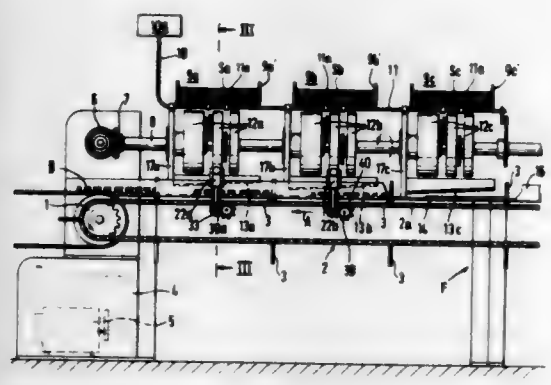
1. A signature trimmer for trimming the edge of an incoming stream of overlapping signatures comprising, first conveyor belt means adapted to engage the upper surface of a continuous stream of overlapping signatures, second conveyor belt means adapted to engage the bottom surface of said continuous stream of overlapping signatures, fluid pressure means for exerting a force on said first and second belt means in the direction to cause said first and second belt means firmly to grip said stream of overlapping signatures while permitting the tension in said belts to be reduced when bunched up signatures occur in said stream, and cutting means positioned to trim at least one edge of said stream of overlapping signature while the same is firmly held between said first and second belt means.

4,511,132

GATHERING MACHINE FOR PAPER SHEETS OR THE LIKE

Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Nov. 14, 1979, Ser. No. 94,321
Claims priority, application Switzerland, Nov. 17, 1978, 11823/78
Int. Cl.[3] B65H *39/02*
U.S. Cl. 270—58 13 Claims



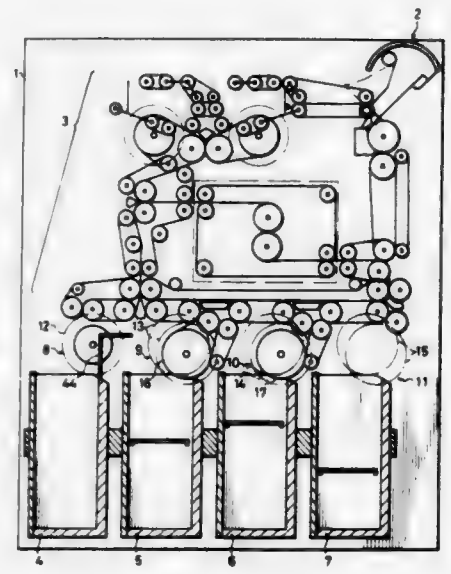
1. In a machine for gathering sheets into stacks or similar accumulation, the combination of a conveyor having a plurality of spaced-apart entraining means arranged to move in a predetermined direction and along a predetermined path; a plurality of supports adjacent to said path and disposed one after the other, as considered in said direction; transfer means for delivering sheets to said supports so that the delivered sheets extend into said path; a plurality of mobile combined advancing and hold-down devices, one for each of said supports, for urging the delivered sheets against the respective supports; and means for moving said devices into engagement with the sheets on said supports and thereupon at least substantially in said direction in synchronism with movements of said entraining means so that a sheet which is about to be engaged by the oncoming entraining means is urged against the respective support by the associated device and is already accelerated by such device with reference to and while contacting the respective support, only in said direction and at least approximately to the speed of said entraining means, before the accelerated sheet on its support is actually engaged by the oncoming entraining means.

4,511,133

DEVICE FOR SECURELY HOLDING STACKED BANK NOTES FOR USE IN AN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

Eiichi Kokubo; Koichi Goi; Junichi Arikawa; Hideyuki Ebihara, and Hiroshi Chiba, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 462,992
Claims priority, application Japan, Feb. 4, 1982, 57-16597
Int. Cl.[3] B65H *5/22*
U.S. Cl. 271—3.1 2 Claims



1. A device for securely holding stacked bank notes and adapted to be assembled with an automatic money depositing and disbursing machine including a box for containing bank notes and having an upper opening through which bank notes are pulled out or stacked, a suction drum for sucking the uppermost bank note separately one by one from the underlying stacked bank notes contained in said box by applying a vacuum suction pressure on the upper surface of the uppermost bank note to pull the same out of said box, and an accumulating wheel adapted to be swung to the upper retracted position during the operation of sucking and separately pulling out the bank notes and adapted to be swung to the lower accumulating position during the operation of accumulating and stacking the bank notes into said box; said device comprises, in combination:

(a) a stopper swingably supported to be held normally at the position to constrain the fore edges of the stacked bank notes, to be swung to the position to release the fore edges of the stacked bank notes at the commencement of the operation of sucking and pulling out the bank notes from said box, to be restored to the normal position to prevent the remaining bank notes from being pulled out of said box at the termination of the operation of sucking and pulling out the bank notes, and to be inserted between paddles of said accumulating wheel to scrape off the bank notes held below respective paddles to let them fall down into said box during the operation of accumulating and stacking bank notes; and

(b) a push cover having an operation plate adapted to be set to the closed position to push the aft end portion of the stacked bank notes during the operation of sucking and pulling out the bank notes from said box, and adapted to

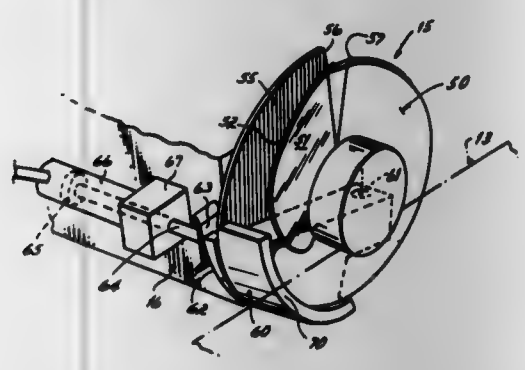
be set to the open position during the operation of accumulating and stacking bank notes.

4,511,134

LOCKOUT FOR A ROTARY FEEDER

Charles C. Hughes, Villa Hills, Ky., assignor to R. A. Jones & Co. Inc., Covington, Ky.

Filed Aug. 29, 1983, Ser. No. 527,016
Int. Cl.³ B65H *3/28*
U.S. Cl. 271—113 **4 Claims**



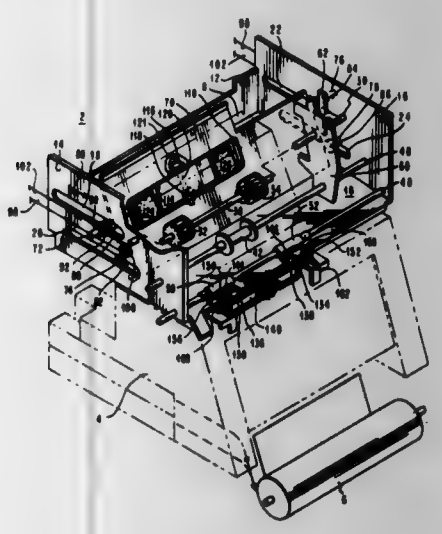
1. A rotary feeder for sheets such as flat folded cartons comprising,
a hub,
a blade mounted on said hub to pass behind a leading sheet to separate it from the adjacent sheet,
a lockout element movably mounted on said hub, said lockout element, when extended axially, projects beyond said blade, thereby engaging a leading sheet and holding it out of engagement by said blade.

4,511,135

ENHANCED ENVELOPE FEEDING

Jose L. Huerta, Austin; Roy A. Rachui, Georgetown; James E. Roberts, and Grainger I. Simpson, Jr., both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,992
Int. Cl.³ B65H *1/08*
U.S. Cl. 271—126 **10 Claims**



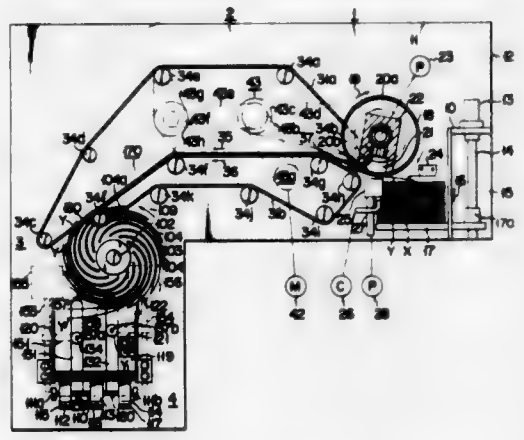
1. In a hopper for holding envelopes on edge for separation for subsequent feeding to a printer or the like wherein the hopper comprises a base, two side walls and a moveable rear wall for urging the envelopes forward to separation station, said moveable wall being as wide as the distance between the two side walls, the width of the moveable wall being greater than the envelopes to be fed and the separation station being located off center of said moveable rear wall, the improvement comprising:
a separately moveable portion in said moveable rear wall;
said moveable portion being located in a correspondingly shaped opening in said rear wall;
said separately moveable portion being pivotable about an axis transverse to the direction of movement of the moveable rear wall;
said separately moveable plate including a pair of resilient pads positioned to align with the separating means toward which the envelopes are urged by the moveable rear wall.

4,511,136

SHEET HANDLING DEVICE

Noboru Yamada, and Kunihiko Nakamura, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 18, 1982, Ser. No. 442,663
Claims priority, application Japan, Nov. 27, 1981, 56-189280
Int. Cl.³ B65H *29/34*
U.S. Cl. 271—187 **8 Claims**

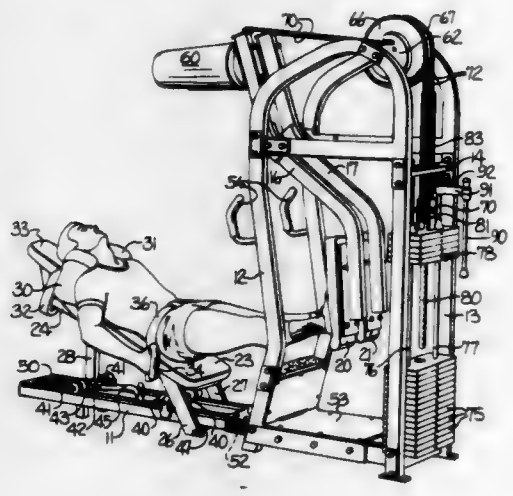


1. A sheet handling device, comprising:
a conveyor belt system to carry leaves of paper one after another at a constant speed,
a plurality of rotating conveying wheels each having an arcuate groove for successively receiving said leaves of paper carried through said conveyor belt system, the tangential velocity of said rotating conveying wheels, at the inlet of said arcuate groove being set to a speed lower than the running speed of the leaf of paper at the outlet of said belt conveying system,
means installed along the side of said rotating conveying wheels for stopping leaves of paper held in said arcuate grooves to allow the same to be discharged and fall via gravity,
a device for piling said falling leaves, and a grouping device having at least two supporting bar members to be projected laterally under the leaf of paper coming after the last of the leaves of paper to be grouped to a preset count, when said leaf of paper coming next is discharged out of said arcuate groove, said grouping device further comprising:
projecting devices for individually projecting said supporting members,
and moving mechanisms for vertically moving said projecting devices in the space where leaves of paper fall after being discharged from said arcuate groove, wherein the one of said at least two supporting bar members is located farther from said stopping means than the other supporting bar member and is projected at a higher position in said space earlier than the other supporting bar member.

4,511,137
COMPOUND WEIGHT LIFTING EXERCISING MACHINE

Arthur A. Jones, Lake Helen, Fla., assignor to Nautilus Sports/-Medical Industries, Inc., Lake Helen, Fla.

Filed Jan. 20, 1983, Ser. No. 459,360
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—118
9 Claims



1. A machine for the compound exercising of the muscles associated with the limbs and for providing the proper variation of resistance to movement in all positions when the distal end of the limb is being moved in substantially a straight line between the extended and retracted positions and vice versa, said machine comprising

(1) frame means supporting components of said machine,

(2) a user-actuated lever pivotally supported on said frame means for swinging back and forth movement of one end thereof,

(3) force transfer means supported on said user actuated lever and at a predetermined distance from the pivotal connection of said lever, said force transfer means being adapted to be engaged by the distal end portion of the limb to be exercised to move said one end of said lever back and forth in a predetermined arc of movement, one end of the arc of movement being reached when the limb is in substantially extended position and the other end of the arc of movement being reached when the limb is in substantially retracted position,

(4) a negative profile cam supported for rotation on said frame and having a different radius at different degrees of rotation thereof to provide moment arms of different lengths as said negative profile cam is rotated,

(5) first flexible connector means fixed at one end to a position on said negative profile cam and being connected at its other end to said lever at a position spaced from the pivotal support thereof,

(6) weight means for offering resistance during an exercise, said weight means being adapted for vertical movement on said frame,

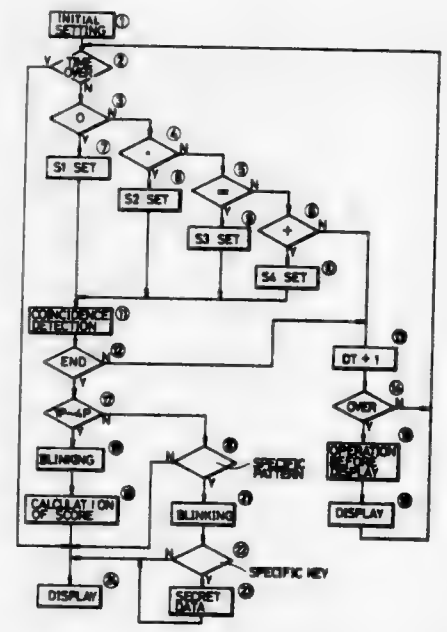
(7) a wheel supported for rotation on said frame and having a uniform radius larger than any radius of said negative profile cam so that the amount of force applied by the user to said force transfer means to raise said weight means is greater than the amount of weight provided by said weight means, said wheel being fixed to rotate with said negative profile cam, and

(8) second flexible connector means fixed at one end to a position on said wheel and being connected at its other end to said weight means, said second flexible connector means being wound onto said wheel to lift said weight means while said first flexible connector means is being unwound from said negative profile cam when said lever is being moved toward one end of said arc of movement, and said second flexible connector means being unwound from said wheel to lower said weight means while said first flexible connector means is being wound onto said negative profile cam when said lever is being moved toward the other end of said arc of movement whereby the proper variation of resistance to movement is provided in all positions when the limb is being moved in substantially a straight line between the extended and retracted positions and vice versa.

4,511,138
GAME CALCULATING APPARATUS

Toshihiko Sumitani, Nara, and Kenichiro Komeda, Gose, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 12, 1982, Ser. No. 407,482
Claims priority, application Japan, Aug. 18, 1981, 56-129866; Aug. 26, 1981, 56-134440
Int. Cl.[3] A63B *71/06*
U.S. Cl. 273—1 E
3 Claims



1. A game device for use as a secondary function in an electronic device having a diverse primary function, comprising:

display means for displaying a plurality of characters at a plurality of display positions;

means operatively connected to said display means for sequentially varying the characters displayed at each said display position;

key means operatively connected to said means for varying for selectively stopping said variation of said characters at all said display positions upon actuation thereof;

memory means for storing a reference pattern of characters representative of a possible display therein;

means responsive to actuation of said key means comparing a first signal representative of the patterns displayed on said display means with a second signal representative of said reference pattern stored in said memory means and producing a unique indicia upon determination of a coincidence therebetween wherein said indicia is a code word symbolizing a specific prize to be awarded; and

wherein said unique indicia is separate from score; and

wherein said unique indicia is only outputted on the display, as opposed to being outputted as a hard copy; and

wherein said secondary function includes outputting said code word, and said primary function includes operation of said electronic device for purposes other than displaying said code word.

4,511,139
BASEBALL TRAINING BAT

Harold A. Armstrong, 3919 Ladoga, Long Beach, Calif. 90808

Filed Feb. 13, 1984, Ser. No. 579,271
Int. Cl.[3] A63B 69/40
U.S. Cl. 273—26 B 2 Claims

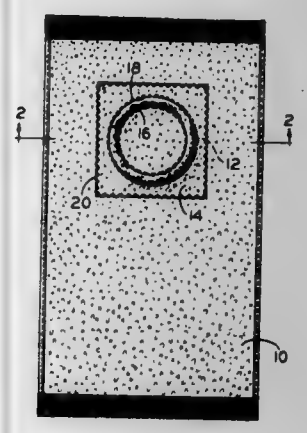


1. A baseball training bat comprising an elongated bat body of conventional shape having a handle portion and a ball contacting portion disposed remote from said handle portion, said ball contacting portion being divided into a free end section and a handle section, said sections being joined by a hinge means for pivotal movement relative to one another, such that one end of said free end section will pivot into alignment with one end of said handle section to make contact with said handle section and emit an audible sound when said bat is swung by a user.

4,511,140
BOWLING BALL RETAINER-TOWEL DEVICE

Robert L. Wenger, 206 W. Michigan St., LaGrange, Ind. 46761

Filed Jul. 7, 1983, Ser. No. 512,202
Int. Cl.[3] A63D 5/00
U.S. Cl. 273—54 B 6 Claims



1. A bowling ball retainer-towel device comprising an extended uninterrupted area, panel-like towel of flexible fabric that lies in a flat plane when laid on a flat surface, and a loop-shaped annular embossment lying in the plane of said fabric having "towel flexibility" and of a fixed diameter smaller than a bowling ball being secured to said towel and spaced inwardly of the edges thereof, said embossment being relatively rigid thereby to serve as a raised obstruction to restrain rolling of a bowling ball placed thereinside while said fabric with said embossment is laid flat on a flat surface.

4,511,141
AUTOMATIC APPARATUS FOR POSITIONING FOOTBALLS FOR KICKING

Samuel R. Dumas, 215 Oakhurst St., El Dorado, Ark. 71730

Division of Ser. No. 273,344, Jun. 15, 1981, Pat. No. 4,424,969.
This application Dec. 6, 1983, Ser. No. 558,512
Int. Cl.[3] A63B 67/00
U.S. Cl. 273—55 B 11 Claims

1. A football support stand for automatically positioning a football for subsequent kicking, the stand comprising:

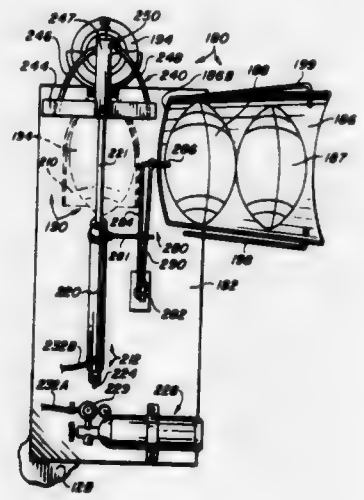
base means adapted to be disposed upon a supporting surface;

hopper means inclined with respect to said base means for containing a plurality of footballs to be kicked, the hopper means having an output mouth towards which footballs roll;

set up means for receiving footballs from said hopper means mouth and operable to properly position them for subsequent kicking, said set up means comprising:

receptor plate means operationally adjacent said hopper means for serially receiving footballs and then moving them to a generally vertically upright position suitable for kicking;

means for moving said receptor plate means between a horizontal football receiving position wherein said plate



means may receive a football exiting said hopper means mouth and a vertical position wherein the football is oriented in a position suitable for subsequent kicking; and,

guide arm means for temporarily maintaining footballs in said position suitable for kicking after they have been appropriately positioned by said receptor plate means;

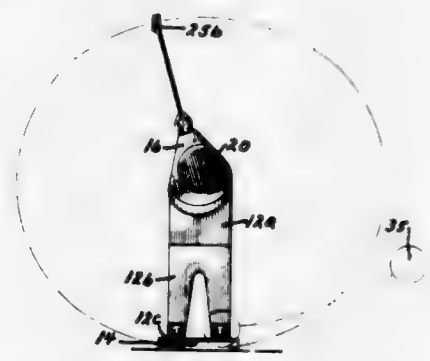
gate means for preventing the output of footballs from said hopper means mouth when said receptor plate means is disposed in said vertical position; and,

gate trigger means for opening said gate means whereby to load said receptor plate means.

4,511,142
GOLF TRAINING DEVICE

Robert L. Pote, Jr., Mt. Vernon, Ind., assignor to Tempo, Inc., Mount Vernon, Ind.

Filed May 9, 1983, Ser. No. 493,019
Int. Cl.[3] A63F 7/06; A63B 69/36
U.S. Cl. 273—87.4 8 Claims

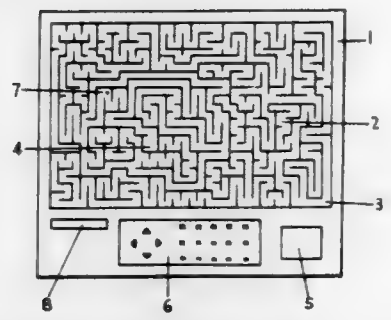


1. A golf training device comprising a miniaturized player model defined by a base supported upstanding body frame, a body portion rotatably mounted on said base supported upstanding body frame, a golf club selectively secured to said rotatable body portion simulating full swing golfing shots, and a resilient layer underlying and affixed to said base supported upstanding body frame, where the selective compression of portions of said resilient layer serves a player model weight distribution and shifting relationship.

4,511,143
ELECTRONIC MAZE GAME

Mithra M. K. V. Sankrithi, 417 Bellevue Way SE. #400, Bellevue, Wash. 98004

Filed Aug. 20, 1982, Ser. No. 409,937
Int. Cl.[3] A63F 9/06
U.S. Cl. 273—153 R 26 Claims

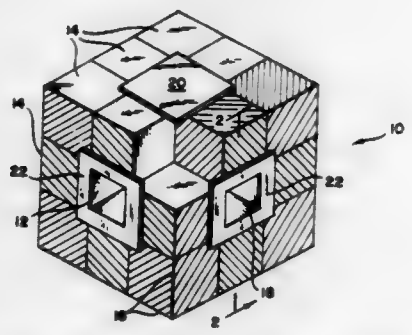


1. A game apparatus comprising a display board;
discrete optical display elements forming a grid on said display board and bounding sides of intersticial blocks with said grid, with electronic means for selectively displaying said optical display elements so that a maze pattern is displayed on said display board;
and additional discrete optical display elements in the interstitial blocks of said grid, with user operable means for selectively displaying said additional optical display elements.

4,511,144
MULTI-CUBE PUZZLE

Patrick A. Roberts, 9348 Cherry Hill Rd., #624, College Park, Md. 20740

Filed Sep. 28, 1982, Ser. No. 425,539
Int. Cl.[3] A63F 9/08
U.S. Cl. 273—153 S 13 Claims

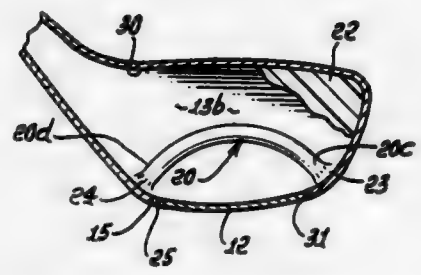


1. A multi-cube puzzle comprising an array of individual smaller cubes defining together a cubical array forming a substantially larger cube the exposed faces of which larger cube have an edge length equivalent to a multiple of that of said individual cubes,
each said face of said cubical array being defined by an annular series of cubes in square form excepting a single void cube zone in said array together defining the edges of the cubical array, and thereby to define six square annuli on said cubical array each having a square central open area, the open areas centrally of said cubical array defining three transverse intersecting passages through said array having a six-pointed rectilinear star-like form,
said open areas having therein a six-legged central core upon which and against which said individual cubes are retained and partake of sliding movement, thereby to permit translation of any one cube from any position in said cubical array to any other position therein by digital manipulation and movement thereof along an exposed face through said single void cube zone, and,
separate end retainer means carried by each leg of said core and engaging a portion of an exposed face of each said smaller cube thereby to retain said individual cubes in grouped array for sliding movement while permitting free digital access to each face annulus.

4,511,145
REINFORCED HOLLOW METAL GOLF CLUB HEAD

Glenn H. Schmidt, 1857 Los Encinos, Glendale, Calif. 91208

Filed Jul. 18, 1983, Ser. No. 514,975
Int. Cl.[3] A63B 53/04
U.S. Cl. 273—167 H 7 Claims

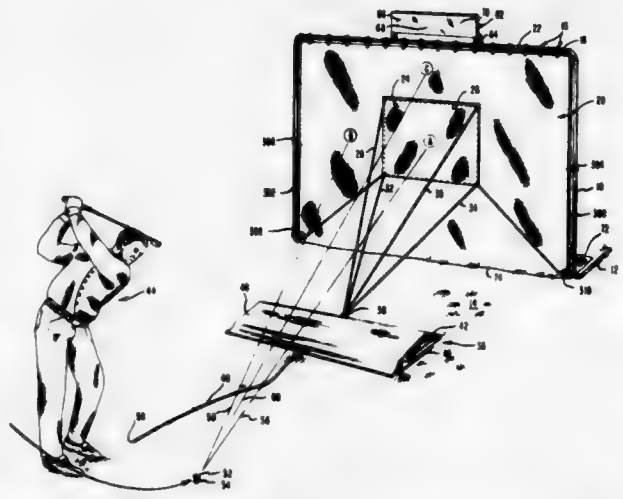


1. In a hollow metallic golf club head having a ball striking front wall, a top wall, a bottom wall, and longitudinally spaced toe and heel walls, the improvement comprising
(a) said front wall having a front side, and a rear side exposed to the hollow interior of the head,
(b) and a metallic ridge in the form of an arch integral with said front wall and extending longitudinally and downwardly adjacent said front wall from a central region of the front wall and adjacent said rear side thereof to transfer ball impact loading to said toe and heel walls,
(c) said ridge having the form of a rib with opposite end portions, and upper, rear and lower surfaces each of which is arched upwardly throughout the major lengthwise extent of the rib between said opposite end portions, said opposite end portions approaching said toe and heel walls increasing substantially in forward and rearward thickness, whereby the rib has compound arching configuration for impact load transfer to said toe and heel walls.

4,511,146
PRACTICE GOLF NET DEVICE

Owen D. Windall, 1007 Oswego Rd., Napersville, Ill. 60540

Filed Jul. 26, 1983, Ser. No. 517,264
Int. Cl.[3] A63B 57/00
U.S. Cl. 273—181 J 15 Claims



1. A practice golf net device comprising a fabric-like screen, a frame, means to drape said screen from said frame in substantially a vertical plane, at least one shroud line, one end of each of said at least one shroud line being disposed secured to said flexible screen the other end of each of said at least one shroud line being coupled together at a point, a plate, a disc, said disc journaled for rotation on a lateral surface of said plate, a hingable plate, one end of said hingable plate hingably secured to

said disc, the other end of said hingable plate being disposed free to move upwardly and outwardly from an uppermost surface of said disc into one of a plurality of positions, means to slidably secure a first cable along a surface of said hingable plate, one end of said first cable being secured to said each other end of said at least one shroud line at said point, means to releasingly clampingly engage said first cable against slidable motion, means to bias said free end of said hingable plate from every said one of said plurality of upward and outward positions, an indicating lever, said indicating lever pivotably secured to said disc, means to angularly position said indicating lever at selected locations reflecting said diverse upward and outward location of said free end of said hingable plate, means to resettably reposition said angular position assumed by said disc, said means to resettably reposition including means to rotationally position said disc at one of a plurality of selected angles of rotation dependent upon said one end of said at least one shroud line being displaced a distance away from a position attained by said one end of said at least one shroud line when said first cable has not been slidably positioned in clamping engagement by said means to releasingly clampingly engage said first cable, a pointer, said pointer secured along the length of said first cable, means to resettably retain said pointer at a selected position when said screen is impacted by a golf ball, said means to resettably retain said pointer including visual access means to visually access said pointer and a distance depicting scale disposed on said plate, a second cable, said second cable being coupled to said hingable plate, said second cable being coupled to said indicating lever, said visual access means including means to visually access said pointer and said distance depicting scale.

4,511,147

GOLF SWING TRAINING CLUB

William A. Olsen, 594 W. 2050 North, West Bountiful, Utah 84087

Filed Aug. 3, 1983, Ser. No. 520,060
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—193 A **11 Claims**



1. A golf swing trainer comprising, a grip means for accommodating a golfer's hands closed therearound; a shaft having an end of an upper substantially straight portion thereof fitted to said grip means and a lower portion, said lower portion including a substantially straight portion positioned along an axis spaced from said upper portion and substantially parallel to the axis of said upper portion, said upper and lower portions being connected by a substantially straight portion connected to said upper and lower portions at substantially equal angles; and weighted head secured to the lower end of said lower shaft portion and extending outwardly therefrom, which head has an open center area.

4,511,148

SCOOP AND CUP DEVICE FOR PLAYING A GAME

Homer C. Amos, Palm Springs, Calif.; Joseph C. Benedyk, Highland Park; Carl E. Scheie, Libertyville, both of Ill., and William R. McGlove, Albuquerque, N. Mex., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 158,128, Jun. 10, 1980, abandoned.
This application Mar. 31, 1982, Ser. No. 363,964
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.³ A63B *59/00, 71/02*
U.S. Cl. 273—326 **87 Claims**



1. A ball catching and throwing device for playing a ball game comprising:

(a) an elongated scoop means having inner and outer surfaces, a distal end, a proximal end and a pair of outwardly and upwardly facing edges between the distal end and the proximal end thereof;

(b) a curvilinear-shaped ball cup means having inner and outer surfaces, an open edge and a closed edge, the closed edge secured to the proximal end of the scoop;

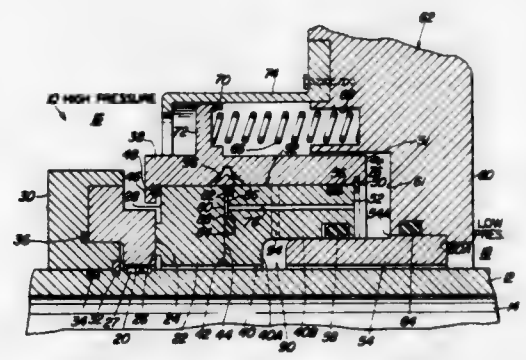
(c) the scoop means having an elongated central first axis extending from the distal end to the proximal end, a portion of the scoop means along the first axis having a portion thereof in the configuration of a segment of a hyperbolic spiral, the spiral having a formula in which the polar coordinates Rθ equal a constant C ($R\theta = C$) and wherein the values of R range from 1.5 to 60 centimeters and the values of the constant C range from 10 to 30 centimeter-radians when θ is measured in radians.

4,511,149

MECHANICAL SEAL WITH CYLINDRICAL BALANCE SLEEVE

Winfred J. Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 29, 1983, Ser. No. 537,229
Int. Cl.³ F16J *15/38, 15/48*
U.S. Cl. 277—3 **12 Claims**



1. A mechanical seal assembly for substantially preventing the flow of a fluid along a rotatable shaft from a high pressure region to a lower pressure region, said seal assembly being associated with a housing and comprising:

a pair of relatively rotatable seal rings having opposed seal faces, one seal ring being connected to said shaft and the other seal ring being connected to said housing and spaced from said shaft;

a back-up ring for one of said seal rings and spaced from said shaft, said back-up ring being constructed of a material

having a different modulus of elasticity than said one of said seal rings, said one of said seal rings and said back-up ring having annular mating faces;

a first zone communicating with said lower pressure region and bounded in part by the inner surfaces of said one seal ring and said back-up ring;

a generally cylindrical member closely surrounding said one of said seal rings and said back-up ring and exposed at its outer surface to high pressure in said high pressure region, said member forming with the outer surfaces of said one of said seal rings and said back-up ring a second zone sealed from high pressure fluid; and

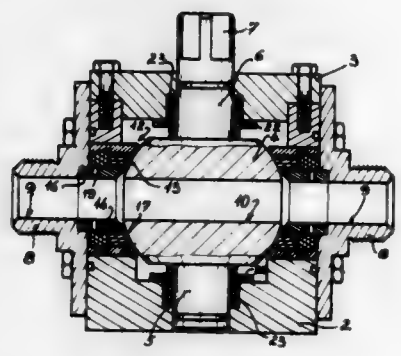
passage means communicating said first zone and said second zone so that low pressure fluid exists on the inner and outer surfaces of said one seal ring and said back-up ring and thus substantially prevent distortion of said one of said seal rings and said back-up ring because of pressure differentials between their inner and outer surfaces.

4,511,150

DEVICE PROVIDING AN EFFECTIVE SEAL FOR A SPHERICAL ROTARY SLIDE VALVE

Gabriel Séguenot, Neuilly-sur-Seine, France, assignor to Societe Nouvelle Auxim (Societe Anonyme), Saint-Etienne, France

Filed Jun. 7, 1983, Ser. No. 501,981
Claims priority, application France, Jun. 7, 1982, 82 10085
Int. Cl.³ F16K *5/06, 5/20;* F16J *15/48*
U.S. Cl. 277—12 **12 Claims**



1. In a sealing device for a valve with a spherical rotary valve member of the type in which an effective seal between a valve body and the rotary valve member is insured by means arranged within the body around ducts provided in said body for passage of the fluid each include an annular gasket capable of being pressed against the rotary valve member by means reacting to the hydrostatic pressure, the improvement wherein the means reacting to the hydrostatic pressure are constituted by at least one ring of a material elastically deformable under pressure, located at the bottom of a blind annular recess formed in said body and communicating with the corresponding duct for passage of the fluid and between the bottom of the recess and engaging and pressed against the annular gasket to form a continuous sealing assembly therewith.

4,511,151

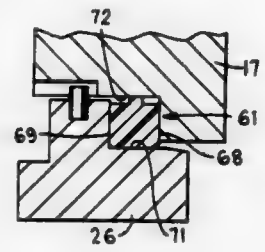
ONE-PIECE MOUNTING RING FOR SEAL INSERT

Thomas E. Cook, Kalamazoo, Mich., assignor to Durametallic Corporation, Kalamazoo, Mich.

Filed Aug. 30, 1983, Ser. No. 527,898
Int. Cl.³ F16J *15/38*
U.S. Cl. 277—92 **9 Claims**

1. In a mechanical seal construction for creating a sealed relationship between a rotatable shaft and a surrounding stuffing box structure, including a rotatable seal ring surrounding and nonrotatably connected to said shaft, a nonrotatable seal ring surrounding said shaft and nonrotatably connected to said stuffing box structure, said seal rings having axially opposed annular end faces disposed in abutting and relative rotative sliding engagement with one another, and packing ring means creating a sealed engagement between said nonrotatable seal ring and said stuffing box structure, comprising the improvement wherein:

said packing ring means comprises a one-piece packing ring of a substantially rigid plastics material, said packing ring including a main body portion which is of a substantially rectangular cross section and is defined by radially inner and outer annular surfaces joined together by substantially parallel axial end faces which extend substantially perpendicularly therebetween, said packing ring also including a ringlike rib which is integral with and externally surrounds said main body portion and projects radially outwardly from the radially outer annular surface thereof, said rib being disposed substantially midway between said axial end faces and having an axial width which is only a



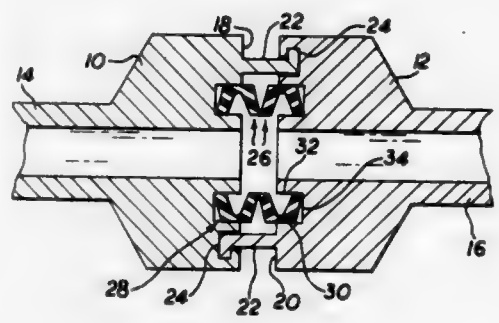
small fraction of the axial width of said main body portion, the radially inner annular surface of said main body portion having a light interference fit with a radially outwardly directed annular surface on said nonrotatable seal ring, the radially outer end of said rib having a light interference fit with a radially inwardly directed surface on said stuffing box structure, the radially outer annular surface of said main body portion being spaced from and free of engagement with said stuffing box structure, one of the axial end faces on said main body portion being sealingly engaged with an opposed surface on said nonrotatable seal ring, and the other axial end face on said main body portion being sealingly engaged with an opposed surface on said stuffing box structure.

4,511,152

SELF-REINFORCED FACE SEAL

Paul J. E. Fournier, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Feb. 8, 1984, Ser. No. 578,137
Int. Cl.³ F16J *15/10*
U.S. Cl. 277—207 A **4 Claims**



1. A self-aligning face seal characterized by its ability to compensate for swelling in an axial direction comprising, an annular molded body of elastomeric material having an axis, a base portion, axially spaced cantilevered lateral portions extending in a common direction from said base portion, each lateral portion including a free end, an outer side surface, an inner surface, and an end surface at the lateral portion free end intersecting said outer and inner surfaces, said lateral portions being axially spaced and said outer side surfaces being obliquely oriented to said body axis whereby the axial spacing between said free ends is greater than the axial dimension of

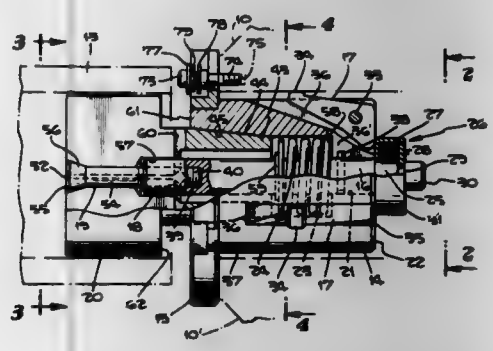
said base portion, and a plurality of circumferentially spaced axially extending bridge segments homogeneously defined of said body material interconnecting said lateral portions radially extending between said base portion and said free ends reinforcing said lateral portions against axial compression, the voids between said segments accommodating swelling of the body material in an axial direction.

4,511,153

CHUCKING ACCESSORY

Lloyd E. Goodrich, Jr., 559 S. Aldenville, Covina, Calif. 91723, and Robert A. Long, 1613 W. Sherway Dr., West Covina, Calif. 92404

Filed Aug. 2, 1982, Ser. No. 404,451
Int. Cl.³ B23B *31/40*
U.S. Cl. 279—2 R **16 Claims**



1. In a chuck accessory for grasping a workpiece which has inwardly facing portions by action originating in the jaw assembly of a substantially conventional chucking means, said chuck accessory comprising a body having a substantially cylindrical portion adapted to be located within said jaw assembly and having a centrally disposed axial bore extending between opposite ends of said body, a fore end, an aft end and an exterior wall, a centrally disposed axially extending draw member mounted in axially slidable relationship with said axial bore, an impeller for said draw member, said impeller having a working end in engagement with said draw member and a laterally exposed actuating end, said impeller being movably mounted on said body between a first position wherein said draw member is in a retracted condition and a second position wherein said draw member is in an extended condition, said impeller when in said second position being adapted to shift said draw member in a direction rearwardly relative to said body, a collet having a first axial guide and a complementary axial guide on said body receptive of said first axial guide, a plurality of jaws on said collet having adjacent expandable ends in circumferentially spaced relationship relative to each other and an expansion plug extending between the adjacent ends of said jaws and said draw member and adapted to effect expansion of said expandable ends in response to a shift in position of said impeller whereby to expand said expandable ends into engagement with the inwardly facing portions of the workpiece.

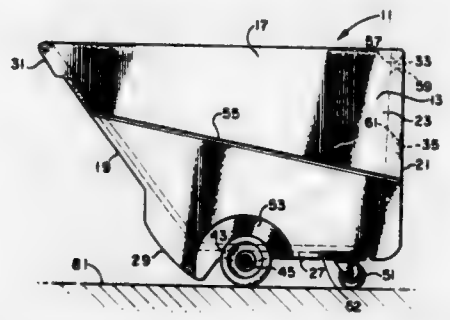
4,511,154

TILT TRUCK

Pasquale C. Daloisio, New Hope, Pa., assignor to Plastech International, Inc., Warminster, Pa.

Filed Dec. 13, 1982, Ser. No. 449,140
Int. Cl.³ B62D *3/08*
U.S. Cl. 280—47.26 **10 Claims**

10. A tilt truck comprising
a double-walled integral tank and frame having outer and inner walls of plastic,
said integral tank and frame being of one-piece construction,
said integral tank and frame having a front tilt wall connected to a back wall by a pair of side walls and having a bottom wall connected to the bottom edges of the front, back and side walls,
said tank and frame having an open top,
the front wall being slanted away from the bottom wall,
a rocker base formed in the lower portion of the front wall,
a tilt stop formed in the upper portion of the front wall,
hand holes formed through the back wall,
roller means mounted on the bottom wall to provide mobility,
said integral tank and frame being made of FDA-approved polyethylene,
said integral tank and frame being of seamless construction,
said roller means comprising a wheel axle seated in the bottom of the bottom wall in an axle groove formed in the bottom wall with a wheel rotatably mounted at each end of the axle.
and at least one swivel caster mounted on the bottom wall and spaced away from the wheel axle to form, with the wheels, at least a three point rolling contact with a floor,
further including a pair of hand holes in the upper portion of the back wall of the integral tank and frame molded through the top portion of the back wall and spaced opposite one another equally distant from a longitudinal center



line of the back wall to facilitate pushing and pulling of the tilt truck,
the hand holes each having an upper surface and a lower surface,
the hand holes each having a depending ridge in the upper surface of the hand hole and an upstanding ridge in the lower surface of the hand hole,
further including a pair of hand holes located in the upper half portion of the back wall of the integral tank and frame,
the hand holes each having an upper surface and a lower surface, and
the hand holes having a groove in the upper surface of each hand hole for easier gripping with the fingers and easier tilting,
further including a pair of stiffening grooves formed in the front wall and bottom wall comprising grooves formed in the outer wall of the double-walled integral tank and frame which contact and support the flat inner wall,
further including at least one stiffener indentation in the bottom wall comprising an indentation formed in the outer wall of the double-walled integral tank and frame that contacts and supports the flat inner wall.

4,511,155

ONE WHEEL TRAILER FOR A TWO-WHEELED VEHICLE

Donald Galloway, Bradenton, Fla., assignor to Verl Fielding, Palmetto, Fla.

Filed Mar. 25, 1983, Ser. No. 478,900
Int. Cl.³ B62D *63/06*
U.S. Cl. 280—204 **20 Claims**

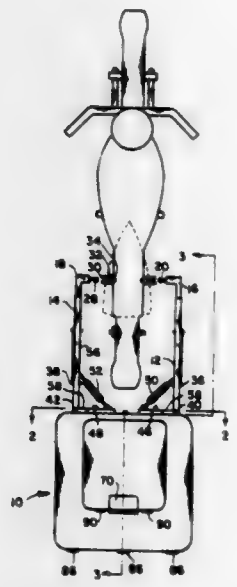
1. A one wheel trailer for a two-wheeled vehicle comprising in combination:
a first and a second arm, each of said arms including a first and a second end, said first end of said first arm being connected one side of the two wheeled vehicle, said first

end of said second arm being connected to the opposite side of the two wheeled vehicle;

a frame plate rigidly secured adjacent said second end of each of said arms;

a container disposed adjacent said frame plate and supported thereby;

a biased suspension plate pivotally connected to said frame plate;



a caster arm swivelably mounted relative to the distal end of said suspension plate;

a damper extending between said caster arm and said suspension plate for moderating the swivelling of said caster arm relative to said suspension plate; and

a wheel rotatably mounted relative to said caster arm enabling said wheel to support said container.

4,511,156

WHEEL SUSPENSION FOR A MOTORCYCLE

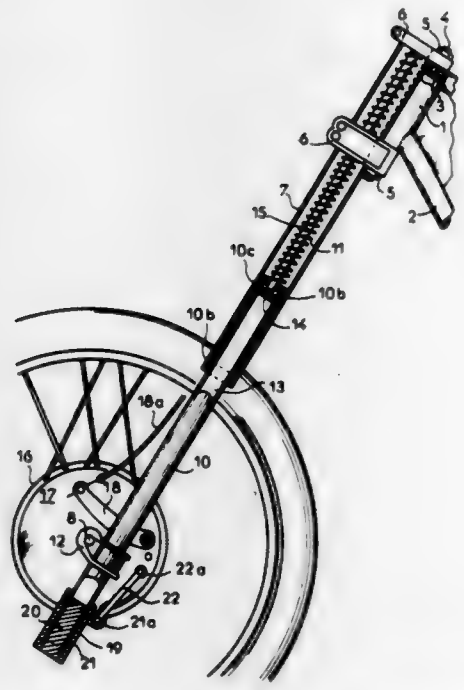
Eric Offenstadt, 41 rue A. Prachay, 95300 Pontoise, France

Filed Apr. 2, 1982, Ser. No. 364,875

Claims priority, application France, Apr. 7, 1981, 81 06966

Int. Cl.³ B62K *25/04*

U.S. Cl. 280—276 **10 Claims**



1. A suspension device for a wheel of a vehicle such as in particular a motorcycle, said suspension device comprising:

a spindle on which the wheel is rotatably mounted,

support means for mounting the suspension device on a frame of the vehicle,

a structure comprising a suspension and shock absorber assembly which is operative along an axis inclined to the vertical and is interposed between and connected to the spindle and the support means,

a first element and a second element, one of said first and second elements being a control element with a cavity portion and the other of said first and second elements being a slidable member slidable in the control element in a direction parallel to said axis, the control element and slidable member defining therebetween a chamber in said cavity portion in said control element, one of said first and second elements being rigid with the wheel spindle and the other of said first and second elements being rigid with the support means,

a brake comprising two elements comprising an element to be braked and a support for brake linings or pads, one of said two brake elements being permanently rigid with the wheel and the other of said two brake elements being mounted to be freely rotatable about the spindle,

a single-acting piston and cylinder unit having a cavity portion and defining therebetween a chamber in said cavity portion in said cylinder and interposed between and connected to said other element of said two brake elements and said one of said first and second elements which is rigid with the wheel spindle,

means putting said cylinder chamber in communication with said chamber in the control element and said means and said chambers being filled with an incompressible fluid,

the slidable member having a solid cross section which is distinctly smaller than the solid cross section of said piston, such that upon braking of said vehicle resulting in compression of said suspension and shock absorber assembly and rearward travel of said wheel; said compression produces relative displacement of said control element and said slidable member which is transmitted by said fluid to cause relative displacement of said piston and cylinder to produce angular movement of said other of said brake elements about said spindle to rotate said one brake element and said wheel, to enable said wheel to roll along the ground during said rearward travel.

4,511,157

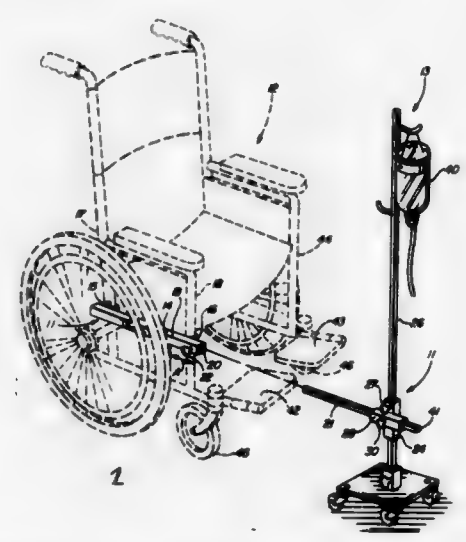
APPARATUS FOR FACILITATING INTRAVENOUS FEEDING DURING TRANSPORTATION OF PATIENT

Chester F. Wilt, Jr., Scottsdale, Ariz., assignor to St. Joseph's Hospital and Medical Center, Phoenix, Ariz.

Filed Jul. 19, 1982, Ser. No. 399,823

Int. Cl.³ A47C *7/62*

U.S. Cl. 280—289 WC **3 Claims**



1. In combination with a portable IV stand and a wheelchair, said IV stand including

a base,

an upstanding elongate pole mounted on said base and adapted to carry an IV bottle, and

ground engaging wheels rotatably mounted on said base, said wheelchair including

a frame,

a seat mounted on said frame,

primary ground engaging wheels rotatably mounted rearwardly on said frame,

secondary ground engaging wheels rotatably mounted forwardly on said frame, said secondary wheels being smaller than said primary wheels, said frame being shaped, contoured and dimensioned such that an individual standing behind said wheelchair can backwardly tilt said wheelchair on said primary wheels to raise said secondary wheels and the forward part of said frame upwardly away from the ground,

substantially rigid means for interconnecting and maintaining said IV stand and said wheelchair in generally fixed spaced relationship with respect to one another when said wheelchair and IV stand are wheeled along the ground, said interconnecting means

(a) being attached at one end to said wheelchair;

(b) being attached at another end to said IV stand;

(c) spanning the distance separating said wheelchair and said IV stand; and,

(d) maintaining said IV stand in front of said wheelchair;

such that when an individual behind said wheelchair

(e) pushes said wheechair said IV stand moves in the same direction of and at the same rate of travel as said wheelchair and is generally maintained in said fixed, spaced relationship with respect to said wheelchair; and,

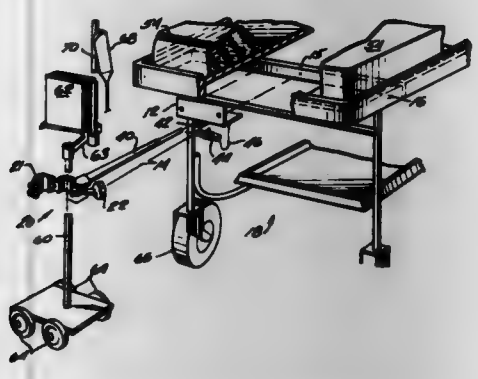
(f) backwardly tilts said wheelchair to raise said secondary wheels of said wheelchair off of the ground said ground engaging wheels of said portable IV stand are raised from the ground to facilitate passage of said IV stand and said wheelchair over an obstruction on the ground.

4,511,158

INTRAVENOUS INFUSION POLE ATTACHMENT

Sandor I. Varga, Miami; Richard L. Dougherty, Miami Beach; Donny C. Dandy, Miami, and Willie J. Thomas, Carol City, all of Fla., assignors to Mt. Sinai Medical Center of Greater Miami, Miami Beach, Fla.

Filed Aug. 27, 1982, Ser. No. 412,195
Int. Cl.³ A61G *1/02*
U.S. Cl. 280—292 **13 Claims**



1. A wheeled patient transport device adapted to having a vertically elongated pole removably attached thereto comprising in combination:

an outer frame defining a frame periphery, said frame having at least one support member interiorly disposed relative to said frame periphery;

a bracket rigidly fixed to said support member and defining an aperture therein;

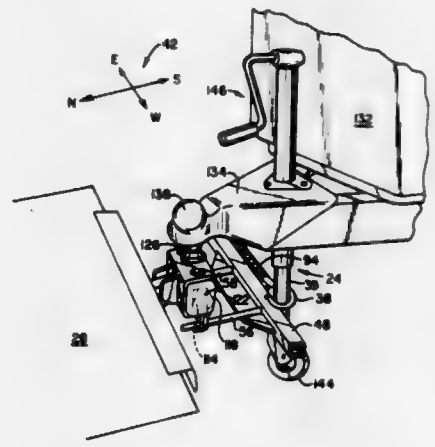
an elongated male member slideably received in said aperture and including at one end clamping means for removably clamping said pole to said patient transport device so that said pole and said patient transport device are moveable as a contiguous unit when clamped one to another, wherein said bracket includes means permitting reciprocal movement of said male member between an extended position wherein said clamping means extends beyond the frame periphery to permit said clamping means to removably clamp said pole and a retracted position wherein said clamping means is retracted interiorly of the frame periphery so as to be substantially hidden.

4,511,159

TRAILER HITCH GUIDE ASSEMBLY

Dwen R. Younger, 2181 Lone Oak Ave., Napa, Calif. 94558

Filed Apr. 30, 1984, Ser. No. 605,538
Int. Cl.³ B62D *53/00*
U.S. Cl. 280—477 **18 Claims**



1. An apparatus for vertically aligning respective mating members extending from a towing vehicle and a towed vehicle having a jack shaft, to permit hitching the towed vehicle to the towing vehicle, the apparatus comprising:

(a) a substantially horizontal elongate guide bar;

(b) means for attaching the guide bar at a chosen distance from, and at a selected orientation relative to, the vehicle mating member, the distance chosen according to the distance between the jack shaft and the towed vehicle mating member, and the orientation selected so the guide bar confronts the jack shaft when the towing vehicle is backed into contact with the towed vehicle; and

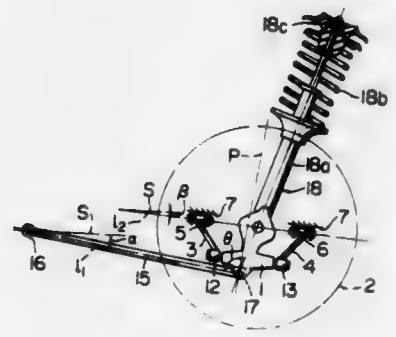
(c) means for moving the jack shaft along the guide bar to place the respective mating members into vertical alignment.

4,511,160

VEHICLE REAR WHEEL SUSPENSION

Hitoshi Inoue, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed May 26, 1983, Ser. No. 498,541
Claims priority, application Japan, May 31, 1982, 57-93368
Int. Cl.³ B60G *3/00*
U.S. Cl. 280—701 **4 Claims**



1. A vehicle rear suspension mechanism comprising wheel hub means carrying a vehicle rear wheel for rotation about its axis of rotation, a pair of lateral links extending substantially transversely and having transverse inward ends connected

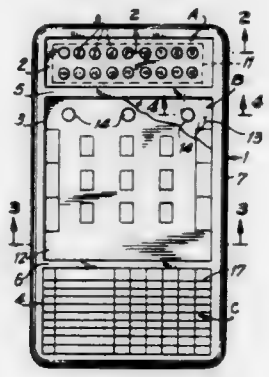
with a longitudinal distance therebetween to vehicle body means for vertical and fore-and-aft swinging movements, said lateral links having transverse outward ends swingably connected with a longitudinal distance therebetween to said wheel hub means, said longitudinal distance between the transverse inward ends of the lateral links being larger than the longitudinal distance between the transverse outward ends, a longitudinal link having one end connected with the vechicle body means and the other end connected with an assembly of the wheel hub means and said lateral links, to transmit a longitudinal force, the improvement comprising a suspension strut assembly which is comprised of damper means and a spring means, said strut assembly having a lower end secured to said wheel hub means and an upper end swingably connected with the vehicle body means, said strut assembly being inclined rearwardly with respect to a line perpendicular to said longitudinal link.

4,511,161

IDENTIFICATION AND CONTROL APPARATUS, FOR EXAMPLE, FOR SERVICE PERSONNEL FOR A RESTAURANT

John Gruner, 3960 Whispering Way, SE., Grand Rapids, Mich. 49506

Filed Sep. 29, 1982, Ser. No. 428,041
Int. Cl.³ B42D *15/00*; A63F *3/00*
U.S. Cl. 283—1 A **7 Claims**



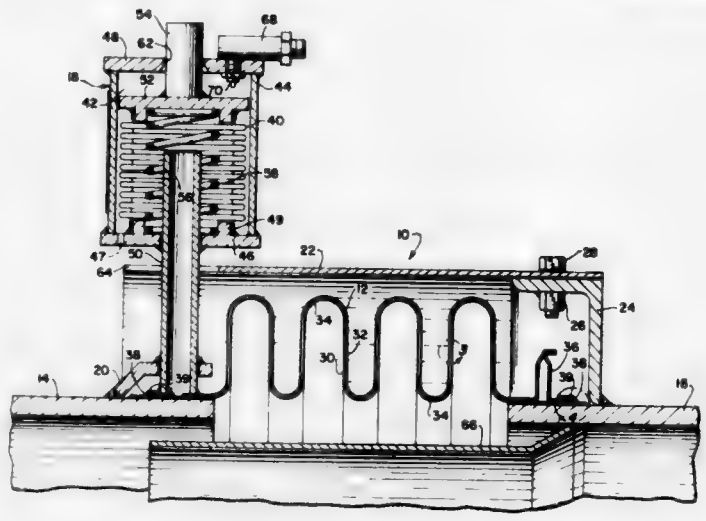
1. Identification and control apparatus for the variable assignment of personnel in selected, variable stations representing subdivided sections of a physical area and for visually indicating said assignment and said stations, said apparatus comprising identification means including a plurality of elements each associated with a respective subject from given personnel, layout means for illustrating on a reduced scale stations corresponding to subdivided sections of a physical area, retaining means for adjustably retaining said elements of said identification means on selected stations of said layout means to associate said elements with said selected stations, correlation means for the correlating of each of said plurality of elements with its respective subject and station, a common support means for the support of said identification means, said layout means and said correlation means in immediate juxtaposition to one another, said support means comprising a base including first, second and third sections, said plurality of elements being removably supported in the first section, said layout means being supported in said second section, and said correlation means being supported in said third section, said retaining means comprising a magnet connected to each of said elements, and a sheet of magnetizable material on said base for magnetically attracting the elements to hold the same in said first section, said layout means including a first sheet on which a planform representation, on reduced scale, of said physical area is placed, and a transparent overlay sheet covering said first sheet and marked to subdivide said planform representative of reduced scale into said stations to form said subdivided sections, means on said base for removably supporting said first sheet and said transparent overlay sheet in superposition, said retaining means further comprising a second sheet of magnetizable material on said base in said second section for magnetically attracting and holding said elements on said overlay sheet in selected and respective sections so that each element representing a respective subject can be removably placed on a selected subdivided section and thereby be physically indicated as being associated with a respective stations, said correlation means comprising means for placement thereon of the name of the subject associated with each of the plurality of elements of the identification means such that when viewing the layout means the physical area will be divided and each station will be associated with a respective subject.

4,511,162

LEAK INDICATING CONDUIT

Robert K. Broyles, Pine Valley, Calif., assignor to Pathway Bellows, Inc., El Cajon, Calif.

Filed Feb. 2, 1983, Ser. No. 463,262
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—93 **16 Claims**



1. A leak indicating conduit for connecting adjacent ends of pipes conveying fluid comprising:

an inner tube;

an outer tube, the inner tube being separated from the outer tube by a first space under a pressure having a predetermined value;

means in continuous communication with said first space for indicating a change of pressure in said first space from said predetermined value;

at least one attachment weld disposed adjacent said conduit and adjacent at least one of said ends of said pipes for attaching said conduit to said at least one of said ends;

at least one annular ring secured by annular welds to said conduit and said at least one of said ends, such that said at least one attachment weld is enclosed by said at least one annular ring;

wherein said at least one ring further partially defines a second space adjacent to said at least one attachment weld, said second space being in communication with said first space.

4,511,163

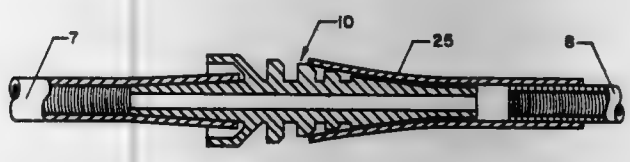
ADAPTABLE TIP TUBING CONNECTOR

Nancy T. Harris, and Leonard C. Harris, both of West Boro, Mass., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Jul. 14, 1982, Ser. No. 398,464
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—177 **5 Claims**

1. An improved adaptable tubing connector comprising a body having a fluid passageway therethrough and with a dietary supply tube connector at one end and an adaptable connector means at the opposite end of the body with the adaptable connector means further comprising a first means and a second means for a selective press-fit connection into and disconnection from the inner bore of an in-dwelling tube insert-

able into a patient for liquid tube feeding wherein the first means for selective connection comprises a sleeve member defining a tip end portion of said passageway, the outer end of the sleeve member projecting from said body, said sleeve member being defined by a wall, said wall having an outer surface which tapers gradually from its smallest diameter at its outer end to its largest diameter at its inner end at a rate of taper which becomes substantially greater at a point midway



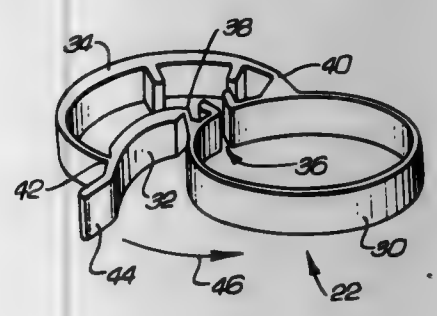
between the outer and inner ends; the second means comprises a middle portion of the connectors length, this middle portion having a multiplicity of stepped flanges which incrementally increase in diameter and spacing therebetween as distance from the tip end increases; the first and second means serving together to adaptably connect firmly via press-fit with tubing of varying size but to do so with ease of connection and disconnection.

4,511,164

TUBE SECURING MECHANISM

Rolf O. Orchard, Manhattan Beach, Calif., assignor to Puritan Bennett Corp., Carlsbad, Calif.

Filed Nov. 30, 1981, Ser. No. 326,126
Int. Cl.³ F16L *33/12*
U.S. Cl. 285—252 **3 Claims**



1. A one-piece plastic tube clamp for use in a respirator breathing circuit, said tube clamp comprising:

a circular band, continuous except for a single peripheral break to facilitate installation and removal of the clamp;

a first arcuate portion having one movable end and one end integrally hinged to said band at a first hinge point on one side of the break;

a second arcuate portion longer than said first arcuate portion and having one end integrally hinged to said band at a second hinge point on the other side of the break and another end integrally hinged to said first arcuate portion at a third hinge point;

two outwardly extending integral teeth located on said band, one on each side of the break and between the first and second hinge points; and

two inwardly extending integral teeth on said second arcuate portion, positioned such that, in the closed position, the two outwardly extending teeth are between and in contact with the two inwardly extending teeth, and tensile stress in said band is transmitted to said second arcuate portion through said teeth rather than through the hinge points;

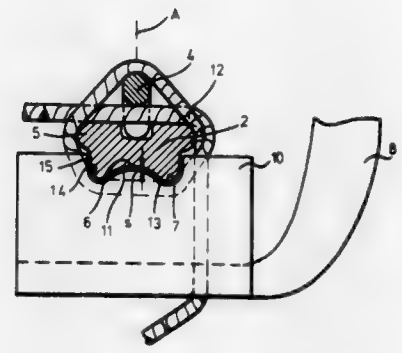
the clamp having an open position in which said arcuate portions extend out from said band in a relatively unstressed condition, and a closed position in which said arcuate portions are folded into an approximately concentric relationship with said band, and tensile forces in said second arcuate portion act between the second and third hinge points, along a line falling inside the first hinge point, to maintain the closed position by toggle action.

4,511,165

BALER KNOTTING DEVICE WITH COMPLEMENTARY KNOTTER AND STRIPPER

Hubert Prellwitz, Polenz, German Democratic Rep., assignor to VEB Kombinat Fortschritt Landmaschinen, Neustadt, German Democratic Rep.

Filed Jul. 27, 1983, Ser. No. 509,243
Claims priority, application German Democratic Rep., Oct. 11, 1982, 243889
Int. Cl.³ B65H *69/04*
U.S. Cl. 289—8 **3 Claims**



1. A knotting device for a baling machine, the knotting device comprising:

a pivotal knotting element having a lower jaw and an upper jaw, the jaws being pivoted together and having separable tips, the lower jaw having

a lower side formed with a pair of parallel and downwardly projecting ridges defining a downwardly open groove extending to the respective tip, whereby when a loop of a tie is tight around the jaws it spans this groove, and

a pair of lateral sides each formed with a longitudinal ridge of cross section decreasing toward the respective tip;

a stripping element displaceable along the lower jaw and having an upper edge complementary with at least the lower side of the knotting element and having a bump engaging in the ridge thereof; and

means for displacing the stripping element substantially parallel to and at a fixed spacing from the lower side across the lower jaw and push a loop from the jaws.

4,511,166

HANDLE-OPERATED DOOR LOCK WITH LATCH-OPERATOR OVERRIDE

Lee S. Weinerman, Medina, Ohio, assignor to The Eastern Company, Strongsville, Ohio

Continuation-in-part of Ser. No. 182,690, Aug. 29, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 457,918
Int. Cl.³ E05C *3/30*
U.S. Cl. 292—29 **10 Claims**

1. A handle-operated door lock, comprising:

(a) a housing structure having front and rear faces connected by opposed sides, with the front and rear faces each having an opening formed therethrough, and with the openings being aligned along a common axis;

(b) a pair of hook-shaped rotary latch bolts each projecting from a separate one of the opposed sides of the housing structure;

(c) inner and outer rotary handles each located near a separate one of the front and rear faces of the housing structure and each having a shaft portion that extends through an associated one of the openings and along the common axis;

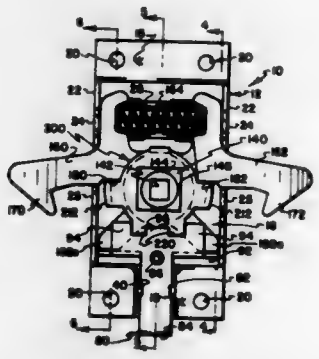
(d) connection means carried within the housing structure

and extending along the common axis for coupling the shaft portions of the rotary handles with the rotary latch bolts, and for cooperating with the housing structure for mounting the shaft portions of the handles for rotation about the common axis such that either of the handles may be rotated about the common axis independently of the other handle to selectively rotate either of the bolts from latched to unlatched positions;

(e) biasing means carried within the housing for biasing the rotary latch bolts toward their latched positions;

(f) latch operator means supported by the housing structure for sliding movement toward and away from the common axis between a locked position wherein the latch operator means functions to prevent the outer handle form rotating either of the bolts, and an unlocked position wherein the latch operator means does not interfere with rotation of either of the handles or with rotation of either of the bolts about the common axis;

(g) latch-operator override means connected to the housing and being movably mounted relative to the housing for moving the latch operator means to its unlocked position in response to rotation of the inner handle so that the



latch-operator override means assures that the latch operator means cannot prevent inner handle rotation about the common axis, and the inner handle can, at all times, be operated to rotate either of the bolts about the common axis from its latched position to its unlatched position;

(h) the housing structure including a pair of metal plates, one of the plates having opposed side walls defining opposite sides of a chamber located between the plates, the side walls each having at least one tab-like projection extending therefrom, the other of the plates having formations configured to receive the tab-like projections in interfitting engagement, the tab-like projections being bent into interfitting engagement with the formations during assembly of the housing structure;

(i) the connection means including a pair of rotary tumblers journaled within the housing structure for rotation about the common axis, each of the tumblers being drivingly connected to a separate one of the inner and outer rotary handles; and,

(j) the latch-operator means being engageable with at least one of the rotary tumblers when the latch operator is in its locked position.

4,511,167

DETACHABLE HOLDER FOR CONTAINERS

Takehiko Kawaguchi, Sakai, Japan, assignor to Taiyo Sanso Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1983, Ser. No. 515,901

Claims priority, application Japan, Mar. 25, 1983, 58-43769[U]; Apr. 4, 1983, 58-50404[U]

Int. Cl.³ A47J *45/10*; B65D *23/10*

U.S. Cl. 294—28 **5 Claims**

1. A detachable holder for containers which comprises:

a first pair of bent arms having respective ends connected to each other via a hinge;

a second pair of bent arms having respective ends connected to each other via a second hinge;

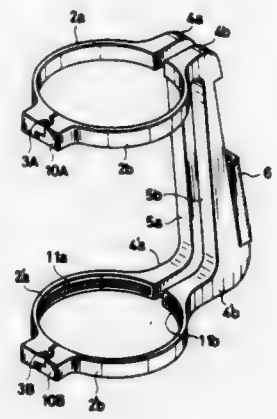
two handle-levers connecting free ends of said first pair of arms with those of said second pair of arms; and,

at least one fixing member engageable with said handle-levers;

the holder wherein:

said handle-levers are capable of being brought into contact with each other or detached by closing or opening of said arms via said hinges;

said arms are capable of being clamped on or released from the container in response to closing or opening of said hinges, respectively;



said two handle-levers each having respectively a rail for engaging with said fixing member in their lengthwise direction, and, said fixing member has grooves to be engaged with said rails on said handle-levers in the lengthwise direction of the member;

at least one of said rails on the handle-levers has a cutaway part; and

fixation for joining said two handle-levers and concurrent clamping the container with said arms or separation of said two handle-levers and concurrent detachment of said arms from the container is carried out by sliding said fixing member on said handle-levers.

4,511,168

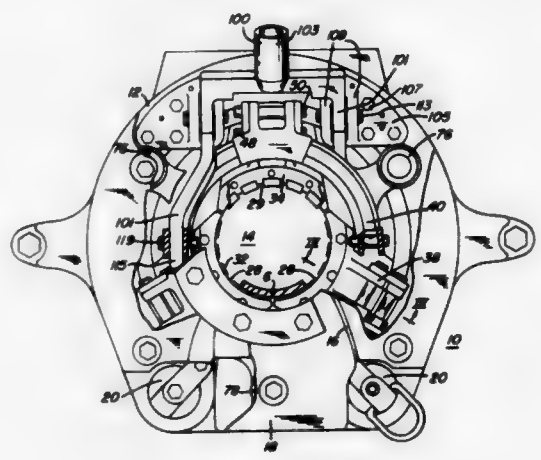
SLIP MECHANISM

Charles W. Haynes, Spring, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Feb. 7, 1983, Ser. No. 464,521

Int. Cl.³ E21B *19/07*

U.S. Cl. 294—102.2 **12 Claims**



1. A slip mechanism for gripping a conduit of circular cross section comprising:

a body having an internal bore and a split section open to said bore, said split section being at least as large as the outside diameter of said conduit;

a horizontally disposed, vertically movable ring above said body;

a rear slip and two side slips disposed at least partially within

said bore, said rear slip being positioned opposite said split section, said slips each encompassing approximately a 120° arc;

means for articulatingly suspending said slips from said ring, said suspension means for said side slips including means for sliding said side slips in an arcuate path concentric with said bore upon raising of said ring, said sliding in an arcuate path being a distance sufficient to expose said split section; and

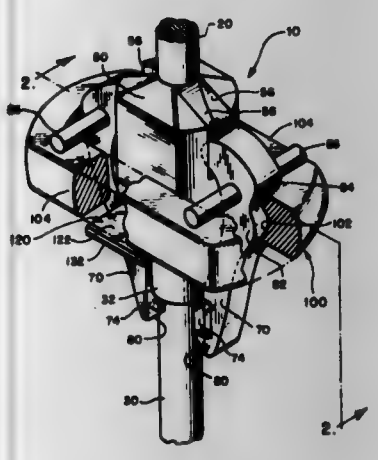
means for selectively raising and lowering said ring.

4,511,169

SELF LOCKING AND UNLOCKING ELEVATOR ASSEMBLY

Clyde A. Willis, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Sep. 30, 1982, Ser. No. 430,943
Int. Cl.[3] B66C 1/64
U.S. Cl. 294—116 24 Claims



1. An elevator for drill pipe, comprising:

at least two jaws, each jaw having a clamping surface shaped to support a length of pipe;

pivot means for urging the clamping surfaces of the jaws into contact with a length of pipe to be elevated, when the ends of the jaws distant from the clamping surfaces are urged away from the pipe;

elevator suspension and jaw activating means for suspending the elevator, for urging the ends of the jaws distant from the clamping surfaces away from the pipe, and in conjunction with the pivot means, for urging the clamping surfaces into contact with the pipe, when the elevator suspension and jaw activating means and the pipe are urged away from each other; and

release means for urging the clamping surfaces away from the pipe when the elevator suspension and jaw activating means and the pipe are urged toward each other.

4,511,170

AERODYNAMIC DEVICE FOR LAND VEHICLES

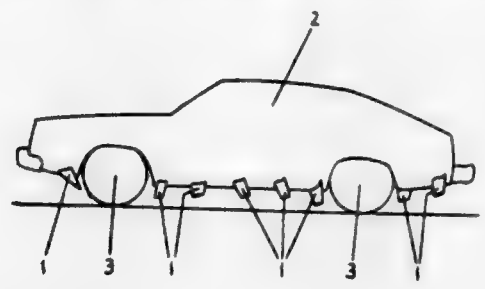
Mithra M. K. V. Sankrithi, 417 Bellevue Way SE., #400, Bellevue, Wash. 98004

Filed Jul. 23, 1982, Ser. No. 401,335
Int. Cl.[3] B62D 35/00; B64C 1/26
U.S. Cl. 296—1 S 10 Claims

1. In a wheel supported land vehicle having an even number of supporting wheels located substantially symmetrically on either side of said wheel supported land vehicle's plane of symmetry, the improvement comprising:

an aerodynamic device which comprises more than two winglets arranged substantially in tandem on each side of said wheel supported land vehicle;

wherein said winglets project from body surface regions on either side of said wheel supported land vehicle, which body surface regions are located inclusively between the outer portions of the lower body surface of said wheel supported land vehicle and the lower portions of the side body surfaces of said wheel supported land vehicle;



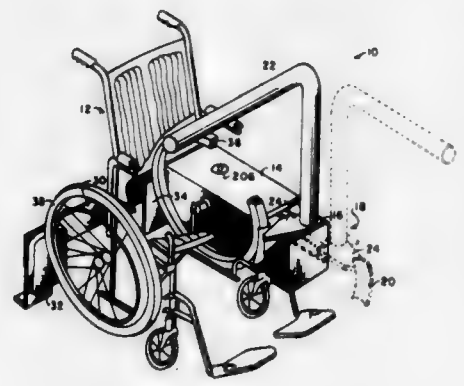
and wherein a majority of said winglets have negative angles of incidence and positive anhedral angles.

4,511,171

WHEELCHAIR RESTRAINT

Lee B. Petersen, #7 Birch Ct., Danville, Calif. 94526

Filed Jun. 15, 1982, Ser. No. 388,521
Int. Cl.[3] B60N 1/02; B60P 3/06
U.S. Cl. 296—65 R 2 Claims



1. A wheelchair restraint apparatus comprising

a fixed bumper adapted to engage one end of a wheelchair,

a movable restraining bumper adapted to engage the other end of a wheelchair and hold said wheelchair in compression between said fixed restraining bumper and said movable retraining bumper, and

means for moving said movable restraining bumper toward and away from said fixed bumper comprising

a fixed actuator base support located adjacent one side of said wheelchair,

a movable base support connected to said actuator base support and adapted to be moved in a horizontal linear motion generally parallel to said wheelchair,

means connected to said movable base support for rotating said movable restraining bumper from a position away from the fixed restraining bumper to a position generally parallel to said fixed bumper, said movable restraining bumper being pivotally connected to said movable base support,

means for moving said movable base support and parallel disposed movable restraining bumper toward said fixed restraining bumper in a straight line to engage said wheelchair and hold said wheelchair in compression between said movable restraining bumper and said fixed restraining bumper, said means comprising

a linear motion actuator,

a bumper pivot arm pivotally connected to said movable base support,

a first linkage member connecting said bumper pivot arm to said movable restraining bumper,

a second linkage member connecting said pivot arm to said linear motion actuator, and

means for locking said means for moving said parallel dis-

posed movable restraining bumper in a fixed position comprising

a ratchet attached to said fixed actuator base support,

a rocker arm pawl pivotally connected to said movable base support and adapted to engage said ratchet and hold said wheelchair in compression between said movable restraining bumper and said fixed restraining bumper.

4,511,172

VEHICLE DOOR HANDLE SEALING SYSTEM

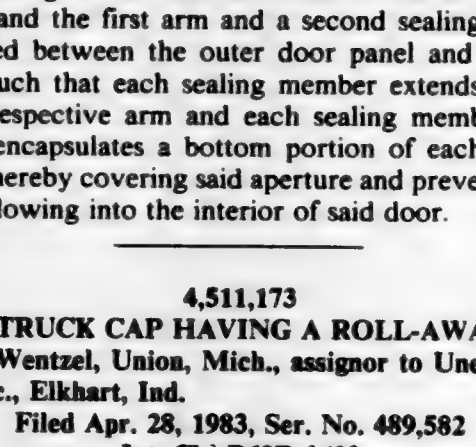
Masaaki Tabata, Susono, and Katsuyuki Miyabayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 16, 1983, Ser. No. 504,949

Claims priority, application Japan, Nov. 1, 1982, 57-166070[U]

Int. Cl.³ B60J *5/04*

U.S. Cl. 296—146 **9 Claims**



1. A vehicle body structure for preventing entry of water into the interior of a vehicle door, comprising:

an outer door panel forming an outer face of a vehicle door and having an opening therein;

a door handle case mounted in said opening in the outer door panel;

a door handle member having an outer portion substantially parallel to said outer door panel and an inner portion substantially perpendicular to said outer portion, said inner portion including a first arm mounted at a first end of said outer portion of said door handle member and a second arm mounted at an opposite second end of said outer portion of said door handle member, and said first and said second arms are pivotally mounted in said door handle case, thereby manipulating the door to open and close, whereby a first aperture exists between the outer door panel and the first arm member and a second aperture exists between the outer door panel and the second arm member; and

a first sealing member is installed between the outer door panel and the first arm and a second sealing member is installed between the outer door panel and the second arm, such that each sealing member extends parallel to each respective arm and each sealing member substantially encapsulates a bottom portion of each respective arm, thereby covering said aperture and preventing water from flowing into the interior of said door.

4,511,173

PICKUP TRUCK CAP HAVING A ROLL-AWAY DOOR

Harold G. Wentzel, Union, Mich., assignor to Uneek Cap and Door, Inc., Elkhart, Ind.

Filed Apr. 28, 1983, Ser. No. 489,582

Int. Cl.³ B60P *3/32*

U.S. Cl. 296—156 **9 Claims**

1. A cap for a pickup truck which comprises:

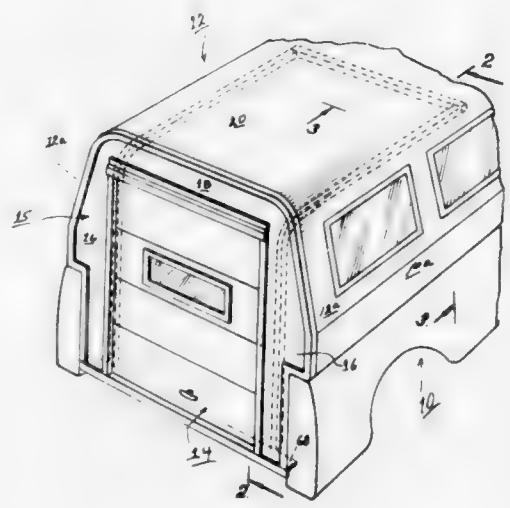
side portions arranged to form an extension of the side walls of the box of said truck,

a cover portion spanning said side portions,

a top cross-panel extending from one side portion to the other and depending from the cover portion,

side panels which project inwardly from said side portions and extend downwardly from said top cross-panel, forming a rectangular opening,

a sectional overhead door,



track means fastened to said side panels and to said cover, adapted to guide said sectional overhead door from a position closely underlying said cover portion to a position in juxtaposition to the inner sides of said panels, and

said track means comprising tubular channels having apposed, narrow, rolling surfaces and said overhead door having rollers affixed thereto adapted to roll on said apposed rolling surfaces.

4,511,174

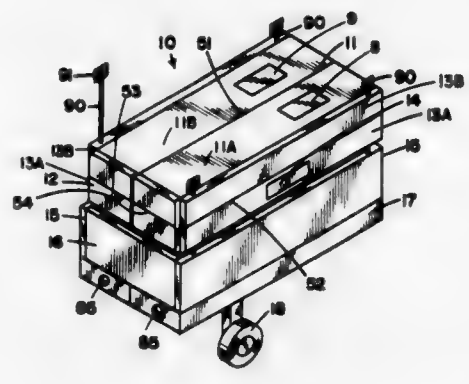
CAMPING AND RECREATION TRAILER

Mathew Walker, 297 N. Western, St. Paul, Minn. 55103

Continuation-in-part of Ser. No. 308,466, Oct. 5, 1981, abandoned. This application May 2, 1983, Ser. No. 490,726

Int. Cl.³ B60P *3/34*

U.S. Cl. 296—173 **7 Claims**



1. A camping and recreation trailer comprising:

a main frame, said main frame having an underside and a top surface for forming a picnic table, said main frame comprises two sections pivotally hinged to each other;

a pair of wheel mechanisms connected to said main frame, said wheel mechanism detachably mounted to said underside of said main frame to permit removal of said wheel assemblies;

a pair of removable sides on said camping and recreation trailer;

said removable sides having folding legs attached thereto to permit said removable sides to be removed from said camping and recreation trailer to form benches when said folding legs are extended;

a sun and rain canopy mounted to said main frame;

means mounted to said sun and rain canopy and said main

frame for raising and lowering said sun and rain canopy from said main frame;

a tongue for towing said camping and recreation trailer, said tongue pivotally connected to said main frame, said tongue operable for folding underneath said camping and recreation trailer to form a stable support leg for said camping and recreation trailer;

a garbage container mounted on said main frame;

a barbecue unit mounted on said main frame; and

an opening in said main frame of said camping and recreation trailer to permit ice fishing from said camping and recreation trailer.

4,511,175

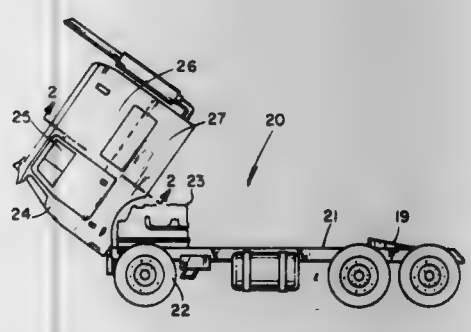
TRUCK CAB WITH REAR COMPARTMENT AND ENGINE HOUSING

Thomas C. Gellenbeck, Indianapolis, Ind., assignor to Team Cruiser Conversion Co., Inc., Indianapolis, Ind.

Filed Oct. 13, 1983, Ser. No. 541,782

Int. Cl.³ B62D *33/06*

U.S. Cl. 296—190 **11 Claims**



1. A truck having a fifth wheel for removably connecting a large payload trailer thereto comprising:

a frame with an engine mounted thereon;

a tiltable cab moveably mounted on said frame and extending over said engine, said cab including a driver and passenger front seat portion and a rear compartment;

an inverted U-shaped cover mounted to said cab and extending adjacent to separate said engine from said front seat portion, said cover including a top wall with a most forward edge positioned within said rear compartment and substantially rearward of said front seat portion;

a rear compartment floor extending between said front seat portion and said cover and extending over said engine substantially lower in elevation than said top wall forming a walkway to support an upright person thereatop between said front seat portion and said cover; and,

a closure wall fastened to said floor and extending interiorly within and fastened to said cover.

4,511,176

VEHICLE BODY FLOOR CONSTRUCTION OF MOTOR VEHICLE

Hiroyuki Watanabe, and Yasushi Tanaka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 1, 1982, Ser. No. 383,964

Claims priority, application Japan, Jun. 12, 1981, 56-90277; Sep. 9, 1981, 56-141888

Int. Cl.³ B62D *21/00*

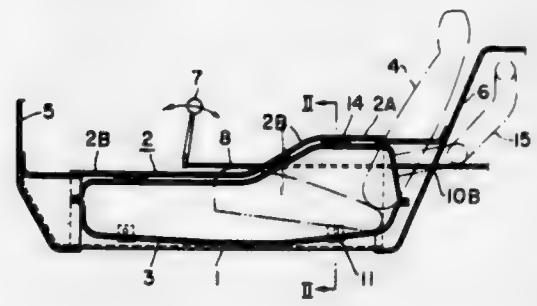
U.S. Cl. 296—204 **7 Claims**

1. A vehicle body floor construction for a motor vehicle, comprising:

a vehicle floor panel having an upwardly projecting central portion in the widthwise direction of the vehicle, the central portion of said floor panel projecting upwardly to form a tunnel disposed in a longitudinal direction of the vehicle; and

a fuel tank disposed in said tunnel, said fuel tank having an upper surface within said tunnel which progressively increases in height within said tunnel toward a rear portion of a vehicle;

an upper surface of said upwardly projecting central portion forming said tunnel being located on the interior of a vehicle compartment, said upper surface of said upwardly projecting central portion and said upper surface of said fuel tank defining a closed cross-sectional area therebe-



tween, a shift linkage coupled to a speed-change control lever mounted within the compartment, said shift linkage extending through said closed cross-sectional area, said upper surface of said upwardly projecting central portion being constructed and arranged to form an armrest for an occupant extending from an inner side of a seat within the compartment toward the rear of the vehicle.

4,511,177

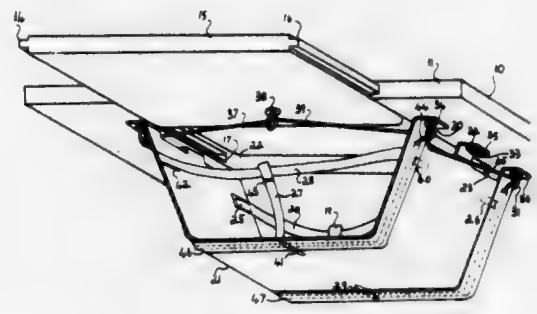
CONVENIENT BABY CHAIR

Daniel J. O'Sullivan, 116-40 Park La. S., Kew Gardens, N.Y. 11418

Filed Jul. 30, 1982, Ser. No. 403,919

Int. Cl.³ A47B *83/02*

U.S. Cl. 297—136 **4 Claims**



1. A convenient baby chair, comprising a slidable leaf cut from a table top and retractable therefrom, an opening in said table top appearing when said slidable leaf is retracted therefrom, s collapsible seating structure secured to said table top underneath said opening, a means for pulling said seating structure close to the underside of said table top when said slidable leaf is fully inserted into said table top and for permitting said seating structure to be occupied by an infant or child when said slidable leaf is fully retracted from said table top, front and rear openings in said seating structure which permit the infant or child to be seated facing at or away from said table top, and front and rear restraining straps and leg dividers mounted across said front and rear openings.

4,511,178

QUICK RELEASE MOUNTING FOR SEAT BACK TRAY TABLE

Edward J. Brennan, Litchfield, Conn., assignor to PTC Aerospace Inc., Bantam, Conn.

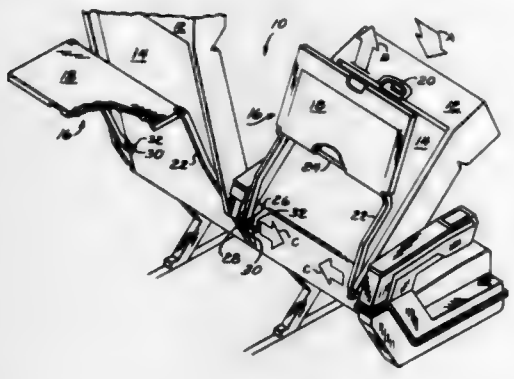
Filed Dec. 16, 1982, Ser. No. 450,400

Int. Cl.³ A47B *83/02*

U.S. Cl. 297—146 **13 Claims**

1. A seat back mounted tray table asembly for a transport vehicle passenger seat which may be quickly assembled not

disassembled, without tools, from a mounted relationship with a pair of seat frame members located adjacent the opposed side edges of a seat back member by authorized persons but protected form removal by passengers, said tray table assembly including a tray table and having a pair of spaced, downwardly extending legs pivoted thereto, said legs being joined by a torsion tube but deflectable by authorized persons toward each other at their lower ends; a pair of short, axially aligned pivot studs mounted to said seat frame members, said pair of pivot



studs forming a pivot axis for said pair of legs and cooperating with a pivot aperture or opening formed in each of said legs to mount said legs; stop means on said seat frame members for limiting the outward pivotal movement of said legs away from said seat back when said tray table is deployed from its generally vertical storage position in the seat back to a generally horizontal use position; and means mounted to at least one of said seat frame and seat back members for preventing unauthorized disassembly of said legs from said pair of pivot studs.

4,511,179

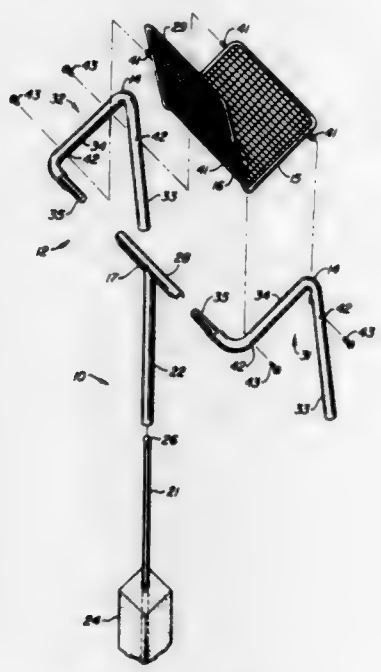
THEFT-PROOF SELECTIVELY POSITIONABLE OUTDOOR CHAIR

Lawrence E. Green, 1859 Powell St., and William R. Morrish, 544 Union St., both of San Francisco, Calif. 94133

Filed May 7, 1982, Ser. No. 375,928

Int. Cl.³ A47C *1/12*

U.S. Cl. 297—349 **7 Claims**



1. A modular assembly of component parts capable of being assembled into a selectively positionable chair for permanent installation outdoors, said assembly comprising:

a rear leg member comprising an elongate first member adapted at one end to be fixed in the ground and a second member mounted on said first member for pivotal movement about the longitudinal axis thereof, said second member being provided with a cross member perpendicular thereto defining a horizontal pivot axis in the assembled chair;

right and left members, each having a first end portion formed to provide a front leg to the assembled chair, an intermediate portion formed to provide an arm rest of the assembled chair, and a second end portion, each said second end portion and said cross member being adapted for rotary mounting so that said right and left members pivot about said horizontal pivot axis in the assembled chair; and

a seat member and a back member adapted to be secured to said right and left members.

4,511,180

HEADREST IN PASSENGER CARS

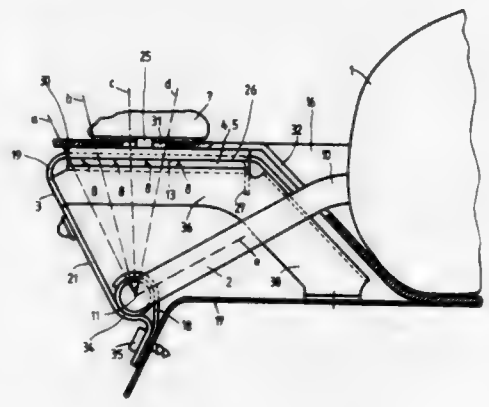
Gersmann Klaus, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,929

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138851

Int. Cl.³ A47C *1/10*

U.S. Cl. 297—408 **4 Claims**



1. A headrest for vehicles comprising:

mounting means for carrying headrest padding, and being pivotable relative to the vehicle body in the zone of a backrest about a substantially horizontal pivoting axis extending generally at right angles to the longitudinal axis of the vehicle, from a forward position determined by a stop,

means for releasably locking the mounting means into at least one rearward position wherein the center of gravity of the headrest mass lies spaced from the pivoting axis of the mounting means above said pivoting axis, and from which the mounting means can be pivoted into said forward position under an inertial force acting on the headrest above a predetermined minimum deceleration of the vehicle,

the means for releasably locking including a spring-loaded detent means having a directional ratchet means including several directional stop means for locking the mounting means in place in its forward pivoting position and in several rearward pivoting positions against rearward pivoting, and

a spring means engaging the mounting means for pretensioning the mounting means toward the rearward position.

4,511,181

TILT BED VERTICALLY STORABLE UTILITY TRAILER

Raymond G. Schantz, Marine, Ill., assignor to Schantz & Sons, Inc., Marine, Ill.

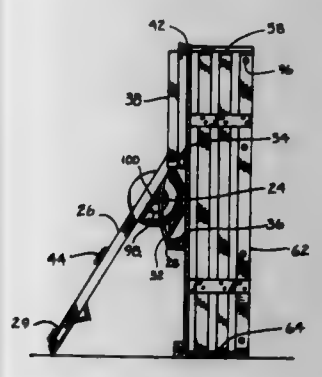
Filed Mar. 7, 1983, Ser. No. 472,588

Int. Cl.³ B60P *1/04*

U.S. Cl. 298—5 **6 Claims**

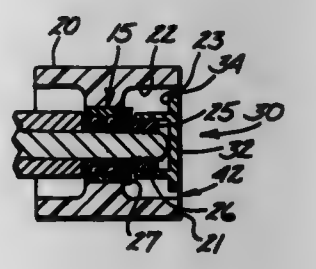
1. A vehicular trailer having a bed and means supporting wheels for said trailer, an elongated tongue having pivot means pivotally connecting a rear end of the tongue to the trailer underneath said bed, a forward end of said tongue having hitch

means for connecting the trailer to a vehicle, said trailer bed being tiltable about said pivot means in a trailer hitched position to a substantially ground engaging position for a rear end of said bed, said trailer being supportable in a storing position upon a ground support surface with the bed in a substatially vertical position and the rear end engaging the ground and said



tongue being pivotable about said pivot means to engage the forward end of the tongue in supporting relation with the ground, an axle supported underneath said bed rearwardly of said pivot means and locking means provided to secure an intermediate portion of said tongue to the axle in the storing position.

4,511,182
SKATE WHEEL COVER
David H. Birnbaum, 49 Vienna, San Francisco, Calif. 94112
Filed Jul. 21, 1982, Ser. No. 400,475
Int. Cl.[3] B60B *7/02, 7/06;* **A63C** *7/26*
U.S. Cl. 301—37 P **3 Claims**

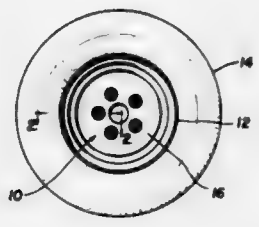


1. In a skate wheel having a recessed wheel well which has a periphery, said skate wheel being rotatably supported on an axle by a bearing means, said axle having an externally threaded end projecting into said wheel well, an internally threaded nut being threadably engaged with said threaded end of said axle to secure said skate wheel to said axle, said nut being disposed within said wheel well and having an external surface, an improvement comprising:

a cover member having a front surface and a rear surface, said rear surface of said cover member having a central region, said cover member having an outer circumference; and

means for securing said cover member to said axle, said securing means comprising a tubular member having a first end and a second end, said first end being rigidly secured to said central region of said rear surface so that said tubular member projects from said rear surface of said cover member, said second end being oppositely disposed from said first end and having a circular cross section and a cyllindrical interior surface, said interior surface of said second end of said tubular member being resilient and deforming outwardly when inserted over said external surface of said nut to frictionally secure said cover member to said nut, said outer circumference of said cover member being smaller than said periphery of said wheel well, said cover member being positioned within said wheel well with an airspace being provided between said circumference of said cover member and said periphery of said wheel well, said cover member and said tubular member comprising a plastic one piece unit.

4,511,183
STEEL WHEEL WITH DECORATIVE COVER
Martin A. Spiegel, and Franklin D. Roberts, both of Compton, Calif., assignors to Mr. Gasket Company, Cleveland, Ohio
Filed Jul. 11, 1983, Ser. No. 512,771
Int. Cl.[3] B60B *7/02, 7/06*
U.S. Cl. 301—37 S **18 Claims**



15. A wheel assembly for a vehicle, comprising:

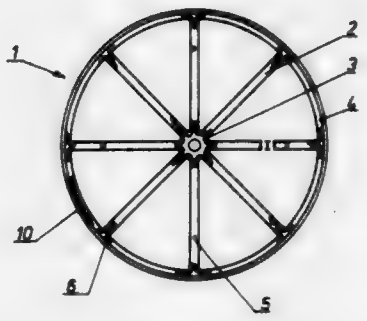
a conventional steel wheel having a rim with a well, a wheel center joined to said well and supporting said rim, said wheel center having a central hub aperture surrounded by a plurality of stud holes for mounting the wheel on the studs of a vehicle axle hub;

a metal cover extending over said wheel center only and having a plurality of stud apertures therein which register with said stud holes of said wheel center;

the outer periphery of said cover extending around and into the junction between said wheel center and said rim and engaging the wheel at said junction; and

said cover being spaced from said wheel center between said outer periphery of the cover and said stud apertures of the cover, whereby said cover is clamped to said wheel center in use by the studs and nuts by which the wheel is mounted on the vehicle.

4,511,184
PLASTIC WHEEL
Dieter Schauf, Leichlingen; Klaus Protoschill; Karl Oberbach, both of Bergisch-Gladbach, and Hans-Werner Depcik, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany
Filed Aug. 17, 1982, Ser. No. 408,762
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134249
Int. Cl.[3] B60B *5/02*
U.S. Cl. 301—63 PW **1 Claim**



1. A process for producing an injection molded unitary wheel having an even number of spokes interconnecting a rim and hub, the process comprising the steps of providing a wheel mold having rim and hub forming portions and an even number of spoke forming portions, locating one injection point in each of some of the spoke forming portions of the mold, separating the spoke forming portions of the mold having injection points from each other by an odd number of intermediary spoke forming mold portions without injection points, and injecting a melt stream into each of the injection points

whereby all of the streams meet and coalesce in the intermediary spoke forming mold portions.

4,511,185

BRAKE PRESSURE REGULATOR FOR AN HYDRAULIC VEHICLE BRAKING SYSTEM

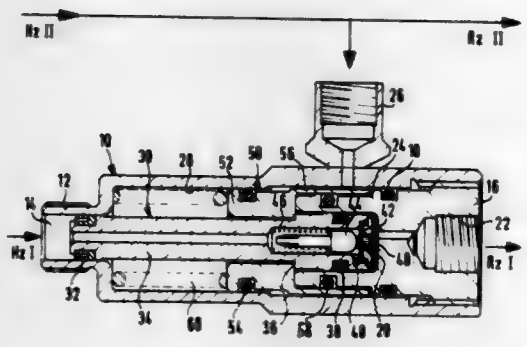
Uwe Wloczyk, Koblenz, Fed. Rep. of Germany, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Jun. 16, 1983, Ser. No. 504,879

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222798

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **3 Claims**



1. A brake pressure regulator for an hydraulic vehicle braking system, comprising a housing (10)

a first inlet chamber (14) and an outlet chamber (20) in fluid connection with each other in said housing and being connectable into a first brake circuit (HzI-RzI), and a second inlet chamber (24) in said housing for connection to a second brake circuit (HzII-RzII),

the first inlet chamber (14) and the outlet chamber (20) being defined by piston surfaces of different sizes of a stepped piston (30),

the stepped piston (30) controlling a valve (40) in said fluid connection between the first inlet chamber (14) and the outlet chamber (20),

said stepped piston (30) being acted on by the biassing force of spring means urging said stepped piston towards a first position in which the valve (40) leaves said fluid connection open,

the second inlet chamber (24) being defined by an annular control piston (50) having a cylindrical inner surface and being acted on by the biassing force of spring means in the same direction as the stepped piston (30) against the pressure in the second inlet chamber (24),

said stepped piston (30) being aided by the control piston (50) to overcome the biassing force acting on said stepped piston to move it to a second position at which the valve (40) closes when a first switching pressure (p1) in both brake circuits (HzI-RzI, HzII-RzII) is surpassed,

the stepped piston (30) being movable to said second position only at a second, higher switching pressure (p2) if because of pressure failure in the second brake circuit (HzII-RzII), said stepped piston is not aided by the control piston in overcoming the biassing force acting on said stepped piston, characterized in that said cylindrical inner surface of

the control piston (50) surrounds the stepped piston (30) without contacting the same and said surface is sealed radially inwardly against a plug (16) which is inserted in the housing (10) and which in turn sealingly surrounds said stepped piston (30).

4,511,186

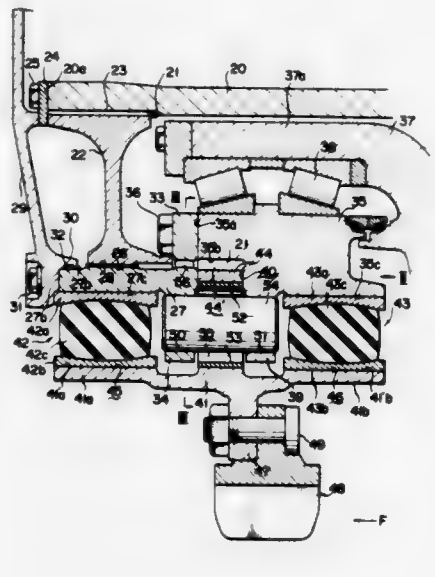
SPROCKET WHEEL ASSEMBLY OF ENDLESS TRACK-TYPE VEHICLES

Tatsuya Sasamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 24, 1983, Ser. No. 497,646

Int. Cl.³ B62D *55/12*

U.S. Cl. 305—57 **5 Claims**



1. A sprocket wheel assembly of a crawler vehicle including a drive shaft and a final reduction gear casing, comprising:

a first inner tube mounted on said drive shaft, said first inner tube having formed therein at one end thereof a flange extending radially inwardly and outwardly, said flange having formed therein a plurality of first holes in the outwardly extending flange portion;

a second inner tube rotatably mounted on said final drive gear casing, said second inner tube being fixedly connected with said first inner tube and having formed therein a flange extending radially outwardly, the flange of said second inner tube having formed therein a plurality of second holes each being in register with said respective first holes;

an outer tube disposed so as to extend outer circumferences of said first and second inner tubes, said outer tube having a first cylindrical section formed at one end thereof, a second cylindrical section formed at the other end thereof, a protrusion extending radially inwardly from an intermediate section thereof, and a flange extending radially outwardly from the intermediate section thereof, said protrusion being adapted to be inserted between the flanges of said first and second inner tubes and having formed therein a plurality of third holes each being in register with said respective first and second holes, diameter of said third holes being made larger than that of said first and second holes;

a first elastic annular block unit interposed between said first inner tube and the first cylindrical section of said outer tube;

a second elastic annular block unit interposed between said second inner tube and the second cylindrical section of said outer tube;

a sprocket wheel fixedly monted to the flange of said outer tube; and

a plurality of pins each inserted into said respective first and second holes across said third holes defining an annular gap between the outer periphery of each of said pins and the inner periphery of each of said third holes.

4,511,187

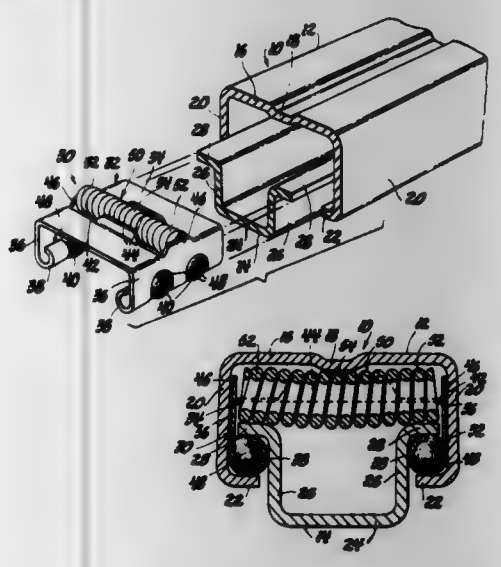
BEARING ASSEMBLY FOR SEAT SLIDE

Richard W. A. Rees, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1983, Ser. No. 555,129

Int. Cl.[3] **A47B** *88/14;* **A47C** *1/023;* **F16C** *21/00;* **F16M** *13/00*

U.S. Cl. 308—3.8 **4 Claims**



1. In a seat slide for supporting an occupant seat and including a pair of generally U-shaped track members, one track member including a base wall, a pair of side walls and a terminal flange extending from each of the side walls, the other track member including a base wall opposed to the one base wall, a pair of side walls, each located in opposed spaced relationship to a respective side wall of the one track member, and a terminal flange extending from each of the side walls and located in opposed spaced relationship to a respective terminal flange of the one track member, and bearing means located between the opposed respective terminal flanges, a bearing assembly for the track members comprising, a flexible elongate member including a center axle portion and roller end portions, means rotatably locating the elongate member transversely of the track members between the base wall of the one track member and the terminal flanges of the other track member, rib means on the base wall of the one track member engageable with the center axle portion of the elongate member to bow the elongate member and engage the roller end portions thereof with the terminal flanges of the other track member, the bowed elongate member biasing said track members apart relative to each other and engaging the bearing means with the opposed respective terminal flanges to locate the track members, the elongate member, and the bearing means in rattle free relationship when the seat is unoccupied, occupancy of the seat shifting the one track member relative to the other track member and engaging the base wall of the one track member with the roller end portions of the elongate member whereby such end portions act as rotatable support and spacing rollers between the track members and support the track members and seated occupant for relative adjustment.

4,511,188

BALL BEARING FOR LENGTHWISE AND TURNING MOVEMENT

Lothar Walter, Schweinfurt, and Walter Reith, Bad Bocklet, both of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

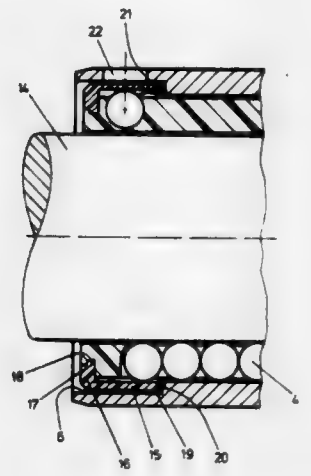
Filed May 3, 1983, Ser. No. 491,050

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216440

Int. Cl.[3] **F16C** *29/06*

U.S. Cl. 308—6 C **6 Claims**

1. In a ball bearing for longitudinal and rotational movement on a shaft, and having circumferentially distributed endless rows of balls, the bearing being comprised of an outer sleeve with axially extending concentric cylindrical races in the bore of the outer sleeve for loaded balls, the races terminating at both ends in annular radial turnaround recesses in the bore of the outer sleeve, and a sleeve-shaped cage rotatably positioned in the bore of the outer sleeve, the cage having axially extending guides for the loaded and unloaded balls, the guides being interconnected in pairs by radially outwardly open semi-circular turnaround guides, so that axially extending return recesses for the unloaded balls of each row are formed between each pair of cylindrical races for the loaded balls, either in the cylindrical bore of the outer sleeve or on the surface of the cylindrical shaft, the improvement wherein the cage is held at its two ends by an end ring mounted on the cage and having an outer section radially covering the turnaround guides of the cage.



4,511,189

ENDLESS LINEAR MOVEMENT ROLLER BEARING

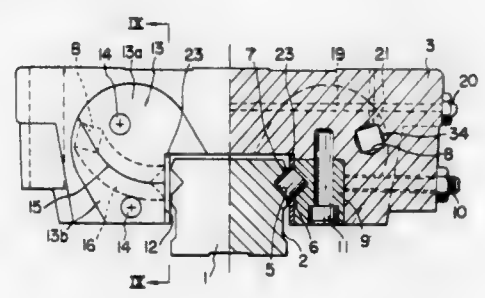
Tatsuo Mottate, Mitaka, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,367

Claims priority, application Japan, Jul. 14, 1982, 57-123427

Int. Cl.[3] **F16C** *29/06*

U.S. Cl. 308—6 C **1 Claim**

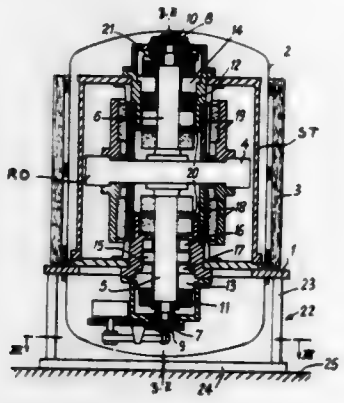


1. A roller bearing for linear movement with endlessly circulating rollers comprising a track rail and a casing linearly movable thereon, said track rail and casing having confronting surfaces having cooperating confronting linear track portions therein, a plurality of bearing rollers in said linear track portions, means in said casing providing a return track portion interconnected with said linear track portions, and a further plurality of said bearing rollers in said return track portion, said bearing rollers endlessly circulating through said linear track portion and said return track portion, said return track portion including a direction changing path which reverses the direction of said rollers in a circular curve, said direction changing path having a projection onto a plane perpendicular to the direction of movement of the bearing rollers which is a circular curve, thus allowing a smooth direction changing movement of the rollers.

4,511,190
KINETIC WHEEL ARRANGEMENT INCORPORATING MAGNETIC BEARINGS, PARTICULARLY FOR STORING ENERGY

Paul D. Caye, Epone; Patrice C. Jamain, Maule, and Bernard G. Weisser, Limay, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jul. 19, 1983, Ser. No. 515,150
Claims priority, application France, Aug. 19, 1982, 82 14339
Int. Cl.[3] F16C *39/06*
U.S. Cl. 308—10 7 Claims

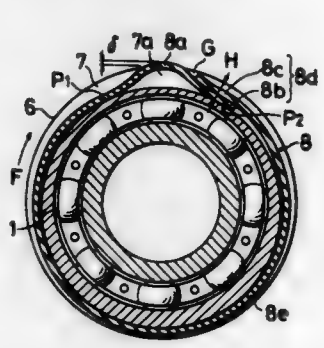


1. Kinetic wheel arrangement comprising:
a stator,
a rotor rotating about an axis of rotation Z—Z, defined by said stator,
magnetic bearings formed by cooperating parts respectively connected to the stator and to the rotor in order magnetically to suspend the rotor with respect to the stator,
a suspension system connecting said stator to a high-inertia suport, and wherein said suspension system includes a plurality of elastic blades disposed parallel to one another so that the length, the width, and the thickness of said elastic blades are respectively parallel to a first direction parallel to the axis of rotation Z—Z of the rotor, a second direction V—V the elastic suspension system is disposed between the high-inertia support and the stator, an envelope which encloses the stator and the rotor and base plate which projects outside of said envelope and said suspension system is disposed between a part of the base plate projecting outside of the envelope and said high-inertia support at right angles to the axis or rotation Z—Z of the rotor, and a third direction U—U at right angles to the two preceding directions Z—Z and V—V.

4,511,191
ANTICREEP DEVICE FOR ANNULAR MEMBER

Masayuki Kitamura, Toyonaka, Japan, assignor to Koyo Seike Company Limited, Osaka, Japan

Filed Feb. 14, 1984, Ser. No. 580,453
Int. Cl.[3] F16C *27/06*
U.S. Cl. 384—536 8 Claims

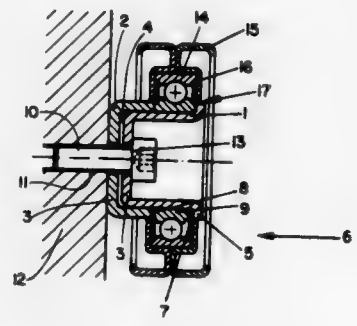


1. An anticreep device comprising an annular member fittable to a support member and having a circumferential groove formed in its outer periphery eccentrically thereof and including a deep groove portion and a shallow groove portion, and a resilient ring fittable in the circumferential groove and having a protruding portion of a height of projection projectable from the deep groove portion toward the support member and opposite end portions fittable one over the other within the circumferential groove at a position adjacent to the protruding portion to provide a combined thickness larger than the depth of the shallow groove portion, the protruding portion and the opposite end portion being fitted in the deep groove portion with the other portion of the resilient ring fitted in the shallow groove portion for the use of the device to prevent creep of the annular member.

4,511,192
SUPPORT FOR A TENSION ROLLER

Rüdiger Hans, Niederwerrn, and Manfred Brandenstein, Eussenheim, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,830
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 8222967[U]
Int. Cl.[3] F16C *35/06*
U.S. Cl. 384—543 6 Claims



1. In a tension roller having a support comprised of two coaxial cup-shaped sleeves mounted with one inside of the other and extending axially in a bearing of a tension roller, the cup-shaped sleeves having an open end and being provided with the mounting holes in their bottoms, and a bearing held by said cup-shaped sleeves, the improvement wherein the cup-shaped sleeves are positioned with one cup-shaped sleeve extending into the other and with their bottoms extending in the same direction, the inner cup-shaped sleeve having a radially outwardly directed flange on its open end axially engaging and holding one axial side of said bearing.

4,511,193
THRUST AND RADIAL BEARING ASSEMBLY

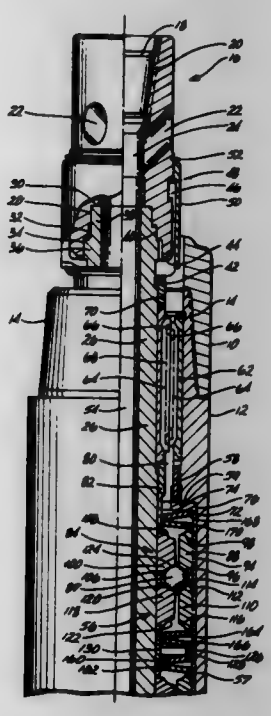
Bela A. Geczy, Orange, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Feb. 10, 1984, Ser. No. 579,150
Int. Cl.[3] F16C *19/18*
U.S. Cl. 384—611 17 Claims

1. A combined radial and thrust bearing assembly comprising:
a fixed housing;
a rotatable shaft extending through the housing;
a plurality of inner race tracks fixed on the shaft, each pair of adjacent inner race tracks defining an inner portion of the channel;
a plurality of outer race tracks mounted in the housing including means for preventing rotation and means for permitting limited axial movement within the the housing, each pair of outer races having a pair of adjacent tracks defining an outer portion of the channel;
a plurality of bearing balls in the channel formed by the inner and outer tracks, said tracks being shaped for transmitting radial and thrust loads via the bearing balls;
upper spring means between an upper pair of outer races and the housing for transmitting an upwardly directed thrust load from the upper pair of outer races to the housing;

a shoulder fixed inside the housing between adjacent pairs of outer races; and

lower spring means between a lower pair of outer races and the shoulder for transmitting an upwardly directed thrust



load from the lower pair of outer races to the shoulder and the housing, the upper and lower springs means being substantially equal for distributing the upwardly directed thrust loads substantially equally between the upper and lower pairs of outer races.

4,511,194

MAGAZINE AND DISC HOLDERS FOR SUPPORTING DISCS IN THE MAGAZINE

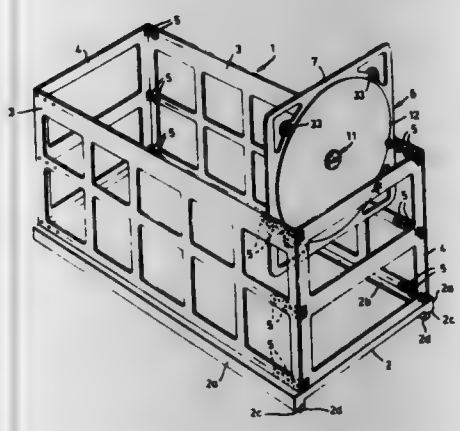
George Park, Preston; Michael J. Smith, Darwen, and Harry Carrington, Blackburn, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,809

Claims priority, application United Kingdom, Mar. 26, 1982, 8208910

Int. Cl.³ G11B *1/02*; A47B *81/06*

U.S. Cl. 312—12 **10 Claims**



1. A magazine and a plurality of disc holders for supporting a plurality of centrally apertured discs in the magazine, the magazine comprising a pair of opposed walls which lie in parallel planes and having an open side between said walls through which the disc holders can be inserted in and removed from the magazine, and the disc holders each comprising a rigid plate with attachment means for attaching a centrally apertured disc to one or each side of the plate, the plate having a pair of opposed parallel edges for cooperation with guide means which are provided on the inner sides of said walls of the magazine for guiding the disc holders during their insertion in and removal from the magazine in directions parallel to said edges of the plates of the holders and for supporting the disc holders in the magazine with the plates of the holders lying in spaced parallel planes, and the attachment means of each disc holder being arranged to engage in the central aperture or apertures of the respective disc or discs and being constructed to engage over the edge or edges of the disc or discs surrounding the central aperture or apertures thereof so as to secure the disc or discs to the respective side or sides of the plate of the disc holder.

4,511,195

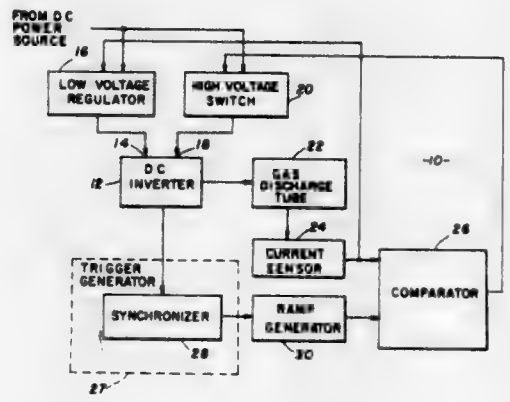
DEVICE FOR STARTING AND OPERATING GAS DISCHARGE TUBES

LeRoy D. Barter, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 30, 1983, Ser. No. 509,904

Int. Cl.³ H05B *37/02*; G05F *1/00*

U.S. Cl. 315—308 **4 Claims**



1. A device for supplying starting and running power to a gas discharge tube, comprising:

an inverter having means for generating a low voltage or a high voltage at an output thereof in response to first or second input signals, respectively, the output being connected to the gas discharge tube;

sensing means for providing a sensed output signal proportional to current flow through the gas discharge tube;

means for periodically generating a trigger signal;

driver means responsive to the sensed output signal and the trigger signal for generating a drive signal synchronized with the trigger signal and having a duration inversely related to the magnitude of the current flowing through the gas discharge tube;

switch means for applying the second input signal to the inverter in response to the drive signal; and

means for applying the first input signal to the inverter.

4,511,196

PRINTED CIRCUIT BOARD CONNECTOR WITH INTEGRAL GROUND PLANE

John G. Schuler, La Mesa, and Lowell R. Lingenfelter, La Jolla, both of Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jan. 20, 1984, Ser. No. 572,356

Int. Cl.³ H01R *13/048*

U.S. Cl. 339—14 R **4 Claims**

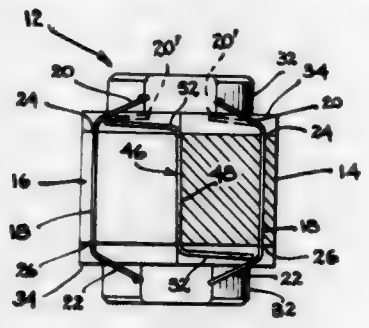
1. A connector having an integral ground plane, comprising:

a generally bar-shaped body formed of an insulating material;

a sheet of conductive material having a central portion extending along the length of and affixed within the body and having a first plurality of spaced-apart finger-like resilient projections extending from and bent across a first side of the body, where the extension and direction of bend of each of the projections is made in accordance with a predetermined pattern; and

a plurality of resilient electrically conductive contacts

spaced apart along the length of the body, each contact having a central portion affixed within the body along a plane generally parallel to the central portion of the conductive sheet, and having a first free end extending from



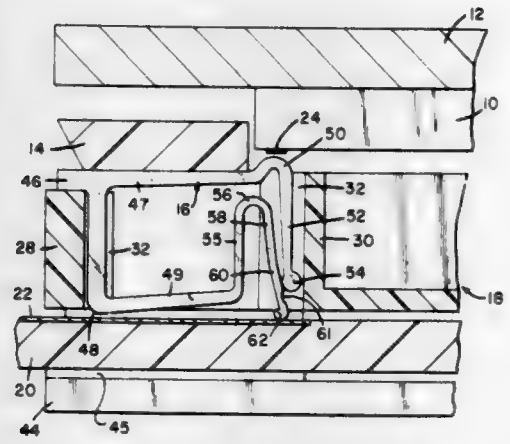
and bent across the first side of the body so that when a particular first free end is pressed toward the first side, a portion of that first free end is forced into contact with an adjacent one of the finger-like projections if that adjacent projection is bent toward the particular first free end.

4,511,197

HIGH DENSITY CONTACT ASSEMBLY

Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 1, 1983, Ser. No. 519,429
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—17 CF **4 Claims**



1. An electrical connector for high density usage, comprising:

a chip carrier having a conductive path thereon;

a circuit board having a conductive strip contained thereon;

a housing disposed on said circuit board for receiving said chip carrier thereon;

contact means disposed in said housing said contact means having substantially all of its parts lying in a single plane and having a generally "U"-shaped first portion wherein the legs of said "U"-shape comprise an upper and a lower cantilever member, said upper cantilever member and said lower cantilever member having outer and inner beams attached perpendicularly respectively thereto, said outer beam having an upper contact surface disposed at the point wherein said outer beam and said upper cantilever member meet and having a lower contact surface at the free end of said outer beam, said inner beam comprised of a second generally "U"-shaped member having the first leg as a shunt portion which is perpendicularly attached to the end of the lower cantilever member and the second leg defining an inner arm having an inner arm beam contact surface attached at the end thereof, said inner arm being resiliently biased against the lower contact surface of said outer beam, said contact means being further characterized in that:

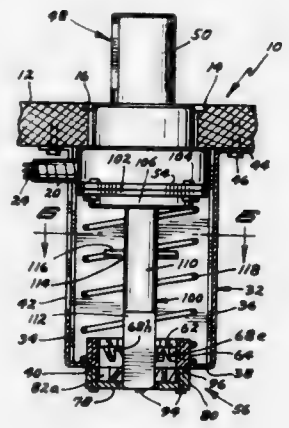
said inner and outer beams are in overlapping relationship such that vertical movement of the chip carrier on said upper contact surface results in a wiping motion between said lower contact surface and said second leg of said inner beam and between the inner beam contact surface and said conductive strip with the resulting development of a contact mating force whereby current flows from said conductive path through said upper contact surface, the interface point between said lower contact surface and said inner arm of said inner beam and through said inner beam contact surface to said conductive strip.

4,511,198

POP-UP ELECTRICAL RECEPTACLE UNIT

Terry L. Mitchell, Jenison, and David H. Hodge, Hopkins, both of Mich., assignors to Dunbar Furniture, Inc., Berne, Ind.

Filed Oct. 12, 1983, Ser. No. 541,206
Int. Cl.³ H01R *13/44*
U.S. Cl. 339—34 **17 Claims**



1. A pop-up electrical receptacle unit comprising a receptacle for receiving therein the prongs of an electrical plug, means constraining said receptacle for rectilinear movement between a retracted position and protracted position, spring means for urging said receptacle from its said retracted position into its said protracted position, manually releaseable means for retaining said receptacle in its said retracted position including a rotary ratchet mechanism, an actuator on said receptacle having a pin thereon for alternately shifting said ratchet mechanism into an interfering position relative to said pin to establish said retracted position when said receptacle is moved from its protracted position to its said retracted position and into a non-interfering position when said receptacle is moved from its retracted position rectilinearly against the force of the spring means to cause said pin to shift said ratchet mechanism.

4,511,199

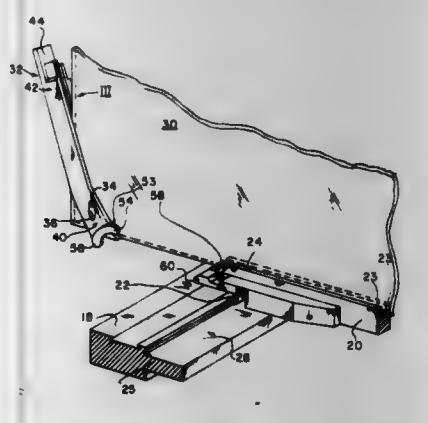
CARD FRAME WITH CARD GUIDES AND CARDS GUIDED THEREIN

David P. Erlam, and Arthur E. Carr, both of Winchester, England, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 486,992
Claims priority, application United Kingdom, Apr. 21, 1982, 8211565
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **11 Claims**

1. A card frame comprising a number of pairs of vertically spaced card guides for receiving cards provided with plug connectors, each pair of card guides being associated with a socket connector to establish electrical contact, a double-armed lever having a shorter lever arm and a longer lever arm, pivotally mounted on each card by means of a pin at the lower front corner of the card and adapted to be pivoted from out of an initial position oblique to a forward edge of said card, into

a latching position in an abutting relationship with said forward edge of said card, said shorter lever arm terminating in a hook portion and a heel portion, with said hook portion being engageable with a receptacle fixed on the frame, as the card is inserted and the lever is pivoted upward into the latching position, the hook bearing against the receptacle counter to the direction of insertion of the card, said heel portion bearing against a front surface area of the frame as the lever is pushed downward into its initial position and the card is ejected; the



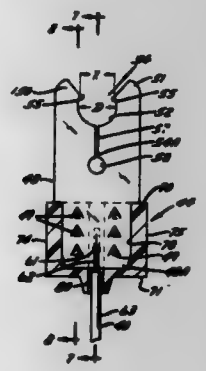
improvement comprising said lever (32) being additionally adjustably mounted by having arcuate slots (36) and a pin (34) of said card (30) movably engaged therein, whereby in an initial position of said lever (32) said pin (34) bears against the upper ends of said slots (36) and in the latching position (FIG. 6) is moved down into the lower portions of said slots (36), and that in said initial position and in said latching position of said lever (32), said pin (34) is located in front of said hooks (54) as viewed in the plug-in direction of said card (30).

4,511,200

ELECTRICAL CONNECTOR HAVING HANDLE-MOUNTED BIFURCATED RESILIENT PIN-ENGAGING ELECTRICAL PLATE

Paul Belokin, Jr., Rte. 4, Box D, Hayward, Wis. 54843

Filed Dec. 2, 1982, Ser. No. 446,241
Int. Cl.[3] H01R *33/08, 4/24*
U.S. Cl. 339—50 R **7 Claims**



1. An electrical connector for releasable connection to an electrically conductive pin and adapted to be attached to an uninsulated end of an electrical conductor wire, said connector comprising:

a base member fabricated of electrical insulating material and having a slot extending thereinto from a surface thereof, and having a wire-receiving aperture communicating with said slot; and

an electrically conductive member comprising an inner portion received within said slot in said base member and an outer portion extending from said slot and engageable with said pin,

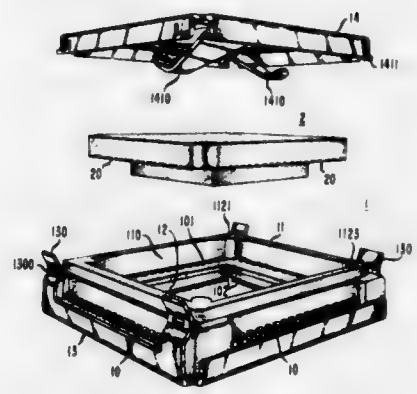
said inner portion of said electrically conductive member comprising at least one barb frictionally engaged with said base member within said slot and further comprising a wire-engaging aperture engageable with said uninsulated end of an electrical conductor wire extending into said wire-receiving aperture in said base member whereby said uninsulated end of said electrical conductor wire is mechanically trapped between said inner portion of said electrically conductive member and a wall of said slot and is in electrical contact with said electrically conductive member.

4,511,201

MODULE MOUNTING ASSEMBLY

Paul A. Baker, and Michael G. Strautz, both of Columbus, Ohio, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 439,389, Nov. 5, 1982, abandoned. This application Jul. 10, 1984, Ser. No. 628,139
Int. Cl.[3] H01R *9/09*
U.S. Cl. 339—75 MP **30 Claims**



1. Apparatus for mounting a module with terminals on a circuit board, said apparatus comprising

an assembly (1) for holding the module (2) and interconnecting the terminals (20) thereof with the circuit board (3) characterized in that said assembly comprises

conducting members (10) having opposing first and second contacts (101, 102) for electrically coupling the module terminals with the circuit board,

means (11) having a chamber on one side for receiving the module and a plurality of cavities on the opposite side for recieving said conducting members and aligning each said first contact with a coresponding module terminal,

means (12) for supporting said conducting members and aligning each said second contact with the circuit board,

means (13) for assembling a plurality of said supporting means positioned thereon in combination with said receiving means and said conducting members to form quadrilateral configurations of said first contacts for contacting the module terminals and said second contacts for contacting the circuit board, and

means (14) for engaging said assembling means and clamping the module in said chamber on said receiving means to maintain the module terminals in electrical engagement with said first contacts.

4,511,202

CERAMIC RESONATOR AND A CERAMIC FILTER USING THE SAME

Yoshihiko Kasai, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

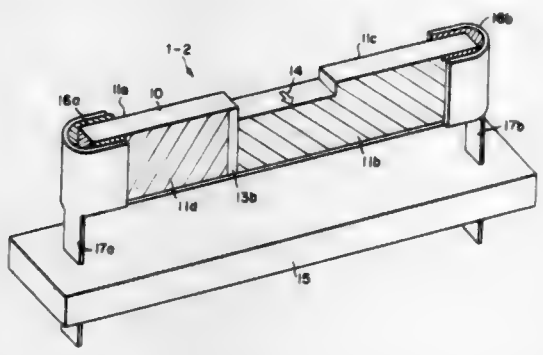
Filed Dec. 17, 1982, Ser. No. 450,790
Claims priority, application Japan, Dec. 29, 1981, 56-213743; Feb. 24, 1982, 57-28430; Apr. 7, 1982, 57-57588
Int. Cl.[3] H03H *9/48, 9/205, 9/13, 9/56*
U.S. Cl. 333—189 **13 Claims**

1. A ceramic resonator, comprising:

an elongated piezoelectric ceramic platelet having an indentation transverse to and in the center of the longitudinal direction of said platelet, a polarization in the thickness direction and occurring at least in said indentation, and first and second main surfaces; and

a first metal thin film electrode formed on said first main

surface, a second metal thin film electrode formed on said second main surface, a third metal thin film electrode formed on said first main surface, and a fourth metal thin film electrode formed on said second main surface, said



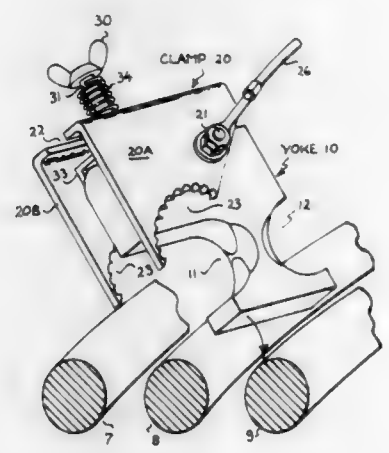
third electrode being electrically isolated from said first electrode and said fourth electrode being electrically isolated from said second electrode by areas of electrical isolation which are offset from each other in said longitudinal direction.

4,511,203

DEVICE FOR PROVIDING ATTACHMENT TO SPACED PARALLEL CABLES OR RODS

Richard H. Eaton, Lynchburg, Va., assignor to General Electric Company, King of Prussia, Pa.

Filed Jul. 25, 1980, Ser. No. 172,183
Int. Cl.³ H01R *11/10*
U.S. Cl. 339—255 P **15 Claims**



1. An improved attaching device for a line trap or device having a plurality of spaced turns or members, said attaching device comprising:

a. an insulating yoke formed of a plate of insulating material having a thickness sufficiently small to be inserted in the space between two adjacent turns or members of a line trap or device, said yoke having a first concave notch bounded by an edge shaped to fit in engagement with a portion of a first of said turns or members, and having a second concave notch bounded by an edge shaped to fit in engagement with a portion of a second of said turns or members adjacent said first turn or member, said notches being opposed and separated by a distance substantially equal to said space between said two adjacent turns or members;

b. a metallic clamp formed of a plate of conductive material mounted on said yoke for pivoting in a plane generally parallel to said yoke plate, said clamp having a concave notch that is bounded by an edge shaped to fit in engagement with a portion of said first turn or member;

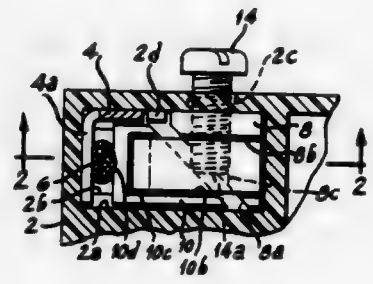
c. and clamping means attached to said yoke for urging said metallic clamp to pivot in said plane and in a direction to cause said edge of said clamp notch toward said edge of said first yoke notch.

4,511,204

RIGHT-ANGLE ELECTRICAL CLAMPING CONNECTOR

Robert L. Glenn, Arab, Ala., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 31, 1983, Ser. No. 462,481
Int. Cl.³ H01R *4/30*
U.S. Cl. 339—263 R **12 Claims**



1. An electrical connector comprising in combination:

means supporting a screw for axial movement in response to rotation thereof, an end of said screw projecting beyond said supporting means;

electrical terminal means fixedly positioned in laterally spaced relation to said screw;

a clamping member disposed adjacent said projecting end of said screw for linear sliding movement at right angles to the axis of said screw, said clamping member having an oblique surface abuttingly engaged by said projecting end of said screw whereby axial movement of said screw drives said clamping member laterally away from the axis of said screw toward said terminal means for clamping an electrical conductor therebetween; and

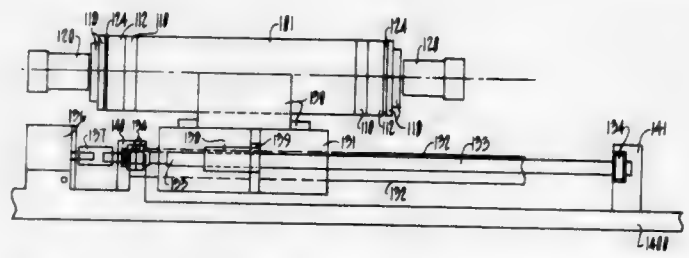
spring means biasing said clamping member oblique surface into engagement with said projecting end of said screw.

4,511,205

SCANNING SYSTEM WHEREIN THE SCANNING BEAM ROTATES AND TRANSLATES

Joseph J. Crane, Woodbridge, Va., assignor to Crossfield Data Systems, Inc., Springfield, Va.

Filed Jun. 2, 1982, Ser. No. 383,928
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.1 **4 Claims**



1. In a scanning system of the type having a mirror that both rotates and translates for receiving a beam of light and reflecting it to provide scanning;

a mirror,

a shaft supporting said mirror, said shaft having an axis of rotation, and defining a cavity,

said shaft including turbine means for rotating the shaft, said turbine means receiving air from said cavity and exhausting it to the ambient atmosphere whereby to drive the turbine means and rotate the shaft,

the plane of the mirror being at an angle, different from perpendicular to the axis of said shaft,

a housing for said shaft,

air bearing means supporting said shaft from said housing,

an elongated stationary rail extending parallel to said axis,

slide means supported by air pressure from said rail,
a lead screw extending parallel to said axis,
said slide means having a lead screw nut connected thereto, said lead screw nut cooperating with said lead screw to move the slide means along the rail when the lead screw is rotated, and
a motor for rotating the lead screw to thereby translate said lead screw nut, said slide, said housing, said shaft, and said mirror, while the shaft and mirror are being rotated by said turbine means,
whereby the mirror both rotates and translates to provide scanning.

4,511,206
LENSLESS SPECTRUM ANALYZER

Lars Thylén, Huddinge; Leif Stensland, Järfälla, and Gunnar Arvidsson, Stockholm, all of Sweden, assignors to Institutet for Optisk Forskning, Stockholm, Sweden

PCT No. PCT/SE82/00137, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03912, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 26, 1982, Ser. No. 457,109
Claims priority, application Sweden, Apr. 27, 1981, 8102671
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.11 **7 Claims**



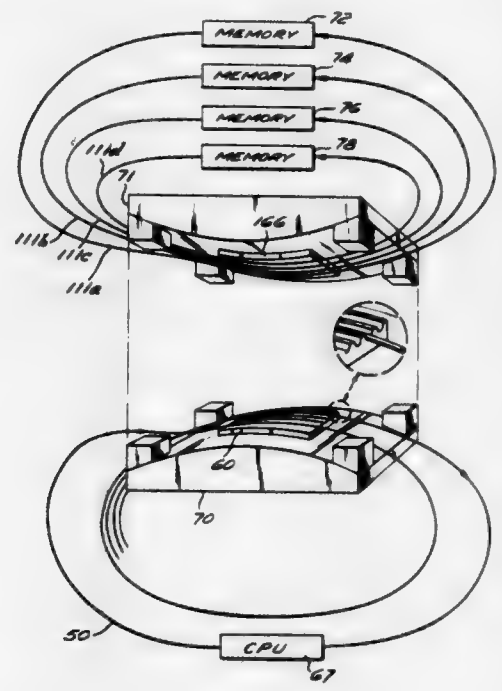
1. An optical spectrum analyzer comprising:
an optical radiation source;
an optical waveguide made of an electro-optical material and coupled to receive radiation from said optical radiation source;
a plurality of electrodes spaced apart on said waveguide along a line perpendicular to the direction of propagation of said radiation with their lengthwise dimension parallel to said direction of propagation, said electrodes having different widths and different spacing between each other, said radiation having an angular deflection in accordance with optical parameters provided by said electrodes, said electrodes and waveguide comprising an electro-optic deflector for deflecting incident radiation in accordance with an applied electric signal to be analyzed;
a detection matrix disposed in said optical waveguide for receiving said radiation passing through said electro-optical deflector, said detection matrix including a sensing surface disposed along a focal line, which receives radiation from said electro-optical deflector, the position of incident radiation along said focal line being proportional to the frequency of said signal to be analyzed.

4,511,207
FIBER OPTIC DATA DISTRIBUTOR

Steven A. Newton, Menlo Park, Calif., and John E. Bowers, Milltown, N.J., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 323,038, Nov. 19, 1981. This application Sep. 10, 1982, Ser. No. 416,667
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.15 **14 Claims**

9. A fiber optic data distribution system, comprising;
a first single mode optical fiber;
a plurality of single mode optical fiber segments optically coupled to the first optical fiber, providing an optical path between said first fiber and each of said optical fiber segments to cause a portion of an optical signal transmitted in any of said first fibers and said fiber segments to be coupled between the first optical fiber and at least one of the plurality of optical fiber segments; and
means optically coupled between selected ones of the optical fiber segments for receiving optical signals coupled from the first optical fiber through a first of the selected optical

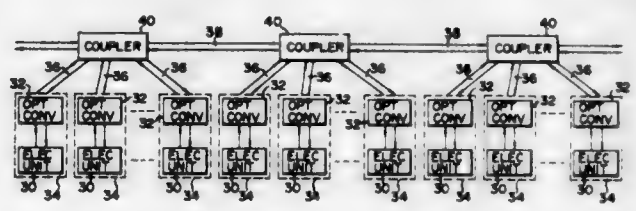


fiber segments and for selectively transmitting optical signals onto a second of the selected optical fiber segments for coupling said selectively transmitted signals onto the first optical fiber, such that a portion of the selectively transmitted optical signals is optically coupled to a third of the selected optical fiber segments.

4,511,208
OPTICAL COMMUNICATION SYSTEM

Takeshi Ozeki, and Toshifumi Tamura, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 5, 1982, Ser. No. 439,547
Claims priority, application Japan, Nov. 26, 1981, 56-189544; Jul. 12, 1982, 57-119931; Jul. 20, 1982, 57-125002; Jul. 28, 1982, 57-130224
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.16 **24 Claims**



1. An optical communication system comprising:
a plurality of stations, each of said stations including means for generating and processing optical signals;
at least two passive optical coupler means, each of said coupler means having a plurality of pairs of ports, at least two of said pairs of ports of each of said coupler means each being connected to one of said stations, respectively, each of said pairs including an input port and an output port, each of said coupler means for causing an optical signal inputted to any one of said input ports to be outputted to all of said output ports except said output port corresponding to said input port receiving said optical signal;
a plurality of optical signal transmission lines interconnecting said passive optical couplers for two-way transfer of said optical signals between said couplers; and
a plurality of optical signal transmission lines connecting

said stations to said coupler means for two-way transfer of said optical signals therebetween.

4,511,209

COMPOSITION HAVING IMPROVED OPTICAL QUALITIES

Bolesh J. Skutnik, Simsbury, Conn., assignor to Ensign-Bickford Industries, Inc., Simsbury, Conn.

Continuation-in-part of Ser. No. 352,050, Feb. 24, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,397

Int. Cl.³ G02B *5/172*

U.S. Cl. 350—96.34 **20 Claims**

1. A cladding composition for plastic clad silica optical fibers comprising

a highly fluorinated monofunctional acrylate with a refractive index below 1.38 and constituting more than 50% by weight of the composition,

a polyfunctional acrylate being trifunctional or higher serving as a crosslinking agent,

a mono or polyfunctional thiol that functions as a synergist, and

a photoinitiator.

4,511,210

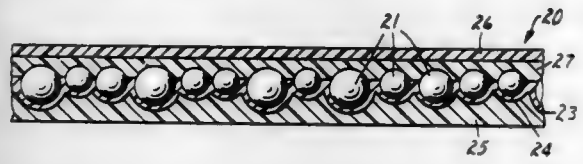
RETROREFLECTIVE SHEETING

Chi F. Tung, Mahtomedi, and James C. Coderre, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 447,615, Dec. 7, 1982, abandoned, which is a division of Ser. No. 275,275, Jun. 19, 1981, Pat. No. 4,367,920, which is a continuation-in-part of Ser. No. 80,434, Oct. 1, 1979, abandoned. This application Sep. 16, 1983, Ser. No. 532,695

Int. Cl.³ G02B *5/128*

U.S. Cl. 350—105 **7 Claims**



1. Retroreflective sheeting comprising: first and second transparent polymeric layers; a monolayer of transparent microspheres embedded in the first layer to, on the average, less than half their diameter, with the second transparent polymeric layer being laminated to the microsphere-covered surface of the first layer, whereby it follows in a substantially constant thickness the curved surfaces of the microspheres protruding from the first layer; and a specularly reflective layer coated on the exposed configured surface of the second layer.

4,511,211

PROJECTION SCREEN ANCHOR

William S. Runyan, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 13, 1982, Ser. No. 436,470

Int. Cl.³ G03B *21/56*

U.S. Cl. 350—117 **8 Claims**

1. A projection screen comprising:

a screen having spaced-apart lateral edges and opposite upper and lower ends;

support means adapted to be attached to a wall and adapted to support said screen at said lateral edges of said upper end;

a pair of elongated magnetic anchor means pivotally secured to said wall and extending upwardly and outwardly therefrom, said anchor means each having adjustment means thereon for selectively adjusting the angle of said anchor means with respect to the wall;

and said lateral edges of said lower end of said screen each have a metal cap capable of magnetic engagement with said anchor means whereby, upon adjustment of said anchor means to an angle in nonintersecting relation with



the top of the screen, adjustment of said lateral edges of said lower end of the screen longitudinally of said anchor means is operative to adjust the angle of the screen with respect to the wall.

4,511,212

FOCUSSING LENS OPERATING DEVICE

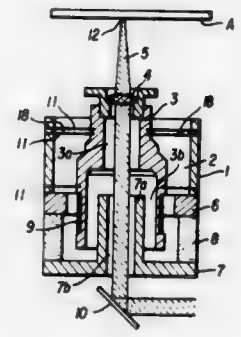
Yoshiharu Tanaka, Omiya, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi, Japan

Filed Sep. 10, 1982, Ser. No. 416,588

Claims priority, application Japan, Sep. 22, 1981, 56-141748[U]

Int. Cl.³ G02B *7/11*

U.S. Cl. 350—255 **16 Claims**



1. A focussing lens operating device for use in an apparatus for reading video and/or audio information recorded in an optionally readable structure on a disc-shaped information carrier comprising:

a frame;

a cylindrical hollow holder held in resilient suspension on said frame;

a focusing lens disposed in the upper portion of said cylindrical hollow holder to converge a light beam into a beam spot on the surface of the information carrier;

an electro-magnetic controlling means arranged near the lower end of said cylindrical hollow holder to move said cylindrical hollow holder upwardly and downwardly in relation to the surface of the information carrier so as to control the size of the beam spot formed on the surface of the information carrier through said focussing lens; and

upper and lower supporting means arranged around said cylindrical hollow holder in parallel spaced relationship

with each other to support said cylindrical hollow holder in resilient suspension on said frame, wherein said upper supporting means is constituted by two thin plates arranged around said upper portion of said cylindrical hollow holder, said thin plates being adjacent each other so as to reduce lateral vibrations of said plates by friction between said plates when said holder is displaced for focusing control.

4,511,213

CODING METHOD FOR MULTILEVEL-GRADATED PICTURE SIGNAL

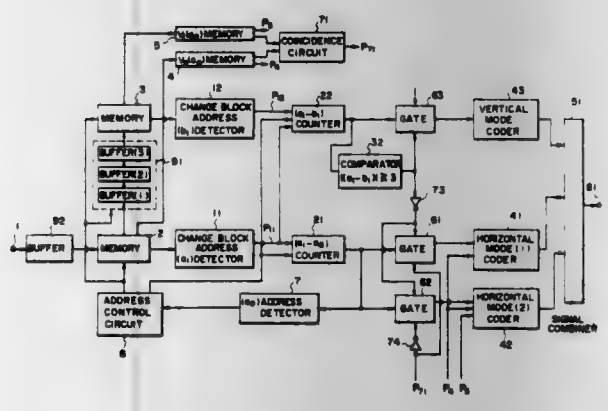
Yasuhiro Yamazaki, Hiratsuka, and Toshiaki Endo, Tanashi, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,186

Claims priority, application Japan, Dec. 24, 1981, 56-212624; Feb. 12, 1982, 57-19767

Int. Cl.³ H04N *1/00*

U.S. Cl. 358—261 **7 Claims**



1. In a coding method for a multilevel-gradated picture signal, comprising the steps of:

segmenting a series of binary codes obtained by processing a multilevel-gradated original picture signal for binary representation, every predetermined number n of picture elements on each scanning line, so as to form blocks respectively capable of assuming values of "0" to "2^n-1"; and

encoding the value of a change block having changed its value and its position on the scanning line so as to be reproduced on the reproducing side;

the improvement characterized by said encoding step performed by the use of the following data:

a_0: address of a block, on a coding line, with which coding starts;

a_1: address of a change block which occurs after the block of the address a_0 on the coding line;

b_1: address of a change block which occurs on a coded reference line after a block of the position just above the block of the address a_0;

b_2: address of a change block which occurs immediately after the block of the address b_1 on the reference line;

$v_1(x)$: value of a block at a position x on the reference line;

$v_2(x)$: value of a block at a position x on the coding line, said encoding step coding the value $V_2(a_0)$ and the address a_1 by coding a relative address of (a_1-b_1) in a Vertical Mode where $v_1(a_0)=v_2(a_0)$ and the relative address of (a_1-b_1) is included in a predetermined range of values;

said encoding step coding the value $v_2(a_0)$ and the address a_1 by coding a relative address of (a_1-a_0) in a Horizontal Mode I where $v_1(a_0)=v_2(a_0)$ and the relative address of (a_1-b_1) exceeds the predetermined range of values; and

said encoding step coding the value $(v_2(a_0)$ and the address a_1 by coding the value $v_2(a_0)$ and the relative address of (a_1-a_0) in a Horizontal Mode II where the value $v_1(a_0)$ is not equal to $v_2(a_0)$,

said Vertical Mode, said Horizontal Mode I and said Horizontal Mode II being mutually differentiated from one another by said coding.

4,511,214

FAIRING WHICH FOLDS FLAT INDEPENDANTLY OF ITS MIRROR

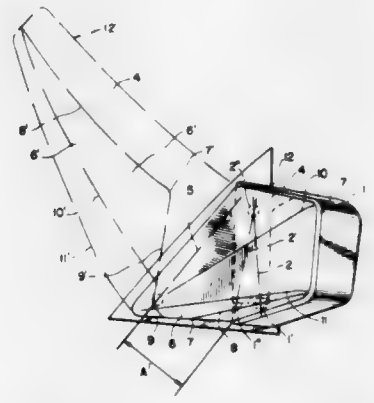
Wilhelm Klein, Aldingen; Jörg Koske, Weil der Stadt; Siegfried Herzog, Steinenbronn; Hans-Peter Jordan, Schonaich; Wilhelm Bauer; Max Bausch, both of Sindelfingen, and Christian Grabner, Gechingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 21, 1983, Ser. No. 460,112

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1982, 3203371

Int. Cl.³ G02B *5/08*; E04G *3/00*

U.S. Cl. 350—632 **5 Claims**



5. An exterior mirror assembly for vehicles responsive to vehicular collision to lie substantially flat against a vehicle body comprising

a mirror housing,

a fairing,

means for causing the fairing to rotate about a first axis in response to vehicular collision, and

means for causing the mirror housing to rotate about a second axis disposed at a substantial angle with respect to the first axis upon vehicular collision.

4,511,215

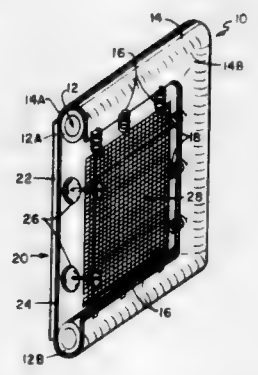
LIGHTWEIGHT DIAPHRAGM MIRROR MODULE SYSTEM FOR SOLAR COLLECTORS

Barry L. Butler, Golden, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 29, 1983, Ser. No. 490,090

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—295 **13 Claims**



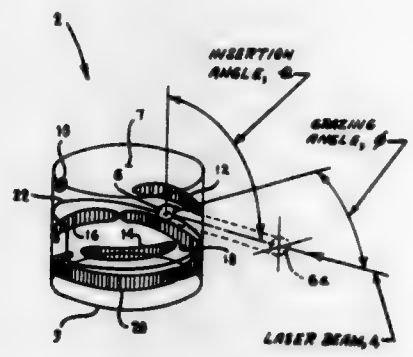
1. A solar energy concentrator comprising:

a frame having a peripheral edge portion thereof and defining a plane;

a semi-rigid membrane positioned on said frame so as to engage the edge portion thereof and extend over the

entire frame on a first side of the plane thereof and over a portion of the frame on a second side of the plane thereof;
engaging means securely coupled to the edge portions of said membrane on the second side of the plane of said frame for applying tension to said membrane;
support means coupled to said engaging means for securely positioning said membrane on said frame in a stretched manner;
a flexible optically reflective surface positioned on an outer surface of said membrane on the first side of the plane of said frame; and
adjustable displacement means coupling said support means and an inner surface of said membrane positioned on the first side of the plane of said frame for selectively changing the surface contour of said optically reflective surface and the focusing characteristics thereof with regard to solar radiation incident thereon.

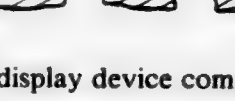
4,511,216
HIGH POWER LASER DUMP
Michael S. Hsu, Lincoln, and James P. Hsu, Arlington, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Aug. 23, 1983, Ser. No. 525,755
Int. Cl.³ G02B *5/20*
U.S. Cl. 350—311 **7 Claims**



1. A high power laser dump comprising:
a metallic body having a cylindrical cavity,
said cavity having closed top and bottom surfaces,
said cavity having a specularly reflective coating formed in a first zone thereof and an energy absorbing coating formed in a second zone thereof,
a hole formed on the side wall of said cylindrical cavity,
means for directing a laser beam through said hole and into said cavity at a grazing angle of less than 90 degrees,
said grazing angle being the angle between the center ray of said laser beam and the tangent of the circular cross section of said cylindrical cavity at the point of entry of said laser beam, and
means for directing said laser beam through said hole into said cavity at an insertion angle of less than 90 degrees,
said insertion angle being defined as the angle between the center ray of said laser beam and the longitudinal axis of said cylindrical cavity.

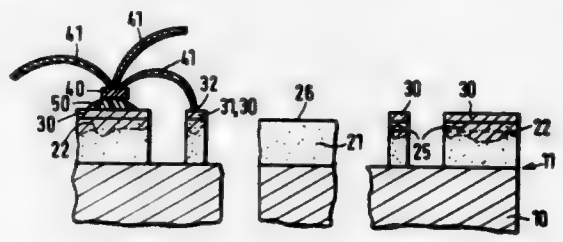
4,511,217
CURVED ELECTRODE PATTERN IN A LIQUID CRYSTAL COLOR DISPLAY CELL
Toshiaki Takamatsu, Nara, and Keisaku Nonomura, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 108,825, Dec. 31, 1979, abandoned, which is a continuation of Ser. No. 829,421, Aug. 31, 1977, abandoned. This application Jan. 26, 1984, Ser. No. 574,194
Claims priority, application Japan, Sep. 7, 1976, 51-120840
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—336 **4 Claims**

1. In a liquid crystal display cell having two substrate means, a plurality of electrode members formed on at least one of said substrate means for display purposes, spacer members positioned between said two substrate means, and a liquid crystal composition filled between said two substrate means, said liquid crystal display cell when having no liquid crystal composition filled between said two substrate means exhibiting characteristic curved shapes of interference fringes due to differences in thickness of said cell across the area of said cell, said curved shapes collectively defining a characteristic configuration of interference fringes across said area, the improvement comprising:



said electrode members being formed on one of said substrate means and being arranged in a generally curved pattern, said curved pattern being substantially symmetrical about and concave to a center line such that an improved uniformity of color indication is provided a segment of the display cell subtended by each electrode member.

4,511,218
ELECTRO-OPTICAL DISPLAY DEVICE AND METHOD FOR ITS PRODUCTION
Bernd Fritz, Lauffen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Nov. 12, 1982, Ser. No. 441,049
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151557
Int. Cl.³ G02F *1/133*; C25F *1/00*
U.S. Cl. 350—356 **4 Claims**



1. An electro-optical display device comprising:
a substrate;
a layer disposed on said substrate, said layer comprising a semi-conductive metal oxide which at the intersection of said substrate and said layer is 100% oxide;
a metallic coating disposed on and adhered to said layer;
wherein the elemental metal content of said layer adjacent said substrate is less than the elemental metal content thereof adjacent said coating and wherein the last one-fifth to one-tenth thickness of said layer on the side thereof adjacent said coating is of 100% elemental metal content; and,
a plurality of electrical leads respectively bonded to selected portions of said metallic coating.

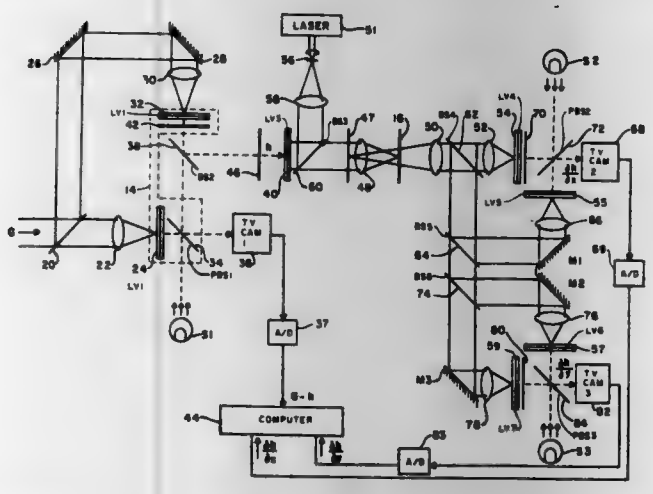
4,511,219
KALMAN FILTER PREPROCESSOR
Michael K. Giles, and Robert B. Rogers, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jun. 15, 1982, Ser. No. 388,574
Int. Cl.³ G02B *27/28*; G02F *1/01*
U.S. Cl. 350—388 **11 Claims**

1. An optical signal preprocessing apparatus for use with a computer employing an extended Kalman filter algorithm, said apparatus comprising:

time averaging means for operating on a source of time varying images to compose an average reference time signal;

subtraction means for subtracting said reference image signal from said source of images, on a continuous basis, to produce a resultant subtraction function image,

first differentiating means for producing a first difference image approximation of a first numbered partial derivative of said reference image signal with respect to a first image dimension,



second differentiating means for producing a second difference image approximation of a second numbered partial derivative of said reference image signal with respect to a second image dimension;

first, second and third optical to electrical signal transducer means for converting said resultant subtraction function image, and said first and second difference image approximations into electrical signals for use with said computer.

4,511,220

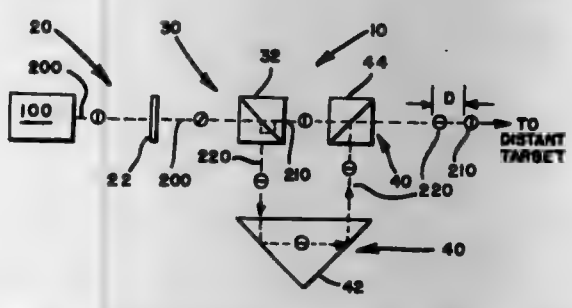
LASER TARGET SPECKLE ELIMINATOR

Charles N. Scully, San Juan Capistrano, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 23, 1982, Ser. No. 452,601

Int. Cl.³ G02B *27/48*

U.S. Cl. 350—403 **4 Claims**



1. A laser target speckle eliminator for use with a linearly polarized laser light beam emitted by a laser having a known coherence length, wherein said laser light beam is polarized vertically, said speckle eliminator comprising:

a. means for rotating said vertically polarized laser light beam 45 degrees, with this means disposed in optical alignment with said emitted laser light beam;

b. means for splitting said rotated laser light beam into two orthogonally polarized components of equal intensity, wherein one component is vertically polarized and the other component is horizontally polarized, and wherein this means is in optical alignment with said means for rotating said vertically polarized laser light beam 45 degrees; and

c. means for recombining said two components of said split and rotated laser light beam such that said components are coincident and have a light path difference which exceeds the coherence length of said laser, wherein this means is in optical alignment with said means for splitting said rotated laser light beam;

whereby two coincident beams result that are orthogonally polarized, that are not coherent with each other, and that have an optical path difference which exceeds said known coherence length of said laser; and

thereby said two beams cannot cause speckle.

4,511,221

REFLEX ZOOM LENS HAVING APERTURE SCALE

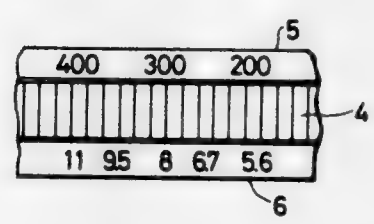
Shinsuke Komoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,914

Claims priority, application Japan, Dec. 25, 1981, 56-198671[U]

Int. Cl.³ G02B *7/10*

U.S. Cl. 350—423 **8 Claims**



1. A reflex zoom lens, comprising in combination, a reflection-type optical system in which the full-aperture F number changes with focal length, an aperture scale including aperture indications, and a focal length scale including focal length indications, said aperture scale and said focal length scale being fixed relative to one another whereby said focal length indications and said aperture indications are fixedly juxtaposed.

4,511,222

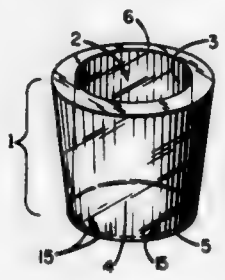
INSPECTION PERISCOPE

Marvin A. Biren, Chestnut Hill, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation of Ser. No. 118,415, Feb. 4, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 359,916

Int. Cl.³ G02B *23/08*

U.S. Cl. 350—441 **10 Claims**



1. An inspection lens for viewing a circumferentially disposed region within an internal, confined area of a structure of the type having inner and outer coaxial surfaces that form a narrow cylindrical passage, said lens comprising:

an optically transparent tubular hollow cylinder having a central aperture therethrough surrounded by an inner sidewall, an outer sidewall, and first and second generally annular end surfaces;

said cylinder being elongate in the direction parallel to said inner sidewall and said outer sidewall;

said cylinder having a tapered outer wall to provide a thinning towards the end of the cylinder having said first annular end surface to permit a portion of said hollow cylinder having said first annular end surface to fit to varying depths between the inner and outer surfaces of said structure while a further portion of said hollow cylin-

der having said second annular end surface projects beyond said cylinder passage;

said first annular end surface providing a focusing and magnifying function, said first annular end surface comprising a lens having in cross-section a curved, sloping optical surface extending between the inner and outer sidewalls for reflecting and focusing an image of said circumferentially disposed region at a predetermined distance from said first annular end surface through said transparent hollow cylinder toward said second annular surface;

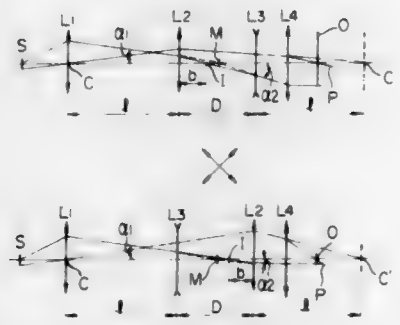
said second annular surface including an optical surface permitting focused viewing of said reflected image therethrough.

4,511,223

TELECENTRIC VARIABLE POWER ILLUMINATION SYSTEM

Hideo Hirose, Kawaguchi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,200
Claims priority, application Japan, Jun. 19, 1981, 56-93729
Int. Cl.³ G02B *21/06*
U.S. Cl. 350—523 **10 Claims**



1. A telecentric variable power illumination system comprising:

a light source;

a converging first unit for forming an image of said light source;

a converging second unit disposed between said converging first unit and an object surface to be illuminated;

a diverging third unit disposed between said converging first unit and the object surface;

a converging fourth unit disposed between said divergent third unit and the object surface, said converging fourth unit having a focal point coincident with the position of the light source image formed by said converging first unit;

said light source image by said converging first unit being formed between said converging second unit and said diverging third unit,

the converging second unit and the diverging third unit being interchangeable in position with each other; and

means for reversibly interchanging the positions of said converging second unit and said diverging third unit while maintaining the telecentricity and while maintaining said light source image between said converging second unit and said diverging third unit.

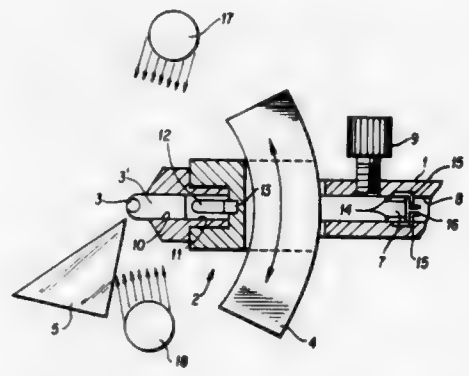
4,511,224

MICROTOME WITH SPECIMEN ILLUMINATION SYSTEM

Helmuth Sitte, Seefeld/Tirol, Austria; Terry W. Cooper, Milton Keynes, Great Britain, and Heinrich Kleber, Vienna, Austria, assignors to C. Reichert Optische Werke, AG, Vienna, Austria

Filed Aug. 1, 1983, Ser. No. 519,283
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 32244449; Sep. 29, 1982, 3235951.
Int. Cl.³ G02B *21/06*; B23Q *3/00*
U.S. Cl. 350—523 **10 Claims**

1. A microtome having a specimen carrier which can be moved relative to a knife, the specimen carrier being provided with a clamping aperture for holding a specimen, and a light



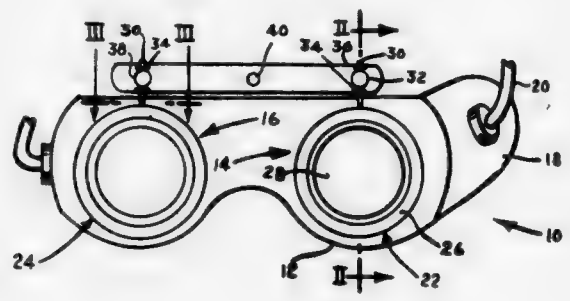
source for illuminating the specimen, the light source being located inside the clamping aperture in the specimen carrier.

4,511,225

VARIABLE NEUTRAL DENSITY LASER GOGGLES

Herbert G. Lipson, 68 Aldrich Rd., Wakefield, Mass. 01880

Filed Dec. 23, 1982, Ser. No. 452,600
Int. Cl.³ G02C *7/12*
U.S. Cl. 351—49 **2 Claims**



1. Variable density laser goggles comprising:

a frame made of laser opaque material having a left and a right eye opening therein, said frame preventing laser radiation from entering into a user's eyes except through eye openings;

means for holding said frame to the user's head;

a plurality of variable density filter units removably secured to said frame in said eye openings, each of said filter units having a housing with means for removable attachment to said frame, means for removable attachment to another of said filter units, and for removable attachment to a laser filter for invisible radiation, said filter units having a three element polarizer mounted in said housing, and means for varying the absorbance of said polarizer, said three element polarizer providing an extended rotation adjustment range such that a user is able to precisely select a given absorbance without excessive attempts;

means for coupling said filter units in each of said eye openings wherein the amount of absorbance in each eye opening is substantially equal; and

means for filtering out invisible laser radiation removably attached to said filter units.

4,511,226

AVIATOR EYEGLASSES

Walter Freeman, 2501 Liberty St., Allentown, Pa. 18104

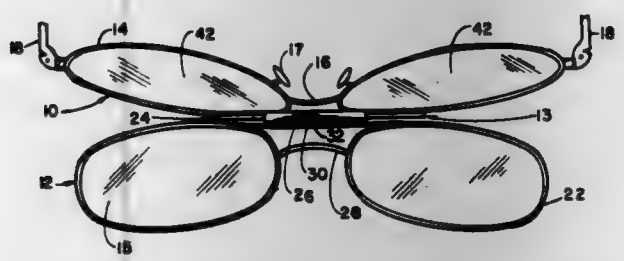
Filed Apr. 1, 1983, Ser. No. 483,944
Int. Cl.³ G02C *7/08*
U.S. Cl. 351—57 **3 Claims**

1. In a pair of conventional wire-framed eyeglasses including two lenses, each lens circumferentially surrounded and retained by a wire frame, two movable nose pads attached to the inner edges of the lenses on their respective wire frames, two

wire temple pieces movably attached to and extending one each from the outer edges of each lens on respective wire frame, a wire bridge joining said lenses at the inner edges of their respective wire frames, and a resilient, double bar wire extending from the upper inside of one lens to the upper inside of the other lens, the improvement comprising:

(a) an auxiliary set of eyeglasses, each lens framed circumferentially with wire, said auxiliary eyeglasses also including a bridge and a resilient double bar wire;

(b) a wire crossbar attached at its ends, one each to said wire frame of said auxiliary eyeglasses proximate the frame's center top;



(c) a generally cylindrical sleeve circumscribing said auxiliary eyeglasses' wire crossbar, said sleeve sized to allow rotation of said crossbar inside said sleeve, said sleeve attached on each end to said wire lens frame of said conventional eyeglasses so that said sleeve joins said auxiliary lenses to said conventional eyeglasses; and,

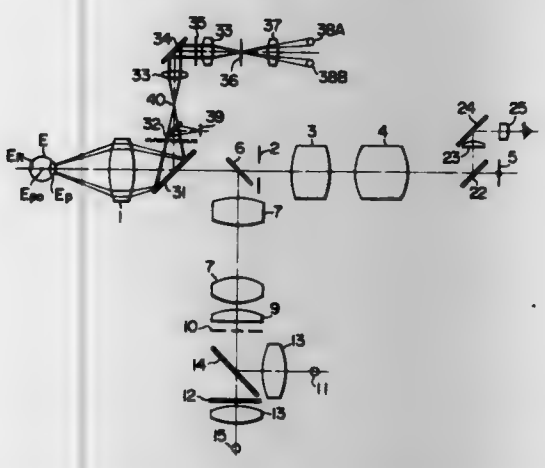
(d) a detent on said sleeve at said sleeve's proximate center whereby when said auxiliary eyeglasses are rotated upward away from said conventional wire-framed eyeglasses, said detent catches said resilient double bar wire of said auxiliary eyeglasses and retains said auxiliary eyeglasses in a predetermined position.

4,511,227

OPHTHALMIC APPARATUS HAVING MEANS FOR AUTOMATIC DETECTION OF APPROPRIATE POSITION OF EYE TO BE EXAMINED

Kazuo Nunokawa, and Masayuki Masuyama, both of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,575
Claims priority, application Japan, Sep. 24, 1980, 55-132662
Int. Cl.[3] A61B *3/14, 3/10;* G03B *29/00*
U.S. Cl. 351—208 **3 Claims**



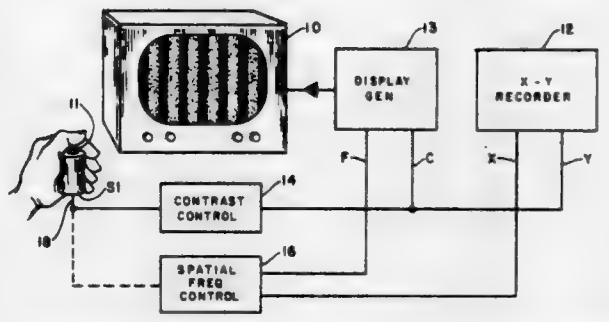
1. An opthalmoscopic apparatus comprising objective lens means having an optical axis and adapted to be positioned opposite to a patient's eye with a working distance, said patient's eye having a cornea with a center of curvature, means for detecting that the eye is properly positioned with respect to the objective lens means, said detecting means including a single target, a target image projection system adapted to project said target image by way of at least two light beams crossing each other on the optical axis of the objective lens means so that a target image is formed by each of the beams at the center of curvature of the cornea of the eye when the eye is properly positioned with respect to the objective lens means, a target image plane for forming target images, by mirror reflection at the cornea, of the light beams projected through the target projection system, whereby the spacing of the target images is changed in response to a change in the working distance and the target images are formed at the same position with the eye at the proper working distance.

4,511,228

MEASUREMENT OF VISUAL CONTRAST SENSITIVITY

Henning E. von Gierke, Yellow Springs, and Adolf R. Marko, Fairborn, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1982, Ser. No. 403,247
Int. Cl.[3] A61B *3/02*
U.S. Cl. 351—243 **17 Claims**



1. Visual examination apparatus for measuring visual contrast sensitivity of a subject using a display unit and recording means, the display unit having means to display on a screen a pattern comprising a sequence of light and dark areas at a selected spatial frequency with contrast which varies in accordance with the value of an analog characteristic of a first signal at a first input, said apparatus comprising:

contrast control circuit means having an output coupled to said first input for supplying said first signal, with means for varying said characteristic so that the contrast of said pattern may be automatically varied in an increasing or decreasing direction;

subject response means for developing a response signal having one or the other of two discrete signal states, the state being changeable under control of the subject in attempting to keep the contrast at a threshold level, the subject response means being coupled to the contrast control circuit means so that the direction of change of said characteristic is increasing for one state of said response signal and is decreasing for the other state and the contrast increases or decreases in accordance with the subject's response;

the output of the contrast control circuit means being also coupled to the recording means to record contrast values corresponding to the values of said characteristic at which the response signal changes condition.

4,511,229

METHOD AND APPARATUS FOR EVALUATION OF COLOR INFORMATION IN PHOTOGRAPHIC PROCESSES

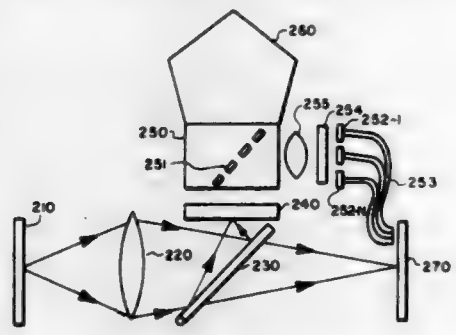
Jack Schwartz, and Tai T. Wu, both of 147 Ridge St., Arlington, Mass. 02174

Filed Jun. 9, 1983, Ser. No. 502,561
Int. Cl.[3] G03B *41/00*
U.S. Cl. 354—20 **16 Claims**

1. A method of compensating for color variations in the light source illuminating a scene to be photographed, said method comprising

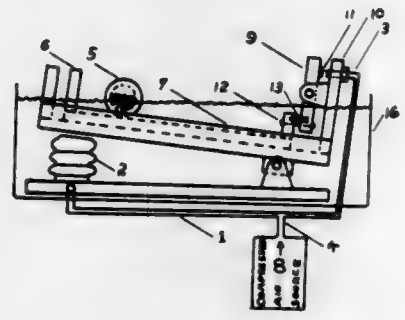
A. collecting a sample of light from said illuminating source;

B. coupling said sample to a plurality of test filters of preselected colors;
C. recording a color sample from each said test filter;
D. comparing each said recorded color sample against a corresponding plurality of color reference standards; and



E. calculating from said comparison the color compensation required to correct for said color variations in said light source.

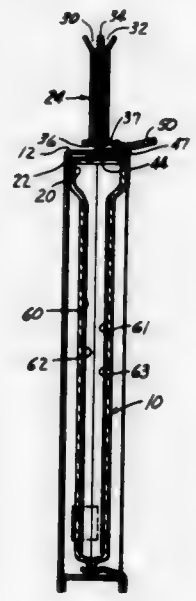
4,511,230
PHOTOGRAPHIC PROCESSING APPARATUS INCLUDING A ROCKING PLATFORM AND A ROLLING DEVELOPING TANK
Neil B. Cartwright, 693 E. 16th St., Idaho Falls, Id. 83401
Filed Sep. 9, 1983, Ser. No. 530,603
Int. Cl.³ G03D *3/04*
U.S. Cl. 354—299 **1 Claim**



1. Apparatus for uniformly processing photographic roll film, or photographic sheet material, said apparatus comprising: a base for supporting a rocking platform attached to said base, a sliding tray that slides back and forth on said rocking platform, said tray supporting a rolling developing tank, means for raising and lowering said rocking platform at one end by use of an air bellows, causing said tank to roll back and forth, means for supplying compressed air to said bellows, means for alternately introducing and exhausting air from said bellows by use of a mechanical air valve, said valve activated by action of said sliding tray alternately jarring and pulling an air valve paddle that opens and shuts said air valve, means for regulating the rate of rolling of said developing tank by adjusting the air supply pressure, means for operating the apparatus in a constant temperature water bath.

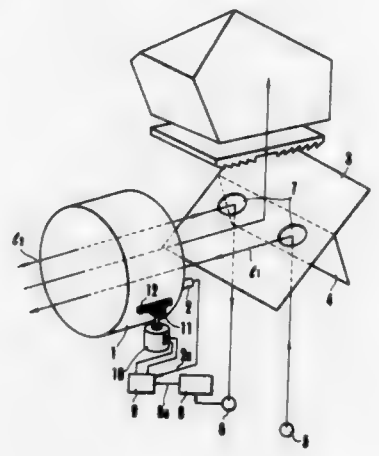
4,511,231
PROCESSING TANK FOR MAKING PHOTOGRAPHIC CONTACT PRINTS
Benjamin F. Ashby, 23942 Paseo del Campo, Laguna Niguel, Calif. 92677
Filed Jan. 10, 1984, Ser. No. 569,663
Int. Cl.³ G03D *9/00, 13/04*
U.S. Cl. 354—301 **15 Claims**

1. A processor for use in contact print processing of sheets of the diffusion transfer type, comprising:
a vertically oriented tank adapted to hold a developing solution, and including a pair of parallel tank walls spaced apart from one another, said tank having an upper aperture;
sheet guide means disposable adjacent to said aperture, said guide means comprising a separator disposed between a pair of parallel slots, which includes a pair of diverging guide members, one adjacent to each said slot, to deflect a respective one of said sheets from the respective slot toward a respective tank wall; and
compression means removably disposable adjacent to said aperture, said compression means including a straight-edged resilient member adapted to exert a compressive wiping force on said sheets when they are pulled past said resilient member;



whereby with solution in said tank, said sheets may be shoved through said slots and deflected toward respective tank walls by said guide means, and slide along said walls, after which said sheet guide means is removed and said compression means is disposed as aforesaid, and the upper ends of said sheets are pulled upwardly to draw the sheets past said compression means to press them together and remove the solution.

4,511,232
AUTO-FOCUS CAMERA
Yasuyuki Yamada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 17, 1983, Ser. No. 495,426
Claims priority, application Japan, May 28, 1982, 57-90770; May 12, 1983, 58-81698
Int. Cl.³ G03B *13/22*
U.S. Cl. 354—403 **1 Claim**



1. An automatic focus camera comprising:
A. detecting means for receiving light passing through an interchangeable lens and and for detecting an in-focus position of the lens,
said light for detection of the in-focus position being in a different wavelength region from an image forming light

focused on a light-sensitive material through the objective lens;

B. signal receiving means for receiving a signal from an interchangeable lens,

said signal receiving means for producing chromatic aberration correction information as an electric signal representing a wavelength region of the interchangeable lens;

C. in-focus signal generating means for producing an in-focus signal on the basis of a signal from said light-receiving means; and

D. drive signal generating means responsive to the in-focus signal and the chromatic aberration correction information, for producing a signal to move said objective lens to the in-focus position that has been corrected for deviation based on the difference between the aberrations of the in-focus detecting light and the image forming light;

E. drive means for driving the objective lens to the in-focus position on the basis of the output signal of the drive signal generating means.

4,511,233

CHARGE CONTROL DEVICE IN A FLASH DEVICE FOR A CAMERA

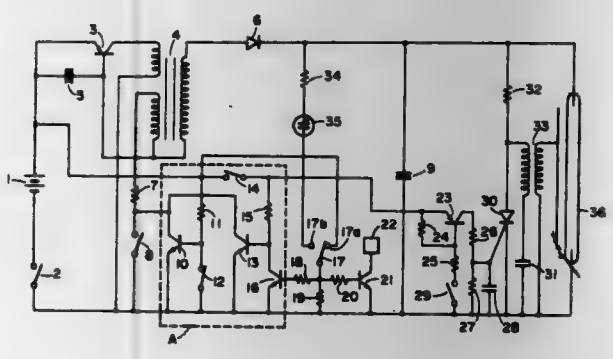
Kazuyuki Kazami, Tokyo, and Yoshiaki Ohtsubo, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Division of Ser. No. 257,356, Apr. 24, 1981, Pat. No. 4,441,774. This application Sep. 16, 1983, Ser. No. 532,951

Claims priority, application Japan, May 14, 1980, 55-62737; May 15, 1980, 55-65580[U]; May 15, 1980, 55-65581[U]; May 16, 1980, 55-66202[U]

Int. Cl.³ G03B *7/16*

U.S. Cl. 354—418 **3 Claims**



1. A flash device adapted to be operatively associated with a camera which automatically carries out a sequence of operations including initiation of photography causing depression of a shutter button and opening of a shutter, and a finishing operation of the photography causing closing of the shutter, returning of the shutter button and take-up of one frame of film, the flash device comprising:

(a) a main capacitor for storing energy for generating flash light;

(b) means for supplying direct current voltage;

(c) a voltage convertor connected to said voltage supplying means and applying a boosted voltage of said direct current voltage to said main capacitor, the voltage convertor including a booster transformer and an oscillation circuit for applying an alternating current voltage to a primary winding of the transformer, the oscillation circuit being energized until said main capacitor is sufficiently charged;

(d) actuating switch means for triggering said oscillation circuit to intitiate oscillation thereof, the switch means being previously operated prior to said sequence in the camera; and

(e) re-actuating circuit means for triggering said oscillation circuit to initiate oscillation thereof, the reactuating circuit means being operatively associated with said finishing operation of said sequence.

4,511,234

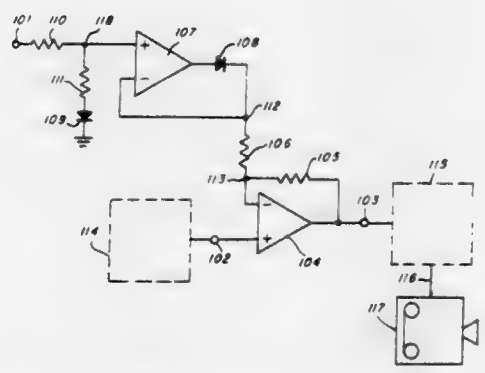
GAIN SWITCHING AMPLIFIER

Bernhard H. Andresen, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 307,720, Oct. 2, 1981, abandoned. This application Feb. 23, 1984, Ser. No. 582,133

Int. Cl.³ G03B *7/083*

U.S. Cl. 354—428 **4 Claims**



2. A camera having a shutter for controlling the time light from an image to be recorded impinges a light sensitive recording material comprising:

(a) means for translating at least a portion the light from the image into an electronic signal;

(b) a logarithmic compression amplifier for amplifying said electronic signal as a logarithmic function of the magnitude of said signal;

(c) a second amplifier having an input to which said signal is applied, and having a predetermined gain within a predetermined range of said signal to produce an amplified signal;

(d) a circuit for compensating for reciprocity failure of the recording material, including means responsive to the magnitude of said signal for controlling the gain of said second amplifier outside said predetermined range;

(e) means to which said amplified signal is applied for logarithmically decompressing said amplified signal to produce a decompresses signal; and

(f) means for controlling the timing of said shutter in accordance with said decompressed signal.

4,511,235

SIMPLIFIED PAPER LOADING MECHANISM

Thomas J. Koller, West Linn, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 6, 1982, Ser. No. 446,883

Int. Cl.³ G03B *27/00*; G03G *15/00*

U.S. Cl. 355—1 **11 Claims**

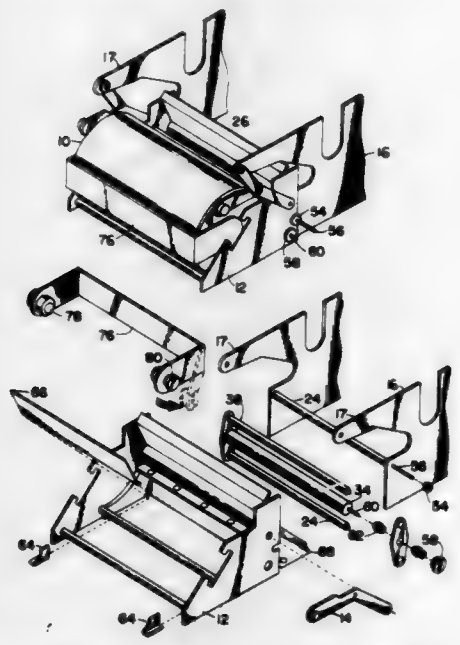
1. A paper loading mechanism for a copier for loading a continuous web of paper from a paper canister through a predetermined path, comprising:

cassette holder means for holding said paper canister in a predetermined position;

roller means including at least a paper drive roller means for feeding the paper into said copier and a foam roller means for pressing the paper against an image forming means of said copier, said drive roller means and said foam roller means being mechanically coupled together; and

paper guide means positioned intermediate said cassette holder means and said drive roller means for properly

guiding the paper from said cassette holder means to said drive roller means, one part of said paper guide means



being in contact with said foam roller means for feeding the paper to said drive roller means.

4,511,236

ELECTROPHOTOGRAPHIC PROCESS

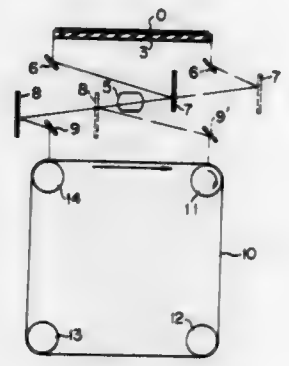
Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 452,899

Claims priority, application Japan, Dec. 24, 1981, 56-210312

Int. Cl.³ G03B *27/34, 27/40, 27/70, 15/04*

U.S. Cl. 355—3 BE **12 Claims**



1. An electrophotographic process, comprising the step of:

moving a photosensitive member in the form of a belt and having a number of image forming regions, N_S, on a peripheral surface thereof, where N_S is equal to or greater than one, along an arcuate path so that the peripheral surface undergoes a cyclic movement in a given direction and such that said photosensitive member presents a planar configuration in the area where it is subject to exposure;

using a means for defining a slitwise exposure position, slitwise exposing the photosensitive member to a light image of an original during the movement of said photosensitive member thereby to define an electrostatic latent image which corresponds to the original, comprising,

moving, simultaneous to moving of said photosensitive member, the location of said slitwise exposure position at a uniform rate in the direction of movement of the peripheral surface of said photosensitive member and selecting the number of times, N_T, the same latent image is used in subsequent developing processing to be equal to or greater than two;

developing each said same latent image into a resulting visual image;

transferring each said resulting visual image from said photosensitive member to another media.

4,511,237

ELECTROPHOTOGRAPHIC REPRODUCING MACHINE

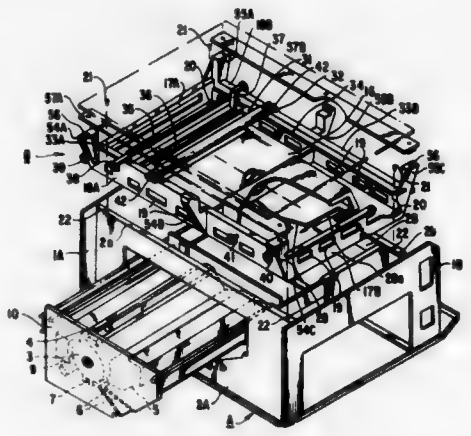
Shun Kawata, Tokyo; Isao Nosaka, Hachioji, and Hiroshi Katakura, Fuchu, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,820

Claims priority, application Japan, Apr. 8, 1982, 57-58523; Apr. 8, 1982, 57-58524; Apr. 8, 1982, 57-58525; Apr. 8, 1982, 57-58526; Apr. 8, 1982, 57-58527; Apr. 8, 1982, 57-58528; Apr. 8, 1982, 57-58529; Apr. 8, 1982, 57-58530; Apr. 8, 1982, 57-58531; Apr. 8, 1982, 57-58532

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **16 Claims**



1. An electrophotographic reproducing machine wherein an integrally formed dish-like housing for an exposure optical system which accommodates therein a slit plate for scanning of an exposure lamp, a projection lens, which is formed in its peripheral walls with vent holes for promoting ventilation within said machine and which has at its bottom portion a shield bottom wall serving as also a heat insulating plate is mounted onto a machine frame which accommodates therein a plurality of process units for reproducing and is opened upward, and a document glass plate is mounted at the top portion of said housing for the exposure optical system through glass mounting plates.

4,511,238

TRAVERSING, INTERMITTENTLY CONTACTING SHEET PICKOFF FOR ELECTROPHOTOGRAPHIC COPIER

Tatsu Hori, Los Altos, Calif., assignor to Savin Corporation, Stamford, Conn.

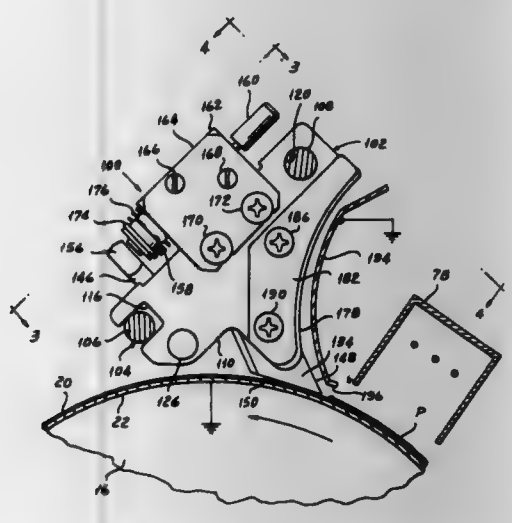
Filed Jul. 13, 1983, Ser. No. 513,359

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **8 Claims**

1. In an electrophotographic copier having a photoconductor, means including a movable scanning element for forming a latent electrostatic image of a document on said photoconductor, means for developing said latent image to form a developed image, means for supplying a carrier sheet to said photoconductor, and means for moving said photoconductor past said image-forming means, said developing means and said sheet-supplying means, apparatus for separating said carrier sheet from said photoconductor including in combination a pickoff element, means for positioning said pickoff element in

engagement with said photoconductor, and means responsive to said scanning element for shifting said pickoff element trans-



versely of said photoconductor with reference to the direction of movement thereof.

4,511,239

DEVELOPING DEVICE

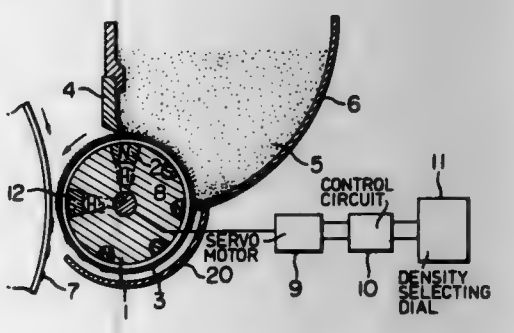
Junichiro Kanbe, Tokyo, and Nagao Hosono, Chofu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 594,961, Apr. 2, 1984, abandoned, which is a continuation of Ser. No. 452,289, Dec. 22, 1982, abandoned, which is a continuation of Ser. No. 114,216, Jan. 22, 1980, abandoned. This application Aug. 29, 1984, Ser. No. 645,530

Claims priority, application Japan, Feb. 2, 1979, 54-11662; Feb. 2, 1979, 54-11663; Feb. 2, 1979, 54-11664

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **10 Claims**



1. A developing device comprising a movable non-magnetic developer-supporting means having a surface in facing relation to a fixed magnet, means for supplying magnetic developer, a magnetic member positioned at a principal pole of said magnet and in spaced relation to an opposite surface of said developer-supporting means for defining by magnetic force the application of said magnetic developer onto said opposite surface of said developer-supporting means, and means for regulating the relative position of said magnetic member with respect to said principal pole within the range of the magnetic field of said magnet to thereby adjust the development density.

4,511,240

ELECTROSTATIC RECORDING APPARATUS

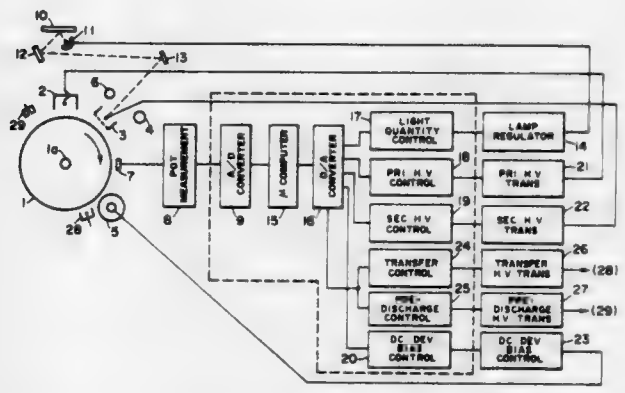
Koji Suzuki, Yokohama; Kouki Kuroda, and Jyoji Nagahira, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1982, Ser. No. 338,045

Claims priority, application Japan, Jan. 13, 1981, 56-2637; Jan. 13, 1981, 56-2638; Jan. 13, 1981, 56-2639; Jan. 13, 1981, 56-2640; Jan. 13, 1981, 56-2641; Jan. 13, 1981, 56-2643; Jan. 14, 1981, 56-3253; Jan. 14, 1981, 56-3254; Jan. 14, 1981, 56-3255; Jan. 14, 1981, 56-3256; Jan. 14, 1981, 56-3257; Jan. 14, 1981, 56-3258; Jan. 14, 1981, 56-3259

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **11 Claims**



1. An image forming apparatus comprising:

exposure means for exposing an image onto a recording medium;

image forming means utilizing said exposed image for forming an image on said recording medium; and

control means for detecting an image forming condition corresponsing to reflected light from a sample member and for controlling an operation condition of said exposure means based on the detected condition, wherein said control means further controls an operation condition of said image forming means in accordance with magnification of the image formation.

4,511,241

COPYING APPARATUS

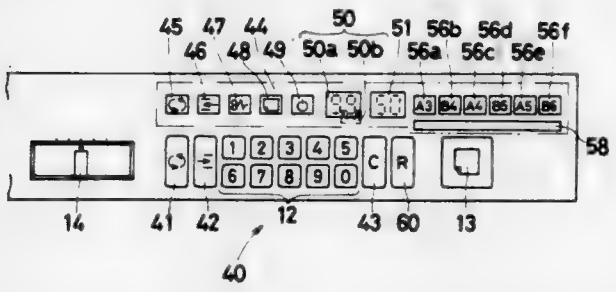
Hideaki Tsudaka; Takaji Washio; Nobuhiko Kozuka; Masahide Iseki; Toshio Watanabe; Masami Kai; Toshio Yoshiyama, and Hiromi Sakata, all of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jul. 21, 1982, Ser. No. 400,284

Claims priority, application Japan, Jul. 21, 1981, 56-114941; Jul. 21, 1981, 56-114942; Nov. 27, 1981, 56-191275

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 CU **16 Claims**



1. In a copying apparatus for performing a successive copying operation mode wherein a first preset number of copying operations corresponding to a first original document is performed successively according to a preset operation, and for performing an operation wherein after a second preset number of copying operations corresponding to a second original document is intruded to be copied on the way of the successive

copying operation mode, the remaining number of copying operations of the first preset number corresponding to the first original document is performed, the improvement comprising;

a preset number display element for displaying the first and the second preset number of copying operations,

a first counting means for counting copying operations at each time when a single of copying operation is performed,

a copy number display element for indicating a number counted by the first counting means,

a second counting means for counting a copy paper discharged after completion of copying operation,

a detecting means for dectecting an occurrence of copy paper jamming, and

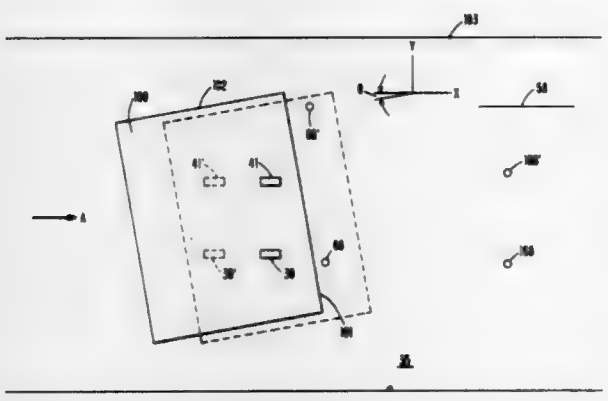
a control means for revising the value counted by the first counting means to a value counted by the second counting means when a copy paper is jammed.

4,511,242

ELECTRONIC ALIGNMENT FOR A PAPER PROCESSING MACHINE

William H. Ashbee; Donovan M. Janssen, both of Boulder; Ronald J. Martin, Loveland, and William S. Seaward, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,233
Int. Cl.³ B65H *9/20, 9/00;* G03B *27/00;* G03G *15/00*
U.S. Cl. 355—14 C **41 Claims**



1. An image producing machine including means for electronically aligning components of said machine for producing a nominally correct position at which image receiving sheets serially fed through said machine are properly aligned with images serially produced by said machine, comprising:

a processing station;

drive means for moving a receiving sheet through said processing station;

means for producing an image on said receiving sheet;

means for developing said image;

aligning means for electronically aligning components of said machine to adjust the relative position of said image and said image receiving sheet;

control means including programmable logic means connected to said aligning means to cause said aligning means to set up said machine to define a nominally correct position whereat images and image receiving sheets are properly aligned one with the other for subsequent production, said set up in accordance with a measure of alignment of the position of said image on said receiving sheet; and

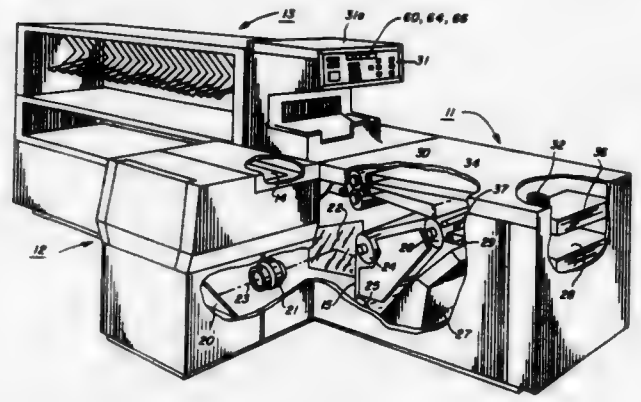
entering means for introducing said measure of alignment into said control means.

4,511,243

TIME TO COMPLETION INTERACTION FOR A COPIER

Craig A. Smith, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1983, Ser. No. 485,352
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 CU **4 Claims**



1. The method of providing a continuous ongoing time to or of completion indication in regard to a programmed reproduction run in an electrostatographic printing system having a copy sheet processor including a machine clock system adapted to provide a signal indicative of the constant time to produce a single copy during the run and the copy sheets exiting the processor, comprising the steps of:

generating a signal indicative of the total number of copies to be produced during the run from the number of originals supplied by an operator and the number of copies programmed for the run,

generating a signal indicative of the total time required to produce the programmed run from the application of the signal indicating the constant time to produce a single copy to said signal indicating the total number of copies to be produced,

continuously modifying said total time signal as copies are being produced by a signal from a real time device thereby providing a continuous ongoing time to completion of the reproduction run, and

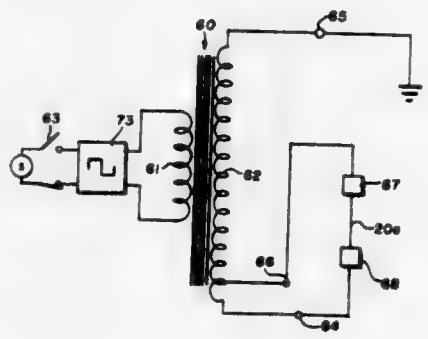
displaying said continuously modified signal in a display device as a countdown time to or of completion for the programmed run.

4,511,244

CORONA GENERATING APPARATUS AND METHOD

Hans P. Baumeister, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,444
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 FU **8 Claims**



1. In an apparatus for generating a corona discharge current, the apparatus including:

an electrode having first and second terminals for producing a corona discharge current when connected to a source of

electrical potential that is sufficiently high to cause said electrode to generate a corona discharge current;

a transformer having a pair of output terminals between which a high EMF is generated, means coupling one terminal of the electrode to one of the terminals of the transformer to establish an electrical potential that is sufficiently high to produce a corona discharge current; and the improvement which comprises:

means tapping an intermediate output of the transformer and coupled to the other terminal of the electrode for establishing a relatively small EMF between the ends of the electrode for generating a current through said electrode.

4,511,245

MULTIFUNCTION REPROGRAPHIC APPARATUS

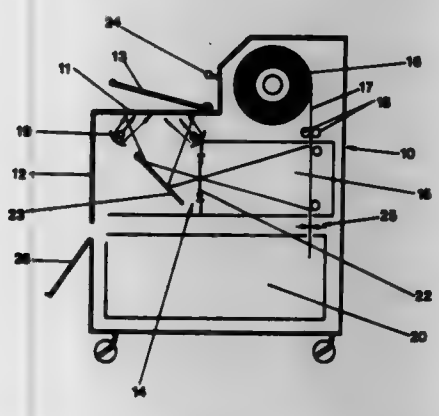
Fred Luscher, 22, Quai du Cheval-Blanc, 1227 Geneva, Switzerland

Filed Mar. 27, 1979, Ser. No. 24,439

Claims priority, application Switzerland, Mar. 30, 1978, 3380/78

Int. Cl.³ G03B *27/52, 27/70*

U.S. Cl. 355—43 **6 Claims**



1. Multifunction reprographic apparatus for alternatively making a photocopy of a two-dimensional original or a photograph of a three-dimensional subject, said apparatus comprising a housing having front, top and rear walls, a first window in said front wall of the housing, a second window in the top wall of the housing, means positioning photosensitive paper vertically in said housing in front of said rear wall, an optical system comprising an objective lens for focusing an image on said photosensitive paper and a mirror movable between a first position in which an image of a 3-dimensional subject positioned in front of and spaced from said first window is directed by said objective lens onto said photosensitive paper and a second position in which an image of a 2-dimensional original placed on said second window is directed by said mirror and said objective lens onto said photosensitive paper, means in said housing for illuminating an original placed on said second window, and change-over means for moving said mirror between said first and second positions and for moving said objective lens along its optical axis toward said photosensitive paper to change the size of the image and depth of field of said optical system when said mirror is moved from said second position to said first position.

4,511,246

SIZE DETECTING DEVICE OF A COPY DOCUMENT SUITABLE FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

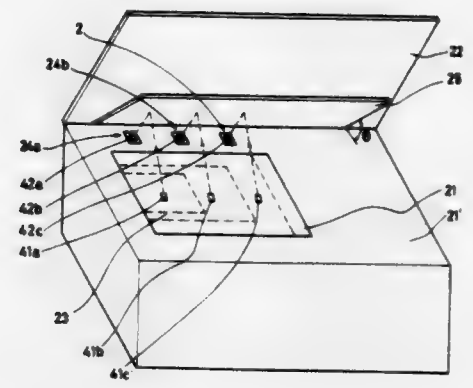
Haruo Nishiyama, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1984, Ser. No. 594,729

Claims priority, application Japan, Apr. 20, 1983, 58-60019[U]

Int. Cl.³ G03B *27/62;* G03G *15/00*

U.S. Cl. 355—75 **10 Claims**



1. A detecting device for detecting the size of a copy document for an electrophotographic copying machine comprising:

document table means on which the copy document is placed;

document cover means pivotally provided on the document tables means to cover the copy document;

sensor means for sensing the size of the copy document on the document table means, the copy document being subjected to optical scanning; said sensor means comprising a light receiving element for receiving light and a light emitting element for emitting light;

light reflecting means pivotably disposed between the document table means and the document cover means, whereby the angle of disposition of the light reflecting means can be varied independent of the document cover means,;

said light emitting element of the sensor means emitting light toward the reflecting means and said light receiving element of the sensor means receiving light reflected by the reflecting means; and

detection means responsive to the output of the light receiving element of the sensor means for detecting the size of the copy document.

4,511,247

SURVEYING TECHNIQUE WITH CORRECTION OF OPTICAL ERRORS CAUSED BY ATMOSPHERIC TURBULENCE

Paul A. McGovern, 440 Second St., Dunellen, N.J. 08812, and Mauro Zambuto, 445 W. 23 St., New York, N.Y. 10011

Filed Aug. 31, 1982, Ser. No. 413,478

Int. Cl.³ G01C *5/04*

U.S. Cl. 356—3 **11 Claims**

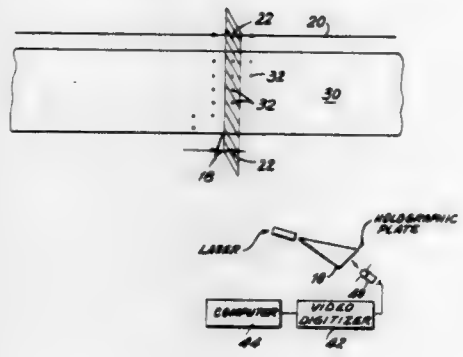
1. A method of surveying a structure of large dimension in which optical errors caused by environmental turbulence are statistically corrected comprising:

placing visible grid markers at predetermined locations on said structure;

reconstructing a holographic reference grid and superimposing the reconstructed reference grid on selected ones of said grid markers;

recording the locations of images of said selected grid markers and of the reconstructed grid a plurality of times; and

determining statistical means of the locations of the images of each said selected grid marker relative to the reconstructed grid from said plurality of said recordings thereof.

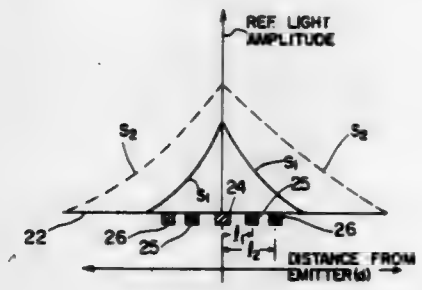


4,511,248

ACTIVE ELECTRO-OPTICAL DISTANCE DETECTION METHODS AND DEVICES

Daniel C. Abbas, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,002
Int. Cl.³ G01C *3/08, 3/10*
U.S. Cl. 356—4 **6 Claims**



1. A device for determining the distance to a light reflective object, said device comprising:

(a) lens means having an optical axis and a focal plane;

(b) emitter means for directing light through said lens means to such object from an emitter zone at or proximate said focal plane;

(c) detector means for producing signals indicative of the amplitude of light, within the blur circle formed by the light reflected from said object back through said lens means, at two detection zones respectively located at different distances from said emitter zone, said detection zones being coplanar with said emitter zone in a plane substantially normal to the optical axis of said lens means; and

(d) signal processing means responsive to the detector means signals to produce an output signal indicative of the difference in amplitudes of such detector means signals, such that said output signal is substantially proportional to the slope of the distance-from-emitter zone versus light-amplitude curve of object reflected light, such slope varying predictably with object distance; whereby said output signal is indicative of an object's distance from the device.

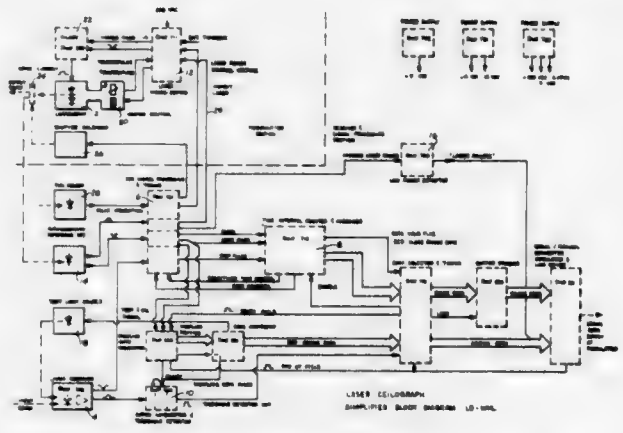
4,511,249

MICROPROCESSOR-DRIVEN LASER CEILOMETERS

Frank Frungel, Herwigredder 105a, 2000 Hamburg 56, DE, and Jürgen Rohr, Barmbeker Str. 163, 2000 Hamburg 60, DE, both of Fed. Rep. of Germany

Continuation of Ser. No. 225,968, Jan. 14, 1981, abandoned. This application Oct. 20, 1983, Ser. No. 543,782
Int. Cl.³ G01C *3/08;* **H01J** *40/14;* **H01L** *9/00*
U.S. Cl. 356—5 **7 Claims**

1. An automated self-checking long lived laser ceilometer including a transmitter and a receiver, said transmitter comprising a laser diode array consisting of a plurality of laser diodes; an electronic pulse generator having an input and an output and being set for driving respective laser diodes of said array at less than the normal maximum pulse peak power and/or repetition rate; an auxiliary photosensitive feed-back control member receiving at said transmitter a part of the laser light emitted by said transmitter for feed-back controlling the



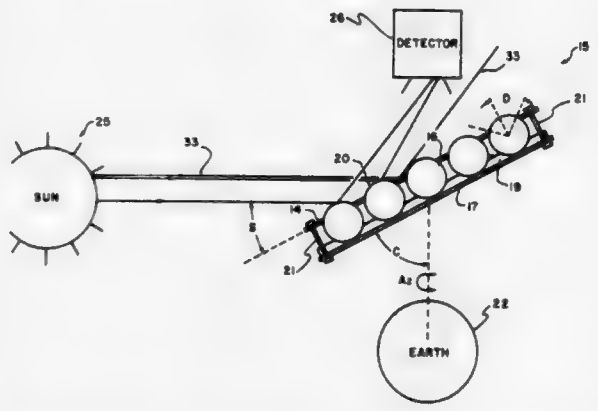
input of said pulse generator, the feed-back control being dimensioned in such a way that dropping of the emitted laser power due to aging or a failure of a laser diode is continuously compensated by higher input of said pulse generator; and an analogue or digital power indicator coupled to the output of said pulse generator to show the measure of fading of said laser diode array, thereby enabling the user for provide a timely replacement of said laser diode array.

4,511,250

APPARATUS FOR MEASURING SCALAR IRRADIANCE

Arthur A. Olsen, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jul. 20, 1981, Ser. No. 284,424
Int. Cl.³ G01J *1/42*
U.S. Cl. 356—225 **2 Claims**



1. An apparatus for measuring the scalar irradiance of a given vicinity produced by all sources over a given angular range, comprising:

a planar array of convex spherical surfaces;

a detector oriented toward said array;

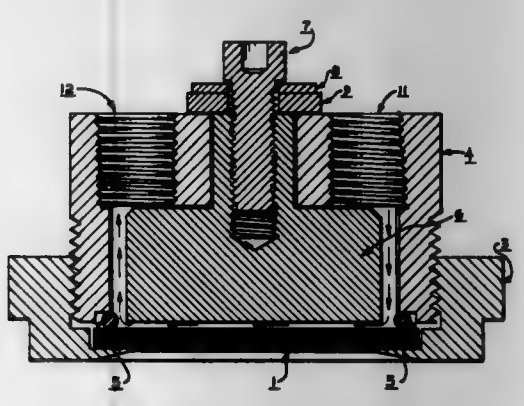
shielding between said convex spherical surfaces to limit the portion of each sphere which is within the view of said detector wherein said shielding is a plate having holes which abut and secure said convex spherical surfaces.

4,511,251

APPARATUS AND PROCESS FOR MEASURING THE COLOR OF PAINTS

Allan F. Falcoff, Lake Orion; Eric Mikkelsen, Pontiac, and Allan B. J. Rodrigues, Bloomfield Hills, all of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 10, 1982, Ser. No. 440,572
Int. Cl.³ G01N *21/05*
U.S. Cl. 356—246 **2 Claims**



1. An apparatus for inspection of a fluid comprising:
a cylindrical housing having a cylindrical cavity therein,
a light transmitting window enclosing one end of the cavity,
a cylindrical insert member positioned in said cavity having a flat horizontal surface area and being in a closely spaced relationship with the window providing a fluid chamber where fluid flows between said window and the flat surface area of said insert member at a uniform velocity across the window and said cylindrical insert member having a vertical flat surface on opposite sides of the insert member which in combination with the housing forms an inlet channel to the fluid chamber and an outlet channel from the fluid chamber,
a fluid inlet connected to the inlet channel and a fluid outlet connected to the outlet channel in communication with said fluid chamber, wherein fluid flows through the inlet and through the inlet channel into the fluid chamber and out of the chamber through the outlet channel and the outlet, the flow of fluid through the chamber being an undirectional laminar flow and having a Reynold's Number of 50–200.

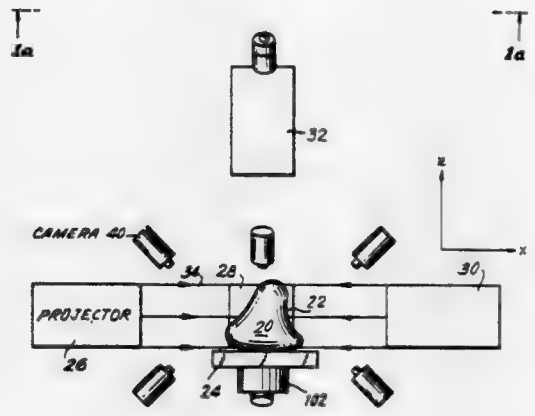
4,511,252

ARRANGEMENT FOR SENSING THE GEOMETRIC CHARACTERISTICS OF AN OBJECT

Paul L. Di Matteo, Huntington; Joseph A. Ross, Fort Salonga, and Howard K. Stern, Greenlawn, all of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Continuation of Ser. No. 608,265, Aug. 27, 1975, Pat. No. 4,175,862. This application Jun. 1, 1979, Ser. No. 44,644
The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.
Int. Cl.³ G01B *11/00*; G01C *11/04*
U.S. Cl. 356—375 **4 Claims**

1. A method for sensing and locating points on a surface comprising the steps of: generating a projection field directed onto a surface; subdividing said projection field into a number of sections; irradiating said surface with different variations of said subdivided projection field so that each section is illuminated at least once; recording within a field of view images of said surface as irradiated by the subdivided projection field; recording a calibrated reference surface and reading said recorded images in relation to said reference surface to define the



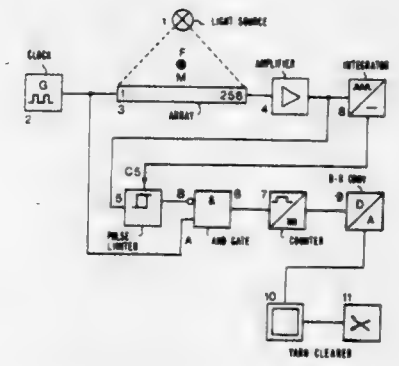
location of a predetermined point on said first-mentioned surface and appearing within said field of view.

4,511,253

DEVICE FOR MEASURING THE TRANSVERSE DIMENSION OF A THREAD

Rolf Glöckner, Egg, and Hansruedi Stutz, Dietlikon, both of Switzerland, assignors to Gebrüder Loepfe AG, Wetzikon, Switzerland

Filed Sep. 10, 1982, Ser. No. 417,190
Claims priority, application Switzerland, Sep. 30, 1981, 6290/81
Int. Cl.³ G01B *11/10, 11/02*
U.S. Cl. 356—385 **6 Claims**



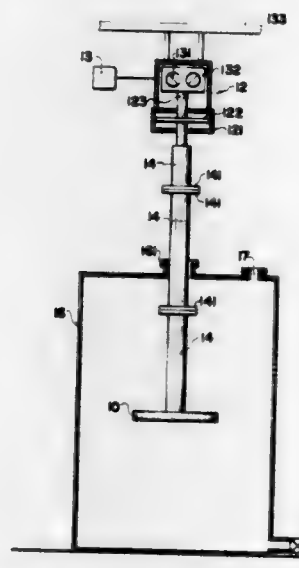
1. A device for measuring the transverse dimension of a thread by means of optoelectronical thread scanning means and thereto connected signal evaluation circuitry:
(A) the optoelectronical thread scanning means comprising:
(i) a light source for illuminating the thread;
(ii) an array of optoelectronical sensors receiving light emanating from the light source and modulated by the thread;
(iii) clock means producing, in successive scanning cycles, pulse series for scanning the array of optoelectrical sensors; and
(B) the signal evaluation circuitry comprising:
(i) amplifying means operatively connected to the array of optoelectrical sensors;
(ii) signal limiting means having a signal input connected to the amplifying means, and a control terminal;
(iii) signal integrating means connected between the amplifying means and said control terminal; and
(iv) logic means having a first input connected to the clock means and a second input connected to the signal limiting means.

4,511,254

CAVITATORS

Henry North, R.R. #16, Thunder Bay, Ontario, Canada (P7B 6B3), and William R. Fauconnier, 1759 Meryle St., Thunder Bay, Ontario, Canada (P0T 2Z0)

Filed Dec. 6, 1982, Ser. No. 447,009
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—118 **22 Claims**



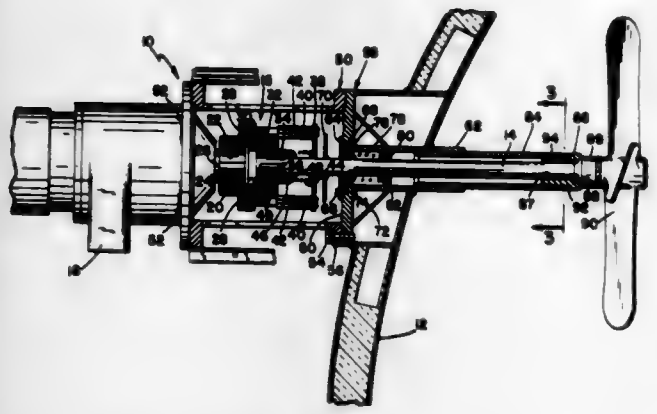
1. A cavitator comprising a chamber, means for admitting and removing fluid material from the chamber, a cavitator plate having opposed cavitator surfaces, means mounting the cavitator plate within the chamber so as to expose both said surfaces to fluid material in said chamber, (for oscillatory movement therein,) high power sonic frequency oscillation means including an eccentric member and means for rotating the member about an axis to produce oscillatory movements and mechanical interconnection means for communicating the oscillatory movement to the cavitator plate (.) whereby said plate causes cavitation of said fluid material, said communicating means having a natural frequency of vibration dependent upon its mechanical construction, the frequency of the oscillatory movement and the natural frequency being arranged such that one is substantially a whole number multiple of the other.

4,511,255

CLEAN-IN-PLACE AGITATOR ASSEMBLY

David O. Saucier, St. Cloud, Minn., assignor to DCI, Inc., St. Cloud, Minn.

Filed Apr. 30, 1984, Ser. No. 605,216
Int. Cl.³ B01F *7/02*
U.S. Cl. 366—138 **7 Claims**



1. In an agitator assembly of the type including a motor connected to the outer end of a drive shaft extending through a tubular housing with an impeller secured to the inner end of the shaft, the improvement which comprises:

means defining a slide coupling interconnecting said motor and shaft for driving rotation and for limited axial movement of said shaft between inner and outer positions;

means for normally biasing said drive shaft toward the outer position;

seal means disposed between said drive shaft and the outer end of said shaft housing;

a bearing/seal member disposed between said shaft and the inner end of said shaft housing;

said impeller including a base portion adapted for rotary sealing engagement with a seat formed in an adjoining end of said bearing/seal member when said shaft is in the outer position;

said bearing/seal member including at least one longitudinal passage extending between the ends thereof; and

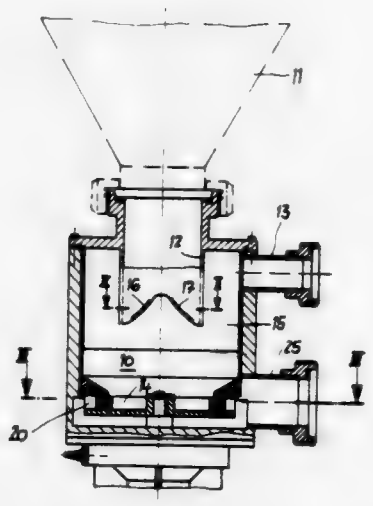
means for introducing cleaning solution under pressure into said shaft housing and through the passage in said bearing-/seal member to urge the base portion of said impeller away from said bearing/seal member so that cleaning solution is discharged into the tank.

4,511,256

APPARATUS FOR THE CONTINUOUS MIXING OF PULVERULENT SUBSTANCES WITH LIQUIDS

Roland Karg, Montana, and Helmut Sattelmaier, Affalterbach, both of Fed. Rep. of Germany, assignors to Ytron Dr. Karg GmbH, Affalterbach, Fed. Rep. of Germany

Filed Sep. 2, 1983, Ser. No. 528,720
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243671
Int. Cl.³ B01F *7/26, 15/02*
U.S. Cl. 366—165 **16 Claims**



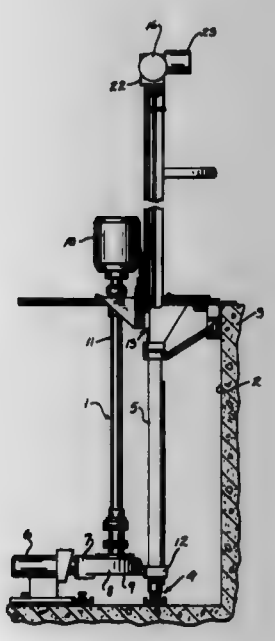
1. An apparatus for the continuous mixing of pulverulent substances and liquids, said apparatus comprising: feed means for feeding pulverulent substances, a mixing chamber arranged below the feed means and into which said feed means extends, liquid suction tube means extending tangentially of and opening into an upper area of the mixing chamber, a pump impeller positioned within said mixing chamber and below said liquid suction tube means, said impeller providing a radially outwardly directed conveying action to material within said mixing chamber, screen means surrounding the pump impeller along an outer circumferential surface thereof, outlet means positioned in the mixing chamber adjacent said impeller, and flow deflectors positioned in an annular space between the feed means and an inner wall of the mixing chamber in such a way that a flow deflection is brought about in the tangentially entering liquid to form a dense mist of liquid droplets that move violently and irregularly to contact and wet the pulverulent substance and form a colloid.

4,511,257

PUMP POSITION RETAINER APPARATUS

James R. Roberts, Grayslake, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Jul. 1, 1983, Ser. No. 510,214
Int. Cl.[3] B01F 5/12
U.S. Cl. 366—262 11 Claims



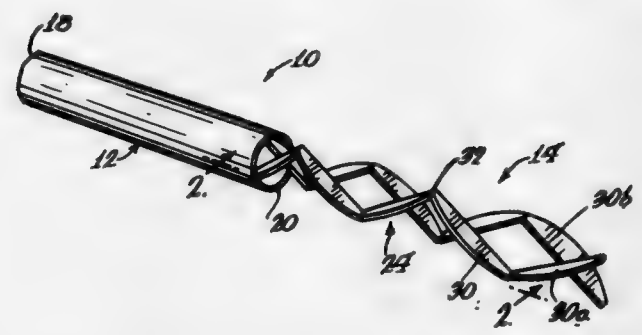
11. An apparatus for retaining the vertical position of an object comprising an object having considerable mass, a fixed supporting structure, means for mounting the object for vertical movement relative to said structure, drive means for raising and lowering the object and including a flexible member interconnected between the object and the supporting structure, the weight of the object applying substantial tension to said flexible member during normal operation of said drive means, descent arresting means operably connected to said object and responsive to slackening of said flexible member for arresting free descent of said object, said descent arresting means comprising a second flexible member having one end connected to said object and being movable in a path of travel in accordance with movement of said first flexible member, said descent arresting means also including locking means mounted for movement between a locking position wherein said locking means engages said second flexible member to prevent movement of said second flexible member and thereby prevent movement of said first flexible member and a release position, slackening of said first flexible member acting to move said locking means from the release to the locking position, said second flexible member comprising a chain having one end connected to said object and the opposite end connected to a weight and a sprocket mounted on the supporting structure to support said cable in travel, said locking means comprising a first locking element secured to the sprocket and a second locking element engageable with said first locking element when said locking means is in the locked position, and a link pivotally connected to the supporting structure, biasing means operably connected to one end of the link to urge the link in one direction, said first flexible member being connected to the opposite end of said link and arranged so that the weight of said object exerts a force on said link opposed to the force exerted by said biasing means and greater than the force of said biasing means, said second locking element being connected to said link, slackening of said first flexible member removing the force exerted by said object on said link and enabling said biasing means to pivot said link and thereby move said second locking element into engagement with said first locking element.

4,511,258

STATIC MATERIAL MIXING APPARATUS

James L. Federighi, and Frank F. Federighi, both of Palatine, Ill., assignors to Koflo Corporation, Arlington Heights, Ill.

Filed Mar. 25, 1983, Ser. No. 478,865
Int. Cl.[3] B01F 5/00, 15/02
U.S. Cl. 366—337 10 Claims



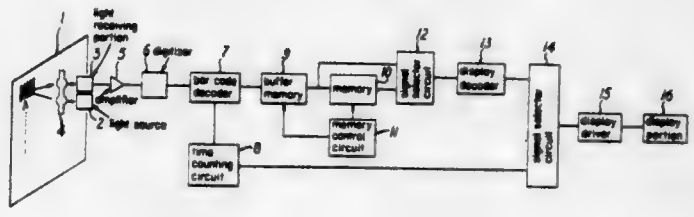
1. A static material-mixing apparatus comprising a conduit having an axis and defining a chamber extending longitudinally therethrough opening on first and second ends of said conduit, a mixing element including two substantially identical continuous segments in said chamber between said first and second ends and each having a sinuous cross-section between said first and second ends, said segments being axially staggered and in engagement with each other generally along said axis with connection means between points of engagement so that said segments substantially close said chamber when viewed from one end thereof.

4,511,259

BAR CODE INPUT ELECTRONIC TIMEPIECE

Teruo Horiuchi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 27, 1983, Ser. No. 498,695
Claims priority, application Japan, May 28, 1982, 57-91043
Int. Cl.[3] G04B 47/00
U.S. Cl. 368—10 12 Claims

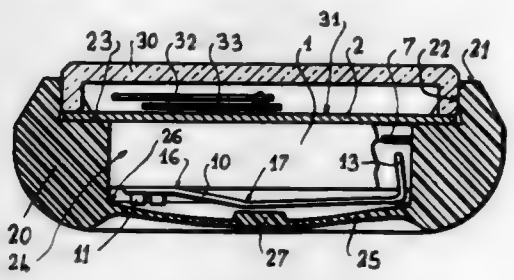


1. In an electronic timepiece of the type having timekeeping means for keeping time and display means for visually displaying time information: read-in means for reading in bar code data representative of selected information in bar-coded form and producing corresponding coded data signals; decoding means for decoding the coded data signals and producing corresponding decoded data signals representative of the selected information in bar-decoded form; memory means for storing the decoded data signals; and read-out means for reading out the decoded data signals from the memory means and producing corresponding display drive signals and applying the display drive signals to the display means for visually displaying the selected information.

4,511,260
IMPROVED QUARTZ WATCH HAVING A SEMI-RIGID WATCH CASE BOTTOM AND A TIME SETTING SYSTEM USING AN ELECTRICAL CONTACT

René Pasquier, 18 Bis, rue Burgat-Charvillon, 74000 Annecy, France

Filed Jul. 5, 1983, Ser. No. 510,769
Claims priority, application France, Jul. 6, 1982, 82 12048
Int. Cl.[3] G04C *17/00*
U.S. Cl. 368—69
3 Claims

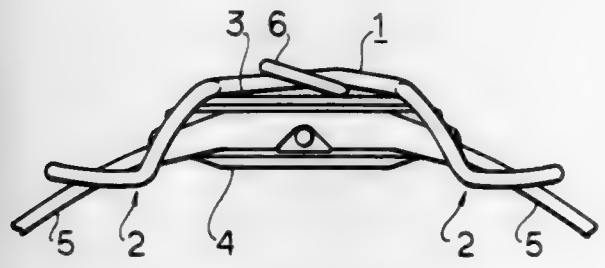


1. A watch of the type comprising:
a plastic semi-rigid movable case covered by a protective transparent face,
hands,
an electronic mechanism with quartz resonator located inside the case, and in which said mechanism does not rest on the bottom of the case which is a semi-rigid material capable of being elastically deformed under force, and recovering its initial position, the said mechanism comprising time-setting means by electrical contact between the positive pole of a battery and the negative pole of an electronic module containing a time-setting program, the rear face of the mechanism comprising means facing the bottom of the watch case for making an electrical contact between the two said poles, so that in response to a force exerted on the bottom of the casing, the means designed to make a contact between said two poles is activated, for setting the mechanism to a desired time and wherein;
the thickness of the bottom of the case decreases progressively for its entire length from the case periphery towards its center, but increases close to said center to form a projection for resting on said contact means.

4,511,261
WRISTWATCH PROTECTOR

Mitsutaka Mishima, No. 30, 2-chome, Ohashi, Miyazaki-shim, Miyazaki-ken, Japan (880)

Continuation of Ser. No. 455,942, Dec. 15, 1982, abandoned.
This application Sep. 5, 1984, Ser. No. 648,331
Int. Cl.[3] G04B *37/00*
U.S. Cl. 368—286
5 Claims

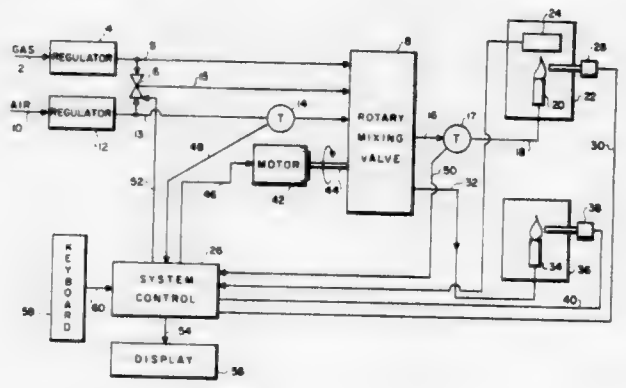


1. A non-metallic protector for a wristwatch comprising:
first and second means for attachment to a wristband, each having an outer ring portion with a bar extending across the center thereof such that the wristwatch band may be extended through and held by said means;
a buffer bar connecting said first and second attachment means such that when said first attachment means holds said band on one side of a wristwatch and said second attachment means holds said band on the other side of said wristwatch, said buffer bar extends across the face of said wristwatch without significantly obscuring said face;
ring means encircling but not fixedly attached to said buffer bar such that a portion of said interlocking ring means lifts at least a portion of said buffer bar away from said wristwatch face so as to form a margin of space between said face and said buffer, and such that said ring means itself protects a substantial portion of said face without significantly obscuring said face.

4,511,262
FUEL ENTRAINED OXYGEN COMPENSATION FOR CALORIFIC CONTENT ANALYZER

Samuel A. Arcara, Doylestown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1982, Ser. No. 433,181
Int. Cl.[3] G01N *25/22*
U.S. Cl. 374—37
13 Claims



1. A gas analyzing apparatus comprising first connection means for a source of a fuel gas, second connection means for a source of combustion air,
ratio control means for producing a mixture of fuel gas and air in a selectively variable ratio, said ratio control means having a first inlet, a second inlet, a third inlet and an outlet arranged to receive a flow mixture obtained from said first, second and third inlets,
means connecting said first connection means for a fuel gas source to said first inlet of said ratio control means,
means connecting said second connection means for a source of air to said second inlet of said ratio control means,
selectively controlled valve means for providing a connection between said third inlet and said first connection means for a source of fuel gas in a first mode of operation and between said third inlet and said connection means for a source of air in a second mode of operation,
combustion means connected to said outlet from said ratio control means for producing a combustion of said mixture of fuel gas and air,
sensor means for sensing combustion products from said combustion means to produce an output signal representative of the combustion state of said combustion means and
controller means arranged to respond to an output from said sensor means for controlling said ratio control means and for switching said valve means between said first and second modes of operation to produce substantially stoichiometric combustion of said mixture of fuel gas and air in said first and second modes of operation.

4,511,263
BOMB-TYPE CONDUCTION CALORIMETER

Edward J. Prosen, 621 Warfield Dr., Rockville, Md. 20850

Filed Jul. 12, 1983, Ser. No. 513,074
Int. Cl.[3] G01N *25/22*
U.S. Cl. 374—38
10 Claims

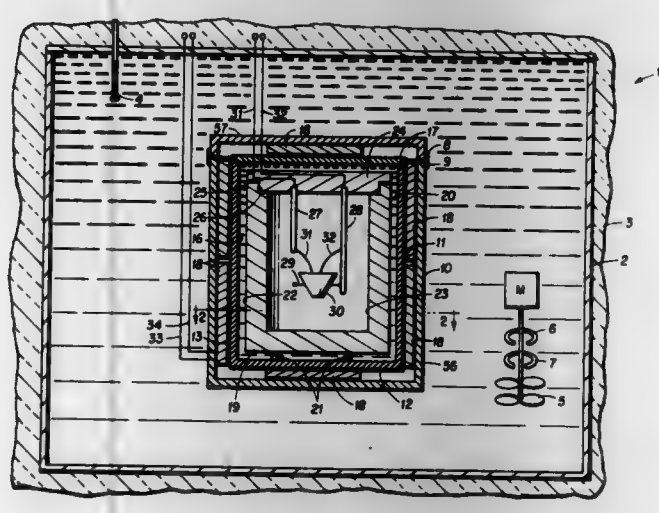
1. A conduction-type macrocalorimeter for measuring heat energy emitted by a test substance comprising:

a sensor box having an inner compartment, an outer compartment, and heat flow detecting means within a gap defined by said inner and outer compartments;

said inner compartment being of high thermal conductivity and diffusivity, and having interior and exterior surfaces, said interior surface completely containerizing said test substance;

said outer compartment being of high thermal conductivity and diffusivity, and having interior and exterior surfaces, said exterior surface defining the outermost extent of said sensor box, said interior surface of said outer compartment closely conforming to said exterior surface of said inner compartment and completely containerizing said inner compartment;

said gap surrounding said inner compartment and being defined by said exterior surface of said inner compartment and said interior surface of said outer compartment, such



that spacing between said gap defining surfaces remains substantially uniform;

heat flow detecting means for sensing heat flow from said test substance and generating a signal proportional to said heat flow, said heat flow detecting means being in intimate contact with said gap defining surfaces and substantially filling said gap to thereby minimize dead space within said gap;

a substantially infinite heat sink in intimate contact with said exterior surface of said outer compartment;

interpreting means for receiving said signal from said heat flow detecting means and generating an output related to said heat energy emitted from said test substance;

whereby substantially all said energy emitted by said test substance is transferred by conduction from said inner compartment to said outer compartment through said heat flow detecting means and dissipated to said substantially infinite heat sink.

4,511,265

TEMPERATURE-RESPONSIVE PACIFIER ASSEMBLY

Dieter R. Berndt, Neptune, N.J., assignor to TRP Energy Sensors, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 351,107, Feb. 22, 1982, Pat. No. 4,447,164. This application Feb. 28, 1983, Ser. No. 470,463

Int. Cl.³ G01K *1/08, 11/12*

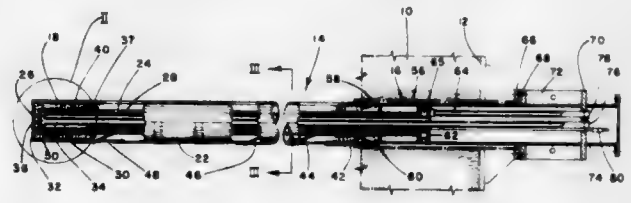
U.S. Cl. 374—151 **13 Claims**

refractory material disposed in the space between the protective member and the first tubular member;

a second tubular member disposed within and axially aligned with the first tubular member and dimensioned to provide a liquid flow passage between the first and second members;

a third tubular member extending through the second member for introducing a liquid coolant into the exterior end of the second tubular member and for conducting the coolant through the second member to the forward end of the same, the third tubular member being dimensioned to provide a space between the second and third members;

annular closure means secured to the forward ends of the second and third members and spaced from the closure at the forward end of the first tubular member, whereby liquid coolant introduced into the third tubular member flows through the same to the space between the end



closure of the first tubular member and from thence through the space between the first and second tubular members;

temperature sensing means comprising a thermal couple and leads connected to the same;

means forming a passage extending through one side of the protective member and also through the refractory material and into the space between the first and second members and through the space between the second and third tubular members to the exterior end of the protecting member; and

said heat sensitive thermal couple and leads connected to the same extending within said passage to the exterior end of the protective member with the thermal couple located adjacent said one side of the protective member and in contact with the surrounding gas;

liquid coolant introduced into the third tubular member.

4,511,264

GAS TEMPERATURE MONITORING DEVICE

Robert M. Bucha, Glenshaw; Albert J. Dzermejko, Jeanette, and James G. Stuart, Pittsburgh, all of Pa., assignors to Raymond Kaiser Engineers Inc., Oakland, Calif.

Filed Apr. 11, 1983, Ser. No. 483,552

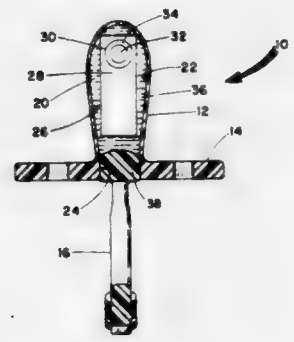
Int. Cl.³ G01K *1/16*

U.S. Cl. 374—135 **2 Claims**

1. A gas temperature monitoring device for monitoring hot gases in a furnace, comprising:

a tubular protective member adapted to extend into a hot gaseous medium of a furnace, the member having a closure at its one forward end within the furnace, and having its other end exterior of the furnace;

a first tubular member disposed axially within the protective member having its forward end spaced from the forward end of the protective member and having closure means at its forward end;



1. An improved heat-responsive pacifier assembly, which comprises of:

a pacifier body including a nipple portion defining an interior chamber sealable by plug means; and

a temperature responsive element and a liquid sealingly positioned in said interior chamber of said nipple portion of said pacifier body, said temperature responsive element

comprised of an elongated strip element having thereon a disposed temperature display means including a liquid crystal composition displaying a color change visually through said pacifier body at a temperature above about 98.6° F.

4,511,266

ARRANGEMENT FOR MOUNTING A BEARING RING ON A ROTARY CYLINDER

Fred Klotmann, Cologne, and Ralf Filges, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

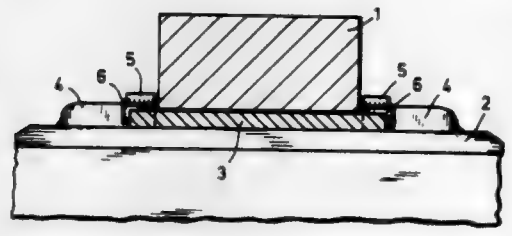
Filed May 26, 1983, Ser. No. 498,585

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223773

Int. Cl.³ F16C *13/00*; F26B *11/04*; F27B *7/22*

U.S. Cl. 384—441

4 Claims



1. A rotary kiln construction comprising in combination:
a rotary kiln cylinder having a cylindrical outer surface;
an annular bearing ring for supporting the kiln in rotation and having an inner circumference larger than the outer circumference of the cylinder;
a plurality of spacing plates located between the ring and cylinder and circumferentially spaced from each other;
and supporting assemblies at each axial side of the bearing ring including a support element welded to the outer surface of the cylinder, abutment strips mounted thereon axially engaging the sides of the bearing ring preventing axial displacement thereof, and
angle lugs mounted on the ends of the abutment strips and having a portion axially engaging said spacing plates preventing axial displacement thereof.

4,511,267

METHOD FOR CHANGING THE SUPPLY OF CHARACTERS IN AN IDEOGRAPHIC TYPEWRITER BY COMBINING AND STORING INDIVIDUAL CHARACTERS

Cornel Pokorny, Accum, and Horst Brendes, Schortens, both of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

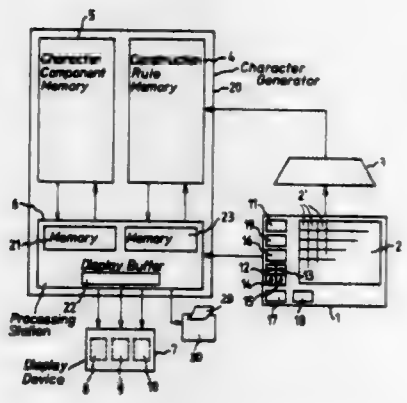
Filed Nov. 17, 1982, Ser. No. 442,606

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148685

Int. Cl.³ B41J *3/02*

U.S. Cl. 400—110

15 Claims



1. Method for operating an ideographic typewriter having input means, a character generator having memory means containing memory locations which can be addressed via the input means, and a display device, the display device having at least one standard character area for the display of ideographic characters, and the memory means of the character generator storing data representing a supply of characters which can each be displayed in the standard character area, said method being carried out for altering the supply of characters represented by the data stored in the character generator, and comprising: displaying, in the standard character area, a first character for which data is already stored in the character generator; reducing the size of the first character displayed in the standard character area with respect to at least one dimension of the character if required; displaying, in the standard character area, at least one further character for which data is already stored in the character generator, to create a new character constituted by the first and further characters as thus displayed; and storing in a location of the memory means of the character generator, which location can be addressed via the input means, data representing the new character which then forms part of the supply of characters.

4,511,268

HIGH SPEED PRINTER

Eric J. Marshall, 5 Carlton Gardens, London SW1, England

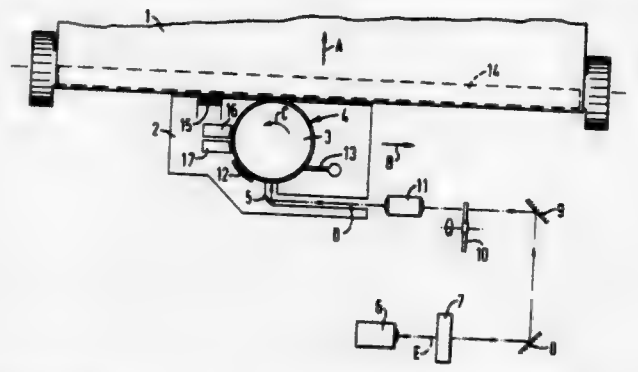
Continuation of Ser. No. 499,025, Jun. 2, 1983, abandoned, which is a continuation of Ser. No. 270,513, filed as PCT GB 80/00171, Oct. 17, 1980, published as WO 81/01120, Apr. 30, 1981, § 102(e) date Jun. 5, 1981, abandoned. This application Apr. 11, 1984, Ser. No. 598,405

Claims priority, application United Kingdom, Oct. 19, 1979, 7936450; Oct. 17, 1980, 8000171

Int. Cl.³ B41J *3/00*

U.S. Cl. 400—119

2 Claims



1. An apparatus, for printing entire characters serially onto a receiver along a printer line, comprising:
a rotatable carrier having a photoconductive circular periphery;
means for providing an electrostatic charge on said periphery;
optical means for directing a plurality of images of entire characters serially onto said charged periphery acquiring a series of uncharged areas each corresponding to a respective one of said characters;
means for applying a heat-fixable toner material having an electrostatic charge serially to each uncharged area of said periphery as said carrier rotates whereby said toner material becomes electrostatically adherent to said uncharged areas;
a stationary receiver structure;
a carriage means translatable parallel to said printing line for interconnecting said carrier and said receiver structure for continuously translating said carrier at constant speed simultaneously with said carrier rotation in a straight line in a plane normal to said carrier axis of rotation along and in contact with said receiver such that adherent material of each area is brought serially into a position contacting said receiver with the direction and rate of rotation of said carrier with respect to the direction and rate of translation of said carrier relative to said receiver being such that, in the position of said contact, there is not relative motion

along the line between the adherent material and said receiver wherein said carriage has located thereon said rotatable carrier, said charging means, said toner applying means, means for removing toner material, and means for discharging the periphery of said carrier;

means for applying an electrostatic field to cause transfer of said adherent material from said carrier to said receiver at said position of contact;

heating means for fixing transferred material on said receiver; and

means connecting said heating means to said carrier for movement of said heating means simultaneously with said carrier along said line in a position trailing said carrier.

4,511,269

CANCEL TYPE PRINTING HEAD

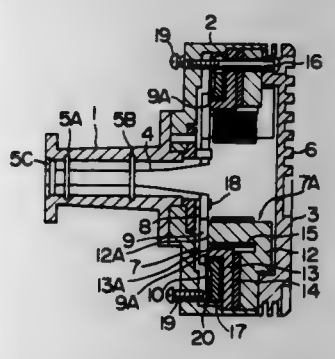
Kazue Takahashi; Kenzi Okuna; Isao Nakajima, all of Ibaraki; Mineo Harada, Owariasahi, and Yutaka Kako, Kasugai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1983, Ser. No. 480,788

Claims priority, application Japan, Apr. 12, 1982, 57-59519

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **7 Claims**



1. A printing head comprising lever components each having printing wires and driving mechanisms for said lever components,

each of said lever components driven by said driving mechanisms including a lever body connected to the associated printing wire,

an attraction member provided at one end of said lever body and adapted to be attractively moved by a magnetic attraction of a permanent magnet interposed between yokes constituting said driving mechanisms,

a spring member coupled to said attraction member and having a free end portion adapted to be biased to create a resilient force therein for displacing the associated printing wire,

means for adjusting a resilient force of said spring member, said means including an insert member which engages said free end portion of said spring member while being received in an opening of said free portion for displacing the free end portion of the spring member toward the yokes, and

wherein a fulcrum of rotation for said lever component is formed between said attraction member and a magnetic polar face of a yoke confronted with said attraction member.

4,511,270

APPARATUS FOR LIFTING PRINT AND CORRECTION RIBBONS IN TYPEWRITERS OR LIKE MACHINES

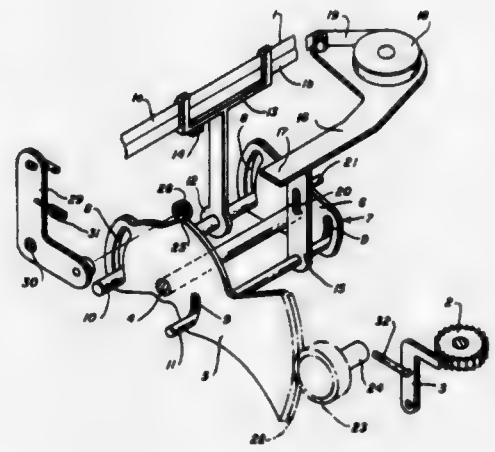
Christian Bohmer, Nuremberg, Fed. Rep. of Germany, assignor to Triumph-Adler A.G. fur Buro- und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,336

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227714

Int. Cl.³ B41J *35/23, 29/36*

U.S. Cl. 400—214 **2 Claims**



1. Apparatus for independently lifting print and correction ribbons from a rest position to a print line comprising

means including a first liftable shaft carrying a print ribbon for movement to said print line,

means including a second liftable shaft carrying a correction ribbon for movement to said print line,

lift lever means,

means supporting said lift lever means for oscillation about a fixed axis,

said lift lever means having arcuate slots located on either side of said fixed axis for supporting said first and second shafts in a home position, and for lifting one or the other of said first and second shafts according to the direction of movement of said lift lever means from said home position,

said lift lever means including gear means,

a motor driven shaft rotatable from a home position in forward and return direction about said home position and a reverse and return direction about said home position according to a print or a correction ribbon lift sequence, and

a pinion connected to said motor shaft and engaged with said gear means for driving said lift lever means.

4,511,271

TYPING RIBBON CARTRIDGE WITH BLOCKING ELEMENT

Giacomo Oberto, Pavone, Italy, assignor to Olivetti Accessori, S.p.A., Ivrea, Italy

Filed Jun. 7, 1983, Ser. No. 501,819

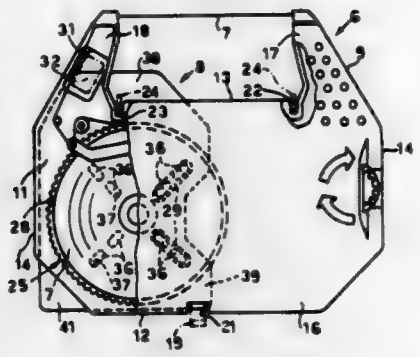
Claims priority, application Italy, Jun. 7, 1982, 67728 A/82

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—208 **7 Claims**

1. A removable cartridge for a typing ribbon with a blocking element comprising a container having a bottom and a cover, wherein the bottom comprises a sleeve and a series of slots and the cover comprises four ribs which project inwardly of the container and are disposed at 90° relative to each other; and a ribbon supply reel, on which the typing ribbon is wound, comprising a hub which is rotatable about the sleeve and a flange which is fixed to the lower end of the hub; and wherein the blocking element comprises a substantially flat plate of limited thickness having a series of dished portions which project from the plane of the plate and which are snapped into

the series of slots for engaging the lower surface of the flange and raising the ribbon supply reel until the upper edge of the typing ribbon is arrested against the four ribs, when the block-



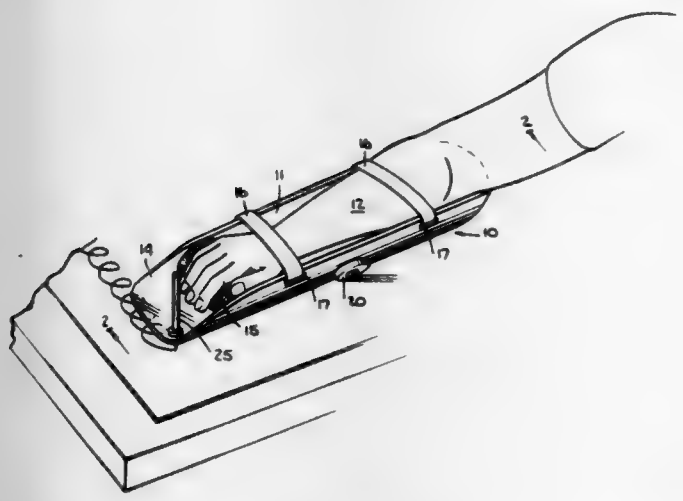
ing element is mounted on the cartridge, so as to prevent the ribbon supply reel from unwinding when the cartridge is not mounted on a typing machine.

4,511,272

WRITING PROSTHESIS

Jason W. Brown, 63 Park Ave., Bronxville, N.Y. 10708, and Mitchell N. Ackerman, Providence, R.I., assignors to Jason W. Brown, Bronxville, N.Y.

Filed May 16, 1983, Ser. No. 495,086
Int. Cl.³ B43K *29/00*
U.S. Cl. 401—6 **14 Claims**



1. A writing prosthesis comprising:

a base adapted to engage and to support the entire forearm and the elbow of a user and having a forward portion extending beyond the distal ends of the fingers of the user;

means for securing said base to the forearm;

a handrest mounted on said base and contoured to engage the palm and fingers;

mounting means for removably securing a writing implement to said forward portion of said base for writing contact with an adjacent writing surface to be inscribed upon; and

rotatable support means connected to the base for supporting the writing instrument and the forearm for universal movement relative to said surface;

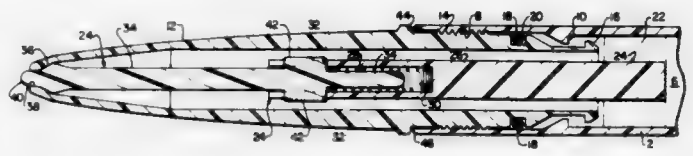
whereby, the prosthesis and the forearm may be controlled solely by the shoulder muscles of the user to cause the writing implement to inscribe intelligent indicia on said surface.

4,511,273

CORRECTION FLUID DISPENSER HAVING A RETRACTABLE AND LOCKABLE SEALING TIP

Robert A. Trotta, Pembroke, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 425,199, Sep. 28, 1982, abandoned, which is a continuation-in-part of Ser. No. 319,245, Nov. 9, 1981, abandoned. This application Dec. 13, 1983, Ser. No. 561,135
Int. Cl.³ B43K *8/00, 1/06*
U.S. Cl. 401—260 **7 Claims**



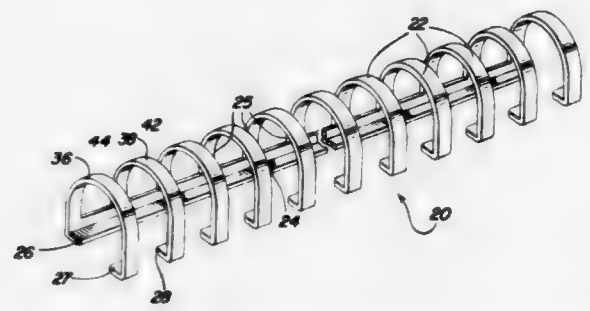
1. A correction fluid dispenser comprising a body member adapted to retain a correction fluid, a barrel member engaged with said body member, a core portion extending axially of said body member and said barrel member, a tip seal member telescopically engaged with said core portion, and a spring means disposed between said core portion and said tip seal member, said body member and said barrel member being relatively rotatable to a first position in which said tip seal member is spring biased toward an orifice in said barrel member to retractably block said orifice to prevent flow of said fluid therethrough unless the spring bias is overcome and a second position in which said core portion is moved axially to its telescopic limit to force said tip seal member against said orifice to prevent retraction of said tip seal member, said core portion and said tip seal member being adapted to rotate with said body member and relative to said barrel member and orifice to provide a wiping action to aid in the removal of particulate material or fluid residue.

4,511,274

LOOSELEAF BINDER ASSEMBLY

Ted Chen, 11060 - F Artesia Blvd., Cerritos, Calif. 90701

Filed Jul. 14, 1983, Ser. No. 513,639
Int. Cl.³ B42F *13/06, 3/04;* B41L *3/06*
U.S. Cl. 402—21 **7 Claims**



1. A loose leaf binder assembly for holding a plurality of sheets comprising:

a backbone member having two grooved slots, each groove slot being located on each side of said backbone member;

a second member whose length is sustantially equal to said backbone member with a plurality of rounded resilient fingers with one end of said rounded resilient fingers rigidly attached to a portion of said second member, said portion also having a continuous flange substantially perpendicular to said one end of fingers and facing the unattached end of said rounded resilient fingers,

an inwardly facing tang on said unattached end of said rounded resilient fingers, said flange and said tangs cooperatively engaging and sliding into said grooves on each side of said backbone member, such that said backbone

member and said second member are in substantial alignment when fully engaged; and

means for locking said second member to said backbone member when said second member and said backbone member are in substantial alignment with each other.

4,511,275

CLAMPING MECHANISM

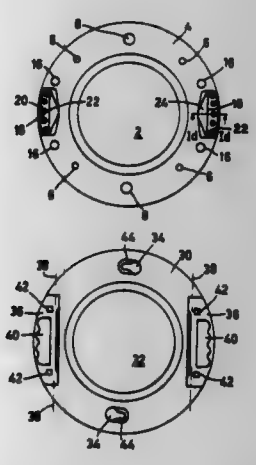
Francis J. Span; Aloysius T. M. Boland, and Albertus J. A. J. van Laarhoven, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 20, 1982, Ser. No. 380,167

Claims priority, application Netherlands, May 21, 1981, 8102498

Int. Cl.³ F16C *11/00*; F16D *1/12, 3/00*

U.S. Cl. 403—33 **5 Claims**



1. A clamping mechanism for exchangeably coupling two elements together in a preselected angular orientation, said clamping mechanism comprising:

a first coupling plate attached to one element;

a second coupling plate attached to the other element;

means for loosely coupling the first and second coupling plates to each other, said loose coupling means forming a tight coupling when the coupling plates are pressed away from each other; and

means for pressing the coupling plates away from each other, said pressing means being operable only when the coupling plates are positioned at the preselected angular orientation;

wherein the pressing means comprises:

a spring attached to the first coupling plate, said spring being biased to oppose any force compressing the spring toward the first coupling plate; and

a folding hand grip attached to the second coupling plate, said hand grip being pivotable through a plane of the second coupling plate;

wherein, when the coupling plates are loosely coupled in their preselected angular orientation and the hand grip is pivoted into the plane of the second coupling plate, the hand grip bears on the spring and compresses it toward the first coupling plate.

4,511,276

CYLINDER PISTON ROD COUPLER

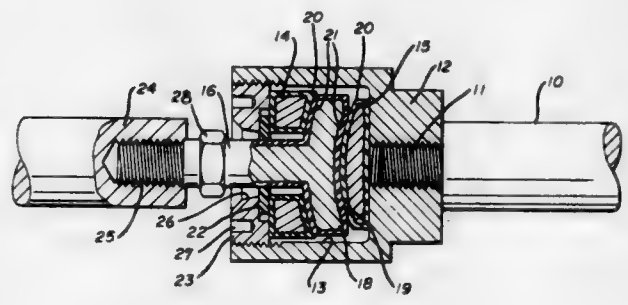
Kingsley A. Doutt, P.O. Box 888, Alpena, Mich. 49707

Filed May 4, 1983, Ser. No. 491,525

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—77 **3 Claims**

1. An improvement in a coupling for misaligned shafts having a housing adapted to be attached to one of said shafts and a stud with an enlarged curved end portion attached to the other one of said shafts with the enlarged end portion of the stud movably caged in said housing between guide members therein by a retaining ring, the improvement comprising means for sealing said housing with respect to said other one of said shafts and secondary means forming slippery surfaces on said guide members and on said stud, said housing having a threaded socket in one side wall and an opening oppositely thereto, said guide members in said housing engaging the opposite sides of said enlarged curved end of said stud, said guide members having curved surfaces matching said opposite sides of said enlarged curved end of said stud, a retaining ring engaged in said opening in said housing, one side of said retaining ring having a first annular surface and a second annular surface spaced radially and sidewardly of said first annular



surface, said retaining ring being engaged in said opening with said second annular surface engaging one of said guide members so as to hold said guide members with said curved end of said stud between said guide members, said stud extending through said retaining ring, said means for sealing said housing comprising a resilient sealing gland on said stud spaced with respect to said enlarged curved end of said stud and movably engaged between said first annular surface of said retaining ring and one of said guide members so as to be movable transversely of said housing with said stud.

4,511,277

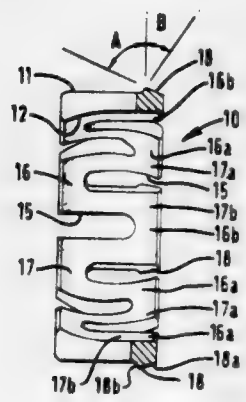
BALL JOINTS AND LINERS THEREFOR

Graham McCabe, Witham, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 14, 1981, Ser. No. 282,986

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—140 **10 Claims**



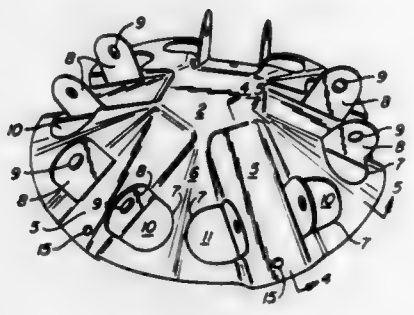
1. A liner for a ball joint comprising an annulus of resiliently deformable plastics material having an inner spherical bearing surface, at least one end portion of the annulus having a plurality of axially extending circumferentially spaced tongues which can be deflected radially to dilate the end of the annulus, characterised in that at least some of the tongues have inner surfaces which lie in the spherical bearing surface, and at least one other tongue which has a radially outwardly extending projection for retaining the liner in a bearing mounting and an inner surface which is spaced radially outwardly from the spherical bearing surface.

4,511,278

CONNECTOR UNIT FOR GEODESIC DOME FRAME STRUT

Richard T. Robinson, Riverside, Calif., assignor to Delta Engineering Co., Covelo, Calif.

Filed Mar. 2, 1983, Ser. No. 471,283
Int. Cl.[3] E04B *1/32*
U.S. Cl. 403—172 3 Claims



1. A connector unit for connecting the struts which form the framework of a geodesic dome comprising:

(a) a sheet metal member having the general shape of a frustum of a right circular cone,

(b) five equally spaced rectangular depressions in the outer surface of the frustum and extending between the bases of the frustum, the length sides of the rectangular depressions being parallel to the elements of the frustum,

(c) a triangular area lying between each adjacent pair of rectangular depressions,

(d) a flange extending outward from each side of each rectangular depression,

(e) the plane of each flange being perpendicular to the plane of the related rectangular depression and the flanges on opposite sides of each rectangular depression being in mirror image relation, each flange being formed by opening a portion of the triangular area adjacent the rectangular depression and bending it upward to perpendicular relationship with the plane of the rectangular depression, and

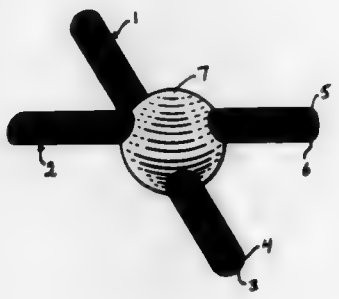
(f) an opening in the central area of each flange and the openings in the flanges extending outward from opposite sides of each rectangular depression being in register with each other.

4,511,279

CABLE TIE FOR AN AIR SUPPORTED STRUCTURE CABLE NET

Carmine Carpanzano, New Rochelle, N.Y., assignor to Air Structures International, Tappan, N.Y.

Filed Aug. 31, 1982, Ser. No. 413,266
Int. Cl.[3] F16B *1/00*
U.S. Cl. 403—266 8 Claims



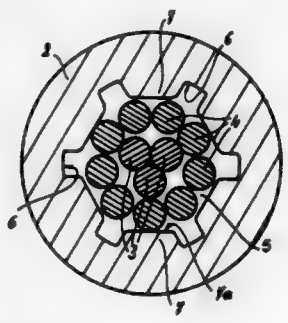
1. The combination comprising: a pair of crossing cable sections; and a permanent cable tie comprising a body of fused material having embedded therein said pair of crossing cable sections, said body of fused material surrounding the region of crossing of said cable sections and making tight contact with and adhering to said cable sections for preventing relative movement therebetween, said crossing cable sections are each comprised of a metallic core and an outer sheath of a fusible material surrounding said metallic core, and wherein the overlapping portions of the respective outer sheaths of said crossing cable sections are fused together.

4,511,280

ANCHORING OR CONNECTING SLEEVE FOR MULTISTRAND CABLE CONDUCTOR

Robert Saint-Prix, Saint-Etienne, and Henri Montmartin, Unieux, both of France, assignors to Societe Nouvelle des Etablissements Dervaux, Chambon Feugerolles, France

Filed Jul. 14, 1982, Ser. No. 398,239
Claims priority, application France, Jul. 15, 1981, 81 14115
Int. Cl.[3] F16G *11/02*
U.S. Cl. 403—274 8 Claims



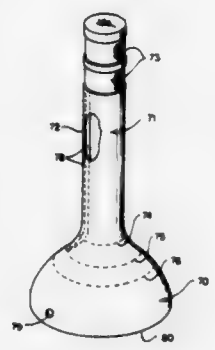
1. A cable-gripping sleeve comprising a tubular body of deformable material with a central bore of noncircular cross-section, said bore forming a multiplicity of generally flat cable-contacting faces separated by longitudinal zones of reduced wall thickness forming internal grooves substantially narrower than said faces facilitating an approach of said faces to one another upon an exertion of radial stresses serving to constrict said body around an engaged cable.

4,511,281

ROAD-SURFACE MOUNTABLE DELINEATOR SUPPORT MEMBER

Donald W. Schmanski, Carson City, Nev., assignor to Carsonite International Corporation, Carson City, Nev.

Filed Oct. 14, 1981, Ser. No. 311,350
Int. Cl.[3] E01F *9/01*
U.S. Cl. 404—10 3 Claims



1. A resilient, road-surface mountable delineator adapted for use with traffic moving at moderate speeds, said delineator being comprised of an integrally formed tube structure and support base;

said tube structure having a composition (represented by modulus of elasticity) and geometric configuration which develop greater stiffness in the tube structure as compared to stiffness in the support base to thereby create a preferential mode of collapse in response to a vehicle imnpact wherein the support base is adapted to collapse and dissipate impact energy by formation of wave-like contortions within support base wall structure in preference to total collapse of the tube structure, thereby avoiding deforma-

tion of the tube structure over an impacting surface such as a vehicle bumper;

said support base being sectionally comprised of integrally formed neck, shoulder and larger collapsible body sections, said neck and shoulder sections having a composition and geometric configuration which develops sufficient compressional stiffness based on elastic modulus in compression and compressional moment of inertia to maintain the attached delineator in operational orientation and to transfer most of said compression forces into the larger, collapsible body wall section; and

said neck and shoulder sections of the support base further comprising a solidified foam insert retained within the neck and shoulder sections.

4,511,282

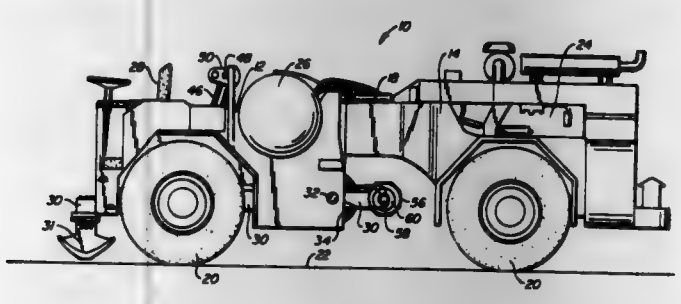
PAVEMENT PENETRATING TOOL

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Company, Sparks, Nev.

Continuation-in-part of Ser. No. 329,149, Dec. 10, 1981, Pat. No. 4,402,629, which is a continuation-in-part of Ser. No. 157,138, Jun. 5, 1980, Pat. No. 4,340,255. This application May 9, 1983, Ser. No. 492,922

Int. Cl.³ E01C *23/12*

U.S. Cl. 404—90 **7 Claims**



1. In a pavement breaker including a mobile vehicle adapted to ride over the surface to be penetrated, a resonant beam having input and output antinodes at input and output ends respectively and at least one node between the ends of the beam at which the beam is mounted to the vehicle, and means for vibrating the resonant beam at at least near its resonant frequency, an improved tool depending from the output end of the beam comprising a flange with a striking surface extending in the operative direction of motion of the vehicle and having a shape which is curved so that the angle between the direction of motion of the striking surface at the point of contact with the surface to be penetrated and the tangent to the striking surface at the point of contact with the surface to be penetrated is constant throughout the stroke of the tool.

4,511,283

METHOD AND APPARATUS FOR SEALING OF PAVEMENT SEAMS

Henry H. Duval, 3944 Boca Bay Dr., Dallas, Tex. 75234; Donald Kennedy, 9741 E. Lake Highlands Dr., Dallas, Tex. 75218, and Milton J. Muesse, 13120 Mitchwin, Dallas, Tex. 75234

Filed Mar. 18, 1983, Ser. No. 476,461

Int. Cl.³ E01C *23/02;* B67B *7/24*

U.S. Cl. 404—107 **7 Claims**

1. A dispensing apparatus for filling the gap between pavement sections with a sealant composition comprising:

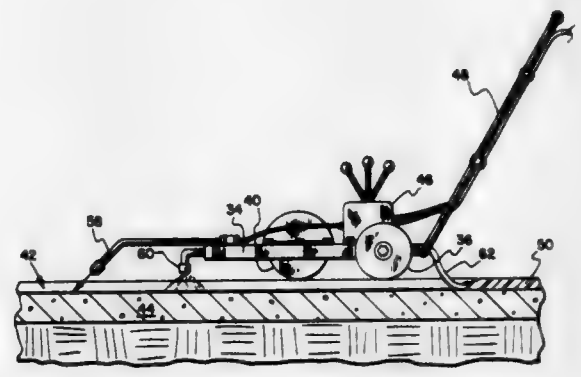
a wheeled support platform movable over said pavement sections;

a first container disposed on said wheeled support platform and containing a liquid sealant composition;

a second container disposed on said wheeled support platform and containing water;

a source of compressed air disposed on said wheeled support platform having a plurality of outputs, a first output of said plurality of outputs coupled to said first container and a second output coupled to said second container; and

an applicator adapted to move over said gap in said pavement sections, said applicator including a first applicator nozzle coupled to a source of compressed air and disposed so as to remove dust and loose debris from said gap, a



second applicator nozzle coupled to said second container and disposed so as to moisten said gap after said dust and loose debris have been removed and a third applicator nozzle coupled to said first container and disposed so as to fill said gap with said liquid sealant composition after said dust and loose debris have been removed and said gap has been moistened.

4,511,284

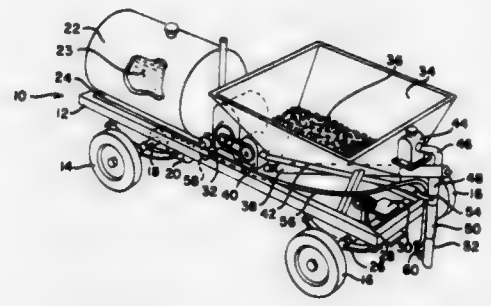
POTHOLE PATCHER

Carl L. Sterner, Rte. 4, Box 372, Bakersfield, Calif. 93309

Filed Aug. 10, 1983, Ser. No. 521,945

Int. Cl.³ E01C *19/10, 19/18*

U.S. Cl. 404—111 **7 Claims**



1. In a road repair truck of the type having a vehicle frame amounted on a pair of front wheels and a pair of rear wheels, an aggregate material hopper on said vehicle frame, a conveyor screw in the hopper bottom, means for driving said screw, a conveyor tube forming the bottom of said hopper and extending from the forward end of said hopper and within which said conveyor screw is disposed, and a vertically disposed discharge chute connected to the forward end of said conveyor tube and having a discharge outlet extending downwardly below the conveyor tube beyond the front end of said vehicle frame for dispensing aggregate material therefrom, said conveyor screw conveying aggregate material from said hopper to said discharge chute for deposit in a pothole to be repaired, means for applying asphalt coated aggregate to the road to be repaired comprising

a first air inlet formed on the discharge chute between the conveyor screw and the discharge outlet,

means for applying a flow of air to the air inlet so as to create a helical downward flow of aggregate material in the chute,

an asphalt outlet disposed at the discharge outlet, and

means for applying heated asphalt under pressure to the asphalt outlet,

said asphalt outlet being disposed with respect to the discharge chute outlet so that, upon the aggregate material

passing through the discharge outlet, asphalt from the asphalt outlet is sprayed thereon.

4,511,285

OIL-CLEARING ELEMENT HAVING TWO OR MORE MOVABLE FLOATING BODIES

Hans Eriksson, Nygatan 11, Kristinehamn, Sweden

PCT No. PCT/SE82/00245, § 371 Date Mar. 31, 1983, § 102(e) Date Mar. 31, 1983, PCT Pub. No. WO83/00517, PCT Pub. Date Feb. 17, 1983

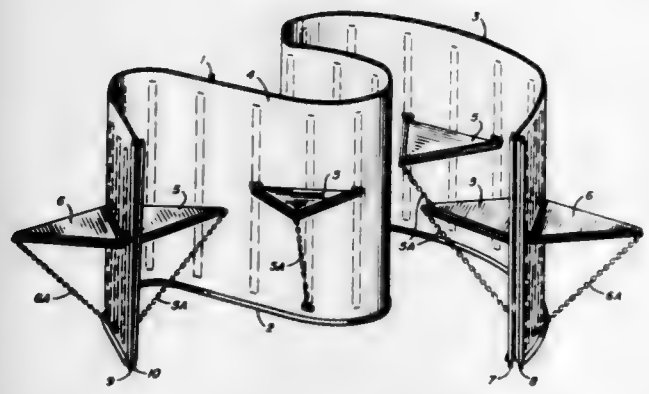
PCT Filed Jul. 15, 1982, Ser. No. 488,546

Claims priority, application Sweden, Aug. 7, 1981, 8104731

Int. Cl.³ E02B *15/04*

U.S. Cl. 405—66

3 Claims



1. Oil clearing apparatus for preventing the spread of oil in waterways, lakes, sea and the like, comprising a flexible rectangular wall element including opposed sides, spaced parallel longitudinal edges, and spaced ends, said rectangular wall element being provided with a number of floating bodies on both sides thereof along a line parallel to said longitudinal edges, said bodies being sheet-like and pivotable about said line whereby each sheet may selectively assume a substantially perpendicular position in relation to the wall element, the rectangular wall element being provided adjacent its ends with joinder means for enabling another such wall element to be joined onto each end, said joinder means, adjacent each wall element end, comprising a pair of extending flexible strips joined and hinged together and along said end, said strips providing a pair of elongate flexible free end edges extending along each end and in a direction normal to said longitudinal edges of the wall element, a rod element engaged with and extending along each of said free end edges, each rod element including end portions protruding beyond the longitudinal edges of the wall element, the pair of flexible strips on said wall element end extending outward of the wall element end and outward relative to each other whereby to selectively receive laterally therebetween the rod element of a further wall element with the corresponding end portions of the rod elements aligned for reception of a retaining ring element thereabout to thereby bunch the protruding end portions of the rod elements of two adjacent wall elements together and provide an elongate joining of the wall elements one to another.

4,511,286

FLEXIBLE BARRIERS

Nicholas P. Hardacre, Dibden Purlieu, England, assignor to Leigh Flexible Structure Ltd., Dorset, England

Filed Oct. 27, 1981, Ser. No. 315,550

Claims priority, application United Kingdom, Oct. 27, 1980, 8034511

Int. Cl.³ E02B *7/02, 7/20;* E02D *5/00;* F16M *11/32*

U.S. Cl. 405—115

17 Claims

1. A barrier which may be extended in a spanning direction across a waterway transverse to the direction of gravity-directed waterflow, said barrier comprising:

support means and a flexible web supported thereby and which provides a barrier surface impeding the waterflow, the support means being situated behind the flexible web and including a plurality of support members presenting a common transverse support surface for said web, individual ones of said support members being tilted in alternating opposite directions within said common support surface and along the spanning direction of the barrier and each being connected with a respective similar support member disposed to mutually oppose further tilting movement within said common support surface.



4,511,287

SUBMERGED BUOYANT OFFSHORE DRILLING AND PRODUCTION TOWER

Edward E. Horton, Rancho Palos Verdes, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 146,362, May 2, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,886

Int. Cl.³ E02B *17/00*

U.S. Cl. 405—204

31 Claims



1. Apparatus useful for defining at an offshore location in an ocean and the like in water of substantial depth a submerged installation providing a connection point for the drilling of a subsea hydrocarbons well by use of drilling equipment normally useful only in waters of substantially shallower depth, the finished installation comprising an elongate, slender, unguyed, positively buoyant erect tower structure extending from a lower end at the ocean floor to an upper end disposed at a selected depth below the water surface, the apparatus comprising

a. a tubular tower base section defining at a lower end thereof means adapted for connecting the section directly to the ocean floor and for holding the section from upward movement when subjected to substantial upwardly directed force, the base section having an upper end adapted to mate coaxially with and be secured to a lower end of one of a plurality of tubular tower central sections,

b. a tubular tower upper section having a lower end adapted to mate coaxially with and be secured to an upper end of a tubular tower central section and having an upper end defining at least one connection point for the drilling of a subsea hydrocarbons well, the connection point being

arranged for access thereto and for connection of selected equipment thereto from above,

c. a plurality of tubular tower central sections each adapted at upper and lower ends thereof to mate coaxially with and to be secured to the lower and upper ends of others of the central sections or the upper end of the base section or the lower end of the upper section, as appropriate, the central sections being sufficient in number and aggregate length that when the central sections are connected in series between the base and upper sections there results a tower structure having a length equal to the distance between the selected depth and the ocean floor at said offshore location,

d. buoyancy means within the upper section and at least some of the other tower sections operable for controlling the buoyancy of the corresponding tower section,

e. whereby, upon serial interconnection of all of the tower sections and connection of the lower section to the ocean floor, there results a submerged tower as aforesaid, and

f. at least one tubular drilling riser duct carried by the tower in a selected position relative to the tower and extending along the entire length of the tower, each duct being coupled to the tower at selected locations therealong to be secure from significant lateral movement relative to the tower, there being the same number of riser ducts as there are drilling connection points defined at the upper end of the tower upper section, the ducts being connected at their upper ends to the respective drilling connection points.

4,511,288

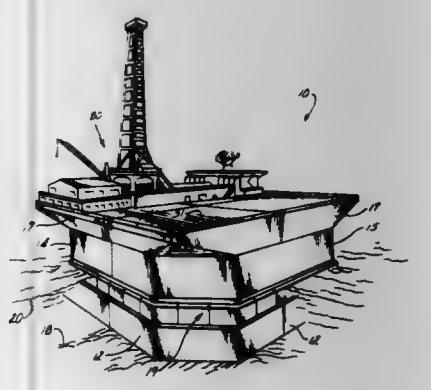
MODULAR ISLAND DRILLING SYSTEM

Sherman B. Wetmore, Westminster, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 325,778, Nov. 30, 1981, Pat. No. 4,422,803. This application Nov. 22, 1982, Ser. No. 443,529

Int. Cl.³ E02B *15/02*

U.S. Cl. 405—217 **77 Claims**



1. An arctic offshore structure of the gravity type movable buoyantly to and from a position over a site of use located on a sea floor under waters in a selected range of depths, the structure when installed at the site extending from a lower end substantially at the sea floor through and above the water surface to an upper operations end of the structure which is adapted to carry a selected operations facility, the structure through a portion thereof between (a) a first location adjacent its lower end and below the water surface and (b) a second location in the structure a substantial distance above the water surface having substantially vertical and substantially flat outer walls, the structure in said portion being comprised of at least one unitary base unit, each base unit being floatable, each base unit being reversibly ballastable adequately to impart to the structure sufficient negative buoyancy, in combination with the nature of the sea floor, to maintain a desired position at the site under environmental forces applied horizontally to the structure.

4,511,289

METHOD OF ROCK BOLTING AND ROCK BOLT

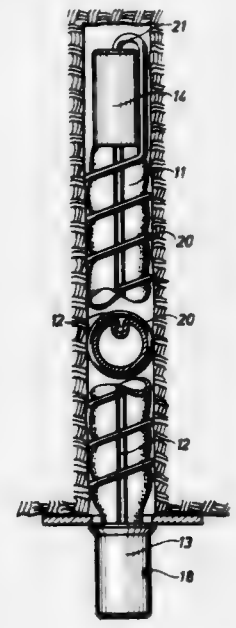
Lorne R. Herron, Beaconsfield, Canada, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 14, 1982, Ser. No. 434,177

Claims priority, application Sweden, Oct. 19, 1981, 8106165

Int. Cl.³ E21D *20/00*

U.S. Cl. 405—259 **10 Claims**



1. A method of rock bolting comprising:

inserting a rock bolt (10) in a borehole which rock bolt comprises a radially expansible tube (11) which, before being used, has a deep longitudinal depression (12) and is closed at its inner end (14);

then coupling the outer end (13) of the tube (11) to an external source of hydraulic high pressure fluid so that the tube (11) is plastically deformed to expand so as to cause permanent gripping action against the inner surface of the borehole, whereafter the tube (11) is relieved of pressure; and

before expanding of said tube (11) by said pressure fluid, mounting a radially expandable insert means (20) between the tube (11) and the borehole, said insert means (20) surrounding the tube so that said deep longitudinal depression (12) cannot be fully expanded in the borehole when the tube (11) is plastically deformed to radially expand upon application of said high pressure fluid, said insert means engaging both the tube and the inner surface of the borehole so as to be clamped therebetween.

4,511,290

SUPPORT FRAME FOR UNDERGROUND MINING OPERATIONS

Walter Lubojatzki, Recklinghausen, Fed. Rep. of Germany, assignor to Klöckner-Becorit GmbH, Castrop-Rauxel, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,356

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118939

Int. Cl.³ E21D *15/44*

U.S. Cl. 405—292 **4 Claims**

1. A support frame for serving as a face support in mining operations comprising:

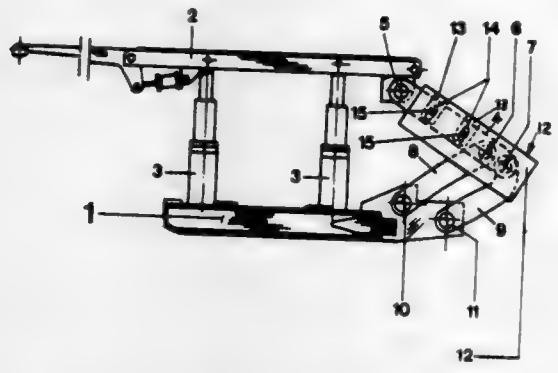
a floor of a seam support supportable on the floor of the seam;

a roof of the seam support for supporting the roof of the seam;

at least one hydraulic strut coupling said seam support floor and said seam support roof and serving to brace the same between the roof of the seam and the floor of the seam; and

at least one stabilization element and guide therefor pivota-

bly coupled and disposed between said seam support floor and said seam support roof pivotable in the longitudinal direction of the support frame to define a pivot plane, at least one of said stabilization element and said guide comprising a plurality of parallel, spaced-apart planar leaf springs, the planar surfaces of which are disposed parallel



to said pivot plane, which are resistant to bending in said pivot plane and resilient to compressive and torsion forces, said leaf springs having restoring forces great enough to return the roof of the seam support to its initial position upon release from the bracing between the roof of the seam and the floor of the seam.

4,511,291

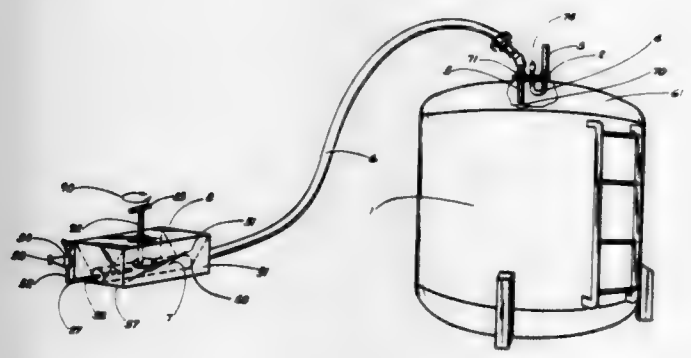
VACUUM MATERIAL CONVEYING APPARATUS

Norman C. Quates, Sr, P.O. Box 896, Harvey, La. 70059, and Norman C. Quates, Jr., 1716 Orchid, Harvey, La. 70058

Filed Jun. 3, 1982, Ser. No. 384,629

Int. Cl.³ B65G *53/14*

U.S. Cl. 406—128 **1 Claim**



1. An adaptor for conveying fluidizable material to a pressurizer tank provided with a removable lid which selectively at least partially seals said tank, said adaptor comprising:

an adaptor lid configured to replace said removable lid for selectively at least partially sealing said tank;

a venturi mounted on said adaptor lid and having first and second flared ends, the first end thereof being in fluid communicating relationship with the interior of said tank through a venturi opening in the adaptor lid, the second end of said venturi being in fluid communicating relationship with the atmosphere;

a generally U-shaped pipe having a first end and a second end, the first end thereof being disposed in the interior said tank adjacent the first end of said venturi for directing a stream of pressurized fluid thereinto, the second end of said U-shaped pipe being in fluid communicating relationship with a source of pressurized fluid through a pressure introduction aperture in the adaptor lid;

a delivery conduit having a first end in fluid communicating relationship with the interior of said tank through a delivery aperture in the adaptor lid, and a second end through which said materials are introduced, the first end of said conduit being provided with a projection for conveying the fluidized material to a distance into said tank beyond said venturi opening in the adaptor lid to prevent fluidized material from being introduced into said venturi;

an aperture through said delivery conduit adjacent its second end through which said fluidizable material enters said delivery conduit;

a pipe inserted into said delivery conduit for delivering a flow of pressurized fluid to the interior of said delivery conduit adjacent said aperture to at least partially fluidize said fluidizable material as it enters said delivery conduit through said aperture in said delivery conduit;

a hopper for holding said fluidizable material in fluid delivering relationship to said aperture through said delivery conduit;

a first flat stationary plate disposed on the outside of said conduit, said plate being provided with an apperture alignable with the aperture in said conduit;

a second flat plate rotatably mounted on top of said first plate, said second plate being provided with an aperture alignable with the aperture in said first plate, the degree of alignment between the apertures in said first and second plates being variable by rotation of said second plate;

a plurality of camlock lever bolts secured to the tank and adapted for attachment to prongs on said adaptor lid for selectively securing said adaptor lid to said tank.

4,511,292

PNEUMATIC SUCTION DEVICES FOR DISCHARGING GRANULATES

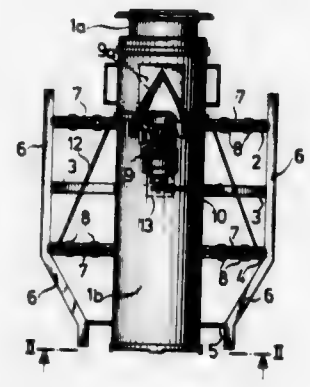
Theodor Hesse, and Hans Barkmeyer, both of Melle, Fed. Rep. of Germany, assignors to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

Filed Dec. 20, 1982, Ser. No. 451,233

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151638

Int. Cl.³ B65G *53/42*

U.S. Cl. 406—152 **5 Claims**

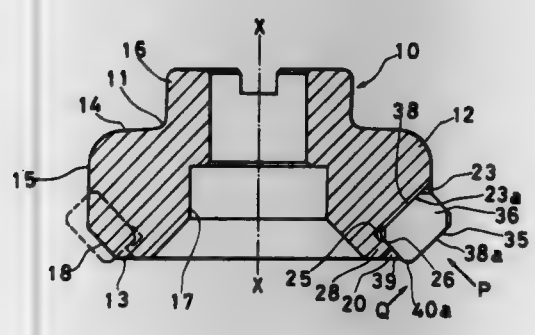


1. A pneumatic suction device for discharging granulates or other not readily flowable materials from ships, comprising a steerable jib, a suction pipe having a suction nozzle suspended from the steerable jib, a frame surrounding said suction nozzle in a spaced relationship therewith, which frame is formed of a plurality of flat bars arranged in a spaced relationship and being substantially parallel to the longitudinal axis of said suction nozzle and in a plane extending radially with respect to the longitudinal axis of said suction nozzle, and horizontally disposed rings, supported on said suction nozzle in an articulated manner, joining together said plurality of flat bars, and drive means comprising a crank motor mounted on said suction nozzle for placing said frame into horizontal oscillating motion so that said granulates or other not readily flowable materials are loosened for intake by suction by said suction nozzle.

4,511,293
INSERT CUTTER

Hiroshi Shimomura, Tokyo, and Tatsuo Arai, Kitamoto, both of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 454,100
Claims priority, application Japan, Dec. 29, 1981, 56-213170; Dec. 29, 1981, 56-213171; Mar. 15, 1982, 57-40499
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—41 6 Claims



1. A cutter for processing a surface of a metal workpiece which comprises:

(a) a body of a generally circular cross-section having an axis of rotation therethrough, said body being of a one-piece solid construction and having a forward end face, a rearward end face and a circumferential surface lying between said forward and rearward end faces, said body having a plurality of generally radially outwardly-opening recesses each formed with a predetermined width extending rearwardly and radially with respect to said circumferential surface, said recesses being in circumferentially spaced relation to each other and disposed adjacent said forward end face so that at least a portion of each of said recesses extends from the forward end face to the circumferential surface of said body, each of said recesses including a first bearing surface sloping radially outwardly in a direction away from said forward end face and extending to said circumferential surface, said recess also including means defining a second bearing surface sloping radially outwardly toward said forward end face, said second bearing surface being disposed forwardly of and extending toward said first bearing surface, said second bearing surface being disposed at a predetermined angle relative to said first bearing surface, so that said first bearing surface has a width extending rearwardly and radially less than the predetermined width of said recess;

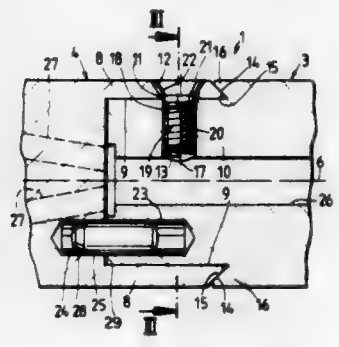
(b) a plurality of cutter inserts received in said plurality of recesses, respectively, each insert being of a quadrilateral shape having four side faces, front and rear faces and four corners, two adjacent side faces being held in contact with said first and second bearing surfaces, respectively, said insert having an end cutting edge at the corner thereof at which the side face held against the said second bearing surface and the side face facing away from the said first bearing surface intersect each other, said end cutting edge extending slightly beyond said forward end face, and said insert having a peripheral cutting edge formed on the side face facing away from the said first bearing surface; and

(c) a plurality of elongated clamp members received in said plurality of recesses, respectively, and releasably holding said inserts in position, each clamp member extending along said first bearing surface generally coextensive therewith.

4,511,294
ROTARY MATERIAL REMOVING TOOL

Manfred Grunsky, Dreieichenhain; Reiner Süssmuth, Neu Isenburg, and Günter Ischen, Oberhausen, all of Fed. Rep. of Germany, assignors to Stellram GmbH, Heusenstamm, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,639
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204245
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—232 18 Claims

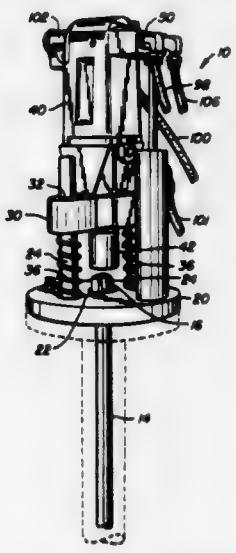


1. A material removing tool with a rotary support comprising an adapter arranged to support a cutter or the like and including two spaced-apart legs defining a socket and having edge faces, at least one of said legs having a hole extending substantially radially of said support; a shank including a stub extending into said socket and having a tapped bore extending substantially radially of said support, said shank further having surfaces each adjacent to a different one of said edge faces; and means for releasably securing said adapter to said shank, including a screw having a threaded shank portion threaded into said tapped bore, and a head in said hole, the axes of said hole and said bore being parallel and offset relative to one another so that the head of said screw cooperates with said one leg to urge said edge faces against the respective surfaces of said shank.

4,511,295
PNEUMATIC COLLET RELEASE TOOL

Vadim Razdobreev, 4150 Ohna Ct., Fremont, Calif. 94536

Filed Sep. 20, 1982, Ser. No. 419,895
Int. Cl.³ B23C *7/00*
U.S. Cl. 409—233 3 Claims



1. A device for rotating a draw bar in a machine tool, said draw bar having one end operably connected to a collet and an opposite end adapted to be rotated, said device comprising:

a frame capable of being mounted on the machine tool near the opposite end of the draw bar;

a carriage slidably mounted on the frame so that it is free to

move toward and away from the opposite end of the draw bar;

a pneumatic motor mounted on said carriage, said motor having a first selector switch shaft for actuating the motor in a first rotational direction and a second selector switch shaft for actuating the motor in the opposite rotational direction;

means for engaging said rotating the opposite end of the draw bar, said means being operably connected to the motor;

a piston and cylinder assembly mounted to the machine tool and connected to the carriage to raise and lower te engaging means relative to the opposite end of the draw bar; and

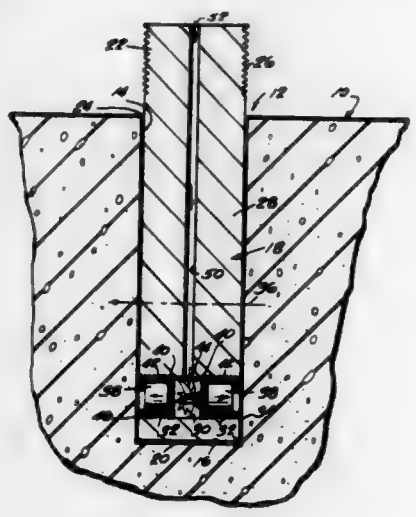
a single pneumatic control switch comprising (1) a housing having a single pneumatic inlet and four pneumatic outlets, to wit, a first outlet connected to the piston and cylinder assembly, a second outlet operatively connected to the first selector shaft, a third outlet operatively connected to the second selector shaft, and a fourth outlet connected to supply air power to the motor, and (2) two cylinders being interconnected between the inlets and outlets so that depressing one cylinder connects the inlet to the first, second and fourth of the outlets in order to simultaneously actuate the piston and cylinder assembly to lower the engaging means and depress the first selector switch to rotate said engaging means in a first direction, and depressing the second cylinder connects the inlet to the first, third and fourth of the outlets in order to simultaneously actuate the piston and cylinder assembly to lower the engaging means and depress the second selector switch to rotate said engaging means in a second direction, whereby the draw bar may be rotated in either direction.

4,511,296

ANCHOR BOLT WITH MECHANICAL KEYS DEPLOYED BY INTERNAL PRESSURIZATION

Israel Stol, Pittsburgh, Pa., assignor to Invocas, Inc., Columbus, Ohio

Filed Mar. 16, 1983, Ser. No. 475,716
Int. Cl.³ F16B *13/04*; B23P *19/00*
U.S. Cl. 411—20 **9 Claims**



1. An anchor bolt for providing an anchor site in a matrix of solid material which has an accessible face having a generally cylindrical socket formed therein through said accessible face, said anchor bolt comprising:

a shaft constructed and arranged to be snuggly received one end first into the socket so as to have an axially inner portion embedded in the matrix and an axially outer stub portion protruding outwardly of said accessible face;

means defining at least one cavity generally centrally within the axially inner portion of the shaft;

means defining a longitudinally extending passageway in said shaft, said longitudinal passageway extending from communication with said cavity, to the exterior of said stub portion of said shaft;

at least one respective radially extending passageway extending in said shaft between each said cavity and the exterior of said shaft axially inner portion;

a key of hard, durable material wholly recessed in each said radially extending passageway, each such key, said at least one cavity and said passageways being constructed and arranged for direct exposure of each such key to superatmospheric fluid pressure when applied to said at least one cavity, and being constructed and arranged for direct, engaging penetration of said matrix upon being driven radially outwardly; and

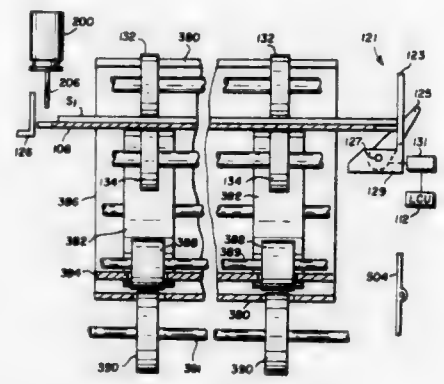
means, operable via said longitudinal passageway, for producing such a surge of superatmospheric fluid pressure in each said cavity, that each said key is driven radially outwardly in the respective radially extending passageway to a position of partial-length protrusion radially from said shaft, so that the anchor bolt may be firmly locked in the socket in which its axially inner end portion is received.

4,511,297

APPARATUS AND METHOD FOR OFFSETTING AND DELAYING DELIVERY OF SHEETS IN AN ADHESIVE BINDER

William C. Wilson, and Michael H. Green, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,069
Int. Cl.³ B42B *5/00*; B05B *1/28*; B42C *9/00*
U.S. Cl. 412—8 **9 Claims**



1. In an adhesive binder for forming bound booklets from sets of sheets, the binder having means for applying liquid adhesive to a side edge portion of one or more sheets of each set of sheets, a tray where sheets of each set are assembled to form a bound booklet, and means for advancing the sheets seriatim toward the assembly tray, the improvement comprising:

means for temporarily stopping advancement of the first and second sheets of a set after such sheets have completely passed the adhesive applying means and before such sheets reach the tray so that there is a brief period of time for removing a booklet from the tray before sheets of the next booklet are advanced to the tray; and

means for offsetting the first and second sheets so that when such sheets are stopped by the stopping means adhesive on one sheet is spaced from the side edge of the other sheet, thereby to avoid removal of adhesive from said one sheet.

4,511,298

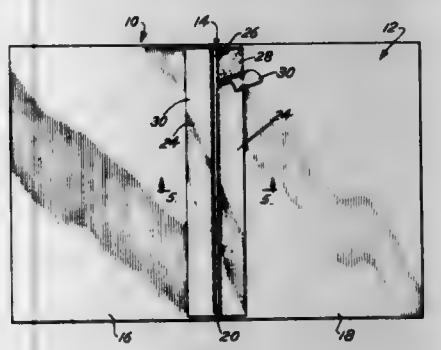
PROTECTIVE BINDER

Charles E. Jones, Evanston, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,765
Int. Cl.³ B42B *5/06, 5/00*; B42F *13/00*; B42C *9/08*
U.S. Cl. 412—34 **6 Claims**

1. A protective binder for holding and protecting one or

more pages containing information and the like thereon, said binder comprising a unitarily formed and foldable semi-rigid member, said foldable member having a front cover, a back cover, and a contiguous rear edge section between said front and back covers, hinge defining means unitarily formed by said foldable member for flexibility interconnecting both said front cover and said back cover to said rear edge section, said rear edge section having an interior surface, elongated flexible tape



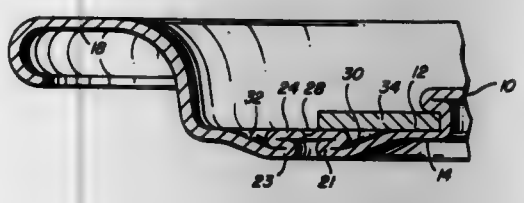
means having a central portion thereof bonded to said interior surface of said rear edge for substantially the entire length of said tape and said rear edge and having a projecting edge portion adjacent said central portion overlapping at least one of said covers said tape having bonding means for securely receiving said pages, said tape being free of said bonding means on the surface thereof adjacent said overlapped cover, said pages being securely received by said bonding means on said tape for securement between said front and back covers.

4,511,299

PULL-TAB FORMING METHOD

Edgar H. Zysset, St. Cloud, Fla., assignor to Automated Container Corporation, Orlando, Fla.

Filed Sep. 1, 1983, Ser. No. 528,584
Int. Cl.[3] B21D *51/00*
U.S. Cl. 413—12 **9 Claims**



1. A method for forming a container having a pull-tab removable end, said method comprising the steps of:

(a) providing a can end having a peripheral edge and a generally flat panel, said panel having opposing first and second sides with said first side adapted to face toward the inside of the container when said end is affixed thereto;

(b) forming first and second concentric grooves in said panel spaced from said peripheral edge, said grooves extending below the level of said first side to form inner and outer beads;

(c) forming a central bead in said panel between said first and second concentric grooves, said central bead extending above the level of said second surface;

(d) forming a score along said central bead;

(e) forcing said inner and outer beads toward each other and then toward said first surface and said central bead toward said second surface until said inner and outer beads abut said central bead; and

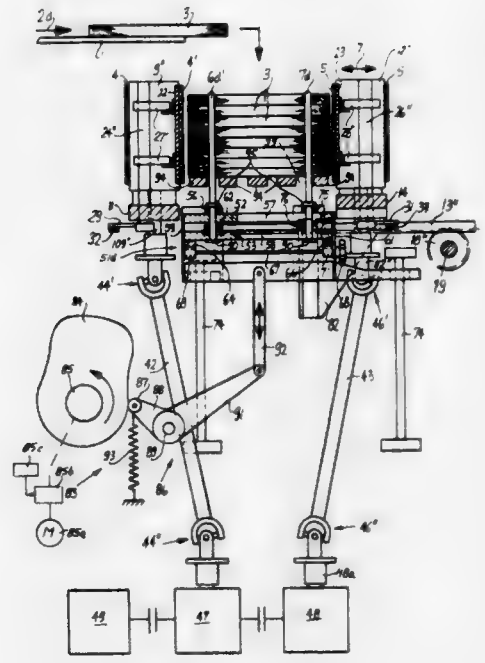
(f) fixing a pull-tab to said end, said pull-tab having means for severing said end along said score.

4,511,300

APPARATUS FOR GATHERING WRITING PADS OR THE LIKE

Siegfried Lampe, Ellerbek; Heinz Lehmann, and Peter Dose, both of Hamburg, all of Fed. Rep. of Germany, assignors to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 269,563, Jun. 2, 1981, Pat. No. 4,403,899. This application Sep. 13, 1983, Ser. No. 531,919
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021124
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.[3] B65H *31/30*
U.S. Cl. 414—35 **10 Claims**



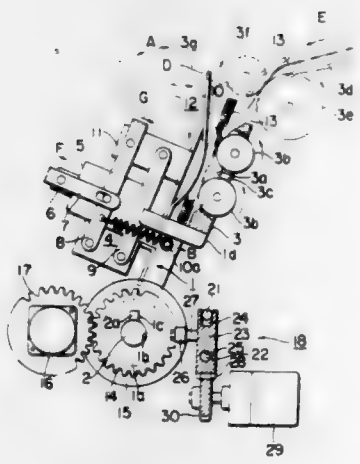
1. Apparatus for gathering stacks of pads or analogous commodities, comprising a row of neighboring receptacles having a floor; means for feeding commodities into said receptacles so that the receptacles accumulate stacks of commodities; and means for removing the stacks from said receptacles, including first and second conveyor means flanking said row, each of said conveyor means comprising an endless flexible element and upright rotary guide members for such flexible element, each of said flexible elements having an elongated reach adjacent to the respective side of said row, at least a portion of at least one of said conveyor means being shiftable between a first position nearer to the other of said conveyor means to thereby establish motion transmitting contact between the stacks and said conveyor means and a second position distant from said other conveyor means, means for shifting said portion of said one conveyor means between said first and second positions including means for moving said reach of said one conveyor means toward and away from said other conveyor means, said moving means including a reciprocable back support adjacent to that side of the respective reach which faces away from said row, and means for advancing said conveyor means to remove the stacks from said receptacles in the longitudinal direction of said row on movement of said portion of said one conveyor means to said first position.

4,511,301

CLAMP DEVICE FOR PAPER SHEET BUNDLES IN A PAPER SHEET COUNTING AND BANDSEALING APPARATUS

Hikaru Kawano, Odawara; Koji Sato, Hiratsuka, and Hiroyoshi Nogi, Tokyo, all of Japan, assignors to Musashi Co., Ltd., Tokyo and Hitachi Engineering Kabushiki Kaisha, Kanagawa, both of, Japan

Filed Dec. 14, 1983, Ser. No. 561,562
Claims priority, application Japan, Dec. 22, 1982, 57-223924
Int. Cl.[3] B41J *13/10*; B65H *31/30*
U.S. Cl. 414—43 2 Claims



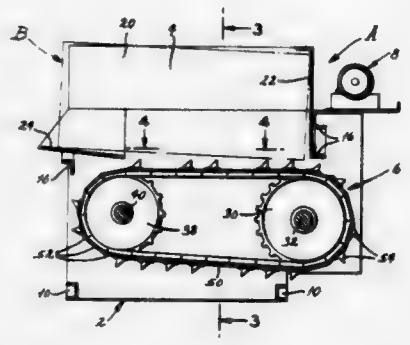
1. A clamp device for receiving and stacking paper sheets fed thereto sequentially in edge-to-edge relation, comprising a stacker member including a stacker piece having a laterally projecting stacker block thereon, said stacker block extending substantially transversely with respect to the path of said fed paper sheets for impingement by, and support of the leading edges of said sheets as they are received and stacked in said lateral direction in said stacker member, said stacker piece having a concavely curved paper sheet receiving surface and means defining a through-hole of said surface, said stacker piece being movable between a first position thereof wherein its said surface is substantially adjacent to the path of said fed paper sheets and a second position thereof which is displaced from its said first position in said lateral direction, the curvature of said concavely curved surface being substantially in the direction of feeding of said paper sheets, a roll-holding member in fixed position adjacent to said first position of said stacker piece and carrying a pair of parallel rotatable rolls which project through said through-hole of said stacker piece and are disposed substantially tangent to the path of said fed paper sheets when said stacker piece is in its said first position, said rolls being rotatable in said direction of feeding of said sheets, a driving member mounted for movement toward and away from said stacker piece and having a convexly curved pressing surface corresponding with, and facing said concavely curved stacker piece surface and said rolls when said stacker piece is in its said first position for receiving and stacking said fed paper sheets in substantially straight condition between said pressing surface and said rolls, and means operable upon attaining the desired stack of said paper sheets for urging said driving member toward said stacker piece and for moving said stacker piece from its said first position and away from said rolls to its said second position to clamp said stacked sheets in curved condition between said convexly curved driving member surface and said concavely curved stacker piece surface as said stacker piece is moved to its said second position.

4,511,302

MACHINE FOR DISLODGING CANS FROM A COMPRESSED BALE OF CANS

Joseph Moore, St. Louis, Mo., assignor to Hustler Conveyor Company, St. Louis, Mo.

Filed Apr. 1, 1983, Ser. No. 481,571
Int. Cl.[3] B65G *65/42*
U.S. Cl. 414—327 11 Claims



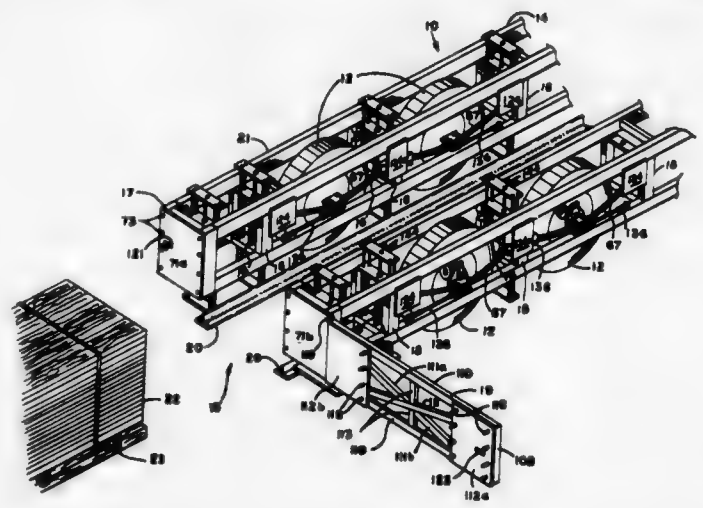
3. A machine for dislodging items from a densified bundle of such items, said machine comprising: a frame; an endless track supported on the frame such that it has one pass which is presented upwardly; means supported on the frame for moving the track relative to the frame without changing its location on the frame; lugs attached to the track such that they project outwardly therefrom, whereby the lugs project generally upwardly along said one upwardly presented pass of the track; and walls mounted on the frame to provide a cavity above said one pass of the track, said walls including a front wall which extends over and across said one pass of the track such that said one pass for the most part moves toward and beneath the front wall, said walls also including side walls which extend rearwardly from the front wall generally along the sides of said one pass, the cavity being open at its top and also between the side walls at their ends that are remote from the front wall, so that the cavity opens both upwardly and rearwardly, whereby a densified bundle of items may be inserted into the rear open end of the cavity and deposited on said one pass of the track, so that the lugs urge the bundle toward the front wall and strip the items from the bottom of the bundle, enabling them to be carried out of the cavity on the track.

4,511,303

SELF-LOADING AND UNLOADING VEHICLE

William B. O'Neill, P.O. Box 1144, Fort Morgan, Colo. 80701

Filed Sep. 13, 1982, Ser. No. 417,355
Int. Cl.[3] B60P *3/00*
U.S. Cl. 414—458 3 Claims



1. A transport trailer releasably connected to and pulled by a tractor, said trailer adapted to automatically load and unload

at least one object supported at a raised position, comprising in combination:

an elongated, generally U-shaped frame having a closed end and an open end and two elongated arms defining an opening therebetween and extending rearwardly from the closed end to the open end, each arm terminating at the closed end in a cap plate having a plurality of prealigned holes formed therein, one of said cap plates having another hole formed therein, each of said arms further including a plurality of box structures spaced at predetermined positions along the length of each arm, each box structure including two vertical members and two horizontal members defining either side of an opening in said arms;

at least one wheel rotatably connected to each of said arms for allowing movement of said frame as said frame is pulled by the tractor, each of said wheels mounted within one of said openings;

lifting means for picking up said object from said raised position and for lowering said object to a second raised position, said lifting means being mounted on selected ones of said horizontal members of said box structures and operably connected to a tine extending substantially the length of each of said arms and generally adjacent the opening defined between said arms;

transverse structure pivotably connected to one of said arms at the open end thereof, said transverse structure including at least two vertical members at either lateral end thereof and two horizontal members at a bottom and a top thereof, each end of said transverse structure at each of the vertical members further including a closure plate connected to said vertical and horizontal members for mated contact with said cap plates on closure of said transverse structure against said arms, one of said closure plates nearest the pivotable connection to said one arm further having a plurality of pins joined thereto in a vertical column, said pins being of generally cylindrical shape and terminating in a frustoconical portion adapted to be received into and project through the prealigned holes on the one like shaped cap plate at the end of the one arm, the other closure plate of said transverse structure including two vertical columns of identically shaped pins adapted to be received into and project through the prealigned holes formed in the other cap plate and a slot formed in said other closure plate; and

locking and closing means for pulling said transverse structure into a closed position wherein the cap plates are face-to-face with the closure plates, the pins of the closure plates projecting into the holes of the cap plates at the ends of the arms, said locking and closure means further including a piston and cylinder pivotably connected to the end of the other arm, said piston being integrally connected to a key, which key extends through the hole in said one cap plate for receipt of the slot in the other closure plate on the transverse structure, said key being of generally T-shaped configuration for initial insertion into and then rotation with respect to said slot to thereby close and lock said transverse structure upon activation of said piston cylinder.

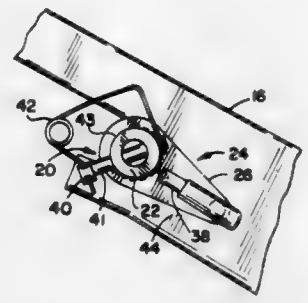
4,511,304

LATCH FOR SECURING REEL CARRYING SPINDLES TO A LOADING AND UNLOADING MECHANISM

Roger D. Woodruff, Hebron, Ind., assignor to Champion Corporation, Hammond, Ind.

Filed Sep. 7, 1982, Ser. No. 415,134
Int. Cl.³ B65H *75/40*
U.S. Cl. 414—546 **14 Claims**

1. In a mechanism for moving structures relative to a supporting bed, the mechanism including pivotally mounted arms having recesses defined at one end of said arms, rod means carried by the structures for engagement with said recesses in the arms whereby pivoting movement of the arms operates to lift the structures, and means for locking said rod means in engagement with said recess in each arm, the improvement in said locking means comprising a latch mechanism having a plate-like body having a completely enclosed aperture therein, said aperture dimensioned to receive said rod means there-



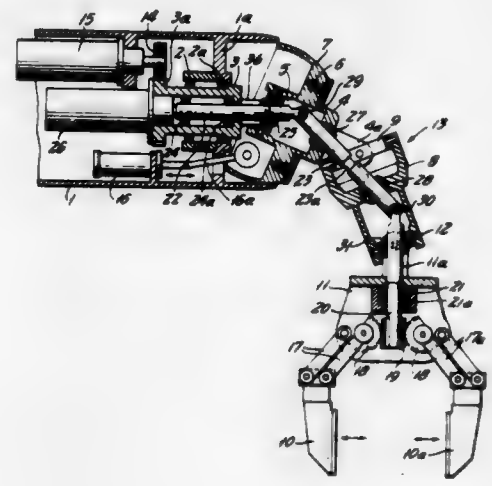
through, and manually operable means for releasably attaching said body to said arm, to prevent translational movement of said body in a plane perpendicular to said rod means, wherein said latch when engaged with said arm and said rod means retains said rod means within the recess of said arm.

4,511,305

MANIPULATOR

Seiji Kawai, Tokyo, and Dairiku Matsumoto, Higashi minemachi, both of Japan, assignors to Meidensha Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1983, Ser. No. 457,590
Claims priority, application Japan, Jan. 16, 1982, 57-5105
Int. Cl.³ B66C *1/10*
U.S. Cl. 414—755 **3 Claims**



1. A manipulator having a base, a hand, and flexible arm means, said flexible arm means comprising: a plurality of hollow coupling members including one adjacent the base, first universal joint means respectively coupling said hollow coupling members to each other so as to allow free flexion and integral rotation thereof, said one hollow coupling member being attached rotatably to said base, first actuator means housed in said base for rotating said one hollow coupling member, a frame mounted rotatably on the hollow coupling member adjacent said one hollow coupling member, a plurality of hand operating shafts including one adjacent said base, spherical bearings attaching said hand operating shafts to said hollow coupling members so as to allow relative rotation therebetween, second universal joint means respectively at intermediate locations of said hollow coupling members for coupling said hand operating shafts to each other, said one hand operating shaft being attached rotatably in said one hollow coupling member, and being connected at one end to an operating shaft for operating said hand, at least another one of said hand operating shafts being expandable, second actuator means attached to said one hollow coupling member for rotating said hand operating shafts, and third actuator means con-

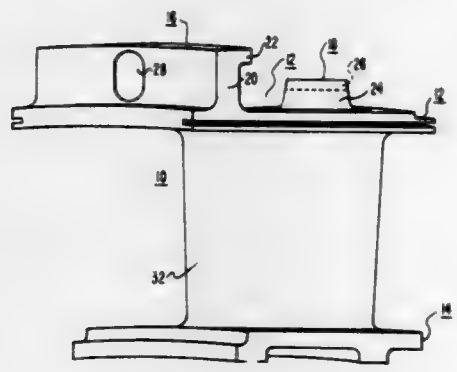
nected to said frame for tilting said frame so as to flex said flexible arm means.

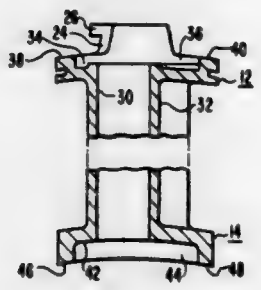
4,511,306

COMBUSTION TURBINE SINGLE AIRFOIL STATOR VANE STRUCTURE

Kent G. Hultgren, Swarthmore, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 2, 1982, Ser. No. 345,125
Int. Cl.³ F01D *9/02, 9/04*
U.S. Cl. 415—136 **1 Claim**





1. A one-piece cast stator structure for a fluid turbine, comprising:

an inner shroud segment;

an outer shroud segment;

a single, generally hollow, airfoil-shaped stator vane having one wall with a concave outer face, and an opposite wall with a convex outer face, said vane having opposite radial ends integrally joining said shroud segments through an investment casting process;

said vane walls being of a given thickness throughout its hollow portion;

the wall thickness of at least one of said shroud segments, in the general vicinity of the intersection between said at least one shroud segment and the hollow wall portion of the vane, is of substantially reduced thickness relative to the wall thickness of said at least one shroud segment along its side margins, so as to provide a closer match in thickness between said vane wall given thickness and said reduced thickness than between said given thickness and said shroud side margin thickness;

upstream and downstream support rail means on the outer face of said outer shroud segment for connecting said stator sturcture to blade ring means;

means for securing said upstream rail means to said blade ring means to restrain relative movement in the circumferential and axial directions while permitting limited relative movement in the radial direction;

said blade ring means includes groove means receiving said downstream rail means, and said groove means and rail means are dimensioned to provide one clearance permitting limited relative movement therebetween in a radial direction; and

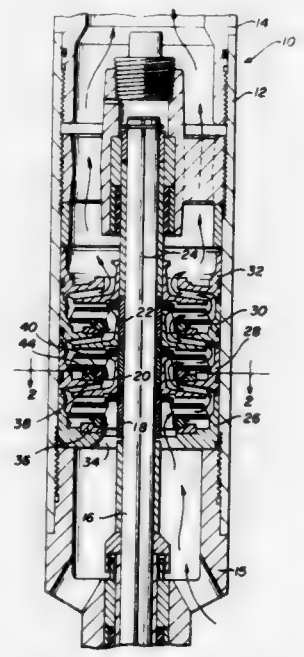
the downstream end of said outer shroud carrying said downstream rail has an arc on its portion facing said blade ring means of a shorter radius than the radius of said facing blade ring means to provide another clearance at the circumferential ends of said outer shroud in the order of two to three times larger than said one clearance.

4,511,307

CENTRIFUGAL PUMP

Eldon L. Drake, Shawnee, Okla., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 2, 1983, Ser. No. 529,058
Int. Cl.³ F04D *29/02, 29/04*
U.S. Cl. 415—172 R **6 Claims**



1. In a centrifugal pump useful in pumping sand laden fluids, said pump including a rotatable impeller and a fixed diffuser, improved bearing means comprising:

an annular thrust member constructed from a material having a hardness greater than the hardness of sand, said member being attached to said impeller and having a bearing surface; and

an annular second member constructed from a material having a hardness greater than the hardness of sand, said second member being attached to said diffuser and having a bearing surface disposed in juxtaposition with the bearing surface on said thrust member to absorb thrust loading of said impeller, and whereby sand coming between said bearing surfaces will not erode said surfaces thereby prolonging the useful life of said pump when used for pumping fluids containing sand.

4,511,308

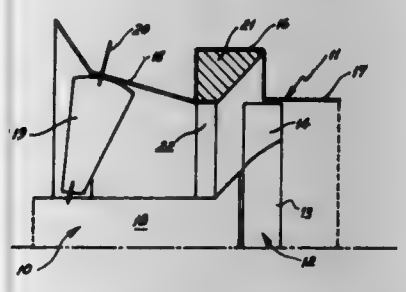
AXIAL AND MIXED FLOW FANS AND BLOWERS

Bruce A. Russell, Queenscliffe, and Adnan M. Abdel-Fattah, Blacktown, both of Australia, assignors to James Howden Australia Pty. Limited, North Sydney, Australia

PCT No. PCT/AU81/00181, § 371 Date Jul. 14, 1982, § 102(e) Date Jul. 14, 1982, PCT Pub. No. WO82/01919, PCT Pub. Date Jun. 10, 1982
PCT Filed Dec. 3, 1981, Ser. No. 403,493
Claims priority, application Australia, Dec. 3, 1980, 6741/80
Int. Cl.³ F04D *29/52*
U.S. Cl. 415—191 **9 Claims**

1. A high pressure axial or mixed flow blower or suction fan, comprising: an elongate tubular casing, an impeller disposed within said casing and having a hub rotatable about a longitudinal axis of the casing, and also having a plurality of blades extending radially from said hub, each blade having a tip with a leading edge and a trailing edge, a stationary center tube positioned within said casing upstream of the hub and carrying a plurality of guide vanes extending radially therefrom, the casing comprising a tubular inlet portion the cross sectional area of which is constant or is reduced gradually along its

length and which extends at least from the guide vanes in a downstream direction until it terminates in a tubular intermediate portion of larger cross sectional area than the inlet portion at its point of termination, the intermediate portion in turn terminating in a tubular outlet portion which is no larger in cross sectional area than the inlet portion at its point of termination, the inlet portion and the intermediate portion being



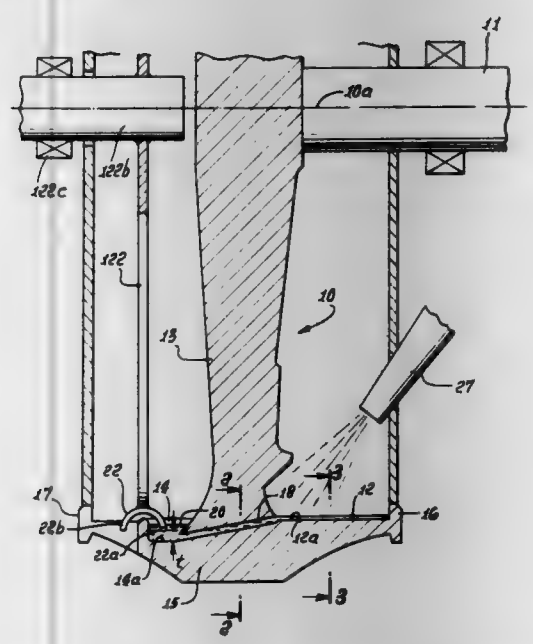
connected by an imperforate and substantially annular first wall portion and the intermediate portion and the outlet portion being connected by an imperforate and substantially annular second wall portion, the impeller being so positioned that the leading edge of the tip of each blade is positioned within the intermediate portion while the trailing edge thereof is positioned within the outlet portion.

4,511,309

VIBRATION DAMPED ASYMMETRIC ROTOR CARRYING LIQUID RING OR RINGS

James P. Maddox, Sherman Oaks, Calif., assignor to Transamerica Delaval Inc., Lawrenceville, N.J.

Filed Jan. 10, 1983, Ser. No. 457,005
Int. Cl.³ F01K *25/06*
U.S. Cl. 415—202 **11 Claims**



1. In apparatus of the character described, the combination comprising

(a) a rotor defining an annular channel to receive liquid that rotates with the rotor about the axis thereof, said channel including first and second sections which are axially spaced apart and intercommunicate via at least one drainage path via which liquid flows from the first channel section to the second channel section, the bottom of the second channel section spaced further from said axis than the bottom of the first channel section;

(b) nozzle means to jet fluid including liquid toward the first channel section which collects liquid in a film on the bottom of the first channel section, and

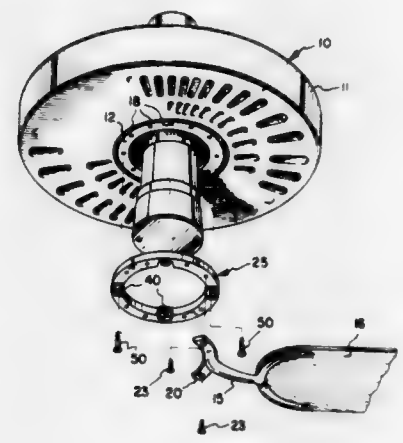
(c) means removing liquid from the second channel section so that liquid depth in said film in the first channel section is controlled, and so that liquid depth in the second channel is kept below a selected minimum value, thereby to inhibit surge wave development that otherwise is productive of rotor vibration during such rotor and liquid rotation, the rotor defining a lip at the side of said second section furthest from said first section, the radius of said lip from said axis approximating the radius to the bottom of the first section.

4,511,310

CEILING FAN BLADE ISOLATION

Richard A. Pearce, Memphis, Tenn., assignor to Robbins & Myers, Inc., Dayton, Ohio

Filed Mar. 2, 1984, Ser. No. 585,745
Int. Cl.³ F04D *29/64*
U.S. Cl. 416—134 R **5 Claims**



1. A ceiling fan having an electric drive motor including a rotor cage, and in which a plurality of paddle-like fan blades are mounted on blade irons for driving by the rotor cage, the improvement comprising:

a plurality of rigid suspension and drive elements depending from said rotor cage,

an annular blade-mount member,

means on said blade-mount member for mounting said blade irons in arcuately spaced relation to each other,

a plurality of elastomeric grommets each having an axial opening therethrough,

means mounting said annular blade-mount member to said grommets, and

means mounting said grommets to said suspension and drive elements for supporting said blade mount member in spaced relation to said cage, said suspension and drive elements further comprising partially threaded headed studs, one for each said grommet, said studgs received through said grommet openings with the heads thereon on one side of the associated said grommet and supporting said annular blade-mount member and said grommets in depending spaced relation to the rotor cage.

4,511,311

FLUID SYSTEM CONTROL APPARATUS AND METHOD

John T. Olson, Edina, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Sep. 1, 1982, Ser. No. 413,628
Int. Cl.³ F04B *41/06*
U.S. Cl. 417—5 **9 Claims**

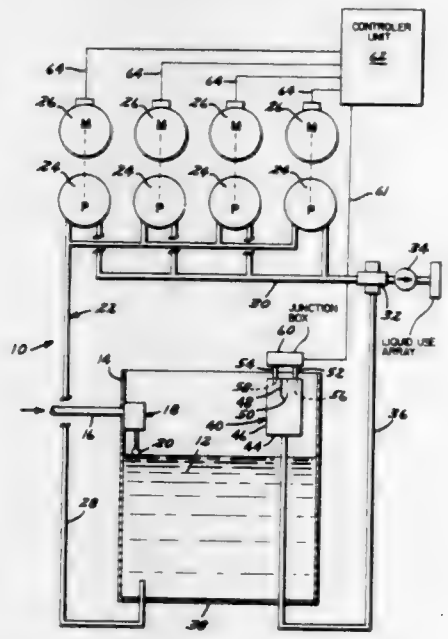
1. In combination with a fluid distribution system including a reservoir containing a supply of fluid, a fluid supply line conveying fluid from the reservoir to an implement using the fluid at a variable rate, a plurality of pumps for moving fluid through the supply line, a flow regulator interposed in the supply line to control the amount of fluid delivered to the implement, and a fluid return line channeling fluid diverted from the supply line by the regulator back to the reservoir; apparatus for governing flow of fluid from the reservoir through the supply line, comprising:

(a) means for measuring volumetric rate of flow of fluid through the return line, said measuring means comprising:

(i) a weir chamber having an aperture with a vertical dimension formed in a side thereof;

(ii) means for conducting fluid in the return line into said chamber, the fluid entering said chamber below a lower extremity of said aperture and rising to a height within said chamber depending upon the volumetric rate of fluid flow in the return line;

(iii) first sensing means disposed for perceiving rising of fluid along said vertical dimension of said aperture to a first height corresponding to the quantity of fluid exceeding that minimum quantity needed by the implement by said first designated amount; and



(iv) second sensing means disposed for perceiving rising of fluid along said vertical dimension of said aperture to a height corresponding to the quantity of fluid exceeding that minimum quantity needed by the implement by said second designated amount; and

(b) means, responsive to the measured volumetric rate of fluid flow through the return line, for activating at least one additional pump, as necessary, in order to provide at least a quantity of fluid exceeding a minimum quantity needed by the implement by a first designated amount, to the regulator, and for deactivating at least one pump, as necessary, when the amount of fluid delivered to the regulator exceeds the minimum amount of fluid needed by the implement by a second designated amount.

4,511,312

METHOD OF DRIVING THE IMPELLER OF A LIQUID PUMP BY MEANS OF A BRUSHLESS A.C. MOTOR; AND A LIQUID PUMP FOR CARRYING OUT THE METHOD

Carl S. M. Hartwig, Täby, Sweden, assignor to Institut Cerac S.A., Ecublens, Switzerland

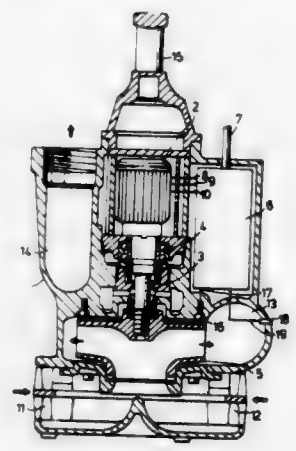
Filed Jun. 1, 1983, Ser. No. 499,980

Claims priority, application Switzerland, Jul. 28, 1982, 4578/82

Int. Cl.[3] **F04B** *49/06*

U.S. Cl. 417—45 **11 Claims**

3. A liquid pump comprising: an impeller (5), a pump housing (1) for housing said impeller (5), a brushless a.c. motor (2) for driving said impeller, a regulatable static inverter (6) for supplying electric power to said motor (2) and having an output frequency in the order of 100–1000 Hz, means (86,87) for changing the output frequency of the inverter so that substantially constant power (P_{max}) is delivered to the motor irrespective of the load on said motor.



4,511,313

COMPRESSION CAPACITY CONTROL APPARATUS FOR SWASH PLATE COMPRESSOR

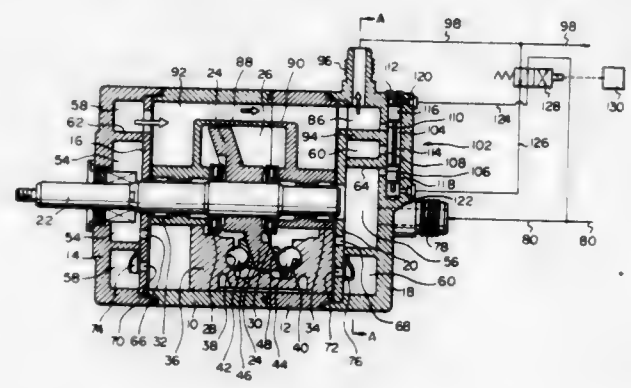
Yutaka Ishizuka, and Tsunenori Shibuya, both of Konan, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,642

Claims priority, application Japan, Sep. 11, 1981, 56-143525

Int. Cl.[3] **F04B** *49/02, 49/00, 1/16, 1/18*

U.S. Cl. 417—270 **8 Claims**



1. A swash plate compressor comprising a cylinder block, front and rear covers mounted on the opposite ends of the cylinder block, each front and rear cover being formed with a low pressure chamber for temporarily storing an incoming gas and a high pressure chamber for temporarily storing an outgoing gas,

a delivery chamber formed in one of the front and rear covers, conduit means extending through said cylinder block for commincating the high pressure chamber in the other cover with the delivery chamber, wall means isolating the delivery chamber from the high pressure chamber in said one cover, a delivery conduit delivering outgoing gas from said delivery chamber;

a compression capacity control passageway providing communication between the delivery chamber and the high pressure chamber in said one cover and communication between the high and low pressure chambers in said one cover; and

a valve member comprising a valve spool disposed in the control passageway and operable in a first position to block communication between the high pressure chamber and the low pressure chamber of said one cover while unblocking communication between the delivery chamber and the high pressure chamber of said one cover and operable in a second position to block communication between the delivery chamber and the high pressure

chamber of said one cover while unblocking the communication between the high pressure chamber and the low pressure chamber of said one cover,

said valve spool being formed with a first land for selectively communicating the delivery chamber with the control passageway and a second land for selectively communicating the low pressure chamber of said one cover with the control passageway, whereby when said valve member is in said second position, the gas in said high pressure chamber in said other cover continues to pass to said delivery chamber and out to said delivery conduit while the gas in said high pressure chamber in said one cover is precluded from passing to said delivery chamber and passes to the low pressure chamber in said one cover to thereby reduce the total capacity of the compressor without requiring any check valve between the high pressure chambers in the front and rear covers and the delivery conduit.

4,511,314

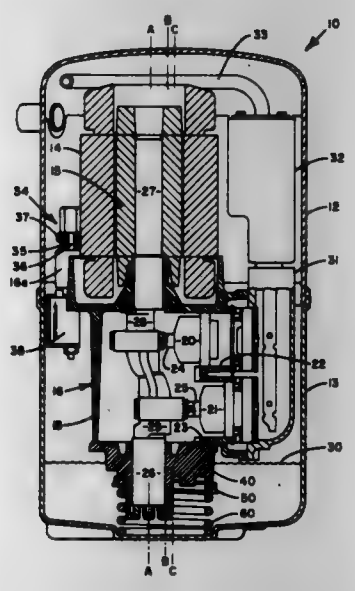
MOUNTING FOR A HERMETIC COMPRESSOR

Howard H. Fraser, Jr., Lafayette, and George A. Anderson, III, East Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 14, 1984, Ser. No. 609,616

Int. Cl.[3] F25D *19/00*

U.S. Cl. 417—363 **6 Claims**



1. A mounting for vertically supporting an asymmetrical motor-compressor unit having a center of gravity spaced from the axis of rotation of the crankshaft within the shell of a hermetic compressor serially comprising:

bearing head means;

positioning plate means; and

spring means;

said bearing head means being adapted to receive the crankshaft of a motor-compressor unit in a journal relationship and including an axial extension, a pair of axially extending bosses and at least one axially extending arcuate rim portion;

said positioning plate means having a first opening for receiving said axial extension and at least two additional openings for receiving said pair of bosses;

said spring means adapted to surround said axial extension and to biasingly engage said plate means and the shell and having a geometric center coaxial with the center of gravity of the compressor whereby a stable support is provided.

4,511,315

LIQUID METAL MECHANICAL PUMP

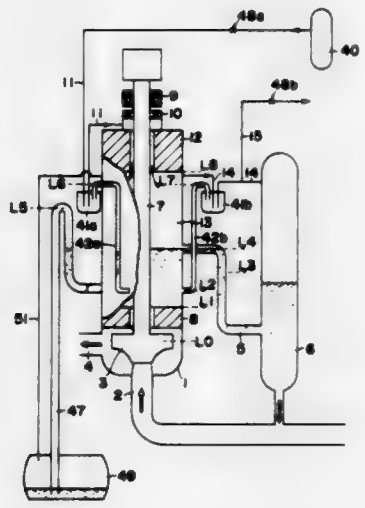
Mitsuru Kanbe, Yokohama, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 479,077

Claims priority, application Japan, Mar. 30, 1982, 57-52158

Int. Cl.[3] F04B *39/02;* F01D *25/08*

U.S. Cl. 417—366 **8 Claims**



1. A mechanical pump for liquid metal, including a drive shaft housing having therein a free surface of liquid metal and a cover gas space over said liquid metal free surface, a gas line for feeding a cover gas into said cover gas space, and a gas line for exhausting the cover gas from said cover gas space, said mechanical pump further comprising:

an emergency cover gas line shut-off system;

wherein said gas feed line is cut at the outside of and in the proximity of said drive shaft housing, resulting open ends of the gas feed line being inserted into a first air-tight freeze pot so as to communicate with each other via said first freeze pot;

wherein said gas exhaust line is cut at the outside of and in the proximity of said drive shaft housing, resulting open ends of the gas exhaust line being inserted into a second air-tight freeze pot so as to communicate with each other via said second freeze pot; and

wherein said first and second freeze pots each being connected to said drive shaft housing via a first freeze pot pipe and a second freeze pot pipe, respectively, through which the liquid metal in said drive shaft housing flows out into said first and second freeze pots when the free surface of the liquid metal inside the drive shaft housing rises to a predetermined level higher than the level of the normal operation of the pump.

4,511,316

POSITIVE DISPLACEMENT PUMPS

Bryan E. Ellis, Eastbourne, England, assignor to SSP Pumps Limited, England

Filed Jul. 1, 1982, Ser. No. 394,334

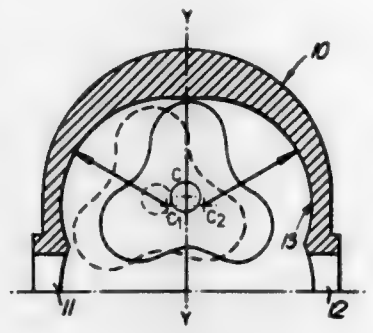
Claims priority, application United Kingdom, Jul. 3, 1981, 8120637

Int. Cl.[3] F01C *1/18;* F04C *2/00*

U.S. Cl. 418—150 **4 Claims**

1. A rotary lobe positive displacement pump comprising two externally driven lobed impellers to contra-rotate within a casing without, in normal use, mutual contact or contact with the casing, the casing having two ports to act respectively as an inlet and an outlet, said ports being positioned on an axis extending intermediate said impellers and being perpendicular to a line joining the rotational axis of the impellers, the casing having two impeller chambers, each chamber being peripherally defined by two arcs, one of the arcs of each chamber being centered at a point offset from the nominal rotational axis of the associated impeller, the offset of said point from said rota-

tional axis being in a direction having one component parallel to the line joining the axes of the impellers and extending



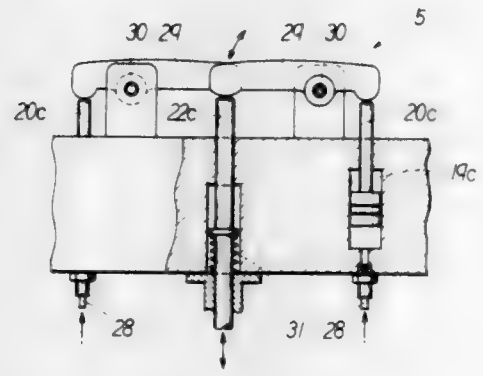
towards the other impeller and another component parallel to the center lines of the ports and extending towards one of said ports.

4,511,317

APPARATUS FOR ENCLOSING SEMICONDUCTORS WITH RESIN BY MOLDING

Kazuo Bandoh, No. 81-8, Toyama, Momoyama-cho, Fushimi-ku, Kyoto-shi, Japan

Filed Dec. 3, 1982, Ser. No. 446,699
Claims priority, application Japan, Dec. 7, 1981, 56-182748
Int. Cl.³ B29G *3/00*
U.S. Cl. 425—116 **3 Claims**



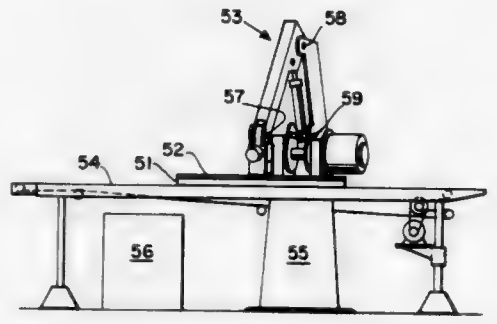
1. An apparatus for enclosing semiconductors with resin by molding comprising a stationary upper mold and a movable lower mold opposed thereto, a plurality of cavities formed in the mold surfaces of said upper and lower molds, a pluraltiy of pots in said upper mold, each of said pots being disposed so as to communicate with a predetermined number of said cavities without through main and auxiliary runners and including openings at the uper end thereof for receiving the resin, a plunger in each of said pots for pressurizing the resin received in the associated pot and for forcing the pressurized resin into said cavities and a resin material pressurizing mechanism disposed above said upper mold, said resin material pressurizing mechanism comprising a plurality of pistons and cylinders individual to but separate from said plungers and a like plurality of rocker arms disposed between individual pairs of said pistons and plungers for transmitting movement of a said piston into movement of the corresponding plunger, said cylinders being connected to individual channels for a fluid pressure medium, said plungers being arranged in a row in a plunger mounting frame and said cylinders being formed in said plunger mounting frame and arranged in two rows in staggered relationship on opposite sides of the row of plungers, sad rocker arms being located between the associated piston and plunger such that the opposite ends of each rocker arm contact the upper ends of the associated piston and plunger, and said rocker arms being mounted on swing shafts arranged in staggered rows on opposite sides on the row of plungers, said apparatus further comprising a plurality of biasing springs, located in the plunger mounting frame and individually associated with a corresponding one of said plungers, for biasing said plungers upwardly to an inoperative position thereof.

4,511,318

DOUGH ROLLING APPARATUS FOR LAMINATED COOKIES

Michael S. Kolodesh; Edward L. Peters, and Raymond J. Madgett, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 475,772, Mar. 16, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 579,837
Int. Cl.³ B29D *7/10*; A21C *3/04, 7/01, 7/04*
U.S. Cl. 425—133.1 **10 Claims**



1. An apparatus for making a generally spherical laminate dough preform that has a first inner dough substantially uniformly encapsulated by at least one outer dough, said apparatus comprising:

(a) means for creating a laminate dough preform comprising a first inner dough having a layer of a second outer dough covering a substantial portion of said first inner dough, said layer of outer dough being of non-uniform thickness;

(b) a closed-top cavity of generally circular shape;

(c) means for supporting said laminate dough preform beneath said closed-top cavity;

(d) suspension means for moving said closed-top cavity in a predetermined direction about a predetermined axis of rotation without rotating said cavity relative to said suspension means; and

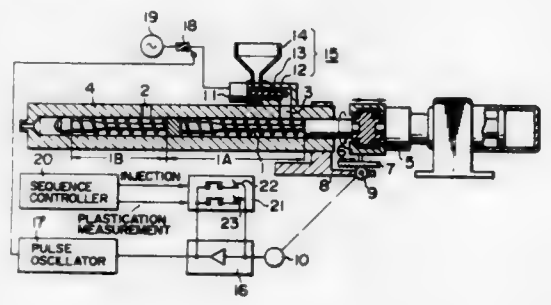
(e) drive means for moving said suspension means in said predetermined direction, whereby said laminate dough preform is caused to rotate about the interior surfaces of said closed-top cavity, thereby substantially uniformly distributing said outer dough about the entire surface of said first inner dough.

4,511,319

VENT-TYPE PLASTICATION MOLDING MACHINE

Seizo Takayama, Ube, Japan, assignor to UBE Industries, Inc., Japan

Filed Aug. 20, 1982, Ser. No. 409,943
Claims priority, application Japan, Aug. 24, 1981, 56-124090[U]
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—145 **7 Claims**



1. A vent-type plastication molding machine comprising a material supply means provided at a material supply port communicating with a base end of an injection screw to feed mate-

rial at various rates, a speed detecting means for detecting a reciprocal sliding speed of said screw, and a material supply speed control means for changing or controlling the material supply speed of said material supply means so as to correspond to the reciprocal sliding speed of the injection screw at an injection stroke and a plastication measurement stroke.

4,511,320

EXTRUDER WITH A CASSETTE FILTER FOR MOLTEN PLASTIC MATERIAL

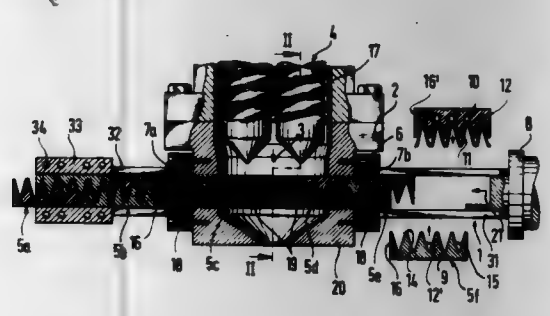
Friedrich Lambertus, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,785

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309505

Int. Cl.³ B29F *3/04*; B01D *27/06*

U.S. Cl. 425—199 **19 Claims**



1. A cassette filter for melt discharged from an extruder, said filter comprising a plurality of successive elements each having a tooth-shaped profile with respective flanks, filter means covering the flanks of the tooth-shaped profile and means fitted in the tooth-shaped profiles of said elements for sandwiching said filter means between the tooth-shaped profiles of said elements and the means which is fitted into the tooth-shaped profiles, said successive elements inclusive of said means which is fitted into said tooth-shaped profiles having aligned bores for passage of melt therethrough and through said filter means.

4,511,321

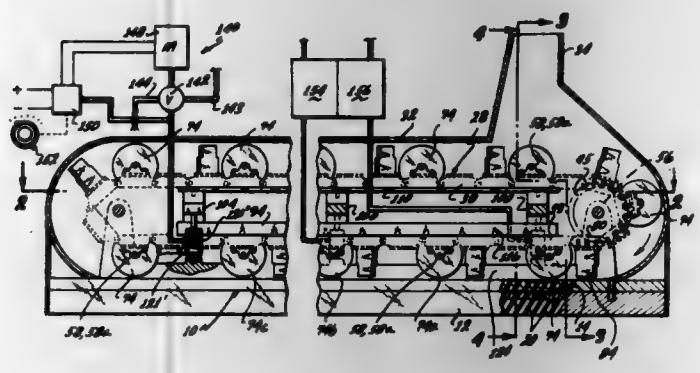
DENSIFICATION - PELLETIZING OF ORGANIC MATERIALS

Glenn Howard, 9893 Hwy. 41 N., Madera, Calif. 93637

Filed May 19, 1982, Ser. No. 379,663

Int. Cl.³ B28B *5/00*

U.S. Cl. 425—331 **13 Claims**



1. A machine for densifying and pelletizing extrudable material comprising, in combination, a flat horizontal die plate having spaced extrusion orifices in it, means for delivering material to be densified and pelletized to the surface of said die plate, pressure exerting means overlying said die plate for exerting pressure downwardly directly against the material for densifying it and for causing the material to be pelletized by being extruded through the die plate orifices, said pressure exerting means including continuous chain means positioned over said die plate, said chain means carrying a plurality of spaced pressure members shaped to cause the material to be densified to be extruded through the orifices in said die plate.

4,511,322

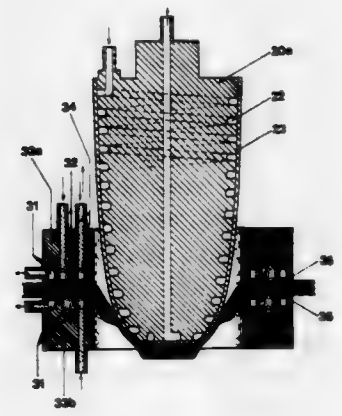
APPARATUS FOR THE MANUFACTURE OF A CUP-LIKE ARTICLE FROM POLYETHYLENE TEREPHTHALATE OR SIMILAR MATERIAL

Kjell M. Jakobsen, Skanor, and Clees T. Nilsson, Loddekopinge, both of Sweden, assignors to PLM Aktiebolag, Malmo, Sweden

Division of Ser. No. 154,890, May 30, 1980, Pat. No. 4,381,279. This application Jan. 10, 1983, Ser. No. 457,055

Int. Cl.³ B29C *17/03, 17/04*

U.S. Cl. 425—384 **8 Claims**



1. Apparatus for the manufacture of a cup-like article from polyethylene terephthalate or similar material comprising clamping means for clamping a substantially flat blank of amorphous, polyethylene terephthalate or similar material in a peripheral region thereof to form an inner zone completely surrounded by an outer clamped zone, press means for engaging said inner zone of said blank in a central region thereof smaller than the total area of said inner zone whereby a band-like zone is formed between said outer clamped zone and the central region in contact with said press means, said band-like zone having a radial extent substantially greater than the thickness of said blank, means for effecting relative displacement between said press means and said clamping means, means for maintaining the temperature of said blank below the glass transition temperature (Tg) of the material of the blank, the aforesaid clamping means, press means, relative displacement means and temperature maintaining means cooperatively constituting means for producing free stretching of the material of the blank in a drawing region by forming a transition zone in said material at which flow takes place in the material and the original thickness of the blank is reduced by a factor sufficient to effect orientation and crystallization of the material whereby a drawn element is formed which comprises an edge part composed of said clamped zone and a body which is drawn relative to said edge part and includes the oriented crystallized material, said temperature maintaining means including means in said press means so arraged as to provide for cooling the material of said blank at the temperature below Tg at least in the region of said transition zone to enable the material to be freely stretched thereat without undergoing compressive squeezing between the clamping means and the press means.

4,511,323
ARRANGEMENT FOR STAMPING OUTER SURFACE OF SHAPED BAR MATERIAL

Franz Blaum, Lemberg, Fed. Rep. of Germany, assignor to Gebrüder Kömmerling Kunststoffwerke GmbH, Pirmasens, Fed. Rep. of Germany

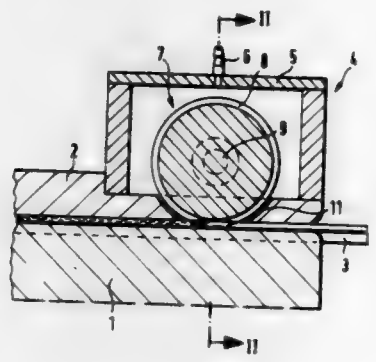
Filed Apr. 20, 1983, Ser. No. 486,843

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215175

Int. Cl.[3] **A21C** *11/02*

U.S. Cl. 425—385

11 Claims



1. An arrangement for stamping an outer surface of a synthetic thermoplastic bar material in thermoplastic condition, comprising

means for guiding a bar material;

a finishing rotary stamping tool having a working surface which is shaped in correspondence with a desired pattern to be stamped and rolls over the bar material to stamp the desired pattern on the latter; and

negative pressure means located at said stamping tool and arranged so that it attracts the bar material against said working surface of said rotary stamping tool simultaneously with rotation of said rotary stamping tool and formation of the pattern on the bar material.

4,511,324
DOUGH FORMING MOLDING ASSEMBLY

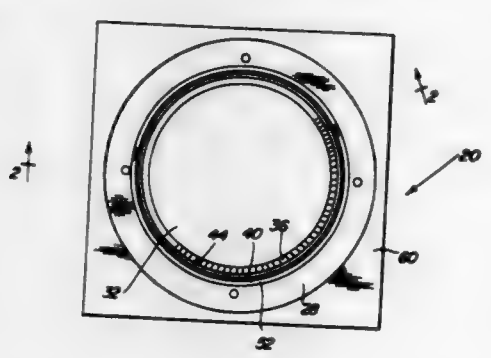
Marshall Bauer, Chicago, Ill., assignor to Nation Enterprises, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 481,759, Apr. 4, 1983, and Ser. No. 270,510, Jun. 4, 1981, abandoned. This application Aug. 10, 1984, Ser. No. 639,580

Int. Cl.[3] **A21C** *11/00*; **B29C** *1/00*

U.S. Cl. 425—398

9 Claims



1. A press assembly defining a mold cavity, and for converting a formable mass of raw dough into a thinned sheet having a generally dish-shaped configuration and including a substantially flat base sheet unitary with and surmounted and bounded by an integrally formed, circumscribing, upstand peripheral rim-like edge,

said press assembly comprising a piston-like platen having a substantially flat pressure face, said face being cut away at an encircling marginal periphery thereof to define an open-sided trough for receiving dough therewithin during compressive shaping of the raw dough mass,

a sleeve member slidably disposed about said platen and defining a mold cavity therewith,

said platen having a circumscribing bounding face spaced from and in dough-confining relation with a cooperating wall of said member, said member and said platen defining therebetween a clearance spacing in the range of 0.002 to 0.008 inches to permit escape of air from said mold cavity while preventing extrusive loss of dough from said mold cavity during closure of said press assembly,

platen and sleeve member intercoupling means including means for shiftably supporting said member while permitting intrusive penetration coaxially of said platen and withdrawal outwardly of said platen from said member,

means to actuate said assembly for applying molding pressure to dough beneath said platen and within said member, said platen abutting a backing plate and being removably attached to said backing plate, said plate being secured to a shaft connected with said means to actuate said assembly, said platen containing an electric heating element for heating said dough, said backing plate being such as to limit movement of said member relative to said platen such that a mold cavity at all times exists beneath the lower face of said platen.

4,511,325
SYSTEM FOR THE REDUCTION OF NO_x EMISSIONS

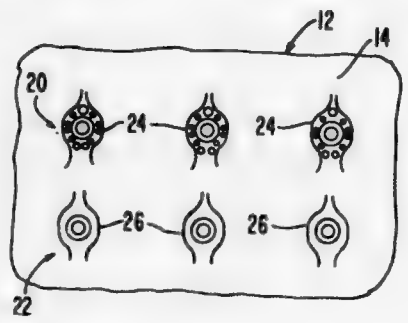
Temple S. Voorheis, Atherton, Calif., assignor to Coen Company, Inc., Burlingame, Calif.

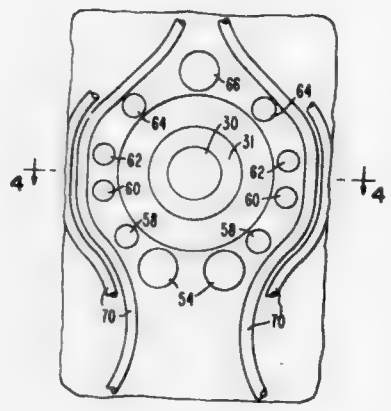
Division of Ser. No. 240,663, Mar. 5, 1982, abandoned. This application Dec. 3, 1982, Ser. No. 446,755

Int. Cl.[3] **F23N** *3/00*

U.S. Cl. 431—10

7 Claims





1. A method of controlling NO_x emissions in the products of combustion of a boiler furnace having a pair of vertically spaced rows of burners comprising: firing each lower burner with a relatively large deficiency of air to provide a fuel-rich flame in the lower part of the combustion region of the furnace; firing each upper burner with a relatively small deficiency of air with the flame emanating from each upper burner combining with the flame emanating from a respective lower burner in said region; and directing a volume of air into the region to make up the deficiency of the air through the lower

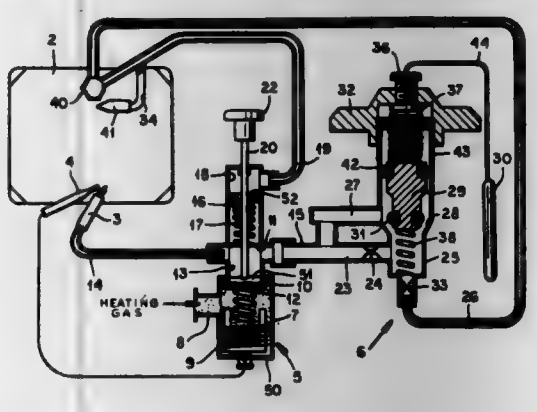
and upper burners, said volume of air being delivered along a number of paths adjacent to and spaced from each upper burner, respectively, certain of said air delivery paths being adjacent to the upper and lower portions of each upper burner, said directing step including moving a greater volume of air along the paths adjacent to the lower portion of each upper burner than is moved along the paths adjacent to the upper portion of the upper burner.

4,511,326

GAS-SUPPLY SYSTEM FOR CATALYTIC GAS BURNERS

Alain Lacroix, Rhone, France, assignor to Societe Lyonnaise des Applications Catalytiques, Rillieux-La-Pape, France

Filed Apr. 26, 1982, Ser. No. 372,053
Claims priority, application France, Apr. 24, 1981, 81 08815
Int. Cl.³ F23Q *9/08*
U.S. Cl. 431—53 **11 Claims**



1. A system for supplying a heating gas to a nozzle assembly of a catalytic burner at a higher rate during a start-up phase and at a lower rate during an operating phase,

comprising:

valve means having a housing subdivided into a pluraity of chambers including a first chamber with an inlet connected to a source of heating gas under pressure, a second chamber communicating with said first chamber via a first passage blockable by a first valve member, and a third chamber communicating with said second chamber via a second passage blockable by a second valve member, said first and second valve members being respectively provided with first and second spring means tending to keep said first and second passages closed;

monitoring means in said burner for detecting the absence of a flame in said operating phase;

first conduit means extending to said nozzle assembly from said second chamber;

second conduit means extending to said nozzle assembly from said third chamber;

flow-regulating means in said first conduit means;

a manually operable control element positively linked with said second valve member for moving same against the force of said second spring means to open said second passage upon displacement of said control element from a normal position into an off-normal position, said first valve member being movable against the force of said first spring means into an unblocking position by said control element upon displacement thereof into said off-normal position with resulting gas flow to said nozzle assembly through both said conduit means in said start-up phase; and

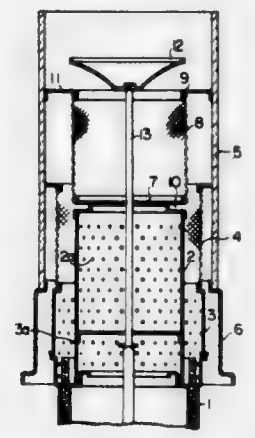
electromagnetic detent means reponsive to said monitoring means for holding said first valve member in said unblocking position in the presence of a flame in said operating phase, thereby maintaining a flow of gas to said nozzle assembly through said first conduit means following cut-off of said second conduit means upon a restoration of said control element to said normal position at the beginning of said operating phase.

4,511,327

OIL BURNER

Toshiro Ogino, Sakurai, and Katsuzo Kokawa, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 17, 1983, Ser. No. 458,446
Claims priority, application Japan, Jan. 19, 1982, 57-7036; Mar. 17, 1982, 57-43470
Int. Cl.³ F23D *5/00*
U.S. Cl. 431—201 **2 Claims**



1. An oil burner comprising: an inner flame cylinder having numerous small apertures, an outer flame cylinder having numerous small apertures, said outer flame cylinder being spaced from and surrounding said inner flame cylinder, an outermost cylinder surrounding said outer flame cylinder, a light transmitting outermost cylinder connected to an upper end of said outermost cylinder; a first red-heatable cylinder connected to an upper end of said outer flame cylinder, said first red-heatable cylinder being spaced from and surrounding said inner flame cylinder and having numerous small apertures, a partition plate disposed above said inner flame cylinder and spaced a predetermined distance above a top portion of said inner flame cylinder, a secndary air inlet disposed adjacent to a space between said partition plate and said top portion of said inner flame cylinder, said secondary air inlet for receiving preheated air from a space between said first red-heatable cylinder and said inner flame cylinder, a second red-heatable cylinder disposed above and connected to said partition plate, said partition plate comprising means for preventing non-preheated air from flowing into an interior of said second red-heatable cylinder directly from an interior of said inner flame cylinder, said second red-heatable cylinder having numerous small apertures and an opening in its upper end, and a damper mechanism for varying an opening in an upper end of said second red-heatable cylinder.

4,511,328

APPARATUS FOR THE RECLAMATION OF GLASS FIBER FROM SCRAP FIBER GLASS MAT

Dennis L. Ramge, Perrysburg, Ohio, and John H. Miller, Littleton, Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed Sep. 20, 1983, Ser. No. 534,218
Int. Cl.³ F27B *9/28, 17/00*
U.S. Cl. 432—59 **6 Claims**

1. Apparatus for reclaiming inorganic fibers disposed in a continuous strip of non-woven fibers containing a binding agent by removing said agent, said apparatus comprising:

a heating zone;

means for moving said strip through said heating zone;

means for supporting said strip along a predetermined path as said strip is being moved through said heating zone, said strip being fully supported in said zone both before and after said binding agent is removed;

means for generating a heating fluid;

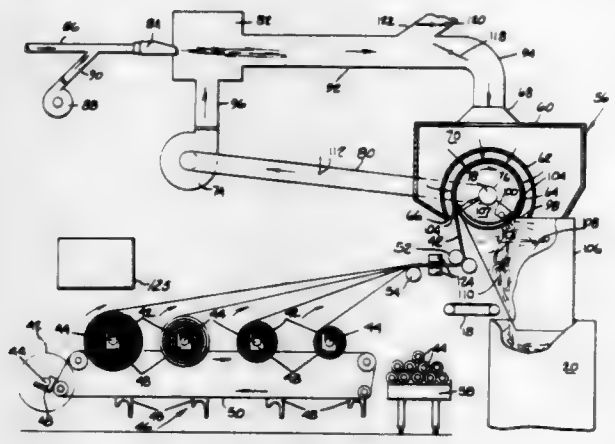
means for conducting said heating fluid to said heating zone;

means for drawing said heating fluid through said strip to

decompose said binding agent and remove said binding agent from the strip; and

means for controlling

(a) the rate of movement of said strip through said heating zone,



(b) the mass flow rate of said heating fluid through the strip, and

(c) the temperature of said heating fluid, to ensure that said inorganic fibers are not exposed to temperatures sufficient to cause said fibers to fuse; whereby reclaimed inorganic fibers are obtained.

4,511,329

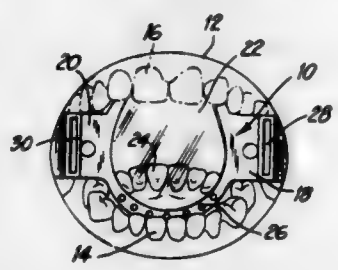
MOISTURE CONTROLLING LINGUAL DENTAL MIRROR

Michael K. Diamond, 86 Milburn La., Roslyn, N.Y. 11577

Filed Jan. 26, 1984, Ser. No. 574,259

Int. Cl.[3] A61C *1/00, 3/00*

U.S. Cl. 433—31 **24 Claims**



1. A dental instrument for viewing the lingual surface of the lower dentition comprising:

a rigid planar base member for positioning in a substantially vertical orientation from top to bottom of the mouth so as to vertically span the mouth cavity rearwardly of the upper and lower dentition and supporting a planar reflective means on a forward surface thereof, for reflecting the lingual view of the lower dentition while precluding the tongue from entering the dental work area, and

a pair of wall members laterally extending on either side of said base member for maintaining the upper and lower dentition in spaced relationship and for providing rest blocks for the dentition.

4,511,330

INTEGRATED ORAL MAGNETIC OSTEOGENIC APPLIANCES

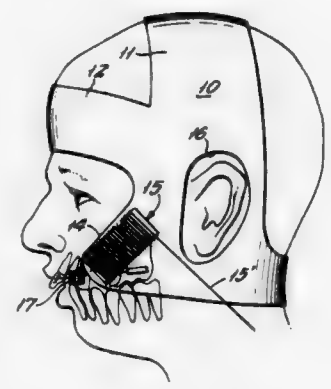
Harry Smiley, White Plains, and Abraham Blechman, Tappan, both of N.Y., assignors to Medical Magnetics, Inc., Ramsey, N.J.

Continuation-in-part of Ser. No. 322,423, Nov. 18, 1981, Pat. No. 4,424,030, which is a continuation of Ser. No. 19,427, Mar. 12, 1979, abandoned. This application Oct. 3, 1983, Ser. No. 538,380

Int. Cl.[3] A61C *7/00*

U.S. Cl. 433—18 **20 Claims**

1. In combination for use in orthodontic and/or periodontal therapy, an extra-oral positioning fixture comprising headgear means having top, front and rear strap-like portions adapted to conform to and be retained by the head of a patient, said headgear means including a mounting portion configurated to retain its position adjacent a region of one cheek and in substantial overlap with the buccal side of maxillary and/or mandible teeth; and magnetically coacting means including an intra-orally mounted element of magnetic flux-conducting material on the lingual side of a tooth near said region and a source of magnetic flux carried by said mounting means.



4,511,331

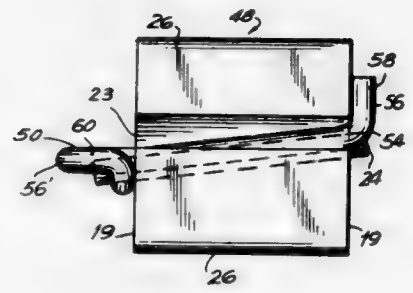
CONVERTIBLE BUCCAL TUBE/BRACKET APPLIANCE

Robert A. Scebold, Westlake Village, and James D. Cleary, Monrovia, both of Calif., assignors to Unitek Corporation, Monrovia, Calif.

Filed Aug. 8, 1983, Ser. No. 520,957

Int. Cl.[3] A61C *7/00*

U.S. Cl. 433—17 **2 Claims**



1. An orthodontic appliance convertible from a buccal tube to a bracket comprising:

a bracket body portion having opposing vertical surfaces and including a buccal surface having a longitudinal slot extending substantially mesial-distal therethrough; and

a removable wire insert attached to said body portion having an intermediate portion and two end portions, each extending from an opposing end of said intermediate portion, said intermediate portion extending longitudinally through the length of said slot and being positioned within at least a portion of said slot so as to form a tubular passageway between said body portion and said insert for accommodating an arch wire therethrough, said two opposing end portions protruding from said slot so as to be externally accessible for facilitating removal of said insert, uncovering of said slot and permitting said body portion to be used as a bracket; wherein at least one end portion is formed into a helical loop, said loop having a terminal portion attached to a vertical surface.

4,511,332

DENTAL ARTICULATOR

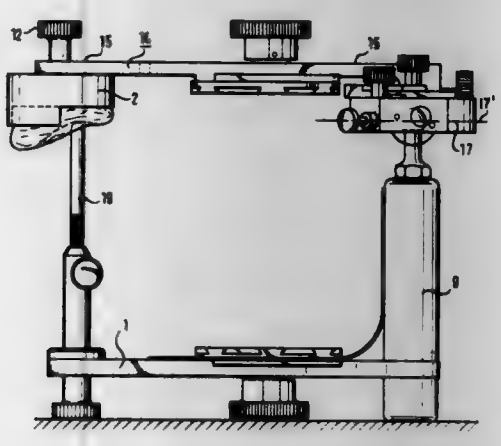
Heinz Mack, Südl. Auffahrtsallee 64, 8000 München 19, Fed. Rep. of Germany

Continuation of Ser. No. 293,241, Aug. 17, 1981, abandoned. This application Aug. 9, 1983, Ser. No. 521,225

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033390

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—59 **3 Claims**



1. A dental articulator comprising:

a lower frame part with a generally horizontal holding device for a mounting plate for a lower jaw model;

a vertical frame part which is fastened to the lower frame part and which has two articulation heads;

an upper frame part with a generally horizontal holding device for a mounting plate for an upper jaw model and also with two radially rotatable articulation sockets which engage a respective said articulation head and which together form a horizontal pivot axis for said upper frame part, said horizontal pivot axis corresponding to the jaw joint and defining a horizontal reference plane parallel to both said holding devices;

a vertically adjustable front tooth guide pin disposed on the lower frame part;

a support table disposed on the upper frame part and divided into two regions, one region being a planar portion which provides a central support region for the point of impact of the front tooth guide pin before commencement of the excursions of the guide pin and which remains invariably in the horizontal position in the reference plane before commencement of the excursions, the other region being pivotable forwards and downwards at the front relative to the one region such that the points of impact of the excursions of the guide pin take place on the other region.

4,511,333

DEVICE FOR BURNING CEMENT

Oswald Kunze, Rösrath, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,347

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150501

Int. Cl.³ F27B *7/02*; C04B *7/02*

U.S. Cl. 432—106 **3 Claims**

1. In a cement making mechanism, the combination comprising:

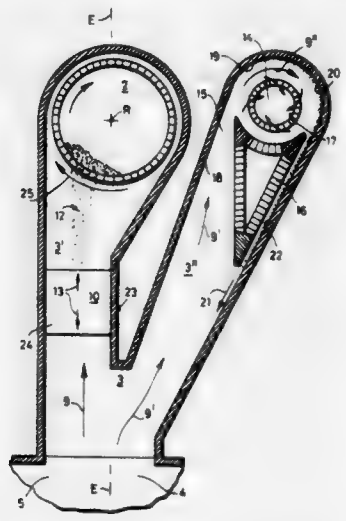
a rotary tubular kiln,

means for introducing precalcined raw meal to said kiln,

a cooler disposed vertically below the discharge end of said kiln to catch calcined material falling from said kiln,

a vertical conduit connecting the discharge end of said kiln with the inlet end of said cooler, said conduit providing free fluid communication between said cooler and said discharge end of said kiln whereby air from said cooler passes through said conduit and into said discharge end, said conduit above said cooler being divided into two branches including a first branch leading to said discharge end of said kiln, said first branch including wall means narrowing said first branch above said cooler and providing a flow constriction for air passing from said cooler to said discharge end of said kiln,

an adjustable flow restricting means positioned in said first branch for adjustably throttling flow of air between said kiln and said cooler, while permitting the free fall of solid calcined material from said kiln to said cooler,



a tertiary air conduit located in the second branch of said conduit, and

a flow guide element positioned below said tertiary conduit in said second branch and being configured to force the flow of air rising from said cooler into a turbulent flow about said tertiary air conduit resulting in a centrifugal action on particles suspended in the air stream to deposit said particles in said second branch beyond said tertiary air conduit.

4,511,334

DENTAL INSTRUMENT FOR CUTTING SLOTS FOR RECEIVING IMPLANTS INTO THE JAW

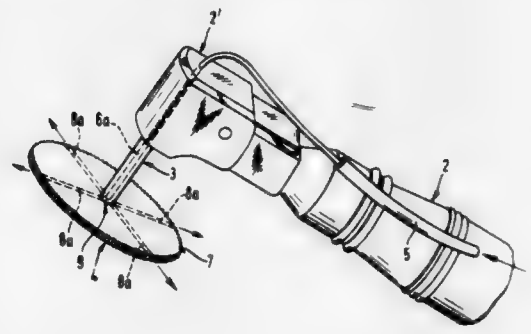
Hans L. Grafelmann, Parkstrasse 105, 2800 Bremen, Fed. Rep. of Germany

Filed Aug. 15, 1983, Ser. No. 523,378

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 8233133[U]

Int. Cl.³ A61C *3/02*

U.S. Cl. 433—165 **12 Claims**



1. In a dental rotary instrument, which is adapted to be driven by a dental handpiece and to cut a slot for receiving an implant into a jaw,

the improvement which comprises

a rotary sawblade, which has a circular periphery and is provided at said periphery with sawteeth and is formed with a plurality of angularly spaced apart, radial passages, which open at said periphery,

driving means, connected to a dental handpiece to transmit torque from said handpiece to said sawblade for rotating the latter, and

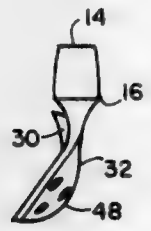
coolant supply and guiding means disposed within said sawblade and connected to said dental handpiece to supply and guide a coolant from said handpiece to each of said radial passages at a point which is radially inwardly spaced from said periphery, said sawteeth being set at said periphery so as to retain the coolant flow at the cutting region of said sawblade.

4,511,335

DENTAL IMPLANT

O. Hilt Tatum, Jr., One Beach Dr., S.E., St. Petersburg, Fla. 33701

Filed Sep. 30, 1982, Ser. No. 428,920
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **12 Claims**



1. An endosseous implant for permanent implantation within a groove formed in the posterior alveolar process of of the mandible of a patient's mouth, comprising in combination:

a supporting head for supporting a crown portion of an artificial tooth, said supporting head having a base portion;

a constricted neck portion disposed adjacent to said base portion for supporting said supported head;

an apertured blade portion disposed adjacent to said neck portion such that said neck portion connects together said supporting head relative to said blade portion;

said blade portion including a lingual face and buccal face;

said blade portion including a mesial portion and an adjoining distal portion;

said neck portion being disposed adjacent the juncture of said mesial portion with said distal portion;

said mesial portion including a substantially blunt mesial edge;

said distal portion including a distal edge of pointed configuration; and

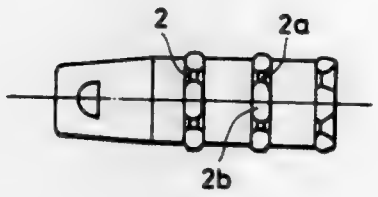
said distal portion defining a curvature which curves in a lateral medial plane, said distal portion additionally being twisted about the longitudinal axis of said mesial portion for yielding a three dimensional configuration such that the implant follows the natural flow of the mandible towards the Ramus.

4,511,336

ARTIFICIAL APATITE DENTAL ROOT

Tsuneo Hidaka; Masahide Inoue, and Makoto Ogiso, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 450,158
Claims priority, application Japan, Dec. 17, 1981, 56-204133
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **2 Claims**



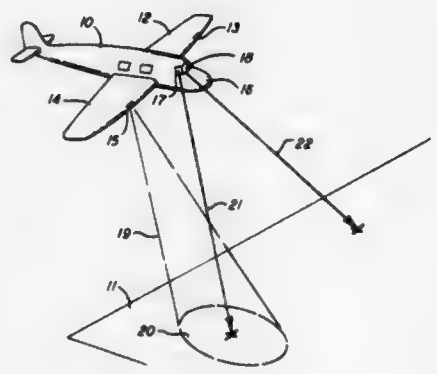
1. A dental prothetic device comprising an implant member having a cylindrical end portion adapted to be inserted into a cavity in a jaw bone and a truncated conical end portion adapted to have an artificial tooth secured thereon, said cylindrical portion having a plurality of raised annular rings thereon spaced along the length thereof with each ring having a plurality of circumferentially spaced apart projections and intermediate flat portions connecting said projections whereby said flat portions will be spaced from surrounding tissue by a predetermined clearance due to the engagement of said projections with surrounding tissues.

4,511,337

SIMPLIFIED HARDWARE COMPONENT INTER-CONNECTION SYSTEM FOR GENERATING A VISUAL REPRESENTATION OF AN ILLUMINATED AREA IN A FLIGHT SIMULATOR

Alfred R. Fortunato; Maurice Millard, and John R. Trzeciak, all of Binghamton, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,205
Int. Cl.³ G09B *9/08*
U.S. Cl. 434—43 **1 Claim**



1. Apparatus for generating, on the display surface of a raster scan device, an illuminated area having a predetermined geometrical configuration simulating the base of a cone of light that would be visible on a more distant plane surface, where the orientation of said cone of light can be varied, and said geometrical configuration is adjustable in size and shape to simulate changes in position of said base on said plane surface as the orientation of said cone of light is varied, comprising:

computer I/O means to compute and to provide signals representative of the display axis to ground axis direction cosine matrix elements, b_{31}, b_{32}, and b_{33}, and various values of a light shape coefficient, G_1 through G_8;

horizontal sweep generator means to generate a signal Tan Ψ and a vertical sweep generator means to generate a signal Tan θ to represent instantaneous azimuth and elevation values, respectively, of the base of a cone of light as the base appears on a display device;

a first multiplier circuit means to receive the output from said horizontal sweep generator means and to receive said signal from said computer I/O means that is representative of said element b_{32} to provide a signal output representative of the function b_{32} Tan Ψ;

a second multiplier circuit means to receive the output from said vertical sweep generator means and to receive said signal from said computer I/O means that is representative of said element b_{33} to provide a signal output representative of the function b_{33} Tan θ;

first ADD circuit means to sum the functions b_{32} Tan $\Psi$and b_{33} Tan θ with said signal b_{31} from said computer I/O means, to provide an output signal representative of a value C_3 which is the related vertical component of the display surface;

a third multiplier circuit means to receive a light shape coefficient value signal G_3 output from said I/O means and to receive said Tan Ψ signal to generate a function G_3 Tan Ψ;

a fourth multiplier circuit means to receive a light shape coefficient value signal G_2 output from said computer I/O

means and to receive said Tan θ signal to generate a function G_2 Tan θ;

second ADD circuit means to sum the functions G_3 Tan Ψ and G_2 Tan θ with a light shape coefficient value signal G_1 output from said computer I/O means to provide an output signal representative of a value F_2;

a fifth multiplier circuit means to receive a light shape coefficient value signal G_5 output from said computer I/O means and to receive said Tan Ψ signal to generate a function G_5 Tan Ψ;

a sixth multiplier circuit means to receive a light shape coefficient value signal G_6 output from said computer I/O means and to receive said Tan θ signal to generate a function G_6 Tan θ;

third ADD circuit means to sum the functions G_5 Tan Ψ and G_6 Tan θ with a light shape coefficient value signal G_4 output from said computer I/O means to provide an output signal representative of a value F_3;

first circuit means to provide signalvalues equal, respectively, to $Tan^2\Psi$ and $Tan^2\theta$;

a constant voltage source to provide a voltage output at a predetermined value;

inverter amplifier ADD circuit means to receive said $Tan^2\Psi$ and $Tan^2\theta$ signal values and to sum said values with said voltage output of the constant voltage source to provide an output signal representative of a value F_1;

a seventh multiplier circuit means to receive said value F_1 and to receive a light shape coefficient value signal G_8 from said computer I/O means to provide an output signal representative of a value G_8 F_1;

second circuit means to receive said value C_3 and to provide a signal value output equal to C_3^2;

eighth multiplier circuit means to receive said C_3^2 signal and a light shape coefficient value signal G_7 from said computer I/O means to provide an output signal representative of a value G_7 C_3^2;

third circuit means to receive said value F_2 and to provide a signal value output equal to F_2^2;

ninth multiplier circuit means to receive also said value C_3 and said value F_3 to provide an output signal representative of a value F_3C_3;

fourth ADD circuit means to sum the four functions $G_7C_3^2$, F_3C_3, G_8F_1 and an inverted F_2^2 to provide an output signal representative of a value T;

a signal comparator circuit means to receive said value T to determine whether each point on said geometrical configuration would be visible; and

a video processor responsive to said signal comparator circuit means for modulation of said raster scan device;

whereby the video modulation creates said illuminated area directly on said display surface corresponding to each point on said geometrical configuration that would be visible.

4,511,338

WATER BICYCLE AND DETACHABLE DEVICE THEREFOR

Noël Fanelli, 15 Rue Berthollet, Mions (Rhone), France

Filed Mar. 4, 1983, Ser. No. 472,351
Int. Cl.³ B63H *16/12*
U.S. Cl. 440—26 **12 Claims**

1. A detachable bicycle device for converting a sail board member into a water bicycle to propel said sail board member along a body of water, said device comprising:

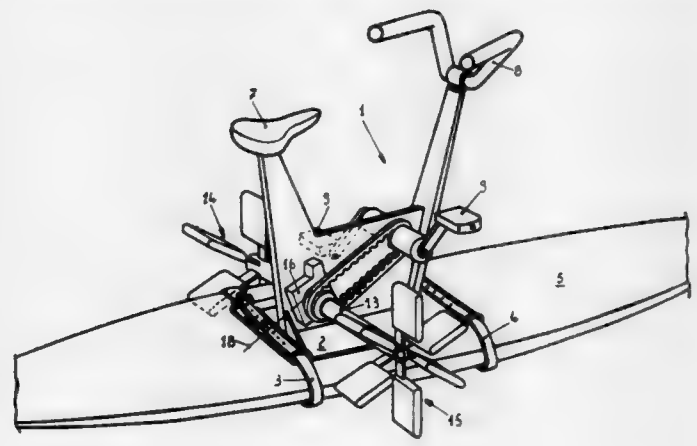
a longitudinal frame member detachably mounted to said sail board member;

a steering handle rotatably mounted to said longitudinal frame member;

a drive shaft transversely mounted to said longitudinal frame member, said drive shaft having one end extending beyond one side of said sail board member, an opposite end extending beyond another side of said sail board member and an intermediate portion rotatably mounted to said longitudinal frame member, said drive shaft further defining a drive axis transverse to said longitudinal frame member;

a pair of paddle wheels, one of said pair of paddle wheels being mounted to said one end of said drive shaft and extending beyond said sail board member, the other of said pair of paddle wheels being mounted to said opposite end of said drive shaft and extending beyond said sail board member, said pair of paddle wheels further extending beyond a bottom surface of said sail board member such as to engage said body of water below said sail board member;

means for driving said drive shaft, said driving means being mounted to said longitudinal frame member to selectively



rotate said drive shaft to propel said water bicycle along said body of water; and

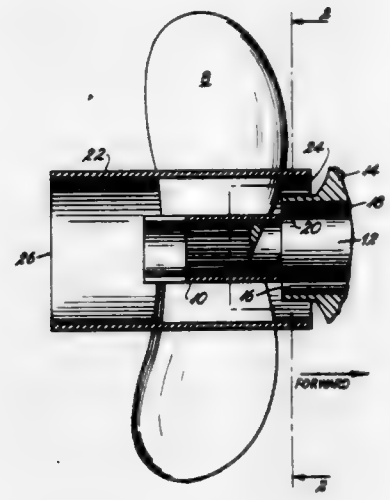
means for steering said bicycle in said body of water, said means for steering mounted to said drive shaft for cooperation therewith, said means for steering having a steering axis substantially perpendicular to said drive axis and means for pivoting said drive shaft about said steering axis such that as said drive shaft is pivoted about said steering axis one of said pair of paddle wheels is rotated upward in a direction away from the water such as to engage less of said body of water while the other of said pair of paddle wheels is rotated downwards such as to engage more of said body of water to thereby selectively steer said water bicycle in said body of water.

4,511,339

THROUGH-HUB EXHAUST PROPELLER ASSEMBLY

Kenneth Kasschau, 17620 Garrett Dr., Gaithersburg, Md. 20878

Continuation-in-part of Ser. No. 971,551, Dec. 20, 1978, Pat. No. 4,388,070. This application Jun. 14, 1983, Ser. No. 504,127
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—89 **6 Claims**



1. A propeller for a through-hub exhaust marine propulsion device, comprising:

a housing surrounding a propeller shaft, said housing having a rearward opening with a diameter, said rearward opening of said housing and said propeller shaft defining a rearwardly disposed exhaust port;

a sleeve driveably attached to said propeller shaft, said sleeve having a diameter substantially less than the diameter of said rearward opening;

at least one propeller blade having an inner end and an outer end extending from and attached to said sleeve; and

a single annular shroud means concentric with said sleeve and said propeller shaft and attached to said propeller blade intermediate said inner and outer ends of said blade, said annular shroud means having a forward opening and a rearward opening, said forward opening of said single annular shroud means, concentric with said rearward opening of said housing, having a greater diameter than said rearward opening of said housing, said concentric forward opening of said annular shroud means and said rearward opening of said housing defining an annular gap, said annular shroud means conducting exhaust gases and engine cooling water forward of the forward face of said propeller blade when said propulsion device is operating in the reverse mode and rearward of the rearward face of said propeller blade when said propulsion device is operating in the forward mode.

4,511,340

METHOD OF FORMING HOT CATHODES

Eberhard Weiss, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,567

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151347

Int. Cl.³ H01J *9/04*

U.S. Cl. 445—6 **2 Claims**

1. A method of forming cathodes for use in a cathode ray tube comprising the steps of:

supplying current to the heater tube element to rapidly heat the cathode sleeve to about 1200° C.,

switching the heater current on and off repeatedly to provide a temperature differential between the cathode and the emitting material deposited thereon,

applying rated voltages to the electrodes in the cathode ray tube,

cycling the heater current between on and off such that the current average maintains the rated heating power and power dissipation with the off periods regulated such that when the temperature of the emitting material decreases, no saturation of the electrode current occurs.

4,511,341

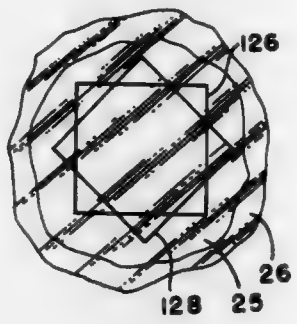
ANIMATED COIN SORTING BANK

John W. Spirk, Jr., 50 Stonewood Dr., and John R. Nottingham, 60 Stonewood Dr., both of Moreland Hills, Ohio 44022

Filed Mar. 26, 1984, Ser. No. 593,475

Int. Cl.³ A45C *1/12*

U.S. Cl. 446—9 **26 Claims**



1. An animated sorting bank comprising a housing having an inlet for receiving a coin in an upright orientation, a display member supported for rotation about a central axis and a sorting area comprising a plurality of coin bins and a sorting ramp, said display member being rotatable relative to a display wall of said housing to cause animation of a composite image formed partly on said display member and partly on said display wall of said housing, each of said coin bins being dimensioned to receive a different diameter coin, said sorting ramp being designed to receive coins of different diameters and to sort the coins in respective coin bins according to their diameters, said housing and said display member cooperating to receive a coin from said inlet in an upright condition and to guide said coin by gravitational/inertial forces between said inlet and said sorting area while maintaining the coin in the upright orientation, the path of travel of the coin between the inlet and the sorting area including an arcuate segment that at least partly circumscribes the central axis of the display member, the housing and the display member being further configured such that an initial phase of the movement of a coin along its arcuate segment is substantially horizontal and a succeeding phase of movement of the coin along its arcuate segment is substantially vertical, the display member including a plurality of actuating surfaces circumferentially spaced such that at any rotated angle of said display member at least one of said actuating surfaces will be positioned for engagement by a coin during its initial phase of movement and prior to its succeeding phase of movement along the arcuate segment of its path of travel, the actuating surfaces being further disposed so that when a coin moves along the arcuate segment of its path of travel and engages an actuating surface a force-couple is applied to the display member to rotate the display member about its central axis first slowly during its initial phase of movement and then significantly faster as the coin moves through the succeeding phase of movement along the arcuate segment, the housing and the display member being still further configured so that a coin is released from engagement from an actuating surface on the display member after imparting rotation to the display member, and the housing allowing a coin that is released from an actuating surface on the display member to move toward said sorting ramp under gravitational/inertial forces.

4,511,342

WINDING AND LAUNCHING DEVICE FOR TOY VEHICLES

William Hart, Palos Verdes Estates, and Michael T. McKittrick, Jr., Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 19, 1983, Ser. No. 524,513

Int. Cl.³ A63H *29/00*

U.S. Cl. 446—429 **1 Claim**

1. A device for winding and launching a vehicle of the type which has a rotatable input coupling, comprising:

a base member;

at least two upstanding partitions on said base member for providing at least one stall for garaging said vehicle;

a shell affixed to said base member, said shell having an elevated roof portion covering said stall, and a roadway portion leading from ground level to said roof portion;

a U-shaped yoke having a bit portion and an arm extending from each end of said bite portion substantially normal thereto;

means for connecting said yoke to the upper surface of said roof portion in a manner such that said yoke will pivot about the major axis of said bite portion;

a platform member swingably connected to the free ends of said arms;

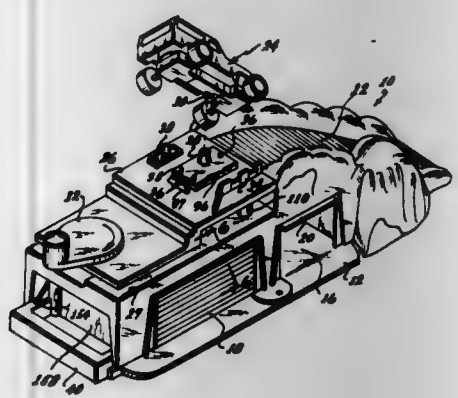
a spring biasing said platform to an elevated position;

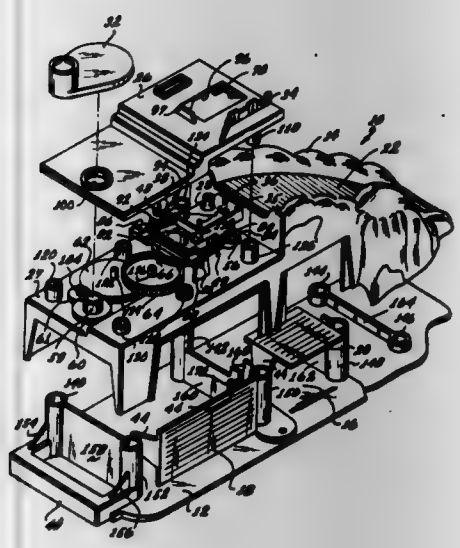
a button connected to said yoke for lowering said platform by swinging said yoke downwardly about said bite portion;

a coupling mechanism rotatably mounted to said platform for imparting rotation to said input coupling on said vehicle;

an elongated pinion gear affixed to said coupling mechanism;

a spindle affixed to said roof for rotatably and reciprocally receiving said elongated pinion;
a first large-diameter gear drivingly engaging said elongated pinion;
a first small-diameter gear affixed to said first large-diameter gear;
a second large-diameter gear drivingly engaging said first small diameter gear;
a second small-diameter gear carried by said second large-diameter gear;
a third large-diameter gear drivingly engaging said second small-diameter gear;





an idler gear mounted to said roof portion in an arcuate slot;
a crank gear drivingly engaging said idler gear;
a crank affixed to said crank gear, said idler gear being adapted to move in said slot and engage said third large-diameter gear when said crank is rotated in a first direction and to move out of engagement with said third large-diameter gear when said crank is rotated in a direction opposite to said first direction;
a stand for covering said gears and said yoke, said stand including a first opening for said platform and a second opening for said button; and
means for affixing said stand to said roof portion.

4,511,343

WHEELED MINIATURE TOY VEHICLE WITH EASILY SELECTABLE PLURAL MODES OF USE

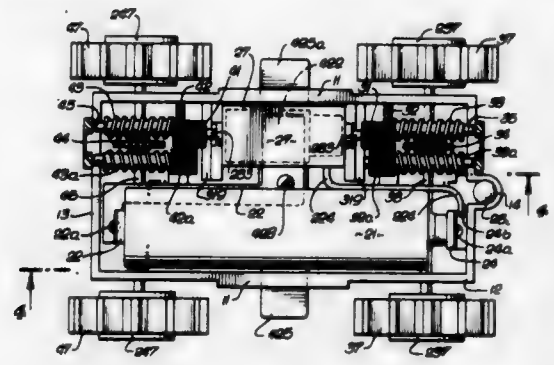
Adolph E. Goldfarb, Tarzana, Calif.; Delmar K. Everitt, 4310 Tosca Rd., Woodland Hills, Calif. 91364, and Norman J. Burger, 10164 Lev Ave., Pacoima, Calif. 91331, assignors to Delmar K. Everitt, Woodland Hills and Norman J. Burger, Pacoima, both of, Calif.

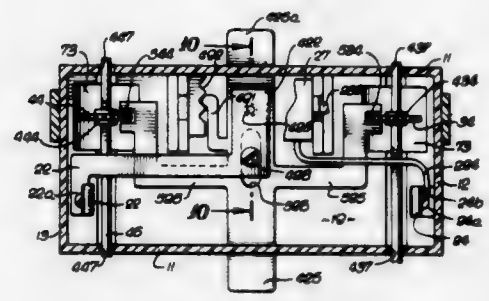
Continuation-in-part of Ser. No. 417,554, Sep. 13, 1982, , which is a continuation-in-part of Ser. No. 233,495, Feb. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 121,645, Feb. 14, 1980, Pat. No. 4,306,375. This application Nov. 2, 1982, Ser. No. 438,510

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ A63H *29/24*

U.S. Cl. 446—463 **18 Claims**





1. A plural-speed miniature wheeled toy vehicle for use with electrical battery means that comprise an elongated dry-cell battery having a longitudinal axis, and for both generally conventional-toy operation at at least one speed on a generally flat surface and climbing-toy operation at at least one reduced speed with greater torque on a steep and/or irregular surface; said vehicle having, when such battery means are in use therewith, major weight components positioned to provide a generally symmetrical, compact, balanced and relatively low arrangement; said vehicle comprising:

a chassis having walls defining an interior compartment;
front wheel means and rear wheel means mounted to the chassis for rolling rotation about respective mutually parallel but spaced-apart front and rear axes;
means mounted in the interior compartment to releasably support such electrical battery means in the compartment with such longitudinal axis of such battery means extending substantially front-to-back of the vehicle and extending at least substantially the full distance between the front and rear axes;
an electric motor mounted in the interior compartment, and having a driveshaft;
means on the chassis for electrically connecting such battery means, when supported in the supporting means, to the motor, so that such battery means power the motor driveshaft;
a speed-reduction mechanism mounted in the interior compartment and connecting the motor driveshaft to both said front and said rear wheel means to transmit rotation from

the driveshaft to the wheel means with a mechanical advantage; and

means associated with the speed-reduction mechanism for selecting among a plurality of values of the mechanical advantage, including at least one value providing such generally conventional-toy operation for generally flat surfaces and at least one other value providing such climbing-toy operation with greater torque for steep and/or irregular surfaces;

at least major portions of the motor and of such battery means, when such battery means are supported in the supporting means, being at approximately the same height as the front and rear wheel means, to particularly enhance such climbing-toy operation at said other value on such steep and/or irregular surfaces; and

the motor, the speed-reduction mechanism, the selecting means, and such battery means, when such battery means are supported in the supporting means, substantially fully occupying the interior compartment.

4,511,344

CARDAN JOINT

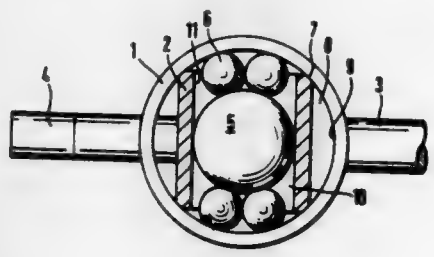
Werner Krude, Siegburg, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,461

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239136

Int. Cl.³ F16D *3/33, 3/34, 3/36*

U.S. Cl. 464—139 **7 Claims**



1. A universal joint for transmitting torque and having a large angle of articulation comprising an inner joint member and an outer joint member coupled together to transmit torque therebetween, said joint members being both configured as hollow cylinders with said inner joint member being smaller than said outer joint member, and with said smaller inner joint member being arranged inside of said larger outer joint member and centering means held in engagement between said joint members for maintaining said joint members centered relative to each other, said centering means comprising centering ball means located generally centrally of said joint and supporting ball means located adjacent said centering ball means on opposite sides thereof.

4,511,345

CONSTANT SPEED JOINT ASSEMBLY

Otmar Winkler, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

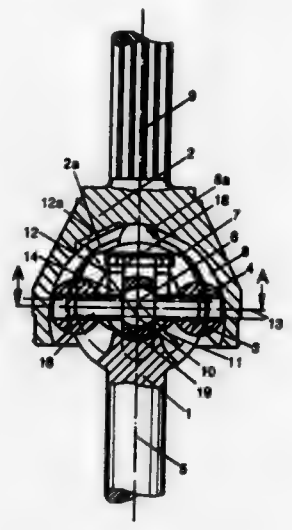
Filed Nov. 23, 1982, Ser. No. 443,869

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148489

Int. Cl.³ F16D *3/30*

U.S. Cl. 464—145 **10 Claims**

1. Constant speed joint assembly comprising an outer joint body member having an axis of rotation and being of cup-like form defining an open chamber and an inner joint body member having an axis of rotation which nests in the chamber of the outer joint body member and at least two rolling elements arranged therebetween capable of transmitting a torque which engage in an inner arcuate groove in the inner joint body member curved in a longitudinal direction about a first center of curvature lying on the axis of rotation of the inner joint body member and in an outer groove in the outer joint body member lying radially opposite the inner joint body member and curved in a longitudinal direction about a second center of curvature offset in a longitudinal direction on the axis of rotation of the outer joint body member in relation to the radius of curvature of the mating inner groove and control means maintaining the rolling elements in a plane bisecting the angle be-



tween the axes of rotation of said joint body member during angular movement of the axes of rotation of the two joint body members, said inner joint body member having a centric cavity, said first and second centers of curvature being offset an equal distance on opposite side of said bisecting plane, said control means comprising a control body mounted in said cavity having at least two control arms rigidly connected to said control body, said control arms engaging through said inner groove and adapted to maintain and coact with the rolling elements to maintain the same in said bisecting plane.

4,511,346

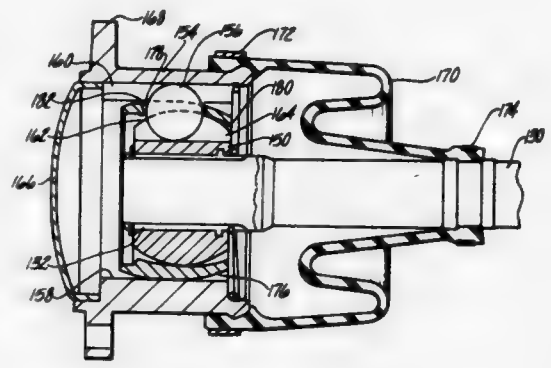
CONSTANT VELOCITY UNIVERSAL JOINT

Daniel W. Hazebrook, Detroit; Glenn F. Gehrke, Brighton, and Michael J. Schmidt, Grosse Pointe Park, all of Mich., assignors to GKN Automotive Components, Inc., Southfield, Mich.

Division of Ser. No. 183,757, Sep. 3, 1980, abandoned. This application Jan. 5, 1983, Ser. No. 455,783

Int. Cl.³ F16D *3/02*

U.S. Cl. 464—146 **2 Claims**



1. A constant velocity universal joint comprising:

an outer joint member having a cylindrical portion, said cylindrical portion having an axis and a plurality of longitudinal grooves along an inner cylindrical surface;

an inner joint member coaxially mounted with said outer joint member for cooperation therewith, said inner joint member having an axis common with said axis of said outer joint member and a plurality of longitudinal grooves substantially parallel to said plurality of longitudinal grooves in said outer joint member;

a plurality of spherical members mounted in said plurality of

longitudinal grooves of said inner and outer joint members for transmitting torque between said inner and outer joint members;

an annular restraining member centrally disposed between said inner and outer joint members, said annular restraining member further comprising:

a part-spherical outer surface cooperating with the inner cylindrical surface of said outer joint member; and

an inner contoured surface disposed adjacent said part-spherical outer surface, said inner contoured surface and said part-spherical outer surface having portions defining a plurality of apertures interposed said part-spherical outer surface and said inner contoured surface, said plurality of apertures locating said plurality of spherical members in a plane normal to the axis of said annular restraining member, the intersection of said normal plane and said common axis of said inner and outer joint members defining a joint center;

means for providing a limited relative axial movement of said outer joint member relative to said inner joint member as said plurality of spherical members move in said plurality of longitudinal grooves of said inner and outer joint members;

said inner joint member further having an outer contoured surface juxtaposed said inner contoured surface of said annular restraining member;

means defining a first spherical surface on said outer contoured surface of said inner joint member, said first spherical surface defining means having a first radius, said first radius having its center along said common axis and centrally located with said outer contoured surface of said inner joint member; and

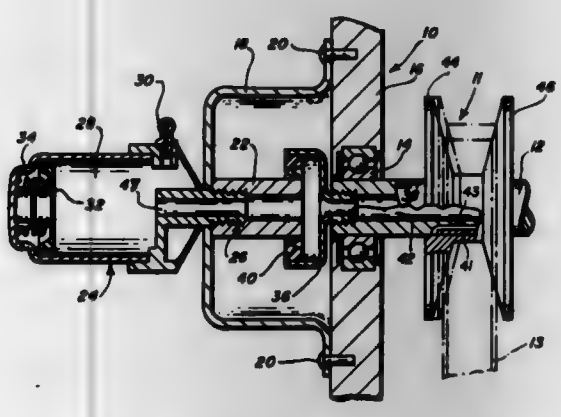
said inner contoured surface of said annular restraining member having a second radius greater than said first radius, said second radius having its center centrally disposed with said inner contoured surface of said annular restraining member and displaced below said common axis to provide a predetermined clearance between said inner joint member and said inner contoured surface of said annular restraining member whereby when said inner joint member moves axially relative to said outer joint member said inner joint member moves a predetermined axial distance relative to said annular restraining member prior to said annular restraining member moving axially relative to said outer joint member.

4,511,347

LUBRICATION IMPROVEMENT FOR VARIABLE SPEED DRIVES

Benson R. Moore, Milwaukee, and Leonard T. Gnacinski, West Allis, both of Wis., assignors to MagneTek, Inc., Milwaukee, Wis.

Filed Oct. 20, 1983, Ser. No. 543,736
Int. Cl.³ F16H 55/56
U.S. Cl. 474—43 **4 Claims**



1. In a variable speed drive of the type having shaft-mounted variable pitch pulleys interconnected by a drive belt contained within an enclosure, the improvement of a lubrication system for lubricating the variable pulley mechanism in combination therewith comprising:

(a) a pressurized grease feeder secured to the enclosure of said drive,

(b) a seal mounted between said grease feeder and a pulley shaft to prevent escape of lubricating grease and to permit rotation of said pulley shaft,

(c) a sheave half having a spline interconnection to said pulley shaft, and

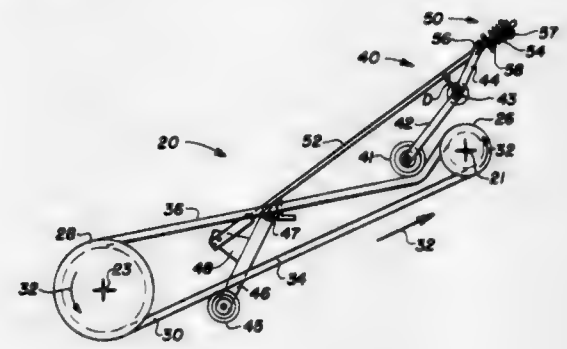
(d) a hollow passageway in said pulley shaft communicating pressurized grease from said feeder to said spline interconnection.

4,511,348

DRIVE TENSIONING APPARATUS

Daniel C. Witdoek, Hooglede, and André G. J. Dhont, Maldegem, both of Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Jun. 24, 1982, Ser. No. 391,773
Int. Cl.³ F16H 7/12
U.S. Cl. 474—109 **19 Claims**



1. In a crop harvesting machine having a frame; a crop harvesting mechanism mounted on said frame and being operably driven by a rotational power input mechanism, said crop harvesting mechanism having a power input shaft for receiving rotational power delivered thereto; power means mounted on said frame to provide rotational power for driving said crop harvesting mechanism, said power means having a power output shaft for delivering rotational power from said power means; power transfer means for transferring rotational power from said power output shaft to said power input shaft, said power means having a first power transfer member affixed to said power output shaft, a second power transfer member affixed to said power input shaft and an endless flexible member entrained between said first and second power transfer members to transfer rotational power therebetween, said flexible member having a normally slack run and a normally taut run; and tensioning apparatus operably engaged with said flexible member to maintain proper tension therein, an improved tensioning apparatus comprising,

a first tensioning member pivotally mounted on said frame by a first pivot and engageable with said flexible member on said normally slack run;

a second tensioning member pivotally mounted on said frame by a second pivot and engageable with said flexible member on said normally taut run;

connecting means interconnecting said first and second tensioning members such that pivotal movement of said tensioning members effects an inversely proportional change in the respective distance between said connecting means and said first and second pivots; and

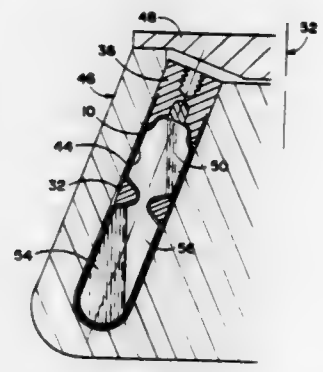
biasing means associated with said connecting means to create a substantially constant force on said connecting means and effect a tensioning force exerted by said first and second tensioning members on said flexible member, said tensioning force being variable and a function of the distance between said connecting means and the respective said pivot, the tensioning force exerted by said first

and second tensioning members being inversely proportional.

4,511,349
ULTRACENTRIFUGE TUBE WITH MULTIPLE CHAMBERS

Steven T. Nielsen, Sunnyvale, and Carleton C. Lee, San Jose, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 395,371, Jul. 6, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,271
Int. Cl.³ B04B 5/02
U.S. Cl. 494—16 **9 Claims**

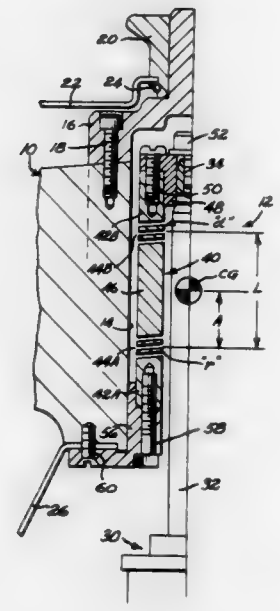


1. A multi-chamber ultracentrifuge tube for placement in an ultracentrifuge inclined rotor and for centrifuging a fluidic sample, said tube comprising:
an upper cylindrical chamber;
a lower cylindrical chamber;
a constricted area joining said chambers and forming a channel between said chambers, said channel having a sectional perimeter smaller than the sectional perimeter of each of said chambers; and
a spacer mounted adjacent said constricted area to support said chambers during centrifugation said spacer having a density of the order of magnitude of the density of said fluidic sample, whereby stresses on said lower chamber during ultracentrifugation are substantially avoided.

4,511,350
SUSPENSION SYSTEM FOR A CENTRIFUGE ROTOR

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 6, 1983, Ser. No. 539,364
Int. Cl.³ B04B 9/14
U.S. Cl. 494—82 **1 Claim**



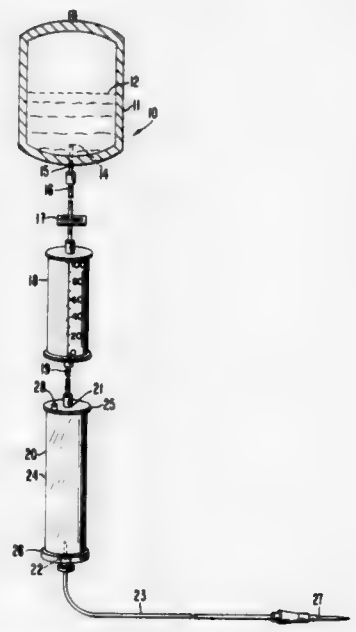
1. In a centrifuge having a rotor with a weight W and a drive member connectable to the rotor the improvement comprising a suspension system for mounting the rotor to the drive member, the suspension system comprising a coupling having a first and a second collar each connected by a flexible link to a rigid shaft, one collar being connected at a connection point "r" to the rotor such that the rotor's center of gravity lies a predetermined distance A above the connection point "r" and the second collar being connected at a second connection point "d" to the shaft, the rigid shaft having a length L, the flexible link adjacent the connection point "r" having a torsional stiffness K_r associated therewith while the flexible link adjacent the connection point "d" having a torsional stiffness K_d associated therewith, the distance A being defined by the relationship:

$$A = \frac{L \cdot K_r}{K_r + K_d + L \cdot W}$$

4,511,351
PARENTERAL DELIVERY SYSTEM UTILIZING A HOLLOW FIBER CELLULAR UNIT

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Filed May 14, 1984, Ser. No. 609,592
Int. Cl.³ A61M 5/14
U.S. Cl. 604—56 **5 Claims**



1. A method for administrating a beneficial drug to a warm-blooded animal, which method comprises the steps of:
(a) introducing into the animal a delivery member in fluid communication with an intravenous delivery system, which system comprises:
(1) a reservoir of a pharmaceutically acceptable fluid;
(2) a formulation cell in fluid communication with the reservoir, which formulation cell comprises:
(i) a wall that surrounds a lumen;
(ii) an inlet in the wall for admitting a fluid into the lumen;
(iii) a spiral wound module in the lumen, said module comprising a permselective membrane wound around a hollow fiber;
(iv) a beneficial drug in the lumen in the space formed by the interior surface of the formulation cell and the exterior surface of the formulation cell and the exterior surface of the module;
(v) an outlet in the wall for letting a fluid drug formulation leave the formulation cell,
(b) admitting fluid into the formulation cell for contacting the drug in the space that passes into the spiral wound module for entering the hollow fiber to flow from the formulation cell; and,

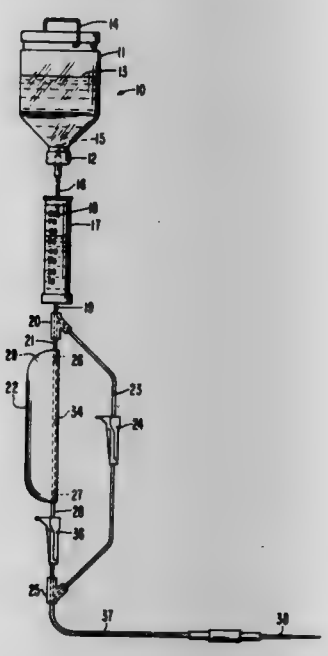
(c) administering the fluid drug formulation flowing from the formulation cell to the animal.

4,511,352

PARENTERAL DELIVERY SYSTEM WITH IN-LINE CONTAINER

Felix Theeuwes, Los Altos, and John Urquhart, Palo Alto, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed May 14, 1984, Ser. No. 609,894
Int. Cl.³ A11M *5/14*
U.S. Cl. 604—56 **12 Claims**



1. A method for the administration of a beneficial drug to an animal, which method comprises:

(a) admitting into the animal a delivery member in fluid communication with an intravenous delivery system, the system comprising:

(1) a reservoir of a pharmaceutically acceptable fluid;

(2) a drip chamber in fluid communication with the reservoir;

(3) a container in fluid communication with the drip chamber and with the delivery member, the container comprising:

(i) a wall that surrounds a lumen, said wall formed of a flexible material that moves from an expanded position to a collapsed position as drug formulation leaves the container;

(ii) a passageway through the container, said passageway formed of a material that permits a fluid to enter the container and permits a fluid drug formulation to leave the container;

(iii) a beneficial drug in the container that forms a fluid drug formulation with fluid that enters the container; and,

(b) administering the drug to the animal by letting fluid enter the container to form the fluid drug formulation that, as the container collapses, leaves the container for administering to the animal.

4,511,353

INTRAVENOUS SYSTEM FOR DELIVERING A BENEFICIAL AGENT

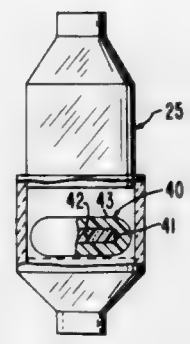
Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 283,077, Jul. 13, 1981, abandoned. This application Oct. 9, 1981, Ser. No. 310,047
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—85 **6 Claims**

1. A self-contained, self-powered beneficial, drug delivery system for use with an intravenous delivery system, the beneficial drug delivery system, comprising in combination:

(a) an intravenous formulation chamber comprising: a wall provided with an inlet that lets an intravenously acceptable medical fluid into the intravenous formulation chamber, and with an outlet for letting fluid leave the chamber; and,

(b) a drug delivery device in the intravenous formulation chamber, the device comprising an inner mass transfer conductor; a beneficial intravenously administrable drug in an amount for performing a therapeutic program with said intravenously administrable drug in the conductor



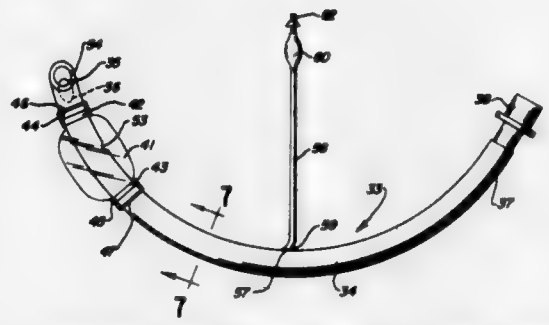
that is permeable to the passage of the drug; and, a membrane surrounding the conductor, which membrane release the drug in a therapeutically effective amount from the device into the medical fluid that is a pharmaceutically acceptable carrier for the drug and enters the intravenous, formulation chamber for formulating an intravenously administrable fluid drug formulation in situ that produces a beneficial effect, when administered intravenously to a recipient, over time.

4,511,354

HYDROCARBON BLOCK COPOLYMER WITH DISPERSED POLYSILOXANE

Robert E. Sterling, New Port Richey, Fla., assignor to Medical Research Associates, Ltd., Clearwater, Fla.

Division of Ser. No. 147,475, May 7, 1980, Pat. No. 4,386,179. This application Feb. 10, 1983, Ser. No. 465,586
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—98 **44 Claims**



1. An inflatable cuff in the form of a web surrounding a medical tubing, the ends of the web being sealed to said medical tubing to define an inflatable space, said cuff being formed of a composition comprising

an elastomeric, thermoplastic hydrocarbon block copolymer, said copolymer having a total molecular weight of about 50,000 to 600,000;

polysiloxane dispersed substantially uniformly throughout said copolymer, having a viscosity of about 20 to 13,000 centistokes, and comprising about 0.1 to 8 percent of the total weight of said composition; and

mineral oil dispersed substantially uniformly throughout said copolymer and comprising less than about 60 percent of the total weight of said composition.

4,511,355
INFUSION DEVICE INTENDED FOR IMPLANTATION IN A LIVING BODY

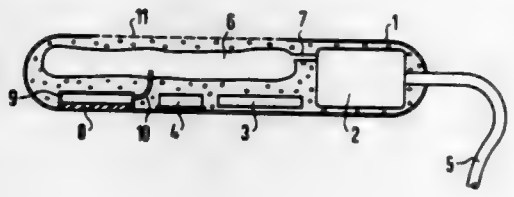
Manfred Franetzki, Uttenreuth, and Karl Prestele, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,525

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138320

Int. Cl.³ A61M *5/14*

U.S. Cl. 604—131 **22 Claims**



1. An infusion device for implantation in a patient's body, comprising

a protective housing;

a flexible walled reservoir positioned within said housing, formed of a fluid impermeable material and adapted to contain an infusion liquid therein;

a conveying and dosing unit positioned within said housing for conveying said infusion liquid from said reservoir to a catheter discharge opening; and

means communicable with the interior of said reservoir for permitting refilling of said reservoir from exterior of said housing;

said protective housing having means providing communication between the interior of said housing exteriorly of said reservoir and bodily fluids exterior of said housing.

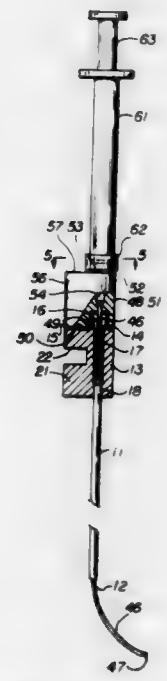
4,511,356
CANNULA, OBTURATOR, STYLET AND NEEDLE HUB CONNECTORS FOR LUMBAR DISC PUNCTURE

Edward C. Froning, P.O. Box 1768, Rancho Santa Fe, Calif. 92067, and Gregory S. Graham, Ventura, Calif., assignors to Edward C. Froning, Rancho Santo Fe, Calif.

Filed Feb. 22, 1983, Ser. No. 468,379

Int. Cl.³ A61M *5/00, 5/04*

U.S. Cl. 604—164 **11 Claims**



1. A canula for use with an instrument having a shaft, an instrument hub on said instrument having a socket in its bottom surface and an instrument vane extending laterally relative to said shaft, said instrument vane having first and second instrument vane sides, said instrument vane having a downward projection, said instrument vane being formed with a cut-away portion and having a lock wider than said cut-away portion below said cut-away portion comprising a lumen, said lumen being shaped to receive said shaft, a cannula hub on the proximal end of said lumen having a bore aligned with said lumen, a flat top, a hollow projection extending up from said top aligned with said bore shaped to fit into said socket and a cannula vane extending laterally relative to said lumen, said cannula vane having first and second cannula vane sides, said cannula vane being formed with a notch extending inward from the outer end of said cannula vane dividing said cannula vane into upper and lower portions, said notch being shaped to receive said lock, said upper portion being cut away on said first cannula vane side to about the vertical midsection of said cannula vane to fit against said cut-away portion of said instrument vane, said first and second cannula vane sides being parallel to said first and second instrument vane sides in the assembled position of said instrument and said cannula.

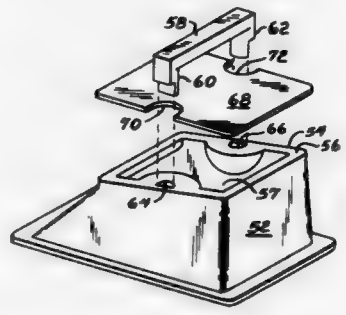
4,511,357
LIQUID DRAINAGE SYSTEM WITH A GUIDABLE VALVE ELEMENT

Carl J. Steigerwald, Wauconda, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 9, 1983, Ser. No. 465,123

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—323 **15 Claims**



1. A urine drainage system, comprising:

a receptacle having a chamber to receive urine, and a depending annular wall defining a valve seat at a lower portion thereof and an opening in the region of the seat;

a valve element comprising a sheet of flexible relatively stiff material being sufficiently large to extend across said opening and sealingly engage against said seat peripherally around the wall; and

means for retaining a central portion of the valve element adjacent to the seat comprising a generally straight bar extending completely across a central portion of the valve element and having a pair of boss member means adjacent opposed ends of the bar, said boss member means being secured to the receptacle wall, the valve element having a pair of arcuate cut-outs along the perimeter to coincide with the boss member means, the boss member means having an inner arcuate surface to conform to the arcuate cut-outs on the perimeter of the valve element to locate the valve element adjacent the valve seat and guide the movement of the valve element.

4,511,358
URINE BAG CARRIER WITH A STRETCHABLE FRONT PANEL

Clifford B. Johnson, Jr.; Barbara Johnson, both of 200 NE. Fifth Ave.; Alex Amadio, and Williane Amadio, both of 1120 S. Parrott Ave., all of Okeechobee, Fla. 33472

Filed Sep. 30, 1982, Ser. No. 430,843

Int. Cl.³ A61M *1/00*

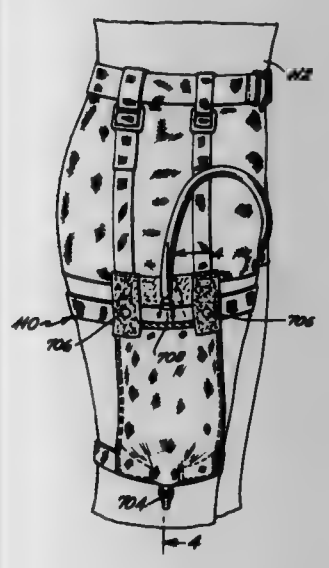
U.S. Cl. 604—327 **9 Claims**

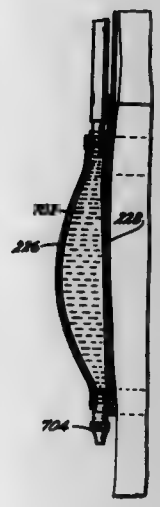
1. A pouch and support for a urine collection bag comprising:

a waist encircling belt having adjustable length;

a pouch for holding a urine bag, said pouch comprising front

and back panel means, the vertical edges and part of the bottom edge of said front and back panel means being sewn together to define a top opening and a centrally disposed bottom opening, said front panel means being formed entirely of a stretchable material to hold a urine bag firmly within said pouch and further to prevent a urine bag from bulging at the bottom portion thereof as the bag is filled with urine;





a plurality of vertical straps connecting said pouch to said belt, said vertical straps having variable lengths, and

top and botton leg encircling straps extending from the top and bottom portions of said pouch, respectively, for encircling the leg of the wearer, said leg encircling straps having adjustable lengths and being provided with fastener means.

4,511,359

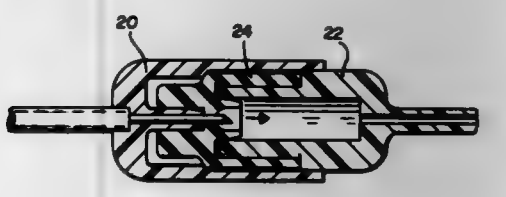
STERILE CONNECTION DEVICE

Vincent L. Vaillancourt, Livingston, N.J., assignor to Manresa, Inc., Hillsdale, N.J.

Filed Sep. 29, 1982, Ser. No. 426,260

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—411 **3 Claims**



1. A sterile connection device adapted for connecting a source of fluid from an influent connector to an effluent connector and providing a resilient protector member carried by the effluent connector, this protector member having an initially imperforiate barrier wall and when the connectors are brought to a closed condition a sharpened hollow needle carried by the influent connector penetrates said resilient barrier wall to establish a fluid flow path and when the connectors are caused to be separated the penetration of the barrier wall by the hollow needle is discontinued with the needle remaining in the influent connector, this withdrawal of the needle allowing the residual bias in the protector to close the penetration site in the barrier wall and provide exclusion of unwanted contaminants into the discharge conduit, said sterile connector device including:

(a) an influent connector providing a female configuration with a cylindrically-formed interior in which at least the outer portion thereof is formed with a precise diameter tubular skirt portion and made as a stepped configuration with a smaller diameter portion extending forwardly of and from the skirt portion and with this differential in diameters forming and providing a stop shoulder, said connector having the opposite end a closing end in which a sharpened hollow needle is carried in and by a post portion of a given extent, said post portion extending into the cylindrically-formed interior and with the sharpened needle extending from said post portion a short distance into said tubular skirt portion with the remaining skirt portion open to the end and providing a smooth circular cavity;

(b) a protector member of resilient material having sufficient residual bias to close an aperture formed in a barrier wall portion of said protector member, said aperture formed by an inserted needle carried in and by the influent connector, said protector member having a forward and a rearward end and of generally circular configuration, the rearward portion being a skirt having an interior diameter of precise size and with this rearward portion integrally connected to said forward portion, the forwardly extending portion of the resilient protector member being formed as a reduced diameter portion of the rearward skirt portion, with this reduced diameter providing a free fit in the smaller diameter stepped bore in the influent connector, and between the forwardly extending portion and the rearwardly extending skirt portion of the resilient protector member is a differential of diameters which provides a stop shoulder adapted to engage the stop shoulder in the influent connector to establish the limit for said closed condition and position;

(c) a substantially rigid effluent connector providing a male configuration with a fluid pathway and conduit formed in a rear-end portion thereof and with said pathway and conduit substantially central of said connector, said connector having a tubular forwardly extending portion and a larger rearwardly extending enlarged tubular portion providing a shoulder at the joining of said external portions, this forwardly tubular portion sized to releaseably retain the outer skirt portion of the protector member and providing therewith a friction fit with the outer surface diameter of tubular forwardly-extending portion of the effluent connector, the rearwardly enlarged portion of the effluent connector sized to provide a mating and sliding fit within the tubular skirt portion of the influent connector, and

(d) a forwardly-extending portion of the protector member sized to be a free sliding fit within the tubular skirt portion of the influent connector and forming in this forwardly-extending portion of the resilient protector member a central recess of a diameter to provide a free sliding fit on the post of the influent connector, said central recess of a depth sufficient to accept much of the post, with said extending portion of the resilient protector member and central recess therein providing means to prevent unwanted exposure to exterior contaminants, including fingers, when the influent connector and needle are removed, this recess terminating with said barrier wall which is of a thickness to be penetrated by the sharpened needle when the influent and effluent connectors are brought to closed condition.

4,511,360

DYEING COMPOSITIONS BASED ON OXIDATION DYESTUFF PRECURSORS AND ON NITRO BENZENE DYESTUFFS AND THEIR USE FOR DYEING KERATIN FIBRES

Christian Monnais, Neuilly-sur-Seine; Jean Cotteret, Franconville, and Andreè Bugaut, Boulogne-Billancourt, all of France, assignors to L'Oreal, Paris, France

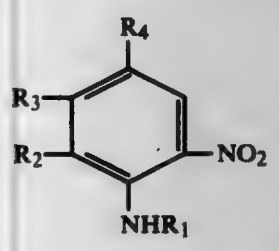
Filed Oct. 14, 1981, Ser. No. 311,309

Claims priority, application Luxembourg, Oct. 16, 1980, 82860

Int. Cl.[3] A61K *7/13*

U.S. Cl. 8—405 21 Claims

1. A composition suitable for dyeing human hair in a reducing alkaline medium which comprises 0.001 to 25% by weight of at least one oxidation base and at least one coupler as oxidation dyestuff precursors in combination with 0.005 to 3% by weight of at least one direct dyestuff, in an aqueous vehicle, said direct dyestuff being a nitro derivative of the formula:



(I)

in which either (i) R_1 denotes methyl, R_2 and R_4 denote hydrogen and R_3 denotes β-hydroxyethoxy, or (ii) R_1, R_3 and R_4 denote hydrogen and R_2 denotes methyl or hydroxyl, or (iii) R_1 and R_2 denote hydrogen, R_3 denotes methyl and R_4 denotes hydroxyl, (β-hydroxyethyl)-amino or (β-N,N-diethylaminoethyl)-amino, or (iv) R_1, R_2 and R_3 denote hydrogen and R_4 denotes N,N-bis-(β-hydroxyethyl)-amino.

4,511,361

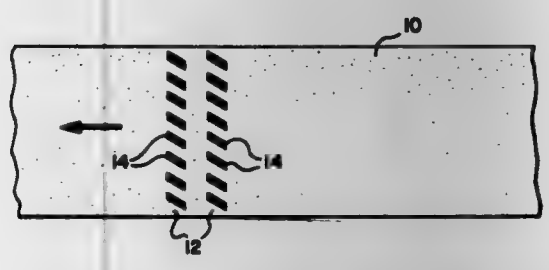
METHOD OF MARKING PAPERMAKERS' FELT BY TRANSFER PRINTING

Shirish M. Shah, Piqua, Ohio, assignor to The Orr Felt Company, Piqua, Ohio

Filed Apr. 27, 1984, Ser. No. 604,357

Int. Cl.[3] D06P *3/82;* D03D *23/00*

U.S. Cl. 8—471 5 Claims



1. The method of marking a papermaker's felt in which the felt is composed of synthetic fibers or a blend of synthetic and wool fibers, with alignment stripes extending transversely of the felt, comprising the steps of:

supporting the felt on a pair of rolls in tension,

applying a sheet having dye transfer color pigment printed thereon transversely of the felt on an inside surface thereof between said rolls,

applying heat to one of said rolls and rotating said rolls to cause said sheet to be brought between the felt and the heated roll, causing said sheet to dwell on said heated roll for a length of time sufficient to transfer the dye pigment therefrom to said inside felt surface, and

removing said paper.

4,511,362

FLUIDIZED BED DESULFURIZATION

Maddury Ravindram, Duarte, and John J. Kalvinskas, South Pasadena, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 26, 1983, Ser. No. 526,768

Int. Cl.[3] C10L *9/02*

U.S. Cl. 44—1 SR 11 Claims

1. A method of desulfurizing a particulate, carbonaceous material containing at least 0.2 percent by weight of sulfur comprising the steps of:

continuously suspending particles of the carbonaceous material in a common reactor vessel;

introducing an upwardly flowing column of chlorine gas at a temperature from 20° C. to 300° C. into the reactor vessel and chlorinating the material by suspending particles of the material in the upwardly flowing column of chlorine gas to form a fluidized bed and reacting chlorine with the material until at least 1 percent by weight of chlorine is added to the material; and

exchanging the chlorine gas with an inert gas at a temperature of at least 300° C. and dechlorinating the material by suspending the material in said inert gas until the chlorine content of the material is reduced below 1 percent by weight.

4,511,363

METHOD OF UPGRADING LOW-RANK COAL

Yoichi Nakamura; Akio Yamamoto, both of Kudamatsu; Shunsuke Nogita, Hitachi; Toshio Kuge, Hitachi, and Katsumi Muroi, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,048

Claims priority, application Japan, Oct. 1, 1982, 57-170852

Int. Cl.[3] C10L *9/08*

U.S. Cl. 44—1 G 10 Claims

1. A method of upgrading low-rank coal comprising:

dehydrating low-rank coal in a drying section, by heating to a temperature of between 100° to 150° C. to remove moisture therefrom;

delivering the dehydrated coal from said drying section to a dry-distillation section;

dry-distilling said dehydrated coal by heating to a temperature of between 250°–450° C. in the dry-distillation section to produce dry-distilled coal and vapor containing tar;

delivering said dry-distilled coal from said dry-distillation section to a cooling section, cooling said dry-distilled coal in the cooling section and contacting the cooled dry-distilled coal with said vapor to enable the cooled dry-distilled coal to absorb tar from said vapor.

4,511,364

MIXED FUELS

Masaru Mitsumori, Miyazaki, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 1, 1982, Ser. No. 383,922

Claims priority, application Japan, May 29, 1981, 56-80827; Jul. 10, 1981, 56-106857

Int. Cl.[3] C10L *1/32*

U.S. Cl. 44—51 17 Claims

1. A thixotropic mixed fuel comprising coal, oil, water and a dispersion stabilizer wherein said coal is a powdered coal which can all pass through a 100-mesh screen, and said dispersion stabilizer is a water-insoluble fine particle having a colloid-forming ability, having a mean grain diameter of 20 μm or less, that is selected from the group consisting of (1) a water-insoluble natural polymeric compound and (2) a water-insolu-

ble polymeric compound prepared by a chemical treatment or dissolution and regeneration of a natural polymeric compound.

4,511,365

COAL-AQUEOUS MIXTURES

Seymour Mark, Wayne, Pa., assignor to Sohio Alternate Energy Development Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 416,606, Sep. 10, 1982, Pat. No. 4,441,889, which is a continuation-in-part of Ser. No. 230,062, Jan. 29, 1981, Pat. No. 4,358,293. This application Apr. 10, 1984, Ser. No. 598,601

Int. Cl.³ C10L *1/32, 1/18*

U.S. Cl. 44—51' **16 Claims**

1. A stabilized, high solids content coal-aqueous mixture comprising particulate coal as a dispersed solid material; water as a carrier medium; a polyalkyleneoxide nonionic surfactant having a hydrophobic portion and a hydrophilic portion, said hydrophilic portion comprising at least about 100 units of ethylene oxide, said polyalkyleneoxide nonionic surfactant being present in said mixture in an amount sufficient to disperse said particulate coal in said water carrier; fuel oil and a viscosity stabilizer.

4,511,366

LIQUID FUELS AND CONCENTRATES CONTAINING CORROSION INHIBITORS

Aubrey L. Burrows, Bracknell; Paul B. Mabley, Hampton Hill, and Steven J. Field, Wokingham, all of England, assignors to Ethyl Petroleum Additives, Inc., Bracknell, England

Filed Dec. 16, 1983, Ser. No. 562,276

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 **18 Claims**

1. A liquid fuel adapted for use in an internal combustion engine said fuel comprising from 5 to 100 weight percent of one or more alcohols from 0 to 95 weight percent gasoline and a corrosion inhibiting amount of a combination of (A) a polymer of one or more C_{16} to C_{18} polyunsaturated aliphatic monocarboxylic acids and (B) a reaction product of (i) about one mole part of one or more polyalkylene polyamines having the formula $H_2N—RNH)_nH$ wherein n is an integer from 1 to about 8 and R is a divalent hydrocarbon group containing 2 to 4 carbon atoms, (ii) about 0.5 to 5 mole parts of one or more C_{10} to C_{20} monounsaturated aliphatic monocarboxylic acids or lower alkylesters thereof and (iii) 0 to about 4 mole parts of an alkenyl succinic anhydride wherein the alkenyl group contains about 8 to 30 carbon atoms.

4,511,367

CORROSION INHIBITORS FOR ALCOHOL CONTAINING MOTOR FUEL

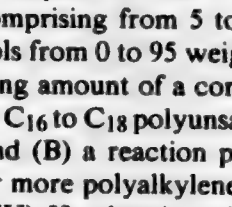
Gordon G. Knapp, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 13, 1984, Ser. No. 619,977

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 **7 Claims**

1. A liquid fuel adapted for use in an internal combustion engine, said fuel consisting essentially of 5 to 100 weight percent of one or more alcohols, 0 to 95 weight percent gasoline and a corrosion inhibiting amount of a combination of (A) at least one substituted imidazoline having the structural formula:



in which R is a hydrocarbon alkenyl group having from about 7 to 24 carbon atoms and (B) at least one monoalkenylsuccinic acid in which the alkenyl group contains about 8 to 30 carbon atoms.

4,511,368

CORROSION INHIBITORS FOR ALCOHOL-BASED FUELS

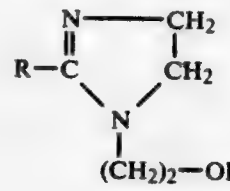
Gordon G. Knapp, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 18, 1984, Ser. No. 621,777

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—53 **9 Claims**

1. A liquid fuel adapted for use in an internal combustion engine, said fuel consisting essentially of 5 to 100 weight percent of one or more alcohols, 0 to 95 weight percent gasoline and a corrosion inhibiting amount of a combination of (A) a polymer of one or more C_{16} to C_{18} polyunsaturated aliphatic monocarboxylic acids and (B) at least one substituted imidazoline having the structural formula:



in which R is a hydrocarbon alkenyl group having from about 7 to about 24 carbon atoms.

4,511,369

COPOLYMERS WITH NITROGEN GROUPS, USEFUL AS ADDITIVES FOR DECREASING THE CLOUD POINT OF HYDROCARBON MIDDLE DISTILLATES AND COMPOSITIONS CONTAINING THEM

Jacques Denis, Charbonniere les Baisn; Bernard Sillion, Rocquencourt; Bernard Damin, Oullins, and Robert Leger, Grigny, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Elf France, Paris, both of, France

Filed Nov. 9, 1983, Ser. No. 550,160

Claims priority, application France, Nov. 9, 1982, 82 18968

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—62 **19 Claims**

1. A composition, useful as an additive for decreasing the cloud point of middle distillates, having a number-average molecular weight of 1,000–10,000, and consisting essentially of a copolymer comprising:

20–40% by mole of recurrent units (A) from at least one linear α-olefin;

30–70% by mole of recurrent units (B) from at least one unsaturated α,β-dicarboxylic compound, in the form of a diacid, a lower alkyl diester or an anhydride;

5–30% by mole of recurrent units (C) from at least one alkyl ester of an unsaturated monocarboxylic acid; and

5–15% by mole of recurrent units (D) from styrene and/or at least one of its alkylated, halogenated or methoxlated derivatives,

wherein the dicarboxylic units (B) of said copolymer are condensed with at least one compound having a single primary amine group, having the formula:

$$R—Z[(CH_2)_nNH]_mH \quad (I)$$

or

$$HO—CH_2—R''—NH_2 \quad (II)$$

wherein R is a monovalent saturated aliphatic radical having 1–30 carbon atoms, Z is 0, NH or NR', wherein R' is a monovalent saturated aliphatic radical having 1–30 carbon atoms; n is an integer from 2 to 4; m is zero or an integer from 1 to 4 when Z is NH, or an integer from 1 to 4 when Z is 0 or NR''; and R'' is a divalent saturated aliphatic radical having 1–18 carbon atoms.

9. A middle distillate composition, which it comprises a

major proportion of middle distillate having a distillation range from 150° to 450° C. and a minor proportion of at least one composition according to claim 1 sufficient to decrease the cloud point thereof.

4,511,370

PROCESS FOR THE UTILIZATION OF HOUSEHOLD RUBBISH OR GARBAGE AND OTHER ORGANIC WASTE PRODUCTS FOR THE PRODUCTION OF METHANE GAS

Martin Hunziker, Speerstrasse 50, Zürich, and Albert Schildknecht, Dorfstrasse 45, Oetwil a.d.Limmat, both of Switzerland

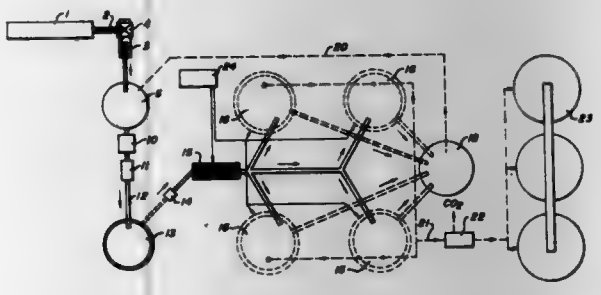
PCT No. PCT/CH81/00137, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/02059, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 4, 1981, Ser. No. 406,246

Claims priority, application Switzerland, Dec. 12, 1980, 9215/80

Int. Cl.³ C02F *11/04, 3/30;* C12P *5/02*

U.S. Cl. 48—197 A **11 Claims**



1. A process for producing methane gas comprising the following sequential steps:

agitating a slurry of crushed organic matter and water in a substantially air tight holding tank, by bubbling methane gas through the slurry, until anaerobic bacterial action commences, as indicated by a rise in temperature of the slurry to about 30° C.;

removing the slurry from the holding tank;

heating the slurry to about 55°–60° C.;

transferring the slurry to at least one substantially air tight reaction tank;

fermenting the slurry in said reaction under anaerobic conditions at a temperature of about 55°–60° C. and agitating it by bubbling methane gas through it, to promote production of methane gas;

separating the gaseous, liquid, and solid phases from each other; and

collecting the methane gas produced.

4,511,371

METHOD FOR PREVENTING PLUGGING OF A SLAG OUTLET IN A SUBSTOICHIOMETRIC SLAGGING COMBUSTOR

Henry J. Blaskowski, Avon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 17, 1983, Ser. No. 467,429

Int. Cl.³ C10J *3/08*

U.S. Cl. 48—197 R **5 Claims**

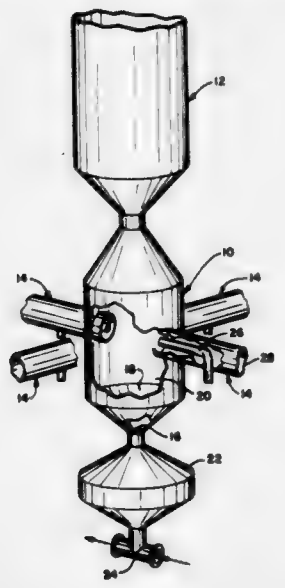
1. A method for preventing plugging of the slagging outlet by excessively viscous slag material in a slagging, substoichiometric combustor reacting a carbonaceous fuel with air, said air including a primary air stream and a secondary air stream, said primary air stream pneumatically conveying said fuel into said combustor, comprising the steps of:

observing the slagging conditions within said combustor for determining a threshold condition, wherein continued operation of said combustor under slagging conditions below the threshold condition results in the occurrence of an unacceptable likelihood of plugging of the slag outlet;

monitoring the current slagging conditions within said combustor to ascertain if the current condition is below the determined threshold condition;

injecting substantially pure oxygen, responsive to the monitoring step, into said primary air stream for increasing, at least locally, the reaction temperature within said combustor, thereby reducing slag viscosity within said combustor; and

ceasing the injection of the substantially pure oxygen upon improvement of the current slagging condition above the determined threshold condition.



4,511,372

CARBON GASIFICATION METHOD

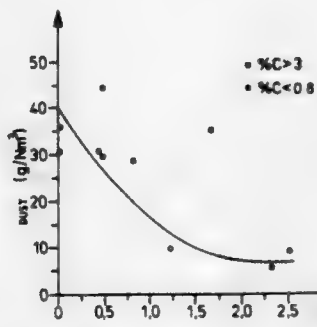
Carl-Lennart Axelsson, Stockholm, Sweden, assignor to IPS Interproject Service AB, Bettna, Sweden

Continuation of Ser. No. 379,787, May 19, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 574,665

Claims priority, application Sweden, May 20, 1981, 8103201

Int. Cl.³ C10J *3/00*

U.S. Cl. 48—197 R **12 Claims**



1. In a method for gasifying carbon in the form of coal, hydrocarbons, and/or hydrocarbon compounds, in which carbon, oxygen and iron oxides are injected beneath the surface of a molten iron bath held in a reactor vessel so that the iron oxides constitute a coolant and are intended to be reduced, and the carbon is dissolved in the molten bath, the carbon being injected in a stoichiometric excess relative to the oxygen present in the bath in the form of oxides, the improvement comprising:

A. maintaining the total pressure in the reactor vessel greater than atmospheric pressure up to 50 bar;

B. maintaining the carbon concentration in the molten iron bath lower than 3% by weight carbon; and

C. maintaining the sulphur concentration in the molten ion bath in the range of about 0.5% to 2.5%, thereby enabling increase in the rate of gas production with reduction in dust formation.

4,511,373

FLUORINATED DIAMOND PARTICLES BONDED IN A FILLED FLUOROCARBON RESIN MATRIX

Gene W. Taylor, Los Alamos, and Herman E. Roybal, Santa Fe, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 14, 1983, Ser. No. 551,528
Int. Cl.³ C09K *3/14*
U.S. Cl. 51—298 **23 Claims**

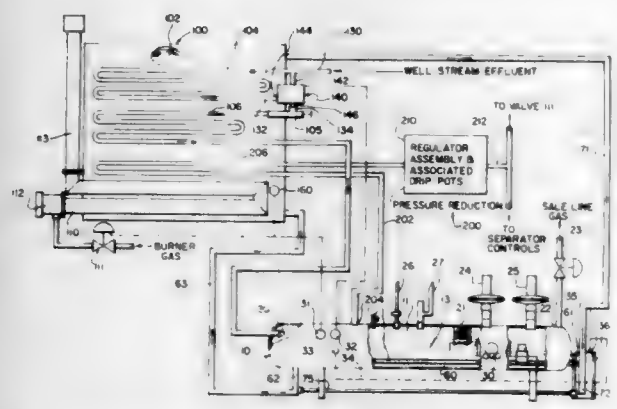
1. An article of manufacture which comprises a formed, filled fluorinated resin support matrix in which fluorinated diamond particles are bonded, said filler material being selected from the group consisting of Al_2O_3, B_4C and AlB_2, and comprising between about 20–40 weight percent of said filler material.

4,511,374

GAS TEMPERATURE CONTROL SYSTEM FOR NATURAL GAS SEPARATOR

Rodney T. Heath, 109 W. 31st, Farmington, N. Mex. 87401

Filed Feb. 17, 1984, Ser. No. 581,341
Int. Cl.³ B61D *19/00*
U.S. Cl. 55—20 **6 Claims**



6. A method of controlling the temperature of a body of relatively low pressure natural gas in a separator vessel means for separating liquids and gas in a relatively high pressure natural gas well head effluent and for controlling the temperature of a fluid heating medium in an heating vessel operatively associated with a relatively low pressure gas operated heating means for heating the fluid heating medium and operatively associated with supply gas conduit means for supplying relatively low pressure fuel gas to the gas operated heating means and operatively associated with a body of liquids in the separator vessel means, the method comprising:

heating the relatively high pressure well effluent by passing the well effluent through a first and a second heating coil means located in the heating vessel in heat transfer relationship with the fluid heating medium to provide heated well effluent;

delivering the heated well effluent to the separator vessel means and separating the heated well effluent into a body of liquids and a body of gas;

controlling the temperature of the body of liquids in the separator vessel by passing the fluid heating medium through conduit means located in the separator vessel in heat transfer relationship with the body of liquids;

heating the supply gas for the gas operated heating means by passing the supply gas through conduit means located in the heating vessel in heat transfer relationship with the fluid heating medium;

controlling the temperature of the fluid heating medium in the heating vessel by temperature sensing means located in the fluid heating medium in the heating vessel means during a first and third mode of operation wherein the fluid heating medium is maintained at a preset maximum temperature and by temperature sensing means located in the separator vessel means during a second mode of operation temperature is variably controlled below the preset maximum wherein the fluid heating medium temperature is variably controlled below the preset maximum temperature; and

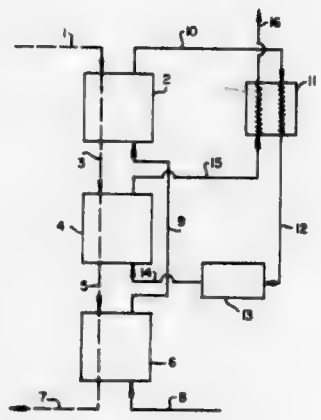
controlling the temperature of the body of gas in the separator vessel by temperature sensing means located in the body of gas and a temperature responsive flow control means connected to the unheated well effluent upstream of the heating vessel means and the heated well effluent delivered from the first heating coil means by causing delivery to the second heating coil means of a variable mixture of unheated well effluent and heated well effluent in said first mode of operation and delivery to the second heating coil means of only unheated well effluent in said second mode of operation, and delivery to the second heating coil means of only heated well effluent in said third mode of operation, and by said variably controlling of the temperature of the fluid heating medium in the heating vessel during said second mode of operation; whereby the amount of heat transferred to effluent passing through said second coil means is variably controlled.

4,511,375

PROCESS AND APPARATUS FOR DIRECT HEAT TRANSFER TEMPERATURE SWING REGENERATION

William E. BeVier, Kenmore, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1984, Ser. No. 594,716
Int. Cl.³ B01D *53/08*
U.S. Cl. 55—28 **19 Claims**



1. A process for cleaning impurity-containing adsorbent by temperature swing regeneration comprising:

(a) providing impurity-containing adsorbent and clean purge gas;

(b) warming the impurity-containing adsorbent by direct heat transfer with warm purge gas to produce warm impurity containing adsorbent and cool purge gas;

(c) heating the cool purge gas to produce hot purge gas;

(d) cleaning the warm impurity-containing adsorbent by contact with the hot purge gas to produce clean adsorbent and impurity-containing purge gas; and

(e) cooling the clean adsorbent by direct heat transfer with the clean purge gas to produce clean cool adsorbent and the warm purge gas of step (2).

15. An apparatus for temperature swing regeneration of impurity-laden adsorbent by direct heat transfer with purge gas comprising: a vessel having a preheating zone, a stripping zone and a recuperating zone, said preheating zone having a gas outlet at one end and a gas inlet at the opposite end, said stripping zone having a gas inlet at one end and, at the other end, gas collection means in flow communication with a gas outlet, said recuperating zone having a gas inlet at one end and, at the other end, gas collection means in flow communication with a gas outlet, said recuperating zone gas outlet in flow communication with said preheating zone gas inlet.

4,511,376

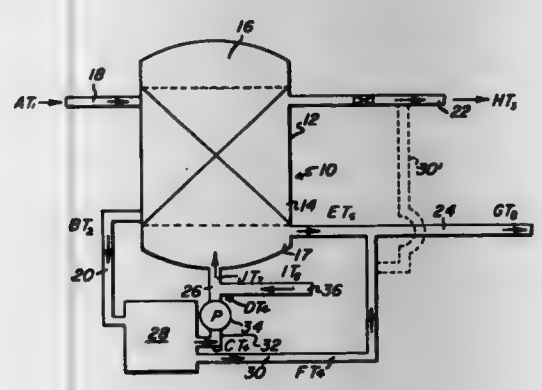
METHOD OF SEPARATING A NONCONDENSABLE GAS FROM A CONDENSABLE VAPOR

Glenn E. Coury, 6600 W. 13th Ave., Lakewood, Colo. 80214

Continuation of Ser. No. 311,810, Oct. 15, 1981, abandoned, which is a continuation of Ser. No. 138,007, Apr. 7, 1980, Pat. No. 4,330,007. This application Apr. 18, 1983, Ser. No. 485,598

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—36 **4 Claims**



1. The method of producing a clean steam from a gaseous mixture of steam and noncondensable gas including H_2S by separating the noncondensable gas from the steam in a continuous process, comprising:

(a) condensing steam from the gaseous mixture of steam and noncondensable gas on the first side of a two sided heat exchanger to form a condensate and a vent gas by

(1) directing the gaseous mixture along a flow path having condensing elements therein, and

(2) directing the condensate formed on said condensing elements in a substantially counter current flow to said flow path of the gaseous mixture so that the uncondensed gaseous mixture following the flow path strips noncondensable gases including substantially all of said H_2S from the condensate;

(b) removing the vent gas from the first side of the heat exchanger;

(c) removing the condensate from the first side of the heat exchanger;

(d) evaporating a portion of the condensate so removed by subjecting the condensate to a lower pressure than the pressure at which the gaseous mixture condenses; and

(e) cooling the second side of the heat exchanger with the liquid condensate remaining after the evaporating step while evaporating said remaining condensate into a clean steam containing relatively less noncondensable gas than said original gaseous mixture.

4,511,377

APPARATUS FOR THE PRODUCTION OF OXYGEN

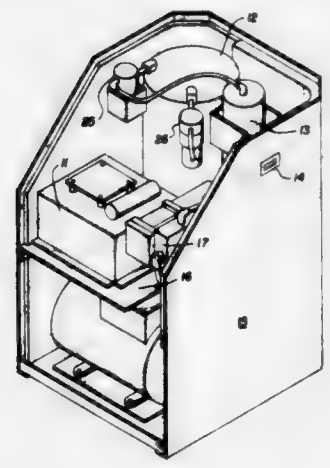
Norman R. McCombs, Tonawanda, N.Y., assignor to Greene & Kellogg, Inc., Tonawanda, N.Y.

Filed Nov. 1, 1983, Ser. No. 547,569

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—163 **12 Claims**

1. A modularized PSA machine comprising a housing; said machine comprising a single bed of adsorbent material, a surge tank, a process solenoid valve, and a pressure regulator; means to join said single bed, said surge tank, said process solenoid valve and said pressure regulator together into a single module, means to removably mount said single module into said housing; whereby said module may be pre-fabricated apart from said housing, and then easily removed from and replaced into



said housing to facilitate service and maintenance of said PSA machine.

4,511,378

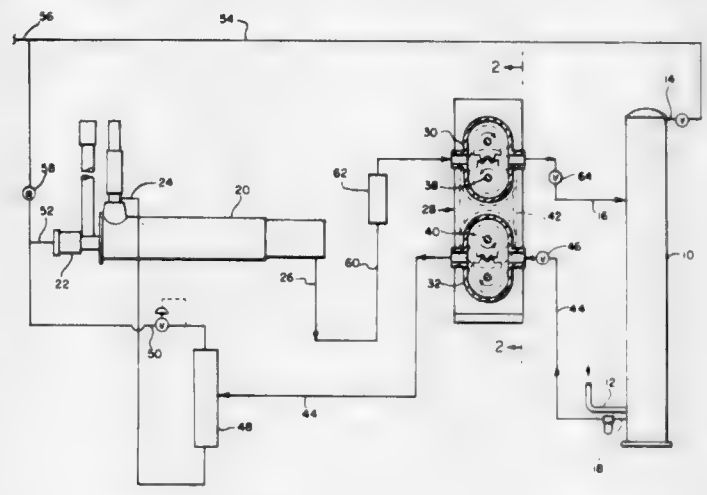
LIQUID-GAS CONTACTING APPARATUS AND PUMP THEREFOR

George J. Greene, 616 N. Eldridge, Houston, Tex. 77079

Continuation of Ser. No. 279,230, Jun. 30, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 482,810

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—208 **4 Claims**



1. A glycol dehydrator, comprising

a contacting vessel having a gas inlet, a gas outlet, a lean glycol inlet, a wet glycol outlet and means within said vessel for providing contact between the gas and the glycol flowing therethrough,

a glycol regenerator,

a first time communicating between the wet glycol outlet and the glycol regenerator,

a second line communicating between the regenerator and the lean glycol inlet,

a gear motor in said first line,

a gear pump in said second line,

means connecting said motor to said pump whereby wet glycol and gas from said contacting vessel provides sufficient power to drive said pump to pump lean glycol into said contacting vessel,

a gas fired burner in contact with said glycol regenerator,

means in said first line between said gear motor and the regenerator for separating gas from wet glycol discharged from said gear motor, and

means for delivering said separated gas to said burner to provide at least a portion of the gas to fire said regenerator burner.

3. In a glycol dehydrator having,

a contacting vessel with a gas inlet and wet glycol outlet, and a gas outlet and lean glycol inlet; and

a glycol regenerator, a first flow line from the glycol regenerator to said lean glycol inlet to provide lean glycol to said vessel, and a second flow line from said wet glycol outlet and vessel in fluid communication with said regenerator to receive wet glycol and gas from the vessel and provide wet glycol to the regenerator for recirculation of the glycol;

the improvement of a glycol pump structure between said vessel and said regenerator comprising:

a positive displacement rotary gear pump in said first flow line between said vessel and said regenerator to provide during operation a continuous uninterrupted flow of lean glycol to said vessel;

a positive displacement rotary gear motor in said second flow line between said vessel and said regenerator to provide during operation a continuous flow of wet glycol and gas from said vessel to said regenerator; and

drive means connecting said rotary motor to said rotary pump whereby wet glycol and gas from said contacting vessel to said rotary motor provides sufficient power for said rotary motor to drive said rotary pump for pumping lean glycol into said contacting vessel;

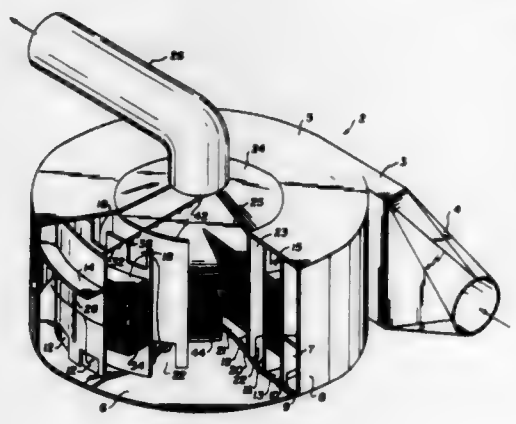
said rotary gear motor having a greater volumetric capacity than said rotary gear pump thereby permitting sufficient gas to pass through the rotary motor with the wet glycol to assure a continuous flow of lean glycol from the rotary pump to said contacting vessel at a preselected flow rate.

4,511,379

APPARATUS FOR TREATING FLUE GAS AND METHANOL CONTAINING EFFLUENTS

Edward G. Hauptmann, North Vancouver, Canada, assignor to Wescam Services Inc., Vancouver, Canada

Filed Jul. 8, 1982, Ser. No. 396,423
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—238 **18 Claims**



1. A gas scrubber comprising a first chamber having:

(i) inner and outer concentric substantially circular side walls each of constant diameter;

(ii) a first end wall extending between corresponding end edges of the side walls;

(iii) a helical second end wall extending between corresponding end edges of the side walls and once thereabout to adjacent the first end wall;

(iv) a gas inlet in the outer wall adjacent the position of maximum height thereof, the gas inlet being positioned so as to direct gas passing therethrough tangentially between the side walls;

(v) fluid nozzles disposed on the inner wall so as to spray liquid toward the outer wall;

(vi) gas outlets extending substantially around a side wall and dimensioned so that the velocity of the gas flowing between the walls is substantially constant; and

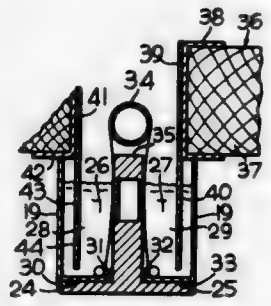
(vii) liquid outlet means to allow liquid to leave the gas scrubber.

4,511,380

SUSPENSION AND SEALING OF LATTICEWORK AND FILTERS

Stephen M. Fetter, Louisville, Ky., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Dec. 15, 1983, Ser. No. 561,883
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—355 **10 Claims**



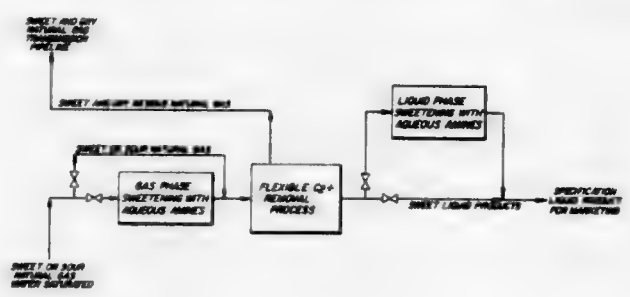
1. A sealed air filter assembly comprising, a suspended latticework of a plurality of filter supporting members running lengthwise and crosswise, each member defining a vertical center wall with lateral horizontal base flanges forming an inverted T-shaped cross section, said filter supporting members defining a plurality of filter openings, an angle frame received in each of said openings forming a perimeter channel chamber receiving sealant, a caulking compound between the lateral base flanges and the angle frames sealing the bottom of the channel chambers, a plurality of filter elements, a peripheral flange on each filter element extending into a perimeter channel chamber thereby providing a sealed filter assembly.

4,511,381

PROCESS FOR EXTRACTING NATURAL GAS LIQUIDS FROM NATURAL GAS STREAMS WITH PHYSICAL SOLVENTS

Yuv R. Mehra, Odessa, Tex., assignor to El Paso Hydrocarbons Company, Odessa, Tex.

Continuation-in-part of Ser. No. 374,270, May 3, 1982, Pat. No. 4,421,534. This application Jun. 24, 1983, Ser. No. 507,564
The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—17 **36 Claims**



1. In a process for the removal of natural gas liquids comprising hydrocarbons heavier than methane from a natural gas stream, wherein a need exists for recovering to any selected degree and at extremely high recoveries a selected hydrocarbon component and heavier hydrocarbons within the group consisting of ethane, propane, butane, and pentane without the need simultaneously to recover hydrocarbons lighter than said selected hydrocarbon component from said natural gas stream, the improvement comprising: providing the capability of selectively extracting said natural gas liquids from said natural gas stream with a physical solvent according to said selected degree of (a) ethane in amounts ranging from 2–98%, (b) propane in amounts ranging from 2–99%, (c) butane in amounts ranging from 2–100%; or (d) pentanes

and higher molecular weight hydrocarbons in amounts ranging up to 100% by:

(1) contacting said natural gas stream with said physical solvent at flow rates within the range of 0.005–0.5 gallon of solvent per standard cubic foot of natural gas to produce a residue natural gas stream of pipeline specifications and a rich solvent stream containing ethane and heavier hydrocarbon components, said solvent being selective for ethane and heavier hydrocarbon components of the gas stream such that the relative volatility of methane over ethane is at least 5.0 and the hydrocarbon loading capacity, defined as solubility of ethane in solvent, is at least 0.25 standard cubic feet of ethane per gallon of solvent;

(2) selectively flashing said rich solvent stream to produce a gas fraction and said solvent; and

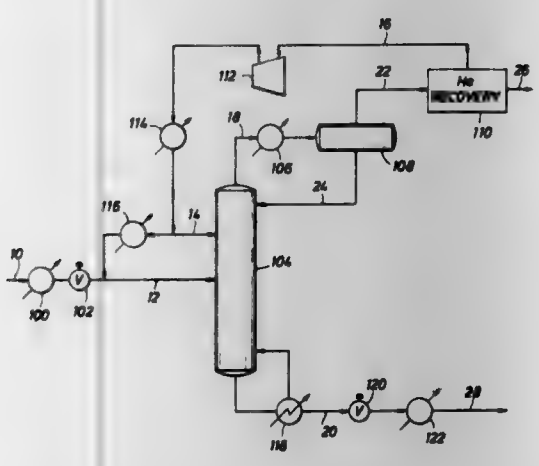
(3) compressing, cooling, and condensing said gas fraction to obtain said natural gas liquids.

4,511,382

METHOD OF SEPARATING ACID GASES, PARTICULARLY CARBON DIOXIDE, FROM METHANE BY THE ADDITION OF A LIGHT GAS SUCH AS HELIUM

Jaime A. Valencia, Sugarland, and Robert D. Denton, Houston, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Sep. 15, 1983, Ser. No. 532,343
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—20 **17 Claims**



10. A method for the separation of a feedstream containing methane and carbon dioxide in a cryogenic distillation tower without producing solid carbon dioxide comprising the steps of:

cooling said feedstream by heat exchange,

expanding said feedstream through expansion means,

introducing a diluent stream containing helium to said feedstream in amounts sufficient to raise the critical pressure of the resulting tower feed enough to preclude formation of solid carbon dioxide within said tower,

distilling said tower feed in a cryogenic distillation tower wherein at least a portion of said distillation tower is operated at a pressure higher than the critical pressure of the carbon dioxide and methane mixture contained therein calculated without the inclusion of helium to produce a bottoms stream containing a major portion of the carbon dioxide in said feedstream and an overhead stream containing a major portion of the methane in said feedstream,

condensing at least a portion of said overhead stream and recycling the condensed overhead stream as reflux in said distillation tower,

separating the remaining uncondensed portion of said overhead stream into a helium gas recycle stream and methane product stream, and

compressing at least a portion of said helium gas recycle stream for mixing with said feedstream as said diluent stream.

4,511,383

METHOD FOR PRODUCING GLASS FIBER

Mohinder S. Bhatti, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 14, 1983, Ser. No. 513,890
Int. Cl.³ C03B *37/085*
U.S. Cl. 65—6 **11 Claims**

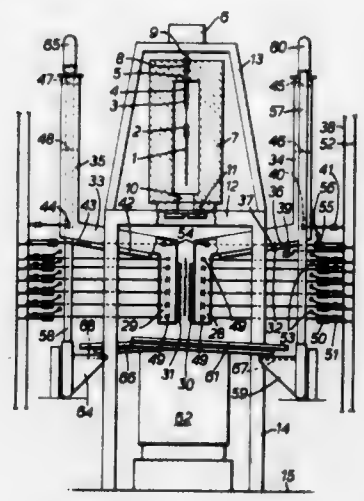
1. In a method of making glass fibers comprising; supplying a stream of molten glass to a rotating rotor; discharging said glass through orifices in said rotor as a plurality of primary streams; and attenuating said primary streams into fibers, the improvement comprising electropolishing said rotor sufficient to substantially reduce the percentage of ultrafine fibers produced therefrom.

4,511,384

THERMALLY TOUGHENING GLASS

John Evason, Southport; Malcolm J. Rigby, St. Helens, and Peter Ward, Garswood, near Wigan, all of England, assignors to Pilkington Brothers P.L.C., St. Helens, England

Filed Jan. 26, 1983, Ser. No. 460,994
Claims priority, application United Kingdom, Feb. 1, 1982, 8202768; Oct. 11, 1982, 8229004
Int. Cl.³ C03B *27/04*
U.S. Cl. 65—114 **24 Claims**



13. A method of thermally toughening a glass sheet, comprising suspending a hot glass sheet between two vertical arrays of nozzles, supplying to each array of nozzles a flow from a falling supply of aerated particulate material, projecting from said nozzles towards the surfaces of the glass a plurality of streams of closely-packed, aerated particles, and supplying additional gas into the flows adjacent the arrays of nozzles to project those streams at a velocity which ensures that the integrity of each stream is preserved in its trajectory towards the glass.

16. Apparatus for thermally toughening glass, comprising

means for containing a supply of aerated particulate material;

gas supply means located in said containing means for pressurizing said supply of aerated particulate material;

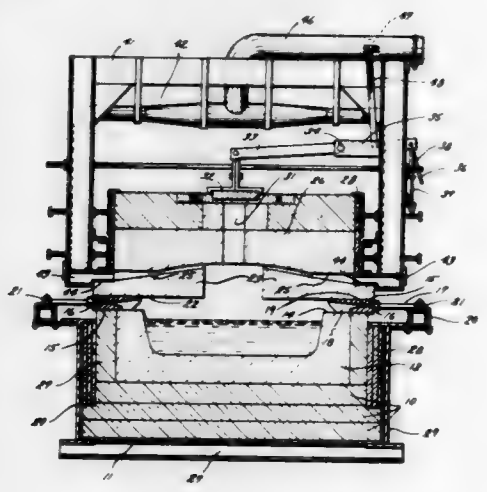
means for generating from that supply in said containing means an array of streams of closely-packed, aerated particles, and for projecting those streams towards a surface of the glass; and means for regulating the pressurizing of said supply of aerated particulate material thereby regulating the voidage fraction of each stream in the range 0.9 to 0.4 and the velocity of projection of each stream with a stream velocity which ensures that the integrity of each stream is preserved in its trajectory towards the glass without detriment to the surface quality of the glass.

4,511,385

FOREHEARTH FOR MOLTEN GLASS AND METHOD OF USING SAME

Marvin L. Barkhau, Elmore, and Joseph J. Kujawa, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 17, 1983, Ser. No. 542,319
Int. Cl.[3] C03B *5/04*
U.S. Cl. 65—135 **5 Claims**



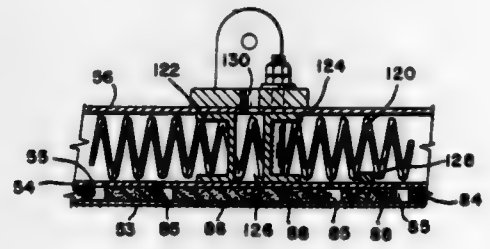
5. A method of controlling the temperature of molten glass in an elongated, forehearth channel comprising the steps of, introducing unheated cooling air directly through a plurality of flue blocks that extend over the forehearth channel toward the centerline of the forehearth, firing a combustible mixture at a plurality of points along the forehearth length beneath the flue blocks while confining the flames from the combustion to principally the surface of glass in the forehearth, and exhausting the combustion products and cooling air through the roof of the forehearth over the centerline thereof.

4,511,386

DEFORMABLE VACUUM HOLDER USED TO SHAPE GLASS SHEETS

John D. Kellar, Pontypool, and Gordon F. Pereman, Columbus, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1983, Ser. No. 496,223
Int. Cl.[3] C03B *23/035*
U.S. Cl. 65—273 **16 Claims**



1. A deformable vacuum holder for use in the shaping of a heat deformable material comprising:

a box having an upper sheet wall, a perforated lower sheet wall and a spacer wall means connecting said upper and lower sheet walls in spaced relation to provide a vacuum type chamber, each of said walls being of material of sufficient flexibility to permit said box to be positively deformed to a configuration different from its original configuration;

means adapted to communicate said chamber with a vacuum source;

a flexible perforated sheet of insulated material with perforations that remain open during the bending of said mold and shaping of said sheet;

means to mechanically secure said flexible perforated sheet against said perforated lower sheet wall with the perforations of said flexible perforated sheet substantially aligned with the perforations of said lower perforated sheet wall; and

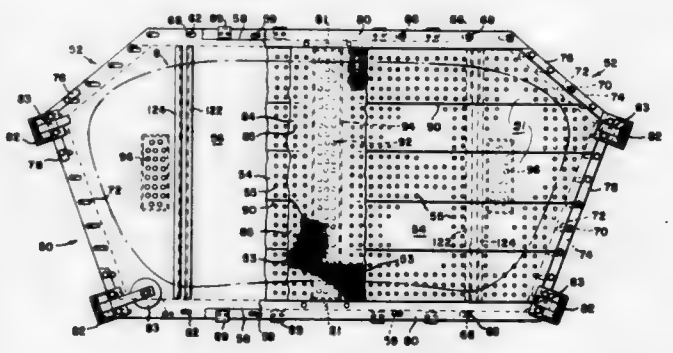
means to positively deform said box and said flexible perforated sheet of insulated material.

4,511,387

VACUUM HOLDER WITH ANTI-BULGING MEANS USED TO SHAPE GLASS SHEETS

John D. Kellar, Pontypool, and Gordon F. Pereman, Columbus, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1983, Ser. No. 496,224
Int. Cl.[3] C03B *23/035*
U.S. Cl. 65—287 **18 Claims**



1. A vacuum holder for holding sheets of heat softened material thereagainst comprising:

an upper sheet wall;

a lower apertured sheet wall with at least one longitudinal slit extending from a generally transversely extending portion of said apertured sheet wall to an edge portion of said apertured sheet wall, forming side by side elongated strips, to allow transverse expansion of said lower apertured sheet wall upon exposure to said sheet at softening temperature without distorting transversely to a shape beyond desired tolerances;

spacer wall means spacing said walls from one another;

means to secure said upper sheet wall, said lower apertured sheet wall, and said spacer wall means together to form a chamber therebetween so that said lower apertured sheet wall is free to expand longitudinally without distorting to a shape beyond desired tolerances; and

means adapted to communicate said chamber with a vacuum source.

4,511,388

PRODUCTION OF HIGH-ANALYSIS AMMONIUM ORTHOPHOSPHATE SUSPENSION FERTILIZERS BY A NEW BATCH-TYPE PROCESS

Thomas M. Jones, Sheffield, and Lucian A. Kendrick, Jr., Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 546,261, Oct. 28, 1983, Pat. No. T104,501. This application Feb. 27, 1984, Ser. No. 584,285
Int. Cl.[3] C05B *7/00*
U.S. Cl. 71—34 **10 Claims**

1. A batch-type process for the production of suspension type fertilizers from ammonia and wet-process phosphoric acid or solid particles derived from such wet-process phosphoric acid, or mixtures thereof, which suspensions have high plant food contents, excellent flow properties, low viscosities, good storage properties, and do not contain settled crytals after exposure to substantial vibration, which process comprises the steps of:

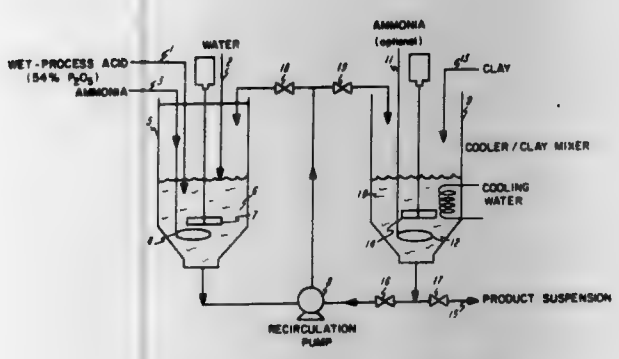
(1) maintaining in reactor means as a first heel of material therein predetermined quantities of at least partially ammoniated wet-process phosphoric acid, ammoniated materials derived from wet-process phosphoric acid, or ammo-

niated mixtures thereof, said first heel of material effected by the performance of step 5, infra;

(2) introducing in predetermined proportions a stream of ammonia, of water, and of wet-process phosphoric acid or solid particles of material derived from wet-process phosphoric acid, or mixtures thereof, into contact with said first heel of material maintained in said reactor means to effect at least a partially ammoniated feed phosphoric acid material therein having a $N:P_2O_5$ weight ratio ranging from about 0.26 to about 0.3, the volume ratio of the aggregate of said proportions of ammonia, water, and acid or materials derived therefrom, to said first heel of material ranging from about 0.67:1 to about 4:1;

(3) maintaining the temperature of the material in said reactor means, after the introduction of said proportions of ammonia, water, and phosphoric acids or solids derived therefrom, in the range from about 200° F. to about 230° F., and retaining same therein for a time ranging from about 10 minutes to about 45 minutes;

(4) removing from said reactor means a portion of said at least partially ammoniated material and introducing same,



BATCH PRODUCTION OF AMMONIUM ORTHOPHOSPHATE BASE SUSPENSION FERTILIZERS

along with clay or clay and predetermined quantities of ammonia into contact with a second heel of material maintained in cooling means, said second heel of material effected by the performance of step 8 infra, the volume ratio of the aggregate of said at least partially ammoniated material, clay or clay and ammonia, to said second heel of material ranging from about 0.67:1 to about 4:1;

(5) reserving that portion of said at least partially ammoniated material remaining in said reactor means as said first heel of material maintained therein in step 1 supra;

(6) maintaining the temperature of the materials in said cooling means, after the introduction of said at least partially ammoniated material, clay, or clay and ammonia, in the range from about 100° F. to about 140° F. for a period of time ranging from about 5 minutes to about 30 minutes;

(7) removing from said cooling means a portion of the resulting ammoniated and cooled product suspension and transferring same to product storage; and

(8) reserving that portion of the resulting cooled product suspension remaining in said cooling means as said second heel of material maintained therein in step 4, supra.

4,511,389

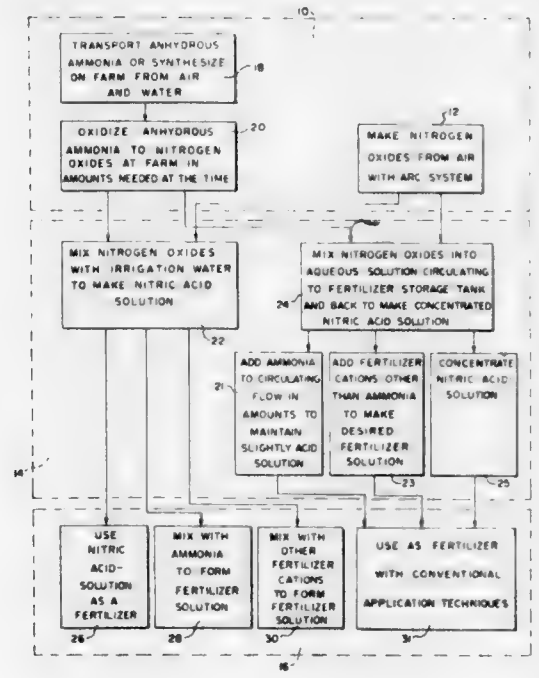
MANUFACTURING AND USING NITROGEN FERTILIZER SOLUTIONS ON A FARM

John A. Eastin, P.O. Box 389, Lincoln, Nebr. 69140

Division of Ser. No. 379,466, May 18, 1982, Pat. No. 4,435,201, which is a continuation-in-part of Ser. No. 100,825, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 824,289, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 728,788, Oct. 1, 1976, abandoned, which is a division of Ser. No. 581,050, May 27, 1975, abandoned. This application Jun. 23, 1983, Ser. No. 507,166

Int. Cl.³ C05C *3/00*

U.S. Cl. 71—54 **26 Claims**



1. Apparatus for nitrogenous fertilizing comprising:

means for oxidizing between 12.5 pounds and 146 pounds of nitrogen each hour in a continuous process by burning ammonia;

means for bringing the nitrogen oxides formed by burning the ammonia in contact with a surface catalyst and flowing water in a continuous process as the nitrogen oxides are formed to form a dilute solution of nitric acid in a continuous stream; and

means for using the dilute solution of nitric acid in a process leading to and including the application of nitrogeneous fertilizer on a farm.

4,511,390

ARALKYLCARBAMOYL PEPTIDE ALCOHOLS

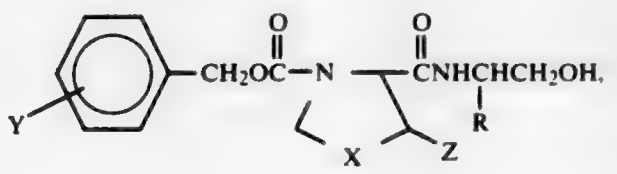
James C. Kauer, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 10, 1983, Ser. No. 503,295

Int. Cl.³ A01N *43/36, 43/76, 43/78;* C07D *207/02*

U.S. Cl. 71—88 **24 Claims**

1. A compound of the formula



wherein

X is CH_2, O or S;

Y is H or an ortho, meta or para substituent selected from the group consisting of F, Cl, and alkyl groups of 1 to 4 carbons;

Z is H or CH_3; and

R is H or an alkyl group of 1 to 4 carbons.

9. A composition for enhancement of nitrate and ammonium ion uptake by plants, comprising an agriculturally acceptable diluent and an effective amount of a compound of claim 1 for ion uptake enhancement.

17. A method of enhancing nitrate and ammonium ion uptake by plants, comprising contacting plants with an effective amount of a composition of claim 9.

4,511,391

CYCLOHEXANE-1,3-DIONE DERIVATIVES AND THEIR HERBICIDAL COMPOSITIONS AND METHODS

Alexander Serban, Doncaster; Keith G. Watson, Box Hill North; Graham J. Bird, North Melbourne, and Graeme J. Farquharson, Reservoir, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

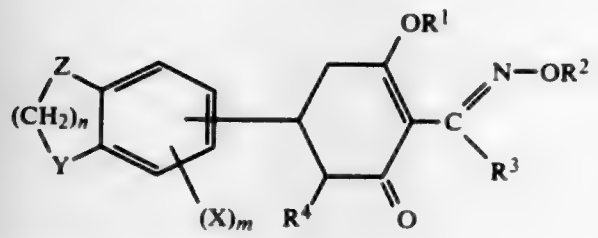
Filed May 24, 1983, Ser. No. 497,683

Claims priority, application Australia, May 24, 1983, PF4118

Int. Cl.³ A01N *43/12*; C07D *307/78*

U.S. Cl. 71—88 **12 Claims**

1. A compound of formula I



I

wherein:

X, which may be the same or different, are selected from the group consisting of: halogen; nitro; cyano; C_1 to C_6 alkyl; C_1 to C_6 alkyl substituted with a substituent selected from the group consisting of halogen, nitro, hydroxy, C_1 to C_6 alkoxy, and C_1 to C_6 alkylthio; C_2 to C_6 alkenyl; C_2 to C_6 alkynyl; hydroxy; C_1 to C_6 alkoxy; C_1 to C_6 alkoxy substituted with a substituent selected from halogen and C_1 to C_6 alkoxy; C_2 to C_6 alkenyloxy; C_2 to C_6 alkynyloxy; C_2 to C_6 alkanoyloxy; (C_1 to C_6 alkoxy)carbonyl; C_1 to C_6 alkylthio; C_1 to C_6 alkylsulfinyl; C_1 to C_6 alkylsulfonyl; sulfamoyl; N-(C_1 to C_6 alkyl)sulfamoyl; N,N-di(C_1 to C_6 alkyl)sulfamoyl; benzyloxy; substituted benzyloxy wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, C_1 to C_6 alkyl, C_1 to C_6 alkoxy and C_1 to C_6 haloalkyl; the group NR^5R^6 wherein R^5 and R^6 are independently selected from the group consisting of hydrogen, C_1 to C_6 alkyl, C_2 to C_6 alkanoyl, benzoyl and benzyl; the group $-C(R^7)=NR^8$ wherein R^7 is selected from hydrogen and C_1 to C_5 alkyl and R^8 is selected from the group consisting of hydrogen, C_1 to C_6 alkyl, phenyl, benzyl, hydroxy, C_1 to C_6 alkoxy, phenoxy and benzyloxy;

Y and Z are independently selected from methylene, oxygen and sulfur provided that at least one of Y and Z is selected from oxygen and sulfur;

R^1 is selected from the group consisting of: hydrogen; C_1 to C_6 alkyl; C_2 to C_6 alkenyl; C_2 to C_6 alkynyl; substituted C_1 to C_6 alkyl wherein the alkyl group is substituted with a substituent selected from the group consisting of C_1 to C_6 alkoxy, C_1 to C_6 alkylthio, phenyl and substituted phenyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, cyano, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy and C_1 to C_6 alkylthio; C_1 to C_6 (alkyl)sulfonyl; benzenesulfonyl; substituted benzenesulfonyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, cyano, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy and C_1 to C_6 alkylthio; C_2 to C_6 alkanoyl; benzoyl and substituted benzoyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, cyano, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy and C_1 to C_6 alkylthio; 2-furoyl; 3-furoyl; 2-thenoyl; 3-thenoyl; and an inorganic or an organic cation selected from the alkali metal ions, the alkaline earth metal ions, transition metal ions and the ammonium ion $R^9R^{10}R^{11}R^{12}N^{\oplus}$ wherein R^9, R^{10}, R^{11} and R^{12} are independently selected from the group consisting of: hydrogen; C_1 to C_{10} alkyl; substituted C_1 to C_{10} alkyl wherein the alkyl group is substituted with a substituent selected from the group consisting of hydroxy, halogen and C_1 to C_6 alkoxy; phenyl; benzyl; and the groups substituted phenyl and substituted benzyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, cyano, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy and C_1 to C_6 alkylthio;

R^2 is selected from the group consisting of: C_1 to C_6 alkyl; C_2 to C_6 alkenyl; C_2 to C_6 haloalkenyl; C_2 to C_6 alkynyl; C_2 to C_6 haloalkynyl; substituted C_1 to C_6 alkyl wherein the alkyl group is substituted with a substituent selected from the group consisting of halogen, C_1 to C_6 alkoxy, C_1 to C_6 alkylthio, phenyl and substituted phenyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, cyano, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy and C_1 to C_6 alkylthio;

R^3 is selected from the group consisting of: C_1 to C_6 alkyl; C_1 to C_6 fluoroalkyl; C_2 to C_6 alkenyl; C_2 to C_6 alkynyl; and phenyl;

R^4 is selected from the group consisting of: hydrogen; halogen; cyano; C_1 to C_6 alkyl; and (C_1 to C_6 alkoxy)carbonyl;

n is an integer selected from 1 to 3; and

m is zero or an integer selected from 1 to 3.

10. A process for severely damaging or killing unwanted plants which process comprises applying to said plants, or to the growth medium of said plants, an effective amount of a compound as defined according to claim 1.

4,511,392

HERBICIDAL SULFONAMIDES

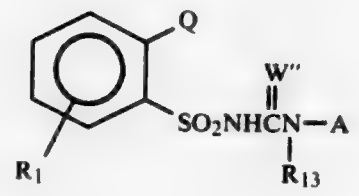
Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 337,934, Jan. 7, 1982, abandoned. This application Oct. 29, 1982, Ser. No. 436,631

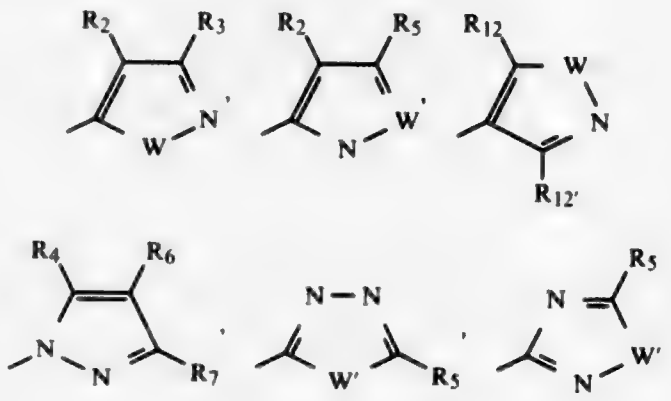
Int. Cl.³ C07D *403/10*; A01N *90/12*

U.S. Cl. 71—90 **39 Claims**

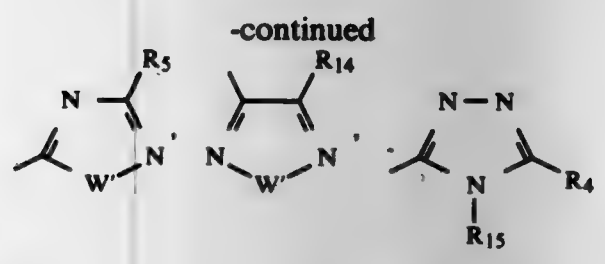
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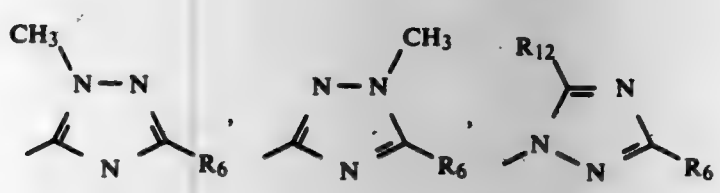


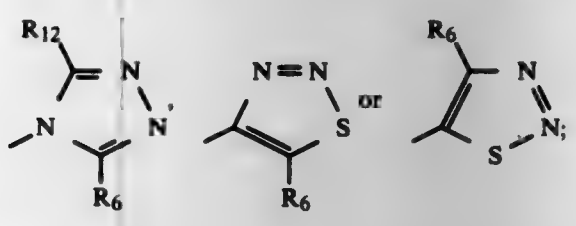
where Q is



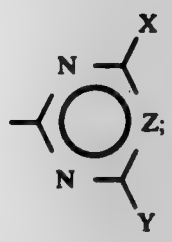
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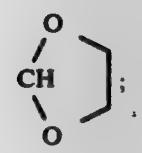




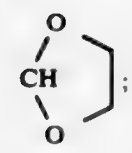
W'' is O or S;
W is O, S or NR;
W' is O or S;
R is H or C_1–C_4 alkyl;
R_1 is H, F, Cl, Br, CH_3, CF_3 or OCH_3;
R_2 is H, CH_3, C_2H_5, Cl or Br;
R_3 is H, CH_3, C_2H_5, Cl, Br, OCH_3, OC_2H_5 or SCH_3;
R_4 is H or C_1–C_4 alkyl;
R_5 is H, CH_3, C_2H_5, Cl, Br, OCH_3, OC_2H_5 or SCH_3;
R_6 is H, CH_3 or C_2H_5;
R_7 is H or C_1–C_4 alkyl;
R_{12} is H or CH_3;
R_{12}' is H or CH_3;
R_{13} is H or CH_3;
R_{14} is H, CH_3, C_2H_5, Cl, OCH_3, OC_2H_5 or SCH_3;
R_{15} is C_1–C_3 alkyl;
A is



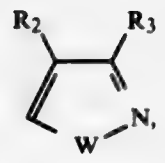
X is CH_3, OCH_3 or Cl;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2$, NH_2, $NHCH_3$, $N(CH_3)_2$, $OCH_2CH_2OCH_3$, OCH_2CF_3, SCH_3, CF_3 or



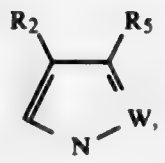
Z is CH;
and their agriculturally suitable salts; provided that
(a) when R_2 is Cl or Br, then W is O or S;
(b) when X is Cl, then Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$ or $N(CH_3)_2$;
(c) when W'' is S, then R_{13} is H and Y is CH_3, OCH_3, C_2H_5, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$ or



(d) when Q is



then one of R_2 or R_3 must be H, CH_3 or C_2H_5;
(e) when Q is



then one of R_2 or R_5 must be H, CH_3 or C_2H_5;
(f) the total number of carbon atoms of Q must be less than or equal to 8.

35. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim **1**.

4,511,393

3-CHLORO-8-CYANOQUINOLINES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Helmut Hagen, Frankenthal; Jüergen Markert, Mutterstadt; Rolf-Dieter Kohler, Edingen-Neckarhausen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

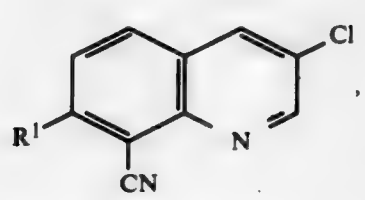
Filed Mar. 23, 1983, Ser. No. 477,964

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210979

Int. Cl.[3] **A01N** *43/48, 43/40;* **C07D** *215/20*

U.S. Cl. 71—92 **8 Claims**

1. A 3-chloro-8-cyanoquinoline of the formula,



(I)

where R^1 is $—NR^2R^3$, and R^2 and R^3 are identical or different and are each hydogen, C_1–C_8-alkyl, C_2–C_6-alkenyl, C_1–C_6-hydroxyalkyl, ω-dialkylamino-C_1–C_6-alkyl, formyl, cyclohexyl or phenyl, or together are tetramethylene or pentamethylene, and one methylene group in these radicals can be replaced by oxygen, nitrogen or $—N(CH_3)$.

8. A process for combating the growth of unwanted plants, wherein the plants and/or their location are treated with a herbicidally effective amount of a 3-chloro-8-cyanoquinoline of the formula I as claimed in claim **1**.

4,511,394

SUBSTITUTED BENZYLOXY CHLOROETHOXY ETHANE HERBICIDE ANTIDOTES

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

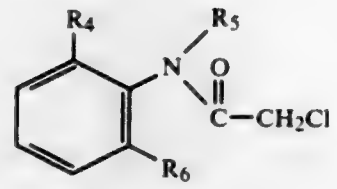
Division of Ser. No. 244,453, Mar. 16, 1981, Pat. No. 4,400,204. This application Mar. 24, 1983, Ser. No. 478,389

Int. Cl.³ A01N *37/34, 37/18*

U.S. Cl. 71—105 **8 Claims**

1. A herbicidal composition for use on wheat comprising:

(a) an herbicidally effective amount of an acetanilide compound of the formula

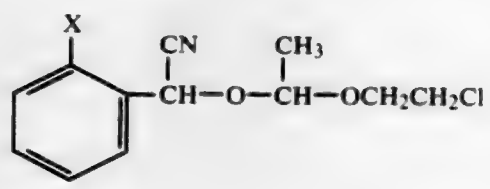


in which

R_4 and R_6 are independently alkyl having 1–2 carbon atoms, inclusive; and

R_5 is alkoxyalkyl having 2–4 carbon atoms, inclusive; and

(b) a non-phytotoxic antidotally effective amount of a compound of the formula



in which X is chlorine, bromine or iodine.

4,511,395

METHOD FOR THE PREPARATION OF WATER DISPERSIBLE GRANULAR HERBICIDAL COMPOSITIONS WITH INCREASED THERMAL STABILITY

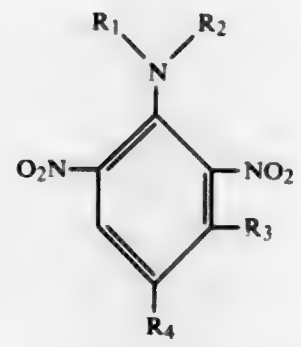
John Misselbrook, Lambertville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 20, 1982, Ser. No. 451,140

Int. Cl.³ A01N *25/22*

U.S. Cl. 71—121 **11 Claims**

1. A method for the preparation of heat stable water-dispersible granular compositions, said method comprising: melting about 50% to 70%, by weight, of a low-melting substituted compound of structural formula (I),



(I)

wherein R_1 is hydrogen, C_1–C_4 straight or branched-chain alkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl; R_2 is C_1–C_6 straight or branched-chain alkyl and optionally substituted with Cl or OCH_3, C_3–C_4 alkenyl or C_3–C_4 alkynyl; R_3 is hydrogen, CH_3 or CH_2OCH_3; R_4 is C_1–C_4 alkyl, CF_3 or Cl; mixing with said melt, on a weight basis, 0.0% to 3% sodium dioctyl sulfosuccinate; 2% to 7.5% of a wetting agent selected from sodium N-methyl-N-oleoyltaurate, octylphenoxy polyethoxy ethanol and nonylphenoxy polyethoxy ethanol; 2% to 6% of a dispersing agent selected from sodium lignin sulfonate and the sodium salt of a naphthalene sulfonic acid-formaldehyde condensate; 0.0% to 7.5% of a hydrophilic precipitated silica; and naturally occurring swelling hydrous aluminum silicate clay, in amounts sufficient to total the composition to 100%; cooling the thus-obtained composition; milling said composition to a particle size range of 5 μm to 10 μm; and granulating same with water.

4,511,396

REFINING OF METALS

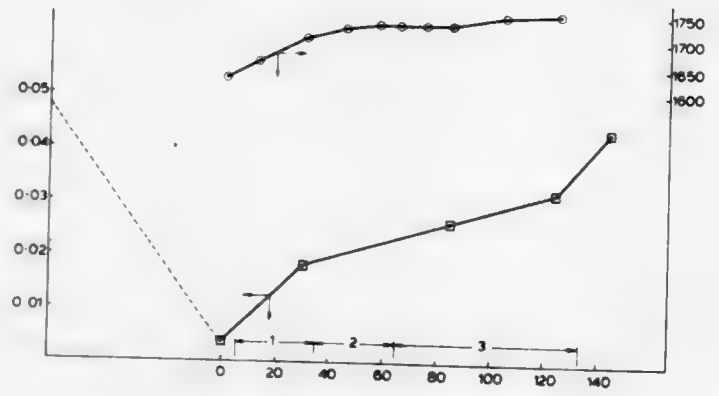
Ivor G. Nixon, ler Stock Ost "Matterhorngruss", Steinmattstrasse, Valais, 3920 Zermatt, Switzerland

Filed Aug. 24, 1983, Ser. No. 525,965

Claims priority, application United Kingdom, Sep. 1, 1983, 8224950

Int. Cl.³ C21C *7/00*; C22B *9/10*

U.S. Cl. 75—51.1 **12 Claims**



1. A method for the refining of a steel melt with a blow gas in the presence of a flux in which said flux is a dual basicity (DB) flux, a major proportion of which comprises one or more primary flux components having a basicity/activity which is equal to or lower then that of lime and a minor proportion of which comprises one or more secondary flux components having a basicity/activity higher than that of lime.

4,511,397

PROCESS FOR INCREASING THE DEGREE OF AFTERBURNING OF CARBON MONOXIDE IN THE REFINING OF IRON MELTS

Antoine Weiner, Luxembourg, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Oct. 5, 1983, Ser. No. 539,260

Claims priority, application Luxembourg, Oct. 6, 1982, 84409

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—59.17 **7 Claims**

1. A process for increasing the extent of afterburning of carbon monoxide formed during decarburization of iron by the action of oxygen including the steps of:

providing a catalyst which promotes the afterburning of carbon monoxide; and

delivering said catalyst to the space above the surface of an iron bath.

4,511,398

PROCESS FOR PURIFYING ALUMINUM WITH SODIUM

Tibor Kugler, Thayngen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 13, 1983, Ser. No. 513,472

Claims priority, application Switzerland, Jul. 23, 1982, 4510/82

Int. Cl.³ C22B *21/06*

U.S. Cl. 75—63 **14 Claims**

1. A process for purifying aluminum contaminated with an element selected from the group consisting of group II b, group III a, group IV a and group V a of the periodic table and

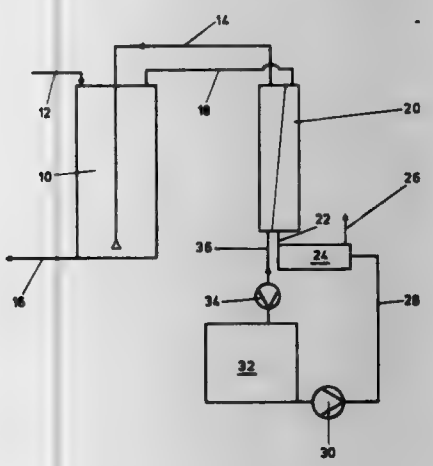
mixtures thereof by liquid extraction in a separating column comprising:

providing a source of contaminated aluminum, a source of sodium, a heat exchanger and a separating column;

feeding a mass of said contaminated aluminum to said separating column;

feeding in countercurrent flow to said contaminated aluminum a quantity of sodium equal to at least five times the mass of the contaminating element so as to produce a purified aluminum product having a small residual amount of said contaminating element and a sodium content of not more than 500 ppm and a sodium product having a small concentration of said contaminating element; and

removing said sodium product from said separating column and feeding said sodium product to said heat exchanger.

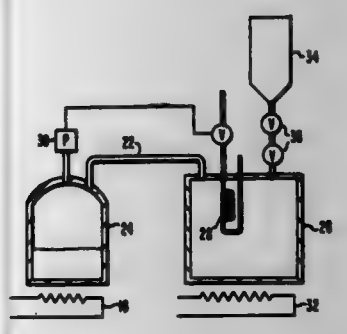


4,511,399

CONTROL METHOD FOR LARGE SCALE BATCH REDUCTION OF ZIRCONIUM TETRACHLORIDE

Young J. Kwon, Fruit Heights, Utah, and Harmon A. Evans, Moses Lake, Wash., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 4, 1983, Ser. No. 539,026
Int. Cl.³ C22B *25/00*
U.S. Cl. 75—84.5 **10 Claims**



1. A control method for large scale batch zirconium reduction, said method comprising:

(a) feeding solid zirconium tetrachloride into a sublimer at least periodically;

(b) heating said sublimer to vaporize said zirconium tetrachloride;

(c) feeding said vaporized zirconium tetrachloride from said sublimer to a reduction vessel;

(d) taking measurements indicative of the feed from said sublimer to said reduction vessel; and

(e) controlling the temperature of a condenser located in conjunction with said sublimer, whereby large batches of zirconium tetrachloride can be economically reduced to high quality zirconium metal.

4,511,400

PRODUCTION OF TOOL STEELS USING CHEMICALLY PREPARED V_2O_3 AS A VANADIUM ADDITIVE

Gloria M. Faulring, Niagara Falls, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 12, 1984, Ser. No. 588,412
Int. Cl.³ C22C *33/08*
U.S. Cl. 75—129 **12 Claims**

1. A process for producing tool steel which comprises:

(a) forming a molten steel having a carbon content above about 0.35 weight percent and containing silicon in an amount of from about 0.15 to about 3.0 weight percent, and a slag covering the molten steel, the slag containing CaO and SiO_2 in proportion such that the weight ratio of CaO to SiO_2 is equal to or greater than unity; and

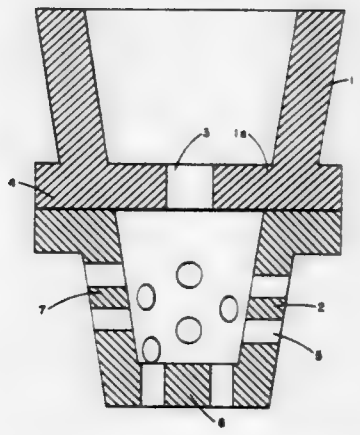
(b) adding to the molten steel a vanadium additive consisting essentially of finely divided chemically prepared, substantially pure V_2O_3 in at least an amount which will react stoichiometrically with said carbon and silicon to produce from about 0.4 to about 5.0 weight percent vanadium in the molten steel.

4,511,401

PROCESS FOR THE TREATMENT OF MOLTEN METAL

Geoffrey Mannion, Horsham, and Patrick V. Palmer, Hove, both of England, assignors to The International Meehanite Metal Company Limited, Surrey, England

Division of Ser. No. 92,676, Nov. 9, 1979, Pat. No. 4,312,668. This application Oct. 19, 1981, Ser. No. 312,860
Int. Cl.³ C22C *33/08*
U.S. Cl. 75—130 R **2 Claims**



1. A process for the treatment of molten metal by introduction of a reactive additive which comprises placing the reactive additive in a solid form in an additive container having a cover, a base, and peripheral walls, with a plurality of holes in at least one of the base and peripheral walls, passing molten metal to be treated via a pouring bush into the additive container wherein the metal contacts the additive in the solid form and reacts with the additive, allowing the metal containing the additive to flow through the holes in the additive container into a pouring ladle arranged beneath the additive container, and restricting contact of the molten metal being treated with the atmosphere.

4,511,402

SINTERED SILICON NITRIDE PRODUCTS AND PROCESSES FOR FABRICATION THEREOF

Kazunori Miura; Yoshinori Hattori, and Yasushi Matsuo, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Japan

Continuation of Ser. No. 428,506, Sep. 29, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,541
Claims priority, application Japan, Sep. 30, 1981, 56-155452
Int. Cl.³ C22C *29/00*
U.S. Cl. 75—233 **14 Claims**

1. A sintered silicon nitride product formed by sintering a mixture consisting essentially of from 60 to 98.9% by weight of

silicon nitride, from 0.1 to 15% by weight of one or more chromium components selected from metal chromium, chromium oxide, and chromium nitride, and from 1 to 25% by weight of one or more oxides selected from oxides of rare earth elements, scandium oxide, yttrium oxide, aluminum oxide, zirconium oxide and silicon dioxide.

4,511,403

IMMERSION TIN COMPOSITION AND PROCESS FOR USING

Alfred P. Orio, Westford; Leonard R. Levy, Framingham, and Michael Gulla, Sherborn, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Continuation of Ser. No. 005,667, Jan. 22, 1979, abandoned, which is a continuation of Ser. No. 824,162, Aug. 12, 1977, abandoned. This application Jan. 16, 1980, Ser. No. 112,781

Int. Cl.³ C23C *3/02*

U.S. Cl. 106—1.22 **8 Claims**

1. In an immersion plating solution for tin that plates over a base metal by displacement, said solution containing stannous ions in an amount of at least 0.05 moles per liter, thiourea in an amount such that the mole ratio of thiourea to stannous tin is at least 10:1, and a mineral acid in an amount sufficient to reduce the solution pH to below 1, the improvement comprising an aromatic mononuclear sulfonic acid in solution in an amount sufficient to prevent the formation of a loosely adherent, discolored immersion tin deposit.

4,511,404

COMPOSITIONS FOR INHIBITING CORROSION OF METAL SURFACES

Cyril F. Drake, Harlow; Ronald Jones, Leeds; Paul F. Bateson, Duxford; Ronald J. Grant, Harlow, and Martin E. Burrage, Ilkley, all of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 2, 1983, Ser. No. 548,206

Claims priority, application United Kingdom, Nov. 2, 1982, 8231658

Int. Cl.³ C09D *5/08*

U.S. Cl. 106—14.12 **4 Claims**

1. In a corrosion inhibiting paint formulation including at least one metal polyphosphate corrosion inhibiting pigment dispersed in a vehicle containing a resin binder, the improvement comprising, as said pigment, a crystalline metal polyphosphate selected from the group consisting of pentastrontium tripolyphosphate and dizinc-monosodium tripolyphosphate.

4,511,405

ANTIFOULANTS FOR THERMAL CRACKING PROCESSES

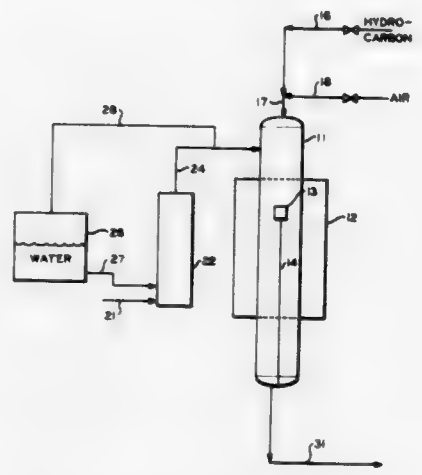
Larry E. Reed; Randall A. Porter; Floyd E. Farha, Jr., and Jack P. Guillory, all of c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Division of Ser. No. 424,889, Sep. 30, 1982, , which is a continuation-in-part of Ser. No. 348,614, Feb. 12, 1982, abandoned. This application May 27, 1983, Ser. No. 499,077

Int. Cl.³ C09D *5/14*

U.S. Cl. 106—15.05 **6 Claims**

1. "An antifoulant composition comprising tin, antimony and germanium". wherein the concentration of antimony in said antifoulant composition is in the range of about 10 mole percent to about 65 mole percent and wherein the concentration of germanium in said antifoulant composition is in the range of about 10 mole percent to about 65 mole percent.



4,511,406

DECORATIVE NONCOMBUSTIBLE COATINGS AND METHODS OF MAKING THE SAME

Charles H. Miller, North Shore, Calif., assignor to The Pathfinders Group, Newport Beach, Calif.

Filed May 10, 1983, Ser. No. 493,157

Int. Cl.³ C09D *5/14*

U.S. Cl. 106—18.14 **9 Claims**

1. A decorative noncombustible coating composition for furnishings and building fixtures having a surface tension of at least about 60 but not in excess of 80 dynes/cm and comprising, in aqueous medium, by weight:

at least about 25 parts but not in excess of about 60 parts of monoaluminum phosphate;

at least about 35 parts but not in excess of about 40 parts of an inert noncombustible coloring material;

at least about 1 part but not in excess of about 3 parts of phosphoric acid; and

a surfactant solution consisting of a mixture of nonyl phenol and alcohol.

4,511,407

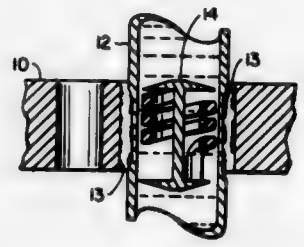
METHOD OF CLEANING CORRODED METAL ARTICLES BY INDUCTION HEATING

David A. Steininger, Santa Clara, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 1, 1982, Ser. No. 438,017

Int. Cl.³ B08B *3/10*

U.S. Cl. 134—1 **7 Claims**



1. A method for removing iron oxide corrosion from a metallic tube and tube support assembly comprising the steps of

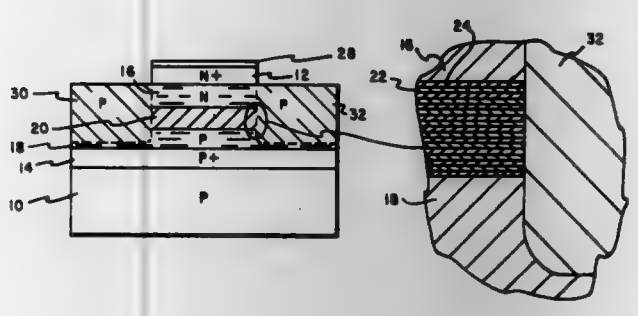
(a) contacting said tube support assembly and exterior of said tube with a substantial volume of fluid cleaning agent at a temperature lower than a predetermined temperature range, said predetermined temperature range being that range in which said agent chemically removes said corrosion,

(b) introducing an induction heating means into the interior of said tube at a location adjacent to said corrosion;
(c) locally heating said tube by said induction heating means for a period sufficient to raise the temperature of said cleaning agent in the vicinity of said heating means to a temperature within said predetermined temperature range to remove said corrosion, while adjacent metallic surfaces of said tube and tube support assembly are substantially maintained below said predetermined temperature range by heat dissipation into said volume of fluid cleaning agent.

4,511,408
SEMICONDUCTOR DEVICE FABRICATION WITH DISORDERING ELEMENTS INTRODUCED INTO ACTIVE REGION

Nick Holonyak, Jr., Urbana, Ill., assignor to The Board of Trustees of The University of Illinois, Urbana, Ill.

Filed Apr. 22, 1982, Ser. No. 370,756
Int. Cl.³ H01L *21/263, 33/10*
U.S. Cl. 148—1.5 **66 Claims**



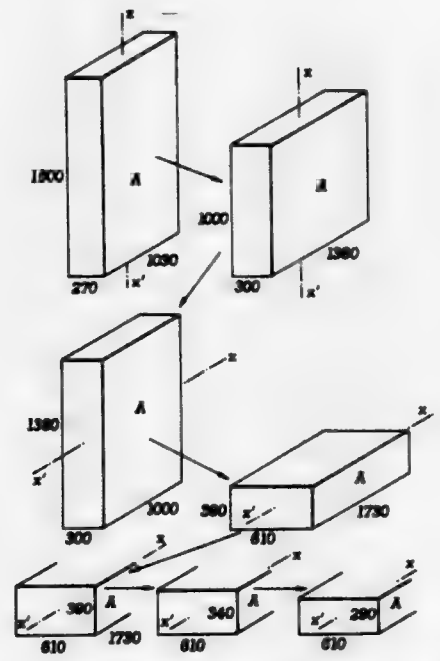
1. A method for converting a multilayer semiconductor structure, which comprises first active semiconductor regions interposed between second semiconductor barrier layers, into a disordered alloy of both said first and second semiconductors, said alloy exhibiting a higher energy gap than said first active semiconductor region; the method comprising introducing a disordering element into said multilayer structure, said disordering element being an element selected from the group consisting of silicon and krypton.

4,511,409
PROCESS FOR IMPROVING BOTH FATIGUE STRENGTH AND TOUGHNESS OF HIGH-STRENGTH AL ALLOYS

Daniel Ferton, Grenoble, and Robert Mace, Issoire, both of France, assignors to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Filed Jul. 1, 1983, Ser. No. 510,200
Claims priority, application France, Jul. 2, 1982, 82 11963
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—2 **7 Claims**

1. A method of improving both fatigue strength and toughness of high-strength Al alloys, comprising casting the high strength Al alloy product along an axis XX'; hot upsetting along the axis XX', with an upsetting ratio (initial length/final length along axis XX') of >1.4; hot drawing along the axis XX', with a rate of working (initial cross section/final cross section) considered perpendicularly to the axis XX' of >1.5; hot compressing along an axis perpendicular to the axis XX', with a rate of reduction (initial cross section-final cross section-/initial cross section) of $>15\%$; and hot deforming in the direction of the XX' axis, wherein the ratio of the thickness of a product (H) to the length of the contact of the product with



a tool (a) as measured in the long direction, is less than or equal to 1.

4,511,410
COPPER-TIN ALLOYS HAVING IMPROVED WEAR PROPERTIES

Eugene Shapiro, Hamden, and Frank N. Mandigo, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 2, 1984, Ser. No. 595,763
Int. Cl.³ C22F *1/08*
U.S. Cl. 148—13.2 **12 Claims**

1. A process for improving the wear performance of a copper-tin alloy, said process comprising:
providing material formed from an alloy consisting essentially of about 2% to about 11% tin, about 0.03% to about 0.75% phosphorous and the balance essentially copper; and
forming a lubricating type film on at least one surface of said material, said forming step comprising subjecting said material to a heat treatment at a temperature in the range of about 400° C. to about 650° C. in an atmosphere having a dew point in the range of about −75° C. to about +95° C. and an oxygen level less than about 300 ppm.

4,511,411
METHOD OF FORMING A HARD SURFACE LAYER ON A METAL COMPONENT

Paul Brunner, Münchenbuchsee, and Beat Hofer, Derendingen, both of Switzerland, assignors to Vereinigte Drahtwerke AG, Biel, Switzerland

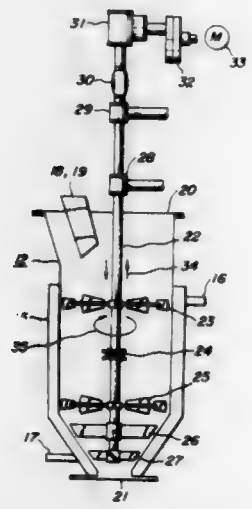
Filed Sep. 2, 1983, Ser. No. 528,954
Claims priority, application Switzerland, Sep. 7, 1982, 5313/82
Int. Cl.³ B22F *3/24*
U.S. Cl. 148—20.3 **3 Claims**

1. A method of forming a nitride layer in the surface- and subsurface-zone of a component made of elements selected from the group consisting of Ti, Zr, Hf, Si, V, Nb, Ta, Cr, Mo, W and alloys thereof, comprising the steps of exposing the chemically untreated component in an autoclave with an atmosphere of nitrogen gas to an isostatic pressure of at least 100 bar and a temperature of at least 200° C. for at least one hour, and thereafter slowly reducing the pressure and the heat in the autoclave steadily.

4,511,412
METHOD OF PRODUCING A WATER-IN-OIL EMULSION EXPOSIVE

Shigeru Kakino; Katsuhide Hattori; Yoshiaki Fukatsu, all of Chita; Hideo Moriyama, Tokoname, and Hidekazu Sakakibara, Handa, all of Japan, assignors to Nippon Oil and Fats Co. Ltd., Japan

Filed Jul. 20, 1984, Ser. No. 632,869
Claims priority, application Japan, Aug. 1, 1983, 58-140923
Int. Cl.³ D03D *23/00*
U.S. Cl. 149—109.6 **1 Claim**

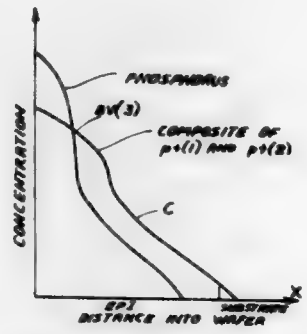


1. In a method of producing water-in-oil emulsion explosive, comprising a step for conditioning an aqueous solution of inorganic oxidizer, a step for conditioning an oil, an emulsifier, or a mixture of oil and emulsifier, a step for mixing the aqueous solution of inorganic oxidizer with the oil and the emulsifier, a step for emulsifying the resulting mixture to form a water-in-oil emulsion, a step for kneading the resulting water-in-oil emulsion together with hollow microspheres, and a step for packing the resulting water-in-oil emulsion explosive, the improvement comprising said kneading step being a kneading step, wherein agitating blades fitted to an agitating shaft in a kneader are subjected to up and down movements in the axial directions of the agitating shaft and concurrently to a rotary motion together with the agitating shaft to knead the water-in-oil emulsion together with hollow microspheres, and the resulting kneaded mixture is exhausted from the bottom portion of the kneader or taken out from the upper portion thereof.

4,511,413
PROCESS FOR FORMING AN IC WAFER WITH BURIED ZENER DIODES

Ralph C. Tuttle, Derry, N.H., and Richard S. Payne, Andover, Mass., assignors to Analog Devices, Incorporated, Norwood, Mass.

Filed Oct. 5, 1983, Ser. No. 539,127
Int. Cl.³ H01L *21/22*
U.S. Cl. 148—187 **5 Claims**

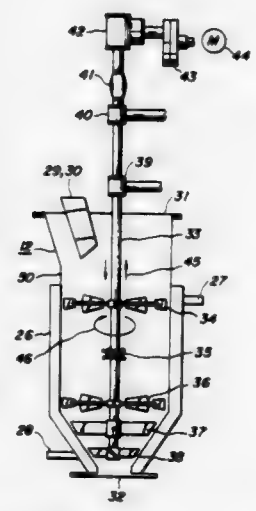


1. The method of making an IC wafer with a buried Zener diode comprising the steps of:
making a first p+ diffusion into said wafer;
driving said first diffusion in;
making a second p+ diffusion into said wafer over said first diffusion;
driving said first and second diffusions into said wafer to desired depths;
making a third p+ diffusion into said wafer over the first and second diffusions, said third diffusion being shallower than said first and second diffusions and extending out laterally beyond opposite edges thereof; and
making an n+ diffusion in the central region of said p+ diffusions to form a sub-surface breakdown junction with the p-doped material, said n+ diffusion being shallower than said third p+ diffusion.

4,511,414
METHOD OF PRODUCING A WATER-IN-OIL EMULSION EXPLOSIVE

Fumio Matsui, Handa; Shin Aono, Chita; Hiroshi Sakai, Chita; Katsuhide Hattori, Chita, and Shigeru Kakino, Chita, all of Japan, assignors to Nippon Oil and Fats Co. Ltd., Japan

Filed Jul. 20, 1984, Ser. No. 632,870
Claims priority, application Japan, Aug. 1, 1983, 58-140924
Int. Cl.³ D03D *23/00*
U.S. Cl. 149—109.6 **1 Claim**



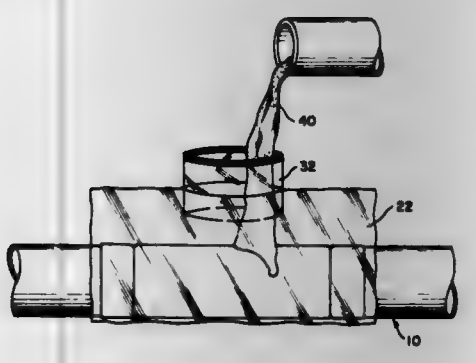
1. A method of producing water-in-oil emulsion explosive, comprising mixing an aqueous solution of inorganic oxidizer with a premixture of oil and emulsifier, emulsifying the mixture into a water-in-oil emulsion through the following emulsifying step (a), and then kneading the resulting water-in-oil emulsion together with hollow microspheres in the following kneading step (b):
(a) said emulsifying step being an emulsifying step, wherein the above described mixture is fed into an emulsifying machine on its disc arranged in the machine and having projections; the mixture is flowed towards the inner wall of the emulsifying machine, while rotating the disc and imposing a shear force to the mixture by the projections arranged on the disc; the emulsified mixture is flowed down from the outer peripheral portion of the disc into a room formed under the disc; the emulsified mixture is further mixed in the room and is extruded therefrom by means of an extruding blade arranged in the room to produce a water-in-oil emulsion; and
(b) said kneading step being a kneading step, wherein the above obtained water-in-oil emulsion is kneaded together with hollow microspheres by means of agitating blades which carry out concurrently rotary motion and up and down movements.

4,511,415

METHOD OF SEALING AN ELECTRICAL CABLE

Zoltan B. Dienes, Annandale, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Feb. 28, 1983, Ser. No. 470,835
Int. Cl.³ H01B *13/10*
U.S. Cl. 156—48 **13 Claims**



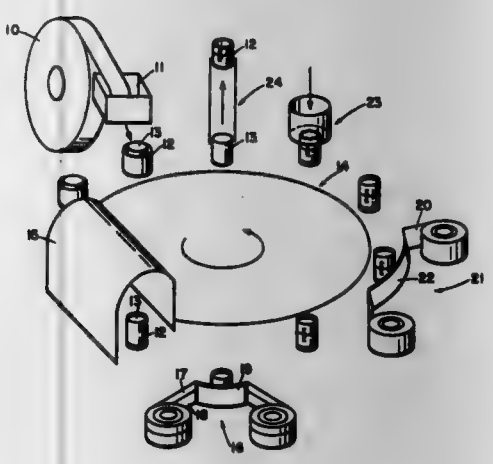
1. A method of sealing an exposed area of an electrical cable comprising the steps of:
forming an enclosure around said exposed area;
sealably attaching said enclosure to said cable adjacent said exposed area;
providing an access opening in said enclosure;
interposing selectively closable flexible inlet means into said access opening;
filling said enclosure through said inlet means with an encapsulant, said encapsulant substantially surrounding said exposed area;
closing said inlet means, thereby preventing escape of said encapsulant;
sealably wrapping said filled enclosure and said closed flexible inlet means with sealing tape; and
placing a sealing sleeve around said wrapped enclosure.

4,511,416

METHOD FOR MAKING DECORATED BATTERY CASINGS

Kenneth M. Karpiloff, New Rochelle, N.Y., assignor to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 328,566, Dec. 8, 1981, Pat. No. 4,436,777. This application Dec. 21, 1983, Ser. No. 564,068
Int. Cl.³ B32B *31/12*
U.S. Cl. 156—69 **5 Claims**



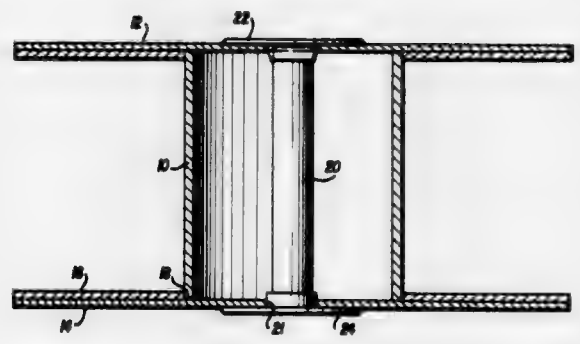
1. A method for making a metallic decorated battery casing from a tubular plastic enclosure member characterized in that said method comprises the steps of placing said enclosure member on a support member, decorating the outer surface of said enclosure member while on said support member by hot stamping a metallic foil thereon, covering said metallic foil decoration with a transparent protective film coating, removing said decorated enclosure member from said support member, and fixedly enclosing a battery therewithin by placing said battery in said decorated tube and heat crimping at least one end of said tubular enclosure member.

4,511,417

CABLE REEL WITH REINFORCING FLANGES

Carl F. Yealy, New Oxford, Pa., assignor to Merline Industries, Inc., Hanover, Pa.

Filed Aug. 31, 1983, Ser. No. 528,166
Int. Cl.³ B29C *27/08;* B65H *75/14*
U.S. Cl. 156—73.5 **1 Claim**



1. A method of assembling a reel for storage of rope or cable, said reel having a hollow central core, a pair of end plates and a cylindrical reinforcing member of plastics material, with a pair of flanges of plastics material secured to said cylindrical member and bearing on the outer surfaces of the end plates, said method comprising:
securing a first flange to one end of a cylindrical member;
assembling a pair of end plates, each having a center opening, to a central hollow core member to form a reel;
passing the free end of said cylindrical member through the center openings of said end plates and said hollow core;
placing a second flange with a hole having an interference fit on the free end of said cylindrical member;
spin-welding the second flange to the cylindrical member by pressing the second flange onto the cylindrical member and causing relative rotation between said interference fit hole of the second flange and the cylindrical member so that heat generated by said rotation causes the plastics material of the second flange and the cylindrical member to fuse together.

4,511,418

METHOD OF MAKING A BOTTLE OF SATURATED POLYESTER RESIN

Takami Tsukada, Chiba; Masao Akutsu, and Tadao Saito, both of Tokyo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 458,352, Jan. 17, 1983, abandoned, which is a division of Ser. No. 245,570, Mar. 20, 1981, abandoned, which is a division of Ser. No. 074,881, Sep. 12, 1979, Pat. No. 9,276,986. This application Oct. 11, 1983, Ser. No. 540,696
Int. Cl.³ B29C *17/07, 27/18;* B29D *9/04*
U.S. Cl. 156—245 **4 Claims**

1. A method of making a bottle of saturated polyester resin from an injection molded parison by biaxial orientation, comprising:
forming a parison of saturated polyester resin by injection molding, said parison having a neck portion, a trunk portion extending downwardly from the lower end of said neck portion, and a closed bottom portion;
preparing a piece of saturated polyester resin having an annular portion surrounding the lower end of said neck portion of said parison, and two opposed strip-shaped portions extending downwardly from said annular portion and conforming with the diametrically opposed sides of the trunk portion of said parison;
welding said piece on an outer face of said parison;

placing said welded piece and said parison in a mold having a recess for receiving said welded piece and heating said piece and said parison to a biaxially orientable temperature; and

blow-molding said piece and said parison into contact with the mold such that said piece is received in said recess and



said piece and said parison are elongated longitudinally simultaneously with the

blow-molding, whereby said piece and said parison are shaped into a bottle of saturated polyester resin having biaxially oriented projections which extend vertically on the diametrically opposed side walls of said bottle and reinforce the same.

4,511,419

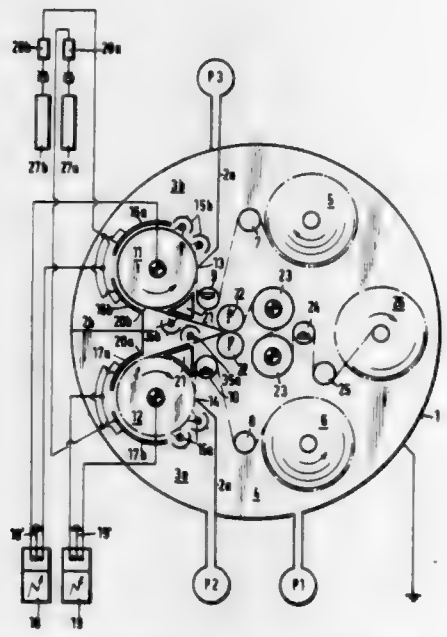
METHOD AND DEVICE FOR LAMINATING FOILS

Heinz Kuhlmann, Wiehl, and Eckhard Prinz, Hamburg, both of Fed. Rep. of Germany, assignors to Firma Erwin Kampf GmbH & Co. and Firma Softal GmbH, both of, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 371,281, Apr. 23, 1982, abandoned. This application Nov. 10, 1983, Ser. No. 550,509

Int. Cl.³ B29C *19/02*

U.S. Cl. 156—272.6 **32 Claims**



1. A method of laminating at least two foils such as plastic foils, metal foils and ribbons, paper, or fabric, the foils being treated with an electrical gas discharge, comprising the steps of: (a) passing a first foil into a first treatment chamber having a first pressure; (b) passing a second foil into a second treatment chamber having a second pressure, the second treatment chamber being separate from the first treatment chamber; (c) treating the first and second foils with a low energy plasma gas discharge in vacuo in their respective treatment chambers such that the surfaces to be bonded together are activated with an energy density of 10 to 10^4 mWs/cm^2; (d) passing the foils into a laminating chamber having a third pressure greater than the first or second pressures, the laminating chamber being separate from the first and second treatment chambers; (e) bringing the foils into contact; and (f) bonding the foils together under pressure and heat.

22. Apparatus for laminating at least two foils such as plastic foils, metal foils and ribbons, paper or fabric, the foils being treated with an electrical gas discharge comprising; (a) a first treatment chamber; (b) means for passing a first foil into the first treatment chamber; (c) first pressure means connected to the first treatment chamber so as to maintain the interior of the first treatment chamber at a first pressure; (d) a second treatment chamber; (e) means for passing a second foil into the second chamber; (f) second pressure means connected to the second treatment chamber so as to maintain the interior of the second chamber at a second pressure; (g) first and second low energy plasma gas discharge means disposed in the first and second treatment chambers, respectively, to treat the first and second foils with a low energy gas discharge such that the surfaces to be bonded together are activated with an energy density of 10 to 10^4 mWs/cm^2; (h) a laminating chamber; (i) means to pass the foils into the laminating chamber; (j) third pressure means connected to the laminating chamber so as to maintain the interior of the laminating chamber at a third pressure; and, (k) bonding means disposed in the laminating chamber to bring the foils into contact with each other under heat and pressure such that they are bonded together.

4,511,420

CONTINUOUS ROD MANUFACTURE

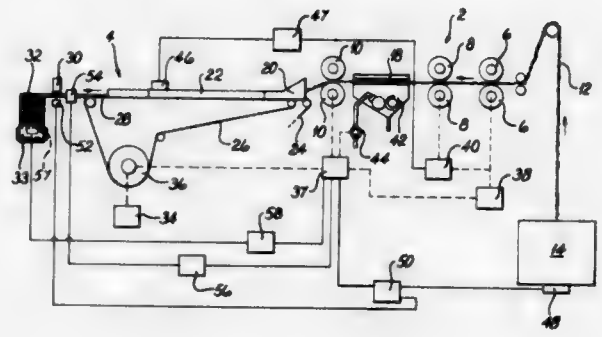
Hugh M. Arthur, Bucks, England, assignor to Molins, Ltd., London, England

Filed Dec. 8, 1981, Ser. No. 328,716

Claims priority, application United Kingdom, Dec. 16, 1980, 8040239

Int. Cl.³ A24D *3/02*

U.S. Cl. 156—356 **27 Claims**

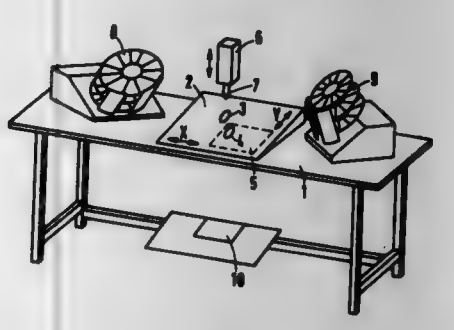


1. Apparatus for making continuous rod of the tobacco industry, comprising a garniture for forming the rod, means for supplying a major constituent of the rod along a path to the garniture including feeding means for feeding at least said major constituent of the rod on said path towards the garniture at a controlled feed rate, means for feeding a secondary constituent of the rod towards said major constituent at a position upstream of said feeding means, means for producing signals indicative of the consumption rate of at least the major constituent, said signal producing means including a detector for detecting the consumption rate of said major constituent upstream of said position, and means for varying the relative feed rates of the major and secondary constituents in response to the signals produced by said signal producing means, including means for changing the feed rate of said feeding means for the major constituent.

4,511,421
COMPONENT-INSERTION TABLE FOR MANUALLY EQUIPPING CIRCUIT CARRIERS

Volker Küehn, Pforzheim; Werner Rothfuss, Korntal-Munchingen, and Richard Widmaier, Kornwestheim, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 3, 1984, Ser. No. 576,598
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303951
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—356 8 Claims

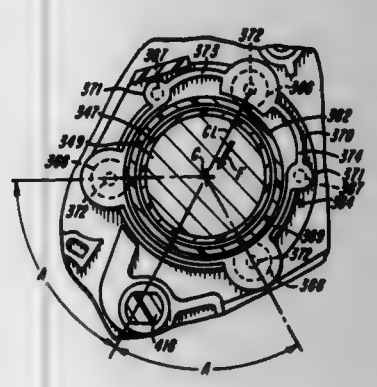


1. A component-insertion table for manually equipping circuit carriers with surface mountable components comprising:
a take up device for a circuit carrier;
a programmable adhesive dosing feeder;
a programmable component supply device;
an insertion table cover having a window at a central insertion position;
said take up device together with a circuit carrier being movable coordinately below said cover to a central position at which said feeder automatically applies adhesive;
said take up device together with said circuit carrier being movable coordinately below said cover to said central insertion position at which individual component insertion locations on said circuit carrier are accessible from above in a programmed order of succession.

4,511,422
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, and John D. Mistyurik, Tipp City, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 28, 1984, Ser. No. 582,336
Int. Cl.[3] B65C *11/02*
U.S. Cl. 156—384 3 Claims

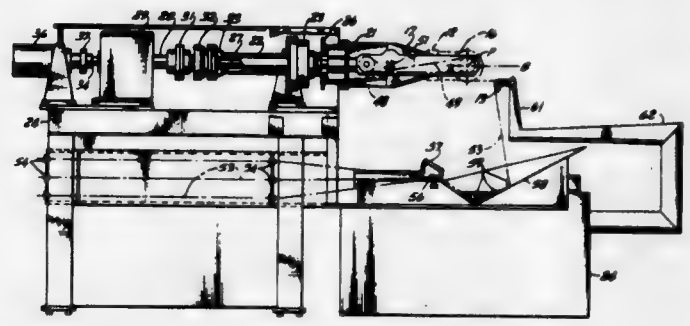


1. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to a carrier web, comprising a housing having a handle, means on the housing for supporting a label roll of pressure sensitive labels, means for printing on labels, means for delaminating printed labels, means for applying printed labels, means for advancing the carrier web, means defining a path for guiding the web from the label roll, to the printing means, to the delaminating means, and to the web advancing means, wherein the web advancing means includes a rotatably mounted feed wheel and an electric motor for driving the feed wheel, wherein the feed wheel includes an annular portion having an outer periphery, three peripherally spaced rolling-contact members in supported contact with the annular portion, two of the rolling contact members being firmly mounted in force opposition to the force exerted by the feed wheel during advance of the carrier web, and the third rolling-contact member being yieldably mounted to exert force against the annular portion.

4,511,423
APPARATUS FOR WINDING FIBER REINFORCED PIPE FITTINGS

Gerald M. Magarian, Cypress, and Ralph S. Friedrich, Hermosa Beach, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Division of Ser. No. 300,292, Sep. 8, 1981, Pat. No. 4,437,816.
This application Dec. 12, 1983, Ser. No. 560,107
Int. Cl.[3] B65H *81/00*
U.S. Cl. 156—425 33 Claims

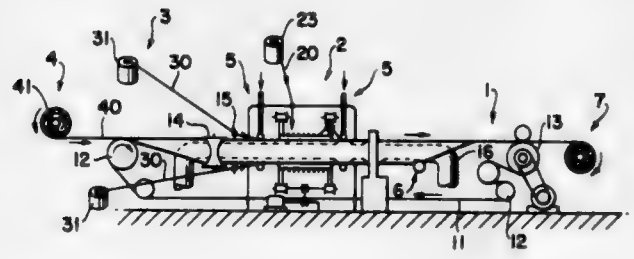


1. Apparatus for winding a fiber reinforced article comprising:
means for holding and rotating a mandrel for the article;
a delivery ring for delivering at least one fiber roving to the mandrel in response to mandrel rotation:
means for translating the delivery ring in any direction in an X-Y plane while remaining fixed in a Z direction normal to the X-Y plane; and
means for alternately rotating the mandrel around an A axis parallel to the X direction and a B axis parallel to the Y direction.

4,511,424
APPARATUS FOR PRODUCING SHEET MOLDING COMPOUND

Fumio Usui, 441 Shimoasao, Asao-ku, Kawasaki-shi, Kanagawa, 215, Japan

PCT No. PCT/JP82/00204, § 371 Date Dec. 29, 1982, § 102(e) Date Dec. 29, 1982, PCT Pub. No. WO82/04219, PCT Pub. Date Dec. 9, 1982
PCT Filed May 28, 1982, Ser. No. 456,089
Claims priority, application Japan, May 30, 1981, 56-83119
Int. Cl.[3] B65H *81/00*
U.S. Cl. 156—426 5 Claims



1. An apparatus for producing a sheet molding compound, comprising:
a belt circulator for circulating a flat belt while curving said flat belt in a cylindrical form along a predetermined path and guiding it;

a carrier film roll disposed adjacent said belt circulator for supplying a carrier film to said cylindrically formed portion;

a warp material bobbin disposed adjacent said belt circulator and having a linear warp material wound therearound and being for supplying the warp material to said cylindrically formed portion;

a winding disk supported coaxially and relatively movably along said cylindrically formed portion of said flat belt and having at least one guide hole therein;

a driving mechanism connected to said winding disk for rotating said winding disk alternately in opposite directions at a predetermined period and at a predetermined speed;

a winding drum disposed upstream of and adjacent to said winding disk with respect to the direction of movement of said flat belt and supported coaxially and relatively movably along said cylindrically formed portion;

a weft material bobbin disposed adjacent said belt circulator and having a linear weft material wound therearound and being for feeding said weft material to said winding drum;

a binder disposed downstream of and adjacent to said winding disk with respect to the direction of movement of said flat belt for binding the outer periphery of the cylindrically formed portion with other linear material at a predetermined period;

a cutter disposed at the downstream end of said cylindrically formed portion for continuously cutting said weft material; and

an improved synthetic resin feeder disposed upstream or downstream of said winding disk for supplying synthetic resin to the warp or weft material and comprising a hollow annular nozzle, means for supplying synthetic resin into said nozzle, said nozzle having an annular nozzle opening facing along the cylindrically formed portion and having an upstream edge with substantially the same inside diameter as the outside diameter of the material wound on the cylindrically formed portion for being in contact with the outer peripheral surface of the cylindrically formed portion during use, and having a downstream edge with an inside diameter slightly larger than the outside diameter of the cylindrically formed portion for being spaced slightly from the surface of the cylindrically formed portion and curved in the downstream direction for supplying a layer of resin from the nozzle onto the cylindrically formed portion.

4,511,425

HEATED PAD DECORATOR

Mary G. Boyd, Framingham; Donald R. Smith, Hingham, both of Mass.; Peter F. Imondi, Providence, R.I.; Norman A. Hiatt, Framingham, Mass.; Fritz E. Bauer, Shrewsbury, Mass.; John M. Anemaet, Millis, Mass., and Alfred K. MacKenzie, Wayland, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jun. 13, 1983, Ser. No. 503,486

Int. Cl.³ B32B *31/00*; B30B *5/02*; B44C *3/00*

U.S. Cl. 156—493 **22 Claims**

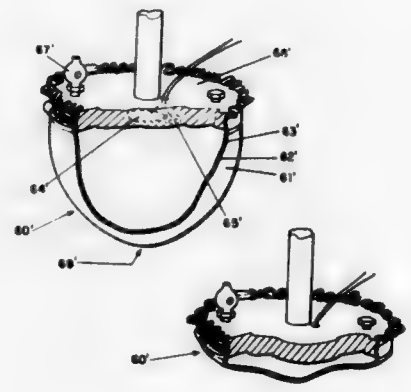
1. Apparatus for transferring a label from a carrier member to an article, comprising:

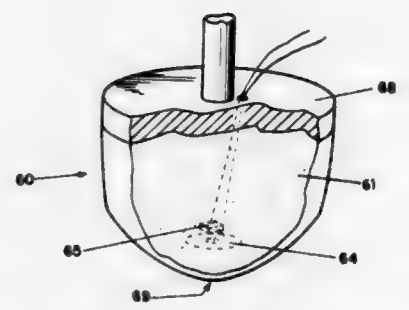
means for heating the label to a first temperature to permit removal from the carrier member;

an elastomeric, substantially deformable silicone transfer pad, comprising a polysiloxane resin, said pad having a convex curvature with a well-defined apex;

a flexible heating element embedded within the silicone material of said transfer pad, which heats the pad's surface by conduction to a second temperature lower than said first temperature; and

means for pressing the silicone transfer pad against said label to adhere the label thereto and remove the label from the carrier member, and for thereafter pressing the silicone





transfer pad and label against the article to bond the label to the article.

4,511,426

HOT GAS SEALING DEVICE

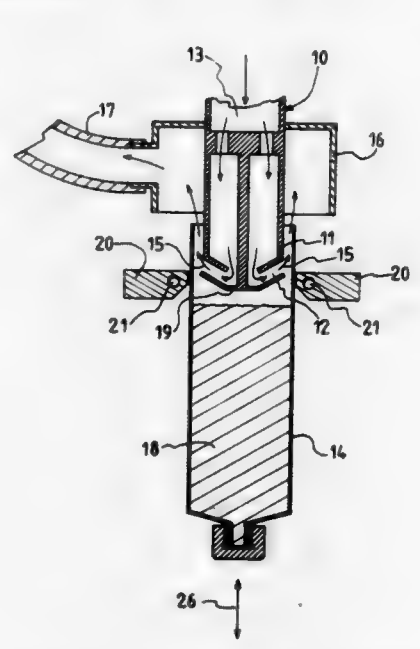
Hans Linnér, Kalmar, Sweden, assignor to Norden Packaging Machinery AB, Kalmar, Sweden

Filed Dec. 30, 1983, Ser. No. 567,318

Claims priority, application Sweden, Jan. 20, 1983, 8300277

Int. Cl.³ B32B *31/26*

U.S. Cl. 156—497 **5 Claims**



1. A device for hot gas welding, preferably hot air sealing, comprising:

a nozzle for activating a sealing area around an opening at the inside of a hollow body, for instance a tube,

a slot device in said nozzle arranged for directing a flow of gas out through the opening and activating said sealing area when the nozzle is in the operative position thereof,

means at the opening of the hollow body for recirculation of the flow of gas,

means for cooling the hollow body externally around the

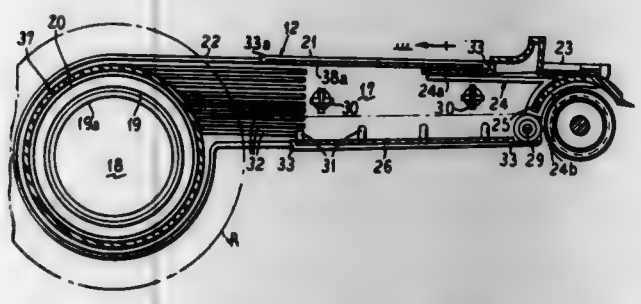
sealing area comprising a loop containing a cooling medium, and

a gas guiding element of a heat insulating material, acting as a heat shield for the goods within the hollow body.

4,511,427
MASKING TAPE APPLICATOR

Rudy R. Karliner, Minnetonka, and Gerald E. Peterson, St. Paul, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Aug. 15, 1983, Ser. No. 522,972
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—523 **12 Claims**



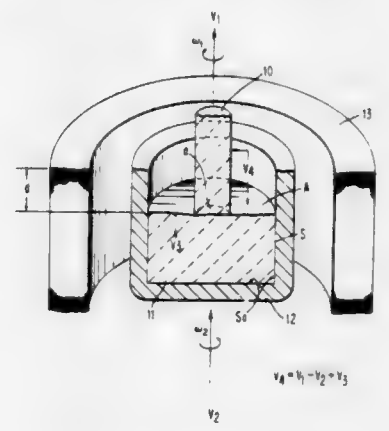
1. A hand held tape dispenser and applicator which comprises a hollow housing having a tape roll receiving hub at one end, a hand grasped finger extending from said one end, and a dispensing outlet at the end of the finger, a feed roll rotatably mounting in the housing adjacent the outlet, a press roll rotatably mounted in the housing at the outlet, a trigger slidably mounted in the housing having a cutter head adapted to be projected over the press roll for severing a length of tape, and said feed roll adapted to receive therearound the adhesive face of tape from a roll mounted on the hub to direct a non-adhesive face of the tape under the press roll whereby the tape between the press roll and the surface to be taped will be pulled over the feed roll and applied to the surface as the applicator is advanced over the surface, and whereby the trigger is adapted to be propelled to press the cutter against the tape for severing the applied length of tape, said trigger having a flat slide, said cutter head tilts on said slide, and said housing has tracks receiving the slide and cutter head.

11. A hand held tape dispenser and applicator which comprises a hollow housing having a tape roll receiving hub at one end, a hand grasped finger extending from said one end, and an open front and open bottom dispensing outlet at the end of the finger, a feed roll rotatably mounted in the housing adjacent the outlet, a press roll rotatably mounted in the housing at the outlet and projecting beyond the open front and open bottom of the outlet, and a trigger slidably mounted in the housing having a cutter head movable from a retracted position leaving the press roll exposed to a projected position covering the open front of the dispensing outlet closely adjacent the press roll for severing a dispensed length of tape close to the press roll at the open bottom of the outlet, said feed roll being adapted to receive therearound the adhesive face of tape from a roll mounted on the hub to direct the opposite face of tape onto the press roll whereby the tape between the press roll and the surface to be taped will be pulled over the feed roll and applied to the surface as the applicator is applied over the surface and whereby the length of tape applied to the surface is severed as the press roll is lifted above the surface forcing the cutter head through the tape closely adjacent the press roll.

4,511,428
METHOD OF CONTROLLING OXYGEN CONTENT AND DISTRIBUTION IN GROWN SILICON CRYSTALS

Hitendra Ghosh, Bloomfield Hills, Mich.; Ashok Murgai, Wappingers Falls, and Wolfgang A. Westdorp, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1982, Ser. No. 396,986
Int. Cl.³ C30B *15/20*
U.S. Cl. 156—601 **11 Claims**



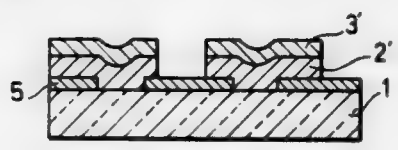
1. In the method of growing silicon crystals by the Czochralski method, wherein a seed crystal is inserted into a bath of silicon in a crucible maintained molten by a heater and slowly withdrawn therefrom to grow a crystal substantially larger than the seed crystal, the improvement in controlling the lift rate of the crucible to achieve axial uniformity in the oxygen concentration in the as-grown crystal comprising;

raising the crucible in the heater at a rate which exceeds the rate at which the melt level in the crucible recedes.

4,511,429
PROCESS FOR DRY ETCHING OF ALUMINUM AND ITS ALLOY

Tatsumi Mizutani, Kodaira; Toshihide Ohgata, and Hideo Komatsu, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP82/00116, § 371 Date Dec. 15, 1982, § 102(e) Date Dec. 15, 1982, PCT Pub. No. WO82/03636, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 9, 1982, Ser. No. 453,894
Claims priority, application Japan, Apr. 15, 1981, 56-55548
Int. Cl.³ C23F *1/02;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 **12 Claims**

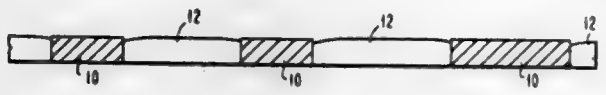


1. Process for dry etching of copper-containing aluminum alloys comprising adding 0.5–10 vol.% of at least one member selected from hydrogen and gaseous hydrogen compounds in a chloride gas-containing dry etching gas in a method for processing an article of said copper-containing aluminum alloys with a glow discharge plasma of said chloride gas-containing gas, and heating the article at 80°–250° C.

4,511,430
CONTROL OF ETCH RATE RATIO OF SiO_2/PHOTORESIST FOR QUARTZ PLANARIZATION ETCH BACK PROCESS

Lee Chen, and Gangadhara S. Mathad, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,118
Int. Cl.[3] **B44C** *1/22;* **C03C** *15/00, 25/06;* **B29C** *17/08*
U.S. Cl. 156—643 **6 Claims**



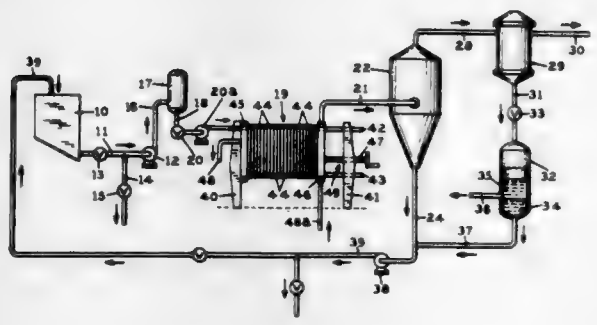
1. A method for uniformly etching a surface which includes both silicon dioxide and an organic polymer material comprising the steps of

contacting said surface with a reactive etching plasma which contains CF_4 and a gas taken from the group consisting of CHF_3 and C_xF_y with $x>1$ to cause the structure formed by said etching step to be substantially planar and have an etch rate ratio of 1.2 ± 0.1.

4,511,431
PROCESS FOR EVAPORATIVE STRIPPING

James G. Moore; James H. Obey, both of Williamsville, and Edward B. Pinkel, Angola, all of N.Y., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 4, 1982, Ser. No. 385,322
Int. Cl.[3] **B01D** *1/00, 1/16, 1/30;* **F28F** *3/08*
U.S. Cl. 159—47.1 **13 Claims**



1. A process for removing volatile components from a liquid material comprising the steps of

(a) heating the liquid material in the absence of a stripping gas,

(b) maintaining the pressure and temperature of the liquid material during the heating step at predetermined levels to prevent any vaporization of the volatile components from occurring during the heating of the liquid material,

(c) after heating the liquid material, continuously passing the liquid material directly through a restrictive orifice forming flow path,

(d) immediately thereafter passing the liquid material directly into a relatively elongated, narrow confined passage having a high ratio of surface area to volume of fluid flow and a predetermined configuration to impart a turbulent flow to the liquid material,

(e) maintaining the pressure and velocity conditions of the liquid material flow within said passage whereby said conditions, relative to such conditions existing during the heating of the liquid material, will cause the majority of the volatile components of the liquid material to, substantially instantaneously vaporize in a flashing action as the liquid material passes from the restrictive orifice forming flow path to said passage,

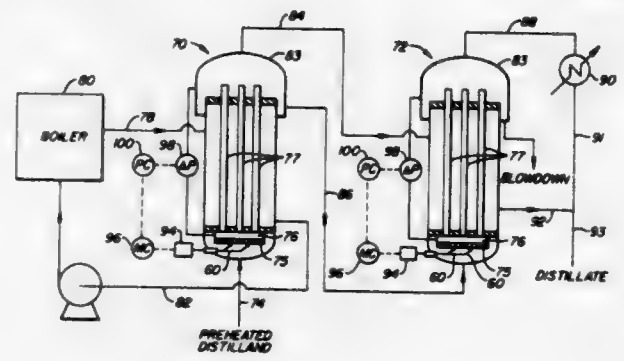
(f) continuing to pass the liquid material and vaporized volatile components as a homogeneous mixture in turbulent flow through said passage whereby the vaporized volatile components continue to flow as a high velocity vapor continuum carrying said liquid material in atomized droplet form and subjecting said liquid droplets to a turbulent stripping action to remove the remaining volatile components therefrom, and

(g) passing the high velocity vapor contiuum-liquid droplet flow into a liquid-vapor separator.

4,511,432
FEED DISTRIBUTION METHOD FOR VERTICAL TUBE EVAPORATION

Hugo H. Sephton, 120 York Ave., Kensington, Calif. 94708

Filed Sep. 7, 1982, Ser. No. 415,088
Int. Cl.[3] **B01D** *1/08, 1/10*
U.S. Cl. 159—47.1 **10 Claims**



1. A method for operating an evaporator which includes a plurality of vertical heat transfer tubes having feed inlets at the lowermost ends thereof, a tube mounting member sealingly connected to said tubes at said lowermost ends, a liquid inlet plenum enclosing the lower ends of the tubes, a distributor plate located within the inlet plenum and having a multiplicity of orifices therethrough, said distributor plate being normally spaced from the inlet ends of the tubes to form a gap with said mounting member defining a manifold which interconnects said inlets to allow cross flow therebetween, and an outlet plenum enclosing the upper ends of the tubes, said method comprising:

feeding a liquid to be evaporated to the inlet plenum so that the liquid flows through the orifices in the distributor plate into the manifold and thereafter into the tubes, and

damping cross flow oscillation between the inlet ends of two or more tubes or tube groups by adjusting said gap to be in the range from 0.01 to 0.2 of the average tube width, to improve heat transfer in said evaporator.

4,511,433
METHOD FOR THE SIMULTANEOUS DELIGNIFICATION OF WOOD AND OTHER LIGNO-CELLULOSIC MATERIALS AND HYDROLYSIS OF THE HEMICELLULOSE COMPONENT THEREOF

Herve Tournier, Valleiry, France; Allan A. Johansson, Meyrin, Switzerland; Jean-Pierre Sachetto, Saint Julien En Genevois, France; Jean-Michel Armanet, Onex, Switzerland; Jean-Pierre Michel, Collonges Sous Salve, and Alain Roman, Bossey, both of France, assignors to Battelle Memorial Institute, Carouge, Switzerland

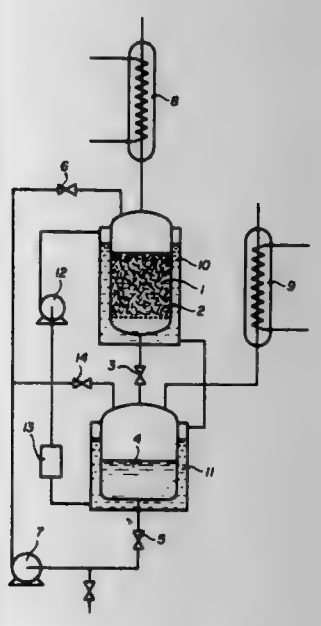
Continuation of Ser. No. 329,360, Dec. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 274,350, Jun. 17, 1981, abandoned. This application Jul. 27, 1984, Ser. No. 636,061
Claims priority, application Switzerland, Jun. 20, 1980, 4737/80
Int. Cl.[3] **C13K** *1/02;* **D21C** *3/02, 3/20, 11/00*
U.S. Cl. 162—16 **16 Claims**

1. A method for simultaneous delignification of wood and other ligno-cellulosic materials and hydrolysis of the hemicellulose component thereof into monomeric sugars and recovering pulp, phenol, lignin and sugars, which comprises:

(a) contacting one part by weight solids of said wood or

other lignocellulosic materials with a liquid of at least 0.5 to 100 parts by weight of a dilute aqueous acid of a pH below 1.5 and having an acid concentration of 0.5 to 6.0% by weight, and 0.4 to 6.0 parts by weight of phenol or other phenolic compounds;

(b) heating the contacting solids, aqueous acid and phenol or other phenolic compounds under ambient pressure or slightly above or below ambient pressure and only at



reflux temperatures of from 90° to 110° C. for ½ to 8 hours to form a delignified and hydrolysed pulp;

(c) filtering and draining the pulp of step (b) without further heating to provide a filtrate and a residual solid of said pulp; and

(d) separating of the filtrate into an organic phase containing said phenol and lignin and an aqueous phase containing said sugars.

4,511,434

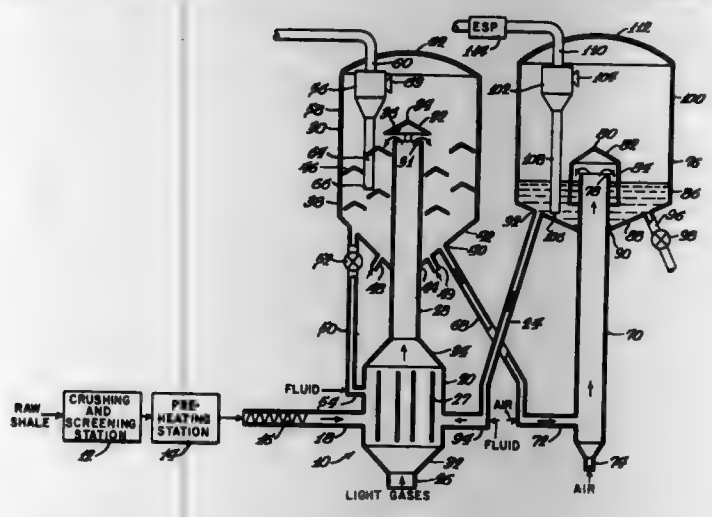
FLUID BED RETORTING SYSTEM

Iacovos Vasalos, Downers Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 293,694, Aug. 17, 1981, Pat. No. 4,404,083. This application Sep. 27, 1982, Ser. No. 423,663

Int. Cl.[3] **B01J** *8/30, 8/32;* **C10B** *49/22*

U.S. Cl. 202—99 **17 Claims**



1. A fluid bed system, comprising:

a generally upright lift pipe;

a first vessel in fluid communication with and located downstream and generally above said lift pipe;

an enlarged mixing chamber in fluid communication with and located upstream and generally below said lift pipe, said enlarged mixing chamber having a maximum transverse cross-sectional area substantially greater than the maximum transverse cross-sectional area of said lift pipe;

lift gas means directly connected to and communicating with said enlarged mixing chamber for injecting a lift gas into said enlarged mixing chamber, said lift gas means including combustion preventing means for preventing air and a sufficient amount of molecular oxygen to support combustion from entering said enlarged mixing chamber to substantially prevent combustion in said enlarged mixing chamber and lift pipe;

first feed means directly connected and extending into said enlarged mixing chamber for feeding a first material into said enlarged mixing chamber;

second feed means comprising combusted solid material feed means spaced separately and apart from said first feed means and directly connected and extending into said enlarged mixing chamber for feeding a second material consisting essentially of substantially combusted solid material into said enlarged mixing chamber;

combustor means spaced separately and laterally away from said enlarged mixing chamber and said lift pipe for substantially combusting carbon residue contained on said material, said combustor means including a combustor lift pipe and a second vessel comprising a combustor vessel in fluid communication with and located downstream and generally above said combustor lift pipe;

combustor feed means directly connecting and extending between said first vessel and said combustor lift pipe for discharging and feeding material containing carbon residue from said first vessel to said combustor lift pipe; and

said second feed means directly connecting and extending between said combustor vessel and said enlarged mixing chamber for feeding said combusted material to said enlarged mixing chamber for use as said second material.

4,511,435

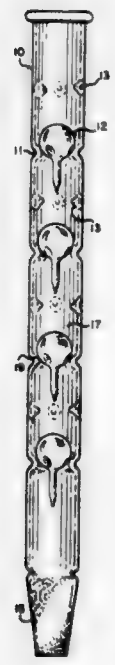
NON-FLOODING DISTILLING COLUMN

Rudy Strohschein, Rte. 1, Box 83, Micanopy, Fla. 32667

Filed Feb. 1, 1982, Ser. No. 344,684

Int. Cl.[3] **B01D** *53/20*

U.S. Cl. 202—158 **5 Claims**



1. Apparatus for separation of volatiles from heavier fractions comprising:

a vertically oriented distillation column having a plurality of chambers, adjacent ones of said chambers separated by orifices forming valve seats; and

a plurality of floating ball vapor valves, each of said valves having a hollow ball portion, a lower surface of said ball portion forming a valve face, said valve face having indentations therein, said ball portion having a downwardly

extending stem portion wherein one of said valves is disposed in each of said orifices with said valve face in contact with said valve seat and said indentations forming liquid flow passages between adjacent ones of said chambers;

whereby said indentations serve to prevent flooding of said chambers.

4,511,436

APPARATUS FOR THE DESALINATION OF SEA WATER

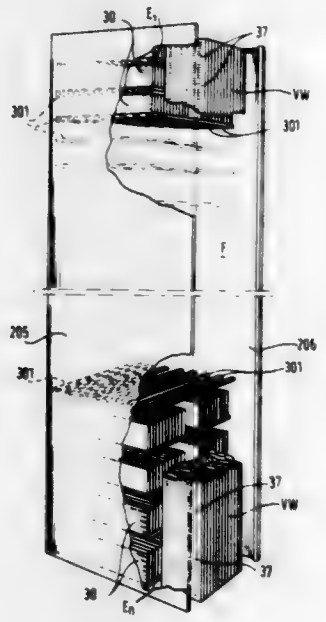
Gamal el Din Nasser, Puchheim, Fed. Rep. of Germany, assignor to D.V.T. Büro für Anwendung Deutscher Verfahrenstechnik H. Morsy, Dusseldorf, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,713

Claims priority, application Fed. Rep. of Germany, May 24, 1982, 3219387

Int. Cl.³ B01D *1/26, 3/02*

U.S. Cl. 202—174 **12 Claims**



1. Apparatus for desalinating sea water by a multi-effect evaporation process comprising elements designed, sized and arranged for maximizing efficiency, facilitating removal, of inert gases, maximizing feed distribution and facilitating assembly and maintenance, including a sea water preheater and a falling film evaporator each subdivided into a plurality of sections in accordance with predetermined and selected pressure and temperature stages, each of said sea water preheater and falling film evaporator comprises a plurality of heat exchanger plates with each plate having a pair of oppositely facing sides comprising a first side and a second side and each first and second sides having a first dimension and a second dimension extending perpendicularly of the first dimension, the surfaces of said first and second sides being similarly deformed providing projections on said first and second sides and depressions on the side opposite the projections, said projections-depressions extending in a grid-like arrangement in the direction of the first and second dimensions of said plates with said projections and depressions aligned in rows in the direction of the first and second dimensions, a pair of said plates arranged with the first sides thereof disposed in facing relation with the depressions in the first sides extending in the direction of the first dimension being disposed in opposed alignment and registration and forming tubular ducts extending in the first dimension direction, another said plate placed on each side of said pair of said plates with the second side of the another said plate facing the second side of the adjacent one of said pair of said plates with the projections on said second sides extending in the second dimension direction disposed in opposed alignment, registration and contacting relation for forming therebetween slot-like ducts extending in the direction of the second dimension.

4,511,437

PROCESS FOR THE CONTINUOUS RECTIFICATION OF ALCOHOLIC FERMATES

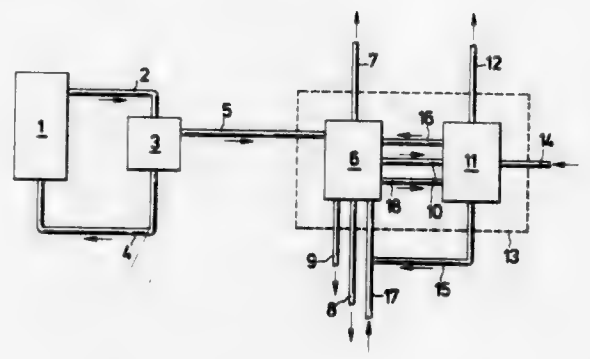
Günter Heck, Wiesbaden; Aladar Lienerth, Kelkheim; Egon Malow, Hochheim am Main; Karl-Heinz Schwarz, Liederbach, and Uwe Faust, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,269

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143734

Int. Cl.³ B01D *3/38*

U.S. Cl. 203—19 **4 Claims**



1. In a process for the continuous rectification of alcoholic fermates which is carried out by feeding said fermates in parallel flow into a plurality of heated distillation columns having successively reduced pressures from an initial column to a last column thereof, each said column having an associated sump, and withdrawing top vapor from the top of each column and using the heat from said top vapor to furnish part of the energy for rectification in the next following one of said columns; the improvement which comprises, maximizing energy usage and avoiding solids deposition from the fermates by, feeding direct steam having a temperature of 130° C. to 160° C. for direct heat exchange to the sump of said initial column; generating direct steam by indirect heat exchange of water with the top vapor withdrawn from the top of said initial column; and feeding the resulting direct steam for direct heat exchange to the sump of the next-lower-pressure column.

4,511,438

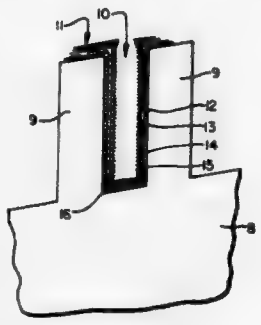
BI-METALLIC ELECTROFORMING TECHNIQUE

Ralph D. DiStefano, Palm Bay, and Nicholas Moldovan, Indian Harbor Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 482,206, Apr. 5, 1983, abandoned. This application Sep. 20, 1983, Ser. No. 534,074

Int. Cl.³ C25D *1/00, 1/02*

U.S. Cl. 204—4 **64 Claims**



1. A process for forming an article on an electroforming mandrel, said article having a sufficiently uniform wall thickness to provide a final article with adequate strength, comprising the steps of:

(a) electroforming a first layer on said mandrel, said first layer being thicker on first portions of said mandrel than on other portions of said mandrel;

(b) electrolessly depositing a plurality of layers on said first

layer, said plurality of layers having a more uniform thickness than said first layer; and

(c) electroforming a final layer on said plurality of layers.

4,511,439

SOLAR-SELECTIVE LAYERS AND METHOD FOR PRODUCING SAME

Boy Cornils, Dinslaken; Jürgen Weber; Béla Tihanyi, both of Oberhausen, and Werner DeWin, Dinslaken, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft and M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, both of, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,094

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210367

Int. Cl.³ C25D *5/54*; F24J *3/02*

U.S. Cl. 204—37.1 **8 Claims**

1. A method for producing solar-selective layers on a converter for converting solar radiation into thermal energy by means of a metal oxide layer applied to the surface of said converter which includes the steps of depositing a metal layer on the surface of said converter and then oxidizing said layer at a temperature of between 100° C. and 400° C. and a pressure of between 50 and 250 bars.

4,511,440

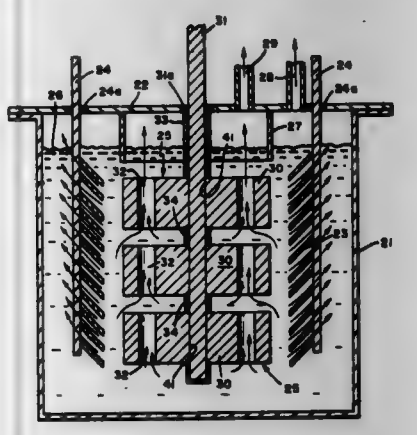
PROCESS FOR THE ELECTROLYTIC PRODUCTION OF FLUORINE AND NOVEL CELL THEREFOR

Alexander M. Saprokhin, Amherst; David J. Friedland, Snyder; Richard M. Baran, Cheektowaga; Jung T. Kim, Williamsville, and Lynn E. McCurry, Hamburg, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 27, 1983, Ser. No. 564,639

Int. Cl.³ C25B *1/02, 1/24, 11/03, 11/12*

U.S. Cl. 204—60 **5 Claims**



1. In a process for the electrolytic production of fluorine in a cell having an anode and a cathode, the improvement which comprises providing the anode with substantially horizontal grooves connected to substantially vertical holes, said grooves and holes forming internal passages directing the flow of fluorine generated at the anode upward, away from the surface, and toward the interior of the anode employing in conjunction therewith a cathode having a louvered structure, generating fluorine gas in the cell, effecting the removal from the surface of the anode of fluorine formed on the surface of the anode by withdrawing said fluorine internally through said passages in the anode and venting hydrogen, which is formed during the generation of fluorine, from the zone between the anode and cathode through said louvered cathode.

4,511,441

METHOD OF OPERATING A LIQUID-GAS ELECTROCHEMICAL CELL

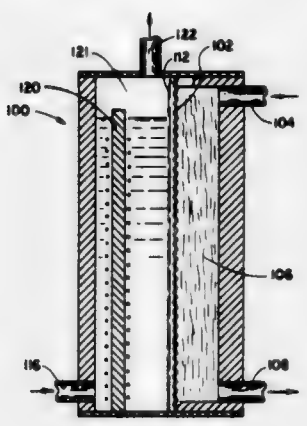
James A. McIntyre, and Robert F. Phillips, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 349,891, Feb. 18, 1982, Pat. No. 4,406,758. This application Aug. 24, 1983, Ser. No. 525,862

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.³ C25B *1/46, 1/30*

U.S. Cl. 204—98 **13 Claims**



1. A method for electrochemically reacting a liquid with a gas in an electrochemical cell of the type having at least two electrodes separated by a liquid permeable separator; at least one of said electrodes being in physical contact with said separator and being porous and self-draining, said method comprising:

(a) flowing a gas into at least a portion of the pores of the self-draining electrode;

(b) controllably flowing the liquid through said separator and into the self-draining electrode at a rate about equal to the drainage rate of the electrode and in a quantity sufficient to fill only a portion of the electrode pores;

(c) electrochemically reacting the liquid with the gas to form at least one nonvolatile product; and

(d) removing the electrochemical products from said self-draining electrode.

4,511,442

ANODE FOR ELECTROLYTIC PROCESSES

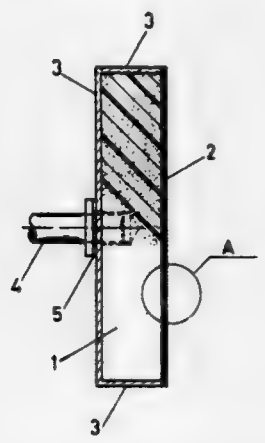
Alberto Pellegri, Luino, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation of Ser. No. 395,942, Jul. 7, 1982, abandoned. This application May 15, 1984, Ser. No. 609,536

Claims priority, application Italy, Mar. 26, 1982, 20407 A/82

Int. Cl.³ C25B *1/34, 11/04, 11/12*

U.S. Cl. 204—98 **14 Claims**



1. Dimensionally stable anode for electrochemical reactions characterized in that it comprises an electroconducting body

impermeable to aqueous electrolytes and to gases constituted by a thermoformed mixture of graphite particles and inert thermoplastic resin powders having on at least one side thereof an electrocatalytic layer impermeable to aqueous electrolytes and gases consisting of a mixture of inert resin and particles of an oxide of at least one of the metals belonging to the group of ruthenium, iridium, platinum, palladium, rhodium, manganese, cobalt, lead, iron, tin, and nickel, the inert thermoplastic resin of the electroconducting layer forming a homogeneous matrix through the cross-section of the anode whereby the graphite particles of the electroconducting body and the particles of an oxide of the electrocatalytic layer are each fused in a continuous resin matrix, and wherein said thermoplastic resin is capable of being fused to produce a substantially impervious body.

4,511,443

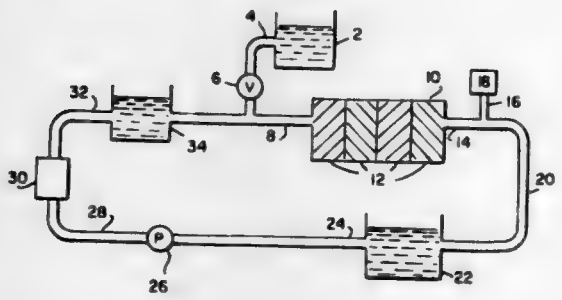
METHOD OF THIOUREA ADDITION TO ELECTROLYTIC SOLUTIONS USEFUL FOR COPPER REFINING

Martin Goffman, Edison, N.J., and Thomas L. Jordan, Amarillo, Tex., assignors to ASARCO Incorporated, New York, N.Y.

Continuation of Ser. No. 514,538, Jul. 19, 1983, Pat. No. 4,474,649, which is a continuation of Ser. No. 390,733, Jul. 21, 1982, abandoned, which is a continuation of Ser. No. 236,965, Feb. 23, 1981, abandoned. This application May 1, 1984, Ser. No. 606,061

Int. Cl.³ C25C *1/12*

U.S. Cl. 204—108 **5 Claims**



1. A copper product prepared in the electrolytic refining of copper by a method comprising:

creating in a suitable container means having inlet and outlet streams a copper refining electrolyte comprising an aqueous solution of sulfuric acid and copper sulfate of effective strength, the solution including small amounts by weight of addition agents, one of which is thiourea;

adding a sufficient amount of thiourea to the inlet stream to maintain the outlet stream concentration of thiourea at a value at least above trace concentrations; and

electrorefining copper in the container means.

4,511,444

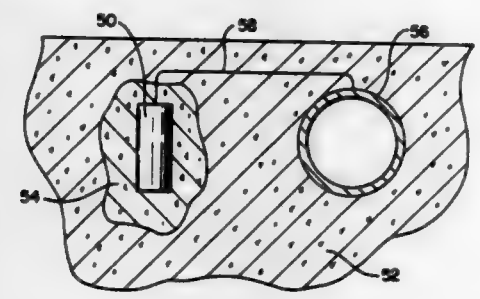
BACKFILL FOR MAGNESIUM ANODES

Alexander J. Dukat, Columbus, Ohio, assignor to Columbia Gas Systems Service Corp., Columbus, Ohio

Filed Sep. 1, 1983, Ser. No. 528,609

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—148 **19 Claims**



1. A backfill composition for use with a magnesium anode comprising on a dry basis from about 65 to about 85% by weight of calcium hydroxide, from about 1 to about 8% by weight of calcium sulfate, from about 10 to about 30% by weight of bentonite clay and from about 0.25% to about 10% by weight of calcium fluoride.

4,511,445

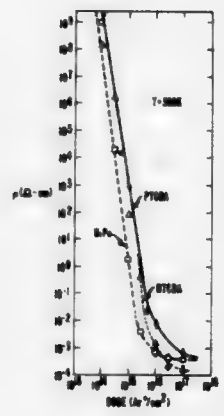
PROCESS OF ENHANCING CONDUCTIVITY OF MATERIAL

Stephen R. Forrest, Chatham; Martin L. Kaplan, Morris Plains; Paul H. Schmidt, Chatham, and Thirumalai N. C. Venkatesan, Bridgewater, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 18, 1982, Ser. No. 389,776

Int. Cl.³ B01J *19/08;* H01L *29/28*

U.S. Cl. 204—158 HE **12 Claims**



1. A method of making an article characterized by irradiating with particles having an atomic weight of at least 1, at least a portion of carbon-containing material having a resistivity greater than 1 ohm-cm prior to said irradiating, thereby essentially permanently reducing the resistivity of the irradiated portion of the material to less than 0.1 ohm-cm, due substantially to the formation of conducting amorphous-type carbon in said irradiated portion and not due to a possible presence of any metal in the article, with said irradiated portion of the material being adapted for use for the conduction of electrons.

4,511,446

CATHODIC ELECTROCOATING COMPOSITION COMPOUNDED WITH LATEX BINDER FOR ENHANCED GLOSS RETENTION

Kirk J. Abbey, Cleveland, and Barbara L. Kunz, Bay Village, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jul. 14, 1983, Ser. No. 513,619

Int. Cl.³ C25D *13/06, 13/24*

U.S. Cl. 204—181 C **9 Claims**

1. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode, and anode, and an aqueous electrodepositable composition wherein net unidirectional electric current is passed through said circuit for causing deposition of said composition on said cathode, said method being characterized by using as said composition one that comprises synthetic, cationactive, film-forming, amino-stabilized, emulsion polymerized latex particles having T_g of at least about 20° C.

2. The method of claim 1 wherein the composition is electrodeposited from a bath that is at least about 10° higher than the Tg of said latex.

4,511,447

ELECTRODEPOSITION OF RESINOUS COMPOSITIONS CURABLE THROUGH A TRANSESTERIFICATION CURING MECHANISM

Joseph T. Valko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 288,239, Jul. 29, 1981,. This application Aug. 1, 1984, Ser. No. 636,632

Int. Cl.³ C25D *13/06;* C08L *63/02*

U.S. Cl. 204—181 C **10 Claims**

1. A method of coating a conductive substrate serving as a cathode which comprises passing electric current between an anode and a cathode in electrical contact with an aqueous resinous dispersion, which comprises:

(A) a polymeric polyol which contains cationic salt groups,

(B) a crosslinking agent having at least two gamma- and/or delta-hydroxyester groups per molecule, and

(C) a transesterification catalyst.

4,511,448

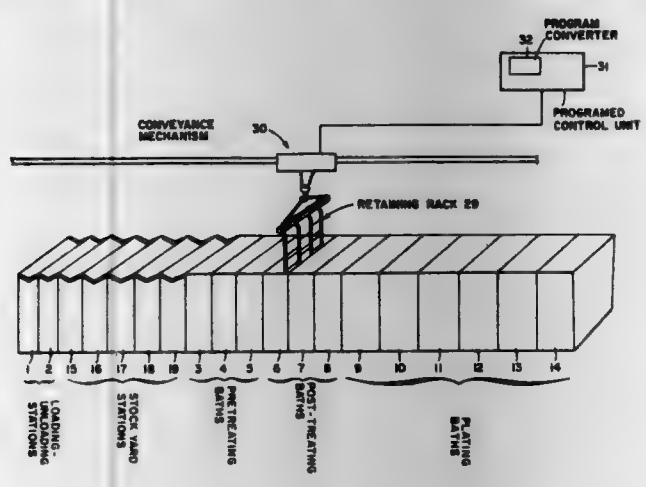
PLATING APPARATUS

Seiitch Tanaka, and Akitoshi Inoue, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,395

Int. Cl.³ C25D *17/08, 17/28;* B05C *3/00*

U.S. Cl. 204—198 **8 Claims**



1. A plating apparatus having a plurality of retaining racks, comprising:

loading-unloading stations for loading an unplated article onto each of said retaining racks and for unloading a plated article from said each of said retaining racks;

treating baths for plating the unplated articles;

a conveyance mechanism for conveying said retaining racks; and

a pluality of stock yard stations for temporarily receiving said retaining racks, said stock yard stations being disposed immediately below a path traversed by the conveyance mechanism and adjacent the loading-unloading stations and treating baths;

in which each of said retaining racks, comprises:

a first electrically conductive member removably disposed so as to horizontally cross uppr portions of said treating baths;

a plurality of second electrically conductive members detachably provided on and electrically connected to said first electrically conductive member and depending from said first electrically conductive member at arbitrary positions therealong, said second electrically conductive members having a plurality of contact portions for urging and supporting, longitudinally of said first electrically conductive member, articles that are to be plated, and for supplying said articles with an electric current;

a shielding frame provided below said first electrically conductive member so as to surround the region in which said second electrically conductive members can move; and

a positioning member for regulating the distance between the second electrically conductive members in such a manner that said articles to be plated are supported between contact members on adjacent ones of said second electrically conductive members;

said articles to be plated being pressured and supported between the contact portions of said adjacent ones of said second electrically conductive members.

4,511,449

CATHODE FOR A FUSED SALT REDUCTION CELL

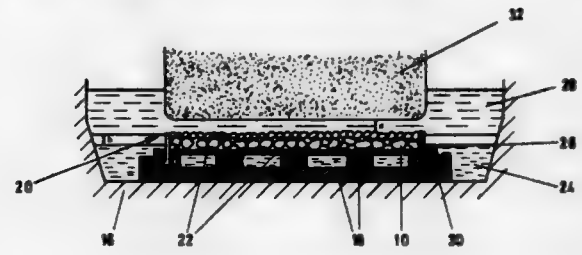
Sandor Molnar, Neuhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 9, 1983, Ser. No. 549,921

Claims priority, application Switzerland, Nov. 15, 1982, 6635/82

Int. Cl.³ C25C *3/08, 7/02;* C25B *11/03, 11/12*

U.S. Cl. 204—243 R **11 Claims**



1. In a fused salt electrolytic cell used in the production of aluminum, said cell having a pot having a floor and sidewalls, at least one anode positioned within said pot and spaced from said floor and a cathode having working faces which can be wet by aluminum, are resistant to attack by the molten electrolyte and are electrically conductive, said cathode comprising a bed of loosely packed bodies which sink in molten aluminum, said bodies being formed of a plurality of composite material elements bonded together wherein each of said plurality of composite material elements comprises a substrate material selected from the group consisting of carbon, graphite, anthracite, aluminum nitride, silicon carbide and mixtures thereof having a thin layer coating of a material selected from the group consisting of titanium diboride, titanium carbide, titanium nitride, zirconium diboride, zirconium carbide, zirconium nitride and mixtures thereof completely and densely covering the surface of said substrate wherein said composite material elements are bonded together to form said bodies.

4,511,450

PASSIVE HYDROGEL FUEL GENERATOR

Charles W. Neefe, 811 Scurry St., Big Spring, Tex. 79720

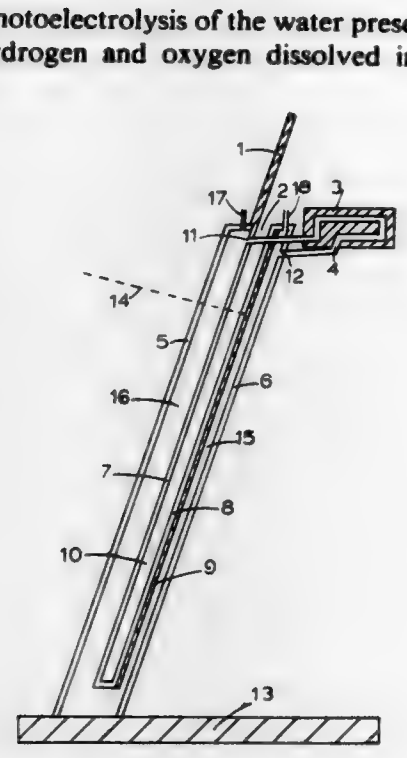
Filed Mar. 5, 1984, Ser. No. 586,352

Int. Cl.³ C25B *1/04, 1/06*

U.S. Cl. 204—278 **5 Claims**

3. A hydrogen and oxygen generator comprising a first chamber having transparent front and rear surfaces, through which water is circulated and heated by absorbing the infrared portion of the sun's spectrum and dissolved hydrogen and oxygen are released from the over-saturated heated water; means for moving the heated water upward by convection in the first chamber; heat exchanger means for cooling the water and passing the heat to the atmosphere; a second chamber for receiving the lower temperature water and separated from the first heated chamber by an insulating layer of air, said second chamber having a transparent front surface supporting a plurality of photoactive receptors imbedded in a hydrophilic polymer, whereby sunlight is allowed to enter the layer of photoactive receptors and provide dissolved hydrogen and

oxygen by photoelectrolysis of the water present in the second chamber, hydrogen and oxygen dissolved in water passing from the second chamber to the first heated chamber through a passageway provided at the lower edges of said chambers.

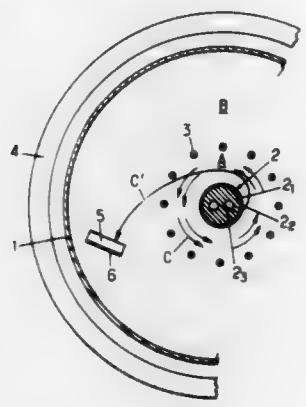


4,511,451

DEVICES FOR PREPARING SUBSTRATES COATED WITH A THIN LAYER OF PLATINUM OXIDE AND SUBSTRATES SO COATED

Claude Sella, Meudon La Foret; Vien Tran-Khanh, Gagny, and Jean-Claude Martin, Meudon, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Sep. 9, 1983, Ser. No. 530,676
Claims priority, application France, Sep. 10, 1982, 82 15378
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **6 Claims**



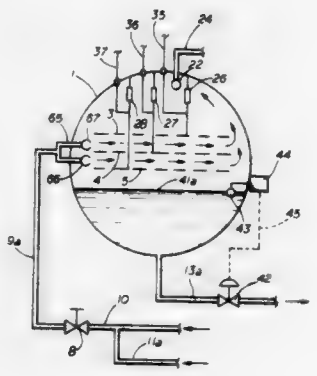
1. Device for preparing a substrate coated with a thin layer of pure platinum oxide said device comprising a magnetron including itself on the on hand means to generate a magnetic field and on the other hand, within an enclosure containing rarefied oxygen, a cathode extending parallel to the magnetic field, said cathode covered with at least a layer of platinum, and a grid forming an anode extending parallel to the cathode, facing its platinum layer, so as to preserve within the enclosure a chamber situated on the side, of the grid, opposite that where the cathode is situated, and said substrate being placed in said chamber so that its surface to be coated by the thin layer of platinum oxide is situated shielded from the impact of electrons which, coming from the cathode, are brought to circulate in this chamber after having traversed the grid.

4,511,452

PLURAL STAGE DESALTING/DEHYDRATING APPARATUS

James R. Robinson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 187,282, Sep. 15, 1980, Pat. No. 4,374,724.
This application Feb. 16, 1983, Ser. No. 467,039
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.
Int. Cl.³ C10G *33/02*; B01D *17/06*
U.S. Cl. 204—302 **5 Claims**



1. An apparatus for desalting oil-continuous oil-water emulsions in plural parallel stages, said apparatus comprising

a closed horizontally disposed vessel, generally cylindrical in form, there being contained within said closed vessel at least three horizontally disposed permeable planar electrodes in vertically spaced relationship, each said electrode extending substantially the entire length and width of said vessel, said electrodes thereby defining a plurality of hydraulically substantially independent coalescing stages;

distributor means positioned at and extending longitudinally along one side of said vessel and adapted to cause parallel flow of emulsion transversely from said one side to the opposite side of said vessel between adjacent planar electrodes which respectively define each of said plural stages;

conduit means for supplying emulsion to said distributor means;

product withdrawal means in the upper portion of said vessel;

water withdrawal means in the lower portion of said vessel;

said permeable electrodes and the vessel interior being adapted and arranged to permit water to pass downwardly through said electrodes to the lower portion of said vessel.

4,511,453

CORROSION INHIBITION WHEN DISTILLING COAL LIQUIDS BY ADDING CRESOLS OR PHENOLS

Kenneth L. Baumert, Emmaus, Pa.; Alberto A. Sagues, Lexington, and Burtron H. Davis, Georgetown, both of Ky., assignors to International Coal Refining Company, Allentown, Pa.

Filed Mar. 21, 1984, Ser. No. 591,737
Int. Cl.³ C10G *1/04, 7/10*
U.S. Cl. 208—8 LE **2 Claims**

1. In a process for the solvent refining of coal which includes fractionation of coal liquids containing nefarious amine hydrochloride by atmospheric or subatmospheric distillation in a fractionation tower, the improvement which consists of adding to said coal liquids, before fractionation, a compound selected from the group consisting of phenolates of Group IA, IIA, VI, VIII and IB, C_1–C_4 alkyl substituted metal phenolates, C_1–C_4 alkyl substituted metal cresols, C_1–C_4 polyalkyl metal phenolates and C_1–C_4 poly-substituted metal cresols, said selected compound having a pKb of less than 6 to reduce corrosion within said fractionation tower.

2. In a process for the solvent refining of coal which includes fractionation of coal liquids containing nefarious amine hydrochloride by atmospheric or subatmospheric distillation in a

fractionation tower, the improvement which consists of adding in the 400°–450° F. range of said fractionation tower a compound selected from the group consisting of phenolates of Group IA, IIA, VI, VIII and IB, C_1–C_4 alkyl substituted metal phenolates, C_1–C_4 alkyl substituted metal cresols, C_1–C_4 polyalkyl metal phenolates and C_1–C_4 polysubstituted metal cresols, said selected compound having a pKb of less than 6 to reduce corrosion within said fractionation tower.

4,511,454

PROCESS FOR USE OF NOVEL BORIDE CATALYST

Alan Bonny, Shaker Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 408,859, Aug. 17, 1982, Pat. No. 4,439,542. This application Nov. 14, 1983, Ser. No. 550,775

Int. Cl.³ C10G *1/06, 47/02*

U.S. Cl. 208—10 **27 Claims**

1. A process for treating solid and liquid carbonaceous materials comprising the steps of:

contacting a carbonaceous material with a heterogeneous Group VIII metal boride containing catalyst and with hydrogen in the presence of a solvent in a reactor;

pressurizing said reactor with hydrogen to at least about 3.45 MPa; and

heating said reactor to a temperature of from about 200° C. to about 600° C.;

wherein said solid carbonaceous materials become partially liquified and heteroatoms are removed from said liquid carbonaceous materials.

4,511,455

CATALYSIS USING HYDROUS METAL OXIDE ION EXCHANGES

Robert G. Dosch; Howard P. Stephens, and Frances V. Stohl, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 515,844, Jul. 21, 1983, abandoned. This application Apr. 10, 1984, Ser. No. 597,590

Int. Cl.³ C10G *1/06, 47/02, 45/00, 23/00*

U.S. Cl. 208—10 **12 Claims**

1. In a hydrogenation process catalyzed by an active metal on a carrier, wherein sdid metal is a catalyst for the process, the improvement wherein the carrier is an amorphous hydrous, alkali metal or alkaline earth metal titanate, zirconate, niobate, or tantalate, in which the alkali or alkaline earth metal cations have been exchanged with a catalytically effective quantity of said catalyst metal.

4,511,456

PROCESS FOR CONTINUOUS PRODUCTION OF OPTICALLY ANISOTROPIC PITCH

Takayuki Izumi, Iruma, Japan, assignor to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,617

Claims priority, application Japan, Mar. 31, 1982, 57-52731

Int. Cl.³ C10C *1/00*

U.S. Cl. 208—44 **4 Claims**

1. A process for continuous production of an optically anisotropic pitch, consisting essentially of the steps of:

(a) providing a reaction tank having an upper reaction zone and a lower settling zone;

(b) continuously feeding a starting material capable of forming an optically anisotropic pitch at elevated temperatures to said reaction zone;

(c) continuously stirring and heating said starting material fed to said reaction zone to at least about 380° C. for forming and increasing an optically anisotropic component of said starting material by thermal decomposition/-polycondensation reactions;

(d) continuously passing said heated starting material to said settling zone while maintaining the material passed to said settling zone at a temperature below about 400° C.;

(e) interposing a baffle between the reaction zone and said settling zone thereby preventing said material in said settling zone from being influenced by the stirring of said starting material in said reaction zone; and

(f) continuously removing from the bottom portion of said settling zone an optically anisotropic pitch component produced from said starting material.

4,511,457

METHOD FOR MINIMIZING FOULING OF HEAT EXCHANGER

Richard F. Miller, Humble, and Michael P. Nicholson, Houston, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 10, 1984, Ser. No. 639,897

Int. Cl.³ C10G *9/16*

U.S. Cl. 208—48 AA **5 Claims**

1. In a method of inhibiting fouling of hydrocarbon processing equipment during the processing of hydrocarbons at elevated temperatures comprising introducing into the equipment an amount of an antifoulant agent effective to substantially reduce the rate of fouling, the improvement comprising using as the agent a combination of:

(1) at least one dimer selected from the N,N′ dimers of phenothiazine, halo-substituted phenothiazine, alkyl-substituted phenothiazines and haloalkyl-substituted phenothiazines, and

(2) at least one mono- or ditertiary alkyl dihydroxylbenzene compound selected from tertiary alkylcatechols, ditertiary alkylcatechols, tertiary alkylhydroquinone, ditertiary alkylhydroquinones and mixtures of these.

4,511,458

HEAVY OIL PROCESS WITH HYDRODEMETALLATION, HYDROVISBREAKING AND HYDRODESULFURATION

Alain Billon, Orlienas; Yves Jacquin, Sevres; Jean-Pierre Peries, Mornant, and Hervé Toulhoat, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 30, 1983, Ser. No. 567,209

Claims priority, application France, Dec. 30, 1982, 82 22209

Int. Cl.³ C10G *23/02*

U.S. Cl. 208—59 **14 Claims**

1. A process for converting a charge of an asphaltene-containing heavy oil or heavy oil fraction to a lighter oil, comprising the steps of:

(a) passing the charge, admixed with hydrogen, under hydrodemetallation conditions, over a catalyst containing alumina and at least one metal from at least one of groups V, VI and VIII (iron group), said catalyst consisting of juxtaposed conglomerates each formed of a plurality of acicular plates, the plates of each conglomerate being generally radially oriented with respect to one another and with respect to the center of the conglomerate wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts;

(b) subjecting the effluent from step (a) to hydrovisbreaking, at a pressure of 40–200 bar, a temperature of 420°–500° C., a ratio of the normalized volume of hydrogen to the volume of charge of 300–3000, and a residence time of 10 seconds to 15 minutes; and

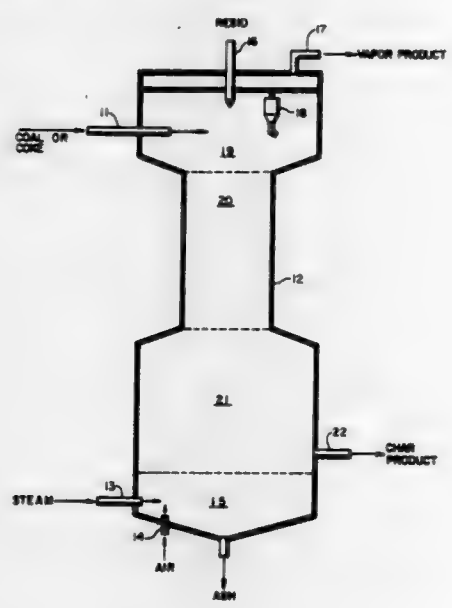
(c) treating the effluent from step (b) with hydrogen, in contact with a catalyst containing alumina and at least one metal or metal compound selected from molybdenum, tungsten, nickel, cobalt, iron or compounds thereof, under hydrodesulfuration conditions.

4,511,459

SIMULTANEOUS COKING OF RESIDUAL OIL AND PARTIAL GASIFICATION AND DESULFURIZATION OF COAL

Tsoung Y. Yan, Philadelphia, Pa., and Paul Shu, Princeton Junction, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,509
Int. Cl.³ C10G *9/32*
U.S. Cl. 208—127 **11 Claims**



11. A process for the coking of residual oil and the devolatization/partial gasification and desulfurization of solid particulate fuel comprising:

burning said particulate fuel in a combustion zone in the bottom of a reactor;

supplying steam to said combustion zone to effect gasification of said particulate fuel;

withdrawing char from the bottom of said reactor;

fluidizing a bed of particulate fuel above said combustion zone with gases rising from said combustion zone;

maintaining the fluidized bed at a temperature which cokes said residual oil and devolatizes said particulate fuel; and

maintaining a high temperature, low velocity zone between said combustion zone and said fluidized bed, said particulate fuel being moved downwardly through said low velocity zone due to said withdrawal of char, said gases being moved upwardly through said low velocity zone at velocities between about 0.05–0.5 ft/sec, bed with no convection or fluidizing of the solids in said low velocity zone so that said low velocity zone is maintained at a temperature sufficiently high for calcination and desulfurization of said solid particulate fuel;

maintaining a settling zone in said reactor on top of said fluidized bed;

supplying particulate fuel to said settling zone; and

injecting residual oil into said settling zone, said particulate fuel contacting said residual oil and settling into said fluidized bed.

4,511,460

MINIMIZING CORROSION IN COAL LIQUID DISTILLATION

Kenneth L. Baumert, Emmaus, Pa.; Alberto A. Sagues, Lexington, and Burtron H. Davis, Georgetown, both of Ky., assignors to International Coal Refining Company, Allentown, Pa.

Filed Mar. 21, 1984, Ser. No. 591,668
Int. Cl.³ C10G *1/00, 7/10;* C23F *11/18*
U.S. Cl. 208—348 **6 Claims**

1. A coal liquefaction fractionation process including a distillation tower to reduce the presence of amine hydrochlorides therein, wherein said distillation tower separates coal liquids containing nitrogen compounds and has:

(i) a bottom region wherein the temperature is greater than 450° F.;

(ii) a middle region wherein the temperature is from 400–450° F.; and

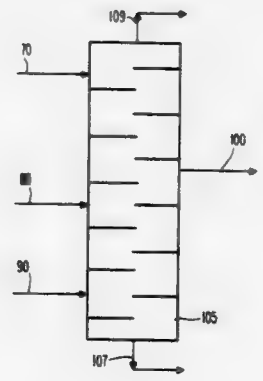
(iii) a top region wherein the temperature is below 400° F.; wherein in said process

(a) high boiling nitrogen-compound-containing streams having a boiling point of greater than 550° F. and containing amine hydrochloride precursors are introduced into said bottom region of said distillation tower;

(b) medium boiling nitrogen-compound-containing streams having a boiling point of 400°–450° F. are introduced into said middle region of said distillation tower; and

(c) low boiling nitrogen-compound-containing streams having a boiling point of less than 400° F. are introduced into said upper region of said distillation tower; and wherein said streams of (a), (b) and (c) are nitrogen-compound-containing streams that are not admixed before charge to said distillation tower.

5. A coal liquefaction fractionation process including a distillation tower to reduce the presence of amine hydrochlorides



therein, wherein said distillation tower separates coal liquids containing nitrogen compounds and has:

(i) a bottom region wherein the temperature is greater than 550° F.;

(ii) a middle region wherein the temperature is from 400°–550° F.; and

(iii) a top region wherein the temperature is below 400° F.; wherein in said process

(a) a nitrogen compound containing stream having a boiling point of greater than 550° F. and containing amine hydrochloride precursors is admixed with a second nitrogen compound-containing stream having a boiling point range of less than 450° F. to convert said amine hydrochloride precursors to amine hydrochloride and to form a low boiling stream containing amine hydrochlorides and a high boiling stream essentially free of amine hydrochlorides;

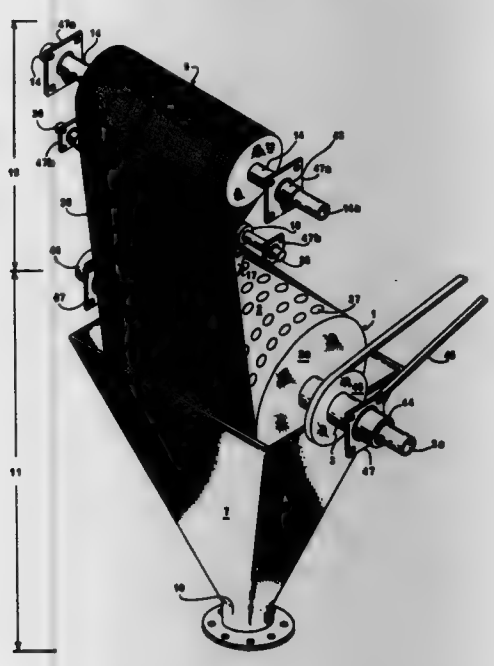
(b) water-washing said low boiling stream containing said amine hydrochlorides to remove said amine hydrochlorides to produce a low boiling stream substantially free of amine hydrochlorides; and

(c) distilling said high and low boiling streams both free of amine hydrochlorides in said fractionation system.

4,511,461
PROCESS FOR RECOVERING MINERALS AND METALS BY OLEOPHILIC ADHESION

Jan Kruyer, 4643 82nd Ave., Edmonton, Alberta, Canada (T6B 2L9)

Filed Jul. 6, 1983, Ser. No. 511,776
Int. Cl.[3] B07B *13/00*
U.S. Cl. 209—47 39 Claims



1. A method for the continuous separation and removal of oleophilic surfaced mineral particles from a particulate mixture of oleophilic minerals and oleophobic gangue which comprises:

(a) providing a continuous separation and recovery system consisting of a rotating conveyor in the form of an apertured oleophilic endless sieve of uniform width supported in a separation zone by a cylindrical generally horizontal rotating cage having an apertured cylindrical sidewall, said cylindrical sidewall being partially enwrapped about the circumference thereof by said sieve, said sieve being supported in a recovery zone by a rotating conveyor roller, and said cage, conveyor roller and sieve being rotated in tandem at substantially the same surface speed such that the sieve rotates sequentially and continuously from separation zone to recovery zone;

(b) applying to the surface of said rotating sieve a coating of a viscous oleophilic oil phase adhesive as said sieve surface rotates from said recovery zone to said separation zone;

(c) continuously introducing an aqueous slurry of said particulate mixture into said rotating cage and tumbling said mixture to enhance the oleophilic nature of the surface of said mineral particles and maintain the oleophobic surface of said oleophobic gangue in contact with water to prepare said mixture for distribution on said sieve;

(d) continuously transferring said aqueous slurry mixture through the apertures of said cylindrical sidewall of said cage onto the surface of said oleophilic oil phase adhesive coated oleophilic sieve across the width thereof causing the mineral particles to contact and adhere to the oil phase adhesive coating on the surfaces of said sieve and the oleophobic gangue particles and aqueous phase to pass through said sieve apertures; and

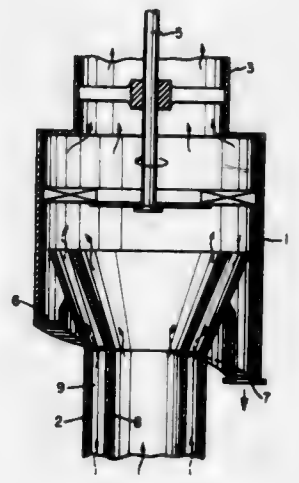
(e) continuously rotating said sieve containing said adhered mineral particles and oil phase adhesive away from contact with said rotating cage and out of said separation zone into said recovery zone wherein heat is transferred to the sieve and where the adhered mineral particles and oil phase adhesive are recovered from said oleophilic sieve; and

(f) continuously rotating said sieve away from said recovery zone for recoating with the viscous oleophilic oil phase coating.

4,511,462
METHOD AND APPARATUS FOR SORTING PARTICULATE MATERIAL

Jan Folsberg, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Aug. 23, 1982, Ser. No. 410,638
Claims priority, application United Kingdom, Sep. 1, 1981, 8126461
Int. Cl.[3] B07B *7/083*
U.S. Cl. 209—140 8 Claims



1. A method for separating particulate material into coarse and fine fractions each including a portion of an intermediate fraction comprising:

(a) suspending the material in a conveying gas flow;

(b) directing the conveying gas suspension in a radially symmetrical flow pattern in a given direction;

(c) directing a band of clean gas in said direction so as to concentrically surround the gas suspension with a band of clean gas containing substantially no particulate so as to contain the fine and fine-intermediate fractions, in the suspension gas, said band of clean gas having substantially the same velocity as the gas suspension;

(d) directing the conveying gas flow and said band of clean gas past a vaned rotating rotor having an axis of rotation axially aligned with the concentric axis of the gases;

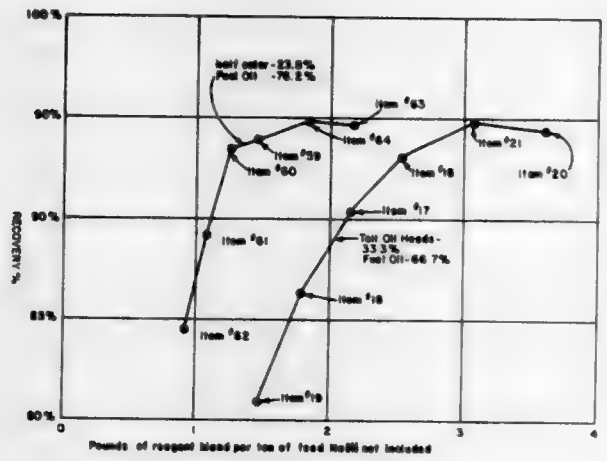
(e) flinging the coarse and coarse-intermediate fractions in a radially outward direction by action of the vaned rotor; and

(f) directing the remaining fine and fine-intermediate fractions in the gas flow past the rotor for subsequent separation from the gas.

4,511,463
PROCESS FOR RECOVERY OF PHOSPHATE ORE

Edward N. Alexander, and Richard Smith, both of Opelika, Ala., assignors to West-Point Pepperell, Inc., West Point, Ga.

Continuation of Ser. No. 809,632, Jun. 24, 1977, abandoned.
This application Dec. 1, 1978, Ser. No. 965,394
Int. Cl.[3] B03D *1/14*
U.S. Cl. 209—166 3 Claims



1. In a method for the flotation of phosphate ore in the presence of water containing an organic acid, oil;

the improvement wherein the organic acid is a half-ester of an organic dicarboxylic acid and at least one saturated aliphatic alcohol containing at least 11 carbon atoms.

4,511,464
1,3-OXATHIOLANE-2-THIONES AS SULFIDE MINERAL COLLECTORS IN FROTH FLOTATION

Roger W. Bergman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 22, 1983, Ser. No. 516,082
Int. Cl.[3] B03D *1/14*
U.S. Cl. 209—166 12 Claims

1. A process of concentrating sulfide ores, which comprises subjecting a metal sulfide ore, in the form of a pulp, to a flotation process in the presence of a flotating amount of a flotation collector for the sulfides wherein the collector comprises a 1,3-oxathiolane-2-thione and recovering the desired metal sulfide in the froth.

4,511,465
ORE FLOTATION WITH COMBINED COLLECTORS

Clarence R. Bresson, c/o French, Hughes and Doescher P.O. Box 2443, Bartlesville, Okla. 74005

Filed Jun. 11, 1984, Ser. No. 619,254
Int. Cl.[3] B03D *1/14*
U.S. Cl. 209—166 23 Claims

1. A composition comprising a mixture which contains both of the following compounds in substantial quantities

(a) S-allyl-S'-n-butyl trithiocarbonate; and

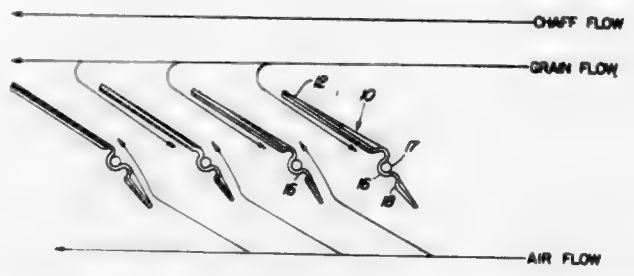
(b) a compound selected from the group consisting of N,N,S-triethyl dithiocarbamate, N,N-diethyl-S-n-butyl dithiocarbamate, and mixtures thereof.

4,511,466
CHAFFER SLAT

Dennis J. Jones, West Brooklyn, and Gary L. Kunz, Mendota, both of Ill., assignors to Hart-Carter Company, Mendota, Ill.

Filed Dec. 14, 1983, Ser. No. 561,300
Int. Cl.[3] A01F *12/44*; B07B *1/34*
U.S. Cl. 209—395 2 Claims

1. A harvester chaffer slat comprising a sheet metal blade having uniformly spaced fingers formed along its upper edge to provide open spaces between the fingers, the blade being bent rearwardly from the plane of its fingered portion in a manner as to form a forwardly and generally upwardly opening, semi-circular channel extending lengthwise of the blade and an angularly projecting air flow baffle portion extending downwardly from the channel and lying wholly within a plane

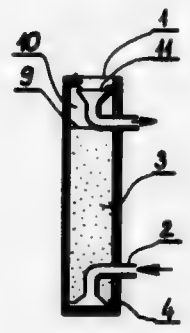


intersecting the plane of said fingered portion, said channel being of a size to firmly receive a slat supporting rod leaving spaced apart the apexes of the channel opening.

4,511,467
APPARATUS FOR THE SIMULTANEOUS FORMATION AND SEPARATION OF A LIQUID SUSPENSION

Frantisek Hereit, and Silvestr Mutl, both of Prague, Czechoslovakia, assignors to Hydroprojekt, Prague, Czechoslovakia

Filed Jul. 26, 1982, Ser. No. 401,749
Claims priority, application Czechoslovakia, Jul. 27, 1981, 5713-81
Int. Cl.[3] B01D *15/00*
U.S. Cl. 210—173 3 Claims



1. Apparatus for the formation of coating layers from a treated liquid upon the particles of a liquid suspension of particulate solid material and for thereafter separating the coating layers from the thus coated particles, said apparatus comprising a reactor and regenerating and handling equipment, the reactor being in the form of a container retaining a fluid layer of particulate material, a source of supply of treated liquid, feed piping connected between said source of supply and the container for conducting treated liquid into the reactor, a source of a destabilization agent, and means extending between the source of destabilization agent and the feed piping for feeding the destabilization agent into said feed piping, the supply of destabilization agent being connected to the feed piping for the treated liquid upstream of the discharge thereof into the fluid layer, the reactor being connected to an equipment for discharging the coated particles from the reactor and also being connected to an equipment for the replenishment of the fluid layer in the reactor, between the equipment for the discharge of the coated particles and the equipment for the replenishment of the fluid layer in the reactor there being interposed equipment for crushing the coated particles to remove the coating therefrom.

4,511,468

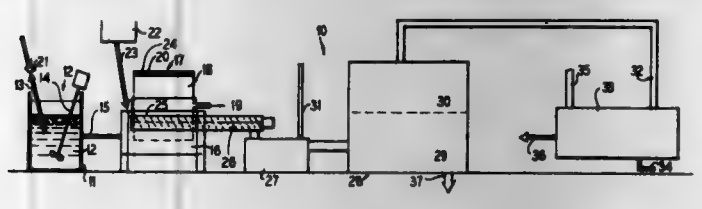
ROTARY VACUUM PRE-COAT FILTER APPARATUS

Harold R. White, New Lenox, Ill., assignor to Alar Engineering Corporation, Mokena, Ill.

Continuation-in-part of Ser. No. 296,135, Aug. 25, 1981,. This application Dec. 8, 1983, Ser. No. 559,273

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—181 **9 Claims**



1. In a pre-coat rotary vacuum filter system including an evacuated rotary filter drum, the improvement of a filter aid pre-coat on the periphery of the drum composed of rigid, granular,non-fibrous combustible material having a particle size of from 30–125 microns.

4,511,469

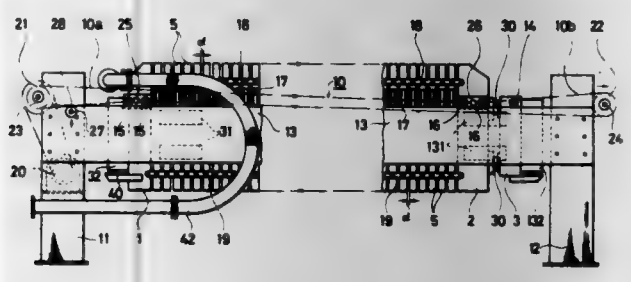
FILTER PRESS OF MOVABLE TWIN HEAD TYPE

Akitoshi Iwatani, Marugame, Japan, assignor to Ishigaki Kiko Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1982, Ser. No. 444,675

Int. Cl.³ B01D *25/14*

U.S. Cl. 210—225 **10 Claims**



1. A filter press of movable twin head type having a plurality of filter plates movably arranged on a pair of parallel guide rails supported by machine frames, a pair of heads, including a one head and an other head, (1, 2) disposed in such a way that the filter plates are entrained therebetween, the filter plates and the heads (1, 2) being movably connected by loose connecting means so that the filter plates may be separated to give definite intervals therebetween or assembled to close the intervals and so that the heads each may be separated from or brought close to an adjacent filter plate, characterized in;

(i) that said pair of heads (1, 2) are movably supported on said pair of parallel guide rails;

(ii) that said pair of heads (1, 2) are connected by simultaneous drive means for moving the heads (1, 2) in such manner that the filter plates are moved in a predetermined forward, plate-closing direction one after another beginning from those nearest to the heads to close the intervals between the filter plates, and that the filter plates are moved in a reverse, plate-separating direction one after another beginning from those nearest to the heads to provide intervals between the filter plates;

(iii) that said one head is provided with ready-to-engage latch means for holding said one head in a predetermined forward position and without retreat relative to the guide rails as the filter plates are completely assembled, the other head being provided with locking means for further tightening the filter plates in their assembled condition; and

(iv) that said locking means provided with said other head comprises a movable beam (3) which is movably supported on said pair of guide rails for movement therealong and which is behind said other head and connected to said other head through loose connecting means including hydraulic cylinder means (30) disposed between and connected to said other head and the movable beam (3) so that an interval between the beam (3) and said other head may be adjusted, and ready-to-engage latch means for holding the movable beam (3) in its forward position and without retreat relative to the guide rails.

4,511,470

APPARATUS FOR THE RECOVERY OF OILS OR OTHER SIMILAR SUBSTANCES FLOATING ON STREAMING WATER COURSES

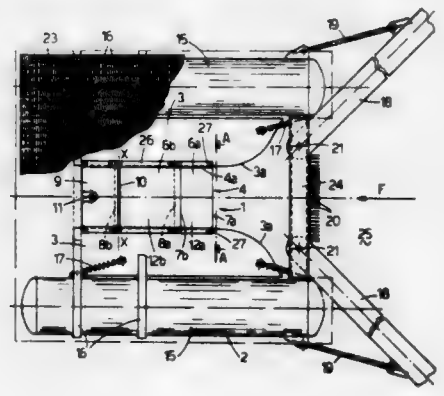
Giuseppe Ayroldi, Via Guido Zanobini, N., Rome, 55, Italy

Filed Mar. 1, 1984, Ser. No. 585,230

Claims priority, application Italy, Mar. 1, 1983, 47830 A83

Int. Cl.³ C02F *1/40*

U.S. Cl. 210—242.3 **7 Claims**



1. Apparatus for the recovery of oily substances or similar products, floating on water courses, comprising: an independently floating skimming platform for the removal of the oil matter, an independently floating support platform connected to the skimming platform for independent floating movement relative to the skimming platform; the skimming platform including two lateral, symmetrical floats submerged only slightly under the water level and supporting a central structure comprising an intake channel which in turn has at least two sections operating in series, each of the intake channel sections having a threshold that can be adjusted to a desired depth, and a downwardly and rearwardly inclined bottom panel having an upper forward edge forming the lower boundary of said threshold, the slopes of the bottom panels generally increasing progressively in the direction of flow, the intake channel sections being positioned to provide a transverse aperture at the bottom rear edge of each section, a chamber positioned at the end of the intake channel fitted with a suction pipe connected to a pump for the retrieval of skimmed oily liquid from the chamber, the chamber being separated from the intake channel by a vertical, forward facing transverse front panel, whose bottom edge is slightly above the bottom panel of the last section of the intake channel, and a floating gate hinged to the top edge of the chamber front panel; the hinged gate mounted for oscillation about a transverse axis, depending on hydraulic pressure on opposite sides of the gate.

4,511,471

FILTER APPARATUS FOR CONTINUOUSLY THICKENING SUSPENSIONS

Hans Müller, Erlenbach, Switzerland, assignor to DrM, Dr. Müller AG, Männedorf, Switzerland

Filed Jun. 2, 1983, Ser. No. 500,313

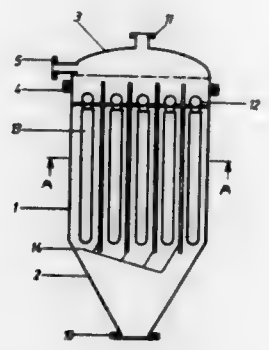
Claims priority, application Switzerland, Jun. 3, 1982, 3401/82

Int. Cl.³ B01D *29/32, 35/12*

U.S. Cl. 210—323.2 **3 Claims**

1. A filter apparatus for continuously thickening suspensions, comprising: a housing defining a chamber therein and having an axis, a filtrate chamber portion, and a slurry chamber portion; a plurality of individual collecting pipes arranged in

the chamber of the housing; a plurality of filter elements mounted on the collecting pipes for providing filtration with formation of a filtrate, each of the filler elements having an upper edge and a lower edge; outlet means for allowing the filtrate to be discharged and a pressure gas conduct for introducing gas through respective ones of the filter elements in counterdirection to the filtration when filtration is to be stopped for cleaning the respective filter elements, said allowing means including valves each associated with a respective



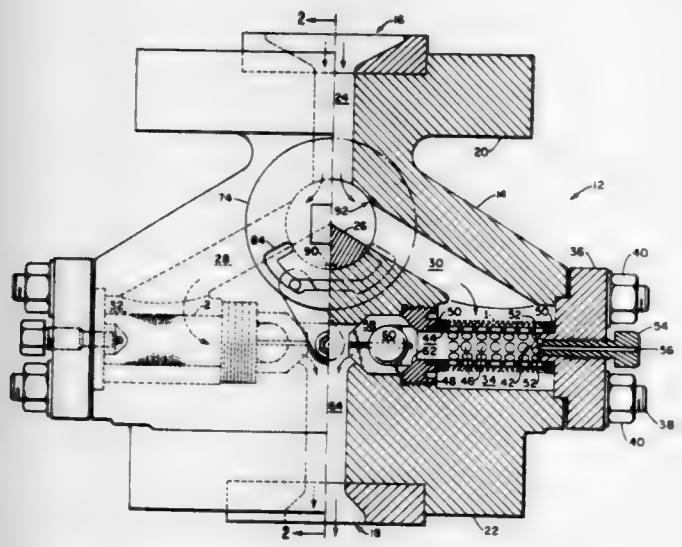
collecting pipe to the outlet means and to the pressure gas conduit; and means for separating the individual collecting pipes from each other so that the gas is prevented from acting on and damaging adjacent filter elements still filtrating, said separating means including a plurality of stationary intermediate walls each arranged between two individual collecting pipes and extending equally deeply into said filtrate chamber portion and into said slurry chamber portion of said chamber beyond the upper edge and lower edge of the filter elements.

4,511,472

APPARATUS FOR CONTINUOUS POLYMER FILTRATION

Delano B. Trott, Salem, Mass., assignor to Beringer Co., Inc., Marblehead, Mass.

Filed Mar. 30, 1983, Ser. No. 480,330
Int. Cl.[3] B01D *35/12*
U.S. Cl. 210—340 **2 Claims**



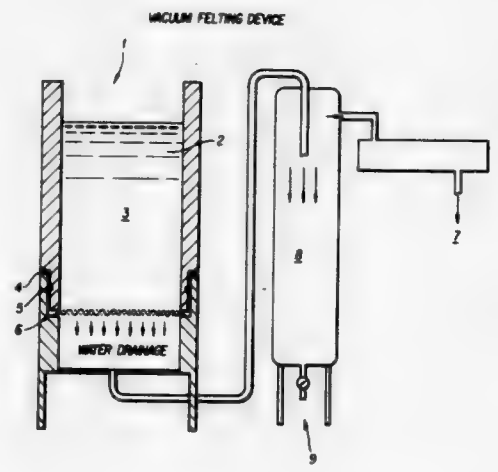
1. In a polymer filtration system comprising a body having means defining an inlet, means defining an outlet, means defining first and second channels each connecting the inlet and outlet, a replaceable filter in each channel, and a rotatable valve member formed to connect the inlet and outlet, in a first position of the valve member through the first channel only, and in a second position of the valve member through the second channel only, the valve member being formed to connect the inlet and outlet through both channels in a third position of the valve member intermediate between said first and second positions, escapement means to limit movements of the valve member comprising a cam plate rotatable with the valve member and having surface contours formed thereon, and a link pivoted on the body and having a portion slidably engaging said contours, said contours including a pair of detents formed therein to cause the movement of the valve member from the third position to the first and second positions to be limited to an alternate sequence.

4,511,473

FIBROUS MEDIA CONTAINING MILLIMICRON-SIZED PARTICULATES

Kenneth C. Hou, San Antonio, Tex., assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 9, 1982, Ser. No. 347,360
Int. Cl.[3] B01D *39/04, 39/06*
U.S. Cl. 210—348 **48 Claims**



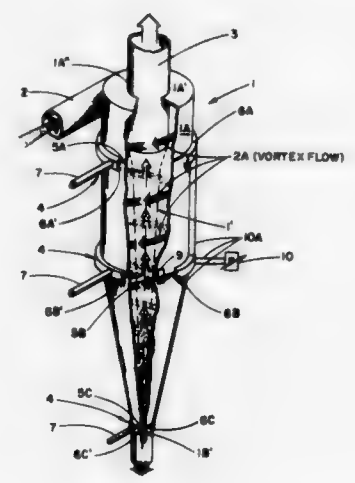
1. A self supporting fibrous matrix containing immobilized therein at least about 5% by weight of microparticulate material with an average diameter of less than 1 micron, an organic polycationic resin and an organic polyanionic resin, wherein said resins are present in an amount effective to flocculate said microparticulate material in said matrix, wherein said microparticulate material is distributed substantially uniformly throughout a cross-section of said matrix.

4,511,474

CYCLONE SEPARATOR HAVING BOUNDARY LAYER TURBULENCE CONTROL

Coimbatore R. Krishna, Mt. Sinai, and Julius S. Milau, Port Jefferson, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 27, 1984, Ser. No. 574,782
Int. Cl.[3] B04C *3/06*
U.S. Cl. 210—512.1 **14 Claims**



1. In a cyclone separator for separating fluid from particulate material entrained therein, comprising:

a hollow body including wall means defining a generally cylindrical section and an adjacent frusto-conical section;

fluid flow inlet means and primary fluid outlet means for directing, respectively, the flow of a fluid into and out of said hollow body, and further including vortex generating means for generating a vortex flow of fluid within said hollow body, whereby the fluid is cleansed by having entrained particulate material separated from the fluid as it flows through the vortex to the primary fluid outlet means;

wherein the improvement comprises said cyclone separator having a boundary layer turbulence control means for substantially reducing radially inward movement of particulate material in the vortex flow of said fluid, said boundary layer turbulence control means being operable to remove from said hollow body fluid with densely entrained particulate material, at a predetermined fluid pressure, from a plurality of selected critical areas at vertically spaced loci along the vortex flow path, whereby said removed particulate material is prevented from inducing turbulence in the boundary layer of the vortex flow at said selected areas, said plurality of selected areas from which densely entrained particulate material and fluid are removed including both of the areas of surface irregularity on said wall means immediately adjacent to the perimeters of the axial extremeties of said frusto-conical section.

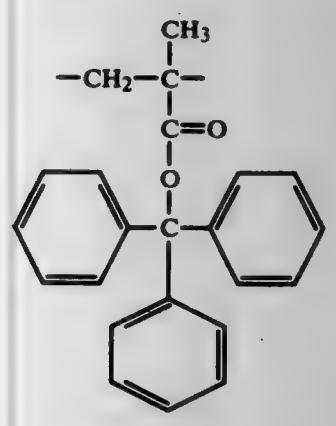
4,511,475

OPTICALLY ACTIVE POLYMER PREPARATION AND USE

Heimei Yuki, Sakai, and Yoshio Okamoto, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Division of Ser. No. 235,233, Feb. 17, 1981, Pat. No. 4,375,495.
This application Nov. 22, 1982, Ser. No. 443,725
Claims priority, application Japan, Feb. 19, 1980, 55-19555
Int. Cl.³ B07C *5/36*
U.S. Cl. 210—635 **9 Claims**

1. A process for the optical resolution of a racemic mixture which comprises contacting the racemic mixture with a stereoregular, highly isotactic, optically active polymer comprising recurring structural units of the formula:



and having a polymerization degree of not less than 5, said polymer having a specific rotation $[\alpha]_D^{20}$ of not less than 50° as an absolute value, either + or −.

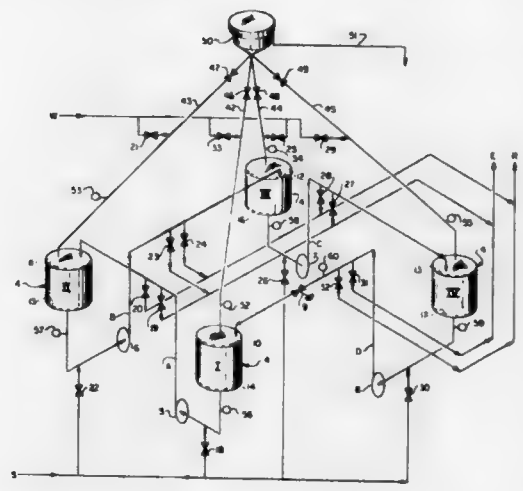
4,511,476

METHOD FOR PREVENTING COMPACTION IN SORBENT BEDS

Karlheinz W. Schoenrock, Ogden, Utah, assignor to The Amalgamated Sugar Company, Ogden, Utah

Filed Jan. 17, 1983, Ser. No. 458,273
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—678 **6 Claims**

1. In a simulated moving bed process in which a plurality of sorbent beds are contained within respective vessels with inlets and outlets connected in a loop so that circulating liquid moves in sequence through said beds while process input streams are cyclically introduced in corresponding sequence to said loop at selected locations associated with said vessels, and compensating process output streams are withdrawn in similarly corresponding sequence from said loop at other selected locations associated with said vessels, all while maintaining a forward



flow in a fixed direction through the loop during a plurality of cycles, the improvement which comprises periodically reversing the direction of flow of said circulating liquid through a selected said sorbent bed while maintaining said forward flow through said loop.

4,511,477

PROCESS OF USING WATER-ABSORBENT AGENTS FOR LOW PH APPLICATIONS

Mark J. McKinley, Linwood, and Jim W. Sanner, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 17, 1983, Ser. No. 542,873
Int. Cl.³ B01D *37/00*; C02F *1/00*
U.S. Cl. 210—689 **7 Claims**

1. A process for effectively absorbing water in the form of an aqueous medium having a pH of less than 4 which process comprises:

contacting said aqueous medium with a water-swellable polymer comprising an alkali metal sulfonic acid salt containing polyelectrolyte which is crosslinked in an amount sufficient to provide swellability to said polyelectrolyte, wherein

the amount of said sulfonic acid salt moieties in said polyelectrolyte is sufficient to provide water absorbent activity, wherein

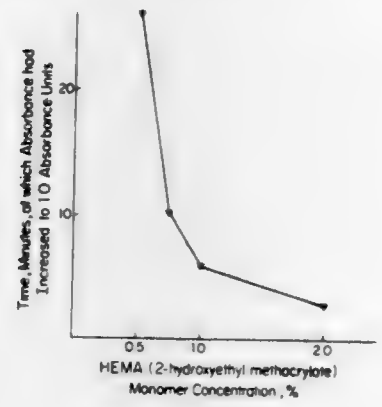
said sulfonic acid salt containing polyelectrolyte maintains an ionic form over a lower pH range than a swellable polyelectrolyte containing alkali metal carboxylic acid salt moieties having (1) a similar molecular weight and (2) a similar concentration of acid salt moieties to that of said alkali metal sulfonic acid salt polyelectrolyte, and wherein

said sulfonic acid salt containing polyelectrolyte provides improved water absorbent capability over a lower pH range than said swellable polyelectrolyte containing alkali metal carboxylic acid salt moieties.

4,511,478
POLYMERIZABLE COMPOUNDS AND METHODS FOR PREPARING SYNTHETIC POLYMERS THAT INTEGRALLY CONTAIN POLYPEPTIDES

Robert C. Nowinski, and Allan S. Hoffman, both of King County, Wash., assignors to Genetic Systems Corporation, Seattle, Wash.

Filed Nov. 10, 1983, Ser. No. 550,929
Int. Cl.³ C08L *89/00*; C08H *1/00*
U.S. Cl. 210—691 **5 Claims**



1. A method of selectively removing substances from a solution or mixture, comprising:

covalently bonding a polymerizable organic monomer to a polypeptide that has binding activity to the substance to form a monomer/polypeptide conjugate;

contacting the substance with the monomer/polypeptide conjugate; and

polymerizing the monomer/polypeptide conjugate to form an insoluble polymer which can be separated from the solution.

4,511,479
OIL REMOVAL FROM WATER SUSPENSIONS USING IONIC DOMAIN POLYMERS

Everett J. Fuller, Gillette, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 333,130, Dec. 21, 1981, abandoned. This application Feb. 3, 1983, Ser. No. 463,341
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—708 **3 Claims**

1. A process for the purification of water containing emulsified oil particles which consists essentially of the steps of:

(a) adding sufficient amounts of neutralized sulfonated polymer to said water containing said emulsified oil particles to have said neutralized sulfonated polymer interact with said oil particles, wherein said neutralized sulfonated polymer is a elastomer polymer selected from the group consisting of EPDM terpolymer and Butyl rubber, and has about 5 to about 50 meq. of sulfonate groups per 100 grams of said neutralized sulfonated polymer, and about 1 to about 60 parts by weight per hundred parts by weight of said neutralized sulfonated polymer of a preferential plasticizer selected from the group consisting of carboxylic acids having about 8 to about 22 carbon atoms and metallic salts of said carboxylic acids having about 8 to about 22 carbon atoms, incorporated therein

(b) stirring the mixture of said neutralized sulfonated polymer and said water containing said emulsified oil particles for a sufficient period of time to cause interaction of said oil particles with said neutralized sulfonated polymer, said oil particles and said neutralized sulfonated polymer separating from said water as a distinct oil/neutralized polymer layer; and

(c) separating said water layer from said oil/neutralized sulfonated polymer layer.

4,511,480
CORROSION INHIBITION IN DEEP GAS WELLS BY PHOSPHATE ESTERS OF POLY-OXYALKYLATED THIOLS

Benjamin T. Outlaw; Bernardus A. Oude Alink, both of St. Louis, Mo.; Joe A. Kelley, Collinsville, Ill., and Carol S. Claywell, St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 20, 1983, Ser. No. 515,223
Int. Cl.³ C23F *11/00*; F17D *1/04*
U.S. Cl. 252—8.55 E **9 Claims**

1. The method of inhibiting corrosion of ferrous metals which comprises contacting said metals with an effective amount of an inhibitor having the formula

$$[R_1S(R_2O)_{\overline{x}}]_m\overset{O}{\overset{\|}{P}}(OH)_n$$

wherein R_1 represents alkyl, cycloalkyl, aryl, aralkyl and heterocyclyl; R_2 represents alkyl; x represents an integer of from 2 to about 4; m represents an integer which is 1 or 2; n represents the integer 1 when m is 2 and represents 2 when m is 1 and the amine and quaternary ammonium salts thereof.

7. The method of inhibiting corrosion of metals in gas wells and distribution systems therefor which comprises adding thereto an effective amount of an inhibitor having the formula

$$[R_1S(R_2O)_{\overline{x}}]_m\overset{O}{\overset{\|}{P}}(OH)_n$$

wherein R_1 represents alkyl, cycloalkyl, aryl, aralkyl and heterocyclyl; R_2 represents alkyl; x represents an integer of from 2 to about 4; m represents an integer which is 1 or 2; n represents the integer 1 when m is 2 and represents 2 when m is 1 and the amine and quaternary ammonium salts thereof.

4,511,481
MULTIFUNCTIONAL ADDITIVES

Joosup Shim, Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,028
Int. Cl.³ C10M *1/32, 1/44*
U.S. Cl. 252—32.5 **18 Claims**

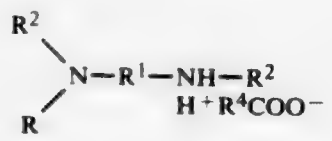
1. A lubricant composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and a minor effective antioxidant, antirust and antiwear improving amount of of a triazole adduct of an amine phosphate obtained by reacting said triazole and said amine phosphate in a 1:3 to about 3:1 ratio of triazole to amine phosphate and carried out at temperatures ranging from about 80° C. to about 125° C. for about 1 to about 8 hours at ambient or higher pressures.

4,511,482
N-HYDROCARBYLHYDROCARBYLENEDIAMINE CARBOXYLATE AND LUBRICANTS CONTAINING SAME

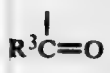
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 29, 1983, Ser. No. 508,980
Int. Cl.³ C10M *1/36*
U.S. Cl. 252—34 **22 Claims**

1. A compound of the formula:



wherein R is a hydrocarbyl group containing 6 to 20 carbon atoms, R^1 is a C_2 to C_3 hydrocarbylene group, R^2 is selected from the group consisting of hydrogen and



wherein at least one R^2 is the latter group in which R^3 is selected from the group consisting of hydrogen and a C_1 to C_6 alkyl group, and R^4 is a C_1–C_{20} hydrocarbyl group.

4,511,483

PIEZOELECTRIC CERAMIC COMPOSITIONS

Toshio Ogawa, Kyoto, and Toshihiko Kittaka, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 485,906, Apr. 18, 1983, abandoned, which is a continuation of Ser. No. 299,635, Sep. 4, 1981, abandoned. This application Jan. 18, 1984, Ser. No. 571,153
Claims priority, application Japan, Sep. 5, 1980, 55-123878
Int. Cl.³ C04B *35/46*
U.S. Cl. 252—62.9 **7 Claims**

1. A piezoelectric ceramic composition comprising a major component,

$$\left[Pb_{(1-\frac{3}{2}X)\pm 0.20} (La_\alpha Nd_{1-\alpha})_X \right] TiO_3$$

(where $0.01 \leqq X \leqq 0.40$ and $0 \leqq \alpha \leqq 1$), and CuO contained therein as an additive in an amount of 0.05 to 2.5 wt% with respect to the weight of 1 mole of the major component, said piezoelectric ceramic composition exhibiting a temperature coefficient of resonant frequency which is either a positive value or a smaller negative value than said composition containing less than 0.05 weight % CuO.

4,511,484

PROCESS FOR PREPARING MAGNETIC COATING COMPOSITION

Masashi Anonuma; Yasuo Tamai; Tsunehiko Sato; Shinichi Funabashi, and Hiroshi Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Kanagawa, Japan

Filed May 18, 1983, Ser. No. 495,869
Claims priority, application Japan, May 18, 1982, 57-83567
Int. Cl.³ H01F *1/00, 1/26*
U.S. Cl. 252—62.54 **13 Claims**

1. A process for preparing a magnetic coating composition, comprising the steps of kneading a magnetic metal powder, 0.1 to 10 parts by weight of an abrasive per 100 parts by weight of the metal powder, 5 to 20 parts by weight of a main binder per 100 parts by weight of the metal powder, and 0 to 60 parts by weight of a solvent per 100 parts by weight of the metal powder, while applying a shearing stress of from about 20 to about 30 kg/cm², wherein the process is carried out in an atmosphere containing 11% oxygen or less.

4,511,485

NONPOLLUTING SALTS AND METHOD OF MAKING SAME

Alan B. Gancy, 265 Robineau Rd., Syracuse, N.Y. 13207

Continuation-in-part of Ser. No. 319,473, Nov. 9, 1981, abandoned. This application Apr. 20, 1983, Ser. No. 486,853
Int. Cl.³ C09K *3/18;* C01F *5/00, 11/00;* C07C *51/41*
U.S. Cl. 252—70 **30 Claims**

2. A non-deliquescent salt mixture having good water solubility comprised of calcium acetate, magnesium acetate and calcium chloride wherein the mixture has a mole ratio of calcium chloride-to-calcium acetate ranging between 0 and 1.0.

4,511,486

METHOD OF CLEANING DENTURES USING AERATED FOAMS

Nutan B. Shah, New Rochelle, N.Y., assignor to Richardson-Vicks Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 316,981, Nov. 2, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 470,589
Int. Cl.³ C11D *1/72, 7/50*
U.S. Cl. 252—90 **12 Claims**

1. A method of cleansing dentures which comprises maintaining said dentures in contact with an aerated denture cleanser foam for a time sufficient to cleanse said dentures without brushing and subsequently removing any foam residue from the dentures, said foam consisting of a mixture of air and a foam-producing liquid composition comprising a pharmaceutically acceptable surfactant, an alcohol component selected from the group consisting of ethanol, isopropanol and mixtures thereof, a pharmaceutically acceptable humectant and water.

4,511,487

DISHWASHER DETERGENT PASTE

Horst Prühs, and Theodor Altenschöpfer, both of Düsseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 22, 1983, Ser. No. 525,325
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310684
Int. Cl.³ C11D *3/08, 17/00, 3/395*
U.S. Cl. 252—99 **6 Claims**

1. A detergent paste for use in dishwashers comprising of a pasty, thixotropic cleaning agent with a viscosity of from 30 Pa.s. to 850 Pa.s. at 20° C. as determined with a rotational viscosimeter at a spindle speed of 5 revolutions per minute consisting essentially of

(A) a mixture of from 3% to 40% by weight of sodium tripolyphosphate hexahydrate and from 5% to 30% on an anhydrous basis of sodium metasilicate pentahydrate, both having an average particle size of less than 0.3 mm.,

(B) from 0.1% to 3.0% by weight of active chlorine of an alkali metal hypochlorite,

(C) from about 1% to 10% by weight of a swellable foliated silicate of the hectorite type having fine particles with less than 1% by weight retained on a 0.25 mm mesh seive and being capable of forming a thixotropic gel in water,

(D) from 0 to 5% by weight of nonionic tensides which have a low foaming capacity, do not decompose in the presence of active chlorine compounds and are alkali stable, and

(E) sufficient water to give the desired viscosity, all based upon the total weight of the detergent composition.

4,511,488

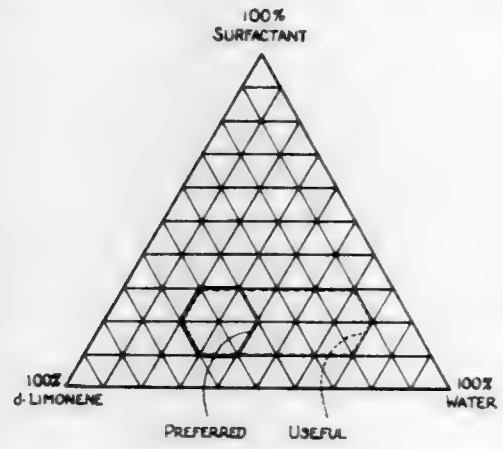
D-LIMONENE BASED AQUEOUS CLEANING COMPOSITIONS

Grant B. Matta, Dover, N.J., assignor to Penetone Corporation, Tenafly, N.J.

Filed Dec. 5, 1983, Ser. No. 558,040
Int. Cl.³ C11D *7/22*
U.S. Cl. 252—162 **17 Claims**

1. A d-limonene based liquid cleaning composition for cleaning hard or flexible substrates, said composition, per 100 parts by weight, comprising 78 to 96 parts by weight of a d-limonene/surfactant/water mixture containing by weight 10–60% stabilized d-limonene, 10–30% surfactant and 20–70% water, 2–10 parts of coupling agent, and 2–12 parts of additives adapting the composition to particular uses, said composition

being characterized as being free of petroleum derived or chlorinated hydrocarbon solvents, as having a flash point not



lower than 160° F. (C.O.C.), and as being a stable, flowable, clear, homogeneous liquid composition.

4,511,489

COMPOSITION FOR CLEANING AND IMPARTING ANTISTATIC PROPERTIES TO PLASTICS SURFACES

Luz P. Requejo, and Charles J. Butke, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Jun. 1, 1983, Ser. No. 499,944
Int. Cl.³ C09D *9/00*
U.S. Cl. 252—172 **26 Claims**

1. A wax-free composition for cleaning polyacrylic and polycarbonate plastic surfaces which, on an active basis by weight of said composition, consists essentially of:

(a) from 0.5 to about 10% of a fluid silicone oil having lubricating activity, said silicone oil being a polydimethylsiloxane having a viscosity of from 40 to 100,000 centistokes at 25° C.;

(b) from about 0.1 to 5% of an anionic or nonionic surfactant;

(c) from about 0.005 to 1% of an anionic or nonionic fluorinated organic surface active compound selected from the group consisting of:

(i) anionic fluorinated hydrocarbon surfactants wherein the fluorinated hydrocarbon has a branched chain structure and having aliphatic perfluorocarbon groups at one end thereof;

(ii) nonionic fluorinated hydrocarbon surfactants having a fluorinated hydrocarbon portion exhibiting a branched structure and having the formula:

$$R_f(OCH_2CH_2)_nOR_f$$

wherein R_f is C_8F_{15}, $C_{10}F_{19}$ or $C_{12}F_{23}$ and n is an integer from 10 to 30;

(iii) nonionic fluorinated hydrocarbon surfactants wherein the fluorinated hydrocarbon portion exhibits a branched structure and having the formula:

$$R_f(OCH_2CH_2)_mOR$$

wherein R_f is as in (ii), R is a lower alkyl and m is an integer from 2 to 10; and

(iv) anionic fluorinated hydrocarbon surfactants wherein the fluorinated hydrocarbon portion exhibits a straight chain structure and having aliphatic perfluorocarbon groups at one end of the chain thereof, and

(d) water,

said composition containing less than 0.5% by weight of an organic solvent.

4,511,490

COOPERATIVE ENZYMES COMPRISING ALKALINE OR MIXTURES OF ALKALINE AND NEUTRAL PROTEASES WITHOUT STABILIZERS

Anna G. Stanislowski, Tracy, and Richard J. Wiersema, Pleasanton, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Jun. 27, 1983, Ser. No. 508,449
Int. Cl.³ C11D *7/42, 3/386;* D06M *16/00*
U.S. Cl. 252—174.12 **33 Claims**

1. A stable, cooperative enzyme system comprising at least two enzymes having activity for a relatively complex substrate which must contain at least one protein, with at least partial activity over the same pH range, wherein their combined activity is greater than the sum of their individual activities as determined by the formula:

$$\frac{[\text{Actual Activity } (E_1 + E_2) - \text{Expected Activity } (E_1 + E_2)]}{\text{Expected Activity } (E_1 + E_2)} \times 100\%$$

wherein E_1 and E_2 are said enzymes;

wherein said enzymes are alkaline or mixtures of alkaline and neutral proteases; and

wherein no stabilizers are present when said enzymes are mixtures of alkaline and neutral proteases.

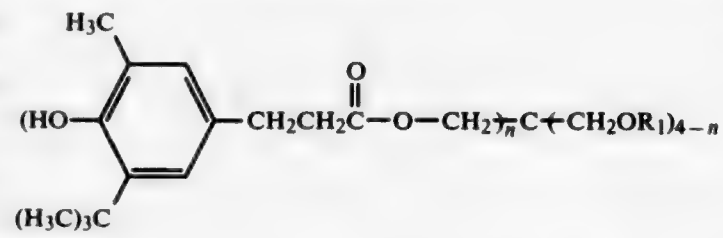
4,511,491

STABILIZERS FOR SYNTHETIC RESINS

Tamaki Ishii, Suita; Shinichi Yachigo, and Yukoh Takahashi, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jul. 15, 1983, Ser. No. 514,021
Claims priority, application Japan, Jul. 26, 1982, 57-130634; Dec. 27, 1982, 57-231293
Int. Cl.³ C09K *15/08*
U.S. Cl. 252—404 **12 Claims**

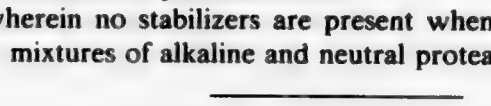
1. A stabilizer for synthetic resins, of which the effective ingredient is a mixture composed of a phenolic compound (I) represented by the general formula (I):



(I)

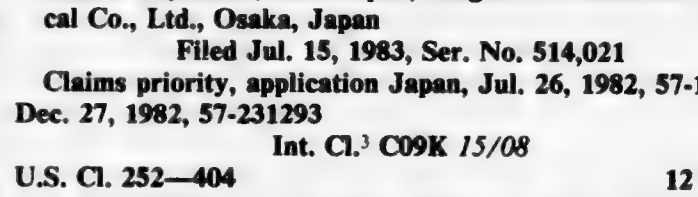
wherein R_1 is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an acyl group having 1 to 5 carbon atoms; and n is an integer from 1 to 4,

and at least one sulfur-containing compound (II) selected from compounds represented by the general formulas (II-1) and (II-2):



(II-1)

wherein R_2 is an alkyl group having 4 to 20 carbon atoms, and



(II-2)

wherein R_3 is an alkyl group having 3 to 18 carbon atoms,

and R_4 and R_5 each independently is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms,

in the ratio (I):(II) of 1:0.5–15 by weight.

4,511,492

ELECTRICALLY CONDUCTING AROMATIC AZOPOLYMERS AND METHOD OF PREPARATION

Raymond J. Swedo, Mount Prospect, and David W. House, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 19, 1983, Ser. No. 543,655

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—500 **14 Claims**

1. A method of preparing an electrically conducting polymeric composition comprising adding to a polymer whose repeating unit has the structure

$$-Ar-(X-Ar')_a-N=N-$$

where Ar and Ar' are independently selected from the group consisting of divalent aromatic nuclei whose parent is benzene, biphenyl, naphthalene, anthracene, chrysene, pyridine, thiophene, pyrrole, furan, imidazole, oxazole, quinoline, carbazole, pyrimidine, or purine, X is O, C=O, S, SO, SO_2, or CH_2, and a is 0 or 1, an effective amount, sufficient to increase electrical conductivity, of a dopant and recovering the resulting doped polymer.

4,511,493

TERNARY INTERCALATION COMPOUND OF A GRAPHITE WITH A METAL FLUORIDE AND FLUORINE, A PROCESS FOR PRODUCING THE SAME, AND AN ELECTRICALLY CONDUCTIVE MATERIAL COMPRISING THE TERNARY INTERCALATION COMPOUND

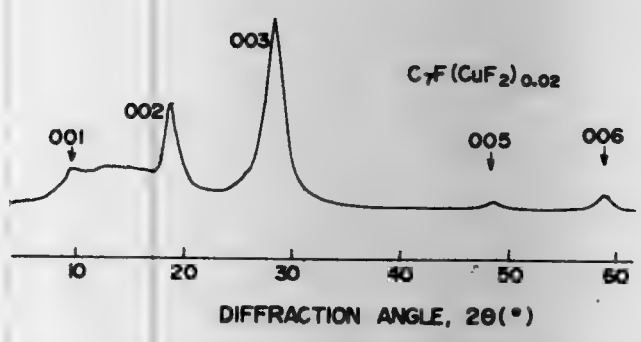
Nobuatsu Watanabe, 136 Uguisudai, Nagaokakyo-shi, Kyoto; Tsuyoshi Nakajima, Kyoto, and Masayuki Kawaguchi, Arida, all of Japan, assignors to Nobuatsu Watanabe, Kyoto, Japan

Filed Sep. 8, 1983, Ser. No. 530,239

Claims priority, application Japan, Mar. 9, 1983, 58-37263

Int. Cl.³ B01J *27/12*; H01B *1/04*

U.S. Cl. 252—507 **7 Claims**



3. A process for producing a ternary intercalation compound of a graphite with a metal fluoride and fluorine represented by the formula

$$C_xF(MF_z)_y$$

wherein M is a metal selected from the group consisting of Pb, transition elements, alkaline earth metals exclusive of Mg and metals in group IIIA of the periodic table exclusive of Al; x is about 1 to about 100; y is about 0.0001 to about 0.15; and z is the valence of M, said metal being one of which the fluoride has a boiling point of about 400° C. or more or one of which the fluoride has a sublimation point of about 400° C. or more, which comprises reacting a graphite material with a metal fluoride having a boiling point of about 400° C. or more or a sublimation point of about 400° C. or more and selected from the group consisting of fluorides of Pb, transition elements, alkaline earth metals exclusive of Mg and metals in group IIIA of the periodic table exclusive of Al in an atmosphere of fluorine gas at a temperature of 0° C. to 400° C. for at least a period of time to effect a weight increase in the graphite.

7. An electrically conductive material comprising a ternary intercalation compound of a graphite with a metal fluoride and fluorine represented by the formula

$$C_xF(MF_z)_y$$

wherein M is a metal selected from the group consisting of Pb, transition elements, alkaline earth metals exclusive of Mg and metals in group IIIA of the periodic table exclusive of Al; x is about 1 to about 100; y is about 0.0001 to about 0.15; and z is the valence of M, said metal being one of which the fluoride has a boiling point of about 400° C. or more or one of which the fluoride has a sublimation point of about 400° C. or more.

4,511,494

SOLUTION OF A CHALCOGEN-CONTAINING POLYMER AND PROCESS OF FORMING CONDUCTING POLYMER ARTICLES THEREFROM

Jane E. Frommer, Mendham Township, Morris County; Ronald L. Elsenbaumer, Morristown, and Douglass S. Davidson, Dover, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 432,045, Sep. 30, 1982, Pat. No. 4,452,727, which is a continuation-in-part of Ser. No. 393,010, Jun. 28, 1982, abandoned. This application Mar. 8, 1984, Ser. No. 587,720

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **8 Claims**

1. The process of forming a conductive article which comprises the steps:

(a) forming a solution comprising a solvent selected from the group consisting of arsenic trifluoride, arsenic trichloride, arsenic tribromide, phosphorus trifluoride, phosphorus pentafluoride, phosphorus trichloride, phosphorus oxytrichloride, titanium tetrachloride, boron trifluoride, boron trichloride, boron tribromide, antimony trichloride, and antimony pentachloride, a polymer solute comprising aromatic moieties directly linked by divalent, trivalent or tetravalent sulfur or by divalent oxygen and a dopant solute comprising a halide or oxyhalide anion of a group IIIA, IIIB, IVA, IVB, VA, VB, VIIIA or VIB metal or metalloid or of phosphorus, selenium, boron or sulfur; and

(b) removing from the solution the solvent as the polymer solute solidifies.

4,511,495

TUMBLE DRYER PRODUCTS FOR DEPOSITING PERFUME

James B. Melville, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 28, 1981, Ser. No. 258,253

Claims priority, application United Kingdom, May 16, 1980, 8016244

Int. Cl.³ A61K *7/46*; B05D *3/12*

U.S. Cl. 252—522 A **6 Claims**

1. A method of depositing perfume on fabrics in a rotary hot air dryer in which a perfume-containing fabric conditioning composition is placed in the dryer before, simultaneously with, or after the addition of wet fabrics to the dryer and the dryer is then operated to dry the fabrics, characterised in that said fabric conditioning composition comprises

(i) a first phase constituting from about 0.5% to about 50% by weight of the composition and consisting of particles having an average size of from about 0.1 micron to about 200 microns, the particles comprising an intimate mixture of (a) from about 0.5% to about 50% by weight, based on the weight of the particles, of a perfume, and (b) from about 50% to about 99.5% by weight, based on the weight

of the particles of a matrix comprising at least one water dispersible amine of the formula

$$R—N\,R^1R^2$$

where R is an alkyl or alkenyl group having from 8 to 22 carbon atoms, R^1 is hydrogen or an alkyl or alkenyl group having 1 to 4 carbon atoms and R^2 is hydrogen or an alkyl, alkenyl or amino-alkyl group having from 1 to 22 carbon atoms, the matrix containing no added cationic material; and

(ii) a second phase constituting from about 0.5% to about 80% by weight of the composition and comprising a fabric conditioning agent.

6. A product for depositing perfume on fabrics in a rotary hot air dryer, comprising a fabric conditioning composition supported on a flexible substrate, characterised in that said fabric conditioning composition comprises

(i) a first phase constituting from about 0.5% to about 50% by weight of the composition and consisting of particles having an average size of from about 0.1 micron to about 200 microns, the particles comprising an intimate mixture of (a) from about 0.5% to about 50% by weight, based on the weight of the particles, of a perfume, and (b) from about 50% to about 99.5% by weight, based on the weight of the particles of a matrix comprising at least one water dispersible amine of the formula

$$R—N\,R^1R^2$$

where R is an alkyl or alkenyl group having from 8 to 22 carbon atoms, R^1 is hydrogen or an alkyl or alkenyl group having 1 to 4 carbon atoms and R^2 is hydrogen or an alkyl, alkenyl or amino-alkyl group having from 1 to 22 carbon atoms, the matrix containing no added cationic material; and

(ii) a second phase constituting from about 0.5% to about 80% by weight of the composition and comprising a fabric conditioning agent.

4,511,496

SLOW-RELEASE PERFUME COMPOSITIONS AND A PROCESS FOR THE PREPARATION OF THEM

Yuuichi Matsumoto, Abiko, Japan, assignor to Soda Aromatic Company, Limited, Tokyo, Japan

Filed Jun. 14, 1983, Ser. No. 504,226
Claims priority, application Japan, Jun. 22, 1982, 57-106111
Int. Cl.³ A61K *7/46*
U.S. Cl. 252—522 A **12 Claims**

1. A slow-release perfume composition comprising a pellet of an ethylene-vinyl acetate copolymer having a vinyl acetate content in the range of from 19 to 40% by weight, said pellet having a particle size in the range of about 1 to 10 mm, said pellet being impregnated with a perfume, said perfume containing as an essential component at least one fragrant component selected from the group consisting of hydrocarbons and esters, a fine powder being coated over the surface of said perfume-impregnated pellet and being present in an amount sufficient to coat the pellet surface thereof, and said fine powder being insoluble in either said pellet or said perfume.

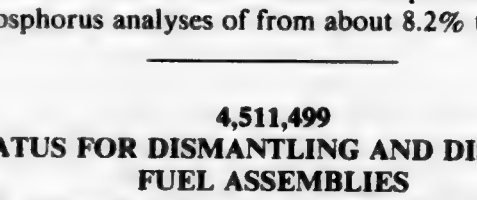
4,511,497

BUBBLE COMPOSITION USING MULTIPURPOSE SURFACTANT BASE

Joseph R. Ehrlich, New York, N.Y., assignor to Strombecker Corporation, Chicago, Ill.

Continuation of Ser. No. 320,518, Nov. 12, 1981, abandoned.
This application Sep. 28, 1983, Ser. No. 536,881
Int. Cl.³ C11D *1/84, 3/22*
U.S. Cl. 252—542 **10 Claims**

1. A bubble-forming composition, which consists essentially of an aqueous solution consisting essentially of from about 0.1 to about 5% by weight of a cellulose ether selected from the group consisting of hydroxypropyl methylcellulose and hydroxybutyl methylcellulose and mixtures thereof and from about 0.8 to about 15% by weight of an imidazoline surfactant of formula II:



(II)

wherein:

R^1 is an alkyl or alkenyl group derived from a fatty acid;
R^2 is hydrogen, $—CH_2COOM$, $—CH_2CH_2COOM$ or M;
R^3 is $—COOM$, $—CH_2COOM$ or $CHOHCH_2SO_3M$;
M is hydrogen, alkali metal or ammonium; and
A is hydroxy, chloride or sulfate or surface active sulfonate or sulfate.

4,511,498

MIXED PHENYL/MESITYL PHOSPHATE ESTER COMPOSITION

Fui-Tseng H. Lee, Princeton; Charles V. Juelke, Belle Mead, and Joseph H. Finley, Metuchen, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 348,636, Feb. 16, 1982, Pat. No. 4,446,062.
This application Dec. 2, 1983, Ser. No. 557,706
Int. Cl.³ C09K *3/28*
U.S. Cl. 252—609 **2 Claims**

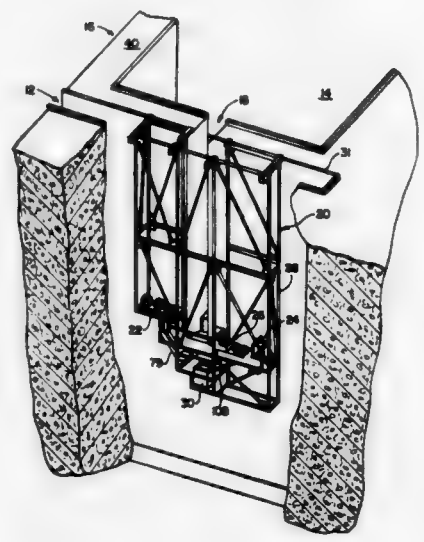
1. A mixed phosphate ester composition useful as a fire retardant additive, comprising about 20 weight percent triphenyl phosphate, about 40 weight percent diphenyl mesityl phosphate, about 40 weight percent phenyl dimesityl phosphate, said mixed ester composition having a viscosity at 65.6° C. no greater than about 0.000024 meter² per second and having a phosphorus analyses of from about 8.2% to about 8.4%.

4,511,499

APPARATUS FOR DISMANTLING AND DISPOSING OF FUEL ASSEMBLIES

Robert E. Meuschke, Penn Hills, and Joseph R. Schulties, Gibsonia, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 18, 1982, Ser. No. 359,552
Int. Cl.³ G21F *9/34*
U.S. Cl. 252—626 **3 Claims**



1. Apparatus for dismantling, shearing, and compacting an elongated fuel assembly frame skeleton remaining after removal of a top nozzle and fuel rods of a nuclear fuel assembly, comprising:

a superstructure adapted for positioning, substantially underwater, in a transfer canal of a fuel handling building of a

nuclear power generating facility, adjacent to a spent fuel pit contained therein;

bottom nozzle removal operating means contained within the superstructure supported at a level below the surface water level of the transfer canal, the bottom nozzle removal operating means including a guillotine blade for severing a bottom nozzle from thimble tubes and grids of the fuel assembly frame skeleton;

compactor operating means supported within said superstructure at a level below the surface of the water level of the transfer canal for compacting the remainder of the frame skeleton after the bottom nozzle has been removed and prior to shearing thereof, to a width which is substantially less than the original width in cross-section in a directional orthogonal to the longitudinal axis of the frame skeleton;

skeleton shear operating means supported by said superstructure below the surface level of the water in the transfer canal for shearing the compacted skeleton into pieces of a shorter length than the original length in the longitudinal direction;

conveyor means operatively associated with said superstructure, the spent fuel pit and the transfer canal for conveying the frame skeleton from the fuel pit to said superstructure after the top nozzle and the fuel rods are removed in the fuel pit from the fuel assembly, said conveyor means also cooperating with the bottom nozzle removal operating means, the compactor operating means and the shear operating means for transferring the frame skeleton from one of the aforementioned operating means to another;

a transfer container for receiving the severed bottom nozzle and sheared sections of the frame skeleton assembly;

a first chute connected between the bottom nozzle removal operating means and the transfer container for transferring the severed bottom nozzle to the transfer container; and

a second chute connected between the skeleton shear operating means and the transfer container for transferring the severed sheared skeleton sections to the transfer container.

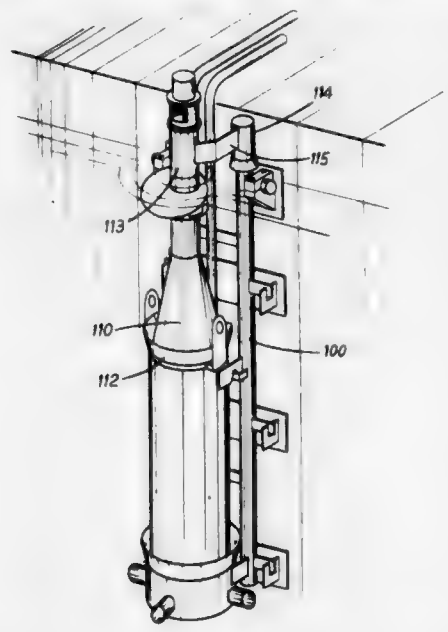
4,511,500

METHOD AND DEVICES FOR PRODUCING EXCHANGES IN RESERVOIRS USED FOR STORING RADIOACTIVE MATERIALS

René Guilloteau, Verriers Le Buisson, France, assignor to Societe Generale pour les Techniques Nouvelles, S.G.N., Montigny-Le-Bretonneux, France

Continuation-in-part of Ser. No. 162,947, Jun. 25, 1980, abandoned. This application Feb. 10, 1983, Ser. No. 465,504
Claims priority, application France, Jul. 2, 1979, 79 17159
Int. Cl.³ G21F *9/12*
U.S. Cl. 252—633 **9 Claims**

1. In a pool type storage system for radioactive waste including a reservoir having bottom and side walls and an open top, water in said reservoir to a predetermined level along said side walls, and radioactive waste submerged within said water; the combination therewith of means positioned directly within said reservoir and submerged within said water for effecting desired exchanges on said water, said exchange means comprising at least one autonomous, dismountable, multi-section, generally vertically oriented, exchange unit having means for allowing the flow of said water therethrough and including a base section detachably positioned on said bottom wall of said reservoir and having receiving means on the upper end thereof, an exchange section having the lower end thereof detachably positioned on said receiving means of said base section and having a receiving means on the upper end thereof and including means therewithin for effecting an exchange on said water, and a pump section having the lower end thereof detachably positioned on said receiving means of said exchange section and including pump means for at least initiating the flow of said water through said exchange unit.



4,511,501

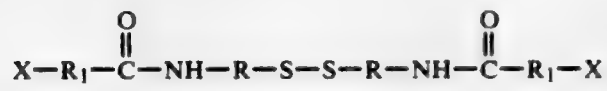
BIS-AMIDE DISULFIDE CLEAVABLE CROSS-LINKING REAGENTS

Richard F. Luduena, San Antonio, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 417,026, Sep. 13, 1982,. This application Nov. 14, 1983, Ser. No. 551,586
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 R **6 Claims**

1. A method of selectively establishing a cleavable cross-link between sulfhydryl groups present on a protein substrate molecule comprising:

reacting the sulfhydryl groups with a disulfide compound represented by the formula:



wherein R and R_1 are lower alkyl or lower alkenyl groups having one to four carbon atoms, and X is a halide.

4,511,502

PURIFICATION AND ACTIVITY ASSURANCE OF PRECIPITATED HETEROLOGOUS PROTEINS

Stuart E. Builder, Belmont, and John R. Ogez, San Mateo, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 452,355, Dec. 22, 1982,. This application Jun. 1, 1984, Ser. No. 615,676
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 R **12 Claims**

1. A process for purifying heterologous proteins which are expressed and deposited in insoluble, refractile form in a host cell culture, which process includes the steps of:

(a) isolating said insoluble refractile heterologous protein from said host cell culture;

(b) dissolving the isolated refractile heterologous protein in a strong denaturing solution; followed by

(c) removing high molecular weight impurities using a molecular sieve or high speed centrifugation techniques.

4,511,503

PURIFICATION AND ACTIVITY ASSURANCE OF PRECIPITATED HETEROLOGOUS PROTEINS

Kenneth C. Olson, Burlingame, and Rong-Chang Pai, Foster City, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 452,252, Dec. 22, 1982,. This application Jun. 1, 1984, Ser. No. 615,680

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 R **2 Claims**

1. A method of solubilizing heterologous protein, produced in an insoluble "refractile form in a recombinant host cell culture, which method comprises:

isolating and insoluble "refractile" heterologous protein from said host cell culture, and

treating said protein with a strongly denaturing solution selected from the group consisting of a guanidine salt or a salt of thiocyanate having a concentration between about 4M and 9M to solubilize said refractile protein.

4,511,504

CARBOXYALKYL PEPTIDE DERIVATIVES

Keith G. McCullagh, Princes Risborough; Harry J. Wadsworth, High Wycombe, and Michael M. Hann, Watlington, all of England, assignors to G.D. Searle & Co., Skokie, Ill.

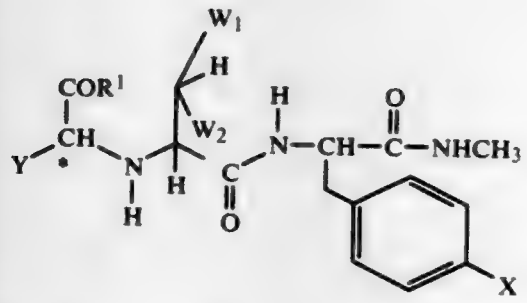
Filed Apr. 12, 1984, Ser. No. 599,307

Claims priority, application United Kingdom, Apr. 26, 1983, 8311286

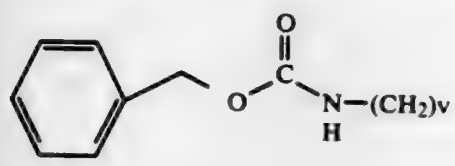
Int. Cl.³ C07C *103/52*; A61K *37/00*; A01N *43/42, 43/36*

U.S. Cl. 260—112.5 R **12 Claims**

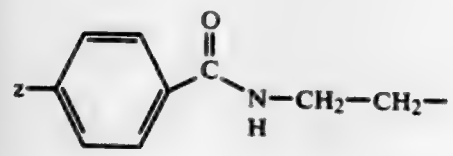
1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof wherein x represents hydrogen, alkoxy or benzyloxy; y represents a radical selected from alkyl, alkylthioalkyl,



wherein v is 2 or 3,



wherein z represents hydrogen or nitro; W_1 and W_2 represent methyl or trifluoromethyl; and R^1 represents hydroxy or alkoxy and the stereochemistry of the carbon marked by the asterisk is R.

4,511,505

SEMI-SYNTHESIS OF HUMAN INSULIN

Kazuyuki Morihara; Tatsushi Oka, and Hiroshige Tsuzuki, all of Osaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 336,071, Dec. 31, 1981, Pat. No. 4,400,465, which is a division of Ser. No. 138,514, Apr. 9, 1900, Pat. No. 4,320,196. This application Jun. 3, 1983, Ser. No. 500,915

Claims priority, application Japan, Apr. 13, 1979, 54-45710

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.7 **3 Claims**

1. A protected human insulin, namely B30-Thr(R^1)(R^2)-human insulin wherein Thr is an L-threonine residue, R^1 is hydrogen or a hydroxy-protecting group, and R^2 is alkyl as a carboxyl-protecting group, and wherein R^2, or R^1 and R^2, are the only protecting groups in the protected human insulin.

4,511,506

REACTIVE BIS-TRIAZINYL STILBENE DYES

Hans Baumann, and Hermann Kaack, both of Wachenheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

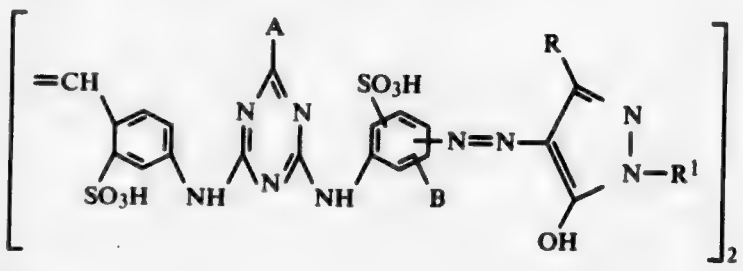
Filed Jan. 2, 1979, Ser. No. 172

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1978, 28001470

Int. Cl.³ C09B *62/08*

U.S. Cl. 534—631 **4 Claims**

1. A reactive dye in free acid or salt form which in the form of the free acid corresponds to the general formula:



where

A is fluorine or chlorine,

B is hydrogen, chlorine, methyl, methoxy, ethoxy, hydroxysulfonyl or carboxyl,

R is carboxyl, C_1–C_4-alkoxycarbonyl, carbamyl, N-mono- or N,N-di-C_1–C_4-alkyl- or -hydroxyalkyl-substituted carbamyl, carbopiperidide, carbopyrrolidide or carbomorpholide and

R^1 is C_1–C_4-alkyl which is unsubstituted or substituted by cyano, hydroxyl or carboxyl, phenyl which is unsubstituted or substituted by methyl, ethyl, fluorine, chlorine, bromine, amino, trifluoromethyl, methoxy, ethoxy, cyano, phenoxy, acetyl, methylsulfonyl, benzoyl, phenylsulfonyl, acetylamino, nitro, hydroxyl, carboxyl, carbamyl, 2-benzthiazolyl or sulfamyl, or naphthyl which is unsubstituted or substituted by hydroxysulfonyl.

4,511,507

MONOAZO COMPOUND HAVING BOTH MONOCHLOROTRIAZINYL AND VINYLSULFONE TYPE REACTIVE GROUPS

Yutaka Kayane, Moriguchi; Takashi Omura, Ashiya; Katsumasa Otake, Nara, and Akira Takeshita, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

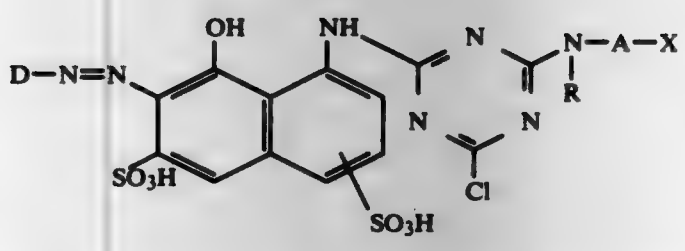
Filed Dec. 20, 1983, Ser. No. 563,587

Claims priority, application Japan, Dec. 28, 1982, 57-231040

Int. Cl.³ C09B *62/08*; D06P *3/10*

U.S. Cl. 534—629 **5 Claims**

1. A compound represented by a free acid of the formula,



wherein D is a phenyl group substituted with one to three substitutents selected from the group consisting of halogen atoms and methyl, ethyl, methoxy, ethoxy, acetylamino, propionylamino, sulfo and carboxyl groups, R is a C_1 to C_4 alkyl group unsubstituted or substituted with a halogen atom or a hydroxyl, cyano, alkoxy, carboxyl, carbamoyl, alkoxycarbonyl or sulfo group, A is a phenylene group unsubstituted or substituted with one or two substituents selected from the group consisting of methyl, ethyl, methoxy, ethoxy and sulfo groups and chlorine and bromine atoms, or a naphthylene group unsubstituted or substituted with one sulfo group, and X is $-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Y$ in which Y is a group capable of being split by the action of an alkali.

4,511,508

PROCESS FOR DRYING OF NATURAL EXTRACTS PREPARED BY HIGH PRESSURE EXTRACTION

Heinz-Rüdiger Vollbrecht, Stein; Erwin Schütz, Palling, and Klaus Sandner, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg AG, Trostberg, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,414

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118160

Int. Cl.³ C07G *17/00*

U.S. Cl. 426—665 **8 Claims**

1. A process for drying extracts of plant or plant part origin obtained by high-pressure extraction with liquefied gases or gases in the supercritical state whereafter the extract is recovered from the gas stream, wherein the improvement comprises the step of removing moisture from the gas stream laden with the extract, before recovering the extract.

4,511,509

3-ALKYLIDINE AZETIDINE COMPOUND AND THEIR PRODUCTION

Hamao Umezawa, Tokyo; Masaji Oono, Kamakura; Hiroshi Ishihama, Higashi-Murayama; Yoshinori Kyotani, Higashi-Yamato, and Yoshio Takahashi, Higashi-Murayama, all of Japan, assignors to Kowa Co., Ltd., Nagoya-chi, Japan

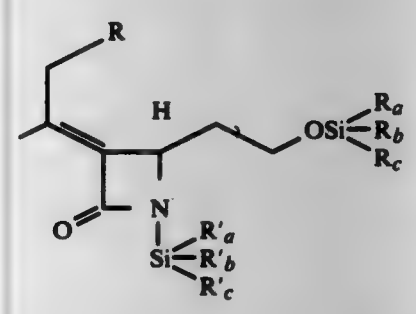
Filed Mar. 21, 1983, Ser. No. 477,369

Claims priority, application Japan, Mar. 25, 1982, 57-47829; May 14, 1982, 57-81195

Int. Cl.³ C07F *7/18*; C07D *205/08, 487/04*; A61K *31/40*

U.S. Cl. 260—239 A **1 Claim**

1. An azetidine compound of the formula



wherein R represents a hydroxyl group, and R_a, R_b, R_c, R'_a, R'_b and R'_c are identical or different and each represent a lower alkyl group.

4,511,510

PROCESS FOR PREPARING A 7-CHLORO-5-(2-CHLOROPHENYL)-BENZODIAZEPINONE

Francesco Mauri, Monza, Italy, assignor to Ravizza S.p.A., Milan, Italy

Filed Oct. 18, 1978, Ser. No. 952,397

Claims priority, application Italy, Oct. 18, 1977, 28738 A/77

Int. Cl.³ C07D *243/32*

U.S. Cl. 260—239.3 D **4 Claims**

1. A method for preparing 7-chloro-5-(2-chlorophenyl)-1,3-dihydro-2H-1,4-benzodiazepin-2-one in a single passage and in a single reaction medium, without the separation of intermediate compounds, which comprises refluxing a suspension of phthalimidoglycine in chloroform with thionyl chloride until a clear solution forms; first adding to said clear solution 2',5-dichloro-2-amino-benzophenone and, thereafter, adding ethanol, chloroform and hydrazine hydrate under ambient temperature conditions to obtain the desired product, the ratio by weight of 2',5-dichloro-1-aminobenzophenone to chloroform to ethanol being 1:15–16:4–5, and the molar ratio of 2',5-dichloro-2-aminobenzophenone to hydrazine being approximately 1:2.

4,511,511

PREDNISOLONE DERIVATIVES

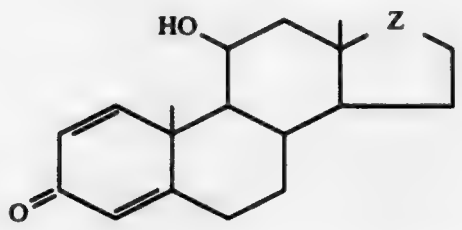
Marvin L. Lewbart, Media, Pa., assignor to Crozer-Chester Medical Center, Chester, Pa.

Filed Dec. 15, 1982, Ser. No. 450,155

Int. Cl.³ C07J *5/00*

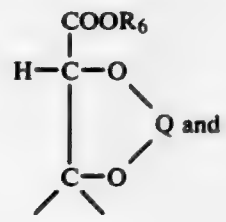
U.S. Cl. 260—239.55 D **12 Claims**

1. A compound of the formula (I)



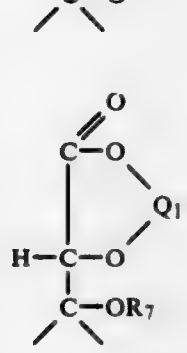
(I)

wherein Z is selected from the group consisting of:



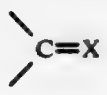
(IIB)

and

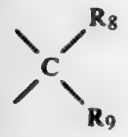


(IIC)

wherein R_6 is selected from the group consisting of hydrogen and lower alkyl, R_7 is selected from the group consisting of hydrogen, lower alkyl and lower acyl; wherein Q and Q_1 are selected from the group consisting of:



wherein X is O or S,



and $-CH_2)_n$

wherein each of R_8 and R_9 is independently selected from the group consistency of hydrogen, lower alkyl, aryl, arylalkyl, alkanoyl and aryl and n is an integer from 2 to 10.

4,511,512

SUBSTANTIALLY PURE DICYCLOHEXYL AMMONIUM 6-β-BROMO-PENICILLANATE

Welf von Daehne, Rungsted Kyst, Denmark, assignor to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Produktionsaktienselskab), Ballerup, Denmark

Filed May 1, 1980, Ser. No. 145,880
Int. Cl.³ C07D *499/00;* A61K *31/425*
U.S. Cl. 260—245.2 R **1 Claim**

1. Substantially pure dicyclohexylammonium 6β-bromopenicillanate.

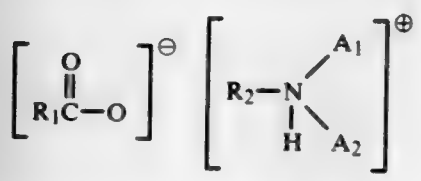
4,511,513

DETERGENT COMPOUNDS AND COMPOSITIONS

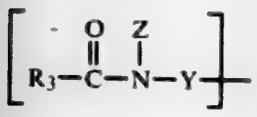
Jacob J. Guth, Upper Black Eddy, Pa., and Robert J. Verdicchio, Succasunna, N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 241,862, Mar. 9, 1981, abandoned. This application May 5, 1982, Ser. No. 375,073
Int. Cl.³ C11D *1/52;* C07C *103/54*
U.S. Cl. 260—404.5 **5 Claims**

1. A complex of the formula



wherein R_1 is alkyl containing from about 5 to 17 carbon atoms and mixtures thereof; R_2 is alkyl amido of the formula



wherein R_3 is alkyl containing from about 5 to 17 carbon atoms and mixtures thereof; Z is H or lower alkyl containing from 1 to 4 carbon atoms; and Y is alkylene containing from 2 to 4 carbon atoms;

A_1 and A_2 are the same or different and at least one of A_1 and A_2 are selected from the group of anionic salt moieties consisting of

$-CH_2CH_2-COOX]_n$

$-CH_2-COOX]_n$

wherein X is a water soluble cation and n is an integer of 1 or 2 with the proviso that if only one of A_1 and A_2 are selected from the anionic salt moieties above, the other is lower alkyl or lower hydroxyalkyl containing from 1 to 4 carbon atoms.

4,511,514

PROCESS FOR SEPARATING OLEIC ACID FROM LINOLEIC ACID

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 407,672, Aug. 12, 1982, Pat. No. 4,404,145, which is a continuation-in-part of Ser. No. 333,250, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 297,453, Aug. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 252,745, Apr. 10, 1981, Pat. No. 4,329,280. This application Oct. 18, 1982, Ser. No. 435,134
Int. Cl.³ C11B *3/16*
U.S. Cl. 260—419 **19 Claims**

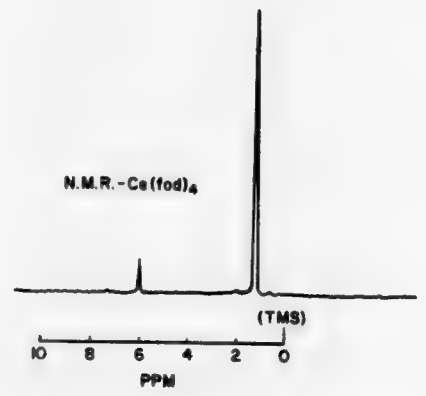
1. A process for separating oleic acid from linoleic acid contained in a feed mixture comprising said acids, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising silicalite, thereby selectively retaining said oleic acid, and removing linoleic acid from the oleic acid containing molecular sieve.

4,511,515

METHOD FOR MAKING A VOLATILE CERIUM DIKETONATE COMPOUND

David A. Thompson, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 28, 1983, Ser. No. 508,602
Int. Cl.³ C07F *5/00*
U.S. Cl. 260—429.2 **3 Claims**



1. A process for the synthesis of tetrakis-(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedione) cerium (IV) which comprises the steps of:

(a) preparing an aqueous solution of a soluble cerium (IV) salt, to provide a cerium (IV) solution; and

(b) combining the cerium (IV) solution with deprotonated 6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedione to react the octanedione with the cerium (IV), and to thereby yield a tetrakis-(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedione) cerium (IV) product.

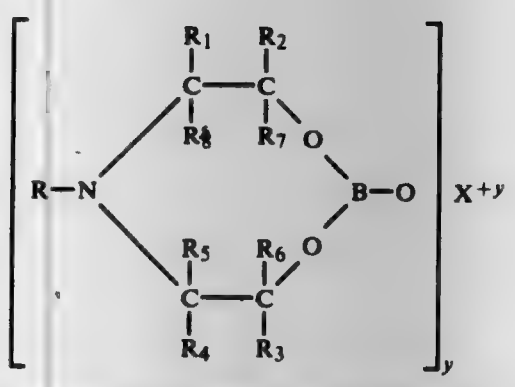
4,511,516

BORON CONTAINING HETEROCYCLIC COMPOUNDS

Richard A. Holstedt, Whittier; Kenneth Baron, Diamond Bar, and Peter Jessup, Santa Ana, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 158,828, Jun. 12, 1980, Pat. No. 4,400,284, and a continuation-in-part of Ser. No. 158,981, Jun. 12, 1980,. This application Sep. 15, 1982, Ser. No. 418,196
Int. Cl.³ C07F *5/04;* C10M *3/48*
U.S. Cl. 260—462 R **24 Claims**

1. A compound having the formula:



where R is hydrogen or an alkyl, alkene, alkadiene, aryl, alkylaryl or arylalkyl radical having from 1 to about 24 carbon atoms, R_1 and R_4 are the same or different radicals selected from hydrogen or alkyl, aryl, alkylaryl or arylalkyl radicals or a mixture thereof, said radicals having from 1 to about 30 carbon atoms, R_2 and R_3 are the same or different aryl, alkylaryl or arylalkyl radicals having from about 6 to about 30 carbon atoms, R_5, R_6, R_7, and R_8 are the same or different radicals selected from hydrogen or an alkyl radical having from 1 to about 6 carbon atoms, Y is an integer between 1 and 4, and X is hydrogen or a metal selected from a transition metal having an atomic number of 21 through 30 or a Group IVA metal.

4,511,517

CARBONYLATION OF METHYL ACETATE

Jean Gauthier-Lafaye, Lyons; Robert Perron, Charly, and Claude Doussain, Saint-Fons, all of France, assignors to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Jul. 16, 1982, Ser. No. 398,802
Claims priority, application France, Jul. 17, 1981, 81 14123
Int. Cl.³ C07C *51/56*
U.S. Cl. 260—549 **20 Claims**

1. In a process for the carbonylation of methyl acetate to produce acetic ahydride in homogeneous liquid phase, the improvement which comprises conducting such carbonylation at a temperature from 80° to 240° C. and under a total pressure from 20 to 300 bars in a virtually anhydrous medium in the presence of:

(a) a cobalt source;

(b) a source of iron in the zero oxidation state;

(c) an ionic iodide of the formula:

$$A^+I^-$$

in which A^+ is a nitrogen group quaternary onium cation or an alkali metal cation, the molar ratio I^-/Co being greater than or equal to 10; with the total amount of halogen compounds present in the reaction medium, expressed in gram atoms of halogen and designated as X_T, being such that the atomic ratio $X_T/(A+)$ is less than or equal to 1.

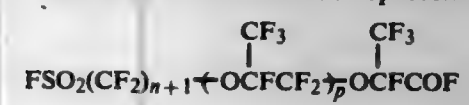
4,511,518

PERFLUORINATED FLUOROSULFONYLALKYLENEOXY-2-PROPANOYL FLUORIDE AND HEXAFLUOROEPOXIDE ADDITION COMPOUNDS

Kyoji Kimoto; Hirotsugu Miyauchi; Jukichi Ohmura; Mikio Ebisawa, and Toshioki Hane, all of Kanagawa, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 330,608, Dec. 14, 1981, which is a division of Ser. No. 152,856, May 23, 1980, Pat. No. 4,329,435. This application Aug. 30, 1983, Ser. No. 527,818
Claims priority, application Japan, May 31, 1979, 54-67889; Jul. 18, 1979, 54-90302; Dec. 21, 1979, 54-165675; Dec. 26, 1979, 54-168179; Dec. 28, 1979, 54-170315
Int. Cl.³ C07C *143/70*
U.S. Cl. 260—543 F **3 Claims**

1. A fluorinated acid fluoride represented by the formula:



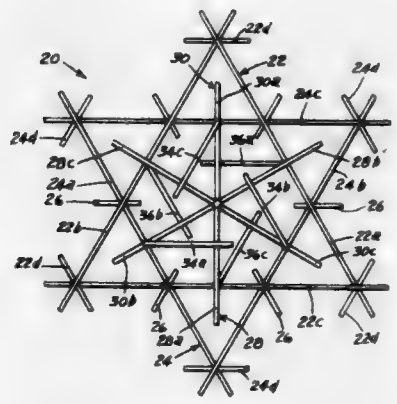
wherein n is an integer of 2 to 4 and p is an integer of 0 to 50.

4,511,519

TOWER PACKING ELEMENTS

Min A. Hsia, Kent, Ohio, assignor to Norton Company, Worcester, Mass.

Filed Apr. 30, 1984, Ser. No. 605,044
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—94 **19 Claims**



1. A packing element for fluid-fluid contact apparatus comprising:

a first hollow triangular shape structure on one side of the packing element and a central plane thereof extending perpendicular to a central axis of the packing element having

three relatively thin narrow elongated inclined structural side members inclined relative to each other and the central plane, extending around the central axis and between apexes of the first triangular structure;

a second hollow triangular shape structure on an opposite side of the packing element and the central plane and angularly displaced about the central axis relative to the first triangular structure and having

three relatively thin narrow elongated inclined structural side members inclined relative to each other, the central plane and the inclined side members of the first triangular structure and extending around the central axis between apexes thereof and crossing the inclined side members of the first triangular structure; and

a pair of interconnected generally Y-shape structures each situated on one side of the central plane and the packing element, adjacent each of the first and second triangular structures and each including

a central hub about the central axis, and

three relatively thin narrow elongated radial structural members angularly displaced relative to each other about the central axis, extending radially from the central hub, connected to and crossing outer inclined edges of the three structural side members of each adjacent one of the first and second triangular structures to free drip ends thereof each situated within an open ended cell adjacent each of the apexes.

4,511,520

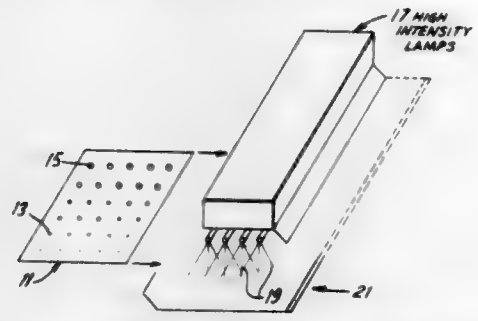
METHOD OF MAKING PERFORATED FILMS

William E. Bowen, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jul. 28, 1982, Ser. No. 402,759
Int. Cl.³ B29C *17/08*
U.S. Cl. 264—22 **17 Claims**

1. A method of producing a perforated plastic film for passage of fluid therethrough which comprising forming a pattern of light-absorbing material on spaced finite areas on one surface of said plastic film, subjecting said plastic film to a light source and causing light generated from said light source to be absorbed by said light-absorbing material thereby melting the plastic film at the areas covered by said light-absorbing material without melting the remaining areas in said plastic film and producing perforations through said film at said areas.

17. A method of producing a perforated plastic film for passage of fluid therethrough which comprises forming a pattern of light-absorbing material on spaced finite areas on a surface of a first plastic film, laminating a second plastic film onto said surface and subjecting the resulting laminate to a



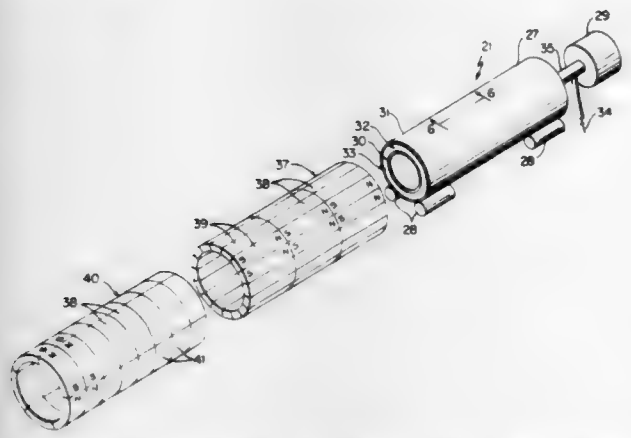
light source to be absorbed by said light-absorbing material thereby melting the plastic film covered by said light-absorbing material without melting the remaining areas in the plastic film to produce perforations through said laminate at said areas.

4,511,521

ENDLESS POWER TRANSMISSION BELT CONSTRUCTION AND METHOD AND APPARATUS FOR MAKING THE SAME

Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Apr. 12, 1982, Ser. No. 367,520
Int. Cl.³ B29D *29/02*
U.S. Cl. 264—24 **15 Claims**



1. In a method of making an endless power transmission belt construction or the like formed of material that is mainly polymeric material and that has been cut from an annular belt sleeve, the method comprising the steps of forming a tension section, forming a compression section, forming a load-carrying section intermediate said tension section and said compression section, and orienting at least part of the material of at least one of said sections, the improvement wherein said step of orienting comprises the step of orienting said part of said material by the force of field line means imposed thereon while said material is in liquid form and is in the belt sleeve form thereof.

4,511,522

METHOD OF MAKING A COMPOSITE FOAM TAXIDERMY MANNIKIN INVOLVING THE USE OF A CLEANABLE ADHESIVE TO HOLD THE ARTIFICIAL EYES IN THE MOLD CAVITY

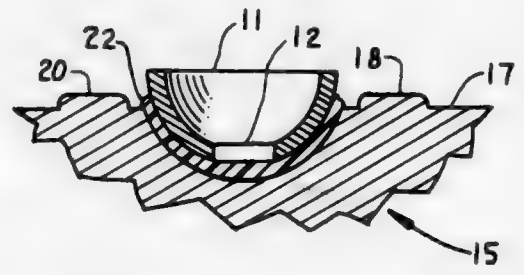
John R. Rinehart, 3232 McCormick Dr., Janesville, Wis. 53545

Continuation of Ser. No. 363,263, Mar. 29, 1982, Pat. No. 4,432,919. This application Jan. 23, 1984, Ser. No. 572,808
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—46.4 **4 Claims**

1. A method of making a taxidermy animal head mannikin having artificial eyes with pupils properly positioned therein and surrounded immediately by proper anatomical features, comprising:

providing a mold comprising half parts which together define a cavity surface contoured for correct anatomical formation of features of the mannikin including the features immediately surrounding the eye; and two eye socket recesses in the cavity surface for snugly receiving the front portion of the eyes;

inserting into each eye socket recess of the mold the front portion of an artificial eye having a pupil with cleanable adhesive emplaced between the socket recess and the front portion of the eye, leaving the rear portion of the eye projecting into the mold cavity;



orienting each eye as held by the adhesive to a desired position;

closing the half parts together to form the full mold cavity therebetween;

introducing liquid foamable hardenable material into the mold cavity to foam expand and harden, thereby forming the mannikin and locking the eyes into the mannikin in proper position therein;

separating the two half parts of the mold from the formed mannikin; and

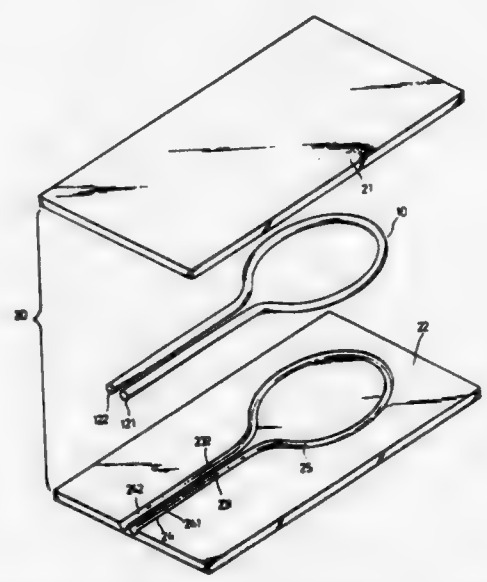
cleaning the adhesive from the eyes embedded in the mannikin.

4,511,523

FABRICATION OF A COMPOSITE MATERIAL RACKET FRAME

Joseph Hsu, No. 306, Chung-Kang Rd., Sec. 1, Taichung, Taiwan

Filed Nov. 16, 1982, Ser. No. 442,092
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—46.6 **7 Claims**



1. A method for producing a reinforced composite racket frame including an outer shell made of a fiber reinforced thermosetting plastic material and a foam core comprising the steps of:

(a) placing an open-ended tubular shell of fiber reinforced thermosetting plastic material in a racket frame mold with two valve members respectively provided at an outlet and an inlet of the mold;

(b) heating the mold to a first predetermined temperature for curing the tubular shell;
(c) causing one of the valve members to be open and the other valve to be closed;
(d) applying compressed air through the open valve to force the shell into intimate contact with an inner surface of the mold, the shell thereby assuming the shape of the mold;
(e) cooling the mold to a second predetermined temperature at which the tubular shell becomes set to the mold shape;
(f) opening the closed valve;
(g) introducing a predetermined amount of a foamable material through at least one of the valves and into the shell;
(h) closing both of the valve members to allow the forming of a foam material at the second predetermined temperature within the tubular shell to form a core of the racket.

4,511,524

CARBON RESISTOR AND METHOD FOR PRODUCING SAME

Joseph Nemeth, Harsens Island, and Charles I. Kowalski, Mt. Clemens, both of Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Continuation of Ser. No. 236,785, Feb. 23, 1981, abandoned. This application Nov. 8, 1982, Ser. No. 440,174

Int. Cl.³ H01C *13/00*

U.S. Cl. 264—61 **3 Claims**

1. A method for producing a ceramic resistor, said method comprising the steps of preparing a uniform, finely-divided mixture by blending a glass frit with at least one temporary binder, and from ¼ to 4 parts conductive carbon, pressing a longitudinally extending shape having opposed ends from the mixture, applying a silver paint to the opposed ends and firing the shape to vitrify the frit of the resistor, and wherein the silver paint consists essentially of a silver metal powder, a lead borosilicate frit and a solvent, and from 15 percent to 75 percent, based upon the paint solids, of a frit composition which consists essentially of from 15 to 30 percent of a phenyl lower alkyl silicone resin, from 5 to 15 percent of $AlPO_4$, from ¼ to 3 percent of conductive carbon, and from 65 to 80 percent of a lead borosilicate glass frit consisting essentially of substantially 20 percent SiO_2, 15 percent B_2O_3, 59 percent PbO and 6 percent Na_2O.

4,511,525

PROCESS FOR PRODUCING SINTERED SILICON NITRIDE-BASE BODY

Akihiko Tsuge; Michiyasu Komatsu, both of Yokohama; Hiroshi Inoue, Kawaguchi, and Katsutoshi Komeya, Oiso, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 22, 1982, Ser. No. 443,678

Claims priority, application Japan, Nov. 26, 1981, 56-188455; Nov. 30, 1981, 56-192365

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—65 **7 Claims**

1. A process for producing a sintered silicon nitride-base body, comprising the steps of:
producing a powdery mixture (B) comprising silicon nitride and a sintering additive;
heat treating said powdery mixture (B) at a temperature ranging from about 1450° to 1750° C. in a non-oxidizing atmosphere;
grinding said heat-treated mixture into a powder;
heat treating a powder (A) consisting essentially of silicon nitride at a temperature ranging from about 1450° to 1800° C. in a non-oxidizing atmosphere;
mixing said heat-treated powdery mixture (B) and said heat-treated powder (A) to form a product powdery mixture;
forming said product powdery mixture into a desired shape; and
sintering said formed product powdery mixture in a non-oxidizing atmosphere.

4,511,526

METHOD FOR MAKING WEATHERSTRIPPING HAVING A ROUGH, LOW-FRICTION SURFACE

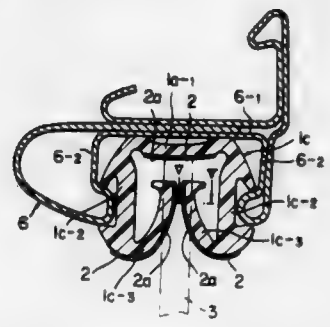
Toshiaki Yamaguchi, Chiba, Japan, assignor to Kinugawa Rubber Industrial Co., Ltd., Japan

Division of Ser. No. 370,675, Apr. 22, 1982, Pat. No. 4,442,156. This application Feb. 17, 1983, Ser. No. 467,290

Claims priority, application Japan, Apr. 23, 1981, 56-61624; Apr. 23, 1981, 56-61625; Apr. 23, 1981, 56-61626; Jun. 16, 1981, 56-88441[U]; Jun. 16, 1981, 56-88442[U]

Int. Cl.³ B29H *7/00*; B29C *3/00*

U.S. Cl. 264—129 **8 Claims**



1. A method of manufacturing window weather stripping having a rough surface for sealing a gap between a movable glass and a window frame, which comprises the following steps of:
(1) extrusion-molding a rubber material into the shape of window weather stripping;
(2) vulcanizing the extrusion-molded rubber material to form a vulcanized rubber material;
(3) applying a paint consisting essentially of nylon particles contained in a nylon-based bonding agent onto at least one sliding surface of the vulcanized rubber material so that the nylon particles form at least one rough surface;
(4) drying the paint-containing nylon particles; and
(5) baking the dried paint.

4,511,527

ALKALI METAL SALTS OF CROSS-LINKED POLYMERIC MICROGELS AS NUCLEATING AGENTS FOR POLYETHYLENE TEREPHTHALATE MOLDING COMPOSITIONS AND METHOD FOR MOLDING

Thomas J. Dolce, Stirling, N.J., and Bheema R. Vijayendran, Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 16, 1982, Ser. No. 449,886

Int. Cl.³ B29F *1/00*

U.S. Cl. 264—328.2 **20 Claims**

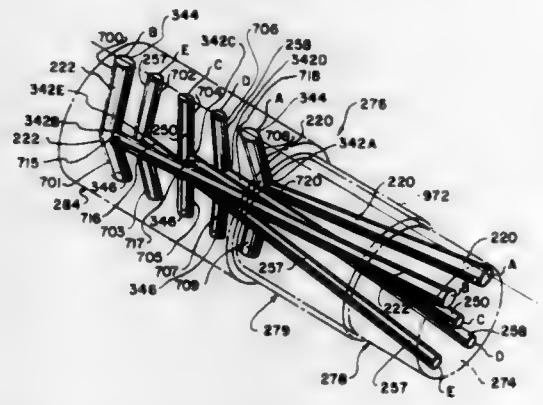
1. A melt blend suitable for use as a thermoplastic molding composition comprised of polyethylene terephthalate and a nucleating agent in an amount sufficient to enhance the crystallization of the polyethylene terephthalate, the nucleating agent being comprised of an alkali metal salt of a cross-linked, aqueous emulsion-polymerized copolymer comprising (1) at least one polymerizable vinyl monomer selected from the group consisting of carboxylic acid group-free polymerizable vinyl monomers and mixtures thereof in an amount sufficient to constitute a major portion of said copolymer; (2) from about 5 to less than 50 percent by weight, based on total monomer weight, of at least one polymerizable vinyl monomer selected from the group consisting of alpha, beta-ethylenically unsaturated carboxylic acid monomers and mixtures thereof, said carboxylic acid monomers being substantially non-gelling when copolymerized with said acid group-free monomers in an aqueous emulsion; and (3) up to about 10 percent by weight, based on total monomer weight of a multifunctional cross-linking monomer; and wherein said nucleating agent is present in an amount sufficient to enable a molded article produced from a melt blend containing 31 weight percent glass fibers to exhibit a heat deflection temperature of at least about 190° C. at a mold temperature of 70° C. as determined by ASTM D648.

4,511,528

FLOW STREAM CHANNEL SPLITTER DEVICES FOR MULTI-COINJECTION NOZZLE INJECTION MOLDING MACHINES

Frederick G. Kudert, Niles; Maurice G. Latreille, Batavia, and William A. Tennant, Schaumburg, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 13, 1983, Ser. No. 484,441
Int. Cl.³ B29C *5/00*; B29D *9/00*; B29F *1/02, 1/10*
U.S. Cl. 264—328.8 **93 Claims**



1. An elongated polymer stream flow channel splitter device for use in a runner block of a multi-coinjection nozzle, injection molding machine, comprised of

a polymer flow stream entrance surface portion,

a plurality of polymer flow stream exit surface portions,

a plurality of spaced polymer stream flow channels extending through a portion of the device, and

a plurality of spaced flow channel entrance ports positioned along the entrance surface portion and communicating with the flow channels, each of said flow channels having a portion which branches at a branch point within the device whereat the flow channel splits into first and second branched exit flow channels of substantially equal length and which communicate with and terminate at respective first and second exit ports each positioned in different exit surface portions, the plurality of first exit ports for the first branched exit flow channels and the plurality of second exit ports for the second branched exit flow channels is each arranged in its own respective axially-aligned spaced pattern of exit ports, for communication with corresponding polymer stream flow channel entrances in a runner block of the multi-coinjection nozzle, injection molding machine.

4,511,529

METHOD OF MAKING A BOTTLE CLOSURE

Thomas A. Fowles, McHenry; Glenn L. Slater, Ingleside, both of Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 306,604, Sep. 29, 1981, Pat. No. 4,378,891.
This application Feb. 23, 1983, Ser. No. 468,965
Int. Cl.³ B29C *17/07*; B29D *3/00*
U.S. Cl. 264—515 **1 Claim**

1. A method of making a hermetically sealed plastic container with a separate interior closure comprising:

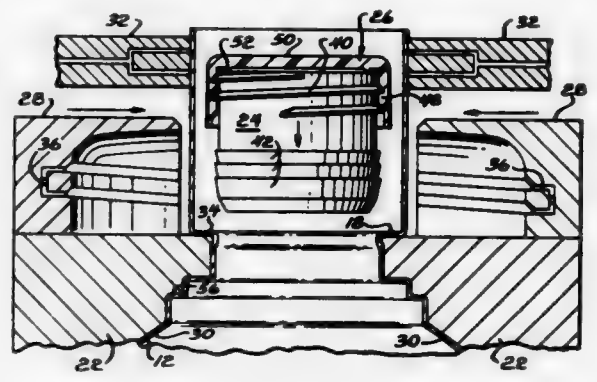
extruding a plastic parison between a pair of movable mold halves defining a body portion of the container and at least a portion of the container neck;

expanding the portion of parison between the mold halves to form the container body and neck portions while holding an upper end of the parison open, forming a thin line of weakness in a horizontal shoulder of the container, above the neck;

providing a preformed generally cylindrical tubular member having threads at an upper end and at least one annular sawtooth notch at the lower end;

attaching a removable primary closure cap, having a top wall and an internally threaded side wall, to the upper end of the preformed tubular member by engaging the internally threaded side wall and the threads at the upper end;

inserting, subsequent to said primary closure cap attachment step, the preformed tubular member with the primary closure cap thereon into the open end of the parison such that the annular sawtooth notch provides fluid-tight engagement with said neck portion to provide a dispensing outlet for the container, said primary closure cap closing the dispensing outlet, said insertion step occurring while



the plastic forming the neck portion is in a soft, semi-molten state; and

sealing the open end of said parison by a second pair of movable molds to hermetically enclose said pre-formed tubular member therewithin;

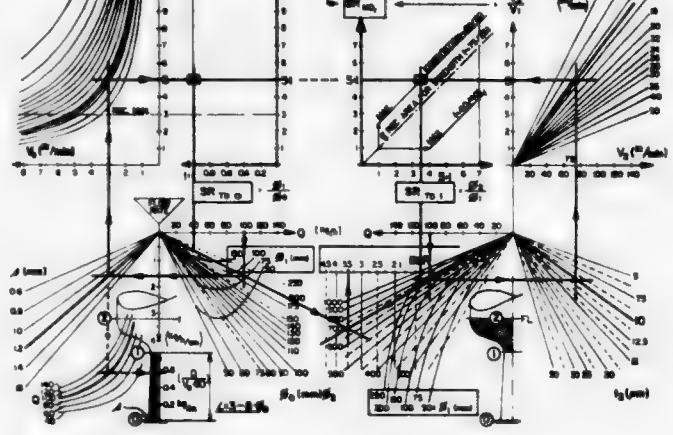
thereby forming, subsequent to said insertion step, an outer removable closure having a generally cylindrical threaded side wall for subsequently installing an internally threaded jacking ring thereon.

4,511,530

PROCESS FOR BLOWING FILM FROM LINEAR THERMOPLASTIC MATERIAL

Stefan Olsson, Gothenburg, and Ralph Widenbäck, Stenungsund, both of Sweden, assignors to Unifos Kemi AB, Stenungsund, Sweden

Filed Oct. 13, 1983, Ser. No. 541,584
Claims priority, application Sweden, Oct. 18, 1982, 8205912
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—564 **16 Claims**



1. A method for the continuous blowing of film from linear polyethylene materials which, after exit of a melt of the thermoplastic material from an annular die accompanied by introduction of air to an interior of the tubular melt thus formed, forms a neck portion having an essentially constant diameter followed at its upper part by rapidly diverging main bubble before solidification at a frost line, the upper part of the neck being defined as the most narrow part or the part where the outward bending has its smallest radius, the improvement comprising,

ejecting the melt from an annular die of a diameter greater than 200 mm and

manipulating the melt temperature, the cooling rate and the take-up speed to

(a) give a linear film velocity (V_1) at the upper part of the neck exceeding 15 m/min., and

(b) give a linear velocity ratio (V_1/V_o), between the velocity of the material at the upper part of the neck portion (V_1) and the velocity of the material when leaving the annular die (V_o), at least as great as the velocity ratio (V_2/V_1), between the final velocity of the material at the frost line (V_2) and the velocity (V_1) at the upper part of the neck portion.

4,511,531

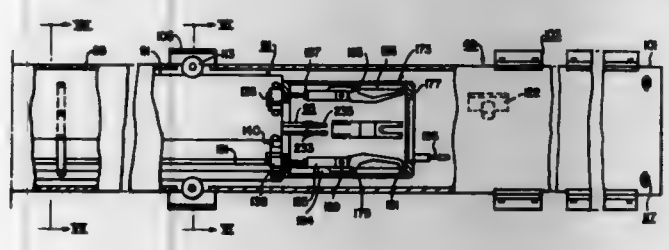
TRANSFER OF NUCLEAR REACTOR COMPONENT ASSEMBLIES

Kenneth J. Swidwa, Harmar Township, Allegheny County; Leonard P. Hornak, North Huntingdon, and Edward F. Kowalski, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1982, Ser. No. 366,631

Int. Cl.³ G21C *19/10*

U.S. Cl. 376—262 **8 Claims**



1. Apparatus for transferring component assemblies of a nuclear reactor, including fuel assemblies, control-rod assemblies, thimble-plug assemblies, poison assemblies and the like, to and from said nuclear reactor or from one position to another position within said reactor, the said transfer being carried out in a water-filled pit within which the reactor is disposed, the said apparatus including a supporting bridge suspended over said pit, a coordinated assembly supported by said bridge and extending into said pit for engaging and selectively disposing said component assemblies for transfer, and means, connected to said bridge and to said coordinated assembly, for selectively positioning said coordinated assembly to engage and dispose said component assemblies, the said coordinated assembly including an external guiding mast, an inner mast within said guiding mast movable vertically relative to said guiding mast, the said inner mast including means, selectively actuable, to engage and disengage a fuel assembly, means, connected to said engaging-and-disengaging means, for actuating said engaging-and-disengaging means to engage or disengage a fuel assembly, an elongated member within said inner mast vertically movable relative to said inner mast and to said guiding mast, the said elongated member including additional engaging-and-disengaging means for engaging and disengaging those of said component assemblies other than a fuel assembly, means, connected to said additional engaging-and-disengaging means, for actuating said engaging-and-disengaging means to engage or disengage a said other component assembly, drive means, connected to said elongated member, for raising and lowering said elongated member, primary projection means on said elongated member, and means, on said inner mast, selectively actuable between a first position in which it is engageable by said primary projection means to render said drive means operable to raise both said elongated member and said inner mast, and a second position in which said selectively-actuable means is not engageable by said primary projection means to render said drive means operable to raise only said elongated member, whereby with said selectively-actuable means in said first position, said fuel assembly may be raised into said guiding mast and with said selectively-actuable means in said second position, a said component assembly other than said fuel assembly may be raised into said guiding mast.

4,511,532

DEVICE FOR SUPPORTING AND PROTECTING NUCLEAR BOILERS

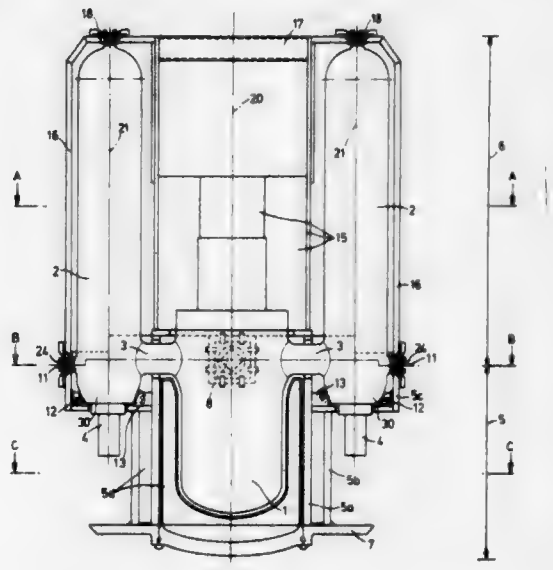
Robert Pièrart, Nantes, France, assignor to Ateliers et Chantiers de Bretagne, A C B, France

Filed Jun. 15, 1979, Ser. No. 48,802

Claims priority, application France, Jun. 23, 1978, 78 20405

Int. Cl.³ G21C *15/12, 13/02*

U.S. Cl. 376—461 **14 Claims**



1. (Amended) Apparatus for supporting and protecting a compact nuclear boiler assembly having a vertical axis and constituted by a nuclear reactor vessel having the same vertical axis as that of said assembly and at least two steam generators symmetrically located around said reactor vessel, each steam generator being connected to the reactor vessel by a short pipe connection which attaches said steam generator to the reactor vessel and permits the interchange of primary coolant between the steam generator and the reactor vessel, said supporting apparatus [comprising] *including* a metallic structure at least partially surrounding the nuclear boiler assembly and supporting the same through the medium of bearing members *and* comprising:

first and second sets of protruding elements *cooperating with ball-joint bearings provided in said structure, at least some of said protruding elements of said first set being* fixed to said reactor vessel and *the other of said protruding elements of said first set being fixed to respective ones of* said steam generators, [the] *said* protruding elements of [a] *said* first set being *substantially* located in [substantially the same] *a common* horizontal plane and having axes which substantially intersect said axis of said reactor vessel and wherein each of the protruding elements of [a] *said* second set is fixed to a respective steam generator *at a distance from said horizontal plane* to extend along [the respective axis thereof] *a substantially vertical direction;* and

wherein said metallic structure [is characterized by] *comprises,*

a rigid lower structure in which ball-joint bearings are provided, said protruding elements of said first set being mounted with a sliding fit in said ball-joint bearings so that the lower structure supports and maintains the boiler assembly through the medium of said protruding elements, said protruding elements being polygonal in cross-section and said ball-joint bearings having a corresponding polygonal bore, each bore comprising two plane bearing surfaces symmetrical in relation to a vertical plane, and

an upper structure forming a cover, rigidly fastened to the lower structure, said upper structure having an outer portion forming walls which [totally] enclose the steam generators to ensure mechanical and radiological shielding of said steam

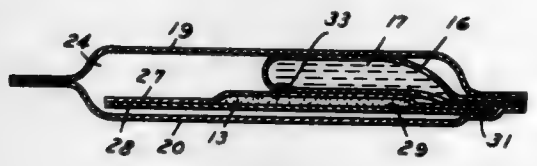
generators, said upper structure holding each steam generator at its upper end by a protruding element of the second set.

4,511,533

TEST KIT FOR PERFORMING A MEDICAL TEST

Philip A. Guadagno, and James R. M. Sanford, both of Vidor, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Filed Oct. 7, 1982, Ser. No. 433,301
Int. Cl.³ G01N *21/78, 33/72*
U.S. Cl. 422—61 **1 Claim**



1. A test kit for determining the presence of occult blood in fecal material comprising:

a package having a top sheet and a bottom sheet joined together about peripheral portions thereof to form a closed pocket therebetween;

an absorbent pad removeably disposed within the pocket having a first reagent retained within said absorbant pad, and said absorbant pad comprises a top layer of absorbant material being permeable to alcohol or water, a bottom layer of cellulosic material for supporting the top layer, said first reagent being a peroxygen agent disposed in a containment pocket formed between the bottom and top layers;

means for retaining a second reagent disposed in said closed pocket separate from said first reagent; and

said retaining means having a weakened portion being adapted to be ruptured to allow the second reagent to contact the first reagent for activating the absorbant pad, and said retaining means comprising a sealed plastic packet and said weakened portion being a score line formed in the sealed plastic packet located adjacent to the top layer of the absorbant pad and proximate the containment pocket, said second reagent being a solution of guaiac in alcohol, said plastic packet being rupturable at the score line when hand pressure is applied to the package wherein said solution of guaiac in alcohol being absorbed through the top layer of the absorbant pad to activate the peroxygen agent in the containment pocket prior to performing a test using said absorbant pad; and

said sealed plastic packet including an anchoring end which is firmly secured between the top and bottom sheets at a peripheral portion of said package and said absorbant pad including a tab portion which is also secured between the top and bottom sheets at said peripheral portion, and said tab portion including means for permitting removal of said absorbant pad from said package while said plastic packet remains within said package when said absorbant pad is removed.

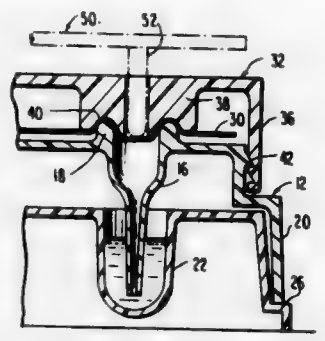
4,511,534

LIQUID TRANSFER DEVICE

John T. Bennett, Jr., 10087 Tyler Pl., Ijamsville, Md. 21754, and Jack E. Goodman, Germantown, Md., assignors to John T. Bennett, Ijamsville, Md.

Filed May 26, 1982, Ser. No. 382,335
Int. Cl.³ B01L *3/02*
U.S. Cl. 422—100 **4 Claims**

1. A liquid transfer device comprising pipette plate means having a plurality of apertures extending therethrough, an upstanding annular boss extending about each aperture on the upper surface of the pipette plate means, a plurality of hollow pipette members secured to the undersurface of said pipette plate means with each hollow pipette member aligned with a respective aperture in said pipette plate means and downwardly extending support means, an elastic membrane covering each aperture in said pipette plate means and disposed in engagement with each upstanding annular boss and retaining plate means having a plurality of pin receiving apertures ex-



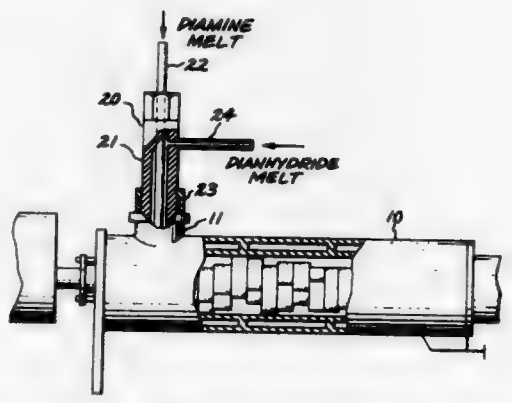
tending therethrough with a downwardly protruding boss surrounding each aperture in said retaining plate means and means for securing said pipette plate means and said retaining plate means together with the respective apertures in each plate disposed in alignment with each other and with said downwardly protruding bosses extending into the respective upstanding bosses on said pipette plate means to press said membrane into each aperture in said pipette plate means under tension to provide a liquid-tight seal about each aperture.

4,511,535

LIQUID MONOMER FEED PIPE FOR CONTINUOUS EXTRUSION POLYMERIZATION

Lawrence R. Schmidt, Schenectady, and Eric M. Lovgren, Westerlo, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,851
Int. Cl.³ B01F *15/02*
U.S. Cl. 422—137 **6 Claims**



1. An apparatus for the polymerization of highly reactive monomers in the liquid state comprising, (A) a feed pipe and (B) a barrel-type extruder reactor, where said feed pipe comprises

(a) a first hollow tube;

(b) a second hollow tube within said first hollow tube and extending below the first hollow tube into a feed region of the barrel of the extruder reactor and

(c) mounting means for positioning said hollow tube on the extruder reactor,

wherein the dimensions of (a) and (b) are sufficient to insure laminar flow of said liquid state monomers into said extruder reactor while satisfying the Reynolds number values in the following expression:

$$Re=[2R(1-\kappa)V\pi]/\mu$$

thereby achieving a Reynolds number of less than 2100, where R is the inner radius of the outer tube, κ is the ratio of the outside diameter of the inner tube to the inside diameter of the outer tube, V is the average fluid velocity, π is the fluid density at flow temperature, and μ is fluid viscosity at flow temperature.

4,511,536

CATALYTIC CONVERTER SECONDARY AIR SUPPLY PIPE SUPPORT

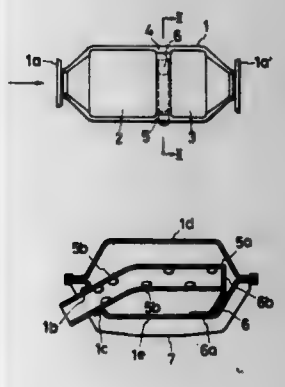
Kozi Shimozi, and Hitoshi Teshima, both of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 31, 1983, Ser. No. 480,814

Claims priority, application Japan, Jul. 24, 1982, 57-112677[U]

Int. Cl.³ F01N *3/30*

U.S. Cl. 422—171 **5 Claims**



1. In a catalytic converter for exhaust gases from an internal combustion engine, the converter including a casing having an exhaust gas inlet and an exhaust gas outlet disposed at opposite ends of the casing, at least two catalyst units disposed within the casing in series along the path of exhaust gas flow, the two catalyst units being separated by a space extending transversely to the path of exhaust gas flow, and a secondary air supply pipe having a downstream end portion inserted from the outside through means defining a hole provided in the casing into the transverse space, the inserted portion of said pipe having a plurality of openings for introducing secondary air into said space, wherein the improvement comprises:

the inserted portion of the secondary air supply pipe has a base portion that is sealingly secured to the casing in the vicinity of said hole provided in the casing and a downstream end located in said transverse space adjacent to, but spaced from, a portion of the casing opposite said hole, and

an elongated spring means in the form of an elongated flat metal strap having a first end and a second end joined by a constricted central portion supports the downstream end of the portion of the secondary air supply pipe inserted in the casing, such that the first end of the metal strap is secured to and sealingly covers said downstream end of the secondary air supply pipe and the second end of the metal strap is secured to the casing at a location offset laterally from the downstream end of the supply pipe such that the strap will yieldably bend in response to thermal expansion and contraction of the supply pipe with respect to the casing.

4,511,537

EXTRACTION ZONE

Robert J. Fiocco, Summit, and James D. Bushnell, Berkeley Heights, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 16, 1982, Ser. No. 450,350

Int. Cl.³ B01D *11/04*

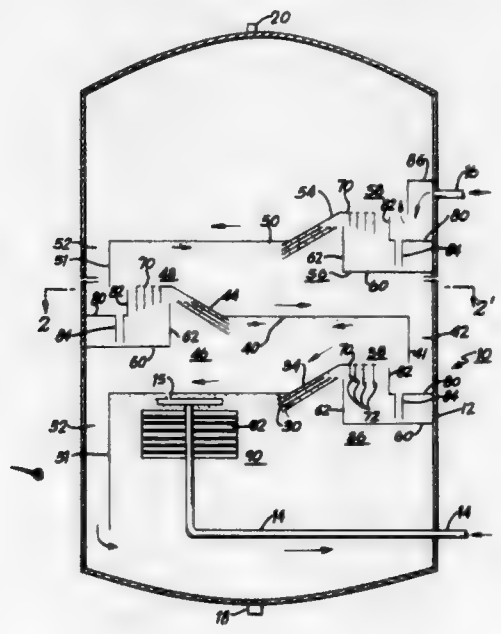
U.S. Cl. 422—256 **23 Claims**

1. An extraction zone for the separation of a feed having a first component and a second component by contacting the feed with a solvent having a density differing from that of the feed to thereby form a relatively light phase and a relatively heavy phase, said extraction zone of the type comprising:

A. a tower having vertically spaced-apart feed and solvent inlets and vertically spaced-apart light phase and heavy phase outlets;

B. a plurality of vertically spaced-apart trays disposed in said tower;

C. riser means associated with at least one of said trays adapted to provide a flow path for the light phase from



below said tray to above said tray, said riser means comprising a plurality of fluid conduits having restricted outlet orifices to convey the light phase without substantial dispersion of the light phase into droplets; and

D. downcomer means associated with at least one of said trays adapted to provide a flow path for the relatively heavy phase from above said tray to below said tray, whereby the light phase passes upwardly through the heavy phase, the light phase and the heavy phase exiting the tower through said respective outlets.

4,511,538

APPARATUS FOR STERILIZING PACKAGING CONTAINERS

Norbert Buchner, Winnenden, and Günther Vögele, Schönaich, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,330

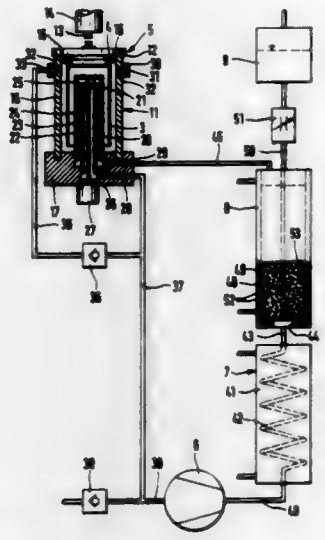
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150035

Int. Cl.³ A61L *2/20*; G05D *7/00*

U.S. Cl. 422—303 **4 Claims**

1. An apparatus for sterilizing packaging containers which comprises: a closable chamber, a closure means for closing said closable chamber, said closure means including means for suspending a container to be sterilized within said chamber, means for the preparation of a sterilizing mixture of hot air and sterilizing agent vapor, means for directing said mixture into said closable chamber containing at least one container, wherein said mixture is directed into said container along a linear axis, passes along the inner wall of said container and then along the outside of said container, a reversing valve means within said chamber for admitting a circulation of said

sterilizing mixture into said container during sterilization thereof and for directing said sterilization mixture back to said



means for preparation of said mixture during the open state of the chamber.

4,511,539

RECOVERY OF PRECIOUS METAL

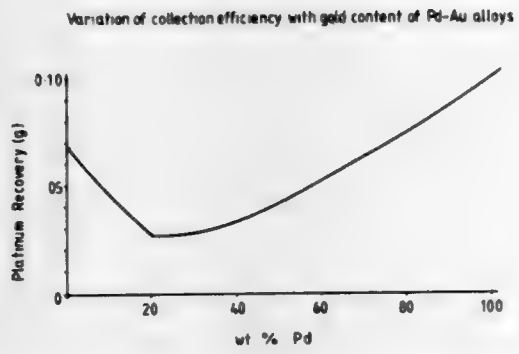
David J. Stephenson, Kempston, England, assignor to Johnson Matthey Public Limited Company, London, England

Continuation of Ser. No. 367,063, Apr. 9, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 590,546

Claims priority, application United Kingdom, Apr. 10, 1981, 8111374

Int. Cl.[3] **B01J** *19/04;* **C01B** *21/28;* **C22B** *11/02*

U.S. Cl. 422—311 **21 Claims**



1. A getter for recovery of precious metal lost from a precious metal-containing catalyst operating at elevated temperature which comprises a self-supporting or supported agglomeration or assemblage of unwoven, randomly oriented fibres of a length falling within the range of ½ to 4 inches, an irregular surface and made from a precious metal selected from the group consisting of ruthenium, rhodium, palladium, iridium, platinum, gold, silver and alloys containing one or more of the said metals, said fibres being produced by a melt extraction or melt spun process.

4,511,540

EXPLOITATION OF COPPER, NICKEL AND COBALT BY TREATING MANGANIFEROUS MATRIX OXIDIZED ORES

Charles Crussard, Neuilly; Pierre Maurel, Aix-en-Provence, and Jean Bonhomme, Domont, all of France, assignors to Pechiney Ugine Kuhlmann, Paris, France

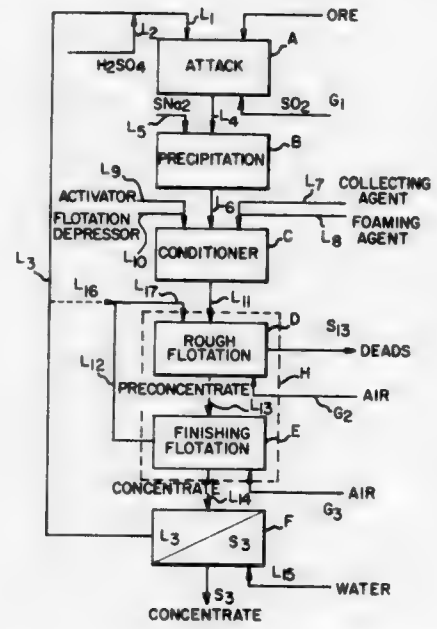
Filed Oct. 26, 1981, Ser. No. 315,349

Claims priority, application France, Oct. 29, 1980, 80 23422

Int. Cl.[3] **C01G** *3/12, 51/00, 53/11*

U.S. Cl. 423—26 **10 Claims**

1. In a process for treating oxidized ores with a manganiferous matrix containing small quantities of copper, nickel and cobalt for the purpose of separating these metals from the ore, wherein said ores are crushed, and then attacked by treatment with a sulfuric acid solution and sulfur dioxide, the improvement comprising the step of injecting said sulfur dioxide into said solution simultaneously with said attack, whereby the post-attack pH of the medium is less than 1.5, and thereafter



precipitating the copper, nickel and cobalt sulfides in the suspension resulting from the attack by introducing an alkaline sulfide, the pH of the precipitation medium being in the range of 0.5–4; and finally separating the aforementioned sulfides by flotation.

4,511,541

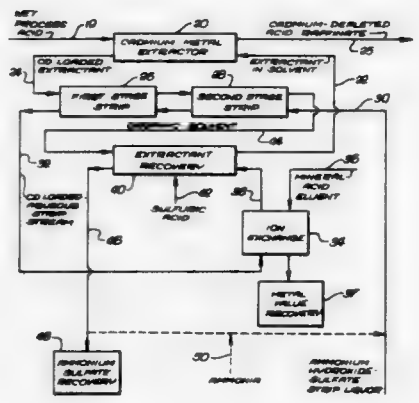
PROCESS FOR THE RECOVERY OF CADMIUM AND OTHER METALS FROM SOLUTION

Laurence W. Bierman; Samuel M. Polinsky; David A. Hempel, and Roger B. Humberger, all of Pocatello, Id., assignors to J. R. Simplot Company, Boise, Id.

Filed Dec. 2, 1982, Ser. No. 446,362

Int. Cl.[3] **C01G** *11/00*

U.S. Cl. 423—100 **22 Claims**



1. A process for selectively recovering the metal values of a metal from a carrier solution, comprising the steps of:

providing a carrier solution having metal values dissolved therein;

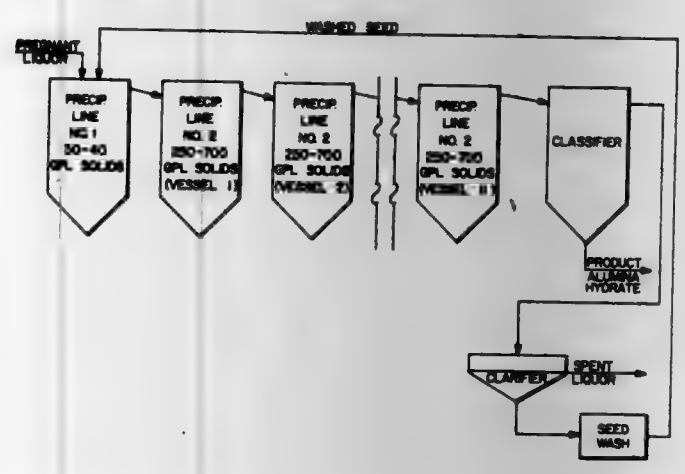
contacting the carrier solution with a thio-organophosphene extractant to extract the metal values as a solid precipitate; and

separating the precipitated metal values from the carrier solution.

4,511,542
BAYER PROCESS PRODUCTION OF ALUMINA HYDRATE

Joseph L. Anjier; Morris L. Roberson, both of Baton Rouge, and William E. Atchison, Greenwell Springs, all of La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed May 24, 1984, Ser. No. 613,701
Int. Cl.[3] C01F 7/14
U.S. Cl. 423—127 9 Claims



1. In the process of producing alumina hydrate from supersaturated Bayer process sodium aluminate liquors, the liquors being derived from the digestion of bauxite at elevated temperatures and pressures with a caustic medium, by seeding the liquors with an alumina hydrate seed charge to initiate precipitation of alumina hydrate from the supersaturated liquors, the improvement which comprises:

(a) introducing a supersaturated sodium aluminate liquor into one or more precipitation vessels defined as first precipitation stage, the liquor being characterized by an alumina (Al_2O_3) to caustic weight ratio (A/C) from about 0.575 to about 0.700, wherein the caustic concentration, expressed in grams/liter Na_2CO_3, is in the range from about 165 to about 300 grams/liter;

(b) seeding the liquor with an alumina hydrate seed charge characterized by a particle size distribution wherein up to about 50% by weight of the seed charge consists of particles having a particle size below about 44 microns, the quantity of the seed charge being so selected as to establish a seed charge surface area in relation to the liquor to be seeded within the range from about 1 to about 3 m^2/liter of liquor;

(c) maintaining the seeded liquor at a temperature below about 68° C. (155° F.) for an average time period from about 90 to about 300 minutes to allow precipitation of alumina hydrate and the generation of a slurry having a solids content in the range from about 30 to about 40 g/l;

(d) transferring the slurry into a second precipitation stage, where the slurry solids content is allowed to increase to about 250–700 g/l, without additional seeding, by accumulating solids from the first precipitation stage and maintaining the slurry of increased solids content in the second precipitation stage for a time period sufficient to allow agglomeration and growth of the solids within the temperature range from about 40° to about 55° C. (105°–131° F.);

(e) subjecting the slurry, having the significantly increased solids content, to a separation treatment to recover product alumina hydrate from the slurry, the product being characterized by an average particle size distribution wherein at least about 95% by weight of the particles have a size in excess of 44 microns, and a fine fraction, characterized by a particle size distribution wherein up to about 50% by weight of the particles have a size below about 44 microns and a liquor having an A/C ratio of about 0.375 or less;

(f) recovering the separated product alumina hydrate in a yield of about 80 g/l and above, based on the dissolved alumina (Al_2O_3) content of the supersaturated liquor subjected to precipitation in the first precipitation line and subjecting the fine fraction to a washing step to remove adhered impurities and recycling the washed fraction to the first precipitation stage as seed charge.

5. In the process of producing alumina hydrate from supersaturated Bayer process sodium aluminate liquors, the liquors being derived from the digestion of bauxite at elevated temperatures and pressures with a caustic medium, by seeding the liquors with an alumina hydrate seed charge to initiate precipitation of alumina hydrate from the supersaturated liquors, the improvement which comprises:

(a) introducing a supersaturated sodium aluminate liquor into one or more precipitation vessels defined as first precipitation stage, the liquor being characterized by an alumina (Al_2O_3) to caustic weight ratio (A/C) from about 0.575 to about 0.700, wherein the caustic concentration, expressed in grams/liter Na_2CO_3, is in the range from about 165 to about 300 grams/liter;

(b) seeding the liquor with an alumina hydrate seed charge characterized by a particle size distribution wherein up to about 50% by weight of the seed charge consists of particles having a particle size below about 44 microns, the quantity of the seed charge being so selected as to establish a seed charge surface area in relation to the liquor to be seeded within the range from about 1 to about 3 m^2/liter of liquor;

(c) maintaining the seeded liquor at a temperature below about 68° C. (155° F.) for an average time period from about 90 minutes to about 300 minutes to allow precipitation of alumina hydrate and the generation of a slurry having a solids content in the range from about 30 to about 40 g/l;

(d) transferring the slurry into a second precipitation stage, where the solids content of the slurry is allowed to accumulate to about 250–700 g/l and introducing additional seed into the slurry, the additional seed charge being so selected as to establish a seed surface area in relation to the slurry to be seeded within the range from about 5 to about 10 m^2/liter of slurry;

(e) maintaining the slurry for a time sufficient to allow agglomeration, growth, and cementation of the solids within the temperature range from about 40° to about 68° C.;

(f) subjecting the slurry to a size classification stage to separate product alumina hydrate, characterized by a particle size distribution wherein at least about 95% by weight of the particles have a size in excess of 44 microns, and a fine fraction which is subjected to a further classification stage to recover a relatively coarse alumina hydrate fraction which is employed as seed charge in the second precipitation stage and a fine fraction dispersed in the slurry;

(g) introducing the slurry containing the fine fraction into a clarifier-settler to provide a fine seed product which after washing is used as seed in the first precipitation stage and a spent liquor which is recycled to the Bayer process.

4,511,543
METHOD FOR BENEFICIATION OF PHOSPHATE ROCK

Yehuda Keren, Kiryat Motzkin; Shmuel Carmon, Arad; Meyer Behar, Beer-Sheva, and Shimshon Axelrod, Haifa, all of Israel, assignors to Negev Phosphates Ltd., Dimona, Israel

Filed Mar. 16, 1984, Ser. No. 590,278
Claims priority, application Israel, Mar. 14, 1983, 68400
Int. Cl.[3] C01F 1/00, 5/00
U.S. Cl. 423—167 8 Claims

1. A method for the beneficiation of a calcareous phosphate rock feed which is not magmatic by upgrading its P_2O_5 content and decreasing its cadmium content which method comprises the steps of:

(a) contacting, in a cyclone-type reactor, the phosphate rock feed with hot gases having a temperature between 700° C. and 1600° C. for a time period which is sufficient to separate fine particles comprised of calcite, lime and cadmium

from the heated phosphate rock, the time period being less than 60 seconds; and

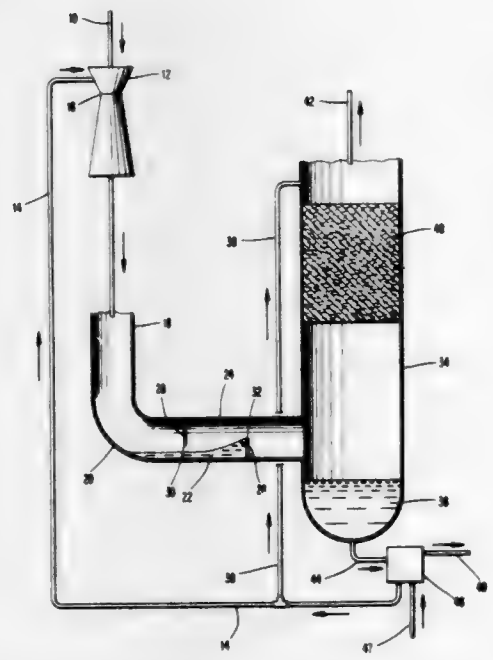
(b) removing the fine particles of step (a) by a classification method which separates solids on the basis of size to separate out an upgraded phosphate rock product having a higher P_2O_5 content and a lower cadmium content than in the phosphate rock feed.

4,511,544

HYDROGEN SULFIDE REMOVAL PROCESS

David E. Connell, El Sobrante, and Colin M. Chapman, Rodeo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1983, Ser. No. 537,859
Int. Cl.[3] B01D *53/34*
U.S. Cl. 423—224 8 Claims



1. An improved process for removing hydrogen sulfide from a gas stream comprising the steps of:

passing a gas stream containing gaseous hydrogen sulfide through a conduit;

introducing a liquid into the gas stream passing through the conduit which reacts with the hydrogen sulfide to produce elemental sulfur;

turning the flow of gas, liquid and elemental sulfur abruptly so that liquid and sulfur particles are partially separated from the gas;

collecting a pool of liquid and sulfur particles with an overflow baffle;

accelerating the gas between the edge of an underflow baffle and the free surface of the pool of liquid upstream of the overflow baffle to obtain gas/liquid contact and using gas momentum to create spray from the overflow baffle through which the gas stream also flows for additional gas/liquid contact;

separating the gas from the liquid and elemental sulfur; and

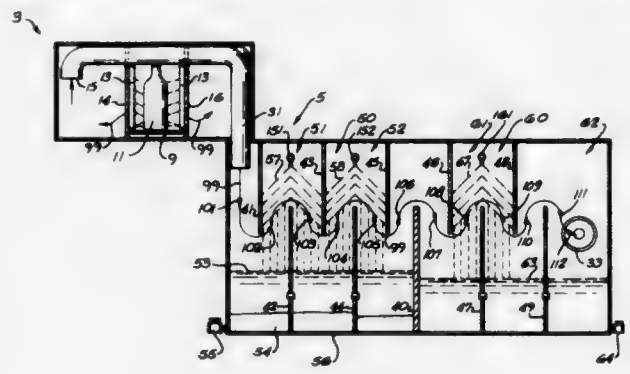
passing the gas through an absorber column in counterflow relationship with a second flow of the liquid for reaction with residual hydrogen sulfide.

4,511,545

PROCESS FOR TREATING OVERSPRAY GAS FROM GLASS COATING OPERATION WITH METAL RECOVERY

Carroll E. Stone, San Marino, and William F. C. Seifert, Lakewood, both of Calif., assignors to American Engineering Group International, Inc., Vernon, Calif.

Filed May 10, 1983, Ser. No. 493,362
Int. Cl.[3] B01D *53/34*
U.S. Cl. 423—240 10 Claims



1. A process for treating an overspray gas generated during a hot-end glass coating operation utilizing a metal halide, said process comprising the steps of:

collecting the overspray gas;

passing the overspray gas to a hot spray compartment;

spraying the overspray gas with a hot water spray to decompose the metal halide to a metal precipitate and a hydrogen halide gas;

collecting the metal precipitate and the hot water spray in a warm water collector;

passing the hydrogen halide gas and the overspray gas to a cold spray compartment;

spraying the hydrogen halide gas and the overspray gas with a cold water spray to form an acid;

diluting the acid to form a cold water effluent; and

discharging the overspray gas from the cold spray compartment.

4,511,546

LINEAR, SUBSTANTIALLY WATER-INSOLUBLE AMMONIUM POLYPHOSPHATES AND PROCESS FOR MAKING THEM

Klaus Schrödter, Cologne, and Alexander Maurer, Hürth, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 464,982
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208202
Int. Cl.[3] C01B *25/30*
U.S. Cl. 423—305 2 Claims

1. A process for making linear, substantially water-insoluble ammonium polyphosphates of the general formula $(NH_4PO_3)_{10\text{-}1000}$ by heating and continuously mixing phosphorus pentoxide and ammonium orthophosphate in a molar ratio of 1:0.9 to 1:1.1 in the presence of ammonia and tempering the resulting reaction product over a period of several hours at 200° to 400° C. in the presence of ammonia which comprises subjecting the phosphorus pentoxide and ammonium orthophosphate at 50° to 150° C. to the following successive operations which provide

(a) for them to be reacted with ammonia over a period of 5 to 15 minutes under an overpressure of 1–2 millibars,

(b) for them to be mixed under nitrogen for 10 to 60 minutes at atmospheric pressure while arresting the supply of ammonia,

(c) for them to be reacted with ammonia over a period of 1 to 3 hours under a pressure 1 to 5 millibars lower than atmospheric pressure, and tempering the reaction prod-

uct, the ammonia being used in an overall stoichiometric excess of at most 20 mol%.

4,511,547

PROCESS FOR PREPARING CRYSTALLINE ALUMINOSILICATE ZEOLITES USING A CARBOXYLIC ACID

Kazuyoshi Iwayama, Kamakura; Takao Kamano, Yokohama; Kuniyuki Tada, Kamakura, and Takehisa Inoue, Tokyo, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Continuation of Ser. No. 342,773, Jan. 26, 1982, abandoned. This application Dec. 22, 1983, Ser. No. 564,357
Claims priority, application Japan, Jan. 27, 1981, 56-9633
Int. Cl.³ C01B *33/28*
U.S. Cl. 423—329 **7 Claims**

1. A process for preparing a crystalline aluminosilicate zeolite, which process comprises reacting an aqueous reaction mixture containing a silica source, an alumina source, an alkali source and a single type of organic template, said single type of organic template consisting essentially of an organic compound having 3 to 6 carbon atoms and 1 to 3 carboxyl groups and not containing an aromatic ring, and the composition, in terms of mole ratios, of said reaction mixture being as follows:

SiO_2/Al_2O_3	above 20
H_2O/SiO_2	5 to 100
OH^-/SiO_2	0.05 to 0.40
A/Al_2O_3	0.10 to 200

wherein A represents said organic compound, said process being conducted at a crystallization temperature of 140°–180° C. to form a crystalline aluminosilicate zeolite having the following X-ray diffraction pattern:

d(Å)	100 I/Io
11.2 ± 0.2	S
10.1 ± 0.2	S
9.8 ± 0.2	M
6.37 ± 0.1	W
6.00 ± 0.1	W
5.71 ± 0.1	W
5.58 ± 0.1	W
4.37 ± 0.08	W
4.27 ± 0.08	W
3.86 ± 0.08	VS
3.82 ± 0.02	VS
3.75 ± 0.08	S
3.72 ± 0.08	S
3.66 ± 0.05	M
3.00 ± 0.05	M
2.00 ± 0.05	W

wherein VS=very strong, S=strong, M=medium strength and W=weak.

2. A process for preparing a crystalline aluminosilicate zeolite, which process comprises reacting an aqueous reaction mixture containing a silica source, an alumina source, an alkali source and a single type of organic template, said single type of organic template consisting essentially of an organic compound having 3 to 6 carbon atoms and 1 to 3 carboxyl groups and not containing an aromatic ring, and the composition, in terms of mole ratios, of said reaction mixture being as follows:

SiO_2/Al_2O_3	15 to 75
H_2O/SiO_2	10 to 50
OH^-/SiO_2	0.14 to 0.40
A/Al_2O_3	0.10 to 50

wherein A represents said organic compound, said process being conducted at a crystallization temperature of 140°–180° C. to form a crystalline aluminosilicate zeolite having the following X-ray diffraction pattern:

d(Å)	100 I/Io
13.6 ± 0.2	M
10.2 ± 0.2	W
9.0 ± 0.2	S
6.56 ± 0.1	S
6.40 ± 0.1	M
6.05 ± 0.1	W
5.80 ± 0.1	M
4.52 ± 0.08	M
3.99 ± 0.08	S
3.83 ± 0.08	W
3.76 ± 0.08	W
3.53 ± 0.05	W
3.46 ± 0.05	VS
3.38 ± 0.05	S
3.28 ± 0.05	W
3.20 ± 0.05	S
3.15 ± 0.05	W
2.89 ± 0.05	M
2.51 ± 0.05	W

wherein VS=very strong, S=strong, M=medium strength and W=weak.

4,511,548

AMMOXIDATION OF METHANOL TO PRODUCE HYDROGEN CYANIDE

T. G. Attig, Aurora, and R. K. Grasselli, Chagrin Falls, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 332,034, Dec. 18, 1981, abandoned. This application Aug. 10, 1983, Ser. No. 521,817
Int. Cl.³ C01C *3/02*
U.S. Cl. 423—376 **9 Claims**

1. A process for ammoxidizing a reactant selected from the group consisting of methanol, formaldehyde and dimethyl ether to produce HCN, said process comprising contacting said reactant, ammonia and oxygen at a temperature of 200° to 600° C. in the vapor phase with an oxide complex catalyst of the formula

$$R_pX_qT_rZ_sFe_tSb_uP_vO_x$$

wherein

R is one or more elements selected from Groups IA and IB of the Periodic Table and tl;

X is Bi, Te or mixtures thereof;

T is Cr, Co, Cu, Ce, Th, B, Sn or mixtures thereof; and

Z is W, Mo, V or mixtures thereof, and further

wherein

p=0 to 3,

q=0 to 1,

r=0 to 4,

s=0 to 3,

t=0 to 5,

u=5 to 10,

v=4 to 10, and

x is a number sufficient to satisfy the valence requirements of the other elements present,

and wherein u/v is ½ to 3/2.

4,511,549

PROCESS FOR THE ELIMINATION OF WASTE WATER PRODUCED UPON THE DESULFURIZATION OF COKING OVEN GAS BY MEANS OF WASH SOLUTION CONTAINING ORGANIC OXYGEN-CARRIER, WITH SIMULTANEOUS RECOVERY OF ELEMENTAL SULFUR

Peter Diemer; Werner Brake, and Rainer Dittmer, all of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,691

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127221

Int. Cl.³ C01B *17/05*

U.S. Cl. 423—574 R **9 Claims**

1. In a process for the elimination of H_2S-containing waste water produced upon the desulfurization of coking oven gas by means of a washing solution containing organic oxygen carrier with simultaneous recovery of elemental sulfur, of the type in which the waste water is decomposed in a combustion chamber in a reducing atmosphere at temperatures between about 1000° and 1100° C. and in the H_2S— and SO_2—containing exhaust gas in the combustion chamber the mole ratio of H_2S:SO_2 amounts to at least 2:1, the sulfur produced therewith is separated, the sensible heat of the exhaust gas is utilized for steam generation and finally the cooled and desulfurized exhaust gas is added to the coking oven gas before a pre-cooling thereof, the improvement comprising separating out sulfur from the washing solution in an oxidizer of a desulfurization plant and leading the separated sulfur into the combustion chamber together with the part of the washing solution which is discharged as waste water from the washing solution circulation, sulfur loading of the waste water amounting to up to about 370 kg sulfur per m^3 waste water.

4,511,550

1-(P-SUBSTITUTED OR UNSUBSTITUTED AMINOALKYL)PHENYLPROPANE-1,2-DIONE BIS(THIOSEMICARBAZONE) DERIVATIVES, AND THEIR PRODUCTION AND USE

Akira Yokoyama, Otsu; Yasushi Arano, Uji, and Takeo Hosotani, Kyoto, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

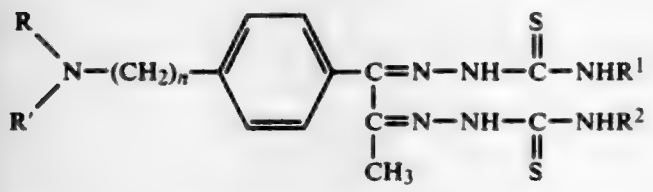
Filed Nov. 3, 1982, Ser. No. 438,776

Claims priority, application Japan, Sep. 7, 1982, 57-155627; Sep. 7, 1982, 57-155628; Sep. 8, 1982, 57-157372

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **35 Claims**

1. A compound of the formula:



wherein R, R', R^1 and R^2 are each a hydrogen atom or a C_1–C_3 alkyl group and n is an integer of 1 to 3.

4,511,551

METHOD AND COMPOSITION FOR THE DETECTION OF A PRECANCEROUS OR LEUKEMIC CONDITION IN MAMMALS

Nathan Cardarelli, and Bernadette Cardarelli, both of Akron, Ohio, assignors to Unique Technologies, Incorporated, Mogadore, Ohio

Filed Nov. 18, 1982, Ser. No. 442,819

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **11 Claims**

1. A diagnositic method for determining the presence of or predisposition to cancer in a mammel comprising:

providing a radioactive isotope of tin;

administering said isotope to a mammalian individual; and

thereafter measuring the accumulation of said isotope in the body of said individual by gamma emission;

wherein the lack of accumulation of said isotope in the lymphatic system and the thymus indicates the presence of or predisposition to cancer in said individual.

4,511,552

DEODORANT-DISPENSING PRODUCTS AND DISPENSING PROCESS

James P. Cox, 246 E. Bartlett Rd., Lynden, Wash. 98264

Filed Sep. 23, 1974, Ser. No. 508,172

Int. Cl.³ A61L *9/01*

U.S. Cl. 424—14 **35 Claims**

1. A solid deodorant-dispensing product in the form of a floatable solid body of substantial size which is durable and stably form-maintaining when in contact with water, comprising deodorant, release retardant for said deodorant, binder, and floatable material, said binder and floatable material being substantially insoluble in water and substantially nonreactive chemically with water.

4,511,553

COATING PROCESS AND AGENT FOR CARRYING OUT THE PROCESS

Werner Boesig, Garmisch-Partenkirchen, and Bernd Pritzwald-Stegmann, Edling, both of Fed. Rep. of Germany, assignors to Meggle Milchindustrie GmbH & Co. KG, Reitmehring, Fed. Rep. of Germany

Continuation of Ser. No. 181,570, Aug. 27, 1980, abandoned. This application Apr. 27, 1984, Ser. No. 604,406

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936040

Int. Cl.³ A61K *9/36*

U.S. Cl. 424—35 **5 Claims**

1. In a process for coating cores of pharmaceutical dragées, chocolate centers, and hazelnuts, with a saccharose coating agent; the improvement comprising mixing the saccharose with lactose in a proportion by weight of 90:10 to 50:50, and with water to form the coating agent, and thereafter coating the centers with the coating agent.

4,511,554

NON-STAINING ANTIPERSPIRANT STICK COMPOSITION

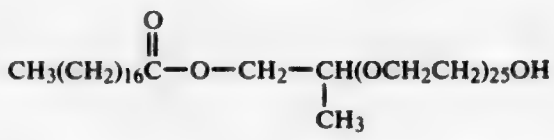
Navin Geria, Warren, and Chung T. Shin, Livingston, both of N.J., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 387,390, Jun. 11, 1982, abandoned, which is a continuation-in-part of Ser. No. 155,688, Jun. 2, 1980, abandoned. This application May 4, 1984, Ser. No. 606,864

Int. Cl.³ A61K *7/32, 7/34, 7/36, 7/38*

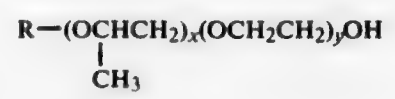
U.S. Cl. 424—65 **8 Claims**

1. An antiperspirant stick composition comprising a matrix and an antiperspirant quantity of active antiperspirant material distributed therein; said stick composition containing a mixture of polyoxyethylene(25)propylene glycol stearate of formula:



(I)

and a polyoxypropylene, polyoxyethylene ether of a long chain fatty alcohol of formula:



(II)

wherein:
R is a long chain fatty alcohol moiety;
x has an average value of from 3 to 10; and
y has an average value of from 2 to 50
said mixture being present in sufficient quantity to reduce the staining potential of said composition; wherein said polyoxyethylene(25)propylene glycol stearate is present in the range of from about 1% to about 15% by weight and said polyoxypropylene, polyoxyethylene ether of said fatty alcohol is present in the range of from about 2% to about 40% by weight; said percentages being based on the total weight of the stick composition.

4,511,555

HERBAL HAIR TREATMENT COMPOSITIONS

Valerie F. Faust, 4009 Glenwood Rd., Brooklyn, N.Y. 11210

Filed Sep. 27, 1982, Ser. No. 424,279
Int. Cl.³ A61K *7/06, 35/78;* C07G *17/00*
U.S. Cl. 424—74 **5 Claims**

1. An herbal hair treatment composition for controlling dandruff comprising a cosmetically acceptable carrier and a vegetable oil extract of sage, Indian hemp, and rosemary prepared by heating 24 oz. by wt. each of sage stems and leaves, Indian hemp leaves, and rosemary needles in 176 to 256 fluid oz. of a vegetable oil for about 3 to 5 hours at a temperature of about 100° to 190° F. with agitation, followed by filtering off residual solids from the extract.

4,511,556

INACTIVATION OF A LIPID VIRUS

Robert H. Purcell, Boyds, Md., and Stephen M. Feinstone, Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 10, 1982, Ser. No. 386,991
Int. Cl.³ A61K *35/14, 39/12, 31/02;* C12N *7/06*
U.S. Cl. 514—743 **21 Claims**

13. A method of inactivating viruses that contain essential lipids in a blood plasma product which comprises contacting said product with at least one halohydrocarbon treating agent selected from the group consisting of chloroform and a freon for about one-half to five hours at a temperature of about 4°–40° C. and at about 5–50% v/v and removing said treating agent.

16. The method of claim 13 wherein the virus is a hepatitis virus selected from hepatitis B virus and non-A, non-B hepatitis virus.

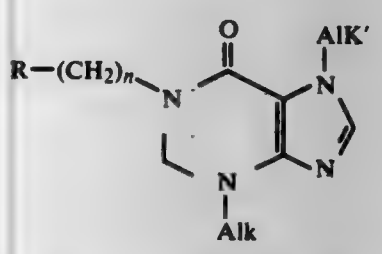
4,511,557

PHARMACEUTICAL COMPOSITION

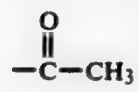
Kailash K. Gauri, Zur Waldburg 13, Lentföhrden, Fed. Rep. of Germany D 2359

Filed Aug. 20, 1982, Ser. No. 409,993
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1981, 3133445
Int. Cl.³ A61K *35/14*
U.S. Cl. 514—263 **8 Claims**

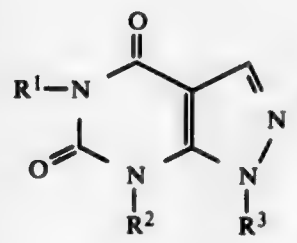
1. A composition for increasing oxygen supply in tissue of warm-blooded animals comprising at least one vasoactive compound selected from the group consisting of (a) calcium 2,5-dihydroxy-phenylsulfonate, (b) 3,7-dihydro-3,7-dialkyl-1H-purine-2,6-dione of the formulae



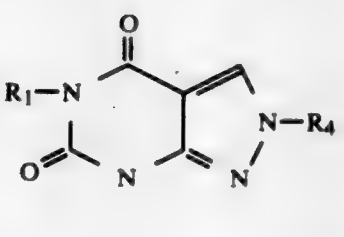
wherein AlK and AlK' are individually alkyl of 1 to 4 carbon atoms, n is an integer from 2 to 4 and R is selected from the group consisting of



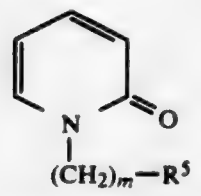
and —CH_2—CH_3, (c) a pyrazolo-[3,4-d]pyrimidines of the formulae



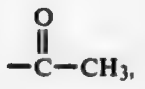
and



wherein R^1 and R^2 are individually selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms and alkylcarbonylalkyl of 4 to 8 carbon atoms, R^3 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and R^4 is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and alkenyl of 2 to 6 carbon atoms with the proviso that R^1 and R^2 are not both hydrogens, (d) a pyridone of the formula



wherein m is an integer from 2 to 4 and R^5 is selected from the group consisting of



—CH_2—CH_3 and —CH_2—CH_2—OH and (e) a compound selected from the group consisting of nicergoline, vincamine and dipyridamol and a potentiating amount of a lipid-free dialyzed concentrate of deproteinized, enzymatically hydrolyzed calf's blood with the blood constituents having a molecular weight less than 10,000.

4,511,558

ALPHA-LACTALBUMIN CONTRACEPTIVE

Barry D. Shur, Houston, Tex., assignor to University Patents, Inc., Westport, Conn.

Filed May 16, 1983, Ser. No. 495,035
Int. Cl.³ C12Q *1/54, 1/48;* C12N *9/96;* A61K *37/00, 31/00, 35/48;* A01N *1/02*
U.S. Cl. 514—8 **6 Claims**

1. A contraceptive composition suitable for introduction into the reproductive tract of a female mammal comprising a contraceptively effective amount of biologically-active alpha-lactalbumin contained in a biocompatible carrier material which will not de-activate the alpha-lactalbumin and which is suitable for administering the alpha-lactalbumin to the female mammal's reproductive tract in amounts sufficient to induce contraception.

4,511,559

BIOLOGICALLY ACTIVE POLYSACCHARIDE CONCENTRATES AND PROCESS FOR PRODUCTION OF PREPARATES CONTAINING SUCH SUBSTANCES

Kálmán Szendrei; Emil Minker; Zsuzsanna Rózsa, all of Szeged; Lehel Koch, and Lajos Wolf, both of Budapest, all of Hungary, assignors to Központi Váltó-és Hitelbank Rt. InnovációAlap, Budapest, Hungary

Filed Mar. 4, 1983, Ser. No. 472,060

Claims priority, application Hungary, Mar. 4, 1982, 660/82; Feb. 9, 1983, 660/82

Int. Cl.³ A61K *31/715*

U.S. Cl. 514—54 **8 Claims**

1. A polysaccharide composition obtained from a plant extract and having an anti-inflammatory activity, said polysaccharide being characterized by:

(a) having a molecular weight between 75,000 and 2,000,000;

(b) containing a maximum of 5% nitrogen;

(c) containing a maximum of 5% phosphorus expressed as P_2O_5;

(d) containing a maximum of 25% ash;

(e) containing a minimum of 30% reducing sugar;

(f) containing a minimum of 60% of total sugar after acidic hydrolysis, expressed as glucose;

(g) substantial freedom from substances with a molecular weight below 75,000 on analysis on a column filled with Sephadex G-75 molecular sieve;

(h) yielding members selected from the group consisting of glucose, galactose, xylose, rhamnose, arabinose and uronic acid and containing at least two of said members upon acid hydrolysis;

(i) exhibiting an anti-inflammatory activity of the same order as phenylbutazone or indomethacin as measured by the rat paw carrageenin oedema test; and

(k) their LD_{50} value in mouse per os is greater than 3000 mg/kg and in rat greater than 2000 mg/kg.

8. A method of treating an inflammatory condition which comprises administering to a susceptible subject an anti-inflammatory effective amount of a polysaccharide as defined in claim **1**.

4,511,560

ANTIBIOTIC SUBSTANCES DC-45, AND THEIR USE AS MEDICAMENTS

Fusao Tomita; Tatsuya Tamaoki; Kunikatsu Shirahata, all of Machida; Takao Iida, Tokyo; Makoto Morimoto, Numazu, and Kazuhisa Fujimoto, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

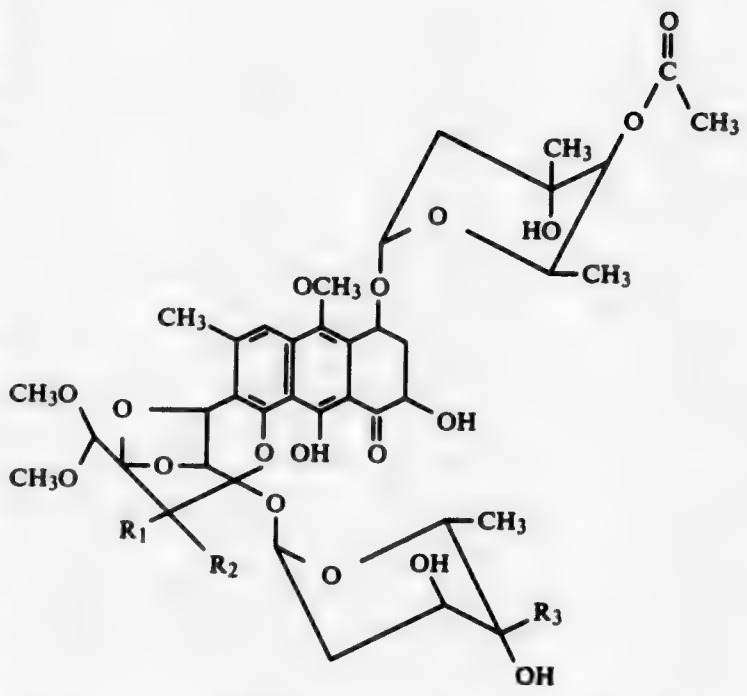
Continuation-in-part of Ser. No. 259,386, May 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 200,299, Oct. 24, 1980, abandoned. This application Aug. 30, 1982, Ser. No. 412,693

Claims priority, application Japan, Oct. 26, 1979, 54-137734

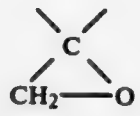
Int. Cl.³ A61K *31/71*; C07H *15/26*; C12P *19/56*

U.S. Cl. 514—27 **5 Claims**

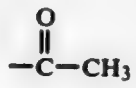
1. A substance having antibiotic activity and selected from the group consisting of DC-45-A, DC-45B_1 and DC-45-B_2 represented by the following formula:



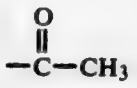
wherein (i) R_1 and R_2 together with the carbon atom therebetween represent the group



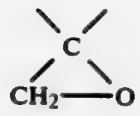
and R_3 represents



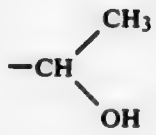
(designated DC-45-A); (ii) R_1 represents —OH, R_2 represents —CH_2OH and R_3 represents



(designated DC-45-B_1); or (iii) R_1 and R_2 together with the carbon atom therebetween represent the group



and R_3 represents



(designated DC-45-B_2) or a pharmaceutically acceptable salt thereof.

3. A pharmaceutical composition for use as an antibiotic comprising as active ingredients an effective amount of at least one substances as claimed in claim **1**, in association with a pharmacologically acceptable carrier or excipient.

4,511,561

LAXATIVE COMPOSITION COMPRISING PSYLLIUM SEEDS AND SENNA FRUITS

Rolf Madaus, Köln-Brück, and Klaus Görler, Bensberg-Refrath, both of Fed. Rep. of Germany, assignors to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 223,965, Jan. 12, 1981, abandoned, which is a continuation of Ser. No. 112,490, Jan. 16, 1980, abandoned. This application Jun. 22, 1983, Ser. No. 506,229
Claims priority, application Fed. Rep. of Germany,
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195.1 **24 Claims**

1. In a method of preparing a laxative based on pysllium seeds and senna fruits, the improvement comprising:

a. separately grinding the psyllium seeds and senna fruits;

b. mixing the separately ground pysllium seeds and senna fruits in a dry state into a dry mixture;

c. further mixing and rapidly and uniformly moistening the dry mixture with sufficient water to prevent substantial swelling of the ground pysllium seeds therein while allowing sufficient swelling thereof to form a mucilage which, from the further mixing, envelops the ground senna fruits, whereby to reduce the undesirable alteration of the senna fruit component and to retard release thereof; and

d. quickly granulating and drying the further mixed and moistened product to a product having residual moisture content of about 3.5% by weight of water in a manner preventing further substantial swelling of the pysllium therein,

whereby a laxative is obtained having longer lasting moderated action and substantially lessened undesirable side effects including convulsant and pain producing actions, upon use of the said laxative.

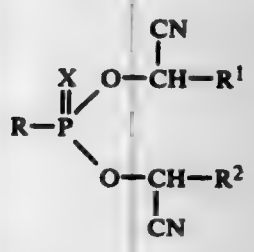
4,511,562

(THIO)(DITHIO-PHOSPHATES(PHOSPHONATES), PROCESSES FOR THEIR PREPARATION, AND THEIR USE IN PEST-COMBATING AGENTS

Bernd-Wieland Krüger, Wuppertal, and Wolfgang Behrenz, Overath, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 2, 1982, Ser. No. 404,249
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3131980; Jun. 7, 1982, 3221479
Int. Cl.³ A01N *57/00, 57/16, 57/26, 65/00*
U.S. Cl. 514—112 **11 Claims**

1. An arthropodicidal composition comprising an arthopodicidally effective amount of (1) a dicyanohydrin (thiono)(dithio)-phosphate or phosphonate of the formula



in which

X represents oxygen or sulphur,

R represents an optionally halogen-substituted radical selected from the group consisting of C_1 to C_5 alkyl, C_2 to C_5 alkenyl, C_2 to C_5 alkinyl, phenyl, benzyl, C_1 to C_5 alkoxy, phenoxy, benzyloxy, C_1 to C_5 alkylthio, phenylthio, benzylthio, mono- or di-(C_1 to C_5 alkyl)-amino, phenylamino and benzylamino, and

R^1 and R^2 are identical or different and individually represent a hydrogen atom, an alkyl radical which has 1 to 20 carbon atoms which is optionally substituted by halogen, cyano, C_1 to C_4 alkoxy or C_1 to C_4 alkylthio, an optionally halogen-substituted C_2 to C_5 alkenyl or C_2 to C_5 alkinyl radical, a C_3 to C_8 cycloalkyl radical which is optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxycarbonyl, phenoxybenzyloxycarbonyl or halogen, a phenyl-C_1 to C_4 alkyl radical which is optionally substituted by halogen, C_1 to C_4 alkyl or C_1 to C_4 alkoxy, a phenyl radical which is optionally substituted by halogen, cyano, nitro, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, trifluoromethyl or by optionally halogen-substituted C_1 or C_2 alkylenedioxy, a furyl, a thienyl or a pyridyl radical, and (2) an arthropodicidally effective amount of an insecticide selected from the group consisting of a

(A) carbamate,

(B) carboxylate,

(C) phosphate or phosphonate other than (1), and

(D) halogeno-(cyclo)-alkene, the weight ratio of (1):(2) being from about 1:100 to 100:1.

4,511,563

CLEAR ANALGESIC GELS WITH REDUCED TACKINESS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jul. 15, 1983, Ser. No. 514,293
Int. Cl.³ A61K *9/10, 31/60, 47/00*
U.S. Cl. 514—162 **8 Claims**

1. An analgesic gel which comprises

(a) from 5 to 15 parts of an analgesic compound;

(b) from 10 to 40 parts of a nonionic surfactant which forms a gel in water alone at about 15 to 30 percent by weight based upon the weight of the water plus the weight of the nonionic surfactant;

(c) from 5 to 40 parts of glycerin;

(d) from 40 to 75 parts of water; and

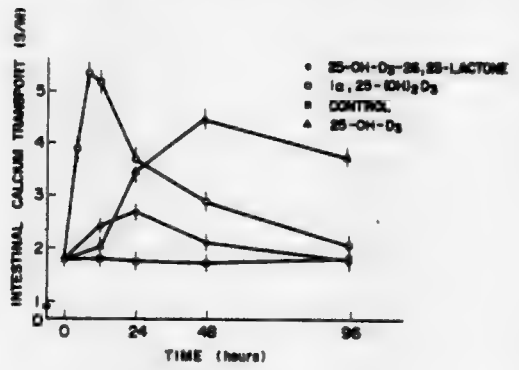
(e) optional ingredients (q.v.), said parts based upon 100 parts of the composition and provided that the weight ratio of nonionic surfactant to water is from 1:2 to 1:5.

4,511,564

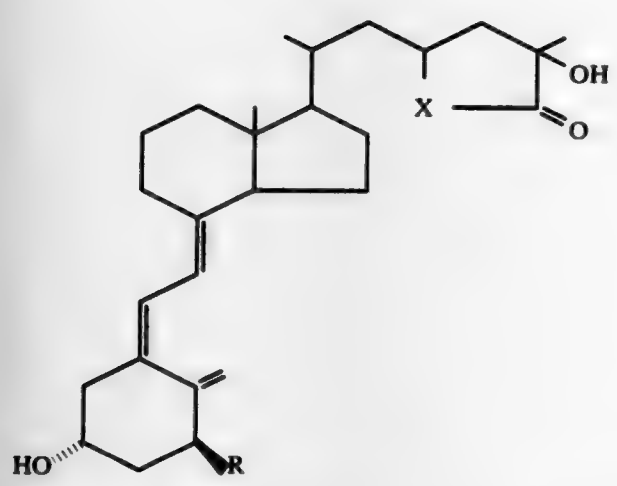
METHODS OF CONTROLLING THE CONCENTRATION OF CALCIUM IN THE SERUM OF WARM-BLOODED ANIMALS AND PHARMACEUTICAL COMPOSITIONS TO BE USED THEREFOR

Seiichi Ishizuka, Hino, and Junji Kubo, Kanagawa, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 29, 1982, Ser. No. 454,309
Claims priority, application Japan, Dec. 29, 1981, 56-213108; Dec. 29, 1981, 56-213109; Oct. 7, 1982, 57-175265
Int. Cl.³ A61K *31/59*
U.S. Cl. 514—167 **7 Claims**



1. A method to decrease the concentration of calcium in the serum of warm-blooded animals characterized by the administration of a pharmaceutically effective amount of 25-hydroxyvitamin D_3-26,23-lactones expressed by the following formula (I) to warm-blooded animals



(I)

wherein R indicates a hydrogen atom or a hydroxyl group and X indicates —O— or —O—O—.

4,511,565

7α-ACYLTHIO-1α,2α-METHYLENE-3-OXO-17α-PREGN-4-ENE-21,17-CARBOLACTONES, THEIR PRODUCTION AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Henry Laurent; Klaus Nickisch; Dieter Bittler; Rudolf Wiechert, and Wolfgang Losert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

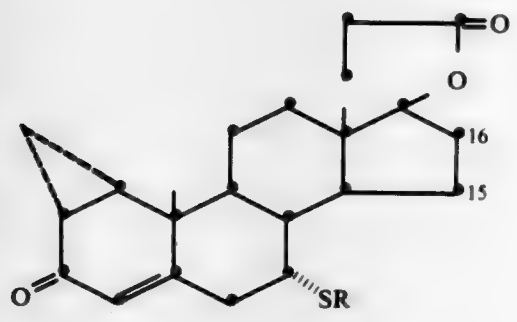
Filed Oct. 28, 1983, Ser. No. 546,352

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1982, 3240510

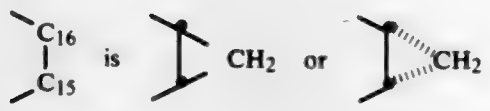
Int. Cl.³ C07J *1/00;* A61K *31/58*

U.S. Cl. 514—173 **13 Claims**

1. A 7α-acylthio-1α,2α-methylene-3-oxo-17α-pregn-4-ene-21,17-carbolactone of the formula



wherein



and

R is C_{2-4}-alkanoyl.

11. A method of achieving an antialdosterone effect in a patient in need of such treatment comprising administering to the patient an amount of a compound of claim 1 effective as an antialdosterone agent.

4,511,566

2-N-CYCLOALKYLMETHYL 3-OXO 5,6-DIARYL-as-TRIAZINES

Guy Pitet, Toulouse; Henri Cousse, and Gilbert Mouzin, both of Castres, all of France, assignors to Pierre Fabre S.A., Castres, France

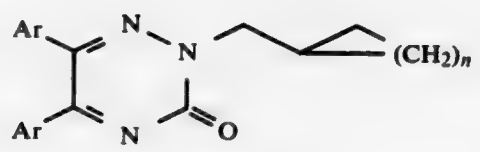
Filed Apr. 16, 1984, Ser. No. 600,473

Claims priority, application France, Apr. 14, 1983, 83 06107

Int. Cl.³ C07D *253/06, 401/04;* A61K *31/53*

U.S. Cl. 514—242 **14 Claims**

1. 2-N-cycloalkylmethyl 3-oxo 5-6-diaryl as-triazine having the formula



in which:

Ar represents phenyl, furyl, thienyl, or pyridyl, which may be substituted by a lower C_1 to C_4 alkoxy radical, and

n is a whole number having a value of 1 to 4.

9. A pharmaceutical composition useful for treating pain which contains an effective pain-relieving amount of at least one compound according to claim 1 together with a pharmaceutically-acceptable carrier.

4,511,567

6-[(4-SUBSTITUTED PIPERAZIN-L-YL)THIOCARBONYLAMINO]BENZAZOLES AND THEIR USE

Jean J. Gallay, Magden, and Ernst Schweizer, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 262,569, May 11, 1981, abandoned. This application Sep. 16, 1982, Ser. No. 418,955

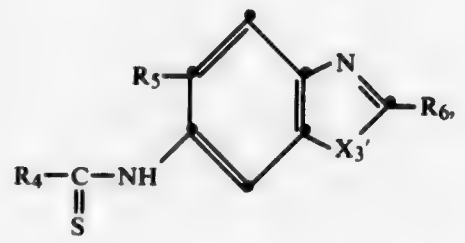
Claims priority, application Switzerland, May 22, 1980, 4016/80

Int. Cl.³ C07D *417/12, 413/12;* A61K *31/495*

U.S. Cl. 514—253 **25 Claims**

1. A compound of the formula

(Ia)



in which

R_4 represents 1-(4-lower alkyl)-piperazino having up to and including 4 C-atoms in the lower alkyl moiety, 1-(4-lower alkyl-4-oxido)-piperazino having up to and including 4 C-atoms in the lower alkyl moiety, or 1-[4-(hydroxy-lower alkyl)]-piperazino in which the hydroxy group is bonded in a position higher than the alpha-position and hydroxy-lower alkyl has up to and including 4 C-atoms and in which

R_5 represents hydrogen, lower alkyl having up to and including 4 C-atoms, lower alkoxy having up to and including 4 C-atoms, or halogen having an atomic number of up to and including 35,

X_3' represents oxy, thio, and

R_6 represents alpha-branched lower alkyl having up to and including 4 C-atoms or straight-chain lower alkyl having up to and including 4 C-atoms bonded by a secondary C-atom, or a salt thereof.

4,511,568

CNS-DEPRESSANT PYRAZOLOPYRIDINES

Thomas M. Bare, West Chester, and Anthony F. Heald, Glen Mills, both of Pa., assignors to ICI Americas Inc., Wilmington, Del.

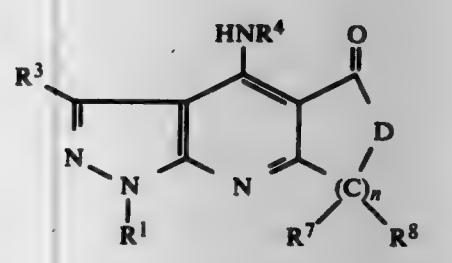
Filed Apr. 15, 1983, Ser. No. 485,191

Claims priority, application United Kingdom, May 12, 1982, 8213700; Jan. 21, 1983, 8301676

Int. Cl.³ A61K *31/44*; C07D *471/14, 491/147*

U.S. Cl. 514—293 **19 Claims**

1. A pyrazolopyridine compound of the following formula (I):



(I)

wherein

R^1 is straight or branched chain alkyl of about 1 to 10 carbons; straight or branched chain alkyl of about 1 to 10 carbons independently substituted by 1 or 2 of hydroxy, alkoxy of about 1 to 6 carbons or oxo or such an alkyl group substituted by at least 1 halogen; cycloalkyl of about 3 to 8 carbons; cycloalkylalkyl of about 4 to 12 carbons; alkenyl or alkynyl of about 3 to 10 carbons; aryl of about 6 to 10 carbons; aryl of about 6 to 10 carbons independently substituted by 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluorosubstituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons; arylalkyl of about 7 to 12 carbons; or (substituted aryl)alkyl of about 6 to 10 carbons in the aryl and about 1 to 4 carbons in the alkyl wherein the substitution is independently 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons;

R^3 is hydrogen; or straight or branched chain alkyl of about 1 to 6 carbons;

R^4 is hydrogen; straight or branched chain alkyl of about 1 to 10 carbons; hydroxy- or oxo-substituted alkyl of about 1 to 10 carbons; oxo-substituted alkyl of about 1 to 10 carbons substituted by an amino group of the formula $—NR^{17}R^{18}$ wherein R^{17} and R^{18} are independently hydrogen or alkyl of about 1 to 6 carbons; alkenyl or alkynyl of about 3 to 10 carbons; aryl of about 6 to 10 carbons; aryl of about 6 to 10 carbons independently substituted by 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 or alkoxy of about 1 to 6 carbons; arylalkyl of about 7 to 12 carbons; (substituted aryl)alkyl of about 6 to 10 carbons in the aryl and about 1 to 4 carbons in the alkyl wherein the substitution is independently 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons; aryl(oxo-substituted)alkyl of about 7 to 12 carbons; or (substituted aryl)oxo-substituted alkyl of about 6 to 10 carbons in the aryl and about 1 to 4 carbons in the alkyl wherein the substitution is independently one or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 carbons, or alkoxy of about 1 to 6 carbons;

D is oxygen or NR^6;

R^6 is hydrogen; straight or branched chain alkyl of about 1 to 10 carbons; straight or branched chain alkyl of about 1 to 10 carbons independently substituted by 1 or 2 of hydroxy, alkoxy of about 1 to 6 carbons or oxo or such an alkyl substituted by at least 1 halogen; cycloalkyl of about 3 to 8 carbons; cycloalkylalkyl of about 4 to 10 carbons; alkenyl or alkynyl of about 3 to 10 carbons; aryl of about 6 to 10 carbons; aryl of about 6 to 10 carbons independently substituted by 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, alkanoyl of about 1 to 6 carbons, halogenoalkyl of about 1 to 6 carbons, nitro, cyano, alkoxycarbonyl of about 2 to 7 carbons, amino, and mono- and di-alkylsubstituted amino groups of about 1 to 12 carbons; arylalkyl of about 7 to 10 carbons; (substituted aryl)alkyl of about 6 to 10 carbons in the aryl and about 1 to 4 carbons in the alkyl wherein the substitution is independently 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, alkanoyl of about 1 to 6 carbons, alkoxy of about 1 to 6 carbons, halogenoalkyl of about 1 to 6 carbons, nitro, cyano, alkoxycarbonyl of about 2 to 7 carbons, amino and mono- and di-alkylsubstituted amino groups of about 1 to 12 carbons; or aryl(oxo-substituted-)alkyl of about 7 to 12 carbons;

n is 1 or 2;

R^7 and R^8 are independently hydrogen; straight or branched chain alkyl of about 1 to 6 carbons; aryl of about 6 to 10 carbons; aryl of about 6 to 10 carbons independently substituted by 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluorosubstituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons; arylalkyl of about 7 to 12 carbons; or (substituted aryl)alkyl of about 6 to 10 carbons in the aryl and about 1 to 4 carbons in the alkyl wherein the substitution is independently 1 or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluorosubstituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons;

or a pharmaceutically-acceptable acid-addition salt thereof.

17. A pharmaceutical composition for the treatment of anxiety, relief of tension, suppression of convulsions, relaxation of skeletal muscles, and for inducing sleep comprising a pharmaceutically effective amount of a pyrazolopyridine compound of claim **1** in association with a pharmaceutical carrier.

4,511,569

TRICYCLIC LACTAMS AND DERIVATIVES USEFUL IN INCREASING CARDIAC CONTRACTILITY

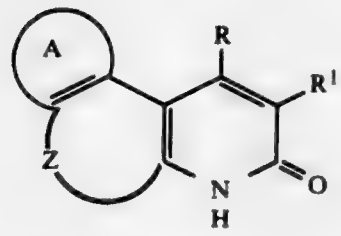
Elizabeth M. Smith, Verona; Ronald J. Doll, Maplewood, and Bernard R. Neustadt, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Aug. 26, 1982, Ser. No. 411,764

Int. Cl.³ A61K *31/47, 31/44*; C07D *471/04, 215/22*

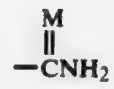
U.S. Cl. 514—290 **19 Claims**

1. A compound of the formula



wherein R is hydrogen or lower alkyl;

R^1 is hydroxy, lower alkoxy, cyano, halogen, $—NR^2R^3$, $—CONR^2R^3$, $—NHCOR^2$, $—COOR^2$ (wherein R^2 and R^3 are independently hydrogen, lower alkyl, or hydroxy lower alkyl) or



wherein M is sulfur or NH;

Z is selected from the group consisting of

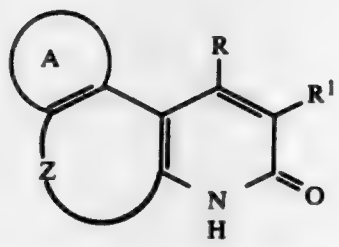
(
$(CH_2)_n$, —CH=CH—
(

wherein n is 1,2,3 or 4;

A is a substituted or unsubstituted benzo or pyrido ring which when substituted have 1 to 3 substituents independently selected from halogen, hydroxy, lower alkyl and lower alkoxy;

or a pharmaceutically acceptable salt thereof.

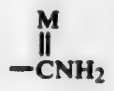
14. A method for increasing cardiac contractility in a patient requiring such treatment which comprises administering an amount effective in increasing cardiac contractility of a compound of the formula



wherein R is hydrogen or lower alkyl;

R^1 is hydrogen, hydroxy, lower alkoxy, cyano, lower alkyl, halogen.

$—^{NR2}R^3$, $—CONR^2R^3$,—$NHCOR^2$, $—COOR^2$ (wherein R^2 and R^3 are independently hydrogen, lower alkyl, or hydroxy lower alkyl) or



wherein M is sulfur or NH; with the proviso that R and R^1 are not both hydrogen;

Z is selected from the group consisting of

(
$(CH_2)_n$, —CH=CH—
(

wherein n is 1,2,3 or 4;

A is a substituted or unsubstituted benzo or pyrido ring which when substituted have 1 to 3 substituents independently selected from halogen, hydroxy, lower alkyl and lower alkoxy;

or a pharmaceutically acceptable salt thereof.

4,511,570

SENILE DEMENTIA TREATMENT

Ronald R. Tuttle, Miami, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Mar. 28, 1983, Ser. No. 479,638
Int. Cl.³ A61K *31/485*
U.S. Cl. 514—282 **4 Claims**

1. A method of orally treating a patient suffering from senile dementia which comprises the periodic oral delivery of a pharmaceutically effective amount of 6-methylene-6-desoxy-N-cyclopropylmethyl-14-hydroxydihydronormorphone to said patient to counter the progression of senile dementia in said subject.

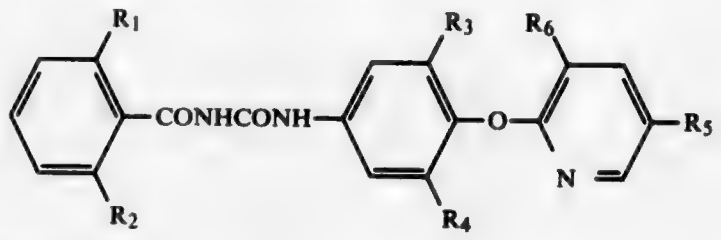
4,511,571

N-(2-PYRIDYLOXYPHENYL)-N'-BENZOYL UREAS, PESTICIDAL COMPOSITIONS CONTAINING SAME AND PESTICIDAL METHODS OF USE

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany; Josef Ehrenfreund, Allschwil, Switzerland; Pierre Martin, Rheinfelden, Switzerland, and Eginhard Steiner, Füllinsdorf, Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Oct. 12, 1982, Ser. No. 433,763
Claims priority, application Switzerland, Oct. 20, 1981, 6691/81; May 26, 1982, 3231/82; Sep. 3, 1982, 5248/82
Int. Cl.³ C07D *213/64*; A01N *43/40*
U.S. Cl. 514—351 **16 Claims**

1. A compound of the formula



wherein

each of R_1, R_2, R_3 and R_4 is independently selected from the group consisting of hydrogen, methyl, fluoro, chloro or bromo;

R_5 is a chlorinated ethyl substituent selected from the group consisting of 2-chloro-1,1,2,2-tetrafluoroethyl; 2,2-dichloro-1,1,2-trifluoroethyl; pentachloroethyl; 1,1-difluoro-2,2,2-trichloroethyl; 1,1-dichloroethyl; 2-chloroethyl; 2,2-dichloroethyl; and 2,2,2-trichloroethyl; and

R_6 is fluoro, chloro or bromo.

16. The method of combating insects and members of the order Acarina which comprises applying to them or to their locus an effective amount of a compound according to claim **1**.

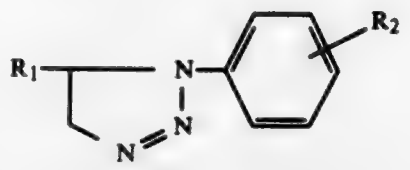
4,511,572

TRIAZOLINE ANTICONVULSANT DRUGS

Pankaja K. Kadaba, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Mar. 18, 1983, Ser. No. 476,792
Int. Cl.³ A61K *31/44, 31/41, 31/49*
U.S. Cl. 514—340 **13 Claims**

1. An anticonvulsant composition comprising as the active ingredient an anticonvulsive effective amount of a compound selected from the group consisting of those of the formulae:



wherein R_1 is 4-pyridyl, 2-pyridyl, and R_2 is hydrogen, m- or p-trifluoromethyl, p-methyl, p-ethyl, m- or p-chloro, m-nitro, p-bromo, p-fluoro or p-$COOR_3$ wherein R_3 is lower alkyl of 1 to 4 carbon atoms, and a carrier.

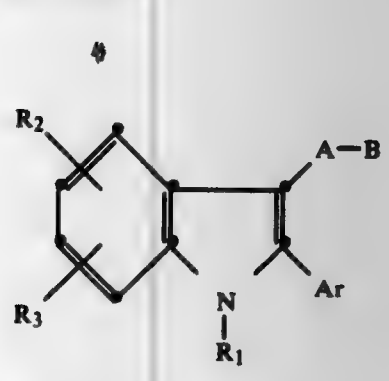
4,511,573

3-SUBSTITUTED-2-(HETEROARYL) INDOLES

Harris B. Renfroe, West Nyack, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 17, 1983, Ser. No. 495,367
Int. Cl.³ A61K *31/44*; C07D *401/04, 403/04*
U.S. Cl. 514—332 **20 Claims**

1. A compound of the formula



(I)

wherein

R_1 represents hydrogen or lower alkyl;

Ar represents 3-pyridyl or 1-imidazolyl, each unsubstituted or substituted by lower alkyl, carboxy, lower alkoxycarbonyl or carbamoyl;

R_2 and R_3 independently represent hydrogen, lower alkyl, halogen, trifluoromethyl, hydroxy, lower alkoxyl, carboxy-lower alkyl, lower alkoxycarbonyl-lower alkyl, carboxy, lower alkoxycarbonyl, or lower alkyl-(thio, sulfinyl or sulfonyl), or R_2 and R_3 together on adjacent carbon atoms represent lower alkylenedioxy;

A represents straight chain or branched alkylene of 3 to 12 carbon atoms in which the number of the carbon atoms separating the indole nucleus from group B is 3 to 12, straight chain or branched alkenylene of 2 to 12 carbon atoms, straight chain or branched alkynylene of 2 to 12 carbon atoms, lower alkylenephenyl-lower (alkylene or alkenylene,) lower alkylene-phenylene, lower alkylene-(thio or oxy)-lower alkylene, lower alkylene-(thio or oxy)-phenylene, or lower alkylene-phenylene(thio or oxy)-lower alkylene;

B represents carboxy, carboxy esterified in form of a pharmaceutically acceptable ester, carbamoyl, mono- or di-lower alkylcarbamoyl, hydroxymethyl, cyano, hydroxycarbamoyl, 5-tetrazolyl or formyl; the imidazolyl and pyridyl N-oxide thereof, or a pharmaceutically acceptable salt thereof.

4,511,574

N-(4-PHENYL-2-THIAZOLYL)CARBAMATE DERIVATIVES

Isao Sakano; Tatsuro Yokoyama; Seitaro Kajiya, all of Yokohama; Yutaka Okazaki; Hiroshi Tokuda, both of Mobara; Hiroshi Kawazura; Mikio Kumakura, both of Mobara; Takuo Nakano, and Akira Awaya, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Kagaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00003, § 371 Date Sep. 8, 1982, § 102(e) Date Sep. 8, 1982, PCT Pub. No. WO82/02384, PCT Pub. Date Jul. 22, 1982

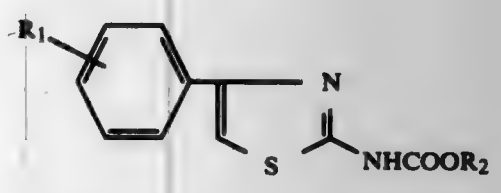
PCT Filed Jan. 8, 1982, Ser. No. 417,115

Claims priority, application Japan, Jan. 8, 1981, 56-714; May 18, 1981, 56-73520

Int. Cl.³ C07D *277/48;* A01K *31/425*

U.S. Cl. 514—371 **9 Claims**

1. An N-(4-phenyl-2-thiazolyl)carbamate compound represented by the formula:



wherein R_1 denotes a lower alkylsulfinyl, lower alkylsulfonyl, nitro or amino group, and R_2 represents a lower alkyl or halogeno-lower alkyl group.

4,511,575

ANTIDIABETIC PYRROLECARBOXYLIC ACIDS

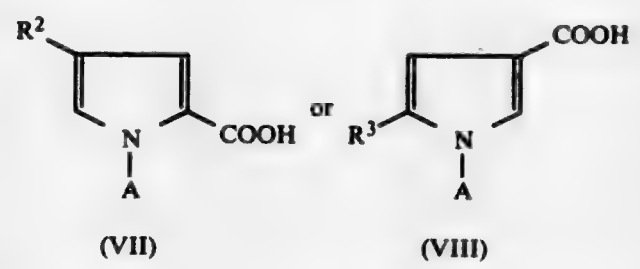
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 256,933, Apr. 23, 1981, Pat. No. 4,351,843, which is a division of Ser. No. 128,199, Mar. 7, 1980, Pat. No. 4,282,242. This application Aug. 9, 1982, Ser. No. 406,306

Int. Cl.³ A61K *31/40*

U.S. Cl. 514—423 **11 Claims**

1. A method of lowering the level of blood glucose in a hyperglycemic mammal which comprises administering to said hyperglycemic mammal a compound selected from the group consisting of pyrrole carboxylic acids having the formula



(VII) (VIII)

wherein

A is selected from the group consisting of hydrogen and (C_1-C_2)alkyl;

R^2 is selected from the group consisting of benzyl, phenyl, chloro, 4-chlorophenyl and 4-chlorophenoxy; and

R^3 is selected from the group consisting of benzyl and chloro;

or a pharmaceutically-acceptable salt thereof in an amount sufficient to lower said blood glucose level in said hyperglycemic mammal.

4,511,576

ANTIDIABETIC PYRROLECARBOXYLIC ACIDS

Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 256,933, Apr. 23, 1981, Pat. No. 4,351,843, which is a division of Ser. No. 128,199, Mar. 7, 1980, Pat. No. 4,282,242. This application Aug. 10, 1982, Ser. No. 406,921

Int. Cl.³ A61K *31/40*

U.S. Cl. 514—423 **5 Claims**

1. A method of lowering the level of blood glucose in a hyperglycemic mammal which comprises administering to said hyperglycemic mammal a compound selected from the group of pyrrole carboxylic acids consisting of:

4,5-bis(4-methoxyphenylthio)pyrrole-3-carboxylic acid;

1-methyl-4,5-bis(phenylthio)pyrrole-2-carboxylic acid;

4-methyl-5-benzoylpyrrole-3-carboxylic acid;

4-phenyl-5-benzoylpyrrole-3-carboxylic acid;

4-bromo-5-benzoylpyrrole-2-carboxylic acid;

5-bromo-4-benzoylpyrrole-2-carboxylic acid; and

1-methyl-4,5-dibromopyrrole-2-carboxylic acid;

or a pharmaceutically-acceptable salt thereof, in an amount sufficient to lower said blood glucose level in said hyperglycemic mammal.

4,511,577

DERIVATIVES OF BENZOIC ACID

Graziella Bruno, Milan, Italy, assignor to Media Research s.r.l., Milan, Italy

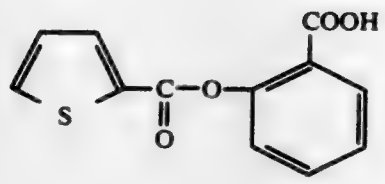
Filed Mar. 13, 1984, Ser. No. 589,126

Claims priority, application Italy, Mar. 23, 1983, 20235 A/83

Int. Cl.³ A61K *31/38;* C07D *333/24*

U.S. Cl. 514—448 **4 Claims**

1. 2-(2-Thenoyloxy)-benzoic acid of formula (I):



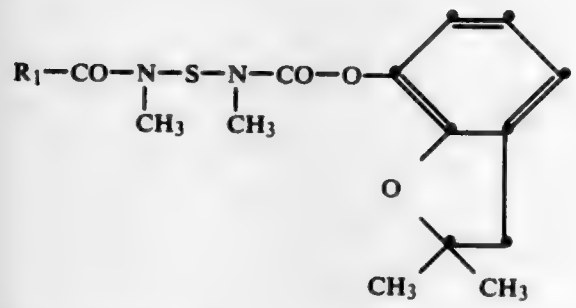
and pharmaceutically acceptable salts thereof.

4,511,578
ACYCLAMIDOSULFENYLCARBAMATES FOR CONTROLLING INSECTS

Jozef Drabek, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 23, 1983, Ser. No. 478,004
Claims priority, application Switzerland, Mar. 31, 1982, 1981/82
Int. Cl.[3] A01N *47/24*; C07D *307/86*
U.S. Cl. 514—469 **16 Claims**

1. A compound of the formula



wherein R_1 is straight-chain or branched-chain C_2-C_4-alkyl or cyclopropyl.

14. A method of controlling insects, which method comprises applying thereto or to the locus thereof an insecticidally effective amount of a compound according to claim 1.

4,511,579
PEST REPELLANT

George L. Rotramel; Daniel P. Veilleux, both of Raleigh, and Joseph L. Allen, Durham, all of N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 248,247, Mar. 27, 1981, abandoned. This application Nov. 8, 1983, Ser. No. 549,747
Int. Cl.[3] A01N *47/10*
U.S. Cl. 514—490 **6 Claims**

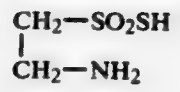
1. A process for reducing damage to agriculturally important products by bird or mammal pests, by including an aversion response to said products in said pests, which comprises contacting said pests while in their natural habitat with a bird or mammal aversion amount of at least one trialkylphenyl alkylcarbamate, wherein said alkyls have from 1-4 carbon atoms which has been applied to said products.

4,511,580
DRUG FOR STIMULATING HEPATIC CELL HOMEOSTASIS AND FOR RESTORING THE FUNCTIONAL CAPACITY OF THE HEPATOCYTES

René Moreuil, Paris, France, assignor to Arconthorn Limited, London, England

Continuation of Ser. No. 439,181, Nov. 4, 1982,. This application Jun. 21, 1984, Ser. No. 623,215
Int. Cl.[3] A61K *31/185*
U.S. Cl. 514—578 **3 Claims**

1. A pharmaceutical composition adapted for internal administration to a host comprising amino-ethanethiosulphonic acid of the formula:



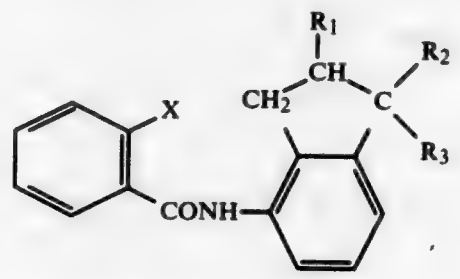
or a pharmaceutically acceptable salt thereof, and a non-toxic pharmaceutically acceptable carrier, diluent or excipient.

4,511,581
FUNGICIDAL INDANYLBENZAMIDE

Tadashi Ohsumi, Fanabashi; Satoru Inoue, Takarazuka, and Kiyoto Maeda, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

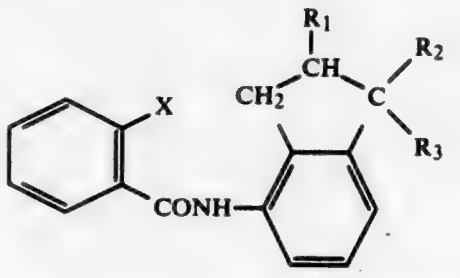
Filed Feb. 8, 1983, Ser. No. 464,864
Claims priority, application Japan, Feb. 10, 1982, 57-20321
Int. Cl.[3] A01N *37/18*; C07C *103/76*
U.S. Cl. 514—617 **10 Claims**

1. A compound of the formula:



wherein X is a lower alkyl, nitro or trifluoromethyl group or a halogen atom, and R_1, R_2, and R_3, which are same or different, each represents a hydrogen atom or a lower alkyl group.

2. A fungicidal composition which comprises a fungicidal amount of a compound of the formula:



wherein X is a lower alkyl, nitro or trifluoromethyl group or a halogen atom, and R_1, R_2, and R_3, which are same or different, each represents a hydrogen atom or a lower alkyl group, and a carrier or diluent.

4,511,582
PHENANTHRENE DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Jun. 1, 1983, Ser. No. 499,856
Int. Cl.[3] A01N *33/02*; C07C *67/03*
U.S. Cl. 514—654 **5 Claims**

1. A method of reducing the number of susceptible tumor cells which comprises contacting said tumor cells with an effective amount of 2-methyl-2-((9-phenanthrylmethyl)amino-1,3-propanediol, or a pharmaceutically acceptable salt thereof, or 2-methyl-2-((2-phenanthyrlmethyl)amino)-1,3-propanediol, or a pharmaceutically acceptable salt thereof.

2. A compound which is 2-methyl-2-((9-phenanthrylmethyl-)amino)-1,3-propanediol or a C_{1-6} alkylcarboxylic acid ester derived therefrom or a pharmaceutically acceptable acid addition salt thereof.

4,511,583

FRIED FOODS OF REDUCED OIL ABSORPTION AND METHODS OF PREPARATION EMPLOYING SPRAY OF FILM FORMING AGENT

Sharon Olson, St. Paul, and Robert Zoss, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jul. 18, 1983, Ser. No. 514,982
Int. Cl.[3] A23L *1/01*
U.S. Cl. 426—89 22 Claims

1. A process for preparing a battered and breaded fried food item with reduced oil absorption, wherein the weight ratio of combined batter and breading to said food item ranges from about 0.25:1 to 1.2:1, comprising:

A. applying to said battered and breaded food item an aqueous solution containing from about 10% to 35% by weight of the solution of a film forming agent in amounts such that the weight ratio of said agent on a dry basis to said food item ranges from about 0.02:1 to 0.06:1, to form a coated food item, and

B. frying said coated food item in an edible fatty triglyceride having a temperature ranging from about 325° F. to 405° F. for about 15 to 40 seconds to form a fried breaded food item having an oil content of less than about 16% by weight.

4,511,584

PARTICULATE FOOD ACIDULANT

Phillip J. Percel, Parma, and Douglas W. Perkins, Medina, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed May 31, 1983, Ser. No. 499,353
Int. Cl.[3] A23L *1/221*
U.S. Cl. 426—99 11 Claims

1. A particulate food acidulant consisting essentially of lactic acid plated onto particulate calcium lactate carrier in a weight ratio of lactic acid (as anhydrous) to carrier of about 1:1 to about 3:2, and a water insoluble hard, edible, lipid coating substantially encapsulating said carrier and acid in an amount effective to prevent substantial release of acid from said acidulant before said lipid coating melts.

4,511,585

STORAGE STABLE, READY-TO-EAT BAKED GOODS

Jack R. Durst, Champlin, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 388,069, Jun. 14, 1982, Pat. No. 4,456,625. This application May 6, 1983, Ser. No. 489,661
The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.
Int. Cl.[3] A21D *10/02, 13/00*
U.S. Cl. 426—106 33 Claims

1. A lower moisture, storage stable, crumb-structured, ready-to-eat, cooked good, said cooked good being made from a flour containing base batter or dough mix, water, and about 5% to about 15% by weight of said cooked good of a liquid edible polyhydric alcohol said batter or dough mix having a water activity level sufficiently low to provide a high quality long shelf life cooked good:

the water activity level (AW) of said cooked good being equal to or less than 0.85,

the ratio of water of said cooked good to liquid polyhydric alcohol being equal to or less than 4.8, and

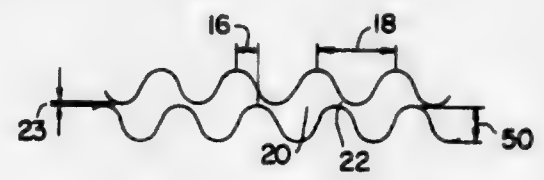
the ratio of starch present in the flour of said cooked good to liquid polyhydric alcohol being equal to or less than 3.95.

4,511,586

POTATO PRODUCT WITH OPPOSITE PHASE-SHIFTED CORRUGATIONS OF THE SAME FREQUENCY AND AMPLITUDE

Margaret Fitzwater, Lewisville, and Lewis C. Keller, Watauga, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Aug. 3, 1983, Ser. No. 519,986
Int. Cl.[3] A23L *1/212, 1/216;* A23P *1/00*
U.S. Cl. 426—144 6 Claims



1. A food product comprising a potato slice or potato dough sheet having substantially parallel corrugations on opposite surfaces thereof, said corrugations having substantially the same frequency and amplitude, wherein the corrugations on one surface are phase shifted with respect to the corrugations on the opposite surface by about ¼ of the pitch distance of the corrugations.

4,511,587

ENZYME INACTIVATED HOPS

Robert C. Menary, Taroona, and Peter E. Doe, Sandy Bay, both of Australia, assignors to The University of Tasmania, Tasmania, Australia

Filed Jan. 5, 1983, Ser. No. 455,737
Claims priority, application Australia, Jan. 7, 1982, PF2201
Int. Cl.[3] C12C *3/00;* A23L *3/16, 3/34*
U.S. Cl. 426—271 2 Claims

1. A process for treating hops which comprises heating fresh hops to a temperature of at least 80° C. and maintaining said hops at a temperature of at least 80° C. for one to two hours to reduce or halt α-acid oxidase enzyme activity in said hops.

2. A process for treating hops according to claim 1 which further comprises mixing said hops with ethylene-diamine-tetra-acetic acid in an amount effective to halt or significantly reduce the activity of α-acid oxidase enzyme.

4,511,588

PRESERVABLE GRANULAR TOFU (SOYBEAN CURD) AND THE PROCESS OF PRODUCTION THEREOF

Shiro Kudo, Shizuoka, and Mitsuyoshi Hayashi, Nagano, both of Japan, assignors to Asahi-Matsu Foods Inc., Nagano and Mitsubishi Corporation, Tokyo, both of, Japan

Filed Apr. 20, 1983, Ser. No. 486,702
Int. Cl.[3] A23J *3/00;* A23L *1/20*
U.S. Cl. 426—302 4 Claims

1. A process for producing granular tofu free from water liberation comprising preparing soybean milk or soybean protein paste from whole or defatted soybeans, adding to said milk or paste a coagulator selected from the group consisting of calcium salts, magnesium salts and glucono-delta-lactone, pouring the mixture into heated oil at temperature between above 75° C. and below 140° C. to obtain a granular particulate product having a surface coated with oily film.

4,511,589

PASTEURIZATION OF EGGS

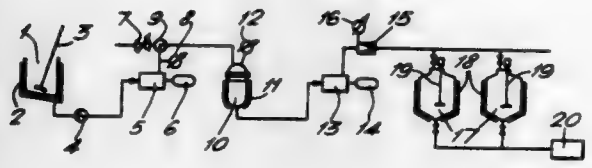
Yvan Padly, La Tour-de-Peilz, and Roger Borgeaud, Vevey, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Apr. 8, 1983, Ser. No. 483,129
Int. Cl.[3] A23L *3/00;* F28F *17/00*
U.S. Cl. 426—521 8 Claims

1. A process for the continuous pasteurisation of eggs comprising:

(a) passing liquid egg material under a superatmospheric operating pressure through a first scraped surface heat exchanger to raise the temperature of the egg material to the pasteurisation temperature;

(b) passing the heated egg material to a heated holding vessel under pressure of a sterile inert gas for a period of time



which ensures pasteurisation but which is sufficiently short to ensure that substantially no coagulation occurs; and then

(c) passing the pasteurised egg material through a second scraped surface heat exchanger where it is cooled to a temperature below 10° C. over a period of time of less than 5 minutes.

4,511,590

LOW-LACTOSE, LOW-GALACTOSE IMITATION MILK PRODUCT

Marion J. Caldwell, 510 Palo Verde Dr., Leesburg, Fla. 32748

Continuation-in-part of Ser. No. 303,043, Sep. 17, 1981, abandoned. This application May 17, 1983, Ser. No. 495,441

Int. Cl.³ A23C *9/00, 9/15*

U.S. Cl. 426—580 **13 Claims**

1. A low-lactose, low-galactose imitation milk product for human consumption wherein the essential ingredients other than added water are: a major quantity of from about 12% to about 18% by weight of undenatured, washed and drained cottage cheese curds; from about 1.0% to about 5.0% by weight of an edible fat or oil; a minor quantity of a substance providing nutritional calcium; a minor quantity of a suspending substance that serves as a stabilizer or emulsifier in the presence of added water; a minor quantity of a sweetener other than lactose or galactose; and a minor quantity of at least one additional palatability-imparting substance.

4,511,591

SPREADABLE FAT PRODUCT AND METHOD FOR ITS PRODUCTION

Kenneth L. Andersson, Sandby, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

PCT No. PCT/SE82/00210, § 371 Date Feb. 9, 1983, § 102(e) Date Feb. 9, 1983, PCT Pub. No. WO83/00005, PCT Pub. Date Jan. 6, 1983

PCT Filed Jun. 11, 1982, Ser. No. 467,485

Claims priority, application Sweden, Jun. 25, 1981, 8103998

Int. Cl.³ A23D *3/00, 3/02*

U.S. Cl. 426—603 **8 Claims**

3. A method of manufacturing a fat product which is spreadable at refrigerator temperature and which is free of additives in the form of stabilizing agents and emulsifiers, said method comprising the steps of pasteurizing milk at 85–95° C., cooling and then ultra-filtrating the pasteurized milk to provide a protein concentrate, mixing said concentrate with fat and water to form a mixture containing 35–55% fat, 4–7% protein and 41–58% water, and forming an oil-in-water emulsion by subjecting said mixture to homogenization, said homogenization being sufficient to reduce said fat to spheres each smaller than 10μ and surrounded by shells of said protein to stabilize the emulsion.

4,511,592

PREPARATION OF ACIDULATED MEAT EMULSIONS

Phillip J. Percel, Parma; Douglas W. Perkins, Medina, and Anthony V. Petricca, Rocky River, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 356,940, Mar. 11, 1982,. This application Jun. 20, 1984, Ser. No. 622,506

Int. Cl.³ A23L *1/31*

U.S. Cl. 426—646 **5 Claims**

1. A method for preparation of acidulated meat emulsions comprising the steps of

(a) emulsifying a meat source;

(b) mixing with said meat source during emulsification a preserving and/or texturizing amount of a particulate meat acidulant consisting essentially of a solid acid core particle having a continuous, substantially impervious coating thereon, said coating being a water soluble, film-forming, edible, bland, starch hydrolysate or protein, said starch hydrolysate or protein having a water solubility sufficient to produce a pumpable solution at about 20–40% solids concentration, based on solution weight;

said acidulant being substantially non-agglomerated and having a particle size not substantially in excess of about 20 mesh, U.S. Standard Sieve;

the ratio of said solid acid core particle to said coating being in the range of about 90–50:10–50;

said coating being spray applied to said solid acid core particle in a fluid bed spray applicator.

4,511,593

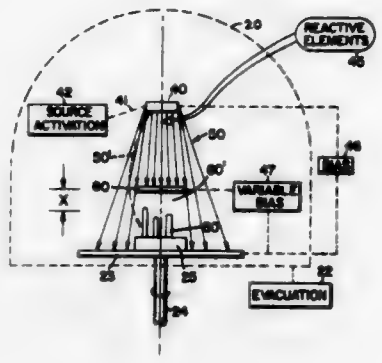
VAPOR DEPOSITION APPARATUS AND METHOD

Henry E. Brandolf, Inver Grove Heights, Minn., assignor to Multi-Arc Vacuum Systems Inc., Saint Paul, Minn.

Filed Jan. 17, 1983, Ser. No. 458,011

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—37 **21 Claims**



1. Vapor deposition apparatus, comprising:

(a) evacuation chamber means defining a deposition chamber suitable for evacuation of the chamber down to at least 2×10^{-3} torr.;

(b) means disposed in said chamber for supplying a source of coating material;

(c) means operative upon said source of coating material for converting said source material into a plasma of particles eminating outwardly from said source;

(d) means for supporting a substrate of the type having at least one surface area suitable for receiving and for being coated by said plasma of coating material;

(e) deflection shield means operatively disposed in said chamber between said source and said substrate supporting means for blocking movement of a majority of those said plasma particles traveling in a line-of-sight direction from said source to said supported substrate, wherein said blocked plasma particles strike and impart kinetic energy to said shield means, thereby heating said shield means; whereby said one substrate surface is primarily coated by said plasma particles that diffuse around said shield means; and

(f) wherein said shield means and said substrate support

means are spaced and arranged relative to one another such that said heat from said shield means radiates to and operatively heats said supported substrate.

19. A method of vapor depositing a coating material on a substrate surface within a vacuum chamber in a manner which preserves pre-coating lap finish dimensions of the substrate surface, comprising the steps of:

(a) introducing a coating source material and a substrate to be coated by said source material into a vapor deposition chamber;

(b) placing a shield member within said vacuum chamber between said source material and said substrate such that said substrate lies in a shadow region of said shield member formed in a line of sight direction from said source;

(c) evacuating said chamber to a pressure of at least 2×10^{-3} torr;

(d) generating a plasma of particles from said coating source material, said plasma particles comprising at least atoms, ions, molecules and agglomerates of molecules of said coating source material;

(e) directing a high energy stream of said plasma particles outward from said source material and toward said shield;

(f) bombarding said shield member with said high energy plasma stream particles, thereby imparting kinetic energy which heats said shield member, and thereby blocking movement of a majority of said agglomerates of molecules traveling in a line of sight direction from said source from reaching said substrate;

(g) heating said substrate by said kinetic energy created heat radiated from said shield member; and

(h) coating a surface of said substrate primarily with said atoms and molecules of said plasma stream that diffuse around said shield means in a manner that substantially preserves the pre-coating lap finish dimensions of said coating surface.

4,511,594

SYSTEM OF MANUFACTURING MAGNETIC RECORDING MEDIA

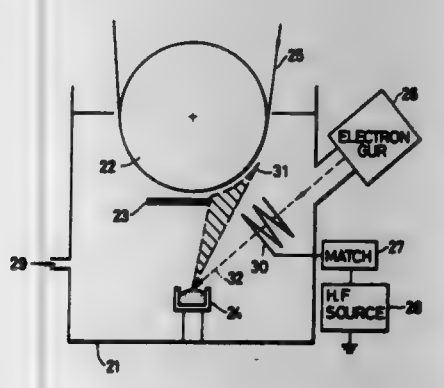
Akio Yanai, and Ryuji Shirahata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 18, 1983, Ser. No. 459,021

Claims priority, application Japan, Jan. 28, 1982, 57-12282

Int. Cl.³ C23C *13/08*

U.S. Cl. 427—38 **12 Claims**



1. A method of manufacturing a magnetic recording medium in a vacuum chamber in which magnetic metal or alloy is heated and evaporated by an electron beam gun so that a vacuum-evaporated magnetic film is formed on a non-organic or organic macromolecular base, comprising the steps of:

disposing a plasma generating coil near an evaporation source,

generating an electron beam that passes through a hollow portion of said coil and strikes said magnetic metal or alloy in said evaporation source, and

applying high frequency power to said coil, whereby vacuum deposition is carried out with a plasma thus generated.

7. An apparatus for manufacturing a magnetic recording medium comprising:

means to convey a base material through a vacuum chamber;

means adapted to hold an evaporation source containing a magnetic;

a metal or alloy in said evaporation source;

a plasma generating coil disposed proximate to said evaporation source;

an electron beam gun from which an electron beam is emitted to pass through a hollow portion of said coil and strikes the magnetic metal or alloy in said evaporation source;

a source of high frequency to actuate said coil and generate a plasma whereby vacuum deposition of evaporated magnetic metal or alloy onto said base is effectuated.

4,511,595

LASER-ACTIVATED CHEMICAL-DEPOSITING METHOD AND APPARATUS

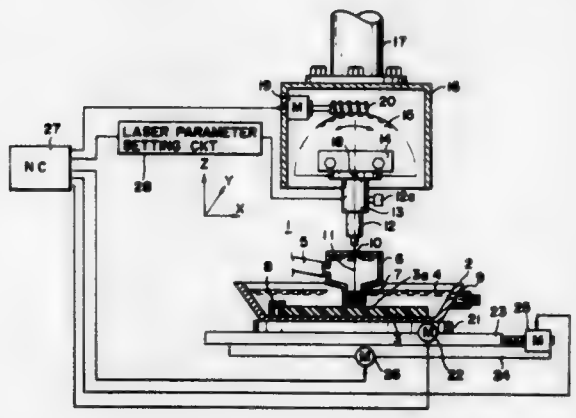
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation of Ser. No. 433,832, Oct. 12, 1982, abandoned. This application Jun. 1, 1984, Ser. No. 616,793

Claims priority, application Japan, Oct. 12, 1981, 56-160893

Int. Cl.³ B05B *5/00*; B05D *3/06*

U.S. Cl. 427—43.1 **40 Claims**



1. A method of chemically depositing a metal onto a substrate, comprising the steps of:

flushing in a dynamic flow a liquid solution containing said metal in contact with said substrate;

irradiating a localized area on said substrate with a narrow energy light beam through said flushing liquid solution while maintaining the thickness thereof traversed by said light beam incident upon the localized area to be less than 5 cm, thereby activating an interface between said area and said flushing liquid solution to allow said metal to be chemically deposited therefrom selectively onto said area; and

automatically displacing said light beam and said substrate in a predetermined scanning manner such as to shift said localized area of interception of said incident light beam successively over a desired surface region of said substrate whereby said metal is sequentially deposited on said surface region.

4,511,596

PROCESS FOR THE ELECTRON BEAM CURING OF COATING COMPOSITIONS

Godwin Berner, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,166

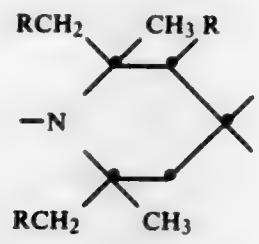
Claims priority, application Switzerland, Jan. 20, 1983, 319/83

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **8 Claims**

1. A process for curing coating compositions, which contain

ethylenically unsaturated compounds, by electron beam irradiation with the addition of a curing accelerator, which comprises using as the curing accelerator at least one 2,2,6,6-tetraalkylpiperidine derivative which, in its molecule, contains at least one group of the formula I



(I)

in which R is hydrogen or methyl.

4,511,597

METHOD FOR DEPOSITING A METAL ON A SURFACE

Yu-Ling Teng, Douglaston, and Richard Mayernik, North Merrick, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Oct. 12, 1983, Ser. No. 541,048
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **19 Claims**

1. In a method for making conductive metal patterns by treating a substrate with a solution comprising a reducible salt of a non-noble metal and a light radiation sensitive reducing compound selected from quinones, benzoquinones, anthraquinones and derivatives thereof, and anthraquinone disulfonic acids and salts thereof;

exposing the treated substrate to light radiant energy to reduce the metal salt to form a real image; and

immersing the substrate in an electroless metal deposition bath to deposit a conductive metal pattern on the real image;

the improvement comprising treating the exposed substrate, prior to electrolessly depositing metal in a fixed bath with a fixing solution comprising a complexing agent for the non-noble metal wherein as a result of said treatment, light sensitive reducing compound builds up in the bath;

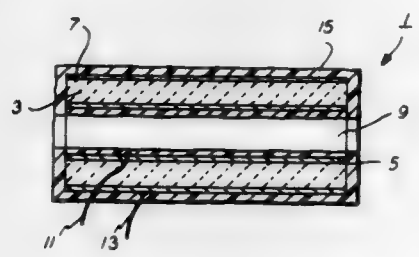
said fixing solution being maintained so that the concentration of the light sensitive reducing compound in the fixing solution does not exceed 0.4 m moles/liter.

4,511,598

ELECTROMECHANICAL TRANSDUCER PROTECTING

Linda T. Creagh, Argyle, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1982, Ser. No. 432,593
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—58 **1 Claim**



1. A method for overcoating and impregnating an electroded porous electromechanical transducer comprising the steps of:

(a) immersing said electroded porous electromechanical transducer in a container of insulating hardenable liquid,

(b) subjecting said container to a reduced pressure until at least a portion of gases entrained in the voids of said porous electromechanical transducer are removed,

(c) increasing the pressure on said container,

(d) removing said transducer from said liquid,

(e) allowing excess liquid to drain off of said transducer,

(f) allowing said hardenable liquid to harden until a protective coating is formed on said transducer

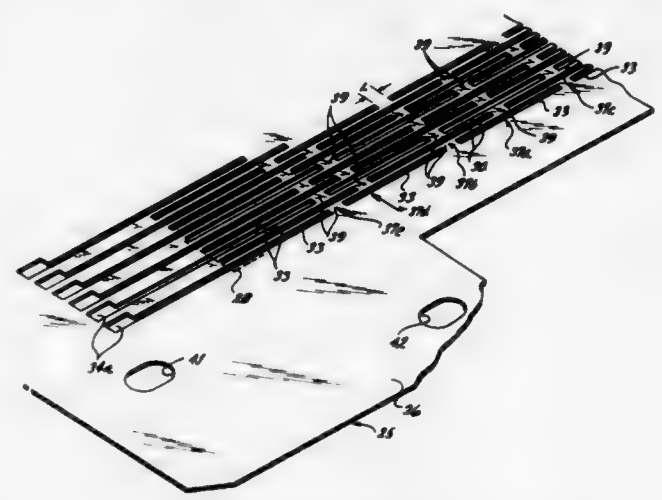
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4,511,599

MASK FOR VACUUM DEPOSITING BACK METAL ELECTRODES ON EL PANEL

Sam H. Rustomji, Camarillo, Calif., assignor to Sigmatron Associates, Los Angeles, Calif.

Filed Mar. 1, 1983, Ser. No. 470,935
Int. Cl.³ B05D *5/12, 1/32*
U.S. Cl. 427—66 **6 Claims**



1. A method of depositing counter metal electrodes on the back of a glass substrate already having thereon a thin-film structure including front transparent electrodes and an electroluminescent layer sandwiched between dielectric layers, said method comprising:

providing a flexible steel mask with a plurality of long parallel closely spaced filaments having spacings corresponding to the width of the back metal electrodes to be deposited on said substrate, and having reinforcing portions bridging the spacings between the filaments for reducing the free length portions of the filaments;

positioning said mask on the back of said substrate while holding said filaments and said reinforcing portions flush against the substrate by a magnet;

vacuum depositing a metal through the spacings of said filaments as provided on said mask;

repositioning said mask on the back of said substrate by shifting it along the length of its filaments at least a distance equal to the length of said reinforcing portions so as to position said reinforcing portions over the areas of the substrate that have already been deposited on while holding said filaments nd said reinforcing portions flush against said substrate by said magnet; and

again vacuum depositing the metal through the spacings of said filaments as provided on said mask so as to complete the forming of said counter metal electrodes on the back of said substrate.

4,511,600

SOLAR CELL METAL SPRAY PROCESS

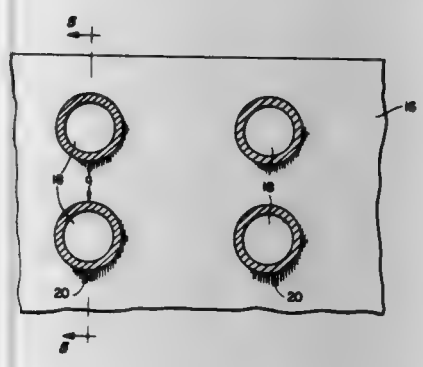
James M. Leas, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Filed Feb. 10, 1984, Ser. No. 579,126
Int. Cl.³ H01L *21/283, 31/04*
U.S. Cl. 427—75 **11 Claims**

1. A method of forming a metal pattern on a solar cell, comprising the steps of:

(a) forcing a molten metal through an aligned array of orifices by use of gas pressure;

(b) vibrating the aligned array of orifices to form the molten metal issuing from the orifices into metal droplets;
(c) moving a solar cell collinearly with the aligned array of orifices; and



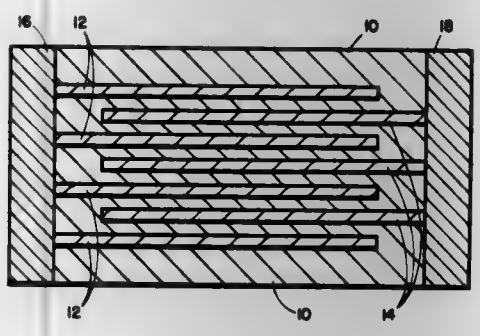
(d) allowing each series of metal droplets from a single orifice to fall onto a specific region of the solar cell to build up a metal layer of increasing thickness, each metal droplet in the metal layer being permitted sufficient time to solidify prior to allowing the next metal droplet to strike the metal layer.

4,511,601

COPPER METALLIZATION FOR DIELECTRIC MATERIALS

James R. Akse, Canyon Country, and Stanley A. Long, Valencia, both of Calif., assignors to North American Philips Corporation, New York, N.Y.

Filed May 13, 1983, Ser. No. 494,475
Int. Cl.³ H05K *3/12*
U.S. Cl. 427—79 **26 Claims**



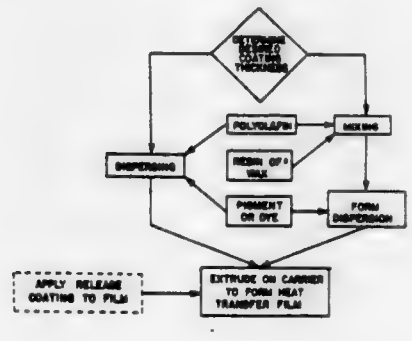
1. A method for providing a copper metallization on a dielectric or semiconductive body, said method consisting essentially of the steps of:
providing copper oxide powder;
providing a reduction-resistant glass frit having a melting temperature;
mixing the copper oxide powder and the glass frit to produce a mixture having at most 15 weight percent glass frit;
dispersing the mixture in an organic vehicle and a solvent for the organic vehicle to produce a paste;
applying the paste to the body to provide a coating thereon;
drying the coating to remove the solvent;
firing the coated body a first time in an oxidizing atmosphere at a temperature below the melting temperature of the glass frit to remove at least a portion of the organic vehicle, said first firing producing substantially no adhesion between the paste and the body; and
firing the coated body a second time after the first firing, the second firing being in an atmosphere which is reducing to the copper oxide, said second firing being at a temperature from 700° to 1050° C. for from 120 to 15 minutes to convert the copper oxide to copper metal and to form a bond between the copper metal and the body.

4,511,602

THERMAL IMPRINTING OF SUBSTRATES

Edward S. Margerum, Salem, and Norman A. Hiatt, Framingham, both of Mass., assignors to Dennison Mfg. Company, Framingham, Mass.

Division of Ser. No. 194,694, Oct. 6, 1980, Pat. No. 4,404,249.
This application Jul. 5, 1983, Ser. No. 510,510
Int. Cl.³ B41M *5/26*
U.S. Cl. 427—148 **12 Claims**



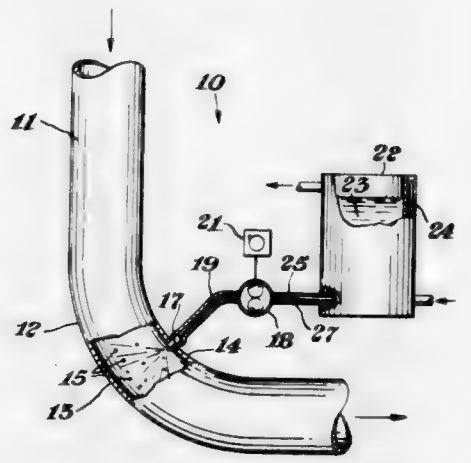
1. The method of producing a heat transfer film comprising forming a single layer heat transfer coating consisting of a uniform blend of a pigmented polyolefin and a rosin ester on a carrier film.

4,511,603

ADDITION OF ADDITIVES TO PLASTICS

Leslie E. Wallace, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 19, 1983, Ser. No. 562,923
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—222 **4 Claims**

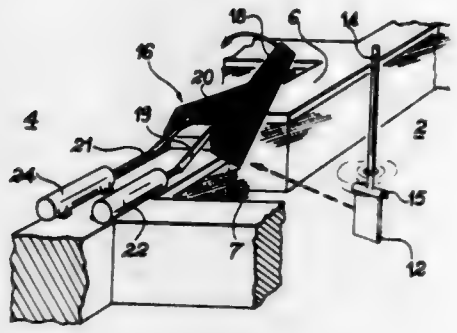


1. An apparatus for the addition of additives to particulate synthetic resins, the apparatus comprising a pneumatic conveyor adapted to convey particulate synthetic resinous thermoplastic material, the pneumatic conveyor having disposed therein at least one elbow, the elbow having an external radius and an internal radius, a spray nozzle disposed at the inside radius and adapted to spray said additive into the conveyor generally toward the outside radius of the elbow, a pump in operative communication with said nozzle therewith, a vessel for the containment of liquid additive in communication with the pump.

4,511,604
PROCESS AND APPARATUS FOR PRODUCING ALTERNATE MONOMOLECULAR LAYERS

André Barraud, Bures-sur-Yvette, and Jean Leloup, Gif sur Yvette, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 29, 1984, Ser. No. 584,918
Claims priority, application France, Mar. 4, 1983, 83 03578
Int. Cl.[3] B05C *3/12;* B05D *1/20*
U.S. Cl. 427—402 10 Claims



1. A process for the production of alternate monomolecular layers on at least one substrate, of the type in which the substrate is passed through the surface of a liquid contained in a vessel and over which has previously been spread a monomolecular layer of a given substrate, wherein the vessel is subdivided into at least two compartments, a monomolecular layer is deposited on the surface of the liquid contained in each of these compartments the latter being arranged in such a way that there can be no contact there between the monomolecular layers located in each of them and the substrate is alternately passed from one compartment to the other, transfer solely taking place within the liquid, or solely above the latter, or alternatively within the liquid or above the surface thereof.

4,511,605
PROCESS FOR PRODUCING POLISHING PADS COMPRISING A FULLY IMPREGNATED NON-WOVEN BATT

John R. McCartney, Westtown, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

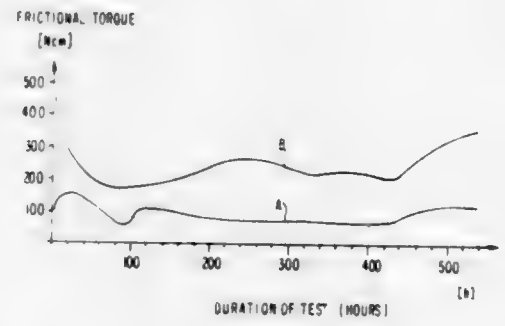
Continuation-in-part of Ser. No. 500,015, Jun. 7, 1983, abandoned, which is a continuation of Ser. No. 306,946, Sep. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 188,330, Sep. 18, 1980, Pat. No. 4,342,805, which is a continuation-in-part of Ser. No. 188,329, Sep. 18, 1980, Pat. No. 4,376,148. This application Nov. 17, 1983, Ser. No. 552,713
Int. Cl.[3] B05D *5/00*
U.S. Cl. 427—246 16 Claims

1. A method of producing a polishing pad comprising:
uniformly fully impregnating a fibrous batt with an aqueous polymer dispersion;
coagulating the dispersion within the fully impregnated batt to form an impregnated composite;
simultaneously drying the impregnated composite;
applying pressure to the impregnated composite and heating at least one surface thereof to form a composite in which the polymer is fused to itself and the at least one heated surface becomes denser and suitably smooth and flat to comprise a polishing surface; said composite having a bulk density at the polishing surface approaching the actual density while maintaining porosity throughout the structure; and
applying an adhesive to a surface opposing the polishing surface to form a polishing pad.

4,511,606
METHOD FOR INCREASING THE ENDURANCE AND REDUCING THE FRICTION OF OIL LUBRICATED CONICAL ROLLER BEARINGS

Willibald Ehrlich, Schorndorf; Hans Jooss, Stuttgart, and Rainer Hornung, Schlierbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,363
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218145
Int. Cl.[3] B05D *3/02;* C10M *5/02, 7/04, 7/16*
U.S. Cl. 427—386 5 Claims



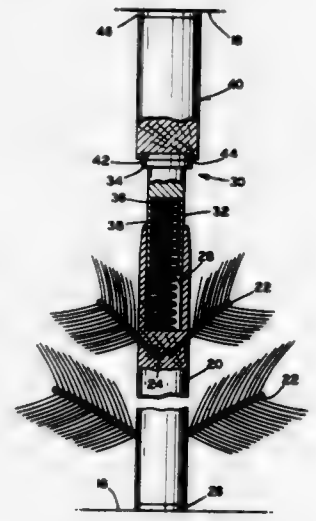
1. A method for increasing endurance and reducing friction of high-precision, oil lubricated conical bearings comprising:
(a) coating guide surfaces of the conical bearings with a lubricating paint containing a solid lubricant, the paint being insoluble in oil and the thickness of the coating being less than about 8 μm, then
(b) drying the guide surfaces.

4. The method according to claim 1, further comprising applying a lubricating paint dispersed in a binder including phenol resins, melamine resins, epoxide resins, or alkyl polyester resins.

4,511,607
WINDOW-MOUNTED CHRISTMAS TREE

John D. White, 3705 Brunswick Dr., Toledo, Ohio 43606

Filed Apr. 11, 1984, Ser. No. 599,274
Int. Cl.[3] A47G *33/06*
U.S. Cl. 428—13 17 Claims



1. In combination, a window comprising a transparent pane, a lower member below said pane having a horizontal surface facing upwardly, and an upper member above said pane having a horizontal surface facing downwardly, an artificial Christmas tree comprising an upright supporting member having a lower end engaging the horizontal surface of said lower member, a plurality of artificial tree branches engaging said upright supporting member and extending outwardly therefrom, said plurality of artificial tree branches extending, in part, generally parallel to said transparent pane and extending, in part, transversely substantially only away from said transparent pane,

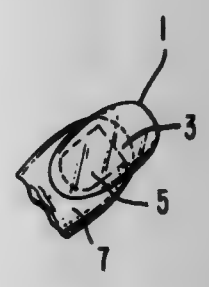
and an extension member mounted on an upper end of said upright supporting member and movable upwardly toward the horizontal surface of said upper member.

4,511,608

ARTIFICIAL NAIL MOUNTING, REINFORCEMENT, AND METHOD

Charlotte L. Ferraro, 236 Paterson Ave., Lodi, N.J. 07644

Filed Dec. 7, 1982, Ser. No. 432,324
Int. Cl.[3] A45D *31/00*
U.S. Cl. 428—15 13 Claims



1. A method for providing a disposable and replaceable artificial nail mounting tab and reinforcement for permitting reuse of said nail until it wears out and for facilitating the securing to and removal from a natural nail of said artificial nail, comprising the steps of:

(1) shaping an appropriate double-sided, pressure-sensitive adhesive material to form a tab for covering a substantial portion of the area of the outside surface of a human or natural nail, upon which it is desired to mount an artificial nail;

(2) securing one side of said tab to the outer surface of said human or natural nail;

(3) positioning an artificial nail over the other side of said tab and said natural nail; and

(4) pressing said artificial nail onto said natural nail, for securely mounting said artificial nail to said natural nail via the adhesive on the other side of said tab.

4,511,609

MULTILAYER TRASH BAG FILM

Joseph N. Craver, Flossmoor, and Jerome T. Horner, Indian Head Park, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1982, Ser. No. 429,184
Int. Cl.[3] B32B *7/02, 27/08;* B28B *3/20*
U.S. Cl. 428—35 14 Claims

1. A method of preparing a multilayer film comprising coextruding a first outer layer consisting essentially of low pressure, low density polyethylene copolymer formed from ethylene and a comonomer selected from butene-1, pentene-1, hexene-1, heptene-1 and octene-1, and mixtures thereof, said copolymer having a melt index of between about 0.5 and about 3.0 decigrams per minute, and a density of between about 0.916 and about 0.930 grams per cubic centimeter, a core layer consisting essentially of high pressure, low density polyethylene, and a second outer layer consisting essentially of high pressure, low density polyethylene, said high pressure, low density polyethylene having a melt index of between about 0.5 and about 5.0 decigrams per minute and a density of between about 0.916 and about 0.930 grams per cubic centimeter.

4,511,610

MULTI-LAYER DRAWN PLASTIC VESSEL

Jinichi Yazaki, Tokyo, and Kozaburo Sakano, Kawasaki, both of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 536,846
Claims priority, application Japan, Oct. 14, 1982, 57-179051; Nov. 2, 1982, 57-191809
Int. Cl.[3] B65D *85/00;* B32B *27/08*
U.S. Cl. 428—35 8 Claims

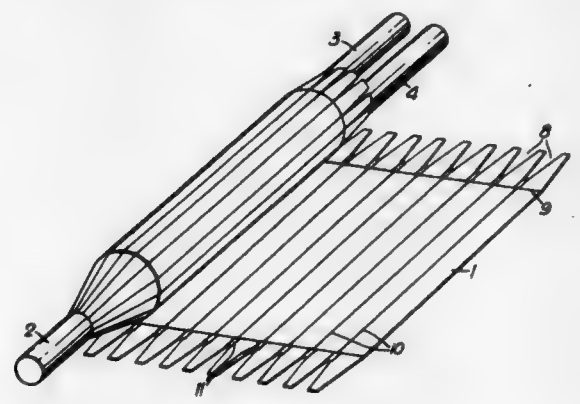
1. A multi-layer drawn plastic vessel comprising at least one layer comprising at least one crystalline olefin resin selected from the group consisting of crystalline polypropylene and crystalline propylene/ethylene copolymers having an ethylene content of 1 to 20 mole %, at least one oxygen-barrier layer comprising an ethylene/vinyl alcohol copolymer having an ethylene content of 25 to 60 mole %, and an adhesive resin layer interposed between said two resin layers, said adhesive resin layer comprising an acid- or acid anhydride—modified, linear, low-density polyethylene and said crystalline olefin resin layer being molecularly oriented in at least one direction.

4,511,611

CABLE SLEEVE LINER

Marc F. L. Moisson, Strombeek, Belgium, assignor to N.V. Raychem S.A., Belgium

Continuation of Ser. No. 425,296, Sep. 28, 1982, abandoned, which is a continuation of Ser. No. 094,815, Nov. 16, 1979, Pat. No. 4,380,686. This application Dec. 20, 1983, Ser. No. 563,271
Claims priority, application United Kingdom, Sep. 11, 1979, 7931402
Int. Cl.[3] B32B *15/20*
U.S. Cl. 428—35 25 Claims



1. A cable sleeve liner capable of being wrapped around a cable splice to support a heat-recoverable sleeve which shrinks over said cable sleeve liner when subjected to heat, said cable sleeve liner comprising a laminate including at least one layer of fibrous, non-woven cellulosic sheet material positioned between a metal layer which is substantially impermeable to moisture vapour and a first substantially vapour-permeable layer formed from flexible vapour-permeable polymeric film material, said flexible vapour-permeable polymeric film material having sufficient vapour permeability to permit substantial escape of vapors and gases generated within the laminate during the application of heat to the heat-recoverable sleeve.

4,511,612

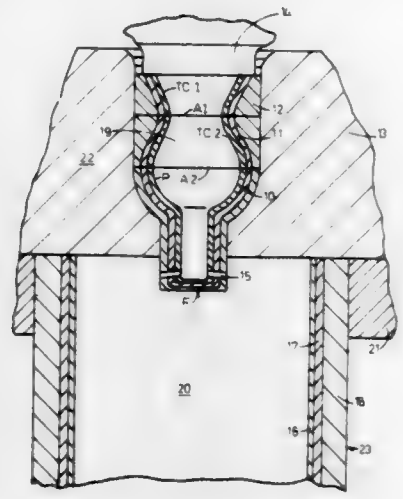
MULTIPLE-LAYER WALL FOR A HOLLOW BODY AND METHOD FOR MANUFACTURING SAME

Werner Hüther, and Axel Rossmann, both of Karlsfeld, Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 20, 1982, Ser. No. 410,059
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 3133209
Int. Cl.[3] F16M *1/00*
U.S. Cl. 428—36 15 Claims

1. A casing subjected to hot gases such as combustion gases of an engine and comprising a hollow body including a three-layer composite wall having a load side, said wall including a ceramic inner layer bounding said load side and an outer retaining layer of fiber-reinforced material or metal confining said inner layer, and further comprising an intermediate layer

of thermally insulating ceramic material between said inner and retaining layers, said intermediate layer being shrinkfitted



or sintered on to the inner layer, said retaining layer compressively prestressing said inner layer.

4,511,613

METHOD FOR INHIBITING DISCOLORATION ON CELLULOSE FOOD CASINGS

Myron D. Nicholson, Lockport, and Herman S. Chiu, Chicago, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 466,302, Feb. 14, 1983,. This application Jun. 27, 1984, Ser. No. 625,364

Int. Cl.³ A22C *13/00*; F16L *11/00*

U.S. Cl. 428—36 **32 Claims**

1. A method for inhibiting discoloration and the formation of black spots upon a cellulose food casing treated with a liquid smoke solution derived from natural wood and containing smoke color, odor and flavor constituents, said method comprising contacting said casing with an agent having the ability to prevent the progressive oxidation of metals, said agent being selected from the group consisting of a coordination compound and a reducing agent, wherein said reducing agent is selected from the group consisting of hydrogen sulfide, sulfur dioxide, and sodium hydrosulfite.

4,511,614

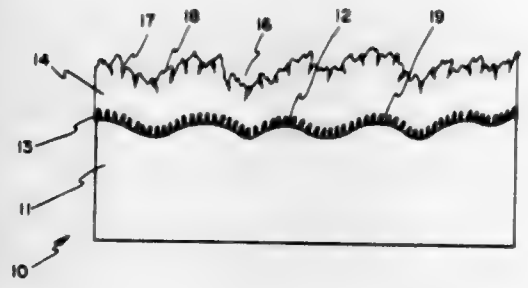
SUBSTRATE HAVING HIGH ABSORPTANCE AND EMITTANCE BLACK ELECTROLESS NICKEL COATING AND A PROCESS FOR PRODUCING THE SAME

Richard L. Greeson, Longmont, and George I. Geikas, Boulder, both of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Oct. 31, 1983, Ser. No. 546,780

Int. Cl.³ B32B *3/26*; B05D *5/06*; C23C *1/10*; C23F *5/02*

U.S. Cl. 428—141 **19 Claims**



1. A blackened substrate which comprises a substrate coated with at least two different nickel-phosphorus alloys, said substrate having a dense array of microscopic as well as macroscopic pores etched into the surface having a spectral reflectance of less than about 5 percent at wavelength of radiant energy from about 0.3 to about 40 microns wherein the lowermost alloy layer comprises about 95% to 96% nickel and about 4% to 5% phosphorus and the uppermost alloy coating contains 92% to 93% nickel and about 7% to 8% phosphorus.

5. A method for producing a highly blackened surface, having high light absorption and high emissivity capabilities on a substrate, said method comprising

(a) surface conditioning said substrate so as to provide a roughened, non-smooth surface,

(b) immersing the thus surface-roughened substrate in a first electroless plating bath having a low phosphorus to nickel concentration wherein said first electroless plating bath has a phosphorus content of about 4 to 5 weight percent based on the total weight of said bath so as to deposit a first electroless nickel-phosphorus alloy coating on said surface-roughened substrate,

(c) immersing said coated substrate from said (b) in a second electroless plating bath having a phosphorus to nickel concentration higher than that of said first electroless plating bath wherein said second electroless plating bath has a phosphorus content of about 7 to 8 weight percent based on the total weight of said bath so as to deposit a second electroless nickel-phosphorus alloy coating which is superimposed directly on said first electroless nickel-phosphorus alloy coating,

(d) immersing the electroless nickel-phosphorus alloy coated substrate resulting from step (c) into an aqueous acidic etchant bath containing about 0.1 to about 2.0 weight percent divalent nickel, about 2 to 3 weight percent sulfuric acid and about 45 to 49 weight percent nitric acid for a period of time effective to develop a highly blankened surface of said substrate and

(e) drying the resulting substrate having said highly blackened surface.

4,511,615

METHOD FOR MANUFACTURING AN ADHESIVE INTERLINING AND FABRIC PRODUCED THEREBY

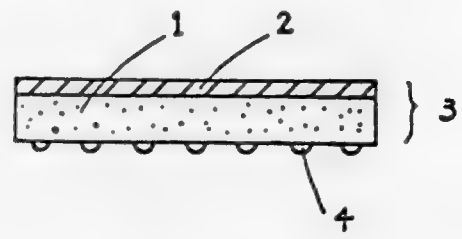
Nobuo Ohta, Showa, Japan, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Dec. 30, 1982, Ser. No. 454,638

Claims priority, application Japan, Feb. 3, 1982, 57-16741

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—198 **9 Claims**



1. A method for manufacturing a soft non-woven fabric having a coating on one side of a heat-melting adhesive having a hot iron softening temperature range, which comprises:

forming a first web layer of about 10 to about 40% by weight of a thermoplastic bicomponent fiber mass, the bicomponent fibers comprising a first low softening temperature range component and a second high softening temperature range component;

forming a second web layer of about 10 to about 50% by weight single component thermoplastic fibers having a softening temperature range equal to or lower than the softening temperature range of said first low softening temperature range component of said bicomponent fibers but at least 20° C. higher than the softening temperature of the heat-melting adhesive;

overlaying the second web on top of the first web;

bonding the first and second webs without compressing them, by heating the webs to a maximum temperature which causes softening of the low softening temperature range component of the bicomponent fibers and the fibers

of the second web to produce a bonded fabric having a first web side and a second web side; and

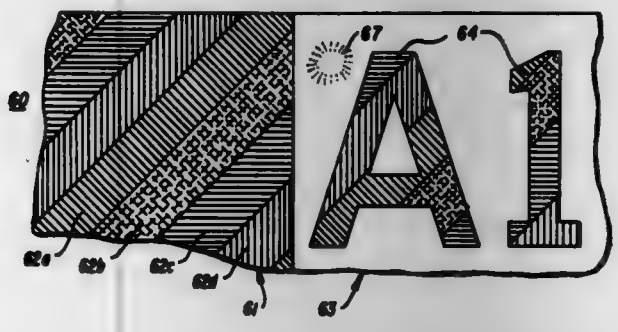
coating the first web side of the bonded fabric with the heat-melting adhesive, to produce the non-woven fabric having an adhesive coating on one side.

4,511,616

ANTICOUNTERFEIT MAGNETIC METALLIZED LABELS

Warren R. Pitts, Needham, and Herbert W. Salit, Ashland, both of Mass., assignors to Dennison Mfg. Company, Framingham, Mass.

Filed Feb. 14, 1983, Ser. No. 466,257
Int. Cl.³ B44C *1/10;* B32B *31/12, 15/02*
U.S. Cl. 428—203 **17 Claims**



1. A metallized security laminate for electrosensitive printing, comprising, in sequence:

a base layer;

a magnetic pattern layer coated onto said base layer;

a decorative background layer coated onto said magnetic pattern layer, said decorative background layer forming a visibly heterogeneous pattern; and

a vapor-deposited metallic surface layer, having a surface resistivity in the range from 1 to 8 ohms per square,

wherein the magnetic pattern layer provides a distinct magnetic pattern along the surface of the metallic layer.

4,511,617

MAGNETIC RECORDING MEDIUM

Shozo Hideyama, Yokohama; Akio Ishizawa, Tokyo; Katuya Kumagai, and Minoru Hashimoto, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 23, 1983, Ser. No. 497,280
Claims priority, application Japan, May 25, 1982, 57-87348
Int. Cl.³ G11B *5/70;* B32B *7/02*
U.S. Cl. 428—412 **13 Claims**

1. A magnetic recording medium which comprises;

a substrate;

a first magnetic layer applied on the surface of the substrate and having an easy axis of magnetization in the in-plane direction of the substrate;

and a second magnetic layer applied on the surface of the first magnetic layer, formed of ferrite series powder represented by the formula:

$$AO.n(Fe_{1-m}M_m)_2O_3$$

(wherein A is at least one metallic element selected from the group consisting of Ba, Sr, Pb and Ca; M is at least one substituent component selected from the group consisting of Co, Ti, Ni, Mn, Cu, Zn, In, Ge and Nb; m is 0.08 to 0.2; and n is 5.4 to 6.0), and having an easy axis of magnetization in a direction perpendicular to the plane of the substrate;

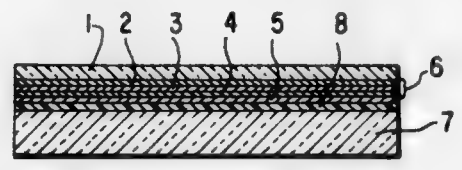
said first magnetic layer having a surface resistivity of 1×10^2 to $1\times10^8\Omega$.

4,511,618

LAMINATED REFLECTIVE PANELS

Eloi Duchene, Gerpinnes, and Pierre Laroche, Ham-sur-Heure, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Continuation of Ser. No. 370,523, Apr. 21, 1982, abandoned. This application Oct. 24, 1983, Ser. No. 544,810
Claims priority, application United Kingdom, Apr. 24, 1981, 8112661
Int. Cl.³ B32B *7/02, 27/40, 31/00;* G02B *5/08*
U.S. Cl. 428—215 **15 Claims**



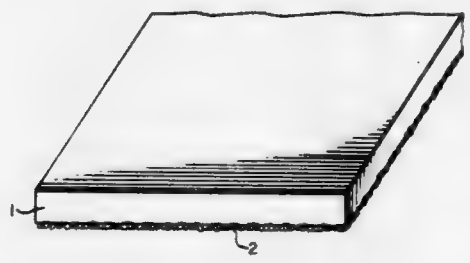
1. A solar reflecting panel forming a component of a solar concentrator, said panel comprising: a glass mirror sheet having a front surface and rear surface and a thickness of less than 2 mm, and coated on its rear surface with a reflective coating; a flat glass backing sheet having a thickness greater than that of said glass mirror sheet; and means constituted by a bonding material bonding said glass backing sheet to said rear surface of said glass mirror sheet to form said sheets into a flat laminate with the drawing direction of said glass mirror sheet being transverse to the drawing direction of said glass backing sheet.

4,511,619

SEALING SHEET OF ELASTOMERIC SYNTHETIC RESINS WITH TEXTILE REINFORCEMENT ON OUTER LAYER

Werner Kuhnel, Neunkirchen-Schoneshof; Peter Pütz, Augustin-Menden; Manfred Simm, Troisdorf, and Paul Spielau, Troisdorf-Eschmar, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 475,520, Mar. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 421,400, Sep. 22, 1982, Pat. No. 4,435,466. This application Aug. 13, 1984, Ser. No. 640,488
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150021
Int. Cl.³ B32B *5/08, 17/04*
U.S. Cl. 428—215 **14 Claims**



1. A multi-layered sealing sheet for the building industry comprising at least one outer layer containing elastomeric synthetic resin, which is weldable thermally and/or by solvents or swelling agents, and a textile reinforcing layer bonded to said at least one outer layer by thermal welding, said reinforcing layer being applied to the outside surface of said at least one outer layer of an elastomeric synthetic resin, all of the layers of said sheet containing elastomeric synthetic resin being free of vulcanization accelerator, and containing synthetic resin consisting essentially of an ethylene-propylene-diene terpolymer and/or an ethylene-propylene copolymer and said textile reinforcing layer being formed of synthetic resin fibers and/or glass fibers, having a weight per unit area of 10 to 300 g/m^2, and having interstices into which the heated elastomeric synthetic resin penetrates during said thermal welding to pro-

vide a bond exhibiting a parting strength which is larger than 100 N/5 cm.

4,511,620

METHOD FOR PREVENTION OF BUBBLE FORMATION IN POLYORGANOSILOXANE GELS

Loretta A. Kroupa, and Patricia G. Agbomeirele, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 29, 1984, Ser. No. 625,939
Int. Cl.³ B05D *3/02, 7/24;* B32B *27/08, 27/28*
U.S. Cl. 428—220 **14 Claims**

1. A method for preventing the formation of bubbles at the interface between a polyorganosiloxane gel that is cured by a platinum catalyzed hydrosilation reaction and a substrate, said method comprising the steps of

I. coating said substrate with a first layer comprising an uncured extrudable silicone rubber composition that is compatible with said gel and is curable by a platinum catalyzed hydrosilation reaction to yield a silicone rubber exhibiting a durometer hardness of at least 10 on the Shore A scale, the thickness of said first layer being greater than 3 mm;

II. applying to said first layer a second layer comprising said polyorganosiloxane gel in an uncured form; and

III. curing said first and second layers substantially concurrently to obtain a unitary, cured composite.

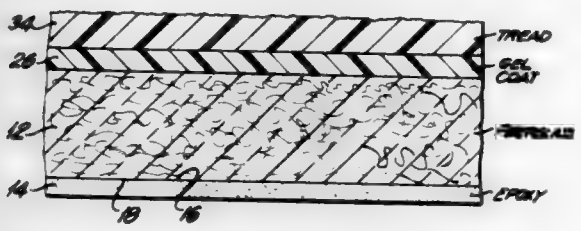
8. A composite consisting essentially of a substrate, a polyorganosiloxane gel composition cured by a platinum catalyzed hydrosilation reaction and a layer of silicone rubber cured by a platinum catalyzed hydrosilation reaction where said layer is in contact with said substrate and separates it from said gel, said silicone rubber and said polyorganosiloxane gel are cohesively bonded, said silicone rubber layer exhibits a thickness of at least 3 mm and where the silicone rubber exhibits a durometer of at least 10 on the Shore A scale.

4,511,621

REPAIR LAMINATE SHEET FOR ACRYLIC AND FIBERGLASS TUBS

Walter Thomas, St. James, and Peter Lucatuorto, Islip, both of N.Y., assignors to Lik-Nu Porcelain, Inc., Hicksville, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,468
Int. Cl.³ B32B *15/00*
U.S. Cl. 428—285 **11 Claims**



1. A laminate repair sheet for fiberglass or acrylic tubs, the sheet comprising:

an upper fiberglass ply; and

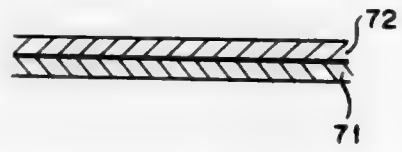
a lower epoxy ply its upper surface adhered to the lower surface of said upper fiberglass ply, said lower epoxy ply being substantially the same size and shape as said upper fiberglass ply and being juxtaposed directly below and in registration with said upper fiberglass ply, said upper fiberglass ply and said lower epoxy ply together providing sufficient flexibility to permit said sheet to conform to movement of fiberglass or acrylic tubs, the lower surface of said lower epoxy ply attached to the upper surface of the bottom of a fiberglass or acrylic tub such that said lower epoxy ply overlies and bonds any faults in said bottom.

4,511,622

INTERMEDIATE TRANSFER MEMBER FOR TRANSFERRING TONER IMAGE ON A CARRIER

Ryubun Seimiya; Noriyoshi Tarumi; Masakazu Kokiso, and Hiroshi Tsuchiya, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 279,325, Jul. 1, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,050
Claims priority, application Japan, Jul. 18, 1980, 55-98994
Int. Cl.³ B32B *5/16, 9/04*
U.S. Cl. 428—323 **15 Claims**



1. An intermediate transfer member for transferring a toner image on a carrier which comprises a substrate and a transfer layer, said transfer layer comprising an addition polymerization type silicone rubber having an acetone extraction rate of up to 8% containing up to 40% by weight of a condensation polymerization type silicon rubber based on the total weight of the polymer components, and a filler.

6. The intermediate transfer member of claim 1 wherein the filler is selected from the group consisting of silica, calcined clay, calcium carbonate, quartz powder, titanium oxide and zinc oxide.

4,511,623

HIGHLY ORIENTED AROMATIC POLYAMIDE SHORT FIBER

Han S. Yoon, and Tae W. Son, both of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, 200-43, Seoul, Rep. of Korea

Filed Aug. 16, 1983, Ser. No. 523,780
Claims priority, application Rep. of Korea, Aug. 30, 1982, 3897/1982[U]
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—359 **8 Claims**



1. A fiber of poly(p-phenyleneterephthalamide) characterized by having:

a pulp-like short fiber form of about 2–100 μm in diameter and about 1,000–50,000 μm in length;

irregular cross-sections in a plane taken perpendicular to the fiber length and needle point-like ends similar to those of natural wood pulp fibers;

an inherent viscosity of at least 5.0 as measured at a concen-

tration of 0.5 g of polymer in 100 ml of 97% concentrated sulfuric acid at 30° C.;

a crystallinity of more than 50%, an orientation angle of less than 25°, and an apparent crystallite size of more than 50 Angstroms, based upon X-ray diffraction pattern data; and

a cross-section with four extinction positions through 360° rotation of a cross-sectional specimen of said fiber, reviewed under crossed polarizers of a polarizing microscope.

4,511,624

ENAMELED WIRES

Munetaka Kawaguchi, Aichi; Hirohiko Nakabayashi, and Masayoshi Miyake, both of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 75,761, Sep. 17, 1974, abandoned, which is a continuation of Ser. No. 825,731, Aug. 18, 1977, abandoned, which is a continuation of Ser. No. 540,469, Jan. 3, 1975, abandoned. This application Jul. 18, 1983, Ser. No. 514,851

Claims priority, application Japan, Jan. 12, 1974, 49-6873; Jan. 12, 1974, 49-6874; Jan. 12, 1974, 49-6875

Int. Cl.³ B32B *15/00;* H01B *7/00*

U.S. Cl. 428—379 **22 Claims**

1. An insulated enameled wire which exhibits a fusing function to short circuit with adjacent wires due to the provision of an insulating thermoplastic straight chain polyurethane layer thereon which melts fuses at an inside temperature of about 150° to 250° C. without substantially generating smoke thereby permiting short circuiting with adjacent wires, which comprises a conductive wire having coated thereon said insulating thermoplastic straight chain polyurethane layer which is formed by coating a layer consisting essentially of a member selected from the group consisting of the following: components (i) and (ii); components (i) and (iii); or components (i), (ii) and (iii) as defined below;

(i) a polyurethane having a terminal hydroxyl group prepared from at least one aliphatic diol, at least one diisocyanate compound selected from the group consisting of a diisocyanate and a blocked diisocyanate in less than about an equimolar amount of said aliphatic diol;

(ii) a polyurethane having a terminal blocked isocyanate group prepared from at least one diisocyanate compound selected from the group consisting of a diisocyanate and a blocked diisocyanate, at least one aliphatic diol in less than about an equimolar amount of said diisocyanate, and a blocking agent for an isocyanate group; and

(iii) a blocked diisocyanate, wherein at least a portion of said diisocyanate compound in (i), (ii) and (iii) is an aromatic diisocyanate on said conductive wire and then baking the thus coated conductive wire to yield said insulating thermoplastic straight chain polyurethane layer.

4,511,625

PHYSICAL CONVERSION OF LATENT MESOPHASE MOLECULES TO ORIENTED MOLECULES

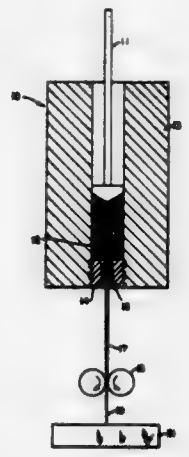
Faramarz Nazem, Strongsville; Rostislav Didchenko, Middleburg Heights, both of Ohio, and David Fink, Stamford, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1982, Ser. No. 429,186

Int. Cl.³ C10C *3/18;* D01F *9/14;* D01D *1/04, 5/08*

U.S. Cl. 428—401 **2 Claims**

1. A pitch fiber having at least 70% mesophase by weight is produced from a spinneret by the steps comprising selecting a petroleum-derived or coal-derived pitch having a mesophase content of less than 40% by weight according to conventional measurements and having a total content of mesophase-type molecules and latent mesophase molecules greater than 70% by weight; and spinning the pitch into a fiber having a diameter less than about 60 microns by passing said pitch through a porous body positioned in a spinneret channel defined between



the inside and outside surfaces of said spinneret to produce said pitch fiber.

4,511,626

ONE-PART MOISTURE-CURABLE POLYURETHANE ADHESIVE, COATING, AND SEALANT COMPOSITIONS

Gerald F. Schumacher, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 9, 1982, Ser. No. 416,301

Int. Cl.³ C08G *18/76*

U.S. Cl. 428—425.6 **20 Claims**

1. Compositions, comprising:

(a) isocyanate-functional prepolymer(s) derived from 4,4'-diphenylmethane diisocyanate (or isocyanate functional derivatives of 4,4'-diphenylmethane diisocyanate) and polyol(s) containing hydroxyl groups about 25 to 100 weight percent of which are primary hydroxyl groups, and

(b) bis[2-(N,N-dialkylamino)alkyl]ether(s), in an amount effective to provide moisture curability of said prepolymer(s).

9. Adhesive, coating, or sealant compositions, comprising a composition according to claim 1, together with filler, solvent, and plasticizer.

12. Cured assemblies, comprising an article and a substrate, with a layer comprising a composition according to claim 1 therebetween.

4,511,627

SANDWICH GLASSES

Itsuo Tanuma, Tokorozawa; Hideo Takeichi, Higashimurayama; Yukio Fukuura, Kawagoe; Tomio Ohyachi, Akigawa, and Kazuo Naito, Kawasaki, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 7, 1982, Ser. No. 433,336

Claims priority, application Japan, Oct. 7, 1981, 56-158723; Nov. 5, 1981, 56-176549

Int. Cl.³ B32B *17/10, 27/30*

U.S. Cl. 428—429 **11 Claims**

1. A sandwich glass comprising glass plates and an intermediate layer interposed therebetween, said intermediate layer being formed by crosslinking a resin composition comprising:

(a) an ethylene-vinyl acetate copolymer having a vinyl acetate content of 15%–50% by weight,

(b) an organic peroxide selected from at least one member of the group consisting of 2-5-, dimethyl-2, 5-di(t-butylperoxy)hexane-3, t-butylcymyl peroxide, 2,5-dimethyl-2, 5-di(t-butylperoxy)hexane, dicumyl peroxide, α,α'bis(t-butylperoxyisopropyl)benzene, n-butyl-4,4-bis(t-butylperoxy)-valerate, 2,2-bis(t-butylperoxy)butane, 1,1-bis(t-butylperoxy)cyclohexane, 1,1-bis(t-butylperoxy)3,3,5-trimethyl cyclohexane and t-butylperoxy benzoate, and

(c) a curing assistant selected from at least one member of

the group consisting of acryloyloxy group-containing compounds, methacryloyloxy group-containing compounds, allyl group-containing compounds and vinyl group-containing compounds wherein said curing assistant is not a silane compound, at a temperature above the melting point of the copolymer.

2. A sandwich glass comprising glass plates and an intermediate layer interposed therebetween, said intermediate layer being formed by photocrosslinking a resin composition comprising:

(a) an ethylene-vinyl acetate copolymer having a vinyl acetate content of 15–50% by weight,

(b) a photosensitizer, and

(c) a curing assistant selected from at least one member of the group consisting of acryloyloxy group-containing compounds, methacryloyloxy group-containing compounds, allyl group-containing compounds and vinyl group-containing compounds wherein said curing assistant is not a silane compound,

under light irradiation during or after heating said resin composition at a temperature above the melting point of the copolymer.

4,511,628

RUBBER ARTICLES HAVING IMPROVED METAL ADHESION AND METAL ADHESION RETENTION EMPLOYING BIS(2-MERCAPTOBENZOTHIAZATO) NICKEL

Jung W. Kang, Clinton, and James A. Davis, Uniontown, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 30, 1984, Ser. No. 575,260

Int. Cl.³ B32B *15/04, 15/08;* **C08K** *5/47, 5/56*

U.S. Cl. 428—457 **4 Claims**

1. A metal-reinforced rubber ply to be used as an element in a manufactured rubber article, said ply having a rubber composition and a plated steel element bonded thereto wherein said rubber composition is made by curing a composition comprising:

a vulcanizable rubber; and

from about 0.5 to about 10.0 parts by weight of a bis(2-mercaptobenzothiazato) nickel per 100 parts of the rubber component in said rubber composition as a promoter of adhesion between said rubber and said plated steel element.

4,511,629

MAGNETIC RECORDING MEDIUM

Ryozo Konno, Omiya; Makio Sugai, Fujimi; Yuichi Kubota; Masaharu Nishimatsu, both of Komoro; Yukihiro Isobe, Usudamachi; Kazushi Tanaka, Komoro, and Osamu Shinoura, Saku, all of Japan, assignors to TDK Electronics Co., Ltd. and Toyo Ink Mfg. Co., Ltd., both of Tokyo, Japan

Filed Feb. 3, 1983, Ser. No. 463,419

Claims priority, application Japan, Feb. 5, 1982, 57-16301; Feb. 5, 1982, 57-16302

Int. Cl.³ H01F *10/00;* **B05D** *5/12*

U.S. Cl. 428—522 **14 Claims**

1. A magnetic recording medium comprising a polyester base, a magnetic coating layer, and a non-magnetic undercoat between said base and said magnetic coating layer, said undercoat comprising a radiation curable coating material which contains at least two types of compounds selected from the group consisting of:

(A) compounds having a molecular weight of at least 5000 and at least two double bonds of a type selected from the group consisting of acrylic, allylic, and maleic double bonds;

(B) compounds having a molecular weight of at least 400 but less than 5000 and at least one double bond of a type selected from the group consisting of acrylic, allylic and maleic double bonds; and

(C) compounds having a molecular weight of less than 400 and at least one double bond selected from the group consisting of acrylic, allylic, maleic and styrenic double bonds.

4,511,630

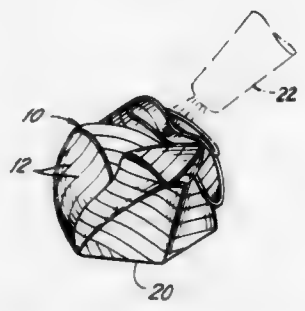
METHOD FOR SCULPTING PAPERWEIGHT OF ATTRACTIVE APPEARANCE

Tibor Kalman, 157 W. 57 St., New York, N.Y. 10019

Filed Feb. 17, 1984, Ser. No. 581,053

Int. Cl.³ B44C *3/06*

U.S. Cl. 428—542.2 **9 Claims**



1. A method for forming a sculpted paperweight having the appearance of crumpled paper, the method comprising the steps of

selecting a metal weight having a flat bottom,

selecting a rigid vinyl sheet of material,

printing desired patterns on said vinyl sheet,

heating said vinyl sheet until it is soft and wrapping said vinyl sheet in said soft and pliable condition around said metal weight to enclose said metal weight and conform the vinyl sheet to the flat bottom of the metal weight,

manually sculpting the soft pliable vinyl sheet to a desired apperance, and

cooling said soft pliable vinyl in its desired appearance to form a rigid sculpted paperweight.

4,511,631

METALLIC CHROMIUM-NICKEL-HYDRATED CHROMIUM OXIDE-COATED TIN FREE STEEL AND PROCESS FOR THE PRODUCTION THEREOF

Terunori Fujimoto; Nobuyoshi Shimizu; Mutsuhiro Shimizu; Kazunori Yanagihara; Akio Miyachi, and Tsuneo Inui, all of Yamaguchi, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 599,822

Int. Cl.³ C25D *5/12, 5/48, 11/38*

U.S. Cl. 428—632 **21 Claims**

1. A tin-free steel having three layers consisting of a bottom layer of metallic chromium, a middle layer of metallic nickel and a top layer of hydrated chromium oxide on a steel base.

4. A process for continuously preparing a tin free steel having three layers consisting of a bottom layer of metallic chromium, a middle layer of metallic nickel and a top layer of hydrated chromium oxide on a steel base which comprises:

(a) chromium plating a steel base to form a layer of metallic chromium and hydrated chromium oxide thereon;

(b) a nickel plating the chromium plated steel base with a nickel plating solution under conditions sufficiently acidic to substantially dissolve said hydrated chromium oxide in said solution; and

(c) forming a layer of hydrated chromium oxide on the nickel plated, chromium plated steel base of step (b).

8. A process for continuously preparing a tin free steel having three layers consisting of a bottom layer of metallic chromium, a middle layer of metallic nickel and a top layer of hydrated chromium oxide on a steel base which comprises:

(a) chromium plating onto a steel base to form a layer of metallic chromium and hydrated chromium oxide thereon;

(b) removing the hydrated chromium oxide formed on the

chromium plated steel base by a cathodic treatment in an acidic solution;

(c) nickel plating the chromium plated steel base; and

(d) forming a layer of hydrated chromium oxide on the nickel plated chromium plated steel base of step (c).

4,511,632

ALUMINUM ALLOY CLAD SHEET HAVING EXCELLENT HIGH-TEMPERATURE SAGGING RESISTANCE AND THERMAL CONDUCTIVITY

Ken Toma, Susono; Masanao Iida, Numazu, and Yo Takeuchi, Susono, all of Japan, assignors to Mitsubishi Aluminum Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,737
Int. Cl.³ B32B *15/20*
U.S. Cl. 428—654 **8 Claims**

1. A clad sheet comprising (i) an aluminum alloy sheet having excellent high-temperature sagging resistance and thermal conductivity and (ii) at least one brazing metal film clad on at least one surface of said aluminum alloy sheet;

said aluminum alloy sheet consisting essentially of:

manganese: from 0.1 to 0.5 wt.%,

silicon: from 0.1 to 0.8 wt.%,

zirconium: from 0.02 to 0.2 wt.%,

and, the balance being aluminum and incidental impurities;

said aluminum alloy clad sheet being particularly adapted to be used as a fin material for tubes of a heat exchanger.

4,511,633

GALVANIZED STEEL SHEET PROTECTED BY CHROMIUM AND CHROMIUM OXIDE LAYERS

Roberto Bruno, and Massimo Memmi, both of Rome, Italy, assignors to Zincroksid S.p.A., Turin, Italy

Filed Feb. 10, 1984, Ser. No. 579,079
Claims priority, application Italy, Mar. 21, 1983, 47949 A/83
Int. Cl.³ C25D *3/04*
U.S. Cl. 428—666 **6 Claims**

1. Steel sheet, protected by a zinc coating overlaid with a protective layer of chromium and hydrated oxides of chromium, the chromium metal being in the form of particles having average dimensions of about 0.03 micron, while at least 40% by volume of the metallic chromium is in the form of particles measuring less than 0.02 micron.

4,511,634

SOLDERABLE LAYER SYSTEM

Friedrich W. Nickol, Eppstein, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 3, 1982, Ser. No. 354,467
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110978
Int. Cl.³ H01L *23/48, 29/46, 1/14*
U.S. Cl. 428—686 **3 Claims**

1. A layer arrangement in an intermediate stage of manufacture of a transparent display prior to an oxidation process comprising

a corrosion-resistant solderable layer system connected at least indirectly to an oxidizable conductive layer,

a support on which the layer system and the conductive layer are applied,

said layer system (in said intermediate stage of manufacture prior to said oxidation process) comprises a solderable layer comprising a metal selected from the group consisting of iron and copper, and including adjacent at least a free surface of said solderable layer oxidizable means for forming upon the subsequent oxidation process by oxidation of said means only adjacent said free surface of the solderable layer a corrosion-protection layer covering and protecting said solderable layer at least adjacent said conductive layer from oxidation,

said solderable layer including said means comprising a portion of oxidizable metal other than iron and copper, and

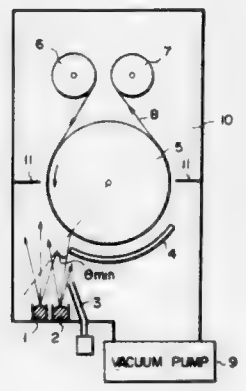
said portion of said oxidizable metal comprising at least one metal selected from the group consisting of aluminum, chromium, indium, titanium and tin.

4,511,635

MAGNETIC RECORDING MEDIUM

Makoto Nagao, and Akira Nahara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1983, Ser. No. 537,620
Claims priority, application Japan, Sep. 30, 1982, 57-171675
Int. Cl.³ G11B *5/65, 5/66*
U.S. Cl. 428—694 **11 Claims**



1. A magnetic recording medium comprising a non-magnetic high-molecular film and at least one magnetic layer containing Co, Ni, Cr and oxygen and formed on said non-magnetic high-molecular film by an oblique incidence vacuum deposition method, wherein the content of said Cr is within the range of 2 to 8 atom %, the content of said oxygen is within the range of 5 to 25 atom %, and the ratio of the number of oxygen atoms to the number of Cr atoms is within the range of 2:1 to 10:1.

4,511,636

MOLTEN CARBONATE FUEL CELL MATRICES

Wolfgang M. Vogel, Glastonbury, and Stanley W. Smith, Vernon, both of Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 7, 1983, Ser. No. 549,380
Int. Cl.³ H01M *4/86*
U.S. Cl. 429—41 **14 Claims**

1. A molten carbonate fuel cell comprising: an anode electrode; a cathode electrode; and a matrix containing an electrolyte which is molten during operation of the fuel cell, the two electrodes being separated by the electrolyte contained within the matrix, the cathode electrode including electrically non-insulating lanthanum containing material and the matrix including an electrically insulating lanthanum oxygenate.

4,511,637

BATTERY LATCH

Robert E. Evans, Piney Flats, Tenn., assignor to S & S Corporation, Cedar Bluff, Va.

Filed Oct. 6, 1983, Ser. No. 539,698
Int. Cl.³ H07M *2/10*
U.S. Cl. 429—100 **6 Claims**

1. A battery retaining mechanism for a battery powered vehicle comprising:

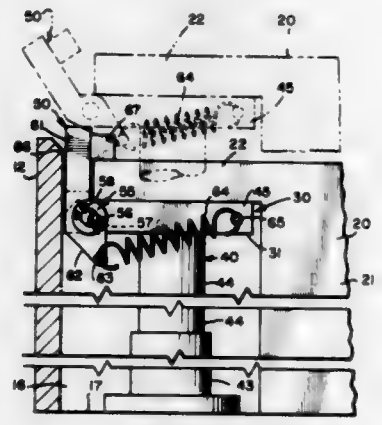
a receiving section on the battery powered vehicle adapted to receive a battery case;

a lifting mechanism comprising a hydraulic cylinder adapted to engage a battery case;

a retaining arm having a first end movable to a first and second position;

a means for biasing the retaining arm to the first position;

said arm positioned on the lifting mechanism so that upon movement into the receiving section contact with the receiving section moves said arm from the first position to the second position; and



said arm having a retaining section adapted to engage a battery case and positioned so that when said retaining arm is in the second position said retaining section is positioned to engage a battery case and when said retaining arm is in the first position said retaining section is positioned to be disengaged from a battery case.

4,511,638

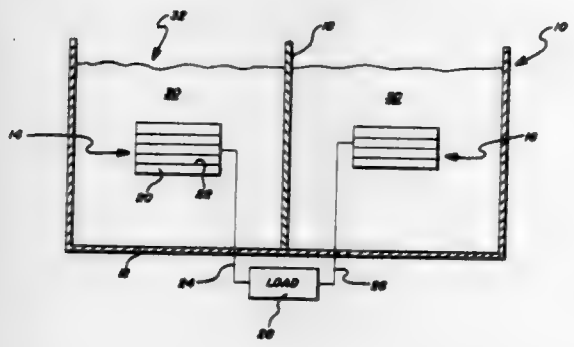
PHOTORESPONSIVE AMORPHOUS SEMICONDUCTOR MATERIALS, METHODS OF MAKING THE SAME, AND PHOTOANODES MADE THEREWITH

Krishna Sapru, Troy; Benjamin Reichman, Birmingham, and Gao Liang, Detroit, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 1, 1983, Ser. No. 499,900

Int. Cl.³ H01M *6/36*; C25B *11/10*

U.S. Cl. 429—111 **42 Claims**



30. A photoelectrochemical cell for the conversion of light into electrical energy or energy stored in a fuel comprising:

a cell having an interior space therein, said space divided by a membrane positioned in said space to form an anode compartment and a counter electrode compartment within said cell,

an electrolyte in said anode compartment and in said counter electrode compartment;

a counter electrode positioned in said counter electrode compartment with at least a portion in contact with said electrolyte;

a photoanode positioned in said anode compartment with at least a portion in contact with said electrolyte;

said photoanode including a substrate having a deposition surface, and an amorphous semiconductor film in electrical contact with said deposition surface, said semiconductor film including a compensating agent selected from the group consisting of hydrogen, lithium, fluorine, beryllium, aluminum, boron, magnesium, other Group I elements, and compounds of these elements, said semiconductor film being cathodically treated to enhance its photoresponse; and

means for allowing light to enter the cell and illuminate said photoelectrode wherein the light will be converted into energy usable as electricity or a fuel.

4,511,639

METHOD FOR REGENERATING THE CARRIER PARTICLES OF A TWO-COMPONENT DEVELOPER CONSISTING OF CARRIER PARTICLES AND TONER

Joseph Knott, Tutzing, and Walter Kopp, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,454

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115294

Int. Cl.³ G03G *9/10*

U.S. Cl. 430—108 **2 Claims**

1. A method for regenerating a developer particulate mix comprising carrier and toner particles contained in a developer unit arranged to deposit toner particles on an image bearing member comprising:

conducting a portion of a main body of said mix in said developer unit to a regenerator device,

removing toner crust formations from carrier particles in said regenerator device by impacting with an ultrasonic wave transmitter said mix portion carrier and toner particles with each other and walls of said regenerator device, and

returning said mix portion from said regenerator device to said main body in said developer unit.

4,511,640

AQUEOUS DEVELOPABLE DIAZO LITHOGRAPHIC PRINTING PLATES WITH ADMIXTURE OF POLYVINYL ACETATE AND STYRENE MALEIC ACID ESTER COPOLYMER

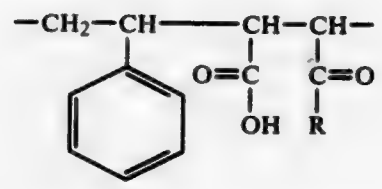
Shuchen Liu, Clinton, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Aug. 25, 1983, Ser. No. 525,927

Int. Cl.³ G03C *1/60*; G03F *7/08*

U.S. Cl. 430—157 **18 Claims**

1. An aqueous developable photosensitive lithographic printing plate composition which comprises, in admixture, about 20% to about 50% by weight of a light sensitive, negative working diazonium salt; about 8% to about 33% by weight of a polyvinyl acetate resin having an average molecular weight in the range of from about 100,000 to less than about 800,000; and about 25% to about 55% by weight of a styrene end-capped, styrene/maleic acid half ester co-polymer of the formula



wherein R is a lower aliphatic alcohol residue having from 1 to about 5 carbon atoms and wherein said polymer has an average molecular weight of not more than about 50,000.

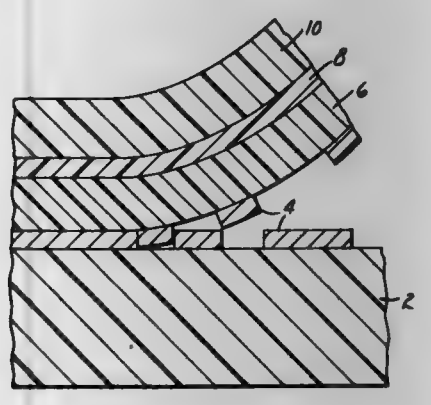
13. A lithographic printing plate which comprises a substrate and the composition of claim 1 coated on said substrate.

4,511,641

METAL FILM IMAGING STRUCTURE

Stanley C. Busman, Oakdale, and John C. Chang, New Brighton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1983, Ser. No. 463,295
Int. Cl.[3] G03C *1/60, 1/90;* G03F *7/26*
U.S. Cl. 430—158 20 Claims



1. A photosensitive, imageable article comprising:
(a) a substrate,
(b) a frangible, thin, light-opaque layer strippably adhered to said substrate, and
(c) a photosensitive layer comprising in admixture a film forming polymeric binder, between 0.2 and 10% by weight of the dry photosensitive layer of at least one acid-sensitive surfactant, and between 0.5 and 10% by weight of the dry photosensitive layer of at least one photochemical acid generator which alters the surface activity of the acid-sensitive surfactant when the photochemical acid generator is photoactivated, and said photosensitive layer is strippably adhered to said light-opaque layer

wherein the peel strength of the unexposed photosensitive layer to said light-opaque layer is less than or greater than the peel strength of said light-opaque layer to said substrate, and the peel strength of the photoactivated photosensitive layer to said light-opaque layer respectively becomes greater than or less than the peel strength of said light-opaque layer to said substrate.

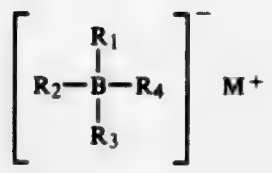
4,511,642

PHOTO-FIXING HEAT-SENSITIVE RECORDING MEDIA WITH PHOTOSENSITIVE DIAZONIUM SALT, COUPLER, AND ORGANIC BORON SALT

Kensaku Higashi; Haruhiko Yano, both of Shizuoka; Hirotsugu Sato; Ken Sukegawa, both of Tokaimura, and Yuji Ooba, Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Public Corp. and Tomoegawa Paper Manufacturing Co., Ltd., both of Tokyo, Japan

Filed Feb. 9, 1983, Ser. No. 465,084
Claims priority, application Japan, Feb. 17, 1982, 57-22893; Feb. 17, 1982, 57-22894; Apr. 16, 1982, 57-62478; Jun. 7, 1982, 57-96175
Int. Cl.[3] G03C *1/60;* G01D *15/10*
U.S. Cl. 430—161 2 Claims

1. Photo-fixing heat-sensitive recording media which comprises a substrate and a coating layer of a recording composition formed on said substrate, said recording composition comprising at least one photosensitive diazonium salt and at least one coupler, both insoluble or sparingly soluble in water, and an organic boron salt capable of rendering the diazonium salt insoluble or sparingly soluble in water and represented by the formula



in which R_1–R_4 independently represent an alkyl group, an alkenyl group, a cycloalkyl group, an allyl group, an aryl group, a heterocyclic group or a cyano group, M^+ represents an alkali metal ion, at least one of the diazonium salt and the coupler being present in the form of a fine powder, said at least one diazonium salt, said at least one coupler and said organic boron salt being present in amounts sufficient for thermal recording of high sensitiveity with excellent storage stability even under high humidity conditions, said at least one diazonium salt, said at least one coupler and said organic boron salt being in admixture in a single layer or by reason of being in adjacent layers.

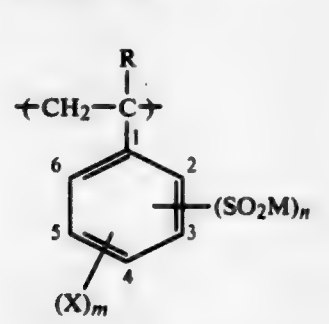
4,511,643

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENT

Ichizo Toya, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1983, Ser. No. 534,922
Claims priority, application Japan, Sep. 22, 1982, 57-165232
Int. Cl.[3] G03C *5/54, 1/40*
U.S. Cl. 430—212 20 Claims

1. A color diffusion transfer photographic element comprising at least
(a_1) a light-sensitive element comprising at least a mordant layer and a light-sensitive silver halide emulsion layer having associated therewith a dye image-providing material or
(a_2) a light-sensitive element comprising at least a light-sensitive silver halide emulsion layer having associated therewith a dye image-providing material and a dye image-receiving element comprising at least a mordant layer, and
(b) an alkaline processing composition element, which comprises a compound having recurrent units represented by the general formula (I):



(I)

wherein:
R represents a hydrogen atom, an alkyl group, or a halogen atom;
M represents a hydrogen atom, an alkali metal atom, an alkaline earth metal atom or an organic base;
X represents an alkyl group, an alkoxy group, an alkylamino group or a halogen atom;
m is 0 or an integer of 1 or 2; and
n is an integer of 1 or 2.

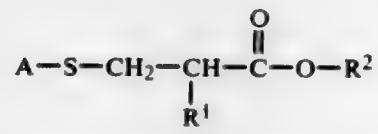
4,511,644

PHOTOGRAPHIC ELEMENTS WITH DEVELOPMENT INHIBITOR PRECURSOR

Hisashi Okamura; Shinji Sakaguchi; Osamu Takahashi, and Ashita Murai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1983, Ser. No. 560,054
Claims priority, application Japan, Dec. 10, 1982, 57-216690
Int. Cl.³ G03C *5/54, 1/40, 1/34*
U.S. Cl. 430—219 **15 Claims**

1. A photographic element comprising a support having provided thereon at least one photosensitive silver halide emulsion layer, said photographic element containing a development inhibitor precursor represented by following general formula (I):



(I)

wherein A represents an unsubstituted or substituted phenyl group or a 5-membered or 6-membered nitrogen-containing heterocyclic ring; R^1 represents a hydrogen atom or a monovalent substituent; and R^2 represents an organic ballasting group.

4,511,645

PHOTOSENSITIVE PLATE FOR LITHOGRAPHIC PRINTING PLATE

Mitsuru Koike; Kesanao Kobayashi; Tadao Toyama; Hiroshi Misu, all of Shizuoka; Koji Tamoto, Kanagawa, and Masayuki Iwasaki, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 9, 1983, Ser. No. 530,821
Claims priority, application Japan, Sep. 9, 1982, 57-157198
Int. Cl.³ G03C *1/94, 1/68*
U.S. Cl. 430—276 **12 Claims**

1. A presensitized printing plate comprising:
a support base having positioned thereon
a photopolymerizable composition layer, the composition comprising:
(A) a copolymer of allylmethacrylate and methacrylic acid;
(B) a monomer or oligomer having at least two polymerizable ethylenically unsaturated double bonds; and
(C) a photopolymerization initiator.

3. A presensitizing printing plate, as claimed in claim 1, wherein the support base is comprised of a composite sheet comprising an aluminum sheet firmly attached to a polyethylene terephthalate film.

4,511,646

ETHYLENICALLY-UNSATURATED DEXTRIN COMPOSITION FOR PREPARING A DURABLE HYDROPHILIC PHOTOPOLYMER

Elsie A. Fohrenkamm, St. Paul, and Alan D. Rousseau, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1983, Ser. No. 471,828
Int. Cl.³ G03C *1/70;* C08L *3/02*
U.S. Cl. 430—283 **11 Claims**

1. A photosensitive composition capable of providing a cross-linked hydrophilic photopolymer comprising

(a) an ethylenically unsaturated dextrin oligomer having a degree of substitution of about 0.20 to about 0.45,
(b) at least one hydroxyfunctional acrylamide monomer,
(c) inorganic solid particulate material, and
(d) a photoinitiation system, said composition, upon undergoing photopolymerization, forming a cross-linked hydrophilic photopolymer.

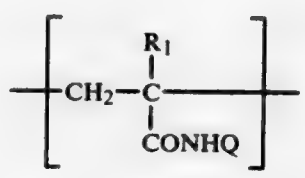
4,511,647

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tsumoru Hirano; Morio Yagihara, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

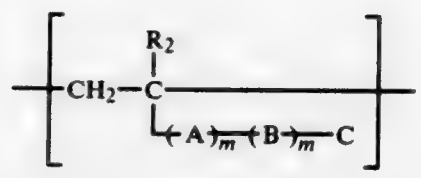
Filed Nov. 9, 1983, Ser. No. 549,947
Claims priority, application Japan, Nov. 9, 1982, 57-196575
Int. Cl.³ G03C *7/16, 7/26*
U.S. Cl. 430—381 **27 Claims**

27. A method of forming a color image comprising imagewise exposing a silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a cyan color image forming polymer coupler latex which comprises at least one recurring unit of a cyan coupler monomer capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent represented by the general formula (I) described below, at least one recurring unit of an ethylenically unsaturated monomer containing an acid component represented by the general formula (II) described below and at least one recurring unit of methyl acrylate



(I)

wherein R_1 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; and Q represents a cyan coupler residue capable of forming a cyan dye upon coupling with an oxidized aromatic primary amine developing agent



(II)

wherein R_2 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; A represents —COO— or —CONH—; B represents an alkylene group containing from 1 to 10 carbon atoms which may be a straight chain, a branched chain or a cyclic, an aralkylene group containing from 7 to 18 carbon atoms or a phenylene group containing from 6 to 10 carbon atoms (inclusive of carbon atoms of substituents for the phenylene group); C represents —COOM or —SO_3M: M represents a hydrogen atom ion, an alkali metal ion, an alkaline earth metal ion or an ammonium ion; and m represents 0 or 1 deceloping the exposed material using an alkaline aqueous solution containing an aromatic primary amine developing agent.

4,511,648
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kiyoshi Yamashita, and Toshifumi Iijima, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP82/00260, § 371 Date Feb. 24, 1983, § 102(e) Date Feb. 24, 1983, PCT Pub. No. WO83/00234, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 10, 1982, Ser. No. 474,663

Claims priority, application Japan, Jul. 10, 1981, 56-106908; Dec. 11, 1981, 56-200477; Dec. 12, 1981, 56-200611; Dec. 13, 1981, 56-200552

Int. Cl.³ G03C *1/46, 1/08*

U.S. Cl. 430—503 21 Claims

1. A light-sensitive silver halide color photographic material comprising a support and at least two silver halide emulsion layers on the same side of said support, said at least two silver halide emulsion layers being sensitive to different spectral regions, at least one layer of said silver halide emulsion layers comprising at least two silver halide emulsion layers having different light-sensitivity, each of said at least two emulsion layers having different light-sensitivity,

containing at least one kind of substantially monodispersed silver halide crystals and at least one silver halide emulsion layer of said at least two emulsion layers having different light-sensitivity comprising a substantial amount of silver iodobromide containing at least 4 mole % of silver iodide, wherein the amount of iodine in the emulsion layer having the highest light-sensitivity is greater than the amount of iodine present in the emulsion layer having the second highest light-sensitivity.

4,511,649
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Akira Ogawa, and Momotoshi Tsuda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

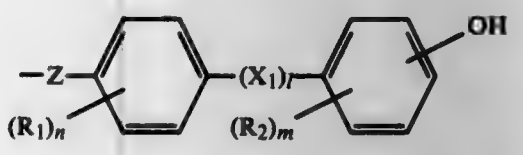
Filed May 21, 1984, Ser. No. 612,499

Claims priority, application Japan, May 20, 1983, 58-88940

Int. Cl.³ G03C *7/26, 7/32*

U.S. Cl. 430—553 27 Claims

1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, the color photographic light-sensitive material containing a coupler having at the coupling position thereof a group represented by formula (I)



(I)

wherein Z represents an oxygen atom or a sulfur atom; R_1 and R_2 each represents a halogen atom, an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group, a cyano group, a nitro group, a hydroxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylsulfonamido group, an arylsulfonamido group, an alkylsulfamoyl group, an arylsulfamoyl group, an acylamino group, an amino group, an alkylcarbamoyl group, an arylcarbamoyl group, an alkylsulfonyl group, an arylsulfonyl group, an alkylcarbonyl group or an arylcarbonyl group; X_1 represents a divalent organic connecting group; l is 0 or 1; and n and m each is 0, 1, 2, 3 or 4 and the total number of n+m is 1 to 8, and when n or m is 2 or more, the R_1 or R_2 groups may be the same or different.

4,511,650
HEAT DEVELOPABLE COLOR LIGHT-SENSITIVE MATERIALS WITH BASE RELEASORS

Hiroyuki Hirai, and Ken Kawata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 16, 1984, Ser. No. 590,396

Claims priority, application Japan, Mar. 16, 1983, 58-43860

Int. Cl.³ G03C *5/54, 1/40*

U.S. Cl. 430—559 6 Claims

1. A heat developable color light-sensitive material, comprising:

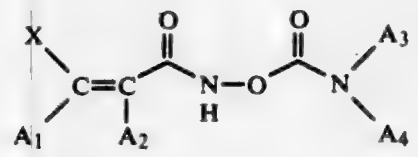
a support base having thereon;

a light-sensitive silver halide;

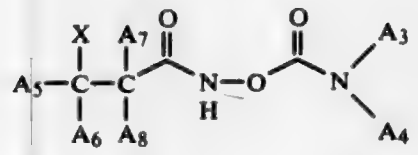
a binder;

a dye-releasing material which is reductive to the light-sensitive silver halide and releases a hydrophilic dye by causing a reaction with the light-sensitive silver halide by heating; and

a base precursor represented by a general formula selected from the group consisting of the general formulae (A) and (B):

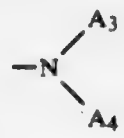


(A)



(B)

wherein A_1, A_2, A_5, A_6, A_7, and A_8 independently represent a substituent selected from a hydrogen atom, an alkyl group, a substituted alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, an aryl group, a substituted aryl group, an acyl group, and a heterocyclic group, A_1 and A_2 may combine each other to form a ring, two of A_5, A_6, A_7 and A_8 may combine with each other to form a ring, and A_3 and A_4 each represents a hydrogen atom, an alkyl group, a substituted alkyl group, a cycloalkyl group, or an aralkyl group, A_3 and A_4 may combine with each other to form a ring and



may become a double bond to form an imino group and X represents a nucleophilic group.

4,511,651
REAGENT COMPOSITION AND ASSAY FOR THE DETERMINATION OF γ-GLUTAMYLTRANSFERASE ACTIVITY

Larry E. Beaty, Indianapolis, and Steven M. Lanham, Brownsburg, both of Ind., assignors to American Monitor Corporation, Indianapolis, Ind.

Filed Jul. 30, 1982, Ser. No. 403,680

Int. Cl.³ C12Q *1/48, 1/36;* C12N *9/96*

U.S. Cl. 435—15 4 Claims

1. A reagent composition for the determination of the enzyme γ-glutamyltransferase in a fluid, comprised of:

(a) an enzymatically reactive amount of γ-glutamyl-p-nitroanilide;

(b) a buffer;

(c) a glycylglycine; and

(d) a cyclodextrin from the group consisting of β-cyclodextrin and cyclodextrins substituted with 1 to 4 amino

groups in an amount between about 1 and 19 grams per liter.

4,511,652

HIGH EFFICIENCY EUKARYOTIC METALLOTHIONEIN PROMOTER SYSTEM

Seymour Fogel; Juliet W. Welch, both of Kensington, and Michael Karin, San Francisco, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 3, 1982, Ser. No. 384,821

Int. Cl.[3] C12Q *1/29;* C12P *21/00, 21/02, 19/34;* C12N *15/00, 1/20, 1/16, 1/18, 1/00;* C07H *21/04*

U.S. Cl. 435—29 18 Claims

1. A DNA sequence encoding yeast copper chelatin or a copper chelating fragment thereof having naturally occurring flanking regions, each flanking region being less than 5 kbp.

4,511,653

PROCESS FOR THE INDUSTRIAL PREPARATION OF COLLAGENOUS MATERIALS FROM HUMAN PLACENTAL TISSUES, HUMAN COLLAGENOUS MATERIALS OBTAINED AND THEIR APPLICATION AS BIOMATERIALS

Dominique Play; Marc Bonneau; Charles Merieux; Daniel Herbage, all of Lyons, and Philippe Comte, Sainte-Foy-Les-Lyon, all of France, assignors to Foundation Merieux and Centre Technique du Cuir, both of Lyons, France

PCT No. PCT/FR82/00199, § 371 Date Oct. 14, 1983, § 102(e) Date Oct. 14, 1983

PCT Filed Nov. 25, 1982, Ser. No. 545,398

Claims priority, application France, Nov. 26, 1981, 81 22606

Int. Cl.[3] C08H *1/06;* C12P *21/06*

U.S. Cl. 435—69 5 Claims

1. A process for the industrial preparation of human collagenous material from human placental tissue which comprises the steps of:

(a) pressing, grinding, and washing said placental tissue in a neutral or acid medium;

(b) subjecting the placental tissue treated according to step (a) to an alkaline treatment with a 0.5M NaOH, a 0.5M KOH, or a saturated lime water solution at a temperature less than or equal to 10° C.;

(c) centrifuging the placental tissue treated according to step (b) to form a first alkaline extract containing 10 to 20% by weight of the collagen in the placental tissue and to form a first insoluble residue which is equivalent to only 20% by weight of the placental tissue but which contains over 80% of the collagen in the placental tissue;

(d) removing the first alkaline extract from the first insoluble residue;

(e) treating the first insoluble residue formed during step (c) with a 0.1 to 0.5M NaOH solution at a temperature less than 10° C.;

(f) centrifuging the insoluble residue treated according to step (e) to form a second alkaline extract which contains about 16% of the collagen in the placental tissue;

(g) removing the second alkali extract from the first insoluble residue; and

(h) extracting the first insoluble residue subsequent to step (g) with a 0.1 to 0.5M acetic acid solution at a temperature less than 10° C. to form a second insoluble residue having a collagen content of about 85% and corresponding to about 68% by weight of the collagen in the placental tissue and an acid extract containing about 5% by weight of the collagen in the placental tissue, and removing the acid extract.

4,511,654

PRODUCTION OF HIGH SUGAR SYRUPS

Ronald P. Rohrbach, Forest Lake, Ill.; Mary J. Maliarik, Ann Arbor, Mich., and Thomas P. Malloy, Lake Zurich, Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 360,120, Mar. 19, 1982, abandoned. This application May 31, 1983, Ser. No. 499,652

Int. Cl.[3] C12P *19/22, 19/20;* C12N *11/14*

U.S. Cl. 435—95 9 Claims

1. A process for the production of a high glucose or maltose syrup which comprises treating a feedstock having a low dextrose equivalent in the range of from about 5 to about 25 with an immobilized enzyme selected from the group consisting of amyloglucosidase and beta-amylase attached to an inorganic porous support material in a conversion zone at conversion conditions comprising a temperature in the range of from about 45° to about 70° C., a pressure in the range of from about 1 to about 1000 psi, a Liquid Hourly Space Velocity in the range of from about 2 to about 50 and a residence time in a range of from about 4 minutes to about 1.6 hours to form a partially hydrolyzed reaction mixture by conversion of said feedstock to glucose or maltose in a range of from about 50% to about 85%, while substantially preventing the formation of reversion products which impart a disagreeable taste to said syrup, passing the resultant partially hydrolyzed reaction mixture through an ultrafiltration membrane to form a retentate and a permeate, recycling the retentate to said conversion zone, and recovering the permeate comprising said high glucose or maltose content syrup.

4,511,655

PROCESS FOR PRODUCING 4-CYCLOPENTENONES

Masayoshi Minai, Moriyama, and Tadashi Katsura, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

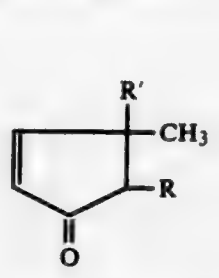
Filed Nov. 19, 1982, Ser. No. 443,017

Claims priority, application Japan, Nov. 19, 1981, 56-186658; Dec. 25, 1981, 56-212393; Mar. 15, 1982, 57-41207

Int. Cl.[3] C12P *7/38, 7/62;* C07B *19/02*

U.S. Cl. 435—149 11 Claims

1. A process for producing 4-cyclopentenones of the formula:



wherein R is a lower alkyl group, a lower alkenyl group or a lower alkynyl group and R' is a hydroxyl group or an aliphatic acyloxy group, provided that the substituent R at the 2-position and the methyl group at the 3-position take a cis-configuration in the d- or l-form, which comprises hydrolyzing the corresponding 4-cyclopentenone wherein R' is an aliphatic acyloxy group in the dl-form with a microorganism or enzyme having a capability of selective hydrolysis of the d- or l-form in said starting corresponding 4-cyclopentenone in the dl-form to selectively obtain either the d- or l-form 4-cyclopentenone product.

4,511,656

DIRECT FERMENTATION OF D-XYLOSE TO ETHANOL BY A XYLOSE-FERMENTING YEAST MUTANT

Cheng-Shung Gong, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 263,925, May 15, 1981, Pat. No. 4,368,268. This application May 11, 1982, Ser. No. 376,731
The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.
Int. Cl.[3] C12P *7/06*
U.S. Cl. 435—161 23 Claims

1. A process for the direct fermentation of D-xylose to ethanol which comprises inoculating a medium comprising growth nurients and D-xylose with a yeast mutant having an ability to ferment D-xylose to ethanol with a bioconversion yield of at least 50%, permitting the inoculated medium to ferment for a period of time sufficient to achieve a conversion of D-xylose to ethanol of at least 50% and recovering the ethanol so produced as product, said mutant being obtained from a parent yeast strain selected from the group consisting of Candida sp. and *Saccharomyces cerevisiae.*

4,511,657

TREATMENT OF OBNOXIOUS CHEMICAL WASTES

Joseph F. Colaruotolo, Grand Island, N.Y.; Robert L. Irvine, Mishawaka; Lloyd H. Ketchum, Jr., South Bend, both of Ind., and Wei-chi Ying, Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed May 25, 1982, Ser. No. 381,866
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.
Int. Cl.[3] C12N *1/22, 1/36;* C12R *1/38;* C12K *1/02*
U.S. Cl. 435—253 16 Claims

1. A microbial culture system comprising activated sludge and a supplemental microbial inoculant selected from the group consisting of ATCC 31945, ATCC 31941, ATCC 31942, ATCC 31940, ATCC 31943, ATCC 31944, ATCC 31939, and mutants thereof, which is acclimated to metabolize chemical wastewaters and chemical waste landfill leachates, containing halogenated organic compounds.

4,511,658

COLORIMETRIC DETECTOR FOR FORMALDEHYDE VAPOR

Jack L. Lambert, Manhattan, and Yuan C. Chiang, Salina, both of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Feb. 28, 1983, Ser. No. 470,510
Int. Cl.[3] G01N *21/78*
U.S. Cl. 436—130 8 Claims

1. The process of preparing a colorimetric detector for formaldehyde vapor, comprising:

(a) coating an inert solid support with a solid phase layer of stable metal bicarbonate;

(b) applying to said metal bicarbonate layer a solution of 4-amino-3-hydrazino-5-mercapto-1,2,4-triazole (AHMT) in a volatile liquid ketone forming a compound with AHMT from which the ketone can be displaced by formaldehyde; and

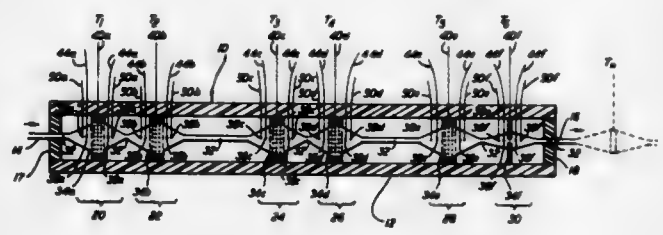
(c) evaporating unreacted ketone from said layer and support to obtain a colorimetric detector sensitive to formaldehyde vapor in the detective range below 2 ppm formaldehyde.

4,511,659

LIQUID CHROMATOGRAPH WITH ELECTROCHEMICAL DETECTOR AND METHOD

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 472,387, Mar. 4, 1983, abandoned, and a continuation-in-part of Ser. No. 425,183, Sep. 28, 1982, , which is a continuation of Ser. No. 111,917, Jan. 4, 1980, Pat. No. 4,404,065. This application Feb. 17, 1984, Ser. No. 579,401
Int. Cl.[3] G01N *27/52, 33/48*
U.S. Cl. 436—150 26 Claims



1. An electrochemical detection apparatus for electrochemically testing a sample containing reversible and irreversible electrochemically active materials in solution, said apparatus comprising:

at least three coulometric electrochemical flow cell, each of said cells having therein at least one working electrode, at least one counter electrode and at least one reference electrode, said plurality of electrochemical cells being arranged in series and defining collectively at least one flow channel for said sample solution;

means for connecting each said reference electrode to a reference potential;

means connecting each said counter electrode to a counter potential; and

means connecting each said working electrode to a working potential, at least two of said cells constituting gate cells, each of said gate cells having means for maintaining its working electrode at a different potential from the other, one of said gate cells being at a potential to oxidize electrochemcially active materials in said sample and another of said gate cells being at a potential to reduce electrochemically active materials in said sample

said remaining cell or cells having means for maintaining its working electrode at a potential to detect and coulometrically measure electrochemically reversible materials in said sample.

13. The method for analyzing complex mixtures of electrochemically active fluids containing electrochemically irreversible materials and trace quantities of electrochemically reversible materials comprising the steps of passing said electrochemically active fluids sequentially through a liquid chromatographic column for achieving time spaced separation of the materials eluting from the column and an electrochemical detection apparatus for electrochemically testing a sample containing reversible and irreversible electrochemically active materials in solution, the detection apparatus comprising at least three coulometric cells arranged in series, maintaining the coulometric electrodes of two of said cells at different potentials to change the oxidation state of electrochemically reversible and electrochemically irreversible materials and convert at least some of said materials to an electrochemically inactive state at the potential maintained on a following coulometric measuring electrode, providing at least one additional test cell following said two gate cells, and coulometrically measuring electrochemically reversible materials of interest in the eluant at a measuring electrode held at a potential adequate to detect and measure the quantity of said materials of interest.

4,511,660

PROCESS AND ARRANGEMENT FOR MEASURING ION STRENGTH

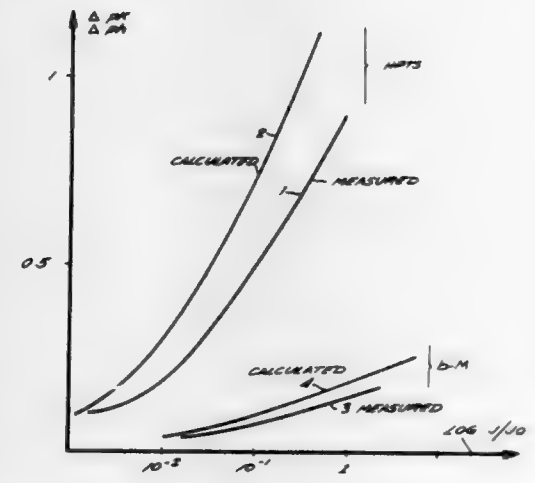
Dietrich W. Lübbers, Rheinlanddam 201a, D-4600 Dortmund, and Norbert Opitz, Marianstrasse 18, D-4630 Bochum, both of Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,251

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1982, 3222325

Int. Cl.³ G01N *21/00, 21/77, 27/36*

U.S. Cl. 436—163 **18 Claims**



1. Process for directly measuring the ion strength of an electrolyte solution comprising the combination of steps of:

measuring the pH value of the electrolyte solution with a first indicator;

measuring the pH of the electrolyte solution with a second indictator which is dependent on the ion strength in a manner different from said first indicator; and

computing the ion strength J of said solution from said first pH measurement and said second pH measurement according to:

$$J = Jo \cdot 10^{F(N)}\left[1 + \frac{W(X) + 0.5}{W(N) - W(X)}\right][pH'(N) - pH'(X)]$$

wherein

Jo=ion strength upon calibration;

pH'(N)=pH value, measured with the first indicator;

pH'(X)=pH value, measured with the second indicator;

W(N)=valency of the first indicator

W(X)=valency of the second indicator; and

$$F(N) = -\frac{1}{0.07[2W(N) + 1]}.$$

4,511,661

ATCC HB8116 AND ITS MONOCLONAL ANTI-H-Y ANTIBODY, HYCLONALAN

Ellen H. Goldberg, Albuquerque, N. Mex., assignor to University Patents, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 359,707, Mar. 19, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,395

Int. Cl.³ G01N *33/54, 33/58;* C12N *15/00*

U.S. Cl. 436—503 **12 Claims**

2. A monoclonal antibody, Hyclonalan, produced by hybridoma cell line ATCC HB8116 and having selective binding affinity to H-Y antigen.

3. An immunological procedure for the identification and separation of male mammalian cells from female mammalian cells comprising:

(a) contacting a mixture of said male and female cells with the monoclonal antibody, Hyclonalan, that has specific binding affinity to H-Y antigen and is produced by hybridoma cell line ATCC HB8116;

(b) allowing a selective immunological reaction to occur between said male cells and Hyclonalan resulting in an antibody-male cell complex; and

(c) detecting said complex and separating said female cells from said complex.

4,511,662

SIMULTANEOUS ASSAY FOR T AND B LYMPHOCYTE POPULATIONS AND SUBPOPULATIONS

Madelyn M. Baran, Novato, and Dennis M. Bleile, Emeryville, both of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Jun. 18, 1982, Ser. No. 389,838

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—513 **26 Claims**

1. A method for simultaneously determining the relative number of B cells and T cells in a lymphocyte population of a vertebrate, said method employing (1) B cell labels comprising insoluble polymeric particles having a size in the range from 5 to 15 microns bound to B cell binding proteins and (2) T cell labels comprising insoluble polymeric particles having a size in the range from 5 to 15 microns bound to T cell binding protein, at least one of said B cell and T cell labels being covalently coupled to a dye which imparts a color to the particle which is visible under a light microscope, said method comprising:

incubating the lymphocyte population simultaneously with the B cell labels and T cell labels for a time sufficient for all of the B cells and T cells to specifically form rosettes with the corresponding label; and

counting the number of B cell rosettes and T cell rosettes under a light microscope.

4,511,663

FIBER-REINFORCED COMPOSITES

Mark P. Taylor, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 9, 1984, Ser. No. 638,781

Int. Cl.³ B32B *9/00;* D02G *3/00*

U.S. Cl. 501—4 **6 Claims**

1. A fiber-reinforced composite having an improved mechanical strength and being composed of metal-coated, carbon fibers embodied within a glass or glass-ceramic matrix.

4,511,664

PROCESS FOR MANUFACTURING CERAMIC FIBERS CONSISTING MAINLY OF ALUMINA AND SILICA

Masafumi Yamamoto, Toyokawa, Japan, assignor to Isolite Babcock Refractories Co., Ltd., Aichi, Japan

Filed Jun. 4, 1984, Ser. No. 617,192

Claims priority, application Japan, Oct. 4, 1983, 58-186578

Int. Cl.³ C03C *13/00*

U.S. Cl. 501—35 **8 Claims**

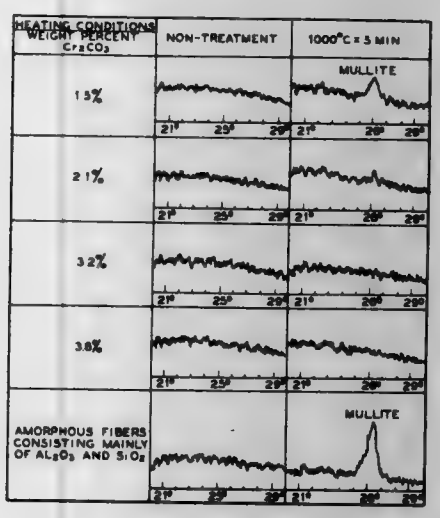
5. A ceramic fiber product consisting mainly of alumina and silica, which is produced by a method comprising:

melting a material containing 35 to 65% by weight of Al_2O_3, 30 to 60% by weight of SiO_2, 1.5 to 4% by weight of Cr_2O_3 and 0.01 to 0.1% by weight of carbon;

forming amorphous fibers from said molten material;

heating said amorphous fibers rapidly to a temperature of 950° C. to 1,150° C.;

holding the heated fibers at said temperature for several to about a dozen minutes; and



cooling the heated fibers rapidly to ordinary room temperature.

4,511,665

DECORATIVE HARD GOLDEN CERAMIC ARTICLE

Yoshio Nagato, Kokubu, and Kazunori Soroi, Sendai, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 26, 1983, Ser. No. 535,739
Claims priority, application Japan, Sep. 30, 1982, 57-173769
Int. Cl.³ C04B *35/10, 35/48, 35/58*
U.S. Cl. 501—96 **8 Claims**

1. A decorative hard golden ceramic article consisting essentially of at least one member selected from titanium nitride and zirconium nitride as the main component, and 0.1 to 5% by weight of at least one member selected from alumina (Al_2O_3) and zirconia (ZrO_2).

4,511,666

PROCESS FOR PRODUCING BETA'-SILICON ALUMINUM OXYNITRIDE (B'-SIALON)

Frankie E. Phelps, Lower Burrell; Paul J. Boget, and Robert L. Troup, both of Murrysville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 16, 1982, Ser. No. 450,337
Int. Cl.³ C04F *35/56*
U.S. Cl. 501—98 **10 Claims**

1. A process for producing an essentially beta'-SiAlON refractory material, the process comprising:

providing a uniform mixture of initial reactant materials as sources of SiO_2, Al_2O_3 and C in a reactor;

nitriding said mixture at temperatures between 1200° C. and 1450° C. for a time sufficient to convert at least a portion of said initial reactants to at least a portion of effective reactants; and

heating said effective reactants in the presence of nitrogen at temperatures from 1400° to 1650° C. for a time sufficient to convert said effective reactants to an essentially beta'-SiAlON refractory material.

4,511,667

COMPOSITE ZEOLITE-ASBESTOS CATALYSTS

Raymond L. V. Mao, 2725 Place Darlington, Apt. 1, Montreal, Quebec H3S 1L4, Canada, and Peter H. Bird, 4166 Hingston Ave., Montreal, Quebec H4A 2J7, Canada

Filed Jan. 16, 1984, Ser. No. 571,348
Claims priority, application Canada, Apr. 26, 1983, 426687
Int. Cl.³ B01J *29/08, 29/28, 21/16*
U.S. Cl. 502—64 **29 Claims**

1. A composite crude zeolite-asbestos-zeolite promoter material having a microstructure having intermingled crude zeolite and asbestos formations together with a zeolite-promoter substance.

16. A method of making a composite zeolite-asbestos-zeolite promoter material having intimately intermingled zeolite and asbestos formations together with a zeolite-promoter substance which comprises:

(a) leaching asbestos with acid solution until part of the metal components of the asbestos lattice is solubilized;

(b) impregnating the dried solid from (a) with a mixture of zeolite promoter substance and alkali metal hydroxide in aqueous solution, incubating at an elevated temperature sufficient to favor the formation of complex silicates and adding a solution of an aluminate of an alkali metal and continuing to incubate at an elevated temperature to obtain a geliform suspension, adding further zeolite promoter substance, the quantities and properties of materials added being sufficient to ensure the production of zeolite in subsequent treatment; and

(c) heating the resulting incubated mixture sufficiently to yield crude zeolite formations in situ and yield the composite zeolite-asbestos-zeolite promoter material.

20. The method of claim 16 in which the zeolite promoter substance is a zeolite-structure-forming substance and the zeolite formations resulting from step (c) are ZSM-5.

4,511,668

CATALYST FOR USE IN HYDROLYSIS OF CARBONYL SULFIDE

Ikutoshi Nozue; Susumu Fujii, and Masayuki Hanada, all of Kitakyushu, Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,406
Int. Cl.³ B01J *21/06, 23/02, 23/06, 23/14*
U.S. Cl. 502—84 **6 Claims**

1. A catalyst composition for use in the hydrolysis of carbonyl sulfide to convert same into hydrogen sulfide, which consists essentially of a catalyst carrier made of titanium oxide and not more than 30 wt.% of a reinforcing material selected from the group consisting of silica, alumina, clay and aluminosilicate, said catalyst carrier having deposited thereon from 0.5 to about 10 wt.% of at least one oxide of a metal of Group IA or Group IIA of the Periodic Chart of the Elements.

4,511,669

HIGH EFFICIENCY CATALYSTS FOR VARYING OLEFIN POLYMER MOLECULAR WEIGHT DISTRIBUTION

Donald E. Gessell, Ponca City, Okla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 429,631, Sep. 30, 1982, abandoned. This application Aug. 18, 1983, Ser. No. 523,867
Int. Cl.³ C08F *4/02, 4/64, 4/68, 4/62*
U.S. Cl. 502—110 **30 Claims**

5. A method for the preparation of an olefin polymerization catalyst comprising combining

(1) the reaction product of a hydropolysiloxane of the general formula

$$[R^1_aH_bSiO_{4-\frac{(a+b)}{2}}]_n$$

wherein R^1 is selected from the group consisting of hydrogen, halogen, alkyl groups containing from 1 to 20 carbon atoms, aryl groups, aralkyl groups, alkaryl groups and acyloxy groups, each containing from 6 to 20 carbon atoms, a is from 0.1 to 2, b is greater than 0 and n is greater than 0, where the sum of a and b does not exceed 3, with a dialkyl magnesium or alkyl magnesium alkoxide of the general formula

RMgR or RMgOR

wherein each R is, independently, hydrogen, alkyl groups containing from 1 to 20 carbon atoms, aryl groups, aralkyl groups and alkaryl groups each containing from 6 to 20 carbon atoms, to form a reaction product having a Si-O/Mg molar ratio of at least 1.0, with

(2) non-halide transition metal alkoxides having at least one of the general formulas

$$RO[M(OR)_2O]_pR \text{ or } MO_q(OR)_r \text{ or } R_xM(OR)_y$$

where M is titanium, vanadium, chromium or zirconium and R is an alkyl group containing from 1 to 20 carbon atoms, aryl groups, aralkyl groups and alkoxyl groups each containing from 6 to 20 carbon atoms, q is 0 or 1, r is from 2 to 4, and $2q+r$ is equal to the valence of M; p is at least 2; and $x+y$ is equal to the valence of M, and

(3) a halogenating agent to obtain a polymerization catalyst having a halogen to magnesium ratio of at least 2.0.

4,511,670

CATALYSTS CONTAINING MIXED OXIDES OF VANADIUM, PHOSPHORUS, AND ALUMINUM AND/OR BORON

George D. Suciu, Ridgewood, N.J.; Giancarlo Stefani, and Carlo Fumagalli, both of Bergamo, Italy, assignors to The Lummus Company, Bloomfield, N.J.; Alusisse Italia S.p.A., Milan, Italy

Filed Aug. 17, 1983, Ser. No. 523,769
Int. Cl.³ B01J *27/14, 21/02;* C07D *307/60*
U.S. Cl. 502—209 **23 Claims**

1. A composition of matter, comprising:

a mixed oxide catalyst comprising vanadium, phosphorus and a member selected from the group consisting of aluminum, boron and mixtures thereof, said catalyst having a phosphorus to vanadium atomic ratio, based on phosphorus uncombined with said member, of from 1:1 to 2:1, an atomic ratio of said member to vanadium of at least 0.10:1, said catalyst having been prepared by treating dried solid catalyst precursor comprising mixed oxides of vanadium and phosphorus in finely divided form with a solution of phosphoric acid and a member selected from the group consisting of water soluble compounds of aluminum, boron and mixtures thereof; and drying of the treated solid catalyst precursor to provide a solid catalyst.

4,511,671

CATALYST FOR MANUFACTURING METHACROLEIN

Noboru Saito, Takatsuki; Takeshi Satake, Kyoto; Ryuji Aoki, Himeji, and Isao Nagai, Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 1, 1983, Ser. No. 528,560
Claims priority, application Japan, Sep. 6, 1982, 57-153819
Int. Cl.³ B01J *21/08, 23/78, 23/84, 23/88*
U.S. Cl. 502—242 **6 Claims**

1. A catalyst for manufacturing methacrolein by the vapor phase oxidation of isobutylene or tertiary butanol, said catalyst having the composition represented by the following formula

$$Mo_aW_bBi_cFe_dA_eB_fC_gD_hO_x$$

wherein

A represents at least one element selected from the group consisting of nickel and cobalt,

B represents at least one element selected from the group consisting of alkali metals, alkaline earth metals and thallium,

C represents at least one element selected from the group consisting of tellurium, antimony, tin, cerium, lead, manganese and zinc,

D represents at least one element selected from the group consisting of silicon, aluminum, zirconium and titanium,

a, b, c, d, e, f, g, h, and x respectively represent the atomic ratios of Mo, W, Bi, Fe, A, B, C, D, and O, and when

a is fixed at 12,
b is from 0 to 10,
c is from 0.1 to 10,
d is from 0.1 to 20,
e is from 2 to 20,
f is from 0 to 10,
g is greater than 0 to 4,
h is from 0 to 30 and
x is a number determined by the atomic valences of the individual elements,

and being molded in the shape of a hollow cylinder having an outside diameter of 3.0 to 10.0 mm, an inside diameter 0.1 to 0.7 times the outside diameter and a length 0.5 to 2.0 times the outside diameter.

4,511,672

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 403,255, Jul. 29, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 571,291
Int. Cl.³ B01J *23/18, 23/02*
U.S. Cl. 502—243 **5 Claims**

1. A catalyst consisting essentially of catalytically-effective amounts of bismuth, tungsten and an alkali or alkaline earth component on a carrier material.

4,511,673

CATALYST FOR REFORMING OF METHANOL AND PROCESS OF PREPARING SAME

Yoshiyuki Eto, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 24, 1983, Ser. No. 478,350
Claims priority, application Japan, Apr. 2, 1982, 57-53712
Int. Cl.³ B01J *23/10, 23/40*
U.S. Cl. 502—525 **28 Claims**

1. A catalyst for reforming methanol to hydrogen and carbon monoxide, consisting essentially of:

a carrier which comprises active alumina over at least substantially the entire surface thereof; applied to said carrier, at least one compound oxide which is expressed by the general formula $MAlO_3$ which is a perovskite structure, wherein M represents a metal element selected from the group consisting of the titanium family elements; and at least one catalytic metal of the platinum group, deposited in reduced metallic form on said carrier.

4,511,674

PROCESS AND CATALYST FOR THE PREPARATION OF A GAS MIXTURE HAVING A HIGH CONTENT OF C_2-HYDROCARBONS

Karsten Pedersen, Birkerod; Jens R. Rostrup-Nielsen, Virum, and Ib Greve H. Jorgensen, Bloustrod, all of Denmark, assignors to Haldor Topsøe A/S, Lyngby, Denmark

Continuation-in-part of Ser. No. 215,546, Dec. 11, 1980, abandoned. This application Oct. 15, 1982, Ser. No. 434,493
Claims priority, application Denmark, Dec. 18, 1979, 5395/79
Int. Cl.³ C07C *1/04*
U.S. Cl. 518—714 **2 Claims**

1. In a process for the conversion of a synthesis gas mixture containing hydrogen and carbon oxides to a mixture of hydrocarbons by catalytic conversion, the improvement wherein said synthesis gas mixture contains at least 10 ppm of at least one gaseous sulfur compound calculated as H_2S and said conversion is conducted at a temperature of 270°–400° C. and at a pressure of 15–150 bar in the presence of a catalyst consisting of molybdenum sulfide and cobalt sulfide, said catalyst being supported on a porous oxidic support consisting essentially of titanium dioxide, whereby the predominant hydrocarbon com-

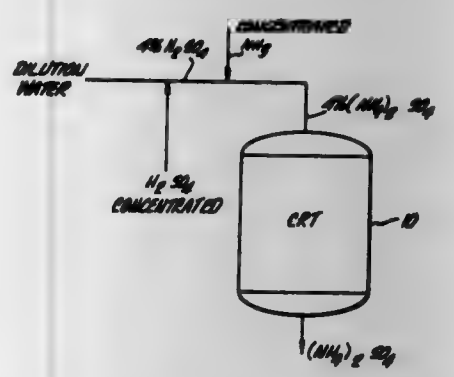
ponent contained in said product mixture of hydrocarbons is a C_2-hydrocarbon.

4,511,675

METHOD FOR REGENERATING WATER POLISHERS USING AMMONIUM SULPHATE

David C. Auerswald, 908 Firmona Ave., Redondo Beach, Calif. 90278

Filed Apr. 19, 1983, Ser. No. 486,380
Int. Cl.³ B01D *15/06*
U.S. Cl. 521—26 17 Claims



1. In a process for regenerating cation exchange resin and anion exchange resin used for polishing water, wherein regenerants are passed through a cation resin tank containing principally the cation exchange resin and some of the anion exchange resin and an anion resin tank containing principally the anion exchange resin and some of the cation exchange resin, the improvement comprising the step of passing an aqueous solution of ammonium sulfate through the cation resin tank to remove cations therefrom.

4,511,676

METHOD FOR CLEANING ORGANICALLY FOULED ANION EXCHANGE RESINS USING DIETHYLENE GLYCOL COMPOUND OR DERIVATIVE

David W. Reichgott, and Michael J. Leary, both of Richboro, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 8, 1983, Ser. No. 521,296
Int. Cl.³ C08D *5/20*
U.S. Cl. 521—26 11 Claims

1. In a method of removing organic foulants selected from the group consisting of humic acids, lignins, and tannins from an anionic exchange resin wherein said fouled resin is treated with a member or members selected from the group consisting of brine and caustic to aid in removal of said foulants, the improvement comprising also contacting said fouled resin with an aqueous composition comprising an effective diethylene glycol compound or derivative, said diethylene compound or derivative having the formula:

$$R—O—CH_2—CH_2O—CH_2—CH_2—O)_nR^1$$

wherein R and R^1 are independently selected from the group consisting of lower alkyl, acyl, and hydrogen, n=1 or 2.

4,511,677

ION EXCHANGE-ACTIVE COMPOSITIONS CONSISTING OF WATER-SOLUBLE POLYELECTROLYTE UPON ION EXCHANGE FUNCTIONAL SUBSTRATE

Robert L. Horton, South Russell, Ohio, and G. Allan Stahl, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1983, Ser. No. 548,051
Int. Cl.³ B01J *39/06;* C01G *56/00, 57/00*
U.S. Cl. 521—28 5 Claims

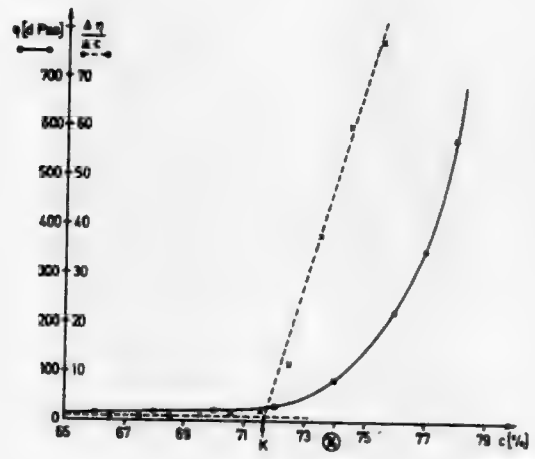
1. An ion exchange process comprising the use of an ion exchange compound comprising a water soluble polymer having multiple ionic functional groups and an ion exchange functional substrate which is at least one of a clay, uranium ore, zeolite, mineral, charcoal or carbon black.

4,511,678

RESILIENT FOAM BASED ON A MELAMINE-FORMALDEHYDE CONDENSATE

Harald Mahnke, Ludwigshafen; Frank P. Woerner, Wachenheim; Heinz Weber, Gruenstadt, and Guenter Kreibiehl, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 516,855, Jul. 25, 1983, which is a continuation of Ser. No. 366,566, Apr. 8, 1982, which is a continuation of Ser. No. 126,393, Apr. 8, 1982, abandoned, Ser. No. 400,050, Jul. 20, 1982, and Ser. No. 330,373, Dec. 14, 1981, which is a division of Ser. No. 242,561, Mar. 11, 1981, Pat. No. 4,334,971, said Ser. No. 400,050, is a continuation of Ser. No. 126,388, Mar. 3, 1980, abandoned. This application Sep. 9, 1983, Ser. No. 530,695
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1979, 2915457; Apr. 17, 1979, 2915467; Mar. 27, 1980, 3011769
Int. Cl.³ C08J *9/38*
U.S. Cl. 521—52 19 Claims



1. A process for the preparation of a resilient, reticulated foam based on a melamine/formaldehyde condensate which contains not less than 50% by weight of melamine and formaldehyde as condensed units, and from 0 to 50% by weight of other compounds selected from the group consisting of alkyl-substituted melamine, urea, urethanes, carboxylic acid amides, dicyandiamide, guanidine, sulfurylamide, sulfonic acid amides, aliphatic amines, phenol and phenol derivatives and containing amino, amide, hydroxyl or carboxyl groups and capable of forming thermosetting resins, and aldehydes selected from the group consisting of acetaldehyde, trimethylolacetaldehyde, acrolein, benzaldehyde, furfuraldehyde, glyoxal, phthaladehyde and terephthalaldehyde and which react therewith to form such resins, as co-condensed units, which resilient foam exhibits the following properties:

(a) the bulk density, measured according to DIN 53,420, is from 4 to 80 [$g.l^{-1}$];

(b) the heat conductivity measured according to DIN 52,612, is less than 0.06 [$W.m^{-1}.{}^oK^{-1}$];

(c) the compressive strength, measured according to DIN 53,577 at 60% compression, divided by the bulk density, is less than 0.30 [$N.cm^{-2}/g.l^{-1}$], and in determining the compressive strength at 60% compression the foam must recover to not less than 90% of its original height;

(d) the modulus of elasticity, measured by methods similar to DIN 53,423, divided by the bulk density is less than 0.25 [$N.mm^{-2}/g.l^{-1}$];

(e) the deflection on break, measured according to DIN 53,423, is greater than 9 [mm]; and

(f) the foams are of not more than normal flammability when assessed according to DIN 4,102, which process comprises: forming an aqueous solution or dispersion, which

contains a melamine/formaldehyde precondensate, an emulsifier, a volatile blowing agent and a curing agent, with or without conventional additives, and then curing the foam, wherein

(a) the concentration of the precondensate in the mixture of precondensate and water (without additives) is selected to be above the salient point of the 1st derivative of the curve which is obtained when, keeping all other conditions constant, the amount of water in the mixture of precondensate and water is varied and the viscosity of the mixture (measured at the boiling point of the blowing agent under the conditions prevailing at the start of foaming) is plotted against the concentration of the precondensate, which concentration must however not be higher than the value which in the curve described corresponds to a viscosity of 5,000 dPas,

(b) during the forming process, up to the time at which the foam has reached 80% of the maximum attainable rise height, the visosity of the aqueous solution or dispersion must not fall below the value which, in the curve described under (a), corresponds to the minimum concentration defined there, but must not exceed 6,000 dPas, and

(c) after reaching the time defined under (b), the viscosity exceeds a value of 10,000 dPas, due to curing of the precondensate, within 8 minutes, the viscosities referred to in (b) and (c) measured, in each case, on a parallel system which is free from blowing agent.

4,511,679

PROCESS FOR PREPARING A RUBBER-ASPHALT COMPOSITION

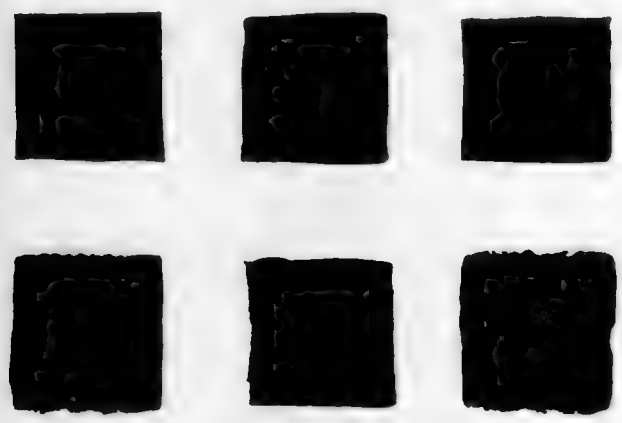
Takashi Ariyoshi, Kudamatsu; Noriaki Emura, Tokuyama, and Yasuhiro Sakanaka, Shin-nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,799

Claims priority, application Japan, Dec. 21, 1982, 57-222919

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—83 **7 Claims**



1. A process for preparing a rubber-asphalt composition, which comprises blending a particulate or powdery rubber composition comprising 100 parts by weight of a particulate or powdery rubber having a particle size of at most 2 mm and from 0.1 to 50 parts by weight of a particulate or powdery blowing agent having a particle size of at most 1 mm, with asphalt composition containing from 0.1 to 30 parts by weight of an organic base from the group consisting of higher amines of primary amines, tertiary amines, polyamines and their derivatives and quanternary ammonium salts, based on 100 parts by weight of the asphalt, wherein the rubber composition is blended with the asphalt composition at a temperature of from 60° to 200° .

4,511,680

PROCESS FOR THE CONTINUOUS HIGH TEMPERATURE GLYCOLYTIC CLEAVAGE OF POLYURETHANE PLASTICS WASTE IN SCREW MACHINES

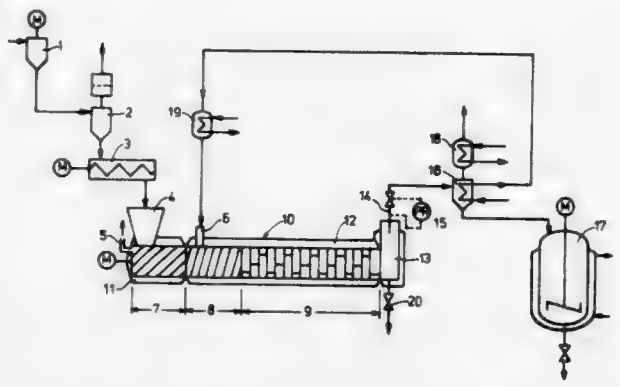
Georg Niederdellmann, Dormagen, and Ernst Grigat, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 24, 1983, Ser. No. 525,846

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232461

Int. Cl.³ B29C *29/00;* C08J *11/00;* C08L *75/00;* B09B *3/00*

U.S. Cl. 521—49.5 **7 Claims**



1. A process for the continuous glycolytic cleavage of polyurethane plastics waste, by the addition of ambient temperature or pre-heated diols, the process being carried out at elevated temperature and under elevated pressure, characterized in that the plastics waste is introduced via a feed funnel into a multishaft screw machine together with diols in a weight ratio of from 10:1 to 1:1, the mixture of plastics waste and diols being maintained in the screw machine in a reaction zone with intensive material and heat exchange for from 2 to 30 minutes at a temperature of from 250° to 350° C., while maintaining a liquid diol phase in the degradation mixture by a pressure of up to 100 bars, the polyol-containing degradation mixture resulting from the glycolytic degradation issuing into a cooled pressure-relieving vessel and into a cooled receiver via a discharge outlet connected to the screw machine, while maintaining the liquefying pressure and a constant liquid level, and the temperature of the resulting degradation polyol mixture being reduced to below 200° C. in less than 30 minutes.

4,511,681

PROCESS FOR PRODUCING A POLYIMIDE SOLUTION

Masatoshi Yoshida, Oyama, and Yasuo Miyadera, Shimodate, both of Japan, assignors to Hitachi Chemical Company, Tokyo, Japan

Filed Apr. 27, 1983, Ser. No. 489,178

Claims priority, application Japan, Apr. 27, 1982, 57-70923

Int. Cl.³ C08G *73/10;* C08K *5/13;* C08L *79/08*

U.S. Cl. 523—310 **16 Claims**

1. A process for producing a homogeneous polyimide solution which comprises effecting polymerization and imidization concurrently at a reaction temperature of 100° to 200° C. in the presence of a halogenated phenolic compound as a solvent by reacting a tetracarboxylic acid component and an aromatic diamine component while initially removing water formed by condensation until the reduced viscosity of the polyimide in the reaction solution becomes 0.1 or higher and successively continuing the reaction under atmospheric pressure and reflux of water until the rotation viscosity of the reaction solution becomes constant; the tetracarboxylic acid component comprising at least 50 mole % of 3,3',4,4'-benzophenonetetracarboxylic acid or an anhydride or an ester thereof and 50 mole % or less of pyromellitic acid or an anhydride or an ester thereof and the aromatic diamine component comprising at least 75 mole % of 4,4'-diamino-diphenyl ether and 25 mole % or less of p-phenylenediamine, both the tetracarboxylic acid component and the aromatic diamine component being used in ap-

proximately equimolar amounts in a concentration that provides a transparent and homogeneous polyimide solution from which a polyimide film can be formed and the polymerization and the imidization being conducted until the degree of imidazation of said polyimide is 90% or more.

3. A process according to claim 1, wherein the reaction is initially effected in the presence of a zeolite which is in a dry condition when added to the reaction solution.

4. A process according to claim 1, wherein further dehydration is conducted after polymerization and imidization.

5. A process according to claim 4, wherein the further dehydration is conducted by using zeolite.

11. A process according to claim 1, wherein the halogenated phenolic compound is p-chlorophenol, m-chlorophenol, p-bromophenol, m-bromophenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol, 2,4-dibromophenol, 2,4,6-tribromophenol or a mixture thereof.

4,511,682

WATER-DISPERSIBLE COATING COMPOSITIONS AND PROCESS

Walter P. Mayer, Lebanon, and Richard J. Burns, Piscataway, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 508,671, Jun. 28, 1983, abandoned. This application May 29, 1984, Ser. No. 614,799

Int. Cl.³ C09D *3/52, 3/49, 3/54, 3/58*

U.S. Cl. 523—402 51 Claims

1. A process for preparing water-dispersible, block copolymer coating compositions, which process comprises:

(1) forming a reaction mixture comprising (i) a water-indispersible, film-forming, organic polymer having an average of at least three hydroxyl groups per molecule (hereinafter referred to as "Reactant A"), (ii) an organic polymer, other than an ethylene-maleic anhydride copolymer, which has an average of at least two carboxylic acid anhydride groups per molecule and which, after hydrolysis and neutralization of at least some of the anhydride groups with a base, is dispersible in water, (hereinafter referred to as "Reactant B"), and (iii) an esterification catalyst;

(2) reacting hydroxyl groups of Reactant A and anhydride groups of Reactant B to form ester groups and carboxy groups, such reaction being conducted to the extent necessary to produce a film-forming composition which, after neutralization of at least some of the carboxy groups with a base, is dispersible in a primarily aqueous medium having a pH over 5; and

(3) controlling said reaction to prevent gelation of the composition by incorporating in said reaction mixture water or a low molecular weight organic compound containing one or two groups reactive with said anhydride groups.

4,511,683

SULFONIC ACID COMPOUND HAVING CYCLOPENTADIENE SKELETON AND COMPOSITION COMPRISING SAME AND CEMENT

Hironobu Shinohara; Noboru Yamahara, and Yoshinori Yoshida, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,671

Claims priority, application Japan, Mar. 8, 1982, 57-35147; Mar. 8, 1982, 57-35148; Mar. 8, 1982, 57-35149; Mar. 9, 1982, 57-35731; Mar. 9, 1982, 57-35732; Mar. 12, 1982, 57-38099; Oct. 4, 1982, 57-174400; Oct. 6, 1982, 57-175666

Int. Cl.³ C08K *3/00*

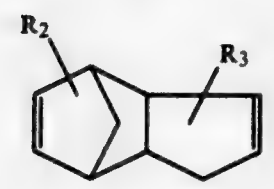
U.S. Cl. 524—3 9 Claims

1. A sulfonation product of a polymer of a cyclopentadiene derivative represented by the formula (A) or (B):



(A)

or



(B)

wherein R_1 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and R_2 and R_3, which may be identical or different, are hydrogen atoms or alkyl groups having 1 to 3 carbon atoms.

4,511,684

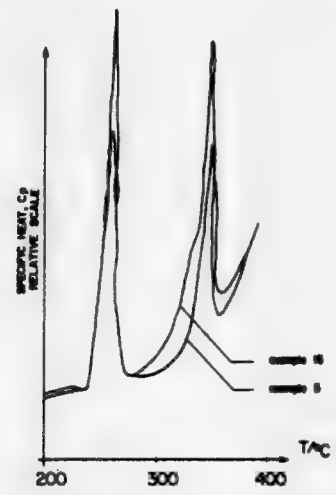
FLAME RETARDANT POLYAMIDES AND AGENT FOR INDUCING FLAME RETARDANCY

Eduard Schmid, Bonaduz, and Manfred Hoppe, Chur, both of Switzerland, assignors to Ems-Inventa AG, Zurich, Switzerland

Filed Dec. 15, 1982, Ser. No. 449,850

Int. Cl.³ C08K *5/34;* C07D *403/00*

U.S. Cl. 524—101 14 Claims



1. A flame retardant thermoplastically processable material comprising

(A) at least one thermoplastically processable polyamide,

(B) a further thermoplast in an amount from 0% to about 45% by weight of the material, and

(C) a flame retarding agent which is a condensation product of

(i) cyanuric acid and

(ii) melamine, there being at least two molecules of melamine per molecule of cyanuric acid.

4,511,685

CHROMAN DERIVATIVES AND STABILIZED POLYPROPYLENE COMPOSITION

Axel Nissen, Leimen; Michael Horner, Neustadt; Dieter Horn, Heidelberg; Erik Lueddecke, and Gernot Teege, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

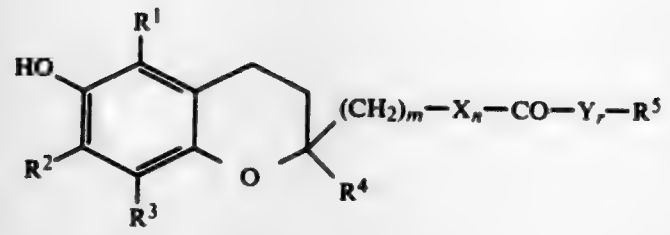
Filed Feb. 26, 1981, Ser. No. 238,593

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010505

Int. Cl.³ C08K *5/09;* C07D *311/72*

U.S. Cl. 524—110 4 Claims

1. A chroman derivative of the formula I



where R^1, R^2, R^3 and R^4 are each H or C_1–C_4-alkyl, R^5 is C_{10}–C_{30}-alkyl or C_{10}–C_{30}-alkenyl, X and Y are each O, NH or S, m is 0, 1, 2 or 3 and n and r are each 0 or 1.

3. A stabilized composition of matter comprising polypropylene and, as a stabilizer, from 0.01 to 20% by weight of a chroman derivative I as set forth in claim 1.

4,511,686

CYANOACRYLATE ADHESIVE COMPOSITION CONTAINING TANNINS

George H. Millet, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 14, 1983, Ser. No. 551,294
Int. Cl.³ C08F *15/02*
U.S. Cl. 524—110 17 Claims

1. A cyanoacrylate adhesive composition, comprising (a) ten weight percent or more of cyanoacrylate monomer, based on the weight of said adhesive composition, and (b) an effective amount of tannin.

4,511,687

POLYCAPROLACTONE COMPOSITION

Michio Nakanishi, Niiza, and Naoki Nakashima, Ohtake, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed May 28, 1982, Ser. No. 383,054
Claims priority, application Japan, Jun. 3, 1981, 56-85343; Jun. 4, 1981, 56-86039
Int. Cl.³ C08L *93/04*
U.S. Cl. 524—270 5 Claims

1. A synthetic resin composition which comprises a blend of (A) 100 parts by weight of polycaprolactone having a number-average molecular weight of from 5,000 to 200,000, with either (B-1) from 10 to 70 parts by weight of a moldable thermoplastic resin selected from the group consisting of polyethylene, polypropylene, vinyl chloride resin, ethylenevinyl acetate copolymer, moldable thermoplastic styrene resin, chlorinated polyethylene having a chlorine content of 25 to 45 wt.%, chlorinated polypropylene having a chlorine content of 15 to 35 wt.% and chlorinated polybutene, and 1 to 30 parts by weight of a tackifier selected from the group consisting of rosin, maleic rosin, ester gum, ester gum H, polyterpene resin, C_5 petroleum resin, C_9 petroleum resin, dicyclopentadiene petroleum resin, tackifying styrene resin different from said moldable thermoplastic styrene resin, alkylphenolic resin and terpene phenolic resin, or (B-2) 10 to 70 parts by weight of a chlorinated polyolefin selected from the group consisting of chlorinated polyethylene having a chlorine content of 25 to 45 wt.%, chlorinated polypropylene having a chlorine content of 15 to 35 wt.% and chlorinated polybutene.

4,511,688

FLAME RETARDANT FOR USE IN RIGID POLYURETHANE FOAMS

Enrico J. Termine, Pembroke Pines, Fla., and Sally P. Ginter, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 29, 1984, Ser. No. 584,577
Int. Cl.³ C08G *18/14*
U.S. Cl. 524—380 18 Claims

1. A flame-retardant composition comprising:
(a) a sucrose polyol;
(b) an aromatic polyester polyol; and
(c) an amount of a halogenated, hydroxyl-containing derivative of pentaerythritol which is sufficient to impart a degree of flame retardancy to a rigid polyurethane foam prepared using said composition, such that the polyurethane can achieve a Class I or Class II rating according to the ASTM E-84 test.

4,511,689

BLENDS OF HARDENED EXTRACT WITH COPOLYMERS OF OLEFIN/ALKYL ACRYLATE

Alan C. G. Aldred, North Cheam, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Dec. 3, 1982, Ser. No. 446,567
Claims priority, application United Kingdom, Dec. 11, 1981, 8137530
Int. Cl.³ C08F *220/10*
U.S. Cl. 524—484 9 Claims

1. A blend of an olefin/alkyl acrylate copolymer and hardened extract, said hardened extract having a saturated hydrocarbon content of not more than 10% by weight and being obtained by blowing a gas containing free oxygen into a petroleum extract at elevated temperature, the petroleum extract having been obtained by the solvent extraction of a product of petroleum refining which product is a distillate petroleum fraction or a deasphalted petroleum residue, which product boils above 350° C. at atmospheric pressure and contains a major proportion of aromatic hydrocarbons.

4,511,690

REINFORCED COMPOSITES

Ike Y. Chang, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 7, 1984, Ser. No. 618,117
Int. Cl.³ C08K *3/04*
U.S. Cl. 524—606 3 Claims

1. A composite comprising a matrix formed of the homopolymer from bis(para-amino cyclohexyl)methane and dodecanedioic acid reinforced with from about 50 to 70% by volume of continuous filaments selected from the group of graphite and p-aramid filaments.

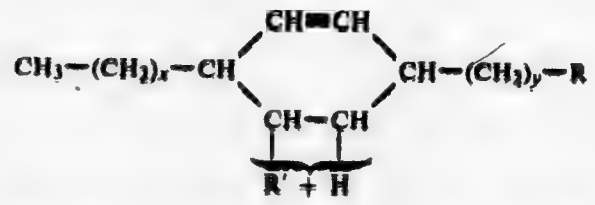
4,511,691

ADHESIVE LATEX POLYMERIZATION SURFACTANTS

John W. Noble, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 475,597, Mar. 15, 1983, Pat. No. 4,455,263. This application Feb. 16, 1984, Ser. No. 580,798
Int. Cl.³ C08K *5/41*
U.S. Cl. 524—748 2 Claims

1. A latex composition which comprises a latex polymer and at least one emulsion polymerization emulsifier having the general formula



where x and y are integers from 3 to 9, x and y together equal 12, R is



a carboxyl group (COOH), and M^+ is an alkali metal, ammonium or amine cation.

4,511,692

CATIONIC ELECTRODEPOSITION COMPOSITION

Jeffrey L. Anderson, Coon Rapids; Philip J. Ruhoff, and Robert B. Edenborg, both of Minneapolis, all of Minn., assignors to The Valspar Corporation, Minneapolis, Minn.

Filed Dec. 8, 1983, Ser. No. 559,385
Int. Cl.[3] C09D *5/40, 3/64, 3/68*
U.S. Cl. 525—7 42 Claims

1. A cationic electrodeposition coating composition comprising:

a reaction product of a base alkyd and ethylenically unsaturated momomers at least some of which are amine functional monomers, said base alkyd comprising the reaction product of a polyhydric alcohol, a polybasic acid, a fatty acid, and a grafting agent; and

said product including amine functional groups in a quantity to provide a water dispersible and cationically depositable composition.

4,511,693

POLYCARBONATE/ADDITION POLYMER BLENDS

Daniel W. Fox, Pittsfield; Edward N. Peters, Lenox, and Gary F. Smith, Pittsfield, all of Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 259,524, May 1, 1981, abandoned. This application Dec. 20, 1982, Ser. No. 451,181
Int. Cl.[3] C08L *69/00*
U.S. Cl. 525—67 25 Claims

1. A thermoplastic resin composition comprising:

(a) a mixed polycarbonate comprising units derived from a first dihydric phenol, which is a bis(hydroxyaryl)sulfone, and a second dihydric phenol, said first and second dihydric phenols in a mole ratio of about 1:5 to 5:1; and

(b) one or more thermoplastic addition polymers comprising a styrene polymer, said composition having been admixed to produce a compatible composition.

4,511,694

HYDROPHILIC POLYMER CARRIER FOR PROTEINS

Dieter Krämer, Mainz; Horst Pennewiss, Darmstadt-Neu-Kranichstein; Hermann Plainer, Reinheim; Reiner Schnee, Darmstadt-Arheilgen, and Waldemar Schleier, Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,524
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106486
Int. Cl.[3] C08F *2/06, 2/10, 2/14*
U.S. Cl. 525—54.1 7 Claims

1. A method for making a pearl-like crosslinked hydrophilic carrier polymer capable of binding proteins, which method comprises inverse pearl polymerizing, by free radical polymerization, a monomer phase distributed as droplets in a non-aqueous organic medium, said monomer phase comprising a monomer mixture of

(1) 30 to 95 percent, by weight of the total weight of polymerizable monomers, of at least one compound selected from the group consisting of acrylamide, methacrylamide, methyl-bisacrylamide, and methylene-bis-methacrylamide,

(2) 0 to 65 percent of further hydrophilic free radically polymerizable comomers,

(3) 5 to 60 percent of at least one unsaturated free radically polymerizable monomer having an oxirane group, and

(4) 0 to 25 percent of at least one other free radically polymerizable comonomer of slight hydrophilicity, of which polymerizable monomers at least 5 percent by weight are monomers having at least two polymerizable double bonds, said monomer phase further including a diluent which is a mixture of

(A) at least one solvent selected from the group consisting of water, formamide, glycol, and dimethylsulfoxide, and

(B) at least one organic liquid different from (A) which forms a homogeneous phase with the aforesaid monomer mixture and with (A), has a molecular weight below 200, and contains at least 20 percent by weight of oxygen, as hydroxyl groups, (A) and (B) being present in said diluent mixture in a ratio such as forms a homogeneous phase with said monomer mixture and such that the monomer phase comprising said monomer mixture and diluent mixture is incompatible with, and suspended in, said non-aqueous organic medium.

4,511,695

SOFT POLYMER ALLOYS

Christian Lindner; Hans-Eberhard Braese, both of Cologne; Karl-Heinz Ott, and Walter Uerdingen, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,282
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312542
Int. Cl.[3] C08L *51/04*
U.S. Cl. 525—80 4 Claims

1. A soft polymer alloy comprising

(A) from 95 to 20% by weight of a graft product of a mixture of from 20 to 40 parts by weight of acrylonitrile and from 80 to 60 parts by weight of styrene, α-methyl styrene, methyl methacrylate or mixtures thereof on a particulate, highly crosslinked diene or alkyl acrylate rubber having an average particle diameter, d_{50}, of from 0.1 to 2.0 μm, the total rubber content amounting to between 20 and 50% by weight, and

(B) from 5 to 80% by weight of a particulate, crosslinked rubber-like copolymer of an alkyl acrylate containing from 20 to 40% by weight of acrylonitrile, methyl methacrylate or both based on the weight of the copolymer and having an average particle diameter, d_{50}, of from 0.05 to 0.6 μm, a gel content of from 80 to 99% by weight, as measured in dimethyl formamide at 25° C., and a degree of swelling of from 10 to 40, as measured in dimethyl formamide at 25° C.

4,511,696

METHOD FOR PROTECTIVELY COATING A POLYMER

Daniel P. Durbin, and William H. Koren, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 29, 1983, Ser. No. 508,776
Int. Cl.[3] C08L *51/00, 77/00*
U.S. Cl. 525—92 8 Claims

1. A method for protectively coating particles of a polymer selected from the group consisting of styrene, isoprene block copolymer formulations and styrene, butadiene block copolymer formulations, comprising interfacially polymerizing a second polymer onto the surface of said particles, wherein said second polymer is a condensation polymer selected from the group consisting of polyamides, polyurethanes, polyureas, polysulfonamides and poly(phenol esters).

4,511,697

RUBBER MIXTURE FOR DIRECT BONDING TO METAL SURFACES

Richard Sohnemann, Northeim, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 298,958, Sep. 3, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,653
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1980, 3033711
Int. Cl.[3] C08L *61/12*
U.S. Cl. 525—139 10 Claims

1. A rubber mixture for direct bonding to exposed metallic surfaces, said mixture including:

a rubber base selected from at least one of the group consisting of natural and synthetic rubbers;

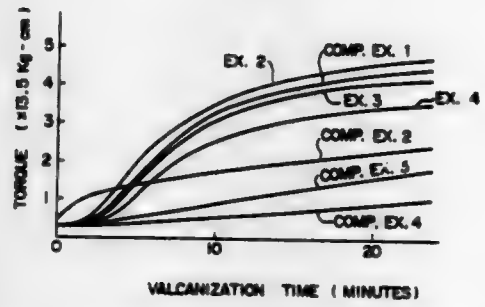
filler;
processing aids;
vulcanizing agent;
a bonding agent selected from the group consisting of phenol and its derivatives, said bonding agent forming phenolic resins with formaldehyde, and being present to the extent of 80–160 mMol per 100 g rubber base;
a source of formaldehyde; and additionally having the improvement in combination therewith that the mixture also contains:
additional metal oxides, the outer electron shell of which has 2s electrons, said additional metal oxides being present to the extent of 70–400 mMol per 100 g rubber to metal base for activating polymerization and a measured quantity of bonding agent increased in a range of from two to four times this extent of rubber base.

4,511,698

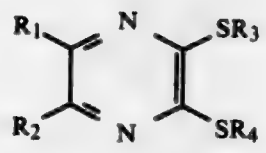
CURABLE COMPOSITION OF EPICHLOROHYDRIN RUBBER AND ACRYLIC RUBBER AND CURED COMPOSITION THEREFROM

Yasuo Matoba, Toyonaka, and Isao Ishimori, Kurashiki, both of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

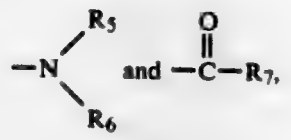
Filed Dec. 23, 1982, Ser. No. 452,736
Claims priority, application Japan, Dec. 25, 1981, 56-213922
Int. Cl.³ C08L *63/00*
U.S. Cl. 525—187 **10 Claims**



1. A curable composition of an epichlorohydrin rubber and an acrylic rubber composed of (1) 100 parts by weight of (a) 10–97% by weight of an epichlorohydrin rubber and (b) 3–90% by weight of an epoxy-containing acrylic rubber, (2) as a crosslinking agent, about 0.1 to about 10 parts by weight of a 2,3-dimercaptopyrazine or -quinoxaline compound having the following formula



wherein R_1 and R_2 are identical or different and represent a hydrogen atom or a C_1–C_8 alkyl group, or R_1 and R_2 are bonded together to form a benzene ring which may be substituted by at least one lower alkyl group; and R_3 and R_4 are identical or different and represent a member selected from the class consisting of a hydrogen atom,



or R_3 and R_4 are bonded together to form >C=O, in which R_5 and R_6 are identical or different and represent a hydrogen atom, a C_1–C_{12} alkyl group or a cyclohexyl group and R_7 represents a C_1–C_{18} alkyl group or



where R_8 represents a C_1–C_8 alkylene group, and
(3) as an acid acceptor, about 0.1 to about 50 parts by weight of a compound of a metal of Group II or IVa of the periodic table.

4,511,699

FLEXIBLE THERMOPLASTIC VINYL CHLORIDE POLYMERS AND ACRYLATE TERPOLYMERS

Earl G. Melby, Uniontown; Hubert J. Fabris; Russell A. Livigni, both of Akron, and Harry W. Cocain, Cuyahoga Falls, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 390,109, Jun. 21, 1982, Pat. No. 4,480,076.
This application Jan. 13, 1984, Ser. No. 570,730
Int. Cl.³ C08F *20/28, 20/26, 20/18;* C08L *27/06*
U.S. Cl. 525—205 **14 Claims**

1. The method which comprises aqueous free radical emulsion copolymerizing polymerizable monomers A, B and C to form a terpolymer in which the relative ratios of A, B and C to each other on a percent by weight basis are from about 24 to 94 of A, from about 1 to 75 of B and from about 1 to 20 of C, the total of A, B and C being 100, said emulsion optionally additionally containing a chain transfer agent in a minor amount sufficient to avoid formation of gel,

where A has the formula

where R is an alkyl group of from 4 to 8 carbon atoms and mixtures of A, said A as a homopolymer having a Tg not above −20° C.,
where B is selected from the group consisting of tetrahydrofurfuryl acrylate and tetrahydrofurfuryl methacrylate and mixtures of the same and
where C is selected from the group consisting of acrylonitrile, methacrylonitrile, N-vinyl-2-pyrrolidone and vinyl-alpha-methyl pyrrolidone and mixtures of the same.

4,511,700

FLEXIBLE THERMOPLASTIC VINYL CHLORIDE POLYMERS

Earl G. Melby, Uniontown; Hubert J. Fabris; Russell A. Livigni, both of Akron, and Harry W. Cocain, Cuyahoga Falls, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

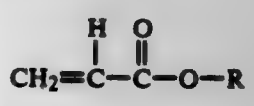
Division of Ser. No. 390,190, Jun. 21, 1982, Pat. No. 4,480,076.
This application Jan. 13, 1984, Ser. No. 570,720
Int. Cl.³ C08F *259/04*
U.S. Cl. 525—283 **9 Claims**

1. A flexible thermoplastic polymeric composition comprising a suspension polymerized vinyl chloride polymer graft or over suspension copolymerized with three copolymerizable monomers consisting essentially of A, B and C, the relative ratios of A, B and C to each other on a percent by weight basis being from about 24 to 94 of A, from about 1 to 75 of B and from about 1 to 20 of C, the total of A, B and C being 100, said vinyl chloride polymer being used in an amount of from about 40 to 60% by weight and said monomers A, B and C being used in a total amount of from 60 to 40% by weight,

where said vinyl chloride polymer is selected from the group consisting of homopolyvinyl chloride, a copolymer of vinyl chloride and vinyl acetate containing up to about 50% by weight of vinyl acetate, and a copolymer of vinyl chloride and vinylidene chloride containing up to about

50% by weight of vinylidene chloride and mixtures of the same,

where A has the formula



where R is an alkyl group of from 4 to 8 carbon atoms and mixtures of A, said A as a homopolymer having a Tg not above −20° C.,

where B is selected from the group consisting of methyl acrylate, ethyl acrylate, tetrahydrofurfuryl acrylate and tetrahydrofurfuryl methacrylate and mixtures of the same and

where C is selected from the group consisting of acrylonitrile, methacrylonitrile, N-vinyl-2-pyrrolidone and vinyl-alpha-methyl pyrrolidone and mixtures of the same.

4,511,701

HEAT CURABLE EPOXY RESIN COMPOSITIONS AND EPOXY RESIN CURING AGENTS

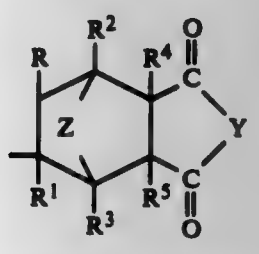
Hong-Son Ryang, Camarillo, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,068
Int. Cl.³ C08G *59/14*
U.S. Cl. 525—533 2 Claims

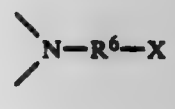
1. Curable epoxy resin compositions comprising

(A) an epoxy resin and

(B) an effective amount of organopolysiloxane curing agent having attached to silicon by carbon-silicon bonds at least one group of the formula,



where R—R⁵ are members selected from hydrogen, halogen, $C_{(1-13)}$ monovalent hydrocarbon radicals and substituted $C_{(1-13)}$ monovalent hydrocarbon radicals, Z is selected from —O— and C—$(R)_2$ and Y is a member selected from —O— and



R^6 is a divalent $C_{(1-13)}$ hydrocarbon radical or substituted hydrocarbon radical and X is a monovalent amine radical.

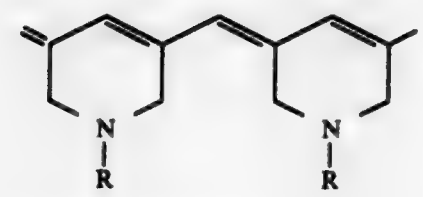
4,511,702

POLY(DIPROPARGYLAMINE) AND DERIVATIVES THEREOF PER SE AND P-DOPED AND PROCESSES FOR PREPARING SAME

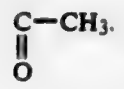
Yoshiyuki Okamoto, Fort Lee, N.J., and Edward F. Hwang, Brooklyn, N.Y., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 579,407, Feb. 13, 1984,. This application Aug. 10, 1984, Ser. No. 639,458
Int. Cl.³ C08F *4/22, 26/02, 38/00*
U.S. Cl. 526—90 17 Claims

1. Polymeric dipropargylamine and derivative compounds having recurring structural units of the formula:



wherein R is H, C_2H_5, $(CH_3)_3C$ or



4,511,703

CATALYSTS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF PROPYLENE AND POLYMERIZATION PROCESSES USING THESE CATALYSTS

Jean C. Bailly, Martigues, France, assignor to BP Chimie Societe Anonyme, Paris, France

Filed Jun. 16, 1983, Ser. No. 504,981
Claims priority, application France, Jun. 24, 1982, 82 11056
Int. Cl.³ C08F *4/02, 10/06*
U.S. Cl. 526—125 5 Claims

1. Process for the polymerisation of propylene, or the copolymerisation of propylene with other alpha-olefins, in the presence of a catalyst, characterised in that the said catalyst comprises a support containing essentially magnesium chloride, or magnesium chloride with a chlorinated derivative of aluminum, and an electron donor compound, but no product comprising a Mg—C bond, this support having a density comprised between 1.2 and 2.1 and a specific surface area comprised between 20 and 60 m^2/g (BET), and occurring in the form of spheroidal particles, having a mean diameter by mass comprised between 10 and 100 microns and a particle size distribution such that the ratio of the mean diameter by mass, Dm, to the mean diameter by number, Dn, is less than or equal to 3, which support has been treated with an electron donor compound chosen from among the aromatic ethers and the esters of an aromatic acid, and which when impregnated with titanium tetrachloride comprises 0.5 to 3% of atoms of titanium per atom of magnesium,

and further characterised in that the said polymerisation or copolymerisation is carried out in the presence of a co-catalyst of the formula $Al(R_7)_3$, in which R_7 is an alkyl radical having 2 to 12 carbon atoms.

4,511,704

PROCESS FOR PRODUCING POLYOLEFIN

Toru Tanaka, Yamato; Nobuaki Gohko, Kurashiki; Osamu Kishiro, Atsugi, and Atsushi Murakami, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 337,508, Jan. 6, 1982, abandoned. This application Sep. 30, 1983, Ser. No. 537,165
Claims priority, application Japan, Jun. 25, 1981, 56-98639
Int. Cl.³ C08F *4/10*
U.S. Cl. 526—125 2 Claims

1. A process for producing a polyolefin which comprises polymerizing ethylene or copolymerizing ethylene and another α-olefin at 50° to 100° C. in a hydrocarbon solvent in the presence of a catalyst system comprising:

(1) an organoaluminum compound selected from the group consisting of an alkylaluminum chloride and a mixture of an alkylaluminum chloride and a trialkyl aluminum,

(2) a transition metal compound component which is a solid component containing a reaction product obtained by reacting an oxygen-containing organomagnesium compound represented by the formula:

$Mg(OR^1)_mX_{2-m}$

wherein
R^1 represents alkyl, aryl, or cycloalkyl,
X^1 represents halogen, and
m is 1 or 2
and tri-n-butoxytitanium monochloride with ethylaluminum sesquichloride;

wherein said process of polymerization comprises:

(a) two-step polymerization of a first polymerization step and a second polymerization step in the presence of a reaction mixture obtained by said first polymerization step;

(b) a polymerization in the presence of hydrogen at a molar ratio of H_2 to C_2H_4 (vapor phase) of 0.01–0.8 to produce a polymer A having a viscosity average molecular weight of 2×10^5–7×10^5 at a ratio of 30:70 weight percent based on the total polymer in one of said first or second polymerization step and a polymerization in the presence of hydrogen at a molar ratio of H_2 to C_2H_4 (vapor phase) of 1.5–15 to produce a polymer B having a viscosity average molecular weight of 1×10^4–4×10^4 at a ratio of 70:30 weight percent based on the total polymer in the other polymerization step to give a ratio of viscosity average molecular weight of polymer A to a viscosity average molecular weight of polymer B of 15:55;

(c) said production of said polymer A as a copolymer of ethylene and other -olefin and said production of said polymer B as a homopolymer of ethylene or a copolymer of ethylene and the other -olefin; and

(d) said production of the total polymer as a polymer having a melt index of less than 0.5 g/10 min.

4,511,705

COMPOSITION FOR PROTECTIVE COATING MATERIAL

Daisuke Makino; Hidetaka Sato; Hiroshi Suzuki; Shun-ichiro Uchimura, all of Hitachi, and Hiroshi Suzuki, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd. and Hitachi, Ltd., both of Tokyo, Japan

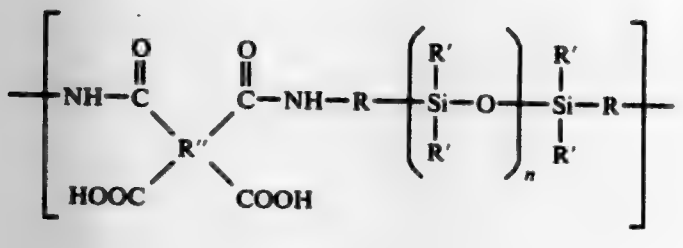
Continuation of Ser. No. 366,146, Apr. 7, 1982, abandoned. This application Jan. 5, 1984, Ser. No. 568,284

Claims priority, application Japan, Apr. 14, 1981, 56-56538

Int. Cl.³ C08G *77/04*

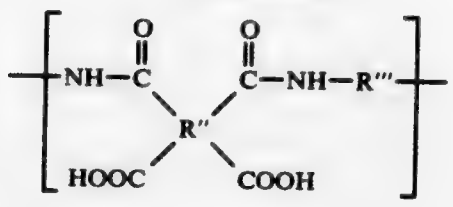
U.S. Cl. 528—26 **13 Claims**

1. A composition for use as a protective coating material in a protective coating layer for a semiconductor device having a high degree of integration, said device comprising a semiconductor memory element, a layer containing an inorganic material encapsulating said element and said protective coating layer arranged between said element and encapsulating layer, said composition comprising a polyamide acid having from 0.1 to 20 mole % of the recurring unit represented by formula (1) and 80 to 99.9 mole % of the recurring unit represented by formula (2), said composition being obtained by the reaction of a diaminosiloxane, an organic diamine containing no silicon and an organic tetrabasic acid dianhydride in the presence of an inert solvent wherein said compounds are pretreated prior to said reaction to remove uranium and thorium contained in said compounds;



(1)

-continued



(2)

wherein R is a divalent hydrocarbyl group; R′ is a monovalent hydrocarbyl group; R″ is a tetravalent organic group; R‴ is a divalent organic group which is a residue of an organic diamine containing no silicon; and n is an integer of 1 or more; and wherein said composition contains a combined amount of uranium and thorium of less than 0.2 part per billion.

4,511,706

COPOLYMERS OF A 4,4′-(ETHYLENEDIOXY)BIS BENZOATE, AN ALKYLENE DIOL AND A (2-ALKENYL OR ALKYL) SUCCINIC ANHYDRIDE

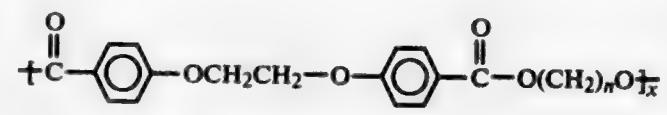
Shalaby W. Shalaby, Mountainville, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 26, 1982, Ser. No. 401,494

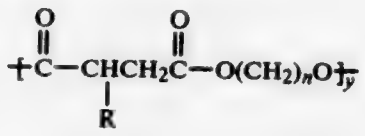
Int. Cl.³ C08G *63/66*

U.S. Cl. 528—192 **7 Claims**

1. A copolymer consisting essentially of a multiplicity of recurring A and B units having the following general formula:



A



B

wherein

x and y are numbers having average values such that the B units comprise from 1 to 55 weight percent of the copolymer, and the A units comprise the remainder,

n is 2 to 8, and

R represents a linear or branched alkyl or alkenyl radical with a chain length of 4 to 30 carbon atoms, or a mixture of such radicals with different chain lengths.

4,511,707

WATER-SOLUBLE PRECONDENSATES USEFUL FOR IMPROVING THE FASTNESS OF DYES AND OPTICAL BRIGHTENERS ON HYDROXY GROUP-CONTAINING SUBSTRATES

James R. Runyon, Oberwil, and Salvatore Valenti, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 376,901, May 10, 1982, Pat. No. 4,439,203. This application Jan. 25, 1984, Ser. No. 573,647

Int. Cl.³ C08G *12/10*; D06M *15/54*; C08G *59/10*

U.S. Cl. 528—250 **20 Claims**

1. A water-soluble precondensate selected from the group consisting of

I. a product produced by reacting (A) with (B) in aqueous solution at an initial pH of 6 to 9,

II. a product produced by reacting (A) with (B) and (E), and

III. a product produced by reacting (A) with (C) and (E), wherein

(A) is the product of reacting a mono- or polyfunctional primary or secondary amine with dyanamide, dicyandiamide, guanidine or biguanidine; with the proviso that up to 50 mole % of the cyanamide, dicyandiamide, guanidine

or biguanide may be replaced with a dicarboxylic acid or a mono- or di-ester thereof, said product (A) containing reactive hydrogen atoms bound to nitrogen,

(B) is an epihalohydrin or a precursor thereof,

(C) is formaldehyde or a formaldehyde precursor, and

(E) is an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide.

4,511,708

PROCESS FOR MANUFACTURING POLYTETRAMETHYLENE TEREPHTHALATE

Takuzo Kasuga; Katsuhiko Takahashi, and Kunio Suzuki, all of Fuji, Japan, assignors to Polyplastics Company, Ltd., Osaka, Japan

Filed Jan. 31, 1984, Ser. No. 575,414
Claims priority, application Japan, Feb. 1, 1983, 58-15172
Int. Cl.³ C08G *63/04, 63/22*
U.S. Cl. 528—274 **16 Claims**

1. A process for manufacturing polytetramethylene terephthalate, comprising subjecting terephthalic acid and 1,4-butanediol to an esterification reaction in the presence of an esterification catalyst and then conducting a condensation-polymerization reaction of the esterification reaction product, the esterification reaction being carried out in the presence of at least one acid amide compound selected from the group consisting of urea, a derivative thereof, mono-carboxylic acid amides having 1 to 9 carbon atoms, poly-carboxylic acid amides having 1 to 9 carbon atoms, polyamides, phosphoric acid amides and sulfonic acid amides.

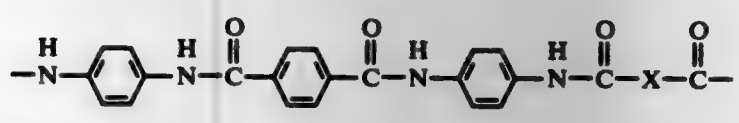
4,511,709

WHOLLY AROMATIC OR ALIPHATIC AROMATIC BLOCK COPOLYAMIDES AND PROCESS THEREFOR

Han S. Yoon, and Wha S. Lee, both of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

Division of Ser. No. 313,166, Oct. 20, 1981, abandoned. This application Feb. 15, 1983, Ser. No. 466,616
Int. Cl.³ C08G *69/12*
U.S. Cl. 528—331 **10 Claims**

1. A fiber or filament forming block copolymer consisting essentially of the recurrent units:



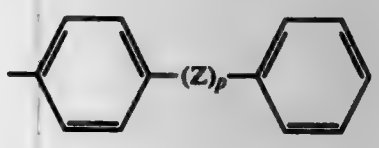
wherein

said block copolymer has a softening point greater than 350° C. and

X is selected from one of the group consisting of $-(CH_2)_m$ wherein m is 4, 6, 8 or 10



substituted in the meta or para position, or



wherein Z is $C(CH_3)_2$, oxygen, or SO_2 and p is 0 or 1.

4,511,710

HALIDE REMOVAL FROM FLUID ORGANIC MATERIALS

Chun S. Wang, Lake Jackson; Kyle B. Benkendorfer, and John L. Burba, III, both of Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1984, Ser. No. 619,440
Int. Cl.³ C08G *59/14;* C08F *6/28*
U.S. Cl. 528—485 **13 Claims**

1. A method for reducing the halogen content of a liquid resin, organic or hydrocarbon material which contains unwanted halogen values, said method comprising

intimately contacting said material with a halogen scavenger,

then separating said scavenger from said material, wherein said scavenger comprises a particulate crystalline lithium aluminate compound which conforms, generally, to the empirical formula

$$(LiX_x)_y \cdot 2Al(OH)_3 \cdot nH_2O$$

where X is at lease one anion or negative-valence radical other than halide, x is an amount of X sufficient to substantially satisfy the valence requirements of Li in the crystal structure, y is a positive amount of Li at least sufficient to maintain the crystal structure, and n represents a numerical amount of zero or more for waters of hydration.

4,511,711

PROCESS FOR PRODUCING SEMIPERMEABLE MEMBRANE

Takatoshi Shimomura, Ibaraki; Fumio Fujita, Osaka, and Manabu Hirakawa, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 2, 1983, Ser. No. 463,243
Claims priority, application Japan, Feb. 10, 1982, 57-20316; Feb. 12, 1982, 57-21633
Int. Cl.³ C08F *6/00*
U.S. Cl. 528—489 **2 Claims**

1. A process for producing a semipermeable membrane which comprises dipping a semipermeable membrane of acrylonitrile polymer containing 40–100% by mole of acrylonitrile in a solution of sodium hydroxide or potassium hydroxide and thereafter treating it with plasma.

4,511,712

METHOD FOR ISOLATING IONOMERS IN THE SALT FORM

Robert A. Florence, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,756
Int. Cl.³ C08F *6/00;* C08G *00/00;* C08J *3/00*
U.S. Cl. 528—488 **20 Claims**

1. A method of isolating ionomers in the salt form from a solution of at least one such ionomer in an organic solvent,

said ionomer comprising a substantially aromatic polymer or a carbon atom backbone elastomer and having ionic substituents selected from the group consisting of sulfonate, carboxylate, alkylammonium and quaternary ammonium groups,

which comprises precipitating said ionomer by blending said solution with a solution, in an organic liquid which is substantially a non-solvent for said ionomer, of at least one salt in which the counterion is identical to that of said ionomer or below it in the ion affinity sequence, and removing the precipitated ionomer.

4,511,713

PROCESS FOR SELECTIVELY CONTROLLING UNWANTED EXPRESSION OR FUNCTION OF FOREIGN NUCLEIC ACIDS IN ANIMAL OR MAMMALIAN CELLS

Paul S. Miller, Baltimore, and Paul O. P. Ts'O, Lutherville, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 206,297, Nov. 12, 1980, Pat. No. 4,469,863. This application Mar. 29, 1982, Ser. No. 363,230

Int. Cl.³ C07H *15/12, 17/00*

U.S. Cl. 536—27 **5 Claims**

1. A process for selectively controlling or interfering with the effect or function of foreign nucleic acid in the presence of otherwise normal living cells which comprises determining the base sequence for said nucleic acid and binding the said nucleic acid with an appropriately prepared nonionic oligonucleoside alkyl or arylphosphonate analogue which is complementary to the indicated sequence of the foreign nucleic acid.

4,511,714

HERBICIDAL ANTIDOTE COMPOSITIONS

Katalin Görög; Erzébet Dudar; Iván Gárdi; Mária Kocsis; Sándor Gaál, and Márta Tasnádi, all of Budapest, Hungary, assignors to Nitrokemia Ipartelepek, Fuzfogyartelep, Hungary

Continuation-in-part of Ser. No. 354,070, Mar. 2, 1982, , which is a continuation of Ser. No. 181,741, Aug. 26, 1980,. This application Mar. 17, 1983, Ser. No. 476,240

Int. Cl.³ C07D *263/00*

U.S. Cl. 548—215 **4 Claims**

1. Phthalic acid-bis-(2,2-dimethyl-1,3-oxazolidine).

4,511,715

PLATINUM-NITROGEN COMPLEX CATALYSTS

Frederick J. Palensky, St. Paul, and Allen R. Siedle, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 245,927, Mar. 20, 1981, abandoned. This application Jul. 27, 1982, Ser. No. 402,231

Int. Cl.³ C07F *15/00*; B01J *31/24, 31/22*

U.S. Cl. 544—225 **22 Claims**

1. A platinum-nitrogen complex compound selected from classes of complexes having the formulae:
(a) monometallic complexes, $(L)PtX_2(Y)$,
(b) bimetallic complexes, $(L)(PtX_2)_2(Y)_2$,
(c) ionic complexes, $(L)PtX_2(Y)(Z)$, and
(d) reduced forms of said monometallic complexes having the formulae:
(1) $H[(PNZ)PtX_2(Q)]_2$,
(2) $[(PNZ)PtX_2(Q)]_2{}^-A^+$, and
(3) $[H(PNZ)PtCl_2(C_2H_4)]_3PtCl_3$
wherein
L is a single ring or fused 2- to 6-ring unsaturated heterocyclic ligand wherein said hetero atoms are nitrogen, said ligand having only 2 to 4 nitrogen atoms in exactly one 6-membered ring, at least one of which nitrogen atoms is bonded to a platinum atom, ligand L being selected from 5- and 6-member rings, and said ligand having up to a total of 26 ring atoms and can be unsubstituted or substituted by phenyl or lower alkyl groups for a total of up to 44 carbon atoms,
Y is a mondentate ligand that fills only one coordination position of the platinum atom and is selected from (1) olefinically unsaturated hydrocarbons, (2) triarylphosphines or triarylarsines wherein aryl is phenyl or phenyl substituted by up to 4 ower alkyl groups having 1 to 4 carbon atoms, (3) dialkyl sulfides wherein each alkyl group independently has 1 to 16 carbon atoms, and (4) carbon monoxide, the ligand having up to 25 carbon atoms,
X is independently Cl, Br, I, Cn, or SCN,
Z is HCl, HBr, or silver trifluoromethanesulfonate,
Q is an olefinically unsaturated hydrocarbon ligand of 2 to 25 carbon atoms,
A is a solubilizing cation, and
PNZ is phenazine.

21. A platinum-nitrogen complex compound selected from classes of complexes having the formulae:
(a) monometallic complexes, $(L)PtX_2(Y)$,
(b) bimetallic complexes, $(L)(PtX_2)_2(Y)_2$,
(c) ionic complexes, $(L)PtX_2(Y)(Z)$, and
(d) reduced forms of said monometallic complexes having the formulae:
(1) $H[(PNZ)PtX_2(Q)]_2$,
(2) $[(PNZ)PtX_2(Q)]_2{}^-A^+$, and
(3) $[H(PNZ)PtCl_2(C_2H_4)]_3PtCl_3$
wherein
L is a single ring or fused 2- to 6-ring unsaturated heterocyclic ligand wherein said hetero atoms are nitrogen, said ligand having only 3 nitrogen atoms in exactly one 5-member ring, at least one of which nitrogen atoms is bonded to a platinum atom, ligand L being selected from 5- and 6-member rings, and said ligand having up to a total of 26 ring atoms and can be unsubstituted or substituted by phenyl or lower alkyl groups for a total of up to 44 carbon atoms,
Y is a mondentate ligand that fills only one coordination position of the platinum atom and is selected from (1) olefinically unsaturated hydrocarbons, (2) triarylphosphines or triarylarsines wherein aryl is phenyl or phenyl substituted by up to 4 lower alkyl groups having 1 to 4 carbon atoms, (3) dialkyl sulfides wherein each alkyl group independently has 1 to 16 carbon atoms, and (4) carbon monoxide, the ligand having up to 25 carbon atoms,
X is independently Cl, Br, I, CN, or SCN,
Z is HCl, HBr, or silver trifluoromethanesulfonate,
Q is an olefinically unsaturated hydrocarbon ligand of 2 to 25 carbon atoms,
A is a solubilizing cation, and
PNZ is phenazine.

22. A platinum-nitrogen complex compound selected from classes of complexes having the formulae:
(a) monometallic complexes, $(L)PtX_2(Y)$,
(b) bimetallic complexes, $(L)(PtX_2)_2(Y)_2$,
(c) ionic complexes, $(L)PtX_2(Y)(Z)$, and
(d) reduced forms of said monometallic complexes having the formulae:
(1) $H[(PNZ)PtX_2(Q)]_2$,
(2) $[(PNZ)PtX_2(Q)]_2{}^-A^+$, and
(3) $[H(PNZ)PtCl_2(C_2H_4)]_3PtCl_3$
wherein
L is a single ring or fused 2- to 6-ring unsaturated heterocyclic ligand wherein said hetero atoms are nitrogen, said ligand having only 4 nitrogen atoms in exactly one 5-membered ring, at least one of which nitrogen atoms is bonded to a platinum atom, ligand L being selected from 5- and 6-member rings, and said ligand having up to a total of 26 ring atoms and can be unsubstituted or substituted by phenyl or lower alkyl groups for a total of up to 44 carbon atoms,
Y is a monodentate ligand that fills only one coordination position of the platinum atom and is selected from (1) olefinically unsaturated hydrocarbons, (2) triarylphosphines or triarylarsines wherein aryl is phenyl or phenyl substituted by up to 4 lower alkyl groups having 1 to 4 carbon atoms, (3) dialkyl sulfides wherein each alkyl group independently has 1 to 16 carbon atoms, and (4) carbon monoxide, the ligand having up to 25 carbon atoms,
X is independently Cl, Br, I, Cn, or SCN,
Z is HCl, HBr, or silver trifluoromethanesulfonate,
Q is an olefinically unsaturated hydrocarbon ligand of 2 to 25 carbon atoms,
A is a solubilizing cation, and

PNZ is phenazine.

4,511,716

METHOD OF PREPARING ADENINE

Kju H. Shin, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 357,009, Mar. 11, 1982, abandoned. This application Feb. 4, 1983, Ser. No. 463,962
The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.
Int. Cl.³ C07D *432/32*
U.S. Cl. 544—277 10 Claims

1. In a process for preparing adenine by the reaction of hydrogen cyanide, formamide, an ammonium salt, and methyldisulfide, the improvement which comprises (1) heating a reaction mixture comprising the formamide and ammonium salt in a closed vessel to a reaction temperature of about 50°–180° C., (2) adding the hydrogen cyanide to the preheated mixture over a period of about 1–5 hours, and (3) maintaining the reaction temperature until the reaction is complete.

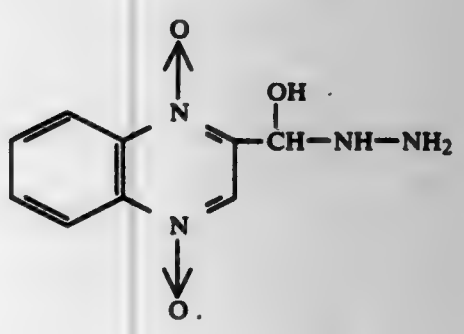
4,511,717

2-HYDROXYMETHYL-QUINOXALINE-1,4-DIOXIDE DERIVATIVES, A PROCESS FOR PREPARING SAME AND COMPOSITIONS CONTAINING SAME

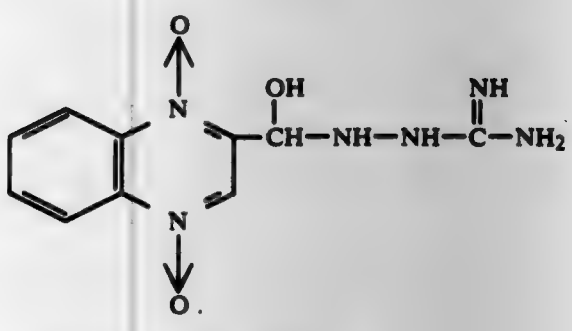
Pál Benkó; Ildikó Rátz née Simonek; László Palloc; Károly Magyar; Jenö Kovács; Erzsébet Mátrai; Janos Gundel, all of Budapest, and Albert Balogh, Szentendre, all of Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

PCT No. PCT/HU81/00038, § 371 Date May 7, 1982, § 102(e) Date May 7, 1982, PCT Pub. No. WO82/01001, PCT Pub. Date Apr. 1, 1982
Continuation of Ser. No. 380,741, May 7, 1982, abandoned. This PCT application Sep. 11, 1981, Ser. No. 593,204
Claims priority, application Hungary, Sep. 12, 1980, 2239/80
Int. Cl.³ C07D *241/52, 403/12, 401/12;* A61K *31/495*
U.S. Cl. 544—353 4 Claims

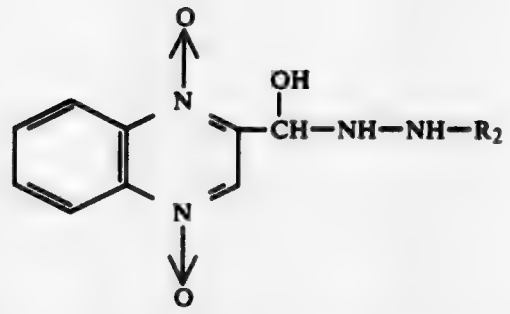
1. A compound of the formula



2. A compound of the formula

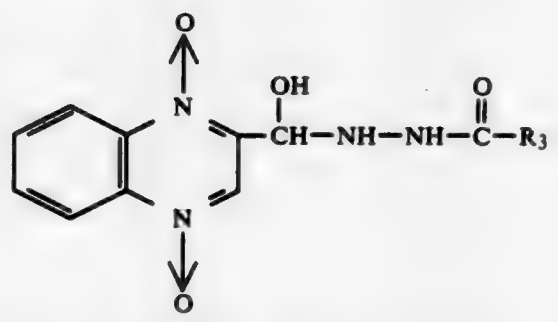


3. A compound of the formula



wherein R_2 is C_1–C_6 alkyl, phenyl, benzyl, hydroxy, or hydroxy-(C_2–C_4)-alkyl.

4. A compound of the formula



wherein R_3 is C_1–C_{20} alkyl, phenyl unsubstituted or substituted by one, two or three identical or different substituents selected from the group consisting of nitro, hydroxy, amino, C_1–C_3 alkoxy, and halogen, or R_3 is naphthyl, hydroxy-naphthyl, phenyl-(C_1–C_3)-alkyl, pyridyl, piperidyl, pyrazinyl, pyrimidyl, 1,2,4-triazinyl, furyl, nitro-furyl, or alpha, alpha-diphenyl-alpha-hydroxymethyl.

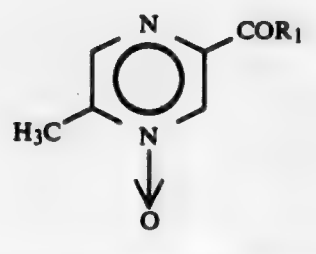
4,511,718

PREPARATION OF PYRAZINE DERIVATIVES

Giuseppe Ribaldone, Gallarate; Maria G. Felicioli, Novara; Claudio Santini, Novara, and Giovanni Agnes, Novara, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

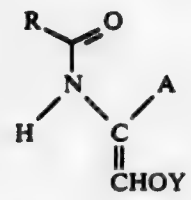
Filed Mar. 3, 1983, Ser. No. 471,691
Claims priority, application United Kingdom, Mar. 8, 1982, 8206772
Int. Cl.³ C07D *241/14, 401/02, 413/02, 417/02*
U.S. Cl. 544—406 8 Claims

1. A process for the preparation of a pyrazine of formula I:



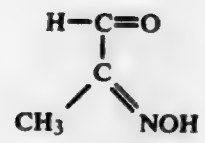
I

wherein R_1 is C_1–C_6 alkoxy, comprising:
(a) reacting a compound of formula II

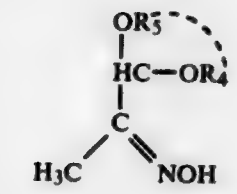


II

wherein R is selected from the group consisting of H, C_1–C_6 alkyl, and C_1–C_6 alkoxy; Y is selected from the group consisting of sodium ion, lithium ion and potassium ion; and A is COR_1; wherein R_1 is as defined above; with pyruvic aldehyde oxime of formula III,



or a pyruvic aldehyde oxime acetal of formula IV



wherein R_4 and R_5 independent of one another, are H or C_1–C_6 alkyl; or R_4 and R_5 may form a cyclic acetal;

in the presence of an organic or inorganic acid selected from the group consisting of hydrochloric acid, hydrobromic acid, hydroiodic acid, sulfuric acid, nitric acid, p-toluene sulfonic acid, formic acid, phosphoric acid, methanesulphonic acid, trifluoroacetic acid, and trifluoromethanesulphonic acid;

in a solvent selected from the group consisting of water, R_7OH alcohols, R_7OR_6 ethers,



ketones, $R_7CO_2R_6$ esters or organic acids; wherein both R_7 and R_6, independent of one another, are a hydrogen atom, branched or linear C_1–C_6 alkyl or R_6 and R_7 together may form a cyclic C_1–C_6 alkyl, cyclic ether, cyclic ketone, or lactone;

at a temperature of from about 15° C. to about the boiling point of the solvent.

4,511,719

Nα-(3-CYANOPROPANOYL)-AMINOCARBOXYLIC ACID DERIVATIVES AND THEIR USE

Axel Kleemann, Hanau; Jürgen Martens, Alzenau, and Horst Weigel, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

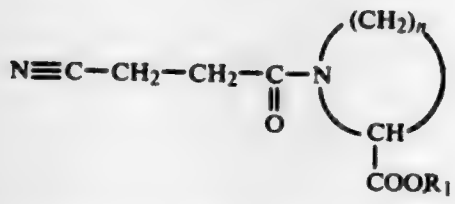
Division of Ser. No. 381,876, May 25, 1982, Pat. No. 4,426,532. This application Oct. 28, 1983, Ser. No. 546,366

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124091

Int. Cl.³ C07D *205/04, 207/12, 211/40*

U.S. Cl. 546—245 **4 Claims**

1. An Nα-(3-cyanopropanoyl)-aminocarboxylic acid derivative of the formula



(I)

where R_1 is hydrogen, methyl, ethyl, or benzyl, n is 2, 3 or 4.

4,511,720

2-IMINO-IMIDAZOLIDINE DERIVATIVES

Henri Ramuz, Birsfelden, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

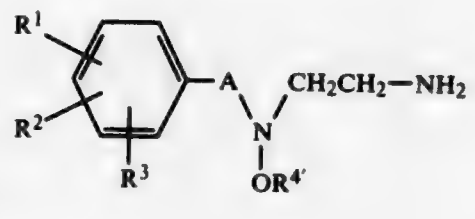
Division of Ser. No. 178,223, Aug. 14, 1980, Pat. No. 4,355,033, which is a division of Ser. No. 958,300, Nov. 6, 1978, Pat. No. 4,244,957. This application Aug. 5, 1982, Ser. No. 405,476

Claims priority, application Luxembourg, Nov. 7, 1977, 78,467; Switzerland, Sep. 15, 1978, 9668/78

Int. Cl.³ C07D *401/00, 233/54*

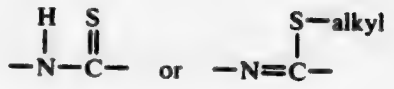
U.S. Cl. 546—273 **5 Claims**

1. A compound of the formula



(V)

wherein A is



R^1, R^2 and R^3, independently, are hydrogen, alkyl, alkoxy, alkylthio, halogen, trifluoromethyl, cyano or hydroxy and $R^{4'}$ is aryl selected from the group consisting of imidazolyl, isoxazolyl, isothiazolyl, and pyridyl, which is bonded via a $CH(R^5)$-group and is optionally substituted by alkyl and R^5 is hydrogen, methyl, ethyl or n-propyl, wherein the term alkyl denotes straight-chain and branched alkyl of 1–6 carbon atoms, and alkoxy denotes straight-chain and branched alkoxy of 1–6 carbon atoms.

4,511,721

INTERMEDIATE FOR PREPARING ANTIFUNGAL 1,2-DIHYDROPYRIDO[3,4-b]-PYRAZINES

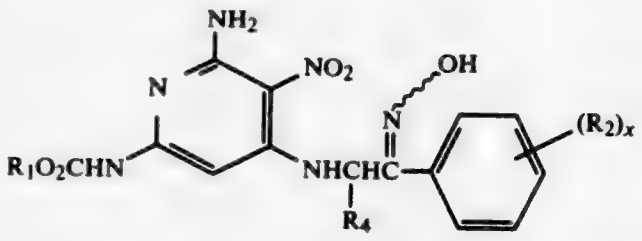
Carroll G. Temple, Jr.; John A. Montgomery; Robert D. Elliott, and Glynn P. Wheeler, all of Birmingham, Ala., assignors to Southern Research Institute, Montgomery, Ala.

Division of Ser. No. 354,164, Mar. 3, 1982, Pat. No. 4,450,160, which is a continuation-in-part of Ser. No. 327,928, Dec. 7, 1981, abandoned, which is a continuation-in-part of Ser. No. 247,158, Mar. 24, 1981, abandoned. This application Jan. 17, 1984, Ser. No. 571,500

Int. Cl.³ C07D *213/76, 213/75*

U.S. Cl. 546—308 **11 Claims**

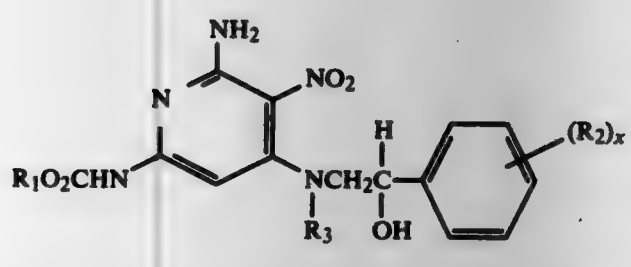
1. A compound having the formula:



wherein x has a value of 1, 2 or 3, R_1 is a lower alkyl group, R_2 is a member selected from the group consisting of hydrogen, alkyl radicals having from one to 12 carbon atoms, alkenyl radicals having from two to 15 carbon atoms, cycloalkyl radicals having from three to 20 carbon atoms, aralkyl and alkaryl radicals having from seven to 20 carbon atoms, a halogen radical, provided that when x has a value of 1 and R_2 is in the para position and R_3 and R_4 are both hydrogen, R_2 is not chlorine; hydroxyl, amino, thiol, nitro, alkoxy, aryloxy, carboxyl, alkylcarboxyl radicals having from one to 10 carbon atoms, alkylthio and arylthio radicals having from one to 20 carbon atoms, a sulfonic acid group, alkylsulfonyl and arylsul-

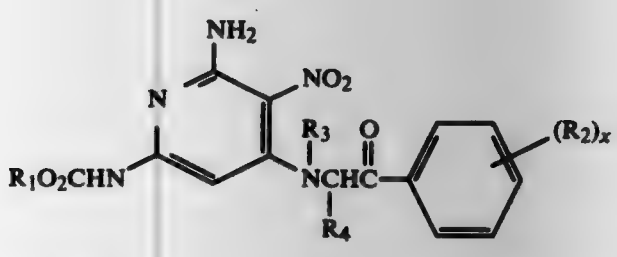
fonyl radicals having from one to 20 carbon atoms, alkylsulfinyl and arylsulfinyl radicals having from one to 20 carbon atoms, alkylamino and arylamino radicals having from one to 20 carbon atoms, and, when taken together with the aromatic ring to which it is attached, naphthyl; and R_4 is hydrogen or a lower alkyl group.

5. A compound having the formula:



wherein x has a value of 1, 2 or 3, R_1 is a lower alkyl group, R_2 is a member selected from the group consisting of hydrogen, alkyl radicals having from one to 12 carbon atoms, alkenyl radicals having from two to 15 carbon atoms, cycloalkyl radicals having from three to 20 carbon atoms, aralkyl and alkaryl radicals having from seven to 20 carbon atoms, a halogen radical, provided that when x has a value of 1 and R_2 is in the para position and R_3 and R_4 are both hydrogen, R_2 is not chlorine; hydroxyl, amino, thiol, nitro, alkoxy, aryloxy, carboxyl, alkylcarboxyl radicals having from one to 10 carbon atoms, alkylthio and arylthio radicals having from one to 20 carbon atoms, a sulfonic acid group, alkylsulfonyl and arylsulfonyl radicals having from one to 20 carbon atoms, alkylsulfinyl and arylsulfinyl radicals having from one to 20 carbon atoms, alkylamino and arylamino radicals having from one to 20 carbon atoms, and, when taken together with the aromatic ring to which it is attached, naphthyl; and R_3 is hydrogen or a lower alkyl group.

7. A compound having the formula:



wherein x has a value of 1, 2 or 3, R_1 is a lower alkyl group, R_2 is a member selected from the group consisting of hydrogen, alkyl radicals having from one to 12 carbon atoms, alkenyl radicals having from two to 15 carbon atoms, cycloalkyl radicals having from three to 20 carbon atoms, aralkyl and alkaryl radicals having fom seven to 20 carbon atoms, a halogen radical, provided that when x has a value of 1 and R_2 is in the para position and R_3 and R_4 are both hydrogen, R_2 is not chlorine; hydroxyl, amino, thiol, nitro, alkoxy, aryloxy, carboxyl, alkylcarboxyl radicals having from one to 10 carbon atoms, alkylthio and arylthio radicals having from one to 20 carbon atoms, sulfonic acid group, alkylsulfonyl and arylsulfonyl radicals having from one to 20 carbon atoms, alkylsulfinyl and arylsulfinyl radicals having from one to 20 carbon atoms, alkylamino and arylamino radicals having from one to 20 carbon atoms, and, when taken together with the aromatic ring to which it is attached, naphthyl; and R_3 and R_4 are either both hydrogen or one is hydrogen and the other is a lower alkyl group.

4,511,722

PROCESS FOR PREPARING CYCLIC N-VINYLACYLAMINES

Heinrich Krimm; Hans-Josef Buysch, both of Krefeld; Peter M. Lange, Leverkusen, and Reinhold Klipper, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

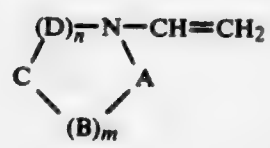
Filed Feb. 16, 1983, Ser. No. 466,807

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3207031

Int. Cl.³ C07D *263/20, 209/40, 207/12, 233/32*

U.S. Cl. 548—231 8 Claims

1. A process for preparing a cyclic N-vinylacylamine of the formula (I)



(I)

wherein

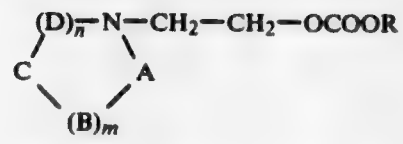
A and D denote the CO group,

B represents oxygen or the NH group,

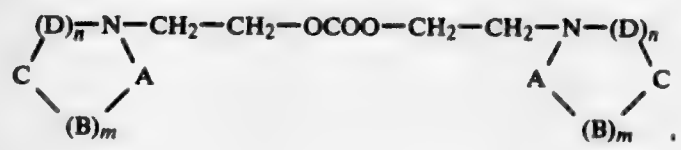
C represents a saturated hydrocarbon radical having 1 to 3 carbon atoms or a benzene ring which can be partially or completely hydrogenated, and

m and n independently of each other denote 0 or 1 and where the number of ring members is 5 or 6,

which comprises heating a carbonic acid ester of a cyclic N-hydroxyethylacylamine of either formula (II) or (III) below



(II)



(III)

in which

A, B, C, D m and n have the previously assigned significance and

R represents a saturated hydrocarbon radical having 1 to 4 carbon atoms,

at a temperature of 120° to 250° C. in the presence of a catalytic amount of at least one alkali or alkaline earth metal compound having an alkaline reaction and thereafter separating off the reaction product by distillation.

4,511,723

HALOGENATED 1-HYDROXYPYRAZOLES

Norbert Rieber, Mannheim; Heinrich Boehm, Neuhofen, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

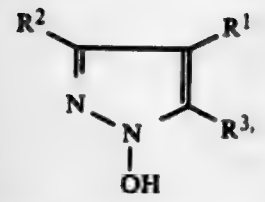
Division of Ser. No. 465,269, Feb. 9, 1983,. This application Apr. 6, 1984, Ser. No. 597,663

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205455; Feb. 16, 1982, 3205456

Int. Cl.³ C07D *231/18*

U.S. Cl. 548—376 1 Claim

1. A halogenated 1-hydroxypyrazole of the formula



(I)

where R^1, R^2 and R^3 independently of one another are hydrogen, chlorine, bromine or iodine, with the proviso that R^1, R^2 and R^3 are not all hydrogen.

4,511,724

5-(PYRROL-2-OYL)-1,2-DIHYDRO-3H-PYRROLO [1,2-A]PYRROLE DERIVATIVES AS ANTI-INFLAMMATORY AND ANALGESIC AGENTS

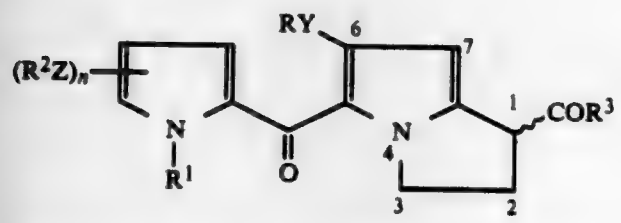
Michael N. Chang, and Tesfaye Biftu, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 387,079, Jun. 10, 1982, abandoned. This application Dec. 13, 1982, Ser. No. 449,302

Int. Cl.³ C07D *487/06;* A61K *31/40*

U.S. Cl. 548—452 **8 Claims**

1. A compound of the structural formula:



(I)

or a pharmaceutically acceptable salt thereof wherein

R is

(a) hydrogen;
(b) loweralkyl;
(c) lowercycloalkyl;
(d) lower(cycloalkyl-alkyl);
(e) loweralkenyl;
(f) halo-loweralkyl; or
(g) phenyl- or phenyl-loweralkyl;

R^1 is hydrogen; loweralkyl; or lower haloalkyl;

R^2Z can be at any available positions and R^2 is R as previously defined;

n is 1 to 3;

R^3 is

(a) hydroxy;
(b) loweralkoxy;
(c) amino;
(d) loweralkylamino;
(e) di(loweralkyl)amino;
(f) morpholinyl;
(g) bis(hydroxyloweralkyl)amino;
(h) loweralkylcyclohexylamino;
(i) glucosamino;
(j) lower(alkanoyloxyalkoxy);
(k) aroyloxyloweralkoxy;
(l) lower(alkoxycarbonyloxyalkoxy);
(m) aryloxycarbonyloxyloweralkoxy;
(n) tri(loweralkylamino)loweralkoxy;
(o) lower(alkanoylaminoalkoxy);
(p) imidoloweralkoxy;
(q) hydroxyloweralkoxy;
(r) loweralkoxyalkoxy;
(s) di(loweralkylamino)loweralkoxy;
(t) N-pyrrolidinylloweralkoxy;
(u) N-piperidinylloweralkoxy;
(v) N-morpholinylloweralkoxy; or
(w) 4-methyl-1-piperazinylloweralkoxy

Y is CH_2 or H with the proviso that when Y is H, R is not present;

Z is —O—, a sulfur-containing group selected from a group of —S—, —SO—and —SO_2—, —NH— or halo providing that when Z is halo, R is not present.

4,511,725

PREPARATION OF N-ACYL-2,5-DIMETHYLPYRROLES FROM AMIDES AND ACETONYLACETONE

Ingenuin Hechenbleikner, West Cornwall, and William P. Enlow, Falls Village, both of Conn., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Jan. 17, 1983, Ser. No. 458,603

Int. Cl.³ C07D *207/327*

U.S. Cl. 548—530 **5 Claims**

1. A process for preparing N-acyl-2,5-dimethylpyrroles comprising mixing acetonylacetone with a 1–20 carbon atom carboxamide selected from the group consisting of formamide, alkylcarboxamides and phenyl carboxamide and a non-aqueous, water-immiscible solvent, heating the resulting mixture at a temperature in the range 75° to 200° C. in the presence of an acid catalyst and removing water from the mixture, and isolating said N-acyl-2,5-dimethylpyrroles.

4,511,726

PRODUCTION METHOD OF AN INSECT PHEROMONE

Kenji Mori, Tokyo, and Tamon Uematsu, Funabashi, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 14, 1982, Ser. No. 449,748

Claims priority, application Japan, Dec. 24, 1981, 56-214181; Dec. 28, 1981, 56-211415; Feb. 17, 1982, 57-25168; Mar. 17, 1982, 57-43599; Mar. 23, 1982, 57-46938; Mar. 23, 1982, 57-46939

Int. Cl.³ C07D *311/02*

U.S. Cl. 549—283 **2 Claims**

1. 1,5,5-Trimethyul-7-endo-hydroxy-4-oxabicyclo-[4.2.0]octan-3-one.

2. (+)-1,5,5-Trimethyl-7-endo-hydroxy-4-oxabicyclo-[4.2.0]octan-3-one.

4,511,727

QUATERNARY AMMONIUM-FUNCTIONAL SILICON COMPOUNDS

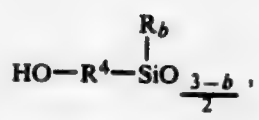
Eugene R. Martin, Adrian, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Division of Ser. No. 380,493, May 21, 1982, Pat. No. 4,384,130. This application Dec. 7, 1982, Ser. No. 447,547

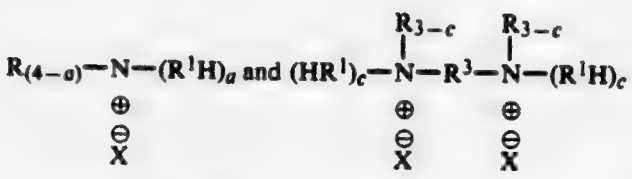
Int. Cl.³ C07F *7/08, 7/10*

U.S. Cl. 556—418 **8 Claims**

1. A quaternary ammonium functional silicon compound which is obtained from the reaction of a carboxylic acid-functional quaternary ammonium compound and a carbinol-functional silicon compound having at least one unit of the formula



said carboxylic acid-functional quaternary ammonium compound is obtained from the reaction of a carbinol-functional quaternary ammonium compound selected from the group consisting of



with a dicarboxylic acid or anhydride thereof, in which R is a monovalent hydrocarbon radical having from 1 to 22 carbon

atoms, R^1 is a hydrocarbonoxy radical represented by the formula $(-C_nH_{2n}O)_r$, R^3 is a divalent hydrocarbon radical having from 2 to 10 carbon atoms, R^4 is a radical selected from the group consisting of saturated divalent hydrocarbon radicals and divalent hydrocarbonoxy radicals in which the oxygen is in the form of an ether linkage, X is an anion, a is a number of from 1 to 4, b is a number of from 0 to 3, c is a number of from 1 to 3, n is 2, 3 or 4, and r is a number of from 1 to 50.

4,511,728

SILANES AND COMPOSITIONS PREPARED THEREFROM

Franz-Heinrich Kreuzer, Martinsried; Gisela Glauberman, Munich, and Erhard Bosch, Burghausen, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische, Munich, Fed. Rep. of Germany

Filed Dec. 30, 1982, Ser. No. 454,810

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210337

Int. Cl.³ C07F *7/08, 7/10, 7/18*

U.S. Cl. 556—419 **4 Claims**

1. Silanes of the formula $R_nSi(OCR_2^1COZR)_{4-n}$ and oligomers thereof; wherein R is selected from the group consisting of monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals, R^1 is selected from the group consisting of hydrogen and R, Z is an



group, where R^1 is the same as above and n is 0 or 1.

4,511,729

NUCLEOPHILIC SUBSTITUTION PROCESS

G. Patrick Stahly, and Barbara C. Stahly, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 452,616, Dec. 23, 1982, , which is a continuation-in-part of Ser. No. 373,633, Apr. 30, 1982,. This application Mar. 10, 1983, Ser. No. 474,137

The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.³ C07C *79/46*

U.S. Cl. 560—020 **17 Claims**

1. A process which comprises reacting a nitrophenoxy- or nitrophenylthiobenzene with an alpha,alpha-disubstituted acetic acid ester in an inert solvent and in the presence of a base so as to form a nitrophenoxy- or nitrophenylthiobenzeneacetic acid ester.

4,511,730

CARBAMATES OF BETA-HYDROXYETHYLSULFOXIDES

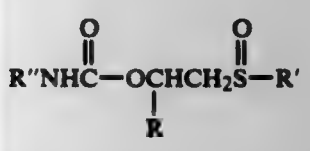
Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 17, 1982, Ser. No. 408,763

Int. Cl.³ C07C *125/063*

U.S. Cl. 560—033 **5 Claims**

1. Carbamates of beta-hydroxyethylsulfoxides of the structural formula



wherein R, R′ and R″ are individually selected from the group consisting of radicals derived from benzene, biphenyl, naphthalene, anthracene, and phenanthrene; alkyl moieties of 1 to 22 carbon atoms; and aralkyl moieties, alkylated aryl moieties and cycloalkyl moieties containing 4 to 40 carbon atoms, the ring radicals of said moieties being selected from the group consisting of phenyl, biphenyl, and cyclohexyl radicals wherein R′ can be substituted with nitro, halogen, cyano and carboalkoxy moieties of 1 to 12 carbon atoms.

4,511,731

2-ETHOXYETHYL 2-(4-HYDROXYPHENOXY)-PROPANOATE

Abel Mendoza, and Eric W. Otterbacher, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 24, 1983, Ser. No. 507,448

Int. Cl.³ C07C *69/612*

U.S. Cl. 560—061 **1 Claim**

1. 2-Ethoxyethyl 2-(4-hydroxyphenoxy)propanoate.

4,511,732

LOW VISCOSITY UV CURABLE POLYACRYLATES

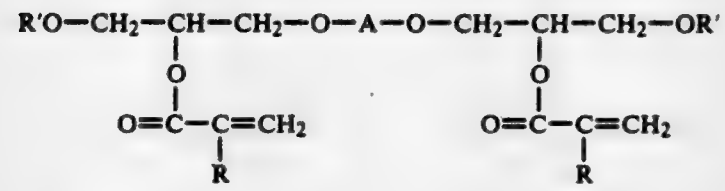
Darrell D. Hicks, Jeffersontown, Ky., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 357,960, Mar. 15, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 488,317

Int. Cl.³ C07C *69/54, 69/347, 69/767*

U.S. Cl. 560—221 **7 Claims**

1. A photocurable, relatively low viscosity, liquid monomer having the formula



wherein R is hydrogen or methyl, R′ is C_1–C_8 alkyl or C_3–C_8 alkyl ether alkyl, and A is the aromatic or aliphatic residue of a diol or the diacyl aliphatic or aromatic residue of a dicarboxylic acid.

4,511,733

FLUORINE-CONTAINING AMINOCARBOXYLIC ACID COMPOUNDS

Iwao Hisamoto, Suita; Chiaki Maeda, Kyoto, and Masaru Hirai, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

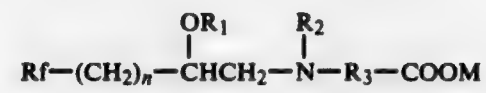
Filed Dec. 23, 1982, Ser. No. 452,811

Claims priority, application Japan, Dec. 25, 1981, 56-210363

Int. Cl.³ C07C *101/30*

U.S. Cl. 560—253 **6 Claims**

1. A fluorine-containing aminocarboxylic acid compound of the formula:



wherein Rf is a C_3–C_{21} fluorine-containing aliphatic group bearing a greater number of fluorine atoms than that of carbon atoms or a C_3–C_{21} aliphatic group bearing a greater number of fluorine atoms than that of carbon atoms which has up to four oxygen atoms in the main chain; R_1 is a hydrogen atom or a C_1–C_3 alkanoyl; R_2 is a hydrogen atom or a C_1–C_5 alkyl group; R_3 is a C_1–C_3 alkylene group; M is a member selected from the group consisting of a proton, an alkali metal ion, an ammonium ion, $NH_3(CH_2)_2OH$, $NH_2(CH_3)_2$, and $NH(C_2H_5)_3$; and n is an integer of 1 to 5, said compound being useful as a surface tension lowering agent for water and/or organic liquids.

4,511,734
PROCESS FOR THE PRODUCTION OF 3,3-DIMETHYLGLUTARIC

Pavel Lehky, Naters, and Peter Hardt, Visp, both of Switzerland, assignors to Lonza Ltd., Gampel, Switzerland

Filed May 5, 1982, Ser. No. 375,343
Claims priority, application Switzerland, May 12, 1981, 3061/81
Int. Cl.³ C07C *51/285, 51/34, 55/02*
U.S. Cl. 562—524 10 Claims

1. Process for the production of 3,3-dimethylglutaric acid from isophorone which comprises converting isophorone with ozone at a temperature of −20° to +20° C. in the presence of water or a solvent to an ozone-addition product, converting the ozone-addition product by hydrolysis in the presence or absence of a solvent into 3,3-dimethyl-5-oxo-hexanoic acid and converting the 3,3-dimethyl-5-oxo-hexanoic acid by treatment with hydrogen peroxide at a temperature of 15° to 70° C. into 3,3-dimethylglutaric acid.

4,511,735
PARTICULATE FUNGICIDES

Philip S. Magee, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1983, Ser. No. 537,753
Int. Cl.³ C07C *143/74, 143/76, 143/78*
U.S. Cl. 514—601 21 Claims

1. A compound of the formula:



wherein

R^1 is lower alkyl, lower alkenyl, lower alkynyl or aryl of 6 to 10 carbon atoms optionally substituted with up to 3 halogen atoms;

R^2 is lower alkyl, lower alkenyl, lower alkynyl or aryl of 6 to 10 carbon atoms optionally substituted with up to 3 halogen atoms or up to 3 lower alkoxy groups; and

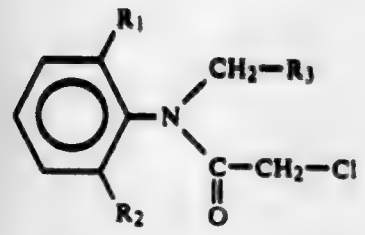
R^3 is alkyl of 1 to 3 carbon atoms substituted with 3 to 6 halogen atoms or trihalovinyl.

4,511,736
PROCESS FOR THE PREPARATION OF SUBSTITUTED CHLOROACETANILIDES

Ferenc Meggyeródi; Eniko Koppány; Tibor Bódi; Károly Balogh, all of Miskolc; István Tóth, Sajóbábony; Rezso Bognár, Debrecen; Sándor Makleit, Debrecen; György Litkei, Debrecen; Miklós Rákosi, Debrecen, and Zoltán Dinya, Debrecen, all of Hungary, assignors to Északmagyarországi Vegyimuvek, Sajóbábony, Hungary

Filed Jan. 7, 1983, Ser. No. 456,383
Claims priority, application Hungary, Jan. 18, 1982, 103/82
Int. Cl.³ C07C *102/00, 102/06*
U.S. Cl. 564—214 10 Claims

1. A process for the preparation of a substituted chloroacetanilide of the formula

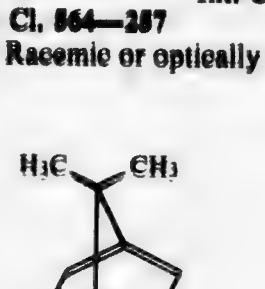


(I)

wherein:

R_1 and R_2 represent independently from each other a hydrogen atom or a C_{1-8} alkyl or C_{1-8} alkoxy group; and

R_3 is a straight chain or branched C_{1-8} alkoxy group comprising the steps of chloroacetylating an aniline of the formula



(II)

at a temperature of 10° to 120° C., optionally in a solvent medium in the presence of an acid binding agent, then reacting a thus-obtained intermediate with chloromethyl chloroformiate or, alternatively, reacting a compound of the formula (II) first with chloromethyl chloroformiate and subjecting the product to chloroacetylation, thereafter reacting a thus-obtained intermediate with an alcohol of the formula

$$R_3—H \qquad \text{(III)}$$

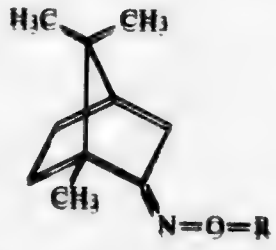
optionally in a solvent medium in the presence of an acid binding agent, and recovering a product of the formula (I).

4,511,737
BICYCLO(2.2.1)HEPTANE OXIMES

Zoltán Budai; Attila Kis-Tamás; Tibor Mezei; Aranka Lay; Zoltán Vigh, and Ágnes Sokorai, all of Budapest, Hungary, assignors to EGYT Gyógyszervegyészeti Gyár, Budapest, Hungary

Division of Ser. No. 322,678, Nov. 18, 1981, Pat. No. 4,425,158. This application Nov. 15, 1983, Ser. No. 551,941
Claims priority, application Hungary, Nov. 21, 1980, 2774/80
Int. Cl.³ C07C *131/02*
U.S. Cl. 564—287 3 Claims

1. Racemic or optically active compounds of the formula (I)



(I)

wherein

R represents a C_{3-12} alkyl group optionally substituted by a lower alkoxy group, a C_{2-4} alkenyl group or a phenyl-(lower alkyl) group substituted on the phenyl ring by one or more lower alkoxy groups or halogen atoms.

4,511,738
PROCESS FOR PREPARING PHOSPHINE OXIDES

Kanji Tokuyama; Yasuhiro Nishitani; Mamoru Tanaka, all of Osaka, and Wataru Nagata, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jan. 7, 1983, Ser. No. 456,221
Claims priority, application Japan, Jan. 12, 1982, 57/3718
Int. Cl.³ C07F *9/54*
U.S. Cl. 568—14 15 Claims

1. A process for preparing a tri-(monocyclic aryl)phosphine oxide or a tri-lower alkyl phosphate which comprises:

chlorinating the corresponding tri-(monocyclic aryl)phosphine sulfide or tri-lower alkyl thionophosphate by treatment with a hypohalite salt or chlorine in an aqueous medium; and

hydrolyzing by treatment with an aqueous base.

4,511,739

CONTINUOUS PREPARATION OF GLYOXAL

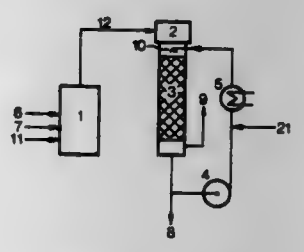
Wolfgang Sauer, Mannheim, and Wolfgang Hoffmann, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

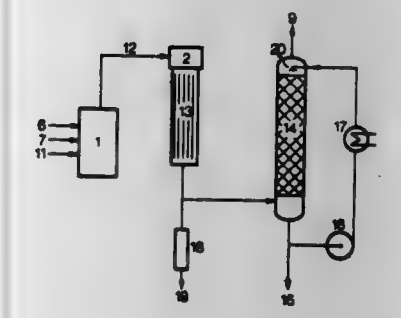
Filed May 27, 1980, Ser. No. 153,704

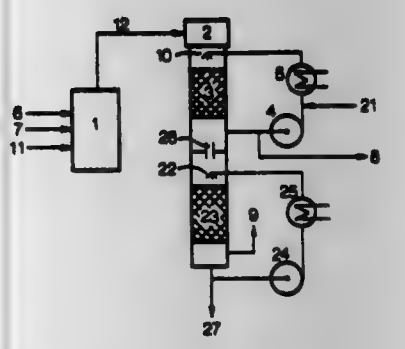
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922599

Int. Cl.³ C07C *47/127*

U.S. Cl. 568—473 17 Claims







1. A process for the continuous preparation of glyoxal by oxidizing glycol with an oxidizing agent in the presence of a silver catalyst at elevated temperature, cooling the hot reaction gases and separating off the end product, wherein all or part of the glyoxal, glycol and/or glycol aldehyde, together with water are condensed out of the hot stream of the reaction mixture, which is in vapor form and at from 450° to 800° C., after the oxidation and not more than one second after the gases have issued from the catalyst, by means of water or aqueous glyoxal solution at from 0° to 130° C. and in the form of droplets having a mean diameter of from 1 to 2,000 micrometers, the majority of the droplets impinging on the stream of reaction gases at an angle of from 2° to 85° to the axis of the stream.

4,511,740

PROCESS FOR HYDROFORMYLATION OF TERMINAL OLEFINS TO PREDOMINANTLY LINEAR ALDEHYDES

David C. Alexander, and John F. Knifton, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,696

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 17 Claims

1. A process for preparing predominantly linear aldehydes containing from 3 to 21 carbon atoms which comprises the steps of

contacting straight chain terminal olefins, with 2 to 20 carbons, carbon monoxide and hydrogen with a catalyst system comprising a ruthenium-containing compound and optionally a cobalt-containing compound mixed with an insoluble polymeric phosphonium salt of the formula:

$$P\text{—}(CH_2)_nPR_3^+X^-$$

where

P is an insoluble polymeric framework selected from the group of polymers consisting of polystyrene cross-linked with divinylbenzene, polyethylene and polymethyacrylamide,

R is one or more alkyl or aryl radicals each containing one to twenty carbon atoms,

x is halogen or an acetate grouping,

n is 0→3,

heating resultant reaction mixture under a pressure of 200 psi or greater at a temperature of at least 100° C. and isolating said linear aldehydes.

4,511,741

PRODUCTION OF ALDEHYDES FROM ORGANIC ACID ESTERS

Richard W. Wegman, South Charleston, and David C. Busby, Cross Lanes, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 2, 1983, Ser. No. 557,269

Int. Cl.³ C07C *45/49, 45/50*

U.S. Cl. 568—484 18 Claims

1. A process for the reaction of an organic ester having the structural formula RCOOR′ or R′OOCR″COOR′ in which R and R′ are monovalent hydrocarbyl (i) alkyl groups having from 1 to 30 carbon atoms, (ii) alkenyl groups having from 2 to 30 carbon atoms, or (iii) aryl, aralkyl or alkaryl groups having from 6 to 10 ring carbon atoms and from 1 to 10 carbon atoms in the alk-moiety thereof, and R″ is a divalent hydrocarbyl group as defined for R and R′ having from 2 to 10 carbon atoms, and wherein R can also be hydrogen, with carbon monoxide or synthesis gas to selectively produce an aldehyde, said process conducted at a temperature of from 100° C. to 300° C., a pressure of from 500 psig to 10,000 psig, wherein said synthesis gas has a H_2:CO mole ratio of from 1:10 to 10:1, in contact with a mixed cobalt and rhodium homogenous catalyst system containing lithium iodide or lithium bromide as the promoter, wherein the mole ratios of Li:Co and Li:Rh are from 50:1 to 1:50, the Li:Co:Rh mole ratio is from 50:1:1 to 1:50:50 and the Rh:Co ratio is from 10:1 to 1:10.

4,511,742

EXTRACTION OF OLIGOMERS FROM POLYMERS OF EPIHALOHYDRIN

Simon H. Yu, Parma, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 30, 1982, Ser. No. 412,474

Int. Cl.³ C07C *43/11, 43/18, 43/20*

U.S. Cl. 568—614 10 Claims

1. Method for extracting cyclic oligomers of an epihalohydrin selected from dimers, trimers, tetramers, pentamers, hexamers, heptamers, and the like, from a functionally terminated liquid polyether containing same comprising contacting said polyether with a solvent in which said oligomers are soluble but in which said polyether is substantially insoluble, and separating said solvent from said polyether whereby at least 75% of said oligomers are extracted from said polyether by said solvent, said polyether is selected from homopolymers of an epihalohydrin, copolymers of an epihalohydrin with a cyclic ether monomer containing 2 to 10 carbon atoms, and block copolymers of an epihalohydrin, said copolymers containing 1 to 99 weight percent epihalohydrin in polymerized form.

4,511,743

PROCESS FOR HOMOLOGATING ALCOHOLS THROUGH THE INTERMEDIATE PRODUCTION OF KETALS WITH COBALT CARBONYL COMPLEXES AS CATALYSTS

Claude Seite, Creteil; Dominique Commereuc, Meudon, and Yves Chauvin, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 4, 1983, Ser. No. 548,737
Claims priority, application France, May 11, 1982, 82 18737
Int. Cl.³ C07C *27/20*
U.S. Cl. 568—814 **16 Claims**

1. A process for converting an alcohol to the acetal of its next higher homolog aldehyde, comprising the steps of reacting the alcohol with a ketone, or a ketal thereof with a less reactive alcohol, under conditions wherein the alcohol is converted to its corresponding ketal; contacting the resultant ketal with synthesis gas comprising carbon monoxide and hydrogen, in the presence of an effective catalytic amount of a cobalt carbonyl complex; and recovering resultant acetal of the next higher homolog aldehyde of said alcohol.

4,511,744

PROCESS FOR PRODUCING LOWER ALKYLENE GLYCOL, CATALYST COMPOSITION USED THEREFOR AND PROCESS FOR PRODUCTION THEREOF

Haruhiko Miyazaki; Koichi Hirai; Taizo Uda; Yasuo Nakamura, all of Ube; Harumi Ikezawa, Onoda, and Takanori Tsuchie, Ube, all of Japan, assignors to UISE Industries, Ltd., Yamaguchi, Japan

Filed May 5, 1983, Ser. No. 491,742
Claims priority, application Japan, May 6, 1982, 57-74611
Int. Cl.³ C07C *29/136, 31/20*
U.S. Cl. 568—864 **14 Claims**

1. A process for producing a lower alkylene glycol, which comprises hydrogenating a lower alkyl ester of a lower hydroxycarboxylic acid in the vapor phase at an elevated temperature in the presence of a hydrogenation catalyst composition composed of a reduction product of copper-containing silica gel formed by contacting an ammine complex of copper with silica gel having an average particle diameter of not more than 200 microns or colloidal silica sol.

4,511,745

PROCESS FOR FUNCTIONALIZING ALKANES

Robert G. Bergman, Kensington, Calif.; Andrew H. Janowicz, Wilmington, Del., and Roy A. Periana-Pillai, Berkeley, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 12, 1984, Ser. No. 619,886
Int. Cl.³ B01J *19/12; C07C 17/00; C07F 15/00*
U.S. Cl. 570—241 **11 Claims**

1. A process for functionalizing saturated hydrocarbons comprising:

(a) reacting said saturated hydrocarbons of the formula:

RH

where:
H represents a hydrogen atom, and
R represents a saturated hydrocarbon radical,
with a metal complex of the formula:

$CpRhPMe_3H_2$

where:
Cp represents a pentamethylated cyclopentadienyl radical,
Rh represents a rhodium atom,
P represents a phosphorous atom,
Me represents a methyl group,
H represents a hydrogen atom,

in the presence of ultraviolet radiation at a temperature maintained at about −60° to −17° C. to form a hydridoalkyl complex of the formula:

$CpRhPMe_3(R)(H)$

(b) reacting said hydridoalkyl complex with a haloform of the formula:

CHX_3

where:
X represents a halogen atom selected from bromine, iodine and chlorine,
at a temperature in the range of about −60° to −17° C. to form the corresponding haloalkyl complex of step (a) having the formula:

$CpRhPMe_3(R)(X)$; and,

(c) reacting said haloalkyl complex formed in (b) with halogen at a temperature in the range of about −60° to 25° C. to form the alkyl halide of said saturated hydrocarbon.

4,511,746

LOW ACTIVITY CATALYST OLIGOMERIZATION PROCESS

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 25, 1981, Ser. No. 305,803
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ C07C *2/02*
U.S. Cl. 585—323 **7 Claims**

1. An alkene oligomerization process comprising:

(a) contacting a C_2 to C_6 alkene with an essentially alumina-free molecular sieve selected from the group consisting of silicalite, RE 29,948 organosilicate, or CZM at a temperature of less than 350° C. and a pressure greater than about 40 bar; and

(b) recovering an effluent comprising substantial amounts of olefin multimers containing from 2 to 5 units of said alkene.

4,511,747

LIGHT OLEFIN CONVERSION TO HEAVIER HYDROCARBONS WITH SORPTION RECOVERY OF UNREACTED OLEFIN VAPOR

Bernard S. Wright, East Windsor; Chung H. Hsia, Matawan, and Hartley Owen, Belle Mead, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 576,179
Int. Cl.³ C07C *3/02, 3/03, 3/20*
U.S. Cl. 585—415 **8 Claims**

1. A continuous process for converting ethene-rich olefinic feedstock to heavier liquid hydrocarbons comprising the steps of

combining the feedstock stream with a liquid hydrocarbon stream containing a major amount of gasoline range hydrocarbons including C_5^+ olefins;

contacting the combined feedstock-gasoline stream at elevated temperature and pressure in a reaction zone with the shape selective medium pore zeolite oligomerization catalyst to convert at least a portion of the olefinic components to heavier hydrocarbons;

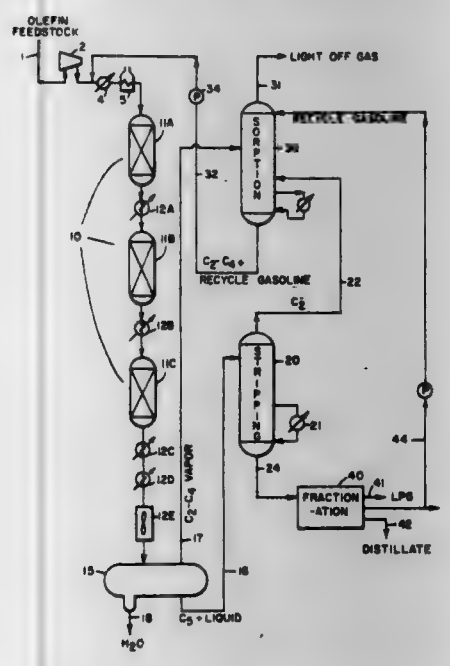
cooling oligomerization reaction effluent to condense at least a portion of said heavier hydrocarbons;

separating the cooled and partially condensed effluent stream into an ethene-rich vapor stream and condensed liquid hydrocarbon stream;

fractionating said condensed hydrocarbons to provide a gasoline stream, a distillate product stream and a light hydrocarbon vapor stream containing unreacted ethene;

contacting the ethene-rich vapor from the separation step

and the light hydrocarbon vapor stream under sorption pressure conditions with a cooled liquid portion of the gasoline hydrocarbon to sorb ethene into the liquid gasoline stream; and pressurizing and recycling the sorbed ethene and gasoline stream for combining with an ethene-rich feedstock.



4,511,748

PROCESS FOR PRODUCING ALKYLBENZENES

Michio Kudoh, Yohohama; Mitsuo Matsuno, Kawasaki, and Hirosuke Imai, Yohohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed May 23, 1984, Ser. No. 613,211
Claims priority, application Japan, May 31, 1983, 58-96756
Int. Cl.³ C07C *3/52*
U.S. Cl. 585—467 **6 Claims**

1. A process for the production of alkylbenzenes which comprises alkylating an aromatic hydrocarbon containing a side-chain in which at least one hydrogen atoms is bonded to a carbon atom alpha to the nucleus with an olefin in the presence of a catalyst comprising sodium and/or sodium amide deposited on a carrier of the formula

$$K_2O.xAl_2O_3$$

where x is $0.5 \leqq x \leqq 11$.

4,511,749

CONVERSION OF METHANOL TO TOLUENE USING AMORPHOUS SILICA-ALUMINA CATALYSTS

Joseph G. Robinson, Winchcombe, and Pierce W. F. Riemer, Huntly, both of England, assignors to Coal Industry Patents Limited, London, England

Filed Nov. 22, 1983, Ser. No. 554,244
Claims priority, application United Kingdom, Feb. 11, 1983, 8303772
Int. Cl.³ C07C *1/20*
U.S. Cl. 585—469 **7 Claims**

1. A process for the production of toluene with high selectivity, comprising passing methanol with at least an equal weight of water over a silica-alumina catalyst which comprises a highly porous amorphous silica xerogel having a layer of an aluminum compound chemically bonded onto the surface in an amount equivalent to a monolayer on up to 90% of the BET surface area of the silica xerogel, said catalyst having a maximum pore diameter of about 1.1 nm, having substantially only protons as electrical charge balancing species on the surface of the layer, the reaction causing bonding of the layer having been carried out at a temperature of from 300° to 600° C. and the catalyst having been calcined at a temperature not exceeding 600° C., at a process reaction temperature in the range 280° to 600° C.

4,511,750

OLEFIN OLIGOMERIZATION WITH AN ACTIVATED CATALYST

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 416,790, Sep. 10, 1982, Pat. No. 4,465,788.
This application Jun. 14, 1984, Ser. No. 620,594
Int. Cl.³ C07C *3/14*
U.S. Cl. 585—526 **7 Claims**

1. A process for oligomerizing a lower olefin in a lower olefin feed comprising: contacting said feed with a catalyst including nickel sulfate associated with a porous, inorganic oxide at oligomerization conditions, said catalyst having been activated by

(a) contacting said catalyst with a gas containing free oxygen at a temperature in the range from about 750° F. to about 1150° F. for at least 2 hours; and

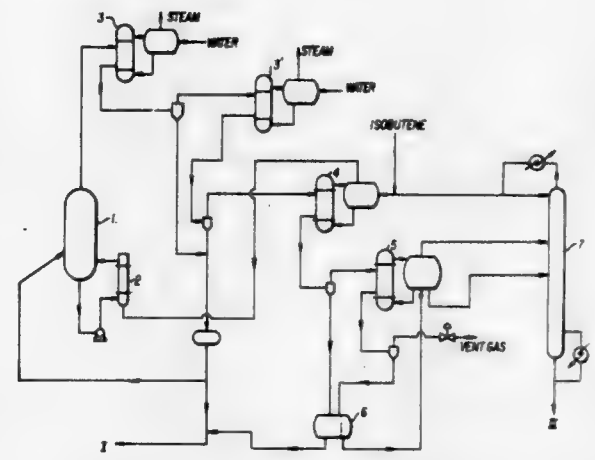
(b) contacting the resulting catalyst with an inert gas at a temperature of about 350° F. to about 750° F. for at least 1 hour.

4,511,751

PROCESS FOR PRODUCING ISOPRENE

Yoichi Ninagawa; Osamu Yamada; Tsumoru Renge, all of Hasaki; Sunao Kyo, Abiko; Takayoshi Osaki, Kurashiki, and Koichi Kushida, Ibaraki, all of Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Oct. 11, 1983, Ser. No. 540,870
Claims priority, application Japan, Oct. 14, 1982, 57-180759; Dec. 9, 1982, 57-216500; Dec. 13, 1982, 57-219096; Dec. 24, 1982, 57-229192; Apr. 4, 1983, 58-59654; Apr. 13, 1983, 58-66147; May 20, 1983, 58-89827; Jun. 20, 1983, 58-111485
Int. Cl.³ C07C *11/18*
U.S. Cl. 585—608 **13 Claims**



1. A process for producing isoprene by reacting isobutene and/or tertiary butanol with formaldehyde in an acidic aqueous solution, characterized in:

(a) that the acidic aqueous solution is present in the reaction zone,

(b) that isobutene and/or tertiary butanol, a formaldehyde source and water are fed to said reaction zone continuously or intermittently, and

(c) that isoprene, water, unreacted starting materials and other low-boiling components are distilled off from said reaction zone,

the amounts of said isobutene and/or tertiary butanol and formaldehyde source being fed to said reaction zone being such that the isobutene/tertiary butanol-to-formaldehyde molar ratio in the charge is at least 3 and the pressure in the reaction system being maintained at a level 1.1 to 2.5 times the vapor pressure at the reaction temperature of the acidic aque-

ous solution existing in the reaction zone, said isobutene/tertiary butanol-to-formaldehyde molar ratio being calculated by calculating the amount of the formaldehyde source in formaldehyde equivalent when said source is other than formaldehyde.

4,511,752

PROCESS FOR THE HYDROISOMERIZATION OF PARAFFINS

Jacobus J. L. Heinerman, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 20, 1983, Ser. No. 486,773

Claims priority, application Netherlands, Apr. 26, 1982, 8201716

Int. Cl.³ C07C 5/13

U.S. Cl. 585—739 **8 Claims**

1. A process for the hydroisomerization of paraffin hydrocarbons in the presence of hydrogen under suitable reaction conditions, wherein the catalyst used therein is a catalytically active metal silicate comprising an at least partly crystalline metal silicate having a crystal lattice which consists substantially of a triplex layer structure containing in the central layer octahedrally coordinated aluminum which may be entirely or partly substituted by one or more metals from Group VIII of the Periodic Table of Elements, and in the two outer layers tetrahedrally coordinated silicon which may be entirely or partly substituted by aluminum, and wherein said metal silicate is treated by contact with one or more compounds comprising chlorine which can further release one or more protons and/or hydrogen chloride.

4,511,753

SELECTIVE REMOVAL OF VINYLIDENE OLEFIN FROM OLEFIN MIXTURES

R. Scott Smith, Baton Rouge, and Gerald Z. Smith, Jr., Francisville, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jan. 16, 1984, Ser. No. 570,934

Int. Cl.³ C07C 7/17

U.S. Cl. 585—856 **33 Claims**

1. A process for selectively removing vinylidene olefins containing about 6–22 carbon atoms from a mixture of olefins containing vinylidene olefins and non-vinylidene olefins, said process comprising

(a) contacting said mixture of olefins in the liquid phase with a sulfur compound selected from the group consisting of H_2S and mercaptans in the presence of an acidic catalyst to form a sulfided mixture whereby said H_2S selectively converts said vinylidene olefins to mercaptans, sulfides, or mixtures thereof, said mercaptan selectively converts said vinylidene olefins to a sulfide (thioether) and

(b) separating said non-vinylidene olefins from said sulfided mixture.

4,511,754

HYDROCARBON DEHYDROGENATION

Anne M. Gaffney, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 16, 1984, Ser. No. 600,652

Int. Cl.³ C07C 5/32

U.S. Cl. 585—656 **22 Claims**

1. A method for dehydrogenating dehydrogenatable hydrocarbons which comprises contacting at a temperature within the range of about 500°–1000° C. a gas comprising said hydrocarbon and a solid comprising:

(a) a reducible oxide of Tb and

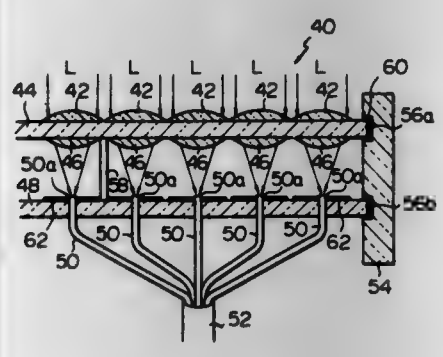
(b) at least one member of the group consisting of alkali metals, alkaline earth metals, and compounds thereof.

ELECTRICAL

4,511,755
SOLAR RAY COLLECTION APPARATUS

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed May 9, 1983, Ser. No. 493,095
Claims priority, application Japan, May 17, 1982, 57-81477; Jun. 3, 1982, 57-95969; Dec. 31, 1982, 57-230792
Int. Cl.[3] H01L *31/04*; G02B *5/14*
U.S. Cl. 136—246 24 Claims



1. A solar ray collection apparatus comprising:
a plurality of lenses;
a first transparent flat support member for supporting the lenses on a surface thereof;
a plurality of light conducting members equal in number to the lenses; and
a second transparent flat support member integrally connected to the first support member in a predetermined spaced parallel position, said lenses and said first and second support members having substantially the same coefficient of thermal expansion, said second support member supporting the light conducting members in such positions that one end of each of the light conducting members faces one of the lenses associated therewith and coincides with a focal point of said one lens.

4,511,756
AMORPHOUS SILICON SOLAR CELLS AND A METHOD OF PRODUCING THE SAME

Matthias Moeller, and Helmold Kausche, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,609
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242931
Int. Cl.[3] H01L *31/06*, *31/18*
U.S. Cl. 136—258 6 Claims

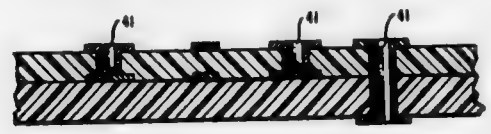


1. In a solar cell having a semiconductor body composed essentially of amorphous silicon applied to a substrate having at least one surface thereof comprised of a metal layer functioning as a back contact, the improvement which comprises employing as said metal layer one which is composed of aluminum and which further comprises a diffusion barrier layer composed of titanium nitride positioned between said metal layer and said semiconductor body.

4,511,757
CIRCUIT BOARD FABRICATION LEADING TO INCREASED CAPACITY

Jose A. Ors, Solebury Township, Bucks County, Pa., and Richard D. Small, Jr., West Windsor Township, Mercer County, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Jul. 13, 1983, Ser. No. 513,485
Int. Cl.[3] H05K *1/03*
U.S. Cl. 174—68.5 6 Claims

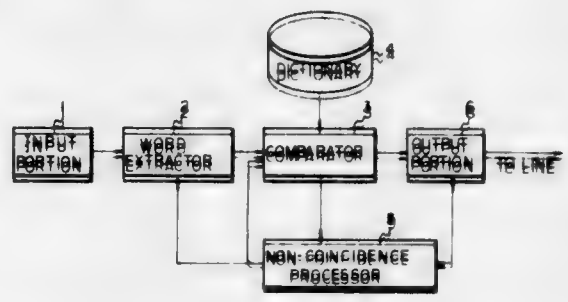


1. A product comprising a first and second pattern of conductive material, an electrically insulating material interposed between said first and second pattern and an electrical connection between said first and second pattern through said insulating material by a conductive via wherein said conductive via and said insulating material is formed by subjecting an energy-sensitive material to electromagnetic radiation processing to form said via and to produce said insulating material wherein said energy-sensitive material comprises a mixture of an acrylated rubber modified epoxy polymer wherein the rubber is in the backbone of the epoxy polymer and is derived from reacting an epoxy resin with a carboxy terminated butadiene-acrylonitril based rubber, an acrylated epoxy having a glass transition temperature of at least 50° C. that is compatible with said acrylated rubber modified epoxy and a viscosity modifier.

4,511,758
REDUCTION OF MESSAGE LENGTH IN A COMMUNICATION SYSTEM

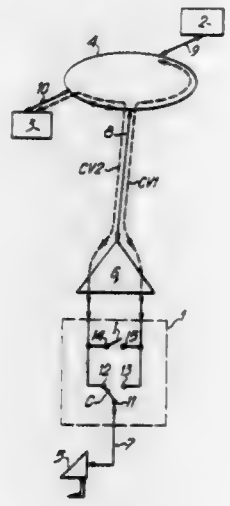
Kazuneri Kenishi, Kawasaki, and Akira Kurematsu, Yokohama, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,917
Claims priority, application Japan, Apr. 22, 1982, 57-66369
Int. Cl.[3] H04L *3/00*
U.S. Cl. 178—1 B 8 Claims



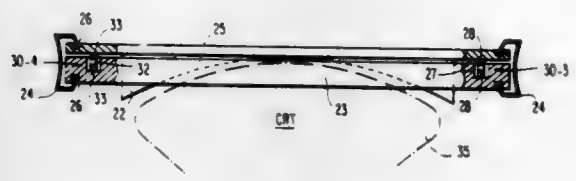
1. A message communication process between a transmission side and a reception side comprising the steps of:
at the transmission side, comparing for all of the characters in a message, a character string of the message to be transmitted with a dictionary, and encoding all of said character string into a variable length compact code according to the content of the dictionary,
sending the encoded compact code to the reception side,
at the reception side, decoding the encoded compact code with a dictionary having the same content as the dictionary of the transmission side,
wherein said dictionary is an electronically controlled dictionary with a memory.

4,511,759
APPARATUS FOR CONTROLLING TRANSFERS OF FILES BETWEEN COMPUTERS
Jean-Paul Irlande, 4 Allée Bourvil, 94000 Rethel, France
Filed Aug. 4, 1983, Ser. No. 520,218
Claims priority, application France, Aug. 13, 1982, 82 14083
Int. Cl.³ H04L *13/10*
U.S. Cl. 178—2 R **4 Claims**



1. An apparatus for controlling the transfer of data between computers, connected to a communications network, accessible to at least one terminal by means of an asynchronous concentrator, which is connected between the network and an input-output junction of the terminal, comprising means connected between the input-output junction of the terminal and the concentrator, in order to asynchronously establish via the concentrator, a first virtual circuit between the terminal and a first computer of the network, then a second virtual circuit between the terminal and a second computer of the network, and connecting means for connecting the thus established virtual circuits, the transfers of files between the first and second computers then taking place across these connecting means, wherein the means for establishing the first and second circuits comprise at least one two-position switch having a common terminal member connected to the input-output junction of the terminal and two switching terminal members connected to the concentrator and corresponding to the two positions of the switch, the latter making it possible to establish the first and second virtual circuits.

4,511,760
FORCE SENSING DATA INPUT DEVICE RESPONDING TO THE RELEASE OF PRESSURE FORCE
Richard L. Garwin, Scarsdale, and James L. Levine, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 23, 1983, Ser. No. 497,290
Int. Cl.³ G08C *21/00*; G01G *3/14*; H04N *1/00*
U.S. Cl. 178—18 **30 Claims**



29. In a force sensitive input device for translating the location of a localized data input force applied to an essentially planar area member into data for machine computation, wherein said planar area member is supported with respect to a reference at at least three points by separate force sensors,

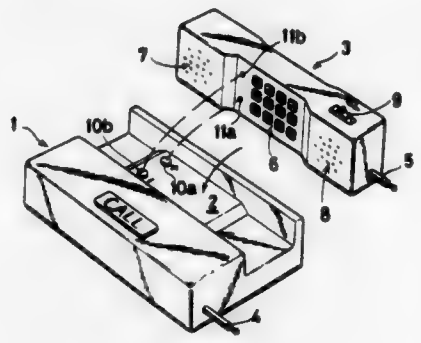
the improvement comprising in combination

means for establishing a sum of the output signals from each of said force sensors,

means for detecting a peak value of said sum in a polarity corresponding to a release of said data input force, and

means for determining a position of application of said data input force in accordance with a value of an output signal from each said force sensor at a time of detection of said peak value.

4,511,761
AUTOMATIC COMMUNICATION STANDBY DEVICE IN CORDLESS TELEPHONE
Kenji Yamazaki, Chiba, and Kazuo Maeda, Tokyo, both of Japan, assignors to Uniden Corporation of Japan, Ichikawa, Japan
Filed Jun. 17, 1982, Ser. No. 389,501
Claims priority, application Japan, Apr. 9, 1982, 57-58198
Int. Cl.³ H04M *1/02*; H04B *1/40*
U.S. Cl. 179—2 EA **20 Claims**



4. In a cordless telephone system including a base unit, and a portable unit having a transmission circuit and a reception circuit incorporated therein, said base and portable units being in communication with each other via radio waves, said base unit being provided with electric charge output terminals and said portable unit being provided with electric charge input terminals, and said charge output and input terminals being so adapted that when said portable unit is disposed upon a cradle of said base unit, said output and input terminals are brought into contact so as to charge a battery disposed inside said portable unit, the improvement comprising:

a switch disposed upon said portable unit and manually operable between a first service position and a second non-service position independently of the cradling or uncradling of said portable unit upon or from said base unit; and

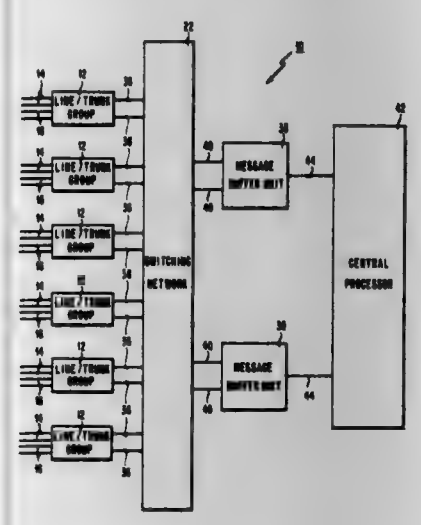
an electrically actuated switching element disposed within a power supply line extending from said battery to said transmission circuit of said portable unit and electrically coupled to said manually operated switch and said charge input terminals of said portable unit such that when said manually operated switch is disposed within said first service position, said switching element will assume an OPEN state in response to the existence of charge potential upon said electric charge input terminals of said portable unit as a result of the mating of said terminals of said portable and base units when said portable unit is disposed upon said cradle of said base unit so as to charge said battery of said portable unit, whereby said transmission circuit of said portable unit is rendered inoperative.

4,511,762

OVERLOAD DETECTION AND CONTROL SYSTEM FOR A TELECOMMUNICATIONS EXCHANGE

Robert Stockdale, West Palm Beach, Fla., assignor to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Jun. 6, 1983, Ser. No. 501,940
Int. Cl.³ H04M *15/10, 3/28*
U.S. Cl. 179—9 **25 Claims**



1. Apparatus for a telecommunications exchange, comprising:

(a) central processing means for controlling certain operations of said telecommunications exchange;

(b) at least one line/trunk group connected to said central processing means, said line/trunk group comprising,

(1) a plurality of telecommunication trunks for receiving and transmitting telecommunication signals;

(c) a switching means connected to said central processing means and to said line/trunk group enabling said telecommunication trunks to communicate with each other, said switching means comprising,

(1) means associated with said line/trunk group for sending a message to said central processing means whenever one of said telecommunication trunks is to communicate with another one thereof; and

(2) means associated with said central processing means for receiving said message and sending a responsive message to said line/trunk group;

wherein said line/trunk group further comprises system overload detection means comprising,

(1) means associated with said line/trunk group to measure the time for said central processing means to send said responsive message to said line/trunk group in response to said message sent by said line/trunk group to said central processing means; and

(2) means responsive to said time for determining the system overload condition.

4,511,763

FLOATING DC CURRENT SOURCE FOR A SUBSCRIBER LOOP CIRCUIT

Constatine V. Skidanenko, Menlo Park, and Gregor D. McGibbon, San Carlos, both of Calif., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Nov. 1, 1982, Ser. No. 437,936
Int. Cl.³ H04M *19/00*
U.S. Cl. 179—16 AA **3 Claims**

1. In floating battery feed circuit, apparatus for providing a controlled subscriber loop current comrising:

a primary dc source having positive and negative output terminals, said positive output terminal being connected to ground;

a transformer having only a primary and a secondary winding and no sense winding, a first terminal of said primary winding being connected to said negative output terminal of said primary dc power source;

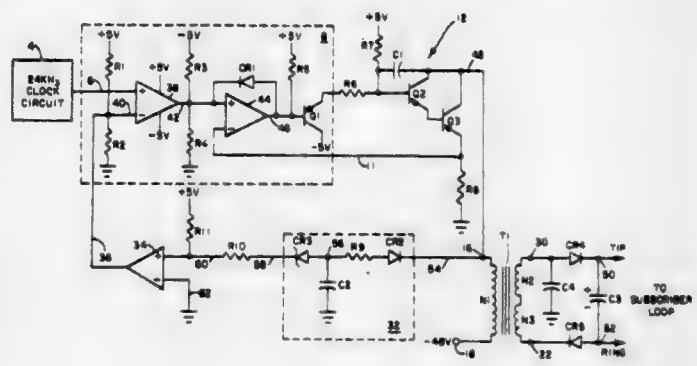
a rectifier circuit connected between the first and second output terminals of said secondary winding, the output of said rectifier circuit being adapted for connection to the tip and ring leads of the subscriber loop;

a clock source providing an output pulse at predetermined time intervals;

a pulse width voltage converter means obtaining power from said primary dc source and being responsive to a clock pulse for enabling the passage of direct current from said primary source throgh said primary winding, said converter means including feedback control means providing an indication of the magnitude of said passing direct current; latch means causing said converter means to pass said direct current until it is disabled, which disablement occurs either at the trailing edge of said clock pulse if a feedback control indication from the associated means is below a predetermined value, or when the feedback control indication from the associated means reaches said predetermined value after termination of said clock pulse; and

means responsive to a reflected voltage from said secondary winding for immobilizing said converter means when the subscriber loop impedance exceeds a threshold value, whereby an on-hook high impedance condition is recognized, thus reducing power consumption during the idle circuit condition;

said converter means further comprising a first operational amplifier having a non-inverting input receiving the output pulse signals from said clock source and an inverting input electrically connected to an output of said immobilizating means, said inverting input being normally held at a fixed bias except during immobilizing intervals; and a second operational amplifier having a non-inverting input receiving a pulse output from said first operational amplifier, having said latch means which comprises a diode being connected between an output terminal and said non-inverting input of said second amplifier, said diode normally being forward biased but the presence of a clock pulse at said non-inverting input thereof causing it to be back biased and latched at least for the duration of said clock pulse; said second amplifier having an inverting input receiving the feedback control signal from said feedback control means and thereby holding said second operational amplifier latched if the feedback voltage applied to said inverting input thereof exceeds said predetermined value before said clock pulse terminates; and



said immobilizing means comprising a peak detector having an input connected to the other terminal of said primary winding and being responsive to the reflected voltage from said secondary winding which is enhanced by the turns ratio of said transformer, having an output and including means for storing said voltage; a breakdown diode having an input receiving the output voltage from said peak detector and being responsive to such voltages above it's breakdown voltage to provide an output voltage thereof; and a third operational amplifier having a non-inverting input connected to the output of said breakdown diode, said non-inverting input also having a fixed

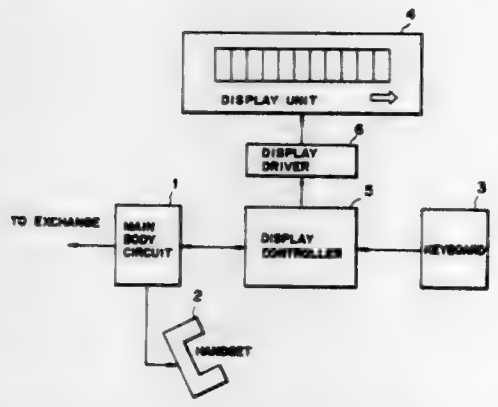
reference voltage applied thereto which causes a high impedance output thereof except when the output voltage from said breakdown diode reaches a predetermined value in which event the output of said third operational amplifier becomes a negative voltage, thereby biasing said first operational amplifier so that it is non-responsive to said clock pulses, which reduces the power dissipation during on-hook conditions of the subscriber loop.

4,511,764

TELEPHONIC DISPLAY DEVICE

Yasunobu Nakayama, Musashino; Yasuji Sato, Hachiouji, and Takeshi Kunii, Fuchu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 27, 1982, Ser. No. 453,819
Claims priority, application Japan, Dec. 25, 1981, 56-209375
Int. Cl.³ H04M *1/26*
U.S. Cl. 179—90 AN **18 Claims**



10. A display telephone including a main body for transmitting dialing signals to an exchange, a display unit for displaying stored data, and a memory in which is stored at least one type of data with respect to parties to be called including character type data identifying a party to be called, telephone number type data representative of the telephone number of a party to be called, and special number type data having a smaller number of digits than the telephone number data and used as an index of stored telephone number data, said display telephone comprising;

a first function key used for displaying data stored in the memory and, if telephone number type data is stored in said memory, for calling a party corresponding to said telephone number type data; and

control means for searching the memory, when special number type data is inputted following the operation of said first function key, for a memory address corresponding to inputted special number type data and, if data of any type is stored at said address of the memory, for transferring said stored data into said display unit as well as, if telephone number type data is stored at said address of said memory, transferring said telephone number type data into the main body to call a party corresponding to said telephone number type data.

4,511,765

UNIVERSAL CONTROL DEVICE FOR RESTRICTING DIALING AND TIME LIMITING TELEPHONE CALLS

Calvea Kuo, Taipei, Taiwan, assignor to Aurora Mechatronics Corporation, Taipei, Taiwan

Filed May 11, 1983, Ser. No. 493,591
Int. Cl.³ H04M *1/26, 1/66*
U.S. Cl. 179—90 BD **6 Claims**

1. A telephone control device for restricting dialing and time limiting telephone calls comprising:

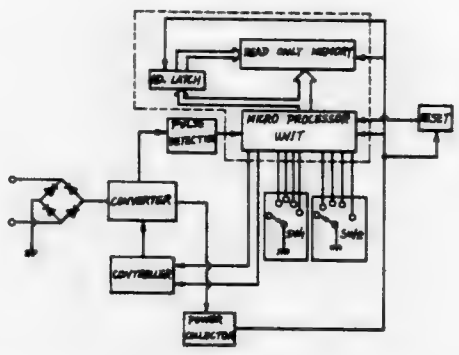
a full-wave rectifier adapted for connection to a telephone set for receiving a dialing signal and telephone power therefrom;

a converter circuit, connected to said full-wave rectifier, for (1) converting said dialing signal into a pulse, (2) converting said telephone power into power usable by the device, and (3) receiving a cut-off signal which cuts off use of the telephone set;

a pulse detector circuit, connected to said converter circuit, for receiving said pulse and generating a decoded signal;

a microprocessor, connected to said pulse detector circuit, for receiving said decoded signal and determining whether a predetermined period of time has elapsed since the beginning of the dialing signal or a predetermined number of dialing digits has been exceeded during dialing of the telephone set whereupon said microprocessor generates a control signal to cut off the telephone set;

first switch means, connected to said microprocessor for setting the predetermined period of time during which the telephone set may be used;



second switch means, connected to said microprocessor, for setting the predetermined number of digits which may be dialed from said telephone set;

memory means, connected to said microprocessor, for storing program instruction for said microprocessor;

an A/D latch circuit, connected to said microprocessor and to said memory means, for controlling the transfer of information from said memory means to said microprocessor;

a controller circuit for receiving said control signal from said microprocessor and generating said cut-off signal and transmitting it to said converter circuit; and

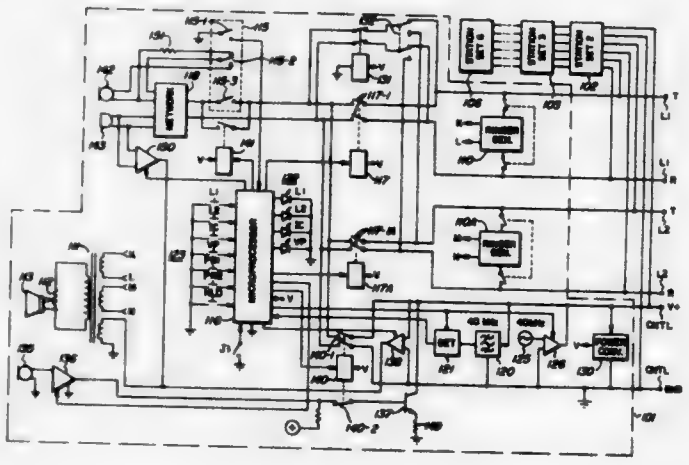
a power collector circuit, connected to said converter, for providing usable power to said microprocessor, said AD latch circuit, and said memory means.

4,511,766

KEY TELEPHONE SYSTEM SIGNALLING AND CONTROL ARRANGEMENT

Mahesh Shah, Donelson, Tenn., assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 21, 1983, Ser. No. 487,298
Int. Cl.³ H04M *1/72*
U.S. Cl. 179—99 A **2 Claims**



1. In a key telephone system having a plurality of telephone

station sets for selective connection to first or second telephone lines;

a control unit comprising:

means for periodically transmitting a framing signal on a common control line to each of the station sets, the period between each framing signal being divided into a selected number of time slots;

one of the telephone station sets comprising means for transmitting an intercom signal in one of the time slots for indicating an intercom state; and

said one and at least one other telephone station set each comprising means responsive to the intercom signal for connecting their telephone handsets to the common control line; whereby an intercom state is established;

a transistor and an emitter load resistor network serially connected across the common control line in a normally conducting state; the impedance of the network approximating the impedance of the handset; and

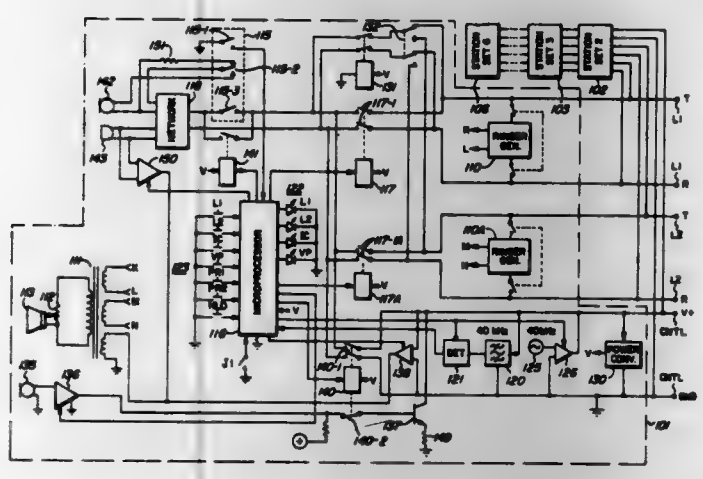
means responsive to the intercom signal for rendering the transistor non-conducting so as to compensate for the increased load of the handset on the control line.

4,511,767

KEY TELEPHONE SYSTEM SIGNALLING AND CONTROL ARRANGEMENT

David L. Wetzel, Charlottesville, Va., and Mahesh Shah, Donelson, Tenn., assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 21, 1983, Ser. No. 487,299
Int. Cl.[3] H04M *1/72*
U.S. Cl. 179—99 A 6 Claims



1. In a key telephone system having a plurality of telephone station sets for selective connection to first or second telephone lines;

a control unit comprising:

means for periodically transmitting a framing signal to each of the station sets on a common control line, the period between each framing signal being divided into a selected number of time slots;

means responsive to a voltage drop on one of the telephone lines resulting from one of the sets going off-hook for transmitting signals to the sets in selected ones of the time slots, indicating off-hook/on-hook status of the lines; and

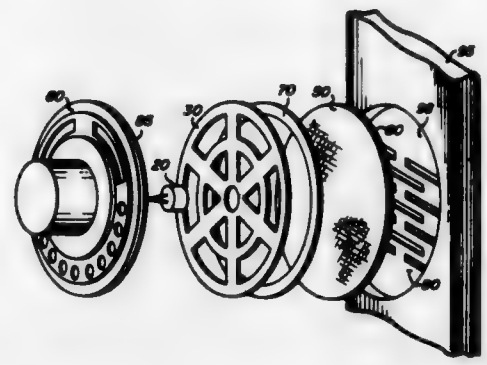
each of the telephone station sets comprising means responsive to the signals in the selected ones of the time slots for indicating the off-hook condition.

4,511,768

MOUNTING ARRANGEMENT FOR ALTERING A MICROPHONE'S FREQUENCY RESPONSE

Bakulesh B. Patel, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 29, 1982, Ser. No. 437,719
Int. Cl.[3] H04M *1/04*
U.S. Cl. 179—146 R 17 Claims



1. A microphone mounting arrangement for mechanically altering the audio frequency response characteristics of the microphone, comprising:

a loudspeaker having a cone;

a flexible diaphragm mechanically coupled to said cone so that said cone and said diaphragm substantially bound a resonant enclosure;

a microphone disposed within said enclosure; and

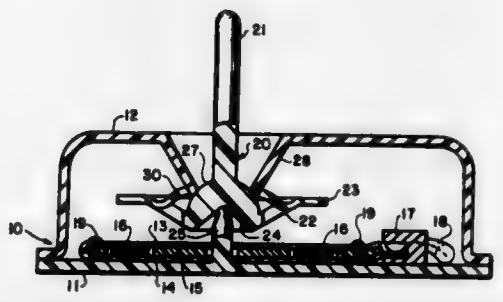
mounting means for mounting said microphone in a fixed physical relationship with said diaphragm and said loudspeaker.

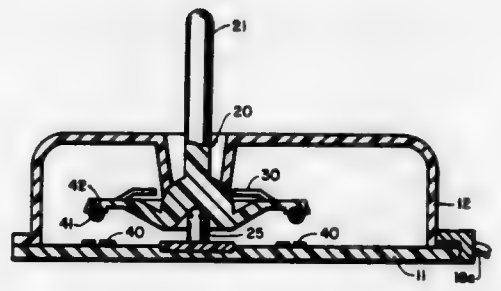
4,511,769

MULTI-PATH INTERRUPTER DEVICE

Diran R. Sahakian, Noisy le Sec; Lucien Pellerin, Septeuil, and Sjoerd Nijboer, Carrieres, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 11, 1983, Ser. No. 522,073
Claims priority, application France, Aug. 20, 1982, 82 14400
Int. Cl.[3] H01H *13/70, 25/00*
U.S. Cl. 200—6 A 2 Claims





1. A multi-path interrupter device, comprising:

a housing (10) which includes a first part (11) connected to a second part (12);

a plurality of contact means for acting as an electrical inter-

rupter, distributed along a circle and joined to the first part of the housing;

a control member (20) formed of a single piece of resilient material, the control member and the plurality of contact means being accommodated between the first and the second parts of the housing, the control member including:

a control lever integral therewith, the control lever having, at one end, a pin (21) emerging from the housing through an opening of the second part of the housing (12), the other end of the control lever being supported by a central pivot (25) carried by the first part of the housing, so that the control lever can be inclined in different directions from a central rest position,

resilient return means for biasing the control member, the resilient return means including parts integrally formed with the control member, the parts being elastically deformable and arranged so that the parts bear on abutment means carried by the second part of the housing, whereby the resilient return means biases the control member to the central rest position, and

a peripheral crown (23) arranged to act on at least one of the contact means when the control lever is manually inclined;

characterized in that the parts of the control member (20) constituting the resilient return means include a plurality of tongues (30) radially cut from a disc-shaped part (22) of the control member, the disc-shaped part connecting the control lever to the peripheral crown (23), the flexible ends of the plurality of tongues facing the center of the disc-shaped part (22), and the opening of the second part of the housing being formed by a truncated cone (28) extending into the interior of the housing and having an axis which substantially coincides with the axis of the central pivot, the abutment means including a lateral outer surface of the truncated cone.

4,511,770

ROTARY SWITCH

Kenji Hayashida, Muko, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Dec. 13, 1983, Ser. No. 561,092

Claims priority, application Japan, Dec. 28, 1982, 57-231157

Int. Cl.³ H01H *19/20, 19/60*

U.S. Cl. 200—6 B **11 Claims**

1. A rotary switch comprising:

a case;

a rotary shaft inserted into the case to be rotatably supported thereto;

a disc having teeth on its periphery and fixedly mounted on the rotary shaft in the case;

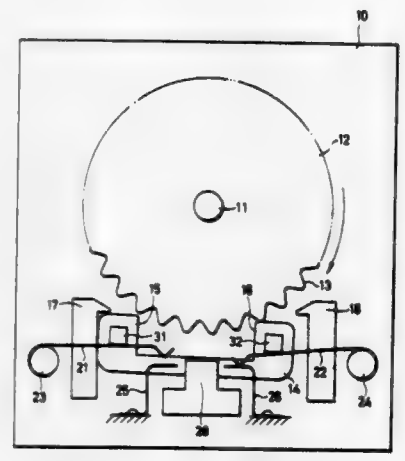
an engagement piece having first and second protrusions respectively on the sides of first and second end portions thereof for engagement with the teeth of the disc and disposed adjacent to the disc in the case in a manner to be movable substantially in parallel to the tangential direction of the disc and pivotable about each end portion thereof;

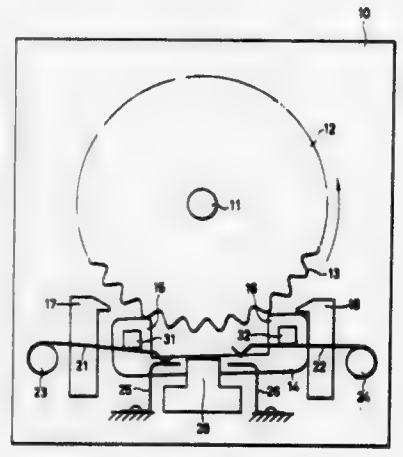
first and second resilient pieces disposed in the case to press at their free ends the first and second protrusions, respectively, against the periphery of the disc;

a first contact piece disposed in the case in opposing relation to the free end portion of the first resilient piece on the opposite side from the disc;

first and second lock members provided in the case for engaging the first and second end portions of the engagement piece, respectively, each in such a manner as to receive the tangential movement of the engagement piece and the pressing force of the engagement piece applied thereto from corresponding one of the first and second resilient pieces;

wherein when the disc is rotated in one direction the engagement piece is driven into a state where the second end portion of the engagement piece is in engagement with the second lock member, the second protrusion is out of engagement with the disc, the first end portion of the engagement piece is out of engagement with the first lock member and the first protrusion is in engagement with the disc, and performs pivotal movement about the second end portion to produce ON-OFF switchings between the first resilient piece and the first contact piece as the teeth of the disc cross over the first protrusion, and when the





disc is rotated in the opposite direction the engagement piece is driven into another state where the first end portion of the engagement piece is in engagement with the first lock member, the first protrusion is out of engagement with the disc, the second end portion of the engagement piece is out of engagement with the second lock member and the second protrusion is in engagement with the disc, and performs pivotal movement about the first end portion.

4,511,771

ELECTRIC FENCE GATE SWITCH

Thomas L. Rossell, R.R. 2, Box 313-3, Clayton, Ind. 46118

Filed Jan. 30, 1984, Ser. No. 575,004

Int. Cl.³ H01H *3/16*

U.S. Cl. 200—61.73 **2 Claims**

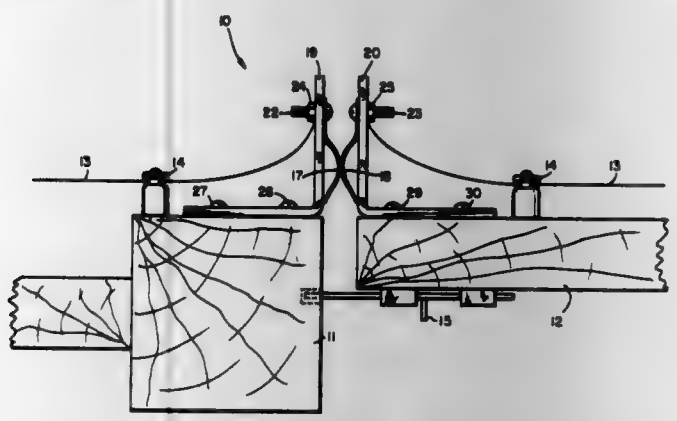
1. An electric fence gate switch for controlling the flow of electricity across spaced electric fence wires in association with the opening and closing of an electric fence gate, comprising:

first and second insulating members adjustably mounted to the gate post and fence post of an electric fence, said first and second insulating members being horizontally spaced apart L-shaped mounting brackets having outwardly extending legs having mutually facing and opposed sides;

a first conducting means including a resilient leaf spring mounted to the facing side of the first of said L-shaped mounting brackets,

a second conducting means mounted to the facing side of the second of said L-shaped mounting brackets; and

a means, mounted to each of said L-shaped mounting brackets, for electrically connecting said first and second conducting means to said spaced electric fence wires with said wires mounted on said opposed sides of said L-shaped



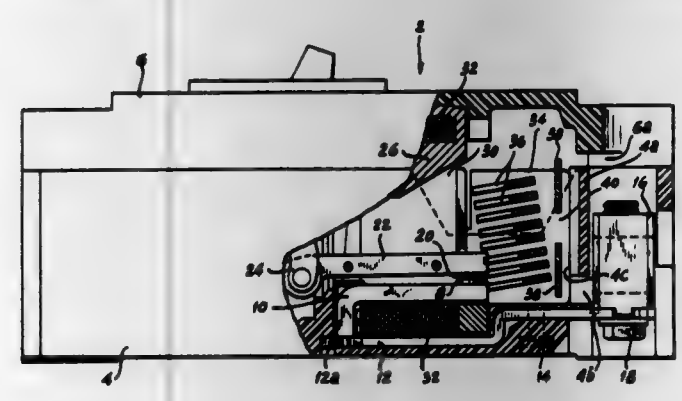
mounting brackets, said leaf spring and said second conducting means resiliently urged together under spring tension from said spring when said gate is in a closed position, whereby said switch automatically closes as said gate is pivoted into a closed position without having to manually connect said first and second conducting means after said gate is moved to its closed position.

4,511,772

ARC EXTINGUISHING STRUCTURE FOR ELECTRICAL SWITCHING DEVICE

Donald A. Link, Hubertus; John A. Swessel, Jr., Milwaukee, and Peter J. Theisen, West Bend, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 11, 1983, Ser. No. 493,479
Int. Cl.³ H01H *33/08*
U.S. Cl. 200—144 R **16 Claims**



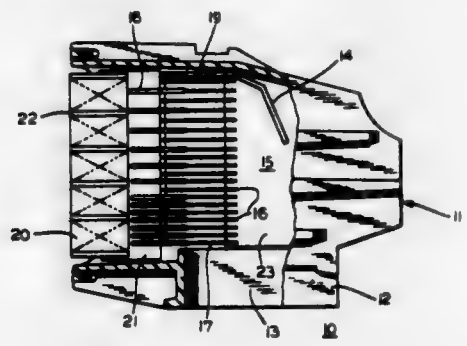
1. An electric circuit breaker comprising in combination:
an insulating housing;
separable contacts in said housing;
means for operating said contacts between open and closed positions; and
arc extinguishing means comprising:
a plurality of arc plates arranged in spaced-apart relation along a separation route of said contacts for receiving an electric arc and exhausting ionized gases associated with said arc in a path toward an imperforate section of a transverse endwall of said housing;
an unobstructed opening in said endwall adjacent said imperforate section defining a passageway extending interiorly of said hosing for exhausting said gases exteriorly of said housing; and
imperforate barrier means spacially interposed between said arc plates and said endwall transversely of said path of said gases and extending into said path for diverting said gases around said barrier toward said passageway, thereby increasing the length of said path for exhausting said gases through said passageway.

4,511,773

MOLDING COMPOSITION FOR ARC CIRCUIT BREAKERS

Eldon B. Heft, West Hartford, Conn.; Irvin C. Huseby, and Jan W. Szymaszek, both of Schenectady, N.Y., assignors to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 382,848, May 27, 1982, Pat. No. 4,413,062. This application Aug. 3, 1983, Ser. No. 519,935
Int. Cl.³ H01H *33/08*
U.S. Cl. 200—144 C **4 Claims**



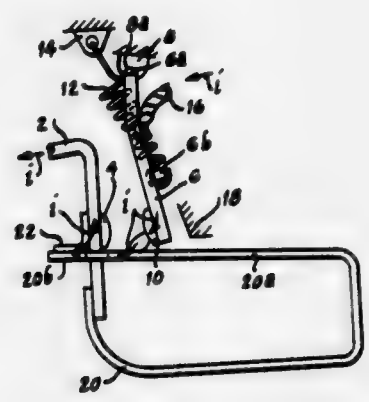
1. An improved circuit breaker arc chute of the type having a molded case forming two sidewalls and supporting a plurality of metal arc plates and insulated arc splitter plates, the improvement comprising:
said arc splitter plates being formed from insulating material having the composition of calcined wollastonite.

4,511,774

CURRENT LIMITING CONTACT ARRANGEMENT

Kenneth A. Forsell, Port Washington, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 8, 1983, Ser. No. 559,503
Int. Cl.³ H01H *33/20, 33/16*
U.S. Cl. 200—147 R **10 Claims**



1. A current limiting contact arrangement comprising, in combination:
stationary and movable contact means providing spaced parallel oppositely directed current paths therein, said movable contact means being biased for engagement with said stationary contact means and being separable therefrom by electromagnetic repulsion forces established by fault currents in said stationary and movable contact means; and
an arc runner having a first end electrically connected to said stationary contact means through normally closed contact means, a transfer segment adjacent said first end extending along a path of movement of said movable contact means, and a continuing portion extending from said transfer segment to a second end which is electrically

connected to said stationary contact means at a point distinct from said connection of said first end thereto;

wherein initial separating movement of said movable contact means from said stationary contact means establishes an electric arc therebetween, said arc being directed from said movable contact means away from said stationary contact means onto said transfer segment during continued separating movement of said movable contact means for establishing an arc current path from said movable contact means through said transfer segment and said normally closed contact means to said stationary contact means, and

wherein forces associated with gases produced by said arc effect opening of said normally closed contact means for interrupting said arc current path therethrough and redirecting said arc current path through said transfer segment and said continuing portion to said stationary contact means for increasing the resistance of said arc current path and the voltage of said arc.

4,511,775

CIRCUIT BREAKER

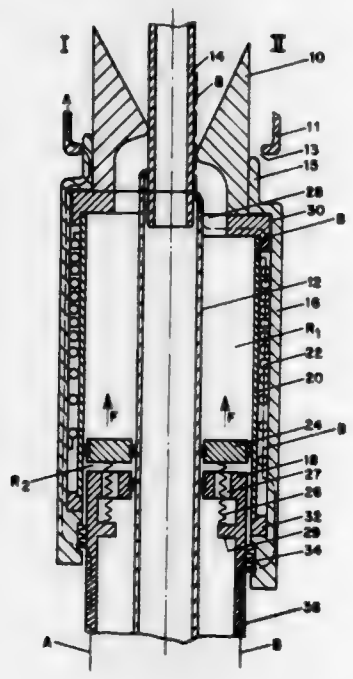
Gerhard Korner, Schriesheim; Horst Plettner; Walter Viering, both of Hanau, and Volker Rees, Darmstadt, all of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 8, 1982, Ser. No. 416,027

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1981, 3141324

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **19 Claims**



1. A circuit breaker, in particular a high-voltage circuit breaker, insulated by SF_6 gas, comprising, a fixed contact part, a movable switching piece, the movable switching piece being provided with a blast nozzle and adapted to be actuated by a drive, a SF_6 gas containing compression space being decreased in volume during the process of tripping out such that a flow of the SF_6 gas is directed by the blast nozzle toward the arc being produced during the tripping out, the compression space being bounded by a piston-cylinder arrangement for generating the gas flow during the process of tripping out, the piston-cylinder arrangement being such that at least one of a movable piston and a movable cylinder is pulled toward at least one of a stationary cylinder bottom and a stationary piston head, respectively, the compression space being concentrically surrounded by a coil for generating a magnetic field, said coil being adapted to be switched into the current path such that during the process of tripping out a short-circuit current does not flow through the coil until disconnection has been effected at a main contact point of the breaker, a cylindrical inner shell is provided inside a cylindrical outer shell which bounds the compression space externally, the inner shell being arranged with a clearance relative to the outer shell and being insulated therefrom, the coil being located between the outer and inner cylindrical shells, an auxiliary piston being movably arranged in the compression space, the auxiliary piston being adapted to be driven by the magnetic field toward the contact point to render the compression space still smaller.

4,511,776

BREAK CHAMBER FOR A GAS-BLAST CIRCUIT BREAKER

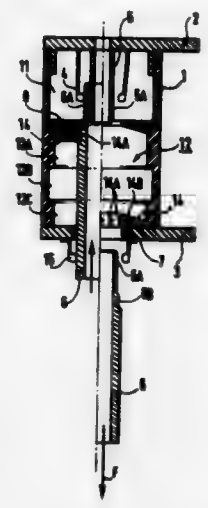
Roger Romier, Sainte Foy les Lyon, and Jean-Pierre Bétolière, Villeurbanne, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Oct. 26, 1983, Ser. No. 545,580

Claims priority, application France, Oct. 28, 1982, 82 18099

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 A **6 Claims**



1. A break chamber for a gas-blast circuit breaker, the chamber comprising an insulating cylindrical housing containing the following contacts disposed coaxially: a fixed arcing contact; a fixed main contact; and a moving contact passing axially through one end of the housing; said moving contact being tubular and, in the closed position of said circuit breaker, being penetrated over a given penetration length by said fixed arcing contact, the diameters of said fixed arcing contact and said moving contact being chosen to exclude metallic contact therebetween in said closed position; said housing being divided into first and second chamber portions by a transverse partition having a central orifice for passage of the moving contact, said first chamber portion containing said fixed contacts, the improvement wherein said second chamber portion comprises two adjacent zones of differing cross sections including a zone of smaller cross section disposed next to said orifice and constituting a cylinder, a piston in the form of an annular disk fixed to the moving contact and having an outside diameter close to that of said zone of smaller cross section, the stroke of said piston running from said orifice to the end of said second portion, and the axial length of the zone of smaller cross section being substantially equal to said given penetration length over which said fixed arcing contact penetrates into said moving contact when the circuit breaker is in said closed position.

4,511,777

PERMANENT MAGNET THERMAL ENERGY SYSTEM

Frank Gérard, 12020 Brooknoll Dr., Kingsville, Md. 21087

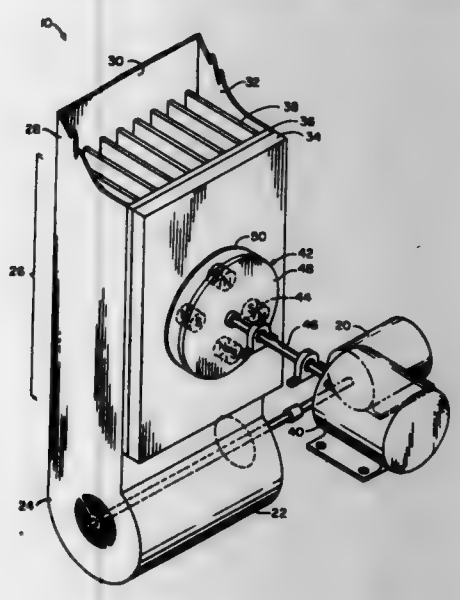
Filed Jul. 19, 1984, Ser. No. 632,287

Int. Cl.³ H05B *6/10*

U.S. Cl. 219—10.51 **7 Claims**

1. In a system for heating fluid through means for transferring heat to fluid by rotation of elongate magnets arranged in a circular array adjacently to the means for transferring heat,

with every other magnet oriented to have opposite polarity from the magnets adjacent thereto, the improvement comprising the means for transferring heat including: a plenum, a plurality of heat-sinks in said plenum, each of said heat sinks having first and second end portions, a ferro-magnetic plate, a



heat absorber plate, the plurality of heat-sinks being integral at the first end portions with the heat absorber plate and passing through respective apertures in the ferro-magnetic plate to respective second end portions of the heat sinks in the plenum, and means for passing fluid through said plenum, for transfer of heat thereto.

4,511,778

IMAGE FIXING DEVICE UTILIZING A HIGH FREQUENCY WAVE

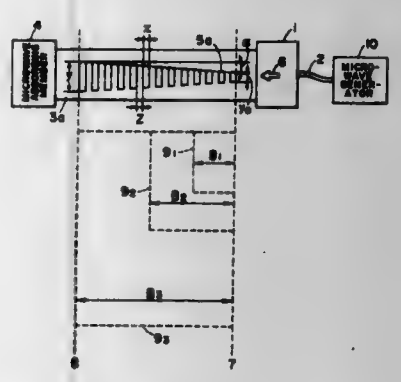
Tohru Takahashi, Tokyo; Hatsuo Tajima, Matsudo; Michio Shigenobu, Tokyo, and Shigemichi Washiyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,688

Claims priority, application Japan, Dec. 11, 1980, 55-174892; Dec. 11, 1980, 55-174904

Int. Cl.³ H05B *6/78*; G03G *15/00*

U.S. Cl. 219—10.55 A **36 Claims**



1. A fixing device comprising:

means defining a high-frequency wave guide for causing a high-frequency wave to travel in a direction intersecting the direction of movement of image bearing members of various width sizes bearing thereon an unfixed image formed by image formation means and for applying the high-frequency wave to said image bearing members to fix the unfixed image on said image bearing members;

means for inputting the high-frequency wave to one side of said applying means; and

means for conveying said image bearing members such that one side edge of each image bearing member, regardless of its width size, moves along a common conveyance reference which intersects the travelling direction of the high-frequency wave, such that said image bearing members of various width sizes are all conveyed on one side of said common reference;

whereby substantially uniform fixation is obtained regardless of the width size of the image bearing members.

4,511,779

MICROWAVE OVEN SHELF

Arnold M. Bucksbaum, Cedar Rapids, and James E. Simpson, Coralville, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Mar. 7, 1983, Ser. No. 472,448

Int. Cl.³ H05B *6/64*

U.S. Cl. 219—10.55 E **11 Claims**

1. A microwave oven comprising:

a conductive cavity having parallel side walls;

means for energizing said cavity with microwave energy;

microwave transparent brackets connected to said side walls of said cavity;

a metal rod rack for providing a shelf in said cavity, said rack having metal rods extending outwardly in a lateral direction for supporting said rack in a horizontal position from said brackets; and

said rack comprising a quarter wavelength choke for substantially preventing electric currents from being excited in said outwardly extending support rods by said microwave energy.

4,511,780

DOOR LATCH ASSEMBLY FOR MICROWAVE HEATING APPARATUS

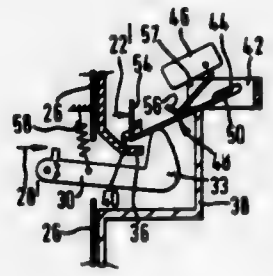
Yoshio Okamura, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 23, 1983, Ser. No. 554,809

Claims priority, application Japan, Jan. 14, 1983, 58-4629

Int. Cl.³ H05B *6/76*

U.S. Cl. 219—10.55 C **6 Claims**



1. A microwave heating apparatus including a cabinet for defining a heating chamber having an access opening at one side thereof, a door mounted on said cabinet for closing said access opening, a cooking start button and a microwave generator for radiating microwave energy into said heating chamber, said apparatus comprising:

a front panel formed in said cabinet for contacting with said door and having an aperture therein;

a lever pivotally connected to said door at one end thereof and provided at the other end with a hook for insertion into said aperture;

a locking mechanism for locking said door in the closed position, said locking mechanism comprises a locking member secured to said cabinet to cooperate with said hook, and a holding member for forming a space adjacent said aperture to receive said hook in the closed position of said door;

a switch coupled in circuit with said microwave generator for actuating same, said switch being mounted in said cabinet;

a sliding member mounted between said hook and said switch in the closed position of said door and slidably movable by said cooking start button; and

means for biasing said hook to contact said sliding member so as to bias same to actuate said switch to turn on said microwave generator, said sliding member automatically deactuating said switch to turn off said microwave generator when said hook begins to move to the opened position of said door.

4,511,781

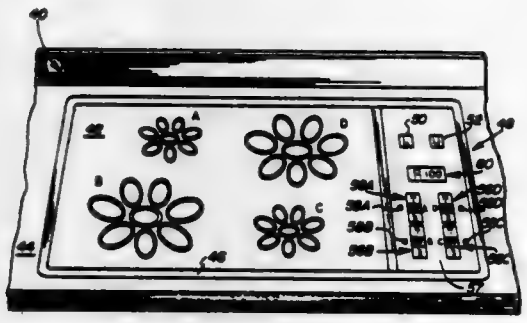
INDUCTION COOK-TOP SYSTEM AND CONTROL

Raymond M. Tucker, and Clarence L. Dyer, both of Cleburne, Tex., assignors to Rangaire Corporation, Cleburne, Tex.

Division of Ser. No. 237,449, Feb. 23, 1981, Pat. No. 4,453,068, which is a continuation of Ser. No. 35,084, May 1, 1979, abandoned. This application Feb. 21, 1984, Ser. No. 581,865

Int. Cl.³ H05B *6/06*

U.S. Cl. 219—10.77 **2 Claims**



1. In an induction cooking system, the combination comprising:

a plurality of induction heating coils operable at a plurality of power levels;

energization means for electrically energizing said plurality of induction heating coils;

a first touch control pad associated with each one of said plurality on induction heating coils for being touched to increase the output of said energization means to thereby increase the power level of said associated one of said plurality of induction heating coils;

a second touch control pad associated with each one of said plurality of induction heating coils for being touched to decrease the output of said energization means to thereby decrease the power level of said associated one of said plurality of induction heating coils;

a digital microprocessor responsive to said energization control signals generated by said first and second touch control pads for actuating and controlling said energization means to thereby vary the energization of said plurality of induction heating coils; and

a single display means associated with said plurality of induction heating coils interconnected to said digital microprocessor for alternately and selectively displaying at a single predetermined location on said single display means a representation of the instantaneous power level of a selected one of said plurality of induction heating coils.

4,511,782

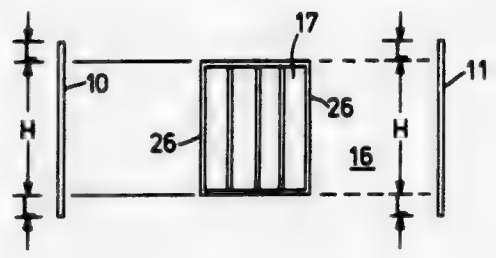
PLASMA SWEEPER TO CONTROL THE COUPLING OF RF POWER TO A MAGNETICALLY CONFINED PLASMA

Robert W. Motley, Princeton, and James Glanz, Lawrenceville, both of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 25, 1982, Ser. No. 436,558

Int. Cl.³ B23K *9/00*; G21B *1/00*

U.S. Cl. 219—121 P **13 Claims**



1. A device for coupling RF power from RF power introducing means to a plasma, the plasma having a magnetic field associated therewith, comprising:

one or more electrodes positioned near the edge of the plasma and near the RF power introducing means; and

means for supplying a positive potential at each electrode for generating a static electric field at each electrode directed into the plasma, each electric field having a component substantially perpendicular to the plasma magnetic field such that a non-zero vector cross-product of the electric and magnetic fields exerts a force on the plasma causing the plasma to drift.

4,511,783

METHOD FOR MAKING ELECTRICAL CONTACTS TO DIAMOND BY MEANS OF A LASER, AND DIAMOND PROVIDED WITH CONTACTS ACCORDING TO THIS OPTICAL METHOD

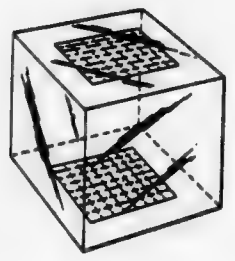
Eduard A. Burgemeister, Abcoude, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft" , Netherlands

Filed Feb. 3, 1983, Ser. No. 463,474

Claims priority, application Netherlands, Feb. 4, 1982, 8200430

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LM **7 Claims**



1. A method for making electrical contacts to a diamond to be used as radiation or heat sensitive detector including the steps of

(a). providing two different faces on the diamond,

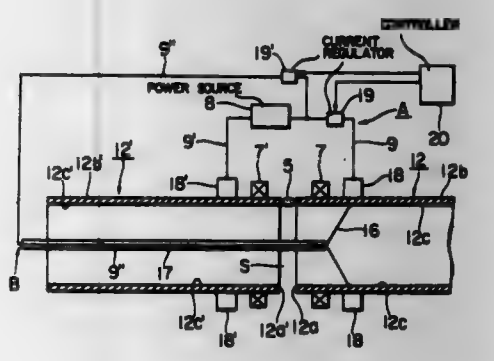
(b). radiating at least a part of each of said faces with a laser beam such that said parts are transformed into graphite layers with a sheet resistivity in the range of 5 to 100 ohms, and

(c). providing an electrical connection to each of the graphite layers.

4,511,784
METHOD FOR WELDING BY MAGNETICALLY DRIVEN ARC

Hideaki Miyamori, Hatano; Kenji Takagi, Yokohama; Shigeru Sato, Ebina; Fujio Takahashi, Yokohama, and Mikio Ozawa, Kanagawa, all of Japan, assignors to Nippon Kokan Koji Kabushiki Kaisha, Yokohama, Japan

Filed Apr. 15, 1983, Ser. No. 485,184
Int. Cl.[3] B23K 9/08
U.S. Cl. 219—123 9 Claims



1. In a method for welding together two objects of welding by a magnetically driven arc, each object of welding having a first surface, a reverse surface, a thickness between said first and reverse surfaces, and an end edge comprising the steps of:

placing two objects of welding in butt formation with a small gap between the end edges thereof, said small gap forming a welding line between said two objects of welding; connecting said two objects of welding to a welding power source by a cable to form an electric circuit comprising said welding power source, said cable and said two objects of welding; flowing a welding current through said electric circuit to produce an arc in said small gap between said two objects of welding; providing a magnetizing coil in parallel with said welding line between said two objects of welding, near said end edge of each of said two objects of welding, said magnetizing coils producing a magnetic flux in said small gap in the thickness direction of said two objects of welding; moving said arc along said welding line under the effect of an electromagnetic force in the direction of said welding line produced by said magnetic flux and said welding current flowing through said arc; heating said end edges of said two objects of welding to a welding temperature with the heat of said arc along said welding line; and pushing said heated end edges of said two objects of welding against each other to weld together said two objects of welding along said welding line;

the improvement comprising:

dividing said electric circuit for producing said arc in said small gap between said two objects of welding into a first electric circuit and a second electric circuit, said first electric circuit comprising said two objects of welding and a cable arranged on the first surface side of said two objects of welding, said second electric circuit comprising said two objects of welding and another cable arranged on the reverse surface side of said two objects of welding, and said first electric circuit and said second electric circuit being connected in parallel to said welding power source so that the direction of magnetic flux interlinking with a first region surrounded by said first electric circuit and the direction of magnetic flux interlinking with a second region surrounded by said second electric circuit are opposite to each other;

changing the amount of said welding current flowing through said first electric circuit to control the strength of a first electromagnetic force in the thickness direction of said two objects of welding produced by said welding current flowing through said first electric circuit and said magnetic flux interlinking with said first region surrounded by said first electric circuit; and

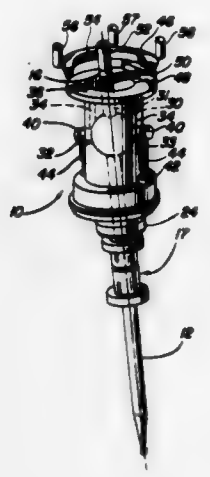
simultaneously changing the amount of said welding current flowing through said second electric circuit to control the strength of a second electromagnetic force, having a direction opposite to the direction of said first electromagnetic force, in the thickness direction of said two objects of welding produced by said welding current flowing through said second electric circuit and said magnetic flux interlinking with said second region surrounded by said second electric circuit;

thereby continuously and controllably moving said arc produced in said small gap between said two objects of welding in the thickness direction of said end edges of said two objects of welding by the difference in strength between said first electromagnetic force and said second electromagnetic force, so that said end edges of said two objects of welding are uniformly heated to a welding temperature in said thickness direction with the heat of said arc.

4,511,785
SEAM TRACKER

William L. Arter, Fullerton, and Foster R. Williams, Seal Beach, both of Calif., assignors to Jetline Engineering, Inc., Irvine, Calif.

Filed Feb. 27, 1984, Ser. No. 584,241
Int. Cl.[3] B23K 9/12
U.S. Cl. 219—124.34 13 Claims



1. In a welding machine having a seam tracking apparatus, having a probe positioned in, and responsive to relative movement respective to the probe of, a welding zone and a control apparatus for modifying the position of a welding head responsive to an output signal from the seam tracking apparatus, an improved apparatus for generating the output signal responsive to the movement of the probe in either of two possible degrees of freedom, comprising:

a seam tracker mounting unit having a longitudinal axis, and having an open ended interior opening of generally cylindrical shape with a first and second end and a longitudinal axis corresponding to that of the mounting unit;

a shaft connected to the probe at one end thereof and extending through the length of the interior opening, with a portion of the shaft forming a position-indicator-member;

a pin having a longitudinal axis and connected to the shaft with opposing exterior ends thereof extending on either side of the shaft;

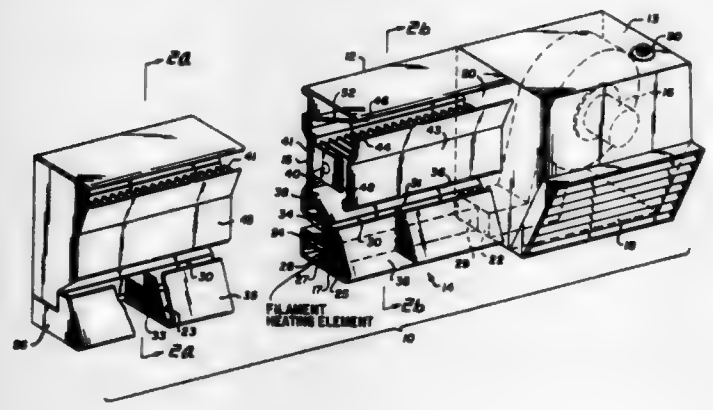
a pair of opposed slots on the mounting unit each disposed to receive a respective one of the ends of the pin; and

a pair of springs each disposed on the outside of the mounting unit and connected to a respective end of the pin to urge each end of the pin into abutment with an end of the respective slot of each end of the pin, thereby resiliently urging the pin against movement in the slots.

4,511,786
FORCED AIR DISTRIBUTOR FOR BASEBOARD HEATER

Friedrich W. Jansen, Prince George, Canada, assignor to P.J. Industrial Safety Elec. Co. Ltd., Prince George, Canada

Filed Apr. 9, 1982, Ser. No. 366,863
Int. Cl.[3] F24H 3/12, 9/02; H05B 1/00
U.S. Cl. 219—364 6 Claims



1. A forced air distributor for supplying air to the air intake of a baseboard heater, the air intake being an elongated slot in the lower side of the baseboard heater, which distributor comprises:

(a) a duct assembly enclosing a pair of adjacent elongated air passageways comprising an inner air passageway and an outer air passageway extending from an open end thereof a preselected distance to a terminal end, and a single elongated air passageway of a cross sectional area substantially equal to the combined cross sectional area of said pair of air passageways extending from said terminal end to a closed end of said assembly, said duct assembly further having an elongated air discharge orifice along an upper longitudinally extending side thereof, communicating with an outer one of the pair of air passageways and the single air passageway;

(b) a mesh baffle positioned at about half way along the length of said outer air passageway and a further mesh baffle at the end of said outer air passageway each baffle extending over the cross sectional area of said outer air passageway and a further mesh baffle at about half way along the length of the single elongated air passageway and extending over the cross sectional area of said single elongated air passageway;

(c) air pump means for supplying air under superatmospheric pressure into the open end of said duct assembly in response to electrical current provided by an external source of electrical energy; and

(d) an elongated air deflector mounted on said duct assembly along an edge of said discharge orifice closest to a wall mounting surface of said assembly and generally inclined to lie in a direction of air flow into the air intake of said baseboard heater.

4,511,787
ELECTRIC STOVE PIPE SPACE HEATER

Frank Sibert, 138-D High Point Blvd., Boynton Beach, Fla. 33435

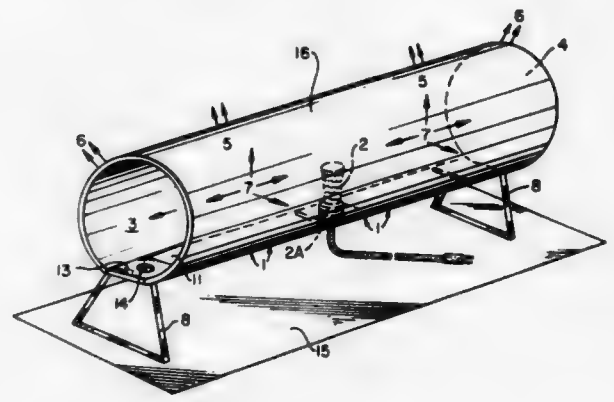
Continuation-in-part of Ser. No. 333,384, Dec. 22, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 462,774
Int. Cl.[3] F24H 3/04, 9/00
U.S. Cl. 219—374 8 Claims

1. An electric space heater comprising:

an elongated horizontally-disposed cylindrical hollow metal pipe having opposite open ends and a bottom portion with a longitudinally extending opening substantially extending along the entire length of said hollow metal pipe for allowing air to be heated to enter into said pipe;

support means for supporting said pipe above a surface;

an electric heating element mounted substantially equidistant from both ends of said pipe at said bottom portion; and

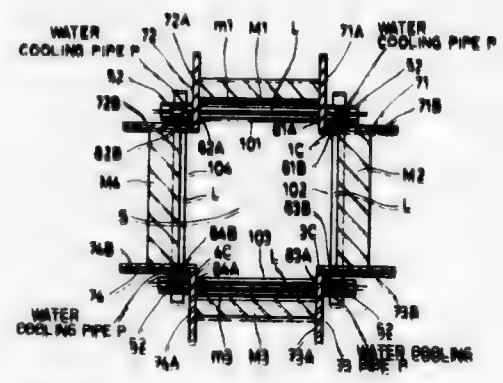


means for supplying electricity to said electric heating element to enable said heating element to heat the pipe by radiation and the ambient atmosphere by convection.

4,511,788
LIGHT-RADIANT HEATING FURNACE

Tetsuji Arai, Tachikawa, and Yoshiki Mimura, Yokohama, both of Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1984, Ser. No. 574,453
Claims priority, application Japan, Feb. 9, 1983, 58-18870; Feb. 9, 1983, 58-18871
Int. Cl.[3] H05B 3/06; F27B 5/14
U.S. Cl. 219—405 3 Claims



1. A light-radiant heating furnace comprising an assembly of:

at least a first, second and third frame members, each of which has two plate portions, arranged in such a manner that one of the plate portions of the first frame member opposes one of the plate portions of the second frame member disposed adjacent to the first frame member, and the other plate portion of the first frame member opposes one of the plate portions of the third frame member disposed adjacent to the first frame member at a side different from the second frame member;

a plurality of lamps making up a first plane light source unit and supported between the first frame member and the second frame member with sealed end portions thereof positioned at one side, extending out through first supporting holes formed through said one of the plate portions of the first frame member;

another plurality of lamps making up a second plane light source unit and supported between the first frame member and the third frame member with sealed end portions thereof positioned at one side, extending out through second supporting holes formed, at levels different from the first supporting holes by a distance at least equal to an outer diameter of the lamp, through said other plate portion of the first frame member;

a first reflector fixed to the first frame member in such a

manner that the first reflector assumes a position predetermined relative to the first supporting holes and extends between the first frame member and the second frame member; and

a second reflector fixed to the first frame member is such a manner that the second reflector assumes a position predetermined relative to the second supporting holes and extends between the first frame member and the third frame member.

4,511,789

HEATING ELEMENT, PARTICULARLY RADIANT HEATING ELEMENT FOR HEATING GLASS CERAMIC PLATES

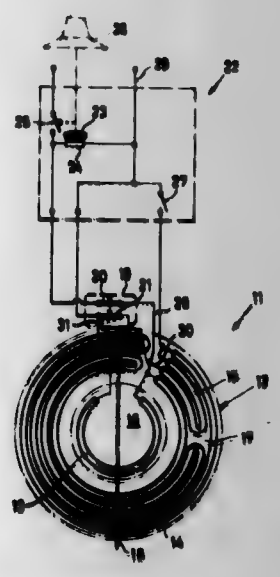
Gerhard Goessler, Oberderdingen, and Eugen Wilde, Knittlingen, both of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,157

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234349; Apr. 21, 1983, 3314501

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—446 14 Claims



1. A radiant heating element for heating glass ceramic plates in cookers, having first and second non-overlapping heating zones, the heating element comprising:

at least one electrical heating resistor disposed in each of the first and second heating zones;

means operable selectively for energizing the at least one heating resistor of the first heating zone independently of the at least one heating resistor in the second heating zone and for simultaneously energizing the at least one heating resistors in both the first and second heating zones, the at least one heating resistor of the first heating zone being thereby always energized during operation of the heating element; and,

means for connecting at least one heating resistor of the second heating zone in series with the at least one heating resistor of the first heating zone, whereby operation of only the first heating zone provides more concentrated heating at a higher power level than simultaneous operation of both heating zones, simultaneous operation of both heating zones providing uniform heating at a lower power level.

4,511,790

MULTIPLE LOAD CONTROL APPARATUS HAVING LOAD EQUALIZATION

Norman M. Kozak, Greendale, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

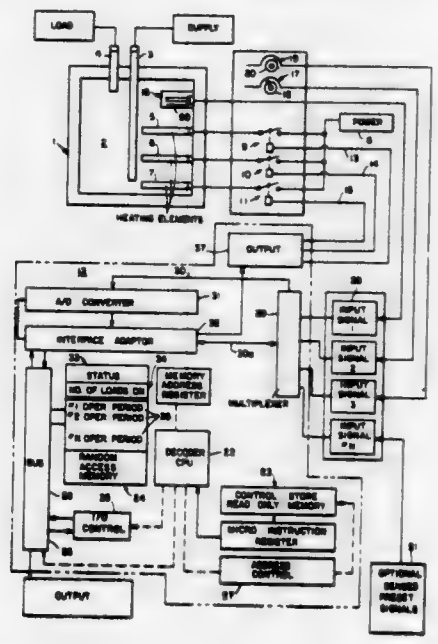
Filed Sep. 30, 1982, Ser. No. 430,258

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—486 16 Claims

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 034 Pages)



1. A water heater apparatus comprising a water storage tank having a plurality of separate heating means, comprising a plurality of power supply connectors one for each of said heating means and operable to energize the corresponding heating means and establish "on" periods and "off" periods of energization, sensor means for sensing the temperature of the water in the storage tank and establishing an output signal proportional to the water temperature, temperature preset means for establishing a signal proportional to a predetermined desired water temperature, status means to record the number of heating means in "on" periods in operation and to record the accumulated "on" periods and thereby the accumulated operating time of energization over a plurality of periods of each of said heating means, controller logic means for comparing the output of the sensor means and the preset means and said heating means in the "on" period to establish the number of activated heating means, and said controller logic means connected to said status means and having operating means operable to turn the heating means on and off in accordance with the historical accumulated operating time inclusive of a plurality of past "on" and "off" periods of operation and thereby the relative accumulated operating time of energization of each of said heating means.

4,511,791

ELECTRONIC BALANCE METER

Avinash J. Desai, Reynoldsburg, Ohio, and Gerhard Kreikebaum, Knoxville, Tenn., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 25, 1983, Ser. No. 488,489

Int. Cl.³ H05B *1/02*

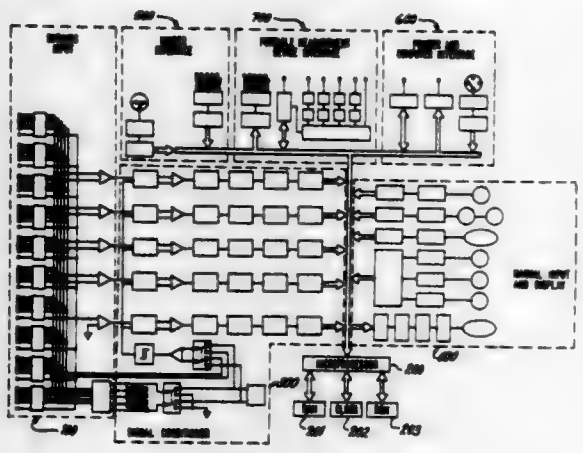
U.S. Cl. 219—497 6 Claims

1. An apparatus for measuring the temperature in segments of an electrical resistance heated glass fiber producing bushing and for displaying the change in temperature of each segment of the bushing comprising:

(a) a glass fiber producing bushing, compartmentalized into individual segments, electrically heated by passing an electrical current through the bushing;

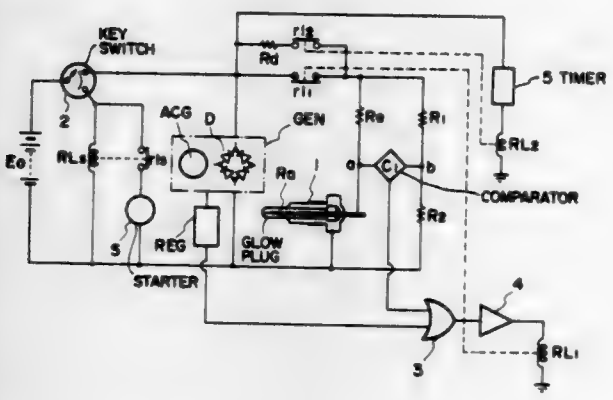
(b) means to supply an electrical current to flow in the bushing;

(c) means for determining the electrical current flowing in a glass fiber producing bushing;
(d) means for simultaneously determining a voltage drop across each segment of the glass fiber producing bushing;
(e) means to calculate a resistance and a temperature from the resistance for each segment of the glass fiber producing bushing;
(f) means for storing the temperature of each segment of the glass fiber producing bushing;



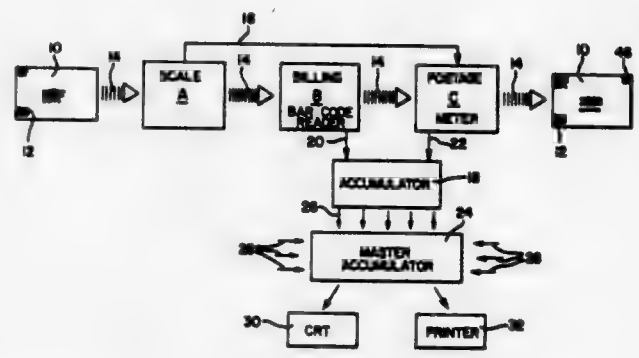
(g) means for determining a change in temperature by use of the stored temperature for each segment of the glass fiber producing bushing;
(h) means for indicating that the change in temperature of any of the segments of the glass fiber producing bushing is outside a predetermined range; and
(i) means to display the change in temperature of each segment of the glass fiber producing bushing.

4,511,792
VOLTAGE CONTROL CIRCUIT FOR PROTECTING GLOW PLUG FROM OVERHEATING
Hideo Kawamura, Kanagawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan
Filed Jun. 28, 1982, Ser. No. 392,519
Claims priority, application Japan, Jun. 30, 1981, 56-102071; Jun. 30, 1981, 56-102072
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—499 **8 Claims**



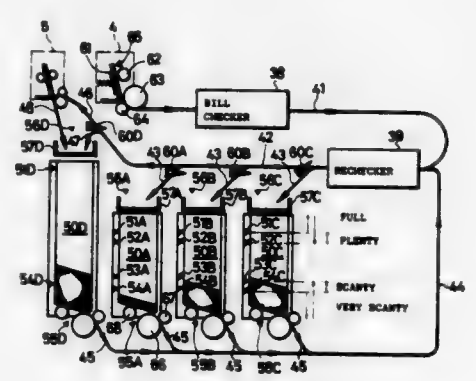
1. A circuit for controlling a voltage applied to a glow plug having a heating element, and for protecting the glow plug from being overheated, said circuit comprising:
sensing means for producing a signal when the power supply voltage exceeds a predetermined value;
a circuit network comprising a normally closed relay contact means, connected in parallel with a serially connected voltage-dropping resistor, for providing electrical contact between the power supply and the glow plug, and a normally open relay contact means for providing electrical contact between said voltage dropping reisitor and the glow plug, said circuit network being serially connected with the heating element of the glow plug and connectable to the power supply; and
a timer connectable to the power supply;
said normally closed relay contact means being opened in response to said sensing circuit producing said signal, and said normally closed relay contact means being opened in response to the temperature of the heating element exceeding a preset value which is below a steady-state heating temperature;
said normally open relay contact being closed by said timer a predetermined time after voltage is applied to the glow plug.

4,511,793
MAIL METERING PROCESS AND MACHINE
Sylvester Racanelli, 602 SE. 47th, Portland, Oreg. 97215
Filed Apr. 4, 1983, Ser. No. 481,747
Int. Cl.³ G06F *15/20*
U.S. Cl. 235—375 **6 Claims**



1. A postage metering and allocation machine comprising; a mail receiving station, a code reading station, a postage metering station, and transporting means for transporting mail individually from the mail receiving station to the code reading station and the metering station, said code reading station adapted to read a designated accounting number code imprinted on the mail, an accumulator, and transmitting means for transmitting to the accumulator the designated accounting number and the postage to be allocated to that number.

4,511,794
SYSTEM FOR PERFORMING TRANSACTIONS
Tutomu Imamichi, Kurita, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Nov. 17, 1982, Ser. No. 442,417
Claims priority, application Japan, Nov. 18, 1981, 56-185904; Nov. 18, 1981, 56-185905; Nov. 19, 1981, 56-186733
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **22 Claims**



1. A system for performing transactions comprising:
a cash handling device of the circulation type having cash containers for accommodating received cash as classified according to the kind of money and delivering cash from the containers for dispensing,

means for detecting the condition of cash in each of the containers, and

means for controlling the state of transaction according to the condition of cash detected.

4,511,795

CASH DISPENSING APPARATUS

John Wood, and Raymond J. Dominey, both of Hampshire, England, assignors to De La Rue Systems Limited, London, England

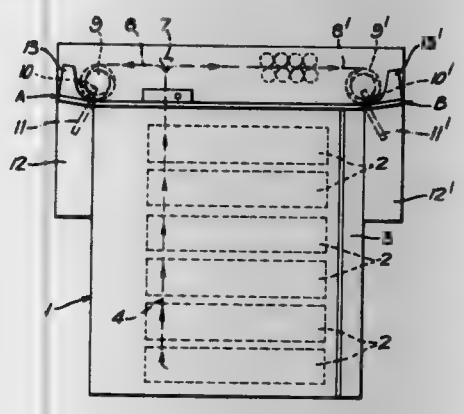
PCT No. PCT/GB82/00091, § 371 Date Nov. 19, 1982, § 102(e) Date Nov. 19, 1982, PCT Pub. No. WO82/03287, PCT Pub. Date Sep. 30, 1982

PCT Filed Mar. 22, 1982, Ser. No. 448,890

Claims priority, application United Kingdom, Mar. 20, 1981, 8108828

Int. Cl.³ G06K *15/30*

U.S. Cl. 235—379 **7 Claims**



1. Cash dispensing apparatus comprising: at least one feed module (2) for storing banknotes and for delivering a selected sequence of banknotes; at least two stacking platforms (A, B), each platform having a dumping facility (11, 11') to dump a stack of banknotes supported on the platform; at least two dispensing stations (14A, 14A'; 14B, 14B') associated with each platform; a transfer means (13, 13') for each platform to transfer banknotes stacked on the platform to a selected one of the dispensing stations; diverter means (7), and a common flow-line (4) for banknotes leading from the feed modules (2) to the diverter means (7) which diverts them to a selected one (for example A) of the stacking platforms; detecting means (6) stationed on the common flow-line (4) for detecting the passage of multiple banknotes and for counting single banknotes; and central control means responsive to the detecting means (6) and to commands for a delivery of banknotes to a selected dispensing station (14A or 14A'); the central control means causing the diverter means (7) to divert single banknotes to the selected platform (A) associated with the selected dispensing station (14A, 14A'), but to divert multiple banknotes to another platform (B); causing the dumping facility at that other platform (B) to dump any multiple banknotes; and, if the detecting means (6) indicates an incorrect total count of single banknotes, also causing the dumping facility at the said selected platform (A) to dump the stack of single banknotes, but otherwise causing the transfer means (11) at that selected platform (A) to transfer the stack to the selected dispensing station (14A or 14A').

4,511,796

INFORMATION CARD

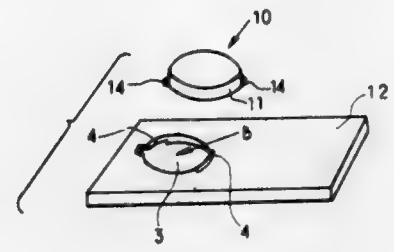
Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,239

Int. Cl.³ G06K *19/06*

U.S. Cl. 235—492 **7 Claims**

1. An information card comprising a card member having a hole defined therein including an information unit receiving portion of the hole in at least one inlet portion of the hole extending radially outwardly of the information unit receiving portion at at least one circumferential location, and an information unit including a holder having a semiconductor device being positionable in the receiving portion of the hole including at least one radially extending projection which is passable only through the inlet portion, said card member having at



least one groove extending circumferentially through an arc angle of less than 90°, said projection being alignable with the groove to permit limited rotation of said holder within the hole of said card member as the projection moves around the groove.

4,511,797

CIRCUIT ARRANGEMENT FOR POSITIONING THE PRINTING MECHANISMS IN PRINTERS EMPLOYING A D.C. MOTOR

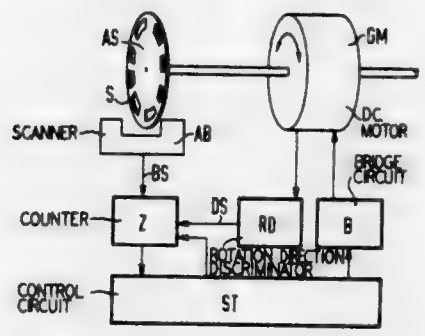
Dietmar Pohlig, Munich, and Ernst Goepel, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,402

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214554

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 SE **4 Claims**



1. In a circuit arrangement for determining the position of a printing mechanism which is driven by a d.c. motor, of the type in which the motor rotates a slotted disc adjacent optical scanner means, the optical scanner means produces pulses in response to rotation of the disc, and in which a display-type counter counts the scanner means output pulses in a positive direction and in a negative direction and displays a count corresponding to the position of the printing mechanism, the improvement wherein:

said scanner means comprises a single-channel incremental scanner operable to produce scanner output pulses; and further comprising

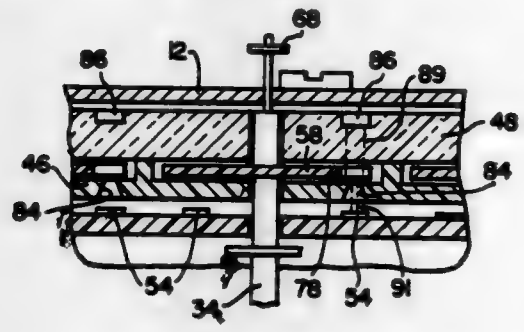
a rotation direction discriminator including an input connected to the d.c. motor for receiving a damped alternating voltage generated by the motor upon deceleration and an output connected to the counter, said discriminator operable in response to zero crossings of the generated voltage to produce an output signal to change the direction of counting of the counter.

4,511,798

METER ENCODING REGISTER WITH TAPERED APERTURE IN BAFFLE INSERT

Emmett D. Killingsworth, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 23, 1983, Ser. No. 469,070
Int. Cl.³ G01D *5/38;* G08C *19/16*
U.S. Cl. 250—231 SE **4 Claims**



1. A multiple shaft meter encoding register for a utility meter having a metering movement responsive to a metering quantity, comprising:

a frame;

a plurality of shafts rotatably mounted in the frame;

means for interconnecting the shafts with an associated metering movement for concurrently rotating the shafts at different predetermined rates in response to actuation by the associated metering movement;

means for generating electrical signals responsive to the position of the shafts and including a plurality of code members each fixedly mounted to a separate one of the shafts;

the electrical signal generating means comprising an illumination source and a plurality of encoding photosensitive components, each of the code members alternately transmitting and blocking illumination between the illumination source and the photosensitive components in response to rotation of the shafts;

baffle means between the illumination source and the photosensitive components for isolating light rays from the source and for avoiding ambient illumination, and

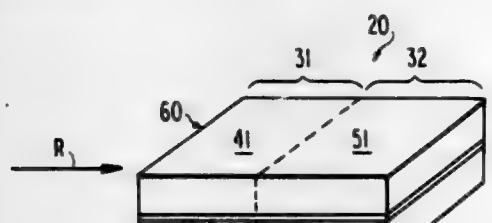
the baffle means including tapered apertures aligned with corresponding photosensitive components, each aperture having a smaller end nearer the illumination source and a larger end nearer the photosensitive component.

4,511,799

DUAL ENERGY IMAGING

Paul J. Bjorkholm, Sharon, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Dec. 10, 1982, Ser. No. 448,461
Int. Cl.³ G01T *1/16, 1/185, 1/20*
U.S. Cl. 250—367 **8 Claims**



5. Apparatus useful in imaging comprising:

a source of penetrating radiant energy,

means for directing penetrating radiant energy emitted by said source to travel a path toward a target area,

detector means located beyond said target area along the path of said radiant energy for producing signals representative of radiant energy reaching said detector means, said detector means including:

first energy detector means for converting radiant energy to a first signal, said first energy detector means having a first detection efficiency as a function of radiant energy, and

second energy detector means located in said path but beyond said first energy detector means, for converting radiant energy to a second signal, said second energy detector means having a second detection efficiency, as a function of radiant energy, different from said first detection efficiency,

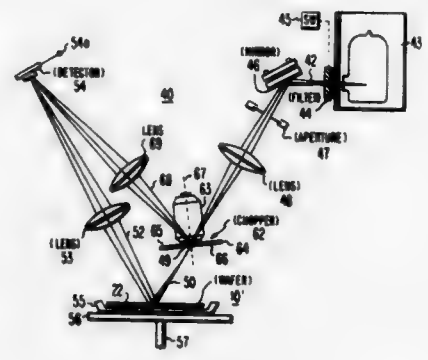
wherein said first detection efficiency has a lower sensitivity to radiant energy in a first energy range and said second detection efficiency has a lower sensitivity to radiant energy in a second, higher, energy range.

4,511,800

OPTICAL REFLECTANCE METHOD FOR DETERMINING THE SURFACE ROUGHNESS OF MATERIALS IN SEMICONDUCTOR PROCESSING

Gunther Harbeke, Affoltern, Switzerland, and Michael T. Duffy, Princeton Junction, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 28, 1983, Ser. No. 479,451
Int. Cl.³ G01N *21/57*
U.S. Cl. 250—372 **5 Claims**



1. A method of determining the surface roughness of a specimen reflective material comprising:

(a) exposing a reference surface of a reference reflective material of predetermined reduced surface roughness to a first beam of radiation of a first wavelength from a source of radiation so that a portion of said first beam is reflected from said reference surface;

(b) exposing said specimen reflective surface to a second beam of radiation from said source so that a portion of said second beam is reflected from said surface, said second beam having a wavelength the same as the wavelength of said first radiation beam;

(c) detecting and measuring the intensity of said first and second reflected beams to obtain a first and a second intensity signal; and

(d) comparing said first intensity signal with said second intensity signal to determine the difference between the two signals, the magnitude of said difference being a measure of the surface roughness of said specimen reflective material;

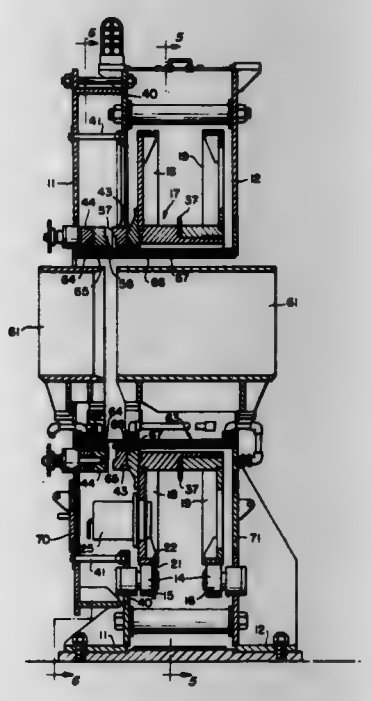
(e) wherein said method includes in alternate and rapid sequence reflecting said first beam to said detector and passing said second beam to said specimen surface for reflection to said detector, whereby said detector is alternately in rapid sequence providing substantially continuously said first and second intensity signals for rapid comparison.

4,511,801

RADIATION SCANNING AND MEASURING DEVICE

Edward J. Tatham; Richard Kravitz, both of Bethlehem; John C. Clymer, Riegelsville, and Carvel D. Hoffman, Bethlehem, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jul. 19, 1982, Ser. No. 399,501
Int. Cl.[3] G01T *1/29*
U.S. Cl. 250—394 6 Claims



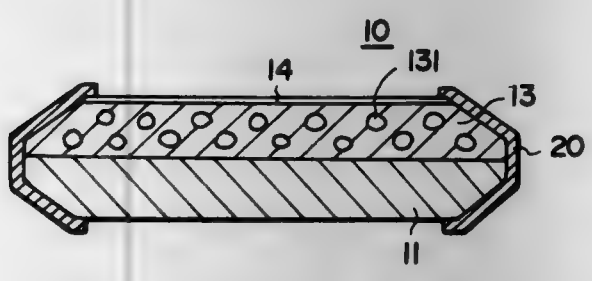
1. A scanning device for examining an object with penetrating radiation comprising a rotating source drum having a plurality of gamma ray radiation source devices, a fixed portion of the scanning device surrounding said rotating drum including a plurality of gamma ray radiation detectors mounted on said fixed portion and an adjustable shutter means concentric with said radiation device said adjustable shutter means including a shutter-half connected to said fixed portion and another shutter-half connected to said rotating source drum.

4,511,802

RADIATION IMAGE STORAGE PANEL

Masanori Teraoka, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed May 20, 1983, Ser. No. 496,731
Claims priority, application Japan, May 24, 1982, 57-87799
Int. Cl.[3] G21K *4/00*
U.S. Cl. 250—484.1 9 Claims



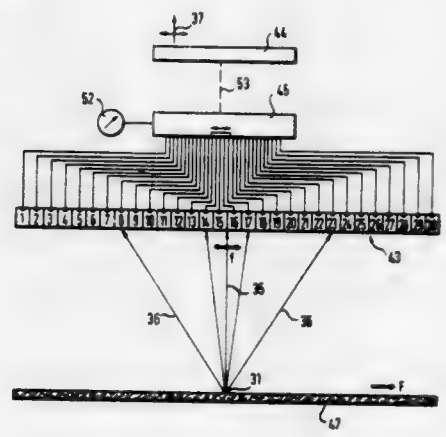
1. A radiation image storage panel comprising a substrate and a stimulable phosphor layer provided on said substrate, wherein at least a part of the edges of end faces of said radiation image storage panel on the substrate side is chamfered, and at least the end face of said radiation image storage panel including said chamfered edge is covered with a polymer film.

4,511,803

FAULT DETECTION APPARATUS FOR MATERIAL WEBS

Dieter Röss, Planegg, and Klaus Ostertag, Munich, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Division of Ser. No. 235,694, Feb. 18, 1981, Pat. No. 4,450,359.
This application Dec. 20, 1983, Ser. No. 563,601
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006072
Int. Cl.[3] G01N *21/88*
U.S. Cl. 250—563 5 Claims



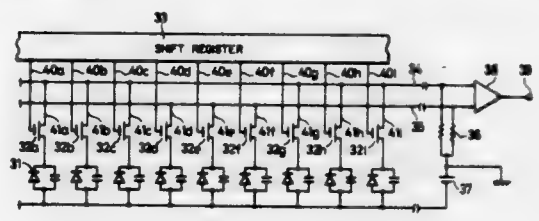
1. Fault detection apparatus for material webs comprising: a light scanning device for directing a bead of light along an imaginary line on the surface of a web to effect line scanning thereof, said web having a width; and an elongate light receiving device disposed to receive light leaving said line within a reception plane containing said line and said light receiving device; said light receiving device comprising: a linear array of individual light receivers, means for selectively switching said light receivers on or off in dependence on the position of said light bead along said line and for switching off at least one of said light receivers at each particular instant, said light receivers generating signals in response to incident light, and means connecting said receivers to a processing circuit for processing said signals.

4,511,804

NOISE REDUCTION APPARATUS FOR HYBRID IMAGE SENSOR

Takashi Ozawa, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,838
Claims priority, application Japan, Nov. 13, 1981, 56-182091
Int. Cl.[3] H04N *5/30*
U.S. Cl. 250—578 10 Claims

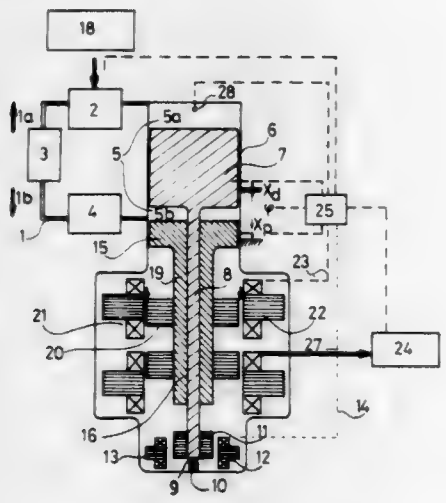


1. A document sensing device comprising: means for sensing light reflected by a document and generating an output signal and comprising a plurality of photodetectors, means for storing said output signals received from said means for sensing light and comprising a plurality of MOSFET devices fabricated at a device location separately from said photodetectors, shift register means for selectively outputting the content of said means for storing signals by sequentially initiating the outputs of said means for storing said output signals, and output means whereby noise signals inherent in said stored signals are eliminated.

4,511,805
CONVERTOR FOR THERMAL ENERGY INTO ELECTRICAL ENERGY USING STIRLING MOTOR AND INTEGRAL ELECTRICAL GENERATOR

Jean-Louis Boy-Marcotte, Orsay; Gilbert M. I. Dahan, Paris; Michel Dancette, Vaucresson; Marcel P. Le Nabour, Limonest; Jean-Francois G. A. Pellerin, Boulogne; José Rivallin, Plaisir, and Marcel A. J. Jannot, Sarcelles, all of France, assignors to BERTIN & Cie, Plaisir, France

Filed Jul. 20, 1982, Ser. No. 400,064
Claims priority, application France, Jul. 21, 1981, 81 14185
Int. Cl.[3] F02G *1/045*
U.S. Cl. 290—2 13 Claims

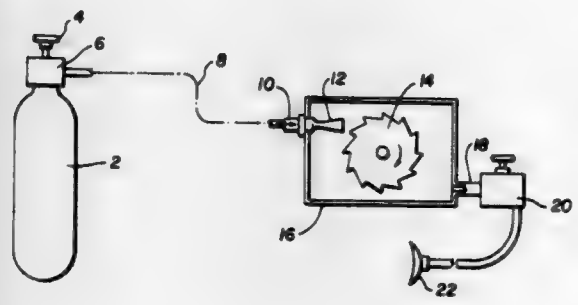


1. Convertor for converting into electrical energy the mechanical energy developed by a thermal piston motor operating along the Stirling thermodynamic cycle, comprising a hermetically sealed enclosure under pressure deprived of mechanical connection to the outside, said hermetically sealed enclosure enclosing a displacing piston guided thereby to induce therein pressure variations due to piston movements, a drive piston also guided thereby and having a face on which said pressure variations are directly exerted without recourse to physical transmission between said pistons, a linear electric generator having a movable magnetic component, and a positive mechanical transmission between said drive piston and said movable magnetic component whereby said magnetic component positively follows up said drive piston and in return any electric control affecting said magnetic component inherently reflects fully on said drive piston for achieving an overall control of the magnetic component and drive piston assembly.

4,511,806
PRESSURE DROP POWER GENERATION

Michael G. May, Bel Air, Switzerland, assignor to AIR Ltd., Arlington, Va.

Filed May 22, 1984, Ser. No. 612,816
Int. Cl.[3] F03B *13/00*
U.S. Cl. 290—43 6 Claims



1. A power generator apparatus including a pressurized gas source container having sufficient quantities of oxygen for breathing purposes, comprising

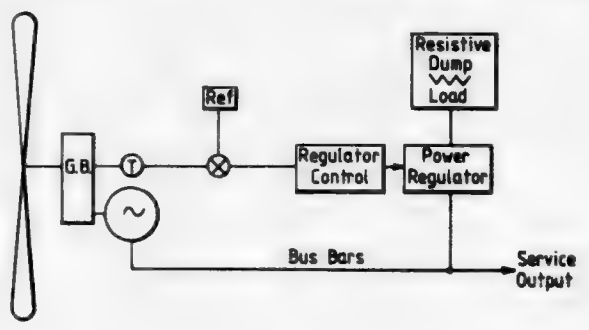
means for connecting said pressurized gas source to said power generator for transmission via a pressure drop in said gas source a gas pressure therethrough, said generator using at least a part of the flow rate of said gas pressure as a pneumatic energy input; and

means connecting said generator to a mouthpiece means, whereby said gas pressure is available for breathing.

4,511,807
ELECTRICAL GENERATOR CONTROL SYSTEM

William M. Somerville, Kirkwhelpington, England, assignor to Northern Engineering Industries plc, Great Britain

Filed Apr. 1, 1983, Ser. No. 481,169
Claims priority, application United Kingdom, Apr. 20, 1982, 8211437; Jun. 2, 1982, 8216130
Int. Cl.[3] H02P *9/04*
U.S. Cl. 290—44 14 Claims



1. An electrical generator control system comprising:

(a) an electric generator;

(b) a plurality of appliance resistors;

(c) a plurality of dump resistors;

(d) switches first and second ones of which are associated with said appliance resistors and said dump resistors, respectively, each said switch being operable, in response to increases or decreases in the frequency of the output of said generator, at a predetermined value of said output frequency, which operation, in the case of each appliance resistor, at least renders the respective resistor connectable to or disconnectable from said generator respectively to impose load thereon or to remove load therefrom and, in the case of each dump resistor, connects or disconnects the respective resistor to or from said generator respectively to impose load thereon or remove load therefrom, said predetermined values of frequency representing a range of values of frequency which increase progressively through said range, at least some of said first ones of said switches being operable at predetermined values of said output frequency which are lower than said predetermined values of frequency at which said second ones of said switches are operable; and

(e) control means for operating said switches at the respective frequencies, said control means comprising for each switch frequency pulse-generating circuitry for generating a train of frequency pulses corresponding to said output frequency, a timing pulse generator and counting means, changes in said output frequency being detectable as changes in the number of timing pulses counted by said counting means between successive frequency pulses in said train.

4,511,808

INSTALLATION FOR EXPLOITING WATER CURRENTS IN FLOWING WATERS BY MEANS OF A PLURALITY OF WATER WHEELS

Bernhard Jöst, Traminerweg, 4, D-6800 Mannheim, Fed. Rep. of Germany

PCT No. PCT/DE81/00141, § 371 Date May 17, 1982, § 102(e) Date May 17, 1982, PCT Pub. No. WO82/01038, PCT Pub. Date Apr. 1, 1982

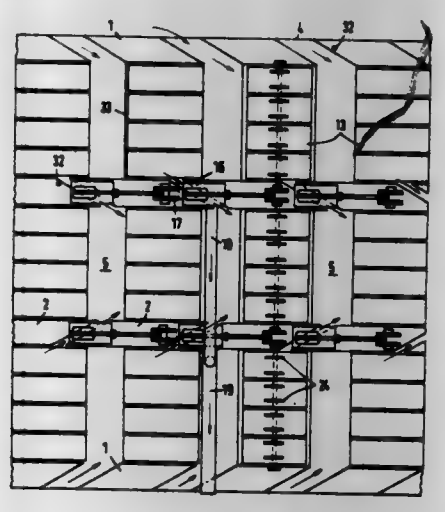
PCT Filed Sep. 12, 1981, Ser. No. 385,412

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034862

Int. Cl.³ F03B 7/00

U.S. Cl. 290—54

8 Claims



1. In an installation for exploiting the energy of flowing water in a river stream of the type including a plurality of anchored pontoons, a plurality of water wheels mounted between said anchored pontoons and disposed in adjacent and successive rows, a plurality of generators having drive turbines and a plurality of piston pumps by which said water wheels drive said turbines of said generators, the improvement comprising:

said anchored pontoons including a plurality of pontoons disposed in outer and intermediate lateral rows, the pontoons in each row being arranged in tandem and so shaped with spacings therebetween and between adjacent rows to form a multiplicity of longitudinal channels to channel water flow from the front to the rear of the installation and a plurality of transverse channels to channel water flow from the side of the installation to its center so as to hinder water flow as little as possible, the installation being free of floor or lateral limitations disposed between respective outer pontoons and intermediate pontoons; and

said water wheels disposed in tandem having crankshafts connected to each other by connecting rods which, in turn, drive said double acting piston pumps, said piston pumps being slow running and having a relatively large stroke for drawing in river water and pumping said water through high pressure lines to pressure storage means, said pressure storage means communicating through pressure conduits to the turbine of a turbo-generator.

4,511,809

SWITCH CIRCUIT HAVING IMPROVED SWITCHING CHARACTERISTICS

Gordon H. Allen, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 27, 1983, Ser. No. 461,327

Int. Cl.³ H03K 17/60, 3/01

U.S. Cl. 307—254

2 Claims

1. A switch circuit having a pair of outputs between which a load may be connected, comprising;

first and second respective paired switching transistor circuits each of which includes an upper transistor coupled to a respective one of the outputs and a lower transistor coupled respectively to the opposite one of the pair of outputs to which its paired upper transistor is coupled;

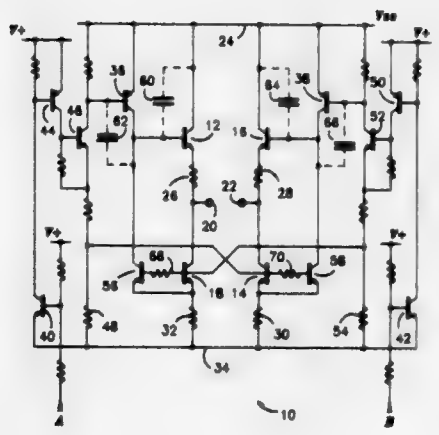
switching circuit means responsive to switching signals applied thereto for alternately rendering said first and second paired switching transistor circuits conductive for producing current through the load;

said upper transistor of each of said paired switching transistor circuits having an emitter coupled to a respective one of the pair of outputs, a collector coupled to a first power supply conductor, and a base;

said lower transistor of each of said paired switching transistor circuits having an emitter coupled to a second power supply conductor, a collector coupled to said emitter of the opposite one of said upper transistors respectively, and a base coupled to said switching circuit means;

first and second driver transistors each having a collector coupled to said base of a respective upper transistor, an emitter coupled to said first power supply conductor, and a base coupled to said switching circuit means;

a first transistor having an emitter; collector and base, said emitter being coupled to said emitter of said lower transistor of said second paired switching transistor circuit, said collector being connected to said base of said upper transistor of said first paired switching transistor circuit, and



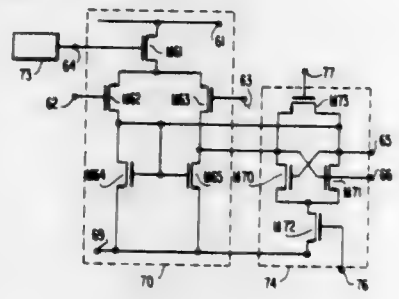
said base being coupled to said base of said lower transistor of said second paired switching transistor circuit, said first transistor being rendered conductive by said switching circuit means when said lower transistor of said second paired switching transistor circuit is rendered conductive for passing parasitic currents appearing at said base of said upper transistor of said first paired switching transistor circuit to said second power supply conductor, said first transistor otherwise being non-conductive; a second transistor having an emitter, collector and base, said emitter being coupled to said emitter of said lower transistor of said first paired switching transistor circuit, said collector being connected to said base of said upper transistor of said second paired switching transistor circuit, and said base being coupled to said base of said lower transistor of said first paired switching transistor circuit, said second transistor being rendered conductive by said switching circuit means when said lower transistor of said first paired switching transistor circuit is rendered conductive for passing parasitic currents appearing at said base of said upper transistor of said second paired switching transistor circuit to said second power supply conductor, said second transistor otherwise being non-conductive.

4,511,810

VOLTAGE COMPARATOR CIRCUIT

Akira Yukawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1982, Ser. No. 414,724
Claims priority, application Japan, Sep. 3, 1981, 56-138946
Int. Cl.³ H03K *5/24, 3/353*
U.S. Cl. 307—355 **18 Claims**



1. A comparator circuit comprising a first voltage terminal, a second voltage terminal, first and second input terminals, first to third nodes, a constant current source coupled between said first voltage terminal and said third node, said constant current source continuously generating a constant current, a first field effect transistor of a first conductivity type coupled between said first node and said third node, a second field effect transistor of said first conductivity type coupled between said second node and said third node, means for connecting a gate of said first field effect transistor to said first input terminal, means for connecting a gate of said second field effect transistor to said second input terminal, first load means coupled between said first node and said second voltage terminal, second load means coupled between said second node and said second voltage terminal, third and fourth field effect transistors of a second conductivity type having gates and drains cross-coupled at said first and second nodes and commonly connected sources, switching means coupled between the commonly connected sources of said third and fourth field effect transistors and said second voltage terminal, a first output terminal, a second output terminal, means for connecting said first output terminal to said first node and means for connecting said second output node to said second node, and control means for making said switching means non-conducting for a first period and conducting for a second period subsequent to said first period, wherein said constant current is divided into said first and second load means during said first period, and divided into said first and second load means and said third and fourth field effect transistors during said second period.

4,511,811

CHARGE PUMP FOR PROVIDING PROGRAMMING VOLTAGE TO THE WORD LINES IN A SEMICONDUCTOR MEMORY ARRAY

Anil Gupta, Sunnyvale, Calif., assignor to Seeq Technology, Inc., San Jose, Calif.

Filed Feb. 8, 1982, Ser. No. 346,891
Int. Cl.³ H03K *19/094, 19/20, 4/02;* G11C *8/00*
U.S. Cl. 307—463 **1 Claim**

1. An apparatus for selectively increasing the voltage on one or more of a plurality of conductive lines having inherent distributed capacitance disposed in a semiconductor circuit comprising:

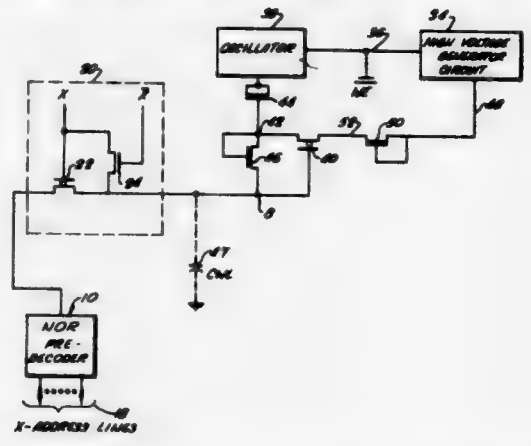
means disposed on said semiconductor circuit for selecting one or more of said conductive lines;

high voltage generating means disposed on said semiconductor circuit for generating a high voltage from a lower voltage power supply connected to said semiconductor circuit;

voltage pulse generating means disposed on said semiconductor circuit for generating voltage pulses;

means for capacitively coupling voltage pulses from said voltage pulse generating means to a voltage node in said semiconductor circuit;

transfer means responsive to said selecting means and connected to said voltage node for transferring increments of charge from said high voltage generating means to the inherent distributed capacitance in selected ones of said conductive lines in response to said voltage pulses;



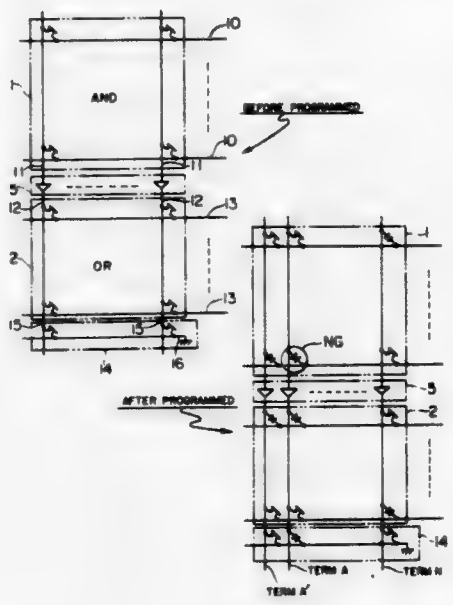
said transfer means including switching means cooperating with said selecting means for blocking substantially all of the flow of current through and transfer of charge from said high voltage generating means to said conductive lines which are unselected.

4,511,812

PROGRAMMABLE LOGIC ARRAY, INCLUDING AN ARRANGEMENT FOR INVALIDATING FAULTY AND TERM OUTPUTS

Shozo Satake, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1982, Ser. No. 388,620
Claims priority, application Japan, Jun. 24, 1981, 56-96666
Int. Cl.³ G06F *11/20, 11/22;* G11C *29/00*
U.S. Cl. 307—465 **5 Claims**



1. A programmable logic array comprising:

an AND array having a plurality of first input lines and a plurality of first output lines as AND terms, said AND array being programmed by electrically connecting selected ones of said first input lines and selected ones of said first output lines;

an OR array having a plurality of second input lines connected to corresponding ones of said first output lines and a plurality of second output lines, said OR array being programmed by electrically connecting selected ones of said second input lines and selected ones of said second output lines; and

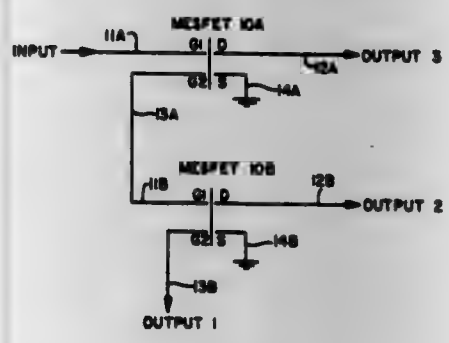
invalidating means for selectively connecting said first output lines forming said AND terms or said second input lines to a constant potential source.

4,511,813

DUAL-GATE MESFET COMBINER/DIVIDER FOR USE IN ADAPTIVE SYSTEM APPLICATIONS

Jing-Jong Pan, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 273,046, Jun. 12, 1981, abandoned.
This application Sep. 15, 1983, Ser. No. 532,520
Int. Cl.[3] H03F *3/193*; H03G *3/30*
U.S. Cl. 307—501 **27 Claims**



1. A signal coupling device comprising:
an input terminal to which an input signal to be divided into a plurality of output signals is to be coupled;
a plurality of N output terminals from which respective ones of said output signals are to be derived; and
a plurality of (N−1) dual-gate MESFETs, each having first and second gate electrodes, a source electrode and a drain electrode; and wherein
the drain-source current path of each of said dual-gate MESFETs is connectable to a source of operating potential through a current conducting element;
the first gate electrode of the first of said plurality of MESFETs is coupled to said input terminal;
the first gate electrode of the second through $(N-1)^{th}$ MESFETs is coupled to the second gate electrode of the first through $(N-2)^{th}$ MESFETs, respectively;
the second gate electrode of the $(N-1)^{th}$ MESFET is coupled to the Nth output terminal; and
said first through $(N-1)^{th}$ output terminals are respectively coupled to one of the source and drain electrodes of said first through $(N-1)^{th}$ MESFETs, respectively; and
where N is an integer greater than two.

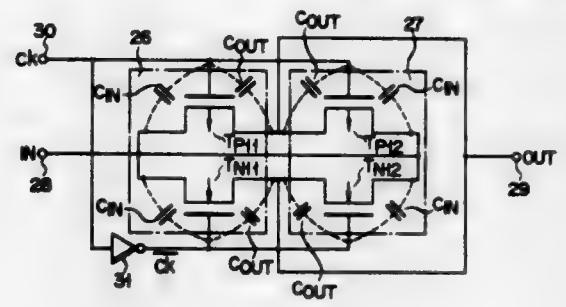
4,511,814

SEMICONDUCTOR ANALOG SWITCH CIRCUIT WITH COMPENSATION MEANS TO MINIMIZE OFFSET OF OUTPUT VOLTAGE

Kenji Matsuo, Yokohama, and Eiji Masuda, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 29, 1982, Ser. No. 445,038
Claims priority, application Japan, Nov. 30, 1981, 56-192251
Int. Cl.[3] H03K *17/16, 17/693, 19/096*
U.S. Cl. 307—572 **4 Claims**

1. A semiconductor analog switching circuit device with a circuit for compensating an offset of an output voltage comprising:
switching means including a first MOS transistor of a first channel type and a second MOS transistor of a second channel type having their channels connected in parallel and having first and second parallel junctions;
an input terminal for receiving an input signal connected to one of said parallel junctions of said first and second transistors;
an output terminal for providing an output signal connected to the other of said parallel junctions of said first and second transistors;
first control terminal for receiving a first control signal connected to the gate of said first transistor;
second control terminal for receiving a second control signal connected to the gate of said second transistor; and



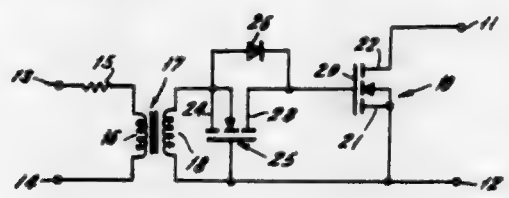
compensating means for compensating an offset of said output signal including a third MOS transistor of said first channel type and a fourth MOS transistor of said second channel type having their channels connected in parallel, the compensating means and said switching means being connected in parallel, the gates of the third and fourth transistors being connected to said first and second control terminals, respectively.

4,511,815

TRANSFORMER-ISOLATED POWER MOSFET DRIVER CIRCUIT

Peter N. Wood, Los Angeles, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Aug. 15, 1983, Ser. No. 523,121
Int. Cl.[3] H03K *17/687, 17/04, 17/60, 17/68*
U.S. Cl. 307—584 **8 Claims**



1. A driver circuit for an output metal oxide field effect transistor; said output metal oxide field effect transistor having gate, source and drain electrodes; said driver circuit comprising an isolation transformer having magnetically coupled input winding means and output winding means which are dielectrically isolated from one another, a control metal oxide field effect transistor having gate, source and drain electrodes, and diode means connected across said source and drain electrodes of said control transistor; said output winding means; said source and drain electrodes of said control transistor and said gate and source electrodes of said output transistor connected in a closed series circuit; said output winding means, said gate electrode of said control transistor and said source electrode of said control transistor connected in a closed series circuit; said diode means having a conduction direction to permit charging of the inherent gate capacitance of said output transistor when said output winding means has an output voltage thereon of a first polarity, and to oppose the discharge of said gate capacitance when said output voltage of said output winding means is zero or reverses from said first polarity.

4,511,816

SURFACE ACOUSTIC WAVE DEVICE USING AN ELASTIC SUBSTRATE AND AN ALUMINUM NITRIDE PIEZOELECTRIC FILM

Nobuo Mikoshiba; Kazuo Tsubouchi, and Kazuyoshi Sugai, all of Sendai, Japan, assignors to Nobuo Mikoshiba and Kazuo Tsubouchi, both of Sendai, Japan

Filed Mar. 9, 1983, Ser. No. 473,410
Claims priority, application Japan, Mar. 11, 1982, 57-39238; Mar. 11, 1982, 57-39239; Mar. 11, 1982, 57-39240
Int. Cl.³ H03H *9/44*
U.S. Cl. 310—313 A **45 Claims**



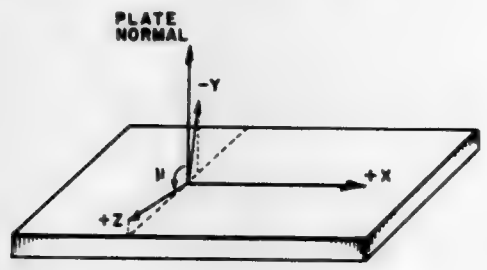
1. In a surface acoustic wave device comprising an elastic substrate, an aluminum nitride (AlN) layer deposited on said elastic substrate, and electrodes provided on said AlN layer for converting an electric signal to a surface acoustic wave and vice versa, respectively, said elastic substrate having the property that its temperature coefficient of delay to the surface acoustic wave is positive, and said aluminum nitride layer having an orientation of the piezoelectric axis thereof so that its temperature coefficient of delay to the surface acoustic wave is negative.

4,511,817

TEMPERATURE COMPENSATED ORIENTATION OF BERLINITE FOR SURFACE ACOUSTIC WAVE DEVICES

Bruce H. Chai, Bridgewater, N.J.; Dana S. Bailey, Columbia, Md.; John F. Vetelino, Veazie, Me.; Donald L. Lee, Orono, Me., and Jeffrey C. Andle, Bangor, Me., assignors to Allied Corporation, Morris Township, N.J.

Filed Oct. 28, 1983, Ser. No. 546,676
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—313 A **3 Claims**



1. a berlinite single crystal having a substantially planar surface defined by the Euler angles λ=about 0°; μ=about 85°; and θ=about 0°.

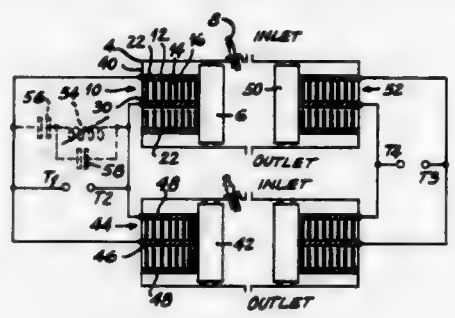
4,511,818

PIEZOELECTRIC GENERATOR DRIVEN BY A COMBUSTION ENGINE

James A. Benjamin, Waukesha, and Herman P. Schutten, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1982, Ser. No. 452,353
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—338 **3 Claims**

1. A piezoelectric generator comprising a combustion engine having a piston driven by explosion of a fuel mixture, and piezoelectric transducer means responsive to piston movement to generate a voltage, and comprising auxiliary energy storage means connected to said piezoelectric transducer means for



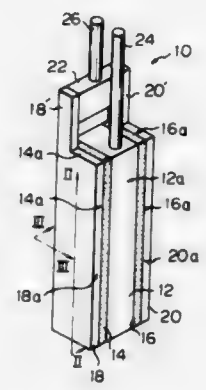
storing energy in response to said piston movement and for releasing said energy for return piston movement.

4,511,819

ELECTRODE CONNECTIONS FOR A PIEZOELECTRIC SENSOR

Naoki Matsubara, and Hideo Numata, both of Tokyo, Japan, assignors to Oval Engineering Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1983, Ser. No. 534,915
Claims priority, application Japan, Oct. 4, 1982, 57-173250
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—340 **3 Claims**



1. A piezoelectric sensor comprising, in combination:
two piezoelectric elements each having end faces and two side faces;
a first plate electrode having end faces and two side faces, one of said side faces of said first plate electrode being bonded to one side face of one of the piezoelectric elements and the other side face of said first plate electrode being bonded to one side face of the other piezoelectric element;
a second plate electrode bonded to the other side face of said one of the piezoelectric elements;
a third plate electrode bonded to the other side face of said other piezoelectric element;
said second and third plate electrodes each having parts thereof formed as output pickup sections which are integral extensions of the respective second and third plate electrodes, said first plate electrode and said two piezoelectric elements having a first generally common planar end face, said integral extensions extending beyond said first planar end face;
a metal fixture connected to said output pickup sections of the second and third plate electrodes to commonly pick up outputs of the second and third plate electrodes, said metal fixture being spaced from said first planar end face, said metal fixture and said integral extensions having a second generally common planar end face;
a first rod electrode connected to the end face of said first plate electrode which forms part of said first common planar end face;
a second rod electrode connected to the end face of the

metal fixture which forms part of said second common planar end face; and

two cover members for respectively covering the end faces of the two piezoelectric elements which are exposed to the outside of the sensor and predetermined areas of the end faces of the first, second and third plate electrodes adjacent to said end faces of the piezoelectric elements, each of said cover members being made of a highly insulative ceramic material to prevent current leakage.

4,511,820

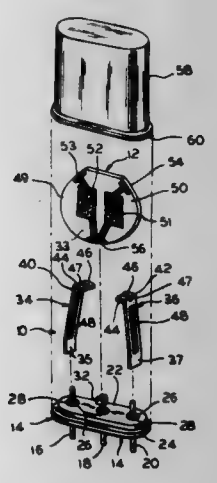
BIASED HOLDER FOR A CRYSTAL WAFER

Keith W. MacKenzie, Lindenhurst, Ill., assignor to Netcom, Inc., Northbrook, Ill.

Filed Oct. 19, 1983, Ser. No. 543,414

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—353 **14 Claims**



1. A piezoelectric crystal device comprising:

a crystal wafer;

a holder including a base and a pair of spaced apart arms secured to the base at the lower end thereof and extending outward therefrom, each of the arms comprising a body portion and a fork portion at the outer end of the body portion;

a slot formed in the body portion of each of said arms, said slot having an upper edge, a lower edge and side edges;

said fork portion including a slit separating a pair of prongs, the width of the slit being less than the width of the slot; and

a support member extending outward from the base and positioned between the arms, said arms being spreadable away from each other from a normal position to an outer position for inserting said crystal between the arms and in association with the support member, said wafer being operatively received in said slit and slot of each of said arms and the upper edges of the slots abutting adjacent edges of the wafer for retaining the wafer in the holder.

4,511,821

SUPPORT STRUCTURE FOR PIEZOELECTRIC VIBRATOR

Takeshi Nakamura, Uji; Hiroshi Nishiyama, Muko; Satoshi Matsuda, Otokuni, and Ikuo Matsumoto, Takatsuki, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 4, 1983, Ser. No. 548,869

Claims priority, application Japan, Nov. 27, 1982, 57-179564[U]

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—354 **13 Claims**

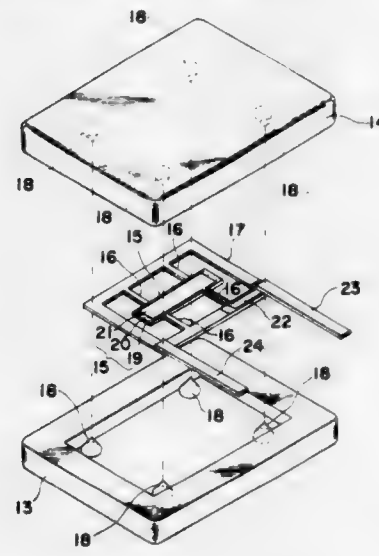
1. A vibrator support structure, comprising:

a pair of identical confronting casing halves;

a pair of sets of projections having bases and tips deformable toward said bases, fixed at said bases to respective ones of said pairs of casing halves, the projections of each set being in confronting relation to respective corresponding projections of the other set;

a vibrator having at least two metallic conductors;

a support framework having paired connecting elements connecting to said vibrator at nodes of vibration thereof, supporting said vibrator through said connecting elements between said pair of casing halves, said framework supporting said at least two conductors on different portions thereof and having means for electrically insulating said at least two conductors from each other;



at least two metallic terminal members electrically connected with respective ones of said metallic conductors for external electrical connection, one of said vibrator and said support framework being sandwiched at the associated nodes of vibration thereof between said tips of said projections of said two sets of projections; and

means for holding said pair of casing halves together with said terminal members clamped to said respective at least two conductors between said tips of some confronting projections of said sets of projections so as to electrically connect said conductors and said terminal members.

4,511,822

IMAGE DISPLAY TUBE HAVING A CHANNEL PLATE ELECTRON MULTIPLIER

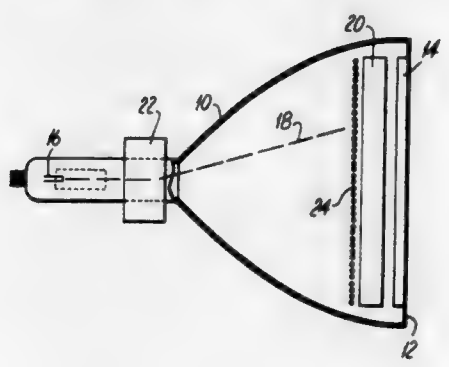
Derek Washington, Wallington, and Roger Pook, East Grinstead, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1981, Ser. No. 326,867

Claims priority, application United Kingdom, Dec. 19, 1980, 8040798

Int. Cl.³ H01J *31/48, 43/28*

U.S. Cl. 313—400 **6 Claims**



1. A display tube comprising an envelope having a faceplate and containing a screen parallel to an inner surface of the faceplate, an electron beam producing means for directing an electron beam at the screen, and a channel plate electron multiplier spaced from the screen and having an input side facing the electron beam producing means and an output side facing

the screen, said channel plate electron multiplier comprising a plurality of apertured dynodes having their apertures aligned to form electron multiplying channels,

characterized in that the display tube further includes a grid, spaced from the input side of the channel plate electron multiplier, for producing an electric field which inhibits secondary electrons emitted from said input side, after impingement by the electron beam, from straying transversely to remote channels.

4,511,823

REDUCTION OF HARMONICS IN GAS DISCHARGE LAMP BALLASTS

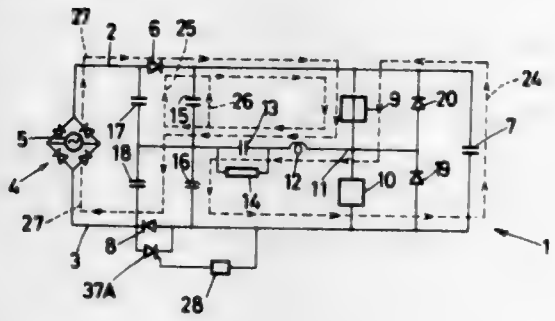
William L. Eaton, 6 Colin Grove Berea, and Alan B. Murray, 304 S. Ridge Rd., both of Durban 4001 Natal Province, South Africa

Filed May 27, 1983, Ser. No. 498,916

Claims priority, application South Africa, Jun. 1, 1982, 82/3819; Jul. 7, 1982, 82/3968; Oct. 26, 1982, 82/7811; Nov. 26, 1982, 82/8709

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—226 **21 Claims**



1. A gas discharge lamp ballast including capacitor smoothing means for a rectified supply input, and switching devices for switching an output alternately between the positive and negative input supply lines in alternate positive and negative cycles, there being a finite time between each of the said switchings of the output during which the switching devices are off, said ballast comprising:

a load circuit having an inductive element connected to be driven in series from the said output and being adapted to have a gas discharge lamp load driven thereby;

switching control means associated with the switching devices for switching the devices considerably faster that the half cycle frequency of the rectified supply; a return path for the rectified input between the load circuit and a supply line;

control capacitor means connected to be charged in series with the load circuit, during on times of a switching device, by discharge from the smoothing capacitor means, to cause a lowering of the voltage over the load circuit;

a uni-directional device connected in the supply line of the return path to prevent discharge along that supply line from the smoothing capacitor means into the return path;

a path for conducting charge from the inductive element in the load circuit to charge the smoothing capacitor means during said finite times;

the uni-directional device also being connected, and the return path being adapted, to enable the said lowering of voltage over the load to allow a current flow originating from the rectified input to pass through the return path and the load circuit; and the magnitude of the control capacitor means being proportioned, for a given load, to cause, sufficient of the said current flow originating from the rectified supply so as to provide, together with any other current flow through the load circuit, excluding such flow resulting from discharge of the smoothing capacitor means at least all the circuit losses and anticipated load loss, and thereby cause the voltage over the smoothing capacitor means to remain at least as high as the peaks of the rectified supply voltage.

4,511,824

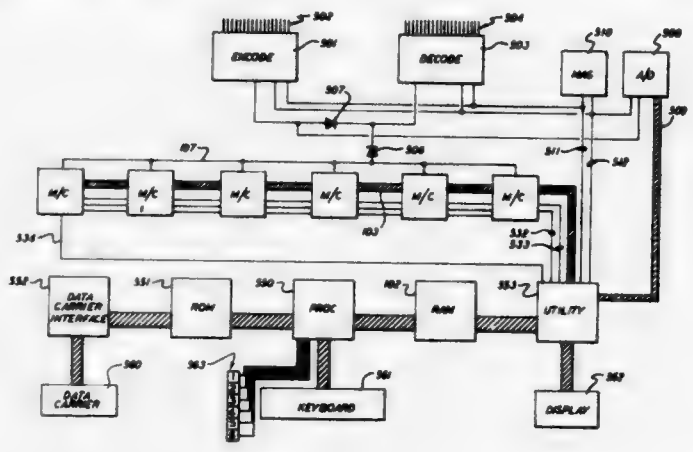
PARALLEL ACCESS MEMORY LIGHTING SYSTEM

Robert M. Goddard, 330 First Ave., New York, N.Y. 10009

Filed Jul. 15, 1983, Ser. No. 514,305

Int. Cl.³ G05F *1/00*; H05B *37/02*

U.S. Cl. 315—297 **17 Claims**



1. In a lighting control console for providing control outputs to dimmers for each of a plurality of channels, said console including a digital memory for storing intensity valves for each of said channels for each of a plurality of presets and means for preset mastering of intensity values by multiplying the channel intensity valves for each preset by a master value for that preset, and means for selecting the highest mastered intensity for each channel and providing it as the control output for that channel, the improvement comprising:

(a) a plurality of preset faders, one for each available preset, each providing an output proportional to the mechanical setting of said fader;

(b) the preset mastering means comprising a plurality of hardware multipliers

(c) means for transferring channel intensity values to said multipliers including:

i. a bus coupled to said memory;

ii. means to provide said channel intensity values for a given channel in the available presets as serial outputs to said bus from said memory; and

iii. means for distributing said serial outputs to said multipliers;

(d) means for comparing the outputs of all of said multipliers and providing the highest as the channel output;

(e) means, between said memory and said comparators, for converting digital outputs from said memory to analog form; and

(f) means for insuring that the outputs of all said multipliers are maintained at the input of said comparator for a time sufficient to perform a comparison.

4,511,825

ELECTRIC WHEELCHAIR WITH IMPROVED CONTROL CIRCUIT

Robert G. Klimo, Parma, Ohio, assignor to Invacare Corporation, Elyria, Ohio

Continuation-in-part of Ser. No. 254,443, Apr. 15, 1981, Pat. No. 4,387,325. This application Feb. 24, 1982, Ser. No. 351,990

Int. Cl.³ B62D *11/04*

U.S. Cl. 318—67 **12 Claims**

1. A plural motor speed control system for an electric vehicle comprising:

an electric power supply;

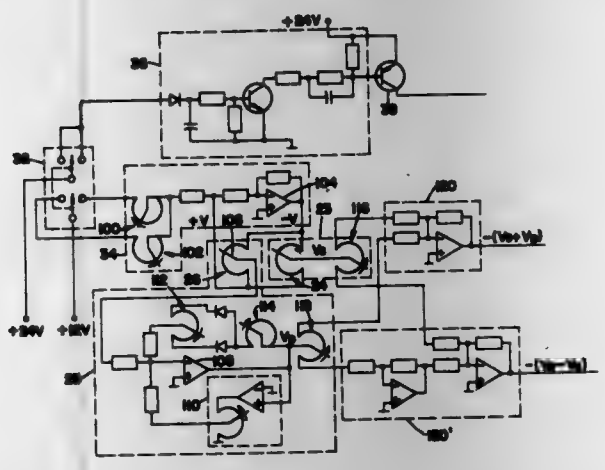
at least one left motor for driving a left vehicle wheel and at least one right motor for driving a right vehicle wheel, the vehicle speed being controlled by the speed of the left and right motors and vehicle direction being controlled by the relative speed of the left and right motors;

a joystick means connected with a speed control means for producing a single selected vehicle speed signal which varies with a selected vehicle speed and connected with a

separate vehicle direction control means for producing a single selected vehicle direction signal which varies with a selected deviation in vehicle direction from straight;

a first combining means for combining the selected vehicle speed signal and the selected vehicle direction signal to produce a right motor speed signal;

a second combining means for combining the selected vehicle speed signal and the selected vehicle direction signal to produce a left motor speed signal;



a right motor speed control circuit operatively connected with the power supply, right motor, and the first combining means for controlling the right motor speed in accordance with the right motor speed signal; and,

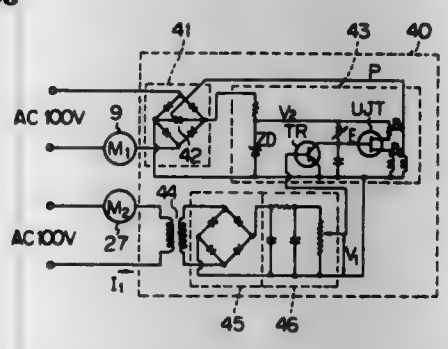
a left motor speed control circuit operatively connected with the power supply, left motor, and the second combining means for controlling the left motor speed in accordance with the left motor speed signal.

4,511,826

CONTROL APPARATUS FOR METAL SAW CUTTER

Takashi Kouchi, Nara, and Eiki Tamaoki, Higashiosaka, both of Japan, assignors to Rex Industries Co., Ltd., Osaka, Japan

Filed Dec. 13, 1983, Ser. No. 561,089
Claims priority, application Japan, Dec. 18, 1982, 57-221122
Int. Cl.[3] H02P *5/46*
U.S. Cl. 318—98 3 Claims



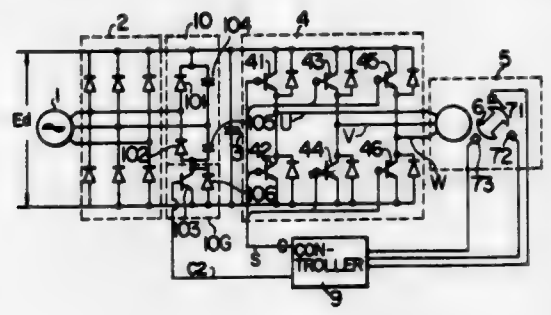
1. An apparatus for cutting plastic coated metal cylindrical members having a first drive for rotating the cylindrical member to be cut, and a second stationary drive for rotating a saw blade independently of said first drive, said drives both rotating about separate and distinct axis, means for continuously detecting the cutting resistance of said second drive in terms of its electrical output and means for controlling the speed of said first drive in response to said detecting means for adjusting said speed to maintain the cutting resistance at a predetermined optimum level throughout the cutting operation.

4,511,827

APPARATUS FOR DRIVING A POLYPHASE BRUSHLESS MOTOR WITH A SUPPRESSED TORQUE RIPPLE

Shigeki Morinaga; Kunio Miyashita, both of Hitachi, and Yasuyuki Sugiura, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,646
Claims priority, application Japan, Aug. 3, 1981, 56-120734; Oct. 6, 1981, 56-158087
Int. Cl.[3] H02P *7/28*
U.S. Cl. 318—254 14 Claims



1. An apparatus for driving a polyphase brushless motor with a suppressed torque ripple, said brushless motor having a rotor, the apparatus comprising:

sensor means for detecting the angular position of the rotor of said brushless motor;

a controller responsive to the output of said sensor means for generating a control signal containing trains of pulses for each phase of said motor; and

an inverter subject to commutation under control of said control signal from said controller for effecting switching among motor phase electric currents to selectively conduct electric current from a power source to each phase of said motor on the basis of said pulse trains;

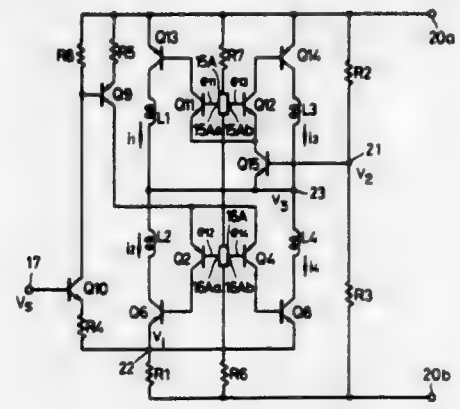
wherein said controller includes means for increasing the value of integration of the electric current for each phase of said motor with respect to time between two instants of successive commutation for said motor phase electric current switching.

4,511,828

D.C. COMMUTATORLESS ELECTRIC MOTOR

Kinzo Wada, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Jan. 20, 1983, Ser. No. 459,222
Claims priority, application Japan, Jan. 22, 1982, 57-8487
Int. Cl.[3] H02P *6/02*; H02K *29/02*
U.S. Cl. 318—254 2 Claims



1. A D.C. commutatorless electric motor comprising:

a rotor having a permanent magnet;

first and second power source terminals for receiving a D.C. power supply;

first and second Hall elements for detecting rotational angle

of said rotor according to a magnetic field formed by the permanent magnet of said rotor, the first and second Hall elements and resistors being connected in series between the first and second power source terminals;

first and second pairs of stator coils for rotating said rotor;

a first pair of switching elements each having a control electrode and being coupled between, one terminal of said first pair of stator coils which generate counter electromotive forces of mutually opposite polarities, and the first power source terminal, other terminal of said first pair of stator coils being commonly coupled to one terminal of said second pair of stator coils which generate counter-electromotive forces of mutually opposite polarities;

a second pair of switching elements each having a control electrode and being coupled between, other terminal of said second pair of stator coils, and the second power source terminal;

first impedance control circuit comprising a first pair of transistors each coupled between a voltage terminal of said first Hall element and the control electrode of said first pair of switching elements, for controlling ON-OFF state of the first pair of switching elements, and a first impedance control means coupled between said first pair of transistors and the commonly coupled terminals of the stator coils, for controlling impedances of said first pair of switching elements upon ON state thereof through said first pair of transistors in response to a difference between a predetermined potential and a potential at the commonly coupled terminals of the stator coils so that the potential at the commonly coupled terminals of the stator coils is held at a substantial center of potentials at the first and second power source terminals; and

second impedance control circuit comprising a second pair of transistors each coupled between a voltage terminal of said second Hall element and the control electrode of said second pair of switching elements, for controlling ON-OFF state of the second pair of switching element, and a second impedance control means coupled to said second pair of transistors, for controlling impedances of said second pair of switching elements upon ON state thereof through said second pair of transistors in response to a control signal.

4,511,829

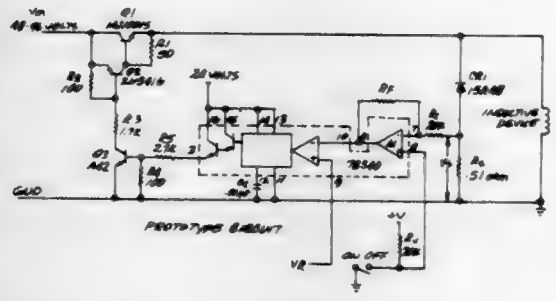
DIRECT CURRENT CONTROL IN INDUCTIVE LOADS

Waldemar S. Wisniewski, Orangevale, Calif., assignor to Exploration Logging, Inc., Sacramento, Calif.

Continuation of Ser. No. 169,764, Jul. 17, 1980, abandoned. This application Oct. 22, 1982, Ser. No. 436,043

Int. Cl.[3] **G05B** *5/00;* **H02K** *27/20;* **H01H** *47/32*

U.S. Cl. 318—317 **12 Claims**



1. A current regulator comprising:

(a) a source of direct current power,

(b) an inductor for supplying electromagnetic energy to a mechanical load;

(c) switching means for supplying power from the source of direct current power to the inductor,

(d) means for actuating said switching means to apply electric current from the source to the inductor for predetermined fixed periods of time during all charging cycles, so that the charging cycles are of fixed time duration irrespective of changes in the load or of changes in the voltage of the source of direct current power,

(e) means for discharging electric current from the inductor during periods of time constituting discharging cycles intermediate the charging cycles, and

(f) sensing means responsive to the electric current which is discharged from the inductor during each discharging cycle for actuating said switching means to apply electric current from the source to the inductor to initiate a charge cycle and to terminate each discharge cycle when the electric current which is discharged from the inductor during discharge cycles decays to a predetermined value to maintain the magnitude of the electric current in the inductor substantially constant with the value varying between the narrow limits of the value at the end of the discharging cycles and the value at the end of the charging cycles which is determined by the fixed period of time during which the charging cycles take place.

4,511,830

SERVO CONTROL APPARATUS

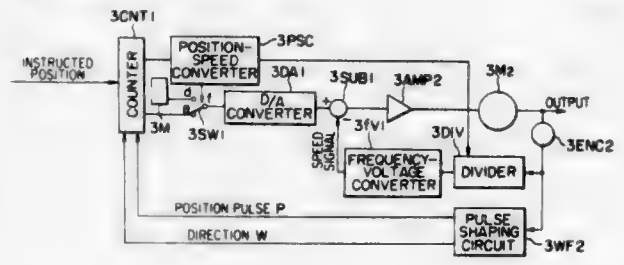
Yasuaki Yamada, Funabashi; Toshiaki Ozawa, Tokyo, and Hiroatsu Kondo, Zushi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 69,927, Aug. 27, 1979, Pat. No. 4,315,200. This application Jul. 23, 1981, Ser. No. 285,922

Claims priority, application Japan, Aug. 29, 1978, 53-105149; Sep. 20, 1978, 53-115648; Sep. 20, 1978, 53-115649; Sep. 20, 1978, 53-156650; Sep. 20, 1978, 53-115651

Int. Cl.[3] **H02P** *5/00*

U.S. Cl. 318—318 **14 Claims**



1. A speed servo control apparatus, comprising:

signal generating means for providing a pulse train of a frequency proportional to a speed of a displacing body;

frequency dividing means for dividing the frequency of said pulse train;

changing means for changing the dividing ratio of said frequency dividing means; and

means for comparing output signals from said frequency dividing means with a predetermined value and for generating speed control signals.

4,511,831

SPEED CONTROL OF A D.C. ELECTRIC MOTOR

Stirling A. McInnis, 661 Kenyon St., Troy, Mich. 48084

Continuation-in-part of Ser. No. 251,865, Apr. 7, 1981, Pat. No. 4,346,335. This application Jun. 11, 1982, Ser. No. 387,506

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.[3] **H02P** *5/06*

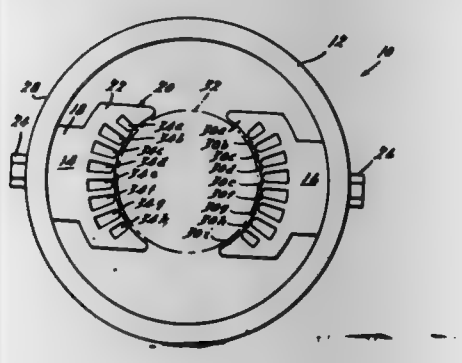
U.S. Cl. 318—351 **28 Claims**

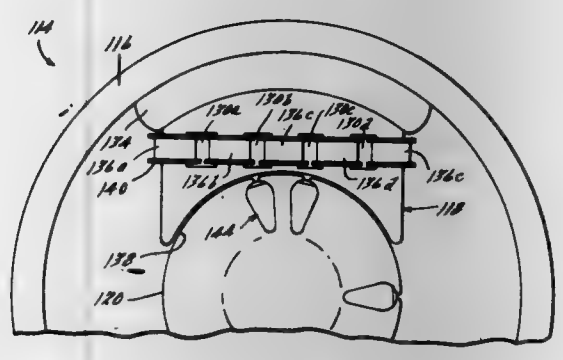
1. A. D.C. electric motor stator assembly, comprising:

a yoke member; and

at least one pair of opposing pole means associated with said yoke member for generating a magnetic field which is variable across a face portion of said pole means, each of said pole means including a plurality of separately excitable field control coils for selectively varying the density and direction of the magnetic flux along said face portion of said pole means; said pole means includes a field pole member having a shank portion mounted to said yoke

member, a plurality of spaced, generally radially extending field pole leg members associated with said face portion, and a core portion interposed radially between said shank portion and said face portion for providing a magnetic path between said shank portion and said face portion, and a field coil wound around said shank portion; and wherein said field control coils are wound individually around said field pole leg members; wherein said core portion of said field pole members has sufficient radial





depth to permit the magnetic flux in said field pole members to shift across said face portion when one or more of said field control coils are energized magnetically subtractive to the flux generated by said field coils, such that said magnetic flux generated by said field coils is shifted away from said substractively energized field control coil(s) and concentrated in a predeterminable portion of said field pole face portion; wherein said face portion is constructed to provide for a continuous, generally cylindrical surface as the bore for receiving said armature.

4,511,832

STEPPER MOTOR DOOR CONTROL APPARATUS AND METHOD

William E. Schmitz, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

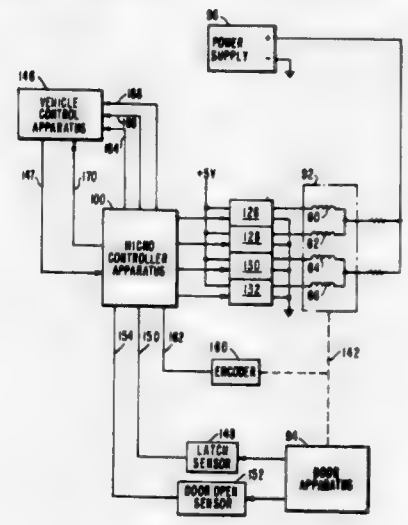
Filed Mar. 19, 1984, Ser. No. 590,109
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—685 **8 Claims**

1. In door movement control apparatus for providing movement of at least one door to a desired position in accordance with an input movement request signal and providing a desired speed pattern for that movement, the combination of

stepper motor means coupled with the door for moving the load in at least one direction,

sensor means coupled with the door for providing a door movement indicating signal, and

means coupled with said stepping motor and responsive to said movement request signal for providing a predetermined number of control pulses to energize the stepping motor for providing a movement of said door in said one direction, with the control pulse providing means being responsive to the door movement indicating signal and including a memory containing a desired time delay to determine a motor step taken in response to each control pulse and having a time duration established as a function of the number of control pulses previously provided to the



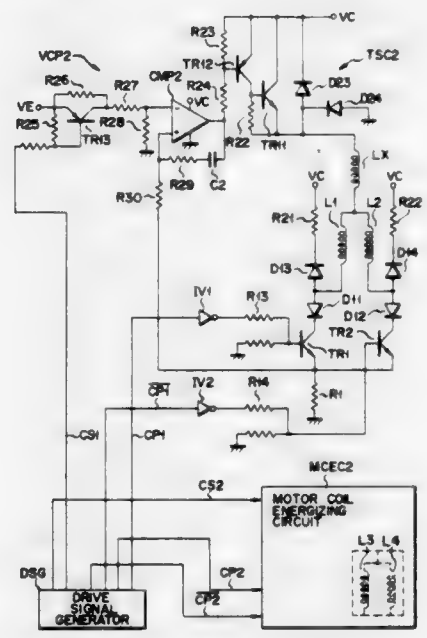
stepper motor for moving the door in said one direction and to establish said desired speed pattern.

4,511,833

STEPPING MOTOR DRIVING CIRCUIT

Yukio Kawaguchi, deceased, late of Shizuoka, Japan, and Nobuichi Kawaguchi, legal representative, Onoda, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,655
Claims priority, application Japan, Nov. 10, 1982, 57-197068
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **5 Claims**



1. A stepping motor driving circuit comprising:

a power supply terminal and a reference potential terminal;

at least one coil current control circuit having a switching circuit connected between each one end of a pair of motor coils and said power supply terminal, first resistive means, one end thereof being connected to said reference potential terminal, and first and second switching means which are respectively connected in series with said pair of motor coils between said switching circuit and the other end of said first resistive means;

energizing means for alternately turning on said first and second switching means;

a reference voltage generating means;

comparing means whose first and second input terminals are respectively connected to said reference voltage generating means and the other end of said first resistive means and which controls the conduction state of said switching

circuit in accordance with the voltages applied to said first and second input terminals; and

a series circuit of second resistive means and capacitive means connected between the output terminal and the second input terminal of said comparing means;

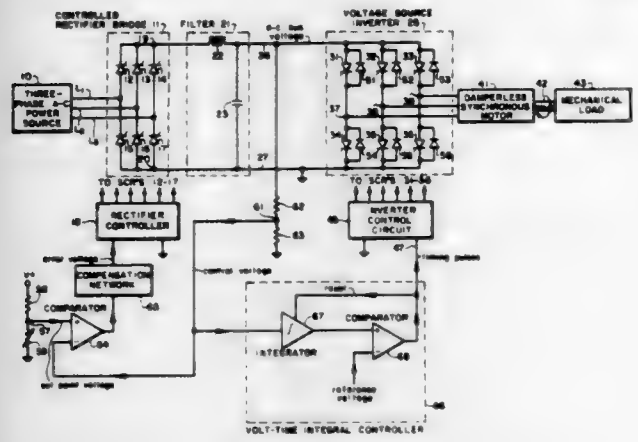
said reference voltage generating means comprising third switching means, third resistive means connected in parallel with said third switching means, and fourth resistive means connected in series with said third switching means, and wherein said reference voltage generating means generates one of two different reference voltages in accordance with the conduction state of said third switching means.

4,511,834

CONTROL AND STABILIZING SYSTEM FOR DAMPERLESS SYNCHRONOUS MOTOR

George H. Studtmann, Mt. Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 23, 1982, Ser. No. 452,559
Int. Cl.[3] H02P 7/42
U.S. Cl. 318—700 22 Claims



1. A control system for controlling and stabilizing the operation of a damperless synchronous motor driven by the output a-c voltage developed by a voltage source inverter from an adjustable d-c bus voltage received over a d-c bus from a controlled d-c power supply having a low internal impedance, both the d-c bus voltage and the torque angle in the motor being subject to transient variations under transient conditions, said control system comprising:

means for establishing the amplitude and frequency of the inverter output voltage at desired steady state levels;

means for developing a control voltage which is a function of the d-c bus voltage or motor voltage and includes information indicating any sudden torque angle change;

and stabilizing means, controlled by said control voltage, for rapidly adjusting the inverter frequency anytime the torque angle tends to suddenly vary in order to reduce the extent to which the angle tends to change, thereby maintaining the torque angle relatively stable under transient conditions and within the stability limit of the motor.

4,511,835

VOLTAGE-CONTROLLED, INVERTER-MOTOR SYSTEM

George H. Studtmann, Mt. Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

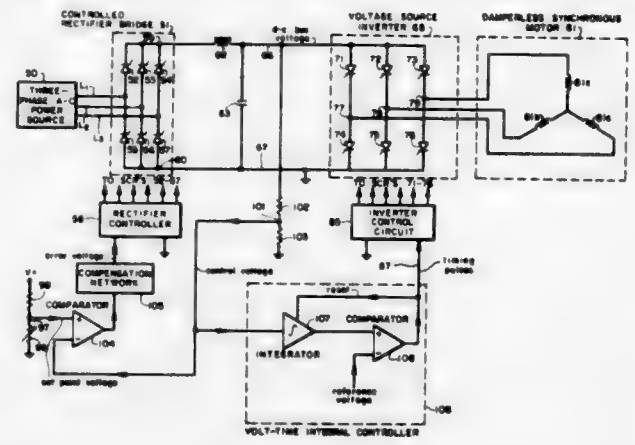
Filed Dec. 23, 1982, Ser. No. 452,560
Int. Cl.[3] H02P 7/42
U.S. Cl. 318—700 12 Claims

1. A voltage-controlled, inverter-motor system, comprising:

a controlled d-c voltage source, having a relatively low internal impedance, for developing an adjustable d-c bus voltage;

a thyristor inverter having a series of thyristor switching devices and operated in response to said d-c bus voltage to develop an output a-c voltage;

means for establishing the amplitude and frequency of the inverter output a-c voltage at desired levels;



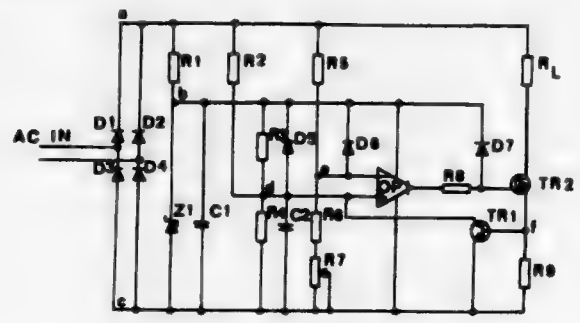
and a synchronous motor, having a leading power factor, driven by the inverter output a-c voltage, said thyristor switching devices being motor-commutated.

4,511,836

CIRCUIT ARRANGEMENT FOR POWER CONTROL

Bror A. Eriksson, Box 10022, Karlstad, Sweden

PCT No. PCT/SE82/00353, § 371 Date Jun. 9, 1983, § 102(e) Date Jun. 9, 1983, PCT Pub. No. WO83/01694, PCT Pub. Date May 11, 1983
PCT Filed Oct. 26, 1982, Ser. No. 511,163
Int. Cl.[3] G05F 5/00
U.S. Cl. 323—300 4 Claims



1. Circuitry for maintaining constant the effect drawn by a load from an A.C. power source essentially independent of its voltage, comprising:

an operational amplifier having first and second inputs;

a power transistor in series with the load from the A.C. power source;

a feeding line carrying a feeding voltage of a sinusoidal, wave form;

means for applying a fraction of the voltage of the A.C. power source to the first input of the operational amplifier;

means for applying a reference voltage to the second input of the operational amplifier so that the reference voltage is raised and lowered when the feeding voltage is raised and lowered; and wherein

the operational amplifier is connected to the power transistor to control the power transistor, so that the transistor is made leading when and as long as the instantaneous value of said fraction of the feeding voltage is lower than a limiting value determined by said reference voltage; and so that the load is passed by periodic pulses of a curved form corresponding to that of the first and last parts of a sine half-wave next to the zero value and of a length which is greater or smaller depending upon whether said feeding voltage is lower or higher, respectively; and so that the energy contents of the pulses are maintained essentially constant over a wide range of feeding voltage variations.

4,511,837

MEASURING SYSTEM FOR MEASURING THE VARIATION OF THE CAPACITIVE IMPEDANCE OF A BEARING INSTALLED IN A HOUSING

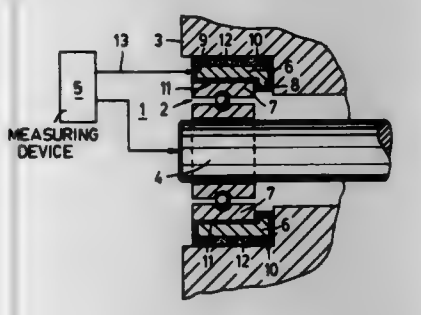
Karel N. Vermeiren, Woerden, and Hendrik Dolfsma, Nieuwegein, both of Netherlands, assignors to SKF Industrial Trading & Development Co., B.V., Netherlands

Filed Jun. 17, 1982, Ser. No. 389,000

Claims priority, application Netherlands, Jun. 30, 1981, 8103161

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **19 Claims**



8. A bearing comprising an inner ring, an outer ring, a plurality of rolling elements interposed between the rings, and an electrically conductive measuring ring, fittingly surrounding the outer ring, which measuring ring is coated with an insulating layer, wherein the portion of the insulating layer between the outer ring and the measuring ring is considerably thinner than the remaining portion of the insulating layer.

4,511,838

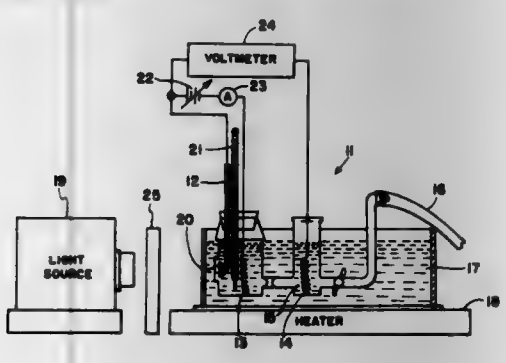
METHOD FOR DETERMINING THE POINT OF ZERO ZETA POTENTIAL OF SEMICONDUCTOR

Benjamin Reichman, Birmingham, Mich., and Charles E. Byvik, Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 364,041

Int. Cl.³ G01N *27/02*

U.S. Cl. 324—71.5 **4 Claims**



1. A method for obtaining the onset potentials at different temperatures of a semiconductor material comprising the steps of:

using the semiconductor material as the working electrode of a three-electrode photoelectrochemical cell including a counter electrode, a reference electrode, an electrolyte, a heater for controlling the temperature of the photoelectrochemical cell, and a light source for illuminating the working electrode;

measuring the temperature of said electrolyte at several different temperature levels;

for each temperature level measured, varying the potential between said working electrode and said counter electrode until there is zero current between the working electrode and the counter electrode; and

measuring the potential between said working electrode and said reference electrode whereby the measured potential is the onset potential corresponding to the measured temperature.

2. A method according to claim 1 including the step of determining the slope of a graph of measured onset potentials versus measured temperatures.

3. A method according to claim 2 including the step of using said slope to compute pH_{pzc} of the semiconductor material by substituting the slope for the term

$$\frac{\partial V_{FB}}{\partial T}$$

in the equation:

$$\frac{\partial V_{FB}}{\partial T} = \frac{2.3R}{F}\left(pH_{pzc} - \log_{10}\frac{n}{N_c}\right)$$

and computing pH_{pzc} where V_{FB} is the flatband potential of the semiconductor material, T is the temperature of the cell, n is the free carrier density, N_c is the density of states in the conduction band, R is the universal gas constant and F is Faraday's constant.

4,511,839

METHOD AND A SYSTEM FOR ANALYZING THE SECONDARY CURRENT IN A CURRENT TRANSFORMER, THE PRIMARY SIDE OF WHICH IS CONNECTED INTO A LINE OF AN ELECTRIC ENERGY SUPPLY NETWORK

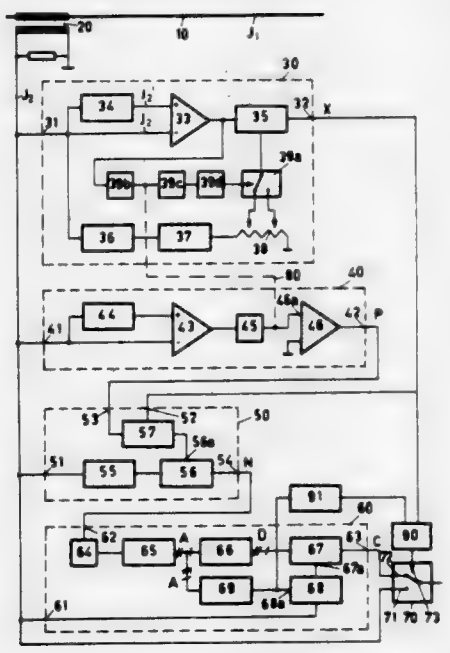
Paul Bulaty, Wettingen; Ivan De Mesmaeker, Windisch; Zdenek Franc, Gebenstorf, and Giuseppe Salerno, Untersiggenthal, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Mar. 22, 1983, Ser. No. 477,645

Claims priority, application European Pat. Off., Mar. 29, 1982, 82200381.0

Int. Cl.³ G01R *1/20*

U.S. Cl. 324—127 **17 Claims**



1. A system for generating an analyzable current signal from the secondary current of a saturated transformer whose primary windings are connected to a line in an electric power supply network, comprising:

a saturation detector having an input connected to a secondary winding of the transformer;

a polarity detector having an input connected to said secondary winding;

an extrapolation circuit having a first input connected to said secondary winding;

a zero transition detector having a first input connected to said secondary winding, a second input connected to said saturation detector and a third input connected to said polarity detector, and an output connected to a second input of said extrapolation circuit; and

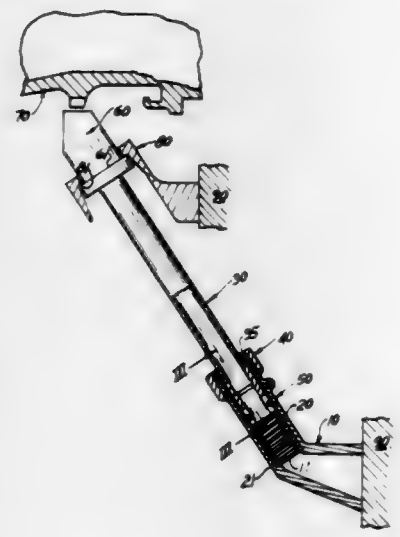
a switch having one input connected to said secondary winding and a second input connected to said extrapolation circuit, and being responsive to an output from said saturation detector for switching between said two inputs.

4,511,840

MOUNTING ASSEMBLY FOR A SPEED SENSOR

Earl A. Leach, Jr., Masonville, N.Y., assignor to Allied Corporation, Morristown, Morristownship, N.J.

Filed Jun. 28, 1982, Ser. No. 392,924
Int. Cl.³ G01P *3/42*
U.S. Cl. 324—160 **2 Claims**



1. A mounting assembly for a speed sensor comprising:

a tubular housing having an internal shoulder therein;

a spring located in said housing, one end of said spring engaging the internal shoulder in said housing;

a bushing;

means for slideably mounting an end portion of said bushing in said housing so that one end of said bushing engages the other end of said spring;

means for sensing rotational movement of a member and providing an electrical signal that is a function of the rotational speed thereof, said sensing means mounted to the other end of said bushing;

a bracket spaced from said housing and mounted adjacent said member, said bracket having an opening therein through which an end portion of said sensing means extends so that said sensing means is in a fixed position at a predetermined distance from said member;

means for mounting said housing adjacent said bracket so that said other end portion of said housing having said sensor mounted thereto engages the bracket and compresses said spring; and

means for preventing rotational movement of said bushing.

4,511,841

METHOD AND APPARATUS FOR HIGH SPEED MAGIC ANGLE SPINNING

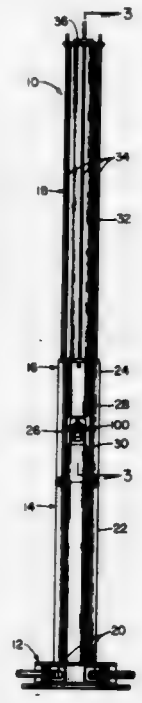
Victor J. Bartuska; David H. Lewis, both of Fort Collins; Robin B. Lewis, Bellvue, and David G. Dalbow, Fort Collins, all of Colo., assignors to Chemagnetics, Inc., Ft. Collins, Colo.

Filed Jun. 17, 1982, Ser. No. 389,449
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—321 **31 Claims**

1. High speed sample spinning apparatus, comprising:

rotor means for spinning a sample, said rotor means having a first section in the shape of an elongated cylinder of uniform diameter along its entire length and a second section extending axially outwardly from one end of said cylindrical first section, said second section being tapered from a base at its proximal end to a point of convergence at its distal end on a line extending outward from the longitudinal axis of said cylindrical first section, said base of said tapered second section being the same diameter as said cylindrical first section;

spinning and axial end bearing means for imparting rotary motion to said rotor means and for supporting said tapered second section of said rotor means, said spinning and end bearing means being comprised of a bearing body having a cavity therein with an open end adapted to receive therein said tapered second section, and a plurality of ports in said bearing body adapted to direct jet streams of gaseous fluid into said cavity in angular spaced apart relation to each other around the circumference thereof in such a manner as to produce a vortical air flow in said



cavity, and a plurality of vanes in angular spaced apart relation to each other around the peripheral surface of said tapered second section adapted to impart rotational motion to said rotor means upon impact thereon by said vortical air flow; and

lateral bearing means for maintaining said rotor means in longitudinal axial alignment with the longitudinal axis of said cavity, said lateral bearing means including a ring positioned coaxially with said cavity a spaced distance outward from the open end of said cavity a sufficient distance to be around the peripheral surface of said cylindrical first section adjacent the end of said cylindrical first section that is opposite said tapered second section, and a plurality of ports in said ring adapted to direct a jet streams of gaseous fluid onto said cylindrical second section in spaced apart relation around the circumference thereof.

4,511,842

ELECTROMAGNETIC LOGGING DEVICE AND METHOD WITH DIELECTRIC GUIDING LAYER

James H. Moran, Spicewood, and Rama N. Rau, League City, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,691
Int. Cl.³ G01V *3/18, 3/30*
U.S. Cl. 324—338 **7 Claims**

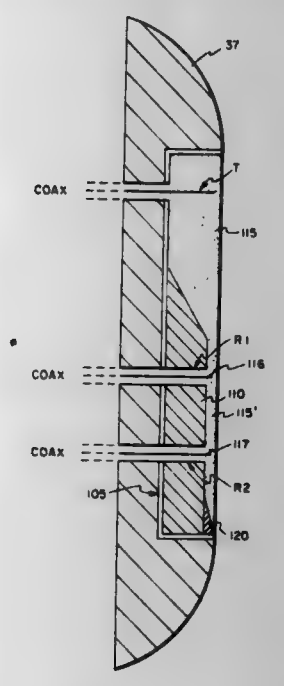
1. A logging device for determining properties of formations surrounding a borehole, comprising;

an elongated support with a wall-engagable member movable through the borehole;

a transmitter and a pair of spaced receivers mounted in spaced relation in said member;

a source of electromagnetic energy coupled to said transmitter;

a layer of dielectric material disposed on a surface of said member and covering said transmitter and receivers and the region therebetween, such that said layer can abut the wall of said borehole;, said layer having a dielectric constant that is greater than the expected dielectric constant



of surrounding formations to be investigated, said layer being operative to guide the electromagnetic energy travelling in the formations between the transmitter and the receivers; and

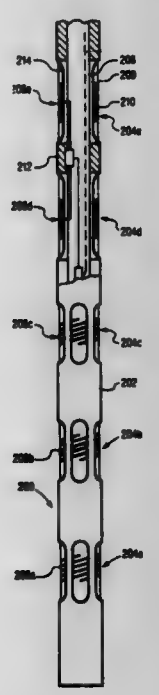
means for measuring characteristics of electromagnetic energy received at said receiver to determine properties of the surrounding formations.

4,511,843

ELECTROMAGNETIC LOGGING SONDE HAVING IMPROVED HOUSING

Yvon Thoraval, Le Plessis-Robinson, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,801
Claims priority, application France, Oct. 17, 1980, 80 22327
Int. Cl.³ G01V *3/30*
U.S. Cl. 324—338 **11 Claims**



1. A mandrel apparatus for investigating a characteristic of a subsurface earth formation traversed by a borehole with propagatory electromagnetic energy, comprising:

a signal source having a preselected frequency of operation;

first magnetic dipole means coupled to said signal source, the frequency of operation of said signal source and the characteristics of said first magnetic dipole means being such as to provide for the transmission of propagatory electromagnetic energy into the earth formation;

a receiver circuit;

second magnetic dipole means coupled to said receiver circuit, the characteristics of said receiver circuit and said second magnetic dipole means being such as to provide for the detection of propagatory electromagnetic energy from the earth formation; and

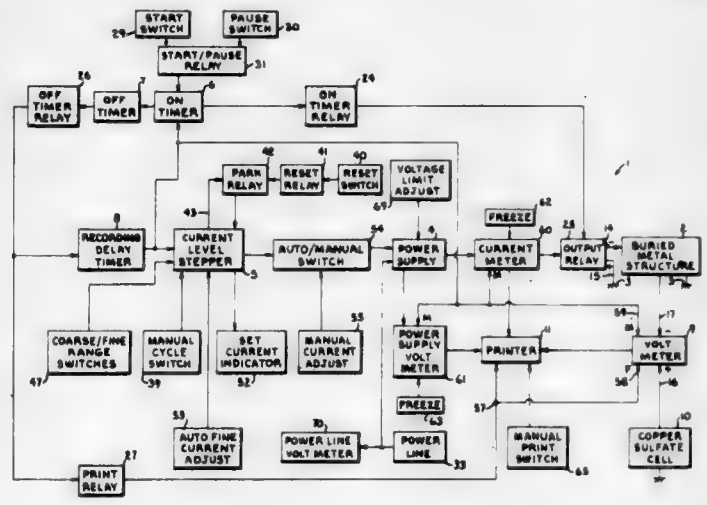
a longitudinally elongated structural conductive housing member, said first and second magnetic dipole means being mounted thereon at respective longitudinal locations with the respective axes of said first and second magnetic dipole means being parallel to the longitudinal axis of said conductive housing member, and said conductive housing member being essentially continuously conductive both longitudinally and circumferentially and having a longitudinal portion between the respective locations of said magnetic dipole means that is uninsulated from the borehole.

4,511,844

E-LOG I FIELD COMPUTER

Thomas N. Tietze, Kansas City, Mo., assignor to Panhandle Eastern Pipe Line Company, Kansas City, Mo.

Filed Dec. 10, 1982, Ser. No. 448,818
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—425 **12 Claims**



1. An apparatus for acquiring data to determine the cathodic protection voltage requirement of a buried metal structure comprising:

(a) power supply means operatively connected to a buried metal structure and the ground in contact with said structure and operable to circulate electrical current therethrough;

(b) current stepper means operatively connected to said power supply means and operative to set one of a plurality of selected current levels for circulation by said power supply means and to advance to a next current level in response to a stepper advance signal;

(c) a current meter connected in a circuit loop including said structure, said ground, and said power supply means and operative to measure and indicate the level of the circulated current;

(d) volt meter means operatively connected between said structure and said ground and operative to measure a structure voltage of said structure relative to said ground corresponding to each level of said circulated current and to releasably retain said structure voltage in response to a voltage hold signal;

(e) a printer connected to said volt meter means and operative to print each value of said structure voltage which is retained by said volt meter means; and

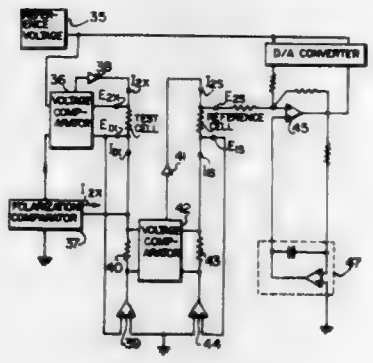
(f) timer means operatively connected to said power supply means, said current stepper means, said printer, and said volt meter means and operative to effect in a repeating sequence: the circulation of said current for an ON interval of selected duration; the interruption of said current for an OFF interval of selected duration; the provision of a voltage hold signal to said volt meter means to cause the retention of a structure voltage corresponding to the previously circulated current level and the printing of the retained structure voltage at the end of said OFF interval; the release of said volt meter means from retaining said structure voltage after the printing thereof; and the provision of said stepper advance signal to cause the advancement of said current stepper means to said next current level whereby a plurality of circulated current levels and corresponding structure voltage levels are obtained for plotting a graph to determine the cathodic protection requirements of said structure in said ground.

4,511,845

SALINOMETER

Thomas M. Dauphinee, and Christopher G. M. Kirby, both of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 8, 1982, Ser. No. 416,013
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—444 **8 Claims**



1. A salinometer comprising:

a reference water channel and a sample water channel, each of the channels including means for feeding predetermined water into the channel;

reference conductivity cell means in the reference water channel and sample conductivity cell means in the sample water channel each conductivity cell means having a water inlet and a water outlet, and each conductivity cell means having first, second, third and fourth electrodes immersed sequentially in the water in the direction of flow, the first and third electrodes being potential electrodes and the second and fourth electrodes being current electrodes;

means for maintaining the temperature of the water in the two cell means substantially the same;

first circuit means for controlling the current through each of the second electrodes such that the voltages at the first electrodes are maintained at a potential substantially identical to the voltage in the temperature maintaining means, thereby preventing electrical leakage from the water inlet of each cell;

second circuit means for driving a current through the fourth electrode of the sample water conductivity cell means thereby generating an ac voltage V_x between the first and third electrodes of the sample water conductivity cell means; and

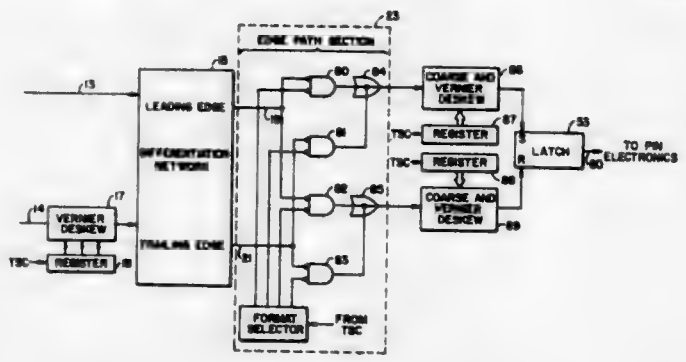
third circuit means for controlling the current through the fourth electrode of the standard water conductivity cell means such that the current in the second electrode of the standard water conductivity cell means has a fixed ratio to the current in the second electrode of the sample water conductivity cell means, whereby the conductivity ratio R_t between the reference water and the sample water is determined as a function of the voltage V_s between the reference cell means first and third electrodes and the voltage V_x between the sample cell means first and third electrodes.

4,511,846

DESKEWING TIME-CRITICAL SIGNALS IN AUTOMATIC TEST EQUIPMENT

Alex Nagy, and Dick Herlein, both of San Jose, Calif., assignors to Fairchild Camera and Instrument Corporation, San Jose, Calif.

Filed May 24, 1982, Ser. No. 381,617
Int. Cl.³ H03K *5/06*
U.S. Cl. 328—164 **8 Claims**



1. Apparatus for supplying deskewed signals comprising:

generating means for generating an electrical signal of desired duration, the signal including a leading edge and a trailing edge;

differentiation means coupled to the generating means for separating the electrical signal into a pair of signals, one of the pair being a leading edge signal and the other a trailing edge signal;

logic gate means connected to receive the pair of signals and to supply one of the pair of signals along a set path and the other of the pair of signals along a reset path;

set and reset time delay means, each connected to the corresponding path to delay the leading edge signal and the trailing edge signal respectively by desired times;

latch means connected to the set and reset time delay means to receive signals therefrom and form the electrical signal of desired duration;

control means coupled to the logic gate means for controlling to which of the set and reset paths each of the pair of signals is supplied; and

wherein the logic gate means includes a first pair of gates connected to receive the leading edge signal, and a second pair of gates connected to receive the trailing edge signal, one of each pair of gates being connected to the set time delay means, and the other of each pair to the reset time delay means.

4,511,847

FILTER ASSEMBLY FOR ELIMINATING MAINS DISTURBANCES

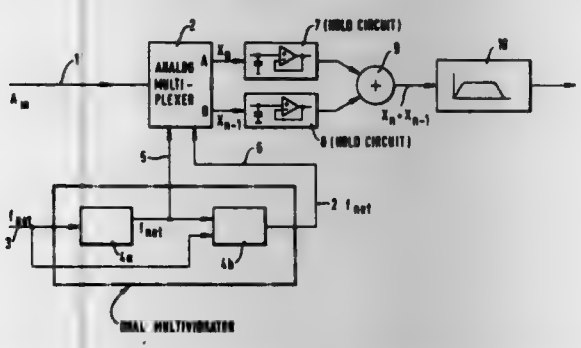
Börje Rantala, Helsinki, Finland, assignor to Instrumentarium Oy, Finland

Filed Jun. 17, 1982, Ser. No. 389,278
Claims priority, application Finland, Jun. 22, 1981, 811941
Int. Cl.³ H03B *1/04*
U.S. Cl. 328—167 **2 Claims**

1. A filter assembly for eliminating mains disburbances from an electric signal, especially a noise type of bioelectric signal, for analyzing amplitude, power or other intensity related parameter of the signal, comprising in combination:

sample and hold circuit means responsive to said electric signal for providing analogous discrete time samples from said electric signal by employing doubled mains frequency as the sampling frequency;

summing means responsive to said sample and hold circuit means for providing signals $Y_n=\frac{1}{2}(X_n+X_{n-1})$, wherein



X_n is a number n sample, from successive analogous samples for filtering away the mains frequency and its odd harmonic frequencies; and

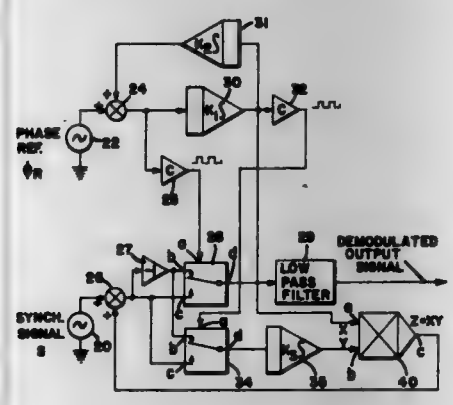
analog high pass filter means responsive to said summing means for processing said signals Y_n for filtering away the even harmonic frequencies of mains frequency downmixed by the sampling.

4,511,848

SYNCHRONOUS AM DEMODULATOR WITH QUADRATURE SIGNAL CANCELLATION

William S. Watson, Eau Claire, Wis., assignor to Watson Industries, Inc., Eau Claire, Wis.

Filed Jun. 15, 1983, Ser. No. 504,585
Int. Cl.³ H03D *1/04*
U.S. Cl. 329—50 **15 Claims**



1. A method of removing a quadrature error signal component from a synchronous signal in a synchronous AM demodulator network having a phase reference signal, comprising the steps of:

(a) generating a counteracting signal, phase related in stable manner to the system phase reference signal; and

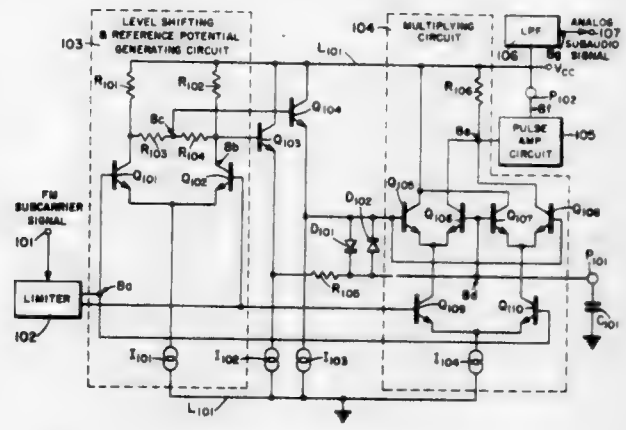
(b) mixing said counteracting signal with said synchronous signal, wherein said counteracting signal subtracts from the quadrature error signal component of said synchronous signal.

4,511,849

FM PULSE COUNTING DEMODULATOR WITH MULTIPLIER FOR INPUT AND DELAYED INPUT SIGNALS

Kozo Yoshihisa, and Isamu Okui, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 30, 1981, Ser. No. 279,078
Claims priority, application Japan, Jul. 3, 1980, 55-90940
Int. Cl.³ H03D *3/14, 3/04*
U.S. Cl. 329—103 **1 Claim**



1. An FM signal demodulating circuit employing a pulse counting technique, said circuit comprising:

a signal input terminal for receiving an FM signal;

a limiter having an input terminal and a pair of output terminals, said input terminal being coupled to said signal input terminal, one of said output terminals producing a first limited FM signal and the other input terminal producing a second limited FM signal having inverse phase with respect to said first limited FM signal;

a multiplying circuit comprising first, second, third, fourth, fifth and sixth transistors, the base electrode of said first transistor being connected to said other limiter output terminal, the base electrode of said second transistor being connected to said one of said limiter output terminals, the emitter electrodes of said first and second transistors being connected together, the collector electrode of said first transistor being connected to the emitter electrodes of said third and fourth transistors, the collector electrode of said second transistor being connected to the emitter electrodes of said fifth and sixth transistors, the base electrodes of said third and sixth transistors being connected together, the base electrodes of said fourth and fifth transistors being coupled to the output terminal of an integrating circuit, and the collector electrodes of said third and fifth transistors being connected together, said integrating circuit producing a time delay much less than $\pi/4$;

a low pass filter having an input terminal and an output terminal, said input terminal being coupled to the collector electrodes of said fourth and sixth transistors;

a level shifting and reference potential generating circuit having a pair of input terminals and a pair of output terminals, each input terminal being connected to a respective one of said limiter output terminals, one of said output terminals producing a reference potential and being connected to the base electrodes of said third and sixth transistors, and the other output terminal producing a level shifted FM signal and being coupled to an input terminal of said integrating circuit;

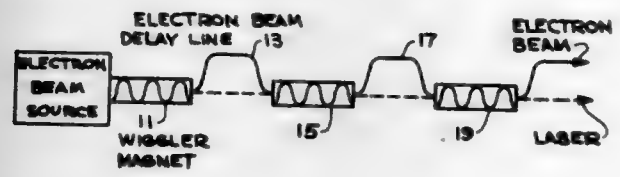
a first diode having its anode electrode coupled to said one of the output terminals of said level shifting and reference potential generating circuit and its cthode electrode connected to said integrating circuit output terminal; and

a second diode having its anode electrode connected to said integrating circuit output terminal, and its cathode electrode connected to said one of the output terminals of said level shifting and reference potential generating circuit.

4,511,850
SHORT PULSE FREE ELECTRON LASER AMPLIFIER

Leland G. Schlitt, Livermore, and Abraham Szoke, Fremont, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,678
Int. Cl.³ H01S *3/09, 3/14*
U.S. Cl. 330—4.3 **3 Claims**



1. Apparatus for amplification of a short laser pulse of temporal duration τ_L, the apparatus comprising:

an electron beam source to produce an electron beam of temporal duration substantially $\tau_B = N\tau_L$, where N is a positive integer larger than one;

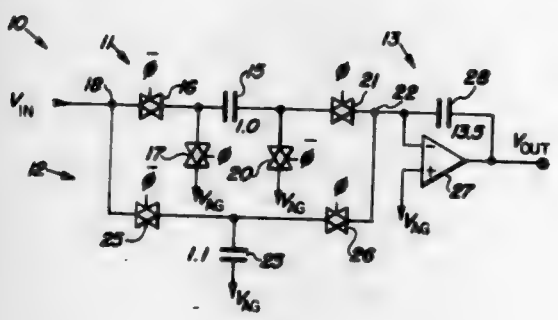
N wiggler magnets, arranged in a linear array, with adjacent magnets being spaced apart by a substantially constant distance and with the linear array being positioned to receive an electron beam produced by the electron beam source and to receive the laser pulse;

N−1 electron beam delay lines, with the kth delay line (k=1, 2, . . . N−1) being positioned between the kth and the $(k+1)^{th}$ wiggler magnet, with each delay line being arranged to delay an electron beam by a predetermined time interval of substantially τ_L, relative to a co-propagating light wave, as the electron beam moves from the kth wiggler magnet to the $(k+1)^{th}$ wiggler magnet.

4,511,851
METHOD AND APPARATUS FOR OBTAINING SMALL FRACTIONAL UNITS OF CAPACITANCE

Henry Wurzburg, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 13, 1982, Ser. No. 449,357
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—51 **10 Claims**



1. An amplifier circuit utilizing small fractional capacitance units, comprising:

operational amplifier means having an inverting input, a noninverting input and an output, for developing an output voltage;

capacitive feedback means coupled between the output and the inverting input of the operational amplifier means, and having a first predetermined capacitive value;

first switched capacitance means having an input coupled to an input terminal, and an output coupled to the inverting input of said operational amplifier means, said first switched capacitance means having a second predetermined capacitive value; and

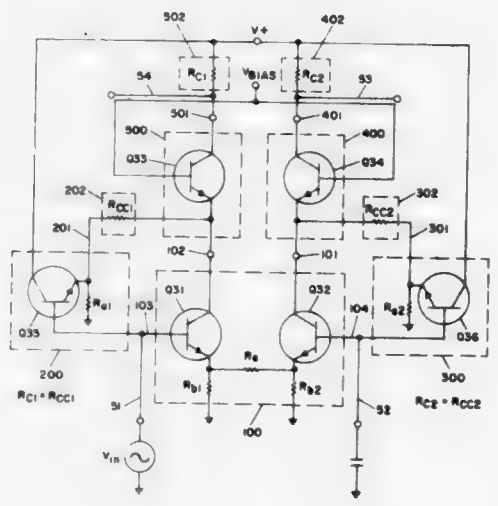
second switched capacitance means having an input coupled to the input terminal, and an output coupled to the inverting input of said operational amplifier means, said second capacitance means having a third predetermined capacitive value which is a fractional percentage of said second predetermined capacitive value,

wherein said output voltage is proportional to the ratio of the second and third capacitive differential value to the first capacitive value.

4,511,852
DIFFERENTIAL AMPLIFIER HAVING BALANCED OUTPUT

Kenneth J. Henrich, Kings Park, and Thomas C. Hana, E. Patchoque, both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,174
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—252 **15 Claims**



1. An apparatus comprising:

a. A differential amplifier having a gain with first and second inputs and first and second outputs;

b. A first voltage follower circuit having a first amplifier, said first circuit associated with the first input and having an output;

c. A second voltage follower circuit having a second amplifier, said second circuit associated with the second input and having an output;

d. First means for summing having inputs associated with the first output of the differential amplifier and the output of the first voltage follower circuit, and having an output providing a voltage substantially representing the sum of the outputs associated with its inputs;

e. Second means for summing having inputs associated with the second output of the differential amplifier and the output of the second voltage follower, and having an output providing a voltage substantially representing the sum of the outputs associated with its inputs, whereby the grounding of the first input of the differential amplifier and applying a positive voltage to the second input of the differential amplifier results in the output of the first means providing a voltage substantially equal to the output of the second means.

4,511,853
DIFFERENTIAL AMPLIFIER CIRCUIT HAVING IMPROVED CONTROL SIGNAL FILTERING

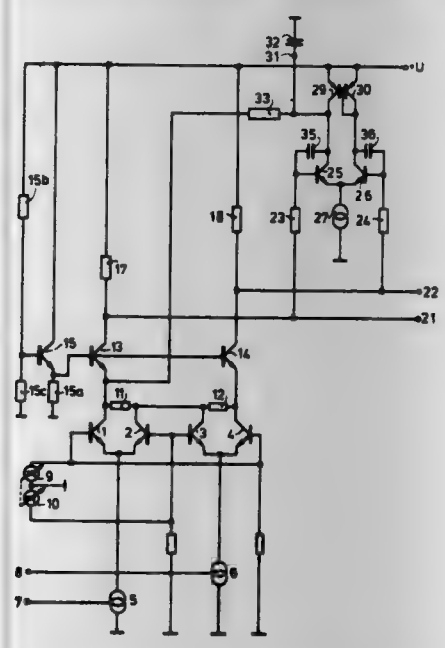
Karl H. Matthies, Hamburg, and Hartmut Harlos, Norderstedt, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,142
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213506
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—259 **5 Claims**

1. An integrated semiconductor circuit arrangement, which comprises:

a first differential amplifier having a differential input and a differential output, said output providing an alternating voltage output signal which is balanced with respect to ground and comprises a d.c. component and first and second alternating subvoltages with respect to ground;

means for filtering the alternating voltage from said d.c. component and amplifying said d.c. component, said means comprising first and second low-pass filters coupled to said first differential amplifier output for filtering said first and second alternating subvoltages, respectively,



and a second differential amplifier having first and second inputs coupled to said first and second low-pass filters, respectively, and to said first differential amplifier output, and an unbalanced output at which a d.c. control signal is generated; and

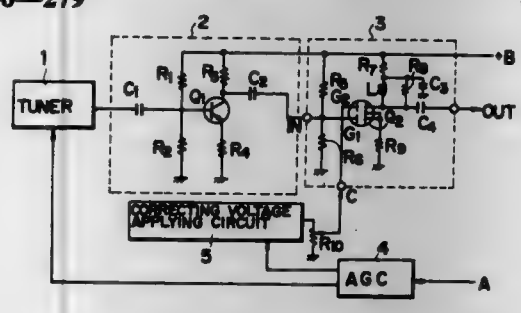
a third low-pass filter having an input coupled to the unbalanced output of said second differential amplifier and an output which is coupled back to said first differential amplifier to provide negative feedback to said first amplifier.

4,511,854

AUTOMATIC LINEARITY CORRECTING CIRCUIT

Toshio Kishida, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,736
Claims priority, application Japan, Mar. 11, 1982, 57-39237
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—279 **4 Claims**



1. In a combination of an amplifying stage having a junction-type active element exhibiting a nonlinear transfer characteristic causing signal distortion increasing with signal level, a signal source coupled to the input of said amplifying stage, the output level of said signal source being controllably responsive to a gain control or first biasing signal coupled to said signal source, a dual-gate field-effect transistor element having a first gate thereof coupled to the output of said amplifying stage, and a backward-acting automatic gain control circuit including a signal level detection circuit responsively coupled to the output of said dual-gate element for providing said first biasing signal to said signal source responsively to the magnitude of the signal level output of said dual-gate element and generally increasing in strength therewith so as to maintain said dual-gate element output signal level at a substantially constant value, the improvement wherein:

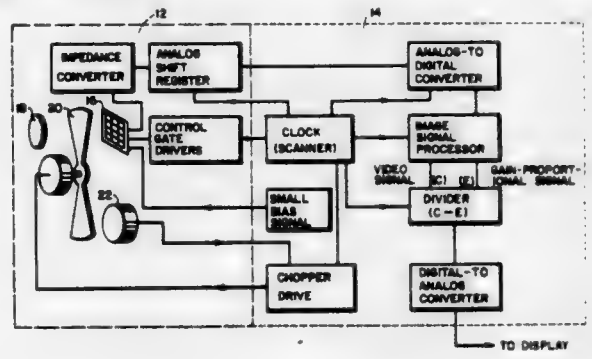
said automatic gain control circuit includes a linearity correcting voltage circuit responsively coupled to said detection circuit and coupled to provide a linearity correcting or second bias voltage to the second gate of said dual-gate element, said dual-gate element having a nonlinear transfer characteristic at said first gate generally complementary to that of said junction-type device and having the degree of nonlinearity controllably responsive to biasing voltage applied to said second gate, said correcting voltage having a relatively strong value for weak values of amplifying stage output signal level and a relatively weak value for strong amplifying stage output signal levels so as to control the nonlinearity of said dual-gate element to at least partially compensate for said nonlinear transfer characteristics of said junction-type active element.

4,511,855

COMPENSATION FOR DIFFERENCES IN GAIN AMONG AMPLIFIERS

Karl R. Wittig, New York, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 358,541, Mar. 15, 1982, Pat. No. 4,481,477.
This application Mar. 26, 1984, Ser. No. 593,147
Int. Cl.³ H03G *3/20*; G01R *19/12*
U.S. Cl. 330—279 **9 Claims**



1. A method of actively compensating for differences in the small signal gain among two or more amplifiers, each of said amplifiers, in operation, producing a small signal output in response to a small signal input variation about a bias level input, said small signal input varying substantially linearly over a field time interval, said method comprising the steps of:

producing signals which are directly proportional to the small signal gains of the amplifiers, one gain-proportional signal being produced for each amplifier; and

dividing the small signal output of each amplifier by the signal proportional to the small signal gain of the amplifier;

characterized in that each gain-proportional signal is produced by a method comprising the steps of:

adding a small bias signal, ΔV, to the bias level input during a portion of the field time interval;

measuring the output of the amplifier at a first time during the field time interval to produce a first measured output, said first time being when the bias signal, ΔV, has not been added to the bias level input;

measuring the output of the amplifier at a second time during the field time interval to produce a second measured output, said second time being when the bias signal, ΔV, has been added to the bias level input;

measuring the output of the amplifier at a third time during the field time interval to produce a third measured output, said third time being different from the first and second times;

multiplying each measured output by a respective preselected fixed number to produce weighted measured outputs; and

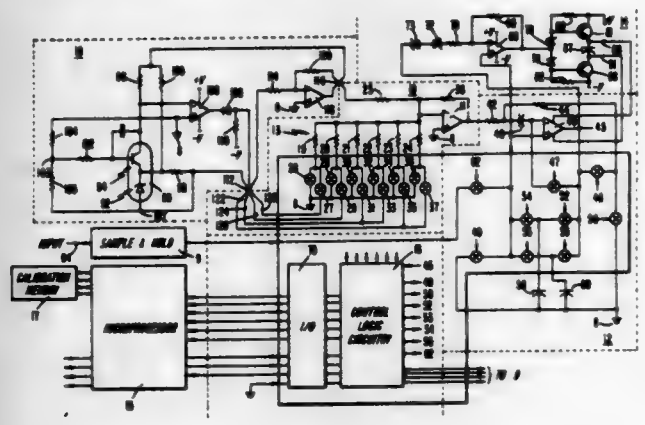
adding the weighted measured outputs in such a way that the sum is a signal which is directly proportional to the product of the bias signal, ΔV, with the small signal gain of the amplifier during the field time interval.

4,511,856

BOOTSTRAP POWER REGULATOR FOR SYSTEMS SUCH AS ANALOG TO DIGITAL CONVERTERS

Benjamin Eng, Jr., Everett, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Nov. 14, 1983, Ser. No. 551,642
Int. Cl.³ H03F 3/04
U.S. Cl. 330—297 **11 Claims**



1. A circuit connectable to first and second voltage sources for supplying to a first amplifier means first and second regulated supply voltages, comprising:

first and second transistor means connected in series between said first and second voltage sources and having outputs supplying respectively said first and second regulated supply voltages;

first and second voltage regulator devices connected in series between said voltage sources, said regulator devices having a substantially constant voltage drop as a function of at least a threshold current flowing therethrough, outputs of said voltage regulator devices controlling respectively said first and second transistor means;

a second amplifier means for controlling an input of said first and second regulator devices;

first means for applying an input signal to non-inverting inputs of said first and second amplifier means; and

second means for applying an output of said first amplifier means to an inverting input of said second amplifier means;

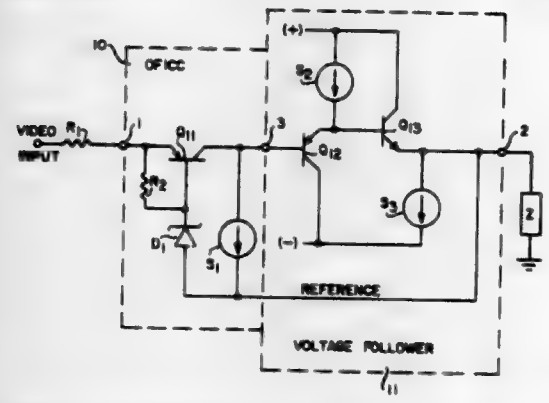
whereby the supply voltages track input signals applied to said second amplifier means to eliminate a common mode signal from the output of said first amplifier means.

4,511,857

OUTPUT FOLLOWING INTERMEDIATE CASCODE CIRCUIT

Steven J. Gunderson, 450 Daily Dr., #6, Camarillo, Calif. 93010

Filed Sep. 17, 1982, Ser. No. 419,161
Int. Cl.³ H03F 3/04
U.S. Cl. 330—311 **10 Claims**



1. A circuit combination for reducing nonlinear distortion comprising:

signal source means having an output terminal;

voltage follower output means having an input terminal and an output terminal;

isolation circuit means having an input terminal and an output terminal and including a transconductance means having a control electrode;

means connecting said signal source means output terminal to said isolation circuit means input terminal;

means connecting said isolation circuit means output terminal to said output means input terminal; and

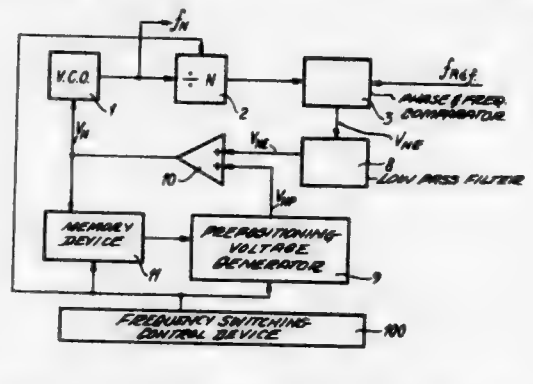
means connecting said output means output terminal to said control electrode for controlling said isolation circuit means to draw a current from said signal source means and to supply a related circuit from said isolation circuit means to said output means input terminal.

4,511,858

FREQUENCY PREPOSITIONING FOR AN INDIRECT FREQUENCY SYNTHESIZER

Jean-Claude Charavit, and Michèle Vandroux, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 269,588, Jun. 2, 1981, abandoned. This application Feb. 22, 1984, Ser. No. 582,132
Claims priority, application France, Jun. 3, 1980, 80 12279
Int. Cl.³ H03L 7/18
U.S. Cl. 331—10 **16 Claims**



1. An indirect synthesizer for producing asine wave output signal f_o with a switchable frequency comprising:

(a) a frequency switching control unit for generating signals which indirectly produce a transition to the desired sine wave output signal frequency;

(b) a prepositioning voltage generator for providing a prepositioning signal V_{NP} corresponding to the desired sine wave output signal frequency called for by a signal from said frequency switching control unit;

(c) a frequency switchable phase loop including a signal controlled oscillator having a control input and an output for providing said sine wave output signal, the frequency of said output signal f_N which serves as the output f_o of the synthesizer being controlled by a control signal V_N applied to said control input,

a programmable divider having a programming input coupled to said frequency switching control unit, for dividing the output of said oscillator by N, the value of N being determined by a signal from said frequency switching control unit, said divider providing a submultiple of oscillator frequency f_N at an output thereof,

a comparator circuit for comparing the output of said programmable divider with a reference signal input thereto and providing an error signal V_{NE} indicative of that comparison,

a summing circuit for summing said error signal V_{NE} from said comparator with said prepositioning signal V_{NP} from said prepositioning voltage generator and providing said control signal V_N at an output thereof coupled to said control input of said oscillator for controlling its output frequency f_N; and

(d) a memory having an input coupled to said output of said summing circuit for receiving values of V_N for storing a value of V_N at a time of a frequency switchover of output

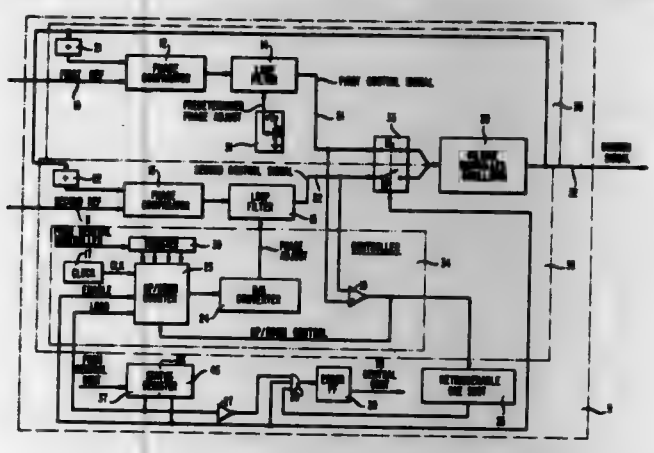
frequency from one output frequency to another, an output for delivering to said prepositioning voltage generator a value of control voltage V_N stored at a previous transition to the desired output frequency and an input coupled to said frequency switching control unit for receiving an instruction therefrom specifying the desired output frequency, the memory device delivering the appropriate value of V_N to the prepositioning voltage generator corresponding to the desired output frequency of said oscillator.

4,511,859

APPARATUS FOR GENERATING A COMMON OUTPUT SIGNAL AS A FUNCTION OF ANY OF A PLURALITY OF DIVERSE INPUT SIGNALS

Leonard C. Dombrowski, Batavia, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1982, Ser. No. 412,593
Int. Cl.³ H03L *7/22*
U.S. Cl. 331—11 **22 Claims**



1. A circuit for generating at least one common signal as a function of any of a plurality of input signals, comprising:
first means for supplying said plurality of input signals;
second means for generating said at least one common signal in response to at least one of a plurality of control signals;
plurality of third means each for controllably generating at least one of said plurality of control signals as a function of the difference between at least one of said plurality of input signals and said at least one common signal;
fourth means for selectively coupling at least one of said plurality of said control signals to said second means; and
fifth means selectively responsive to at least one of said plurality of control signals for controlling generation by the third means of at least the control signals other than said at least one control signal to which said fifth means are responsive.

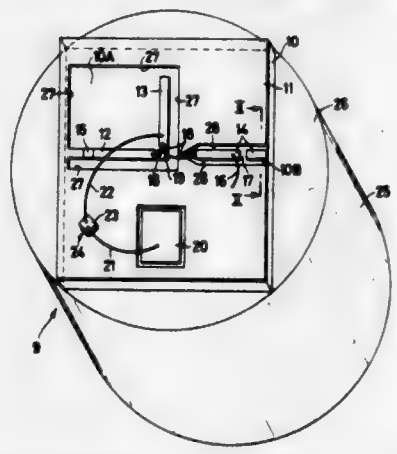
4,511,860

PLANAR MICROWAVE OSCILLATOR MOUNTED ON A DIELECTRIC CAVITY

Ezio M. Bastida, Segrate, and Paolo Bergamini, Milan, both of Italy, assignors to CISE Centro Informazioni Studi Esperienze S.p.A., Milan, Italy

Filed Jul. 7, 1982, Ser. No. 395,983
Claims priority, application Italy, Jul. 8, 1981, 22817 A/81
Int. Cl.³ H03B *5/18*; H01P *3/08*
U.S. Cl. 331—96 **6 Claims**

1. A planar oscillator having a dielectric cavity, operable at microwave frequencies, characterized in that it consists of a base of a dielectric material (10, 110) to a face of which there is superposed a continuous layer (11, 111) of a conductive material coating portions of said face, to remaining portions (10A, 10B, 110A', 110A'', 110B) of said face there being superposed strips (12, 13, 14, 112, 113, 114) of a conductive material separate from each other and electrically connected (18, 118) to an active component (19, 119), to the opposite face of said dielectric material base (10, 110) a dielectric cavity (25, 125) being adherent, said layer (11, 111) of conductive material acting as a grounding plane and at least a portion of each of said strips of conductive material forming at least one waveguide and (12, 13, 14, 112, 113, 114) acting as transmission lines (12, 13, 112, 113) and an output line (14, 114) of the oscillator (9, 109), the ratio of the width of the space existing between a



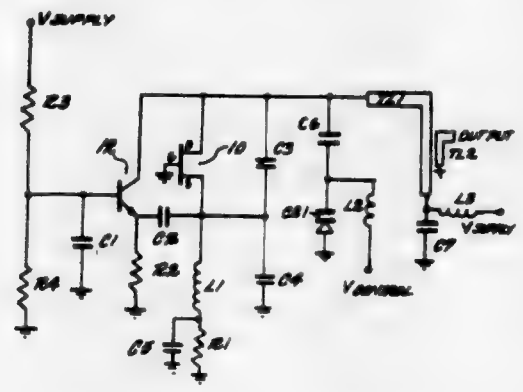
side of said portion of each of said strips and the nearest adjoining edge of said conductive material layer to the width of the strip itself at each and every point being constant.

4,511,861

VCO HAVING FIELD EFFECT AND BIPOLAR TRANSISTORS IN PARALLEL

Robert K. Bell, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 15, 1982, Ser. No. 441,774
Int. Cl.³ H03B *5/12, 5/02*
U.S. Cl. 331—108 R **11 Claims**



1. A voltage controlled oscillator (VCO) comprising:
an oscillator circuit including a field effect transistor (FET) having gate, source and drain electrodes;
means for controlling the oscillating frequency of said oscillator circuit;
an output circuit coupled to said oscillator circuit; and
a circuit including a bipolar transistor having collector and emitter electrodes coupled in parallel with the source and drain electrodes of said FET for increasing the closed loop gain of the VCO, said bipolar transistor operating at a collector current lower than the drain current of said FET at the oscillating frequency.

4,511,862

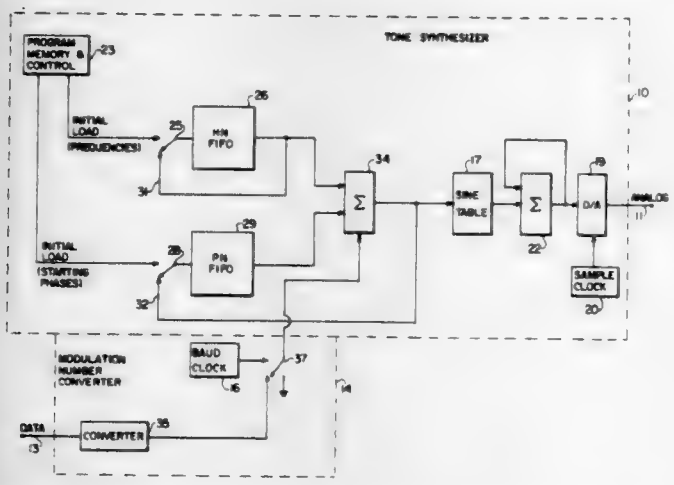
PROGRAMMABLE MULTITONE DPSK MODULATOR

M. Arif Motiwala, Fairport, and Jack L. Sutherland, Rochester, both of N.Y., assignors to Harris Corporation, Melbourne, Fla.

Filed Oct. 20, 1982, Ser. No. 435,467
Int. Cl.³ H03C *3/00*
U.S. Cl. 332—16 R **16 Claims**

1. A method of generating a composite analog signal containing a plurality of tones, each of the tones being a different harmonic of the same predetermined frequency, and each of the tones having a programmable frequency, amplitude and phase wherein the phase represents data, comprising the steps of:
(a) providing first and second memories;

(b) loading a plurality of digital harmonic numbers into the first memory, each of the digital harmonic numbers corresponding to a harmonic of a predetermined frequency and representing a tone;
(c) loading a plurality of digital phase numbers into the second memory, each of the phase numbers corresponding to the starting phase of one of the tones;
(d) providing a digital data signal;
(e) converting one or more bits of the digital data signal into a phase modulation number for each of the tones;
(f) summing for each tone the phase number with the harmonic number and with the phase modulation number to provide a phase number;
(g) circulating the phase numbers through the second memory;



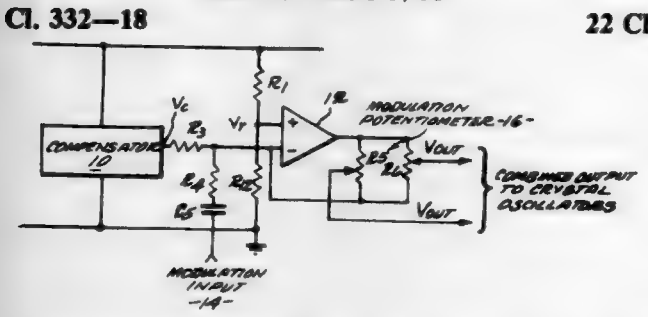
(h) circulating the harmonic numbers through the first memory;
(i) providing a third memory containing sinusoidal values;
(j) retrieving a sinusoidal value related to each phase number in response to the circulation of each of the phase numbers through the second memory;
(k) summing the retrieved sinusoidal values for each of the phase numbers to provide a composite digital signal; and
(l) converting the composite digital signal into a composite analog signal.

4,511,863

COMBINED MODULATION AND TEMPERATURE COMPENSATION CIRCUIT

Johannes J. Vandegraaf, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Mar. 22, 1983, Ser. No. 477,609
Int. Cl.³ H03C *3/08*
U.S. Cl. 332—18 **22 Claims**



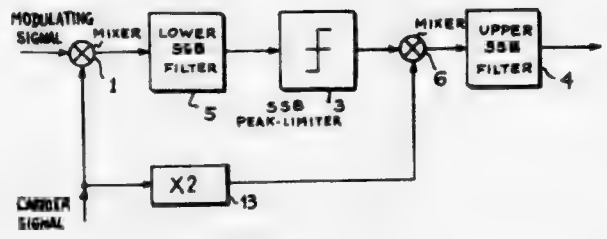
1. A combined modulation and temperature compensating circuit arrangement for driving an oscillator comprising:
means for receiving a D.C. temperature compensating signal from a temperature compensator;
means for receiving an A.C. modulating signal;
combining circuit means, coupled to said temperature compensating receiving signal means and modulating signal receiving means, for providing a combined temperature compensating and modulating signal having a predetermined ratio of magnitude of said D.C. temperature compensating signal and said A.C. modulating signal; and
adjustable output means for adjusting the level of the output signal of said combining circuit means without changing said predetermined ratio.

4,511,864

MODULATING DEVICE FOR A SINGLE-SIDEBAND MODULATION SYSTEM

Charles de Rivieré, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 12, 1983, Ser. No. 457,390
Claims priority, application France, Jan. 26, 1982, 82 01205
Int. Cl.³ H03C *1/60*
U.S. Cl. 332—41 **6 Claims**



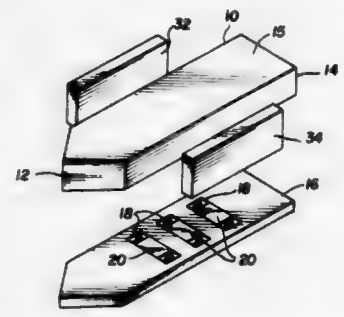
1. A modulating device for a modulation system of the single-sideband type, wherein said device comprises:
a first modulator for the modulation of a first carrier signal by a modulating signal and for delivering a first modulated signal having a first lower sideband and a first upper sideband;
a first filter, for receiving the first modulated signal, for eliminating one of the two first sidebands and delivering the other sideband;
a signal-processing device for processing the signal delivered by the filter;
a second modulator for the modulation of a second carrier signal by the signal delivered by said signal processing device, the frequency of said second carrier signal being double the frequency of said first carrier signal, and for delivering a second modulated signal having a component within the sideband which is eliminated by said first filter;
and a second filter for receiving a modulated signal, for eliminating the sideband retained by the first filter and for delivering the second sideband which is identical with the first sideband eliminated by said first filter.

4,511,865

MILLIMETER WAVE SIGNAL LIMITER HAVING FERRITE LOADED SLOTS IN GROUND PLANE OF IMAGE GUIDE

Samuel Dixon, Jr., Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 21, 1984, Ser. No. 581,833
Int. Cl.³ H01P *1/23*
U.S. Cl. 333—17 L **16 Claims**



1. A slot excited millimeter wave power limiter, comprising:
dielectric transmission line means having a relatively high dielectric constant;
a conductive ground plane on which said dielectric transmission line means is located forming thereby an image guide;
said ground plane further including a plurality of slots of a predetermined area formed therein to provide a further propagating medium for energy propagating along said image guide, the dielectric constant of said transmission means causing the slot mode wavelength to be small com-

pared to the free space wavelength, thereby causing fields to be confined substantially to the area of said slots;

a body of ferromagnetic material located in each of said slots and having a biasing magnetic field applied thereto for causing magnetic moments in said ferromagnetic material to precess at a rate determined by the strength of said magnetic field whereby at a critical threshold level of incident signal power on said image guide, spin waves are generated in said ferromagnetic material to absorb signal energy and thus limit the power out of said image guide above said threshold level; and

magnetic field means located in relative close proximity to said body of ferromagnetic material for providing said biasing magnetic field.

4,511,866

ACOUSTIC SURFACE WAVE DEVICE

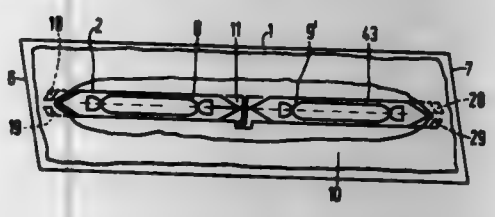
Robert F. Milsom, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 13, 1983, Ser. No. 531,805

Claims priority, application United Kingdom, Sep. 15, 1982, 8226282

Int. Cl.³ H03H *9/64, 9/145, 9/30*

U.S. Cl. 333—194 **6 Claims**



1. An acoustic surface wave device comprising a piezoelectric substrate for propagating acoustic surface waves at a surface thereof and respective acoustic surface wave launching and receiving transducers formed on said surface to launch and to receive acoustic surface waves at said surface along a common propagation path directed along the axes of the transducers, wherein each said transducer includes at least one interdigital array of two overlapping sets of electrodes with each set connected to one of a pair of opposite bus bars, characterized in that the overall width of each interdigital array between the outer boundaries of each said pair of bus bars measured in a direction at right angles to the acoustic surface wave propagation direction is determined, in relation to the wavelength λ_c at the centre frequency f_c of the acoustic surface wave pass-band of the transducer, and in relation to the electrode distribution, so that each said interdigital array functions as an acoustic surface waveguide which will only propagate and transduce a single acoustic surface wave guided energy mode which is symmetrical about the central propagation axis of the array, and each said transducer comprises a corresponding apodized array.

4,511,867

ACOUSTIC SURFACE WAVE DEVICE INCLUDING A REFLECTIVE MULTISTRIP COUPLER

John Schofield, Coulsdon, England, assignor to U.S. Philips Corporation, New York, N.Y.

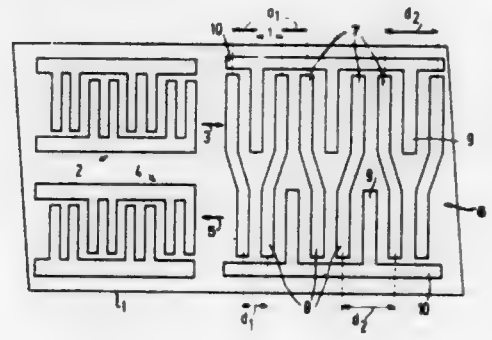
Filed Jul. 1, 1983, Ser. No. 510,094

Claims priority, application United Kingdom, Jul. 5, 1982, 8219372

Int. Cl.³ H03H *9/145, 9/64*

U.S. Cl. 333—195 **15 Claims**

1. An acoustic surface wave device comprising a piezoelectric substrate for propagating an acoustic surface wave at a surface thereof, transducer means for launching acoustic surface wave energy so as to propagate over said surface and for converting acoustic surface wave energy propagating over said surface into an electrical signal, and electrical coupling means for receiving acoustic surface wave energy propagating along a first propagation track and relaunching at least part of that energy as acoustic surface wave energy along a second propagation track, said electrical coupling means comprising a first array of electrically conductive strips across said first track and a second array of electrically conductive strips across said second track, each array including discrete parallel electrically conductive strips each of which is electrically insulated from the other said discrete conductive strips of that array and is electrically connected to a respective said discrete conductive strip of the other array such that the successive said discrete conductive strips of each array are electrically connected to the successive said discrete conductive strips of the other array, the centre-to-centre spacings of the successive said discrete conductive strips of each array being alternately relatively large and relatively small, the relatively large centre-to-



centre spacing being aproximately twice the relatively small centre-to-centre spacing, the said discrete conductive strips of the two arrays being interconnected such that, in each array, the said discrete conductive strips of each pair which have a said relatively large centre-to-centre spacings are connected to the respective strips of a pair in the other array which have a said relatively small centre-to-centre spacing, characterized in that each array includes a plurality of further electrically conductive strips which are parallel to the said discrete conductive strips of that array, in that a further strip is situated between the respective discrete conductive strips forming substantially every pair having a said relatively large centre-to-centre spacing, and in that all said further electrically conductive strips in both said arrays are electrically interconnected.

4,511,868

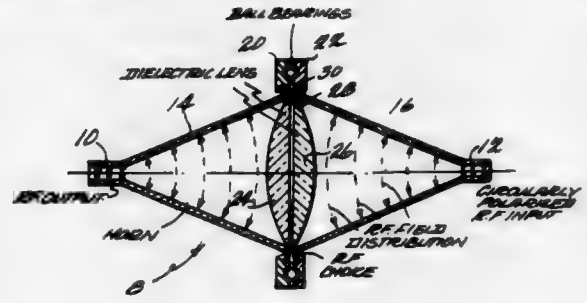
APPARATUS AND METHOD FOR TRANSFER OF R.F. ENERGY THROUGH A MECHANICALLY ROTATABLE JOINT

Robert E. Munson, and Hussain A. Haddad, both of Boulder, Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Sep. 13, 1982, Ser. No. 417,517

Int. Cl.³ H01P *1/06*

U.S. Cl. 333—257 **23 Claims**



1. An r.f. rotary joint comprising:

a first horn means having a small end and a large end for forming substantially planar r.f. wave fronts at its large end;

a second horn means having a small end and a large end for forming substantially planar r.f. wavefronts at its large end;

the large ends of said horn means being opposingly juxtaposed so that said substantially planar r.f. wavefronts can

pass between said large ends substantially independently of the relative rotational positions of said horns; and

a rotary motion bearing disposed about and physically interconnecting said juxtaposed large ends of the horn means;

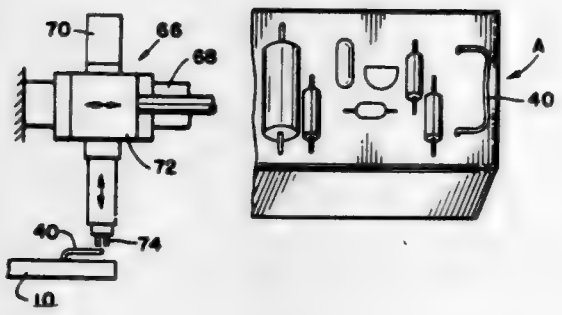
wherein at least one of said horn means includes at least one r.f. lens structure disposed at the juncture of said juxtaposed large ends of the horn means.

4,511,869

RADIO CIRCUIT TUNED BY ADJUSTABLY DEFORMING AN INDUCTANCE COIL

Daniel S. Snyder, Norwalk, and Timothy C. Benincasa, Bellevue, both of Ohio, assignors to Imperial Clevite Inc., Glenview, Ill.

Filed Feb. 15, 1983, Ser. No. 466,428
Int. Cl.³ H03J 7/30
U.S. Cl. 334—20 **5 Claims**



1. A method of tuning a radio frequency circuit including an inductive loop having an exposed inductor portion comprising:

detecting the frequency of operation of said circuit with a frequency detecting device;

associating said inductor portion with a selectively movable actuator device coupled to said frequency detecting device by nesting said inductor portion in a receiving slot of a movable plunger arm of said actuator device;

adjusting the configuration of said exposed inductor portion by moving said actuator device in response to control signals from said frequency detecting device whereby the inductance of said inductive loop and the frequency of operation are associatively varied;

fixing the configuration of said exposed inductor portion at a position of adjustment to determine the frequency of operation to be at a pre-selected frequency; and

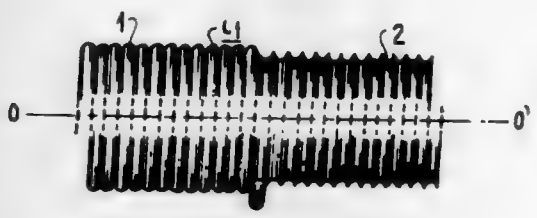
disassociating said inductor portion from said actuator device whereby said radio frequency circuit is tuned to the pre-selected frequency.

4,511,870

FOCUSSING SOLENOID, APPLICATION THEREOF AND A PROCESS FOR MANUFACTURING SAME

Pierre Caillat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 28, 1983, Ser. No. 470,526
Claims priority, application France, Mar. 5, 1982, 82 03731
Int. Cl.³ H01F 5/02, 7/06
U.S. Cl. 335—213 **20 Claims**



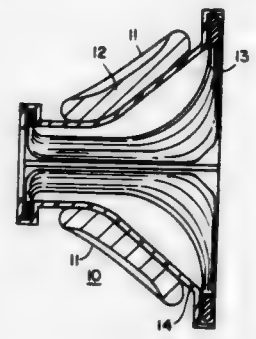
1. In a focussing solenoid formed by an insulated wire wound in the form of a helix around an insulating cylindrical sleeve, the turns of the helix being jointing and the solenoid comprising several superimposed wire layers having the same winding direction around the sleeve, said sleeve having a helical etching in which the turns of the first layer are housed, and the slope of the turns of the helix with respect to said sleeve of each of the wire layers wound in a helix around the sleeve is substantially the same, connecting means being provided between the wire layers to obtain a substantially uniform magnetic field parallel to the sleeve axis.

4,511,871

MODIFIED DEFLECTION YOKE COILS HAVING SHOOTBACK WINDINGS

John H. Schier, Jr., Greenwood, and William E. Brooks, Jr., Indianapolis, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 18, 1983, Ser. No. 514,988
Int. Cl.³ H01F 5/00
U.S. Cl. 335—213 **8 Claims**



1. A deflection yoke comprising:

a magnetically permeable core;

a deflection coil toroidally wound on said core comprising:

a first winding emplacement incorporating a plurality of wire turns occupying a first arcuate region on said core;

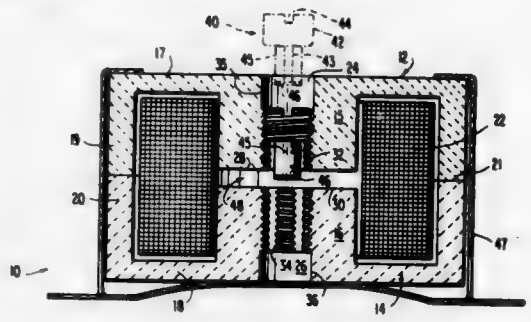
at least a first additional winding emplacement wound after said first winding emplacement and incorporating a plurality of wire turns that overlay said first winding emplacement, and incorporating at least one wire turn that extends beyond an end of said first winding emplacement and lies level with wire turns thereof such that lateral displacement of the extending wire turn is obstructed by the presence of said first winding emplacement.

4,511,872

INDUCTANCE TUNING MEANS AND METHODS OF MANUFACTURE

Robert W. Olmsted, and Joseph F. Huth, III, both of Butler, Pa., assignors to Spang Industries Inc., Butler, Pa.

Filed Nov. 5, 1982, Ser. No. 439,372
Int. Cl.³ H01F 21/06, 41/02
U.S. Cl. 336—83 **5 Claims**



1. Method for manufacturing a magnetically-soft ferrite pot core element to provide unitary means for adjusting the air gap presented by a pair of ferrite pot core elements assembled to form a ferrite pot core in which coil windings are positioned, comprising

providing a substantially homogeneous mass of particulate

ferrite-forming material which is reactive when treated at elevated temperature to form a magnetically-soft ceramic ferrite,

molding such ferrite-forming material at elevated pressure to form a unitary part compacted in a green state for conversion to a ceramic-state ferrite pot core element including

an elongated center post symmetrically distributed about a centrally located longitudinal axis,

such center post terminating in a distal end surface, lying in a plane which is transverse to the centrally located longitudinal axis, for use in defining an air gap in such assembled electrical inductance device,

a web portion extending in transverse relationship to such centrally located axis at the remaining end of such center post longitudinally opposite to such distal end surface, and

a skirt portion extending from such web in space relationship from such center post and extending in an axial direction to define a space for positioning coil windings between such center post and such skirt portion,

such center post presenting an inner wall surface defining a central opening extending longitudinally with and substantially symmetrically about the centrally located longitudinal axis,

such inner wall surface including axially-directed reentrant portions separated by axially-directed non-reentrant portions,

establishing unitary die means within such center post central opening for acting on a thread-free nonmagnetic portion of an elongated air gap adjustor member,

such die means including

helically-oriented screw thread means for providing axial movement of an air gap adjustor member upon rotation within such central opening of a ferrite pot core element,

such helically-oriented screw thread means consisting of discontinuous helically-oriented threads established on such axially-directed non-reentrant portions of such center post inner wall surface,

such helically-oriented threads being interrupted along such inner wall surface by such axially-directed reentrant portions,

such axially-directed reentrant portions defining thread-free longitudinally-open flute means which remain longitudinally open after insertion of such elongated adjustor member into such central opening,

such discontinuous helically-oriented screw threads being formed in such non-reentrant portions of the inner wall surface of the central opening of the unitary part compacted from ferrite-forming material while such unitary part is in a green state after pressure compaction, and

following forming of such discontinuous screw threads,

sintering such core part utilizing an elevated temperature to convert such compacted part from such green state to a ceramic state.

4,511,873

CURRENT TRANSFORMER INSULATED BY PRESSURIZED GAS

Manfred Baier, Oberehrendigen, and Andreas Tobler, Lengnau, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

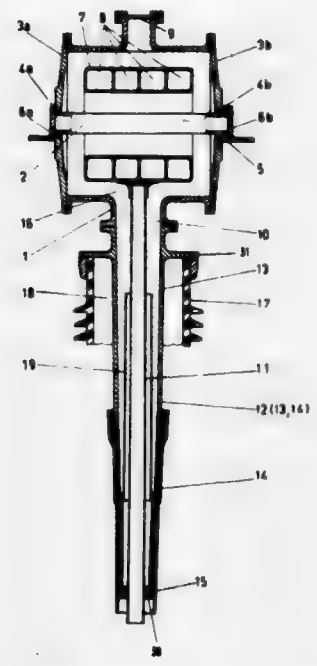
Filed Jul. 8, 1983, Ser. No. 511,942

Claims priority, application Switzerland, Jul. 19, 1982, 4392/82

Int. Cl.³ H01F *27/02*

U.S. Cl. 336—90 **5 Claims**

1. A current transformer comprising a metallic top housing containing a primary conductor surrounded by coil means of a secondary circuit; said top housing having a high voltage therein; hollow insulator means mounted on base means; said top housing being supported by said insulator means; tubular metallic lead-through means disposed within said insulator means and extending from said top housing to said base means for receiving terminal leads of said secondary circuit; and gas-tight partition means connected to said top housing for separating a high-pressure gas region encompassing said primary conductor and said coil means from a low-pressure gas region defined at least in part by said insulator means.



4,511,874

FATIGUE-RESISTANT FUSE STRIP

John F. Rasmussen, North Andover, Mass., and Aldino J. Gaia, St. Louis, Mo., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 31, 1983, Ser. No. 480,766

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—159 **20 Claims**



1. An electrical fuse comprising a fusible ribbon having at least one weak spot along its axial length which is resistant to mechanical fatigue, said weak spot of said fusible ribbon comprising a series of apertures having geometric centers arranged in a curvilinear or angular configuration which extends transversely to said axis of said fusible ribbon between opposite edges thereof, wherein the geometric centers of said apertures nearest the opposite edges are substantially colinear with respect to the transverse axis of the fusible ribbon and wherein the geometric centers of adjacent apertures of said series of apertures are offset from each other with respect to the transverse axis of said fusible ribbon by a distance at least equal to the shortest distance between the geometric center and the peripheral edge of any one of said adjacent apertures, whereby the cross-sectional area of said weak spot is distributed transversely across said fusible ribbon.

4,511,875

MICRO-FUSE ASSEMBLY

Hiroo Arikawa, Tokyo, Japan, assignor to S.O.C. Corporation, Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,229

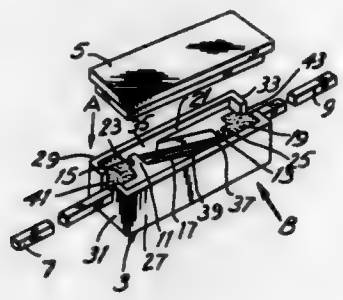
Claims priority, application Japan, Mar. 19, 1982, 57-37984[U]

Int. Cl.³ H01H *85/02*

U.S. Cl. 337—201 **8 Claims**

1. An electric micro-fuse comprising a hollow body defined

by a base, opposed sidewalls upstanding from said base and opposed end walls upstanding from said base; a cover for sealing said body; said body having two raised sections and three recessed sections, one of said recessed sections being disposed at the middle of said body and each of the other two recessed sections being disposed at each end of said hollow body, a first channel connecting said middle recessed section to



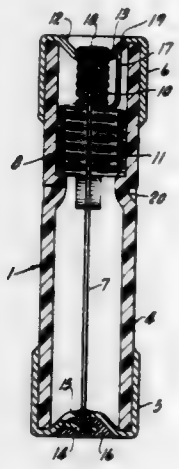
one of said end recessed section and a second channel connecting said middle recessed section to the other end recessed section; a fusible element diagonally stretched across said middle recessed section between said first and second channels; a pair of lead wires, a first lead wire extending through one of said end walls and secured to one end of said fusible element and a second lead wire extending through the other end wall and secured to the other end of said fusible element.

4,511,876

ELECTRICAL FUSE WITH RESPONSE INDICATOR

Angelo Urani, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Feb. 7, 1983, Ser. No. 464,729
Int. Cl.[3] H01H *85/30*
U.S. Cl. 337—244 **11 Claims**



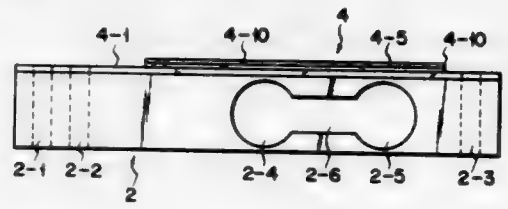
1. An elongated fuse device having a tubular insulating housing having first and second end terminals, a fuse element connected to the first end terminal and extending longitudinally through the housing, a spring/indicator unit including a spring coil and an integrated close wound indicator coil of a substantially smaller diameter located within the housing adjacent said second end terminal, said indicator coil being wound as an extension from one end of said spring coil, said spring coil having a diameter substantially larger than said fusible element with said fusible element extending therethrough, said fusible element extending through and connected to said indicator coil, means electrically connecting said fuse element to said second end terminal and constructed and arranged to permit movement of said spring/indicator unit upon opening of said fusible element, said housing including an internal stop wall means, said spring being located between said stop wall means and said second terminal whereby said fuse element holds the spring in a stressed state with said indicator withdrawn into said housing, fusing of said element releasing said spring coil to release its stress and thereby move said indicator coil at least partially from within said housing to provide an indication of a blown fuse.

4,511,877

STRAIN GAUGE WITH REDUCED CREEP PHENOMENON BY IMPROVED INSULATION LAYERING

Hisashi Nishikawa; Satoshi Suzuki; Masanobu Hirata, all of Shizuoka; Koichiro Sakamoto; Ikuo Fujisawa, both of Mishima, and Shozo Takeno, Yokohama, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1983, Ser. No. 465,344
Claims priority, application Japan, Feb. 18, 1982, 57-24939
Int. Cl.[3] G01L *1/22*; G01B *7/18*; G01G *3/14*
U.S. Cl. 338—2 **17 Claims**



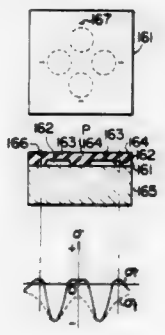
1. A strain sensor comprising:
a beam body having a strain generating section;
an insulating resin film mixed with solid powder which includes silicon dioxide on said beam body at least over said strain generating section; and
a resistance layer on at least a portion of said insulating resin film.

4,511,878

PRESSURE SENSOR WITH IMPROVED SEMICONDUCTOR DIAPHRAGM

Satoshi Shimada; Ken Murayama; Shigeyuki Kobori, all of Hitachi, and Kanji Kawakami, Mito, all of Japan, assignors to Hitachi, Ltd. and Hitachi Const. Mach. Company, both of Tokyo, Japan

Filed Sep. 20, 1983, Ser. No. 534,076
Claims priority, application Japan, Sep. 20, 1982, 57-162323
Int. Cl.[3] G01L *9/06*
U.S. Cl. 338—4 **8 Claims**



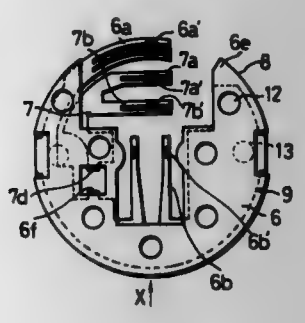
1. A pressure sensor of semiconductor type, comprising a semiconductor diaphragm having upper and lower surfaces and including at least one of thin wall parts provided by forming at least one recess in said lower surface and at least one of thick wall parts, said thin wall parts having such a thickness and a shape that local flexibility arises in said upper surface in said thick wall parts, piezoresistance elements each laid on said upper surface in an area outside the area of the at least one recess where the local flexibility arises, and a supporting member jointed to said thick wall parts at said lower surface for supporting said diaphragm.

4,511,879

SLIDER ARRANGEMENT AND METHOD OF PRODUCING OF THE SAME

Shosaku Fujii, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,189
Claims priority, application Japan, Dec. 10, 1982, 57-215582
Int. Cl.[3] H01C *1/12, 10/34;* H01H *19/00;* H01R *39/00*
U.S. Cl. 338—174 2 Claims



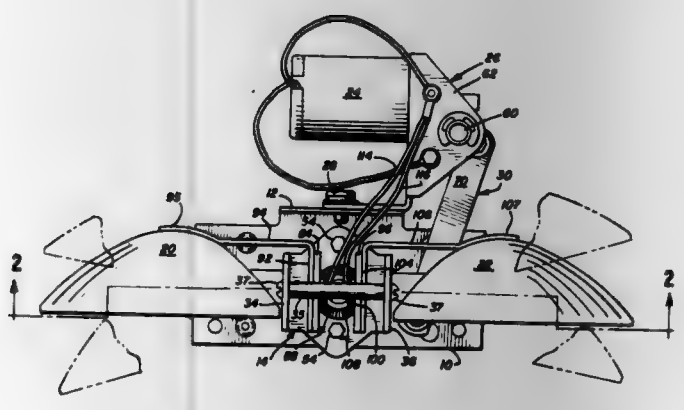
1. A slider arrangement for a variable resistor having two resistive elements each adapted to be connected electrically to a respective collector by respective sliders ganged together for simultaneous actuation; said slider arrangement being formed by a member molded from an insulative material and having embedded therein during its molding a resilient metal plate having four elongate contact elements extending outwardly from said member, said metal plate having means including connecting portions serving to connect said contact elements together and exposed from said member so that said connecting members may be severed to isolate said contact elements into two pairs with the contact elements of each pair being connected together and adapted to engage a respective resistive element and associated collector.

4,511,880

TWIN OSCILLATING LIGHT

Edward S. Stanuch, Oak Forest, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Filed Sep. 29, 1982, Ser. No. 426,990
Int. Cl.[3] B60Q *1/00*
U.S. Cl. 340—84 10 Claims



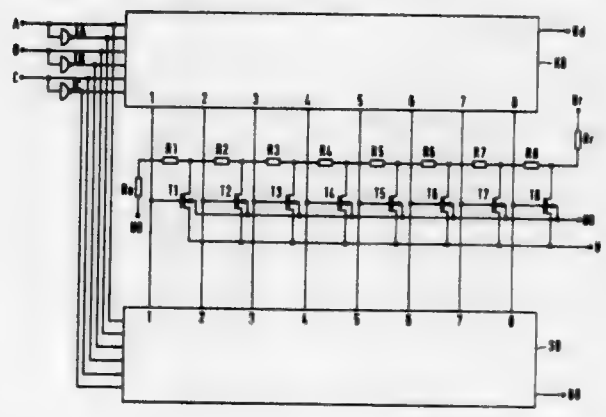
2. A twin oscillating light assembly for use on emergency vehicles and the like comprising, in combination, a first light source mounted for oscillating movement about first and second axes to produce a first generally linear light path, a second light source mounted for oscillating movement about first and second axes to produce a second generally linear light path, said first and second light sources being arranged so said first and second light paths cross to produce an approximate X-pattern of light, and motor means for oscillating said first and second light sources.

4,511,881

INTEGRATED VOLTAGE DIVIDER WITH SELECTION CIRCUIT

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,819
Claims priority, application European Pat. Off., May 16, 1981, 81103764.7
Int. Cl.[3] H03K *13/02, 13/03*
U.S. Cl. 340—347 DA 7 Claims



1. An integrated voltage divider comprising a series arrangement of a number (N) of resistors operated from a biasing voltage (Ur), with the tapping points thereof each, via a switching connection comprising one individual switching transistor or a series arrangement of switching transistors and dependent upon a digital selecting signal, capable of being connected through to the voltage output (U) by means of a selection circuit, with said selection circuit, said resistors (R . . .) and said switching connections employing transistors of the insulated-gate field-effect type, wherein each switching connection is realized by the switching section of one single switching transistor of the one selected channel conductivity type;

a selection circuit comprising short circuit decoder (KD) and an open circuit decoder (SD) the corresponding inputs of which are arranged in parallel and supplied with the corresponding bits of the selecting signal;

said open-circuit decoder (SD) comprising transistors of one selected channel conductivity type which are arranged in the semiconductor body of the integrated voltage divider as connected to a reference potential (UO) of the source of voltage (Ur), the potential input of the open circuit decoder connected to the reference potential (UO);

said short-circuit decoder (KD) comprising transistors of the other channel conductivity type, which are arranged within a separate insulating island (NW) of the one selected channel conductivity type, the potential input of the short circuit decoder connected to this insulating island (NW) and to the operating voltage (Ud), wherein

like outputs of both the open-circuit and the short-circuit decoders (SD, KD) are connected to one another and to the respective gates of the switching transistors (T . . .), such that upon the supply of the bits of the selecting signal, the appropriate sections of the switching transistors are turned on to permit the desired output voltage.

4,511,882

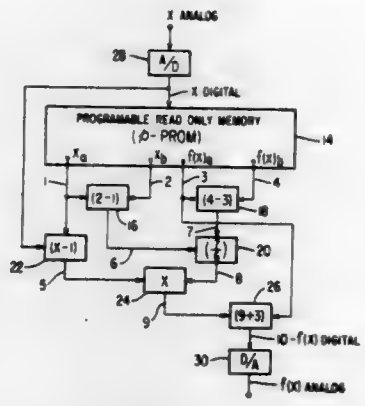
FUNCTION GENERATOR

Marion A. Keyes, IV, Chagrin Falls, and William L. Thompson, Chardon, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 2, 1982, Ser. No. 394,563
Int. Cl.[3] H03K *13/24*
U.S. Cl. 340—347 DD 3 Claims

1. A function generator producing a digital output signal varying in predetermined non-linear relationship to a digital input signal, comprising, a PROM receiving said digital input signal programmed to generate a first and a second readout

signal corresponding to selected minimum and maximum values of said input respectively and third and fourth readout signals corresponding to the non-linear relationship between the input and output signals at said minimum and maximum values of said input signal respectively, means generating a fifth signal proportional to the difference between the input signal and said first signal, means generating a sixth signal proportional to the difference between said second and first signals, means generating a seventh signal proportional to the difference between said fourth and third signals, means generating an eighth signal proportional to the quotient of said sixth signal divided by said seventh signal, means generating a ninth



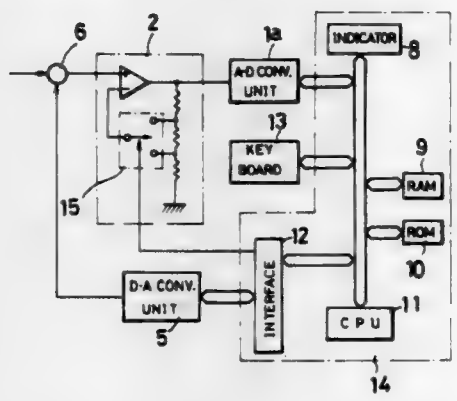
signal proportional to the product of said fifth signal multiplied by said eighth signal, and means generating a tenth signal proportional to the sum of said third and ninth signals whereby said tenth signal varies in said non-linear relationship to said input signal and said PROM being programmed to generate said first, second, third, and fourth readout signals at a plurality of selected values of said input signal and including means selecting for readout the output signals generated by the two consecutive selected input signals, one having a value less than and the other having a value greater than said input signal to form said selected minimum and maximum values of said input signal.

4,511,883

A-D CONVERTER FOR USE IN AN ELECTRONIC BALANCE

Akira Komoto, Otsu, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 28, 1982, Ser. No. 402,582
Claims priority, application Japan, Jul. 31, 1981, 56-121294
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **2 Claims**



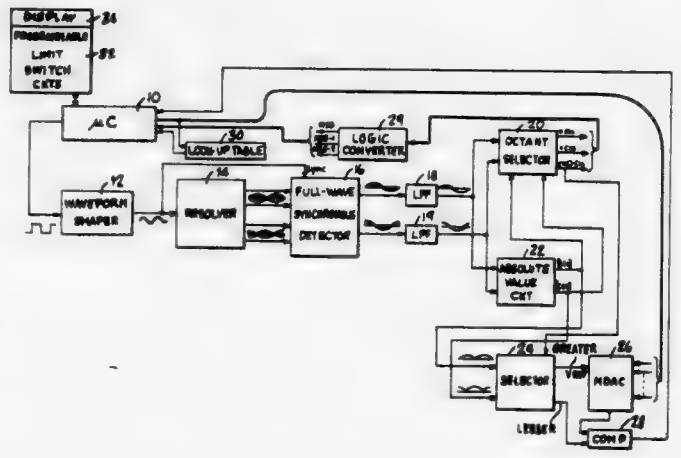
1. An A-D converter for use in an electronic balance comprising:
- a pulse-modulating D-A converting unit which converts an input digital signal to an analog output signal;
- an analog subtracter which subtracts the analog output signal of said pulse-modulating D-A converting unit from the analog signal to be measured;
- a switching means for selecting either the full output signal of said analog subtracter or the signal reduced to one N-th of the same;
- an A-D converting unit which converts the analog output of said switching means to a digital signal;
- a digital memory which can store a digital signal whose value is predetermined in accordance to said signal reduced to one N-th;
- a digital adder which adds said signal reduced to one N-th; with the same multiplied by N, to the output of said A-D converting unit; and
- a leading means for leading said digital signal stored in said digital memory to the input terminals of said pulse modulating D-A converting unit.

4,511,884

PROGRAMMABLE LIMIT SWITCH SYSTEM USING A RESOLVER-TO-DIGITAL ANGLE CONVERTER

Peter G. Serev, Woodbury, and Roger M. Bogin, Washington Depot, both of Conn., assignors to C & A Products, Inc., Washington Depot, Conn.

Filed Nov. 9, 1982, Ser. No. 440,421
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 SY **4 Claims**



1. A resolver-to-digital angle converter comprising:
- a microcomputer programmed to generate periodic highest priority interrupts and to complement an output bit at every interrupt and thereby generate a programmed square wave output;
- a waveform shaper which comprises a bandpass filter and is driven by the status of said output bit to produce a substantially sinusoidal reference voltage signal at a frequency determined by the programmed interrupts of said microcomputer;
- a resolver transducer having a rotor winding excited with said reference voltage signal and a pair of stator windings producing, in response, a pair of two-wire outputs which are at the frequency of the reference voltage but are amplitude-modulated as respective functions of the sine and cosine of the spatial angle between the resolver rotor and stator windings;
- a synchronous detector comprising a comparator timed to the output of the waveform shaper to produce switch-control signals and analog CMOS switches timed by said switch control signals and receiving the resolver outputs and fullwave rectifying them to respective polarities determined by their sine and cosine amplitude modulation to thereby produce a fullwave rectified sine detector output and a fullwave rectified cosine detector output;
- a sine active low pass filter and a cosine active low pass filter receiving the respective sine and cosine detector outputs and providing their respective sine and cosine envelopes as outputs;
- an absolute value circuit receiving the sine envelope and providing the absolute value thereof and comprising a comparator receiving the output of the sine filter and

providing an output which is high for the first four octants and low for the last four octants of the sine filter output, an analog CMOS switch controlled by the output of the comparator, and an operational amplifier having a positive input receiving the output of the last-recited switch and a negative input receiving the output of the sine filter and providing said absolute value at its output, and a corresponding absolute value circuit receiving the cosine envelope and providing the absolute value thereof;

an octant selector receiving the sine and cosine envelopes and comparing each to zero, and receiving the absolute values of the same envelopes and comparing them with each other, to provide three most significant bit outputs, the first determined by the polarity of the sine envelope, the second by the polarity of the cosine envelope and the third determined by the absolute value comparison;

a selector circuit receiving said absolute values of said envelopes and the third most significant bit to provide, for any given octant, a first output which is the greater of the two absolute value envelopes and a second output which is the lesser one;

means driven by said microcomputer and synchronized to said interrupts, for performing successive approximation analog-to-digital conversion of the selector circuit outputs and for providing a binary code output representative of the tangent of the shaft angle within a given octant;

means for combining said three most significant bits with said binary code output to provide a binary code representation of the shaft angle; and

means for utilizing said shaft angle.

4,511,885

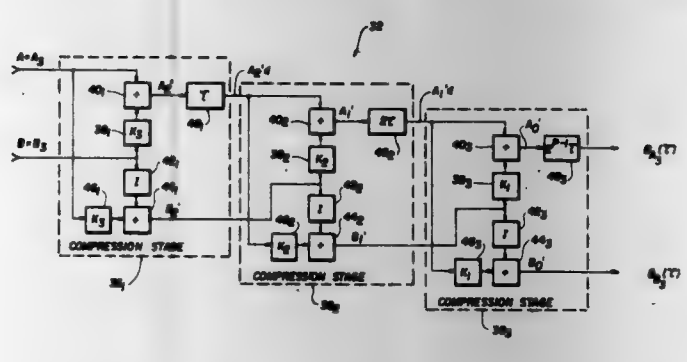
CODE COMPRESSOR FOR MULTILEVEL INTERLEAVED MULTIPLEXED NOISE CODES

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 28, 1983, Ser. No. 555,774

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **21 Claims**



12. Apparatus for compressing a pair of expanded noise codes comprised of first and second multilevel code mates and having a predetermined number of code bits defining the code length of said code mates, comprising:

a plurality of series coupled compression stages, each stage including,

means for generating third and fourth multilevel code mates respectively comprised of first and second multilevel input code mates multiplied by a predetermined gain factor not necessarily equalling unity;

means for combining said first multilevel code mate with said fourth multilevel code mate in a first manner to form a first compressed code mate having one half the number of code bits of the first and second multilevel input code mates;

means for combining said third multilevel code mate with said second multilevel code mate in a second manner to form a second compressed code mate also having one half the number of code bits of the first and second input code mates; and

means for delaying said first compressed code mate by a time delay equal to an integer multiple of the code bit width of said codes for providing a first output code mate coincident in time with said second compressed code mate, said second compressed code mate being a second output code mate.

4,511,886

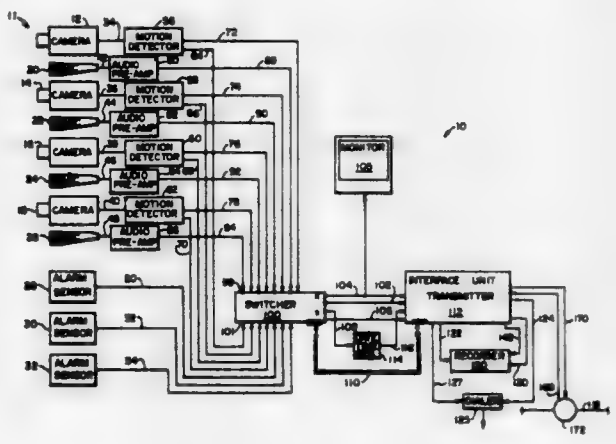
ELECTRONIC SECURITY AND SURVEILLANCE SYSTEM

Michael J. Rodriguez, Lilburn, Ga., assignor to Micron International, Ltd., Tucker, Ga.

Continuation-in-part of Ser. No. 499,946, Jun. 1, 1983, abandoned. This application Oct. 6, 1983, Ser. No. 538,848

Int. Cl.³ G08B *1/08;* H04N *7/18*

U.S. Cl. 340—534 **5 Claims**



1. Security and surveillance system comprising a central station connected to a plurality of remote installations by means of a transmission medium having a finite information bandwidth wherein:

a. each remote installation comprises:

i. a plurality of surveillance equipment associated with a plurality of monitored locations for collecting raw security information including audio, video, and alarm information;

ii. switching means with a plurality of inputs connected to the surveillance equipment for sampling the security information at its inputs in serial fashion and providing the security information at its output, the switching means being capable of locking onto a particular input in response to an alarm condition at a particular monitored location; and

iii. interface unit transmitter means connected to the output of the switching means for receiving and processing the raw security information including:

(a) video compressor means for compressing the video information in bandwidth to provide compressed video information;

(b) alarm decoder means for generating an alarm code from the alarm information in order to identify the particular location of an alarm condition;

(c) sub-channel modulator which uses a key frequency unique to each remote installation to modulate and thereby sub-channelize the audio information, the compressed video information, and the alarm code to provide processed, sub-channelized security information within a base band frequency spectrum of predetermined size; and

(d) transmitter means including channel modulator to translate in frequency the base band frequency spectrum with its processed, sub-channelized security information into an available downstream channel of the transmission medium; and

b. the central station comprises:

i. receiver means including channel demodulator connected to the transmission medium for recovering the

processed, sub-channelized security information from the available downstream medium channel;

ii. a plurality of interface unit receivers each associated with a remote installation and connected to the channel demodulator for reprocessing the processed, sub-channelized security information including:

(a) sub-channel demodulator which uses the key frequency unique to the associated remote installation to recover the audio information, the compressed video information, and the alarm code from the sub-channelized security information within the base band frequency spectrum; and

(b) video expander means for expanding the compressed video information to provide the video information; and

iii. master switching means connected to the interface unit receivers for selecting for display on command particular audio information and video information; and

iv. command unit connected to the master switching means and the interface unit receiver for controlling the master switching means in response to the alarm code.

4,511,887

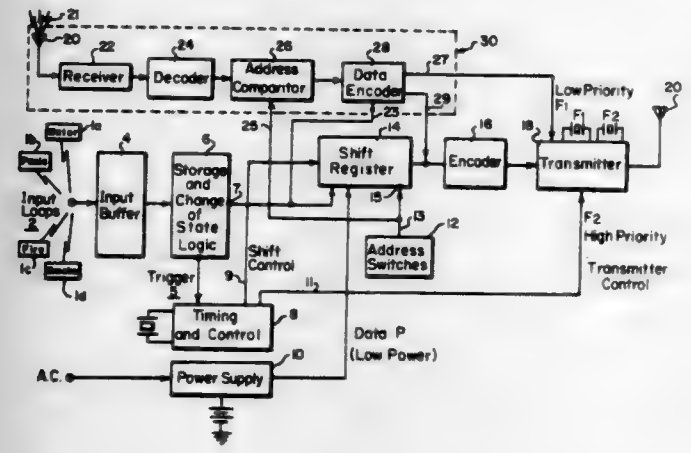
LONG RANGE WIRELESS ALARM MONITORING SYSTEM

Louis T. Fiore, Larchmont, N.Y., assignor to Radionics, Inc., Salinas, Calif.

Continuation of Ser. No. 302,125, Sep. 14, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,852

Int. Cl.³ G08B *26/00*

U.S. Cl. 340—539 **4 Claims**



1. A long range wireless alarm monitoring system which employs an existing FM transmitter or a subcarrier allocation of an existing broadcast band FM transmitter, said system comprising:

a central station;

a plurality of remote responder stations capable of operating in either one-way or two-way communication with said central station, each remote responder station having clock means for measuring elapsed time, a radio frequency transmitter, one or more transducer means for sensing physical conditions, encoder means for producing a unique multi-bit word and control means for controlling said clock means, said transmitter and said transducer means;

said control means causing said transmitter to transmit a repeated signal comprised of said unique multi-bit word when said transducer means senses a change in a sensed physical condition and said control means further causing said transmitter to transmit said repeated signal indicating the operating state of said remote responders upon said clock means indicating a predetermined elapsed time;

said central station having receiver means for receiving transmissions from said remote responders, decoder means for decoding said repeated signals and information processing means associated with said receiver means and said decoder means for processing said decoded signals, said information processing means including output means for displaying the results of said processing.

4,511,888

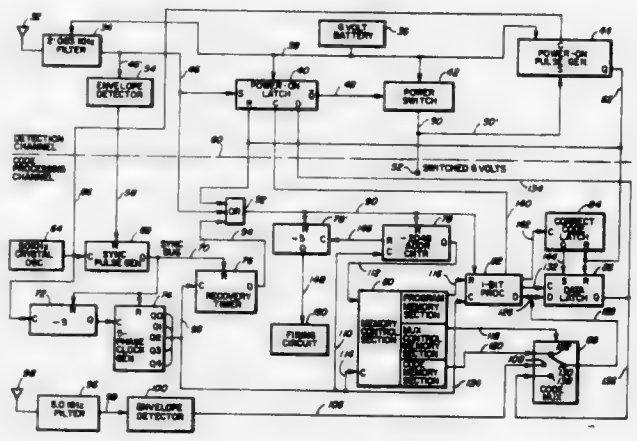
DUAL SIGNAL ELECTROMAGNETIC ARTICLE THEFT DETECTOR

Terry L. Bernhardt, Scottsdale, Ariz., assignor to U.S. Currency Protection Corp., Phoenix, Ariz.

Filed Jun. 29, 1983, Ser. No. 509,288

Int. Cl.³ G08B *13/22, 13/00*

U.S. Cl. 340—571 **20 Claims**



1. A security system for detecting the removal of an article from a premises to be protected, the protected premises including at least one exit through which the article may be removed from the protected premises, said security system comprising in combination:

a. a transmitter for transmitting first and second signals in the vicinity of said exit, said first signal being transmitted as a series of periodic pulses having a first predetermined period of time therebetween:

b. receiver means carried by said article, said receiver means including:

i. an electrical power source;

ii. a first receiver for detecting the presence of said first signal, said first receiver being continuously coupled to said electrical power source for continuously receiving electrical power therefrom, said first receiver generating an enabling signal upon detecting said first signal;

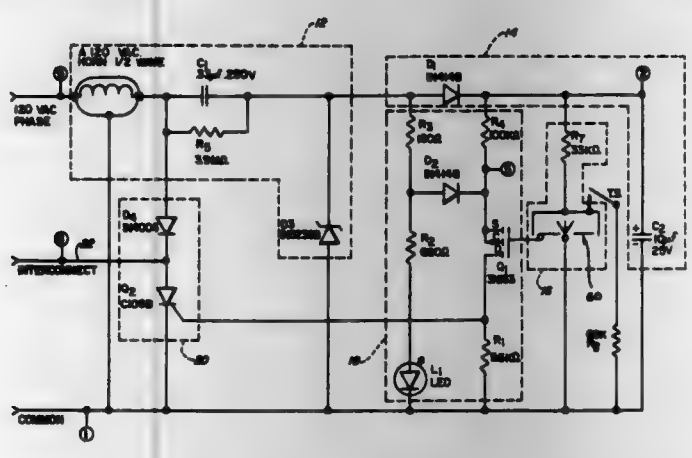
iii. a second receiver for detecting the presence of said second signal and providing an alarm in response thereto, said second receiver generating a disabling signal upon failing to detect said second signal within a second predetermined period of time after said enabling signal is generated, said second predetermined period of time being shorter than said first predetermined period of time; and

iv. power switching means responsive to said enabling and disabling signals for selectively electrically coupling said electrical power source to said second receiver following the generation of said enabling signal and decoupling said electrical power source from said second receiver means following the generation of said disabling signal for lessening the amount of electrical power drained from said electrical power source during instances when said receiver means is exposed to said first signal in the absence of said second signal.

4,511,889
SURGE PROTECTED SMOKE ALARM

Richard G. Atwater, Brookfield, Ill., assignor to Firex Corporation, Downers Grove, Ill.

Filed Sep. 30, 1982, Ser. No. 431,048
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—629 2 Claims

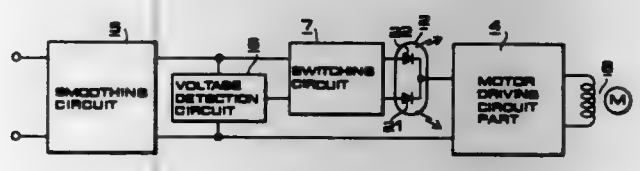


1. A smoke alarm for operation from an AC line voltage source comprising:
an ionization current smoke detector having a plate suitable for holding a floating plate voltage,
an AC voltage drive warning horn having an inductive coil connected to the AC source,
voltage clipping means for generating a square wave voltage from the AC line voltage,
rectifying means connected to said voltage clipping means for rectifying said square wave to provide substantially constant voltage DC power connected to said smoke detector to power said detector, and
threshold detection means connected to said smoke detector plate for setting a predetermined threshold voltage and determining when the smoke detector plate voltage exceeds said threshold voltage, said inductive coil of said horn being connected in series between said AC line voltage and said voltage clipping means so that current passing through said voltage clipping means necessarily passes through said coil.

4,511,890
ENERGIZATION INDICATOR FOR TIME SWITCH

Fumio Kouzai, and Yoshiaki Motoki, both of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,506
Claims priority, application Japan, Apr. 16, 1981, 56-58201
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—644 4 Claims

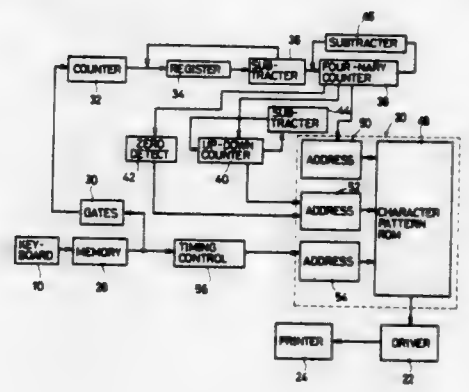


1. An energization indicator for time switch comprising:
(a) a motor driving circuit for the time switch;
(b) a dc converting circuit for dropping, rectifying and smoothing voltage of commercial power source and supplying power to said motor driving circuit at either of a plurality of output voltages,
(c) a voltage detection circuit for detecting the output voltage of said dc converting circuit and generating a signal dependent on which of the output voltages is being supplied by said converting circuit,
(d) a switching circuit for selectively switching in energization circuit for the output voltage of said dc converting circuit to said motor driving circuit in series with either a first load circuit or a second load circuit in response to the signal from said voltage detection circuit, and
(e) light emission elements inserted into said first and second load circuits, respectively and emitting different colors from one another to indicate which of said output voltages is being supplied to said motor driving circuit.

4,511,891
MONEY INFORMATION PRINT CONTROL SYSTEM

Hiroshi Nakatani, and Hachizou Yamamoto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1982, Ser. No. 368,754
Claims priority, application Japan, Apr. 27, 1981, 56-64653
Int. Cl.³ G09G *1/00*
U.S. Cl. 340—734 13 Claims

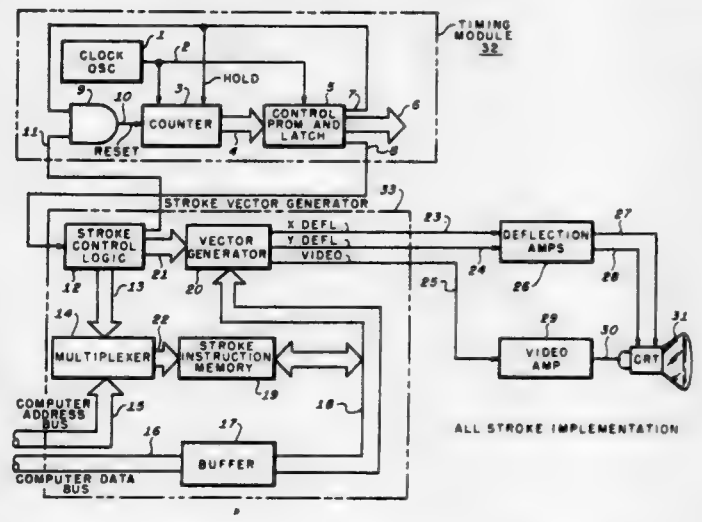


1. A system for converting amount information of plural digits from a numeric to a non-numerical symbolic representation thereof comprising:
means for introducing amount information represented as a numerical character string;
means for determining the order position of each numerical character representing said amount information;
means, responsive to the order position of each numerical character determined by said means for determining, for generating non-numerical symbology representative of the order position of said amount information.

4,511,892
VARIABLE REFRESH RATE FOR STROKE CRT DISPLAYS

Steven P. Grothe, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,206
Int. Cl.³ G09G *1/04*
U.S. Cl. 340—739 6 Claims



1. In a display system of the type having a stroke vector display generator means for supplying stroke information to at

least one cathode ray tube, wherein the improvement comprises:

means for providing signals representative of minimum refresh intervals for said stroke information to be displayed on said at least one cathode ray tube;

means cupled to said stroke vector display generator means for initiating said stroke information and for providing signals representative of completions of said stroke information; and

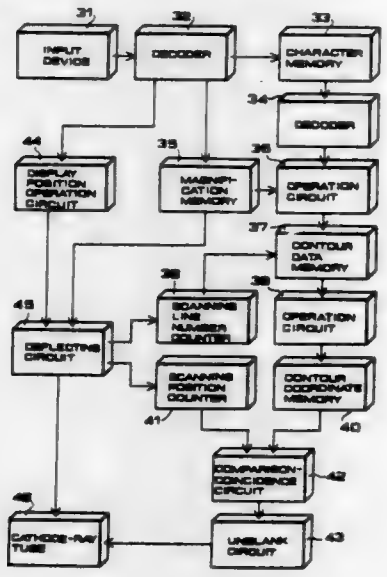
means coupled to said minimum signal means and said stroke initiation and completion signal means for recycling said display system when a minimum stroke refresh representative signal and a stroke completion representative signal are received, thereby extending refresh intervals for said stroke information for a time necessary to display said stroke information.

4,511,893

METHOD OF STORING IMAGES IN THE FORM OF CONTOURS AND PHOTO-TYPESETTING APPARATUS THEREOF

Shinichiro Fukuda, Tokyo, Japan, assignor to Shaken Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,160
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—747 **7 Claims**



1. A photo-typesetting apparatus comprising:

(a) A character-figure memory means for dividing contours of characters and figures at suitable positions into a plurality of contour elements, said character-figure memory means obtaining coordinate information of (n+1) points on each respective contour element, wherein $n \geqq 2$ consisting of at least a start point and an end point of each said contour element, and of arbitrary points numbering (n−1), wherein $n \geqq 2$, existing on each said contour element, said points comprising contour element data defining said contour elements, said character-figure memory means storing said contour element data concerning all contour elements constituting said characters and figures,

(b) a character-figure generator means for forming said characters and figures by scanning of an energy beam,

(c) an operation circuit means for calculating coordinate information in which the contour element crosses a scanning line formed by said character-figure generator means from the coordinate informations of each said point defining each contour element which is read out from said character-figure memory means, and

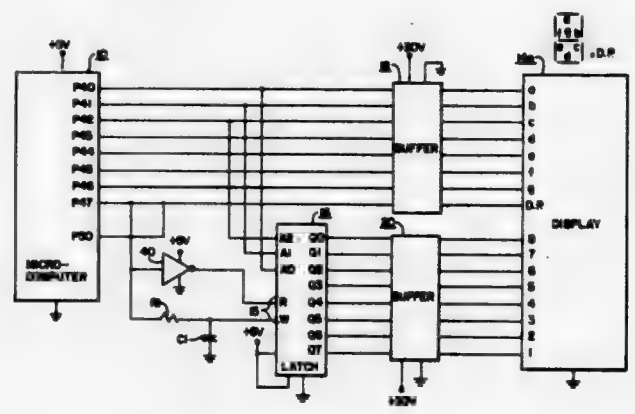
(d) unblanking circuit means for controlling the activation and deactivation of said energy beam, in response to the results calculated by said operation circuit means.

4,511,894

ELECTRONIC DISPLAY APPARATUS USING TIME MULTIPLEXED DATA AND CONTROL SIGNALS

Paul M. Johnston, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1981, Ser. No. 331,726
Int. Cl.³ G09G *3/10*
U.S. Cl. 340—756 **8 Claims**



1. Electronic display apparatus, comprising:

a display device comprising a plurality of digits and a like number of digit select inputs, each digit comprising a plurality of character segments selectively energizable to form a set of display characters and a like number of segment inputs the energization of which produces energization of the corresponding character segment;

an addressable latch device comprising an ENABLE input, a plurality of address inputs, and a plurality of outputs each connected to one of said digit select inputs and selectable by a unique pattern of energization of said latch address inputs, the selected output being latchably energizable upon actuation of said ENABLE input;

a microprocessor for generating said latch address input energization patterns, for generating data to be displayed, and for converting said display data to a multi-segment code to energize the proper display device segments to display said data, said microprocessor comprising a plurality of data outputs each connected to one of said segment inputs, said data outputs also being connected in parallel to said latch address inputs, said microprocessor comprising a control output connected to said ENABLE input; said microprocessor energizing in sequence said data outputs with the latch address input pattern corresponding to the desired digit, said control output, and said data outputs with the multi-segment code for the desired character.

4,511,895

METHOD AND APPARATUS FOR CONTROLLING DISTRIBUTED ELECTRICAL LOADS

Edward B. Miller, West Warwick, R.I., and Charles W. Eichelberger, Schenectady, N.Y., assignors to General Electric Company, Bridgeport, Conn.

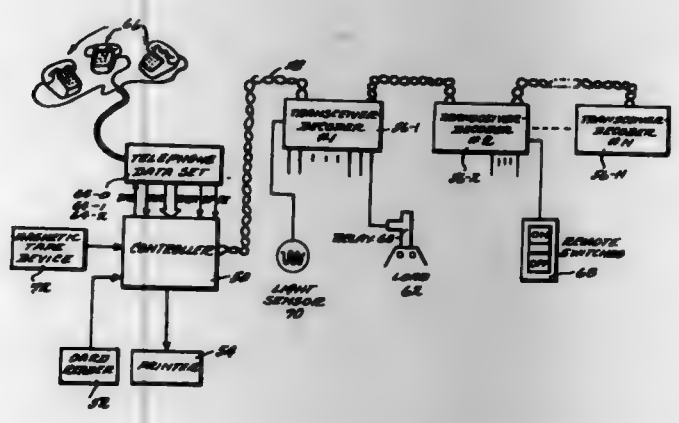
Division of Ser. No. 89,478, Oct. 30, 1979, abandoned. This application Nov. 24, 1981, Ser. No. 324,640
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.5 **18 Claims**

1. Apparatus at plural remote locations permitting non-interfering randomly occurring digital data communication between plural locations via a common data communications link, said apparatus being situated at each of said plural locations and comprising:

data transmitting means for serially transmitting digital binary bit information conveying signals having first and second states onto said communications link as described, one of said first and second states being dominant when transmitted on said link even if simultaneous transmission of the other state on the same link is attempted from

another location, said binary bit information conveying signals including unique duration or sequence patterns of said first and second states identifying respective ones of a plurality of output modes of said data transmitting means, said

arbitatration means for monitoring the existence of and first and second states on the link during the time required for the transmission of said binary bit of information, for



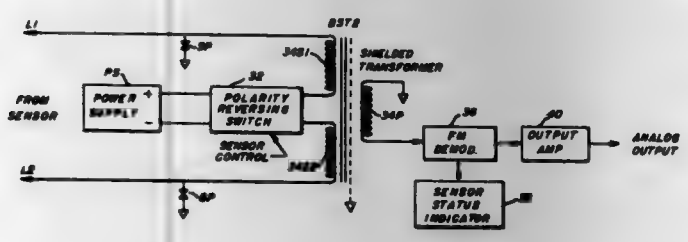
comparing the state value then being transmitted from its respective remote location with the state value then existing on said link, and for inhibiting further transmission of the data onto said link by its respective data transmission means if there is a difference between the value then being transmitted and the actual state then existing thus eventually leaving only one remote location transmitting on said link.

4,511,896

REMOTE SENSOR SYSTEM WITH BI-DIRECTIONAL MONITORING AND CONTROL OF OPERATION

Matthew E. Cousins III, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 30, 1982, Ser. No. 403,686
Int. Cl.³ G08C *19/16*
U.S. Cl. 340—870.25 **7 Claims**



1. A system for transmitting electrical signals bi-directionally between a remote sensor unit which generates analog data signals and a control terminal unit along a single pair of transmission lines comprising:

power supply means within said control terminal unit for applying D.C. power of a predetermined polarity to said pair of transmission lines for providing D.C. bias to both said sensor unit and control terminal unit, said system operating in a monitoring mode of operation wherein analog data signals from said sensor unit are monitored at said control terminal unit when said power of a predetermined polarity is applied;

polarity reversing means coupled to said power supply means for selectively reversing the polarity of power supplied to said pair of transmission lines to switch said system to an adjustment mode of operation wherein said sensor unit is adjusted to a desired operating point;

adjustment means within said sensor unit responsive to said polarity reversal for initiating the adjustment of said sensor unit and terminating the adjustment at said operating point in response to a change in polarity back to said predetermined polarity; and

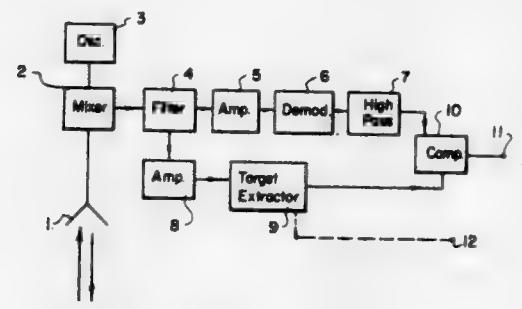
transmitter means within said sensor unit for sending said analog data signals detected by said sensor unit to said control terminal unit along the same single pair of transmission lines to which said D.C. power is applied during both said monitoring and adjustment modes of system operation.

4,511,897

SENSOR SYSTEM FOR METALLIC TARGETS INCLUDING DOPPLER RADAR AND RADIOMETER

Kurt Lindner, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs GmbH, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,384
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3113472
Int. Cl.³ G01S *13/86*
U.S. Cl. 343—6 R **5 Claims**



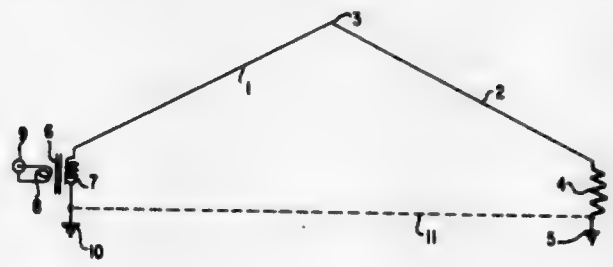
1. A sensor system including a radiometric device, a Doppler radar device, and means for comparing signals obtained through said devices, characterized by a receiving circuit which is common to both said radiometric device and said Doppler radar device and which comprises an antenna, a mixer connected to said antenna, and a mixer oscillator connected to said mixer, and by a channel filter arrangement connected to said mixer, in which low frequency Doppler signals and high frequency radiometer signals contained in an output signal of said mixer are separately filtered out and supplied for signal processing and evaluation to separate devices comprising said radiometric device and said Doppler radar device, and wherein means for detecting quick changes in the radiometric signal are provided in said radiometric device.

4,511,898

TERMINATED INVERTED V ANTENNA WITH MATCHING TRANSFORMER

Elmer R. Bush, Bethlehem, Pa., assignor to Timetco Corporation, Bristol, Pa.

Filed Jun. 22, 1983, Ser. No. 506,837
Int. Cl.³ H01Q *11/06*
U.S. Cl. 343—736 **5 Claims**



1. A wideband coaxial cable fed antenna system for continuous coverage of the 1.8 MHz to 30 MHz frequency spectrum comprising an antenna wire in an inverted V configuration having two wire segments sloping generally downward from an elevated middle portion of said antenna, a terminatng resistor connected between one end of said inverted V antenna wire and an electrical ground connection, and a radiofrequency transformer having a longitudinally laminated ferrite bar core of generally rectangular cross-section, a low impe-

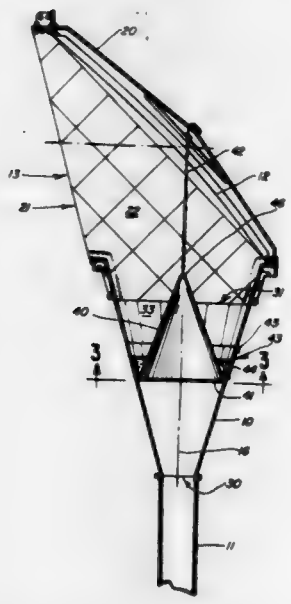
dance primary winding adapted for connection to a coaxial cable transmission line, and a high impedance secondary winding connected between the end of said inverted V antenna wire remote from said resistor terminated end and an electrical ground connection.

4,511,899

HORN-REFLECTOR MICROWAVE ANTENNA WITH INTERNAL DEBRIS TRAP

Eric L. Brooker, Hinsdale, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Dec. 27, 1982, Ser. No. 453,239
Int. Cl.³ H01Q *13/02*
U.S. Cl. 343—784 **6 Claims**



1. A horn-reflector microwave antenna comprising the combination of

a paraboloidal reflector for transmitting and receiving microwave signals,

a tapered feed horn extending downwardly from said reflector for guiding microwave signals to and from said reflector,

a waveguide connected to the lower end of said feed horn, and

a dielectric membrane extending across the interior of said feed horn for collecting any debris that falls down into said feed horn, wherein the outer periphery of said dielectric membrane is secured to the interior walls of said feed horn, and the central portion of said membrane is elevated above the periphery thereof so that debris collected on said membrane slides to the walls of said feed horn where the effect of such debris on the performance of the antenna is minimized.

4,511,900

CURRENT ENHANCED MONOPOLE RADIATION TYPE ANTENNA APPARATUS

Richard E. Deasy, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 10, 1982, Ser. No. 376,871
Int. Cl.³ H01Q *9/38*
U.S. Cl. 343—845 **8 Claims**

1. A system for generating a monopole radiation pattern comprising:

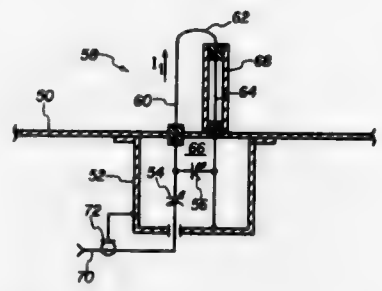
a ground plane having first and second sides;

an electrically short closed loop antenna including,

an input terminal positioned on said first side of said ground plane,

a first unshielded electrical conductor portion positioned on said second side of said ground plane and forming an antenna radiating portion, said first unshielded electrical conductor portion including first and second ends, said first end being electrically insulated from and extending through said ground plane and coupled to said input terminal,

a second electrical conductor portion positioned on said second side of said ground plane and electrically insulated from said ground plane and having a first end coupled to said second end of said first conductor portion and a second end electrically insulated from and extending through said ground plane, and



a return terminal positioned on said first side of said ground plane and coupled to said second end of said second conductor portion; and

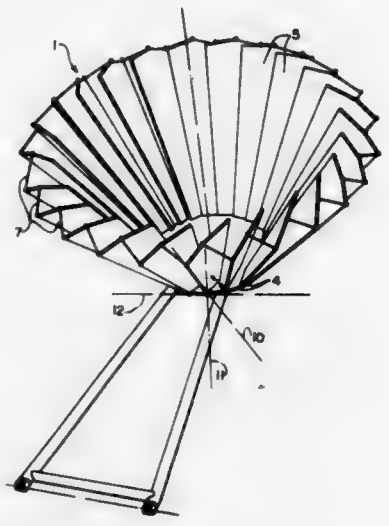
an electrically conductive non-radiating shield positioned on said second side of said ground plane and surrounding and electrically insulated from said second conductor portion, said electrically conductive shield being electrically connected to said return terminal.

4,511,901

DEVICE FOR CONNECTING AND GUIDING THE INDIVIDUAL COLLAPSIBLE ELEMENTS OF A RIGID, COLLAPSIBLE ANTENNA REFLECTOR

Manfred Westphal, Bermatingen, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,093
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128926
Int. Cl.³ H01Q *15/20*
U.S. Cl. 343—915 **2 Claims**



1. A collapsible antenna relfector, comprising

a central panel having circular periphery;

a plurality of rigid tapered panels each having a lower edge, one end point of the edge being hingedly connected to the periphery of the central panel, for simultaneous rotating and pivoting so as to turn each panel and fold it outwardly from a folded position in what one longitudinal edge of each panel is situated on a cylinder surface; and

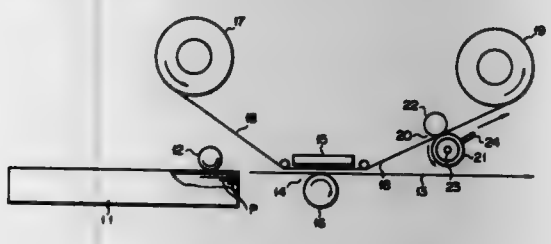
a plurality of rods, each being hinged with one end to one upper end point on said longitudinal edge of a panel of the plurality of panels, and being hinged with its other end to a mid point of an upper edge of an adjacent panel.

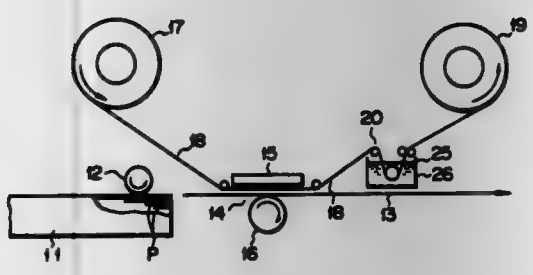
4,511,902

THERMAL TRANSFER TYPE PRINTING APPARATUS

Masayoshi Nagashima, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 16, 1983, Ser. No. 467,167
Claims priority, application Japan, Feb. 17, 1982, 57-24119
Int. Cl.³ G01D *15/10*; B41J *3/20, 31/00*
U.S. Cl. 346—76 PH **5 Claims**





1. A thermal transfer type printing apparatus which comprises:

means for conveying a paper sheet along a conveying path in a conveyance direction;

ribbon means for containing an ink medium formed with an ink layer;

a printing section arranged at said path and having thermal head means which contacts the ink layer of said ink medium contacted with said sheet and is driven in response to printing information for selectively and thermally transferring said ink layer onto said sheet in response to said information; and

erasing means for erasing at least blanks of the ink layer which correspond to said information remaining on said ink medium thus transferred so as to render said information illegible, said erasing means including a press roller in opposing relationship to a heat roller, said press and heat rollers arranged along said path downstream of said printing section, said ribbon means passing between said press and heat rollers so that said ink layer is in contact with said heat roller, said heat roller including heating means for heating and thus melting the ink layer of said ribbon means and being rotated in a direction opposite to said conveyance direction to generate friction between said ribbon means and said heat roller for increasing the erasing effect of said erasing means.

4,511,903

THERMAL PRINTER

Naoki Miyazaki, Suntoh; Keiichi Horiya, Numazu; Tsugio Shiozaki, Susono, and Kazuhide Takahama, Tagata, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,670
Claims priority, application Japan, Oct. 18, 1982, 57-182291
Int. Cl.³ B41J *3/02*
U.S. Cl. 346—76 PH **6 Claims**

1. A thermal printer comprising:

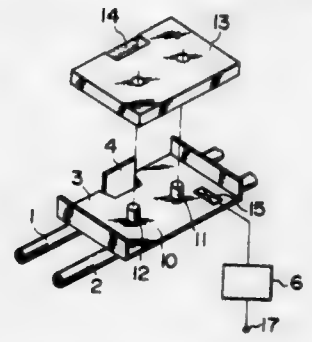
a platen to hold a paper;

a carriage moveable in reciprocating motion along the platen;

a thermal head attached to the carriage;

a ribbon cassette enclosing a printing ribbon coated with thermal fusible ink, said cassette being attachable to the carriage;

means for supplying a supply voltage to the thermal head to heat the thermal fusible ink or the paper;



a detector for detecting whether the ribbon cassette is attached to the carriage; and

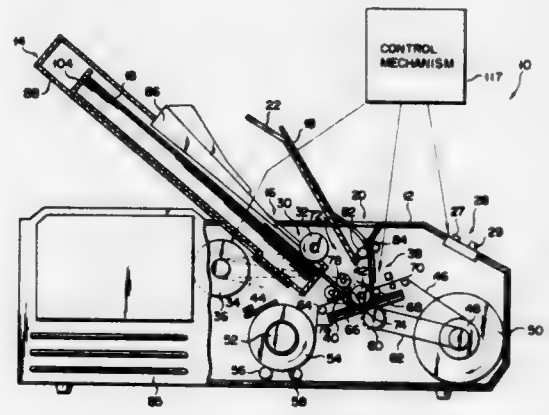
a driving voltage switching circuit for varying the supply voltage to the thermal head in response to the output of the detector in order to heat either the thermal fusible ink or the paper;

4,511,904

RECORDING APPARATUS

Tomohiko Takahashi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 14, 1983, Ser. No. 541,911
Claims priority, application Japan, Oct. 18, 1982, 57-156315[U]
Int. Cl.³ G01D *15/24*; B65H *1/00, 7/02*; B41J *13/10*
U.S. Cl. 346—134 **15 Claims**



1. A recording apparatus for recording information onto a sheet comprising:

a main body;

a printing means provided in said main body for effecting the printing onto said sheet;

a cassette for receiving the sheet provided separately from said main body;

a cassette-mounting means for mounting said cassette at a position located above said main body and obliquely with respect thereto;

a sheet feeding means for feeding said sheet received in said cassette toward said printing means;

a stopper means movably provided to said cassette in accordance with various size sheets received in said cassette, thereby setting said sheet into said cassette;

a sheet size regulating member connected to said stopper means and movably provided to a prescribed position in accordance with the movement of said stopper means,

a sheet size sensing means for sensing the size of the sheet received in said cassette provided to said cassette-mounting means and sensing the position of said sheet size regulating member and generating a detection signal; and

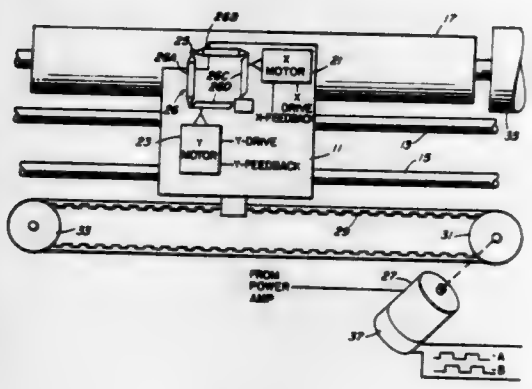
a display means for displaying the size of the sheet received in said cassette in accordance with the signal from said sheet size sensing means.

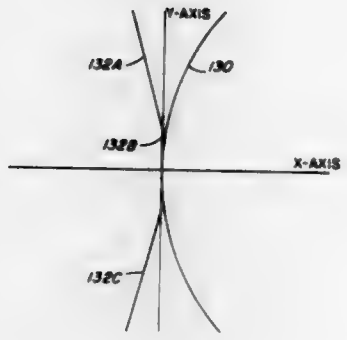
4,511,905

STYLUS RECORDER LINEARIZED DRIVE SYSTEM

Richard M. Ulvila, Salem, N.H., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Filed Sep. 30, 1982, Ser. No. 430,506
Int. Cl.³ G01D *15/18*; B41J *3/04*
U.S. Cl. 346—140 A **4 Claims**





1. A calligraphic character printer comprising:
a print head assembly including a stylus;
a suspension for permitting movement of said stylus relative the assembly, said suspension including at least a pair of generally orthogonal arms hinged together;
for each arm, a drive transducer operative to move the stylus along an arc having a substantial curvature defined essentially by the length of the other arm;
means for generating, from stored data, a pair of signals which represent stylus position along orthogonal axes relative said assembly;
for each drive transducer, servo amplifier means for energizing that drive transducer responsive to the respective position signal;
for each drive transducer, means for generating a compensation signal which is an function of the absolute value of the position signal corresponding to the other drive transducer and for mixing that compensation signal into the position signal which controls the energization of the respective drive transducer with a value to substantially offset the deviation from a straight line of said curvature.

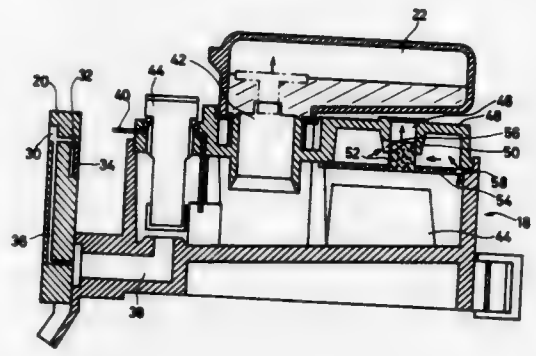
4,511,906

INK LIQUID RESERVOIR IN AN INK JET SYSTEM PRINTER

Takafumi Hara, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 5, 1983, Ser. No. 539,251
Claims priority, application Japan, Oct. 13, 1982, 57-154575[U]; Nov. 22, 1982, 57-176868[U]
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **6 Claims**

1. An ink liquid supply system for an ink jet system printer which includes a printer head mounted on a carriage, comprising:
an ink liquid reservoir mounted on said carriage, said ink liquid reservoir having a ceiling wall provided with an opening;
an ink cartridge removable mounted on said ink liquid reservoir;



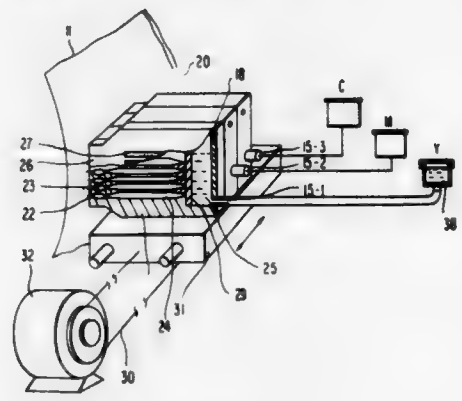
a capping member engaged in said opening formed in said ceiling wall of said ink liquid reservoir; and
a thin gap formed between said capping member and said ceiling wall of said ink liquid reservoir.

4,511,907

COLOR INK-JET PRINTER

Hiromichi Fukuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 19, 1983, Ser. No. 543,546
Claims priority, application Japan, Oct. 19, 1982, 57-183220
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **7 Claims**



1. An ink-jet printer comprising:
a paper-feed control mechanism;
a printing mechanism containing print heads each Provided with a plurality of nozzles arranged vertically and substantially in the direction of paper feeding;
a carriage-feed control mechanism carrying said printing mechanism, moving at a constant speed in the horizontal direction, and outputting position detection signals;
a buffer circuit for temporarily storing input data transmitted from outside;
a dot pattern storage circuit for converting data output from said buffer circuit into a dot pattern and storing it;
a print head control circuit outputting timing signals for driving said print heads, in synchronization with the position detection signals output from said carriage-feed control mechanism;
a print head driving circuit unit for driving the print heads according to dot pattern data signals output from said dot pattern storage circuit, in synchronization with the timing signals from said print head control circuit;
a control unit for controlling all of said circuit units;
a first print head recording section being composed of said buffer circuit, said dot pattern storage circuit, said print head control circuit, said print head driving circuit, and a first print head mechanism wherein a plurality of nozzles

are arranged in the vertical direction substantially in the direction of paper feed;

a second print head recording section being composed of a second buffer circuit, a second dot pattern storage circuit, a second print head control circuit, a second print head driving circuit, a second print head mechanism wherein a plurality of nozzles are arranged in the vertical direction substantially in the direction of paper feed, and a delay memory circuit which is inserted between said second dot pattern storage circuit and said second print head control circuit and which generates a dot shift between the first print head mechanism acting as a baseline to the second print head mechanism in order to print and record dots at the same positions of and superimposed over dots printed and recorded on a sheet of paper by the first print head recording section; and

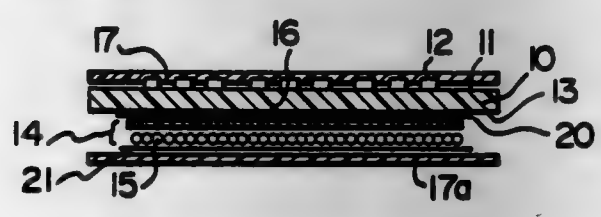
a third print head recording section having a similar circuit constitution to that of said second print head recording section, the delay memory circuit in said third print head recording section being a delay memory generating a dot shift from the first print head mechanism acting as a baseline to a third print head mechanism unit.

4,511,908

PLASTIC IDENTIFICATION CARD HAVING FORGERY PROTECTION WITH RESPECT TO EMBOSSED INFORMATION

Edward A. Small, Nepean, Canada, assignor to British American Bank Note Inc., Ottawa, Canada

Filed Feb. 10, 1984, Ser. No. 579,013
Claims priority, application Canada, May 17, 1983, 428289
Int. Cl.³ B41M *5/16*
U.S. Cl. 346—206 **12 Claims**



1. An identification card comprising a core stock, having embossed information and at least one layer of chemicals reactive under pressure in registration with the embossments to form a coloured dye conforming with the original embossed information and a further formation of such dye when the embossed information is altered.

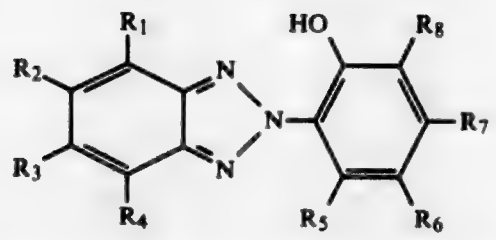
4,511,909

HEAT-SENSITIVE RECORDING MATERIALS

Naoto Arai, Osaka, Japan, assignor to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,857
Claims priority, application Japan, Nov. 17, 1981, 56-184862
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—208 **4 Claims**

1. A heat-sensitive recording material comprising a support having a recording layer provided thereon, said recording layer comprising (a) a colorless or pale-colored basic dye selected from the group consisting of 3-(N-ethyl-p-toluidino)-6-methyl-7-phenylaminofluoran, 3-(N-ethyl-p-toluidino)-6-methyl-7-(p-toluidino)fluoran, 3-diethylamino-6-methyl-7-phenylaminofluoran, 3-diethylamino-7-(2-carbomethoxyphenylamino)fluoran, 3-(N-cyclohexyl-N-methylamino)-6-methyl-7-phenylaminofluoran, 3-pyrrolidino-6-methyl-7-phenylaminofluoran, 3-piperidino-6-methyl-7-phenylaminofluoran, 3-diethylamino-6-methyl-7-xylidinofluoran, 3-pyrrolidino-6-methyl-7-p-butylphenylaminofluoran, and 3,3-bis-(p-dimethylaminophenyl)-6-dimethylaminophthalide, (b) a color developing material, and (c) at least one heat-fusible material represented by the formula (I):



(I)

wherein R_1 to R_8 independently represent a hydrogen atom, a halogen atom, an alkyl group having 1 to 8 carbon atoms, an alkoxy group having 1 to 8 carbon atoms, a phenyl group, a benzyl group, or a benzyloxy group, and wherein the ratio by weight of said at least one heat-fusible material to said developing material is at least 1 to 10.

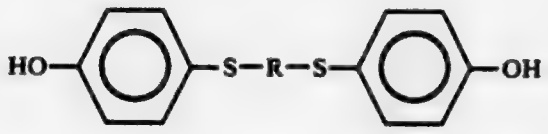
4,511,910

THERMOSENSITIVE RECORDING MATERIAL

Keishi Taniguchi, Shizuoka, and Kiyotaka Iiyama, Mishima, both of Japan

Filed Apr. 12, 1984, Ser. No. 599,408
Claims priority, application Japan, Apr. 16, 1983, 58-67520; Oct. 20, 1983, 58-196798
Int. Cl.³ B41M *5/18, 5/22*
U.S. Cl. 346—216 **5 Claims**

1. In a thermosensitive recording material comprising a colorless or light-colored coloring material, and a color developer capable of inducing color formation in said colorless or light-colored coloring material upon application of heat thereto, the improvement wherein said color developer is a phenolic material of the formula



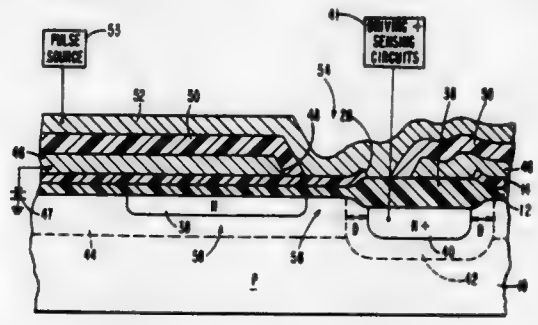
wherein R represents an straight-chain or branched alkylene group having at least one hydroxyl group.

4,511,911

DENSE DYNAMIC MEMORY CELL STRUCTURE AND PROCESS

Donald M. Kenney, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1981, Ser. No. 286,110
Int. Cl.³ H01L *29/78, 27/02, 29/34, 27/10*
U.S. Cl. 357—23.6 **9 Claims**



1. A memory cell comprising;

a semiconductor substrate of a first conductivity type having spaced apart storage node and bit/sense line diffusion regions of a second conductivity type defining a channel region,

a first insulating layer having a given substantially uniform thickness disposed over said storage node diffusion region and extending over a first portion of said channel region,

a second insulating layer disposed over said bit/sense line diffusion region and extending over the remaining portion

of said channel region adjacent said bit/sense line diffusion region, the thickness of said second insulating layer over said bit/sense line diffusion region and over the remaining portion of said channel region being substantially thicker than said given thickness,

a control gate disposed over said channel region, said first and second insulating layers being disposed between said channel region and said control gate, said control gate being spaced from the first portion of said channel region by a distance equal to the thickness of said first insulating layer and from the remaining portion of said channel region and from said bit/sense line diffusion region by a distance equal to the thickness of said second insulating layer, and

conducting means disposed over said first and second insulating layers and insulated from said control gate, said conducting means having an opening over said channel region.

4,511,912

SEMICONDUCTOR ELEMENT

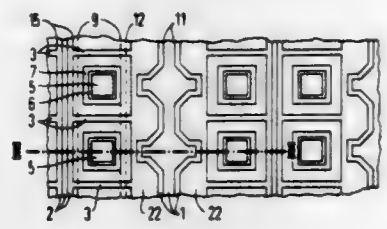
Peter Mahrla, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

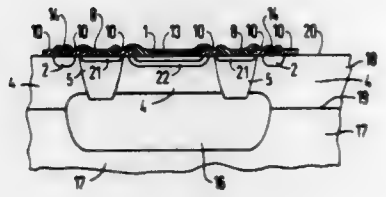
Filed Aug. 5, 1981, Ser. No. 290,332

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035462

Int. Cl.³ H01L *29/72*

U.S. Cl. 357—36 **3 Claims**





1. Integrated power transistor arrangement with several bipolar parallel connected partial power transistors in which, on a semiconductor substrate an epitaxial layer is provided, which forms the partial power transistors in respective collector zones, in which, in the region of the border-surface between the semiconductor substrate and the epitaxial layer, is provided for each respective collector zone a buried layer zone, which projects all the way to collector contact regions, the collector contact regions reaching from the surface of the epitaxial layer facing away from the semiconductor substrate into the buried layer zone, and in which, in the epitaxial layer on the side facing away from the semiconductor substrate, a base zone is provided which is part of the partial power transistors and in the base zone is provided a common emitter zone for the partial power transistors; and in which is connected to each respective base a barrier resistance which is integrated with the base, the power transistor arrangement which comprise base barrier resistances which are formed in such a way that the base common to the partial power transistors extends from an active base region which lies below the zones forming the emitter for the partial power transistors, and has strip-shaped regions which project through bounded regions of the epitaxial layer which in each case, respectively, form a collector contact region for a partial power transistor and that the strip-shaped regions of the base zone on the side of the collector contact regions facing away from the emitter zone have a common base contact.

4,511,913

GATE-TURN OFF THYRISTOR WITH OPTIMIZED ANODE SHORTING RESISTANCE, R_{so}

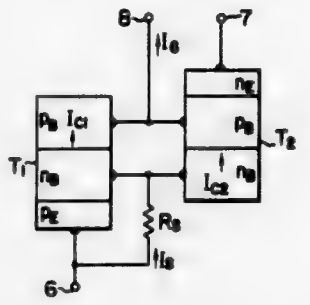
Takahiro Nagano, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

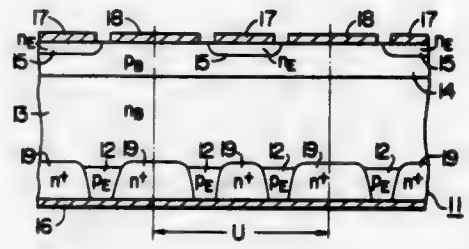
Continuation-in-part of Ser. No. 13,808, Feb. 22, 1979, abandoned. This application May 27, 1981, Ser. No. 267,676

Claims priority, application Japan, Feb. 22, 1978, 53-18484

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **10 Claims**





1. A semiconductor switching device having a gate turn-off capability, comprising:

a semiconductor substrate including at least one gate turn-off thyristor unit comprising four semiconductor layers with alternately different conductivity types, a first main electrode kept in ohmic contact with a first outermost semiconductor layer of said four semiconductor layers, a control electrode kept in ohmic contact with a first inner semiconductor layer of said four semiconductor layers adjacent to said first outermost semiconductor layer, and a second main electrode kept in ohmic contact with a second outermost semiconductor layer of said four semiconductor layers and with an exposed area of a second inner semiconductor layer of said four semiconductor layers adjacent to said second outermost semiconductor layer, wherein a short-circuiting resistance $R_{so}(\Omega \cdot cm^2)$ between (a) an area on a first surface of the second inner semiconductor layer adjacent to the first inner semiconductor layer which area is a projection of said first outermost layer on said first surface of the second inner semiconductor layer and (b) said exposed area of said second inner semiconductor layer which is in contact with said second main electrode satisfies the following inequality in thermal equilibrium:

$$R_{so\ min} < R_{so} < R_{so\ max},$$

where $R_{so\ min}$ and $R_{so\ max}$ are the lower and upper limits of R_{so}, respectively, and $R_{so\ min}$ and $R_{so\ max}$ are also represented by the following expressions:

$$R_{so\ min} = 0.498\ (\log \tau_{B1} - 0.54)^{-1/7} \cdot \rho_n W \text{ and}$$

$$R_{so\ max} = 3.937\ (\log \tau_{B1} - 0.654)^{-0.3} \cdot \rho_n W,$$

where W and ρ_n are the thickness (cm) and the resistivity (Ω·cm) of said second inner semiconductor layer respectively and τ_{B1} is the life-time (μsec) of the carrier in said second inner semiconductor layer.

4,511,914

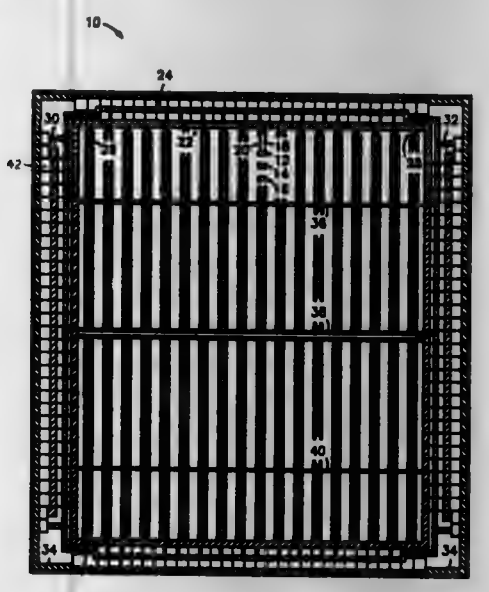
POWER BUS ROUTING FOR PROVIDING NOISE ISOLATION IN GATE ARRAYS

James J. Remedi, Austin; Don G. Reid, Round Rock, and Lynette Ure, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1982, Ser. No. 394,239

Int. Cl.[3] **H01L** *27/02, 27/10, 23/48, 27/15*

U.S. Cl. 357—45 **9 Claims**



1. A gate array having power bus routing for providing noise isolation, comprising:

n columns of a plurality of transistor cells, where n is an integer, each of said n columns of transistor cells having first and second power busses extending substantially along each of the n columns and coupled to predetermined ones of the transistor cells;

first and second input/internal power busses coupled to said first and second power busses of each column, respectively, and extending substantially around the perimeter of said n columns, for providing power to each transistor cell of said n columns;

at least one power strip extending substantially perpendicular to said n columns of transistor cells, coupling each of said pair of input/internal power busses to a predetermined one of said first and second power busses of one or more columns, for providing increased current to said plurality of transistor cells; and

output power busses positioned along the outer perimeter of said gate array, for providing power busses for output cells along one or more sides of the gate array which are separate from the internal power busses to keep external current spikes from being coupled into the array.

4,511,915

COLOR TELEVISION ENCODING CIRCUIT

Nicolaas J. L. Van der Valk; Antonius G. Moelands, and Peter C. Schmale, all of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 12, 1983, Ser. No. 457,610

Claims priority, application Netherlands, Jan. 14, 1982, 8200127

Int. Cl.[3] **H04N** *9/46, 5/06*

U.S. Cl. 358—17 **6 Claims**

1. A color television encoding circuit for use in a television system of the NTSC or PAL standard, comprising:

a first oscillator for generating a chrominance subcarrier signal having a frequency stability prescribed by one of said standards;

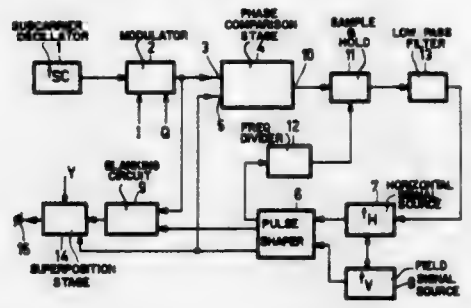
a second oscillator for generating a line frequency signal;

a pulse circuit for generating a composite synchronizing signal;

a modulator circuit for modulating the chrominance subcarrier signal to generate a chrominance signal;

a signal control loop for adjusting the phase and frequency of the second oscillator, including:

a phase comparison stage having first and second input terminals for receiving the chrominance signal and composite synchronizing signal, respectively, and an output terminal, said stage detecting during operation the difference of the phase of the chrominance subcarrier signal with respect to the zero value at the instant at which the leading edge of the synchronizing pulse reaches half the amplitude thereof, and



a sample and hold circuit connected to said phase comparison stage output terminal and said second oscillator, said sample and hold circuit sampling once per 2n line periods, where n is an integer, to produce a control signal for said second oscillator frequency.

4,511,916

METHOD AND DEVICE FOR CORRECTING CHROMINANCE SIGNAL

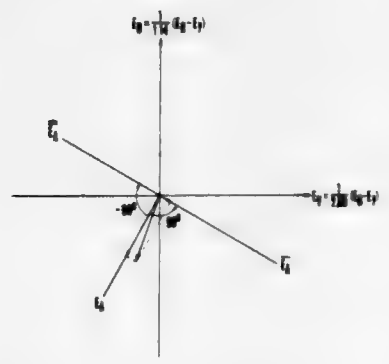
Ryo Fujimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,889

Claims priority, application Japan, Apr. 7, 1982, 57-57936

Int. Cl.[3] **H04N** *9/535*

U.S. Cl. 358—28 **10 Claims**



1. A method for correcting a chrominance signal, comprising steps of:

(a) obtaining a carrier chrominance signal by modulating a carrier with an input chrominance signal;

(b) taking out from said input signal a first hue component which is of a phase differing about plus 90° from the phase of a specific color relative to the carrier and a second hue component which is of a phase differing about minus 90° from the phase of the specific color;

(c) determining the magnitudes of said first and second hue components; and

(d) correcting said carrier chrominance signal when the magnitudes of said first and second hue components are determined to be less than a prescribed value.

4,511,917

DETERMINING AGREEMENT BETWEEN AN ANALYSIS SIGNAL AND AT LEAST ONE REFERENCE SIGNAL

Hans O. Köhler, Lilla vägen 10, s-142 00 Trångsund, Sweden, and Sten K. Strömvall, Farsta, Sweden, assignors to Hans Olof Kohler, London, England

PCT No. PCT/SE82/00339, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01526, PCT Pub. Date Apr. 28, 1983

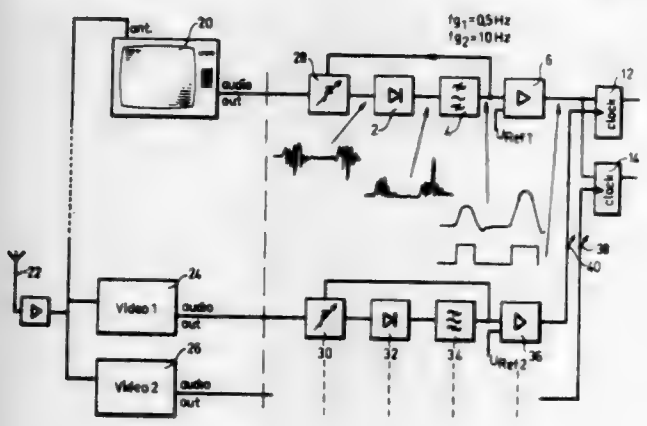
PCT Filed Oct. 20, 1982, Ser. No. 514,808

Claims priority, application Sweden, Oct. 20, 1981, 8106186

Int. Cl.[3] H03K 5/26; H04N 7/02

U.S. Cl. 358—84

10 Claims



1. A method of determining concordance of an analysis signal with at least one reference signal comprising forming smoothed envelopes of the analysis signal and the reference signal, generating a pulse train for each of the smoothed envelopes comprising pulses which have a duration determined by the time of a predetermined relationship of the envelopes, above or below a threshold signal, said pulse trains respectively representing the analysis signal and the reference signal, and subsequently registering the simultaneous occurence of pulses in the two trains in a predetermined number of consecutive comparisons made each time a pulse occurs in the reference signal pulse train constituting the criterion for the analysis signal and the reference signal being in concordance.

4,511,918

SCANNING APPARATUS AND METHOD

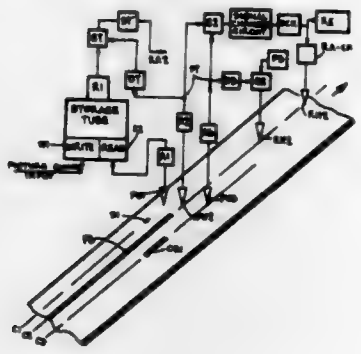
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08841

Division of Ser. No. 013,608, Feb. 16, 1979, Pat. No. 4,338,626, which is a division of Ser. No. 778,331, Mar. 16, 1977, Pat. No. 4,148,061, which is a continuation of Ser. No. 254,710, May 18, 1972, Pat. No. 4,118,730, which is a continuation-in-part of Ser. No. 267,377, Mar. 11, 1963, which is a continuation-in-part of Ser. No. 626,211, Dec. 4, 1956, Pat. No. 3,081,379, and Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Jul. 2, 1982, Ser. No. 394,946

Int. Cl.[3] H04N 7/18

U.S. Cl. 358—107

46 Claims



1. An automatic scanning system comprising:
(a) a beam scanning device,
(b) means for locating an image field to be scanned in the scanning field of said device,
(c) means initiating scanning and causing the beam to scan in a predetermined path across the field to be scanned,
(d) said beam device including means for producing an output signal derived from scanning and modulating said signal in accordance with variations in light intensity of the field scanned,
(e) a storage tube having a writing means and a reading means connected to its output,
(f) said writing means including beam means for storing said input signal,
(g) means passing the output of said beam scanning device to the input of said storage tube to effect storage of said output signal,
(h) recording means having a movable recording member and recording transducing means operative for recording signals onto said recording member,
(i) said recording transducing means being adapted to receive signals generated on the output of said storage tube,
(j) means for generating a control signal when a predetermined portion of said recording member is aligned with said recording transducing means, and
(k) means responsive to said control signal for activating said storage tube reading means,
(l) whereby after a signal has been recorded on its storage means, a signal is generated on its output which signal is recorded on said recording member.

4,511,919

METHOD AND APPARATUS FOR SCRAMBLING AND DESCRAMBLING VIDEO SIGNALS IN A MULTICHANNEL SYSTEM

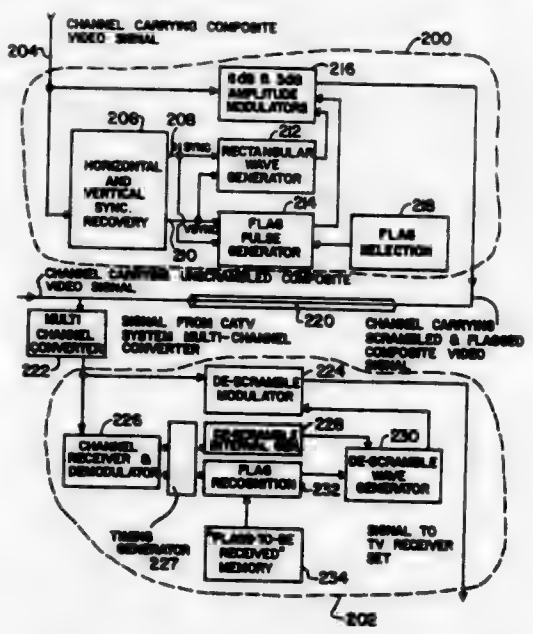
James Forgey, Seattle, Wash., and Donald Kirk, Jr., Gainesville, Fla., assignors to Hamlin International Corp., Seattle, Wash.

Filed Dec. 1, 1981, Ser. No. 326,441

Int. Cl.[3] H04N 7/16

U.S. Cl. 358—120

3 Claims



1. In a video communication system which provides an unscrambled composite video signal having a video information signal interrupted by (1) amplitude-detectable horizontal sync pulses occurring within a horizontal blanking interval which follows the scan of a horizontal line and (2) periodic sets of pulses, each such set including vertical sync pulses and occurring within a vertical blanking interval which follows the scan of a predetermined fixed number of horizontal lines, apparatus for limiting access by a receiver set to the video information contained within the video information signal of the unscrambled composite video signal, the apparatus comprising:

a scrambler having the unscrambled composite video signal as an input, the scrambler comprising:

amplitude modifying means for (a) reducing the amplitude of predetermined horizontal sync pulses to levels indistinguishable from the amplitude of the video information signal of the unscrambled composite video signal and (b) maintaining the amplitude of (1) at least some of the pulses occurring during each vertical blanking interval and (2) substantially all of the video information signal, the scrambler thereby providing a selectively suppressed scrambled composite video signal as an output; and

a descrambler connected to receive the scrambled composite video signal as input, the descrambler comprising:

means for deriving the time intervals of the amplitude-reduced horizontal sync pulses from the amplitude-maintained pulses occurring within the vertical blanking intervals,

said video communication constituting a system wherein each periodic set of pulses includes a fixed number of adjacent broad pulsewidth vertical sync pulses and a plurality of narrow pulsewidth equalizing pulses, the scrambler further comprising:

(a) means for determining a time period which contains a plurality of equalizing pulses, at least some of which are adjacent in time;

(b) means for dividing the intervals between at least two adjacent equalizing pulses in the determined time period into time slots; and

(c) flagging means for selecting one of a plurality of broadcast identifier flags and for generating a flag pulse during one of the time slots, the flag pulse in the time slot corresponding to the selected identifier flag,

said flagging means further comprising:

means for inserting the generated flag pulses into the selectively suppressed composite video signal when (a) the flag pulse occurs during a preselected time slot between two equalizing pulses, (b) the preselected time slot occurs during the determined time period, and (c) the determined time period occurs within a fixed relative time interval during each vertical blanking interval,

said flag inserting means further comprising:

modulator means for effecting a relative increase in the selectively suppressed scrambled composite video signal during the presence of an inserted flag pulse,

said time interval deriving means comprising:

means for producing a reference pulse at substantially the same relative time during each vertical blanking interval,

said reference pulse producing means comprising:

(a) means for integrating the vertical sync pulses;

(b) means for comparing the output of the integrating means with a threshold level which is less than the maximum output integrated by the integrating means; and

(c) means for signalling when the output of the integrating means exceeds the threshold level,

(d) means, receiving the scrambled composite video signal as input, for providing a pip signal in response to either only the rising edge or falling edge of each pulse in the srambled video signal; and

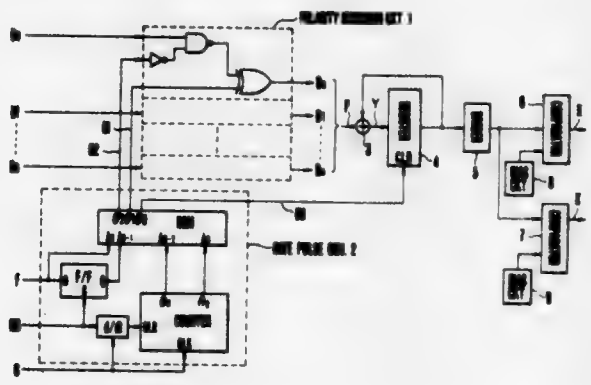
(e) means, having as inputs the output of the pip signal providing means and the output of the integrating means, for generating a pulse output when a pip from the pip providing means is first provided after the signalling means indicates that the threshold level has been exceeded.

4,511,920

TELEVISION SIGNAL AMPLITUDE DETECTION CIRCUIT

Yukihiko Iijima, and Sadame Kobayashi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1982, Ser. No. 400,147
Claims priority, application Japan, Jul. 22, 1981, 56-113624
Int. Cl.³ H04N *7/02*
U.S. Cl. 358—139 **4 Claims**



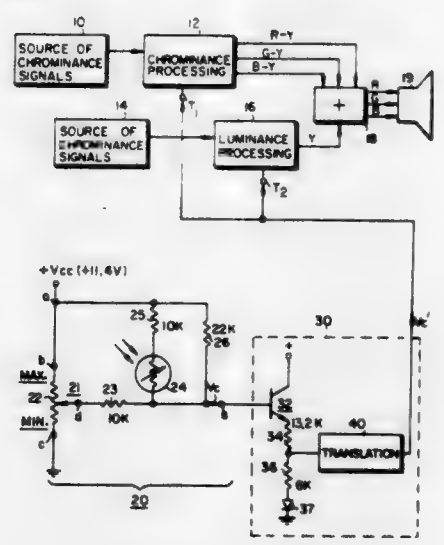
1. A television synchronizing signal amplitude detection circuit for detecting the amplitude of an input composite television signal comprising a first detection circuit for detecting the sync signal amplitude from the difference between an average of a first level and an average of a second level in a detection interval including a vertical sync pulse period and an equalizing pulse period preceding or succeeding said vertical sync pulse period of the television signal, and a second detection circuit for determining whether said sync signal amplitude detected by said first detection circuit is within a predetermined permissible range, the detection output of said second detection circuit being representative of detection as to whether the amplitude of the composite television signal is within a permissible range.

4,511,921

TELEVISION RECEIVER WITH MANUAL AND SELECTIVELY DISABLED AUTOMATIC PICTURE CONTROL

Wayne E. Harlan, and James C. Marsh, Jr., both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,971
Int. Cl.³ H04N *5/58, 9/535*
U.S. Cl. 358—161 **9 Claims**



1. In a video signal display system including a signal processing channel; an imange reproducing kinescope for producing an image display on a viewing screen thereof in response to output signals from said signal processing channel; and a light responsive variable conduction device positioned with respect to said kinescope viewing screen such that substantially pro-

portional amounts of ambient light strike said light responsive device and said kinescope viewing screen; a source of variable DC gain control voltage for controlling the gain of said signal processing channel, comprising:

a first DC operating potential;

a second DC operating potential;

a manually adjustable potentiometer including a resistance between first and second nodes, and an adjustable wiper slideably connected to said resistance and adjustable between said first and second nodes; said potentiometer exhibiting a maximum gain setting when said wiper is positioned at said first node, and exhibiting a minimum gain setting when said wiper is positioned at said second node;

a first coupling path for coupling said first potentiometer node to said first DC potential;

a second coupling path for coupling said second potentiometer node to said second DC potential;

a third coupling path for coupling said potentiometer wiper at which a manually variable gain control voltage is produced according to the position of said wiper, to a gain control voltage output terminal of said gain control voltage source; and

a variable impedance network, including said light responsive device, coupled from said first operating potential to said third coupling path; wherein

(a) the impedance of said first coupling path is significantly less than the effective impedance of said variable impedance network when said wiper is positioned at said first potentiometer node to produce a maximum gain condition, and

(b) the impedance between said output terminal and said second operating potential is significantly greater than the effective impedance of said variable impedance network when said wiper is positioned at said first potentiometer node to produce a maximum gain condition, such that the gain control voltage at said output terminal is substantially unaffected by variations in the conductivity of said light responsive device in response to varying ambient light levels when said wiper is positioned at said first potentiometer node.

4,511,922

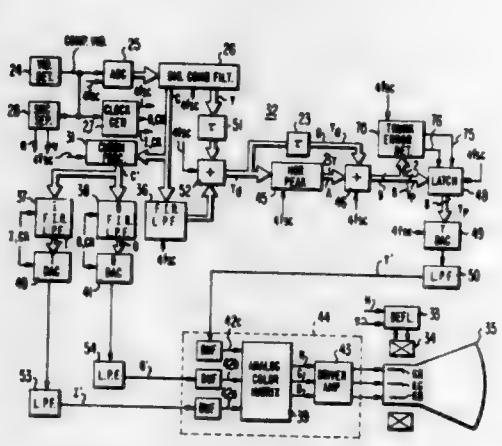
DIGITAL TELEVISION SYSTEM WITH TRUNCATION ERROR CORRECTION

Henry G. Lewis, Jr., Hamilton Square, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 21, 1982, Ser. No. 435,777

Int. Cl.³ H04N *5/14*

U.S. Cl. 358—166 **5 Claims**



1. A digital television signal processing system with truncation error, correction, comprising:

means for supplying first digital samples containing picture information;

a digital processor operating on said first digital samples to derive therefrom second digital samples that contain picture information that is modified from the picture information contained in said first digital samples, said digital processor including within its processing chain a processing stage that produces an output digital word that is subject to truncation error when said digital processor is supplied with selected ones of said first digital samples such that said truncation error results in the derivation of second digital samples containing erroneously modified picture information;

means coupled to said digital processor for detecting the truncation error produced by said processing stage; and

means coupled to said truncation error detecting means for changing said second digital samples upon the detection of said truncation error to different samples that contain picture information corrected for the effects of said truncation error,

wherein said processing stage includes an adder that develops said output digital word such that said adder produces one of an overflow and underflow condition upon the occurrence of said truncation error and wherein said second digital sample changing means includes a latch that receives said output digital word and passes it to a subsequent processing stage such that upon the detection of said truncation error said latch passes a modified output digital word corrected for the effects of said truncation error.

4,511,923

METHOD FOR TUNING THE INPUT STAGE OF A RECEIVER TO A DESIRED RECEIVING FREQUENCY AND CIRCUIT ARRANGEMENT FOR CARRYING OUT THE METHOD

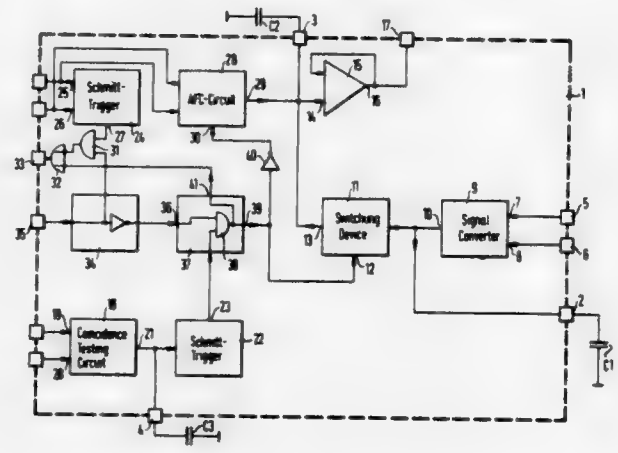
Laslo Götz, Freising, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 12, 1981, Ser. No. 320,896

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3043103; Nov. 20, 1980, 3043768

Int. Cl.³ H04N *5/44*

U.S. Cl. 358—191.1 **23 Claims**

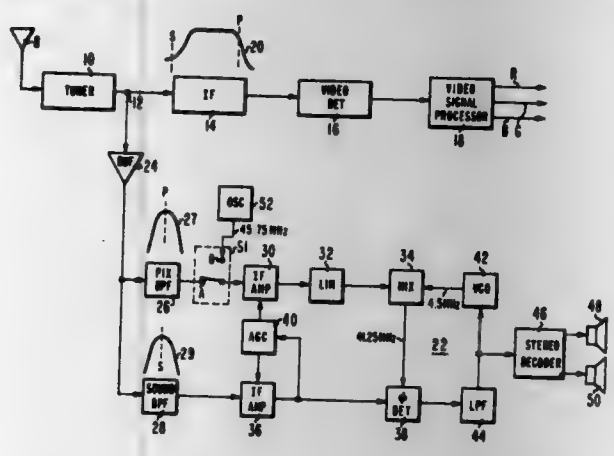


1. Method for tuning the input stage of a receiver to a desired transmission frequency in which a tuning signal whose duty cycle represents a received frequency is converted to a d.c. tuning voltage which is applied to the input stage for the tuning, wherein the instantaneous d.c. level of the tuning voltage applied during the tuning operation to the input stage is stored, and after completion of the tuning operation the application of the tuning voltage to the input stage is interrupted and the previously stored instantaneous d.c. level of the tuning voltage is applied to the input stage.

4,511,924
FREQUENCY TRANSLATION PHASE-LOCKED LOOP FOR SEPARATE OR INTERCARRIER TYPE TELEVISION SOUND DETECTION

Patrick D. Griffis, and Abraham E. Rindal, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 29, 1982, Ser. No. 437,833
Int. Cl.[3] H04N *5/62*
U.S. Cl. 358—197 5 Claims



1. In a television system including a source of an intermediate frequency (IF) signal having an IF picture carrier amplitude modulated with video information and an associated IF sound carrier frequency modulated with audio information, apparatus for detecting said audio information comprising:

a frequency translation phase-locked loop (PLL) for producing at an output said audio information, said frequency translation PLL including a phase detector having a first input coupled to be responsive to said frequency modulated sound carrier, a second input and an output for providing said audio information;

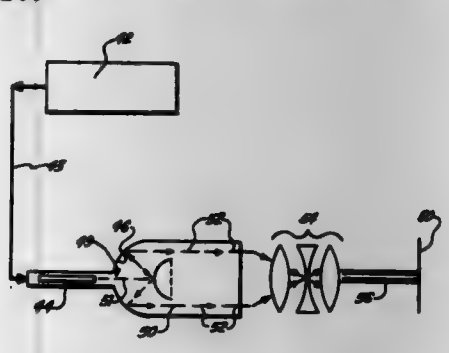
an oscillator for producing an oscillator signal; and

a switching means coupled to be responsive to said amplitude modulated picture carrier and said oscillator signal for selectively causing said second input of said phase detector to be responsive to either said amplitude modulated picture carrier or said oscillator signal.

4,511,925
HIGH INTENSITY ULTRAVIOLET LIGHT VIDEO IMAGING APPARATUS

Joseph R. Mackenroth, III, 8117 McArthur Dr., Harahan, La. 70123

Filed Aug. 16, 1982, Ser. No. 408,429
Int. Cl.[3] G03B *27/70;* H04N *5/76*
U.S. Cl. 358—244 15 Claims



1. An ultraviolet, video imaging tube for printing on vesicular microfilm, diazo microfilm, and diazo paper and like medium comprising:

a. housing means having an outer wall defining therewithin an interior;

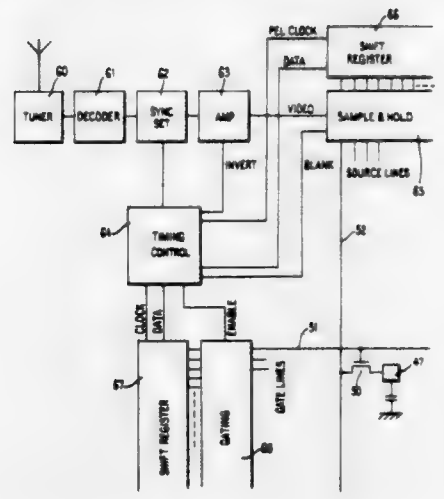
b. electron gun means penetrating the housing wall for emitting scanning electrons into the housing means across a path intersecting the interior of the housing means; and

c. ultraviolet phosphor target means disposed within the housing means interior, and positioned on said path for converting the scanning electrons into a reflected high intensity, ultraviolet video image which can print upon an ultraviolet sensitive medium.

4,511,926
SCANNING LIQUID CRYSTAL DISPLAY CELLS

William A. Crossland, Harlow; Peter W. Ross, and Peter J. Ayliffe, both of Bishop's Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 31, 1983, Ser. No. 481,050
Claims priority, application United Kingdom, Apr. 1, 1982, 8209708
Int. Cl.[3] H04N *5/66*
U.S. Cl. 358—236 5 Claims



1. A method of operating a matrix array liquid crystal display device including a liquid crystal layer sandwiched between a transparent front sheet provided with an electrode and a rear sheet provided with a matrix array of electrode pads that define respective picture elements, and an access circuitry including a matrix array of gates individually connected to the electrode pads and operative for supplying selected potentials thereto in accordance with the information to be displayed, comprising the steps of:

maintaining the front sheet electrode at a substantially constant reference potential;

repetitively addressing each of the electrode pads via the associated gate;

supplying the selected potential to the respective electrode pad through the associated gate during said addressing step;

closing the associated gate after said addressing step for a predetermined period of time;

opening the associated gate at least once following said predetermined period of time;

discharging the respective electrode pad with respect to the front sheet electrode during said opening step through the associated gate; and

reclosing the associated gate after said discharging step until the next following addressing step.

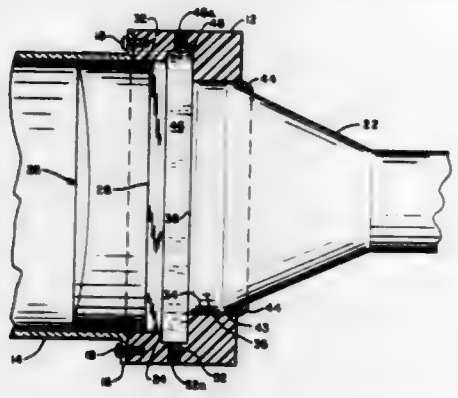
4,511,927
LIQUID COUPLING SYSTEM FOR VIDEO PROJECTORS

Michael T. Bauer, Welborn, Fla., assignor to National Viewtech Corp., Patchogue, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,806
Int. Cl.[3] H04N *5/72, 5/65, 5/74*
U.S. Cl. 358—250 5 Claims

1. Apparatus for optically coupling a projection lens to the face of a CRT comprising coupling cell means, lens means mounted on one side of said cell means, and a recess in said cell means to accommodate a lens element of said lens means, a

recess formed on the oppositely facing side of said cell means to accommodate the screen surface of a CRT, a liquid chamber formed within said cell means for communicating with both said lens element and said screen surface of said CRT, coupling liquid having the ability to absorb x-rays being a substantially saturated solution of a halide selected from the group consisting of $BaCl_2$, $SrCl_2$, and BaI filling said liquid chamber in intimate contact with said lens element and said screen surface, said liquid being optically transparent thereby providing an optical path from said screen surface through said lens element free of air gaps and means for sealing against liquid leakage the perimeters of said lens element and CRT in contact with said cell means.



4,511,928

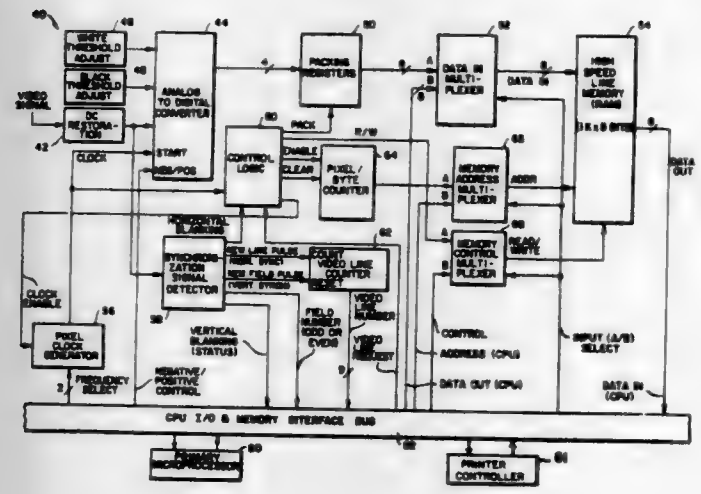
SYSTEM AND METHOD FOR HIGH QUALITY IMAGE REPRODUCTION WITH GRAYSCALE IMAGE PRINT WHILE STORE CAPABILITY

Denis G. Colomb, Boca Raton, Fla., assignor to Sonics Research Corporation, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 182,886, Aug. 29, 1980, Pat. No. 4,345,276. This application Aug. 16, 1982, Ser. No. 408,567

Int. Cl.³ H04N *1/40, 1/32*

U.S. Cl. 358—280 **15 Claims**



1. A method of reproducing images on a printer in printed form, said method comprising the steps of:

(a) receiving digital image data corresponding to said images to be reproduced;

(b) storing said digital image data corresponding to said images to be reproduced in a first storage area;

(c) transferring digital image data, corresponding to images to be printed, from said first storage area to a second storage area;

(d) simultaneously with step (b), reading out stored digital image data from said second storage area, and providing same to said printer; and

(e) printing said images in correspondence to said digital image data provided to said printer;

wherein steps (a), (b) and (c) are carried out by a primary microprocessor, and step (d) is carried out by a printer control microprocessor.

4,511,929

PICTURE IMAGE INFORMATION RECORDING APPARATUS

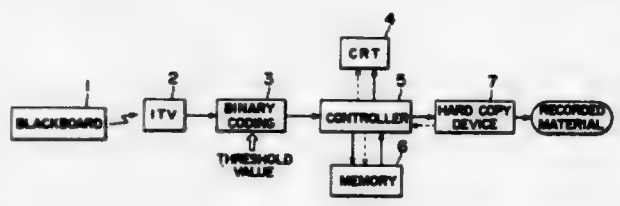
Masatoshi Maeda, Kawasaki; Junji Katsurai, Hachioji, and Hiroaki Ikeda, Tachikawa, all of Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 372,225

Claims priority, application Japan, Apr. 29, 1981, 56-65447

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—296 **5 Claims**



1. An apparatus for recording picture image information from a large image field comprising:

a picture image information input device for scanning and reading in succession each of a plurality of frames dividing the large image field;

a binary coding device for coding the picture image information obtained by said scanning and reading into binary image information;

a memory device comprising a plurality of memory sections each corresponding to a respective one of said plurality of frames for storing the binary image information corresponding to the respective frames;

a display device for displaying a picture image from said binary image information;

a controller device for controlling a display on one portion of said display device of at least part of the binary image information stored in one memory section corresponding to one frame of said image field, and the display on another portion of said display at least part of the binary image information of another memory section corresponding to another frame;

means for adjusting the displayed portions such that the picture images of the frames are aligned, and means for adjusting the binary image information stored in said memory device to correspond with aligning said frames; and

a hard copy device for producing a hard copy output of combined frames of the entire image field from the adjusted binary image information in said memory device.

4,511,930

ELECTRO-OPTICAL INFORMATION RECORDING AND REPRODUCTION SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 257,376, Apr. 24, 1981, Pat. No. 4,398,223, which is a continuation of Ser. No. 951,763, Oct. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 654,939, Feb. 3, 1976, Pat. No. 4,121,249, which is a continuation of Ser. No. 474,932, Mar. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 277,401, Aug. 2, 1972, Pat. No. 3,818,500, and Ser. No. 277,402, Aug. 2, 1972, abandoned. This application Aug. 3, 1983, Ser. No. 519,979

The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—335 **18 Claims**

1. A system for recording and reproducing video information comprising in combination:

a record member,

first means operable to generate video picture signals each of

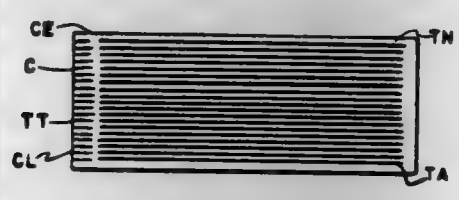
which signals defines at least one full frame of video information,

first control means for controlling said first means to generate frame video picture signals,

second means including a writing radiation beam generating means operable for generating and controllably directing a narrow beam of recording radiation of sufficient intensity to effect a recording in said record member by varying the physical structure of portions of said record member intersected by said beam and means for receiving a frame video picture signal from said first means and modulating said radiation beam in accordance with the characteristics of the picture signal generated to permit said beam to record the picture information in said record member by varying the structure of said portions intersected by said beam,

third means operatively located with respect to said second means for prepositioning a record member containing a plurality of parallel record tracks with respect to said second means to permit said second means to record frame video signal information along selected record tracks of said record member,

fourth means for effecting lateral relative positioning of a record member and said second means to dispose the scanning axis of said narrow beam of radiation in alignment with a selected narrow track of said record member,



fifth means for effecting relative movement between said record member and said beam of radiation to cause said beam to scan said selected track,

sixth means for activating said first control means to cause said first means to generate an output signal representative of the information contained in the field scanned when said fourth means is operated to effect the relative positioning of said scanning axis of said beam of recording radiation with a selected track of said record member wherein the video signal generated is employed to modulate said beam as it scans said selected track and said beam records the information defined by said signal output by said first means along an area of the selected track of the card which area is no wider than the width of said narrow beam scanning said selected track,

seventh means including means for generating a beam of reading radiation for reading information recorded by said means and generating information signals defining the video information read by said reading radiation,

eighth means for controlling the operation of said third, fourth and fifth means to cause said record member and said reading radiation beam to effect controlled relative movement whereby said reading radiation beam scans selected information recorded on said record member by said recording radiation beam, and

means for receiving and transducing the information signals generated by said seventh means to a visually monitorable form.

4,511,931

SLOW MOTION USING LONGITUDINAL RECORDING AND FORWARD/REVERSE TAPE TRANSPORTATION

James A. Bixby, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

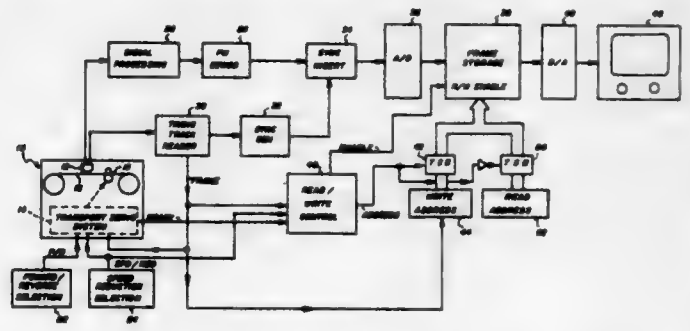
Filed Jul. 28, 1980, Ser. No. 172,915
Int. Cl.[3] H04N *5/782*
U.S. Cl. 360—10.3 7 Claims

1. Apparatus for use in providing a slow motion display of scene information recorded on a magnetic recording medium in the form of a plurality of frames of time sequential scene information, the magnetic recording medium being transportable in a reverse direction and in a forward direction, said apparatus comprising:

(a) means for playing back information from said magnetic recording medium upon the transportation of said magnetic recording medium in the forward direction;

(b) means for repeatedly transporting said magnetic recording medium in accordance with a transport cycle wherein said magnetic recording medium is transported in the reverse direction and then in the forward direction to effect playback of a frame of scene information during each transport cycle;

(c) a frame storage device cooperative with said means for playing back information for storing a frame of scene



information as it is played back from said magnetic recording medium by said playback means; and

(d) means cooperative with said frame storage device for continuously reading out information stored by said frame storage device,

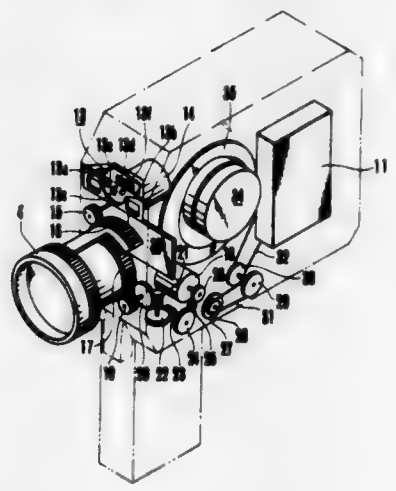
said transport means including means for selectively transporting said magnetic recording medium during each transport cycle a distance D_F in the reverse direction and a distance D_F+D_T in the forward direction, where D_T is nominally equal to the distance said magnetic recording medium must be transported in the forward direction to effect playback of a single frame of scene information, thereby resulting in playback of frames of scene information in slowed chronological order that depends on the repetition rate of said means for repeatedly transporting said magnetic recording medium.

4,511,932

VIDEO RECORDING CAMERA

Tatsuzo Ushiro, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,248
Claims priority, application Japan, Jun. 24, 1981, 56-97916
Int. Cl.[3] H04N *5/78, 5/91, 5/26*
U.S. Cl. 360—33.1 17 Claims



1. A video recording camera comprising:

image pick up means including a picture taking lens having at least one part;

recording means for recording a video signal obtained with the image pick up means on a recording medium;

a motor for producing motive power;

running means for running the recording medium with the motive power from the motor; and

selectively transmitting means for selectively transmitting the motive power from the motor to the lens and to the running means.

4,511,933

METHOD AND APPARATUS FOR RECORDING A DIGITAL INFORMATION SIGNAL

Martijn H. H. Höfelt; Edmond de Niet, and Albert M. A. Rijckaert, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

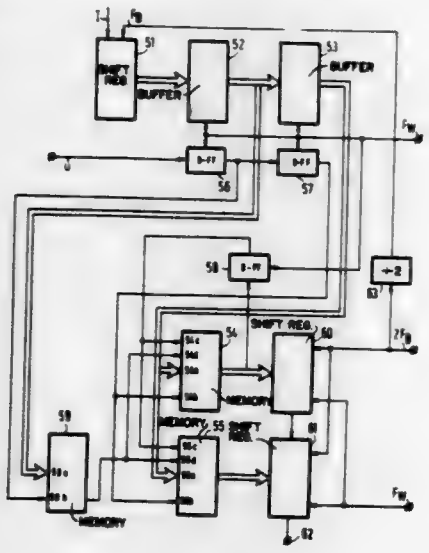
Filed Jan. 13, 1983, Ser. No. 457,780

Claims priority, application Netherlands, Sep. 20, 1982, 8203619

Int. Cl.³ G11B *5/09, 21/10*

U.S. Cl. 360—47

12 Claims



1. A method of recording a digital information signal into information tracks on a record carrier, in which at least one tracking signal, comprising a selected carrier wave of comparatively low frequency relative to that of information in said digital information signal, is used to provide information about the position, transverse to the track direction, of a read head relative to the information track to be scanned, characterized in that said method comprises the steps:

converting each of consecutive information words in said digital information signal into a first and a second channel words, wherein said first channel word forms part of a group of permissible channel words having a d.c. content unequal to zero and said second channel word is the complement of said first channel word;

generating a binary control signal from said tracking signals, wherein the binary control signal is dependent on the frequency of said tracking signal;

alternately selecting said first or second channel word under control of said binary control signal; and

recording said selected control word on said record carrier, whereby the tracking signal is encoded in the d.c. content of the channel words.

4,511,934

VIDEO TAPE RECORDER

Takao Ohira, Fujisawa; Daijiro Okihara, Hadano, and Makoto Niiro, Sagamihara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

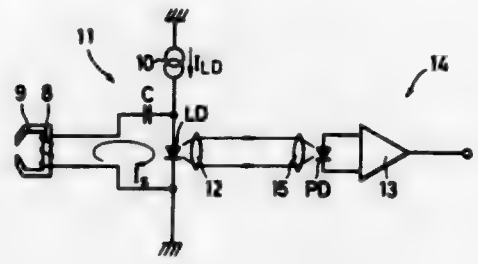
Filed Sep. 9, 1982, Ser. No. 416,328

Claims priority, application Japan, Sep. 11, 1981, 56-144162

Int. Cl.³ G11B *5/00*

U.S. Cl. 360—55

12 Claims



1. A video tape recorder comprising: a rotary magnetic head drum having rotating means and a magnetic head mounted on said rotating means, said magnetic head including a coil and being adapted to record or reproduce video signal information on a magnetic tape; a laser element mounted on said rotating means; means for supplying a constant current to said laser element; means for electrically connecting said coil to said laser element, whereby said laser element is adapted to produce an optical output including optical video signals; stationary photoelectric conversion means means mounted in said video tape recorder; and optical transmission means for transmitting optical video signals between said laser element and said photoelectric conversion means.

4,511,935

TAPE RECORDER

Yougo Imai, and Hideo Takenaga, both of Tokyo, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

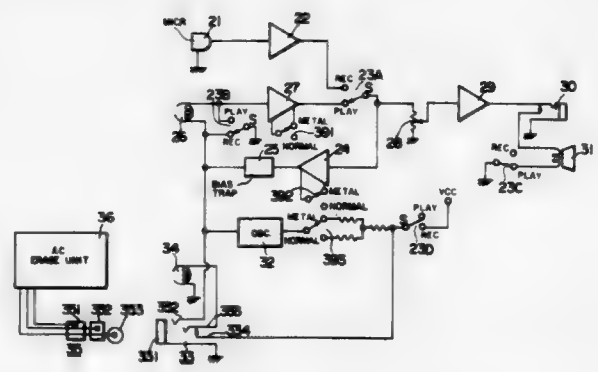
Filed Nov. 18, 1982, Ser. No. 442,572

Claims priority, application Japan, Nov. 20, 1981, 56-186385

Int. Cl.³ G11B *5/47*

U.S. Cl. 360—66

6 Claims

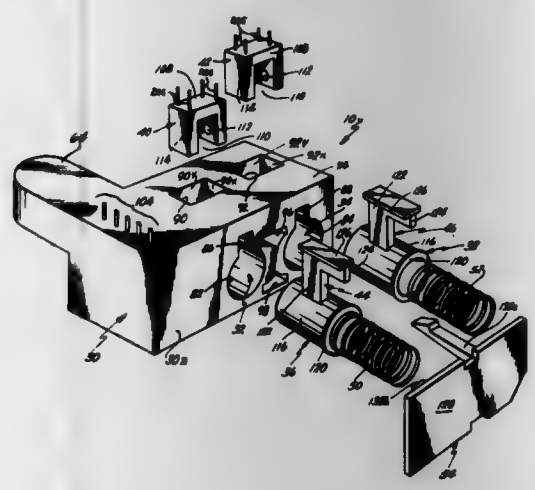


1. A tape recorder comprising a recording unit having recording bias oscillating means for supplying an AC recording bias current a recording head for receiving the bias current, and erase head, and erase means for supplying said erase head with DC erasing current during recording; and an AC erase unit which is connectable to said unit for supplying AC erasing current to said erase means instead of said DC erasing current so that said erase means supplies AC erasing current to said erase head, said AC erase unit being conductively coupled to said recording bias oscillatory means for receiving the AC bias current and using the AC bias current to produce the AC erasing current.

4,511,936
SWITCH AND OPTICAL SENSOR ASSEMBLY FOR RECORDER

Dewey M. Sims, Jr., Wayne, Mich., assignor to Northern Telecom Inc., Nashville, Tenn.

Filed May 24, 1982, Ser. No. 381,401
Int. Cl.[3] G11B *15/18*
U.S. Cl. 360—69 20 Claims



6. A switch assembly for a tape recorder having a housing adapted to receive a tape cartridge in an operating position, said tape cartridge including means for indicating whether said tape cartridge is write-protected, said switch assembly comprising:

a switch housing having a cartridge-facing wall and defining first and second chambers, said switch housing including a plurality of reference surfaces, all of said reference surfaces comprising accurately-located positioning means for engaging corresponding reference surfaces on said tape recorder housing, said switch housing being provided with manufacturing tolerances that complement the alignment tolerances of said tape cartridge;

a first switch mounted on and in fixed relationship to said switch housing;

a second switch mounted on and in fixed relationship to said switch housing;

first actuating means mounted for guided reciprocal movement within said first chamber and precisely located so as to be responsive to the position of said tape cartridge for actuating said first switch when said tape cartridge is in said operating position; and

second actuating means mounted for guided reciprocal movement within said second chamber and precisely located so as to be responsive to said indicating means, for actuating said second switch when said indicating means indicates that said tape cartridge is not write-protected.

4,511,937
INERTIAL TAPE POSITIONING METHOD AND APPARATUS

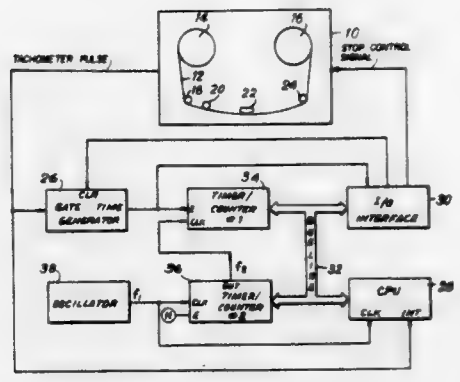
Manuel A. Guerrero, Ft. Lauderdale, Fla., assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 14, 1983, Ser. No. 475,338
Int. Cl.[3] G11B *15/22*
U.S. Cl. 360—72.1 21 Claims

17. A method of positioning a tape at a predetermined point, said tape being wound on at least one reel of a tape machine, comprising the steps of:

winding said tape in respect to said reel while moving the tape toward said predetermined point at a preset speed;

determining the inertia of said tape while said tape is winding; and

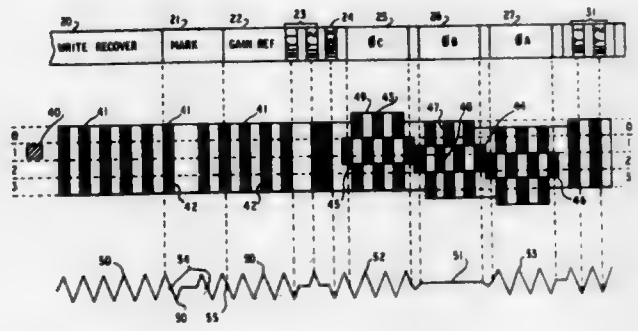


stopping said tape at said predetermined point in response to said determination of said inertia of the wound tape.

4,511,938
MAGNETIZABLE RECORDING DISK AND DISK FILE EMPLOYING SERVO SECTOR HEAD POSITIONING

Alan J. Betts, Romsey, England, assignor to International Business Machines, Armonk, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,764
Claims priority, application European Pat. Off., Jun. 18, 1982, 82303180
Int. Cl.[3] G11B *5/58, 21/10, 23/34*
U.S. Cl. 360—77 11 Claims



1. A magnetizable recording disk divided into data sectors, each having a plurality of concentric tracks for the recording and reproducing of information by an associated magnetic transducing head, and having servo sectors, interspersed with the data sectors, containing position reference information defining the radial position of the data tracks for an associated head positioning servo system, the position reference information comprising a circumferentially extending and radially repeated magnetization pattern having at least two radially offset subsets of elements from each of which a different phase of radial position error signal, indicating displacement from a data track centre line, can be derived, the record member being characterised in that the position reference information pattern comprises at least three such subsets of elements, whose radial offset from each other is less than the pitch of the data tracks and whose individual elements each have a radial width greater than the pitch of a data track.

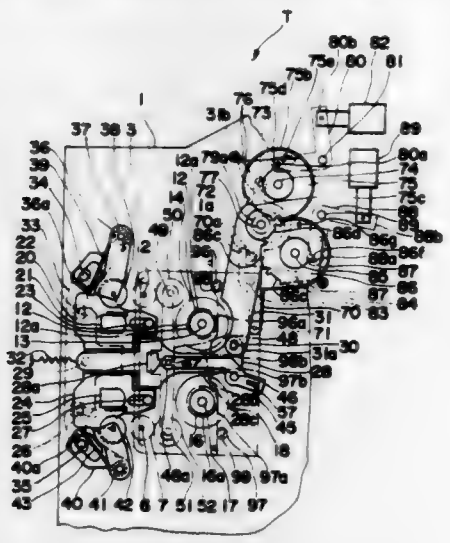
4,511,939
CASSETTE TAPE RECORDER

Isao Shinohara, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 14, 1982, Ser. No. 398,214
Claims priority, application Japan, Jul. 17, 1981, 56-112480; Jul. 17, 1981, 56-112481; Jul. 17, 1981, 56-112482
Int. Cl.[3] G11B *15/00*
U.S. Cl. 360—93 4 Claims

1. A cassette tape recorder for use with a magnetic tape cassette accommodating a magnetic tape therein and having

first and second tape pads, and first and second capstan holes located in opposite sides of said first and second tape pads, said cassette tape recorder comprising first and second capstans adapted to be inserted into said first and second capstan holes, first and second pinch rollers for selectively running the magnetic tape of said cassette in a first and second direction in association with said first and second capstans, a change-over means for changing over the functioning of said first and second pinch rollers, and a first and second magnetic head base plate having mounted therein a first and second magnetic head corresponding to said first and second tape pads, said first and second magnetic head base plates and said change-over means being associated with each other through a first actuating means having a pivotal point in a position approximately intermediate said first and second capstans for see-saw movement so that said first magnetic head is arranged to provide sufficient contact with said magnetic tape to achieve a reproducing state, with said second magnetic head located at an upstream position with respect to said first magnetic head being adapted to provide minimum, non-reproducing contact of the magnetic tape during the first running function of said magnetic tape, and said second magnetic head being arranged to provide sufficient contact with said magnetic tape to achieve a reproducing state, with said first magnetic head located at an upstream side with respect to said second magnetic head being adapted to provide a minimum, non-reproducing contact with the magnetic tape during the second running function of said magnetic tape.

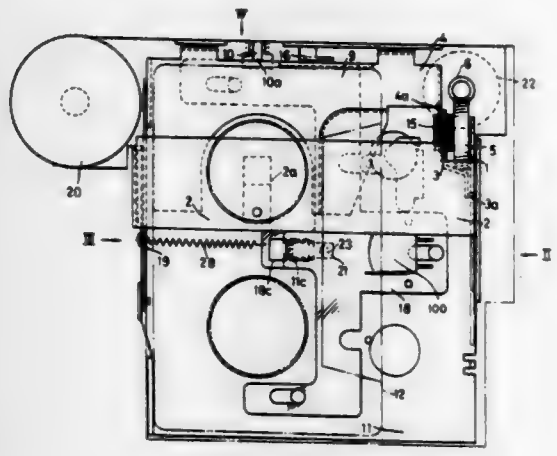


4,511,940

TAPE PLAYER HAVING MOTOR-DRIVEN TAPE-PACK LOADING MECHANISM

Katsumi Yamaguchi; Kazuki Takai, and Hitoshi Okada, all of Saitama, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,756
Int. Cl.³ G11B *23/10, 5/54*
U.S. Cl. 360—96.6 **9 Claims**



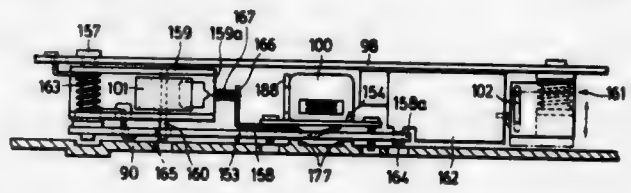
1. A magnetic tape recording/playing apparatus having a motor-driven tape-pack loading mechanism, comprising: a chassis; a push member supported on said chassis for reciprocal movement between first and second positions in directions substantially parallel to a first direction in which a tape-pack can be manually inserted into said apparatus, said push member having means engageable with a tape-pack manually inserted into said apparatus for limiting movement of the tape-pack in said first direction relative to said push member so that the tape-pack moves said push member from said first to said second position as the tape-pack is inserted; first resilient means yieldably urging said push member toward said first position in a second direction opposite said first direction; a tape-pack holder supported for movement in directions generally transverse of said first direction between a loading position and a playing position, said tape-pack holder being adapted to receive a tape-pack inserted into said apparatus in said first direction when said tape-pack holder is in said loading position; a magnetic tape head supported for movement between a playing position and a non-playing position in which said head is respectively engaging and spaced from a tape in a tape-pack disposed in said tape-pack holder when said tape-pack holder is in its playing position; second resilient means yieldably urging said head toward its playing position; locking means for releasably holding said head in its non-playing position; means for causing said locking means to release said head when said tape-pack holder has moved from its loading position into its playing position; a motor; first means driven by said motor and adapted to move said tape-pack holder from its loading to its playing position when said push member is in its second position, said first means including a rack provided on and extending approximately parallel to the direction of movement of said tape-pack holder, a gear which is rotatably supported on said push member and operatively engages said rack when said push member is in said second position, second means for drivingly coupling said motor to said gear when said push member is in said second position so that said motor effects rotation of said gear, and third means for interrupting said engagement between said gear and said rack when said tape-pack holder is in its playing position; and further locking means for releasably holding said push member in said second position, and wherein said third means causes said further locking means to release said push member when said tape-pack holder has reached said playing position.

4,511,941

CASSETTE TAPE APPARATUS WITH ADJUSTABLE HEAD POSITIONING CHARACTERISTICS

Mitsuru Ida, Koshigaya, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,670
Claims priority, application Japan, Dec. 29, 1980, 55-188031
Int. Cl.³ G11B *5/54, 15/00*
U.S. Cl. 360—105 **14 Claims**



1. A cassette tape apparatus comprising:
a chassis having mounting means fixed thereto and defining an opening and upwardly directed projections disposed on a surface of said mounting means;
a cassette holding means pivotally mounted on said chassis for angular movement relative to the latter between an inclined cassette receiving position and an operative position in which a cassette received in said holding means is loaded flat against said chassis;
means defining a pivot axis on said cassette holding means at

right angles to the axis of said angular movement relative to the chassis;

a magnetic head;

a head base carrying said head and mounted on said pivot axis for movement thereabout relative to said cassette holding means between a rest position and an active position to permit insertion and removal of a cassette into and from said holding means in said inclined cassette receiving position with said head base in said rest position and to extend said head substantially into a cassette loaded flat on said chassis for engagement with the tape therein upon movement of said head base to said active position with said holding means in said operative position; and

a head base actuating member disposed under said mounting means and having an operating arm projecting upwardly through said opening in said mounting means to engage said head base when said cassette holding means is moved to said operative position;

said upwardly directed projections being positioned on said surface of said mounting means to be slidably engaged by said head base approximately at the location of said head when said cassette holding means is in said operative position and said head base is moved between said rest and active positions.

4,511,942

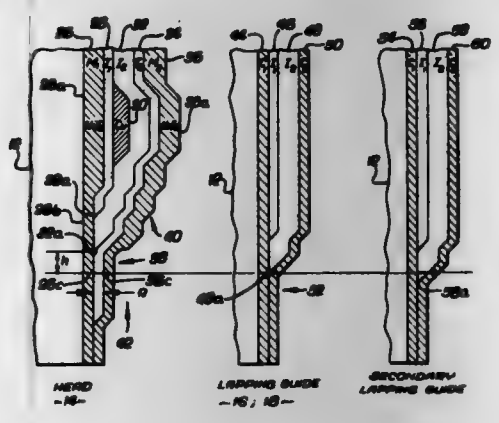
AUTOMATIC THROAT HEIGHT CONTROL FOR FILM HEADS

Erich P. Valstyn, Santa Barbara, Calif., assignor to Computer & Communications Technology Corp., Santa Barbara, Calif.

Filed May 7, 1982, Ser. No. 375,714

Int. Cl.³ G11B *5/16*

U.S. Cl. 360—126 **7 Claims**



1. In a thin film magnetic head module of the type having one or more head elements, each of which is formed of a pair of magnetic film pole pieces separated by a first insulating film at the tip of the head element and the first insulating film and one or more additional insulating films along a remaining portion of the head element, wherein the tip extends from an edge of the additional film to a pole face established by lapping, wherein the head module includes at least one lapping guide offset from the edge of the additional film to indicate when lapping of the tip should terminate, the improvement wherein the position of the lapping guide is determined by one or more films which are formed during the same processing steps as the additional insulating films of the head, thereby increasing the precision of the lapping of the head.

4,511,943

DAMAGE CONTROL APPARATUS FOR MAGNETIC TAPE TRANSPORT

Erno H. Fechner, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,733

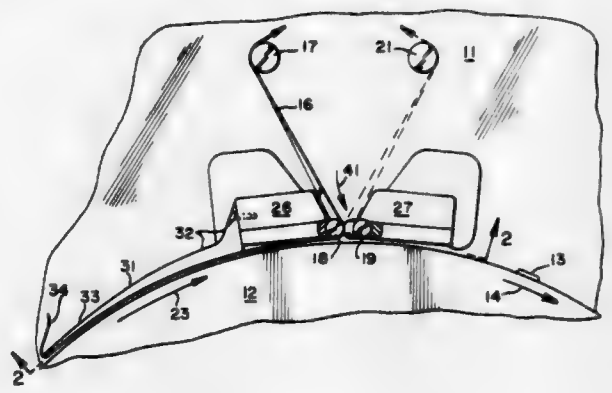
Int. Cl.³ G11B *15/60*

U.S. Cl. 360—130.23 **6 Claims**

1. Apparatus for smoothing out a kink in the free trailing end of a tape moving from an upstream tape path segment generally coincident with a rotating-head path of a magnetic tape scanning drum and toward a downstream tape path segment tangentially separating from the head path and approaching a first tape guide spaced from the drum, comprising:

means positioned alongside said tape path opposite said drum and upstream from the first guide, for encountering and smoothing out the approaching kink;

said smoothing out means being in the form of a thin blade presenting generally opposite major faces substantially concentric with said drum and defining therebetween an upstream blade edge portion and a downstream blade back portion; and



said blade having a thickness dimension in a radial direction of said drum that is substantially smaller than the corresponding dimension of said kink, so as to cause said kink, upon first encountering said blade edge portion, to go into a whiplash mode and to flap around said blade edge portion and downstream therefrom against the major face of said blade that is remote from said drum and to be straightened and smoothed out by the cooperative action of its own downsteam acceleration and momentum, and thereafter to be pulled back in an upstream direction and around said blade edge portion, and thence downstream between said blade and drum, as by the continuing downstream movement of the mass of tape downstream from said free end segment thereof.

4,511,944

MAGNETIC DISK CARTRIDGE

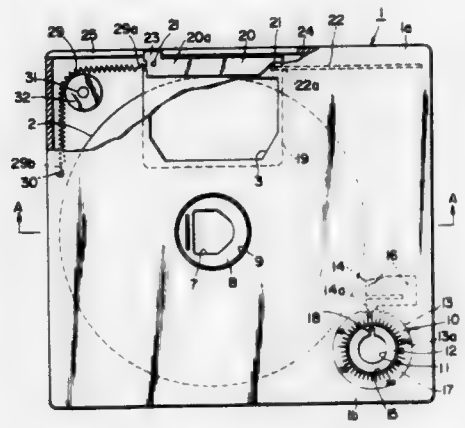
Etsuro Saito, Ayase, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 388,998

Claims priority, application Japan, Jun. 16, 1981, 56-88562[U]

Int. Cl.³ G11B *23/02, 5/012, 17/02;* B65D *85/30*

U.S. Cl. 360—133 **14 Claims**



1. In a magnetic disc cartridge having a jacket and a rotatable magnetic disc housed within said jacket for recording signals thereon and reproducing signals therefrom when said cartridge, carried between opposing guide rails of a cartridge holder, is inserted into recording or reproducing apparatus, the

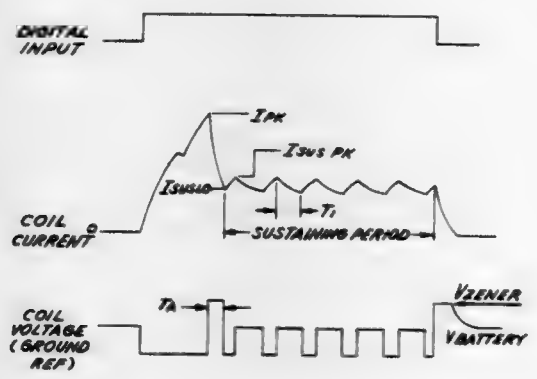
combination of: a guide groove in one wall of said jacket extending in the direction in which said cartridge is slid between said guide rails of said cartridge holder for receiving a guide element on one of said guide rails to establish a predetermined orientation of said cartridge relative to said cartridge holder when said cartridge is properly oriented relative to said guide rails, wherein said guide groove is open along a length thereof for permitting said guide element to extend transversely into said guide groove during sliding of said cartridge between said guide rails; a window in said jacket for providing access to said magnetic disc to record signals thereon and reproduce signals therefrom; shutter means movable relative to said window between a closed position covering said window and an open position exposing said magnetic disc; and engagement means on said shutter means disposed relative to said guide groove for contact by said guide element as said cartridge is slid into said cartridge holder to move said shutter means from said closed position to said open position.

4,511,945

SOLENOID SWITCHING DRIVER WITH FAST CURRENT DECAY FROM INITIAL PEAK CURRENT

Arnold D. Nielsen, Wayne, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 565,796
Int. Cl.³ H01H 47/32
U.S. Cl. 361—154 **11 Claims**



1. A solenoid driver circuit for controlling application of current to a solenoid and reducing the total power dissipation during activation of the solenoid, said solenoid driver circuit including:

a first and a second transistor means coupled to the solenoid;

a sense resistor coupled in said solenoid driver circuit to sense current flowing in the solenoid;

a Zener diode coupled in series with said sense resistor and the solenoid so as to provide a current decay path in series with said sense resistor thereby providing an indication of solenoid current by the voltage drop across said sense resistor;

a first comparator means coupled to said sense resistor to compare the sensed current of the solenoid to a first control current representative of a desired initial peak current in the solenoid;

a second comparator means coupled to said sense resistor to compare the sensed current of the solenoid to a second control current representative of a desired low sustaining current in the solenoid;

a third comparator means coupled to said sense resistor to compare the sensed current of the solenoid to a third control current representative of a desired sustaining peak current in the solenoid;

logic means coupled to said first, second and third comparator means and said first and second transistor means so as to receive input signals which are a function of the solenoid current and the first, second and third control currents, for switching said first and second transistor means on and off as a function of the output of said first, second and third comparator means so that an initial peak current level is applied to the solenoid, there is a relatively rapid current decay to a predetermined low sustaining current level, another increase in driving current to the solenoid to a sustaining peak current level, said sustaining peak current level being less in magnitude than said initial peak current magnitude; and

said logic means including:

a timer means for establishing a predetermined current decay time from the sustaining peak current level so that after an increase in solenoid driving current to the sustaining peak current magnitude there occurs a subsequent slower current decay, relative to said rapid current decay, for a predetermined time period;

a first flip-flop means coupled to said first comparator means for generating a logic state;

a second flip-flop means coupled to said second comparator means for generating a logic state;

a first OR gate means coupled to said second comparator;

a second OR gate coupled to said third comparator and said third flip-flop means;

a first AND gate coupled to said second flip-flop means;

a second AND gate means coupled to said second OR gate means and adapted to receive a digital input;

a fourth flip-flop means coupled to said first and second AND gate means for generating a logic signal;

a first timer means coupled to said fourth flip-flop means and said first AND gate for timing the length of said predetermined current decay period;

a third OR gate means coupled to said first and fourth flip-flop means;

a third AND gate coupled to said third OR gate and to the digital input;

said first transistor means being coupled to said third AND gate means; and

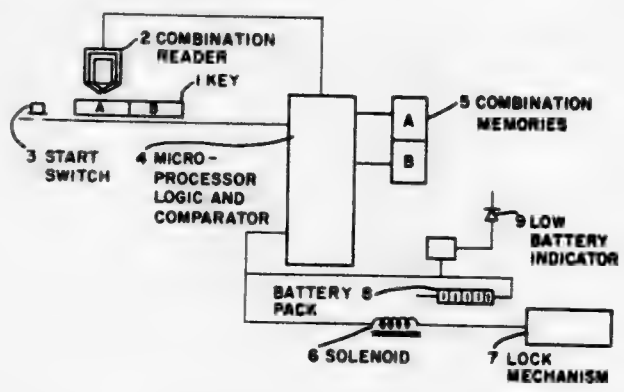
said second transistor means being coupled to said second flip-flop means.

4,511,946

PROGRAMMABLE COMBINATION ELECTRONIC LOCK

Wallace A. McGahan, Lawrenceville, N.J., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Jan. 14, 1983, Ser. No. 457,965
Int. Cl.³ H01H 47/28
U.S. Cl. 361—172 **8 Claims**



1. A method for combinating electronic locks by sequential users comprising the steps of:

providing a key with a first and second combination;

providing a lock with a first and second stored combination;

reading said first and second combinations on said key and comparing said first key combination with said first lock combination and said second key combination with said second lock combination; and

opening said lock in a first mode of operation by a former repeat user in response to said first key combination equaling said first lock combination and said second key combination equaling said second lock combination; and

in a second mode of operation by a new user, comparing said

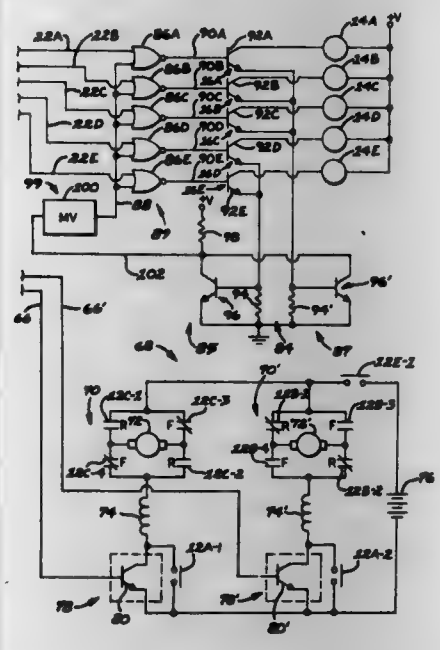
first key combination with said second lock combination and recombinating said first and second lock combination respectively to said first and second key combination if said first key combination equals said second lock combination and opening the lock.

4,511,947

COIL AND COIL DRIVER CONTROL APPARATUS

Grant C. Melocik, Chardon, and William Pickering, University Heights, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 5, 1983, Ser. No. 455,778
Int. Cl.³ H01H *47/00*
U.S. Cl. 361—191 **10 Claims**



1. In an apparatus **(10)** having a plurality of controllable contactors, each contactor having an associated coil **(14A–E)** and coil driver **(16A–E)**, and means **(18)** for selectively supplying respective control signals to controllably energize and deenergize each of said coil drivers **(16A–E)**, the improvement comprising:

monitoring means **(84)** for sensing the total current flowing through said plurality of coils **(14A–E)** and supplying a variable current signal in response to the magnitude of said sensed total current; and

control means **(85)** for receiving said current signal and controllably limiting the number of concurrently energized coils **(14A–E)** to a preselected maximum number in response to the magnitude of said current signal.

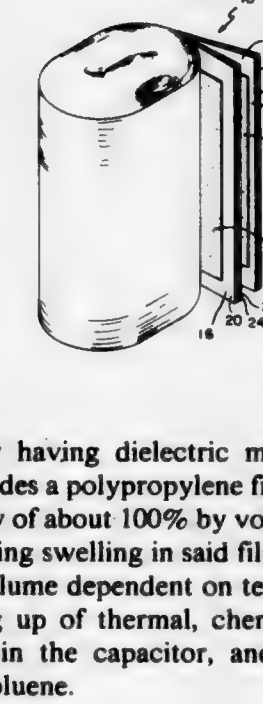
4,511,948

TWO LAYER PROBE

Frederick L. Maltby, Jenkintown; Kenneth M. Loewenstern, Warminster, and Jack G. Benning, Jr., Lansdale, all of Pa., assignors to Drexelbrook Controls, Inc., Horsham, Pa.

Continuation of Ser. No. 323,317, Nov. 20, 1981, Pat. No. 4,428,026, which is a continuation of Ser. No. 072,833, Sep. 6, 1979, Pat. No. 4,301,681. This application Jan. 20, 1984, Ser. No. 572,691
Int. Cl.³ G01F *23/26;* H01G *7/00*
U.S. Cl. 361—280 **10 Claims**

1. A probe assembly for the measurement of the level of conductive materials within a vessel having conductive wall portions comprising a probe member, an upper termination and a lower termination, said probe member comprising a conductive core covered by an insulating layer which is in turn covered by an outer layer, the outer layer being sufficiently conductive to become a substantially equipotential surface with respect to said core only in regions where it is surrounded by conductive material, said conductive core being in use electrically insulated from said conductive material, said upper termination including means for attachment to said outer layer so as to provide physical support of said probe member while maintaining electrical isolation of said core and said outer layer from said vessel and also including means for electrical connection to said core, and said lower termination maintaining electrical isolation of said core and said outer layer from said vessel.

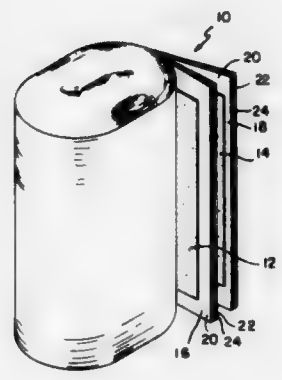


4,511,949

AROMATIC DIELECTRIC FLUID FOR A CAPACITOR

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Dec. 19, 1983, Ser. No. 562,392
Int. Cl.³ H01G *4/22*
U.S. Cl. 361—319 **4 Claims**



1. In a capacitor having dielectric means for separating electrodes that includes a polypropylene film, a dielectric fluid consisting essentially of about 100% by volume of an alkylated biphenyl for enhancing swelling in said film of from about 5% to about 15% by volume dependent on temperature, an epoxide for the cleaning up of thermal, chemical, and electrical decomposition within the capacitor, and an antioxidant of butylated hydroxytoluene.

4,511,950

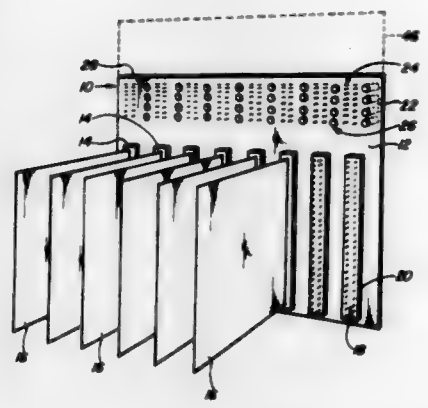
BACKPANEL ASSEMBLIES

Charles B. D. Bunner, Carp, and David S. Brombal, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 27, 1983, Ser. No. 507,734
Int. Cl.³ H05K *1/14*
U.S. Cl. 361—413 **10 Claims**

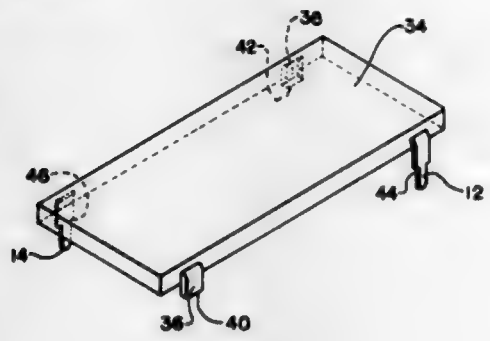
1. A backpanel assembly comprising a main backpanel having a plurality of elongate printed circuit board (PCB) connectors aligned in parallel thereon, the backpanel having a part extending beyond an end of the PCB connectors, the assembly including a plurality of power supply studs and a plurality of power supply pins, in respect of each of the PCB connectors, on said extending part of the backpanel, and printed circuit wiring interconnecting each power supply stud with at least

one power supply pin and with the associated PCB connector, whereby power can be supplied to printed circuit boards,



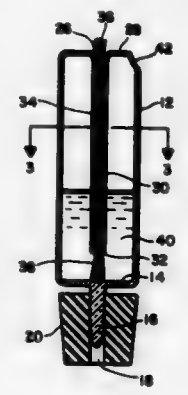
inserted into the PCB connectors, selectively via the associated power supply studs or via the associated power supply pins.

4,511,951
MULTILAYER DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF
Michael M. Gottlieb, Kraainem, Belgium, assignor to Rogers Corporation, Rogers, Conn.
Filed Nov. 14, 1983, Ser. No. 551,576
Int. Cl.³ H01G *9/00, 7/00*
U.S. Cl. 361—433 **24 Claims**



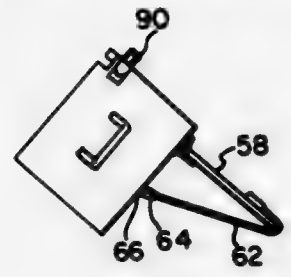
17. A decoupling capacitor including:
a first electrically conductive connection plate;
a second electrically conductive connection plate;
a first electrically active terminal pin extending from said first connection plate;
a second electrically active terminal pin extending from said second connection plate;
said first and second electrically active terminal pins being at different positions relative to the decoupling capacitor;
a multilayer capacitive element between said first and second connection plates, said capacitive element having first and second electrically conductive end surfaces;
a layer of electrically insulating material;
said first and second connection plates and said capacitive element being bonded to said layer of insulating material on one side of said layer of insulating material with said first connection plate and said first conductive end surface being electrically connected and said second connection plate and said second conductive end surface being electrically connected;
a molded encapsulating cover encapsulating said connection plates and capacitive element, with said electrically active terminal pins extending from said encapsulating cover at a first pair of positions; and
a pair of electrically inactive stabilizing elements, said stabilizing elements being at a second pair of positions to balance said terminal pins.

4,511,952
FLUID LAMP ASSEMBLY
Willy Vanbragt, 544 Weddell #7, Sunnyvale, Calif. 94086
Filed Jul. 13, 1983, Ser. No. 513,470
Int. Cl.³ F21V *19/00*
U.S. Cl. 362—181 **6 Claims**



1. A fluid lamp attachment for converting a candle holder having a cup for receiving a bottom end of a candle to a fluid lamp, which comprises a rubber stopper dimensioned to be held by the cup of the candle holder, said rubber stopper having a centrally disposed, axially extending opening, and a fluid lamp comprising a one piece hollow glass container for holding a combustible fluid, said one piece container having a top with an opening, a cylindrical glass tube forming part of said container and extending from the container opening toward, and terminating short of, a bottom of said container, a wick with a first end positioned in said cylindrical glass tube to be immersed in the combustible fluid, the second end of said wick extending through the opening in the top of said container for ignition of the combustible fluid drawn to the second end of said wick by capillary action, the bottom of said container having a projecting tip dimensioned and configured to be held in the opening of said rubber stopper, said one piece container having a port spaced from said cylindrical glass tube for inserting the combustible fluid into said container.

4,511,953
THEATRICAL LIGHT BOX
Bonnard Fage, 100 Wompatuck St., Hingham, Mass. 02043
Filed Sep. 17, 1984, Ser. No. 650,894
Int. Cl.³ F21V *9/00*
U.S. Cl. 362—230 **12 Claims**



1. A light box comprising a box-like base member and a cover, the base member having a base, first wall, a second wall, a top wall and a bottom wall, the first wall, second wall, top wall and bottom wall extending from the base **16** with the first wall in spaced parallel relation to the second wall and the top wall and the bottom wall in spaced parallel relation to each other and in right angle relation to the first and second walls; the base, first wall, second wall, top wall and bottom wall defining a primary compartment; the bottom wall having a first free edge and the first wall, second wall and top wall having free edges, the free edges of the first wall, second wall, top wall and the first free edge of the bottom wall lying on the same horizontal plane defining an opening, the cover having an inner surface, an outer surface, a first side edge and a second side edge, the first side edge of the cover pivotally engaged to

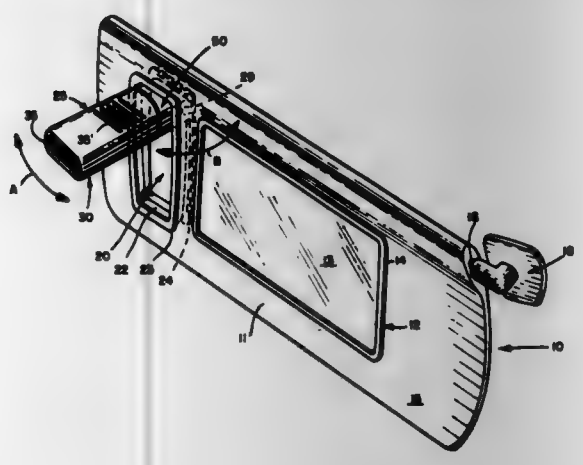
the first free edge, the second side edge having an adjustable connector extending therefrom and engageable with the base member, the primary compartment having an electric light mounted therein whereby the base member may be positioned on a flat surface resting on the second side edge and the edge defined by the juncture of the base and the bottom wall.

4,511,954

VISOR WITH AUXILIARY LIGHT

Konrad H. Marcus, and Michael J. Cody, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Dec. 13, 1982, Ser. No. 448,940
Int. Cl.³ F21V *21/28, 33/00;* B60Q *3/02*
U.S. Cl. 362—275 **7 Claims**



2. Auxiliary lighting means for a vehicle visor having first and second spaced surfaces and peripheral edges defining the outline of said surfaces; a recess in said surfaces comprising:

a light assembly including a relatively flat housing adapted to be positioned in said recess flush with said surfaces and means located between said surfaces for pivotally mounting said assembly to said vehicle visor for movement about a first axis between a stored position within said recess in said visor to a use position pivoted outwardly from said recess; and

a coupling between said light assembly and said means for pivotally mounting said light assembly to permit movement of said light assembly about a second axis generally orthogonal to said first axis.

4,511,955

VEHICLE HEADLIGHT

Hans-Otto Ernst, and Wilhelm Röhling, both of Lippstadt, Fed. Rep. of Germany, assignors to Westfälische Metall Industrie KG Hueck & Co., Lippstadt, Fed. Rep. of Germany

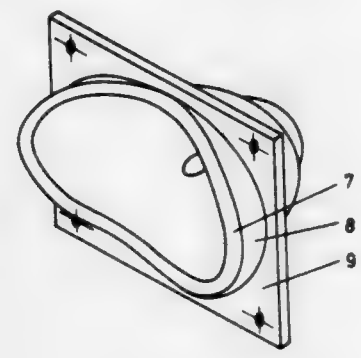
Filed May 16, 1983, Ser. No. 494,761
Claims priority, application Fed. Rep. of Germany, May 18, 1982, 3218702
Int. Cl.³ F21M *3/08*
U.S. Cl. 362—347 **18 Claims**

1. A vehicle headlight for providing a shaped beam comprising a dish-shaped reflector having an axis

where an inner reflection surface in a section containing the axis of the reflector in each case forms an ellipse segment;

where the ellipse eccentricity increases from the longitudinal section spanned by the vertical and the reflector axis to the longitudinal section spanned by the horizontal and the reflector axis;

where the focal points of the ellipse segments of all sections disposed in planes containing the reflector axis coincide; and



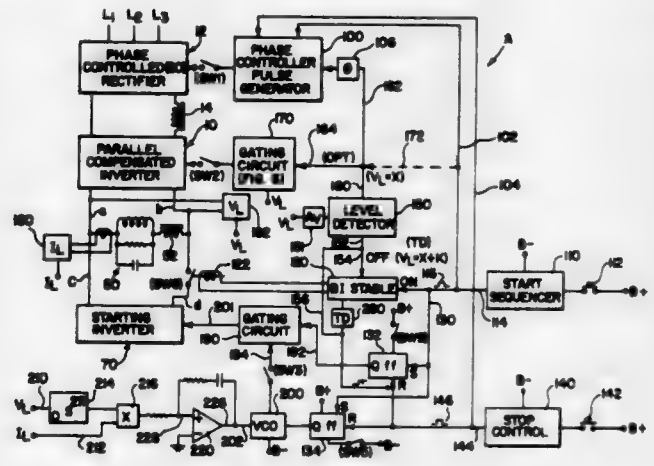
where the vertices of the ellipse segments of all sections disposed in planes containing the ellipse axis coincide.

4,511,956

POWER INVERTER USING SEPARATE STARTING INVERTER

Shashi B. Dewan, Toronto, Canada, and Graham R. Adams, Boaz, Ala., assignors to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Nov. 30, 1981, Ser. No. 325,750
Int. Cl.³ H02P *1/04, 13/20*
U.S. Cl. 363—49 **41 Claims**

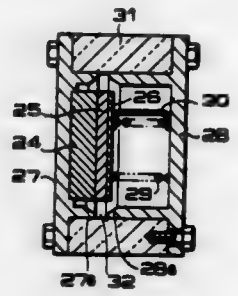


1. In a power inverter for converting a D.C. current into alternating current having a frequency controlled by the rate at which a series of gating signals are created, said inverter including control means for selectively energizing said power inverter, a first branch to be connected across a load, a second branch to be connected across said load, first switching means for applying a voltage of a first polarity across said load by said first branch, second switching means for applying a voltage of a second polarity across said load by said second branch and means for alternately operating said first and second switching means by said series of gating signals, the improvement comprising: a separated starting inverter having a D.C. input and a A.C. output with a frequency controlled by a series of repeating gating commands, means for selectively applying said A.C. output across said load until a preselected load condition exists, means for disconnecting said A.C. output of said starting inverter from said load in predetermined timed relationship with energizing said power inverter and wherein said energizing means include means to increase the power to said power inverter.

4,511,957
POWER CONVERTER

Susumu Matsumura, and Mitsumasa Imataki, both of Hyogo, Japan, assignors to Susumu Matsumura, Hyogo and Susumu Matsumura and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jun. 27, 1983, Ser. No. 508,290
Claims priority, application Japan, Jul. 12, 1982, 57-120844
Int. Cl.³ H02H 7/125
U.S. Cl. 363—54 4 Claims



1. A power converter having a plurality of thyristor elements connected in series with one another and overvoltage limiters each connected between the anode and the cathode of the associated thyristor elements individually, each of said overvoltage limiters comprising an overvoltage limiting element connected between the anode and the cathode of said thyristor element, and means for short-circuiting the ends of said overvoltage limiting element in response to a load current flowing in said overvoltage limiting element, each of said overvoltage limiters comprising a first electrode kept in contact with one end face of said overvoltage limiting element, a metal layer of a low melting point disposed opposite to said first electrode and kept in contact with the other end face of said overvoltage limiting element, a second electrode disposed opposite to said first electrode and connected electrically to said metal layer of a low melting point, a first extended portion protruding from said first electrode toward said second electrode, and a second extended portion protruding from said second electrode toward the fore end of said first extended portion and forming a gap of a predetermined width in relation to said fore end, said gap being so positioned as to be suitable for effecting electrical connection of said first and second extended portions with each other when the metal of a low melting point flows into said gap posterior to becoming molten by the heat generated due to the flow of a load current through said overvoltage limiting element.

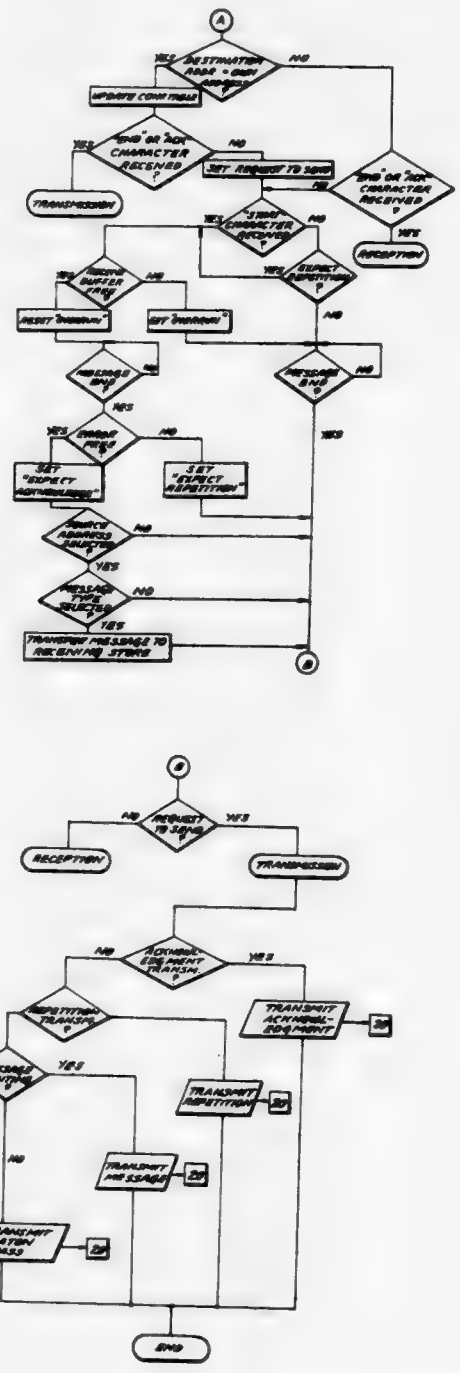
4,511,958
COMMON BUS ACCESS SYSTEM USING PLURAL CONFIGURATION TABLES FOR FAILURE TOLERANT TOKEN PASSING AMONG PROCESSORS

Gerhard Funk, Ennetbaden, Switzerland, assignor to Patelhold Patentverwertungs- & Elektro-Holding AG, Glarus, Switzerland

Continuation-in-part of Ser. No. 194,000, Oct. 6, 1980, abandoned, which is a continuation of Ser. No. 6,907, Jan. 26, 1979, abandoned. This application Oct. 26, 1981, Ser. No. 314,733
Claims priority, application Switzerland, Jan. 30, 1978, 984/78
Int. Cl.³ G06F 3/04, 15/16
U.S. Cl. 364—200 23 Claims

19. A data exchange method for a system having a plurality of data processing partners, a data bus for interconnecting said data processing partners, said data processing partners communicating with each other via said data bus, individual channel equipment circuits associated with each respective one of said data processing partners, said channel equipment circuits operating in conjunction with said respective data processing partner to guarantee that only one of said partners is allowed to transmit over said data bus at any given time, said system further being of the type which does not employ a central controller and which is designed to continue its data exchange even after the failures of several of said plurality of data processing partners, said method comprising the steps of:

(A) sequentially transferring access from a partner who has access to said data bus to a next partner by generating an access-passing-on message and transmitting said access-passing-on message over said data bus, said access-passing-on message including a source address block identifying the address of said partner who has access to said bus and a destination address identifying the address of said next partner, said next partner being selected from an actual configuration table maintained by each of said partners;



(B) generating data information messages and transmitting each of said data information messages over said data bus whenever said partner who has access to said data bus has data information available for transmission, said data information message including an address block identifying the address of said partner who has access to said data bus, a destination address identifying the address of said next partner, and information type block identifying the type of information being transmitted and at least one data information block containing the data being transmitted, each of said data information blocks being the same length;

(C) determining at each one of said partners whether said partner is to process a received data information message;

(D) generating at each partner which has received a data

information message which was free of errors, an acknowledgment message and sequentially transmitting said acknowledge message on said data bus, each said partner generating said acknowledgement message in a predetermined sequence with respect to the remaining partners;

(E) maintaining at each partner a nominal configuration table which includes the addresses of all of said partners and said actual configuration table which includes the addresses of all partners which are active participants in said data exchange system, said partners which are active participants periodically offering access to said data bus means to partners whose addresses are not included in said actual configuration table; and

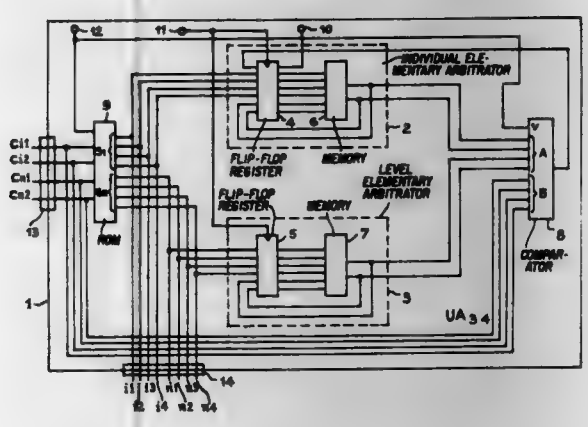
(F) allowing said partner who has access to said data bus to transfer access to another partner which is listed in said actual configuration table immediately after said next partner in the event that said next partner fails to acknowledge said acknowledgment message.

4,511,959

DECENTRALIZED ARBITRATION DEVICE FOR SEVERAL PROCESSING UNITS OF A MULTIPROCESSOR SYSTEM

Alain Nicolas, and Jean Chapelain, both of Colombes, France, assignors to Thomson-CSF - Telephone, Colombes, France

Filed Nov. 4, 1981, Ser. No. 318,136
Claims priority, application France, Nov. 7, 1980, 80 23877
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **4 Claims**



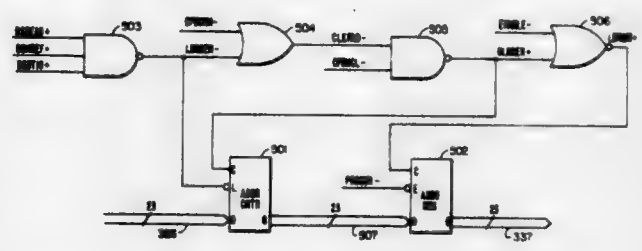
1. A decentralized arbitration device for several processing units of a multiprocessor system comprising p.n processing units all connected to a common bus and divided into p groups each comprising n processing units each associated with an arbitration unit, wherein each arbitration unit comprises an elementary arbitrator for individual priority determination and an elementary arbitrator for group priority determination, the inputs of the individual priority elementary arbitrators being connected, in each group, to the corresponding conductors of an individual request connection particular to the group considered, the inputs of the elementary arbitrators for group priority determination of all the arbitration units being connected to the corresponding conductors of a common group priority request connection, the inputs of the two elementary arbitrators of each arbitration unit being also connected to the output of a priority request signaling device of the corresponding processing unit whereby said arbitration device has a priority attribution cycle wherein each unit having a priority request is allowed to perform a single elementary operation in each cycle.

4,511,960

DATA PROCESSING SYSTEM AUTO ADDRESS DEVELOPMENT LOGIC FOR MULTIWORD FETCH

Daniel A. Boudreau, Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 15, 1982, Ser. No. 339,549
Int. Cl.³ G06F *9/10, 9/32, 13/00*
U.S. Cl. 364—200 **1 Claim**



1. In a software analyzer connected to a common bus of a data processing system in which a central processor unit (CPU) makes requests for multiple words of information to be transferred between a memory and said CPU and in which said multiple words of information are transferred one word at a time over said common bus during multiple information transfer cycles, an improved address development logic for developing consecutive addresses to be associated with said multiple words, wherein the improvement comprises:

A. a synchronous presettable address counter, coupled to said common bus, said address counter having data input for receiving a starting address and data outputs for providing a next address;

B. an address register, coupled to said address counter, said address register having data inputs for receiving said next address and data outputs for providing a current address;

C. a load means, coupled to said address counter and said common bus, said load means for providing a signal to enable the loading of said address counter with said starting address when said loading means detects the transfer of said starting address during an initial information transfer cycle of said multiple information transfer cycles;

D. an early cycle clocking means, coupled to said address counter and said common bus, said early cycle clocking means for providing a signal to said address counter incidating that it is early in an information transfer cycle of said multiple information transfer cycles and that said address counter if load enabled should load said starting address, or if not load enabled said address counter is to compute said next address; and

E. a late cycle clocking means, coupled to said early cycle clocking means and said address register, said late cycle clocking means for providing a signal indicating to said address register that it is to load said next address into said address register, said late cycle means producing said clocking signal late in said information transer cycle, whereby during all but said initial transfer cycle in which said starting address is transferred, said address counter is computing the next address while said current address remains available at the outputs of said address register.

4,511,961

APPARATUS FOR MEASURING PROGRAM EXECUTION

Perry W. Penton, Columbia, S.C., assignor to NCR Corporation, Dayton, Ohio

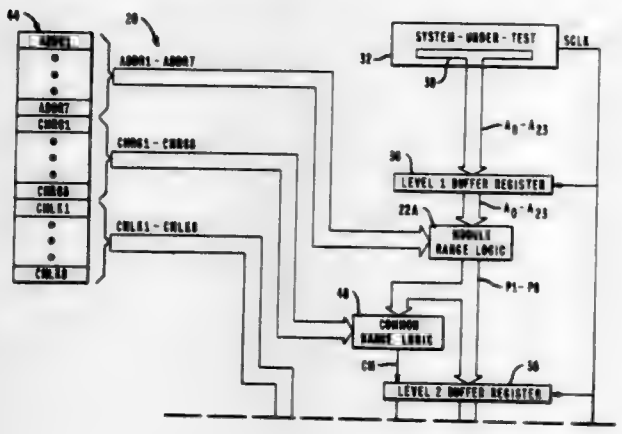
Filed Apr. 16, 1982, Ser. No. 369,057
Int. Cl.³ G06F *11/28, 9/06*
U.S. Cl. 364—200 **14 Claims**

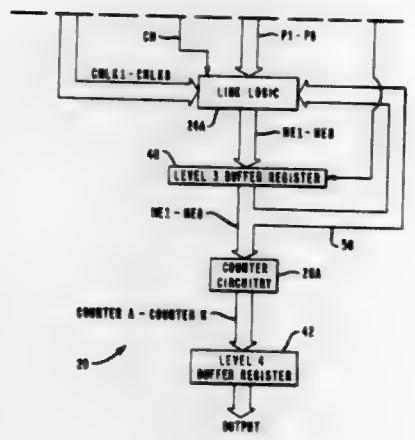
1. An apparatus for measuring the execution of instructions, each of the instructions stored in a memory at a memory location having a memory address associated therewith, the memory being accessed by a memory bus for carrying memory addresses thereon, said apparatus comprising:

range detection means connected to said memory bus and

responsive to the memory addresses thereon for detecting memory addresses within a first range and memory addresses within a second range;

counter means enabled in response to said range detection means for incrementing said counter means at least once for each presence on said memory bus of a memory address within said first range; and





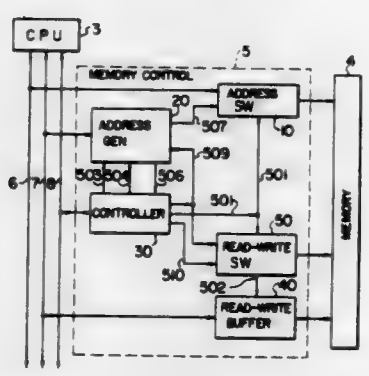
link logic means connected to said range detection means and said counter means for enabling said counter means to also be incremented at least once for each presence of a memory address within said second range when an address within said second range is on said memory bus immediately following an address within said first range.

4,511,962

MEMORY CONTROL UNIT

Tetsuo Machida, Machida; Susumu Tsuhara, Sagamihara; Kuniaki Tabata, Tokyo, and Yasuyuki Okada, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,644
Claims priority, application Japan, Jul. 1, 1981, 56-101238
Int. Cl.³ G06F *13/06, 7/00*
U.S. Cl. 364—200 **13 Claims**



1. A memory control unit connected between a memory for storing image data and a processor, comprising:

(a) address generator means for alternately supplying a read address signal for data to be read out from said memory and a write address signal for data to be written into said memory in each of a plurality of successive operating cycles, including means for altering said read and write addresses by predetermined amounts in each operating cycle;

(b) controller means for generating a first mode signal and a second mode signal;

(c) address switch means connected to said processor, said address generator means and said controller means for supplying an address signal from said processor to said memory in response to said first mode signal and for supplying the address signals from said address generator means to said memory in response to said second mode signal;

(d) a buffer memory connected to said memory; and

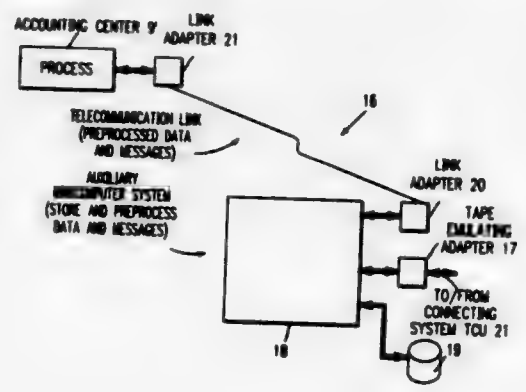
(e) read/write control means responsive to said second mode signal for alternately and repeatedly reading out data from a first area of said memory specified by said read address signal and storing the data so read in said buffer memory and writing data stored in said buffer memory into a second area of said memory specified by said write address signal.

4,511,963

EMULATION OF SPECIAL PURPOSE MAGNETIC TAPE DATA RECORDING EQUIPMENT BY A GENERAL PURPOSE PROCESSOR

Robert F. Kantner, Delray Beach, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,669
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **10 Claims**



1. In a data processing system in which signals representing information records are normally transferred from a primary processing system to magnetic tape storage equipment and corresponding signals are echoed from the tape equipment after a predetermined echo delay, the signals of each such record consisting of a varied length sequence of data byte signals timed at a first rate followed by a fixed length sequence of check byte signals timed at a second rate different from said first rate, said signals being stored by said equipment on magnetic tape media subject to manual handling, a method for replacing said tape equipment with a general purpose auxiliary processing system performing all of the functions of said tape equipment and presenting an interface to said primary system, for signal reception and echoing, which is identical to the interface presented by said tape equipment, but providing processing functions not available in said tape equipment and eliminating said manual handling of tape media, said method comprising performing the following operations in said auxiliary system:

receiving said record signals from said primary system;

storing information corresponding to said received signals byte sequentially in a buffer store having a limited capacity associated with said echo delay;

retrieving said information byte sequentially from said buffer

store, in the order of byte entry into said store, after time intervals corresponding to said echo delay;

transmitting echo signals to said primary system corresponding to said retrieved bytes;

determining when information being retrieved from said store respectively represents data bytes and check bytes; and

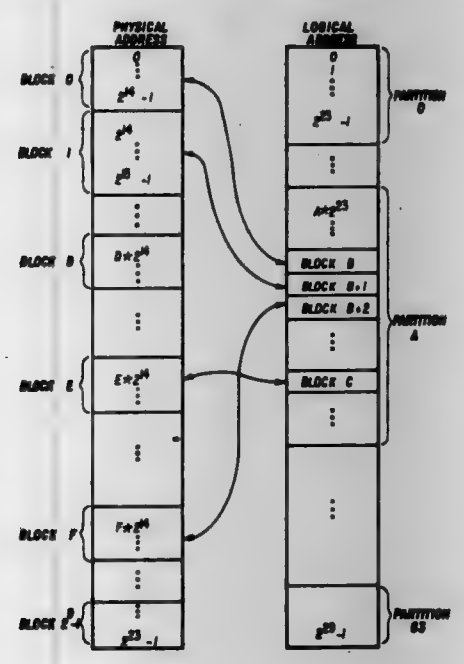
responsive to said determination, selectively timing the echo signals corresponding to said data bytes at a rate corresponding to said first rate and the echo signals corresponding to said check bytes at a rate corresponding to said second rate.

4,511,964

DYNAMIC PHYSICAL MEMORY MAPPING AND MANAGEMENT OF INDEPENDENT PROGRAMMING ENVIRONMENTS

Dennis D. Georg, and Benjamin D. Osecky, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 12, 1982, Ser. No. 440,895
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 **18 Claims**



1. A method of dynamically allocating to at least one data structure physical memory locations, each of which is accessible by a uniquely associated physical address, the set of all physical addresses associated with the physical memory locations being referred to herein as the physical address space, said method comprising the steps of:

assigning to each word of a data structure a unique logical address, each of said logical addresses being contained within a set of logical addresses referred to herein as the logical address space;

one-to-one mapping a set of physical addresses onto the set of logical addresses which have been assigned to a word of a data structure, whereby contiguous addresses within one of these address spaces are not necessarily associated by this map with contiguous addresses in the other address space; and

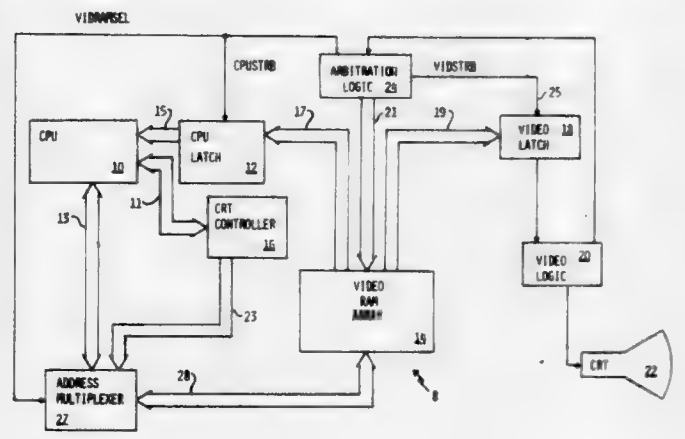
storing each word of the data structure in the physical memory location whose physical address was mapped onto the logical address assigned to that word.

4,511,965

VIDEO RAM ACCESSING SYSTEM

Babu Rajaram, St. Joseph, Mich., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 21, 1983, Ser. No. 446,296
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system including a central processing unit, video memory means characterized as having first and second modes of operation and including a plurality of addressable memory locations for storing central processing unit instructions, display instructions, and display graphics information, a raster scanned display unit for presenting said display graphics information thereon in accordance with said display instructions, and a controller unit responsive to said display instructions and said display graphics information for generating video drive signals for said display unit in presenting said display graphics information in accordance with said display instructions, wherein said video memory means is successively accessed by said central processing unit during a control cycle by means of a first data bus and a central processing unit latch during a central processing unit control cycle in response to an access request signal for writing said central processing unit instructions therein and reading said display instructions and display graphics information therefrom in said first mode of operation and is accessed by said controller unit by means of a second data bus and a video latch during a video processing cycle for reading said display instructions and display graphics information therefrom in driving said display unit in accordance therewith in said second mode of operation, a system for controlling the access of said video memory means by said central processing unit and said controller unit comprising:

first means responsive to the first mode of operation of said video memory means and further responsive to said access request signal for generating a first control signal in response thereto;

timing means responsive to the start of a video processing cycle for generating a second control signal equal in duration to two video processing cycles;

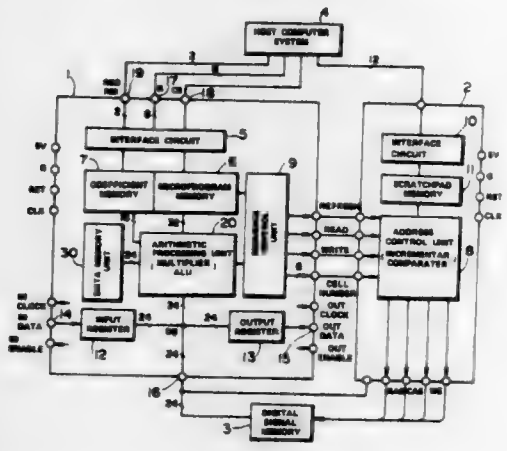
logic means coupled to said video memory means and to said video latch, and further coupled to said first means and to said timing means and responsive to said first and second control signals respectively output therefrom for generating a video strobe signal and a memory access signal, wherein said memory access signal is provided to said video memory means for initiating a video processing cycle and said video strobe signal is provided to said video latch for coupling said controller to said video memory means for two successive video processing cycles; and

conducting means coupling said first means to said central processing unit latch for providing said first control signal thereto in initiating a control cycle wherein said central processing unit accesses said video memory means following said two successive video processing cycles.

4,511,966
DIGITAL SIGNAL PROCESSING SYSTEM

Osamu Hamada, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 28, 1983, Ser. No. 462,049
Claims priority, application Japan, Feb. 19, 1982, 57-25616
Int. Cl.[3] G06F *15/16*
U.S. Cl. 364—200 3 Claims



1. A digital signal processing system comprising

microprogram memory means for storing a plurality of microinstructions for instructing a digital signal processing procedure,

coefficient memory means for storing coefficient data required for performing a series of arithmetic operations on digital signal data,

a host computer system,

means for writing data into said microprogram memory means and said coefficient memory means from said host computer system,

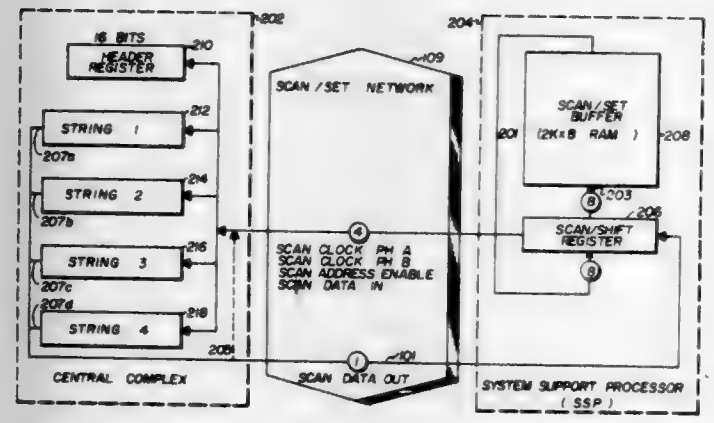
said coefficient memory means having at least two selectable pages corresponding to a total memory area accessible during digital signal processing in accordance with said microinstructions, and

said host computer system controlling page selection of said pages of said coefficient memory means.

4,511,967
SIMULTANEOUS LOAD AND VERIFY OF A DEVICE CONTROL STORE FROM A SUPPORT PROCESSOR VIA A SCAN LOOP

Jerome J. Witalka, Minneapolis; Howard L. Buettner, Bloomington, and James G. Ellsworth, St. Paul, all of Minn., assignors to Sperry Corporation, New Yor, N.Y.

Filed Feb. 15, 1983, Ser. No. 466,761
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—200 25 Claims



1. Wherein a scan/settable register is defined as composite shift register, called a STRING, controllable by clock signals upon a scan/set network to bit-serially be set, meaning written, by data input signals and to bit-serially be scanned, meaning read, to produce data output signals, an improved method of bit-serially sequentially communicating data, called scan data, to and from such a scan/settable register within a slave first digital logic device, called a CENTRAL COMPLEX, from and to a controlling second digital logic device, called a SYSTEM SUPPORT PROCESSOR, to the end that bit-serial communication to, and bit-serial communication from, said scan/settable register should substantially transpire overlapped in simultaneous time, said method of concurrently writing and reading a scan/settable register comprising:

producing in said controlling second digital logic device clock signals, called SCAN CLOCK PH A and SCAN CLOCK PH B, sufficient in time and phase relationship to control the bit-serial shifting of the entirety of said scan/-settable register, said STRING, within said slave first digital logic device, and transmitting said produced clock signals upon said scan/set network; while also concurrently in simultaneous time

responsively to said clock signals, bit-serially successively shifting first data bits stored within a first register, called a SCAN/SHIFT REGISTER, within said controlling second digital logic device successively serially out from a first end of said first register as a bit-serial first signal, called SCAN DATA IN, which said bit-serial first signal is transmitted upon a line of said scan/set network uniquely dedicated to said first signal; while also concurrently in simultaneous time

responsively to said clock signals, bit-serially successively shifting second data bits into a second end of said first register within said controlling second digital logic device responsively to a bit-serial second signal, called SCAN DATA OUT, which second signal is received upon said scan/set network; while also concurrently in simultaneous time

responsively to said clock signals received upon said scan/-set network, writing by bit-serially setting from a first end and shifting said scan/settable register within said slave digital logic device with said first data bits responsively to receiving said bit-serial first signal upon said scan/set network; while also concurrently in simultaneous time

responsively to said clodk signals received upon said scan/-set network, reading by bit-serially successively shifting said second data bits stored within said scan/settable register within said slave first digital logic device successively serially out from a second end of said scan/settable register as said bit-serial second signal, which said bit-serial second signal is transmitted upon a line of said scan/set network uniquely dedicated to said second signal;

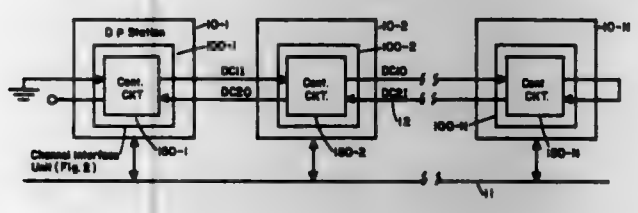
whereby said bit-serial signal transmissions upon unique signal lines upon said scan/set network is of said first signal, said SCAN DATA IN signal, from said controlling second digital logic device to said slave first digital logic device, and of said second signal, said SCAN DATA OUT, from said slave first digital logic device to said controlling second digital logic device, which transmissions signals and transmissions signal lines are thusly circular between said controlling second digital logic device and said slave first digital logic device, which circular communication upon said scan/set network is called a SCAN LOOP;

whereby both said bit-serial writing of first data bits into said scan/settable register and said reading of second data bits from said scan/settable register does transpire concurrently in simultaneous time.

4,511,968
COMMUNICATION CHANNEL INTERFACE UNIT

Gabor Fencsik, Berkley, and Fletcher M. Glenn, II, Danville, both of Calif., assignors to MDS-Qantel, Inc., Hayward, Calif.

Filed Mar. 24, 1983, Ser. No. 478,921
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 4 Claims



1. In a system having a plurality of data processing stations in which messages are exchanged among the stations over a communication channel and in which each station includes a processor to handle such message exchanges by asserting a request to send signal when it is desired to transmit a message and to provide such message for transmission upon the assertion of a clear to send signal, an improved channel interface unit for operating upon the request to send signal, posting the assertion of the clear to request signal and translating such message to the channel comprising:

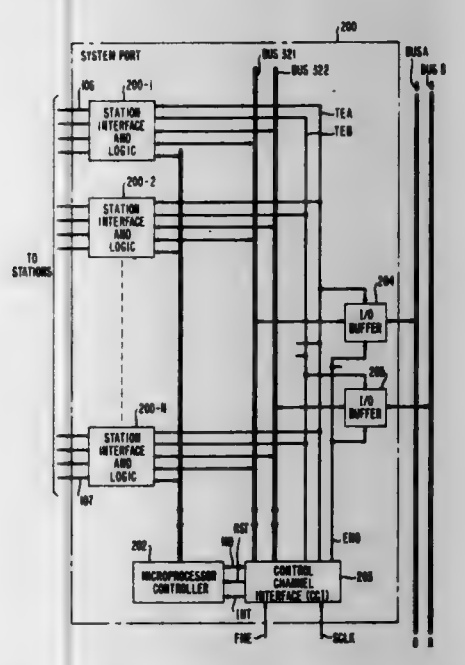
a channel contention circuit for asserting contention for use of the channel and for providing a set of contention status signals; and

a microstate machine arranged under program control to interact with the request to send signal and the channel contention status signals to enable the contention circuit to assert contention, to post such clear to send signal and to translate such message to the channel.

4,511,969
CONTROL CHANNEL INTERFACE CIRCUIT

Mark J. Koenig, Middlesex, and Kevin J. Oye, Holmdel, both of N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Filed May 20, 1983, Ser. No. 496,483
Int. Cl.[3] G06F *15/16;* H04J *3/00*
U.S. Cl. 364—200 21 Claims



1. An interface circuit for use in a telephone communication system having at least one distributed processor controlling at least one port station circuit, said interface circuit and said one port station circuit being in communication with a central processor over a common bus, said interface circuit interfacing said one distributed processor to said bus, said interface circuit comprising

means responsive to requests on said bus from said central processor for applying information from said one distributed processor to said bus,

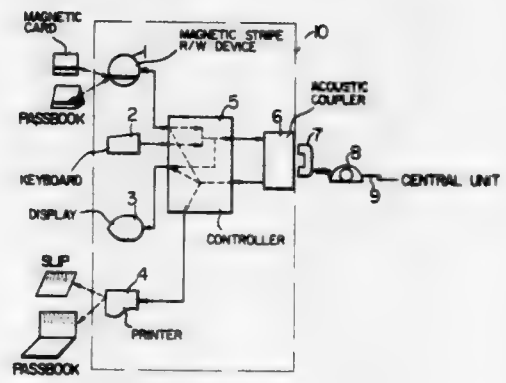
means for monitoring said bus for signals identifying said one distributed processor and accepting central processor information from said bus, and

means for establishing access to said bus by said one port station circuit and by said interface circuit such that said access is placed in a read-only mode when said one distributed processor is malfunctioning.

4,511,970
PORTABLE TERMINAL DEVICE

Yoshio Okano, and Yasuo Okuma, both of Seto, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 363,800
Claims priority, application Japan, Apr. 8, 1981, 56-52811
Int. Cl.[3] G0oF *15/30*
U.S. Cl. 364—401 6 Claims



1. A portable terminal device adapted to be carried to a customer site and to perform transaction operations by transmitting and receiving data to and from a central unit through a telephone set, said portable terminal device comprising:

a card reader for receiving a transaction card on which customer data is recorded, a first control card on which transaction limiting data is recorded for limiting the scope of transactions permitted by said terminal device, said transaction limiting data including at least one limiting item data indicative of a limit of total transaction amount to be permitted, and a second control card on which data is recorded for causing the inhibiting of transactions by said terminal device, said card reader functioning for reading out the data recorded on each of said transaction, first control card and second control cards;

a keyboard for inputting transaction data;

data buffer means coupled to said keyboard and said card reader for temporarily storing the transaction data inputted from said keyboard and the customer data read out from said transaction card by said card reader;

memory means coupled to said card reader for storing said transaction limiting data read out from said first control card by said card reader;

state storing means coupled to said card reader for holding a transaction ready state in which said terminal device is ready for a transaction when said transaction limiting data is stored in said memory means and a transaction inhibit state in which said terminal device is inhibited for a transaction when said card reader reads out said second control card;

transmitting means coupled to said data buffer means for transmitting the data stored in said data buffer means to said central unit through said telephone set during a time in which said state storing means holds the transaction ready state;

accumulating means coupled to said data buffer means operative prior to the data transmission by said transmitting means to said central unit for producing an accumulation

of transactions for each limiting item of said transaction limiting data; and

means coupled to said accumulation means and said memory means for checking whether or not a value of the accumulation produced by said accumulating means exceeds a value for the corresponding limiting item of said transaction limiting data stored in said memory means, said means for checking causing the inhibition of the data transmission by said transmitting means to said central unit when the value of the accumulation exceeds the value for the corresponding item of said transaction limiting data,

whereby transactions with a plurality of customers are possible within a scope allowed by a manager of said terminal device.

4,511,971

ANTILOCKING BRAKE SYSTEM

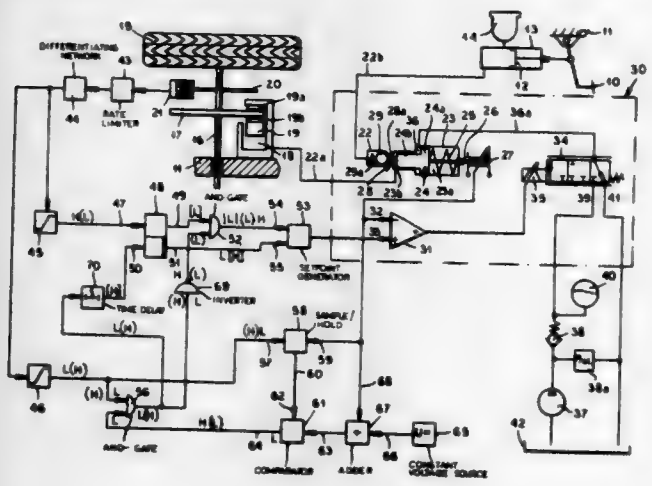
Adam Dittner, Hochstadt; Heinrich Schurr, Herzogenaurach, and Ducius Von Wallenberg, Erlangen, all of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed May 11, 1982, Ser. No. 377,031

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119144

Int. Cl.³ B60T *8/08*; G06F *15/20*

U.S. Cl. 364—426 **7 Claims**



1. An antilocking brake system for a nondriven vehicle wheel having a wheel brake with a wheel-brake cylinder whose brake pressure is controlled by a brake pedal, said system comprising:

(a) signal producing means including:

means for measuring the angular velocity of the wheel and producing a first signal representing said angular velocity,

at least one acceleration-rate limiter, and

at least one differentiating network receiving said first signal for processing said first signal and delivering the respectively processed first signal respectively to first and second threshold-valve discriminators connected to said network and producing respectively a second output signal upon the deceleration of said wheel exceeding a first threshold value of substantially 10 m/s^2, and a third output signal when said deceleration is below a second threshold value of about 10 m/s^2 but lower than said first threshold value;

(b) electrohydraulic analog control means including:

a setpoint/actual value comparator producing a difference signal,

an adjustable valve connected to said comparator and responsive to said difference signal,

a braking-force reducer operated by said valve and having a spring-loaded setting piston controlling the volume of said wheel-brake cylinder independently of said brake pedal,

means for delivering said second signal to said comparator as a setpoint signal, and

means responsive to the displacement of said setting piston for generating an actual value signal and applying said actual value signal to said comparator whereby said braking-force reducer upon overbraking reduces the braking force upon said wheel;

(c) means for temporarily storing a signal value representing the braking force as said first signal falls below said second threshold value and, at least in part in response to the stored signal value, modifying said setpoint value to induce a further reduction in braking force, said valve terminating reduction in brake force upon said actual valve signal corresponding to the modified setpoint value;

(d) means responsive to the means for temporarily storing said signal value for delaying further change in said brake force while the friction between said wheel and a road surface engaged thereby remains constant, for a predetermined brief period; and

(e) means effective after the lapse of said period to increase said brake force and, upon the deceleration of said wheel again exceeding said first threshold value to repeat the operation of said analog control means in response to overbraking.

4,511,972

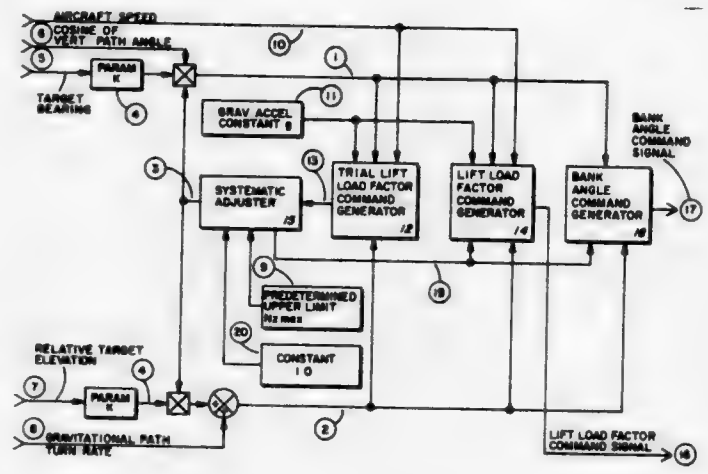
LARGE ANGLE, GRAVITY COMPENSATED, BANK-TO-TURN PURSUIT CONTROLLER

Lee G. Hofmann, Vestal, and Charles J. Dittmar, Jr., Binghamton, both of N.Y., assignors to General Electric Company, Binghamton, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,910

Int. Cl.³ G06F *15/50*; G06G *7/78*

U.S. Cl. 364—434 **16 Claims**



1. A system for accomplishing bank-to-turn pursuit steering of an aircraft, comprising:

Means for generating a lift load factor attenuation signal;

Means for generating first and second signals representing the components of commanded path turn rate in horizontal and vertical planes respectively, each compensated for gravitational path turn rate, the said first and second signals varying in response to and as a function of the lift load factor attenuation signal;

Means for generating a lift load factor command signal which is less than or equal to a predetermined limit, the said lift load factor command signal generating means having inputs from the first and second signals and a gravitational and aircraft performance input component;

Means for generating a bank angle command signal for use with the lift load factor command signal, the said bank angle command signal generating means having inputs of the said first and second signals, and adjusted as a function of the lift load attenuation command signal;

and means for coupling said bank angle command signal and said lift load factor command signal to the aircraft bank

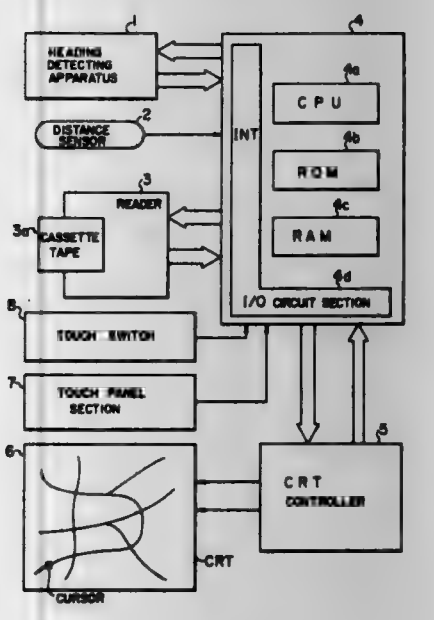
and lift adjusting surface control elements to modify the aircraft bank angle and lift.

4,511,973

NAVIGATOR FOR VEHICLES

Kunio Miura, Okazaki, and Takashi Ono, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 20, 1982, Ser. No. 409,855
Claims priority, application Japan, Aug. 24, 1981, 56-133088; Oct. 22, 1981, 56-169071
Int. Cl.[3] G06F *15/50;* G09B *29/10*
U.S. Cl. 364—449 3 Claims



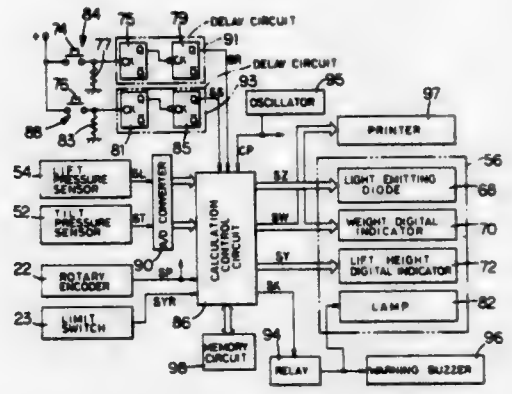
1. A navigator for vehicles comprising:
distance detector means for detecting a running distance of the vehicle to generate a distance signal;
direction detector means for detecting a travelling direction of the vehicle to generate a direction signal;
memory means for storing map data for displaying the road map of a travelling region of the vehicle and position information of a specific point of the travelling region;
display means for electronically displaying the road map and a cursor for indicating the present position of the vehicle on a display surface thereof;
first command means for generating a first command for causing said cursor to move in a predetermined direction;
second command means for generating a second command for causing said cursor to move to a position of the display surface corresponding to said specific point;
map display control means for reading the map data from said memory means to cause said display means to display the road map on the display surface thereof;
present position display control means responsive to the distance signal from said distance detector means and the direction signal from said direction detector means for determining the amount of movement of the vehicle and for causing the displayed position of said cursor to move in accordance with the amount of movement;
first cursor movement control means for moving the displayed position of said cursor in the direction decided by the first command from said first command means; and
second cursor movement control means responsive to the second command from said second command means for reading the position information of the specific point from said memory means to rapidly move said cursor to the position decided by said position information.

4,511,974

LOAD CONDITION INDICATING METHOD AND APPARATUS FOR FORKLIFT TRUCK

Masao Nakane, Handa; Motohiko Takahashi, Aichi, and Takaki Ogawa, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 22, 1982, Ser. No. 341,678
Claims priority, application Japan, Feb. 4, 1981, 56-15536; Feb. 6, 1981, 56-17272; Feb. 9, 1981, 56-18643
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—463 9 Claims



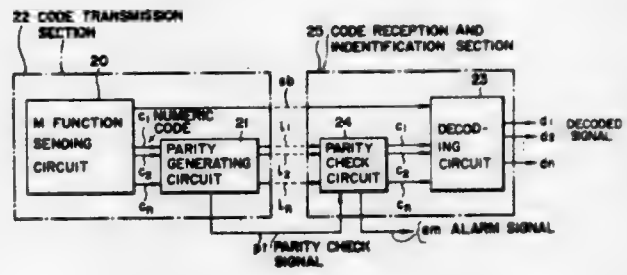
1. A method of indicating a load condition of a forklift truck having a tilt mechanism for tilting a mast and a lift mechanism for lifting a fork along said mast, comprising the steps of:
detecting loads applied to said tilt and lift mechanisms while a cargo is placed on said fork;
calculating a weight of said cargo and a centroid position of the same based on the detected loads applied to said tilt and lift mechanisms; and
displaying the load condition by indicating the calculated cargo weight and centroid position at least by a point which is located in a coordinate system having at least two axes one of which represents the calculated cargo weight as a first variable and the other of which represents the calculated centroid position as a second variable, said coordinate system providing a border line indicating an overload criterion area determined based on a forecast of overturn of said forklift truck.

4,511,975

NUMERICAL CONTROL MACHINE TOOL

Ryoichiro Nozawa, Tokyo; Tsuyoshi Nagamine, Hachioji; Hideaki Kawamura, Hachioji, and Mitsuto Miyata, Hachioji, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP81/00242, § 371 Date May 21, 1982, § 102(e) Date May 21, 1982, PCT Pub. No. WO82/01262, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 21, 1981, Ser. No. 387,848
Claims priority, application Japan, Sep. 25, 1980, 55-133330
Int. Cl.[3] G06F *15/46;* G05B *23/02*
U.S. Cl. 364—474 3 Claims



1. A numerical control system which is equipped to perform at least one of M, S and T functions, comprising:
a numerical controller having a code transmission means for combining a numeric code following an address character indicating one of the M, S and T functions with a redundant signal for checking the validity of the numeric code;

a plurality of transmission lines for conveying the numeric code with the redundant signal from the numerical controller;

a machine tool connected to said transmission lines, said machine tool having a code reception and identification means for receiving the signal from the code transmission means, said code reception and identification means including means for checking the validity of the received signal based on the numeric code indicating one of the M, S and T functions and the validity checking redundant signal; and

decoding means for decoding the numeric code and providing it to a heavy current circuit of the machine tool in response to the numeric code being determined valid and for generating an alarm signal to keep the machine tool out of operation in response to the numeric code being determined invalid.

4,511,976

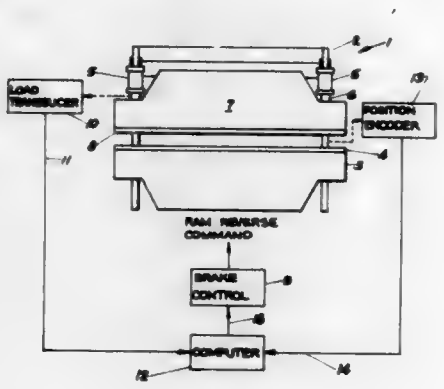
PRESS BRAKE HAVING SPRING BACK COMPENSATION STROKE REVERSAL CONTROL

Raymond J. Graf, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Cincinnati, Ohio

Filed Jul. 6, 1982, Ser. No. 395,792

Int. Cl.³ G06F *15/46;* B21D *5/02*

U.S. Cl. 364—474 **25 Claims**



1. In a press brake for bending a work piece to a desired unloaded flank angle during a forming cycle of the type having a bed supporting a die member, a ram displaceable with respect to said bed, a punch member mounted on the ram and configured to engage the die to produce the desired bend, means for moving said ram toward said bed so that the punch member engages the work piece, and reversing means for reversing the direction of travel of said ram to move the punch member out of engagement with the work piece, the improvement in combination therewith comprising means for reversing the direction of ram travel at the proper point to compensate for work piece spring back and material variations in order to develop the desired unloaded flank angle including means for calculating the loading characteristics of the work piece during the forming cycle, means for deriving from said loading characteristics the theoretical unloading characteristics of the work piece, means for calculating the plastic characteristics of the work piece during the forming cycle, and means for relating said unloading and plastic characteristics to calculate the point of ram penetration at which ram reversal should occur to produce the desired flank angle in the work piece.

4,511,977

PUNCH MARKER HEIGHT CONTROL

Daryl Schuettpelz, Milwaukee, Wis., assignor to C.R.O. Inc., Menomonee Falls, Wis.

Filed Mar. 18, 1982, Ser. No. 359,238

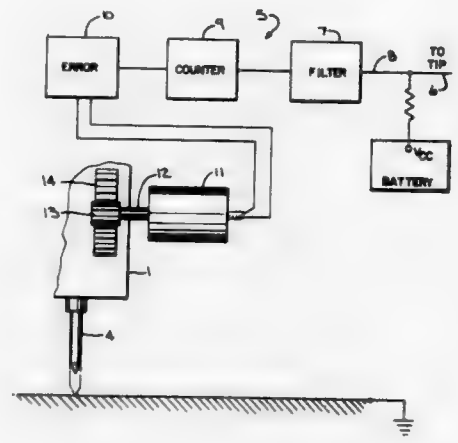
Int. Cl.³ G06F *15/46*

U.S. Cl. 364—475 **4 Claims**

1. A height control system for monitoring and adjusting the distance between a reciprocating punch marking tool and a workpiece comprising:

timing means for measuring the time interval during which the marking tool is in contact with the workpiece,

error detection means connected to the output of said timing means for comparing said time interval with a predetermined time range, said predetermined time range being indicative of an "in position" condition for the marking tool,



said error detection means generating a correction signal upon determining that said time interval is outside said predetermined time range, and

height adjustment means operatively connected to the output of said error detection means for adjusting the height of the marking tool in response to said correction signal generated by said error detection means.

4,511,978

DEVICE FOR DETERMINING A PARAMETER SIGNAL FOR A VOLTAGE-FED LOAD

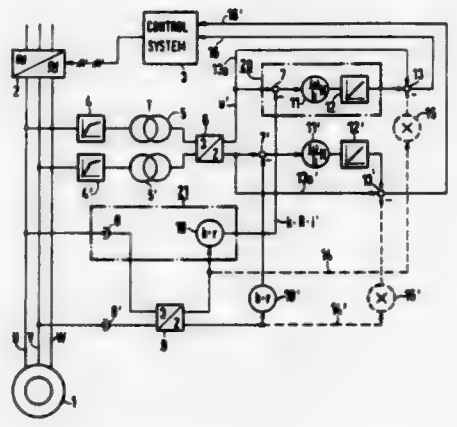
Leonhard Reng, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 386,946

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125748

Int. Cl.³ G06G *7/62*

U.S. Cl. 364—480 **6 Claims**



1. Device for determining an operating parameter signal for a load fed by a current i and a voltage u which decreases with decreasing frequency said operating parameter defined by $\int(u'+Ri')\,dt$ correlated to a proportionality factor R, comprising:

an integrating and amplifying circuit connected to amplify the load voltage u in accordance with a transfer function $k/(1+s\cdot k/\omega_N)$, where s is a laplacian operation, ω_N is a given reference frequency of the load, and k is a proportionality factor;

a transformer connected to receive the amplified load voltage signal at its input and to provide a d-c isolated voltage signal u′ at its output which is proportional to the voltage u;

a current measuring system for determining the load current i, for forming the isolated signal i', and for forming a signal R·i';

a post-transformer integrating circuit connected to receive the u' and R·i' signals and to develop an output signal corresponding to the value $\omega_N k \cdot \int (u' + k \cdot R \cdot i')\, dt$;

summing point means for summing the u' signal and the output signal of the post-transformer integrating circuit to provide the operating parameter signal;

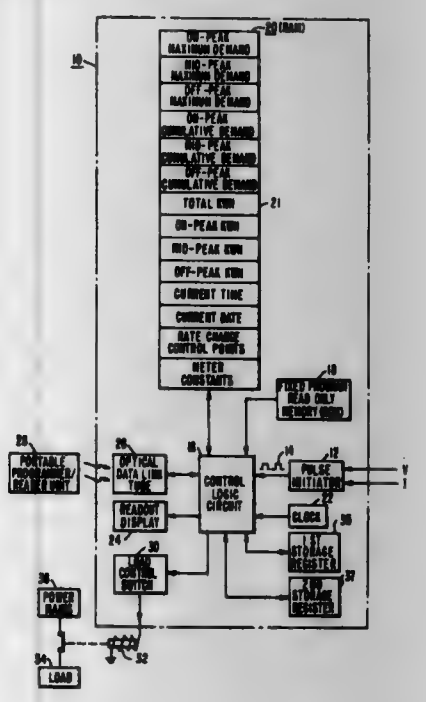
wherein the proportionality factor k is chosen so that even at low frequencies the voltage u amplified in accordance with the proportionality factor k is greater than the quotient of the absolute measurement error and the maximum permissible relative transfer error ($k \cdot u > \Delta u/(\Delta u/u_{o\ max})$) relative to a transformer input voltage u_o.

4,511,979

PROGRAMMABLE TIME REGISTERING AC ELECTRIC ENERGY METER HAVING RANDOMIZED LOAD CONTROL

Dominic Amirante, Louisburg, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 25, 1982, Ser. No. 411,220
Int. Cl.[3] G01R *11/57, 11/24*
U.S. Cl. 364—481 8 Claims



1. An electrical energy meter for connecting to a power distribution system for measuring parameters of electrical energy usage in accord with time differentiated billing rate periods and for controlling a load, said meter comprising:

clock means for producing periodic timing pulses;

first means for accumulating said timing pulses in a manner representative of a current time;

second means for storing a plurality of preselected rate change control points, each of said plurality of rate change control points comprising a time data code, a billing rate data code, and a load control data code;

comparator means for periodically comparing said current time with said time data code of each one of said plurality of rate change control points, and for selecting a current rate change control point from said plurality of rate change control points when said current time is equal to the time data code of one of said plurality of rate change control points;

means for producing metering pulses representative of electrical energy usage;

third means for accumulating said metering pulses, said third accumulating means comprising a plurality of storage registers;

control logic means for producing a billing rate control signal in response to a billing rate data code associated with said selected current rate change control point, said billing rate control signal controlling accumulation of said metering pulses in a preselected one of said plurality of storage registers of said third accumulating means, said control logic means comprising means for selecting a least significant digit of one of said plurality of storage registers of said third accumulating means;

means for storing said selected least significant digit in a load control switch;

means for periodically decrementing said load control switch; and

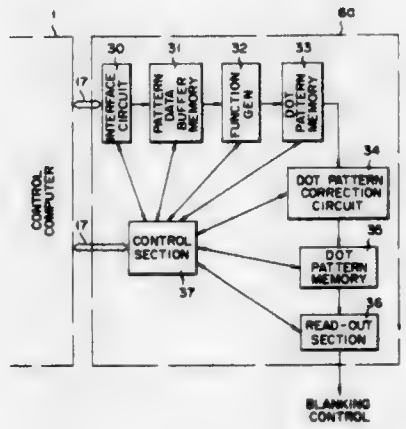
means for selectably shedding and reconnecting a load when said load control switch is equal to a preselected value based on the binary status of said load control data code associated with said selected current rate change control point.

4,511,980

ELECTRON BEAM EXPOSURE APPARATUS

Susumu Watanabe, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 16, 1982, Ser. No. 388,936
Claims priority, application Japan, Jun. 17, 1981, 56-93408
Int. Cl.[3] H01J *3/12*
U.S. Cl. 364—491 4 Claims



1. An electron beam exposure apparatus, comprising:

a buffer memory for temporarily storing input pattern data,

a function generator responsive to said buffer memory for converting the pattern data stored in said buffer memory into corresponding dot pattern data according to a predetermined function,

first memory means for storing dot pattern data obtained from said function generator,

means for correcting an error occurring in an individual dot in the dot pattern data obtained from said function generator and stored in said first memory means so as to obtain corrected dot pattern data,

second memory means for storing the corrected dot pattern data, and

means for directing an electron beam modulated according to the corrected dot pattern data read out from said second memory means to an exposure medium.

4,511,981

PROTECTIVE RELAYING SYSTEM

Fumio Andow, Hachiohji, and Masuo Nakashima, Urawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

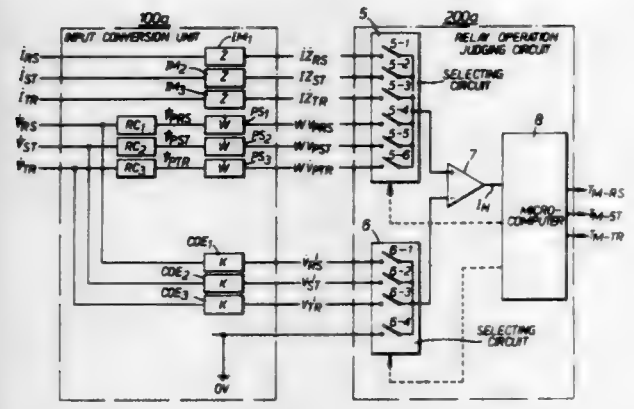
Filed Sep. 29, 1982, Ser. No. 428,327
Claims priority, application Japan, Sep. 29, 1981, 56-154142
Int. Cl.[3] G06F *15/46;* G01R *31/08*
U.S. Cl. 364—492 20 Claims

1. A protective relaying system which detects a fault in an electric power system having a circuit breaker by using a current and a voltage of said electric power system and causes

said circuit breaker to trip in accordance with the fault detection so as to protect said electric power system, said protective relaying system, comprising:

input conversion means adapted for connecting said electric power system to receive a first input signal corresponding to said current and a second input signal corresponding to said voltage and for converting the magnitude and/or the phase of said first and second input signals to produce a plurality of electrical quantities including a first electrical quantity, a second electrical quantity and a third electrical quantity;

comparing means connected to said input conversion means for receiving said first, second and third electrical quantities, for comparing said first electrical quantity with said second electrical quantity to produce a first logical state



signal based on a first comparing result and comparing said third electrical quantity with a fourth electrical quantity to produce a second logical state signal based on a second comparing result cyclically, and for producing a logical state signal including said first and second logical state signals cyclically; and

digital data processing means connected to said comparing means for receiving cyclically said logical state signal, for producing a first and a second serial logical state signals based on said cyclically received first and second logical state signals, respectively, and for judging whether a phase-rotation sequence of said first and second serial logical state signals equals a predetermined sequence to produce a protection relay output signal based on the judging result, said protection relay output signal being adapted for using to trip said circuit breaker.

4,511,982

NUMERICAL CONTROL DEVICE

Mitsuo Kurakake, Hino, Japan, assignor to Fujitsu Fanuc Limited, Minamitsuru, Japan

PCT No. PCT/JP81/00157, § 371 Date Mar. 5, 1982, § 102(e) Date Mar. 5, 1982, PCT Pub. No. WO82/00210, PCT Pub. Date Jan. 21, 1982

PCT Filed Jul. 7, 1981, Ser. No. 355,724

Claims priority, application Japan, Jul. 7, 1980, 55-92383

Int. Cl.³ G06F *15/46, 11/16*

U.S. Cl. 364—167 **3 Claims**

3. A numerical control system, comprising:

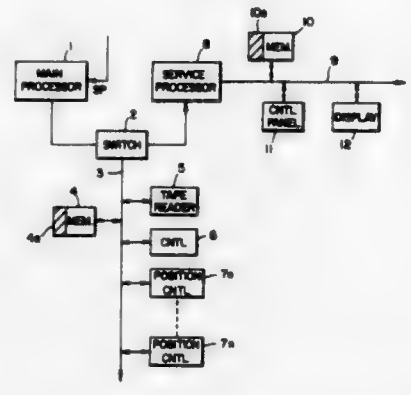
a main processor for numerical control processing;

a switching circuit operatively connected to said main processor;

peripheral circuits operatively connected to said switching circuit and including numerical control circuits and a diagnostic program memory including a first system diagnostic program executable by said main processor;

a service processor memory including a second system diagnostic program; and

a service processor, operatively connected to said switching circuit and said service processor memory, for diagnosing failure of said main processor and said peripheral circuits when said main processor fails in accordance with the second diagnostic program, said switching circuit connecting said service processor to said peripheral circuits when said main processor fails.



4,511,983

APPARATUS FOR CONTROLLING MICROINSTRUCTIONS STORED IN A DATA PROCESSING UNIT MEMORY

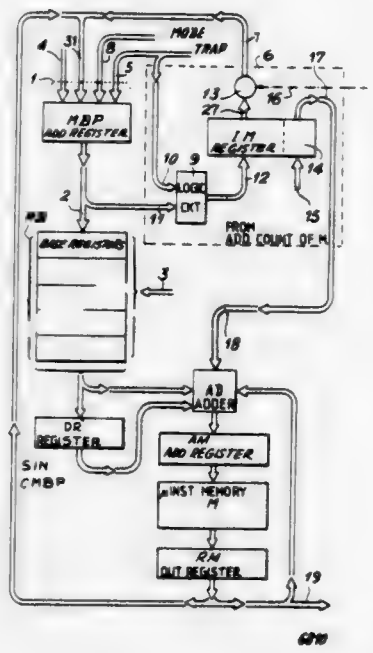
Jean-Claude M. Cassonnet, Conflans Sainte-Honorine, and Marie-Odile Lamarche née Lechevin, Pantin, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 22, 1980, Ser. No. 219,388

Claims priority, application France, Dec. 27, 1979, 79 31793

Int. Cl.³ G06F *9/00, 9/20*

U.S. Cl. 364—200 **6 Claims**



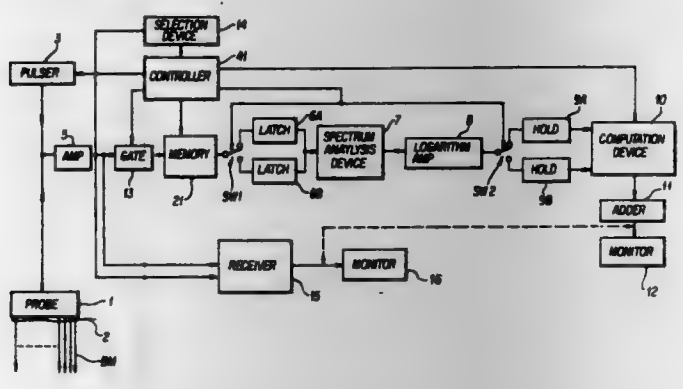
1. Apparatus for controlling microinstructions stored in a memory of a data processing unit, the microinstructions being grouped into microprogram segments, each microprogram segment being defined by a base as a function of each microprogram segment which is to executed, the apparatus comprising a memory address register for the memory, an output register for microinstructions read from the memory, said memory address register and output register respectively having outputs and inputs coupled to an address input of the memory and an output read from the memory, an adder having first and second inputs respectively responsive to (1) a signal indicating the base corresponding to the microprogram executed and (2) an output of the memory output register, the adder having an output connected to an input of the memory address register, a bank of base registers for storing bases of segments, means for addressing the base registers, outputs of the output register of the memory being connected to control inputs of the means for addressing base registers, the means for address-

ing the base registers comprising a base address register having outputs connected to address inputs of the base registers, the base address register having control inputs including: first and second inputs, the first input of the base address register loading the base address register with a binary signal contained in microinstructions of each segment, the first input corresponding to a base register in the base register bank which is addressed while the microprograms are being executed, the second input of the base address register being a signal indicative of addresses of the base registers which must be addressed while registers of the bank are loaded with signals indicative of the bases of the microprogram segments which are to be executed; and means for safeguarding the address of the base register of the bank which corresponds to a microprogram segment being executed when an interrupt occurs in the executed microprogram, the safeguarding means comprising: a safeguard register and a logic circuit including an AND gate array responsive to the address indicating output signal of the base address register and to the interrupt signal, the logic circuit deriving an output signal indicating the address of the register in the register bank containing the base segment at the time the interrupt signal occurs, means for coupling an output signal from the safeguard register to the base address register, said last named means including a logic control gate for coupling an output of the safeguard register to an input of the bank address register, the logic control gate having a control input responsive to a control signal for emptying the contents of the safeguard register into the base address register when the interrupted microprogram is resumed.

4,511,984
ULTRASOUND DIAGNOSTIC APPARATUS

Yoichi Sumino, and Susumu Enjoji, both of Ootawara, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1982, Ser. No. 411,310
Claims priority, application Japan, Sep. 19, 1981, 56-147018
Int. Cl.[3] G06F *15/42*
U.S. Cl. 364—415 17 Claims



1. An ultrasonic diagnostic apparatus for use in evaluating characteristics of a subject, comprising:

ultrasonic probe means for transmitting ultrasonic beams having predetermined frequency spectra and for receiving reflected echo signals, said probe means scanning said subject in a predetermined cross sectional plane wth the transmitted ultrasonic beams;

pulser means connected to said ultrasonic probe means for initiating generation and transmission of ultrasonic beams by said probe means;

gate means coupled to said ultrasonic probe means for sampling reflected echo signals at predetermined sampling time periods after transmission of said ultrasonic beams by said probe means to divide said echo signals into predetermined segments corresponding to successive incremental time periods;

spectrum analysis means coupled to said gate means for obtaining frequency spectra of the echo signals of each of said segments by means of Fourier analysis;

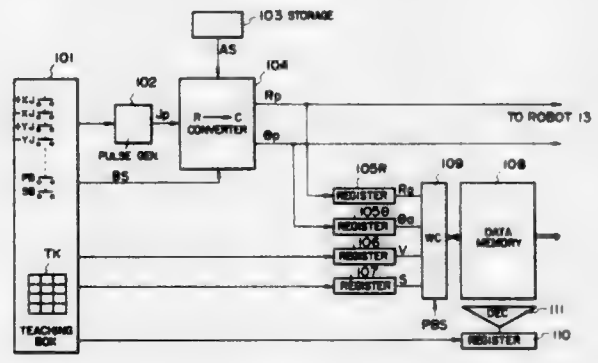
processing means coupled to said spectrum analysis means for determining a transfer function associated with each of said segments as a function of differences between the frequency spectra of successive segments and for deriving at least one frequency-dependent ultrasonic attentuation parameter based on the transfer functions associated with plural of said segments; and,

controlling means coupled to said pulser means, and said processing means for controlling the generation and scanning of said ultrasonic beams, the sampling by said gate means, and the determining of said at least one parameter by said processing means.

4,511,985
ROBOT CONTROL SYSTEM

Hajimu Inaba, Hino, and Shinsuke Sakakibara, Kunitachi, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP81/00346, § 371 Date Aug. 25, 1982, § 102(e) Date Aug. 25, 1982, PCT Pub. No. WO82/02435, PCT Pub. Date Jul. 22, 1982
PCT Filed Nov. 18, 1981, Ser. No. 413,380
Claims priority, application Japan, Dec. 30, 1980, 55-186735
Int. Cl.[3] G06F *15/46;* G05B *19/42*
U.S. Cl. 364—513 9 Claims



1. A robot control system, comprising:

a robot having a hand which operates on the basis of a cylindrical coordinate system, where said robot operates upon receiving robot command data in a cylindrical coordinate system;

a robot control device, operatively connected to said robot, having data memory for storing the robot command data for the cylindrical coordinate system, where said robot control device provides said robot with the robot command data;

teaching means for providing instructions on the basis of a rectangular coordinate system for teaching the actions of said robot;

rectangular-to-cylindrical coordinate conversion means, operatively connected to said teaching means and said robot control device, for converting the instructions in the rectangular coordinate system from said teaching means into robot command data in the cylindrical coordinate system; and

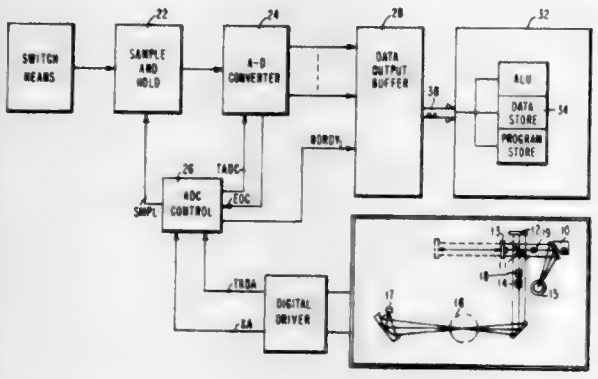
coordinate conversion means, operatively connected to the data memory, for converting the robot command data with an origin into different robot command data with a different origin, where in order to use the robot command data at a position with an origin different from the origin of said rectangular coordinate system as the basis of a teaching operation, said coordinate conversion means converts the robot command data in the data memory into the different robot command data depending upon a difference between cylindrical coordinate values of both origins.

4,511,986

METHOD AND APPARATUS FOR SIMULTANEOUSLY RECORDING MULTIPLE FT-IR SIGNALS

Robert J. Bellar, Watsonville; William G. Golden, San Jose; David D. Saperstein, Foster City, and Ashok Vats, San Jose, all of Calif., assignors to International Business Machines, Armonk, N.Y.

Filed Aug. 30, 1982, Ser. No. 413,034
Int. Cl.³ G06G *9/00*; G01J *3/42*
U.S. Cl. 364—576 **7 Claims**



1. Apparatus for simultaneously recording, in a single beam Fourier Transform Infrared spectrometer, multiple signals defining at least two different interferograms comprising:

switching circuit means having at least two signal terminals, having a first and a second control circuit input terminal and having one output terminal;

means for coupling input signals to said at least two signal terminals;

sample-and-hold circuit means having an input terminal connected to the output terminal of said switching circuit means;

analog-to-digital circuit means having an input terminal connected to said sample-and-hold circuit means and having an output terminal for delivering digital data;

means for generating a first control signal for synchronizing said switching circuit means with an interferometer operation;

means for generating a second control signal defining data acquisition intervals;

means for coupling said first control signal to said first control circuit input terminal to reset said switching circuit means to a predetermined state;

means for coupling said second control signal to said second control circuit input terminal to switch the state of said switching circuit means for each of said signals defining data acquisition intervals so that data samples for each of said input signals are interleaved;

computing circuit means coupled to receive the digital data from the output terminal of said analog-to-digital circuit means, said computing circuit means being operable under program control to store said digital data, and for accessing said digital data so that all data samples for the same input signal are combined to produce an interferogram for each of the input signals.

4,511,987

METHOD OF ENTERING AND PERFORMING OPERATIONS ON COMPLEX NUMBERS ON CALCULATORS

David Caldwell, and Mahendra P. Agrawal, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 25, 1982, Ser. No. 361,689
Int. Cl.³ G06F *15/02*
U.S. Cl. 364—715 **25 Claims**

1. A data processing apparatus comprising:

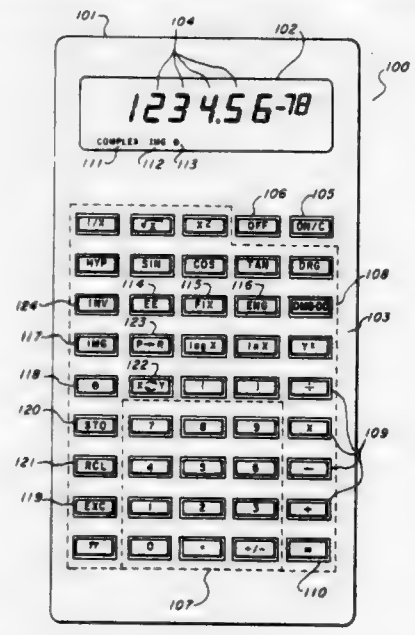
operator input means for entering numeric data and operational commands, said operational commands including (a) a first set of at least one operational command corresponding to a data processing function permitting at least one complex number operand, and (b) at least one complex number mode designation command corresponding to a mode of complex number representation;

indicator memory for storing data therein;

output means connected to said indicator memory for generating an operator perceivable indication of said data stored in said indicator memory;

second memory for storing data therein; and

arithmetic means connected to said operator input means, said indicator memory and said second memory including (a) means for performing entered operational commands on entered numeric data in a real number mode and storing the result in said indicator memory when said data processing apparatus is not in a complex number computation mode, (b) means for designating the previously entered numeric data as a first part of a complex number and the next entered numeric data as a second part of a complex number in a corresponding mode of complex number representation, and setting a corresponding complex number computation mode upon entry of a complex number mode designation command, and (c) means for performing entered operational commands from said first set of at least one operational command on entered complex number numeric data in said corresponding mode of complex number computation and storing the first part of the result in said second memory and the second part of the result in said indicator memory when said data processing apparatus is in a complex number computation mode.



4,511,988

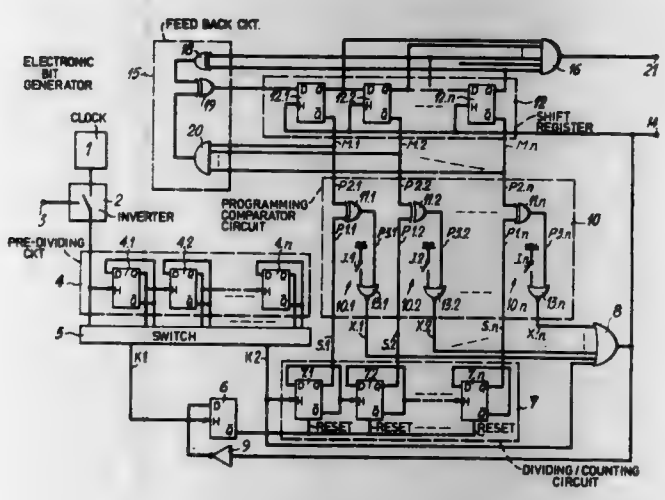
ELECTRONIC EVENT OR BIT GENERATOR HAVING A PREDETERMINED OCCURRENCE RATE WITH A PREDETERMINED EVENT OR BIT DISTRIBUTION

Urien Michel, Rue du Park Moan, Brélevenez, and Theron M. P. J. Guy, 42, rue de Lorraine, both of F-22300 Lannion, France

Filed Jul. 16, 1982, Ser. No. 398,993
Claims priority, application France, Jul. 17, 1981, 81 14312
Int. Cl.³ G06F *1/02, 15/31*
U.S. Cl. 364—717 **3 Claims**

1. An electronic event generator comprising time base means having an output terminal; pseudo-random sequence generator means having an output terminal and a clock terminal; counter means having output, clock, and reset terminals; comparator means having an output terminal and a plurality of stages which are equal to the number of the length of an output binary word of the pseudo-random sequence generator means, each of said stages including an exclusive OR gate having two inputs and an output terminal, the two inputs of each exclusive OR gate being respectively connected from the outputs of the

stages having the same rank in the pseudo-random sequence generator means said in the counter means; said comparator means having one input which is connected to the output terminal of the pseudo-random sequence generator means, and another input which is connected to the output terminal of the counter means, the output terminal of the comparator means being connected to a reset terminal of the counter means and to the clock terminal of the pseudo-random sequence generator means, the clock terminal of the counter means being connected to the output terminal of the time base means; a two-



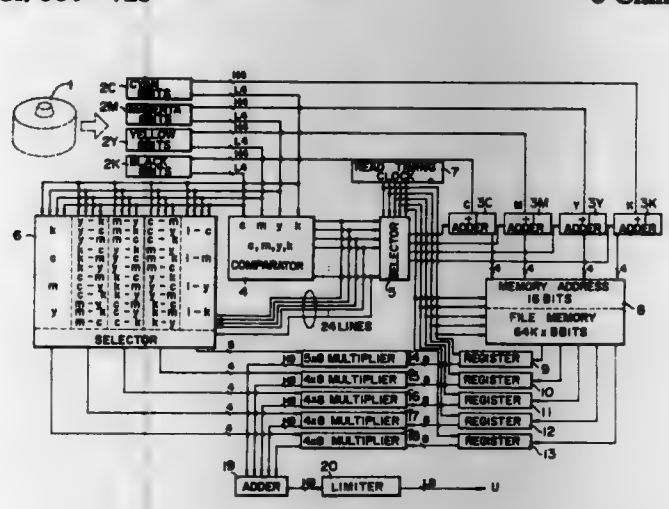
input AND gate associated with each of the exclusive OR gates, one input of each two-input AND gates being connected to the output terminal of its associated exclusive OR gate; a voltage source; a controllable switch; the other input of each AND gate being connected to said voltage source via a contact of said controllable switch; a multiple-input AND gate which is common to all the stages of the comparator, the output of each of the two input AND gates being connected to a corresponding input on the multiple-input AND gate, the output of the multiple-input AND gate being the output of the electronic event generator.

4,511,989

LINEAR INTERPOLATING METHOD AND COLOR CONVERSION APPARATUS USING THIS METHOD

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed May 17, 1982, Ser. No. 378,792
Claims priority, application Japan, Jun. 18, 1981, 56-93013
Int. Cl.³ G06F *15/353*
U.S. Cl. 364—723 **6 Claims**



5. A color conversion apparatus for use in a linear interpolation method, comprising:

(a) means for separating each of (p+q) bits of digital subtractive primary colors such as cyan, magenta, yellow and black into two sets, one set of which is an address signal of p bits of the higher order (for C, M, Y, and K) for calling additive primary color signals and the other is for the lower-order q bits (for c, m, y, and k);

(b) a comparator for comparing relative magnitudes of c, m, y, and k and generating an output signal which is a function of said relative magnitudes;

(c) means for monitoring the output signals of the comparator and determining, as a function of said relative magnitudes, to which of said higher-order address signals C, M, Y, or K a unit value is to be added;

(d) memory means for preliminarily storing additive primary signals corresponding to all combinations of said p bits in the higher-order address signals, and outputting five of said additive primary signals in response to address signals output by said monitoring means;

(e) means for calculating five sets of coefficients (1−c, 1−m, 1−y, 1−k), (1−m, c−y, c−k, m−k, m−c, y−k, y−c, y−m, k−c, k−m, k−y), (m−y, m−k, m−c, y−k, y−c, y−m, k−c, k−m, k−y, c−m, c−y, c−k), (y−k, y−c, y−m, k−c, k−m, k−y, c−m, c−y, c−k, m−y, m−k, m−c) and (k, c, m, y), from the q bits of the lower-order signals and for selecting five of said coefficients as a function of said output signal of the comparator, and outputting signals corresponding to said coefficients,

(f) a plurality of multipliers for multiplying each of said coefficient signals by each of the corresponding additive primary color signals read from said memory means, and

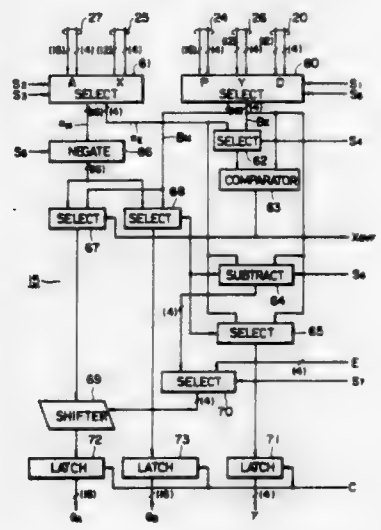
(g) an adder for adding higher-order bits obtained by the multiplication of said signals in said multipliers.

4,511,990

DIGITAL PROCESSOR WITH FLOATING POINT MULTIPLIER AND ADDER SUITABLE FOR DIGITAL SIGNAL PROCESSING

Yoshimune Hagiwara; Shizuo Sugiyama, both of Kodaira; Narimichi Maeda, Tachikawa; Osamu Yumoto, Kokubunji; Takashi Akazawa, Kodaira; Masahito Kobayashi, Yokohama; Yasuhiro Kita, Hachioji, and Yuzo Kita, Fuchu, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,680
Claims priority, application Japan, Oct. 31, 1980, 55-152051
Int. Cl.³ G06F *7/48*
U.S. Cl. 364—748 **11 Claims**



1. A digital processor comprising:

a first data bus having a first number of bit lines;

interface means connected to said first data bus for receiving data to be provided on the first data bus and for transmitting data provided on the first data bus;

data storage means connected to said first data bus for storing data provided on the first data bus, each data having said first number of bits;

read means connected to said data storage means for simultaneously reading first and second data from said data storage means;

multiplication means for performing floating point multiplication on first and second data read out by said read means and both having floating point representation, and for delivering produce data with floating point representation and with a second number of bits which is larger than the first number of bits;

a second data bus having said second number of bit lines;

floating point addition means including input selection means connected to said multiplication means and said second data bus for selecting a pair of operands from the first and second read out data, the product data and data on the second data bus, extending means for selectively extending the first and second read out data into floating point data of a second number of bits when said input selection means selects either of the first and second read out data and operation means for performing floating point addition on said selected pair of operands:

transferring means connected to said operation means of said floating point addition means for selectively transferring the sum data provided therefrom onto said first or second data bus;

converting means connected to said transferring means for converting the sum data into floating point data having said first number of bits when it is necessary to provide the sum data onto the first data bus;

memory means for storing a plurality of program instructions; and

control means responsive to program instruction read out from said memory means for controlling the operations of said interface means, said data storage means, said read means, said multiplication means, said floating point addition means, and said transferring means.

4,511,991

ARITHMETIC OPERATION CIRCUIT FOR FINDING A SQUARE ROOT OF A SUM OF SQUARED VALUES

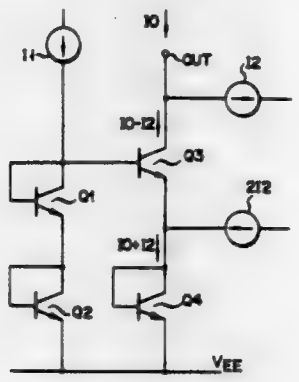
Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1982, Ser. No. 414,908

Claims priority, application Japan, Sep. 22, 1981, 56-149850

Int. Cl.³ G06G 7/22

U.S. Cl. 364—814 **5 Claims**



1. An arithmetic operation circuit for delivering an output current corresponding to a square root of a sum of two squared values, said values being represented by current delivered from first and second current sources, comprising:

a first transistor having an emitter-collector path connected at one end thereof to the first current source and to the base of said first transistor;

a second transistor having an emitter-collector path connected at one end thereof to the other end of the emitter-collector path of said first transistor and to the base of said second transistor, the other end of the emitter-collector path of said second transistor being connected to a first power source;

a third transistor having an emitter-collector path connected at one end thereof to an output terminal, the base of said third transistor being connected to said one end of the emitter-collector path of said first transistor;

a fourth transistor having an emitter-collector path connected at one end thereof to the other end of the emitter-collector path of said third transistor and to the base of said fourth transistor, the other end of the emitter-collector path of said fourth transistor being connected to said first power source; and

means connected to the second current source and to said third and fourth transistors for delivering a difference current, equal to the output current at the output terminal less the current from the second current source, to said one end of said emitter-collector path of said third transistor and for delivering a summed current, equal to said output current plus the current from the second current source, to said one end of said emitter-collector path of said fourth transistor.

4,511,992

SYSTEM FOR RECONSTITUTING, BY FILTERING, AN ANALOG SIGNAL FROM A PSEUDO-ANALOG SIGNAL

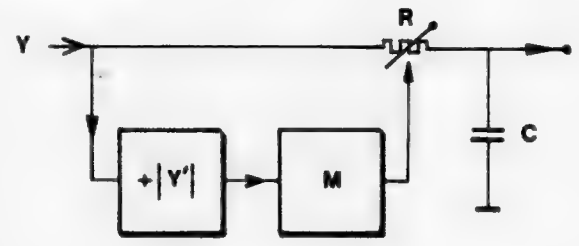
Bernard Dureigne; Stéphane Guerillot, both of Paris, and Alain Regnault, Chevilly Larue, all of France, assignors to Organisme Autonome Dote de la Personnalite Civile Agence France Presse, France

Filed May 6, 1982, Ser. No. 375,765

Claims priority, application France, May 8, 1981, 81 09239

Int. Cl.³ H03H 7/00

U.S. Cl. 364—825 **6 Claims**



4. A circuit for the reconstitution by filtering of an analog signal, from a pseudo-analog signal obtained by a double analog to digital, digital to analog conversion of the analog signal, said circuit processing this pseudo-analog signal issued from this said double conversion, in which analog variations in amplitude as a function of the time are represented by incremental level variations, said processing circuit including an RC network (R_3C_3) with a variable impedance to which the pseudo-analog signal is transmitted as an input through an input buffer amplifier (**10**), and providing the reconstituted signal as an output signal through an output buffer amplifier (**20**), said circuit comprising:

a. a first differentiating circuit (R_1C_1) connected to the output of the input buffer amplifier (**10**),

b. a rectifier of absolute value (**11**), receiving the signal from said first differentiating circuit (R_1C_1),

c. a sample and hold circuit (**12**) connected to the output of said rectifier (**11**), and the output signal of which is connected to a circuit for controlling the impedance of said RC network (R_3C_3),

d. a second differentiating circuit (R_2C_2), connected for its input to said rectifier of absolute value (**11**), and for its output to a second rectifier (**13**),

e. a circuit formed by a third amplifier (**14**), which receives a signal furnished by said second rectifier (**13**), and a monostable circuit (**15**), connected for its input to said third amplifier, and the signal from the output of said monostable circuit (**15**) controlling said sample and hold circuit (**12**).

4,511,993
ARRANGEMENT FOR READING OUT DEFINED DATA FROM A DIGITAL SWITCHING DEVICE WITH MUTUALLY ASYNCHRONOUS CONTROL SIGNALS FOR SEQUENTIAL SWITCHING OF THE DEVICE AND TRANSFER OF THE DATA

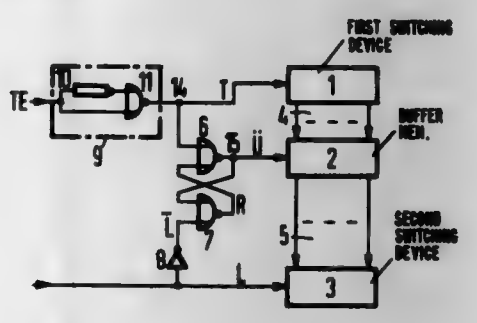
Irmfried Bromme; Reinhold Brunner, both of Munich, and Heinz Reimer, Tutzing, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,247

Claims priority, application Fed. Rep. of Germany, May 11, 1981, 3118621

Int. Cl.[3] G06F *1/00*

U.S. Cl. 364—900 8 Claims



1. Arrangement for transfer of well-defined data from a first switching device to a second switching device, wherein the first switching device is driven by a first clock and the second switching device is driven by a second clock and wherein the first and second clocks are mutually asynchronous, the arrangement which comprises:

an output data storage being a part of the first switching device for storing the well-defined data to be transferred;

an input data storage being a part of the second switching device for receiving the data to be transferred;

a buffer storage for temporarily receiving and holding the data from the output data storage and subsequently transferring the data to the input data storage;

a clock pulse T synchronous with said first clock, operatively engaging said first switching device for initiation of the transfer of data from said output data storage to said buffer storage;

a read signal L synchronous with said second clock operatively engaging said second switching device, for initiating the transfer of said data;

a cross-connected latching gate arrangement having at least a first and a second gate, each having a first and a second gate input and an output;

said first input of said first gate operatively responsive to said clock pulse T, said second output of said second gate operatively responsive to said read pulse L;

said output of said first gate operatively producing receive signal Ü for engaging said buffer storage for receiving said data from said output storage.

4,511,994
MULTI-GROUP LRU RESOLVER

David M. Webb, Blaine, and Thomas A. Lane, New Brighton, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

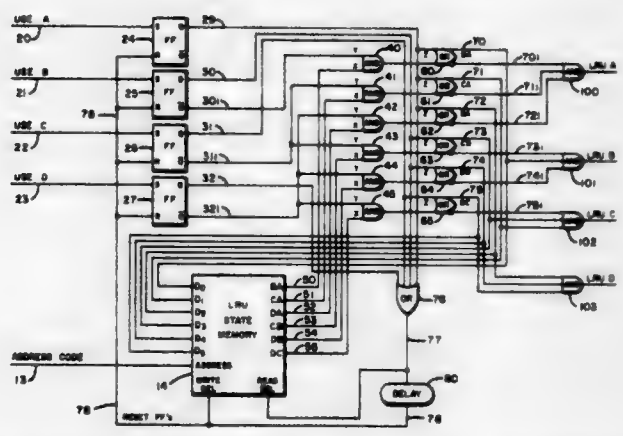
Filed Sep. 27, 1982, Ser. No. 424,665

Int. Cl.[3] G06F *7/00, 7/38*

U.S. Cl. 364—900 3 Claims

1. In a least recently used resolving network of the type having a group address input line for receiving an address code and a plurality of use input lines, each use input line having associated with it a plurality of elements, one element from each plurality of elements being associated in an elemental group with one element from each of the other pluralities of elements, each said elemental group having associated with it a unique address code supplied on the group address input line each time an element in the group is used, a single one of the use input lines receiving in conjunction with each address code a use signal indicating use of the element associated with the use input line carrying the use signal, for resolving and recording the individual use relationships among the elements of each group and comprising:

(a) a memory storing N words, each word having bits numbered 1 through M, where N is the greatest number of elements associated with any use input line and M is the combination of the number of use input lines taken two at a time, said memory having an input line forming the group address input line, read and write select lines, and a data input line and output line for each memory bit, and storing the data present on the data input lines at the address on the group address input line responsive to a write signal on the write select line, and providing at the data output lines for a predetermined period the data stored at the location specified by the address present on the group address input line responsive to a signal on the read select line, and each similarly numbered bit is associated with first and second use input lines forming a unique combination for each set of differently numbered bits;



(b) logic network means receiving as input the signals carried by the use input lines and the memory contents received responsive to a read select signal, for supplying on the memory input lines for each of the bits 1 through M of the memory words the logical value of the expression (X AND Y) OR Z where X is the current logical value in the memory word supplied responsive to the read select signal of the memory bit involved, Y is the inverted logical value present in any use signal carried on the first use input line associated with the memory bit involved, and Z is the logical value present in any use signal carried on a second use input line associated with the memory bit involved, and wherein the logical values supplied as input to the memory comprise the desired individual use history relationship for the elements of the group associated with the address code supplied to the memory, as modified by the most recent signal on a use input line; and

(c) control means receiving the use signals on the use input lines, for supplying to the memory a read select signal responsive thereto and a write select signal a predetermined interval following the read select signal.

4,511,995
DETECTOR-DUMMY DETECTOR COMBINATION WHICH IS INTEGRATED AS A SINGLE ELEMENT OF REDUCED SIZE

LuVerne R. Peterson, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 29, 1983, Ser. No. 508,944

Int. Cl.[3] G11C *19/08*

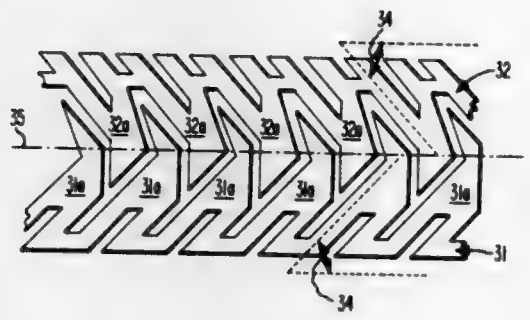
U.S. Cl. 365—8 11 Claims

1. A magnetic bubble memory of the type that includes a planar magnetic film containing a plurality of magnetic bubbles which move in response to a magnetic field that rotates in said plane; wherein said memory further includes an improved

detector-dummy detector mechanism for detecting said bubbles comprised of:

an elongated magnetoresistive detector member and an elongated magnetoresistive dummy detector member that lie alongside of one another on a single insulating layer at the same uniform height over said magnetic film;

said detector and said dummy detector members having fingers that extend towards each other along the direction of elongation;



said fingers of said detector member being interdigitated with the fingers of said dummy detector member such that they mesh together but do not touch;

said fingers of said detector and dummy detector members being interdigitated at angles of less than 180° and such that, at one point during each rotation of said field, magnetic poles which attract said bubbles are induced in the fingers of only said detector member to thereby make any difference in resistance between the two members indicate the presence of a bubble.

4,511,996

MEMORY CELL HAVING A DOUBLE GATE FIELD EFFECT TRANSISTOR AND A METHOD FOR ITS OPERATION

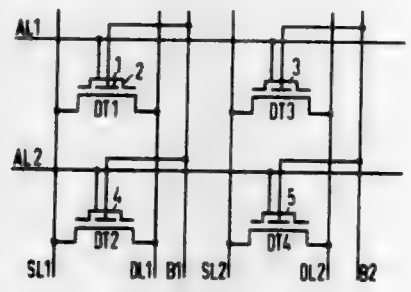
Erwin Jacobs, Vaterstetten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,718

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138947

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—186 **10 Claims**



1. In a transistor memory cell of the type in which a semiconductor body of a first conductivity type has a boundary surface, in which a semiconductor source region of an opposite second conductivity type and a semiconductor drain region of the second conductivity type are located spaced apart in the semiconductor body at the boundary surface and adapted to receive selected operating potentials for writing, reading and erasing, in which a first gate electrode is carried insulated over a first portion of the boundary surface and thereby defines second portions of the boundary surface which extend between the first portion and the source and drain regions, the first gate electrode adapted for connection to a bit line to receive selected potentials for writing, reading and erasing, including potentials effective to produce an electrical charge shift of the threshold voltage of the transistor, and in which selection means connected in circuit with the transistor is operable in response to selection signals to prepare the memory cell for writing, reading and erasing, the improvement wherein the selection means comprises:

a second gate electrode carried insulated over said first gate electrode and extending over said second portions of said boundary surface and adapted for connection to a selection line to receive a selection potential effective to create inversion layers in said semiconductor body below said second portions of said boundary surface to effectively extend said source and drain regions towards said first gate electrode and prepare the transistor for writing, reading and erasing.

4,511,997

SEMICONDUCTOR MEMORY DEVICE

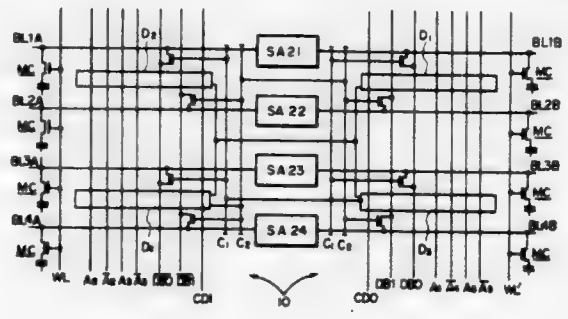
Shigeki Nozaki, Kawasaki; Yoshihiro Takemae, Tokyo, and Tomio Nakano, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 5, 1982, Ser. No. 439,507

Claims priority, application Japan, Nov. 5, 1981, 56-177477

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189 **14 Claims**



1. A semiconductor memory device, having a semiconductor substrate and operatively connected to receive column address signals, comprising:

a plurality of sense amplifiers divided into sense amplifier groups, for providing output signals;

bit lines, operatively connected to said sense amplifiers and arrayed on the semiconductor substrate, each of said sense amplifiers being connected to a pair of said bit lines;

column decoders, operatively connected to receive the column address signals and, respectively, operatively connected to said sense amplifier groups, for selecting said sense amplifier groups;

one or more control signal lines, operatively connected to said sense amplifiers, for simultaneously selecting the output signals of at least two sense amplifiers in said sense amplifier group selected by said column decoders; and

a plurality of data buses, operatively connected to said bit lines, for transferring the output signals of at least two said sense amplifiers selected by said one or more control signal lines, to said bit lines, said sense amplifiers having said control signal lines and said data buses in common.

4,511,998

MULTIELEMENT ACOUSTIC TRANSDUCER AS WELL AS A METHOD OF MANUFACTURING THE SAME AND AN ACOUSTIC IMAGING INSTRUMENT

Hiroshi Kanda, Tokorozawa; Isao Ishikawa, Hino, and Toshio Kondo, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 226,819, Jan. 21, 1981, abandoned. This application Sep. 8, 1983, Ser. No. 530,469

Claims priority, application Japan, Jan. 21, 1980, 55-4624

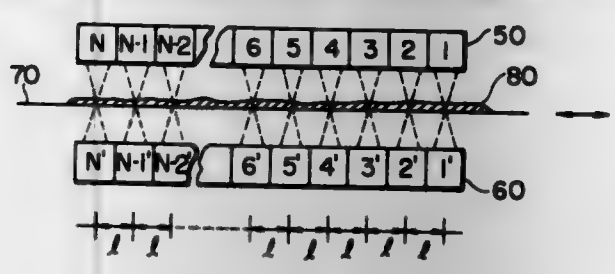
Int. Cl.³ G01N *29/00*

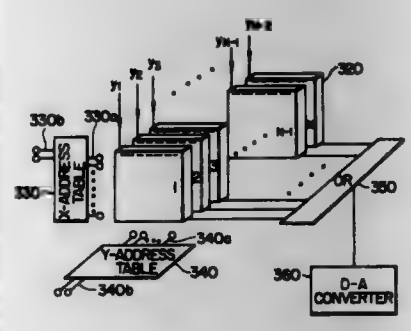
U.S. Cl. 367—11 **12 Claims**

1. In an acoustic imaging instrument wherein a predetermined object to be imaged is mechanically scanned in two dimensions in a focal zone of a focussed acoustic beam, and an

acoustic image of the object to be imaged is formed on the basis of the resultant acoustic beam;

an acoustic imaging instrument characterized in that means to form the acoustic beam includes multielement transducer means for simultaneously transmitting and receiving each beam, the multielement transducer means including a plurality of acoustic transducer elements formed at intervals each being equal to a width of the mechanical scanning, and that each of the plurality of transducer elements has a concave construction.



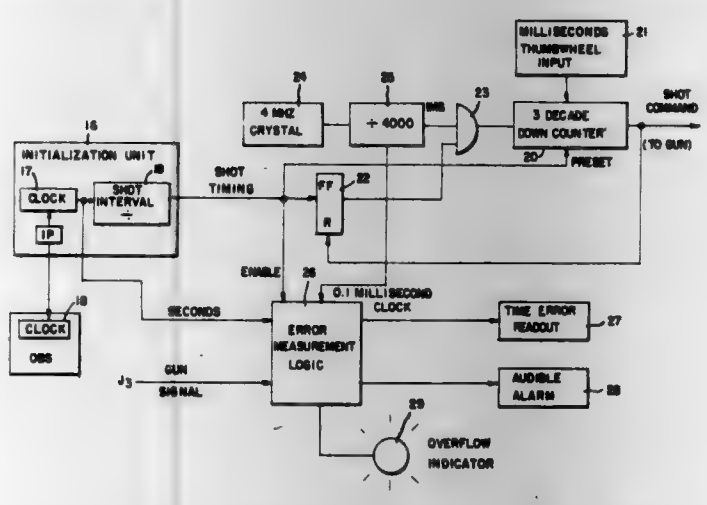


4,511,999

GUN SHOT CONTROL UNIT FOR SEISMIC EXPLORATION

Edgar A. Bowden, Arlington; Gordon R. Deline, Carrollton, and Gerard D. Koeijmans, Dallas, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 163,600, Jun. 27, 1980, abandoned.
This application Nov. 18, 1982, Ser. No. 442,818
Int. Cl.³ G01V *1/38, 1/08*
U.S. Cl. 367—23 8 Claims



1. In a seismic exploration system wherein seismic pulses are generated at regularly occurring intervals, by a seismic source which is actuated in response to a shot command signal, and received by at least one remotely located detector, a shot control unit for adjusting the time of said seismic pulses comprising:

a digital first clock which can be synchronized with a second clock provided in said remotely located detector, for producing regularly occurring first timing pulses; means responsive to said first timing pulses for producing a shot timing pulse at a time preceding one of said first timing pulses; said one timing pulse occurring at a desired time of occurrence of a seismic pulse;

an adjustable digital counter, said shot timing pulse being applied to said digital counter so that a shot command signal is generated by said digital counter at a time having an adjustable difference from said shot timing pulse, said shot command signal being applied to said seismic source to actuate it, said adjustable difference being combined with an inherent delay between said actuation of said seismic source and said shot command signal to produce a seismic pulse at said desired time;

means for producing a gun signal representing the actual time of occurrence of the actuation of said seismic source;

error measurement circuitry producing a digital error signal representing the error between the time of occurrence of said one timing pulse representing the desired time of seismic source firing and the time of occurrence of said gun signal wherein said error measurement circuitry comprises:

a second digital counter for counting clock pulses in the interval between start and stop signals applied thereto;

means responsive to the first occurrence of said gun signal or said one timing pulse for producing a start signal for said second digital counter;

means responsive to the second occurrence of said gun signal of said one timing pulse for producing a stop signal for said second digital counter;

an overflow indicator connected to said second digital counter for indicating that the magnitude of said error exceeds the capacity of said digital counter; and,

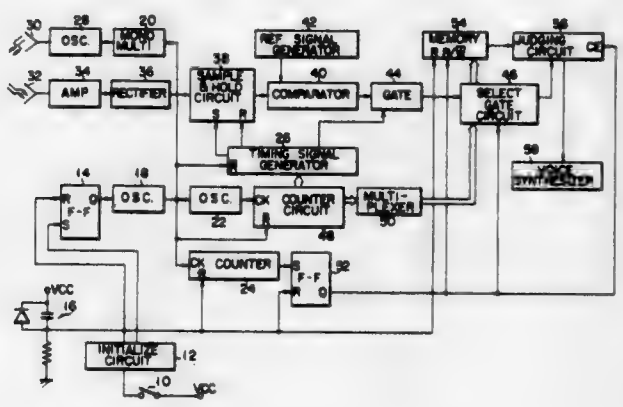
means for utilizing said digital error signal so that said adjustable counter can be adjusted to minimize either a leading or lagging error.

4,512,000

OBJECT DETECTOR WHICH COMPARES RETURNED SIGNALS FROM SUCCESSIVE TRANSMISSIONS

Akinori Masuko, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 18, 1981, Ser. No. 332,296
Claims priority, application Japan, Dec. 23, 1980, 55-182363; Apr. 17, 1981, 56-57928
Int. Cl.³ G08B *13/16*
U.S. Cl. 367—93 14 Claims



1. An object detecting apparatus comprising:

transmitting means for periodically radiating a signal wave into a region to be monitored;

receiving means for receiving the signal wave radiated from said transmitting means and reflected from the monitored region to produce a received signal;

means for sampling the received signal from said receiving means at predetermined time intervals to produce a pulse train signal wherein the time between the pulses in the pulse train signal is proportional to the distance from the transmitting means of a detected object in said region;

means for storing the pulse train signal produced by said sampling means as a reference pulse train signal; and

judging means for comparing the pulse train signal from said

sampling means at each period of transmission of said transmitting means with the reference pulse train signal previously stored in said storing means to detect a change in position of said detected object.

4,512,001

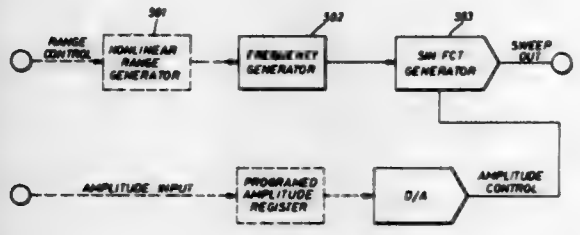
METHOD AND APPARATUS FOR SEISMIC EXPLORATION USING NONLINEAR SWEEPS

W. Harry Mayne, and Sasson Zilkha, both of Houston, Tex., assignors to Geosource Inc., Houston, Tex.

Continuation of Ser. No. 310,829, Oct. 13, 1981, abandoned. This application Mar. 6, 1984, Ser. No. 585,032

Int. Cl.³ G01V *1/28, 1/113*

U.S. Cl. 367—189 **2 Claims**



1. A method of seismic exploration, comprising the steps of:

establishing at least one seismic array at a location on the earth's surface, each said seismic array containing seismic detectors;

establishing at least one vibrator at a location on the earth's surface, each said vibrator having the capability of sweeping through a range of frequencies during a preselected sweep time and each said vibrator including a sweep generator;

generating an output signal from the sweep generator which varies as a function of time during the sweep time as follows:

$$F_0 + 0.43429 \frac{R}{C}\left[\ln \frac{(2.3026CA_0t + 1)}{R}\right]$$

where:

t is the instantaneous value of time during the sweep in seconds;

F_0 is the frequency at which the sweep starts in Hz;

R is the range of frequencies over which the sweep varies during the sweep time;

A_0 is the initial rate of change of frequency with respect to time,

C is the logarithm to the base 10 of the ratio of the response at high frequency to the response at low frequency, where C is chosen to provide compensation for any attenuation which exists to a particular impedance boundary over the range R,

receiving seismic data with the arrays of detectors located on the earth's surface; and

recording the received seismic data.

4,512,002

TRACKING SERVO SYSTEM OF RECORDING DISC INFORMATION RECORDING AND REPRODUCING APPARATUS

Minoru Kosaka, and Toru Akiyama, both of Tokorozawa, Japan, assignors to Universal Pioneer Corporation, Tokyo, Japan

Continuation of Ser. No. 204,753, Nov. 6, 1980,. This application Apr. 4, 1983, Ser. No. 481,261

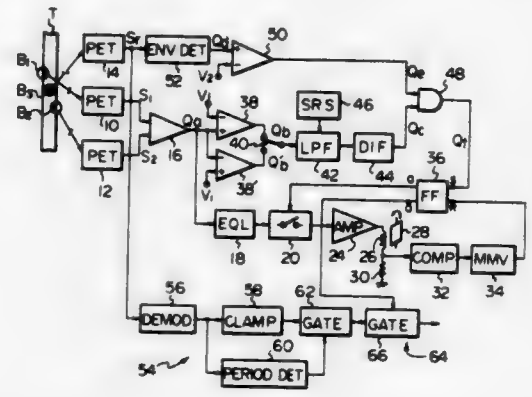
Claims priority, application Japan, Nov. 8, 1979, 54-155227[U]

Int. Cl.³ G11B *21/10*

U.S. Cl. 369—44 **9 Claims**

1. In a recording disc reproducing apparatus, which includes a pick-up unit for producing a scanning spot on a recording disc and for deflecting said scanning spot radially of said recording-disc in response to a drive signal in order to make the scanning spot trace a target track of said recording disc, and for producing an electric reproducing signal representation of a track signal recorded on said target track, said track signal containing an information signal to be reproduced and control data signals such as address signals,

a tracking servo system including tracking error signal producing means operative to produce a tracking error signal continuously variable in magnitude with an amount of deviation, if any, of said scanning spot from said target track and a pick-up unit actuating circuit for producing said drive signal in response to said tracking error signal;



a servo loop closure switch provided between said pick-up unit actuating circuit and said pick-up unit and a servo loop closure control means connected to said servo loop closure switch and operative for producing a servo loop closure command signal in accordance with said electric reproducing signal and said tracking error signal, said servo loop closure switch being operative for relaying said drive signal to said pick-up unit only when it receives the servo loop closure command signal,

control data extracting means for extracting said control data signals from said track signal; and

data signal preventing means for blocking said control data signals from being supplied to a succeeding stage when said servo loop closure signal is absent.

4,512,003

CONTROL CIRCUITRY FOR PRELIMINARY FOCUSING OF LIGHT ON A RECORD MEDIUM SURFACE IN AN OPTICAL REPRODUCING APPARATUS

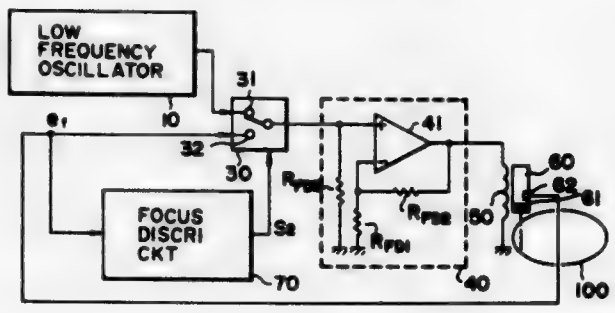
Shuichi Kimura, Shiki, and Akira Katsuyama, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,330

Claims priority, application Japan, Jan. 9, 1982, 57-2146

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—45 **11 Claims**



1. In an optical reproducing apparatus including an optical pickup device directing a light beam at a record medium surface and having photodetecting means which produces a focus error signal in accordance with the state of focus of said light beam in respect to said record medium surface, and focus control means responsive to a drive signal for controlling the

focus of said light beam in respect to said record medium surface: the combination of

signal generating means operative for producing a preliminary focusing signal which initially varies rapidly toward a first predetermined level of one polarity with respect to a reference potential and then varies relatively slowly toward a second predetermined level of opposite polarity with respect to said reference potential;

detecting means for detecting a zero crossover point of said focus error signal and producing an output signal which varies from a first level to a second level when said zero crossover point is detected; and

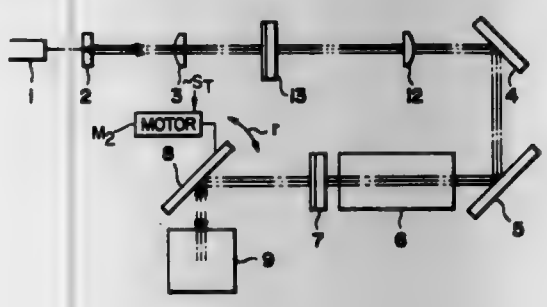
switching means operative for supplying said preliminary focusing signal to said focus control means as said drive signal for the latter when said output signal of said detecting means is at said first level and supplying said focus error signal to said focus control means as said drive signal for the latter when said output signal of said detecting means is at said second level.

4,512,004

APPARATUS FOR OPTICALLY REPRODUCING AN INFORMATION SIGNAL RECORDED ON A RECORD DISC

Chiaki Nonaka, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,389
Claims priority, application Japan, Jan. 24, 1982, 57-9404
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—45 **11 Claims**



1. Apparatus for reproducing an information signal recorded in at least one record track on a record disc, comprising:

optical pickup means for projecting a light beam onto said record disc to be modulated by said information signal recorded therein and for reproducing said information signal in response to said modulated light beam, said optical pickup means including lens means for focusing said projected light beam onto said record disc;

focus control means for moving said lens means in response to a focusing error signal produced in response to said modulated light beam so as to focus said projected light beam onto said record disc;

light beam tracking means for rapidly moving said light beam projected onto said record disc in a direction transverse to said at least one record track to a desired position with respect to said record disc, in response to a track jump command signal; and

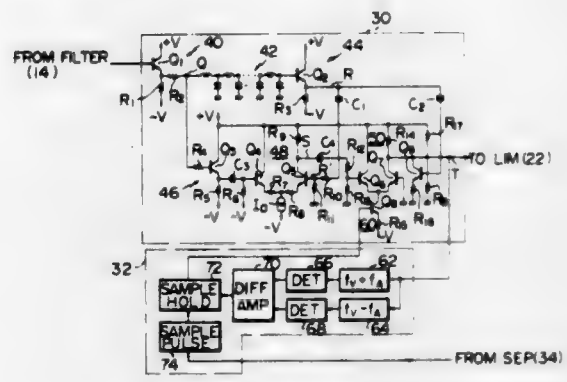
gain control means for reducing the level of said focusing error signal in response to said track jump command signal.

4,512,005

INFORMATION REPRODUCING APPARATUS IN A RECORDING DISC PLAYER

Takashi Okano, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,493
Claims priority, application Japan, Jan. 19, 1981, 56-6906
Int. Cl.³ A04N *5/91*
U.S. Cl. 369—48 **3 Claims**



1. An information reproducing apparatus for reading and reproducing a first information carrier signal which is angular-modulated and is recorded together with a second information carrier signal on a rotatable recording disc in a frequency multiplex form, which comprises:

a pick-up means for reading said first and second information carrier signals from said recording disc;

a filter means for separating the read first and second information carrier signals from each other;

a demodulating means for demodulating at least said read first information carrier signal;

an equalizer means inserted between said filter means and said demodulating means, for passing therethrough said first information carrier signal and for compensating for the frequency characteristics of said pick-up means, said equalizer means having a frequency-to-gain characteristic controlled by a control signal; and

a control signal producing means for producing said control signal in response to the output signal from said equalizer means, said control signal being representative of the intensity of the extraneous components appearing in the output signal from said equalizer means, thereby to make the upper and lower side band frequencies of said first information carrier signal coincide in intensity with each other so as to compensate the degraded frequency response of said pick-up means.

4,512,006

OPTICAL TYPE INFORMATION READ/WRITE APPARATUS

Teruo Murakami, and Isao Hoshino, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1982, Ser. No. 421,731
Claims priority, application Japan, Nov. 16, 1981, 56-183268
Int. Cl.³ H04N *5/76*
U.S. Cl. 369—50 **19 Claims**

1. An apparatus for storing information on a disk-shaped recording medium having a radition-sensitive layer and defining plural data storage sectors, comprising:

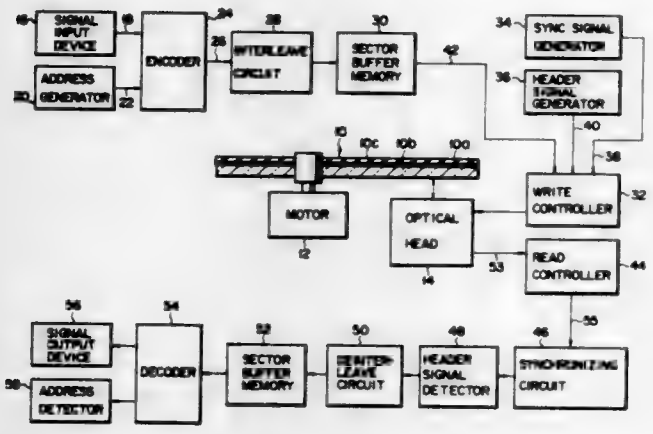
(a) first circuit means for producing a digitally encoded information signal corresponding to said information;

(b) second circuit means for producing an address signal which specifies an address in said recording medium of a respective sector in which said information signal is to be stored;

(c) third circuit means connected to said first and second circuit means, for receiving said information signal and said address signal, and for commonly interleaving both

said signals to produce an interleaved output signal to be commonly stored in said respective sector of said recording medium; and

(d) fourth circuit means connected to said third circuit means, for modulating a write beam of energy incident to



said radiation-sensitive layer of said recording medium in response to said interleaved output signal from said third circuit means so as to form on said radiation-sensitive layer said respective sector including said interleaved information address signals.

4,512,007

METHOD FOR PRODUCING A RECORD CARRIER

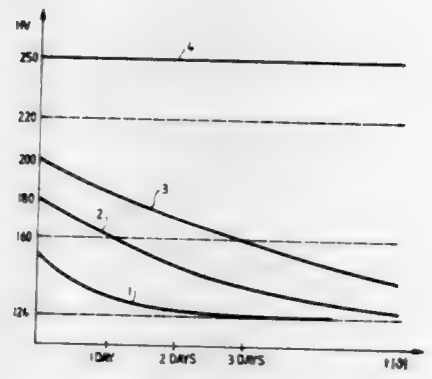
Herbert Knothe, Neumünster, and Klaus Röschmann, Schülp, both of Fed. Rep. of Germany, assignors to Teldec Telefunken-Decca-Schallplatten GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,395

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114131

Int. Cl.³ G11B *3/00*; C25D *5/48*

U.S. Cl. 369—127 **2 Claims**



1. Process for manufacturing a record carrier having a cuttable copper layer, wherein a copper layer is precipitated onto a substrate in an electrochemical bath containing copper ions and a brightener additive and a Vickers hardness ranging from about 160 to about 220 kg/mm^2 in the precipitated copper layer is obtained by controlling the concentration of the brightener additive, comprising: precipitating the copper layer in a recrystallizable phase, and cutting the recording while the copper layer is in its recrystallizable phase, with the temperature of the bath being held at room temperature and the record carrier being kept at a temperature below room temperature until the recording is cut to prolong the time during which recrystallization occurs.

4,512,008

SMALL SIGNAL AMPLIFYING CIRCUIT FOR A PICKUP CARTRIDGE

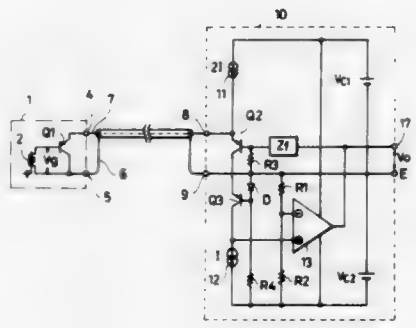
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

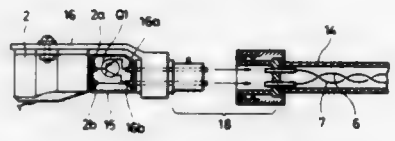
Filed Aug. 25, 1982, Ser. No. 411,329

Claims priority, application Japan, Sep. 11, 1981, 56-135338[U]

Int. Cl.³ G11B *3/00*; H03F *3/45*

U.S. Cl. 369—134 **12 Claims**





1. A small signal amplifying circuit comprising:

a signal source component including a pickup cartridge as a signal source, a first transistor having a base, an emitter and a collector, said signal source being coupled between said base and said collector, and first and second output terminals respectively coupled to said emitter and said collector;

an amplifier component including first and second input terminals, said second input terminal being coupled to a reference potential of said amplifier component, a third output terminal from which an output of said amplifier component produced by amplifying a signal from said signal source is derived, and a second transistor having a base, an emitter and a collector and constituting a differential amplifier of an input stage voltage amplifier together with said first transistor, said emitter of said second transistor being coupled to said first input terminal and said collector of said second transistor being coupled to said third output terminal;

the emitter of said second transistor of said amplifier component being supplied with a DC bias current to provide DC biasing of said first transistor; and

coupling means having metal contact portions and comprising lead wires for respectively coupling said first output terminal to said first input terminal and said second output terminal to said second input terminal;

said metal contact portions being detachable to break connections between the first output and first input terminals and between the second output and second input terminals.

4,512,009

STYLUS FOR STEREO PICKUPS

Werner Fidi, Baden, and Gunter Nawrata, Mistelbach, both of Austria, assignors to AKG Akustische u.Kino-Geräte Gesellschaft m.b.H., Austria

Filed Sep. 16, 1982, Ser. No. 419,028

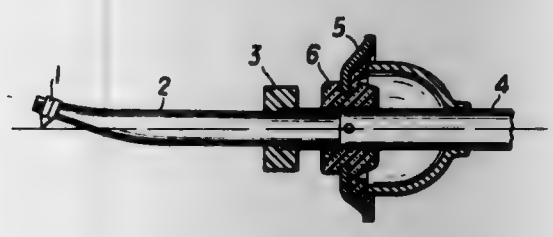
Claims priority, application Austria, Sep. 24, 1981, 4107/81

Int. Cl.³ G11B *3/46, 3/50*

U.S. Cl. 369—170 **6 Claims**

1. A stylus for stereo pickups tracking acoustic events mechanically recorded in grooves of a plate shaped record carrier, comprising a soft iron tube adapted to embody a trans-

ducer and having an open end, a needle support tube having one end engaged in said soft iron tube at said open end and having an opposite end, a needle carried by said needle support tube and having an axis substantially perpendicular to the axis of said support tube and being located adjacent the opposite end of said support tube, a support plate having an opening therethrough through which said soft iron tube extends, a first elastic element engaged with said plate in the opening thereof and embracing and elastically engaging said soft iron tube to pivotally support said soft iron tube, said soft iron tube extending entirely through said first elastic element, and a second



elastic element engaged around a portion of said soft iron tube adjacent its open end and a portion of said support tube which is adjacent the open end of said soft iron tube, said second elastic element forming a one piece damping body of a homogeneous material of high internal friction being firmly connected to the portion of said soft iron tube and said support tube which it covers, said second elastic element being smaller than said first elastic element and closer to said first elastic element than to said needle, said second elastic element being harder than said first elastic element and wherein two residual ripples in the frequency characteristic of the stereo pickup in the high frequency range are eliminated.

4,512,010

APPARATUS FOR CONTROLLING LINEAR TRACKING ARM IN RECORD PLAYER

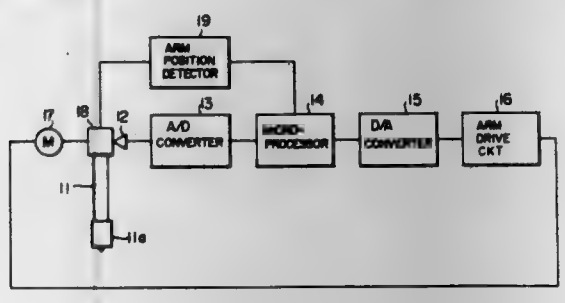
Jiro Yamada; Tetsuo Maeda, both of Neyagawa, and Hiroshi Yasuda, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 423,267

Claims priority, application Japan, Sep. 28, 1981, 56-154309; Sep. 30, 1981, 56-156520; Sep. 30, 1981, 56-156525

Int. Cl.³ G11B *3/10*

U.S. Cl. 369—220 **4 Claims**



1. A control apparatus for a linear tracking arm in a record player, comprising:

an arm having signal pick-up means mounted at a portion thereof;

an arm base for supporting said arm;

driving means for driving linearly said arm base to drive thereby said signal pick-up means in a radial direction of a rotating record disc;

tracking error angle detecting means for detecting a tracking error angle of said arm to produce thereby an electric signal representing proportionately said tracking error angle;

a microprocessor receiving said electric signal representing proportionately said tracking error angle for arithmetically determining on the basis of the electric signal a servo output signal which is supplied to said driving means for causing said tracking error angle to be constantly zero;

said electric signal comprising an electric voltage representing proportionately said tracking error angle, said voltage being an analogue voltage which is converted into a pulse signal having a pulse width proportional to said analogue voltage before inputting to said microprocessor, said microprocessor including a memory for storing therein said tracking error angle detected at a predetermined position of said arm, said arm being movable in the vertical direction; and

a lift device which is detached from said arm when said arm is moved upwardly, said lift device being so arranged that said arm exhibits an offset angle of zero when said arm is moved upwardly, wherein said tracking error angle detected when said arm is moved upwardly is stored in the memory.

4,512,011

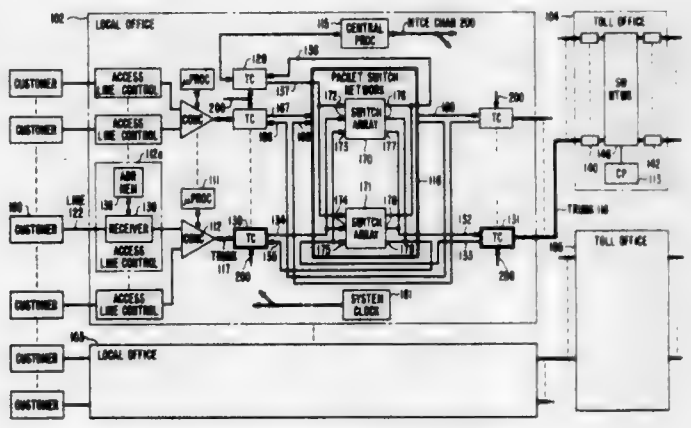
DUPLICATED NETWORK ARRAYS AND CONTROL FACILITIES FOR PACKET SWITCHING

Jonathan S. Turner, Evanston, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 1, 1982, Ser. No. 438,572

Int. Cl.³ H04J *6/00*; H04Q *11/04*

U.S. Cl. 370—60 **51 Claims**



1. Circuitry for controlling the communication of information packets among a single communication channel and a plurality of network switching arrays, comprising:

array interface means comprising communicating means for each of said arrays for concurrently transmitting and receiving packets between each of said arrays and said channel, and

common control means responsive to availability signals from said arrays and said channel for controlling the concurrent transmission and reception of said information packets to and from said communicating means for each of said arrays and said channel.

4,512,012

TIME-SWITCH CIRCUIT

Takeshi Sampei, Sagamihara; Norio Miyahara, Higashiyamato; Tadanobu Nikaido; Hiroaki Sato, both of Tokyo, and Keizo Aoyama, Yamato, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 10, 1983, Ser. No. 465,604

Claims priority, application Japan, Feb. 10, 1982, 57-20043

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—66 **9 Claims**

1. A time-switch having read and write cycles and operatively connected to receive a control signal, for use in a primary time switch of a time-space-time network, the primary time switch having a primary speech path memory, a hold memory, operatively connected to the primary speech path memory, for generating a write address for random writing into the primary speech path memory, and a time slot counter,

operatively connected to the primary speech path memory, for generating a read address for sequentially reading out of the primary speech path memory, said time switch circuit comprising:

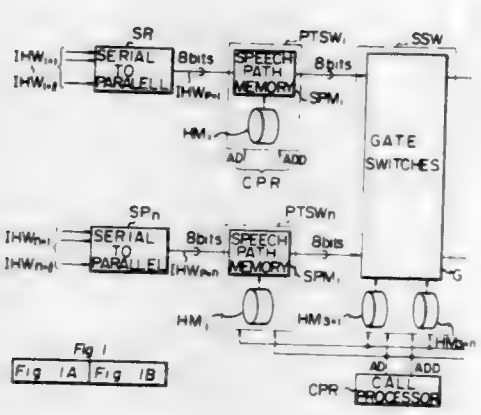
a first memory circuit including the primary speech path memory and the time slot counter;

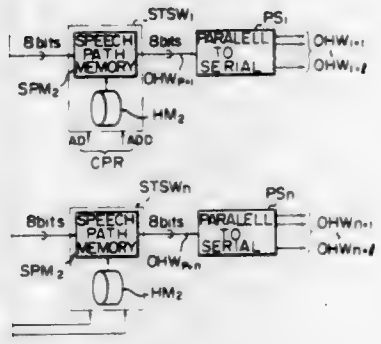
a second memory circuit operatively connected to said first memory circuit and including the hold memory;

said first and second memory circuits having first and second address signals and having input and output terminals, respectively, said input terminals receiving input data, each of said first and second memory circuits comprising:

a memory unit of q-words, q being an integer greater than or equal to one, and m-bits, m being an integer greater than or equal to one, for receiving and transmitting data;

an address selector, having a selection mode operatively connected to said memory unit and said first and second memory circuits, for selecting one of the first and second address signals and transmitting it to said memory unit;





an address buffer, operatively connected to said address selector, for receiving and providing the first address signal to said address selector;

an m-ary counter, operatively connected to said address selector, for receiving and providing the second address signal to said address selector;

address selection mode switching means, operatively connected to said address selector for controlling the selection mode of said address selector;

write mode switching means having a write enable signal, operatively connected to said memory unit, for controlling the mode of generation of the write enable signal transmitted to said memory unit;

an input data buffer, operatively connected to said memory unit, for transmitting the input data from the input terminal to said memory unit; and

an output data buffer, operatively connected to said memory unit, for transmitting the input data from said memory unit to the output terminal;

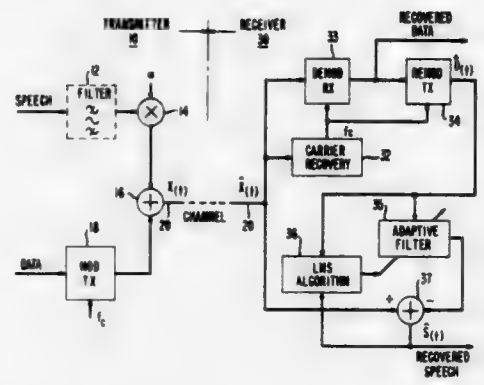
said output terminal of said second memory circuit being connected to said input terminal of said first memory circuit, said address selection mode switching means of said first and second memory circuits being controlled so that said address selector of each of said first and second memory circuits selects the first address signal during the write cycle and selects the second address signal during the read cycle, said write mode switching means of said first memory circuit being controlled to generate the write enable signal during every write cycle, said write mode switching means of said second memory circuit being controlled to generate the write enable signal only upon receipt of the control signal during the write cycle.

4,512,013

SIMULTANEOUS TRANSMISSION OF SPEECH AND DATA OVER AN ANALOG CHANNEL

Randy D. Nash, Ocean, and Wai C. Wong, Aberdeen, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 11, 1983, Ser. No. 483,879
Int. Cl.³ H04J 1/02
U.S. Cl. 370—69.1 **5 Claims**



1. A receiver comprising:

an input terminal capable of simultaneously receiving an analog speech signal which includes a predetermined power density characteristic over a predetermined bandwidth and a data signal which is received in a portion of the received analog speech signal bandwidth where the analog speech signal is present and the power density characteristic of the analog speech signal is at a low value;

a first and a second output terminal;

means responsive to a received composite analog speech and modulated data signal at the input terminal for demodulating and recovering the data signal therefrom at an output thereof for transmission to the receiver first output terminal;

means capable of remodulating the recovered data signal at the output of the demodulating and recovering means for generating an output signal corresponding substantially to the data signal received at the input terminal of the receiver;

adaptive filtering means capable of generating a first signal representative of an estimate of an impulse response of a channel connected to the input terminal of the receiver, and convolving said first signal with the remodulated data output signal from the remodulating means to generate a resultant output data signal; and

means capable of subtracting the resultant output data signal generated by the adaptive filtering means from the composite analog speech and data signal received at the input terminal of the receiver for substantially canceling the data signal forming part of the composite received signal and generating a resultant output signal at the second output terminal of the receiver which comprises the recovered analog speech signal.

4,512,014

TIME SLOT MULTIPLEX SYSTEM FOR THE DIVISION MULTIPLEXING OF DIGITAL COMMUNICATION SIGNALS

Reiner Binz, Hohenschäftlarn, and Norbert Pointner, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

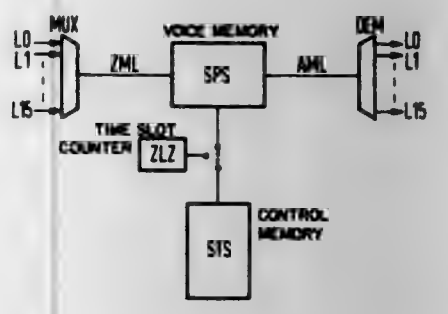
Filed Aug. 6, 1980, Ser. No. 175,692

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934379

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—84 **10 Claims**



6. In a time division multiplex system for the through-coupling of digital communications signals transmitted in time channels with bit rates which are multiples of 2^n of the basic frame rate of said time division multiplex system, said multiplex system having a voice memory for storing communications signals present on an incoming multiplex line during the time slots of said time division multiplex system, a control memory for cyclically addressing said voice memory to cause the read out of data from said voice memory to an outgoing multiplex line, a time slot counter for addressing said control memory during successive time slots, and an addressing register connected to receive data to be stored in said control memory, a time slot multiplex unit comprising:

a storage device for storing data representative of said multiples;

a logic circuit connected to said storage device, to said address register, and to said time slot counter, for generating a plurality of equally spaced addresses; and

writing means connected to said logic circuit for writing data from said address register into a plurality of addresses of said control memory for a single set of data stored in said address register.

4,512,015

DIGITAL TIME-DIVISION SWITCH

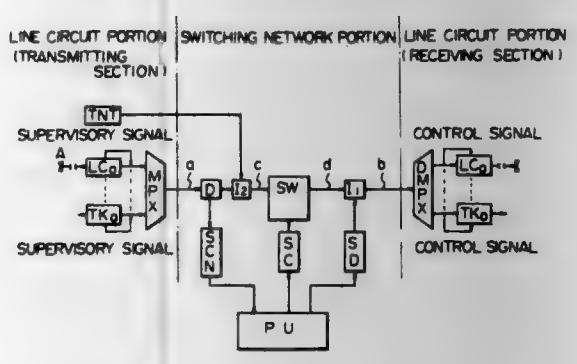
Yoshiharu Kanó ; Makoto Fujisawa, both of Yokohama; Shoji Nojiri, Kawasaki, and Yoshikazu Tanaka, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 27, 1982, Ser. No. 453,574

Claims priority, application Japan, Dec. 29, 1981, 56-213405

Int. Cl.³ H04J *3/12*

U.S. Cl. 370—110.1 **9 Claims**



1. A digital time-division switch, comprising:

line circuit portions;

a common control unit; and

a switching network portion comprising:

a supervisory signal receiver;

a multiplexer which multiplexes digitalized voice signals, supervisory signals transmitted from the line circuit portions, and which inserts said signals into predetermined time slots;

a signal-extracting circuit, operatively connected to said multiplexer and said supervisory signal receiver, which extracts said supervisory signals from time slots assigned for control signals and which transmits said extracted supervisory signals to the common control unit through said supervisory signal receiver;

a switching network, operatively connected to said common control unit, which switches data time slots;

a first signal-inserting circuit, operatively connected to said switching network and said common control unit, for transmitting control signals to said line circuit portions;

a distributor circuit, operatively connected to said first signal-inserting circuit and said line circuit portions, for distributing the voice signals and control signals to each line circuit portion; and

a second signal-inserting circuit, operatively connected between said signal-extracting circuit and said switching network, said second signal-inserting circuit inserting one-way signals into said time slots assigned for control signals, so that the one-way signals are inserted into the time slots into which supervisory signals extracted by said signal-extracting circuit were previously inserted.

4,512,016

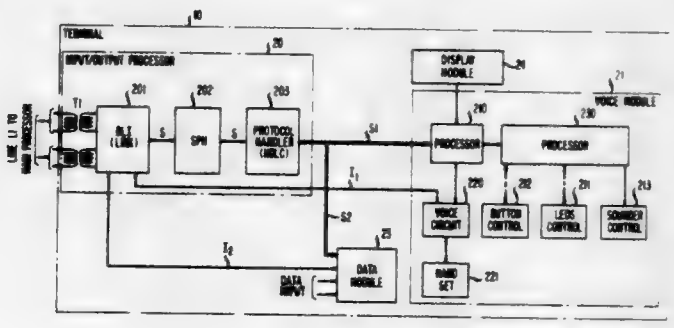
DIGITAL COMMUNICATION STATION SIGNALING CONTROL

Emanuel J. Fulcomer, Jr., Little Silver; Richard J. Nici, Ocean; Vance E. Poteat, Aberdeen; George W. Schramm, Oakhurst, all of N.J.; John B. Sharp, Boulder, Colo., and Michael M. Winseck, Jr., Middletown, N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Filed Feb. 4, 1983, Ser. No. 464,057

Int. Cl.³ H04J *3/12*

U.S. Cl. 370—110.1 **12 Claims**



1. A communication telephone station having a bidirectional communication line for simultaneously exchanging information and control signals over time separated information channels and over a time separated signaling channel on said line, respectively, said telephone station comprising

means for directing multibit data from at least one of said information channels over a first communication path to at least one of a plurality of communication devices,

means for accumulating an individual bit of data from each of a number of successive frames of said signaling channel into variable length signaling messages, at least one of said signaling messages containing a plurality of signaling messages, and

means for communicating said signaling messages over a bidirectional signaling interface to either one of said plu-

rality of communication devices, said signaling interface being separate from said communication path.

4,512,017

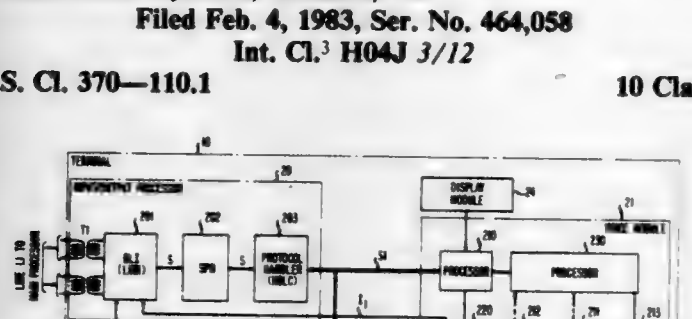
DIGITAL DUAL CHANNEL COMMUNICATION TERMINAL

Richard J. Nici, Ocean; George W. Schramm, Oakhurst, both of N.J., and John B. Sharp, Boulder, Colo., assignors to AT&T Information Systems, Holmdel, N.J.

Filed Feb. 4, 1983, Ser. No. 464,058

Int. Cl.³ H04J 3/12

U.S. Cl. 370—110.1 **10 Claims**



1. A telephone station having at least two communication modules, said telephone station comprising

means for simultaneously exchanging information over at least two time separated information channels of a communication line,

means for directing data in one of said information channels to one of said communication modules and for directing data in another one of said information channels to another one of said communication modules, and

means for exchanging signaling information over said communication line in a signaling channel that is time separated from said information channels, said signaling information being accumulated over a plurality of time frames and being directed to either one of said communication modules.

4,512,018

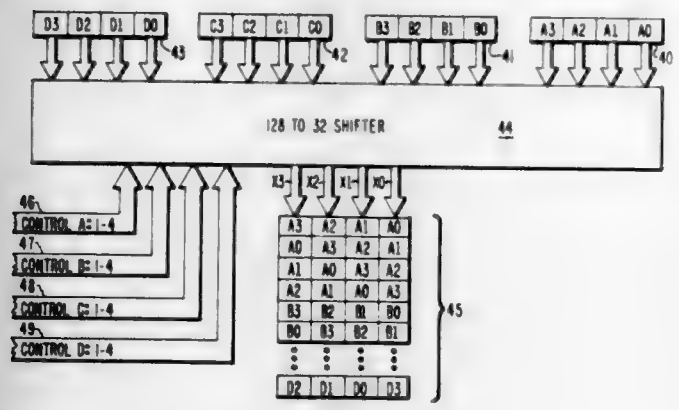
SHIFTER CIRCUIT

Andrew E. Phelps, and Allen Ta-Ming Wu, both of San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 8, 1983, Ser. No. 473,274

Int. Cl.³ H04J 3/00

U.S. Cl. 370—112 **12 Claims**



1. An array of shifter circuits arranged into N groups of M shifter circuits per group wherein both N and M are integers greater than one, each shifter circuit has P data input terminals, P control input terminals and P output terminals, where P is a positive integer, each of said P output terminals of the M shifter circuits in a group being coupled to one another, respectively, so as to form N×P output terminals of said array; each of said shifter circuits comprising P columns by P rows of transistor switching means, each having an input and an output element and a control element wherein the control element of each switching means in a row is coupled to corresponding ones of the control input terminals, the input element of each of the transistor switching means in a column being coupled to corresponding ones of the data input terminals and the output element of each of the transistor switching means in a row being coupled to respective ones of said output terminals shifted in position as a function of control signals supplied on said control input terminals.

4,512,019

MONITORING CIRCUIT FOR RESETTING MALFUNCTIONING ELECTRONIC COMPONENTS, SUCH AS MICROPROCESSORS

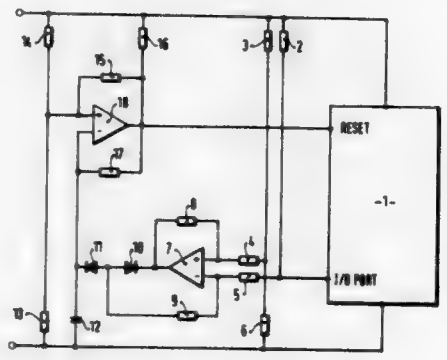
Bernd Bodig, Leinfelden; Gerd Höhne, Ludwigsburg, and Helmut Schmied, Remshalden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,221

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3214006

Int. Cl.³ G06F 11/00; F02D 35/00

U.S. Cl. 371—12 **9 Claims**



1. Monitoring circuit for electronic components which in normal operation produce dynamic signals at their output, said monitoring circuit containing only one capacitor, said capacitor (12) serving for being charged by said signals, said monitoring circuit further including means (13-18) for resetting the monitored component to a defined state when said capacitor discharged to a predetermined extent, an amplifying device (7) connected to a circuit (5,9,11) for charging said capacitor (12) in response to said dynamic signals, said amplifier being provided with negative feedback coupling (8) and being connected for stopping the charging and beginning the discharging of said capacitor when said capacitor reaches a predetermined level of charge.

4,512,020

DATA PROCESSING DEVICE FOR PROCESSING MULTIPLE-SYMBOL DATA-WORDS BASED ON A SYMBOL-CORRECTING CODE AND HAVING MULTIPLE OPERATING MODES

Thijs Krol, Eindhoven, and Bernardus J. Vonk, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 416,992

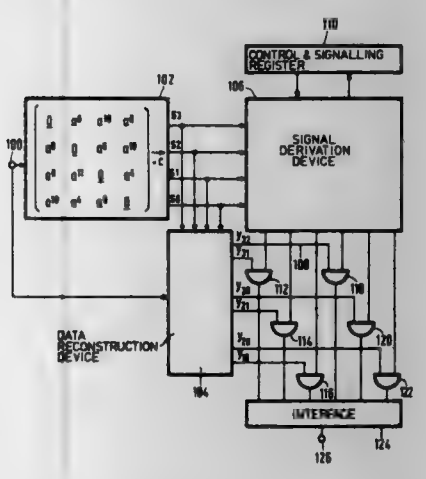
Claims priority, application Netherlands, Sep. 21, 1981, 8104342

Int. Cl.³ G06F 11/10

U.S. Cl. 371—37 **8 Claims**

1. A data processing device for the processing of data words which are composed of k=2p−2 data symbols by means of code words which are formed from the associated data words by means of an error-correcting code, said code words containing n=2p code symbols, all symbols consisting of m=2s bits and forming part of a Galois field GF(2^m)=0, a^0, a^1 . . . a^{2m-2}, p and s being integers equal or greater than 2, said device comprising a first input for a data word, first multiplier

means for multiplying the data word by a generator matrix (G) consisting of n×k matrix elements each of m bits in order to form a code word, processing means for processing the code word in order to form a processing result, and reconstruction means for reconstructing, using a parity check matrix (R)=(S)·(H)·(T) which is orthogonal to the generator matrix (G), a second data word associated with the processing result for output for a first output, said reconstruction means comprising mode indicating means (110), for controlling in a first state a "normal" mode for processing code words as forming part of a code providing a minimum Hamming-distance of three over the symbols, and, in n respective erasure states indicating one associated received-symbol position of a code word as erased and for processing the remaining code symbols as a code providing a minimum Hamming-distance of at least three over the bits, wherein (S) is a non-singular matrix of (mx(n−k))×(mx(n−k)) bits, the matrix (H) comprises a first submatrix of (n−k)×(n−k) symbols in the form of an identity matrix and a second submatrix of (n−k)×k symbols whose determinant is not equal to $\underline{1}=a^0$, while each (n−k)×(n−k) symbol submatrix of (H) is non-singular, the matrix (T) consisting of (nm×nm) bits in n×n blocks which are arranged in rows and columns and each of which blocks consists of m×m bits, each row and each column of blocks comprising (n−1) blocks which consist exclusively of "0" bits, each row of bits and each column of bits containing exactly one "1" bit and for the remainder exclusively "0" bits, whereby (H) produces a systematic code, which multiplied by (S) may produce a non-



systematic code and multiplied by (T) may produce permutations of symbols or bits within symbols; characterized in that said mode indicating means is a mode register having a third input and a third output and in said first state alternatively controls the processing of code words as forming part of a code providing a minimum Hamming-distance of five over the bits; in that in said second submatrix the absolute values modulo (2^m-1) of the differences between the exponents of any pair of exponents of symbols written as powers of (a) being at least equal to (m) on each respective row and in each respective column of the matrix (H), in that the reconstruction means comprise:

(a) second multiplier means (102) with a second input for receiving the processing result for multiplication by an extended parity check matrix (Q)=(A)×(R) of n rows of symbols by n columns of symbols to form a number of (n) syndrome symbols (S0 . . . S3) on a second output, wherein (A) is a matrix of (n) rows of symbols and (n−k) columns of symbols, wherein all (n−k)×(n−k) submatrices of A are non-singular so that any combination of (n−k) rows of matrix (Q) may be used as a parity check matrix, and wherein each row of matrix (Q) contains exactly one zero symbol;

(b) a data reconstruction device (104) with a fourth input (100) for receiving the processing result and a fifth input for receiving the syndrome symbols, and with a fourth output Y32, Y31, Y30, Y21, Y20, Y10) for forming (k^n) (k^n) versions of a reconstructed data word, each version being generated from an associated unique subset of k code symbols of the received processing result;

(c) a selection device (106) with a sixth input which is connected to the second output in order to receive the syndrome symbols and a seventh input which is connected to the third output in order to receive the state information from the mode register and also provided with a sixth output which is connected to the third input and a seventh output for supplying, on the basis for the syndrome symbols and the state of the mode register, a selection signal for indicating which of the (k^n) (k^n) versions of the reconstructed data word is derived from non-disturbed code symbols and supplying an update signal for the mode register;

(d) a gating device (112–122), with inputs which are connected to the fourth output and the seventh output for the selection of an error-free data word.

4,512,021

PASSIVELY Q-SWITCHED SQUARE BORE WAVEGUIDE LASER

Peter P. Chenausky, Avon, and Richard A. Hart, Wethersfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 16, 1982, Ser. No. 369,294
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—20 **5 Claims**



1. A waveguide laser comprising a first optical cavity, having a first cavity length, including first and second mirrors and an optical waveguide having a characteristic transverse length disposed therebetween, a gain medium being disposed within said waveguide;

means for exciting said gain medium, whereby guided-wave laser radiation is resonated within said first optical cavity; and

a second freespace optical cavity coupled to said first optical cavity by said second mirror and including a radiation modulating element and a grating disposed on a side of said radiation modulating element opposite said second mirror, said second cavity having a modulating cavity length, characterized in that:

said radiation modulating element is a bleachable passive Q-switch containing a gas at a predetermined density;

said modulation cavity length being at least fifty times longer than said transverse length; and

said first cavity length is controlled to maintain said laser in stable operation whereby radiation resonated in a waveguide mode within said waveguide is coupled efficiently to radiation in a free space mode within said freespace optical cavity.

4,512,022

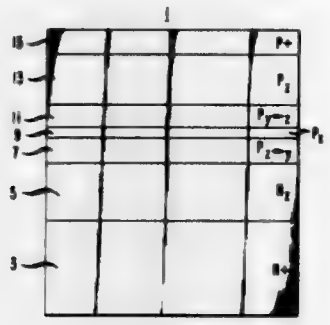
SEMICONDUCTOR LASER HAVING GRADED INDEX WAVEGUIDE

Won-Tien Tsang, New Providence, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 13, 1982, Ser. No. 397,809
Int. Cl.³ H01S *3/19*
U.S. Cl. 372;45 **10 Claims**

1. A semiconductor laser comprising a first semiconductor active layer having a first bandgap, second and third layers having bandgaps larger than said first bandgap, said first layer being between said second and third layers, said second and third layers having a composition varying such that said second and third layers each have a varying refractive index with

a maximum and a minimum, said maximum being nearer said first layer than said minimum whereby waveguiding occurs, fourth and fifth semiconductor layers having first and second



conductivity types, respectively, and contacting said second and third layers, respectively, said fourth and fifth layers having bandgaps greater than those of said second and third layers, and first and second ohmic contacts to said laser.

4,512,023

ELECTRODES FOR GLASS FURNACES

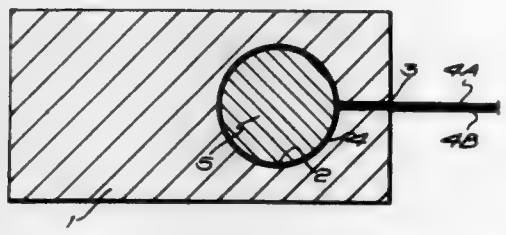
Richard J. Brinkman, Pattingham, Nr. Wolverhampton, England, assignor to Dyson Refractories Limited, England

Filed Jun. 10, 1983, Ser. No. 503,418

Claims priority, application United Kingdom, Jun. 15, 1982, 8217284

Int. Cl.³ C03B *5/027*

U.S. Cl. 373—36 **8 Claims**



1. An electrode comprising an elongate ceramic electrode body, a transverse hole extending through the body towards one end thereof, a slot extending from the transverse hole and emerging at the said one end of the body, a plug member having a cross-sectional shape corresponding to the shape of the transverse hole and being a close fit therein, said plug member being formed from a chemically compatible material having expansion characteristics closely related to those of the electrode material and a wrapping of a sheet of noble metal around the plug member, the end of the sheet extending through the slot to clamping means at that end of the electrode to connect the sheet to a source of electrical supply.

4,512,024

IMPULSE AUTOCORRELATION FUNCTION COMMUNICATIONS SYSTEM

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1983, Ser. No. 508,791

Int. Cl.³ H04J *13/00;* **H04B** *1/10*

U.S. Cl. 375—34 **18 Claims**

1. A bi-orthogonal pulse code modulation communication system, comprising:

means for generating first and second multi-bit digital noise codes;

means for generating first and second RF carrier signals;

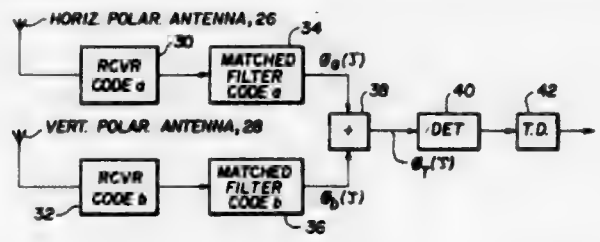
means for modulating said first and second noise codes on said first and second RF carrier signals;

first transmitting antenna means having a first type polarization coupled to said first carrier signal for radiating a first polarized RF carrier wave modulated with said first noise code;

second transmitting antenna means having a second type polarization coupled to said second carrier signal for radiating a second polarized RF carrier wave modulated with said second noise code;

first receiving antenna means having said first type polarization and being receptive of said first polarized RF carrier wave;

second receiving antenna means having said second type polarization and being receptive of said second polarized RF carrier wave;



receiver means coupled to said first and second receiving antenna means for processing respective first and second received signals containing said noise codes from said first and second polarized RF carrier waves received by said antenna means;

means coupled to said receiver means for autocorrelation detecting said first and second received signals for detecting said first and second noise codes and providing thereby first and second compressed output signals; and

means for combining said first and second compressed output signals to provide a substantially lobeless impulse output signal.

4,512,025

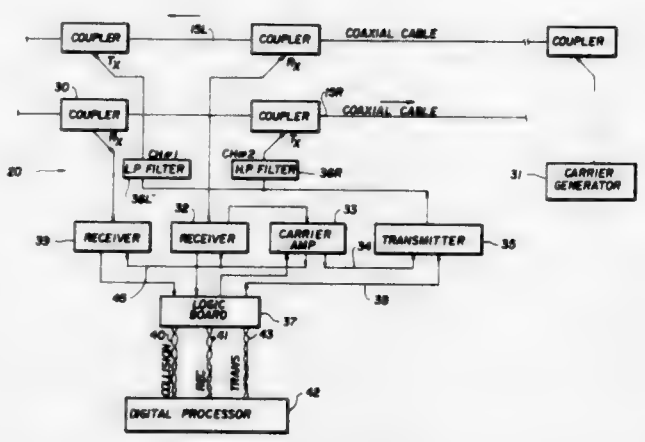
INCREASING CAPACITY OF BASEBAND DIGITAL DATA COMMUNICATION NETWORKS

Robert S. Frankel, Centereach, N.Y., and Alexander Herman, Hertzelia, Israel, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 23, 1982, Ser. No. 443,982

Int. Cl.³ H04B *3/50*

U.S. Cl. 375—36 **6 Claims**



1. A digital data communication network system with collision prevention means including a plurality of stations using a particular assigned frequency bandwidth spectrum of a transmission link communicating digital signals between (a) said plurality of digital data stations, said collision prevention means being operable to prevenf interference by concurrent use of the same frequency by more than one of said stations, comprising in combination,

means including a clear channel detector for enabling the transmitting of digital signal communications from at least two of said digital data stations respectively in separate ones of said frequency bands carried simultaneously by

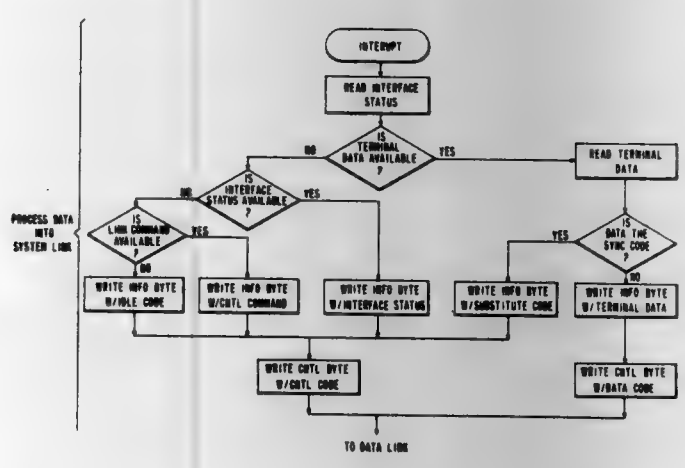
locally choosing one of such frequency bands within the assigned link bandwidth having a clear channel as identified by said detector, and

receiving means tuned to a selected one of said separate frequency bands carried simultaneously and including collision prevention means responsive to said detector for enabling reception on a clear channel of one of said digital communications transmitted within that assigned frequency band over said transmission link.

4,512,026
DATA FORMAT FOR ASYNCHRONOUS DATA TRANSMISSION

Orrie J. Vander Meiden, Boca Raton, Fla., assignor to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Apr. 21, 1983, Ser. No. 487,423
Int. Cl.[3] H04L *25/38, 7/08*
U.S. Cl. 375—114 3 Claims



1. The method of transmitting digital data between terminals with a telecommunications exchange which reserves specific digital codes for internal processing, comprising the steps of:

(a) forming a data frame containing a control code and an information code, said control code having a first state when said information code contains digital data to be transmitted and having a second state when said information code does not contain digital data;

(b) detecting when an item of said digital data is identical to said digital code reserved by said exchange for internal processing;

(c) if said item of digital data is not identical to said reserved digital code, setting said control code to said first state and setting said information code equal to said item of digital data;

(d) if said item of digital data is identical to said reserved digital code, converting said identical digital data to prescribed substitute digital data;

(e) if said item of digital data is identical to said reserved digital code, setting said control code to said second state and setting said information code to said prescribed substitute digital data;

(f) transmitting said data frame to said exchange;

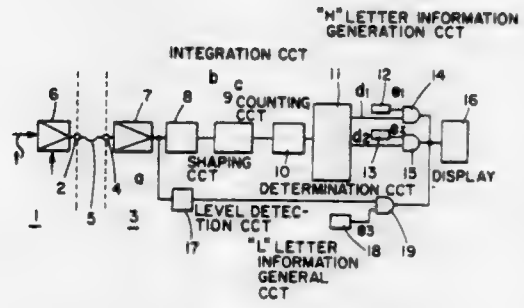
(g) receiving said data frame from said exchange; and

(h) if said control code is in said second state, converting said substitute data transmitted in said data frame to said identical digital data.

4,512,027
ELECTRONIC CALCULATING DEVICE WITH FACULTIES OF DETECTING REPRODUCTION LEVEL OF DATA APPLIED THERETO

Daisuke Mochizuki, Nara; Souichi Ohnishi, Yao, and Kensaku Komai, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1980, Ser. No. 125,093
Claims priority, application Japan, Feb. 28, 1979, 54-23648; Mar. 28, 1979, 54-37224
Int. Cl.[3] G07C *3/00*
U.S. Cl. 377—16 5 Claims



1. An electronic calculating machine including means for receiving information which is recorded on an audio tape, said information being recorded as a variable amplitude digital information signal having each pulse frequency modulated by a high frequency signal, said each pulse frequency modulated by said high frequency signal being lengthened in duration by an overvoltage condition, said means for receiving including a means for monitoring comprising:

integrator means receiving said digital information signal for integrating and rectifying said information signal to remove said high frequency signal and producing a pulse train signal;

shaping means responsive to said integrator means for defining the leading and trailing edges of said each pulse of said pulse train signal;

counter means responsive to said pulse train signal defined by said shaping means for determining the width of each pulse of said pulse train signal and producing a width signal indicative thereof;

determination means for comparing said width signal with signal representative of a predetermined desired width, said determination means producing a voltage level signal indicative of the relative voltage level of said input information signal in response to said comparison, said voltage level signal monitoring whether the voltage level of said input information is below a predetermined maximum value;

means receiving said digital information signal for determining whether the relative voltage level of said input information exceeds a predetermined minimum value;

whereby an operator may monitor said voltage level signal and said means for determining and adjust the voltage level of the information signal to a proper level for said calculating machine to receive.

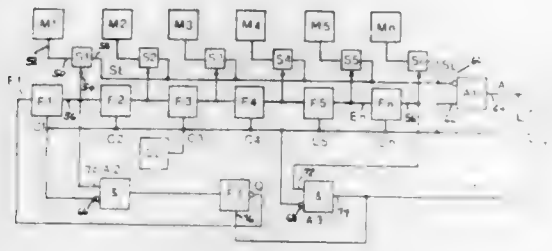
4,512,028
ELECTRONIC SCANNER FOR MONITORING RUNNING THREADS AT A MULTITUDE OF LOCATIONS IN A TEXTILE MACHINE

Hansruedi Stutz, Dietlikon, Switzerland, assignor to Loepfe Brothers Limited, Wetziukon, Switzerland

Filed Feb. 28, 1983, Ser. No. 470,591
Claims priority, application Switzerland, Mar. 11, 1982, 1496/82
Int. Cl.[3] D01H *13/32;* H03K *17/00, 21/34*
U.S. Cl. 377—16 5 Claims

1. An electronic scanner for monitoring a multitude of thread running locations in a textile machine, comprising:

a respective measuring head provided for each respective one of the thread running locations and serving to detect thread rupture or standstill thereat;
a series of bistable controllers, each associated with a respective one of said measuring heads;
a clock pulse generator;
each of said bistable controllers containing a data input, a clock pulse input and an output;
said bistable controllers being connected in series with one another by means of said data inputs;
said clock pulse generator acting upon said clock pulse inputs of said bistable controllers;
a plurality of switching means each containing a first input, a second input and an output;
said first input of each switching means being connected to a related one of said measuring heads and said second



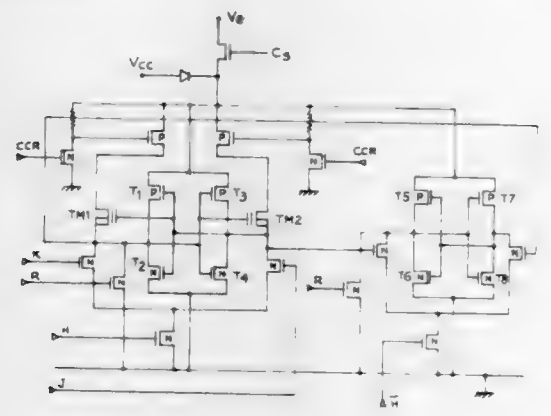
input being connected to the output of a related one of said bistable controllers;
a common signal line connected to said outputs of said switching means;
a first AND-gate having a negated first input, a second input and an output;
said negated first input of said first AND-gate being connected to said signal line and said second input thereof being connected to said clock pulse generator;
a signalling line;
an operative device responsive to thread rupture;
switching members for generating a cyclic series of initiating pulses at said data input of a first one of said series of said bistable controllers;
whereby said output of said first AND-gate is connected to said operative device via said signalling line.

4,512,029

NON-VOLATILE DECADE COUNTER USING JOHNSON CODE OR EQUIVALENT

Jean-Michel Brice, Grenoble, France, assignor to Societe pour l'Etude et la Fabrication de Circuits, Grenoble, France

Filed Sep. 29, 1982, Ser. No. 428,329
Claims priority, application France, Apr. 20, 1982, 82 06755
Int. Cl.³ H03K *23/08, 25/00*
U.S. Cl. 377—33 **8 Claims**



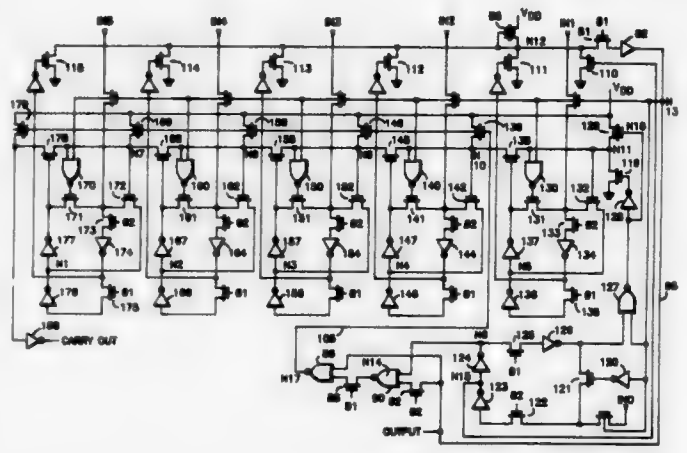
1. A non-volatile counting unit, the contents of which are stored in a non-volatile memory after every count incrementation signal applied to an input of said counting unit, and which comprises several flipflops, the outputs of which represent the contents of the counting unit in binary form, wherein said flipflops are connected with one another to provide a representation of the decimal contents of said counting unit by the logic state of said several flipflops, in accordance with a code in which no bit changes more than twice in the course of a complete counting cycle, and wherein are provided selective activating means for non-volatile memorization of said flipflop logic states, and a selection logic circuit connected to said activation means, to prohibit activation of memorization of the state of flipflops that have not changed logic state after an incrementation of the counting unit, and to enable activation of memorization of the state of flipflops that have changed logic state after such incrementation.

4,512,030

HIGH SPEED PRESETTABLE COUNTER

Masaru Fukuta, Yokohama, Japan, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 28, 1983, Ser. No. 461,837
Int. Cl.³ H03K *19/017, 21/36, 23/22*
U.S. Cl. 377—107 **5 Claims**



1. A high speed presettable counter, said counter being driven by a two-phase non-overlapping clock, said counter comprising:
a voltage source;
a plurality of counter stages, each stage comprising
logic means for storing a binary number and generating an output corresponding to said stored binary number,
a preset data input,
a preset data enable input responsive to a preset data enable signal for loading into said logic means a binary number received over said preset data input,
a carry input, and
means responsive to said stored binary number and to said carry input for generating a carry output;
a plurality of coupling transistors, each coupled between the carry output of a given counter stage and the carry input of the next higher counter stage, said coupling transistors being enabled in response to the output of said respective given counter stage;
a plurality of dynamic depletion mode (DDM) gating transistors, each coupled between said voltage source and the carry output of a respective counter stage, said DDM gating transistors being enabled in response to a gate control signal;
means responsive to all of said counter stage outputs for generating an "all zero minus one" signal when all but the lowest order counter stage output is a zero;
means responsive to said preset data enable signal for generating said gate control signal, said means including a pair of first and second enhancement mode gating transistors each responsive, respectively, to a different phase of said clock;
means responsive to said "all zero minus one" signal for generating said preset data enable signal, said means in-

cluding a third enhancement mode gating transistor responsive to one phase of said clock;

means, including a DDM transistor, in the lowest order counter stage and responsive to the binary number stored in said stage for generating said carry output from said stage, said means including a pair of fourth and fifth enhancement mode gating transistors each responsive, respectively, to a different phase of said clock,

whereby the generation of said gate control signal, of said preset data enable signal, and of said carry output from said lowest order counter stage is each delayed to allow for signal propagation delays through said counter.

4,512,031

ARRANGEMENT FOR RECEIVING TV-SIGNALS HAVING LEFT AND RIGHT STEREO SOUND SIGNALS

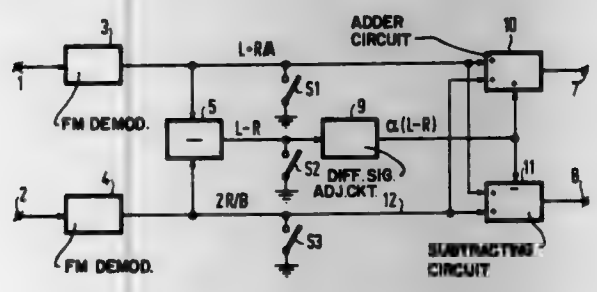
Cornelis J. M. Van Gils, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1982, Ser. No. 408,584

Claims priority, application Netherlands, Sep. 8, 1981, 8104156

Int. Cl.³ H04H *5/00*; H04N *5/60*

U.S. Cl. 381—2 **5 Claims**



1. An arrangement for receiving TV-signals containing left and right stereo sound signals, a first sound carrier being frequency-modulated by the sum signal (L+R) of the two stereo sound signals and a second sound carrier being frequency-modulated by twice the right stereo sound signal (2R), comprising a first FM-demodulator for demodulating the sum signal from the first carrier and a second FM-demodulator for demodulating twice the right stereo sound signal from the second sound carrier, a matrix circuit for deriving at least the left stereo sound signal from the sum signal and twice the right stereo sound signal, and a left and right sound channel for the respective left and right stereo sound signals, characterized in that the matrix circuit comprises a first submatrix for deriving the difference signal (L−R and/or R−L) of the two stereo sound signals from the sum signal and twice the right stereo sound signal, and a second submatrix for deriving at least the left stereo sound signal from the sum signal and the difference signal, and a difference signal adjusting circuit is coupled between the first and the second submatrices for symmetrically adjusting the crosstalk attenuation between the left and the right sound channel.

4,512,032

OPTICAL CHARACTER RECOGNITION APPARATUS

Hiromi Namba, Tokorozawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1982, Ser. No. 423,322

Claims priority, application Japan, Dec. 26, 1981, 56-209508

Int. Cl.³ G06K *9/34*

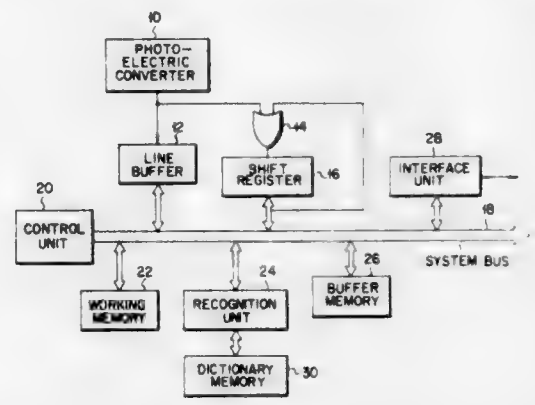
U.S. Cl. 382—9 **10 Claims**

1. An optical character recognition apparatus comprising:

photo-electric converting means for scanning printed lines of a machine printed document to produce binary signals representing quantization patterns of characters in the document;

projecting means for producing binary signals representing projection patterns in a horizontal line which coincides with the printed line of the quantization patterns of one line of the document, on the basis of the binary signals produced by said photo-electric converting means;

discriminating means, connected to said projecting means, for discriminating one of a plurality of printing pitches by determining whether or not the distance between centers of two projection patterns is within a predetermined range, which is determined by the distance between centers of two projection patterns with one or more other



projection patterns and spaces interposed therebetween in each of the plurality of printing pitches and the printing position error, and for discriminating the one printing pitch according to the determination result; and

recognizing means for determining the quantization pattern of each character from the output of said photo-electric converting means based on the one printing pitch discriminated by said discriminating means and for recognizing the character.

4,512,033

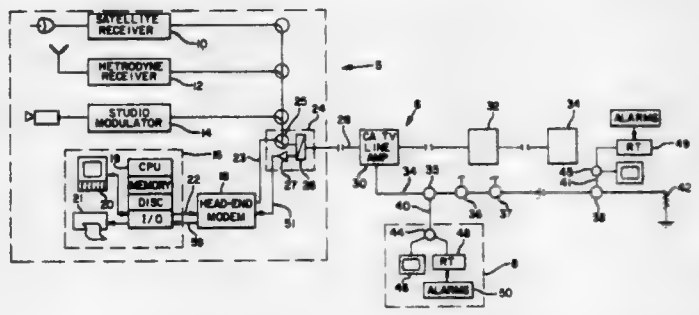
REMOTE LEVEL ADJUSTMENT SYSTEM FOR USE IN A MULTI-TERMINAL COMMUNICATIONS SYSTEM

Clifford B. Schrock, Aloha, Oreg., assignor to C-Cor Labs, Inc., Beaverton, Oreg.

Filed Nov. 29, 1982, Ser. No. 445,167

Int. Cl.³ H04B *17/00*; H04H *1/00*

U.S. Cl. 455—2 **16 Claims**



14. A method for remote level adjustment in a communications system in which a plurality of remote terminals are connected to a master terminal by a communications network for bi-directional transmission of signals between said master terminal and said remote terminals, the method comprising the steps of:

(a) transmitting a polling signal from said master terminal for causing said remote terminals to transmit output signals carrying data regarding transactions at respective remote locations;

(b) interrupting said polling signal and transmitting an interrogation signal from said master terminal for causing a selected remote terminal to transmit a reply signal;

(c) resuming said polling signal while measuring at said master terminal the level of said reply signal transmitted by said selected terminal; and

(d) temporarily interrupting said polling signal, if desirable based on said measurement, to transmit an adjustment

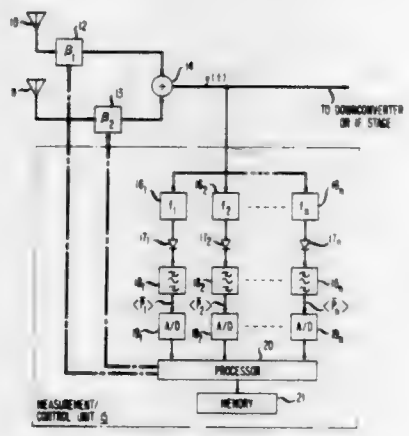
signal from said master terminal for causing said selected remote terminal to adjust its output signal level according to a predetermined protocol.

4,512,034

TECHNIQUE FOR DIGITAL RADIO SPACE DIVERSITY COMBINING

Lawrence J. Greenstein, Edison, and Yu S. Yeh, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 11, 1983, Ser. No. 512,603
Int. Cl.[3] H04B 7/08
U.S. Cl. 455—139 **5 Claims**



1. A space diversity combiner comprising:

a first and a second branch capable of propagating a first and a second concurrent input signal, respectively, received from a remote transmitter over separate channel paths

gain and phase adjusting means disposed in relation to the first and second branches and capable of adjusting the relative gain and phases of the first and second input signals in a predetermined manner in response to control signals to provide adjusted first and second input signals;

means for combining the adjusted first and second input signals at the output of the gain and phase adjusting means for generating a combiner output signal; and

measurement and control means responsive to the combiner output signal for generating noncoherent spectrum measurements over the frequency band of the combiner output signal and computing therefrom a performance measure for the space diversity combiner which accounts for both dispersion and noise and, in response to such computation, generating and applying said control signals to the gain and phase adjusting means for adjusting the relative amplitude and phase of the first and second input signals to maximize said performance measure computation.

4,512,035

METHOD OF PROGRAMMING A SYNTHESIZER ROM FOR ELIMINATION OF RECEIVER SELF-QUIETING

Alan M. Victor, Cooper City, and Darrell E. Davis, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 16, 1983, Ser. No. 495,307
Int. Cl.[3] H03J 7/18; H04B 1/16
U.S. Cl. 455—165 **7 Claims**

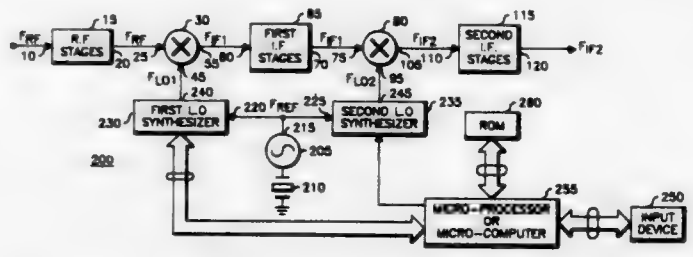
6. A method of programming a memory element for elimination of self-quieting in a synthesized multiple conversion radio receiver,

said synthesized receiver including a memory element for controlling the frequency of an oscillator used for local oscillator frequency injection into a mixer, said method comprising the steps of:

providing a desired receive frequency for receipt by said receiver, said desired receive frequency having potential to produce self-quieting in said receiver;

searching for potential receiver self-quieting spurious responses at said desired receiver frequency; and

programming said memory element to select an appropriate



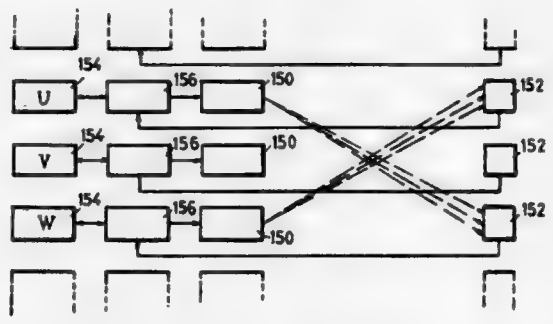
local oscillator frequency for allowing receipt of said desired receive frequency so that said receiver operates free of self-quieting when operating at said desired receiver frequency.

4,512,036

PIEZOELECTRIC APPARATUS FOR POSITIONING OPTICAL FIBERS

Herzl Laor, P.O. Box 588, Rehovot 76105, Israel

Filed Feb. 2, 1981, Ser. No. 230,794
Claims priority, application Israel, Feb. 4, 1980, 59306; Aug. 26, 1980, 60923
Int. Cl.[3] H04B 9/00
U.S. Cl. 455—612 **32 Claims**



1. A communications exchange comprising:

a first plurality of electromagnetic radiation transmitting units each of which provides a beam of information bearing electromagnetic radiation;

a second plurality of electromagnetic radiation receiving units arranged in radiation receiving relationship with said first plurality;

means for causing the radiation from a selectable one of said transmitting units to be received by a selectable one of said receiving units for establishment of communications therebetween, said means for causing comprising at least one device for selectably orienting an end of an information bearing optical fiber relative to a lens thereby providing a radiation beam of variable direction,

and wherein said selectably orienting device comprises:

a bender assembly including at least two piezoelectric bender elements mounted onto each other, the elements extending in the same direction and lying in two perpendicular planes and arranged for bending motion in different directions, said bender assembly having a free end thereof arranged for association with at least one optical fiber end and a mounting end thereof located at a reference position;

means for receiving radiation transmitted by said at least one optical fiber end;

means for measuring the intensity of radiation at said receiving means; and

feedback means responsive to the intensity of radiation measured by said measuring means for governing the positioning of said at least one optical fiber end.

DESIGN PATENTS

GRANTED APR. 16, 1985

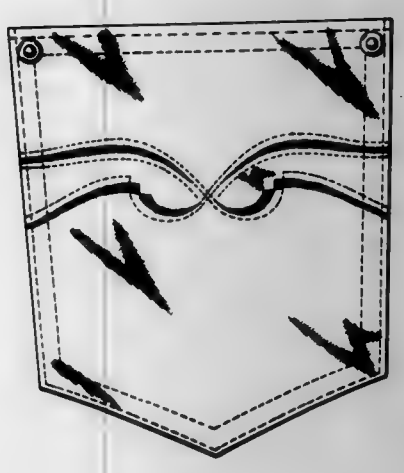
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For CLASS	See PATENT NO.
D18–001	278,404

DESIGNS

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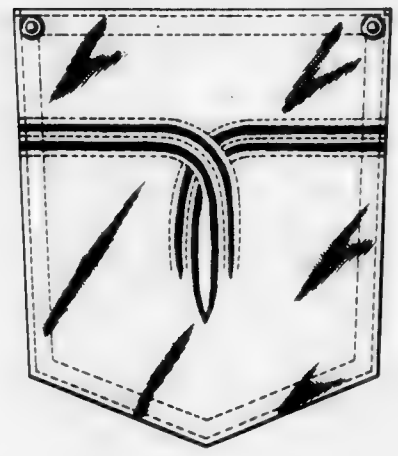
278,375
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Sep. 22, 1982, Ser. No. 421,644
Term of patent 14 years
U.S. Cl. D2—28



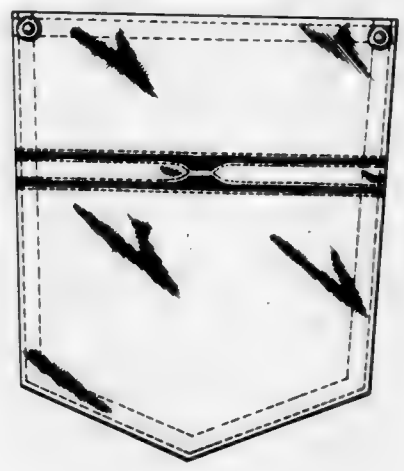
278,376
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Sep. 22, 1982, Ser. No. 421,646
Term of patent 14 years
U.S. Cl. D2—28



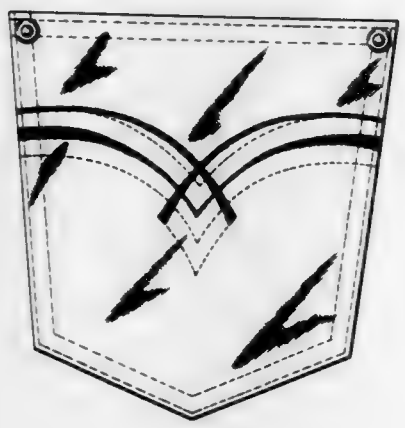
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Filed Sep. 22, 1982, Ser. No. 421,647
Term of patent 14 years
U.S. Cl. D2—28



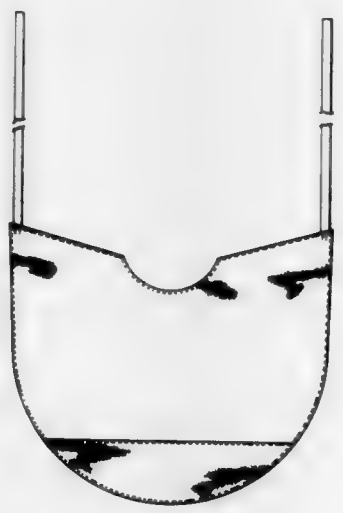
278,378
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Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Sep. 22, 1982, Ser. No. 421,648
Term of patent 14 years
U.S. Cl. D2—28



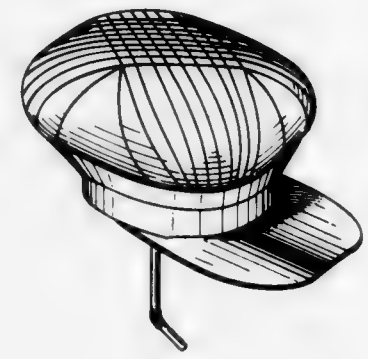
278,379
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Sep. 22, 1982, Ser. No. 421,705
Term of patent 14 years
U.S. Cl. D2—28

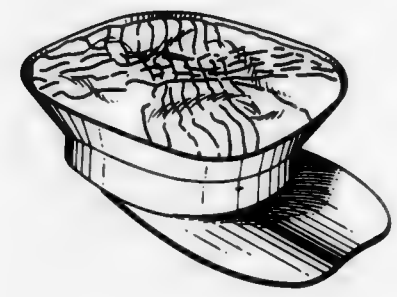


278,380
BEARD BIB
Barbara J. Verdick, 575 N. Lillian Way, Los Angeles, Calif. 90004
Filed Jul. 19, 1982, Ser. No. 399,778
Term of patent 14 years
U.S. Cl. D2—234

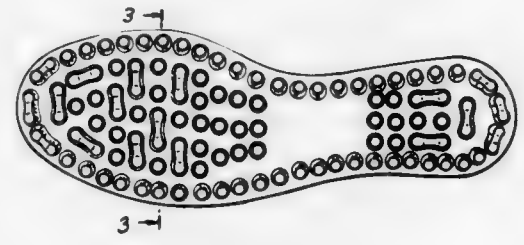


278,381
INFLATABLE DOME HAT
Timothy J. Saari, Rosemount, Minn., assignor to Jack Carmichael Advertising, Inc., Minneapolis, Minn.
Filed Dec. 3, 1982, Ser. No. 446,641
Term of patent 14 years
U.S. Cl. D2—244

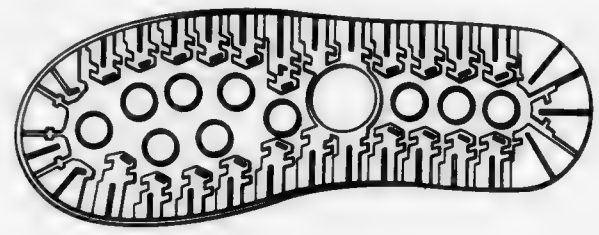




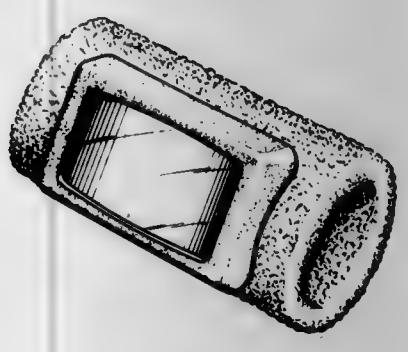
278,382
GOLF SHOE SOLE
York Chen, Taipei, Taiwan, assignor to Y. Chen & Co., Ltd., Taipei, Taiwan
Filed Sep. 17, 1982, Ser. No. 419,147
Claims priority, application Taiwan, Apr. 30, 1982, 7122219; Japan, Jun. 17, 1982, 57-27202
Term of patent 14 years
U.S. Cl. D2—320



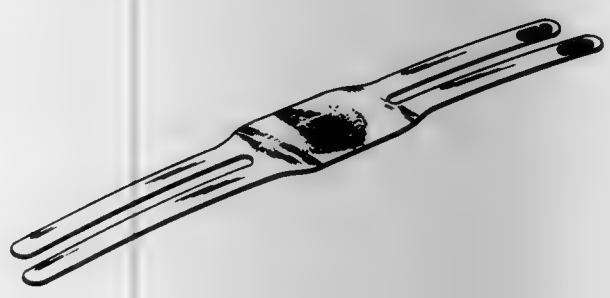
278,383
SHOE SOLE
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Filed Feb. 4, 1983, Ser. No. 463,947
Term of patent 14 years
U.S. Cl. D2—320



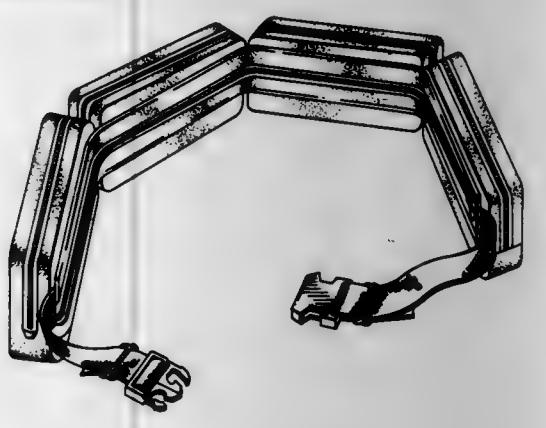
278,384
COMBINED SWEATBAND AND MIRROR
Michael C. Wilson, Glen Ellyn, Ill., assignor to The Idea Works! , Glen Ellyn, Ill.
Filed Feb. 17, 1983, Ser. No. 467,325
Term of patent 14 years
U.S. Cl. D2—360



278,385
BELT
Maud K. H. Kjellén, Hyllie Kyrkoväg 7, S-216 11 Malmö, Sweden, assignor to Maud K. H. Kjellén, Malmo, Sweden
Filed May 3, 1982, Ser. No. 374,529
Term of patent 14 years
U.S. Cl. D2—380



278,386
BATTERY PACK BELT
Seymour J. Share, P.O. Box 667, Port Orange, Fla. 32019
Filed Aug. 13, 1982, Ser. No. 407,829
Term of patent 14 years
U.S. Cl. D2—383



278,387
ILLUMINATED CANE
George Bixler, Modesto, Calif., assignor to Nellie Thompson, Modesto, Calif.
Filed May 26, 1982, Ser. No. 381,945
Term of patent 14 years
U.S. Cl. D3—7



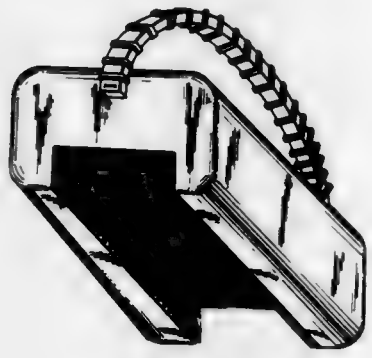
278,388
POUCH
Taichi Ueda, Yokohama, Japan, assignor to Fuji Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1982, Ser. No. 454,433
Claims priority, application Japan, Jul. 7, 1982, 57-30545
Term of patent 14 years
U.S. Cl. D3—71



278,389
COMBINED CREEL AND GAME BAG
William B. Kircher, Johnson County, Kans., and David A. Lester, Jackson County, Mo., assignors to North Fork Industries, Inc., Kansas City, Mo.
Filed Jan. 17, 1983, Ser. No. 458,566
Term of patent 14 years
U.S. Cl. D2—38



278,390
WHEELCHAIR TIRE CLEANER
Dennis J. Bailey, P.O. Box 20293, Atlanta, Ga. 30325, assignor to Dennis James Bailey, Doraville, Ga.
Filed Jun. 23, 1983, Ser. No. 329,653
Term of patent 14 years
U.S. Cl. D4—129



278,391
CHAIR
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Jan. 3, 1983, Ser. No. 455,060
Term of patent 14 years
U.S. Cl. D6—366



278,392
RECLINING LOUNGE CHAIR OR SIMILAR ARTICLE
Peter K. Bayly, Victoria, Australia, assignor to Roplas Pty. Ltd., Victoria, Australia
Filed Jan. 28, 1983, Ser. No. 462,121
Claims priority, application Australia, Aug. 4, 1982, 1153/82
Term of patent 14 years
U.S. Cl. D6—361



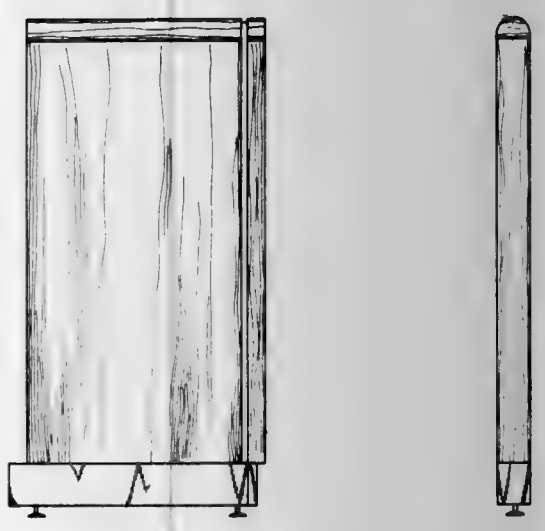
278,393
ARM CHAIR
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Jan. 3, 1983, Ser. No. 455,061
Term of patent 14 years
U.S. Cl. D6—374



278,394
COMBINED PLATE AND FRAME STAND
George E. Goetz, and Robin E. McNutt, both of P.O. Box 185, Milford, Ohio 45150
Filed Sep. 13, 1982, Ser. No. 416,981
Term of patent 14 years
U.S. Cl. D6—310



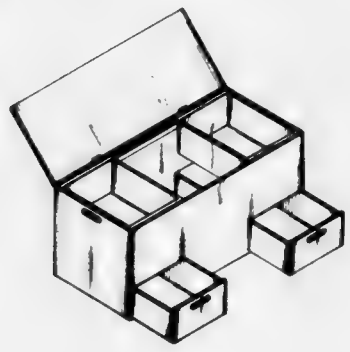
278,395
PARTITION UNIT
Robert A. Keeler, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Sep. 29, 1982, Ser. No. 427,310
Term of patent 14 years
U.S. Cl. D6—332



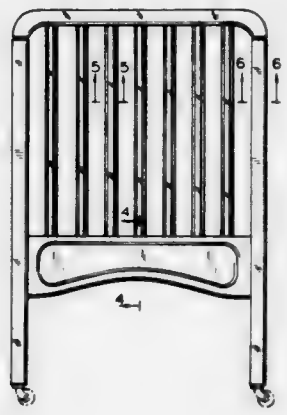
278,396
PARK BENCH
Duncan C. Syme, Chelsea; Vance R. Smith, Fish Hill, and Brian J. Tyrol, South Royalton, all of Vt., assignors to Vermont Castings, Inc., Randolph, Vt.
Filed Jun. 1, 1982, Ser. No. 383,777
Term of patent 14 years
U.S. Cl. D6—370



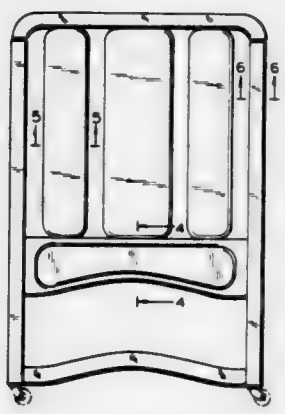
278,397
STORAGE CHEST FOR SPORTS AND OTHER PERSONAL ACCESSORIES
Anthony Frankenreiter, 5141 Ashrock Dr., St. Louis, Mo. 63129
Filed Dec. 13, 1982, Ser. No. 449,447
Term of patent 14 years
U.S. Cl. D6—440



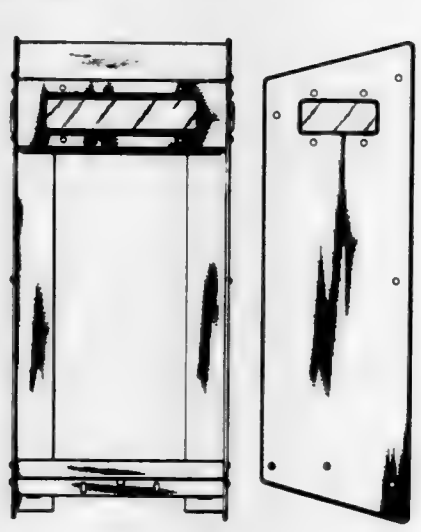
278,398
CRIB FOOTBOARD
Merlin A. Brunner; David W. Robinson, both of New London, and Harvey J. Draheim, Weyauwega, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Feb. 4, 1983, Ser. No. 463,776
Term of patent 14 years
U.S. Cl. D6—505



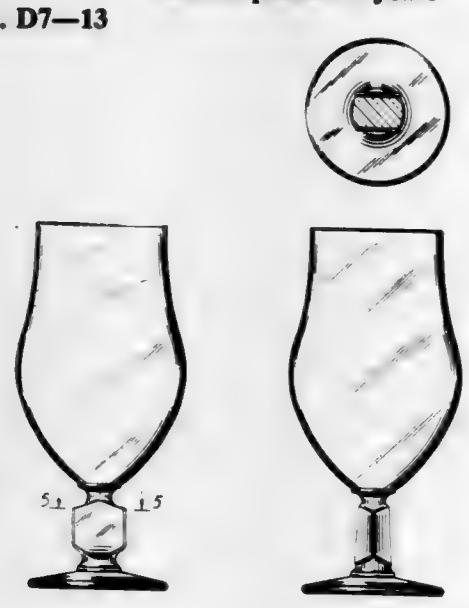
278,399
CRIB FOOTBOARD
Merlin A. Brunner; David W. Robinson, both of New London, and Harvey J. Draheim, Weyauwega, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Feb. 4, 1983, Ser. No. 463,778
Term of patent 14 years
U.S. Cl. D6—505



278,400
OUTDOOR TELEPHONE BOOTH
James M. Suttles, Elberton, Ga., assignor to Royston Manufacturing Corporation, Royston, Ga.
Filed Dec. 22, 1982, Ser. No. 452,226
Term of patent 14 years
U.S. Cl. D6—553



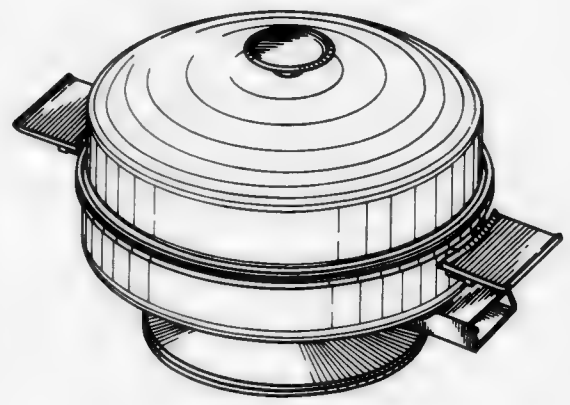
278,401
GOBLET
Pierre J. G. Assez, Steenkerque, Belgium, assignor to Durobor Societe Anonyme, Soignies, Belgium
Filed May 7, 1982, Ser. No. 376,158
Claims priority, application Benelux, Dec. 4, 1981, 02659-00
Term of patent 14 years
U.S. Cl. D7—13



278,402
BOTTLE SPOON
Stella P. Reichard, Santa Ana, Apt. 24 b, Carretera 19, Esquina Calle A, Villa Caparra, Guaynabo, P.R. 00657
Filed Aug. 11, 1982, Ser. No. 407,867
Term of patent 14 years
U.S. Cl. D7—104



278,403
ELECTRIC SKILLET
William C. Cesaroni, Glenview, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 28, 1983, Ser. No. 479,535
Term of patent 14 years
U.S. Cl. D7—360

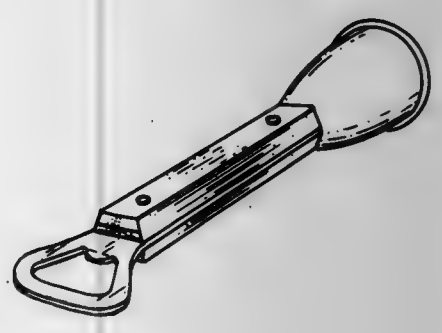


278,404
TYPEWRITER
Masayuki Morishita, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 28, 1983, Ser. No. 470,144
Claims priority, application Japan, Sep. 17, 1982, 57-42524
Term of patent 14 years
U.S. Cl. D18—1

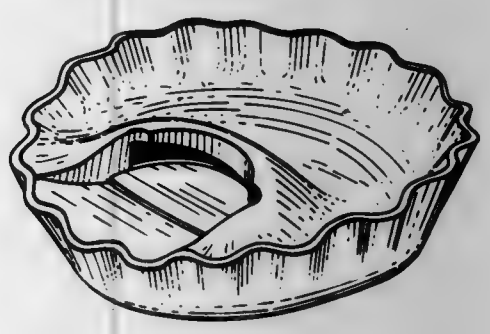




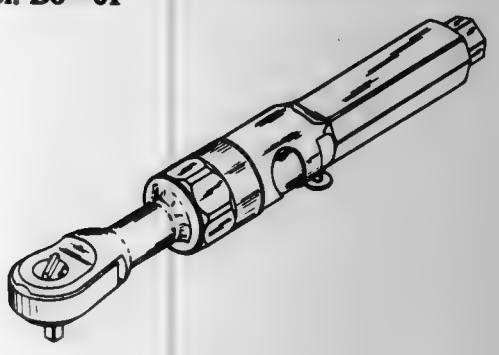
278,405
COMBINED BOTTLE OPENER WITH SHOT MEASURER
Richard W. Birchenall, P.O. Box 24847, San Jose, Calif. 95154
Filed Dec. 27, 1982, Ser. No. 453,483
Term of patent 14 years
U.S. Cl. D8—34



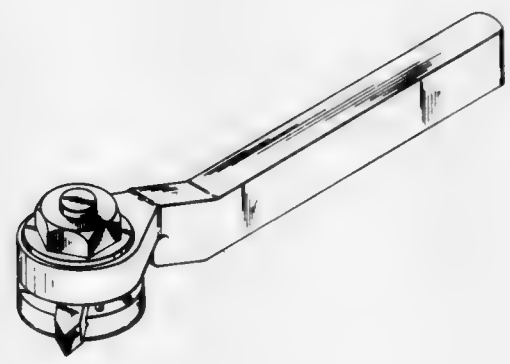
278,406
BOTTLE-OPENER
Stephan Koziol, 6120 Michelstadt, Fed. Rep. of Germany
Filed Mar. 3, 1983, Ser. No. 471,637
Term of patent 14 years
U.S. Cl. D8—38



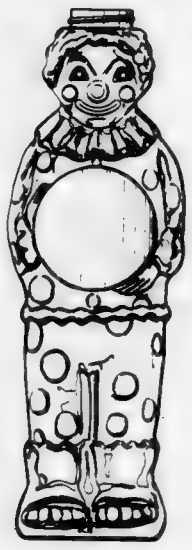
278,407
PORTABLE PNEUMATIC TOOL HOUSING
William B. Fleischer, Jr., Ridgefield, Conn., assignor to Upneumat International, Inc., Ridgefield, Conn.
Filed Sep. 1, 1982, Ser. No. 413,731
Term of patent 14 years
U.S. Cl. D8—61



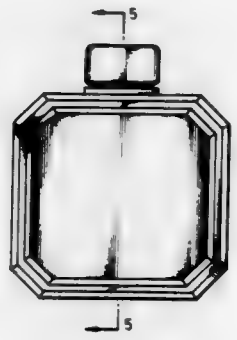
278,408
CUTTING TOOL HOLDER
Joseph A. Shampang, 676 New Britain Ave., Rocky Hill, Conn. 06067
Filed Dec. 19, 1983, Ser. No. 562,826
Term of patent 14 years
U.S. Cl. D8—98



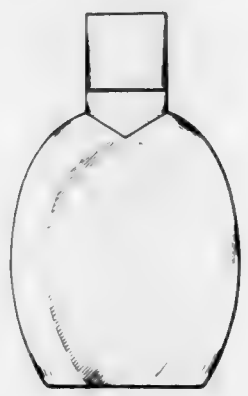
278,409
BOTTLE
Robert A. Palmer, Toronto, Canada, assignor to Greater Toronto Food Corporation, Mississauga, Canada
Filed May 2, 1983, Ser. No. 490,399
Claims priority, application Canada, Mar. 28, 1983, 28-03-83-6
Term of patent 14 years
U.S. Cl. D9—316



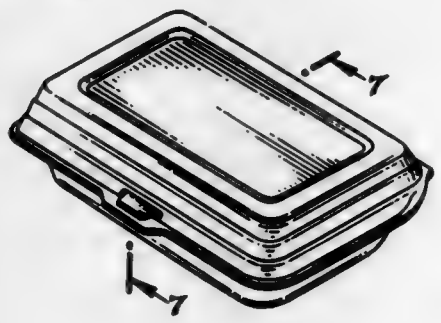
278,410
COSMETIC BOTTLE
Masaki Matsubara, Narashino, and Shuichi Ikeda, Tokyo, both of Japan, assignors to Shiseido Company Ltd., Tokyo, Japan
Filed May 17, 1982, Ser. No. 378,549
Term of patent 14 years
U.S. Cl. D9—403



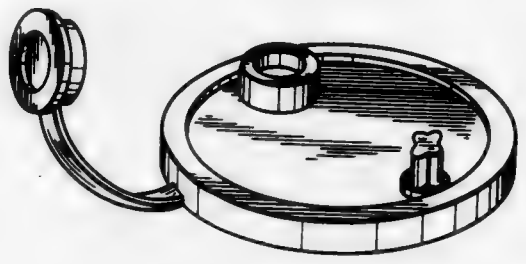
278,411
BOTTLE
Povl Reitzel, Klampenborg, and Søren Carlsen, Copenhagen, both of Denmark, assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 15, 1982, Ser. No. 434,670
Claims priority, application Denmark, Apr. 15, 1982, 331/1982
Term of patent 14 years
U.S. Cl. D9—403



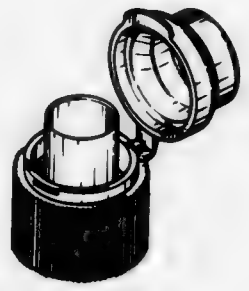
278,412
FOOD CONTAINER
Yat K. Yeung, Los Angeles, Calif., assignor to Sunlux Best Group, USA, Inc., Los Angeles, Calif.
Filed Nov. 4, 1982, Ser. No. 439,261
Claims priority, application United Kingdom, May 11, 1982, 1006650
Term of patent 14 years
U.S. Cl. D9—420



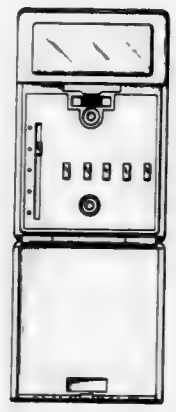
278,413
DISPENSING CLOSURE
Charles M. Woodcock, and Randy Kliment, both of Trenton, N.J., assignors to General Foods Corporation, White Plains, N.Y.
Filed Mar. 2, 1982, Ser. No. 353,988
Term of patent 14 years
U.S. Cl. D9—446



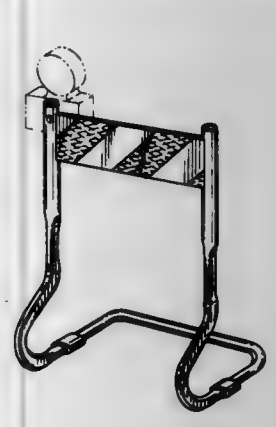
278,414
BOTTLE CAP FOR EDIBLE OIL
Joong H. Cho, 1097-2 Myunmok-Dong, Dongdaemun-ku, Seoul, Rep. of Korea
Filed Nov. 24, 1982, Ser. No. 444,444
Term of patent 14 years
U.S. Cl. D9—446



278,415
WALL TIMER
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Aurora, Ill.
Filed Jun. 30, 1983, Ser. No. 509,422
Term of patent 14 years
U.S. Cl. D10—40



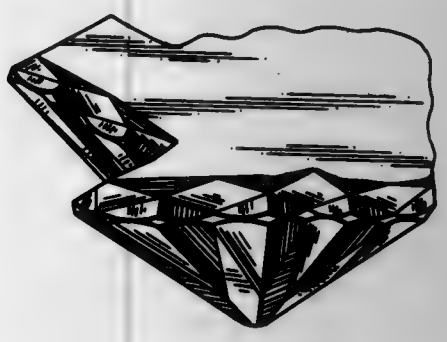
278,416
BARRICADE
Thomas F. Moran, 540 Cobblestone, Aurora, Ohio 44202
Filed May 2, 1983, Ser. No. 490,557
Term of patent 14 years
U.S. Cl. D10—109



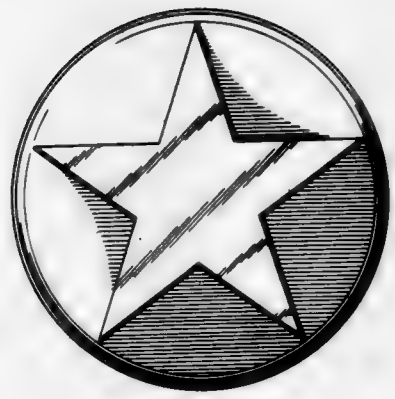
278,417
GEMLESS RING
Maxwell P. Lewis, 1229 Grouse Dr., Pittsburgh, Pa. 15243
Filed Sep. 29, 1982, Ser. No. 426,846
Term of patent 14 years
U.S. Cl. D11—27



278,418
PRECIOUS, SEMIPRECIOUS OR SYNTHETIC CUT STONE
Daniel Nejman, Irving, Tex., assignor to Chadiam Diamond Mfg., Inc., Dallas, Tex.
Filed Nov. 7, 1983, Ser. No. 548,974
Term of patent 14 years
U.S. Cl. D11—90



278,419
CHRISTMAS TREE ORNAMENT
James J. Hill, Plantation, Fla., assignor to Cook International, Inc., Palm Beach, Fla.
Filed Apr. 20, 1983, Ser. No. 486,813
Term of patent 14 years
U.S. Cl. D11—121



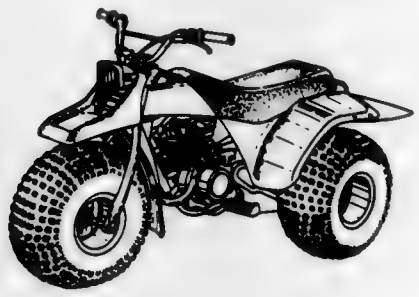
278,420
ILLUMINATED PICTURE BOX
Lawrence E. Thompson, 7608 Monroe St., Hammond, Ind. 46324
Filed Sep. 27, 1982, Ser. No. 425,123
Term of patent 14 years
U.S. Cl. D11—136



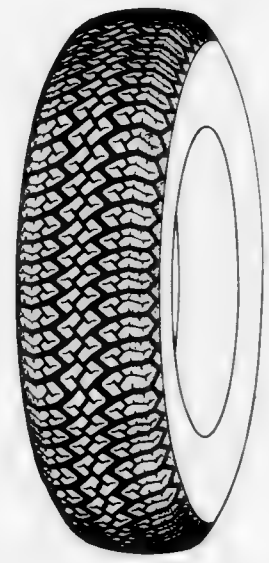
278,421
FIGURINE OF A QUAIL
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jun. 17, 1982, Ser. No. 389,541
Term of patent 14 years
U.S. Cl. D11—162



278,422
MOTORTRICYCLE
Tsuyoshi Murakami, Shizuoka, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kamimura Takatsuka, Japan
Filed Apr. 28, 1982, Ser. No. 372,685
Term of patent 14 years
U.S. Cl. D12—110



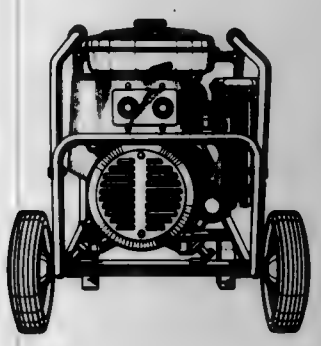
278,423
TIRE
Andre E. J. Baus, Bettembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 1, 1983, Ser. No. 510,005
Term of patent 14 years
U.S. Cl. D12—147

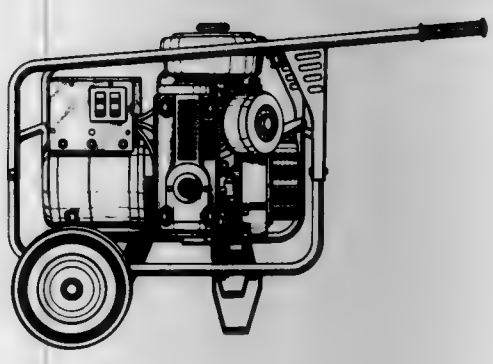


278,424
CAMPER RACK FOR HOLDING SKIS AND THE LIKE
Dannie R. L. Kern, 2016 Quadros La., San Jose, Calif. 95131
Filed Apr. 15, 1982, Ser. No. 368,758
Term of patent 14 years
U.S. Cl. D12—157

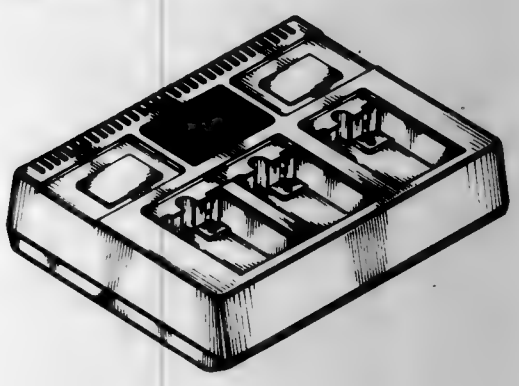


278,425
POWER GENERATOR
Shibuya Toshihiko, Urawa, Japan, assignor to Honda Gikken Kogyo Kabushiki Kaisha, Japan
Filed Apr. 30, 1982, Ser. No. 373,516
Claims priority, application Japan, Nov. 2, 1981, 56-48944
Term of patent 14 years
U.S. Cl. D13—1





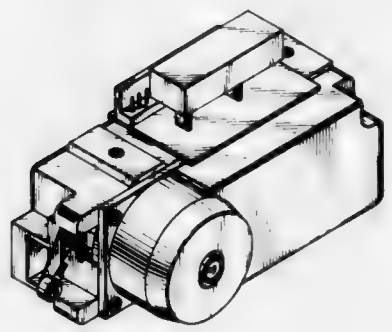
278,426
BATTERY CHARGER
Dennis M. Lanci, Renton, and Larry J. Peters, Snohomish, both of Wash., assignors to Physio-Control Corporation, Redmond, Wash.
Filed Mar. 25, 1983, Ser. No. 478,734
Term of patent 14 years
U.S. Cl. D13—5



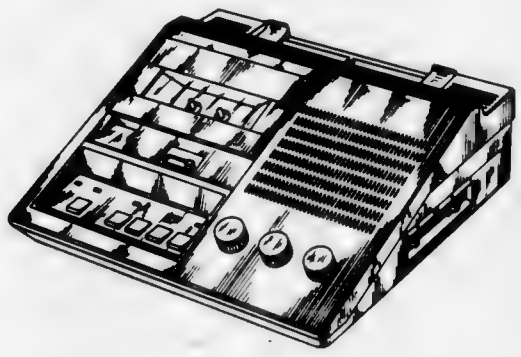
278,427
PUMP INTERFACE
Paul D. Eckstedt, Campbell, and Robert W. Caton, Morgan Hill, both of Calif., assignors to FMC Corporation, Chicago, Ill.
Filed Mar. 14, 1983, Ser. No. 475,277
Term of patent 14 years
U.S. Cl. D13—12



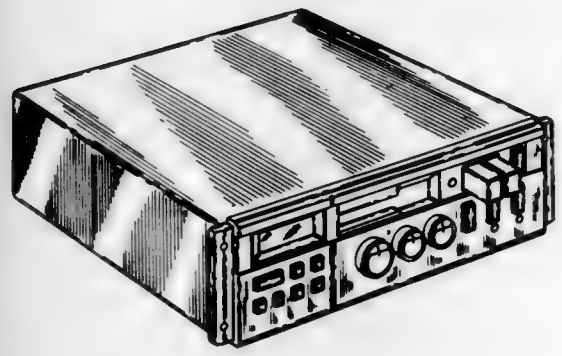
278,428
OPTICAL READ OUT PICKUP FOR USE IN AN OPTICAL AUDIO DISC MACHINE OR THE LIKE
Yasutaka Tsuchihashi, and Kenichi Ito, both of Okaya, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 1, 1982, Ser. No. 413,805
Claims priority, application Japan, Mar. 18, 1982, 57-11330
Term of patent 14 years
U.S. Cl. D14—1



278,429
DICTATING MACHINE
Peter J. Doodson, and Stefanus F. W. Joosten, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 27, 1982, Ser. No. 423,972
Claims priority, application Benelux, Apr. 19, 1982, 56782-00
Term of patent 14 years
U.S. Cl. D14—3



278,430
COMBINED AUTOMOBILE TAPE PLAYER AND RADIO RECEIVER
Rebertus van de Poel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 20, 1982, Ser. No. 451,518
Claims priority, application Benelux, Jun. 29, 1982, 56968-02
Term of patent 14 years
U.S. Cl. D14—5

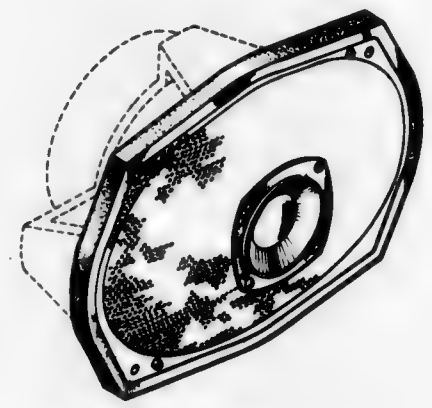


278,431
ACOUSTIC REFLECTOR HEADSET
Kenneth K. Beard, 1609 S. Columbia Ave., Tulsa, Okla. 74104
Filed Aug. 27, 1982, Ser. No. 412,128
Term of patent 14 years
U.S. Cl. D14—36

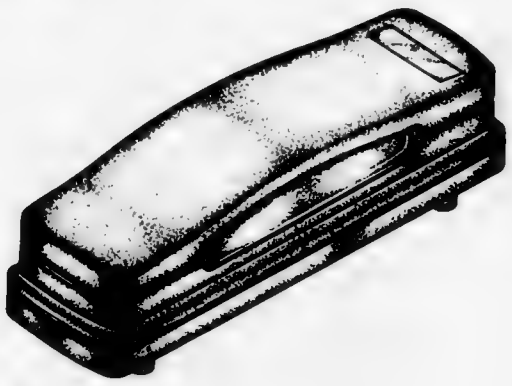




278,432
GRILLE ASSEMBLY FOR A COAXIAL LOUDSPEAKER
Marshall D. Buck, Los Angeles, Calif., assignor to Cerwin-Vega, Inc., Arleta, Calif.
Filed Sep. 30, 1982, Ser. No. 429,553
Term of patent 14 years
U.S. Cl. D14—39

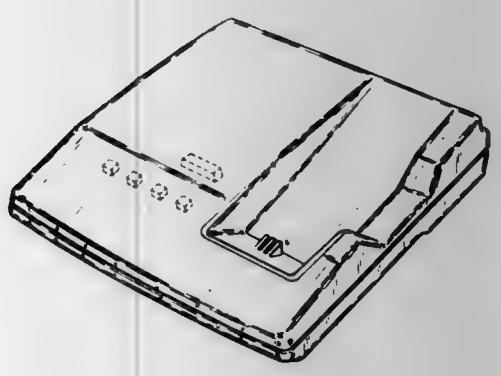


278,433
TELEPHONE
George D. Perkins, Eugene, Oreg., assignor to American Telecommunications Corporation, El Monte, Calif.
Filed Nov. 15, 1982, Ser. No. 441,414
Term of patent 14 years
U.S. Cl. D14—53

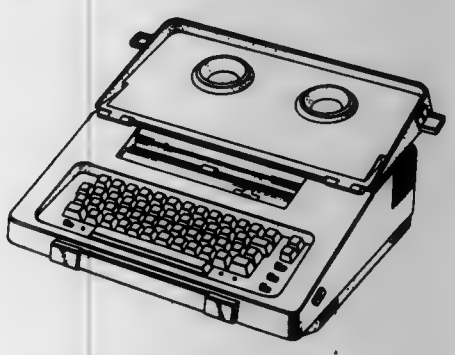




278,434
WIRELESS TELEPHONE SYSTEM BASE UNIT OR THE LIKE
Bengt A. Nestell, Belle Mead, N.J., assignor to GTE Communication Systems Corporation, Northlake, Ill.
Filed Dec. 16, 1982, Ser. No. 450,409
Term of patent 14 years
U.S. Cl. D14—60



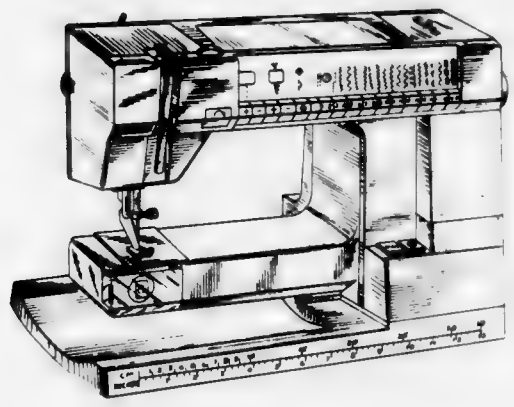
278,435
I/O TERMINAL FOR DATA COMMUNICATION
Koji Hikawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Nov. 17, 1982, Ser. No. 442,247
Claims priority, application Japan, May 25, 1982, 57-022764
Term of patent 14 years
U.S. Cl. D14—101



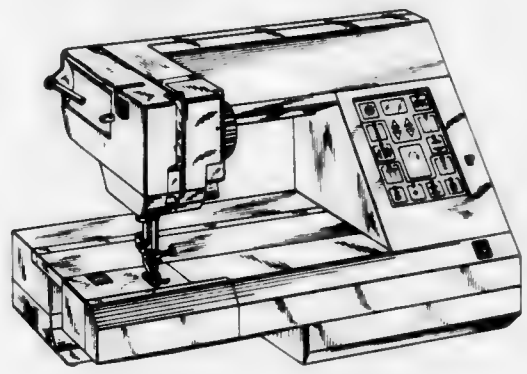
278,436
LIFT HITCH PIN
John W. Storlie, Box 56, Santiago, Minn. 55377
Filed May 6, 1983, Ser. No. 492,177
Term of patent 14 years
U.S. Cl. D15—28



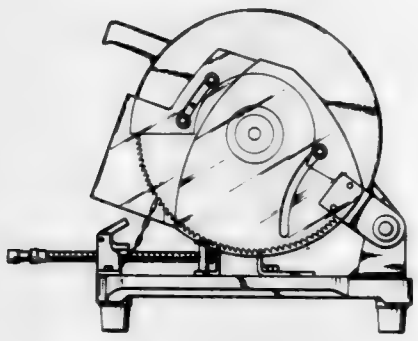
278,437
SEWING MACHINE
Lars G. Rosenblad, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden
Filed Mar. 29, 1982, Ser. No. 362,624
Claims priority, application Sweden, Sep. 29, 1981, 812135
Term of patent 14 years
U.S. Cl. D15—68

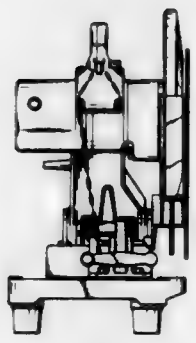


278,438
SEWING MACHINE
Giorgetto Giugiaro, Moncalieri, Italy, assignor to Necchi S.p.A., Pavia, Italy
Filed Jun. 4, 1982, Ser. No. 384,995
Term of patent 14 years
U.S. Cl. D15—70

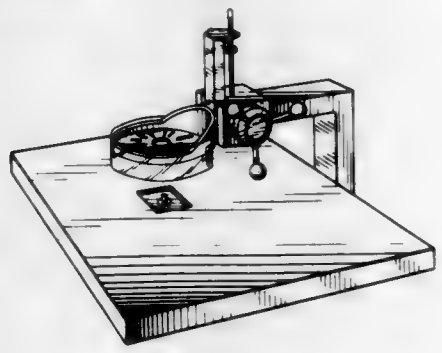


278,439
CUTTER
Kouzou Hakoda, Fukuyama, Japan, assignor to Ryobi Limited, Hiroshima, Japan
Division of Ser. No. 407,776, Aug. 13, 1982,. This application Sep. 13, 1984, Ser. No. 649,942
Claims priority, application Japan, Feb. 15, 1982, 57-6393; Mar. 9, 1982, 57-9734
Term of patent 14 years
U.S. Cl. D15—127

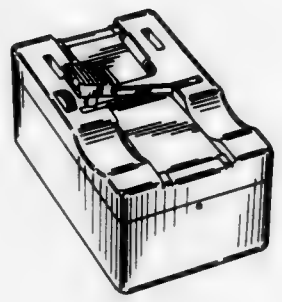




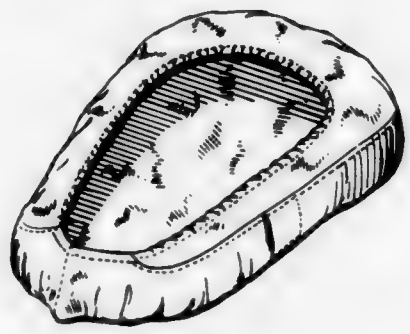
278,440
ROUTER TABLE
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Michael Peterson, Evanston, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Oct. 21, 1982, Ser. No. 435,758
Term of patent 14 years
U.S. Cl. D15—141



278,441
FILM CUTTING APPARATUS
Rudolph Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG Hanke & Thomas, Monheim, Fed. Rep. of Germany
Filed Jun. 1, 1982, Ser. No. 383,782
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3 AR 107/82
Term of patent 14 years
U.S. Cl. D16—40



278,442
STRINGED INSTRUMENT COVER
Roxane L. Whomsley, 9932 Cris Ave., Anaheim, Calif. 92804
Filed Nov. 22, 1982, Ser. No. 443,171
Term of patent 14 years
U.S. Cl. D17—20



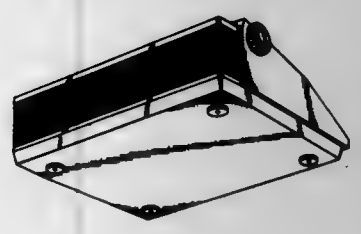
278,443
TYPEWRITER
Masayuki Morishita, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 28, 1983, Ser. No. 470,496
Claims priority, application Japan, Sep. 17, 1982, 57-42522
Term of patent 14 years
U.S. Cl. D18—1



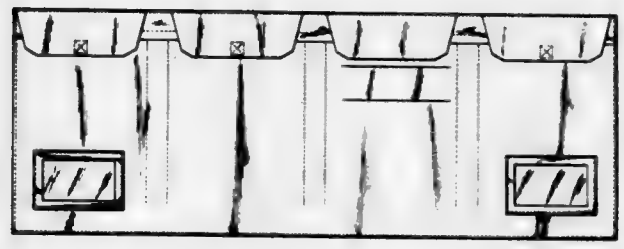


278,444
TYPEWRITER
Ishin Miyamoto; Yasuo Nagamatsu; Toshiya Moriyama, and Masaharu Sakamoto, all of Fukuoka, Japan, assignors to Kyushu Matsushita Electric Co., Ltd., Fukuoka, Japan
Filed Mar. 24, 1983, Ser. No. 478,583
Term of patent 14 years
U.S. Cl. D18—1

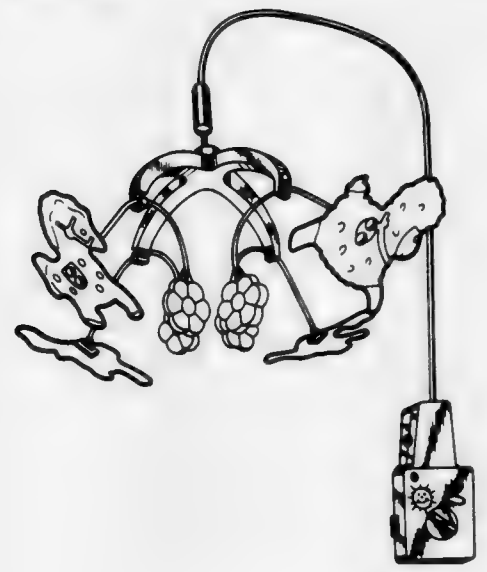




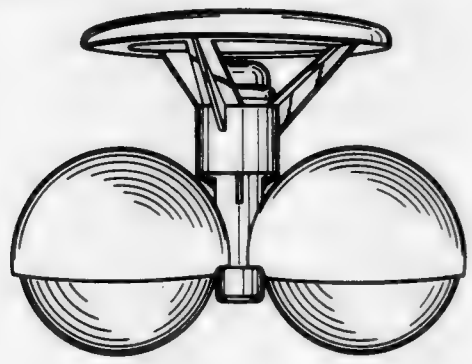
278,445
DOCUMENT ORGANIZER
Sheryl J. Hartney, Barrington, R.I., assignor to Saab-Scania of America, Inc., Orange, Conn.
Filed Sep. 30, 1982, Ser. No. 432,542
Term of patent 14 years
U.S. Cl. D19—26



278,446
ACTION MOBILE
Stanley M. Kujawski, and Andrew I. Bergman, both of East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,189
Term of patent 14 years
U.S. Cl. D21—63



278,447
TOY VEHICLE
Arieh Solomon, 49, Hasaifan St., Ramat Hasharon 47248, Israel
Filed Jul. 7, 1982, Ser. No. 396,052
Claims priority, application Israel, Jan. 12, 1982, 8854
Term of patent 14 years
U.S. Cl. D21—76



278,448
TOY STABLE

Elizabeth Knight, Milton, and Richard Barlik, North Attleboro, both of Mass., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

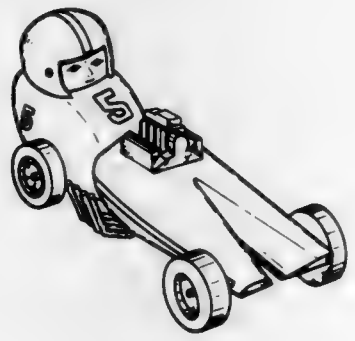
Filed Apr. 11, 1983, Ser. No. 484,411
Term of patent 14 years
U.S. Cl. D21—116



278,449
MODEL RACING CAR

Lester M. Colquitt, 8225 Tumbleweed Trail, Knoxville, Tenn. 37920

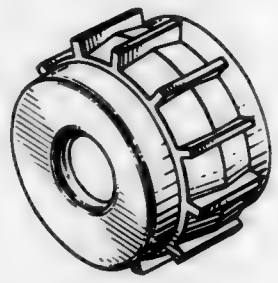
Filed Dec. 8, 1982, Ser. No. 447,791
Term of patent 14 years
U.S. Cl. D21—137



278,450
WHEEL FOR TOY AMPHIBIOUS VEHICLE

Adolph E. Goldfarb, 1432 SE. Wind Cir., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.

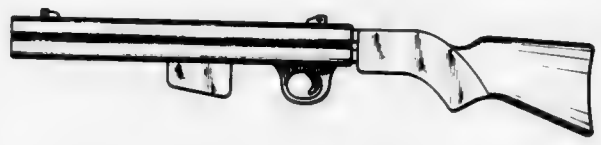
Filed Dec. 20, 1982, Ser. No. 451,087
Term of patent 14 years
U.S. Cl. D21—141



278,451
TOY RIFLE

Paul B. Makhoulian, 27445 Hystone, Farmington Hills, Mich. 48018

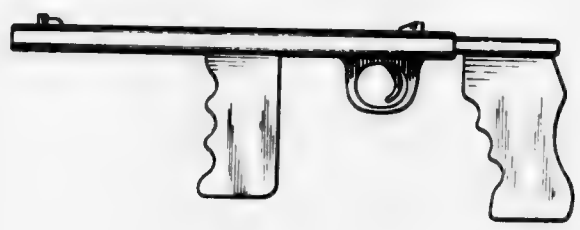
Filed Dec. 9, 1982, Ser. No. 448,212
Term of patent 14 years
U.S. Cl. D21—145



278,452
TOY GUN

Paul B. Makhoulian, 27445 Hystone, Farmington Hills, Mich. 48018

Filed Dec. 9, 1982, Ser. No. 448,213
Term of patent 14 years
U.S. Cl. D21—145



278,453
FACIAL APPLIANCE FOR MAKEUP

Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605

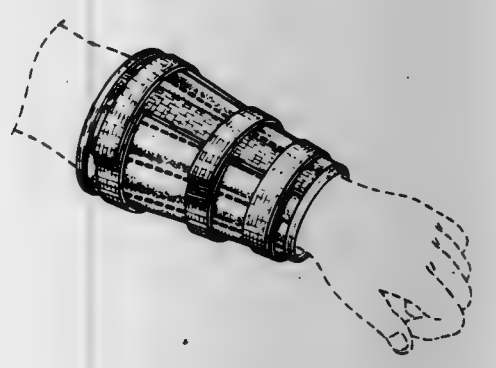
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,327
Term of patent 14 years
U.S. Cl. D21—190



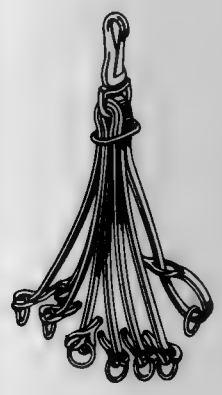
278,454
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, , which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, , which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979,. This application Jun. 29, 1984, Ser. No. 626,373
Term of patent 14 years
U.S. Cl. D21—190



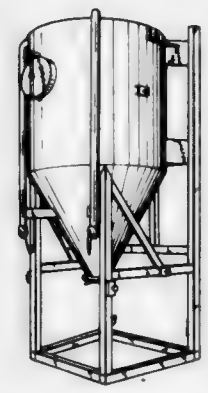
278,455
ARM WEIGHT OR SIMILAR ARTICLE
Robert J. Nosek, 469 Bouckhart Ave., Rochester, N.Y. 14622
Filed Aug. 1, 1983, Ser. No. 519,008
Term of patent 14 years
U.S. Cl. D21—196



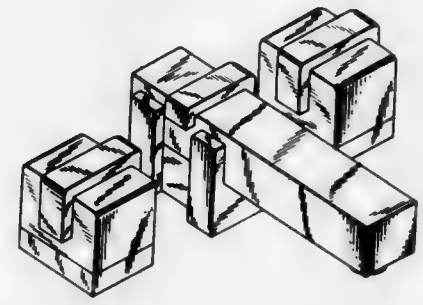
278,456
GAME CARRYING STRAP ASSEMBLY HAVING PLURAL LOOP ENDED STRAPS
Frederick F. Lewis, 5029 Dryades St., New Orleans, La. 70115
Filed Feb. 17, 1983, Ser. No. 467,261
Term of patent 14 years
U.S. Cl. D22—13



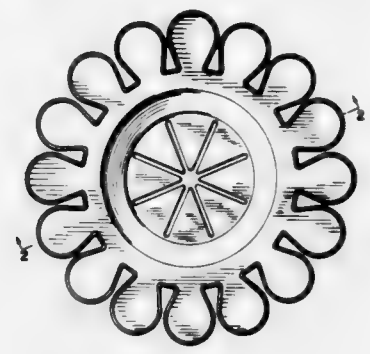
278,457
TRANSPORTABLE BULK CONTAINER
Ernest W. Schroder, and David A. Pickford, both of Largs Bay, Australia, assignors to Adelaide Brighton Cement Limited, Australia
Filed Jun. 23, 1982, Ser. No. 391,239
Claims priority, application Australia, Dec. 24, 1981, 86138
Term of patent 14 years
U.S. Cl. D23—2



278,458
FAUCET SET
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Long Island City, N.Y.
Filed May 3, 1983, Ser. No. 491,119
Term of patent 14 years
U.S. Cl. D23—25



278,459
SINK STRAINER
Ronald E. Cook, 4160 Echowoods Dr., Clarkston, Ga. 30021
Filed Sep. 30, 1982, Ser. No. 431,141
Term of patent 14 years
U.S. Cl. D23—42





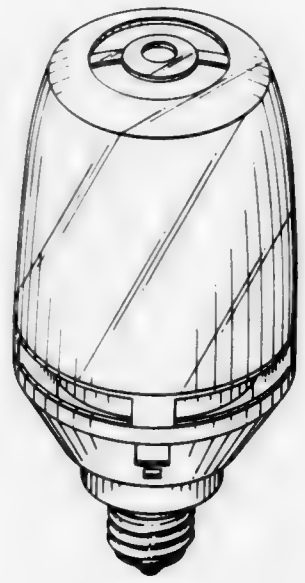
278,460
PORTABLE FIRE DRAFT MAKER OR SIMILAR ARTICLE
Anthony Kimball, 8686½ Long Hill Rd., Rome, N.Y. 13440
Filed Aug. 30, 1982, Ser. No. 413,096
Term of patent 14 years
U.S. Cl. D23—90.1



278,461
SUN LAMP
Lynford S. Pepall, Waskemeer, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 27, 1982, Ser. No. 453,325
Claims priority, application Benelux, Jul. 2, 1982, 56978-00
Term of patent 14 years
U.S. Cl. D24—68



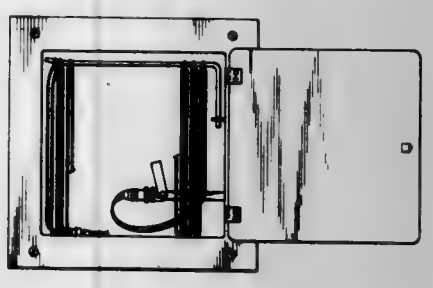
278,462
AIR-COOLED COMPACT ELECTRIC LAMP
Denis E. Bedel, Pittsburgh, Pa., assignor to North American Philips Electric Corp., New York, N.Y.
Filed Jul. 26, 1982, Ser. No. 402,193
Term of patent 14 years
U.S. Cl. D26—3



278,463
FLUORESCENT LIGHT BALLAST RECEPTACLE WITH INTEGRAL WALL PLUG
Gary W. Vest, 4480 Broadview Rd., Cleveland, Ohio 44109
Filed Mar. 22, 1982, Ser. No. 360,229
Term of patent 14 years
U.S. Cl. D26—113



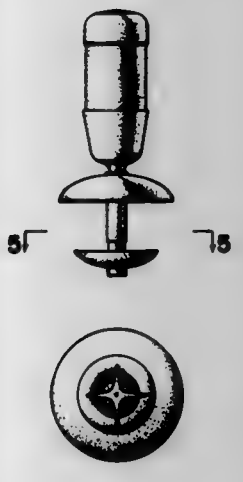
278,464
COMBINED FIRE HOSE AND CABINET THEREFOR
Robert Brooks, 2 Caldwell St., Weymouth, Mass. 02191
Filed Sep. 13, 1982, Ser. No. 416,964
Term of patent 14 years
U.S. Cl. D29—2



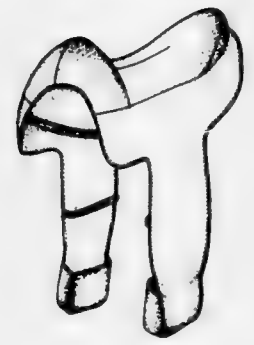
278,465
AQUARIUM ORNAMENT
Jerome Goldman, New York; Marvin Goldman, Great Neck; Gerald Philips, Glen Cove, and Joseph Pesin, Brooklyn, all of N.Y., assignors to Penn Plax Plastics, Garden City, N.Y.
Filed Jun. 2, 1983, Ser. No. 500,458
Term of patent 14 years
U.S. Cl. D30—12



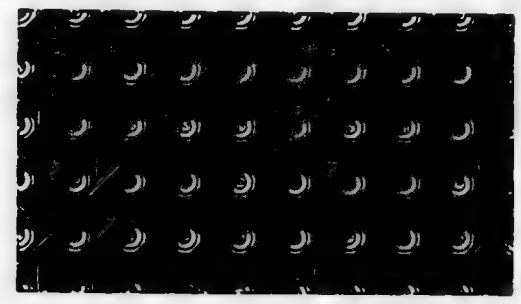
278,466
BIRD FEEDER
Robert H. Springer, 3280 Observatory Ave., Cincinnati, Ohio 45208
Filed Feb. 4, 1983, Ser. No. 464,010
Term of patent 14 years
U.S. Cl. D30—15



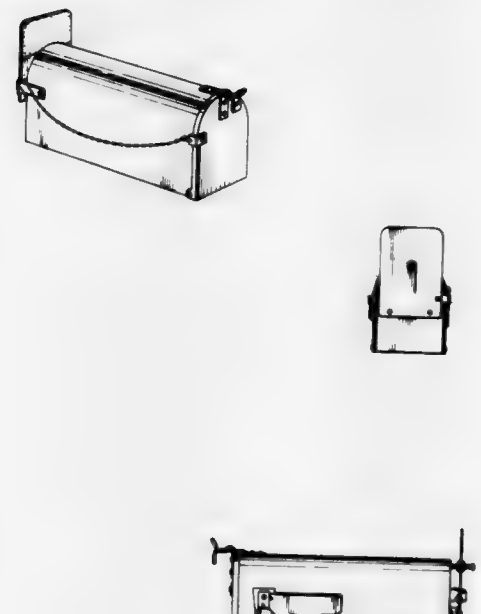
278,467
SADDLE COVER
Harry J. Lang, Rte. 1, Box 20, Heber, Utah 84032
Filed Nov. 29, 1982, Ser. No. 445,239
Term of patent 14 years
U.S. Cl. D30—19



278,468
PLASTIC SHEET MATERIAL OR THE LIKE
Helen H. Trotman, deceased, late of Virginia Beach, VA; by Peter M. Huber, legal representative, 1800 Virginia Natl. Bank Bldg., Norfolk, Va. 23510, and Herbert H. Trotman, P.O. Box 807, Virginia Beach, Va. 23451
Filed Jan. 4, 1982, Ser. No. 337,511
Term of patent 14 years
U.S. Cl. D92—1.1



278,469
COMBINED MAILBOX AND SIGNAL
Edward E. Ross, Rte. 5, Box 900, Warrensburg, Mo. 64093
Filed Nov. 30, 1982, Ser. No. 445,527
Term of patent 14 years
U.S. Cl. D99—29



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TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF APRIL, 1985

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Pierart, Robert, 4,511,532, Cl. 376-461.000.
Atkinson, Colin: *See*—
Lawrence, Christopher J.; Wilkinson, Philip M.; and Atkinson, Colin, 4,510,744, Cl. 57-280.000.
Atlantic Richfield Company: *See*—
Gaffney, Anne M., 4,511,754, Cl. 585-656.000.
Miller, Richard F.; and Nicholson, Michael P., 4,511,457, Cl. 208-48.0AA.
Atlas Copco Aktiebolag: *See*—
Herron, Lorne R., 4,511,289, Cl. 405-259.000.
Attig, T. G.; and Grasselli, R. K., to Standard Oil Company, The. Ammoxidation of methanol to produce hydrogen cyanide. 4,511,548, Cl. 423-376.000.
Attler, Anthony R. Dipstick guide device for automotive vehicles. 4,510,690, Cl. 33-126.70R.
Atwater, Richard G., to Firex Corporation. Surge protected smoke alarm. 4,511,889, Cl. 340-629.000.
Auerswald, David C. Method for regenerating water polishers using ammonium sulphate. 4,511,675, Cl. 521-26.000.
Aurora Mechatronics Corporation: *See*—
Kuo, Calven, 4,511,765, Cl. 179-90.0BD.
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Hammond, Leslie A.; and Freeman, Norman H., 4,510,856, Cl. 99-457.000.
Automated Container Corporation: *See*—
Zysset, Edgar H., 4,511,299, Cl. 413-12.000.
Avner, Correy B. Secondary grilling apparatus. 4,510,855, Cl. 99-450.000.
Awaya, Akira: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.
Axelrod, Shimshon: *See*—
Keren, Yehuda; Carmon, Shmuel; Behar, Meyer; and Axelrod, Shimshon, 4,511,543, Cl. 423-167.000.
Axelsson, Carl-Lennart, to IPS Interproject Service AB. Carbon gasification method. 4,511,372, Cl. 48-197.00R.
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Crossland, William A.; Ross, Peter W.; and Ayliffe, Peter J., 4,511,926, Cl. 358-236.000.
Ayroldi, Giuseppe. Apparatus for the recovery of oils or other similar substances floating on streaming water courses. 4,511,470, Cl. 210-242.300.
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Robertson, Michael L., 4,510,854, Cl. 99-337.000.
B-Bar-B, Inc.: *See*—
Ellert, Roger H., 4,510,737, Cl. 53-570.000.
B. F. Goodrich Company, The: *See*—
Grider, Bruce A., 4,511,021, Cl. 188-218.0XL.
Yu, Simon H., 4,511,742, Cl. 568-614.000.
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Keyes, Marion A., IV; and Thompson, William L., 4,511,882, Cl. 340-347.0DD.
Bachofen AG: *See*—
Kagi, Bruno, 4,510,845, Cl. 91-180.000.
Baier, Manfred; and Tobler, Andreas, to BBC Brown, Boveri & Company, Limited. Current transformer insulated by pressurized gas. 4,511,873, Cl. 336-90.000.
Bailey, Dana S.: *See*—
Chai, Bruce H.; Bailey, Dana S.; Vetelino, John F.; Lee, Donald L.; and Andle, Jeffrey C., 4,511,817, Cl. 310-313.00A.
Bailly, Jean C., to BP Chimie Societe Anonyme. Catalysts for the polymerization and copolymerization of propylene and polymerization processes using these catalysts. 4,511,703, Cl. 526-125.000.
Bair, Kenneth W., to Burroughs Wellcome Co. Phenanthrene derivatives. 4,511,582, Cl. 514-654.000.
Baker Oil Tools, Inc.: *See*—
Krause, William F., Jr.; and Hopmann, Mark E., 4,510,995, Cl. 166-217.000.
Baker, Paul A.; and Strautz, Michael G., to AT&T Bell Laboratories. Module mounting assembly. 4,511,201, Cl. 339-75.0MP.
Balaskas, Spyros, to Vereinigte Flugtechnische Werke GmbH. Hydraulic control valves. 4,510,973, Cl. 137-625.640.
Ball Corporation: *See*—
Greeson, Richard L.; and Geikas, George I., 4,511,614, Cl. 428-141.000.
Munson, Robert E.; and Haddad, Hussain A., 4,511,868, Cl. 333-257.000.
Olsen, Arthur A., 4,511,250, Cl. 356-225.000.
Ballik, Rainer; and Hutten, Heinrich, to Pierburg GmbH & Co., KG. Fuel-injection systems and associated methods. 4,511,082, Cl. 239-8.000.
Balogh, Albert: *See*—
Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, 4,511,717, Cl. 544-353.000.
Balogh, Karoly: *See*—
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Ebata, Sadao; and Bando, Seiji, 4,511,089, Cl. 239-553.300.
Bandoh, Kazuo. Apparatus for enclosing semiconductors with resin by molding. 4,511,317, Cl. 425-116.000.
Banks, Russell; and Magid, David J., to Enviro-Spray Systems Incorporated. Expandable bag and method of manufacture. 4,510,734, Cl. 53-449.000.
Bar-Ray Products, Inc.: *See*—
Pokrinchak, Jordan J., 4,510,708, Cl. 40-361.000.
Baran, Madelyn M.; and Bleile, Dennis M., to Bio-Rad Laboratories, Inc. Simultaneous assay for T and B lymphocyte populations and subpopulations. 4,511,662, Cl. 436-513.000.
Baran, Richard M.: *See*—
Saprokhin, Alexander M.; Friedland, David J.; Baran, Richard M.; Kim, Jung T.; and McCurry, Lynn E., 4,511,440, Cl. 204-60.000.
Bare, Thomas M.; and Heald, Anthony F., to ICI Americas Inc. CNS-Depressant pyrazolopyridines. 4,511,568, Cl. 514-293.000.
Barkhau, Marvin L.; and Kujawa, Joseph J., to Owens-Illinois, Inc. Forehearth for molten glass and method of using same. 4,511,385, Cl. 65-135.000.
Barkmeyer, Hans: *See*—
Hesse, Theodor; and Barkmeyer, Hans, 4,511,292, Cl. 406-152.000.
Barner, William H.: *See*—
Martin, Ernest N.; Barner, William H.; and Martin, Don M., 4,511,067, Cl. 222-230.000.
Baron, Kenneth: *See*—
Holstedt, Richard A.; Baron, Kenneth; and Jessup, Peter, 4,511,516, Cl. 260-462.00R.
Barraud, Andre ; and Leloup, Jean, to Commissariat a l'Energie Atomique. Process and apparatus for producing alternate monomolecular layers. 4,511,604, Cl. 427-402.000.
Barreras, Francisco J., to Cordis Corporation. P Wave detection system. 4,510,945, Cl. 128-696.000.
Barrington, Claud C.: *See*—
Jennings, Charles E.; Barrington, Claud C.; Chen, Lien-Yan; Hopkins, Bob C.; McIntyre, John N.; and Regitz, Alfred P., 4,510,960, Cl. 137-75.000.
Barsi, Endre: *See*—
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 4,510,642, Cl. 15-231.000.
Barter, LeRoy D., to Beckman Instruments, Inc. Device for starting and operating gas discharge tubes. 4,511,195, Cl. 315-308.000.
Bartholet, Stephen J., to Odetics, Inc. Leg mechanism for walking machine. 4,511,011, Cl. 180-8.600.
Bartlett, Robert L.; and McKee, Robert N., to Shopsmith, Inc. Table assembly for a multipurpose tool. 4,510,980, Cl. 144-1.00C.
Barton, Delmar O.; and Simpson, Loran R., to Metromail Corporation. Phase controlled gripper operating system for collator. 4,511,130, Cl. 270-54.000.
Bartuska, Victor J.; Lewis, David H.; Lewis, Robin B.; and Dalbow, David G., to Chemagnetics, Inc. Method and apparatus for high speed magic angle spinning. 4,511,841, Cl. 324-321.000.
BASF Aktiengesellschaft: *See*—
Baumann, Hans; and Kaack, Hermann, 4,511,506, Cl. 534-631.000.
Hagen, Helmut; Markert, Juergen; Kohler, Rolf-Dieter; and Wuerzer, Bruno, 4,511,393, Cl. 71-92.000.
Mahnke, Harald; Woerner, Frank P.; Weber, Heinz; and Kreibiehl, Guenter, 4,511,678, Cl. 521-52.000.
Nissen, Axel; Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, 4,511,685, Cl. 524-110.000.
Rieber, Norbert; Boehm, Heinrich; and Adolphi, Heinrich, 4,511,723, Cl. 548-376.000.
Sauer, Wolfgang; and Hoffmann, Wolfgang, 4,511,739, Cl. 568-473.000.
BASF Wyandotte Corporation: *See*—
Schmolka, Irving R., 4,511,563, Cl. 514-162.000.

Bastida, Ezio M.; and Bergamini, Paolo, to CISE Centro Informazioni Studi Esperienze S.p.A. Planar microwave oscillator mounted on a dielectric cavity. 4,511,860, Cl. 331-96.000.

Bateson, Paul F.: *See—*
Drake, Cyril F.; Jones, Ronald; Bateson, Paul F.; Grant, Ronald J.; and Burrage, Martin E., 4,511,404, Cl. 106-14.120.

Batra, Subhash K. Suture. 4,510,934, Cl. 128-335.500.

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Tournier, Herve; Johansson, Allan A.; Sachetto, Jean-Pierre; Armanet, Jean-Michel; Michel, Jean-Pierre; and Roman, Alain, 4,511,433, Cl. 162-16.000.

Bauer, Fritz E.: *See—*
Boyd, Mary G.; Smith, Donald R.; Imondi, Peter F.; Hiatt, Norman A.; Bauer, Fritz E.; Anemaet, John M.; and MacKenzie, Alfred K., 4,511,425, Cl. 156-493.000.

Bauer, Marshall, to Nation Enterprises, Inc. Dough forming molding assembly. 4,511,324, Cl. 425-398.000.

Bauer, Michael T., to National Viewtech Corp. Liquid coupling system for video projectors. 4,511,927, Cl. 358-250.000.

Bauer, Wilhelm: *See—*
Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, 4,511,214, Cl. 350-632.000.

Bauer, Wolfgang; and Grosser, Werner, to Karl Schmidt GmbH. Device for making a firm, but releasable joint between a steering wheel and a locking bolt. 4,510,821, Cl. 74-552.000.

Baumann, Hans; and Kaack, Hermann, to BASF Aktiengesellschaft. Reactive bis-triazinyl stilbene dyes. 4,511,506, Cl. 534-631.000.

Baumeister, Hans P., to Eastman Kodak Company. Corona generating apparatus and method. 4,511,244, Cl. 355-14.0FU.

Baumers, Johannes; Lisken, Werner; and Lietzke, Heinz, to Losenhausen Maschinenbau AG. Flyweight vibrator designed as directional vibrator. 4,510,815, Cl. 74-61.000.

Baumert, Kenneth L.; Sagues, Alberto A.; and Davis, Burtron H., to International Coal Refining Company. Corrosion inhibition when distilling coal liquids by adding cresols or phenols. 4,511,453, Cl. 208-8.0LE.

Baumert, Kenneth L.; Sagues, Alberto A.; and Davis, Burtron H., to International Coal Refining Company. Minimizing corrosion in coal liquid distillation. 4,511,460, Cl. 208-348.000.

Bausch, Max: *See—*
Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, 4,511,214, Cl. 350-632.000.

Baxter, Kenneth D.: *See—*
Espiritu Santo, Eugenio; Baxter, Kenneth D.; and Bluem, Gary R., 4,510,814, Cl. 73-862.570.

Baxter Travenol Laboratories, Inc.: *See—*
Fowles, Thomas A.; Slater, Glenn L.; and Winchell, David A., 4,511,529, Cl. 264-515.000.

Bayer Aktiengesellschaft: *See—*
Krimm, Heinrich; Buysch, Hans-Josef; Lange, Peter M.; and Klipper, Reinhold, 4,511,722, Cl. 548-231.000.
Kruger, Bernd-Wieland; and Behrenz, Wolfgang, 4,511,562, Cl. 514-112.000.
Lindner, Christian; Braese, Hans-Eberhard; Ott, Karl-Heinz; and Uerdingen, Walter, 4,511,695, Cl. 525-80.000.
Niederdellmann, Georg; and Grigat, Ernst, 4,511,680, Cl. 521-49.500.
Schauf, Dieter; Protoschill, Klaus; Oberbach, Karl; and Depcik, Hans-Werner, 4,511,184, Cl. 301-63.0PW.

Bayerische Motoren Werke AG: *See—*
Klaus, Gersmann, 4,511,180, Cl. 297-408.000.
Schweiger, Erwin; Starmuehler, Erwin; and Temmesfeld, Axel, 4,510,893, Cl. 123-41.020.

BBC Brown, Boveri & Company, Limited: *See—*
Baier, Manfred; and Tobler, Andreas, 4,511,873, Cl. 336-90.000.
Bulaty, Paul; De Mesmaeker, Ivan; Franc, Zdenek; and Salerno, Giuseppe, 4,511,839, Cl. 324-127.000.
Korner, Gerhard; Plettner, Horst; Viering, Walter; and Rees, Volker, 4,511,775, Cl. 200-148.00A.

BBC Brown Boveri, Inc.: *See—*
Hochstrasser, Otto; Heine, Hans G.; and Buechi, Heinz, 4,511,125, Cl. 266-135.000.

Beasley, Gary; and Spector, George. Microwave clothes dryer. 4,510,697, Cl. 34-1.000.

Beaty, Larry E.; and Lanham, Steven M., to American Monitor Corporation. Reagent composition and assay for the determination of γ-glutamyltransferase activity. 4,511,651, Cl. 435-15.000.

Beckman Instruments, Inc.: *See—*
Barter, LeRoy D., 4,511,195, Cl. 315-308.000.
Nielsen, Steven T.; and Lee, Carleton C., 4,511,349, Cl. 494-16.000.

Behar, Meyer: *See—*
Keren, Yehuda; Carmon, Shmuel; Behar, Meyer; and Axelrod, Shimshon, 4,511,543, Cl. 423-167.000.

Behrenz, Wolfgang: *See—*
Kruger, Bernd-Wieland; and Behrenz, Wolfgang, 4,511,562, Cl. 514-112.000.

Bell, Robert K., to General Electric Company. VCO Having field effect and bipolar transistors in parallel. 4,511,861, Cl. 331-108.00R.

Bellar, Robert J.; Golden, William G.; Saperstein, David D.; and Vats, Ashok, to International Business Machines. Method and apparatus for simultaneously recording multiple FT-IR signals. 4,511,986, Cl. 364-576.000.

Beloit Corporation: *See—*
Berry, Kenneth W., 4,510,859, Cl. 100-35.000.
Ely, Donald A., 4,510,698, Cl. 34-117.000.

Belokin, Paul, Jr. Electrical connector having handle-mounted bifurcated resilient pin-engaging electrical plate. 4,511,200, Cl. 339-50.00R.

Ben Clements & Sons, Inc.: *See—*
Furutsu, Akira, 4,511,073, Cl. 227-67.000.

Bendix Corporation, The: *See—*
Gaiser, Robert F., 4,510,752, Cl. 60-562.000.

Benedyk, Joseph C.: *See—*
Amos, Homer C.; Benedyk, Joseph C.; Scheie, Carl E.; and McGlove, William R., 4,511,148, Cl. 273-326.000.

Benincasa, Timothy C.: *See—*
Snyder, Daniel S.; and Benincasa, Timothy C., 4,511,869, Cl. 334-20.000.

Benjamin, James A.; and Schutten, Herman P., to Eaton Corporation. Piezoelectric generator driven by a combustion engine. 4,511,818, Cl. 310-338.000.

Benkendorfer, Kyle B.: *See—*
Wang, Chun S.; Benkendorfer, Kyle B.; and Burba, John L., III, 4,511,710, Cl. 528-485.000.

Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, to Egyt Gyogyszervegyeszeti Gyar. 2-Hydroxymethyl-quinoxaline-1,4-dioxide derivatives, a process for preparing same and compositions containing same. 4,511,717, Cl. 544-353.000.

Benmussa, Simon. Self heating receptacle. 4,510,919, Cl. 126-263.000.

Bennett, John T.: *See—*
Bennett, John T., Jr.; and Goodman, Jack E., 4,511,534, Cl. 422-100.000.

Bennett, John T., Jr.; and Goodman, Jack E., to Bennett, John T. Liquid transfer device. 4,511,534, Cl. 422-100.000.

Benning, Jack G., Jr.: *See—*
Maltby, Frederick L.; Loewenstern, Kenneth M.; and Benning, Jack G., Jr., 4,511,948, Cl. 361-280.000.

Berchem, Rutger, to Berchem & Schaberg GmbH. Cutting-tooth anchor for suction dredge and method of making same. 4,510,706, Cl. 37-64.000.

Berchem & Schaberg GmbH: *See—*
Berchem, Rutger, 4,510,706, Cl. 37-64.000.

Bergamini, Paolo: *See—*
Bastida, Ezio M.; and Bergamini, Paolo, 4,511,860, Cl. 331-96.000.

Bergman, Robert G.; Janowicz, Andrew H.; and Periana-Pillai, Roy A., to United States of America, Energy. Process for functionalizing alkanes. 4,511,745, Cl. 570-241.000.

Bergman, Roger W., to Dow Chemical Company, The. 1,3-Oxathiolane-2-thiones as sulfide mineral collectors in froth flotation. 4,511,464, Cl. 209-166.000.

Beringer Co., Inc.: *See—*
Trott, Delano B., 4,511,472, Cl. 210-340.000.

Berndt, Dieter R., to TRP Energy Sensors, Inc. Temperature-responsive pacifier assembly. 4,511,265, Cl. 374-151.000.

Berner, Godwin, to Ciba-Geigy Corporation. Process for the electron beam curing of coating compositions. 4,511,596, Cl. 427-44.000.

Bernhardt, Terry L., to U.S. Currency Protection Corp. Dual signal electromagnetic article theft detector. 4,511,888, Cl. 340-571.000.

Bernuchon, Marc; Pompei, Michel; and Gregoire, Daniel, to Hutchinson. Hydraulic membrane shock absorbers. 4,511,126, Cl. 267-140.100.

Berry, Kenneth W., to Beloit Corporation. Supercalender NIP relieving arrangement. 4,510,859, Cl. 100-35.000.

BERTIN & Cie: *See—*
Boy-Marcotte, Jean-Louis; Dahan, Gilbert M. I.; Dancette, Michel; Le Nabour, Marcel P.; Pellerin, Jean-Francois G. A.; Rivallin, Jose ; and Jannot, Marcel A. J., 4,511,805, Cl. 290-2.000.

Bethlehem Steel Corporation: *See—*
Tatham, Edward J.; Kravits, Richard; Clymer, John C.; and Hoffman, Carvel D., 4,511,801, Cl. 250-394.000.

Betoliere, Jean-Pierre: *See—*
Romier, Roger; and Betoliere, Jean-Pierre, 4,511,776, Cl. 200-148.00A.

Betts, Alan J., to International Business Machines. Magnetizable recording disk and disk file employing servo sector head positioning. 4,511,938, Cl. 360-77.000.

Betz Laboratories, Inc.: *See—*
Reichgott, David W.; and Leary, Michael J., 4,511,676, Cl. 521-26.000.

BeVier, William E., to Union Carbide Corporation. Process and apparatus for direct heat transfer temperature swing regeneration. 4,511,375, Cl. 55-28.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method for producing glass fiber. 4,511,383, Cl. 65-6.000.

Bierman, Laurence W.; Polinsky, Samuel M.; Hempel, David A.; and Humberger, Roger B., to J. R. Simplot Company. Process for the recovery of cadmium and other metals from solution. 4,511,541, Cl. 423-100.000.

Biftu, Tesfaye: *See—*
Chang, Michael N.; and Biftu, Tesfaye, 4,511,724, Cl. 548-452.000.

Biller, Sven-Olov, to KOCKUMS Industri AB. Self-centering feeding device. 4,510,981, Cl. 144-246.00F.

Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , to Institut Francais du Petrole. Heavy oil process with hydrodemetallation, hydrovisbreaking and hydrodesulfuration. 4,511,458, Cl. 208-59.000.

Bindl, Max; and Reusch, Heinz. Liquid boiler, particularly utility-water boiler. 4,510,891, Cl. 122-32.000.

Binz, Reiner; and Pointner, Norbert, to Siemens Aktiengesellschaft. Time slot multiplex system for the division multiplexing of digital communication signals. 4,512,014, Cl. 370-84.000.

Bio-Rad Laboratories, Inc.: *See*—
Baran, Madelyn M.; and Bleile, Dennis M., 4,511,662, Cl. 436-513.000.

Biosonics, Inc.: *See*—
Brenman, Henry S.; Katz, Philip; and Singer, Mark, 4,510,939, Cl. 128-639.000.

Bird, Graham J.: *See*—
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; and Farquharson, Graeme J., 4,511,391, Cl. 71-88.000.

Bird, Peter H.: *See*—
Mao, Raymond L. V.; and Bird, Peter H., 4,511,667, Cl. 502-64.000.

Biren, Marvin A., to Charles Stark Draper Laboratory, Inc., The. Inspection periscope. 4,511,222, Cl. 350-441.000.

Birnbaum, David H. Skate wheel cover. 4,511,182, Cl. 301-37.00P.

Bittler, Dieter: *See*—
Laurent, Henry; Nickisch, Klaus; Bittler, Dieter; Wiechert, Rudolf; and Losert, Wolfgang, 4,511,565, Cl. 514-173.000.

Bixby, James A., to Eastman Kodak Company. Slow motion using longitudinal recording and forward/reverse tape transportation. 4,511,931, Cl. 360-10.300.

Bjorkholm, Paul J., to American Science and Engineering, Inc. Dual energy imaging. 4,511,799, Cl. 250-367.000.

Blaak, Cornelis; and van Mondfrans, Gerardus H., to Stork Brabant B.V. System adapted to distribute a viscous substance. 4,510,863, Cl. 101-119.000.

Blanshine, Allison W.: *See*—
Campbell, Willis R.; and Blanshine, Allison W., 4,510,861, Cl. 100-88.000.

Blaskowski, Henry J., to Combustion Engineering, Inc. Method for preventing plugging of a slag outlet in a substoichiometric slagging combustor. 4,511,371, Cl. 48-197.00R.

Blaum, Franz, to Gebruder Kommerling Kunststoffwerke GmbH. Arrangement for stamping outer surface of shaped bar material. 4,511,323, Cl. 425-385.000.

Blechman, Abraham: *See*—
Smiley, Harry; and Blechman, Abraham, 4,511,330, Cl. 433-18.000.

Bleile, Dennis M.: *See*—
Baran, Madelyn M.; and Bleile, Dennis M., 4,511,662, Cl. 436-513.000.

Bloch, Igal: *See*—
Schour, Avi; and Bloch, Igal, 4,510,701, Cl. 36-68.000.

Blounts, Joseph: *See*—
Krause, Glenn C.; and Blounts, Joseph, 4,511,063, Cl. 222-75.000.

Bloxham, Roger W. Floating dry dock. 4,510,877, Cl. 114-45.000.

Bluem, Gary R.: *See*—
Espiritu Santo, Eugenio; Baxter, Kenneth D.; and Bluem, Gary R., 4,510,814, Cl. 73-862.570.

Board of Regents, The University of Texas System: *See*—
Luduena, Richard F., 4,511,501, Cl. 260-112.00R.

Bodi, Tibor: *See*—
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.

Bodig, Bernd; Hohne, Gerd; and Schmied, Helmut, to Robert Bosch GmbH. Monitoring circuit for resetting malfunctioning electronic components, such as microprocessors. 4,512,019, Cl. 371-12.000.

Boehm, Heinrich: *See*—
Rieber, Norbert; Boehm, Heinrich; and Adolphi, Heinrich, 4,511,723, Cl. 548-376.000.

Boeing Company, The: *See*—
Kasper, James R.; and Opsahl, Allan W., 4,510,714, Cl. 49-249.000.

Boesig, Werner; and Pritzwald-Stegmann, Bernd, to Meggle Milchindustrie GmbH & Co. KG. Coating process and agent for carrying out the process. 4,511,553, Cl. 424-35.000.

Bogaerts, Leo C.; and Murphy, John W., to Ammco Tools, Inc. Lathe cross feed assembly. 4,510,828, Cl. 82-4.00A.

Boger, Manfred; Ehrenfreund, Josef; Martin, Pierre; and Steiner, Eginhard, to Ciba Geigy Corporation. N-(2-Pyridyloxyphenyl)-N'-benzoyl ureas, pesticidal compositions containing same and pesticidal methods of use. 4,511,571, Cl. 514-351.000.

Boget, Paul J.: *See*—
Phelps, Frankie E.; Boget, Paul J.; and Troup, Robert L., 4,511,666, Cl. 501-98.000.

Bogin, Roger M.: *See*—
Serev, Peter G.; and Bogin, Roger M., 4,511,884, Cl. 340-347.0SY.

Bognar, Rezso: *See*—
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.

Bohmer, Christian, to Triumph-Adler A.G. fur Buro- und Informationstechnik. Apparatus for lifting print and correction ribbons in typewriters or like machines. 4,511,270, Cl. 400-214.000.

Bolam, Charles W.: *See*—
Conley, Richard W.; Tremblay, Richard P.; Bolam, Charles W.; Logan, James E.; and Krueger, David A., 4,511,120, Cl. 251-288.000.

Boland, Aloysius T. M.: *See*—
Span, Francis J.; Boland, Aloysius T. M.; and van Laarhoven, Albertus J. A. J., 4,511,275, Cl. 403-33.000.

Bonds, James V.: *See*—
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Small, Edward A., 4,511,908, Cl. 346-206.000.
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Aldred, Alan C. G., 4,511,689, Cl. 524-484.000.
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Brown, Dennis N. Variably adjustable shoe inserts. 4,510,700, Cl. 36-44.000.
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Brunson, David T., to Dresser Industries, Inc. Rotary cutter drill bit with permanent snap ring cutter retention. 4,511,008, Cl. 175-369.000.
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Amos, Homer C.; Benedyk, Joseph C.; Scheie, Carl E.; and McGlove, William R., 4,511,148, Cl. 273-326.000.
Bucek, David C. Decorative fly-swatting device. 4,510,711, Cl. 43-137.000.
Bucha, Robert M.; Dzermejko, Albert J.; and Stuart, James G., to Raymond Kaiser Engineers Inc. Gas temperature monitoring device. 4,511,264, Cl. 374-135.000.
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Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay, Aranka; Vigh, Zoltan; and Sokorai, Agnes, to EGYT Gyogyszervegyeszeti Gyar. Bicyclo(2.2.1)heptane oximes. 4,511,737, Cl. 564-257.000.
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Bunnelle, Philip R., to FMC Corporation. Circuitry for operating an extendible boom and a service line. 4,510,971, Cl. 137-615.000.
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Burroughs Corporation: *See—*
Peterson, LuVerne R., 4,511,995, Cl. 365-8.000.
Phelps, Andrew E.; and Ta-Ming Wu, Allen, 4,512,018, Cl. 370-112.000.
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Bair, Kenneth W., 4,511,582, Cl. 514-654.000.
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Butler, Barry L., to United States of America, Energy. Lightweight diaphragm mirror module system for solar collectors. 4,511,215, Cl. 350-295.000.
Butter, Johannes A. M.: *See—*
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Buysch, Hans-Josef: *See—*
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Byatt, Dennis W. G.; and Walker, John W., to Marconi Co. Ltd., The; and Occidental Refineries Ltd. Distance measuring. 4,510,804, Cl. 73-290.00V.
Byers, John E. Sharpener device with guide means. 4,510,824, Cl. 76-86.000.
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Reichman, Benjamin; and Byvik, Charles E., 4,511,838, Cl. 324-71.500.
C & A Products, Inc.: *See—*
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C-Cor Labs, Inc.: *See—*
Schrock, Clifford B., 4,512,033, Cl. 455-2.000.
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C. Reichert Optische Werke, AG: *See—*
Sitte, Helmuth; Cooper, Terry W.; and Kleber, Heinrich, 4,511,224, Cl. 350-523.000.
Cadillac, Joseph A. Mount for a power rescue tool. 4,511,109, Cl. 248-310.000.
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Caillat, Pierre, to Thomson-CSF. Focussing solenoid, application thereof and a process for manufacturing same. 4,511,870, Cl. 335-213.000.
Caldwell, David; and Agrawal, Mahendra P., to Texas Instruments Incorporated. Method of entering and performing operations on complex numbers on calculators. 4,511,987, Cl. 364-715.000.
Caldwell, Marion J. Low-lactose, low-galactose imitation milk product. 4,511,590, Cl. 426-580.000.
California Linear Circuits, Inc.: *See—*
Yakura, John, 4,510,672, Cl. 29-574.000.

Camco, Incorporated: *See*—
Pringle, Ronald E., 4,510,994, Cl. 166-156.000.
Campa, Eddie L. Apparatus for disassembling a universal joint. 4,510,661, Cl. 29-259.000.
Campbell, Hallis D.; and Burrough, Donald E., to Gehl Company. Rotary crop baler. 4,510,741, Cl. 56-341.000.
Campbell, Willis R.; and Blanshine, Allison W., to Sperry Corporation. Continuous roll baling machine. 4,510,861, Cl. 100-88.000.
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Tench, Orren K., Jr., 4,510,758, Cl. 62-45.000.
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Kanbe, Junichiro; and Hosono, Nagao, 4,511,239, Cl. 355-3.0DD.
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,511,240, Cl. 355-14.00R.
Takahashi, Tohru; Tajima, Hatsuo; Shigenobu, Michio; and Washiyama, Shigemichi, 4,511,778, Cl. 219-10.55A.
Ushiro, Tatsuzo, 4,511,932, Cl. 360-33.100.
Yamada, Yasuaki; Ozawa, Toshiaki; and Kondo, Hiroatsu, 4,511,830, Cl. 318-318.000.
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Cardiac Recorders Limited: *See*—
Spencer, Joseph, 4,510,935, Cl. 128-419.00D.
Carl Freudenberg, Firma: *See*—
Ohta, Nobuo, 4,511,615, Cl. 428-198.000.
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Leitz, Helmut, 4,510,695, Cl. 33-293.000.
Carlson, Franklin J. Removable protective skirt for a tank. 4,511,055, Cl. 220-69.000.
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Keren, Yehuda; Carmon, Shmuel; Behar, Meyer; and Axelrod, Shimshon, 4,511,543, Cl. 423-167.000.
Carpanzano, Carmine, to Air Structures International. Cable tie for an air supported structure cable net. 4,511,279, Cl. 403-266.000.
Carr, Arthur E.: *See*—
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Carrier Corporation: *See*—
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Carrington, Harry: *See*—
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Carsonite International Corporation: *See*—
Schmanski, Donald W., 4,511,281, Cl. 404-10.000.
Cartwright, Neil B. Photographic processing apparatus including a rocking platform and a rolling developing tank. 4,511,230, Cl. 354-299.000.
Caruso, Richard. Hair curler. 4,510,953, Cl. 132-40.000.
Casey, Gary L., to Allied Corporation. Vacuum operated idle speed control device. 4,510,904, Cl. 123-339.000.
Cassonnet, Jean-Claude M.; and Lamarche nee Lechevin, Marie-Odile, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Apparatus for controlling microinstructions stored in a data processing unit memory. 4,511,983, Cl. 364-200.000.
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Ponzellini, Giulio, 4,511,108, Cl. 248-188.700.
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Nozue, Ikutoshi; Fujii, Susumu; and Hanada, Masayuki, 4,511,668, Cl. 502-84.000.
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Lindsey, James C., 4,511,060, Cl. 221-115.000.
Manzer, Marvin R., 4,511,059, Cl. 221-115.000.
Cave, Ben R.: *See*—
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Cawley, William E., to United States of America, Energy. Centrally activated pipe snubbing system. 4,511,114, Cl. 248-550.000.
Caye, Paul D.; Jamain, Patrice C.; and Weisser, Bernard G., to Societe Nationale Industrielle Aerospatiale. Kinetic wheel arrangement incorporating magnetic bearings, particularly for storing energy. 4,511,190, Cl. 308-10.000.
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Century International Corp.: *See*—
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 4,510,642, Cl. 15-231.000.
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Cetrelli, Renato: *See*—
Rauser, Jan A. I.; and Cetrelli, Renato, 4,511,078, Cl. 229-17.00R.
Chai, Bruce H.; Bailey, Dana S.; Vetelino, John F.; Lee, Donald L.; and Andle, Jeffrey C., to Allied Corporation. Temperature compensated orientation of berlinite for surface acoustic wave devices. 4,511,817, Cl. 310-313.00A.
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Woodruff, Roger D., 4,511,304, Cl. 414-546.000.
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Roccaforte, Harry I., 4,511,043, Cl. 206-620.000.
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Nemeth, Joseph; and Kowalski, Charles I., 4,511,524, Cl. 264-61.000.
Chang, Ike Y., to Du Pont de Nemours, E. I., and Company. Reinforced composites. 4,511,690, Cl. 524-606.000.
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Chapelain, Jean: *See*—
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Chapman, Colin M.: *See*—
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Charavit, Jean-Claude; and Vandroux, Michele, to Thomson-CSF. Frequency prepositioning for an indirect frequency synthesizer. 4,511,858, Cl. 331-10.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Biren, Marvin A., 4,511,222, Cl. 350-441.000.
Bowditch, Philip N., 4,510,626, Cl. 2-115.000.
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Bartuska, Victor J.; Lewis, David H.; Lewis, Robin B.; and Dalbow, David G., 4,511,841, Cl. 324-321.000.
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Jennings, Charles E.; Barrington, Claud C.; Chen, Lien-Yan; Hopkins, Bob C.; McIntyre, John N.; and Regitz, Alfred P., 4,510,960, Cl. 137-75.000.
Chen, Ted. Looseleaf binder assembly. 4,511,274, Cl. 402-21.000.
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Chevron Research Company: *See*—
Connell, David E.; and Chapman, Colin M., 4,511,544, Cl. 423-224.000.
Magee, Philip S., 4,511,735, Cl. 514-601.000.
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Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,511,133, Cl. 271-3.100.
Chicago Bridge & Iron Company: *See*—
Ludwigsen, John S., 4,511,115, Cl. 248-562.000.
Chicago Cutlery Consumer Products, Inc.: *See*—
Tolentino, John, 4,511,040, Cl. 206-553.000.
Chiu, Herman S.: *See*—
Nicholson, Myron D.; and Chiu, Herman S., 4,511,613, Cl. 428-36.000.
Chrysler Corporation: *See*—
Ruehle, Edward A., 4,511,112, Cl. 248-544.000.
Chu, Richard, to International Business Machines Corporation. Method of assembling magnetic pins into printed circuit boards. 4,510,685, Cl. 29-837.000.
Ciba-Geigy Corporation: *See*—
Berner, Godwin, 4,511,596, Cl. 427-44.000.
Boger, Manfred; Ehrenfreund, Josef; Martin, Pierre; and Steiner, Eginhard, 4,511,571, Cl. 514-351.000.

Drabek, Jozef, 4,511,578, Cl. 514-469.000.
Gallay, Jean J.; and Schweizer, Ernst, 4,511,567, Cl. 514-253.000.
Renfroe, Harris B., 4,511,573, Cl. 514-332.000.

Cillario, Lorenzo, to Ferrero S.p.A. Wrapping of spherical objects having small protrusions. 4,510,735, Cl. 53-464.000.

Cincinnati Incorporated: *See—*
Graf, Raymond J., 4,511,976, Cl. 364-474.000.

CISE Centro Informazioni Studi Esperienze S.p.A.: *See—*
Bastida, Ezio M.; and Bergamini, Paolo, 4,511,860, Cl. 331-96.000.

Clarion Co., Ltd.: *See—*
Hayashi, Hideki; Ito, Yukio; Akiike, Yukio; and Kinoshita, Shigeo, 4,511,103, Cl. 242-186.000.
Kishida, Toshio, 4,511,854, Cl. 330-279.000.
Yamaguchi, Katsumi; Takai, Kazuki; and Okada, Hitoshi, 4,511,940, Cl. 360-96.600.

Claywell, Carol S.: *See—*
Outlaw, Benjamin T.; Oude Alink, Bernardus A.; Kelley, Joe A.; and Claywell, Carol S., 4,511,480, Cl. 252-8.55E.

Cleary, James D.: *See—*
Scebold, Robert A.; and Cleary, James D., 4,511,331, Cl. 433-17.000.

Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating oleic acid from linoleic acid. 4,511,514, Cl. 260-419.000.

Clorox Company, The: *See—*
Stanislowski, Anna G.; and Wiersema, Richard J., 4,511,490, Cl. 252-174.120.

Clymer, John C.: *See—*
Tatham, Edward J.; Kravits, Richard; Clymer, John C.; and Hoffman, Carvel D., 4,511,801, Cl. 250-394.000.

Coal Industry Patents Limited: *See—*
Robinson, Joseph G.; and Riemer, Pierce W. F., 4,511,749, Cl. 585-469.000.

Coburn Optical Industries, Inc.: *See—*
Sherwin, Dewayne J., 4,510,717, Cl. 51-58.000.

Cocain, Harry W.: *See—*
Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., 4,511,699, Cl. 525-205.000.
Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., 4,511,700, Cl. 525-283.000.

Coderre, James C.: *See—*
Tung, Chi F.; and Coderre, James C., 4,511,210, Cl. 350-105.000.

Cody, Michael J.: *See—*
Marcus, Konrad H.; and Cody, Michael J., 4,511,954, Cl. 362-275.000.

Coen Company, Inc.: *See—*
Voorheis, Temple S., 4,511,325, Cl. 431-10.000.

Cohen, Joel S.: *See—*
Druffel, James B.; and Cohen, Joel S., 4,511,113, Cl. 248-546.000.

Colaruotolo, Joseph F.; Irvine, Robert L.; Ketchum, Lloyd H., Jr.; and Ying, Wei-chi, to Occidental Chemical Corporation. Treatment of obnoxious chemical wastes. 4,511,657, Cl. 435-253.000.

Collot, Jean, to Association pour la Recherche et le Developpemente des Methods et Processus Industrieles (Armines). Method and apparatus for casting metal alloys in the thixotropic state. 4,510,987, Cl. 164-71.100.

Collumeau, Yoland, to Thomson CSF. Cases with flat terminal lugs for medium power semi-conductor components and a process for manufacturing same. 4,510,677, Cl. 29-588.000.

Colomb, Denis G., to Sonics Research Corporation. System and method for high quality image reproduction with grayscale image print while store capability. 4,511,928, Cl. 358-280.000.

Columbia Gas Systems Service Corp.: *See—*
Dukat, Alexander J., 4,511,444, Cl. 204-148.000.

Combustion Engineering, Inc.: *See—*
Blaskowski, Henry J., 4,511,371, Cl. 48-197.00R.
Wincze, Steven P.; and Rickard, Earl K., 4,510,892, Cl. 122-510.000.

Commereuc, Dominique: *See—*
Seite, Claude; Commereuc, Dominique; and Chauvin, Yves, 4,511,743, Cl. 568-814.000.

Commissariat a l'Energie Atomique: *See—*
Barraud, Andre ; and Leloup, Jean, 4,511,604, Cl. 427-402.000.

Compagnie Industrielle des Telecommunications Cita-Alcatel: *See—*
Morel, Jacques; and Tallon, Jacques, 4,510,792, Cl. 73-40.700.
Morel, Jacques; and Tallon, Jacques, 4,510,792, Cl. 73-40.700.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Cassonnet, Jean-Claude M.; and Lamarche nee Lechevin, Marie-Odile, 4,511,983, Cl. 364-200.000.

Componenti Grafici S.r.l.: *See—*
Molinatto, Bruno, 4,510,865, Cl. 101-153.000.

Computer & Communications Technology Corp.: *See—*
Valstyn, Erich P., 4,511,942, Cl. 360-126.000.

Comte, Philippe: *See—*
Play, Dominique; Bonneau, Marc; Merieux, Charles; Herbage, Daniel; and Comte, Philippe, 4,511,653, Cl. 435-69.000.

Conley, Richard W.; Tremblay, Richard P.; Bolam, Charles W.; Logan, James E.; and Krueger, David A., to Kerotest Manufacturing Corp. Plastic service valve. 4,511,120, Cl. 251-288.000.

Connell, David E.; and Chapman, Colin M., to Chevron Research Company. Hydrogen sulfide removal process. 4,511,544, Cl. 423-224.000.

Connor, John T.; Halsted, Charles P.; and Ravn, Jacob, to West Company, The. Seal force monitor apparatus, system, and method for in-process determination of integrity of sealed containers. 4,511,044, Cl. 209-522.000.

Consolidated Natural Gas Service Company, Inc.: *See—*
Hise, Ralph E.; and Swenson, Paul F., 4,510,756, Cl. 60-659.000.

Consortium fur Elektrochemische: *See—*
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, 4,511,728, Cl. 556-419.000.

Constantinescu, Dan, to Constantinescu, Dan. Method and apparatus for treating a living body. 4,510,925, Cl. 128-1.300.

Container Corporation of America: *See—*
Lopez, Louis, 4,511,079, Cl. 229-34.00R.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Sohnemann, Richard, 4,511,697, Cl. 525-139.000.

Control Data Corporation: *See—*
Webb, David M.; and Lane, Thomas A., 4,511,994, Cl. 364-900.000.

Cook, Thomas E., to Durametallic Corporation. One-piece mounting ring for seal insert. 4,511,151, Cl. 277-92.000.

Cooper, Terry W.: *See—*
Sitte, Helmuth; Cooper, Terry W.; and Kleber, Heinrich, 4,511,224, Cl. 350-523.000.

Cordis Corporation: *See—*
Barreras, Francisco J., 4,510,945, Cl. 128-696.000.

Cornils, Boy; Weber, Jurgen; Tihanyi, Bela; and DeWin, Werner, to Ruhrchemie Aktiengesellschaft; and M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Solar-selective layers and method for producing same. 4,511,439, Cl. 204-37.100.

Corning Glass Works: *See—*
Taylor, Mark P., 4,511,663, Cl. 501-4.000.
Thompson, David A., 4,511,515, Cl. 260-429.200.

Corsette, Douglas F. Manually actuated pump having pliant piston. 4,511,065, Cl. 222-153.000.

Cotteret, Jean: *See—*
Monnais, Christian; Cotteret, Jean; and Bugaut, Andree , 4,511,360, Cl. 8-405.000.

Cotton, Curran D., to Maytag Company, The. Control system for a combined appliance. 4,510,778, Cl. 68-12.00R.

Couch, Robert P., to United Technologies Corporation. Afterburner flameholder ion probe. 4,510,794, Cl. 73-116.000.

Coursen, David L., to Du Pont de Nemours, E. I., and Company. Apparatus and method for transferring a Bingham solid through a long conduit. 4,510,958, Cl. 137-13.000.

Coury, Glenn E. Method of separating a noncondensable gas from a condensable vapor. 4,511,376, Cl. 55-36.000.

Cousins III, Matthew E., to United States of America, Army. Remote sensor system with bi-directional monitoring and control of operation. 4,511,896, Cl. 340-870.250.

Cousse, Henri: *See—*
Pitet, Guy; Cousse, Henri; and Mouzin, Gilbert, 4,511,566, Cl. 514-242.000.

Cowan, Edwin J. Infrared water heater. 4,510,890, Cl. 122-17.000.

Cox, James P. Deodorant-dispensing products and dispensing process. 4,511,552, Cl. 424-14.000.

Crane, Joseph J., to Crossfield Data Systems, Inc. Scanning system wherein the scanning beam rotates and translates. 4,511,205, Cl. 350-6.100.

Craver, Joseph N.; and Horner, Jerome T., to Union Carbide Corporation. Multilayer trash bag film. 4,511,609, Cl. 428-35.000.

Creagh, Linda T., to Xerox Corporation. Electromechanical transducer protecting. 4,511,598, Cl. 427-58.000.

Creedon, Richard L., to GA Technologies Inc. Bow action valve. 4,510,972, Cl. 137-625.280.

Cromeens, Jeff Y., to Industrial Woodworking Machine Co. Inc. Apparatus for guiding a powered circular saw along an elliptical cutting path. 4,510,835, Cl. 83-471.200.

Crossfield Data Systems, Inc.: *See—*
Crane, Joseph J., 4,511,205, Cl. 350-6.100.

Crossland, William A.; Ross, Peter W.; and Ayliffe, Peter J., to International Standard Electric Corporation. Scanning liquid crystal display cells. 4,511,926, Cl. 358-236.000.

Crossman, William W., Jr.: *See—*
Ferguson, Robert W.; Andors, Derik K.; and Crossman, William W., Jr., 4,510,918, Cl. 126-79.000.

Crowley, John E., to Houdaille Industries, Inc. Apparatus for applying a force. 4,510,977, Cl. 140-123.000.

Crozer-Chester Medical Center: *See—*
Lewbart, Marvin L., 4,511,511, Cl. 260-239.55D.

Crussard, Charles; Maurel, Pierre; and Bonhomme, Jean, to Pechiney Ugine Kuhlmann. Exploitation of copper, nickel and cobalt by treating manganiferous matrix oxidized ores. 4,511,540, Cl. 423-26.000.

Curinier, Jean; and Pinet, Philippe, to Etablissements les Fils d'Auguste Chomarat & Cie. Rotating creel for a nonwoven fabric machine. 4,510,657, Cl. 28-100.000.

Curran, Richard F. Combination backpack frame and cot. 4,511,071, Cl. 224-156.000.

Curtis, Thad C., Sr. Water exchanger and method for evaporative cooler. 4,510,766, Cl. 62-171.000.

Cusack, Robert F., to GTE Valeron Corporation. Probe with stylus adjustment. 4,510,693, Cl. 33-174.00L.

D.V.T. Buro fur Anwendung Deutscher Verfahrenstechnik H. Morsy: *See—*
el Din Nasser, Gamal, 4,511,436, Cl. 202-174.000.

Dahan, Gilbert M. I.: *See—*
Boy-Marcotte, Jean-Louis; Dahan, Gilbert M. I.; Dancette, Michel; Le Nabour, Marcel P.; Pellerin, Jean-Francois G. A.; Rivallin, Jose ; and Jannot, Marcel A. J., 4,511,805, Cl. 290-2.000.

Daicel Chemical Industries, Ltd.: *See—*
Nakanishi, Michio; and Nakashima, Naoki, 4,511,687, Cl. 524-270.000.
Yuki, Heimei; and Okamoto, Yoshio, 4,511,475, Cl. 210-635.000.
Daihatsu Motor Company Limited: *See—*
Yoshida, Ryo, 4,510,747, Cl. 60-343.000.
Daikin Kogyo Co., Ltd.: *See—*
Hisamoto, Iwao; Maeda, Chiaki; and Hirai, Masaru, 4,511,733, Cl. 560-253.000.
Daimler-Benz Aktiengesellschaft: *See—*
Ehrlich, Willibald; Jooss, Hans; and Hornung, Rainer, 4,511,606, Cl. 427-386.000.
Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, 4,511,214, Cl. 350-632.000.
Rauneker, Josef, 4,511,012, Cl. 180-65.200.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Sakamoto, Takashi, 4,511,989, Cl. 364-723.000.
Dalbow, David G.: *See—*
Bartuska, Victor J.; Lewis, David H.; Lewis, Robin B.; and Dalbow, David G., 4,511,841, Cl. 324-321.000.
Daloisio, Pasquale C., to Plastech International, Inc. Tilt truck. 4,511,154, Cl. 280-47.260.
Damin, Bernard: *See—*
Denis, Jacques; Sillion, Bernard; Damin, Bernard; and Leger, Robert, 4,511,369, Cl. 44-62.000.
Dancette, Michel: *See—*
Boy-Marcotte, Jean-Louis; Dahan, Gilbert M. I.; Dancette, Michel; Le Nabour, Marcel P.; Pellerin, Jean-Francois G. A.; Rivallin, Jose ; and Jannot, Marcel A. J., 4,511,805, Cl. 290-2.000.
Dancsik, Joseph J. Rotary table. 4,511,128, Cl. 269-61.000.
Dandy, Donny C.: *See—*
Varga, Sandor I.; Dougherty, Richard L.; Dandy, Donny C.; and Thomas, Willie J., 4,511,158, Cl. 280-292.000.
Dauphinee, Thomas M.; and Kirby, Christopher G. M., to Canadian Patents & Development Limited. Salinometer. 4,511,845, Cl. 324-444.000.
Davidson, Douglass S.: *See—*
Frommer, Jane E.; Elsenbaumer, Ronald L.; and Davidson, Douglass S., 4,511,494, Cl. 252-518.000.
Davis, Burtron H.: *See—*
Baumert, Kenneth L.; Sagues, Alberto A.; and Davis, Burtron H., 4,511,453, Cl. 208-8.0LE.
Baumert, Kenneth L.; Sagues, Alberto A.; and Davis, Burtron H., 4,511,460, Cl. 208-348.000.
Davis, Darrell E.: *See—*
Victor, Alan M.; and Davis, Darrell E., 4,512,035, Cl. 455-165.000.
Davis, James A.: *See—*
Kang, Jung W.; and Davis, James A., 4,511,628, Cl. 428-457.000.
Dayco Corporation: *See—*
Standley, Paul M., 4,511,521, Cl. 264-24.000.
DCI, Inc.: *See—*
Saucier, David O., 4,511,255, Cl. 366-138.000.
De La Rue Systems Limited: *See—*
Wood, John; and Dominey, Raymond J., 4,511,795, Cl. 235-379.000.
DeAngelis, Barbara; Jacobsen, Howard; and Jacobsen, Edwin. Shield assembly for an area of an animal to be protected. 4,510,888, Cl. 119-143.000.
Deasy, Richard E., to Rockwell International Corporation. Current enhanced monopole radiation type antenna apparatus. 4,511,900, Cl. 343-845.000.
Deborde, Albert H.; and Grandvallet, Gilles, to Saurer Diederichs (Societe Anonyme). Flow distributor for fluid circuit and its application to shuttleless looms with pneumatic insertion of the weft. 4,510,976, Cl. 139-435.000.
deCelle, Charles W., to Franco, Ralph A.; and Franco, Lila K., part interest to each. Vaporizing fuel system for internal combustion engine. 4,510,913, Cl. 123-557.000.
Dechant, Joseph C.: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 4,510,642, Cl. 15-231.000.
Decoene, Frans J. G. C.; Strubbe, Gilbert J. I.; and Todd, Robert R., to Sperry Corporation. Infeed mechanism for rotary cleaning device in combines. 4,510,946, Cl. 130-27.00T.
DeCuir, Perry J., Sr.: *See—*
Guidry, Shelby L.; and DeCuir, Perry J., Sr., 4,510,797, Cl. 73-151.000.
Deere & Company: *See—*
Espiritu Santo, Eugenio; Baxter, Kenneth D.; and Bluem, Gary R., 4,510,814, Cl. 73-862.570.
Degussa Aktiengesellschaft: *See—*
Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,511,719, Cl. 546-245.000.
de Haan, Atze: *See—*
Groothuis, Gerrit J.; de Haan, Atze; Poel, Hendrik; Tietjens, Eduard W.; and de Vries, Jochem J., 4,510,687, Cl. 30-34.200.
Dekeyzer, Marcel A., to Sperry Corporation. Discharge assist means for combine harvesters. 4,510,948, Cl. 130-27.00R.
de Kroon, Jan, to Akzo N.V. Rope comprising two or more polymer components. 4,510,743, Cl. 57-260.000.
Deline, Gordon R.: *See—*
Bowden, Edgar A.; Deline, Gordon R.; and Koeijmans, Gerard D., 4,511,999, Cl. 367-23.000.
Delta Engineering Co.: *See—*
Robinson, Richard T., 4,511,278, Cl. 403-172.000.
De Mesmaeker, Ivan: *See—*
Bulaty, Paul; De Mesmaeker, Ivan; Franc, Zdenek; and Salerno, Giuseppe, 4,511,839, Cl. 324-127.000.
Deneen, Michael. Apparatus for drilling a plurality of bores in a lawn. 4,511,004, Cl. 172-21.000.
de Niet, Edmond: *See—*
Hofelt, Martijn H. H.; de Niet, Edmond; and Rijckaert, Albert M. A., 4,511,933, Cl. 360-47.000.
Denis, Jacques; Sillion, Bernard; Damin, Bernard; and Leger, Robert, to Institut Francais du Petrole; and Elf France. Copolymers with nitrogen groups, useful as additives for decreasing the cloud point of hydrocarbon middle distillates and compositions containing them. 4,511,369, Cl. 44-62.000.
Dennison Manufacturing Company: *See—*
Boyd, Mary G.; Smith, Donald R.; Imondi, Peter F.; Hiatt, Norman A.; Bauer, Fritz E.; Anemaet, John M.; and MacKenzie, Alfred K., 4,511,425, Cl. 156-493.000.
Margerum, Edward S.; and Hiatt, Norman A., 4,511,602, Cl. 427-148.000.
Pitts, Warren R.; and Salit, Herbert W., 4,511,616, Cl. 428-203.000.
Denton, Robert D.: *See—*
Valencia, Jaime A.; and Denton, Robert D., 4,511,382, Cl. 62-20.000.
Depcik, Hans-Werner: *See—*
Schauf, Dieter; Protoschill, Klaus; Oberbach, Karl; and Depcik, Hans-Werner, 4,511,184, Cl. 301-63.0PW.
de Riviere, Charles, to Thomson-CSF. Modulating device for a single-sideband modulation system. 4,511,864, Cl. 332-41.000.
Desai, Avinash J.; and Kreikebaum, Gerhard, to Owens-Corning Fiberglas Corporation. Electronic balance meter. 4,511,791, Cl. 219-497.000.
Desai, Kirit C., to Owens-Illinois, Inc. Child-resistant package with tamper indicating device. 4,511,051, Cl. 215-225.000.
de Vries, Jochem J.: *See—*
Groothuis, Gerrit J.; de Haan, Atze; Poel, Hendrik; Tietjens, Eduard W.; and de Vries, Jochem J., 4,510,687, Cl. 30-34.200.
Devriese, Thierry E. G., to Sperry Corporation. Combine harvester straw hood. 4,510,947, Cl. 130-27.00B.
Dewan, Shashi B.; and Adams, Graham R., to Park-Ohio Industries, Inc. Power inverter using separate starting inverter. 4,511,956, Cl. 363-49.000.
DeWin, Werner: *See—*
Cornils, Boy; Weber, Jurgen; Tihanyi, Bela; and DeWin, Werner, 4,511,439, Cl. 204-37.100.
Dhont, Andre G. J.: *See—*
Witdoek, Daniel C.; and Dhont, Andre G. J., 4,511,348, Cl. 474-109.000.
Diamond, Michael K. Moisture controlling lingual dental mirror. 4,511,329, Cl. 433-31.000.
Didchenko, Rostislav: *See—*
Nazem, Faramarz; Didchenko, Rostislav; and Fink, David, 4,511,625, Cl. 428-401.000.
Diedrich, Brian J.; and Wolf, Leslie G., II. Infant carrier. 4,510,634, Cl. 5-98.00B.
Diemer, Peter; Brake, Werner; and Dittmer, Rainer, to Krupp-Koppers GmbH. Process for the elimination of waste water produced upon the desulfurization of coking oven gas by means of wash solution containing organic oxygen-carrier, with simultaneous recovery of elemental sulfur. 4,511,549, Cl. 423-574.00R.
Dienes, Zoltan B., to Thomas & Betts Corporation. Method of sealing an electrical cable. 4,511,415, Cl. 156-48.000.
Diesel Kiki Company, Ltd.: *See—*
Ishizuka, Yutaka; and Shibuya, Tsunenori, 4,511,313, Cl. 417-270.000.
Okazaki, Michio, 4,510,659, Cl. 29-156.80R.
Suzuki, Nobuhiko, 4,510,764, Cl. 62-133.000.
Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., to Robotic Vision Systems, Inc. Arrangement for sensing the geometric characteristics of an object. 4,511,252, Cl. 356-375.000.
Dinya, Zoltan: *See—*
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.
DiStefano, Ralph D.; and Moldovan, Nicholas, to Harris Corporation. Bi-metallic electroforming technique. 4,511,438, Cl. 204-4.000.
Dittmar, Charles J., Jr.: *See—*
Hofmann, Lee G.; and Dittmar, Charles J., Jr., 4,511,972, Cl. 364-434.000.
Dittmer, Rainer: *See—*
Diemer, Peter; Brake, Werner; and Dittmer, Rainer, 4,511,549, Cl. 423-574.00R.
Dittner, Adam; Schurr, Heinrich; and Von Wallenberg, Ducius, to Fag Kugelfischer Georg Schafer & Co. Antilocking brake system. 4,511,971, Cl. 364-426.000.
Dixon, Samuel, Jr., to United States of America, Army. Millimeter wave signal limiter having ferrite loaded slots in ground plane of image guide. 4,511,865, Cl. 333-17.00L.
Dluhosch, Kurt, to Fichtel & Sachs Ag. Lawn mower. 4,510,739, Cl. 56-17.500.
Dr. Ing. h.c.f. Porsche AG: *See—*
Ampferer, Herbert, 4,510,898, Cl. 123-192.00R.
Meyer, Juergen, 4,511,104, Cl. 244-118.500.

Dr. Ing. h.c.f. Porsche Aktiengesellschaft: *See—*
Rutschmann, Erwin, 4,510,896, Cl. 123-52.0MB.
Dr. Madaus & Co.: *See—*
Madaus, Rolf; and Gorler, Klaus, 4,511,561, Cl. 424-195.100.
Doe, Peter E.: *See—*
Menary, Robert C.; and Doe, Peter E., 4,511,587, Cl. 426-271.000.
Doell, Hermann, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Lubricating system for gas turbine engines. 4,511,016, Cl. 184-6.110.
Dolce, Thomas J.; and Vijayendran, Bheema R., to Celanese Corporation. Alkali metal salts of cross-linked polymeric microgels as nucleating agents for polyethylene terephthalate molding compositions and method for molding. 4,511,527, Cl. 264-328.200.
Dolfsma, Hendrik: *See—*
Vermeiren, Karel N.; and Dolfsma, Hendrik, 4,511,837, Cl. 324-61.00R.
Doll, Ronald J.: *See—*
Smith, Elizabeth M.; Doll, Ronald J.; and Neustadt, Bernard R., 4,511,569, Cl. 514-290.000.
Dombrowski, Leonard C., to AT&T Bell Laboratories. Apparatus for generating a common output signal as a function of any of a plurality of diverse input signals. 4,511,859, Cl. 331-11.000.
Dominey, Raymond J.: *See—*
Wood, John; and Dominey, Raymond J., 4,511,795, Cl. 235-379.000.
Donat Flamand Inc.: *See—*
Giguere, Jean P., 4,510,715, Cl. 49-488.000.
Dornier System GmbH: *See—*
Westphal, Manfred, 4,511,901, Cl. 343-915.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Kanbe, Mitsuru, 4,511,315, Cl. 417-366.000.
Dosch, Robert G.; Stephens, Howard P.; and Stohl, Frances V., to United States of America, Energy. Catalysis using hydrous metal oxide ion exchanges. 4,511,455, Cl. 208-10.000.
Dose, Peter: *See—*
Lampe, Siegfried; Lehmann, Heinz; and Dose, Peter, 4,511,300, Cl. 414-35.000.
Dougherty, Richard L.: *See—*
Varga, Sandor I.; Dougherty, Richard L.; Dandy, Donny C.; and Thomas, Willie J., 4,511,158, Cl. 280-292.000.
Doussain, Claude: *See—*
Gauthier-Lafaye, Jean; Perron, Robert; and Doussain, Claude, 4,511,517, Cl. 260-549.000.
Doutt, Kingsley A. Cylinder piston rod coupler. 4,511,276, Cl. 403-77.000.
Dow Chemical Company, The: *See—*
Anand, Joginder N.; Revak, Timothy T.; and Rossini, Frank J., 4,510,681, Cl. 29-623.100.
Bergman, Roger W., 4,511,464, Cl. 209-166.000.
McIntyre, James A.; and Phillips, Robert F., 4,511,441, Cl. 204-98.000.
McKinley, Mark J.; and Sanner, Jim W., 4,511,477, Cl. 210-689.000.
Mendoza, Abel; and Otterbacher, Eric W., 4,511,731, Cl. 560-061.000.
Termine, Enrico J.; and Ginter, Sally P., 4,511,688, Cl. 524-380.000.
Wallace, Leslie E., 4,511,603, Cl. 427-222.000.
Wang, Chun S.; Benkendorfer, Kyle B.; and Burba, John L., III, 4,511,710, Cl. 528-485.000.
Dow Corning Corporation: *See—*
Kroupa, Loretta A.; and Agbomeirele, Patricia G., 4,511,620, Cl. 428-220.000.
Drabek, Jozef, to Ciba-Geigy Corporation. Acyclamidosulfenylcarbamates for controlling insects. 4,511,578, Cl. 514-469.000.
Drackett Company, The: *See—*
Requejo, Luz P.; and Butke, Charles J., 4,511,489, Cl. 252-172.000.
Dragagna, Claudio: *See—*
Locatelli, Claudio; and Dragagna, Claudio, 4,510,646, Cl. 19-80.00R.
Dragerwerk Aktiengesellschaft: *See—*
Kuhl, Uwe; Krause, Andreas; and Kruger, Horst, 4,511,118, Cl. 251-137.000.
Wendt, Michael; and Schwanbom, Erik, 4,510,933, Cl. 128-207.140.
Drake, Cyril F.; Jones, Ronald; Bateson, Paul F.; Grant, Ronald J.; and Burrage, Martin E., to ITT Industries, Inc. Compositions for inhibiting corrosion of metal surfaces. 4,511,404, Cl. 106-14.120.
Drake, Eldon L., to Dresser Industries, Inc. Centrifugal pump. 4,511,307, Cl. 415-172.00R.
Dresser Industries, Inc.: *See—*
Brunson, David T., 4,511,008, Cl. 175-369.000.
Drake, Eldon L., 4,511,307, Cl. 415-172.00R.
Drexelbrook Controls, Inc.: *See—*
Maltby, Frederick L.; Loewenstern, Kenneth M.; and Benning, Jack G., Jr., 4,511,948, Cl. 361-280.000.
DrM, Dr. Muller AG: *See—*
Muller, Hans, 4,511,471, Cl. 210-323.200.
Druffel, James B.; and Cohen, Joel S., to Prescolite, a division of U.S. Industries. Hangar device for a recessed lighting unit. 4,511,113, Cl. 248-546.000.
Duchene, Eloi; and Laroche, Pierre, to Glaverbel. Laminated reflective panels. 4,511,618, Cl. 428-215.000.
Dudar, Erzebet: *See—*
Gorog, Katalin; Dudar, Erzebet; Gardi, Ivan; Kocsis, Maria; Gaal, Sandor; and Tasnadi, Marta, 4,511,714, Cl. 548-215.000.
Duffy, Michael T.: *See—*
Harbeke, Gunther; and Duffy, Michael T., 4,511,800, Cl. 250-372.000.
DuFries, Ronald W., to Morgan Construction Company. Spinner drive for double block wire drawing machine. 4,511,096, Cl. 242-47.010.
Dukat, Alexander J., to Columbia Gas Systems Service Corp. Backfill for magnesium anodes. 4,511,444, Cl. 204-148.000.
Duke University, Inc.: *See—*
Jobsis, Frans F.; Keizer, Hans H.; and Overaker, Ronald F., 4,510,938, Cl. 128-633.000.
Dumas, Samuel R. Automatic apparatus for positioning footballs for kicking. 4,511,141, Cl. 273-55.00B.
Dunbar Furniture, Inc.: *See—*
Mitchell, Terry L.; and Hodge, David H., 4,511,198, Cl. 339-34.000.
Dunegan Corporation: *See—*
Feng, Ching C., 4,510,812, Cl. 73-644.000.
Dunn, Kenneth. Air cushion lawn mower. 4,510,738, Cl. 56-12.800.
Dunn, William J.: *See—*
Semrow, Carolyn M.; Kolstedt, Mark W.; and Dunn, William J., 4,510,941, Cl. 128-671.000.
Du Pont de Nemours, E. I., and Company: *See—*
Chang, Ike Y., 4,511,690, Cl. 524-606.000.
Coursen, David L., 4,510,958, Cl. 137-13.000.
Falcoff, Allan F.; Mikkelsen, Eric; and Rodrigues, Allan B. J., 4,511,251, Cl. 356-246.000.
Gessell, Donald E., 4,511,669, Cl. 502-110.000.
Kauer, James C., 4,511,390, Cl. 71-88.000.
Romanauskas, William A., 4,511,350, Cl. 494-82.000.
Rorer, Morris P., 4,511,392, Cl. 71-90.000.
Duracell Inc.: *See—*
Karpiloff, Kenneth M., 4,511,416, Cl. 156-69.000.
Durametallic Corporation: *See—*
Cook, Thomas E., 4,511,151, Cl. 277-92.000.
Durbin, Daniel P.; and Korcz, William H., to Shell Oil Company. Method for protectively coating a polymer. 4,511,696, Cl. 525-92.000.
Dureigne, Bernard; Guerillot, Stephane; and Regnault, Alain, to Organisme Autonome Dote de la Personnalite Civile Agence France Presse. System for reconstituting, by filtering, an analog signal from a pseudo-analog signal. 4,511,992, Cl. 364-825.000.
Durst, Jack R., to Pillsbury Company, The. Storage stable, ready-to-eat baked goods. 4,511,585, Cl. 426-106.000.
Duval, Henry H.; Kennedy, Donald; and Muesse, Milton J. Method and apparatus for sealing of pavement seams. 4,511,283, Cl. 404-107.000.
Dyer, Clarence L.: *See—*
Tucker, Raymond M.; and Dyer, Clarence L., 4,511,781, Cl. 219-10.770.
Dynamit Nobel AG: *See—*
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,511,619, Cl. 428-215.000.
Dyson Refractories Limited: *See—*
Brinkman, Richard J., 4,512,023, Cl. 373-36.000.
Dzermejko, Albert J.: *See—*
Bucha, Robert M.; Dzermejko, Albert J.; and Stuart, James G., 4,511,264, Cl. 374-135.000.
E.C.H. Will (GmbH & Co.): *See—*
Lampe, Siegfried; Lehmann, Heinz; and Dose, Peter, 4,511,300, Cl. 414-35.000.
E.G.O. Elektro-Gerate Blanc u. Fischer: *See—*
Goessler, Gerhard; and Wilde, Eugen, 4,511,789, Cl. 219-446.000.
Eastern Company, The: *See—*
Weinerman, Lee S., 4,511,166, Cl. 292-29.000.
Eastin, John A. Manufacturing and using nitrogen fertilizer solutions on a farm. 4,511,389, Cl. 71-54.000.
Eastman Kodak Company: *See—*
Abbas, Daniel C., 4,511,248, Cl. 356-4.000.
Baumeister, Hans P., 4,511,244, Cl. 355-14.0FU.
Bixby, James A., 4,511,931, Cl. 360-10.300.
Wilson, William C.; and Green, Michael H., 4,511,297, Cl. 412-8.000.
Eaton Corporation: *See—*
Benjamin, James A.; and Schutten, Herman P., 4,511,818, Cl. 310-338.000.
Forsell, Kenneth A., 4,511,774, Cl. 200-147.00R.
Glenn, Robert L., 4,511,204, Cl. 339-263.00R.
Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., 4,511,772, Cl. 200-144.00R.
Eaton, Richard H., to General Electric Company. Device for providing attachment to spaced parallel cables or rods. 4,511,203, Cl. 339-255.00P.
Eaton, William L.; and Murray, Alan B. Reduction of harmonics in gas discharge lamp ballasts. 4,511,823, Cl. 315-226.000.
Ebata, Sadao; and Bando, Seiji, to Kawasaki Steel Corporation. Nozzle header for cooling plates. 4,511,089, Cl. 239-553.300.
Ebihara, Hideyuki: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,511,133, Cl. 271-3.100.
Ebisawa, Mikio: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,511,518, Cl. 260-543.00F.
Economics Laboratory, Inc.: *See—*
Olson, John T., 4,511,311, Cl. 417-5.000.
Edenborg, Robert B.: *See—*
Anderson, Jeffrey L.; Ruhoff, Philip J.; and Edenborg, Robert B., 4,511,692, Cl. 525-7.000.
Edmondson, Alan S., to Hulbritt Developments Limited. Apparatus for seal-testing sachets, packets and the like. 4,510,730, Cl. 53-53.000.
Eggers, Harald, to Siemens Aktiengesellschaft. Method for manufacturing a monolithically integrable circuit with a multilayer wiring structure. 4,510,678, Cl. 29-590.000.

Egyt Gyogyszervegyeszeti Gyar: *See—*
Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, 4,511,717, Cl. 544-353.000.
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay, Aranka; Vigh, Zoltan; and Sokorai, Agnes, 4,511,737, Cl. 564-257.000.

Ehrenfreund, Josef: *See—*
Boger, Manfred; Ehrenfreund, Josef; Martin, Pierre; and Steiner, Eginhard, 4,511,571, Cl. 514-351.000.

Ehrlich, Johann, Jr., to Patoflex Corporation. Sole for shoes and process for producing said sole. 4,510,702, Cl. 36-86.000.

Ehrlich, Joseph R., to Strombecker Corporation. Bubble composition using multipurpose surfactant base. 4,511,497, Cl. 252-542.000.

Ehrlich, Willibald; Jooss, Hans; and Hornung, Rainer, to Daimler-Benz Aktiengesellschaft. Method for increasing the endurance and reducing the friction of oil lubricated conical roller bearings. 4,511,606, Cl. 427-386.000.

Eichelberger, Charles W.: *See—*
Miller, Edward B.; and Eichelberger, Charles W., 4,511,895, Cl. 340-825.500.

Eichenlaub, Carl, to Loube, Irving, a part interest. Hull sanding device. 4,510,718, Cl. 51-170.0EB.

Eisele, Hermann; and Stein, Volkhard, to Robert Bosch GmbH. Fuel injection pump. 4,510,908, Cl. 123-449.000.

Eiteljorg, Harrison. Ski boot. 4,510,703, Cl. 36-119.000.

EKC Technology, Inc.: *See—*
Miller, Anne K. M.; and Mason, Richard, 4,511,038, Cl. 206-454.000.

El Paso Hydrocarbons Company: *See—*
Mehra, Yuv R., 4,511,381, Cl. 62-17.000.

el Din Nasser, Gamal, to D.V.T. Buro fur Anwendung Deutscher Verfahrenstechnik H. Morsy. Apparatus for the desalination of sea water. 4,511,436, Cl. 202-174.000.

Electric Power Research Institute, Inc.: *See—*
Steininger, David A., 4,511,407, Cl. 134-1.000.

Electro-Hydraulic Controls, Inc.: *See—*
Presley, Glen T.; and Lautzenhiser, Lloyd L., 4,510,963, Cl. 137-117.000.

Electroline Manufacturing Company: *See—*
Elinsky, Howard S., 4,511,047, Cl. 211-90.000.

Elf France: *See—*
Denis, Jacques; Sillion, Bernard; Damin, Bernard; and Leger, Robert, 4,511,369, Cl. 44-62.000.

Elinsky, Howard S., to Electroline Manufacturing Company. Product display and storage shelf system. 4,511,047, Cl. 211-90.000.

Ellert, Roger H., to B-Bar-B, Inc. Machine and method for filling flexible containers. 4,510,737, Cl. 53-570.000.

Ellingson, David I.; and Wilson, James D., to Maytag Company, The. Control system for an access door. 4,510,777, Cl. 68-12.00R.

Elliott, Robert D.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,511,721, Cl. 546-308.000.

Ellis, Bryan E., to SSP Pumps Limited. Positive displacement pumps. 4,511,316, Cl. 418-150.000.

Ellsworth, James G.: *See—*
Witalka, Jerome J.; Buettner, Howard L.; and Ellsworth, James G., 4,511,967, Cl. 364-200.000.

Elphick, Thomas G.; Eshleman, Edgar S.; and Field, Martin J., to General Motors Corporation. Fuel rail assembly. 4,510,909, Cl. 123-470.000.

Elsenbaumer, Ronald L.: *See—*
Frommer, Jane E.; Elsenbaumer, Ronald L.; and Davidson, Douglass S., 4,511,494, Cl. 252-518.000.

Elsis, Christopher C. Children's game pool. 4,510,632, Cl. 4-488.000.

Ely, Donald A., to Beloit Corporation. Dryer felt run. 4,510,698, Cl. 34-117.000.

Emhart Industries, Inc.: *See—*
Shedigian, Vandos, 4,511,949, Cl. 361-319.000.

Ems-Inventa AG: *See—*
Schmid, Eduard; and Hoppe, Manfred, 4,511,684, Cl. 524-101.000.

Emura, Noriaki: *See—*
Ariyoshi, Takashi; Emura, Noriaki; and Sakanaka, Yasuhiro, 4,511,679, Cl. 521-83.000.

Endo, Hiroshi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,510,915, Cl. 123-620.000.

Endo, Toshiaki: *See—*
Yamazaki, Yasuhiro; and Endo, Toshiaki, 4,511,213, Cl. 358-261.000.

Energy Conversion Devices, Inc.: *See—*
Sapru, Krishna; Reichman, Benjamin; and Liang, Gao, 4,511,638, Cl. 429-111.000.

Eng, Benjamin, Jr., to John Fluke Mfg. Co., Inc. Bootstrap power regulator for systems such as analog to digital converters. 4,511,856, Cl. 330-297.000.

Engelbrecht & Lemmerbrock GmbH & Co.: *See—*
Hesse, Theodor; and Barkmeyer, Hans, 4,511,292, Cl. 406-152.000.

Enjoji, Susumu: *See—*
Sumino, Yoichi; and Enjoji, Susumu, 4,511,984, Cl. 364-415.000.

Enlow, William P.: *See—*
Hechenbleikner, Ingenuin; and Enlow, William P., 4,511,725, Cl. 548-530.000.

Ensign-Bickford Industries, Inc.: *See—*
Skutnik, Bolesh J., 4,511,209, Cl. 350-96.340.

Enviro-Spray Systems Incorporated: *See—*
Banks, Russell; and Magid, David J., 4,510,734, Cl. 53-449.000.

Eriksson, Bror A. Circuit arrangement for power control. 4,511,836, Cl. 323-300.000.

Eriksson, Hans. Oil-clearing element having two or more movable floating bodies. 4,511,285, Cl. 405-66.000.

Erlam, David P.; and Carr, Arthur E., to Rittal-Werk Rudolf Loh GmbH & Co. KG. Card frame with card guides and cards guided therein. 4,511,199, Cl. 339-45.00M.

Ermital AG: *See—*
Jovy, Herbert; and Schuster, Wilhelm, 4,510,629, Cl. 4-332.000.

Ernst, Hans-Otto; and Rohling, Wilhelm, to Westfalische Metall Industrie KG Hueck & Co. Vehicle headlight. 4,511,955, Cl. 362-347.000.

Erwin Kampf GmbH & Co., Firma: *See—*
Kuhlmann, Heinz; and Prinz, Eckhard, 4,511,419, Cl. 156-272.600.

Erwin Sick GmbH Optik-Elektronik: *See—*
Ross, Dieter; and Ostertag, Klaus, 4,511,803, Cl. 250-563.000.

ESA, Inc.: *See—*
Matson, Wayne R., 4,511,659, Cl. 436-150.000.

Eshleman, Edgar S.: *See—*
Elphick, Thomas G.; Eshleman, Edgar S.; and Field, Martin J., 4,510,909, Cl. 123-470.000.

Espinoza, Cesar, to Hollingsead International, Inc. Cable clamp assembly. 4,510,650, Cl. 24-16.0PB.

Espiritu Santo, Eugenio; Baxter, Kenneth D.; and Bluem, Gary R., to Deere & Company. Snap-in force sensor with bellows. 4,510,814, Cl. 73-862.570.

Estes, Donald C., to Speedco, Incorporated. Apparatus for distributing powdered material. 4,510,883, Cl. 118-305.000.

Eszakmagyarorszagi Vegyimuvek: *See—*
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balógh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.

Etablissements les Fils d'Auguste Chomarat & Cie: *See—*
Curinier, Jean; and Pinet, Philippe, 4,510,657, Cl. 28-100.000.

Ethicon, Inc.: *See—*
Alpern, Marvin, 4,511,035, Cl. 206-363.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,511,706, Cl. 528-192.000.

Ethyl Corporation: *See—*
Knapp, Gordon G., 4,511,367, Cl. 44-53.000.
Knapp, Gordon G., 4,511,368, Cl. 44-53.000.
Shin, Kju H., 4,511,716, Cl. 544-277.000.
Smith, R. Scott; and Smith, Gerald Z., Jr., 4,511,753, Cl. 585-856.000.
Stahly, G. Patrick; and Stahly, Barbara C., 4,511,729, Cl. 560-020.000.

Ethyl Petroleum Additives, Inc.: *See—*
Burrows, Aubrey L.; Mabley, Paul B.; and Field, Steven J., 4,511,366, Cl. 44-53.000.

Eto, Yoshiyuki, to Nissan Motor Co., Ltd. Catalyst for reforming of methanol and process of preparing same. 4,511,673, Cl. 502-525.000.

Ets. Y. Jouanel S.A.: *See—*
Triouleyre, Jean; Rousselin, Jean; Schmit, Patrick; and Gondry, Philippe, 4,510,785, Cl. 72-323.000.

Evans, Harmon A.: *See—*
Kwon, Young J.; and Evans, Harmon A., 4,511,399, Cl. 75-84.500.

Evans, Robert E., to S & S Corporation. Battery latch. 4,511,637, Cl. 429-100.000.

Evason, John; Rigby, Malcolm J.; and Ward, Peter, to Pilkington Brothers P.L.C. Thermally toughening glass. 4,511,384, Cl. 65-114.000.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; Everitt, Delmar K.; and Burger, Norman J., 4,511,343, Cl. 446-463.000.

Ex-Cell-O Corporation: *See—*
Gill, John D., 4,510,881, Cl. 114-270.000.

Expert Maschinenbau GmbH: *See—*
Moller, Reinfried, 4,511,110, Cl. 248-421.000.

Exploration Logging, Inc.: *See—*
Wisniewski, Waldemar S., 4,511,829, Cl. 318-317.000.

Exxon Production Research Co.: *See—*
Valencia, Jaime A.; and Denton, Robert D., 4,511,382, Cl. 62-20.000.

Exxon Research and Engineering Co.: *See—*
Fiocco, Robert J.; and Bushnell, James D., 4,511,537, Cl. 422-256.000.
Fuller, Everett J.; and Lundberg, Robert D., 4,511,479, Cl. 210-708.000.
Peiffer, Dennis G.; Lundberg, Robert D.; and Walker, Thad O., 4,510,998, Cl. 166-295.000.

F. L. Smidth & Co.: *See—*
Folsberg, Jan, 4,511,462, Cl. 209-140.000.

F. LLI Marzoli & C. S.P.A.: *See—*
Locatelli, Claudio; and Dragagna, Claudio, 4,510,646, Cl. 19-80.00R.

Fabralloy, Inc.: *See—*
Wilt, Henry E.; and Murray, Larry N., 4,511,088, Cl. 239-455.000.

Fabris, Hubert J.: *See—*
Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., 4,511,699, Cl. 525-205.000.
Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., 4,511,700, Cl. 525-283.000.

Fag Kugelfischer Georg Schafer & Co.: *See—*
Dittner, Adam; Schurr, Heinrich; and Von Wallenberg, Ducius, 4,511,971, Cl. 364-426.000.

Fage, Bonnard. Theatrical light box. 4,511,953, Cl. 362-230.000.

Fairchild Camera and Instrument Corporation: *See—*
Nagy, Alex; and Herlein, Dick, 4,511,846, Cl. 328-164.000.

Falcoff, Allan F.; Mikkelsen, Eric; and Rodrigues, Allan B. J., to Du Pont de Nemours, E. I., and Company. Apparatus and process for measuring the color of paints. 4,511,251, Cl. 356-246.000.

Fanelli, Noel. Water bicycle and detachable device therefor. 4,511,338, Cl. 440-26.000.

Fanuc Ltd: *See—*
Inaba, Hajimu; and Sakakibara, Shinsuke, 4,511,985, Cl. 364-513.000.
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,511,975, Cl. 364-474.000.

Farha, Floyd E., Jr.: *See—*
Reed, Larry E.; Porter, Randall A.; Farha, Floyd E., Jr.; and Guillory, Jack P., 4,511,405, Cl. 106-15.050.

Farmitalia Carlo Erba S.p.A.: *See—*
Ribaldone, Giuseppe; Felicioli, Maria G.; Santini, Claudio; and Agnes, Giovanni, 4,511,718, Cl. 544-406.000.

Farquharson, Graeme J.: *See—*
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; and Farquharson, Graeme J., 4,511,391, Cl. 71-88.000.

Farran, John; Hatchett, Michael R.; and Heath, John S., to International Business Machines Corporation. Mechanism for cutting single thickness paper or like sheet material and apparatus including such mechanism. 4,510,841, Cl. 83-176.000.

Fauconnier, William R.: *See—*
North, Henry; and Fauconnier, William R., 4,511,092, Cl. 241-49.000.
North, Henry; and Fauconnier, William R., 4,511,254, Cl. 366-118.000.

Faulring, Gloria M., to Union Carbide Corporation. Production of tool steels using chemically prepared V_2O_3 as a vanadium additive. 4,511,400, Cl. 75-129.000.

Faust, Uwe: *See—*
Heck, Gunter; Lienerth, Aladar; Malow, Egon; Schwarz, Karl-Heinz; and Faust, Uwe, 4,511,437, Cl. 203-19.000.

Faust, Valerie F. Herbal hair treatment compositions. 4,511,555, Cl. 424-74.000.

Fechner, Erno H., to Ampex Corporation. Damage control apparatus for magnetic tape transport. 4,511,943, Cl. 360-130.230.

Fedde, George A.; and Kirk, Kenneth H., to Sperry Corporation. Force assembler apparatus for robots. 4,510,683, Cl. 29-701.000.

Federal Signal Corporation: *See—*
Stanuch, Edward S., 4,511,880, Cl. 340-84.000.

Federighi, Frank F.: *See—*
Federighi, James L.; and Federighi, Frank F., 4,511,258, Cl. 366-337.000.

Federighi, James L.; and Federighi, Frank F., to Koflo Corporation. Static material mixing apparatus. 4,511,258, Cl. 366-337.000.

Feinstone, Stephen M.: *See—*
Purcell, Robert H.; and Feinstone, Stephen M., 4,511,556, Cl. 514-743.000.

Felicioli, Maria G.: *See—*
Ribaldone, Giuseppe; Felicioli, Maria G.; Santini, Claudio; and Agnes, Giovanni, 4,511,718, Cl. 544-406.000.

Felix, Raymond A., to Stauffer Chemical Co. Substituted benzyloxy chloroethoxy ethane herbicide antidotes. 4,511,394, Cl. 71-105.000.

Fencsik, Gabor; and Glenn, Fletcher M., II, to MDS-Qantel, Inc. Communication channel interface unit. 4,511,968, Cl. 364-200.000.

Feng, Ching C., to Dunegan Corporation. Apparatus for acoustic emission detection including a waveguide made of aluminum or beryllium oxide. 4,510,812, Cl. 73-644.000.

Ferguson, Blake L.; and Moracz, Donald J., to TRW Inc. Method of forging a workpiece. 4,510,788, Cl. 72-377.000.

Ferguson, Robert W.; Andors, Derik K.; and Crossman, William W., Jr., to Vermont Castings, Inc. Woodburning heating apparatus. 4,510,918, Cl. 126-79.000.

Ferraro, Charlotte L. Artificial nail mounting, reinforcement, and method. 4,511,608, Cl. 428-15.000.

Ferrero S.p.A.: *See—*
Cillario, Lorenzo, 4,510,735, Cl. 53-464.000.

Ferton, Daniel; and Mace, Robert, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Process for improving both fatigue strength and toughness of high-strength Al alloys. 4,511,409, Cl. 148-2.000.

Fetter, Stephen M., to Allis-Chalmers Corp. Suspension and sealing of latticework and filters. 4,511,380, Cl. 55-355.000.

Fichtel & Sachs Ag: *See—*
Dluhosch, Kurt, 4,510,739, Cl. 56-17.500.

Fidi, Werner; and Nawrata, Gunter, to AKG Akustische u.Kino-Gerate Gesellschaft m.b.H. Stylus for stereo pickups. 4,512,009, Cl. 369-170.000.

Field, Martin J.: *See—*
Elphick, Thomas G.; Eshleman, Edgar S.; and Field, Martin J., 4,510,909, Cl. 123-470.000.

Field, Steven J.: *See—*
Burrows, Aubrey L.; Mabley, Paul B.; and Field, Steven J., 4,511,366, Cl. 44-53.000.

Fielding, Verl: *See—*
Galloway, Donald, 4,511,155, Cl. 280-204.000.

Fields, Ellis K., to Standard Oil Company (Indiana). Carbamates of beta-hydroxyethylsulfoxides. 4,511,730, Cl. 560-033.000.

Figge, Dieter: *See—*
Artz, Gerd; Figge, Dieter; and Philipp, Clemens, 4,510,990, Cl. 164-431.000.

Filges, Ralf: *See—*
Klotmann, Fred; and Filges, Ralf, 4,511,266, Cl. 384-441.000.

Fillion, Jean-Claude, to S.N.E.C.M.A. Device for measurement of amplitude and angular position of an untrue running in a revolving system. 4,510,809, Cl. 73-457.000.

Fink, David: *See—*
Nazem, Faramarz; Didchenko, Rostislav; and Fink, David, 4,511,625, Cl. 428-401.000.

Finley, Joseph H.: *See—*
Lee, Fui-Tseng H.; Juelke, Charles V.; and Finley, Joseph H., 4,511,498, Cl. 252-609.000.

Fiocco, Robert J.; and Bushnell, James D., to Exxon Research and Engineering Co. Extraction zone. 4,511,537, Cl. 422-256.000.

Fiore, Louis T., to Radionics, Inc. Long range wireless alarm monitoring system. 4,511,887, Cl. 340-539.000.

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Kang, Jung W.; and Davis, James A., 4,511,628, Cl. 428-457.000.

Firex Corporation: *See—*
Atwater, Richard G., 4,511,889, Cl. 340-629.000.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Circumferentially continuous cylinder for a rotary printing machine. 4,510,868, Cl. 101-415.100.

Fitch, John L.; and Mullins, Lynn D., to Mobil Oil Corporation. Solvent flooding to recover viscous oils. 4,510,997, Cl. 166-263.000.

Fitzwater, Margaret; and Keller, Lewis C., to Frito-Lay, Inc. Potato product with opposite phase-shifted corrugations of the same frequency and amplitude. 4,511,586, Cl. 426-144.000.

Florence, Robert A., to General Electric Company. Method for isolating ionomers in the salt form. 4,511,712, Cl. 528-488.000.

Flot, Regis; and Hine, Jean Patrick, to Raychem Corporation. Wire stripping arrangement. 4,510,827, Cl. 81-9.400.

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Bunnelle, Philip R., 4,510,971, Cl. 137-615.000.
Jennings, Charles E.; Barrington, Claud C.; Chen, Lien-Yan; Hopkins, Bob C.; McIntyre, John N.; and Regitz, Alfred P., 4,510,960, Cl. 137-75.000.
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Fogel, Seymour; Welch, Juliet W.; and Karin, Michael, to University of California, The Regents of the. High efficiency eukaryotic metallothionein promoter system. 4,511,652, Cl. 435-29.000.

Fohrenkamm, Elsie A.; and Rousseau, Alan D., to Minnesota Mining and Manufacturing Company. Ethylenically-unsaturated dextrin composition for preparing a durable hydrophilic photopolymer. 4,511,646, Cl. 430-283.000.

Folsberg, Jan, to F. L. Smidth & Co. Method and apparatus for sorting particulate material. 4,511,462, Cl. 209-140.000.

Ford Motor Company: *See—*
McCabe, Graham, 4,511,277, Cl. 403-140.000.
Nielsen, Arnold D., 4,511,945, Cl. 361-154.000.
Rahnke, Christian J., 4,510,754, Cl. 60-602.000.

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Formflo Limited: *See—*
Holt, Peter J., 4,510,781, Cl. 72-105.000.

Forrest, Stephen R.; Kaplan, Martin L.; Schmidt, Paul H.; and Venkatesan, Thirumalai N. C., to AT&T Bell Laboratories. Process of enhancing conductivity of material. 4,511,445, Cl. 204-158.0HE.

Forsberg, Lennart G. Device used in connection with containers for bulk material. 4,511,066, Cl. 222-189.000.

Forsell, Kenneth A., to Eaton Corporation. Current limiting contact arrangement. 4,511,774, Cl. 200-147.00R.

Forster, Karl-Heinz; Schuck, Helmut; Johne, Hans; and Jentzsch, Arndt, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Control system for ink zone adjusters. 4,510,867, Cl. 101-365.000.

Fortunato, Alfred R.; Millard, Maurice; and Trzeciak, John R., to Singer Company, The. Simplified hardware component inter-connection system for generating a visual representation of an illuminated area in a flight simulator. 4,511,337, Cl. 434-43.000.

Foster, James E., to Universal Instruments Corporation. Method and apparatus for straightening and aligning leads and testing electrical functioning of components. 4,510,686, Cl. 29-838.000.

Foster, Ronald L. Tobacco harvester. 4,510,740, Cl. 56-27.500.

Foundation Merieux: *See—*
Play, Dominique; Bonneau, Marc; Merieux, Charles; Herbage, Daniel; and Comte, Philippe, 4,511,653, Cl. 435-69.000.

Fourcin, Adrian J.; Howard, David M.; and Walliker, John R., to National Research Development Corporation. Apparatus for the electrical stimulation of nerves. 4,510,936, Cl. 128-419.00R.

Fournier, Paul J. E., to Aeroquip Corporation. Self-reinforced face seal. 4,511,152, Cl. 277-207.00A.

Fowles, Thomas A.; Slater, Glenn L.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Method of making a bottle closure. 4,511,529, Cl. 264-515.000.

Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., to General Electric Company. Polycarbonate/addition polymer blends. 4,511,693, Cl. 525-67.000.

Franc, Zdenek: *See—*
Bulaty, Paul; De Mesmaeker, Ivan; Franc, Zdenek; and Salerno, Giuseppe, 4,511,839, Cl. 324-127.000.

Franco, Lila K.: *See—*
deCelle, Charles W., 4,510,913, Cl. 123-557.000.

Franco, Ralph A.: *See—*
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Franetzki, Manfred; and Prestele, Karl, to Siemens Aktiengesellschaft. Infusion device intended for implantation in a living body. 4,511,355, Cl. 604-131.000.
Frank, Xaver, to S & F Orthopadietechnik GmbH. Resilient support foot for walking aids, particularly crutches. 4,510,957, Cl. 135-84.000.
Frankel, Robert S.; and Herman, Alexander, to United States of America, Energy. Increasing capacity of baseband digital data communication networks. 4,512,025, Cl. 375-36.000.
Fraser, Howard H., Jr.; and Anderson, George A., III, to Carrier Corporation. Mounting for a hermetic compressor. 4,511,314, Cl. 417-363.000.
Freeman, Norman H.: *See—*
Hammond, Leslie A.; and Freeman, Norman H., 4,510,856, Cl. 99-457.000.
Freeman, Walter. Aviator eyeglasses. 4,511,226, Cl. 351-57.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Artz, Gerd; Figge, Dieter; and Philipp, Clemens, 4,510,990, Cl. 164-431.000.
Friedland, David J.: *See—*
Saprokhin, Alexander M.; Friedland, David J.; Baran, Richard M.; Kim, Jung T.; and McCurry, Lynn E., 4,511,440, Cl. 204-60.000.
Friedrich, Ralph S.: *See—*
Magarian, Gerald M.; and Friedrich, Ralph S., 4,511,423, Cl. 156-425.000.
Friesz, Robert E., to Murnan, Leo R.; and Omaha Door Company, part interest to each. Method of installing multi-sections vertically acting doors. 4,510,663, Cl. 29-429.000.
Frito-Lay, Inc.: *See—*
Fitzwater, Margaret; and Keller, Lewis C., 4,511,586, Cl. 426-144.000.
Fritz, Bernd, to ITT Industries, Inc. Electro-optical display device and method for its production. 4,511,218, Cl. 350-356.000.
Fritz, Raimund; and Zeyher, Fritz, to Heckler & Koch GmbH. Electronic firing mechanism for weapons. 4,510,844, Cl. 89-135.000.
Frommer, Jane E.; Elsenbaumer, Ronald L.; and Davidson, Douglass S., to Allied Corporation. Solution of a chalcogen-containing polymer and process of forming conducting polymer articles therefrom. 4,511,494, Cl. 252-518.000.
Froning, Edward C.; and Graham, Gregory S., to Froning, Edward C. Cannula, obturator, stylet and needle hub connectors for lumbar disc puncture. 4,511,356, Cl. 604-164.000.
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Rommen, Hans; and Frosch, Hans, 4,510,783, Cl. 72-200.000.
Frungel, Frank; and Rohr, Jurgen. Microprocessor-driven laser ceilometers. 4,511,249, Cl. 356-5.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Makita, Fujio, 4,511,014, Cl. 180-233.000.
Sakakiyama, Ryuzo, 4,510,903, Cl. 123-339.000.
Sakakiyama, Ryuzo, 4,510,903, Cl. 123-339.000.
Fuji Photo Film Co.: *See—*
Anonuma, Masashi; Tamai, Yasuo; Sato, Tsunehiko; Funabashi, Shinichi; and Ogawa, Hiroshi, 4,511,484, Cl. 252-62.540.
Fuji Photo Film Co., Ltd.: *See—*
Hirai, Hiroyuki; and Kawata, Ken, 4,511,650, Cl. 430-559.000.
Hirano, Tsumoru; Yagihara, Morio; and Umemoto, Makoto, 4,511,647, Cl. 430-381.000.
Koike, Mitsuru; Kobayashi, Kesanao; Toyama, Tadao; Misu, Hiroshi; Tamoto, Koji; and Iwasaki, Masayuki, 4,511,645, Cl. 430-276.000.
Konaya, Yoshikazu, 4,511,098, Cl. 242-56.00R.
Nagao, Makoto; and Nahara, Akira, 4,511,635, Cl. 428-694.000.
Ogawa, Akira; and Tsuda, Momotoshi, 4,511,649, Cl. 430-553.000.
Okamura, Hisashi; Sakaguchi, Shinji; Takahashi, Osamu; and Murai, Ashita, 4,511,644, Cl. 430-219.000.
Teraoka, Masanori, 4,511,802, Cl. 250-484.100.
Toya, Ichizo, 4,511,643, Cl. 430-212.000.
Yanai, Akio; and Shirahata, Ryuji, 4,511,594, Cl. 427-38.000.
Fuji Xerox Co., Ltd.: *See—*
Ozawa, Takashi, 4,511,804, Cl. 250-578.000.
Fujie, Hideo: *See—*
Sekizawa, Hidekazu; Iwamoto, Akito; Togashi, Kousaku; and Fujie, Hideo, 4,510,866, Cl. 101-365.000.
Fujii, Shosaku, to Alps Electric Co., Ltd. Slider arrangement and method of producing of the same. 4,511,879, Cl. 338-174.000.
Fujii, Susumu: *See—*
Nozue, Ikutoshi; Fujii, Susumu; and Hanada, Masayuki, 4,511,668, Cl. 502-84.000.
Fujimoto, Kazuhisa: *See—*
Tomita, Fusao; Tamaoki, Tatsuya; Shirahata, Kunikatsu; Iida, Takao; Morimoto, Makoto; and Fujimoto, Kazuhisa, 4,511,560, Cl. 514-27.000.
Fujimoto, Ryo, to Canon Kabushiki Kaisha. Method and device for correcting chrominance signal. 4,511,916, Cl. 358-28.000.
Fujimoto, Terunori; Shimizu, Nobuyoshi; Shimizu, Mutsuhiro; Yanagihara, Kazunori; Miyachi, Akio; and Inui, Tsuneo, to Toyo Kohan Co., Ltd. Metallic chromium-nickel-hydrated chromium oxide-coated tin free steel and process for the production thereof. 4,511,631, Cl. 428-632.000.
Fujisawa, Ikuo: *See—*
Nishikawa, Hisashi; Suzuki, Satoshi; Hirata, Masanobu; Sakamoto, Koichiro; Fujisawa, Ikuo; and Takeno, Shozo, 4,511,877, Cl. 338-2.000.
Fujisawa, Makoto: *See—*
Kano , Yoshiharu; Fujisawa, Makoto; Nojiri, Shoji; and Tanaka, Yoshikazu, 4,512,015, Cl. 370-110.100.
Fujita, Fumio: *See—*
Shimomura, Takatoshi; Fujita, Fumio; and Hirakawa, Manabu, 4,511,711, Cl. 528-489.000.
Fujita, Toshihito: *See—*
Ideno, Eizo; Fukushi, Shinichi; Tai, Masahiko; Nakazawa, Koji; and Fujita, Toshihito, 4,511,095, Cl. 242-18.00G.
Fujita, Tsutomu: *See—*
Ida, Jinsei; Fujita, Tsutomu; Yamada, Ichiho; Higuchi, Fumio; and Matsuo, Kenzaburo, 4,510,669, Cl. 29-568.000.
Fujitsu Fanuc Limited: *See—*
Kurakake, Mitsuo, 4,511,982, Cl. 364-167.000.
Fujitsu Limited: *See—*
Kano , Yoshiharu; Fujisawa, Makoto; Nojiri, Shoji; and Tanaka, Yoshikazu, 4,512,015, Cl. 370-110.100.
Kasai, Yoshihiko, 4,511,202, Cl. 333-189.000.
Nozaki, Shigeki; Takemae, Yoshihiro; and Nakano, Tomio, 4,511,997, Cl. 365-189.000.
Sampei, Takeshi; Miyahara, Norio; Nikaido, Tadanobu; Sato, Hiroaki; and Aoyama, Keizo, 4,512,012, Cl. 370-66.000.
Fukatsu, Yoshiaki: *See—*
Kakino, Shigeru; Hattori, Katsuhide; Fukatsu, Yoshiaki; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,511,412, Cl. 149-109.600.
Fukaya, Hiroyasu: *See—*
Ninomiya, Masakazu; Suda, Toshi; Omori, Norio; Akiyama, Susumu; and Fukaya, Hiroyasu, 4,510,910, Cl. 123-486.000.
Fukuchi, Hiromichi, to NEC Corporation. Color ink-jet printer. 4,511,907, Cl. 346-140.00R.
Fukuda, Shinichiro, to Shaken Co., Ltd. Method of storing images in the form of contours and photo-typesetting apparatus thereof. 4,511,893, Cl. 340-747.000.
Fukushi, Shinichi: *See—*
Ideno, Eizo; Fukushi, Shinichi; Tai, Masahiko; Nakazawa, Koji; and Fujita, Toshihito, 4,511,095, Cl. 242-18.00G.
Fukuta, Masaru, to Motorola, Inc. High speed presettable counter. 4,512,030, Cl. 377-107.000.
Fukuura, Yukio: *See—*
Tanuma, Itsuo; Takeichi, Hideo; Fukuura, Yukio; Ohyachi, Tomio; and Naito, Kazuo, 4,511,627, Cl. 428-429.000.
Fulcomer, Emanuel J., Jr.; Nici, Richard J.; Poteat, Vance E.; Schramm, George W.; Sharp, John B.; and Winseck, Michael M., Jr., to AT&T Information Systems Inc. Digital communication station signaling control. 4,512,016, Cl. 370-110.100.
Fuller, Everett J.; and Lundberg, Robert D., to Exxon Research and Engineering Company. Oil removal from water suspensions using ionic domain polymers. 4,511,479, Cl. 210-708.000.
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Suciu, George D.; Stefani, Giancarlo; and Fumagalli, Carlo, 4,511,670, Cl. 502-209.000.
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Funk, Gerhard, to Patelhold Patentverwertungs- & Elektro-Holding AG. Common bus access system using plural configuration tables for failure tolerant token passing among processors. 4,511,958, Cl. 364-200.000.
Funk, Richard J. One-piece clamp. 4,511,107, Cl. 248-74.100.
Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Fastener dispensing device. 4,511,073, Cl. 227-67.000.
G.D. Searle & Co.: *See—*
McCullagh, Keith G.; Wadsworth, Harry J.; and Hann, Michael M., 4,511,504, Cl. 260-112.50R.
G.D. Societa Per Azioni: *See—*
Seragnoli, Enzo, 4,511,045, Cl. 209-535.000.
GA Technologies Inc.: *See—*
Creedon, Richard L., 4,510,972, Cl. 137-625.280.
Gaal, Sandor: *See—*
Gorog, Katalin; Dudar, Erzebet; Gardi, Ivan; Kocsis, Maria; Gaal, Sandor; and Tasnadi, Marta, 4,511,714, Cl. 548-215.000.
Gaffney, Anne M., to Atlantic Richfield Company. Hydrocarbon dehydrogenation. 4,511,754, Cl. 585-656.000.
Gaia, Aldino J.: *See—*
Rasmussen, John F.; and Gaia, Aldino J., 4,511,874, Cl. 337-159.000.
Gaiser, Robert F., to Bendix Corporation, The. Master cylinder. 4,510,752, Cl. 60-562.000.
Gallaher, Kenneth R.: *See—*
Mott, Philip J.; and Gallaher, Kenneth R., 4,510,962, Cl. 137-102.000.
Gallay, Jean J.; and Schweizer, Ernst, to Ciba-Geigy Corporation. 6-[(4-Substituted piperazin-l-yl)thiocarbonylamino]benzazoles and their use. 4,511,567, Cl. 514-253.000.
Galloway, Donald, to Fielding, Verl. One wheel trailer for a two-wheeled vehicle. 4,511,155, Cl. 280-204.000.
Gamble, David E. Fuel system. 4,510,912, Cl. 123-525.000.
Gancy, Alan B. Nonpolluting salts and method of making same. 4,511,485, Cl. 252-70.000.
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Bossina, Jaap, 4,511,068, Cl. 222-257.000.
Garcia, Elmer D., to United States of America, Energy. Breathable gas distribution apparatus. 4,510,930, Cl. 128-202.220.
Gardi, Ivan: *See—*
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Garley, Anthony M.; and Stafford, Rita A., to USM Corporation. Method for positioning two workpiece portions for stitching together along a desired stitching path. 4,510,876, Cl. 112-262.100.

Garlock, Inc.: *See—*
Parsons, William, Jr., 4,510,966, Cl. 137-375.000.

Garrett Corporation, The: *See—*
Graves, Richard F., 4,511,106, Cl. 248-65.000.

Gartmann, Russell J.; and Brown, James S., to Transamerica DeLaval Inc. Demineralization of feed water in a steam system. 4,510,755, Cl. 60-657.000.

Garwin, Richard L.; and Levine, James L., to International Business Machines Corporation. Force sensing data input device responding to the release of pressure force. 4,511,760, Cl. 178-18.000.

Gaspardo, Luigi. Stirrer-feeder for pneumatic distributors drills. 4,511,061, Cl. 221-200.000.

Gaur, Santosh P.: *See—*
Anantha, Narasipur G.; Gaur, Santosh P.; Huang, Yi-Shiou; and Tsang, Paul J., 4,510,676, Cl. 29-577.00C.

Gauri, Kailash K. Pharmaceutical composition. 4,511,557, Cl. 514-263.000.

Gauthier-Lafaye, Jean; Perron, Robert; and Doussain, Claude, to Rhone-Poulenc Chimie de Base. Carbonylation of methyl acetate. 4,511,517, Cl. 260-549.000.

Gazzera, Raymond W., to United States of America, Air Force. Pneumatic actuator device. 4,510,846, Cl. 91-460.000.

Gebruder Kommerling Kunststoffwerke GmbH: *See—*
Blaum, Franz, 4,511,323, Cl. 425-385.000.

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Glockner, Rolf; and Stutz, Hansruedi, 4,511,253, Cl. 356-385.000.

Geczy, Bela A., to Smith International, Inc. Thrust and radial bearing assembly. 4,511,193, Cl. 384-611.000.

Gehl Company: *See—*
Campbell, Hallis D.; and Burrough, Donald E., 4,510,741, Cl. 56-341.000.

Gehrke, Glenn F.: *See—*
Hazebrook, Daniel W.; Gehrke, Glenn F.; and Schmidt, Michael J., 4,511,346, Cl. 464-146.000.

Geikas, George I.: *See—*
Greeson, Richard L.; and Geikas, George I., 4,511,614, Cl. 428-141.000.

Gellenbeck, Thomas C., to Team Cruiser Conversion Co., Inc. Truck cab with rear compartment and engine housing. 4,511,175, Cl. 296-190.000.

Genentech, Inc.: *See—*
Builder, Stuart E.; and Ogez, John R., 4,511,502, Cl. 260-112.00R.
Olson, Kenneth C.; and Pai, Rong-Chang, 4,511,503, Cl. 260-112.00R.

General Electric Company: *See—*
Bell, Robert K., 4,511,861, Cl. 331-108.00R.
Eaton, Richard H., 4,511,203, Cl. 339-255.00P.
Florence, Robert A., 4,511,712, Cl. 528-488.000.
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., 4,511,693, Cl. 525-67.000.
Heft, Eldon B.; Huseby, Irvin C.; and Szymaszek, Jan W., 4,511,773, Cl. 200-144.00C.
Hofmann, Lee G.; and Dittmar, Charles J., Jr., 4,511,972, Cl. 364-434.000.
Johnson, Ronald L., 4,510,763, Cl. 62-115.000.
Kast, Howard B., 4,510,848, Cl. 91-461.000.
Miller, Edward B.; and Eichelberger, Charles W., 4,511,895, Cl. 340-825.500.
Miller, Timothy J. E.; Jones, Donald W.; and Kalan, Gary L., 4,510,680, Cl. 29-598.000.
Ryang, Hong-Son, 4,511,701, Cl. 525-533.000.
Schmidt, Lawrence R.; and Lovgren, Eric M., 4,511,535, Cl. 422-137.000.
Vandegraaf, Johannes J., 4,511,863, Cl. 332-18.000.

General Mills, Inc.: *See—*
Olson, Sharon; and Zoss, Robert, 4,511,583, Cl. 426-89.000.

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Elphick, Thomas G.; Eshleman, Edgar S.; and Field, Martin J., 4,510,909, Cl. 123-470.000.
Rees, Richard W. A., 4,511,187, Cl. 308-3.800.

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Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., 4,511,699, Cl. 525-205.000.
Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., 4,511,700, Cl. 525-283.000.

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Nowinski, Robert C.; and Hoffman, Allan S., 4,511,478, Cl. 210-691.000.

Geo Vann, Inc.: *See—*
George, Flint R.; and Brieger, Emmet F., 4,510,999, Cl. 166-297.000.

Georg, Dennis D.; and Osecky, Benjamin D., to Hewlett-Packard Company. Dynamic physical memory mapping and management of independent programming environments. 4,511,964, Cl. 364-200.000.

George, Flint R.; and Brieger, Emmet F., to Geo Vann, Inc. Well cleanup and completion method and apparatus. 4,510,999, Cl. 166-297.000.

Geosource Inc.: *See—*
Mayne, W. Harry; and Zilkha, Sasson, 4,512,001, Cl. 367-189.000.

Gerard, Frank. Permanent magnet thermal energy system. 4,511,777, Cl. 219-10.510.

Geria, Navin; and Shin, Chung T., to Bristol-Myers Company. Non-staining antiperspirant stick composition. 4,511,554, Cl. 424-65.000.

German, Martin A.; and Volk, Joseph F., to Warner & Swasey Co., The. Grinding machine having improved dressing means. 4,510,716, Cl. 51-5.00D.

Gessell, Donald E., to Du Pont de Nemours, E. I., and Company. High efficiency catalysts for varying olefin polymer molecular weight distribution. 4,511,669, Cl. 502-110.000.

Ghosh, Hitendra; Murgai, Ashok; and Westdorp, Wolfgang A., to International Business Machines Corporation. Method of controlling oxygen content and distribution in grown silicon crystals. 4,511,428, Cl. 156-601.000.

Gidick, Ward F., to Raymond Kaiser Engineers Inc. Method for installation of an extended header. 4,510,959, Cl. 137-15.000.

Giguere, Jean P., to Donat Flamand Inc. Composite weather strip for windows and doors. 4,510,715, Cl. 49-488.000.

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Giles, Michael K.; and Rogers, Robert B., to United States of America, Air Force. Kalman filter preprocessor. 4,511,219, Cl. 350-388.000.

Gill, John D., to Ex-Cell-O Corporation. Marine propulsion unit. 4,510,881, Cl. 114-270.000.

Gillette Company, The: *See—*
Gikas, Giorgos X., 4,510,952, Cl. 132-37.00R.
Trotta, Robert A., 4,511,273, Cl. 401-260.000.

Ginter, Sally P.: *See—*
Termine, Enrico J.; and Ginter, Sally P., 4,511,688, Cl. 524-380.000.

Girard, Leroy. Ornamental assembly. 4,510,707, Cl. 40-152.000.

GKN Automotive Components, Inc.: *See—*
Hazebrook, Daniel W.; Gehrke, Glenn F.; and Schmidt, Michael J., 4,511,346, Cl. 464-146.000.

GKSS-Forschungszentrum-Geesthacht GmbH: *See—*
Luther, Gunter; Loebel, Peter; Risse, Gerhard; and Leiser, Volker, 4,510,932, Cl. 128-204.290.

Glanz, James: *See—*
Motley, Robert W.; and Glanz, James, 4,511,782, Cl. 219-121.00P.

Glauberman, Gisela: *See—*
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, 4,511,728, Cl. 556-419.000.

Glaverbel: *See—*
Duchene, Eloi; and Laroche, Pierre, 4,511,618, Cl. 428-215.000.

Glaze, Stanley G.: *See—*
Thomas, Alan; and Glaze, Stanley G., 4,511,022, Cl. 188-299.000.

Glenn, Fletcher M., II: *See—*
Fencsik, Gabor; and Glenn, Fletcher M., II, 4,511,968, Cl. 364-200.000.

Glenn, Robert L., to Eaton Corporation. Right-angle electrical clamping connector. 4,511,204, Cl. 339-263.00R.

Global Marine, Inc.: *See—*
Horton, Edward E., 4,511,287, Cl. 405-204.000.
Wetmore, Sherman B., 4,511,288, Cl. 405-217.000.

Glock, Alfred, to SKF Kugellagerfabriken GmbH. Construction of draw frames for spinning machines. 4,510,645, Cl. 19-0.250.

Glockner, Rolf; and Stutz, Hansruedi, to Gebruder Loepfe AG. Device for measuring the transverse dimension of a thread. 4,511,253, Cl. 356-385.000.

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GNB Batteries Inc.: *See—*
Sabatino, Anthony; Schaumburg, Edward G.; Recht, Peter A.; Olszewski, Douglas J.; and Strait, Richard T., 4,510,682, Cl. 29-623.100.

Goddard, Robert M. Parallel access memory lighting system. 4,511,824, Cl. 315-297.000.

Godfrey, Steven W.; Stern, Allen M.; and MacGregor, Fran W., to Hunt Manufacturing Co. Portable keyboard support. 4,511,111, Cl. 248-459.000.

Goepel, Ernst: *See—*
Pohlig, Dietmar; and Goepel, Ernst, 4,511,797, Cl. 250-231.0SE.

Goessler, Gerhard; and Wilde, Eugen, to E.G.O. Elektro-Gerate Blanc u. Fischer. Heating element, particularly radiant heating element for heating glass ceramic plates. 4,511,789, Cl. 219-446.000.

Goffman, Martin; and Jordan, Thomas L., to ASARCO Incorporated. Method of thiourea addition to electrolytic solutions useful for copper refining. 4,511,443, Cl. 204-108.000.

Gohko, Nobuaki: *See—*
Tanaka, Toru; Gohko, Nobuaki; Kishiro, Osamu; and Murakami, Atsushi, 4,511,704, Cl. 526-125.000.

Goi, Koichi: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,511,133, Cl. 271-3.100.

Goldberg, Ellen H., to University Patents, Inc. ATCC HB8116 And its monoclonal anti-H-Y antibody, Hyclonalan. 4,511,661, Cl. 436-503.000.

Golden, William G.: *See—*
Bellar, Robert J.; Golden, William G.; Saperstein, David D.; and Vats, Ashok, 4,511,986, Cl. 364-576.000.

Goldfarb, Adolph E.; Everitt, Delmar K.; and Burger, Norman J., to Everitt, Delmar K.; and Burger, Norman J. Wheeled miniature toy vehicle with easily selectable plural modes of use. 4,511,343, Cl. 446-463.000.

Gondry, Philippe: *See—*
Triouleyre, Jean; Rousselin, Jean; Schmit, Patrick; and Gondry, Philippe, 4,510,785, Cl. 72-323.000.

Gong, Cheng-Shung, to Purdue Research Foundation. Direct fermentation of D-xylose to ethanol by a xylose-fermenting yeast mutant. 4,511,656, Cl. 435-161.000.

Goodman, Jack E.: *See*—
Bennett, John T., Jr.; and Goodman, Jack E., 4,511,534, Cl. 422-100.000.

Goodrich, Lloyd E., Jr.; and Long, Robert A. Chucking accessory. 4,511,153, Cl. 279-2.00R.

Gorler, Klaus: *See*—
Madaus, Rolf; and Gorler, Klaus, 4,511,561, Cl. 424-195.100.

Gorog, Katalin; Dudar, Erzebet; Gardi, Ivan; Kocsis, Maria; Gaal, Sandor; and Tasnadi, Marta, to Nitrokemia Ipartelepek. Herbicidal antidote compositions. 4,511,714, Cl. 548-215.000.

Gottlieb, Michael M., to Rogers Corporation. Multilayer decoupling capacitor and method of manufacture thereof. 4,511,951, Cl. 361-433.000.

Gotz, Laslo, to Texas Instruments Incorporated. Method for tuning the input stage of a receiver to a desired receiving frequency and circuit arrangement for carrying out the method. 4,511,923, Cl. 358-191.100.

Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. High density contact assembly. 4,511,197, Cl. 339-17.0CF.

Grabner, Christian: *See*—
Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, 4,511,214, Cl. 350-632.000.

Grady, Marilyn. Commode. 4,510,631, Cl. 4-478.000.

Graf, Raymond J., to Cincinnati Incorporated. Press brake having spring back compensation stroke reversal control. 4,511,976, Cl. 364-474.000.

Grafelmann, Hans L. Dental instrument for cutting slots for receiving implants into the jaw. 4,511,334, Cl. 433-165.000.

Graham, Gregory S.: *See*—
Froning, Edward C.; and Graham, Gregory S., 4,511,356, Cl. 604-164.000.

Graham, Merrill E., Jr. Heat engine. 4,510,757, Cl. 60-667.000.

Grainger, Alfred J. Drill bit and method of use thereof. 4,511,006, Cl. 175-57.000.

Grandvallet, Gilles: *See*—
Deborde, Albert H.; and Grandvallet, Gilles, 4,510,976, Cl. 139-435.000.

Grant, Ronald J.: *See*—
Drake, Cyril F.; Jones, Ronald; Bateson, Paul F.; Grant, Ronald J.; and Burrage, Martin E., 4,511,404, Cl. 106-14.120.

Grapha-Holding AG: *See*—
Muller, Hans, 4,511,132, Cl. 270-58.000.

Grasselli, R. K.: *See*—
Attig, T. G.; and Grasselli, R. K., 4,511,548, Cl. 423-376.000.

Graves, Richard F., to Garrett Corporation, The. Heat exchanger support system providing for thermal isolation and growth. 4,511,106, Cl. 248-65.000.

Gray, Laurence A., to Yale-New Haven Hospital, Inc. Brachytherapy devices and methods employing americium-241. 4,510,924, Cl. 128-1.200.

Gray Tool Company: *See*—
Adamek, Frank C.; Bonds, James V.; and Bridges, Charles D., 4,511,002, Cl. 166-382.000.

Green, Jerrold D.: *See*—
LaBarge, Robert L.; Horansky, Frank J.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,510,857, Cl. 100-53.000.
LaBarge, Robert L.; Pohlenz, Elmer E.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; and Scherf, Thomas W., 4,510,860, Cl. 100-49.000.

Green, Lawrence E.; and Morrish, William R. Theft-proof selectively positionable outdoor chair. 4,511,179, Cl. 297-349.000.

Green, Michael H.: *See*—
Wilson, William C.; and Green, Michael H., 4,511,297, Cl. 412-8.000.

Greene, Dennis T.; and Salyers, Glen M. Siding cutter. 4,510,834, Cl. 83-453.000.

Greene, George J. Liquid-gas contacting apparatus and pump therefor. 4,511,378, Cl. 55-208.000.

Greene & Kellogg, Inc.: *See*—
McCombs, Norman R., 4,511,377, Cl. 55-163.000.

Greenstein, Lawrence J.; and Yeh, Yu S., to AT&T Bell Laboratories. Technique for digital radio space diversity combining. 4,512,034, Cl. 455-139.000.

Greeson, Richard L.; and Geikas, George I., to Ball Corporation. Substrate having high absorptance and emittance black electroless nickel coating and a process for producing the same. 4,511,614, Cl. 428-141.000.

Gregoire, Daniel: *See*—
Bernuchon, Marc; Pompei, Michel; and Gregoire, Daniel, 4,511,126, Cl. 267-140.100.

Greve, Heinz; and Wahle, Gunter, to Hauni-Werke Korber & Co. KG. Apparatus for applying atomized liquid plasticizer to a running tow of filamentary filter material. 4,510,885, Cl. 118-674.000.

Grider, Bruce A., to B. F. Goodrich Company, The. Brake apparatus. 4,511,021, Cl. 188-218.0XL.

Griebel, Heinrich: *See*—
Kille, Ewald; and Griebel, Heinrich, 4,511,074, Cl. 227-113.000.

Griffis, Patrick D.; and Rindal, Abraham E., to RCA Corporation. Frequency translation phase-locked loop for separate or intercarrier type television sound detection. 4,511,924, Cl. 358-197.000.

Grigat, Ernst: *See*—
Niederdellmann, Georg; and Grigat, Ernst, 4,511,680, Cl. 521-49.500.

Griggs, Calvin: *See*—
Treace, Harry T.; and Griggs, Calvin, 4,510,627, Cl. 3-1.000.

Grigoleit Company, The: *See*—
Howie, Robert K., Jr., 4,510,666, Cl. 29-511.000.

Groothuis, Gerrit J.; de Haan, Atze; Poel, Hendrik; Tietjens, Eduard W.; and de Vries, Jochem J., to U.S. Philips Corporation. Shaving apparatus. 4,510,687, Cl. 30-34.200.

Grosser, Werner: *See*—
Bauer, Wolfgang; and Grosser, Werner, 4,510,821, Cl. 74-552.000.

Grothe, Steven P., to Sperry Corporation. Variable refresh rate for stroke CRT displays. 4,511,892, Cl. 340-739.000.

Grunbeck Wasseraufbereitung GmbH: *See*—
Arens, Hans, 4,510,978, Cl. 141-65.000.

Gruner, John. Identification and control apparatus, for example, for service personnel for a restaurant. 4,511,161, Cl. 283-1.00A.

Grunsky, Manfred; Sussmuth, Reiner; and Ischen, Gunter, to Stellram GmbH. Rotary material removing tool. 4,511,294, Cl. 408-232.000.

GTE Communication Systems Corporation: *See*—
Skidanenko, Constatine V.; and McGibbon, Gregor D., 4,511,763, Cl. 179-16.0AA.

GTE Valeron Corporation: *See*—
Cusack, Robert F., 4,510,693, Cl. 33-174.00L..

Guadagno, Philip A.; and Sanford, James R. M., to Helena Laboratories Corporation. Test kit for performing a medical test. 4,511,533, Cl. 422-61.000.

Guardian Fasteners and Closure Systems: *See*—
Marks, Milton, 4,510,826, Cl. 81-57.370.

Guerillot, Stephane: *See*—
Dureigne, Bernard; Guerillot, Stephane; and Regnault, Alain, 4,511,992, Cl. 364-825.000.

Guerrero, Manuel A., to Sony Corporation. Inertial tape positioning method and apparatus. 4,511,937, Cl. 360-72.100.

Guidry, Shelby L.; and DeCuir, Perry J., Sr., to Schlumberger Technology Corporation. Full-bore drill stem testing apparatus with surface pressure readout. 4,510,797, Cl. 73-151.000.

Guillory, Jack P.: *See*—
Reed, Larry E.; Porter, Randall A.; Farha, Floyd E., Jr.; and Guillory, Jack P., 4,511,405, Cl. 106-15.050.

Guilloteau, Rene , to Societe Generale pour les Techniques Nouvelles S.G.N. Rotary device for shearing a bundle of tubes containing burnt nuclear fuels. 4,510,832, Cl. 83-168.000.

Guilloteau, Rene , to Societe Generale pour les Techniques Nouvelles, S.G.N. Method and devices for producing exchanges in reservoirs used for storing radioactive materials. 4,511,500, Cl. 252-633.000.

Gulla, Michael: *See*—
Orio, Alfred P.; Levy, Leonard R.; and Gulla, Michael, 4,511,403, Cl. 106-1.220.

Gundel, Janos: *See*—
Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, 4,511,717, Cl. 544-353.000.

Gunderson, Steven J. Output following intermediate cascode circuit. 4,511,857, Cl. 330-311.000.

Gupta, Anil, to Seeq Technology, Inc. Charge pump for providing programming voltage to the word lines in a semiconductor memory array. 4,511,811, Cl. 307-463.000.

Gurries, Raymond A., to Resonant Technology Company. Pavement penetrating tool. 4,511,282, Cl. 404-90.000.

Guth, Jacob J.; and Verdicchio, Robert J., to Johnson & Johnson Baby Products Company. Detergent compounds and compositions. 4,511,513, Cl. 260-404.500.

Gutleber, Frank S., to United States of America, Army. Code compressor for multilevel interleaved multiplexed noise codes. 4,511,885, Cl. 340-347.0DD.

Gutleber, Frank S., to United States of America, Army. Impulse autocorrelation function communications system. 4,512,024, Cl. 375-34.000.

Guy, Theron M. P. J.: *See*—
Michel, Urien; and Guy, Theron M. P. J., 4,511,988, Cl. 364-717.000.

Gyles, Darrell D.: *See*—
Walsh, Richard J.; and Gyles, Darrell D., 4,511,046, Cl. 209-539.000.

H. H. Brown Shoe Co., Inc.: *See*—
Schour, Avi; and Bloch, Igal, 4,510,701, Cl. 36-68.000.

H. Krantz GmbH & Co.: *See*—
Richarts, Fritz, 4,510,762, Cl. 62-79.000.

Habeck, Reinhold; Mackiol, Norbert; Mautner, Franz; and Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Railroad vehicle bogie. 4,510,871, Cl. 105-167.000.

Haddad, Hussain A.: *See*—
Munson, Robert E.; and Haddad, Hussain A., 4,511,868, Cl. 333-257.000.

Hagen, Helmut; Markert, Juergen; Kohler, Rolf-Dieter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 3-Chloro-8-cyanoquinolines and their use for controlling undesirable plant growth. 4,511,393, Cl. 71-92.000.

Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Digital processor with floating point multiplier and adder suitable for digital signal processing. 4,511,990, Cl. 364-748.000.

Haldor Topsoe A/S: *See*—
Pedersen, Karsten; Rostrup-Nielsen, Jens R.; and Jorgensen, Ib Greve H., 4,511,674, Cl. 518-714.000.

Hallmark Findings, Inc.: *See*—
Alley, Philip J.; and Ireland, Thomas R., 4,510,772, Cl. 63-12.000.

Halsted, Charles P.: *See—*
Connor, John T.; Halsted, Charles P.; and Ravn, Jacob, 4,511,044, Cl. 209-522.000.

Hamada, Osamu, to Sony Corporation. Digital signal processing system. 4,511,966, Cl. 364-200.000.

Hamisch, Paul H., Jr.; and Mistyurik, John D., to Monarch Marking Systems, Inc. Hand-held labeler. 4,511,422, Cl. 156-384.000.

Hamlin International Corp.: *See—*
Forgey, James; and Kirk, Donald, Jr., 4,511,919, Cl. 358-120.000.

Hammond, Leslie A.; and Freeman, Norman H., to Australian Dairy Corporation. Manufacture of Cheddar and like cheese. 4,510,856, Cl. 99-457.000.

Hana, Thomas C.: *See—*
Henrich, Kenneth J.; and Hana, Thomas C., 4,511,852, Cl. 330-252.000.

Hanada, Masayuki: *See—*
Nozue, Ikutoshi; Fujii, Susumu; and Hanada, Masayuki, 4,511,668, Cl. 502-84.000.

Handling Systems, Inc.: *See—*
Volakakis, John G.; McNelis, Robert L.; and Wallentin, Burt H., 4,511,048, Cl. 212-253.000.

Hane, Toshioki: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,511,518, Cl. 260-543.00F.

Hann, Michael M.: *See—*
McCullagh, Keith G.; Wadsworth, Harry J.; and Hann, Michael M., 4,511,504, Cl. 260-112.50R.

Hanna, Thomas J.; Logsdon, Bill C.; and Meredith, Elmer E., to Hanna, Thomas J. Fishing lure. 4,510,710, Cl. 43-42.130.

Hans, Rudiger; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Support for a tension roller. 4,511,192, Cl. 384-543.000.

Hansen, Erik; and Lambach, Heinrich W., to Brdr. Schur International A/S. Method and an apparatus for closing packing bags for slaughtered poultry. 4,510,733, Cl. 53-434.000.

Hara, Takafumi, to Sharp Kabushiki Kaisha. Ink liquid reservoir in an ink jet system printer. 4,511,906, Cl. 346-140.00R.

Harada, Mineo: *See—*
Takahashi, Kazue; Okuna, Kenzi; Nakajima, Isao; Harada, Mineo; and Kako, Yutaka, 4,511,269, Cl. 400-124.000.

Harbeke, Gunther; and Duffy, Michael T., to RCA Corporation. Optical reflectance method for determining the surface roughness of materials in semiconductor processing. 4,511,800, Cl. 250-372.000.

Hardacre, Nicholas P., to Leigh Flexible Structure Ltd. Flexible barriers. 4,511,286, Cl. 405-115.000.

Hardin, James R., to UOP Inc. Well screen assembly with longitudinally ported connector sub. 4,510,996, Cl. 166-227.000.

Hardt, Peter: *See—*
Lehky, Pavel; and Hardt, Peter, 4,511,734, Cl. 562-524.000.

Hare, Charles E. Body and frame straightening system. 4,510,790, Cl. 72-457.000.

Harlan, Wayne E.; and Marsh, James C., Jr., to RCA Corporation. Television receiver with manual and selectively disabled automatic picture control. 4,511,921, Cl. 358-161.000.

Harlos, Hartmut: *See—*
Matthies, Karl H.; and Harlos, Hartmut, 4,511,853, Cl. 330-259.000.

Harris Corporation: *See—*
DiStefano, Ralph D.; and Moldovan, Nicholas, 4,511,438, Cl. 204-4.000.
Motiwala, M. Arif; and Sutherland, Jack L., 4,511,862, Cl. 332-16.00R.
Pan, Jing-Jong, 4,511,813, Cl. 307-501.000.

Harris, Leonard C.: *See—*
Harris, Nancy T.; and Harris, Leonard C., 4,511,163, Cl. 285-177.000.

Harris, Nancy T.; and Harris, Leonard C., to Mead Johnson & Company. Adaptable tip tubing connector. 4,511,163, Cl. 285-177.000.

Hart-Carter Company: *See—*
Jones, Dennis J.; and Kunz, Gary L., 4,511,466, Cl. 209-395.000.

Hart, Richard A.: *See—*
Chenausky, Peter P.; and Hart, Richard A., 4,512,021, Cl. 372-20.000.

Hart, William; and McKittrick, Michael T., Jr., to Mattel, Inc. Winding and launching device for toy vehicles. 4,511,342, Cl. 446-429.000.

Hartwig, Carl S. M., to Institut Cerac S.A. Method of driving the impeller of a liquid pump by means of a brushless a.c. motor; and a liquid pump for carrying out the method. 4,511,312, Cl. 417-45.000.

Hasenack, Hendrikus J. A., to Shell Oil Company. Burner and process for the partial combustion of solid fuel. 4,510,874, Cl. 110-347.000.

Hashimoto, Minoru: *See—*
Hideyama, Shozo; Ishizawa, Akio; Kumagai, Katuya; and Hashimoto, Minoru, 4,511,617, Cl. 428-412.000.

Hatchett, Michael R.: *See—*
Farran, John; Hatchett, Michael R.; and Heath, John S., 4,510,841, Cl. 83-176.000.

Hattori, Katsuhide: *See—*
Kakino, Shigeru; Hattori, Katsuhide; Fukatsu, Yoshiaki; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,511,412, Cl. 149-109.600.
Matsui, Fumio; Aono, Shin; Sakai, Hiroshi; Hattori, Katsuhide; and Kakino, Shigeru, 4,511,414, Cl. 149-109.600.

Hattori, Yoshinori: *See—*
Miura, Kazunori; Hattori, Yoshinori; and Matsuo, Yasushi, 4,511,402, Cl. 75-233.000.

Hatz, Ernst; and Absenger, Erich, to Motorenfabrik Hatz GmbH & Co. KG. Mechanism for actuating the valve rockers of an internal combustion engine. 4,510,897, Cl. 123-90.480.

Hauni-Werke Korber & Co. KG: *See—*
Greve, Heinz; and Wahle, Gunter, 4,510,885, Cl. 118-674.000.

Hauptmann, Edward G., to Wescam Services Inc. Apparatus for treating flue gas and methanol containing effluents. 4,511,379, Cl. 55-238.000.

Haver & Becker: *See—*
Muller, Mathias, 4,510,736, Cl. 53-567.000.

Hawkins, Ronald G.: *See—*
LaBarge, Robert L.; Horansky, Frank J.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,510,857, Cl. 100-53.000.
LaBarge, Robert L.; Pohlenz, Elmer E.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; and Scherf, Thomas W., 4,510,860, Cl. 100-49.000.

Hayashi, Chihiro; and Nakasuji, Kazuyuki, to Sumitomo Metal Industries, Ltd. Method of manufacturing hollow rods. 4,510,787, Cl. 72-368.000.

Hayashi, Hideki; Ito, Yukio; Akiike, Yukio; and Kinoshita, Shigeo, to Clarion Co., Ltd. Tape end detecting device in a tape player. 4,511,103, Cl. 242-186.000.

Hayashi, Mitsuyoshi: *See—*
Kudo, Shiro; and Hayashi, Mitsuyoshi, 4,511,588, Cl. 426-302.000.

Hayashida, Kenji, to Hosiden Electronics Co., Ltd. Rotary switch. 4,511,770, Cl. 200-6.00B.

Haynes, Charles W., to Joy Manufacturing Company. Slip mechanism. 4,511,168, Cl. 294-102.200.

Hazebrook, Daniel W.; Gehrke, Glenn F.; and Schmidt, Michael J., to GKN Automotive Components, Inc. Constant velocity universal joint. 4,511,346, Cl. 464-146.000.

Hazeltine Corporation: *See—*
Henrich, Kenneth J.; and Hana, Thomas C., 4,511,852, Cl. 330-252.000.

Heald, Anthony F.: *See—*
Bare, Thomas M.; and Heald, Anthony F., 4,511,568, Cl. 514-293.000.

Heath, John S.: *See—*
Farran, John; Hatchett, Michael R.; and Heath, John S., 4,510,841, Cl. 83-176.000.

Heath, Rodney T. Gas temperature control system for natural gas separator. 4,511,374, Cl. 55-20.000.

Hechenbleikner, Ingenuin; and Enlow, William P., to Borg-Warner Chemicals, Inc. Preparation of N-acyl-2,5-dimethylpyrroles from amides and acetonylacetone. 4,511,725, Cl. 548-530.000.

Heck, Gunter; Lienerth, Aladar; Malow, Egon; Schwarz, Karl-Heinz; and Faust, Uwe, to Hoechst Aktiengesellschaft. Process for the continuous rectification of alcoholic fermates. 4,511,437, Cl. 203-19.000.

Heckler & Koch GmbH: *See—*
Fritz, Raimund; and Zeyher, Fritz, 4,510,844, Cl. 89-135.000.

Heft, Eldon B.; Huseby, Irvin C.; and Szymaszek, Jan W., to General Electric Company. Molding composition for arc circuit breakers. 4,511,773, Cl. 200-144.00C.

Heidemann, Gerhard: *See—*
Jung, Thomas; and Heidemann, Gerhard, 4,511,007, Cl. 175-297.000.

Heilmann, Edmund: *See—*
Kintzel, Gerhard; and Heilmann, Edmund, 4,510,829, Cl. 82-36.00R.

Heine, Hans G.: *See—*
Hochstrasser, Otto; Heine, Hans G.; and Buechi, Heinz, 4,511,125, Cl. 266-135.000.

Heinerman, Jacobus J. L., to Shell Oil Company. Process for the hydroisomerization of paraffins. 4,511,752, Cl. 585-739.000.

Helena Laboratories Corporation: *See—*
Guadagno, Philip A.; and Sanford, James R. M., 4,511,533, Cl. 422-61.000.

Hempel, David A.: *See—*
Bierman, Laurence W.; Polinsky, Samuel M.; Hempel, David A.; and Humberger, Roger B., 4,511,541, Cl. 423-100.000.

Henderson, Deborah; and Street, Norman, to W. L. Gore & Associates, Inc. Barrier for use during cardiopulmonary resuscitation. 4,510,931, Cl. 128-202.280.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Pruhs, Horst; and Altenschopfer, Theodor, 4,511,487, Cl. 252-99.000.

Henrich, Kenneth J.; and Hana, Thomas C., to Hazeltine Corporation. Differential amplifier having balanced output. 4,511,852, Cl. 330-252.000.

Herbage, Daniel: *See—*
Play, Dominique; Bonneau, Marc; Merieux, Charles; Herbage, Daniel; and Comte, Philippe, 4,511,653, Cl. 435-69.000.

Hereit, Frantisek; and Mutl, Silvestr, to Hydroprojekt. Apparatus for the simultaneous formation and separation of a liquid suspension. 4,511,467, Cl. 210-173.000.

Herlein, Dick: *See—*
Nagy, Alex; and Herlein, Dick, 4,511,846, Cl. 328-164.000.

Herman, Alexander: *See—*
Frankel, Robert S.; and Herman, Alexander, 4,512,025, Cl. 375-36.000.

Hermanson, Terry, to Mr. Christmas Incorporated. Foldable umbrella. 4,510,955, Cl. 135-25.00R.

Herron, Lorne R., to Atlas Copco Aktiebolag. Method of rock bolting and rock bolt. 4,511,289, Cl. 405-259.000.

Herzog, Siegfried: *See*—
Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, 4,511,214, Cl. 350-632.000.

Hesse, Theodor; and Barkmeyer, Hans, to Engelbrecht & Lemmerbrock GmbH & Co. Pneumatic suction devices for discharging granulates. 4,511,292, Cl. 406-152.000.

Hewlett-Packard Company: *See*—
Georg, Dennis D.; and Osecky, Benjamin D., 4,511,964, Cl. 364-200.000.

Hiatt, Norman A.: *See*—
Boyd, Mary G.; Smith, Donald R.; Imondi, Peter F.; Hiatt, Norman A.; Bauer, Fritz E.; Anemaet, John M.; and MacKenzie, Alfred K., 4,511,425, Cl. 156-493.000.
Margerum, Edward S.; and Hiatt, Norman A., 4,511,602, Cl. 427-148.000.

Hicks, Darrell D., to Celanese Corporation. Low viscosity UV curable polyacrylates. 4,511,732, Cl. 560-221.000.

Hidaka, Tsuneo; Inoue, Masahide; and Ogiso, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha. Artificial apatite dental root. 4,511,336, Cl. 433-173.000.

Hideyama, Shozo; Ishizawa, Akio; Kumagai, Katuya; and Hashimoto, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic recording medium. 4,511,617, Cl. 428-412.000.

Hieber, Konrad: *See*—
Schwabe, Ulrich; Neppl, Franz; and Hieber, Konrad, 4,510,670, Cl. 29-571.000.

Higashi, Kensaku; Yano, Haruhiko; Sato, Hirotsugu; Sukegawa, Ken; and Ooba, Yuji, to Nippon Telegraph and Telephone Public Corp.; and Tomoegawa Paper Manufacturing Co., Ltd. Photo-fixing heat-sensitive recording media with photosensitive diazonium salt, coupler, and organic boron salt. 4,511,642, Cl. 430-161.000.

Hightower, Floyd. Adjustable sling for rifles, shotguns or the like. 4,511,070, Cl. 224-150.000.

Higuchi, Fumio: *See*—
Ida, Jinsei; Fujita, Tsutomu; Yamada, Ichiho; Higuchi, Fumio; and Matsuo, Kenzaburo, 4,510,669, Cl. 29-568.000.

Hikin, Boris L.: *See*—
Prussin, Simon A.; and Hikin, Boris L., 4,510,798, Cl. 73-150.00R.

Hine, Jean Patrick: *See*—
Flot, Regis; and Hine, Jean Patrick, 4,510,827, Cl. 81-9.400.

Hirai, Hiroyuki; and Kawata, Ken, to Fuji Photo Film Co., Ltd. Heat developable color light-sensitive materials with base releasors. 4,511,650, Cl. 430-559.000.

Hirai, Koichi: *See*—
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,511,744, Cl. 568-864.000.

Hirai, Masaru: *See*—
Hisamoto, Iwao; Maeda, Chiaki; and Hirai, Masaru, 4,511,733, Cl. 560-253.000.

Hiraiwa, Kazuyoshi: *See*—
Kawamoto, Tamio; and Hiraiwa, Kazuyoshi, 4,510,817, Cl. 74-477.000.

Hirakawa, Manabu: *See*—
Shimomura, Takatoshi; Fujita, Fumio; and Hirakawa, Manabu, 4,511,711, Cl. 528-489.000.

Hirano, Hiroyuki: *See*—
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,510,822, Cl. 74-733.000.

Hirano, Tsumoru; Yagihara, Morio; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,511,647, Cl. 430-381.000.

Hirata, Masanobu: *See*—
Nishikawa, Hisashi; Suzuki, Satoshi; Hirata, Masanobu; Sakamoto, Koichiro; Fujisawa, Ikuo; and Takeno, Shozo, 4,511,877, Cl. 338-2.000.

Hirose, Hideo, to Nippon Kogaku K.K. Telecentric variable power illumination system. 4,511,223, Cl. 350-523.000.

Hisamoto, Iwao; Maeda, Chiaki; and Hirai, Masaru, to Daikin Kogyo Co., Ltd. Fluorine-containing aminocarboxylic acid compounds. 4,511,733, Cl. 560-253.000.

Hise, Ralph E.; and Swenson, Paul F., to Consolidated Natural Gas Service Company, Inc. Cogeneration. 4,510,756, Cl. 60-659.000.

Hitachi Cable Ltd.: *See*—
Natori, Takeshi; Kobayashi, Yoji; Watanabe, Shigetaka; Shimizu, Katsumi; Matsumura, Ikuei; Namekawa, Yoshihiro; and Miyanaga, Satoshi, 4,510,974, Cl. 138-137.000.

Hitachi Chemical Company: *See*—
Yoshida, Masatoshi; and Miyadera, Yasuo, 4,511,681, Cl. 523-310.000.

Hitachi Chemical Company, Ltd.: *See*—
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,511,705, Cl. 528-26.000.

Hitachi Const. Mach. Company: *See*—
Shimada, Satoshi; Murayama, Ken; Kobori, Shigeyuki; and Kawakami, Kanji, 4,511,878, Cl. 338-4.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,510,750, Cl. 60-443.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.

Hitachi Engineering Kabushiki Kaisha: *See*—
Kawano, Hikaru; Sato, Koji; and Nogi, Hiroyoshi, 4,511,301, Cl. 414-43.000.

Hitachi, Ltd.: *See*—
Atago, Takeshi; and Manaka, Toshio, 4,510,907, Cl. 123-435.000.
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.
Kanda, Hiroshi; and Ishikawa, Isao, 4,510,810, Cl. 73-606.000.
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, 4,511,998, Cl. 367-11.000.
Machida, Tetsuo; Tsuhara, Susumu; Tabata, Kuniaki; and Okada, Yasuyuki, 4,511,962, Cl. 364-200.000.
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,511,705, Cl. 528-26.000.
Matsuda, Toshiharu; Imamura, Minoru; and Saho, Norihide, 4,510,771, Cl. 62-514.00R.
Mizutani, Tatsumi; Ohgata, Toshihide; and Komatsu, Hideo, 4,511,429, Cl. 156-643.000.
Morinaga, Shigeki; Miyashita, Kunio; and Sugiura, Yasuyuki, 4,511,827, Cl. 318-254.000.
Nagano, Takahiro, 4,511,913, Cl. 357-38.000.
Nakamura, Yoichi; Yamamoto, Akio; Nogita, Shunsuke; Kuge, Toshio; and Muroi, Katsumi, 4,511,363, Cl. 44-1.00G.
Okano, Yoshio; and Okuma, Yasuo, 4,511,970, Cl. 364-401.000.
Satake, Shozo, 4,511,812, Cl. 307-465.000.
Shimada, Satoshi; Murayama, Ken; Kobori, Shigeyuki; and Kawakami, Kanji, 4,511,878, Cl. 338-4.000.
Takahashi, Kazue; Okuna, Kenzi; Nakajima, Isao; Harada, Mineo; and Kako, Yutaka, 4,511,269, Cl. 400-124.000.

Hjorth-Hansen, Arne. Apparatus for controlling the inflation of tires. 4,510,979, Cl. 141-95.000.

Hlusko, Edward G. Manually operable resizing cartridge press and method for operating same. 4,510,842, Cl. 86-25.000.

Hobart Corporation: *See*—
Mathieu, Raymond J., 4,510,731, Cl. 53-66.000.

Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,511,672, Cl. 502-243.000.

Hochstrasser, Otto; Heine, Hans G.; and Buechi, Heinz, to BBC Brown Boveri, Inc. Ladle scraper mechanism. 4,511,125, Cl. 266-135.000.

Hoddie Corporation, Inc., The: *See*—
Krause, Glenn C.; and Blounts, Joseph, 4,511,063, Cl. 222-75.000.

Hodge, David H.: *See*—
Mitchell, Terry L.; and Hodge, David H., 4,511,198, Cl. 339-34.000.

Hoechst Aktiengesellschaft: *See*—
Heck, Gunter; Lienerth, Aladar; Malow, Egon; Schwarz, Karl-Heinz; and Faust, Uwe, 4,511,437, Cl. 203-19.000.
Schrodter, Klaus; and Maurer, Alexander, 4,511,546, Cl. 423-305.000.

Hoeffken, Russell W., to Snyder General Corporation. Method of manufacturing a two-plate heat exchanger. 4,510,660, Cl. 29-157.30D.

Hofelt, Martijn H. H.; de Niet, Edmond; and Rijckaert, Albert M. A., to U.S. Philips Corporation. Method and apparatus for recording a digital information signal. 4,511,933, Cl. 360-47.000.

Hofer, Beat: *See*—
Brunner, Paul; and Hofer, Beat, 4,511,411, Cl. 148-20.300.

Hoffman, Allan S.: *See*—
Nowinski, Robert C.; and Hoffman, Allan S., 4,511,478, Cl. 210-691.000.

Hoffman, Carvel D.: *See*—
Tatham, Edward J.; Kravits, Richard; Clymer, John C.; and Hoffman, Carvel D., 4,511,801, Cl. 250-394.000.

Hoffmann-La Roche Inc.: *See*—
Ramuz, Henri, 4,511,720, Cl. 546-273.000.

Hoffmann, Wolfgang: *See*—
Sauer, Wolfgang; and Hoffmann, Wolfgang, 4,511,739, Cl. 568-473.000.

Hofmann, Lee G.; and Dittmar, Charles J., Jr., to General Electric Company. Large angle, gravity compensated, bank-to-turn pursuit controller. 4,511,972, Cl. 364-434.000.

Hohne, Gerd: *See*—
Bodig, Bernd; Hohne, Gerd; and Schmied, Helmut, 4,512,019, Cl. 371-12.000.

Holland, Gerald F., to Pfizer Inc. Antidiabetic pyrrolecarboxylic acids. 4,511,575, Cl. 514-423.000.

Holland, Gerald F., to Pfizer Inc. Antidiabetic pyrrolecarboxylic acids. 4,511,576, Cl. 514-423.000.

Hollingsead International, Inc.: *See*—
Espinoza, Cesar, 4,510,650, Cl. 24-16.0PB.

Holonyak, Nick, Jr., to University of Illinois, The Board of Trustees of The. Semiconductor device fabrication with disordering elements introduced into active region. 4,511,408, Cl. 148-1.500.

Holstedt, Richard A.; Baron, Kenneth; and Jessup, Peter, to Union Oil Company of California. Boron containing heterocyclic compounds. 4,511,516, Cl. 260-462.00R.

Holt, Peter J., to Formflo Limited. Ring rolling. 4,510,781, Cl. 72-105.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ida, Jinsei; Fujita, Tsutomu; Yamada, Ichiho; Higuchi, Fumio; and Matsuo, Kenzaburo, 4,510,669, Cl. 29-568.000.
Miyakoshi, Shinichi; and Tsunoda, Kazuhiko, 4,511,013, Cl. 180-227.000.
Otobe, Yutaka, 4,510,911, Cl. 123-493.000.
Tsuboi, Masaharu, 4,510,820, Cl. 74-474.000.
Yatabe, Fumio; and Ozaki, Syunzaburo, 4,510,901, Cl. 123-325.000.

Honda, Naojiro: *See—*
Sakai, Takashi; Honda, Naojiro; and Yonezu, Ikuo, 4,510,759, Cl. 62-48.000.
Honeywell GmbH: *See—*
Multrus, Vladimir, 4,510,961, Cl. 137-86.000.
Honeywell Inc.: *See—*
Arcara, Samuel A., 4,511,262, Cl. 374-37.000.
Honeywell Information Systems Inc.: *See—*
Boudreau, Daniel A., 4,511,960, Cl. 364-200.000.
Honma, Kazuo: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,510,750, Cl. 60-443.000.
Hoogovens Groep B.V.: *See—*
Ploegaert, Hendrikus T.; Molenaar, Ronald N.; and Butter, Johannes A. M., 4,510,793, Cl. 73-86.000.
Hopkins, Bob C.: *See—*
Jennings, Charles E.; Barrington, Claud C.; Chen, Lien-Yan; Hopkins, Bob C.; McIntyre, John N.; and Regitz, Alfred P., 4,510,960, Cl. 137-75.000.
Hopmann, Mark E.: *See—*
Krause, William F., Jr.; and Hopmann, Mark E., 4,510,995, Cl. 166-217.000.
Hoppe, Manfred: *See—*
Schmid, Eduard; and Hoppe, Manfred, 4,511,684, Cl. 524-101.000.
Horansky, Frank J.: *See—*
LaBarge, Robert L.; Horansky, Frank J.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,510,857, Cl. 100-53.000.
LaBarge, Robert L.; Pohlenz, Elmer E.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; and Scherf, Thomas W., 4,510,860, Cl. 100-49.000.
Hori, Tatsu, to Savin Corporation. Traversing, intermittently contacting sheet pickoff for electrophotographic copier. 4,511,238, Cl. 355-3.0SH.
Horikoshi, Toshio: *See—*
Watanabe, Katsuhiro; Minei, Masayuki; and Horikoshi, Toshio, 4,510,951, Cl. 132-7.000.
Horiuchi, Teruo, to Kabushiki Kaisha Daini Seikosha. Bar code input electronic timepiece. 4,511,259, Cl. 368-10.000.
Horiya, Keiichi: *See—*
Miyazaki, Naoki; Horiya, Keiichi; Shiozaki, Tsugio; and Takahama, Kazuhide, 4,511,903, Cl. 346-76.0PH.
Horn, Dieter: *See—*
Nissen, Axel; Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, 4,511,685, Cl. 524-110.000.
Hornak, Leonard P.: *See—*
Swidwa, Kenneth J.; Hornak, Leonard P.; and Kowalski, Edward F., 4,511,531, Cl. 376-262.000.
Horner, Jerome T.: *See—*
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Horner, Michael: *See—*
Nissen, Axel; Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, 4,511,685, Cl. 524-110.000.
Hornung, Rainer: *See—*
Ehrlich, Willibald; Jooss, Hans; and Hornung, Rainer, 4,511,606, Cl. 427-386.000.
Horodysky, Andrew G., to Mobil Oil Corporation. N-hydrocarbylhydrocarbylenediamine carboxylate and lubricants containing same. 4,511,482, Cl. 252-34.000.
Horton, Edward E., to Global Marine, Inc. Submerged buoyant offshore drilling and production tower. 4,511,287, Cl. 405-204.000.
Horton, Robert L.; and Stahl, G. Allan, to Phillips Petroleum Company. Ion exchange-active compositions consisting of water-soluble polyelectrolyte upon ion exchange functional substrate. 4,511,677, Cl. 521-28.000.
Hoshino, Isao: *See—*
Murakami, Teruo; and Hoshino, Isao, 4,512,006, Cl. 369-50.000.
Hosiden Electronics Co., Ltd.: *See—*
Hayashida, Kenji, 4,511,770, Cl. 200-6.00B.
Hosono, Nagao: *See—*
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Hosotani, Takeo: *See—*
Yokoyama, Akira; Arano, Yasushi; and Hosotani, Takeo, 4,511,550, Cl. 424-1.100.
Hou, Kenneth C., to AMF Incorporated. Fibrous media containing millimicron-sized particulates. 4,511,473, Cl. 210-348.000.
Houdaille Industries, Inc.: *See—*
Crowley, John E., 4,510,977, Cl. 140-123.000.
House, David W.: *See—*
Swedo, Raymond J.; and House, David W., 4,511,492, Cl. 252-500.000.
Howard, David M.: *See—*
Fourcin, Adrian J.; Howard, David M.; and Walliker, John R., 4,510,936, Cl. 128-419.00R.
Howard, Glenn. Densification - pelletizing of organic materials. 4,511,321, Cl. 425-331.000.
Howie, Robert K., Jr., to Grigoleit Company, The. Knob with decorative end cap and method of manufacturing it. 4,510,666, Cl. 29-511.000.
Hsia, Chung H.: *See—*
Wright, Bernard S.; Hsia, Chung H.; and Owen, Hartley, 4,511,747, Cl. 585-415.000.
Hsia, Min A., to Norton Company. Tower packing elements. 4,511,519, Cl. 261-94.000.
Hsu, James P.: *See—*
Hsu, Michael S.; and Hsu, James P., 4,511,216, Cl. 350-311.000.
Hsu, Joseph. Fabrication of a composite material racket frame. 4,511,523, Cl. 264-46.600.
Hsu, Michael S.; and Hsu, James P., to United States of America, Air Force. High power laser dump. 4,511,216, Cl. 350-311.000.
Hsu, Yu-Wen, to Kaiser Aluminum & Chemical Corporation. Rolling mill spray bar. 4,510,784, Cl. 72-201.000.
Huang, Yi-Shiou: *See—*
Anantha, Narasipur G.; Gaur, Santosh P.; Huang, Yi-Shiou; and Tsang, Paul J., 4,510,676, Cl. 29-577.00C.
Hudson, William S.: *See—*
Neron, Joseph; Hudson, William S.; and Miller, Ronald L., 4,510,825, Cl. 81-57.290.
Huerta, Jose L.; Rachui, Roy A.; Roberts, James E.; and Simpson, Grainger I., Jr., to International Business Machines Corporation. Enhanced envelope feeding. 4,511,135, Cl. 271-126.000.
Hughes, Charles C., to R. A. Jones & Co. Inc. Lockout for a rotary feeder. 4,511,134, Cl. 271-113.000.
Hulbritt Developments Limited: *See—*
Edmondson, Alan S., 4,510,730, Cl. 53-53.000.
Hultgren, Kent G., to Westinghouse Electric Corp. Combustion turbine single airfoil stator vane structure. 4,511,306, Cl. 415-136.000.
Humberger, Roger B.: *See—*
Bierman, Laurence W.; Polinsky, Samuel M.; Hempel, David A.; and Humberger, Roger B., 4,511,541, Cl. 423-100.000.
Hunt Manufacturing Co.: *See—*
Godfrey, Steven W.; Stern, Allen M.; and MacGregor, Fran W., 4,511,111, Cl. 248-459.000.
Hunziker, Martin; and Schildknecht, Albert. Process for the utilization of household rubbish or garbage and other organic waste products for the production of methane gas. 4,511,370, Cl. 48-197.00A.
Huseby, Irvin C.: *See—*
Heft, Eldon B.; Huseby, Irvin C.; and Szymaszek, Jan W., 4,511,773, Cl. 200-144.00C.
Hustler Conveyor Company: *See—*
Moore, Joseph, 4,511,302, Cl. 414-327.000.
Hutchins, Burleigh M.; and Abrahams, Louis, to Zymark Corporation. Robot tool system. 4,510,684, Cl. 29-703.000.
Hutchinson: *See—*
Bernuchon, Marc; Pompei, Michel; and Gregoire, Daniel, 4,511,126, Cl. 267-140.100.
Huth, Joseph F., III: *See—*
Olmsted, Robert W.; and Huth, Joseph F., III, 4,511,872, Cl. 336-83.000.
Huther, Werner; and Rossmann, Axel, to Motoren-und Turbinen-Union Munchen GmbH. Multiple-layer wall for a hollow body and method for manufacturing same. 4,511,612, Cl. 428-36.000.
Hutten, Heinrich: *See—*
Ballik, Rainer; and Hutten, Heinrich, 4,511,082, Cl. 239-8.000.
Hwang, Edward F.: *See—*
Okamoto, Yoshiyuki; and Hwang, Edward F., 4,511,702, Cl. 526-90.000.
Hydroprojekt: *See—*
Hereit, Frantisek; and Mutl, Silvestr, 4,511,467, Cl. 210-173.000.
Ianni, John P., Jr.: *See—*
Shils, Alan J.; and Ianni, John P., Jr., 4,510,673, Cl. 29-574.000.
ICI Americas Inc.: *See—*
Bare, Thomas M.; and Heald, Anthony F., 4,511,568, Cl. 514-293.000.
ICI Australia Limited: *See—*
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; and Farquharson, Graeme J., 4,511,391, Cl. 71-88.000.
Ida, Jinsei; Fujita, Tsutomu; Yamada, Ichiho; Higuchi, Fumio; and Matsuo, Kenzaburo, to Honda Giken Kogyo Kabushiki Kaisha. Replaceable gang head machine tool. 4,510,669, Cl. 29-568.000.
Ida, Mitsuru, to Sony Corporation. Cassette tape apparatus with adjustable head positioning characteristics. 4,511,941, Cl. 360-105.000.
Ideno, Eizo; Fukushi, Shinichi; Tai, Masahiko; Nakazawa, Koji; and Fujita, Toshihito, to Shimadzu Corporation; and Nitto Boseki Co., Ltd. Method and apparatus for winding glass fibers. 4,511,095, Cl. 242-18.00G.
Iida, Masanao: *See—*
Toma, Ken; Iida, Masanao; and Takeuchi, Yo, 4,511,632, Cl. 428-654.000.
Iida, Takao: *See—*
Tomita, Fusao; Tamaoki, Tatsuya; Shirahata, Kunikatsu; Iida, Takao; Morimoto, Makoto; and Fujimoto, Kazuhisa, 4,511,560, Cl. 514-27.000.
Iijima, Toshifumi: *See—*
Yamashita, Kiyoshi; and Iijima, Toshifumi, 4,511,648, Cl. 430-503.000.
Iijima, Yukihiko; and Kobayashi, Sadame, to Nippon Electric Co., Ltd. Television signal amplitude detection circuit. 4,511,920, Cl. 358-139.000.
Iiyama, Kiyotaka: *See—*
Taniguchi, Keishi; and Iiyama, Kiyotaka, 4,511,910, Cl. 346-216.000.
Ikeda, Hiroaki: *See—*
Maeda, Masatoshi; Katsurai, Junji; and Ikeda, Hiroaki, 4.511,929, Cl. 358-296.000.
Ikezawa, Harumi: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,511,744, Cl. 568-864.000.

Imai, Hirosuke: *See*—
Kudoh, Michio; Matsuno, Mitsuo; and Imai, Hirosuke, 4,511,748, Cl. 585-467.000.
Imai, Iwao: *See*—
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,510,915, Cl. 123-620.000.
Imai, Shigeru: *See*—
Matsumoto, Masao; and Imai, Shigeru, 4,510,662, Cl. 29-408.000.
Imai, Yougo; and Takenaga, Hideo, to Olympus Optical Company Limited. Tape recorder. 4,511,935, Cl. 360-66.000.
Imamichi, Tutomu, to Omron Tateisi Electronics Co. System for performing transactions. 4,511,794, Cl. 235-379.000.
Imamura, Minoru: *See*—
Matsuda, Toshiharu; Imamura, Minoru; and Saho, Norihide, 4,510,771, Cl. 62-514.00R.
Imataki, Mitsumasa: *See*—
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Imondi, Peter F.: *See*—
Boyd, Mary G.; Smith, Donald R.; Imondi, Peter F.; Hiatt, Norman A.; Bauer, Fritz E.; Anemaet, John M.; and MacKenzie, Alfred K., 4,511,425, Cl. 156-493.000.
Imperial Clevite Inc.: *See*—
Snyder, Daniel S.; and Benincasa, Timothy C., 4,511,869, Cl. 334-20.000.
Inaba, Hajimu; and Sakakibara, Shinsuke, to Fanuc Ltd. Robot control system. 4,511,985, Cl. 364-513.000.
Inaba, Yutaka, to Tokyo Medical and Dental University. Support device for medical instruments. 4,510,926, Cl. 128-20.000.
Inami, Mamoru; Tanaka, Yoshiaki; and Otsuki, Zenju, to Victor Company of Japan, Limited. Musical note display device. 4,510,840, Cl. 84-477.00R.
Incerti Baldi, Andrea: *See*—
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,511,064, Cl. 222-153.000.
Industrial Woodworking Machine Co. Inc.: *See*—
Cromeens, Jeff Y., 4,510,835, Cl. 83-471.200.
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., to Century International Corp. Combination bowling lane stripper and duster. 4,510,642, Cl. 15-231.000.
Inoue, Akitoshi: *See*—
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Inoue, Hiroshi: *See*—
Tsuge, Akihiko; Komatsu, Michiyasu; Inoue, Hiroshi; and Komeya, Katsutoshi, 4,511,525, Cl. 264-65.000.
Inoue, Hitoshi, to Mazda Motor Corporation. Vehicle rear wheel suspension. 4,511,160, Cl. 280-701.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,511,595, Cl. 427-43.100.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Laser-activated chemical-depositing method and apparatus. 4,511,595, Cl. 427-43.100.
Inoue, Masahide: *See*—
Hidaka, Tsuneo; Inoue, Masahide; and Ogiso, Makoto, 4,511,336, Cl. 433-173.000.
Inoue, Satoru: *See*—
Ohsumi, Tadashi; Inoue, Satoru; and Maeda, Kiyoto, 4,511,581, Cl. 514-617.000.
Inoue, Takehisa: *See*—
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,511,547, Cl. 423-329.000.
Inoue, Tetsuzo: *See*—
Kawabata, Susumu; Inoue, Tetsuzo; Miyamoto, Noriaki; Shibuya, Masanobu; and Kaneko, Masashi, 4,510,745, Cl. 57-415.000.
Institut Cerac S.A.: *See*—
Hartwig, Carl S. M., 4,511,312, Cl. 417-45.000.
Institut Francais du Petrole: *See*—
Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , 4,511,458, Cl. 208-59.000.
Denis, Jacques; Sillion, Bernard; Damin, Bernard; and Leger, Robert, 4,511,369, Cl. 44-62.000.
Seite, Claude; Commereuc, Dominique; and Chauvin, Yves, 4,511,743, Cl. 568-814.000.
Institutet for Optisk Forskning: *See*—
Thylen, Lars; Stensland, Leif; and Arvidsson, Gunnar, 4,511,206, Cl. 350-96.110.
Instrumentarium Oy: *See*—
Rantala, Borje, 4,511,847, Cl. 328-167.000.
International Business Machines: *See*—
Bellar, Robert J.; Golden, William G.; Saperstein, David D.; and Vats, Ashok, 4,511,986, Cl. 364-576.000.
Betts, Alan J., 4,511,938, Cl. 360-77.000.
International Business Machines Corporation: *See*—
Alt, Richard C.; and Pinter, Joseph, 4,510,862, Cl. 101-93.140.
Anantha, Narasipur G.; Gaur, Santosh P.; Huang, Yi-Shiou; and Tsang, Paul J., 4,510,676, Cl. 29-577.00C.
Ashbee, William H.; Janssen, Donovan M.; Martin, Ronald J.; and Seaward, William S., 4,511,242, Cl. 355-14.00C.
Chen, Lee; and Mathad, Gangadhara S., 4,511,430, Cl. 156-643.000.
Chu, Richard, 4,510,685, Cl. 29-837.000.
Farran, John; Hatchett, Michael R.; and Heath, John S., 4,510,841, Cl. 83-176.000.
Garwin, Richard L.; and Levine, James L., 4,511,760, Cl. 178-18.000.
Ghosh, Hitendra; Murgai, Ashok; and Westdorp, Wolfgang A., 4,511,428, Cl. 156-601.000.
Huerta, Jose L.; Rachui, Roy A.; Roberts, James E.; and Simpson, Grainger I., Jr., 4,511,135, Cl. 271-126.000.
Kantner, Robert F., 4,511,963, Cl. 364-200.000.
Kenney, Donald M., 4,511,911, Cl. 357-23.600.
Shils, Alan J.; and Ianni, John P., Jr., 4,510,673, Cl. 29-574.000.
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Baumert, Kenneth L.; Sagues, Alberto A.; and Davis, Burtron H., 4,511,453, Cl. 208-8.0LE.
Baumert, Kenneth L.; Sagues, Alberto A.; and Davis, Burtron H., 4,511,460, Cl. 208-348.000.
International Medical Electronics, Ltd.: *See*—
Rogers, Noel A., 4,510,937, Cl. 128-422.000.
International Meehanite Metal Company Limited, The: *See*—
Mannion, Geoffrey; and Palmer, Patrick V., 4,511,401, Cl. 75-130.00R.
International Rectifier Corporation: *See*—
Wood, Peter N., 4,511,815, Cl. 307-584.000.
International Standard Electric Corporation: *See*—
Crossland, William A.; Ross, Peter W.; and Ayliffe, Peter J., 4,511,926, Cl. 358-236.000.
Kuehn, Volker; Rothfuss, Werner; and Widmaier, Richard, 4,511,421, Cl. 156-356.000.
Weiss, Eberhard, 4,511,340, Cl. 445-6.000.
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Fujimoto, Terunori; Shimizu, Nobuyoshi; Shimizu, Mutsuhiro; Yanagihara, Kazunori; Miyachi, Akio; and Inui, Tsuneo, 4,511,631, Cl. 428-632.000.
Invacare Corporation: *See*—
Klimo, Robert G., 4,511,825, Cl. 318-67.000.
Invocas, Inc.: *See*—
Stol, Israel, 4,511,296, Cl. 411-20.000.
Iowa State University Research Foundation, Inc.: *See*—
Runyan, William S., 4,511,211, Cl. 350-117.000.
IPS Interproject Service AB: *See*—
Axelsson, Carl-Lennart, 4,511,372, Cl. 48-197.00R.
Ireland, Thomas R.: *See*—
Alley, Philip J.; and Ireland, Thomas R., 4,510,772, Cl. 63-12.000.
Irlande, Jean-Paul. Apparatus for controlling transfers of files between computers. 4,511,759, Cl. 178-2.00R.
Irvine, Robert L.: *See*—
Colaruotolo, Joseph F.; Irvine, Robert L.; Ketchum, Lloyd H., Jr.; and Ying, Wei-chi, 4,511,657, Cl. 435-253.000.
Ischen, Gunter: *See*—
Grunsky, Manfred; Sussmuth, Reiner; and Ischen, Gunter, 4,511,294, Cl. 408-232.000.
Iseki, Masahide: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,511,241, Cl. 355-14.0CU.
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Ishida, Toshihiko: *See*—
Nunokawa, Eiichi; Ishida, Toshihiko; and Ohira, Yasuo, 4,511,099, Cl. 242-71.800.
Ishigaki Kiko Co., Ltd.: *See*—
Iwatani, Akitoshi, 4,511,469, Cl. 210-225.000.
Ishihama, Hiroshi: *See*—
Umezawa, Hamao; Oono, Masaji; Ishihama, Hiroshi; Kyotani, Yoshinori; and Takahashi, Yoshio, 4,511,509, Cl. 260-239.00A.
Ishii, Tamaki; Yachigo, Shinichi; and Takahashi, Yukoh, to Sumitomo Chemical Co., Ltd. Stabilizers for synthetic resins. 4,511,491, Cl. 252-404.000.
Ishikawa, Isao: *See*—
Kanda, Hiroshi; and Ishikawa, Isao, 4,510,810, Cl. 73-606.000.
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, 4,511,998, Cl. 367-11.000.
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, to Nissan Motor Company, Limited. Plasma ignition system for an internal combustion engine. 4,510,915, Cl. 123-620.000.
Ishimori, Isao: *See*—
Matoba, Yasuo; and Ishimori, Isao, 4,511,698, Cl. 525-187.000.
Ishino, Yoshitane; Naruse, Toshihisa; and Sawano, Toshiyuki, to Kabushiki Kaisha Komatsu Seisakusho. Water-bottom rubbles leveling apparatus. 4,510,705, Cl. 37-54.000.
Ishizawa, Akio: *See*—
Hideyama, Shozo; Ishizawa, Akio; Kumagai, Katuya; and Hashimoto, Minoru, 4,511,617, Cl. 428-412.000.
Ishizuka, Seiichi; and Kubo, Junji, to Teijin Limited. Methods of controlling the concentration of calcium in the serum of warm-blooded animals and pharmaceutical compositions to be used therefor. 4,511,564, Cl. 514-167.000.
Ishizuka, Yutaka; and Shibuya, Tsunenori, to Diesel Kiki Company, Ltd. Compression capacity control apparatus for swash plate compressor. 4,511,313, Cl. 417-270.000.
Isobe, Yukihiro: *See*—
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.
Isolite Babcock Refractories Co., Ltd.: *See*—
Yamamoto, Masafumi, 4,511,664, Cl. 501-35.000.

Isuzu Motors Limited: *See—*
Kawamura, Hideo, 4,511,792, Cl. 219-499.000.
Ito, Hajime: *See—*
Yano, Naomichi; Makido, Isao; and Ito, Hajime, 4,510,921, Cl. 126-429.000.
Ito, Yukio: *See—*
Hayashi, Hideki; Ito, Yukio; Akiike, Yukio; and Kinoshita, Shigeo, 4,511,103, Cl. 242-186.000.
ITT Corporation: *See—*
Rosebrooks, Nathan B., 4,510,884, Cl. 118-405.000.
ITT Industries, Inc.: *See—*
Adam, Fritz G., 4,511,881, Cl. 340-347.0DA.
Drake, Cyril F.; Jones, Ronald; Bateson, Paul F.; Grant, Ronald J.; and Burrage, Martin E., 4,511,404, Cl. 106-14.120.
Fritz, Bernd, 4,511,218, Cl. 350-356.000.
Marianu, Vlad, 4,511,019, Cl. 188-72.200.
Iwamoto, Akito: *See—*
Sekizawa, Hidekazu; Iwamoto, Akito; Togashi, Kousaku; and Fujie, Hideo, 4,510,866, Cl. 101-365.000.
Iwasaki, Masayuki: *See—*
Koike, Mitsuru; Kobayashi, Kesanao; Toyama, Tadao; Misu, Hiroshi; Tamoto, Koji; and Iwasaki, Masayuki, 4,511,645, Cl. 430-276.000.
Iwatani, Akitoshi, to Ishigaki Kiko Co., Ltd. Filter press of movable twin head type. 4,511,469, Cl. 210-225.000.
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, to Toray Industries, Incorporated. Process for preparing crystalline aluminosilicate zeolites using a carboxylic acid. 4,511,547, Cl. 423-329.000.
Izu, Masatsugu; and Cannella, Vincent D., to Sovonics Solar Systems. System for eliminating short circuit current paths in photovoltaic devices. 4,510,674, Cl. 29-574.000.
Izu, Masatsugu; and Cannella, Vincent D., to Sovonics Solar Systems. System for eliminating short and latent short circuit current paths in photovoltaic devices. 4,510,675, Cl. 29-574.000.
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, to Hitachi Construction Machinery Co., Ltd. Circuit pressure control system for hydrostatic power transmission. 4,510,750, Cl. 60-443.000.
Izumi, Takayuki, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for continuous production of optically anisotropic pitch. 4,511,456, Cl. 208-44.000.
J. R. Simplot Company: *See—*
Bierman, Laurence W.; Polinsky, Samuel M.; Hempel, David A.; and Humberger, Roger B., 4,511,541, Cl. 423-100.000.
J. Wagner GmbH: *See—*
Kille, Ewald; and Griebel, Heinrich, 4,511,074, Cl. 227-113.000.
Jackson, Alan D., to Cessna Aircraft Company, The. Outlet metering load-sensing circuit. 4,510,751, Cl. 60-450.000.
Jackson, Lawrence D. A., to Linatex Canada Inc. Variable opening pinch sleeve valve. 4,511,116, Cl. 251-5.000.
Jacobs, Erwin, to Siemens Aktiengesellschaft. Memory cell having a double gate field effect transistor and a method for its operation. 4,511,996, Cl. 365-186.000.
Jacobs Manufacturing Company, The: *See—*
Quenneville, Raymond N., 4,510,900, Cl. 123-321.000.
Jacobsen, Edwin: *See—*
DeAngelis, Barbara; Jacobsen, Howard; and Jacobsen, Edwin, 4,510,888, Cl. 119-143.000.
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Jacquin, Yves: *See—*
Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , 4,511,458, Cl. 208-59.000.
Jager, Theo; and Schmid, Helmut. Device for cutting sheet metal and the like. 4,510,831, Cl. 83-157.000.
Jakobsen, Kjell M.; and Nilsson, Clees T., to PLM Aktiebolag. Apparatus for the manufacture of a cup-like article from polyethylene terephthalate or similar material. 4,511,322, Cl. 425-384.000.
Jamain, Patrice C.: *See—*
Caye, Paul D.; Jamain, Patrice C.; and Weisser, Bernard G., 4,511,190, Cl. 308-10.000.
James Howden Australia Pty. Limited: *See—*
Russell, Bruce A.; and Abdel-Fattah, Adnan M., 4,511,308, Cl. 415-191.000.
Jamiolkowski, Dennis D.: *See—*
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,511,706, Cl. 528-192.000.
Janisiewicz, Stanley W.; and Rose, Emery L., to Universal Instruments Corporation. Gauging method and apparatus for components having leads. 4,510,806, Cl. 73-432.00R.
Jannot, Marcel A. J.: *See—*
Boy-Marcotte, Jean-Louis; Dahan, Gilbert M. I.; Dancette, Michel; Le Nabour, Marcel P.; Pellerin, Jean-Francois G. A.; Rivallin, Jose ; and Jannot, Marcel A. J., 4,511,805, Cl. 290-2.000.
Janowicz, Andrew H.: *See—*
Bergman, Robert G.; Janowicz, Andrew H.; and Periana-Pillai, Roy A., 4,511,745, Cl. 570-241.000.
Jansen, Friedrich W., to P.J. Industrial Safety Elec. Co. Ltd. Forced air distributor for baseboard heater. 4,511,786, Cl. 219-364.000.
Janssen, Donovan M.: *See—*
Ashbee, William H.; Janssen, Donovan M.; Martin, Ronald J.; and Seaward, William S., 4,511,242, Cl. 355-14.00C.
Japan Bano'k Co., Ltd.: *See—*
Furutsu, Akira, 4,511,073, Cl. 227-67.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Shinohara, Hironobu; Yamahara, Noboru; and Yoshida, Yoshinori, 4,511,683, Cl. 524-3.000.
Jennings, Charles E.; Barrington, Claud C.; Chen, Lien-Yan; Hopkins, Bob C.; McIntyre, John N.; and Regitz, Alfred P., to FMC Corporation. Valve stem-to-bonnet backseat. 4,510,960, Cl. 137-75.000.
Jentzsch, Arndt: *See—*
Forster, Karl-Heinz; Schuck, Helmut; Johne, Hans; and Jentzsch, Arndt, 4,510,867, Cl. 101-365.000.
Jergens, Inc.: *See—*
Schron, Jack H.; and Seidel, Lawrence H., 4,511,127, Cl. 269-32.000.
Jessup, Peter: *See—*
Holstedt, Richard A.; Baron, Kenneth; and Jessup, Peter, 4,511,516, Cl. 260-462.00R.
Jetline Engineering, Inc.: *See—*
Arter, William L.; and Williams, Foster R., 4,511,785, Cl. 219-124.340.
Jobe, A. Louise. Parasite control bath unit. 4,510,889, Cl. 119-159.000.
Jobsis, Frans F.; Keizer, Hans H.; and Overaker, Ronald F., to Duke University, Inc. Body-mounted light source-detector apparatus. 4,510,938, Cl. 128-633.000.
Johansson, Allan A.: *See—*
Tournier, Herve; Johansson, Allan A.; Sachetto, Jean-Pierre; Armanet, Jean-Michel; Michel, Jean-Pierre; and Roman, Alain, 4,511,433, Cl. 162-16.000.
John Fluke Mfg. Co., Inc.: *See—*
Eng, Benjamin, Jr., 4,511,856, Cl. 330-297.000.
Johne, Hans: *See—*
Forster, Karl-Heinz; Schuck, Helmut; Johne, Hans; and Jentzsch, Arndt, 4,510,867, Cl. 101-365.000.
Johns Hopkins University, The: *See—*
Miller, Paul S.; and Ts'O, Paul O. P., 4,511,713, Cl. 536-27.000.
Johnson, Barbara: *See—*
Johnson, Clifford B., Jr.; Johnson, Barbara; Amadio, Alex; and Amadio, Williane, 4,511,358, Cl. 604-327.000.
Johnson, Clifford B., Jr.; Johnson, Barbara; Amadio, Alex; and Amadio, Williane. Urine bag carrier with a stretchable front panel. 4,511,358, Cl. 604-327.000.
Johnson, Dale A.: *See—*
Bulle, Marshall R.; and Johnson, Dale A., 4,511,121, Cl. 254-50.400.
Johnson & Johnson Baby Products Company: *See—*
Guth, Jacob J.; and Verdicchio, Robert J., 4,511,513, Cl. 260-404.500.
Johnson Matthey Public Limited Company: *See—*
Stephenson, David J., 4,511,539, Cl. 422-311.000.
Johnson, Ronald L., to General Electric Company. Automotive type air conditioning system and method of operating such. 4,510,763, Cl. 62-115.000.
Johnson, William N. Boot or shoe incorporating pedometer or the like. 4,510,704, Cl. 36-136.000.
Johnston, Paul M., to Westinghouse Electric Corp. Electronic display apparatus using time multiplexed data and control signals. 4,511,894, Cl. 340-756.000.
Jones, Arthur A., to Nautilus Sports/Medical Industries, Inc. Compound weight lifting exercising machine. 4,511,137, Cl. 272-118.000.
Jones, Charles E., to Moore Business Forms, Inc. Protective binder. 4,511,298, Cl. 412-34.000.
Jones, Dennis J.; and Kunz, Gary L., to Hart-Carter Company. Chaffer slat. 4,511,466, Cl. 209-395.000.
Jones, Donald W.: *See—*
Miller, Timothy J. E.; Jones, Donald W.; and Kalan, Gary L., 4,510,680, Cl. 29-598.000.
Jones, Ronald: *See—*
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Jones, Thomas M.; and Kendrick, Lucian A., Jr., to Tennessee Valley Authority. Production of high-analysis ammonium orthophosphate suspension fertilizers by a new batch-type process. 4,511,388, Cl. 71-34.000.
Jooss, Hans: *See—*
Ehrlich, Willibald; Jooss, Hans; and Hornung, Rainer, 4,511,606, Cl. 427-386.000.
Jordan, Hans-Peter: *See—*
Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, 4,511,214, Cl. 350-632.000.
Jordan, Thomas L.: *See—*
Goffman, Martin; and Jordan, Thomas L., 4,511,443, Cl. 204-108.000.
Jorgensen, Ib Greve H.: *See—*
Pedersen, Karsten; Rostrup-Nielsen, Jens R.; and Jorgensen, Ib Greve H., 4,511,674, Cl. 518-714.000.
Jost, Bernhard. Installation for exploiting water currents in flowing waters by means of a plurality of water wheels. 4,511,808, Cl. 290-54.000.
Jovy, Herbert; and Schuster, Wilhelm, to Ermital AG. Method of flushing a water closet. 4,510,629, Cl. 4-332.000.
Joy Manufacturing Company: *See—*
Haynes, Charles W., 4,511,168, Cl. 294-102.200.
Young, Terry G., 4,510,970, Cl. 137-625.400.
Juelke, Charles V.: *See—*
Lee, Fui-Tseng H.; Juelke, Charles V.; and Finley, Joseph H., 4,511,498, Cl. 252-609.000.

Jung, Thomas; and Heidemann, Gerhard, to Norton Christensen, Inc. Locking device for a tool with telescopically displaceable parts. 4,511,007, Cl. 175-297.000.
Jury, Harold R., to Ampliform Pty. Ltd. Grid supported structure. 4,510,727, Cl. 52-508.000.
Kaack, Hermann: *See*—
Baumann, Hans; and Kaack, Hermann, 4,511,506, Cl. 534-631.000.
Kabushika Kaisha Ishida Koki Seisakusho: *See*—
Kataoka, Koichi, 4,511,009, Cl. 177-1.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Horiuchi, Teruo, 4,511,259, Cl. 368-10.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Kanazawa, Jitsuo, 4,510,813, Cl. 73-766.000.
Sashiki, Takashi; and Sakaeda, Keiko, 4,511,010, Cl. 177-25.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Tokutake, Kunihiko; Mizokami, Nobuo; and Tanaka, Hiroyuki, 4,510,807, Cl. 73-432.00R.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Ishino, Yoshitane; Naruse, Toshihisa; and Sawano, Toshiyuki, 4,510,705, Cl. 37-54.000.
Sasamoto, Tatsuya, 4,511,186, Cl. 305-57.000.
Tomioka, Kunio; Tokai, Shigeru; and Tsuchida, Tatsuo, 4,510,789, Cl. 72-442.000.
Kabushiki Kaisha Takuma: *See*—
Shigaki, Masanobu, 4,510,873, Cl. 110-289.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kawabata, Susumu; Inoue, Tetsuzo; Miyamoto, Noriaki; Shibuya, Masanobu; and Kaneko, Masashi, 4,510,745, Cl. 57-415.000.
Mori, Mitsuo; Suzuki, Yoshihisa; Muramatsu, Shigeru; and Takasu, Sigeru, 4,510,648, Cl. 19-266.000.
Nakane, Masao; Takahashi, Motohiko; and Ogawa, Takaki, 4,511,974, Cl. 364-463.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kawabata, Susumu; Inoue, Tetsuzo; Miyamoto, Noriaki; Shibuya, Masanobu; and Kaneko, Masashi, 4,510,745, Cl. 57-415.000.
Kadaba, Pankaja K., to University of Kentucky Research Foundation, The. Triazoline anticonvulsant drugs. 4,511,572, Cl. 514-340.000.
Kagi, Bruno, to Bachofen AG. Pressure-medium-driven linear driving arrangement. 4,510,845, Cl. 91-180.000.
Kai, Masami: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,511,241, Cl. 355-14.0CU.
Kaiser Aluminum & Chemical Corporation: *See*—
Anjier, Joseph L.; Roberson, Morris L.; and Atchison, William E., 4,511,542, Cl. 423-127.000.
Hsu, Yu-Wen, 4,510,784, Cl. 72-201.000.
Kajiya, Seitaro: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.
Kakino, Shigeru; Hattori, Katsuhide; Fukatsu, Yoshiaki; Moriyama, Hideo; and Sakakibara, Hidekazu, to Nippon Oil and Fats Co. Ltd. Method of producing a water-in-oil emulsion exposive. 4,511,412, Cl. 149-109.600.
Kakino, Shigeru: *See*—
Matsui, Fumio; Aono, Shin; Sakai, Hiroshi; Hattori, Katsuhide; and Kakino, Shigeru, 4,511,414, Cl. 149-109.600.
Kako, Yutaka: *See*—
Takahashi, Kazue; Okuna, Kenzi; Nakajima, Isao; Harada, Mineo; and Kako, Yutaka, 4,511,269, Cl. 400-124.000.
Kalan, Gary L.: *See*—
Miller, Timothy J. E.; Jones, Donald W.; and Kalan, Gary L., 4,510,680, Cl. 29-598.000.
Kalat, Edwin F., to Pharmasol Corporation, The. Dispensing system. 4,511,069, Cl. 222-263.000.
Kalman, Tibor. Method for sculpting paperweight of attractive appearance. 4,511,630, Cl. 428-542.200.
Kalvinskas, John J.: *See*—
Ravindram, Maddury; and Kalvinskas, John J., 4,511,362, Cl. 44-1.0SR.
Kamano, Takao: *See*—
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,511,547, Cl. 423-329.000.
Kampichler, Gunter, to Robert Bosch GmbH. Method for mounting at least one single-cylinder plug-in fuel injection pump on a diesel internal combustion engine. 4,510,796, Cl. 73-119.00A.
Kanazawa, Jitsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Temperature compensation circuit for strain gauges. 4,510,813, Cl. 73-766.000.
Kanbe, Junichiro; and Hosono, Nagao, to Canon Kabushiki Kaisha. Developing device. 4,511,239, Cl. 355-3.0DD.
Kanbe, Mitsuru, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Liquid metal mechanical pump. 4,511,315, Cl. 417-366.000.
Kanda, Hiroshi; and Ishikawa, Isao, to Hitachi, Ltd. Ultrasonic microscope. 4,510,810, Cl. 73-606.000.
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, to Hitachi, Ltd. Multielement acoustic transducer as well as a method of manufacturing the same and an acoustic imaging instrument. 4,511,998, Cl. 367-11.000.
Kaneko, Masashi: *See*—
Kawabata, Susumu; Inoue, Tetsuzo; Miyamoto, Noriaki; Shibuya, Masanobu; and Kaneko, Masashi, 4,510,745, Cl. 57-415.000.
Kang, Jung W.; and Davis, James A., to Firestone Tire & Rubber Company, The. Rubber articles having improved metal adhesion and metal adhesion retention employing bis(2-mercaptobenzothiazato) nickel. 4,511,628, Cl. 428-457.000.
Kano , Yoshiharu; Fujisawa, Makoto; Nojiri, Shoji; and Tanaka, Yoshikazu, to Fujitsu Limited. Digital time-division switch. 4,512,015, Cl. 370-110.100.
Kansas State University Research Foundation: *See*—
Lambert, Jack L.; and Chiang, Yuan C., 4,511,658, Cl. 436-130.000.
Kantner, Robert F., to International Business Machines Corp. Emulation of special purpose magnetic tape data recording equipment by a general purpose processor. 4,511,963, Cl. 364-200.000.
Kanzaki Paper Mfg. Co., Ltd.: *See*—
Arai, Naoto, 4,511,909, Cl. 346-208.000.
Kaplan, Martin L.: *See*—
Forrest, Stephen R.; Kaplan, Martin L.; Schmidt, Paul H.; and Venkatesan, Thirumalai N. C., 4,511,445, Cl. 204-158.0HE.
Karg, Roland; and Sattelmaier, Helmut, to Ytron Dr. Karg GmbH. Apparatus for the continuous mixing of pulverulent substances with liquids. 4,511,256, Cl. 366-165.000.
Karin, Michael: *See*—
Fogel, Seymour; Welch, Juliet W.; and Karin, Michael, 4,511,652, Cl. 435-29.000.
Karl Schmidt GmbH: *See*—
Bauer, Wolfgang; and Grosser, Werner, 4,510,821, Cl. 74-552.000.
Karliner, Rudy R.; and Peterson, Gerald E., to Wagner Spray Tech Corporation. Masking tape applicator. 4,511,427, Cl. 156-523.000.
Karpiloff, Kenneth M., to Duracell Inc. Method for making decorated battery casings. 4,511,416, Cl. 156-69.000.
Kasai, Yoshihiko, to Fujitsu Limited. Ceramic resonator and a ceramic filter using the same. 4,511,202, Cl. 333-189.000.
Kasper, James R.; and Opsahl, Allan W., to Boeing Company, The. Powered outward-opening cargo door. 4,510,714, Cl. 49-249.000.
Kasschau, Kenneth. Through-hub exhaust propeller assembly. 4,511,339, Cl. 440-89.000.
Kast, Howard B., to General Electric Company. Shear-type fail-fixed servovalve. 4,510,848, Cl. 91-461.000.
Kasuga, Takuzo; Takahashi, Katsuhiko; and Suzuki, Kunio, to Polyplastics Company, Ltd. Process for manufacturing polytetramethylene terephthalate. 4,511,708, Cl. 528-274.000.
Katakura, Hiroshi: *See*—
Kawata, Shun; Nosaka, Isao; and Katakura, Hiroshi, 4,511,237, Cl. 355-3.00R.
Kataoka, Koichi, to Kabushika Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus and method. 4,511,009, Cl. 177-1.000.
Katsura, Tadashi: *See*—
Minai, Masayoshi; and Katsura, Tadashi, 4,511,655, Cl. 435-149.000.
Katsurai, Junji: *See*—
Maeda, Masatoshi; Katsurai, Junji; and Ikeda, Hiroaki, 4,511,929, Cl. 358-296.000.
Katsuyama, Akira: *See*—
Kimura, Shuichi; and Katsuyama, Akira, 4,512,003, Cl. 369-45.000.
Katz, Philip: *See*—
Brenman, Henry S.; Katz, Philip; and Singer, Mark, 4,510,939, Cl. 128-639.000.
Kauer, James C., to Du Pont de Nemours, E. I., and Company. Aralkylcarbamoyl peptide alcohols. 4,511,390, Cl. 71-88.000.
Kausche, Helmold: *See*—
Moeller, Matthias; and Kausche, Helmold, 4,511,756, Cl. 136-258.000.
Kauss, Wolfgang: *See*—
Mucheyer, Norbert; and Kauss, Wolfgang, 4,510,847, Cl. 91-461.000.
Kawabata, Susumu; Inoue, Tetsuzo; Miyamoto, Noriaki; Shibuya, Masanobu; and Kaneko, Masashi, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Open-end spinning unit. 4,510,745, Cl. 57-415.000.
Kawaguchi, Masayuki: *See*—
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, 4,511,493, Cl. 252-507.000.
Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Miyake, Masayoshi, to Sumitomo Electric Industries, Ltd. Enameled wires. 4,511,624, Cl. 428-379.000.
Kawaguchi, Nobuichi, legal representative: *See*—
Kawaguchi, Yukio, deceased; and Kawaguchi, Nobuichi, legal representative, 4,511,833, Cl. 318-696.000.
Kawaguchi, Takehiko, to Taiyo Sanso Kabushiki Kaisha. Detachable holder for containers. 4,511,167, Cl. 294-28.000.
Kawaguchi, Yukio, deceased; and Kawaguchi, Nobuichi, legal representative, to Tokyo Electric Co., Ltd. Stepping motor driving circuit. 4,511,833, Cl. 318-696.000.
Kawahira, Hiroto, to Mitsubishi Denki Kabushiki Kaisha. Heat exchanger and fan motor in a front wheel drive vehicle. 4,510,991, Cl. 165-41.000.
Kawai, Seiji; and Matsumoto, Dairiku, to Meidensha Electric Mfg. Co., Ltd. Manipulator. 4,511,305, Cl. 414-755.000.
Kawakami, Kanji: *See*—
Shimada, Satoshi; Murayama, Ken; Kobori, Shigeyuki; and Kawakami, Kanji, 4,511,878, Cl. 338-4.000.
Kawamoto, Tamio; and Hiraiwa, Kazuyoshi, to Nissan Motor Company, Limited. Gear operating mechanism of an automotive manual transmission. 4,510,817, Cl. 74-477.000.
Kawamura, Hideaki: *See*—
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,511,975, Cl. 364-474.000.
Kawamura, Hideo, to Isuzu Motors Limited. Voltage control circuit for protecting glow plug from overheating. 4,511,792, Cl. 219-499.000.

Kawano, Hikaru; Sato, Koji; and Nogi, Hiroyoshi, to Musashi Co., Ltd.; and Hitachi Engineering Kabushiki Kaisha. Clamp device for paper sheet bundles in a paper sheet counting and bandsealing apparatus. 4,511,301, Cl. 414-43.000.

Kawasaki Steel Corporation: *See*—
Ebata, Sadao; and Bando, Seiji, 4,511,089, Cl. 239-553.300.

Kawata, Ken: *See*—
Hirai, Hiroyuki; and Kawata, Ken, 4,511,650, Cl. 430-559.000.

Kawata, Shun; Nosaka, Isao; and Katakura, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Electrophotographic reproducing machine. 4,511,237, Cl. 355-3.00R.

Kawazura, Hiroshi: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.

Kayane, Yutaka; Omura, Takashi; Otake, Katsumasa; and Takeshita, Akira, to Sumitomo Chemical Company, Limited. Monoazo compound having both monochlorotriazinyl and vinylsulfone type reactive groups. 4,511,507, Cl. 534-629.000.

Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, to Nippon Kogaku K.K. Charge control device in a flash device for a camera. 4,511,233, Cl. 354-418.000.

KDI American Products, Inc.: *See*—
Spinnett, Raymond G., 4,510,967, Cl. 137-389.000.

Keizer, Hans H.: *See*—
Jobsis, Frans F.; Keizer, Hans H.; and Overaker, Ronald F., 4,510,938, Cl. 128-633.000.

Kellar, John D.; and Pereman, Gordon F., to PPG Industries, Inc. Deformable vacuum holder used to shape glass sheets. 4,511,386, Cl. 65-273.000.

Kellar, John D.; and Pereman, Gordon F., to PPG Industries, Inc. Vacuum holder with anti-bulging means used to shape glass sheets. 4,511,387, Cl. 65-287.000.

Keller, Alex J.; and Pinto, Akiva. Method and apparatus for controlling fiber density. 4,510,647, Cl. 19-105.000.

Keller, Keith T. Method of manufacturing a piano plate assembly and the assembly. 4,510,837, Cl. 84-184.000.

Keller, Lewis C.: *See*—
Fitzwater, Margaret; and Keller, Lewis C., 4,511,586, Cl. 426-144.000.

Keller, Paul. Adjustable ice breaker for an ice machine producing sheet ice. 4,510,768, Cl. 62-320.000.

Kelley, Joe A.: *See*—
Outlaw, Benjamin T.; Oude Alink, Bernardus A.; Kelley, Joe A.; and Claywell, Carol S., 4,511,480, Cl. 252-8.55E.

Kendall Company, The: *See*—
Semrow, Carolyn M.; Kolstedt, Mark W.; and Dunn, William J., 4,510,941, Cl. 128-671.000.
Steigerwald, Carl J., 4,511,357, Cl. 604-323.000.

Kendrick, Lucian A., Jr.: *See*—
Jones, Thomas M.; and Kendrick, Lucian A., Jr., 4,511,388, Cl. 71-34.000.

Kennedy, Donald: *See*—
Duval, Henry H.; Kennedy, Donald; and Muesse, Milton J., 4,511,283, Cl. 404-107.000.

Kenney, Donald M., to International Business Machines Corporation. Dense dynamic memory cell structure and process. 4,511,911, Cl. 357-23.600.

Kent, Henry R., to Maxwell Laboratories, Inc. Winding apparatus. 4,511,094, Cl. 242-7.080.

Keren, Yehuda; Carmon, Shmuel; Behar, Meyer; and Axelrod, Shimshon, to Negev Phosphates Ltd. Method for beneficiation of phosphate rock. 4,511,543, Cl. 423-167.000.

Keritsis, Gus D.; and Nichols, Walter A., to Philip Morris Incorporated. Foamed, extruded, tobacco-containing smoking article and method of making same. 4,510,950, Cl. 131-353.000.

Kerotest Manufacturing Corp.: *See*—
Conley, Richard W.; Tremblay, Richard P.; Bolam, Charles W.; Logan, James E.; and Krueger, David A., 4,511,120, Cl. 251-288.000.

Kerr Glass Manufacturing Corporation: *See*—
Shank, Brian E., 4,511,054, Cl. 215-252.000.

Ketchum, Lloyd H., Jr.: *See*—
Colaruotolo, Joseph F.; Irvine, Robert L.; Ketchum, Lloyd H., Jr.; and Ying, Wei-chi, 4,511,657, Cl. 435-253.000.

Key, Clyde. Wall-patch adapter. 4,510,728, Cl. 52-514.000.

Key Pharmaceuticals, Inc.: *See*—
Tuttle, Ronald R., 4,511,570, Cl. 514-282.000.

Keyes, Marion A., IV; and Thompson, William L., to Babcock & Wilcox Company, The. Function generator. 4,511,882, Cl. 340-347.0DD.

Khramtsov, Alexandr A.; Tsyrkin, Mikhail I.; and Shinder, Ilya E. Apparatus for synchronizing actuators. 4,510,849, Cl. 91-515.000.

Kidde Consumer Durables Corp.: *See*—
Rummelsburg, Al S., 4,511,077, Cl. 228-228.000.

Kido, Yoshinobu: *See*—
Tsuchida, Tsuyoshi; and Kido, Yoshinobu, 4,510,902, Cl. 123-325.000.

Kille, Ewald; and Griebel, Heinrich, to J. Wagner GmbH. Electrically-operated manual device. 4,511,074, Cl. 227-113.000.

Killingsworth, Emmett D., to Westinghouse Electric Corp. Meter encoding register with tapered aperture in baffle insert. 4,511,798, Cl. 250-231.0SE.

Kim, Jung T.: *See*—
Saprokhin, Alexander M.; Friedland, David J.; Baran, Richard M.; Kim, Jung T.; and McCurry, Lynn E., 4,511,440, Cl. 204-60.000.

Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, to Asahi Kasei Kogyo Kabushiki Kaisha. Perfluorinated fluorosulfonylalkyleneoxy-2-propanoyl fluoride and hexafluoroepoxide addition compounds. 4,511,518, Cl. 260-543.00F.

Kimura, Shuichi; and Katsuyama, Akira, to Sony Corporation. Control circuitry for preliminary focusing of light on a record medium surface in an optical reproducing apparatus. 4,512,003, Cl. 369-45.000.

King, Lorraine. Walking aid, particularly for handicapped persons. 4,510,956, Cl. 135-67.000.

King, William. Reeling device. 4,511,101, Cl. 242-107.700.

Kinoshita, Shigeo: *See*—
Hayashi, Hideki; Ito, Yukio; Akiike, Yukio; and Kinoshita, Shigeo, 4,511,103, Cl. 242-186.000.

Kintzel, Gerhard; and Heilmann, Edmund, to SKF Kugellagerfabriken GmbH. Clamping device for tool assemblies. 4,510,829, Cl. 82-36.00R.

Kinugawa Rubber Industrial Co., Ltd.: *See*—
Yamaguchi, Toshiaki, 4,511,526, Cl. 264-129.000.

Kirby, Christopher G. M.: *See*—
Dauphinee, Thomas M.; and Kirby, Christopher G. M., 4,511,845, Cl. 324-444.000.

Kirin Beer Kabushiki Kaisha: *See*—
Nakayama, Toshikazu, 4,511,025, Cl. 198-377.000.

Kirk, Donald, Jr.: *See*—
Forgey, James; and Kirk, Donald, Jr., 4,511,919, Cl. 358-120.000.

Kirk, Kenneth H.: *See*—
Fedde, George A.; and Kirk, Kenneth H., 4,510,683, Cl. 29-701.000.

Kis-Tamas, Attila: *See*—
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay, Aranka; Vigh, Zoltan; and Sokorai, Agnes, 4,511,737, Cl. 564-257.000.

Kishida, Katsuji; Ueno, Tetsuto; Onishi, Masakazu; and Oda, Keijiro, to Toyo Rubber Industry Co., Ltd., The. Pneumatic radial tire having durable bead structure. 4,510,984, Cl. 152-362.0CS.

Kishida, Toshio, to Clarion Co., Ltd. Automatic linearity correcting circuit. 4,511,854, Cl. 330-279.000.

Kishino, Kohji, to Toyo Kogyo Co., Ltd. Quarter-window structure for vehicle. 4,511,129, Cl. 296-146.000.

Kishiro, Osamu: *See*—
Tanaka, Toru; Gohko, Nobuaki; Kishiro, Osamu; and Murakami, Atsushi, 4,511,704, Cl. 526-125.000.

Kita, Yasuhiro: *See*—
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.

Kita, Yuzo: *See*—
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.

Kitada, Hisao. Vacuum floor polisher. 4,510,643, Cl. 15-320.000.

Kitamura, Masayuki, to Koyo Seike Company Limited. Anticreep device for annular member. 4,511,191, Cl. 384-536.000.

Kitazawa, Yoichi: *See*—
Ohkuni, Shinichiro; and Kitazawa, Yoichi, 4,510,983, Cl. 152-361.00R.

Kittaka, Toshihiko: *See*—
Ogawa, Toshio; and Kittaka, Toshihiko, 4,511,483, Cl. 252-62.900.

Klatt, Alfred, to WABCO Westinghouse Fahrzeugbremsen GmbH. Accelerator pedal mechanism for optimizing fuel economy. 4,510,906, Cl. 123-396.000.

Klaus, Gersmann, to Bayerische Motoren Werke AG. Headrest in passenger cars. 4,511,180, Cl. 297-408.000.

Kleber, Heinrich: *See*—
Sitte, Helmuth; Cooper, Terry W.; and Kleber, Heinrich, 4,511,224, Cl. 350-523.000.

Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, to Degussa Aktiengesellschaft. Nα-(3-Cyanopropanoyl)-aminocarboxylic acid derivatives and their use. 4,511,719, Cl. 546-245.000.

Klein, Howard J.; and Szekeres, Gabor L. Container seal with tamper indicator. 4,511,052, Cl. 215-230.000.

Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, to Daimler-Benz Aktiengesellschaft. Fairing which folds flat independantly of its mirror. 4,511,214, Cl. 350-632.000.

Klemm, Gerhard. Screen printing machine. 4,510,864, Cl. 101-123.000.

Klimo, Robert G., to Invacare Corporation. Electric wheelchair with improved control circuit. 4,511,825, Cl. 318-67.000.

Klipper, Reinhold: *See*—
Krimm, Heinrich; Buysch, Hans-Josef; Lange, Peter M.; and Klipper, Reinhold, 4,511,722, Cl. 548-231.000.

Klockner-Becorit GmbH: *See*—
Lubojatzki, Walter, 4,511,290, Cl. 405-292.000.

Klockner-Humboldt-Deutz AG: *See*—
Klotmann, Fred; and Filges, Ralf, 4,511,266, Cl. 384-441.000.
Kunze, Oswald, 4,511,333, Cl. 432-106.000.

Klotmann, Fred; and Filges, Ralf, to Klockner-Humboldt-Deutz AG. Arrangement for mounting a bearing ring on a rotary cylinder. 4,511,266, Cl. 384-441.000.

Knapp, Gordon G., to Ethyl Corporation. Corrosion inhibitors for alcohol containing motor fuel. 4,511,367, Cl. 44-53.000.

Knapp, Gordon G., to Ethyl Corporation. Corrosion inhibitors for alcohol-based fuels. 4,511,368, Cl. 44-53.000.

Knifton, John F.: *See*—
Alexander, David C.; and Knifton, John F., 4,511,740, Cl. 568-454.000.

Knoll, Jimmie L.: *See*—
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 4,510,642, Cl. 15-231.000.

Knothe, Herbert; and Roschmann, Klaus, to Teldec Telefunken-Decca-Schallplatten GmbH. Method for producing a record carrier. 4,512,007, Cl. 369-127.000.

Knott, Joseph; and Kopp, Walter, to Siemens Aktiengesellschaft. Method for regenerating the carrier particles of a two-component developer consisting of carrier particles and toner. 4,511,639, Cl. 430-108.000.

Knox, Howard: *See*—
Prete, Ernest, Jr.; and Knox, Howard, 4,510,651, Cl. 24-68.00R.

Kobayashi, Chikara: *See*—
Ohkoshi, Tatsuo; and Kobayashi, Chikara, 4,511,093, Cl. 241-60.000.

Kobayashi, Kesanao: *See*—
Koike, Mitsuru; Kobayashi, Kesanao; Toyama, Tadao; Misu, Hiroshi; Tamoto, Koji; and Iwasaki, Masayuki, 4,511,645, Cl. 430-276.000.

Kobayashi, Masahito: *See*—
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.

Kobayashi, Sadame: *See*—
Iijima, Yukihiko; and Kobayashi, Sadame, 4,511,920, Cl. 358-139.000.

Kobayashi, Yoji: *See*—
Natori, Takeshi; Kobayashi, Yoji; Watanabe, Shigetaka; Shimizu, Katsumi; Matsumura, Ikuei; Namekawa, Yoshihiro; and Miyanaga, Satoshi, 4,510,974, Cl. 138-137.000.

Kobori, Shigeyuki: *See*—
Shimada, Satoshi; Murayama, Ken; Kobori, Shigeyuki; and Kawakami, Kanji, 4,511,878, Cl. 338-4.000.

Koch, Lehel: *See*—
Szendrei, Kalman; Minker, Emil; Rozsa, Zsuzsanna; Koch, Lehel; and Wolf, Lajos, 4,511,559, Cl. 514-54.000.

Kochi, Ikuyoshi: *See*—
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.

KOCKUMS Industri AB: *See*—
Biller, Sven-Olov, 4,510,981, Cl. 144-246.00F.

Kocsis, Maria: *See*—
Gorog, Katalin; Dudar, Erzebet; Gardi, Ivan; Kocsis, Maria; Gaal, Sandor; and Tasnadi, Marta, 4,511,714, Cl. 548-215.000.

Koeijmans, Gerard D.: *See*—
Bowden, Edgar A.; Deline, Gordon R.; and Koeijmans, Gerard D., 4,511,999, Cl. 367-23.000.

Koenig, Mark J.; and Oye, Kevin J., to AT&T Information Systems Inc. Control channel interface circuit. 4,511,969, Cl. 364-200.000.

Koflo Corporation: *See*—
Federighi, James L.; and Federighi, Frank F., 4,511,258, Cl. 366-337.000.

Kohler, Hans O.; and Stromvall, Sten K., to Kohler, Hans Olof. Determining agreement between an analysis signal and at least one reference signal. 4,511,917, Cl. 358-84.000.

Kohler, Hans Olof: *See*—
Kohler, Hans O.; and Stromvall, Sten K., 4,511,917, Cl. 358-84.000.

Kohler, Rolf-Dieter: *See*—
Hagen, Helmut; Markert, Juergen; Kohler, Rolf-Dieter; and Wuerzer, Bruno, 4,511,393, Cl. 71-92.000.

Koike, Mitsuru; Kobayashi, Kesanao; Toyama, Tadao; Misu, Hiroshi; Tamoto, Koji; and Iwasaki, Masayuki, to Fuji Photo Film Co., Ltd. Photosensitive plate for lithographic printing plate. 4,511,645, Cl. 430-276.000.

Kokawa, Katsuzo: *See*—
Ogino, Toshiro; and Kokawa, Katsuzo, 4,511,327, Cl. 431-201.000.

Kokiso, Masakazu: *See*—
Seimiya, Ryubun; Tarumi, Noriyoshi; Kokiso, Masakazu; and Tsuchiya, Hiroshi, 4,511,622, Cl. 428-323.000.

Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, to Laurel Bank Machine Co., Ltd. Device for securely holding stacked bank notes for use in an automatic money depositing and disbursing machine. 4,511,133, Cl. 271-3.100.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Konishi, Kazunori; and Kurematsu, Akira, 4,511,758, Cl. 178-2.00B.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Yamazaki, Yasuhiro; and Endo, Toshiaki, 4,511,213, Cl. 358-261.000.

Kolff, Willem J., to University of Utah. Artificial heart valve made by vacuum forming technique. 4,510,628, Cl. 3-1.500.

Koller, Thomas J., to Tektronix, Inc. Simplified paper loading mechanism. 4,511,235, Cl. 355-1.000.

Kollmorgen Technologies Corporation: *See*—
Teng, Yu-Ling; and Mayernik, Richard, 4,511,597, Cl. 427-53.100.

Kolodesh, Michael S.; Peters, Edward L.; and Madgett, Raymond J., to Procter & Gamble Company, The. Dough rolling apparatus for laminated cookies. 4,511,318, Cl. 425-133.100.

Kolstedt, Mark W.: *See*—
Semrow, Carolyn M.; Kolstedt, Mark W.; and Dunn, William J., 4,510,941, Cl. 128-671.000.

Komai, Kensaku: *See*—
Mochizuki, Daisuke; Ohnishi, Souichi; and Komai, Kensaku, 4,512,027, Cl. 377-16.000.

Komatsu, Fumiaki; Saegusa, Kazuyuki; Seshimo, Yu; and Yamashita, Norio, to Mitsubishi Denki Kabushiki Kaisha. Cold storage and refrigeration system. 4,510,767, Cl. 62-200.000.

Komatsu, Hideo: *See*—
Mizutani, Tatsumi; Ohgata, Toshihide; and Komatsu, Hideo, 4,511,429, Cl. 156-643.000.

Komatsu, Michiyasu: *See*—
Tsuge, Akihiko; Komatsu, Michiyasu; Inoue, Hiroshi; and Komeya, Katsutoshi, 4,511,525, Cl. 264-65.000.

Komeda, Kenichiro: *See*—
Sumitani, Toshihiko; and Komeda, Kenichiro, 4,511,138, Cl. 273-1.00E.

Komeya, Akira: *See*—
Yoshida, Hiroshi; Matsuda, Yoshio; and Komeya, Akira, 4,510,656, Cl. 24-390.000.

Komeya, Katsutoshi: *See*—
Tsuge, Akihiko; Komatsu, Michiyasu; Inoue, Hiroshi; and Komeya, Katsutoshi, 4,511,525, Cl. 264-65.000.

Komoto, Akira, to Shimadzu Corporation. A-D Converter for use in an electronic balance. 4,511,883, Cl. 340-347.0AD.

Komoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reflex zoom lens having aperture scale. 4,511,221, Cl. 350-423.000.

Konaya, Yoshikazu, to Fuji Photo Film Co., Ltd. Film storage device. 4,511,098, Cl. 242-56.00R.

Kondo, Hiroatsu: *See*—
Yamada, Yasuaki; Ozawa, Toshiaki; and Kondo, Hiroatsu, 4,511,830, Cl. 318-318.000.

Kondo, Toshio: *See*—
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, 4,511,998, Cl. 367-11.000.

Konishi, Kazunori; and Kurematsu, Akira, to Kokusai Denshin Denwa Co., Ltd. Reduction of message length in a communication system. 4,511,758, Cl. 178-2.00B.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kawata, Shun; Nosaka, Isao; and Katakura, Hiroshi, 4,511,237, Cl. 355-3.00R.
Maeda, Masatoshi; Katsurai, Junji; and Ikeda, Hiroaki, 4,511,929, Cl. 358-296.000.
Seimiya, Ryubun; Tarumi, Noriyoshi; Kokiso, Masakazu; and Tsuchiya, Hiroshi, 4,511,622, Cl. 428-323.000.
Yamashita, Kiyoshi; and Iijima, Toshifumi, 4,511,648, Cl. 430-503.000.

Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, to TDK Electronics Co., Ltd.; and Toyo Ink Mfg. Co., Ltd. Magnetic recording medium. 4,511,629, Cl. 428-522.000.

Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, to Kubota Ltd.; and Toyo Engineering Corporation. Tube for thermal cracking or reforming hydrocarbon and manufacturing method thereof. 4,510,988, Cl. 164-102.000.

Kopp, Walter: *See*—
Knott, Joseph; and Kopp, Walter, 4,511,639, Cl. 430-108.000.

Koppany, Eniko: *See*—
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.

Korcz, William H.: *See*—
Durbin, Daniel P.; and Korcz, William H., 4,511,696, Cl. 525-92.000.

Korea Advanced Institute of Science and Technology: *See*—
Yoo, Han S.; and Lee, Wha S., 4,511,709, Cl. 528-331.000.

Korea Advanced Institute of Science and Technology, 200-43: *See*—
Yoon, Han S.; and Son, Tae W., 4,511,623, Cl. 428-359.000.

Korner, Gerhard; Plettner, Horst; Viering, Walter; and Rees, Volker, to BBC Brown, Boveri & Company, Limited. Circuit breaker. 4,511,775, Cl. 200-148.00A.

Korsunsky, Iosif: *See*—
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,511,197, Cl. 339-17.0CF.

Kosaka, Minoru; and Akiyama, Toru, to Universal Pioneer Corporation. Tracking servo system of recording disc information recording and reproducing apparatus. 4,512,002, Cl. 369-44.000.

Koske, Jorg: *See*—
Klein, Wilhelm; Koske, Jorg; Herzog, Siegfried; Jordan, Hans-Peter; Bauer, Wilhelm; Bausch, Max; and Grabner, Christian, 4,511,214, Cl. 350-632.000.

Kouchi, Takashi; and Tamaoki, Eiki, to Rex Industries Co., Ltd. Control apparatus for metal saw cutter. 4,511,826, Cl. 318-98.000.

Kouzai, Fumio; and Motoki, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Energization indicator for time switch. 4,511,890, Cl. 340-644.000.

Kovacs, Jeno : *See*—
Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, 4,511,717, Cl. 544-353.000.

Kowalski, Charles I.: *See*—
Nemeth, Joseph; and Kowalski, Charles I., 4,511,524, Cl. 264-61.000.

Kowalski, Edward F.: *See*—
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Kitamura, Masayuki, 4,511,191, Cl. 384-536.000.

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Szendrei, Kalman; Minker, Emil; Rozsa, Zsuzsanna; Koch, Lehel; and Wolf, Lajos, 4,511,559, Cl. 514-54.000.

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Krauss-Maffei Aktiengesellschaft: *See*—
Habeck, Reinhold; Mackiol, Norbert; Mautner, Franz; and Schwarzler, Peter, 4,510,871, Cl. 105-167.000.

Kravits, Richard: *See*—
Tatham, Edward J.; Kravits, Richard; Clymer, John C.; and Hoffman, Carvel D., 4,511,801, Cl. 250-394.000.

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Mahnke, Harald; Woerner, Frank P.; Weber, Heinz; and Kreibiehl, Guenter, 4,511,678, Cl. 521-52.000.

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Desai, Avinash J.; and Kreikebaum, Gerhard, 4,511,791, Cl. 219-497.000.

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Kroupa, Loretta A.; and Agbomeirele, Patricia G., to Dow Corning Corporation. Method for prevention of bubble formation in polyorganosiloxane gels. 4,511,620, Cl. 428-220.000.

Krude, Werner, to Uni-Cardan Aktiengesellschaft. Cardan joint. 4,511,344, Cl. 464-139.000.

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Conley, Richard W.; Tremblay, Richard P.; Bolam, Charles W.; Logan, James E.; and Krueger, David A., 4,511,120, Cl. 251-288.000.

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Kuhl, Uwe; Krause, Andreas; and Kruger, Horst, 4,511,118, Cl. 251-137.000.

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Kruyer, Jan. Process for recovering minerals and metals by oleophilic adhesion. 4,511,461, Cl. 209-47.000.

Kubo, Junji: *See*—
Ishizuka, Seiichi; and Kubo, Junji, 4,511,564, Cl. 514-167.000.

Kubota Ltd.: *See*—
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.
Yano, Naomichi; Makido, Isao; and Ito, Hajime, 4,510,921, Cl. 126-429.000.

Kubota, Yuichi: *See*—
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.

Kudert, Frederick G.; Latreille, Maurice G.; and Tennant, William A., to American Can Company. Flow stream channel splitter devices for multi-coinjection nozzle injection molding machines. 4,511,528, Cl. 264-328.800.

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Kudoh, Michio; Matsuno, Mitsuo; and Imai, Hirosuke, to Nippon Oil Co., Ltd. Process for producing alkylbenzenes. 4,511,748, Cl. 585-467.000.

Kuehn, Volker; Rothfuss, Werner; and Widmaier, Richard, to International Standard Electric Corporation. Component-insertion table for manually equipping circuit carriers. 4,511,421, Cl. 156-356.000.

Kuge, Toshio: *See*—
Nakamura, Yoichi; Yamamoto, Akio; Nogita, Shunsuke; Kuge, Toshio; and Muroi, Katsumi, 4,511,363, Cl. 44-1.00G.

Kugler, Tibor, to Swiss Aluminium Ltd. Process for purifying aluminum with sodium. 4,511,398, Cl. 75-63.000.

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Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, to Dynamit Nobel AG. Sealing sheet of elastomeric synthetic resins with textile reinforcement on outer layer. 4,511,619, Cl. 428-215.000.

Kujawa, Joseph J.: *See*—
Barkhau, Marvin L.; and Kujawa, Joseph J., 4,511,385, Cl. 65-135.000.

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,510,671, Cl. 29-571.000.

Kulprathipanja, Santi: *See*—
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,511,514, Cl. 260-419.000.

Kumagai, Katuya: *See*—
Hideyama, Shozo; Ishizawa, Akio; Kumagai, Katuya; and Hashimoto, Minoru, 4,511,617, Cl. 428-412.000.

Kumakura, Mikio: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.

Kumano, Shinji, to Nippon Gakki Seizo Kabushiki Kaisha. Keyboard structures of electronic musical instruments. 4,510,839, Cl. 84-434.000.

Kunii, Takeshi: *See*—
Nakayama, Yasunobu; Sato, Yasuji; and Kunii, Takeshi, 4,511,764, Cl. 179-90.0AN.

Kunz, Barbara L.: *See*—
Abbey, Kirk J.; and Kunz, Barbara L., 4,511,446, Cl. 204-181.00C.

Kunz, Gary L.: *See*—
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Kunze, Oswald, to Klockner-Humboldt-Deutz AG. Device for burning cement. 4,511,333, Cl. 432-106.000.

Kuo, Calven, to Aurora Mechatronics Corporation. Universal control device for restricting dialing and time limiting telephone calls. 4,511,765, Cl. 179-90.0BD.

Kuo, Chuan M. Cutting torch. 4,511,086, Cl. 239-416.300.

Kurakake, Mitsuo, to Fujitsu Fanuc Limited. Numerical control device. 4,511,982, Cl. 364-167.000.

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Ninagawa, Yoichi; Yamada, Osamu; Renge, Tsumoru; Kyo, Sunao; Osaki, Takayoshi; and Kushida, Koichi, 4,511,751, Cl. 585-608.000.

Kurematsu, Akira: *See*—
Konishi, Kazunori; and Kurematsu, Akira, 4,511,758, Cl. 178-2.00B.

Kuribayashi, Sadatomo. Rudder arrangement for ships. 4,510,880, Cl. 114-162.000.

Kuroda, Kouki: *See*—
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,511,240, Cl. 355-14.00R.

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Taguchi, Masahiro; Kuwakado, Satosi; and Tsuge, Noboru, 4,510,749, Cl. 60-286.000.
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Kwon, Young J.; and Evans, Harmon A., to Westinghouse Electric Corp. Control method for large scale batch reduction of zirconium tetrachloride. 4,511,399, Cl. 75-84.500.

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Kyocera Corporation: *See*—
Nagato, Yoshio; and Soroi, Kazunori, 4,511,665, Cl. 501-96.000.

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Matsumoto, Kozo, 4,511,087, Cl. 239-433.000.

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Umezawa, Hamao; Oono, Masaji; Ishihama, Hiroshi; Kyotani, Yoshinori; and Takahashi, Yoshio, 4,511,509, Cl. 260-239.00A.

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Tomita, Fusao; Tamaoki, Tatsuya; Shirahata, Kunikatsu; Iida, Takao; Morimoto, Makoto; and Fujimoto, Kazuhisa, 4,511,560, Cl. 514-27.000.

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Adler, Arno, 4,511,026, Cl. 198-469.000.

LaBarge, Robert L.; Horansky, Frank J.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., to Aluminum Company of America. Container recycling apparatus having shock mounted manually rotatable carrier. 4,510,857, Cl. 100-53.000.

LaBarge, Robert L.; Pohlenz, Elmer E.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; and Scherf, Thomas W., to Aluminum Company of America. Latch-

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Lacroix, Alain, to Societe Lyonnaise des Applications Catalytiques. Gas-supply system for catalytic gas burners. 4,511,326, Cl. 431-53.000.

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Morgan, Paul M., 4,511,090, Cl. 239-666.000.

Lamarche nee Lechevin, Marie-Odile: *See*—
Cassonnet, Jean-Claude M.; and Lamarche nee Lechevin, Marie-Odile, 4,511,983, Cl. 364-200.000.

Lambach, Heinrich W.: *See*—
Hansen, Erik; and Lambach, Heinrich W., 4,510,733, Cl. 53-434.000.

Lambert, Jack L.; and Chiang, Yuan C., to Kansas State University Research Foundation. Colorimetric detector for formaldehyde vapor. 4,511,658, Cl. 436-130.000.

Lambertus, Friedrich, to Werner & Pfleiderer. Extruder with a cassette filter for molten plastic material. 4,511,320, Cl. 425-199.000.

Lampe, Siegfried; Lehmann, Heinz; and Dose, Peter, to E.C.H. Will (GmbH & Co.). Apparatus for gathering writing pads or the like. 4,511,300, Cl. 414-35.000.

Lane, Thomas A.: *See*—
Webb, David M.; and Lane, Thomas A., 4,511,994, Cl. 364-900.000.

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Krimm, Heinrich; Buysch, Hans-Josef; Lange, Peter M.; and Klipper, Reinhold, 4,511,722, Cl. 548-231.000.

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Strangward, William J., 4,510,786, Cl. 72-326.000.

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Beaty, Larry E.; and Lanham, Steven M., 4,511,651, Cl. 435-15.000.

Laor, Herzl. Piezoelectric apparatus for positioning optical fibers. 4,512,036, Cl. 455-612.000.

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Duchene, Eloi; and Laroche, Pierre, 4,511,618, Cl. 428-215.000.

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Kudert, Frederick G.; Latreille, Maurice G.; and Tennant, William A., 4,511,528, Cl. 264-328.800.

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Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,511,133, Cl. 271-3.100.

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Presley, Glen T.; and Lautzenhiser, Lloyd L., 4,510,963, Cl. 137-117.000.

Lawrence, Christopher J.; Wilkinson, Philip M.; and Atkinson, Colin, to Rieter-Scragg Limited. Apparatus for false twisting yarn. 4,510,744, Cl. 57-280.000.

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Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay, Aranka; Vigh, Zoltan; and Sokorai, Agnes, 4,511,737, Cl. 564-257.000.

Leach, Earl A., Jr., to Allied Corporation. Mounting assembly for a speed sensor. 4,511,840, Cl. 324-160.000.

Leary, Michael J.: *See*—
Reichgott, David W.; and Leary, Michael J., 4,511,676, Cl. 521-26.000.

Leas, James M., to Solarex Corporation. Solar cell metal spray process. 4,511,600, Cl. 427-75.000.

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Nielsen, Steven T.; and Lee, Carleton C., 4,511,349, Cl. 494-16.000.

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Chai, Bruce H.; Bailey, Dana S.; Vetelino, John F.; Lee, Donald L.; and Andle, Jeffrey C., 4,511,817, Cl. 310-313.00A.

Lee, Fui-Tseng H.; Juelke, Charles V.; and Finley, Joseph H., to FMC Corporation. Mixed phenyl/mesityl phosphate ester composition. 4,511,498, Cl. 252-609.000.

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Yoo, Han S.; and Lee, Wha S., 4,511,709, Cl. 528-331.000.

Leech, Francis, to USM Corporation. Drive for shell type rolls. 4,510,823, Cl. 74-789.000.

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Denis, Jacques; Sillion, Bernard; Damin, Bernard; and Leger, Robert, 4,511,369, Cl. 44-62.000.

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Hardacre, Nicholas P., 4,511,286, Cl. 405-115.000.

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Newton, Steven A.; and Bowers, John E., 4,511,207, Cl. 350-96.150.

Leloup, Jean: *See*—
Barraud, Andre ; and Leloup, Jean, 4,511,604, Cl. 427-402.000.

Lem, Hans J., to Air Lane Systems Inc. Article accumulating conveyor system. 4,511,030, Cl. 198-633.000.

Lemelson, Jerome H. Scanning apparatus and method. 4,511,918, Cl. 358-107.000.

Lemelson, Jerome H. Electro-optical information recording and reproduction system. 4,511,930, Cl. 358-335.000.

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Boy-Marcotte, Jean-Louis; Dahan, Gilbert M. I.; Dancette, Michel; Le Nabour, Marcel P.; Pellerin, Jean-Francois G. A.; Rivallin, Jose ; and Jannot, Marcel A. J., 4,511,805, Cl. 290-2.000.

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von Daehne, Welf, 4,511,512, Cl. 260-245.20R.

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Melville, James B., 4,511,495, Cl. 252-522.00A.

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Garwin, Richard L.; and Levine, James L., 4,511,760, Cl. 178-18.000.

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Orio, Alfred P.; Levy, Leonard R.; and Gulla, Michael, 4,511,403, Cl. 106-1.220.

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Lewis, Henry G., Jr., to RCA Corporation. Digital television system with truncation error correction. 4,511,922, Cl. 358-166.000.

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Lindner, Kurt, 4,511,897, Cl. 343-6.00R.

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Lietzke, Heinz: *See*—
Baumers, Johannes; Lisken, Werner; and Lietzke, Heinz, 4,510,815, Cl. 74-61.000.

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Thomas, Walter; and Lucatuorto, Peter, 4,511,621, Cl. 428-285.000.

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Jackson, Lawrence D. A., 4,511,116, Cl. 251-5.000.

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Lindner, Kurt, to Licentia Patent-Verwaltungs GmbH. Sensor system for metallic targets including doppler radar and radiometer. 4,511,897, Cl. 343-6.00R.

Lindsey, James C., to Cavalier Corporation. Antitheft side mounted escrows for vending machine. 4,511,060, Cl. 221-115.000.

Lingenfelter, Lowell R.: *See*—
Schuler, John G.; and Lingenfelter, Lowell R., 4,511,196, Cl. 339-14.00R.

Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., to Eaton Corporation. Arc extinguishing structure for electrical switching device. 4,511,772, Cl. 200-144.00R.

Linner, Hans, to Norden Packaging Machinery AB. Hot gas sealing device. 4,511,426, Cl. 156-497.000.

Lion Industries Ltd.: *See*—
Yuill, Grenville K., 4,510,791, Cl. 73-40.000.

Lipson, Herbert G. Variable neutral density laser goggles. 4,511,225, Cl. 351-49.000.

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Liu, Shuchen, to American Hoechst Corporation. Aqueous developable diazo lithographic printing plates with admixture of polyvinyl acetate and styrene maleic acid ester copolymer. 4,511,640, Cl. 430-157.000.

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Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., 4,511,699, Cl. 525-205.000.
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Stutz, Hansruedi, 4,512,028, Cl. 377-16.000.
Loewenstern, Kenneth M.: *See—*
Maltby, Frederick L.; Loewenstern, Kenneth M.; and Benning, Jack G., Jr., 4,511,948, Cl. 361-280.000.
Logan, James E.: *See—*
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Logsdon, Bill C.: *See—*
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Roberts, Charles D.; and Cave, Ben R., 4,511,124, Cl. 266-44.000.
Long, Dennis L. Modular unit with foldable panels. 4,511,024, Cl. 198-346.000.
Long, Robert A.: *See—*
Goodrich, Lloyd E., Jr.; and Long, Robert A., 4,511,153, Cl. 279-2.00R.
Long, Stanley A.: *See—*
Akse, James R.; and Long, Stanley A., 4,511,601, Cl. 427-79.000.
Lonza Ltd.: *See—*
Lehky, Pavel; and Hardt, Peter, 4,511,734, Cl. 562-524.000.
Lopez, Louis, to Container Corporation of America. Variable dimension container. 4,511,079, Cl. 229-34.00R.
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Monnais, Christian; Cotteret, Jean; and Bugaut, Andree , 4,511,360, Cl. 8-405.000.
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Baumers, Johannes; Lisken, Werner; and Lietzke, Heinz, 4,510,815, Cl. 74-61.000.
Losert, Wolfgang: *See—*
Laurent, Henry; Nickisch, Klaus; Bittler, Dieter; Wiechert, Rudolf; and Losert, Wolfgang, 4,511,565, Cl. 514-173.000.
Lothman, Stig A., to Tetra Pak International AB. Machine for the processing of packing containers. 4,510,732, Cl. 53-168.000.
Loube, Irving: *See—*
Eichenlaub, Carl, 4,510,718, Cl. 51-170.0EB.
Lovgren, Eric M.: *See—*
Schmidt, Lawrence R.; and Lovgren, Eric M., 4,511,535, Cl. 422-137.000.
Lubbers, Dietrich W.; and Opitz, Norbert. Process and arrangement for measuring ion strength. 4,511,660, Cl. 436-163.000.
Lubojatzki, Walter, to Klockner-Becorit GmbH. Support frame for underground mining operations. 4,511,290, Cl. 405-292.000.
Lucas, David J.: *See—*
Vella, Paul L., 4,510,770, Cl. 62-464.000.
Lucas Industries: *See—*
Thomas, Alan; and Glaze, Stanley G., 4,511,022, Cl. 188-299.000.
Lucas Industries Limited: *See—*
Williams, Francis V., 4,511,020, Cl. 188-73.390.
Lucas Industries Public Limited Company: *See—*
Wloczyk, Uwe, 4,511,185, Cl. 303-6.00C.
Lucatuorto, Peter: *See—*
Thomas, Walter; and Lucatuorto, Peter, 4,511,621, Cl. 428-285.000.
Lucous, Robert W. Box for wrapping and transporting flexible cordlike structure. 4,511,037, Cl. 206-396.000.
Luduena, Richard F., to Board of Regents, The University of Texas System. Bis-amide disulfide cleavable cross-linking reagents. 4,511,501, Cl. 260-112.00R.
Ludwigsen, John S., to Chicago Bridge & Iron Company. Passive structure with energy absorbing capacity. 4,511,115, Cl. 248-562.000.
Lueddecke, Erik: *See—*
Nissen, Axel; Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, 4,511,685, Cl. 524-110.000.
Luetzelschwab, Wayne E., to Marathon Oil Company. Flow control apparatus and method. 4,510,993, Cl. 166-75.00R.
Lummus Company, The: *See—*
Suciu, George D.; Stefani, Giancarlo; and Fumagalli, Carlo, 4,511,670, Cl. 502-209.000.
Lundberg, Robert D.: *See—*
Fuller, Everett J.; and Lundberg, Robert D., 4,511,479, Cl. 210-708.000.
Peiffer, Dennis G.; Lundberg, Robert D.; and Walker, Thad O., 4,510,998, Cl. 166-295.000.
Luscher, Fred. Multifunction reprographic apparatus. 4,511,245, Cl. 355-43.000.
Luther, Gunter; Loebel, Peter; Risse, Gerhard; and Leiser, Volker, to GKSS-Forschungszentrum-Geesthacht GmbH. Apparatus for supplying divers with artificial respiratory gas mixtures. 4,510,932, Cl. 128-204.290.
Lypka, Alexander. Flax straw buncher. 4,510,742, Cl. 56-384.000.
M.A.N. Maschinenfabrik Aktiengesellschaft: *See—*
Oetringhaus, Walter G., 4,511,100, Cl. 242-86.510.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Cornils, Boy; Weber, Jurgen; Tihanyi, Bela; and DeWin, Werner, 4,511,439, Cl. 204-37.100.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,510,868, Cl. 101-415.100.
Mabley, Paul B.: *See—*
Burrows, Aubrey L.; Mabley, Paul B.; and Field, Steven J., 4,511,366, Cl. 44-53.000.
Macaster Controls, Inc.: *See—*
Boyce, William A., 4,510,694, Cl. 33-203.180.
MacDonald, Milton H., Jr. Insulated building structure and method for assembling same. 4,510,726, Cl. 52-309.800.
MacDonald, Robert C., to Westinghouse Electric Corp. Elevator system. 4,511,017, Cl. 187-29.00R.
Mace, Robert: *See—*
Ferton, Daniel; and Mace, Robert, 4,511,409, Cl. 148-2.000.
MacGregor, Fran W.: *See—*
Godfrey, Steven W.; Stern, Allen M.; and MacGregor, Fran W., 4,511,111, Cl. 248-459.000.
Machida, Tetsuo; Tsuhara, Susumu; Tabata, Kuniaki; and Okada, Yasuyuki, to Hitachi, Ltd. Memory control unit. 4,511,962, Cl. 364-200.000.
Mack, Heinz. Dental articulator. 4,511,332, Cl. 433-59.000.
Mack, James F. Seal for rotary actuator. 4,510,850, Cl. 92-125.000.
Mackenroth, Joseph R., III. High intensity ultraviolet light video imaging apparatus. 4,511,925, Cl. 358-244.000.
MacKenzie, Alfred K.: *See—*
Boyd, Mary G.; Smith, Donald R.; Imondi, Peter F.; Hiatt, Norman A.; Bauer, Fritz E.; Anemaet, John M.; and MacKenzie, Alfred K., 4,511,425, Cl. 156-493.000.
MacKenzie, Keith W., to Netcom, Inc. Biased holder for a crystal wafer. 4,511,820, Cl. 310-353.000.
Mackiol, Norbert: *See—*
Habeck, Reinhold; Mackiol, Norbert; Mautner, Franz; and Schwarzler, Peter, 4,510,871, Cl. 105-167.000.
Macy, Lawrence E., to Muncie Power Product Inc. Electronic overspeed switch. 4,510,899, Cl. 123-198.00D.
Madaus, Rolf; and Gorler, Klaus, to Dr. Madaus & Co. Laxative composition comprising psyllium seeds and senna fruits. 4,511,561, Cl. 424-195.100.
Maddox, James P., to Transamerica Delaval Inc. Vibration damped asymmetric rotor carrying liquid ring or rings. 4,511,309, Cl. 415-202.000.
Madgett, Raymond J.: *See—*
Kolodesh, Michael S.; Peters, Edward L.; and Madgett, Raymond J., 4,511,318, Cl. 425-133.100.
Madsen, Roger E.; and Williams, Michael M., to Packaging Corporation of America. Interlocking end closure flaps on collapsible eight-sided receptacle. 4,511,080, Cl. 229-41.00C.
Maeda, Chiaki: *See—*
Hisamoto, Iwao; Maeda, Chiaki; and Hirai, Masaru, 4,511,733, Cl. 560-253.000.
Maeda, Kazuo: *See—*
Yamazaki, Kenji; and Maeda, Kazuo, 4,511,761, Cl. 179-2.0EA.
Maeda, Kiyoto: *See—*
Ohsumi, Tadashi; Inoue, Satoru; and Maeda, Kiyoto, 4,511,581, Cl. 514-617.000.
Maeda, Masatoshi; Katsurai, Junji; and Ikeda, Hiroaki, to Konishiroku Photo Industry Co. Ltd. Picture image information recording apparatus. 4,511,929, Cl. 358-296.000.
Maeda, Narimichi: *See—*
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.
Maeda, Tetsuo: *See—*
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Magarian, Gerald M.; and Friedrich, Ralph S., to Ameron, Inc. Apparatus for winding fiber reinforced pipe fittings. 4,511,423, Cl. 156-425.000.
Magee, Philip S., to Chevron Research Company. Particulate fungicides. 4,511,735, Cl. 514-601.000.
Magid, David J.: *See—*
Banks, Russell; and Magid, David J., 4,510,734, Cl. 53-449.000.
MagneTek, Inc.: *See—*
Moore, Benson R.; and Gnacinski, Leonard T., 4,511,347, Cl. 474-43.000.
Magnuson, Karl. Building structure. 4,510,724, Cl. 52-233.000.
Magyar, Karoly: *See—*
Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, 4,511,717, Cl. 544-353.000.
Mahnke, Harald; Woerner, Frank P.; Weber, Heinz; and Kreibiehl, Guenter, to BASF Aktiengesellschaft. Resilient foam based on a melamine-formaldehyde condensate. 4,511,678, Cl. 521-52.000.
Mahrla, Peter, to Siemens Aktiengesellschaft. Semiconductor element. 4,511,912, Cl. 357-36.000.
Makido, Isao: *See—*
Yano, Naomichi; Makido, Isao; and Ito, Hajime, 4,510,921, Cl. 126-429.000.

Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shunichiro; and Suzuki, Hiroshi, to Hitachi Chemical Company, Ltd.; and Hitachi, Ltd. Composition for protective coating material. 4,511,705, Cl. 528-26.000.

Makita, Fujio, to Fuji Jukogyo Kabushiki Kaisha. System for controlling a power transmission of a four-wheel drive vehicle. 4,511,014, Cl. 180-233.000.

Makleit, Sandor: *See—*
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.

Maliarik, Mary J.: *See—*
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Mallon, Joseph R.: *See—*
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,510,671, Cl. 29-571.000.

Malloy, Thomas P.: *See—*
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Malow, Egon: *See—*
Heck, Gunter; Lienerth, Aladar; Malow, Egon; Schwarz, Karl-Heinz; and Faust, Uwe, 4,511,437, Cl. 203-19.000.

Maltby, Frederick L.; Loewenstern, Kenneth M.; and Benning, Jack G., Jr., to Drexelbrook Controls, Inc. Two layer probe. 4,511,948, Cl. 361-280.000.

Manaka, Toshio: *See—*
Atago, Takeshi; and Manaka, Toshio, 4,510,907, Cl. 123-435.000.

Mandigo, Frank N.: *See—*
Shapiro, Eugene; and Mandigo, Frank N., 4,511,410, Cl. 148-13.200.

Mannesman Rexroth GmbH: *See—*
Mucheyer, Norbert; and Kauss, Wolfgang, 4,510,847, Cl. 91-461.000.

Mannion, Geoffrey; and Palmer, Patrick V., to International Meehanite Metal Company Limited, The. Process for the treatment of molten metal. 4,511,401, Cl. 75-130.00R.

Manresa, Inc.: *See—*
Vaillancourt, Vincent L., 4,511,359, Cl. 604-411.000.

Mansei Kogyo Kabushiki Kaisha: *See—*
Tanaka, Yoshiharu, 4,511,212, Cl. 350-255.000.

Manufacture de Machines du Haut-Rhin, "Manurhin": *See—*
Nicolas, Jacques; and Raso, Roland, 4,510,869, Cl. 102-240.000.

Manville Service Corporation: *See—*
Ramge, Dennis L.; and Miller, John H., 4,511,328, Cl. 432-59.000.

Manzer, Marvin R., to Cavalier Corporation. Vending machine with side mounted escrows. 4,511,059, Cl. 221-115.000.

Mao, Raymond L. V.; and Bird, Peter H. Composite zeolite-asbestos catalysts. 4,511,667, Cl. 502-64.000.

Marathon Oil Company: *See—*
Luetzelschwab, Wayne E.; 4,510,993, Cl. 166-75.00R.

Marconi Co. Ltd., The: *See—*
Byatt, Dennis W. G.; and Walker, John W., 4,510,804, Cl. 73-290.00V.

Marcus, Konrad H.; and Cody, Michael J., to Prince Corporation. Visor with auxiliary light. 4,511,954, Cl. 362-275.000.

Margerum, Edward S.; and Hiatt, Norman A., to Dennison Mfg. Company. Thermal imprinting of substrates. 4,511,602, Cl. 427-148.000.

Marianu, Vlad, to ITT Industries, Inc. Spot-type disc brake, in particular for automotive vehicles. 4,511,019, Cl. 188-72.200.

Marine Construction & Design Co.: *See—*
Svendsen, Robert A., 4,511,122, Cl. 254-332.000.

Mark, Seymour, to Sohio Alternate Energy Development Company. Coal-aqueous mixtures. 4,511,365, Cl. 44-51'.000.

Markert, Juergen: *See—*
Hagen, Helmut; Markert, Juergen; Kohler, Rolf-Dieter; and Wuerzer, Bruno, 4,511,393, Cl. 71-92.000.

Markó, Adolf R.: *See—*
von Gierke, Henning E.; and Marko, Adolf R., 4,511,228, Cl. 351-243.000.

Markowitz, Jerome, to Allen Organ Company. Touch sensitivity in an electronic musical instrument having non-positive attack. 4,510,836, Cl. 84-1.260.

Marks, Milton, to Guardian Fasteners and Closure Systems. Extension for a screwgun. 4,510,826, Cl. 81-57.370.

Marsh, James C., Jr.: *See—*
Harlan, Wayne E.; and Marsh, James C., Jr., 4,511,921, Cl. 358-161.000.

Marshall, Eric J. High speed printer. 4,511,268, Cl. 400-119.000.

Martens, Jurgen: *See—*
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Martin, Don M.: *See—*
Martin, Ernest N.; Barner, William H.; and Martin, Don M., 4,511,067, Cl. 222-230.000.

Martin, Ernest N.; Barner, William H.; and Martin, Don M. Particulate material dispensing device. 4,511,067, Cl. 222-230.000.

Martin, Eugene R., to SWS Silicones Corporation. Quaternary ammonium-functional silicon compounds. 4,511,727, Cl. 556-418.000.

Martin, Jean-Claude: *See—*
Sella, Claude; Tran-Khanh, Vien; and Martin, Jean-Claude, 4,511,451, Cl. 204-298.000.

Martin, Pierre: *See—*
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Martin, Ronald J.: *See—*
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Mason, Richard: *See—*
Miller, Anne K. M.; and Mason, Richard, 4,511,038, Cl. 206-454.000.

Masuda, Eiji: *See—*
Matsuo, Kenji; and Masuda, Eiji, 4,511,814, Cl. 307-572.000.

Masuko, Akinori, to Tokyo Shibaura Denki Kabushiki Kaisha. Object detector which compares returned signals from successive transmissions. 4,512,000, Cl. 367-93.000.

Masuyama, Masayuki: *See—*
Nunokawa, Kazuo; and Masuyama, Masayuki, 4,511,227, Cl. 351-208.000.

Mathad, Gangadhara S.: *See—*
Chen, Lee; and Mathad, Gangadhara S., 4,511,430, Cl. 156-643.000.

Mathieu, Raymond J., to Hobart Corporation. Film wrapping machine including film length selection. 4,510,731, Cl. 53-66.000.

Matoba, Yasuo; and Ishimori, Isao, to Osaka Soda Co. Ltd. Curable composition of epichlorohydrin rubber and acrylic rubber and cured composition therefrom. 4,511,698, Cl. 525-187.000.

Matrai, Erzsebet: *See—*
Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, 4,511,717, Cl. 544-353.000.

Matson, Wayne R., to ESA, Inc. Liquid chromatograph with electrochemical detector and method. 4,511,659, Cl. 436-150.000.

Matsubara, Naoki; and Numata, Hideo, to Oval Engineering Co., Ltd. Electrode connections for a piezoelectric sensor. 4,511,819, Cl. 310-340.000.

Matsuda, Satoshi: *See—*
Nakamura, Takeshi; Nishiyama, Hiroshi; Matsuda, Satoshi; and Matsumoto, Ikuo, 4,511,821, Cl. 310-354.000.

Matsuda, Toshiharu; Imamura, Minoru; and Saho, Norihide, to Hitachi, Ltd. Cryostat with refrigerating machine. 4,510,771, Cl. 62-514.00R.

Matsuda, Yoshio: *See—*
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Matsui, Fumio; Aono, Shin; Sakai, Hiroshi; Hattori, Katsuhide; and Kakino, Shigeru, to Nippon Oil and Fats Co. Ltd. Method of producing a water-in-oil emulsion explosive. 4,511,414, Cl. 149-109.600.

Matsumoto, Dairiku: *See—*
Kawai, Seiji; and Matsumoto, Dairiku, 4,511,305, Cl. 414-755.000.

Matsumoto, Ikuo: *See—*
Nakamura, Takeshi; Nishiyama, Hiroshi; Matsuda, Satoshi; and Matsumoto, Ikuo, 4,511,821, Cl. 310-354.000.

Matsumoto, Kozo, to Kyoritsu Gokin Mfg. Co., Ltd. Air mist nozzle apparatus. 4,511,087, Cl. 239-433.000.

Matsumoto, Masao; and Imai, Shigeru, to Yoshida Kogyo K. K. Apparatus and a method for forming space sections in a slide fastener chain having coupling elements in the form of continuous coil. 4,510,662, Cl. 29-408.000.

Matsumura, Ikuei: *See—*
Natori, Takeshi; Kobayashi, Yoji; Watanabe, Shigetaka; Shimizu, Katsumi; Matsumura, Ikuei; Namekawa, Yoshihiro; and Miyanaga, Satoshi, 4,510,974, Cl. 138-137.000.

Matsumura, Susumu; and Imataki, Mitsumasa, to Matsumura, Susumu; and Susumu Matsumura and Mitsubishi Denki Kabushiki Kaisha. Power converter. 4,511,957, Cl. 363-54.000.

Matsuno, Mitsuo: *See—*
Kudoh, Michio; Matsuno, Mitsuo; and Imai, Hirosuke, 4,511,748, Cl. 585-467.000.

Matsuo, Kenji; and Masuda, Eiji, to Tokyo Shibaura Denki Kabushiki Kaisha, Semiconductor analog switch circuit with compensation means to minimize offset of output voltage. 4,511,814, Cl. 307-572.000.

Matsuo, Kenzaburo: *See—*
Ida, Jinsei; Fujita, Tsutomu; Yamada, Ichiho; Higuchi, Fumio; and Matsuo, Kenzaburo, 4,510,669, Cl. 29-568.000.

Matsuo, Yasushi: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
Ogino, Toshiro; and Kokawa, Katsuzo, 4,511,327, Cl. 431-201.000.
Shinohara, Isao, 4,511,939, Cl. 360-93.000.
Yamada, Jiro; Maeda, Tetsuo; and Yasuda, Hiroshi, 4,512,010, Cl. 369-220.000.

Matta, Grant B., to Penetone Corporation. D-Limonene based aqueous cleaning compositions. 4,511,488, Cl. 252-162.000.

Mattel, Inc.: *See—*
Hart, William; and McKittrick, Michael T., Jr., 4,511,342, Cl. 446-429.000.

Matthies, Karl H.; and Harlos, Hartmut, to U.S. Philips Corporation. Differential amplifier circuit having improved control signal filtering. 4,511,853, Cl. 330-259.000.

Matumoto, Yuuichi, to Soda Aromatic Company, Limited. Slow-release perfume compositions and a process for the preparation of them. 4,511,496, Cl. 252-522.00A.

Maurel, Pierre: *See—*
Crussard, Charles; Maurel, Pierre; and Bonhomme, Jean, 4,511,540, Cl. 423-26.000.

Maurer, Alexander: *See—*
Schrodter, Klaus; and Maurer, Alexander, 4,511,546, Cl. 423-305.000.

Mauri, Francesco, to Ravizza S.p.A. Process for preparing a 7-chloro-5-(2-chlorophenyl)-benzodiazepinone. 4,511,510, Cl. 260-239.30D.

Mautner, Franz: *See—*
Habeck, Reinhold; Mackiol, Norbert; Mautner, Franz; and Schwarzler, Peter, 4,510,871, Cl. 105-167.000.
Maxwell Laboratories, Inc.: *See—*
Kent, Henry R., 4,511,094, Cl. 242-7.080.
May, Michael G., to AIR Ltd. Pressure drop power generation. 4,511,806, Cl. 290-43.000.
May, Ronald J., to American Audiographics, Inc. Promotional attachment for beverage packages. 4,511,033, Cl. 206-216.000.
Mayer, Frederic C. Production of metal rods. 4,510,989, Cl. 164-415.000.
Mayer, Rothkopf Industries, Inc.: *See—*
Quay, Earl R.; and Tilson, Alan L., 4,510,773, Cl. 66-9.00B.
Mayer, Walter P.; and Burns, Richard J., to Union Carbide Corporation. Water-dispersible coating compositions and process. 4,511,682, Cl. 523-402.000.
Mayernik, Richard: *See—*
Teng, Yu-Ling; and Mayernik, Richard, 4,511,597, Cl. 427-53.100.
Mayne, W. Harry; and Zilkha, Sasson, to Geosource Inc. Method and apparatus for seismic exploration using nonlinear sweeps. 4,512,001, Cl. 367-189.000.
Maytag Company, The: *See—*
Cotton, Curran D., 4,510,778, Cl. 68-12.00R.
Ellingson, David I.; and Wilson, James D., 4,510,777, Cl. 68-12.00R.
McNally, William J.; and Mellinger, John C., 4,510,776, Cl. 68-3.00R.
Mazda Motor Corporation: *See—*
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Tsuchida, Tsuyoshi; and Kido, Yoshinobu, 4,510,902, Cl. 123-325.000.
McCabe, Graham, to Ford Motor Company. Ball joints and liners therefor. 4,511,277, Cl. 403-140.000.
McCartney, John R., to Norwood Industries, Inc. Process for producing polishing pads comprising a fully impregnated non-woven batt. 4,511,605, Cl. 427-246.000.
McClellan, Robert D., Jr. Thermally insulating device for a beverage-containing bottle. 4,510,769, Cl. 62-457.000.
McCombs, Norman R., to Greene & Kellogg, Inc. Apparatus for the production of oxygen. 4,511,377, Cl. 55-163.000.
McCullagh, Keith G.; Wadsworth, Harry J.; and Hann, Michael M., to G.D. Searle & Co. Carboxyalkyl peptide derivatives. 4,511,504, Cl. 260-112.50R.
McCurry, Lynn E.: *See—*
Saprokhin, Alexander M.; Friedland, David J.; Baran, Richard M.; Kim, Jung T.; and McCurry, Lynn E., 4,511,440, Cl. 204-60.000.
McGahan, Wallace A., to Schlage Lock Company. Programmable combination electronic lock. 4,511,946, Cl. 361-172.000.
McGibbon, Gregor D.: *See—*
Skidanenko, Constatine V.; and McGibbon, Gregor D., 4,511,763, Cl. 179-16.0AA.
McGlove, William R.: *See—*
Amos, Homer C.; Benedyk, Joseph C.; Scheie, Carl E.; and McGlove, William R., 4,511,148, Cl. 273-326.000.
McGovern, Paul A.; and Zambuto, Mauro. Surveying technique with correction of optical errors caused by atmospheric turbulence. 4,511,247, Cl. 356-3.000.
McGraw-Edison Company: *See—*
Rasmussen, John F.; and Gaia, Aldino J., 4,511,874, Cl. 337-159.000.
Urani, Angelo, 4,511,876, Cl. 337-244.000.
McInnis, Stirling A. Speed control of a D.C. electric motor. 4,511,831, Cl. 318-351.000.
McIntyre, James A.; and Phillips, Robert F., to Dow Chemical Company, The. Method of operating a liquid-gas electrochemical cell. 4,511,441, Cl. 204-98.000.
McIntyre, John N.: *See—*
Jennings, Charles E.; Barrington, Claud C.; Chen, Lien-Yan; Hopkins, Bob C.; McIntyre, John N.; and Regitz, Alfred P., 4,510,960, Cl. 137-75.000.
McKee, Robert N.: *See—*
Bartlett, Robert L.; and McKee, Robert N., 4,510,980, Cl. 144-1.00C.
McKinley, Mark J.; and Sanner, Jim W., to Dow Chemical Company, The. Process of using water-absorbent agents for low pH applications. 4,511,477, Cl. 210-689.000.
McKittrick, Michael T., Jr.: *See—*
Hart, William; and McKittrick, Michael T., Jr., 4,511,342, Cl. 446-429.000.
McNally, William J.; and Mellinger, John C., to Maytag Company, The. Sliding access door for washing machine. 4,510,776, Cl. 68-3.00R.
McNelis, Robert L.: *See—*
Volakakis, John G.; McNelis, Robert L.; and Wallentin, Burt H., 4,511,048, Cl. 212-253.000.
MDS-Qantel, Inc.: *See—*
Fencsik, Gabor; and Glenn, Fletcher M., II, 4,511,968, Cl. 364-200.000.
Mead Johnson & Company: *See—*
Harris, Nancy T.; and Harris, Leonard C., 4,511,163, Cl. 285-177.000.
Media Research s.r.l.: *See—*
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Medical Magnetics, Inc.: *See—*
Smiley, Harry; and Blechman, Abraham, 4,511,330, Cl. 433-18.000.
Medical Research Associates, Ltd.: *See—*
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Meggle Milchindustrie GmbH & Co. KG: *See—*
Boesig, Werner; and Pritzwald-Stegmann, Bernd, 4,511,553, Cl. 424-35.000.
Mehra, Yuv R., to El Paso Hydrocarbons Company. Process for extracting natural gas liquids from natural gas streams with physical solvents. 4,511,381, Cl. 62-17.000.
Meidensha Electric Mfg. Co., Ltd.: *See—*
Kawai, Seiji; and Matsumoto, Dairiku, 4,511,305, Cl. 414-755.000.
Meister, Richard P., to Bunting Magnetics Company. Gang conveyor drive mount and method for transporting. 4,511,028, Cl. 198-497.000.
Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., to General Tire & Rubber Company, The. Flexible thermoplastic vinyl chloride polymers and acrylate terpolymers. 4,511,699, Cl. 525-205.000.
Melby, Earl G.; Fabris, Hubert J.; Livigni, Russell A.; and Cocain, Harry W., to General Tire & Rubber Company, The. Flexible thermoplastic vinyl chloride polymers. 4,511,700, Cl. 525-283.000.
Melcher, Alton R. Fishing rod holder with bite signaling means. 4,510,709, Cl. 43-17.000.
Mellinger, John C.: *See—*
McNally, William J.; and Mellinger, John C., 4,510,776, Cl. 68-3.00R.
Melocik, Grant C.; and Pickering, William, to Towmotor Corporation. Coil and coil driver control apparatus. 4,511,947, Cl. 361-191.000.
Melville, James B., to Lever Brothers Company. Tumble dryer products for depositing perfume. 4,511,495, Cl. 252-522.00A.
Memmi, Massimo: *See—*
Bruno, Roberto; and Memmi, Massimo, 4,511,633, Cl. 428-666.000.
Menary, Robert C.; and Doe, Peter E., to University of Tasmania, The. Enzyme inactivated hops. 4,511,587, Cl. 426-271.000.
Mendoza, Abel; and Otterbacher, Eric W., to Dow Chemical Company, The. 2-Ethoxyethyl 2-(4-hydroxyphenoxy)-propanoate. 4,511,731, Cl. 560-061.000.
Merck & Co., Inc.: *See—*
Chang, Michael N.; and Biftu, Tesfaye, 4,511,724, Cl. 548-452.000.
Meredith, Elmer E.: *See—*
Hanna, Thomas J.; Logsdon, Bill C.; and Meredith, Elmer E., 4,510,710, Cl. 43-42.130.
Merieux, Charles: *See—*
Play, Dominique; Bonneau, Marc; Merieux, Charles; Herbage, Daniel; and Comte, Philippe, 4,511,653, Cl. 435-69.000.
Merline Industries, Inc.: *See—*
Yealy, Carl F., 4,511,417, Cl. 156-73.500.
Messer Griesheim Industries, Inc.: *See—*
Wieland, Rolf H., 4,510,760, Cl. 62-49.000.
Metromail Corporation: *See—*
Barton, Delmar O.; and Simpson, Loran R., 4,511,130, Cl. 270-54.000.
Meuschke, Robert E.; and Schulties, Joseph R., to Westinghouse Electric Corp. Apparatus for dismantling and disposing of fuel assemblies. 4,511,499, Cl. 252-626.000.
Meyer, Hans. Device for measuring distances between two opposite surfaces. 4,510,691, Cl. 33-169.00R.
Meyer, Juergen, to Dr. Ing. h.c.F. Porsche AG. Table-like support installation for papers, especially at a covering frame of a sliding window. 4,511,104, Cl. 244-118.500.
Mezei, Tibor: *See—*
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay, Aranka; Vigh, Zoltan; and Sokorai, Agnes, 4,511,737, Cl. 564-257.000.
Michel, Jean-Pierre: *See—*
Tournier, Herve; Johansson, Allan A.; Sachetto, Jean-Pierre; Armanet, Jean-Michel; Michel, Jean-Pierre; and Roman, Alain, 4,511,433, Cl. 162-16.000.
Michel, Urien; and Guy, Theron M. P. J. Electronic event or bit generator having a predetermined occurrence rate with a predetermined event or bit distribution. 4,511,988, Cl. 364-717.000.
Micron International, Ltd.: *See—*
Rodriguez, Michael J., 4,511,886, Cl. 340-534.000.
Mikkelsen, Eric: *See—*
Falcoff, Allan F.; Mikkelsen, Eric; and Rodrigues, Allan B. J., 4,511,251, Cl. 356-246.000.
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Sugai, Kazuyoshi, to Mikoshiba, Nobuo; and Tsubouchi, Kazuo. Surface acoustic wave device using an elastic substrate and an aluminum nitride piezoelectric film. 4,511,816, Cl. 310-313.00A.
Milau, Julius S.: *See—*
Krishna, Coimbatore R.; and Milau, Julius S., 4,511,474, Cl. 210-512.100.
Millard, Maurice: *See—*
Fortunato, Alfred R.; Millard, Maurice; and Trzeciak, John R., 4,511,337, Cl. 434-43.000.
Miller, Anne K. M.; and Mason, Richard, to EKC Technology, Inc. Container for masks and pellicles. 4,511,038, Cl. 206-454.000.
Miller, Charles H., to Pathfinders Group, The. Decorative noncombustible coatings and methods of making the same. 4,511,406, Cl. 106-18.140.
Miller, Edward B.; and Eichelberger, Charles W., to General Electric Company. Method and apparatus for controlling distributed electrical loads. 4,511,895, Cl. 340-825.500.
Miller, John H.: *See—*
Ramge, Dennis L.; and Miller, John H., 4,511,328, Cl. 432-59.000.
Miller, Paul S.; and Ts'O, Paul O. P., to Johns Hopkins University, The. Process for selectively controlling unwanted expression or function

of foreign nucleic acids in animal or mammalian cells. 4,511,713, Cl. 536-27.000.

Miller, Richard F.; and Nicholson, Michael P., to Atlantic Richfield Company. Method for minimizing fouling of heat exchanger. 4,511,457, Cl. 208-48.0AA.

Miller, Richard J. Apparatus and method for automatically removing fingernail polish. 4,510,954, Cl. 132-75.000.

Miller, Ronald L.: *See—*
Neron, Joseph; Hudson, William S.; and Miller, Ronald L., 4,510,825, Cl. 81-57.290.

Miller, Stephen J., to Chevron Research Company. Low activity catalyst oligomerization process. 4,511,746, Cl. 585-323.000.

Miller, Stephen J., to Chevron Research Company. Olefin oligomerization with an activated catalyst. 4,511,750, Cl. 585-526.000.

Miller, Timothy J. E.; Jones, Donald W.; and Kalan, Gary L., to General Electric Company. Method of making a permanent magnet rotor. 4,510,680, Cl. 29-598.000.

Millet, George H., to Minnesota Mining and Manufacturing Company. Cyanoacrylate adhesive composition containing tannins. 4,511,686, Cl. 524-110.000.

Milsom, Robert F., to U.S. Philips Corporation. Acoustic surface wave device. 4,511,866, Cl. 333-194.000.

Mims, Donald S., to Texaco Inc. Bitumen production and substrate stimulation. 4,511,000, Cl. 166-303.000.

Mimura, Yoshiki: *See—*
Arai, Tetsuji; and Mimura, Yoshiki, 4,511,788, Cl. 219-405.000.

Minai, Masayoshi; and Katsura, Tadashi, to Sumitomo Chemical Company, Limited. Process for producing 4-cyclopentenones. 4,511,655, Cl. 435-149.000.

Minei, Masayuki: *See—*
Watanabe, Katsuhiro; Minei, Masayuki; and Horikoshi, Toshio, 4,510,951, Cl. 132-7.000.

Minker, Emil: *See—*
Szendrei, Kalman; Minker, Emil; Rozsa, Zsuzsanna; Koch, Lehel; and Wolf, Lajos, 4,511,559, Cl. 514-54.000.

Minnesota Mining and Manufacturing Company: *See—*
Busman, Stanley C.; and Chang, John C., 4,511,641, Cl. 430-158.000.
Fohrenkamm, Elsie A.; and Rousseau, Alan D., 4,511,646, Cl. 430-283.000.
Millet, George H., 4,511,686, Cl. 524-110.000.
Palensky, Frederick J.; and Siedle, Allen R., 4,511,715, Cl. 544-225.000.
Prato, Pietro, 4,510,882, Cl. 118-300.000.
Schumacher, Gerald F., 4,511,626, Cl. 428-425.600.
Tung, Chi F.; and Coderre, James C., 4,511,210, Cl. 350-105.000.

Mishima, Mitsutaka. Wristwatch protector. 4,511,261, Cl. 368-286.000.

Misselbrook, John, to American Cyanamid Company. Method for the preparation of water dispersible granular herbicidal compositions with increased thermal stability. 4,511,395, Cl. 71-121.000.

Mr. Christmas Incorporated: *See—*
Hermanson, Terry, 4,510,955, Cl. 135-25.00R.

Mr. Gasket Company: *See—*
Spiegel, Martin A.; and Roberts, Franklin D., 4,511,183, Cl. 301-37.00S.

Mistyurik, John D.: *See—*
Hamisch, Paul H., Jr.; and Mistyurik, John D., 4,511,422, Cl. 156-384.000.

Misu, Hiroshi: *See—*
Koike, Mitsuru; Kobayashi, Kesanao; Toyama, Tadao; Misu, Hiroshi; Tamoto, Koji; and Iwasaki, Masayuki, 4,511,645, Cl. 430-276.000.

Mita Industrial Company Limited: *See—*
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,511,241, Cl. 355-14.0CU.

Mitchell, Terry L.; and Hodge, David H., to Dunbar Furniture, Inc. Pop-up electrical receptacle unit. 4,511,198, Cl. 339-34.000.

Mitsubishi Aluminum Kabushiki Kaisha: *See—*
Toma, Ken; Iida, Masanao; and Takeuchi, Yo, 4,511,632, Cl. 428-654.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Tanaka, Toru; Gohko, Nobuaki; Kishiro, Osamu; and Murakami, Atsushi, 4,511,704, Cl. 526-125.000.

Mitsubishi Corporation: *See—*
Kudo, Shiro; and Hayashi, Mitsuyoshi, 4,511,588, Cl. 426-302.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kawahira, Hiroto, 4,510,991, Cl. 165-41.000.
Komatsu, Fumiaki; Saegusa, Kazuyuki; Seshimo, Yu; and Yamashita, Norio, 4,510,767, Cl. 62-200.000.
Kouzai, Fumio; and Motoki, Yoshiaki, 4,511,890, Cl. 340-644.000.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Shimomura, Hiroshi; and Arai, Tatsuo, 4,511,293, Cl. 407-41.000.

Mitsui Toatsu Kagaku Kabushiki Kaisha: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.

Mitsumori, Masaru, to Asahi Kasei Kogyo Kabushiki Kaisha. Mixed fuels. 4,511,364, Cl. 44-51.000.

Miura, Kazunori; Hattori, Yoshinori; and Matsuo, Yasushi, to NGK Spark Plug Co., Ltd. Sintered silicon nitride products and processes for fabrication thereof. 4,511,402, Cl. 75-233.000.

Miura, Kunio; and Ono, Takashi, to Nippondenso Co., Ltd. Navigator for vehicles. 4,511,973, Cl. 364-449.000.

Miyabayashi, Katsuyuki: *See—*
Tabata, Masaaki; and Miyabayashi, Katsuyuki, 4,511,172, Cl. 296-146.000.

Miyachi, Akio: *See—*
Fujimoto, Terunori; Shimizu, Nobuyoshi; Shimizu, Mutsuhiro; Yanagihara, Kazunori; Miyachi, Akio; and Inui, Tsuneo, 4,511,631, Cl. 428-632.000.

Miyadera, Yasuo: *See—*
Yoshida, Masatoshi; and Miyadera, Yasuo, 4,511,681, Cl. 523-310.000.

Miyahara, Norio: *See—*
Sampei, Takeshi; Miyahara, Norio; Nikaido, Tadanobu; Sato, Hiroaki; and Aoyama, Keizo, 4,512,012, Cl. 370-66.000.

Miyake, Masayoshi: *See—*
Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Miyake, Masayoshi, 4,511,624, Cl. 428-379.000.

Miyakoshi, Shinichi; and Tsunoda, Kazuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Rear suspension system for motorcycles. 4,511,013, Cl. 180-227.000.

Miyamae, Ryuichi; and Yasuda, Haruo, to Sharp Kabushiki Kaisha. Electronic sphygmomanometer. 4,510,942, Cl. 128-680.000.

Miyamae, Ryuichi, to Sharp Kabushiki Kaisha. Display inhibition in an electronic sphygmomanometer. 4,510,943, Cl. 128-680.000.

Miyamori, Hideaki; Takagi, Kenji; Sato, Shigeru; Takahashi, Fujio; and Ozawa, Mikio, to Nippon Kokan Koji Kabushiki Kaisha. Method for welding by magnetically driven arc. 4,511,784, Cl. 219-123.000.

Miyamoto, Noriaki: *See—*
Kawabata, Susumu; Inoue, Tetsuzo; Miyamoto, Noriaki; Shibuya, Masanobu; and Kaneko, Masashi, 4,510,745, Cl. 57-415.000.

Miyanaga, Satoshi: *See—*
Natori, Takeshi; Kobayashi, Yoji; Watanabe, Shigetaka; Shimizu, Katsumi; Matsumura, Ikuei; Namekawa, Yoshihiro; and Miyanaga, Satoshi, 4,510,974, Cl. 138-137.000.

Miyashita, Kunio: *See—*
Morinaga, Shigeki; Miyashita, Kunio; and Sugiura, Yasuyuki, 4,511,827, Cl. 318-254.000.

Miyata, Mitsuto: *See—*
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,511,975, Cl. 364-474.000.

Miyauchi, Hirotsugu: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,511,518, Cl. 260-543.00F.

Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, to UISE Industries, Ltd. Process for producing lower alkylene glycol, catalyst composition used therefor and process for production thereof. 4,511,744, Cl. 568-864.000.

Miyazaki, Naoki; Horiya, Keiichi; Shiozaki, Tsugio; and Takahama, Kazuhide, to Tokyo Electric Co., Ltd. Thermal printer. 4,511,903, Cl. 346-76.0PH.

Mizokami, Nobuo: *See—*
Tokutake, Kunihiko; Mizokami, Nobuo; and Tanaka, Hiroyuki, 4,510,807, Cl. 73-432.00R.

Mizuki, Nobuo. Light-shielding protective mask. 4,510,625, Cl. 2-8.000.

Mizutani, Tatsumi; Ohgata, Toshihide; and Komatsu, Hideo, to Hitachi, Ltd. Process for dry etching of aluminum and its alloy. 4,511,429, Cl. 156-643.000.

Mobil Oil Corporation: *See—*
Bowden, Edgar A.; Deline, Gordon R.; and Koeijmans, Gerard D., 4,511,999, Cl. 367-23.000.
Fitch, John L.; and Mullins, Lynn D., 4,510,997, Cl. 166-263.000.
Horodysky, Andrew G., 4,511,482, Cl. 252-34.000.
Morris, Kenneth L., 4,510,641, Cl. 15-118.000.
Prior, Maurice, 4,510,800, Cl. 73-153.000.
Quigley, M. Scott; and Russell, Gordon A., 4,510,801, Cl. 73-153.000.
Shim, Joosup, 4,511,481, Cl. 252-32.500.
Wright, Bernard S.; Hsia, Chung H.; and Owen, Hartley, 4,511,747, Cl. 585-415.000.
Yan, Tsoung Y.; and Shu, Paul, 4,511,459, Cl. 208-127.000.

Mochizuki, Daisuke; Ohnishi, Souichi; and Komai, Kensaku, to Sharp Kabushiki Kaisha. Electronic calculating device with faculties of detecting reproduction level of data applied thereto. 4,512,027, Cl. 377-16.000.

Modern Machine and Grinding, Inc.: *See—*
Lorince, Julius, 4,510,689, Cl. 30-347.000.

Moelands, Antonius G.: *See—*
Van der Valk, Nicolaas J. L.; Moelands, Antonius G.; and Schmale, Peter C., 4,511,915, Cl. 358-17.000.

Moeller, Matthias; and Kausche, Helmold, to Siemens Aktiengesellschaft. Amorphous silicon solar cells and a method of producing the same. 4,511,756, Cl. 136-258.000.

Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, to Eszakmagyarorszagi Vegyimuvek. Process for the preparation of substituted chloroacetanilides. 4,511,736, Cl. 564-214.000.

Moisson, Marc F. L., to N.V. Raychem S.A. Cable sleeve liner. 4,511,611, Cl. 428-35.000.

Moldovan, Nicholas: *See—*
DiStefano, Ralph D.; and Moldovan, Nicholas, 4,511,438, Cl. 204-4.000.

Molenaar, Ronald N.: *See—*
Ploegaert, Hendrikus T.; Molenaar, Ronald N.; and Butter, Johannes A. M., 4,510,793, Cl. 73-86.000.

Molinatto, Bruno, to Componenti Grafici S.r.l. Gravure pressure rollers with axis of variable shape. 4,510,865, Cl. 101-153.000.
Molins, Ltd.: *See—*
Arthur, Hugh M., 4,511,420, Cl. 156-356.000.
Molins, PLC: *See—*
Preston, Edward G.; and Stewart, David B., 4,510,949, Cl. 131-109.00R.
Moller, Reinfried, to Expert Maschinenbau GmbH. Scissors lift table. 4,511,110, Cl. 248-421.000.
Molnar, Sandor, to Swiss Aluminium Ltd. Cathode for a fused salt reduction cell. 4,511,449, Cl. 204-243.00R.
Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr.; and Mistyurik, John D., 4,511,422, Cl. 156-384.000.
Monnais, Christian; Cotteret, Jean; and Bugaut, Andree , to L'Oreal. Dyeing compositions based on oxidation dyestuff precursors and on nitro benzene dyestuffs and their use for dyeing keratin fibres. 4,511,360, Cl. 8-405.000.
Monsanto Company: *See—*
Hobbs, Charles F., 4,511,672, Cl. 502-243.000.
Montgomery, John A.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,511,721, Cl. 546-308.000.
Montmartin, Henri: *See—*
Saint-Prix, Robert; and Montmartin, Henri, 4,511,280, Cl. 403-274.000.
Moody, Roy A.: *See—*
Yudis, Donald W.; and Moody, Roy A., 4,510,649, Cl. 24-16.0PB.
Moore, Benson R.; and Gnacinski, Leonard T., to MagneTek, Inc. Lubrication improvement for variable speed drives. 4,511,347, Cl. 474-43.000.
Moore Business Forms, Inc.: *See—*
Jones, Charles E., 4,511,298, Cl. 412-34.000.
Moore, James G.; Obey, James H.; and Pinkel, Edward B., to White Consolidated Industries, Inc. Process for evaporative stripping. 4,511,431, Cl. 159-47.100.
Moore, Joseph, to Hustler Conveyor Company. Machine for dislodging cans from a compressed bale of cans. 4,511,302, Cl. 414-327.000.
Moracz, Donald J.: *See—*
Ferguson, Blake L.; and Moracz, Donald J., 4,510,788, Cl. 72-377.000.
Moran, James H.; and Rau, Rama N., to Schlumberger Technology Corporation. Electromagnetic logging device and method with dielectric guiding layer. 4,511,842, Cl. 324-338.000.
Morel, Jacques; and Tallon, Jacques, to Compagnie Industrielle des Telecommunications Cita-Alcatel; and Compagnie Industrielle des Telecommunications Cita-Alcatel. Apparatus for measuring and displaying leakage rates in a tracer gas leakage detector. 4,510,792, Cl. 73-40.700.
Moreuil, Rene , to Arconthorn Limited. Drug for stimulating hepatic cell homeostasis and for restoring the functional capacity of the hepatocytes. 4,511,580, Cl. 514-578.000.
Morgan Construction Company: *See—*
DuFries, Ronald W., 4,511,096, Cl. 242-47.010.
Morgan, Paul M., to Lakeshore Equipment & Supply Co. Material spreader. 4,511,090, Cl. 239-666.000.
Mori, Kei. Solar ray collection apparatus. 4,511,755, Cl. 136-246.000.
Mori, Kenji; and Uematsu, Tamon, to Sumitomo Chemical Company, Limited. Production method of an insect pheromone. 4,511,726, Cl. 549-283.000.
Mori, Mitsuo; Suzuki, Yoshihisa; Muramatsu, Shigeru; and Takasu, Sigeru, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Weighting device for drafting means. 4,510,648, Cl. 19-266.000.
Morichika, Toshiaki: *See—*
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.
Morihara, Kazuyuki; Oka, Tatsushi; and Tsuzuki, Hiroshige, to Shionogi & Co., Ltd. Semi-synthesis of human insulin. 4,511,505, Cl. 260-112.700.
Morimoto, Makoto: *See—*
Tomita, Fusao; Tamaoki, Tatsuya; Shirahata, Kunikatsu; Iida, Takao; Morimoto, Makoto; and Fujimoto, Kazuhisa, 4,511,560, Cl. 514-27.000.
Morimoto, Yoshiro: *See—*
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,510,822, Cl. 74-733.000.
Morinaga, Shigeki; Miyashita, Kunio; and Sugiura, Yasuyuki, to Hitachi, Ltd. Apparatus for driving a polyphase brushless motor with a suppressed torque ripple. 4,511,827, Cl. 318-254.000.
Moriyama, Hideo: *See—*
Kakino, Shigeru; Hattori, Katsuhide; Fukatsu, Yoshiaki; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,511,412, Cl. 149-109.600.
Morris, Kenneth L., to Mobil Oil Corporation. Scrubbing pad. 4,510,641, Cl. 15-118.000.
Morrisey, Edward J., to United States of America, Air Force. Compartmented, filament wound, one-piece aircraft fuel tanks. 4,511,105, Cl. 244-135.00R.
Morrish, William R.: *See—*
Green, Lawrence E.; and Morrish, William R., 4,511,179, Cl. 297-349.000.
Motiwala, M. Arif; and Sutherland, Jack L., to Harris Corporation. Programmable multitone DPSK modulator. 4,511,862, Cl. 332-16.00R.
Motley, Robert W.; and Glanz, James, to United States of America, Energy. Plasma sweeper to control the coupling of RF power to a magnetically confined plasma. 4,511,782, Cl. 219-121.00P.
Motoki, Yoshiaki: *See—*
Kouzai, Fumio; and Motoki, Yoshiaki, 4,511,890, Cl. 340-644.000.
Motoren-und Turbinen-Union Munchen GmbH: *See—*
Huther, Werner; and Rossmann, Axel, 4,511,612, Cl. 428-36.000.
Motorenfabrik Hatz GmbH & Co. KG: *See—*
Hatz, Ernst; and Absenger, Erich, 4,510,897, Cl. 123-90.480.
Motorola, Inc.: *See—*
Allen, Gordon H., 4,511,809, Cl. 307-254.000.
Fukuta, Masaru, 4,512,030, Cl. 377-107.000.
Patel, Bakulesh B., 4,511,768, Cl. 179-146.00R.
Remedi, James J.; Reid, Don G.; and Ure, Lynette, 4,511,914, Cl. 357-45.000.
Victor, Alan M.; and Davis, Darrell E., 4,512,035, Cl. 455-165.000.
Wurzburg, Henry, 4,511,851, Cl. 330-51.000.
Mott, Philip J.; and Gallaher, Kenneth R., to Borg-Warner Corporation. Precise pressure regulator for a variable output pump. 4,510,962, Cl. 137-102.000.
Mottate, Tatsuo, to Nippon Thompson Co., Ltd. Endless linear movement roller bearing. 4,511,189, Cl. 308-6.00C.
Mouzin, Gilbert: *See—*
Pitet, Guy; Cousse, Henri; and Mouzin, Gilbert, 4,511,566, Cl. 514-242.000.
Mt. Sinai Medical Center of Greater Miami: *See—*
Varga, Sandor I.; Dougherty, Richard L.; Dandy, Donny C.; and Thomas, Willie J., 4,511,158, Cl. 280-292.000.
MTU Motoren-und Turbinen-Union Muenchen GmbH: *See—*
Doell, Hermann, 4,511,016, Cl. 184-6.110.
Mucheyer, Norbert; and Kauss, Wolfgang, to Mannesman Rexroth GmbH. Apparatus for adjusting the position of an adjustable element. 4,510,847, Cl. 91-461.000.
Muesse, Milton J.: *See—*
Duval, Henry H.; Kennedy, Donald; and Muesse, Milton J., 4,511,283, Cl. 404-107.000.
Muller-Girard, Otto, to Ratnik Industries, Inc. Self-regulating hydrant. 4,511,083, Cl. 239-14.000.
Muller, Hans, to Grapha-Holding AG. Gathering machine for paper sheets or the like. 4,511,132, Cl. 270-58.000.
Muller, Hans, to DrM, Dr. Muller AG. Filter apparatus for continuously thickening suspensions. 4,511,471, Cl. 210-323.200.
Muller, Herbert. Holder for filter bags for preparing tea and the like. 4,510,654, Cl. 24-344.000.
Muller, Mathias, to Haver & Becker. Machine for filling and closing bags of synthetic plastic material. 4,510,736, Cl. 53-567.000.
Mullins, Lynn D.: *See—*
Fitch, John L.; and Mullins, Lynn D., 4,510,997, Cl. 166-263.000.
Multi-Arc Vacuum Systems Inc.: *See—*
Brandolf, Henry E., 4,511,593, Cl. 427-37.000.
Multrus, Vladimir, to Honeywell GmbH. Pneumatic controller. 4,510,961, Cl. 137-86.000.
Muncie Power Product Inc.: *See—*
Macy, Lawrence E., 4,510,899, Cl. 123-198.00D.
Munson, Robert E.; and Haddad, Hussain A., to Ball Corporation. Apparatus and method for transfer of r.f. energy through a mechanically rotatable joint. 4,511,868, Cl. 333-257.000.
Murai, Ashita: *See—*
Okamura, Hisashi; Sakaguchi, Shinji; Takahashi, Osamu; and Murai, Ashita, 4,511,644, Cl. 430-219.000.
Murakami, Atsushi: *See—*
Tanaka, Toru; Gohko, Nobuaki; Kishiro, Osamu; and Murakami, Atsushi, 4,511,704, Cl. 526-125.000.
Murakami, Teruo; and Hoshino, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical type information read/write apparatus. 4,512,006, Cl. 369-50.000.
Muramatsu, Shigeru: *See—*
Mori, Mitsuo; Suzuki, Yoshihisa; Muramatsu, Shigeru; and Takasu, Sigeru, 4,510,648, Cl. 19-266.000.
Murata Manufacturing Co., Ltd.: *See—*
Nakamura, Takeshi; Nishiyama, Hiroshi; Matsuda, Satoshi; and Matsumoto, Ikuo, 4,511,821, Cl. 310-354.000.
Ogawa, Toshio; and Kittaka, Toshihiko, 4,511,483, Cl. 252-62.900.
Murayama, Ken: *See—*
Shimada, Satoshi; Murayama, Ken; Kobori, Shigeyuki; and Kawakami, Kanji, 4,511,878, Cl. 338-4.000.
Murgai, Ashok: *See—*
Ghosh, Hitendra; Murgai, Ashok; and Westdorp, Wolfgang A., 4,511,428, Cl. 156-601.000.
Murnan, Leo R.: *See—*
Friesz, Robert E., 4,510,663, Cl. 29-429.000.
Muroi, Katsumi: *See—*
Nakamura, Yoichi; Yamamoto, Akio; Nogita, Shunsuke; Kuge, Toshio; and Muroi, Katsumi, 4,511,363, Cl. 44-1.00G.
Murphy, John W.: *See—*
Bogaerts, Leo C.; and Murphy, John W., 4,510,828, Cl. 82-4.00A.
Murphy, Michael F. Fence dropper. 4,510,721, Cl. 52-40.000.
Murray, Alan B.: *See—*
Eaton, William L.; and Murray, Alan B., 4,511,823, Cl. 315-226.000.
Murray, Larry N.: *See—*
Wilt, Henry E.; and Murray, Larry N., 4,511,088, Cl. 239-455.000.
Musashi Co., Ltd.: *See—*
Kawano, Hikaru; Sato, Koji; and Nogi, Hiroyoshi, 4,511,301, Cl. 414-43.000.
Mutl, Silvestr: *See—*
Hereit, Frantisek; and Mutl, Silvestr, 4,511,467, Cl. 210-173.000.

Nagahira, Jyoji: *See*—
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,511,240, Cl. 355-14.00R.

Nagai, Isao: *See*—
Saito, Noboru; Satake, Takeshi; Aoki, Ryuji; and Nagai, Isao, 4,511,671, Cl. 502-242.000.

Nagai, Shigeo, to Nisshin Kogyo Kabushiki Kaisha. Clutch brake apparatus for farm work machinery or other apparatus. 4,511,023, Cl. 192-18.00R.

Nagamine, Tsuyoshi: *See*—
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,511,975, Cl. 364-474.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Arithmetic operation circuit for finding a square root of a sum of squared values. 4,511,991, Cl. 364-814.000.

Nagano, Takahiro, to Hitachi, Ltd. Gate-turn off thyristor with optimized anode shorting resistance, R_{so}. 4,511,913, Cl. 357-38.000.

Nagao, Makoto; and Nahara, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,511,635, Cl. 428-694.000.

Nagashima, Masayoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal transfer type printing apparatus. 4,511,902, Cl. 346-76.0PH.

Nagata, Wataru: *See*—
Tokuyama, Kanji; Nishitani, Yasuhiro; Tanaka, Mamoru; and Nagata, Wataru, 4,511,738, Cl. 568-14.000.

Nagato, Yoshio; and Soroi, Kazunori, to Kyocera Corporation. Decorative hard golden ceramic article. 4,511,665, Cl. 501-96.000.

Nagy, Alex; and Herlein, Dick, to Fairchild Camera and Instrument Corporation. Deskewing time-critical signals in automatic test equipment. 4,511,846, Cl. 328-164.000.

Nahara, Akira: *See*—
Nagao, Makoto; and Nahara, Akira, 4,511,635, Cl. 428-694.000.

Naito, Kazuo: *See*—
Tanuma, Itsuo; Takeichi, Hideo; Fukuura, Yukio; Ohyachi, Tomio; and Naito, Kazuo, 4,511,627, Cl. 428-429.000.

Nakabayashi, Hirohiko: *See*—
Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Miyake, Masayoshi, 4,511,624, Cl. 428-379.000.

Nakajima, Isao: *See*—
Takahashi, Kazue; Okuna, Kenzi; Nakajima, Isao; Harada, Mineo; and Kako, Yutaka, 4,511,269, Cl. 400-124.000.

Nakajima, Kichio: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,510,750, Cl. 60-443.000.

Nakajima, Tsuyoshi: *See*—
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, 4,511,493, Cl. 252-507.000.

Nakamura, Kunihiko: *See*—
Yamada, Noboru; and Nakamura, Kunihiko, 4,511,136, Cl. 271-187.000.

Nakamura, Takeshi; Nishiyama, Hiroshi; Matsuda, Satoshi; and Matsumoto, Ikuo, to Murata Manufacturing Co., Ltd. Support structure for piezoelectric vibrator. 4,511,821, Cl. 310-354.000.

Nakamura, Toshiro; and Watanabe, Tetsuya, to Nakamura, Toshiro. Insole. 4,510,699, Cl. 36-43.000.

Nakamura, Yasuo: *See*—
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,511,744, Cl. 568-864.000.

Nakamura, Yoichi; Yamamoto, Akio; Nogita, Shunsuke; Kuge, Toshio; and Muroi, Katsumi, to Hitachi, Ltd. Method of upgrading low-rank coal. 4,511,363, Cl. 44-1.00G.

Nakane, Masao; Takahashi, Motohiko; and Ogawa, Takaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Load condition indicating method and apparatus for forklift truck. 4,511,974, Cl. 364-463.000.

Nakanishi, Michio; and Nakashima, Naoki, to Daicel Chemical Industries, Ltd. Polycaprolactone composition. 4,511,687, Cl. 524-270.000.

Nakano, Takuo: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.

Nakano, Tomio: *See*—
Nozaki, Shigeki; Takemae, Yoshihiro; and Nakano, Tomio, 4,511,997, Cl. 365-189.000.

Nakashima, Masuo: *See*—
Andow, Fumio; and Nakashima, Masuo, 4,511,981, Cl. 364-492.000.

Nakashima, Naoki: *See*—
Nakanishi, Michio; and Nakashima, Naoki, 4,511,687, Cl. 524-270.000.

Nakasuji, Kazuyuki: *See*—
Hayashi, Chihiro; and Nakasuji, Kazuyuki, 4,510,787, Cl. 72-368.000.

Nakatani, Hiroshi; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Money information print control system. 4,511,891, Cl. 340-734.000.

Nakayama, Toshikazu, to Kirin Beer Kabushiki Kaisha. Article holding apparatus of rotary type. 4,511,025, Cl. 198-377.000.

Nakayama, Yasunobu; Sato, Yasuji; and Kunii, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Telephonic display device. 4,511,764, Cl. 179-90.0AN.

Nakazawa, Koji: *See*—
Ideno, Eizo; Fukushi, Shinichi; Tai, Masahiko; Nakazawa, Koji; and Fujita, Toshihito, 4,511,095, Cl. 242-18.00G.

Namba, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical character recognition apparatus. 4,512,032, Cl. 382-9.000.

Namekawa, Yoshihiro: *See*—
Natori, Takeshi; Kobayashi, Yoji; Watanabe, Shigetaka; Shimizu, Katsumi; Matsumura, Ikuei; Namekawa, Yoshihiro; and Miyanaga, Satoshi, 4,510,974, Cl. 138-137.000.

Nara Machinery Co., Ltd.: *See*—
Ohkoshi, Tatsuo; and Kobayashi, Chikara, 4,511,093, Cl. 241-60.000.

Naruse, Toshihisa: *See*—
Ishino, Yoshitane; Naruse, Toshihisa; and Sawano, Toshiyuki, 4,510,705, Cl. 37-54.000.

Nash, Randy D.; and Wong, Wai C., to AT&T Bell Laboratories. Simultaneous transmission of speech and data over an analog channel. 4,512,013, Cl. 370-69.100.

Nassoy, Jacques; and Protin, Bernard. Process for pre-setting mounting holes for cutting and ejection tools of an automatic platen press. 4,510,667, Cl. 29-526.00R.

Nation Enterprises, Inc.: *See*—
Bauer, Marshall, 4,511,324, Cl. 425-398.000.

National Research Development Corporation: *See*—
Fourcin, Adrian J.; Howard, David M.; and Walliker, John R., 4,510,936, Cl. 128-419.00R.

National Viewtech Corp.: *See*—
Bauer, Michael T., 4,511,927, Cl. 358-250.000.

Natori, Takeshi; Kobayashi, Yoji; Watanabe, Shigetaka; Shimizu, Katsumi; Matsumura, Ikuei; Namekawa, Yoshihiro; and Miyanaga, Satoshi, to Hitachi Cable Ltd. Fluid conveying hose. 4,510,974, Cl. 138-137.000.

Nautilus Sports/Medical Industries, Inc.: *See*—
Jones, Arthur A., 4,511,137, Cl. 272-118.000.

Nawrata, Gunter: *See*—
Fidi, Werner; and Nawrata, Gunter, 4,512,009, Cl. 369-170.000.

Nazem, Faramarz; Didchenko, Rostislav; and Fink, David, to Union Carbide Corporation. Physical conversion of latent mesophase molecules to oriented molecules. 4,511,625, Cl. 428-401.000.

NCR Corporation: *See*—
Penton, Perry W., 4,511,961, Cl. 364-200.000.

NEC Corporation: *See*—
Fukuchi, Hiromichi, 4,511,907, Cl. 346-140.00R.

Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek: *See*—
Wesseling, Karel H., 4,510,940, Cl. 128-667.000.

Neefe, Charles W. Passive hydrogel fuel generator. 4,511,450, Cl. 204-278.000.

Negev Phosphates Ltd.: *See*—
Keren, Yehuda; Carmon, Shmuel; Behar, Meyer; and Axelrod, Shimshon, 4,511,543, Cl. 423-167.000.

Nemeth, Joseph; and Kowalski, Charles I., to Champion Spark Plug Company. Carbon resistor and method for producing same. 4,511,524, Cl. 264-61.000.

Neppl, Franz: *See*—
Schwabe, Ulrich; Neppl, Franz; and Hieber, Konrad, 4,510,670, Cl. 29-571.000.

Neron, Joseph; Hudson, William S.; and Miller, Ronald L. Multi-position drive ratchet wrench. 4,510,825, Cl. 81-57.290.

Netcom, Inc.: *See*—
MacKenzie, Keith W., 4,511,820, Cl. 310-353.000.

Neustadt, Bernard R.: *See*—
Smith, Elizabeth M.; Doll, Ronald J.; and Neustadt, Bernard R., 4,511,569, Cl. 514-290.000.

Neuzil, Richard W.: *See*—
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,511,514, Cl. 260-419.000.

Neville, Richard E. G., to AMF Incorporated. Apparatus for the continuous measurement of bulk density material such as cut tobacco. 4,510,808, Cl. 73-433.000.

New York State Energy Research and Development Authority: *See*—
Walmet, Gunnar E., 4,510,920, Cl. 126-415.000.

Newton, Steven A.; and Bowers, John E., to Leland Stanford Junior University, The Board of Trustees of the. Fiber optic data distributor. 4,511,207, Cl. 350-96.150.

NGK Spark Plug Co., Ltd.: *See*—
Miura, Kazunori; Hattori, Yoshinori; and Matsuo, Yasushi, 4,511,402, Cl. 75-233.000.

Nichols, Walter A.: *See*—
Keritsis, Gus D.; and Nichols, Walter A., 4,510,950, Cl. 131-353.000.

Nicholson, Michael P.: *See*—
Miller, Richard F.; and Nicholson, Michael P., 4,511,457, Cl. 208-48.0AA.

Nicholson, Myron D.; and Chiu, Herman S., to Union Carbide Corporation. Method for inhibiting discoloration on cellulose food casings. 4,511,613, Cl. 428-36.000.

Nici, Richard J.; Schramm, George W.; and Sharp, John B., to AT&T Information Systems. Digital dual channel communication terminal. 4,512,017, Cl. 370-110.100.

Nici, Richard J.: *See*—
Fulcomer, Emanuel J., Jr.; Nici, Richard J.; Poteat, Vance E.; Schramm, George W.; Sharp, John B.; and Winseck, Michael M., Jr., 4,512,016, Cl. 370-110.100.

Nickisch, Klaus: *See*—
Laurent, Henry; Nickisch, Klaus; Bittler, Dieter; Wiechert, Rudolf; and Losert, Wolfgang, 4,511,565, Cl. 514-173.000.

Nickol, Friedrich W., to VDO Adolf Schindling AG. Solderable layer system. 4,511,634, Cl. 428-686.000.

Nicol, Irene L. Dose indicator closure. 4,511,050, Cl. 215-219.000.

Nicolas, Alain; and Chapelain, Jean, to Thomson-CSF - Telephone. Decentralized arbitration device for several processing units of a multiprocessor system. 4,511,959, Cl. 364-200.000.

Nicolas, Jacques; and Raso, Roland, to Manufacture de Machines du Haut-Rhin, "Manurhin". Rotating cage security device for a gyratory projectile. 4,510,869, Cl. 102-240.000.

Niederdellmann, Georg; and Grigat, Ernst, to Bayer Aktiengesellschaft. Process for the continuous high temperature glycolytic cleavage of polyurethane plastics waste in screw machines. 4,511,680, Cl. 521-49.500.

Nielsen, Arnold D., to Ford Motor Company. Solenoid switching driver with fast current decay from initial peak current. 4,511,945, Cl. 361-154.000.

Nielsen, Steven T.; and Lee, Carleton C., to Beckman Instruments, Inc. Ultracentrifuge tube with multiple chambers. 4,511,349, Cl. 494-16.000.

Nihon Medi-Physics Co., Ltd.: *See*—
Yokoyama, Akira; Arano, Yasushi; and Hosotani, Takeo, 4,511,550, Cl. 424-1.100.

Niiro, Makoto: *See*—
Ohira, Takao; Okihara, Daijiro; and Niiro, Makoto, 4,511,934, Cl. 360-55.000.

Nijboer, Sjoerd: *See*—
Sahakian, Diran R.; Pellerin, Lucien; and Nijboer, Sjoerd, 4,511,769, Cl. 200-6.00A.

Nikaido, Tadanobu: *See*—
Sampei, Takeshi; Miyahara, Norio; Nikaido, Tadanobu; Sato, Hiroaki; and Aoyama, Keizo, 4,512,012, Cl. 370-66.000.

Nilsson, Clees T.: *See*—
Jakobsen, Kjell M.; and Nilsson, Clees T., 4,511,322, Cl. 425-384.000.

Ninagawa, Yoichi; Yamada, Osamu; Renge, Tsumoru; Kyo, Sunao; Osaki, Takayoshi; and Kushida, Koichi, to Kuraray Company, Ltd. Process for producing isoprene. 4,511,751, Cl. 585-608.000.

Ninomiya, Masakazu; Suda, Toshi; Omori, Norio; Akiyama, Susumu; and Fukaya, Hiroyasu, to Nippondenso Co., Ltd. Ignition timing control method and apparatus for internal combustion engines. 4,510,910, Cl. 123-486.000.

Nippon Electric Co., Ltd.: *See*—
Iijima, Yukihiko; and Kobayashi, Sadame, 4,511,920, Cl. 358-139.000.
Yukawa, Akira, 4,511,810, Cl. 307-355.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kumano, Shinji, 4,510,839, Cl. 84-434.000.
Yokoyama, Kenji, 4,512,008, Cl. 369-134.000.

Nippon Kogaku K.K.: *See*—
Hirose, Hideo, 4,511,223, Cl. 350-523.000.
Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, 4,511,233, Cl. 354-418.000.

Nippon Kokan Koji Kabushiki Kaisha: *See*—
Miyamori, Hideaki; Takagi, Kenji; Sato, Shigeru; Takahashi, Fujio; and Ozawa, Mikio, 4,511,784, Cl. 219-123.000.

Nippon Oil Co., Ltd.: *See*—
Kudoh, Michio; Matsuno, Mitsuo; and Imai, Hirosuke, 4,511,748, Cl. 585-467.000.

Nippon Oil and Fats Co. Ltd.: *See*—
Kakino, Shigeru; Hattori, Katsuhide; Fukatsu, Yoshiaki; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,511,412, Cl. 149-109.600.
Matsui, Fumio; Aono, Shin; Sakai, Hiroshi; Hattori, Katsuhide; and Kakino, Shigeru, 4,511,414, Cl. 149-109.600.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Saito, Noboru; Satake, Takeshi; Aoki, Ryuji; and Nagai, Isao, 4,511,671, Cl. 502-242.000.

Nippon Soken, Inc.: *See*—
Taguchi, Masahiro; Kuwakado, Satosi; and Tsuge, Noboru, 4,510,749, Cl. 60-286.000.
Tsuge, Noboru; Taguchi, Masahiro; and Kuwakado, Satosi, 4,511,097, Cl. 242-55.000.

Nippon Telegraph and Telephone Public Corp.: *See*—
Higashi, Kensaku; Yano, Haruhiko; Sato, Hirotsugu; Sukegawa, Ken; and Ooba, Yuji, 4,511,642, Cl. 430-161.000.

Nippon Thompson Co., Ltd.: *See*—
Mottate, Tatsuo, 4,511,189, Cl. 308-6.00C.

Nippondenso Co., Ltd.: *See*—
Miura, Kunio; and Ono, Takashi, 4,511,973, Cl. 364-449.000.
Ninomiya, Masakazu; Suda, Toshi; Omori, Norio; Akiyama, Susumu; and Fukaya, Hiroyasu, 4,510,910, Cl. 123-486.000.

Nishihara, Hisakatsu: *See*—
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.

Nishikawa, Hisashi; Suzuki, Satoshi; Hirata, Masanobu; Sakamoto, Koichiro; Fujisawa, Ikuo; and Takeno, Shozo, to Tokyo Electric Co., Ltd. Strain gauge with reduced creep phenomenon by improved insulation layering. 4,511,877, Cl. 338-2.000.

Nishimatsu, Masaharu: *See*—
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.

Nishitani, Yasuhiro: *See*—
Tokuyama, Kanji; Nishitani, Yasuhiro; Tanaka, Mamoru; and Nagata, Wataru, 4,511,738, Cl. 568-14.000.

Nishiyama, Haruo, to Sharp Kabushiki Kaisha. Size detecting device of a copy document suitable for electrophotographic copying machine. 4,511,246, Cl. 355-75.000.

Nishiyama, Hiroshi: *See*—
Nakamura, Takeshi; Nishiyama, Hiroshi; Matsuda, Satoshi; and Matsumoto, Ikuo, 4,511,821, Cl. 310-354.000.

Nissan Motor Co., Ltd.: *See*—
Eto, Yoshiyuki, 4,511,673, Cl. 502-525.000.
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,510,915, Cl. 123-620.000.
Kawamoto, Tamio; and Hiraiwa, Kazuyoshi, 4,510,817, Cl. 74-477.000.
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,510,822, Cl. 74-733.000.

Nissen, Axel; Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, to BASF Aktiengesellschaft. Chroman derivatives and stabilized polypropylene composition. 4,511,685, Cl. 524-110.000.

Nisshin Kogyo Kabushiki Kaisha: *See*—
Nagai, Shigeo, 4,511,023, Cl. 192-18.00R.

Nitrokemia Ipartelepek: *See*—
Gorog, Katalin; Dudar, Erzebet; Gardi, Ivan; Kocsis, Maria; Gaal, Sandor; and Tasnadi, Marta, 4,511,714, Cl. 548-215.000.

Nitto Boseki Co., Ltd.: *See*—
Ideno, Eizo; Fukushi, Shinichi; Tai, Masahiko; Nakazawa, Koji; and Fujita, Toshihito, 4,511,095, Cl. 242-18.00G.

Nixon, Ivor G. Refining of metals. 4,511,396, Cl. 75-51.100.

NL Industries, Inc.: *See*—
Roesler, Richard F., 4,510,696, Cl. 33-304.000.

Noble, John W., to Westvaco Corporation. Adhesive latex polymerization surfactants. 4,511,691, Cl. 524-745.000.

Nogi, Hiroyoshi: *See*—
Kawano, Hikaru; Sato, Koji; and Nogi, Hiroyoshi, 4,511,301, Cl. 414-43.000.

Nogita, Shunsuke: *See*—
Nakamura, Yoichi; Yamamoto, Akio; Nogita, Shunsuke; Kuge, Toshio; and Muroi, Katsumi, 4,511,363, Cl. 44-1.00G.

Nojiri, Shoji: *See*—
Kano , Yoshiharu; Fujisawa, Makoto; Nojiri, Shoji; and Tanaka, Yoshikazu, 4,512,015, Cl. 370-110.100.

Nonaka, Chiaki, to Sony Corporation. Apparatus for optically reproducing an information signal recorded on a record disc. 4,512,004, Cl. 369-45.000.

Nonomura, Keisaku: *See*—
Takamatsu, Toshiaki; and Nonomura, Keisaku, 4,511,217, Cl. 350-336.000.

Norden Packaging Machinery AB: *See*—
Linner, Hans, 4,511,426, Cl. 156-497.000.

North American Philips Corporation: *See*—
Akse, James R.; and Long, Stanley A., 4,511,601, Cl. 427-79.000.
Wittig, Karl R., 4,511,855, Cl. 330-279.000.

North, Henry; and Fauconnier, William R. Milling apparatus. 4,511,092, Cl. 241-49.000.

North, Henry; and Fauconnier, William R. Cavitators. 4,511,254, Cl. 366-118.000.

Northern Engineering Industries plc: *See*—
Somerville, William M., 4,511,807, Cl. 290-44.000.

Northern Telecom Inc.: *See*—
Sims, Dewey M., Jr., 4,511,936, Cl. 360-69.000.

Northern Telecom Limited: *See*—
Bunner, Charles B. D.; and Brombal, David S., 4,511,950, Cl. 361-413.000.
Shah, Mahesh, 4,511,766, Cl. 179-99.00A.
Wetzel, David L.; and Shah, Mahesh, 4,511,767, Cl. 179-99.00A.

Norton Christensen, Inc.: *See*—
Jung, Thomas; and Heidemann, Gerhard, 4,511,007, Cl. 175-297.000.

Norton Company: *See*—
Hsia, Min A., 4,511,519, Cl. 261-94.000.

Norwood Industries, Inc.: *See*—
McCartney, John R., 4,511,605, Cl. 427-246.000.

Nosaka, Isao: *See*—
Kawata, Shun; Nosaka, Isao; and Katakura, Hiroshi, 4,511,237, Cl. 355-3.00R.

Nottingham, John R.: *See*—
Spirk, John W., Jr.; and Nottingham, John R., 4,511,341, Cl. 446-9.000.

Nowinski, Robert C.; and Hoffman, Allan S., to Genetic Systems Corporation. Polymerizable compounds and methods for preparing synthetic polymers that integrally contain polypeptides. 4,511,478, Cl. 210-691.000.

Nozaki, Shigeki; Takemae, Yoshihiro; and Nakano, Tomio, to Fujitsu Limited. Semiconductor memory device. 4,511,997, Cl. 365-189.000.

Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, to Fanuc Ltd. Numerical control machine tool. 4,511,975, Cl. 364-474.000.

Nozue, Ikutoshi; Fujii, Susumu; and Hanada, Masayuki, to Catalysts & Chemicals Industries Co., Ltd. Catalyst for use in hydrolysis of carbonyl sulfide. 4,511,668, Cl. 502-84.000.

NUKEM GmbH: *See*—
Sternberg, Walter; Schreyer, Fritz; and Ruth, Ursula, 4,510,811, Cl. 73-611.000.

Numata, Hideo: *See*—
Matsubara, Naoki; and Numata, Hideo, 4,511,819, Cl. 310-340.000.

Nunn, Timothy A.: *See*—
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,510,671, Cl. 29-571.000.

Nunokawa, Eiichi; Ishida, Toshihiko; and Ohira, Yasuo, to TDK Corporation. Hub of a tape cassette. 4,511,099, Cl. 242-71.800.

Nunokawa, Kazuo; and Masuyama, Masayuki, to Tokyo Kogaku Kikai Kabushiki Kaisha. Ophthalmic apparatus having means for automatic detection of appropriate position of eye to be examined. 4,511,227, Cl. 351-208.000.
N.V. Nederlandse Metaalindustrie Polynorm: *See*—
van Wieringen, Gijsbertus L., 4,510,722, Cl. 52-213.000.
N.V. Optische Industrie "De Oude Delft" : *See*—
Burgemeister, Eduard A., 4,511,783, Cl. 219-121.0LM.
N.V. Raychem S.A.: *See*—
Moisson, Marc F. L., 4,511,611, Cl. 428-35.000.
Oberbach, Karl: *See*—
Schauf, Dieter; Protoschill, Klaus; Oberbach, Karl; and Depcik, Hans-Werner, 4,511,184, Cl. 301-63.0PW.
Oberto, Giacomo, to Olivetti Accessori, S.p.A. Typing ribbon cartridge with blocking element. 4,511,271, Cl. 400-208.000.
Obey, James H.: *See*—
Moore, James G.; Obey, James H.; and Pinkel, Edward B., 4,511,431, Cl. 159-47.100.
Occidental Chemical Corporation: *See*—
Colaruotolo, Joseph F.; Irvine, Robert L.; Ketchum, Lloyd H., Jr.; and Ying, Wei-chi, 4,511,657, Cl. 435-253.000.
Occidental Refineries Ltd.: *See*—
Byatt, Dennis W. G.; and Walker, John W., 4,510,804, Cl. 73-290.00V.
Ochoa, Ricardo: *See*—
Lincoln, Kay L.; and Ochoa, Ricardo, 4,510,887, Cl. 119-95.000.
Oda, Keijiro: *See*—
Kishida, Katsuji; Ueno, Tetsuto; Onishi, Masakazu; and Oda, Keijiro, 4,510,984, Cl. 152-362.0CS.
Odetics, Inc.: *See*—
Bartholet, Stephen J., 4,511,011, Cl. 180-8.600.
Oetringhaus, Walter G., to M.A.N. Maschinenfabrik Aktiengesellschaft. Railless vechicle for underground mining. 4,511,100, Cl. 242-86.510.
Offenstadt, Eric. Wheel suspension for a motorcycle. 4,511,156, Cl. 280-276.000.
Ogawa, Akira; and Tsuda, Momotoshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,511,649, Cl. 430-553.000.
Ogawa, Hiroshi: *See*—
Anonuma, Masashi; Tamai, Yasuo; Sato, Tsunehiko; Funabashi, Shinichi; and Ogawa, Hiroshi, 4,511,484, Cl. 252-62.540.
Ogawa, Takaki: *See*—
Nakane, Masao; Takahashi, Motohiko; and Ogawa, Takaki, 4,511,974, Cl. 364-463.000.
Ogawa, Toshio; and Kittaka, Toshihiko, to Murata Manufacturing Co., Ltd. Piezoelectric ceramic compositions. 4,511,483, Cl. 252-62.900.
Ogden, Ralph. Barbeque grill with paper start facility. 4,510,916, Cl. 126-25.00B.
Ogez, John R.: *See*—
Builder, Stuart E.; and Ogez, John R., 4,511,502, Cl. 260-112.00R.
Ogino, Toshiro; and Kokawa, Katsuzo, to Matsushita Electric Industrial Co., Ltd. Oil burner. 4,511,327, Cl. 431-201.000.
Ogiso, Makoto: *See*—
Hidaka, Tsuneo; Inoue, Masahide; and Ogiso, Makoto, 4,511,336, Cl. 433-173.000.
Ohgata, Toshihide: *See*—
Mizutani, Tatsumi; Ohgata, Toshihide; and Komatsu, Hideo, 4,511,429, Cl. 156-643.000.
Ohira, Takao; Okihara, Daijiro; and Niiro, Makoto, to Sony Corporation. Video tape recorder. 4,511,934, Cl. 360-55.000.
Ohira, Yasuo: *See*—
Nunokawa, Eiichi; Ishida, Toshihiko; and Ohira, Yasuo, 4,511,099, Cl. 242-71.800.
Ohkoshi, Tatsuo; and Kobayashi, Chikara, to Nara Machinery Co., Ltd. Mixer-granulator drier. 4,511,093, Cl. 241-60.000.
Ohkuni, Shinichiro; and Kitazawa, Yoichi, to Bridgestone Tire Company Limited. Pair of pneumatic belted tires for motorcycle. 4,510,983, Cl. 152-361.00R.
Ohmura, Jukichi: *See*—
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,511,518, Cl. 260-543.00F.
Ohnishi, Souichi: *See*—
Mochizuki, Daisuke; Ohnishi, Souichi; and Komai, Kensaku, 4,512,027, Cl. 377-16.000.
Ohsumi, Tadashi; Inoue, Satoru; and Maeda, Kiyoto, to Sumitomo Chemical Company, Limited. Fungicidal indanylbenzamide. 4,511,581, Cl. 514-617.000.
Ohta, Nobuo, to Carl Freudenberg, Firma. Method for manufacturing an adhesive interlining and fabric produced thereby. 4,511,615, Cl. 428-198.000.
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Ojanpera, Heimo K. Woven fringed textile product and a method for making said manufacturing product. 4,510,975, Cl. 139-384.00R.
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Morihara, Kazuyuki; Oka, Tatsushi; and Tsuzuki, Hiroshige, 4,511,505, Cl. 260-112.700.
Okada, Hitoshi: *See*—
Yamaguchi, Katsumi; Takai, Kazuki; and Okada, Hitoshi, 4,511,940, Cl. 360-96.600.
Okada, Yasuyuki: *See*—
Machida, Tetsuo; Tsuhara, Susumu; Tabata, Kuniaki; and Okada, Yasuyuki, 4,511,962, Cl. 364-200.000.
Okamoto, Yoshio: *See*—
Yuki, Heimei; and Okamoto, Yoshio, 4,511,475, Cl. 210-635.000.
Okamoto, Yoshiyuki; and Hwang, Edward F., to W. R. Grace & Co. Poly(dipropargylamine) and derivatives thereof per se and p-doped and processes for preparing same. 4,511,702, Cl. 526-90.000.
Okamura, Hisashi; Sakaguchi, Shinji; Takahashi, Osamu; and Murai, Ashita, to Fuji Photo Film Co., Ltd. Photographic elements with development inhibitor precursor. 4,511,644, Cl. 430-219.000.
Okamura, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Door latch assembly for microwave heating apparatus. 4,511,780, Cl. 219-10.55C.
Okano, Takashi, to Universal Pioneer Corporation. Information reproducing apparatus in a recording disc player. 4,512,005, Cl. 369-48.000.
Okano, Yoshio; and Okuma, Yasuo, to Hitachi, Ltd. Portable terminal device. 4,511,970, Cl. 364-401.000.
Okawa, Masao, to Sumitomo Heavy Industries, Ltd. Apparatus for transferring articles. 4,511,029, Cl. 198-621.000.
Okazaki, Michio, to Diesel Kiki Co., Ltd. Method for manufacturing a vane compressor having a lightweight rotor. 4,510,659, Cl. 29-156.80R.
Okazaki, Yutaka: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.
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Ohira, Takao; Okihara, Daijiro; and Niiro, Makoto, 4,511,934, Cl. 360-55.000.
Oklahoma Agriculture and Mechanical Colleges Acting for and in Behalf of Oklahoma State University, Board of Regents for the: *See*—
Whitcomb, Carl E., 4,510,712, Cl. 47-66.000.
Okui, Isamu: *See*—
Yoshihisa, Kozo; and Okui, Isamu, 4,511,849, Cl. 329-103.000.
Okuma, Yasuo: *See*—
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Okuna, Kenzi: *See*—
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Olmsted, Robert W.; and Huth, Joseph F., III, to Spang Industries Inc. Inductance tuning means and methods of manufacture. 4,511,872, Cl. 336-83.000.
Olsen, Arthur A., to Ball Corporation. Apparatus for measuring scalar irradiance. 4,511,250, Cl. 356-225.000.
Olsen, William A. Golf swing training club. 4,511,147, Cl. 273-193.00A.
Olson, John T., to Economics Laboratory, Inc. Fluid system control apparatus and method. 4,511,311, Cl. 417-5.000.
Olson, Kenneth C.; and Pai, Rong-Chang, to Genentech, Inc. Purification and activity assurance of precipitated heterologous proteins. 4,511,503, Cl. 260-112.00R.
Olson, Sharon; and Zoss, Robert, to General Mills, Inc. Fried foods of reduced oil absorption and methods of preparation employing spray of film forming agent. 4,511,583, Cl. 426-89.000.
Olsson, Stefan; and Widenback, Ralph, to Unifos Kemi AB. Process for blowing film from linear thermoplastic material. 4,511,530, Cl. 264-564.000.
Olszewski, Douglas J.: *See*—
Sabatino, Anthony; Schaumburg, Edward G.; Recht, Peter A.; Olszewski, Douglas J.; and Strait, Richard T., 4,510,682, Cl. 29-623.100.
Olympia Werke AG: *See*—
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Olympus Optical Company Limited: *See*—
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Omaha Door Company: *See*—
Friesz, Robert E., 4,510,663, Cl. 29-429.000.
Omori, Norio: *See*—
Ninomiya, Masakazu; Suda, Toshi; Omori, Norio; Akiyama, Susumu; and Fukaya, Hiroyasu, 4,510,910, Cl. 123-486.000.
Omori, Shogo. Duster-polisher made of plastic film. 4,510,640, Cl. 15-104.00A.
Omron Tateisi Electronics Co.: *See*—
Imamichi, Tutomu, 4,511,794, Cl. 235-379.000.
Omura, Takashi: *See*—
Kayane, Yutaka; Omura, Takashi; Otake, Katsumasa; and Takeshita, Akira, 4,511,507, Cl. 534-629.000.
O'Neill, William B. Self-loading and unloading vehicle. 4,511,303, Cl. 414-458.000.
Onishi, Masakazu: *See*—
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Ono, Takashi: *See*—
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Ooba, Yuji: *See*—
Higashi, Kensaku; Yano, Haruhiko; Sato, Hirotsugu; Sukegawa, Ken; and Ooba, Yuji, 4,511,642, Cl. 430-161.000.
Oono, Masaji: *See*—
Umezawa, Hamao; Oono, Masaji; Ishihama, Hiroshi; Kyotani, Yoshinori; and Takahashi, Yoshio, 4,511,509, Cl. 260-239.00A.

Opitz, Norbert: *See—*
Lubbers, Dietrich W.; and Opitz, Norbert, 4,511,660, Cl. 436-163.000.
Opsahl, Allan W.: *See—*
Kasper, James R.; and Opsahl, Allan W., 4,510,714, Cl. 49-249.000.
Orchard, Rolf O., to Puritan Bennett Corp. Tube securing mechanism. 4,511,164, Cl. 285-252.000.
Organisme Autonome Dote de la Personnalite Civile Agence France Presse: *See—*
Dureigne, Bernard; Guerillot, Stephane; and Regnault, Alain, 4,511,992, Cl. 364-825.000.
Orio, Alfred P.; Levy, Leonard R.; and Gulla, Michael, to Shipley Company Inc. Immersion tin composition and process for using. 4,511,403, Cl. 106-1.220.
Oronzio de Nora Impianti Elettrochimici S.p.A.: *See—*
Pellegri, Alberto, 4,511,442, Cl. 204-98.000.
Orr Felt Company, The: *See—*
Shah, Shirish M., 4,511,361, Cl. 8-471.000.
Ors, Jose A.; and Small, Richard D., Jr., to AT&T Technologies, Inc. Circuit board fabrication leading to increased capacity. 4,511,757, Cl. 174-68.500.
Osaka Soda Co. Ltd.: *See—*
Matoba, Yasuo; and Ishimori, Isao, 4,511,698, Cl. 525-187.000.
Osaki, Takayoshi: *See—*
Ninagawa, Yoichi; Yamada, Osamu; Renge, Tsumoru; Kyo, Sunao; Osaki, Takayoshi; and Kushida, Koichi, 4,511,751, Cl. 585-608.000.
Osecky, Benjamin D.: *See—*
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Osgood, R. W. Mini-bidet. 4,510,630, Cl. 4-443.000.
Ostertag, Klaus: *See—*
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Ostrobrod, Meyer. Safety device. 4,511,123, Cl. 254-364.000.
O'Sullivan, Daniel J. Convenient baby chair. 4,511,177, Cl. 297-136.000.
Otake, Katsumasa: *See—*
Kayane, Yutaka; Omura, Takashi; Otake, Katsumasa; and Takeshita, Akira, 4,511,507, Cl. 534-629.000.
Otobe, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling fuel supply to an internal combustion engine after termination of fuel cut. 4,510,911, Cl. 123-493.000.
Otsuki, Zenju: *See—*
Inami, Mamoru; Tanaka, Yoshiaki; and Otsuki, Zenju, 4,510,840, Cl. 84-477.00R.
Ott, Karl-Heinz: *See—*
Lindner, Christian; Braese, Hans-Eberhard; Ott, Karl-Heinz; and Uerdingen, Walter, 4,511,695, Cl. 525-80.000.
Otte, Dieter W.: *See—*
Sarnosky, Joseph R.; Wolbrink, David W.; and Otte, Dieter W., 4,510,851, Cl. 98-42.080.
Otterbacher, Eric W.: *See—*
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Oude Alink, Bernardus A.: *See—*
Outlaw, Benjamin T.; Oude Alink, Bernardus A.; Kelley, Joe A.; and Claywell, Carol S., 4,511,480, Cl. 252-8.55E.
Outlaw, Benjamin T.; Oude Alink, Bernardus A.; Kelley, Joe A.; and Claywell, Carol S., to Petrolite Corporation. Corrosion inhibition in deep gas wells by phosphate esters of poly-oxyalkylated thiols. 4,511,480, Cl. 252-8.55E.
Oval Engineering Co., Ltd.: *See—*
Matsubara, Naoki; and Numata, Hideo, 4,511,819, Cl. 310-340.000.
Overaker, Ronald F.: *See—*
Jobsis, Frans F.; Keizer, Hans H.; and Overaker, Ronald F., 4,510,938, Cl. 128-633.000.
Overholser, Duane J.; and Prough, Craig M. Combined batters' and catcher's box marking frame. 4,510,692, Cl. 33-174.00G.
Overmier, David K., to United States of America, Energy. Method of measuring material properties of rock in the wall of a borehole. 4,510,799, Cl. 73-151.000.
Owen, Hartley: *See—*
Wright, Bernard S.; Hsia, Chung H.; and Owen, Hartley, 4,511,747, Cl. 585-415.000.
Owens, Burgess. Drinking cup holder for automobiles. 4,511,072, Cl. 224-273.000.
Owens-Corning Fiberglas Corporation: *See—*
Bhatti, Mohinder S., 4,511,383, Cl. 65-6.000.
Desai, Avinash J.; and Kreikebaum, Gerhard, 4,511,791, Cl. 219-497.000.
Owens-Illinois, Inc.: *See—*
Barkhau, Marvin L.; and Kujawa, Joseph J., 4,511,385, Cl. 65-135.000.
Desai, Kirit C., 4,511,051, Cl. 215-225.000.
Oye, Kevin J.: *See—*
Koenig, Mark J.; and Oye, Kevin J., 4,511,969, Cl. 364-200.000.
Ozaki, Syunzaburo: *See—*
Yatabe, Fumio; and Ozaki, Syunzaburo, 4,510,901, Cl. 123-325.000.
Ozawa, Mikio: *See—*
Miyamori, Hideaki; Takagi, Kenji; Sato, Shigeru; Takahashi, Fujio; and Ozawa, Mikio, 4,511,784, Cl. 219-123.000.
Ozawa, Takashi, to Fuji Xerox Co., Ltd. Noise reduction apparatus for hybrid image sensor. 4,511,804, Cl. 250-578.000.
Ozawa, Toshiaki: *See—*
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Ozeki, Takeshi; and Tamura, Toshifumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical communication system. 4,511,208, Cl. 350-96.160.
P.J. Industrial Safety Elec. Co. Ltd.: *See—*
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Packaging Corporation of America: *See—*
Madsen, Roger E.; and Williams, Michael M., 4,511,080, Cl. 229-41.00C.
Padly, Yvan; and Borgeaud, Roger, to Societe d'Assistance Technique pour Produits Nestle S.A. Pasteurization of eggs. 4,511,589, Cl. 426-521.000.
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Palensky, Frederick J.; and Siedle, Allen R., to Minnesota Mining and Manufacturing Company. Platinum-nitrogen complex catalysts. 4,511,715, Cl. 544-225.000.
Pallos, Laszlo : *See—*
Benko, Pal; Ratz nee Simonek, Ildiko ; Pallos, Laszlo ; Magyar, Karoly; Kovacs, Jeno ; Matrai, Erzsebet; Gundel, Janos; and Balogh, Albert, 4,511,717, Cl. 544-353.000.
Palmer, Patrick V.: *See—*
Mannion, Geoffrey; and Palmer, Patrick V., 4,511,401, Cl. 75-130.00R.
Pan, Jing-Jong, to Harris Corporation. Dual-gate MESFET combiner/-divider for use in adaptive system applications. 4,511,813, Cl. 307-501.000.
Pan, You-Chwen. Computer diskette cases. 4,511,034, Cl. 206-310.000.
Panhandle Eastern Pipe Line Company: *See—*
Tietze, Thomas N., 4,511,844, Cl. 324-425.000.
Park, George; Smith, Michael J.; and Carrington, Harry, to U.S. Philips Corporation. Magazine and disc holders for supporting discs in the magazine. 4,511,194, Cl. 312-12.000.
Park-Ohio Industries, Inc.: *See—*
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Parry, James L. Drafting equipment holder. 4,510,872, Cl. 108-25.000.
Parsons, William, Jr., to Garlock, Inc. Plug valve with floating stem seal. 4,510,966, Cl. 137-375.000.
Pasquier, Rene . Improved quartz watch having a semi-rigid watch case bottom and a time setting system using an electrical contact. 4,511,260, Cl. 368-69.000.
Patel, Bakulesh B., to Motorola, Inc. Mounting arrangement for altering a microphone's frequency response. 4,511,768, Cl. 179-146.00R.
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Funk, Gerhard, 4,511,958, Cl. 364-200.000.
Pathfinders Group, The: *See—*
Miller, Charles H., 4,511,406, Cl. 106-18.140.
Pathway Bellows, Inc.: *See—*
Broyles, Robert K., 4,511,162, Cl. 285-93.000.
Patoflex Corporation: *See—*
Ehrlich, Johann, Jr., 4,510,702, Cl. 36-86.000.
Payne, Richard S.: *See—*
Tuttle, Ralph C.; and Payne, Richard S., 4,511,413, Cl. 148-187.000.
Pearce, Richard A., to Robbins & Myers, Inc. Ceiling fan blade isolation. 4,511,310, Cl. 416-134.00R.
Pechiney Ugine Kuhlmann: *See—*
Crussard, Charles; Maurel, Pierre; and Bonhomme, Jean, 4,511,540, Cl. 423-26.000.
Peck, Alan M., to USM Corporation. System for processing workpieces for sewing. 4,510,875, Cl. 112-121.120.
Pedersen, Karsten; Rostrup-Nielsen, Jens R.; and Jorgensen, Ib Greve H., to Haldor Topsoe A/S. Process and catalyst for the preparation of a gas mixture having a high content of C_2-hydrocarbons. 4,511,674, Cl. 518-714.000.
Peiffer, Dennis G.; Lundberg, Robert D.; and Walker, Thad O., to Exxon Research and Engineering Co. Fluid loss additive for well drilling. 4,510,998, Cl. 166-295.000.
Pellegri, Alberto, to Oronzio de Nora Impianti Elettrochimici S.p.A. Anode for electrolytic processes. 4,511,442, Cl. 204-98.000.
Pellerin, Jean-Francois G. A.: *See—*
Boy-Marcotte, Jean-Louis; Dahan, Gilbert M. I.; Dancette, Michel; Le Nabour, Marcel P.; Pellerin, Jean-Francois G. A.; Rivallin, Jose ; and Jannot, Marcel A. J., 4,511,805, Cl. 290-2.000.
Pellerin, Lucien: *See—*
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Penetone Corporation: *See—*
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Penton, Perry W., to NCR Corporation. Apparatus for measuring program execution. 4,511,961, Cl. 364-200.000.
Perara, Thomas E., to Allied Corporation. Flight recorder having capability of storing intermediate data. 4,510,803, Cl. 73-178.00R.
Percel, Phillip J.; and Perkins, Douglas W., to SCM Corporation. Particulate food acidulant. 4,511,584, Cl. 426-99.000.
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Pereman, Gordon F.: *See—*
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Peries, Jean-Pierre: *See—*
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Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., 4,511,592, Cl. 426-646.000.

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Perron, Robert: *See—*
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Perrot, Alexander: *See—*
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Perrot-Regnerbau GmbH & Co.: *See—*
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Peters, Edward L.: *See—*
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Peters, Edward N.: *See—*
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Peters, Rex B., to Sundstrand Data Control, Inc. Angular rate sensor utilizing two vibrating accelerometers secured to a parallelogram linkage. 4,510,802, Cl. 73-505.000.

Peters, Rick E. Ankle brace. 4,510,927, Cl. 128-80.00H.

Petersen, Lee B. Wheelchair restraint. 4,511,171, Cl. 296-65.00R.

Peterson, Gerald E.: *See—*
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Peterson, LuVerne R., to Burroughs Corporation. Detector-dummy detector combination which is integrated as a single element of reduced size. 4,511,995, Cl. 365-8.000.

Petricca, Anthony V.: *See—*
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Petrolite Corporation: *See—*
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Pfizer Inc.: *See—*
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Holland, Gerald F., 4,511,576, Cl. 514-423.000.

Pharmasol Corporation, The: *See—*
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Phelps, Frankie E.; Boget, Paul J.; and Troup, Robert L., to Aluminum Company of America. Process for producing beta'-silicon aluminum oxynitride (B'-SiAlON). 4,511,666, Cl. 501-98.000.

Philip Morris Incorporated: *See—*
Keritsis, Gus D.; and Nichols, Walter A., 4,510,950, Cl. 131-353.000.

Philipp, Clemens: *See—*
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Phillips, Edward H., to Amfit Incorporated. System and method for forming custom-made shoe inserts. 4,510,636, Cl. 12-1.00R.

Phillips Petroleum Company: *See—*
Arnim, Robert C., II; and Bourne, Gregory D., 4,510,985, Cl. 175-7.000.
Horton, Robert L.; and Stahl, G. Allan, 4,511,677, Cl. 521-28.000.

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Pickering, William: *See—*
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Pierart, Robert, to Ateliers et Chantiers de Bretagne, A C B. Device for supporting and protecting nuclear boilers. 4,511,532, Cl. 376-461.000.

Pierburg GmbH & Co., KG: *See—*
Ballik, Rainer; and Hutten, Heinrich, 4,511,082, Cl. 239-8.000.

Pierre Fabre S.A.: *See—*
Pitet, Guy; Cousse, Henri; and Mouzin, Gilbert, 4,511,566, Cl. 514-242.000.

Pilkington Brothers P.L.C.: *See—*
Evason, John; Rigby, Malcolm J.; and Ward, Peter, 4,511,384, Cl. 65-114.000.

Pillsbury Company, The: *See—*
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Pinet, Philippe: *See—*
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Pinkel, Edward B.: *See—*
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Pinter, Joseph: *See—*
Alt, Richard C.; and Pinter, Joseph, 4,510,862, Cl. 101-93.140.

Pinto, Akiva: *See—*
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Pitts, Warren R.; and Salit, Herbert W., to Dennison Mfg. Company. Anticounterfeit magnetic metallized labels. 4,511,616, Cl. 428-203.000.

Plainer, Hermann: *See—*
Kramer, Dieter; Pennewiss, Horst; Plainer, Hermann; Schnee, Reiner; and Schleier, Waldemar, 4,511,694, Cl. 525-54.100.

Plastech International, Inc.: *See—*
Daloisio, Pasquale C., 4,511,154, Cl. 280-47.260.

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Korner, Gerhard; Plettner, Horst; Viering, Walter; and Rees, Volker, 4,511,775, Cl. 200-148.00A.

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Jakobsen, Kjell M.; and Nilsson, Clees T., 4,511,322, Cl. 425-384.000.

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Groothuis, Gerrit J.; de Haan, Atze; Poel, Hendrik; Tietjens, Eduard W.; and de Vries, Jochem J., 4,510,687, Cl. 30-34.200.

Pohlenz, Elmer E.: *See—*
LaBarge, Robert L.; Horansky, Frank J.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,510,857, Cl. 100-53.000.
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Pohlig, Dietmar; and Goepel, Ernst, to Siemens Aktiengesellschaft. Circuit arrangement for positioning the printing mechanisms in printers employing a d.c. motor. 4,511,797, Cl: 250-231.0SE.

Pointner, Norbert: *See—*
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Pokrinchak, Jordan J., to Bar-Ray Products, Inc. Viewer for X-ray and like films. 4,510,708, Cl. 40-361.000.

Polinsky, Samuel M.: *See—*
Bierman, Laurence W.; Polinsky, Samuel M.; Hempel, David A.; and Humberger, Roger B., 4,511,541, Cl. 423-100.000.

Polyplastics Company, Ltd.: *See—*
Kasuga, Takuzo; Takahashi, Katsuhiko; and Suzuki, Kunio, 4,511,708, Cl. 528-274.000.

Pompei, Michel: *See—*
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Pont-A-Mousson S.A.: *See—*
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Ponzellini, Giulio, to Castelli S.p.A. Locking device for the assembling of modular elements of pieces of furniture. 4,511,108, Cl. 248-188.700.

Pook, Roger: *See—*
Washington, Derek; and Pook, Roger, 4,511,822, Cl. 313-400.000.

Porges, Stephen W. Method and apparatus for evaluating rhythmic oscillations in aperiodic physiological response systems. 4,510,944, Cl. 128-687.000.

Porter, Randall A.: *See—*
Reed, Larry E.; Porter, Randall A.; Farha, Floyd E., Jr.; and Guillory, Jack P., 4,511,405, Cl. 106-15.050.

Post, Willem P., to Thomassen & Drijver-Verblifa N.V. Apparatus for cutting through or trimming a pipe or can in a plane transverse to its longitudinal axis. 4,510,830, Cl. 83-114.000.

Pote, Robert L., Jr., to Tempo, Inc. Golf training device. 4,511,142, Cl. 273-87.400.

Poteat, Vance E.: *See—*
Fulcomer, Emanuel J., Jr.; Nici, Richard J.; Poteat, Vance E.; Schramm, George W.; Sharp, John B.; and Winseck, Michael M., Jr., 4,512,016, Cl. 370-110.100.

PPG Industries, Inc.: *See—*
Kellar, John D.; and Pereman, Gordon F., 4,511,386, Cl. 65-273.000.
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Prato, Pietro, to Minnesota Mining and Manufacturing Company. Coating apparatus and method for the curtain coating of liquid compositions using it. 4,510,882, Cl. 118-300.000.

Prellwitz, Hubert, to VEB Kombinat Fortschritt Landmaschinen. Baler knotting device with complementary knotter and stripper. 4,511,165, Cl. 289-8.000.

Prescolite, a division of U.S. Industries: *See—*
Druffel, James B.; and Cohen, Joel S., 4,511,113, Cl. 248-546.000.

Presley, Glen T.; and Lautzenhiser, Lloyd L., to Electro-Hydraulic Controls, Inc. Proportional-flow electrohydraulic control. 4,510,963, Cl. 137-117.000.

Prestele, Karl: *See—*
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Preston, Edward G.; and Stewart, David B., to Molins, PLC. Feeding particulate material, especially tobacco. 4,510,949, Cl. 131-109.00R.
Prete, Ernest, Jr.; and Knox, Howard, to Ancra Corporation. Ratchet buckle with a removable operating lever. 4,510,651, Cl. 24-68.00R.
Prince Corporation: *See—*
Marcus, Konrad H.; and Cody, Michael J., 4,511,954, Cl. 362-275.000.
Pringle, Ronald E., to Camco, Incorporated. Pump out sub. 4,510,994, Cl. 166-156.000.
Prinz, Eckhard: *See—*
Kuhlmann, Heinz; and Prinz, Eckhard, 4,511,419, Cl. 156-272.600.
Prior, Maurice, to Mobil Oil Corporation. Drilling mud testing system having a thermally isolated pump. 4,510,800, Cl. 73-153.000.
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Boesig, Werner; and Pritzwald-Stegmann, Bernd, 4,511,553, Cl. 424-35.000.
Procter & Gamble Company, The: *See—*
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Prosen, Edward J. Bomb-type conduction calorimeter. 4,511,263, Cl. 374-38.000.
Protin, Bernard: *See—*
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Protoschill, Klaus: *See—*
Schauf, Dieter; Protoschill, Klaus; Oberbach, Karl; and Depcik, Hans-Werner, 4,511,184, Cl. 301-63.0PW.
Prough, Craig M.: *See—*
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Pruhs, Horst; and Altenschopfer, Theodor, to Henkel Kommanditgesellschaft auf Aktien. Dishwasher detergent paste. 4,511,487, Cl. 252-99.000.
Prussin, Simon A.; and Hikin, Boris L., to TRW Inc. Shallow junction depth measurement method. 4,510,798, Cl. 73-150.00R.
PTC Aerospace Inc.: *See—*
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Purcell, Robert H.; and Feinstone, Stephen M., to United States of America, Health and Human Services. Inactivation of a lipid virus. 4,511,556, Cl. 514-743.000.
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Gong, Cheng-Shung, 4,511,656, Cl. 435-161.000.
Purdy, Paul J. Manlift. 4,511,015, Cl. 182-2.000.
Puritan Bennett Corp.: *See—*
Orchard, Rolf O., 4,511,164, Cl. 285-252.000.
Purser, Ben D. Apparatus and method for preparing a mixture of combustible liquid fuel and air. 4,510,914, Cl. 123-590.000.
Putz, Peter: *See—*
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,511,619, Cl. 428-215.000.
Quarles, James H. Ice making machine with reverse direction hot gas thawing and pressurized gas discharge. 4,510,761, Cl. 62-73.000.
Quates, Norman C., Jr.: *See—*
Quates, Norman C., Sr; and Quates, Norman C., Jr., 4,511,291, Cl. 406-128.000.
Quates, Norman C., Sr; and Quates, Norman C., Jr. Vacuum material conveying apparatus. 4,511,291, Cl. 406-128.000.
Quay, Earl R.; and Tilson, Alan L., to Mayer, Rothkopf Industries, Inc. Fiber transfer system for sliver high pile fabric circular knitting machines. 4,510,773, Cl. 66-9.00B.
Quenneville, Raymond N., to Jacobs Manufacturing Company, The. Hydraulic pulse engine retarder. 4,510,900, Cl. 123-321.000.
Quigley, M. Scott; and Russell, Gordon A., to Mobil Oil Corporation. Controlled heater for drilling mud testing system. 4,510,801, Cl. 73-153.000.
R. A. Jones & Co. Inc.: *See—*
Hughes, Charles C., 4,511,134, Cl. 271-113.000.
Rabatin, Robert U. Sound suppressor attaching device for guns. 4,510,843, Cl. 89-14.400.
Racanelli, Sylvester. Mail metering process and machine. 4,511,793, Cl. 235-375.000.
Rachui, Roy A.: *See—*
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Radionics, Inc.: *See—*
Fiore, Louis T., 4,511,887, Cl. 340-539.000.
Rahnke, Christian J., to Ford Motor Company. Turbocharger and exhaust gas control therefor. 4,510,754, Cl. 60-602.000.
Rajaram, Babu, to Zenith Electronics Corporation. Video ram accessing system. 4,511,965, Cl. 364-200.000.
Rakosi, Miklos: *See—*
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.
Ramge, Dennis L.; and Miller, John H., to Manville Service Corporation. Apparatus for the reclamation of glass fiber from scrap fiber glass mat. 4,511,328, Cl. 432-59.000.
Ramuz, Henri, to Hoffmann-La Roche Inc. 2-Imino-imidazolidine derivatives. 4,511,720, Cl. 546-273.000.
Ranco Incorporated: *See—*
Rossi, Guglielmo, 4,510,765, Cl. 62-154.000.
Randall, Lowell N. Sprinkler. 4,511,003, Cl. 169-38.000.
Rangaire Corporation: *See—*
Tucker, Raymond M.; and Dyer, Clarence L., 4,511,781, Cl. 219-10.770.
Rantala, Borje, to Instrumentarium Oy. Filter assembly for eliminating mains disturbances. 4,511,847, Cl. 328-167.000.
Rasmussen, John F.; and Gaia, Aldino J., to McGraw-Edison Company. Fatigue-resistant fuse strip. 4,511,874, Cl. 337-159.000.
Raso, Roland: *See—*
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Ratnik Industries, Inc.: *See—*
Muller-Girard, Otto, 4,511,083, Cl. 239-14.000.
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Ratz nee Simonek, Ildiko : *See—*
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Rau, Karl, to VDO Adolf Schindling AG. Suction device. 4,510,968, Cl. 137-590.000.
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Rauneker, Josef, to Daimler-Benz Aktiengesellschaft. Drive axle for a motor vehicle. 4,511,012, Cl. 180-65.200.
Rauser, Jan A. I.; and Cetrelli, Renato, to Tetra Pak International AB. Packing container with a crack-resistant laminate. 4,511,078, Cl. 229-17.00R.
Ravindram, Maddury; and Kalvinskas, John J., to United States of America, National Aeronautics and Space Administration. Fluidized bed desulfurization. 4,511,362, Cl. 44-1.0SR.
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Connor, John T.; Halsted, Charles P.; and Ravn, Jacob, 4,511,044, Cl. 209-522.000.
Raybuck, William B., to Trimmer Machine Co., Inc. Method and apparatus for aligning and trimming overlapped signatures. 4,511,131, Cl. 270-54.000.
Raychem Corporation: *See—*
Flot, Regis; and Hine, Jean Patrick, 4,510,827, Cl. 81-9.400.
Raymond Kaiser Engineers Inc.: *See—*
Bucha, Robert M.; Dzermejko, Albert J.; and Stuart, James G., 4,511,264, Cl. 374-135.000.
Gidick, Ward F., 4,510,959, Cl. 137-15.000.
Razdobreev, Vadim. Pneumatic collet release tool. 4,511,295, Cl. 409-233.000.
RCA Corporation: *See—*
Griffis, Patrick D.; and Rindal, Abraham E., 4,511,924, Cl. 358-197.000.
Harbeke, Gunther; and Duffy, Michael T., 4,511,800, Cl. 250-372.000.
Harlan, Wayne E.; and Marsh, James C., Jr., 4,511,921, Cl. 358-161.000.
Lewis, Henry G., Jr., 4,511,922, Cl. 358-166.000.
Schier, John H., Jr.; and Brooks, William E., Jr., 4,511,871, Cl. 335-213.000.
Recht, Peter A.: *See—*
Sabatino, Anthony; Schaumburg, Edward G.; Recht, Peter A.; Olszewski, Douglas J.; and Strait, Richard T., 4,510,682, Cl. 29-623.100.
Reed, Larry E.; Porter, Randall A.; Farha, Floyd E., Jr.; and Guillory, Jack P. Antifoulants for thermal cracking processes. 4,511,405, Cl. 106-15.050.
Rees, Richard W. A., to General Motors Corporation. Bearing assembly for seat slide. 4,511,187, Cl. 308-3.800.
Rees, Volker: *See—*
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Regnault, Alain: *See—*
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Reichgott, David W.; and Leary, Michael J., to Betz Laboratories, Inc. Method for cleaning organically fouled anion exchange resins using diethylene glycol compound or derivative. 4,511,676, Cl. 521-26.000.
Reichman, Benjamin; and Byvik, Charles E., to United States of America, National Aeronautics and Space Administration. Method for determining the point of zero zeta potential of semiconductor. 4,511,838, Cl. 324-71.500.
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Sapru, Krishna; Reichman, Benjamin; and Liang, Gao, 4,511,638, Cl. 429-111.000.
Reid, Don G.: *See—*
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Reimer, Heinz: *See—*
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Reith, Walter: *See—*
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Remedi, James J.; Reid, Don G.; and Ure, Lynette, to Motorola, Inc. Power bus routing for providing noise isolation in gate arrays. 4,511,914, Cl. 357-45.000.

Renfroe, Harris B., to Ciba-Geigy Corporation. 3-Substituted-2-(heteroaryl) indoles. 4,511,573, Cl. 514-332.000.
Reng, Leonhard, to Siemens Aktiengesellschaft. Device for determining a parameter signal for a voltage-fed load. 4,511,978, Cl. 364-480.000.
Renge, Tsumoru: *See*—
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Gurries, Raymond A., 4,511,282, Cl. 404-90.000.
Reusch, Heinz: *See*—
Bindl, Max; and Reusch, Heinz, 4,510,891, Cl. 122-32.000.
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Revak, Timothy T.: *See*—
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Rex Industries Co., Ltd.: *See*—
Kouchi, Takashi; and Tamaoki, Eiki, 4,511,826, Cl. 318-98.000.
Rhone-Poulenc Chimie de Base: *See*—
Gauthier-Lafaye, Jean; Perron, Robert; and Doussain, Claude, 4,511,517, Cl. 260-549.000.
Ribaldone, Giuseppe; Felicioli, Maria G.; Santini, Claudio; and Agnes, Giovanni, to Farmitalia Carlo Erba S.p.A. Preparation of pyrazine derivatives. 4,511,718, Cl. 544-406.000.
Richardson-Vicks Inc.: *See*—
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Richarts, Fritz, to H. Krantz GmbH & Co. Heat recovery method. 4,510,762, Cl. 62-79.000.
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Uozumi, Osamu, 4,510,833, Cl. 83-205.000.
Yano, Takashi, 4,511,236, Cl. 355-3.0BE.
Rieber, Norbert; Boehm, Heinrich; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Halogenated 1-hydroxypyrazoles. 4,511,723, Cl. 548-376.000.
Riemer, Pierce W. F.: *See*—
Robinson, Joseph G.; and Riemer, Pierce W. F., 4,511,749, Cl. 585-469.000.
Rieter-Scragg Limited: *See*—
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Rigby, Malcolm J.: *See*—
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Rindal, Abraham E.: *See*—
Griffis, Patrick D.; and Rindal, Abraham E., 4,511,924, Cl. 358-197.000.
Rinehart, John R. Method of making a composite foam taxidermy mannikin involving the use of a cleanable adhesive to hold the artificial eyes in the mold cavity. 4,511,522, Cl. 264-46.400.
Risi, Alfred. Torsion coiler. 4,510,782, Cl. 72-142.000.
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Luther, Gunter; Loebel, Peter; Risse, Gerhard; and Leiser, Volker, 4,510,932, Cl. 128-204.290.
RISVIN - Ricerche e Sviluppo Industriale - S.r.l.: *See*—
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Erlam, David P.; and Carr, Arthur E., 4,511,199, Cl. 339-45.00M.
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Robbins & Myers, Inc.: *See*—
Pearce, Richard A., 4,511,310, Cl. 416-134.00R.
Roberson, Morris L.: *See*—
Anjier, Joseph L.; Roberson, Morris L.; and Atchison, William E., 4,511,542, Cl. 423-127.000.
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Bodig, Bernd; Hohne, Gerd; and Schmied, Helmut, 4,512,019, Cl. 371-12.000.
Buchner, Norbert; and Vogele, Gunther, 4,511,538, Cl. 422-303.000.
Eisele, Hermann; and Stein, Volkhard, 4,510,908, Cl. 123-449.000.
Kampichler, Gunter, 4,510,796, Cl. 73-119.00A.
Leiber, Heinz, 4,510,905, Cl. 123-360.000.
Sumal, Jaihind S., 4,510,795, Cl. 73-118.000.
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Roberts, Franklin D.: *See*—
Spiegel, Martin A.; and Roberts, Franklin D., 4,511,183, Cl. 301-37.00S.
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Huerta, Jose L.; Rachui, Roy A.; Roberts, James E.; and Simpson, Grainger I., Jr., 4,511,135, Cl. 271-126.000.
Roberts, James R., to A. O. Smith Harvestore Products, Inc. Pump position retainer apparatus. 4,511,257, Cl. 366-262.000.
Roberts, Patrick A. Multi-cube puzzle. 4,511,144, Cl. 273-153.00S.
Robertson, Michael L., to B. B. Robertson Company. Compact barbecue oven. 4,510,854, Cl. 99-337.000.
Robinson, James R., to Petrolite Corporation. Plural stage desalting-/dehydrating apparatus. 4,511,452, Cl. 204-302.000.
Robinson, Joseph G.; and Riemer, Pierce W. F., to Coal Industry Patents Limited. Conversion of methanol to toluene using amorphous silica-alumina catalysts. 4,511,749, Cl. 585-469.000.
Robinson, Richard T., to Delta Engineering Co. Connector unit for geodesic dome frame strut. 4,511,278, Cl. 403-172.000.
Robotic Vision Systems, Inc.: *See*—
Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,511,252, Cl. 356-375.000.
Roccaforte, Harry I., to Champion International Corporation. Easy opening carton. 4,511,043, Cl. 206-620.000.
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Wischusen, Henry, III, 4,511,042, Cl. 206-611.000.
Rockwell International Corporation: *See*—
Deasy, Richard E., 4,511,900, Cl. 343-845.000.
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Rodrigues, Allan B. J.: *See*—
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Rodriguez, Michael J., to Micron International, Ltd. Electronic security and surveillance system. 4,511,886, Cl. 340-534.000.
Rodth, Joseph J., to Alco Foodservice Equipment Company. Connector for pressurized source of beverage concentrate. 4,510,969, Cl. 137-614.050.
Roesler, Richard F., to NL Industries, Inc. Surveying of boreholes using shortened non-magnetic collars. 4,510,696, Cl. 33-304.000.
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Rohm GmbH: *See*—
Kramer, Dieter; Pennewiss, Horst; Plainer, Hermann; Schnee, Reiner; and Schleier, Waldemar, 4,511,694, Cl. 525-54.100.
Rohr Industries, Inc.: *See*—
Cadwell, Gilbert C., 4,510,780, Cl. 72-57.000.
Rohr, Jurgen: *See*—
Frungel, Frank; and Rohr, Jurgen, 4,511,249, Cl. 356-5.000.
Rohrbach, Ronald P.; Maliarik, Mary J.; and Malloy, Thomas P., to UOP Inc. Production of high sugar syrups. 4,511,654, Cl. 435-95.000.
Roman, Alain: *See*—
Tournier, Herve; Johansson, Allan A.; Sachetto, Jean-Pierre; Armanet, Jean-Michel; Michel, Jean-Pierre; and Roman, Alain, 4,511,433, Cl. 162-16.000.
Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Suspension system for a centrifuge rotor. 4,511,350, Cl. 494-82.000.
Romier, Roger; and Betoliere, Jean-Pierre, to Alsthom-Atlantique. Break chamber for a gas-blast circuit breaker. 4,511,776, Cl. 200-148.00A.
Rommen, Hans; and Frosch, Hans, to SMS-Schloemann Siemag AG. Changing rolls in six-high roll stand. 4,510,783, Cl. 72-200.000.
Roncaglione, James W. Vehicle washing apparatus having flexible brushes. 4,510,639, Cl. 15-53.0AB.
Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,511,392, Cl. 71-90.000.
Roschmann, Klaus: *See*—
Knothe, Herbert; and Roschmann, Klaus, 4,512,007, Cl. 369-127.000.
Rose, Emery L.: *See*—
Janisiewicz, Stanley W.; and Rose, Emery L., 4,510,806, Cl. 73-432.00R.
Rose, Wolfgang, to VEB Kombinat Textima. Control device for a knitting machine. 4,510,774, Cl. 66-75.200.
Rosebrooks, Nathan B., to ITT Corporation. Device for providing a dual coating on an optical fiber. 4,510,884, Cl. 118-405.000.
Ross, Dieter; and Ostertag, Klaus, to Erwin Sick GmbH Optik-Elektronik. Fault detection apparatus for material webs. 4,511,803, Cl. 250-563.000.
Ross, Joseph A.: *See*—
Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,511,252, Cl. 356-375.000.
Ross, Peter W.: *See*—
Crossland, William A.; Ross, Peter W.; and Ayliffe, Peter J., 4,511,926, Cl. 358-236.000.
Rossell, Thomas L. Electric fence gate switch. 4,511,771, Cl. 200-61.730.
Rossi, Guglielmo, to Ranco Incorporated. Control unit for refrigerators or freezers. 4,510,765, Cl. 62-154.000.

Rossini, Frank J.: *See—*
Anand, Joginder N.; Revak, Timothy T.; and Rossini, Frank J., 4,510,681, Cl. 29-623.100.

Rossmann, Axel: *See—*
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Rostrup-Nielsen, Jens R.: *See—*
Pedersen, Karsten; Rostrup-Nielsen, Jens R.; and Jorgensen, Ib Greve H., 4,511,674, Cl. 518-714.000.

Roth, Johann, to Braun Aktiengesellschaft. Method of soldering circuit boards with solder-repellent contacts. 4,511,076, Cl. 228-180.100.

Rothfuss, Werner: *See—*
Kuehn, Volker; Rothfuss, Werner; and Widmaier, Richard, 4,511,421, Cl. 156-356.000.

Rotramel, George L.; Veilleux, Daniel P.; and Allen, Joseph L., to Union Carbide Corporation. Pest repellant. 4,511,579, Cl. 514-490.000.

Rousseau, Alan D.: *See—*
Fohrenkamm, Elsie A.; and Rousseau, Alan D., 4,511,646, Cl. 430-283.000.

Rousselin, Jean: *See—*
Triouleyre, Jean; Rousselin, Jean; Schmit, Patrick; and Gondry, Philippe, 4,510,785, Cl. 72-323.000.

Roussos, Theodore; and Sakhuja, Ravinder K., to Thermo Electron Corporation; and Thermo Electron Corporation. Energy storage system having thermally stratified liquid. 4,510,922, Cl. 126-435.000.

Roybal, Herman E.: *See—*
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Rozsa, Zsuzsanna: *See—*
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Rubber-en Kunststoffabriek ENBI B.V.: *See—*
Lock, Pieter J., 4,510,664, Cl. 29-450.000.

Ruehle, Edward A., to Chrysler Corporation. Engine test stand. 4,511,112, Cl. 248-544.000.

Ruhoff, Philip J.: *See—*
Anderson, Jeffrey L.; Ruhoff, Philip J.; and Edenborg, Robert B., 4,511,692, Cl. 525-7.000.

Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; Weber, Jurgen; Tihanyi, Bela; and DeWin, Werner, 4,511,439, Cl. 204-37.100.

Rummelsburg, Al S., to Kidde Consumer Durables Corp. Cookware and method of making the same. 4,511,077, Cl. 228-228.000.

Runquist, Paul. Passive mode solid fuel burning furnace. 4,510,917, Cl. 126-76.000.

Runyan, William S., to Iowa State University Research Foundation, Inc. Projection screen anchor. 4,511,211, Cl. 350-117.000.

Runyon, James R.; and Valenti, Salvatore, to Sandoz Ltd. Water-soluble precondensates useful for improving the fastness of dyes and optical brighteners on hydroxy group-containing substrates. 4,511,707, Cl. 528-250.000.

Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, to S.A.R. S.p.A. Valve and cap assembly for dispensing fluid materials under pressure with warranty seal. 4,511,064, Cl. 222-153.000.

Russell, Bruce A.; and Abdel-Fattah, Adnan M., to James Howden Australia Pty. Limited. Axial and mixed flow fans and blowers. 4,511,308, Cl. 415-191.000.

Russell, Gordon A.: *See—*
Quigley, M. Scott; and Russell, Gordon A., 4,510,801, Cl. 73-153.000.

Rustomji, Sam H., to Sigmatron Associates. Mask for vacuum depositing back metal electrodes on EL panel. 4,511,599, Cl. 427-66.000.

Ruth, Ursula: *See—*
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Rutschmann, Erwin, to Dr. Ing. h.c.f. Porsche Aktiengesellschaft. Multi-cylinder combustion engine intake manifold. 4,510,896, Cl. 123-52.0MB.

Ryang, Hong-Son, to General Electric Company. Heat curable epoxy resin compositions and epoxy resin curing agents. 4,511,701, Cl. 525-533.000.

S.A.R. S.p.A.: *See—*
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,511,064, Cl. 222-153.000.

S & F Orthopadietechnik GmbH: *See—*
Frank, Xaver, 4,510,957, Cl. 135-84.000.

S.N.E.C.M.A.: *See—*
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S.O.C. Corporation: *See—*
Arikawa, Hiroo, 4,511,875, Cl. 337-201.000.

S & S Corporation: *See—*
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Sabatino, Anthony; Schaumburg, Edward G.; Recht, Peter A.; Olszewski, Douglas J.; and Strait, Richard T., to GNB Batteries Inc. Apparatus and method for assembling battery cell elements. 4,510,682, Cl. 29-623.100.

Sachetto, Jean-Pierre: *See—*
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Saegusa, Kazuyuki: *See—*
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Sagues, Alberto A.: *See—*
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Baumert, Kenneth L.; Sagues, Alberto A.; and Davis, Burtron H., 4,511,460, Cl. 208-348.000.

Sahakian, Diran R.; Pellerin, Lucien; and Nijboer, Sjoerd, to U.S. Philips Corporation. Multi-path interruptor device. 4,511,769, Cl. 200-6.00A.

Saho, Norihide: *See—*
Matsuda, Toshiharu; Imamura, Minoru; and Saho, Norihide, 4,510,771, Cl. 62-514.00R.

Saint-Amour, John D. Fluid gauging. 4,510,805, Cl. 73-37.900.

St. Joseph's Hospital and Medical Center: *See—*
Wilt, Chester F., Jr., 4,511,157, Cl. 280-289.0WC.

Saint-Prix, Robert; and Montmartin, Henri, to Societe Nouvelle des Etablissements Dervaux. Anchoring or connecting sleeve for multi-strand cable conductor. 4,511,280, Cl. 403-274.000.

Saito, Etsuro, to Sony Corporation. Magnetic disk cartridge. 4,511,944, Cl. 360-133.000.

Saito, Noboru; Satake, Takeshi; Aoki, Ryuji; and Nagai, Isao, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Catalyst for manufacturing meth-acrolein. 4,511,671, Cl. 502-242.000.

Saito, Tadao: *See—*
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Sakaeda, Keiko: *See—*
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Sakaguchi, Shinji: *See—*
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Sakai, Hiroshi: *See—*
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Sakai, Takashi; Honda, Naojiro; and Yonezu, Ikuo, to Agency of Industrial Science & Technology. Metalhydride container and metal hydride heat storage system. 4,510,759, Cl. 62-48.000.

Sakakibara, Hidekazu: *See—*
Kakino, Shigeru; Hattori, Katsuhide; Fukatsu, Yoshiaki; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,511,412, Cl. 149-109.600.

Sakakibara, Shinsuke: *See—*
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Sakakibara, Yasuji: *See—*
Yoneda, Takao; and Sakakibara, Yasuji, 4,510,719, Cl. 51-289.00R.

Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha; and Fuji Jukogyo Kabushiki Kaisha. System for regulating the idle speed of an internal combustion engine. 4,510,903, Cl. 123-339.000.

Sakamoto, Koichiro: *See—*
Nishikawa, Hisashi; Suzuki, Satoshi; Hirata, Masanobu; Sakamoto, Koichiro; Fujisawa, Ikuo; and Takeno, Shozo, 4,511,877, Cl. 338-2.000.

Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Linear interpolating method and color conversion apparatus using this method. 4,511,989, Cl. 364-723.000.

Sakanaka, Yasuhiro: *See—*
Ariyoshi, Takashi; Emura, Noriaki; and Sakanaka, Yasuhiro, 4,511,679, Cl. 521-83.000.

Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, to Mitsui Toatsu Kagaku Kabushiki Kaisha. N-(4-Phenyl-2-thiazolyl)carbamate derivatives. 4,511,574, Cl. 514-371.000.

Sakano, Kozaburo: *See—*
Yazaki, Jinichi; and Sakano, Kozaburo, 4,511,610, Cl. 428-35.000.

Sakata, Hiromi: *See—*
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Sakhuja, Ravinder K.: *See—*
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Salerno, Giuseppe: *See—*
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Salit, Herbert W.: *See—*
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Salyers, Glen M.: *See—*
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Sam J. Brown Land & Cattle Company, Inc.: *See—*
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Sampei, Takeshi; Miyahara, Norio; Nikaido, Tadanobu; Sato, Hiroaki; and Aoyama, Keizo, to Fujitsu Limited. Time-switch circuit. 4,512,012, Cl. 370-66.000.

Samsonite Corporation: *See—*
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San-Ei Kagaku Co., L.T.D.: *See—*
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Sandner, Klaus: *See—*
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Sandoz Ltd.: *See—*
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Sanford, James R. M.: *See*—
Guadagno, Philip A.; and Sanford, James R. M., 4,511,533, Cl. 422-61.000.
Sangroni, Roberto. Ball carrier system. 4,510,982, Cl. 150-52.00A.
Sankrithi, Mithra M. K. V. Electronic maze game. 4,511,143, Cl. 273-153.00R.
Sankrithi, Mithra M. K. V. Aerodynamic device for land vehicles. 4,511,170, Cl. 296-1.00S.
Sanner, Jim W.: *See*—
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Santini, Claudio: *See*—
Ribaldone, Giuseppe; Felicioli, Maria G.; Santini, Claudio; and Agnes, Giovanni, 4,511,718, Cl. 544-406.000.
Santy, Jean: *See*—
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Saperstein, David D.: *See*—
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Saprokhin, Alexander M.; Friedland, David J.; Baran, Richard M.; Kim, Jung T.; and McCurry, Lynn E., to Allied Corporation. Process for the electrolytic production of fluorine and novel cell therefor. 4,511,440, Cl. 204-60.000.
Sapru, Krishna; Reichman, Benjamin; and Liang, Gao, to Energy Conversion Devices, Inc. Photoresponsive amorphous semiconductor materials, methods of making the same, and photoanodes made therewith. 4,511,638, Cl. 429-111.000.
Sarnosky, Joseph R.; Wolbrink, David W.; and Otte, Dieter W., to Broan Mfg. Co., Inc. Ventilation fan. 4,510,851, Cl. 98-42.080.
Sasamoto, Tatsuya, to Kabushiki Kaisha Komatsu Seisakusho. Sprocket wheel assembly of endless track-type vehicles. 4,511,186, Cl. 305-57.000.
Sashiki, Takashi; and Sakaeda, Keiko, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus therefor. 4,511,010, Cl. 177-25.000.
Satake, Shozo, to Hitachi, Ltd. Programmable logic array, including an arrangement for invalidating faulty and term outputs. 4,511,812, Cl. 307-465.000.
Satake, Takeshi: *See*—
Saito, Noboru; Satake, Takeshi; Aoki, Ryuji; and Nagai, Isao, 4,511,671, Cl. 502-242.000.
Sato, Hidetaka: *See*—
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Sato, Hiroaki: *See*—
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Sato, Hirotsugu: *See*—
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Sato, Koji: *See*—
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Sato, Shigeru: *See*—
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Sato, Tsunehiko: *See*—
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Sato, Yasuji: *See*—
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Sattelmaier, Helmut: *See*—
Karg, Roland; and Sattelmaier, Helmut, 4,511,256, Cl. 366-165.000.
Saucier, David O., to DCI, Inc. Clean-in-place agitator assembly. 4,511,255, Cl. 366-138.000.
Sauer, Wolfgang; and Hoffmann, Wolfgang, to BASF Aktiengesellschaft. Continuous preparation of glyoxal. 4,511,739, Cl. 568-473.000.
Saurer Diederichs (Societe Anonyme): *See*—
Deborde, Albert H.; and Grandvallet, Gilles, 4,510,976, Cl. 139-435.000.
Savin Corporation: *See*—
Hori, Tatsu, 4,511,238, Cl. 355-3.0SH.
Sawano, Toshiyuki: *See*—
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Scebold, Robert A.; and Cleary, James D., to Unitek Corporation. Convertible buccal tube/bracket appliance. 4,511,331, Cl. 433-17.000.
Schantz, Raymond G., to Schantz & Sons, Inc. Tilt bed vertically storable utility trailer. 4,511,181, Cl. 298-5.000.
Schantz & Sons, Inc.: *See*—
Schantz, Raymond G., 4,511,181, Cl. 298-5.000.
Schanz, Friedrich; Schucker, Emil; Schucker, Eberhard; and Perrot, Alexander, to Perrot-Regnerbau GmbH & Co. Swivel drive for fan-jet sprinkler. 4,511,085, Cl. 239-242.000.
Schauf, Dieter; Protoschill, Klaus; Oberbach, Karl; and Depcik, Hans-Werner, to Bayer Aktiengesellschaft. Plastic wheel. 4,511,184, Cl. 301-63.0PW.
Schaumburg, Edward G.: *See*—
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LaBarge, Robert L.; Pohlenz, Elmer E.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; and Scherf, Thomas W., 4,510,860, Cl. 100-49.000.
Schering Aktiengesellschaft: *See*—
Laurent, Henry; Nickisch, Klaus; Bittler, Dieter; Wiechert, Rudolf; and Losert, Wolfgang, 4,511,565, Cl. 514-173.000.
Schering Corporation: *See*—
Smith, Elizabeth M.; Doll, Ronald J.; and Neustadt, Bernard R., 4,511,569, Cl. 514-290.000.
Scheurer, Stephen M., to Texas Recreation Corporation. Container insulation apparatus. 4,510,665, Cl. 29-460.000.
Schier, John H., Jr.; and Brooks, William E., Jr., to RCA Corporation. Modified deflection yoke coils having shootback windings. 4,511,871, Cl. 335-213.000.
Schildknecht, Albert: *See*—
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Schlage Lock Company: *See*—
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Schleier, Waldemar: *See*—
Kramer, Dieter; Pennewiss, Horst; Plainer, Hermann; Schnee, Reiner; and Schleier, Waldemar, 4,511,694, Cl. 525-54.100.
Schlitt, Leland G.; and Szoke, Abraham, to United States of America, Energy. Short pulse free electron laser amplifier. 4,511,850, Cl. 330-4.300.
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Guidry, Shelby L.; and DeCuir, Perry J., Sr., 4,510,797, Cl. 73-151.000.
Moran, James H.; and Rau, Rama N., 4,511,842, Cl. 324-338.000.
Thoraval, Yvon, 4,511,843, Cl. 324-338.000.
Schmale, Peter C.: *See*—
Van der Valk, Nicolaas J. L.; Moelands, Antonius G.; and Schmale, Peter C., 4,511,915, Cl. 358-17.000.
Schmanski, Donald W., to Carsonite International Corporation. Road-surface mountable delineator support member. 4,511,281, Cl. 404-10.000.
Schmid, Eduard; and Hoppe, Manfred, to Ems-Inventa AG. Flame retardant polyamides and agent for inducing flame retardancy. 4,511,684, Cl. 524-101.000.
Schmid, Helmut: *See*—
Jager, Theo; and Schmid, Helmut, 4,510,831, Cl. 83-157.000.
Schmidt, Glenn H. Reinforced hollow metal golf club head. 4,511,145, Cl. 273-167.00H.
Schmidt, Lawrence R.; and Lovgren, Eric M., to General Electric Company. Liquid monomer feed pipe for continuous extrusion polymerization. 4,511,535, Cl. 422-137.000.
Schmidt, Michael J.: *See*—
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Schmidt, Paul H.: *See*—
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Schmied, Helmut: *See*—
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Schmit, Patrick: *See*—
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Schmitz, William E., to Westinghouse Electric Corp. Stepper motor door control apparatus and method. 4,511,832, Cl. 318-685.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. Clear analgesic gels with reduced tackiness. 4,511,563, Cl. 514-162.000.
Schnee, Reiner: *See*—
Kramer, Dieter; Pennewiss, Horst; Plainer, Hermann; Schnee, Reiner; and Schleier, Waldemar, 4,511,694, Cl. 525-54.100.
Schoenrock, Karlheinz W., to Amalgamated Sugar Company, The. Method for preventing compaction in sorbent beds. 4,511,476, Cl. 210-678.000.
Schofield, John, to U.S. Philips Corporation. Acoustic surface wave device including a reflective multistrip coupler. 4,511,867, Cl. 333-195.000.
Schour, Avi; and Bloch, Igal, to H. H. Brown Shoe Co., Inc. Athletic shoe and counter. 4,510,701, Cl. 36-68.000.
Schramm, George W.: *See*—
Fulcomer, Emanuel J., Jr.; Nici, Richard J.; Poteat, Vance E.; Schramm, George W.; Sharp, John B.; and Winseck, Michael M., Jr., 4,512,016, Cl. 370-110.100.
Nici, Richard J.; Schramm, George W.; and Sharp, John B., 4,512,017, Cl. 370-110.100.
Schreyer, Fritz: *See*—
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Schrock, Clifford B., to C-Cor Labs, Inc. Remote level adjustment system for use in a multi-terminal communications system. 4,512,033, Cl. 455-2.000.
Schrodter, Klaus; and Maurer, Alexander, to Hoechst Aktiengesellschaft. Linear, substantially water-insoluble ammonium polyphosphates and process for making them. 4,511,546, Cl. 423-305.000.
Schron, Jack H.; and Seidel, Lawrence H., to Jergens, Inc. Hydraulic-mechanical clamping device. 4,511,127, Cl. 269-32.000.

Schuck, Helmut: *See*—
Forster, Karl-Heinz; Schuck, Helmut; Johne, Hans; and Jentzsch, Arndt, 4,510,867, Cl. 101-365.000.
Schucker, Eberhard: *See*—
Schanz, Friedrich; Schucker, Emil; Schucker, Eberhard; and Perrot, Alexander, 4,511,085, Cl. 239-242.000.
Schucker, Emil: *See*—
Schanz, Friedrich; Schucker, Emil; Schucker, Eberhard; and Perrot, Alexander, 4,511,085, Cl. 239-242.000.
Schuettpelz, Daryl, to C.R.O. Inc. Punch marker height control. 4,511,977, Cl. 364-475.000.
Schuler, John G.; and Lingenfelter, Lowell R., to Teledyne Industries, Inc. Printed circuit board connector with integral ground plane. 4,511,196, Cl. 339-14.00R.
Schulties, Joseph R.: *See*—
Meuschke, Robert E.; and Schulties, Joseph R., 4,511,499, Cl. 252-626.000.
Schumacher, Gerald F., to Minnesota Mining and Manufacturing Company. One-part moisture-curable polyurethane adhesive, coating, and sealant compositions. 4,511,626, Cl. 428-425.600.
Schurr, Heinrich: *See*—
Dittner, Adam; Schurr, Heinrich; and Von Wallenberg, Ducius, 4,511,971, Cl. 364-426.000.
Schuster, Wilhelm: *See*—
Jovy, Herbert; and Schuster, Wilhelm, 4,510,629, Cl. 4-332.000.
Schutten, Herman P.: *See*—
Benjamin, James A.; and Schutten, Herman P., 4,511,818, Cl. 310-338.000.
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Vollbrecht, Heinz-Rudiger; Schutz, Erwin; and Sandner, Klaus, 4,511,508, Cl. 426-665.000.
Schwabe, Ulrich; Neppl, Franz; and Hieber, Konrad, to Siemens Aktiengesellschaft. Method for the manufacture of integrated MOS-field effect transistor circuits silicon gate technology having diffusion zones coated with silicide as low-impedance printed conductors. 4,510,670, Cl. 29-571.000.
Schwanbom, Erik: *See*—
Wendt, Michael; and Schwanbom, Erik, 4,510,933, Cl. 128-207.140.
Schwankl, Rose M. Magnetically attached storm windows and the like. 4,510,986, Cl. 160-354.000.
Schwartz, Jack; and Wu, Tai T. Method and apparatus for evaluation of color information in photographic processes. 4,511,229, Cl. 354-20.000.
Schwarz, Karl-Heinz: *See*—
Heck, Gunter; Lienerth, Aladar; Malow, Egon; Schwarz, Karl-Heinz; and Faust, Uwe, 4,511,437, Cl. 203-19.000.
Schwarzler, Peter: *See*—
Habeck, Reinhold; Mackiol, Norbert; Mautner, Franz; and Schwarzler, Peter, 4,510,871, Cl. 105-167.000.
Schweiger, Erwin; Starmuehler, Erwin; and Temmesfeld, Axel, to Bayerische Motoren Werke AG. Cooling circuit for internal combustion engines. 4,510,893, Cl. 123-41.020.
Schweizer, Ernst: *See*—
Gallay, Jean J.; and Schweizer, Ernst, 4,511,567, Cl. 514-253.000.
SCM Corporation: *See*—
Abbey, Kirk J.; and Kunz, Barbara L., 4,511,446, Cl. 204-181.00C.
Percel, Phillip J.; and Perkins, Douglas W., 4,511,584, Cl. 426-99.000.
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Scott, Edward. Bicycle brake mechanism. 4,511,018, Cl. 188-24.120.
Scully, Charles N., to United States of America, Air Force. Laser target speckle eliminator. 4,511,220, Cl. 350-403.000.
Sea-Land Industries, Inc.: *See*—
van Iperen, Willem H. P., 4,510,652, Cl. 24-68.0CD.
Seaward, William S.: *See*—
Ashbee, William H.; Janssen, Donovan M.; Martin, Ronald J.; and Seaward, William S., 4,511,242, Cl. 355-14.00C.
Seeq Technology, Inc.: *See*—
Gupta, Anil, 4,511,811, Cl. 307-463.000.
Seguenot, Gabriel, to Societe Nouvelle Auxim (Societe Anonyme). Device providing an effective seal for a spherical rotary slide valve. 4,511,150, Cl. 277-12.000.
Seidel, Lawrence H.: *See*—
Schron, Jack H.; and Seidel, Lawrence H., 4,511,127, Cl. 269-32.000.
Seifert, William F. C.: *See*—
Stone, Carroll E.; and Seifert, William F. C., 4,511,545, Cl. 423-240.000.
Seimiya, Ryubun; Tarumi, Noriyoshi; Kokiso, Masakazu; and Tsuchiya, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Intermediate transfer member for transferring toner image on a carrier. 4,511,622, Cl. 428-323.000.
Seite, Claude; Commereuc, Dominique; and Chauvin, Yves, to Institut Francais du Petrole. Process for homologating alcohols through the intermediate production of ketals with cobalt carbonyl complexes as catalysts. 4,511,743, Cl. 568-814.000.
Sekizawa, Hidekazu; Iwamoto, Akito; Togashi, Kousaku; and Fujie, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha; and Toshiba Machine Co., Ltd. Apparatus for measuring the area of image portion of image-bearing member. 4,510,866, Cl. 101-365.000.
Sella, Claude; Tran-Khanh, Vien; and Martin, Jean-Claude, to Centre National de la Recherche Scientifique. Devices for preparing substrates coated with a thin layer of platinum oxide and substrates so coated. 4,511,451, Cl. 204-298.000.
Semanko, Mark. Method and apparatus for tying balloons and the like. 4,510,653, Cl. 24-131.00C.
Semrow, Carolyn M.; Kolstedt, Mark W.; and Dunn, William J., to Kendall Company, The. Temperature, pulse and respiration mouthpiece probe. 4,510,941, Cl. 128-671.000.
Sephton, Hugo H. Feed distribution method for vertical tube evaporation. 4,511,432, Cl. 159-47.100.
Seragnoli, Enzo, to G.D. Societa Per Azioni. Device for transferring and verifying batches of cigarettes. 4,511,045, Cl. 209-535.000.
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; and Farquharson, Graeme J., to ICI Australia Limited. Cyclohexane-1,3-dione derivatives and their herbicidal compositions and methods. 4,511,391, Cl. 71-88.000.
Serev, Peter G.; and Bogin, Roger M., to C & A Products, Inc. Programmable limit switch system using a resolver-to-digital angle converter. 4,511,884, Cl. 340-347.0SY.
Seshimo, Yu: *See*—
Komatsu, Fumiaki; Saegusa, Kazuyuki; Seshimo, Yu; and Yamashita, Norio, 4,510,767, Cl. 62-200.000.
Shah, Mahesh, to Northern Telecom Limited. Key telephone system signalling and control arrangement. 4,511,766, Cl. 179-99.00A.
Shah, Mahesh: *See*—
Wetzel, David L.; and Shah, Mahesh, 4,511,767, Cl. 179-99.00A.
Shah, Nutan B., to Richardson-Vicks Inc. Method of cleaning dentures using aerated foams. 4,511,486, Cl. 252-90.000.
Shah, Shirish M., to Orr Felt Company, The. Method of marking papermakers' felt by transfer printing. 4,511,361, Cl. 8-471.000.
Shaken Co., Ltd.: *See*—
Fukuda, Shinichiro, 4,511,893, Cl. 340-747.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Copolymers of a 4,4'-(ethylenedioxy)bis benzoate, an alkylene diol and a (2-alkenyl or alkyl) succinic anhydride. 4,511,706, Cl. 528-192.000.
Shank, Brian E., to Kerr Glass Manufacturing Corporation. Tamper-evident closure and method of manufacture. 4,511,054, Cl. 215-252.000.
Shapiro, Eugene; and Mandigo, Frank N., to Olin Corporation. Copper-tin alloys having improved wear properties. 4,511,410, Cl. 148-13.200.
Sharp, John B.: *See*—
Fulcomer, Emanuel J., Jr.; Nici, Richard J.; Poteat, Vance E.; Schramm, George W.; Sharp, John B.; and Winseck, Michael M., Jr., 4,512,016, Cl. 370-110.100.
Nici, Richard J.; Schramm, George W.; and Sharp, John B., 4,512,017, Cl. 370-110.100.
Sharp Kabushiki Kaisha: *See*—
Hara, Takafumi, 4,511,906, Cl. 346-140.00R.
Miyamae, Ryuichi; and Yasuda, Haruo, 4,510,942, Cl. 128-680.000.
Miyamae, Ryuichi, 4,510,943, Cl. 128-680.000.
Mochizuki, Daisuke; Ohnishi, Souichi; and Komai, Kensaku, 4,512,027, Cl. 377-16.000.
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,511,891, Cl. 340-734.000.
Nishiyama, Haruo, 4,511,246, Cl. 355-75.000.
Sumitani, Toshihiko; and Komeda, Kenichiro, 4,511,138, Cl. 273-1.00E.
Takamatsu, Toshiaki; and Nonomura, Keisaku, 4,511,217, Cl. 350-336.000.
Shedigian, Vandos, to Emhart Industries, Inc. Aromatic dielectric fluid for a capacitor. 4,511,949, Cl. 361-319.000.
Sheh, Chen-Piau. Fishing scaling apparatus. 4,510,644, Cl. 17-64.000.
Shell Oil Company: *See*—
Durbin, Daniel P.; and Korcz, William H., 4,511,696, Cl. 525-92.000.
Hasenack, Hendrikus J. A., 4,510,874, Cl. 110-347.000.
Heinerman, Jacobus J. L., 4,511,752, Cl. 585-739.000.
Sherwin, Dewayne J., to Coburn Optical Industries, Inc. Lens finishing apparatus. 4,510,717, Cl. 51-58.000.
Shibata, Keiichi: *See*—
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.
Shibuya, Masanobu: *See*—
Kawabata, Susumu; Inoue, Tetsuzo; Miyamoto, Noriaki; Shibuya, Masanobu; and Kaneko, Masashi, 4,510,745, Cl. 57-415.000.
Shibuya, Tsunenori: *See*—
Ishizuka, Yutaka; and Shibuya, Tsunenori, 4,511,313, Cl. 417-270.000.
Shigaki, Masanobu, to Kabushiki Kaisha Takuma. Stoker type firing equipment for use with city refuse incinerator. 4,510,873, Cl. 110-289.000.
Shigenobu, Michio: *See*—
Takahashi, Tohru; Tajima, Hatsuo; Shigenobu, Michio; and Washiyama, Shigemichi, 4,511,778, Cl. 219-10.55A.
Shils, Alan J.; and Ianni, John P., Jr., to International Business Machines Corporation. Laser written chip identification method. 4,510,673, Cl. 29-574.000.
Shim, Joosup, to Mobil Oil Corporation. Multifunctional additives. 4,511,481, Cl. 252-32.500.
Shima Idea Center Co., Ltd.: *See*—
Shima, Masahiro, 4,510,775, Cl. 66-77.000.
Shima, Masahiro, to Shima Idea Center Co., Ltd. Flat knitting machine capable of changing stitch density. 4,510,775, Cl. 66-77.000.
Shimada, Satoshi; Murayama, Ken; Kobori, Shigeyuki; and Kawakami, Kanji, to Hitachi, Ltd.; and Hitachi Const. Mach. Company. Pressure sensor with improved semiconductor diaphragm. 4,511,878, Cl. 338-4.000.

Shimadzu Corporation: *See—*
Ideno, Eizo; Fukushi, Shinichi; Tai, Masahiko; Nakazawa, Koji; and Fujita, Toshihito, 4,511,095, Cl. 242-18.00G.
Komoto, Akira, 4,511,883, Cl. 340-347.0AD.

Shimizu, Katsumi: *See—*
Natori, Takeshi; Kobayashi, Yoji; Watanabe, Shigetaka; Shimizu, Katsumi; Matsumura, Ikuei; Namekawa, Yoshihiro; and Miyanaga, Satoshi, 4,510,974, Cl. 138-137.000.

Shimizu, Mutsuhiro: *See—*
Fujimoto, Terunori; Shimizu, Nobuyoshi; Shimizu, Mutsuhiro; Yanagihara, Kazunori; Miyachi, Akio; and Inui, Tsuneo, 4,511,631, Cl. 428-632.000.

Shimizu, Nobuyoshi: *See—*
Fujimoto, Terunori; Shimizu, Nobuyoshi; Shimizu, Mutsuhiro; Yanagihara, Kazunori; Miyachi, Akio; and Inui, Tsuneo, 4,511,631, Cl. 428-632.000.

Shimomura, Hiroshi; and Arai, Tatsuo, to Mitsubishi Kinzoku Kabushiki Kaisha. Insert cutter. 4,511,293, Cl. 407-41.000.

Shimomura, Takatoshi; Fujita, Fumio; and Hirakawa, Manabu, to Sumitomo Chemical Company, Limited. Process for producing semipermeable membrane. 4,511,711, Cl. 528-489.000.

Shimozi, Kozi; and Teshima, Hitoshi, to Toyota Jidosha Kabushiki Kaisha. Catalytic converter secondary air supply pipe support. 4,511,536, Cl. 422-171.000.

Shin, Chung T.: *See—*
Geria, Navin; and Shin, Chung T., 4,511,554, Cl. 424-65.000.

Shin, Kju H., to Ethyl Corporation. Method of preparing adenine. 4,511,716, Cl. 544-277.000.

Shinder, Ilya E.: *See—*
Khramtsov, Alexandr A.; Tsyrkin, Mikhail I.; and Shinder, Ilya E., 4,510,849, Cl. 91-515.000.

Shinohara, Hironobu; Yamahara, Noboru; and Yoshida, Yoshinori, to Japan Synthetic Rubber Co., Ltd. Sulfonic acid compound having cyclopentadiene skeleton and composition comprising same and cement. 4,511,683, Cl. 524-3.000.

Shinohara, Isao, to Matsushita Electric Industrial Co., Ltd. Cassette tape recorder. 4,511,939, Cl. 360-93.000.

Shinohara, Takanobu: *See—*
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.

Shinoura, Osamu: *See—*
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.

Shionogi & Co., Ltd.: *See—*
Morihara, Kazuyuki; Oka, Tatsushi; and Tsuzuki, Hiroshige, 4,511,505, Cl. 260-112.700.
Tokuyama, Kanji; Nishitani, Yasuhiro; Tanaka, Mamoru; and Nagata, Wataru, 4,511,738, Cl. 568-14.000.

Shiozaki, Tsugio: *See—*
Miyazaki, Naoki; Horiya, Keiichi; Shiozaki, Tsugio; and Takahama, Kazuhide, 4,511,903, Cl. 346-76.0PH.

Shipley Company Inc.: *See—*
Orio, Alfred P.; Levy, Leonard R.; and Gulla, Michael, 4,511,403, Cl. 106-1.220.

Shirahata, Kunikatsu: *See—*
Tomita, Fusao; Tamaoki, Tatsuya; Shirahata, Kunikatsu; Iida, Takao; Morimoto, Makoto; and Fujimoto, Kazuhisa, 4,511,560, Cl. 514-27.000.

Shirahata, Ryuji: *See—*
Yanai, Akio; and Shirahata, Ryuji, 4,511,594, Cl. 427-38.000.

Shopsmith, Inc.: *See—*
Bartlett, Robert L.; and McKee, Robert N., 4,510,980, Cl. 144-1.00C.

Shu, Paul: *See—*
Yan, Tsoung Y.; and Shu, Paul, 4,511,459, Cl. 208-127.000.

Shur, Barry D., to University Patents, Inc. Alpha-lactalbumin contraceptive. 4,511,558, Cl. 514-8.000.

Sibert, Frank. Electric stove pipe space heater. 4,511,787, Cl. 219-374.000.

Siedle, Allen R.: *See—*
Palensky, Frederick J.; and Siedle, Allen R., 4,511,715, Cl. 544-225.000.

Siemek, Stanislaw. Hamburger holder. 4,511,039, Cl. 206-525.000.

Siemens Aktiengesellschaft: *See—*
Binz, Reiner; and Pointner, Norbert, 4,512,014, Cl. 370-84.000.
Bromme, Irmfried; Brunner, Reinhold; and Reimer, Heinz, 4,511,993, Cl. 364-900.000.
Eggers, Harald, 4,510,678, Cl. 29-590.000.
Franetzki, Manfred; and Prestele, Karl, 4,511,355, Cl. 604-131.000.
Jacobs, Erwin, 4,511,996, Cl. 365-186.000.
Knott, Joseph; and Kopp, Walter, 4,511,639, Cl. 430-108.000.
Mahrla, Peter, 4,511,912, Cl. 357-36.000.
Moeller, Matthias; and Kausche, Helmold, 4,511,756, Cl. 136-258.000.
Pohlig, Dietmar; and Goepel, Ernst, 4,511,797, Cl. 250-231.0SE.
Reng, Leonhard, 4,511,978, Cl. 364-480.000.
Schwabe, Ulrich; Neppl, Franz; and Hieber, Konrad, 4,510,670, Cl. 29-571.000.

Siemens Corporate Research & Support, Inc.: *See—*
Stockdale, Robert, 4,511,762, Cl. 179-9.000.
Vander Meiden, Orrie J., 4,512,026, Cl. 375-114.000.

Sigmatron Associates: *See—*
Rustomji, Sam H., 4,511,599, Cl. 427-66.000.

Silentnight Holdings PLC: *See—*
Woffendin, Arnold, 4,510,635, Cl. 5-247.000.

Sillion, Bernard: *See—*
Denis, Jacques; Sillion, Bernard; Damin, Bernard; and Leger, Robert, 4,511,369, Cl. 44-62.000.

Simm, Manfred: *See—*
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,511,619, Cl. 428-215.000.

Simpson, Grainger I., Jr.: *See—*
Huerta, Jose L.; Rachui, Roy A.; Roberts, James E.; and Simpson, Grainger I., Jr., 4,511,135, Cl. 271-126.000.

Simpson, James E.: *See—*
Bucksbaum, Arnold M.; and Simpson, James E., 4,511,779, Cl. 219-10.55E.

Simpson, Loran R.: *See—*
Barton, Delmar O.; and Simpson, Loran R., 4,511,130, Cl. 270-54.000.

Sims, Dewey M., Jr., to Northern Telecom Inc. Switch and optical sensor assembly for recorder. 4,511,936, Cl. 360-69.000.

Singer Company, The: *See—*
Fortunato, Alfred R.; Millard, Maurice; and Trzeciak, John R., 4,511,337, Cl. 434-43.000.

Singer, Mark: *See—*
Brenman, Henry S.; Katz, Philip; and Singer, Mark, 4,510,939, Cl. 128-639.000.

Sitte, Helmuth; Cooper, Terry W.; and Kleber, Heinrich, to C. Reichert Optische Werke, AG. Microtome with specimen illumination system. 4,511,224, Cl. 350-523.000.

SKF GmbH: *See—*
Walter, Lothar; and Reith, Walter, 4,511,188, Cl. 308-6.00C.

SKF Industrial Trading & Development Co., B.V.: *See—*
Vermeiren, Karel N.; and Dolfsma, Hendrik, 4,511,837, Cl. 324-61.00R.

SKF Kugellagerfabriken GmbH: *See—*
Glock, Alfred, 4,510,645, Cl. 19-0.250.
Hans, Rudiger; and Brandenstein, Manfred, 4,511,192, Cl. 384-543.000.
Kintzel, Gerhard; and Heilmann, Edmund, 4,510,829, Cl. 82-36.00R.
Winkler, Otmar, 4,511,345, Cl. 464-145.000.

Skidanenko, Constatine V.; and McGibbon, Gregor D., to GTE Communication Systems Corporation. Floating dc current source for a subscriber loop circuit. 4,511,763, Cl. 179-16.0AA.

Skutnik, Bolesh J., to Ensign-Bickford Industries, Inc. Composition having improved optical qualities. 4,511,209, Cl. 350-96.340.

SKW Trostberg AG: *See—*
Vollbrecht, Heinz-Rudiger; Schutz, Erwin; and Sandner, Klaus, 4,511,508, Cl. 426-665.000.

Slater, Glenn L.: *See—*
Fowles, Thomas A.; Slater, Glenn L.; and Winchell, David A., 4,511,529, Cl. 264-515.000.

Slee, Roger H., to AE PLC. Pistons for internal combustion engines. 4,510,895, Cl. 123-48.00B.

Small, Edward A., to British American Bank Note Inc. Plastic identification card having forgery protection with respect to embossed information. 4,511,908, Cl. 346-206.000.

Small, Richard D., Jr.: *See—*
Ors, Jose A.; and Small, Richard D., Jr., 4,511,757, Cl. 174-68.500.

Smiley, Harry; and Blechman, Abraham, to Medical Magnetics, Inc. Integrated oral magnetic osteogenic appliances. 4,511,330, Cl. 433-18.000.

Smith, Craig A., to Xerox Corporation. Time to completion interaction for a copier. 4,511,243, Cl. 355-14.0CU.

Smith, Donald R.: *See—*
Boyd, Mary G.; Smith, Donald R.; Imondi, Peter F.; Hiatt, Norman A.; Bauer, Fritz E.; Anemaet, John M.; and MacKenzie, Alfred K., 4,511,425, Cl. 156-493.000.

Smith, Elizabeth M.; Doll, Ronald J.; and Neustadt, Bernard R., to Schering Corporation. Tricyclic lactams and derivatives useful in increasing cardiac contractility. 4,511,569, Cl. 514-290.000.

Smith, Gary F.: *See—*
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., 4,511,693, Cl. 525-67.000.

Smith, Gerald Z., Jr.: *See—*
Smith, R. Scott; and Smith, Gerald Z., Jr., 4,511,753, Cl. 585-856.000.

Smith International, Inc.: *See—*
Geczy, Bela A., 4,511,193, Cl. 384-611.000.

Smith, Michael J.: *See—*
Park, George; Smith, Michael J.; and Carrington, Harry, 4,511,194, Cl. 312-12.000.

Smith, R. Scott; and Smith, Gerald Z., Jr., to Ethyl Corporation. Selective removal of vinylidene olefin from olefin mixtures. 4,511,753, Cl. 585-856.000.

Smith, Richard: *See—*
Alexander, Edward N.; and Smith, Richard, 4,511,463, Cl. 209-166.000.

Smith, Ronald L.: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 4,510,642, Cl. 15-231.000.

Smith, Stanley W.: *See—*
Vogel, Wolfgang M.; and Smith, Stanley W., 4,511,636, Cl. 429-41.000.

SMS-Schloemann Siemag AG: *See—*
Rommen, Hans; and Frosch, Hans, 4,510,783, Cl. 72-200.000.

Snyder, Daniel S.; and Benincasa, Timothy C., to Imperial Clevite Inc. Radio circuit tuned by adjustably deforming an inductance coil. 4,511,869, Cl. 334-20.000.
Snyder General Corporation: *See—*
Hoeffken, Russell W., 4,510,660, Cl. 29-157.30D.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Padly, Yvan; and Borgeaud, Roger, 4,511,589, Cl. 426-521.000.
Societe Generale pour les Techniques Nouvelles S.G.N.: *See—*
Guilloteau, Rene , 4,510,832, Cl. 83-168.000.
Guilloteau, Rene , 4,511,500, Cl. 252-633.000.
Societe Lyonnaise des Applications Catalytiques: *See—*
Lacroix, Alain, 4,511,326, Cl. 431-53.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Caye, Paul D.; Jamain, Patrice C.; and Weisser, Bernard G., 4,511,190, Cl. 308-10.000.
Societe Nouvelle Auxim (Societe Anonyme): *See—*
Seguenot, Gabriel, 4,511,150, Cl. 277-12.000.
Societe Nouvelle des Etablissements Dervaux: *See—*
Saint-Prix, Robert; and Montmartin, Henri, 4,511,280, Cl. 403-274.000.
Societe pour l'Etude et la Fabrication de Circuits: *See—*
Brice, Jean-Michel, 4,512,029, Cl. 377-33.000.
Soda Aromatic Company, Limited: *See—*
Matumoto, Yuuichi, 4,511,496, Cl. 252-522.00A.
Soderstrom, Sigvard V., to Aktiebolaget Electrolux. Activating apparatus in a liquid conveying system operated by vacuum, preferably a so-called vacuum sewage system. 4,511,117, Cl. 251-73.000.
Softal GmbH, Firma: *See—*
Kuhlmann, Heinz; and Prinz, Eckhard, 4,511,419, Cl. 156-272.600.
Sohio Alternate Energy Development Company: *See—*
Mark, Seymour, 4,511,365, Cl. 44-51'.000.
Sohnemann, Richard, to Continental Gummi-Werke Aktiengesellschaft. Rubber mixture for direct bonding to metal surfaces. 4,511,697, Cl. 525-139.000.
Sokorai, Agnes: *See—*
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay, Aranka; Vigh, Zoltan; and Sokorai, Agnes, 4,511,737, Cl. 564-257.000.
Solarex Corporation: *See—*
Leas, James M., 4,511,600, Cl. 427-75.000.
Somerville, William M., to Northern Engineering Industries plc. Electrical generator control system. 4,511,807, Cl. 290-44.000.
Son, Tae W.: *See—*
Yoon, Han S.; and Son, Tae W., 4,511,623, Cl. 428-359.000.
Sone, Masazumi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,510,915, Cl. 123-620.000.
Sonics Research Corporation: *See—*
Colomb, Denis G., 4,511,928, Cl. 358-280.000.
Sony Corporation: *See—*
Guerrero, Manuel A., 4,511,937, Cl. 360-72.100.
Hamada, Osamu, 4,511,966, Cl. 364-200.000.
Ida, Mitsuru, 4,511,941, Cl. 360-105.000.
Kimura, Shuichi; and Katsuyama, Akira, 4,512,003, Cl. 369-45.000.
Nonaka, Chiaki, 4,512,004, Cl. 369-45.000.
Ohira, Takao; Okihara, Daijiro; and Niiro, Makoto, 4,511,934, Cl. 360-55.000.
Saito, Etsuro, 4,511,944, Cl. 360-133.000.
Soroi, Kazunori: *See—*
Nagato, Yoshio; and Soroi, Kazunori, 4,511,665, Cl. 501-96.000.
Sorrentino, Anthony A. Window-type air conditioner mounting assembly. 4,510,852, Cl. 98-94.200.
Soum, Rene P. Prestressed cable anchorage system. 4,510,723, Cl. 52-223.00R.
Southern Research Institute: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,511,721, Cl. 546-308.000.
Sovonics Solar Systems: *See—*
Izu, Masatsugu; and Cannella, Vincent D., 4,510,674, Cl. 29-574.000.
Izu, Masatsugu; and Cannella, Vincent D., 4,510,675, Cl. 29-574.000.
Span, Francis J.; Boland, Aloysius T. M.; and van Laarhoven, Albertus J. A. J., to U.S. Philips Corporation. Clamping mechanism. 4,511,275, Cl. 403-33.000.
Spang Industries Inc.: *See—*
Olmsted, Robert W.; and Huth, Joseph F., III, 4,511,872, Cl. 336-83.000.
Spatz, Gunter: *See—*
Brandes, Carlos E.; and Spatz, Gunter, 4,511,053, Cl. 215-252.000.
Spector, George: *See—*
Beasley, Gary; and Spector, George, 4,510,697, Cl. 34-1.000.
Speedco, Incorporated: *See—*
Estes, Donald C., 4,510,883, Cl. 118-305.000.
Spencer, Joseph, to Cardiac Recorders Limited. Cardiac defibrillator. 4,510,935, Cl. 128-419.00D.
Sperry Corporation: *See—*
Campbell, Willis R.; and Blanshine, Allison W., 4,510,861, Cl. 100-88.000.
Decoene, Frans J. G. C.; Strubbe, Gilbert J. I.; and Todd, Robert R., 4,510,946, Cl. 130-27.00T.
Dekeyzer, Marcel A., 4,510,948, Cl. 130-27.00R.
Devriese, Thierry E. G., 4,510,947, Cl. 130-27.00B.
Fedde, George A.; and Kirk, Kenneth H., 4,510,683, Cl. 29-701.000.
Grothe, Steven P., 4,511,892, Cl. 340-739.000.
Witalka, Jerome J.; Buettner, Howard L.; and Ellsworth, James G., 4,511,967, Cl. 364-200.000.
Witdoek, Daniel C.; and Dhont, Andre G. J., 4,511,348, Cl. 474-109.000.
Spiegel, Martin A.; and Roberts, Franklin D., to Mr. Gasket Company. Steel wheel with decorative cover. 4,511,183, Cl. 301-37.00S.
Spielau, Paul: *See—*
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,511,619, Cl. 428-215.000.
Spinnett, Raymond G., to KDI American Products, Inc. Anti-backflow valve for therapy tubs and the like. 4,510,967, Cl. 137-389.000.
Spirk, John W., Jr.; and Nottingham, John R. Animated coin sorting bank. 4,511,341, Cl. 446-9.000.
SSP Pumps Limited: *See—*
Ellis, Bryan E., 4,511,316, Cl. 418-150.000.
Stafford, Rita A.: *See—*
Garley, Anthony M.; and Stafford, Rita A., 4,510,876, Cl. 112-262.100.
Stahl, G. Allan: *See—*
Horton, Robert L.; and Stahl, G. Allan, 4,511,677, Cl. 521-28.000.
Stahly, Barbara C.: *See—*
Stahly, G. Patrick; and Stahly, Barbara C., 4,511,729, Cl. 560-020.000.
Stahly, G. Patrick; and Stahly, Barbara C., to Ethyl Corporation. Nucleophilic substitution process. 4,511,729, Cl. 560-020.000.
Standard Oil Company, The: *See—*
Attig, T. G.; and Grasselli, R. K., 4,511,548, Cl. 423-376.000.
Bonny, Alan, 4,511,454, Cl. 208-10.000.
Standard Oil Company (Indiana): *See—*
Fields, Ellis K., 4,511,730, Cl. 560-033.000.
Vasalos, Iacovos, 4,511,434, Cl. 202-99.000.
Standley, Paul M., to Dayco Corporation. Endless power transmission belt construction and method and apparatus for making the same. 4,511,521, Cl. 264-24.000.
Stanislowski, Anna G.; and Wiersema, Richard J., to Clorox Company, The. Cooperative enzymes comprising alkaline or mixtures of alkaline and neutral proteases without stabilizers. 4,511,490, Cl. 252-174.120.
Stanuch, Edward S., to Federal Signal Corporation. Twin oscillating light. 4,511,880, Cl. 340-84.000.
Starmuehler, Erwin: *See—*
Schweiger, Erwin; Starmuehler, Erwin; and Temmesfeld, Axel, 4,510,893, Cl. 123-41.020.
Stauffer Chemical Co.: *See—*
Felix, Raymond A., 4,511,394, Cl. 71-105.000.
Steer, John E., to Allied Corporation. Master cylinder. 4,510,753, Cl. 60-578.000.
Stefani, Giancarlo: *See—*
Suciu, George D.; Stefani, Giancarlo; and Fumagalli, Carlo, 4,511,670, Cl. 502-209.000.
Steigerwald, Carl J., to Kendall Company, The. Liquid drainage system with a guidable valve element. 4,511,357, Cl. 604-323.000.
Stein, Volkhard: *See—*
Eisele, Hermann; and Stein, Volkhard, 4,510,908, Cl. 123-449.000.
Steiner, Eginhard: *See—*
Boger, Manfred; Ehrenfreund, Josef; Martin, Pierre; and Steiner, Eginhard, 4,511,571, Cl. 514-351.000.
Steininger, David A., to Electric Power Research Institute, Inc. Method of cleaning corroded metal articles by induction heating. 4,511,407, Cl. 134-1.000.
Stellram GmbH: *See—*
Grunsky, Manfred; Sussmuth, Reiner; and Ischen, Gunter, 4,511,294, Cl. 408-232.000.
Stensland, Leif: *See—*
Thylen, Lars; Stensland, Leif; and Arvidsson, Gunnar, 4,511,206, Cl. 350-96.110.
Stephens, Howard P.: *See—*
Dosch, Robert G.; Stephens, Howard P.; and Stohl, Frances V., 4,511,455, Cl. 208-10.000.
Stephenson, David J., to Johnson Matthey Public Limited Company. Recovery of precious metal. 4,511,539, Cl. 422-311.000.
Sterling, Robert E., to Medical Research Associates, Ltd. Hydrocarbon block copolymer with dispersed polysiloxane. 4,511,354, Cl. 604-98.000.
Stern, Allen M.: *See—*
Godfrey, Steven W.; Stern, Allen M.; and MacGregor, Fran W., 4,511,111, Cl. 248-459.000.
Stern, Howard K.: *See—*
Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,511,252, Cl. 356-375.000.
Sternberg, Walter; Schreyer, Fritz; and Ruth, Ursula, to NUKEM GmbH. Method for distinguishing between interfering signals and signals indicating defects of workpieces during ultrasonic testing. 4,510,811, Cl. 73-611.000.
Sterner, Carl L. Pothole patcher. 4,511,284, Cl. 404-111.000.
Stewart, David B.: *See—*
Preston, Edward G.; and Stewart, David B., 4,510,949, Cl. 131-109.00R.
Stockdale, Robert, to Siemens Corporate Research & Support, Inc. Overload detection and control system for a telecommunications exchange. 4,511,762, Cl. 179-9.000.
Stohl, Frances V.: *See—*
Dosch, Robert G.; Stephens, Howard P.; and Stohl, Frances V., 4,511,455, Cl. 208-10.000.
Stol, Israel, to Invocas, Inc. Anchor bolt with mechanical keys deployed by internal pressurization. 4,511,296, Cl. 411-20.000.
Stone, Carroll E.; and Seifert, William F. C., to American Engineering Group International, Inc. Process for treating overspray gas from

glass coating operation with metal recovery. 4,511,545, Cl. 423-240.000.

Stork Brabant B.V.: *See—*
Blaak, Cornelis; and van Mondfrans, Gerardus H., 4,510,863, Cl. 101-119.000.

Stork PMT B.V.: *See—*
van Mil, Martinus P. G., 4,510,886, Cl. 119-82.000.

Strait, Richard T.: *See—*
Sabatino, Anthony; Schaumburg, Edward G.; Recht, Peter A.; Olszewski, Douglas J.; and Strait, Richard T., 4,510,682, Cl. 29-623.100.

Strangward, William J., to Langenau Manufacturing Company, The. Method and apparatus of making double reverse corrugated material. 4,510,786, Cl. 72-326.000.

Strautz, Michael G.: *See—*
Baker, Paul A.; and Strautz, Michael G., 4,511,201, Cl. 339-75.0MP.

Street, Norman: *See—*
Henderson, Deborah; and Street, Norman, 4,510,931, Cl. 128-202.280.

Strohschein, Rudy. Non-flooding distilling column. 4,511,435, Cl. 202-158.000.

Strombecker Corporation: *See—*
Ehrlich, Joseph R., 4,511,497, Cl. 252-542.000.

Stromvall, Sten K.: *See—*
Kohler, Hans O.; and Stromvall, Sten K., 4,511,917, Cl. 358-84.000.

Strubbe, Gilbert J. I.: *See—*
Decoene, Frans J. G. C.; Strubbe, Gilbert J. I.; and Todd, Robert R., 4,510,946, Cl. 130-27.00T.

Stuart, James G.: *See—*
Bucha, Robert M.; Dzermejko, Albert J.; and Stuart, James G., 4,511,264, Cl. 374-135.000.

Studtmann, George H., to Borg-Warner Corporation. Control and stabilizing system for damperless synchronous motor. 4,511,834, Cl. 318-700.000.

Studtmann, George H., to Borg-Warner Corporation. Voltage-controlled, inverter-motor system. 4,511,835, Cl. 318-700.000.

Stutz, Hansruedi, to Loepfe Brothers Limited. Electronic scanner for monitoring running threads at a multitude of locations in a textile machine. 4,512,028, Cl. 377-16.000.

Stutz, Hansruedi: *See—*
Glockner, Rolf; and Stutz, Hansruedi, 4,511,253, Cl. 356-385.000.

Suciu, George D.; Stefani, Giancarlo; and Fumagalli, Carlo, to Lummus Company, The. Catalysts containing mixed oxides of vanadium, phosphorus, and aluminum and/or boron. 4,511,670, Cl. 502-209.000.

Suda, Toshi: *See—*
Ninomiya, Masakazu; Suda, Toshi; Omori, Norio; Akiyama, Susumu; and Fukaya, Hiroyasu, 4,510,910, Cl. 123-486.000.

Sugai, Kazuyoshi: *See—*
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Sugai, Kazuyoshi, 4,511,816, Cl. 310-313.00A.

Sugai, Makio: *See—*
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.

Sugitani, Junichi: *See—*
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.

Sugiura, Yasuyuki: *See—*
Morinaga, Shigeki; Miyashita, Kunio; and Sugiura, Yasuyuki, 4,511,827, Cl. 318-254.000.

Sugiyama, Shizuo: *See—*
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.

Sukegawa, Ken: *See—*
Higashi, Kensaku; Yano, Haruhiko; Sato, Hirotsugu; Sukegawa, Ken; and Ooba, Yuji, 4,511,642, Cl. 430-161.000.

Sumal, Jaihind S., to Robert Bosch GmbH. Method for measuring air flow. 4,510,795, Cl. 73-118.000.

Sumino, Yoichi; and Enjoji, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasound diagnostic apparatus. 4,511,984, Cl. 364-415.000.

Sumitani, Toshihiko; and Komeda, Kenichiro, to Sharp Kabushiki Kaisha. Game calculating apparatus. 4,511,138, Cl. 273-1.00E.

Sumitomo Chemical Co., Ltd.: *See—*
Ishii, Tamaki; Yachigo, Shinichi; and Takahashi, Yukoh, 4,511,491, Cl. 252-404.000.
Kayane, Yutaka; Omura, Takashi; Otake, Katsumasa; and Takeshita, Akira, 4,511,507, Cl. 534-629.000.
Minai, Masayoshi; and Katsura, Tadashi, 4,511,655, Cl. 435-149.000.
Mori, Kenji; and Uematsu, Tamon, 4,511,726, Cl. 549-283.000.
Ohsumi, Tadashi; Inoue, Satoru; and Maeda, Kiyoto, 4,511,581, Cl. 514-617.000.
Shimomura, Takatoshi; Fujita, Fumio; and Hirakawa, Manabu, 4,511,711, Cl. 528-489.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kawaguchi, Munetaka; Nakabayashi, Hirohiko; and Miyake, Masayoshi, 4,511,624, Cl. 428-379.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Okawa, Masao, 4,511,029, Cl. 198-621.000.

Sumitomo Metal Industries, Ltd.: *See—*
Hayashi, Chihiro; and Nakasuji, Kazuyuki, 4,510,787, Cl. 72-368.000.

Sunbeam Plastics Corporation: *See—*
Bush, Randall G., 4,511,032, Cl. 206-1.500.

Sundstrand Corporation: *See—*
Aleem, Mohd A.; Lobsinger, James L.; and Wefel, Jerry D., 4,510,679, Cl. 29-598.000.

Sundstrand Data Control, Inc.: *See—*
Peters, Rex B., 4,510,802, Cl. 73-505.000.

Sunsweet Growers of California: *See—*
Walsh, Richard J.; and Gyles, Darrell D., 4,511,046, Cl. 209-539.000.

Sussmuth, Reiner: *See—*
Grunsky, Manfred; Sussmuth, Reiner; and Ischen, Gunter, 4,511,294, Cl. 408-232.000.

Susumu Matsumura and Mitsubishi Denki Kabushiki Kaisha: *See—*
Matsumura, Susumu; and Imataki, Mitsumasa, 4,511,957, Cl. 363-54.000.

Sutherland, Jack L.: *See—*
Motiwala, M. Arif; and Sutherland, Jack L., 4,511,862, Cl. 332-16.00R.

Sutter, Jean: *See—*
Peroux, Bernard; Santy, Jean; and Sutter, Jean, 4,510,965, Cl. 137-375.000.

Suzuki, Hiroshi: *See—*
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,511,705, Cl. 528-26.000.
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,511,705, Cl. 528-26.000.

Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, to Canon Kabushiki Kaisha. Electrostatic recording apparatus. 4,511,240, Cl. 355-14.00R.

Suzuki, Kunio: *See—*
Kasuga, Takuzo; Takahashi, Katsuhiko; and Suzuki, Kunio, 4,511,708, Cl. 528-274.000.

Suzuki, Nobuhiko, to Diesel Kiki Co., Ltd. Control method for air conditioning systems for vehicles. 4,510,764, Cl. 62-133.000.

Suzuki, Satoshi: *See—*
Nishikawa, Hisashi; Suzuki, Satoshi; Hirata, Masanobu; Sakamoto, Koichiro; Fujisawa, Ikuo; and Takeno, Shozo, 4,511,877, Cl. 338-2.000.

Suzuki, Yoshihisa: *See—*
Mori, Mitsuo; Suzuki, Yoshihisa; Muramatsu, Shigeru; and Takasu, Sigeru, 4,510,648, Cl. 19-266.000.

Svendsen, Robert A., to Marine Construction & Design Co. Deepwater king crab pot line hauler. 4,511,122, Cl. 254-332.000.

Swedo, Raymond J.; and House, David W., to UOP Inc. Electrically conducting aromatic azopolymers and method of preparation. 4,511,492, Cl. 252-500.000.

Swenson, Paul F.: *See—*
Hise, Ralph E.; and Swenson, Paul F., 4,510,756, Cl. 60-659.000.

Swessel, John A., Jr.: *See—*
Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., 4,511,772, Cl. 200-144.00R.

Swidwa, Kenneth J.; Hornak, Leonard P.; and Kowalski, Edward F., to Westinghouse Electric Corp. Transfer of nuclear reactor component assemblies. 4,511,531, Cl. 376-262.000.

Swiss Aluminium Ltd.: *See—*
Kugler, Tibor, 4,511,398, Cl. 75-63.000.
Molnar, Sandor, 4,511,449, Cl. 204-243.00R.

SWS Silicones Corporation: *See—*
Martin, Eugene R., 4,511,727, Cl. 556-418.000.

Syring, Ewald. Method and template for applying relief plastering on a wall surface. 4,510,729, Cl. 52-741.000.

Szekeres, Gabor L.: *See—*
Klein, Howard J.; and Szekeres, Gabor L., 4,511,052, Cl. 215-230.000.

Szendrei, Kalman; Minker, Emil; Rozsa, Zsuzsanna; Koch, Lehel; and Wolf, Lajos, to Kozponti Valto-es Hitelbank Rt. InnovacioAlap. Biologically active polysaccharide concentrates and process for production of preparates containing such substances. 4,511,559, Cl. 514-54.000.

Szoke, Abraham: *See—*
Schlitt, Leland G.; and Szoke, Abraham, 4,511,850, Cl. 330-4.300.

Szymaszek, Jan W.: *See—*
Heft, Eldon B.; Huseby, Irvin C.; and Szymaszek, Jan W., 4,511,773, Cl. 200-144.00C.

Ta-Ming Wu, Allen: *See—*
Phelps, Andrew E.; and Ta-Ming Wu, Allen, 4,512,018, Cl. 370-112.000.

Tabata, Kuniaki: *See—*
Machida, Tetsuo; Tsuhara, Susumu; Tabata, Kuniaki; and Okada, Yasuyuki, 4,511,962, Cl. 364-200.000.

Tabata, Masaaki; and Miyabayashi, Katsuyuki, to Toyota Jidosha Kabushiki Kaisha. Vehicle door handle sealing system. 4,511,172, Cl. 296-146.000.

Tada, Kuniyuki: *See—*
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,511,547, Cl. 423-329.000.

Taguchi, Masahiro; Kuwakado, Satosi; and Tsuge, Noboru, to Nippon Soken, Inc. Exhaust gas purifier for a diesel engine. 4,510,749, Cl. 60-286.000.

Taguchi, Masahiro: *See—*
Tsuge, Noboru; Taguchi, Masahiro; and Kuwakado, Satosi, 4,511,097, Cl. 242-55.000.

Tai, Masahiko: *See—*
Ideno, Eizo; Fukushi, Shinichi; Tai, Masahiko; Nakazawa, Koji; and Fujita, Toshihito, 4,511,095, Cl. 242-18.00G.

Taiyo Sanso Kabushiki Kaisha: *See*—
Kawaguchi, Takehiko, 4,511,167, Cl. 294-28.000.
Tajima, Hatsuo: *See*—
Takahashi, Tohru; Tajima, Hatsuo; Shigenobu, Michio; and Washiyama, Shigemichi, 4,511,778, Cl. 219-10.55A.
Takagi, Kenji: *See*—
Miyamori, Hideaki; Takagi, Kenji; Sato, Shigeru; Takahashi, Fujio; and Ozawa, Mikio, 4,511,784, Cl. 219-123.000.
Takagi, Syoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Coffee making apparatus. 4,510,853, Cl. 99-286.000.
Takahama, Kazuhide: *See*—
Miyazaki, Naoki; Horiya, Keiichi; Shiozaki, Tsugio; and Takahama, Kazuhide, 4,511,903, Cl. 346-76.0PH.
Takahashi, Fujio: *See*—
Miyamori, Hideaki; Takagi, Kenji; Sato, Shigeru; Takahashi, Fujio; and Ozawa, Mikio, 4,511,784, Cl. 219-123.000.
Takahashi, Katsuhiko: *See*—
Kasuga, Takuzo; Takahashi, Katsuhiko; and Suzuki, Kunio, 4,511,708, Cl. 528-274.000.
Takahashi, Kazue; Okuna, Kenzi; Nakajima, Isao; Harada, Mineo; and Kako, Yutaka, to Hitachi, Ltd. Cancel type printing head. 4,511,269, Cl. 400-124.000.
Takahashi, Kihei, to Yoshida Kogyo K. K. Clamping unit. 4,510,658, Cl. 29-33.200.
Takahashi, Motohiko: *See*—
Nakane, Masao; Takahashi, Motohiko; and Ogawa, Takaki, 4,511,974, Cl. 364-463.000.
Takahashi, Osamu: *See*—
Okamura, Hisashi; Sakaguchi, Shinji; Takahashi, Osamu; and Murai, Ashita, 4,511,644, Cl. 430-219.000.
Takahashi, Tetsuro: *See*—
Ishida, Kenichi; and Takahashi, Tetsuro, 4,510,668, Cl. 29-561.000.
Takahashi, Tohru; Tajima, Hatsuo; Shigenobu, Michio; and Washiyama, Shigemichi, to Canon Kabushiki Kaisha. Image fixing device utilizing a high frequency wave. 4,511,778, Cl. 219-10.55A.
Takahashi, Tomohiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Recording apparatus. 4,511,904, Cl. 346-134.000.
Takahashi, Yoshio: *See*—
Umezawa, Hamao; Oono, Masaji; Ishihama, Hiroshi; Kyotani, Yoshinori; and Takahashi, Yoshio, 4,511,509, Cl. 260-239.00A.
Takahashi, Yukoh: *See*—
Ishii, Tamaki; Yachigo, Shinichi; and Takahashi, Yukoh, 4,511,491, Cl. 252-404.000.
Takai, Kazuki: *See*—
Yamaguchi, Katsumi; Takai, Kazuki; and Okada, Hitoshi, 4,511,940, Cl. 360-96.600.
Takamatsu, Toshiaki; and Nonomura, Keisaku, to Sharp Kabushiki Kaisha. Curved electrode pattern in a liquid crystal color display cell. 4,511,217, Cl. 350-336.000.
Takasu, Sigeru: *See*—
Mori, Mitsuo; Suzuki, Yoshihisa; Muramatsu, Shigeru; and Takasu, Sigeru, 4,510,648, Cl. 19-266.000.
Takayama, Seizo, to UBE Industries, Inc. Vent-type plastication molding machine. 4,511,319, Cl. 425-145.000.
Takeichi, Hideo: *See*—
Tanuma, Itsuo; Takeichi, Hideo; Fukuura, Yukio; Ohyachi, Tomio; and Naito, Kazuo, 4,511,627, Cl. 428-429.000.
Takemae, Yoshihiro: *See*—
Nozaki, Shigeki; Takemae, Yoshihiro; and Nakano, Tomio, 4,511,997, Cl. 365-189.000.
Takenaga, Hideo: *See*—
Imai, Yougo; and Takenaga, Hideo, 4,511,935, Cl. 360-66.000.
Takeno, Shozo: *See*—
Nishikawa, Hisashi; Suzuki, Satoshi; Hirata, Masanobu; Sakamoto, Koichiro; Fujisawa, Ikuo; and Takeno, Shozo, 4,511,877, Cl. 338-2.000.
Takeshita, Akira: *See*—
Kayane, Yutaka; Omura, Takashi; Otake, Katsumasa; and Takeshita, Akira, 4,511,507, Cl. 534-629.000.
Takeuchi, Yo: *See*—
Toma, Ken; Iida, Masanao; and Takeuchi, Yo, 4,511,632, Cl. 428-654.000.
Tallon, Jacques: *See*—
Morel, Jacques; and Tallon, Jacques, 4,510,792, Cl. 73-40.700.
Tamai, Yasuo: *See*—
Anonuma, Masashi; Tamai, Yasuo; Sato, Tsunehiko; Funabashi, Shinichi; and Ogawa, Hiroshi, 4,511,484, Cl. 252-62.540.
Tamaoki, Eiki: *See*—
Kouchi, Takashi; and Tamaoki, Eiki, 4,511,826, Cl. 318-98.000.
Tamaoki, Tatsuya: *See*—
Tomita, Fusao; Tamaoki, Tatsuya; Shirahata, Kunikatsu; Iida, Takao; Morimoto, Makoto; and Fujimoto, Kazuhisa, 4,511,560, Cl. 514-27.000.
Tamoto, Koji: *See*—
Koike, Mitsuru; Kobayashi, Kesanao; Toyama, Tadao; Misu, Hiroshi; Tamoto, Koji; and Iwasaki, Masayuki, 4,511,645, Cl. 430-276.000.
Tamura, Toshifumi: *See*—
Ozeki, Takeshi; and Tamura, Toshifumi, 4,511,208, Cl. 350-96.160.
Tanaka, Hiroyuki: *See*—
Tokutake, Kunihiko; Mizokami, Nobuo; and Tanaka, Hiroyuki, 4,510,807, Cl. 73-432.00R.
Tanaka, Kazushi: *See*—
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.
Tanaka, Mamoru: *See*—
Tokuyama, Kanji; Nishitani, Yasuhiro; Tanaka, Mamoru; and Nagata, Wataru, 4,511,738, Cl. 568-14.000.
Tanaka, Seiitch; and Inoue, Akitoshi, to Anritsu Electric Company Limited. Plating apparatus. 4,511,448, Cl. 204-198.000.
Tanaka, Toru; Gohko, Nobuaki; Kishiro, Osamu; and Murakami, Atsushi, to Mitsubishi Chemical Industries Ltd. Process for producing polyolefin. 4,511,704, Cl. 526-125.000.
Tanaka, Yasushi: *See*—
Watanabe, Hiroyuki; and Tanaka, Yasushi, 4,511,176, Cl. 296-204.000.
Tanaka, Yoshiaki: *See*—
Inami, Mamoru; Tanaka, Yoshiaki; and Otsuki, Zenju, 4,510,840, Cl. 84-477.00R.
Tanaka, Yoshiharu, to Mansei Kogyo Kabushiki Kaisha. Focussing lens operating device. 4,511,212, Cl. 350-255.000.
Tanaka, Yoshikazu: *See*—
Kano , Yoshiharu; Fujisawa, Makoto; Nojiri, Shoji; and Tanaka, Yoshikazu, 4,512,015, Cl. 370-110.100.
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,510,822, Cl. 74-733.000.
Taniguchi, Keishi; and Iiyama, Kiyotaka. Thermosensitive recording material. 4,511,910, Cl. 346-216.000.
Tanuma, Itsuo; Takeichi, Hideo; Fukuura, Yukio; Ohyachi, Tomio; and Naito, Kazuo, to Bridgestone Tire Company Limited. Sandwich glasses. 4,511,627, Cl. 428-429.000.
Tarumi, Noriyoshi: *See*—
Seimiya, Ryubun; Tarumi, Noriyoshi; Kokiso, Masakazu; and Tsuchiya, Hiroshi, 4,511,622, Cl. 428-323.000.
Tasnadi, Marta: *See*—
Gorog, Katalin; Dudar, Erzebet; Gardi, Ivan; Kocsis, Maria; Gaal, Sandor; and Tasnadi, Marta, 4,511,714, Cl. 548-215.000.
Tatham, Edward J.; Kravits, Richard; Clymer, John C.; and Hoffman, Carvel D., to Bethlehem Steel Corporation. Radiation scanning and measuring device. 4,511,801, Cl. 250-394.000.
Tatum, O. Hilt, Jr. Dental implant. 4,511,335, Cl. 433-173.000.
Taylor, Gene W.; and Roybal, Herman E., to United States of America, Energy. Fluorinated diamond particles bonded in a filled fluorocarbon resin matrix. 4,511,373, Cl. 51-298.000.
Taylor, Mark P., to Corning Glass Works. Fiber-reinforced composites. 4,511,663, Cl. 501-4.000.
TDK Corporation: *See*—
Nunokawa, Eiichi; Ishida, Toshihiko; and Ohira, Yasuo, 4,511,099, Cl. 242-71.800.
TDK Electronics Co., Ltd.: *See*—
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.
Team Cruiser Conversion Co., Inc.: *See*—
Gellenbeck, Thomas C., 4,511,175, Cl. 296-190.000.
Teege, Gernot: *See*—
Nissen, Axel; Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, 4,511,685, Cl. 524-110.000.
Teijin Limited: *See*—
Ishizuka, Seiichi; and Kubo, Junji, 4,511,564, Cl. 514-167.000.
Tektronix, Inc.: *See*—
Koller, Thomas J., 4,511,235, Cl. 355-1.000.
Teldec Telefunken-Decca-Schallplatten GmbH: *See*—
Knothe, Herbert; and Roschmann, Klaus, 4,512,007, Cl. 369-127.000.
Teledyne Industries, Inc.: *See*—
Schuler, John G.; and Lingenfelter, Lowell R., 4,511,196, Cl. 339-14.00R.
Temmesfeld, Axel: *See*—
Schweiger, Erwin; Starmuehler, Erwin; and Temmesfeld, Axel, 4,510,893, Cl. 123-41.020.
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., to Southern Research Institute. Intermediate for preparing antifungal 1,2-dihydropyrido[3,4-b]-pyrazines. 4,511,721, Cl. 546-308.000.
Tempo, Inc.: *See*—
Pote, Robert L., Jr., 4,511,142, Cl. 273-87.400.
Tench, Orren K., Jr., to Canberra Industries, Inc. Convertible cryostat. 4,510,758, Cl. 62-45.000.
Teng, Yu-Ling; and Mayernik, Richard, to Kollmorgen Technologies Corporation. Method for depositing a metal on a surface. 4,511,597, Cl. 427-53.100.
Tennant, William A.: *See*—
Kudert, Frederick G.; Latreille, Maurice G.; and Tennant, William A., 4,511,528, Cl. 264-328.800.
Tennessee Valley Authority: *See*—
Jones, Thomas M.; and Kendrick, Lucian A., Jr., 4,511,388, Cl. 71-34.000.
Teraoka, Masanori, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,511,802, Cl. 250-484.100.
Termine, Enrico J.; and Ginter, Sally P., to Dow Chemical Company, The. Flame retardant for use in rigid polyurethane foams. 4,511,688, Cl. 524-380.000.
Teshima, Hitoshi: *See*—
Shimozi, Kozi; and Teshima, Hitoshi, 4,511,536, Cl. 422-171.000.
Tetra Pak International AB: *See*—
Lothman, Stig A., 4,510,732, Cl. 53-168.000.
Rauser, Jan A. I.; and Cetrelli, Renato, 4,511,078, Cl. 229-17.00R.
Texaco Inc.: *See*—
Alexander, David C.; and Knifton, John F., 4,511,740, Cl. 568-454.000.

Mims, Donald S., 4,511,000, Cl. 166-303.000.
Texas Instruments Incorporated: *See*—
Andresen, Bernhard H., 4,511,234, Cl. 354-428.000.
Caldwell, David; and Agrawal, Mahendra P., 4,511,987, Cl. 364-715.000.
Gotz, Laslo, 4,511,923, Cl. 358-191.100.
Texas Recreation Corporation: *See*—
Scheurer, Stephen M., 4,510,665, Cl. 29-460.000.
Theeuwes, Felix, to ALZA Corporation. Parenteral delivery system utilizing a hollow fiber cellular unit. 4,511,351, Cl. 604-56.000.
Theeuwes, Felix; and Urquhart, John, to ALZA Corporation. Parenteral delivery system with in-line container. 4,511,352, Cl. 604-56.000.
Theeuwes, Felix, to ALZA Corporation. Intravenous system for delivering a beneficial agent. 4,511,353, Cl. 604-85.000.
Theisen, Peter J.: *See*—
Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., 4,511,772, Cl. 200-144.00R.
Thermo Electron Corporation: *See*—
Roussos, Theodore; and Sakhuja, Ravinder K., 4,510,922, Cl. 126-435.000.
Roussos, Theodore; and Sakhuja, Ravinder K., 4,510,922, Cl. 126-435.000.
Thomas, Alan; and Glaze, Stanley G., to Lucas Industries. Valve arrangement for regulating vehicle suspension damping pressures. 4,511,022, Cl. 188-299.000.
Thomas & Betts Corporation: *See*—
Dienes, Zoltan B., 4,511,415, Cl. 156-48.000.
Thomas, Walter; and Lucatuorto, Peter, to Lik-Nu Porcelain, Inc. Repair laminate sheet for acrylic and fiberglass tubs. 4,511,621, Cl. 428-285.000.
Thomas, Willie J.: *See*—
Varga, Sandor I.; Dougherty, Richard L.; Dandy, Donny C.; and Thomas, Willie J., 4,511,158, Cl. 280-292.000.
Thomassen & Drijver-Verblifa N.V.: *See*—
Post, Willem P., 4,510,830, Cl. 83-114.000.
Thompson, David A., to Corning Glass Works. Method for making a volatile cerium diketonate compound. 4,511,515, Cl. 260-429.200.
Thompson, William L.: *See*—
Keyes, Marion A., IV; and Thompson, William L., 4,511,882, Cl. 340-347.0DD.
Thomson-CSF: *See*—
Caillat, Pierre, 4,511,870, Cl. 335-213.000.
Charavit, Jean-Claude; and Vandroux, Michele, 4,511,858, Cl. 331-10.000.
Collumeau, Yoland, 4,510,677, Cl. 29-588.000.
de Riviere, Charles, 4,511,864, Cl. 332-41.000.
Thomson-CSF - Telephone: *See*—
Nicolas, Alain; and Chapelain, Jean, 4,511,959, Cl. 364-200.000.
Thoraval, Yvon, to Schlumberger Technology Corporation. Electromagnetic logging sonde having improved housing. 4,511,843, Cl. 324-338.000.
Thorne, Mark W. Invalid transfer means. 4,510,633, Cl. 5-81.00R.
Thylen, Lars; Stensland, Leif; and Arvidsson, Gunnar, to Institutet for Optisk Forskning. Lensless spectrum analyzer. 4,511,206, Cl. 350-96.110.
Tietjens, Eduard W.: *See*—
Groothuis, Gerrit J.; de Haan, Atze; Poel, Hendrik; Tietjens, Eduard W.; and de Vries, Jochem J., 4,510,687, Cl. 30-34.200.
Tietze, Thomas N., to Panhandle Eastern Pipe Line Company. E-Log I field computer. 4,511,844, Cl. 324-425.000.
Tihanyi, Bela: *See*—
Cornils, Boy; Weber, Jurgen; Tihanyi, Bela; and DeWin, Werner, 4,511,439, Cl. 204-37.100.
Tilson, Alan L.: *See*—
Quay, Earl R.; and Tilson, Alan L., 4,510,773, Cl. 66-9.00B.
Timetco Corporation: *See*—
Bush, Elmer R., 4,511,898, Cl. 343-736.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Izumi, Takayuki, 4,511,456, Cl. 208-44.000.
Tobler, Andreas: *See*—
Baier, Manfred; and Tobler, Andreas, 4,511,873, Cl. 336-90.000.
Todd, Robert R.: *See*—
Decoene, Frans J. G. C.; Strubbe, Gilbert J. I.; and Todd, Robert R., 4,510,946, Cl. 130-27.00T.
Togashi, Kousaku: *See*—
Sekizawa, Hidekazu; Iwamoto, Akito; Togashi, Kousaku; and Fujie, Hideo, 4,510,866, Cl. 101-365.000.
Tokai, Shigeru: *See*—
Tomioka, Kunio; Tokai, Shigeru; and Tsuchida, Tatsuo, 4,510,789, Cl. 72-442.000.
Tokuda, Hiroshi: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.
Tokutake, Kunihiko; Mizokami, Nobuo; and Tanaka, Hiroyuki, to Kabushiki Kaisha Kobe Seiko Sho. Diagnosis method of rotary kiln interior. 4,510,807, Cl. 73-432.00R.
Tokuyama, Kanji; Nishitani, Yasuhiro; Tanaka, Mamoru; and Nagata, Wataru, to Shionogi & Co., Ltd. Process for preparing phosphine oxides. 4,511,738, Cl. 568-14.000.
Tokyo Electric Co., Ltd.: *See*—
Kawaguchi, Yukio, deceased; and Kawaguchi, Nobuichi, legal representative, 4,511,833, Cl. 318-696.000.
Miyazaki, Naoki; Horiya, Keiichi; Shiozaki, Tsugio; and Takahama, Kazuhide, 4,511,903, Cl. 346-76.0PH.
Nishikawa, Hisashi; Suzuki, Satoshi; Hirata, Masanobu; Sakamoto, Koichiro; Fujisawa, Ikuo; and Takeno, Shozo, 4,511,877, Cl. 338-2.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Nunokawa, Kazuo; and Masuyama, Masayuki, 4,511,227, Cl. 351-208.000.
Tokyo Medical and Dental University: *See*—
Inaba, Yutaka, 4,510,926, Cl. 128-20.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Andow, Fumio; and Nakashima, Masuo, 4,511,981, Cl. 364-492.000.
Hideyama, Shozo; Ishizawa, Akio; Kumagai, Katuya; and Hashimoto, Minoru, 4,511,617, Cl. 428-412.000.
Masuko, Akinori, 4,512,000, Cl. 367-93.000.
Matsuo, Kenji; and Masuda, Eiji, 4,511,814, Cl. 307-572.000.
Murakami, Teruo; and Hoshino, Isao, 4,512,006, Cl. 369-50.000.
Nagano, Katsumi, 4,511,991, Cl. 364-814.000.
Nagashima, Masayoshi, 4,511,902, Cl. 346-76.0PH.
Nakayama, Yasunobu; Sato, Yasuji; and Kunii, Takeshi, 4,511,764, Cl. 179-90.0AN.
Namba, Hiromi, 4,512,032, Cl. 382-9.000.
Okamura, Yoshio, 4,511,780, Cl. 219-10.55C.
Ozeki, Takeshi; and Tamura, Toshifumi, 4,511,208, Cl. 350-96.160.
Sekizawa, Hidekazu; Iwamoto, Akito; Togashi, Kousaku; and Fujie, Hideo, 4,510,866, Cl. 101-365.000.
Sumino, Yoichi; and Enjoji, Susumu, 4,511,984, Cl. 364-415.000.
Takagi, Syoji, 4,510,853, Cl. 99-286.000.
Takahashi, Tomohiko, 4,511,904, Cl. 346-134.000.
Tsuge, Akihiko; Komatsu, Michiyasu; Inoue, Hiroshi; and Komeya, Katsutoshi, 4,511,525, Cl. 264-65.000.
Watanabe, Susumu, 4,511,980, Cl. 364-491.000.
Yamada, Noboru; and Nakamura, Kunihiko, 4,511,136, Cl. 271-187.000.
Yoshihisa, Kozo; and Okui, Isamu, 4,511,849, Cl. 329-103.000.
Tolentino, John, to Chicago Cutlery Consumer Products, Inc. Display case. 4,511,040, Cl. 206-553.000.
Toma, Ken; Iida, Masanao; and Takeuchi, Yo, to Mitsubishi Aluminum Kabushiki Kaisha. Aluminum alloy clad sheet having excellent high-temperature sagging resistance and thermal conductivity. 4,511,632, Cl. 428-654.000.
Tomioka, Kunio; Tokai, Shigeru; and Tsuchida, Tatsuo, to Kabushiki Kaisha Komatsu Seisakusho. Press brake. 4,510,789, Cl. 72-442.000.
Tomita, Fusao; Tamaoki, Tatsuya; Shirahata, Kunikatsu; Iida, Takao; Morimoto, Makoto; and Fujimoto, Kazuhisa, to Kyowa Hakko Kogyo Kabushiki Kaisha. Antibiotic substances DC-45, and their use as medicaments. 4,511,560, Cl. 514-27.000.
Tomoegawa Paper Manufacturing Co., Ltd.: *See*—
Higashi, Kensaku; Yano, Haruhiko; Sato, Hirotsugu; Sukegawa, Ken; and Ooba, Yuji, 4,511,642, Cl. 430-161.000.
Tontarelli, Sergio. Cap for the temporary hermetic closure of cylindrical tin cans with pull-off opening tab. 4,511,057, Cl. 220-306.000.
Toray Industries, Incorporated: *See*—
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,511,547, Cl. 423-329.000.
Torretta, Roberto: *See*—
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,511,064, Cl. 222-153.000.
Toshiba Machine Co., Ltd.: *See*—
Sekizawa, Hidekazu; Iwamoto, Akito; Togashi, Kousaku; and Fujie, Hideo, 4,510,866, Cl. 101-365.000.
Toth, Istvan: *See*—
Mogyorodi, Ferenc; Koppany, Eniko; Bodi, Tibor; Balogh, Karoly; Toth, Istvan; Bognar, Rezso; Makleit, Sandor; Litkei, Gyorgy; Rakosi, Miklos; and Dinya, Zoltan, 4,511,736, Cl. 564-214.000.
Toulhoat, Herve : *See*—
Billon, Alain; Jacquin, Yves; Peries, Jean-Pierre; and Toulhoat, Herve , 4,511,458, Cl. 208-59.000.
Tournier, Herve; Johansson, Allan A.; Sachetto, Jean-Pierre; Armanet, Jean-Michel; Michel, Jean-Pierre; and Roman, Alain, to Battelle Memorial Institute. Method for the simultaneous delignification of wood and other ligno-cellulosic materials and hydrolysis of the hemicellulose component thereof. 4,511,433, Cl. 162-16.000.
Towmotor Corporation: *See*—
Melocik, Grant C.; and Pickering, William, 4,511,947, Cl. 361-191.000.
Toya, Ichizo, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic element. 4,511,643, Cl. 430-212.000.
Toyama, Tadao: *See*—
Koike, Mitsuru; Kobayashi, Kesanao; Toyama, Tadao; Misu, Hiroshi; Tamoto, Koji; and Iwasaki, Masayuki, 4,511,645, Cl. 430-276.000.
Toyo Engineering Corporation: *See*—
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.
Toyo Ink Mfg. Co., Ltd.: *See*—
Konno, Ryozo; Sugai, Makio; Kubota, Yuichi; Nishimatsu, Masaharu; Isobe, Yukihiro; Tanaka, Kazushi; and Shinoura, Osamu, 4,511,629, Cl. 428-522.000.
Toyo Kogyo Co., Ltd.: *See*—
Kishino, Kohji, 4,511,129, Cl. 296-146.000.
Toyo Kohan Co., Ltd.: *See*—
Fujimoto, Terunori; Shimizu, Nobuyoshi; Shimizu, Mutsuhiro; Yanagihara, Kazunori; Miyachi, Akio; and Inui, Tsuneo, 4,511,631, Cl. 428-632.000.

Toyo Rubber Industry Co., Ltd., The: *See—*
Kishida, Katsuji; Ueno, Tetsuto; Onishi, Masakazu; and Oda, Keijiro, 4,510,984, Cl. 152-362.0CS.
Toyo Seikan Kaisha Ltd.: *See—*
Yazaki, Jinichi; and Sakano, Kozaburo, 4,511,610, Cl. 428-35.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Ariyoshi, Takashi; Emura, Noriaki; and Sakanaka, Yasuhiro, 4,511,679, Cl. 521-83.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Yoneda, Takao; and Sakakibara, Yasuji, 4,510,719, Cl. 51-289.00R.
Toyota Jidosha Kabushiki Kaisha: *See—*
Inui, Masaki, 4,510,818, Cl. 74-477.000.
Inui, Masaki, 4,510,819, Cl. 74-477.000.
Inui, Masaki, 4,510,819, Cl. 74-477.000.
Shimozi, Kozi; and Teshima, Hitoshi, 4,511,536, Cl. 422-171.000.
Tabata, Masaaki; and Miyabayashi, Katsuyuki, 4,511,172, Cl. 296-146.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Watanabe, Hiroyuki; and Tanaka, Yasushi, 4,511,176, Cl. 296-204.000.
Tran-Khanh, Vien: *See—*
Sella, Claude; Tran-Khanh, Vien; and Martin, Jean-Claude, 4,511,451, Cl. 204-298.000.
Transamerica DeLaval Inc.: *See—*
Gartmann, Russell J.; and Brown, James S., 4,510,755, Cl. 60-657.000.
Maddox, James P., 4,511,309, Cl. 415-202.000.
Treace, Harry T.; and Griggs, Calvin, to Treace Medical, Inc. Ossicular prosthesis. 4,510,627, Cl. 3-1.000.
Treace Medical, Inc.: *See—*
Treace, Harry T.; and Griggs, Calvin, 4,510,627, Cl. 3-1.000.
Tremblay, Richard P.: *See—*
Conley, Richard W.; Tremblay, Richard P.; Bolam, Charles W.; Logan, James E.; and Krueger, David A., 4,511,120, Cl. 251-288.000.
Trimmer Machine Co., Inc.: *See—*
Raybuck, William B., 4,511,131, Cl. 270-54.000.
Triouleyre, Jean; Rousselin, Jean; Schmit, Patrick; and Gondry, Philippe, to Ets. Y. Jouanel S.A. Automatic sheet metal folding machine. 4,510,785, Cl. 72-323.000.
Triumph-Adler A.G. fur Buro- und Informationstechnik: *See—*
Bohmer, Christian, 4,511,270, Cl. 400-214.000.
Trott, Delano B., to Beringer Co., Inc. Apparatus for continuous polymer filtration. 4,511,472, Cl. 210-340.000.
Trotta, Robert A., to Gillette Company, The. Correction fluid dispenser having a retractable and lockable sealing tip. 4,511,273, Cl. 401-260.000.
Troup, Robert L.: *See—*
Phelps, Frankie E.; Boget, Paul J.; and Troup, Robert L., 4,511,666, Cl. 501-98.000.
TRP Energy Sensors, Inc.: *See—*
Berndt, Dieter R., 4,511,265, Cl. 374-151.000.
TRW Inc.: *See—*
Ferguson, Blake L.; and Moracz, Donald J., 4,510,788, Cl. 72-377.000.
Prussin, Simon A.; and Hikin, Boris L., 4,510,798, Cl. 73-150.00R.
Trzeciak, John R.: *See—*
Fortunato, Alfred R.; Millard, Maurice; and Trzeciak, John R., 4,511,337, Cl. 434-43.000.
Tsang, Paul J.: *See—*
Anantha, Narasipur G.; Gaur, Santosh P.; Huang, Yi-Shiou; and Tsang, Paul J., 4,510,676, Cl. 29-577.00C.
Tsang, Won-Tien, to AT&T Bell Laboratories. Semiconductor laser having graded index waveguide. 4,512,022, Cl. 372-45.000.
Ts'O, Paul O. P.: *See—*
Miller, Paul S.; and Ts'O, Paul O. P., 4,511,713, Cl. 536-27.000.
Tsuboi, Masaharu, to Honda Giken Kogyo Kabushiki Kaisha. Drum type switch-over mechanism for a speed change device. 4,510,820, Cl. 74-474.000.
Tsubouchi, Kazuo: *See—*
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Sugai, Kazuyoshi, 4,511,816, Cl. 310-313.00A.
Tsuchida, Koji: *See—*
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,510,988, Cl. 164-102.000.
Tsuchida, Tatsuo: *See—*
Tomioka, Kunio; Tokai, Shigeru; and Tsuchida, Tatsuo, 4,510,789, Cl. 72-442.000.
Tsuchida, Tsuyoshi; and Kido, Yoshinobu, to Mazda Motor Corporation. Fuel supply control in deceleration of an internal combustion engine for vehicles. 4,510,902, Cl. 123-325.000.
Tsuchie, Takanori: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,511,744, Cl. 568-864.000.
Tsuchiya, Hiroshi: *See—*
Seimiya, Ryubun; Tarumi, Noriyoshi; Kokiso, Masakazu; and Tsuchiya, Hiroshi, 4,511,622, Cl. 428-323.000.
Tsuda, Momotoshi: *See—*
Ogawa, Akira; and Tsuda, Momotoshi, 4,511,649, Cl. 430-553.000.
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, to Mita Industrial Company Limited. Copying apparatus. 4,511,241, Cl. 355-14.0CU.
Tsugami Corporation: *See—*
Ishida, Kenichi; and Takahashi, Tetsuro, 4,510,668, Cl. 29-561.000.
Tsuge, Akihiko; Komatsu, Michiyasu; Inoue, Hiroshi; and Komeya, Katsutoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Process for producing sintered silicon nitride-base body. 4,511,525, Cl. 264-65.000.
Tsuge, Noboru; Taguchi, Masahiro; and Kuwakado, Satosi, to Nippon Soken, Inc. Automobile seat belt winding device. 4,511,097, Cl. 242-55.000.
Tsuge, Noboru: *See—*
Taguchi, Masahiro; Kuwakado, Satosi; and Tsuge, Noboru, 4,510,749, Cl. 60-286.000.
Tsuhara, Susumu: *See—*
Machida, Tetsuo; Tsuhara, Susumu; Tabata, Kuniaki; and Okada, Yasuyuki, 4,511,962, Cl. 364-200.000.
Tsukada, Takami; Akutsu, Masao; and Saito, Tadao, to Yoshino Kogyosho Co., Ltd. Method of making a bottle of saturated polyester resin. 4,511,418, Cl. 156-245.000.
Tsukumo, Masae: *See—*
Tsukumo, Zenzaburo; Tsukumo, Masae; and Tsukumo, Shinsuke, 4,511,102, Cl. 242-130.200.
Tsukumo, Shinsuke: *See—*
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Tsukumo, Zenzaburo; Tsukumo, Masae; and Tsukumo, Shinsuke. Bobbin holder. 4,511,102, Cl. 242-130.200.
Tsunoda, Kazuhiko: *See—*
Miyakoshi, Shinichi; and Tsunoda, Kazuhiko, 4,511,013, Cl. 180-227.000.
Tsuzuki, Hiroshige: *See—*
Morihara, Kazuyuki; Oka, Tatsushi; and Tsuzuki, Hiroshige, 4,511,505, Cl. 260-112.700.
Tsyrkin, Mikhail I.: *See—*
Khramtsov, Alexandr A.; Tsyrkin, Mikhail I.; and Shinder, Ilya E., 4,510,849, Cl. 91-515.000.
Tucker, Raymond M.; and Dyer, Clarence L., to Rangaire Corporation. Induction cook-top system and control. 4,511,781, Cl. 219-10.770.
Tung, Chi F.; and Coderre, James C., to Minnesota Mining and Manufacturing Company. Retroreflective sheeting. 4,511,210, Cl. 350-105.000.
Turner, Jonathan S., to AT&T Bell Laboratories. Duplicated network arrays and control facilities for packet switching. 4,512,011, Cl. 370-60.000.
Tuttle, Ralph C.; and Payne, Richard S., to Analog Devices, Incorporated. Process for forming an IC wafer with buried Zener diodes. 4,511,413, Cl. 148-187.000.
Tuttle, Ronald R., to Key Pharmaceuticals, Inc. Senile dementia treatment. 4,511,570, Cl. 514-282.000.
UBE Industries, Inc.: *See—*
Takayama, Seizo, 4,511,319, Cl. 425-145.000.
Uchimura, Shun-ichiro: *See—*
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,511,705, Cl. 528-26.000.
Uda, Taizo: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,511,744, Cl. 568-864.000.
Uematsu, Tamon: *See—*
Mori, Kenji; and Uematsu, Tamon, 4,511,726, Cl. 549-283.000.
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Lindner, Christian; Braese, Hans-Eberhard; Ott, Karl-Heinz; and Uerdingen, Walter, 4,511,695, Cl. 525-80.000.
UISE Industries, Ltd.: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,511,744, Cl. 568-864.000.
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Umezawa, Hamao; Oono, Masaji; Ishihama, Hiroshi; Kyotani, Yoshinori; and Takahashi, Yoshio. 3-Alkylidine azetidine compound and their production. 4,511,509, Cl. 260-239.00A.
Uneek Cap and Door, Inc.: *See—*
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Uni-Cardan Aktiengesellschaft: *See—*
Krude, Werner, 4,511,344, Cl. 464-139.000.
Uniden Corporation of Japan: *See—*
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Unifos Kemi AB: *See—*
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Union Carbide Corporation: *See—*
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Craver, Joseph N.; and Horner, Jerome T., 4,511,609, Cl. 428-35.000.
Faulring, Gloria M., 4,511,400, Cl. 75-129.000.
Mayer, Walter P.; and Burns, Richard J., 4,511,682, Cl. 523-402.000.
Nazem, Faramarz; Didchenko, Rostislav; and Fink, David, 4,511,625, Cl. 428-401.000.
Nicholson, Myron D.; and Chiu, Herman S., 4,511,613, Cl. 428-36.000.

Rotramel, George L.; Veilleux, Daniel P.; and Allen, Joseph L., 4,511,579, Cl. 514-490.000.
Wegman, Richard W.; and Busby, David C., 4,511,741, Cl. 568-484.000.

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Unique Technologies, Incorporated: *See—*
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Air Force: *See—*
Gazzera, Raymond W., 4,510,846, Cl. 91-460.000.
Giles, Michael K.; and Rogers, Robert B., 4,511,219, Cl. 350-388.000.
Hsu, Michael S.; and Hsu, James P., 4,511,216, Cl. 350-311.000.
Morrisey, Edward J., 4,511,105, Cl. 244-135.00R.
Scully, Charles N., 4,511,220, Cl. 350-403.000.
von Gierke, Henning E.; and Marko, Adolf R., 4,511,228, Cl. 351-243.000.
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Cousins III, Matthew E., 4,511,896, Cl. 340-870.250.
Dixon, Samuel, Jr., 4,511,865, Cl. 333-17.00L.
Gutleber, Frank S., 4,511,885, Cl. 340-347.0DD.
Gutleber, Frank S., 4,512,024, Cl. 375-34.000.
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Butler, Barry L., 4,511,215, Cl. 350-295.000.
Cawley, William E., 4,511,114, Cl. 248-550.000.
Dosch, Robert G.; Stephens, Howard P.; and Stohl, Frances V., 4,511,455, Cl. 208-10.000.
Frankel, Robert S.; and Herman, Alexander, 4,512,025, Cl. 375-36.000.
Garcia, Elmer D., 4,510,930, Cl. 128-202.220.
Krishna, Coimbatore R.; and Milau, Julius S., 4,511,474, Cl. 210-512.100.
Motley, Robert W.; and Glanz, James, 4,511,782, Cl. 219-121.00P.
Overmier, David K., 4,510,799, Cl. 73-151.000.
Schlitt, Leland G.; and Szoke, Abraham, 4,511,850, Cl. 330-4.300.
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Vogel, Wolfgang M.; and Smith, Stanley W., 4,511,636, Cl. 429-41.000.
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Reichman, Benjamin; and Byvik, Charles E., 4,511,838, Cl. 324-71.500.

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Groothuis, Gerrit J.; de Haan, Atze; Poel, Hendrik; Tietjens, Eduard W.; and de Vries, Jochem J., 4,510,687, Cl. 30-34.200.
Hofelt, Martijn H. H.; de Niet, Edmond; and Rijckaert, Albert M. A., 4,511,933, Cl. 360-47.000.
Krol, Thijs; and Vonk, Bernardus J., 4,512,020, Cl. 371-37.000.
Matthies, Karl H.; and Harlos, Hartmut, 4,511,853, Cl. 330-259.000.
Milsom, Robert F., 4,511,866, Cl. 333-194.000.
Park, George; Smith, Michael J.; and Carrington, Harry, 4,511,194, Cl. 312-12.000.
Sahakian, Diran R.; Pellerin, Lucien; and Nijboer, Sjoerd, 4,511,769, Cl. 200-6.00A.
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Span, Francis J.; Boland, Aloysius T. M.; and van Laarhoven, Albertus J. A. J., 4,511,275, Cl. 403-33.000.
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United Technologies Corporation: *See—*
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Couch, Robert P., 4,510,794, Cl. 73-116.000.

Unitek Corporation: *See—*
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Universal Instruments Corporation: *See—*
Foster, James E., 4,510,686, Cl. 29-838.000.
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Universal Pioneer Corporation: *See—*
Kosaka, Minoru; and Akiyama, Toru, 4,512,002, Cl. 369-44.000.
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University of California, The Regents of the: *See—*
Fogel, Seymour; Welch, Juliet W.; and Karin, Michael, 4,511,652, Cl. 435-29.000.

University of Illinois, The Board of Trustees of The: *See—*
Holonyak, Nick, Jr., 4,511,408, Cl. 148-1.500.

University of Kentucky Research Foundation, The: *See—*
Kadaba, Pankaja K., 4,511,572, Cl. 514-340.000.

University of Tasmania, The: *See—*
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University of Utah: *See—*
Kolff, Willem J., 4,510,628, Cl. 3-1.500.

University Patents, Inc.: *See—*
Goldberg, Ellen H., 4,511,661, Cl. 436-503.000.
Shur, Barry D., 4,511,558, Cl. 514-8.000.

UOP Inc.: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,511,514, Cl. 260-419.000.
Hardin, James R., 4,510,996, Cl. 166-227.000.
Rohrbach, Ronald P.; Maliarik, Mary J.; and Malloy, Thomas P., 4,511,654, Cl. 435-95.000.
Swedo, Raymond J.; and House, David W., 4,511,492, Cl. 252-500.000.

Uozumi, Osamu, to Ricoh Company, Ltd. One-rotation clutch. 4,510,833, Cl. 83-205.000.

Upjohn Company, The: *See—*
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Urani, Angelo, to McGraw-Edison Company. Electrical fuse with response indicator. 4,511,876, Cl. 337-244.000.

Ure, Lynette: *See—*
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Ushiro, Tatsuzo, to Canon Kabushiki Kaisha. Video recording camera. 4,511,932, Cl. 360-33.100.

USM Corporation: *See—*
Garley, Anthony M.; and Stafford, Rita A., 4,510,876, Cl. 112-262.100.
Leech, Francis, 4,510,823, Cl. 74-789.000.
Peck, Alan M., 4,510,875, Cl. 112-121.120.

Usui, Fumio. Apparatus for producing sheet molding compound. 4,511,424, Cl. 156-426.000.

V. E. Anderson Mfg. Co.: *See—*
Anderson, Richard N., 4,510,713, Cl. 49-175.000.

Vaillancourt, Vincent L., to Manresa, Inc. Sterile connection device. 4,511,359, Cl. 604-411.000.

Valencia, Jaime A.; and Denton, Robert D., to Exxon Production Research Co. Method of separating acid gases, particularly carbon dioxide, from methane by the addition of a light gas such as helium. 4,511,382, Cl. 62-20.000.

Valenti, Salvatore: *See—*
Runyon, James R.; and Valenti, Salvatore, 4,511,707, Cl. 528-250.000.

Valko, Joseph T., to PPG Industries, Inc. Electrodeposition of resinous compositions curable through a transesterification curing mechanism. 4,511,447, Cl. 204-181.00C.

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Anderson, Jeffrey L.; Ruhoff, Philip J.; and Edenborg, Robert B., 4,511,692, Cl. 525-7.000.

Valstyn, Erich P., to Computer & Communications Technology Corp. Automatic throat height control for film heads. 4,511,942, Cl. 360-126.000.

Vanbragt, Willy. Fluid lamp assembly. 4,511,952, Cl. 362-181.000.

Vandegraaf, Johannes J., to General Electric Company. Combined modulation and temperature compensation circuit. 4,511,863, Cl. 332-18.000.

Vander Meiden, Orrie J., to Siemens Corporate Research & Support, Inc. Data format for asynchronous data transmission. 4,512,026, Cl. 375-114.000.

Van der Valk, Nicolaas J. L.; Moelands, Antonius G.; and Schmale, Peter C., to U.S. Philips Corporation. Color television encoding circuit. 4,511,915, Cl. 358-17.000.

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Van Gils, Cornelis J. M., to U.S. Philips Corporation. Arrangement for receiving TV-signals having left and right stereo sound signals. 4,512,031, Cl. 381-2.000.

van Iperen, Willem H. P., to Sea-Land Industries, Inc. Cargo restraining device. 4,510,652, Cl. 24-68.0CD.

van Laarhoven, Albertus J. A. J.: *See—*
Span, Francis J.; Boland, Aloysius T. M.; and van Laarhoven, Albertus J. A. J., 4,511,275, Cl. 403-33.000.

van Mil, Martinus P. G., to Stork PMT B.V. Device for emptying a container filled with live poultry. 4,510,886, Cl. 119-82.000.

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Blaak, Cornelis; and van Mondfrans, Gerardus H., 4,510,863, Cl. 101-119.000.

van Wieringen, Gijsbertus L., to N.V. Nederlandse Metaalindustrie Polynorm. Device adapted to mount a metal jamb or frame, more particularly a door jamb, into a wall opening. 4,510,722, Cl. 52-213.000.

Varga, Sandor I.; Dougherty, Richard L.; Dandy, Donny C.; and Thomas, Willie J., to Mt. Sinai Medical Center of Greater Miami. Intravenous infusion pole attachment. 4,511,158, Cl. 280-292.000.

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Vasco, Augusto. Method and apparatus for recycling thermoplastic scrap. 4,511,091, Cl. 241-18.000.

Vats, Ashok: *See—*
Bellar, Robert J.; Golden, William G.; Saperstein, David D.; and Vats, Ashok, 4,511,986, Cl. 364-576.000.
VDO Adolf Schindling AG: *See—*
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VEB Kombinat Fortschritt Landmaschinen: *See—*
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Forrest, Stephen R.; Kaplan, Martin L.; Schmidt, Paul H.; and Venkatesan, Thirumalai N. C., 4,511,445, Cl. 204-158.0HE.
Verdicchio, Robert J.: *See—*
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Vereinigte Drahtwerke AG: *See—*
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Vermeiren, Karel N.; and Dolfsma, Hendrik, to SKF Industrial Trading & Development Co., B.V. Measuring system for measuring the variation of the capacitive impedance of a bearing installed in a housing. 4,511,837, Cl. 324-61.00R.
Vermont Castings, Inc.: *See—*
Ferguson, Robert W.; Andors, Derik K.; and Crossman, William W., Jr., 4,510,918, Cl. 126-79.000.
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Victor, Alan M.; and Davis, Darrell E., to Motorola, Inc. Method of programming a synthesizer ROM for elimination of receiver self-quieting. 4,512,035, Cl. 455-165.000.
Victor Company of Japan, Limited: *See—*
Inami, Mamoru; Tanaka, Yoshiaki; and Otsuki, Zenju, 4,510,840, Cl. 84-477.00R.
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Viering, Walter: *See—*
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Vigh, Zoltan: *See—*
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Vijayendran, Bheema R.: *See—*
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Vogel, Wolfgang M.; and Smith, Stanley W., to United States of America, Energy. Molten carbonate fuel cell matrices. 4,511,636, Cl. 429-41.000.
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Volakakis, John G.; McNelis, Robert L.; and Wallentin, Burt H., to Handling Systems, Inc. Jib crane system having a rotatable mast. 4,511,048, Cl. 212-253.000.
Volk, Joseph F.: *See—*
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Vollbrecht, Heinz-Rudiger; Schutz, Erwin; and Sandner, Klaus, to SKW Trostberg AG. Process for drying of natural extracts prepared by high pressure extraction. 4,511,508, Cl. 426-665.000.
von Daehne, Welf, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Produktionsaktienselskab). Substantially pure dicyclohexyl ammonium 6-β-bromo-penicillanate. 4,511,512, Cl. 260-245.20R.
von Gierke, Henning E.; and Marko, Adolf R., to United States of America, Air Force. Measurement of visual contrast sensitivity. 4,511,228, Cl. 351-243.000.
Vonk, Bernardus J.: *See—*
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Voorheis, Temple S., to Coen Company, Inc. System for the reduction of NO_x emissions. 4,511,325, Cl. 431-10.000.
W. L. Gore & Associates, Inc.: *See—*
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W. R. Grace & Co.: *See—*
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WABCO Westinghouse Fahrzeugbremsen GmbH: *See—*
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Wada, Kinzo, to Victor Company of Japan, Ltd. D.C. commutatorless electric motor. 4,511,828, Cl. 318-254.000.
Wadsworth, Harry J.: *See—*
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Wagner Spray Tech Corporation: *See—*
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Wahle, Gunter: *See—*
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Waitzman, Michael D. Jewelry display tray and security system. 4,511,041, Cl. 206-566.000.
Walker, John W.: *See—*
Byatt, Dennis W. G.; and Walker, John W., 4,510,804, Cl. 73-290.00V.
Walker, Mathew. Camping and recreation trailer. 4,511,174, Cl. 296-173.000.
Walker-Neer Manufacturing Co., Inc.: *See—*
Willis, Clyde A., 4,511,169, Cl. 294-116.000.
Walker, Thad O.: *See—*
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Wallace, Leslie E., to Dow Chemical Company, The. Addition of additives to plastics. 4,511,603, Cl. 427-222.000.
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Walmet, Gunnar E., to New York State Energy Research and Development Authority. Heat exchanger mat. 4,510,920, Cl. 126-415.000.
Walsh, Richard J.; and Gyles, Darrell D., to Sunsweet Growers of California. Method and apparatus for detecting an irregular product in a product flow. 4,511,046, Cl. 209-539.000.
Walter, Lothar; and Reith, Walter, to SKF GmbH. Ball bearing for lengthwise and turning movement. 4,511,188, Cl. 308-6.00C.
Walters, William P., to United States of America, Army. Charge liner construction and method. 4,510,870, Cl. 102-307.000.
Wang, Chun S.; Benkendorfer, Kyle B.; and Burba, John L., III, to Dow Chemical Company, The. Halide removal from fluid organic materials. 4,511,710, Cl. 528-485.000.
Ward, Peter: *See—*
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Warner & Swasey Co., The: *See—*
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Washington, Derek; and Pook, Roger, to U.S. Philips Corporation. Image display tube having a channel plate electron multiplier. 4,511,822, Cl. 313-400.000.
Washio, Takaji: *See—*
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Watanabe, Hiroshi: *See—*
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Watanabe, Hiroyuki; and Tanaka, Yasushi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle body floor construction of motor vehicle. 4,511,176, Cl. 296-204.000.
Watanabe, Katsuhiro; Minei, Masayuki; and Horikoshi, Toshio, to San-Ei Kagaku Co., L.T.D. Method and apparatus for diagnosis of hair for permanent waving. 4,510,951, Cl. 132-7.000.
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, to Watanabe, Nobuatsu. Ternary intercalation compound of a graphite with a metal fluoride and fluorine, a process for producing the same, and an electrically conductive material comprising the ternary intercalation compound. 4,511,493, Cl. 252-507.000.
Watanabe, Shigetaka: *See—*
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Watanabe, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron beam exposure apparatus. 4,511,980, Cl. 364-491.000.
Watanabe, Tetsuya: *See—*
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Watson, Keith G.: *See—*
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Watson, William S., to Watson Industries, Inc. Synchronous AM demodulator with quadrature signal cancellation. 4,511,848, Cl. 329-50.000.
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Weaver, Richard T.; and Weaver, Gregory A. Anti-cavitation rudder blade. 4,510,879, Cl. 114-162.000.
Webb, David M.; and Lane, Thomas A., to Control Data Corporation. Multi-group LRU resolver. 4,511,994, Cl. 364-900.000.

Weber, Heinz: *See—*
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Weber, Jurgen: *See—*
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Wegman, Richard W.; and Busby, David C., to Union Carbide Corporation. Production of aldehydes from organic acid esters. 4,511,741, Cl. 568-484.000.

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Weiner, Antoine, to Arbed S.A. Process for increasing the degree of afterburning of carbon monoxide in the refining of iron melts. 4,511,397, Cl. 75-59.170.

Weinerman, Lee S., to Eastern Company, The. Handle-operated door lock with latch-operator override. 4,511,166, Cl. 292-29.000.

Weiss, Eberhard, to International Standard Electric Corporation. Method of forming hot cathodes. 4,511,340, Cl. 445-6.000.

Weisser, Bernard G.: *See—*
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Fogel, Seymour; Welch, Juliet W.; and Karin, Michael, 4,511,652, Cl. 435-29.000.

Wendling, Jean. Valve for pressurized cylinders for liquified gas. 4,510,964, Cl. 137-210.000.

Wendt, Michael; and Schwanbom, Erik, to Dragerwerk Aktiengesellschaft. Suction adapter and medical draining set and method of using a tracheal draining device. 4,510,933, Cl. 128-207.140.

Wenger, Robert L. Bowling ball retainer-towel device. 4,511,140, Cl. 273-54.00B.

Wentzel, Harold G., to Uneek Cap and Door, Inc. Pickup truck cap having a roll-away door. 4,511,173, Cl. 296-156.000.

Werner & Pfleiderer: *See—*
Lambertus, Friedrich, 4,511,320, Cl. 425-199.000.

Wescam Services Inc.: *See—*
Hauptmann, Edward G., 4,511,379, Cl. 55-238.000.

Wesseling, Karel H., to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek. Plethysmograph pressure correcting arrangement. 4,510,940, Cl. 128-667.000.

West Company, The: *See—*
Connor, John T.; Halsted, Charles P.; and Ravn, Jacob, 4,511,044, Cl. 209-522.000.

West-Point Pepperell, Inc.: *See—*
Alexander, Edward N.; and Smith, Richard, 4,511,463, Cl. 209-166.000.

Westberg, Russell C. Honing control system. 4,510,720, Cl. 51-34.00J.

Westdorp, Wolfgang A.: *See—*
Ghosh, Hitendra; Murgai, Ashok; and Westdorp, Wolfgang A., 4,511,428, Cl. 156-601.000.

Westfalische Metall Industrie KG Hueck & Co.: *See—*
Ernst, Hans-Otto; and Rohling, Wilhelm, 4,511,955, Cl. 362-347.000.

Westinghouse Electric Corp.: *See—*
Amirante, Dominic, 4,511,979, Cl. 364-481.000.
Hultgren, Kent G., 4,511,306, Cl. 415-136.000.
Johnston, Paul M., 4,511,894, Cl. 340-756.000.
Killingsworth, Emmett D., 4,511,798, Cl. 250-231.0SE.
Kwon, Young J.; and Evans, Harmon A., 4,511,399, Cl. 75-84.500.
MacDonald, Robert C., 4,511,017, Cl. 187-29.00R.
Meuschke, Robert E.; and Schulties, Joseph R., 4,511,499, Cl. 252-626.000.
Schmitz, William E., 4,511,832, Cl. 318-685.000.
Swidwa, Kenneth J.; Hornak, Leonard P.; and Kowalski, Edward F., 4,511,531, Cl. 376-262.000.
Yeo, Denis, 4,511,075, Cl. 228-7.000.

Westphal, Manfred, to Dornier System GmbH. Device for connecting and guiding the individual collapsible elements of a rigid, collapsible antenna reflector. 4,511,901, Cl. 343-915.000.

Westvaco Corporation: *See—*
Noble, John W., 4,511,691, Cl. 524-745.000.

Wetmore, Sherman B., to Global Marine Inc. Modular island drilling system. 4,511,288, Cl. 405-217.000.

Wetzel, David L.; and Shah, Mahesh, to Northern Telecom Limited. Key telephone system signalling and control arrangement. 4,511,767, Cl. 179-99.00A.

Wheeler, Glynn P.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,511,721, Cl. 546-308.000.

Whitcomb, Carl E., to Oklahoma Agriculture and Mechanical Colleges Acting for and in Behalf of Oklahoma State University, Board of Regents for the. Air-root-pruning container. 4,510,712, Cl. 47-66.000.

White Consolidated Industries, Inc.: *See—*
Moore, James G.; Obey, James H.; and Pinkel, Edward B., 4,511,431, Cl. 159-47.100.

White, Harold R., to Alar Engineering Corporation. Rotary vacuum pre-coat filter apparatus. 4,511,468, Cl. 210-181.000.

White, John D. Window-mounted Christmas tree. 4,511,607, Cl. 428-13.000.

White, Leola E. Seam ripper. 4,510,688, Cl. 30-294.000.

Widenback, Ralph: *See—*
Olsson, Stefan; and Widenback, Ralph, 4,511,530, Cl. 264-564.000.

Widmaier, Richard: *See—*
Kuehn, Volker; Rothfuss, Werner; and Widmaier, Richard, 4,511,421, Cl. 156-356.000.

Wiechert, Rudolf: *See—*
Laurent, Henry; Nickisch, Klaus; Bittler, Dieter; Wiechert, Rudolf; and Losert, Wolfgang, 4,511,565, Cl. 514-173.000.

Wieland, Rolf H., to Messer Griesheim Industries, Inc. Compact integrated gas phase separator and subcooler and process. 4,510,760, Cl. 62-49.000.

Wiersema, Richard J.: *See—*
Stanislowski, Anna G.; and Wiersema, Richard J., 4,511,490, Cl. 252-174.120.

Wiese, Winfred J., to Borg-Warner Corporation. Mechanical seal with cylindrical balance sleeve. 4,511,149, Cl. 277-3.000.

Wilde, Eugen: *See—*
Goessler, Gerhard; and Wilde, Eugen, 4,511,789, Cl. 219-446.000.

Wilkerson, William E. Canisters for pressurized gas and personal security devices utilizing same. 4,511,062, Cl. 222-47.000.

Wilkinson, Philip M.: *See—*
Lawrence, Christopher J.; Wilkinson, Philip M.; and Atkinson, Colin, 4,510,744, Cl. 57-280.000.

Williams, Foster R.: *See—*
Arter, William L.; and Williams, Foster R., 4,511,785, Cl. 219-124.340.

Williams, Francis V., to Lucas Industries Limited. Disc brakes. 4,511,020, Cl. 188-73.390.

Williams, Gerald J. Cam operated engine. 4,510,894, Cl. 123-48.00R.

Williams, Michael M.: *See—*
Madsen, Roger E.; and Williams, Michael M., 4,511,080, Cl. 229-41.00C.

Willis, Clyde A., to Walker-Neer Manufacturing Co., Inc. Self locking and unlocking elevator assembly. 4,511,169, Cl. 294-116.000.

Wilson, James D.: *See—*
Ellingson, David I.; and Wilson, James D., 4,510,777, Cl. 68-12.00R.

Wilson, Mark E. Building block and construction system. 4,510,725, Cl. 52-309.100.

Wilson, Peter K., to Broken Hill Proprietary Company Limited, The. Rail anchoring clip and associated sleeper. 4,511,081, Cl. 238-59.000.

Wilson, William C.; and Green, Michael H., to Eastman Kodak Company. Apparatus and method for offsetting and delaying delivery of sheets in an adhesive binder. 4,511,297, Cl. 412-8.000.

Wilt, Chester F., Jr., to St. Joseph's Hospital and Medical Center. Apparatus for facilitating intravenous feeding during transportation of patient. 4,511,157, Cl. 280-289.0WC.

Wilt, Henry E.; and Murray, Larry N., to Fabralloy, Inc. Liquid distribution device. 4,511,088, Cl. 239-455.000.

Winchell, David A.: *See—*
Fowles, Thomas A.; Slater, Glenn L.; and Winchell, David A., 4,511,529, Cl. 264-515.000.

Wincze, Steven P.; and Rickard, Earl K., to Combustion Engineering, Inc. Seal for boiler water wall. 4,510,892, Cl. 122-510.000.

Windall, Owen D. Practice golf net device. 4,511,146, Cl. 273-181.00J.

Winkler, Otmar, to SKF Kugellagerfabriken GmbH. Constant speed joint assembly. 4,511,345, Cl. 464-145.000.

Winseck, Michael M., Jr.: *See—*
Fulcomer, Emanuel J., Jr.; Nici, Richard J.; Poteat, Vance E.; Schramm, George W.; Sharp, John B.; and Winseck, Michael M., Jr., 4,512,016, Cl. 370-110.100.

Wischusen, Henry, III, to Rock-Tenn Company. Combination snack food tray. 4,511,042, Cl. 206-611.000.

Wisniewski, Waldemar S., to Exploration Logging, Inc. Direct current control in inductive loads. 4,511,829, Cl. 318-317.000.

Witalka, Jerome J.; Buettner, Howard L.; and Ellsworth, James G., to Sperry Corporation. Simultaneous load and verify of a device control store from a support processor via a scan loop. 4,511,967, Cl. 364-200.000.

Witdoek, Daniel C.; and Dhont, Andre G. J., to Sperry Corporation. Drive tensioning apparatus. 4,511,348, Cl. 474-109.000.

Wittig, Karl R., to North American Philips Corporation. Compensation for differences in gain among amplifiers. 4,511,855, Cl. 330-279.000.

Wloczyk, Uwe, to Lucas Industries Public Limited Company. Brake pressure regulator for an hydraulic vehicle braking system. 4,511,185, Cl. 303-6.00C.

Woerner, Frank P.: *See—*
Mahnke, Harald; Woerner, Frank P.; Weber, Heinz; and Kreibiehl, Guenter, 4,511,678, Cl. 521-52.000.

Woffendin, Arnold, to Silentnight Holdings PLC. Box spring assemblies. 4,510,635, Cl. 5-247.000.

Wolbrink, David W.: *See—*
Sarnosky, Joseph R.; Wolbrink, David W.; and Otte, Dieter W., 4,510,851, Cl. 98-42.080.

Wolf, Lajos: *See—*
Szendrei, Kalman; Minker, Emil; Rozsa, Zsuzsanna; Koch, Lehel; and Wolf, Lajos, 4,511,559, Cl. 514-54.000.

Wolf, Leslie G., II: *See—*
Diedrich, Brian J.; and Wolf, Leslie G., II, 4,510,634, Cl. 5-98.00B.

Won, Vann Y. Top feeding liquid atomizer. 4,511,084, Cl. 239-223.000.

Wong, Wai C.: *See—*
Nash, Randy D.; and Wong, Wai C., 4,512,013, Cl. 370-69.100.

Wood, John; and Dominey, Raymond J., to De La Rue Systems Limited. Cash dispensing apparatus. 4,511,795, Cl. 235-379.000.

Wood, Peter N., to International Rectifier Corporation. Transformer-isolated power MOSFET driver circuit. 4,511,815, Cl. 307-584.000.

Woodruff, Roger D., to Champion Corporation. Latch for securing reel carrying spindles to a loading and unloading mechanism. 4,511,304, Cl. 414-546.000.

Woods, Richard E.; and Bradburn, Marvin D., to Car-Go, Corp. Vehicle compactor. 4,510,858, Cl. 100-35.000.

Wright, Bernard S.; Hsia, Chung H.; and Owen, Hartley, to Mobil Oil Corporation. Light olefin conversion to heavier hydrocarbons with sorption recovery of unreacted olefin vapor. 4,511,747, Cl. 585-415.000.

Wu, Tai T.: *See*—
Schwartz, Jack; and Wu, Tai T., 4,511,229, Cl. 354-20.000.

Wu, Yulin. Composition and method for corrosion inhibition. 4,511,001, Cl. 166-310.000.

Wuerzer, Bruno: *See*—
Hagen, Helmut; Markert, Juergen; Kohler, Rolf-Dieter; and Wuerzer, Bruno, 4,511,393, Cl. 71-92.000.

Wurzburg, Henry, to Motorola, Inc. Method and apparatus for obtaining small fractional units of capacitance. 4,511,851, Cl. 330-51.000.

Xerox Corporation: *See*—
Creagh, Linda T., 4,511,598, Cl. 427-58.000.
Smith, Craig A., 4,511,243, Cl. 355-14.0CU.

Yachigo, Shinichi: *See*—
Ishii, Tamaki; Yachigo, Shinichi; and Takahashi, Yukoh, 4,511,491, Cl. 252-404.000.

Yagihara, Morio: *See*—
Hirano, Tsumoru; Yagihara, Morio; and Umemoto, Makoto, 4,511,647, Cl. 430-381.000.

Yakura, John, to California Linear Circuits, Inc. Process for making stacked high voltage rectifiers. 4,510,672, Cl. 29-574.000.

Yale-New Haven Hospital, Inc.: *See*—
Gray, Laurence A., 4,510,924, Cl. 128-1.200.

Yamada, Ichiho: *See*—
Ida, Jinsei; Fujita, Tsutomu; Yamada, Ichiho; Higuchi, Fumio; and Matsuo, Kenzaburo, 4,510,669, Cl. 29-568.000.

Yamada, Jiro; Maeda, Tetsuo; and Yasuda, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Apparatus for controlling linear tracking arm in record player. 4,512,010, Cl. 369-220.000.

Yamada, Noboru; and Nakamura, Kunihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet handling device. 4,511,136, Cl. 271-187.000.

Yamada, Osamu: *See*—
Ninagawa, Yoichi; Yamada, Osamu; Renge, Tsumoru; Kyo, Sunao; Osaki, Takayoshi; and Kushida, Koichi, 4,511,751, Cl. 585-608.000.

Yamada, Yasuaki; Ozawa, Toshiaki; and Kondo, Hiroatsu, to Canon Kabushiki Kaisha. Servo control apparatus. 4,511,830, Cl. 318-318.000.

Yamada, Yasuyuki, to Canon Kabushiki Kaisha. Auto-focus camera. 4,511,232, Cl. 354-403.000.

Yamaguchi, Katsumi; Takai, Kazuki; and Okada, Hitoshi, to Clarion Co., Ltd. Tape player having motor-driven tape-pack loading mechanism. 4,511,940, Cl. 360-96.600.

Yamaguchi, Toshiaki, to Kinugawa Rubber Industrial Co., Ltd. Method for making weatherstripping having a rough, low-friction surface. 4,511,526, Cl. 264-129.000.

Yamahara, Noboru: *See*—
Shinohara, Hironobu; Yamahara, Noboru; and Yoshida, Yoshinori, 4,511,683, Cl. 524-3.000.

Yamamoto, Akio: *See*—
Nakamura, Yoichi; Yamamoto, Akio; Nogita, Shunsuke; Kuge, Toshio; and Muroi, Katsumi, 4,511,363, Cl. 44-1.00G.

Yamamoto, Hachizou: *See*—
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,511,891, Cl. 340-734.000.

Yamamoto, Masafumi, to Isolite Babcock Refractories Co., Ltd. Process for manufacturing ceramic fibers consisting mainly of alumina and silica. 4,511,664, Cl. 501-35.000.

Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, to Nissan Motor Company, Limited. Continuously variable V-belt transmission including hydrodynamic transmission unit with lock-up means. 4,510,822, Cl. 74-733.000.

Yamashita, Kiyoshi; and Iijima, Toshifumi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 4,511,648, Cl. 430-503.000.

Yamashita, Norio: *See*—
Komatsu, Fumiaki; Saegusa, Kazuyuki; Seshimo, Yu; and Yamashita, Norio, 4,510,767, Cl. 62-200.000.

Yamazaki, Kenji; and Maeda, Kazuo, to Uniden Corporation of Japan. Automatic communication standby device in cordless telephone. 4,511,761, Cl. 179-2.0EA.

Yamazaki, Yasuhiro; and Endo, Toshiaki, to Kokusai Denshin Denwa Kabushiki Kaisha. Coding method for multilevel-gradated picture signal. 4,511,213, Cl. 358-261.000.

Yan, Tsoung Y.; and Shu, Paul, to Mobil Oil Corporation. Simultaneous coking of residual oil and partial gasification and desulfurization of coal. 4,511,459, Cl. 208-127.000.

Yanagihara, Kazunori: *See*—
Fujimoto, Terunori; Shimizu, Nobuyoshi; Shimizu, Mutsuhiro; Yanagihara, Kazunori; Miyachi, Akio; and Inui, Tsuneo, 4,511,631, Cl. 428-632.000.

Yanai, Akio; and Shirahata, Ryuji, to Fuji Photo Film Co., Ltd. System of manufacturing magnetic recording media. 4,511,594, Cl. 427-38.000.

Yano, Haruhiko: *See*—
Higashi, Kensaku; Yano, Haruhiko; Sato, Hirotsugu; Sukegawa, Ken; and Ooba, Yuji, 4,511,642, Cl. 430-161.000.

Yano, Naomichi; Makido, Isao; and Ito, Hajime, to Kubota Ltd. Latent heat accumulating greenhouse. 4,510,921, Cl. 126-429.000.

Yano, Takashi, to Ricoh Company, Ltd. Electrophotographic process. 4,511,236, Cl. 355-3.0BE.

Yasuda, Haruo: *See*—
Miyamae, Ryuichi; and Yasuda, Haruo, 4,510,942, Cl. 128-680.000.

Yasuda, Hiroshi: *See*—
Yamada, Jiro; Maeda, Tetsuo; and Yasuda, Hiroshi, 4,512,010, Cl. 369-220.000.

Yatabe, Fumio; and Ozaki, Syunzaburo, to Honda Giken Kogyo Kabushiki Kaisha. Throttle valve control apparatus. 4,510,901, Cl. 123-325.000.

Yazaki, Jinichi; and Sakano, Kozaburo, to Toyo Seikan Kaisha Ltd. Multi-layer drawn plastic vessel. 4,511,610, Cl. 428-35.000.

Yealy, Carl F., to Merline Industries, Inc. Cable reel with reinforcing flanges. 4,511,417, Cl. 156-73.500.

Yeh, Yu S.: *See*—
Greenstein, Lawrence J.; and Yeh, Yu S., 4,512,034, Cl. 455-139.000.

Yeo, Denis, to Westinghouse Electric Corp. Welding nuclear reactor fuel rod end plugs. 4,511,075, Cl. 228-7.000.

Ying, Wei-chi: *See*—
Colaruotolo, Joseph F.; Irvine, Robert L.; Ketchum, Lloyd H., Jr.; and Ying, Wei-chi, 4,511,657, Cl. 435-253.000.

Yokoyama, Akira; Arano, Yasushi; and Hosotani, Takeo, to Nihon Medi-Physics Co., Ltd. 1-(p-Substituted or unsubstituted aminoalkyl)phenylpropane-1,2-dione bis(thiosemicarbazone) derivatives, and their production and use. 4,511,550, Cl. 424-1.100.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Small signal amplifying circuit for a pickup cartridge. 4,512,008, Cl. 369-134.000.

Yokoyama, Tatsuro: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,511,574, Cl. 514-371.000.

Yoneda, Takao; and Sakakibara, Yasuji, to Toyoda Koki Kabushiki Kaisha. Method of grinding a curved corner portion. 4,510,719, Cl. 51-289.00R.

Yonezu, Ikuo: *See*—
Sakai, Takashi; Honda, Naojiro; and Yonezu, Ikuo, 4,510,759, Cl. 62-48.000.

Yoo, Han S.; and Lee, Wha S., to Korea Advanced Institute of Science and Technology. Wholly aromatic or aliphatic aromatic block copolyamides and process therefor. 4,511,709, Cl. 528-331.000.

Yoon, Han S.; and Son, Tae W., to Korea Advanced Institute of Science and Technology, 200-43. Highly oriented aromatic polyamide short fiber. 4,511,623, Cl. 428-359.000.

Yoshida, Hiroshi; Matsuda, Yoshio; and Komeya, Akira, to Yoshida Kogyo K.K. Slide fastener assembly. 4,510,656, Cl. 24-390.000.

Yoshida Kogyo K. K.: *See*—
Asahi, Sadaho, 4,510,655, Cl. 24-382.000.
Matsumoto, Masao; and Imai, Shigeru, 4,510,662, Cl. 29-408.000.
Takahashi, Kihei, 4,510,658, Cl. 29-33.200.

Yoshida Kogyo K.K.: *See*—
Yoshida, Hiroshi; Matsuda, Yoshio; and Komeya, Akira, 4,510,656, Cl. 24-390.000.

Yoshida, Masatoshi; and Miyadera, Yasuo, to Hitachi Chemical Company. Process for producing a polyimide solution. 4,511,681, Cl. 523-310.000.

Yoshida, Ryo, to Daihatsu Motor Company Limited. Lockup control device for a torque converter. 4,510,747, Cl. 60-343.000.

Yoshida, Yoshinori: *See*—
Shinohara, Hironobu; Yamahara, Noboru; and Yoshida, Yoshinori, 4,511,683, Cl. 524-3.000.

Yoshihisa, Kozo; and Okui, Isamu, to Tokyo Shibaura Denki Kabushiki Kaisha. FM Pulse counting demodulator with multiplier for input and delayed input signals. 4,511,849, Cl. 329-103.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Tsukada, Takami; Akutsu, Masao; and Saito, Tadao, 4,511,418, Cl. 156-245.000.

Yoshiyama, Toshio: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,511,241, Cl. 355-14.0CU.

Young, Terry G., to Joy Manufacturing Company. Dual seal in-line test valve. 4,510,970, Cl. 137-625.400.

Younger, Dwen R. Trailer hitch guide assembly. 4,511,159, Cl. 280-477.000.

Ytron Dr. Karg GmbH: *See*—
Karg, Roland; and Sattelmaier, Helmut, 4,511,256, Cl. 366-165.000.

Yu, Simon H., to B. F. Goodrich Company, The. Extraction of oligomers from polymers of epihalohydrin. 4,511,742, Cl. 568-614.000.

Yudis, Donald W.; and Moody, Roy A. Tie strip. 4,510,649, Cl. 24-16.0PB.

Yuill, Grenville K., to Lion Industries Ltd. Method and apparatus for testing the air-tightness of a building using transient pressurization. 4,510,791, Cl. 73-40.000.

Yukawa, Akira, to Nippon Electric Co., Ltd. Voltage comparator circuit. 4,511,810, Cl. 307-355.000.

Yuki, Heimei; and Okamoto, Yoshio, to Daicel Chemical Industries, Ltd. Optically active polymer preparation and use. 4,511,475, Cl. 210-635.000.

Yumoto, Osamu: *See*—
Hagiwara, Yoshimune; Sugiyama, Shizuo; Maeda, Narimichi; Yumoto, Osamu; Akazawa, Takashi; Kobayashi, Masahito; Kita, Yasuhiro; and Kita, Yuzo, 4,511,990, Cl. 364-748.000.

Zamboni, Alderino, to RISVIN - Ricerche e Sviluppo Industriale - S.r.l. Method of and apparatus for the handling of products by operative means carried in continuous movement. 4,511,027, Cl. 198-478.000.

Zambuto, Mauro: *See*—
McGovern, Paul A.; and Zambuto, Mauro, 4,511,247, Cl. 356-3.000.

Zenith Electronics Corporation: *See*—
Rajaram, Babu, 4,511,965, Cl. 364-200.000.

Zeyher, Fritz: *See*—
Fritz, Raimund; and Zeyher, Fritz, 4,510,844, Cl. 89-135.000.

Ziegler, Thomas K.: *See*—
Vella, Paul L., 4,510,770, Cl. 62-464.000.

Zilkha, Sasson: *See*—
Mayne, W. Harry; and Zilkha, Sasson, 4,512,001, Cl. 367-189.000.

Zincroksid S.p.A.: *See*—
Bruno, Roberto; and Memmi, Massimo, 4,511,633, Cl. 428-666.000.

Zlotnicki, Lucjan. Bridge launcher. 4,510,637, Cl. 14-2.400.

Zoss, Robert: *See*—
Olson, Sharon; and Zoss, Robert, 4,511,583, Cl. 426-89.000.

Zymark Corporation: *See*—
Hutchins, Burleigh M.; and Abrahams, Louis, 4,510,684, Cl. 29-703.000.

Zysset, Edgar H., to Automated Container Corporation. Pull-tab forming method. 4,511,299, Cl. 413-12.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF APRIL, 1985

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Australian Merino Wool Harvesting Ltd.: *See*—
Lines, Lancelot H.; and Baxter, John R., Re. 31,866, Cl. 128-419.00R.

Baxter, John R.: *See*—
Lines, Lancelot H.; and Baxter, John R., Re. 31,866, Cl. 128-419.00R.

Beasley, John K.; Beckerbauer, Richard; Schleinitz, Henry M.; and Wilson, Frank C., to Mitsubishi Rayon Co., Ltd. Low attenuation optical fiber of deuterated polymer. Re. 31,868, Cl. 350-96.300.

Beckerbauer, Richard: *See*—
Beasley, John K.; Beckerbauer, Richard; Schleinitz, Henry M.; and Wilson, Frank C., Re. 31,868, Cl. 350-96.300.

Kennon, James L., to Nordson Corporation. Electrostatic spray gun. Re. 31,867, Cl. 239-3.000.

Lines, Lancelot H.; and Baxter, John R., to Senil Nominees Pty. Ltd.; and Australian Merino Wool Harvesting Ltd. Immobilizing animals. Re. 31,866, Cl. 128-419.00R.

Mitsubishi Rayon Co., Ltd.: *See*—
Beasley, John K.; Beckerbauer, Richard; Schleinitz, Henry M.; and Wilson, Frank C., Re. 31,868, Cl. 350-96.300.

Nordson Corporation: *See*—
Kennon, James L., Re. 31,867, Cl. 239-3.000.

Roux, Christiane. Artificial joints, in particular coxo-femoral joints. Re. 31,865, Cl. 3-1.912.

Schleinitz, Henry M.: *See*—
Beasley, John K.; Beckerbauer, Richard; Schleinitz, Henry M.; and Wilson, Frank C., Re. 31,868, Cl. 350-96.300.

Senil Nominees Pty. Ltd.: *See*—
Lines, Lancelot H.; and Baxter, John R., Re. 31,866, Cl. 128-419.00R.

Wilson, Frank C.: *See*—
Beasley, John K.; Beckerbauer, Richard; Schleinitz, Henry M.; and Wilson, Frank C., Re. 31,868, Cl. 350-96.300.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Anthony Manufacturing Company: *See*—
Ray, Charles A.; and Kent, John L., B1 4,316,579, Cl. 239-123.000.

Basilone, Anthony J.: *See*—
Sivertz, Christian; and Basilone, Anthony J., B1 3,963,842, Cl. 427-305.000.

Christenson, Roger M., to Pittsburgh Plate Glass Company. Water-insoluble condensation products of aldehydes and acrylamide interpolymers. B1 2,978,437, 4-16-85, Cl. 525-163.000.

Christenson, Roger M., to Pittsburgh Plate Glass Company. Resinous materials. B1 3,037,963, 4-16-85, Cl. 525-154.000.

Fankhauser, Peter: *See*—
Witschi, Heinz; and Fankhauser, Peter, B1 4,338,757, Cl. 52-699.000.

Kent, John L.: *See*—
Ray, Charles A.; and Kent, John L., B1 4,316,579, Cl. 239-123.000.

Korex Company, The: *See*—
Porasik, Paul A., B1 4,427,417, Cl. 23-313.00R.

London Laboratories Limited Co.: *See*—
Sivertz, Christian; and Basilone, Anthony J., B1 3,963,842, Cl. 427-305.000.

Nye, Alice W. Output commode pan. B1 3,654,638, 4-16-85, Cl. 4-144.100.

Papst, Hermann, to Papst-Motoren KG. Soundproofed housing for electric motors. B1 3,527,969, 4-16-85, Cl. 310-51.000.

Papst-Motoren KG: *See*—
Papst, Hermann, B1 3,527,969, Cl. 310-51.000.

Pittsburgh Plate Glass Company: *See*—
Christenson, Roger M., B1 2,978,437, Cl. 525-163.000.
Christenson, Roger M., B1 3,037,963, Cl. 525-154.000.

Porasik, Paul A., to Korex Company, The. Process for preparing detergent compositions containing hydrated inorganic salts. B1 4,427,417, 4-16-85, Cl. 23-313.00R.

Ray, Charles A.; and Kent, John L., to Anthony Manufacturing Company. Multi-purpose seal for pop-up sprinkler. B1 4,316,579, 4-16-85, Cl. 239-123.000.

Sivertz, Christian; and Basilone, Anthony J., to London Laboratories Limited Co. Deposition of copper. B1 3,963,842, 4-16-85, Cl. 427-305.000.

Witschi, Heinz; and Fankhauser, Peter. Device for connecting a structure with a wall to be poured with concrete. B1 4,338,757, 4-16-85, Cl. 52-699.000.

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Adelaide Brighton Cement Limited: *See*—
Schroder, Ernest W.; and Pickford, David A., 278,457, Cl. D23-2.000.

American Telecommunications Corporation: *See*—
Perkins, George D., 278,433, Cl. D14-53.000.

Assez, Pierre J. G., to Durobor Societe Anonyme. Goblet. 278,401, 4-16-85, Cl. D7-13.000.

Bailey, Dennis J., to Bailey, Dennis James. Wheelchair tire cleaner. 278,390, 4-16-85, Cl. D4-129.000.

Bailey, Dennis James: *See*—
Bailey, Dennis J., 278,390, Cl. D4-129.000.

Barlik, Richard: *See*—
Knight, Elizabeth; and Barlik, Richard, 278,448, Cl. D21-116.000.

Baus, Andre E. J., to Goodyear Tire & Rubber Company, The. Tire. 278,423, 4-16-85, Cl. D12-147.000.

Bayly, Peter K., to Roplas Pty. Ltd. Reclining lounge chair or similar article. 278,392, 4-16-85, Cl. D6-361.000.

Beard, Kenneth K. Acoustic reflector headset. 278,431, 4-16-85, Cl. D14-36.000.

Bedel, Denis E., to North American Philips Electric Corp. Air-cooled compact electric lamp. 278,462, 4-16-85, Cl. D26-3.000.

Bergman, Andrew I.: *See*—
Kujawski, Stanley M.; and Bergman, Andrew I., 278,446, Cl. D21-63.000.

Birchenall, Richard W. Combined bottle opener with shot measurer. 278,405, 4-16-85, Cl. D8-34.000.

Bixler, George, to Thompson, Nellie. Illuminated cane. 278,387, 4-16-85, Cl. D3-7.000.

Brooks, Robert. Combined fire hose and cabinet therefor. 278,464, 4-16-85, Cl. D29-2.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Morishita, Masayuki, 278,404, Cl. D18-1.000.
Morishita, Masayuki, 278,443, Cl. D18-1.000.

Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., to Simmons Universal Corporation. Crib footboard. 278,398, 4-16-85, Cl. D6-505.000.

Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., to Simmons Universal Corporation. Crib footboard. 278,399, 4-16-85, Cl. D6-505.000.

Buck, Marshall D., to Cerwin-Vega, Inc. Grille assembly for a coaxial loudspeaker. 278,432, 4-16-85, Cl. D14-39.000.

Carbajales Santa-Eulalia, Javier B.: *See—*
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 278,421, Cl. D11-162.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a quail. 278,421, 4-16-85, Cl. D11-162.000.

Carlsen, Soren: *See—*
Reitzel, Povl; and Carlsen, Soren, 278,411, Cl. D9-403.000.

Caton, Robert W.: *See—*
Eckstedt, Paul D.; and Caton, Robert W., 278,427, Cl. D13-12.000.

Cerwin-Vega, Inc.: *See—*
Buck, Marshall D., 278,432, Cl. D14-39.000.

Cesaroni, William C., to Dart Industries Inc. Electric skillet. 278,403, 4-16-85, Cl. D7-360.000.

Chadiam Diamond Mfg., Inc.: *See—*
Nejman, Daniel, 278,418, Cl. D11-90.000.

Chaussures Mephisto S.A.: *See—*
Michaeli, Martin, 278,383, Cl. D2-320.000.

Chen, York, to Y. Chen & Co., Ltd. Golf shoe sole. 278,382, 4-16-85, Cl. D2-320.000.

Cho, Joong H. Bottle cap for edible oil. 278,414, 4-16-85, Cl. D9-446.000.

Colgate-Palmolive Company: *See—*
Reitzel, Povl; and Carlsen, Soren, 278,411, Cl. D9-403.000.

Colquitt, Lester M. Model racing car. 278,449, 4-16-85, Cl. D21-137.000.

Cook International, Inc.: *See—*
Hill, James J., 278,419, Cl. D11-121.000.

Cook, Ronald E. Sink strainer. 278,459, 4-16-85, Cl. D23-42.000.

Dart Industries Inc.: *See—*
Cesaroni, William C., 278,403, Cl. D7-360.000.

Doodson, Peter J.; and Joosten, Stefanus F. W., to U.S. Philips Corporation. Dictating machine. 278,429, 4-16-85, Cl. D14-3.000.

Draheim, Harvey J.: *See—*
Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 278,398, Cl. D6-505.000.
Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 278,399, Cl. D6-505.000.

Durobor Societe Anonyme: *See—*
Assez, Pierre J. G., 278,401, Cl. D7-13.000.

Eckstedt, Paul D.; and Caton, Robert W., to FMC Corporation. Pump interface. 278,427, 4-16-85, Cl. D13-12.000.

Englishtown Sportswear, Ltd.: *See—*
Heinfling, Martin, 278,375, Cl. D2-28.000.
Heinfling, Martin, 278,376, Cl. D2-28.000.
Heinfling, Martin, 278,377, Cl. D2-28.000.
Heinfling, Martin, 278,378, Cl. D2-28.000.
Heinfling, Martin, 278,379, Cl. D2-28.000.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; and Everitt, Delmar K., 278,450, Cl. D21-141.000.

Fenne, Kenneth R., to Pittway Corporation. Wall timer. 278,415, 4-16-85, Cl. D10-40.000.

Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, to Hirsh Company. Router table. 278,440, 4-16-85, Cl. D15-141.000.

Fleischer, William B., Jr., to Upneumat International, Inc. Portable pneumatic tool housing. 278,407, 4-16-85, Cl. D8-61.000.

FMC Corporation: *See—*
Eckstedt, Paul D.; and Caton, Robert W., 278,427, Cl. D13-12.000.

Frankenreiter, Anthony. Storage chest for sports and other personal accessories. 278,397, 4-16-85, Cl. D6-440.000.

Fuji Co., Ltd.: *See—*
Ueda, Taichi, 278,388, Cl. D3-71.000.

General Foods Corporation: *See—*
Woodcock, Charles M.; and Kliment, Randy, 278,413, Cl. D9-446.000.

Giugiaro, Giorgetto, to Necchi S.p.A. Sewing machine. 278,438, 4-16-85, Cl. D15-70.000.

Goetz, George E.; and McNutt, Robin E. Combined plate and frame stand. 278,394, 4-16-85, Cl. D6-310.000.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Wheel for toy amphibious vehicle. 278,450, 4-16-85, Cl. D21-141.000.

Goldman, Jerome; Goldman, Marvin; Philips, Gerald; and Pesin, Joseph, to Penn Plax Plastics. Aquarium ornament. 278,465, 4-16-85, Cl. D30-12.000.

Goldman, Marvin: *See—*
Goldman, Jerome; Goldman, Marvin; Philips, Gerald; and Pesin, Joseph, 278,465, Cl. D30-12.000.

Goodyear Tire & Rubber Company, The: *See—*
Baus, Andre E. J., 278,423, Cl. D12-147.000.

Greater Toronto Food Corporation: *See—*
Palmer, Robert A., 278,409, Cl. D9-316.000.

GTE Communication Systems Corporation: *See—*
Nestell, Bengt A., 278,434, Cl. D14-60.000.

Hakoda, Kouzou, to Ryobi Limited. Cutter. 278,439, 4-16-85, Cl. D15-127.000.

Hama Hamaphot KG Hanke & Thomas: *See—*
Hanke, Rudolph, 278,441, Cl. D16-40.000.

Hanke, Rudolph, to Hama Hamaphot KG Hanke & Thomas. Film cutting apparatus. 278,441, 4-16-85, Cl. D16-40.000.

Hartney, Sheryl J., to Saab-Scania of America, Inc. Document organizer. 278,445, 4-16-85, Cl. D19-26.000.

Hasbro Industries, Inc.: *See—*
Knight, Elizabeth; and Barlik, Richard, 278,448, Cl. D21-116.000.

Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 278,375, 4-16-85, Cl. D2-28.000.

Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 278,376, 4-16-85, Cl. D2-28.000.

Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 278,377, 4-16-85, Cl. D2-28.000.

Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 278,378, 4-16-85, Cl. D2-28.000.

Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 278,379, 4-16-85, Cl. D2-28.000.

Hikawa, Koji, to Ricoh Company, Ltd. I/O Terminal for data communication. 278,435, 4-16-85, Cl. D14-101.000.

Hill, James J., to Cook International, Inc. Christmas tree ornament. 278,419, 4-16-85, Cl. D11-121.000.

Hirsh Company: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 278,440, Cl. D15-141.000.

Honda Gikken Kogyo Kabushiki Kaisha: *See—*
Toshihiko, Shibuya, 278,425, Cl. D13-1.000.

Huber, Peter M., legal representative: *See—*
Trotman, Helen H., deceased; Huber, Peter M., legal representative; and Trotman, Herbert H., 278,468, Cl. D92-1.100.

Husqvarna Aktiebolag: *See—*
Rosenblad, Lars G., 278,437, Cl. D15-68.000.

Idea Works! The: *See—*
Wilson, Michael C., 278,384, Cl. D2-360.000.

Ikeda, Shuichi: *See—*
Matsubara, Masaki; and Ikeda, Shuichi, 278,410, Cl. D9-403.000.

Ito, Kenichi: *See—*
Tsuchihashi, Yasutaka; and Ito, Kenichi, 278,428, Cl. D14-1.000.

Jack Carmichael Advertising, Inc.: *See—*
Saari, Timothy J., 278,381, Cl. D2-244.000.

John J. Madison Company, Inc.: *See—*
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 278,421, Cl. D11-162.000.

Joosten, Stefanus F. W.: *See—*
Doodson, Peter J.; and Joosten, Stefanus F. W., 278,429, Cl. D14-3.000.

Keeler, Robert A., to Steelcase Inc. Partition unit. 278,395, 4-16-85, Cl. D6-332.000.

Kern, Dannie R. L. Camper rack for holding skis and the like. 278,424, 4-16-85, Cl. D12-157.000.

Kimball, Anthony. Portable fire draft maker or similar article. 278,460, 4-16-85, Cl. D23-90.100.

Kircher, William B.; and Lester, David A., to North Fork Industries, Inc. Combined creel and game bag. 278,389, 4-16-85, Cl. D2-38.000.

Kjellen, Maud K. H., to Kjellen, Maud K. H. Belt. 278,385, 4-16-85, Cl. D2-380.000.

Kliment, Randy: *See—*
Woodcock, Charles M.; and Kliment, Randy, 278,413, Cl. D9-446.000.

Knight, Elizabeth; and Barlik, Richard, to Hasbro Industries, Inc. Toy stable. 278,448, 4-16-85, Cl. D21-116.000.

Koper, Barry R. Facial appliance for makeup. 278,453, 4-16-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,454, 4-16-85, Cl. D21-190.000.

Koziol, Stephan. Bottle-opener. 278,406, 4-16-85, Cl. D8-38.000.

Kujawski, Stanley M.; and Bergman, Andrew I., to Quaker Oats Company, The. Action mobile. 278,446, 4-16-85, Cl. D21-63.000.

Kyushu Matsushita Electric Co., Ltd.: *See—*
Miyamoto, Ishin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 278,444, Cl. D18-1.000.

Lanci, Dennis M.; and Peters, Larry J., to Physio-Control Corporation. Battery charger. 278,426, 4-16-85, Cl. D13-5.000.

Lang, Harry J. Saddle Cover. 278,467, 4-16-85, Cl. D30-19.000.

Lester, David A.: *See—*
Kircher, William B.; and Lester, David A., 278,389, Cl. D2-38.000.

Lewis, Frederick F. Game carrying strap assembly having plural loop ended straps. 278,456, 4-16-85, Cl. D22-13.000.

Lewis, Maxwell P. Gemless ring. 278,417, 4-16-85, Cl. D11-27.000.

Makhoulian, Paul B. Toy rifle. 278,451, 4-16-85, Cl. D21-145.000.

Makhoulian, Paul B. Toy gun. 278,452, 4-16-85, Cl. D21-145.000.

Matsubara, Masaki; and Ikeda, Shuichi, to Shiseido Company Ltd. Cosmetic bottle. 278,410, 4-16-85, Cl. D9-403.000.

McNutt, Robin E.: *See—*
Goetz, George E.; and McNutt, Robin E., 278,394, Cl. D6-310.000.

Michaeli, Martin, to Chaussures Mephisto S.A. Shoe sole. 278,383, 4-16-85, Cl. D2-320.000.

Miyamoto, Ishin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, to Kyushu Matsushita Electric Co., Ltd. Typewriter. 278,444, 4-16-85, Cl. D18-1.000.

Moran, Thomas F. Barricade. 278,416, 4-16-85, Cl. D10-109.000.

Morishita, Masayuki, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,404, 4-16-85, Cl. D18-1.000.

Morishita, Masayuki, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,443, 4-16-85, Cl. D18-1.000.

Moriyama, Toshiya: *See—*
Miyamoto, Ishin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 278,444, Cl. D18-1.000.

Murakami, Tsuyoshi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Motortricycle. 278,422, 4-16-85, Cl. D12-110.000.
Nagamatsu, Yasuo: *See*—
Miyamoto, Ishin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 278,444, Cl. D18-1.000.
Necchi S.p.A.: *See*—
Giugiaro, Giorgetto, 278,438, Cl. D15-70.000.
Nejman, Daniel, to Chadiam Diamond Mfg., Inc. Precious, semiprecious or synthetic cut stone. 278,418, 4-16-85, Cl. D11-90.000.
Nestell, Bengt A., to GTE Communication Systems Corporation. Wireless telephone system base unit or the like. 278,434, 4-16-85, Cl. D14-60.000.
North American Philips Electric Corp.: *See*—
Bedel, Denis E., 278,462, Cl. D26-3.000.
North Fork Industries, Inc.: *See*—
Kircher, William B.; and Lester, David A., 278,389, Cl. D2-38.000.
Nosek, Robert J. Arm weight or similar article. 278,455, 4-16-85, Cl. D21-196.000.
Olympus Optical Co., Ltd.: *See*—
Tsuchihashi, Yasutaka; and Ito, Kenichi, 278,428, Cl. D14-1.000.
Palmer, Robert A., to Greater Toronto Food Corporation. Bottle. 278,409, 4-16-85, Cl. D9-316.000.
Paul Associates: *See*—
Paul, Stanley M., 278,458, Cl. D23-25.000.
Paul, Stanley M., to Paul Associates. Faucet set. 278,458, 4-16-85, Cl. D23-25.000.
Penn Plax Plastics: *See*—
Goldman, Jerome; Goldman, Marvin; Philips, Gerald; and Pesin, Joseph, 278,465, Cl. D30-12.000.
Pepall, Lynford S., to U.S. Philips Corporation. Sun lamp. 278,461, 4-16-85, Cl. D24-68.000.
Perkins, George D., to American Telecommunications Corporation. Telephone. 278,433, 4-16-85, Cl. D14-53.000.
Pesin, Joseph: *See*—
Goldman, Jerome; Goldman, Marvin; Philips, Gerald; and Pesin, Joseph, 278,465, Cl. D30-12.000.
Peters, Larry J.: *See*—
Lanci, Dennis M.; and Peters, Larry J., 278,426, Cl. D13-5.000.
Peterson, Michael: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 278,440, Cl. D15-141.000.
Philips, Gerald: *See*—
Goldman, Jerome; Goldman, Marvin; Philips, Gerald; and Pesin, Joseph, 278,465, Cl. D30-12.000.
Physio-Control Corporation: *See*—
Lanci, Dennis M.; and Peters, Larry J., 278,426, Cl. D13-5.000.
Pickford, David A.: *See*—
Schroder, Ernest W.; and Pickford, David A., 278,457, Cl. D23-2.000.
Pittway Corporation: *See*—
Fenne, Kenneth R., 278,415, Cl. D10-40.000.
Platner, Warren. Chair. 278,391, 4-16-85, Cl. D6-366.000.
Platner, Warren. Arm chair. 278,393, 4-16-85, Cl. D6-374.000.
Quaker Oats Company, The: *See*—
Kujawski, Stanley M.; and Bergman, Andrew I., 278,446, Cl. D21-63.000.
Reichard, Stella P. Bottle spoon. 278,402, 4-16-85, Cl. D7-104.000.
Reitzel, Povl; and Carlsen, Soren, to Colgate-Palmolive Company. Bottle. 278,411, 4-16-85, Cl. D9-403.000.
Ricoh Company, Ltd.: *See*—
Hikawa, Koji, 278,435, Cl. D14-101.000.
Robinson, David W.: *See*—
Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 278,398, Cl. D6-505.000.
Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 278,399, Cl. D6-505.000.
Roplas Pty. Ltd.: *See*—
Bayly, Peter K., 278,392, Cl. D6-361.000.
Rosenblad, Lars G., to Husqvarna Aktiebolag. Sewing machine. 278,437, 4-16-85, Cl. D15-68.000.
Ross, Edward E. Combined mailbox and signal. 278,469, 4-16-85, Cl. D99-29.000.
Royston Manufacturing Corporation: *See*—
Suttles, James M., 278,400, Cl. D6-553.000.
Ryobi Limited: *See*—
Hakoda, Kouzou, 278,439, Cl. D15-127.000.
Saab-Scania of America, Inc.: *See*—
Hartney, Sheryl J., 278,445, Cl. D19-26.000.
Saari, Timothy J., to Jack Carmichael Advertising, Inc. Inflatable dome hat. 278,381, 4-16-85, Cl. D2-244.000.
Sakamoto, Masaharu: *See*—
Miyamoto, Ishin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 278,444, Cl. D18-1.000.
Schroder, Ernest W.; and Pickford, David A., to Adelaide Brighton Cement Limited. Transportable bulk container. 278,457, 4-16-85, Cl. D23-2.000.
Shampang, Joseph A. Cutting tool holder. 278,408, 4-16-85, Cl. D8-98.000.
Share, Seymour J. Battery pack belt. 278,386, 4-16-85, Cl. D2-383.000.
Shiseido Company Ltd.: *See*—
Matsubara, Masaki; and Ikeda, Shuichi, 278,410, Cl. D9-403.000.
Simmons Universal Corporation: *See*—
Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 278,398, Cl. D6-505.000.
Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 278,399, Cl. D6-505.000.
Smith, Vance R.: *See*—
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., 278,396, Cl. D6-370.000.
Solomon, Arieh. Toy vehicle. 278,447, 4-16-85, Cl. D21-76.000.
Springer, Robert H. Bird feeder. 278,466, 4-16-85, Cl. D30-15.000.
Steelcase Inc.: *See*—
Keeler, Robert A., 278,395, Cl. D6-332.000.
Storlie, John W. Lift hitch pin. 278,436, 4-16-85, Cl. D15-28.000.
Sunlux Best Group, USA, Inc.: *See*—
Yeung, Yat K., 278,412, Cl. D9-420.000.
Suttles, James M., to Royston Manufacturing Corporation. Outdoor telephone booth. 278,400, 4-16-85, Cl. D6-553.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Murakami, Tsuyoshi, 278,422, Cl. D12-110.000.
Sylvan, Richard: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 278,440, Cl. D15-141.000.
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., to Vermont Castings, Inc. Park bench. 278,396, 4-16-85, Cl. D6-370.000.
Thompson, Lawrence E. Illuminated picture box. 278,420, 4-16-85, Cl. D11-136.000.
Thompson, Nellie: *See*—
Bixler, George, 278,387, Cl. D3-7.000.
Toshihiko, Shibuya, to Honda Gikken Kogyo Kabushiki Kaisha. Power generator. 278,425, 4-16-85, Cl. D13-1.000.
Trotman, Helen H., deceased; by Huber, Peter M., legal representative; and Trotman, Herbert H. Plastic sheet material or the like. 278,468, 4-16-85, Cl. D92-1.100.
Trotman, Herbert H.: *See*—
Trotman, Helen H., deceased; Huber, Peter M., legal representative; and Trotman, Herbert H., 278,468, Cl. D92-1.100.
Tsuchihashi, Yasutaka; and Ito, Kenichi, to Olympus Optical Co., Ltd. Optical read out pickup for use in an optical audio disc machine or the like. 278,428, 4-16-85, Cl. D14-1.000.
Tyrol, Brian J.: *See*—
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., 278,396, Cl. D6-370.000.
Ueda, Taichi, to Fuji Co., Ltd. Pouch. 278,388, 4-16-85, Cl. D3-71.000.
U.S. Philips Corporation: *See*—
Doodson, Peter J.; and Joosten, Stefanus F. W., 278,429, Cl. D14-3.000.
Pepall, Lynford S., 278,461, Cl. D24-68.000.
van de Poel, Rebertus, 278,430, Cl. D14-5.000.
Upneumat International, Inc.: *See*—
Fleischer, William B., Jr., 278,407, Cl. D8-61.000.
van de Poel, Rebertus, to U.S. Philips Corporation. Combined automobile tape player and radio receiver. 278,430, 4-16-85, Cl. D14-5.000.
Verdick, Barbara J. Beard bib. 278,380, 4-16-85, Cl. D2-234.000.
Vermont Castings, Inc.: *See*—
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., 278,396, Cl. D6-370.000.
Vest, Gary W. Fluorescent light ballast receptacle with integral wall plug. 278,463, 4-16-85, Cl. D26-113.000.
Whomsley, Roxane L. Stringed instrument cover. 278,442, 4-16-85, Cl. D17-20.000.
Wilson, Michael C., to Idea Works! The. Combined sweatband and mirror. 278,384, 4-16-85, Cl. D2-360.000.
Woodcock, Charles M.; and Kliment, Randy, to General Foods Corporation. Dispensing closure. 278,413, 4-16-85, Cl. D9-446.000.
Y. Chen & Co., Ltd.: *See*—
Chen, York, 278,382, Cl. D2-320.000.
Yeung, Yat K., to Sunlux Best Group, USA, Inc. Food container. 278,412, 4-16-85, Cl. D9-420.000.

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Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de La Londe. Carnation named Londonie. 5,439, 4-16-85, Cl. 73.000.

Bennett, Cecelia Lucy Daphne: *See*—
Strawn, Leslie E., 5,436, Cl. 8.000.

Bennett, Cecilia L. D. Miniature rose plant. 5,437, 4-16-85, Cl. 9.000.

Bradford, Norman G. Nectarine tree - Early Diamond. 5,438, 4-16-85, Cl. 41.000.

Ducloux, Yves: *See*—
Barberet, Nicole; and Ducloux, Yves, 5,439, Cl. 73.000.

Duffett, William E.; and Mack, Grace H., to Mack, Grace H. Chrysanthemum plant named Ballerina. 5,440, 4-16-85, Cl. 77.000.

Duffett, William E.; and Mack, Grace H., to Mack, Grace H. Chrysanthemum plant named Camelot. 5,441, 4-16-85, Cl. 80.000.

Laboratoire de Physiologie Vegetale de La Londe: *See*—
Barberet, Nicole; and Ducloux, Yves, 5,439, Cl. 73.000.

Mack, Grace H.: *See*—
Duffett, William E.; and Mack, Grace H., 5,440, Cl. 77.000.
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C
8
115

C
1
1.5
1.912

C
144.1
332
443
478
488

C
81 R
98 B
247

C
405
471

CL
1 R

CL
2.4
71.7

CL
53 AB
104 A
118
231
320

CL
64

CL
0.25
80 R
105
266

CL
313 R

CL
16 PB

68 CD
68 R
131 C
344
382
390

CL
100

CL
33.2
156.8 R
157.3 D
259
408
429
450
460
511
526 R
561
568
571

574

577 C
588
590
598

623.1

701
703
837
838

CLASSIFICATION OF PATENTS

ISSUED APRIL 16, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

8	4,510,625
115	4,510,626

CLASS 3

1	4,510,627
1.5	4,510,628
1.912	Re.31,865

CLASS 4

144.1	B1 3,654,638
332	4,510,629
443	4,510,630
478	4,510,631
488	4,510,632

CLASS 5

81 R	4,510,633
98 B	4,510,634
247	4,510,635

CLASS 8

405	4,511,360
471	4,511,361

CLASS 12

1 R	4,510,636

CLASS 14

2.4	4,510,637
71.7	4,510,638

CLASS 15

53 AB	4,510,639
104 A	4,510,640
118	4,510,641
231	4,510,642
320	4,510,643

CLASS 17

64	4,510,644

CLASS 19

0.25	4,510,645
80 R	4,510,646
105	4,510,647
266	4,510,648

CLASS 23

313 R	B1 4,427,417

CLASS 24

16 PB	4,510,649
	4,510,650
68 CD	4,510,652
68 R	4,510,651
131 C	4,510,653
344	4,510,654
382	4,510,655
390	4,510,656

CLASS 28

100	4,510,657

CLASS 29

33.2	4,510,658
156.8 R	4,510,659
157.3 D	4,510,660
259	4,510,661
408	4,510,662
429	4,510,663
450	4,510,664
460	4,510,665
511	4,510,666
526 R	4,510,667
561	4,510,668
568	4,510,669
571	4,510,670
	4,510,671
574	4,510,672
	4,510,673
	4,510,674
	4,510,675
577 C	4,510,676
588	4,510,677
590	4,510,678
598	4,510,679
	4,510,680
623.1	4,510,681
	4,510,682
701	4,510,683
703	4,510,684
837	4,510,685
838	4,510,686

CLASS 30

34.2	4,510,687
294	4,510,688
347	4,510,689

CLASS 33

126.7 R	4,510,690
169 R	4,510,691
174 G	4,510,692
174 L	4,510,693
203.18	4,510,694
293	4,510,695
304	4,510,696

CLASS 34

1	4,510,697
117	4,510,698

CLASS 36

43	4,510,699
44	4,510,700
68	4,510,701
86	4,510,702
119	4,510,703
136	4,510,704

CLASS 37

54	4,510,705
64	4,510,706

CLASS 40

152	4,510,707
361	4,510,708

CLASS 43

17	4,510,709
42.13	4,510,710
137	4,510,711

CLASS 44

1 G	4,511,363
1 SR	4,511,362
51	4,511,364
51'	4,511,365
53	4,511,366
	4,511,367
	4,511,368
62	4,511,369

CLASS 47

66	4,510,712

CLASS 48

197 A	4,511,370
197 R	4,511,371
	4,511,372

CLASS 49

175	4,510,713
249	4,510,714
488	4,510,715

CLASS 51

5 D	4,510,716
34 J	4,510,720
58	4,510,717
170 EB	4,510,718
289 R	4,510,719
298	4,511,373

CLASS 52

40	4,510,721
213	4,510,722
223 R	4,510,723
233	4,510,724
309.1	4,510,725
309.8	4,510,726
508	4,510,727
514	4,510,728
699	B1 4,338,757
741	4,510,729

CLASS 53

53	4,510,730
66	4,510,731
168	4,510,732
434	4,510,733
449	4,510,734
464	4,510,735
567	4,510,736
570	4,510,737

CLASS 55

20	4,511,374
28	4,511,375
36	4,511,376
163	4,511,377
208	4,511,378
238	4,511,379
355	4,511,380

CLASS 56

12.8	4,510,738
17.5	4,510,739
27.5	4,510,740
341	4,510,741
384	4,510,742

CLASS 57

260	4,510,743
280	4,510,744
415	4,510,745

CLASS 59

79.1	4,510,746

CLASS 60

39.02	4,510,748
286	4,510,749
343	4,510,747
443	4,510,750
450	4,510,751
562	4,510,752
578	4,510,753
602	4,510,754
657	4,510,755
659	4,510,756
667	4,510,757

CLASS 62

17	4,511,381
20	4,511,382
45	4,510,758
48	4,510,759
49	4,510,760
73	4,510,761
79	4,510,762
115	4,510,763
133	4,510,764
154	4,510,765
171	4,510,766
200	4,510,767
320	4,510,768
457	4,510,769
464	4,510,770
514 R	4,510,771

CLASS 63

12	4,510,772

CLASS 65

6	4,511,383
114	4,511,384
135	4,511,385
273	4,511,386
287	4,511,387

CLASS 66

9 B	4,510,773
75.2	4,510,774
77	4,510,775

CLASS 68

3 R	4,510,776
12 R	4,510,777
	4,510,778

CLASS 70

208	4,510,779

CLASS 71

34	4,511,388
54	4,511,389
88	4,511,390
	4,511,391
90	4,511,392
92	4,511,393
105	4,511,394
121	4,511,395

CLASS 72

57	4,510,780
105	4,510,781
142	4,510,782
200	4,510,783
201	4,510,784
323	4,510,785
326	4,510,786
368	4,510,787
377	4,510,788
442	4,510,789
457	4,510,790

CLASS 73

37.9	4,510,805
40	4,510,791
40.7	4,510,792
86	4,510,793
116	4,510,794
118	4,510,795
119 A	4,510,796
150 R	4,510,798
151	4,510,797
	4,510,799
153	4,510,800
	4,510,801
178 R	4,510,803
290 V	4,510,804
432 R	4,510,806
	4,510,807
433	4,510,808
457	4,510,809
505	4,510,802
606	4,510,810
611	4,510,811
644	4,510,812
766	4,510,813
862.57	4,510,814

CLASS 74

61	4,510,815
372	4,510,816
474	4,510,820
477	4,510,817
	4,510,818
	4,510,819
552	4,510,821
733	4,510,822
789	4,510,823

CLASS 75

51.1	4,511,396
59.17	4,511,397
63	4,511,398
84.5	4,511,399
129	4,511,400
130 R	4,511,401
233	4,511,402

CLASS 76

86	4,510,824

CLASS 81

9.4	4,510,827
57.29	4,510,825
57.37	4,510,826

CLASS 82

4 A	4,510,828
36 R	4,510,829

CLASS 83

114	4,510,830
157	4,510,831
168	4,510,832
176	4,510,841
205	4,510,833
453	4,510,834
471.2	4,510,835

CLASS 84

1.26	4,510,836
184	4,510,837
422 R	4,510,838
434	4,510,839
477 R	4,510,840

CLASS 86

25	4,510,842

CLASS 89

14.4	4,510,843
135	4,510,844

CLASS 91

180	4,510,845
460	4,510,846
461	4,510,847
	4,510,848
515	4,510,849

CLASS 92

125	4,510,850

CLASS 98

42.08	4,510,851
94.2	4,510,852

CLASS 99

286	4,510,853
337	4,510,854
450	4,510,855
457	4,510,856

CLASS 100

35	4,510,858
	4,510,859
49	4,510,860
53	4,510,857
88	4,510,861

CLASS 101

93.14	4,510,862
119	4,510,863
123	4,510,864
153	4,510,865
365	4,510,866
	4,510,867
415.1	4,510,868

CLASS 102

240	4,510,869
307	4,510,870

CLASS 105

167	4,510,871

CLASS 106

1.22	4,511,403
14.12	4,511,404
15.05	4,511,405
18.14	4,511,406

CLASS 108

25	4,510,872

CLASS 110

289	4,510,873
347	4,510,874

CLASS 112

121.12	4,510,875
262.1	4,510,876

CLASS 114

45	4,510,877
54	4,510,878
162	4,510,879
	4,510,880
270	4,510,881

CLASS 118

300	4,510,882
305	4,510,883
405	4,510,884
674	4,510,885

CLASS 119

82	4,510,886
95	4,510,887
143	4,510,888
159	4,510,889

CLASS 122

17	4,510,890
32	4,510,891
510	4,510,892

CLASS 123

41.02	4,510,893
48 B	4,510,895
48 R	4,510,894
52 MB	4,510,896
90.48	4,510,897
192 R	4,510,898
198 D	4,510,899
321	4,510,900
325	4,510,901
	4,510,902
339	4,510,903
	4,510,904
360	4,510,905
396	4,510,906
435	4,510,907
449	4,510,908
470	4,510,909
486	4,510,910
493	4,510,911
525	4,510,912
557	4,510,913
590	4,510,914
620	4,510,915

CLASS 126

25 B	4,510,916
76	4,510,917
79	4,510,918
263	4,510,919
415	4,510,920
429	4,510,921
435	4,510,922
438	4,510,923

CLASS 128

1.2	4,510,924
1.3	4,510,925
20	4,510,926
80 H	4,510,927
94	4,510,928
200.14	4,510,929
202.22	4,510,930
202.28	4,510,931
204.29	4,510,932
207.14	4,510,933
335.5	4,510,934
419 D	4,510,935
419 R	Re.31,866
	4,510,936
422	4,510,937
633	4,510,938
639	4,510,939
667	4,510,940
671	4,510,941
680	4,510,942
	4,510,943
687	4,510,944
696	4,510,945

CLASS 130

27 B	4,510,947
27 R	4,510,948
27 T	4,510,946

CLASS 131

109 R	4,510,949
353	4,510,950

CLASS 132

7	4,510,951
37 R	4,510,952
40	4,510,953
75	4,510,954

CLASS 134

1	4,511,407

CLASS 135

25 R	4,510,955
67	4,510,956
84	4,510,957

CLASS 136

246	4,511,755
258	4,511,756

CLASS 137

13	4,510,958
15	4,510,959
75	4,510,960
86	4,510,961
102	4,510,962
117	4,510,963
210	4,510,964
375	4,510,965
	4,510,966
389	4,510,967
590	4,510,968
614.05	4,510,969
615	4,510,971
625.28	4,510,972
625.4	4,510,970
625.64	4,510,973

CLASS 138

137	4,510,974

CLASS 139

384 R	4,510,975
435	4,510,976

CLASS 140

123	4,510,977

CLASSIFICATION OF PATENTS

CLASS 141

65 4,510,978
95 4,510,979

CLASS 144

1 C 4,510,980
246 F 4,510,981

CLASS 148

1.5 4,511,408
2 4,511,409
13.2 4,511,410
20.3 4,511,411
187 4,511,413

CLASS 149

109.6 4,511,412
4,511,414

CLASS 150

52 A 4,510,982

CLASS 152

361 R 4,510,983
362 CS 4,510,984

CLASS 156

48 4,511,415
69 4,511,416
73.5 4,511,417
245 4,511,418
272.6 4,511,419
356 4,511,420
4,511,421
384 4,511,422
425 4,511,423
426 4,511,424
493 4,511,425
497 4,511,426
523 4,511,427
601 4,511,428
643 4,511,429
4,511,430

CLASS 159

47.1 4,511,431
4,511,432

CLASS 160

354 4,510,986

CLASS 162

16 4,511,433

CLASS 164

71.1 4,510,987
102 4,510,988
415 4,510,989
431 4,510,990

CLASS 165

41 4,510,991
45 4,510,992

CLASS 166

75 R 4,510,993
156 4,510,994
217 4,510,995
227 4,510,996
263 4,510,997
295 4,510,998
297 4,510,999
303 4,511,000
310 4,511,001
382 4,511,002

CLASS 169

38 4,511,003

CLASS 172

21 4,511,004
430 4,511,005

CLASS 174

68.5 4,511,757

CLASS 175

7 4,510,985
57 4,511,006
297 4,511,007
369 4,511,008

CLASS 177

1 4,511,009
25 4,511,010

CLASS 178

2 B 4,511,758
2 R 4,511,759
18 4,511,760

CLASS 179

2 EA 4,511,761
9 4,511,762
16 AA 4,511,763
90 AN 4,511,764
90 BD 4,511,765
99 A 4,511,766
4,511,767
146 R 4,511,768

CLASS 180

8.6 4,511,011
65.2 4,511,012
227 4,511,013
233 4,511,014

CLASS 182

2 4,511,015

CLASS 184

6.11 4,511,016

CLASS 187

29 R 4,511,017

CLASS 188

24.12 4,511,018
72.2 4,511,019
73.39 4,511,020
218 XL 4,511,021
299 4,511,022

CLASS 192

18 R 4,511,023

CLASS 198

346 4,511,024
377 4,511,025
469 4,511,026
478 4,511,027
497 4,511,028
621 4,511,029
633 4,511,030
836 4,511,031

CLASS 200

6 A 4,511,769
6 B 4,511,770
61.73 4,511,771
144 C 4,511,773
144 R 4,511,772
147 R 4,511,774
148 A 4,511,775
4,511,776

CLASS 202

99 4,511,434
158 4,511,435
174 4,511,436

CLASS 203

19 4,511,437

CLASS 204

4 4,511,438
37.1 4,511,439
60 4,511,440
98 4,511,441
4,511,442
108 4,511,443
148 4,511,444
158 HE 4,511,445
181 C 4,511,446
4,511,447
198 4,511,448
243 R 4,511,449
278 4,511,450
298 4,511,451
302 4,511,452

CLASS 206

1.5 4,511,032
216 4,511,033
310 4,511,034
363 4,511,035
371 4,511,036
396 4,511,037
454 4,511,038
525 4,511,039
553 4,511,040
566 4,511,041
611 4,511,042
620 4,511,043

CLASS 208

8 LE 4,511,453
10 4,511,454
4,511,455
44 4,511,456
48 AA 4,511,457
59 4,511,458
127 4,511,459
348 4,511,460

CLASS 209

47 4,511,461
140 4,511,462
166 4,511,463
4,511,464
4,511,465
395 4,511,466
522 4,511,044
535 4,511,045
539 4,511,046

CLASS 210

173 4,511,467
181 4,511,468
225 4,511,469
242.3 4,511,470
323.2 4,511,471
340 4,511,472
348 4,511,473
512.1 4,511,474
635 4,511,475
678 4,511,476
689 4,511,477
691 4,511,478
708 4,511,479

CLASS 211

90 4,511,047

CLASS 212

253 4,511,048

CLASS 215

4,511,049
216 4,511,050
219 4,511,051
225 4,511,052
230 4,511,053
252 4,511,054

CLASS 219

10.51 4,511,777
10.55 A 4,511,778
10.55 C 4,511,780
10.55 E 4,511,779
10.77 4,511,781
121 LM 4,511,783
121 P 4,511,782
123 4,511,784
124.34 4,511,785
364 4,511,786
374 4,511,787
405 4,511,788
446 4,511,789
486 4,511,790
497 4,511,791
499 4,511,792

CLASS 220

69 4,511,055
204 4,511,056
306 4,511,057

CLASS 221

2 4,511,058
115 4,511,059
4,511,060
200 4,511,061

CLASS 222

47 4,511,062
75 4,511,063
153 4,511,064
4,511,065
189 4,511,066
230 4,511,067
257 4,511,068
263 4,511,069

CLASS 224

150 4,511,070
156 4,511,071
273 4,511,072

CLASS 227

67 4,511,073
113 4,511,074

CLASS 228

7 4,511,075
180.1 4,511,076
228 4,511,077

CLASS 229

17 R 4,511,078
34 R 4,511,079
41 C 4,511,080

CLASS 235

375 4,511,793
379 4,511,794
4,511,795
492 4,511,796

CLASS 238

59 4,511,081

CLASS 239

3 Re.31,867
8 4,511,082
14 4,511,083
123 B1 4,316,579
223 4,511,084
242 4,511,085
416.3 4,511,086
433 4,511,087
455 4,511,088
553.3 4,511,089
666 4,511,090

CLASS 241

18 4,511,091
49 4,511,092
60 4,511,093

CLASS 242

7.08 4,511,094
18 G 4,511,095
47.01 4,511,096
55 4,511,097
56 R 4,511,098
71.8 4,511,099
86.51 4,511,100
107.7 4,511,101
130.2 4,511,102
186 4,511,103

CLASS 244

118.5 4,511,104
135 R 4,511,105

CLASS 248

65 4,511,106
74.1 4,511,107
188.7 4,511,108
310 4,511,109
421 4,511,110
459 4,511,111
544 4,511,112
546 4,511,113
550 4,511,114
562 4,511,115

CLASS 250

231 SE 4,511,797
4,511,798
367 4,511,799
372 4,511,800
394 4,511,801
484.1 4,511,802
563 4,511,803
578 4,511,804

CLASS 251

5 4,511,116
73 4,511,117
137 4,511,118
216 4,511,119
288 4,511,120

CLASS 252

8.55 E 4,511,480
32.5 4,511,481
34 4,511,482
62.54 4,511,484
62.9 4,511,483
70 4,511,485
90 4,511,486
99 4,511,487
162 4,511,488
172 4,511,489
174.12 4,511,490
404 4,511,491
500 4,511,492
507 4,511,493
518 4,511,494
522 A 4,511,495
4,511,496
542 4,511,497
609 4,511,498
626 4,511,499
633 4,511,500

CLASS 254

50.4 4,511,121
332 4,511,122
364 4,511,123

CLASS 260

112 R 4,511,501
4,511,502
4,511,503
112.5 R 4,511,504
112.7 4,511,505
239 A 4,511,509
239.3 D 4,511,510
239.55 D 4,511,511
245.2 R 4,511,512
404.5 4,511,513
419 4,511,514
429.2 4,511,515
462 R 4,511,516
543 F 4,511,518
549 4,511,517

CLASS 261

94 4,511,519

CLASS 264

22 4,511,520
24 4,511,521
46.4 4,511,522
46.6 4,511,523
61 4,511,524
65 4,511,525
129 4,511,526
328.2 4,511,527
328.8 4,511,528
515 4,511,529
564 4,511,530

CLASS 266

44 4,511,124
135 4,511,125

CLASS 267

140.1 4,511,126

CLASS 269

32 4,511,127
61 4,511,128

CLASS 270

54 4,511,130
4,511,131
58 4,511,132

CLASS 271

3.1 4,511,133
113 4,511,134
126 4,511,135
187 4,511,136

CLASS 272

118 4,511,137

CLASS 273

1 E 4,511,138
26 B 4,511,139
54 B 4,511,140
55 B 4,511,141
87.4 4,511,142
153 R 4,511,143
153 S 4,511,144
167 H 4,511,145
181 J 4,511,146
193 A 4,511,147
326 4,511,148

CLASS 277

3 4,511,149
12 4,511,150
92 4,511,151
207 A 4,511,152

CLASS 279

2 R 4,511,153

CLASS 280

47.26 4,511,154
204 4,511,155
276 4,511,156
289 WC 4,511,157
292 4,511,158
477 4,511,159
701 4,511,160

CLASS 283

1 A 4,511,161

CLASS 285

93 4,511,162
177 4,511,163
252 4,511,164

CLASS 289

8 4,511,165

CLASS 290

2 4,511,805
43 4,511,806
44 4,511,807
54 4,511,808

CLASS 292

29 4,511,166

CLASS 294

28 4,511,167
102.2 4,511,168
116 4,511,169

CLASS 296

1 S 4,511,170
65 R 4,511,171
146 4,511,129
4,511,172
156 4,511,173
173 4,511,174
190 4,511,175
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Vol. 1053 Number 4

OFFICIAL GAZETTE

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 23, 1985

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 25/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

Note that the amount of the international search fee for the European Patent Office will change effective May 7, 1985 and the amounts of the International PCT fees will change effective May 28, 1985. For information on these fee changes see the notice appearing in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Mar. 20, 1985. *Acting Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 20, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,325,148 through 4,326,298

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,736,107, Re. S.N. 597,582, Filed Apr. 19, 1984, Cl. 428/336, COATED CEMENTED CARBIDE PRODUCT, Thomas E. Hale, Owner of Record: *General Elec-*

tric Co., Attorney or Agent: Joseph B. Forman, Ex. Gp.: 131

3,858,793, Re. S.N. 302,402, Filed Sept. 15, 1981, Cl. 494/60, CARTRIDGE CENTRIFUGE, Denis J. Dudrey, Owner of Record: *Donaldson Co., Inc., Minneapolis, Minn.*, Attorney or Agent: John D. Gould, et al., Ex. Gp.: 242

3,937,283, Re. S.N. 703,149, Filed Feb. 19, 1985, Cl. 166/307, FORMATION FRACTURING WITH STABLE FOAM, Roland E. Blauer, et al., Owner of Record: *Scientific Software Corp., Denver, Colo.*, Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 356

4,223,970, Re. S.N. 663,817, Filed Oct. 22, 1984, Cl. 339/221, COMPLIANT BACKPLANE ELECTRICAL CONNECTOR, Leo Walter, et al., Owner of Record: *Electronics Stamping Corp., Compton, Calif.*, Attorney or Agent: William W. Haefliger, Ex. Gp.: 322

4,246,904, Re. S.N. 461,297, Filed Jan. 27, 1983, Cl. 313/99, SURGICAL SUTURE DERIVED FROM SEGMENTED POLYETHER-ESTER BLOCK COPOLYMERS, Donald S. Kaplan, Owner of Record: *American Cyanamid Co., Stamford, Conn.*, Attorney or Agent: Charles F. Costello, Jr., Ex. Gp.: 256

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,815,764, Reexam. No. 90/000,745, Requested: Mar. 21, 1985, Cl. 414/513, LOAD BODY WITH LOAD COMPACTING AND EJECTING BLADE, William C. Gilfillan, et al., Owner of Record: *Saul R. Spector, Pottsville, Pa.*, Attorney or Agent: Harvey B. Jacobson, Ex. Gp.: 310, Requester: Harsco Corp., Camp Hill, Pa.

3,893,462, Reexam. No. 90/000,738, Requested: Mar. 11, 1985, Cl. 128/421, BIOELECTROCHEMICAL REGENERATOR AND STIMULATOR DEVICES AND METHODS FOR APPLYING ELECTRICAL ENERGY TO CELLS AND/OR TISSUE IN A LIVING BODY, Michael R. Manning, Owner of Record: *ESB, Inc., Philadelphia, Pa.*, Attorney or Agent: Anthony J. Rossi, Ex. Gp.: 335, Requester: Electro-Biology, Inc., Washington, D.C.

4,017,652, Reexam. No. 90/000,743, Requested: Mar. 21, 1985, Cl. 427/54.1, PHOTOCATALYST SYSTEM AND ULTRAVIOLET LIGHT CURABLE COATING COMPOSITIONS CONTAINING THE SAME, Gerald W. Gruber, Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.*, Attorney or Agent: Russell A. Eberly, Ex. Gp.: 150, Requester: Upjohn Co., Kalamazoo, Mich.

4,301,302, Reexam. No. 90/000,742, Requested: Mar. 15, 1985, Cl. 568,373, TETRAALKYL SUBSTITUTED TRICYCLIC KETONE, Mark A. Sprecker, et al., Owner of Record: *International Flavors & Fragrances, Inc., New York, N.Y.*, Attorney or Agent: Arthur L. Liberman, Ex. Gp.: 126, Requester: International Flavors & Fragrances, New York, N.Y.

Marks Published for Opposition

The Apr. issues of the Official Gazette (Trademark Section) will present marks published for opposition in two separate sections.

Each section will contain both multiple class and single class applications. The first section will be printed at the beginning of the Official Gazette and the second section will be printed at the end of the Official Gazette, after the Index of Registrants.

The second section will be numbered separately from the first section, and each page will bear the notation Ap.

Jan. 10, 1985.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Princess Peggy, Inc., Peoria, Ill., Reg. No. 805,995, for the mark "NO-GAP", Canc. No. 14,344.

Extec Corp., d.b.a. Health Headquarters, Castleton, Ind., Reg. No. 1,125,912, for the mark "ARTHRON", Canc. No. 14,402.

Crimefighter Systems, Inc., Hallandale, Fla., Reg. No. 1,206,494, for the mark "CRIMEFIGHTER", Canc. No. 14,572.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,341,730, Goodrich and Ignatowski, ELECTRON MULTIPLIER WITH MULTIPLYING PATH WALL MEANS HAVING A REDUCES REDUCIBLE MENTAL COMPOUND CONSTITUENT; **4,227,087,** Edward A. Kurz, BEAN DETECTOR, **filed** May 15, 1984, D.C. Mass. (Springfield), Doc. 84-0187-G, *Galileo Electro-Optics Corp.* v. *Detector Technology, Inc.*

3,343,506, Buchbinder and Duignan, FOUR POST SHELVING WITH INSERTABLE SHELVES, **filed** Sept. 24, 1984, D.C., M.D. Fla. (Tampa), Doc 84-1271-Civ-T-15, *Ardco, Inc.* v. *Commercial Refrigerator Door Co.*

3,378,633, Albert Macovski, MONOCHROME PHOTOGRAPHY SYSTEM FOR COLOR TELEVISION; **37,491,** same, PHOTOGRAPHY USING SPATIAL FILTERING, **filed** July 19, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-3625 WWS, *S R I International* v. *Matsushita Electric Corp. of America.*

3,425,080, Doilitzsch and Skirde, WASHING APPARATUS FOR VEHICLES, MORE PARTICULARLY FOR MOTOR VEHICLES, **filed** Dec. 1, 1981, D.C., E.D. Mich. (Ann Arbor), Doc. 81-60241, *OY Electrolux AB Tammermatic* v. *Lamminen Wash Systems, Inc.* Plaintiff filed a complaint charging defendants with patent infringement, filed Aug. 28, 1984.

3,430,612, John J. Ansteth, ROCKER ARM STUD GIRDLE, **filed** Oct. 12, 1984, D.C., W.D. Mich. (Grand Rapids), Doc. G84–1161–CA1, *John J. Ansteth* v. *Abacus Acceptance Co., Inc., a Mich. Corp., d/b/a Baker Engineered Racing Engines & Components.*

3,579,127, Technologies, Inc., APPARATUS FOR MONITORING PULSES, **filed** Mar. 1, 1984, D.C., S.D. Calif. (San Diego), Doc. 84–0541–K (M), *GA Technologies, Inc.* v. *Gamma-Metrics, et al.* This case is hereby dismissed with prejudice as to all parties, each party to bear his own costs and fees, filed Aug. 22, 1984.

3,595,141, The D.C. Brown Co., PAVEMENT AND BRIDGE JOINT SEALS, **filed** Sept. 2, 1983, D.C., E.D. Mo. (St. Louis), Doc. N83–0098C, *The D.S. Brown Co.* v. *The Huntington Rubber Corp.* This action is hereby dismissed without prejudice, each party to bear its own costs, filed Mar. 27, 1984.

3,609,014, Arthur W. Kurz, ELECTRIC REMOTE CONTROL REAR VIEW MIRROR, filed Aug. 16, 1984, D.C., W.D. Mich. (Grand Rapids), Doc. G84–926 CA1, *NI Industries, Inc.* v. *Lowell Engineering Corp.*

3,618,898, Elmer L. Notestine, WINCH, **filed** Sept. 14, 1984, D.C. Oreg. (Portland), Doc. CV 84–1045, *Elmer L. Notestine* v. *Tensen Co., Inc., et al.*

3,649,532, John O. McLean, METHOD OF TREATING WATER, **filed** Jan. 7, 1983, D.C., S.D. Ohio (Columbus), Doc. C–2–83–70, *Chemical Engineering Corp.* v. *William R. Hague, Inc.* **Same, filed** Oct. 14, 1982, D.C., N.D. Ind. (Fort Wayne), Doc F–82–417, *Chemical Engineering Corp.* v. *Essef Industries, Inc.*

3,651,734, Thomas W. McSherry, EXPANSIBLE FASTENER, **filed** Aug. 10, 1984, D.C. Conn. (Hartford), Doc. H 84 880, *Mechanical Plastics Corp.* v. *Emhart Industries, Inc.*

3,692,155, Joseph N. Laurita, LUGGAGE HANDLE; **D. 220,819,** same, HANDLE ASSEMBLY, **filed** Mar. 1, 1984, D.C., S.D.N.Y., Doc. 84–Civ–1465(WK), *CPG Products Corp.* v. *M/M Verdi International, Inc.*

3,709,552, Boalloy Ltd., VAN BODIES, **filed** Aug. 22, 1984, D.C., N.D. Tex. (Fort Worth), Doc. CA4–84–347 K, *Boalloy Ltd.* v. *Aztec Don-Bur Products, Inc.*

3,751,014, Graham Engineering Corp., APPARATUS FOR EXTRUDING SYNTHETIC PLASTIC RESINS AT LOW TEMPERATURES; **3,866,669,** Crompton & Knowles Corp., EXTRUDER AND TEMPERATURE CONTROL APPARATUS THEREFOR; **4,262,737,** Crompton & Knowles Corp., EXTRUDER TEMPERATURE CONTROLLER, **filed** May 10, 1982, D.C., S.D.N.Y., Doc. 82–Civ–2972, *Eurotherm Corp.* v. *Crompton & Knowles Corp.* Action settled on July 18, 1984.

3,757,087, Smiths Industries, Ltd., HEATING ELEMENTS, **filed** Mar. 30, 1978, D.C.N.J. (Newark), Doc. 78–647, *Interdynamics, Inc., et al.* v. *Firma Wolf, et al.* Stipulation and Order transferring action to E.D.N.Y. (Ackerman), filed Aug. 21, 1984.

3,772,065, Dynamit Nobel Aktiengesellschaft, METHOD FOR WATERPROOFING MASONRY STRUCTURERS, **filed** June 13, 1984, D.C., W.D. Okla. (Oklahoma City), Doc. CIV 84–1456–R, *Advanced Chemical Technologies, Inc.* v. *Dynamit Nobel Aktiengesellschaft.*

3,775,552, AMP, Inc., MINIATORE COAXIAL CABLE ASSEMBLY, **filed** Nov. 12, 1982, D.C. Del. (Wilmington), Doc. 82–734, AMP, Inc. v. *W. L. Gore & Ass., Inc.* Stipulation of dismissal, filed July 29, 1983.

3,780,502, Dupre and DeMarco, COLLECTOR APPARATUS; **4,111,670,** Thomas M. DeMarco, TRUCK MOUNTED SEPARATOR APPARATUS, **filed** Oct. 10, 1983, D.C., N.D. Ala. (Birmingham), Doc. 83–AR–2506–S, *NFE International, Ltd.* v. *Guzzler Manufacturing, Inc.* Action dismissed with prejudice, filed Sept. 11, 1984.

3,817,492, Paul Raymer, MESSAGE EDGED PAD, **filed** Apr. 10, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84–2497, *Brothers Printing Co., Inc.* v. *Linn Erickson, et al.* Defendant is permanently restrained and enjoined from directly or indirectly using and making advertisements of patent, filed Aug. 28, 1984.

3,824,796, Charles L. Nasby, Jr., MOBILE DOCK STRUCTURE, **filed** Oct. 10, 1984, D.C. Minn. (St. Paul), Doc. 3–84–1369, *Span-Dock, Inc.* v. *Bob's Machine & Manufacturing Co.*

3,906,820, Ernest D. Hauk, APPARATUS AND METHOD FOR SPINNING PIPE; **4,099,429,** same, PIPE-SPINNING APPARATUS AND METHOD, **filed** Oct. 1, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84–7433ER(Bx), *Hawk Industries, Inc.* v. *Klampon Corp.*

3,915,464, William Berry, FULCRUM DEVICE, **filed** Aug. 31, 1984, D.C., E.D.N.Y. (Uniondale), Doc. CV–84–3624 LDW, *Braberry Sales Corp.* v. *National Distribution, Inc., et ano.*

3,938,520, Abbott Laboratories, TRANSFER UNIT HAVING A DUAL CHANNEL TRANSFER MEMBER, **filed** Aug. 24, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 6341, *Abbott Laboratories,* v. *IMS, Ltd.*

3,955,728, Jackson and Bohm, HANDLEBAR BAG, **filed** Sept. 4, 1984, D.C., E.D. Mich. (Ann Arbor), Doc. 84–CV–7413–AA, *Eclipse, Inc.* v. *Wilderness, Group, Inc.*

3,968,559, AB Volvo, et al., METHOD AND ARRANGEMENT FOR ASSEMBLY OF COMPONENT PARTS, PREFERABLE FOR MOTOR VEHICLES, **filed** Sept. 27, 1984, D.C., N.D. Ohio (Cleveland), Doc. C84–3095, *AB Volvo, et al.* v. *Eaton-Kenway, Inc.*

3,971,656, Teledyne Industries, Inc., CARBONITRIDE ALLOYS FOR TOOL AND WEAR APPLICATIONS, **filed** Aug. 27, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 7376, *Teledyne Industries, Inc.* v. *Sumiden Carbide America, Inc.*

4,074,447, Shivers, Jr., et al., STUMP CUTTING AND PRECISION DIGGING APPARATUS, **filed** July 15, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 4567 LEW(Gx), *Paul N. Shivers, et al.* v. *Arrowhead Continental, Inc.* Action dismissed with prejudice and each party to bear own costs, filed Sept. 17, 1984.

4,074,803, Tri Star Industries, Ltd., SEMICONDUCTOR RECTIFIER DEVICE, **filed** July 18, 1984, D.C. Minn. (Minneapolis), Doc. 4–84–Civil 734, *Sunds Defibrator, Inc.* v. *Tri Star Industries, Ltd.*

4,096,523, Corporate Communications Consultants, Inc., COLOR CORRECTION SYSTEM, **filed** Aug. 20, 1984, D.C., M.D. Fla. (Orlando), Doc. 84–633–Civ–Orl–18, *Corporate Communications Consultants, Inc.* v. *Digital Video Corp., et al.*

4,096,523, Corporation Communications Consultants, Inc., COLOR CORRECTION SYSTEM; **4,410,918,** same, HELICAL SCAN W.T.R. WITH DEFLECTABLE HEAD, **filed** Aug. 3, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 6700, *Corporate Communications Consultants, Inc.* v. *Edit/Chicago, Inc.*

4,099,429. (See 3,906,820.)

4,147,044, A & B Safe Corp., SAFE DOOR LOCKING ARRANGEMENT, **filed** Aug. 28, 1984, D.C., N.D. Ill. (Chicago), Doc. 84C7431, *A & B Safe Corp.* v. *Jae Sung Chang.*

4,152,922, Edward E. Francisco, APPARATUS AND METHOD FOR DETERMINING THE CHARACTERISTIC OF A FLOWMETER, **filed** Aug. 24, 1984, D.C. Tex. (Corpus Christi), Doc. 84–199, *Emerson Electric Co. & Flow Technology, Inc.* v. *Smith Meter, Inc.*

4,176,921, Jan H. Matthias, EYEGLASSES HAVING REMOVABLE LENSES, **filed** May 15, 1984, D.C. Fla. (W. Palm Beach), Doc. 84–1229–CIV–JCP, *Optyl Eyewear Fashions International* v. *Dynasty Optical Industries.* **Same, filed** June 11, 1984, D.C.N.J. (Newark), Doc. Civ 84–2283, *Optyl Eyewear Fashions International Corp.* v. *Viva Optique, Inc.*

4,181,955, Mathematical Applications Group, Inc., APPARATUS FOR PRODUCING PHOTOGRAPHIC SLIDES, **filed** July 9, 1984, D.C., S.D.N.Y., Doc. Civ 84–2677D, *Mathematical Applications Group, Inc.* v. *Accm. Communication Industries, Inc.*

4,183,157, Clarence J. Counselman, OVERSHOES FOR SPIKED SHOES, **filed** Oct. 1, 1982, D.C., W.D. Pa. (Pittsburgh), Doc. 82–2044, *ACS Hospital Systems, Inc.* v. *Wells National Services Corp.* It is hereby stipulated that this case may be dismissed with prejudice, each party to bear its own costs, filed Sept. 25, 1984.

4,194,509, Pickering & Ferguson, PRECONNECTED CATHETER DRAINAGE SYSTEM, **filed** Aug. 13, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 6043, *C.R. Brad, Inc.* v. *American Hospital Supply Corp.*

4,211,426, Everest & Jennings, Inc., WEIGHT RELIEVING AMBULATOR, **filed** Dec. 13, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 7934, *Everest & Jennings, Inc.* v. *L. Mulholland Corp.* This action was dismissed with prejudice on Sept. 11, 1984

4,218,104, Anderson and Crennan, REFRIGERATION INSULATION PANEL AND STRUCTURE; **Re. 31,328,** same, **filed** Sept. 19, 1984, D.C., N.D. Iowa (Cedar Rapids), Doc. C 84–1035, *Insul-Aids Products, Inc.* v. *Frommelt Industries, Inc.*

4,218,227, Robert E. Frey, DUST COLLECTOR, **filed** Nov. 17, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6408, *Donaldson Co., Inc.* v. *Farr Co.*

4,221,013, Angel M. Echevarria, FLUID FLOTATION SLEEP SYSTEM, **filed** Oct. 2, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 7498, *Somma Mattress* v. *Diamond Mattress Co., Inc.*

4,227,087. (See 3,341,730.)

4,234,649, Commercial Affiliates, Inc., BINDER MATERIAL SEAM, **filed** Sept. 17, 1984, D.C., S.D. Ohio (Columbus), Doc. C–2–84–1688, *Lewis McDermott* v. *Omid International, Inc.*

4,243,464, Thomas M. & Jessie M. Potchen, LAMINATING METHOD, **filed** Oct. 12, 1984, D.C., M.D. Fla. (Orlando), Doc. 84–789–Civ–Orl–11, *Thomas M. & Jessie M. Potchen* v. *Hymmen GmbH & Laminex, Inc.* **Same, filed** Oct. 12, 1984, D.C., M.D. Fla. (Orlando), Doc. 84–790–ORL–CIV–11, *Thomas M. & Jessie M. Potchen* v. *North Branch Lumber Co.* **Same, filed** Oct. 12, 1984, D.C., M.D. Fla. (Orlando), Doc. 84–791–Civ–Orl–11, *Thomas M. & Jessie M. Potchen* v. *Barberan.*

4,259,676, Peter C. & David M. Salmon, THERMAL PRINT HEAD, **filed** Sept. 25, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 7207, *Kyocera Corp., et al.* v. *Santek, Inc.*

4,265,393, Edgar L. Orchard, BOX CONSTRUCTION, **filed** Mar. 7, 1984, D.C., E.D. Mo. (St. Louis), Doc. 84–0566C(2), *Orco Sales Co., Inc.* v. *Arvco Container Corp.* The Defendant has infringed the patent by manufacturing and selling a pizza box which incorporates the claimed subject matter, plaintiff is the owner, filed Oct. 5, 1984

4,313,112, Daniel F. Foster, COMPUTER WORK STATION ASSEMBLY AND MOUNTING APPARATUS THEREFORE, **filed** Feb. 3, 1983, D.C., N.D. Ala. (Birmingham), Doc. CV83–G–0287–S, *Input-Ez Corp.* v. *Health Science Products, Inc., d/b/a HSP Computer Furniture.* Judgment filed on Aug. 29, 1984

4,315,763, Stoller and Hartung, HIGH ANALYSIS LIQUID FERTILIZERS, **filed** Sept. 6, 1984, D.C. Idaho (Boise), Doc. 84–4124, *Stoller Enterprises, Inc.* v. *Jay Beck.* **Same, filed** Sept. 7, 1984, D.C. Idaho (Boise), Doc. 84–4125, *Stoller Enterprises, Inc.* v. *Weldon Baker.* **Same, filed** Sept. 28, 1984, D.C. Mont. (Billings), Doc. CV 84–242–H, *Stoller Enterprises, Inc.* v. *N & P Fertilizer, Inc.* **Same, filed** Sept. 28, 1984, D.C. Mont. (Billings), Doc. CV 84–243–Blg, *Stoller Enterprises, Inc.* v. *Ferti-Chem, Inc.*

4,327,133, Lever Brothers Co., ADDITIVES FOR CLOTHES DRYERS; **4,421,792,** same, **filed** Oct. 9, 1984, D.C.N.J. (Newark), Doc. 84–4188, *Lever Brothers Co.* v. *The Procter & Gamble Co., et al.*

4,328,404, Frankl & Kirchner GmbH & Co. KG, ACTUATION APPARATUS FOR A CONTROL SWITCH; **4,361,350,** same, SECURING DEVICE FOR A HOUSING COVER ELEMENT, ESPECIALLY FOR SWITCH BOXES HAVING ELECTRICAL SWITCHING SERVICES, **filed** Sept. 28, 1984, D.C., E.D. Pa. (Pennsylvania), Doc. 84–4660, *Frankl & Kirchner GmbH & Co. KG* v. *Teledyne, Inc.*

4,332,557, Takara Co., DENTAL OPERATORY SYSTEM; **Re. 31,548,** same, **filed** Apr. 4, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 2874, *Takara Co.* v. *Adenca, Inc.* Cause dismissed, with prejudice, defendant having paid cost per final judgment, filed Oct. 9, 1984

4,361,142, Jack L. Lewis, KNEE ORTHOSIS AND JOINT CONSTRUCTION THEREFOR, **filed** Oct. 10, 1984, D.C., E.D. Ill. (Chicago), Doc. 84 C 8768, *Ballert Orthopedic Corp.* v. *Orthotic-Prosthetic Laboratory Services, Inc., et al.*

4,361,350. (See 4,328,404.)

4,371,580, Morrison Co., Inc. THREE-PLY BELTING MATERIAL, **filed** Sept. 19, 1984, D.C. Kansas (Wichita), Doc. 84–1675, *Morrison Co., Inc.* v. *The Goodyear Tire & Rubber Co., Inc.*

4,377,507, The Marley-Wylain Co., CONTAINING NUCLEAR WASTE VIA CHEMICAL POLYMERIZATION, **filed** Sept. 21, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 7226, *Precolite, a division of U.S. Industries, Inc.* v. *GTY Industries*

4,381,785, Reliance Products Corp., BABY PACIFIER, **filed** Oct. 3, 1984, D.C., N.D. Calif. (San Francisco), Doc. C84–6442, *Reliance Products Corp.* v. *Questor Corp.*

4,387,440, Michael D. Eaton, MODEM CONTROL DEVICE CODE MULTIPLEXING, **filed** Feb. 16, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 1431, *U.S. Robotics, Inc.* v. *Business Computor Corp., et al.* The court enters an order transferring this case to the Northern District of California, filed Sept. 17, 1984

4,392,760, Rudolph E. Futer, SURFACE FLOW AIR CONVEYOR WITH PLENUM MOUNTED FAN

WHEEL, **filed** Aug. 17, 1984, D.C., N.D. Calif. (San Francisco), Doc. C-84-5881SC, *Futerized Systems, Inc.* v. *Pack Air, Inc. et al.*

4,401,258, Villeroy & Boch Keramische Werke KG, LETTER CARD AND CONFINING MEANS THEREFOR, **filed** July 6, 1984, D.C., S.D.N.Y., Doc. 84-Civ-4773 (LBS), *Villeroy & Boch Keramische Werke KG* v. *Papel, Inc.*

4,401,335, Byron L. Godbersen, BOAT HOIST, **filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1354CA1, *Byron L. Godbersen* v. *Harbor, Ltd.* Consent judgment filed on May 9, 1984.

4,402,300, Philip I. Houck, COOKING UNIT, METHOD, AND BURNER ASSEMBLY FOR GRILLING LARGE QUANTITIES OF FOOD, **filed** Aug. 21, 1984, D.C. Del. (Wilmington), Doc. 84-457, *Philip I. Houck* v. *David L. Canby d/b/a/ Canby's.*

4,402,391, Golden Recycle Co., SELECTIVE SCRAP METAL COLLECTION APPARATUS, **filed** Sept. 7, 1984, D.C. Colo. (Denver), Doc. 84-Z-1803, *Golden Recycle Co.* v. *Creative Technology, Inc.*

4,410,918. (See 4,096,523.)

4,111,670. (See 3,780,502.)

4,418,944, Stephen W. Haines, et al., FLUID COUPLING, **filed** Aug. 15, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84-6025-ER (Bx), *Cooper Vision, Inc.* v. *Alcon Laboratories, Inc.*

4,421,792. (See 4,327,133.)

4,431,634, American Cyanamid Co., PRENATAL IRON SUPPLEMENTS, **filed** Oct. 5, 1984, D.C.N.J. (Newark), Doc. 84-4167, *American Cyanamid Co.* v. *Amide Pharaceutical, Inc.*

4,441,021, Snap-On Tools Corp., LUMINOSITY PROBE FOR DIESEL ENGINE TIMING APPARATUS, **filed** Oct. 4, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 8640, *Snap-On Tools Corp.* v. *Sun Electric Corp.*

4,452,698, U.S. Environmental Products, Inc., RIGID FILTER PLATE AND PROCESS FOR MANUFACTURE OF THE SAME, **filed** Sept. 12, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 7882, *U.S. Environmental Products, Inc.* v. *Infilco Degrement, Inc.*

4,457,201, David C. Storey, COMBINED BRIDGE AND TAILPIECE ASSEMBLY FOR A STRINGED MUSICAL INSTRUMENT, **filed** Oct. 9, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 8711, *David C. Storey, et al.* v. *Westheimer Corp.*

Re. 27,491. (See 3,378,633.)

Re. 30,308, Lloyd D. Masser, SUSPENSION STRUCTURE FOR AUTOMOTIVE VEHICLES, **filed** July 19, 1984, D.C., E.D. Mich. (Detroit), Doc. 84 CV3353DT, *Lear Siegler, Inc.* v. *Turner Quick Lift Corp.*

Re. 31,328. (See 4,218,104.)

Re. 31,548. (See 4,332,557).

D. 220,819. (See 3,692,155.)

D. 224,029, Learning Products, Inc., JUVENILE PLAY STRUCTURE OR SIMILAR ARTICLE, **filed** Oct. 2, 1984, D.C., E.D. Mo. (St. Louis), Doc. 84-2335C(4), *Learning Products, Inc.* v. *Rotoplas, Ltd.*

D. 251,292, Coachmen Industries, Inc. TOP FOR AN AUTOMOTIVE VAN, **filed** Mar. 19, 1984, D.C., N.D. Ind. (Ft. Wayne), Doc. F 84-103, *Coachmen Industries, Inc.* v. *Fawn River Plastics, Inc.*

D. 268,275. (See 4,335,538.)

D. 268,490, Mills and Egan, MOTORCYCLE TIRE; **D. 269,263,** Barrington S. Gill, TIRE FOR A VEHICLE WHEEL, **filed** Jun. 22, 1984, D.C., M.D. Fla. (Tampa), Doc. 84-842-Civ-T-15, *Dunlop Tire and Rubber Corp.* v. *Rebel International, Inc.*

Department of the Treasury
United States Customs Service

Application for Recordation of Trade Name: "CRISSAIR, INC."

Agency: Customs Service, Department of the Treasury
Action: Notice of Application for Recordation of Trade Name
Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "CRISSAIR, INC." used by Crissair, Inc., a corporation organized under the laws of the State of California, located at 38905 Tenth St. East, Palmdale, Calif. 93550.

The application states that the trade name is used for the following merchandise manufactured in the United States: hydraulic, fuel, and pneumatic system components (such as valves and actuators) for both military and civilian aircraft and helicopters.

Before final action is taken on the application, consideration will be given to any person in opposition to the recordation of this trade name. Notice of the action taken on the applicaiton for recordation of this trade name will be published in the Federal Register.
Date: Comments must be received on or before Apr. 8, 1985.
Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Rm. 2417, Washington, D.C. 20229.
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Washington, D.C., 20229 (202-566-5765).

EDWARD T. ROSSI,
Jan. 30, 1985. *Acting Director, Entry Procedures and Penalties Division.*

Department of the Treasury
United States Customs Service

Application for Recordation of Trade Name: "AMERICAN FAN RETAIL ASSOCIATION, INC."

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Application for Recordation of Trade Name
Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "AMERICAN FAN RETAIL ASSOCIATION, INC." used by American Fan Retail Association, Inc., a corporation organized under the laws of the State of Delaware, located at 125 Walnut Ave., Bronx, N.Y. 10454.

The application states that the trade name is used in connection with fans manufactured in Taiwan and Hong Kong.

Before final action is taken on the application, consideration will be given to any person in opposition to the recordation of this trade name. Notice of the action

taken on the application for recordation of this trade name will be published in the Federal Register.
Date: Comments must be received on or before Apr. 12, 1985.
Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Rm. 2417, Washington, D.C. 20229.
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202–566–5765).

Jan. 29, 1985.

DONALD W. LEWIS,
Director, Entry Procedures and Penalties Division.

Department of Commerce
Patent and Trademark Office

Interim Protection for Mask Works of Japanese Nationals Domiciliaries and Sovereign Authorities

Agency: Patent and Trademark Office, Commerce
Action: Notice of Initiation of Proceeding
Summary : The Secretary of Commerce has delegated the authority under Section 914 of 17 U.S.C. to make findings and issue orders for interim protection of mask works to the Assistant Secretary and Commissioner of Patents and Trademarks by Amendment 1 to Department Organization Order 10–14. Guidelines for the submission of petitions for the issuance of interim orders were published on Nov. 7, 1984 in the Federal Register, 49 FR 44517–9 and on Nov. 13, 1984 in the *Official Gazette,* 1048 O.G. 30.

On Oct. 22, 1984, prior to the Nov. 8, 1984, effective date of P.L. 98–620 which added Chapter 9 to 17 U.S.C., the Electronic Industries Association of Japan (EIAJ) through its attorneys submitted a request for the issuance of an interim order. That original request has since been supplemented by additional information from the Government of Japan sufficient to bring it into compliance with the aforementioned guidelines. Consequently, in accordance with paragraph F of the guidelines, this notice announces the initiation of a proceeding with respect to Japan for consideration of the issuance of an interim order.

In the interests of time and because of the rapidly approaching July 1, 1985 registration cut-off date for chips first commercially exploited on or after July 1, 1983, a date is being set both for the submission of comments in accordance with paragraph F(a), and a hearing date with respect to paragraph F(b) of the guidelines.
Dates: Comments must be submitted on or before Apr. 22, 1985 and a public hearing will be held May 6, 1985 at 9:30 a.m.; requested to present oral testimony should be received on or before Apr. 22, 1985.
Address: Address written comments to: Commissioner of Patents and Trademarks, Attention Assistant Commissioner for External Affairs, Box 4, Washington, D.C. 20231.

The hearing will be held in the Commissioner's Conference Room, 11th Fl., Crystal Plz. Bldg. 3, Rm. 11-C-10, 2021 Jefferson Davis Hwy., Arlington, Va. Written comments and a transcript of the public hearing will be available for public inspection in Rm. 11C28 Crystal Plz. 3, 2021 Jefferson Davis Hyw., Arlington, Va.
For Further Information Contact: Michael K. Kirk, Assistant Commissioner for External Affairs, by telephone at (703) 557–3065 or by mail marked to his attention and addressed to Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.
Supplementary Information: Chapter 9 of 17 U.S.C. establishes an entirely new form of intellectual property protection for mask works that are fixed in semiconductor chip products. Mask works are defined in 17 U.S.C. 901(a)(2) as:

> "a series of related images, however, fixed or encoded
> (A) having or representing the predetermined, three-dimensional pattern of metallic, insulating or semiconductor material present or removed from the layers of a semiconductor chip product; and
> (B) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product."

Chapter 9 further provides for a 10 year term of protection for original mask works measured from their date of registration in the U.S. Copyright Office, or their first commercial exploitation anywhere in the world. Mask works must be registered within 2 years of their first commercial exploitation to maintain this protection. Section 913(d)(1) provides that mask works first commercially exploited on or after July 1, 1983 are eligible for protection provided that they are registered in the U.S. Copyright Office before July 1, 1985.

Foreign mask works are eligible for protection under this Chapter under basic criteria set out in section 902; first, that the owner of the mask works is a national, domiciliary, or sovereign authority of a foreign nation that is a party to a treaty providing for the protection of the mask works to which the United States is also a party, or a stateless person wherever domiciled; second that the mask work is first commercially exploited in the United States; or that the mask work comes within the scope of a Presidential proclamation. Section 902(a)(2) provides that the President may issue such a proclamation upon a finding that:

> "a foreign nation extends to mask works of owners who are nationals or domiciliaries of the United States protection (A) on substantially the same basis as that on which the foreign nation extends protection to mask works of its own nationals and domiciliaries and mask works first commercially exploited in that nation, or (B) on substantially the same basis as provided under this chapter, the President may by proclamation extend protection under this chapter to mask works (i) of owners who are, on the date on which the mask works are registered under section 908, or the date on which the mask works are first commercially exploited anywhere in the world, whichever occurs first, nationals, domiciliaries, or sovereign authorities of that nation, or (ii) which are first commercially exploited in that nation."

Although this chapter generally does not provide protection to foreign owners of mask works unless the works are first commercially exploited in the United States, it is contemplated that foreign nationals, domiciliaries and sovereign authorities may obtain full protection if their nation enters into an appropriate treaty or enacts mask works protection legislation. In order to encourage steps toward a regime of international comity in mask works protection, Section 914(a) provides that the Secretary of Commerce may extend the privilege of obtaining interim protection under chapter 9 to nationals, domiciliaries and sovereign authorities of foreign nations if the Secretary finds:

> (1) that the foreign nation is making good faith efforts and reasonable progress toward—
> (A) entering into a treaty described in section 902(a)(1)(A), or
> (B) enacting legislation that would be in compliance with subparagraph (A) or (B) of section 902(a)(2); and
> (2) that the nationals, domiciliaries, and sovereign authorities of the foreign nation, and persons controlled by them, are not engaged in the misappropriation, or unauthorized distribution or commercial exploitation of mask works; and
> (3) that issuing the order would promote the purposes of this chapter and international comity with respect to the protection of mask works."

On Oct. 22, 1984, prior to the Nov. 8, 1984 effective date of P.L. 98–620 which added Chapter 9 to 17

U.S.C., the Electronic Industries Association of Japan (EIAJ), through its attorneys, submitted a request for the issuance of an interim order to Secretary Baldrige. The Secretary informed EIAJ's attorneys that the request had been referred to the Patent and Trademark Office, and that the Commissioner would advise them if additional information were required. On Nov. 15, 1984, Commissioner Mossinghoff met with Japanese officials to discuss a letter from Mr. Yuji Tanahashi of the Japanese Ministry of International Trade Industry, and what additional information might be required to complete the EIAJ submission. The results of this meeting were confirmed on Nov. 30, 1984, in a letter to Mr. Tanahashi. No response was received from Mr. Tanahashi. On Jan. 22, 1985, Acting Commissioner Quigg wrote Mr. Taizo Yokayama pointing out what additional information would be required. On Mar. 4, 1985, Mr. Tanahashi wrote to Mr. Quigg to supplement the original request with sufficient information to permit the commencement of proceedings under the guidelines. The original petition and the supplemental information are reproduced below.

In his remarks in the *Congressional Record* of Oct. 10, 1984 at page E4434 Representative Kastenmeier suggests that "[i]n making determinations of good faith efforts and progress . . ., the Secretary should take into account the attitudes and efforts of the foreign nation's private sector, as well as its government. If the private sector encourages and supports action toward chip protection, that progress is much more likely to continue . . . With respect to the participation of foreign nationals and those controlled by them in chip piracy, the Secretary should consider whether any chip designs, not simply those provided full protection under the Act, are subjected to misappropriation. The degree to which a foreign concern that distributes products containing misappropriated chips knows or should have known that it is selling infringing chips is a relevant factor in making a finding under section 914(a)(2). Finally, under section 914(a)(3), the Secretary should bear in mind the role that issuance of the order itself may have in promoting the purposes of this chapter and international comity."

In view of these admonitions, comments are invited on this petition and the supplemental information. Particularly, views are solicited as to the relation of the proposed Japanese legislation and Chapter 9 of 17 U.S.C.; and to the existence or non-existence of any misappropriation of mask works in Japan.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Mar. 22, 1985.

Oct. 22, 1984

Hon. Malcolm Baldrige
Secretary of Commerce
Washington, D. C. 20230

Dear Mr. Secretary:

Enclosed please find a letter and petition from Mr. Akio Morita with respect to Section 914 of the Semiconductor Chip Protection Act of 1984. Mr. Morita's petition is made in his capacity as President of our client, the Electronic Industries Association of Japan.

Please let us know how we may be of the most assistance in answering questions and providing further information in support of the enclosed petition.

Sincerely yours,
Tanaka Walders & Ritger
by Robert S. Schwartz

Oct. 18, 1984

The Honorable Malcolm Baldrige
Secretary of Commerce
Washington D.C. 20230

Re: *Semiconductor Chip Protection Act of 1984*

Dear Mr. Secretary:

Enclosed please find a petition that I have executed today, on behalf of the Electronic Industries Association of Japan. I hope it will meet with your favorable consideration.

Sincerely yours,
Akio Morita
President
Electronic Industries
Association of Japan
Chairman and Chief
Executive Officer
Sony Corp.

Petition of Akio Morita on Behalf of the Electronic Industries Association of Japan Under Section 914(a) of the Semiconductor Chip Protection Act of 1984

WHEREAS Section 914(a) of the Semiconductor Chip Protection Act of 1984 provides that the Secretary of Commerce may issue an order with respect to protection afforded nationals, domiciliaries, and sovereign authorities of any nation of any person, and

WHEREAS the Electronic Industries Association of Japan ("EIAJ") is a business association which includes the major semiconductor manufacturers based in Japan, and the undersigned serves as its President,

The Undersigned, on behalf of the EIAJ, does now petition the Secretary to issue an order respecting Japan, effective as of the date of enactment of the Act and for such time period as the Secretary may decide is reasonable under the circumstances. It is further petitioned that said order be issued expeditiously in the case of Japan, in conformance with the statutory criteria and legislative history pertaining to the Act.

In support of the expeditious issuance of an order with respect to Japan, effective as of the date of enactment, reference is made to the following facts:

1. The private semiconductor industry in Japan, as represented by EIAJ, during the pendency of the Act advised the U.S. Congress by official letter (Appendix I hereto) of its support for the Act and its support for expeditious legislation in Japan.
2. The Government of Japan, through the joint recommendations of the United States-Japan Work Group on High Technology Industries, has agreed to a bilateral declaration in support of such legislation. in this regard, the Industrial Structure Council, an advisory committee to the Minister of International Trade and Industry, has organized a formal study group, the Subcommittee on Legislative Problems Concerning Semiconductor Chips, to draft appropriate legislation. The first meeting of the Subcommittee has been scheduled for Oct. 24, 1984.
3. Japan has a substantial semiconductor industry. In light of the above considerations with respect to progress toward legislation in Japan, expedited issuance of an order is appropriate to encourage and facilitate efforts to establish international comity.
4. Insofar as can be determined, Japan's commercial entities are not engaging in, and have not in the recent past engaged in, the activities described in Section 914(a)(2) of the Act.

WHEREFORE, on behalf of the EIAJ I do petition that an order, as described, issue expeditiously with respect to Japan.

Respectfully submitted,
Akio Morita
President
Electronic Industries
Association of Japan
Chairman and Chief
Executive Officer
Sony Corp.

Oct. 18, 1984.

Thank you for any consideration you can give to the approach we suggest. As always, my personal best wishes,

Sincerely yours,
Akio Morita
President
Electronic Industries
Association of Japan
Chairman & Chief
Executive Officer
Sony Corp.

Appendix I

July 18, 1984

Hon. Robert W Kastenmeier
Chairman
Subcommittee on Courts, Civil Liberties and the Administration of Justice
Judiciary Committee
U.S. House of Representatives
Washington, D.C. 20515
U.S.A.

Dear Rep. Kastenmeier:

The Electronic Industries Association of Japan (EIAJ) has been following the progress, through the Congress, of legislation that would afford a new form of protection for semiconductor chip products. In our view, the passage of such legislation is highly desirable, both of itself and as an indication of the proper direction for the international protection of such intellectual property. In this latter respect, we note the joint recommendations of the U.S.-Japan Work Group on High Technology Industries, made in Nov. 1983. One such recommendation of this government-to-government group was:

III. Technology

3. Both governments should recognize that some form of protection to semiconductor producers for their intellectual property is desirable to provide the necessary incentives for them to develop new semiconductor products. And both governments should take their own appropriate steps to discourage the unfair copying of semiconductor products and the manufacturing and distribution of the unfairly copied semiconductor products.

Since the U.S. legislation will be the first of its kind in the world, we hope that it will meet the challenge posed by the development of a new class of intellectual property by affording it a commensurately new form of protection. We expect that this approach by the U.S. will serve as a model for other countries. In this respect we feel it would be very beneficial for such legislation to maintain an incentive for foreign nations to "catch up", without departing from the principle of full national treatment. This could be accomplished by a reasonable interim period for full-term registration, not limited by considerations of nationality, domicile, or place of first commercial exploitation. This suggestion was spelled out in a July 9 letter from our Washington counsel (which is attached). We have also suggested, through counsel, some important technical clarifications of interpretation. I would be gateful if you could consider our suggestions in any conference proceedings.

In this connection, we have been asked whether EIAJ has a view as to probable or appropriate legislative action in Japan. Speaking on behalf of the semiconductor manufacturers of Japan, EIAJ recognizes the need for, and importance of, protection in Japan for the intellectual property embodied in semiconductor chips. Accordingly, we will ask the Government of Japan to provide such protection, as expeditiously as possible, through a new legislative framework.

July 18, 1984

Hon. Charles McC. Mathias
Chairman
Subcommittee on Patents,
Copyrights and Trademarks
Judiciary Committee
U.S. Senate
Washington, D.C. 20510
U.S.A.

Dear Sen. Mathias:

I was sorry to have missed the opportunity to see you during my recent trip to Washington. I do hope, however, that we will have another chance before too long. In the meantime, I did want to call to your attention something that is of great interest in my capacity as President of the Electronic Industries Association of Japan (EIAJ).

EIAJ has been following the progress, through the Congress, of legislation that would afford a new form of protection for semiconductor chip products. In our view, the passage of such legislation is highly desirable, both of itself and as an indication of the proper direction for the international protection of such intellectual property. In this latter respect, we note the joint recommendations of the U.S.-Japan Work Group on High Technology Industries, made in November, 1983. One such recommendation of this government-to-government group was:

III. Technology

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In this connection, we have been asked whether EIAJ has a view as to probable or appropriate legislative action in Japan. Speaking on behalf of the semiconductor manufacturers of Japan, EIAJ recognizes the need for, and importance of, protection in Japan for the intellectual property embodied in semiconductor chips. Accordingly, we will ask the Government of Japan to provide such protection, as expeditiously as possible, through a new legislative framework.

Thank you for any consideration you can give to the approach we suggest. As always, my personal best wishes,

Sincerely yours,
Akio Morita
President
Electronic Industries
Association of Japan
Chairman and Chief
Executive Officer
Sony Corp.

Mar. 4, 1985

Mr. Donald J. Quigg
Acting Commissioner of Patents
and Trademarks

Dear Mr. Quigg:

I would like to relate the following to you in connection with the efforts we have made and the progress we have achieved in legislative initiatives for the protection of semiconductor chips in Japan since I wrote to Mr. Mossinghoff on Nov. 13, 1984.

On Jan. 22, 1985, the Subcommittee on the Legal Problems Concerning Semiconductor Chips under the Industrial Structure Council, after seven sessions since Oct., 1984 reached a conclusion that, in sum, a new law similar to the Semiconductor Chip Protection Act of the United States is necessary for optimal protection of the layout of semiconductor chips in Japan, and recommended that the Ministry of International Trade and Industry ("MITI") start preparation for enactment of such a law as soon as possible. I believe you have received an English text of the report of the Subcommittee, since we turned it in to the United States Embassy in Japan.

Mr. Akio Morita, President of the Electronics Industry Association of Japan ("EIAJ"), also requested that the Minister of International Trade and Industry promptly enact a new law similar to that of the United States.

Under these circumstances, MITI, as a governmental agency in charge of developing legislation for the protection of mask works, is making an energetic effort to submit a legislative bill to the present session of the Diet. We are drafting the bill with due consideration for the views expressed on the outline of the bill by the semiconductor industry, including foreign affiliates. Although there is no fundamental objection to this effort among governmental agencies, the decision of the Japanese government as a whole to submit the bill will be made most probably in the middle of March since adjustments are necessary within the government pursuant to the ordinary legislative procedure.

Meanwhile, MITI has good grounds for believing that neither Japan nor Japanese nationals or domiciliaries are engaged in the misappropriation, or unauthorized distribution or commercial exploitation of mask works. As you are aware, MITI has taken action to make people and industries concerned throughly understand the view expressed in the recommendation of the Japan-U.S. High Tech Work Group—"Both governments should take their own appropriate steps to discourage the unfair copying of semiconductor products and the manufacturing and distribution of unfairly copied semiconductor products.", and I believe the Japanese semiconductor industry has been responding sincerely to this action.

A petition under Section 914 of the Semiconductor Chip Protection Act of 1984 (17 U.S.C.) was filed with the Secretary of Commerce by Mr. Akio Morita of EIAJ. Considering the circumstances mentioned above, I believe conditions for issuance of an order under 17 U.S.C. Section 914(a)(1)(B) are fully satisfied.

Yours sincerely,
Yuji Tanahashi
Deputy Director-General
Machinery and Information
Industries Bureau Ministry of
International Trade and
Industry

Semiconductor Integrated Circuit Protection Bill of Japan
(Summary)

Feb., 1985

1. Definitions

(1) A "semiconductor integrated circuit product" means any product having transistors and other elements which are inseparably formed on the surface of a semiconductor or insulating material, or inside the semiconductor material, and intended to perform circuitry functions.

(2) A "circuit layout" means a three-dimensional layout of elements and wires in a semiconductor integrated circuit product.

(3) "Utilize" means manufacture, transfer, lease, exhibition or import of semiconductor integrated circuit products embodying a circuit layout.

2. The following rights can be claimed:

(1) The holder of a circuit layout right shall have an exclusive right to utilize, for business purposes, the circuit layout.

(2) The holder of a circuit layout right or an exclusive licensee may seek an injunction against a person who infringes or likely to infringe on the circuit layout right or exclusive license.

(3) The manufacture, transfer, etc., for business purposes, of articles, such as masks, to be used exclusively for the manufacture of the infringing semiconductor integrated circuit products shall be deemed to be an infringement of the circuit layout right.

(4) The infringing party shall be liable for damages for infringement and shall be subject to criminal punishment.

3. Registration system

(1) A person who has originally developed the circuit layout, or his successor, may apply for registration for the establishment of a circuit layout right within two years of the date on which he first transferred, leased or exhibited the concerned semiconductor integrated circuit products for business purposes.

(2) The circuit layout right shall come into force upon registration for its establishment. (The registration system shall be a simple one.)

4. Term of protection

The term of protection shall be ten years from the date on which the right was created.

5. Limitation of exclusive rights

(1) The experimental manufacturing for the purpose of analyzing or evaluating the circuit layout, electronic circuitry or logic circuitry of a semiconductor integrated

circuit product embodying a circuit layout right shall not constitute an infringement.

(2) Utilizing an originally developed circuit layout based upon electronic circuitry or logic circuitry analyzed and evaluated as described in paragraph (1) shall not constitute an infringement.

(3) When the holder of a right to a semiconductor integrated circuit product transfers it to another, the transferee thereof may transfer, lease, exhibit or import the product without the authority of the holder of the right ("first sale doctrine").

(4) A bona fide purchaser, without (gross) negligence, of an infringing semiconductor integrated circuit product who has transferred it to another after learning of the infringement shall be held responsible for the payment of a fair price to the legitimate holder of the right but shall not be subject to injunction or damages.

6. Protection of a circuit layout developed by a foreigner Under consideration.

(The law shall extend protection without discrimination to a circuit layout developed by a national or a domiciliary of a foreign country at least if a circuit layout developed by a Japanese national or a domiciliary of Japan is protected by that country.)

7. Other provisions

Other provisions to be established include provisions concerning exclusive and non-exclusive licenses and a provision to the effect that if an employee of a company develops a circuit layout, the right concerning the layout shall, unless otherwise agreed, belong to the company.

Nov. 13, 1984

Mr. Gerald J. Mossinghoff
Commissioner of Patents and Trademarks Office
Department of Commerce

Dear Mr. Mossinghoff:

As co-chairman of the Japan-U.S. High Tech Work Group I would like to relate the following to you in connection with the materialization of your country's Semiconductor Chip Protection Act of 1984.

At the Sept. 14th meeting of the High Tech Work Group it was requested of me that, in consideration of the enactment of the Semiconductor Chip Protection Act in the United States, Japan enact legislation to the same effect. I myself have agreed with the High Tech Work Group's recommendation made in Nov. 1983 as to the need for Japanese legislation to protect developers of semiconductor chips, and I am now pleased to let you know that serious consideration of this issue has begun with the abovementioned request taken into account.

A subcommittee on legislative issues concerning semiconductor chips has been set up within the Industrial Structure Council and was convened for the first time on Oct. 24th. I would like to add that participating in the subcommittee are Japanese representatives of Intel Japan K.K. (a U.S. affiliate) and Texas Instruments Japan Ltd. (a U.S. affiliate). Because the authority to enact laws rests with Japan's legislative body, the Diet, and because of differences between our legal system and that of the United States, I am not able to state anything definitive as yet. But I do want to consolidate the views of those of us within the Government and lay a bill before the Diet at the earliest possible date.

In addition to more effectively protecting rights relating to semiconductor chips in line with the High Tech Work Group's recommendation, on a fundamental level we are interested in making efforts towards drafting a proposed law similar to that enacted by your country.

Finally, I am sure we agree that close cooperation between our two Governments is essential to the sound growth of the semiconductor chip industry and also of trade in this item. Let us, then, cooperate closely in the future application of the Semiconductor Chip Protection Act and in the enactment of a new law in Japan.

Yours sincerely,
Yuji Tanahashi
Chairman of the Japan-U.S.
Work Group on High
Technology Industries
Deputy Director-General,
Machinery and Information
Industries Bureau Ministry of
International Trade and
Industry

P.S. In connection with the above, I would like to add that I have been informed that Mr. Morita, representing the views of the Japanese semiconductor industry, has presented a petition to the Secretary of Commerce in accordance with Article 914 of the U.S. Semiconductor Chip Protection Act.

Nov. 30, 1984

Mr. Yuji Tanahashi
Chairman of the Japan-U.S. Work Group
on High Technology Industries
Deputy Director-General
Machinery and Information
Industries Bureau
Ministry of International
Trade and Industry
1-3-1 Kasumigaseki
Chiyoda-ku
Tokyo 100 Japan

Dear Mr. Tanahashi:

Thank you for your earlier inquiry concerning the extension of interim protection to Japanese mask works under Section 914 of the Semiconductor Chip Protection Act of 1984. On Nov. 15, 1984, I met with Mr. Taizo Yokoyama and Mr. Nobuo Tanaka of the Japanese Embassy here in Washington to discuss a number of matters related to chip protection. I would like to assure you, as I assured them, that any Japanese request for the issuance of an order extending interim protection will be given serious and prompt consideration. However, there are certain factors that must be considered in arriving at a determination to issue or not to issue such an order.

Although requests for the issuance of an order may be submitted by any party, Section 914 requires that the Secretary of Commerce make certain findings with respect to the activities of foreign governments and sovereign authorities as well as organizations controlled by them. Section 914(a)(1) requires that the Secretary must find that the foreign nation is making good faith efforts and reasonable progress toward entering into a treaty or enacting appropriate legislation. This finding must be made with respect to the government involved. As I informed Mr. Yokoyama and Mr. Tanaka, we will require a statement attesting to good faith efforts and reasonable progress from an agency which can speak for your Government, especially in view of the potential dispute between your Ministry and the Ministry of Education over jurisdiction for the preparation of semiconductor chip legislation. In view of the differences in our legislative processes, such a statement should include as much information as is available on the nature of the protection under consideration and the processes to be followed in its implementation into law.

I agree that close cooperation between our two nations, which are leaders in the development of this new technology, is important. I hope that we can work together in a way that will promote international comity in mask work protection.

Sincerely,
Gerald J. Mossinghoff
Commissioner of Patents
and Trademarks

Jan. 22, 1985

Mr. Tazio Yokoyama
Embassy of Japan
2520 Massachusetts Ave., N.W.
Washington, D.C. 20008

Dear Mr. Yokoyama:

I am writing to follow up on an earlier conversation that you had with Commissioner Gerald J. Mossinghoff on Nov. 15, 1984, concerning the protection of Japanese mask works. As you may recall, Mr. Mossinghoff assured you that any Japanese request for the issuance of an interim order under section 914 of the Semiconductor Chip Protection Act of 1984 would receive prompt and serious consideration.

At that meeting, Mr. Mossinghoff advised you that before we could consider further Japan's request we would require additional information regarding the efforts and progress toward enacting chip legislation in Japan, and that this information should be provided by an agency that could speak for the Japanese Government. You also informed Mr. Mossinghoff that he would receive a letter from MITI Deputy Director General Tanahashi attesting to MITI's efforts. On Nov. 30, 1984, we responded to Mr. Tanahashi's letter and advised him of our need for further information in view of the potential jurisdictional dispute between MITI and the Ministry of Education. To date, we have not received the information that we requested.

In view of the July 1, 1985 deadline for registration of chips first commercially exploited after July 1, 1983, time is of the essence. We are anxious to obtain the needed assurances from the Government of Japan that you are progressing on legislation that would protect the mask works of U.S. nationals in a fashion similar to the protection provided under the new U.S. law.

I hope that we will soon receive the statements that will permit us to initiate proceedings with respect to Japan's eligibility for protection under the U.S. legislation.

Sincerely,
Donald J. Quigg
Acting Commissioner of
Patents and Trademarks

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

PATENT NOTICES

Certificates of Correction for the Week of Apr. 23, 1985

Pp. 4,121	4,445,895	4,469,688	4,481,644
D. 269,223	4,446,461	4,470,068	4,481,764
D. 276,128	4,447,350	4,470,964	4,482,268
D. 276,274	4,448,192	4,470,994	4,482,379
D. 276,753	4,449,200	4,471,088	4,482,444
3,883,545	4,450,242	4,471,384	4,482,571
4,189,478	4,450,470	4,471,745	4,483,184
4,273,612	4,451,422	4,471,800	4,483,372
4,297,879	4,451,996	4,471,992	4,483,493
4,311,666	4,453,256	4,472,027	4,483,598
4,328,667	4,454,361	4,472,479	4,484,109
4,329,293	4,455,361	4,473,388	4,484,255
4,344,976	4,455,747	4,473,642	4,484,314
4,360,098	4,456,684	4,473,912	4,484,546
4,364,419	4,457,390	4,474,140	4,484,568
4,371,883	4,457,542	4,474,372	4,484,698
4,380,684	4,458,695	4,474,909	4,484,785
4,388,386	4,461,178	4,474,910	4,484,918
4,389,510	4,461,388	4,474,916	4,485,209
4,394,296	4,462,211	4,475,004	4,485,285
4,396,235	4,462,877	4,475,414	4,485,352
4,406,801	4,463,182	4,475,947	4,485,359
4,409,344	4,463,220	4,476,044	4,485,530
4,410,518	4,463,427	4,476,372	4,485,674
4,411,993	4,463,782	4,476,416	4,485,908
4,416,132	4,464,446	4,478,509	4,485,966
4, 416,994	4,464,466	4,478,561	4,486,101
4,421,287	4,464,755	4,478,603	4,487,026
4,422,147	4,464,966	4,478,656	4,487,392
4,422,158	4,467,195	4,478,891	4,488,395
4,423,360	4,467,258	4,479,273	4,489,431
4,427,761	4,467,355	4,479,335	4,489,847
4,430,906	4,467,440	4,479,754	4,490,160
4,431,411	4,467,454	4,479,929	4,490,396
4,431,449	4,467,969	4,480,267	4,490,523
4,432,925	4,468,171	4,480,487	4,490,559
4,434,429	4,468,223	4,480,515	4,491,151
4,436,221	4,468,235	4,480,897	4,491,152
4,438,020	4,468,527	4,481,167	4,491,180
4,438,146	4,468,956	4,481,234	4,491,257
4,438,258	4,468,971	4,481,320	4,491,275
4,438,387	4,468,983	4,481,512	4,491,319
4,441,353	4,469,243	4,481,528	4,491,638
4,444,937	4,469,350	4,481,574	

Disclaimers

Re. 31,528.—*David F. Mieyal,* Strongsville, Ohio. GRID TEE FOR SUSPENSION CEILINGS OR THE LIKE. Patent dated Mar. 6, 1984. Disclaimer filed May 7, 1984, by the assignee, *Donn, Inc.*

Hereby enters this disclaimer to claim 38 of said patent.

4,370,008.—*Richard G. Haworth,* Holland; *Charles J. Saylor,* Zeeland and *Harold R. Wilson,* Holland, Mich. WALL PANEL WITH PREWIRED POWER SYSTEM. Patent dated Jan. 25, 1983. Disclaimer filed Feb. 27, 1985, by the assignee, *Haworth, Inc.*

The term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

4,485,031.—*Franciszek Olstowski,* Freeport and *Richard D. Peffley,* Lake Jackson, Tex. COMPATIBLE MIXTURES OF AMINATED POLYETHER POLYOLS AND LOW MOLECULAR WEIGHT GLYCOLS. Patent dated Nov. 27, 1984. Disclaimer filed Dec. 10, 1984, by the assignee, *Dow Chemical Co.*

The term of this patent subsequent to Nov. 27, 2001, has been disclaimed.

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	San Diego Public Library	(619) 236-5813
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	Boston Public Library	(617) 536-5400 Ext. 265
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 2, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-20-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	1-06-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	8-10-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-30-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-20-81
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	7-19-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-20-82
DESIGN, GROUP 290—K. L. CAGE, Director	11-08-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	10-28-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	3-22-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-30-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-21-83

Expiration of patents: The patents within the range of numbers indicated below expire during March 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,371,351 to 3,375,528, inclusive

Plant Patents ..... Numbers 2,797 to 2,801 inclusive

REISSUES

APRIL 23, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,869

BOTTLE CAPS

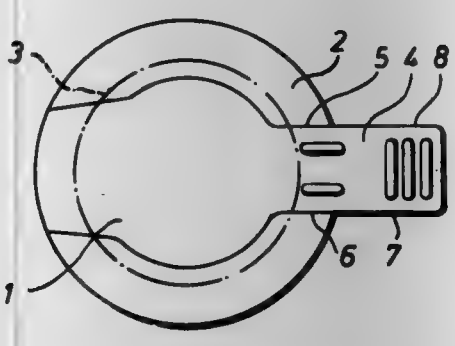
Sune Harding, Partille, Sweden, assignor to AB Wicanders Korkfabriker, Alvangen, Sweden

Original No. 3,963,140, dated Jun. 15, 1976, Ser. No. 536,719, Dec. 27, 1974. Application for reissue Aug. 16, 1977, Ser. No. 825,190

Int. Cl.³ B65D *41/42*

U.S. Cl. 215—254

9 Claims



7. A tear-off convenience bottle cap comprising a circular top panel surrounded by a cylindrical skirt terminating in a lowermost free edge, a radiused juncture portion connecting said top panel and said skirt, a gripping ear formed as an integral part of said skirt extending downwardly and radially outwardly from said free edge, a tearing zone commencing at said skirt free edge on either side of said gripping ear and extending upwardly across said skirt, each of said tearing zones blending in an outwardly diverging pattern into a path lying in close proximity to the periphery of said cap top panel, said tearing zones extending rearwardly from said gripping ear so as to partially surround said cap top panel and an annular sealing gasket adhesively affixed to said cap interior so as to completely overlie said tearing zones along said path whereby removal of said cap causes tearing of said gasket along said path.

Re. 31,870

MEANS FOR YIELDABLY COUPLING A SHAFT TO COUNTER WHEELS OR THE LIKE

Friedemann Wagner, Furtwangen, Fed. Rep. of Germany, assignor to Ernst Reiner, KG Feinmechanik und Apparatebau, Furtwangen, Fed. Rep. of Germany

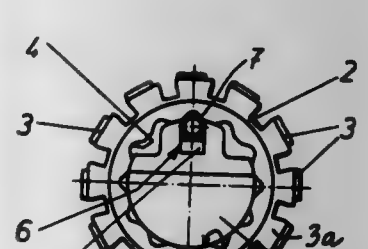
Original No. 4,299,512, dated Nov. 10, 1981, Ser. No. 91,398, Nov. 6, 1979. Application for reissue Jun. 29, 1982, Ser. No. 393,376

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848039

Int. Cl.³ B41J *1/60*; B25G *3/28*

U.S. Cl. 101—110

33 Claims



20. In a printer, a plurality of axially aligned wheels, each having a plurality of different printing elements coupled thereto, a support for rotatably supporting said wheels, said wheels having holes defining a continuous opening, each of said wheels also having a series of recesses, detenting means including a metal helical spring engaging a plurality of said wheels for detenting the wheels, said detenting means including means providing a recess in said support, said recess in said support having an open side, said helical spring being disposed in said recess in said support and projecting beyond the open side into one recess in each wheel to detent the wheels and align selected printing elements at a printing zone.

Re. 31,871

METAL HALOGEN BATTERIES AND METHOD OF OPERATING SAME

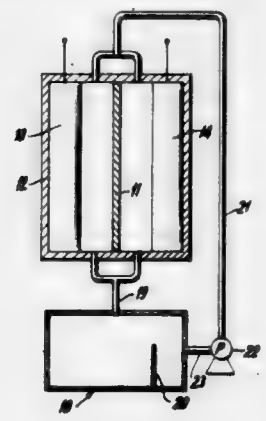
Agustin F. Venero, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Original No. 4,105,829, dated Aug. 8, 1978, Ser. No. 674,583, Apr. 7, 1976. Application for reissue Dec. 17, 1979, Ser. No. 104,336

Int. Cl.³ H01M *8/08, 4/60*

U.S. Cl. 429—15

22 Claims



1. An electrochemical cell having a metal bromine couple comprising:

an electrode structure on which to deposit the metal of the metal bromine couple;

an inert counterelectrode structure at which to generate the bromine of the metal couple;

an aqueous electrolyte containing a metal bromide and a bromine complexing agent, the metal of said metal bromide being selected from zinc and cadmium, said bromine complexing agent being selected from water soluble organic quaternary ammonium compounds and mixtures of quaternary ammonium compounds with water soluble organic solvents which in the presence of bromine and at temperatures in the range of about 10° C. to about 60° C. form a substantially water immiscible liquid;

means for circulating said electrolyte between said electrode structures during charging of the cell;

a separation zone communicating with said cell whereby bromine complex formed during charging of the cell is separated from said aqueous electrolyte; and,

means for circulating separated bromine complex from said separation zone to said cell during discharge of said cell.

Re. 31,872

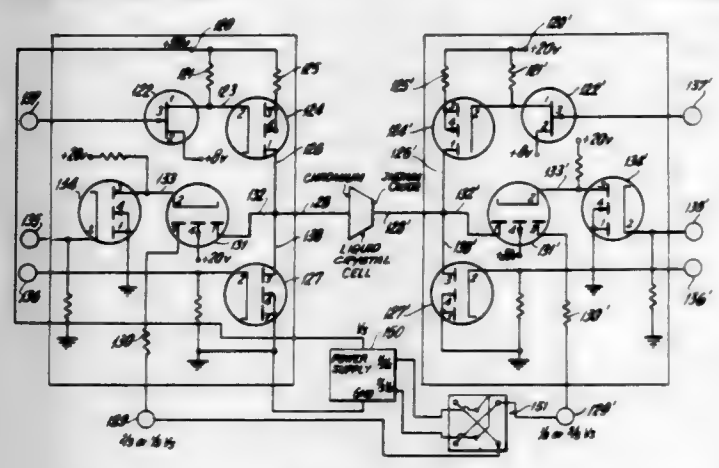
ELECTRO-OPTICAL DISPLAY WITH CIRCUITRY FOR APPLYING PREDETERMINED POTENTIALS TO ALL DISPLAY SEGMENTS TO EFFECT ACTIVATION OF A SELECTED SEGMENT ONLY

Sam G. Cohen, Pleasantville, N.Y., assignor to Timex Corporation, Waterbury, Conn.

Original No. 3,932,860, dated Jan. 13, 1976, Ser. No. 463,927, Apr. 25, 1974. Application for reissue Jul. 8, 1982, Ser. No. 396,224

Int. Cl.[3] G09G *3/36;* G06F *3/14*

U.S. Cl. 340—784 11 Claims



1. An electro-optical display *for a timepiece* comprising:

a first and a second plate each having on one side thereof a pattern formed by segments, said segments being layers of conductive material, [at least some of said segments being electrically connected together;] *said second plate segment pattern comprising a plurality of radial segments and said first plate segment pattern comprising a plurality of common segments, each common segment being aligned with a predetermined number of said radial segments, each radial segment, aligned with one common segment, being electrically connected to only one radial segment from said number of radial segments aligned with another common segment,* said plates being spaced from each other and with the segments on each plate aligned; a thin layer of liquid crystal material sandwiched between said plates, said liquid crystal material characterized by a threshold voltage of V_t;

a driver circuit connected to said segments and a voltage source of V_s connected to said driver circuit, said driver circuit having first voltage supply means *adapted* to provide [a] *to* first [selectable] segments of the first plate to voltage V_1 which is a fraction of V_s and less than V_2, second voltage supply means *adapted* to provide to first [selectable] *predetermined* segments of said second plate [with] a voltage V_2 greater than V_1 and a fraction of V_s wherein $V_1+V_2=V_s$ and $V_2>V_t>V_1$, third voltage supply means *adapted* to supply voltage V_s [,] to second [selectable] *predetermined* segments of the first plate and fourth means *adapted* to switch second [selectable] *predetermined* segments of the second plate to zero voltage, whereby the liquid crystal material between the first segments is not activated and the liquid crystal material between the second segments is activated.

PLANT PATENTS

GRANTED APRIL 23, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,442

AVOCADO TREE-SCHILLER

Pinchas Barkan, Kvutsat Schiller, Israel, assignor to Kvutsat Schiller Kvutsat Ovdim Lehityashvut Shitufit Ltd., Kvutsat Schiller, Israel

Filed Jul. 1, 1983, Ser. No. 510,751
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—44 **1 Claim**

1. The new variety of avocado tree of the Mexican group substantially as described and illustrated herein, being distinguished for its ability to produce mature fruit having light green skin and to bring this fruit to maturity about two weeks earlier than the fruit of comparable early maturing avocado varieties in the same growing area.

5,443

KALANCHOE PLANT NAMED SONORA

Peter S. Hesse, Bradenton, Fla., and Margaret M. Fleming, Half Moon Bay, Calif., assignors to Pan American Plant Company, Parrish, Fla.

Filed Jul. 1, 1983, Ser. No. 510,409
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive Kalanchoe plant named Sonora, as described and illustrated, and particularly characterized by rose colored flowers, compact habit, highly floriferous habit, free branching, average 15-week flowering response, and its adaptability to production in 10–15 cm. pots.

5,444

CARNATION NAMED LONFOREM

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,514
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. The new and distinctive spray carnation cultivar, substantially as herein shown and described, characterized by the Indian Yellow and Scarlet coloration of its small blooms which are produced profusely on strong, straight peduncles carried on tall, upright and strong flowering stems; and by its vigorous and upright growth habit, rather abundant foliage and resistance to *Fusarium oxysporum.*

5,445

CARNATION NAMED LONDELIEN

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,564
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct spray carnation variety, substantially as herein shown and described, characterized by the very strong Brick Red and Magenta Rose coloring of its small blooms which are produced profusely on tall, straight and strong flowering stems, and by its vigorous and upright growth habit, abundant foliage and resistance to *Fusarium oxysporum.*

5,446

CARNATION NAMED LONSICO

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,521
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—73 **1 Claim**

1. A new carnation cultivar, substantially as herein shown and described, characterized by its ruby red flowers of medium size which bloom profusely during each of its recurrent blooming seasons, and by its vigorous growth habit which is resistant to *Fusarium oxysporum.*

5,447

CHRYSANTHEMUM PLANT NAMED REMARKABLE

William E. Duffett, Salinas, Calif., and Grace H. Mack, 108 Wahackme Rd., New Canaan, Conn. 06840, assignors to Grace H. Mack, New Canaan, Conn.

Filed Jul. 15, 1983, Ser. No. 514,319
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant named Remarkable, as described and illustrated, and identified by the combined charcteristics of flat capitulum form, decorative capitulum type, orange-red ray floret color, diameter across face of capitulum up to 50 mm., short plant height, semi-spreading branching pattern, average natural season flowering date of September 20 and average flowering response period of seven weeks in photoperiodic controlled short day programs.

PATENTS

GRANTED APR. 23, 1985

ERRATA

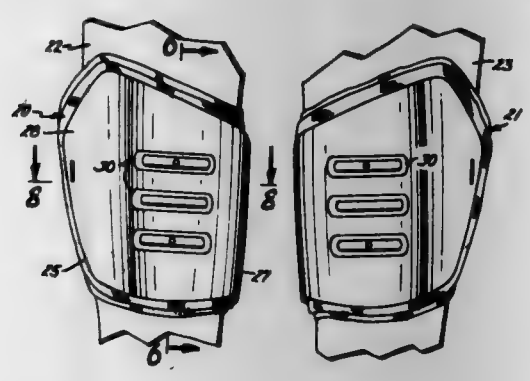
For CLASS	See PATENT NO.
354–475	4,512,656
446–061	4,512,690
514–147	4,512,984
514–301	4,512,985
514–170	4,512,986
514–171	4,512,987
514–211	4,512,988
514–383	4,512,989
514–225	4,512,990
514–252	4,512,991
514–258	4,512,992
514–275	4,512,993
514–374	4,512,994
514–277	4,512,995
514–304	4,512,996
514–383	4,512,997
514–367	4,512,998
514–192	4,512,999
514–407	4,513,000
514–394	4,513,001
514–408	4,513,002
514–411	4,513,003
514–414	4,513,004
514–451	4,513,005
514–023	4,513,006
514–555	4,513,007
514–560	4,513,008
514–513	4,513,009
514–651	4,513,010
514–730	4,513,011
455–052	4,513,443

PATENTS

GRANTED APRIL 23, 1985

GENERAL AND MECHANICAL

4,512,037
PROTECTIVE PAD ASSEMBLY
Eugene J. Vacanti, Edina, Minn., assignor to Sports Marketing, Inc., Minneapolis, Minn.
Filed Aug. 17, 1982, Ser. No. 409,014
Int. Cl.[3] A41D *13/00*
U.S. Cl. 2—2 **14 Claims**



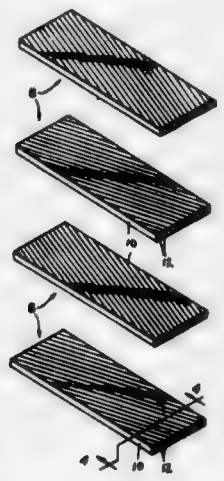
1. A protective pad assembly for protection of a thigh of a persons body from injury, comprising:

a shield of relatively rigid material having a transverse curved shape generally in conformance with and somewhat larger than the thigh of a persons body to be protected; said shield having an outside portion locatable adjacent the outside of a thigh, an inside portion locatable adjacent the inside of the thigh, and an outer edge surrounding the shield; a cushion having an outer periphery shaped to conform to the interior surface of the shield and positioned to contact the thigh to be protected; said cushion having an outer perimeter projected outwardly from the outer edge of the shield, said cushion comprising a pad of springy compressible air entrained open cellular material of the type that expels air upon compression, and returns air into the cellular material upon expansion thereof, air impervious flexible sheet means having a chamber accommodating the pad, said pad substantially filling the chamber, said sheet means having an outer portion at the outer perimeter of the cushion, said sheet means holding the entire pad under less than complete compression thereof, and a plurality of openings in the outer portion of the sheet means for regulating air flow through the sheet means and out of the pad upon further compression of the pad from impact of an external force on the shield and through the sheet means and into the pad upon expansion of the pad, and

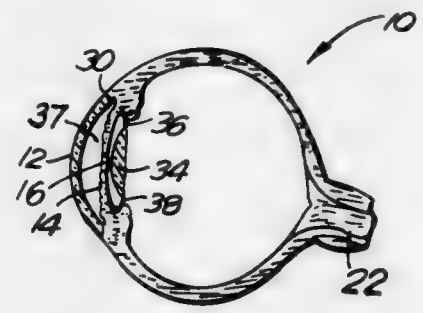
means releasably connecting the cushion to the interior surface of the shield, said means having first members secured to the interior surface of the shield and second members secured to the sheet means, said first and second members having releasable cooperating means.

4,512,038
BIO-ABSORBABLE COMPOSITE TISSUE SCAFFOLD
Harold Alexander, Short Hills; John R. Parsons, Montclair; Irving D. Strauchler, Irvington, and Andrew B. Weiss, Short Hills, all of N.J., assignors to University of Medicine and Dentistry of New Jersey, Newark, N.J.
Division of Ser. No. 033,945, Apr. 27, 1979, Pat. No. 4,329,743.
This application Apr. 6, 1981, Ser. No. 251,285
Int. Cl.[3] A61F *1/00*
U.S. Cl. 3—1.9 **18 Claims**

1. A bio-compatible composition comprising a composite of a plurality of stacked substrates, each substrate comprising a plurality of carbon fibers completely enveloped by a bio-absorbable and bio-compatible polylactic acid polymer, wherein the weight ratio of carbon fibers to bio-absorbable and bio-compatible polymer is such that the said composite has sufficient strength and rigidity to form a surgical article therefrom especially adapted for the stabilization and repair or replacement of fractured bone tissue such that the rate of loss of the strength and rigidity of the composite due to absorption of the bio-absorbable polymer by the tissue substantially coincides with the rate of new bone tissue growth thereby enabling a gradual transference of load from the composite to new tissue in a human or non-human animal.



4,512,039
METHOD OF OFFSETTING POSTOPERATIVE ASTIGMATISM WITH AN INTRAOCULAR LENS
David M. Lieberman, 9 Prospect Park West, Brooklyn, N.Y. 11215
Filed May 24, 1983, Ser. No. 497,504
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **3 Claims**



1. A method for offsetting postoperative astigmatism induced by a surgeon as a result of cataract surgery, wherein the surgeon has estimated the induced astigmatism based on previous cataract surgery performed by said surgeon, said method comprising the steps of:

making an incision at the upper part of the juncture between the cornea and the sclera;

removing the cataract lens;

providing a toric lens having two transverse meridians of unequal power, with the difference in power being sufficient to offset the astigmatism anticipated to be induced by the surgery;

inserting the lens in the eye such that the weaker power meridian is vertically aligned; and

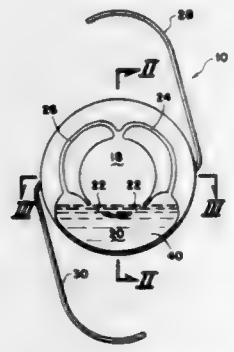
suturing the incision in the eye, whereby the toric lens offsets the astigmatism induced by the surgery.

4,512,040

BIFOCAL INTRAOCULAR LENS

Hubert L. McClure, 7777 S. Harvard Pl., Tulsa, Okla. 74136

Filed Jun. 9, 1982, Ser. No. 502,695
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **3 Claims**



1. An intraocular lens for implantation into a human eye comprising:

(a) an optical lens suitable for replacing a human crystalline lens wherein said optical lens consists of an inner transparent wall and an outer transparent wall which define an internal closed space within said lens wherein said internal closed space comprises:

(i) a refractive chamber centrally located in said lens such that it is in the line of sight when said lens is implanted into an eye;

(ii) a reservoir chamber in direct fluid communication with said refractive chamber and located in said lens such that it is in vertical alignment with said refractive chamber when said lens is implanted into an eye but not in the line of sight; and

(iii) at least one vent tube means within said lens and not in the line of sight wherein said vent tube means establishes fluid communication between said reservoir chamber and the far edge of said refractive chamber remote to said reservoir chamber;

(b) an eye attachment means operatively connected to said optical lens and adapted to fasten and retain said optical lens when implanted into the eye; and

(c) a sufficient quantity of a transparent liquid means of predetermined refractive index to partially fill said internally closed space and flow between said refractive chamber and reservoir chamber, in and out of the line of sight, as the angle of inclination of the line of sight changes.

4,512,041

DISPENSING DEVICE

Tseng B. Tsai, No. 118, La. 526, Ta-Tung Rd., Tainan, Taiwan

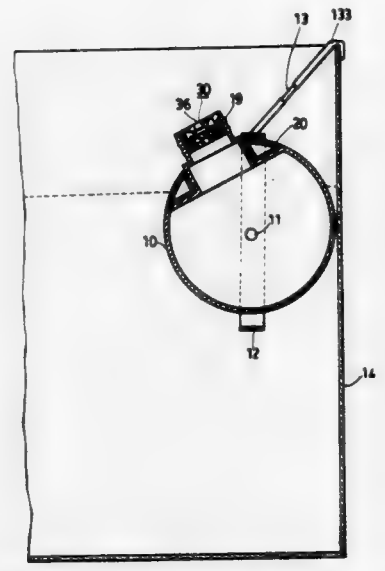
Filed Oct. 18, 1983, Ser. No. 543,010
Int. Cl.[3] E03D *9/02*
U.S. Cl. 4—227 **2 Claims**

1. A device for dispensing liquid cleanser into a toilet tank, comprising:

a container including a first chamber having a through bore and a second chamber associated with said first chamber yet not communicated therewith for storing liquid to be dispensed, said second chamber formed with an upstanding fill tube portion extending through said bore of said first chamber;

a dispensing member provided in said fill tube portion, which member has a tortuous passage ending in an outlet orifice, by which a quantity of liquid defined by the dimensions of said tortuous passage will dispense from said orifice into the toilet tank;

an adjustable mounting means, detachably mounted to said toilet tank and privotably connected to said second chamber at two ends thereof such that when the tank is full said container will be held in the tank water in a normal position with the upper end of said fill tube disposed above the highest flush water level within said toilet tank and when the tank water level recedes during flushing said first chamber and said second chamber will pivot with respect



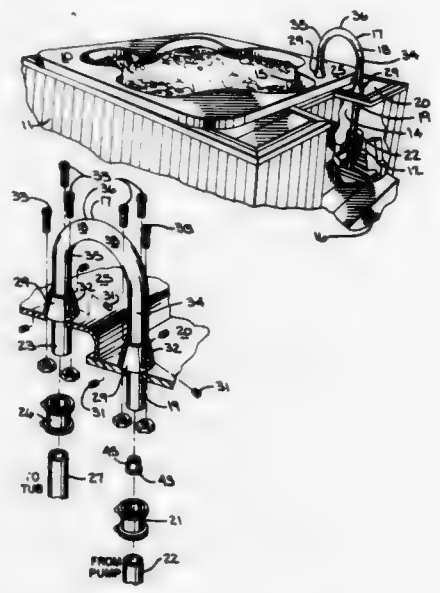
to said mounting as a unit about said pivotal connection to dispense a predetermined quantity of liquid defined by the dimensions of said tortuous passage.

4,512,042

RAILING FOR SPA OR THE LIKE

William H. Striegel, Howards Grove, and Willard H. Schmitz, Plymouth, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed May 16, 1983, Ser. No. 494,947
Int. Cl.[3] E04H *3/16, 3/18, 3/19*
U.S. Cl. 4—496 **1 Claim**



1. A railing for a spa or the like, comprising:

a tubular railing having an upwardly extending portion leading from an inlet, a downwardly extending portion leading to an outlet, and a cross portion connecting the upper ends of the upwardly and downwardly extending portions;

at least a grip section of said railing comprising an outer decorative tube and a flexible inner insulating tube;

said insulating tube having been formed separately from the outer decorative tube and then having been positioned therein so as to permit the passage of air through the insulating tube, from its inlet end to its outlet end;

a cover ring which bears axially against and covers the junction of the insulating tube and the outer decorative tube in the direction of air flow to restrict the entry of air therebetween; and

a guide sleeve extending from said cover ring and inserted in

the inlet end of the insulating tube to guide air into the insulating tube;

whereby the sleeve limits the inward movement of the inlet end of the flexible insulating tube away from the outer tube, and covers a radially inward junction between the cover ring and insulating tube.

4,512,043

PORTABLE HAIR SHAMPOO AND SCALP TREATMENT BASIN

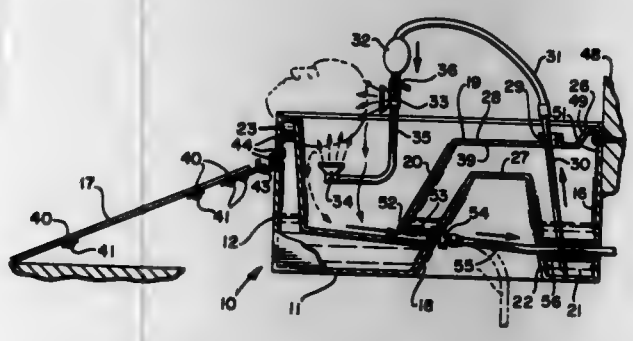
William D. Nolan, 3105 Grant St., Wichita Falls, Tex. 76308

Filed Apr. 4, 1983, Ser. No. 482,042

Int. Cl.[3] A54D *19/04*

U.S. Cl. 4—516

16 Claims



1. A portable hair shampoo and scalp treatment basin comprising: a box structure having, a removable top, a bottom, two opposite sides, a back end, and a front end, and with said box being generally of double spaced wall construction having, an outer wall and an inner wall; said outer wall forming said bottom, two opposite sides, the back end, and the front end; said inner wall is connected to said outer wall near the top of said box structure by a peripheral interconnect surface which serves to support said inner wall in a spaced relationship with respect to said outer wall and thus forms a water reservoir between said two walls, said inner wall is formed with a basin cavity at the front user head receiving end of said box structure, and with a convenience tray portion extending generally from the rear of said basin cavity to said interconnect means at the rear of said structure; opening means in said tray portion through which water may be fed to said water reservoir; a rounded cut out in the top of the front end of both said outer and inner walls with said interconnect surface following the contour of said cutout to form a user neck rest mount means for connecting an edge of said removable top to said front end below said cutout to serve as a sloped back rest for a user during a hair shampoo and scalp treatment; wherein fluid drain means extends from said basin cavity through said inner wall and said outer wall and through space between said inner wall and said outer wall; and said water reservoir extending through substantially the length of the basin box and around said basin cavity formed in said inner wall.

4,512,044

PORTABLE SHOWER AND BATH MAT

John T. M. Clark, 1722 Shorelane, R.R. 3, Stayner, Ontario, Canada L0M 1S0

Filed Apr. 2, 1981, Ser. No. 250,161

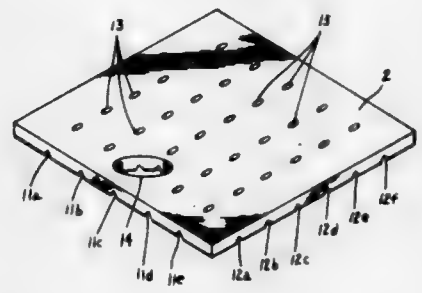
Int. Cl.[3] A47K *3/00*

U.S. Cl. 4—581

28 Claims

1. An improved portable shower or bath mat including:

(a) a high density polystyrene pad having an upper surface and also having a channeled bottom surface, wherein at least one of said channels extends to at least one edge of said pad; and



(b) said pad further including a plurality of drain holes, including drain holes extending from said upper surface through said pad to said channels in said bottom surface.

4,512,045

STRUCTURAL ASSEMBLY, FOR SHOWER PARTITION OR THE LIKE

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach/-Thun, Switzerland

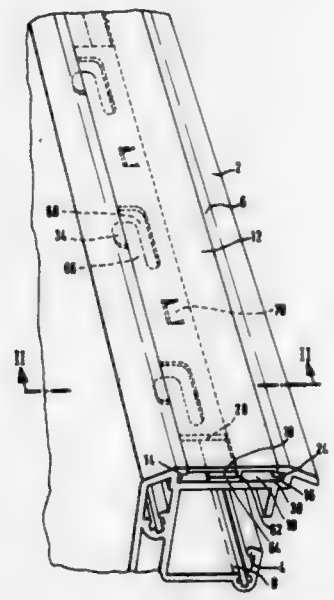
Filed Aug. 26, 1983, Ser. No. 526,825

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232084

Int. Cl.[3] A47K *3/22*

U.S. Cl. 4—610

18 Claims



1. A structural assembly, for a shower partition or the like, of the type comprising: a support member formed with an elongated first channel having a bottom surface and opposed longitudinal side flanges, one of said side flanges defining a groove opening over said bottom surface; an elongated facing panel fitting into said first channel and having opposed side edges disposed between said channel side flanges, and a connecting element interconnecting said support member and said facing panel, said connecting element engaging into said groove, the improvement wherein:

said facing panel is formed with means defining a second channel opening toward said groove, in interconnected condition of said support member and said facing panel;

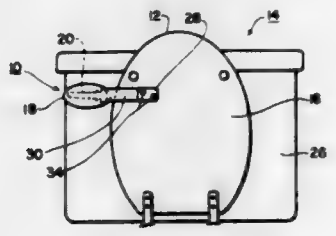
said connecting element, when in said interconnected condition, is mounted partly in said second channel of said facing panel and partly in said groove of said one of said first channel side flanges;

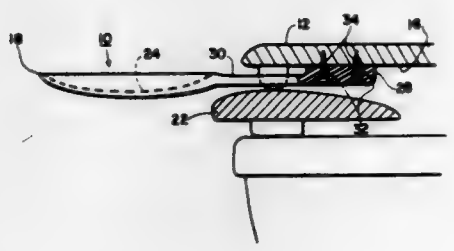
said connecting element is made of resilient material, and

the other of said first channel side flanges and the adjacent edge of said facing panel are formed with interlocking means whereby said panel member with said connecting element inserted in said second channel form a sub-assembly which may be mounted and removed from said support member by pivotal movement of said assembly about

said interlocking means to allow resilient engagement and removal of said connecting elemeht in and out of said groove.

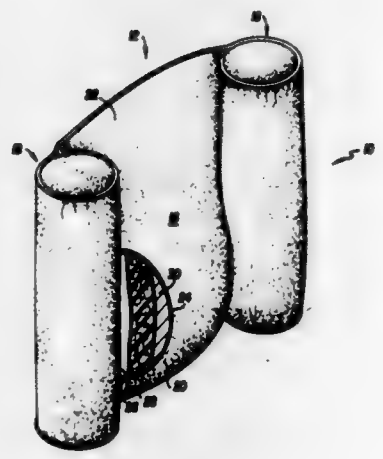
4,512,046
TOILET GUARD
Rita C. Riggle, P.O. Box 19, San Gregorio, Calif. 94074
Filed Mar. 7, 1983, Ser. No. 472,617
Int. Cl.³ A47K *13/10, 17/00*
U.S. Cl. 4—661 **6 Claims**





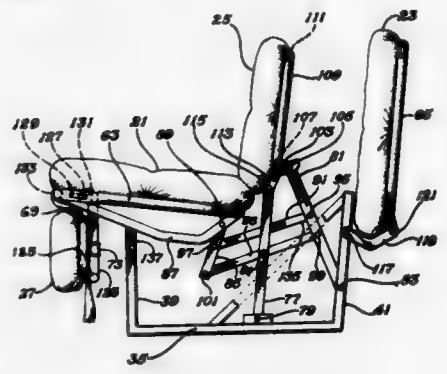
1. A combination to prevent flushing a toilet without closing a lid of the toilet, which comprises a toilet lid, a toilet seat and an attachment for said toilet lid to insure closing said lid after use of the toilet, which attachment comprises a member dimensioned and configured at one end to cover a flushing handle for the toilet when said lid is in a raised position, and a second end remote from said covering end attaching said member to said lid so that said covering end extends from said lid and beyond an edge of said toilet seat on the same side thereof as the flushing handle to cover the flushing handle when said lid is in the raised position.

4,512,047
SUPPORT CUSHION
Violet M. Johnson, 21 Kelly Cir., Katonah, N.Y. 10536
Filed Sep. 7, 1983, Ser. No. 530,148
Int. Cl.³ A47G *9/00;* A61G *7/06*
U.S. Cl. 5—432 **2 Claims**



1. A support cushion adapted to be located on a sitting means for gently supporting a person comprising,
a cover having a center portion and two side portions connected to the center portion, said cover including two slits at a bottom between the center portion and the side portion, respectively, adapted to permit a strap to pass therethrough,
a central section to be situated inside the center portion of the cover, said central section including a flat back portion and a front portion and being divided into a lower part and an upper part, said central section being formed of a rectangular central core extending from the lower part to the upper part along the flat back portion and a bottom core connected to the lower part of the front portion so that the front portion gradually rearwardly extends from the lower part toward the upper part thereof and the central core and the bottom core do not move in the cover and stay therein to properly support the back and waist portions of the person, and
two cylindrical bolsters having height substantially the same as the central section, said bolters being arranged vertically relative to the central section and situated inside the side portions of the cover so that the central section and two bolsters respectively support the back and two side portions of a person, and the body of the person can be firmly tightened to the sitting means by the strap which passes across the front of the person and extends to the sitting means through the slits.

4,512,048
VAN SOFA BED
Robert O. Isham, Rte. 2, Box 135-B, Decatur, Tex. 76234, and Wayne S. Reese, 7201 Hovenkamp Ave., Richland Hills, Tex. 76118
Filed Jul. 27, 1983, Ser. No. 517,684
Int. Cl.³ A47C *17/04*
U.S. Cl. 5—37 R **5 Claims**

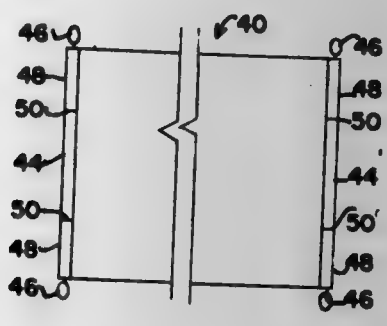


1. A sofa bed combination adapted to be mounted in the interior of a van, comprising:
a front cushion, a rear cushion, and an intermediate cushion, the cushions being of the same approximate width;
a rigid frame, less than the width of said cushions;
linkage means for connecting and pivotally mounting said front and intermediate cushions on said rigid frame, whereby said intermediate cushion is pivotable between an upright position which forms a seat back with respect to said front cushion and a folded down position, said folded down position being in the same horizontal plane as said front cushion to form a bed, said rear cushion being pivotally mounted on said rigid frame independently of said front and intermediate cushions and being pivotable between an upright position to provide a storage area behind said sofa bed and a folded down position in the same horizontal plane as said front cushion; and
said rigid frame being sized to fit within the interior of said van whereby said front and intermediate cushions form a rear seat for said van when said intermediate cushion is in said upright position and wherein said front, intermediate and rear cushions form a three-section bed when said intermediate and rear cushions are in said folded down position.

4,512,049
RECREATIONAL TOWEL

Jill Henry, 193 Pavahilani Pl., Kailua, Hi. 96734

Filed Jul. 13, 1984, Ser. No. 630,533
Int. Cl.[3] A47G *9/06*; B32B *3/02*
U.S. Cl. 5—417
1 Claim

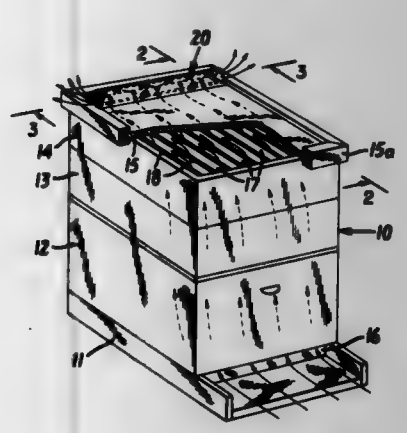


1. A towel comprising,
(a) a generally rectangular sheet of soft, moisture absorbing fabric,
(b) two elongated overlapping portions located along opposite edges of said sheet,
(c) elongated pockets formed at each of the ends of said elongated overlapping portions and being defined by the width of said overlapping portions and a seam thereacross,
(d) loop members extending from the opening of each of said pockets,
(e) means for securing said opening in a closed position, and
(f) spike members being adapted to be driven into an underlying substrate, said spike members fitting within said pockets and secured therein when said securing means is in the closed position, said spikes further being slidable in and engagable with said loops so that when said spikes are removed from said pockets, engaged within said loops and driven into an underlying surface, the towel is secured to said surface.

4,512,050
BEEHIVE VENTILATOR

Matthew Jamison, 4640 Valley Quail La., Santa Rosa, Calif. 95401, and Charles C. Sharp, 1246 Enos Ave., Sebastopol, Calif. 95472

Filed Jan. 25, 1984, Ser. No. 573,808
Int. Cl.[3] A01K *47/06*
U.S. Cl. 6—1
10 Claims

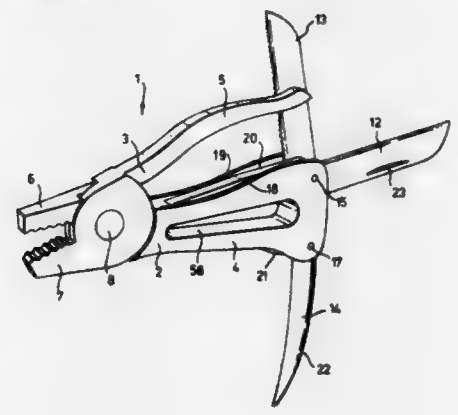


1. A ventilator for a beehive comprising means defining a longitudinally extending vent passage open at at least one end, a base adapted to be mounted to the upper surface of a cover for the beehive, at least one vent opening in said base and communicating with the interior of the beehive beneath the beehive cover, and means accessible from the open end of the vent passage for opening and closing at least one vent opening to control the flow of air from the interior of the beehive to the vent passage.

4,512,051
HANDTOOL

Arthur S. C. Magan, 15, Heytesbury La., Dublin 4, Ireland

Filed Oct. 26, 1982, Ser. No. 436,819
Claims priority, application Ireland, Oct. 27, 1981, 2508/81
Int. Cl.[3] B25B *7/22*
U.S. Cl. 7—128
2 Claims



1. A handtool which comprises: (a) a substantially elongate major body member; (b) a substantially elongate minor body member; (c) at least one inside implement; and (d) an outside implement; each of the body members having a jaw portion in a front end region and a handle portion in a rear end region, the body members being pivotally connected together intermediate their end regions so that they can be rotated relative to each other by manual operation of the handle portions between a closed condition of the body members in which the jaw portions are in abutment with each other and an open condition of the body members in which the jaw portions are spaced apart from each other; the handle portion of the major body member having an inside edge region which faces the handle portion of the minor body member and said handle portion also having an elongate recess in said inside edge region; said at least one inside implement being pivotably mounted on the major body member in the inside edge region and being rotatably displaceable between a rest position in which it is received at least in part in said recess in the inside edge region and a working position in which it extends rearwardly from the body member; the handle portion of the major body member also having a recess in an outside edge region directed away from the handle portion of the minor body member, the outside implement being pivotably mounted on the major body member in the outside edge region and being rotatably displaceable between a rest position in which it is received at least in part in the recess in the outside edge region and a working position in which it extends rearwardly from the body member, and said outside implement having a gripping-surface region which faces outwardly of the body member when the outside implement is in its rest position; and the handle portion of the major body member having in addition an elongate slot-form opening in a side surface thereof, said opening defining a shackle opener; the handtool further comprising detent means for preventing displacement of the implements from their working positions towards their rest positions, each implement having a detent surface in the region of its pivotal mounting on the body member, the detent means comprising at least one detent member displaceable between a blocking position in which it engages a said detent surface to prevent pivoting displacement of the corresponding implement from its working position and a release position in which the implement may be rotated towards its rest position, and the handle portion of the major body member comprising means for holding said at least one detent member in its blocking position and manual means associated with said holding means and selectively operable to allow displacement of the corresponding implement from its working position towards its rest position, said at least one detent member being a spring mounted in the major body member to resiliently engage the corresponding implement in the region of its detent surface, the detent member holding

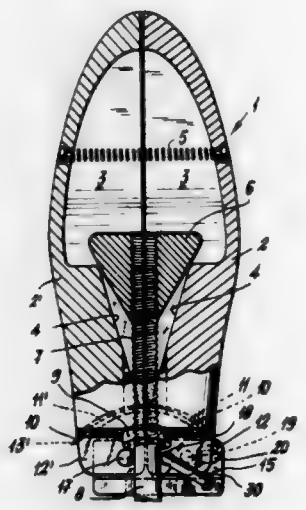
means being a cam member mounted in the major body member for rotation between a locking position in which a cam surface of the cam member engages against a portion of said spring-form detent member to maintain the detent member in its blocking position and a free position in which said spring-form detent member may be displaced into its release position by rotation of the implement, and the manual means being a knob rotatably mounted in and extending outwardly of the major body member and fixedly connected with the cam member, so that the cam member may be rotated by rotation of the knob.

4,512,052

LAST WITH DEVICE FOR APERTURE ADJUSTMENT AS REQUIRED AND SHIELD ELEMENT FOR LAST ADAPTABILITY TO RIGHT AND LEFT SHOES

Bruno, Caminiti, Via Stradella 4/A, Milan, Italy (20129)

Filed Feb. 23, 1983, Ser. No. 468,966
Claims priority, application Italy, Mar. 15, 1982, 21138/82[U]
Int. Cl.³ A43D *5/00*
U.S. Cl. 12—116.2 **5 Claims**



1. A last for controlled stretching of shoes comprising a first half-last and a second half-last, said first and second half-lasts having forward toe portions and opposed rear portions, retaining means for resiliently retaining said half-lasts in closely spaced relation and for allowing lateral adjustment therebetween, and adjustment means for selective lateral adjustment of the two half-lasts relative to each other selectively and individually at at least said toe portions and said rear portions, said adjustment means comprising last manipulation means engaged between said half-lasts and selectively manipulable for a selective movement of said half-lasts relative to each other, said adjustment means further comprising connector means, said connector means extending between said half-lasts and including pivot means for pivotally engaging said half-lasts for enabling pivotal movement of said half-lasts relative to each other about fixed preselected points in response to manipulation of said manipulation means, and means for selectively varying the pivot means for changing said fixed preselected points whereby said adjustment means selectively provides for separate lateral adjustment of said two half-lasts at the toe portions, generally parallel to each other, and at the rear portions.

4,512,053

HAND-HELD SHOE POLISHING APPARATUS

Charles F. Horak, 1700 W. Callighan, and James M. Jordan, Box 172, both of Fort Stockton, Tex. 79735

Filed Nov. 15, 1983, Ser. No. 551,939
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—28 **6 Claims**

1. A hand-holdable apparatus for polishing and buffing shoes comprising:

(a) a housing elongated between front and rear extremities and comprised of interengaged upper portion and lower portion provided with ventillation apertures,

(b) an elongated holding handle disposed above said upper housing portion and oriented substantially parallel to the direction of elongation of said housing,

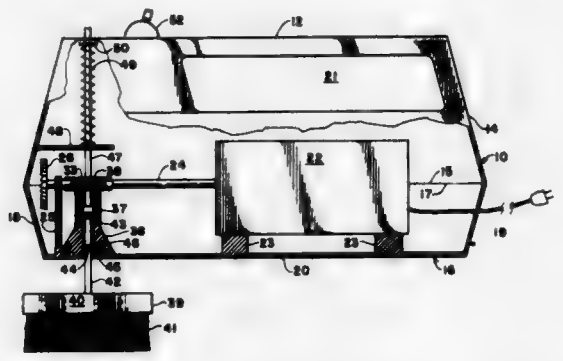
(c) an electric motor and associated drive shaft confined within said housing and oriented such that said drive shaft is substantially parallel to the direction of elongation of said housing and terminates in a distal extremity directed toward the front of said housing, said distal extremity having attached thereto a fan blade adapted to force air past said motor and out said ventillation apertures,

(d) a worm gear associated with said drive shaft in coaxial disposition therewith,

(e) a second gear positioned within said housing in operative engagement with said worm gear and adapted to re-direct the torque of said drive shaft 90° in the direction of said lower housing portion.

(f) a rotary shoe-polishing attachment comprised of a circular head and a spindle perpendicularly attached to the center of said head, said spindle having retention means and first coupling means associated with the upper extremity of said spindle,

(g) a channel in said lower housing portion adapted to accommodate the spindle of said rotary attachment,



(h) second coupling means centrally associated with said second gear and adapted to releasably interengage the first coupling means of said spindle for transmitting torque thereto,

(i) spring-restorable releasing means having an upper extremity extending above said upper housing portion, and a lower extremity positioned within said housing, said upper and lower extremities being misaligned by way of an offset portion, said releasing means being adapted to disengage said spindle from said second gear,

(j) electrical switch means to control the operation of said motor, located adjacent said holding handle, and

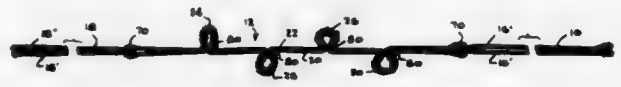
(k) an electrical supply cord.

4,512,054

BACK-SCRUBBER DEVICE

Henry S. Clark, 1510 13th St. West, Bradenton, Fla. 33505

Filed Apr. 11, 1984, Ser. No. 599,009
Int. Cl.³ A47K *7/03*
U.S. Cl. 15—222 **20 Claims**



1. A back scrubber comprising:

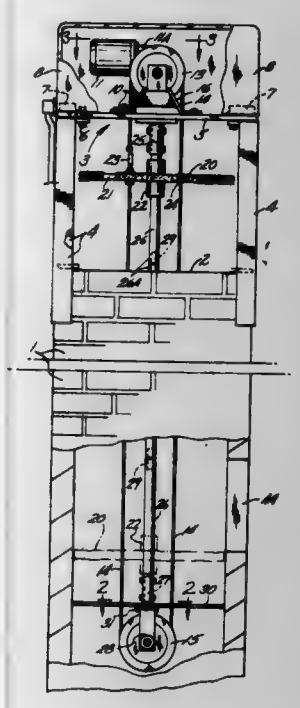
an elongated cloth member including a central scrubber section and first and second outer hand grasp members respectively extending outwardly from opposite ends of said central scrubber section and wherein said central scrubber section includes transverse pleats alternately extending outwardly therefrom on opposite sides thereof.

4,512,055

CHIMNEY CLEANING APPARATUS WITH MOTOR DRIVE

Burnell G. Boehland, Creswell, and Donald G. Coutts, Eugene, both of Oreg., assignors to Speedy Automatic Chimney Sweep, Inc., Eugene, Oreg.

Filed Nov. 9, 1983, Ser. No. 549,882
Int. Cl.³ F23J 3/00
U.S. Cl. 15—249 **8 Claims**



1. An apparatus for cleaning the interior of chimneys and the like, said apparatus comprising,

a base for supported placement on a chimney,

a post structure carried by said base and adapted for extending downwardly therefrom for lengthwise placement within the chimney,

a brush assembly slidably disposed on said post for travel therealong,

a brush drive assembly including a flexible member connected to the brush assembly, a first rotatable member on said base, reversible motor means coupled to said first rotatable member to drive same, a second rotatable member carried by said post structure, said flexible member entrained about said first and second rotatable members, motor operation imparting rectilinear movement of said brush assembly along said post to clean the chimney interior, and

a motor control circuit in circuit with a power source to energize said motor for predetermined periods of operation in each direction of operation whereby said brush assembly will traverse the chimney in opposite directions to clean same.

4,512,056

WINDSCREEN WIPER SYSTEM

Maurice F. Wattier, Sissonnes, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

Filed Feb. 24, 1984, Ser. No. 583,400
Claims priority, application France, Feb. 25, 1983, 83 03149
Int. Cl.³ B60S 1/24
U.S. Cl. 15—250.23 **19 Claims**

1. In a windscreen wiper system for a motor vehicle comprising:

(a) windscreen wiper blade means;

(b) blade holder arm means for driving said windscreen wiper blade means in an alternating wiping movement in relation to the windscreen surface to be wiped;

(c) intermediary connecting means articulated to the windscreen wiper blade means and to the blade holder arm means;

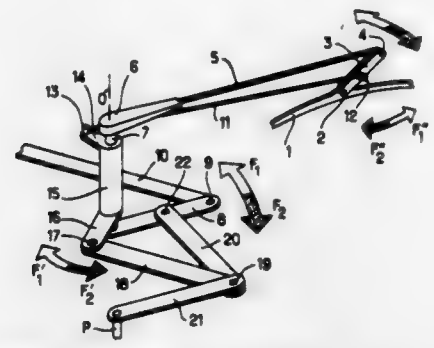
(d) first shaft means having a first axis of rotation and having said blade holder arm means fixed thereto for rotation around said first axis of rotation;

(e) driving crank means for transmitting drive to said first shaft means for executing alternating rotation around said first axis of rotation;

(f) actuator arm means having a first end articulated to the intermediary connecting means for actuating displacement of the intermediary connecting means in relation to the blade holder arm means;

(g) actuator crank means articulated to a second end of said actuator arm means;

(h) second shaft means rotatable about a second axis of rotation, said second shaft means having said actuator crank means fixed thereto for rotation about said second axis;



(i) linkage means drivingly connecting the driving crank means and the second shaft means so that any point along said windscreen wiper blade means follows a non-circular trajectory in the course of wiping rotation of said blade holder arm means;

the improvement wherein said linkage means comprises

(j) a driven crank fixed to the second shaft means

(k) an idler constrained to follow a circular or rectilinear movement;

(l) first and second reversing links articulated to said idler;

(m) means articulating said driven crank to said first reversing link; and

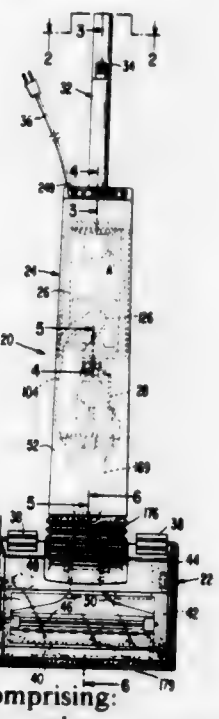
(n) means articulating said second reversing link to the driving crank.

4,512,057

FLOOR CARE APPLIANCE

Gordon E. Laing; Martin E. Harbeck, both of Anderson; John E. Jones, Greenville; William R. Sumerau, Easley, and William K. Glenn, III, Anderson, all of S.C., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 30, 1984, Ser. No. 605,043
Int. Cl.³ A47L 5/30
U.S. Cl. 15—320 **3 Claims**



1. A floor care appliance comprising:

a main housing including integral top, rear and side panels,

and further including a large rearwardly open cavity portion extending inwardly between said sides from said rear panel, said cavity portion including an inlet aperture thereto;

a handle for directing said floor care appliance;

means for attaching one end of said handle to an upper portion of said main housing;

a filter arrangement received in said main housing cavity portion, said filter arrangement including a filter bag carried within said cavity portion and an air permeable closure attached to said rear panel and covering said rearwardly open cavity portion;

an internal groove in said main housing beneath said cavity portion; a main housing motor baffle situated in said groove, a motor blower assembly supported by said main housing and said baffle below said cavity portion, said motor blower assembly including an inlet tube extending beyond a lower portion of said main housing and an outlet tube extending through said inlet aperture of said cavity portion to communicate with said filter bag, said main housing further including inlet louvers situated between said cavity portion and said internal groove;

a main housing extension having side panels and a rear panel, said rear panel having louvers therein;

means for attaching said main housing extension to said main housing at the bottom edge thereof;

a cover including integral top, front and side panels and an internal groove spaced from an end thereof;

a cover motor blower baffle captured in said cover internal groove;

means for affixing said cover to said main housing and said main housing extension with said motor blower baffles aligned and extending to said motor blower assembly to provide an inlet chamber for motor cooling air between said cavity portion and said motor baffles and an outlet chamber therefor open to the ambient through said louvers in said main housing extension;

a floor unit including a lower housing supporting a pair of rear wheels, a forwardly situated brush, and a reversible first motor for selectively driving said brush in a selected forward or reverse direction, an upper housing having a chamber for retaining a supply of carpet cleaning powder and supporting a second motor and means for selectively dispensing the powder operatively connected to said second motor, said lower housing further supporting a swivel having an outlet tube for connection to said inlet tube of said motor blower assembly, said swivel fitting communicating with a plenum chamber formed between said upper and lower housing and terminating in a slot adjacent said forwardly situated brush thereof which rotates toward said plenum chamber in said forward direction;

said cover including a switch assembly for selecting operation of said motor blower assembly without operation of said first motor, or operation of said motor blower assembly with operation of said first motor, or operation of said first motor in a reverse direction without operation of said motor blower assembly.

4,512,058

APPARATUS FOR UNHAIRING SLAUGHTERED LIVESTOCK

Günter Abele, Neuler, Fed. Rep. of Germany, assignor to Machinefabriek G. J. Nijhuis B.V., Netherlands

PCT No. PCT/EP81/00050, § 371 Date Jan. 15, 1982, § 102(e) Date Jan. 15, 1982

PCT Filed May 18, 1981, Ser. No. 341,990

Claims priority, application Netherlands, May 16, 1980, 8002849

Int. Cl.³ A22B *5/08*

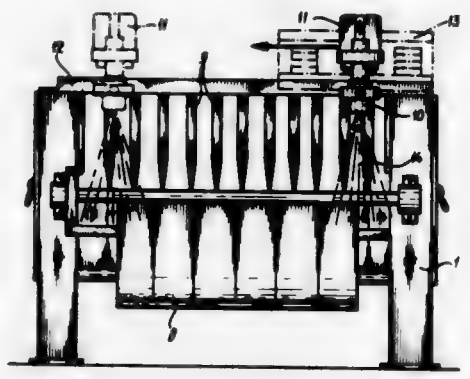
U.S. Cl. 17—20 **14 Claims**

1. Apparatus for unhairing slaughtered livestock, comprising, in combination:

hot water treatment apparatus for treating a carcass with hot water to prepare hairs on the carcass for further hair removal operations;

dehairing apparatus for scraping the carcass, the dehairing apparatus being adapted to receive the carcass and to rotate the carcass, the dehairing apparatus including scrapers, the scrapers being adapted to remove a substantial portion of the hair on the carcass after the hair has been pretreated with hot water; and,

means for differentially heating the carcass after scraping to remove additional hair which is more difficult to remove, without overheating the valuable belly section of the carcass, said means including at least one pivotally mounted burner, the burner being supported by the dehairing apparatus near to the carcass so that the burner can burn away hairs which were not removed by the



scrapers, the burner being pivotally mounted on a pivotal axis, said pivotal axis extending in a direction which is generally transversely oriented with respect to the length of the carcass, so that a flame produced by the burner may be directed up and down at least a portion of the length of the carcass by pivoting the burner about said pivotal axis, the burner being pivotally moveable so that the flame is directed toward the head section of the carcass or the rear section of the carcass for a period of time that is longer than the period of time that the flame is directed toward the belly section of the carcass, the burner being operable to single hair remaining upon the carcass after scraping including hair upon the head section and rear section of the carcass, without overheating the belly section of the carcass, while the carcass is rotated in the dehairing apparatus.

4,512,059

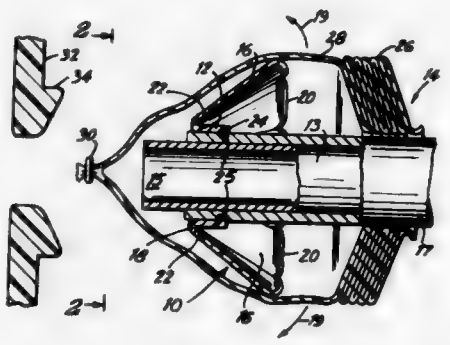
CASING SIZING MEANS AND METHOD

John H. Beckman, Downers Grove, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 9, 1983, Ser. No. 521,590

Int. Cl.³ A22C *7/00, 13/00*

U.S. Cl. 17—45 **20 Claims**



1. A method for diametrically expanding a food casing about the discharge end of a stuffing horn assembly during the stuffing of the casing, said method comprising the steps of:

(a) locating an expandable casing sizing means within an

unshirred, substantially unstretched portion of casing, said sizing means being attachable adjacent the discharge end of the stuffing horn assembly and including a plurality of petal members arranged about the stuffing horn assembly in generally conical configuration wherein each petal member has one end hinged with respect to the stuffing horn assembly to permit arcuate movement of said petal members upward and forward towards the discharge end and to a casing stretching position;

(b) urging the petal members to pivot upward and forward until said petal members are at a position in contact with the inner surface of said unshirred casing but short of said casing stretching position;

(c) moving said unshirred casing over said contacting petal members and toward said discharge end; and

(d) pivoting said petal members to said casing stretching position in direct response to said casing movement.

4,512,060

APPARATUS AND METHODS FOR AEROMECHANICAL AND ELECTRODYNAMIC RELEASE AND SEPARATION OF FOREIGN MATTER FROM FIBER

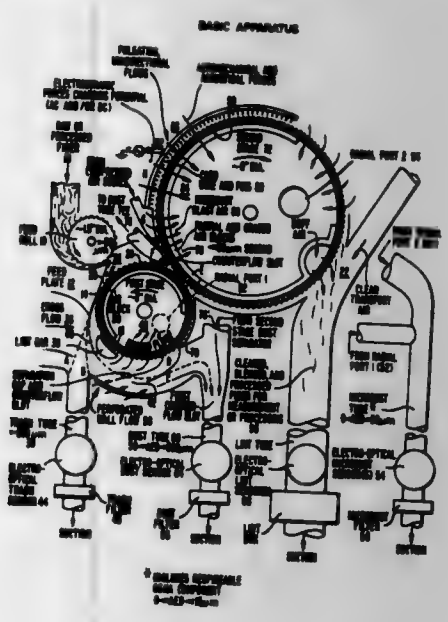
Frederick M. Shofner, Knoxville, Tenn., assignor to ppm, Inc., Knoxville, Tenn.

Continuation-in-part of Ser. No. 428,608, Sep. 30, 1982, abandoned. This application Nov. 15, 1983, Ser. No. 552,061

Int. Cl.³ D01B *3/00*

U.S. Cl. 19—200

14 Claims



1. Apparatus for removing foreign matter from bulk fiber material, said apparatus comprising:

a perforated cylindrical rotating beater wheel having perforations for permitting radially inward airflow and having projections for engaging fibers on said beater wheel, the perforations being sufficiently small to substantially preclude movement of lint through the perforations;

a mechanism for continuously supplying bulk fiber material to said beater wheel at a first point along the rotational path thereof;

a mechanism for continuously removing the lint mat from said beater wheel at a second point along the rotational path thereof; and

a port for withdrawing transport gas from the interior of said cylindrical beater wheel to provide aerodynamic force tending to pull fiber and foreign matter towards the cylindrical surface of said beater wheel.

4,512,061

METHOD OF CONTROLLING FIBER-DRAWING APPARATUS

Max Hartmannsgruber, Kirchheim; Kurt Kriechbaum, Ingoldstadt; Günter Schulz, Ebersbach, and Hermann Güttler, Uhingen, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

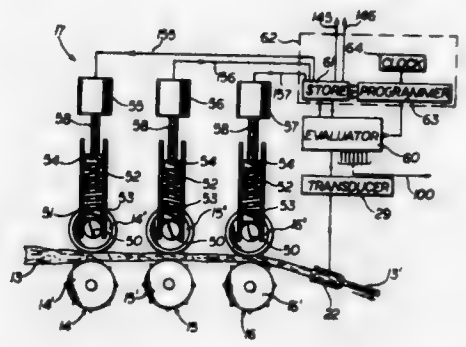
Division of Ser. No. 420,787, Sep. 21, 1982, Pat. No. 4,473,924, which is a continuation-in-part of Ser. No. 196,582, Oct. 14, 1980, abandoned. This application Apr. 13, 1984, Ser. No. 600,310

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941612

Int. Cl.³ D01H *5/42*

U.S. Cl. 19—239

3 Claims



1. A method of controlling the operation of a draw frame with a plurality of cascaded roller pairs following one another in a direction of travel of sliver to be combined into an outgoing bundle, said roller pairs being rotated at relative speeds imparting tension to the bundle between the portion clamped in the nips of each pair of rollers, wherein the improvement comprises the steps of:

(a) sensing thickness fluctuations of said bundle;

(b) successively varying the nip line spacing between roller pairs;

(c) for each nip line spacing thus established, maintaining the nip line spacing constant and measuring the extent of said fluctuations;

(d) ascertaining the nip line spacing for which said fluctuations as measured in step (c) are at a minimum; and

(e) maintaining the nip line spacing as the ascertained value of step (d) for continued operation of the draw frame.

4,512,062

LOAD BINDER HANDLE AND EXTENSION THEREFOR

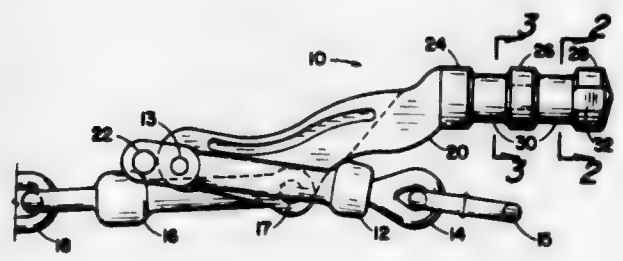
Edward J. Crook, Jr., Tulsa, Okla., assignor to The Crosby Group, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 357,048, Mar. 11, 1982,. This application Dec. 21, 1982, Ser. No. 451,871

Int. Cl.³ A47B *95/02*; B66F *3/00*

U.S. Cl. 24—71 R

5 Claims



1. In a load binder for applying tension to a chain or other flexible load retaining element wherein said load binder comprises at least two link members each adapted to attach to said chain or other flexible element, said link members being pivotally interconnected to an actuator link that pivots between a relatively extended slack chain position and a relatively re-

tracted chain tension position wherein said actuator link being adapted to lock over-center thus holding said chain or said flexible member under said tension, the specific improvement comprising:

said actuator link comprised of a toggle arm and a handle rigidly formed thereto, said handle being substantially a hand-breadth in length; and

a removable extension, said extension including means at one end to interconnect and interlock with said handle and means at the other end to release said over-center locking tension position.

4,512,063

BUTTON

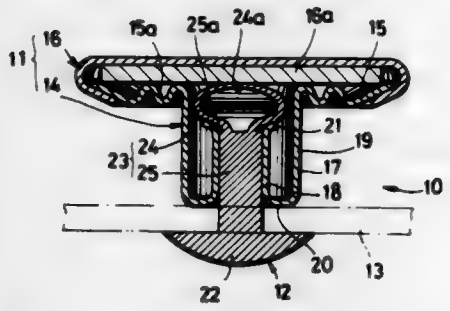
Takeo Fukuroi, Uozu, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,339

Claims priority, application Japan, Aug. 11, 1982, 57-121754[U]

Int. Cl.³ A44B *1/42, 17/00*

U.S. Cl. 24—94 **6 Claims**



1. A button for attachment to a garment fabric, comprising:

(a) a button body including a button back and a cap covering said button back on its one obverse side, said button back having a hollow hub integral therewith and disposed remotely from said cap and projecting centrally from said button back;

(b) a one-piece tack member including a head, and a shank of a circular cross section projecting perpendicularly and centrally from said head for being pierced through the garment fabric and then inserted into said hollow hub of said button back to thereby join said tack member with said button body; and

(c) said shank having a hollow and solid combined structure that is composed of a closed tapering hollow end portion and a solid base portion, said hollow end portion being deformable into a balloon-like shape, axially compressed and radially swelled, as its tip end is forced against the inner side of said cap of said button body during the insertion of said shank into said hollow hub of said button back.

4,512,064

METHOD OF CONNECTING PULL TAB WITH SLIDE FASTENER SLIDER

Kiyotada Nishikawa, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 221,976, Jan. 2, 1981,. This application Jan. 12, 1984, Ser. No. 570,219

Claims priority, application Japan, Feb. 9, 1980, 55-15729

Int. Cl.³ A44B *19/00*

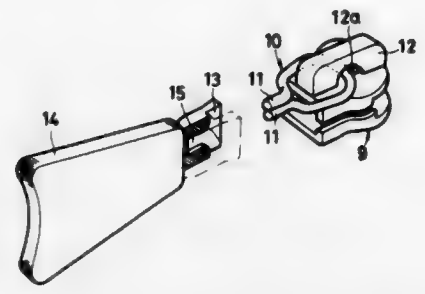
U.S. Cl. 24—429 **3 Claims**

1. A method of connecting a planar pull tab having at one end an axial hole extending in from a transverse recess with a slide fastener slider having a bridge with an opening therein, comprising the steps of:

forming a piece of resilient wire into a closed planar loop with two straight wire end portions projecting outwardly from said loop, said wire end portions being parallel, juxtaposed in contact and overlying one another in a plane generally perpendicular to the plane of said loop,

separating said end portions sufficiently to thread one end portion through said opening in the bridge of said slider to interlink said wire loop with said slider,

inserting said juxtaposed wire end portions into said transverse recess of said pull tab with the plane of said wire end portions generally coinciding with the plane of said pull tab and with the plane of said loop generally perpendicular to the plane of said pull tab,



turning said pull tab approximately 90° about its longitudinal axis relative to said loop whereby said wire end portions are displaced relative to one another so as to be aligned with one another in the general plane of said loop,

moving said pull tab and loop relatively toward one another to insert said wire end portions into said axial hole of said pull tab and bring an adjacent portion of said loop in said recess, and

securing said wire loop to said pull tab.

4,512,065

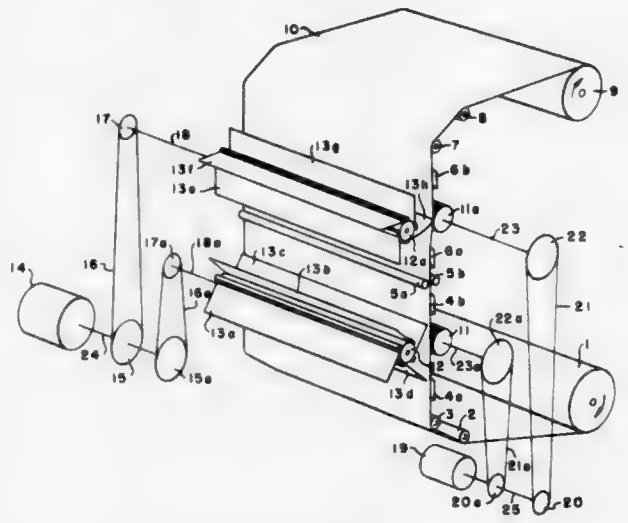
MECHANICAL SURFACE FINISHING APPARATUS FOR TEXTILE FABRIC

Wolfgang K. F. Otto, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 282,446, Jul. 13, 1981, Pat. No. 4,468,844, which is a continuation-in-part of Ser. No. 92,815, Nov. 9, 1979, Pat. No. 4,316,928. This application Apr. 27, 1984, Ser. No. 604,771

Int. Cl.³ D06C *11/00*

U.S. Cl. 26—28 **5 Claims**



1. An apparatus for mechanically achieving a substantially uniform modification of the hand characteristics of a textile fabric having fibrous components which comprises means for continuously feeding said fabric from a source of supply such that said fabric lies in a single plane, at least one rotating abrasive roll; at least one intermittent impact means for subjecting successive adjacent sections of said fabric to intermittent mechanical impact with said abrasive roll across the width of said fabric, thereby avoiding substantial sustained contact between said fabric and said abrasive roll; said intermittent mechanical impact means being disposed across the fabric width, parallel

to the abrasive roll near the reverse side of the fabric from said abrasive roll, thereby causing the portions of the fibrous components exposed to said intermittent mechanical impact with said abrasive roll to be substantially scarred and to be provided with a multiplicity of generally short, rather thick, lamella shaped protrusions extending therefrom.

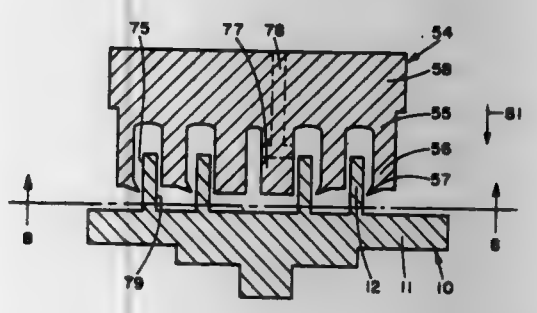
5. An apparatus for mechanically achieving a substantially uniform modification of the hand characteristics of a textile fabric having fibrous components which comprises means for continuously feeding said fabric from a source of supply such that said fabric lies in a single plane, at least one rotating abrasive roll covered with napping wire; at least one intermittent impact means for subjecting successive adjacent sections of said fabric to intermittent mechanical impact with said abrasive roll across the width of said fabric thereby avoiding substantial sustained contact between said fabric and said abrasive roll; said intermittent mechanical impact means being disposed across the fabric width, parallel to the abrasive roll near the reverse side of the fabric from said abrasive roll, thereby causing the portions of the fibrous components exposed to said intermittent mechanical impact with said abrasive roll to be substantially scarred and to be provided with a multiplicity of generally short, rather thick, lamella shaped protrusions extending therefrom.

4,512,066

METHOD OF FABRICATING SCROLL MEMBERS

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 239,414
Int. Cl.[3] B23D *15/02*
U.S. Cl. 29—23.5 10 Claims



1. A method of fabricating a scroll member comprising the steps of

(a) providing a precision preformed scroll member as an element having affixed to an end plate an involute wrap having its inner and outer flanks joined to said end plate along the base of said involute wrap;

(b) forming reentrant corners between the surface of said end plate and said inner and outer flank surfaces joining said involute wrap to said end plate;

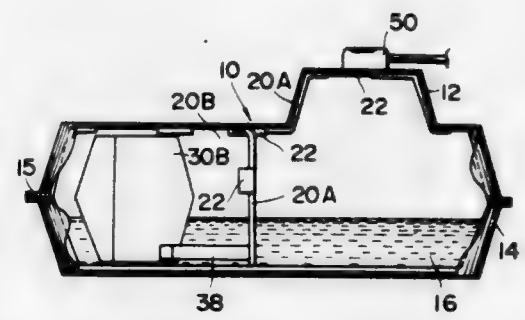
(c) broaching said inner and outer flanks of said involute wrap axially toward the surface of said end plate to attain a predetermined thickness of said involute wrap and a radial spacing between the turns thereof, said reentrant corners providing clearance for chips resulting from said broaching.

4,512,067

METHOD OF MAKING LIQUID CONTAINER HAVING ELECTRODE PLATES TO DETECT LIQUID LEVEL BY MEASURING CAPACITANCE

Hiroshi Kobayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 330,782, Dec. 14, 1981,. This application Mar. 20, 1984, Ser. No. 591,238
Claims priority, application Japan, Dec. 15, 1980, 55-175875; Dec. 29, 1980, 55-188969; Aug. 27, 1981, 56-133274
Int. Cl.[3] H01G *7/00*
U.S. Cl. 29—25.41 14 Claims



1. A method of producing, in a liquid container having a hollow container body, a plurality of capacitors electrically connected in parallel and disposed in the container body such that the capacitance of each capacitor varies as the level of liquid in the container body varies, each of the capacitors having an electrode plate assembly including two generally polygonal electrode plates arranged opposite to and spaced from each other and disposed substantially vertically in the container body, the method comprising the steps of:

for each electrode plate assembly, preparing a provisional assembly of a first electrode plate having a plurality of holes and a shape enabling it to serve as a baffleplate, placing a second electrode plate opposite to said first electrode plate, the second plate having a plurality of holes correspondingly to said holes of said first electrode plate, inserting a spacer network between said first and second electrode plates to provide a predetermined distance between said first and second electrode plates, said spacer network being a one-piece member formed of an electrically insulating material and including plural generally annular spacers arranged correspondingly to said holes of said first and second electrode plates, said spacer having a thickness equal approximately to said distance and a plurality of relatively thin connecting bars each extending in a zigzag manner to breakably connect a predetermined number of said spacers to one another by relatively weak joints with a generally arc-like part of the outer periphery of each spacer, said spacer having an end portion protruding from the space between said first and second electrode plates, inserting a fastener in the center hole of each spacer through the aligned holes of said first and second electrode plates, and fixing each of said fasteners to said first and second electrode plates;

pulling each of said connecting bars at said end portion to cause the joints between the pulled connecting bar and each of said number of spacers to break to thereby separate the pulled connecting bar from all of said number of spacers, and then removing the separated connecting bar from said provisional assembly, whereby said provisional assembly is converted into said electrode plate assembly, wherein said plurality of spacers remain sandwiched between said first and second electrode plates and are spaced from one another; and

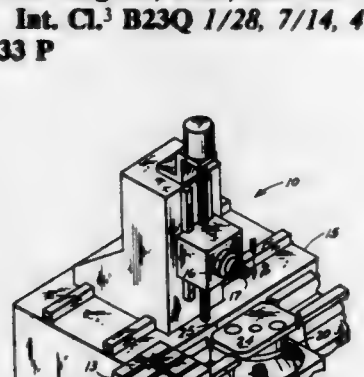
substantially vertically disposing each electrode plate assembly in said container body at a predetermined location, and fixing said first electrode plate of each electrode plate assembly to said container body.

4,512,068

PALLET RECEIVER WITH COMPLIANT PIN AND SOCKET REGISTRATION

Tadeusz W. Piotrowski, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 23, 1982, Ser. No. 178,922
Int. Cl.³ B23Q *1/28, 7/14, 41/02*
U.S. Cl. 29—33 P **3 Claims**



1. An improved pallet registration apparatus in a machine tool having: a pallet interchanger; a pallet receiver with a base adapted to receive a pallet from said interchanger; and means to clamp and release said pallet at said receiver at selected interchange times, wherein the improvement comprises:

(a) a first rigid locating surface on said receiver base;

(b) a second rigid locating surface on said pallet;

(c) a registration socket located on one of said pallet and receiver;

(d) a registration pin matingly-shaped to said socket, located on the other of said pallet and receiver; and

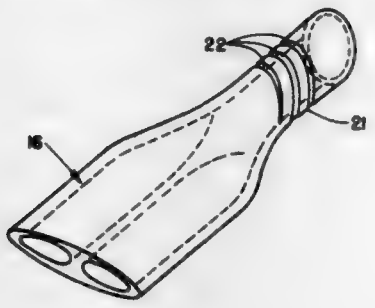
(e) diaphragm spring mounting means supporting one of said pin and said socket; wherein said pallet is moved and aligned through engagement of said pin and socket during a first portion of clamp means movement, and is subsequently stationarily held and clamped through engagement of said first and second rigid surfaces during a second portion of clamp means movement.

4,512,069

METHOD OF MANUFACTURING HOLLOW FLOW PROFILES

Klaus Hagemeister, Ebenhausen, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 444,200
Int. Cl.³ B21K *3/04*; B23P *15/02, 15/04*; B21D *53/02*
U.S. Cl. 29—156.8 B **4 Claims**



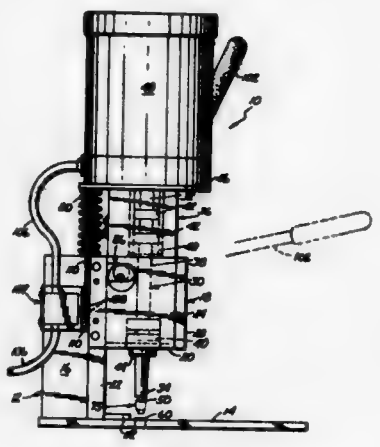
1. A method for manufacturing hollow heat exchanger matrix flow profiles of aerodynamic configurations, said profiles each having an outer skin streamed about during operation by a first working medium, and internal passages in the flow profiles simultaneously streamed through by a second working medium; comprising the steps of forming material accumulations at predetermined locations spaced over the circumference of a conduit of an initially predetermined sectional configuration; deforming said conduit so that one of the material accumulations produces a side thickening of the wall being formed proximate the area of the leading and trailing edges of the flow profile, and further deforming said conduit so that other material accumulations produce inner webs superimposed in the meridian plane ultimately to provide at least two separate compressed air passages, said forming step further including providing two diametrically opposite material accumulations on the circumference of the conduit of the same web-like configuration before the final forming of the profile and a projectile structure on the conduit wall; inserting turbulence-inducing metal means between the adjacent ends of the inner webs of the finish-formed flow profiles, and fastening said turbulence-inducing metal means together with the ends of the inner webs, as an internal structural component of the flow profile; effecting the final finish forming through pressing the inner webs together and welding them together.

4,512,070

SAW CHAIN RIVET SPINNER

Richard C. Anhalt, Rte. 9, Box 1B, Brainerd, Minn. 56401

Filed Jun. 1, 1983, Ser. No. 499,816
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—243.53 **18 Claims**



1. A rivet spinner for saw chain rivets which comprises:

a generally horizontal base portion;

a generally vertical spindle sleeve supported from and above the base portion;

a rotatable spindle having a generally vertical axis of rotation and being slidably movable axially with respect to the spindle sleeve between a first raised position and a second lowered position;

spring means for urging the rotatable spindle toward its first raised position;

manually actuated cam means for selectively moving the rotatable spindle from its first raised position to its second lowered position;

a rivet support die mounted on the base portion, the support die being axially aligned under the rotatable spindle and formed to support a saw chain rivet;

a rivet anvil fixedly secured on a lower end of the rotatable spindle for engaging the rivet supported by the support die when the spindle is moved to its second lowered position;

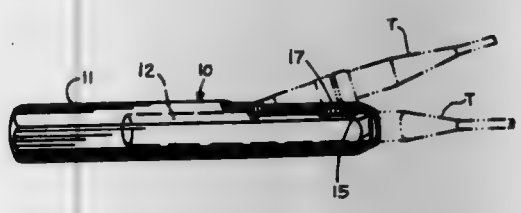
motor means for rotating the spindle and rivet anvil; and

switch means for actuating the motor means, the switch means being responsive to the position of the rotatable spindle such that the motor means is only actuated when the spindle is moved downwardly out of its first raised position toward its second lowered position.

4,512,071
TOOL HOLDER

Russell F. Fieberg, Westminster, and Donald E. Fieberg, Sunset Beach, both of Calif., assignors to Russtech Engineering Company, Inc., Huntington Beach, Calif.

Filed Jan. 24, 1983, Ser. No. 432,242
Int. Cl.[3] B25G *3/02*
U.S. Cl. 29—278 1 Claim



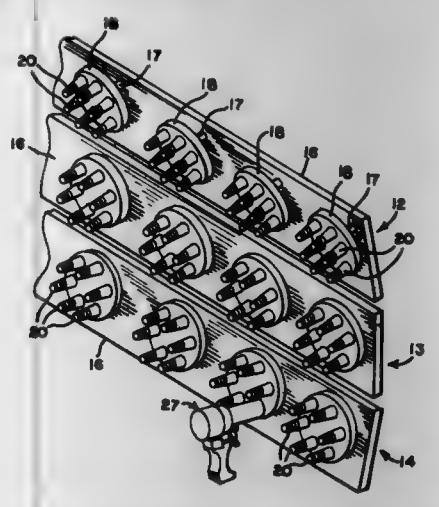
1. An elongate tool holder of a resilient material structure for retaining insertion and extraction tools useful in inserting and extracting electrical leads from a connector structure, said tool being characterized by two opposed frustoconical segments extending from a central grasping section provided with a rectangular enlargement all formed as a unitary structure of a resilient material, comprising:

an elongate handle provided with a circular central bore extending along the longitudinal axis thereof conformed to receive said frustoconical segments and a rectangular lateral cavity transversely extending into said bore for receiving said rectangular enlargement of said grasping section proximate one end of said handle, said handle further including a lateral cut-off surface over said lateral cavity in alignment over said grasping section enlargement, exposing a lateral gap in the surface of said central bore of a dimension smaller than the transverse dimension of either one of said frustoconical segments.

4,512,072
APPARATUS FOR INSTALLING POULTRY FEATHER PICKING FINGERS

Johnny R. Graham, Rte. 8, Gainesville, Ga. 30501

Filed May 9, 1983, Ser. No. 493,054
Int. Cl.[3] B66F *15/00*
U.S. Cl. 29—252 7 Claims

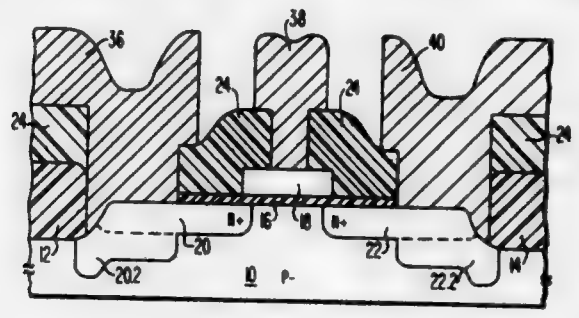


1. Apparatus for seating a resilient picking finger in a support hole of a poultry feather picking machine comprising, in combination, a housing having an open end adapted to be placed against the support about the hole; a tubular sleeve mounted for reciprocal movement within said housing and carrying collet camming means; a collet slidably mounted within said sleeve having an annularly arranged set of resilient collet fingers positioned adjacent said collet camming means; pressurized fluid drive means for moving said sleeve within said housing, spring means for biasing said collet toward said collet camming means, and stop means mounted to said housing for limiting movement of said collet toward said housing open end whereby the housing open end can be placed against the machine support about the support hole with the collet positioned about the shank of a poultry picking finger extending through the support hole and upon activation of the pressurized fluid drive means the picking finger gripped and pulled by the collet and seated within the support hole.

4,512,073
METHOD OF FORMING SELF-ALIGNED CONTACT OPENINGS

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 23, 1984, Ser. No. 582,752
Int. Cl.[3] H01L *21/265, 21/28*
U.S. Cl. 29—571 6 Claims



1. In a process for forming a self-aligned contact opening in a semiconductor device, the device having a semiconductor substrate of a first conductivity type, a gate insulator layer formed on the surface of the substrate, a gate member formed on a portion of the surface of the insulator layer, a source region and a drain region of a second opposite conductivity type formed in the substrate at the surface thereof and having their facing edges aligned with the edges of the gate member, the gate member and the remainder of the gate insulator layer being covered with a second insulator layer, the improved process comprising the following steps, in the following order:

forming openings in the second insulator layer and in the gate insulator layer to expose a portion of the source region, a portion of the drain region and a portion of the gate member, wherein, after etching, any misalignment of the apertures, with respect to the source and drain regions, exposes portions of the substrate adjacent the source and/or drain regions;

implanting a second type conductivity modifier through the apertures into the source and drain regions and into any exposed area of substrate;

heating the substrate to anneal implantation damage and to cause the implanted conductivity modifiers to migrate laterally and deeper into the substrate; and

depositing conductive material into the apertures to form ohmic contacts with the source and drain regions, the gate member and any previously exposed area of substrate.

4,512,074
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING SELECTIVE OXIDATION AND DIFFUSION FROM A POLYCRYSTALLINE SOURCE

Gen Sasaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 2, 1983, Ser. No. 528,793
Claims priority, application Japan, Sep. 9, 1982, 57-157023
Int. Cl.[3] H01L *21/225, 21/76*
U.S. Cl. 29—576 W 4 Claims

1. A method for manufacturing a semiconductor device, comprising the steps of:

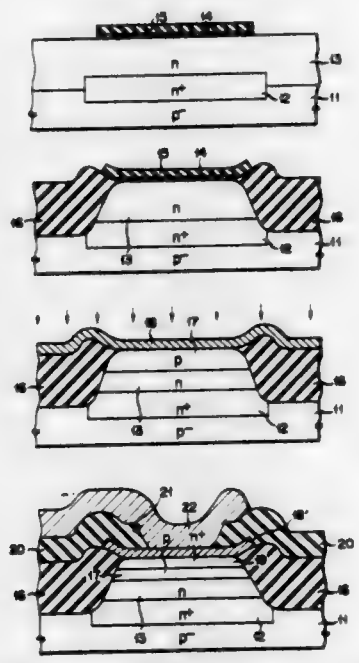
selectively oxidizing a surface of a semiconductor layer of a first conductivity type so as to form a field oxide film;

selectively forming an impurity region of a second conductivity type in an element region isolated by said field oxide film;

forming a polycrystalline silicon pattern containing an in-

purity of the first conductivity type on a surface including at least part of said impurity region and said field oxide film; and

diffusing the impurity of the first conductivity type from said polycrystalline silicon pattern into said impurity region so as to form another impurity region of the first conductivity type contiguous with said field oxide film;



wherein a thickness t of said field oxide film and a concentration n of the impurity of the first conductivity type in said polycrystalline silicon pattern have the following relation:

$$t(\mu m) \leqq -0.117 \times 10^{-20}(\mu m \cdot cm^3) \cdot n(cm^{-3}) + 1.42(\mu m)$$

for $1 \times 10^{19} \leqq n(cm^{-3}) \leqq 1 \times 10^{21}$.

4,512,075

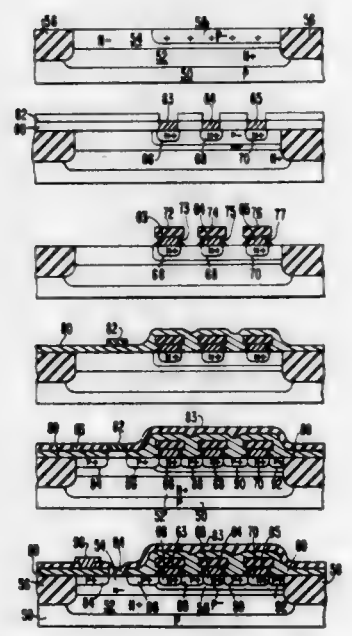
METHOD OF MAKING AN INTEGRATED INJECTION LOGIC CELL HAVING SELF-ALIGNED COLLECTOR AND BASE REDUCED RESISTANCE UTILIZING SELECTIVE DIFFUSION FROM POLYCRYSTALLINE REGIONS

Madhukar B. Vora, Los Gatos, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 106,428, Aug. 4, 1980, abandoned. This application Jul. 28, 1983, Ser. No. 517,564

Int. Cl.³ H01L *21/225, 21/31*

U.S. Cl. 29—577 C **7 Claims**



1. A method of fabricating a semiconductor structure having a lateral transistor and a plurality of vertical transistors in a device region of a first conductivity type in a semiconductor body along a surface thereof, the method comprising the steps of:

introducing a first semiconductor dopant of a second conductivity type opposite to the first conductivity type into a portion of the device region along the surface to form a doped region of the second conductivity type;

forming a first polycrystalline semiconductor layer on the surface;

selectively introducing a semiconductor dopant of the first conductivity type into (1) the first polycrystalline layer to form a like plurality of doped polycrystalline portions of the first conductivity type extending to the doped region and spaced apart from one another and (2) the doped region to form a like plurality of vertical current-conducting regions of the first conductivity type corresponding on a one-to-one basis to the polycrystalline portions and lying therebelow;

selectively subjecting the first polycrystalline layer to a first oxidizing environment to form a top electrically insulating covering at the exposed surface of each polycrystalline portion;

removing the remainder of the first polycrystalline layer except for a non-oxidized polycrystalline segment of each polycrystalline portion;

subjecting the polycrystalline segments to a second oxidizing environment to form a side electrically insulating covering at each exposed surface of each polycrystalline segment so as to define a composite covering for each polycrystalline segment comprising its top and side coverings and to leave a first electrically conductive line for each polycrystalline segment comprising its non-oxidized remainder;

forming a second polycrystalline semiconductor layer on the composite coverings and over the exposed sections of the device region; and

selectively introducing a second semiconductor dopant of the second conductivity type into (1) the second polycrystalline layer and (2) the device region therebelow to form a pair of lateral current-conducting regions of the second conductivity type spaced apart from each other, of which a first one is continuous with the doped region and the second one is spaced apart therefrom.

4,512,076

SEMICONDUCTOR DEVICE FABRICATION PROCESS

Deepak Mehrotra, Milpitas; Gerard J. Shaw, San Jose; Jok Y. Go, Sunnyvale, and Rajni Kant, Milpitas, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 20, 1982, Ser. No. 450,900

Int. Cl.³ H01L *21/86*

U.S. Cl. 29—578 **3 Claims**

1. The method of forming a semiconductor structure comprising the steps of:

(a) forming a first window in a first silicon dioxide layer disposed over the surface of a silicon semiconductor layer to expose a first portion of the silicon layer;

(b) forming a doped region in the first portion of the silicon layer exposed by the first window;

(c) disposing a second layer of silicon dioxide over the surface of the first previously formed silicon dioxide layer and over the first portion of the silicon layer exposed by the first window;

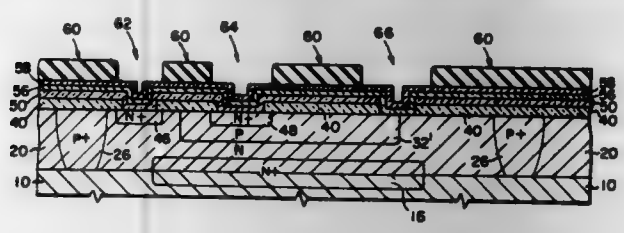
(d) forming a second window through the first and second silicon dioxide layers to expose a second, different portion of the surface of the silicon layer;

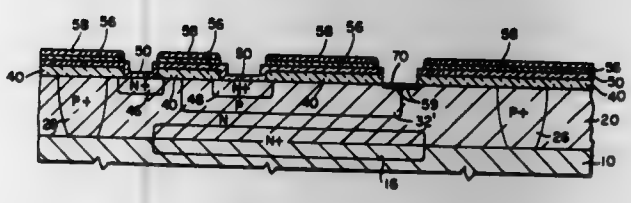
(e) disposing a layer of silicon nitride over the second layer of silicon dioxide and through the second formed window onto the portion of the silicon layer exposed by such second formed window;

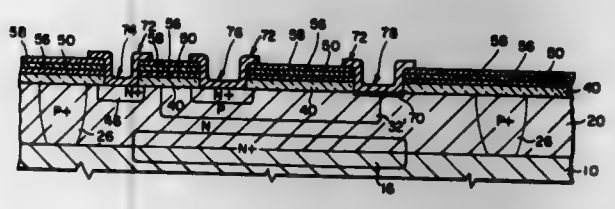
(f) forming a mask over the silicon nitride layer with win-

dows disposed over the first and second previously exposed portions of the silicon layer;

(g) bringing an etchant into contact with portions of the silicon nitride layer exposed by the windows formed in the mask to selectively remove said portions of the silicon nitride layer exposed by such windows to expose the portion of the second silicon dioxide layer disposed over







the first exposed portion of the silicon layer and to expose the second exposed portion of the silicon layer;

(h) forming a Schottky contact with the second exposed portion of the silicon layer; and,

(i) selectively removing the portion of the second silicon dioxide layer disposed over the first portion of the silicon layer to expose a portion of the previously formed doped region.

4,512,077

ELECTRIC SHAVER HAVING IMPROVED SHAVING CHARACTERISTICS

Toshio Tanabe, and Masakazu Kita, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 21, 1983, Ser. No. 460,052

Claims priority, application Japan, Jan. 26, 1982, 57-10779

Int. Cl.³ B26B *19/06, 19/38*

U.S. Cl. 30—43 **12 Claims**

1. An electric shaver comprising:

a housing;

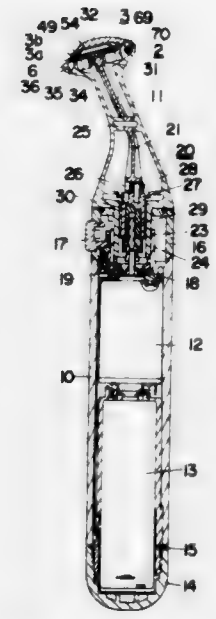
a shaving head projecting from an upper end of said housing;

a shaving blade having a front shaving edge extending laterally along a front end of said head, said front edge of said shaving blade projecting from said front end of said head, said shaving blade comprising a fixed blade which has at a front end thereof a comb-shaped edge comprising a number of small teeth arranged laterally side by side and which is fixed in a predetermined position at said head, and a movable blade which has a comb-shaped edge in slidable contact with said comb-shaped edge of said fixed blade and which is movable in reciprocation laterally of said head;

a comb having a number of combing teeth arranged laterally side by side and positioned below said front shaving edge of said shaving blade;

an edge cover provided above said shaving blade for abutting against skin when said shaver is in use to regulate, together with said comb, an angle which the edge of said shaving blade makes with respect to said skin; and

a front edge of said edge cover, and a front end of said comb



being aligned on a straight line in a plane perpendicular to and cutting said front edge of said edge cover, said front shaving edge of said shaving blade and said front end of said comb.

4,512,078

JIG SAW WITH ORBITAL MECHANISM

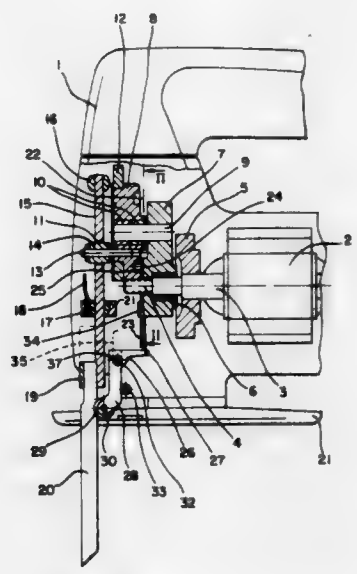
Gerhard Pfanzer, Camberg, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Apr. 19, 1983, Ser. No. 486,529

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 8211249[U]

Int. Cl.³ B27B *11/02*

U.S. Cl. 30—393 **18 Claims**



1. A jig saw, comprising:

a housing;

a reciprocating saw blade assembly pivotally supported by said housing;

an engagement element pivotally supported by said housing for engaging said saw blade assembly to generate pivotal movement thereof;

actuating means for pivoting said engagement element;

drive means for simultaneously reciprocating said saw blade assembly and driving said actuating means;

adjusting means for displacing the pivotal axis of said engagement element to determine the pivotal movement of said saw blade assembly; and

said engagement element comprising a bell crank one arm of

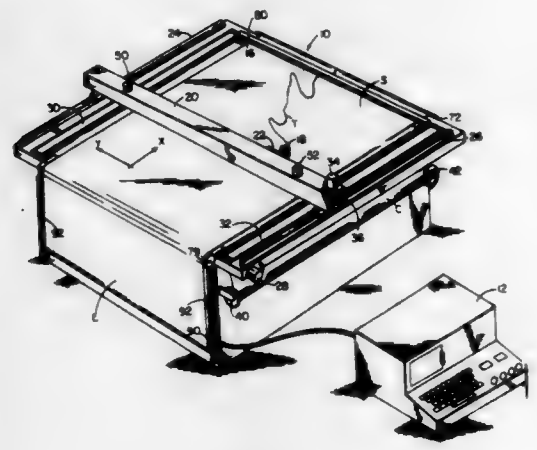
which is acted upon by said actuating means and the other arm of which carries a roller which engages said saw blade assembly.

4,512,079

METHOD AND APPARATUS FOR INDEXING SHEET MATERIAL

Claude W. LeBlond, Enfield, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Jul. 21, 1983, Ser. No. 515,638
Int. Cl.[3] B65H *17/36*
U.S. Cl. 33—1 M 13 Claims



1. An automatically controlled instrument system comprising:

a work table with a flat support surface on which a sheet of material rests during a work operation,

a work carriage carrying an instrument and mounted for movement over the support surface in a given direction to enable the instrument to perform work operations on the material at selected locations over the table;

a material advance mechanism for indexing the material over the support surface in the given direction from a feed position at one end of the table to a discharge position at the opposite end of the table whereby continuous work can be produced on consecutive segments of material having a total length greater than the length of the table in the given direction, the advance mechanism including coupling means operatively associated with the work carriage for engaging the material, and control means for moving the carriage, the coupling means, and the engaged material in the given direction across the support surface from the feed position toward the discharge position at a controlled speed and further including

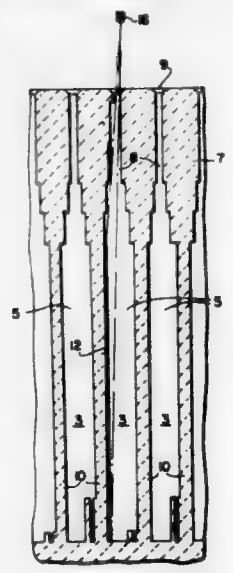
tensionless receiving means associated with the discharge position of the table for receiving the material discharged from the support surface by the advance mechanism without tension or distortion, the receiving means including a take-up roll onto which the material is wound from the table, and a take-up drive motor connected in driving relationship with the take-up roll and operated at a speed less than the controlled speed of the work carriage and engaged material to receive the material on the take-up roll from the support surface in a tensionless condition.

4,512,080

METHOD AND APPARATUS FOR MEASURING THE FLEXURE OF A HEATING WALL OF A COKE OVEN DURING OPERATION THEREOF

Dietrich Wagener, and Manfred Blase, both of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 3, 1983, Ser. No. 548,426
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242338
Int. Cl.[3] G01B *21/16*
U.S. Cl. 33—125 T 20 Claims



1. In a coke oven of the type having coke oven chambers separated by a heating wall having therein at least one heating flue defined by stretcher and binder walls of said heating wall, and an oven roof covering said coke oven chambers and said heating flue, wherein during operation of said coke oven said heating wall is flexed, the improvement of means for determining during operation of said coke oven the amount of flexure of said heating wall, said determining means comprising:

an observation hole through said oven roof into said heating flue, said observation hole having an axis;

at least one vertical measuring strip formed on at least one of said binder walls and extending throughout substantially the entire height thereof at a position to be visible through said observation hole; and

said measuring strip defining, prior to heating of said heating wall during operation of said coke oven, a rectilinear measuring line extending parallel to and spaced from said axis of said observation hole;

whereby, upon heating of said heating wall during operation of said coke oven said binder wall will be flexed, and the degree of such flexure may be determined by the extent of deviation of said measuring strip from said measuring line.

4,512,081

TRAMMEL HEAD ASSEMBLY

Hong K. Park, 300 Harolds Dr., Huntsville, Ala. 35806

Continuation-in-part of Ser. No. 383,738, Jun. 1, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 535,640
Int. Cl.[3] B43L *9/04*
U.S. Cl. 33—27 C 12 Claims

1. A trammel assembly adapted to accommodate variously dimensioned, elongated, generally flat scales having singular cross sections, comprising:

a trammel head assembly comprising:

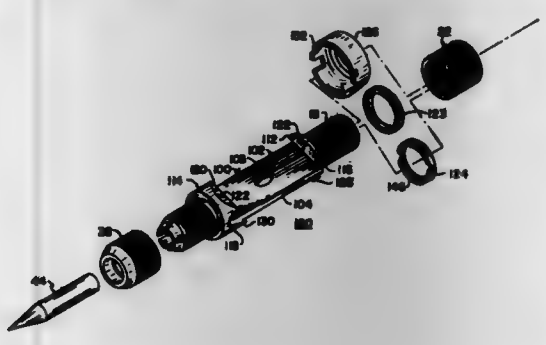
a central body region having a first inset elongated flat portion and a second oppositely positioned inset elongated flat portion sized smaller than said first portion, each said flat portion being adapted to separately receive a said scale,

a first externally threaded region extending from one end of said central body region, and a second externally threaded

region extending from an opposite end of said central body region and having a tubular interior,

first guide means forming a part of said central body region for guiding a said scale adjacent to said first flat portion, said first guide means comprising a first pair of oppositely spaced lip members positioned adjacent to longitudinal ends of said first flat portion, one of said first pair of lip members forming a first slot extending into said first threaded region flush with said first flat portion,

second guide means forming a part of said central body region for guiding a said scale adjacent to said second flat portion, said second guide means comprising a second pair of oppositely spaced lip members positioned adjacent to longitudinal ends of said second flat portion, one of said second pair of lip members forming a second slot extending parallel to said first slot flush with said second flat portion,



first clamping means for applying a force parallel to each said flat portions of said central body region and against a said elongated scale, said first clamping means comprising:

a first nut threadably engagable with said first threaded region, and

an annular collar extending around said first threaded region and around said slot in said first threaded region, said collar engaging a said scale inserted within one of said slots, wherein said collar and a flat region together engage and secure a said scale, and

second clamping means including a second nut threadably engagable on said second threaded region for clamping a workpiece engaging member within said tubular interior;

an index positioned on one lip member of each said pair of lip members and said index coinciding with a plane centrally through said tubular interior; and

a workpiece engaging member positioned and held within said tubular interior.

4,512,082

ERROR CORRECTION ARRANGEMENT FOR DIGITAL LENGTH OR ANGLE MEASURING DEVICE

Horst Burkhardt, Truchtlaching, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Mar. 9, 1983, Ser. No. 473,586

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208591

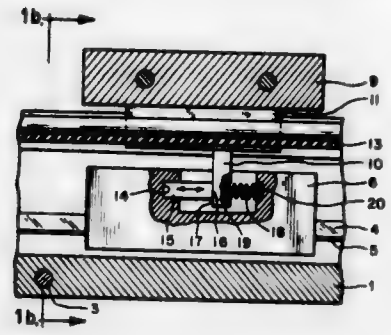
Int. Cl.³ G01B *11/04*

U.S. Cl. 33—125 R **19 Claims**

1. In a digital position measuring system for measuring the relative position of two objects, of the type comprising a measuring scale secured to the first object, a scanning unit, and means for coupling the scanning unit to move with the second object to scan the scale, the improvement comprising:

means for generating an electric correction signal which varies in accordance with a desired error correction course; and

electrically responsive means, included in the coupling means, for varying the separation between at least a portion of the scanning unit and the second object in accordance with the electric correction signal in order to correct the relative position of the at least a portion of the scanning unit with respect to the second object.



4,512,083

MEASURING APPARATUS

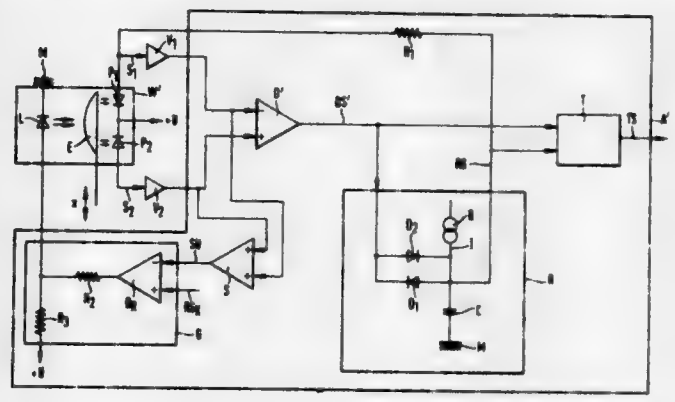
Walter Schmitt, Traunreut, and Dieter Michel, Traunstein, both of Fed. Rep. of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,626

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1983, 3301256

Int. Cl.³ G01B *7/02, 11/02*

U.S. Cl. 33—143 L **14 Claims**



1. In combination with a measuring apparatus for measuring the relative position of two objects, said apparatus comprising a transducer for converting a mechanical input into an analog electrical signal, the improvement comprising:

a trigger stage having first and second inputs and an output;

a reference signal stage having an input and an output;

means for applying the analog signal to the first input of the trigger stage and to the input of the reference signal stage;

means, included in the reference signal stage, for generating a reference signal on the output of the reference signal stage, which reference signal is dependent on the analog signal; and

means for applying the reference signal to the second input of the trigger stage;

the trigger stage generating a trigger signal at its output in response to a change in the analog signal resulting from a change in the mechanical input.

4,512,084

PICTURE HANGING MARKER

Steven Lieberman, 17 Sunset Dr., Bedford Hills, N.Y. 10507

Filed Jan. 11, 1984, Ser. No. 570,077

Int. Cl.³ G01B *3/02*

U.S. Cl. 33—180 R **8 Claims**

1. A wall marker for marking a desired location on a wall for a support for an object, said support being of the type which

may be affixed to a wall and used to hold an object on said wall, said wall marker comprising

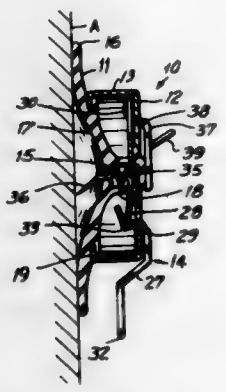
(a) suction cup means,

(b) said suction cup means having a central concave portion and an axially extending lip portion,

(c) said lip portion being arranged and configured to uniformly contact said wall whereby said suction cup means forms an airtight seal with said wall when said suction cup means is placed against said wall,

(d) said lip portion and said wall, when in contact, defining a plane of contact,

(e) said central concave portion being arranged to face said wall when said suction cup means is in contact with said wall,



(f) a marking means mounted upon said suction cup means and extending within the confines of the central concave portion of said suction cup means,

(g) means associated with said suction cup means and said marking means to retain said marking means in a normally spaced relation to said plane of contact,

(h) said marking means being selectively axially displaceable relative to said suction cup means whereby said marking means may be selectively displaced into contact with said wall to create a visible mark on said wall, and

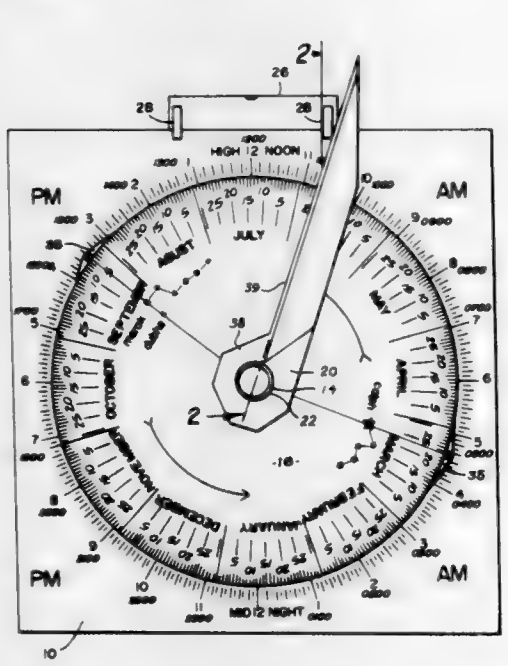
(i) a support mounting means mounted on said suction cup means.

4,512,085

METHOD OF AND APPARATUS FOR TELLING TIME AT NIGHT

Olin E. Liddell, 1166 Sunnyvale-Saratoga Rd., #36, Sunnyvale, Calif. 94087

Filed Nov. 22, 1982, Ser. No. 443,582
Int. Cl.[3] G01C *17/34*
U.S. Cl. 33—269 24 Claims



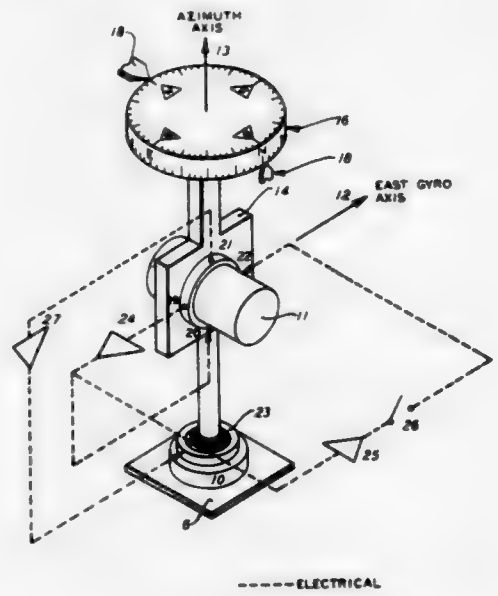
1. A device for telling time by reference to circumpolar stars comprising a base having a flat surface, means providing a circular time scale on said surface, a circular disc overlying said surface, means providing on said disc a calender scale in the form of indicia indicating the days of an entire year disposed in circular formation adjacent the graduations of the circular time scale, means mounting said disc for rotation about an axis relative to said base, a pointer overlying said disc, means mounting said pointer for rotation about said axis, means releasably attaching said pointer to said disc for rotary movement at times with said disc and at other times relative to said disc, and means providing a sighting aperture extending through said base at the axis of rotation of said pointer and said disc.

4,512,086

HEADING INDICATOR

George Galuschak, Hasbrouck Hts., and Richard J. Stomber, Wayne, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Continuation-in-part of Ser. No. 66,702, Aug. 15, 1979,. This application Feb. 9, 1982, Ser. No. 347,139
Int. Cl.[3] G01C *19/34*
U.S. Cl. 33—324 5 Claims



1. A heading indicator comprising:

a case;

a single-degree-of-freedom platform supported by said case, for rotation about a vertical axis;

torquing means for rotating said platform about said vertical axis;

a two-degree-of-freedom, tuned-rotor gyroscope, with a first and second sensitive axes providing first and second outputs proportional to rotation about said two sensitive axes, having first and second torquing inputs for restoring rotation about said first and second axes, disposed on said platform, with said second sensitive axis aligned with said vertical axis;

first means for coupling the first output to said first torquing input;

second means for coupling said second output of said gyroscope to said means for torquing; and

third means for selectively coupling said first output to said second torquing input.

4,512,087

NAVIGATIONAL AID DEVICE

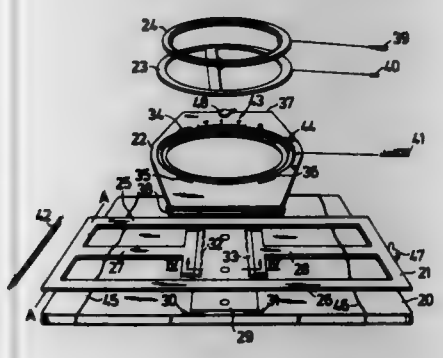
Lars O. Jerhammar, Bråddgatan 1Y, 60222 Norrköping, Sweden

Filed Jan. 13, 1984, Ser. No. 570,346
Int. Cl.[3] B43L *5/00*
U.S. Cl. 33—431 20 Claims

1. A navigational aid device of the type comprising a disc supporting a map, especially a chart, a protractor being mov-

able over said map, a first carrier movable in the longitudinal direction of said disc, and a second carrier which is movable on said first carrier and in the transversal direction of said disc and upon which said protractor is rotatably journalled, wherein:

said first carrier consists of at least one ruler extending across said disc and situated upon said map;



sliding means situated between said map and said disc and connected to said at least one ruler, track means provided on and extending longitudinally of said disc, said sliding means being provided with at least one guide member movable along said track means for preventing transversal displacement of said first carrier; and

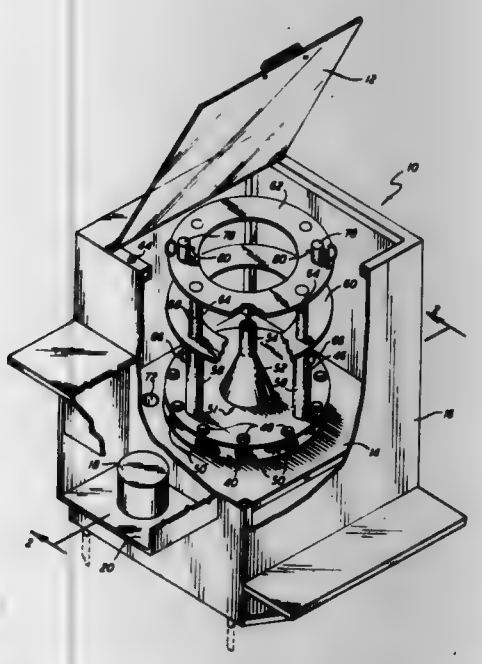
said second carrier including at least two scales to take deviation from the true North into consideration.

4,512,088

CENTRIFUGAL EXTRACTOR FOR ROTARY AIR FILTERS

Millard F. Clapper, R.D. 3 Box 291 Terrace Dr., Binghamton, N.Y. 13901

Filed Apr. 4, 1983, Ser. No. 481,728
Int. Cl.³ F26B *11/08*
U.S. Cl. 34—58 **10 Claims**



1. Centrifugal extractor apparatus for removing fluid from rotary air filter units following washing thereof, said apparatus comprising, in combination:

(a) an enclosed housing having a lid movable between open and closed positions;

(b) a drive motor mounted outside said housing;

(c) rotatable means within said housing adapted to support in an axially vertical orientation a rotary filter unit, said filter unit having outer and inner cylindrical walls, said outer wall having a predetermined maximum diameter, for rotation thereof to extract fluids by centrifugal force, said rotatable means including:

(i) a base member;

(ii) a first annular ring having predetermined inner and outer diameters, said inner diameter being slightly larger than said maximum diameter;

(iii) first support means fixedly supporting said first ring in spaced, parallel relation to said base member;

(iv) a second annular ring of substantially the same inner and outer diameters as said first ring;

(v) second support means adjustably supporting said second ring for axial movement in superposed relation to said first ring;

(vi) means for releasably fixing the position of said second ring with respect to said first ring; and

(vii) a central support member extending upwardly from an anchored position below said first ring, coaxially therewith, and having at least an upper portion of a diameter not greater than that of said inner cylindrical wall; and

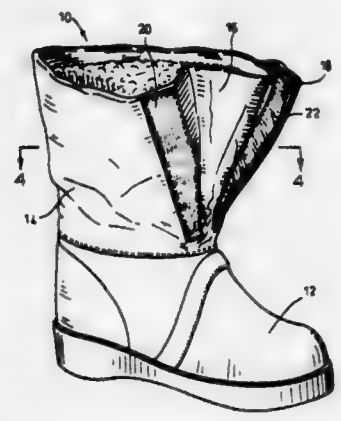
(d) means for transmitting rotation from said motor to said rotatable means.

4,512,089

WINTER BOOT

Anthony Carrier, 25 Edmunds Dr., Toronto, Ontario, Canada M4N 2P7

Continuation of Ser. No. 415,535, Sep. 7, 1982, abandoned. This application May 14, 1984, Ser. No. 610,923
Int. Cl.³ A43B *3/30*
U.S. Cl. 36—112 **2 Claims**



1. A boot having a waterproof foot portion enclosing the foot of the user and having a leg portion fixed to the top of the foot portion and extending therefrom up the leg of the user, the leg portion comprising:

(a) a water repellant flexible material shaped to surround the leg of the user and having opposed first and second upright edges at first and second sides of the leg portion, which edges extend continuously from the top of the foot portion to the top of the leg portion;

(b) first and second elongated strips of adhesive material operative to adhere to one-another when pressed into mutual contact, the first and second strips being of substantial width and being attached in mutually opposed relationship at said first and second upright edges and both extending continuously therealong from the top of the foot portion to the top of the

(c) a V-shaped gusset joined to said first side of the leg portion at said first upright edge and extending beyond the first adhesive strip toward the second side of the leg portion and being joined thereto inside the leg portion along an upright seam which is spaced inwardly of said second side from said second upright edge by a distance which is at least as great as the width of said second adhesive strip, the seam extending from the top of the foot portion to the top of the leg portion and defining between it and the second edge an elongated flap which is coextensive with said second edge and which supports said second adhesive strip; and

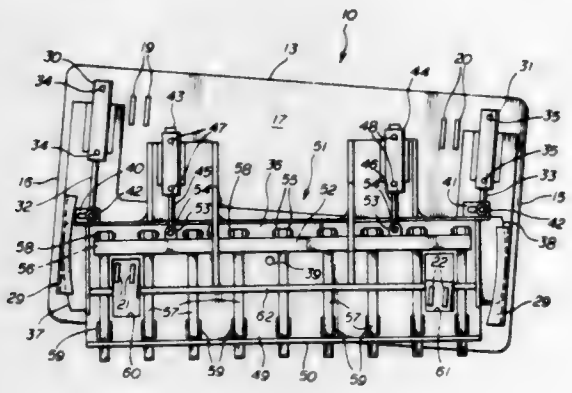
(d) the gusset being folded over upon itself against the leg of the user and the second adhesive strip inside the flap being overlapped and adhered to the first adhesive strip at the first edge of the leg portion, the overlap being variable to vary the closed circumference of the portion to achive a tight fit around the leg of the user.

4,512,090

EXCAVATOR BUCKET WITH RETRACTABLE SCRAPER AND SCARIFIER

Jeff Billings, Rte. #2, Box 4035, Shepherd, Tex. 77371

Filed Nov. 25, 1983, Ser. No. 555,122
Int. Cl.³ E02F *3/76*
U.S. Cl. 37—117.5 **14 Claims**



1. An excavator bucket for attachment to earth moving vehicles comprising

a bucket having spaced parallel side walls, an open front, and a curved, outwardly convex rear wall having a cutting edge at said open front,

a curved, rearwardly facing scraper member mounted on said bucket rear wall for pivotal movement relative thereto,

a retractable scarifier assembly carried by said scraper member and vertically movable relative thereto, and

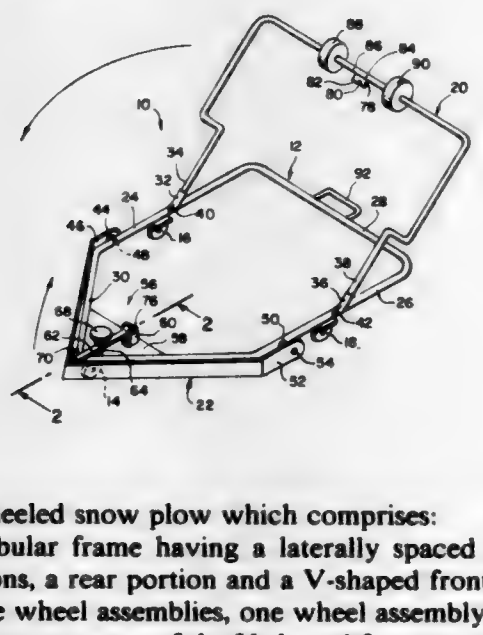
means for controlling vertical movement of said scarifier assembly.

4,512,091

SNOW PLOW SCOOP

Glenn Leininger, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Jan. 19, 1983, Ser. No. 459,363
Int. Cl.³ E01H *5/02*
U.S. Cl. 37—278 **3 Claims**



1. A wheeled snow plow which comprises:

(a) a tubular frame having a laterally spaced pair of side portions, a rear portion and a V-shaped front portion;

(b) three wheel assemblies, one wheel assembly mounted to the bottom center of the V-shaped front portion and each of the other two wheel assemblies mounted to the bottom center of a respective side portion of the frame;

(c) a U-shaped handle with a free end and a pivotal end;

(d) means for connecting said pivotal end pivotally to the top center of the side portions of the frame so that the U-shaped handle will sit at a vertical angle with respect to the frame when it is in use and will pivot forwardly beyond said front portion of said frame when pivoted to a closed position when not in use;

(e) a V-shaped plow blade;

(f) means for connecting the V-shaped snow plow blade pivotally to the side portions of the frame so that the V-shaped plow blade will face frontwardly, be spaced from and circumscribe said V-shaped front portion;

(g) means for height adjusting the V-shaped plow blade with respect to the frame allowing for passage over rough and uneven terrain; the means for connecting the U-shaped handle pivotally to the top center of the side portions of the frame comprises:

(h) a pair of hinge stop members each hinge stop member affixed to the free end of the U-shaped handle, and

(i) a pair of pivot pins each pivot pin placed through one of the hinge stop members and one of the side portions of the frame; the means for connecting the V-shaped plow blade pivotally to the side portions of the frame comprises:

(j) a pair of spacers, each spacer having an aperture placed between one end of the V-shaped plow blade and the side of the front end of one of the side portions of the frame; and

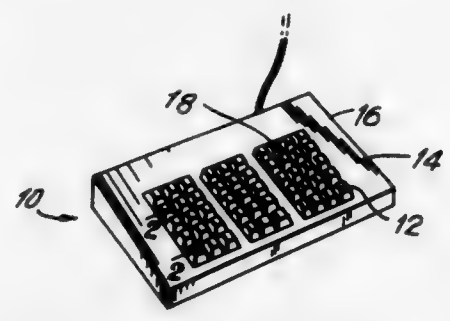
(k) a pair of pivot pins, each pivot pin placed through one end of the V-shaped plow blade, the aperture of the spacer and into the front end of one of the side portions of the frame.

4,512,092

REPLACEMENT LABELS FOR KEYBOARD

Thomas F. McLaughlin, Chappaqua, and Gerard J. Diaz, Hastings on Hudson, both of N.Y., assignors to Technical Support Services, Inc., Ossining, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,524
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—2 R **8 Claims**



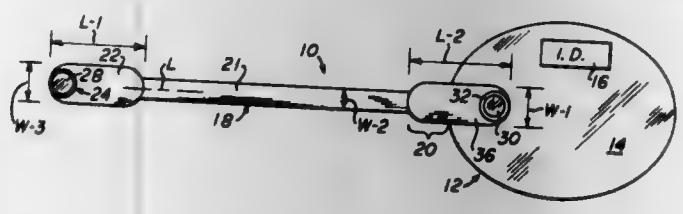
1. Replacement labels for keys of a keyboard having fitted clear plastic caps fitting over said keys, said replacement labels comprising a strip of material of a length to cover at least two aligned adjacent ones of said keys, said strip of material comprising folds transverse to the direction of alignment of said adjacent keys, said folds being aligned with said keys to be fitted on and conform to the shape of said keys to fit within said fitted caps when said fitted caps are placed on said keys, the width of said strip being substantially equal to the corresponding width of said keys, said strip comprising a material which retains said folds, the length of said strip of material between adjacent keys including at least one of said folds and being greater than the vertical movement of said keys such that at least said one fold in said strip comprises hinge means enabling one key to be depressed independent of the adjacent key without tearing said strip.

4,512,093

INTEGRAL TAG AND TIE

Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B & G Plastics, Inc., New York, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,481
Int. Cl.³ G09F *3/08*
U.S. Cl. 40—20 R **5 Claims**



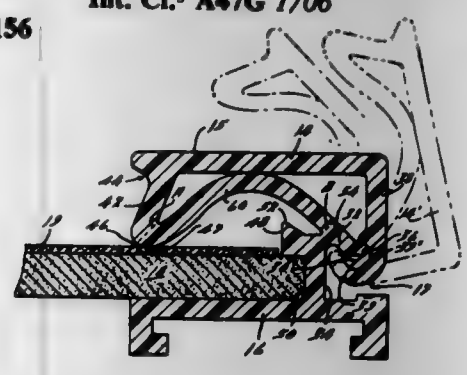
1. A tag comprising a unitary body having a tag body part and a flexible elongate tag tie having a first end extending from one end of said tag body part, said tag tie defining a latch projection extending normal thereto at a second end of said tag tie distal from said first end thereof, said tag body part having a latch opening adjacent said one end thereof and extending normal to said tag tie and of dimensions adapted to receive said latch projection, said tag body part further defining a channel, opening into exterior surface of said tag body part, and extending longitudinally with said tag tie from said one end of said tag body part commencing at said tag tie first end into registry with said opening, said channel being configured in complementary manner with a portion of said tag tie adjacent said latch projection, whereby said tag tie portion is adapted for nesting residence in said channel upon insertion of said projection into said latch opening.

4,512,094

PLASTIC POSTER FRAME WITH ARTICULATED BIAS MEMBER

James R. Seely, Rochester, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Continuation-in-part of Ser. No. 448,047, Dec. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 424,883, Sep. 27, 1982, abandoned. This application Jun. 6, 1983, Ser. No. 499,441
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—156 **66 Claims**



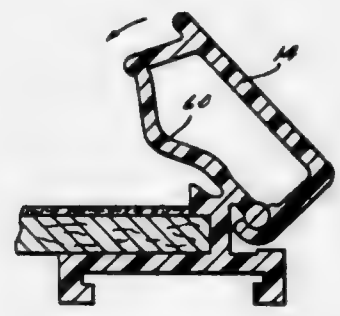
1. A closure comprising:
a first member,
a second member rotatable about an axis and movable with respect to said first member between relatively open and relatively closed positions, and
resilient articulated biasing means integrally attached to both said first member and said second member for connecting them together,
said resilient articulated biasing means including at least one living hinge means at a position between the integral points of attachment to said first member and said second member,
said first member and said second member defining a longitudinal dimension parallel to said axis and said biasing means being fully coextensive with said longitudinal dimension and said biasing means being substantially enclosed by said first and second members when disposed in said closed position,
said first member, said second member and said biasing means being made of extruded plastic material and being integrally formed together at the time of extrusion,
said first and second members comprising relatively rigid material and said biasing means comprising a relatively softer material and being elastic and resilient,
said biasing means providing a force urging said second member toward said closed position.

4,512,095

HINGED PLASTIC BIASED POSTER FRAME

James R. Seely, Rochester, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 448,047, Dec. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 424,883, Sep. 27, 1982,. This application Mar. 23, 1984, Ser. No. 592,904
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—156 **70 Claims**



1. A display holder having a plurality of elongated frame sections forming a polygonal frame structure for receiving and clamping a display piece in said display holder, the improvement comprising
each frame section having a base member, a moveable cover member, and resilient biasing means, said cover member having holding means for being positioned against said display piece and holding it in place,
said biasing means integrally attached to said base member and said cover member and connecting them together,
first living hinge means connecting one edge of said biasing means to said cover member, second living hinge means connecting a second edge of said biasing means to said base member,
said base member, cover member and biasing means being made of an extruded plastic material and being integrally formed together at the time of extrusion,
said base member and cover member comprising a relatively rigid material and said biasing means comprising a relatively softer material and being elastic and resilient,
said biasing means providing a spring-type biasing force holding said holding means of said cover member against said display piece.

4,512,096

ANIMAL IDENTIFICATION BAND AND METHOD AND MEANS FOR PERMANENTLY FASTENING SAME

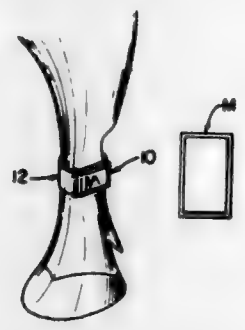
Robert F. Heidecker, Bozeman, Mont., assignor to Dairy Systems, Inc., Longmont, Colo.

Filed Oct. 19, 1981, Ser. No. 312,857
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—304 **10 Claims**

1. An identification device comprising in combination:
an elongated flexible strap, opposite ends of which are composed of a heat-fusible material;
identification circuit housing means releasably secured to

strap, said housing means including a hollow casing in the form of a generally rectangular pod and support means in the form of wire loop members on either side of said casing for securing said casing to said strap in superimposed relation;

temporary securing means defined by complementary fastening members at said opposite ends of said strap operative to temporarily secure said opposite ends in overlapping relation to one another whereby to establish the effective circumference of said strap as a preliminary to permanent fastening of said opposite ends together; and



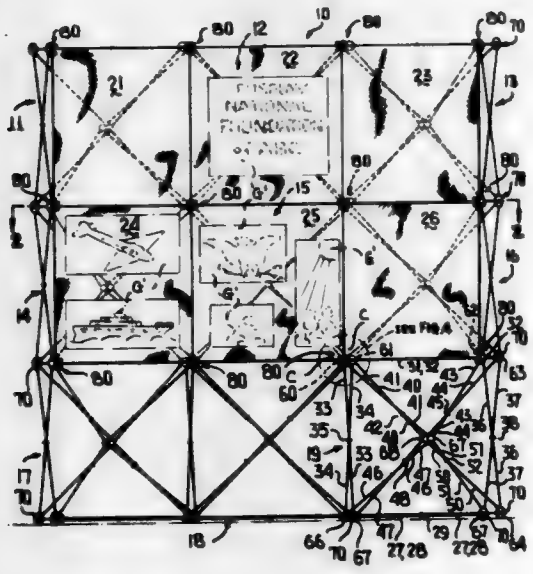
fusing means disposed on one of said opposite ends between confronting surfaces of said opposite ends when said opposite ends are arranged in overlapping relation to one another, said fusing means comprising an electrical conductive element extending across the substantial width of said one end having a melting point above the fusion point of said material of which said opposite ends are composed, said fusing means responsive to the generation of heat above the melting point of said heat-fusible material to fuse said opposite ends into permanently bonded relation to one another.

4,512,097

DISPLAY PANEL MOUNTING CLIP

Theodore R. Zeigler, 9923 Indian Queen Point Rd., Oxon Hill, Md. 20022

Filed Jul. 30, 1982, Ser. No. 403,363
Int. Cl.³ G09F *7/02*
U.S. Cl. 40—611 **45 Claims**



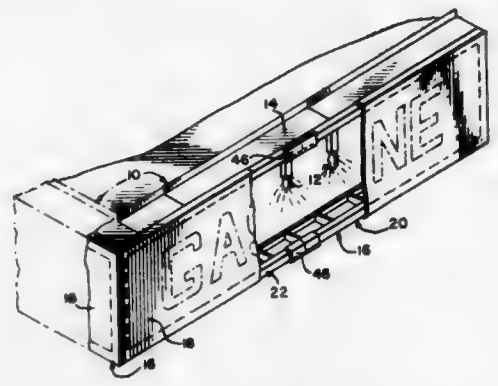
42. A collapsible self-locking portable display stand comprising a plurality of sections each formed from a plurality of pairs of crossed rods with said rods being pivotally connected to associated hubs, said hubs in the erected condition of said display stand setting-off corners of said sections, and points of attachment for a plurality of display panels, a plurality of display panels, a display panel mounting clip for mounting a plurality of corners of a plurality of the display panels to one of said hubs, each hub having an opening, each display panel corner having an opening, said display panel mounting clip including a clip body having a central body portion and four arms defining generally equal angles therebetween, a post projecting from said central body portion and being received in one of said hub openings, said post having means for preventing the inadvertent removal of said post from said one hub opening, a sleeve slidably carried by each arm, a hook-like projection carried by each sleeve received in an associated display panel corner opening, and means connected to said sleeves for exerting a tensioning force on each display panel through its associated corner opening and the hook-like projection therein.

4,512,098

SIGN FRAME AND METHOD FOR FACTORY INSTALLING FLEXIBLE SIGN FACING MATERIAL THEREON

Robert J. Ready, Cincinnati, Ohio; Donald E. Whipple, Edgewood, Ky., and James P. Sferra, Pleasant Plain, Ohio, assignors to Lighting Systems Inc., Cincinnati, Ohio

Filed Nov. 21, 1983, Ser. No. 553,719
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—610 **20 Claims**



1. Sign frame whereby flexible sign facing material composed of flexible film can be installed away from the job site on said frame in the manufacture of fascias having a longitudinal dimension exceeding 12 feet to provide an assembly which can be collapsed to reduce only the longitudinal dimension for transportation and restored to full length at the job site, said sign frame comprising

(a) left and right end sections, each section comprising

(i) a vertical member,

(ii) a first horizontal member rigidly and fixedly connected to the vertical member and extending between one end of the vertical member and a free end,

(iii) a second horizontal member rigidly and fixedly connected to the vertical member and extending between the other end of the vertical member and a free end, and

(iv) rigid bracing means connecting the horizontal members, and

(b) means for locking the left and right end sections in alignment, said locking means comprising means slidable on a horizontal member to partly encompass the free end of an adjacent horizontal member.

4,512,099

GUN LOCKING DEVICE

Ronald G. Mathew, 11763 Willow Valley Rd., Nevada City, Calif. 95959

Filed Feb. 24, 1984, Ser. No. 583,521
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—1 LP **7 Claims**

1. A device for locking a gun having a barrel with rifling extending from the muzzle to the throat, said device comprising:

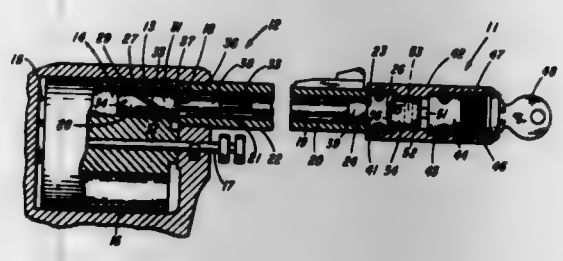
a. a tube insertable in the barrel and extending from the muzzle to the throat;

b. a rod translatable wihin said tube, the after end of said rod

extending into the gun chamber to prevent the operation of the gun;

c. a first wedge mounted on said after end of said rod, said wedge having a forwardly facing inclined surface;

d. a second wedge encompassing said rod and located between said first wedge and the after end of said tube, said second wedge having a rearwardly facing inclined surface for engagement with said forwardly facing inclined sur-



face of said first wedge as said rod and said first wedge are urged in a forward direction, said first and said second wedges being thereby biased transversely so that at least one of said wedges is displaced far enough to interfere either with the walls of the throat or the base of the lands at the after end of the rifling; and,

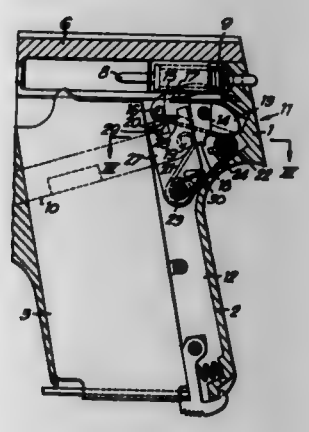
e. lock means for selectively translating said rod relative to said tube and urging said first wedge either toward or away from said second wedge.

4,512,100

POCKET PISTOL

Raymond J. Dheur, Cheratte, Belgium, assignor to Fabrique Nationale Herstal, Belgium

Continuation-in-part of Ser. No. 366,383, Apr. 7, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,002
Claims priority, application Belgium, Aug. 28, 1981, 2/59319
Int. Cl.³ F41C *17/00*
U.S. Cl. 42—70 A **2 Claims**



2. A pocket pistol comprising:

(a) a body including a housing for receiving a cartridge magazine;

(b) a striker;

(c) A sear mounted for pivotal movement on the body for controlling the movement of the striker, the sear including a lateral finger and a downwardly extending protrusion;

(d) a trigger;

(e) a trigger rod having one end coupled with the trigger and the other end including a lug continuously engaging the downwardly extending protrusion;

(f) a first pin carried by the body;

(g) a first safety member mounted for pivotal movement on the first pin;

(h) means facing the downwardly extending protrusion for bringing the first safety member into and out of the trajectory of the protrusion to, respectively, prohibit and permit movement of the sear;

(i) a second pin carried by the body;

(j) a second safety member having one end mounted for pivotal movement on the second pin and another end disposed adjacent the lateral finger, the other end including a smaller cut-out portion and a larger cut-out portion;

(k) a first spring for continuously urging the second safety member into a first position wherein the smaller cut-out portion is disposed below the lateral finger when the housing is empty, thereby prohibiting movement of the sear when either the housing is empty or during insertion of the magazine into the housing, and into a second position wherein the larger cut-out portion is disposed below the lateral finger when a cartridge magazine is fully inserted in the housing, thereby permitting movement of the sear; and

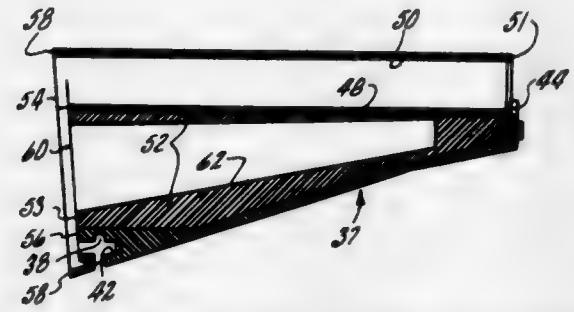
(l) a second spring engaging the lateral finger and the lug for maintaining the sear and the trigger in a rest position, the second spring being mounted around the first and second pins.

4,512,101

RIFLE BUTTSTOCK ASSEMBLY

Harold J. Waterman, Jr., Wallingford, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Oct. 19, 1983, Ser. No. 543,342
Int. Cl.³ F41C *23/00, 21/18*
U.S. Cl. 42—71 R **3 Claims**



1. In a buttstock for a rifle having a tubular lower receiver extension which buttstock is of the type having: a hollow shell of plastic material having a generally triangular shape with an oval-shaped cross-section which progressively increases in area in the longitudinal direction from the front end to the butt end of the buttstock, an inner core of different plastic material and a cylindrical volume defined in the buttstock for receiving the receiver extension, the improvement comprising:

an interior web of generally semi-circular cross-section integral with and forming a part of the shell, the web extending longitudinally such that the concave surface of the web defines the cylindrical volume together with the inner periphery of the upper portion of the shell.

4,512,102

ANIMAL AND INSECT EXTERMINATOR

Stanley E. Long, 52 Edna, Pontiac, Mich. 48053

Filed Aug. 9, 1982, Ser. No. 406,292
Int. Cl.³ A01M *27/00*
U.S. Cl. 43—84 **5 Claims**

1. An animal and insect exterminator comprising:

a tubular member having first and second ends;

a shatterable tip member replaceably mounted on the second end of the tubular member;

an explosive charge disposed within the tip member; and

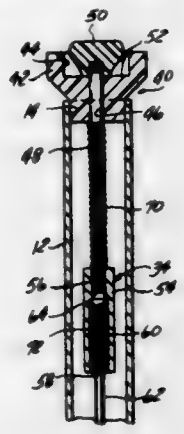
primer means mounted within the tip member within proximity with the explosive charge;

manually operable trigger means, carried by the first end of the tubular member and extending telescopically outward therefrom;

an elongated rod slidably disposed within the tubular mem-

ber forceably engaging the primer means upon urging of the manually operable trigger means;

first means for biasingly positioning the elongated rod away from the primer means; and



second means for biasingly urging the trigger means toward the elongated rod, the second biasing means extending a force opposed to and greater than the force exerted by the first biasing means.

4,512,103

METHOD FOR PRODUCING FUNGI

T. Lionel Coulthard, R.R. #2, Ganges, B.C., Canada V0S 1E0; Phillip M. Townsley, 4569 W. 13th Ave., Vancouver B.C., Canada V6R 2V5, and Hugh S. Saben, 819 W. 20th Ave., Vancouver, B.C., Canada V52 1Y3

Continuation-in-part of Ser. No. 279,475, Jul. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,763, Dec. 18, 1979, Pat. No. 4,292,328, which is a continuation-in-part of Ser. No. 935,141, Aug. 21, 1978, abandoned, which is a continuation of Ser. No. 679,994, Apr. 26, 1976, abandoned. This application Mar. 14, 1983, Ser. No. 475,064

Int. Cl.³ A01G *1/04*

U.S. Cl. 47—1.1 **9 Claims**

1. A method for producing fungi comprising the steps of:

providing a relatively inert support medium for physically supporting fungi growth,

contacting said support medium with a liquid nutrient comprising the product of thermophilic, aerobic digestion of biodegradable organic material to provide a growing bed,

inoculating the liquid nutrient with spawn without sterilization of said liquid nutrient,

maintaining the liquid nutrient in said growing bed at a predetermined temperature and moisture content to promote the growth of mycelia.

4,512,104

APPARATUS FOR HARVESTING MAPLE TREE SAP

Robert M. Lamb, Box 368, Rte. 49, Bernhards Bay, N.Y. 13028

Filed Dec. 19, 1983, Ser. No. 563,056

Int. Cl.³ A01G *23/00*

U.S. Cl. 47—52 **3 Claims**

1. In a sap gathering system of the type wherein a main sap collecting line is positioned below bore holes in a plurality of trees so that sap from the trees can flow by gravity from the bore holes into the collecting line, said system including a tap for insertion into a bore hole, said tap having a housing containing an enclosed chamber, a hollow spout outwardly disposed from the housing having an open end that is insertable within the bore hole so that sap flows from the hole into the chamber, a first downwardly disposed flow connector depending from the housing and a second upwardly disposed flow connector in the collecting line, a vertically disposed drop line mounted in fluid flow communication between the two connectors whereby sap flowing into the chamber passes by gravity into the collecting line, an upraised bracket in the top of the housing having a hole for removably containing a spout plug, said plug having an elongated tapered body that fits in sealing engagement within the open end of the spout to close the spout when the tap is removed from the bore hole, hanger means secured to the tree above said collecting line for engaging the



hole in said bracket to suspend the tap in a stored position above the collecting line when said spout is removed from the bore hole and sealed with said plug whereby the drop line is hung in a vertical position above the collecting line, and a flexible strap attaching the plug to the tap.

4,512,105

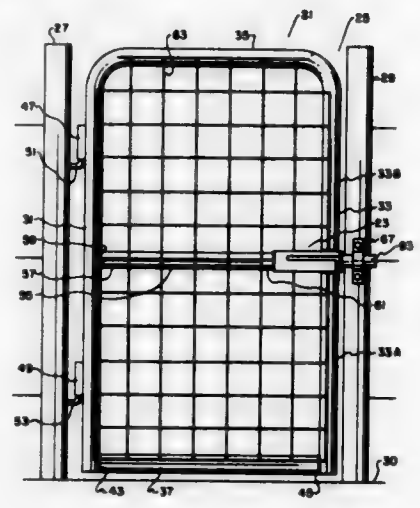
GATE LATCH

Dennis J. Norton, 7558 Carriage La., Fort Worth, Tex. 76112

Filed Feb. 6, 1984, Ser. No. 577,192

Int. Cl.³ E05B *65/06*; E05C *5/02, 1/04*

U.S. Cl. 49—394 **6 Claims**



1. A gate, comprising:

a generally rectangular shaped frame comprising two side frame members, an upper frame member, and a lower frame member,

one of said side frame members being used to support hinge means for pivotally coupling said frame to a structural means such that said frame may swing to open and closed positions relative to another structural means,

a hollow elongated member having first and second aligned openings formed through first and second opposite ends respectively,

said hollow elongated member at said first end being connected to said other side frame member such that said second end of said hollow elongated member extends toward said one side frame member,

an intermediate hollow frame member having an open end located in said second opening of said hollow elongated

member and an opposite end connected to said one side frame member,

an elongated bolt means located in said hollow elongated member,

said bolt means having a first end extending through said first opening and a second end extending through said second opening and into said open end of said intermediate hollow frame member,

said elongated bolt means being movable between a fastening position and an unfastening position,

in said fastening position, said first end of said bolt means extends beyond said first end of said hollow elongated member a given distance for insertion into an opening formed in the other structural means for fastening said frame to the other structural means,

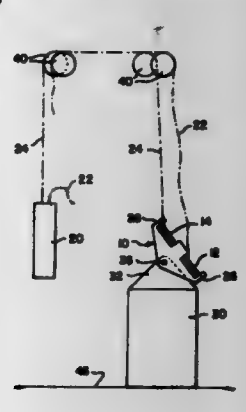
in said unfastening position, said bolt means being located closer to said one side frame member than in said fastening position such that said first end of said bolt means can be withdrawn from the opening formed in the other structural means for unfastening said frame from the structural means.

4,512,106

CABLE FAILURE INDICATOR

John N. Roche, Greenville, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Dec. 30, 1983, Ser. No. 567,236
Int. Cl.³ E05D *13/10*
U.S. Cl. 49—445 **4 Claims**



1. In a system for assisting the vertical movement of a closure wherein a counterweight for balancing the closure is suspended from each of two cables in a redundant cable system, a device for indicating the failure of one or more of the cables comprising:

a member having two arms for so connecting each of the cables to the counterweight that the counterweight is maintained at a first distance from the closure when all cables are intact and the counterweight so moves to a second distance from the closure when at least one of the cables fails that the counterweight can move into a position for inhibiting the raising of the closure, thereby indicating the failure of one of the cables, said second distance being greater than said first distance;

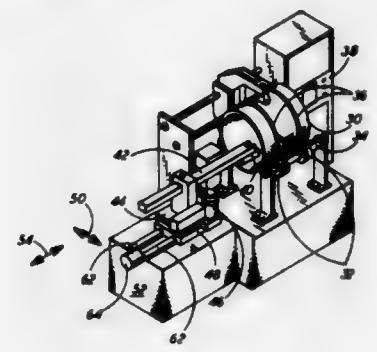
each of said arms being adapted for sliding attachment to one of the cables; said member being so pivotally connected to the counterweight that the cables maintain said arms in such a generally horizontal position when both cables are intact, that the counterweight is maintained at said first distance, and one of the cables so slides along the one of said arms to which it is attached when the other of the cables fails, that said member pivots, moving said arms toward such a generally vertical position that the counterweight moves to said second distance.

4,512,107

AUTOMATED POLISHER FOR CYLINDRICAL SURFACES

Robert A. Jones, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 16, 1982, Ser. No. 441,987
Int. Cl.³ B24B *5/40*
U.S. Cl. 51—56 R **8 Claims**



1. An apparatus for either precision polishing or grinding the inner sutface of a cylindrical workpiece comprising, in combination:

means to support a cylindrical workpiece;

first drive means coupled to said support means to rotate said workpiece about its longitudinal axis at an adjustable speed;

an elongated arm with a free end, said arm being mounted for movement in a direction parallel to said longitudinal axis and disposed to project into the area surrounded by said workpiece;

a pad support means to urge a pad supported thereby against the inner surface of said workpiece, said pad support means being coupled to said free end of said arm;

means to move said pad in a repeating motion relative to said workpiece;

second drive means to move said arm relative to said workpiece at an adjustable speed;

first detector means to detect the position of said free end of said arm;

second detector means to detect the rotary position of said workpiece relative to said support means;

means responsive to said first detector means and said second detector means to adjust the speed of said first drive means and said second drive means in accordance with a predefined speed for said first and said second drive means as a function of the rotary position of said workpiece and the position of the free end of said arm.

4,512,108

LENS WORKING APPARATUS

Takahide Kobayashi, Kawasaki, Japan, assignor to Koken Co., Ltd., Japan

Filed Sep. 13, 1982, Ser. No. 417,575
Claims priority, application Japan, Apr. 16, 1982, 57-64497
Int. Cl.³ B24B *7/00*
U.S. Cl. 51—101 LG **6 Claims**

1. A lens working apparatus, comprising:

a rotary grindstone having a driven shaft;

an X-Y slidable lens blank carrier having a pair of lens blank holding shafts disposed parallel to the shaft of said rotary grindstone, said shafts holding between them a lens blank to be rotatably worked by said grindstone to form a circumferential rib on said lens blank;

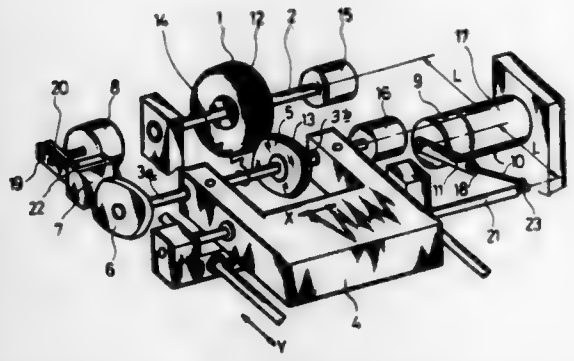
a lens model fixedly mounted on one of said lens blank holding shafts to be rotated thereby in fixed relation to rotation of said lens blank;

a model partner urged against said lens model;

a sensor for detecting a defined contact angle of said lens model with said model partner;

a controller operably associated with said sensor; and

a slider-crank mechanism, operated by an output of said controller, for shifting said X-Y slidable lens blank carrier



in an axial direction of said lens blank, whereby the circumferential rib on the edge of said lens blank is thereby controllably formed.

4,512,109

ROLLING GEAR APPARATUS FOR AN INVOLUTE TOOTH GEAR CUTTING MACHINE

Heinrich van de Löcht, Malach, Fed. Rep. of Germany, assignor to BHS-Dr. Ing Hofler, Maschinenbau GmbH, Ettlingen-Oberweier, Fed. Rep. of Germany

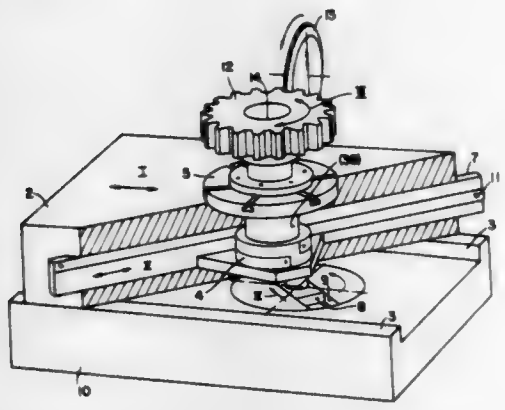
PCT No. PCT/DE82/00138, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982

PCT Filed Jul. 5, 1982, Ser. No. 432,922

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126768

Int. Cl.³ B24B *3/00*

U.S. Cl. 51—123 G **12 Claims**



1. A rolling-gear apparatus for an involute-tooth gear cutting machine, the machine including an engine bed, comprising:

a primary carriage longitudinally movable in both directions along a movable path I in a first guideway formed on the engine bed;

a secondary carriage longitudinally movable in both directions along a movement path II in a second guideway formed on the primary carriage, the movement path II being at an oblique angle relative to the path I;

a crank element connected to the secondary carriage and glidingly movable in a third guideway, the third guideway being angularly adjustable relative to the engine bed;

a roll-circle member carried by the primary carriage and connected to a working-part table for co-rotation therewith, the roll-circle member being rotatably connected to the secondary carriage through a band-drive; and

drive means connected to at least one of the primary carriage, the secondary carriage and the working-part table for driving the same in their respective translational and rotational movements.

4,512,110

ENDLESS ABRASIVE BELTS

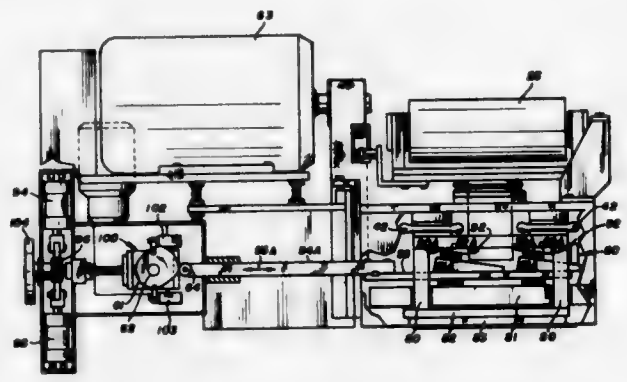
Lee E. Stump, Brooklyn Park, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Continuation of Ser. No. 329,245, Dec. 10, 1981, abandoned.

This application Jan. 11, 1984, Ser. No. 569,971

Int. Cl.³ B24B *21/08*

U.S. Cl. 51—141 **7 Claims**



1. Apparatus for controlling the working force and relative disposition of the work-contacting surface of a driven endless abrasive belt while in contact with the surface of a workpiece held within a working station, said apparatus comprising, in combination:

(a) drive means for establishing a predetermined orbital working path for an endless abrasive belt and wherein said working path includes a zone for arranging abrading contact between said abrasive belt and a workpiece held within a working station;

(b) a first frame means disposed in spaced relationship to said drive means and including at least one working station;

(c) work retaining means for positioning a workpiece within said working station and for arranging abrading contact between said workpiece and said abrasive belt; and

(d) means for adjustably positioning said endless abrasive belt in a planar parallel fashion relative to the surface of a workpiece within said working station, said adjustable positioning means comprising:

(1) second frame means for retaining said adjustable positioning means;

(2) abrasive belt back-up means having a first support plate mounted in planar parallel fashion relative to a second support plate, said first support plate movable along a first axis and said second support plate movable along a second axis and a third support plate coupled to said first support plate via at least one extendable guide-posts and movable along said first axis;

(3) at least one inflatable airbag coupled to said first support plate for applying a predetermined normal bias along said first axis to said first support plate in and toward said workpiece;

(4) a rigid linear cam means coupled intermediate said first and second support plates and movable along said second axis and comprising at least one pair of complementary mating inclined relatively movable ramps for movably positioning said third support plate along said first axis in a predetermined spaced relationship relative to said working station so as to bring said work-contacting surface into a substantially parallel orientation relative to the workpiece in said working station;

(5) rotating cam means coupled to said linear cam means for generating reciprocatory to-and-fro movement between said mating inclined ramps along said second axis and thereby controlling the extent of movement and ultimate position of said abrasive belt back-up means along said first axis relative to said abrasive belt during each machine cycle; and

(6) said rotating cam means comprises a rotating adjustment sleeve coupled to a cam drive shaft and which cam drive shaft is, in turn, coupled to a slidable shaft housing and said rotating cam means, and wherein a

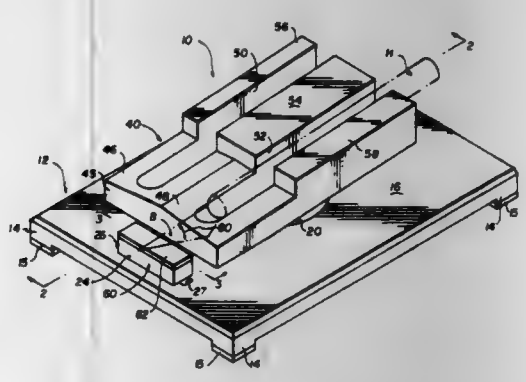
means for correctively repositioning said back-up means and abrasive belt relative to a workpiece to accommodate belt wear comprises first and second controlled air cylinders diametrically mounted in opposed relation to each other and tangent to said adjustment sleeve for incrementally rotating said sleeve and thereby laterally correcting said housing on said cam drive shaft and correspondingly retracting or advancing said rotating cam means coupled to said linear cam means.

4,512,111

KNIFE BLADE SHARPENER

Don A. Childers, 11259 Casa St., Ventura, Calif. 93004

Filed Oct. 26, 1982, Ser. No. 436,731
Int. Cl.[3] B24B *23/00*
U.S. Cl. 51—157 10 Claims



1. A device for shaping and sharpening the blade of a utility knife or the like, comprising:

(a) a base member having a flat top surface and a second flat surface disposed parallel and below the top surface,

(b) a sharpening stone firmly mounted on the base member and having a flat sharpening surface parallel to the flat top surface of the base member,

(c) the base member having a large circular opening in its flat top surface aligned with and spaced a predetermined distance fron the sharpening stone,

(d) a slider unit consisting of a block positioned in sliding engagement with the base member including a slider base disposed below the top surface and in general alignment with the circular opening so as to slide parallel with the top surface, the slider base having a planar surface of larger area than the circular opening and in close sliding engagement with the second flat surface such that the slider unit has firm, fixed planar movement, and including base engaging means for holding the slider unit in sliding engagement,

(e) a slider head disposed above the top plate which is supported on the slider base and connected thereto by a cylindrical support post on the slider unit being of substantially smaller diameter than the circular opening in the top surface and extending through the circular opening to freely permit two degrees of substantial planar translational movement of the slider unit with respect to the sharpening stone, and

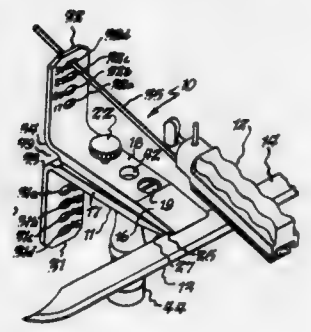
(f) a saddle unit being connected through a pivotal connection to the slider base head which permits movement along an axis parallel to the plane of translation of the slider unit and also having a knife receiving upper surface for supporting the knife blade transversely with respect to the sharpening stone flat surface and bringing it into contact therewith at an acute fixed angle, such that a flush wiping contact of the edge of the knife blade is made with the upper surface of the sharpening stone.

4,512,112

KNIFE SHARPENER CLAMP CONSTRUCTION

Arthur L. LeVine, P.O. Box 800, Williamsville, N.Y. 14221

Filed Oct. 4, 1982, Ser. No. 432,702
The portion of the term of this patent subsequent to Sep. 18, 1984, has been disclaimed.
Int. Cl.[3] B24B *3/54;* B21K *5/12;* B25B *3/00*
U.S. Cl. 51—221 BS 9 Claims



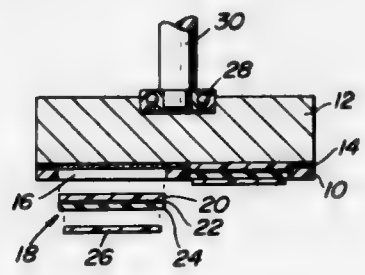
1. A sharpener clamp construction comprising first and second clamp members having a first longitudinal axis and first and second ends, respectively, first and second jaws at said first ends of said first and second clamp members, respectively, for clamping a knife with a second longitudinal axis extending transversely to said first longitudinal axis, first and second guide member means of substantially the same width as said clamp members formed integrally as an extrusion with and extending outwardly from said first and second clamp members, respectively, at said second end, a plurality of apertures in said first and second guide member means at different distances from said second end for receiving a guide rod attached to a sharpener stone holder, first and second opposite sides on said first and second clamp members, respectively, first and second bores in said first and second opposite sides, respectively, a post, and a pin at the end of said post, said pin being of a size to fit snugly within said first and second bores, whereby said first clamp member may be mounted on said post and thereafter said second clamp member may be mounted on said post after said sharpener body has been inverted relative to said post.

4,512,113

WORKPIECE HOLDER FOR POLISHING OPERATION

William D. Budinger, 16 Southridge Rd., Kennett Square, Pa. 19348

Filed Sep. 23, 1982, Ser. No. 422,124
Int. Cl.[3] B24B *4/04*
U.S. Cl. 51—236 7 Claims



1. A workpiece holder for polishing, lapping and grinding operations comprising a carrier adapted to be mounted for rotation, a flat template secured to a face of the carrier and having a plurality of holes therethrough, each hole cooperating with said carrier face to define a discrete cavity, an insert removably retained in each cavity, each insert comprised of a volume compressible fixturing material having a low compression set value and a low compressive modulus that will allow it to compress under a service load to at least 10 percent but not more than 60 percent of its potential range of compressibility, the fixturing material being adapted to be releasably attached to a major face of a workpiece, the fixturing material being

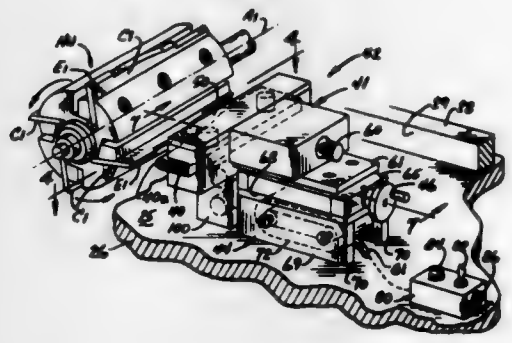
secured to the carrier by a thermoplastic resin, the resin being initially placed within each cavity with the cavity at a temperature sufficient to cause the resin to melt, the volume compressible fixturing material then being placed in each cavity over which is then pressed a blank with geometry the same as that desired from the finished workpiece, the fixturing material with the blank then being compressed at a reduced temperature, causing the melted resin first to flow and form a seat to compensate for irregularities and imperfections in the fixturing material, and then to cool and harden in said compensated condition.

4,512,114

METHOD FOR HIGH TOOTH EQUALIZATION OF CUTTERS

Clarence M. Theien, Rockford, Ill., assignor to Superior Machinery Inc., Rockford, Ill.

Filed Sep. 27, 1982, Ser. No. 423,653
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—288 **21 Claims**



1. The method of "jointing" a plurality of cutter elements carried by, and spaced circumferentially about the axis of, a rotationally power-driven spindle in a machine tool, said machine tool having a magnetically permeable member formed with a planar workpiece support surface which lies either parallel or normal to the spindle axis,

said method comprising, in combination

(1) locking an abrasive stone in the carrier of a fixture which comprises a magnetically permeable base and a carrier linearly movable to different positions along a predefined path relative to the base,

said stone having an operative edge projecting from said carrier and having a contour generally conforming to the contour of said cutter elements along a direction parallel to said spindle axis,

(2) placing said fixture base on said support surface with freedom to slide thereon,

(3) while said spindle is not rotating, slidably shifting said fixture base relative to said support surface to locate the stone's operative edge in juxtaposed general alinement with the cutting edge of at least one of said cutter elements,

(4) creating magnetic flux to releasably lock said fixture base to said support surface by magnetic force attraction,

(5) power driving said spindle at a speed within its normal range of working speeds, and

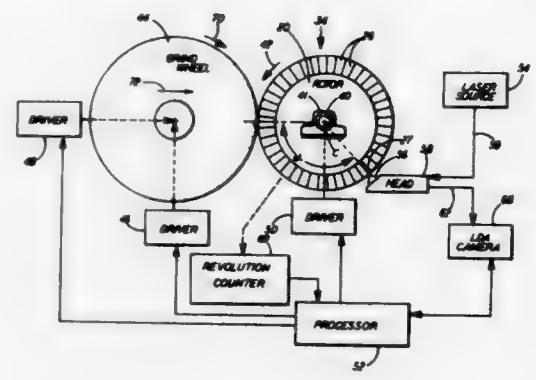
(6) infeeding said carrier along said path relative to said base and toward said cutter elements until said stone makes the cutting edges of all cutter elements travel in a common surface of revolution concentric about said spindle axis.

4,512,115

METHOD FOR CYLINDRICAL GRINDING TURBINE ENGINE ROTOR ASSEMBLIES

Robert J. Miller, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 7, 1983, Ser. No. 501,983
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—289 R **14 Claims**



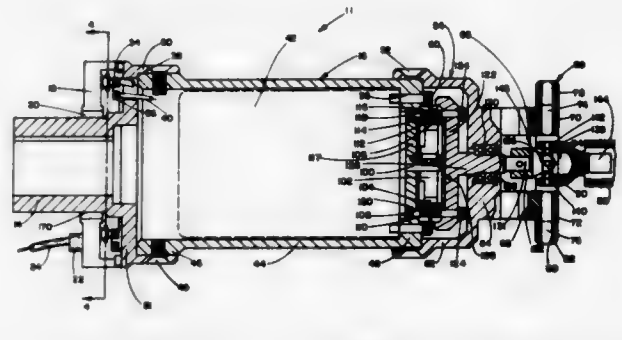
1. The method of finishing to a desired dimension the tips of a plurality of airfoil blades removably mounted around the periphery of a rotor disk, the combination comprising a rotor assembly of an axial flow turbo-machine, which comprises rotating the rotor assembly about a rotor axis in a direction which moves the airfoil blades in a concave side direction so that air impinges on the blades in the same direction as it impinges during use of the axial flow turbo-machine, the rotating speed being sufficient to cause the rotor blades to move air in substantial quantity along the direction of said rotor axis; and contacting the tips of the blades with a medium which removes material therefrom.

4,512,116

FEED-UP MEANS FOR EXPANDABLE WORK ENGAGING MEMBERS

Frank E. Vanderwal, Jr., Frontenac, and James K. Davis, Cedar Hill, both of Mo., assignors to Sunnen Products Company, St. Louis, Mo.

Filed Jun. 8, 1983, Ser. No. 502,146
Int. Cl.³ B24B *33/02*
U.S. Cl. 51—347 **37 Claims**



1. A rotary drive train for a radially expandable tool comprising:

a machine tool, rotatable about an axis which is substantially coaxial with the rotational axis of the drive train connected thereto including a body having a longitudinal bore therethrough and at least two angularly related transverse bores intersecting the longitudinal bore at an intermediate location therealong, an adjustment member positioned in the longitudinal bore substantially on the rotational axis of the machine tool, at least two opposed work engaging assemblies having means extendible into selected ones of the transverse bores for engaging the adjustment member whereby movements of the adjustment member in the longitudinal bore produces radial movement of the work engaging assemblies,

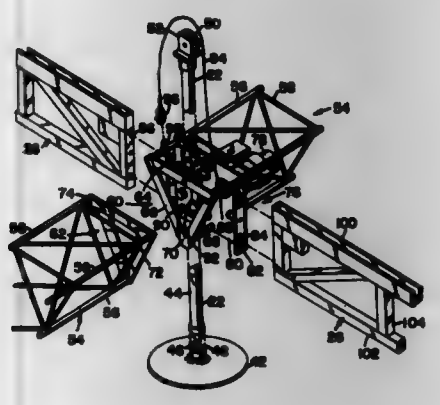
a non-rotatable structure,
said rotary drive train including a rotatable drive operatively connected to the machine tool and rotatable relative to the non-rotatable structure to rotate the machine tool, said rotatable drive including a rotatable motor housing,
a feed motor, having a motor shaft mounted in the motor housing substantially on the rotational axis of the drive train and rotatable therewith and means to supply electric energy to the feed motor including slideably engageable first and second contact means positioned respectively on the rotatable drive train and on the non-rotatable structure, and
means operatively connecting the motor shaft to the adjustment member.

4,512,117

MODULAR PROSCENIUM THEATRE

Fredric A. Lange, Osseo, Minn., assignor to Interlock Structures International, Inc., Minneapolis, Minn.

Filed Aug. 6, 1982, Ser. No. 405,990
Int. Cl.[3] E04H *3/10*
U.S. Cl. 52—6 26 Claims



1. A theatre comprising:
a movable curtain for separating acting space from nonacting space;
a light for illuminating said acting space;
overhead frame means for supporting said curtain and said light, said frame means including a plurality of modular sections and first means for disconnectably attaching adjacent said sections together, said attaching means including an element attached to one of each adjacent pair of sections and a cradle for receiving said element attached to a second of said adjacent pair, said cradle having spaced apart side walls and a back wall whereby said element is received between said side walls to contact said back, said modular sections and said attaching means providing for enlarging and reducing frame means size;
mean for supporting said frame means above the acting space; and
means for disconnectably connecting said supporting means and said frame means;
whereby said theatre is readily expandable and portable.

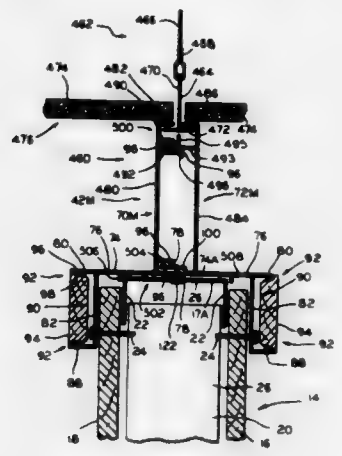
4,512,118

CASING ARRANGEMENT FOR PARTITION END CAPS

Robert R. Rasmussen, 1120 Grandview La., Lake Forest, Ill. 60045

Division of Ser. No. 277,226, Jun. 25, 1981, Pat. No. 4,443,984. This application Nov. 25, 1983, Ser. No. 554,964
Int. Cl.[3] G09F *7/18*
U.S. Cl. 52—39 3 Claims

1. For use in forming partitioning in a building structure to define, in the area to be subdivided by the partitioning, room space between a floor and a ceiling, with the ceiling being of the suspended T grid type, a casing arrangement for forming partition end caps,
said casing arrangement comprising a pair of cooperating frame members,
said casing frame members comprising:
first and second elongated plates each defining a web portion extending longitudinally thereof and having the partition upper end defining side of the respective plates on one side surfacing thereof and the other side surfacing of the respective plates being the partition masking side of same,
said plate web portions each having first and second marginal edge portions extending longitudinally of the respective plates along either side edging of said plate web portions,
said plates along said first marginal edge portions thereof on said partition masking side of the respective plates each defining a lateral wing flange extending normally longitudinally thereof set back from the terminal edging of said first marginal edge portions respectively, and having along its projecting edge a stub flange paralleling said web portion and terminating in a terminal edging,
said first marginal edge portion, and wing flange, and said



stub flange of said plates defining a channel shaped recess extending longitudinally of said plates, respectively,
means for snap fit mounting a trim piece in said recesses, respectively, for masking same,
said plates along said second marginal edge portion of said web portion being generally flat for partition overlying purposes,
with said plates being juxtaposed in overlapping relation and said wing flanges being disposed on either side of the partition,
and means for supporting said frame members from a common T grid support member,
said support means comprising:
each of said plates defining an upright flange portion each having a suspension flange at right angles thereto, with said suspension flanges being disposed in spaced apart opposed relation to receive and rest on the T grid support member along either side of the T grid support member, and including snap action locking means interacting between the respective upright flanges for securing the respective upright flanges together along the T grid support member.

4,512,119

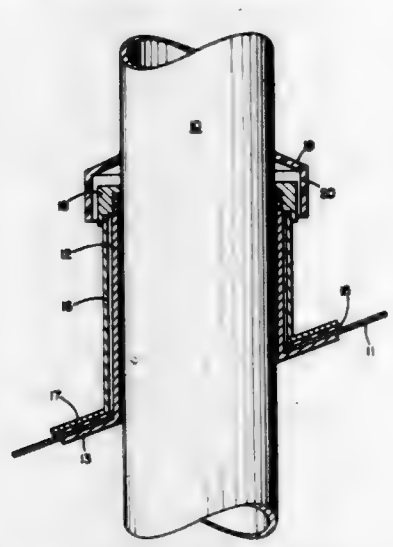
APPARATUS FOR ROOF FLASHING

John C. Willoughby, Victoria, Australia, assignor to Foam-Lag Industries Pty. Ltd. and P.C.H. Constructions Pty. Ltd., both of Victoria, Australia

Filed Aug. 12, 1983, Ser. No. 522,743
Claims priority, application Australia, Aug. 13, 1982, PF5379; Sep. 24, 1982, PF6050
Int. Cl.[3] E04D *13/14*
U.S. Cl. 52—58 12 Claims

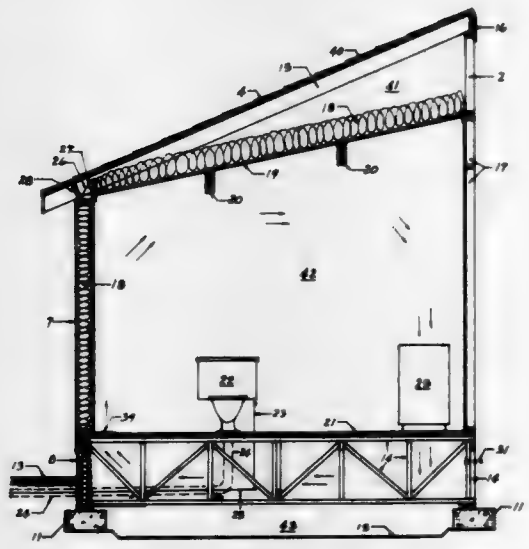
1. Apparatus for flashing roofs around pipes using a relatively thin sheet of material engageable about said pipe to form part of the roof, said sheet being provided, in use, with a hole

through which said pipe passes; said apparatus including an inner sleeve member fitting over said pipe and passing through said hole and having an annular flange engaging the underside of said sheet, an outer sleeve member fitting over said inner sleeve member, said outer sleeve member having an annular



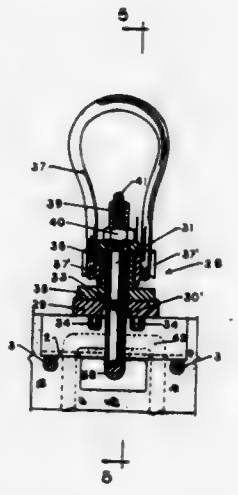
flange engaging the upper side of said sheet and a locking cap attached to an upper end of said inner sleeve member in a manner engaging and applying a force on an upper end of said outer sleeve so as to force said respective flanges toward each other in a manner clamping said sheet therebetween.

4,512,120
MODULAR HOME CONSTRUCTION
Sir W. Lindal, 1120 8th Ave., #1702, Seattle, Wash. 98101
Filed Feb. 24, 1982, Ser. No. 351,944
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—79.1 **8 Claims**



1. A transportable modular house having its foundation attached; said foundation is a sheathed 3-dimension box truss, braced longitudinally and crosswise with vertical trusses and also diagonally to form a rigid flat bottomed base for the house itself during transportation that prevents the walls, partitions and ceiling of the house from racking during transportation; said box truss foundation also serves the transportable modular home as a cavity for the placement of plumbing, heating, air conditioner, hot water storage tank and necessary piping, ducting and electric wiring, and which also serves as storage space; said box truss foundation is constructed of decay resisting material so that it can be permanently set into the ground deep enough for its flat bottom to be below the frost line for the intended geographical location of the house and be resistant to insect attack and decay while set in the earth; the bottom plane of said box truss foundation is rigid and flat so that the modular house can be set and fixed on a truck or trailer, whose flat bed is narrower and shorter than the modular house, enabling the transportation of the modular house without the overhanging box truss bending or breaking during transportation over rough roads.

4,512,121
HANDLING SYSTEM FOR PRECAST UNITS
Roger Carydias, 331 Demers St., Sainte-Rose, Laval, Province of Quebec, Canada (H7L 3C3), and Chahan Pacradouni, 2320 Captain Bernier, Montreal, Canada H3M 1W5
Filed May 24, 1983, Ser. No. 497,607
Int. Cl.³ E04G *21/12*; E04C *5/16*
U.S. Cl. 52—125.2 **5 Claims**

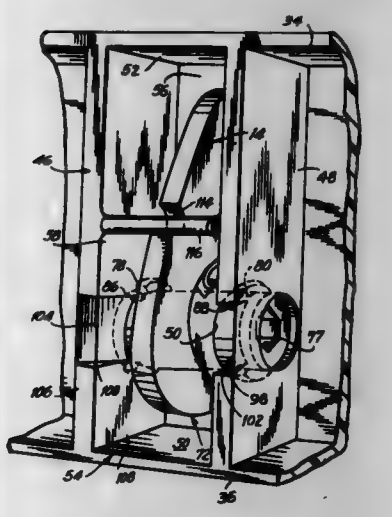


1. In a handling system for a moldable element, such as a reinforced precast concrete panel, beam or the like, said element including a cavity formed therein adjacent an exposed surface of said element, said cavity communicating with the exterior at said exposed surface by a restricted slot, said cavity having a length at least equal to the length of said slot and a width greater than the width of said slot, said slot and cavity adapted to receive an anchor member having a main straight shank and a transverse leg at one end, the cross-sectional maximum dimension of said anchor member being smaller than the width of said slot and the length of said transverse leg being greater than the width of said slot and smaller than the width of said cavity, whereby said transverse leg can enter said cavity when oriented longitudinally of said slot, rotation of said anchoring member, about the axis of said main leg through a rotated position about a quarter turn, causing said transverse leg to extend in said cavity transversely to said slot and, therefore, secure said anchoring ember to said element, a base plate having a central hole through which the main leg of said anchor member rotatably extends, said base plase having an underface adapted to be applied flat against said exposed surface of said element over said restricted slot, safety pins fixed to said plate on each side of said central hole and protruding from its underface to engage said slot and prevent rotation of said base plate, a guiding support fixed to said base plate opposite said safety pins to rotatably guide said anchor member, said central hole having a lateral notch and said main leg of said anchor member having a laterally-extending lug to engage said notch to prevent rotation of said anchor member with respect to said base plate and guiding support, the outer end portion of said main leg of said anchor member being threaded and further including a nut screwed on said threaded portion and engaging said guiding support.

4,512,122
PANEL FASTENER SYSTEM

Irving L. Berkowitz, Binghamton, N.Y., assignor to Kason Industries Inc., Binghamton, N.Y.

Filed May 3, 1982, Ser. No. 373,907
Int. Cl.³ E04G 23/00
U.S. Cl. 52—127.9 7 Claims



1. An improved fastener system for insulated slab panels, the fastener being of the type having the first housing mounting a hook assembly and a second housing mounting a pin, the first and second housings being locked together via the hook assembly and pin, the hook assembly including a cam, a hook extending from the cam, and opposed extended hubs mounted transversely from the cam, said system in combination, comprising;

walls disposed in said first housing forming a slot therein for receiving said hook member and for positioning said hook member for attachment to said pin of said second housing,

means defining a recess disposed in each of said walls, said recess for receiving said hubs of said hook assembly for pivotable mounting,

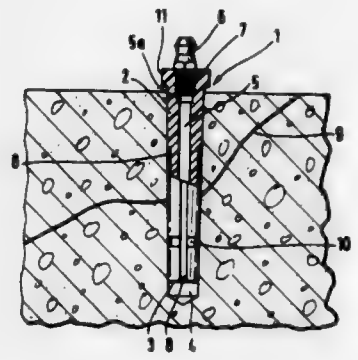
an inclined plane disposed in each of said walls for spreading out said wall means into a biased position when said hubs are moved along said walls towards said recess means, said walls being movable from said biased position to an unbiased position after said hubs have moved along said inclined planes to said recess means, whereby said hubs are positively captured in said recess means, and said hook assembly is resiliently locked within said first housing for rotatable movement therein, and

biasing means disposed between said hook and said cam for providing positive contact therebetween, said first housing having an upright front wall facing said second housing, said wall including a pair of upright opposing walls spaced one from another to form said slot, said slot being disposed substantially vertically in said front wall, said recesses including a pair of annular bearing receptacles adapted to receive said hubs, said receptacles being disposed on opposite sides of said slot closely spaced to an inner surface of said front wall, said annular bearing receptacles including opposed hub receiving apertures formed in said opposing walls, and wherein said annular bearing receptacles further including a pair of opposed support members extending from the inner surfaces of said opposing walls, said support members forming hub receiving apertures coextensive with said annular bearing receptacles, said support members forming hub passages adapted to receive said hubs as said hubs are moved along said inclined.

4,512,123
HIGH-PRESSURE PACKING DEVICE FOR INJECTING SYNTHETIC RESIN INTO CRACKS IN CONCRETE

Artur Fischer, Weinhalde 34, D-7244 Tumlingen/Waldachtal 3, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,616
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203871
Int. Cl.³ E02D 5/18
U.S. Cl. 52—173 R 2 Claims

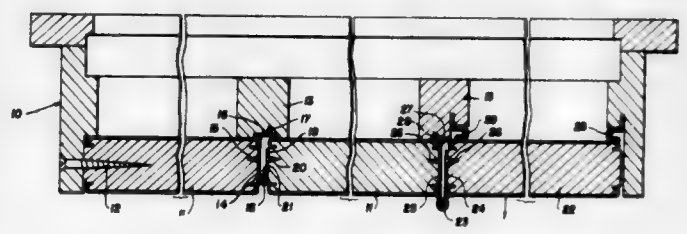


1. A high-pressure packing device for injecting hardenable synthetic resin into cracks in concrete and insertable into a hole drilled in concrete in the region of a crack, comprising an elongated sleeve of synthetic plastic material having an axis and an internal bore, a front end to be positioned near a base of said hole and a rear end, said sleeve having an outer surface tapering towards said front end whereby said sleeve is wedged in said hole; and an injection nipple inserted into said bore at said rear end of the sleeve, said sleeve being formed with a plurality of longitudinal guiding grooves formed in said outer surface and starting immediately from said front end and extended in the direction of the axis of said sleeve, said guiding grooves being spaced from each other in a circumferential direction, said sleeve being further formed with at least one additional circumferential groove formed in said outer surface and extended between two said adjacent grooves to connect the longitudinal grooves to each other, whereby the synthetic resin injected through said niple into said bore flows into said base and then is guided along said longitudinal and circumferential grooves and rises towards the crack to seal the crack when hardened.

4,512,124
RIGIDIFIED DOORWAY

Dennis W. Banford, Evans, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

Filed Aug. 2, 1983, Ser. No. 519,505
Int. Cl.³ E06B 1/04
U.S. Cl. 52—207 2 Claims



1. A doorway structure comprising a doorway frame including spaced vertical stiles, at least a pair of fixed doorway panels within said doorway frame and a horizontally swingable door within said frame on one side of one fixed panel, the fixed panels and said door occupying a common vertical plane when the door is closed and there being narrow vertical spaces between the fixed panels and between the door and the adjacent fixed panel, vertical edge portions of the fixed panels and door overlapping forward faces of said stiles, vertically spaced hinges for said door including pairs of hinge leaves fixed to

opposing vertical edges of the door and said one fixed panel and being disposed within one of said narrow vertical spaces, the hinges including vertically extending pins and knuckles disposed immediately forwardly of the last-named narrow vertical space, and interlocking connectors for the fixed panels within the narrow vertical spaces between the fixed panels, said connectors being disposed at the heights of said hinges and corresponding in number to said hinges and having the same vertical lengths as said hinges to simulate the appearance of said hinges to an observer of the front of the doorway structure, said connectors including opposing bracket plates and tongue plates fixed to opposing vertical edges of the fixed panels and being disposed within said narrow vertical spaces, the bracket plates including curved simulated hinge knuckle elements on their forward ends within the narrow vertical spaces, and the tongue plates including angled tongues on their forward ends within said vertical spaces which are interlocked within said simulated knuckles.

a loop member extending generally in the transverse direction between the first and second edge ribs, the loop member being movable in the direction of rib thickness between a first position in which the loop member extends beyond one of the first and second sides of the first and second edge ribs and a second position in which the loop member is jammed between the plate-like unit and the frame for holding the element in position while the plate-like unit is mounted in the frame.

4,512,125

ELEMENTS FOR SUPPORTING AND BRACING SEALED-GLAZING UNITS

Lars E. Eriksson, Storgatan 40, S-361 00 Emmaboda, Sweden, and Göte Rickardsson, Gislaved, Sweden, assignors to Lars Erik Eriksson, Sweden

PCT No. PCT/SE82/00253, § 371 Date Mar. 28, 1984, § 102(e) Date Mar. 28, 1984, PCT Pub. No. WO84/00574, PCT Pub. Date Feb. 16, 1984

PCT Filed Jul. 30, 1982, Ser. No. 598,317

Int. Cl.³ E06B 7/14

U.S. Cl. 52—209 **15 Claims**



1. An element for supporting and bracing a plate-like unit in a frame, comprising:

first and second parallel edge ribs extending in a longitudinal direction, each of the edge ribs having a first longitudinally extending side for being mounted against a plate-like unit and a second longitudinally extending side opposite the first side for being mounted against a frame, the first and second sides of each edge rib being spaced apart by a rib thickness, the edge ribs being spaced apart from each other in a transverse direction generally perpendicular both to the longitudinal direction and the rib thickness;

a central part between the first and second edge ribs for connecting the edge ribs to each other; and

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4,512,126

PANEL MODULE MEANS

Everett V. Walston, Indianapolis, Ind., assignor to Beaver Products, Inc., Noblesville, Ind.

Filed Dec. 28, 1981, Ser. No. 334,530

Int. Cl.³ E04B 1/04

U.S. Cl. 52—251 **5 Claims**

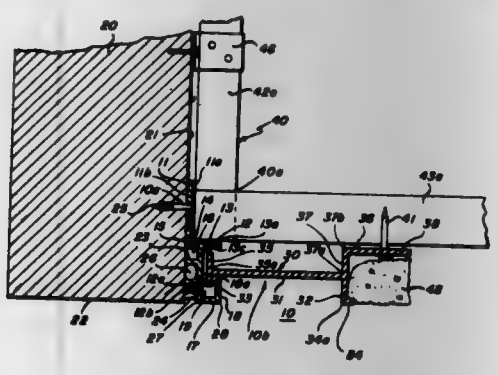


1. A panel module for a building, the panel module having a concrete face panel and a backing of insulation, the insulation being provided by spaced bodies of insulation, ribs of concrete being provided in the spaces between the insulation bodies, reinforcing bars being provided in the spaces between the insulation bodies, and held by the concrete poured thereinto to provide said ribs;

in a combination in which at least one of the reinforcing bars carries a connector member for use in connecting the panel module associated components of the building to the floor of the building, the connector member being a loop-like hook having leg means extending in a direction such that the axis of the leg means is generally perpendicular to the axis of the reinforcing bar, and with a portion of the leg means formed to underlie the reinforcing bar on a side opposite the connector member, thus providing means by which the panel module may be anchored to the floor of the building and any force component exerted on the connector member in the direction of the axis of its leg means is transmitted compressively to the reinforcing bar,

the connector member extending into the region of the edge of the building's concrete floor, thereby providing means for securely anchoring the panel module to the floor of the building.

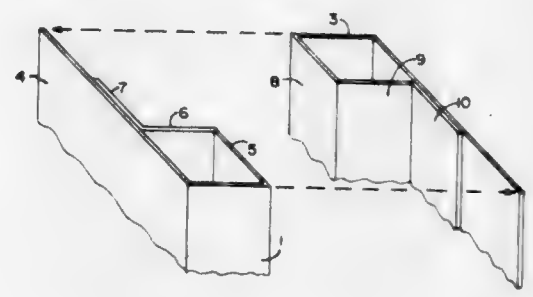
4,512,127
MOLDINGS
Julian J. Attaway, Tucker, Ga., assignor to MM Systems Corporation, Tucker, Ga.
Filed May 5, 1983, Ser. No. 492,020
Int. Cl.³ E04F *13/06*
U.S. Cl. 52—288 **20 Claims**



1. A plural shaft molding adapted to be associated with sub-structure of a building and be facially opposed by first and second structural bodies, at least said second structural body being of a dry wall or of a fluent settable coating type, and said molding comprising first and second molding shafts, said first molding shaft including, a first wall portion adapted to be fastened to said building, and second and third wall portions, said third wall portion being joined at a first end thereof to a first end of said first wall portion so that a rearward face of said third wall portion forms a corner in said first molding shaft with an inside face of said first wall portion, and said second wall portion having a first end joined to said third wall portion and said second wall portion laterally leading forwardly angularly disposed relatively to said third wall portion outside said first molding shaft corner, for said sub-structure to be disposed in part inside said corner with said first wall portion fastened to said building and said first structural body facially to be continuous to outside faces of said first and second wall portions and to a recessed reveal to be introduced by said first and second molding shafts; said second molding shaft including, a side wall having an outside face to be concealed by said second structural body contiguous to said reveal, and a lead and contact wall connected at an inner end thereof to a first end of said side wall and adapted to be fastened to said sub-structure; and said first and second molding shafts further including, a back wall and lapping portion connected with either one of said side wall of said second molding shaft and said second wall portion of said first molding shaft intermediately of said first end and a second end of said one of said side wall of said second molding shaft and said second wall portion of said first molding shaft, and a supplemental flange wall connected with the other of said second wall portion of said first molding shaft and said side wall of said second molding shaft, for said supplemental flange wall and said back wall and lapping portion to be between an inside face of said second wall portion of said first molding shaft and an inside face of said side wall of said second molding shaft and said first and second molding shafts to introduce said reveal having said back wall and lapping portion contribute facially in said recess to said reveal, and said back wall and lapping portion to lap said supplemental flange wall proximately thereto and proximately to said inside face of said other of said second wall portion of said first molding shaft and said side wall of said second molding shaft, having said back wall and lapping portion for lapping and said supplemental flange wall relatively movable with reference to one another laterally in first and second directions and longitudinally in a third direction, while having said sub-structure in part inside said corner in said first molding shaft, said first wall portion of said first molding shaft fastened to said building, and said first structural body contiguous to said outside faces of said first and second wall portions of said first molding shaft and to said reveal, with said lead and contact wall of said second molding shaft meanwhile fastened to said sub-structure, and said outside face of said side wall of said second molding shaft concealed by said second structural body contiguous to said reveal.

4,512,128
Patent Not Issued For This Number

4,512,129
ELECTROSTUD
John F. Riggs, P.O. Box 648, Stone Mountain, Ga. 30086
Filed Jul. 12, 1982, Ser. No. 371,565
Int. Cl.³ E04F *17/00*
U.S. Cl. 52—364 **3 Claims**



1. An electrostud said stud being formed from two sheets of metal each capable of receiving self-driving sheetrock screws, each said metal sheet having at least 3 right angle bends in a first direction dividing that sheet into three sheet segments, the first sheet segment being the width of a standard stud and forming a side of the electrostud, the second sheet segment forming a nailing surface for the electrostud, the third sheet segment forming an attachment surface for joining the said two sheets of metal back-to-back and having a width substantially less than half the width of the first segment but greater than the length of a standard self-driving sheet rock screw, and the fourth sheet segment having a width equal to the distance between the first and third segments to enclose a screw receiving compartment, said two sheets of metal being joined back-to-back to form an electrostud having two screw receiving compartments and an intermediate electrical compartment.

4,512,130
INSULATION SUPPORT
Jean P. Pepin, Civic Center Dr., Augusta, Me. 04330
Filed Mar. 22, 1982, Ser. No. 360,220
Int. Cl.³ F04B *1/74*
U.S. Cl. 52—404 **5 Claims**

1. An improved building insulation system comprising fiber insulation (26) and improved apparatus for supporting and

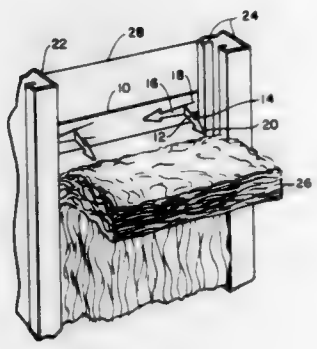
retaining said fiber insulation (26) on a wall, ceiling, partition or other structure surface (28) of a building wherein the improved apparatus comprises:

elongate strap means (10) constructed and arranged with a flat bearing face portion for bearing and fastening against a structure surface of a building;

a plurality of elongate insulation support members (12) formed in the strap means (10) each insulation support member (12) having a free end (20) and a stem end (18) merging with the strap means (10) and being formed with sufficient length from the stem end to the free end to match the thickness of the fiber insulation (26) to be supported and retained, each said insulation support member (12) constructed and arranged to be manually foldable at the stem end by installation workers to extend at an angle from the strap means (10) for supporting and retaining insulation, each said elongate support member being formed with a declining taper at the free end (20) for impaling and supporting fiber insulation (26) on the support member (12), said elongate support member (12) also being formed with at least one barb (14) at the free end (20) for retaining fiber insulation impaled thereon;

said elongate strap means (10) being formed with the plurality of elongate insulation support members (12) cut in the elongate strap means (10) along cutouts (16) in a row with the elongate axes of the insulation support members (12) and cutouts (16) parallel with the elongate axis of the strap means (10);

said elongate insulation support members (12) being initially formed generally in the same plane with the strap means (10) for installation of the strap means (10) on a structure surface (28) with the elongate insulation support members (12) lying in substantially the plane of the strap means (10) whereby installation workers may subsequently fold the elongate insulation support members at an angle projecting from the strap means (10) for support of insulation (26) upon installation of the insulation.



4,512,131

PLANK-TYPE BUILDING SYSTEM

Larry W. Laramore, 22526 108th SE. Ave., Kent, Wash. 98031

Filed Oct. 3, 1983, Ser. No. 538,133

Int. Cl.³ E04B *1/40*

U.S. Cl. 52—586 **14 Claims**

1. A plank-type building system, comprising:

at least two planks, each plank having first and second opposing major surfaces, first and second side surfaces joining said major surfaces, and first and second end surfaces joining said major and said side surfaces, said first and said second side surfaces each having a longitudinal groove formed therein, said second major surface having a slot oriented transversely to said second major surface, said slot extending to said first and said second side surfaces and having a depth sufficient to intersect said longitudinal grooves therein, said slot being positioned proximate one



of said first and said second end surfaces for abutment with an underlying member of the building system;

a spline for engaging said longitudinal grooves of said planks when said planks are arranged with said first side surface of one plank in abutment with said second side surface of the other plank; and,

connecting means for engaging said slots of said planks and preventing longitudinal displacement thereof.

4,512,132

PORTABLE EARTH ANCHOR

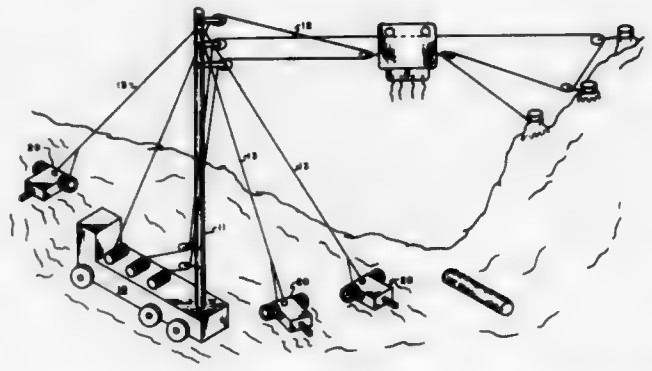
Kenneth C. Keesee, Smoot, and James A. Ruckman, Lewisburg, both of W. Va., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 268,774, Jun. 1, 1981, Pat. No. 4,406,100.

This application Jun. 3, 1983, Ser. No. 492,257

Int. Cl.³ E02D *5/74*

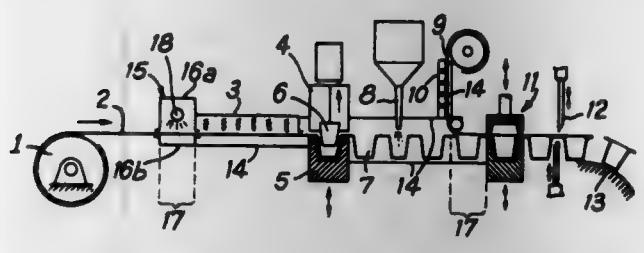
U.S. Cl. 52—742 **1 Claim**



1. A method of stabilizing a portable mast comprising the steps of:

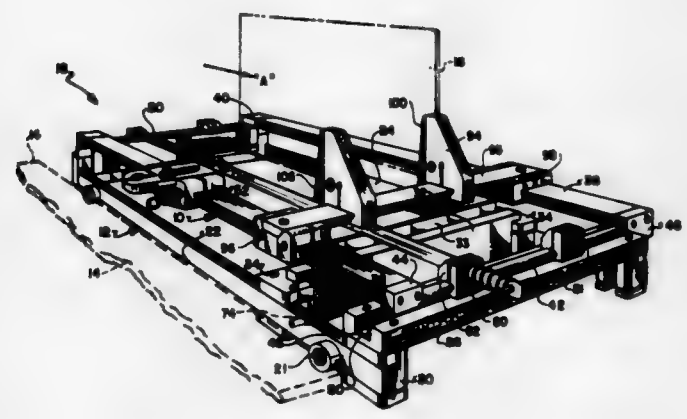
A. Providing a plurality of ground wheel supported, reinforced concrete anchor means having ground penetrating spike means projecting upwardly from top surfaces thereof;
B. Erecting said mast at a suitable, desired location;
C. Connecting one end of guy wires to and proximate of the top of said mast;
D. Rolling at least one of said anchor means to a desired anchor location respective to a guy wire;
E. Inverting said anchor means to sequentially disengage said support wheels from the support ground and engage said spike means with the support ground;
F. Setting said spike means to restrain guy wire tension forces; and,
G. Securing the other end of said guy wire to said anchor means.

4,512,133
DEVICE FOR STERILIZING A THERMOPLASTIC STRIP USED FOR THE HOT-FORMING OF STERILE CONTAINERS AND STERILE PACKAGING INSTALLATION USING THE DEVICE
Roland Torterotot, Longvilliers, France, assignor to Pak Pro International, N.V., Willemstad, Netherlands Antilles
Division of Ser. No. 135,666, Mar. 31, 1980, Pat. No. 4,329,829.
This application Feb. 12, 1982, Ser. No. 348,409
Claims priority, application France, Jan. 17, 1980, 80 01030
Int. Cl.[3] B65B *55/08, 55/06*
U.S. Cl. 53—167 10 Claims



1. An installation for the sterile packaging of a sterile product in sealed packages, said installation comprising a reel of thermoplastic strip material, means to unwind said thermoplastic strip from said reel in a stepwise manner so as to extend along a feed path, a heating chamber positioned adjacent said feed path and including a plurality of heating elements for heating said thermoplastic strip to its softening temperature through the entire thickness of said strip, a hot-forming device including a movable mold and a punch engageable with said thermoplastic strip for producing container portions therein, a filling station for depositing a sterile product in said container portions, means for sterilizing a cover strip and means for guiding the sterilized cover strip onto said thermoplastic strip so that it overlies container portions in which sterile product has been deposited, sealing means for sealing said sterilized cover strip over said container portions, cutting means for severing said sealed container portions from said thermoplastic strip to provide discrete filled and sealed containers, discharge means for removing said discrete filled and sealed containers, enclosure means defining a first sterile, enclosure on both sides of said thermoplastic strip extending from said heating chamber to a location immediately upstream of the sealing means, a means for sterilizing the thermoplastic strip comprising a sterilizing heating device situated upstream of the heating chamber and further comprising a second sterile enclosure communicating with the first sterile enclosure of the heating chamber via a passage through which the thermoplastic strip extends, wherein the second sterile enclosure of said sterilizing means encloses said sterilizing heating device; said sterilizing heating device comprising a plurality of sterilizing heating resistors of the type having essentially instant thermal response for generating an instantaneous thermoplastic strip surface temperature which exceeds the softening temperature of said strip, an adjustable power source, a control circuit connecting said adjustable power source to said sterilizing heating resistors and switching means mounted in said control circuit for intermittently, operatively connecting said heat resistors to said power source for automatically, repetitively energizing said sterilizing heating resistors, with each said energization time period not exceeding five seconds.

4,512,134
UNIVERSAL TYPE PACKING HEAD
Mary K. Robinson, Akron, and Timothy F. Probst, North Canton, both of Ohio, assignors to Figgie International, Willoughby, Ohio
Filed Nov. 9, 1982, Ser. No. 440,365
Int. Cl.[3] B65B *21/16*
U.S. Cl. 53—248 9 Claims



1. In a packing head for a case packer apparatus or the like including a carrier frame,
a shifting frame operably positioned on said carrier frame for movement laterally thereof and including side bars and blade bars, said carrier frame being stationary in relation to said shifting frame,
a plurality of mounting blocks slidably carried by each of said blade bars,
means for securing said mounting blocks to said blade bars in fixed positions thereon, said mounting blocks normally being positioned in opposed pairs at upstream and downstream ends of said shifting frame, and
longitudinally extending skid blades positioned on and extending between said pairs of mounting blocks whereby lateral movement of said skid blades as a unit will occur with movement of said shifting frame but where the lat-

eral relation of the said skid blades to said stationary carrier frame can be varied.

4,512,135

LOCKING MECHANISM FOR WRAP-AROUND CARTONS

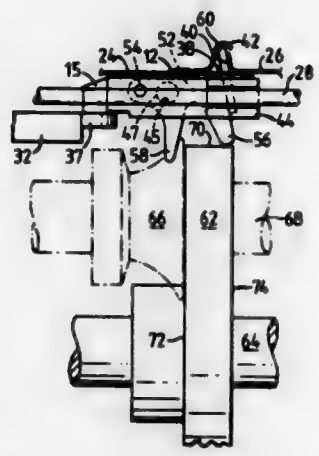
Dale K. Scott, Jonesboro, and Rodney K. Calvert, Dunwoody, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed May 12, 1983, Ser. No. 493,873

Claims priority, application United Kingdom, Jun. 12, 1982, 8217109

Int. Cl.³ B65B *7/24, 11/10*

U.S. Cl. 53—285 **4 Claims**



1. A locking mechanism for locking together overlapping base panels of a wrap-around carton, which mechanism includes carton conveying means, a locking element, and means pivotally mounting said locking element about a pivot axis on said conveying means for movement therewith, said locking element comprising a locking finger for insertion into said base panels to form a lock therebetween and a bifurcated portion providing a first cam follower leg and a second cam follower leg, a first cam surface located in the path of said first cam follower leg for engagement therewith to pivot said locking element so that said locking finger moves into locking position, a second cam surface located in the path of movement of said second cam follower leg for engagement therewith and effective to pivot said locking element so that said locking finger is moved into retracted position, said first and second cam surfaces being spaced apart in the path of movement of said locking element whereby said first and second locking fingers alternately engage said first and second cam surface, respectively, characterized in that said first cam surface comprises a rotatable disc having a constant diameter as measured across its peripheral edge and said second cam surface comprises a rotatable disc having a convex peripheral edge which is of decreasing diameter.

4,512,136

FITMENT ATTACHMENT METHODS IN HORIZONTAL FORM/FILL/SEAL MACHINES

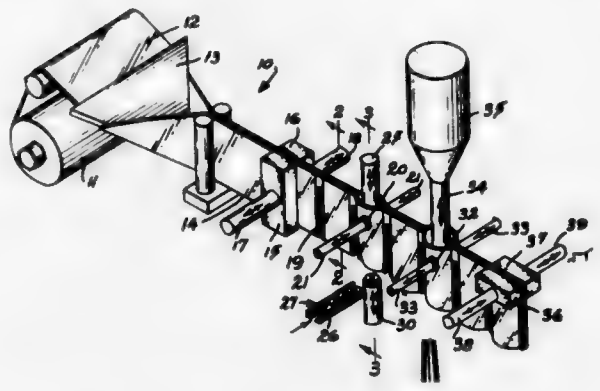
William C. Christine, Catasauqua, Pa., assignor to Trinity Associates, a Partnership of the State of Pennsylvania, Nazareth, Pa.

Filed Aug. 23, 1982, Ser. No. 410,591

Int. Cl.³ B65B *9/08, 61/00*

U.S. Cl. 53—410 **3 Claims**

1. A method of attaching fitments to a pouch of thermoplastic material in a horizontal form/fill/seal machine comprising the steps of: first folding a web of material substantially in half in a longitudinal direction with the fold being lowermost, and moving said material horizontally, next sealing said web vertically at spaced intervals to provide a plurality of pouches, at least partially slitting said seals with the slit extending upwardly from said fold, separating the opposite side walls of each pouch, moving a fitment against said lowermost fold surface of said pouch and causing said surface to flatten against said fitment, then applying a fitment sealing element against the flattened portion of said fold surface and heating at least one



fitment and said fold surface to cause intimate bonding therebetween, said slits permitting the portions of said pouch to move toward each other.

4,512,137

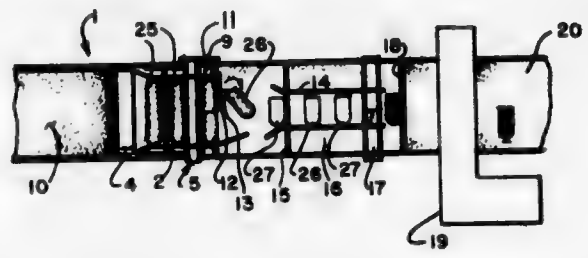
BREAD LOAF PROCESSING

Ross D. Koberlein, Brownstown, Ill., assignor to Bettendorf Stanford Inc., Salem, Ill.

Filed Sep. 2, 1982, Ser. No. 414,478

Int. Cl.³ B65B *25/18, 35/58, 63/00;* A21C *15/04*

U.S. Cl. 53—435 **7 Claims**



1. The process of processing a bread loaf or the like comprising splitting said loaf in half to produce a cut end and a heel end of each half loaf, thereafter turning one of said half loaves mechanically through 180° with respect to the other so that the heel and cut ends of both of the two half loaves are oriented in the same direction, cutting the two half loaves into slices, and packing said sliced half loaves in separate packages but in the same orientation with respect to each package.

4,512,138

FORM, FILL AND SEAL MACHINE WITH HOT GAS AND THERMAL IMPULSE SEALING

Eddie L. Greenawalt, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 4, 1982, Ser. No. 354,589

Int. Cl.³ B65B *9/00*

U.S. Cl. 53—451 **16 Claims**

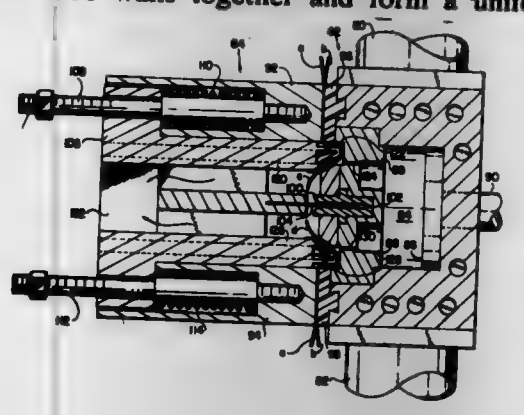
10. In a form, fill and seal machine for forming sealed packages of a product from a web of heat sealable material which is formed into a tube, and then the product is deposited in a measured amount in a closed end of the tube, an improved method of sealing the product in the tube comprising:

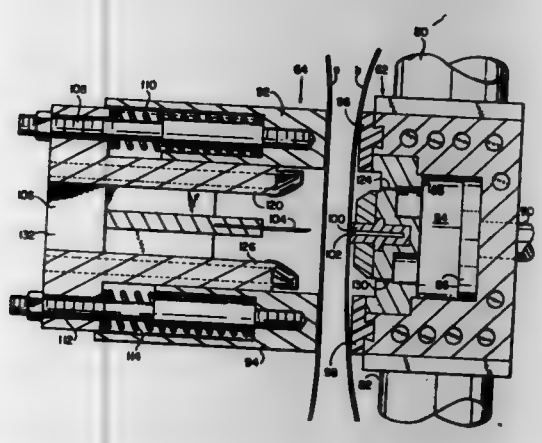
clamping the formed tube of heat sealable material at a station spaced along the tube from the closed end with the deposited product inbetween to press the tube walls together in a sealing area extending transversely of the tube;

applying heat and pressure to one side of the transverse sealing area by means of a hot gas directed onto the sealing area as a "free form" clamp; and

applying heat to the other side of the transverse sealing area

opposite the hot gas by means of an electrical heater to fuse the tube walls together and form a uniform seal





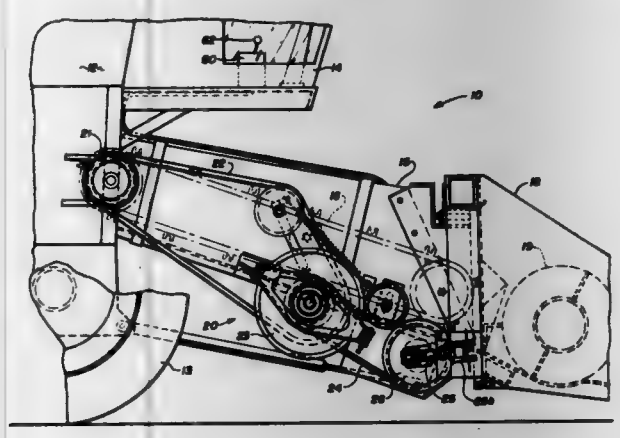
whereby the sealing area is pressed between said hot gas and said electrical heating means.

4,512,139

DRIVE REVERSER ACTUATING MECHANISM

Glenn A. Musser; James F. Rayfield, both of New Holland, and Richard A. Pucher, Leola, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Dec. 12, 1983, Ser. No. 560,671
Int. Cl.³ A01D *69/00*
U.S. Cl. 56—11.2 **11 Claims**



1. In a crop harvesting machine for harvesting crop material from a field, said crop harvesting machine having a mobile frame adapted for movement over the field; a header having harvesting means supported by said frame to gather crop material from the field and initiate a crop harvesting process; a source of rotational power mounted on said frame to power the operation of said header harvesting means; drive transfer means operatively interconnecting said source of rotational power and said header harvesting means to transfer rotational power for driving said header harvesting means, said source of rotational power being selectively disengageable by a clutching means to interrupt the driving of said header harvesting means by said source of rotational power; and drive reversing means operatively connected to said drive transfer means to reverse the direction of rotational power transferred to said header harvesting means to reverse the operation thereof, the improvement comprising:

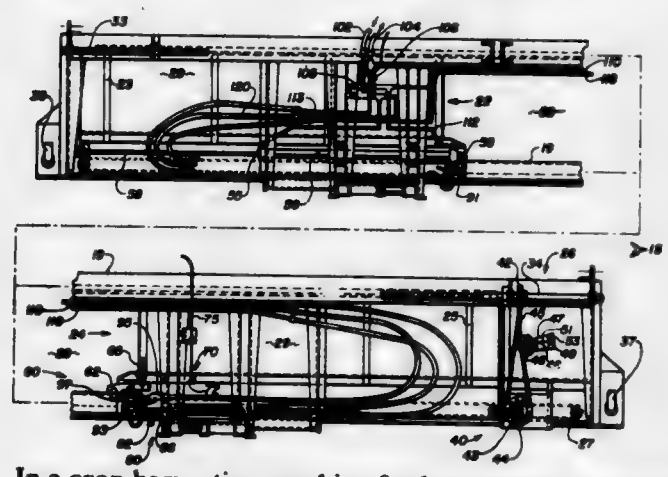
actuation means interconnecting said clutching means and said drive reversing means to prevent the operation of said drive reversing means to drive said header harvesting means while said drive transfer means is transferring operative power to said header harvesting means from said source of rotational power.

4,512,140

STUB DRAPER DRIVE FOR DRAPER HEADER

Edward A. Blakeslee, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 16, 1983, Ser. No. 532,945
Int. Cl.³ A01D *35/14, 57/20*
U.S. Cl. 56—11.6 **10 Claims**



1. In a crop harvesting machine for harvesting crop material from a field and having a mobile frame adapted for movement across the field; a generally transverse header subframe having laterally spaced ends forwardly mounted on said mobile frame; a reciprocating cutterbar forwardly mounted on said header subframe to sever standing crop material from the field and initiate the crop harvesting process, said cutterbar including first and second sickles reciprocatable in opposing directions to minimize vibrations in said subframe; drive means mounted on said header subframe to drive said first and second sickles from the respective ends of said header subframe; said drive means including first and second rotatable drive shafts extending toward the respective ends of said header subframe from a centrally located source of rotational power; and a laterally shiftable draper movably mounted on said header subframe rearwardly of said cutterbar for transverse movement relative to said subframe, said draper being rotatable to convey crop material in a lateral direction, the improvement comprising:

a stub draper affixed to said header subframe adjacent said second end, said stub draper being rotatable to convey crop material thereon laterally away from said second end toward said first end, said stub draper including a first rotatable drive member; and

a flexible member interconnecting a second drive member affixed to said second drive shaft and said first drive member to transfer rotational power from said second cutterbar drive shaft to said stub draper to effect rotation thereof simultaneously with the operation of said cutterbar.

4,512,141

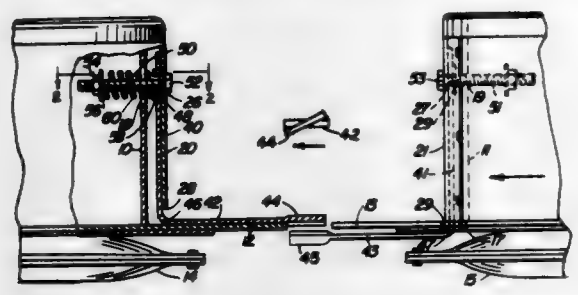
DRUM MOWERS HAVING SPRING MOUNTED FLAT BLADES

Bernard C. Mathews, deceased, late of Crystal Lake, Ill., and by Violet E. Mathews, administrator, 8606 Rte. 176, Crystal Lake, Ill. 60014

Filed Aug. 26, 1983, Ser. No. 526,689
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—13.6 **20 Claims**

1. In a drum mower comprising at least one generally vertically disposed rotatable drum, said drum having a larger diam-

eter generally horizontally disposed disc at its bottom, and said drum having a plurality of L-shaped blades, the vertical portion of each said blade attached in relation to said drum and the horizontal portion of each said blade positioned in close relation to one side of said disc and extending radially therebeyond, the improvement comprising: said L-shaped blades comprising a flat vertical portion and a flat horizontal portion, said flat vertical portion attached in relation to said drum by spring mounting means extending through an oversize hole in said flat



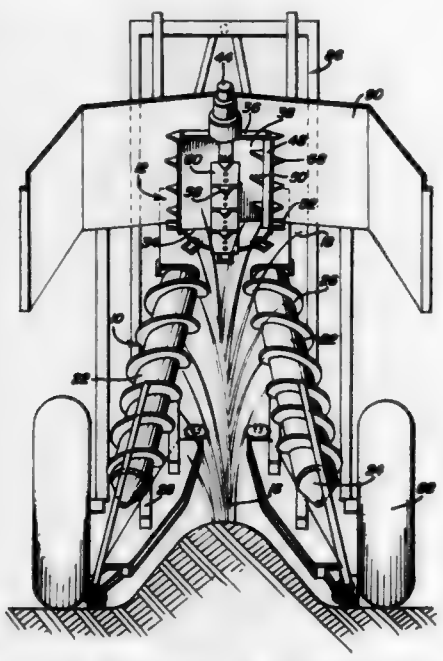
vertical portion, and comprising spring means in force transmitting relation to said flat vertical portion whereby horizontal application of force to said flat horizontal portion causes said spring means to flex providing arcuate yielding of said flat horizontal portion and automatic return to its cutting position and whereby vertical application of force to said flat horizontal portion causes said spring means to flex providing vertical yielding of said flat horizontal portion and automatic return to its cutting position.

4,512,142

SCROLL-TYPE GATHERER AND TOP SHREDDER WITH LONGITUDINAL BLADES FOR SUGAR CANE HARVESTER

Walter J. Landry, P.O. Box 788, Jeanerette, La. 70544, and Robert T. André, P.O. Box 313, New Iberia, La. 70560

Continuation-in-part of Ser. No. 542,700, Oct. 17, 1983, abandoned. This application Nov. 16, 1983, Ser. No. 552,472
Int. Cl.³ A01D *45/10*
U.S. Cl. 56—13.9 **16 Claims**



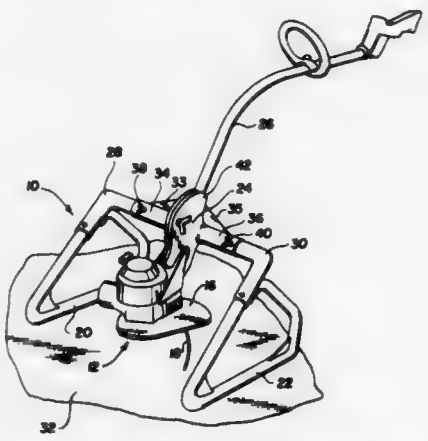
1. A sugar cane gathering and topping attachment for a sugar cane harvester comprising a pair of laterally spaced, upwardly and rearwardly inclined gathering means for engaging and lifting the leaves on the upper portion of the sugar cane stalks and guide the same rearwardly in relation to the sugar cane harvester, and a cutter means located at the rear end of said gathering means for cutting the non-millable upper end portion of the sugar cane stalk from the millable lower portion thereof and chopping the non-millable portion into small segments, said cutter means comprising a driven rotatable knife carrier, a plurality of vertically spaced horizontal knives mounted on said carrier for movement in spaced circular paths having a center coinciding with the rotational axis of the carrier and a plurality of longitudinal knives mounted on said carrier for cutting and chopping the upper end portion of sugar cane stalks and discharging the cut and chopped stalks laterally of the carrier.

4,512,143

CARRIAGE FOR A TRIMMING DEVICE

Raul Jimenez, 5308 Jerri La., Fort Worth, Tex. 76117

Filed Nov. 14, 1983, Ser. No. 551,126
Int. Cl.³ A01G *3/06*; A01D *53/00*
U.S. Cl. 56—16.7 **3 Claims**



1. A carriage for a trimming device of the type having a motor, a housing for the motor, a handle pole, and a cutting element in the form of a length of cable connected to the motor so as to be rotatable about an axis at high speed for cutting grass, weeds and the like comprising in combination:

at least two runners;

opposing grip members for gripping the handle pole, forming a channel for receiving the handle pole and two cross channels transverse to and on opposite sides of the channel for receiving the handle pole;

two tubes, one tube received by each of the cross channels;

means for securing the tubes in the cross channels; and

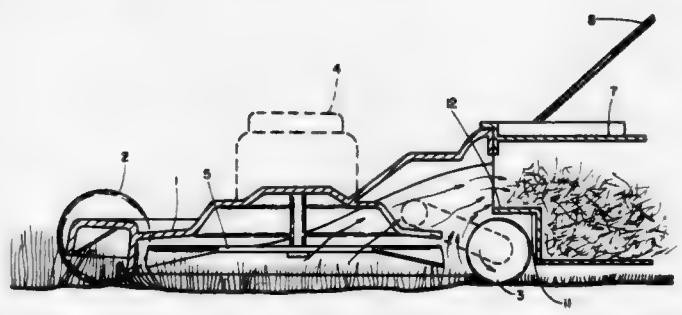
means for securing the ends of the tubes opposite the gripping means to the runners wherein the runners support the trimming device.

4,512,144

GRASS CUTTING APPARATUS

Teodoro Soldavini, Via Leonardo da Vinci, 48, 20062 Cassano D'Adda (Milano), Italy

Filed Sep. 23, 1983, Ser. No. 535,285
Claims priority, application Italy, Oct. 13, 1982, 23164/82[U]
Int. Cl.³ A01D *35/22*
U.S. Cl. 56—202 **2 Claims**



1. An improved grass cutting apparatus, of the type including a blade rotating in a plane parallel to the ground, comprising a housing or casing, mounted at the front on wheels and at the rear on a roller, whereon an engine is mounted effective to drive said grass cutting blade and cause said grass cutting apparatus to advance on the ground, and provided with an inlet chamber for sucking the cut grass and conveying the latter to a collecting hopper connected to said casing, characterized in that the front portion of said collecting hopper is so designed as to be superimposed at least partially on said roller, in such a way as to provide a main path for the cut grass flow

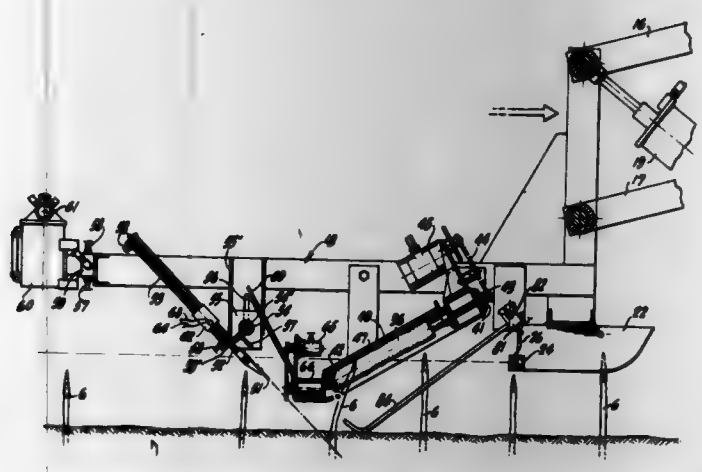
and prevent the cut grass from obstructing the outlet portion of said inlet chamber and characterized in that said roller is effective to operate as a baffle member for conveying the cut grass stream towards the inlet portion of said collecting hopper.

4,512,145

ASPARAGUS HARVESTER

William J. Lund, Stockton, Calif., assignor to Spear Harvesters, Stockton, Calif.

Filed Nov. 8, 1982, Ser. No. 440,138
Int. Cl.³ A01D *45/00*
U.S. Cl. 56—327 A **7 Claims**



1. An asparagus harvester for use with asparagus spears growing in the ground and projecting upwardly therefrom in random array in a path of predetermined width comprising:

a. a main frame;

b. means for advancing said main frame on the ground along said path;

c. a sub-frame;

d. means for supporting said sub-frame on said main frame at selected heights above said ground;

e. a plurality of vertical divider plates disposed on said sub-frame in the leading portion thereof and in an array transversely of said sub-frame. each of said divider plates being substantially planar and defining a plurality of spaces therebetween;

f. means on said sub-frame trailing said divider plates for engaging and exerting a lifting force on the asparagus spears;

g. means on said sub-frame and movable with respect thereto for severing the asparagus spears below the ground and to retract therefrom;

h. height responsive means, each effective between respective pairs of said plates to actuate said severing means in response to the height of asparagus spears within a respective one of said spaces;

i. an opaque bar mounted to pivot about a vertical axis on one of said plates and adapted to be pivoted by contact with an asparagus spear in one of said spaces to rotate about said axis and to actuate said height responsive means in adjacent ones of said spaces; and,

j. a conveyor on said sub-frame adjacent said engaging means and said severing means for receiving and conveying away asparagus spears severed by said severing means.

4,512,146

CROP ENGAGING DEVICE

Wilfred E. Klinner, Milton Keynes, England, assignor to National Research De Development, London, England

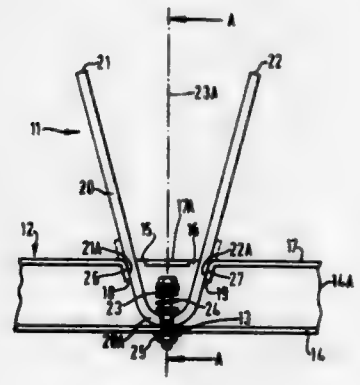
Filed Sep. 30, 1982, Ser. No. 430,594
Claims priority, application United Kingdom, Oct. 5, 1981, 8129970; Dec. 4, 1981, 8136651
Int. Cl.³ A01D *82/00*
U.S. Cl. 56—364 **20 Claims**

1. A crop engaging device comprising:

support means including a rotor and a plurality of channel-section support members secured to said rotor and aligned along the direction of the axis of rotation of the rotor, each channel-section support member having an inner flange closer to the axis of rotation and an outer flange further spaced from the axis of rotation, and a linking portion linking the two flanges,

a plurality of outwardly extending crop engaging elements secured to each one of said support members, each crop engaging element comprising an elongate member shaped as two outwardly extending arms which diverge from each other in the outward direction and in a plane generally transverse to the direction of movement of the arms relative to the crop, the elongate members being secured to the support members at the region of conjunction of the two arms,

a plurality of axial fastening means, each elongate member being secured to its support member by a single axial fastening means having a principal axis along which the



fastening means extends through a base portion of the associated elongate member at the said region of conjunction of the arms,

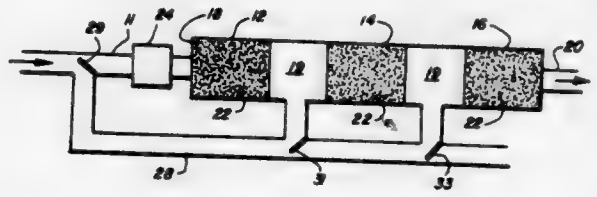
a plurality of guides formed on the support members for locating the arms of the crop engaging elements, each shaped elongate member being secured to the inner surface of the inner flange of said support member with the said conjunction of the arms of the elongate member within the channel-section, there being provided in said outer flange of said channel section at least one opening through which said arms of the element pass, said guides of said support members being provided by the sides of said at least one opening in said outer flange of said channel-section, the arms of each crop engaging element being yieldable in operation by movement of the arms relative to the support member by sliding movement along said guides.

4,512,147

METHOD AND APPARATUS FOR REMOVING CARBON PARTICLES FROM ENGINE EXHAUSTS

Victor W. Wong, Cambridge, Mass., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 7, 1983, Ser. No. 456,484
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—274 **2 Claims**



1. Apparatus for removal of particulates from exhaust gas emitted by an internal combustion engine which comprises a first gas flow conduit leading to the exhaust of an internal combustion engine and to a first particulate trapping chamber containing means for removing particulates from exhaust gas,

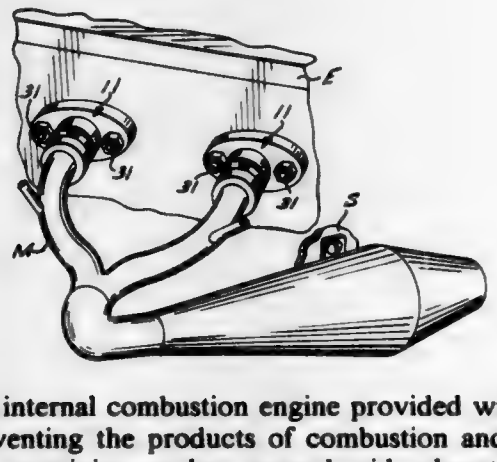
at least two additional particulate trapping chambers containing means for removing particulates from exhaust gas, gas mixing chambers disposed between each of the said particulate trapping chambers, means for heating gas flowing in said first gas flow conduit at a location upstream of said first particulate trapping chamber, a second gas flow conduit connecting with said first gas flow conduit at a location upstream of said heating means and leading to said gas mixing chambers, and low diretting means for selectively directing flow through said first and second gas flow conduits.

4,512,148

INTERFACE FOR WATER COOLED ENGINE MANIFOLDS

Clayton J. Jacobson, P.O. Box 5338, Empire Landing RB, Parker, Ariz. 85344

Filed Jul. 5, 1983, Ser. No. 510,766
Int. Cl.³ F01N *7/06, 7/18*
U.S. Cl. 60—321 **4 Claims**



1. In an internal combustion engine provided with exhaust ports for venting the products of combustion and a hollow jacket for containing coolant around said exhaust ports, the improvement comprising:

an exhaust manifold provided with mating ends adapted to mate with respective ones of said exhaust ports including cavities formed around the exterior thereof for containing coolant, said cavities terminating proximate said mating ends;

a plurality of resilient adapters each conformed as an annular structure for sealably receiving the exterior surface of said cavities around said mating ends and for sealably engaging said engine around said exhaust ports; and

each of said adapters includes a cylindrical boss provided with a central opening conformed to receive one of said mating ends, said boss expanding to form a flange adapted to abut said engine.

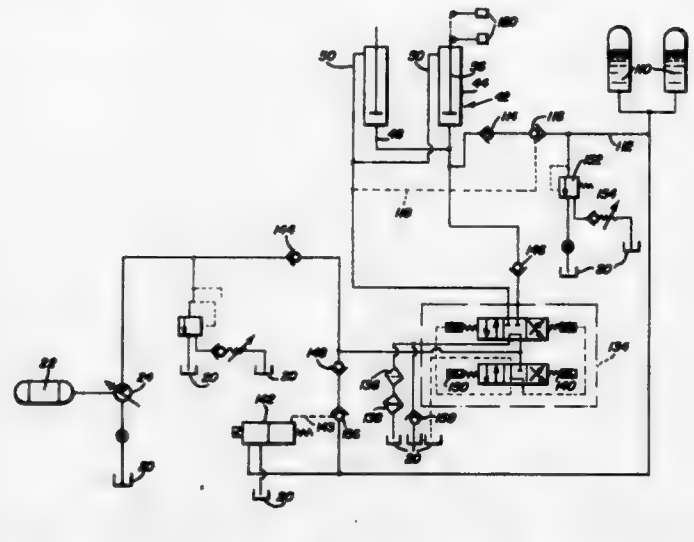
4,512,149

OIL WELL PUMPING UNIT

Paul E. Weaver, P.O. Box 886, Stuttgart, Ark. 72180

Filed Feb. 11, 1982, Ser. No. 348,003
Int. Cl.³ F01L *25/08*; F01B *9/00*
U.S. Cl. 60—371 **6 Claims**

1. A well pumping unit comprising a supporting structure including a vertical guide, a slide assembly mounted on the vertical guide, said slide assembly including pulley means thereon, a flexible member entrained over the pulley means with one end anchored stationarily to the supporting structure and the other end connected to the upper end of a polish rod for reciprocating the polish rod vertically, vertically disposed hydraulically operated piston and cylinder means interconnecting the slide assembly and the supporting structure to vertically reciprocate the slide assembly thereby reciprocating the polish rod a distance twice the vertical movement of the slide assembly, said hydraulically operated piston and cylinder means being connected to a hydraulic system having means communicating the piston and cylinder means with accumulator means for storing energy during the downstroke of the slide assembly and polish rod, said hydraulic system including valve means admitting pressurized fluid from the bottom of the piston and cylinder means into the accumulator means during the downstroke and automatically releasing the pressurized fluid from the accumulator means back into the bottom of the piston and cylinder means during the upstroke thereby assisting in the upstroke of the piston and cylinder means and slide



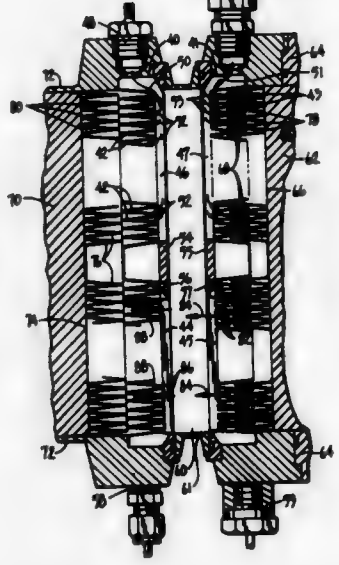
assembly, said vertical guide including a pair of substantially vertical channels, a pair of vertically spaced guide rollers in each channel, said slide assembly including a pair of vertically disposed channels receiving the guide rollers for guiding vertical movement of the slide assembly in relation to the vertical guide.

4,512,150

CONSTANT TEMPERATURE ELEMENT

Glendon M. Benson, Danville, Calif., assignor to New Process Industries, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 244,941, Mar. 18, 1981, Pat. No. 4,446,698, and Ser. No. 292,771, Aug. 14, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 518,516
Int. Cl.³ F02G *1/00*
U.S. Cl. 60—526 **34 Claims**



1. A constant temperature element for heating or cooling a working gas to the temperature of a control fluid, said element comprising:

a plurality of hollow concentric tapered rings of heat conductive material having a serrate configuration in section with tips projecting into the working fluid;

means for enclosing the bases of the rings except for a ple-

num spanning the rings and having inlet and outlet ends respectively and a barrier at the center; and

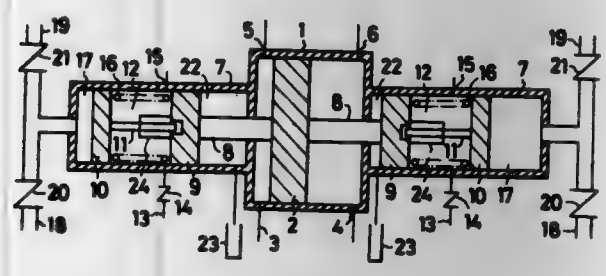
means for flowing the temperature control fluid into the inlet end of the plenum so that the control fluid circulates through the rings and exits through the outlet end of the plenum to maintain the rings, and thereby the working fluid adjacent the rings, at substantially the temperature of the temperature control fluid.

4,512,151

INTENSIFIER

Yoshiichi Yamatani, 1870 Manazuru, Manazuru-machi, Ashigarashimogun, Kanagawa-ken, Japan

Continuation of Ser. No. 253,075, Apr. 10, 1981, abandoned, which is a continuation of Ser. No. 53,315, Jun. 29, 1979, abandoned. This application Dec. 23, 1982, Ser. No. 452,510
Claims priority, application Japan, Jul. 13, 1978, 53-085426
Int. Cl.³ F15B 7/00
U.S. Cl. 60—581 2 Claims



1. In an intensifier to intensify fluid pressure of the type including a driving cylinder, a driving piston reciprocal within the driving cylinder to reciprocate a connecting rod, an intensifying cylinder adjacent to the driving cylinder and receiving one end of the connecting rod therein, a first piston connected directly to the connecting rod and being adapted for movement within the intensifying cylinder, the improvement comprising

a second piston adapted for movement within the intensifying cylinder simultaneously with the first piston, the second piston being indirectly connected to the connecting rod;

a movable lubricating chamber defined in the intensifying cylinder intermediate the first and second pistons, the lubricating chamber being moved when the first and second pistons are moved;

the second piston being connected to the first piston by a guiding rod, the guiding rod having a first end connected to the first piston and a second end loosely connected to the second piston, the guiding rod always being positioned within the lubricating chamber, the second piston having limited axial movement within the intensifying cylinder relative to the first piston; and

shock absorber means intermediate the connection between the second piston and the guiding rod second end,

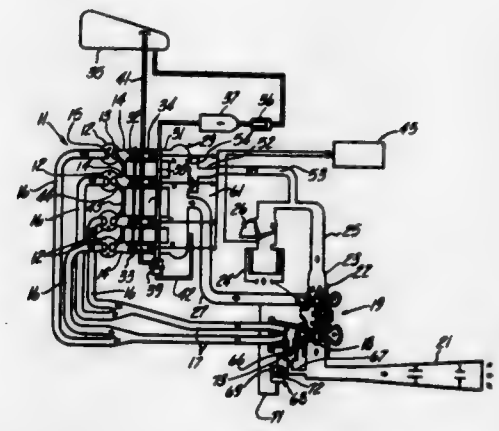
the shock absorber means comprising a gap in the second piston, the second end of the guiding rod being loosely retained in the gap and a path between the gap and the lubricating chamber, the path being sufficiently small to restrict the flow of lubricant from the lubricating chamber into the gap to modify the movement of the second piston relative to the first piston in accordance with the compression ratio of the lubricant; whereby variations in pressure in the intensifying cylinder may be compensated by the shock absorber means.

4,512,152

ENGINE WITH SUPERCHARGER

Takao Asaba, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Division of Ser. No. 317,346, Nov. 2, 1981, abandoned. This application Sep. 8, 1983, Ser. No. 529,983
Claims priority, application Japan, May 9, 1981, 56-67339
Int. Cl.³ F02B 37/00, 75/18, 3/00
U.S. Cl. 60—601 18 Claims



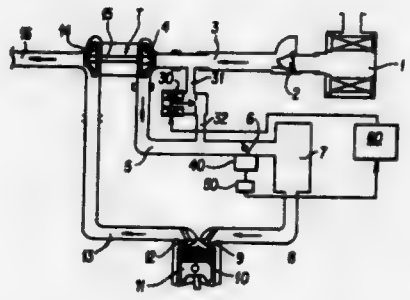
1. An induction system for a supercharged internal combustion engine having an intake device comprising a plenum chamber defined in part by a separable planar wall, said intake device having an outlet communicating said plenum chamber with a chamber of the engine, a supercharging inlet communicating with said intake device plenum chamber for delivering a boosted charge thereto, an atmospheric inlet communicating with said intake device plenum chamber through first check valve means supported in said wall, said first check valve means being adapted to close when the pressure in said intake device plenum chamber exceeds the pressure at said atmospheric inlet by a predetermined amount, and second check valve means supported in said wall communicating said intake device plenum chamber with said atmospheric inlet, said second check valve means being adapted to open when the pressure in said intake device plenum chamber exceeds a predetermined value.

4,512,153

TURBOCHARGER CONTROL SYSTEM

Yasuhiro Kawabata, Anjo, and Motonobu Akagi, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 28, 1982, Ser. No. 454,170
Claims priority, application Japan, Dec. 31, 1981, 56-213058
Int. Cl.³ F02B 37/12
U.S. Cl. 60—611 5 Claims



1. A turbocharger control system for a vehicle engine, comprising:

first air passage means for supplying air to said vehicle;

a throttle valve pivotally mounted in said first air passage means;

a turbocharger having a compressor and a turbine, said compressor being positioned within said first air passage means upstream of said throttle valve;

second air passage means for connecting a portion of said first passage means downstream of said compressor and a portion of said first air passage means upstream of said compressor;

valve means positioned within said second air passage means for relieving fluid pressure from said downstream portion of said first air passage means to said upstream portion of said first air passage means;

throttle sensor means operatively associated with said throttle valve for detecting the position of said throttle valve and generating first signals in response thereto; and

a computer connected to said valve means for receiving said first signals generated from said throttle sensor means, for calculating acceleration of movement of said throttle valve from said first signals and for delivering second signals to said valve means for operating said valve means in response to the position of said throttle valve and acceleration of movement of said throttle valve.

4,512,154

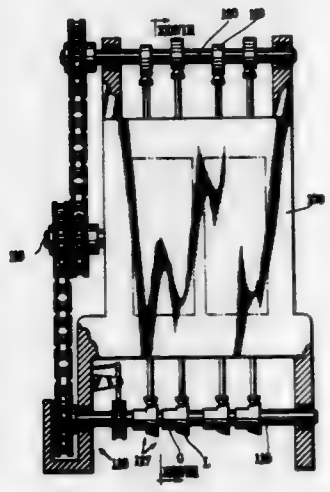
METHOD FOR DRIVING A VEHICLE DRIVEN BY AN INTERNAL COMBUSTION ENGINE

Takahiro Ueno, 5-11, 4-Bancho, Wakayama City, Japan

Continuation of Ser. No. 449,245, Dec. 13, 1982, abandoned, which is a continuation of Ser. No. 110,373, Jan. 8, 1980, abandoned, which is a continuation of Ser. No. 658,601, Feb. 17, 1976, abandoned. This application Jun. 25, 1984, Ser. No. 624,787

Int. Cl.³ F01B *29/04*; F02N *9/04*

U.S. Cl. 60—626 **6 Claims**



1. In an internal combustion engine which is convertible to a compressor and adapted for use in a transport vehicle, said engine comprising:

a body including a plurality of working chambers of said engine each of which is provided with an inlet port and an outlet port;

an inlet valve and an outlet valve for opening and closing each of said inlet and outlet ports;

means for supplying fuel to said chambers;

means for supplying air to said chambers;

means for halting the supply of fuel to at least one of said chambers in order to supply only air to said one chamber;

crank-shaft means for the elimination of air from said one chamber;

a cam shaft rotatably and axially adjustably mounted on said body;

a cam change-over mechanism for moving said cam shaft axially;

a pair of cams for each of said inlet valves and each of said outlet valves mounted on said cam shaft, each of said pair of cams comprising an engine and a compressor cam spaced apart from each other;

tappet means reciprocally mounted on said engine in relation to each of said inlet and each of said outlet valves for opening and closing said valves; and

each of the engine and compressor cams of each of said pairs having an inclined surface facing the other cam of the pair and adapted to engage said tappet means;

the improvement which comprises auxiliary cam means disposed between each pair of engine and compressor cams causing said cam change-over mechanism to provide a transitional sequential change including the placing of at least one of said working chambers in an unloaded state.

4,512,155

FLOWING GEOTHERMAL WELLS AND HEAT RECOVERY SYSTEMS

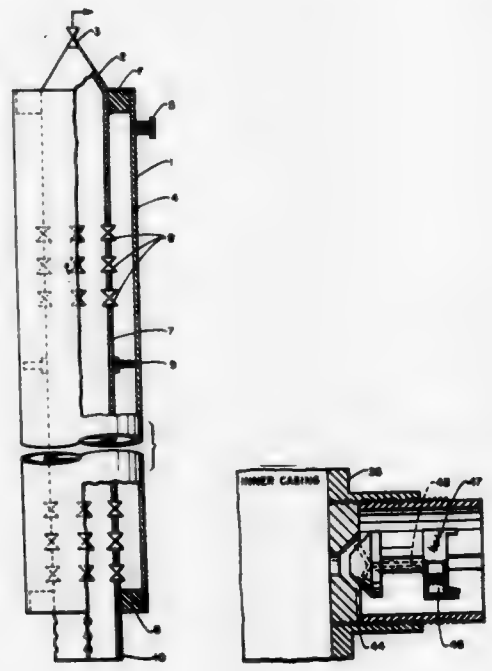
Itzhak Sheinbaum, 136 Walnut Ave., Monrovia, Calif. 91016

Division of Ser. No. 99,674, Dec. 3, 1979, Pat. No. 4,364,232. This application Dec. 21, 1982, Ser. No. 451,884

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ F03G *7/00*; B63H *3/00*

U.S. Cl. 60—641.2 **12 Claims**



1. A process causing a geothermal well to flow, comprising: injecting a primary fluid into a geothermal well; controlling the level of injection and the rate of injection of primary fluid by a plurality of control valves in a casing of the geothermal well; flowing the geothermal fluid mixture from said well and utilizing the heat of the flowed mixture; and operating the mechanism of said valves by balancing the effect of the velocity of the fluid at the face of the valve to control the rate of fluid flow through the valve.

4,512,156

GEOTHERMAL ENERGY CONVERSION SYSTEM

Ushiro Nagase, Kyoto, Japan, assignor to Kyoto Central Co. Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 213,293, Dec. 5, 1980, abandoned, which is a continuation of Ser. No. 946,977, Sep. 29, 1978, abandoned. This application May 16, 1983, Ser. No. 495,197

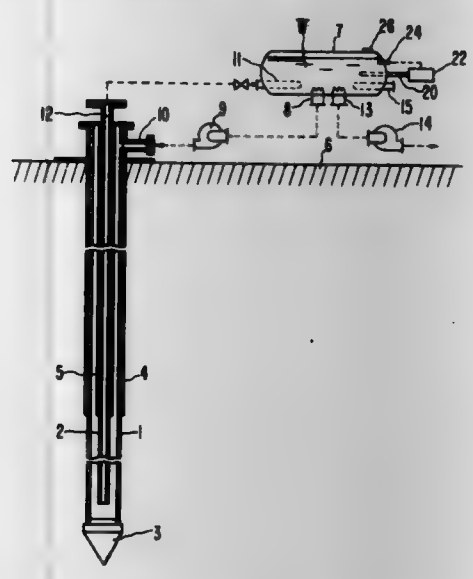
Claims priority, application Japan, Sep. 30, 1977, 52-118146

Int. Cl.³ F03G *7/04*

U.S. Cl. 60—641.2 **4 Claims**

1. Apparatus for using subterranean heat for heating a liquid comprising: a circulation pipe having a pair of opposed ends and a length sufficient to permit the pipe to extend into the earth to a region of subterranean heat; a tank for containing a liquid to be heated, said tank adapted to be placed adjacent to the surface of the earth, said pipe being coupled at the ends thereof to the tank and being in fluid communication with the

tank so that a liquid in the tank can flow through the pipe to said region and return to the tank, whereby the pipe and the tank form parts of a first closed loop, said tank having means for keeping the liquid therein at a constant pressure and temperature to keep the liquid in the tank from boiling; a pump outside the tank and coupled to the pipe for causing a circulation of liquid through the pipe and the tank; and means coupled with the tank for directing the liquid out of the tank to a heat exchanger and returning the liquid to the tank, whereby the tank and the directing means form parts of a second closed loop in which the heat energy in the liquid can be used to perform useful work.

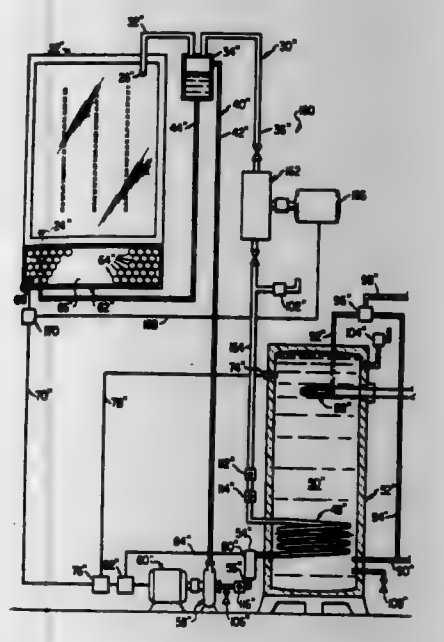


4,512,157

SOLAR POWERED FLUID HEATING SYSTEM

Glenn E. Weadock, Dallas, Tex., assignor to Wetzel Enterprises, Inc., Dallas, Tex.

Filed Feb. 7, 1983, Ser. No. 464,715
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.8 **37 Claims**



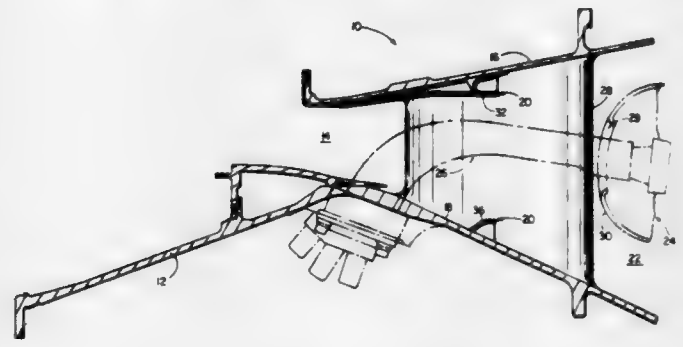
1. A solar powered water heating system comprising:
a predetermined quantity of refrigerant;
a thermal collector for heating the refrigerant;
separator means for receiving the heated refrigerant from the thermal collector and for separating the vapor component from any liquid component of the heated refrigerant;
a tank having a predetermined quantity of water therein;
a condenser positioned within the tank for receiving the vapor component of the heated refrigerant from the separator means and for transferring heat from the refrigerant to the water in the tank and thereby returning the refrigerant vapor to the liquid phase;
vapor conduit means extending from the separator means to the condenser;
liquid conduit means extending from the condenser to the separator means and from the separator means to the thermal collector;
said thermal collector, separator means, condenser, vapor conduit means and liquid conduit means comprising a closed refrigerant circuit which contains the predetermined quantity of refrigerant;
refrigerant pressurizing means for causing the refrigerant to flow through the closed refrigerant circuit; and
solar powered means for actuating the refrigerant pressurizing means which comprises a turbine driven by refrigerant vapor flowing through the vapor conduit means from the separator means to the condenser, and a generator driven by the turbine.

4,512,158

HIGH BLOCKAGE DIFFUSER WITH MEANS FOR MINIMIZING WAKES

Edmund E. Striebel, South Windsor; John A. Matthews, Melrose; Domingo Sepulveda, Vernon, and Francis C. Pane, Jr., South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 16, 1983, Ser. No. 504,995
Int. Cl.³ F02C 7/20
U.S. Cl. 60—740 **1 Claim**

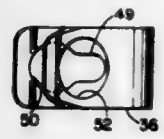


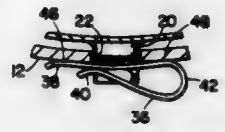
1. For a gas turbine engine having a burner receiving working fluid medium, an annular diffuser having an inner wall and outer wall in axial alignment with the burner but, spaced from said burner directing said working fluid to said burner, a portion of said air discharging from said diffuser entering said burner and a portion of said air admitted to a space surrounding said burner, a fuel nozzle in the front end of said burner in axial alignment with said diffuser, a nozzle support structure extending from a hole in said outer wall of said diffuser extending for a portion transverse to the flow and for the remaining portion axially to support said fuel nozzle, said support structure being an obstruction to the flow passing through said diffuser, means for minimizing wakes in said flow, occasioned by the obstruction of said support structure, including a pair of wall members extending into the passageway of said diffuser spaced from and being on opposite sides of said nozzle support structure for diverging the flow of air adjacent said nozzle support structure and succeedingly converging said flow downstream of said support structure relative to the flow of air in said diffuser, said inner wall and said outer wall being generally conically shaped, one of said pair of wall members being attached to said inner wall and the other of said pair of wall members being attached to the outer wall, one of said pair of wall members and said outer wall defining a prediffusing section and said other pair of wall members being generally bellmouth shaped so that for portion of its axial length of the prediffuser said prediffuser is in diverging relationship, and in the remaining portion of its axial length the prediffuser is in converging relationship.

4,512,159
CLIP ATTACHMENT

Robert L. Memmen, Juno Isles, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1984, Ser. No. 595,859
Int. Cl.³ F23R *3/20*
U.S. Cl. 60—752 2 Claims



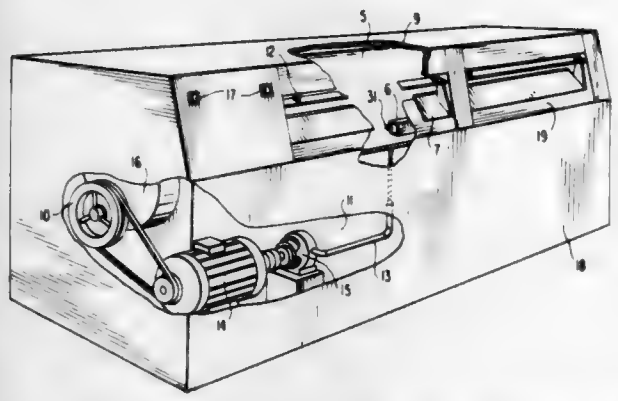


1. In combination, a combustor for a gas turbine engine having an outer shell and an inner segmented free floating member conforming to the shape of the outer shell defining a combustion section, the segmented members movable circumferentially and axially in response to the combustion products relative to the outer shell, means for securing said segmented members to said outer shell including at least one post integral with each of said segmented members extending radially through an opening in said shell, a clip being generally U-shaped but having at least one leg bent inwardly toward the other leg to bear against the surface thereof, a hole remote from the end of one of said legs sized to fit said post, a first slot smaller in width of said hole extending from said hole to fit a second slot formed in said post spaced from the end thereof, a hole in the other leg overlying said first slot to receive said post so that it extends radially beyond said clip in the secured position, whereby said clip retains said segmented member to said shell and is oriented in a given position and incapable of becoming dislodged by axial movement.

4,512,160
MACHINE FOR MAKING ICE FLAKES FROM SEA WATER OR FRESH WATER

Gonzalo Arias Mas, Nunez de Balboa 31, Madrid, Spain

Filed Dec. 21, 1982, Ser. No. 455,034
Claims priority, application Spain, Dec. 21, 1981, 508.206; Nov. 29, 1982, 517.788
Int. Cl.³ F25C *7/12*
U.S. Cl. 62—71 5 Claims

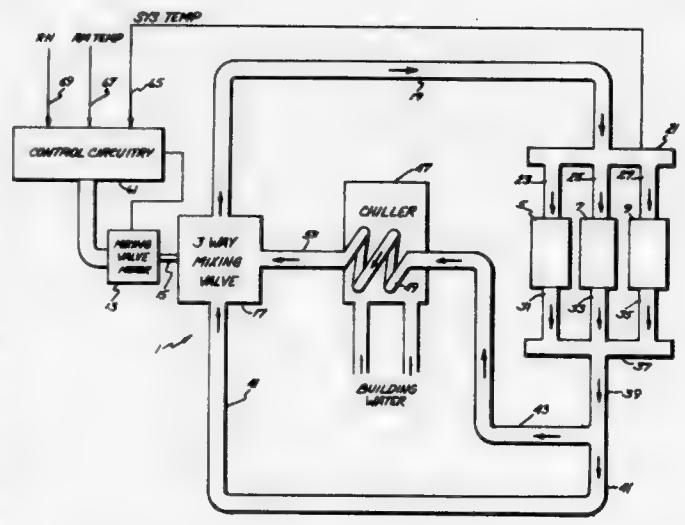


1. A machine comprising means for making ice flakes by freezing water onboard a ship, including a drum rotatable about a horizontal axis, means to cool the drum to below the freezing point of water, means to spray water on the drum, means to collect water falling from the drum, means to supply to said collecting means make-up water to be frozen, said collecting means comprising a plurality of tanks having at least one vertical divider partition therein, and an opening through a lower portion of the divider partition through which the tanks communicate with each other.

4,512,161
DEW POINT SENSITIVE COMPUTER COOLING SYSTEM

Max C. Logan, Maplewood, and Jon T. Nordstrom, Forrest Lake, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Division of Ser. No. 471,953, Mar. 3, 1983,. This application Jun. 25, 1984, Ser. No. 604,348
Int. Cl.³ F25D *17/04;* B01F *3/02*
U.S. Cl. 62—176.6 15 Claims



1. In a cooling system for a computer installed in an environment, said cooling system including cooling conduits and coolant flowing through said cooling conduits to cool said computer, said cooling system further including a means for controlling the temperature of said coolant, an improvement, comprising:

a means for estimating the dew point of said environment;

a means for sensing the temperature of said cooling system;

a means for comparing said estimated dew point temperature with said cooling system temperature to determine a temperature differential; and

circuit means responsive to said temperature differential for controlling said temperature control means to maintain said cooling system temperature above said dew point temperature.

4,512,162
REFRIGERATOR

Kazumi Etou, and Tetsuo Komoto, both of Osaka, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 24, 1984, Ser. No. 573,346
Claims priority, application Japan, May 18, 1983, 58-88078
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—298 12 Claims

1. A refrigerator having a freezer compartment comprising:

an outer box;

an inner freezer compartment, spaced from said outer box;

a layer of insulating material between said outer box and said inner compartment;

a main evaporator mounted in said inner compartment;

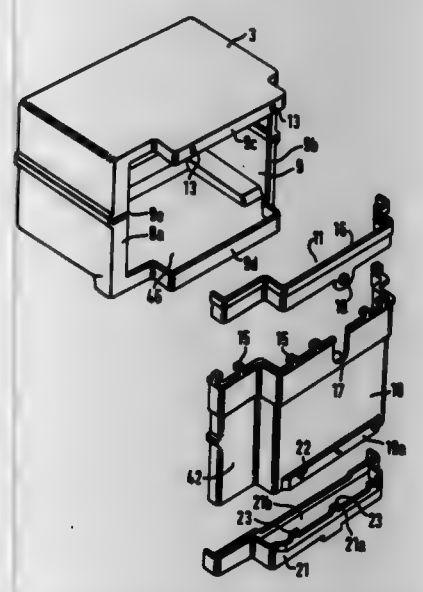
an auxiliary evaporator mounted in said inner compartment and connected to said main evaporator;

said inner compartment having a back opening for permitting insertion into said inner compartment, in assembling both said evaporators,

means for covering said opening on which said main evaporator is attached;

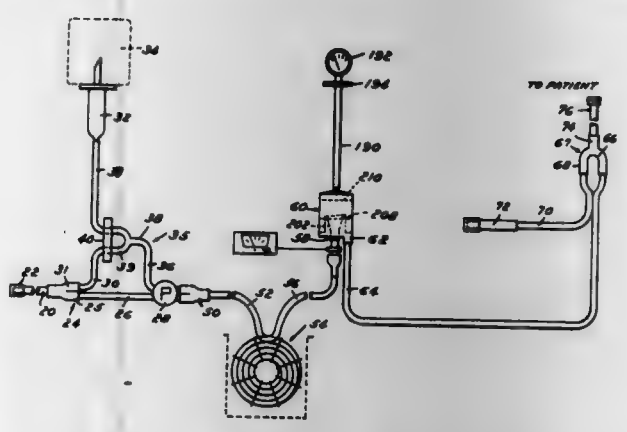
a support member secured to said inner compartment along an upper edge of said opening for attaching said covering means to said inner compartment;

means for dividing the space within said inner compartment to define an air passage therein; and



a fan motor for circulating cooled air in said passage and inner compartment.

4,512,163
INTEGRATED CARDIOPLEGIA DELIVERY SYSTEM
Edward S. Wells, Whitmore Lake; Spencer K. Ford, Dexter; Jack E. Werner, Ann Arbor, and Erin J. Lindsay, Dexter, all of Mich., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Division of Ser. No. 279,175, Jun. 30, 1981, Pat. No. 4,427,009.
This application Nov. 3, 1983, Ser. No. 548,298
Int. Cl.[3] B67D *5/62*
U.S. Cl. 62—394 6 Claims



4. A cooling system for cardioplegia and other uses which comprises:

(a) a body of cooled liquid such as ice water,

(b) a cooling tank to hold cooled liquid at varying levels in said tank,

(c) a cooling coil for holding liquid to be cooled, said cooling coil supported in said tank and having inlet and outlet ends independent of said cooling tank,

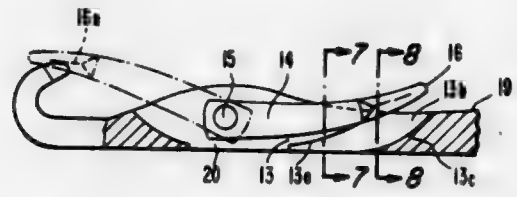
(d) means to move said cooled liquid to said tank,

(e) means to control the flow of cooled liquid to said tank, and

(f) a second tank which serves as a receptacle and discharge vessel for said cooling tank;

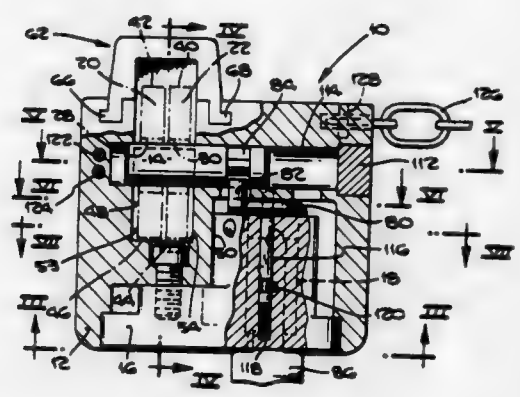
wherein said cooling tank has one or more openings to discharge said cooled liquid to said second tank at varying levels dependent on the rate of flow of cooled liquid to said cooling tank so as to control the level of cooled liquid in said cooling tank and thus control the area of said cooling coil exposed to said cooled liquid.

4,512,164
PIVOTED LATCH NEEDLE
Masao Fukuhara, Nishimuro, Japan, assignor to Fukuhara Needle Company, Ltd., Wakayama, Japan
Filed Sep. 23, 1983, Ser. No. 535,217
Claims priority, application Japan, Oct. 4, 1982, 57-174841
Int. Cl.[3] D04B *35/04*
U.S. Cl. 66—121 6 Claims



1. A pivoted latch needle for use in knitting machines, the needle having an elongated shank with a hook at one end thereof and with a cheek portion adjacent the hook, a first slot extending through the shank at the cheek portion thereof, a latch pivotally mounted in the first slot, and a second slot extending through the shank adjacent the first slot, the slots being connected with the width of the second slot being less than the width of the first slot.

4,512,165
HIGH SECURITY PADLOCK
Tim M. Uyeda, South San Gabriel, Calif., assignor to La Gard, Inc., Torrance, Calif.
Continuation of Ser. No. 177,251, Aug. 11, 1980, abandoned.
This application Apr. 1, 1982, Ser. No. 364,420
Int. Cl.[3] E05B *63/00, 67/36*
U.S. Cl. 70—32 21 Claims



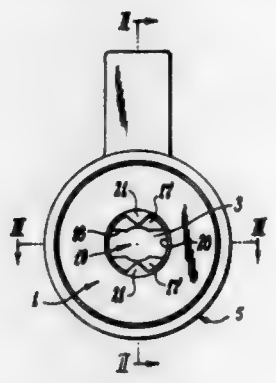
1. In a lock assembly adapted for locking two flanges together, where the flanges are secured to support structures and movable to a position adjacent each other, said flanges further including bolt holes positioned for axial alignment when said flanges are in said adjacent position, said lock assembly including a lock body having flange retaining walls defining a flange receiving opening for receiving and holding said flanges in said adjacent position, said lock assembly further including a latch bolt for engaging said flange bolt holes when the flanges are within said flange receiving opening, to lock said lock assembly to said flanges, the improvement in said lock assembly comprising:

removable shield means removably attached to said lock body for covering said flange receiving opening to thereby prevent external access to said latch bolt when said lock assembly is locked to the flanges, said shield means being removable from said lock body only when the retaining walls are removed from retaining contact with said flanges.

4,512,166
CYLINDER LOCK AND KEY

Gerald F. Dunphy, and Donald J. Newman, both of Melbourne, Australia, assignors to Ogden Industries Pty. Ltd., Huntingdale, Australia

Filed Jul. 23, 1982, Ser. No. 401,417
Claims priority, application Australia, Jul. 29, 1981, PE9982
Int. Cl.[3] E05B *15/14, 19/02, 29/02*
U.S. Cl. 70—366 31 Claims

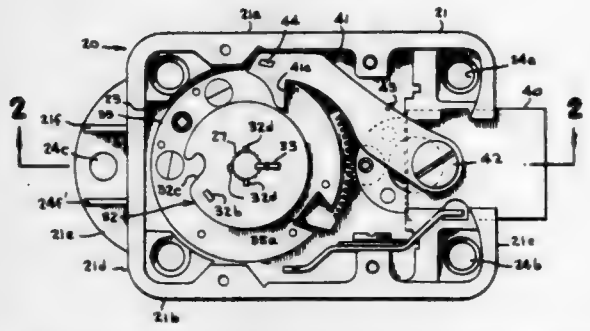


1. A key operated cylinder lock including a housing having a cylindrical bore therein, a barrel assembly rotatably mounted within said bore, a plurality of individual discs forming part of said barrel assembly and being arranged for relative rotation about a common axis, a key receiving opening of non-circular shape formed through each said disc at a location such that said common axis passes therethrough, locking means operative to prevent rotation of said barrel assembly relative to said housing and being responsive to the rotational positioning of the discs so as to be rendered inoperative when each said disc has a particular rotational position relative to the adjacent said disc, and at least one camming face is provided at a front side of each said disc at each of two opposite sides of said common axis, said camming faces being arranged for coaction with a key inserted into said lock and each being located directly adjacent the respective disc opening and sloping rearwardly of the said disc towards that opening so that said coaction induces the respective said disc to rotate towards a position at which said key can be moved longitudinally through the opening thereof.

4,512,167
VARIABLE POSITION QUICK MOUNT COMBINATION LOCK

Joseph M. Remenicky, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Aug. 4, 1983, Ser. No. 520,681
Int. Cl.[3] E05B *9/00*
U.S. Cl. 70—443 18 Claims

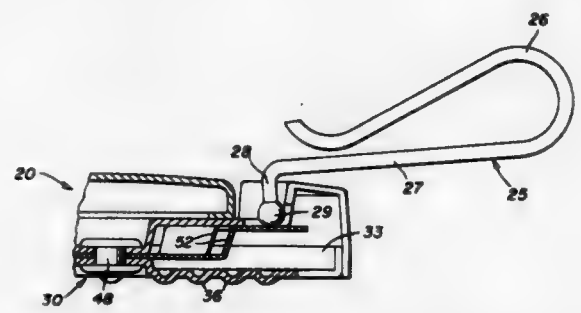


1. A quick mount combination lock constructed to be readily installed or changed to assume any of the four right hand, left hand, vertical up, or vertical down installation positions from externally of the lock case, the lock comprising a front case section having front, side, end, top and bottom walls defining a rearwardly opening substantially rectangular enclosure and a rear cover plate substantially coextensive with said front wall to be removably assembled on the front section and form a closure therefor providing a lock mechanism chamber, a combination lock mechanism including a plurality of peripherally gated tumbler wheels rotatably journaled about a common axis, means for adjusting the angular positions of the tumbler wheels through lost motion couplings including a dial having a drive spindle extending along said axis therefrom and a drive cam adjustably positioned on said spindle by a spline key at any of four angular positions correlated to said installation positions, a fence lever pivoted on a reciprocative bolt slidable through one end wall of the case, the fence lever being movable by the drive cam along an unlocking path when coupled thereto to retract the bolt; said front case section having an integral flange extension lying in the plane of said front wall and protruding from a second end wall thereof opposite said one end wall and having a mounting screw opening therethrough, said front case section and cover plate having aligned mounting screw holes extending entirely therethrough adjacent said second end wall whereby the mounting screws for securing the lock case to the security closure to which it is to be affixed are accessible for installation and withdrawal without removing the cover plate from said front case section, and said cover plate having an access opening therethrough concentric with said common axis located rearwardly adjacent the rearmost end of the spindle for removal and installation of the spline key releasably retaining the driving cam in any of said four angular positions on the spindle, and a removable closure button member releasably secured in said access opening.

4,512,168
KEY HOLDER

Frederick T. Reitze, 5532 S. Kenwood Ave., Chicago, Ill. 60637

Filed Mar. 9, 1981, Ser. No. 242,038
Int. Cl.[3] A47G *29/10*
U.S. Cl. 70—456 R 8 Claims



1. A key holder comprising a free self-contained circular housing; said housing including a base member having a flat circular bottom wall and a peripheral base side wall integral with said bottom wall around the perimeter thereof and projecting therefrom, said bottom wall having a raised flat planar central portion, a cover member having a circular top wall and a peripheral cover side wall integral with said top wall around the perimeter thereof and projecting therefrom, said top wall having a first depressed flat planar portion centrally thereof, said first depressed portion having a second further depressed flat planar portion centrally thereof, said cover member being disposed over said base member coaxially therewith with said cover side wall overlapping said base side wall around the entire circumference thereof and with said second depressed portion overlying said raised central portion parallel thereto, and attachment means fixedly securing said second depressed portion to said raised central portion for securing said cover member to said base member, said cover member cooperating with said base member to form a substantially closed annular chamber bounded on the outer periphery thereof by said overlapping side walls and bounded on the inner periphery thereof by said raised central portion and said second depressed portion, said housing having a plurality of simultaneously accessible peripheral slots therein spaced apart circumferentially thereof and communicating with said chamber and extending radially into said base member and said cover member for cooperation with said chamber to define a plurality of discrete

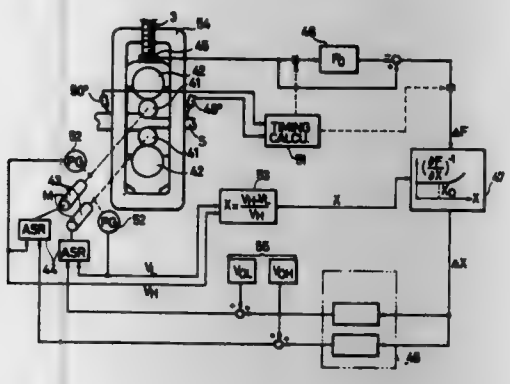
receptacles, each of said slots having an enlarged portion extending into said first depressed portion and a narrow portion; a plurality of key hooks, each of said key hooks having a shank portion dimensioned to pass through the narrow portions of said slots and an enlarged mounting portion dimensioned to pass through the enlarged portions of said slots but to be unable to pass through the narrow portions of said slots; and a retainer in said housing between said cover member and said base member, said retainer having a central attachment portion clamped between said second depressed portion and said raised central portion, and a plurality of resilient portions carried by said attachment portion and engageable with said first depressed portion of said cover member for respectively closing said enlarged portions of said slots, each said resilient portion being deflectable by said mounting portion of one of said key hooks for opening said enlarged portion of the corresponding one of said slots to permit insertion of said mounting portion into said chamber and removal of said mounting portion from said chamber for mounting and demounting said key hook with respect to said housing.

4,512,169

AUTOMATIC PLATE THICKNESS CONTROL DEVICE

Keiichi Miura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,469
Claims priority, application Japan, Feb. 15, 1982, 57-23905
Int. Cl.[3] B21B *37/12*
U.S. Cl. 72—16
6 Claims



6. In a rolling mill of the type comprising upper and lower rollers between which a rolling material is compressed by a rolling load F, a method for automatically controlling the thickness of said rolling material, comprising the steps of

rotating said upper and lower rollers at different speeds V_H and V_L, respectively, to produce a differential peripheral speed rate X defined by the equation

$$X = \frac{V_H - V_L}{V_H};$$

detecting a variation in rolling material thickness;

generating a deviation rolling load signal WF as a function of said detection variation;

detecting said differential peripheral rolling speed X;

generating a correcting differential peripheral speed rate signal ΔX as a function of the equation

$$\Delta X = -\left(\frac{\partial F}{\partial X}\right)^{-1}(\Delta F);$$

and

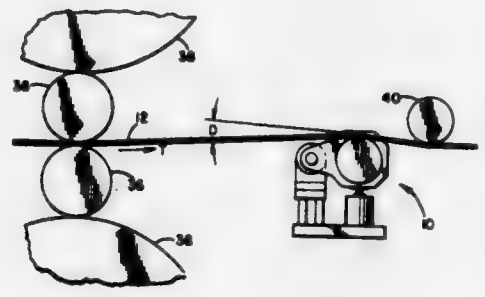
correcting said speeds V_H and V_L of said upper and lower rollers, respectively, as a function of said correcting differential peripheral speed rate signal ΔX.

4,512,170

PROCESS AND APPARATUS FOR STRIP FLATNESS AND TENSION MEASUREMENTS

Yu-Wen Hsu, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sep. 30, 1983, Ser. No. 537,868
Int. Cl.[3] B21B *37/04*; G01L *5/04*
U.S. Cl. 72—17
18 Claims



1. A process for monitoring a continuously moving metal strip in a rolling mill comprising the steps of selecting a first and second pair of load-sensing positions, continuously supporting the moving strip under tension on an endless unitary surface rotatable about an axis and intermediate the first and second pair of load-sensing positions with the individual positions of a given pair being located at a different end of said axis and the locations of the positions of one pair of load-sensing positions being disposed in opposed relationship on an opposite side of said axis with respect to the other pair of load-sensing positions, continuously and simultaneously measuring a reaction characteristic for at least three of the load-sensing positions relative to theoretically calculated flat strip values and continuously making determinations of the unflatness of the strip from the measured reaction characteristics.

18. A dual-support shape roll, comprising:

a roll having a cylindrical roll body for supporting a length of strip and a pair of roll necks for supporting the roll body extending axially from the roll body along the cylindrical axis thereof;

a pair of inner bearings at the opposite ends of said roll and receiving the respective roll necks therein;

a pair of pivot plates at the opposite ends of said roll, said pivot plates having means for respectively mounting said pair of inner bearings;

first pivot means for pivotably supporting said pivot plates to allow said pivot plates to pivot about an axis parallel to the axis of said cylindrical roll;

a pair of tension load cells in contact with said pivot plates to measure the respective loads imposed thereon;

a pair of outer bearings at the opposite ends of said roll and receiving the respective roll necks therein, each of said pair of outer bearings being disposed further from said roll body than the respective inner bearings;

a pair of pivot arms at the opposite ends of said roll, said pivot arms having means for respectively mounting said pair of outer bearings;

second pivot means for pivotably supporting said pivot arms on the respective said pivot plates to allow said pivot arms to pivot about an axis parallel to the axis of said cylindrical roll; and

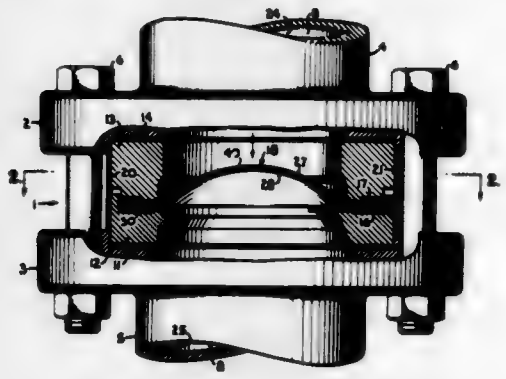
a pair of flatness load cells in contact with said pivot arms to measaure the respective bending loads imposed upon said outer bearings.

4,512,171

METHOD FOR FORMING RUPTURE DISC

Robert M. Mozley, Raytown, Mo., assignor to Continental Disc Corporation, Kansas City, Mo.

Filed Sep. 20, 1983, Ser. No. 533,854
Int. Cl.[3] B21D *22/00*
U.S. Cl. 72—55 11 Claims



1. A method of manufacturing a reverse buckling rupture disc comprising the steps of:

(a) providing a disc support structure including a source of hydraulic fluid;

(b) placing a generally circular and planar blank to be formed into said disc in said support structure such that said hydraulic fluid source communicates with only one side of said blank;

(c) placing a forming ring on the side of said blank opposite the side thereof communicating with said hydraulic fluid; said forming ring being generally annular in shape and having an interior diameter approximately equal in length to a projected peripheral diameter of a dome of the disc to be formed;

(d) applying sufficient pressure to said forming ring to maintain said ring in position with the adjacent portion of said blank; while

(e) simultaneously applying a preselected pressure to said hydraulic fluid such that a dome portion of said blank bulges through said forming ring thereby producing a disc having a pre-bulged dome, a flange portion surrounding said dome, and a transition region between said flange portion and said dome; said dome including a crown; and

(f) applying pressure to said dome in an unsymmetrical manner at a location spaced from both said transition region and said crown so as to form an indentation thereon.

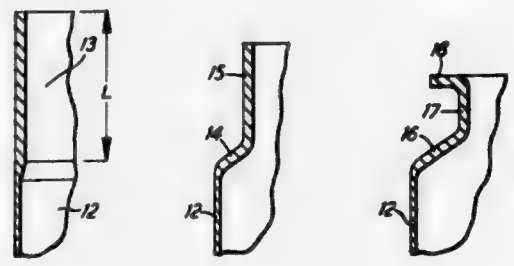
4,512,172

METHOD OF FORMING FLANGED CONTAINERS

James B. Abbott, Newbury; Ernest O. Kohn, Abingdon; Christopher Berry, Wantage, and Mark N. Slade, Farringdon, all of England, assignors to Metal Box plc, Reading, England

PCT No. PCT/GB81/00169, § 371 Date Mar. 5, 1982, § 102(e) Date Mar. 5, 1982, PCT Pub. No. WO82/00785, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 27, 1981, Ser. No. 359,654
Claims priority, application United Kingdom, Sep. 8, 1980, 8029005
Int. Cl.[3] B21D *19/06, 22/00*
U.S. Cl. 72—68 15 Claims

1. A method of forming a shoulder, neck and flange at an open end of the cylindrical side wall of a can body, comprising a die necking operation followed by a rolling operation, wherein the die necking operation includes a static die necking step in which a marginal edge portion defining the open end of the side wall is forced into a die to make a portion of reduced diameter having a shoulder portion supporting a cylindrical portion, the rolling operation includes a rolling step in which the portion of reduced diameter is rolled so as to further reduce the diameter of the cylindrical portion and generate a rereduced shoulder supporting said neck, and forming a flange at a terminal end portion of said cylindrical portion.

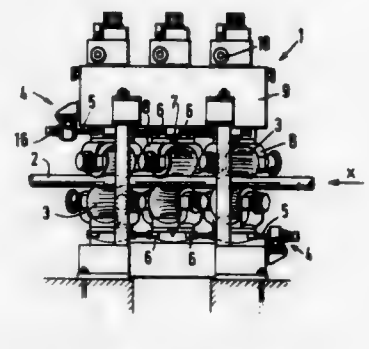


4,512,173

TUBE RELEASE ROLLING MILLS

Hans Brauer, Leichlingen, and Hans-Dieter Gerhards, Monheim, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,472
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227532
Int. Cl.[3] B21B *19/08*
U.S. Cl. 72—98 18 Claims



1. In a tube release rolling mill having four or more driven rolls which form pass openings in pairs and rolls axes extending at an adjustable angle of attack diagonally to the longitudinal direction of tubes rolled therebetween and in which the roll axes of each roll pair run diagonally in an intersecting manner in different directions, the improvements comprising the rolls being identicallly designed and having a working surface width of more than 1 times the advance distance per revolution of a tube bloom with the largest outside diameter to be rolled therein; said roll pair spacings are dimensioned equal to one of 1.5, 2.5, 3.5, 4.5, 5.5, and 6.5 times the advance distance per revolution of the tube bloom with the smallest outside diameter to be rolled therein and said angle of attack of the rolls is between 33 and 55 degrees.

4,512,174

COMBINED SHEET BENDING BRAKE AND PLATFORM

James J. Rhoades, Garden City, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Filed Jun. 7, 1982, Ser. No. 385,461
Int. Cl.[3] B21D *5/04*
U.S. Cl. 72—319 14 Claims

1. A combined sheet bending brake and platform comprising

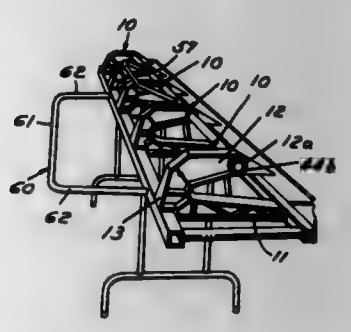
a base,

first and second bending members hinged to one another and mounted on the base,

an anvil member attached to the first bending member for clamping a workpiece of sheet material on said first member such that moving the second member relative to the first member will bend the sheet material, said first and second bending members and anvil member extending longitudinally and horizontally, the longitudinal extend of

the members constituting the length of the sheet bending brake with said hinge axis extending parallel to said sheet bending brake length,

and a platform for workpieces and the like extending longitudinally for at least a portion of the length of the sheet bending brake along the base generally parallel and oppo-



site to the hinge axis of the two members such that the area overlying the brake is generally unobstructed,

said platform being movable horizontally between an extended position extending rearwardly of the brake away from the hinge axis and a position toward the hinge axis within the confines of the brake, the movement of said platform being movable in a direction transverse to the longitudinal extent of the platform.

4,512,175

SWASH PLATE TYPE COMPRESSOR SHOE AND MANUFACTURING METHOD THEREFOR

Yoshihiro Kaku, and Keiichiro Otsu, both of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

PCT No. PCT/JP81/00067, § 371 Date Nov. 27, 1981, § 102(e) Date Nov. 27, 1981, PCT Pub. No. WO81/02767, PCT Pub. Date Oct. 1, 1981

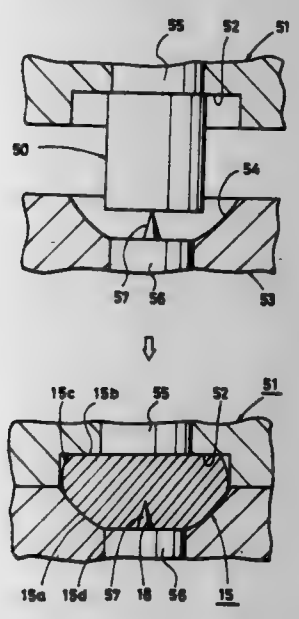
PCT Filed Mar. 28, 1981, Ser. No. 328,547

Claims priority, application Japan, Mar. 28, 1980, 55-39842; Mar. 31, 1980, 55-41387; Mar. 31, 1980, 55-41388; Oct. 29, 1980, 55-151907

Int. Cl.³ B21J *13/02*

U.S. Cl. 72—360

18 Claims



1. A method for manufacturing a swash plate type compressor shoe by pressing toward each other a first die with a hemispherical recess and a second die with a substantially flat end wall spaced from said second die and arranged along an axis of said hemispherical recess to subject a columnar element interposed between said hemispherical recess and said flat end wall to plastic deformation in the direction of said axis and along the inner surface of said hemispherical recess and flat end wall, wherein, by axial pressure of said dies, a surface of said columnar element is subjected to plastic deformation along said inner surface of said hemispherical recess, and an end face of said element is urged against said flat end wall to constrain said end face of said element and to radially outwardly expand that intermediate part of said element which extends axially toward said flat end wall from said hemispherical recess while subjecting the surface of that intermediate part of said columnar element to plastic deformation into a hemispherical part whose cross-sectional area is gradually increased outward along the surface of said hemispherical recess and a flank whose cross-sectional area is gradually reduced from said hemispherical part axially toward said flat end wall of said second die, and said flank is kept free of contact with said second die throughout the formation of said flank.

4,512,176

COUPLING MEMBER AND METHOD OF MANUFACTURING SUCH A COUPLING MEMBER

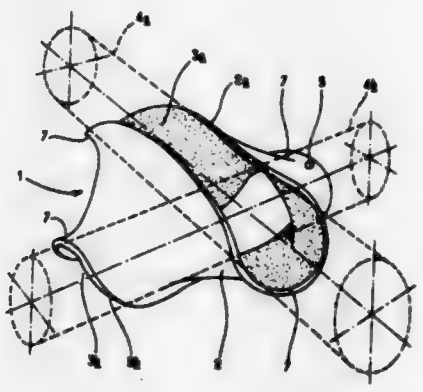
Jean-Francois Pennel, 132, Boulevard de l'Hopital, 75013 Paris, and Patrick H. Vesnier, 6, rue Euryale Dehaynin, 75019 Paris, both of France

Division of Ser. No. 211,137, Nov. 28, 1980, Pat. No. 4,440,519. This application Feb. 3, 1984, Ser. No. 576,959

Int. Cl.³ B21D *53/36*

U.S. Cl. 72—367

10 Claims



1. A method for making a coupling element for coupling together two elongated members extending at an angle to each other comprising the steps of, providing a one-piece closed loop band of a ductile material, the band having a sidewall curving around a central axis, and first and second ends, each having continuous rims, positioning the band between a first elongated tool having an axis extending diametrically of the band, and a second elongated tool having an axis extending diametrically of the band and at an angle to the first tool, so that the continuous rim of the first end of the band faces the first tool and the continuous rim of the second end of the band faces the second tool, at least one of said tools have transverse dimensions, transverse to the length of the tool which are less than the facing diameter of the band, and moving the tools toward each other to deform the rim of the first end of the band around the first tool and to simultaneously deform the rim of the second end of the band around the second tool as a result of the forces exerted on the band by said tools.

4,512,177

METHOD OF MANUFACTURING METALLIC MATERIALS HAVING A CIRCULAR CROSS SECTION

Chihiro Hayashi, and Kazuyuki Nakasuji, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 28, 1983, Ser. No. 508,720

Claims priority, application Japan, Jun. 30, 1982, 57-114362; Feb. 10, 1983, 58-20753

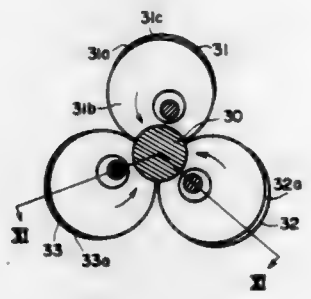
Int. Cl.³ B21B *27/02*

U.S. Cl. 72—368

14 Claims

1. A method of manufacturing metallic bar or rod having a circular cross-section which comprises the steps of producing a solid bar-form material having a cross-section which is circular or a polygon of six or more sides and thereafter elongating the said material into a circular cross-sectional bar or rod of

reduced diameter by working said material in a rotary mill, said rotary mill comprising three or four rolls arranged around a pass line for the material being worked, the axes of the rolls being inclined so that the shaft ends on the material inlet side of the rolls are at a cross angle γ from the pass line, said axes being inclined at a feed angle β so that the shaft ends on same side of the rolls face the same circumferential side of the material being worked, said rolls being supported at their respective



both ends, and said cross and feed angles being within the following ranges:

$0° < \gamma < 15°$

$3° < \beta < 20°$

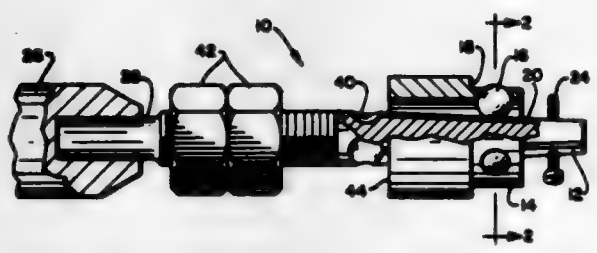
$5° < \gamma + \beta < 30°$.

4,512,178

TUBE END DEFORMING TOOL

Milton L. Blevins, Chattanooga, and Charles R. Seiter, Hixson, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 28, 1983, Ser. No. 479,762
Int. Cl.³ B21D *41/02, 53/02*
U.S. Cl. 72—393 **4 Claims**



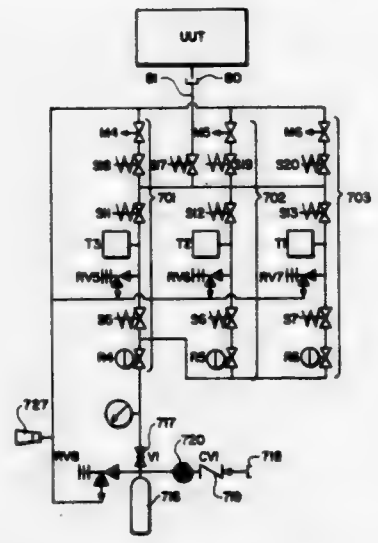
1. A tube deforming tool including a tapered mandrel, the mandrel having a small diameter at its forward end and a larger diameter at its rearward end, a housing with a plurality of radially movable balls mounted therein surrounding the mandrel, the housing having a forward end closest to the forward end of the mandrel, and a rearward end closest to the rearward end of the mandrel, the housing having openings therein adjacent the location of each ball, collar means surrounding the mandrel at the rearward end of the housing and adapted to abut against the end of the tube to be deformed, means for moving the mandrel without rotation thereof, but longitudinally of the ball housing, a plurality of longitudinal grooves in the mandrel, therebeing one for each ball, the grooves being such that as the mandrel is moved longitudinally through the ball housing into the tube interior, the balls are moved radially outwardly by the increasing diameter of the tapered mandrel, until the balls contact and eventually deform the tube wall, an enlarged recess at the end of each of the grooves near the rearward end of mandrel, such that when the balls drop into the recesses, they are removed from contact with the tube wall, thereby forming dimples of a given size in the outer tube wall and permitting easy withdrawal of the tool from the tube.

4,512,179

INSTRUMENT FOR CALIBRATING PRESSURE GAUGES

Don G. Umble, San Martin; Tsi-Pin Choong, Sunnyvale; Kenneth R. Izzo, San Jose; Charles E. Burdg, San Martin; Gary H. Hankin, and Charles A. Dalke, both of San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 28, 1983, Ser. No. 546,739
Int. Cl.³ G01L *27/00*
U.S. Cl. 73—4 R **9 Claims**
MICROFICHE APPENDIX INCLUDED
(3 Microfiche, 139 Pages)



1. A portable calibration apparatus for supplying a pressure test signal to a pressure gauge unit under test, which unit under test is of the class that transduces pressure into an electrical signal out, in combination with a fluid conduct and an electrical cable connecting the calibration apparatus to the unit under test, the apparatus comprising:

(a) a fluid pressure supply;

(b) a test line, having an inlet, an outlet and a test port;

(c) a transducer in the test line, between the inlet and outlet, which transducer communicates with the interior of the test line to receive pressure of the fluid and emit an electrical signal in response;

(d) an inlet remote valve connected to the fluid pressure supply to enable the pressure in the test line to be increased;

(e) an outlet remote valve connected to the outlet of the test line, to enable the pressure in the test line to be decreased;

(f) a computer, including means for comparing the electrical signal received from the transducer to a signal generated by the internal reference standard transducer, which computer is operatively connected to the inlet and outlet remote valves to increase pressure or decrease pressure responsive to the comparison; and

(g) a test remote valve, connected to the test port, for outletting the pressure maintained in the test line to the unit under test.

4,512,180

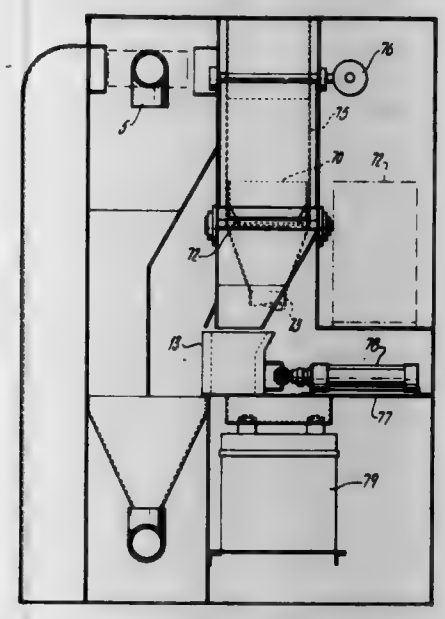
PELLET DURABILITY TESTER

John D. Payne, Whitchurch, England, assignor to Holmen Chemicals Limited, Hampshire, England

Filed Jan. 21, 1983, Ser. No. 460,014
Claims priority, application United Kingdom, Jan. 28, 1982, 8202417; Jun. 9, 1982, 8216770
Int. Cl.³ G01N *3/56*
U.S. Cl. 73—7 **16 Claims**

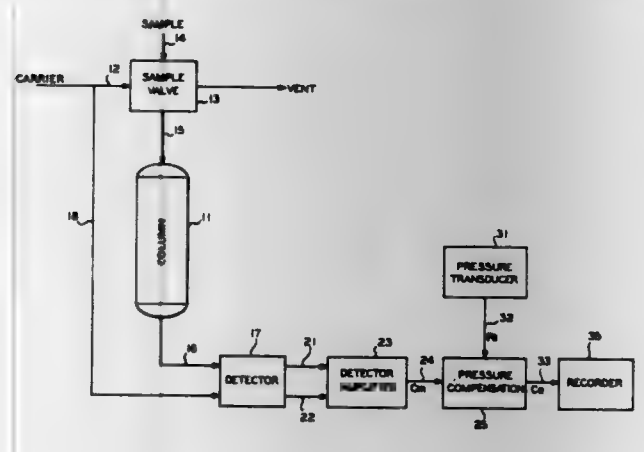
1. A pellet durability tester comprising means for defining an air re-circulation path into which pellets may be introduced to determine their durability, means for introducing into the re-circulation path for testing a sample batch of pellets, means for removing the whole pellets remaining of the batch after testing and means for establishing the relative quantities of

whole pellets in the sample before and after testing and thereby the durability of the pellets, and a diverter member movable between a first position in which it causes the batch material to



continue re-circulating in the re-circulation path and a second position to deliver the material from the re-circulation path to the establishing means.

4,512,181
PRESSURE COMPENSATION FOR A CHROMATOGRAPH
Buell O. Ayers, and Edwin K. Clardy, both of c/o Phillips Petroleum Company, Bartlesville, Okla. 74004
Filed Feb. 17, 1983, Ser. No. 467,547
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **6 Claims**



1. In a chromatographic analyzer system for analyzing the composition of a sample, wherein said chromatographic analyzer system has a detector means for providing an output signal (C_m) having an amplitude which varies as a function of time in accordance with the sample composition and wherein said chromatographic analyzer system is calibrated at a barometric pressure P_c, the improvement comprising apparatus for compensating for errors in said output signal, said errors being produced by changes in barometric pressure from the barometric pressure P_c, said apparatus comprising:

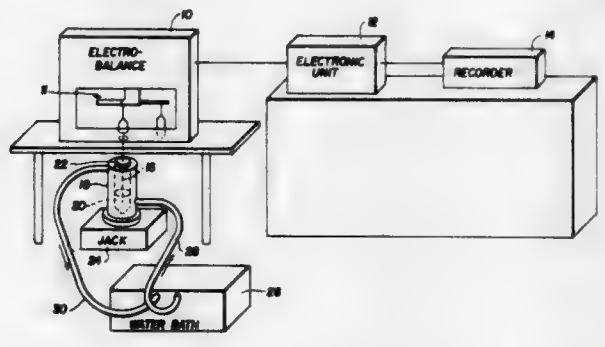
means for establishing a first signal representative of the actual barometric pressure (P_a) at the time an analysis is made using said chromatographic analyzer system;

means for determining the slope (M) of a plot of C_m divided by the magnitude that C_m would have if errors were not introduced by changes in barometric pressure (C_a) as a function of P_a/P_c for said detector means and for said sample;

means for calculating a pressure compensation factor using P_c, P_a and M; and

means for dividing said output signal by said pressure compensation factor to compensate for errors in said output signal produced by changes in barometric pressure from the barometric pressure P_c.

4,512,182
GELATION MEASURING APPARATUS AND METHOD
Syed S. H. Rizvi, and Patricia W. Gossett, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed May 26, 1983, Ser. No. 498,386
Int. Cl.³ G01N *33/02*
U.S. Cl. 73—64.1 **13 Claims**



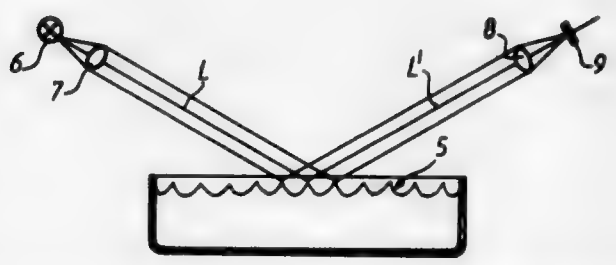
1. An apparatus for continuously measuring the coagulation, gelation or denaturation of food components and related biomaterials utilizing a single sample thereof, comprising:

a container for holding the sample;

temperature control means connected to the container for controlling the temperature of the sample; and

sensing means contacting the sample, said sensing means being dimensioned such that the coagulation, gelation or denaturation of the sample generates a force applied to the sensing means.

4,512,183
METHOD OF MEASURING AND/OR MONITORING THE SURFACE TENSION OF FLUIDS
Martin Alexander, Wilhelm-Kuhnert-Str. 24, 8000 München 90, Fed. Rep. of Germany
PCT No. PCT/EP83/00013, § 371 Date Aug. 1, 1983, § 102(e) Date Aug. 1, 1983, PCT Pub. No. WO83/02500, PCT Pub. Date Jul. 21, 1983
PCT Filed Jan. 18, 1983, Ser. No. 522,180
Int. Cl.³ G01N *13/02*
U.S. Cl. 73—64.4 **8 Claims**



1. Method of measuring and/or monitoring the surface tension of a fluid, in which standing capillary waves are produced on the surface of the fluid by means of an oscillation generator of a known frequency and are optically evaluated, characterised by the following features:

(a) a circular region of the surface of the fluid is excited centrally or peripherally by the oscillation generator;

(b) the wavelength of the capillary waves thus produced or the radius of the excited circular surface region is altered until a system of circular standing capillary waves is produced; and

(c) the occurrence of circular standing capillary waves is determined by measuring the intensity of light radiation reflected on the surface of the fluid.

4,512,184
MOUNTING ARRANGEMENT FOR ANGLE MEASURING DEVICE

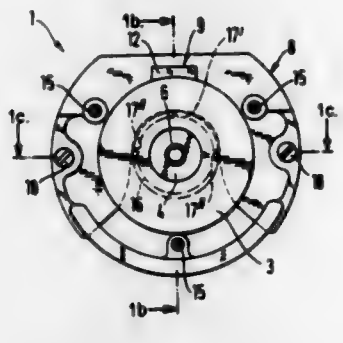
Alfons Ernst, Traunreut, and Arthur Brunner, Trostberg, both of Fed. Rep. of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jul. 26, 1983, Ser. No. 517,349

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228507

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **12 Claims**



1. In an angle measuring device for an external drive unit, wherein the drive unit comprises a drive shaft and an attachment surface adjacent the drive shaft, and wherein the angle measuring device comprises a graduated disc, a connecting hub mounted to the disc and secured to the drive shaft, a stator mounted to the attachment surface, and a scanning unit mounted to the stator to scan the disc, the improvement comprising:

a centering collar defined by the attachment surface, concentric with the drive shaft; and

a plurality of radial alignment surfaces defined by the stator, said alignment surfaces positioned to engage the centering collar in order to center the stator radially on the attachment surface with respect to the drive shaft, and thereby to align the scanning unit properly with the graduated disc, during the mounting of the stator to the attachment surface;

said stator shaped to allow the stator to be mounted to and removed from the drive unit by radial movement of the stator with respect to the drive shaft while the disc is secured to the drive shaft in order simultaneously to mount and align both the stator and the scanning unit in place.

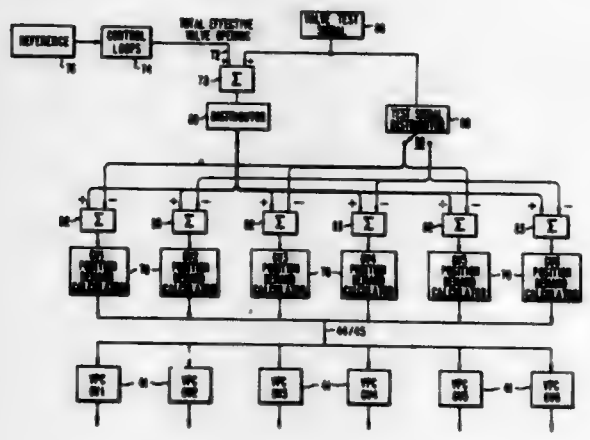
4,512,185
STEAM TURBINE VALVE TEST SYSTEM

William D. Ghrist, III, Blawnox, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 3, 1983, Ser. No. 538,390

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—118 **8 Claims**



1. A valve test system for a steam turbine having at least a throttle valve and a plurality of governor valves for controlling steam admission to the turbine, comprising:

(a) calculator means (70) for generating a plurality of individual governor valve position demand signals;

(b) a plurality of individual valve position control circuits (41) each for governing operation of a respective one of said governor valves in response to a respective input valve position demand signal;

(c) means for supplying a desired total effective valve opening reference signal (72);

(d) means for providing a valve test signal (86);

(e) first means (80) for distributing said reference signal among all of said governor valve position demand signals;

(f) second means (88) for distributing said valve test signal among only selected ones of said governor valve position demand signals;

(g) means for subtracting (82/83) the distributed signals of said second means from those of said first means.

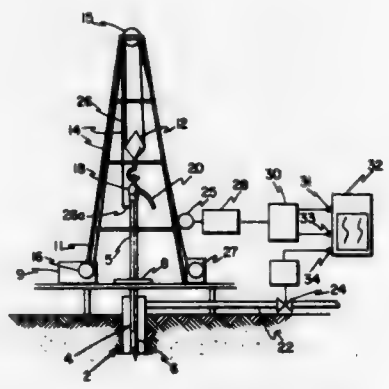
4,512,186
DRILL RATE AND GAS MONITORING SYSTEM

Bruce K. Edwards, Jackson, Miss., assignor to Location Sample Service, Inc., Rankin County, Miss.

Filed Apr. 27, 1983, Ser. No. 488,941

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—151.5 **8 Claims**



1. In a system for monitoring the drilling of a well with a rotary drill system of the type having a bit secured to the bottom of a drill string and wherein a drilling fluid is circulated through said well and returned to the surface thereof, the combination comprising:

a. recording means having an index drive and at least two recording channels;

b. means for producing a succession of depth signals representative of the incremental advance of the drill string during drilling operations;

c. variable scaler means responsive to said depth signals for producing one of a plurality of scale signals having different relative values and for selecting said one of said signals;

d. means responsive to the scale signal from said scaler means to actuate the index drive of said recorder by an amount proportional to the value of said scale signal to produce a depth index;

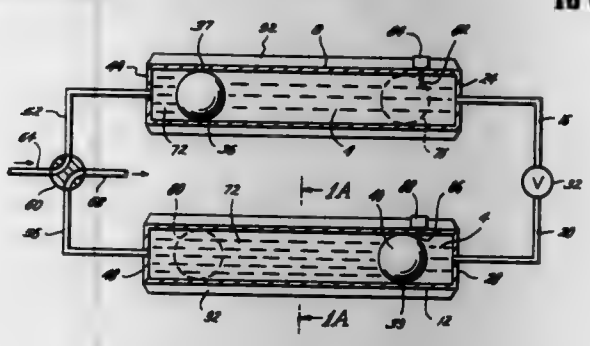
e. means for applying a gas signal to a recording channel of said recording means to provide a record of the quantity of gas detected in drilling fluid returned to the surface as a function of said well depth index;

f. means responsive to said depth signal for producing a signal representative of the rate of penetration of the drill string and for applying said rate of penetration signal to another recording channel of said recording means to provide a record of said rate of penetration signal as a function of said well depth index.

4,512,187
FLOW RATE CONTROLLER

Peter L. Sigwardt, Houston, Tex., assignor to Getty Oil Company, Houston, Tex.

Filed Nov. 19, 1981, Ser. No. 322,729
Int. Cl.[3] G01F *3/02*
U.S. Cl. 73—198
16 Claims



1. In a system having a high pressure pumping means for injecting a viscous shear-sensitive liquid into a subsurface earth formation, an adjustable flow controller for establishing such injection at a preselected flow rate against a variable rock pressure in said formation, said flow controller comprising

first chamber means having first and second ports and a displacement liquid therebetween,

first barrier means responsive to said pumping means and disposed in said first chamber means for isolating said displacement liquid from said first port therein,

second chamber means having third and fourth ports and a displacement liquid therebetween,

second barrier means responsive to said pumping means and disposed in said second chamber means for isolating said displacement liquid from said fourth port therein,

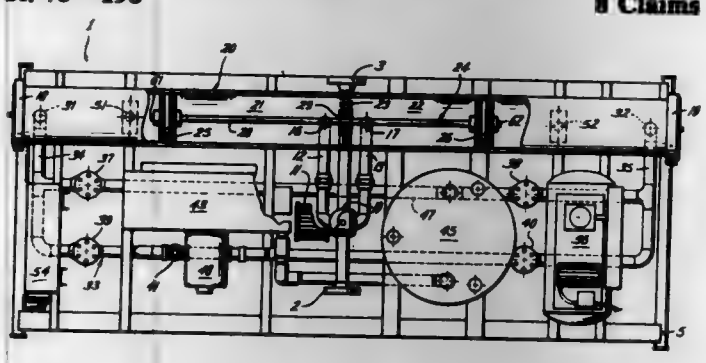
first adjustable valve means interconnecting said chamber means for selectively constricting the flow of said displacement liquid between said second and third ports therein as a function of said rock pressure in said formation, and

second adjustable valve means interconnected with said pumping means and said formation for delivering said viscous liquid into said first chamber through said first port and from said second chamber through said fourth port and for alternately delivering said viscous liquid into said second chamber through said fourth port and from said first chamber through said first port.

4,512,188
FLOW RATE CONTROL AND METERING MEANS FOR SHEAR-SENSITIVE LIQUIDS

Charles D. Erickson, Houston, Tex., assignor to Getty Oil Company, Houston, Tex.

Filed Aug. 25, 1982, Ser. No. 411,469
Int. Cl.[3] G01F *15/02*
U.S. Cl. 73—198
8 Claims



1. In a system having a high pressure pumping means for injecting a viscous shear-sensitive liquid into a subsurface earth formation, an adjustable flow control assembly comprising

an elongate cylinder means having a pair of first ports adjacent opposite ends thereof, a pair of second ports adjacent the middle of said cylinder means, and an annular wall member fixedly disposed between said pair of second ports,

a piston assembly comprising a rod member slidably positioned through said wall member and having a first piston head disposed at one end between and isolating the ports on one side of said wall member from each other and a second piston head disposed at the other end of said rod member between and isolating the ports on the other side of said wall member from each other,

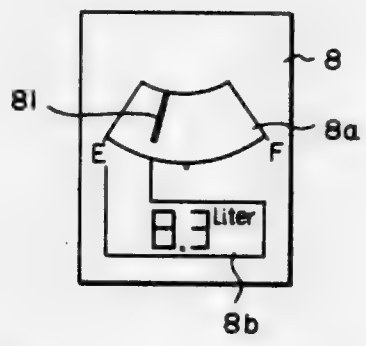
a control valve means interconnected with said second ports for conducting shear-sensitive liquid from said pumping means into said cylinder means between said wall member and one of said piston heads and for displacing shear-sensitive liquid into said formation from between said wall member and the other of said piston heads, and

a flow regulating means interconnected between said first ports for conducting a control liquid from between said one piston head and the first port adjacent thereto to the interior of said cylinder means between said other piston head and the other of said first ports at a flow rate functionally related to the rock pressure in said formation.

4,512,189
LIQUID QUANTITY DETECTING DEVICE

Junji Kitagawa; Shigeyuki Akita, both of Okazaki, and Sotoo Kitamura, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 30, 1982, Ser. No. 403,481
Claims priority, application Japan, Aug. 1, 1981, 56-120027
Int. Cl.[3] G01F *23/00*
U.S. Cl. 73—296
6 Claims



1. A liquid quantity detecting device for detecting the liquid quantity in a tank, comprising:

(a) a float-type liquid-quantity meter having a float provided in said tank, means for generating an electric signal corresponding to the position of said float, and first display means for displaying the liquid quantity in response to the signal from said generating means, said float-type liquid-quantity meter detecting and displaying the quantity of liquid stored in said tank when said quantity is larger than a predetermined quantity; and

(b) a liquid meter comprising,

(i) housings fixed to said tank;

(ii) at least two torsion bar means, one end of each means being fixed to said tank by said housings and the other end of each means being fixed to a supporting member, for twisting in proportion to the weight of said tank and said liquid in said tank;

(iii) twisted angle detection means for detecting an angle of the twisting of said torsion bar means, and comprising first and second electric members which are adapted to move relative to each other in proportion to the twisted angle of said torsion bar means, and are arranged facing each other, said second electric member being positioned at the center of said first electric member whenever said twisting is at a predetermined status defined as zero;

(iv) electrical processing means for generating a signal corresponding to the quantity of liquid in said tank in

response to detections of said twisted angle detection means; and

(v) second display means for displaying liquid quantity in response to said signal from said electrical processing means when the quantity of said liquid to be measured is smaller than said predetermined quantity.

4,512,190

MAGNETICALLY OPERATED LIQUID LEVEL INDICATOR

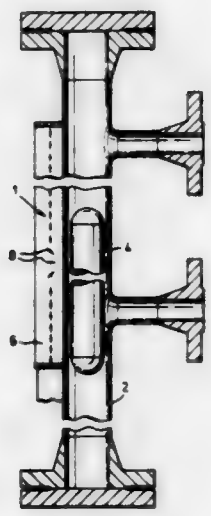
Alan B. Sledmere, Dartford, England, assignor to Klinger AG, Zug, Switzerland

Filed Apr. 8, 1982, Ser. No. 366,763

Claims priority, application United Kingdom, Apr. 14, 1981, 8111798

Int. Cl.³ G01F *23/12*

U.S. Cl. 73—319 **3 Claims**



1. In a liquid level indicator including a magnetized float capable of moving as the liquid level moves;

a plurality of adjacent magnetized indicator elements disposed one above the other past which the float travels as the liquid level rises or falls, and,

support members for the indicator elements,

the indicator elements each being plate-like elements having a pair of opposed ends, a generally longitudinal axis and opposed longitudinal edges each extending from one of said pair of opposed ends to the other,

the indicator elements each being pivotable about its said horizontal axis under the action of the magnetic float when the float lies adjacent thereto so as to provide said liquid level indication,

the support members each being disposed adjacent to a respective said end of the indicator elements, and the indicator elements and support members being adapted for cooperation with one another to allow said pivotable movement of the indicator elements,

the improvement comprising:

each said indicator element being formed from a dimensionally stable collocation of magnetic particles which have been magnetized to provide a magnetic field of one polarity and of substantially constant flux density extending continuously along one longitudinal edge thereof, and a magnetic field of an opposite polarity and of substantially constant flux density extending continuously along the other longitudinal edge thereof, the adjacent edges of adjacent pairs of elements being of opposite polarity and mutually attracting except when they are in the immediate vicinity of said magnetized float; and,

said magnetized float including a magnetized disk having an outer circumferential periphery thereof providing a single continuous magnetic pole of a single polarity and which is supported by said float with the axis of said magnetized disk vertically disposed;

said magnetized disk presenting to said slats a magnetic field that is substantially constant in magnitude throughout its entire periphery without regard to the position of angular rotation of said magnet about said vertical longitudinal axis.

4,512,191

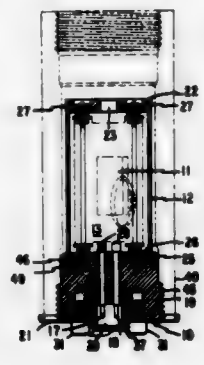
AIR PURIFICATION SYSTEM MONITOR

John M. Sexton, Pleasant Garden, N.C., assignor to Pressure Systems, Inc., Pleasant Garden, N.C.

Filed Jan. 3, 1983, Ser. No. 455,271

Int. Cl.³ G01N *1/00*

U.S. Cl. 73—337.5 **4 Claims**



1. An air purification system monitor comprising; a pressure vessel having a hollow cylindrical body including threaded openings at each end thereof, an end plug having air inlet and discharge openings threadably retained in said cylindrical body at one end to admit air into said cylindrical body, a humidistat-supporting end plug threadably retained in said cylindrical body at the other end, said humidistat-supporting end plug having an axial opening therethrough and a humidistat-retaining housing mounted thereon for retention in said cylindrical body and having an opening to receive air therein from said cylindrical body, a humistat mounted in said humidistat-retaining housing, said humidistat having sealed and insulated electrical conductor terminals extending from said humidistat into said plug axial opening for connection to an audible or visual signaling device upon humidistat detection of conditions varying from preset conditons.

4,512,192

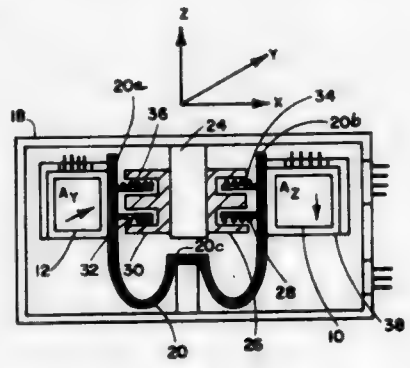
TWO AXIS ANGULAR RATE AND SPECIFIC FORCE SENSOR UTILIZING VIBRATING ACCELEROMETERS

Rex B. Peters, Woodinville, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Sep. 2, 1983, Ser. No. 528,772

Int. Cl.³ G01C *19/56, 23/00*; G01P *15/08*

U.S. Cl. 73—505 **7 Claims**



1. An angular rate measuring apparatus comprising:

a first accelerometer having a first force sensing axis;

a second accelerometer having a second force sensing axis;

vibrating means for vibrating said first and second accelerometers along a vibration axis;

alignment means for securing said first accelerometer to said vibrating means such that said first force sensing axis is

normal to said vibration axis and for securing said second accelerometer to said vibrating means such that said second force sensing axis is normal to both said vibration axis and said first force sensing axis; and

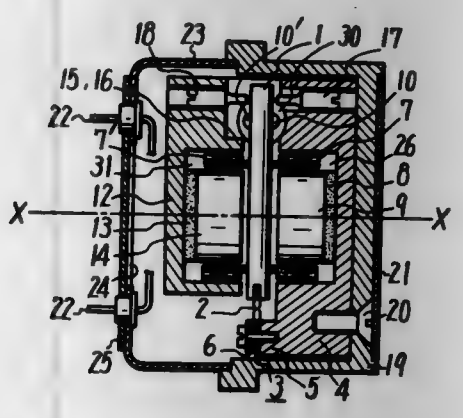
processing means operatively connected to said first and second accelerometers for generating a first rate signal from the output signal of said first accelerometer representing the angular rotation of said first accelerometer about a first axis parallel to said second accelerometer force sensing axis and for generating a second rate signal from the output signal of said second accelerometer representing the rotation of said second accelerometer about a second axis parallel to said first accelerometer force sensing axis.

4,512,193

ACCELEROMETER

Michio Fukano, Kuroiso, Japan, assignor to Kabushiki Kaisha Tokyo Keiki, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,735
Claims priority, application Japan, Nov. 25, 1981, 56-188924
Int. Cl.³ G01P *15/13*
U.S. Cl. 73—517 B
4 Claims



1. An accelerometer comprising:

a flexible pivot;

a first frame to which one end of said flexible pivot is fixed;

a pendulum, one end of which is fixed to the other end of said flexible pivot;

a pair of torquers for generating a torque in proportion to an acceleration applied through said first frame to said pendulum;

a displacement detecting means for electrically detecting a relative displacement between said first frame and said pendulum;

a second frame engageable with said first frame;

said first frame having an attaching portion to which said one end of said flexible pivot is fixed, a hole within which one of said pair of torquers is received, a recess within which the other end of said pendulum is movably located without contact therebetween, a pair of apertures into which said displacement detecting means is inserted, and a first engaging portion;

said second frame having a hole within which the other of said torquers is received and a second engaging portion, said first and second frames being coupled through said first and second engaging portions; and

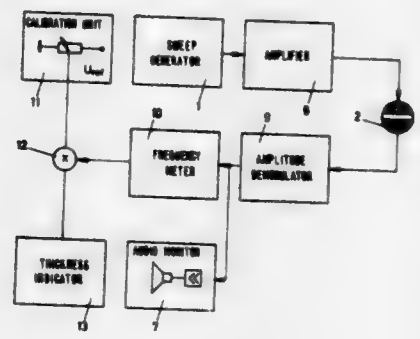
said displacement detecting means being formed of a light emitting element inserted into one of said apertures and a light receiving element inserted into the other of said apertures.

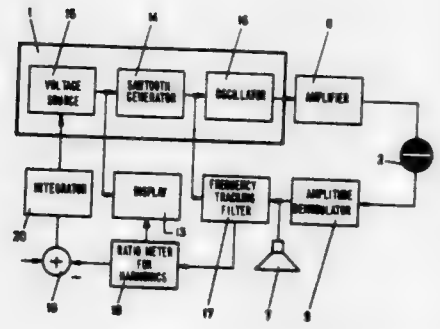
4,512,194

METHOD AND APPARATUS FOR CONTROLLING OR MEASURING THE THICKNESS OF MATERIAL LAYERS

Karl Beuter, Frankfurt am Main, Fed. Rep. of Germany, assignor to Battelle-Institut E.V., Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP82/00069, § 371 Date Dec. 1, 1982, § 102(e) Date Dec. 1, 1982, PCT Pub. No. WO82/03455, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 29, 1982, Ser. No. 448,913
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113025
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—579
6 Claims





1. An apparatus to determine a thickness of a material layer, comprising:

(a) a sweep generator to generate an ultrasonic signal which covers a multiple of an interference interval, the sweep generator has:

(i) an adjustable band width; and

(ii) an adjustable modulation rate;

(b) an amplifier to amplify the generated signal;

(c) a transmitting transducer to transmit the amplified signal into the material layer wherein the transmitted signal is reflected from surface interfaces of the material layer resulting in interference signals;

(d) a receiving transducer to receive the interference signals from the material layer;

(e) an amplitude demodulator to demodulate the received signals; and

(f) a means to analyze frequencies of the demodulated interference signal and correlate the frequencies of the interference signal to a thickness measurement of the material layer.

4,512,195

ULTRASONIC LIVING BODY TISSUE CHARACTERIZATION METHOD

Hirohide Miwa, Kawasaki, and Mitsuhiro Ueda, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 25, 1983, Ser. No. 516,555
Claims priority, application Japan, Jul. 26, 1982, 57-129902
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—602
3 Claims

1. An ultrasonic living body tissue characterization method wherein an ultrasonic wave pulse is transmitted by a measuring system into a living body, the reflected signals are received by the measuring system and a living body tissue characteristic is

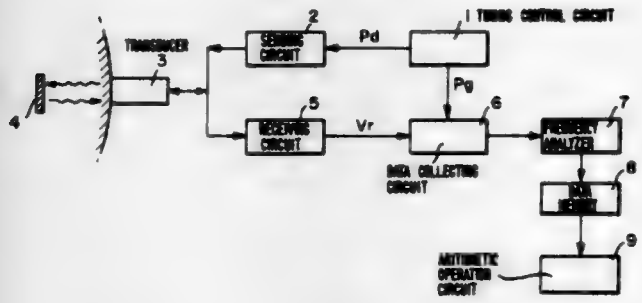
measured by analysing said received signals, said method comprising the steps of:

(a) analyzing the frequency of signals reflected from the region to be measured to obtain the power spectrum of said reflected signals, Er(f);

(b) obtaining the power spectrum Eo(f) of the measuring system by using a standard reflector positioned in the region equivalent to be measured in a non-attenuative medium;

(c) normalizing the power spectrum Er(f) obtained in step (a) with the power spectrum Eo(f) to obtain the transfer function R(f) of a living body tissue, at the region to be measured;

(d) obtaining the transfer function R(f) at a particular frequency fo;



(e) obtaining P(f) by normalizing R(f) with R(fo) at the particular frequency fo;

(f) obtaining P(f)/A(f) by dividing P(f) obtained in step (e) with A(f), utilizing the fact that the function Q(f), which is the transfer function R(f) of a living tissue model, normalized with its specific value at fo is expressed in the form of

$$Q(f)=A(F)*e^{B(f)},$$

(g) expressing the function obtained in step (f) using logarithmic operators; and

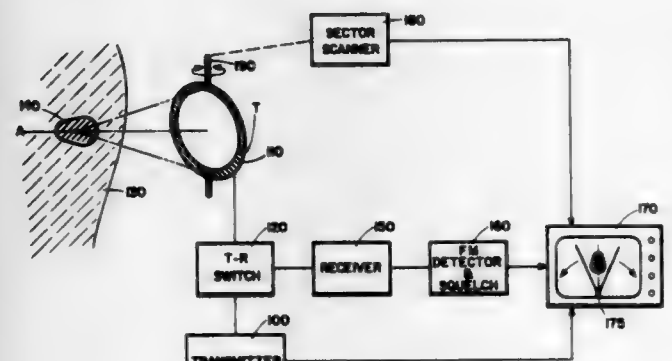
(h) obtaining the optimum values of parameters of the functions A(f) and B(f) using regression processing such that the function obtained in step g is considered to be equal to the function B(f).

4,512,196

ULTRASOUND IMAGING WITH FM DETECTION

Casper W. Barnes, Newport Beach, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Sep. 30, 1983, Ser. No. 538,021
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—620 **3 Claims**



1. An ultrasound imaging system comprising, in combination:

an ultrasound transducer having an annular acoustic aperture;

means which excite the transducer to emit pulses of ultrasound energy and which produce electrical echo signals representative of echos of said pulses which are received by the transducer;

FM detector means connected to receive the echo signals and to produce therefrom a detector output signal having an instantaneous amplitude which is proportional to the instantaneous frequency of the echo signals; and

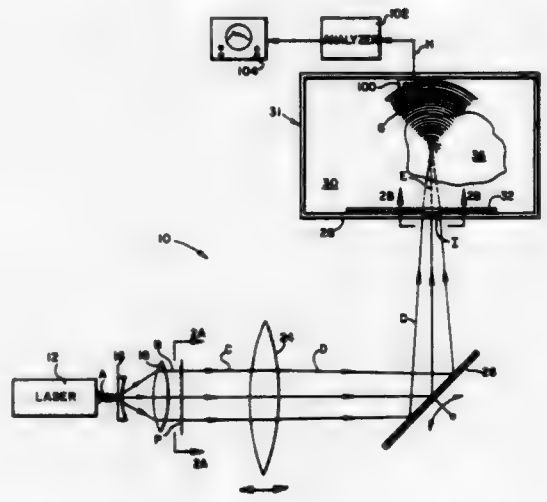
display means which produce an image by generating pixels whose brightness is a function of the detector output signal at points in an image which are mapped to correspond with the points of origin of the corresponding ultrasound echos.

4,512,197

APPARATUS FOR GENERATING A FOCUSABLE AND SCANNABLE ULTRASONIC BEAM FOR NON-DESTRUCTIVE EXAMINATION

Robert J. von Gutfeld, New York, and Sherman S. Wang, Pleasantville, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1983, Ser. No. 528,708
Int. Cl.³ G01N *29/00*; G10K *10/00*
U.S. Cl. 73—643 **13 Claims**



1. Apparatus for generating a focusable and scannable ultrasonic beam for use in examining an object internally comprising in combination:

a pulsed laser for generating a light beam;

light modifying means optically connected to said light means for producing an optical zone pattern having alternating light and dark zones in said light beam, said light modifying means including, an optical mask having alternating reflecting and transmitting ring zones, said ring zones having radii determined by a preselected acoustic wavelength in a predetermined propagation medium, an optial lens slidably disposed in the path of the light beam after it emerges from said optical mask for forming an image of the optical zone pattern on a focal plane, and an oscillatable mirror disposed in the path of the light beam after the lens for scanning the light beam; and

light absorbing means disposed in the path of light beam and in contact with a propagation medium surrounding the object to be examined for propagating an ultrasonic beam through said medium when an image of the optical zone pattern is formed on said light absorbing means.

5. Apparatus for generating a focusable and scannable ultrasonic beam for use in examining an object internally, comprising:

light means for generating a light beam, said light means comprising a pulsed laser;

light modifying means optically connected to said light means for producing an optical zone pattern having alternating light and dark zones in the light beam, said light modifying means including signal generator means for generating an acoustic chirp signal and acousto-optic

means for modulating the light beam with the acoustic chirp signal; and

light absorbing means disposed in the path of said light beam and in contact with a propagation medium surrounding the object to be examined for propagating an ultrasonic beam through said medium when an image of the optical zone pattern is formed on said light absorbing means.

4,512,198

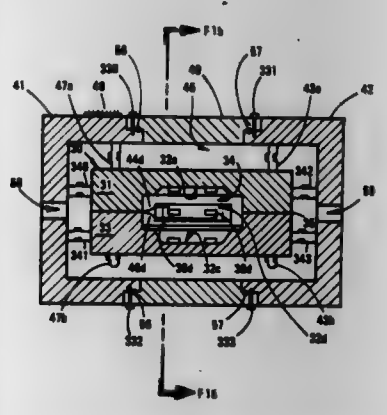
SURFACE ACOUSTIC WAVE SENSORS

Bikash K. Sinha, West Redding, and Michel Gouilloud, Norwalk, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 427,240, Sep. 29, 1982,. This application Aug. 1, 1984, Ser. No. 636,515

Int. Cl.³ G01L *9/08*

U.S. Cl. 73—703 **2 Claims**



1. A surface acoustic wave signal frequency apparatus comprising a crystalline diaphragm section having a cylindrical or spherical outer surface and a cylindrical or spherical inner surface, said outer surface being adapted for subjection to an applied isotropic force and said inner surface having an area thereof of a selected crystal lattice arrangement and adapted for the fabrication of a surface acoustic wave device.

4,512,199

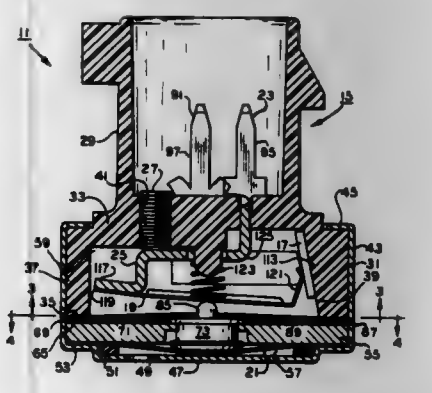
TRANSDUCER

Stewart A. Woodward; Ronald L. Hilty, both of Morrison, Ill., and Donald H. Stoll, North Mankato, Minn., assignors to General Electric Company, Fort Wayne, Ind.

Filed Apr. 6, 1983, Ser. No. 482,531

Int. Cl.³ G01L *9/02*

U.S. Cl. 73—725 **15 Claims**



1. A transducer adapted for connection in circuit relation with a power source and in pressure fluid communication with a fluid pressure source to establish an output voltage proportional to an input fluid pressure supplied from the fluid pressure source, the transducer comprising:

a pair of housing members secured together against displacement, one of said housing members including a pair of opposite end walls with a sidewall interposed therebetween, a recess intersecting with one of said end walls, and a threaded opening in the other of said end walls intersecting with said recess, the other of said housing members including another sidewall extending generally in confronting relation about said first named sidewall, a closure wall integral with said another sidewall and extending generally across said one end wall and said recess, and at least one passage means in said closure wall adapted for connection in the pressure fluid communication with the fluid pressure source;

resistor means within said recess and adapted for mounting therein at least adjacent said first named sidewall;

a set of terminal means mounted to said other end wall and adapted for connection in the circuit relation with the power source, a pair of said terminal means including a pair of means within said recess for electrical connection across said resistor means, respectively, and another one of said terminal means including a deformable supporting arm within said recess and having a free end portion spaced from said resistor means generally adjacent said threaded opening;

resilient means mounted to said free end portion of said deformable supporting arm within said recess and in pivotally movable electrical contacting engagement with said resistor means between the connection therewith of said electrical connection means of said terminal means pair to establish the output voltage;

a plate extending across said recess and including a pair of stepped bores extending therethrough, and a shoulder defined between said stepped bore;

diaphragm means sealably interposed between said plate and said closure wall and adapted for displacement in response to the input fluid pressure acting thereon and established at said passage means when it is connected in the pressure fluid communication with the fluid pressure source;

piston means adapted for movement in the smaller of said stepped bores in response to the input fluid pressure displacement of said diaphragm means, said piston means including means for engagement with said shoulder to limit the movement of said piston means in said smaller stepped bore, and projection means on said piston extending into said recess for pivotally moving said resilient means about said free end portion of said deformable supporting arm to alter the electrical connection engagement of said resilient means with said resistor means and thereby establish the output voltage upon the movement of said piston means by said diaphragm means in response to the input fluid pressure acting thereon;

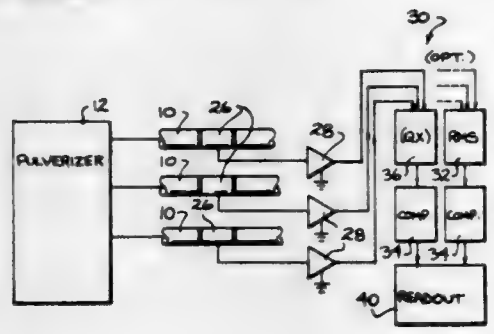
at least one spring including a peripheral portion interposed between said plate and said one end wall, and a plurality of resilient fingers extending from said peripheral portion into overlaying relation with said piston means generally about said projection means thereof and urging said piston means against movement by said diaphragm means, respectively; and

an adjusting screw received in said threaded opening and extending into said recess into engagement with said free end portion on said deformable arm of said another one terminal means, said adjusting screw being adjustably movable in response to a manual adjusting force exerted thereon to effect the deformation of said deformable supporting arm and adjustably move said resilient means toward a calibrated position in its electrical connection engagement with said resistor means thereby to define a predetermined output voltage correlative with a predetermined input fluid pressure at said passage means.

4,512,200
PULVERIZED COAL RELATIVE DISTRIBUTION METER

Walter L. Ghering, Alliance, and William L. Thompson, Montville, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 30, 1983, Ser. No. 556,524
Int. Cl.[3] G01F *1/64, 1/74*
U.S. Cl. 73—861.04 8 Claims



1. An apparatus for measuring the relative flow of pulverized coal in a plurality of pipes connected between a common pulverizer and a respective plurality of burners, comprising:

a plurality of electric charge sensors, each connected to one pipe at a selected position with respect to the pulverizer, and each for producing an induced signal caused by the passage of charged pulverized coal particles, the selected position for each sensor being similar to each other;

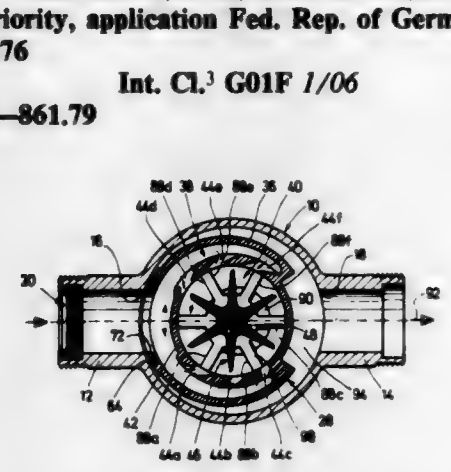
first circuit means connected to said sensors for processing each induced signal to obtain a value of the charge flux, a value proportional to the second integral of the induced signal; and

comparator means for comparing the values of the charge flux for each induced signal as a measurement of the relative flow in each pipe.

4,512,201
FLOW VOLUMETER FOR LIQUIDS

Peter Konrad, Heimsheim, and Adam Mechel, Esslingen, both of Fed. Rep. of Germany, assignors to Wassermesserfabrik ANDRAE GmbH & Co., Leonberg, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,099
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247376
Int. Cl.[3] G01F *1/06*
U.S. Cl. 73—861.79 18 Claims



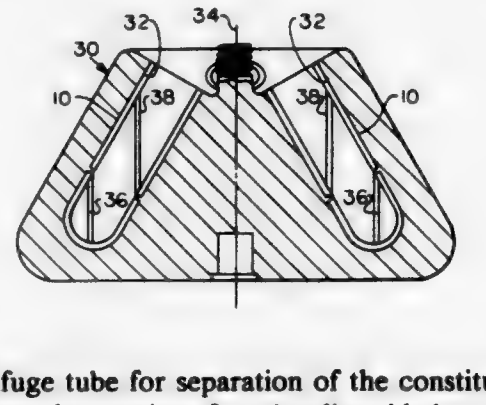
1. A flow volumeter for liquids comprising a cup-shaped outer housing having at its circumference an inflow opening and an outflow opening positioned approximately opposite each other and also comprising a measuring chamber unit insertable into the outer housing, said measuring chamber unit forming an impeller chamber and an inflow chamber embracing said impeller chamber, said inflow chamber having in its central area an inlet opening communicating with the inflow opening as well as an inflow chamber portion on each side of said inlet opening, an impeller being rotatably mounted in the impeller chamber with its axis of rotation approximately perpendicular to the bottom of the outer housing, the impeller chamber also having a circumferential wall in which a plurality of flow-directing openings are located, said flow-directing openings all being undirectionally inclined relative to the radial direction in the direction of rotation of the impeller, and comprising at least one outlet opening from the impeller chamber communicating with the outflow opening,

characterized in that the flow cross sections of the inflow chamber decrease in size on both sides of its inlet opening in the direction of flow and up to termination of each of said inflow chamber portions, and the impeller chamber, when viewed perpendicular to its axial direction, has at least one outlet opening on each side of its flow-directing openings.

4,512,202
PREGROOVED CENTRIFUGE TUBES

Herschel E. Wright, Santa Clara, and Robert C. Wedemeyer, Menlo Park, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 27, 1982, Ser. No. 453,192
Int. Cl.[3] G01N *37/00, 1/28*
U.S. Cl. 73—863 12 Claims



1. A centrifuge tube for separation of the constituents in a fluid sample and for receipt of a tube slicer blade to partition said tube into at least two sections for isolation of centrifugated bands of constituents of said samples, said tube comprising:

a hollow cylindrical body portion with one end enclosed to form an interior chamber;

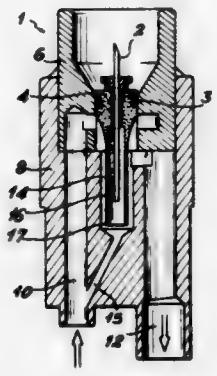
a circumferential groove formed in the exterior surface of said body portion to create at least two sections of said body portion; and

a connecting portion adjacent said groove and joining said two sections, for rejoining said two body sections under force to form a fluid tight seal after said body portion is severed by said tube slicer blade.

4,512,203
LIQUID SAMPLING DEVICE

André Calame-Lonjean, Bagnols sur Ceze, and Pierre Naujalis, Orly, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 19, 1982, Ser. No. 435,274
Claims priority, application France, Oct. 26, 1981, 81 20038
Int. Cl.[3] G01N *1/14*
U.S. Cl. 73—863.81 12 Claims



1. A liquid sampling device comprising

a support comprising a supply pipe for a liquid to be sam-

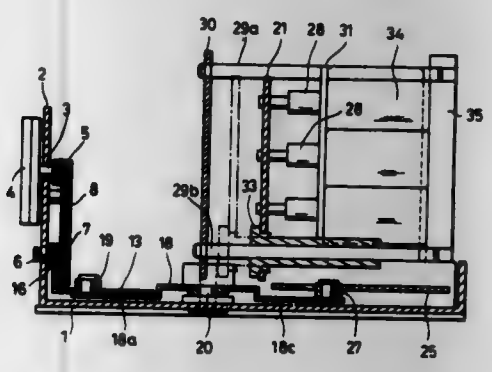
pled, a discharge pipe for said liquid, an intermediate tank, and drainage means for said liquid connecting a lower part of said intermediate tank and said supply pipe,
an end fitting held by said support, a lower portion of said end fitting comprising a sleeve immersed in said intermediate tank, a lower end of said sleeve being open, and
at least one hollow needle held by said end fitting.

4,512,204

PUSHBUTTON-OPERATED WAVEBAND OR STATION SELECTOR

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,608
Claims priority, application Japan, Mar. 31, 1981, 56-46043[U]
The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.
Int. Cl.³ H03J *5/06*; F16H *35/18*
U.S. Cl. 74—10.33 **2 Claims**



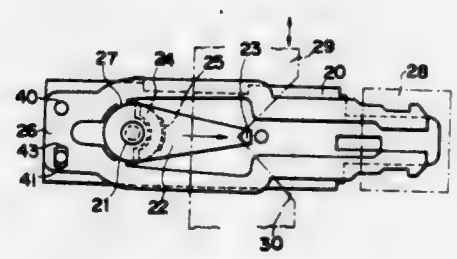
1. In a tuner having a pushbutton-operated waveband or station selector in which the tuner has pushbuttons for making station selections, a rotatable tuning knob for making station selections alternatively with the pushbuttons, tuning coil means and tuning core means movable in said tuning coil means and operable by the pushbuttons and the tuning knob for tuning in stations, the combination comprising: a slidable memory plate movable back and forth in a first direction between a plurality of positions which are selectable by operation of said pushbuttons, said first direction extending laterally to the direction of movement of the pushbuttons, and a first elongated guide portion on said memory plate and extending perpendicular to said first direction; a slidable core slide connected to the tuning core means and movable back and forth in a second direction for tuning in stations, said second direction being different from said first direction, and a second elongated guide portion on said core slide and extending perpendicular to said second direction; a slidable idler plate movable in said first direction in response to rotation of the tuning knob, and a third elongated guide portion on said idler plate and extending perpendicular to said first direction; a link having first, second and third arms and means mounting said link for pivotal movement on said tuner, each of said arms having a guide member thereon spaced outwardly from the pivot axis of said link, the guide member on said first arm being slidably received in said third guide portion, the guide member on said second arm being slidably received in said second guide portion and the guide member on said third arm being slidably received in said first guide portion so that movement of said memory plate or said idler plate in the first direction will pivot the link and thereby effect movement of said core slide in the second direction; and a clutch mechanism for coupling the axis of said tuning knob and said idler plate; said clutch mechanism being so arranged to decouple said tuning knob axis and said idler plate in response to advance of said pushbutton.

4,512,205

ARM MECHANISM OF A PUSHBUTTON TUNER

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1982, Ser. No. 439,852
Claims priority, application Japan, Nov. 11, 1981, 56-167112[U]
Int. Cl.³ H03J *5/12*
U.S. Cl. 74—10.33 **3 Claims**



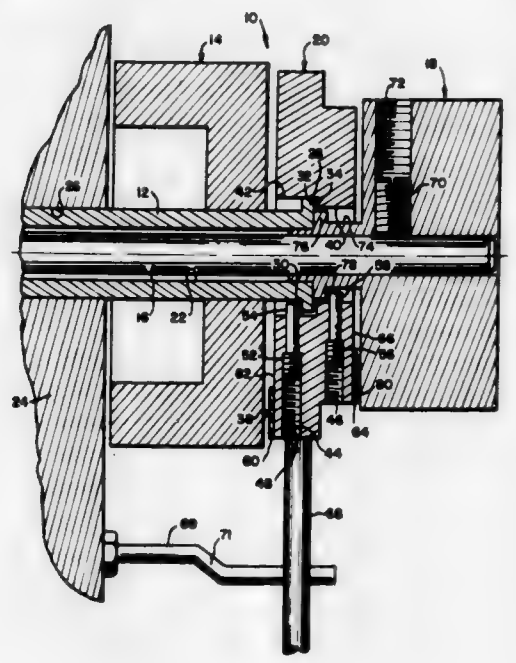
1. Arm mechanism of a pushbutton tuner comprising:
an arm;
a setting pin disposed on said arm;
a setting plate mounted rotatably on said setting pin;
a plate spring disposed around the periphery of the setting plate on said arm;
a pushbutton mounted at an end of said arm, said plate spring fixing the setting plate to the arm by mounting the pushbutton on the arm;
a guide projection disposed on the lower surface of said setting plate;
a guiding opening disposed on the arm cooperating with said guide projection; and
pressing means for pressing said guide projection towards the guiding opening when the pushbutton is pushed and moves relative to said plate spring.

4,512,206

ACTUATING DEVICE FOR ROTATING SHAFTS

James A. Clark, Honeoye Falls, and Alfred P. Gabriel, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 23, 1983, Ser. No. 497,469
Int. Cl.³ F16H *35/18*
U.S. Cl. 74—10.54 **11 Claims**



1. An adjusting mechanism comprising:
(a) rotatable means, said rotatable means including a bearing surface and a friction surface, and
(b) actuator means including pivot means and friction means,

said actuator means being rotatably and pivotably supported relative to said rotatable means with said pivot means adjacent said bearing surface and said friction means adjacent said friction surface, whereby when said actuator means is pivoted in a first direction said pivot means engages said bearing surface and said friction means engages said friction surface, whereby said actuator means and said rotatable means may be rotated in unison.

4,512,207

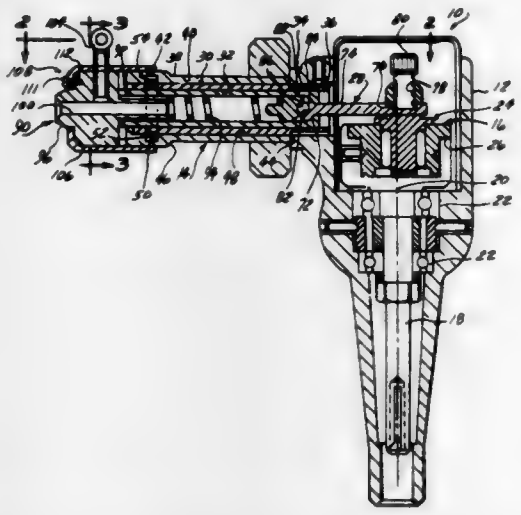
RECIPROCATING MECHANISM

Josef J. Dancsik, 37970 Pointe Rosa, Mt. Clemens, Mich. 48045

Continuation of Ser. No. 305,098, Sep. 24, 1981, abandoned. This application Sep. 2, 1982, Ser. No. 414,077

Int. Cl.³ B24B *23/00*; F16H *21/22*

U.S. Cl. 74—44 **5 Claims**



1. A hand-held reciprocating mechanism for driving a tool in linear reciprocation while accommodating rotation of the tool about its axis of linear reciprocation including:

a main housing;

an elongate, sleeve-like support bushing fixedly mounted at one end on said housing;

an elongate tool support assembly slidably received within said bushing for axial and rotary movement relative to said bushing and having a front end portion projecting outwardly from the other end of said bushing;

drive means in said housing coupled to said tool support assembly for driving said assembly in axial reciprocation within said bushing;

an outer sleeve member rotatively mounted upon the exterior of said bushing at an axially fixed location and having a front end section projecting outwardly beyond said other end of said bushing characterized in that:

the front end section of said outer sleeve member is of a diameter substantially greater than that of said bushing and is formed with a diametrical slot therethrough extending rearwardly from the front end of said front end section, and the front end portion of said tool support assembly is formed with a flattened, enlarged head section having a lateral extent substantially equal to that of the front end section of said outer sleeve member and slidably received and guided within said slot, said enlarged head section having an axial tool receiving passage therethrough and tool clamping means including a member passing radially through said head section at a location in said head section between the walls of said slot.

4,512,208

MECHANICAL ROTARY-TO-LINEAR MOTION CONVERSION ELEMENT

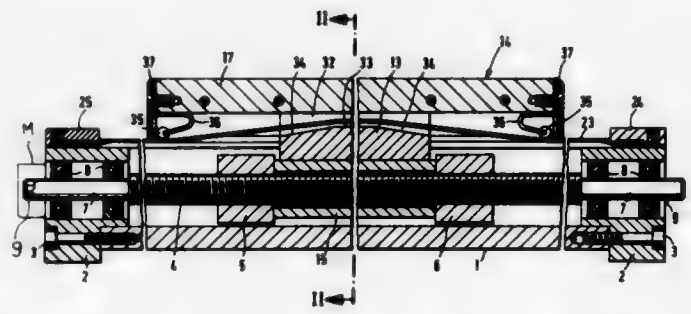
Reinhard Lipinski, Plochingen, and Karl Neff, Waldenbuch, both of Fed. Rep. of Germany, assignors to PROMA Produkt- und Marketing Gesellschaft m.b.H., Plochingen, Fed. Rep. of Germany

Filed Feb. 2, 1983, Ser. No. 463,167

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205143

Int. Cl.³ F16H *1/18*

U.S. Cl. 74—89.15 **18 Claims**



1. Mechanical rotary-to-linear motion conversion element, to provide linear movement of an output element (17) comprising

a stiff, form-stable elongated tubular housing (1) formed with an axially extending longitudinally slit (12);

a spindle drive located in the housing having

a drive spindle (4) axially located in the housing;

bearing means (8) located in the end portions of the tubular housing, and rotatably retaining the spindle therein;

and at least one spindle nut (5, 6) threaded on the drive spindle;

a force transfer element (14) coupled to the at least one spindle nut, extending through the slit (12) and coupled to the output element (17);

cooperating, relatively movable guide means (20, 21) having a first portion (20) coupled to the force transfer element, and a second portion (21) located on the housing, said portions being in mutual, relatively movable engagement with each other, for guiding movement of the force transfer element on the housing upon rotation of the spindle and isolating external forces applied to the force transfer element from the spindle (4);

an elongated, flexible closing strip (23) closing off the slit (12) in the regions between the end portions of the housing (1) and said force transfer element;

wherein said flexible strip (23) is secured to the housing at the end portions thereof;

and said strip includes a holding flange or strip (27) extending transversely to the width of the strip and dimensioned to fit into the slit (12);

and wherein the force transfer element (14) includes

a projecting element (13) projecting through the slit and coupled to the at least one spindle nut;

means (33, 34) lifting the strip (23) out of the slit at both longitudinal sides of said projecting element;

and means (35, 36, 37) located at the respective end portions of the force transfer element and opposite said slit engaging the strip (23) and applying a force thereto to seat the strip against the slit.

4,512,209

STEERING COLUMN

Elmer H. Linnemeier, Washington Depot, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 18, 1983, Ser. No. 476,589

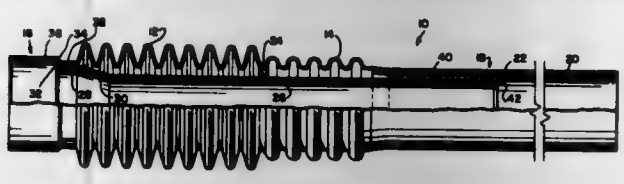
Int. Cl.³ B62D *1/18*

U.S. Cl. 74—492 **4 Claims**

1. A steering column for a steering wheel assembly for a motor vehicle comprising:

a rotatable outer tube having energy absorbing means along a longitudinal portion thereof separating relatively non-energy absorbing upper and lower sections;

a support tube within the outer tube and rotatable with the outer tube, the support tube extending from the lower relatively non-energy absorbing section into the relatively



non-energy absorbing upper section, the support tube contacting the relatively non-energy absorbing lower section with the longitudinal part of the support tube adjacent the energy absorbing means being radially spaced from the energy absorbing means; and

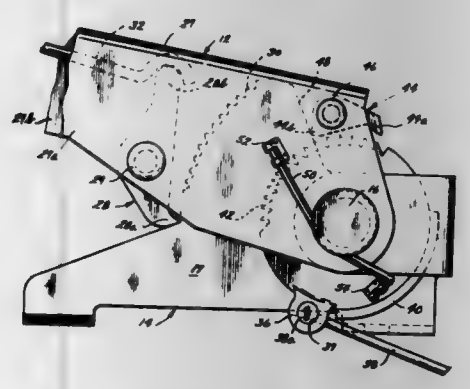
an annular noise dampener separating the relatively non-energy absorbing upper section from the support tube.

4,512,210

PARKING BRAKE LEVER ASSEMBLY

Anthony R. Gurney, Toledo, Ohio, assignor to Donovan Wire & Iron, Toledo, Ohio

Filed Sep. 30, 1982, Ser. No. 431,591
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—535 **6 Claims**



1. A lever assembly adapted to be connected to one end of a cable assembly having an opposite end connected to operate a remote mechanism, said lever assembly comprising:

a support member;

a lever pivotally mounted to said support member;

locking means for maintaining said lever in a selected pivoted position relative to said support member; and

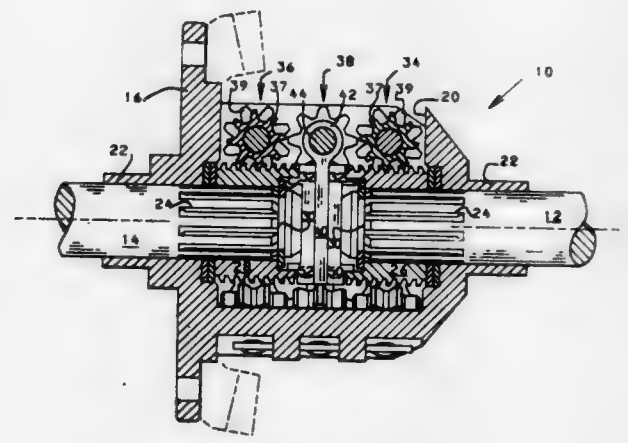
adjusting means for maintaining the cable within a predetermined tension range when said lever is in a non-operating position, said adjusting means including an adjusting element pivotally mounted to said support member, said adjusting element including means for securing the one end of said cable assembly to said element, biasing means for exerting a predetermined rotational force on said element relative to said lever when said lever is in a non-operating position to cause the cable tension to fall within the predetermined range, and means for locking said adjusting element to said lever when said lever is pivoted to an operating position, said biasing means including a spring having one end coupled to said lever and an opposite end coupled to said adjusting element, and said means for locking said adjusting element including a sector of ratchet teeth on said adjusting element and an adjusting pawl pivotally mounted on said lever and adapted to engage one of said ratchet teeth when said lever is pivoted to an operating position.

4,512,211

DIFFERENTIAL ASSEMBLY HAVING MEANS FOR LOCKING AND POSITIONING AXLE SHAFTS THEREIN

Gene A. Stritzel, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Mar. 15, 1983, Ser. No. 475,574
Int. Cl.³ F16H *1/38, 1/42*
U.S. Cl. 74—745 **9 Claims**



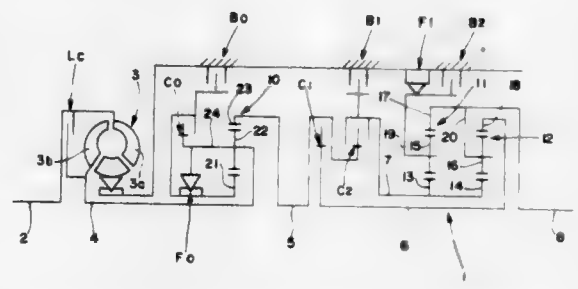
1. In a differential assembly of the type which includes a differential case having means for receiving a pair of axle ends together with a pair of drive gears coupled to said pair of axle ends for rotation therewith, and including spacing means for limiting axial thrust of said axle ends towards each other within said differential assembly, said spacing means comprising a spacing member which can be removably installed between said axle ends so as to define a predetermined spacing between said axle ends within said differential case, said spacing member having a mounting element projecting radially outwardly therefrom for securing said spacing member in its installed position between said axle ends, and securing means for fixing the position of said mounting element relative to said differential case, said securing means comprising a journal pin removably mounted across an access opening formed through said differential case, and including a bore through said mounting element of said spacing means for receiving said journal pin when (a) the spacing means is inserted through the access opening and into its installed position and (b) the said journal pin is mounted in its installed position, to thereby fix the position of said spacing means within said differential case, the improvement wherein the center axis of said bore is perpendicular to and offset from the center axis of said axle ends.

4,512,212

VEHICLE AUTOMATIC POWER TRANSMISSION HAVING A LOCK UP CLUTCH

Kazuo Ishikawa, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 6, 1982, Ser. No. 365,896
Claims priority, application Japan, Apr. 8, 1981, 56-052785
Int. Cl.³ F16H *47/00, 57/10;* F16D *33/00;* B60K *41/22*
U.S. Cl. 74—733 **5 Claims**



1. An automatic power transmission comprising:

a fluid-type torque converter driven by an engine output shaft;

a multiple stage gear transmission having an input element operatively connected to said torque converter, said gear transmission including selectively operable clutch and brake means for providing a plurality of gear trains having different gear ratios;

hydraulic control circuit means for selectively operating said clutch and brake means, said hydraulic control circuit means including a line communicating governor pressure corresponding to vehicle speed and a line communicating throttle valve kick-down pressure;

lock-up clutch means provided between said output shaft and said input element; and

lock-up clutch control means for controlling said lock-up clutch means and including means operable under a pressure difference between said governor pressure and said throttle valve kick-down pressure, said pressure difference operable means including axially movable spool means axially separating first and second pressure chamber means, first means for introducing said governor pressure into said first pressure chamber means, and second means for introducing said throttle valve kick-down pressure into said second pressure chamber means.

4,512,213

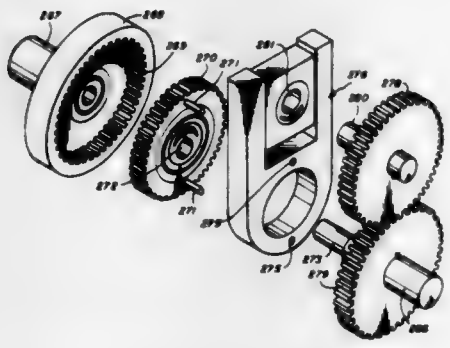
SPEED REDUCER

Alan R. Newton, 67 Bluebird Ave., East Wareham, Mass. 02538

Continuation-in-part of Ser. No. 316,753, Oct. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 218,470, Dec. 22, 1980, abandoned. This application Dec. 12, 1983, Ser. No. 560,540

Int. Cl.[3] F16H *1/28*

U.S. Cl. 74—805 6 Claims



1. A speed changing mechanism comprising:

a housing,

first and second gear means supported in the housing in planar relationship with one of the gears having external teeth and the other internal teeth and with the number of teeth of one of the gears being less than the number of teeth of the other gear,

means defining an output shaft from said first gear means,

said second gear means having a substantially centrally disposed hole and a peripherally disposed hole, a first pinion gear,

means defining an input shaft supporting said first pinion gear and a first cam means received in the centrally disposed hole of said second gear means,

and a second pinion gear and associated second cam means supported in the peripheral hole of said second gear means.

4,512,214

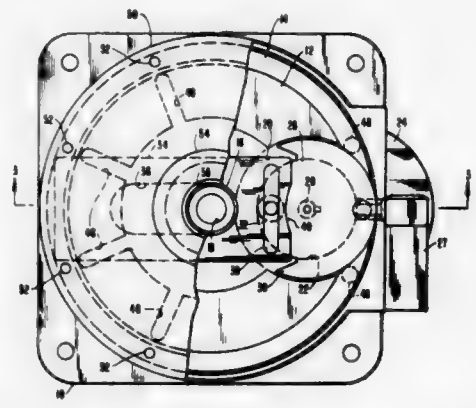
STATION LOCKING ROTARY INDEXING TABLE

William K. Surman, 10 Greenbriar Rd., Green Brook, N.J. 08812

Filed Sep. 19, 1983, Ser. No. 533,346

Int. Cl.[3] B23Q *17/00*

U.S. Cl. 74—820 17 Claims



17. A rotary indexing table which comprises a mounting base having an upper face defining a stationary plate, said plate having a central hub therethrough and a recessed channel positioned at the upper face of said plate around its circumference said plate further having a slide groove adapted for sliding engagement with a slide element, and further having a bore capable of cooperation with rotating means; a drive disk positioned over said plate, said disk having a central orifice therethrough and a plurality of notches radiating from said orifice and extending a distance spaced from the periphery thereof, a plurality of cam followers mounted at the underside of said disk, said cam followers being positioned and capable of translation in said plate channel; an generally planar table-top member at the upper portion of said disk, a slide element positioned in the slide groove of said plate, said slide having a first slot therethrough parallel to its longitudinal axis and adapted to slide with said hub positioned therethrough, a first end of said slide positioned for periodic locking engagement and disengagement between two adjacent cam followers, a second slot through said slide positioned at a second end thereof perpendicular to and spaced from said first slot; a motor comprising a rotating shaft mounted through said plate bore, a generally crescent shaped rotor member mounted for rotation by said shaft; a needle bearing positioned on said rotor member at the open end of said crescent, perpendicular to the plane containing the upper surface of said rotor, and adapted for revolution around said shaft, said needle bearing being positioned for translation in said second slot of said slide and capable of sequentially engaging and disengaging adjacent disk notches to effect disk rotation about said hub; and switching means capable of signalling the position of said disk.

4,512,215

RADIATOR CAP REMOVING DEVICE

Walter Krauchick, 28 Humphrey St., Seymour, Conn. 06483

Filed May 2, 1983, Ser. No. 490,340

Int. Cl.[3] B67B *7/00*

U.S. Cl. 81—3.44 11 Claims

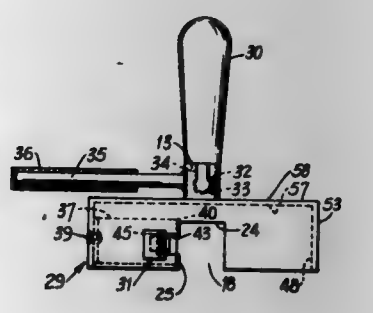
1. A tool for unscrewing an automobile radiator cap from a radiator comprising:

a unitary body member having a cup shape and a bottom rim, said bottom rim having two diametrical notches, and having a chamber for receiving a portion of the radiator cap;

a handle means formed of substantially nonconductive thermal material affixed to said body member for enabling manual rotation of said body member;

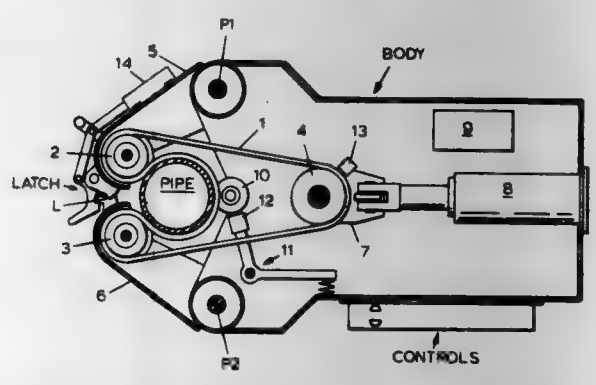
clamping means mountable on said body member and being

manually adjustable for clamping engagement with a portion of the radiator cap; and



whereby the radiator cap being unscrewable from the radiator with rotation of said body member.

4,512,216
PIPE SPINNER
Stephen R. Callegari, Sr., Lafayette, La., and Tommie L. Rogers, P.O. Box 30248, Lafayette, La. 70503, assignors to Tommie Rogers, Lafayette, La.
Filed Jan. 20, 1984, Ser. No. 572,289
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.17 **22 Claims**



1. A powered pipe spinner for joining threaded pipe connections by friction drive of an endless flexible pipe periphery gripping element circulated among drive and guide rollers apparatus comprising:

(a) a body;

(b) opposed pair of jaws movably mounted on said body;

(c) means to synchronize movement of said jaws between a closed and an open position;

(d) means to lock said jaws together in said closed position;

(e) chain guide wheels mounted on said jaws so positioned as to rotate about axes generally parallel with the center axis of pipe to be spun;

(f) a drive wheel carrier movably mounted on said body and means to move said carrier toward and away from the pipe to be spun;

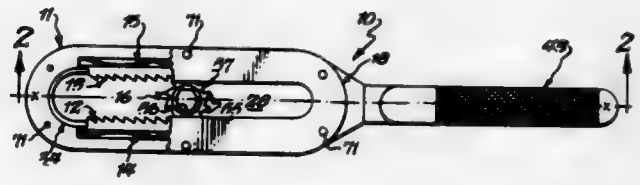
(g) a flexible element drive wheel positioned on said carrier with rotational axis generally parallel the pipe axis situated to tighten and loosen said flexible element by said means to move;

(h) a continuous circulating path for said flexible drive element comprising a positive bight around part of the periphery of said drive wheel, a positive bight around part of the periphery of each of said guide wheels, and a negative bight around part of the periphery of the pipe to be spun;

(i) means to rotate under power said drive wheel mounted on said carrier for sympathetic movement with said drive wheel; and

(j) at least two pipe contact wheels mounted on said jaws with axes generally parallel the axis of the pipe to be spun, so situated that when said jaws are in said closed position, the pipe cannot be moved from between said jaws by the force of said negative bight of said flexible element when under tension because of contact of rollers and pipe.

4,512,217
LINEAR RATCHET
William S. Conover, 351 Huntington Ave., Buffalo, N.Y. 14214
Filed Jul. 22, 1983, Ser. No. 516,110
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—58 **7 Claims**



1. A linearly-reciprocable ratchet wrench, comprising:

an elongated member having an axis, having an axial slot, having a recess extending transversely into said member from either side of said slot, and having a handle connected to and extending axially away from one end of said member in a direction away from said slot;

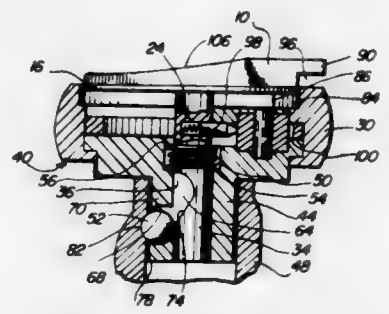
a rack mounted on said member and arranged in each recess for movement toward and away from said axis, each rack having a plurality of ratchet teeth extending into said slot, each of said ratchet teeth having an inclined surface and an abutment surface, one rack being arranged so that the abutment surfaces of its teeth are arranged to face toward said handle, the other rack being arranged so that the abutment surfaces of its teeth are arranged to face away from said handle;

a spring operatively arranged between said member and each rack for urging the associated rack to move toward said axis; and

a socket arranged in said slot for rotational and linear motion relative to said member and having a pawl-like toothed portion engaging the teeth of each rack, and having a recess adapted to receive the head of a fastener, said socket being rotatable in one angular direction when said member is moved in one axial direction relative to said socket and being rotatable in the same angular direction when said member is moved in the opposite axial direction relative to said socket;

whereby an operator may grasp said handle and move said member in either axial direction relative to said socket to rotate said socket in one angular direction.

4,512,218
CONTROL BAR FOR RATCHET WRENCH
Kirk K. Chow, 5902 Bent Trail Dr., Dallas, Tex. 75248
Filed Mar. 19, 1984, Ser. No. 591,029
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—62 **10 Claims**



1. In a ratchet wrench having a rotatably shiftable head for selectively reversing a driving direction of a socket carried by a driving stud of the wrench, a head-encircling driving collar, and control bar means surmounting said head and secured

thereto for manually pivotally manipulating said head to assume a selectable driving mode of said wrench,

the improvement wherein said control bar means includes an integral end portion projecting radially beyond a circumscribing bounding periphery of said head and overlying said collar to provide enhanced ease of annular shifting of said head and increased applied rotational torque thereto during and changing of a driving mode of said ratchet wrench, and

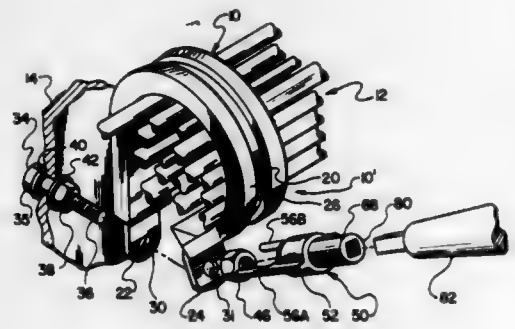
wherein said radially projecting end portion of said control bar means overlying said collar is spaced upwardly of said collar permitting physical displacement of said head axially inwardly within said collar of said wrench upon manual application of depressing force to said head for releasing a socket carried by said wrench.

4,512,219

TOOL FOR INSTALLING ELECTRICAL WIRE HARNESS CLAMPS AND THE LIKE

Caleb E. Janssen, Orange Park, Fla., assignor to Lockheed Corporation, Burbank, Calif.

Filed Dec. 8, 1983, Ser. No. 559,618
Int. Cl.[3] B25B *13/06*
U.S. Cl. 81—121.1 **4 Claims**



1. An installation tool for a clamp assembly, said clamp assembly being of the type having apertured end members and being securable by means of a screw and nut assembly extending through the aperture, the tool comprising:

a guide member having first and second ends, said guide member having a pair of legs extending from said first end in mutually spaced relationship adapted to straddle the end members, said guide member further having an aperture therethrough exiting from said first end between said legs;

a drive member having at least a portion thereof greater in diameter than the diameter of said aperture, said drive member further having a socket aligned with said aperture and adapted to receive and rotate the nut; and

retaining means adapted to releasably hold said drive member in alignment with said aperture, said retaining means comprising a plurality of spring retainers mounted on said second end of said guide member, each of said retainers terminating in an inwardly directed protrusion, the distance of said protrusions from said second end being slightly greater than said portion of that drive member having a diameter greater than said aperture;

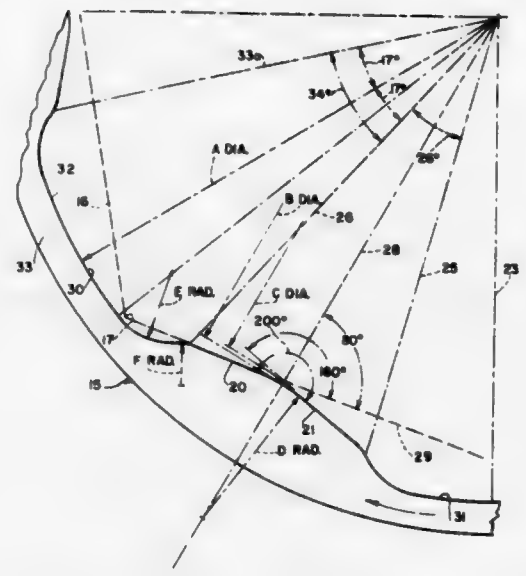
such that said drive member can be installed and retained by said retaining members by inserting said drive member past said protrusions, causing said retainers to yield and thereafter return to their original position, securing said drive member to said guide member.

4,512,220

FAST LEAD SOCKET WRENCH

Martin L. Barnhill, III, Union Grove, and William T. Pagac, Kenosha, both of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Continuation of Ser. No. 364,255, Apr. 1, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,534
Int. Cl.[3] B25B *13/06*
U.S. Cl. 81—121.1 **7 Claims**



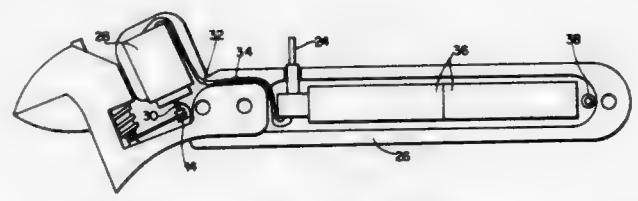
1. A socket wrench for a fastener having a predetermined across-corners dimension, said socket wrench having an internal surface comprising a plurality of pairs of adjacent clockwise and counterclockwise drive surfaces, the drive surfaces in each pair being substantially flat and lying in planes intersecting at a predetermined angle, a corresponding plurality of relieved surfaces respectively between said pairs of drive surfaces, each of said relieved surfaces having a predetermined diameter slightly greater than the predetermined across-corners dimension, a corresponding plurality of first reverse curved surfaces respectively between said relieved surfaces and said clockwise drive surfaces, a corresponding plurality of second reverse curved surfaces respectively being between said relieved surfaces and said counterclockwise drive surfaces, each of said reverse curved surfaces having a given radius and being tangent to the associated relieved surface, each of said relieved surfaces having an angular extent greater than the angular extent of each of said reverse curved surfaces, each of said relieved surface having a radius greater than the radius of each of said reverse curved surfaces.

4,512,221

ELECTRIC POWERED ADJUSTABLE WRENCH

John A. Picone, 195 Quebec Rd., Island Park, N.Y. 11558

Filed Aug. 25, 1983, Ser. No. 526,202
Int. Cl.[3] B25B *13/16*
U.S. Cl. 81—170 **5 Claims**



1. In an adjustable jaw wrench comprising:

body means, said body means including an integral handle and a head portion, said head portion defining a stationary jaw;

a movable jaw reciprocally mounted in said body means, head portion in alignment with said stationary jaw, said movable jaw including a rack;

driven means mounted in said body means head portion, said driven means being operably connected to said movable jaw and causing movement of said movable jaw relative to said stationary jaw, and driven means including:

a worm gear rotatably mounted in said body means head, said worm gear engaging said movable jaw rack; and

a first pulley integral with said worm gear, said first pulley being rotatable with said worm gear, said first pulley and at least a portion of said worm gear being positioned in an aperture in said body means head portion whereby said first pulley is accessible from opposite sides of said body means;

drive means mounted in said body means handle, said drive means comprising:

a second pulley rotatably mounted in said handle; and

an endless drive belt, said drive belt extending between said first and second pulleys, the improvement comprising:

a reversible electric motor mounted in said body means handle in driving connection with said second pulley.

4,512,222

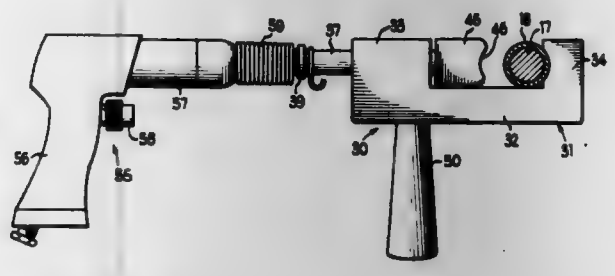
LOOSENING TOOL FOR TIE ROD SLEEVES

Steven L. Christophersen, Clarkston, Mich., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed May 2, 1983, Ser. No. 490,722

Int. Cl.³ B25B *19/00*

U.S. Cl. 81—464 **3 Claims**



1. A loosening tool for loosening the interconnection between two threaded members, comprising a U-shaped body having a bight and spaced-apart upstanding first and second legs, said first leg including a bore therein the axis of which is generally parallel to said bight, said second leg having a leg surface generally mating with the surface of one of the threaded members, said leg surface being part of a cylinder, a shaft slidably disposed in said bore, a hammer on one end of said shaft located between said legs, said hammer having a hammer surface generally matching the surface of the one threaded member, said hammer surface being part of a cylinder, the threaded members being insertable in the space between said hammer and leg surfaces, means on the other end of said shaft for being engaged by a reciprocating air tool to cause the hammer and leg surfaces to repeatedly strike the threaded members so as to loosen the interconnection therebetween, said air tool engaging means being integral with said shaft, and an elongated handle permanently attached to said bight and being directed generally perpendicular to said shaft.

4,512,223

LATHE

Franz Pühringer, Steyr, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Dec. 22, 1982, Ser. No. 452,340

Int. Cl.³ B23B *15/00*

U.S. Cl. 82—2.5 **3 Claims**

1. A lathe for handling a succession of workpieces having two end faces, which comprises a machine bed whereon there are mounted

(a) two tool units for machining a respective one of the workpieces from both end faces,

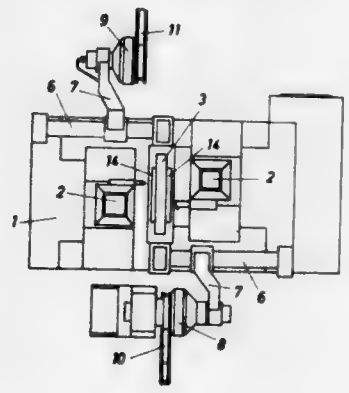
(b) a workpiece-gripping drive stock disposed between the two tool units,

(c) a single chuck supported on the drive stock, the drive stock constituting a back rest and serving as a bearing eye for the chuck, and the chuck having an axis and including (1) a series of radially displaceable gripping members and (2) two coaxial rings rotatable relative to each other for actuating the gripping members, an outer one of the rings serving as a pulley for a driving belt whereby the outer ring is driven and each one of the two rings having an annular series of coupling teeth at one end face thereof,

(d) device for loading the one workpiece for machining, the loading device comprising

(1) a rotatable carrier carrying coupling teeth movable into mesh with the coupling teeth of the two coaxial chuck rings and a motor connected to the rotatable carrier for rotating the carrier,

(2) an axially displaceable collet for gripping the one workpiece, and



(3) means for axially displacing the collet under pressure,

(e) a device for unloading a previously machined one of the workpieces, the unloading device comprising

(1) a non-rotatable carrier carrying coupling teeth movable into mesh with the coupling teeth of the two coaxial chuck rings,

(2) an axially displaceable collet for gripping the machined workpiece,

(3) yielding means for axially displacing the collet of the unloading device under the pressure of the axially displaced collet of the loading device, and

(4) an adjustable stop arranged to be engaged by the collet of the unloading device when it is forced back by the pressure, and

(f) means for moving the loading and unloading devices into and out of alignment with the axis of the chuck.

4,512,224

SLITTER DEVICE

Isamu Terauchi, Osaka, Japan, assignor to Kabushiki Kaisha Kindai, Osaka, Japan

Filed Mar. 31, 1983, Ser. No. 481,077

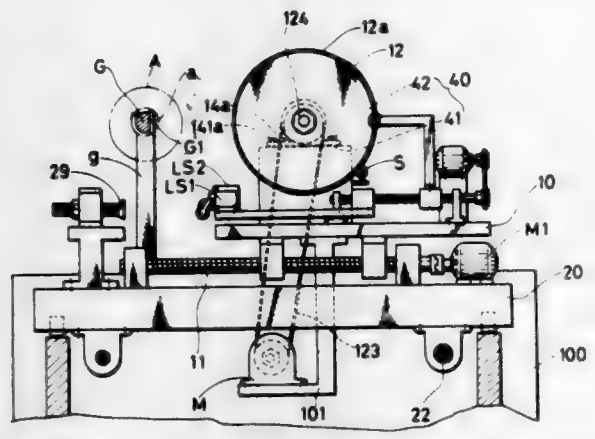
Claims priority, application Japan, Apr. 1, 1982, 57-47933[U]; Jul. 12, 1982, 57-106110[U]

Int. Cl.³ B23B *7/00, 25/04*

U.S. Cl. 82—48 **5 Claims**

1. A slitter device for an elongated roll shaped workpiece having a hollow core comprising: a base, an electrically conductive guide holder support rod having a D shaped transverse cross-section on said base for insertion into the hollow core of a workpiece, means on said base to rotatably drive a workpiece, a longitudinally movable carriage on said base, a transversely movable table on said carriage, a feed motor for moving said table, a bearing, bolts mounting the bearing on said table, a drive shaft rotatably supported by said bearing, a cutting blade fixed for rotation with said shaft, a cutter drive motor and means drivingly connecting said cutter drive motor to said drive shaft, first control means for limiting the movement of said table toward said support rod to prevent contact between said cutting blade and said support rod, safety means

operable in the event of failure of said first control means comprising: a brake means coupled to said cutting blade drive motor for stopping the rotation of said cutting blade drive motor and to stop rotation of said cutting blade, an electrical insulating means provided between said cutting blade and said guide holder support rod for providing electrical insulation between said cutting blade and said rod during non-contact of the two, said insulating means comprising an insulating liner placed between said bearing and said table, insulating washers placed under the heads of said bearing mounting bolts, a belt made from an electrical insulating material coupling said cutter drive motor to said drive shaft, a control circuit which applies an electric voltage between said cutting blade and said support



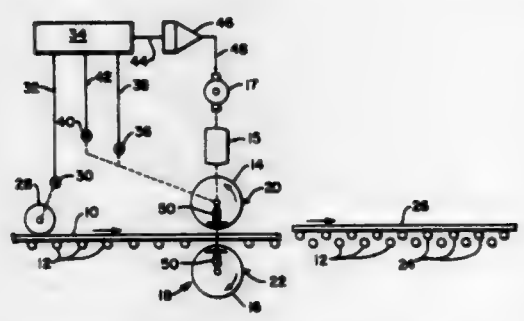
rod and which controls said cutting blade drive motor, said table feed motor and said brake when said cutting blade accidentally contacts said support rod and an electric current flows between said cutting blade and said support rod to stop the rotation of and retract said cutting blade, said control circuit means comprising a first switching means which interrupts current flow to said cutting blade drive motor in response to current flow between said cutting blade and said guide holder support rod and a second switching means which reverses the direction of rotation of said feeding motor in response to current flow between said cutting blade and said guide holder support rod to simultaneously stop and retract said cutting blade from said guide holder rod.

4,512,225

DIFFERENTIAL INTEGRAL ROTARY KNIFE CONTROL

John L. Green, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 18, 1982, Ser. No. 434,763
Int. Cl.³ B26D *5/20*; G05B *19/20*
U.S. Cl. 83—38 **15 Claims**



1. In a continuous sheet cutting process, and method of cutting the continuous sheet of material with a moving knife into predetermined lengths comprising the steps of:

(a) passing a continuous sheet of material past a cut point beneath the knife;

(b) measuring the length of continuous sheet passing a fixed point since the knife last reached a park position;

(c) measuring the distance of travel of the knife from the park position;

(d) comparing the measured length of continuous sheet passing a fixed point since the knife last reached a park position to the distance of travel of the knife from the park position and generating a difference signal therebetween;

(e) holding the knife in the park position until the difference signal exceeds a predetermined value indicating that a first predetermined point on the continuous sheet has reached the cut point;

(f) initiating motion of the knife when the first predetermined point on the continuous sheet has passed the cutting point;

(g) after the difference signal in step (e) exceeds a predetermined value, controllably moving the knife at a rate proportional to the difference in position between

(1) the difference between the first predetermined point on the continuous sheet and the cut point, and

(2) the distance of travel of the knife from the park position

until the knife becomes synchronous with the continuous sheet and the variation in measured position difference is reduced to zero;

(h) after the variation in position difference in step (f) is reduced to zero, operating the knife synchronously with the continuous sheet;

(i) cutting the continuous sheet severing a predetermined length of the continuous sheet of material while the knife is operating synchronously with the continuous sheet; and

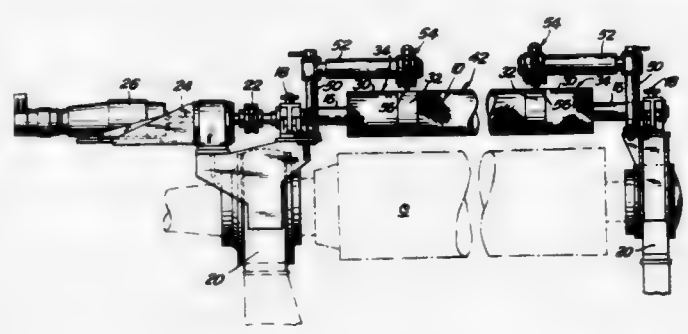
(j) returning the knife to the park position synchronously with the continuous sheet.

4,512,226

SLITTING APPARATUS AND METHOD

David W. Juckett, Hudson Falls, N.Y., assignor to Sandy Hill Corporation, Hudson Falls, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,115
Int. Cl.³ B26D *3/12*
U.S. Cl. 83—56 **4 Claims**



4. In a method of trimming a continuously running wet web, the steps of: running the wet web over a rotatable perforated tube mounting at each end a peripherally arranged hardened sleeve, and driving a rotatable circular cutting knife at each side of the tube into severing contact with the wet web and in confronting relationship with the respective hardened sleeve.

4,512,227

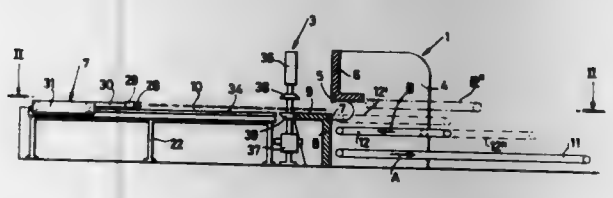
APPARATUS FOR THE AUTOMATIC SHEARING OF A SHEET METAL IN SEVERAL PIECES OF DIFFERENT SIZE

Guido Salvagnini, Sarego, Italy, assignor to Salvagnini Transferica S.p.A., Sarego, Italy

Filed Nov. 22, 1982, Ser. No. 443,694
Claims priority, application Italy, Nov. 25, 1981, 25267 A/81
Int. Cl.³ B26D *7/06*
U.S. Cl. 83—104 **6 Claims**

1. Apparatus for automatic shearing of sheet metal in a plurality of pieces of variable size, comprising a shear having a shearing blade, feeding means for feeding a piece of sheet metal to the shear, at least one movable carrier disposed downstream of the shearing blade and means for selectively causing the movable carrier during a first operation mode to receive and store sheared pieces of sheet metal for their subsequent return

to the feeding means and during a second operation mode to allow sheared pieces to reach a discharge means, said movable carrier being disposed during said first operation mode in at least one piece-receiving working position near the shearing blade and during said second operation mode in a non-piece



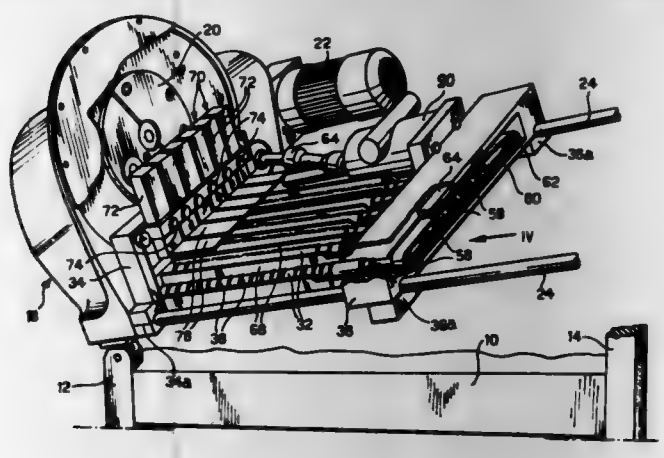
receiving removed position at a distance from the shearing blade such that sheared pieces are prevented from reaching said movable carrier and are allowed to fall on an underlying collecting means for sending sheared pieces to said discharge means.

4,512,228

AUTOMATIC SAUSAGE SLICING MACHINE FOR SALAMI AND LIKE PRODUCTS

Re Tarcisio, Rho, Italy, assignor to Victor Slicing Systems S.r.l., Milan, Italy

Filed Nov. 23, 1982, Ser. No. 444,202
Claims priority, application Italy, Nov. 23, 1981, 25221 A/81
Int. Cl.³ B26D *5/20, 7/06*
U.S. Cl. 83—355 **13 Claims**



1. Automatic sausage slicing machine for salami and the like products, of the type comprising a framework, an orbital blade, an electric motor drivingly connected to the orbital blade, and a feed device for feeding a line of products to be sliced continuously towards the path of displacement of the orbital blade, wherein the improvement consists in the feed device comprising:

a plurality of entrainment shafts located side by side and extending towards the orbital blade;

a plurality of longitudinal containment partitions separating neighboring entrainment shafts;

each entrainment shaft having a helical projection on which a respective product to be sliced rests in use of the machine, said product being inserted between a pair of corresponding said containment partitions;

means for simultaneously rotating the said entrainment shafts in synchronism with the movement of the orbital blade said means for rotating the entrainment shafts being the electric motor which drives the orbital blade;

a sprocket mounted on the end of each entrainment shaft opposite the orbital blade, an endless toothed drive belt engaging said sprocket, and a transmission including a speed variator drivingly connected to said drive belt, the transmission being driven by the electric motor;

presser means for retaining the active pass of the drive belt in engagement with the corresponding zones of said sprockets, and means for maintaining the inactive pass of the drive belt spaced from the said sprockets; and

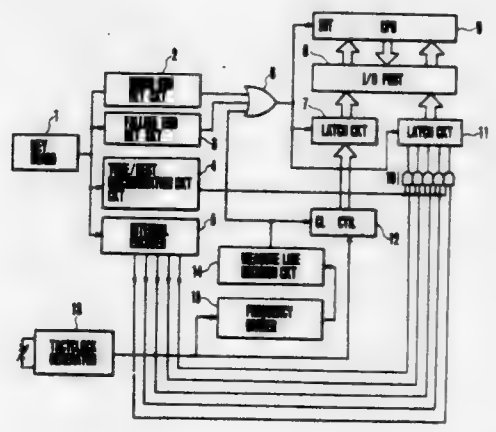
a drive sprocket driven by the transmission means, the drive belt passing over said drive sprocket, which is disposed at a level different from that of the sprockets carried by the entrainment shafts, whereby the inactive pass of the drive belt between the said drive sprocket and the sprocket associated with the entrainment shaft furthest from the drive sprocket does not interfere with the remaining entrainment shaft sprockets and further including a plate acting on the active pass of the drive belt, and means pressing said plate resiliently towards the entrainment shaft sprockets.

4,512,229

SCORING SYSTEM

Kenji Kamiya, and Masatoshi Hosoi, both of Ena, Japan, assignors to Ricoh Watch Co., Ltd., Gifu, Japan

Continuation of Ser. No. 377,225, May 11, 1982, abandoned.
This application Jul. 17, 1984, Ser. No. 631,571
Claims priority, application Japan, May 18, 1981, 56-74758
Int. Cl.³ G10H *7/00*
U.S. Cl. 84—1.01 **8 Claims**



1. A music scoring system for scoring music arranged in measures, said system comprising:

(a) a clock generator;

(b) a counter for counting clock signals generated by the clock generator;

(c) means for clearing the contents of the counter;

(d) means for summing a series of quantized note/rest length values during each measure of the music to be scored; and

(e) means for subtracting the current sum generated by the summing means from the value stored in said counter and converting the result thereof to a new quantized note/rest length value.

4,512,230

ELECTRONIC MUSICAL INSTRUMENT

Sadaaki Ezawa, and Hiroshi Kitagawa, both of Shizuoka, Japan, assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Apr. 25, 1983, Ser. No. 488,289
Claims priority, application Japan, Apr. 26, 1982, 57-69970
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **2 Claims**

1. In combination with an electronic musical instrument having a plurality of panel tone control switches and having a plurality of internal memories each of which stores the switch states of a setting of said plurality of panel tone control switches, apparatus for externally augmenting the number of said plurality of internal memories comprising;

a plurality of external memories each of which stores the switch states of a setting of said plurality of panel tone control switches,

a panel memory means for storing the switch states of said plurality of panel tone control switches,

a plurality of internal preset switches each of which corresponds to one of said plurality of internal memories,

an internal memory read means responsive to the actuation of said plurality of internal preset switches whereby the contents of an internal memory corresponding to an actuated internal preset switch is read into said panel memory means,

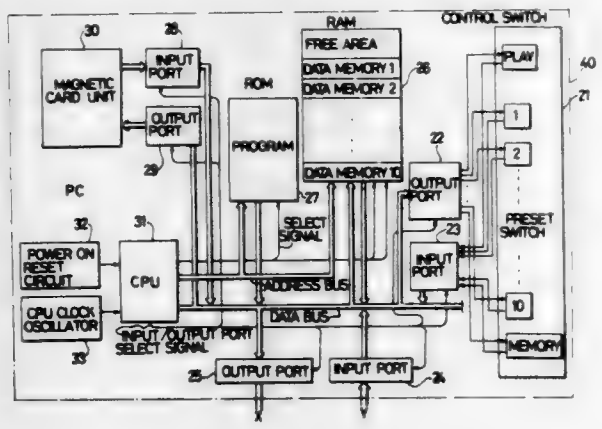
a plurality of external preset switches each of which corresponds to one of said plurality of external memories,

a play switch means for generating a request signal,

an external memory switch means for generating an external memory write signal,

an external memory write means responsive to the actuation of said plurality of external preset switches whereby the contents of said panel memory means is stored into one of said plurality of external memories corresponding to an actuated external preset switch if said external memory write signal is generated,

a card reader means for reading data from a memory card in response to a card read signal and for storing data in a memory card in response to a card write signal,



a memory transfer means responsive to the actuation of said plurality of external preset switches whereby in response to said card read signal the data read from said memory card is stored in one of said plurality of external memories corresponding to an actuated external preset switch and whereby in response to said card write signal the data stored in one of said plurality of external memories corresponding to an actuated external preset switch is stored in said memory card,

an external memory read means responsive to the actuation of said plurality of external preset switches whereby the contents of an external memory corresponding to an actuated external preset switch is read into said panel memory means if said request signal is generated, and

utilization means responsive to the data stored in said panel memory means whereby musical tones are generated corresponding to the stored set of switch states for a setting of said plurality of panel tone control switches.

4,512,231

VIOLIN CONSTRUCTION

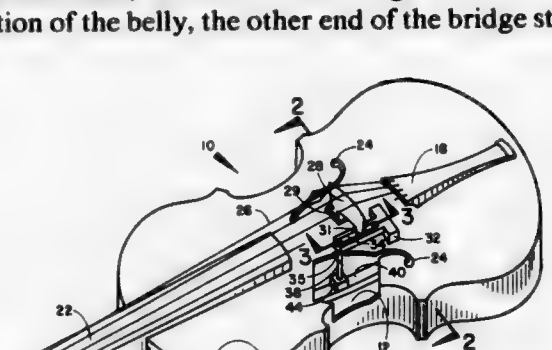
Paul K. Mink, 575 E. Ave. East, Wendell, Id. 83355

Filed Mar. 14, 1984, Ser. No. 589,594
Int. Cl.³ G10D *3/02*
U.S. Cl. 84—277 **5 Claims**

1. An acoustical instrument in which the back and belly of the instrument are allowed to vibrate independently, comprising the combination of:

a hollow body having a back, a belly, and sides, said sides connecting said back to said belly; and

a bridge having two feet, one of said feet supported by and resting on the belly, the other of said feet supported by a bridge stabilizer, one end of said bridge stabilizer forming a portion of the belly, the other end of the bridge stabilizer



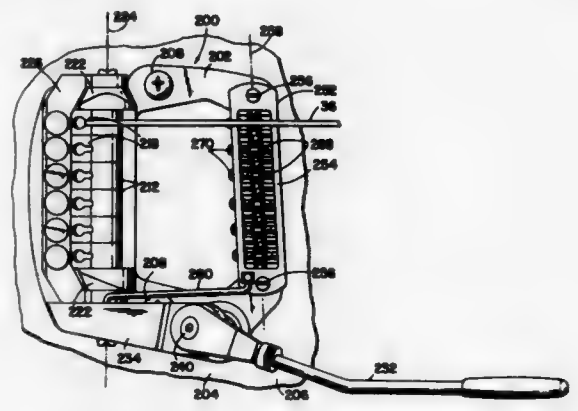
mounted to the upper end of a sound-post, said sound-post extending from said belly to said back.

4,512,232

TREMOLO TAILPIECE AND BRIDGE DEVICE

Helmut F. K. Schaller, Postfach 1225, D-8501 Feucht, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,748
Int. Cl.³ G10D *3/12*
U.S. Cl. 84—313 **33 Claims**



1. A tremolo tailpiece and bridge device for use with a guitar or similar stringed instrument, said device comprising:

a plurality of string anchor means, one for each of the strings of the instrument,

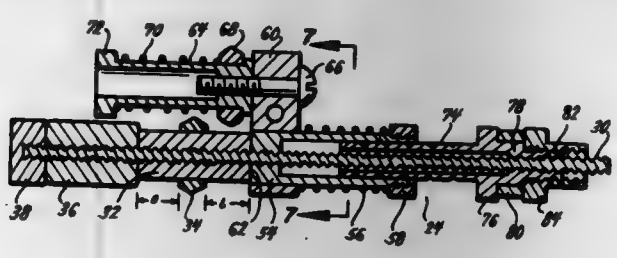
means supporting said plurality of string anchor means adjacent the top surface of an instrument body at a location near the bottom end of the instrument and for rotational movement relative to said body about a common first axis extending generally transversely to the strings of the instrument and parallel to the top surface of the instrument's body,

a bridge unit having means for engaging all of the strings of the instrument,

means supporting said bridge unit adjacent said top surface of the instrument body some distance away from said plurality of string anchor means in the direction toward the neck of the instrument and for rotational movement relative to said body about a second axis extending generally parallel to said first axis, and

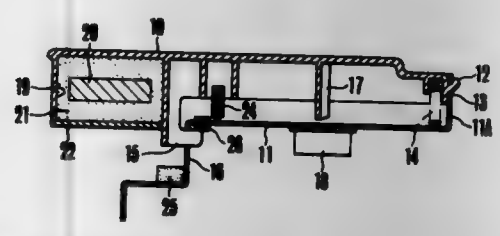
means manually operable by the player of the instrument for synchronously rotating said plurality of string anchor means back and forth in unison about said first axis and said bridge unit back and forth about said second axis, said rotating means including linkage means other than said strings for coupling said string anchor means to said bridge unit.

4,512,233
PITCH ADJUSTER
Jack O. Holland, 2722 Brentwood Blvd., St. Louis, Mo. 63144
Filed Nov. 18, 1983, Ser. No. 552,923
Int. Cl.[3] G10D *9/00*
U.S. Cl. 84—394
11 Claims



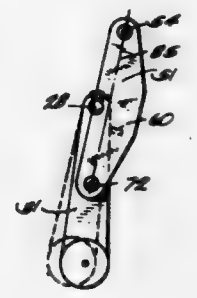
1. In a pitch adjuster for a valved brass instrument, said valved brass instrument having a tuning slide crook telescopically mounted to stationary tube members, said pitch adjuster having means to selectively operate the tuning slide crook between a normal position, preselected inward position, and preselected outward position to raise or lower the note played, and means to automatically restore the tuning slide crook to the normal position, the improvement comprising positive detent means at the normal position, said detent means having stopping means to limit the automatic restoring means to prevent overtravel of said crook upon return to the normal position from either the outward or inward position.

4,512,234
KEYBOARD DEVICE HAVING CUSHIONED WEIGHT MEMBER FOR ELECTRONIC MUSICAL INSTRUMENT
Shinji Kumano, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Jan. 25, 1983, Ser. No. 460,954
Claims priority, application Japan, Jan. 26, 1982, 57-10450
Int. Cl.[3] G10C *3/12*
U.S. Cl. 84—433
16 Claims



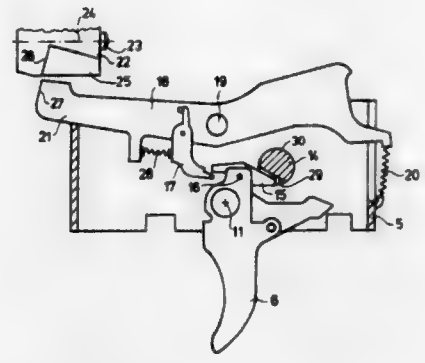
1. A keyboard device of an electronic musical instrument comprising a plurality of keys each mounted on a frame to be tiltable in the vertical direction between a predetermined upper rest position and a predetermined lower rest position; biasing means for resiliently biasing each of said plurality of keys to its predetermined upper rest position; a weight member incorporated in each of said plurality of keys for adding a predetermined weight to each of said plurality of keys; and a cushion means disposed in each of said plurality of keys for elastically suspending said weight member from each of said plurality of keys toward said predetermined upper rest position and toward said predetermined lower rest position of each of said plurality of keys, said cushion means retarding both an action of each of said plurality of keys against said weight member at the start of key depression and a reaction of said weight member against each of said plurality of keys at the end of key depression.

4,512,235
STRESS LIMITED CARTRIDGE RELOADING PRESS
Richard J. Lee, 3146 Kettle Moraine Rd., and John D. Lee, 3086 Kettle Moraine Rd., both of, Hartford, Conn. 53027
Filed Dec. 22, 1983, Ser. No. 564,182
Int. Cl.[3] F42B *33/02*
U.S. Cl. 86—23
11 Claims



1. A cartridge case reloading press comprising:
a frame including a member for supporting a die,
a ram for retaining a case and guided for travelling reciprocally toward and away from said member,
toggle links pivotally connected to each other and respectively pivotally connected to said frame and said ram, and a manual operating arm connected to one of the links and swingable in one direction to pivot the links toward the position at which said links could toggle and drive said ram sufficiently far for the ram to apply maximum force to said member through the agency of a case, and swingable in an opposite direction to drive the ram away from said member, and
means for stopping the pivotal motion of said links when said arm is being swung in said one direction before said links reach said toggling position to thereby prevent said toggling and prevent imposing said maximum force on said member.

4,512,236
SOUND DAMPENED AUTOMATIC HAND FIREARM
Paul Thevis, Oberndorf, and Helmut Danner, Sulz-Sigmarswangen, both of Fed. Rep. of Germany, assignors to Heckler & Koch GmbH, Oberndorf, Fed. Rep. of Germany
Filed Aug. 5, 1982, Ser. No. 405,596
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131264
Int. Cl.[3] F41D *11/06*
U.S. Cl. 89—128
11 Claims



1. A sound dampened automatic hand firearm of the type provided with silencing means for the firing of projectiles at a muzzle velocity in the subsonic speed range,
said firearm comprising a breechblock movable in a predetermined direction between closed and open positions,
said breechblock having abutment means,
a locking lever swingable into engagement with said abutment means for locking said breechblock in its closed

position during the release of a shot to prevent opening movement of the breechblock by the shot,

said locking lever being pivotable about an axis oriented transversely to the direction of movement of the breechblock,

a spring biasing said locking lever toward an unlocking position in which said lever is out of the path of said abutment means to provide for the manual opening of said breechblock,

a trigger swingable between an initial position and a pulled position for releasing a shot,

and a catch connected to and pivotally mounted on said trigger and operable by swinging movement of said trigger toward said pulled position thereof for swinging said locking lever into a locking position with said locking lever engaging said abutment means and for maintaining said locking lever in said locking position as long as said trigger is in its pulled position,

said catch being operative to swing said locking lever to its locking position against the biasing action of said spring,

whereby said catch and said locking lever are operative to prevent movement of said breechblock away from its closed position by the release of a shot.

4,512,237

TANDEM TYPE BRAKE POWER SERVO BOOSTER

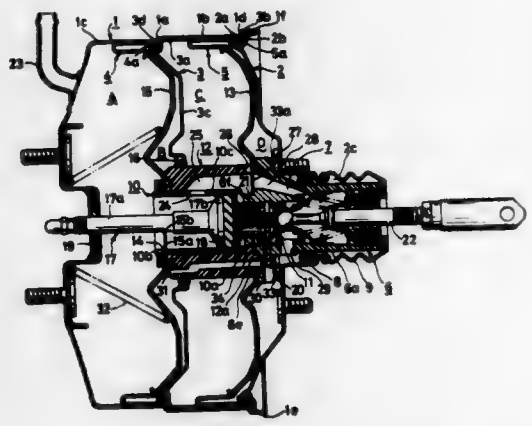
Kazunori Endoh, and Haruo Suzuki, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Japan

Filed Jan. 5, 1983, Ser. No. 455,639

Claims priority, application Japan, Jan. 16, 1982, 57-4141[U]; Jan. 26, 1982, 57-9029[U]; Jan. 26, 1982, 57-10314

Int. Cl.³ F15B *9/10*; F01B *19/00*

U.S. Cl. 91—369 A **13 Claims**



1. A tandem type brake power servo booster, comprising:

a valve body;

a rear power piston disposed on said valve body;

a cylindrical member provided on said valve body;

a front power piston disposed on said cylindrical member, said cylindrical member having a shoulder engaged with an inner periphery of said front power piston;

a nut fitted about said cylindrical member and cooperating with said shoulder and holding said front power piston in position;

a first engaging means located on said cylindrical member;

second engaging means located on said front power piston for engaging said first engaging means to connect said cylindrical member and said front power piston in such a manner that said cylindrical member and said front power piston are prevented against rotating relative to one another when said nut is tightened; and

wherein said cylindrical member further comprises a metallic reaction disk hub having a reduced diameter portion slidably fitted within a central portion of said valve body and also comprises a center body slidably fitted about said hub.

4,512,238

HYDRAULIC DISTRIBUTOR WITH A REACTION BIASED CONTROL MEMBER

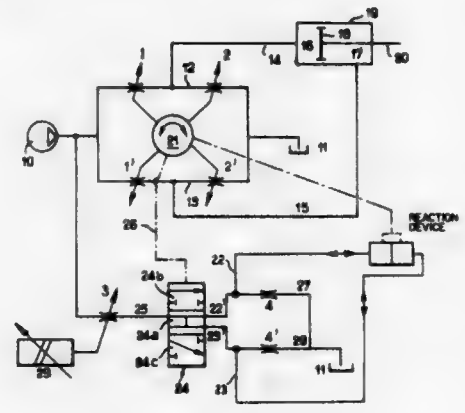
Juan S. Bacardit, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Jan. 10, 1983, Ser. No. 457,091

Claims priority, application Spain, Jan. 14, 1982, 509.159

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—370 **15 Claims**



1. A hydraulic distributor for a servo-mechanism, more particularly for a power-assisted steering system of an automotive vehicle, comprising a primary member and a secondary member defining mutually distribution valve means selectively modulable upon a limited relative displacement of said primary and secondary members on both sides of a central position, said primary member being connected to an input actuating member and to a reaction device hydraulically actuated by externally modulated reaction pressures, said secondary member being connected to a driven mechanism coupled to a hydraulic assistance device controlled by the distributor, characterized in that the reaction device has a pair of fluid inlets each connected respectively to an independent fluid flow circuit extending from a corresponding outlet of OR logic function valve means which is actuated by said primary member to which said OR logic function valve means is positively coupled, the OR logic function valve means becoming operative before the distribution valve means of the distributor becomes operative.

4,512,239

VEHICLE AIR DUCT CONSTRUCTION USING CENTER CONSOLE BOX

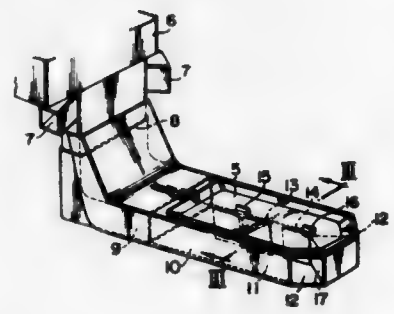
Toshimitu Watanabe; Masayuki Sakai; Kazutoshi Minami, and Shigeji Takumi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 25, 1983, Ser. No. 460,791

Claims priority, application Japan, Jan. 29, 1982, 57-11170[U]

Int. Cl.³ B60H *1/24*

U.S. Cl. 98—2.03 **4 Claims**



1. An air duct for a vehicle, said vehicle having longitudinally arranged front and rear ends and incorporating a floor, a front instrument panel, an air treatment unit fitted under said instrument panel which provides treated air from an air outlet thereof, a front seating assembly mounted on said floor forming an underneath space defined between said front seating

assembly and including side by side half portions thereof, and a rear seating assembly situated above said floor and defining a rear seating space including side by side half portions thereof, said air duct leading treated air from said air outlet of said air treatment unit to said rear seating space and comprising:

a hollow center console box extending along a transversely central portion of said floor of the vehicle in the longitudinal direction of the vehicle from a front end thereof connected with said air outlet of said air treatment unit to a rear end thereof located at a front side portion of and close to said underneath space so as to define an air flow passage, said center console box having formed therein at said rear end portion thereof first and second outlet openings opening respectively toward said side by side half portions of said underneath space so as to respectively supply flows of air principally to said side by side half portions of said rear seating space through said side by side half portions of said underneath space;

first damper means positioned in said center console box for controlling flow resistance of said air flow passage formed therein; and

second damper means of a single plate member type positioned in said center console box at a transversely central portion thereof for variably dividing a flow of air flowing through said air flow passage into said flows of air supplied through said first and second air outlet openings, respectively.

4,512,240

DOOR, PARTICULARLY FOR A CAR

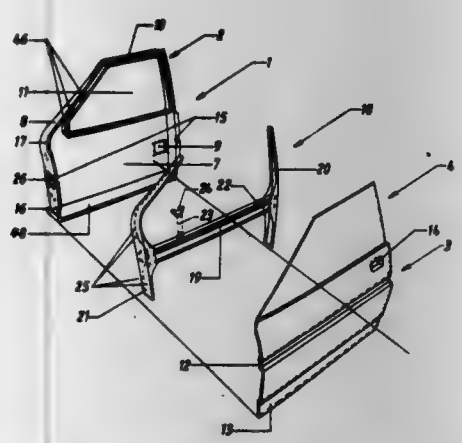
Gert Mahler, Radevormwald; Heinz-Jürgen Falkenroth, Ennepetal; Wulf Leitermann, Wimpfen, and Manfred Boms, Neckargerach, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Jun. 1, 1983, Ser. No. 499,828

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221322

Int. Cl.³ B60H *1/26*

U.S. Cl. 98—2.04 **25 Claims**



1. A door for a car or the like vehicle, said door having:

an inner section directed toward the inside of the car; the door inner section being formed of plastic said inner section comprising a generally box-shaped lower part, with an open side which opens toward the outside of the car; a window frame integral with said lower part of the door inner section; the window frame being comprised of arms extending up from the lower part of the inner section;

said door having an outer section located outside the said inner section; the door outer section also being formed of plastic at its outer side, the door inner section being attached to the inner side of the door outer section;

a window pane at the door outer section firmly attached to the arms of the window frame; the said arms of the window frame having a U-shaped cross-section with the open side of the U facing toward the door outer section, the window pane extending across the open side of the U and closing off the U for defining a stiffening structure thereby.

21. The door of claim 1, further comprising an air duct between the door inner and outer sections, which duct is connectable with an air supply; the duct extending generally rearwardly along the door; an outlet from the duct and directed for blowing air against the window pane.

4,512,241

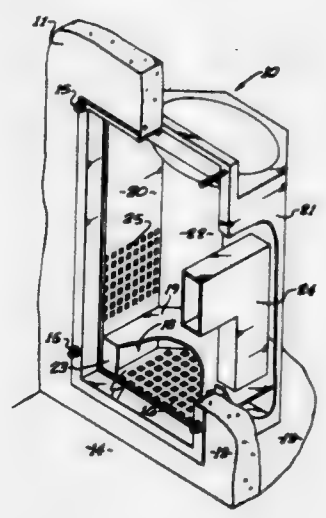
PLENUM/VACUUM CHAMBER WITH DUCT CONNECTION FOR INSTALLATION IN CABINET OF FIXTURE TO CONTROL AIR SUPPLY OR RETURN

Earl L. Morris, La Habra Heights, and V. Walter Hafner, Whittier, both of Calif., assignors to Acorn Engineering Company, City of Industry, Calif.

Filed Jan. 5, 1983, Ser. No. 455,751

Int. Cl.³ F24F *13/00*

U.S. Cl. 98—32 **10 Claims**



1. A plenum/vacuum chamber for providing air circulation to a room comprising:

a hollow housing securely affixed over an opening in the wall of a room, said housing extending into said room;

a first grille formed in a wall of said housing, said grille being formed from a plurality of openings formed through a portion of the wall said grille having an exterior surface and an interior surface; and

a second grille formed in a wall of said housing other than the wall of the housing in which said first grille is formed said second grille having an air-tight compartment sealingly affixed about the interior surface thereof, said compartment having an opening for connection to an air supply-return.

4,512,242

HEAT DESTRATIFICATION METHOD AND SYSTEM

Hoy R. Bohanon, Sr., Muskogee, Okla., assignor to Acme Engineering & Manufacturing Corp., Muskogee, Okla.

Filed Jun. 11, 1982, Ser. No. 387,679

Int. Cl.³ F24F *7/06*

U.S. Cl. 98—31.5 **7 Claims**

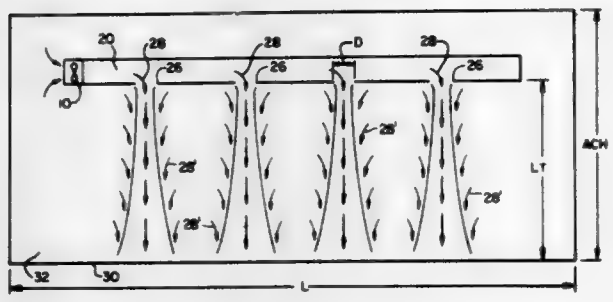
1. A method of destratifying heat within an enclosure, comprising:

drawing warm inside air off of the ceiling of the enclosure,

propelling the warm inside air from the ceiling along a confined path that is separate from the remaining portions of the air within the enclosure,

jetting the warm air downwardly from the confined path along a plurality of streams to the vicinity of the floor of the enclosure, and

entraining quantities of surrounding warm air by the downward movement of each of the jetting streams thereby



moving the surrounding warm air to the vicinity of the floor of the enclosure.

4,512,243

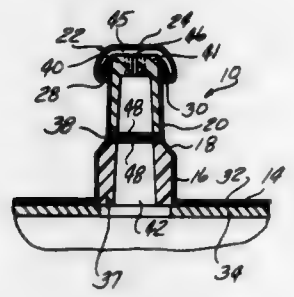
VENTILATOR HAVING INSERT FOR CONTROLLING MOISTURE AND METHOD OF MAKING SAME

James W. Ballard, Livonia, and Larry R. Ballard, Redford Township, Wayne County, both of Mich., assignors to Charles Bonnici, Livonia, Mich.

Continuation-in-part of Ser. No. 193,711, Oct. 3, 1980, , and a continuation-in-part of Ser. No. 172,414, Jul. 25, 1980, Pat. No. 4,370,876, which is a division of Ser. No. 968,192, Dec. 11, 1978, Pat. No. 4,214,513. This application Jul. 23, 1982, Ser. No. 402,020

Int. Cl.³ F24F *7/02*

U.S. Cl. 98—42.01 **28 Claims**



23. A roof ventilator, comprising:

an elongate, essentially hollow tube having a longitudinal passageway therein through which air may flow;

a structurally self supporting, thermally insulative sleeve of foamed synthetic material lining at least a portion of the interior wall of said tube within said passageway, said sleeve including an inside wall exposed to and defining and air space within said passageway which is thermally insulated from said interior wall; and

a generally planar, foraminous member for controlling the flow of moisture in one direction through said passageway, said foraminous member being secured to said sleeve and extending across said air space, whereby all of the air flowing through said passageway passes through said foraminous member.

4,512,244

VENTILATION GRATING FOR USE IN WINDOW FRAMES TOGETHER WITH SEALED UNIT INSULATING GLASS

Jan J. Knaap, Haren, Netherlands, assignor to Kateka B.V., Netherlands

Filed Nov. 23, 1983, Ser. No. 554,601

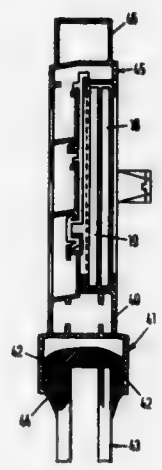
Int. Cl.³ F24F *13/18*

U.S. Cl. 98—98 **6 Claims**

1. A closable ventilation grating for attachment against a head piece of a window frame comprising an upper hollow profile member, a lower hollow profile member both made of a metal, and left and right end members each provided with lugs that may be fittingly pushed into the corresponding ends of the upper and lower profile members to form a rectangular frame, said end members having outwardly directed flat flanges; in the frame further being mounted two grids having similar vent openings one of the grids being slidable along the other in order to control the amount of ventilation; the grids being made of the same material as the left and right end members of the rectangular frame, characterized in that

(a) the lower profile member has been provided with two parallel pending flanges for mounting of the ventilation grating on sealed unit insulating glass;

(b) the upper profile member has been provided with an



upper channel of rectangular inverted U-shape having a thickness corresponding to the thickness of the insulating glass to be used and being located such that the vertical side walls of the U-shaped channel essentially are flush with the inner and outer surfaces defined by the insulating glass;

(c) the end members each have been provided with a profile of basically rectangular cross-section, that may be fittingly pushed on the flat flanges, the cross-sectional width of the profile being equal to the thickness of the insulating glass to be used.

4,512,245

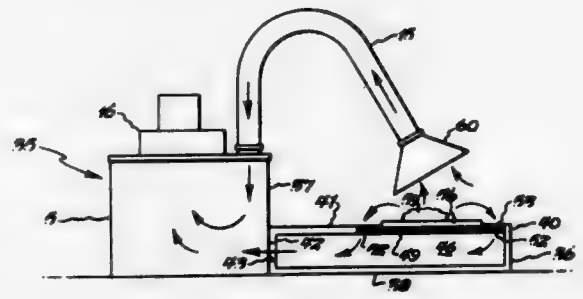
PORTABLE POINT SOURCE ADSORBER

Max Goldman, Latham, N.Y., assignor to Adsorbent Products Inc., Latham, N.Y.

Continuation-in-part of Ser. No. 422,757, Sep. 24, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 662,942

Int. Cl.³ F24F *11/00*

U.S. Cl. 98—115.4 **18 Claims**



1. A portable point source filter for adsorbing both lighter-than-air fumes and heavier-than-air fumes from a fume emitting specimen comprising a gas-tight box, an exhauster blower mounted on said gas-tight box for exhausting gases from said box, first conduit means in communication with said box for conducting gases into said box, said first conduit means having a first end mounted on said box and a second end for placement above a point source, second conduit means having a first end in communication with said box and a second end for placement below said point source, and adsorbent filter means mounted within said gas-tight box and in communication with said exhauster blower whereby gases passing into said box

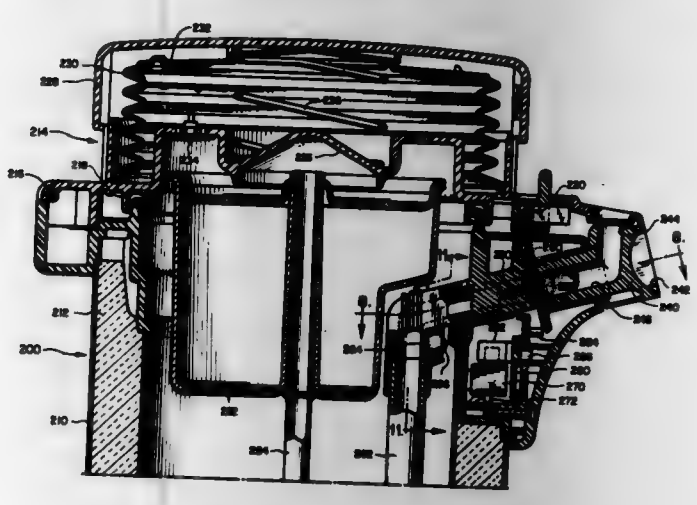
from said first and second conduit means must pass through said adsorbent filter means.

4,512,246

PERCOLATOR INCLUDING PUMP-TYPE DISPENSER

William A. Chappell, Raytown; William J. Tweed, Kansas City, and David T. Higgins, Lee's Summit, all of Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 453,787, Dec. 27, 1982, Pat. No. 4,464,983. This application Jul. 10, 1984, Ser. No. 629,351
Int. Cl.[3] A47J *31/00*
U.S. Cl. 99—312 16 Claims



1. A percolator/dispenser comprising:
an insulated vessel;
a spout extending between the interior and the exterior of the vessel;
a perforated basket inside the vessel;
percolator means for causing a liquid contained in the vessel to percolate through the basket, said percolator means comprising:
a heater; and
a conduit extending upwardly from the heater to conduct the liquid heated by the heater to a portion of the interior of the vessel above the basket;
a manually operated pump mounted to the vessel and operative to pump the liquid out of the spout;
a manually operated venting system comprising vent means for selectively opening and closing a vent path between the interior and the exterior of the vessel; and
interlock means, responsive to the vent means, for automatically disabling the heater when the vent path is closed and for automatically enabling the heater when the vent path is open.

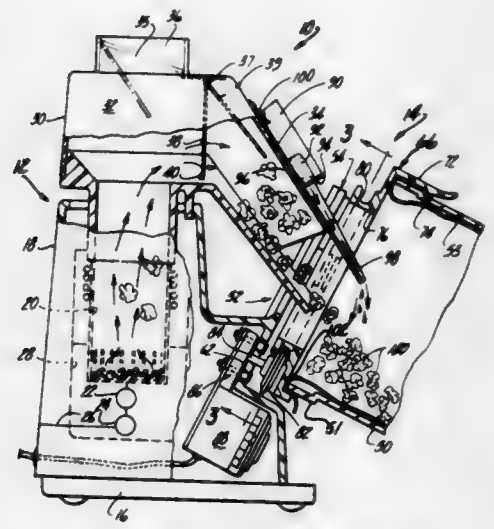
4,512,247

POPCORN POPPING AND COATING APPARATUS

Aaron M. Friedman, 23200 Riverside, Apt. 437, Southfield, Mich. 48034

Filed May 19, 1983, Ser. No. 496,052
Int. Cl.[3] A23L *1/18*
U.S. Cl. 99—323.5 15 Claims

1. An apparatus for coating popping corn kernels and coating the popped kernels comprising:
a base;
a first housing secured to said base, said housing defining a chamber for holding popping corn kernels and including a means for heating said popping corn kernels to a temperature sufficient to permit kernels of popping corn to pop;
a receptacle;
means secured to said base for supporting and rotating said receptacle;
passage means for transferring popped kernels from said chamber to said receptacle, said passage means comprising a second housing removably secured to said first housing and defining a tubular chute extending between said chamber and said receptacle;
gate means secured to said chute, for normally closing said chute; said gate means comprising means responsive to the volumetric expansion of cooked popping corn to open



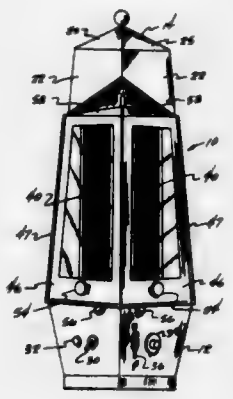
said gate means so that popped corn continues to be heated by said heating means until a predetermined accumulation of volumetrically expanded kernels opens said gate and permits passage of said kernels from said chamber to said receptacle.

4,512,248

ROTISSERIE COOKER

Dinos G. Volakakis, 6905 Cleaton Rd., Apt. C-1112, Columbia, S.C. 29206

Filed Jan. 23, 1984, Ser. No. 572,853
Int. Cl.[3] A47J *37/04*
U.S. Cl. 99—341 4 Claims



1. In a rotisserie cooker having a multi-sided base, wall sections attached to and extending upwardly from sides of the base to define with a roof section an open front cooking area, a rotatable spit centrally mounted on the base and extending vertically upward in the cooking area for supporting food to be cooked, and heating means on an inner surface of the wall sections for radiating heat onto food on the spit to heat the same, the improvement therewith comprising door means for closing a major portion of the open front of the cooking area to define with the wall sections a cooking compartment to facilitate the cooking of food and the comfort of personnel in the area of the cooker, said door means comprising a pair of bifold doors, each bifold door having an upwardly extending side panel and an upwardly extending front panel with window to permit viewing of the interior of the cooking compartment, hinge means pivotally interconnecting adjacent upstanding side edges of the side and front panels of each bifold door, and hinge means pivotally connecting the other upstanding side edge of each side panel to a respective wall section of the cooker which defines a side of the opening into the cooking compartment, each panel of each bifold door having a lower

edge for engaging an upper edge of a side of the multi-sided base of the cooker and each front panel having a free upwardly extending side edge for engaging the other front panel side edge to close the front of the cooking compartment opening when the doors are in closed position, and the door panels having upper edges located below the roof section of the cooker when the free side edge of each front panel of each bifold door engages the other to define an upper opening from the compartment.

4,512,249

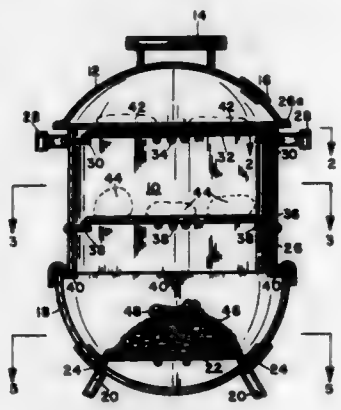
SMOKER ADAPTER FOR KETTLE GRILLS

Lee R. Mentzel, Rte. 1, Shiocton, Wis. 54170

Filed Apr. 21, 1983, Ser. No. 487,044

Int. Cl.³ A47J *37/07, 37/04*

U.S. Cl. 99—352 **6 Claims**



1. A smoker adapter for use with a kettle grill having a cover and a lower kettle portion each having vents for controlling air flow, comprising:

a vertical cylindrical peripheral wall;

first support means about the top of said wall for supporting the cover of the kettle grill;

second support means for supporting said wall above the lower portion of the kettle grill, said second support means being a plurality of removable clips each having a curved portion which is hooked over the edge of the kettle and an outstanding tab portion extending toward the center of the kettle, upon which tabs said wall rests;

at least one grill rack for supporting the food to be cooked; and

third support means for supporting said grill rack within said peripheral wall.

4,512,250

APPARATUS FOR COOKING EGGS

James C. Schindler, and Donald K. Jewell, both of Naperville, Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Division of Ser. No. 146,438, May 5, 1980, abandoned. This application Oct. 28, 1981, Ser. No. 316,102

Int. Cl.³ A47J *37/10*

U.S. Cl. 99—425 **11 Claims**

1. Apparatus for cooking an egg comprising:

(a) a grill having a grill surface for supporting an egg thereon, said grill including a grill member defining said grill surface on one side and also defining a heat exchange surface on the other side for being heated whereby heat can be transferred from said heat exchange surface through said grill member to said grill surface;

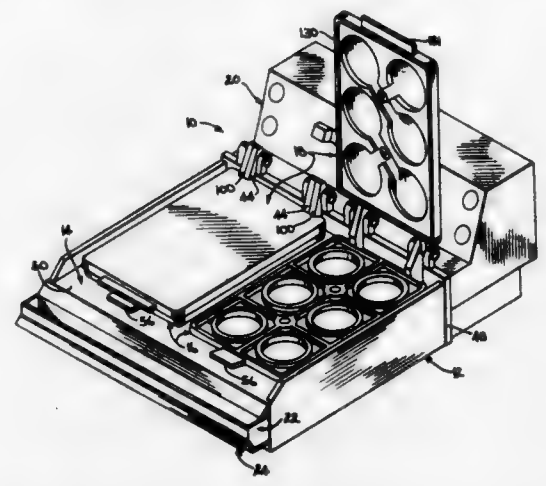
(b) means for heating said grill surface from beneath the grill surface;

(c) a steam containment enclosure adapted to cover said grill surface for defining a steam containment volume thereabove;

(d) means for injecting steam above said grill surface from a source of pressurized steam into said steam containment volume;

(e) said grill further including a steam heating chamber defined in part by said grill member;

(f) wherein said apparatus further includes means for injecting steam into said steam heating chamber; and



(g) a plurality of heat transfer fins extending into said steam heating chamber from said heat exchange surface of said grill member.

4,512,251

RAPID BREATHING, DEGASSING AND STORAGE DEVICE FOR WINE

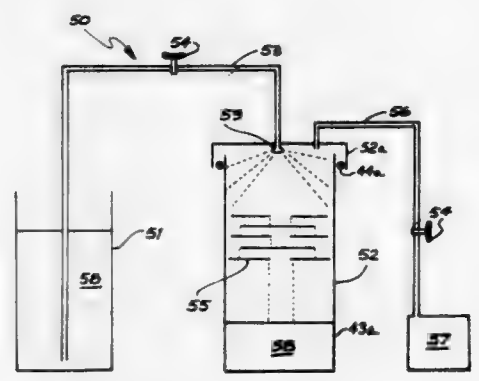
Kenneth Green, 24 Reserve Ave., Blaxland, New South Wales 2774, Australia, assignor to Kenneth Green and Graham Edward Thomas, both of Blaxland, Australia

Filed Sep. 30, 1983, Ser. No. 537,981

Claims priority, application Australia, Oct. 1, 1982, PF6152; Jan. 24, 1983, PF7719

Int. Cl.³ A23B *7/00*

U.S. Cl. 99—472 **4 Claims**



1. Apparatus for degassing or breathing of fermented wine contained in a first container, said apparatus comprising:

a second container having an opening, a container closure, seal means for engaging said container closure over said opening of said second container, a first aperture and a second aperture, each opening to said second container,

a vacuum source being fluidly connected to an upward location in said second container through said first aperture so as to provide evacuation of gases from said second container therethrough,

an elongated fluid passage with one end passing through said second aperture and the other end adapted for establishing fluid communication with wine in said first container, whereby upon evacuating said second container, wine from said first container is drawn through said fluid passageway into said second container, and

a spray device on the end of said fluid passage at an upward location within said second container so that the wine entering therethrough forms a spray or fine mist, whereby the entering wine presents a large surface area from which gas is efficiently extracted under reduced pressure even in

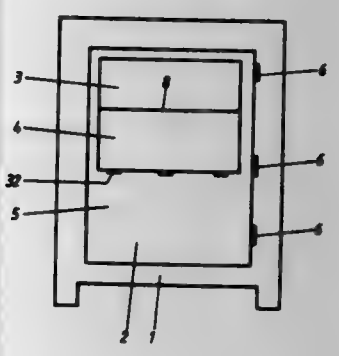
the absence of heating which would adversely affect the quality of the wine.

4,512,252

BALING PRESS

Albert Goldhammer, Überlingen, Fed. Rep. of Germany, assignor to Firma Feinwerktecnik Schleicher & Co., Markdoff, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,478
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112914
Int. Cl.[3] B30B *15/00*
U.S. Cl. 100—53 12 Claims



1. A baling press apparatus comprising:
a press frame having a working chamber area;
a press door movably fastened to said press frame for providing access to said working chamber area;
a feed opening in said apparatus enabling material to be baled to be inserted into said working chamber area so as to be pressed in said working chamber area;
a feed door provided at said feed opening, being movable for opening and closing of said feed opening;
the feed door being divided into upper and lower door parts by a horizontal partition line; and said
upper door part being directly connected to said lower door part by drive means for actuating said upper door part in response to actuation and movement of said lower door part.

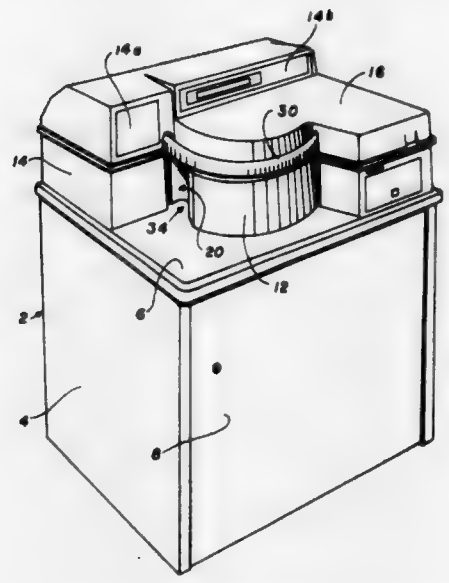
4,512,253

APPARATUS FOR PROCESSING RECYCLABLE CONTAINERS

Robert L. La Barge, Ben Avon; Eric D. Arndt, New Kensington; Jerrold D. Green, Murrysville, all of Pa.; Ronald G. Hawkins, Massena, N.Y.; Frank J. Horansky, Apollo; Charles J. Leftault, Jr., Murrysville, both of Pa.; Elmer E. Pohlenz, Richmond, Ind., and Thomas W. Scherf, Vandergrift, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 8, 1983, Ser. No. 559,425
Int. Cl.[3] B30B *9/32*
U.S. Cl. 100—53 25 Claims

1. Apparatus for receiving and crushing containers consisting essentially of recyclable material comprising:
(a) an enclosure;
(b) a manually operated rotatable carrier associated with said enclosure;
(c) a first station comprising a pocket in said carrier to receive a container;
(d) means for detecting the presence of a container in said pocket;
(e) means for determining the orientation of said container within said pocket;
(f) latching means to prevent rotation of said rotatable carrier until a container inserted therein has passed all tests performed in said first station;
(g) means for detecting the type of material comprising the walls of said container;
(h) means for measuring the weight of said container; and



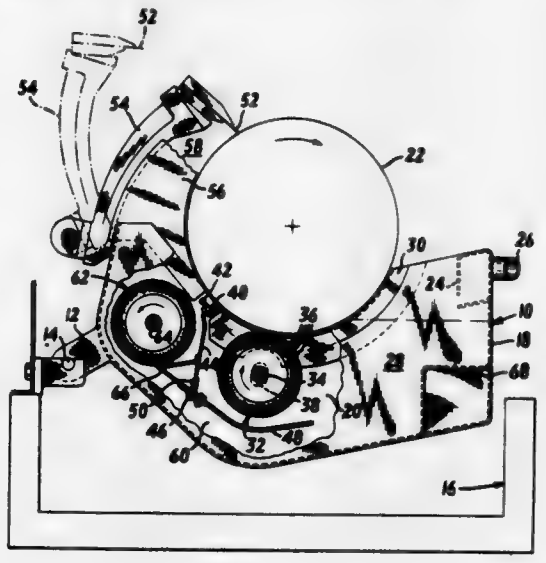
(i) means for crushing metallic containers having a predetermined acceptable weight.

4,512,254

FOAM INK FOUNTAIN

Leif F. Reslow; Mark D. Nieman, and Dean R. Swagert, all of York, Pa., assignors to Motter Printing Press Co., York, Pa.

Filed Apr. 24, 1984, Ser. No. 603,507
Int. Cl.[3] B41F *9/10, 9/16;* B41L *27/08*
U.S. Cl. 101—157 5 Claims



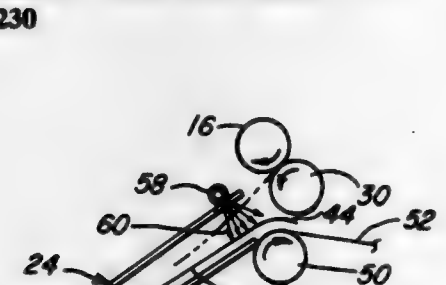
1. A fountain for applying a foam ink to an engraved cylinder of a rotogravure printing press comprising
an open ink pan disposed below the engraved cylinder,
means for supplying the foam ink to the ink pan,
rotary brush means for applying foam ink from the ink pan to the engraved cylinder,
a pre-doctor blade disposed in adjacent spaced relation to the engraved cylinder and arranged, in the direction of rotation thereof, following the rotary brush means, the pre-doctor blade permitting a predetermined amount of foam ink to pass thereby,
a doctor blade bearing against the engraved cylinder for scraping excess ink therefrom, the doctor blade being arranged, in the direction of rotation of the engraved cylinder, spaced from and following the pre-doctor blade, and
pump means for moving foam ink from the space between the pre-doctor blade and the doctor blade to the rotary brush means.

4,512,255

SHEET HANDLING MECHANISM FOR DUPLICATING MACHINE WITH DUPLEXING CAPABILITY

Lee D. Crist, Burlingame, Calif., assignor to AM International, Chicago, Ill.

Filed Mar. 4, 1983, Ser. No. 472,393
Int. Cl.[3] B41F 5/02; B65H 29/00
U.S. Cl. 101—230 10 Claims



1. In a duplicating machine for duplicating images on both sides of copy sheets including a first printing couple, having an impression cylinder, for transferring a first image to a first side of a copy sheet and a second printing coupled for transferring a second image to a second side of the sheet, means for handling said sheets for duplexing said images thereon, comprising:

means for directing each sheet issuing from said impression cylinder in a path away from the first printing couple;

means for diverting each sheet out of said path toward a reversing station;

means at the reversing station for re-feeding each sheet back into the path;

means for engaging the sheet and transporting the sheet toward the second printing couple; and

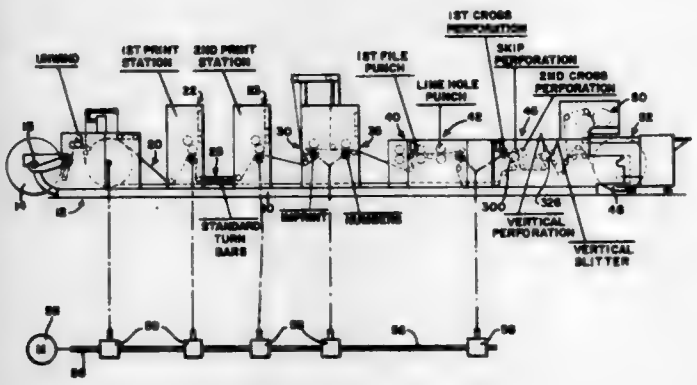
means for directing a stream of air in a direction against the plane of the trail end of the sheet as the sheet leaves the diverting means to bias the trail end into engagement with said means for transporting the sheet toward the second printing couple.

4,512,256

BUSINESS FORMS PRESS

Louis Schriber, Englewood; Robert E. Stephens, and John F. Blaha, both of Dayton, all of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Continuation of Ser. No. 738,751, Nov. 4, 1976, Pat. No. 4,177,730. This application Nov. 27, 1979, Ser. No. 97,622
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.
Int. Cl.[3] B41F 5/08, 13/14
U.S. Cl. 101—248 6 Claims



1. In a web printing press for printing business forms, including

an unwind station having a mechanism for supporting a roll of web material within a range of adjustment width-wide of said press,

at least one print station having means including rotary cylinders for printing form information on the web,

a numbering station including numbering machine means operable to print a number on each of the printed forms,

a a punch station including marginal punch unit means for forming a series of marginal holes along the printed forms,

a cross perforator station including rotating perforating blade means for making a transverse discontinuous line of perforation across the printed web for separation of the individual forms,

a drive connected to said stations to withdraw the web material from the roll and to rotate said cylinders and operate said numbering machine means, said marginal punch unit means, and said cross perforating blade means all in synchronsim:

the improvement comprising

said punch station and/or said cross perforator station having a rotary zero reference position relative to said drive,

means at one of said stations establishing a lateral zero reference position of the web and a means for indicating displacement of the web from the lateral reference position,

adjustment mechanisms at plural ones of said stations for adjusting the rotary displacement of the means included in said stations relative to said rotary reference position,

adjustment mechanisms at plural ones of said stations for adjusting the lateral displacement of the means included in said stations relative to said lateral reference position,

and coordinated indicated means coupled to each of said adjustment mechanisms to indicate the respective lateral or rotary zero positions and the respective lateral or rotary adjustments,

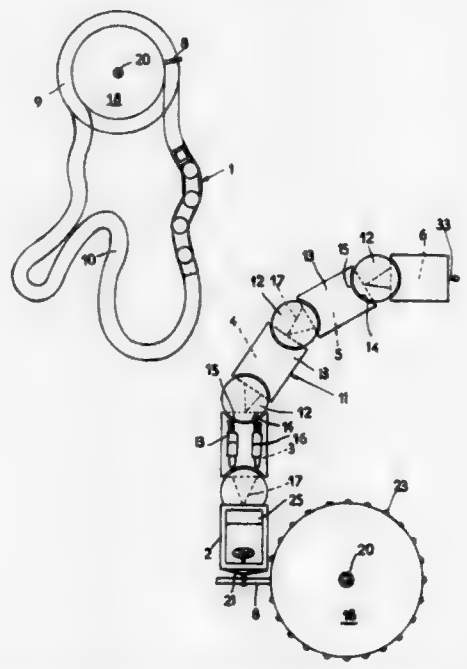
said adjustment mechanisms and indicator means constituting a coordinate layout system enabling precise alignment of each of said stations of the press from coordinate instructions at the beginning of makeready of the press.

4,512,257

CAROUSEL AND TRAIN FOR AMUSEMENT PARKS

Paul Loisel, 46 Vieux chemin de Paris, 95290 L'Isle Adam, France

Filed Apr. 29, 1982, Ser. No. 373,178
Claims priority, application France, May 5, 1981, 81 08859
Int. Cl.[3] A63G 1/00, 25/00
U.S. Cl. 104—53 9 Claims



1. An amusement park ride system, comprising:

a track, said track being a closed continuous first loop;

a complex path of travel forming a closed second loop, said complex path including a portion of said first loop;

an automotive train having at least one car, said train being adapted to move on said track and said path;

first and second connecting portions between said track and path, at said first connecting portion said train being selectively subject to one of egressing from said track to said path and continuing movement on said track, at said second connecting portion said train returning from said path to said track; and

steering means for selecting at said first connecting portion either said track or said path for movement thereon of said train.

4,512,258

HIGH SPEED UNDERGROUND TRANSPORTATION SYSTEM

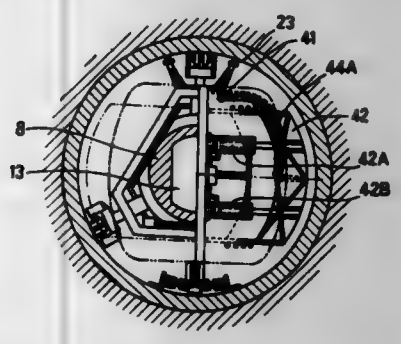
Kosuke Matsukata, 23-18 Toyooka-cho, Tsurumi-ku, Yokohama-shi, Kanagawa-ken 230, Japan

PCT No. PCT/JP82/00347, § 371 Date Jan. 7, 1983, § 102(e) Date Jan. 7, 1983, PCT Pub. No. WO84/00932, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 30, 1982, Ser. No. 460,246

Int. Cl.³ B61B *13/10;* B61F *9/00;* B64C *9/32*

U.S. Cl. 104—138 R 1 Claim



1. In an underground high speed transportation system of the type comprising an underground tube, at least one car running in said underground tube, at least two sets of legs of said car, each set having three legs positioned symmetrically around and radiating from an axis coaxial with the axis of the tube, a frame unit connecting said legs, a driving wheel on the extreme end of each of two said legs and a freely rotatable wheel on the extreme end of the third said leg, said two driving wheels lying on an imaginary horizontal line spaced between the bottom of the tube and the middle of the tube and said two driving wheels being in contact with the inner surface of the tube, and driving motors coupled to said driving wheels and driving said wheels for driving said car along said tube, wherein each said leg is extendable and retractable and each has an end part telescopically mounted on a main part, and said end and main parts define between them a hydraulic chamber, and a hydraulic control system coupled to the hydraulic chambers for extending said end parts of said legs, an improved means on said car for providing vertical stability, said stabilizing means comprising:

(a) one radiating spoke fixed to a central axle of the car extending toward the middle of the lower circumference of the tube, adjacent to and spaced from said tube, equipped with an even number of extendably mounted stabilizing wheels, transversely mounted to opposite sides of said spoke, two planar surfaces that contact the treads of said stabilizing wheels, between which said stabilizing wheels travel as the car moves through said tube;

(b) means for providing outward pressure to said stabilizing wheels to assure that they remain in contact with said planar surfaces as the car travels through the underground tube, said pressure means including a system of hydraulic cylinders to which each stabilizing wheel is extendably mounted and a regulated hydraulic pressure source to provide controlled hydraulic pressure to said hydraulic cylinders for pressing the stabilizing wheels outwardly against the planar surfaces; and

an improved baffle-type braking system comprising:

(a) flat baffle plates;

(b) baffle plate control means for extending and retracting said baffle plates whereby said baffle plates may be pushed outward from the body of the car to provide wind resistance for the purpose of decelerating said car, said baffle plates control means including two hydraulic cylinders per baffle plate and a regulated source of hydraulic pressure;

(c) movable cover means, mounted flush with the outside of said car, for being selectively moved into place to cover said baffle plates when they are in the retracted position, so as to maintain the aerodynamics of said vehicle; and

(d) a high pressure air ejection means including ports located on both the posterior and anterior sides of said baffle plates for exhausting high pressure air from said ports into the direction of travel of the vehicle during deceleration, thereby augmenting the braking force of said baffle plates, said air ejection means being supplied with a source of pressurized air to be selectively exhausted from said ports.

4,512,259

AUTOMATIC TRANSPORT SYSTEM COMPRISING CABLE-DRAWN NON-MOTORIZED VEHICLES

Jean Huon de Kermadec, Versailles, France, assignor to Soule Fer et Froid S.A., Bagneres de Bigorre, France

PCT No. PCT/FR81/00015, § 371 Date Oct. 6, 1981, § 102(e) Date Oct. 6, 1981, PCT Pub. No. WO81/02275, PCT Pub. Date Aug. 20, 1981

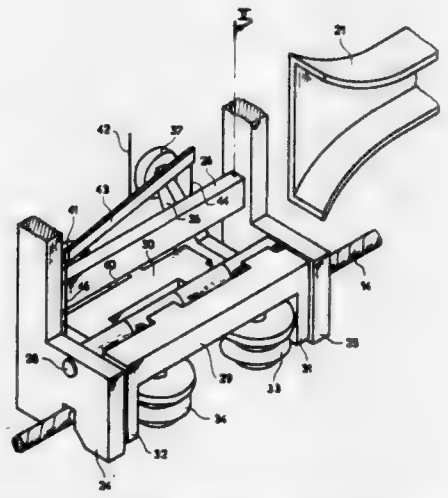
Continuation of Ser. No. 309,888, Oct. 6, 1981, abandoned. This PCT application Feb. 9, 1981, Ser. No. 583,277

Claims priority, application France, Feb. 11, 1980, 80 02908

Int. Cl.³ B61B *9/00, 12/12*

U.S. Cl. 104—208 14 Claims





1. An automatic transport system comprising:

a plurality of non-motorized vehicles supported for rolling movement on a closed-circuit support and guide track, said track having a main section for high speed movement of said vehicles and a station section adjacent to an end of said main section for decelerating said vehicles, said station section having an entrance and an exit;

a drive cable continuously moving in a closed circuit defined by a set of rollers for pulling said vehicles over said main section of said track, each of said vehicles having automatic coupling means for coupling the said vehicle to said drive cable, said coupling means comprising

a two-branch clamp for embracing said cable, each of said branches comprising a fixed member mounted on the chassis of said vehicle, and a revolving member mounted on said fixed member; and

means for automatically applying a predetermined clamping force to said cable, at least one branch of said clamp having means for opposing the movement of said revolving member relative to said fixed member with a force proportional to said predetermined clamping force, whereby upon closing said clamp said revolving member rolls without slip relative to said cable and revolves relative to said fixed member, said means for opposing the movement of said revolving member limiting the value of acceleration of said vehicle to a predetermined value so that the vehicle gradually attains the speed of said drive cable;

means located at the entrance to said station section for automatically opening said clamp;

means for automatically decelerating and transporting said vehicles between the entrance and the exit of said station section; and

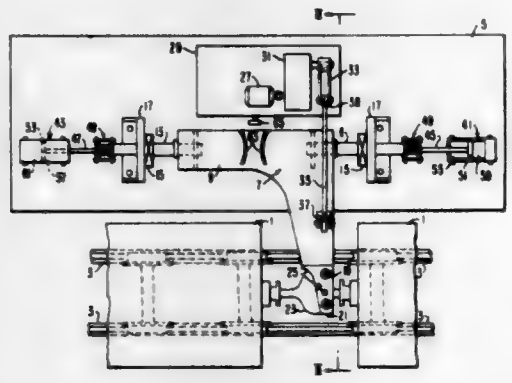
means at the exit from said station section for automatically closing said clamp to attach said vehicles to said cable.

4,512,260

TRAIN HOLDING APPARATUS WITH MEANS FOR RELIEVING THE LOAD IMPOSED THEREON DURING DISENGAGEMENT

Edward T. Manning, Jr., and Grant S. Horan, both of Bay Village, Ohio, assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1982, Ser. No. 427,003
Int. Cl.³ B61B *12/00;* B61J *3/00;* B61K *7/16*
U.S. Cl. 104—252 **8 Claims**



1. Apparatus for holding railroad cars in a train in place on a railroad track and for relieving the load carried thereby during disengagement from the train, said apparatus comprising:

a base positioned adjacent said railroad track;

a car holding arm including means on one end of said arm for engaging couplings on said railroad cars;

mounting means for mounting the car holding arm on the base for movement between a car engaging position wherein the arm engages a coupling of a car to hold that car and any other cars coupled to it in position on the track, and a retracted position wherein the cars are movable along the track relative to said car holding arm, said mounting means including means providing for movement of said car holding arm in a direction parallel to the direction of said track;

thrust absorbing means connected to said car holding arm for selectively resisting movement of the arm in a direction parallel to the railroad track; and

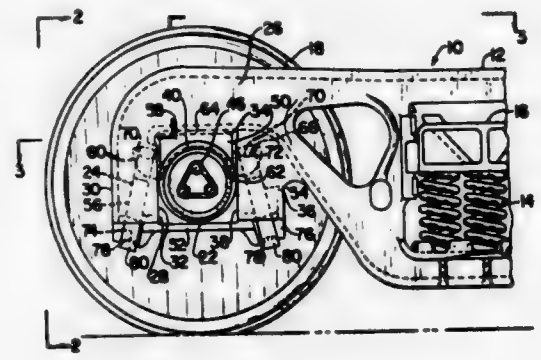
control means for selectively conditioning said thrust absorbing means to resist movement of the car holding arm in said direction parallel to the direction of said track in response to loads imposed thereon by the cars when the arm is in engagement with the coupling on a railroad car to hold the cars in place on the track, and for conditioning said thrust absorbing means to permit movement of the car holding arm in a direction parallel to the railroad track to relieve the load imposed by said cars on said car holding arm when the car holding arm is to be moved to the retracted position, whereby the car holding arm can be moved from engagement with the car coupling for return to the retracted position without any load from the cars being imposed therein.

4,512,261

SELF-STEERING RAILWAY TRUCK

Oscar J. Horger, San Diego, Calif., assignor to A. Stucki Company, Pittsburgh, Pa.

Continuation of Ser. No. 390,220, Jun. 21, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 429,004
Int. Cl.³ B61D *3/08, 5/26, 5/38*
U.S. Cl. 105—167 **13 Claims**



1. A railway truck comprising:

a pair of laterally spaced, elongated side frame members having opposed openings therein intermediate the length thereof; respectively,

at least one elongated rotatable axle extending transversely between said side frame members with the ends thereof being received at least in part within said openings, respectively;

rotatable wheels carried by said axle adjacent the ends thereof laterally inward of said side frame members, respectively;

said axle having axially spaced and circumferentially extending bearing areas located outwardly adjacent said wheels and said openings, respectively;

side frame support members engageable by upwardly facing portions of said bearing areas, respectively, for continuous support thereof;

each of said side frame support members carrying longitudinally spaced upper support means;

said upper support means including upwardly facing engagement surface portions which are fixedly located with respect to said side frame support members, respectively, generally outwardly in longitudinally opposite directions with respect to a vertical plane passing through the axis of rotation of said axle;

each of said side frame members carrying longitudinally spaced lower support means;

said lower support means including downwardly facing engagement surface portions which are fixedly located with respect to said side frame members, respectively, outwardly in opposite directions with respect to such a vertical plane;

said downwardly facing engagement surface portions being spaced a greater longitudinal distance from such vertical plane than the respective said upwardly facing engagement surface portions to provide a pair of longitudinally offset upper and lower engagement surface portions on each side of such vertical plane adjacent each end of said axle;

and rigid connecting means having fixedly spaced apart, oppositely facing surfaces thereon which are engageable with respective said pairs of upper and lower engagement

surface portions to connect said upper and lower support means, respectively, in a manner to permit simultaneous relative lateral and longitudinal movement of said members in response to the relative lateral and longitudinal movement of said wheels and said axle with respect to said side frame members while maintaining continuous engagement with said upper and lower engagement surface portions.

4,512,262

ARTICLE DISPLAY STAND

Wolf-Dietrich Hannecke, Rischenau Weg 6, 3410 Northeim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 821,410, Aug. 3, 1977,. This application Dec. 14, 1981, Ser. No. 330,771

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 7706489[U]; Mar. 3, 1977, 7706490[U]; Mar. 4, 1977, 7706706[U]

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.³ A47B *57/00*

U.S. Cl. 108—61 **18 Claims**



1. The article display stand comprising an elongated upright resiliently deformable support having a plurality of recesses which are spaced from and located adjacent to each other in the direction of elongation of said support; and an article supporting element mountable in said support in any of a plurality of positions spaced longitudinally of said support and having a projection which is detachably engageable with respective ones of said recesses so that, when said projection of said article supporting element engages in one of said recesses of said support, said article supporting element is fixed in a respective one of said positions, said article supporting element including a substantially horizontal base plate arranged to support articles and a substantially upright hollow conical member connected with said base plate and fittable onto said support, said conical member having an upper region and a lower region, said article supporting element having a second such projection upwardly spaced from said first-mentioned projection, said first-mentioned projection being arranged in said lower region of said conical member whereas said second projection is arranged in said upper region thereof.

4,512,263

DEPOSITORY APPARATUS WITH SEQUENTIAL STACKING

Frederick E. Lanning, Concord, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1983, Ser. No. 492,321

Int. Cl.³ E05G *1/00, 5/00*

U.S. Cl. 109—66 **6 Claims**

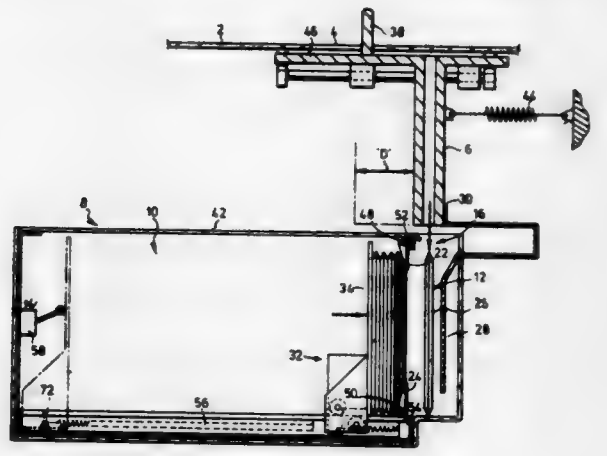
1. An improved depository apparatus, for use in an automatic banking system or the like, comprising:

housing means having a deposit aperture formed therein:

a substantially closed depository storage chamber within said housing means, said chamber having an access port displaced relative to said deposit aperture;

an open-ended duct member mounted within said housing means for movement between a first position for communication solely with the storage chamber access port, and a second position for communications solely with said deposit aperture;

operating means effective to provide for movement of said duct member between said first and second positions;



said depository storage chamber having a receiving zone in communication with said access port, and a storage zone;

gate means mounted between said receiving zone and said storage zone to permit one-way passage of deposits from said receiving zone to said storage zone; and,

pusher means mounted in said housing means for movement responsive to operation of said duct member to push a deposit located in said receiving zone through said gate means and into said storage zone to thereby effect sequential stacking of deposits.

4,512,264

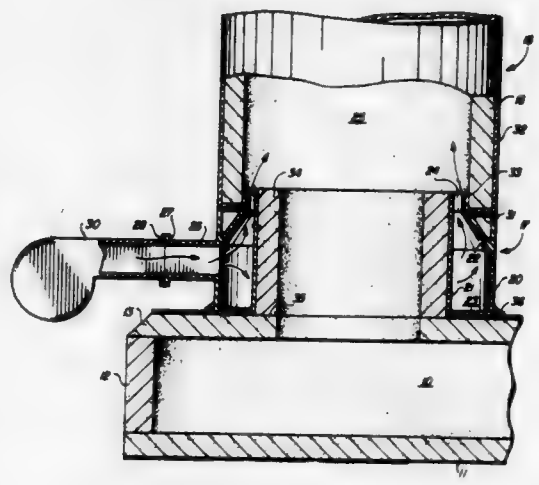
INDUCED STACK DRAFT APPARATUS

James P. Crawford, P.O. Box 13243, Orlando, Fla. 32859

Filed Oct. 31, 1983, Ser. No. 546,992

Int. Cl.³ F23L *17/16;* F23N *3/00*

U.S. Cl. 110—160 **4 Claims**



1. An induced draft apparatus comprising in combination:

a combustion chamber;

an exhaust stack operatively connected to said combustion chamber;

induced draft means attached between said combustion chamber and said exhaust stack around the base of said exhaust stack and having an annular plenum formed of mild steel, an air blower connected to said annular plenum for directing air under pressure into said annular plenum and out a narrowed annular opening into said stack,

whereby the velocity of the air leaving said annular plenum is increased as it exits into said stack;

an annular refractory surface formed on the inside of the inside wall of said plenum wall and abutting refractory material in the combustion chamber, whereby said plenum wall is protected from heat and exhaust gases passing through said stack; and

said induced draft means having a reinforced annular ledge having an annular lip therearound for attachment of the base of a stack lined with a refractory material thereon.

4,512,265

WET ASH REMOVER

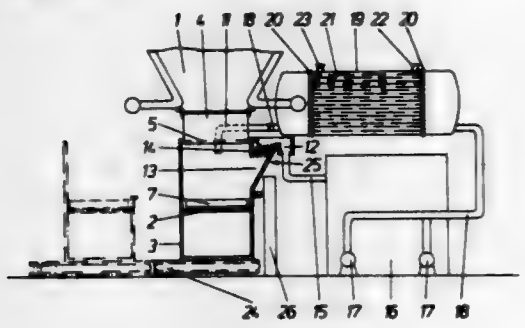
Horst Buchmüller, Hünxe, and Bernhard Michelbrink, Wesel, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 182,862, Sep. 2, 1980, abandoned, which is a continuation of Ser. No. 006,580, Jan. 26, 1979, abandoned. This application Apr. 9, 1982, Ser. No. 366,789

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830380

Int. Cl.[3] **F23J** *1/02*

U.S. Cl. 110—171 **8 Claims**



1. A wet ash remover comprising: a trough arranged underneath the ash funnel of a boiler; said trough being filled with quenching water; a quenching water feed means and an overflow means located on said trough; ash conveying means passing through said trough; cooling means located between said overflow means and said quenching water feed means for cooling said quenching water, quenching water being continuously circulated through said cooling means, said quenching water being cooled by a coolant isolated from said quenching water in said cooling means; and at least one set of a plurality of immovable parallel plates located inside said trough immediately in front of said overflow means, said plates being inclined and spaced from each other and forming parallel and inclined passages for the quenching water, said plates having means so that particles of ash suspended in the quenching water are precipitated between said plates and thereby retained in said trough; immersion means connected to said ash funnel and having lower edges dipping below the level of the quenching water within said trough for sealing off the trough from the ash funnel, said quenching water being cooled by said cooling means subsequent to precipitation of said particles of ash.

4,512,266

CITY REFUSE INCINERATOR FOR THE PREVENTION OF CLINKER FORMATION

Masanobu Shigaki, Ibaragi, Japan, assignor to Kabushiki Kaisha Takuma, Osaka, Japan

Filed Mar. 27, 1984, Ser. No. 594,005

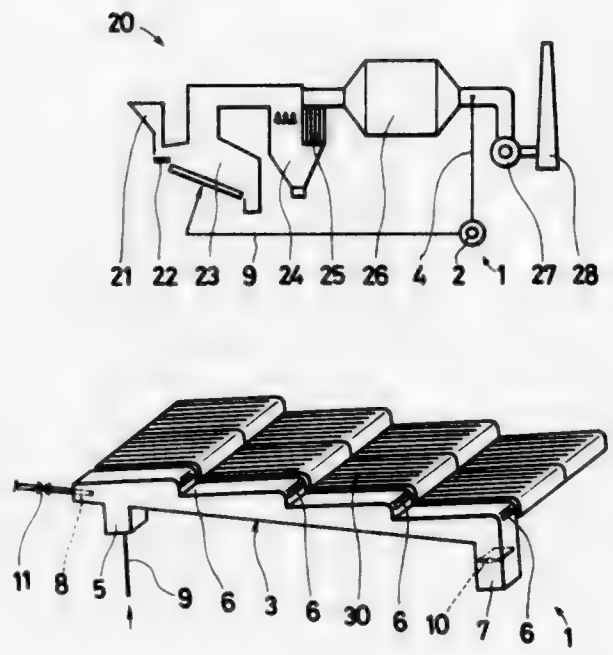
Claims priority, application Japan, Mar. 30, 1983, 58-56270

Int. Cl.[3] **F23B** *5/02;* **F23K** *7/04*

U.S. Cl. 110—204 **1 Claim**

1. A city refuse incinerator for the prevention of clinker formation comprising a furnace body having a sidewall, said refuse incinerator being provided with stoker type firing equipment for moving refuse through said furnace body, and an inert gas circuit comprising: gas injection positioned in said furnace body and directed to inject gas into said furnace body adjacent said sidewall, a dust collector means coupled to said furnace to receive and purify a combustion gas led from the furnace body, a temperature reducing means for lowering the temperature of the combustion gas passing through the dust-collector means and a circulation fan for supplying this purified low temperature inert combustion gas from the dust-collector means to the gas injectors, said gas injectors injecting said inert gas to form a gas curtain concentrated at the inside of said sidewall of the furnace body to thereby inhibit the formation of clinkers on said sidewall;

said gas injectors being formed by a gas injector apparatus which includes a hollow pipe member installed between said stoker type firing equipment inside the furnace body and the sidewall of the furnace body, the upper side of said hollow pipe member having steps shaped thereon with injection openings in the front faces of said steps, said



hollow pipe member further having a gas inlet opening for receiving said purified low temperature inert combustion gas from said dust collector, a selectively operated valved foreign matter discharge opening downstream of said injection openings and a selectively operated valved pressurized air source upstream of said injection openings, whereby said valved foreign matter discharge opening and said selectively operated valved pressurized air source are normally closed to allow said purified low temperature inert combustion gas entering from said gas inlet opening to be passed through said injection openings but being selectively opened for sending compressed air through the hollow pipe member so as to drive foreign matter from the hollow pipe through the foreign matter discharge opening.

4,512,267

METHODS AND APPARATUS FOR COMBUSTING ASH PRODUCING SOLIDS

John M. Cegielski, Jr., Claremore; Gerald D. Campbell, Jenks, and Clyde D. Schaub, Tulsa, all of Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Jan. 24, 1984, Ser. No. 573,470

Int. Cl.[3] **F23D** *1/00*

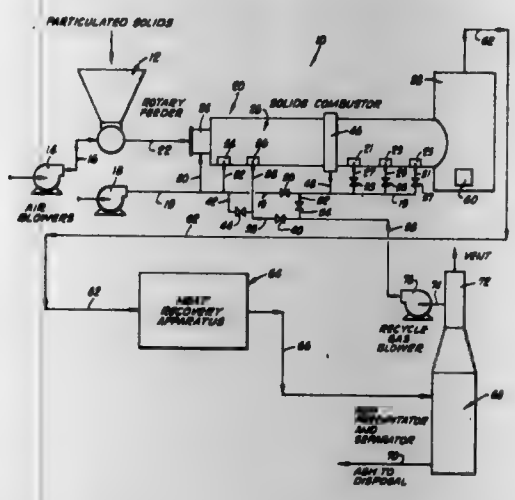
U.S. Cl. 110—347 **26 Claims**

1. A method of combusting particulated ash producing solids comprising:

conveying said particulated solids to an elongated cylindrical combustion chamber;

combining air with said solids and injecting the resulting air-solids mixture longitudinally into said combustion chamber wherein the solids are ignited and combusted;

tangentially injecting a stream of relatively cool gas into the interior of said combustion chamber in a direction transverse to the longitudinal axis thereof so that a helical vortex is created within and along the length of said combustion chamber and the flame, ash and hot gaseous products of combustion produced therein are caused to flow through the central portion of the combustion chamber



surrounded by a sleeve of a cooler gas whereby tacky or molten ash is substantially prevented from adhering to the interior surfaces of said combustion chamber;

cooling said ash and hot gaseous products of combustion in said combustion chamber whereby tacky or molten ash is solidified therein; and

withdrawing the resultant cooled stream of solidified ash and gases from said combustion chamber.

4,512,268

METHOD AND APPARATUS FOR TENSIONING AND SEWING A TUBULAR WORKPIECE

Gunter H. Rohr, Hemmingen, Fed. Rep. of Germany, assignor to Union Special GmbH, Stuttgart, Fed. Rep. of Germany

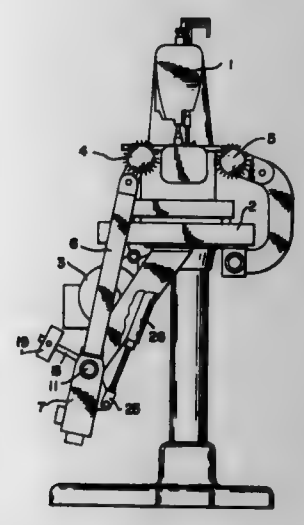
Filed Oct. 26, 1982, Ser. No. 436,764

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142836

Int. Cl.³ D05B *35/00*

U.S. Cl. 112—63

18 Claims



1. A tensioning device arranged in combination with an automatic sewing machine capable of sewing along an advancing edge of a tubular workpiece article and having a work supporting surface, said tensioning device comprising:

at least two rotatable tensioning parts for supportably receiving a tubular workpiece edge portion of the article to be sewn; and

means for mounting said tensioning parts on opposite sides of said sewing machine in the direction of the article's advancement, said mounting means including means for holding one of said tensioning parts in a fixed relationship relative to said sewing machine and means responsive to machine actuation for automatically moving the other tensioning part away from the first tensioning part to a free floating position determined by the size of the tubular workpiece edge portion arranged thereabout and along a path extending substantially parallel to said work supporting surface whereby applying a constant predetermined tension to the workpiece edge regardless of the article's size.

4,512,269

AUTOMATED ASSEMBLY SYSTEM FOR SEAMED ARTICLES

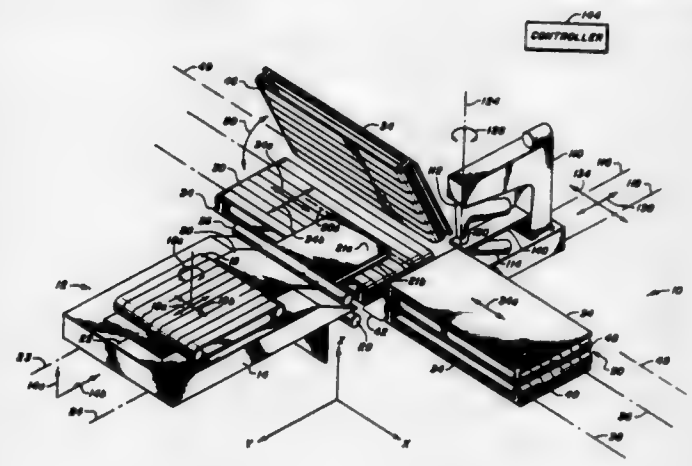
Philip N. Bowditch, Cohasset, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jul. 19, 1983, Ser. No. 515,126

Int. Cl.³ D05B *3/00, 27/00*

U.S. Cl. 112—121.12

21 Claims



1. System for joining portions of an elongated strip of limp fabric, said strip being characterized by an associated fabric axis extending along its elongated dimension, comprising:

A. feeder means for selectively feeding a strip of limp fabric with its fabric axis parallel to a first (Y) reference axis, said Y axis being perpendicular to a second (X) reference axis and intersecting therewith,

B. means for folding a portion of said strip of limp fabric onto itself along a fold axis offset from said fabric axis, said folded portion having an upper layer overlying a lower layer,

C. means for supporting said upper and lower layers of said folded portion in a substantially planar fabric locus substantially parallel to said X and Y axes, wherein said supporting means includes:

i. a frame member, a support assembly coupled to said feeder means, and an associated frame X-drive means for selectively positioning said frame member with respect to said support assembly in the direction of said X axis,

ii. a pair of lower belt assemblies coupled to said frame member and including a plurality of continuous loop lower belts having a planar uppermost portion underlying said fabric locus and being adapted on their outer surface for frictional coupling with said lower layer of said folded portion, each of said lower belt assemblies being adjacently positioned along said X axis, each of said lower belt assemblies including an associated lower belt drive means for selectively driving said lower belts whereby said lower layer coupled thereto is positionable in the direction of said X axis,

iii. a pair of upper belt assemblies coupled to said frame member and including a plurality of continuous loop upper belts having a planar lowermost portion opposite and spaced apart from said planar uppermost portion of said lower belts, said upper belts overlying said fabric

locus and being adapted on their outer surface for frictional coupling with said upper layer of said folded portion, each of said upper belt assemblies including an associated upper belt drive means for selectively driving said upper belts whereby said lower layer coupled thereto is positionable in the direction of said X axis, wherein the region between said lowermost portion of said upper belts and said upper portion of said lower belts defines said fabric locus,

D. folded fabric controller including means for selectively controlling said lower belt drive means, said upper belt drive means and said frame X-drive means, whereby said upper and lower layers may be substantially independently positioned in said fabric locus in the direction of said X axis,

E. fabric joiner including:

i. an upper assembly selectively positionable between said upper belt assemblies along said Y axis and, a lower assembly selectively positionable and between said lower belt assemblies along said Y axis, and said upper assembly being above said fabric locus and said lower assembly underlying said upper assembly and being below said fabric locus, said upper and lower assemblies including selectively operable joining means for joining adjacent regions said upper and lower layers in said fabric locus between said upper and lower assemblies, and

ii. joiner drive means for selectively positioning said upper and lower assemblies with respect to said support assembly in the direction of said Y axis,

F. fabric joiner controller including means for selectively controlling said joiner drive means to establish a current position of said upper and lower assemblies and for selectively controlling the operation of said joining means at said current position of said fabric joiner.

18. System for joining portions of a multilayer limp fabric workpiece, comprising:

A. feeder means for selectively feeding said multilayer limp fabric workpiece in the direction of an X reference axis, said X axis being perpendicular to a Y reference axis and intersecting therewith, said fabric workpiece having an upper layer overlying a lower layer,

B. means for supporting said upper and lower layers of said workpiece in a plane fabric locus substantially parallel to said X and Y axes,

C. means for independently, selectively positioning said upper and lower layers in the direction of said X axis,

D. fabric joiner including a joining means adjacent to said fabric locus and associated means for selectively positioning said joining means with respect to said fabric locus along said Y axis, said joining means including selectively operable means for joining said upper and lower layers in said fabric locus at a current position of said joining means,

E. fabric joiner controller including means for establishing a current position of said joining means and for selectively controlling the operation of said joining means.

4,512,270

HEMMING GUIDE CONTROL FOR AN OVERLOCK SEWING MACHINE

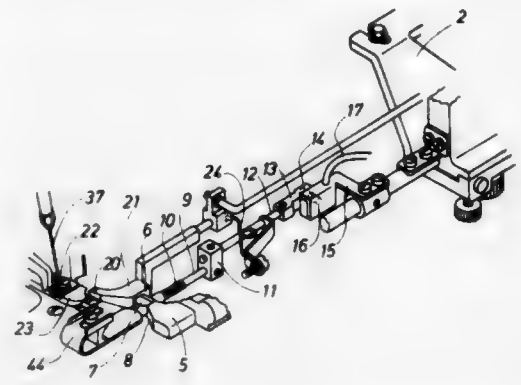
Keizo Nozaki, Kawanishi, Japan, assignor to Yamato Mishin Seizo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 11, 1983, Ser. No. 457,208
Claims priority, application Japan, Sep. 27, 1982, 57-169318
Int. Cl.³ D05B *1/24*
U.S. Cl. 112—140 **17 Claims**

1. An apparatus for assuring stitching of portions of a fabric just forward of and behind a stepped cross seam in a sewing path, which cross seam extends in a lateral direction out of the plane of the fabric, for use in a sewing machine which includes a sewing needle and means for moving the portion of the fabric to be sewn in a longitudinal direction beneath the sewing needle, said apparatus comprising:

a hemming guide unit having a fabric guide surface for being positioned adjacent the needle such that said fabric guide surface guides the portion of the fabric to be sewn in contact therewith beneath the needle, said hemming guide unit being movable between a first normal position, in which said fabric guide surface guides the fabric, and a second position laterally spaced from said first position;

means for detecting the stepped cross seam longitudinally behind said fabric guide surface; and



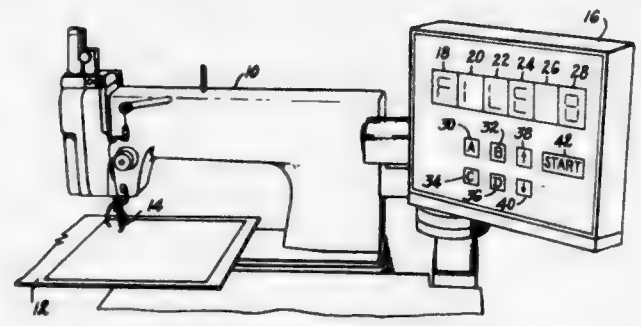
means, responsive to the detection of the stepped cross seam, for moving said hemming guide unit from said first normal position in a first direction so as to move said fabric guide surface away from the fabric to be sewn just before the stepped cross seam crosses beneath the sewing needle, and returning the hemming guide unit to said first normal position just after the stepped cross seam passes under the sewing needle, so as to eliminate excessive pressure on the stepped cross seam by the fabric guide surface along a segment of the sewing path from just forward to just rearward of the stepped cross seam.

4,512,271

PATTERN SELECTION SYSTEM

Donald F. Herdeg, South Hamilton, and William G. Matseas, Rowley, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Oct. 20, 1982, Ser. No. 434,037
Int. Cl.³ D05B *3/02, 21/00*
U.S. Cl. 112—158 E **14 Claims**



1. An automatic sewing machine having a number of predefined stitch patterns stored in a memory, and furthermore having a smaller number of pattern selection switches wherein each of said smaller number of pattern selection switches may be assigned one of said predefined stitch patterns stored in the memory, a system for assigning the predefined stitch patterns in a manner which allows any assigned, predefined stitch pattern to be recalled from memory by activating the pattern selection switch to which the stitch pattern has been assigned, said system comprising:

means for monitoring the status of each pattern selection switch;

means for displaying a message in response to a change in

status of any of the pattern selection switches, the message providing a designation of one of the predefined stitch patterns stored in the memory in the event that a prior assignment of a predefined stitch pattern stored in the memory has been made to the particular pattern selection switch in which a change in status has occurred;

means for altering the displayed message so as to display the designation of a different one of said number of predefined stitch patterns stored in the memory; and

means for storing the designation of the different predefined stitch pattern for subsequent recall upon further activation of the particular pattern selection switch.

4,512,272

SEWING MACHINE REVERSIBLE FEEDING MECHANISM

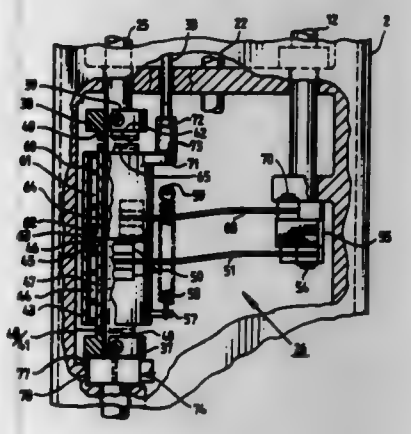
Günter Landwehr, Bielefeld, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,219

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210997

Int. Cl.³ D05B *27/06*

U.S. Cl. 112—311 **13 Claims**



1. A sewing machine comprising:

a housing including a base plate supporting a workpiece;

a rotating shaft pivotally received in said housing;

stitch forming means including:

a reciprocatingly driven needle and

a feed gear reversibly advancing said workpiece with respect to said needle and having:

a first gear part including

eccentric means driven by said shaft for generating an oscillatory movement, and

a second gear part comprising:

a first one-way coupling means connected by drive means to said first gear part for converting said oscillatory movement into a stepwise movement of a direction,

an endless workpiece feed member with a drive connection,

reversing gear means, and

clutch means including shifting means for alternatively connecting said one-way coupling means or said reversing gear means to said feed member,

said reversing gear means comprising a further one-way coupling means similarly structured to said first one way coupling means oppositely-arranged with respect to said one-way coupling means and drivingly connected to said first gear part for converting said oscillatory movement into a stepwise oppositely-directed movement of an opposite direction with respect to said direction.

4,512,273

FEEDING MECHANISM IN A SEWING MACHINE

Kenneth O. E. Skogward, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden

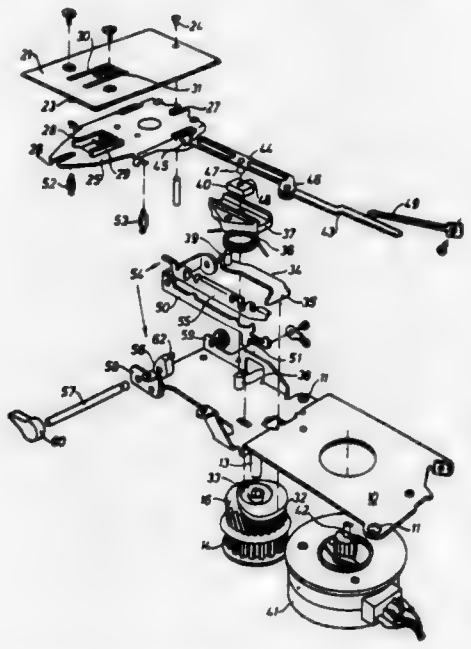
PCT No. PCT/SE82/00374, § 371 Date Jun. 24, 1983, § 102(e) Date Jun. 24, 1983, PCT Pub. No. WO83/01795, PCT Pub. Date May 26, 1983

PCT Filed Nov. 8, 1982, Ser. No. 514,819

Claims priority, application Sweden, Nov. 11, 1981, 8106701

Int. Cl.³ D05B *27/22, 27/24*

U.S. Cl. 112—315 **10 Claims**



1. In a feeding mechanism for a sewing machine, the sewing machine having a stitch plate and drive means, said feeding mechanism having a cloth feeder arranged below the stitch plate, first cam means moving the cloth feeder in a cloth feed direction and second cam means for moving the cloth feeder toward and away from said stitch plate, said first and second cam means being driven by said drive means; the improvement wherein said feeding mechanism further comprises a frame, a guide journalled on said frame about an axis substantially normal to said stitch plate, means coupled to said first cam means for reciprocably moving said guide, said first and second cam means being journalled to said frame, block means slidably mounted on said guide, slide means coupled to said block for moving said cloth feeder in said feed direction upon reciprocation of said guide, and adjustment means for moving said block means in a direction substantially perpendicular to said feed direction for adjusting the movement of said cloth feeder in said feed direction.

4,512,274

SEAM FOR TUBE OF CLOTH, FABRIC OR FLEXIBLE MATERIAL

Richard J. Campbell, Jr., 1006 Orange Grove Ave., Glendale, Calif. 91205, and Kirk B. Campbell, 1531 Broadview, Glendale, Calif. 91208

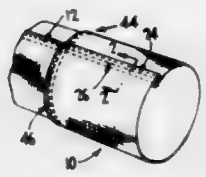
Filed Sep. 1, 1982, Ser. No. 413,794

Int. Cl.³ D05B *1/10, 1/18*

U.S. Cl. 112—423 **8 Claims**

1. A longitudinal seam for a fabric and like tube, an outer edge of said tube being radially inwardly reversely folded to define a folded edge portion including a folded edge and a free edge, and an inner edge of said tube underlying said folded edge portion and having a free edge generally aligned with said fold edge portion free edge, a first needle thread disposed adjacent to and parallel to said folded edge and having loops extending through all three of the lapped layers, said first needle thread loops being joined together within said tube by a first looper thread, and second and third needle threads adjacent and on opposite sides of said free edges and parallel to said first needle thread and having loops joined by a second

looper thread, said second needle thread loops extending through all three layers, said third needle thread extending



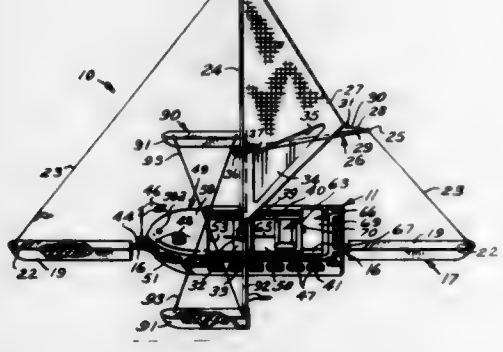
through a single layer, and said second looper thread criss-crossing said free edges between said second and third needle thread loops.

4,512,275

UNSINKABLE ALL-PURPOSE BOAT

Philip R. Drumm, P.O. Box 608, Midtown, New York, N.Y. 10018

Filed Apr. 27, 1983, Ser. No. 489,102
Int. Cl.³ B63B *5/24, 35/72*
U.S. Cl. 114—39 **1 Claim**



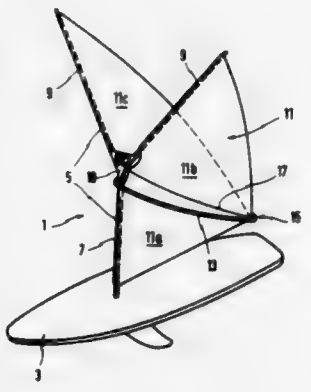
1. An unsinkable all-purpose boat, comprises, in combination, a resilient foam plastic hull, a resilient foam plastic cowl and storage unit frictionally received in said resilient foam plastic hull, a resilient foam plastic seat frictionally received in said resilient foam plastic hull, and a resilient foam plastic storage chest frictionally received in said resilient foam plastic hull, and a plate is removably received in said resilient foam plastic hull and provides support means for a mast and is rectangular in configuration, and one end of a hollow cylindrical sleeve is fixedly secured to one side of said plate in a suitable manner, and said hollow cylindrical sleeve removably receives the bottom end of said mast, and the ends of said plate are frictionally received in a pair of elongated cut-out grooves in the inside surfaces of the side walls of said resilient foam plastic hull, and a fore and aft stabilizer is provided and includes a tube which extends from the bow portion and the transom, and is removably secured in a longitudinal groove provided in the bottom surface of said resilient foam plastic hull, by suitable means, and the ends of said tube are fixedly secured in a resilient foam plastic float in a suitable manner.

4,512,276

SAILBOARD RIG

Georg Hamann, Loherfeldweg 8, 8211 Schleching, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,677
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234582
Int. Cl.³ B63B *35/72*
U.S. Cl. 114—39 **8 Claims**



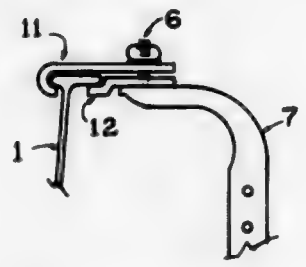
1. A sailboard rig comprising a mast, a sail, a boom for holding and moving the sail, a mast foot joint for connection of said mast to a sailboard so that said mast may be turned and heeled over, said sail being joined with said mast at a sail luff and with an end of said boom spaced from said mast, said mast being generally Y-like with a lower mast section running up from said mast foot joint to a branch point and then further upwards in the form of two outwardly forked mast arms, said sail having a lower sail panel and two upper, outwardly and upwardly spreading panels in keeping with the Y-like form of the mast and a Y-like luff, the two upper sail panels being joined with the lower panel along a seam running to an aft limit of said sail.

4,512,277

ADJUSTABLE CANOE PONTOONS

Donald F. Williams, 53 E. Lakewood Dr., Fenton, Mo. 63026

Continuation of Ser. No. 369,513, Apr. 19, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 571,340
Int. Cl.³ B63B *35/00*
U.S. Cl. 114—364 **3 Claims**



1. An adjustable two-piece clamping device for mounting a pontoon to the top flat surface of a "T"-shaped gunwale of a canoe comprising a first clamp adapted to engage the top and inboard bottom surface of said "T"-shaped gunwale lying flat across the top thereof and a second clamp adapted to engage the outboard bottom surface of said "T"-shaped gunwale and having a bolt and nut connecting said first and second clamp to the upper end of an outrigger arm for attachment to a pontoon, said nut and bolt providing an upper pivot point to allow said clamp to conform to the different shapes of various length canoes.

4,512,278

VEHICLE TIRE DEFLATION SIGNALLING SYSTEM

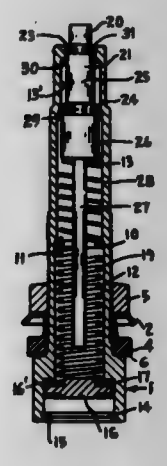
Harry C. Winther, Chestertown, Md., assignor to Winther Family Members, Pa.

Continuation of Ser. No. 182,606, Aug. 29, 1980, abandoned. This application Aug. 12, 1983, Ser. No. 522,741

Int. Cl.[3] B60C *23/04*

U.S. Cl. 116—34 R

9 Claims



1. A valve and low-pressure indicator assembly for a pressurized container comprising:

(a) a tubular housing having a downwardly-facing seat;

(b) a valve poppet cooperating with the seat;

(c) spring means biasing the valve poppet away from the seat, the spring means being overcomeable by air pressure within the pressurized container above a preestablished pressure;

(d) mounting means intermediate the level of the seat and the upper end of the housing for mounting the valve assembly to the pressurized container;

(e) said poppet and seat being located and protected inside the pressurized container;

(f) an indicator piston reciprocable in the housing and having an upper portion adapted to be seen and indicate low pressure, the piston having an upper position for indicating, a lower position for venting, and a normal position intermediate the two, the piston having a downward extension adapted to engage the poppet and forcibly open it when the piston is moved manually down to the lower position, the piston sealingly engaging the wall of the housing except in the venting position;

whereby when the pressure in the container drops, the poppet opens and the piston is driven to indicating position and whereby from the upper end of the housing the container may be vented by pressing down the piston to open the poppet, and gauged or filled by placing a gauge or filling chuck over the top of the housing and pressing the piston down to open the poppet.

4,512,279

PAPER COATING APPARATUS

Wayne A. Damrau, and James C. Gauss, both of Wisconsin Rapids, Wis., assignors to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

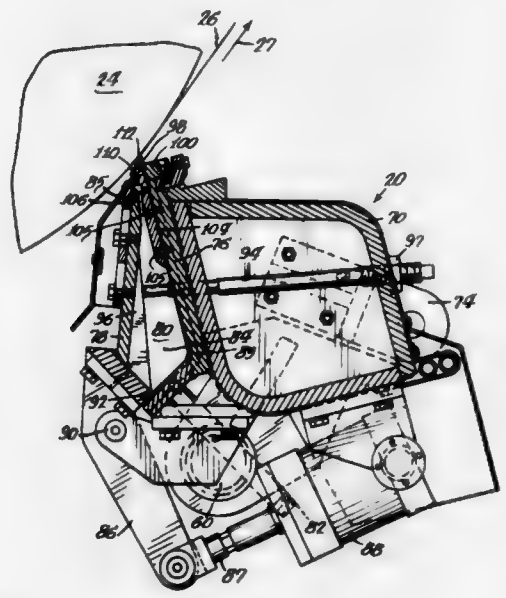
Continuation of Ser. No. 863,464, Dec. 22, 1977, , which is a continuation-in-part of Ser. No. 683,669, May 6, 1976, abandoned. This application Jun. 10, 1983, Ser. No. 501,969

Int. Cl.[3] B05C *5/02*

U.S. Cl. 118—411

2 Claims

1. A coating applicator for applying coating liquid to one side of a moving web of paper, comprising means for supporting the moving web in position located on the other side of the web, a beam carrying a front wall and a rear wall forming a chamber extending substantially across and parallel to the web, said chamber having a header with at least one coating liquid inlet and discharging between said front and rear walls, said chamber receiving the coating liquid from said header, said chamber defining a narrow outlet slot extending across the web and adjacent thereto, means for delivering coating liquid through said header, said chamber and said outlet slot and onto said web at a pressure of between 150 and 7 inches of water, a single doctor blade located at a rear edge of said outlet slot on the rear wall of said chamber for doctoring the coating liquid on the web, said doctor blade being spaced from a front edge of said front wall by a small dimension such that the blade doctors the coating liquid on the web within about 0.0004 to about 0.0100 second of the pressure application of the coating to the web, and end dam means for sealing the end spaces between said front and rear walls and said doctor blade with the web, the front edge of said front wall of said chamber being spaced less than one inch from the web, a liquid seal established between said front edge of said front wall and the web continuously across the web at the front edge of said outlet slot by flow of coating liquid under said pressure reversely of the direction of web travel through the space between said front edge of said front wall and the web, said liquid seal causing the coating liquid in said chamber and between said doctor blade and said seal to be held under said pressure while permitting reverse flow of coating liquid between said front edge and the moving web for establishing said liquid seal, for sealing off the forward edge of said chamber against entry of air and foreign matter, for continuously purging said chamber, and for causing said blade to doctor the coating liquid on the web while said



coating liquid is held under said pressure, whereby said moving web may be coated with coating applied primarily to the surface of the web and doctored almost immediately so that there is a minimum penetration of coating liquid beyond the surface of the web into the paper; an orifice plate comprising said front edge of said front wall and adjustably mounted on said front wall for movement toward and away from the web for establishing a desired clearance between the front edge of said orifice plate and the web, and means for adjusting said orifice plate to establish a clearance of less than one inch which, in relation to the delivery of coating liquid, is such as to cause a reverse flow of coating liquid under said pressure between said front edge of said orifice plate and the moving web sufficient to maintain said liquid seal and said coating liquid pressure in said chamber; said adjusting means comprising an adjustable member slidable on said front wall in a direction transverse to the movement of said orifice plate and having inclined slots therein, said front wall having vertical slots therein intersecting said inclined slots, said orifice plate carrying first and second cam means engaged respectively in said inclined and vertical slots, the cam means engaging in said inclined slots comprising rotatable rollers eccentrically and adjustably mounted on said orifice plate to provide for uniform engagement thereof within said inclined slots, whereby movement of said adjustable member in a direction transverse to the movement of said orifice plate causes said orifice plate to move

linearly toward or away from said web uniformly over its length.

4,512,280

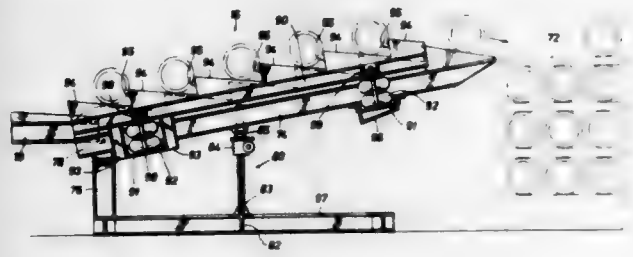
PIPE CONVEYING APPARATUS

Roy Lee, Jr., 10134 Briar Dr., Houston, Tex. 77042

Continuation-in-part of Ser. No. 267,994, May 28, 1981, abandoned. This application Oct. 21, 1982, Ser. No. 435,726

Int. Cl.³ B05C *3/09*

U.S. Cl. 118—426 **4 Claims**



1. Pipe conveying apparatus comprising a plurality of spaced, parallel, fixed pipe rails for supporting a plurality of joints of pipe extending transverse the rails, a plurality of spaced movable pipe rails that are parallel to each other and to the fixed pipe rails, means for moving the movable rails between a raised position where the pipe joints above the movable rails are supported by the movable rails and a lowered position where the pipe joints are supported by the fixed rails, said fixed and movable rails having adjacent notches on their upper surfaces, said notches being arranged in transversely aligned rows to support one or more pipe joints in each row of notches, each notch having an upstream side that slopes gently downwardly in the direction the pipe is to be moved so that pipe supported thereon will roll by gravity down the sloping side toward the bottom of the notch and a downstream side extending upwardly to stop the movement of the pipe when it reaches the bottom of the notch, said notches on the movable rail being positioned so that when the movable rails are moved to their raised position the gently sloping upstream sides of the notches on the movable rails will lift the pipe resting in the bottom of the notches on the fixed rails above the downstream sides of the notches on the fixed rails where the pipe will roll down the gently sloping upstream sides of the notches on the movable rails until stopped by the downstream sides of the notches so that when the movable rails are moved to their lowered positions, the pipe will be deposited on the gently sloping upstream sides of the next row of notches on the fixed rails from where the pipe will roll downwardly to the bottom of the next row of notches on the fixed rails so that each pipe joint resting at the bottom of a row of notches on the fixed rails will be moved one row of notches each time the movable rails are moved from their lowered position to their raised position and returned to their lowered position, means mounting a section of the fixed and movable pipe supporting rails for pivotal movement as a unit around an axis parallel to the rails and means for moving the section around its pivotal axis between a first position in which the pipe is substantially horizontal and a second position where one end of each pipe joint supported by the section is lowered into a tank containing a liquid, such as an acid phosphate solution used to inhibit the formation of rust.

4,512,281

METHOD FOR COATING OPTICAL TRANSMISSION GLASS FIBERS

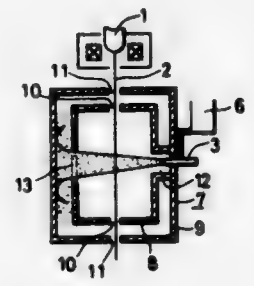
Toru Yamanishi; Katsuyuki Tsuneishi, and Masaaki Yoshida, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Sep. 6, 1983, Ser. No. 529,779

Claims priority, application Japan, Sep. 3, 1982, 57-154335; Dec. 22, 1982, 57-223896

Int. Cl.³ B05B *5/02;* B05C *5/02;* B05D *5/06*

U.S. Cl. 118—627 **7 Claims**



1. An apparatus for resin-coating an optical transmission glass fiber comprising:

a vessel comprising an outer casing and an inner casing positioned within said outer casing, said inner and outer casings having apertures in top and bottom portions thereof for passing an optical fiber to be coated;

means for spraying a resinous composition against said fiber to be coated, said spraying means being disposed at one side of said inner and outer casings, and said inner casing having an exhaust vent provided therein on a side thereof opposite said spraying means for passing surplus particles of said resinous composition.

4,512,282

APPARATUS FOR COATING PLATE-SHAPED BODIES OF GLAZED CERAMIC (TILES), GLASS OR ENAMEL

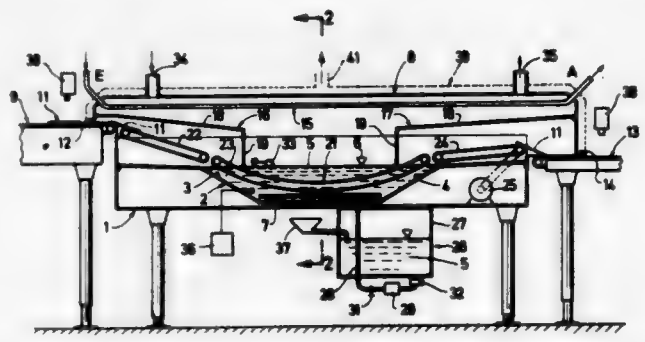
Erwin W. Wartenberg, Brunnenwiesen 6, 7000 Stuttgart 71, Fed. Rep. of Germany

Filed Nov. 1, 1983, Ser. No. 547,759

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242166

Int. Cl.³ B05C *3/10*

U.S. Cl. 118—666 **9 Claims**



1. Apparatus for applying a thin, adhesive coating to plate-shaped bodies of glazed ceramic (tiles), glass or enamel by dipping the bodies into a liquid bath in which a substance constituting the coating is dissolved, comprising the following features:

(a) a heated tank for receiving the dipping substance;

(b) a cover hood shielding the tank and the liquid bath from the environment and comprising inlet and outlet slits for the plate-shaped bodies;

(c) a cooling device arranged in the cover hood;

(d) a conveyor mechanism extending from the inlet to the outlet slit through the tank and running at a constant transportation speed, said conveyor mechanism comprising three successively arranged conveyor sections, with

the first covering substantially the area between the inlet slit and the liquid surface, the second extending substantially exclusively in the tank on a downwardly curved path, and the third covering substantially the area between the liquid surface and the outlet slit;

(e) a pumping mechanism for adjustment of the dipping time by lowering and raising the liquid level in the tank.

4,512,283

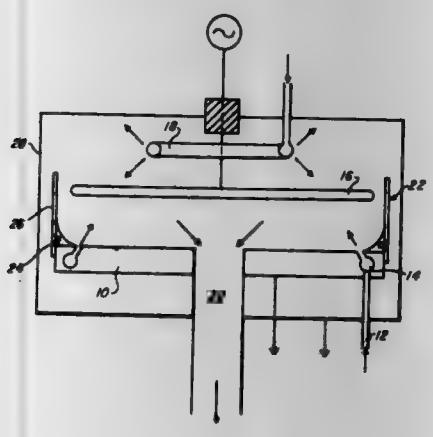
PLASMA REACTOR SIDEWALL SHIELD

Thomas D. Bonifield, and Andrew J. Purdes, both of Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 344,586, Feb. 1, 1982, abandoned. This application Nov. 4, 1983, Ser. No. 549,341

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—723 **24 Claims**



1. A plasma reactor comprising:

a substrate holder;

an electrode opposed to said substrate holder;

a reactor chamber comprising a plurality of walls enclosing said substrate holder and said electrode;

means for introducing reagent gases at the periphery of said substrate holder; and

a sidewall shield, said sidewall shield surrounding, touching and in thermal contact with the periphery of said substrate holder and being spaced apart from said walls of said chamber.

4,512,284

GLOW DISCHARGE APPARATUS FOR USE IN COATING A DISC-SHAPED SUBSTRATE

John W. Robinson, Levittown, Pa., and Grzegorz Kaganowicz, Belle Meade, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 19, 1983, Ser. No. 563,230

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—723 **10 Claims**

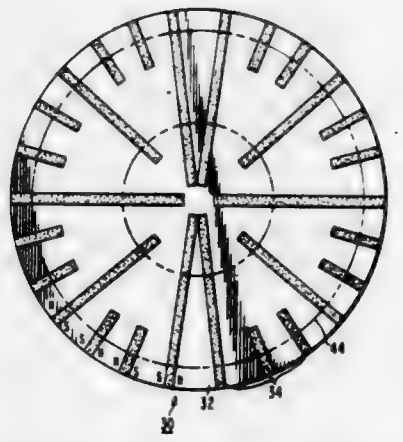
1. In a magnetically enhanced glow discharge apparatus for use in coating a substrate, which apparatus comprises

a vacuum chamber including an outlet means for evacuating said chamber and an inlet means for introducing appropriate reactant precursors into said chamber;

at least one electrode assembly within said chamber connected to a power source, which assembly comprises an electrode which has a diameter greater than that of the substrate and magnets, electrically insulated from said electrode but arranged in such proximity to said electrode that a magnetic field created by said arrangement holds the glow between the electrode and the substrate without interfering with deposition onto the substrate; and

means for holding the substrate parallel to, but apart from, said electrode;

the improvement comprising that the magnets are arranged in a quasi-radial fashion provided by disposing magnets of varying length within the perimeter of the electrode assembly extending toward the center of said assembly, and so that the area of the magnets is distributed in a substantially proportional manner with respect to the area of the



substrate to be coated, whereby a more uniform coating at a lower temperature and higher description rate is deposited.

4,512,285

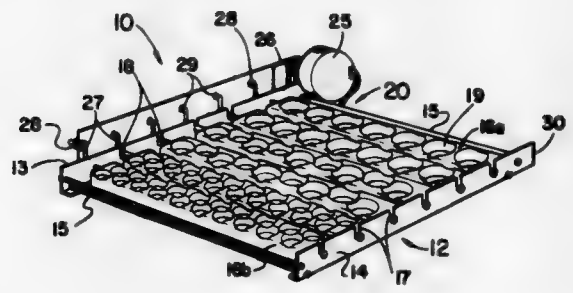
APPARATUS AND METHOD FOR EGG TURNING DURING INCUBATION

R. Stephen McGehee, Savannah, Ga., assignor to Gof Manufacturing Company, Inc., Savannah, Ga.

Filed Dec. 27, 1983, Ser. No. 566,117

Int. Cl.³ A01K *41/06*

U.S. Cl. 119—44 **4 Claims**



1. A method for egg turning during incubation, comprising:

rotatively supporting along a selected axis of rotation each of a plurality of egg trays; and

continuously and smoothly oscillating said trays unitarily at a selected frequency through a selected angle about their respective axes of rotation, such that there is no substantial period of nonmovement of said trays during operation; and

wherein said frequency is selected in the range of about one cycle per two days to two cycles per hour and said angle is selected in the range of about plus and minus 25 to 60 degrees, further provided that said frequency and said angle are relatedly selected to substantially optimize incubation hatch rate.

4,512,286

PET SEAT FOR AUTOMOBILES

Paul R. Rux, 5125 Mountain View Dr., Las Vegas, Nev. 89102

Filed Jun. 20, 1983, Ser. No. 505,768

Int. Cl.³ A01K *3/00, 27/00*

U.S. Cl. 119—96 **12 Claims**

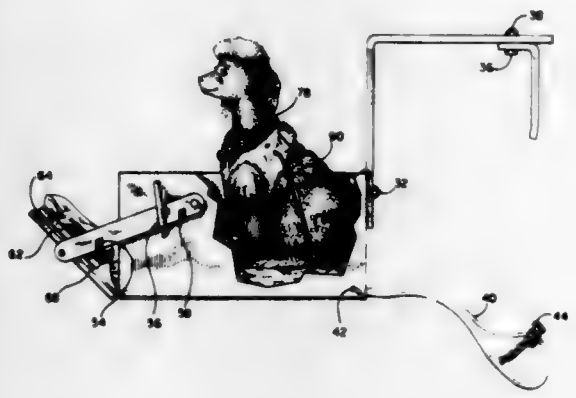
1. A container for supporting a pet in a vehicle comprises a bottom wall, side walls, and a normally open top,

a front wall hingedly attached at a lower portion thereof to the container and movable between a first substantially horizontal position and a second position,

stop means for selectively retaining said wall in any of said

first position, said second position, and at least one position therebetween,

mounting means for fastening the container to a seat of a vehicle, and



restraining means for securing an animal to prevent the animal from leaving the container.

4,512,287

DEVICE FOR TYING-UP AN ANIMAL

Christiaan A. C. Vandekeybus, Kloosterstraat 21, B - 2190 Essen, Belgium

Filed Dec. 21, 1982, Ser. No. 451,836

Claims priority, application Belgium, Jan. 4, 1982, 2/59531; Apr. 28, 1982, 2/59682; Jul. 9, 1982, 2/59771

Int. Cl.³ A01K *1/062*

U.S. Cl. 119—147 R **10 Claims**



1. A device for tying-up an animal comprising:

a suspension element,

two parallel and substantially horizontal bolts supported by the suspension element,

a multiple yoke comprising top parts which are pivotally mounted on said bolts, said top parts having top ends which project above the said bolts, said top parts pivoting between a closing position and an open position and having in the closing position the top ends remote from each other and in the open position the top ends close to each other,

means comprising a spring which acts on both top parts and which in the closing position is in a first position and in the open position is in a second position, said means thus retaining the top parts in the closing position when said spring is in its first position and retaining the top parts in the open position when said spring is in its second position,

lever mounted relative to the suspension element, said lever controlling said means to bring said spring from its first position to its second position, thus bringing the top parts from the closed position to the open position, and

a spacer member movable between a first position and a second position and which in its first position is present between and against said top ends of said top parts and which in its second position does not engage said top ends of said top parts, said spacer member being mounted on said lever.

4,512,288

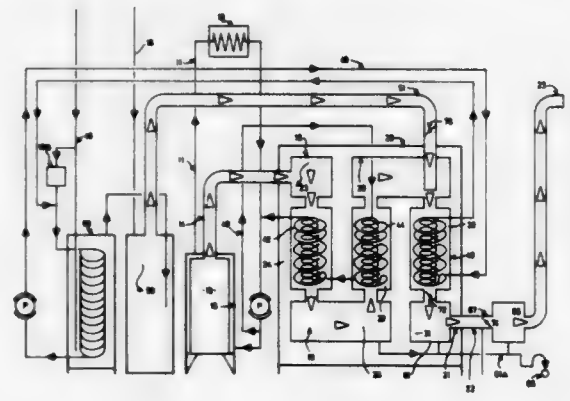
FURNACE HEAT EXCHANGER

Roger Michaud, 530 Patricia Blvd., Timmins, Ontario P4N 6Z2, Canada

Filed Jul. 15, 1983, Ser. No. 514,054

Int. Cl.³ F22B *33/00*

U.S. Cl. 122—20 B **16 Claims**



1. A heat recovery system for recovering heat from the flue gases of a plurality of heating appliances each supplying heat to a respective heat transfer medium, said system comprising first and second interconnected duct means to receive the flue gases of respective ones of said appliances and convey the gases to a common outlet, a first heat recovery circuit operatively connected to said heat transfer medium of said first appliance and including a first heat exchange means located in said first duct and a second heat recovery circuit operatively connected to said heat transfer medium of said second appliance and including a second heat exchange means in said second duct said ducts being arranged such that one of said heat exchange means is supplied with flue gases from only one of said appliances.

4,512,289

WATER HEATER WITH COMBINATION MAGNETIC AND AGITATOR MEANS

Denver G. Collins, Ashland City, Tenn., assignor to State Industries, Inc., Ashland City, Tenn.

Continuation of Ser. No. 561,055, Dec. 13, 1983, abandoned, and a continuation of Ser. No. 380,521, May 12, 1982, abandoned.

This application May 29, 1984, Ser. No. 614,978

Int. Cl.³ F22B *37/18*

U.S. Cl. 122—380 **1 Claim**

1. A water heater for heating water containing iron molecules comprising:

a water tight tank means adapted to contain water under pressure;

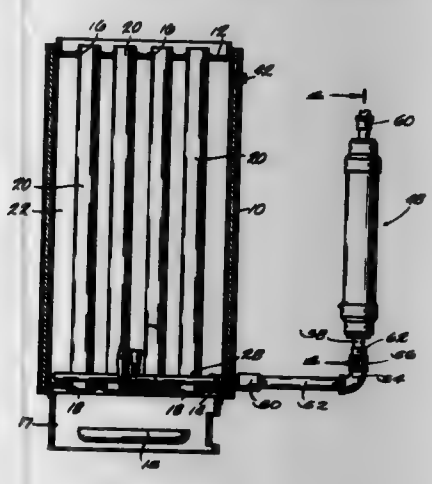
a source of heat for heating water inside said tank means;

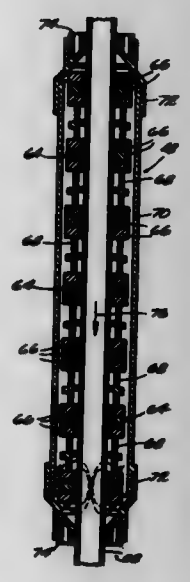
a hot water outlet means located in the top portion of said tank means for periodically withdrawing heated water from the top portion of said tank means;

a cold water inlet means located in the bottom portion of said tank means for admitting cold water into said tank means when hot water is withdrawn from said hot water outlet means;

a magnetic means having an inlet connected to a source of water under pressure and an outlet connected to said cold water inlet means, said magnetic means including a flow passageway means extending between said inlet and said

outlet and a plurality of permanent magnet means mounted on said flow passageway means and spaced along the length thereof, each of said permanent magnet means producing magnetic lines of force which pass through the interior of said flow passageway means so that water flowing thru said flow passageway means will pass thru said magnetic lines of force, said flow passageway means of said magnetic means being in the form of a tubular member made of non-metallic material, said permanent magnet means including spaced sets of doughnut-shaped permanent magnets mounted on said tubular member, each of said spaced sets of permanent magnets having a north pole on one end face thereof and a south pole on the other end face thereof, said permanent magnets producing lines of flux which extend parallel to the direction of flow of water through said tubular member, spacer members of non-magnetic material are positioned between each group of doughnut-shaped permanent magnet mem-





bers and said magnetic means includes a jacket made of non-magnetic material mounted on said tubular member and enclosing said permanent magnet members and spacer members;

an agitator assembly means mounted in the bottom portion of said tank, said agitator assembly means including a tubular member connected to said cold water inlet means, said tubular member extending into said water tight tank means and having a plurality of small openings therein spaced along the length thereof to direct multiple streams of water under pressure into the tank each time water is drawn out of the top portion of said tank means through said hot water outlet means, said plurality of openings in said tubular member positioned so that said multiple streams of water will be directed to sweep over the bottom of the tank means to create a stirring action in the lower portion of said tank means to thereby cause solid materials which have either settled to the bottom or are in the process of settling to the bottom to be maintained in suspension in the water so that ultimately at least a portion of such materials will be carried upwardly in said tank means and out said hot water outlet means, the relationship of the aggregate size of the small openings in said tubular member to the size of said tubular member itself is such that the velocity of the water flowing into said tank means through said plurality of openings in said tubular member is greater than the velocity of water flowing into said tubular member from said cold water inlet means to thereby create the desired stirring action in the bottom portion of said tank means.

4,512,290

CRANK GUIDE ASSEMBLY FOR INTERNAL COMBUSTION ENGINES, IN PARTICULAR TWO-STROKE INTERNAL COMBUSTION ENGINES WITH FACING CYLINDERS

Reinhold Ficht, Kirchseeon, and Manfred Schindler, Markt Schwaben, both of Fed. Rep. of Germany, assignors to Ficht GmbH, Kirchseeon, Fed. Rep. of Germany

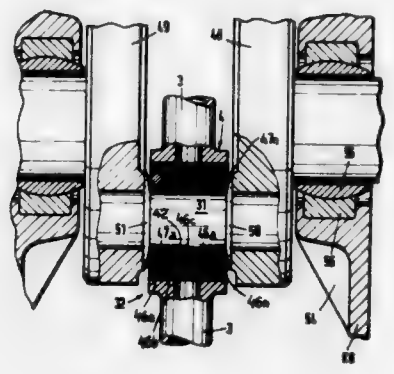
Filed May 13, 1983, Ser. No. 494,767

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218311

Int. Cl.[3] F02B *75/32*

U.S. Cl. 123—56 BC

4 Claims



1. Crank guide assembly for use with internal combustion engines, such as two-stroke internal combustion engines, with the engine including a pair of oppositely disposed cylinders in coaxial alignment each having a piston rod attached to a piston in the cylinder with the piston rod extending out of the cylinder, a crankcase sealed with respect to the cylinders with the piston rods extending into the crankcase, said crank guide assembly comprises a crankpin rotatably mounted in the crankcase, a crank guide located within the crankcase connected to said piston rod and extending around said crankpin, a sliding piece mounted on said crankpin and sliding in said crank guide, said sliding piece forming the bearing surfaces between said crankpin and said crank guide and said sliding piece comprises ceramic components which slide on one another, said ceramic components comprise a plurality of ceramic rings each closely encircling said crankpin and a corresponding number of ceramic discs encircling said ceramic rings, a pair of ceramic platelets are located between said crank guide and said ceramic components located around said crankpin, said ceramic platelets having a width corresponding to the dimension of said crank guide in the axial direction of said crankpin, and a clamped joint connecting said ceramic platelets to said crank guide.

4,512,291

INTERNAL COMBUSTION ENGINE

J. David Kirk, 2252 Ottawa Rd., Waukegan, Ill. 60087

Filed May 26, 1983, Ser. No. 498,398

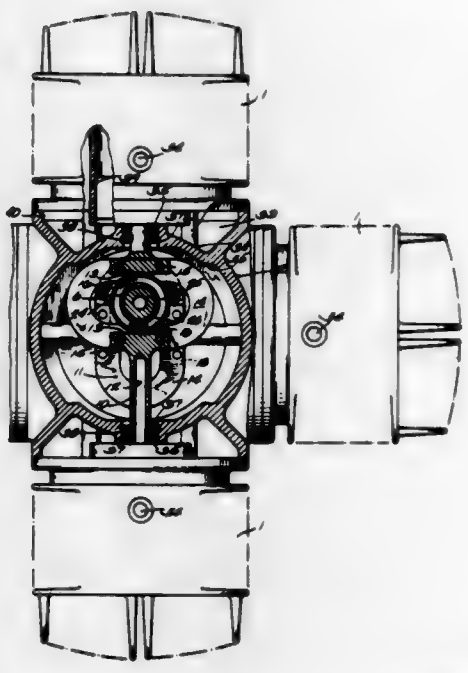
Int. Cl.[3] F02B *75/24*

U.S. Cl. 123—56 BC

7 Claims

1. A radial two-stroke internal combustion engine having two pairs of opposed cylinders arranged on axes at 90 degrees to one another and having a single throw crankshaft, each pair

of cylinders having opposed pistons, a piston rod rigidly connected to each piston and extending inwardly to a cross piece having a load face transverse the axis of the engine, a pair of rollers mounted on the single throw of said crankshaft each in alignment with and engaged by the load faces of a pair of the piston rods, apertured retention plates with each plate on opposite sides of each roller along the axis of the crankshaft fixed to the cross pieces with the roller in engagement with the load faces and the crankshaft extending through the apertures, the plates being fixed to the inner ends of each of the rods by



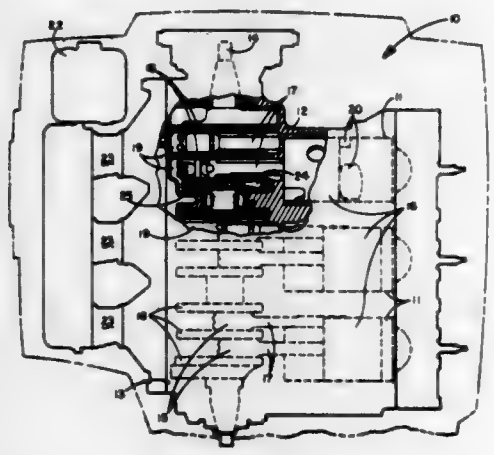
dowel bolts positively locating and spacing the load faces and the retention plates, the two pairs of pistons being axially offset, and counterweights on said crankshaft, wherein each of the rollers includes a bearing assembly having an interior and an exterior with roller elements therebetween, said interior being fixed on the crankpin, a lightweight alloy annulus having an interior and an exterior and said interior of said annulus being press fit on said exterior of the bearing assembly to reduce the mass of the roller assembly, and a wear shell press fit on said exterior of said annulus and engageable with said faces of the heels.

4,512,292

ACCESSORY GEAR DRIVE FOR A TWO-CYCLE ENGINE

James M. Hundertmark, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 19, 1983, Ser. No. 563,326
Int. Cl.³ F16H *55/06*
U.S. Cl. 123—65 B **12 Claims**



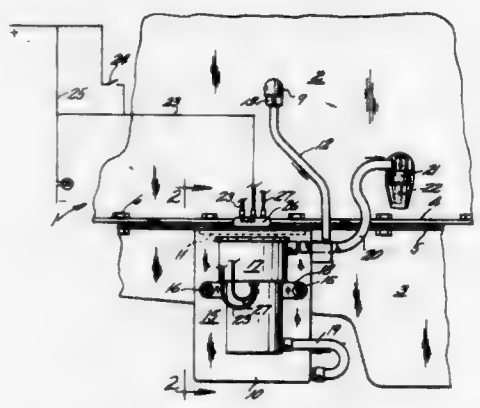
1. A two-cycle crankcase compression engine comprising:
(A) a cylinder block having a cylinder;
(B) a crankcase member defining with said cylinder block a crankcase;
(C) a crankshaft mounted for rotation in said crankcase;
(D) a piston means mounted for reciprocation in said cylinder and coonnected to said crankshaft;
(E) an intake means for admitting lubrication oil and a combustible mixture to said crankcase;
(F) a worm member mounted on said crankshaft inside said crankcase, said worm member formed of a low friction plastic material and having a helical tooth; and
(G) a worm gear mounted on said engine in engagement with said helical tooth.

4,512,293

OIL RECOVERY SYSTEM FOR TWO CYCLE DIESEL ENGINES

Steven C. Mast, 2175 Garfield, Eugene, Oreg. 97405, and Frederick D. Altman, 3120 County Farm Rd., Eugene, Oreg. 97401

Filed Apr. 16, 1984, Ser. No. 601,012
Int. Cl.³ F02B *75/02*
U.S. Cl. 123—65 B **4 Claims**



1. An oil return system for collecting lubricating oil from a Diesel engine air box of a vehicle and returning same to an engine lubricating oil sump, said system comprising,
a reservoir including mounting means,
means communicating the engine air box with said reservoir for delivery of air box oil to the reservoir,
an electric pump in place on said reservoir and a pump inlet in communication with said reservoir, a pump outlet in communication with the interior of the engine for discharging lubricating oil into the engine, and
switch means in circuit with a power source and with said pump to control pump operation.

4,512,294

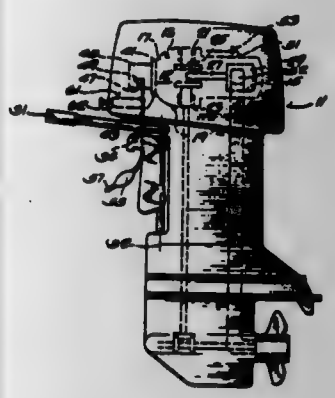
OUTBOARD MOTOR WITH SELECTIVELY OPERABLE DRAINAGE SYSTEM

James W. Mohr, Brookfield, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 408,839, Aug. 17, 1982, Pat. No. 4,461,250, which is a continuation of Ser. No. 119,081, Feb. 6, 1980, abandoned. This application Feb. 2, 1984, Ser. No. 576,277
Int. Cl.³ F02B *33/04*
U.S. Cl. 123—73 R **11 Claims**

1. A valve for an ouboard motor including a cylinder, a crankcase extending from said cylinder and including an upper portion having a bearing and a lower portion having a drains outlet, a transfer passage extending between said cylinder and said crankcase, a drains return inlet in one of said cylinder and said transfer passage, an overboard drain, and a fuel supply system including an inlet manifold communicable with said cylinder and having a drains outlet, and a carburetor communicating with said inlet manifold and having a drainage outlet, said valve comprising a valve housing having therein an elongated valve chamber, first and second drains inlet ports communicating with said chamber in spaced relation to each other and adapted to communicate with said manifold drains outlet

and with said crankcase drains outlet, port means communicating with said chamber and adapted to communicate with said crankcase bearing and said drains return inlet, a drains overboard port communicating with said chamber in spaced relation to said port means and adapted to communicate with said overboard drain, a carburetor drainage inlet port communicating with said chamber and adapted to communicate with said carburetor drainage outlet, a carburetor drainage overboard port communicating with said chamber and adapted to communicate with said overboard drain, and a valve member



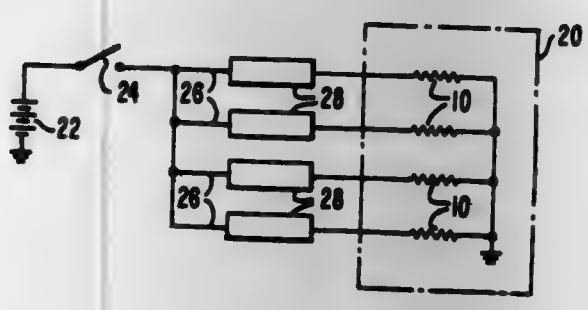
movable in said valve chamber between a run position and a drain position, said valve member including means cooperating with said ports so that, when said valve member is in said run position, said first drains inlet port is in communication with said port means, and said second drains inlet port and said carburetor drainage inlet port are blocked by said valve member and, when said valve member is in said drain position, said second drains inlet port communicates with said drains overboard port, said carburetor drainage inlet port communicates with said carburetor drainage overboard port, and said first drains inlet port is blocked by said valve member.

4,512,295

DIESEL GLOW PLUG TIP ENLARGEMENT PROTECTION

Jay L. Hanson, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Dec. 17, 1982, Ser. No. 450,858
Int. Cl.³ F02P *19/02*
U.S. Cl. 123—145 A **6 Claims**



1. For a diesel engine having at least one glow plug means including glow plug tip means adapted to be electrically energized for heating the glow plug tip means, an arrangement for preventing enlargement of the tip means after a short of the tip means, comprising:

a separate series connection for energizing each of one or more of said glow plug means; and

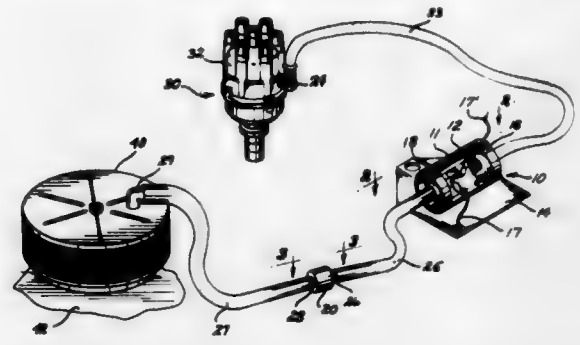
a separate, cyclable circuit interruption means in each said series connection operable to open said connection within a fraction of a second in response to current through said interruption means of a value corresponding to a short of said tip means.

4,512,296

DISTRIBUTOR MOISTURE GUARD

Allen G. Herrington, P.O. Box 93, Lynnwood, Wash. 98036, and Nicholas L. Herrington, 14600 51st Ave. NE. #46, Marysville, Wash. 98270

Filed Jun. 4, 1984, Ser. No. 617,040
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—146.5 R **14 Claims**



1. A system for removing moisture from the distributor of a spark-ignition engine, said distributor including vents and a cap connected to a base, said engine including air intake means for conducting a flow of air therethrough, said system comprising:

a shell having an internal chamber, said shell including an outlet port and an inlet port which communicate with said internal chamber;

means connected to the cap of said distributor and to the inlet port of said shell for providing fluid communication between the interior of said distributor and said internal chamber;

a valve having an inlet and an outlet, said inlet being connected in fluid communication with the outlet port of said shell, said valve being selectively operable to permit a one-way fluid flow from its inlet to its outlet;

conduit means for connecting the outlet of said valve in fluid communication with said intake means; and

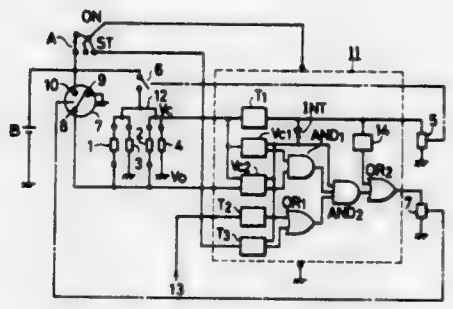
means for sealing the vents of said distributor.

4,512,297

APPARATUS FOR CONTROLLING ENERGIZATION OF GLOW PLUGS

Sadao Ichikawa, and Tuyoshi Kamiya, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd. and Nissan Motor Company, Limited, both of, Japan

Filed Sep. 9, 1983, Ser. No. 530,917
Int. Cl.³ F02P *19/02*
U.S. Cl. 123—179 H **4 Claims**



1. An apparatus for controlling energization of quick-heating glow plugs in a diesel engine, comprising:

(a) a power supply;

(b) a main relay having a normally open contact;

(c) a transfer-type changeover relay having a neutral terminal, a normally closed terminal connected to ground, and a normally open contact connected to said power supply;

(d) a plurality of pairs of glow plugs, said glow plugs each having one terminal connected through the normally open contact of said main relay to said power supply, said glow plugs in each pair having one of other terminals grounded

and the other terminal in each pair connected to said neutral terminal of said transfer-changeover relay; and

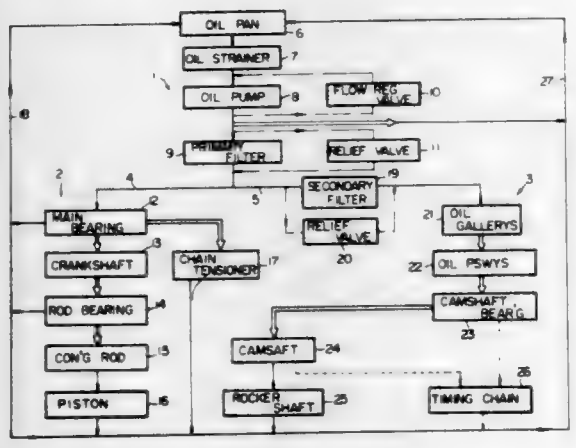
(e) a control circuit for controlling said main and changeover relays to connect said glow plugs in each pair selectively in series or parallel to each other with respect to said power supply.

4,512,298

ENGINE LUBRICATING SYSTEM

Isao Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 21, 1982, Ser. No. 438,358
Claims priority, application Japan, Dec. 9, 1981, 56-198165
Int. Cl.³ F01M *11/10*
U.S. Cl. 123—196 R **6 Claims**



1. An engine lubricating system of an internal combustion engine including a power producing mechanism including a crankshaft and a valve drive mechanism including a cylinder head, a camshaft, a camshaft timing mechanism to transmit driving power from the crankshaft to the camshaft, and members which are associated with the camshaft and which are to be subjected to sliding motion during operation of the engine, comprising, in combination,

lubricating oil delivery means for delivering lubricating oil under controlled pressure when the engine is in operation, the lubricating oil delivery means comprising a primary filter unit having included therein a porous filter medium having perforations measuring about 15 to 20 microns in width, length and/or diameter;

first lubricating means communicating with the lubricating oil delivery means through a first oil feed passageway and operable for circulating oil from the lubricating oil delivery means to said power producing mechanism of the engine; and

second lubricating means communicating with said lubricating oil delivery means through a second oil feed passageway and operable for circulating oil from the lubricating oil delivery means to said valve drive mechanism of the engine, the second lubricating means comprising a secondary filter unit having included therein a porous filter medium having perforations [of a second range of sizes smaller than said first range of sizes]measuring about 5 angstroms to 10 microns in width, length and/or diameter;

said second lubricating means further comprising:

oil galleries formed in the cylinder head of the engine and upstream communicating with said secondary filter unit;

oil passageway means including oil passageways formed in the brackets supporting the camshaft and upstream communicating with the oil galleries;

camshaft-bearing lubricating means upstream communicating with the oil passageway means and adapted to lubricate the bearings receiving the journal portions of the camshaft; and

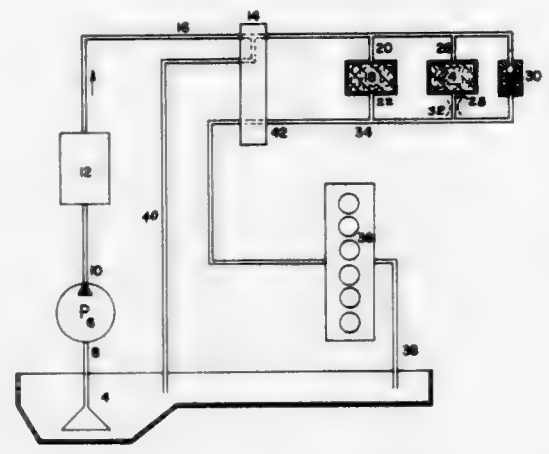
camshaft lubricating means upstream communicating with the camshaft-bearing lubricating means and adapted to feed oil into the oil passageways in the camshaft.

4,512,299

AUTOMOTIVE ENGINE WITH IMPROVED MULTIFILTER LUBRICATION SYSTEM

John J. Egan, Wheaton, and Andrew B. Witkowski, Oakbrook Terrace, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 12, 1983, Ser. No. 560,762
Int. Cl.³ F01M *1/00*
U.S. Cl. 123—196 A **19 Claims**



1. An automotive internal combustion engine with an oil lubrication system comprising:

an oil pump for delivering a pressurized oil flow through said oil lubrication system;

at least one primary oil filter having an inlet port which fluidly communicates with a first part of the pressurized oil flow, said primary oil filter having a first micron rating, and said primary oil filter having an outlet port;

at least one secondary oil filter having an inlet port which fluidly communicates with said second part of the pressurized oil flow, said second part of the pressurized oil flow being less than said first part of the pressurized oil flow, said secondary oil filter having a second micron rating, said second micron rating being lower than said first micron rating, and said secondary oil filter having an outlet port;

means for restricting the second part of the pressurized oil flow through said secondary filter;

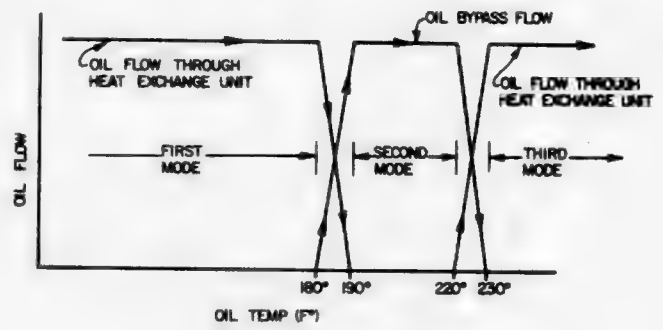
an engine block which fluidly communicates with said outlet ports of said primary and secondary oil filters.

4,512,300

OIL TEMPERATURE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

James R. DeVore, Farmington Hills, Mich., and Leslie A. Roettgen, Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Apr. 17, 1984, Ser. No. 601,307
Int. Cl.³ F01M *1/00*
U.S. Cl. 123—196 AB **5 Claims**



1. In a diesel engine, a system for regulating the oil temperature during predetermined engine operating modes, said system comprising a single heat exchange unit through which all

of the oil is adapted to flow when the engine is operating in certain modes; a single passage through which all of said oil is adapted to flow and bypass said unit when the engine is operating in another mode; a single valve having a housing provided with an oil inlet port, longitudinally spaced first oil outlet ports communicating with said unit, a second oil outlet port disposed intermediate said first outlet ports and communicating with said bypass passage, and adjustable means effecting interconnection between said oil inlet port and a selected outlet port; and temperature sensing means operatively connected to said valve means to effect adjustment thereof in accordance with said engine operating modes; when in a first mode wherein the oil temperature is below a predetermined temperature range, said valve means effecting interconnection of said inlet port and one of said first outlet ports whereby all of said oil is heated in said unit to within said predetermined temperature range; when in a second mode wherein the oil temperature is within said predetermined temperature range, said valve means effecting interconnection of said inlet port and said second outlet port causing all of said oil to bypass said unit; and when in a third mode wherein the oil temperature is above said predetermined temperature range, said valve means effecting interconnection of said inlet port and the other of said first outlet ports causing all of said oil to be cooled within said unit.

4,512,301

INTERNAL COMBUSTION ENGINE PROVIDED WITH A PLURALITY OF POWER UNITS

Toru Yamakawa, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

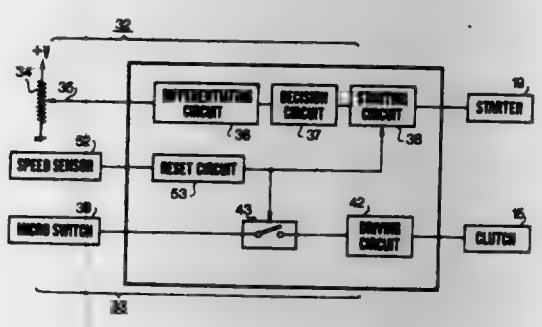
PCT No. PCT/JP81/00360, § 371 Date Jul. 29, 1982, § 102(e) Date Jul. 29, 1982, PCT Pub. No. WO82/02226, PCT Pub. Date Jul. 8, 1982

PCT Filed Nov. 30, 1981, Ser. No. 403,740

Claims priority, application Japan, Dec. 25, 1980, 55-184780

Int. Cl.³ F02D *25/04, 17/02*

U.S. Cl. 123—198 F **15 Claims**



1. In an internal combustion engine for motor vehicles, having a primary engine unit, an auxiliary engine unit selectively operating with the primary engine unit, primary and auxiliary carburetors each having a throttle valve for producing an air-fuel mixture to the primary and auxiliary engine units, respectively, and clutch means for selectively connecting the output of the auxiliary engine unit to the output of the primary engine unit, the improvement comprising

acceleration sensing means for sensing the magnitude of the acceleration of the primary engine unit and for producing a first output signal dependent on a predetermined magnitude of the acceleration,

an auxiliary starter means for starting for said auxiliary engine unit,

a starting circuit means for operating said auxiliary starter means in response to said first output signal at a proper time,

engine speed sensing means for sensing the engine speed of said auxiliary engine unit and for producing a second output signal at a predetermined engine speed such that said second output signal causes said starting circuit means to stop said auxiliary starter means,

throttle position detecting means for producing a third output signal at a predetermined opening degree of the throttle valve of said primary engine unit,

a driving circuit means for engaging said clutch means in dependency on said third output signal.

4,512,302

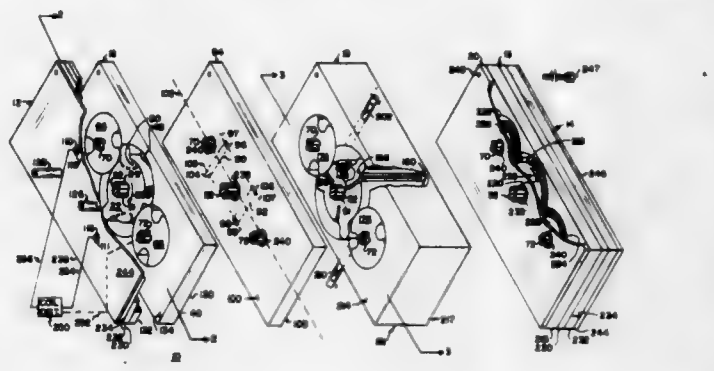
ROTARY ENGINE

Earl G. Bunce, 223-1 Queensbury Dr., Huntsville, Ala. 35802

Filed Jul. 5, 1983, Ser. No. 510,654

Int. Cl.³ F02B *53/08*

U.S. Cl. 123—238 **1 Claim**



1. A rotary internal combustion engine comprising:

a centrally positioned main drive shaft and first and second auxiliary shafts, each said auxiliary shaft located parallel to and spaced a discrete distance from said main drive shaft;

a compression assembly comprising:

a first housing including a first central chamber and first and second end chambers in opposite end regions of said first housing and opening into said first central chamber,

a compression rotor mounted on said main shaft within said first central chamber and having a peripheral surface, said compression rotor including three equally spaced curved peripheral lugs making a sealing engagement with wall regions of said central chamber, and said compression rotor further including a like plurality of evenly spaced peripheral slots opening to one side and adjacent to the forward, with respect to the direction of rotation of said compression rotor, edge of each said lug,

a first sealing rotor mounted on said first auxiliary shaft within said first end chamber and having an outer peripheral surface in sealing engagement with wall regions of said first end chamber, said first sealing rotor including two oppositely positioned slots, a said slot of said first sealing rotor being adapted to mesh with a said lug of said compression rotor,

a second sealing rotor mounted on said second auxiliary shaft within said second end chamber and having an outer peripheral surface in sealing engagement with wall regions of said second end chamber, said second sealing rotor including two oppositely positioned slots, a said slot of said second sealing rotor being adapted to mesh with a said lug of said compression rotor, and

a first compression chamber in said first central chamber formed between said first and second sealing rotors and between one side of said first housing and said compression rotor, and a second compression chamber formed in said first central chamber between said first and second sealing rotors and between the opposite side of said first housing and said compression rotor;

said slots of said first and second sealing rotors being configured of curved surfaces including a bottom or inner-most convex surface and a pair of opposite, like, side wall surfaces, each side wall surface having a concave region and a convex region, said bottom convex surface extending between the inner extremity of each concave region of each said side wall surface, and said convex region of each said side wall extending between said peripheral surface of said sealing rotor and each of said concave regions;

said lugs of said compression rotor being configured of curved

surfaces including an outermost or top convex surface and a pair of opposite, like convex side walls having one end intersecting with said top convex surface and an opposite end intersecting with said peripheral surface of said compression rotor, said top convex surface being in sealing engagement with said wall region of said central chamber;

a power impulse assembly comprising:

a second housing including a second central chamber and third and fourth end chambers located in opposite end regions of said second housing and opening into said central chamber,

a power impulse rotor mounted on said main shaft within said second central chamber and having a peripheral surface, said power rotor including three equally spaced peripheral lugs, displaced with respect to said lugs of said compression rotor, making a sealing engagement with wall regions of said second central chamber, and said power impulse rotor further including a plurality of evenly spaced peripheral slots opening to one side of said power impulse rotor and being located adjacent to the trailing, with respect to the direction of rotation, edge of each said last-named lug,

wherein the width of said first central chamber and said compression rotor have a width substantially greater than twice the width of said second central chamber and said power impulse rotor,

a third sealing rotor mounted on said first auxiliary shaft within said third end chamber and having an outer peripheral surface in sealing engagement with wall regions of said third end chamber, said third sealing rotor including two oppositely positioned slots, a said slot of said third sealing rotor being adapted to mesh with a said lug of said power impulse rotor,

a fourth sealing rotor mounted on said second auxiliary shaft within said fourth end chamber and having an outer peripheral surface in sealing engagement with wall regions of said fourth end chamber, said fourth sealing rotor including two oppositely positioned slots, a said slot of said fourth sealing rotor being adapted to mesh with a said lug of said power impulse rotor, and

a first power chamber formed between said third and fourth sealing rotors and between one side of said second housing and said power impulse rotor, and a second power chamber formed between said third and fourth sealing rotors and between the opposite side of said second housing and said power impulse rotor;

wherein said slots in said third and fourth sealing rotors are configured similarly as said slots in said first and second sealing rotors, and said lugs on said power rotor are configured similarly as said lugs on said compression rotor;

said compression rotor being three-halves the diameter of said first and second sealing rotors, and said power impulse rotor being three-halves the diameter of said third and fourth sealing rotors;

timing means for interconnecting said main shaft and said first and second auxiliary shafts and synchronized for engagement of said lugs and slots;

fuel source means comprising a first inlet through said first housing into said first compression chamber adjacent to said first sealing rotor, and a second inlet to said first housing into said second compression chamber adjacent to said second sealing rotor;

gas coupling means comprising a first channel extending from a region of said first compression chamber opposite a circumferential position of said slot in said compression rotor as said compression rotor rotates by said first channel which is adjacent to said second sealing rotor and extending to a region of said second power chamber adjacent to said fourth sealing rotor, and a second channel extending from the region of said second compression chamber opposite the radial position of a said slot in said compression rotor as it rotates past said second channel adjacent to said first sealing rotor to a region of said first power chamber adjacent to said third sealing rotor;

exhaust means comprising a first outlet through said second housing from a region of said first power chamber adjacent to said fourth sealing rotor, and a second outlet through said second housing from a region of said second power chamber adjacent to said third sealing rotor;

said bottom convex surface in both said slots in each of said first and second sealing rotors in said compression assembly defines an arc on a first circle having a radius from the center of each said sealing rotor equal to the value of one-half lug height, RL, subtracted from two-thirds RPC, the radius of the pitch circle of said compression rotor, said two-thirds RPC being RPC′ and being the radius of the pitch circle of each said sealing rotor;

said concave regions of said side wall surfaces of both said slots in each of said first and second sealing rotors in said compression assembly defining oppositely positioned arcs on a second circle having a radius equal to the product RL′ of RL times a multiplier which has a range from 1 1/16 to 1¼, and said second circle being centered on said pitch circle of each said sealing rotor and overlapping said first circle;

said convex regions of said side wall surfaces of both said slots in each of said first and second sealing rotor in said compression assembly define arcs along third and fourth circles centered on said pitch circle of each of said sealing rotor, and on opposite sides of said second circle, said third circle having a center point spaced a distance equal to the value of the diameter of said second circle, and away from a first point of intersection between said sealing rotor pitch circle and said second circle, and said fourth circle having a center point spaced a distance equal to the diameter of said second circle from a second point of intersection between said sealing rotor pitch circle and said second circle, said convex regions of said side wall surfaces extending along said third and fourth circles, respectively, between said pitch circle and said outer periphery surface of each said sealing rotor;

said top convex surface of each said lug on said compression rotor defining an arc on a fifth circle having a radius from the center of said main shaft equal to the sum of RPC plus RL;

said opposite like convex side walls on each said lug on said compression rotor define opposite arcs on said second circle between said fifth circle and said outer periphery surface of said compression rotor; and

said slots in said third and fourth sealing rotors in said power assembly being configured as said slots in said first and second sealing rotors, and said lugs on said power impulse rotor being configured as said lugs on said compression rotor.

4,512,303

IGNITION TIME CONTROLLING DEVICE IN CONTACTLESS IGNITION DEVICES FOR INTERNAL COMBUSTION ENGINES

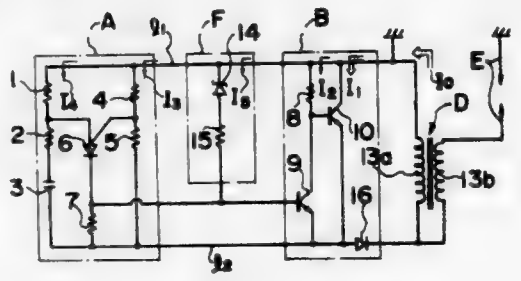
Hiromi Watanabe, Kanagawa, Japan, assignor to Oppama Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 26, 1983, Ser. No. 488,788

Claims priority, application Japan, Nov. 2, 1982, 57-193064; Dec. 3, 1982, 57-212504

Int. Cl.³ F02P *3/08, 5/04*

U.S. Cl. 123—335 4 Claims



1. An ignition timing control for a contactless ignition de-

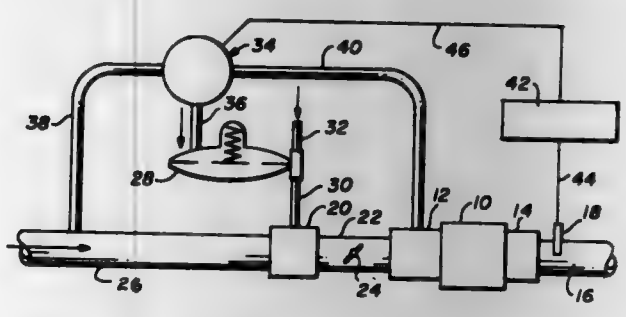
vice for internal combustion engines comprising a trigger circuit having a programmable unijunction transistor which will be ON when the primary short-circuiting current of an ignition coil is at or a little past its peak, a charging and discharging circuit for the primary short-circuiting current, a switching controlling circuit interrupting the primary short-circuiting current when said trigger circuit is ON, an ignition coil inducing a high voltage in a secondary winding when the primary short-circuiting current is interrupted by said switching controlling circuit, a spark plug generating a spark on receiving the high voltage of the above mentioned secondary winding and an angle advancing circuit connected between said programmable unijunction transistor and said switching controlling circuit, said angle advance circuit breaking over at a set value of the primary short-circuiting current or the voltage on the primary winding of the ignition coil and operating the switching controlling circuit prior to the operation of said programmable unijunction transistor.

4,512,304

METHOD AND APPARATUS FOR CONTROLLING AIR TO GAS RATIO IN GAS ENGINES

Warren E. Snyder, Dousman, Wis., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 20, 1983, Ser. No. 543,722
Int. Cl.[3] F02M *7/00*
U.S. Cl. 123—344 10 Claims



1. Improved apparatus for controlling the air to gas ratio of fuel being supplied to a gas engine that includes intake and exhaust manifolds connected to the engine, a carburetor having an air inlet and having an outlet connected to the intake manifold, and a gas regulator connected to the carburetor for controlling the pressure of gas to the carburetor, said improved apparatus comprising:

conduit means connecting the air inlet with the intake manifold;

actuating means located in said conduit means and connected to said regulator, said actuating means providing an output signal to said regulator that has a magnitude equal to or between the pressure in said inlet and the pressure in said intake manifold for actuating said regulator to supply the desired rate of flow of gas to said carburetor; and,

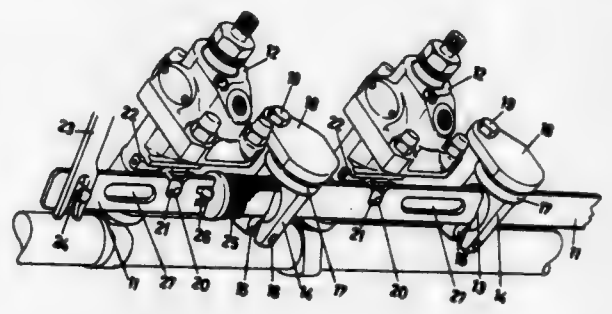
intelligence means connected to said regulator actuating means for transmitting a signal to said actuating means whereby said actuating means causes said regulator to provide the desired rate of flow of gas to said carburetor and the desired air to gas ratio of fuel supplied to said engine.

4,512,305

DELIVERY-REGULATION UNIT FOR IN-LINE INJECTION PUMPS

Luigi Pitozzi, Brescia, Italy, assignor to SAME S.p.A., Treviglio, Italy

Filed Oct. 7, 1983, Ser. No. 539,946
Claims priority, application Italy, Oct. 11, 1982, 23142/82[U]
Int. Cl.[3] F02D *31/00*
U.S. Cl. 123—364 2 Claims



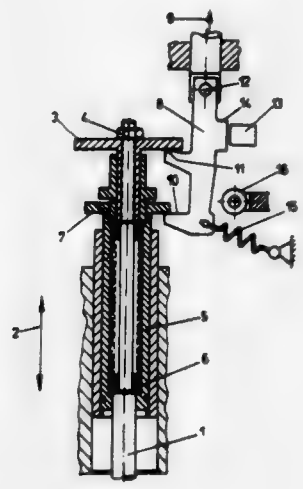
1. A delivery-regulation unit for in-line injection pumps arranged with parallel axes in an engine bed, particularly for multi-cylinder Diesel engines, comprising a reciprocating rod arranged adjacent to individual injection pumps, and pump governor means for each of said injection pumps, said pump governor means each comprising a rack slidably supported by the respective injection pump outside thereof and substantially tangentially thereto for controlling fuel injection thereof, wherein said rod has slots adjacent to the injection pumps and each rack is connected to a respective one of said slots by a swivel joint means to allow adjustment of said pumps individually by angular displacement thereof about their axes.

4,512,306

DEVICE FOR SHUTTING DOWN A FUEL INJECTION COMBUSTION ENGINE

Georg Brasseur, Vienna, and Heinz Rathmayr, Hallein, both of Austria, assignors to Friedmann & Maier Aktiengesellschaft, Hallein, Austria

Filed Jul. 8, 1983, Ser. No. 512,026
Claims priority, application Austria, Jul. 9, 1982, 2686/82
Int. Cl.[3] F02D *31/00*
U.S. Cl. 123—367 9 Claims



1. A device for shutting down a fuel injection combustion engine, in which a fuel amount control rod of an injection pump cooperates with an adjustable stop adapted to be locked, in operation, by a locking member in a position giving free the whole adjusting range of the fuel amount control rod and being acted upon in its locked position by a shut-down spring in the sense of moving the fuel amount control rod to zero-delivery, the locking member being releasable in dependence on an operating condition, characterized in that an adjusting member

for adjusting the fuel amount is actuated by a servometer and acts on the fuel amount control rod with interposition of a drag spring, in that the lockable stop is connected with a further stop cooperating, on adjusting the adjusting member in direction of maximum fuel supply of the fuel amount control rod, with a counterstop of the adjusting member, the shut-down spring thereby being tensioned until engagement of the locking member is the lockable stop, and in that in operation the further stop is out of engagement with the counterstop of the adjusting member.

4,512,307

FUEL QUANTITY CONTROL APPARATUS OF SUPERCHARGED DIESEL ENGINE WITH SAFETY MEASURES

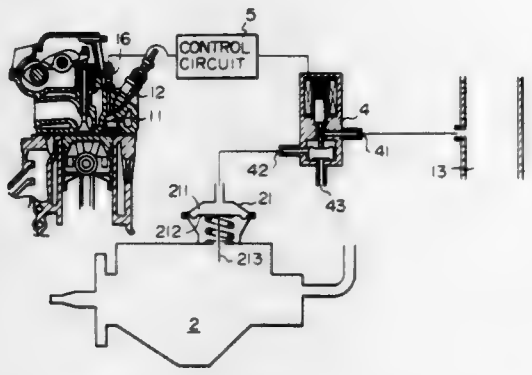
Toshihiko Igashira, Toyokawa; Hisasi Kawai; Takeshi Tanaka, both of Toyohashi; Kenzi Iwamoto, Nishio; Seiko Abe, Kariya, and Eiji Hashimoto, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 15, 1982, Ser. No. 398,712

Claims priority, application Japan, Jul. 18, 1981, 56-111547

Int. Cl.³ F02D *1/04*; F02M *39/00*

U.S. Cl. 123—383 **4 Claims**



1. A fuel quantity control apparatus for a supercharged diesel engine, having a glow plug, an electric circuit for preheating the glow plugs and a fuel injection pump capable of increasing the fuel quantity according to the degree of supercharging, said apparatus comprising:

means for detecting at least an abnormal temperature by measuring the electric resistance of the glow plug using a bridge circuit including a diode provided to electrically separate said bridge circuit from said electric circuit for the preheating of the glow plug,

a control circuit for receiving the output of the detection means, and

a three-way valve driven by the control circuit and for controlling the amount of increase of the fuel quantity,

whereby when the abnormal temperature is detected by the detection means, the amount of increase of the fuel quantity is made zero or decreased.

4,512,308

DEVICE FOR ADJUSTING THE FULL-LOAD INJECTION QUANTITY OF A FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Gerald Höfer, Weissach-Flacht; Max Straubel, and Franz Eheim, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,816

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146132

Int. Cl.³ F02D *1/06*

U.S. Cl. 123—383 **15 Claims**

1. A device for adjusting the full load injection quantity of a fuel injection pump for internal combustion engines including a fuel quantity adjusting member arranged to traverse a travel and means associated therewith for varying said travel which comprises:

an injection pump housing;

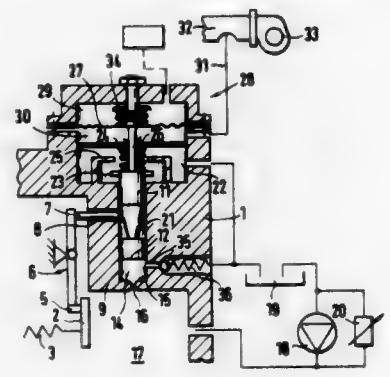
a piston chamber in said injection pump housing;

an adjusting piston in said piston chamber;

a restoring spring positioned relative to and operative to apply a counterforce on one end of said adjusting piston;

a pressure source which is varied according to rpm;

a work chamber defined by one end of said piston and said piston chamber which communicates with said pressure source to provide a fluid under pressure in said work



chamber according to rpm of said fuel injection pump against said counterforce on one end of said adjusting piston;

transmission means operatively related to said adjusting piston and to said means for varying said travel for adjusting said means relative to any movement of said adjusting piston in said piston chamber, and

means for restricting travel of said adjusting piston in accordance with operating parameters of said combustion engine including the density of air delivered to said combustion engine.

4,512,309

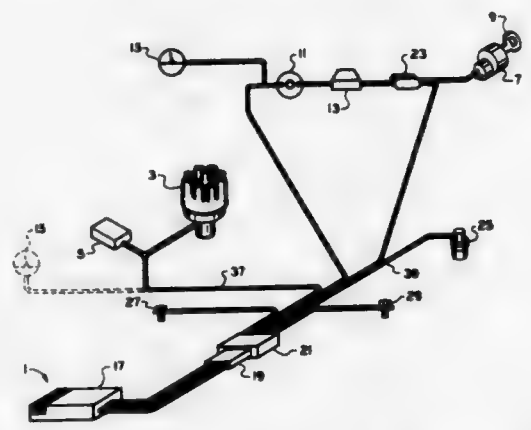
SPARK CONTROL APPARATUS

Chusak Tansuwan, Manchester, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed May 2, 1983, Ser. No. 490,974

Int. Cl.³ F02B *5/04*

U.S. Cl. 123—425 **21 Claims**



1. A spark control apparatus for an internal combustion engine using either a breaker point or solid state ignition system, the apparatus controlling current to an ignition coil and comprising:

means for converting the waveform of the current signal from the ignition system to a predetermined waveform;

means for sensing engine vibration and for generating an electrical signal representative thereof;

means for processing the electrical signal to determine engine knock by comparing the peak and average values of the electrical signal;

means for delaying termination of current to the ignition coil as a function of the comparison of the peak and average values of the electrical signal;

driver means responsive to the ignition signal for controlling current to the ignition coil; and,

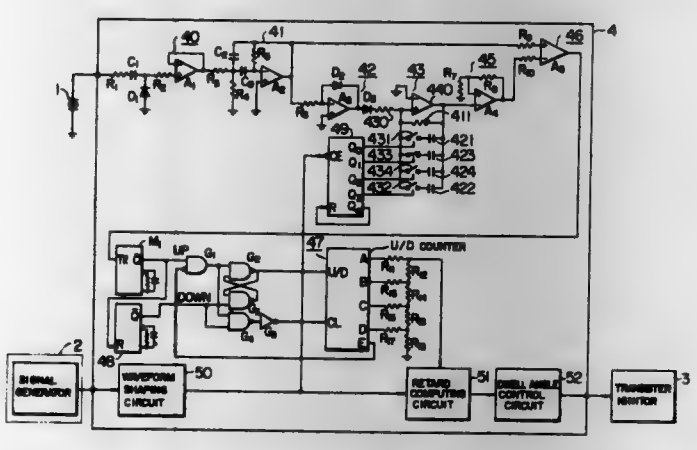
means for shutting off the driver means when the engine is not running thereby to prevent application of current to the ignition coil and reduce current drain, the shut-off means including first switching means which is normally off when the engine is not running, second switching means which turns off the driver means when on and control means controlling the second switch means to turn it on when the engine is not running, the shut-off means being responsive to changes in the operating state of the first switching means to switch the operating state of the second switching means, the first switching means including a solid-state device responsive to the predetermined current waveform to switch between on and off operating states when the engine is running and to remain in its off state when the engine is not running, the second switching means including a second solid-state device connected between the input to the driver means and electrical ground, the solid-state device, when on, electrically grounding the driver means input thereby shutting it off, and the controlling means including a capacitor having a discharge path in which the first said solid-state device is connected and a third solid-state device whose operating state is determined by the charge level of the capacitor, the third solid-state device being connected to the second solid-state device to control the operating state thereof, the first said solid-state device, when on, discharging the capacitor and maintaining the third solid-state device in its off operating state and the third solid-state device, in turn, keeping the second solid-state device off, and the first said solid-state device, when off, causing the capacitor to charge to a level at which the third solid-state device is turned on to, in turn, turn the second solid-state device on.

4,512,310

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hiroshi Haraguchi, Oobu, and Ko Narita, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 29, 1982, Ser. No. 427,818
Claims priority, application Japan, Sep. 30, 1981, 56-155214
Int. Cl.[3] F02P *5/04*
U.S. Cl. 123—425 5 Claims



1. An ignition timing control system for internal combustion engines including a knocking detector for detecting the knocking of the internal combustion engine caused, a control unit for generating an ignition timing control signal in accordance with an output signal produced from said knocking detector, and an ignitor for generating an ignition signal in response to the ignition timing control signal, wherein

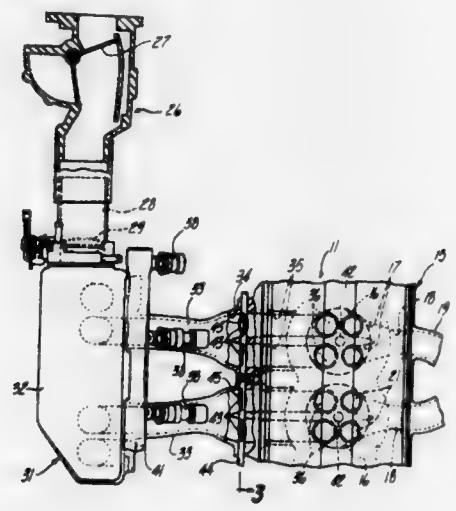
said control unit comprises a cylinder switching signal generator for generating a cylinder switching signal in synchronism with the rotation of the engine, a plurality of integrating means corresponding in number to a group of cylinders for generating reference signals in response to the signal produced from said knocking detector, switching means for selecting one of the reference signals of said integrating means in response to said cylinder switching signal, and comparing means for deciding the presence or absence of a knock in response to the signal produced from said knock detector and the selected one of the reference signals produced from said integrating means.

4,512,311

INTAKE CONTROL SYSTEM FOR MULTI-VALVE TYPE INTERNAL COMBUSTION ENGINE

Keiichi Sugiyama, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Continuation of Ser. No. 312,673, Oct. 19, 1981, abandoned. This application Mar. 2, 1984, Ser. No. 588,358
Claims priority, application Japan, Oct. 20, 1980, 55-147150
Int. Cl.[3] F02D *9/08*
U.S. Cl. 123—432 11 Claims

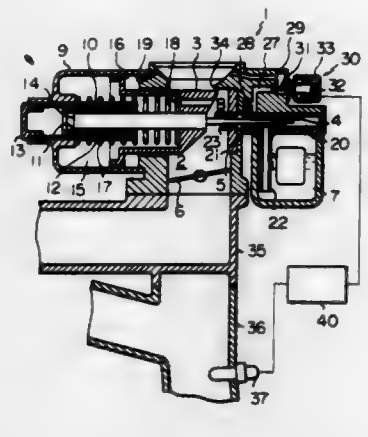


1. In an induction system for a chamber of an internal combustion engine having inlet means communicating with said chamber, for delivering a charge thereto, main throttle valve means in said inlet means for controlling the flow therethrough, exhaust means communicating with said chamber for receiving a burnt charge therefrom, means for controlling the communication of said inlet means and said exhaust means with said chamber for providing for opening of said inlet means prior to full closure of said exhaust means, the improvement comprising means for limiting the effective area of said inlet means during idle for minimizing the backflow of exhaust products into said inlet means when said inlet means and said exhaust means are both open and for reducing said restriction when said engine is in an off idle condition comprising a control valve means in said inlet means downstream of said main throttle valve means and means for commencing the opening of said control valve means immediately upon opening said main throttle valve past its idle condition, said means for opening said control valve means comprises linkage means interconnecting said control valve means with said main throttle valve and adapted to open said control valve means at a faster rate than said main throttle valve is opened so that said control valve means is in its fully open position prior to full opening of said main throttle valve.

4,512,312
VARIABLE VENTURI-TYPE CARBURETOR

Norihiko Nakamura; Takaaki Itou; Takashi Katou, all of Mishima; Masatami Takimoto, and Mitsuyoshi Teramura, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 10, 1983, Ser. No. 465,658
Claims priority, application Japan, May 18, 1982, 57-082408
Int. Cl.[3] F02M 7/18
U.S. Cl. 123—439 6 Claims



1. A variable venturi-type carburetor of an internal-combustion engine having a cylinder, an exhaust passage, and an oxygen concentration detector arranged in the exhaust passage, said carburetor comprising:

an intake passage formed in the carburetor;

a suction piston transversely movable in said intake passage in response to a change in the amount of air flowing within said intake passage, said suction piston having a tip face which defines the venturi in said intake passage;

a fuel passage extending transversely and being open to said intake passage;

a metering jet arranged in said fuel passage and having a cylindrical inner wall and an air-outflow opening formed on said cylindrical inner wall;

an air-bleed passage through which said air-outflow opening is open to the outside air;

an auxiliary air-bleed passage branching from said air-bleed passage and being open to said fuel passage downstream of said metering jet;

valve means arranged in said air-bleed passage and actuated in response to an output signal from the oxygen concentration detector so as to keep the air-fuel ratio of the mixture fed into the cylinder equal to a predetermined ratio; and

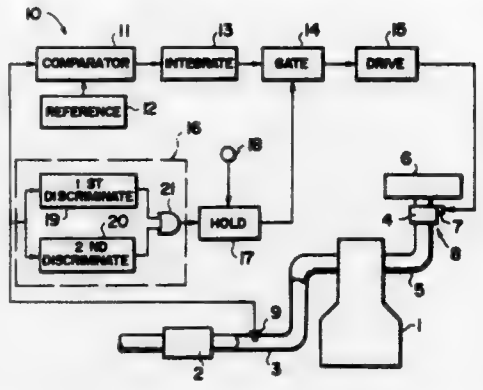
a needle fixed onto the tip face of said suction piston and having a cross-sectional area which increases in the direction f the tip face of said suction piston, said needle extending through said fuel passage and said metering jet and partially covering said air-outflow opening so as to reduce the flow are of said air-outflow opening in accordance with a reduction in the amount of air fed into the cylinder.

4,512,313
ENGINE CONTROL SYSTEM HAVING EXHAUST GAS SENSOR

Tsuyoshi Tsuchida; Yoshinobu Kido; Hideki Kakumoto, and Yuzuru Tanaka, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 3, 1983, Ser. No. 500,918
Claims priority, application Japan, Jun. 4, 1982, 57-96849; Jun. 4, 1982, 57-96848
Int. Cl.[3] F02M 7/12
U.S. Cl. 123—440 5 Claims

1. An internal combustion engine including an intake system for drawing fresh charge of intake gas to the engine, an exhaust system for exhausting combustion gas from the engine as an exhaust gas, and an engine control system, said engine control system including exhaust gas sensing means provided in said exhaust system of the engine for producing an electric signal which corresponds to concentration of a constituent in the engine exhaust gas, regulating means for regulating at least one factor which affects operating conditions of the engine, control means for receiving said electric signals from the sensing means to calculate rate of change in a unit time of said electric signal when the sensing means is being warmed-up and produce a control signal for controlling said regulating means

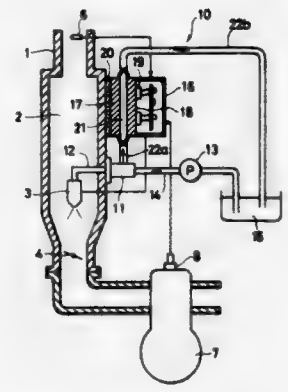


after the rate of change of said electric signal has become greater than a predetermined value, said control means including means for producing a sensor activated signal when the rate of change of said electric signal exceeds the predetermined value, and signal hold means for maintaining the sensor activated signal until the engine is stopped so that the control signal is produced even when the rate of change is decreased.

4,512,314
FUEL CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Toshiyuki Sakamoto, and Seiji Wataya, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 10, 1982, Ser. No. 448,864
Claims priority, application Japan, Jan. 14, 1982, 57-5625
Int. Cl.[3] F02M 39/00
U.S. Cl. 123—459 1 Claim

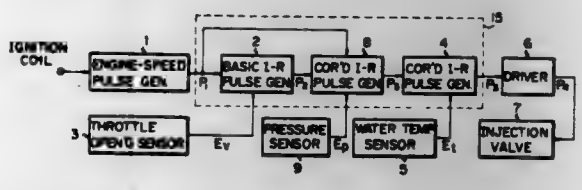


1. In a fuel control apparatus for an internal combustion engine including a fuel tank, an air intake tube, an electrically controlled fuel injection valve, a fuel pressure controller for supplying fuel at a constant pressure to said valve and a control device for controlling the operation of said valve in accordance with various parameters such as the quantity of incoming air to said engine and the temperature of said engine, the improvement comprising heat insulating means and said control device being provided with a radiating fin for dissipating the heat generated by said control device and fuel passage means contacting said fin to assist in cooling said fin, and conduit means connecting opposite ends of said fuel passage means to said fuel pressure controller and said fuel tank respectively, said fuel injection valve, said fuel pressure controller and said control device being installed on said intake tube and said heat insulating means being interposed between said intake tube and said fin.

4,512,315
ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Isesaki, Japan, assignor to Japan Electronic Control Systems Company, Limited, Japan

Filed Oct. 20, 1982, Ser. No. 435,378
Claims priority, application Japan, Oct. 21, 1981, 56-168361
Int. Cl.³ F02M *51/02*
U.S. Cl. 123—478
7 Claims



1. An electronically operated fuel injection system for actuating injector means provided at an air induction passage of an internal combustion engine, said induction passage being provided with a throttle valve operable to open to varying degrees and a supercharging means mounted upstream of said throttle valve, comprising:

engine speed sensor means for producing an engine speed signal representative of the engine speed of said engine;

throttle opening sensor means for producing a throttle opening signal representative of the opening degree of the throttle valve;

basic injection-rate pulse generating means for producing basic injection-rate pulses indicative of a basic fuel injection rate in response to said engine speed signal and said throttle opening signal;

air-pressure sensor means for producing an air pressure signal representative of the air pressure downstream of said supercharging means but upstream of said throttle valve;

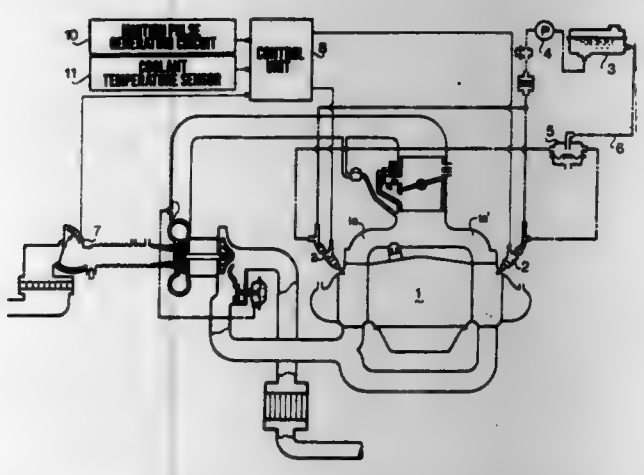
a corrected injection-rate pulse generating means for correcting said basic injection-rate pulses in accordance with said air-pressure signal; and

an actuator for actuating said injector means in response to the corrected basic injection-rate pulses.

4,512,316
FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kenji Mochizuki, Mitakashi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1983, Ser. No. 538,467
Claims priority, application Japan, Oct. 1, 1982, 57-173630
Int. Cl.³ F02M *51/00*; F02B *3/00*
U.S. Cl. 123—478
14 Claims



1. A fuel injection system for an internal combustion engine, wherein

the engine having adjacent cylinders provided with intake valves, the adjacent cylinders and the intake valves undergoing a periodic operation cycle dependent on engine speed with timewise partially overlapping opening times of said intake valves, the fuel injection system comprising

a common intake manifold communicating the adjacent cylinders with each other,

respective fuel injection valves for said cylinders respectively disposed in said common intake manifold,

control means for producing a fuel injection signal once each operation cycle of the communicating adjacent cylinders for simultaneously opening the fuel injection valves for the communicating adjacent cylinders,

means for detecting the engine speed and for producing a first signal dependent thereon, and

said control means including:

means comprising a fuel injection time computing circuit responsive to said first signal of said detecting means for producing a second signal, and

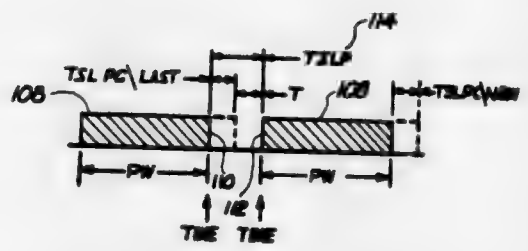
computing means responsive to said second signal for producing a fuel injection time delay signal providing a time delay of said fuel injection signal after ignition time of a first of the communicating adjacent cylinders, and

said control means for decreasing the time delay with increase of the engine speed, and for providing said time delay during low engine speed below a predetermined engine speed so as to inject fuel after all of said intake valves of the communicating adjacent cylinders have closed and for making said time delay zero during high engine speed at least equal to said predetermined engine speed so as to inject the fuel at said ignition time of the first of the communicating adjacent cylinders.

4,512,317
EXTENDED RANGE THROTTLE BODY FUEL INJECTION SYSTEM

Michael A. Pauwels, Williamsburg; Danny O. Wright, Grafton, both of Va.; Bruce J. Harvey, Sterling Heights, Mich., and Thomas J. Bauer, Newport News, Va., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 27, 1984, Ser. No. 584,025
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—478
4 Claims



1. An extended range throttle body fuel injection system utilizing injection means for injecting fuel into an engine, comprising:

a microprocessor having a plurality of control laws stored therein and responsive to at least one engine operating condition and in accordance with said control laws for generating a series of pulse width signals representing an amount of fuel to be injected into the engine said pulse width signal including a compensation time component and a calculated time component;

timer means responsive to the trailing and leading edges of said pulse width signals to measure the time between successive pulse width signals;

first means for subtracting from the value in said timer means said compensation time component associated with the previous fuel pulse for determining a net time value between the previous fuel pulse and the present fuel pulse;

comparison means responsive to said net time value for comparing said net time value between successive pulse width signals with a predetermined time value;

means responsive to said comparison means to generate a new compensation time value signal as a function of said net time value; and

second means for subtracting said compensation time value signal from said pulse width signal to generate a compensated pulse width signal.

4,512,318

INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION SYSTEM

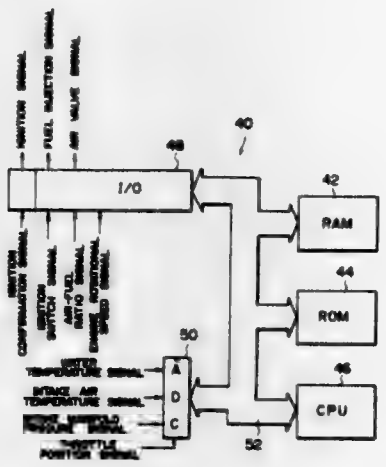
Toshimitsu Ito, and Toshiaki Isobe, both of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 16, 1982, Ser. No. 418,838

Claims priority, application Japan, Sep. 18, 1981, 56-147314

Int. Cl.³ F02D *5/02*

U.S. Cl. 123—492 **12 Claims**



1. An internal combustion engine with a fuel injection system comprising:

an injector for injecting fuel;

a rotational sensor for detecting a rotational speed of said engine;

a throttle sensor for detecting an opening degree of a throttle valve of said engine;

a pressure sensor for detecting pressure in an intake manifold of said engine;

first calculating means for calculating a basic injection time period, during which said injector injects fuel, based on the engine rotational speed detected by said rotation sensor and intake manifold pressure detected by said pressure sensor;

second calculating means for calculating a change with time of said opening degree detected by said throttle sensor and a change with time of said intake manifold pressure detected by said pressure sensor; and

correcting means for correcting said basic injection time period under acceleration of said engine by alternatively using a first value effective when the increasing change of the opening degree of the throttle valve exceeds a first level and a second value effective when the increasing change of the intake manifold pressure exceeds a second level, said first value being large enough to provide a quick engine response and being attenuated when the change of the opening degree of the throttle value is below the first level and said second value being used to correct the basic injection time period only after the first value is below the second value.

4,512,319

INTERNAL COMBUSTION ENGINE

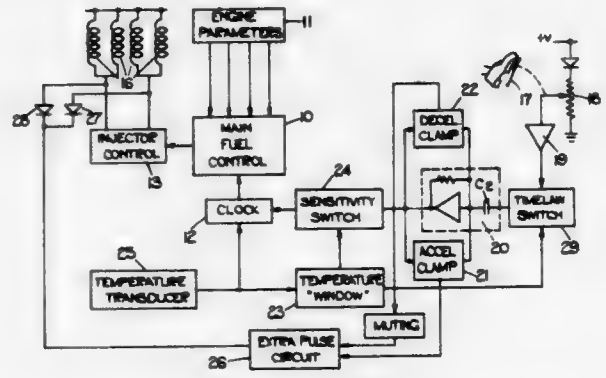
Malcolm Williams, Solihull; Albert R. Tingey, Whitacre Heath; John P. Southgate, Braunton, Nr. Barnstable, and Steven J. Russell, Coventry, all of England, assignors to Lucas Industries Limited, England

Continuation of Ser. No. 470,139, Feb. 28, 1983, abandoned, which is a continuation of Ser. No. 847,622, Nov. 1, 1977, abandoned. This application Nov. 23, 1983, Ser. No. 554,756

Claims priority, application United Kingdom, Nov. 4, 1976, 45862/76

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—492 **11 Claims**



1. An electronic fuel injection control for an internal combustion engine comprising a main fuel control circit sensitive to at least one engine parameter and determining the rate at which fuel is supplied to the engine, said main fuel control circuit including demand means for generating a demand signal which influences the rate at which fuel is injected, said fuel injection control further comprising a transient enrichment control circuit operative during acceleration to provide a temporary increase in the rate of fuel supplied, the magnitude of the temporary increase in the rate of fuel supply being substantially proportional to the rate of change of said demand signal, a sensitivity switch circuit being incorporated in said transient enrichment control circuit and arranged to select one of a plurality of discrete values for a constant of proportionality of said temporary increase thereof and temperature sensitive means sensitive to engine temperature and connected to control said sensitivity switch circuit, said sensitivity switch circuti being effective to modify the effect of said transient enrichment control circuit by selecting one of said discrete values in accordance with engine temperature.

4,512,320

METHOD OF AND DEVICE FOR CONTROLLING FUEL INJECTION IN INTERNAL COMBUSTION ENGINE

Shinichi Abe; Mitsuharu Taura, both of Toyota; Hidetoshi Amano, Okazaki, and Toshiaki Mizuno, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Mar. 15, 1984, Ser. No. 590,051

Claims priority, application Japan, Mar. 28, 1983, 58-52187; Mar. 28, 1983, 58-52188

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—492 **23 Claims**

1. A method of controlling a fuel injection in an internal combustion engine for effecting an asynchronous fuel injection from a fuel injector when an amount of an engine acceleration exceeds a predetermined judging level, comprising the steps of:

detecting an air-fuel ratio of a mixture as an index of the state of combustion in said engine; and

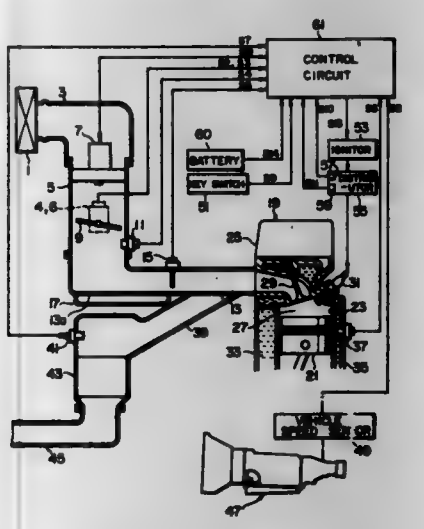
controlling said judging level in accordance with said air-fuel ratio thus detected such that said judging level is raised as said air-fuel ratio gets smaller.

2. A device for controlling a fuel injection in an internal combustion engine comprising:

an acceleration detecting means for detecting an amount of acceleration of said engine;

an air-fuel ratio detecting means for detecting an air-fuel ratio as an index representing the state of combustion in said engine;

a judging means adapted to make a judgement as to whether an asynchronous fuel injection by an injector is necessary in accordance with a judging level and to allow the asynchronous fuel injection when the amount of engine acceleration exceeds said judging level;



a judging level changing means adapted to control said judging level in accordance with air-fuel ratio detected by said air-fuel ratio detecting means such that said level is raised as said air-fuel ratio becomes smaller; and

a signal generating means adapted to generating an injection signal for driving said injector for a predetermined time length when said asynchronous fuel injection is allowed by said judging means.

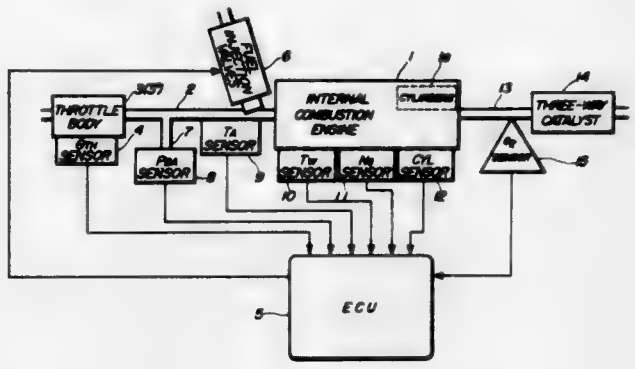
4,512,321

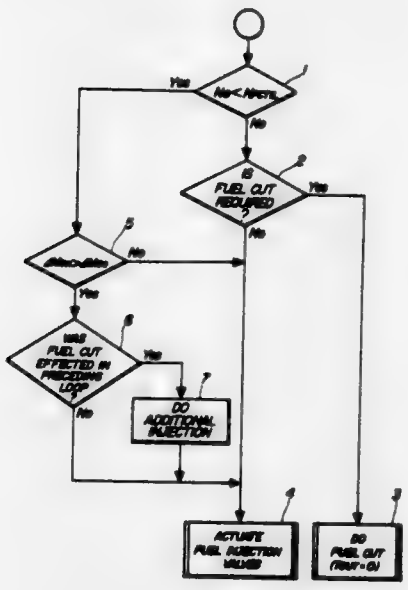
FUEL SUPPLY CONTROL METHOD FOR MULTI CYLINDER INTERNAL COMBUSTION ENGINES AFTER TERMINATION OF FUEL CUT

Akihiro Yamato, Shiki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1984, Ser. No. 608,998
Claims priority, application Japan, Jun. 15, 1983, 58-107548
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—493 **5 Claims**

1. A method of controlling the supply of fuel to an internal combustion engine having a plurality of cylinders at deceleration thereof, wherein operating conditions of said engine are detected, the quantity of fuel being supplied to said engine is set to a value appropriate to a detected operating condition of said engine upon generation of each pulse of a trigger signal, sequential injections of the set quantity of fuel are effected into said cylinders in predetermined sequence in synchronism with generation of pulses of said trigger signal, and the supply of fuel to said cylinders is interrupted when said engine is decelerating in a predetermined operating condition, the method comprising the steps of: (1) determining whether or not a predetermined condition for terminating the interruption of the fuel supply to said engine is satisfied; and, (2) when said predetermined condition is determined to be satisfied, effecting one of said sequential injections into one of said cylinders which corresponds to a present pulse of said trigger signal at the time of generation of said present pulse of said trigger signal, and simultaneously effecting an additional injection into





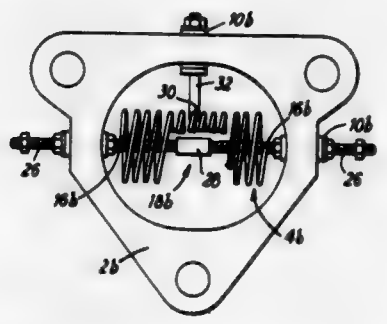
another one of said cylinders which corresponds to an immediately preceding pulse of said trigger signal.

4,512,322

ENGINE PREHEATERS

Michael F. Barcy, Tadworth, England, assignor to CT Harwood Limited, London, England

Filed Jul. 12, 1982, Ser. No. 397,069
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **15 Claims**



1. In an air-breathing internal combustion engine having at least one combustion air-inlet conduit providing an air path between transversely opposed walls, the improvement consisting of an air-heating device in said conduit comprising an electrical resistance element in the form of a helical coil extending transversely across said air path and a substantially rigid electrically conductive retaining member for said element, said device including support means for mounting said retaining member, said support means comprising a one-piece carrier body attached to the air-inlet conduit and having an opening through it and between opposed body walls to form a part of the air-inlet conduit, said member being (1) connected to one end of the coil and (2) directed through the coil interior

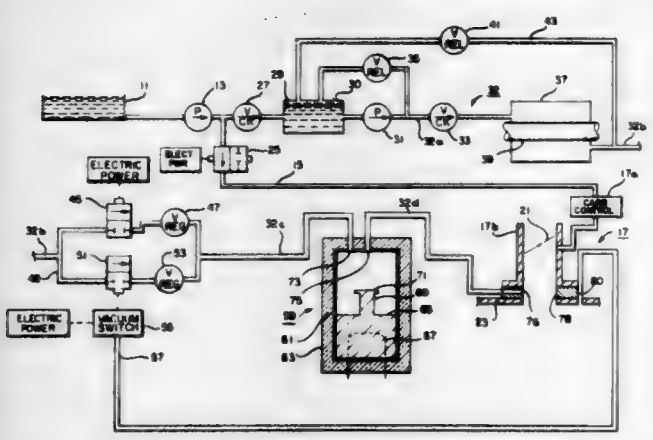
and (3) extending across said opening and (4) being secured to said opposed body walls, said member providing a support for at least said one end of the resistance element, the coil comprising a series of turns each having an internal cross-section substantially greater in all directions than the corresponding cross-section of the retaining member, the other end of said coil being adapted for support by one of said opposed body walls, the coil being suspended solely by its ends within said opening and with essentially the whole length of the coil spaced from the retaining member.

4,512,323

CARBURETOR VAPORIZER

John V. Ruth, and Garfield C. Potts, both of Fort Worth, Tex., assignors to Ultra Mileager Company, Inc., Fort Worth, Tex.

Filed Jan. 23, 1984, Ser. No. 573,021
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **10 Claims**



1. A system for vaporizing fuel for an internal combustion engine having a main fuel pump for pumping fuel from a main fuel tank through a main fuel line to a carburetor, comprising in combination:

an auxiliary fuel tank connected to the main fuel pump for receiving fuel pumped by the main fuel pump;

an auxiliary fuel pump having an intake connected to the auxiliary fuel tank and a discharge connected to an auxiliary fuel line;

preheater means for heating the fuel in the auxiliary fuel line with exhaust from the engine;

a vaporizer chamber sealed from the atmosphere and connected to the auxiliary fuel line downstream of the preheater means, the vaporizer chamber having an electrically heated element upon which fuel from the auxiliary line is discharged to create air-free vapor, the vaporizer chamber having an outlet connected to the carburetor for transmitting the air-free vapor to the carburetor for mixing with air and for combustion; and

valve means connected into the main fuel line for preventing flow through the main fuel line when vapor is being delivered by the vaporizer chamber.

4,512,324

FUEL PREHEATER

David Neary, 12716 E. 137 St., Broken Arrow, Okla. 74011, assignor to David Neary, Broken Arrow, Okla.

Filed Apr. 9, 1984, Ser. No. 597,959
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **16 Claims**

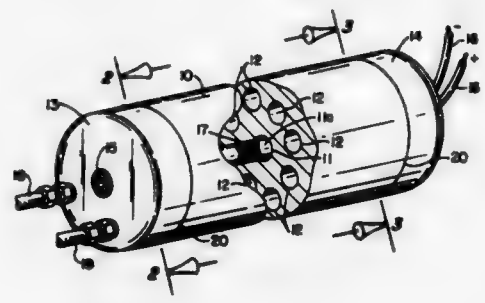
1. A preheater for liquid fuel to be used in a device designed to burn said fuel comprising

a single, unitary cylindrical member provided with a first axially positioned conduit, circular in cross section, extending throughout the entire length of said cylindrical member,

an electrical resistance heating element positioned within said first conduit and electrically insulated therefrom,

a plurality of second conduits, circular in cross section, equi-spaced around and parallel to said first axially positioned conduit and extending throughout the entire length of said cylinder and adapted to carry fuel therein,

means connecting the ends of said plurality of second conduits together so that said second conduits are at least in one series connection, one end of said series connected second conduits being provided with means connecting said one end of said series connected second conduits to a source of fuel and the other end of said series connected second conduits being provided with means connecting said other end of said series connected second conduits to said device designed to burn said fuel, both said means for



connecting said one end of said series connected second conduits to a source of fuel and said means for connecting said other end of said series connected second conduits to said device to burn said fuel being located at the same end of said cylindrical member,

a temperature sensor located in said means connecting said other end of said series connected second conduits to said device designed to burn said fuel and positioned adjacent to said device designed to burn said fuel,

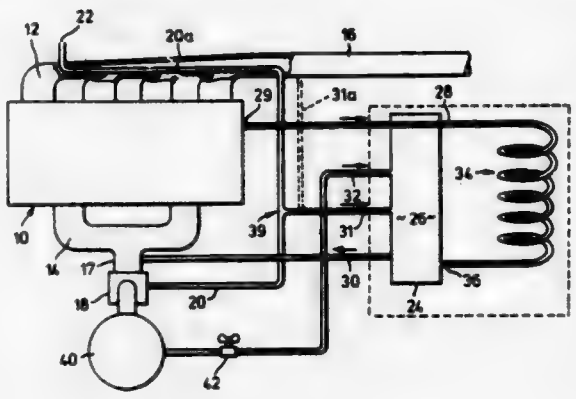
means, responsive to a signal from said temperature sensor, for activating or deactivating said electrical resistance heating element.

4,512,325

EMISSION CONTROL DEVICE

Stephan DePakh, 90 Warren Rd., Suite 110, Toronto, Ontario M4V 2S2, Canada

Filed Mar. 12, 1984, Ser. No. 588,739
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—572 **8 Claims**



1. An improved internal combustion engine including a crankcase ventilation system, an air filter and an intake manifold, wherein the improvement comprises in combination:

means defining a gas-mixing chamber,

a first conduit having one end adapted for connection to the crankcase of the engine and passing in non-communicating fashion through said chamber so that any gases in said chamber contact the outside of the first conduit, the first conduit opening at its other end into said chamber and being such that at least its inner wall is of copper,

a second conduit leading from said chamber and being adapted for communication with said intake manifold,

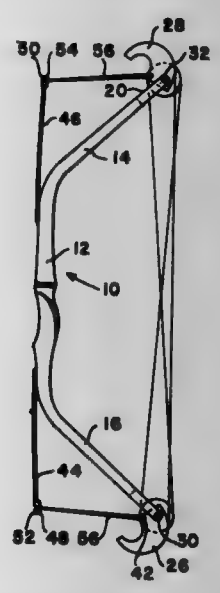
a third conduit leading from said mixing chamber and receiving a gas which has been heated by exhaust heat,
and a fourth conduit leading from said mixing chamber and being adapted for connection to the air filter of the engine.

4,512,326

COMPOUND LEVER BOW

David W. Jarrett, 901 Sunset Dr., Lexington, Va. 40502

Filed Apr. 20, 1982, Ser. No. 370,036
Int. Cl.[3] F41B *5/00*
U.S. Cl. 124—23 R 4 Claims



1. A compound lever bow having a center handle and rigid bow limbs having free terminal ends; a lever mechanism rotatably mounted on a pivot point on each of said rigid bow limb terminal ends; said lever mechanisms each including a pulley portion and bowstring levers; said bowstring levers extending a predetermined distance radially outward of the pivot point of said lever mechanisms; a bowstring having respective ends connected to each of said bowstring levers; a synchronizing cable received by said pulley portions; flexible limbs having a strength providing a predetermined shooting force connected to opposite ends of said center handle and having free ends extending outwardly away from the handle; a force cable connecting pin mounted in each of said lever mechanisms; the pins being located a predetermined radial distance from the lever mechanism pivot point; a pair of force cables, each connected to respective of said connecting pins and said flexible limb free ends; and adjustable stop means on one of said rigid limbs in a position engaging said lever mechanism limiting rotation and preventing over-center rotation of said bowstring levers; the strength of said flexible limbs, the mechanical advantage provided by the radial distance between the bowstring lever pivot points and said connecting pins and the positioning of said adjustable stop means all combining whereby a specific bow shooting force is supplied in combination with a predetermined minimal shooting hold force.

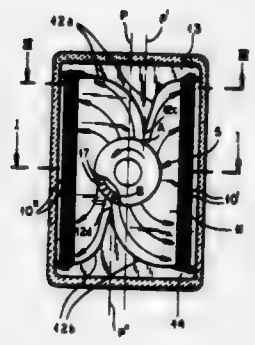
4,512,327

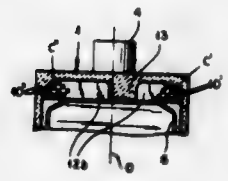
MUFFLE OVEN FOR HEATING FOODSTUFFS

Hartmut Stiegler, Herborn, Fed. Rep. of Germany, assignor to Buderus Aktiengesellschaft, Wetzlar, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,932
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1983, 3306972
Int. Cl.[3] F24C *15/32*
U.S. Cl. 126—21 A 3 Claims

1. An apparatus for heating foodstuffs, comprising:
a generally closed housing;
partition means dividing the interior of said housing into a treatment chamber and an air-circulating compartment surrounding said chamber on three sides, said compartment forming a rear air space and two lateral air spaces merging into one another, said partition means having side apertures connecting said lateral air spaces with said chamber and a central opening connecting said chamber with said rear air space;
a radial blower in said rear air space centered on a horizontal axis and driven by an external motor, said blower having an axial intake end aligned with said central opening and having peripheral blades for discharging air in generally radial directions into said rear air space;
stationary upper baffle means above said blower extending across the width of said rear air space and forming a pair of downwardly concave aerodynamic deflecting surfaces converging at an upper flow-dividing edge pointed toward said blower for substantially evenly splitting an ascending air flow between said lateral air spaces;
stationary lower baffle means below said blower extending across the width of said rear air space and forming a pair of upwardly concave aerodynamic deflecting surfaces converging at a lower flow-dividing edge pointed toward said blower for substantially evenly splitting a descending air flow between said lateral air spaces; and





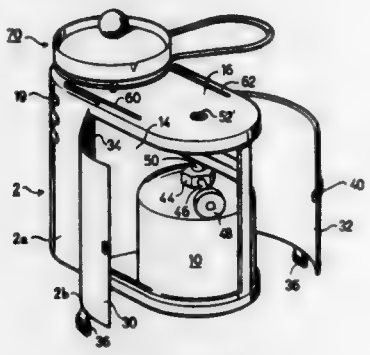
heating means disposed in said compartment in the paths of air streams directed by said blower together with said upper and lower baffle means into said lateral air spaces for circulation through said chamber by way of said apertures and said central opening, said deflecting surfaces being nearly tangent at said flow-dividing edges to two mutually parallel planes substantially coinciding with the flow direction of air leaving said blower at peripheral locations respectively confronted by said flow-dividing edges, said mutually parallel planes being vertical and lying on opposite sides of a vertical plane of symmetry of said housing including the axis of said blower, said mutually parallel planes having a spacing less than the diameter of said blower and a spacing each from said plane of symmetry less than the radius of said blower, said pairs of deflecting surfaces being of generally cycloidal configuration leveling off toward upper and lower corners of said rear air space, said upper and lower baffle means being integral forward extensions of a rear wall of said housing, said housing being of generally rectangular horizontal cross-section with rounded inner wall surfaces at junctions of said rear wall with respective sidewalls.

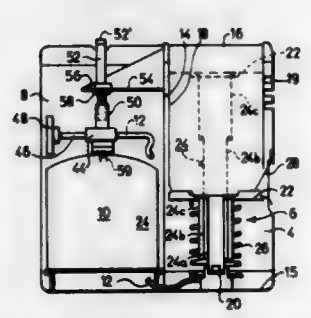
4,512,328

PORTABLE GAS HEATER PARTICULARLY USEFUL FOR HEATING FOODSTUFFS

Yoel Arad, Kibbutz Kfar Blum, D.N., Galil Elyon, Israel

Continuation-in-part of Ser. No. 253,661, Apr. 14, 1981, abandoned. This application Sep. 6, 1983, Ser. No. 529,641
Claims priority, application Israel, Apr. 29, 1983, 68528
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—37 B **29 Claims**





1. A portable gas heater particularly useful for heating foodstuffs, comprising:

a housing including a first section defining a gas burner compartment including a gas burner, and a second section defining a gas container compartment having a fitting for receiving a gas cylinder;

means for interconnecting the fitting to the gas burner for conduction of gas to the gas burner;

said second section of the housing including a pair of side walls hingedly mounted at one end along vertical axes, such that their opposite ends may be pivoted towards each other to a closed position to close said gas container compartment or to an open position to open said gas container compartment;

the bottom of said pair of side walls, when in their open positions, being engageable with a surface supporting the portable gas heater to provide a stable support therefor during use.

4,512,329

HEAT CIRCULATING FIREPLACE GRATE ASSEMBLY FOR GAS FIRED LOGS

Steven W. Sweet, 10470 Metcalf, Overland Park, Kans. 66212

Filed Apr. 13, 1984, Ser. No. 600,007
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **4 Claims**

1. A gas log grate assembly for a fireplace, said grate assembly including,

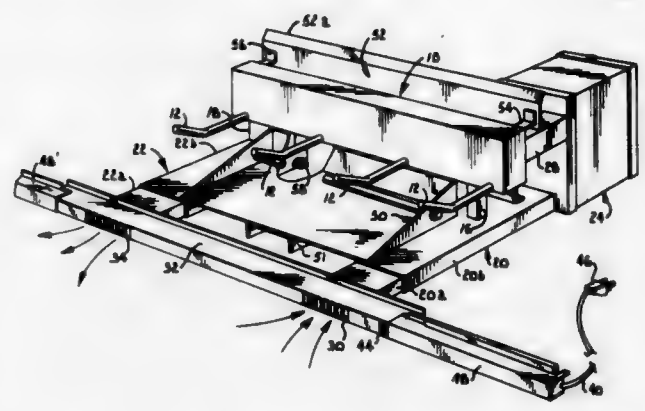
(a) an elongate generally horizontal air manifold having an inlet near one end and an outlet near the other;

(b) means for supporting said manifold between the front and back of the fireplace and spaced above the floor of the fireplace;

(c) an air circulating blower positioned between said manifold and the back of the fireplace;

(d) duct means connected with the inlet to and outlet from said manifold and with said blower and providing for intake of air from outside the fireplace into and through the blower and to said manifold and back from the manifold to outside the fireplace;

(e) means for supporting gas fired logs in close proximity to said manifold; and



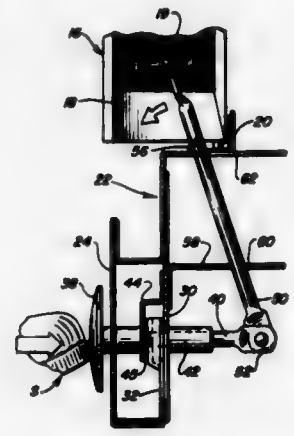
(f) heat shield means disposed between said manifold and said blower.

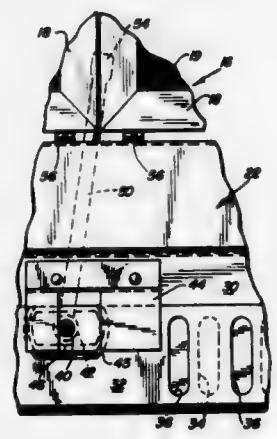
4,512,330

FIREPLACE SCREEN

Bruce T. Larkins, Cookeville, Tenn., assignor to DeSoto, Inc., Chattanooga, Tenn.

Filed Jan. 24, 1983, Ser. No. 460,167
Int. Cl.³ F24C *15/12*
U.S. Cl. 126—139 **11 Claims**





1. A fireplace screen having a frame adapted for association with the face of a fireplace, a damper assembly including a moveable damper member on said frame to regulate the amount of air admitted to a fireplace, and a pair of mesh doors for providing access to a fireplace area,

means pivotally mounting said mesh doors on said frame,

lever means on said frame for engaging the rear of at least one of said mesh doors and for pushing both of said doors open and away from the fireplace, and

manual operating means comprising a damper control knob mounted on said frame and connected both to said moveable damper member and said lever means for operating

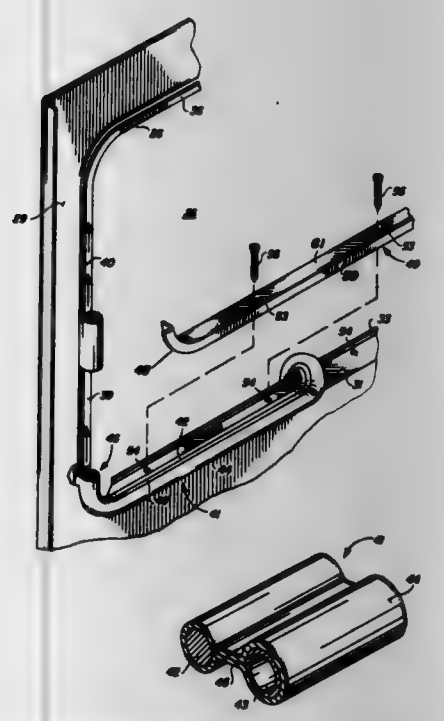
said lever means to push open said mesh doors to gain access to the fireplace, and for moving said damper member.

4,512,331

OVEN SEAL ARRANGEMENT

David E. Levi, Chattanooga, Tenn., assignor to The Maytag Company, Newton, Iowa

Filed May 24, 1984, Ser. No. 613,577
Int. Cl.[3] F24C *15/02*
U.S. Cl. 126—190 13 Claims



1. An oven seal arrangement, comprising: oven means including a stationary portion defining an oven cavity open at one end and a wall portion adjacent and generally surrounding the open end of said oven cavity, said oven means further including a movable portion in the form of oven door means operable between an open position and a closed position juxtaposed to said wall portion for effectively covering the open end of said oven cavity; flange means associated with said oven means and defining a channel in one of said stationary and movable portions extending along at least a portion of the perimeter of the open end of said oven cavity with said oven door means in said closed position, said channel having a narrow longitudinal opening formed by said flange means and further having seal entry means; and elongated seal means including a retainer portion, a seal portion and an intermediate web portion interconnecting said retainer and seal portions, said retainer and intermediate portions being of effectively smaller cross-section than said channel and said narrow longitudinal opening to be slidably received therein at said seal entry means and to permit longitudinal sliding movement of said elongated seal means relative to said channel for positioning said seal portion in sealing juxtaposition to said stationary and movable portions.

4,512,332

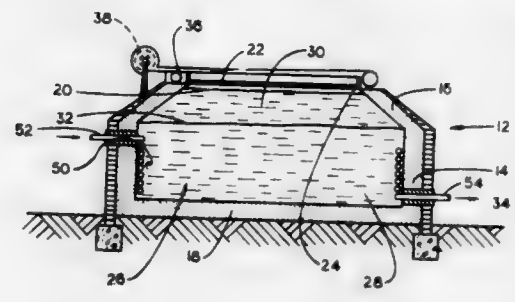
STABLE DENSITY STRATIFICATION SOLAR POND

Fikry L. Lansing, San Gabriel, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 259,208, Apr. 30, 1981, abandoned. This application Oct. 18, 1983, Ser. No. 542,557
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—415 12 Claims

1. A stable, density-stratification solar pond comprising:

(a) a cylindrical container having light opaque walls and, in its upper segment, a truncated conical shape converging toward a solar energy acceptance opening facing toward the sun, said opening having an area which is small relative to the surface area of the internal walls of the container, with the ratio of the area of the opening to the surface area of all of the internal walls being in the range of 1/10 to 1/50, and said opening area being no greater than 50% of the projected area of the cylindrical container, said ratio of said aforementioned areas approaching a black-body configuration for said solar pond; and



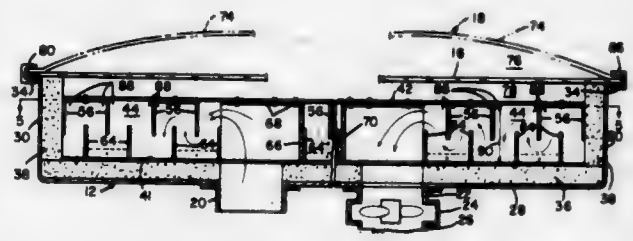
(b) a body of liquids of mutually differing densities disposed within said container, said liquids comprising two separate layers of non-brine, immiscible liquids, the upper layer being organic based and substantially contained within said truncated conical segment, and the lower layer being aqueous based about 80% more dense than said upper layer and essentially contained within said cylindrical container, with the upper layer being transparent to solar radiation and the lower layer being a dark color for high absorptivity of said solar radiation.

4,512,333

SOLAR COLLECTOR PANEL AND METHOD

Wladimir S. King, Mechanicsburg, Pa., assignor to Kimex International Technologies, Inc., Mechanicsburg, Pa.

Filed May 23, 1983, Ser. No. 496,908
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—429 17 Claims



1. A solar collector panel comprising a collector plate having one side adapted to be exposed to solar energy, a wall spaced from the other side of the plate, a fluid flow passage between the plate and the wall, a first set of fins spaced along the passage and extending from the plate into the passage and a second set of fins spaced along the passage and extending from the wall into the passage, the second set of fins being located between the fins of the first set, all of said fins being generally parallel, so that fluid flowing through the passage is moved along a serpentine path repetitively toward, into contact with and away from the collector plate for improved transfer of heat from the plate to the fluid.

4,512,334

PORTABLE THERMAL EXCHANGE SYSTEM

Kenneth G. Peachey, Mt. Crawford, Va., assignor to Sunwood Energy Products, Inc., Harrisonburg, Va.

Filed Apr. 28, 1983, Ser. No. 489,462
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—430 7 Claims

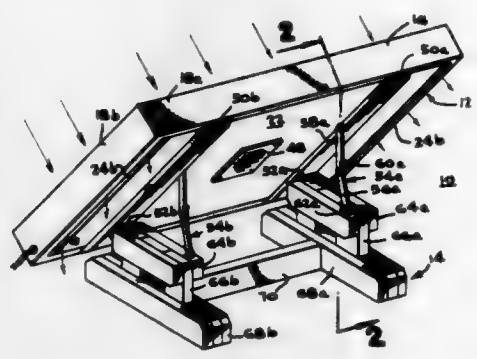
1. Dual functioning apparatus for collecting and storing thermal energy and for serving as a table, said apparatus adapted to be readily moved along a floor surface from a first,

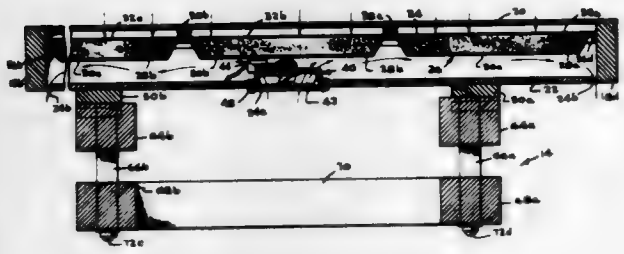
thermal absorbing location to a second, thermal emitting location, said apparatus comprising:

(a) phase change means for selectively absorbing and emitting thermal energy;

(b) base means for supporting said phase change means;

(c) transport means mounted on said base means for facilitating the movement of said base means and said phase change means from the first to the second locations;





(d) a tabletop for receiving and supporting said phase change means and including a plate for presenting a table surface, said plate comprised of a material transmissive to solar radiation, whereby solar radiation may be directed through said plate and onto said phase change means; and

(e) means for adjustably mounting said table top with respect to said base means, whereby said table top may be disposed from a first orientation with respect to the floor surface to a second orientation with respect to the floor surface.

4,512,335

SOLAR ENERGY COLLECTING APPARATUS

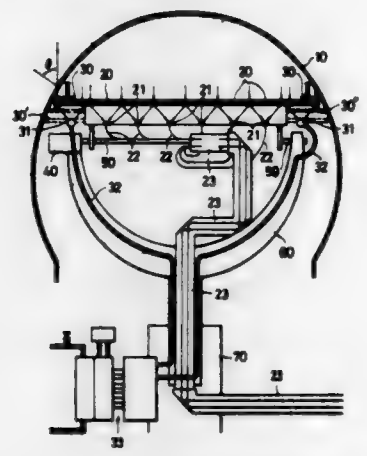
Kei Mori, No. 3-16-3-501,, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 482,027

Claims priority, application Japan, Apr. 3, 1982, 57-55668; Apr. 5, 1982, 57-56215

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—440 **12 Claims**



1. A solar energy collecting apparatus comprising a transparent capsule; a lens assembly comprising a plurality of spot focal point type lenses housed in said capsule and arranged essentially concentrically in order to converge rays of the sun; a sunlight collecting means and solar heat collecting means which are integrated into said lens assembly and provided at the focal point of said lens; a photo conductive cable for transmitting sunlight collected by sunlight collecting means to the desired place; and a heat transmitting device for transmitting the solar heat collected by said heat collecting means to the desired place, said heat collecting means being provided for at least one line of the peripheral side of said lens assembly, and said sunlight collecting means being provided for the remaining lenses at the central portion.

4,512,336

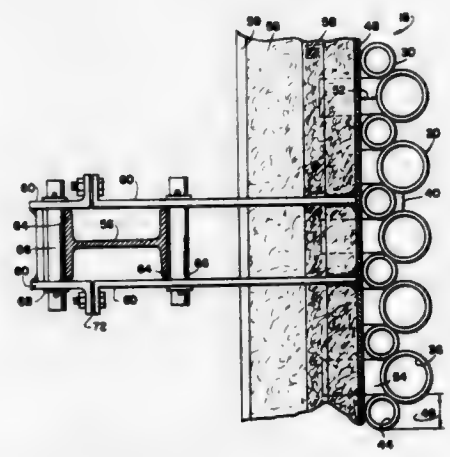
PANEL OF VAPOR GENERATING AND SUPERHEATING TUBES

Murray Wiener, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 14, 1982, Ser. No. 434,219

Int. Cl.³ F24J *3/02;* F22B *37/24*

U.S. Cl. 126—442 **17 Claims**



1. A tube panel comprising at least two parallel vapor generating tubes for receiving radiation energy from forwardly thereof to heat fluid flowing therein to form vapor, each of said vapor generating tubes has a cylindrical outer surface, said cylindrical outer surfaces of said vapor generating tubes are spaced-apart to define a gap having a width, a superheating tube disposed parallel to and contiguous with said cylindrical outer surface of each of said two vapor generating tubes to span said gap for receiving radiation energy from forward of said gap to superheat vapor flowing in said superheating tube, said gap is unobstructed such that insolation may penetrate said gap to be absorbed by said superheating tube, said superheating tube has a diameter which is less than the diameter of either of said vapor generating tubes and is disposed rearwardly of a straight line connecting the centers of said vapor generating tubes such that a major portion of radiation which is emitted by the superheating tube will be absorbed by the vapor generating tubes, and means for supporting said superheating tube in contiguous relation with said vapor generating tubes.

4,512,337

METHODS FOR CRYOPRESERVATION AND TRANSFER OF BOVINE EMBRYOS

Newton G. Leveskis, 8500 Mt. Vernon Rd., Auburn, Calif. 95603

Filed Oct. 20, 1981, Ser. No. 313,118

Int. Cl.³ A61D *7/00, 7/02*

U.S. Cl. 128—1 R **10 Claims**

1. A method for transferring a bovine embryo comprising:

providing a bovine embryo in a physiologically buffered solution, said solution containing a cryoprotective amount of dimethyl sulfoxide, and moving said solution containing the embryo and substantially all of said dimethyl sulfoxide without additional dilution into the uterus of a recipient bovine animal when the animal is apparently receptive to pregnancy.

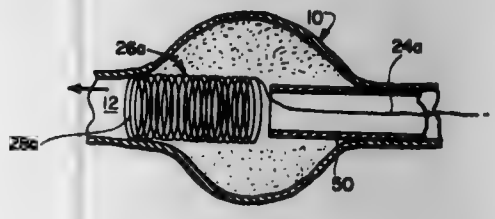
5. A method for freezing a bovine embryo comprising:
providing a bovine embryo in an initial buffered solution, adding dimethyl sulfoxide at a preselected single concentration within the range of 1–2M", slowly and substantially continuously at a constant rate per minute to said solution until a cryoprotective amount is present therein, and lowering the temperature of said solution sufficiently to preserve the embryo in a viable condition.

4,512,338

PROCESS FOR RESTORING PATENCY TO BODY VESSELS

Alexander B. Balko, 30 Red Barn La., East Greenwich, R.I. 02818, and Dhiraj M. Shah, R.D. #1, Rte. 43, Rensselaer, N.Y. 12144

Filed Jan. 25, 1983, Ser. No. 460,842
Int. Cl.³ A61M *29/00*; A61B *19/00*
U.S. Cl. 128—1 R 15 Claims



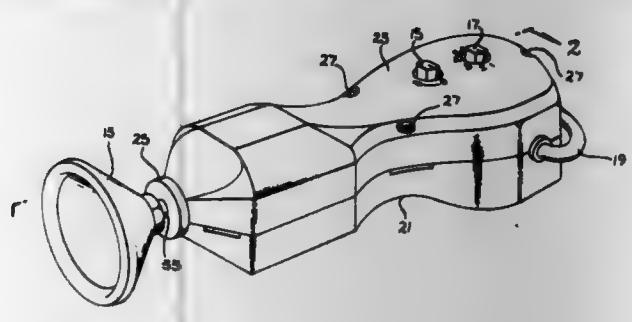
1. The process of restoring the patency and/or re-establish continuity of a disrupted hollow body vessel a patient which includes a localized defect disposed intermediate proximal and distal patent vessel portions, comprising inserting at least the forward end of a shape-memory allow wire having a parent phase and a martensite phase and a temperature transformation point therebetween and which wire has been previously formed in its parent phase to form a longitudinally oriented coil of adjacent wire loops and then cooled to its martensite phase and reshaped to an alternate form before insertion along the interior of said vessel past said defect to a position adjacent the proximal patent vessel portion while maintaining the temperature of said wire below its martensite transformation point and thereafter permitting the forward portion of said wire to be warmed above its transformation point so as to initially cause said alternate form to substantially revert to said parent phase coil form and to cause the thus reformed wire loops of the forward wire end to be urged against the interior of said proximal patent vessel portion so as to be at least temporarily positioned thereat and thereafter permit the reformation of the remainder of said coil so as to bridge said localized defect and extend into said distal patent vessel portion, said warming being progressive in the proximal to distal direction.

4,512,339

PERCUSSOR APPLICATION

Robert C. McShirley, Glendale, Calif., assignor to McShirley Products, Inc., Burbank, Calif.

Filed Apr. 24, 1981, Ser. No. 257,373
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—41 7 Claims



1. In a hand held therapeutic percussor apparatus having an applicator, reciprocal motor means for imparting a reciprocal motion to said applicator, power supply means for controlling the frequency and power of said reciprocal motion, said motor means including an armature, a first shaft coupled at a first end to a first end of said armature and coupled at a second end to said applicator, a second shaft coupled at a first end to a second end of said armature, wherein said first shaft, said second shaft and said armature are substantially aligned along the same longitudinal axis, a means for resiliently holding said armature in a predetermined position, the improvement comprising:
a solenoid having an opening defined along its longitudinal axis;
a magnetic frame substantially surrounding said solenoid, said magnetic frame defined by two pole pieces,
said frame having a single substantially rectangular opening at one end thereof adjacent to said first shaft, such that each said pole piece is separated from said shaft by a preselected distance,
wherein said rectangular opening has approximately the same cross-sectional area as the cross-section of said armature, and wherein the contacting surface of said armature and said solenoid form a bearing surface such that said armature is constrained from rotational movement about its longitudinal axis;
a first resilient bumper disposed on a first end of said second shaft and aligned thereon along the same longitudinal axis as a first bumper stop to impact therewith and to dampen the impact momentum of said first shaft when said second shaft is urged to travel in a first direction when said armature is pulled into the magnetic field formed by said solenoid and said magnetic frame upon the application of an electrical signal to said solenoid;
a second resilient bumper disposed on a second end of said second shaft and aligned thereon along the same longitudinal axis as a second bumper stop to impact with said second bumper stop and to dampen the impact momentum of said first shaft when said second shaft is urged to travel in a second direction upon the removal of said electrical signal from said solenoid; bumper stop;
whereby said first and second bumpers are disposed behind both said applicator and said armature such that said bumpers are outside the area of separation between said pole pieces,
and whereby the said pole pieces have a maximum separation at said one end thereof to provide clearance for the diameter of said first shaft so that said pole pieces will not interfere with the reciprocating travel thereof.

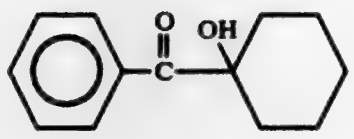
4,512,340

VISIBLE LIGHT CURED ORTHOPEDIC POLYMER CASTS

Carl J. Buck, Berkeley Heights, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

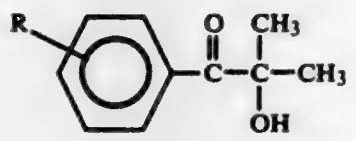
Filed Feb. 22, 1983, Ser. No. 468,434
Int. Cl.³ A61F *13/04*
U.S. Cl. 128—90 33 Claims

1. An orthopedic cast material which, when wrapped about a body member and cured by exposure to incandescent visible light which is essentially free of significant actinic radiation in the ultraviolet range of about 200 to 400 nm, forms a rigid, high strength inmobilizing structure and which comprises an air, light and X-ray permeable fabric impregnated with a formulation comprising (a) one or more acrylate terminated polyurethane oligomers, (b) optionally, one or more functional acrylate or methacrylate monomers as reactive diluents and (c) a photoinitiator which is activated by visible light in the wavelength range 400 nm to 750 nm to generate free radicals to initiate the photo polymerization reaction, said photoinitiator being selected from the group consisting of
(A) 1-hydroxy-1-cyclohexyl phenyl ketone of the formula



or

(B) (ring substituted or unsubstituted) 2-hydroxy 2,2-dimethyl acetophenone of the formula



wherein the substituents R are selected from the group consisting of hydrogen, methyl, dimethyl, isopropyl, tert-butyl, chloro, bromo and fluoro, whereby the casts produced therefrom show no tendency towards discoloration in ambient light or sunlight.

4,512,341

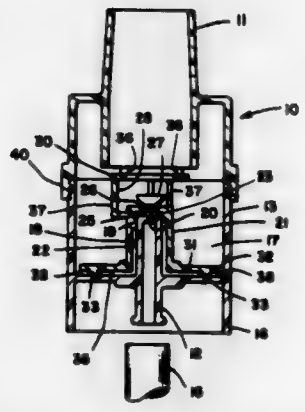
NEBULIZER WITH CAPILLARY FEED

Victor E. Lester, P.O. Box 536, Jamestown, Calif. 95237

Filed Nov. 22, 1982, Ser. No. 443,473

Int. Cl.[3] A61M *16/00*

U.S. Cl. 128—200.21 4 Claims



1. In a nebulizer having a reservoir for liquid, outlet means from said reservoir, a gas nozzle extending along the longitudinal axis of said reservoir, gas inlet means connected to said gas nozzle, a liquid spray nozzle mounted relative to said gas nozzle for nebulization of liquid sprayed from said spray nozzle, and liquid passageway means extending between said reservoir and said spray nozzle to provide a liquid flow path therebetween, wherein the improvement in said nebulizer comprises:

said reservoir including a bottom wall extending substantially normal to said longitudinal axis and formed to extend laterally across a lower side of said reservoir to a side wall;

said passageway means including a fluid-flow conduit extending from said spray nozzle and terminating in an opening positioned proximate and above said bottom wall; and

said passageway means further including a collector flange extending laterally outwardly from said conduit around said opening to substantially the greatest width dimension of said reservoir and terminating proximate said side wall with the periphery of said flange and said side wall defining an annular collector opening, said flange being mounted in spaced relation to said bottom wall at a distance not more than 0.02 inches to define a capillary passageway between said bottom wall and said flange.

4,512,342

DEVICE AND METHOD FOR REVERSIBLY OCCLUDING A BODY DUCT

Lourens J. D. Zaneveld, 900 N. Lake Shore Dr., Chicago, Ill. 60611, and James W. P. Burns, 146 S. Elgin Ave., Forest Park, Ill. 60130, assignors to Lourens J. D. Zaneveld and James W. P. Burns, both of Chicago, Ill.

Filed Apr. 14, 1982, Ser. No. 368,275

Int. Cl.[3] A61B *19/00*

U.S. Cl. 128—303 R 18 Claims



1. A method of occluding the vas deferens, said method comprising the step of blocking the lumen of said vas deferens at a plurality of axially spaced positions by positioning at least two elongated plugs having a diameter substantially equal to the diameter of the lumen within said lumen, with said plugs being connected by a flexible connector extending through at least one aperture in the wall of the vas deferens and secured to and extending between said at least two plugs, with said flexible connector permitting movement of said plugs with respect to each other and maintaining an axial spacing between said plugs to prevent sperm passage through the vas deferens.

9. A device for reversibly occluding the vas deferens possessing peristaltic-like contractory muscle movement comprising:

two elongated plugs of cross-sectional diameter substantially equal to the inside diameter of the vas deferens and length sufficient to substantially engage the periphery of the interior of the vas deferens over a substantial distance when positioned in the lumen, and connecting means interconnecting said plugs and permitting movement of said plugs within the vas deferens due to peristaltic-like contractory muscle movement with respect to one another while maintaining an axial spacing between said plugs to prevent sperm passage through the vas deferens, said connecting means extending through the wall of the vas deferens at at least one location and being sufficiently flexible without functionally traumatizing the vas deferens such that said device, after implantation in the vas deferens, may be removed therefrom to provide a reversible male sterilization procedure.

4,512,343

MEDICAL COAGULATION DEVICE

Ernst Falk, Sternenfels-Diefenbach, and Johann Knösel, Bretten, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,379

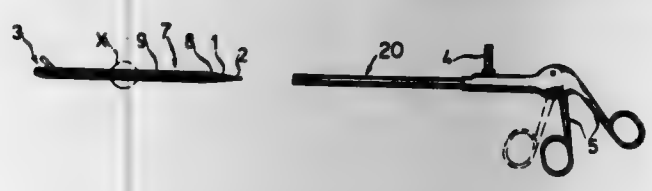
Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217165

Int. Cl.[3] A61B *17/39*

U.S. Cl. 128—303.17 6 Claims

1. A medical coagulation instrument comprising an electrically conductive hollow shaft member having proximal and distal ends and having an insulated handle affixed thereto at its proximal end and a manipulatable device operatively affixed thereto at its distal end and means for applying an electrical potential to said shaft member, an insulating jacket surrounding said shaft member for at least a portion of its length between the proximal and distal ends thereof, said insulating

jacket comprising a plurality of individual axially abutting conduit pieces surrounding said shaft member, said conduit pieces formed of insulating material, said conduit pieces being dimensioned to be slipped over said shaft member and said conduit pieces having axial end faces abutting axial end faces of



adjacent conduit pieces, the end faces of said conduit pieces abutting in such a manner as to provide a contact line of end face abutment between the inner diameter and the outer diameter of the jacket which has two radial components separated by an axial component.

4,512,344

ARTHROSCOPIC SURGERY DISSECTING APPARATUS

Forest C. Barber, P.O. Box 7744, Fort Worth, Tex. 76111

Filed May 12, 1982, Ser. No. 377,403
Int. Cl.[3] A61B *17/32*
U.S. Cl. 128—305
11 Claims



1. Arthroscopic sharp dissecting apparatus comprising

a rotatable dissecting tool comprising an elongated shank having an axial chuck engageable means at its proximal end and having a dissecting tip at its distal end; said chuck engageable means adapted to be engaged and rotatably driven by the chuck of a rotary motor; said dissecting tip including at least one cutting edge disposed to dissect material with which it is engaged;

a guide for said dissecting tool comprising an elongated hollow shank, means at the proximal end of said shank for attachment to said rotary motor, and protective shroud means formed at the distal end of said shank for partially enclosing said dissecting tip; said guide shank having a generally V-shaped notch formed at its distal end, opening longitudinally to said distal end at one side wall thereof, for exposing said dissecting tip to the material to be dissected;

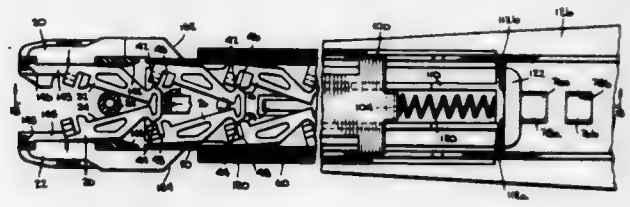
said shank including means for rotationally supporting said tool shank.

4,512,345

SURGICAL CLIP APPLYING APPARATUS, AND CLIPS AND CLIP TRAIN FOR USE THEREIN

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 30, 1982, Ser. No. 429,250
Int. Cl.[3] A61B *17/12*
U.S. Cl. 128—325
19 Claims



1. Surgical clips for use in a device for applying a succession of surgical clips to body tissue, each surgical clip comprising:

a base;

two arms, each arm being connected adjacent one of its ends to a respective end of the base, and the other ends of the arms being initially free and laterally spaced from one another, the longitudinal axes of the base and arms defining the plane of the clip, each arm having an inner surface which is opposite the inner surface of the other arm and an outer surface which is opposite the inner surface of the arm;

first coupling means comprising a member unitary with the clip and projecting from the outer surface of each arm remote from the initially free end of the arm, each projecting member having a longitudinal axis which is substantially perpendicular to the longitudinal axis of the associated arm and parallel to the plane of the clip; and

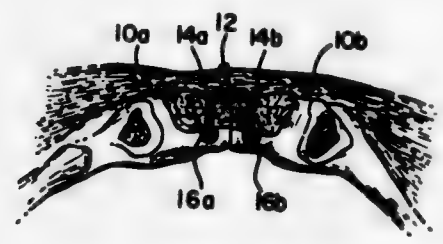
second coupling means comprising a slot in the inner surface of each arm remote from the base for removably receiving an associated one of the projecting members of an adjacent clip so that a plurality of said clips can be intercoupled in a linear array in which each clip is pulled along by the preceding clip in the array when the preceding clip moves in a direction away from the clip.

4,512,346

STERNAL CLOSURE METHOD AND MEANS

Gerald M. Lemole, 404 Tomlinson Rd., Huntingdon Valley, Pa. 19046

Filed Apr. 25, 1983, Ser. No. 488,280
Int. Cl.[3] A61B *17/08, 17/04;* A61F *5/04*
U.S. Cl. 128—335
5 Claims



1. A device for closing a severed sternum, comprising:

a pair of rods each to be disposed longitudinally along respective separate sides of the sternum immediately adjacent to the posterior surface thereof; and

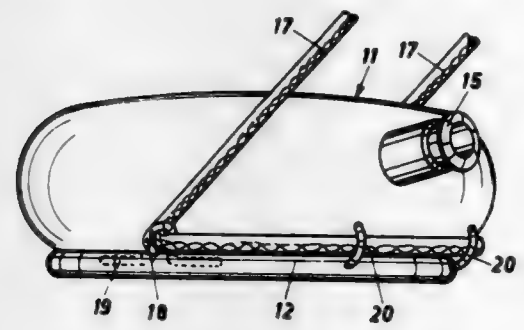
a plurality of wires each connected at one end thereof to corresponding points along each of said rods, said wires to be extended through the respective separate sides of the sternum and be connected at their other ends in opposing pairs on the anterior surface of the sternum.

4,512,347

OBSTETRIC SUCTION DEVICE

Göran O. Uddenberg, Marstrand, Sweden, assignor to AB Vacuum-Extractor, Göteborg, Sweden

Filed Dec. 23, 1982, Ser. No. 452,817
Claims priority, application Sweden, Dec. 28, 1981, 8107786
Int. Cl.[3] A61B *17/42*
U.S. Cl. 128—352 4 Claims



1. An obstetric suction device for vacuum extractors comprising a suction cup of a rigid material having a suction mouth, a connection piece for connecting a suction hose to said suction cup, a traction device attachable to said cup, the traction device being in the form of a two-point pulling device attachable to two attachments disposed diametrically opposite one another in close proximity to the suction mouth of the cup in such a manner that the attachments are in the form of loops which are oblique with respect to the plane of the suction mouth and the traction device is in the form of a string, ribbon or similar soft and flexible member which extends from said attachment loops around approximately half the circumference of the cup and held in this position by means of guiding means.

4,512,348

DEVICE FOR AUTOMATICALLY AND CONTINUOUSLY MEASURING THE CONSTITUENT PARTS OF BLOOD

Takatoshi Uchigaki; Akio Saito, both of Kyoto, and Naoki Yamada, Joyo, all of Japan, assignors to Kabushiki Kaisha Kyoto Daiichi Kagaku, Japan

Filed Apr. 23, 1982, Ser. No. 371,482
Claims priority, application Japan, Apr. 24, 1981, 56-063160; Oct. 9, 1981, 56-150924[U]
Int. Cl.[3] G01N *21/26*
U.S. Cl. 128—632 6 Claims



1. A device for automatically and continously measuring constituent parts of blood, said constituent parts being continuously drawn from the blood by means of a catheter inserted in a vein, comprising:

blood drawing means for drawing blood;

a tube pump coupled to said blood drawing means;

sample liquid cup means for holding a sample liquid received from said blood drawing means by said tube drawing pump;

standard liquid cup means for holding a standard liquid;

base liquid cup for receiving a base liquid;

sensor means for sensing said constituent part;

sensor means correction means responsive to said standard liquid and said base liquid for correcting said sensor means;

sampling means comprising a single sampling nozzle and nozzle tube for withdrawing said sample liquid, standard and base liquid from their respective cups in a predetermined order, said sampling means further comprising means for separating said withdrawn sample, standard and base liquids with air;

manifold means for receiving said separated standard liquid, base liquid and sample liquid, and for diluting them at an equal rate by the use of a buffer solution, and for interposing a layer of air between said diluted sample, base and standard liquid, and for providing the diluted and separated sample, standard and base liquid as respective measuring liquids; and

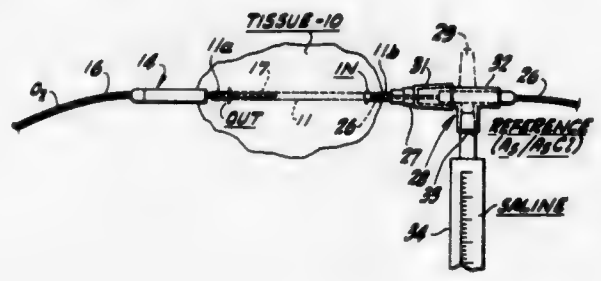
operation control means coupled to said sensor means for receiving successive signals, in order therefrom, and for correcting said sensor output signals of said sample liquid according to said standard liquid and said base liquid, and for further displaying the value of said constituent part, and further for controlling the operation of said sampling device.

4,512,349

METHOD OF DIRECT TISSUE GAS TENSION MEASUREMENT AND APPARATUS THEREFOR

Thomas K. Hunt; William H. Goodson, III; Ning Chang; David R. Knighton, all of San Francisco, Calif.; Finn Gottrup, Hojbjerg, Denmark, and Richard Firmin, London, England, assignors to Regents of the University of California, Berkeley, Calif.

Filed May 13, 1983, Ser. No. 494,173
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—632 27 Claims



1. A method of direct tissue gas tension measurement by use of a gas permeable tube implanted in such tissue and by gas polarography comprising the following steps:

implanting a predetermined length of said tube through said tissue and leaving a pair of exposed ends of such tube;

inserting reference and gas electrodes in respective ends of said tube;

filling said tube with an electrolytic fluid;

waiting for said gas to permeate from said tissue through said tube into said fluid;

and applying a polarographic potential between said gas and reference electrodes and measuring the electrical signal from said gas electrode.

4,512,350

TIME GAIN CONTROL SIGNAL GENERATOR FOR AN ULTRASONIC DIAGNOSTIC SYSTEM

Charles I. Cimilluca, Bronx, N.Y., assignor to Irex Corporation, Ramsey, N.J.

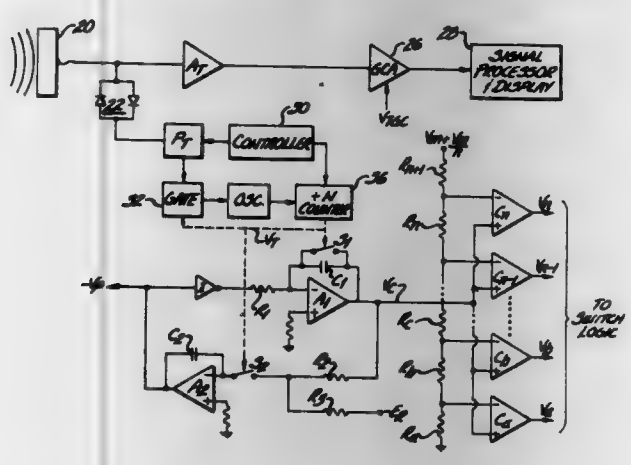
Filed Apr. 22, 1983, Ser. No. 487,788
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 12 Claims

1. In an ultrasonic diagnostic imaging system which transmits ultrasound into the tissue of a patient and is capable of receiving ultrasonic echo information from varying tissue depths during active intervals, a time gain control circuit for controllably amplifying received ultrasonic echo information during consecutive reception periods of said active intervals comprising:

a gain controlled amplifier having an input responsive to received ultrasonic echo information signals, an output at which amplified echo information signals are produced,

and a control input responsive to a time gain control signal;

means, operated in response to the transmission of ultrasound, for producing a first signal representative of the durations of said active intervals and a second signal representative of the durations of said consecutive periods;



gain set means for selecting the gain of said amplifier during respective ones of said consecutive periods, said gain set means being responsive to said first signal for producing a plurality of gain control signals; and

means, responsive to said second signal, for applying said gain control signals to said control input of said gain controlled amplifier during said consecutive periods.

4,512,351

PERCUTANEOUS LEAD INTRODUCING SYSTEM AND METHOD

Peter J. Pohndorf, Miami Shores, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Nov. 19, 1982, Ser. No. 442,964

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—786 **20 Claims**



1. A method of introducing a flexible member in the epidural space in the spinal column of a patient, comprising the steps of:

percutaneously inserting an elongated flexible introducer having an epidural needle assembly extending through a cannula in the introducer between vertebrae in the patient's spine so that the leading tip of the epidural needle assembly and the introducer are adjacent said epidural space;

withdrawing said epidural needle assembly from the cannula of said introducer;

inserting said flexible member through the cannula of said introducer until the flexible member is positioned in said epidural space;

withdrawing said introducer from the patient while leaving said flexible member in said epidural space; and

splitting said flexible member along the elongate axis thereof following withdrawal of said introducer from the patient and removing said split introducer from around said flexible member.

4,512,352

USE OF 4-METHYL-2-HYDROXY-BENZALDEHYDE TO IMPROVE THE FLAVOR CHARACTERISTICS OF TOBACCO

Sina D. Escher, Le Lignon, and Paul Dietrich, Troinex, both of Switzerland, assignors to Firmenich SA, Switzerland

Division of Ser. No. 368,508, Apr. 15, 1982, Pat. No. 4,443,485. This application Feb. 14, 1984, Ser. No. 579,945

Claims priority, application Switzerland, May 21, 1981, 3314/81

Int. Cl.³ A24B *15/30*

U.S. Cl. 131—276 **2 Claims**

1. A method to enhance, modify or improve the sweet gustative note of caramel and burnt type reminisint of coumarin of smoking tobacco and tobacco products, which comprises the step of adding thereto between about 5 and 200 parts per million by weight based on the total weight of the flavorized smoking tobacco or tobacco product of 4-methyl-2-hydroxy-benzaldehyde.

4,512,353

TOBACCO DRYING PROCEDURE

Warren A. Brackmann, Mississauga, Canada, assignor to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

Filed Feb. 16, 1983, Ser. No. 466,792

Claims priority, application United Kingdom, Mar. 2, 1982, 8206083

Int. Cl.³ A24B *3/10, 3/18*

U.S. Cl. 131—304 **7 Claims**

1. In a method of drying particulate tobacco material by passing particulate tobacco material to be dried from one end of a heated drying zone to the other, heating said particulate tobacco material during its passage through the drying zone, and contacting said heated particulate tobacco material with an air stream flowing through said drying zone to remove moisture from the heated particulate tobacco material, the improvement which comprises flowing said air stream in the direction of movement of the particulate tobacco material through the entire drying zone at a rate such that the air imparts a translational motion to the particulate tobacco material in the entire drying zone and the speed of individual tobacco particles through the entire drying zone is proportional to the size of the individual tobacco particle.

4,512,354

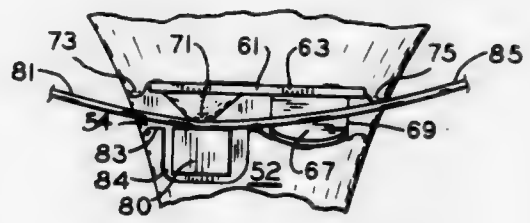
DENTAL FLOSS APPLICATOR WITH IMPROVED FLOSS SEVERING AND ANCHORING

Robert J. Loubier, 5122 Chippewa Ct., Ft. Wayne, Ind. 46804, and Robert A. Muhn, 918 Reed Rd., Ft. Wayne, Ind. 46815

Continuation-in-part of Ser. No. 435,619, Oct. 20, 1982,. This application Jul. 26, 1983, Ser. No. 517,331

Int. Cl.³ A61C *15/00*

U.S. Cl. 132—91 **12 Claims**



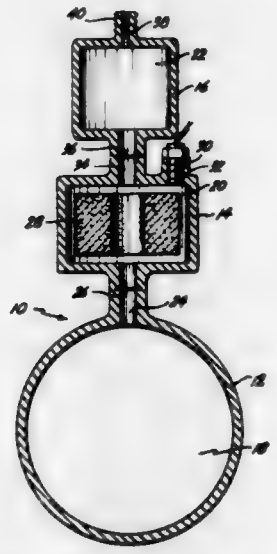
1. In a dental floss applicator for use in dispensing and supporting a strand of dental floss under tension for cleaning between teeth of the type having a user actuable capstan for periodically substituting a fresh floss strand segment for a previously used segment and for maintaining strand segment tension during use of the applicator, an arrangement for contemporaneously severing floss and anchoring a floss strand end to the capstan as a result of a simple continuous movement of

the strand by a user comprising a slot in the capstan, and a metallic floss severing and anchoring plate nested in the slot, the plate having a gently deformed dimple which in conjunction with one slot surface defines a floss receiving gap sufficiently narrow to securely grip floss pulled into the gap and a cutting edge adjacent to and protruding in the same general direction as the dimple so that as a user pulls floss into the slot, a section of floss is wedged between the dimple and one slot surface while an adjacent floss section engages and is severed by the cutting edge.

4,512,355
PROPELLANT AUGMENTED, PRESSURIZED GAS DISPENSING DEVICE

Lyle D. Galbraith, Redmond, Wash., assignor to Rocket Research Company, Redmond, Wash.

Filed Dec, 16, 1982, Ser. No. 450,355
Int. Cl.[3] B60R *21/08*
U.S. Cl. 137—68 A 5 Claims



1. In a pressurized gas dispensing device including:

means defining a first chamber for holding a gas under pressure;

means defining a second chamber for holding a propellant;

means defining first flow passage means placing said first and second chambers in fluid communication, the first flow passage means comprising all fluid communication means between the first and second chambers; and

means defining second flow passage means for exhausting fluids from said second chamber, the improvement comprising:

means defining a third chamber in fluid communication with said second flow passage means, the second flow passage means comprising all fluid communication means between the second and third chambers;

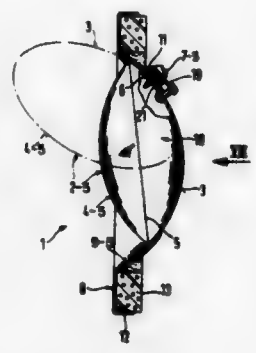
pressure relief means interposed in said second flow passage means to prevent fluid flow through the second flow passage means from the second chamber to the third chamber until the pressure in said second chamber reaches a predetermined high pressure as a result of ignition of propellant in the second chamber, and to thereupon permit said fluid flow through the second flow passage means; and

means defining third flow passage means for exhausting said third chamber, said third flow passage means being smaller in total cross-section than the second flow passage means and being the sole means for exhausting said third chamber.

4,512,356
EXHAUST AIR VALVE

Lennart Widerby, Jonkoping, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

Filed Jan. 26, 1983, Ser. No. 461,039
Claims priority, application Sweden, Jan. 29, 1982, 8200487
Int. Cl.[3] F16K *13/04*
U.S. Cl. 137—75 16 Claims



1. A valve for a ventilation channel comprising a valve casing with a valve seat element defining a flow passage orifice for air which is to be sucked out of or forced from a space, said valve seat element becoming narrower and converging in the direction of flow through the flow passage orifice, a valve body element cooperable with the upstream surface of the valve seat element and selectively operable for opening and closing the flow passage, the confronting surfaces of the valve seat element and the valve body element engaging each other along at least a line contact surrounding said orifice when the valve is closed, and being concave and convex respectively with the same center of curvature, characterized in that the confronting surfaces of the valve seat element and the valve body element comprise surface segments having the same radius of curvature and an arcuate extension no greater than 180 degrees, the surface segment of the seat element having an orifice with a width smaller than the width of the valve body surface segment, said valve body element being selectively slidable along one of said confronting surface segments between its open and closed positions, in the open position said body element being out of registry with said orifice to open a flow passage therethrough, and in closed position said body element covering said orifice to close the flow passage therethrough, said valve including engagement means to maintain the surface segment of said valve body element in sliding engagement with the surface segment of said seat element throughout said opening and closing displacements of said valve body element.

9. A valve according to claims 1, 2 or 3 wherein said engagement means includes open and closed stop abutment means defining an open position and a closed position, said engagement means affording displacement of said body element between said positions.

10. A valve according to claim 9 wherein said engagement means includes a valve operator for displacing said body element between said positions.

12. A valve according to claim 10 wherein said valve operator comprises a spring device urging said body element toward said closed position, and a heat-sensitive member rendering said spring device inoperative when the ambient temperature is below a predetermined temperature level.

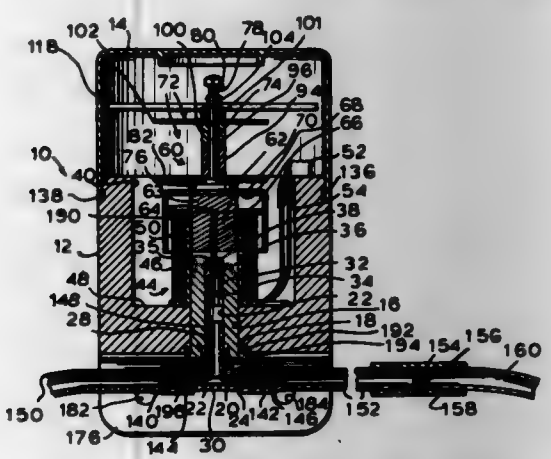
4,512,357
PRESSURE TRANSDUCER

Webster B. Earl, Lewisville, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed Jan. 12, 1983, Ser. No. 457,461
Int. Cl.[3] G05D *16/00*
U.S. Cl. 137—82 10 Claims

1. An electric to pneumatic transducer comprising a housing, nozzle means for releasing air or a gas or gases located in

said housing, inlet means for transmitting air or a gas or gases to said nozzle means, magnetic means acting upon said nozzle means for varying the amount of air or a gas or gases released from said nozzle means and electrical activating means operatively associated with said means for acting upon said nozzle means for controlling said magnetic means for acting upon said



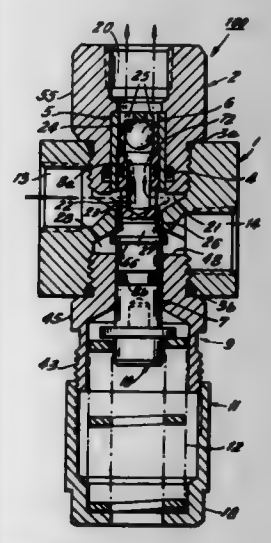
nozzle means in accordance with an electrical signal, said magnetic means for acting upon said nozzle means including means for limiting lateral movement thereof and for permitting reciprocal movement thereof comprising spring means, said spring means comprising a plurality of substantially M-shaped leaf springs.

4,512,358

COMPACT LONG-LIFE BY-PASS AND PRESSURE UNLOADER VALVE

Gregory S. Kuzma, Randolph, N.J., assignor to Wm. Steinen Mfg. Co., Parsippany, N.J.

Filed Aug. 26, 1983, Ser. No. 526,608
Int. Cl.³ G05D *16/10*
U.S. Cl. 137—116 **13 Claims**



1. A valve comprising:

a valve body for containing the flow of a fluid, the valve body having a generally cylindrical central chamber; an inlet opening to the central chamber for fluid to enter the central chamber; an outlet opening to the central chamber for fluid to exit from the central chamber for providing a flow of fluid to an output; a by-pass opening to the central chamber for fluid to exit from the central chamber; the openings being disposed such that the inlet opening is between the outlet opening and the by-pass opening; the central chamber of the valve body further having a restricted portion between the inlet opening and the by-pass opening; and

a movable valve mechanism inside the central chamber in the valve body for permitting fluid to flow from the inlet opening to the outlet opening, the movable valve mechanism comprising;

a plunger comprising a hollow portion, the hollow portion having a lateral opening for receiving fluid from the inlet opening of the valve body and having an end opening for discharging fluid to the outlet opening; the plunger further comprising a widened portion which fits against the restricted portion of the valve body for forming a by-pass valve; and

a check valve at the end opening of the hollow portion of the plunger for preventing the flow of fluid from the outlet opening to the inlet opening of the valve body;

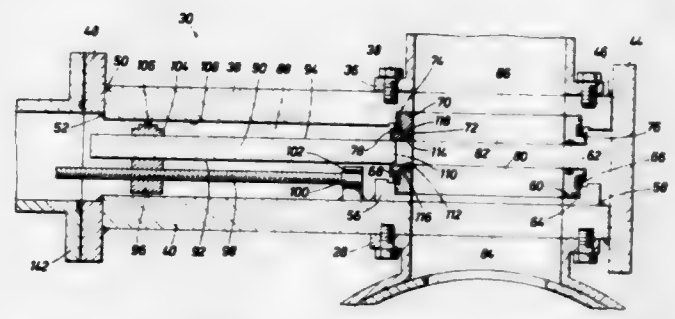
an override piston movable in relation to the plunger for driving the plunger when the output is closed for fully opening the by-pass valve and for permitting fluid to flow from the inlet opening to the by-pass opening for avoiding excessive pressure and for lowering pressure in the inlet opening to a low unloading pressure level.

4,512,359

VALVE MECHANISM WITH REPLACEABLE SEAL RINGS

Alberto L. Hinojosa; Kee Kim, both of Houston, and Kenton Chickering, III, Simonton, all of Tex., assignors to Daniel Industries, Inc., Houston, Tex.

Filed Apr. 13, 1984, Ser. No. 599,982
Int. Cl.³ F16K *43/00, 3/16*
U.S. Cl. 137—315 **6 Claims**



1. A gate valve mechanism permitting seal replacement while in the assembled condition thereof, comprising:

(a) a generally rectangular valve body structure formed by flat spaced side plates and flat end plates joined by welds, said valve body structure defining a valve chamber and flow passage means intersecting said valve chamber, one of said side plates forming a circular seat recess about said flow passage means, a seat retainer extending from the opposite one of said spaced side plates and forming a circular seat recess about said flow passage means;

(b) a pair of opposed seat rings being seated within said seat recesses, said seat rings each defining circular face seal groove means and passage means communicating the bottom, radially outer portion of said seal groove means with said valve chamber said face seal groove means being defined by opposed diverging frusto-conical side wall surfaces forming a restricted circular groove opening, the bottom portion of said seal groove means being formed by a pair of converging frusto-conical bottom wall surfaces intersecting respective ones of said diverging frusto-conical surfaces;

(c) resilient O-ring face seal ring means being removably retained within each of said seal groove means, said outer portion of said seal groove means being formed by tapered wall surfaces interfaces to permit easy insertion and removal of the seal ring means within said seal groove means, said resilient O-ring face seal ring means being of significantly greater cross-sectional diameter than the width of said restricted circular groove opening and being of sufficient cross-sectional dimension to simultaneously establish contact with at least one of said tapered surfaces and said diverging and converging frusto-conical surfaces to restrain any tendency of said seal mans from shifting outwardly of said seal groove means in all positions of the gate valve mechanism;

(d) nonported gate means being movably positioned with

said valve chamber and defining opposed flat sealing surfaces for sealing engagement with said seat rings, said gate means being movable between open and closed positions to control the flow of fluid through said flow passage means and being positionable radially outwardly of said resilient seal means to thus expose said resilient O-ring face seal means for removal; and

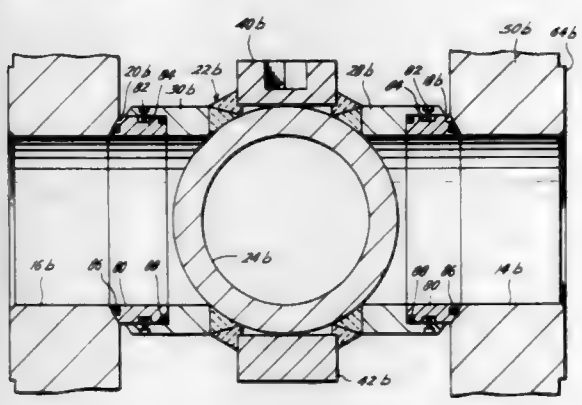
(e) means for controlling movement of said gate means within said valve chamber between said open and closed positions.

4,512,360

FABRICATED BALL VALVE

Clyde H. Chronister, 4 Kings Row, Houston, Tex. 77069

Filed Nov. 29, 1982, Ser. No. 445,137
Int. Cl.[3] F16K *5/20*
U.S. Cl. 137—326 1 Claim



1. A fabricated ball valve comprising,

a housing having an inlet and outlet and a valve seat inside the housing adjacent each of the inlet and outlet,

a fabricated ball valve element positioned in the housing between the inlet and outlet and including,

a first cylindrical tubular pipe member having a sealing face on each end for seating on the valve seats and providing flow therethrough when the first tubular member is aligned between the inlet and outlet,

second and third cylindrical tubular pipe members having one end weldably connected to the outside of the first member and having a sealing face on their other ends for seating on the valve seats, said second and third members axially aligned on opposite sides of the first member and blocking flow through the valve when the second and third members are aligned between the inlet and outlet,

trunnions positioned on opposite sides of the first member perpendicular to the axis of the first member for rotating the fabricated ball,

a movable seat ring telescopically connected to the interior of each of the other ends on the second and third tubular members,

the seat rings are connected to the second and third members by a lost motion connection allowing the rings to axially move relative to the second and third members,

said seat rings include an outer resilient seal in their outer ends for seating on the valve seats, and an inner seal between the seat rings and said second and third members, respectively,

the diameter of the inner seal is greater than the diameter of the outer seal whereby the outer seals are urged away from the valve element and onto a valve seat by service pressure acting on the seat rings,

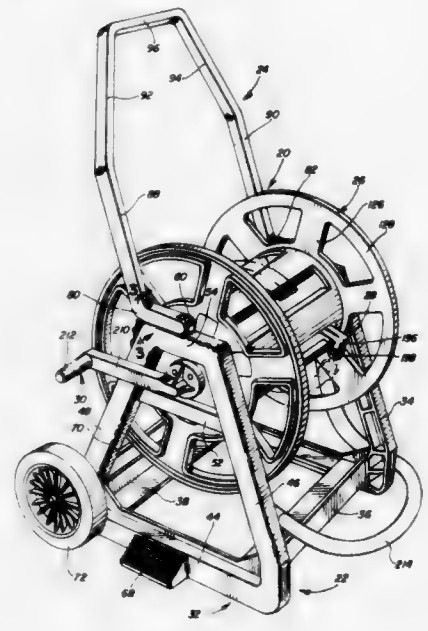
said housing including a closure flange in a plane parallel to the trunnions that can be opened for repair and replacement of the seat rings and seals.

4,512,361

HOSE STORAGE APPARATUS

Cosmo N. Tisbo; Thomas A. Tisbo, both of Barrington; Richard D. Recker, Palatine, and Bruce Heggeland, Rolling Meadows, all of Ill., assignors to Suncast Corporation, Batavia, Ill.

Filed Nov. 29, 1982, Ser. No. 445,100
Int. Cl.[3] B65H *75/34*
U.S. Cl. 137—355.27 26 Claims



1. A hose storage appartus for windably storing an elongated flexible hose comprising: a frame formed of a moldable plastic material;

a reel for windably receiving an elongated flexible hose,

said reel being formed of a moldable plastic material,

said reel being rotatably mounted on the frame,

said reel including a pair of connected reel sides,

each of said reel sides including a hub rotatably mounted in the frame,

said reel including a hose support surface connecting the reel sides;

and a hose connector mounted on the reel,

said hose connector having an inlet tube rotatably mounted in the hub of one of said sides and an outlet tube having one end adapted for attachment to a hose windably mounted on the hose support surface,

said outlet tube fixed relative to the hose support surface and being connected to the inlet tube to receive a fluid delivered to the inlet tube.

4,512,362

PNEUMATIC CONTROL VALVE MANIFOLD INTERFACE

Donald L. Groeschner, New Milford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 26, 1982, Ser. No. 444,563
Int. Cl.[3] F16K *11/24*
U.S. Cl. 137—356 10 Claims

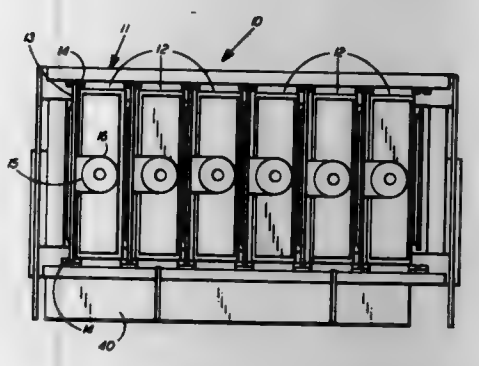
1. In a pneumatic control system for providing control functions to an associated apparatus,

a card cage having having a back plate and a plurality of card slots permanently fixed to said apparatus,

a like plurality of control logic manifolds fixed to said back plate for respective ones of said card slots,

each of said control logic manifold being individually pneumatically programmed to perform specific control functions,

a like plurality of identical control valve printed circuit board pneumatic connectors removably disposed in each



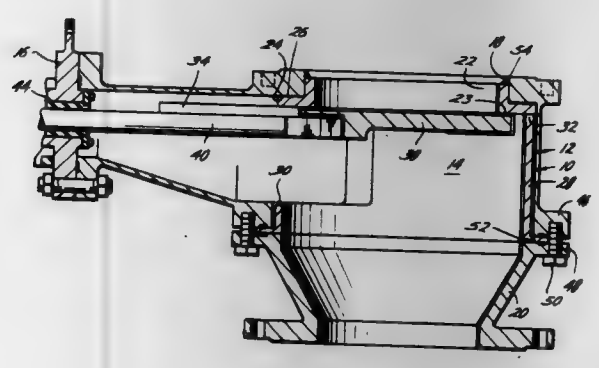
of said card slots in pneumatic communication with respective ones of said control logic manifolds.

4,512,363

SLIDE VALVE

Frank J. Jandrasi; Davy G. Pampell, and Walter J. Stinson, all of Houston, Tex., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 25, 1982, Ser. No. 411,407
Int. Cl.³ F16L 7/00
U.S. Cl. 137—375 **15 Claims**



1. A valve comprising, a body having an internal chamber and an inlet and outlet in fluid communication with the internal chamber for forming a flow passage through the body, a valve seat having an orifice disposed in the body about the flow passage, an abutment in the body, a tubular liner radially spaced from said orifice and disposed adjacent to the wall of said chamber and separate from the valve seat and having an abutment, said liner being removably disposed in the body, said liner abutment and said body abutment bearing against portions of said valve seat on opposite sides thereof, the valve seat being maintained in position by a clamping action of the abutments against said portions, spaced apart guides maintained in position with the valve seat, a slide valve having slides slidable in the guides operable for movement of the slide valve across the orifice into open, partially closed and closed positions, and means to move the slide valve into its positions.

4,512,364

NON-STICK GLASS STOPCOCK

Edwin Phillips, 700 Cedar Ave., P.O. Box 67, Middlesex, N.J. 08846

Filed Jan. 28, 1983, Ser. No. 462,068
Int. Cl.³ F16L 7/00
U.S. Cl. 137—375 **8 Claims**

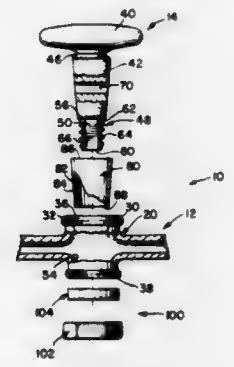
1. A valve assembly comprising:

a body portion which includes a plurality of conduits and a tapered bore intersecting each of said conduits;

a glass stem portion rotatably mounted in said body tapered bore, said stem portion having a stem body tapered to fit into said body portion tapered bore, a handle on one end of said stem portion body, a bore defined through said stem portion body, and a distal end section with said stem portion;

a tapered sleeve snugly fit about said stem portion body to be interposed between said stem portion body and said body portion tapered bore;

means for providing non-slip contact between said sleeve and said stem portion body;



adjustment means on said stem distal end portion, said adjustment means including a screw thread on said distal end portion, a lock nut threadably attached to said distal end portion and a washer interposed between said lock nut and said body portion;

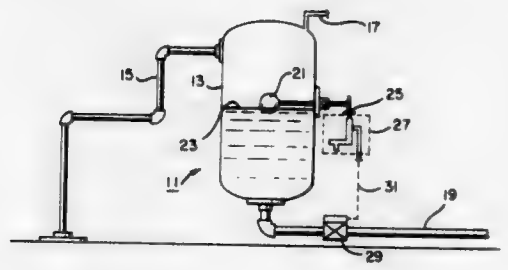
said means for providing non-slip contact between said sleeve and said stem portion body including the outer surface of the tapered body being coarse ground roughened prior to the installation of said tapered sleeve.

4,512,365

PILOT VALVE FOR AN OIL AND GAS SEPARATOR

George S. Jacobs, P.O. Box 4737, and R. David Anderson, 110 Pembroke, both of Wichita Falls, Tex. 76308

Filed Dec. 8, 1983, Ser. No. 559,325
Int. Cl.³ F16K 31/34
U.S. Cl. 137—413 **2 Claims**



1. A float actuated pilot valve for an oil and gas separator of the type having a float responsive to the liquid level in said separator for applying a biasing force to said pilot valve, and a discharge valve associated with said separator and said pilot valve for discharging liquid from said separator when said float biases said pilot valve, the improvement comprising:

a pilot valve body having a gas inlet, a lower chamber communicating with said gas inlet, an upper chamber having a top opening, and a vertically oriented gas passage connecting said upper chamber and lower chamber;

a horizontally oriented gas outlet located in said pilot valve body between said upper and lower chambers and communicating with said gas passage;

an actuator valve contained within said upper chamber having a top stem which extends from said top opening for contact with said float, and a bottom stem slidably received within a portion of said, vertically oriented gas passage, said actuator valve having a lower sealing surface adapted to sealingly engage an opening of said vertically oriented passage into said upper chamber when said float contacts said top stem;

a control valve contained within said lower chamber having an upper stem in contact with said actuator bottom stem

and having a lower stem, said control valve having an upper sealing surface adapted to sealingly engage an opening of said vertically oriented gas passage into said lower chamber;

resilient seal means contained in said upper chamber between said actuator valve sealing surface and said gas passage and contained in said lower chamber between said control valve sealing surface and said gas passage; and

biasing means for normally biasing said control valve sealing face toward said resilient seal means to block the flow of gas from said gas outlet, the biasing force of said float on said actuator valve top stem serving to compress said upper chamber resilient seal means and to relax said lower chamber resilient seal means whereby gas is allowed to flow from said lower chamber through said vertically oriented gas passage and out said gas outlet to open said discharge valve and discharge liquid from said separator, and the upper resilient seal means being spaced from its sealing surface to allow venting between said gas outlet and the atmosphere through the upper chamber when said biasing means biases the lower resilient seal means toward its sealing surface.

4,512,366

SELF-ACTING FLUID NON-RETURN VALVE

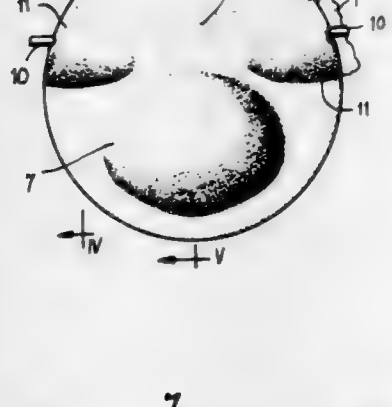
Jeffrey M. O. Lewis, Charleston, W. Va., assignor to The University Court of the University of Edinburgh, Edinburg, Scotland

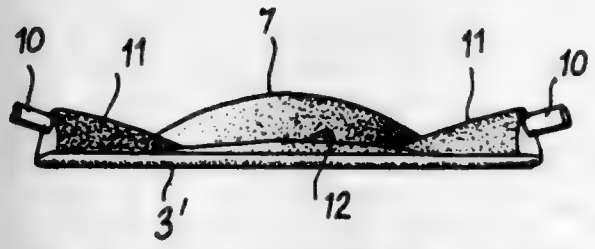
Filed Jul. 9, 1982, Ser. No. 396,686

Claims priority, application United Kingdom, Jul. 17, 1981, 8122205

Int. Cl.³ A61F *1/22*; F16K *15/03*

U.S. Cl. 137—527.8 **6 Claims**





1. In a self-acting non-return heart valve including a ring member defining a smooth bored passage, a flap member mounted in the ring member to turn by pivot means within the passage about a pivoting axis between a closed position, in which the flap member substantially closes the passage to blood flow therethrough in a first back direction, and an open position in which the flap member is substantially aligned with blood flow in a second forward direction being reverse to said first direction, the pivoting axis dividing the flap member into a minor area which is upstream, with reference to blood flow, of the pivoting axis and a major area which is downstream, with reference to blood flow, of the pivoting axis in the open position of the flap member the major area being shaped to provide an aerofoil cross-section to the flap member which generates lift in the direction to urge the flap member into the open position in the face of the second direction flow, wherein the improvement comprises said flap member being a relatively thin flap having at least one thickened localized region in said major area removed from said pivot means responsible for generating the lift, leaving only said pivot means and said localized region thickened while the remaining part of said flap remains relatively thin.

4,512,367

ROTATION DETECTING APPARATUS

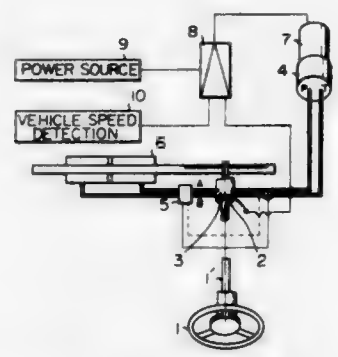
Michio Abe; Naoyuki Maeda, both of Aichi, Japan, and Robert M. Lynas, Pepper Pike, Ohio, assignors to Tokai TRW & Co. Ltd., Aichi, Japan

Filed Mar. 7, 1983, Ser. No. 472,676

Claims priority, application Japan, Mar. 15, 1982, 57-40517

Int. Cl.³ F16D *31/02*

U.S. Cl. 137—554 **5 Claims**



1. A rotation detecting apparatus for a power steering system of a vehicle, comprising:

control valve means coupled to a steering shaft of a steering wheel of the vehicle for controlling a flow of power fluid supplied to a power cylinder for powering a steering operation;

rotator magnet means secured on an input shaft of said control valve means for rotation therewith as a body;

concentric-circle shaped stator coil means adapted to face to said rotor magnet means; and

casing means functioning also as an iron core yoke mounted on a housing of said control valve for receiving said rotor magnet means and said stator coil means and supporting said stator coil means, whereby, when said input shaft is rotated in response to the steering operation of said steering wheel, an electromotive force is produced so as to detect a displacement in rotation of said input shaft.

4,512,368

FLUID DISTRIBUTOR

Motofumi Kaminaka, Wakayama; Hiroyuki Takashima, Ibaragi, and Katsuhiko Kaburagi, Wakayama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 8, 1983, Ser. No. 472,877

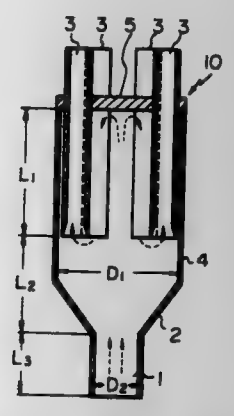
Claims priority, application Japan, Mar. 20, 1982, 57-39992[U]

Int. Cl.³ F16L *41/00*

U.S. Cl. 137—561 A **20 Claims**

1. A distributor for distributing a fluid containing solids carried on a carrier gas from a main pipe to a plurality of branch pipes, comprising a cylindrical inlet pipe portion for the introduction of fluid supplied through said main pipe, a branching portion one end of which concentrically communicates with said inlet pipe portion, a cover portion located at the other end of said branching portion, said cover portion having an inner surface and a plurality of branch pipes which extend through said cover portion for carrying a distributed fluid, the diameter of said branching portion being larger than that of

said inlet pipe portion, said plurality of branch pipes being arranged at equally spaced positions on a circle which is con-



centric with said branching portion, and each of said branch pipes extending into said branching portion.

4,512,369

EMERGENCY DISCONNECTOR FOR FLUID LOADING AND UNLOADING LINES

Susumu Takahashi, Niigata, Japan, assignor to Niigata Engineering Co., Ltd., Tokyo, Japan

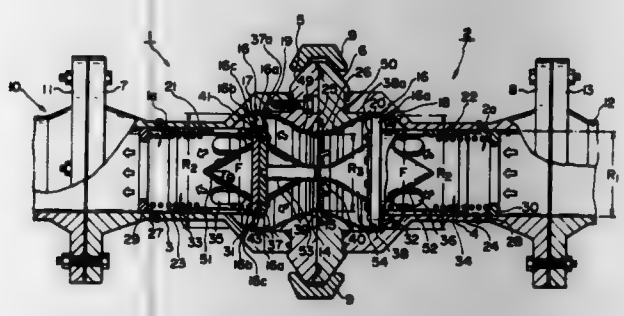
Filed Nov. 24, 1982, Ser. No. 444,092

Claims priority, application Japan, Feb. 26, 1982, 57-25780[U]; Apr. 13, 1982, 57-60337

Int. Cl.³ F16L *37/28*

U.S. Cl. 137—614.04

10 Claims



1. An emergency disconnector for a fluid loading and unloading line, comprising; a pair of couplings each having a fluid passage, a pair of slide valves axially slidably movable within said couplings and being normally held apart from one another to establish a continuous fluid path through said couplings, said slide valves including valve heads, sealing means surrounding said valve heads and extending outwardly therefrom and being movable into sealing abutment with a first inner surface of said fluid passages, and a pair of cover rings covering at least a portion of said sealing means when said slide valves are positioned to provide a continuous fluid path through the couplings, said cover rings defining a portion of the fluid passages, respectively mounted on inner walls defining said fluid passages and having fluid passages therein continuous with said fluid passages of said coupling.

4,512,370

HIGH AND LOW PRESSURE SENSOR

Harry Roger, 124 Banks Ave., Lafayette, La. 70506

Continuation of Ser. No. 312,095, Oct. 16, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,118

Int. Cl.³ F16K *11/07*

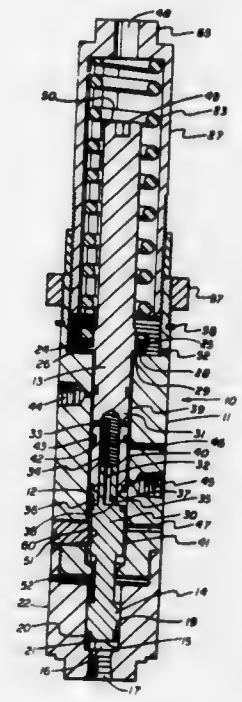
U.S. Cl. 137—625.66

8 Claims

1. A high and low pressure sensor, comprising:

(a) a cylinder housing having a piston chamber therewithin, said cylinder housing further having an inlet port for enabling the entry of a first pressurized fluid into said piston chamber, an outlet port for enabling egress of said first pressurized fluid from said piston chamber, a plurality of venting ports for enabling bleeding of any residual of said first pressurized fluid within said piston chamber, and a sensed fluid port for enabling entry of a second pressurized fluid into said piston chamber, each of said ports communicating between said piston chamber and exteriorly of said cylinder housing;

(b) a piston means sealingly and slideably mounted within said piston chamber, said piston means being shorter in length than said piston chamber so as to be capable of longitudinal movement therewithin, said piston means preventing communication between said sensed fluid port and the inlet, outlet and venting ports, said piston means further having a plurality of conduit means so constructed and arranged whereby said piston means has a first position wherein communication is enabled by a conduit between said inlet and outlet ports, and having second and third positions wherein communication is prevented between said inlet and outlet ports but is enabled between said outlet port and said venting ports, said piston further being separated into upper and lower components, said components being mutually threadedly engaged whereby the relative rotation of said components will shorten or lengthen the overall length of said piston, said upper and lower components further defining an internal passageway having a first end communicating with a groove at one end of said piston, said groove being in continuous communication with said inlet port, the internal passage-



way having a second end defined by a gap between the bottom surface of said uppermost component and a shoulder on said lower component by said outlet port is aligned with said gap, the continous flow of fluid through said inlet port and egressing through said outlet port is enabled, whereby the length of said gap is adjustable by inserting an instrument to engage a cavity formed in the upper surface of said upper component so as to enable the rotation of said upper component with respect to said lower component of said piston thereby widening or narrowing said gap, so as to enable adjustment of the desired range of said pressure sensor wherein fluid is allowed to flow therethrough; and

(c) resilient means mounted within said piston chamber, said resilient means urging said piston means toward said sensed fluid port, whereby the second pressurized fluid within said piston chamber urges said piston means away from said sensed fluid port so as to oppose said resilient means, whereby if said second pressurized fluid is pressurized within desired values, said piston means will assume said first position within said cylinder housing, and if said second pressurized fluid is pressurized lower than or higher than the desired value, said piston means will assume said second or third position, whereby passage of

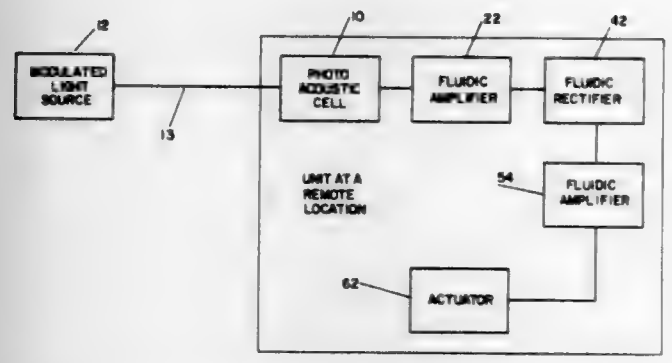
fluid through said conduit means in said piston means and egressing through said outlet port is permitted only when said piston means is in said first position.

4,512,371

PHOTOFLUIDIC INTERFACE

Tadeusz M. Drzewiecki, Silver Spring; Kenji Toda, Rockville, and John Gurney, Kensington, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 13, 1983, Ser. No. 503,454
Int. Cl.³ F15C *1/04, 1/08, 1/12*
U.S. Cl. 137—828 **19 Claims**



1. A photofluidic interface for transducing optical signals to fluidic signals comprising:

a source of modulated electromagnetic energy that utilizes an optical carrier control signal that operates at a frequency in excess of 1000 Hz;

means for converting said electromagnetic energy to modulated fluidic signals;

means for fluidically amplifying said fluidic signals;

means for fluidically rectifying said fluidic signals; and

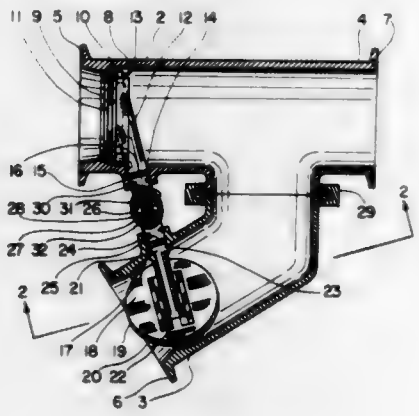
an actuator responsive to said rectified signals.

4,512,372

FLOATING DISC DIVERT VALVE

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Jan. 6, 1982, Ser. No. 395,834
Int. Cl.³ F16K *11/16*
U.S. Cl. 137—862 **1 Claim**



1. A floating disc divert valve comprising in combination:

(a) a parent pipe;

(b) a first pipe bifurcating from said parent pipe;

(c) a second pipe bifurcating from said parent pipe;

(d) a first annular seat included in said first pipe near one extremity having a connection means for connecting to a pipe line, said first annular seat having a seating surface substantially conforming to a spherial surface of a first hypothetical sphere of diameter slightly larger than an inside diameter of said first pipe and of center substantially coinciding with a central axis of said first pipe wherein said first annular seat is disposed intermediate said center of said first hypothetical sphere and said one extremity of said first pipe;

(e) a first disc with a rim surface substantially conforming to the spherical surface of said first hypothetical sphere rotatably disposed in said first pipe adjacent to said first annular seat;

(f) a first stem nonrotatably and slidably connected to said first disc, said first stem rotatably and slidably engaging and extending through a hole included in a first stem housing extending toward to said second pipe, a central axis of said first stem substantially passing through the center of said first hypothetical sphere wherein it substantially intersects the central axis of said first pipe in an oblique angle and further intersects a face of said first disc in another oblique angle, wherein the only possible movement of said first stem relative to said first disc is a sliding movement in a direction parallel to a face of said first disc on a plane including the central axis of said first stem;

(g) a second annular seat included in said second pipe near one extremity having a connection means for connecting to another pipe line, said second annular seat having a seating surface substantially conforming to a spherical surface of a second hypothetical sphere of diameter slightly larger than an inside diameter of said second pipe and of center substantially coinciding with a central axis of said second pipe wherein said second annular seat is disposed intermediate said center of said second hypothetical sphere and said one extremity of said second pipe;

(h) a second disc with a rim surface substantially conforming to the spherical surface of said second hypothetical sphere rotatably disposed in said second pipe adjacent to said second annular seat;

(i) a second stem nonrotatably and slidably connected to said second disc, said second stem rotatably and slidably engaging and extending through a hole included in a second stem housing extending toward to said first pipe in a coaxial relationship with respect to said first stem, a central axis of said second stem substantially passing through the center of said second hypothetical sphere wherein it substantially intersects the central axis of said second pipe in an oblique angle and further intersects a face of said second disc in another oblique angle, wherein the only possible movement of said second stem relative to said second disc is a sliding movement in a direction parallel to a face of said second disc on a plane including the central axis of said second stem;

(j) coupling means nonrotatably and slidably coupling said first and second stems to one another; and

(k) rotating means for rotating said first and second stems about the common central axis of said first and second stem, said means including means for pulling and pushing said first and second stems toward to and away from one another over a small distance; whereby, a seating pressure between said discs and said annular seats can be established for a leak-proof closure or relieved for an easy rotation of said discs.

4,512,373

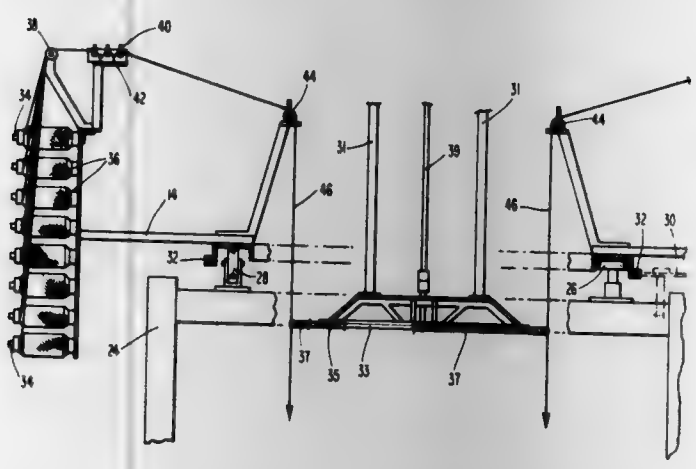
FEEDING AND GUIDING MEANS FOR TRIAXIAL FABRIC FORMING MACHINE

Wayne C. Trost, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed May 9, 1983, Ser. No. 492,791
Int. Cl.³ D03D *41/00, 49/16*
U.S. Cl. 139—11 **6 Claims**

1. In a triaxial fabric forming machine comprising a warp yarn supply creel mounted and adapted to rotate about an axis, and means for guiding individual warp yarn strands from said creel through a variable path length to an axially central warp yarn gathering and weaving position, said variable path length dependent on the rotation of said creel about said axis, the improvement comprising individual warp yarn supply and

tensioning means mounted on said creel, said supply means comprising a plurality of spindles, each of which is adapted to support a yarn package, and a plurality of guide means, said plurality of guide means including a plurality of individual receiving guides, each of which is adapted to receive a single yarn end in a straight path from one of said spindles, said plurality of guide means further including a circular yarn array forming means for guiding a plurality of individual yarn ends



received from said individual receiving guides into an essentially cylindrical array concentric with and parallel to the axis of said circular creel, said tensioning means comprising a means for controlling the tension separately for each yarn supplied by a yarn package located on each one of said spindles and for maintaining relatively constant tension in each yarn irrespective of the variable path length of said yarn during rotation of said creel about said axis.

4,512,374

LAMELLAE COMB FOR WEAVING APPARATUS, PARTICULARLY FOR A WEAVING ROTOR IN A MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING LOOM, AND METHOD FOR MANUFACTURING THE SAME

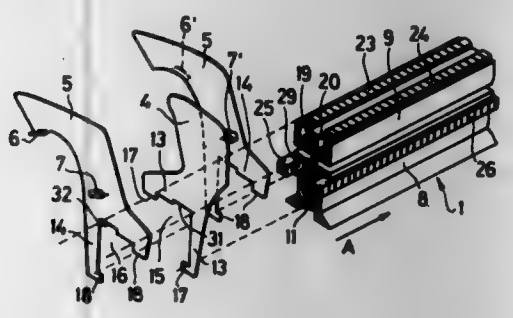
Alois Steiner, Rieden, Switzerland, assignor to Maschinenfabrik Sulzer-Rüti AG, Rüti, Switzerland

Filed Apr. 11, 1983, Ser. No. 483,527

Claims priority, application Switzerland, Apr. 20, 1982, 2377/82

Int. Cl.³ D03D *49/60, 41/00;* D03C *13/00*

U.S. Cl. 139—191 **20 Claims**



1. A lamellae comb for weaving machines, particularly for a weaving rotor of a multiple longitudinal traversing shed weaving machine, comprising:

a plurality of lamellae;

a carrier on which said lamellae are arranged;

shed-retaining elements for retaining warp threads;

each one of said shed-retaining elements comprising two lateral projections extending from two of said lamellae which enclose said shed-retaining element;

said projections including warp thread bearing surfaces lying in the same plane; and

said projections protruding towards each other, conjointly bridging an intermediate space between said two lamellae and being offset from one another in a predetermined direction of extent of the warp threads.

4,512,375

SYSTEM FOR ALTERNATELY INSERTING DIFFERENT WEFT YARNS INTO THE SHED OF A JET LOOM

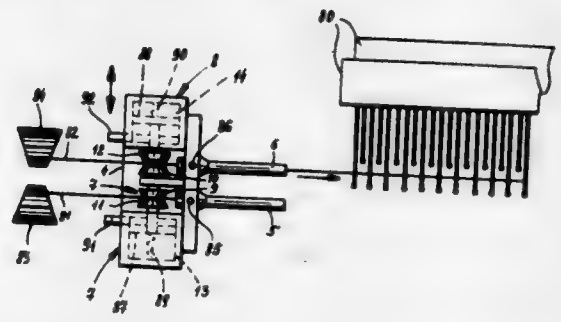
Albert H. Deborde, and Pierre Rémond, both of Bourgoin Jallieu, France, assignors to Saurer Diederichs Societe Anonyme, Bourgoin Jallieu, France

Filed Nov. 8, 1983, Ser. No. 549,929

Claims priority, application France, Nov. 9, 1982, 82 19105

Int. Cl.³ D03D *47/38*

U.S. Cl. 139—435 **18 Claims**



1. In a jet loom including shed-forming means, two insertion nozzles mounted on a mobile carrier for pneumatically introducing a respective weft yarn into a set of warp threads upon operative alignment with said shed-forming means, two thread clamps respectively associated with said insertion nozzles for temporarily retaining the corresponding weft yarns preparatorily to introduction thereof into the set of warp threads, and weft-selection means synchronized with said shed-forming means for alternatively placing said insertion nozzles in an alignment position,

the combination therewith of distributor means positively coupled with said weft-selection means for temporarily connecting a source of high-pressure air to the insertion nozzle placed in said alignment position and concurrently therewith to the associated thread clamp for releasing the weft yarn engaged thereby, said distributor means comprising two stationary gating members and a movable gating member bracketed by said stationary gating members, said stationary gating members being provided with first and second inlet ports connected to said source and with first and second pairs of outlet ports, said first pair of outlet ports being disposed on the stationary gating member opposite the gating member provided with said first inlet port, said second pair of outlet ports being disposed on the stationary gating member opposite gating member provided with said second inlet port, said first pair of outlet ports being respectively connected to said thread clamps, said second pair of outlet ports being respectively connected to said insertion nozzles, said movable member being displaceable between one working position, establishing flow paths from said first inlet port to one outlet port of said first pair and from said second inlet port to one outlet port of said second pair, and another working position, establishing flow paths from said first inlet port to the other outlet port of said first pair and from said second inlet port to the other outlet port of said second pair.

4,512,376

APPARATUS FOR FORMING STATOR COILS OF DYNAMO ELECTRIC MACHINES

Giorgio Barrera, Via Novalesa 12, Leumann (Torino), Italy

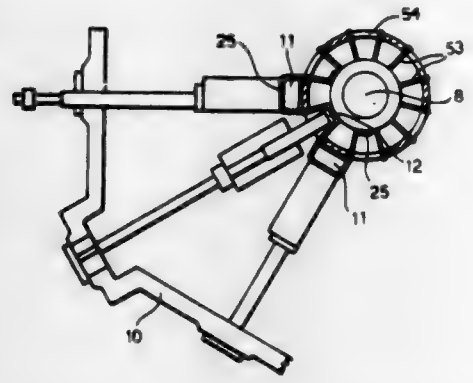
Filed Jul. 8, 1983, Ser. No. 512,054

Int. Cl.³ B21F *3/00*

U.S. Cl. 140—92.1 **7 Claims**

1. Apparatus for forming stator coils of the undulatory type, comprised of multi-lobed turns, for dynamo-electric machines, wherein the apparatus comprises:

a support frame having a rotatable member mounted therein,
a first circumferential series of forming elements carried by said rotatable members and located at equal distances from a central axis and equiangularly spaced from each other,
a second circumferential series of forming elements carried by said rotatable member and equiangularly located about the said central axis and intercalated between the forming elements of the first series, the forming elements of the second series being movable radially relative to the said central axis between an outer position which is spaced from the central axis by a distance greater than the distance between the central axis and the forming elements of the first series, and an inner position which is spaced from the central axis by a distance less than the distance between the central axis and the forming elements of the first series,
means for winding a copper wire about the first circumferential series of forming elements by rotation of said rotatable member so as to form a polygonal coil,
means movably carried by said support frame for moving the forming elements of the second series radially from their outer positions towards their inner positions, thrusting them against the sides of the polygonal coil so as to curve these sides towards the centre of the coil, imparting the desired undulatory multi-lobed configuration to the coil,
support means carried by said rotatable member for supporting the forming elements of the first series for free radial movement towards the central axis from the position in which they are located during the forming of the polygonal coil, under the action of the thrust exerted against the sides of the polygonal coil by the forming elements of the second series, and
means carried by said support means for opposing the said radial movement of the forming elements of the first series towards the central axis.



4,512,377

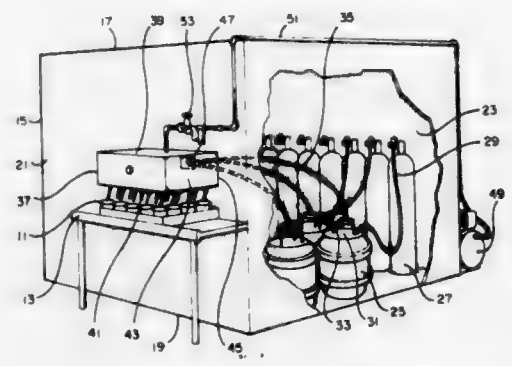
BEVERAGE DISPENSING APPARATUS

Terry N. Greer, 3237 Scruggs Park Dr., Richland Hills, Tex. 76118

Filed Dec. 19, 1983, Ser. No. 563,295
Int. Cl.[3] B67D *5/02*
U.S. Cl. 141—11 9 Claims

1. A beverage dispensing apparatus for filling multiple containers in a high volume beverage dispensing operation, comprising:
a walk-in beverage cooler having a refrigerated interior enclosed by upright walls, a floor and a ceiling;
a housing mounted directly onto an upright wall of said walk-in cooler, said housing having top, bottom and interconnecting side walls, and said bottom wall being provided with beverage dispensing openings, said openings being selectively positioned for dispensing beverages into a plurality of containers located below said bottom wall, one of said housing side walls being provided with a wall duct which is aligned with an opening provided in said walk-in cooler upright wall;
a plurality of beverage transfer lines, each of said lines being connected at one end to a source of pressurized beverage inside said cooler to be dispensed, the opposite ends of said lines passing through said wall duct directly into said housing and running to said beverage dispensing openings for dispensing beverage into said containers located below said bottom wall; and
valve means located within said housing for controlling the simultaneous flow of beverage through said beverage transfer lines to said dispensing openings.

9. A method for simultaneously dispensing beverages to fill multiple containers in a high volume beverage dispensing operation, at a beverage dispensing station located adjacent a walk-in beverage cooler, comprising the steps of:
mounting a housing directly onto an upright wall of said walk-in cooler, said housing having a top, bottom and interconnecting side walls;



providing a wall duct in one of said housing side walls in alignment with a similar opening provided in said walk-in cooler upright wall;
providing beverage dispensing openings in said bottom wall of said housing, said dispensing openings being selectively positioned for dispensing beverages into a plurality of containers located below said bottom wall;
running a plurality of flexible beverage transfer lines from a source of pressurized beverage located within said walk-in cooler through said wall duct directly into said housing and to said beverage dispensing openings;
providing a valve means for each of said transfer lines within said housing for simultaneously controlling the flow of beverage through said dispensing openings;
cooling said transfer line portions located within said housing by circulating cool air from within said walk-in cooler to the interior of said housing; and
dispensing beverages from a plurality of said dispensing openings to fill a plurality of containers located below said bottom wall.

4,512,378

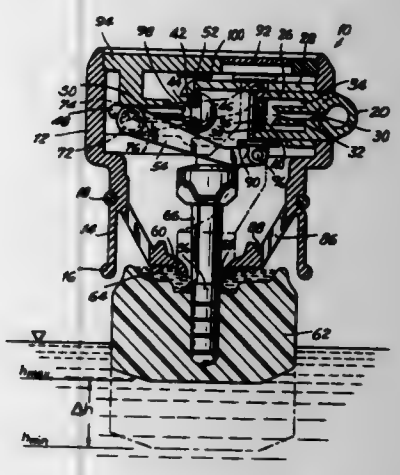
AUTOMATIC FILLING DEVICE FOR BATTERY CELLS

Klaus Oschmann, Mitterweg 9, Feldgeding, Fed. Rep. of Germany

PCT No. PCT/EP82/00150, § 371 Date Mar. 14, 1983, § 102(e) Date Mar. 14, 1983, PCT Pub. No. WO83/00260, PCT Pub. Date Jan. 20, 1983
PCT Filed Jul. 13, 1982, Ser. No. 476,868
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1981, 3127619
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—98 20 Claims

1. In a device for the automatic filling of battery cells with water of the type comprising a filling housing defining a filling cup to be inserted into the cell, a connection means for connection to a water supply, a valve actuated by a float for interrupting the flow of water from said water supply to said cell and a lever connecting the valve and the float, the improvement comprising said housing having an opening in the bottom

thereof; a guide rod connected at its lower end to said float and extending through said opening, said guide rod being dimensioned for a close fit with said opening for guiding the move-



ment of said float for preventing undesired tilting thereof, and an amplifying lever hingedly secured at one end to the guide rod and at the other end to the valve for transmitting the float movement to the valve body with amplified force.

4,512,379

SPOUT FOR LIQUID PACKING APPARATUS

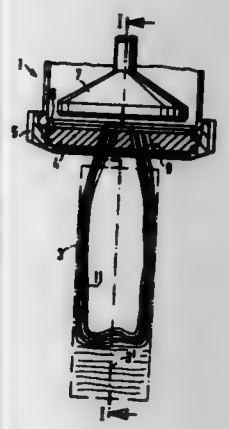
Franz Hennig, Düsseldorf, Fed. Rep. of Germany, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 2, 1982, Ser. No. 404,089

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134182

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—286 **7 Claims**



1. A spout plate, for filling a container with a liquid, provided with several narrow rectangular fields of bores extending therethrough, the bores being arranged symmetrically about a central axis, the bores in a first field in the direction of discharge diverging from the bores in a second field lying opposite the first field with respect to said central axis, each bore immediately upstream of its exit orifice being reduced to a lesser diameter to form a shoulder, the bores being inclined at an acute angle to the longitudinal axis of the spout such that liquid streams emerging from the bores are aimed at an angle toward the container inner wall, the plate on its bottom having integral lips about at least part of each field and projecting into the path of streams of liquid issuing from the marginal bores of each field, whereby the marginal streams of liquid are forced to join with other liquid streams for minimized foaming during filling, the bottom of the spout plate at each field being formed into a projection which tapers downwardly to a point or edge, and which projects less far than the lip.

4,512,380

APPARATUS FOR THE TRANSVERSE AND/OR LONGITUDINAL MACHINING OF WOODEN WORKPIECES

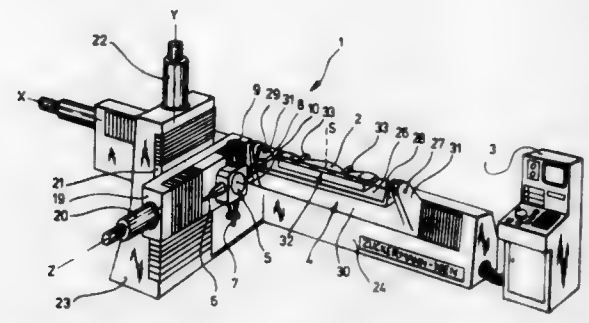
Erich Schmidt, Mauerbach, Austria, assignor to MZW Maschinenfabrik Zuckermann Pachtgesellschaft mbH, Vienna, Austria

Filed May 4, 1983, Ser. No. 491,382

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218107

Int. Cl.³ B27C *9/04*

U.S. Cl. 144—1 A **14 Claims**



1. In an apparatus having X-Y-Z coordinates for the transverse and/or longitudinal machining of wooden workpieces, comprising a workpiece carriage for mounting a workpiece or a plurality of workpieces thereon, said carriage being adapted to be displaced in the longitudinal direction of the X-axis of the apparatus and at least one transverse machining tool adapted to be displaced in the Y- and/or Z-axis of the apparatus for the machining operation, the improvement comprising a mounting table on the workpiece carriage for mounting the workpiece adapted to be tilted about an axis parallel to said X-axis.

4,512,381

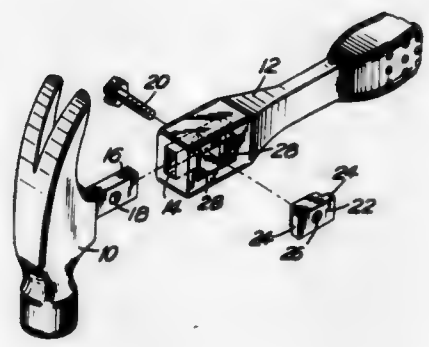
INTERCHANGABLY HEADED TOOL

Ernest Alvarez, 6040 Madison St., Ridgewood, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,833

Int. Cl.³ B25C *1/00*

U.S. Cl. 145—29 R **2 Claims**



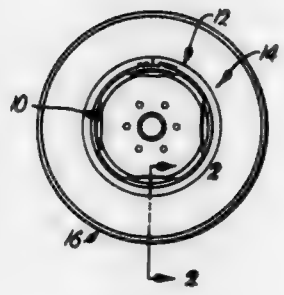
1. An interchangably headed tool comprising a handle having at one end thereof a longitudinal passage formed therein, an interchangable tool head for said handle, said head having a shank extending therefrom, said shank being insertable in said passage, a portion of the wall forming the longitudinal passage comprising a removable clamping plate adapted to abut the shank, said passage wall having posts formed therein to support said clamping plate, said clamping plate being recessed at its ends to abut the posts formed in the passage wall, said clamping plate having a threaded aperture, a clamping screw passing through the passage wall and shank to threadedly engage the clamping plate, said plate bringing clamping pressure to bear upon the shank as the screw is tightened.

4,512,382

INDEXING AND LOCKING ASSEMBLY FOR MULTI-PIECE TRUCK RIMS

Donald L. Gibson, 9 Mumford Dr., Columbia, Mo. 65201

Filed Jun. 4, 1982, Ser. No. 373,005
Int. Cl.³ B60B *25/06*
U.S. Cl. 152—408 **5 Claims**



3. An indexing and locking assembly for a multi-piece truck tire rim having a base and a ring for attachment to the base comprising:

means for indexing the ring with respect to the base, the base having a gutter, the indexing means including at least one tab extending outwardly from the gutter, the tab presenting a ramp on the normally uppermost surface thereof, the ramp being inclined from the gutter toward the center of the base;

means for locking the ring on the base, the locking means including a lug extending outwardly from the gutter, the lug being laterally spaced along said gutter from said tab, the lug presenting a ramp on the normally uppermost surface thereof, the ramp being inclined from the gutter toward the center of the base; and

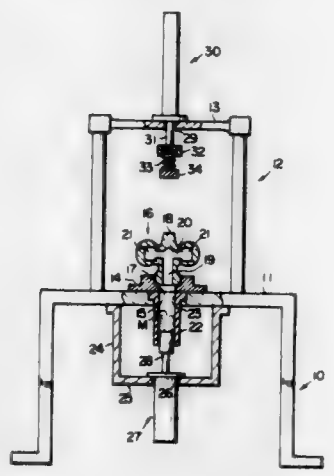
the ring having a notch therein for receiving said tab and a slot therein for receiving said lug when the ring is attached to the base.

4,512,383

DIE CASTING PROCESS AND APPARATUS THEREFOR

Shunsuke Suzuki, Tokyo; Masanobu Mori, Yokosuka, and Takeshi Miyata, Hamamatsu, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 14, 1982, Ser. No. 449,649
Claims priority, application Japan, Jan. 21, 1982, 57-6753
Int. Cl.³ B22D *18/02*
U.S. Cl. 164—35 **18 Claims**



1. A vertical pressure die casting process comprising:

preparing an air-permeable die formed with a cavity including a runner portion which is open downwardly and at least one casting cavity portion communicating with the runner portion;

melting a metal;

pouring the molten metal into a tubular sleeve fixedly held in position with respect to a stationary member and having a vertically extending axial bore;

detachably mounting said die on said stationary member so that the axial bore in the sleeve upwardly communicates with the runner portion of the cavity in the die;

clamping the die to said stationary member;

injecting the molten metal from the axial bore in the sleeve into the cavity in the die by mechanically applying an upward force to the molten metal in the axial bore in the sleeve toward the runner portion of the cavity in the die;

allowing the molten metal to solidify in the cavity in the die;

removing the die from said stationary member; and

withdrawing the resultant castings out of the cavity in the die,

wherein said die is clamped to said stationary member by application of a downward force to the die on the stationary member and in which said downward force is released from the die while continuing the application of said upward force to the metal in the cavity in the die after the molten metal is injected into the die whereby the die is forcibly removed upwardly from said stationary member.

9. A vertical pressure die casting apparatus comprising:

a stationary member;

an air-permeable die detachably mounted in its entirety on the stationary member and formed with a cavity including a vertically extending runner portion which is open downwardly and at least one casting cavity portion communicating with the runner portion;

die clamping means operative to have the die clamped vertically between said stationary member and the die clamping means;

said die being free to move upwardly away from said stationary member when disengaged from said die clamping means;

a tubular sleeve fixedly held in position with respect to said stationary member and having an axial bore upwardly communicating with said runner portion of the cavity in the die; and

a fluid-operated metal-injection power cylinder provided below said die and having a cylinder body fixedly held in position with respect to said stationary member and a piston rod extending upwardly into said sleeve and vertically slidable in the axial bore in the sleeve, said piston rod having at its upper end a cross sectional area larger than the cross sectional area which said runner portion has at its lower open end.

wherein said die clamping means comprises a fluid-operated die-clamping power cylinder provided above said die and having a cylinder body fixedly held in position with respect to said stationary member and a piston rod vertically movable toward and away from the die and a die clamping member which is located below and connected to the piston rod of the die-clamping power cylinder, said clamping member being separate from said die and being engageable with said die at the upper end of the die when the piston rod of the die-clamping power cylinder is driven to protrude downwardly from the cylinder body of the power cylinder.

4,512,384

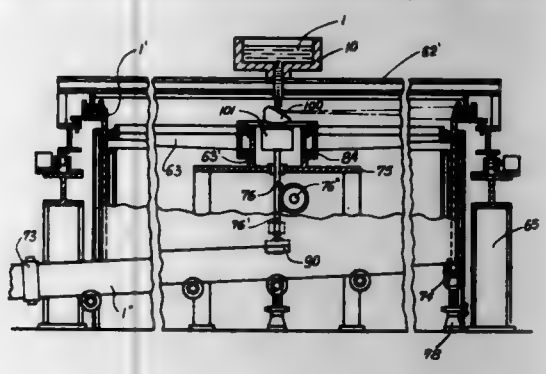
CONTINUOUS SPRAY CASTING

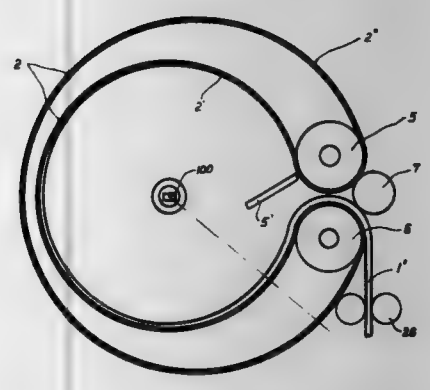
Tadeusz Sendzimir, 269 Brookside Rd., Waterbury, Conn. 06720

Filed Sep. 14, 1983, Ser. No. 532,208
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—46 **9 Claims**

1. A method of continuously producing a single metallic strip product of unlimited length from molten steel comprising the steps of providing a heat absorbing target having a cylindrical target surface with a vertical axis, locating means axially of said target surface for projecting a stream of molten particles against said target surface, providing a heat absorbing upper horizontal plane above said projecting means and a heat absorbing lower horizontal plane below said projecting means,

said upper and lower planes cooperating with said target surface to form a chamber, maintaining a non-oxidizing atmosphere within said chamber, rapidly rotating and vertically oscillating said projecting means and said stream of molten particles produced thereby to deposit on said target surface a layer of metallic particles substantially only one particle deep to assure that all the particles of said layer reach a crystalizing





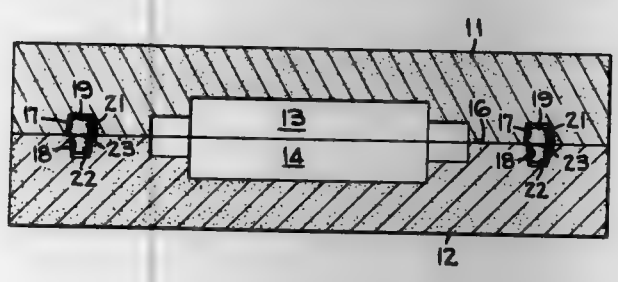
stage before the deposition of another layer thereon, similarly depositing subsequent layers until the product of required thickness is produced, providing said target surface with a diameter such that at least half of said particles are solid and plastic when they hit said target surface, rotating said target and said product formed thereon, and withdrawing said metallic product as a single strip.

4,512,385

MOLD REGISTRATION APPARATUS

John J. Uppgren, St. Paul, Minn., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 337,357, Jan. 6, 1982,. This application Feb. 7, 1983, Ser. No. 464,301
Int. Cl.³ B22C *33/04*
U.S. Cl. 164—364 **6 Claims**



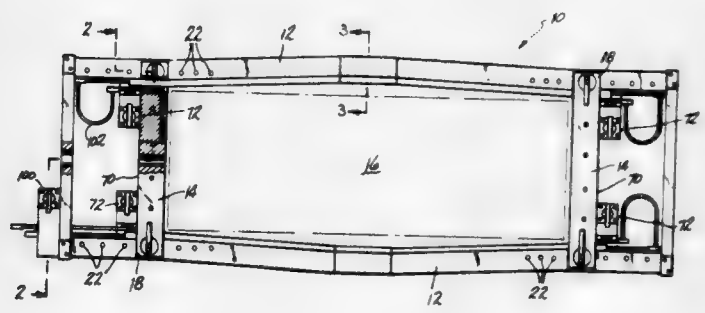
1. A sand mold assembly defining a mold cavity, comprising
a cope portion of the mold
a drag portion of the mold, said cope and drag portions having planar surfaces surrounding the mold cavities therein, said surfaces lying in a mold parting plane when said cope and drag are assembled to define the mold cavity,
a locating core having a first truncated cone portion and a second truncated cone portion, said first portion having a base larger than the base of said second portion, said first and second portions being joined at said bases, whereby a peripheral step is formed on said core at the junction of said first and second cone portions,
said cope and drag portions of the mold each having at least two depressions formed within the mold material and shaped to receive said first and second truncated cone portions respectively,
said cone portions having height dimensions which are less than said depression depth dimensions, so that said peripheral step rests on said drag planar surface and said cope and drag surfaces are in abutting contact in said mold parting plane.

4,512,386

ADJUSTABLE MOLD FOR ELECTROMAGNETIC CASTING

Walter Haller, Sierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 12, 1982, Ser. No. 441,225
Int. Cl.³ B22D *27/02, 11/10*
U.S. Cl. 164—467 **7 Claims**



1. A process for continuously casting molten metal into ingots of various sizes by electromagnetically containing and forming said molten metal comprising pouring said molten metal into a substantially rectangular shaped casting zone defined by a substantially rectangular shaped electromagnetic casting mold having side walls and end walls each having inductor portions and shield portions wherein said inductor portions induce an electromagnetic field in the casting zone so as to define the size and shape of the ingot being cast, the improvement comprising providing a gap of up to about ½" between said side walls and said end walls, adjusting the position of one of said side walls and said end walls with respect to each other so as to define the size and shape of the ingot being cast, providing electrical contact between the inductor portions of said side walls and the inductor portions of said end walls and the shield portions of said side walls and the shield portions of said end walls so as to form an inductor characterized by a closed loop and a shield characterized by a closed loop and pouring said molten metal into said casting zone while maintaining the gap between said side walls and said end walls.

4,512,387

POWER TRANSFORMER WASTE HEAT RECOVERY SYSTEM

Larry A. Rodriguez, 7452 18th St., NE., St. Petersburg, Fla. 33702; Antonio A. Padilla, 15803 Deep Creek La., Tampa, Fla. 33624, and Ned B. Spake, 2711 Summerfield Rd., Winter Park, Fla. 32792

Filed May 28, 1982, Ser. No. 383,181
Int. Cl.³ F22D *1/00, 3/00;* F24H *3/04*
U.S. Cl. 165—1 **5 Claims**

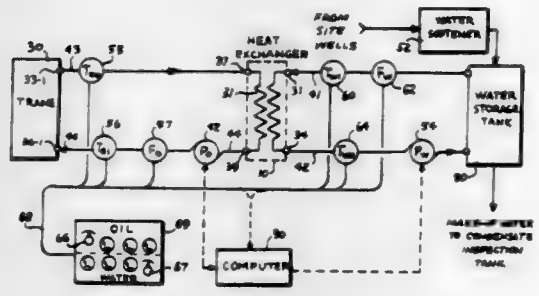
4. In an oil-cooled power transformer having a plurality of air-cooled radiators for cooling oil circulating through the core and coils of said transformer, the process of recovering energy losses therefrom for preheating boiler makeup water comprising the steps of:
removing at least one of said air-cooled radiators;

connecting a plate heat exchanger in place of the removed radiator;

transferring hot transformer oil from the top portion of the transformer to the heat exchanger;

circulating the hot oil through an oil flow path in the plate heat exchanger;

providing water to the heat exchanger from a source of boiler makeup water;



circulating the boiler makeup water through a water flow path in the plate heat exchanger in which the water flow path is in a heat exchange relationship with the oil flow path, thereby heating the water;

storing the heated water; and

feeding the stored heated water to a condensate tank to make up for lost boiler water.

passing a storage working fluid stream in contact with a plurality of thermal energy storage elements for storage of thermal energy at about 400° to about 3000° F. comprising about 10 to about 90 volume percent solid-liquid phase-change chemical having a phase-change temperature at about 400° to about 3000° F. and selected from the group consisting of alkali metal and alkaline earth carbonates, chlorides, nitrates, nitrites, fluorides, hydroxides and sulfates, metals, metallic alloys and mixtures thereof supported within the pores of sensible thermal energy storage-support material selected from the group consisting of refractory metals, carbides, nitrides, silicides, oxides, aluminates, titanates and zirconates having submicron particle size which do not substantially coarsen with thermal cycling at temperatures up to said phase-change temperature and having a surface area greater than about 1 square meter per gram of storage-support material, said ceramic storage-support material comprising about 10 to about 90 volume percent of said thermal storage element, the inlet temperature of said storage working fluid being above the phase-change temperature of said phase-change chemical; and

when thermal retrieval is desired, passing a retrieval working fluid stream in contact with said plurality of thermal energy storage elements for retrieval of thermal energy, the inlet temperature of said retrieval working fluid stream being below the phase-change temperature of said phase-change chemical thereby increasing the temperature of said retrieval working fluid stream.

4,512,388

HIGH-TEMPERATURE DIRECT-CONTACT THERMAL ENERGY STORAGE USING PHASE-CHANGE MEDIA

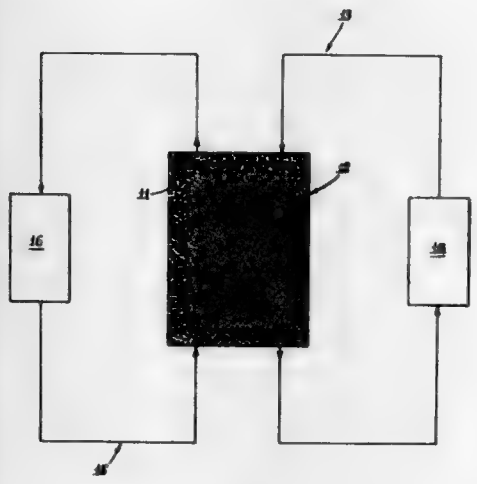
Terry D. Claar, Lisle, and Randy J. Petri, Chicago, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 275,380, Jun. 19, 1981, Pat. No. 4,421,661. This application Jun. 20, 1983, Ser. No. 506,030

The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.

Int. Cl.³ C09K *5/06;* **F24H** *7/04;* **F28F** *23/00;* **F28D** *17/00*

U.S. Cl. 165—1 **25 Claims**



13. A process for high-temperature direct-contact thermal energy storage and retrieval comprising:

4,512,389

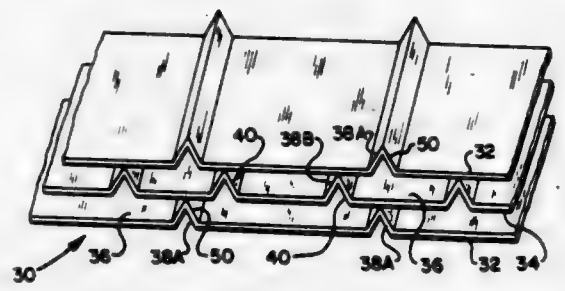
HEAT TRANSFER ELEMENT ASSEMBLY

Gary C. Goetschius, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,655

Int. Cl.³ F28D *19/00*

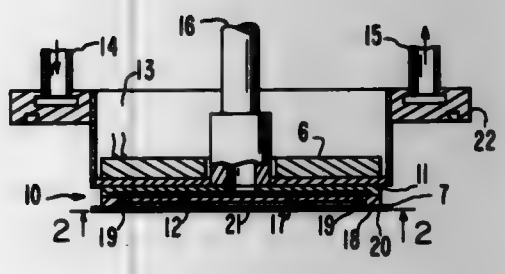
U.S. Cl. 165—10 **2 Claims**



1. An assembly of heat transfer elements for a heat exchanger comprising: a plurality of first heat absorbent plates, a plurality of second heat absorbent plates, and a plurality of spacers, said plurality of first and second heat absorbent plates stacked alternatively in spaced relationship with said spacers interdisposed therein to maintain a predetermined spacing between adjacent plates thereby providing a plurality of passageways between first and second stacked plates for flowing a heat exchange fluid therebetween, said spacers comprising a plurality of folds in said first and second plates extending transversely across the width thereof, the folds in said first plates extending outwardly therefrom at a plurality of points spaced equally apart by a first interval and the folds in said second plates extending outwardly therefrom at a plurality of points spaced equally apart by a second interval, said first interval and said second interval being unequal to each other.

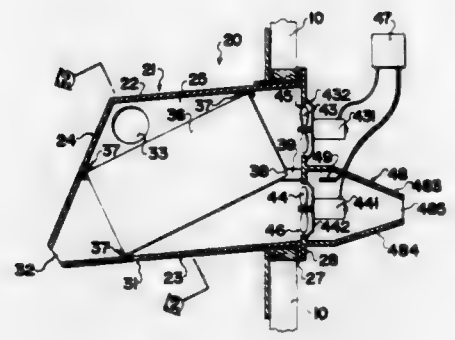
4,512,390
Patent Not Issued For This Number

4,512,391
APPARATUS FOR THERMAL TREATMENT OF SEMICONDUCTOR WAFERS BY GAS CONDUCTION INCORPORATING PERIPHERAL GAS INLET
David J. Harra, Santa Cruz, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Jan. 29, 1982, Ser. No. 343,794
Int. Cl.[3] F28F 7/00; F28D 15/00
U.S. Cl. 165—48 R
12 Claims



1. Apparatus for the uniform temperature regulation of a substrate by gas conduction, said apparatus comprising:
a body having a substantial thermal mass which serves to provide heat transfer in respect to a substrate,
said body having wall means forming an end face,
said end face having an annular substrate-support lip projecting outwardly from said end face at a position remote from a center of said end face, whereby when a substrate is positioned against said lip, a chamber is formed by the surfaces of the end face, supporting lip and substrate,
said end face having gas conduction aperture means positioned in an annular locus located adjacent an inner rim of said lip, and said end face being solid everywhere internally of said aperture means,
said body having gas conduction passage means for conducting gas to said aperture means of said end face, whereby when a substrate is positioned against said lip, gas can be introduced into said chamber to conduct heat from one to the other of said end face and a substrate, and
means for controlling temperature of said body, said temperature controlling means being distinct from contact with said gas.

4,512,392
HEAT EXCHANGE APPARATUS
Dirk van Ee, P.O. Box 2693, and Larry J. Benning, P.O. Box 2006, both of Humboldt, Saskatchewan, Canada
Filed Jan. 18, 1983, Ser. No. 458,994
Int. Cl.[3] F28F 3/00
U.S. Cl. 165—54
3 Claims



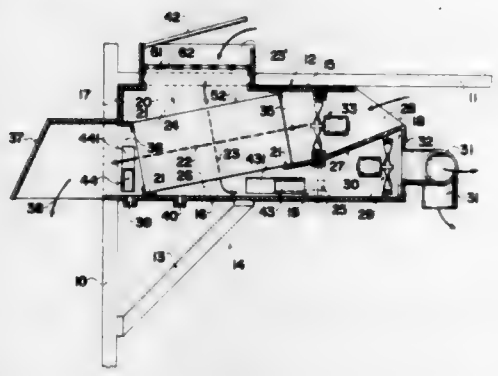
1. Heat exchange apparatus comprising an outside casing, means defining in the casing a first inlet, a first outlet, a second inlet and a second outlet, means for mounting the outside casing relative to an outside wall of a building such that the first inlet and the second outlet are arranged on one side of the wall facing within the building and the first outlet and the second inlet are arranged on the other side of the wall facing outside the building, a heat exchange block defining therethrough two separate air paths mutually at right angles, means mounting the block in the casing such that air can pass in a first and a second separate path respectively from said first inlet through said block to said first outlet and from said second inlet through said block to said second outlet, a first fan for pumping air in said first path and a second fan for pumping air in said second path, said heat exchange block comprising a plurality of thin sheets of plastics material lying in planes parallel to the first and second flows and arranged so as to divide the first and second flows into a plurality of alternate portions separated by the sheets, a plurality of elongated parallel spacer strips arranged to support and space each sheet on one side thereof relative to the adjacent sheet on that side, each spacer strip being at right angles to the sheets and extending from one edge thereof to an opposing edge, the strips being parallel to the second air path as it passes through the block and spaced by a distance of the order of the spacing between the sheet and the adjacent sheet each sheet, its respective adjacent sheet and the plurality of spacer strips being formed integrally from a plastics extrusion, and a plurality of elongated spacer members on the other side of each sheet and arranged parallel to the first air path as it passes through the block and spaced so as to support said sheet at positions including opposed edges thereof spaced widely relative to said spacing between the sheet and the next adjacent sheet, each member being formed from a strip of said plastics extrusion.

4,512,393

HEAT EXCHANGER CORE CONSTRUCTION AND AIRFLOW CONTROL

Jonathan P. Maendel, MacGregor, Canada, assignor to Baker Colony Farms Ltd., MacGregor, Canada

Filed Apr. 11, 1983, Ser. No. 483,904
Int. Cl.³ F24H *3/02*; F28F *3/00*
U.S. Cl. 165—54 **15 Claims**



1. Heat exchange apparatus comprising an enclosure, means for mounting the enclosure relative to an external wall of the building for communication with air outside and inside of the building, a heat exchange core mounted within the enclosure, means associated with the core dividing said enclosure into a first path for conveying outside air into the building and a second path or conveying inside air to the outside of the building, said first and second paths passing through said core in heat exchanging and air impervious relationship with one another, the core comprising a plurality of substantially rectangular cells defining the second path, each cell formed from sheet metal material and having two long sides and two short sides defining a slot shaped path therethrough and means for mounting the cells in parallel spaced relation such that the spaces therebetween define the first path substantially at right angles to the second path and such that one short side of each cell presents an end face against which the incoming outside air in the first path impinges, each cell being formed from a single sheet folded such that the seam completing the cell is arranged adjacent the other short side whereby said one short side and adjacent portions of the long sides are formed from unitary integral sheet metal free from seams, fan means mounted in said enclosure to move air in said paths and arranged so as to direct outside air to impinge on one face of said one short side and to direct inside air to impinge on the other face of said one short side said cell mounting means comprising a plurality of spacers arranged at the ends of the cells and set in position by a resilient settable material whereby the air in the first path contacts the outside walls of the cells and is divided from the air in the second path only by the thickness of the cell walls and casing means wrapped around the cells only at the ends thereof to bind the cells to form the core.

4,512,394

VARIABLE EFFECT ABSORPTION MACHINE AND PROCESS

Kenneth W. Kauffman, 4920 City Line Ave., Apt. #A207, Philadelphia, Pa. 19131, assignor to Kenneth W. Kauffman, Philadelphia, Pa.

Continuation-in-part of Ser. No. 207,791, Nov. 17, 1980, Pat. No. 4,442,677. This application Nov. 25, 1983, Ser. No. 554,989
Int. Cl.³ F28F *5/02*
U.S. Cl. 165—86 **15 Claims**

1. A thermal machine for producing variable effect thermal processes comprising:

an outer housing;

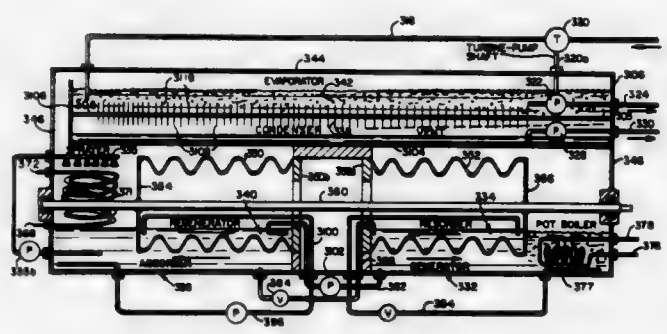
means for coupling to drive means outside the housing for producing rotational movement;

a horizontal rotatable shaft within the housing and coupled to drive means generally outside the housing;

at least one hollow cylindrical drum means within the housing fixed concentrically to the shaft to rotate with the shaft;

means associated with each such drum means to permit the collection of at least one pool of liquid within and along the inner sidewall of the drum means;

means within the outer housing to permit the collection of liquid in at least one separate pool in contact with the outer sidewall surface of each such drum means;



sealing means permitting rotation of each such drum means but isolating vapors within the drum means from pools within the outer housing and vapors from the other housing pools from one another; and

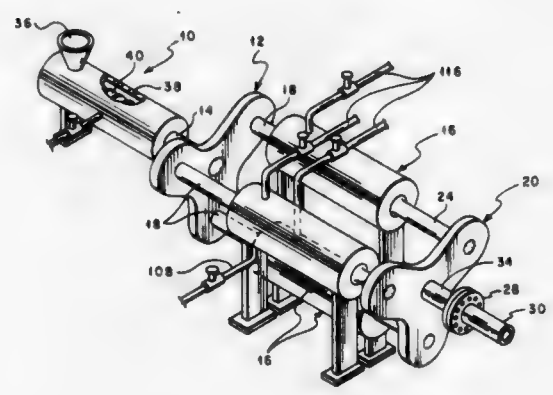
piping to transfer liquid from selected pools within the housing and each such drum to provide flow from pool to pool in a selected sequence.

4,512,395

MULTIPLE HEAT EXCHANGER DISTRIBUTION APPARATUS

Granville J. Hahn, and Raleigh N. Rutledge, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Oct. 3, 1983, Ser. No. 538,077
Int. Cl.³ F28F *27/02*
U.S. Cl. 165—101 **14 Claims**



1. Apparatus for regulating the flow of thermoplastic material between a main conduit and a plurality of distribution conduits, comprising:

(a) a manifold having a main port in communication with the main conduit and a plurality of distribution ports each in communication with one of the distribution conduits, the main port in communication with the distribution ports through passageways within the manifold; and

(b) means for regulating the flow of thermoplastic material through each of the distribution ports including:

(i) a sleeve, having a flow space therethrough, axially aligned within both the distribution port and the distribution conduit for axial movement therewithin, the distribution conduit including a plurality of orifices through the surface thereof for the flow of thermoplastic material, the sleeve including a main orifice through the surface thereof for communicating the manifold passageway with the flow space of the sleeve and a plurality of flow orifices through the surface thereof for the flow of thermoplastic material, the flow of thermo-

plastic material through the distribution port regulated by communication of varying portions of the sleeve orifices with the conduit orifices by axial positioning of the sleeve; and

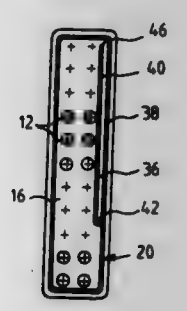
(ii) means for moving the sleeve in an axial direction.

4,512,396

WATER BOX INCLUDING A DEGASSING PASSAGE, AND A HEAT EXCHANGER INCLUDING SUCH A WATER BOX

Denis Villeval, Maurepas, France, assignor to Valeo, Paris, France

Filed Nov. 14, 1983, Ser. No. 551,569
Claims priority, application France, Nov. 18, 1982, 82 19345
Int. Cl.³ F01P *11/02, 3/20*
U.S. Cl. 165—104.32 **9 Claims**



1. In a water box for a heat exchanger suitable for use as the radiator in a cooling circuit of an internal combustion engine and which is formed from a bundle of tubes having a perforated plate at at least one end of said bundle, the perforated plate forming a transverse wall between said water box and the bundle of tubes, and the perforations of said plate forming passages between the tubes of the bundle and the water box, wherein said water box includes a passage for degassing a cooling liquid contained therein, said passage opening out near to one end of the water box and being intended for connection to an expansion chamber which is associated with the heat exchanger, the improvement comprising forming the water box of a single piece molding comprising an internal partition inside the water box which is a part of said single piece molding, and which is parallel to a longitudnal wall of the water box, the degassing passage being formed between said internal partition and said longitudinal wall, wherein said internal partition includes a free longitudinal edge which is pressed to said perforated plate in a substantially sealed manner, an opposite longitudinal edge which is connected to a wall of said water box, a transverse edge which is free and which is located near to said one end of said water box, and a transverse edge which is connected to a wall of said water box.

4,512,397

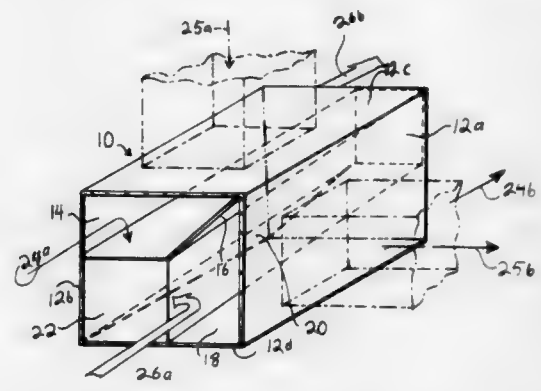
HOUSING FOR CROSS FLOW HEAT EXCHANGER

Walter Stark, 630 New York Ave., Huntington, N.Y. 11743

Continuation-in-part of Ser. No. 382,383, May 27, 1982, abandoned. This application Dec. 16, 1983, Ser. No. 562,456
Int. Cl.³ F28F *3/00*
U.S. Cl. 165—166 **7 Claims**

1. An improved cross flow heat exchanger of the type wherein two air streams are passed near one another through a heat exchanger element and the heat exchanger element keeps the two gases from coming into contact with one another but at the same time permits heat transfer from the hotter gas to the colder gas wherein the improvement comprises:

a duct type longitudinal housing having inlet and exit ends and walls for directing the two air streams longitudinally therethrough, said heat exchanger element being positioned in said longitudinal housing offset and diagonally in two planes therein, wherein the walls of the housing and



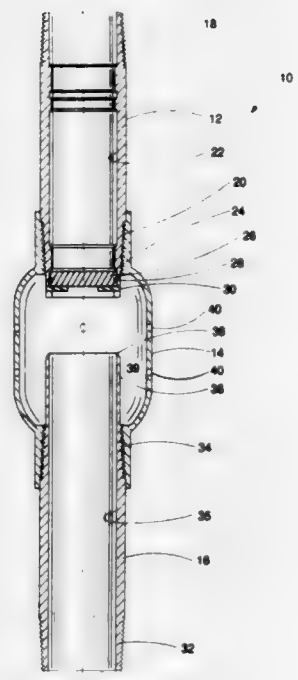
of said offset, diagonal heat exchanger element define tapered, converging inlet and diverging exit plenums.

4,512,398

PUMP-OUT PLUG CATCHER

James A. Hazel, Corsicana, Tex., assignor to Standard Oil Company, Chicago, Ill.

Filed Jul. 8, 1983, Ser. No. 512,292
Int. Cl.³ E21B *31/08*
U.S. Cl. 166—70 **8 Claims**



1. A pump-out plug catcher comprising:

a body having a first bore extending axially therethrough;

an enlarged hollow body connectable to said body and in communication with said first bore;

a pump-out plug retention means provided in said body for retaining a pump-out plug across said first bore until subjected to a predetermined fluid pressure; and

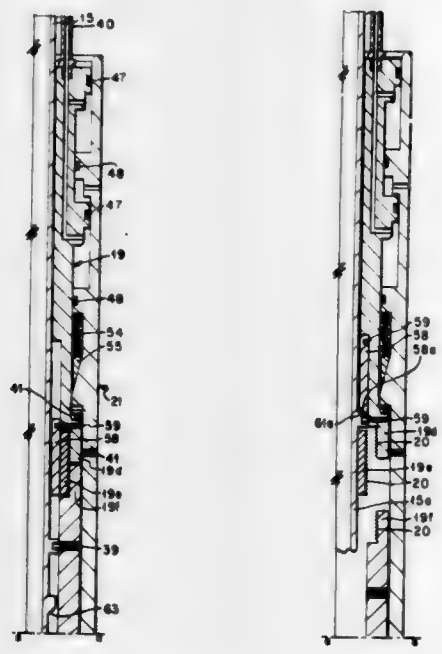
an extension member rigidly connectable to and extending into said enlarged hollow body, for retaining a released pump-out plug said extension member having a second bore extending axially therethrough and of a diameter less than said pump-out plug.

4,512,399

WELL PACKER

John C. Gano, and Donald H. Perkins, both of Carrollton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 1, 1983, Ser. No. 481,330
Int. Cl.[3] E21B *33/122, 33/126*
U.S. Cl. 166—120 14 Claims



1. A well packer comprising:

a. one or more mandrel means, each having a flow passage therethrough, and each including an upper tubular section having a connection for tubing on the upper end thereof and a shoulder thereon, connected to a second tubular section having a lower support surface thereon, connected to a third tubular section, connected to a lower tubular section having an upper sealing support surface thereon and a connection for tubing on the lower end thereof;

b. body means, releasably connected to and sealably and slidably mounted around said mandrel means, including an upper cylindrical section having a bore therethrough for each mandrel means and upper and lower external shoulders thereon, connected to a second cylindrical section, connected to a third longitudinally cut cylindrical section with threads thereon, connected to a fourth cylindrical section, connected to a lower section having a bore therethrough for each mandrel means, each bore having support surfaces at the upper and lower ends thereof;

c. outer body means releasably connected to and slidably mounted around said body means;

d. anchoring means connected to said outer body means and carried on said body means;

e. packing means carried on said body means adjoining said anchoring means;

f. hydraulic setting means responsive to fluid pressure, disposed in said body means and outer body means, for moving said outer body means downwardly on said body means, expanding said anchoring means to engage the interior wall of a well casing, and compressing and expanding said packing means into sealing engagement with said casing wall;

g. means for locking the downwardly moved outer body means to the body means thereby maintaining the packing means sealably engaging and the anchoring means engaging said casing wall; and

h. releasably connecting means in the body means for disengaging said anchoring means and said packing means from said casing wall.

4,512,400

MISCIBLE DISPLACEMENT DRIVE FOR ENHANCED OIL RECOVERY IN LOW PRESSURE RESERVOIRS

Ralph Simon, Placentia, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 26, 1983, Ser. No. 545,718
Int. Cl.[3] E21B *43/30, 43/40*
U.S. Cl. 166—245 6 Claims



1. A miscible drive process of recovering hydrocarbons from a low pressure hydrocarbon-bearing reservoir comprising:

injecting a C_2–C_4 mixture which forms a miscible drive fluid at reservoir conditions at a first injection well;

terminating the injection of said C_2–C_4 mixture at said first injection well and injecting natural gas at said first injection well while commencing the injection of the C_2–C_4 mixture at a second injection well separated from said first injection well by a production well;

recovering said C_2–C_4 mixture and hydrocarbons from said production well;

separating the C_2–C_4 mixture from the recovered hydrocarbons; and

reinjecting the C_2–C_4 mixture at said second injection well.

4,512,401

METHOD FOR FORMING A CEMENT ANNULUS FOR A WELL

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Continuation-in-part of Ser. No. 344,626, Feb. 1, 1982,. This application May 27, 1982, Ser. No. 382,700
Int. Cl.[3] E21B *33/14*
U.S. Cl. 166—249 7 Claims

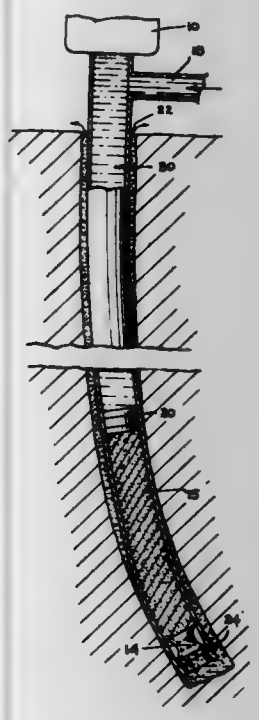
1. A method for forming a cementitious annulus around the outer wall of a well casing comprising the steps of

forcing mud, water and other foreign material out of the casing,

flowing a column of cement down the casing and out of the bottom thereof such that the cement rises up along the walls of the casing,

while the cement is being so cast, applying sonic energy to the casing by means of an orbiting mass oscillator coupled thereto, the frequency of said oscillator being adjusted to

cause elastic vibration of said casing so as to release gas bubbles, dirt and other foreign material from the casing



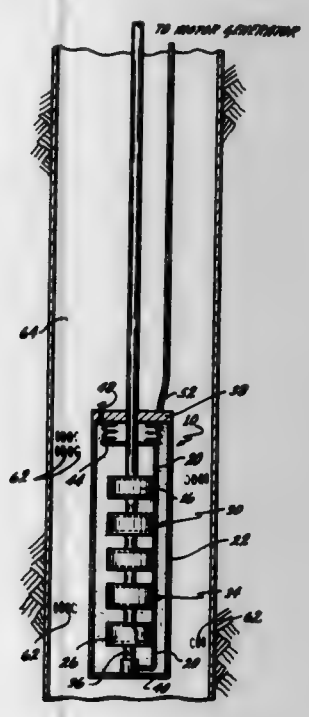
surface thereby to wet said surface with the cement to effect a sealing bond between the cement and the casing.

4,512,402

CASING TUNED DOWNHOLE TOOL

Harry W. Kompanek; James R. Ligman, both of Santa Barbara, and Eric D. Plambeck, Carpinteria, all of Calif., assignors to Sona-Tool Development Ltd., Newport Beach, Calif.

Filed May 11, 1983, Ser. No. 493,597
Int. Cl.³ E21B *43/25*
U.S. Cl. 166—249 **19 Claims**



1. In combination for facilitating the flow of oil in an oil well,

a casing disposed in the oil well and perforated to provide for a flow of oil through the casing and having a particular resonant frequency,

a tubing disposed in the casing in spaced relationship to the casing,

transducer means disposed with the tubing and cooperative with the tubing to provide a resonant frequency for the transducer means and the tubing, indpendently of the casing, corresponding substantially to the resonant frequency of the casing, and

means for energizing the transducer means at the particular resonant frequency to obtain a resonance of the casing at the particular resonant frequency through the oil in the space between the tubing and the transducer means.

13. A method of facilitating the flow of fluid in an oil well, including the following steps;

providing a casing with a particular resonant frequency in a hoop mode and with characteristics to provide for a flow of oil through the casing,

disposing a tubing in the casing in spaced relationship to the casing,

disposing at least one transducer in the tubing in spaced relationship to the tubing,

providing the combination of the transducer and the tubing with a resonant frequency in a hoop mode corresponding to the particular resonant frequency of the casing in the hoop mode and independently of the resonant frequency of the casing,

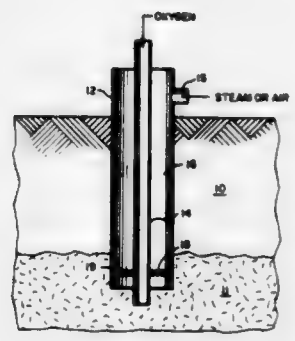
providing for a vibration of the transducer to induce a resonance of the casing, through the oil in the casing, in the hoop mode at the particular resonant frequency.

4,512,403

IN SITU COAL GASIFICATION

Joseph G. Santangelo, and John M. Fernbacher, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 174,470, Aug. 1, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,525
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—261 **8 Claims**



1. In the underground gasification of carbonaceous material in-situ through a bored injection well by the method which comprises injecting oxygen-rich gas through a conduit within said well while flowing a combustion-moderating fluid downwardly within the well in a flow path externally of said conduit, said moderating fluid being flowed at a predetermined mass flow rate sufficient to satisfy the requirements of the gasification product composition, the improvement which comprises placing a restriction in the flow path of said moderating fluid so as to restrict the cross-sectional flow area at the restriction such that at said predetermined mass flow rate the average flow velocity, defined as the volumetric flow rate at the conditions existant at the restriction divided by the total open area of the restriction, is at least equal to the critical flow velocity Vc at the restriction as given by the formula

$$V_c = gD$$

where D is the equivalent diameter of the restricted cross-sectional flow area and g is the acceleration due to gravity.

3. An injection well for underground gasification of carbonaceous solids by partial reaction with oxidizing gas in the presence of a moderating fluid, said well having an outer casing surrounding a gas injection tube within said casing for introduction of oxidizing gas into the bottom of said well, and providing a second gas flow path in said casing externally of said injection tube, adapted to be used for admission of moderating fluid to the bottom of said well; gas flow restricting means in said second gas flow path for providing a restricted

flow area within said second path, such that at a predetermined mass flow rate of the moderating fluid, the downward gas flow velocity through the restricted flow area at the restricting means corresponds to the formula

$$V_c = gD$$

wherein g is the gravity constant and D is the equivalent diameter of the the restricted flow area at the restricting means.

4,512,404

MICELLAR SLUG FOR OIL RECOVERY

Hiroshi Morita, Chiba; Yasuyuki Kawada, Funabashi; Junichi Yamada, and Toshiyuki Ukigai, both of Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 415,840, Sep. 8, 1982,. This application Mar. 31, 1983, Ser. No. 480,862

Claims priority, application Japan, Oct. 9, 1981, 56-160296; Mar. 11, 1982, 57-37186

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—274 **4 Claims**

1. A micellar slug for use in the recovery of oil, said slug consisting essentially of about 2% to about 90% by weight of a hydrocarbon, about 4% to about 95% by weight of an aqueous medium, about 1% to about 30% by weight of a surfactant, and about 0.1% to about 20% by weight of a cosurfactant, said surfactant containing, as an essential component, a divalent metal salt of an alpha-olefin sulfonic acid having 10 to 26 carbon atoms.

4,512,405

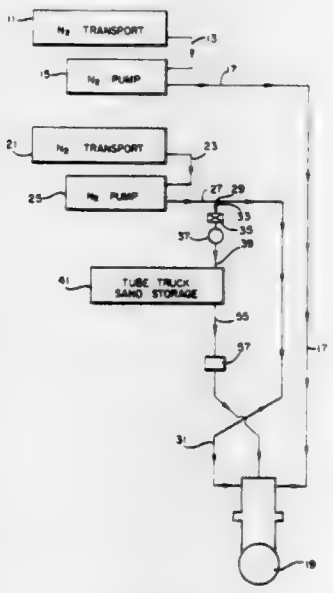
PNEUMATIC TRANSFER OF SOLIDS INTO WELLS

Ronald E. Sweatman, Cypress, Tex.; Earl R. Freeman, Oklahoma City, Okla.; John Gottschling, Williamstown, and John Simon, Ripley, both of W. Va., assignors to Hughes Tool Company, Houston, Tex.

Filed Feb. 29, 1984, Ser. No. 584,581

Int. Cl.³ E21B *33/138, 43/08, 43/267*

U.S. Cl. 166—278 **17 Claims**



1. A method of pneumatically transferring particulate solid materials into an earth formation penetrated by a well bore, comprising the steps of:

flowing a gas into the well bore to establish the desired injection rate and pressure; and

adding a particulate solid material to the established gas flow passing into the well bore by flowing a gas containing an entrained particulate solid material into the established gas flow to thereby transfer the solid particulate material pneumatically into the well bore.

4,512,406

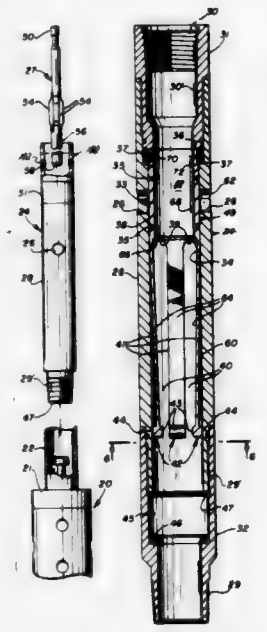
BAR ACTUATED VENT ASSEMBLY

Roy R. Vann; Flint R. George, both of Katy, Tex., and Dennis F. Warren, Albuquerque, N. Mex., assignors to GEO Vann, Inc., Houston, Tex.

Filed Jun. 7, 1982, Ser. No. 385,705

Int. Cl.³ E21B *43/116, 43/26*

U.S. Cl. 166—297 **23 Claims**



14. In a wellbore which penetrates a hydrocarbon-containing formation, the method of completing the formation comprising the steps of:

(1) suspending a subsurface perforating means and packer means from a tubing string;

(2) setting the packer means within the borehole at a position which enables the packer means to isolate a lower portion of the borehole and which positions the perforating means adjacent the formation;

(3) using the interior of the tubing string as a passageway to open a flow path which communicates the lower portion of the borehole with the interior of the tubing string by dropping a bar down the tubing string to impact a means for moving a barrier to the flow path from a closed position to an open position due to the inertia of the bar and thereafter;

(4) preventing further motion of the barrier from the open position to the closed position so that the flow path is not substantially closed after bar impact and thereafter;

(5) using the interior of the tubing string as a passageway through which the perforating means is caused to be actuated so as to communicate the lower portion of the borehole with the formation; and

(6) producing the formation along the flow path of step (3) immediately upon carrying out step (5).

4,512,407

SAND CONSOLIDATION METHODS USING ADSORBABLE CATALYSTS

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 271,426, Jun. 8, 1981, Pat. No. 4,427,069. This application Dec. 15, 1983, Ser. No. 561,970

The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—295 **12 Claims**

1. A method for selectively consolidating sand grains surrounding a borehole in a relatively low temperature subterranean formation, comprising:

providing an aqueous fluid composition of a zirconium acid salt catalyst, the zirconium salt effective to cure a poly-

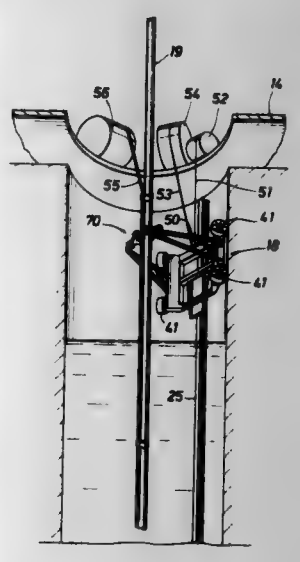
merizable furfuryl alcohol oligomer resin and effective to adsorb the surface of sand grains;
passing the catalyst composition through said borehole and into the formation surrounding the borehole;
allowing the acidic salt catalyst to be adsorbed onto the surface of the sand grains, said acidic salt catalyst forming a dispersed acid salt catalyst layer on the surface of the sand grains;
providing a resin composition comprising polymerizable furfuryl alcohol oligomer resin;
following the passage of the catalyst composition into the formation, passing the resin composition through said borehole and into the formation surrounding the borehole; and
polymerizing the resin at the site of the adsorbed acidic salt catalyst to form as a reaction product a polymer effective to consolidate the sand grains without substantially reducing the permeability through the consolidated formation.

4,512,408

MOONPOOL GUIDANCE SYSTEM FOR DRILL STRINGS HAVING ATTACHED UMBILICAL LINES

Thomas R. Danielson, Morgan Hill, and Donald A. Eberwine, Fremont, both of Calif., assignors to Exxon Production Research Co., Houston, Tex.

Filed Oct. 13, 1983, Ser. No. 541,621
Int. Cl.³ E21B *15/02, 41/04*
U.S. Cl. 166—349 **8 Claims**



1. A system for guiding a continuous drill string with attached umbilical line through a moonpool of a floating structure comprising:
a means for supporting a workhead assembly within the moonpool; and
a workhead assembly adapted to engage and guide said drill string with attached umbilical line;
wherein said workhead assembly comprises:
a turntable having a central opening and adapted to be positioned about both said continuous drill string and said umbilical line;
means on said turntable adapted to allow vertical movement of said drill string and umbilical line through said turntable; and
a turntable support including means for rotatably supporting said turntable;
whereby said continuous drill string with attached umbilical line can be guided and held generally in the center of said moonpool.

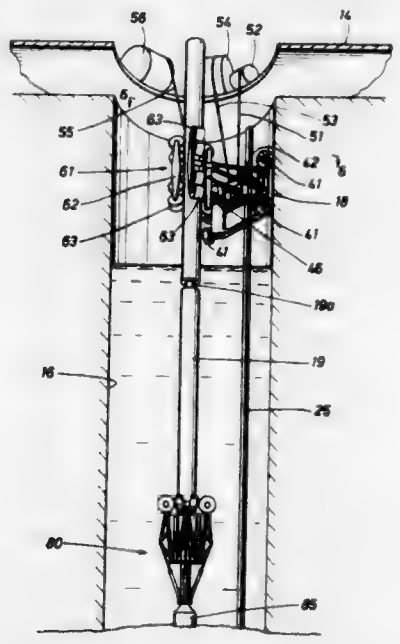
7. A turntable for use in guiding a continuous drill string with attached umbilical line through a moonpool of a floating structure, comprising:
a pair of plate-like members;
means for pivotably connecting said plate-like members at one point so that when in an open position said members can be positioned about said continuous drill string and attached umbilical line, and so that when in a closed position said members define a central opening in which said continuous drill string and attached umbilical are positioned; and
means for securing said members in said closed position; whereby said continuous drill string with attached umbilical line may be guided through and held generally in the center of said moonpool; said plate-like members being adapted to allow free longitudinal movement of said drill string through said plate-like members, and being adapted to rotate with said drill string in response to rotation of said drill string such that the angular orientation of said plate-like members to said drill string remains constant when said plate-like members are in the closed position.

4,512,409

MOONPOOL GUIDANCE SYSTEM FOR FLOATING STRUCTURES

Edward W. Gregory, Calgary, Canada; Thomas R. Danielson, Morgan Hill, and Donald A. Eberwine, Fremont, both of Calif., assignors to Exxon Production Research Co., Houston, Tex.

Filed Oct. 13, 1983, Ser. No. 541,620
Int. Cl.³ E21B *15/02, 41/04*
U.S. Cl. 166—352 **13 Claims**



1. A system for guiding drill strings or risers through a moonpool of a floating structure, said moonpool having a wall, a top, and a bottom, said system comprising:
one or more tracks on the wall of said moonpool extending vertically from the top of said moonpool to a point near the bottom thereof, wherein each said track comprises a monorail on the wall of the moonpool;
one or more guidance vehicles each movingly mounted to one of said one or more tracks; and
means for raising or lowering said vehicles along their respective tracks.

4,512,410

GEOTHERMAL EXPANSION WELLHEAD SYSTEM

Buford G. Forester, 2128 Hazlitt, Houston, Tex. 77032

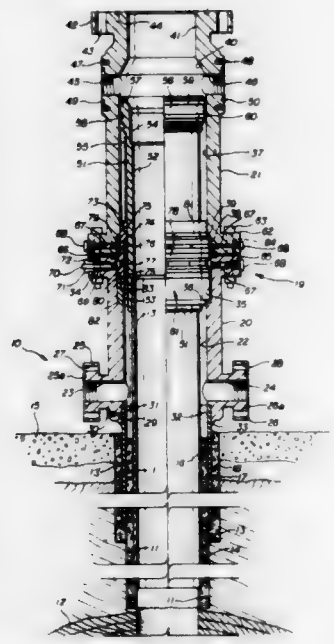
Filed Sep. 16, 1983, Ser. No. 532,800
Int. Cl.³ E21B *33/03, 33/126;* F16L *7/00, 27/12*
U.S. Cl. 166—380 **27 Claims**

1. A geothermal wellhead system comprising
a surface casing cemented in the surface portion of a well bore and extending above the earth surface,
a production casing cemented in a well bore inside and extending above said surface casing,
a casing head having a tubular body portion secured on said surface casing and having an open top end with a sur-

rounding flange having at least one radially extending passageway therein,

a hollow member with an opening the same size as said casing head, with a surrounding flange secured to said casing head flange and having at least one radially extending passageway therein,

a tubular mandrel secured on said production casing and having a smooth hard cylindrical exterior surface extending through at least part of said casing head and said hollow member,



an annular seal assembly positioned adjacent to said flanges in said casing head and said hollow member,

said annular seal assembly filling the annular space surrounding said mandrel and having annular pressure activated seals positioned to contact the exterior surface of said mandrel and the interior surface of said casing head and said hollow member, and

a high temperature plastic material maintained under pressure against said annular seals and introduced through and filling said radial passageways, the outer ends of said passageways being closed by plug closures.

4,512,411

FLUID ACTUATED ENERGY CHARGED WELL SERVICE LINE CUTTER

Ronald E. Pringle, Houston, Tex., assignor to Camco Incorporated, Houston, Tex.

Filed Apr. 19, 1984, Ser. No. 601,896
Int. Cl.³ E21B *29/04*
U.S. Cl. 166—54.5 **18 Claims**

1. A fluid actuated energy charged well service line cutter for connection in a well conduit for cutting a line extending therethrough comprising,

a housing, said housing having a bore through which the line may extend, and said housing including connections for attaching the housing in a well conduit,

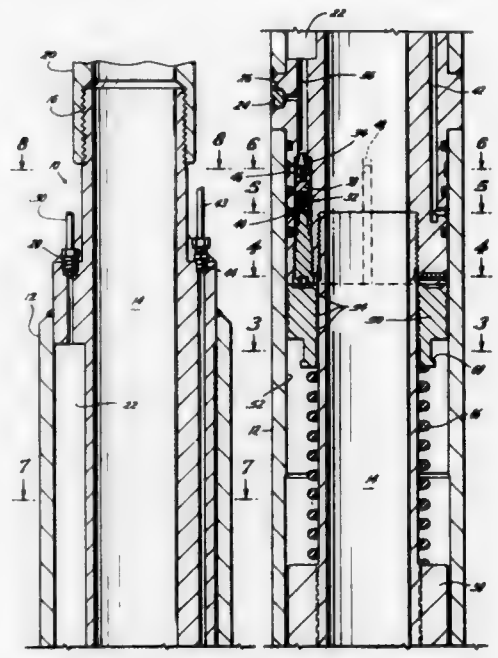
said housing including an energy chamber for holding energy,

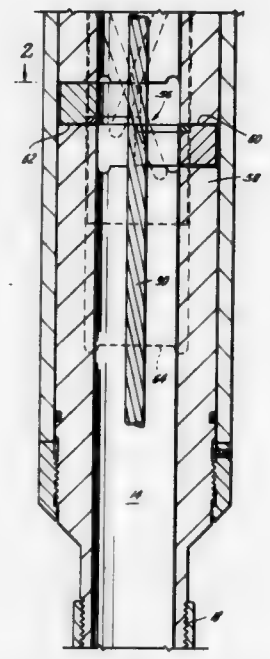
valve means connected to the chamber for releasing energy from the chamber,

control means connected to said valve means and extending to the well surface for actuating the valve means,

piston means in the housing in communication with the energy chamber through the valve means whereby the piston is actuated when the valve means releases energy from the chamber,

cutter means in the housing normally retracted out of said bore, said cutter means connected to and moved by the piston into the bore for cutting any line in said bore, and





means for returning the piston and cutter means to a retracted position.

4,512,412

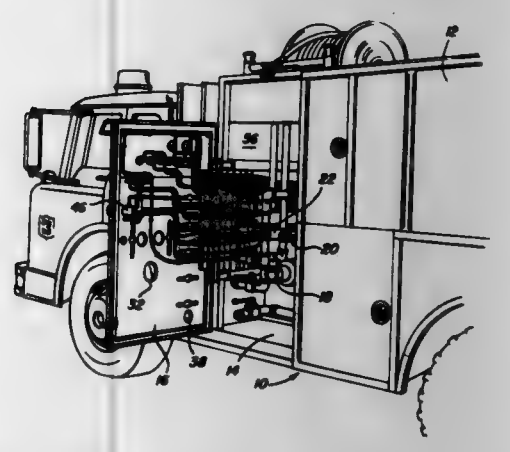
SWINGING FIRE APPARATUS PUMP OPERATOR PANEL

John W. Campbell, P.O. Box 431, Tonopah, Nev. 89049

Filed Feb. 2, 1983, Ser. No. 463,274
Int. Cl.³ A62C *27/00*
U.S. Cl. 169—24 **6 Claims**

1. A fire fighting apparatus of the type including a body defining an outwardly opening side recess comprising an operator's control station and with said recess removably closed by a control panel supporting various gauges, switches and other operating controls and having a plurality of openings formed therethrough through which water inlet and outlet couplings as well as valve controlling operators project, support means supporting said control panel from said body for movement between a closed position closing said recess with said couplings and operators projecting outwardly through said openings and an open position providing ready access to said recess for servicing and maintenance of the various control components disposed therein, said support means including an elongated support member disposed adjacent and extending along one generally straight marginal portion of said recess, mount-

ing means mounting said support means from said body for guided limited lateral outward and inward shifting relative to said body along a path which generally parallels the direction in which said recess opens outwardly, said control panel including a marginal edge portion corresponding to said one marginal portion of said recess and hingedly supported from said support member for angular displacement relative thereto about an axis generally paralleling said support member, said



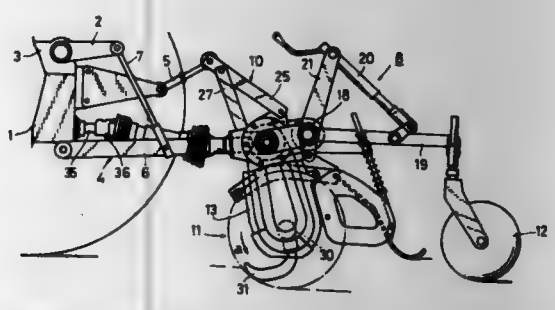
mounting means mounting said support member for lateral shifting relative to said body toward outward limit position thereof a distance sufficient to displace said panel and said openings therein fully outward of said couplings and operators to thereby allow subsequent swinging of said panel from the closed position toward the open position thereof independent of interference between said couplings and operators with the portions of said panel defining the corresponding openings.

4,512,413

ROTARY CULTIVATING APPARATUS OF LATERALLY SHIFTABLE TYPE

Mitsuki Hirata; Yoshitaka Sato, and Kaname Matudaira, all of Sakai, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Jun. 8, 1982, Ser. No. 386,319
Claims priority, application Japan, Aug. 28, 1981, 56-135738
Int. Cl.³ A01B *33/08, 33/02*
U.S. Cl. 172—74 **9 Claims**



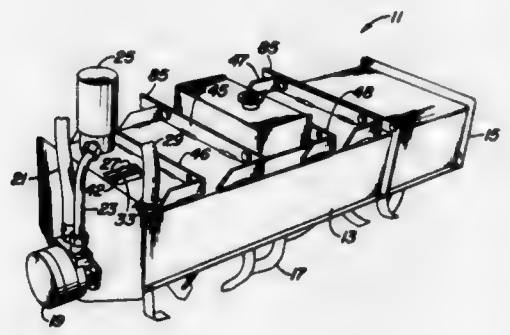
1. A rotary cultivating apparatus of the laterally shiftable type comprising an input gear case and a power input shaft, a pair of tubular support members each extending laterally from opposite sides of the input gear case, said gear case and said support members having hitch connecting portions for attachment to a vehicle a tiller frame having a rotary tiller unit and being laterally shiftably supported by the support members a transmission shaft inserted in one of the support members for transmitting power from the input shaft to the rotary tiller unit; a laterally shifting mechanism mounted in the other support member for laterally shifting the tiller frame relative to the input gear case, the shifting mechanism including a reversibly rotatable shifting screw rod screwed in an internally threaded member disposed within the other support member and fixed to the tiller frame, drive means for coupling the shifting screw rod to the transmission shaft to rotate the screw rod in a positive or reverse direction selectively and control means for operating the drive means, the drive means including a transmission gear member having an inner gear and an outer gear and a pair of intermediate gears supported by a pivotal arm and selectively meshable with the inner gear and the outer gear respectively, the control means including a lever for selectively bringing one of the intermediate gears into meshing engagement with the gear meshable therewith.

4,512,414

ROTARY TILLER

John B. Kuhn, Mayville, and Henry J. Lange, Juneau, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Jan. 13, 1984, Ser. No. 570,721
Int. Cl.³ A01B *33/08; B60R 27/00*
U.S. Cl. 172—112 **4 Claims**



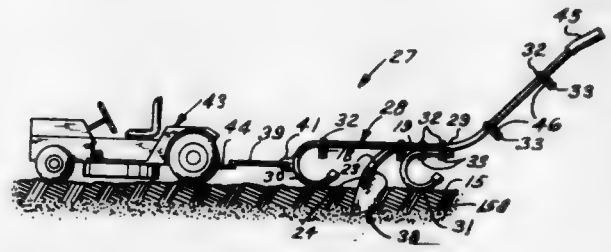
1. An improved tractor mounted rotary tiller having a housing formed by a first and second end wall, a plurality of elongated sidewalls sealably and fixably mounted at their respective ends to a respect one of said end walls, a tine shaft rotably mounted in said end walls, a top wall sealably and fixably mounted to said end and sidewalls, hydraulic drive means operatively and cooperatively mounted to said tractor and said tiller housing for driving said tine shafts wherein the improvement comprises, said tiller housing further having a bottom wall fixably mounted to said end and sidewalls beneath said top wall, whereby said walls define a fluid reservoir, an inlet tube extending through said top wall into said reservoir; a suction tube extending through said wall substantially submerged into said reservoir; means for conducting fluid to said inlet tube from said hydraulic drive means, and for conducting fluid from said suction tube to said hydraulic drive means.

4,512,415

PULL PLOW WITH PULL HANDLES AND RUNNERS AND AUTOMOBILE SELECTIVELY ATTACHED TO PLOW

William S. Jennette, 1707 Parkview Dr., Elizabeth City, N.C. 27909

Filed Apr. 16, 1984, Ser. No. 600,896
Int. Cl.³ A01B *3/02, 3/26; A63H 33/30*
U.S. Cl. 172—360 **1 Claim**



1. A pull plow, comprising, in combination, a frame formed of a pair of forwardly rearwardly extending, spaced-apart, parallel side members, and a plurality of transverse cross bar members secured therebetween, a forward end of said side members being upwardly angled to form pull handles, a rearward end of said side members being arcuately downwardly curved, and forming a pair of rear runners for travel upon a ground surface, a front pair of curved runners spaced for-

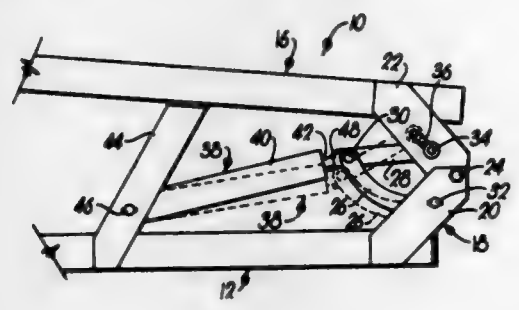
wardly of said rear runners, and being affixed to an underside of said side members; a plow member being fixedly secured on said frame, and including a plow blade affixed thereto, said plow blade being located under said frame, and being forwardly rearwardly positioned between said front and rear pairs of runners, said plow blade projecting downwardly lower than said runners; a hitch at a rear end of said frame, and a child's toy automobile selectively attachable to said hitch.

4,512,416

FLAT FOLD IMPLEMENT FRAME

David R. Smith, Hesston, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Sep. 30, 1982, Ser. No. 431,008
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—776 **10 Claims**



1. In a folding implement frame:

a pair of hingedly interconnected frame sections, one of which is swingable from a generally horizontal operating position in essentially the same horizontal plane as the other section to a folded position disposed in overlying relationship to said other section;

power means connected to said other section; and

coupling means operably connecting the power means with said one section for effecting said swinging movement thereof,

said coupling means including an elongated slot and a transverse pin received therein,

said slot being so oriented relative to the line of force between the power means and the one section when the latter is in said operating position as to permit the one section to rise and fall freely and independently of the power means to the extent permitted by engagement of the pin against opposite ends of the slot,

said orientation of the slot further being such that said line of force is at least substantially perpendicular to the longitudinal axis of the slot when the one section is in a raised position approximately midway between said operating and folded positions whereby to prevent free-fall of the one section incurred by the pin moving freely in the slot,

said coupling means further including an elongated, rigid, push-pull link pivotally connected at one end to said power means and at the opposite end to said one section through said pin and slot, said line of force being transmitted through said rigid link.

4,512,417

HYDRAULIC RECIPROCATING DEVICE

Ewald H. Kurt, Phillipsburg, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 318,482, Nov. 5, 1981, abandoned. This application Jan. 31, 1984, Ser. No. 575,719
Int. Cl.³ E21C *7/00*; F15B *21/02*
U.S. Cl. 173—77 **3 Claims**

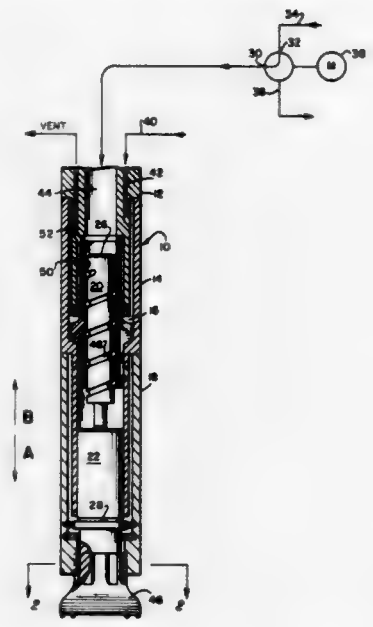
1. A hydraulic reciprocating device for a downhole drill comprising:

(a) a housing;

(b) a piston means in said housing, said piston means having a first operating surface and a second opposed operating surface;

(c) a means for alternately communicating said first surface of the piston means with a hydraulic fluid; supply and hydraulic fluid return

(d) a means for continuously communicating said second surface of the piston means with pneumatic fluid wherein the piston means moves in a first impact direction when



the hydraulic fluid supply communicates with the first surface of the piston and wherein the piston means moves in a second return direction when the hydraulic fluid return communicates with the first surface of the piston means; said piston having said first surface and a separate second piston having said second surface, and

(e) a means for venting said pneumatic fluid whereby said pneumatic fluid also purges the drill hole for chip removal.

4,512,418

MECHANICALLY INITIATED TUBING CONVEYED PERFORATOR SYSTEM

John A. Regalbuto, Fort Worth; James B. Patton, Arlington, and Cyril R. Sumner, Houston, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 21, 1983, Ser. No. 515,821
Int. Cl.³ E21B *43/1185*
U.S. Cl. 175—4.56 **8 Claims**

1. A tubing conveyed completion system comprising:

tubing means extending from the surface of the earth down a well bore to a location therein;

perforating gun means connected to one end of the tubing means, the perforating gun means including:

body means;

detonating cord means extending from the top of the body means through a portion thereof;

connector plug means secured to the top of the body means having one end of the detonating cord means secured therein;

hollow elongated cylindrical member means secured to the connector plug means;

explosive means retained within the hollow elongated cylindrical member means;

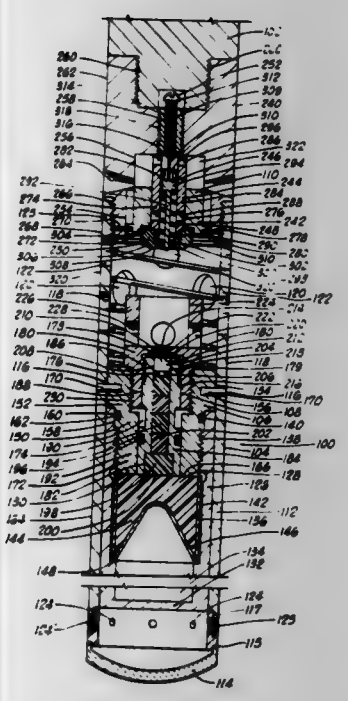
tubing connector member means having one end connected to the body means and the other end connected to the tubing means, the tubing connector means including:

spring centralizer finger means disposed within the upper portion of the tubing connector member means having a portion thereof surrounding the hollow elongated cylindrical member means adapted to guide the weight actuated primary

detonating means into contact with the hollow elongated cylindrical member means; and

weight actuated primary detonating means adapted to move through the tubing means, contact the perforating





gun means, and cause the detonation of the explosive means retained within the hollow elongated cylindrical member means and the detonating cord means of the perforating gun means.

4,512,419

CORING DEVICE WITH AN IMPROVED CORE SLEEVE AND ANTI-GRIPPING COLLAR

David S. Rowley, and James T. Aumann, both of Salt Lake City, Utah, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Sep. 9, 1983, Ser. No. 530,784
Int. Cl.[3] E21B *25/06*
U.S. Cl. 175—58 18 Claims

1. An improved coring apparatus comprising:

an outer driving structure adapted to be connected at one end to said coring bit for cutting a core in a bore hole, and at the other end to the lower end of said drill string in telescoping and co-rotatable manner therewith;

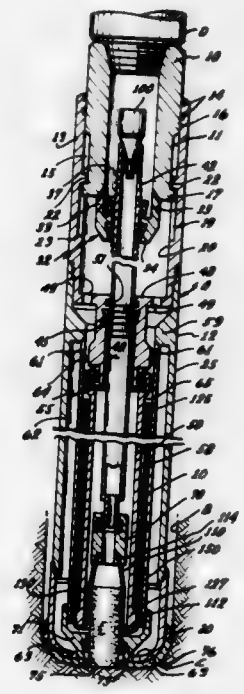
an inner barrel disposed within said outer driving structure and including a lower end portion adjacent to said bit;

means supporting said inner barrel in spaced relationship to said outer driving structure while permitting rotation of said driving structure with respect to said inner barrel;

a woven metal mesh sleeve mounted in surrounding relation on at least a portion of the exterior surface of said inner barrel, said sleeve including a leading portion adapted to be positioned within the inner barrel and initially to receive a core as it is cut,

said sleeve having a predetermined normal diameter which is greater than the diameter of the sleeve in tension and a diameter when in axial compression which is greater than said normal diameter;

the portion of said sleeve which surrounds said inner barrel being compressed axially and having an inside diameter greater than the outside diameter of said inner barrel while the portion of said sleeve positioned inside said inner barrel being in axial tension to grip and compress a core received within said sleeve and having an outside diameter in tension less than the inside diameter of said inner barrel; and



means positioned within said inner barrel and connected to the leading portion of said sleeve to draw said sleeve within said inner barrel and to apply tension to the portion of said sleeve within said barrel to encase and grip said core as it is cut.

18. A method of coring which comprises:

providing a core apparatus including a woven mesh core sleeve having a predetermined normal diameter greater than the diameter of the sleeve in tension;

lowering said coring apparatus into a borehole and driving the same to cut a core; and

maintaining a portion of said sleeve in axial compression while the remaining portion of said sleeve is in tension to grip said core as it is being cut.

4,512,420

DOWNHOLE VORTEX GENERATOR

Asadollah Hayatdavoudi, and Ladd M. Adams, both of Norman, Okla., assignors to Gill Industries, Inc., Meeker, Colo.

Continuation of Ser. No. 169,676, Jul. 17, 1980, Pat. No. 4,436,166. This application Jan. 24, 1984, Ser. No. 573,500
Int. Cl.[3] E21B *7/18*
U.S. Cl. 175—67 15 Claims

1. A method of drilling a well, comprising:

rotating a drill bit attached to a lower end of a drill string by rotating an upper end of said drill string extending above a ground surface, and thereby boring a well borehole;

directing drilling fluid from within said drill string into an annulus between said drill string and said well borehole, at

an elevation above said drill bit, with a velocity component tangential to said annulus; and thereby



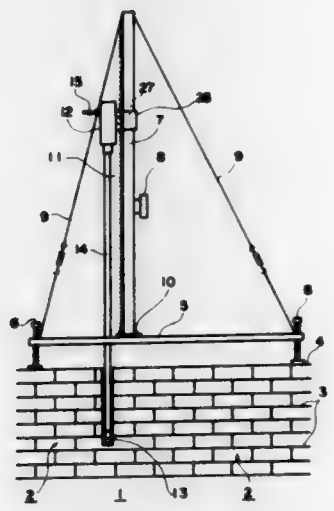
imparting a swirling motion in only one direction about said drill string to drilling fluid in said annulus.

4,512,421

METHOD FOR DRILLING COKE OVEN TOP BRICK

Fumio Ogahara, Hiroshima, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1983, Ser. No. 538,287
Claims priority, application Japan, Oct. 5, 1982, 57-173899
Int. Cl.[3] E21C *7/08*
U.S. Cl. 175—71 4 Claims



1. In a method wherein a vertically axially movable drill rotating shaft is rotated at each desired position on a top surface of a coke oven proper so as to rotary drill vertically a hole in a top brick at said position with a drilling bit attached to a lower end of said drill rotating shaft, the improvement comprising:

a step of vertically positioning said drill rotating shaft on a drilling position, said drill rotating shaft comprising a straight hollow shaft having therein a cooling gaseous body passage;

a first drilling step of attaching a first core bit with square chips to a lower end of said hollow shaft and rotating said hollow shaft to axially feed the same downward while forcing a cooling gaseous body into said passage through an upper part of said hollow shaft and jetting said cooling gaseous body from a forward end of said first core bit thereby drilling the top brick to a depth of at least five times of diameter of the hole to be drilled;

a second drilling step of replacing said first bit at the lower end of said hollow shaft by a second core bit with circular chips and drilling said hole drilled by said first drilling step further down to near a predetermined target depth while forcing the cooling gaseous body into said body through the upper part of said hollow shaft and jetting said cooling gaseous body from a forward end of said second core bit; and

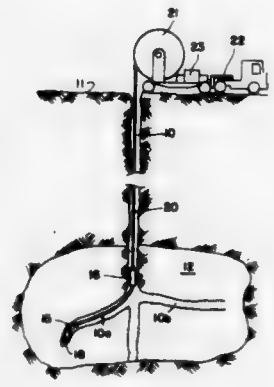
a third drilling step of replacing said second bit at the lower end of said hollow shaft with a planer type drill bit including ventilation holes and smoothly plaining a bottom of said hole drilled by said second drilling step down to said target depth while forcing the cooling gaseous body into said passage through the upper part of said hollow shaft and jetting said cooling gaseous body from a forward end of said planer type drill bit.

4,512,422

APPARATUS FOR DRILLING OIL AND GAS WELLS AND A TORQUE ARRESTOR ASSOCIATED THEREWITH

Rondel Knisley, 15611 Superior St., Sepulveda, Calif. 91343

Filed Jun. 28, 1983, Ser. No. 507,966
Int. Cl.[3] E21B *4/18*
U.S. Cl. 175—99 3 Claims



1. A torque arrestor for use in a well hole to prevent rotation of a drilling apparatus associated with a rotating bit which is powered by pressurized gas delivered through a coiled tube, the torque arrestor comprising:

a pair of spaced side plates having first and second ends and being joined at the first and second ends to form a supporting frame;

a tube extending between the plates and being secured in non-rotating relationship therewith through which the coiled tube passes;

a first cam fixed to the supporting frame adjacent to the first ends of the plates;

a second cam slidably mounted on the frame adjacent to the second ends of the plates;

means for moving the cams toward one another;

a pair of gripping members each having at least two gripping edges, the gripping members being mounted between the plates and having first and second follower surfaces thereon aligned with the first and second cam surfaces, whereby when the cam surfaces move toward one another, the gripping members are urged laterally into engagement with the wall of the bore hole, and

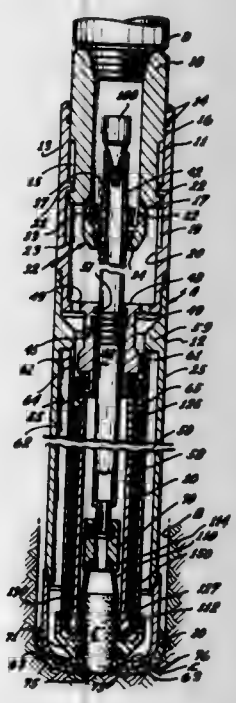
the torque arrestor wherein the gripping members are secured between the plates by links and wherein friction between the plates and gripping members is reduced by disposing bearings between the gripping members and plates and retaining the bearings in slots.

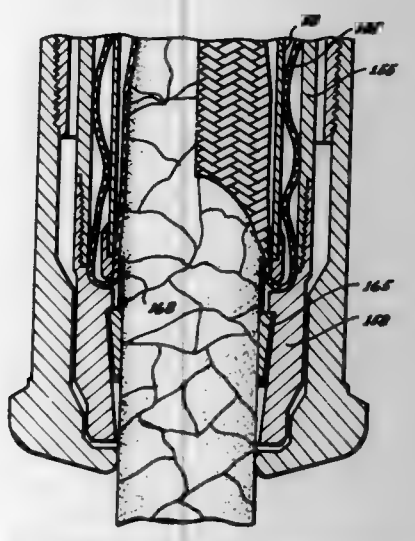
4,512,423

CORING DEVICE WITH AN IMPROVED WEIGHTED CORE SLEEVE AND ANTI-GRIPPING COLLAR

James T. Aumann, and Michael Filshtinsky, both of Salt Lake City, Utah, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Sep. 9, 1983, Ser. No. 530,783
Int. Cl.[3] E21B *25/06*
U.S. Cl. 175—226
15 Claims





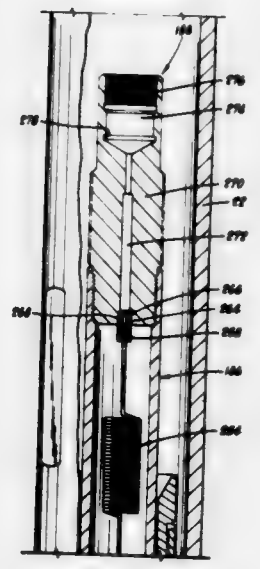
1. An improved coring apparatus comprising:
an outer driving structure adapted to be connected at one end to a bit for cutting a core in a bore hole, and at the other end to the lower end of a drill string in telescoping and co-rotatable manner therewith;
an inner barrel disposed within said outer driving structure and including a lower end portion adjacent to said bit;
means supporting said inner barrel in spaced relationship to said outer driving structure while permitting rotation of said driving structure with respect to said inner barrel;
a woven metal mesh sleeve mounted in surrounding relation on at least a portion of the exterior surface of said inner barrel, said sleeve having a free end and including a leading portion adapted to be positioned within the inner barrel and initially to receive a core as it is cut;
said sleeve having a predetermined normal diameter which is greater than the diameter of the sleeve in tension;
means contacting the free end of said sleeve to maintain the portion of said sleeve which surrounds said inner barrel in axial compression, and said sleeve having an inside diameter greater than the outside diameter of said inner barrel while the portion of said sleeve positioned inside said inner barrel being in tension to grip and compress a core received within said sleeve and having an outside diameter less than the inside diameter of said inner barrel when in tension;
means positioned within said inner barrel and connected to the leading portion of said sleeve to draw said sleeve within said inner barrel and to apply tension to the portion of said sleeve within said inner barrel to encase and grip a core as it is cut; and
an intermediate tube located between said inner barrel and driving structure,
core shoe means carried by one end of said intermediate barrel,
core catcher means supported by said core shoe, and
said core catcher including an extension received within the lower end of the inner barrel.

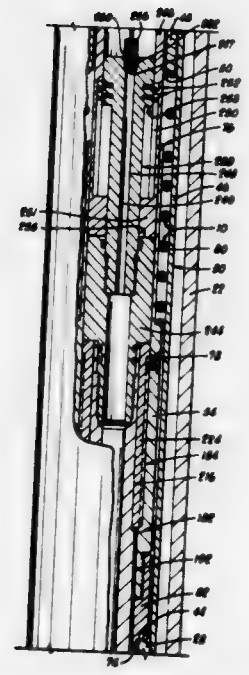
4,512,424

TUBULAR SPRING SLIP-JOINT AND JAR

Timothy R. Heemstra, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 22, 1983, Ser. No. 564,820
Int. Cl.[3] E21B *17/07*
U.S. Cl. 175—299
19 Claims





1. A pressure-balanced slip joint, comprising: generally tubular housing means; coupling means at one end of said housing means and having a longitudinal bore extending therethrough;
mandrel means slidably disposed within said housing means

and having a longitudinal bore extending therethrough; and

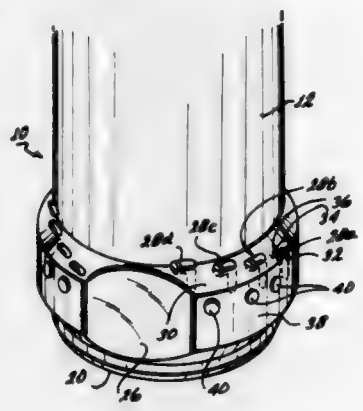
tubular spring means having a substantially constant interior volume disposed in said housing means between said coupling means and said mandrel means, one end of said tubular spring means being secured to said coupling means and the other end to said mandrel means, said coupling means bore communicating with said mandrel means bore through said tubular spring means.

4,512,425

UP-DRILL SUB FOR USE IN ROTARY DRILLING

Kenneth A. Brock, Sandy, Utah, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Feb. 22, 1983, Ser. No. 468,662
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—329 **7 Claims**



1. A tool for earth boring for use in a drill string, adapted to drill upwardly in a bore comprising:

a body;

a multiple lobed circumferentially disposed collar radially extending from said body and including an upwardly inclined surface on said collar; and

a plurality of cutting elements disposed on said upwardly inclined surface on said collar arranged and configured to cut said bore as said tool is rotated and drawn upwardly within said bore,

wherein said plurality of cutting elements includes at least one cutting element on each lobe of said multiple lobed circumferential collar wherein said at least one element is disposed into said body and into said collar to overlap the intersection therebetween.

4,512,426

ROTATING BITS INCLUDING A PLURALITY OF TYPES OF PREFERENTIAL CUTTING ELEMENTS

Dominique A. Bidegaray, Paris, France, assignor to Christensen, Inc., Salt Lake City, Utah

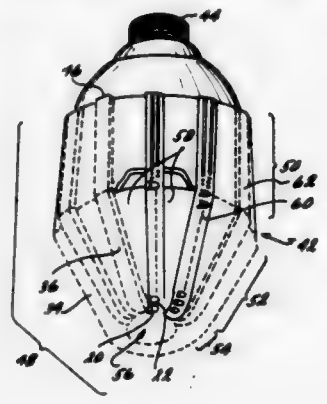
Filed Apr. 11, 1983, Ser. No. 483,896
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—329 **23 Claims**

1. An improvement in a rotating bit having a bit face comprising:

a first plurality of cutting teeth of a first shape and composition positioned on said bit face, said cutting teeth of said first plurality adapted by said shape and composition to optimally cut a first type of material; and

a second plurality of cutting teeth included on said bit face of a second shape and composition adapted by said shape and composition to optimally cut a second type of material, said first plurality of teeth positioned on said bit face to primarily cut said first type of material and secondarily cut said second type of material, said second plurality of teeth positioned on said bit face to primarily cut said second type of material and secondarily cut said first type of material,

whereby cutting performance of said rotating bit with said first and second plurality of teeth is primarily attributable to said first or second plurality of teeth depending on



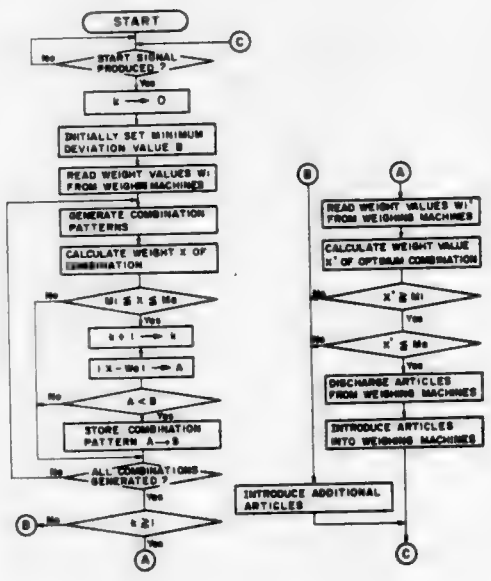
whether said rotating bit is cutting said first or second type of material respectively.

4,512,427

COMBINATORIAL WEIGHING METHOD AND APPARATUS

Kazukiyo Minamida, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Mar. 16, 1984, Ser. No. 590,356
Claims priority, application Japan, Mar. 17, 1983, 58-044811
Int. Cl.³ G01G *19/00, 19/22*
U.S. Cl. 177—1 **9 Claims**



1. A combinatorial weighing method in which weight values produced by respective ones of a plurality of weighing machines containing articles are combined, an optimum combination having a total weight equal to a target weight value or closest to the target value within set allowable limits is obtained, and the articles are discharged from those weighing machines corresponding to the optimum combination obtained, said method comprising the steps of:

(a) obtaining the optimum combination by performing combinatorial processing using weight values produced by the weighing machines at a predetermined first point in time following introduction of the articles into the weighing machines;

(b) obtaining the total weight of the obtained optimum combination again by using weight values produced by the weighing machines again at a second point in time;

(c) determining whether the total weight value of the optimum combination, obtained the second time in said step (b), lies within the set allowable limits; and

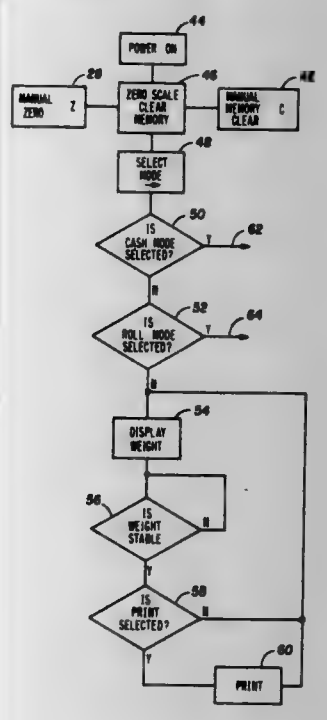
(d) discharging the articles from those weighing machines corresponding to the optimum combination if the result of said step (c) is that the total weight value obtained the second time in said step (b), lies within the set allowable limits.

4,512,428

WEIGHING APPARATUS AND METHOD

Kenneth W. Bullivant, Scottsdale, Ariz., assignor to K-Tron International, Inc., Scottsdale, Ariz.

Filed May 5, 1983, Ser. No. 491,765
Int. Cl.³ G01G *23/22, 19/52, 19/42*
U.S. Cl. 177—25 **28 Claims**



1. A weighing apparatus for measuring a quantity of items of nominally uniform weight comprising:

means associated with the apparatus for receiving items of nominally uniform weight to be counted and for providing an output of the weight of such items;

means for detecting said weight to determine a change in a number of said items;

means for detecting the weight of the number of items changed and comparing that weight with a preset threshold weight; and

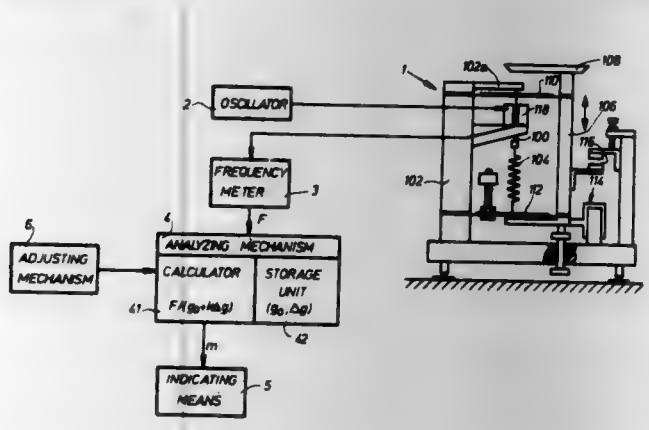
means for computing a count of the number of items changed for each weight less than or equal to said preset threshold.

4,512,429

WEIGHING APPARATUS FOR PRODUCING GEOGRAPHICALLY-CORRECTED MEASUREMENTS

Linus Meier, Saland, Switzerland, assignor to Mettler Instruments AG, Greifensee, Switzerland

Filed Jan. 19, 1984, Ser. No. 572,014
Claims priority, application Switzerland, Mar. 23, 1983, 1580/83
Int. Cl.³ G01G *19/22, 23/14, 3/14*
U.S. Cl. 177—25 **5 Claims**



1. In an electromechanical weighing apparatus including digital indicating means for displaying the weight of an object being weighed, the improvement which comprises means for correcting the displayed weight value in accordance with the specific force of gravity prevailing at the geographical location of the weighing apparatus, including

(a) analyzing means (4) connected between said weighing apparatus and said indicating means, said analyzing means including calculating means (41) and a storage means (42);

(b) electromechanical adjusting means (6) operable in a plurality of operating conditions corresponding with different predetermined gravitational acceleration values, respectively;

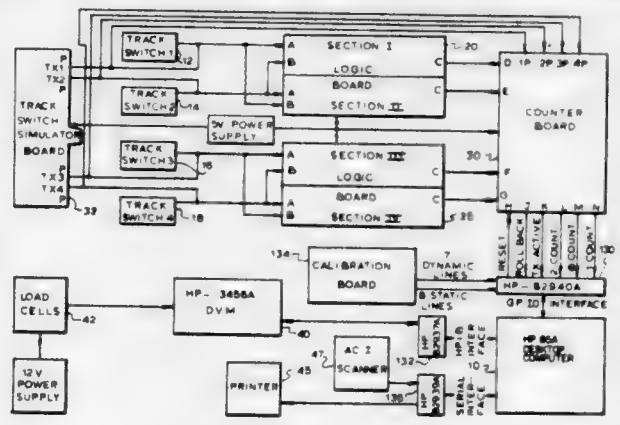
(c) said calculating section being operable in accordance with the selected condition of said adjusting mechanism and the information contained in said storage means to modify the weight signal (F) produced by said weighing apparatus such that said indicating means displays a corrected value which generally corresponds with the magnitude of mass (m) of the object being weighed.

4,512,430

ELECTRONIC COUPLED-IN-MOTION RAILROAD TRACK SCALE

Bruce V. Bowersox, Moorcroft, and Thomas I. Shepherd, Gillette, both of Wyo., assignors to AMAX, Inc., Greenwich, Conn.

Filed Jul. 20, 1983, Ser. No. 515,473
Int. Cl.³ G01G *19/04*
U.S. Cl. 177—163 **9 Claims**



1. An electronic coupled-in-motion railroad track scale system for determining the weight of train cars moving in either direction over a weighbridge, comprising:

(a) at least one load cell for providing an electrical signal indication of the weight of the train car on said weighbridge;

(b) a digital voltmeter for reading the electrical signal provided by at least one load cell and determining the weight of the train car on said weighbridge;

(c) four track switches for signaling the passing of a train car axle, pairs of said switches being located at each end of said weighbridge, wherein the two switches of each pair are located in close proximity to each other, one of said two switches of each pair being located on said railroad track and the other of said two switches being located on said weighbridge;

(d) logic circuitry for receiving the indications of said four track switches, wherein said logic circuitry ascertains the direction of said train and signals occurrences of two car axles on said weighbridge;

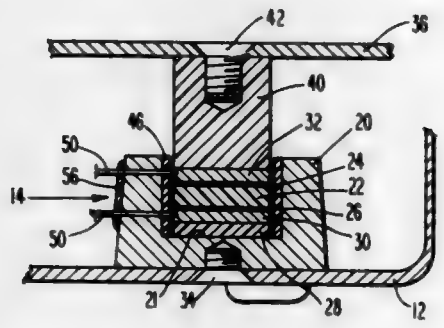
(e) A computer for receiving the signals of said logic circuitry for directing said digital voltmeter to read said load cell signal, for determining said train car weight when said logic circuitry signal indicates that two car axles are on said weighbridge and are moving in a forward direction, for reading the train car weight from said digital voltmeter and for outputting the weight of said train car; and

(f) display means for displaying the output of said computer.

4,512,431
WEIGHT SENSING APPARATUS EMPLOYING POLYMERIC PIEZOELECTRIC FILM

Philip E. Bloomfield, Bala Cynwyd, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 29, 1983, Ser. No. 527,145
Int. Cl.³ G01G 3/14
U.S. Cl. 177—210 R 8 Claims



1. Weight sensing apparatus comprising

a base member, and a platform spaced thereabove for accepting weight placed thereon,

said base member having a plurality of spaced apart cavity-forming wells mounted thereto, said wells being substantially symmetrically disposed on said base member,

said platform having a plurality of members depending therefrom for mating engagement within each of said well cavities,

sensing means disposed within said cavities and adapted to receive mechanical pressure from said mating members, said sensing means transducing said mechanical pressure to electrical responses,

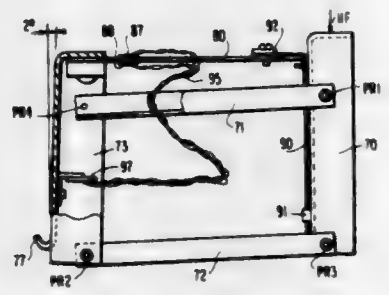
means for applying said pressure to said mating members,

converting means for transforming said electrical responses to a digital display, said sensing means and converting means being devoid of moving components, said sensing means comprising a transducer of polymeric piezoelectric film of polarized polyvinylidene fluoride, and wherein said polymeric film is provided with a metallized coating on both faces thereof, each of said metallized coatings being in electrical contact with ungrounded metallic members, said coated piezofilm and said ungrounded metallic members forming a piezofilm assembly, and said piezofilm assembly being surrounded and spaced from grounded metallic members.

4,512,432
WEIGHT TRANSDUCER FOR INEXPENSIVE ELECTRONIC SCALE

John W. Balenger, Rte. 4, Box 152, Leesburg, Va. 22075

Filed Dec. 15, 1982, Ser. No. 449,919
Int. Cl.³ G01G 3/14, 3/08, 21/24
U.S. Cl. 177—211 6 Claims



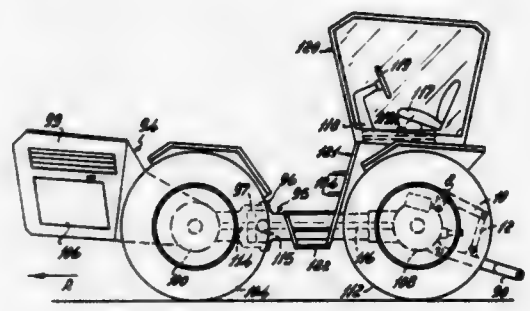
1. In an electronic scale having a cantilever beam with strain gauges bonded to the surface of said beam, stationary support means for one end of said beam, a parallelogram linkage having four rigid link members, one of which is included in said stationary support means and low friction pivot means pivotally connecting the link members proximate their ends in said parallelogram linkage, respectively, and with the free end of said cantilever beam extending proximate the pass of movement of the opposite link parallel to said stationary support means to which said cantilever beam is supported and a flexible linkage coupling the end of said beam to said opposite parallel link and electrical circuit means connected to said strain gauges for producing an electrical signal proportional to the weight of said load, the improvement comprising,

said cantilever beam being a flat metal plate having a notch formed in the center of the free end of said beam, said flexible wire link being seated in said notch and secured to one end of said cantilever beam and the end opposite to said opposite parallel link to eliminate the effect of eccentric loading on said cantilever beam.

4,512,433
ROW-CROP FRONT AND REAR WHEEL DRIVE ARTICULATED TRACTOR FOR HEAVY-DUTY OPERATIONS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 128,933, Mar. 10, 1980, Pat. No. 4,368,797, which is a division of Ser. No. 894,153, Apr. 6, 1978, Pat. No. 4,206,825, which is a continuation of Ser. No. 653,514, Jan. 29, 1976, abandoned. This application Jun. 28, 1982, Ser. No. 394,101
Int. Cl.³ B60K 17/30
U.S. Cl. 180—235 81 Claims



1. An articulated agricultural tractor which comprises:

an engine having a power rating of not less than substantially one hundred horsepower;

a frame having front and rear frame portions, a horizontal axle on each of said frame portions and at least two ground engaging wheels mounted on each said axle, each said rear wheel being aligned to follow a corresponding one of said front wheels, each said wheel being driven by said engine;

pivot means connecting said front and rear frame portions whereby said portions are pivotable relative to each other about a substantially vertical axis;

said engine mounted on said front frame portion and in a housing;

a cab containing a seat and controls for an operator mounted on said rear frame portion directly above the upper aspects of each said two rear wheels as seen both from the side and above, said engine housing being completely spaced forward from the front of said cab.

4,512,434
AERODYNAMIC BASS-REFLEX ENCLOSURE

Sin Y. Yoo, 14217 Peartree La., No. 21, Silver Spring, Md. 20906

Filed May 10, 1983, Ser. No. 493,342
Int. Cl.³ H05K 5/00
U.S. Cl. 181—146 2 Claims

1. A sound reproducing cabinet for increasing the intensity of the low-frequency range of reproduced sounds, comprising:

a. a housing having a right wall, a left wall, a front panel, a back, a top, and a bottom, all of predetermined dimensions and enclosing a predetermined volume of air mass;

b. a sound damping means of predetermined dimensions

affixed to said right wall and said left wall within said housing;

c. a first projection of vibratory sound pressures on said volume of air mass by a first speaker;

d. a second projection of vibratory sound pressures on said volume of air mass by a second speaker;

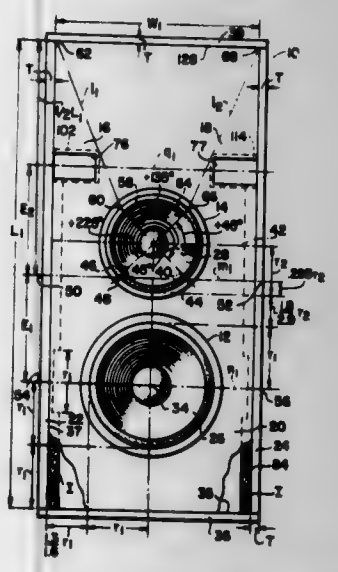
e. said first speaker mounted on the front panel of said housing at predetermined distances from said right and left walls and from the bottom of said housing and having a speaker cone of predetermined radius;

f. said second speaker having a frame extending into said housing and mounted on the front panel at a predetermined distance from said first speaker and from said right and left walls;

g. said frame having a plurality of open sectors of substantially similar dimensions spaced substantially symmetrically about said frame, at least one of said plurality of open sectors facing to the top of said housing and at least one of said plurality of open sectors facing to the bottom of said housing;

h. a damping means for reducing said second projection of vibratory sound pressures from said top- and bottom-facing open sectors of said second speaker;

i. a first sound duct having a top, a bottom, and a right side of predetermined dimensions affixed within said housing at a first opening on the front panel thereof, said first opening having substantially similar cross-sectional di-



mensions as said first sound duct and disposed at a predetermined distance from said second speaker and from the top of said housing;

j. said top and bottom of said first sound duct orthogonally affixed to said right side of said sound duct and to said left wall of said housing;

k. a second sound duct having a top, a bottom, and a left side of predetermined dimensions affixed within said housing at a second opening on the front panel thereof, said second opening having substantially similar cross-sectional dimensions as said second sound duct and disposed at a predetermined distance from said said second speaker and from the top of said housing;

l. said top and bottom of said second sound duct orthogonally affixed to said left side of said sound duct and to said right wall of said housing;

m. said predetermined volume, dimensions, and distances derived solely from the predetermined radius of said first speaker cone; and

n. the combination of said sound damping means on said walls, said sound damping means on said top- and bottom-facing open sectors, and of said first projection of vibratory sound pressures by said first speaker augmented by said second projection of vibratory sound pressures by said second speaker at said first and second sound ducts, to increase the intensity of the low-frequency range of reproduced sounds at said sound ducts and extend the range of low-frequency sounds from said ducts below the range of low-frequency sounds from said speakers.

4,512,435

DIAPHRAGM FOR LOUDSPEAKERS

Hiroshi Takeuchi, Matsubara, and Yoshiaki Maruno, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

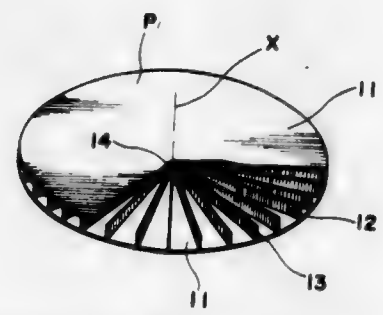
Filed Mar. 16, 1983, Ser. No. 475,965

Claims priority, application Japan, Mar. 16, 1982, 57-42053; Mar. 17, 1982, 57-43495; Mar. 17, 1982, 57-43496

Int. Cl.³ H04R 7/06, 7/14

U.S. Cl. 181—170

5 Claims



1. A diaphragm for loudspeakers comprising in combination a pair of skin materials each being formed in disc shape approximately equal in diameter, and a core material comprised of a plurality of plate pieces joined to form a disc-shaped construction having a top face and a bottom face, said pair of skin materials being integrally constructed on said top face and said bottom face of said core material, said skin materials and core material being made both in their entirety of either boron or beryllium low in density and high in modulus of elasticity.

4,512,436

PLATFORM ROTATING MECHANISM FOR AERIAL DEVICES

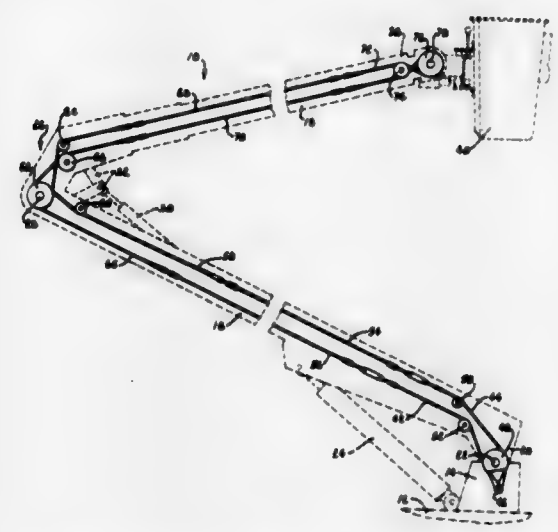
Frank D. Freudenthal, Andrew County, and Carl M. Anderson, Buchanan County, both of Mo., assignors to Altec Industries, Inc., Birmingham, Ala.

Filed Jul. 1, 1983, Ser. No. 510,062

Int. Cl.³ B66F 11/04

U.S. Cl. 182—2

21 Claims



1. In a vehicle mounted aerial device of the type having a boom assembly mounted for rotation on the vehicle, a generally horizontal platform pin supported on the boom assembly to turn relative thereto about an axis coinciding with the axis of the platform pin, a working platform, and leveling means for maintaining the platform pin in a substantially constant orientation relative to the ground at all positions of the boom assembly, the improvement comprising:

a mounting frame for the platform rigidly connected with

the platform pin to turn therewith about the platform pin axis;

means for mounting the platform on said frame in a manner permitting the platform to rotate relative to the frame about a generally vertical rotational axis displaced from the axis of the platform pin, said mounting means permitting the platform to rotate about said rotational axis between a first position to one side of the boom assembly and a second position beyond the end of the boom assembly;

rotation drive means for effecting rotation of the platform between the first and second positions;

stop means for stopping the platform in a preselected rotative position between the first and second positions as the platform is being rotated from the first position toward the second position; and

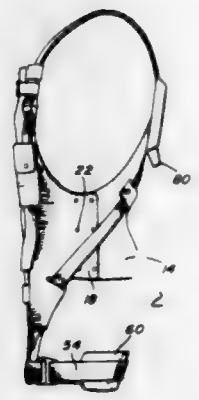
means for overriding said stop means to permit the platform to be rotated from said preselected rotative position to the second position.

4,512,437

SAFETY VEST

Garry Savage, Montreal, Canada, assignor to Institut de Recherche en Sante et en Securite du Travail du Quebec, Quebec, Canada

Filed Jun. 13, 1983, Ser. No. 503,777
Claims priority, application Canada, May 6, 1983, 427637
Int. Cl.³ A62B *35/00*
U.S. Cl. 182—3 **9 Claims**



1. A safety vest comprising:

(a) a front section and a rear section forming a torso encircling garment;

(b) a plurality of strap guide means attached to said garment;

(c) a strap arrangement associated with said guide means and said garment, said arrangement including

(i) a first pair of separate straps, each forming a continuous detachable loop with a front portion, a back portion, a shoulder portion and a hip portion, and each passing through associated guide means on said garment; said front portion extending vertically over said garment;

(ii) a second pair of separate straps, each forming a continuous detachable loop adapted to surround the thigh of a user and engaging a lower-most part of the front portion of said first pair of straps; the engagement of the second pair of straps to the lower-most part of the first pair of straps being at its front-most portions so that, at impact following an accidental fall, a major portion of the forces exerted on the strap arrangement are transmitted to the second pair of straps which cause the thighs to pivot and to provoke a dynamic resistance by the thigh muscles; and

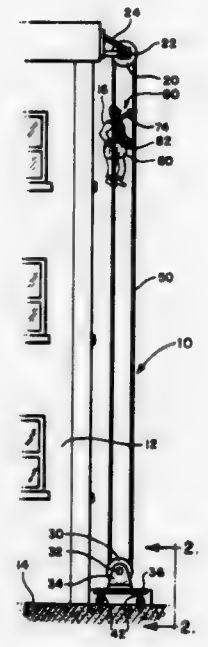
(d) buckle means associated with each strap of each pair for detaching said loops.

4,512,438

ESCAPE APPARATUS

Andrew Vilchek, deceased, late of Palos Park, Ill., and by Mary F. Trindl, executrix, 12612 Pawnee Rd., Palos Park, Ill. 60464

Filed Jan. 30, 1984, Ser. No. 574,913
Int. Cl.³ A62B *1/12*
U.S. Cl. 182—43 **11 Claims**



1. An escape apparatus for lowering persons down a structure comprising:

a base pivotably mounted adjacent to the structure to pivot in a vertical plane;

a lower pulley rotably mounted to the base;

an upper pulley secured to the structure in vertical alignment with the lower pulley;

an endless loop cable mounted to pass around the upper and lower pulley such that movement of the cable causes at least the first pulley to rotate;

adjusting means mounted to the base to adjust the vertical position of the base in opposition to tension of the cable on the first pulley in order to adjust the tension of the cable;

means for supporting a person on the cable;

a hydraulic reservoir containing a hydraulic fluid;

a hydraulic pump;

conduit means for interconnecting the pump and the reservoir such that the pump removes hydraulic fluid from the reservoir and returns the fluid under pressure to the reservoir;

restricting means for restricting the flow of hydraulic fluid in the conduit means from the pump to the reservoir;

means for coupling the pump to the first pulley such that movement of the cable causes the first pulley to rotate and the pump to force fluid through the restricting means, and the flow restriction of hydraulic fluid pumped by the pump limits the speed of the pump and thereby the speed of the cable; and

auxillary brake means coupled to the first pulley for slowing rotation of the first pulley by an additional amount when a person supported on the cable by the support means approaches the first pulley.

4,512,439

CONTROL MECHANISM FOR AERIAL LADDERS

Donald J. Howell, Franklin County, Kans., assignor to Sponco Mfg., Inc., Ottawa, Kans.

Filed Sep. 6, 1983, Ser. No. 529,215
Int. Cl.³ E06C *5/04*
U.S. Cl. 182—66 **11 Claims**

1. In a multiple section aerial ladder having a lower ladder section supported for rotation about a generally vertical rotational axis and for up and down pivotal movement about a generally horizontal pivot axis, a middle ladder section sup-

ported for extension and retraction on the lower section, and an upper ladder section supported for extension and retraction on the middle section, a control arrangement comprising:

an upper set of parallel rods mounted for rotation on the upper ladder section;

an upper set of hand levers coupled with the respective rods in a manner to rotate each rod in opposite directions from a neutral position when the corresponding lever is displaced in opposite directions from a neutral position;

a first set of parallel tubes mounted for rotation on the middle ladder section and receiving the respective rods in a manner to effect rotation of each tube when the corresponding rod is rotated, said rods being extensible out of and retractable into the tubes to accommodate extension and retraction of the upper ladder section;

a second set of parallel tubes mounted for rotation on the middle ladder section, each tube in said second set having a corresponding tube in said first set, the tubes in said first and second sets being substantially parallel and located generally side by side;

means for coupling the corresponding tubes together in pairs in a manner to rotate each tube in said second set when the corresponding tube in the first set is rotated;

a lower set of parallel rods mounted for rotation on the lower ladder section and received in the respective tubes in said second set in a manner to rotate each rod in the



lower set when the corresponding tube in said second set is rotated, said rods in the lower set being extensible out of and retractable into the tubes in said second set to accommodate extension and retraction of the middle ladder section;

a lower set of hand levers including an elevation control lever, a rotation control lever and an extension control lever to which the respective rods in said lower set are coupled in a manner to displace each lever in said lower set in opposite directions from a neutral position when the corresponding rod is rotated in opposite directions from a neutral position thereof, said levers in the lower set being accessible for manual displacement from the neutral position;

means for pivoting the lower ladder section up and down about said pivot axis when the elevation control lever is displaced in opposite directions from the neutral position;

means for rotating the lower ladder section in opposite directions about said rotational axis when the rotation control lever is displaced in opposite directions from the neutral position; and

means for extending and retracting the middle and upper ladder sections when the extension control lever is displaced in opposite directions from the neutral position,

whereby the elevation, rotation and extension of the ladder can be controlled by the upper or lower set of hand levers.

4,512,440

RUNGLESS MOTORIZED LADDER

Lawrence B. Bixby, Rte. 2, Box 1671, Oklawaha, Fla. 32679

Filed Dec. 12, 1983, Ser. No. 560,562

Int. Cl.³ E06C *1/00;* A63B *27/04*

U.S. Cl. 182—146 **7 Claims**

1. A rungless motorized ladder apparatus comprising:

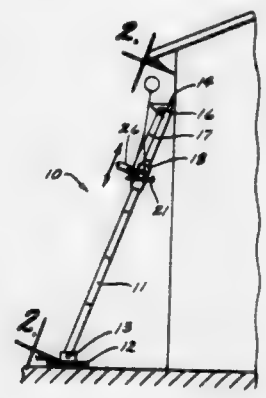
an elongated pole;

a carriage means disposed on said pole for movement up or down along said pole;

foot receiving means attached to said carriage means for permitting a person to stand thereon and move up or down with the movement of said carriage means;

a winch means operably attached to said carriage means, said winch means including a spool having a cable attached thereto at one end thereof for permitting such cable to be wound thereon;

means for attaching the other end of said cable to the top of said pole;



electric motorized means on said carriage means for rotating said spool for selectively pulling said carriage up or permitting said carriage to move downwardly; and

foot pedal switch means attached to said foot receiving means for causing said spool to turn in one rotary direction when one side of said foot pedal switch means is pushed or to turn said spool in the other rotary direction when the other side of said switch means is pushed.

4,512,441

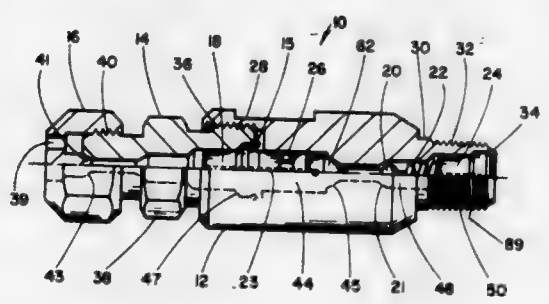
BLOWDOWN FITTING

Jack M. Cooper, Houston, Tex., assignor to General Screw Products Company, Houston, Tex.

Continuation-in-part of Ser. No. 124,444, Feb. 25, 1980, Pat. No. 4,347,915. This application Jun. 28, 1982, Ser. No. 392,753

Int. Cl.³ F01M *1/18;* F16N *21/06*

U.S. Cl. 184—105 B **20 Claims**



1. A fitting for allowing lubricant to enter a device and retain said lubricant within said device, comprising:

a main body member having a first passageway extending through said body member;

said first passageway defining first and second seating surfaces;

connection means on one end of said main body member for securing said main body member to a receiving aperture in said device;

a ball member within said first passageway for sealing engagement with said first seating surface;

spring means within said first passageway for biasing said ball member toward said first seating surface;

an upper body member rotatably secured to another end of said main body member and having a second passageway extending through said upper body member;

a valve assembly at least partially disposed within both said first and second passageways and rotatable with respect to said upper body member and axially movable within said upper body member in response to lubricant pressure;

a valve portion of said valve assembly for sealing engagement with said second seating surface in response to rotation of said upper body member relative to said main body member;

main body sealing means for establishing a fluid tight seal between said valve assembly and a cylindrical surface defined by said first passageway through said main body member;

said valve assembly having a third passageway extending through at least a portion of said valve assembly and past said main body sealing means.

4,512,442

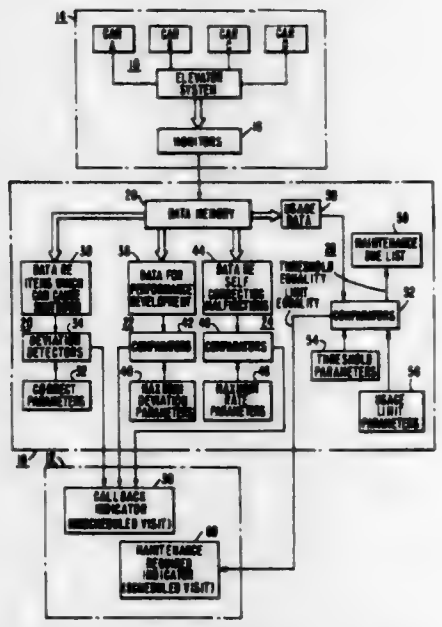
METHOD AND APPARATUS FOR IMPROVING THE SERVICING OF AN ELEVATOR SYSTEM

William H. Moore, Bridgewater Township, Somerville County, N.J.; Alan F. Mandel, Scott Township, Allegheny County, Pa.; William J. Trosky, Wilkinsburg, Pa.; Kenneth M. Eichler, North Versailles, Pa.; Stephen P. Tomas, West Mifflin, Pa.; Edward Tober, Bethel Park, Pa., and Thomas A. Vasold, Morristown, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1984, Ser. No. 595,174

Int. Cl.³ B66B *3/00*

U.S. Cl. 187—29 R **35 Claims**



1. A method of improving the servicing of an elevator system by determining when specific preventive maintenance services are due, and when such maintenance services should be scheduled, comprising the steps of:

monitoring the usage of predetermined elevator system functions,

collecting usage data in response to the monitoring step,

establishing predetermined usage parameters, including both maintenance due thresholds and upper usage limits, for at least certain of the monitored functions,

comparing said usage data with the associated parameters,

placing at least on maintenance required service on a maintenance due list as the usage of the monitored function reaches the associated maintenance due threshold parameter,

and indicating a need for scheduled elevator service, for all of the maintenance services on the maintenance due list, when the usage of one of the monitored functions reaches its associated upper usage limit.

4,512,443

LIFT DOOR CONTROL APPARATUS

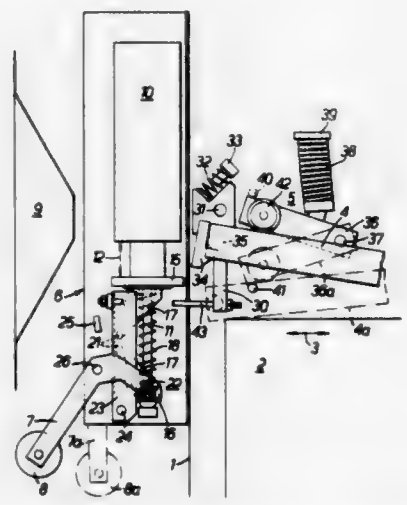
Alan Dewhurst, Hounslow, England, assignor to Dewhurst & Partner P.L.C., Hounslow, England

Filed Mar. 18, 1983, Ser. No. 476,564

Claims priority, application United Kingdom, Mar. 24, 1982, 8208692

Int. Cl.³ B66B *13/20*

U.S. Cl. 187—57 **6 Claims**



1. Apparatus for controlling the movement of a lift car door relative to a lift car, comprising

(a) door locking means operable between locked and normally unlocked conditions;

(b) latch means operable between normally unlatched and latched conditions in which said door locking means is in the unlocked and locked conditions, respectively;

(c) means for releasing said latch means when said lift car is at a given position relative to a floor, said release means including

(1) a release arm pivotally connected intermediate its ends with said lift car for pivotal movement between retracted and normally extended positions relative to the car, one end of said release arm, when in the extended position, being arranged for engagement by a stationary floor ramp adjacent the floor for pivoting said release arm to said retracted position;

(2) a latch release lever pivotally connected with said lift car for movement between normal first and second positions relative to said car;

(3) means connecting said latch lever with said latch means to cause said latch means to be in the latched and unlatched conditions when said latch release lever is in said first and second positions, respectively; and

(4) means connected with the other end of said release arm for pivoting said latch release lever to the second position when said release arm is pivoted to the retracted position, said latch release lever pivoting means including

(a) an electromagnetic actuator connected with said lift car and including an actuator shaft operable between extended and retracted positions when said actuator is de-energized and energized, respectively;

(b) a pair of finger members each having base and finger portions, said base portions containing enlarged openings for loosely mounting said finger members for sliding and pivotal movement on said shaft with the finger portions extending toward each other; and

(c) spring means biasing said finger members apart, one of said finger members being connected with said other end of said release arm to effect relative displacement of said finger members toward each other and subsequent pivoting of said latch release lever to its second position when the release arm is displaced to its retracted position;

(d) said electromagnetic actuator being energizable to retract said shaft to the retracted position and thereby pivot said

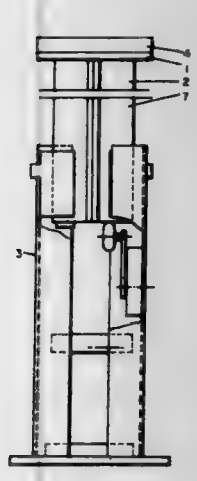
release arm to its retracted position without relative displacement of said fingers and without operation of said latch release lever.

4,512,444

ELEVATOR BUFFER

Werner Koppensteiner, Vienna, Austria, assignor to Otis Elevator Company, Farmington, Conn.

Filed Apr. 11, 1983, Ser. No. 484,113
Claims priority, application Austria, Jul. 6, 1982, 2614/82
Int. Cl.³ B66B *5/28*
U.S. Cl. 187—67 8 Claims



1. For use in stopping an elevator car or counterweight, a buffer, characterized by:

(a) a strike plate mounted on a rail;

(b) a housing in which the rail slides vertically;

(c) a brake assembly attached to the housing for providing stopping force upon the rail when the rail moves in one direction, said assembly comprising;

(d) a brake shoe on one side of the rail;

(e) a roller on the other side of the rail;

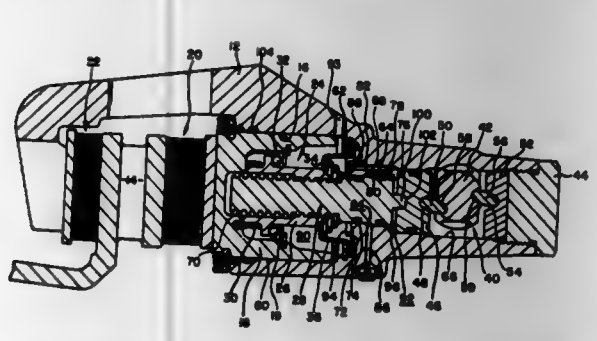
(f) a resilient member on the other side of the rail that forces the roller against the rail, said resilient member being located relative to the rail, to force the rail progressively harder against said shoe as the rail moves in said one direction.

4,512,445

ADJUSTMENT ASSEMBLY FOR A DISC BRAKE

Dean E. Runkle, LaPorte, and James J. Colpaert, Granger, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 1, 1982, Ser. No. 413,857
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—71.9 4 Claims



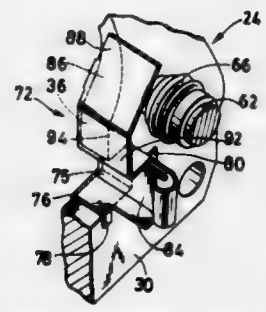
1. An adjustment assembly for a disc brake wherein a caliper includes a stepped bore for receiving a piston, the adjustment assembly comprising a nut cooperating with the piston to limit retraction of the latter upon termination of braking and a threaded stem cooperating with the nut to limit retraction of the nut, the nut being adjustable relative to the threaded stem upon initial braking when the fluid pressure communicated to the caliper is below a predetermined value and the threaded stem being pressure responsive to the fluid pressure communicated to the caliper to substantially limit adjustment of the nut relative to the threaded stem when the fluid pressure communicated to the caliper is above the predetermined value, characterized in that said stepped bore defines a first diameter portion sealingly engaging said threaded stem and a second diameter portion sealingly engaging said threaded stem, said second diameter portion being larger than said first diameter portion whereby fluid pressure acting against said threaded stem above the predetermined level biases said threaded stem to move toward said piston, said threaded stem cooperating with said stepped bore to define a chamber between said sealing engagements and vented to atmosphere and said caliper or threaded stem defining a passage remote from said chamber for communicating fluid pressure acting against said threaded stem at said first diameter portion to said second diameter portion for acting against said threaded stem at said second diameter portion.

4,512,446

PIN-SLIDING CALIPER DISC BRAKE WITH BOOT PROTECTOR

Tsutomu Chuwman, Toyota; Tetsu Hagino, Nagoya, and Shozaburo Tsuchida, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 29, 1983, Ser. No. 490,168
Claims priority, application Japan, Dec. 27, 1982, 57-197026[U]
Int. Cl.³ F16D *65/00*
U.S. Cl. 188—73.38 16 Claims



1. A disc brake for a vehicle having a wheel, comprising:

a disc rotor having friction surface on opposite sides thereof and rotatable integrally with said wheel;

a pair of brake pads disposed on said opposite sides of the disc rotor;

a torque member movably supporting said pair of brake pads toward and away from said friction surfaces of the disc rotor along an axis of rotation thereof, said torque member supporting at least one boot and receiving a frictional drag torque force from said brake pads;

a caliper straddling said brake pads and a peripheral portion of said disc rotor and having on one side thereof a hydraulic cylinder;

at least one slide pin extending along said axis of the disc rotor from one of said caliper and said torque member and slidably engaging mating bores formed in the other of said caliper and said torque member to thereby guide said caliper along said axis; at least one boot enclosing exposed portions of said at least one slide pin between said torque member and said caliper; and a liner made of sheet-like material and radially disposed in at least one clearance formed between side end surfaces of said brake pads and torque receiving surfaces of said torque member opposite to said side end surfaces, said liner being fixed to said torque member and providing a sliding surface for said brake pads; and

a boot protector including means for protecting said at least one boot against damage thereof due to heat applied thereto from a heat source including one of said brake pads which is located on the same side of said disc rotor as said at least one boot, said boot protector including a first

extension of said liner extending more than 5 mm along said axis of the disc rotor away from one of said torque receiving surface remote from said disc rotor axially thereof, said first extension of the liner radially extending between said at least one boot and said one of the brake pads.

4,512,447

HYDRAULIC DAMPER

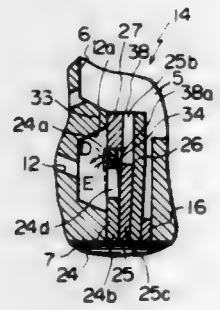
Ieaki Miura, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Dec. 16, 1982, Ser. No. 450,546

Claims priority, application Japan, Dec. 18, 1981, 56-189560[U]

Int. Cl.³ F16F 9/348

U.S. Cl. 188—322.15 **2 Claims**



1. A hydraulic damper comprising:

a cylinder containing hydraulic liquid therein;

a piston working in said cylinder and partitioning the interior of said cylinder into first and second liquid chambers;

a piston rod secured to said piston and extending to the exterior of said cylinder;

a disc valve mounted on each side of said piston for generating damping forces;

said disc valve exposed to said first liquid chamber comprising at least three mutually overlapping annular discs;

the outer circumference of a first said disc which is located contiguous to said piston being easily deflectable;

a second said disc which is located contiguous to said first disc having at least one opening, one end of which is communicated permanently with said first liquid chamber;

said opening being closed by said first disc when said piston moves toward said second liquid chamber, and said opening being opened due to deflection of said first disc when said piston moves toward said first liquid chamber; and

said first disc having large and small diameter coaxial annular portions which are integrally connected by at least one radial bridge portion, whereby said large diameter annular portion can easily deflect with respect to said small diameter portion.

4,512,448

SYSTEM FOR EQUILIBRATING AN IMBALANCE COUPLE AND USE OF SUCH A SYSTEM FOR EQUILIBRATING AN AIRBORNE RADAR ANTENNA

Bernard Estang, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 16, 1982, Ser. No. 418,837

Claims priority, application France, Sep. 25, 1981, 81 18137

Int. Cl.³ F16D 63/00

U.S. Cl. 188—378 **8 Claims**

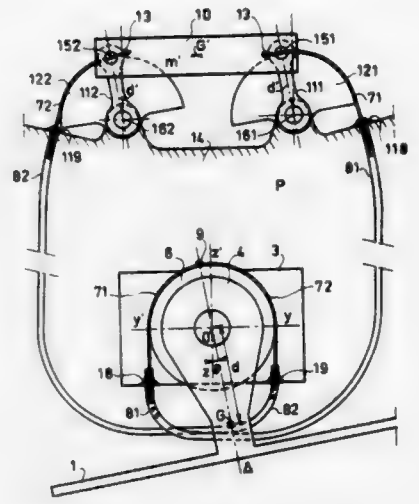
1. An apparatus for remotely equilibrating an imbalance couple comprising:

pivoting means mounted in cantilever relation to its axis of rotation for rotational movement;

a pulley attached to said pivoting means and having a rotational axis coincident with the rotational axis of said pivoting means;

an equilibrating mass mounted detached from said pivoting means and remote therefrom; and

transmission means coupling said pulley to said equilibrating mass whereby the rotational movement of said pivoting



means is transferred to a proportional and antagonistic movement of said equilibrating mass.

4,512,449

FRONT COVER FOR A TORQUE CONVERTER AND METHOD OF PROCESSING THE SAME

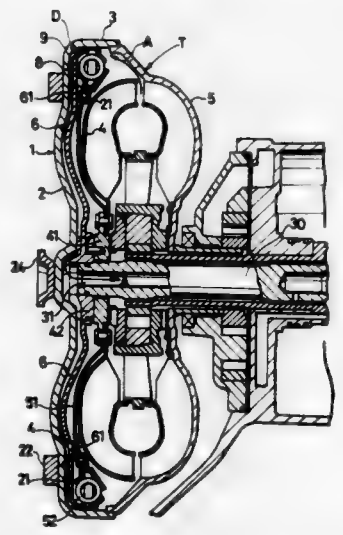
Jiro Motomura, Anjo; Yasuhisa Kamiya, Chita, and Seiichi Nishikawa, Ioyokawa, all of Japan, assignors to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Feb. 5, 1982, Ser. No. 346,212

Claims priority, application Japan, Feb. 10, 1981, 56-18303

Int. Cl.³ F16H 45/02; F16D 3/12

U.S. Cl. 192—3.28 **2 Claims**



1. A front cover for a torque converter comprising:

a front wall portion to be connected coaxially to an output shaft of an engine press-formed from a metal plate;

a connecting portion press-formed from said metal plate integrally with said front wall portion extending from an outside periphery thereof and having a predetermined radius of curvature in cross section;

a cylindrical peripheral portion press-formed from said metal plate integrally with said front wall portion and connecting portion extending from an outside periphery of said connecting portion at a predetermined angle with respect to said front wall portion;

a flat annular surface formed on an inside surface of said front wall portion and a boundary portion connecting an outside periphery of said flat annular surface to an inside periphery of said connecting portion at an inside surface thereof having a smaller radius of curvature in cross section than that of said connecting portion; said flat annular surface and inner surface of said boundary portion having increased hardness and more compact metallographic

structure in the surface thereof and a reduced thickness thereof in comparison with rest of the part of said front wall portion.

4,512,450

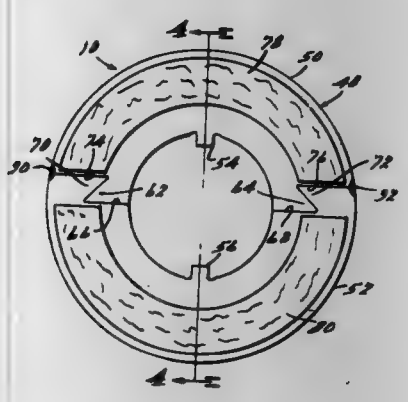
CLUTCH BRAKE

Daniel A. Babcock, 4609 Wilcox, Holt, Mich. 48842

Continuation-in-part of Ser. No. 317,484, Nov. 2, 1981, abandoned. This application May 28, 1982, Ser. No. 383,252

Int. Cl.³ F16D *69/00, 13/68*

U.S. Cl. 192—12 R **5 Claims**



1. A clutch brake comprising, in combination, an annular base including first and second sections, said first and second sections each being substantially flat and having spaced substantially parallel opposite side surfaces, said first and second sections each being generally semiring shaped whereby said first and second sections each include opposite end portions, the opposite end portions of said first section defining a pair of radially disposed teeth within the confines of the inner and outer edges of the semiring shape of said first section and selectively received in a pair of complementary shaped recesses defined by the opposite end portions of said second section, the opposite end portions of said second section defining a pair of radially disposed teeth within the confines of the inner and outer edges of the semiring shape of said second section and selectively received in a pair of complementary shaped recesses defined by the opposite end portions of said first section, said teeth and recesses being selectively engaged and interlocking said first and second sections against movement with respect to each other in any radial direction, a plurality of friction facings secured to the opposite side surfaces of said first and second sections, said first and second sections also each including an integral radially inwardly projecting tang portion, and means disposed entirely between said opposite side surfaces of said first and second sections and selectively connecting the adjoining end portions of said first and second sections to each other to form a unitary structure.

4,512,451

SINGLE LEVER CONTROL ASSEMBLY TO PERMIT DISENGAGEMENT BETWEEN TWO FUNCTIONS

Jacob Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada V6M 2W2

Filed Jun. 21, 1982, Ser. No. 390,243

Int. Cl.³ B60K *41/02;* **G05G** *9/08*

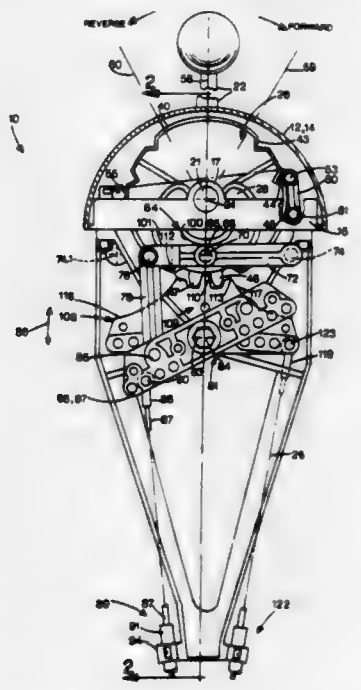
U.S. Cl. 192—0.096 **25 Claims**

1. A control lever assembly having: a body; a lever mounted for rotation about a lever axis relative to the body, and for axial movement along the lever axis relative to the body between engaged and disengaged positions; and first and second signal output means mounted for rotation relative to the body, the assembly being characterized by:

(a) interrupter driving means cooperating with the first signal output means and with the lever and being responsive to the rotation of the lever,

(b) interrupter driven means cooperating with the second signal output means and being engageable with the interrupter driving means when the lever is in the engaged position so that the driven means is responsive to at least a portion of the rotation of the lever,

(c) selector means to permit axial movement of the lever between the engaged and disengaged positions when the lever is in a particular position only, the selector means having a projection and a wall member, the projection being mounted for rotational movement with the interrupter driven means, the wall member being mounted for axial and rotational movement with the lever, the wall



member having a clearance opening of a size adapted to pass the projection when aligned therewith during the axial movement of the lever in the particular position, and to interfere with the projection when non-aligned, so that the axial movement permits disengagement between the driven means and the driving means, and when so disengaged to permit rotation of the lever and the interrupter driving means with no corresponding movement of the second signal output means.

4,512,452

SLIP CLUTCH

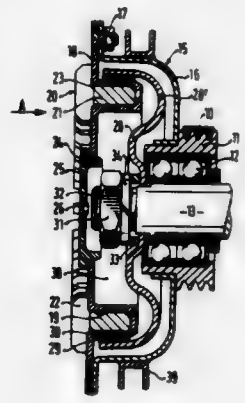
Rudolf Babitzka, Kirchberg; Gottlob Haag, Jettingen, and Ernst Linder, Mühlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,663

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029627

Int. Cl.³ F16D *43/18, 13/72*

U.S. Cl. 192—104 C **12 Claims**



1. A slip clutch for transmitting torque between a drive motor having an output member and a generator having an input member, comprising a transmitting element rotatable about an axis and arranged to transmit torque from the output

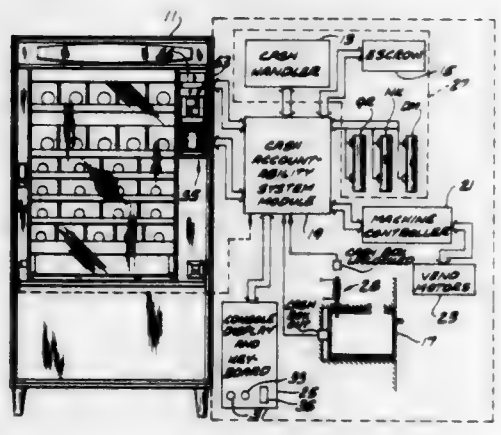
member of the drive motor to the input member of the generator with limitation of a rotational speed under the action of a centrifugal force acting upon said transmitting element, said transmitting element being connected with one of said members and including a spring element; a friction element provided on said spring element and arranged so that said spring element presses said friction element against the other of said members with a prestress; means forming a substantially closed fluid-tight chamber which is symmetrical relative to said axis of rotation and accommodates a fluid and said spring element and said friction element, said chamber being partially filled with oil; a ventilator, said members being first and second members, said first member having an annular groove and an outer exposed side, and said ventilator being arranged on said outer exposed side and connected with said first member for joint rotation therewith, said ventilator having a ring part and a plurality of vanes, said ring part being inserted into said annular groove and connected therein with said first member; and a housing which at least partially forms said transmitting element and has one housing part arranged to face toward said input member and another housing part arranged to face away from the latter, said housing parts together bounding said chamber, said annular groove for receiving said ring part of said ventilator being formed in said second housing part, said housing being provided with a ventilating opening which communicates said chamber with the exterior of said housing.

4,512,453

VENDOR ACCOUNTABILITY SYSTEM

James T. Schuller, St. Louis County; Paul K. Griner, St. Louis, and Nai H. Mak, Maryland Heights, all of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Sep. 24, 1982, Ser. No. 423,073
Int. Cl.³ G07F 9/08
U.S. Cl. 194—1 N **122 Claims**



1. An accountability system for a vendor having means for handling cash deposited, means for holding coins for delivery in change to a customer, and a cash box, said handling means being adapted to accept said coins and deliver them to the coin holding means if needed, otherwise to deliver them to the cash box, said system comprising:

a memory for storing data on the amount of cash which should be retained in the vendor out of cash deposited in the vendor, and also data on the amount of coin delivered to and delivered from the coin holding means; and

logic means for controlling input of data to and retrieval of data from the memory;

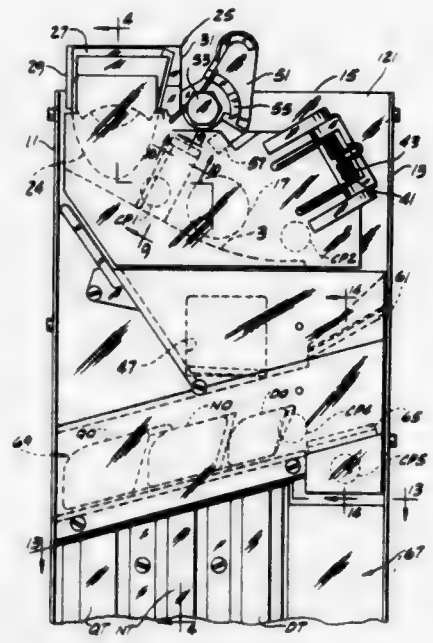
said logic means being operable to update in the memory said data for computation of the amount of cash which should be turned in by one who collects cash from the vendor.

4,512,454

COIN APPARATUS HAVING COIN ESCROW AND RETURN MEANS

James T. Schuller, St. Louis County; Barry L. Smith, Florissant, and Paul K. Griner, Maryland Heights, all of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Continuation of Ser. No. 316,078, Oct. 29, 1981, abandoned.
This application Jan. 10, 1984, Ser. No. 569,613
Int. Cl.³ G07F 5/16
U.S. Cl. 194—1 D **15 Claims**



1. Coin apparatus for use in a vendor and for handling coins deposited in the vendor and for making change, comprising:

a plurality of change tubes, one for each of a plurality of denominations of coins that may be deposited in the vendor, each of said tubes being adapted to hold a supply of coins of a respective denomination, and adapted to have coins drop into it for stocking it with coins;

each of said change tubes having associated with it means for sensing the stocking of the tube with coins up to a predetermined amount;

coin sorting means for sorting coins of said denominations and delivering to each change tube coins of the denomination for that tube;

means for holding coins in escrow for delivery either to a cash box or to a return system of the vendor;

an accept/return gate movable between a closed position for delivery of unacceptable items deposited in the vendor to the return system of the vendor and an open position for acceptance of a coin for delivery of the coin either to the coin sorting means or the escrow means,

a coin sorting/escrow gate above the escrow means and below the accept/return gate movable between a closed position for delivery of accepted coins to the coin sorting means and an open position for delivery of an accepted coin to the escrow means,

control means controlled by said sensing means for opening the accept/return gate with the coin-sorting/escrow gate closed for delivery of accepted coins of each denomination to the coin sorting means as long as the change tube for coins of that denomination needs coins to bring the supply therein up to the respective predetermined amount, and for opening the accept/return gate and the coin-sorting escrow gate for delivery of coins of each of said denominations to said escrow means when the respective change tube does not need coins;

means for actuating said escrow means to deliver any coins therein to said cash box upon operation of the vendor by a customer for a vend, and for actuating said escrow means to deliver any coins therein to said return system of the vendor upon operation by a customer of a coin return means of the vendor; and

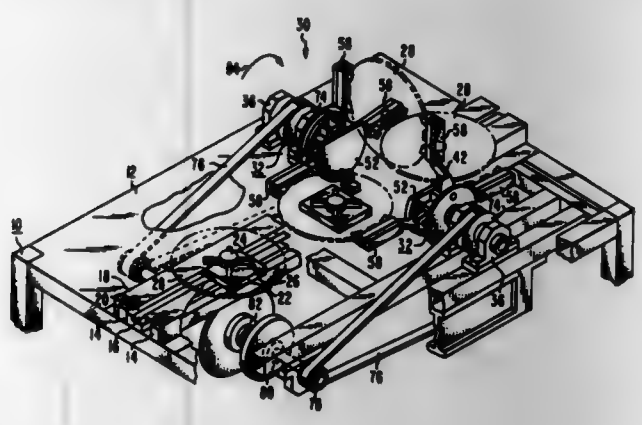
means operable on operation of said coin return means by a customer for delivering coins from the change tubes to said return system of the vendor in amount corresponding to that deposited by the customer in the vendor and delivered to the change tubes.

4,512,455

DISC TURNOVER DEVICE

Joseph H. Thorn, and John J. Prusak, both of Marion, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 3, 1983, Ser. No. 538,547
Int. Cl.[3] B65G *47/24*
U.S. Cl. 198—404 12 Claims



1. An apparatus for turning a disc over comprising
a conveyor for supporting a disc in a flat horizontal position and carrying said disc along a horizontal path,
a pair of spaced parallel arms at opposite sides of said conveyor with each arm being rotatable about a point adjacent one end thereof in a plane parallel to the path of movement of said conveyor,
a pickup head on the other end of each arm and slidable along the arm, and
means for moving said other ends of the arms toward each other to pick up a disc and away from each other to release the disc.

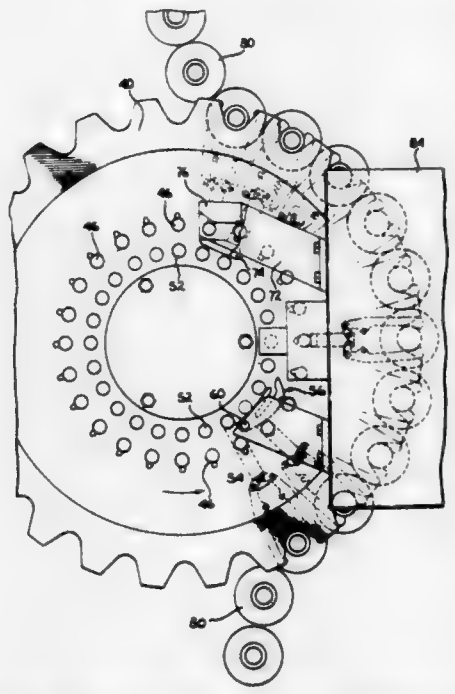
4,512,456

FORCE BALANCED ACTUATOR FOR MECHANICALLY ACTUATED CONTAINER GRIPPERS

John J. Peyton, Santa Barbara, Calif., assignor to Industrial Automation Corp., Goleta, Calif.

Filed Sep. 29, 1982, Ser. No. 428,145
Int. Cl.[3] B65G *47/86*
U.S. Cl. 198—479 10 Claims

6. A container-conveying apparatus, having a rotating starwheel assembly comprising a pair of spaced substantially circular rotatable disks, each having a plurality of recesses on the periphery thereof, said recesses in each of said disks being aligned whereby containers may be held in said recesses, comprising;
gripper assembly means having gripper means for gripping and releasing containers in response to the position of said first actuating means,
second actuating means fixedly mounted on said starwheel assembly radially inward from said first actuating means and corresponding with said first actuating means,
actuator means stationarily pivotedly supported adjacent said starwheel assembly for responding to engagement with said first actuating means of said gripper means by engaging said second actuating means such that an actuation force is provided by said second actuating means through said actuator means to said first actuating means



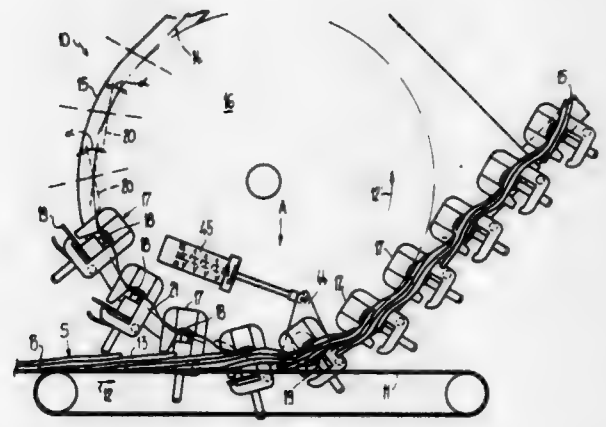
for causing said gripper means to grip containers as said disks rotate.

4,512,457

APPARATUS FOR TRANSPORTING CONTINUOUSLY ARRIVING FLAT PAPER PRODUCTS, ESPECIALLY A STREAM OF PRINTED PRODUCTS ARRIVING IN AN IMBRICATED FORMATION

Walter Reist, and Jürg Eberle, both of Hinwil, Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed May 23, 1983, Ser. No. 496,899
Claims priority, application Switzerland, Jun. 2, 1982, 3386/82
Int. Cl.[3] B65G *47/86*
U.S. Cl. 198—479 7 Claims



1. An apparatus for transporting continuously arriving substantially flat paper products, especially a stream of printed products arriving in an imbricated formation, comprising:
a guided revolvingly driven endless traction means defining a predetermined direction of transport;
controlled gripper units arranged at said traction means in spaced relationship from each other;
each of said gripper units possessing a substantially planar clamping surface;
each of said planar clamping surfaces extending laterally of said traction means and at essentially the same predetermined inclination relative to said predetermined direction of transport of the paper products; and
said gripper units serving to grip a lateral marginal edge of said paper products viewed in said predetermined direc-

tion of transport of the paper products and to thereby impart an undulatory configuration to the imbricated formation of said paper products.

4,512,458

BRIDGE SCRAPER FOR DIRECT MATERIAL FEEDING

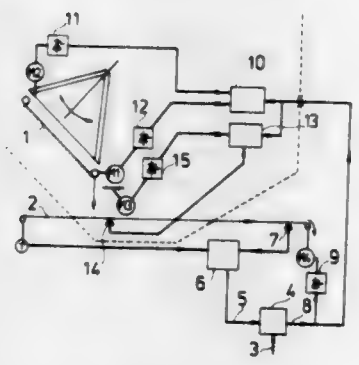
Torkil D. Jensen, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Filed Dec. 10, 1982, Ser. No. 448,427

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149650

Int. Cl.³ B65G *43/00*

U.S. Cl. 198—507 **2 Claims**



1. A bridge scraper for raking material from a storage heap, said bridge scraper comprising a raking device positioned at one end face of the heap, the raking device being mounted on a carriage on a bridge perpendicular to the center line of the storage heap and being moved into the storage heap and to and fro along the base line of the end face of the heap by means of a drive unit; a scraper chain extending parallel to the bridge for raking material onto a belt conveyor, the speed of the conveyor being coupled through control lines with that of the bridge drive unit, the scraper chain and the carriage; a first measuring device and a second measuring device, said first measuring device comprising a belt weigher located near the outlet end of the belt conveyor and adapted to control the speed of said belt conveyor so as to cause a substantially constant amount of material to be discharged from said outlet end per unit of time, said second measuring device comprising a measuring device located and adapted to measure the filling of the belt immediately after the point at which it receives the material from the scraper chain and being further adapted to control the relation between the speed of the bridge and the speed of the scraper chain, carriage and belt conveyor in such a way that the relative travelling speed of the bridge increases when the belt filling rate drops below a set value and decreases when the belt filling rate exceeds the set value.

4,512,459

GUIDE ASSEMBLY FOR A CURVED SECTION OF A SCRAPER-CHAIN CONVEYOR

Bodo Kerklies, Lunen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,494

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1981, 3123374

Int. Cl.³ B65G *19/00*

U.S. Cl. 198—729 **12 Claims**

1. A guide assembly for a curved section of a scraper-chain conveyor, the assembly comprising:

(a) a housing and two pulley wheels which are rotatably mounted within the housing,

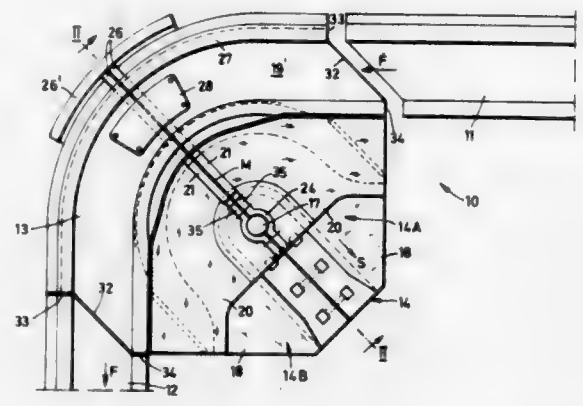
(b) the pulley wheels constituting means for guiding the scrapers of a scraper assembly around a curved section of a scraper-chain conveyor,

(c) each of the pulley wheels having an inner wheel part and a multi-part scraper-engaging rim detachably connected to said inner wheel part,

(d) the pulley wheels being independently rotatably mounted on an axle mounted within the housing,

(e) the housing being formed in two detachably-connected parts and including a base plate arranged beneath the pulley wheels, a cover plate arranged above the pulley wheels, and a panel arranged between the pulley wheels,

(f) the ends of the axle being supported by the base plate and the cover plate,



(g) the base plate, the cover plate and the panel each being formed in two parts, a common plane of separation separating the two parts of the base plate, the cover plate and the panel with said plane of separation passing through the axis of the axle,

(h) the upper end of the axle being held within the cover plate by an upper end fitting, and the lower end of the axle being held within the base plate by a lower end fitting,

(i) each of said fittings being constituted by a pair of semi-cylindrical shells.

4,512,460

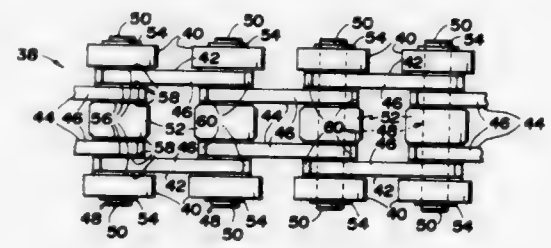
GLASS SHEET ROLLER CONVEYOR INCLUDING ANTIFRICTION DRIVE CHAIN

Ronald A. McMaster, Woodville, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Filed Mar. 30, 1983, Ser. No. 480,223

Int. Cl.³ B65G *13/07*

U.S. Cl. 198—790 **7 Claims**



1. In glass sheet processing equipment including a roller conveyor having elongated rolls extending transversely to the direction of conveyance, a continuous drive loop on which the rolls are supported for frictional driving, and a horizontally extending support surface on which the drive loop is supported and moved to drive the rolls, the continuous drive loop comprising: an antifriction drive chain including antifriction rollers each of which has an annular outer member supported for rolling movement on the support surface; each antifriction roller also including an annular inner member located within the outer member thereof and further including bearing elements that support the inner and outer members for rotation with respect to each other; the antifriction rollers being arranged in laterally aligned pairs spaced along the length of the drive chain; the drive chain including connecting pins each of which has opposite ends received by the inner members of an associated pair of the laterally aligned antifriction rollers; the drive chain including links extending between the connecting

pins and spaced upwardly from the associated support surface in a spaced relationship thereto; and each link having an upper surface that supports and frictionally drives the rolls as the antifriction rollers support the chain for movement on the associated support surface.

4,512,461

APPARATUS FOR PLANARIZING AND STORING HYDROPHILIC CONTACT LENS

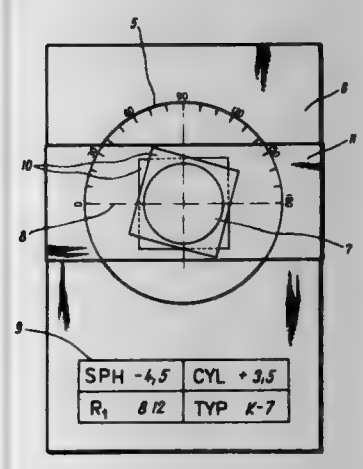
Otto Wichterle, Prague, Czechoslovakia, assignor to SPOFA, spojene podniky pro zdravotnickou vyrobu, Prague, Czechoslovakia

Division of Ser. No. 48,895, Jun. 15, 1979, Pat. No. 4,322,139. This application Dec. 11, 1981, Ser. No. 330,022

Claims priority, application Czechoslovakia, Jun. 26, 1978, 4178-78; Jun. 26, 1978, 4179-78; Dec. 4, 1978, 7974-78

Int. Cl.³ B65D *81/22;* A45C *11/00*

U.S. Cl. 206—5.1 **6 Claims**



1. Apparatus for converting a spherical hydrophilic toric contact lens swollen in a volatile swelling agent and having its cylindric axis indicated thereon, into a planarized xerogel and for thereafter storing and transporting said lens in the xerogel state comprising a rigid planar or moderately curved base for supporting said lens, said base being provided with an angle scale in the range of 0 degrees to 180 degrees, and being adapted to locate the contact lens above the center of the scale, the cylindric axis of the contact lens lying on the line connecting the angles 0 degrees or 180 degrees with the center of the angle scale and means for removably fixing said lens to said base, said means being permeable to said swelling agent and being capable of compressing said swollen lens to the surface of said base so that said lens assumes the planar or moderately curved shape of the base in the xerogel state.

4,512,462

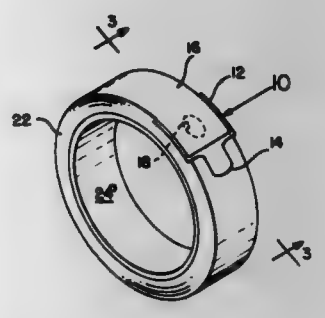
ADHESIVE TAPE TAB

Reuben H. Dills, P.O. Box 12451, Seattle, Wash. 98111

Filed Sep. 26, 1984, Ser. No. 654,960

Int. Cl.³ B65D *85/67*

U.S. Cl. 206—53 **13 Claims**



1. A reusable tab to mark the exposed end of a roll of tape comprising a sheet of nonporous moisture-resistant, adhesive-free material which is adherable to the exposed end of the tape on the adhesive side of the tape to mark the end of the tape when the tape is stored between uses, the tab being removable from the end of the tape and being reusable.

4,512,463

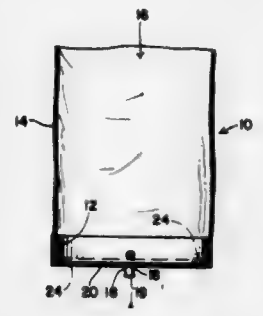
FREE-STANDING FLEXIBLE CONTAINER FOR FLUIDS

Randall W. Ward, 5333 Baltimore Dr. #109, La Mesa, Calif. 92041

Filed Feb. 2, 1984, Ser. No. 576,445

Int. Cl.³ B65D *77/04, 83/00;* B65B *39/00*

U.S. Cl. 206—216 **5 Claims**



1. A container comprising:

(a) an annulus portion including a band of material formed into a squat annuluar wall, said band of material being sufficiently rigid to allow said annular wall to be free-standing, said annulus portion having an inner surface and an outer surface;

(b) a base portion which is relatively more flexible than said band of material, said base portion closing the bottom of said annulus portion;

(c) a tubular sidewall portion which is also relatively more flexible than said band of material, said tubular sidewall portion being upwardly extensible from said annulus portion and having a sealable mouth such that said annulus portion, said base portion, and said tubular sidewall portion cooperate to form a fluid-tight container when said mouth is sealed, said base portion and said tubular sidewall portion being of unitary construction and of substantially uniform thickness, wherein said base portion is substantially planar and wherein said sidewall portion joins said base portion at substantially right angles relative thereto, where said annulus portion is attached to said sidewall portion proximate its juncture to said base portion such that only one of said inner surface and said outer surface is in contact with said sidewall portion; and

(d) a drain spout extending from and made contiguous with said annulus portion, said drain spout being operative to drain fluids contained within said container.

4,512,464

METHOD OF FOLDING T-SHIRTS AND FOLDED SHIRT ARRANGEMENT RESULTING THEREFROM

John D. Sylvester, Garden City, N.Y., assignor to Amscomatic, Inc., Long Island City, N.Y.

Filed Aug. 3, 1984, Ser. No. 637,646

Int. Cl.³ B65D *85/18*

U.S. Cl. 206—292 **12 Claims**

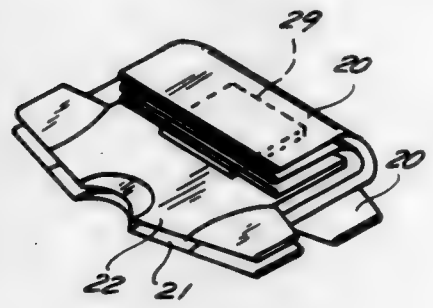
7. An arrangement of folded T-shirts comprising:

(a) at least two shirts each having a top part, a central part, a bottom part, and two sides,

(b) a first of the shirts being folded along two lines parallel to the shirt bottom so that its central part is between its top and bottom parts,

(c) each of the other shirts being folded along two lines parallel to the bottom of that shirt, the bottom and central part of each other shirt being between the bottom and central part of the first shirt,

(d) a stiffener board between the bottom and central part of the shirt farthest from the first shirt, and



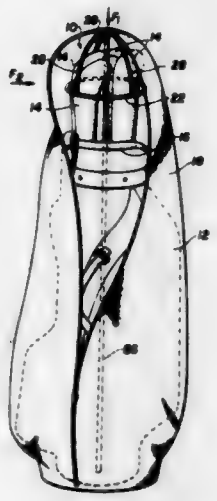
(e) the bottom parts and sides of all the shirts being folded between the top part of the first shirt and the top part of the shirt farthest from the first shirt.

4,512,465

GOLF BAG ACCESSORY

Howard L. Jobe, 6500 Capitol Dr., Greenbelt, Md. 20770

Filed Nov. 22, 1983, Ser. No. 554,287
Int. Cl.[3] A63B *55/00*
U.S. Cl. 206—315.4 12 Claims



1. A protective device utilized with means for carrying sports equipment, particularly golf clubs, and being operable to protect the golf clubs during travel and/or storage, comprising:

substantially rigid downwardly facing concave club head protecting means for surrounding and enveloping the heads of said clubs, and elongated support means integral with said club head protecting means;

said elongated support means further comprising a central rod member;

said club head protecting means further comprising a base member surrounding said rod member and a plurality of downwardly projecting and upwardly converging connecting members connecting one end of said rod member to said base member;

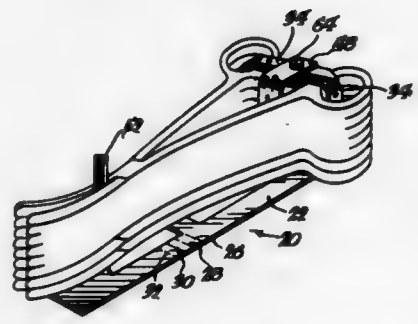
said rod member being insertable in said carrying means and having a predetermined length such that the overall length of the protective device is greater than the longest club carried, whereby damage occurring as a result of undesired externally applied longitudinal and lateral forces is prevented.

4,512,466

SURGICAL INSTRUMENT ORGANIZER

Theodore G. Delang, 3440 N. Lake Shore Dr., Apt. 11G, Chicago, Ill. 60657

Filed Jul. 5, 1984, Ser. No. 628,022
Int. Cl.[3] B65D *85/62*
U.S. Cl. 206—370 14 Claims



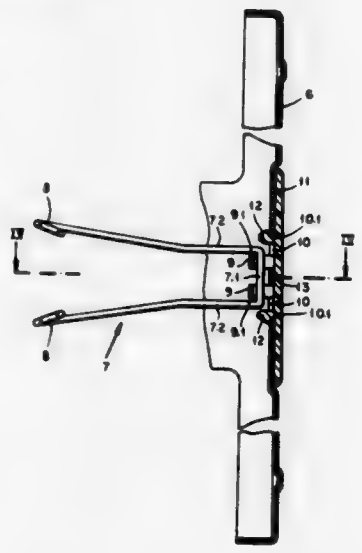
1. An organizer for instruments of the type having a pair of finger rings each connected by an associated shaft to an associated jaw through a hinged connection for closing and opening the jaws in response to respective movement of the finger rings toward and away from each other, said organizer comprising a base; a pair of elongate finger ring posts extending upwardly from opposite sides of said base toward one end thereof; an elongate jaw separator extending upwardly from said base toward an opposite end thereof from a position generally intermediate said base sides; and an elongate shaft divider extending upwardly from said base intermediate said finger ring posts and jaw separator from a position generally intermediate said base sides, said organizer accommodating placement of the instrument thereon, such that said finger ring posts extend upwardly through associated ones of the instrument finger rings, said jaw separator extends upwardly between open jaws of the instrument and said shaft divider extends upwardly between the instrument shafts, whereby said organizer supports the instrument thereon and prevents the instrument from going from an open to a closed position whereat the finger rings move together and the jaws close.

4,512,467

DRILL-BIT INDEX CASE

Georg Knoblauch, Giengen, Fed. Rep. of Germany, assignor to Georg Knoblauch GmbH, Giengen/Brenz, Fed. Rep. of Germany

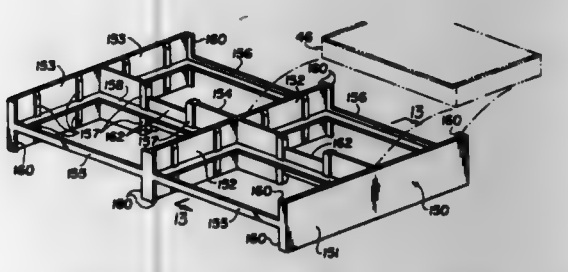
Filed Feb. 17, 1984, Ser. No. 581,082
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 8304781
Int. Cl.[3] B65D *85/24*
U.S. Cl. 206—379 8 Claims



1. A case for holding and displaying objects such as drill bits, the case comprising:

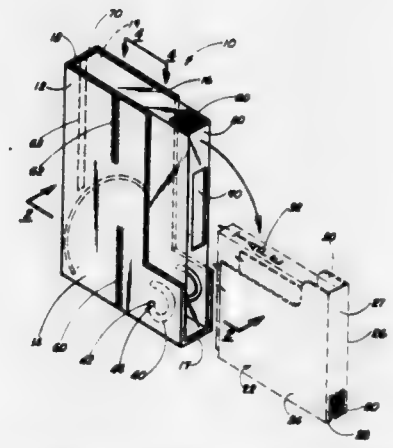
an elongated and upwardly open box;
an insert adapted to hold a plurality of the objects and pivotal in the box about an insert axis between a down position wholly contained therein and an up position projecting upward therefrom;
a U-shaped link having a pair of legs pivoted on the insert and a straight bight portion extending substantially parallel to the axis, interconnecting the legs, and of a predetermined bight length between the legs;
a lid pivotal on the box between a closed position engaging over and closing the box and an open position projecting upward therefrom, the lid being formed with
a pivot loop through which the bight portion passes and which has a pair of outer edges spaced axially apart substantially by the bight length, whereby the bight portion cannot move axially relative to the lid,
a window at the pivot link having a pair of outer edges spaced apart parallel to the axis by a distance greater than the bight length, and
a strut bridging the window parallel to and between the window edges, whereby the bight portion engages against the strut on closing of the lid; and
a cover plate having respective snap tabs spaced apart axially by a distance greater than the bight length and engaged snugly against the window edges.

4,512,468
CASSETTE STORAGE DEVICE
David M. Stravitz, New York, N.Y., assignor to Lebo/Peerless Corp., Bloomfield, N.J.
Filed Nov. 26, 1982, Ser. No. 444,795
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **14 Claims**



1. A cassette case storage device for storing a cassette (46) of type including a base portion (38) with an upstanding longitudinally extending wall (38*a*) and first and second upstanding transversely extending walls (38*b* and 38*c*), mutually longitudinally spaced and having first ends joined to the base portion longitudinally extending wall (38*a*) and second ends (38*d* and 38*e*), defining an upstanding longitudinally extending opening therebetween for receipt of a cover (39) for said cassette case, said transversely extending walls (38*b* and 38*c*) including pivots (38*f*) for supporting said cover for pivotal movement between open and closed positions, said storage device defining a compartment for receiving said cassette case and comprising:
(a) storage device first and second upstanding mutually longitudinally spaced and transversely extending walls (151, 152), bounding said compartment for respective engagement with said cassette case first and second transversely extending walls (38*b* and 38*c*) for restraining movement of a received such cassette case in longitudinal direction in said storage device;
(b) a first upstanding longitudinally extending wall (162) in said storage device bounding said compartment and extending between said storage device first and second transversely extending walls (151, 152) for engagement with said cassette case longitudinally extending wall (38*a*); and
(c) a projection (160) in said storage device extending longitudinally from said storage device first transversely extending wall (151) for engagement with said second end (38*d*) of said cassette case first transversely extending wall (38*b*) for restraining a received such cassette case from movement in the transverse direction in said storage device, while not interfering with such pivotal movement of said cassette case cover.

4,512,469
STORAGE RECEPTACLE FOR ELECTRONIC STORAGE MEDIA
Chester R. West, 1604 Sunburst La., Pineville, La. 71360
Filed Jun. 6, 1983, Ser. No. 501,259
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **3 Claims**

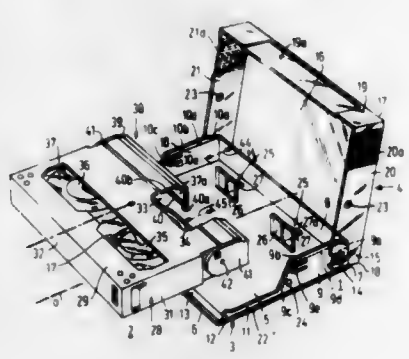


1. A media storage container, which comprises:
a. a primary container having a pair of substantially parallel side walls, a back wall and an open-ended front portion for defining a container space therein;
b. a secondary container means pivotally moveable from an open to a closed position within said space of said primary container, said secondary container having substantially side parallel walls and an open-ended back wall for defining a media storage tape container space therein;
c. double track means, allowing said pivotal movement of said secondary container within said space of said primary container, said double track means further comprising;
i. an arcuate slot cut into the wall of said primary container having its lower portion sloped toward said open-ended front portion of said primary container;
ii. a peg member contained on the wall of said secondary container, said peg member matingly slideable within said slot, as said secondary container changes positions;
iii. a second eccentric semi-circular track cut into the wall of said secondary container and having its open end facing said arcuate slot when said secondary container is in said closed position;
iv. a second peg member positioned on the wall of said primary container accommodated in said second eccentric track as said secondary container moves from opened to closed position;
v. said first peg matingly engaged in said first slot and said second peg matingly engaged in said second eccentric track, together providing said means to move said secondary container from opened to closed positions within said primary container; and
d. means for locking said container in a closed position comprising the rotatable positioning of the open end of said arcuate track on said second peg, effected by the slideable engagement of said first peg member to the lower portion of said arcuate slot.

4,512,470
STORAGE CASE FOR A MAGNETIC-TAPE CASSETTE

Joannes H. F. C. Sieben, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 19, 1984, Ser. No. 571,979
Claims priority, application Netherlands, Sep. 5, 1983, 8303077
Int. Cl.[3] B65D *85/67, 85/672*
U.S. Cl. 206—387
10 Claims



1. A storage case, for a magnetic-tape cassette comprising
a cassette housing having two parallel substantially rectangular major walls, two side walls, a rear wall, a front side with a front opening which continues in at least one major wall, and a partition which separates the front opening from the interior of the housing,
two reel hubs juxtaposed in the housing between the major walls and mounted for rotation about two axes of rotation which extend perpendicularly to the major walls,
a part of a length of magnetic tape wound around said reel hubs and another part of said length of tape stretched across the front opening, and
a front cover which covers the stretched part of the magnetic tape at least at the front side, bounds the front opening at the front side, and is pivotally connected to the housing,
which storage case comprises:
(a) a base section having a rectangular bottom provided with a front edge and a rear edge, an upright rear wall which adjoins the rear edge, and a pair of spaced and parallel upright side walls which extend from the rear wall towards the front edge,
(b) at least one upright positioning element arranged on the bottom, for positioning a magnetic-tape cassette whose front cover faces the rear wall of the base section when the cassette is situated in the case, and
(c) a cover section having a rectangular upper wall provided with a front edge and a rear edge, which rear edge at least substantially adjoins the rear wall of the base section, in the closed position of the cover section; a front wall which adjoins the front edge of the upper wall and, in the closed position of the cover section, at least substantially adjoins the front edge of the bottom of the base section; and a pair of parallel spaced side walls, which extend from the front wall towards the rear edge, the side walls of the cover section being pivotally connected to the side walls of the base section to enable the cover section to be pivoted relative to the base section between an open and a closed position,
characterized in that the positioning element occupies such a location on the bottom of the base section relative to the rear wall that the positioning element extends into the front opening of a magnetic-tape cassette contained in the case, and
the distance at the base, between that side of the positioning element which is remote from the rear wall and the inner side of the rear wall, is greater than the distance between that wall portion of the cassette partition which faces the positioning element and the front of the front cover, in such a manner that a movement of the cassette inside the case towards the rear wall is limited by abutment of the partition with the positioning element, thereby ensuring that the front cover remains clear of the rear wall.

4,512,471
STORAGE UNIT

Robert L. Kaster, Plymouth, and Perry M. Domaas, Brooklyn Center, both of Minn., assignors to Angicor Limited, Minneapolis, Minn.

Filed Apr. 6, 1984, Ser. No. 597,796
Int. Cl.[3] B65D *85/02*
U.S. Cl. 206—438
10 Claims

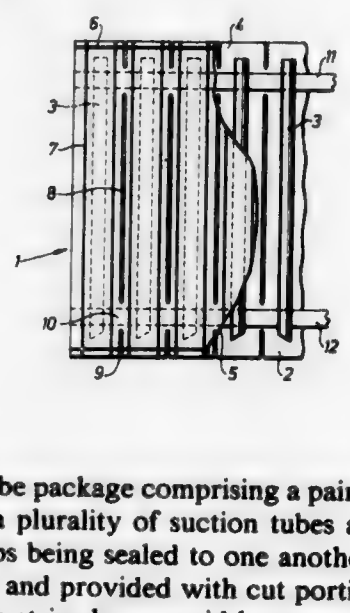


1. A storage unit for use in storing a prosthetic heart valve and a plurality of heart valve opening measurement gauges prior to use thereof, comprising:
(a) first and second container units:
(b) connecting means for selectively connecting and disconnecting said first and second container units to and from one another;
(c) first opening means for selectively gaining access to said first container unit but not to said second container unit;
(d) second opening means for selectively gaining access to said second container unit but not to said first container unit; and
(e) object indicia visibly disposed on either of said first and second container units to identify the size and type of said prosthetic heart valve stored within said storage unit.

4,512,472
SUCTION TUBE PACKAGE

Erik Järund, Fjällbacka, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Oct. 17, 1983, Ser. No. 542,712
Claims priority, application Sweden, Oct. 21, 1982, 8205977
Int. Cl.[3] B65D *77/28, 85/08*
U.S. Cl. 206—443
6 Claims



1. A suction tube package comprising a pair of flexible strips between which a plurality of suction tubes are placed transversely, said strips being sealed to one another on all sides of the suction tubes and provided with cut portions between the seals, wherein the strips have a width greater than a length of the suction tubes and edges of the strips protrude beyond the length of the tubes; said seals comprising longitudinal seals

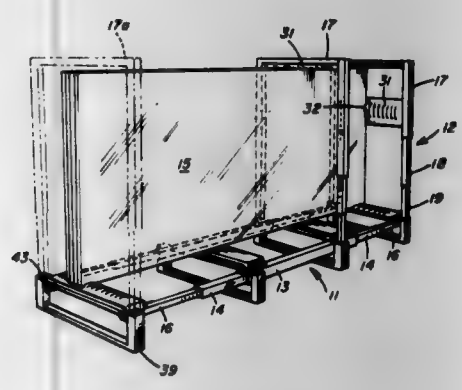
which seal longitudinal edge zones of said strips and transverse seals extending along the width of the strips on either side of each Suction tube; said longitudinal and said transverse seals defining closed pockets for each suction tube; said cuts provided parallel to said transverse seals and said closed pockets; a plurality of edge cuts provided in said edge zones transverse to said longitudinal seals; two parallel tapes of a material sealed between the strips extending in a longitudinal direction of the strips at some distance from one another parallel with the longitudinal edges; said tapes extending longitudinally between said cut portions and said edge cuts so as to provide uncut length of said two parallel tapes; said two parallel tapes sealed to said traverse seals so as to prevent tensile stresses from deforming said cut portions and said edge cuts.

4,512,473

ADJUSTABLE SHIPPING CONTAINER FOR FRANGIBLE SHEET-LIKE UNITS

Ronald J. Thomaswick, Kittanning, and James R. Rowley, Freeport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 446,111, Dec. 2, 1982, abandoned. This application Apr. 11, 1984, Ser. No. 599,042
Int. Cl.³ B65D *85/48*
U.S. Cl. 206—454 **5 Claims**



1. An adjustable shipping container for frangible sheets, comprising:

a base, said base having adjustable rigid frame means for altering the length of said base;

a first rigid sheet supporting means removably attached to said base, said first supporting means adjustable for altering the height of said first supporting means relative to said base;

a second rigid sheet supporting means removably attached to said base in spaced relation to said first supporting means, said second supporting means adjustable for altering the height of said second supporting means relative to said base, said first and second supporting means attached to said base to provide spaced enclosures for receiving the sheets and for maintaining the sheets in a substantially vertical position on the base;

sheet edge contacting means attached to each of said first and second supporting means, for maintaining said sheets in spaced relationship to one another;

banding means engaging the base and having its course over said first and second supporting means to urge said first and second supporting means toward the sheets and said base to secure the sheets on the container;

load-bearing loops attached to said banding means;

receiving means attached to said base between said first and second supporting means for receiving and third sheet supporting means to maintain the sheets on edge during loading or unloading the sheets on or from the container; and

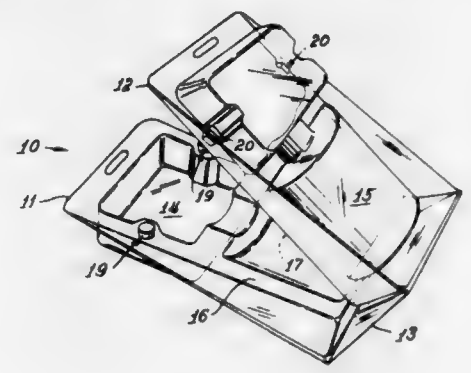
load-bearing caster wheels removably attached to said base.

4,512,474

LOCKING MEANS FOR DISPLAY PACKAGE

LeRoy A. Harding, Glen Ellyn, Ill., assignor to Plastoflim Industries, Inc., Wheaton, Ill.

Filed Dec. 8, 1983, Ser. No. 559,417
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—461 **12 Claims**



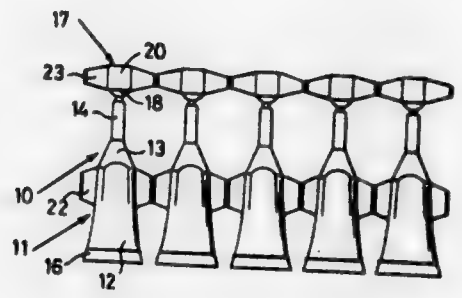
1. An improvement for plastic packages of the vacuum-formed type having a first package section closable with a second package section and having means for fastening the sections in a closed position, the improvement comprises locking means having at least one set of resiliently engageable male and female portions respectively integrally formed with said package sections, said male portion having a generally cylindrical side wall, said female portion having a side wall which is polygonal in cross section, the side walls of both said portions having non-positive draft, said male and female portions including engagement means adapted to resiliently contact each other during engagement at spaced-apart points.

4,512,475

SINGLE OR MULTIPLE DOSE CONTAINER-CLOSURE ASSEMBLIES

Alberto Federighi, Casella Postale Via Carmignani 37, 56100 Pisa, Italy

Filed Nov. 4, 1983, Ser. No. 548,613
Int. Cl.³ B65D *1/08, 17/24;* B67D *5/56;* B65D *85/62*
U.S. Cl. 206—484 **5 Claims**



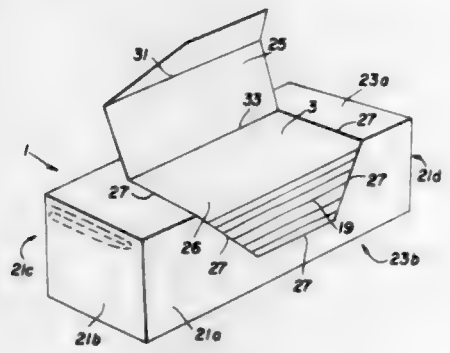
1. A series of injection molded container-closure assemblies, for liquid products characterized by a container consisting of a tubular hollow body portion having a lower side opening which can be sealed by welding and an upper neck closed at the upper side by a stalk and a stopper integrally connected to the discharge end of the container by a stalk provided with means to close the neck of the container after the opening by means of fracturing the stalk, the lateral sidewalls of the container body portion and stopper of each assembly in the series being joined by separate connecting fins, said fins of adjacent assemblies being connected along a fracturable scoreline to facilitate separation of each container-closure of the series.

4,512,476

PLASTIC BAG DISPENSER

F. John Herrington, Jr., Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,725
Int. Cl.[3] B65D *83/00*; B65H *1/00*
U.S. Cl. 206—554 3 Claims



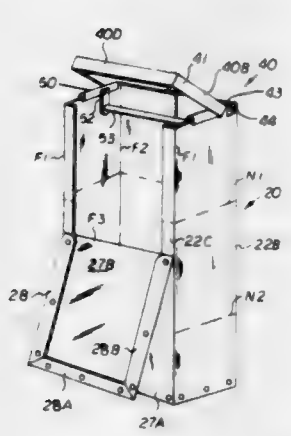
1. A plastic bag dispenser comprising a rectangular shaped box-like housing having four sides and a top and bottom and containing a plurality of stacked and folded plastic bags, each of said bags being individually folded within said housing and not interlocked with another bag, said dispenser including a rupturable line extending along said top and an adjacent side edge which, when ruptured, provides an opening in said housing at a corner and extending along said top and adjacent side edge, exposing said bags for removal from said dispenser, said bags being folded into thirds and a fold line of said bags being exposed by said opening.

4,512,477

READILY ERECTABLE WARDROBE CABINET AND A MODE OF PACKAGING THE SAME

Mark S. Densen, 18 Blackburn Place, Summit, N.J. 07901

Filed Apr. 8, 1983, Ser. No. 483,300
Int. Cl.[3] B65D *85/18*
U.S. Cl. 206—577 6 Claims



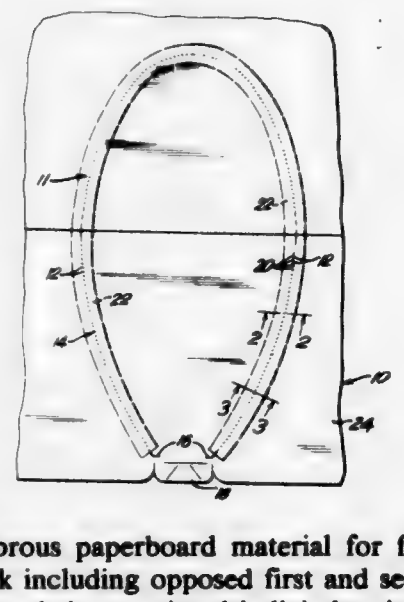
1. A knock-down wardrobe cabinet comprising
a pair of substantially identical blanks of sheet material having transversely extending foldlines to define in the folded position a half back panel, an adjacent side panel, and a front connected flange,
a blank formed of readily foldable material to define a bottom panel having hingedly connected thereto circumscribing side, front and back flanges disposed normal to said bottom panel,
a blank of readily foldable material to define a front panel adapted to be connected to said front flanges,
said front panel having a transversely extending foldline intermediate the top and bottom thereof about which said front panel can be folded between an open and closed position,
and a blank of foldable sheet material defining a top panel, said top panel having a transversely extending foldline about which said top panel is hingedly folded between an open and closed position,
and said top panel having a depending front flange connected thereto whereby said top panel front flange in the closed position of said top panel overlie the upper edge of the front panel in the closed position thereof to effect the closure of said wardrobe,
and including a hanger rod, and support means for detachably supporting said hanger rod between the side panels, said support means including a reversely bent rod support fitted on the upper edge of said respective side panel, a hanger strap, and means for connecting said rod support and hanger strap to the respective corresponding side panel, and said hanger rod being supported on and between said hanger straps.

4,512,478

PAPERBOARD CARTON WITH IMPROVED PERFORATED OPENING AND METHOD OF MAKING SAME

Ralph J. Korte, Darien, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 30, 1982, Ser. No. 429,802
Int. Cl.[3] B65D *5/72*
U.S. Cl. 206—611 10 Claims



1. A blank of fibrous paperboard material for forming a container, said blank including opposed first and second surfaces, the first surface being a printed indicia bearing surface for defining the outside of said container, the second surface for defining the opposed inside of said container, said blank including an opening member defined by an array of spaced die-cut perforations, said blank including a coating of plastically deformable material disposed on and partially penetrating into the second surface of said blank, said coating defining a continuous strip extending along and to each side of said array of perforations, each said die cut perforation extending entirely through said blank and through said coating, whereby when said blank is erected to form a container and when a force is exerted on said opening member to remove said opening member from said container, said coating being of a plastically deformable and readily rupturable material inhibits uneven tearing of the opening member and said fibrous paperboard material and further inhibits disengagement of slivers of fibrous paperboard material therefrom.

7. A method for producing a paperboard container having an improved removable opening member, said method comprising the steps of:
providing a planar sheet of fibrous paperboard material;
coating one surface of said planar sheet with a continuous strip of flowable material which when dried is plastically deformable and readily rupturable, said strip being coated conforming generally to the size, configuration and location of the opening member;
allowing said flowable material to partially penetrate said

planar sheet of fibrous paperboard material and dry thereon to define a coating of plastically deformable material;

die-cutting an array of perforations through said planar sheet of fibrous paperboard material and through said strip of coating to define said opening member; and

forming said container from said planar sheet of fibrous paperboard material.

4,512,479

CONTAINER WITH EASY OPENING CLOSURE

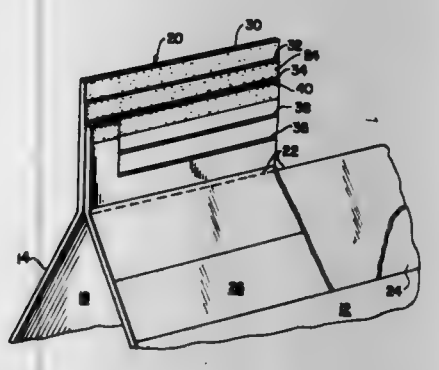
Paul O. Hain, Hamilton, and J. George Lepisto, Middletown, both of Ohio, assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 419,736, Sep. 20, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 639,183

Int. Cl.³ B65D *33/18*

U.S. Cl. 206—632

4 Claims



1. In a container having a body portion, an opening in said body portion providing access to the container interior, and a fold-over flap for extending over and closing said opening by being adhered to said body portion, the improvement comprising:

seal means including:

a layer of adhesive extending along the entire length of said flap, and

an abhesive coating of material which will reduce, but not eliminate, the adhesive bonding strength of said adhesive on at least a portion of the body portion of said container which is overlapped by the flap,

whereby said flap can be easily separated from said body portion, while effectively sealing the container along the entire width of said flap prior to opening,

said abhesive coating being selected from the group consisting of kaolin clay and pearl starch.

4,512,480

ARTICLE HOLDING DEVICE

Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.

Filed Aug. 11, 1983, Ser. No. 522,406

Int. Cl.³ B42F *17/00*

U.S. Cl. 211—11

30 Claims

1. A device which comprises:

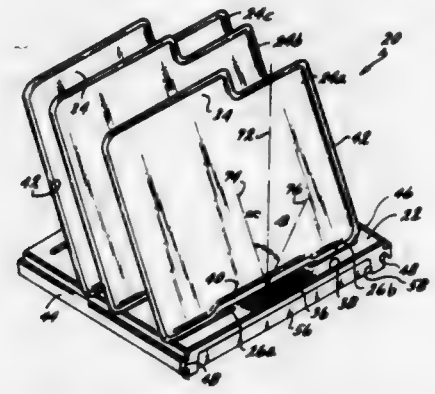
a base module;

said base module including a support surface, said support surface having a top side and an under side;

said support surface including at least one elongated opening extending through said support surface between said top side and said under side;

at least one tilt plate, said tilt plate having peripheral edges, one of said edges including at least one tab means located thereon, said tab means sized and shaped so as to be positionable in said opening with at least a portion of said tab means extending beyond the underside of said support surface, said tab means movable within said opening along the elongated dimension of said opening in response to movement of said tilt plate along said elongated dimension and when said tab is so positioned in said opening at least a portion of said one edge of said tilt plate being located against said support surface so as to support said tilt plate on said support surface;

at least one stop means located on said under side of said support surface in association with said opening, said portion of said tab means which extends beyond said under side of said surface abutting against said stop means when said tilt plate is oriented at an acute angle to a line which is perpendicular to said support surface, said abutting of said tab means and said stop means maintaining said tilt plate from tilting beyond said acute angle while allowing said tilt plate to freely move between said acute angle and a position wherein said tilt plate is perpendicular to the support surface;



at least one lock means located on said underside of said support surface in association with said opening, said lock means for engaging with and locking said tab means, said tab means moving between an unlocked position and a locked position with respect to said lock means as said tab means moves back and forth within said elongated opening in response to movement of said tilt plate along the elongated dimension of said opening, said lock means locking said tab means when said tab means is in said locked position so as to inhibit movement of said tilt plate between said perpendicular position and said acute angle and when said tab means is in said unlocked position said tilt plate freely movable between said perpendicular position and said acute angle.

4,512,481

MERCHANDISE DISPLAY HOOK

David R. Thalenfeld, Beachhurst, N.Y., assignor to Trion Industries, Inc., Wilkes-Barre, Pa.

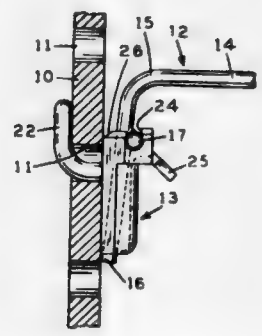
Division of Ser. No. 303,419, Sep. 18, 1981, Pat. No. 4,436,209, which is a continuation-in-part of Ser. No. 151,357, May 19, 1980, Pat. No. 4,351,440, which is a continuation-in-part of Ser. No. 918,483, Jun. 23, 1978, abandoned. This application Sep. 19, 1983, Ser. No. 533,342

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—57.1

4 Claims



1. In a two-part display hook assembly or the like of the type adapted for mounting on a display panel provided with mounting apertures

(a) a merchandise support element or the like provided with a generally vertically extending stabilizing portion,
(b) said stabilizing portion being disposed, when said assembly is installed on a display panel, in confronting and contacting relation to said panel,
(c) horizontal hinge bar means secured to said stabilizing portion between the upper and lower extremities thereof and defining a hinge axis,
(d) a base member having rearwardly and upwardly projecting L-shaped mounting lugs for mounting said base member to an apertured display panel and having hinge bar receiving recess means formed therein,
(e) said hinge bar means being received in said recess means to provide for pivoting movement of said base member relative to said support element about said hinge axis,
(f) said recess means being so located with respect to the bottoms of said mounting lugs as to locate the hinge axis of said hinge bar means at a level above the tops of the panel apertures in which said mounting lugs are received, when said display hook assembly is mounted on an apertured display panel,
(g) said stabilizing portion including a portion extending upward above said hinge bar means in close proximity to the front of said panel.

4,512,482

MULTIPLE OFFSET CRANE BOOM EXTENSION

William R. Mentzer, Shady Grove, Pa., assignor to Kidde, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 371,133, Apr. 23, 1982,. This application Feb. 15, 1983, Ser. No. 466,625
Int. Cl.³ B66C *23/62*
U.S. Cl. 212—188 **4 Claims**



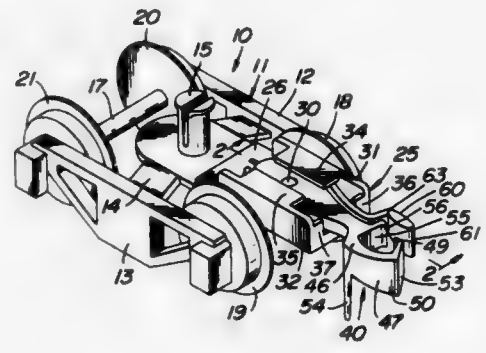
1. In a crane boom having a nose assembly and a jib having its base pivotally supported on said nose assembly for swinging movement to multiple offset use positions relative to the axis of said boom, the improvement comprising, a single fixed length of cable for supporting said jib in said selected offset use positions, said cable being reversely bent on itself to form a loop intermediate the ends thereof, the ends of said cable being attached to the nose assembly in spaced relationship to the pivot axis of said jib, a guide element, said cable loop engaging said guide element, mounting means secured to said jib near the forward end thereof, means adjustably connecting said guide element to said mounting means, whereby the guide element can be adjusted relative to the mounting means, while the end of the jib is supported in proximity to the ground, to thereby vary the distance between the cable loop and ends thereof while the cable is slack, thereby adjusting the effective length of the cable loop, whereby the cable loop becomes taut when the crane boom is lifted to thereby support the jib in a selected angular offset position; said mounting means being at a forwardly convergent angle to the axis of the jib and defining a plane in which the cable loop lies when taut and defining an angle of convergence of the cable loop with the axis of the jib which is constant in all offset positions of the jib, whereby crimping of the cable is prevented.

4,512,483

MODEL TRAIN COUPLER

David W. Crossley, Maple Shade, N.J., and Peter Van Dore, Elkins Park, Pa., assignors to Mantua Metal Products Co., Inc., Woodbury Heights, N.J.

Filed May 20, 1983, Ser. No. 496,613
Int. Cl.³ A63H *19/18*
U.S. Cl. 213—75 TC **9 Claims**



1. A model train coupler for a truck including an outwardly opening pocket and a vertically retractile upright pin in said pocket, said coupler comprising an elongate stem having one end insertable into said pocket and having a receiver for rotatably receiving said pin to mount said stem for swinging movement about the axis of said pin, a hook extending outwardly from the other end of said stem away from said pocket, said hook facing inwardly toward said stem and having a lateral opening toward one side, an undercut protrusion on the end of said hook extending inwardly into said opening, an actuator depending from said hook on the other side from said opening, and a guide on said one side of said hook extending partially across said opening and resiliently mounted on said stem for yieldable movement away from said opening, said guide having a laterally inner operating surface configured for engagement with a hook of a like coupler to interengage the hooks upon movement toward each other with the hook protrusions in interfering engagement to resist lateral separation of the coupled hooks when the cars of a train are extended apart, and said actuator and the actuator of a like coupler being engageable with a track cam when the train is decelerated in the forward direction or being pushed in reverse to compress the cars of the train to disengage the protrusions and spread the interengaging hooks laterally apart from each other against the yieldability of said guides for uncoupling the couplers, said guide being entirely clear on its underside to remain spaced from the track cam at all times.

4,512,484

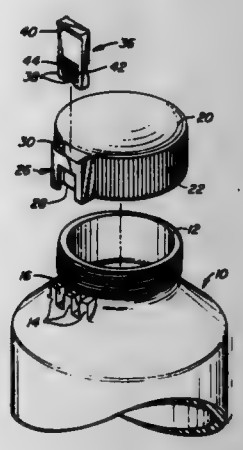
LOCKING SCREW CAP

Bob Mar, 1025 Rosemarie La., Apt. D-8, Stockton, Calif. 95207

Filed Mar. 3, 1982, Ser. No. 354,263
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—221 **8 Claims**

1. A system for sealing containers, said system comprising:
a container having a threaded opening and at least one lug formed adjacent said opening;
a screw cap capable of threadably engaging the threaded opening to seal the container;
a bracket formed at the periphery of the cap; and

a pin slidably received in the bracket and having means at one end for engaging the lug, so that in an extended position the pin engages the lug to prevent rotation of the cap and in a retracted position the cap is free to rotate.

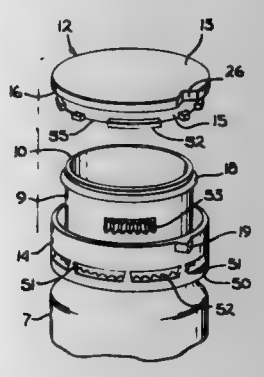


4,512,485

TAMPER RESISTANT AND TAMPER EVIDENT CLOSURES

Albert J. Agbay, Worcester, Mass., and Ralph H. Thomas, Sr., Clark, N.J., assignors to Robert Linkletter Associates, Inc., Westboro, Mass.

Filed Mar. 29, 1984, Ser. No. 594,723
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—225 20 Claims



1. A safety closure for a container having a rim defining a mouth, a neck located below said rim, and a peripheral lip around said rim, said closure comprising:

a snap cap having a top overlying said mouth and said rim and having a depending annular flange projecting below said top, said flange having an inwardly directed circumferential bead engaged below said lip, and a first outwardly directed circumferential bead located below said top and cooperating therewith to define a circumferential locking groove extending around the outer side of said flange;

a rotary safety ring having an annular sidewall surrounding said flange and overlying said locking groove and said first outwardly directed circumferential bead, said annular sidewall being closely spaced to said locking groove and said first outwardly directed circumferential bead so that said inwardly directed circumferential bead is held in engagement with said lip and prevents removal of said cap;

a plurality of angularly spaced fingers on the inner side of said sidewall projecting into said locking groove and overlying the bottom wall of said locking groove to prevent downward movement of said safety ring along said cap, said fingers being inclined inwardly and downwardly into said locking groove and having free inner ends positioned to be wedged against the bottom of the locking groove to prevent free flexing of the fingers as the safety ring is pulled downwardly relative to the cap, thereby normally preventing downward movement of said safety ring out of overlying relation with said locking groove;

a plurality of longitudinally extending release grooves in said first outwardly directed circumferential bead, spaced and sized to permit movement of said fingers through said first outwardly directed circumferential bead in one angular position of said safety ring about said cap, and thus allowing downward movement of said safety ring away from said cap for the removal of said cap from the container in said one angular position;

a locking member located below said rotary safety ring and having a first engaging means;

a second engaging means located on said neck and engaging said first engaging means so that said locking member cannot be rotated relative to said container;

a connection between said safety ring and said locking member preventing said safety ring from rotating,

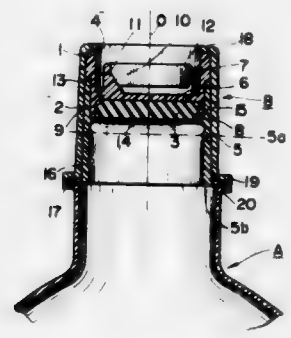
whereby, when said rotary safety ring is locked and out of alignment with said snap cap, said closure cannot be opened without breaking said connection.

4,512,486

STOPPER ASSEMBLY FOR MEDICAL LIQUID CONTAINER AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Hiroshi Kobayashi, Abiko, and Michio Kousaka, Tokyo, both of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 428,426
Claims priority, application Japan, Nov. 16, 1981, 56-183382
Int. Cl.[3] B65D *51/20, 41/50, 47/36*
U.S. Cl. 215—249 3 Claims



1. A stopper assembly for a medical liquid container, comprising an inner cylindrical stopper member formed of a plastic material, a rubber plug member hermetically contained in a chamber formed within said inner stopper member by first and second partition walls, said second partition wall being thinner than said first partition wall and sealing said rubber plug member from contact with a liquid in the container, said first partition wall being provided with an annular score, said second partition wall being formed at a position spaced from a base portion of the stopper assembly a distance sufficient enough to reduce heat transfer thereto from the base portion upon heat sealing thereof, an outer cylindrical stopper member formed of a plastic material and hermetically welded around and surrounding said inner stopper member, a pulling member formed in said first partition wall at a region enclosed by said annular score and being disposed and enclosed in the inner cylindrical stopper member; said outer stopper member having an inner flange formed at the top end thereof and an outer flange formed at the bottom end thereof, said inner flange covering the top end of said inner stopper member, said outer flange being welded to an outer flange formed at the bottom end of said inner stopper member, both of said outer flanges being hermetically welded to a top end of the mouth of said container.

4,512,487

BOTTLE STOPPER

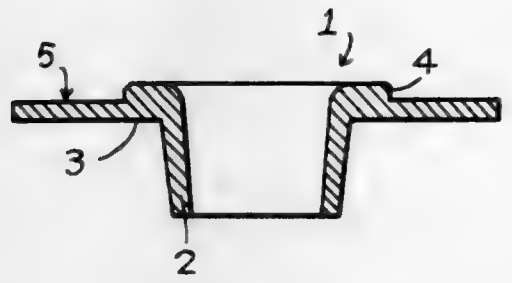
Jacques Augros, Villiers le Bel, France, assignor to Arts Et Techniques Nouvelles, Paris, France

Continuation of Ser. No. 440,178, Nov. 8, 1982, abandoned. This application Aug. 16, 1984, Ser. No. 641,434

Claims priority, application France, Nov. 10, 1981, 81 21099

Int. Cl.³ B65D *41/18*

U.S. Cl. 215—274 **12 Claims**



1. A neck adapter for a bottle with a neck formed with a pouring rim, which comprises:

a sleeve-holding plate having a downwardly depending internal stopper-receiving sleeve defining an internal opened channel providing means for receiving a stopper and encircled at an upper part by an external peripheral flange, said sleeve having an open top and open bottom to provide a through passageway, said sleeve-holding plate being formed of a flexible material, said sleeve-holding plate designed to rest in a tight manner on said pouring rim of said bottle, and

a cap formed with an external skirt provided for fastening said sleeve-holding plate and said cap to said bottle, said cap comprising an inner peripheral rim defining a central orifice which covers at least a part of said external peripheral flange of said sleeve-holding plate, said cap being formed of a relative rigid material, said sleeve-holding plate and said cap joined together to operate as an integrated stopper device for receiving a stopper in said internal opened channel of said stopper-receiving sleeve of said sleeve holding plate.

4,512,488

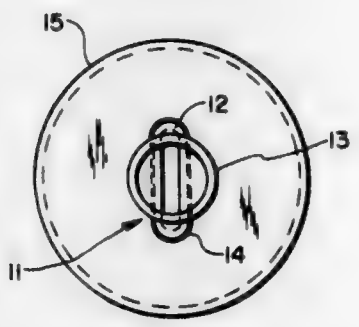
SEALING TUBULATION AND METHOD

Tyrone D. Schwenk, Fallston, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 382,505, May 27, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,451

Int. Cl.³ H01J *9/26, 19/54;* H01K *3/12, 1/36*

U.S. Cl. 220—2.2 **8 Claims**



1. An enclosure for sealing components comprising:

an airtight envelope having an exhaust opening in one wall; and

separate airtight tubulation means including a bore having one end sealed to the perimeter of said opening to form a passage, said opening having two opposing curved sections joined by two closely spaced sides wherein the width is narrower in one dimension than the other,

said tubulation means having a like narrower width cross-section in one dimension corresponding to said opening with two opposing curved sections joined by two closely spaced sides at said one end and a round cross-section at the other end, the overall cross-sectional area of said tubulation means bore being substantially unchanged from said one end to said other end, said tubulation having an integral structure of a uniform material throughout and being adapted to be pinched off across said narrower width adjacent said one end and envelope to create a vacuum seal for said enclosure, said opening having a shape and dimensions substantially equal to said one end of said tubulation.

6. A method of making an enclosure for sealing components comprising:

supporting an airtight envelope including components to be sealed therein, said envelope having an exhaust opening in a wall, said exhaust opening having one dimension narrower than the other dimension;

sealing to the perimeter of said exhaust opening a separate airtight tubulation member including a bore having a cross-section narrower in one dimension than the other and of substantially the same shape and dimensions at one end as said opening to form a passage and having a substantially round cross-section at the other end, said tubulation being of an integral structure and a uniform material throughout and having an overall cross-sectional area of said bore substantially unchanged from said one end to said other end;

exhausing said envelope through said tubulation member;

pinching off said tubulation member across said narrower dimension adjacent said one end and envelope to form a vacuum seal for said enclosure; and

removing the portion of the tubulation member extending beyond the pinched off section.

4,512,489

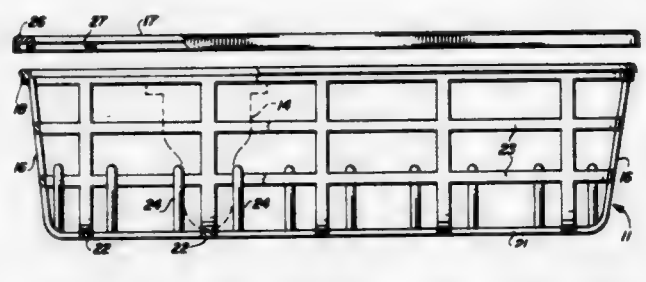
NIPPLE HOLDER

Jacqueline M. Green, 2956 W. Villa Maria Dr., Phoenix, Ariz. 85023, and Jody L. Numbers, Scottsdale, Ariz., assignors to Jacqueline M. Green, Phoenix, Ariz.

Filed Mar. 16, 1984, Ser. No. 590,159

Int. Cl.³ B65D *6/08, 1/36;* A47G *19/08;* B08B *13/00*

U.S. Cl. 220—19 **7 Claims**



1. A device for holding a plurality of baby bottle nipples for washing comprising, a rim member having opposed side portions and opposed end portions arranged in a flat plane, a plurality of spaced U-shaped longitudinal members each having a generally flat intermediate region and upwardly extending end regions, the end regions of each of said longitudinal members being joined to said end portions of said rim members, a plurality of spaced U-shaped transverse members each having a generally flat intermediate region and upwardly extending end regions, the end regions of each of said transverse members being joined to said side portions of said rim member, the intermediate regions of said longitudinal members intersecting the intermediate regions of said transverse members to form a first foraminous face of said device spaced from the plane of said rim member, a plurality of sets of protuberances disposed on the intermediate regions of said longitudinal

members and said transverse members, each of said sets comprising four equal-spaced protuberances surrounding an intersection between a transverse member and a longitudinal member, the space between the protuberances of each set being slightly in excess of the diameter of the head of a nipple and the spacing between nearby sets being greater than the diameter of the base of the nipple, whereby said sets of protuberances receive the heads of nipples and position the nipples out of contact with each other, and a foraminous closure engageable with the rim member of the device, said closure providing another face for the device, said other face being spaced from said first face a distance slightly in excess of the height of the nipples whereby when said closure engages said rim member said closure prevents the heads of the nipples from being withdrawn from between said protuberances.

4,512,490

STRENGTHENED CAN BODIES OF THIN-WALLED METAL

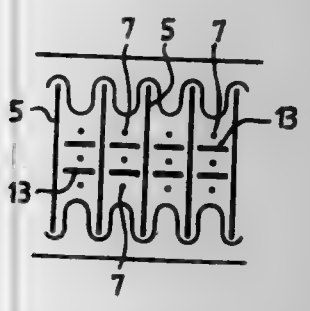
Siegfried Frei, St. Gallen, and Jakob Koch, Hünibach, both of Switzerland, assignors to Cantec, Inc., Forth Worth, Tex. and Gebrueder Hoffmann AG, Thun, Switzerland, a part interest

Filed May 3, 1982, Ser. No. 374,146

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118781

Int. Cl.³ B65D *8/08, 8/12*

U.S. Cl. 220—72 **7 Claims**



1. A can body formed of a thin-walled metallic material, comprising:

said can body being provided with beads extending essentially in axial direction and in circumferential direction for the purpose of increasing the strength of the can body;

said beads comprising primary beads extending in a first predetermined direction and auxiliary beads extending in a second predetermined direction essentially at right angles to said primary beads;

said primary beads being continuous in said first predetermined direction with a substantially constant depth in the same radial direction and being arranged in a spaced relationship with respect to said second predetermined direction;

a plurality of protuberances;

said plurality of protuberances extending all in the same radial direction in the opposite radial direction of said primary beads;

said plurality of protuberances defining rows of protuberances with each said row extending in said first predetermined direction along with said primary beads between two adjacent primary beads;

each said auxiliary bead which extends in said second predetermined direction being located between two adjacent protuberances of a related row of protuberances; and

said auxiliary beads extend in one of the two radial directions and to a lesser depth than said primary beads.

4,512,491

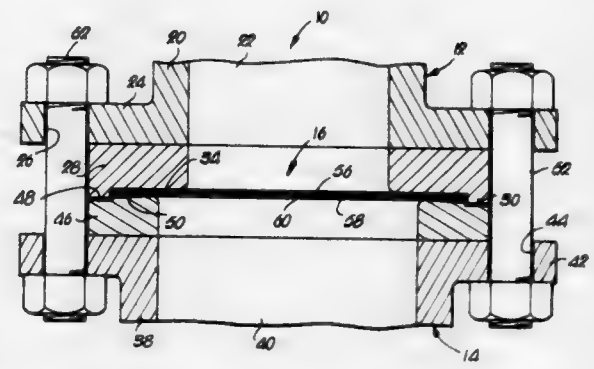
DUAL RANGE RUPTURE DISC ASSEMBLY

Robert L. DeGood, Lee's Summit, and Eddie R. Malcolm, Independence, both of Mo., assignors to Fike Metal Products Corporation, Blue Springs, Mo.

Filed Jan. 16, 1984, Ser. No. 570,985

Int. Cl.³ B65B *25/00*

U.S. Cl. 220—89 A **7 Claims**



1. A pressure relief assembly comprising:

elongated support structure including means defining a bore therethrough of desired cross-sectional configuration, and flange means extending into said bore presenting a peripheral abutment face;

bidirectional relief means for normally preventing fluid flow through said bore, and for bursting in the event of a pressure differential thereacross of preselected magnitude, said relief means including a frangible element having first inner unsupported line of weakness defining an inboard burst pattern and a second distinct, separately operable outboard line of weakness presenting an outboard burst pattern, said first burst pattern being located closer to the center of said element than said second burst pattern; and

means for mounting said element across said bore in normal flow blocking relationship thereto, with the outer periphery of said element, and the entirety of said second outboard line of weakness defining the outer burst pattern being adjacent to and supported against movement in one direction by said flange abutment face.

4,512,492

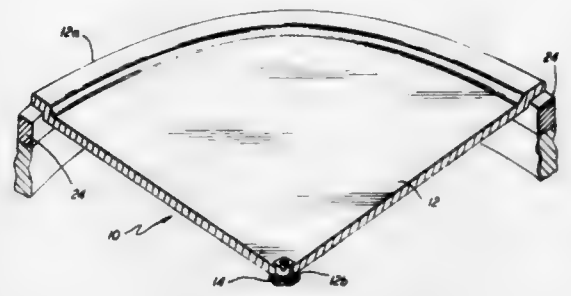
MANHOLE CLOSURE WITH A SINGLE LIQUID IMPERVIOUS, TWO-WAY GAS PRESSURE RELIEF VALVE

Walter C. Graybeal, 6791 Sheridan St., Hollywood, Fla. 33024

Filed Dec. 12, 1983, Ser. No. 560,382

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—204 **5 Claims**



1. A manhole closure to prevent surface liquids from entering a sewer system comprising:

a water impervious barrier, said barrier including a lip disposed circumferentially for supporting the closure around the perimeter of the manhole opening and an aperture;

a pneumatic, bidirectional pressure relief valve mounted within said barrier aperture, said valve having an upper casing and a lower casing joined together to form a valve housing, said upper casing having at least one aperture, and said lower casing having at least first and second

apertures; said valve further including a single moveable plug having a predetermined sealing weight mounted in said valve housing, said plug having a body and a guide stem, said stem being disposed in said first aperture of said lower casing, said plug having a cylindrical body with a closed end face, the inside closed end face being coupled to one end of the stem; and

a water sealing gasket mounted on the upper surface of the lower casing encircling said first and second apertures on said lower casing, the open end face surface of the plug body engaging the sealing ring to prevent water flow from the upper casing to the lower casing, the weight of the plug being determined to permit air flow through the valve housing in either direction caused by an air pressure differential existing between the upper and lower valve casing apertures.

4,512,493

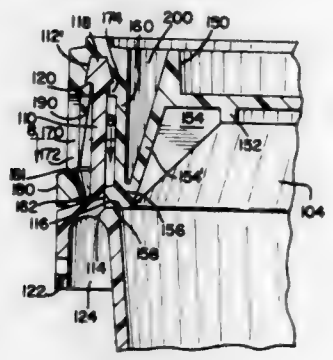
MOLDED BUCKET AND LID HAVING HIGH STACK STRENGTH

John W. Von Holdt, 7340 N. Croname Rd., Niles, Ill. 60648

Continuation-in-part of Ser. No. 356,496, Mar. 9, 1982, Pat. No. 4,420,093, which is a continuation-in-part of Ser. No. 319,933, Nov. 10, 1981, Pat. No. 4,452,382, and Ser. No. 329,258, Dec. 10, 1981, Pat. No. 4,380,305. This application Aug. 1, 1983, Ser. No. 519,253

Int. Cl.³ B65D *41/16, 41/18*

U.S. Cl. 220—306 **9 Claims**



1. A lid for removable attachment to a molded bucket comprising:

said lid defining a peripheral, annular recess adapted to receive the annular projection of a bucket in locking relationship;

said annular recess being formed by an internal annular portion and an external skirt portion lying in radial spaced relation thereto, said recess and skirt portion being joined by an intermediate portion defining said recess;

said skirt portion having a lower detachable strip extending generally continuously about the bottom edge of said skirt portion to retain said lid against removal of said skirt portion; and

said detachable strip being removable by being physically severed at a break area, said strip being capable of being manually detached from said skirt upon being severed for removal of said lid;

wherein said lid includes a pair of spaced, approximately annular walls, and a plurality of strengthening ribs disposed between said walls, said ribs being disposed diagonally to form side-by-side V-shaped formations.

4,512,494

PLASTIC CONTAINER HAVING TONGUE AND GROOVE RETENTION

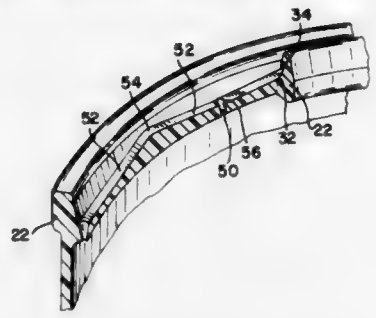
John W. Von Holdt, 6864 Lexington La., Niles, Ill. 60648

Filed Feb. 28, 1983, Ser. No. 470,555

Int. Cl.³ B65D *55/16*

U.S. Cl. 220—307 **4 Claims**

1. A plastic container and removable interlocking lid comprising, in combination, a container body having a circular cross-section and having a bottom wall and an open top, said top of said container body comprising a generally U-shaped annular rim defining an upwardly facing trough, said U-shaped annular rim including an outer upright annular flange, an inner upright annular flange spaced radially inwardly from said outer flange, and a bottom wall, said outer and inner annular flanges and said bottom wall defining said upwardly facing annular trough, at least one of said outer and inner annular flanges having an annular groove formed on the wall facing said trough, said groove being defined at its upper end by a substantially flat annular surface inclined at an angle of from 0 degrees to 48 degrees from the horizontal, and said lid comprising a first radially outer depending wall dimensioned to fit and lock within said trough between said first and second annular flanges, said first depending wall having an annular substantially flat shoulder inclined at an angle to the horizontal substantially matching the angle of said flat annular surface defining said groove so as to engage against said flat annular surface thereby releasably locking said lid to the top of said container, a second depending annular wall on said lid positioned to contact and seal against the radially inner surface of said inner annular flange when said lid is pressed into locking relation with said top of said container, and a third depending annular wall on said lid spaced radially inwardly from said second wall and integrally connecting said second wall with a top surface of said lid, a plurality of drain holes being formed in the base of said trough to communicate with the interior of said container, the base of said trough comprising a plurality of abutting sloping surfaces forming circumferentially alternating apexes and lower portions, said drain holes being located adjacent lower portions of said sloping surfaces.



4,512,495

SAUCEPAN LID WITH DETACHABLE HANDLE

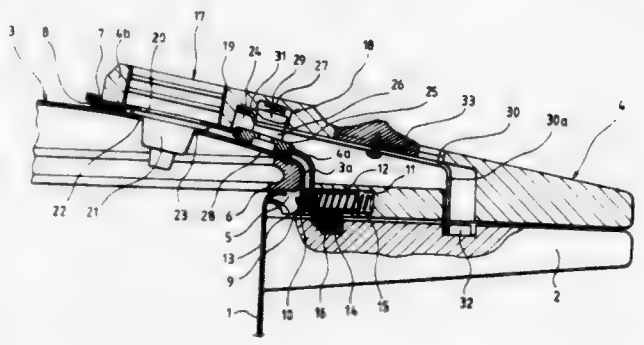
Ewald Bauer, Geislingen, and Jürgen Krejza, Kuchen, both of Fed. Rep. of Germany, assignors to Wurttembergische Metallwarenfabrik AG., Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 600,186

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1983, 3314346

Int. Cl.³ B65D *45/00*

U.S. Cl. 220—316 **14 Claims**



1. A saucepan lid having a handle detachably secured thereto, particularly for a pressure cooker, including monitoring elements sealingly mounted within the lid handle, characterized in that said lid handle (4) and said lid (3) are provided with projections (8; 35) and engagement recesses (7; 7')

adapted to be brought into mutual engagement for securing said lid handle and to be released from one another for detaching said lid handle, at least one projection (13) forming a movable component of a locking closure means (9).

4,512,496

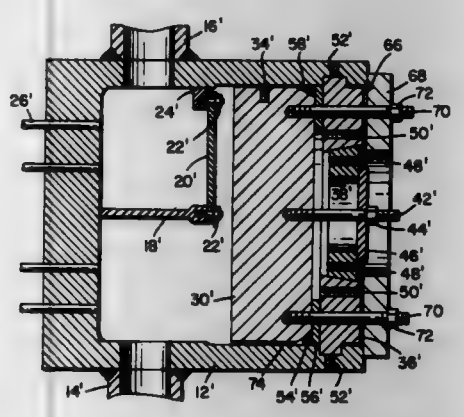
HIGH PRESSURE FEEDWATER HEATER CLOSURE ASSEMBLY

John L. Tsou, Berlin, Wis., assignor to McQuay, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 531,907, Sep. 12, 1983, Pat. No. 4,470,516. This application Aug. 2, 1984, Ser. No. 636,911

Int. Cl.³ B65D *45/32*

U.S. Cl. 220—319 **11 Claims**



1. In a pressure vessel having open and closed ends, a closure assembly comprising:

a generally cylindrical cover adapted for axial receipt in the open end of the pressure vessel;

means including a holding ring over the open end of the pressure vessel, defining a releasable retainer for constraining said cover against axial movement outward from the pressure vessel;

an o-ring seated in a predetermined chamfered groove formed in the outside edge of the end of said cover adjacent said retainer means; and

a compression ring disposed between said cover and retainer means, said compression ring overlying said o-ring and a predetermined portion of said cover so that part of the force exerted upon pressurizing the vessel is transferred directly to said retainer means through said compression ring without undue deformation of said o-ring.

4,512,497

COVERED DISH WITH ADJUSTABLE OPENING

Gerald M. Grusin, Chicago, Ill., assignor to Dart Industries Inc., Northbrook, Ill.

Continuation of Ser. No. 386,385, Jun. 8, 1982, abandoned. This application Apr. 19, 1984, Ser. No. 601,778

Int. Cl.³ A47J *27/00*; B65D *51/16, 51/24*

U.S. Cl. 220—369 **6 Claims**

1. An apparatus for cooking, serving and storing food and the like, comprising:

a dish having a bottom wall and a side wall extending upwardly therefrom forming an open mouth;

a cover having an outer rim with an upwardly facing opening therein;

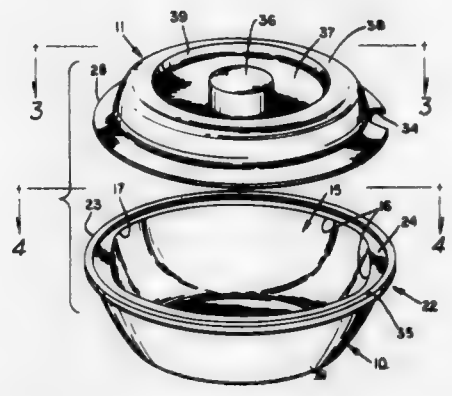
said open mouth having four outwardly arcuate sides interconnected by four corners to define an edge;

a dish rim extending outwardly from said edge;

said dish rim having an upwardly facing ledge thereon with a relatively wide portion positioned adjacent each of said sides and a relatively narrow portion positioned adjacent each of said corners;

said upwardly facing ledge and said upwardly facing opening cooperating to define an effective unblocked area at various positions of said cover on said ledge;

said cover being rotatable on said upwardly facing ledge between a position over one of said relatively narrow portions wherein the effective unblocked area of said upwardly facing opening is maximized and a position over one of said relatively wide portions wherein said upwardly facing opening is completely blocked; and



said effective unblocked area gradually decreases as the upwardly facing opening is rotated from a position over said relatively narrow ledge portion to a position over said relatively wide ledge portion.

4,512,498

STERILIZABLE CONTAINER

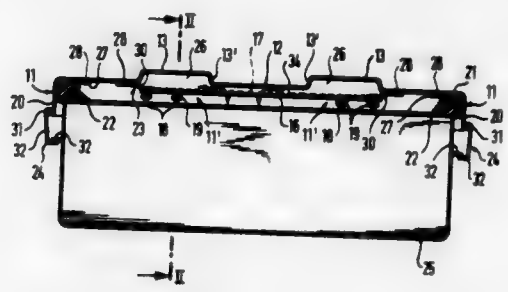
Karl Leibinger, Mühlheim, Fed. Rep. of Germany, assignor to Karl Liebinger Medizintechnik GmbH & Co., Muhlheim, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 614,109

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338371

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—371 **18 Claims**

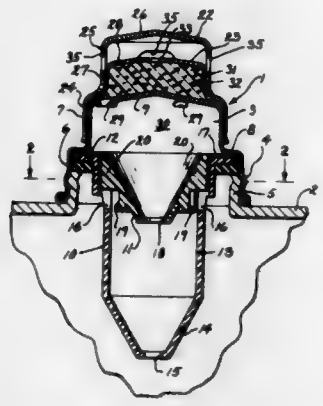


1. A sterilising container comprising a container part which is open at the top and a cover which has no openings and which is sealingly mounted on the container via a ring seal, the cover having a peripheral downwardly extending edge and at least one bulge which extends up to the edge and which forms a free flow passage from the atmosphere up to a filter or valve arrangement provided at the inner side of the cover and arranged between the internal chamber and the flow channel, characterised in that the ring seal (11)is arranged at the inner side of the cover (12) in the corner between the cover surface and the edge (20), bridges the bulge (13) and is spaced therefrom; and in that the filter and valve arrangement extends in a surface region which is bounded by the seal part (11') which bridges the bulge (13) and by the edges (13') of the bulge (13) which extend within the ring seal (11), whereby the part of the surface region which is not taken up by the filter or valve arrangement is covered in gas-tight manner.

4,512,499
GAS CAP ASSEMBLY

Arvo F. Uuskallio, Hartland, Wis., assignor to Briggs & Stratton Corp., Wauwatosa, Wis.

Filed Jul. 2, 1984, Ser. No. 627,116
Int. Cl.[3] B65D *41/04*
U.S. Cl. 220—374 15 Claims

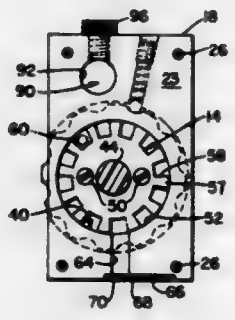


1. A cap assembly to enclose an opening in a fuel tank, comprising a generally cup-shaped cap, a tubular member connected to the cap and extending downwardly from the cap, the lower end of the tubular member having a drain opening, port means in the upper end portion of said tubular member, a generally conical member disposed in the upper end of the tubular member and having a second opening in the lower end providing communication between the interior of the tubular member and the interior of said cap, swirling means disposed on the outer surface of the conical member in alignment with said port means for causing liquid fuel and vapor entering said port means to swirl within said tubular member, said swirling aiding in separating said liquid from said vapor with the liquid flowing downwardly through said drain opening and said vapor passing upwardly through said second opening to the interior of said cap, a dome connected to said cap and spaced upwardly from said cap, said cap having an aperture providing communication between the interior of the cap and the space between the cap and said dome, and outlet means disposed in the side portion of said dome to discharge vapor and any remaining liquid from said space.

4,512,500
TABLET STORAGE AND DISPENSING DEVICE

Chesley E. Belbin, Sr., P.O. Box 490, Bay Roberts, Newfoundland, Canada A0A 1G0

Filed Dec. 9, 1982, Ser. No. 448,251
Int. Cl.[3] B65D *83/04*
U.S. Cl. 221—82 12 Claims

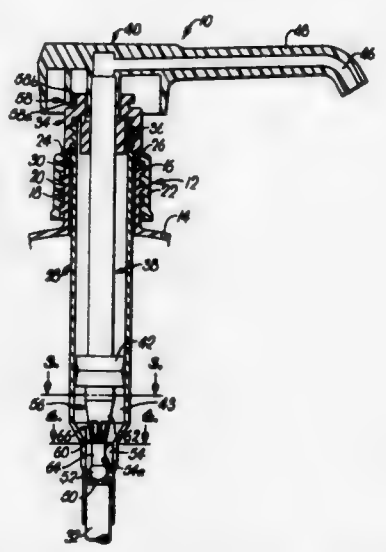


1. A pocket-sized tablet storage and dispensing device comprising a casing having a chamber defined by first and second, spaced apart wall portions and first and second apertures opening into said chamber and also opening exteriorly of said casing, a manually manipulated control wheel in the interior of said casing between said spaced apart wall portions, said control wheel having shaft means rotatably supporting said wheel from both of said spaced apart wall portions and having a portion received in said chamber, said control wheel also extending through said first aperture from said chamber to the exterior of said casing such that a peripheral portion thereof lies exteriorly of said casing to enable said control wheel to be manually rotated by the user, a tablet dispensing wheel disposed entirely within said chamber and formed along its outer periphery with a plurality of circumferentially spaced, radially outwardly opening, tablet-receiving recesses each sized to receive and store a single tablet, said dispensing wheel being axially aligned with said control wheel, and said dispensing wheel being rigid with and rotatable with said control wheel, said casing being formed with an internal wall further delimiting said chamber and peripherally surrounding said dispensing wheel, the clearance between said wall and the outer periphery of said dispensing wheel being large enough to permit rotation of said dispensing wheel but small enough to prevent tablets stored in said recesses entering the space between said wall and the outer periphery of said dispensing wheel, said second aperture being formed through said wall, and said dispensing wheel being rotatable with said control wheel to positions where said recesses successively register with said second aperture to provide for the gravity discharge of the stored tablets one at a time through said second aperture.

4,512,501
DOWN-LOCKING DISPENSING PUMP WITH GUIDED CHECK VALVE HOLD-DOWN STRUCTURE

Donald D. Foster, R.R. 1, Box 306A, Kingsville, Mo. 64051

Filed Aug. 23, 1982, Ser. No. 410,459
Int. Cl.[3] B65D *47/34*
U.S. Cl. 222—153 4 Claims



1. In a dispensing pump, the improvement comprising:
a tubular body having a collar at one end thereof and an inlet at the opposite end thereof;
a tubular projecting through said collar and reciprocable within said body between depressed and extended positions;
a check valve operably associated with said inlet for opening and closing the same,
said valve opening the inlet during movement of the plunger toward said extended position for drawing products into the body through said inlet and closing the inlet during movement of the plunger toward said depressed position for forcing products out of the body through said plunger;
locking means associated with said collar for selectively, releasably locking the plunger in said fully depressed position;
an elongated, lowermost tip on said plunger disposed for engaging said valve and holding the same in its position closing said inlet when the plunger is locked by said locking means in said fully depressed position;
orifice means in said plunger communicating the interior of the latter with the interior of said body for discharging

products through the plunger upon depression of the latter,

said orifice means including a series of axially elongated orifices spaced around said tip and separated by a plurality of elongated, yieldably resilient legs; and

guide means in said body disposed to cooperate with said plunger tip in maintaining the same engaged with said valve when the plunger is locked in said fully depressed position,

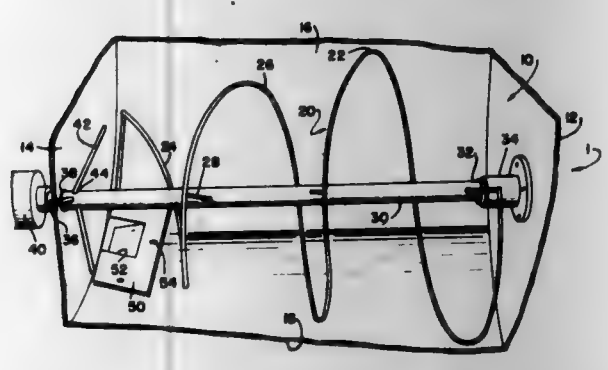
said locking means including structure lockingly engageable to retain the plunger in its fully depressed position upon slight rotation of the plunger relative to the collar when the plunger is fully depressed with said tip engaging the valve and said guide means engaging said tip for resisting rotation thereof with the remainder of the plunger, whereby to torsionally load said legs.

4,512,502

ICE DISPENSING METHOD AND APPARATUS

Jerry L. Landers, Sellersburg, Ind., assignor to SerVend International, Inc., Sellersburg, Ind.

Filed Mar. 30, 1982, Ser. No. 363,370
Int. Cl.³ G01F *11/20*
U.S. Cl. 222—413 **5 Claims**



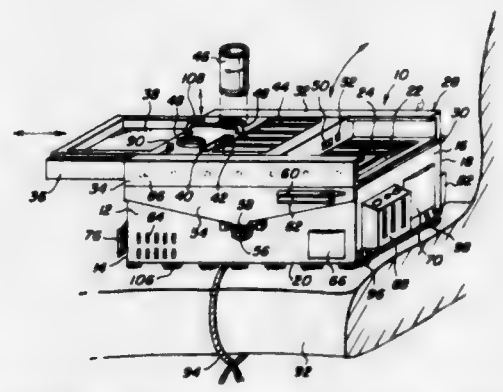
1. An ice dispensing apparatus comprising a horizontally oriented bin having end walls, side walls and a bottom wall, an ice dispensing opening in one of the walls, and a cone-shaped wire auger mounted between end walls for agitating the ice in the bin and for pushing ice along the bottom of the bin axially toward the opening, while eliminating crushing of the ice, said bin being semicircular in shape, wherein the end walls are substantially semicircular and wherein the side and bottom walls are substantially smoothly curved in semicylindrical shape, the cone-shaped wire auger having a large flyte near one end wall of the bin and having a smaller flyte near an opposite end wall of the bin, the cone-shaped wire auger being mounted on an eccentrically positioned axle which extends from one end wall to the opposite end wall, the axle sloping downward from the end wall opposite the opening to the end wall adjacent the opening and extending into a bearing in one of the side walls and extending through a seal in the other of the side walls, and a driving means connected to the axle adjacent the seal on a side thereof opposite the bin, a few substantially radial connectors mounted in the axle and extending outward therefrom and connected to portions of the auger for mounting the auger on the axle, the connectors being non-perpendicular to the auger axle, generally radially extending fingers mounted on the axle near a lower end thereof for breaking ice clusters near the fingers, the fingers being angled slightly toward the axle, the fingers being inclined from radial directions at an angle toward the axle, and the opening being positioned beneath the fingers, whereby as the axle turns, distal ends of the fingers sweep adjacent the opening, and an opening plate secured to a bottom wall of the bin adjacent a side wall thereof and wherein the opening plate is removable and replaceable with a plate having an opening of a different size to control flow of ice from the bin according to selected size of the opening in the selected plate.

4,512,503

ALL PURPOSE VEHICLE TRAVEL ORGANIZER

John Gioso, 1908-B Soho Pl., Coram, N.Y. 11727

Filed Jul. 9, 1984, Ser. No. 629,273
Int. Cl.³ B60R *7/00, 7/04;* B65D *85/00*
U.S. Cl. 224—42.42 R **14 Claims**



1. An all purpose vehicle travel, comprising in combination:

(a) a base in the shape of a rectangular parallelepiped with rigid bottom panel, rigid front panel, rigid rear panel, two rigid side panels and an open top; wherein said base is of such dimension as to fit on the upper surface of a vehicle seat;

(b) a fixed rectangular tray which nests into said open top such that the top of said fixed rectangular tray is flush with the top of said open top;

(c) a rectangular hinged track lid together with associated hinge, wherein said rectangular hinged track lid has the same rectangular base dimension as said open top and wherein said hinged track lid has two vertical planar extensions extending the entire length of said front and said rear panels; wherein each of said vertical planar extensions has a perpendicular extension directed inwards, thereby forming a lengthwise track with overhang;

(d) a sliding tray whose travel is defined by said lengthwise track with overhang; and

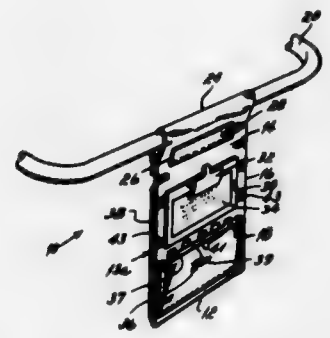
(e) means for locking and unlocking said sliding tray so as to provide access to said fixed tray and to secure offset position of said sliding tray.

4,512,504

SHOPPING ORGANIZER

Lois Owlett, 734 Maple Ridge Rd., Milford, Ohio 45150

Filed Dec. 19, 1983, Ser. No. 563,069
Int. Cl.³ B60R *11/00*
U.S. Cl. 224—42.46 R **8 Claims**



1. A shopping organizer for mounting to the handle of a shopping cart, comprising:

a sheet having front and back sides, said sheet being foldable into sections, said sections being unfolded for mounting said sheet to said handle;

a sleeve mounted to one of said sections and being adapted to hold a pen or pencil;

a plate mounted to another of said sections;

at least one pocket mounted to another of said sections;

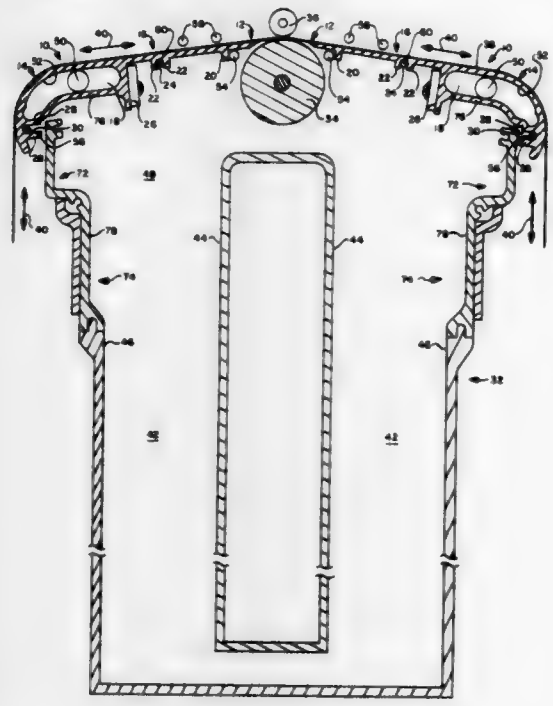
a flap attaching to said sheet, said flap being foldable in one direction around said handle with said sections unfolded, said flap thereafter being secured to said sheet for mounting said sheet to said handle so that said sections extend vertically downwardly from said handle, said flap being foldable in the opposite direction about said sections with said sections folded together, said flap thereafter being secured to said sheet for maintaining said sections folded together.

4,512,505

CONVERTIBLE PLATEN FOR GRAPHICS PLOTTER

Pernie E. Westly, Huntington Beach, and Uri Leder, Cerritos, both of Calif., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Jul. 16, 1984, Ser. No. 631,289
Int. Cl.³ B65H *23/00, 23/04*
U.S. Cl. 226—101 **2 Claims**



1. In a graphics plotter having a drum disposed between and in parallel spaced relationship with a pair of paper holding rollers and including a pair of paper loop vacuum columns disposed with respective rectangular openings between respective ones of the rollers and the drum and parallel thereto, the improvement to permit operation of the plotter as either a roll paper plotter or a cut paper plotter comprising:

(a) a pair of convertible platen members disposed adjacent respective ones of the openings to the vacuum column, said members having an inner edge adapted to fit close adjacent the drum and an arcuate outer edge, said members being mounted for movement between a raised cut paper position with said inner edges adjacent a drum and said members between said inner and outer edges spanning across the openings and a lowered roll paper position lying adjacent the top of the inside of the outer wall of the vacuum columns whereby said outer edges form curved surfaces at the top outer edges of the vacuum columns over which roll paper can smoothly slide between the vacuum columns and the paper holding rollers when said members are in said lowered position and form a table on either side of the drum with curved outer edges over which cut paper can smoothly slide back and forth when in said raised position; and,

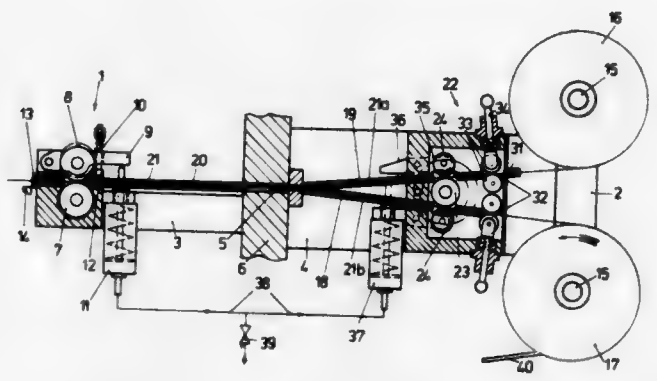
(b) support means for releasably holding said members in said position.

4,512,506

SYSTEM FOR THE SUPPLY OF STAPLE WIRE TO A STAPLER

Emil Fischer, Ludwigshafen-Oggersheim, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,786
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210014
Int. Cl.³ B27F *7/21*
U.S. Cl. 227—5 **18 Claims**



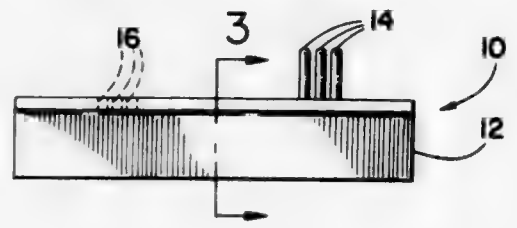
1. An apparatus for the supply of stapling wire to a stapler, comprising a frame, a stationary wire guide pipe for feeding wire through an outlet end thereof with a sharp cutting edge, a moving knife, means for moving said knife past said pipe outlet and cutting said wire thereat, a support for two reels of stapling wire, a wire feed unit for transporting said wire from said reel to said pipe, said reel support being designed for supporting two said reels in working positions thereof, means forming a ready station for supporting a length or wire from one of the reels in which said wire is kept in a ready or waiting position some distance short of the feed unit, and for guiding wire from the other of said reels to said feed unit, a change-over unit placed between the reels and the feed unit, said change-over unit having two wire driving parts designed to be moved in opposite directions and having one of said wires from said reels running through them, said change-over unit's wire driving parts being able to take effect on the wire going therethrough, and means for changing over the direction of motion of the two wire driving parts when the reels are to be changed over and wire supplied to the guide pipe in place of wire from the other reel.

4,512,507

DEVICE FOR JOINING ELECTRONIC TRANSMISSION WIRE TO ELECTRONIC CONNECTORS

Walter L. Ledin, 4904 Arbor Rd., Long Beach, Calif. 90808

Filed Sep. 2, 1982, Ser. No. 414,295
Int. Cl.³ B23K *3/00*
U.S. Cl. 228—57 **3 Claims**



1. A device for simultaneously joining electrical wire to a male connector on one end and to a female connector on the other end of a electronic transmission cable comprising:

a fixture having a (sheet) metal plate (base) with a plurality

of pins on one end adapted to accept said female connector and a plurality of apertures extending through said metal plate on the opposite end adapted to accept said male connector.

4,512,508

METHOD AND APPARATUS FOR THE MACHINE SOLDERING OF WORKPIECES

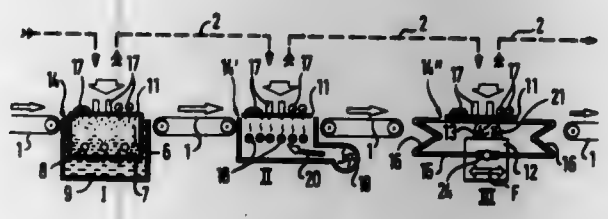
Heino Pachschwöll, Twistetal-Nieder-Waroldern, Fed. Rep. of Germany, assignor to Zevatron GmbH, Gesellschaft fur Fertigungseinrichtungen der Elektronik, Arolsen, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 360,955

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111809

Int. Cl.³ B23K *31/02*

U.S. Cl. 228—180.1 **12 Claims**



1. A method for the automatic machine soldering of workpieces in an apparatus having a plurality of treatment stations including at least a fluxing station, a heating station and a soldering station, and means for transferring said workpieces from one of said treatment stations to an adjacent one of said treatment stations, the method comprising the steps of:

(a) transferring a said workpiece into a first fixed position above said fluxing station;

(b) fluxing while holding said workpiece independent of any movement of said transferring means;

(c) transferring said workpiece from a second fixed position above said fluxing station to a third fixed position above said heating station;

(d) heating said workpiece independent of any movement of said transferring means;

(e) transferring said workpiece from a fourth fixed position above said heating station to a fifth fixed position above said soldering station;

(f) soldering said workpiece while pivoting said workpiece about a substantially horizontal axis to produce relative movement between said workpiece and a crest of a solder wave, said crest of said solderf wave being moved relative to said workpiece along a lower surface thereof, said solder step being independent of any movement of said workpiece during said transferring steps.

4,512,509

TECHNIQUE FOR BONDING A CHIP CARRIER TO A METALLIZED SUBSTRATE

Roland Ellis, Jr., Burlington Township, Burlington County; Brian E. Jacobs, Collingswood Township, Camden County, both of N.J.; Edward J. March, Lower Makefield Township, Bucks County, Pa., and Raymond J. Newman, Lawrence Township, Mercer County, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,662

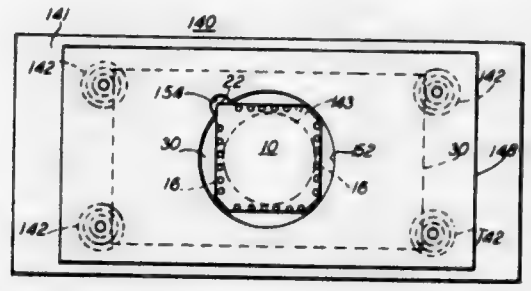
Int. Cl.³ B23K *31/02*; B01J *17/00*

U.S. Cl. 228—180.2 **2 Claims**

1. A method of bonding leads of a substantially square chip carrier to respective bonding pads on a planar metallized substrate, a predeposited reflowable bonding material being interposed between the pads and leads; the method comprising the steps of:

roughly aligning the chip carrier leads to the respective bonding pads on a first major surface of the planar substrate;

loosely capturing a corner of the chip carrier in a notch of a circular aperture in a template overlying the substrate;



reflowing the bonding material to self align the leads to the pads by permitting free rotation of the chip carrier about the loosely captured corner; and

solidifying the material to form the bond.

4,512,510

PRINTED CIRCUIT BOARD SOLDERING APPARATUS

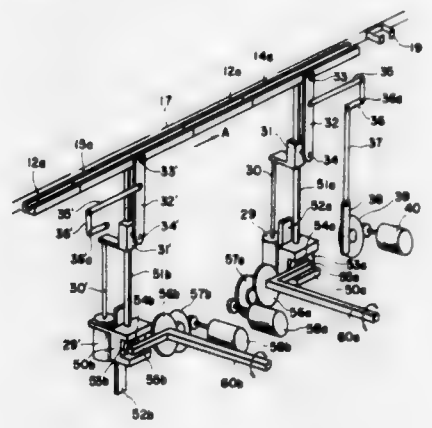
Kenshi Kondo, Tokyo, Japan, assignor to Nihon Den-Nitsu Keiki Co. Ltd., Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 542,984

Claims priority, application Japan, Oct. 26, 1982, 57-186682; Oct. 26, 1982, 57-186681; Oct. 26, 1982, 57-186680

Int. Cl.³ H05K *3/34*

U.S. Cl. 228—40 **7 Claims**



1. An apparatus for soldering printed circuit board, comprising:

a carrier adapted to support a printed circuit board;

means for moving the carrier along a predetermined transfer path;

first front and rear wheel members mounted at one side of the carrier;

second front and rear wheel members mounted at the other side of the carrier;

first and second vertically moveable supporting means;

a pair of transversely spaced parallel first and second front rails supported on said first supporting means for vertical movement therewith and defining part of said transfer path;

a pair of transversely spaced parallel first and second rear rails supported on said second supporting means for vertical movement therewith and defining part of said transfer path;

said first front and rear rails and said second front and rear rails being adapted for supporting engagement with said first front and rear wheel members and said second front and rear wheel members, respectively, and being positioned so that said first front and rear wheel members and said second front and rear wheel members can position on said first front and rear rails and said second front and rear rails, respectively, at the same time;

a molten solder vessel located beneath the space between said first and second front and rear rails;

first and second drive means for vertically moving said first and second supporting means so that said front and rear rails may be vertically moved independently from each other;

engaging means for laterally displacing the carrier in the direction parallel with the direction of the transfer path of the carrier, said engaging means being operatively connected to one of said first and second supporting means for vertical movement therewith and capable of being displaced between a first position at which it may engage with the carrier for supporting same and a second position at which it may disengage from the carrier; and

an engaging means-displacing means for laterally displacing the said engaging means in the direction parallel with the direction of the transfer path of the carrier,

whereby said first and second front and rear rails lower upon actuation of said first and second drive means to bring the printed circuit board carried on the carrier on said rails into contact with the molten solder, and said engaging means positioning at said first position displaces for moving the printed circuit board in the direction parallel with the transfer path of the carrier.

4,512,511

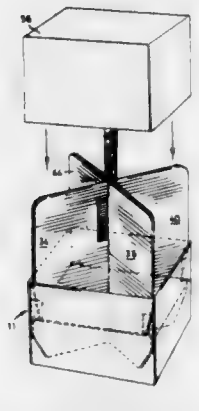
DIVIDED DISPLAY CONTAINER

John Zimmermann, Scarborough, Canada, assignor to Somerville Belkin Industries Limited, London, Canada

Continuation of Ser. No. 370,105, Mar. 20, 1982,. This application Dec. 28, 1983, Ser. No. 566,338

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—15 **2 Claims**



1. A paperboard container and divider comprising:

a container base having a bottom and four side walls which intersect in upstanding corners each disposed at right angles to the bottom;

a divider having four divider panels each radiating from a common central axis extending normal to the center of said bottom and each panel having a free side edge that extends upright parallel to said axis within a corner formed by two of said side walls of said base and extends beyond said base;

a cover for said base operative to close the container and having a top which in closed position lies parallel to said bottom, and the cover having four side walls each at right angles to the top, the cross section of said cover taken normal to said axis being the same as the cross section of said base, and the corners formed by the four side walls of both the base and the cover being everywhere mutually parallel and parallel with said axis;

locking means located internally of the base and cooperating with catch means on the free side edges of the divider to maintain the divider fixed within the base; and

each of said upright free side edges of said divider panels extending in a straight line above the side walls of said base to a height equal to the height of the side walls of said cover, whereby the free side edges of the divider fit into the corners of the cover and form a cover guide as the cover is slidingly telescoped over the divider to said closed position wherein the free lower edges of the side walls of the cover abutt the free upper edges of the side walls of the base.

4,512,512

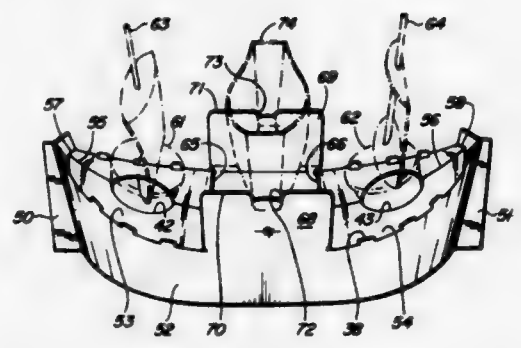
FAST FOOD SERVING TRAY

James W. Fleming, Vancouver, Canada, assignor to Lawson & Jones Limited, Mississauga, Canada

Filed Jan. 10, 1984, Ser. No. 569,770

Int. Cl.³ B65D *5/36*

U.S. Cl. 229—30 **16 Claims**



10. A serving tray for fast food or the like, comprising, in combination,

(a) a pair of generally upright, outwardly convexly curved side walls connected with each other at connection tabs integral with the respective side walls and end sections thereof;

(b) said side walls being further integral with a pair of transverse top walls, each top wall having a parabolic contour in plan, said top walls being disposed one at each end of the tray;

(c) each top wall having a generally circular cutout formed centrally thereof, said generally circular cutouts being of the size adapted to removably receive a frustoconical container such as a plastic coffee cup;

(d) said top walls having inside end edges defining two opposed ends of a central opening adapted to receive a rectangular container such as a hamburger or fish tray, the two remaining opposed sides of said central opening being formed by a pair of normally upwardly extending generally rentangular side panel sections, each side panel section being integral with one of said side walls and forming a central, upward extension of the surface thereof;

(e) each of said side panel sections having a normally generally horizontal top edge, the top edges being generally coincident with a horizontal plane spaced above the said inside end edges, said top edges being adapted to support a container such as a French fry container of a generally oval contour in plan.

4,512,513

ARC METAL SPRAY APPARATUS AND METHOD

Frank S. Rogers, 4955 NW. Gustafson Rd., Silverdale, Wash. 98383

Filed Oct. 18, 1982, Ser. No. 435,022

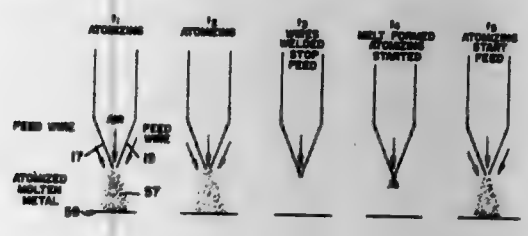
Int. Cl.³ B05B *7/18, 7/22*

U.S. Cl. 239—8 **12 Claims**

12. An arc spray method as recited in claim 7 wherein steps (f) and (g) comprise:

(f) sensing the occurrence of an increase above a predetermined value of the current of said electrical power; and

(g) stopping the feeding of said first and second wires when said current is above said predetermined value and start-



(FIG _ 1 SYSTEM)

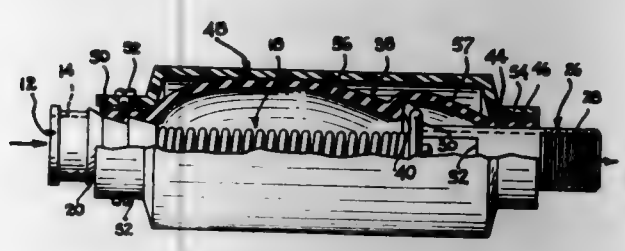
ing the feeding of said first and second wires when said voltage is at or below said predetermined value.

4,512,514

FLUID PULSATION APPARATUS

Teleb M. Elcott, 3809 Vista Linda Dr., Encino, Calif. 91316

Filed Oct. 7, 1983, Ser. No. 540,012
Int. Cl.[3] B05B *1/08*
U.S. Cl. 239—99 8 Claims



1. Fluid pulsation apparatus having a fluid inlet and outlet for converting a continuous stream of fluid flowing under pressure into the inlet into a pulsating stream exiting from the outlet, comprising:

a generally tubular elastomeric sleeve having upstream and downstream ends which communicate, respectively, with the apparatus inlet and outlet and which is designed to expand circumferentially in response to internal pressure generated by the inlet fluid stream;

a generally tubular rigid housing surrounding the elastomeric sleeve and designed to restrict its circumferential expansion to a predetermined expansion limit;

fluid barrier means located within the elastomeric sleeve for blocking fluid flow through that sleeve to the outlet when the barrier means is held in an upstream closed position; and

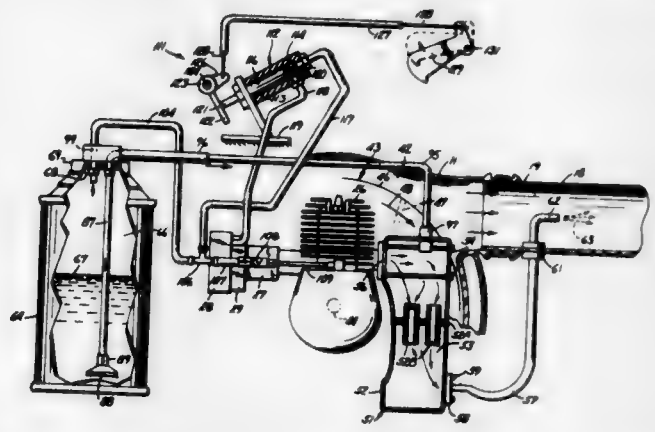
bias means positioned between the inlet and the barrier means for biasing the barrier means in its closed position in opposition to an internal fluid pressure generated within the elastomeric sleeve between its upstream end and the barrier means by the inlet fluid stream, the bias means selected to allow the barrier means to open when the internal fluid pressure reaches a first level which is sufficient to cause the elastomeric sleeve to expand circumferentially to the predetermined expansion limit, but is less than the static pressure of the inlet fluid, where the barrier means remains open until the internal fluid pressure drops to a second level less than the first level, and where the flow of fluid downstream of the barrier means is sufficiently unrestricted to permit the internal fluid pressure to drop below the second level when the barrier means is open, whereby the barrier means is caused to sequentially open and close, generating the pulsating fluid stream at the outlet of the apparatus.

4,512,515

THERMAL FOG GENERATOR

William L. Tenney, Crystal Bay, Minn., assignor to London Fog, Inc., Long Lake, Minn.

Filed Jun. 9, 1983, Ser. No. 502,505
Int. Cl.[3] A01M *7/00*
U.S. Cl. 239—129 56 Claims



1. An apparatus for producing and dispensing fog, smoke, mist, and the like, comprising: a housing having a chamber, an air inlet opening allowing air to flow into the chamber, and tube means having an air discharge passage open to the chamber to carry air from the chamber to the atmosphere, an internal combustion engine mounted on the housing operable to produce hot exhaust gas and a supply of crankcase gases under pressure, blower means located in the chamber drivably connected to the engine operable to load the engine and move air through the chamber and air discharge passage and dispense air into the atmosphere, means for carrying the hot exhaust gas from the engine to the tube means and discharging said hot exhaust gas into the air discharge passage, container means for storing a liquid formulation, means mounting the container means on the housing, line means for carrying the liquid formulation from the container means to the means for carrying the hot exhaust gas, and control means for selectively supplying said crankcase gases under pressure from said engine to said container means, said crankcase gases under pressure in the container means forcing said liquid formulation from said container means and through said line means into the means for carrying the hot exhaust gas, the velocity of said exhaust gas atomizing said liquid formulation and the heat of said hot exhaust gas vaporizing at least part of said atomized liquid formulation, said atomized and vaporized liquid formulation being discharged into said air discharge passage, mixed with the air flowing in said passage, and dispensed into the atmosphere, said vaporized liquid formulation being condensed by the cool air forming a fog, smoke, or the like, said control means having means operable to vent the crankcase gases under pressure from the container means to reduce the pressure of the crankcase in the container means to terminate the flow of liquid formulation to the means for carrying the hot exhaust gas from the engine.

4,512,516

AGRICULTURAL SPRAYER

Patrick J. Ballu, Reims, France, assignor to Tecnoma, Epernay, France

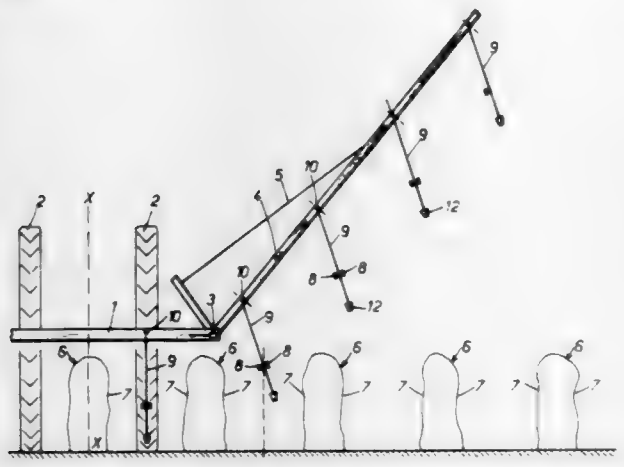
Filed Jun. 25, 1982, Ser. No. 392,325
Claims priority, application France, Jun. 25, 1981, 81 12495
Int. Cl.[3] B05B *1/20*
U.S. Cl. 239—168 7 Claims

1. An agricultural sprayer for discharging treating fluid onto the sides of plants, said sprayer comprising

a frame adapted to lie parallel to the ground, said frame including a wall,

a plurality of substantially rigid supports suspended from pivot points on said frame for free oscillation movement such that under the action of the weight thereof they can assume vertical positions between plants which are to be

treated with treating fluid regardless of the slope of the ground, said substantially rigid supports including portions which lie below said pivot points and are juxtaposed to said wall of said frame, each of said portions comprising a pad which is arcuate in shape and which has a radius of curvature centered at the pivot point on said frame to which the respective substantially rigid support is attached,



spray nozzles disposed on said supports for discharging treating fluid onto the sides of plants, and

catch means mounted on said frame so as to interfere with said substantially rigid supports and lock said substantially rigid supports in said vertical positions, said catch means including a push rod associated with each of said substantially rigid supports for pushing the arcuate-shaped pads thereof into locked positions against said wall of said frame.

4,512,517

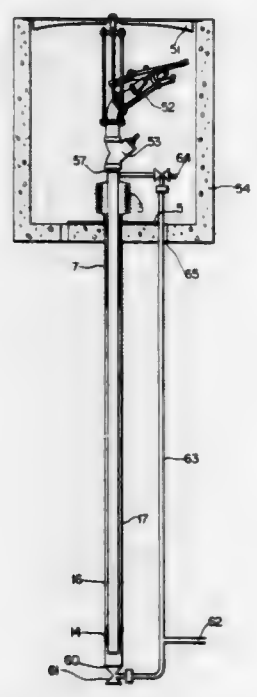
IRRIGATION APPARATUS RETRACTILE INTO PIT

Ron Manor, 29 Shimoni St., Tel Aviv, Israel

Filed Aug. 31, 1982, Ser. No. 413,420

Int. Cl.³ B05B *15/10*

U.S. Cl. 239—206 **1 Claim**



1. Sprinkler irrigation apparatus adapted to be retracted into an open-top underground pit, to be raised out of the pit by water pressure, and to eject water only after having been elevated above the plants to be irrigated, the apparatus comprising:

a hydraulically operated vertical telescopic lifting unit consisting of an outer tube rigidly fastened in the bottom of said pit and having its bottom end connected to an underground water supply system, and an inner tube vertically movable in and along said outer tube, the respective upper ends of said tubes being tightly attached to the two ends of an axially expandable bellows; a vertically positioned pressure relief valve of the kind adapted to be wide opened upon being exposed to water pressure one or two bar below the pressure in said water supply acting on its inlet side, its inlet end being tightly connected to the top of said inner tube; a rotary sprinkler or water gun of known design mounted on the outlet end of said pressure relief valve, the diameter described by the rotating nozzle of said sprinkler being smaller than the inner contour of said pit; a flat cover positioned above said sprinkler of a dimension permitting its closing the top opening of said pit, said cover being attached to the top of said telescopic unit and being adapted to be raised above ground together with said sprinkler; a pressure-operated valve of the kind to be opened by pressure applied to its actuating mechanism, positioned between said outer tube and said underground water supply; a pressure operated drain valve adapted to be closed by pressure applied to its actuating mechanism connected at its one end to the portion of said inner tube, and at the other end to the atmosphere; a remote control station communicating with said pressure-operated supply valve and said pressure-operated drain valve through piping, said control station serving to open said supply valve and to close said drain valve by pressure supplied through said piping whenever the irrigation apparatus is to be operated, and to close said supply valve and to open said drain valve by non-pressure supply, in order to stop water supply to said sprinkler and to lower it into said pit.

4,512,518

ATOMIZING HEAD

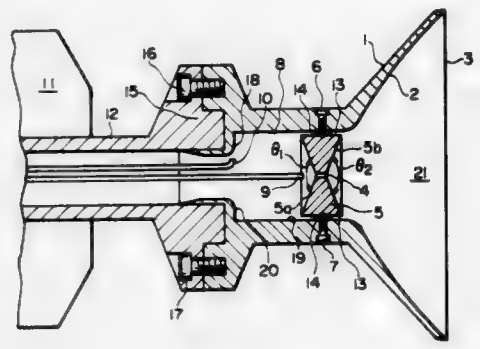
Yuzo Inukai, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 25, 1983, Ser. No. 545,295

Claims priority, application Japan, Oct. 25, 1982, 57-161411[U]

Int. Cl.³ B05B *3/10*

U.S. Cl. 239—223 **9 Claims**



1. A rotary atomizing head for an atomizer comprising;

a cup-shaped rotary atomizing head body mounted at its rear end on the front end of a rotary shaft; said head body having a conical inner discharge surface with a circular outer edge; a cylindrical bell hub provided in said atomizing head body; discharging passages provided for guiding a liquid in the form of a film to the inner surface of said atomizing head body; and said bell hub having a liquid passage along the central axis thereof and conically recessed end faces.

4,512,519

SPRINKLER

Mordechay Uzrad, Hof Hacarmel, Israel, assignor to Mifalei Matechet Naan, Kibbutz Naan, Israel

Filed Oct. 5, 1982, Ser. No. 432,861
Int. Cl.[3] B05B *3/16*
U.S. Cl. 239—381 4 Claims





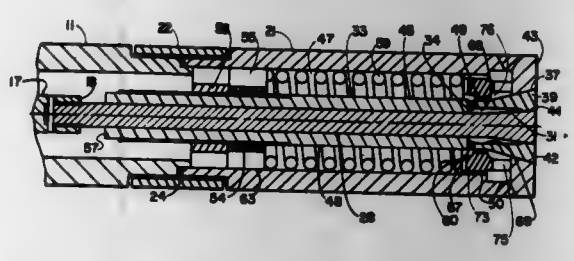
4. A sprinkler comprising:
a water conduit which is connectable to a water feed line and supplies water to a nozzle;
a rotatable body, revolving about a vertical axis, being positioned above and eccentrically relative to said nozzle;
the rotatable body defining a central bore and two downwardly open curved slots extending from said central bore;
said slots defining oppositely curved arcs about the rotatable body;
means for seating the rotatable body in eccentric relation to the nozzle whereby said rotatable body oscillates back and forth when a water jet impinges eccentrically thereon.

4,512,520

DUAL ELEMENT DESUPERHEATER APPARATUS

Kevin G. Schoonover, Tucker, Ga., assignor to Steam Systems and Services, Incorporated, Atlanta, Ga.

Filed May 11, 1983, Ser. No. 493,724
Int. Cl.[3] A62C *31/00*
U.S. Cl. 239—440 22 Claims



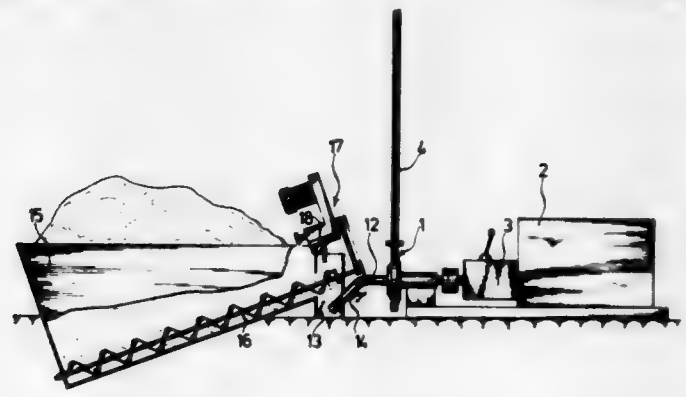
1. Apparatus for introducing a variable flow of fluid into a body, comprising:
a housing having an injection region locatable in the body, and having an interior chamber operable to receive a supply of fluid;
a primary flow control element within said housing and selectably operaive to open a primary fluid flow orifice leading to said injection region;
a secondary flow control element within said housing concentric to said primary flow control element and selectably operative to open a secondary fluid flow orifice leading to said injection region; and
means associated with said secondary flow control element to operate said primary flow control element after said secondary fluid flow orifice is opened, and to block fluid flow through the opened secondary fluid flow orifice when said primary fluid flow orifice is open,
so that the fluid can flow only through said primary orifice when both said primary and second orifices are opened.

4,512,521

APPARATUS FOR GRANULATING AND CONVEYING CORN-COB MIX

Hermann Johanning, Melle, Fed. Rep. of Germany, assignor to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,624
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149981
Int. Cl.[3] B02C *13/286*
U.S. Cl. 241—34 8 Claims



1. Apparatus for granulating corn cob mix, and for conveying the granulate into a receptacle situated at a higher level than that of the apparatus, which comprises a beater mill comprising a casing divided by a sieve which determines fineness of the granulate, an integrated blower disposed in the casing behind the sieve, and a conveyor pipe tangentially connected to said blower, and directed into said receptacle, a suction pipe connected to the beater mill and provided with a secondary air opening, the aperture width thereof being adjustable, the width of said suction pipe being greater by 35 to 70% than the width of the conveyor pipe, a suction chamber disposed at a lower level than that of the beater mill for dipping thereinto said suction pipe, and conveyor means disposed in the suction chamber for feeding corn cob mix thereinto, so as to allow the corn cob mix to be sucked into the beater mill by means of said suction pipe.

4,512,522

SINGLE VERTICAL MOTION FEEDTUBE PROTECTOR AND ACTUATOR FOR A FOOD PROCESSOR

James E. Williams, Stanford, Conn., assignor to Cuisinarts, Inc., Greenwich, Conn.

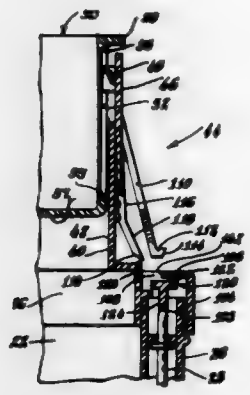
Continuation-in-part of Ser. No. 500,327, Jun. 2, 1983, abandoned. This application Oct. 17, 1983, Ser. No. 542,766
Int. Cl.[3] B02C *25/00*
U.S. Cl. 241—37.5 41 Claims

1. In a food processor of the type including a housing containing an electric motor drive and control means for rendering said motor drive inoperative unless said control means is actuated, a bowl mountable on said housing for surrounding a rotary tool adapted to be driven by said electric motor drive and a removable cover for said bowl, a feedtube forming a passageway for feeding food items into said bowl with a feedtube protector including outer means positionable in a predetermined position relative to the feedtube carrying a food pusher captured in a telescoping relationship with respect to said outer means so that the pusher can be plunged longitudinally into said passageway for pushing food items toward the rotary tool in said bowl, said control means being actuated for rendering said motor drive operative when and only when said cover is properly positioned on said bowl and said outer means

of the feedtube protector is positioned in said predetermined position relative to said feedtube, feedtube protector actuating means comprising:

laterally extendible means operatively associated with said control means and operated by said outer means of said feedtube protector for causing actuation of said control means by a single downward vertical movement of said outer means into said predetermined position and for deactivation of said control means by an upward vertical movement of said outer means,

said laterally extendible means including a member pivotally mounted for rotational movement,



said member being operatively associated with said control means for transmission of the downward linear motion of said outer means into a rotational movement of said pivoted member thereby actuating said control means,

whereby a one-motion, vertical movement of the outer means of the feedtube into and away from said predetermined position relative to the feedtube controls the operation of the food processor, thereby permitting one-motion opening of the feedtube for convenient loading of the food processor.

4,512,523

APPARATUS FOR MINCING FROZEN MEAT INTO GROUND MEAT

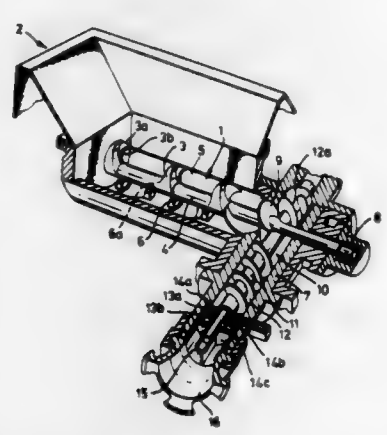
Tsuyoshi Higashimoto, Ikoma, Japan, assignor to Higashimoto Kikai Co., Ltd., Japan

Filed Jul. 18, 1983, Ser. No. 514,464

Claims priority, application Japan, Jul. 26, 1982, 57-114350[U]

Int. Cl.³ B02C *18/30*

U.S. Cl. 241—82.4 **6 Claims**



1. An apparatus for converting frozen meat into minced meat, said apparatus comprising:

(A) a hopper into which frozen meat is charged, said hopper having

(i) an open top,

(ii) a lower region,

(iii) the lower region being of elongated semi-cylindrical configuration, and

(iv) an outlet at one end of said lower region,

(B) a crusher roll rotatably mounted in said hopper, and constituting

(i) a rotary shaft and

(ii) a plurality of pawl-shaped feed vanes axially spaced along said shaft and extending radially therefrom,

(iii) each feed vane having a cutting edge for crushing frozen meat fed into the hopper,

(iv) said crusher roll being disposed with its rotary shaft extending coaxially of the longitudinal axis of the elongated semi-cylindrical lower region of the hopper,

(v) the feed vanes and cutting edges of the crusher roll being disposed transversely of the longitudinal axis of said lower region of the hopper,

(C) a plurality of stationary projections on the inner surface of said hopper, said projections being disposed between adjacent feed vanes for preventing idle rotation of frozen meat as it is crushed and for guiding the crushed frozen meat toward the outlet of the hopper,

(D) a pipe having an inlet communicating with the outlet of the hopper through which the meat crushed in the hopper is fed to the inlet to the pipe,

(E) a main roll rotatably mounted in said pipe, and having a rotary shaft and a main spiral feed vane formed on said rotary shaft,

(i) said pipe and main roll and rotary shaft being so disposed that the rotary shaft of the main roll crosses the rotary shaft of the crusher roll adjacent the outlet of the hopper,

(F) said rotary shaft of said crusher roll also having a spiral vane slightly projecting into said pipe to push crushed meat from the lower region of the hopper into the pipe,

(G) said rotary shaft of said main roll also having an auxiliary feed vane to advance crushed frozen meat fed into the spiral vane from the hopper toward the spiral vane on the rotary shaft of the main roll,

(H) said rotary shaft of the main roll further having cutter blades mounted thereon upstream of the spiral vane which turn with the main shaft,

(I) said pipe having plates stationarily mounted therein with said cutter blades interposed therebetween and with apertures therethrough for cooperation with said cutter blades to mince meat advanced therethrough by the main feed vane after having been crushed in the hopper and pushed from the hopper outlet into the pipe, and

(J) power means to turn said shafts simultaneously,

(K) whereby frozen meat charged into said hopper is crushed by the cutting edges of the crusher roll, pushed through the outlet of the hopper into said pipe by the spiral vane on the rotary shaft of the crusher roll, advanced by the auxiliary feed vane and fed to the cutter blades and plates at a mincing position by the main feed vane of the main roll.

4,512,524

CRUSHER FOR CONCRETE STRUCTURES

Akihiko Shigemizu, Tokyo, Japan, assignor to Takachiho Kogyo Yuugen Kaisha and Kabushiki Kaisha Kansai Kougu Seisakusho, both of Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,322

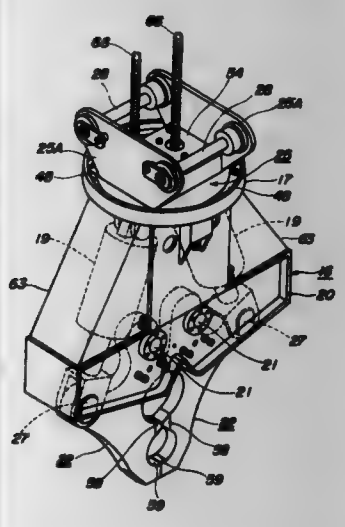
Claims priority, application Japan, Sep. 16, 1983, 58-170778

Int. Cl.³ B02C *1/06*

U.S. Cl. 241—101.7 **10 Claims**

1. In a crusher for concrete structures, including a head carried by a traveling carrier, a rotating base having an axis and supported by said head concentrically therewith for rotation relative thereto, a pair of hydraulic cylinders pivotally supported at one end by said rotating base and disposed symmetrically with respect to the axis thereof, a pair of jaw members pivotally supported by said rotating base and disposed symmetrically with respect to the axis thereof, and click-stop means provided between said rotating base and said head for retaining said rotating base in any one of a plurality of prede-

termined circumferential positions with respect to said head, against a value of load applied on at least one of said rotating base and the head below a predetermined value, the improvement comprising rotative coupling means coupling said rotating base with said head, said rotative coupling means comprising: a first disc member forming part of said rotating base and having one side surface provided with a cylindrical hub, said first disc member extending substantially parallel with a plane perpendicular to the axis of said rotating base; a second disc member forming part of said head and disposed in facing relation to said one side surface of said first disc member, said second disc member having a boss formed at a center thereof and disposed around said hub of said first disc member; a cover



disposed over said hub of said first disc member and said boss of said second disc member; means fixing said cover to said hub of said first disc member; an annular bearing member formed of synthetic resin and interposed between said one side surface of said first disc member and said second disc member; a cylindrical bearing member formed of synthetic resin and interposed between said hub of said first disc member and said boss of said second disc member; and stopper means for keeping said second disc member engaged with said first disc member against disengagement therefrom, wherein said first disc member is rotatable relative to said second member through sliding intervention of said annular and cylindrical bearing members therebetween.

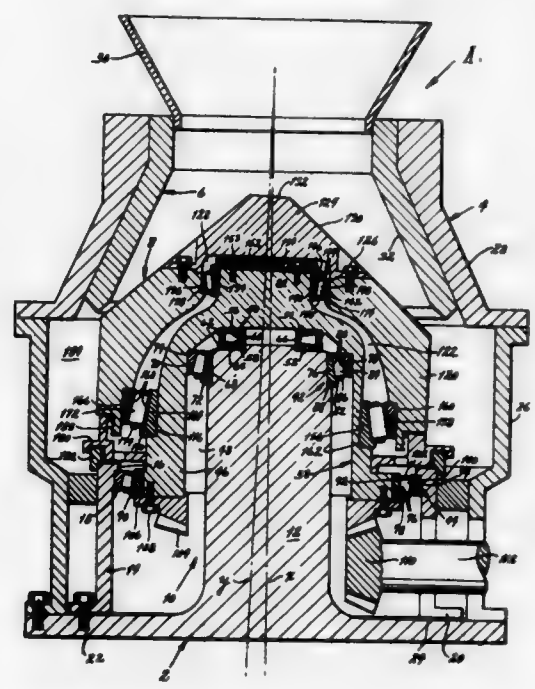
4,512,525

CONE TYPE ROCK CRUSHER AND BEARING ARRANGEMENT THEREFOR

Robert W. Cameron, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Apr. 2, 1979, Ser. No. 25,992
Int. Cl.[3] B02C *2/04*
U.S. Cl. 241—207 **19 Claims**

1. A crusher comprising: a base; a fixed member projected upwardly from the base and being fixed in position with respect to the base; an intermediate member surrounding the fixed member; first bearing means for enabling the intermediate member to rotate with respect to the fixed member about the axis of the first bearing means, the first bearing means including a thrust bearing located at the upper end of the fixed member where it is between the fixed member and the intermediate member so as to transmit thrust loads from the intermediate member to the fixed member, the first bearing means also including a tapered roller radial bearing surrounding the fixed member near the thrust bearing and being located between the side of the fixed member and the intermediate member, so as to transfer radial loads from the intermediate member to the fixed member, the radial bearing having a single row of tapered rollers with the large diameter ends of the tapered rollers being presented downwardly, the tapered roller radial bearing further being positioned to also transmit some of the thrust load from the intermediate member to the fixed member; means for rotating the intermediate member; a crusher head positioned generally around the intermediate member, the crusher head having an upwardly presented crushing surface; second bearing means between the crusher head and the intermediate member to enable the intermediate member to rotate within crusher head, the axis of the second bearing means being oblique to the axis of the first bearing means, whereby the head will wobble as the intermediate member rotates; a housing extending over the head, the housing having an inlet located



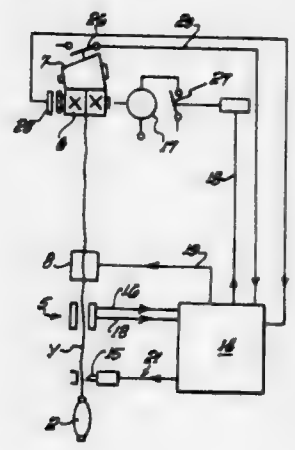
above the head so that material to be crushed may be directed through the opening and toward the head; and a downwardly presented crushing surface located in a generally fixed position within the housing, the crushing surface of the housing being positioned opposite to, yet spaced from, the crushing surface on the head, so that material introduced into the housing through the opening will be crushed in the space between the two crushing surfaces as the crusher head wobbles.

4,512,526

DOFFING CONTROL SYSTEM IN AUTOMATIC WINDER

Syoiti Tone, and Norio Kubota, both of Kyoto, Japan, assignors to Murata Kikai Kabushiki Kaisa, Japan

Continuation of Ser. No. 366,476, Apr. 8, 1982, abandoned. This application Aug. 28, 1984, Ser. No. 645,524
Claims priority, application Japan, Apr. 13, 1981, 56-56057
Int. Cl.[3] B65H *54/26, 63/00*
U.S. Cl. 242—36 **7 Claims**



1. A control system for controlling the doffing of a fully wound package of yarn in each of a plurality of winding units comprising an automatic yarn winder, wherein each winding unit includes a package, a cop supplying yarn to be wound onto said package, a slub catcher, and a driven traversing drum

for driving said package to wind the yarn thereon, and wherein said automatic winder provides means for cutting the yarn upon detection of a slub by said slub catcher and means for knotting ends of said yarn together upon detection of a yarn breakage or resupply condition, said means for cutting and said means for knotting being relocatably disposed to service a plurality of said winding units, said control system comprising:

means for detecting the presence of a fully wound package and emitting a signal indicating when a fully wound package is present;

means, responsive to said signal indicating the presence of the fully wound package, for controlling the driving of the traversing drum;

means for detecting the presence of yarn between the cop and the fully wound package, said means being operative for all speeds of travel of yarn at least equal to or exceeding a set critical sensing speed;

means for enabling said slub catcher to remain operative at all speeds of travel of yarn at least equal to or exceeding said set critical sensing speed;

means for commanding a cutting and knotting operation prior to a doffing operation on the detection of slub; and

means for commanding a start of a doffing operation on the detection of the presence of the yarn.

4,512,527

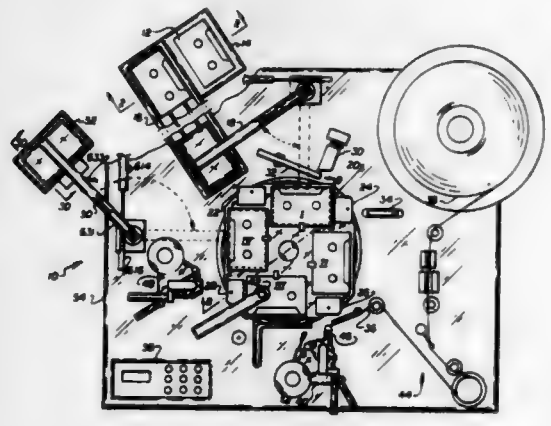
CASSETTE LOADING APPARATUS

George D. Rehklau, Los Altos; Lee A. Cotterill, San Jose, and Robert Z. Langevin, Los Gatos, all of Calif., assignors to Electro-Sound, Inc., Sunnyvale, Calif.

Filed Oct. 22, 1982, Ser. No. 436,051

Int. Cl.³ B65H *19/26, 21/00*

U.S. Cl. 242—56 R **52 Claims**



1. Cassette loading apparatus for winding tape into cassettes having a tape leader connected between at least two spools comprising:

tape supply means for providing recording tape;

transport means receiving a plurality of cassettes for carrying each cassette sequentially in a stream by a plurality of work stations;

extraction means for extracting a loop of the tape leader from each cassette received at a first work station;

holder means carried by said transport means for receiving, aligning and holding a length of the tape leader forming the loop;

first cutter means disposed at a second work station for cutting the length of the tape leader creating first and second leader segments each with a cut end and each connecting with one of the spools of the cassette;

splicing means disposed at a third work station for splicing an end of the recording tape to the cut end of said first leader segment attached to a first spool of said cassette;

winding means disposed at said third work station for engaging and rotating the first spool of the cassette and winding a desired length of the recording tape about such spool;

second cutter means disposed at said third work station for cutting said recording tape creating a first cut end thereof terminating the recording tape wound about the first spool of the cassette and a second cut end terminating the recording tape from the supply means;

splicing means disposed at a fourth work station for splicing the cut end of said second leader segment to the first cut end of the recording tape, whereby at least four cassettes are being operated on simultaneously.

4,512,528

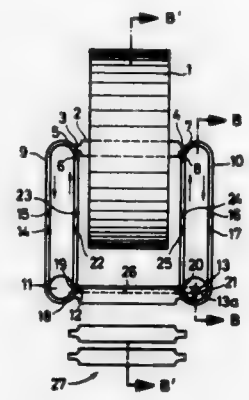
DEVICE FOR EXCHANGING A WINDING MANDREL

Klaus G. Kuhn, Wingertweg 52, 8750 Aschaffenburg 19, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,490

Int. Cl.³ B65H *17/12, 19/06*

U.S. Cl. 242—56 R **21 Claims**



1. In an apparatus for winding continuously-fed sheet material on a material receiving winding mandrel, an improved device for the exchange of a full winding mandrel and an empty winding mandrel without interruption of the continuously-fed sheet material to be wound, said device comprising:

a movable, endless conveyor for the horizontal transport of both a full winding mandrel from a winding station and an empty winding mandrel to said station;

means carried by said movable, endless conveyor for coupling and uncoupling a winding mandrel thereto to permit an empty winding mandrel to be received by said conveyor, transported to said winding station for receiving continuously-fed sheet material, and transported to a removal station for removal as a full winding mandrel; and

vertical guiding means carried by said conveyor for vertically guiding a winding mandrel while coupled to said conveyor.

4,512,529

WINDING MACHINE

Eberhard Kampf, Muehlener Strasse 44, 5276 Wiehl, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,551

Claims priority, application European Pat. Off., Jun. 25, 1982, 82105629.8

Int. Cl.³ B21C *47/02;* **B65H** *79/00*

U.S. Cl. 242—67.1 R **4 Claims**

1. A winding machine comprising:

(a) individual slides cooperating in pairs and being movable on a slide guide,

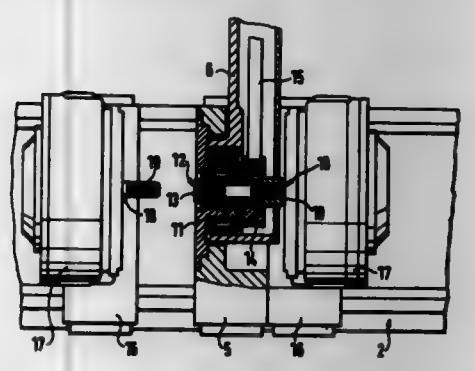
(b) swivelable pendulum arms carried by said slide guides, each pendulum arm comprising:

(i) a hollow driving shaft positioned at one end of the pendulum arm coaxially with the swivel axis of the pendulum arm, and

(ii) a receiver device at the other end of the pendulum arm adapted to be driven by the driving shaft;

(c) a motor for engaging one end of at least one of said hollow shafts,

(d) a winding core carried by the receiver devices in two adjacent pendulum arms,



(e) at least one additional motor for possible and selective connection to at least one of said hollow shafts.

4,512,530

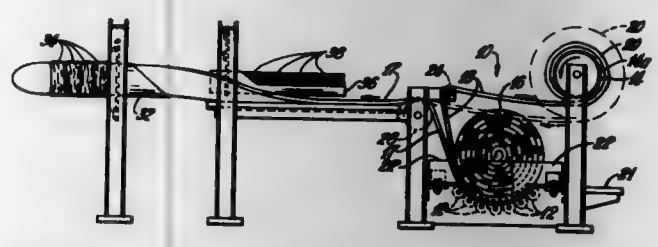
APPARATUS FOR HANDLING SPLIT-BATT ROLLS

William C. Rauschert, Montgomery, Tex., and Leo A. Oswald, Huntingdon, Pa., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 12, 1984, Ser. No. 588,618

Int. Cl.³ B65H *17/00*

U.S. Cl. 242—67.3 R **3 Claims**



1. Handling apparatus for composite two-batt rolls of glass wool insulation, said apparatus comprising a plurality of rotatably mounted rollers of relatively small diameter disposed in a generally arcuate upwardly concave arrangement, a rotatably mounted roller of relatively large diameter disposed in suitably spaced relationship with the plurality of rollers of relatively small diameter, means for continuously rotating the large-diameter roller, and a non-rotatable bar disposed in suitably spaced relationship with the large-diameter roller, the large-diameter roller being sufficiently large to establish frictional driving engagement with a first winding of a batt of glass wool insulation wrapped therearound as long as there is slack in a following portion of the batt to be wound, whereby glass wool insulation in the form of two batts wound together in a composite roll may be rotatably supported along a lower portion of the periphery of the composite roll by the plurality of rollers of relatively small diameter and a radially outer batt of the composite roll may be intermittently pulled therefrom while a radially inner belt of the composite roll is wound into a separate roll on the rotating large-diameter roller, the non-rotatable bar operatively engaging the inner batt during the winding thereof on the large-diameter roller and insuring that, after no slack remains therein, the large-diameter roller does not pull the inner batt from the composite roll independently of the pulling of the outer batt therefrom.

4,512,531

FISHING REEL WITH TRAVERSE-CAM MEMBER ROTATABLY MOUNTED ON ANTI-REVERSE SHAFT

Kikuo Tunoda, Fuchu, Japan, assignor to Ryobi Limited, Hiroshima, Japan

Filed Oct. 21, 1983, Ser. No. 544,449

Claims priority, application Japan, Oct. 25, 1982, 57-162180[U]

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—84.21 R **10 Claims**

1. A fishing reel comprising:

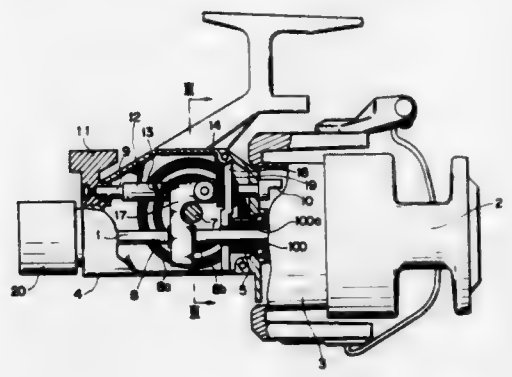
a housing; a rotor

a spool shaft mounted in the housing;

a traverse cam member mounted in the housing;

oscillator means for reciprocating the spool shaft, said oscillator means having one end portion thereof secured to said spool shaft and another end portion thereof engaged with said traverse-cam member;

a master gear coupled to said traverse-cam member for rotating said traverse-cam member;



anti-reverse means including an anti-reverse shaft arranged inside said housing in parallel with said pool shaft;

said traverse-cam member being formed as a cylinder and being mounted on said anti-reverse shaft so as to be rotatable relative to said anti-reverse shaft; and

said master gear being provided with outer and inner face gears, one of which rotates said rotor of the fishing reel and the other of which is coupled to rotate said traverse-cam member.

4,512,532

YARN LIMITING DISC DEVICE

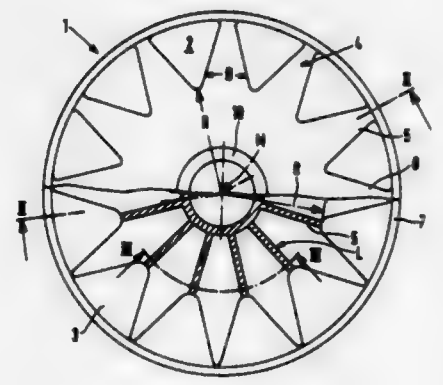
Horst Dittrich, Industriestrasse 9, 6382 Friedrichsdorf, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,876

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235156

Int. Cl.³ B65H *75/22*

U.S. Cl. 242—116 **19 Claims**



1. A yarn limiting disc device for use in winding a yarn package on a yarn package carrier such as a loom beam, a warp beam, a weaver beam or a sectional beam of a textile machine, said device comprising:

a substantially planar, annular disc body adapted to have extend therethrough a beam of a yarn package carrier onto which a yarn package is to be wound;

a plurality of hollow reinforcing ribs extending generally radially along one side of said disc body; and

said body and said ribs being integrally formed as a single unitary member defining a hollow internal cavity between said body and each said rib.

4,512,533

PROCESS AND APPARATUS FOR UNWINDING COILS OF WIRE

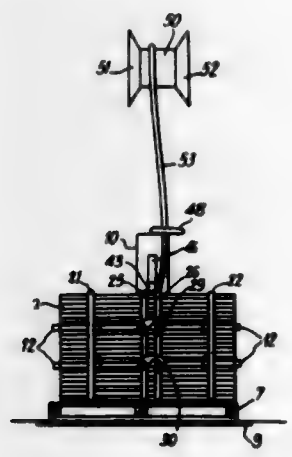
Fernand Morival, 51, route de Tournai, 59226 Lecelles, and Anne Morival, 11, rue Jean Jaures, 59178 Hasnon, both of France

Continuation-in-part of Ser. No. 451,950, Dec. 21, 1982,. This application Apr. 4, 1984, Ser. No. 596,553

Claims priority, application France, Apr. 13, 1983, 83 06328

Int. Cl.³ B65H *49/00*

U.S. Cl. 242—129 **21 Claims**



1. Apparatus for winding hollow coils of wire by drawing wire upwardly from the central hole of a coil, characterized by

(a) a plate for supporting a coil of wire with the axis of its central hole disposed vertically,

(b) a main vertical upright firmly affixed to the plate,

(c) an articulated corset element mounted pivotally on the main upright for holding the coil stationary during unwinding, said corset element being constituted of horizontal cross-pieces composed of articulatory sections and vertical uprights,

(d) corset actuating means operative to close the corset element to grip the coil of wire externally during unwinding and to open the corset element sufficiently to permit the placement of a coil on the plate,

(e) a pressure device extending over the coil and being operative to bear downwardly on the top of the coil to stabilize the coil during unwinding and

(f) pressure device actuating means for moving the pressure device vertically, said pressure device actuating means being operative to advance the pressure device to press against the top of the coil and to retract the pressure device to enable placement of a coil on the plate.

4,512,534

CASSETTE REEL LOCK

Don R. Coy, Jr., Palatine, and Peter M. Giannis, Arlington Heights, both of Ill., assignors to T/B & H Home Video, Northbrook, Ill.

Filed Aug. 12, 1982, Ser. No. 407,501

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—198 **10 Claims**

9. A reel locking mechanism for a tape cassette comprising:

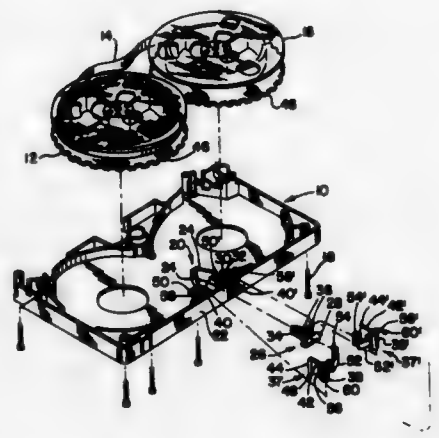
at least one cassette housing half;

a reel lock having means for engaging a reel in the cassette to prevent rotation of the reel;

mounting means for stationarily mounting said reel lock on said housing half, but allowing rotation of said reel lock on said housing half between reel engaging and disengaging positions;

spring means including a resilient arm extending angularly to said reel lock, and having one end formed integrally and in one-piece relationship to said reel lock, the other end of said arm being free and unattached and including an enlarged portion adjacent said other end of said arm; and

spring engaging means mounted stationarily on said housing half, said resilient arm slidably contacting said spring engaging means along the length of said arm when said



reel lock is rotated between said reel engaging and disengaging positions to urge said reel lock toward said reel engaging position.

4,512,535

TAPE CASSETTE WITH CLUTCH ASSEMBLY

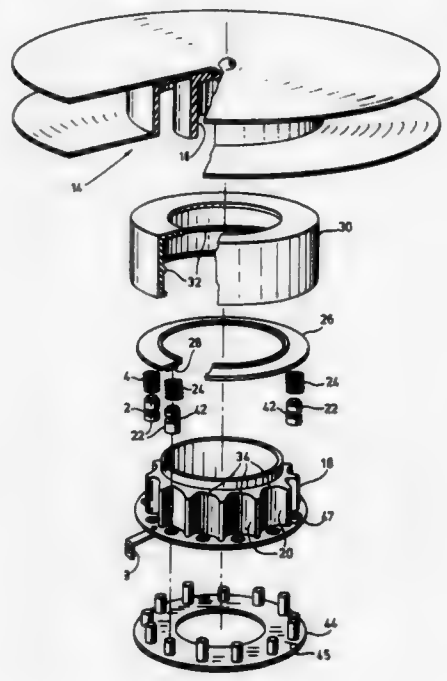
Edward J. Dickson, 55 Charles St. W., Apt. 3103, Toronto, Ontario, Canada, and Richard J. Armstrong, Toronto, Canada, assignors to Edward John Dickson, West Toronto, Canada

and a continuation-in-part of Ser. No. 544,505, Oct. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 476,916, Mar. 21, 1983, abandoned. This application Mar. 21, 1984, Ser. No. 591,915

Claims priority, application Canada, Mar. 2, 1983, 422682

Int. Cl.³ G11B *15/32, 23/04*; B65H *17/02*

U.S. Cl. 242—200 **12 Claims**



1. A cassette having a casing and reels mounted for rotation within the casing and connectable to a rotatable drive shaft to transfer tape from one reel to the other characterized by:

locking means for locking one of said reels against rotation with respect to the casing in only one direction when operative;

said locking means being releasable to render it inoperative and to permit said reel free rotation with respect to the casing in either direction;

said locking means including a roller cage, brake means and rollers;

one of said roller cage and brake means being nonrotatable

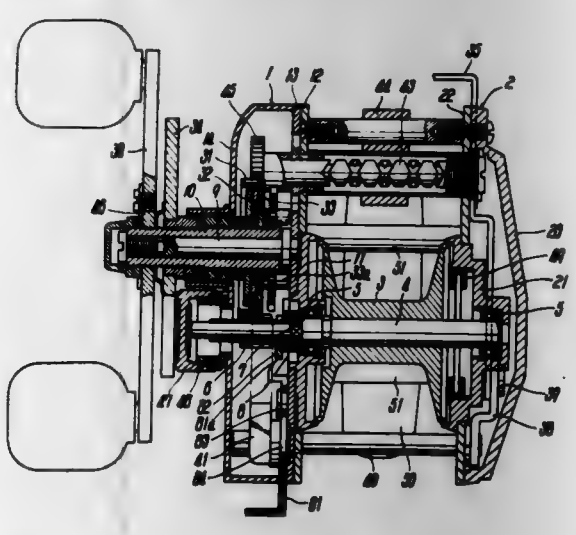
with respect to said body the other of the roller cage and brake means being nonrotatable with respect to the reel;
said roller cage having a series of channels arranged in a circle;
each channel of said series of channels having one of said rollers therein;
said brake means having a brake surface;
said roller cage and said brake surface of said brake means defining a space therebetween that is annular in cross section, each of said channels of said series of channels having a ramp surface at its bottom that slopes towards the brake surface on the brake means in the direction against which the locking means locks;
said rollers being moveable longitudinally of their respective channels between positions to dispose said locking means in an operative position or an inoperative position, said operative position being one where the rollers wedge between a brake surface of the brake means and the ramp surface of the roller cage to lock against rotation of reel with respect to the casing in one direction and permit free rotation in the other direction, the inoperative position being one where the rollers will not wedge between the roller cage and brake means whereby to permit free rotation of the reel with respect to the casing in either direction of rotation; the distance in a radial direction across the space of annular cross section between the roller cage and brake surface being of a length that is different for the operative position of the rollers and the inoperative position of the rollers, the said distance being longer in the inoperative position than the operative position and long enough in the inoperative position to avoid wedging between the roller cage and brake means as aforesaid and short enough in the operative position to cause wedging between the roller cage and brake means as aforesaid.

4,512,536

FISHING REEL

Jun Sato, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 344,746, Feb. 1, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,220
Claims priority, application Japan, Feb. 9, 1981, 56-17506
Int. Cl.[3] A01K *89/015*
U.S. Cl. 242—218 3 Claims



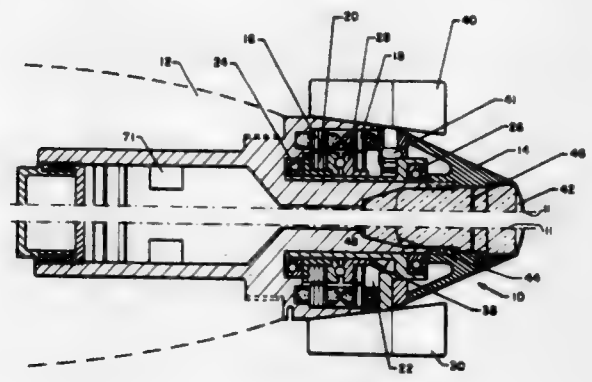
1. A fishing reel comprising:
first and second side frames;
a spool supported rotatably between said side frames;
a handle supported rotatably to said first side frame;
a transmission mechanism including a clutch for transmitting rotation of said handle to said spool, and
a clutch control mechanism having a clutch lever for engaging or disengaging said clutch, said second side frame opposite to said first side frame being provided with a clutch operating member, said first and second side frames being provided with an association mechanism including an association shaft journalled between said side frames for mechanically coupling said clutch operating member with said clutch lever so that operation of said clutch operating member causes said clutch control mechanism to operate said clutch, said clutch lever projecting outwardly from said first side frame, so that the projecting portion of said clutch lever also is operable to cause said clutch control mechanism to operate said clutch, said first and second side frames being provided with side plates and covers respectively, said association shaft being journalled to said side plates at said first and second side frames and projecting at both axial ends thereof outwardly from said side plates respectively, and having an association arm at a first projecting axial end of said association shaft at a side of said first side frame, said association arm being connected with said clutch lever, said clutch operating member being connected with said projecting axial end of said association shaft at a side of said second side frame.

4,512,537

CANARD CONTROL ASSEMBLY FOR A PROJECTILE

George Sebestyen, Weston, Mass.; Ronald R. Sinclair, Moultonboro, N.H.; John A. Smith, Bedford, Mass.; Timothy B. Sands, Acton, Mass., and Theodore J. Nussdorfer, Lexington, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 10, 1973, Ser. No. 392,716
Int. Cl.[3] F42B *13/28, 15/02*
U.S. Cl. 244—3.21 10 Claims



1. Apparatus for providing precision correction to the trajectory of a standard gun-fired projectile by providing a device which is adapted to be screwed into the fuze well of the standard projectile, comprising:
a main housing having means for inserting same into the fuze well of the gun-fired projectile thereby adapting the projectile to supply guidance thereto;
a canard frame coupled to said main housing for relative rotation thereto about the longitudinal axis thereof;
said canard frame having deflectable canards thereon; and
means for deflecting said canards to guide the projectile.

4,512,538

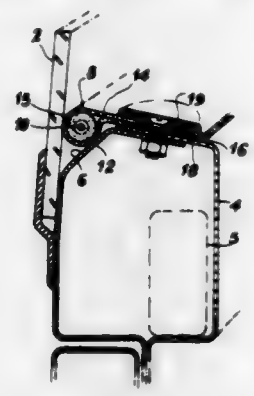
DEVICE FOR MAINTAINING A DETONATING CORD AGAINST A TRANSPARENT AIRCRAFT CANOPY MEMBER

Jules H. P. Devienne, Sartrouville, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

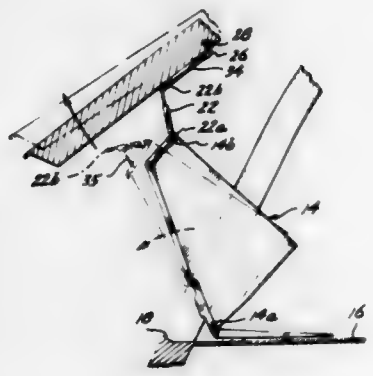
Filed Mar. 1, 1983, Ser. No. 470,944
Claims priority, application France, Mar. 4, 1982, 82 03609
Int. Cl.[3] B64D *25/08*
U.S. Cl. 244—122 AF 12 Claims

1. A device for maintaining a detonating cord against a transparent aircraft canopy member, said device comprising a closed sheath within which is placed the detonating cord, an outer envelope, whereof a first part, entirely surrounding the closed sheath, is maintained against the transparent member and whereof a second part is fixed to a longeron the cross-sec-

tion of which is shaped in such a way that it defines a first surface forming a dihedral angle with the surface of the transparent canopy member, the part of the outer envelope surrounding the closed sheath being kept against both the transparent canopy member and the first surface, as well as a second surface, to which is fixed the second part of the outer envelope.



4,512,539
ESCAPE SLIDE DEPLOYMENT SYSTEM
Albert B. Ackermann, Fountain Valley, Calif.; Donald K. Jones, Bellevue, and Timothy M. Holey, Marysville, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Aug. 15, 1983, Ser. No. 523,184
Int. Cl.³ B64D *25/14*
U.S. Cl. 244—137 P **9 Claims**



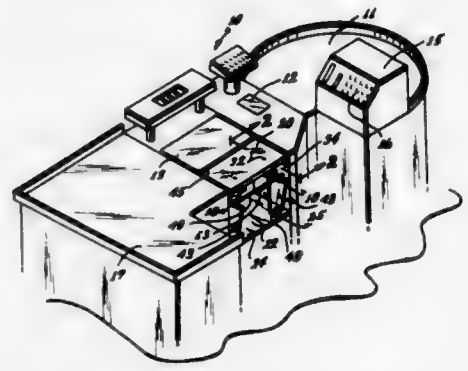
1. A deployment apparatus for use in moving an escape slide contained in a stowage pack from a position within an aircraft adjacent the sill area of a door opening in the aircraft fuselage, through the door opening to a position exterior to the aircraft fuselage, said aircraft including a door movably mounted in said door opening and operable to swingably move between an open position and a closed position, said deployment apparatus comprising:

a rigid elongate deployment arm having a first portion, a first end of said first portion being swingably attached to said stowage pack, and a second portion slidably engaging said first portion such that a first end of said second portion is movable longitudinally with respect to said first portion to make said deployment arm extensible;

arming means movably mounted on an interior surface of said door, said arming means being movable between a first position in which it is out of engagement with said deployment arm and a second position in which it cooperably engages said first end of said second portion of said deployment arm, said arming means engaging and capturing said first end of said second portion of said deployment arm as it moves from said first position to said second position; and

elongate guide track means fixed to the interior surface of said door, said arming means cooperable with said guide track means when said arming means is in said second position to guide said first end of said second portion of said deployment arm into a first end of said guide track means as said door is moved from said closed position toward said open position, said first end of said second portion of said deployment arm moving along the elongate dimension of said guide track means as said door moves toward said open position until it exits from a second end of said guide track means when a predetermined degree of movement of said door has been exceeded.

4,512,540
PLASTIC BAG RACK FOR CHECKSTAND
Alvin L. Stroh, Downey, Calif., assignor to McMillin Wire and Plating, Inc., Los Angeles, Calif.
Filed Apr. 18, 1983, Ser. No. 486,262
Int. Cl.³ B65B *67/12*
U.S. Cl. 248—95 **10 Claims**



1. A combination of a plastic bag rack and an adjustable mount for mounting said rack on the undersurface of a panel movable between a position in which it covers a well provided in the table top of a checkstand at a supermarket and an upright position on the rear of said well, said combination comprising:

a rack having a pair of side support arms, each said side support arm including a front and rear shoulder;

a downwardly and rearwardly extending bottom side member joined to the end of each of the front shoulders;

an upper transverse member for joining the ends of the rear shoulders;

a lower transverse member for joining the ends of the downwardly and rearwardly extending bottom side members;

a pair of strip members connected across the upper and lower transverse members;

a pair of attachment means connected on the undersurface of said panel, each said attachment means having a longitudinal slot on a front wall thereof; and

a pair of pins slideably extending through the longitudinal slot on the front wall of each said attachment means;

said pair of pins having one of the ends thereof engaged to said strip member and having heads on the opposite ends thereof retained within the longitudinal slot on the front wall of said attachment means to thereby provide for coupling said strip member to the front wall of said attachment means;

whereby when said panel is disposed in an upright position said rack can be held on said attachment means in a first location in which all portions of the rack are below the upper edge of said panel and a second location in which a portion of the rack is elevated above the upper edge of said panel.

4,512,541
DISPLAY STAND
G. W. Lietzke, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.
Filed Mar. 15, 1982, Ser. No. 358,220
Int. Cl.³ A47B *97/04*
U.S. Cl. 248—459 **3 Claims**

1. A display stand including integral base and header mem-

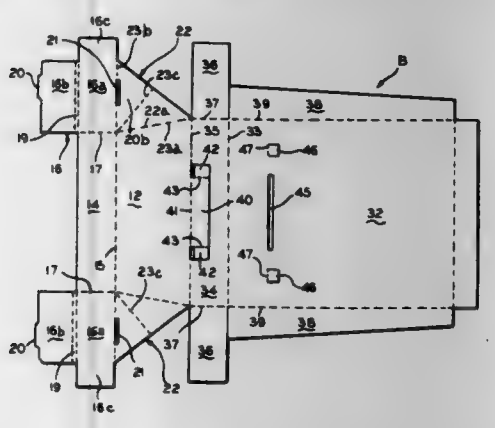
bers formed from a unitary blank of foldable sheet material such as paperboard, comprising:

(a) a header member including a vertically disposed display panel having a pair of support flanges foldably joined to opposite side edges thereof and disposed to extend rearwardly from said panel for support thereof;

(b) said panel presenting, adjacent a lower end thereof a retaining slot extending therethrough;

(c) a base member including a rear wall, a top wall, and a front wall foldably joined to form a box-like structure;

(d) said base member rear wall being foldably joined at a lower edge to a lower edge of said display panel and folded to lie in face-to-face engagement with a front surface of said display panel;



(e) said base member rear wall including a retaining flap cut from material thereof, folded thereto at an upper edge thereof, and disposed to extend through said display panel retaining slot to provide interlocking engagement therebetween;

(f) said base member rear wall having foldably joined to opposite ends thereof a pair of intermediate end flaps;

(g) said base member front wall having foldably joined to opposite ends thereof a pair of outer end flaps;

(h) each of said outer end flaps having foldably joined to a lower edge thereof an inner end flap;

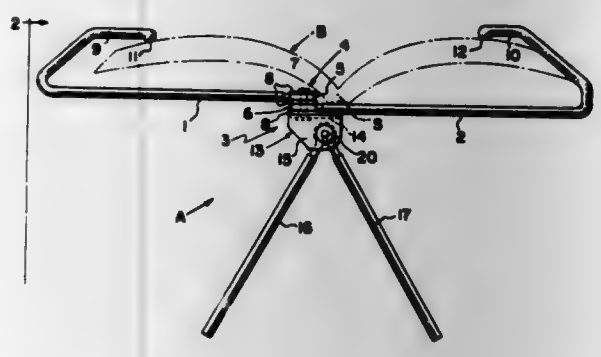
(i) each of said base member intermediate end flaps being sandwiched between a related pair of inner and outer end flaps.

4,512,542

BOOK HOLDER

Maurice Black, 2412 S. Washington Ave., Saginaw, Mich. 48601

Filed Sep. 29, 1982, Ser. No. 426,280
Int. Cl.³ A47B *97/04*
U.S. Cl. 248—460 **11 Claims**



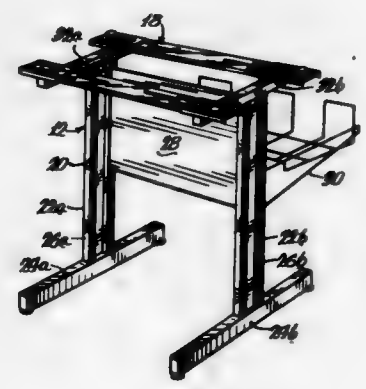
1. A book holder comprising a pair of limbs extending in opposite directions from a central zone; a reversely turned finger at the free end of each of said limbs extending alongside and spaced from the associated limb, the spacing between one finger and its limb being less than that between the other of said fingers and its limb by an amount sufficient to enable said one finger to nest with the other of said fingers; and means coupling said limbs to one another at said zone and enabling relative movement between said limbs in such manner as to move said limbs between a number of positions, one of said limbs being longer than the other by such an amount that in one of said positions of said limbs said one finger nests with the other of said fingers.

4,512,543

UNIVERSAL PRINTER STAND

David C. Petrick, Park Ridge, Ill., assignor to Bretford Manufacturing, Inc., Schiller Park, Ill.

Filed Sep. 27, 1982, Ser. No. 424,403
Int. Cl.³ F16M *11/00*
U.S. Cl. 248—670 **20 Claims**



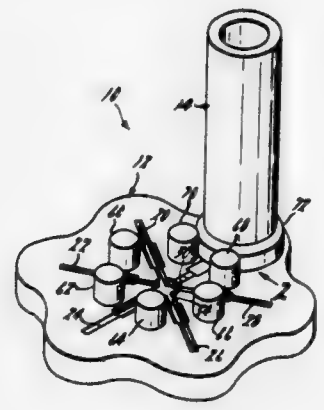
1. A universal printer stand for supporting any one of a number of printer types each having support legs separated from one another by lateral and longitudinal distances which depend upon the particular type of printer to be supported, comprising: a platform having a pair of spaced support members and a pair of spaced cross members secured to and transversely disposed with respect to the support members to afford an upper platform surface; receiving means disposed on the cross members for supporting the legs of the printer including extender brackets disposed on each of the cross members; means for adjusting the receiving means to accommodate the lateral and longitudinal distances between the printer support legs; and means for supporting the platform such means being positioned below the upper platform surface and being in noninterfering relationship with the adjusting means.

4,512,544

BOTTOM POUR INGOT MOULD SYSTEM

Paul D. Eckenrode, Newton Falls; Richard P. Eisenbrei, and James E. Nixon, both of Youngstown, all of Ohio, assignors to Microdot Inc., Darien, Conn.

Filed Sep. 1, 1982, Ser. No. 413,609
Int. Cl.³ B22D *7/06, 41/08*
U.S. Cl. 249—109 **3 Claims**



1. A bottom pour ingot mould system comprising:

a sprue plate having a support surface for the support of an ingot mould, an inlet aperture for the acceptance of molten steel, an outlet aperture for the discharge of molten

steel, and a horizontally extending runner below the support surface thereof communicating with the inlet and outlet apertures,

a pair of vertically extending integral guide pads on said sprue plate between the inlet and outlet apertures therein and disposed on opposite sides of said runner, and

an ingot mould on the support surface of said sprue plate having a bottom inlet for the acceptance of molten steel, said guide pads extending above the support surface on said sprue plate so as to engage said mould upon horizontal movement thereof relative to said sprue plate, abutment of said ingot mould against each of said guide pads positively positioning the bottom inlet therein over the outlet aperture in said sprue plate.

4,512,545

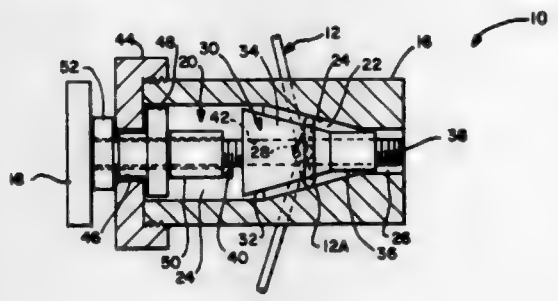
EXTERNALLY ACTUATED VALVE ASSEMBLY AND METHOD

Dav Mar, Sunnyvale, Calif., assignor to Dionex Corporation, Sunnyvale, Calif.

Filed Jun. 24, 1982, Ser. No. 391,571

Int. Cl.³ F16L *55/14*

U.S. Cl. 251—4 **6 Claims**



1. A valve assembly for controlling the flow rate of a fluid through an elastomeric conduit including a section thereof having an inner pasageway, said assembly comprising: first means configured as a right-circular conic section having an outer conic surface adapted to support said section of conduit such that the latter makes at least one turn around said surface at approximately a right angle with one axis of the conic section, second means defining a cavity having an inner surface disposed around and corresponding in conic configuration to said outer surface with a spacing therebetween for accommodating said conduit section; and means for moving said conic section along its conic axis between adjustably fixed positions relative to said cavity in order to change the spacing between said inner and outer surfaces for squeezing said conduit section and changing the cross-sectional configuration of its passageway a proportionate amount, whereby to control the flow rate of fluid therethrough.

4,512,546

SOLENOID ACTUATED VALVE DEVICE

Masami Inada, and Kenji Hashimoto, both of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

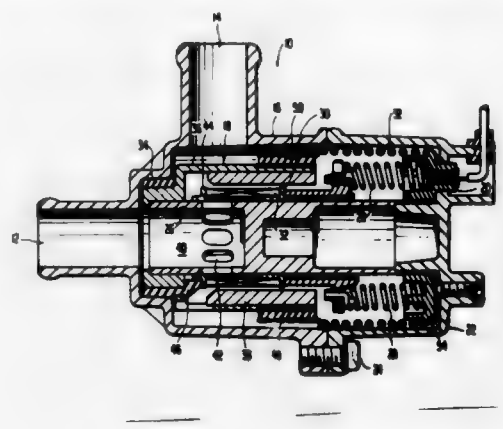
Filed Dec. 29, 1981, Ser. No. 335,430

Claims priority, application Japan, Dec. 29, 1980, 55-187712[U]

Int. Cl.³ F16K *31/08*

U.S. Cl. 251—65 **1 Claim**

1. A solenoid actuated valve device for controlling the flow of fluid comprising a body having an inlet port and an outlet port, a hollow tubular core axially mounted within said body with one end thereof disposed in communication with said outlet port and having at least one radially extending aperture therethrough to provide communication between said inlet port and said outlet port, an annular yoke supported at one end thereof on said one end of said core, a bobbin having valve means being slidably mounted on said core within said yoke to control the effective open area of said aperture, a solenoid coil wound on said bobbin, permanent magnet means secured within said yoke so that the magnetic flux thereof intersects the windings of said solenoid coil at right angles thereto whereby a magnetic circuit is defined by said yoke with said core and permanent magnetic means to provide a magnetic force causing said bobbin to move relative to said core when electric current passes through said coil, spring means biasing said bobbin to a position wherein said valve means closes said aperture, first resilient means sealingly mounting said one end



of said core and said one end of said yoke in said body adjacent said inlet port and providing resilient stopper means for said valve means and second resilient means supporting the opposite end of said yoke within said body wherein said yoke is provided with apertures through which a portion of said first resilient means protrude to define said resilient stopper means for said valve means and is provided with additional passage means communicating said apertures in said core with said outlet port.

4,512,547

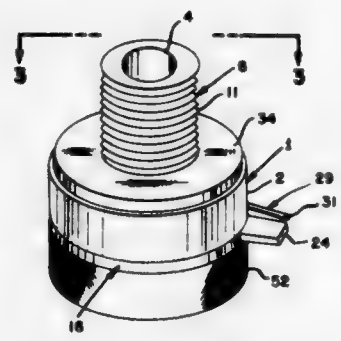
LOCKING DRAIN VALVE

Duane C. Balch, Napa, Calif., assignor to Chartwell Corporation, Line Lexington, Pa.

Filed May 6, 1983, Ser. No. 492,450

Int. Cl.³ F16K *35/02*

U.S. Cl. 251—115 **3 Claims**



1. A locking drain valve assembly comprising:

a. a valve housing (1) formed with sidewalls (2) and a passage (3) therethrough including an inlet opening (4), an upstream portion (17), an opening in said upstream portion, an outlet opening (5), an annular seat area (40) surrounding said passage;

b. said housing being formed with connection means (6) adapted for connection to a fluid source (7);

c. said housing being formed with a transverse slot (12) intersecting said passage creating an opening (41) in said passage and terminating at an inside slot wall (13) within said housing;

d. a slide gate member (16) dimensioned for registration within said transverse slot and having a portion (39) dimensioned for covering said annular seat area (40) and said opening (41) in said upstream portion (17) of said passage;

e. pin means (19) connected to said housing and said slide gate for pivotal movement of said slide gate into and out of closure position with said opening (41) in said upstream portion (17) of said passage (3);

f. said slide gate being formed with a finger engageable lever (24) extending beyond said side of said housing;

g. slide gate sealing means (25) mounted in said housing surrounding said passage and sealably engaging said slide gate member in said closed position for preventing flow of fluid through said passage;

h. said slide gate being formed with a spring latch engageable portion (42);

i. spring latch means (29) having a curvilinear cross section moveable between a latched and an unlatched position, including a proximal end (30) connected to said housing and a distal end (31) projecting beyond said side wall (2) adapted for finger engageable release, a V-shaped portion (32) formed adjacent said distal end for releasable engagement with said spring engageable portion in said slide gate in said closed position of said slide gate, a mid-portion (33) arcuately formed between said V-shaped portion and said proximal portion extending from said side of said valve body in said unlatched position and moveable to a latched position by finger compression;

j. housing sealing means (34) adapted for sealing said valve housing to said fluid source;

k. a portion of said side of said housing is formed with an annular groove (36) dimensioned for receiving a portion of said spring latch means;

l. the proximal end (30) of said spring latch means is formed with a hook shape for operative non-removeable engagement of an end of said annular groove and said inside slot wall permitting spring deforming rotational movement of said distal end of said spring latch means relative to said proximal end;

m. spring latch holding means (35) formed in said housing for releasably engaging said "V38 shaped portion of said spring latch means when said spring latch means is moved to said unlatched position permitting easy unbiased movement of said slide gate between said open and closed positions;

n. said spring latch means is positioned with respect to said slide gate so that it must be moved counter to said slide gate to effect unlatching; and p1 o. said sealing means (25) includes an annular groove (26) formed in said housing surrounding said passage in an upstream side of said slot; and

p. an "o" ring (27) dimensioned for receipt within said annular groove and dimensioned for sealing receipt with said slide gate in said closed position.

4,512,548

VALVE WITH A DEVICE FOR THE ATTENUATION OF ACOUSTIC VIBRATIONS SELF-EXCITED BY THE WORKING MEDIUM

Jakob Keller, Killwangen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

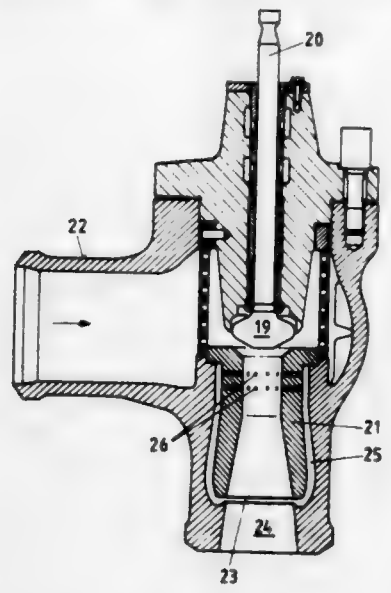
Continuation of Ser. No. 239,588, Mar. 2, 1981, abandoned. This application Jan. 19, 1984, Ser. No. 571,648

Claims priority, application Switzerland, Feb. 28, 1980, 1587/80

Int. Cl.³ F16K *1/34*

U.S. Cl. 251—124 **4 Claims**

1. In a fluid valve of the type comprising a housing, a valve seat surrounding an opening, a closure for the seat to close-off said opening, and a diffuser including a wall having a generally annular surface therein forming a diffuser channel disposed downstream of said seat for recovering pressure energy in the working medium, the improvement comprising conduit means fluidly intercommunicating a region within said diffuser channel where a flow separation point occurs and a portion of said valve where pressure is higher than at said region during operation, to stabilize said flow separation point and minimize resulting noise, said conduit means comprising an annular passage surrounding said diffuser and a plurality of holes in said diffuser wall surface and communicating with an area of narrowest cross-section of said diffuser channel, said area of narrowest cross-section having a cross-section no larger than



the cross-section of said opening of said seat, said diffuser channel being disposed in contiguous relationship with said opening so that no gap is formed therebetween, the length of said diffuser channel being longer than a diameter of said narrowest cross-section.

4,512,549

MAGNETIC VALVE

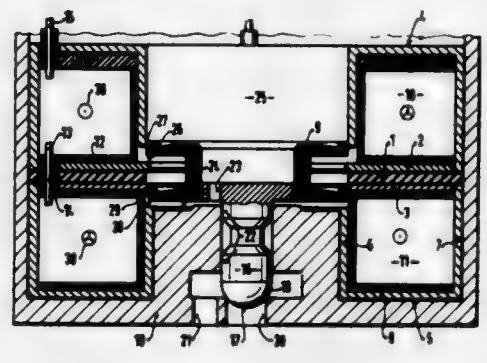
Theodor Gast, Berlin; Hans Kubach, Korntal, and Kurt Binder, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,715

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136734

Int. Cl.³ F16K *31/02*

U.S. Cl. 251—137 **7 Claims**



1. A magnetic valve having at least one soft-iron core means and further provided with a movable armature of magnetically conductive material, which carries a valve body, and a disc shaped permanent magnet surrounding said armature and interposed between oppositely disposed fixed first and second magnetic conductor disc elements of which said permanent magnet is in magnetic contact for reinforcing movement of said armature positioned in proximity thereto, characterized in that said soft-iron core means comprises first and second soft-iron cores which are disposed parallel to one another, each of said cores arranged to surround a coil member, said armature is formed as an annular element adapted for reciprocable movement under influence of a magnetic field established by said coil members, said permanent magnet, said magnetic cores and said disc elements, each of said conductor disc elements having portions physically in contact with said soft-iron core means and in magnetic contact therewith, and a first air gap

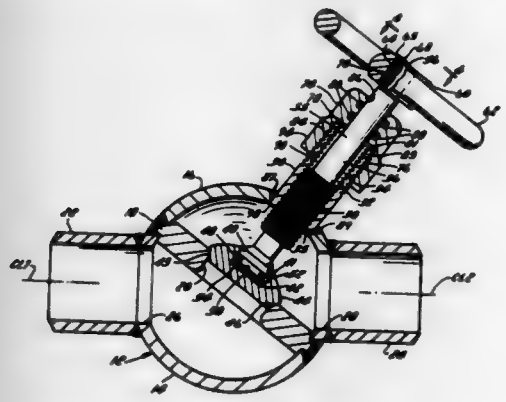
disposed between said armature and the first magnetic conductor disc element, a second air gap disposed between said armature and said first soft-iron core, a third air gap disposed between said armature and said second soft-iron core and a fourth air gap disposed between said armature and said second magnetic conductor disc element with said first and third air gaps disposed parallel to the direction of said armature movement, and said second and fourth air gaps are disposed perpendicular to the direction of said armature movement.

4,512,550

SEALING MEANS FOR VALVE SPINDLE

Erich J. Kocher, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Jul. 25, 1983, Ser. No. 516,685
Int. Cl.³ F16K *41/00*
U.S. Cl. 251—214 **4 Claims**



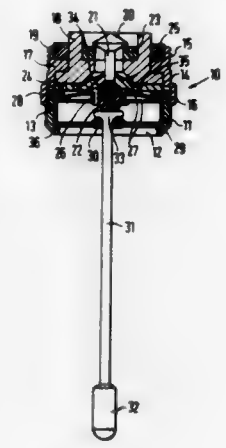
1. A valve (60) comprising:
a hollow valve body (12) having a hole (35) therein;
a hollow sleeve (30) secured to said body (12) and having a sleeve bore therethrough communicating with said hole (35);
said sleeve (30) having a flat annular outer end surface (81), an externally threaded portion (34) and an internally threaded portion (32);
a valve spindle (36) extending through said sleeve (30) and having an unthreaded portion (55) and an externally threaded portion (38) threadably engaged with said internally threaded portion (32) of said sleeve (30) whereby rotation of said spindle (36) effects axial movement of said spindle (36) relative to said sleeve (30);
a bonnet (74) having a bonnet bore (84) therethrough for accommodating said sleeve (30) and said spindle (36) and having an internally unthreaded portion (86) for receiving said unthreaded portion (55) of said valve spindle (36) and having an internally threaded portion (76) in said bonnet bore (84) threadably engaged with said externally threaded portion (34) of said sleeve (30), said bonnet (74) having a flat annular flange (83) extending inwardly into said bonnet bore (84), said unthreaded portion (86) of said bonnet bore (84) having a plurality of annular grooves (88) formed therein;
first compressible deformable packing material sealing means (78) entrapped in said bonnet bore (84) between said flat annular flange (83) and said flat annular outer end surface (81) of said sleeve (30);
and second resiliently compressible deformable resilient sealing means in the form of O-rings (80) entrapped in said grooves (88) between said bonnet (84) and said unthreaded portion (55) of said valve spindle (36).

4,512,551

DEVICE FOR RELEASING THE FLOW OF WATER IN A WATER FAUCET

Gotthilf R. Dalferth, Auf den Felsen 25, D-7140 Ludwigsburg-Poppenweiler, Fed. Rep. of Germany

Filed Jun. 9, 1983, Ser. No. 505,154
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222004
Int. Cl.³ F16K *31/254*
U.S. Cl. 251—339 **17 Claims**



1. Device for releasing the flow of water from a water faucet by a valve means enclosed within a casing (10) connectible at its inlet with said faucet opening, said valve means opening and closing said inlet opening with a valve body (20), said valve body (20) resting on a valve seat (23) facing said inlet opening of said casing (10) and actuated by operating lever (31) extending out of the outlet opening of said casing (10) and having an operating plate (33) within said casing and supported in the vicinity of said outlet opening of said casing so as to pivot in all directions removing said valve body (20) from said valve seat (23) by said pivot action, characterized in that said operating lever (31) is supported in a center bushing (30) of an annular perforated disc insert (29) covering said outlet opening of said casing (10) and is held suspended therein by said operating plate (33).

4,512,552

CORROSION INHIBITOR

Sakae Katayama, Osaka; Tadahiko Asano, Sennan; Kazuo Marugame, Sakai; Sadaoki Kanada, Ibaraki, and Yoshinari Kawasaki, Osaka, all of Japan, assignors to Katayama Chemical Works Co., Ltd., Osaka, Japan

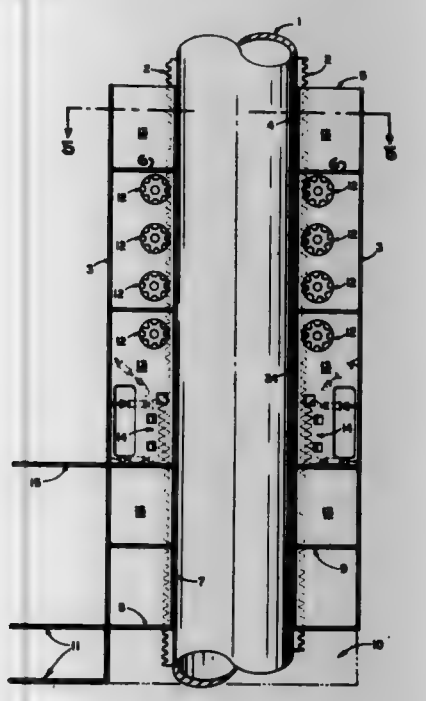
Filed Nov. 16, 1982, Ser. No. 442,136
Int. Cl.³ C23F *11/18*; C09K *3/00*
U.S. Cl. 253—389 R **10 Claims**

1. A composition comprising:
(a) one or more inorganic acid components of molybdic acid or its alkali salt, tungstic acid or its alkali salt, or the alkali salt of nitrous acid;
(b) an aliphatic hydroxycarboxylic acid or aliphatic dicarboxylic acid having up to seven carbon atoms or salt thereof;
(c) an inorganic heavy metal compound selected from the group consisting of the sulfate, the chloride, the nitrate and the sulfanate of zinc, manganese, tin, and, nickel, and mixtures thereof, which can readily release a heavy metal ion in water; and
(d) a water-soluble polymer component having a molecular weight in the range of 500 to 100,000 of a homo- or copolymer of acrylic acid, methacrylic acid or maleic acid; or a copolymer of any said three monomers with other copolymerizable compounds having an ethylenic double bond; or a mixture of said homocopolymer and copolymer; the weight ratio of components a:b:c:d: being about 1:0.2–30:0.1–5:0.1–5.

4,512,553
JACK-UP UNIT

David A. Dunham, New Orleans; Robert P. Riggs, Luling, and Rufus L. Burton, Jr., New Iberia, all of La., assignors to Red Fox Industries, Inc., New Iberia, La.

Filed Mar. 17, 1982, Ser. No. 358,920
Int. Cl.[3] B66F *7/12*
U.S. Cl. 254—89 R 5 Claims



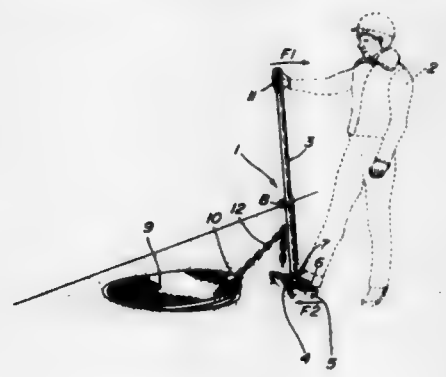
1. A Jack-Up Unit for use in a body of water, comprising:
a floatable hull;
a plurality of legs, said legs suitable for contacting a solid surface and for supporting said hull in an elevated position relative to the surface of said body of water, each of said legs including at least one longitudinally extending leg gear rack;
means for moving said hull longitudinally relative to said legs for establishing said hull at a desired height relative to said legs;
a guidance system on each leg for said moving means, comprising,
an upper guide member configured to surround said leg at a close tolerance interval, and
a lower guide member configured to surround said leg at a close tolerance interval; and
a plurality of gear rack sections located one proximate each leg intermediate said upper guide member and said lower guide member, each gear rack section movable into and out of toothed engagement with said leg gear rack section on its respective leg, said toothed engagement including a gear tooth backlash in excess of said close tolerance between said upper and lower guide members and said leg whereby said engagement of said gear rack section and said leg gear rack is vertically load bearing yet horizontally pliable.

4,512,554
LEVERING TOOL FOR MANHOLE COVER

Jacques Racine, Charlesbourg, Canada, assignor to Hydro-Quebec, Quebec, Canada

Filed Mar. 18, 1983, Ser. No. 476,816
Claims priority, application Canada, Dec. 21, 1982, 418234
Int. Cl.[3] B66F *3/00*
U.S. Cl. 254—131 11 Claims

1. A levering tool useful in displacing an object, such as a manhole cover, out of or onto its housing at substantially ground level and permitting said object to be dragged over a distance sufficiently long whereby the object can be pulled over obstacles in the environment of the housing comprising:
a base provided with anti-skidding elements in a lower surface thereof and a foot receiving upper surface onto which the user can stand to provide a restraining load on said base; said anti-skidding elements being a series of plates of a substantially similar dimension and disposed parallel to one another and secured to said base, each plate of said series of plates lying at an angle of about 15° from a vertical axis;
an elongated and rigid power bar having a lower end mounted for pivotal movement on said base and an upper end of said power bar being free for movement along an arc in a predetermined direction, said upper end defining a hand gripping end so that a person can effect said pivotal movement by pulling said power bar from said upper end;

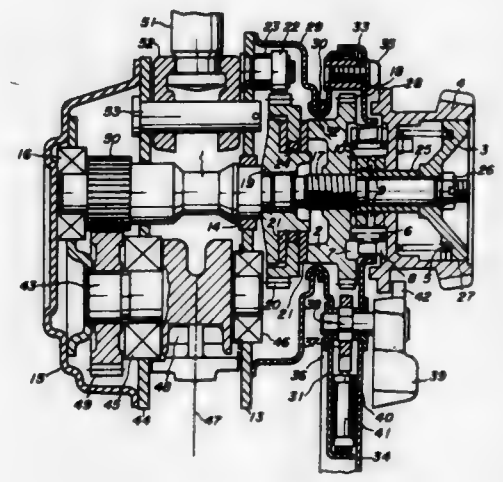


a link of appropriate resistance connectable between said power bar and said object;
connecting means firmly connecting said object to be displaced to said power bar through said link whereby a hand pulling force applied on said upper end of the power bar causes outward displacement of said object out of the housing by straining said link with said anti-skid base remaining substantially stationary whether on hard or soft surfaces such as concrete, asphalt, loose soil, grass, ice or snow.

4,512,555
IDLING DEVICE FOR LEVER HOIST

Takayoshi Nakamura, Atsugi, Japan, assignor to Kabushiki Kaisha Kito, Yamanshi, Japan

Filed Jun. 24, 1983, Ser. No. 507,384
Claims priority, application Japan, Jul. 2, 1982, 57-113927
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.[3] B66F *19/00, 3/30;* G05G *1/12;* F16D *13/42*
U.S. Cl. 254—350 10 Claims



1. An idling device for a lever hoist including a change gear provided on a driving member threadedly engaged on a driving shaft for driving a sheave winding up thereabout a chain, rope or the like for a load, an operating lever rockable about said driving member by a hand, a winding-up driving pawl

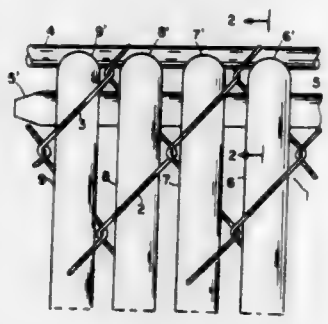
engageable with teeth of said change gear and driven by said operating lever in a winding-up direction for the load, and a braking assembly preventing said change gear from being driven from a side of said sheave and being clamped and released by rotative movement of said driving member relative to said driving shaft, said device comprising an anchoring member fixed to an end of said driving shaft on an opposite side of said braking assembly with respect to said driving member, a manually operatable knob arranged between said driving member and said anchoring member and fitted rotatably and axially slidably on said driving shaft relative thereto, a brake releasing torsion spring arranged between said manually operatable knob and said anchoring member to rotate said manually operatable knob into a brake releasing direction relative to said driving shaft, a brake clamping torsion spring arranged between said driving member and said manually operatable knob to rotate said driving member into a brake clamping direction relative to said manually operatable knob, engagement protrusions formed in said driving member and said manually operatable knob, respectively, and engaging with each other by urging by said brake clamping torsion spring to couple said driving member and said manually operatable knob, brake clamped position holding means for preventing said driving member from rotating into a brake releasing direction when said braking assembly is clamped, and brake over-released preventing means for preventing said driving member from further rotating into said brake releasing direction when said braking assembly is suitably released.

4,512,556

SLAT RETAINING MEANS FOR CHAIN LINK FENCES

Don A. Meglino, 85 Edwards St., Roslyn Heights, N.Y. 11577

Filed Feb. 6, 1984, Ser. No. 577,216
Int. Cl.³ B21F *27/00*
U.S. Cl. 256—34 **4 Claims**



1. Slat retaining means for chain link fences of the type made of linking wires comprising:
- a plurality of parallel slats woven through the wires the parallel slats extending in a first direction,
- a rectangular aperture in each parallel slat and
- a connecting member of complimentary rectangular cross-section along its length inserted through said rectangular apertures to lock the parallel slats in position,
- wherein the rectangular apertures are a predetermined distance from one end of the parallel slats and the connecting member is adapted to be secured to a vertical fence support.

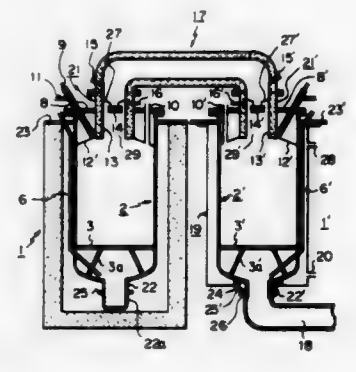
4,512,557

APPARATUS FOR PREPARING HIGH-MELTING-POINT HIGH-TOUGHNESS METALS

Etsuji Kimura; Katsumi Ogi; Kazusuke Sato, all of Saitama, and Mayuki Hashimoto, Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1983, Ser. No. 511,934
Claims priority, application Japan, Jul. 21, 1982, 57-125870; Mar. 4, 1983, 58-034488
Int. Cl.³ C22B *53/00*
U.S. Cl. 266—171 **14 Claims**

1. An apparatus for preparation of high-melting-point high-toughness metals by reduction of halide thereof with an active metal, comprising:
- a heatable reaction chamber in which a metal halide and an active metal are reacted, and the remaining active metal and produced active metal halide are vaporized;
- means for heating said reaction chamber;
- a coolable condensation chamber in which vapors of the remaining active metal and produced active metal halide are collected and condensed;
- means for cooling said condensation chamber; and



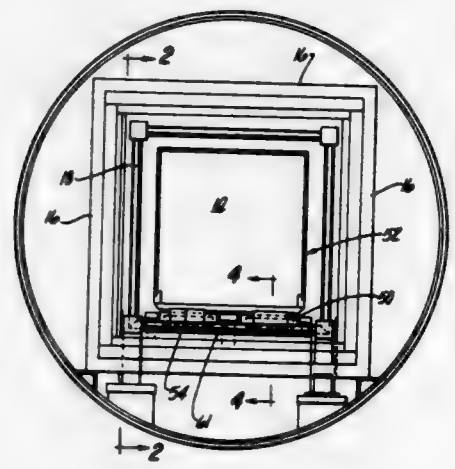
- a gas passage connecting the two chambers, the whole apparatus being evacuable, wherein the reaction chamber and the condensation chamber are positioned side-by-side in the upright position, wherein each chamber has a lid with a neck which is provided with a seal pot comprising a funnel member and a pan member receiving the lower pipe of the former and a neck heating means for heating the neck, and wherein the necks of the two chambers are communicated with a detachable connecting duct provided with a duct heating means.

4,512,558

COFFIN DELIVERY SYSTEM FOR METALLURGICAL FURNACE

Roy C. Lueth, St. Clair, Mich., assignor to Ultra-Temp Corporation, Mt. Clemens, Mich.

Filed Jan. 3, 1984, Ser. No. 567,769
Int. Cl.³ C21D *1/00*
U.S. Cl. 266—249 **9 Claims**



1. A delivery system in conjunction with a high temperature metallurgical furnace having an elongated furnace chamber with a bottom, top and two sides, said top, sides and bottom each comprising an insulating panel, said panel closing said chamber, and access means at at least one end of said chamber, a coffin delivery system comprising:
- a coffin having a bottom and adapted to carry parts,
- a plurality of roller assemblies, each roller assembly having an axle and a roller rotatably mounted to aid axle, said roller assemblies being constructed of a high temperature deformation resistant material,
- means for securing said roller assemblies to the bottom of

and within the furnace chamber so that the axles of said rolers extend transversely with respect to the axis of the furnace chamber whereby said rollers frictionally engage the bottom of said coffin and guide the coffin into the furnace chamber, and

wherein said roller assemblies are wholly contained within said furnace chamber.

4,512,559

LEAF SPRING CONSTRUCTION

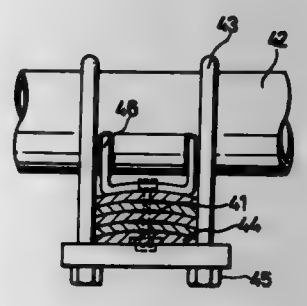
Shigetsune Aoyama; Kazuo Yoshikawa; Yoshimichi Hasegawa, and Junichi Higuchi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi; Aichi Steel Works, Ltd., Tokai and Chuo Hatsujyo Kabushiki Kaisha, Nagoya, all of, Japan

Continuation of Ser. No. 256,784, Apr. 23, 1981, abandoned. This application Aug. 1, 1983, Ser. No. 518,766

Claims priority, application Japan, May 1, 1980, 55-58526

Int. Cl.³ F16F *1/18*

U.S. Cl. 267—47 **10 Claims**



1. A leaf spring for use in a laminated leaf spring comprising:

a spring steel plate having a length greater than the width thereof and being mounted to undergo bending deformation in a direction perpendicular to the length thereof, said bending deformation defining a tension side and a compression side for said plate;

said steel plate having an arcuate shape in the transverse cross-section with a convex surface on said tension side thereof and a concave surface on said compression side thereof, said arcuate shape being uniform along the length thereof and said concave and convex surfaces respectively being defined by an arc of substantially constant radius over the entire width thereof; and

said steel plate having in said cross-section a width b and a transverse center line forming an arc of a radius r_c with the relation of

$$2.0 \geqq r_c/b \geqq 0.65,$$

thereby shifting the neutral axis in cross-section toward said convex surface so as to reduce tensile stresses during bending of said leaf spring and so as to improve both flexural rigidity and fatigue strength per unit weight of said leaf spring.

4,512,560

APPARATUS FOR MOUNTING RAILS ON A RIGID RAIL BEAM

Peter Mölzer, Ebersberg; Jürgen Pollner; Nicola Topic, both of Munich; Gregor Trummer, Aschering, and Rudolf Zurek, Gröbenzell, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 419,425

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139636

Int. Cl.³ B25B *11/02*

U.S. Cl. 269—20 **14 Claims**

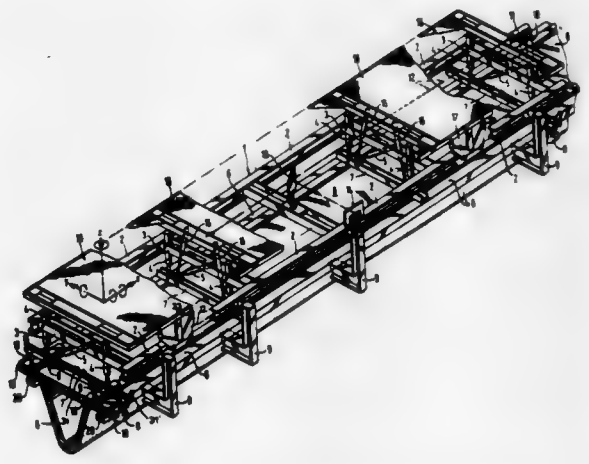
1. An apparatus for mounting relatively small and deformable elongated rails on a relatively large, generally horizontal, and nondeformable elongated rail beam, the apparatus comprising:

a stiff but limitedly elastically deformable elongated jig;

means including a plurality of clamps spaced longitudinally along the jig and engageable with the beam for locking onto the beam at respective longitudinally spaced locations;

means including respective vertical jacks and nonvertical jacks transversely engaged between the clamps and the jig for elastically deforming the jig into a desired shape relative to the rail beam; and

mounting means on the jig for securing the deformable rails to the jig in predetermined positions relative to the rail



beam, said jig including horizontal, generally parallel, and transversely spaced longitudinal frame members and horizontal and longitudinally spaced transverse frame members transversely bridging the longitudinal frame members, said clamp means including:

respective horizontal and transverse clamp beams at the locations,

respective jaws on the beams, and

respective hydraulic actuators for locking the jaws on the rail beam at the respective locations and thereby solidly arresting the transverse beams on the rail beam at the respective locations.

4,512,561

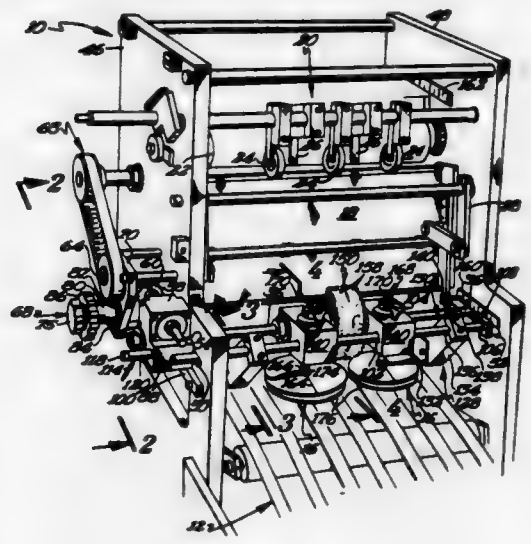
FOLDER UNIT WITH MEANS FOR SIMULTANEOUS PHASE SHIFTING OF FRONT AND REAR SPIRAL SETS

Frank Ury, St. Croix Falls, Wis., assignor to Brandtjen & Kluge, Inc., St. Croix Falls, Wis.

Filed May 15, 1984, Ser. No. 610,503

Int. Cl.³ B41L *1/30*

U.S. Cl. 270—40 **19 Claims**



7. In a folder unit for folding a continuous web of paper having cross perforations including a front set of spirals driven by a first shaft having a first end and a second end, a rear set of

spirals driven by a second shaft having a first end and a second end, with the first shaft being in a parallel spaced relation to the second shaft, a paper chute pivotal between a first position for directing the paper web towards the front set of spirals and a second position for directing the paper web towards the rear set of spirals and a first drive gear in a rotatable relation with the position of the paper chute, wherein the improvement comprises means for driving the first and second shafts together and for allowing the simultaneous phase shifting of the first and second shafts with the position of the paper chute, with the phase shifting and driving means comprising, in combination: a third drive shaft extending between the first and second shafts; means for rotatably relating the third drive shaft and the first shaft; means for rotatably relating the third drive shaft and the second shaft; a second drive gear rotatably related to but slideable with respect to the third drive shaft; with the first and second drive gears being helical gears and in gearing relation together; and means for sliding the second drive gear with respect to the third drive shaft forcing the third drive shaft to rotate and change its rotational position with respect to the first drive gear due to the helix of the first and second helical drive gears causing the rotational position of the front and rear sets of spirals to simultaneously change with respect to the position of the paper chute due to the rotatably relating means of the third drive shaft with the first and second shafts.

4,512,562

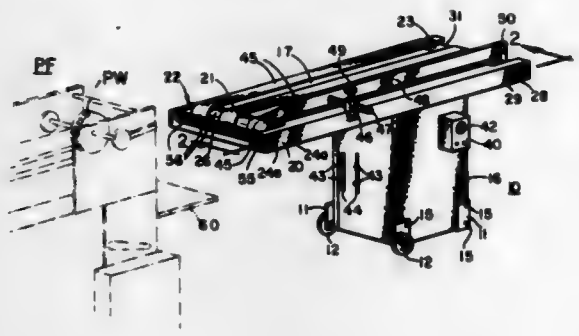
FEEDER TABLE WITH PHOTO-SCAN CONTROLLED BELT MOTOR

Richard J. Moll, c/o Dick Moll & Sons, 415 Constance Dr., Warminster, Pa. 18974

Continuation-in-part of Ser. No. 138,713, Apr. 9, 1980, abandoned. This application Jun. 18, 1984, Ser. No. 621,533

Int. Cl.³ B42C *1/00*

U.S. Cl. 270—45 **7 Claims**



1. In combination with a pile fed paper folding machine for folding sheets of paper or the like, which includes sheet pick up means, and hold down means on the machine the improvement which comprises

a portable feeder table for continuously supplying said sheets for folding which includes

a portable housing having therein a motor driven shaft,

a single variable speed motor for driving said shaft,

a horizontal longitudinally extending table carried by said housing,

height adjusting members on the lower part of said housing for adjusting the height of the table to accord with the height of the receiving portion of the machine to which the sheets are to be delivered,

said table having an input end and a delivery end,

said table having transverse end rollers at said input end and said delivery end and a plurality of flat horizontally disposed spaced endless driving belts carried on said rollers and longitudinally movable along said table,

said motor driven shaft being connected in driving relation to said roller at said delivery end,

said table having along one side edge thereof a longitudinally extending movable guide plate for one side edge of the sheets to be advanced,

said table having at the delivery end a transversely extending nose plate, and

detector means responsive to the presence or absence of a pile of paper sheets for controlling the operation of said motor and the advance of sheets to said folding machine for folding.

4,512,563

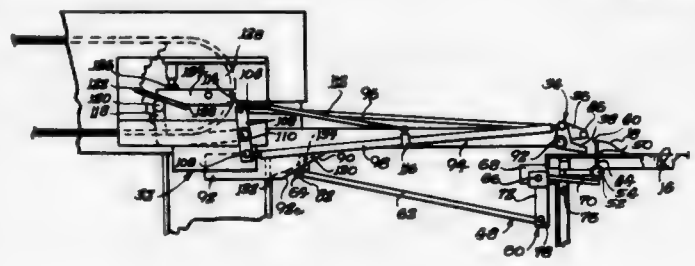
TAKEOFF METHOD AND APPARATUS

Henry J. Bubley, Deerfield, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed Oct. 26, 1982, Ser. No. 436,833

Int. Cl.³ B65H *29/10*

U.S. Cl. 271—85 **12 Claims**



1. Apparatus for transporting large sheets of stock which may have curled ends from a planar support surface to another location, comprising:

a stationary screen printing frame having a pivotally mounted printing head,

a stationary, planar support surface for supporting a sheet of stock at a fixed planar location thereon beneath said printing head,

gripper means for gripping a sheet of stock and transporting it, the gripper means comprising a plurality of grippers having upper and lower jaws movable between an open position for receiving a sheet of stock and a closed position for gripping a sheet,

means for opening and closing the gripper jaws,

carriage means mounted on the frame for transporting the grippers and a sheet gripped from the stationary planar support surface thereby to another location, and

lifting means mounted on the stationary frame including pins for raising a leading end of the sheet of stock upwardly above the stationary, planar support surface and including a mechanical operated means actuated by said carriage means to lift said pins to ensure that the jaws of the grippers grip sheets of stock having curled ends.

4,512,564

PULLOUT ROLLER ASSEMBLY

Ronald W. Alverth, Lombard, and Thomas H. Schumacher, West Chicago, both of Ill., assignors to The Mako-Tek Corporation, Downers Grove, Ill.

Filed Dec. 19, 1983, Ser. No. 562,854

Int. Cl.³ B65H *5/06*

U.S. Cl. 271—274 **11 Claims**

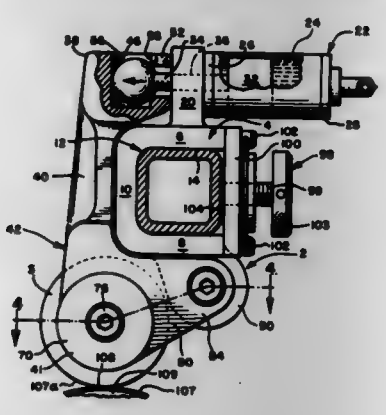
1. In a printing press comprising frame means supporting a plurality of imprinting stations and means for drawing imprintable stock through said stations comprising stock-grasping and pulling roller means mounted on said frame means

said roller means comprising a first roller rotatable about a fixed axis,

a second roller,

means mounting said second roller for adjustment about a single universal axis defined between a point of contact of an associated biasing means, and a point at the center of a cross section of the second roller for automatically adapting said second roller to position itself to rotate about an axis parallelling said fixed axis of said first roller, and

rigid non-binding load transfer means having a single point of contact with said mounting means for biasing said second roller toward the fist roller and providing an axis

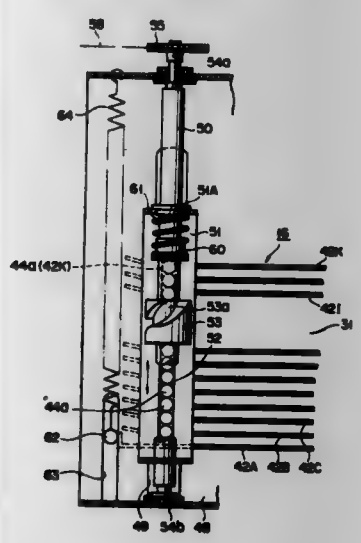


of pivot for said mounting means about said universal axis without inhibiting self-adjustment thereof for grasping said stock therebetween.

4,512,565
SORTER

Hiroshi Matsumoto, and Yoshiaki Nawata, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 361,103, Mar. 23, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 631,011
Claims priority, application Japan, Mar. 30, 1981, 56-46740
Int. Cl.[3] B65H *31/24*
U.S. Cl. 271—294 **11 Claims**



1. A sorter, electrically and mechanically connected to a copying machine main body, said sorter comprising:
reset signal generating means for generating a reset signal synchronously with the entry of a change in a preset copying sheet number by an operator;
sorting means including plural sort bins defining plural sort bin positions, a first sort bin at one end of said plural sort bins establishing a first sort home position and a last sort bin at an opposite end of said plural sort bins establishing a second sort home position, said sorting means for sorting copied paper sheets being fed out of said copying machine main body and into said sort bins alternately and repetitively in forward and reverse directions starting from either said first or second sort home positions; and
control means operatively connected to said sorter means and said reset signal generating means for stopping said sorting means and thus stopping the sorting of said copied sheets at a respective one of said bin positions corresponding to said preset copying sheet number in response to the number of copied sheets being equal to said preset copying sheet number; and for either (a) resuming the sorting of said copied sheets beginning with said respective one sort bin position in the absence of said control means receiving said reset signal, or (b) resuming the sorting of said copied sheets by said sorting means beginning with either said first or second sort home positions in response to said control means receiving said reset signal indicative of a change in said preset copying sheet number.

4,512,566
AUDIO-VISUAL DEVICE FOR GYMNASTIC IMPLEMENTS

Eugenio Bicocchi, Via Leopoldo Nobili, 10, Reggio Emilia, Italy

Continuation-in-part of Ser. No. 101,907, Dec. 10, 1979, abandoned. This application Nov. 12, 1982, Ser. No. 441,236
Claims priority, application Italy, Dec. 13, 1978, 46918 A/78
Int. Cl.[3] A63B *69/16*
U.S. Cl. 272—72 **18 Claims**

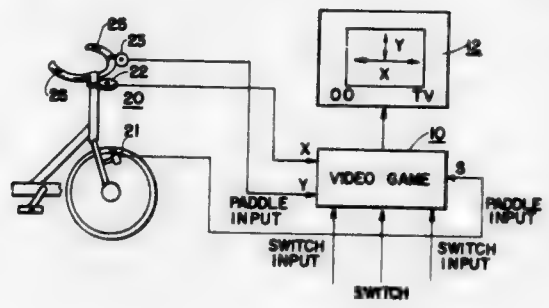


1. An exercise machine comprising:
a movable member moved by the user during exercise;
an audio-visual device visible to said user and provided with a picture or feeding image device;
an external source of current for supplying electrical energy to said audio-visual device;
power source means for sensing the speed of said movable member is a user powered generator comprising a sprocket applied to a flywheel of said exercise machine, a stepless speed-change gear connected through a worm gear-helical wheel coupling a flexible cable to said sprocket, and a film drawing sprocket connected to said stepless speed change gear; and
switch means for connecting said picture or image feeding device to said external source of current or to said power source means for sensing the speed of said movable member.

4,512,567
EXERCISE BICYCLE APPARATUS PARTICULARLY ADAPTED FOR CONTROLLING VIDEO GAMES

Robert V. Phillips, 113 High St., South Bound Brook, N.J. 08880

Filed Mar. 28, 1983, Ser. No. 479,511
Int. Cl.[3] A63B *69/16*
U.S. Cl. 272—73 **9 Claims**



1. An exercising apparatus for controlling a video game apparatus, said game of the type having input terminals for

receiving electrical type signals necessary to control the movement of a particular object associated with a video game as displayed on the screen of a television receiver associated with said video game apparatus, comprising in combination therewith,

an exercise bicycle having a frame and having a pedal driven wheel and a moveable handlebar assembly which assembly is pivotally coupled to said frame to move in a right or left direction as well as move up or down,

first means coupled to said handlebar assembly to provide a first output signal indicative of the extent of motion of said assembly in said right or left direction to provide control of the movement of said object in the horizontal plane,

Second means coupled to said handlebar assembly to provide a second output signal indicative of the extent of motion of said assembly in said up or down direction to provide control of the movement of said object in the vertical plane,

third means coupled to said wheel to provide a third output signal indicative of the speed of the wheel to provide control of the speed of said object as moving in said horizontal or vertical planes, and

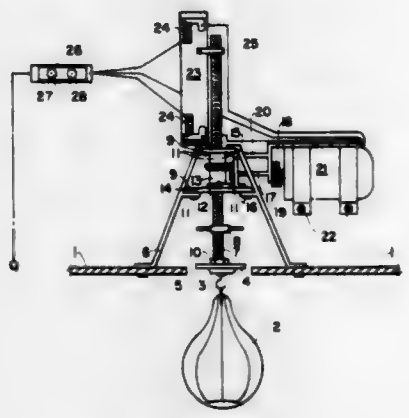
means adapted to apply said first, second and third output signals to associated input terminals of said video game apparatus whereby said object can be controlled to move about said screen according to said output signals.

4,512,568

PUNCHING BAG REBOUND ADJUSTER

Robert Servadio, 3721 Parkview Ave., Pittsburgh, Pa. 15213

Filed Apr. 4, 1983, Ser. No. 481,732
Int. Cl.³ A63B *69/22*
U.S. Cl. 272—78 **1 Claim**



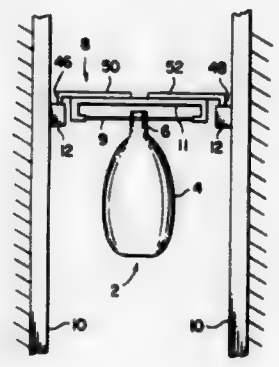
1. In combination with a rebound board, having a central hole, a punching bag, mounting means including mounting legs supported on said rebound board and surrounding said central hole, for suspending said punching bag from said rebound board through said central hole, including adjusting means comprising a vertically mounted threaded shaft, from the lower end of which said punching bag is suspended, coaxially with said shaft, said hole being sufficiently large to allow the top portion of said punching bag to project therethrough, reversible driving motor means, including control buttons and circuit breakers mounted on a panel supported on said mounting means and responsive to a trip lever propelled along said vertically mounted threaded shaft for driving a bevel gear internally screw threaded to said vertical shaft to effect selective lifting or lowering of said vertical shaft in response to rotation of said driving motor means in one direction or in an opposite direction to adjust the distance between the rebound board and punching bag.

4,512,569

PUNCHING BAG APPARATUS AND ADJUSTABLE SUPPORTING MEANS

Louis Aragona, 11 Scheiber Ter., Cedar Grove, N.J. 07009

Filed Jul. 25, 1983, Ser. No. 516,582
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ A63B *69/22*
U.S. Cl. 272—78 **6 Claims**



1. Punching bag apparatus and supporting means, comprising:

a punching bag member having a body portion adapted for being struck by a user and a neck portion adapted for engaging a supporting member;

the supporting member including a pair of elongated wire-like members which are twisted together to form a centrally disposed resilient portion for engaging the neck portion of the punching bag member so that said member offers resistance when the body portion thereof is struck by the user and automatically snaps back to the rest position, one of said wire-like members extending in opposite directions from the centrally disposed resilient portion;

the supporting means including the supporting member, a frame for supporting the supporting member, and a pair of arms mounted to the frame and adjustable relative thereto in accordance with the spacing between a pair of vertical members; and

means mounted to the vertical members for receiving the adjusted arms to retain the supporting means between the vertical members.

4,512,570

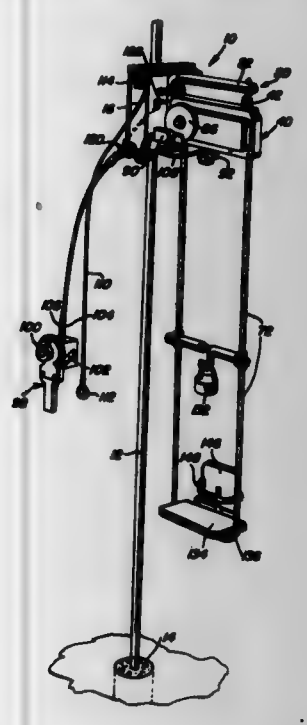
ROPE CLIMBING EXERCISE APPARATUS

Georges M. Tardivel, Flagstaff, Ariz., assignor to Monique M. Tardivel, Venice, Calif.

Filed Feb. 17, 1983, Ser. No. 467,852
Int. Cl.³ A63B *7/04*
U.S. Cl. 272—112 **12 Claims**

1. A rope climbing apparatus including support structure for support in elevated position above a support surface from which a user of the apparatus may be supported, an elongated section of flexible tension member, said support structure including tension member support and guide means supporting and guiding said tension member from said support structure for longitudinal shifting relative thereto and with a portion of the tension member depending downwardly from said support structure, said support and guide means including adjustable brake means variably braking said tension member against longitudinal shifting relative to said support and guide means, said brake means including remotely controllable adjustment means incorporating an adjustably shifting control member and elongated flexible connecting means connecting said control member and said brake means for adjustment thereof from said remote adjustment means, an inverted L-shaped support arm structure including an upper horizontal arm portion and a vertical arm portion depending downwardly from one end of

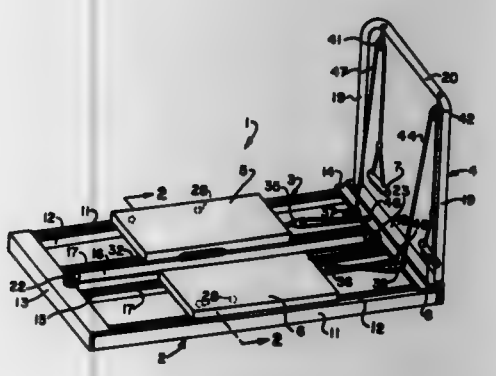
said horizontal arm portion, means oscillatably supporting said vertical arm portion from a suitable support for angular dis-



placement about its longitudinal axis, said support structure being removably supported from said horizontal arm portion.

4,512,571
FORCE OPPOSITION TYPE EXERCISER
Victor M. Hermelin, 13547 Ladue Farm Rd., St. Louis, Mo. 63141

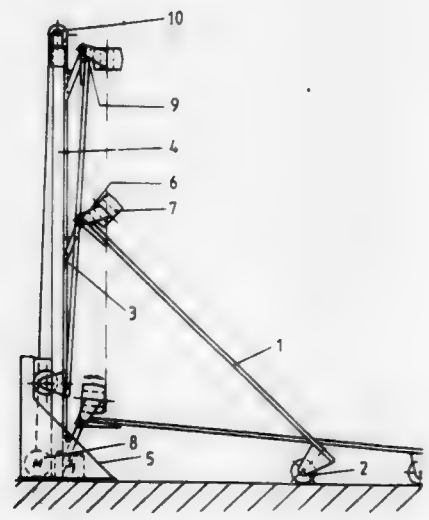
Filed Sep. 30, 1982, Ser. No. 429,688
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—126 **5 Claims**



1. An resistance exercise machine wherein member is pitted against member, said machine comprising a frame including a horizontal reach and an upright, and four interconnected but separate movable stations, two mounted on said horizontal reach to accommodate the feet of the user and adapted to be stood upon and two, carried above said horizontal reach by said upright, to accommodate the hands of the user; a first, two-ended, elongated flexible means connected at one end to one hand station, passing through means supported by said upright for changing the direction in which said flexible means tends and connected at its other end to one foot station for transmitting force to move said foot and hand stations in opposite directions in response to the exertion by the user of a preponderant force on one of said hand and foot stations; a second, two-ended, elongated flexible means connected at one end to the other of said hand stations, passing through means supported by said upright for changing the direction in which said flexible means tends and connected at its other end to the other of said foot stations for transmitting force to move said foot and hand stations in opposite directions in response to the exertion by the user of a preponderant force on one of said hand and foot stations, and third means interconnecting said separate foot stations for transmitting force to move said stations in opposite directions in response to the exertion by the user of a preponderant force on one of said foot stations, said hand stations being interconnected mediately and only through said third means.

4,512,572
MULTI-PURPOSE SPORTS-KIT
Wilfried Hamm, Im Wiesengrund 28, 4330 Mulheim-Ruhr, Fed. Rep. of Germany

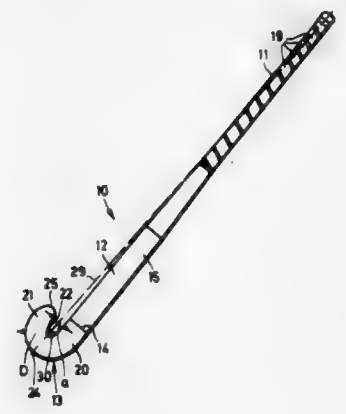
Filed Jun. 29, 1983, Ser. No. 509,350
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 8231535[U]
Int. Cl.³ A61F *5/00*
U.S. Cl. 272—144 **8 Claims**



1. An exercising apparatus comprising in combination, a support base adapted to stand on a horizontal floor, said base defining an inclined ramp surface and a vertically upwardly extending post, a carriage slidably mounted on said support post, powered means for raising and lowering said carriage, a bed having one end pivotably mounted to said carriage, rollers at the opposite end of said bed and adapted to roll across the floor adjacent said support, and clamping devices to hold a persons feet at said one end of said bed, said one end when raised in response to raising said carriage causes the rollers to move across the horizontal floor and to ride up said ramp to support the person from said clamping devices so that he is suspended generally vertically in addition to being supported in intermediate inclined positions.

4,512,573
HOCKEY STICK HAVING A U-SHAPED HEAD
Toon Coolen, CT Nuenen, Netherlands, assignor to Grays of Cambridge (Pakistan) Limited, Pakistan

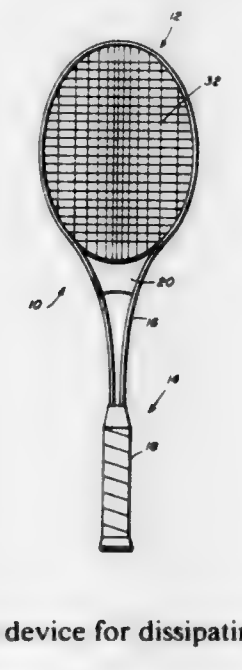
Filed Feb. 15, 1983, Ser. No. 466,587
Int. Cl.³ A63B *59/12*
U.S. Cl. 273—67 A **6 Claims**



1. A hockey stick having a shaft and a head, the head being

provided at one end of the shaft and being in the form of a U-shaped member having two limbs and a base interconnecting the limbs, one limb of the head having a free end portion and the other limb of the head having an end portion forming an axial continuation of the said one end of the shaft, the distance between the said limbs being less than the diameter of a standard size hockey ball and the said limbs and base together providing a ball-striking face.

4,512,574
RACKET HAVING A REFRIGERANT CONTAINED THEREIN FOR HEAT DISSIPATION
William J. Klaila, 399 Marion Rd., Middleboro, Mass. 02346
Filed Sep. 20, 1982, Ser. No. 419,777
Int. Cl.³ A63B *49/00*
U.S. Cl. 273—73 J **8 Claims**



2. A hand held device for dissipating body heat, said device comprising:

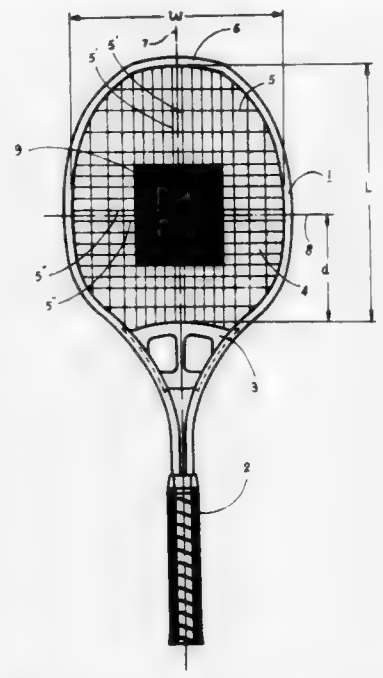
(a) a frame having a handle;

(b) at least one tubular member disposed about portions of said frame, said tubular member extending into said handle; and

(c) a refrigerant within said tubular member, said tubular member defining an evaporator and a condenser.

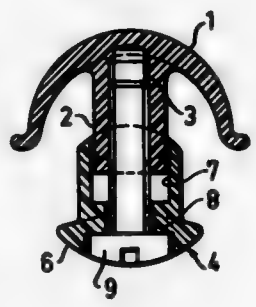
4,512,575
RACQUET HAVING STRINGS OF EQUAL LENGTH
Kuo-Nan Tzeng, No. 35-4, Sec. 3, Chinan Rd., Taipei, Taiwan
Filed Nov. 30, 1982, Ser. No. 445,737
Int. Cl.³ A63B *49/02*
U.S. Cl. 273—73 D **3 Claims**

1. A tennis racquet comprising a frame, a handle and a throat, the throat being secured within the frame to define a strung surface therewith, said frame comprising a frame tip located opposite said throat, said frame tip and throat having inner edges defining the boundaries of said strung surface in a longitudinal direction, said frame further comprising two sides oppositely arranged, said two sides having inner edges defining the boundaries of said strung surface in a transverse direction, said strung surface having a stringing pattern comprising a pair of longitudinal central strings located symmetrically one on each side of a central longitudinal axis of the frame, four additional strings disposed outwardly of each of the central strings to make ten longitudinal strings and a plurality of strings disposed outwardly of said ten longitudinal strings; a pair of transverse central strings located symmetrically one on each side of an axis extending in the transverse direction of the frame, said last named axis being located at a distance approximately 40% of the length of said strung surface as measured from the inner edge of the throat to the tip of the frame, and both in directions toward the tip of the frame and toward the throat, four additional strings being arranged to make ten transverse strings, there being as well a plurality of strings on either side of said ten transverse strings, the total number of the last named plurality of strings on the frame tip side of the racquet being no more than the number of the last named plurality of strings on the throat side of the racquet, plus one; an effective strike area being constituted by the cross-linking of



said ten longitudinal and ten transverse strings, and corresponding to the scope of said area the inner edges of the frame tip and of the throat being parallel and of an identical curvature, said curvature of said inner edge of the throat facing said area being of convex shape, and the inner edges of both sides of the frame being arranged at a minimum curvature.

4,512,576
STRUNG RACKET AND TENSION ADJUSTING DEVICE THEREFOR
Lars Dahlgren, 11A Klockargatan, S-723 44 Västerås, Sweden
Filed Sep. 12, 1983, Ser. No. 531,035
Int. Cl.³ A63B *51/12*
U.S. Cl. 273—73 R **10 Claims**



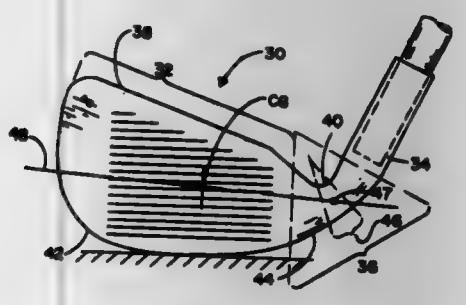
1. The combination of a racket and a device for attachment to and to remain attached to said racket during play, said racket comprising a frame with interwoven longitudinal and transverse strings strung thereacross to form a planar playing surface;

said device providing a means for adjusting the tension of said strings and comprising: a first elongated part being generally U-shaped in a transverse cross-section and providing spaced apart edges for contact with said strings, the area between said spaced apart edges defining an open mouth; said device further comprising a second part having a length substantially equal to the length of said first part and a width less than the distance between the edges of said first part and means for securing said first and second parts together on opposite sides of said planar playing surface and in contact with said strings;

said securing means providing a varying degree of penetra-

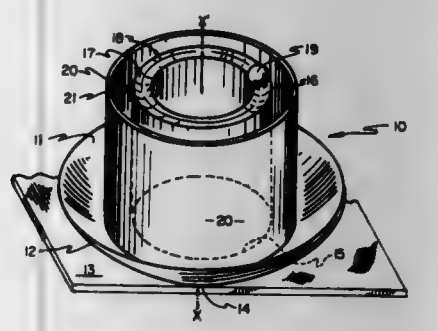
tion by said second part into the open mouth of said U-shaped first part so as to adjust the tension of the strings of the racket.

4,512,577
SET OF GOLF CLUBS
Karsten Solheim, 501 Wakonda La., Phoenix, Ariz. 85023
Continuation of Ser. No. 412,910, Aug. 30, 1982, abandoned.
This application Jun. 11, 1984, Ser. No. 620,521
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—77 A 1 Claim



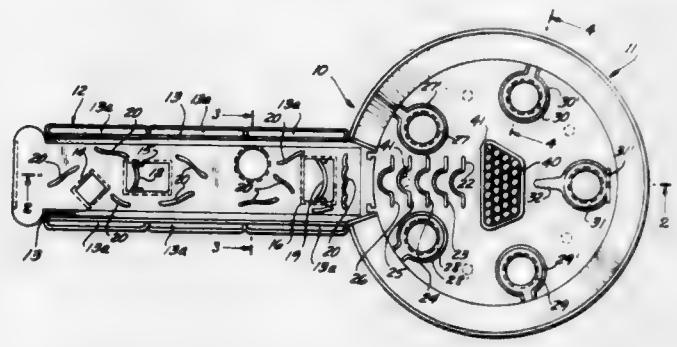
1. In a set of correlated iron-type golf clubs, the head of each club having a main body, a hosel for receiving a shaft, and a neck connecting said hosel to said main body, said main body having a face for striking a ball, a sole, a toe, and an upper edge inclined upwardly from said neck to said toe, an improvement comprised of a shape for said neck defined by a smooth convex curve, as viewed from the face, of approximately constant radius over a sector extending from said sole to said hosel, and a sharper concave curve of shorter radius extending up to said hosel over a smaller sector approximately centered on the sector of said smooth curve of greater radius to define a neck having at its mid-cross section a maximum dimension which is smaller than the diameter of said hosel at the lower end of said hosel where it connects to said neck, whereby said neck uncouples the twisting action of said club head from said shaft.

4,512,578
BALL AND TRACK GAME
Susan H. Dalton, 331 West 1200 North, Orem, Utah 84057
Filed Dec. 9, 1983, Ser. No. 559,944
Int. Cl.[3] A63B *67/08*
U.S. Cl. 273—110 7 Claims



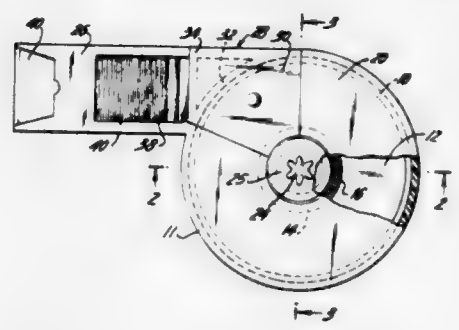
1. A ball and track game comprising:
a truncated spheroidal-shaped base member having a convex under face by which said device can contact and rest upon a support surface;
a centrally located elongated vertical support secured by one of its ends to the surface of the concave upper face of said base member, said elongated vertical support and said base member having corresponding axes;
at least one closed-end, generally circular track attached to the other end of said elongated vertical support, said track being adapted to receive and have move therein a ball or other spheroidal object;
a sleeve concentric with and fitted about said elongated vertical support thereby providing an annular space therebetween, said sleeve being secured by one of its ends to the bottom of the concave upper face of said base member and terminating at its other end at approximately the plane of the track surface of said tubular cannister.

4,512,579
GAME WITH MARBLE AGITATION
Eddie L. Clipper, 152 Macon St., Brooklyn, N.Y. 11216
Continuation-in-part of Ser. No. 427,552, Sep. 29, 1982, abandoned. This application Apr. 16, 1984, Ser. No. 600,465
Int. Cl.[3] A63F *7/00*
U.S. Cl. 273—123 R 4 Claims



1. A game apparatus for use with marbles which are shot from a starting line down toward a score line, comprising an elongated launching pad, a plurality of obstacles placed randomly on said pad, a pan portion coupled to said launching pad portion for receiving the marbles shot successfully over said lauching pad portion and a plurality of score marking barriers arranged in a predetermined order in said pan portion for assigning score numbers or priorities for further playing the marbles landing at the various score barriers, wherein said launching pad portion is an elongated handle-shaped member having said plurality of obstacles in the form of a first-type of obstacles for deflecting the marbles into a second plurality of obstacles in the form of receptacles, wherein said pan member comprises a plurality of said score marking barriers arranged in a predetermined order of difficulty and carrying a predetermined number of assigned value according to the difficulty of landing the marbles into said score marking barriers, and further including a plurality of additional score means in the form of a stack of marbles marked for shooting by the highest scoring player into receptacles provided in said pan area, wherein one of said receptacles has an ascending ramp member associated therewith and a basket shaped receptacle formed at a predetermined height above said ramp and containing a special marble awarded to the player for a marble shot up the ramp and into the associated receptacle.

4,512,580
DEVICE FOR REDUCING PREDICTABILITY IN CARD GAMES
John Matviak, R.R. #1, Box 221, Bloomsbury, N.J. 08804
Filed Nov. 15, 1982, Ser. No. 441,917
Int. Cl.[3] A63F *1/12*
U.S. Cl. 273—148 A 16 Claims



1. A device for maximizing the random distribution of a plurality of playing cards, said device comprising a base, a

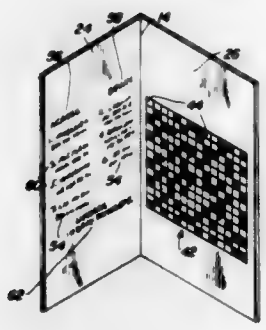
continuous, advancable, circular track rotatably mounted on said base, means disposed on said track operable to support a plurality of unpartitioned cards only at their edge portions radially on said track with their major surface in a vertical orientation, and a cover associated with said base, said base and cover operable cooperatively to enclose said track and cards supported thereon, and said cover further defining at least one sectorially shaped access station permitting either or both of manual removal of an arbitrary number of the cards on that segmental region of the track then aligned with the access station or manual insertion of cards into that segmental region of the track then aligned with the access station.

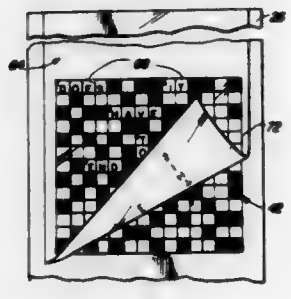
4,512,581

HIDDEN MESSAGE PUZZLE PACKET

Paula B. Levine, Skokie, Ill., assignor to Paula Blaine International, Ltd., Skokie, Ill.

Filed Jan. 20, 1983, Ser. No. 459,381
Int. Cl.³ A63F 9/06
U.S. Cl. 273—153 R **1 Claim**





1. A puzzle-presenting message greeting card comprising:
a support panel for carrying imprinted reference indicia thereon;
a lattice-like pattern imprinted on said support panel on one surface face thereof, said pattern having a plurality of reference numbers imprinted thereon at spaced, selectable loci of said pattern;
a cover panel having substantially the same quadrilateral shape and approximately the same dimensions as said support panel, said support panel and said cover panel each having a side edge thereof fixedly and pivotally connected to the side edge of the other of said support panel and said cover panel to form an openable greeting card, such that, when said card is opened, said pattern is visible immediately;
said cover panel having printed material on the front surface face thereof, which front surface face faces away from said support panel when said greeting is closed, such that said cover panel overlies said one surface face of said support panel, said printed material communicating an idea about the contents of said pattern;
said cover panel further comprising an array of legand means formed on the rear surface face thereof, which rear surface face faces toward said one surface face of said support panel when said greeting card is in its normally-closed position in overlying-fashion, said legand means giving instructions to fill out the lattice-like pattern of said one surface face of said support panel;
a translucent recordation sheet made of a flexible material to allow for the folding thereof, said translucent recordation sheet also having substantially the same quadrilateral shape as said support panel for fitting over said pattern; said translucent recordation sheet being positioned over said one surface face of said support panel for overlying said pattern; said translucent recordation sheet having imprinted thereon printed matter arranged such that it overlies said pattern to fill it in to give the information desired to be conveyed by said greeting card, said printed material of said recordation sheet being arranged in a manner similar to the reference numbers of said pattern.
said support panel further having another surface face constituting the rear thereof facing away from said cover panel when said cover panel overlies said support panel in a parallel-like arrangement in its normally-closed position; said support panel further comprising an envelope fixedly attached to said another rear surface face thereof, said envelope having a sealable flap portion for sealing of said envelope, said envelope having a size substantially smaller than said another rear surface and having substantially the same quadrilateral shape as said another rear surface face and being arranged on said another rear surface face such that the sides of the quadrilateral of said envelope lie adjacent corresponding sides of said another rear surface face quadrilateral; said envelope further having a size great enough to hold therein said recordation sheet when said recordation sheet has been removed from said one surface face of said support panel and has been folded; and
means for adhesively attaching said recordation sheet to said one surface face of said support panel, said means for adhesively attaching securing said recordation sheet to said support panel for easy separation thereof.

4,512,582

RING PUZZLE

Rémy Dallaire, 461 St. Isidore St. P.O. Box 95, Lac à la Croix, Canada (G0W 1WO), and Claude Larouche, 402 Desnoyers St. Apt. 8, Beauport, Canada G1E 2N3

Filed May 3, 1984, Ser. No. 606,691
Int. Cl.³ A63F 9/08
U.S. Cl. 273—158 **6 Claims**



1. In a puzzle having a plurality of post-like members and a plurality of ring-like members, said ring-like members being articulately attached adjacent the corresponding ends of respective ones of said post-like members, and an elongated closed loop-like member in interlocking engagement with the respective pairs of said post-like and ring-like members, so that the loop-like members can normally be disengaged from said post-like and ring-like members only by a series of prescribed manipulations of all of said members, said post-like members each having an opposite end movably anchored to a common base member, each post-like member being made of two parts, namely: a rod defining said corresponding end and a cap member, said cap member having a slot opening through three sides for the transverse insertion of a ring-like member into the cap slot with the ring-like member protruding from opposite two

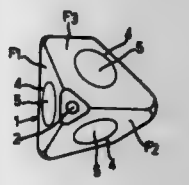
sides of said cap member, said cap member further having a blind bore extending across the third side of said cap slot, said blind bore receiving said corresponding end of said rod, whereby said rod is attached to said cap member and locks said ring within said cap slot.

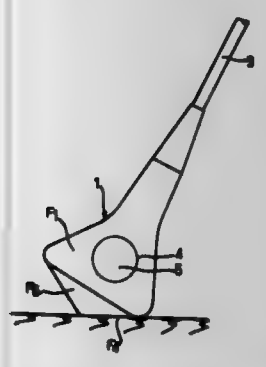
4,512,583

GOLF CLUB FOR INSTRUCTION OR RECREATION

Laurent Leveque de Vilmorin, 15 rue Pierre Lescot, Paris, France 75001

Filed Nov. 16, 1983, Ser. No. 552,536
Claims priority, application France, Nov. 17, 1982, 82 19250
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—168 17 Claims





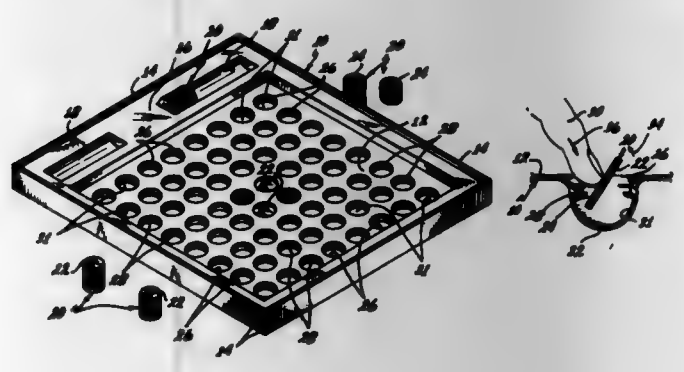
1. A golf club for instruction or recreation, comprising a shaft having one end fixedly secured to a ball striking head of generally polyhedral shape widening out from the shaft, said head having a plurality of striking faces which have different angles of inclination and can be selected by simply turning the shaft, wherein the striking head has three striking faces widening out in trihedral form from an apex on which the shaft of the club is fixed, the three faces intersecting at three edges which intersect themselves at said one end of the shaft.

4,512,584

IMPROVED GAME BOARD WITH PIECES COOPERATING FOR ROTATION

George F. Propsom, Racine, Wis., assignor to Western Publishing Company, Inc., Racine, Wis.

Filed Jun. 24, 1983, Ser. No. 507,381
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—282 4 Claims



1. A rectangular game board provided with a raised support along its edges,

said game board having a rectangular upper playing surface with a plurality of circular openings formed therein, each of said openings being formed as a separate deep pocket with sides and a bottom portion; and

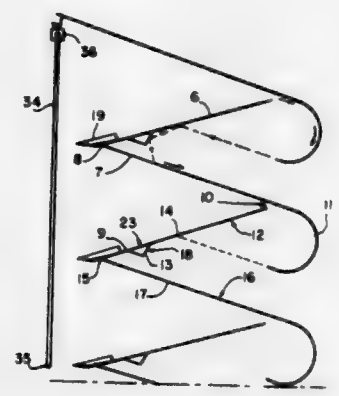
a plurality of flat circular playing chips capable of being deployed within said circular openings and resting within each of said circular openings, and means whereby, if a force is applied to any portion of the edge of a chip when supported within said opening, said chip supported in said opening will be flipped over to show the opposite side of the chip.

4,512,585

BULLET TRAP FOR A SHOOTING STAND

Marie E. Baravaglio, 5, rue des Lacs, 91350 Grigny 2, France

Filed Mar. 28, 1984, Ser. No. 594,359
Claims priority, application France, Apr. 8, 1983, 83 06395
Int. Cl.[3] F41J *1/12*
U.S. Cl. 273—410 5 Claims



1. A bullet trap for a firing stand, comprising successions of metal sheets slanted alternately to the front and to the rear and forming a succession of dihedrons, metal sheets joined together two by two at their front end and being close to each other two by two at their rear end while being separated by a space forming a passage for the bullets, a first metal sheet out of two being extended rearwardly, beyond the passage, by a curved portion forming a deflector, the second metal sheet being interrupted at the level of the passage, the angle at the apex of the dihedrons being less than 60°, the bisecting plane of the dihedrons being parallel to the mean shooting direction and the deflector being formed by a semi cylinder connected to the corresponding first metal sheet along its tangent for deflecting the bullets and reversing their direction of travel while throwing them back against the rear face of the second metal sheet not provided with deflectors, wherein angle irons are firmly secured to the rear face of the second metal sheets parallel to the apex of the dihedrons and disposed after the line of impact of the bullets on the rear face of the metal sheets, so as to form a deflector throwing the bullets back onto the rear face of the first metal sheets.

4,512,586

SEAL WITH PREFORMED V-SHAPED PACKING RINGS AND METHOD

Russell G. Smith, Maison LaFayette, 800 Rue de LaPaix, #26, Cincinnati, Ohio 45220

Filed May 18, 1984, Ser. No. 611,993
Int. Cl.[3] F16J *15/18*; B29C *17/04*
U.S. Cl. 277—124 16 Claims

1. A packing arrangement for sealing a pressurized fluid system, comprising:

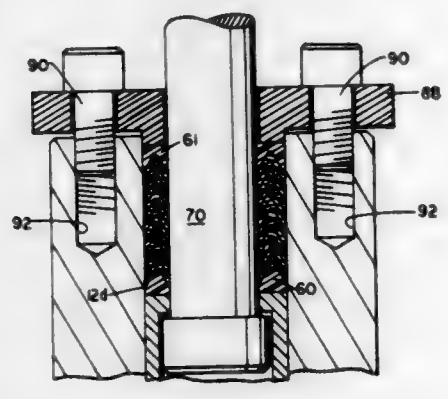
(a) a structural body;

(b) a shaft extending into said structural body;

(c) a plurality of packing rings formed from a memory retainable material, said packing rings being stacked in alignment with each other, said rings being preformed in a forming die from a substantially planar body circumferentially disposed about a centrally disposed shaft receiving aperture into a preformed V-shaped configuration with a

pair of obliquely oriented sidewalls convergingly disposed in concentric relationship to each other; and

(d) a packing chamber in said body, said packing chamber having cylindrical sidewalls in spaced concentric relationship to said shaft, said stacked packing rings being disposed in aligned compressive relationship in said chamber



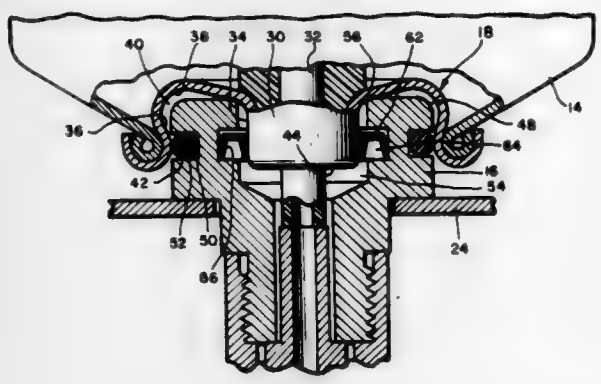
between said cylindrical sidewalls and said shaft, wherein the obliquely oriented packing ring sidewalls are compressed toward each other beyond the preformed V-shaped configuration, said memory retainable material being operative to urge the rings toward their preformed configuration whereby the sealing relationship between the cylindrical sidewalls and the shaft is enhanced.

4,512,587

AEROSOL CANNISTER FITTING

James W. Burke, Long Grove, Ill.; John D. Krueger, Brookwood, Wis., and John W. Krueger, Glenview, Ill., assignors to Krubur, Inc., Algonquin, Ill.

Filed Feb. 28, 1978, Ser. No. 882,202
Int. Cl.³ F10J *15/18*
U.S. Cl. 277—205 **19 Claims**



1. A fitting adapted to receive and seal an aerosol cannister valve assembly, said assembly having an exit port and a perimeter surface which cooperates with a floor surface to define a recess surrounding the exit port, said fitting comprising:

an annular fitting member adapted to fit into the recess; and

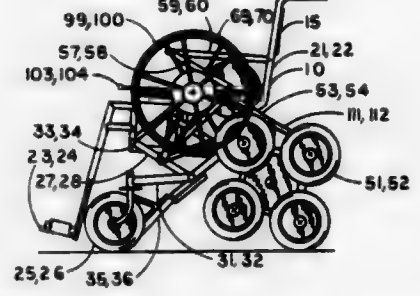
an annular sealing member disposed on the fitting member, said sealing member sized to contact both the fitting member and a portion of the perimeter surface such that the sealing member is compressed between the fitting member and the portion of the perimeter surface to provide a substantially fluid tight, static seal between the fitting member and the portion of the perimeter surface of the valve assembly.

4,512,588

STAIR CLIMBING WHEEL CHAIR

Kenneth R. Cox, 2711 Marquis Cir. E., Arlington, Tex. 76016

Filed Apr. 15, 1983, Ser. No. 485,269
Int. Cl.³ B62B *5/02*
U.S. Cl. 280—5.26 **11 Claims**



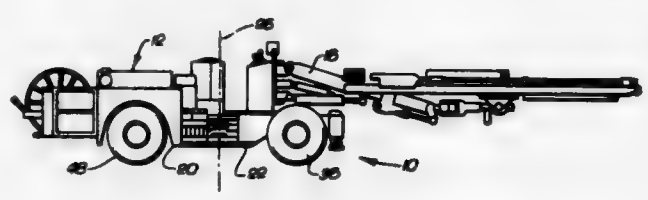
1. A self propelled vehicle adaptable to climbing stairs comprising: a cargo supporting frame, a pair of symmetrical rear suspension frames with a spider wheel rotatably attached to each, and a pair of symmetrical forward suspension frames with a sloped skid rigidly attached; with the rear suspension frames attached to the cargo supporting frame by a plurality of arms with ends rotatably attached to the cargo frame and the rear suspension frames, with the forward suspension frames attached to the cargo frame by a plurality of arms with ends rotatably attached to the cargo frame and the forward suspension frames; with rear frames and forward suspension frames containing a common attachment arm causing said frames to move in sequence with each other for respositioning the spider wheels in a forward and upward direction and skids in a forward and downward direction for traversing stairs with supporting loads carried primarily by the spider wheels.

4,512,589

OSCILLATING AXLE OVERRIDE SYSTEM

Albert R. Ambrose, Troutville, and Scott F. Fancett, Roanoke, both of Va., assignors to Cooper Industries Inc., Houston, Tex.

Filed Dec. 27, 1982, Ser. No. 453,236
Int. Cl.³ B60G *19/10*
U.S. Cl. 280—6 R **13 Claims**



1. An articulated vehicle comprising:

a first frame portion having a first axle and a wheel rotatably carried by the axle for supporting the frame portion, said axle being pivotally coupled about a generally horizontal pivot axis to the first frame portion;

a second frame portion pivotally coupled to the first frame portion about a generally vertical pivot axis and having a second axle and a second wheel for supporting the second frame portion;

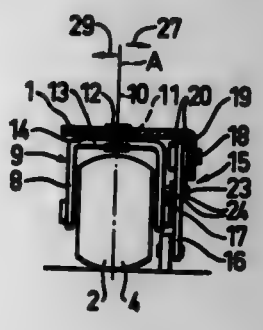
sensor means for sensing a condition of impending imbalance caused by pivoting between the first and second frame portions about the generally vertical pivot axis while the vehicle is turning; and

means responsive to the sensor means, for restricting the movement of the first axle relative to the first frame portion when the vehicle is in the condition of impending imbalance, thereby increasing the stability of the operation of the articulated vehicle while turning.

4,512,590
ROLLER SKATE

Carl-Johan Stenvall, Älvsbyn, Sweden, assignor to NPI New Products Investment AB, Askim, Sweden

PCT No. PCT/SE82/00122, § 371 Date Dec. 13, 1982, § 102(e) Date Dec. 13, 1982, PCT Pub. No. WO82/03560, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 14, 1982, Ser. No. 453,882
Claims priority, application Sweden, Apr. 15, 1981, 8102439
Int. Cl.³ A63C 17/06
U.S. Cl. 280—11.23
6 Claims

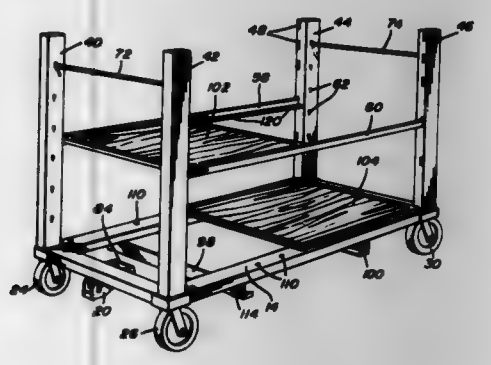


1. A roller skate comprising an elongated plate for supporting a user's foot, said plate having a front portion and a rear portion, at least one front wheel, at least one rear wheel, each wheel being rotatably mounted on a shaft and having a convex curved running surface for rolling on a sub-surface; means for pivotally connecting one of said wheels to one of said portions of said plate so that said one wheel is swivable about an axis in a longitudinal central plane through said plate; and a steering mechanism for said one wheel and comprising a sensing member for rolling on said sub-surface, and means interposed between said sensing member, said connecting means and said plate, the arrangement being such that the angle of swivelling of said wheel is determined by the inclination of the said plane in relation to the subsurface, as said member, as a result of support against the subsurface, is located at different distances from a plane at right angles to the said longitudinal plane and at a tangent to the running surfaces of the wheels.

4,512,591
HAND TRUCK

Jean-Paul Plante, Rang 11 St Ephrem, Co. Beauce Quebec, Canada

Filed Jul. 6, 1982, Ser. No. 395,296
Int. Cl.³ B62B 3/02
U.S. Cl. 280—47.35
9 Claims

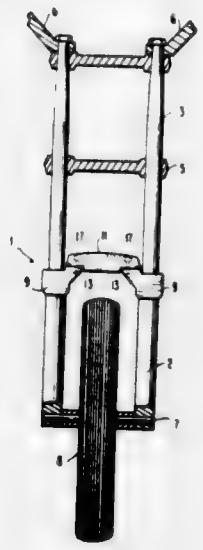


1. A hand truck comprising, in combination:
(a) a substantially rectangular base frame defined by a pair of longitudinal side members and front and rear end members, said members being fixed in a horizontal plane;
(b) a handle adapted for connection to said front end member;
(c) four uprights each adapted for mounting in an opening provided at each corner of said base frame;
(d) a pair of support elements adapted for mounting to said uprights vertically above said side members;
(e) platform means adapted for support on said support elements;
(f) supporting mounts secured to said front and rear end members for receiving two of said uprights in an inclined plane relative to the plane of said base frame; and
(g) means for compactly storing in said base frame said handle, said uprights, said support elements and said platform means comprising a pair of parallel facing L-shaped cross-members secured to the underside of said side members and slidably receiving said platform means sideways therein.

4,512,592
FRONT FORK REINFORCING STRUCTURE IN MOTOR BICYCLE OR THE LIKE

Toshiharu Yoshioka, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Sep. 16, 1982, Ser. No. 418,961
Claims priority, application Japan, Sep. 17, 1981, 56-137177[U]
Int. Cl.³ B62K 19/24
U.S. Cl. 280—279
2 Claims



1. A front fork reinforcing structure for a motorcycle or the like, comprising:
a pair of telescopic forks each having a bottom case axially slidably engaged to a respective one of a pair of upper fork pipes;
means for rigidly connection said pair of fork pipes to each other at the upper portions thereof;
a pair of brackets, each extending radially outwardly from upper end portions of a respective one of said bottom cases and rigidly attached to said respective case; and
a connecting member having through-holes at either end thereof; and
bolt means threadingly engageable through said through-holes with said brackets for fixedly and replaceably securing said connecting member to both said brackets.

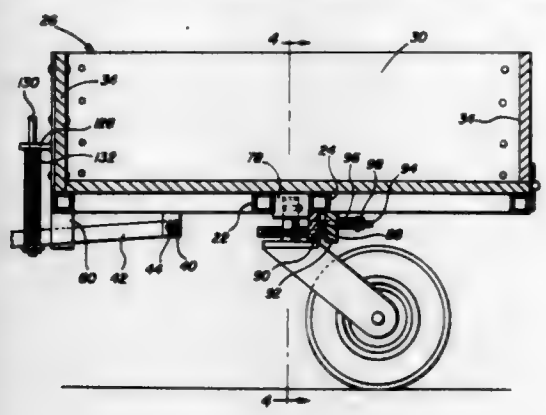
4,512,593
TRACKING TRAILER CONSTRUCTION

Henry B. Ehrhardt, 723 E. Highland Dr., Arlington, Wash. 98223

Filed Mar. 14, 1983, Ser. No. 475,629
Int. Cl.³ B60D 1/14
U.S. Cl. 280—460 R
10 Claims

1. A tracking trailer including a main frame having front and rear end portions, said front end portion including a pair of laterally spaced apart hitch means for releasable hitching to a pair of complementary hitch portions carried by the rear of an associated towing vehicle, a pair of caster wheel assemblies,

means mounting said caster wheel assemblies in laterally spaced apart depending relation from the rear end portion of said frame for full 360° angular displacement relative to said frame about corresponding upstanding axes, interconnecting



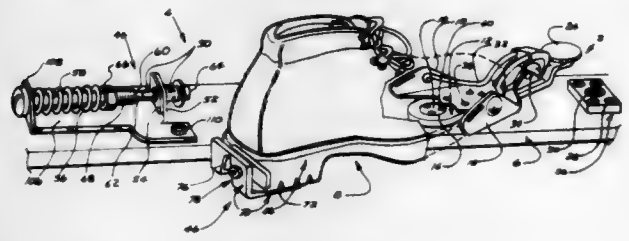
said caster wheel assemblies together for equal and simultaneous angular displacement relative to said frame, and frictionally resisting angular displacement of at least one of said caster wheel assemblies relative to said frame.

4,512,594

SAFETY SKI BINDING

Steven C. Eyre, P.O. Box 2348, Taos, N. Mex. 87571

Filed Aug. 31, 1983, Ser. No. 528,347
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—614 **8 Claims**



1. Ski binding, comprising:

(a) a front base plate;

(b) rotation means, attached to said front base plate and to a ski, for securing said front base plate to said ski, and for allowing said front base plate to rotate about an axis perpendicular to the surface of said ski;

(c) toe binding means, clampable to the forward portion of a ski boot and attached to said front base plate, for binding the toe of said ski boot to said front base plate;

lock means, attached in part to said front base plate and attached in remaining part to said ski, for locking said front base plate to said ski so as to prevent rotation of said front base plate with respect to said ski;

(e) a heel latch assembly, attached to the heel of said ski boot, comprising:

(1) a heel plate, having a horizontal bottom portion attached to the bottom of the heel of said ski boot and a vertical portion behind the heel of said ski boot, said heel plate having an aperture locates principally in said vertical portion of said heel plate and extending to the rear section of the bottom portion of said heel plate;

(2) heel latch means comprising a latch rotatably attached to the vertical portion of said heel plate for selectively closing the upper portion of said aperture;

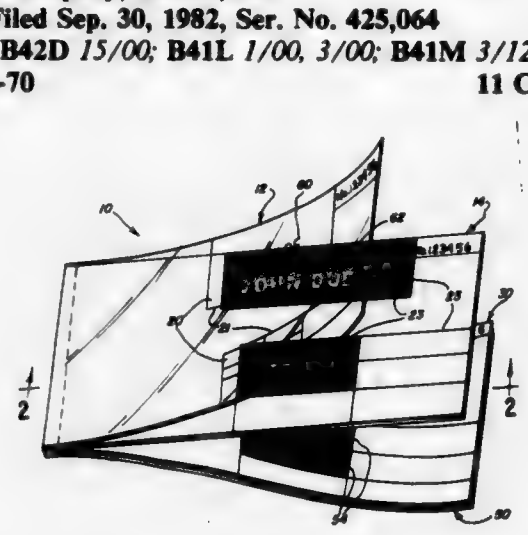
(f) heel binding means, attached to said ski and having a forwardly extending member which is adapted to be received in the upper portion of said aperture, for securing said heel latch assembly in a fixed position with respect to said ski, and for allowing release of said heel latch assembly when sufficient transverse force is applied to said heel binding means by said heel latch assembly, and for allowing adjustment of the magnitude of said transverse force required to effect said release.

4,512,595

TAMPER-RESISTING NEGOTIABLE INSTRUMENTS CONTAINING A TRANSPARENT VERIFYING WEB

Thomas J. Breen, Arlington Heights, Ill., assignor to Rand McNally & Company, Skokie, Ill.

Filed Sep. 30, 1982, Ser. No. 425,064
Int. Cl.³ B42D *15/00;* B41L *1/00, 3/00;* B41M *3/12*
U.S. Cl. 283—70 **11 Claims**



1. A multipart negotiable instrument having improved resistance to tampering after inscription of an image thereon, said instrument comprising in stacked relation at least a first generally planar, substantially transparent web, a second generally planar web and a third generally planar web;

said first substantially transparent web being secured to said instrument and defining a first surface and a second surface, one of said surfaces adapted for receiving an image transferred from a surface in contact with said one surface when a corresponding image is inscribed against the surface of the top web in said stack;

said second web being removably secured to said instrument, and defining a first surface and a second surface, one of said surfaces being in contact with said one surface of said first web that is adapted for receiving images, said one surface of said second web including an image transferring means in register with at least a portion of said first web and capable of transferring an image to said one surface of said first web when a corresponding image is inscribed against a surface of said top web;

said image transferring means comprising a particulate matrix erasably bonded to said one surface of the second web and defacable when rubbed with an organic solvent, said means also being removable when an adhesive tape is applied to said image transferring means and then pulled away; and

said third web being removably secured to said instrument beneath the first and second webs in said stack and defining a first surface and a second surface, the first surface of said third web facing upwardly and including an area capable of visualizing an image when a corresponding image is inscribed against the surface of said top web, said image visualizing area being in register with the image transferring means of said first surface of said second web.

4,512,596

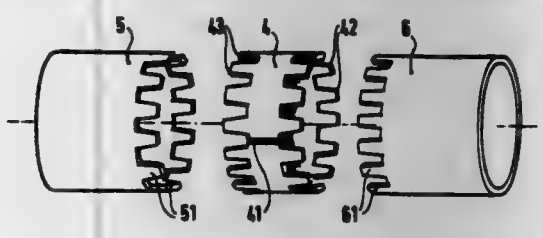
ANTI-UNSCREWING DEVICES

Georges Obrecht, Le Canton, France, assignor to Alsthom-Atlantique, Paris, France

Filed Apr. 19, 1983, Ser. No. 486,583
Claims priority, application France, Apr. 19, 1982, 82 06644
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—81 **7 Claims**

1. A device preventing the unscrewing of two elongated cylindrical bodies joined end-to-end in threaded union, said device comprising cylindrical rings respectively surrounding the two bodies and means for mounting them non-rotatable thereabout (them), the two facing edges of said rings having regular angular series of teeth on their entire perimeters, projecting axially into an axial gap between the two rings, and a

cylindrical blocking sleeve occupying said axial gap and surrounding the two aforementioned bodies, said sleeve having along the entire perimeter of each of its edges a regular angular series of axially projecting teeth meshing with the recesses between the teeth of the adjoining ring such that the device prevents the rotation of one body relative to the other, with a minimal diametrical encumberance, said device being provided with extenral means for installing and removing said blocking sleeve and wherein: said blocking sleeve comprises a resilient sleeve having a slit through its entire length enabling it to be radially expanded and oriented prior to its installation in the



gap between the rings and installed in said gap without displacement of said rings and wherein it is maintained as installed by resilient latching; the number of teeth of one ring and of the facing edge of the blocking sleeve being different from the number of teeth N+X of the other ring and of the other edge of the blocking sleeve, facing said other ring, the difference X between the two numbers N and N+X being small compared with the smallest N of the two, thereby requiring only a small fraction of a rotation X/2N (N+X), to eliminate the residual difference in alignment between the meshing teeth and recesses of the respective sleeve edge and adjoining ring edge after the sleeve has been oriented and lock said sleeve in place.

4,512,597

DOOR LOCK

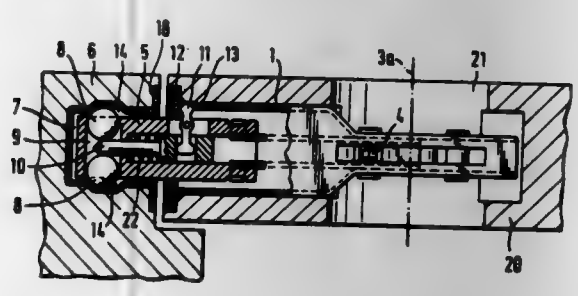
Elis Nabb, Björkboda, and Stig Eggert, Kärra, both of Finland, assignors to Oy Wärtsilä Ab, Helskinki, Finland

Filed Jul. 7, 1983, Ser. No. 512,103

Claims priority, application Finland, Jul. 12, 1982, 822469; Jan. 26, 1983, 830279

Int. Cl.³ E05B *1/16*

U.S. Cl. 292—143 **14 Claims**



1. A door lock, comprising a bolt and a mechanism for moving said bolt between a protruding locking position and a withdrawn unlocking position, said bolt being provided, in its protruding portion, with at least one auxiliary locking element movable in a transverse cavity in said bolt between a first outer position, in which it partly extends outside a lateral surface of said bolt, and a second retracted position, said bolt being further provided with an operating member movable in the longitudinal direction of the bolt and arranged to move said auxiliary locking element into its first position when said bolt reaches said protruding position, and a lever pivoted to the bolt, which lever, when said bolt approaches its protruding position, is arranged to meet a portion stationary with respect to said lock, whereby said pivoted lever is turned and thereby forces said operating member in a longitudinal direction of said bolt to bring said auxiliary locking element into its first position.

4,512,598

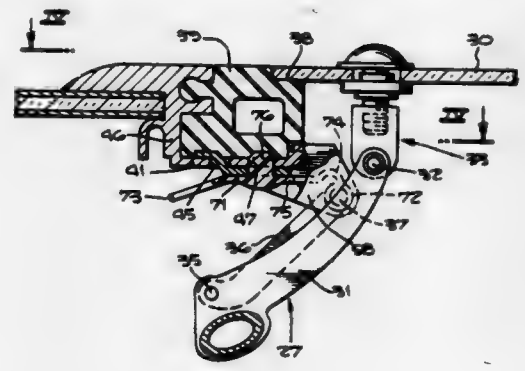
RELEASABLE LATCH BRACKET MEANS FOR A VEHICLE SUNROOF

John H. Coller, La Puente, Calif., assignor to D. G. Shelter Products Company, City of Industry, Calif.

Filed Oct. 21, 1980, Ser. No. 199,358

Int. Cl.³ E05C *17/32*

U.S. Cl. 292—263 **11 Claims**



1. In a latch means including a latch member for interconnecting a panel and a frame member defining an opening, the combination of:

bracket means carried by one end of said latch member to be connected to said frame member,

said bracket means including interlock means for cooperable releasable connection to said frame member to position and secure said one end of the latch member;

said interlock means including sequentially operable sets of interlock elements;

one of said sets of interlock elements including a lock pin on said bracket means,

and a port on said frame member to receive said lock pin;

the other of said sets of interlock elements including a lip portion on said bracket means,

and an elongated slot opening on said frame member adapted to receive said lip portion.

4,512,599

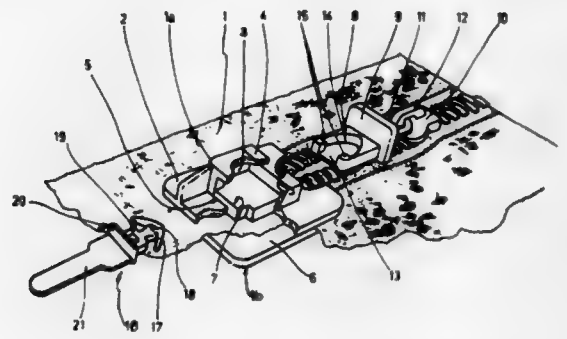
SECURITY SEALING SYSTEM

Eduardo De Lima Castro Netto, Rua Sao Luiz Gonzaga, No. 912, Rio de Janeiro, Brazil

Filed Jan. 10, 1983, Ser. No. 456,898

Int. Cl.³ B65D *33/34*

U.S. Cl. 292—307 R **7 Claims**



1. A security sealing system for a linear sliding closure, said system including a housing having a linear passage extending in a first direction, said passage having a first end which is open and a second end which is open, an insert member having a leading end which is insertable in a first direction into the first end of the linear passage, said insert member having a configurartion which substantially fills said passage at said first end thereof, first abutment means on the insert member for preventing the insert member from passing through said passage and for closing said first end of said passage, a seal member which is insertable into the second end of the passage in a

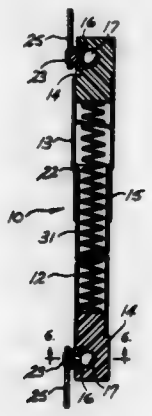
direction parallel to and opposite from said first direction; said seal member including a resilient detent, a second abutment means facing the detent, and a frangible section positioned between the detent and the second abutment means; said insert member having a cavity for receiving and containing the detent of the seal member when the insert and seal member are within the passage and the first and second abutment means are engaged with the ends of the passage, said cavity having internal surfaces therewithin which are cooperable with said detent of the seal member to resist separation of the insert and seal members.

4,512,600

COLLAPSIBLE STRUT WITH PIVOT JOINT CONNECTOR

Shaylor E. King, Elkhart, Ind., assignor to QMP, Inc., Elkhart, Ind.

Filed Jan. 30, 1984, Ser. No. 574,720
Int. Cl.³ E05C *17/30*
U.S. Cl. 292—338 **2 Claims**



1. A collapsible strut assembly having first and second shiftable telescopic tube members, said tube members being shiftable between extended and retracted positions, yieldable means for normally urging said tube members into their said extended position, an end member secured to one of said tube members, a socket formed in said end member, a pivot member having a ball connected to a shank, said pivot member ball fitted within said end member socket with said pivot member being pivotable relative to said end member, and a plate member connected to said pivot member shank and adapted for attachment to a support, said end member having a slot intersecting said end member socket at the location of said pivot member ball, a clip member fitted through said end member slot and overlying and contacting said pivot member ball to secure the ball within said end member socket, said clip member being formed of a resilient material and contacting said pivot member ball for urging the ball into the end member socket, said clip member being slotted from one end to define sides, said clip member sides straddling said pivot member shank, the improvement wherein said clip member includes tabs at its said one end overlying said end member.

4,512,601

CONTACT LENS HANDLING DEVICE

Benjamin Jacobstein, Coral Gables, Fla., assignor to Scientific Technology, Ltd., Coral Gables, Fla.

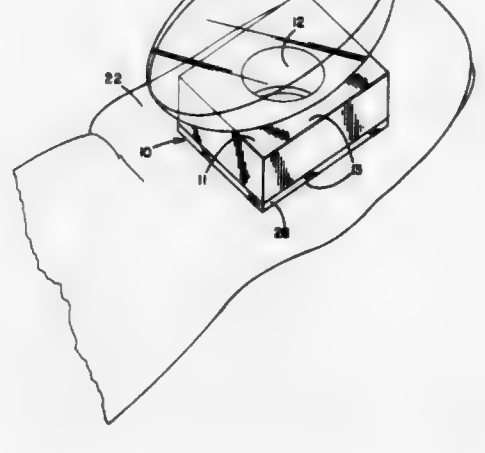
Filed Aug. 25, 1983, Ser. No. 526,332
Int. Cl.³ A61F *9/00*
U.S. Cl. 294—1.2 **14 Claims**

1. A contact lens applicator, comprising:

a base member having an upper surface and a lower surface, formed of a soft, biocompatible material;

a generally circular aperture extending through the base member for supporting a contact lens, said aperture being dimensioned so that the upper surface supports the contact lens without collapse of the lens while maintaining sufficient mechanical strength for said base member;

adhesive means for contacting the lower surface of said base member with a finger of a person applying the contact lens



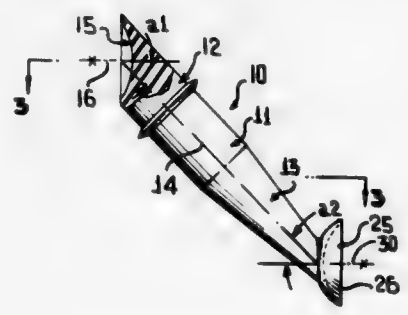
to an eye and securing the base member to the finger so that said lower surface is between said upper surface and the area of the finger contacted along a line generally perpendicular to the area of the finger contacted, said adhesive means being biocompatible.

4,512,602

DEVICE FOR INSERTING AND REMOVING CONTACT LENSES

Robert C. England, P.O. Box 2829, Zanesville, Ohio 43701

Filed Nov. 17, 1983, Ser. No. 552,707
Int. Cl.³ A61F *9/00*
U.S. Cl. 294—1.2 **5 Claims**

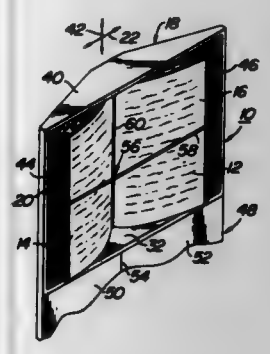


1. A device for inserting and removing hard contact lenses comprising an elongated body of resilient material having opposite terminal end portions, said elongated body including a central axis, static suction cup means at one of said terminal end portions for locating a hard contact lens at a predetermined angle to said central axis incident to placing the lens upon an eye, said static suction cup means being defined by a first static concave surface, soft resilient suction cup means at another of said terminal end portions for locating a hard contact lens at a predetermined angle to said central axis incident to removing the lens from an eye, said soft resilient suction cup means being defined by a body portion defined in part by a resilient peripheral lip and a second concave surface, said body portion and second concave surface being angularly offset relative to said central axis and defining therewith an acute angle, and said second concave surface being defined by a radius of generation which is disposed at an angle of generally 45 degrees to said central axis.

4,512,603
BOOK SUPPORT SYSTEM

Tommy A. Williams, 12902 N. Point La., Laurel, Md. 20708

Filed Feb. 1, 1983, Ser. No. 462,904
Int. Cl.³ A47B *23/00*
U.S. Cl. 294—137 16 Claims

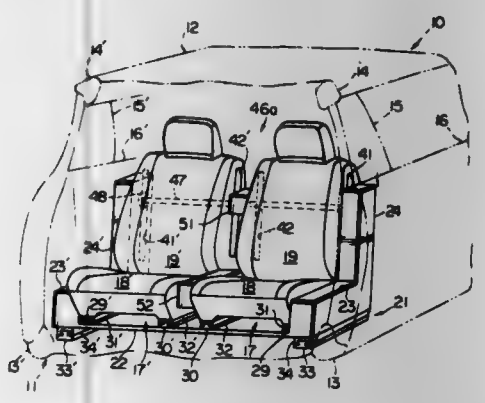


1. A book support system comprising:
(a) a housing having a recess formed therein, said recess having a predetermined contour adapted for receipt of a book, said housing being extended in a transverse direction;
(b) means for releaseably constraining said book within said recess, said releaseable constraining means being coupled to said housing; and,
(c) a transversely extending tab member secured to said housing, said tab member defining a continuous tab wall member extending throughout the entire transverse dimension of said housing for providing a manual hold for said housing along said transverse dimension, said housing defining a pair of frontal members and a pair of upper and lower ledge members secured to said frontal members for forming a peripheral boundary of said recess.

4,512,604
VEHICULAR SEAT ARRANGEMENT

Kouzo Maeda, and Harutoshi Tsujimura, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 7, 1982, Ser. No. 366,218
Claims priority, application Japan, Apr. 20, 1981, 56-57349[U]
Int. Cl.³ B60N *1/02*
U.S. Cl. 296—65 A 18 Claims

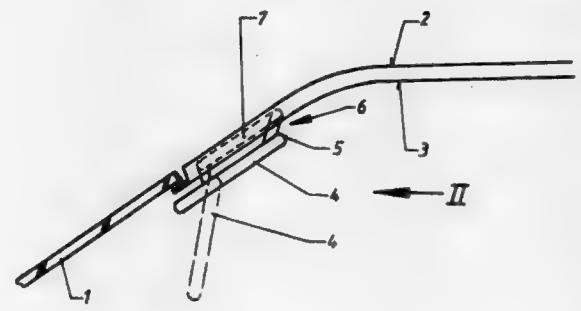


1. A vehicular seat arrangement for use in an automotive vehicle having a vehicle body including a floor panel and a pair of side wall portions, comprising
at least two seat assemblies positioned on the floor panel in parallel with each other laterally of the vehicle body, each of the seat assemblies having a seat cushion portion positioned over and in parallel to the floor panel and a seat back portion upstanding from the seat cushion portion and rockable with respect to the seat cushion portion about a pivot axis in a lateral direction of the seat assembly,
a seat reinforcing device including an elongated reinforcement member longitudinally extending in a lateral direction of the vehicle body between said side wall portions and passed in part through the seat back portion of one of said seat assemblies and in part through the seat back portion of the other of the seat assemblies, and
tilt regulating means permitting the seat back portion of one of said seat assemblies to tilt with respect to the seat cushion portion of the seat assembly about said pivot axis independently of the seat back portion of the other of the seat assemblies.

4,512,605
SUN VISOR FOR AUTOMOBILES

Willi Aschermann, Wuppertal, and Peter Haarhaus, Velbert, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,842
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227719
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 G 16 Claims

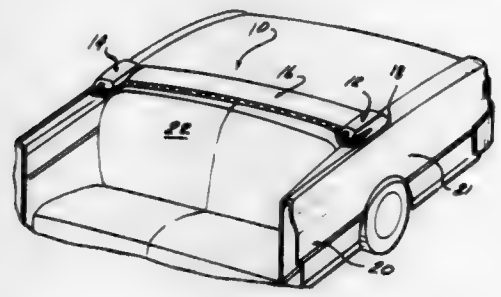


1. A sun visor for a vehicle, comprising a sun visor body, movable between a non-use position against the ceiling of the vehicle and above a window of the vehicle and a use position which is at least partially covering the window of the vehicle; the body having a front which faces toward the window and an opposite rear which faces into the vehicle compartment; the body having a front edge which is down in the position of use and having an opposite rear edge; and
sun visor body support means for displacing the sun visor body so that its front edge moves down past the window while its rear edge moves forward beneath the ceiling; the support means comprising:
a bearing bracket at the front of the sun visor body and protruding out of the front, and also extending toward the rear edge of the body;
the bracket having a free end portion away from the body, and the end portion serving as a guide adapted for controlling the orientation of the body as it moves forward and rearward;
a guide rail at the ceiling of the vehicle for receiving the guide of the bracket; the guide rail being elongate for guiding the guide of the bracket along the pathway defined by the guide rail; the guide rail being of curved development for orienting the body to cause the front and rear edges of the body to move as described, as the body moves forward and rearward, respectively, between its use and non-use positions;
an additional pair of rails; the guide being shaped to extend to and be guided by both rails of the pair;
the guide comprising oppositely directed pins, and the additional pair of rails having guide grooves shaped and directed for receiving the pins.

4,512,606
CONVERTIBLE TOP BOOT COVER

D. Mark Trostle, Canton; Milton C. Kaltz, Allen Park; Ronald Moler, Garden City, and Lendell E. Cowsert, Trenton, all of Mich., assignors to ASC Incorporated, Southgate, Mich.

Filed Apr. 29, 1983, Ser. No. 489,820
Int. Cl.[3] B60J 7/20
U.S. Cl. 296—130 4 Claims



1. In a boot cover of the type adapted to be removably emplaced over a convertible top comprises:

(a) a first rigid section for covering a first portion of a stowage compartment;

(b) a second rigid section for covering a second portion of a stowage compartment;

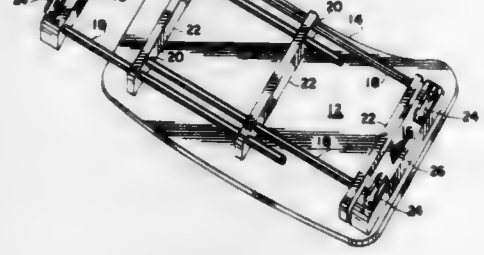
(c) an intermediate flexible section extending between and integral with the first and second rigid sections, the intermediate flexible section covering a further portion of a stowage compartment; and

wherein one of the rigid sections is capable of overlying the other of the rigid sections, when not in use, to define a volume therebetween, the intermediate section being foldable and storable within the vehicle.

4,512,607
DETACHABLE PATIENT SERVING TRAYS

Edward D. Rapp, 500 N. Osceola, Clearwater, Fla. 33515

Filed Apr. 11, 1983, Ser. No. 483,519
Int. Cl.[3] A47B 23/02, 83/02
U.S. Cl. 297—153 3 Claims



1. A tray member of the type designed to be detachably secured to the frame of structures having tubular frames, comprising,

a flat, generally rectangular base member having a top article-supporting surface and a bottom surface,

a first guide member fixedly secured to the bottom surface of said base member, said first guide member disposed normal to the longitudinal axis of said base member and positioned adjacent a first lateral edge of said base member,

said first guide member provided with proximal and distal aperture members formed therein,

a second guide member fixedly secured to the bottom surface of said base member, said second guide member disposed parallel to said first guide member and positioned adjacent a second lateral edge of said base member,

said second guide member provided with proximal and distal aperture members formed therein,

a third guide member fixedly secured to the bottom surface of said base member, said third guide member disposed parallel to said first and second guide members and positioned intermediate thereof,

said third guide member provided with a first pair of proximal aperture members formed therein and a second pair of distal aperture members formed therein,

said first pair of aperture members being respectively axially aligned with the proximal aperture members formed in said first and second guide members,

said second pair of aperture members being respectively axially aligned with the distal aperture members formed in said first and second guide members,

a first handle member disposed parallel to said first, second and third guide members,

a proximal elongate rod member and a distal elongate rod member fixedly secured to sad first handle member and projecting laterally therefrom and respectively positioned so that the proximal rod member is slideably engaged with the proximal aperture member formed in said first guide member and with a first one of the proximal aperture members formed in said third guide member and so that the distal rod member is slideably engaged with the distal aperture member formed in said first guide member and with a second one of said proximal aperture members formed in said third guide member,

a second handle member disposed parallel to said first handle member,

a proximal elongate rod member and a distal elongate rod member fixedly secured to said second handle member and projecting laterally therefrom and respectively positioned so that the proximal rod member is slideably engaged with the proximal aperture member formed in said second guide member and with a second one of the proximal aperture members formed in said third guide member and so that the distal rod member is slideably engaged with the distal aperture member formed in said second guide member and with a second one of said distal aperture members formed in said third guide member,

said rod members collectively having a length substantially equal to the distance between said first and second guide members so that said first and second guide members act as stop means that limit the inwardly directed travel of said rod members,

and said first and second guide members being spaced inwardly from the first and second lateral edges of said base member, respectively, by a distance substantially equal to the width of said first and second handle members so that said handle members are fully retractable beneath said base member to thereby decrease the amount of space occupied by said tray member when it is stored.

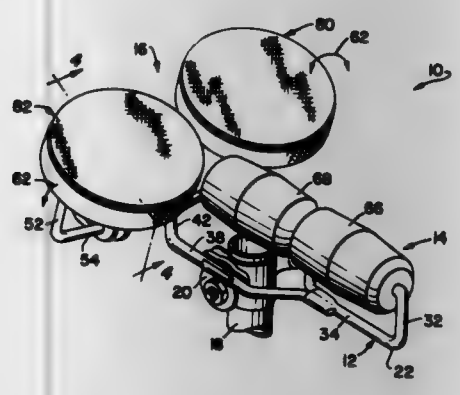
4,512,608
SADDLE ASSEMBLY

Homi K. Erani, 318 W. Seneca, Pierre, S. Dak. 57501

Continuation-in-part of Ser. No. 365,109, Apr. 5, 1982,. This application Sep. 22, 1982, Ser. No. 421,279
Int. Cl.[3] B62J 1/00
U.S. Cl. 297—201 8 Claims

1. In a saddle for a foot operated device, a horn assembly comprising a elongate horn extending fore to aft of the saddle and means for supporting said horn for rotary motion about an axis extending generally fore to aft, said horn including dis-

crete rollers each independently rotatable on said support means and each located at different fore to aft positions



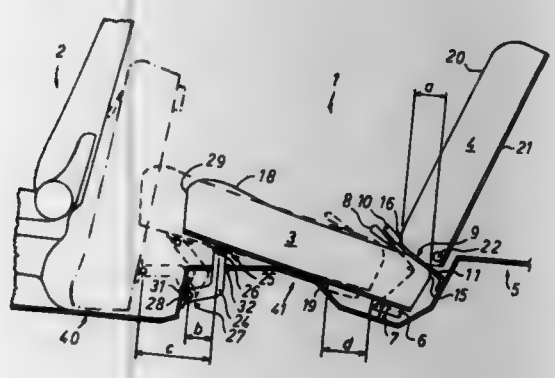
whereby a forward one of said discrete rollers would be free to rotate independent of a rearward one of said discrete rollers.

4,512,609

ARRANGEMENT IN A VEHICLE SEAT

Nils O. Pärsson, Trollhättan, Sweden, assignor to Saab-Scania AB, Sweden

Filed Mar. 25, 1983, Ser. No. 479,031
Claims priority, application Sweden, Mar. 30, 1982, 8202022
Int. Cl.³ B60N *1/02*; A47C *1/02*
U.S. Cl. 297—331 **4 Claims**



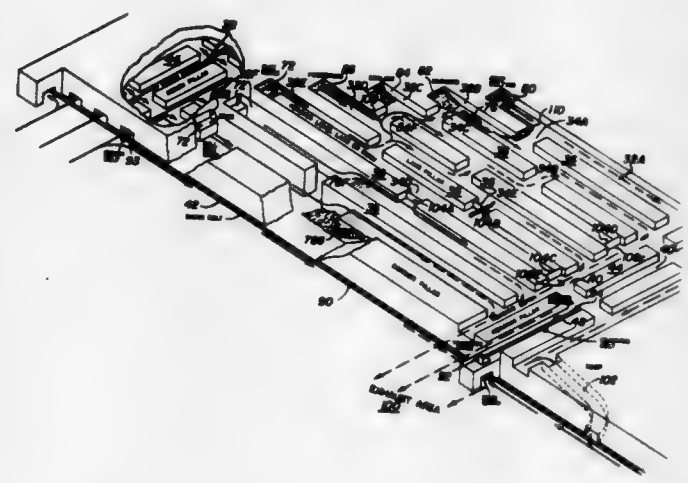
1. Arrangement in a passenger seat in a vehicle, preferably a passenger car back seat, for re-arranging said seat, including a seat cushion and a back cushion, said seat cushion being pivotably connected via at least one link to the vehicle body and separately arrangeable between a normal sitting position and a retracted substantially vertical loading position, the back cushion being pivotably connected to the vehicle body and separately arrangeable between a normal back support position and a downwardly-swung substantially horizontal loading position, the rear end of the seat cushion being situated under the lower end of the back cushion in their respective normal positions, characterized in that the link is pivotably attached to the seat cushion via a first joint and to the body via a second joint and in that in the normal sitting position of the seat cushion the first joint is situated closer to the back cushion than the second joint and above any supporting points between the seat cushion and the body, and in that the second joint is situated behind the forward end of the seat cushion, whereby a substantially parallel displacement of the seat cushion from its normal sitting position to a tipping position is allowed, the distance (d) between said positions being greater than a distance (a) between the rear end of the seat cushion and the lower forward edge of the back cushion in the normal sitting position of the seat cushion.

4,512,610

MINING SYSTEM

Clark J. Gilbert, Golden, Colo.; Menelaos D. Hassialis, Ridgewood, N.J.; Andrew H. Scrymgeour, Parker, and Samuel I. Vera, Golden, both of Colo., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 27, 1983, Ser. No. 499,040
Int. Cl.³ E21C *41/00*
U.S. Cl. 299—13 **5 Claims**



1. A method for mining a body of material occurring in generally horizontal subsurface formations comprising the steps of:

excavating a main entry in juxtaposition with the body of material;

excavating a heading entry perpendicular and connected to said main entry at one level;

excavating a bench entry perpendicular and connected to said main entry and parallel to said heading entry at a second level;

excavating a first plurality of lanes from said heading entry to said bench entry at said one level;

removing the material from said first plurality of lanes;

excavating a second plurality of lanes from said bench entry to said heading entry at said second level, said second plurality of lanes being located below said first plurality of lanes;

removing the material from said second plurality of lanes through said bench entry; and

connecting said first plurality of lanes and said second plurality of lanes.

4,512,611

OSCILLATED HEAD WITH BEARING SUPPORT AND QUICK DEMOUNTABILITY

Palmer Grasse, Glendale, Calif., assignor to Grasse Family Trust, Glendale, Calif., Palmer Grasse, Trustee

Continuation-in-part of Ser. No. 473,695, Mar. 9, 1983, Pat. No. 4,483,566, which is a continuation-in-part of Ser. No. 443,327, Nov. 22, 1982, Pat. No. 4,452,492, which is a continuation-in-part of Ser. No. 329,523, Dec. 10, 1981, Pat. No. 4,365,843, which is a continuation-in-part of Ser. No. 318,827, Nov. 6, 1981, Pat. No. 4,365,842. This application Jun. 1, 1983, Ser. No. 500,284
The portion of the term of this patent subsequent to Dec. 20, 1999, has been disclaimed.
Int. Cl.³ A47L *11/12*
U.S. Cl. 299—37 **19 Claims**

1. For use in power-operated floor stripping apparatus that includes a frame, a drive carried on the frame, wheels supporting the frame, a handle to guide the frame, and a cutting blade carried by a head which is pivotally mounted to the frame, the frame having side members the improvement comprising

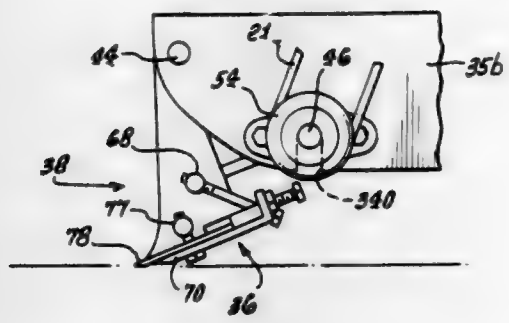
(a) a connecting element having a first tubular part and a second tubular part, said parts having spaced, parallel

axes, said second tubular part pivotally connected to the head,

(b) a drive shaft extending within said first tubular part, said shaft operatively connectible to the drive to be rotated thereby, and

(c) support bearings removably attached to the frame side members, the drive shaft having end portions rotatably supported by the bearings,

(d) the frame side members having apertures into which the drive shaft extends, said apertures opening peripherally to



pass and thereby free the drive shaft from the frame when the bearings are detached from the frame side members, whereby the drive shaft and said first tubular part may be demounted from the frame,

(e) said head consisting of lightweight metal and having two flanges interconnecting by a web, the flanges being locally thickened to substantial extent to define two lugs,

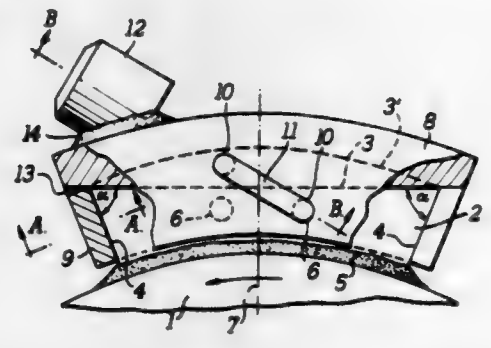
(f) and bearings carried by said lugs to form bearing openings for a pivot shaft removably connected to the frame, said bearings being lubricated adjacent the shaft.

4,512,612

SYSTEM FOR MOUNTING TOOTH-CARRIER SECTORS ON A CUTTER WHEEL OR A MILLING-CUTTER DRUM

Joseph Allard, Bourg en Bresse, France, assignor to Eurotungstene, Grenoble, France

Filed Jun. 29, 1983, Ser. No. 508,891
Claims priority, application France, Jul. 21, 1982, 82 13036
Int. Cl.³ E21C *35/18*
U.S. Cl. 299—91 **6 Claims**



1. A cutter wheel or milling-cutter drum comprising:

(a) a wheel which, during use, is rotated about an axis of rotation;

(b) at least one support which is mounted on the outer periphery of said wheel, said support being delimited by a radially outer surface which, in cross-section, is symmetrical with respect to an axis of symmetry which is perpendicular to the axis of rotation of said wheel and two lateral surfaces at opposite ends of said support, said lateral surfaces being symmetrical with respect to said axis of symmetry and being inclined inwardly from said radially outer surface by angles α which are identical and each of which is less than 90°;

(c) a tooth-carrier sector sized and shaped to fit snugly over said at least one support in either of two oppositely disposed positions, said tooth-carrier sector having an abutting surface which is sized and shaped to correspond to said lateral surfaces and which abuts against one of said two lateral surfaces when said tooth-carrier sector is in one of its two oppositely disposed positions and which abuts against the other of said two lateral surfaces when said tooth-carrier sector is in the other of its two oppositely disposed positions;

(d) means for releasably connecting tooth-carrier sector to said support when said tooth-carrier sector is in either of its two oppositely disposed positions; and

(e) a tooth-carrier mounted on said tooth-carrier sector,

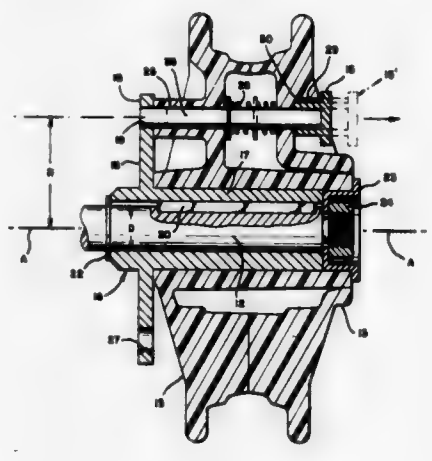
whereby the orientation of said tooth-carrier sector and said tooth-carrier with respect to said axis of rotation can be rapidly reversed, permitting a change in the direction of the rotation of said wheel about said axis of rotation.

4,512,613

WHEEL HUB LATCH MECHANISM FOR POWER WHEELCHAIRS

Joe-Massoud Nassiri, Thousand Oaks, Calif., assignor to Everest & Jennings, Inc., Camarillo, Calif.

Filed Dec. 2, 1982, Ser. No. 446,337
Int. Cl.³ B60B *27/00*
U.S. Cl. 301—1 **4 Claims**



1. A wheel hub latch mechanism for a power wheelchair having a power driven rear axle normally secured to the wheel hubs of the rear wheels of the wheelchair, said latch hub mechanism including, in combination:

(a) a bearing member comprised of a tubular portion surrounding a portion of said axle normally secured to a wheel hub and an integrally formed flange portion extending outwardly from the inner end of the tubular portion, the portion of said flange adjacent to its outer periphery having at least one hole passing therethrough in a direction parallel to the axis of the tubular portion and at a given radial distance therefrom;

(b) means for locking said bearing member to said portion of said axle for power rotation therewith;

(c) a wheel hub for carrying a rear wheel for said wheelchair journalled for free rotation on the exterior surface of said tubular portion of said bearing member, an inner side portion of said hub being juxtaposed to said flange portion and having a bore at the same given radial distance from the axis of said tubular portion as is said hole in said flange such that said bore can be positioned in registration with said hole by rotating said hub freely on said tubular portion of said bearing member; and

(d) pin means carried by said hub including a pin shank receivable in said bore and said hole when in registration with said bore for locking said hub to said flange so that said hub and wheel are driven by said flange when said rear axle is power driven, removal of said pin from said hole releasing said hub from said flange so that said hub and wheel supported thereby are independent of the power drive system and thereby essentially free-wheeling, said given radial distance of said hole and bore from the

axis of said tubular portion being greater than twice the diameter of said axle such that an increased driving torque is provided for said hub when said hub is locked to said flange, over that provided by direct connection of the axle portion to a wheel hub, thereby lessening strain on the hub latch mechanism.

4,512,614

WHEEL COVER WITH RETAINMENT SYSTEM

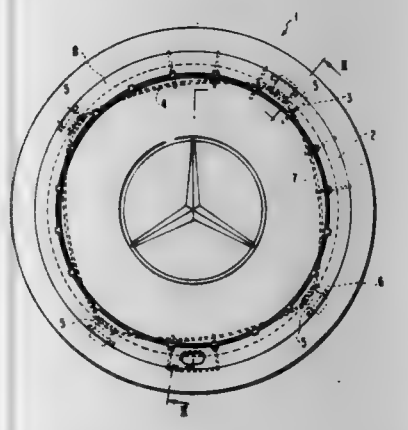
Bernd Löper, Korb, Fed. Rep. of Germany, assignor to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 419,487

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137319

Int. Cl.³ B60B *7/06*

U.S. Cl. 301—37 P **17 Claims**



1. A retaining arrangement for a wheel cover made of plastic material and having a rim-like retaining means, comprising several substantially U-shaped retaining spring means having inner and outer legs, a circumferential, essentially non-springy support ring means, said retaining spring means being operable to engage with the radially outer leg thereof in a groove-shaped recess of a wheel rim, the inner leg of the retaining spring means being inserted, secured against rotation and axial displacement, in the rim-like retaining means of the wheel cover and being supported at said support ring means, and the retaining spring means being clipped on the support ring means and being operable thereby to support the wheel cover at the support ring means.

4,512,615

BRAKE CONTROLLER

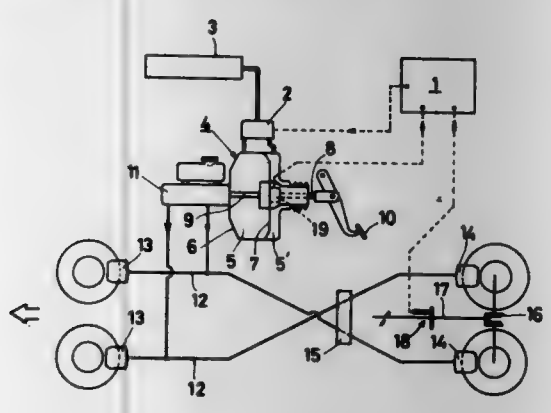
Yasuo Kita; Michio Moriya, both of Itami, and Kenichi Yoshida, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Jul. 14, 1983, Ser. No. 513,679

Claims priority, application Japan, Jul. 21, 1982, 57-128737; Jul. 21, 1982, 57-128738

Int. Cl.³ B60T *8/12*

U.S. Cl. 303—97 **12 Claims**



1. A brake controller for controlling a vehicle brake system having a plurality of brakes, a source of pressure, an actuator for controlling the pressure to be supplied to said brakes, and brake control means for operating said brake system, said brake controller comprising:

a control valve means interposed between said source of pressure and said actuator for controlling the pressure supplied from said source of pressure to said actuator;

a first sensing means for sensing the deceleration obtained by braking;

a second sensing means for sensing the force with which said brake control means is operated; and

data processing means for storing data representing a desired relationship between the deceleration and said force, processing the signals from said first and second sensing means to compute a desired deceleration corresponding to said force sensed on the basis of the stored data, and giving such a control signal to said control valve means that the actual deceleration will be equal to the desired deceleration.

4,512,616

SLIDING GUIDE

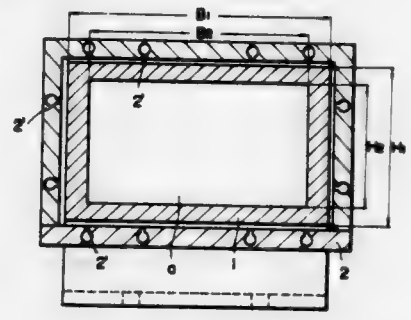
Shigemi Suzuki, Chigasaki, and Masahiro Mizukane, Yokohama, both of Japan, assignors to Toto Ltd., Kitakyushya, Japan

Filed Mar. 19, 1984, Ser. No. 590,821

Claims priority, application Japan, Mar. 25, 1983, 58-43050; Mar. 25, 1983, 58-43051

Int. Cl.³ F16C *29/02*

U.S. Cl. 308—3 R **14 Claims**



1. A sliding guide comprising a guide body made of a ceramic material of a hollow body whose sectional dimension ratio is less than 0.8 in an section perpendicular to a sliding direction of said sliding guide.

4,512,617

LINEAR BALL BEARING WHICH ACCOMMODATES SHAFT MISALIGNMENT

Lawrence M. Saravis, deceased, late of Milford (by Nancy Saravis, executrix); Jeffrey A. Stein, Bridgeport, and Darren S. Saravis, Milford, all of Conn., assignors to The Barden Corporation, Danbury, Conn.

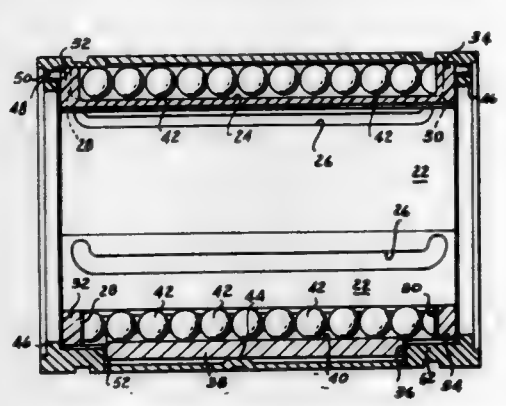
Filed Mar. 6, 1984, Ser. No. 586,768

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **11 Claims**

1. An improved linear ball bearing including in combination a cage formed with a plurality of ball path portions including loaded ball path portions and unloaded ball path portions and transition ball path portions connecting said loaded and unloaded ball path portions, a plurality of load plates cooperating with said loaded ball path portions and a sleeve surrounding

said cage and said load plates, said sleeve being provided with a plurality of internal bosses for cooperation with said load



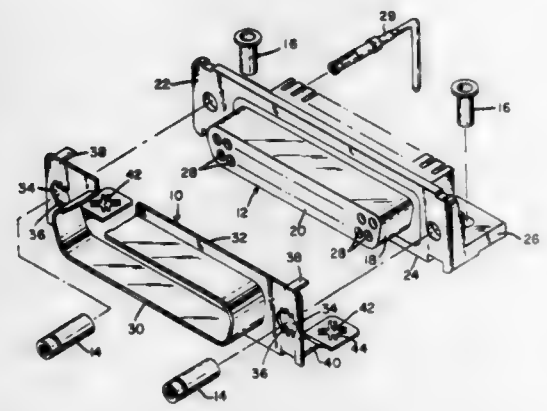
plates to permit said load plates to pivot around axes generally perpendicular to the lengths thereof.

4,512,618

GROUNDING MATING HARDWARE

Vijay Kumar, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 10, 1983, Ser. No. 473,935
Int. Cl.[3] H01R *4/66, 13/648*
U.S. Cl. 339—14 R **2 Claims**



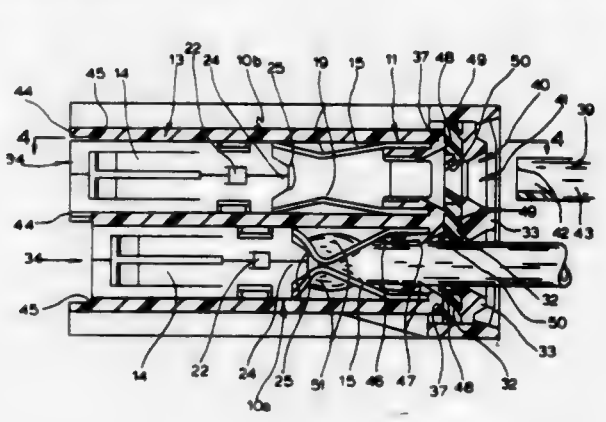
1. In combination with an electrical connector having a housing of rigid insulative material defining a mating face and a mounting face with a plurality of terminal passages extending between the faces, a peripheral flange around said mating face and mounting flanges on said mounting face each said peripheral and mounting flange being provided with at least one hole to receive locking and mounting means, respectively, therein, a plurality of electrical terminals mounted in said housing, each terminal having a mating portion directed toward the mating face and a mounting portion extending from the mounting face, a metal shell providing grounding interconnect between a shielded connector and the mounting surface characterized by a unitary metallic member having a shroud portion encircling the mating face to engage shielding of said shielded connector and an integral flange extending normal to the axis of the shroud portion, at least one mounting tab extending from a first edge of said flange adapted to engage one edge of said peripheral flange of said housing and at least one mounting tab adapted to lie adjacent said mounting face, each said flange and said mounting tab being provided with a profiled aperture providing wiping engagement between the shell and the respective locking means and mounting means.

4,512,619

INSULATION DISPLACEMENT TERMINAL FOR AN ELECTRICAL CONNECTOR AND ENVIRONMENTAL SEALING MEANS THEREFOR

Helen Dechelette, London, England, assignor to Molex Incorporated, Lisle, Ill.

Filed Jul. 20, 1983, Ser. No. 515,428
Claims priority, application United Kingdom, Jul. 23, 1982, 8221411; Aug. 9, 1982, 8222891; Jul. 6, 1983, 8318283
Int. Cl.[3] H01R *4/24, 13/58*
U.S. Cl. 339—94 M **19 Claims**



1. A connector assembly for terminating an insulated wire having an electrical conductor with a sheath of insulation therearound, including:

a dielectric housing fitted with an electrically conductive terminal said terminal having means for displacing the insulation of said conductor upon relative movement with respect thereto, the improvement comprising:

said displacing means comprising at least one terminal wall portion deflectable into said conductor upon application of a force directed generally parallel to the longitudinal axis of said wire; and

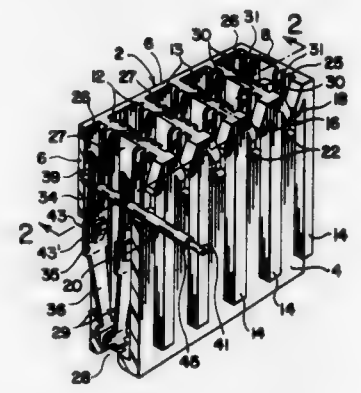
tab means integrally formed with said housing for securing said wire in said terminal after its termination to the connector assembly.

4,512,620

MASS TERMINATION ELECTRICAL CONNECTOR

John D. Tillotson, Southfield, Mich., assignor to Elco Corporation, El Segundo, Calif.

Filed Feb. 22, 1983, Ser. No. 468,418
Int. Cl.[3] H01R *4/24, 13/41*
U.S. Cl. 339—97 P **16 Claims**



6. An electrical connector comprising: a one-piece housing of insulating material having front and rear vertical walls, a top end, and a bottom end wall, said housing being provided with a vertically extending cavity open at the top end of the housing and defined by vertical inner wall surfaces of said front and rear walls and by opposed vertical side wall surfaces of transverse walls extending between said front and rear walls, said cavity having a vertically extending center axis; a first pair of opposed, vertically extending, terminal retaining channels on

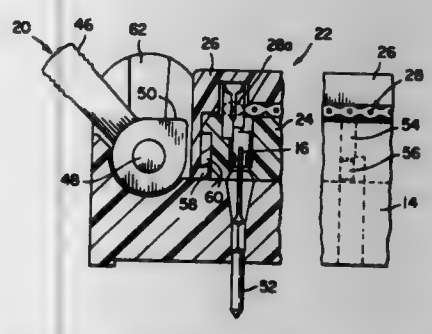
said opposed side wall surfaces of said cavity, said pair of channels being formed at least in part by protruding vertical ribs on said opposed side walls surfaces and being offset to one side of the said center axis of said cavity toward one of said housing front and rear walls and having open upper ends exposed at the top end of said housing and closed lower ends located within said cavity to provide terminal engaging stop shoulders therein; and an elongated terminal of flat metal strip material supported in and extending generally vertically through said housing cavity, said terminal having a flat terminal-retaining intermediate portion, a flat conductor-termination upper portion extending upwardly within said cavity and provided with a longitudinal wire termination slit extending vertically of said cavity and having an open upper end, and a generally flat lower contact leaf portion laterally inclined to the common plane of the said flat intermediate and upper portions of the terminal, said flat intermediate terminal portion having flat side flange extensions projecting from the opposite side edges thereof and providing downwardly facing abutment shoulders thereon; said side flange extensions being slidably force-fitted into the said pair of opposed channels in the housing cavity to retain the terminal in fixed upright and oriented position within the cavity with the said abutment shoulders on the terminal engaged with the said stop shoulders in the said channels to locate the terminal in predetermined vertical position within the cavity with the said lower contact leaf portion of the terminal inclined toward the said center axis of the housing cavity; at least one of said housing front and rear walls having an upwardly open notch opening therethrough extending vertically downward from the top end of the housing and coextensive with a portion of the length of and located opposite the slit in said inserted terminal for permitting transverse translational passage thereinto and forced entry into the said wire termination slit in said terminal of a wire conductor for electrical connection thereto.

4,512,621

FLAT CABLE PITCH TRANSITION CONNECTOR

Gary C. Bethurum, El Segundo, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Continuation of Ser. No. 177,638, Aug. 13, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 422,614
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—99 R **4 Claims**



1. A pitch transition electrical connector assembly for making zero-insertion force connection between flat multiconductor cable of given pitch and an array of fixed electrical terminals having a given outer dimension, comprising:

a plurality of identical electrical contact elements, each having a first contact of insulation-piercing type and a second contact opposite and axially offset from said first contact, said contact including a socket portion defining a terminal receiving region having an access greater than said given outer dimension of said terminals;

an elongate housing adapted for receiving said cable and for engaging said contact elements therewith, said housing supporting said contact elements with such first contacts thereof in laterally spaced first and second rows, longitudinally successive ones of said first contacts being spaced by said given pitch, said housing supporting said second contacts in respective pairs, said contacts of each such pair being spaced mutually in lateral alignment, longitudinally adjacent ones of said pairs being spaced by a predetermined pitch exceeding said given pitch;

an elongate base circumscribing such terminal array and adapted for receiving said housing and placing said terminal receiving region of said second contacts individually in circumscribing relation about the respective terminals of the terminal array in preselected non-engaging registry with such terminals; and

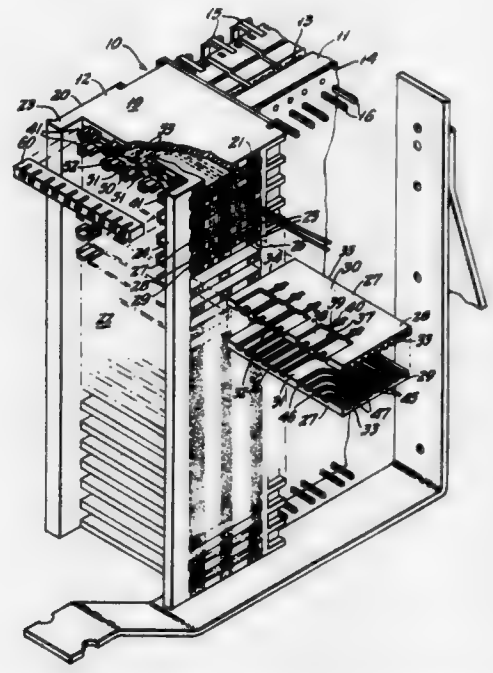
actuator means for effecting relative longitudinal movement of said housing and said base to place said terminal contacting member of said second contacts individually in electrical engagement with said array terminals.

4,512,622

CONDUCTOR GUIDE MEANS FOR TELEPHONE CONNECTOR BLOCKS

William V. Carney, Oyster Bay, and Michael Fasano, Syosset, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Nov. 4, 1983, Ser. No. 548,683
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **3 Claims**

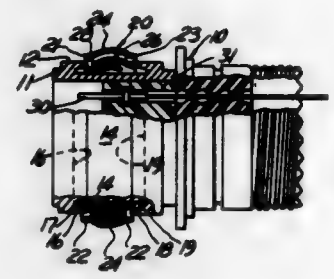


1. In a telephone connector block of a type including a first exposed wall mounting a plurality of quick clip connectors for engaging individual subscriber pairs, the improvement comprising: means for guiding individual pairs of conductors through said block to exit therefrom at identified locations for subsequent external connection, said means including a plurality of guide elements; said first exposed wall having a plurality of slotted openings therein disposed, said guide elements being of generally planar configuration and slidably positioned behind a slotted opening to extend inwardly from said first wall, each of said guide elements having channels therein accommodating a single pair of conductors; said block having a second exposed wall disposed at an angle relative to said first wall, and having elongated parallel slotted openings therein lying in co-planar relation relative to said first plurality of slotted openings; said guide elements being positioned with one surface thereof lying within said second plurality of slotted openings, whereby said guide elements provide continuous channels from said first mentioned wall to said second mentioned wall, and conductors may be inserted into said channels from either end thereof.

4,512,623
ELECTRICAL CONNECTOR ASSEMBLY HAVING MEANS FOR SHIELDING ELECTROMAGNETIC INTERFERENCE

Vladimir Tomsa, Chicago, Ill., assignor to Allied Corporation, Morristown, N.J.

Filed Feb. 3, 1984, Ser. No. 576,684
Int. Cl.[3] H01R *13/653*
U.S. Cl. 339—143 R 11 Claims



1. An electrical connector assembly comprising a plug connector member including a barrel telescoped into a shell of a receptacle connector member, said barrel including an annular groove therearound circumposed by the shell, a plurality of mated contacts therein, and shielding means disposed between the outer surfacc of said barrel and the inner surface of said shell for shielding said contacts from radio frequency interference, said shielding means comprising an annular band of arcuate cross-section being disposed in said groove, said band being stamped from a resilient metal and having alternating slots therein opening at opposite edges thereof to define a succession of segments, said shielding means characterized by:

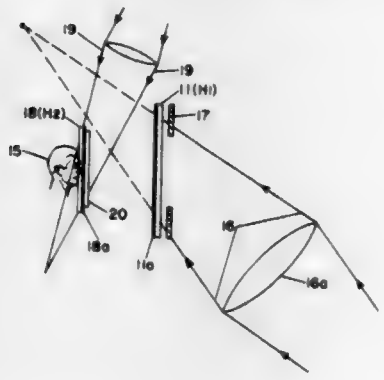
said annular groove being defined by a circumferential surface substantially concentric with the axis of said barrel and by a pair of laterally spaced annular undercuts; and

said band comprising a closed annulus disposed in contacting relation with said circumferential surface, said annulus being radially contractible and radially contracted about said surface from a diameter greater than the outer surface of said barrel, said arcuate section extending radially from said groove and being flattened radially inward by said shell, and said succession of segments being disposed so that adjacent segments are overlapping and said slots are substantially closed.

4,512,624
METHOD OF RECORDING HOLOGRAPHIC IMAGES IN WHITE LIGHT IMAGE PLANE HOLOGRAMS

Peter Nicholson, 141-17 Cherry Ave., Flushing, N.Y. 11355

Filed Nov. 23, 1981, Ser. No. 323,950
Int. Cl.[3] G03H *1/22;* G02B *27/22*
U.S. Cl. 350—3.69 2 Claims



1. A method of producing a real image plane hologram from a transmission hologram produced with a diverging reference beam, and containing a recorded holographic image, comprising the steps of:

placing a mask defining a generally elliptically-shaped opening over the transmission hologram;

directing a reconstruction beam at the transmission hologram, to reconstruct a real image of the recorded holographic image, said beam being the conjugate, time-reversed beam of the reference beam used to create the transmission hologram;

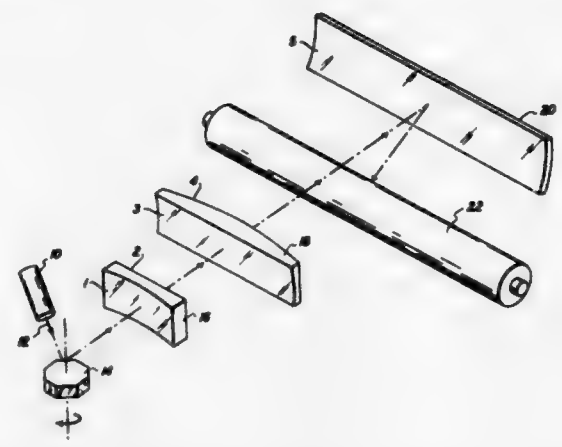
positioning a photographic hologram plate in a plane generally parallel to the plane containing the transmission hologram and approximately at the location of the reconstructed real image;

directing a converging reference beam at the photographic plate to thereby create a real image plane hologram, whereby the real recorded image can be reconstructed by illuminating the real image plane hologram with a diverging white light point source at the conjugate time reversed position of the converging reference beam when the plate is positioned having its emulsive side opposite to the diverging white light point source.

4,512,625
SCANNER OPTICS WITH NO CROSS SCAN FIELD CURVATURE

Harry P. Brueggemann, San Marino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 8, 1982, Ser. No. 433,340
Int. Cl.[3] G02B *27/17*
U.S. Cl. 350—6.8 9 Claims



1. In a flying spot scanning system including a rotating light-reflector **14** and a medium to be scanned, wherein the improvement is characterized by:

negative element lens means **16** in the optical path from said rotating light-reflector,

positive element lens means **18** in the optical path from said rotating light-reflector and said negative element lens means, said negative element lens means and said positive element lens means focussing any light reflected by said rotating light-reflector, and

mirror means **20** in the optical path from said postive element lens means **18** for reflecting any said light focussed thereby onto said medium to be scanned, wherein wobble effects of said rotating light-reflector and distorting effects of field curvature are effectively eliminated.

4,512,626
ROTATING MIRROR SCANNER

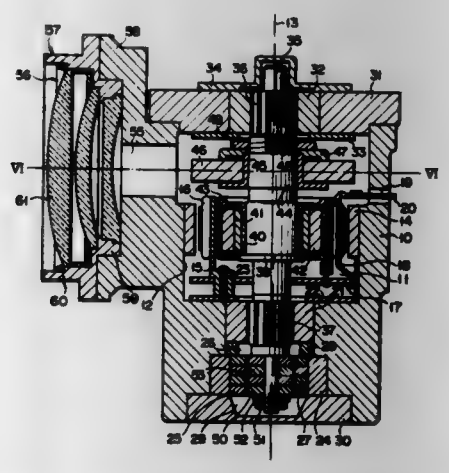
Masashi Kamiya, Tokyo; Katsunobu Ueda; Mitsuo Sumiya, both of Yokohama, and Tameyasu Tsukada, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 15, 1983, Ser. No. 504,424
Claims priority, application Japan, Jun. 24, 1982, 57-107529
Int. Cl.[3] G02B *27/17*
U.S. Cl. 350—6.8 13 Claims

1. A rotating mirror scanner comprising:

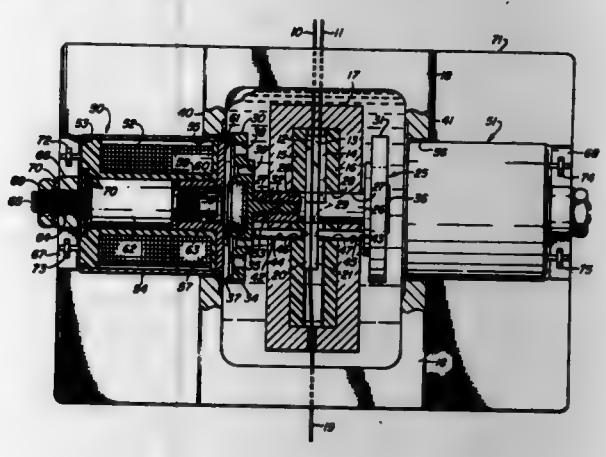
a spindle having a pair of journals;

a rotor rotating with the spindle;
a stator for rotating the rotor;
a pair of bearings individually receiving the pair of journals;
a polygonal mirror disposed between the pair of journals and fixed to the spindle;
a housing fixedly fitted with one of the bearings and the stator and having at least one window facing the polygonal mirror so that a light reflected from the polygonal mirror passes through the window, the housing having an opening through which the rotor, the polygonal mirror, and the one bearing are inserted;



a cover fitted with the other bearing and removably closing the opening; and
means for floating the spindle, the means including at least one rotor magnet fixed on the spindle, and at least one stator magnet fixed to the housing so that the rotor magnet is inserted therein and having an inner surface facing the outer surface of the rotor magnet with a gap therebetween, the facing surfaces of the rotor and stator magnets being opposite in polarity.

4,512,627
OPTICAL FIBER SWITCH, ELECTROMAGNETIC ACTUATING APPARATUS WITH PERMANENT MAGNET LATCH CONTROL
Wendel E. Archer, Gahanna; James M. Luther, Pataskala, and Michael L. Thieken, Glenford, all of Ohio, assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 13, 1982, Ser. No. 449,435
Int. Cl.[3] G02B *7/26*; H01H *67/02*; H01F *7/08*
U.S. Cl. 350—96.20 **21 Claims**



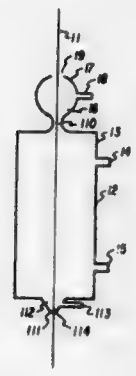
1. Actuating apparatus for controlling the movement of a body from a first to a second position comprising a push-rod mounted on one side of said body to be freely movable in either direction along its longitudinal axis to bring one end of said rod into contact with one side of said body, a shuttle element comprising a connecting rod mounted to be freely movable in either direction along its longitudinal axis and a first actuating magnetic member provided at one end of said connecting rod transverse to its said longitudinal axis for latching said shuttle element in said first and second positions, said actuating member having a bearing surface for contacting the opposite end of said push-rod, and an electromagnet having a core positioned for magnetic coupling with said actuating magnetic member to release said shuttle element from one of said positions and position said shuttle element in another of said positions.

4,512,628
SPLICE CASING ASSEMBLY
John J. Anderton, Oil City, Pa., assignor to GTE Products Corporation, Stamford, Conn.
Filed May 31, 1983, Ser. No. 499,642
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—96.20 **16 Claims**



10. A splice casing assembly for a fiber optic splice housing assembly, the casing assembly comprising:
a tubular splice casing,
a mounting insert disposed within the splice casing and for supporting a splice housing assembly, the mounting insert comprising an elongated, rectangular platform portion and integral disklike portions disposed at opposite ends of the platform portion,
a pair of casing plugs, each individually fastened at an opposite end of the splice casing, said casing plugs each comprising a threaded portion for fastening to the splice casing, and
a pair of connectors for fiber optic cables, each of the pair individually fastened at a respective end of a casing plug and comprising a threaded portion for fastening to the casing plug, a polygonal gripping portion, a major cylindrical portion, and a minor cylindrical portion disposed between the polygonal gripping portion and the major cylindrical portion, whereby each of a pair of fiber optic cables may be routed in a mating fashion via an associated connector, through an associated casing plug and into an end of the fiber optic splice housing assembly, said splice housing assembly to be surrounded by the tubular casing.

4,512,629
OPTICAL FIBER WITH HERMETIC SEAL AND METHOD FOR MAKING SAME
Eric G. Hanson, Burlingame; Ronald Hiskes, Palo Alto, and Christopher A. Schantz, Santa Clara, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 30, 1982, Ser. No. 363,722
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.30 **2 Claims**

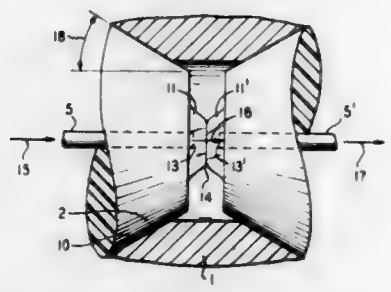


1. An improved optical fiber having an encapsulating hermetic coating consisting essentially of silicon and carbon.

4,512,630
OPTICAL FIBER CONNECTOR

Peter K. Runge, Fair Haven, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 630,930, Nov. 11, 1975, abandoned. This application Feb. 29, 1980, Ser. No. 125,941
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—96.21 2 Claims

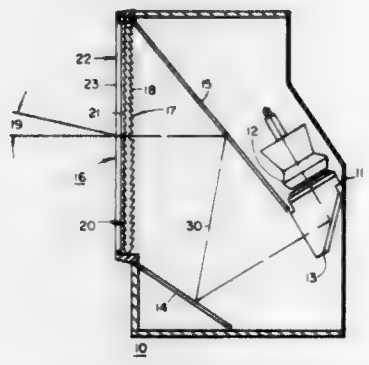


1. An optical fiber connector assembly comprising:
first and second connectors, each of which includes:
a circular cylindrical frustum-shaped mating portion which tapers from a larger diameter at a point along the body of said connector to a smaller diameter end surface;
a single optical fiber extending through said connector along the axis of said frustum-shaped mating portion and terminating at said end surface;
and a transparent, flexible contacting member extending over the end of the fiber; and
a disconnectable holder for receiving and holding said connectors in linear alignment for coupling between said fibers having:
first and second opposed, conical frustum-shaped hollowed receiving surfaces for receiving said first and second connectors, respectively, and automatically aligning the fibers terminating therein;
said connectors being in contact with said respective receiving surfaces, and the flexible contacting members of said connectors being in contact with each other.

4,512,631
REAR PROJECTION TELEVISION SCREEN INCORPORATING A PRISM LENS

Bertram VanBreemen, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 21, 1983, Ser. No. 487,382
Int. Cl.[3] G03B *21/60*
U.S. Cl. 350—128 18 Claims

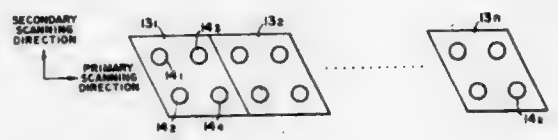


1. A rear projection television receiver, comprising:
a video image source; and
a rear projection screen comprising:
a field lens;
a prism array comprising a plurality of horizontally disposed prism elements, said prism elements incorporating facets for distributing light at a plurality of different predetermined angles, each of said angles defining a principal light ray angle of a component of the vertical audience envelope; and
a focusing lens for focusing said distributed light onto an image surface.

4,512,632
ORIGINAL READING APPARATUS

Jun Tokumitsu, Tokyo, and Kazuo Minoura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 250,947, Apr. 6, 1981, abandoned. This application Aug. 10, 1984, Ser. No. 640,204
Claims priority, application Japan, Apr. 15, 1980, 55-50124
Int. Cl.[3] G02B *27/00*
U.S. Cl. 350—167 7 Claims



1. An original reading apparatus comprising:
a plurality of image pick-up means disposed in the primary scanning direction of an original; and
a compound-eye optical system for forming an image of the original on said image pick-up means, said compound-eye optical system including end surfaces, a plurality of plastic effective lens portions arranged in a staggered fashion along said primary scanning direction and a plastic protective portion provided around and formed integrally with said effective lens portions to protect said effective lens portions against moisture entry from side surfaces of said effective lens portions, said protective portion separating said effective lens portions from said end surfaces of said compound-eye optical system by more than a predetermined length, said compound-eye optical system being divided into a plurality of lens blocks, each of said lens blocks including a plurality of said effective lens portions, the boundary surface defined between adjacent ones of said lens blocks being defined in said protective portion and being inclined at an oblique angle with respect to a plane perpendicular to said primary scanning direction so as to make the distance between said effective lens portion and said boundary surface greater than if said boundary surface were perpendicular to said primary scanning direction.

4,512,633
VEHICLE REARVIEW MIRROR REMOTE-CONTROL DEVICE

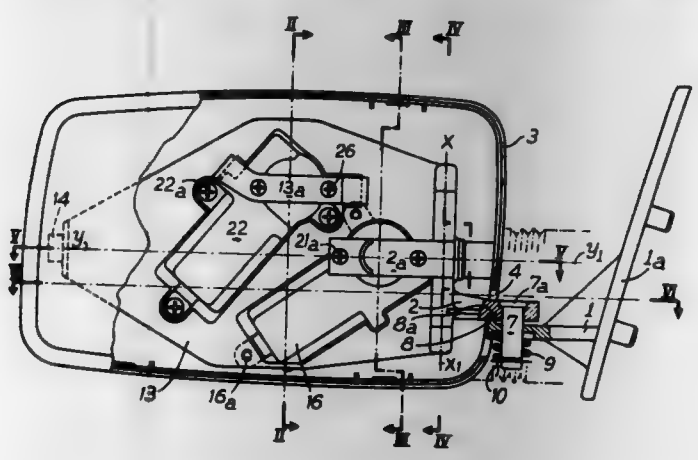
Stephane Manzoni, Saint Claude, France, assignor to Manzoni-Bouchot, France

Filed Apr. 6, 1982, Ser. No. 366,034
Claims priority, application France, Apr. 10, 1981, 81 07272
Int. Cl.[3] G02B *7/18*
U.S. Cl. 350—632 4 Claims

1. A rearview mirror remote-control device for controlling the movement of a mirror about a vertical axis and a horizontal axis comprising:
a hollow mirror casing having a front face mounting said mirror, an inboard and an outboard lateral side, a support means aperture through said inboard lateral side, and inboard and outboard casing bearing means mounted within said hollow mirror casing to define said horizontal axis therethrough;
support means having a body end adapted to be secured to a body of a vehicle and a casing end extending through said support means aperture into said hollow mirror casing, said casing end comprising support bearing means defining and locating said vertical axis within said hollow mirror casing substantially closer to one side of said inboard and outboard lateral sides than to the other of said sides, said support means further comprising a first support arm comprising said body end, a second support arm

comprising said casing end, and clutch means pivotably coupling said first and second support arms for normally preventing relative movement therebetween until a torque greater than a predetermined torque is applied to one of said first and said second support arms whereby said casing end is allowed to move relative to said body end only when a torque greater than said predetermined torque is applied to said hollow mirror casing;

cross-piece means pivotably secured to said inboard and outboard casing bearing means so as to allow a vertical pivoting about said horizonal axis and further being pivotably supported by said support means so as to allow a horizontal pivoting about said vertical axis, whereby said



horizontal pivoting of said cross-piece means about said vertical axis also pivots said hollow mirror casing thereabout;

vertical movement controlling means mounted to one of said hollow mirror casing and said cross-piece means for controlling said vertical pivoting of said hollow mirror casing relative to said cross-piece means about said horizontal axis; and

horizontal movement controlling means mounted to one of said support means and said cross-piece means for controlling said horizontal pivoting of said cross-piece means and said hollow mirror casing relative to said support means about said vertical axis.

4,512,634

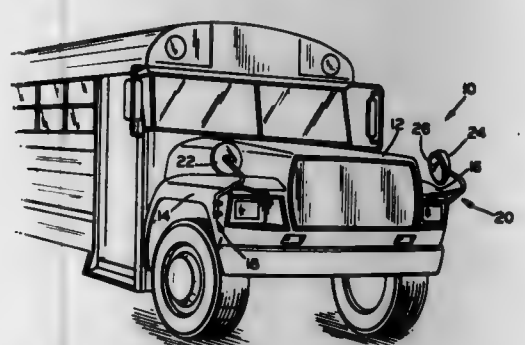
MOUNTING ASSEMBLY FOR SCHOOL BUS MIRROR

Thomas R. Stout, Lambertville, Mich., assignor to Safety Cross Mirror Co., Inc., Lambertville, Mich.

Filed Jul. 28, 1983, Ser. No. 518,120

Int. Cl.³ G02B *5/08, 5/10*

U.S. Cl. 350—632 **16 Claims**



9. A mounting assembly to be mounted on the body of a vehicle, said assembly comprising a main arm having a lower upright portion, an intermediate angular portion to extend upwardly and forwardly relative to the vehicle body when said arm is mounted thereon, and an upper portion extending upwardly from the intermediate angular portion, bracket means to be mounted on the vehicle body and frictionally engaging said lower upright portion of said arm, a brace clamp mounted on said intermediate portion of said arm and having bolt holes therein, a bolt extending through said bolt holes, and a nut on a shank of said bolt, a brace terminating in a flat end having a longitudinally-extending slot terminating at an edge of said end, said end being engaged by said clamp, said bolt extending through said slot and causing said clamp to frictionally engage said end when said nut is tightened on said bolt, the other end of said brace having means to mount said other end on said vehicle.

4,512,635

DENTAL MIRROR APPARATUS

Chris R. Melde, 7007 Third Ave., Scottsdale, Ariz. 85251

Continuation-in-part of Ser. No. 259,659, May 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 93,621, Nov. 13, 1979, abandoned. This application Jan. 4, 1982, Ser. No. 337,085

Int. Cl.³ G02B *7/18;* A61B *1/24*

U.S. Cl. 350—640 **13 Claims**



1. Dental mirror apparatus comprising, in combination:

handle means, including a stem;

mirror means, including a first mirror and a second mirror, and at least one of which mirrors comprises a front surface mirror, and having an outer periphery;

holder means secured to the stem of the handle means for holding the mirror means, and including

a rim deformable for releasably holding the mirror means,

an inner periphery for receiving the outer periphery of the mirror means,

a midline extending about the inner periphery, and

a plurality of faces on the inner periphery and extending generally upwardly and downwardly from the midline, including a first plurality of vertical faces and a second plurality of sloping faces alternating about the inner periphery.

4,512,636

LIQUID CRYSTAL COMPOUNDS

Beatrice M. Andrews, Grimsby; Neil Carr, Hull; George W. Gray, Cottingham, and Christine Hogg, Beverley, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdon of Great Britian and Northern Ireland of Whitehall, London, England

Filed Jun. 7, 1983, Ser. No. 501,783

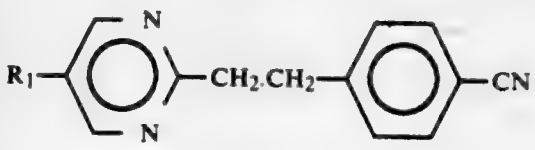
Claims priority, application United Kingdom, Jun. 15, 1982, 8217355

Int. Cl.³ G01F *1/13;* C09K *3/34;* C07D *239/26, 319/06*

U.S. Cl. 350—350 R **3 Claims**

1. A pyrimidine compound having the formula:

Formula I

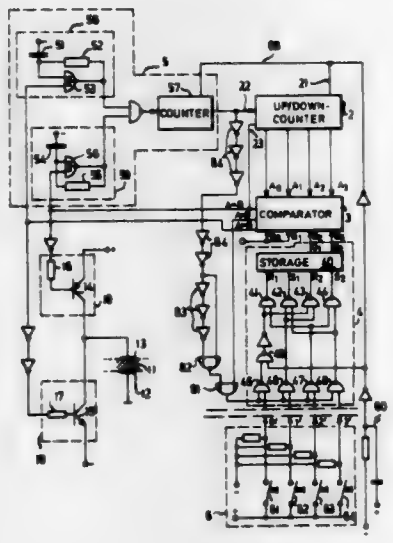


wherein R_1 represents an alkyl group.

4,512,637
METHOD AND MEANS FOR STEPWISE CHARGE CONTROL OF ELECTROCHROMIC LAYERS

Horst Ballmer, Heidenheim, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,173
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142906
Int. Cl.³ G02F *1/23*
U.S. Cl. 350—357 17 Claims



1. Apparatus for step-wise charge control of an electrochromic layer, said layer being in uncolored state for the condition of no charge in said layer, said layer being colored to a first state for a first charge in said layer, and said layer being colored to a second and greater colored state for a second and greater charge in said layer, said apparatus comprising: selectively operable means for selecting a change of layer state to one of said states regardless of the currently existing state of said layer; said selectively operable means including comparator means responsive both to the existing state and to the selected state and having (1) a first control output for the case of the layer in the selected state being more colored than in the existing state ($A < B$), (2) a second control output for the case of the layer in the selected state being less than in the existing state ($A > B$); a constant-current charging circuit connected to charge said layer in the event of a signal in said first control output; a constant-current charge-removal circuit connected to remove charge from said layer in the event of a signal in said second control output; first interval-timing means connected for response to said first control-output signal and connected to said charging circuit to determine a timed incremental charge in said layer in the direction of increased color development in said layer, and second interval-timing means connected for response to said second control-output signal and connected to said constant-current charge-removal circuit to determine a timed decremental removal of charge from said layer, the timed interval for a charging increment to produce a given layer-coloring increment under control of said first interval-timing means being greater than the timed interval for a corresponding decrement of charge removal to produce a corresponding color-removing decrement under control of said second interval-timing means, and said decrement of color removal being selected to be slightly in excess of the increment of layer coloring, whereby regardless of the number of selected increment-decrement cycles there will be no cyclic growth in the coloring of said layer.

4,512,638
WIRE GRID POLARIZER

Sambamurthy Sriram, Wilkins; Kenneth Steinbruegge, Murrysville, and Emmanuel Supertzi, Oakland, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 31, 1982, Ser. No. 413,594
Int. Cl.³ G02F *1/11*
U.S. Cl. 350—372 9 Claims



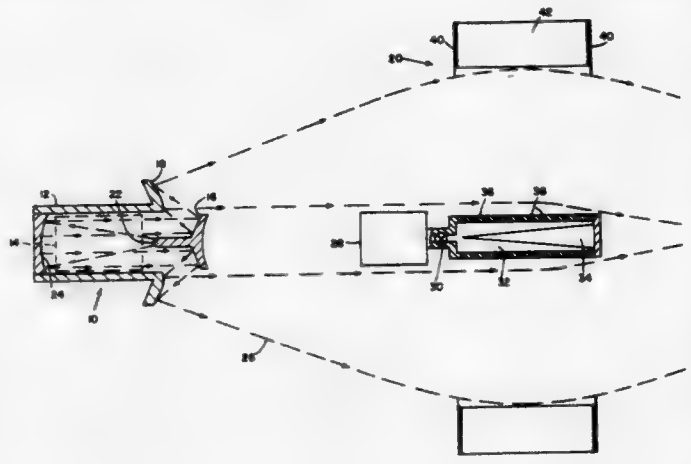
1. In an infrared acousto-optic tunable filter consisting of: an input wire grid polarizer adapted to have input infrared radiation directed through the polarizer and to be polarized thereby; an acousto-optic member, optically aligned with the input polarizer, comprising an acousto-optic crystal and an rf transducer means coupled to the crystal to launch acoustic waves in the crystal which interact with a selected bandwidth portion of the polarized input infrared radiation to shift the polarization of the selected bandwidth portion by 90 degrees so that it is distinguishable from the remaining input infrared radiation, which selected bandwidth portion is a function of the rf energy input frequency; an output wire grid polarizer optically aligned with the output face of the acousto-optic crystal and oriented with the wires aligned orthogonal to the wires of the input wire grid polarizer, whereby only the 90-degree shifted polarized selected bandwidth portion of the infrared radiation transmitted through the acousto-optic member passes through the output wire grid polarizer for analysis, the improvement wherein said input and output wire grid polarizers each comprise:

a substrate selected from the group consisting of single crystal silicon and single crystal gallium arsenide and having an infrared radiation input surface and an infrared radiation output surface opposite said input surface, both of said surfaces having alternately disposed infrared transmissive zones and electrically conductive zones, said conductive zones having a spacing of at least about 2000 zones per millimeter.

4,512,639
ERECTABLE LARGE OPTIC FOR OUTER SPACE APPLICATION

Thomas G. Roberts, Huntsville, and Thomas E. Honeycutt, Somerville, both of Ala., assignors to The United States of American as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 5, 1983, Ser. No. 510,709
Int. Cl.³ G02B *3/12, 3/14*
U.S. Cl. 350—418 5 Claims



1. An erectable optics for outer space applications comprising a housing having a resonator cavity therein with reflective

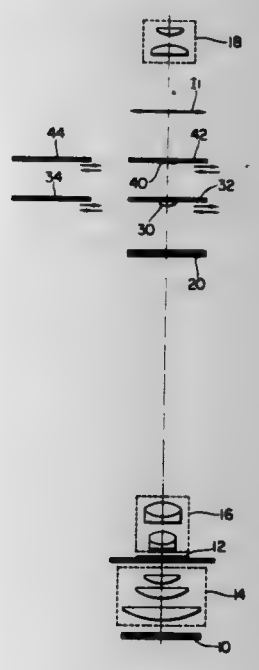
mirror means at opposite ends of the resonator cavity for reflecting light out of the resonator cavity, a beam reflector and a beam expander mounted on said housing for receiving said reflected out light and for expanding said light, a gas dynamic lens mounted relative to said housing, and said gas dynamic lens being constructed so as to focus and direct the expanding light coming from said beam expander toward a target.

4,512,640

POLARIZING MICROSCOPE

Toshiaki Nihoshi, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,402
Claims priority, application Japan, Jun. 4, 1982, 57-95793
Int. Cl.³ G02B *21/00, 15/10, 27/00*
U.S. Cl. 350—510 **5 Claims**



1. A polarizing microscope comprising:
(a) an orthoscopic system having an objective lens for forming the image of a sample; and
(b) a conoscopic system including polarizer means, analyzer means and an image forming lens disposed between said objective lens and the image plane of the image of said sample, said image forming lens being disposed at a position whereat the exit pupil of said objective lens and said image plane are conjugate with respect to said image forming lens and having a sufficiently small diameter relative to the width of the optical path of said orthoscopic system in said position;
whereby said conoscopic system forms the image of the exit pupil of said objective lens on said image plane and the observation light beam by said orthoscopic system passes through the outside of said image forming lens and forms the image of said sample around the image of said exit pupil on said image plane.

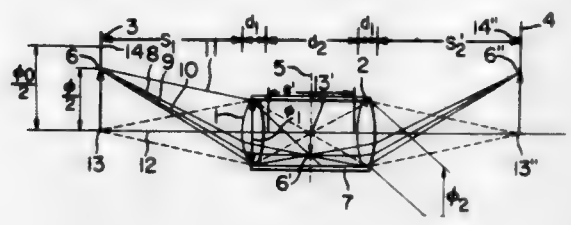
4,512,641

COMPOUND EYE PROJECTION DEVICE

Noritaka Mochizuki, Yokohama; Setsuo Minami, Kawasaki, and Yoshiya Matsui, Yokohama all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,482
Claims priority, application Japan, Mar. 31, 1981, 56-47621
Int. Cl.³ G02B *27/00, 27/40*
U.S. Cl. 350—573 **3 Claims**

1. A compound eye projection device comprising:
a plurality of element lens systems, each element lens system consisting essentially of first and second lenses of identical shape arranged along a common optical axis, said plurality of element lens systems being arranged in at least one row such that the optical axes of said plural element lens sys-



tems are substantially parallel, said element lens systems satisfying the following conditions:

$$0.8r < r_1 = -r_2 < 1.2r$$

$$r = \frac{(n-1)+\left[(n-1)^2-\frac{1}{S_1}\times\left(\frac{\phi_0}{\phi_1}-1\right)\times d\times\frac{(n-1)^2}{n}\right]^{\frac{1}{2}}}{\frac{1}{S_1}\left(\frac{\phi_0}{\phi_1}-1\right)}$$

$$0.8\times 2S_1\times\frac{\phi_1}{\phi_0} < e' < 1.2\times 2S_1\times\frac{\phi_1}{\phi_0}$$

$$0.36\phi_0 < P < 0.44\phi_0$$

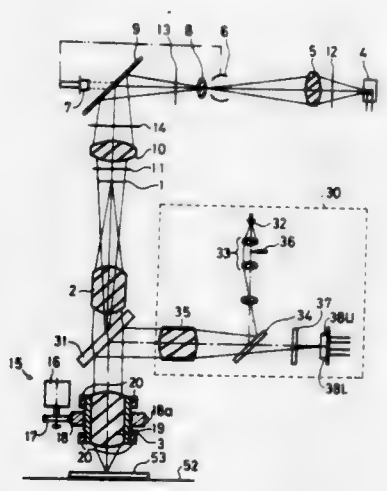
where r_1 and r_2 are the radii of curvature of the object side surface and the image side surface of the lenses constituting said element lens systems, n is the refractive index of each lens, d is the on-axis thickness of each lens, ϕ_1 is the effective diameter of each lens, e' is the principal point interval between each first lens and associated second lens, ϕ_0 is the maximum diameter of the effective object view field, S_1 is the distance from the object side surface of each first lens to an object, and P is the interval between the element lens systems in the row direction.

4,512,642

AUTOMATIC FOCUSING APPARATUS IN OPTICAL DRAWING MACHINE

Tokuhisa Ito, Tokyo; Hideaki Ohno, Sakadoshi; Izumi Kurata, Tokyo, and Takashi Okuyama, Urawashi, all of Japan, assignors to Ashai Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,567
Claims priority, application Japan, Sep. 18, 1981, 56-147243
Int. Cl.³ G03B *41/00*; G01J *1/20*
U.S. Cl. 354—4 **3 Claims**



1. An apparatus of automatic focusing in an automatic optical drawing machine comprising a photohead carrying a drawing optical system having an imaging lens assembly, and a drawing table which lies in a plane perpendicular to an optical

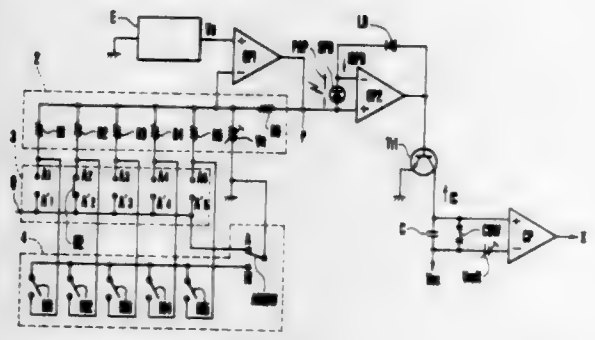
axis of the drawing optical system and which holds thereon a photosensitive material with a photosensitive surface on which a predetermined pattern of images is to be formed, said drawing table and said photohead being capable of relative two-dimensional movement in a plane parallel to the plane of the drawing table, said optical drawing system including a pair of collimate lens which forms parallel lines of drawing light flux incident of the imaging lens assembly, one of said collimate lenses being also the imaging lens, a stationary dichroic mirror located within said parallel light flux and inclined with respect to the optical axis of the flux, an actuator for moving only said imaging lens in the optical axis, said mirror transmitting drawing light and reflects focus detecting light to which the photosensitive material is insensitive, and a focus detecting device which illuminates and reflects the focus detecting light on the photosensitive surface of the photosensitive material through the dichroic mirror and the imaging lens of the drawing optical system to detect whether the photosensitive surface is located in the depth of focus of the drawing optical system in accordance with the reflecting light, said focus detecting device being adapted to produce and give a drive signal to said actuator so as to continuously maintain the photosensitive surface of the photosensitive material within the depth of focus of the drawing optical system.

4,512,643

EXPOSURE CONTROL DEVICE FOR CAMERA

Ryuji Tokuda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1984, Ser. No. 583,754
Claims priority, application Japan, Mar. 2, 1983, 58-34171
Int. Cl.³ G03B *7/083, 7/24*
U.S. Cl. 354—21 **9 Claims**



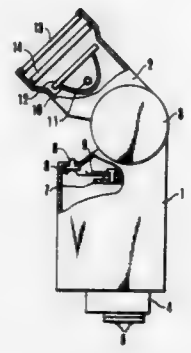
1. An exposure control device for a photographic camera having a shutter comprising:
(a) means for producing a digital signal in accordance with a code signal representative of a film sensitivity on a film cartridge;
(b) means for converting the digital signal from said digital signal producing means to an analog signal corresponding to the digital signal;
(c) means for producing a voltage proportional to absolute temperature;
(d) first amplifying means having a first input terminal to receive the analog signal from said converting means, a second input terminal to receive the voltage from said voltage producing means and an output terminal;
(e) feedback impedance means connected between the first input terminal and the output terminal of said first amplifying means, whereby said first amplifying means producing a voltage corresponding to the analog signal;
(f) light sensitive means disposed to receive the light from an object to be photographed;
(g) second amplifying means arranged to receive the voltage from said first amplifying means and for amplifying the output from said light sensitive means;
(h) impedance means connected to a feedback path of said second amplifying means for logarithmically compressing the output from said light sensitive means;
(i) variable impedance means connected to an output terminal of said second amplifying means and for expanding the output from said second amplifying means into the inverse-logarithmic output;
(j) integrating capacitor means for integrating an output from said variable impedance means in accordance with the opening operation of said shutter; and
(k) shutter triggering means for closing said shutter when the voltage accross said integrating capacitor means reaches a predetermined value.

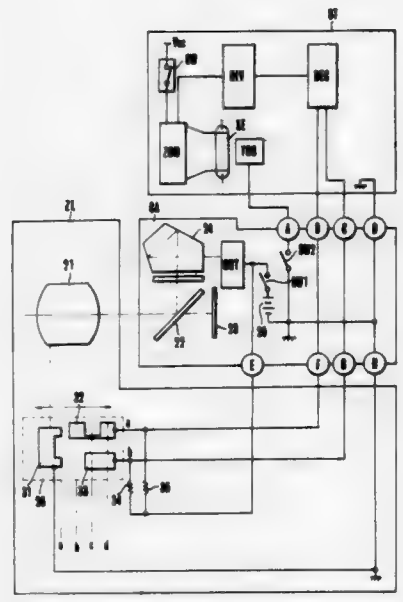
4,512,644

FLASH DEVICE

Masaaki Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,369
Claims priority, application Japan, Jan. 31, 1983, 58-15338
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—149.1 **10 Claims**





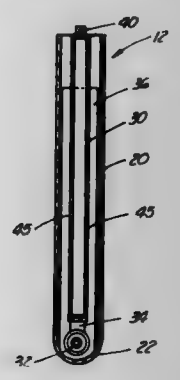
1. A flash device for a camera having a flash part arranged to be shiftable from an ordinary photographic position for bounce flash photography, comprising:
(a) input means for receiving information on the focal length of a photo-taking lens;
(b) illuminating angle adjusting means for adjusting the illuminating angle of a flash of light to be emitted from said flash part according to the focal length information obtained through input means; and
(c) control means for supplying, in the case of bounce flash photography, said illuminating angle adjusting means with predetermined illuminating angle information in place of said focal length information.

4,512,645

FILM PROCESSOR TANK WITH TANK DIVIDER

Billy M. Engelhardt, Lakeworth, Tex., and Dwane L. Moore, Wichita, Kans., assignors to Jamieson Film Company, Dallas, Tex.

Filed Mar. 22, 1984, Ser. No. 592,467
Int. Cl.[3] G03B 3/02
U.S. Cl. 354—324
3 Claims



1. An improved film processor tank for receiving film, paper and the like therein, the tank mounted in a film processor unit for receiving a fluid such as film processing chemicals or dryer air, the tank comprising:

a tank housing integrally formed and having a round bottom and an overflow port in the side thereof; and

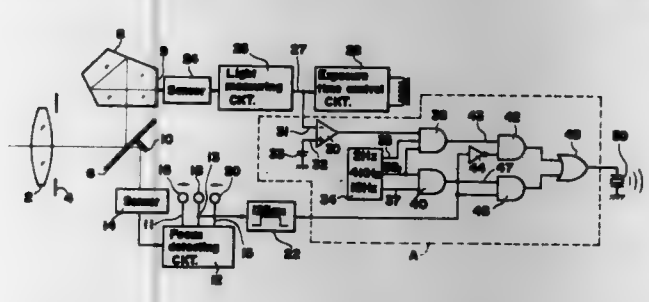
a hollow tank divider disposed along the length of the tank and slidably received therein, the divider having a concave idle roller mounted on the bottom thereof, the divider having an inlet port in the top thereof for receiving the fluid and apertures along the length thereof for discharging the fluid into the tank housing adjacent the film as it is transported thereby, the opposite sides of the divider concave in shape for limiting the contact of the film against the sides of the divider as the film is transported thereby.

4,512,646

ACOUSTIC INDICATING DEVICE FOR CAMERAS

Mashio Kitaura, Tondabayashi; Norio Ishikawa, Osaka, and Toshihiko Ishimura, Habikino, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 15, 1984, Ser. No. 580,313
Claims priority, application Japan, Feb. 25, 1983, 58-27593[U]
Int. Cl.[3] G03B 3/00
U.S. Cl. 354—409
9 Claims



1. An acoustic indicating device for cameras in which an exposure time is automatically controlled in accordance with a measured object brightness and which has an objective lens, said device comprising:

a first signal generating means for generating a first signal of a first frequency when an anticipated exposure time to be controlled automatically is longer than a given value;

a focus condition detecting means for generating an in-focus signal when an in-focus condition is obtained with the camera objective lens;

a second signal generating means responsive to said in-focus signal for generating, for a given time period, a second signal of a second frequency, which is higher than said first frequency;

an acoustic means, responsive to said first and second signals, for generating an audible sound intermittently at said first and second frequencies, respectively; and

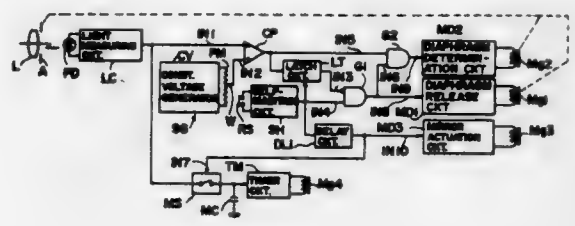
means for interrupting, for said given time period, the supply of said first signal to said acoustic means in response to the generation of said in-focus signal.

4,512,647

AUTOMATIC DIAPHRAGM CONTROL AND MIRROR RELEASE DEVICES FOR CAMERAS

Keiji Yamazaki, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 392,061, Jun. 25, 1982, abandoned, which is a continuation of Ser. No. 259,764, May 1, 1981, Pat. No. 4,339,186. This application Nov. 23, 1983, Ser. No. 554,175
Claims priority, application Japan, May 2, 1980, 55-57798
The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.
Int. Cl.[3] G03B 7/087
U.S. Cl. 354—441
14 Claims



1. In a camera for use with a diaphragm mechanism having a normally fully open aperture capable of being stopped-down to a desired size before camera exposure operation, a combination comprising:

diaphragm operating means for stopping-down said diaphragm aperture towards a minimum size opening thereof;

light measuring means for receiving light from an object to be photographed through said diaphragm aperture and generating a light measurement signal as a function of the received light;

means for generating a reference signal as a function of at least one exposure parameter other than the diaphragm aperture;

means for comparing said light measurement signal with said reference signal and generating a comparison signal representative of the relative magnitude of the two signals;

diaphragm arresting means for arresting said diaphragm operating means in accordance with the comparison signal generated while said diaphragm operating means is stopping-down said diaphragm aperture;

means for restraining said diaphragm operating means and said diaphragm arresting means;

release means for releasing the restraint of said diaphragm operating and arresting means to allow operation thereof;

control means responsive to said comparison signal for generating a control signal when the light measurement signal generated before the actuation of said diaphragm operating means is of a value, with respect to said reference signal, requiring a fully open diaphragm aperture; and

means for preventing the operation of said release means in response to said control signal.

4,512,648
PROGRAM TYPE AUTOMATIC EXPOSURE CONTROLLER FOR USE IN CAMERAS

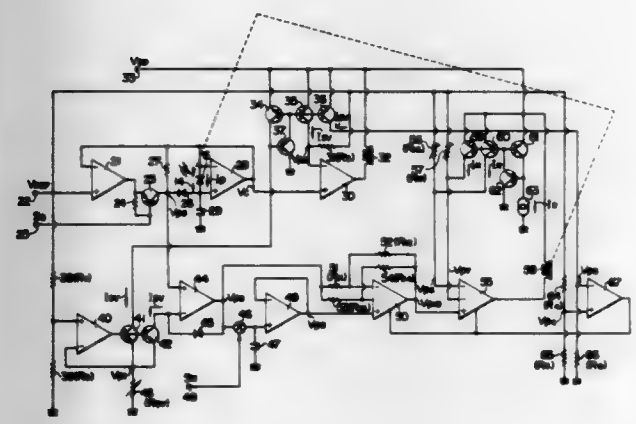
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

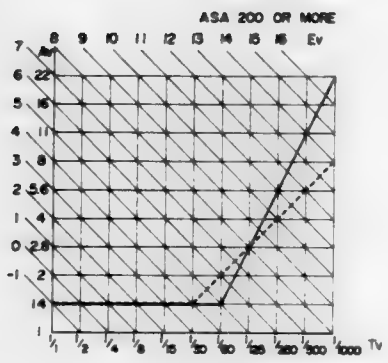
Filed Feb. 3, 1984, Ser. No. 577,063

Claims priority, application Japan, Apr. 14, 1983, 58-55970[U]

Int. Cl.[3] G03B *7/08*

U.S. Cl. 354—443 3 Claims





1. A program type automatic exposure controller for use in a camera, comprising:

photometry means for measuring light from an object being photographed which is transmitted through a taking lens and an aperture;

program constant means for determining a program constant to conduct an aperture control operation in response to a value measured by said photometry means and information representing a film sensitivity;

aperture control means for making a stop-down operation of the aperture in response to an output of said program constant means;

switching means for switching a program constant in said program constant means by selecting an inclination of a predetermined program characteristic and a starting point of the stop-down operation suitable for each of a plurality of film sensitivity information regions which are formed by dividing a range for setting information of a film sensitivity, in response to a selection signal which is produced in said each of film sensitivity information regions;

and shutter control means for controlling a shutter by integrating photometric values from said photometry means after termination of the stop-down operation by means of said aperture control means.

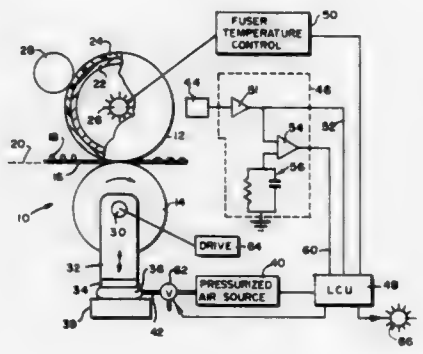
4,512,649
FUSER APPARATUS

John Derimiggio, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,260

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 FU 3 Claims



1. In reproduction apparatus having a path along which toner image carrying supports are moved, fuser apparatus comprising:

a heated fuser member which contacts toner image carrying supports moved along said path;

means, spaced from said fuser member, for sensing the temperature of said fuser member and for producing a signal representative of said temperature; and

logic and control means connected to said sensing means for maintaining the temperature of said fuser member within predetermined limits and for interpreting a sudden large drop in the temperature sensed as a jam condition caused by a support deviating from said path and interposing between said fuser member and said means for sensing.

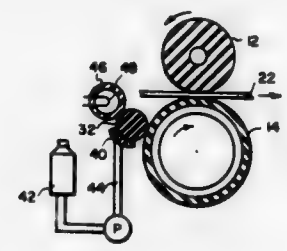
4,512,650
FUSER APPARATUS HAVING A UNIFORM HEAT DISTRIBUTION

Haribhajan S. Kocher, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1983, Ser. No. 548,610

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 FU 10 Claims



1. Fuser apparatus comprising:

a movable heated fuser member for fusing a toner image carried by a support moved into contact with the member at a fusing region; and

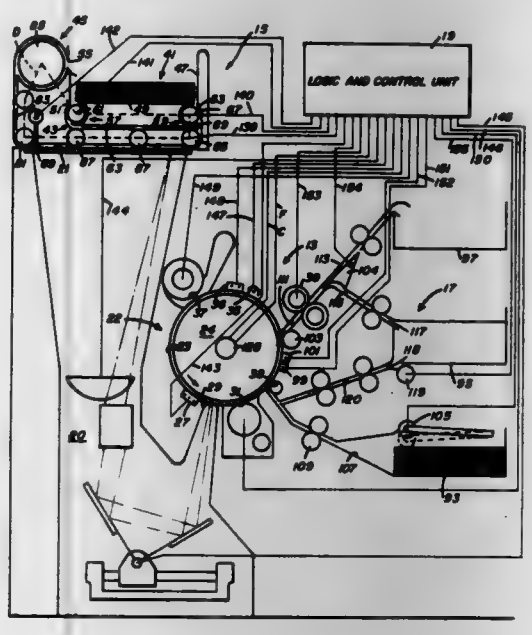
means for maintaining the temperature of said fusing member substantially uniform along the length thereof by redistributing heat from hotter regions to cooler regions of the member, said temperature maintaining means being located in advance of said fusing region relative to the direction of support movement, and said temperature maintaining means being in engagement with said fuser member and movable relative to the fuser member.

4,512,651

COLLATING DOCUMENT FEEDER AND REPRODUCTION APPARATUS HAVING COPY DUPLEXING CAPABILITIES

James E. Dunleavy, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,041
Int. Cl.[3] B65H *3/06, 5/26*
U.S. Cl. 355—14 SH 15 Claims



1. A feeder for presenting a set of simplex or duplex document sheets to a duplicating apparatus, the duplex sheets bearing information on first faces oriented in one direction relative to the set and second faces oriented in the opposite direction, and the simplex sheets bearing information only on first faces oriented in the same direction relative to the set, said feeder comprising:

a hopper for receiving a set of document sheets and having first and second exits through which individual sheets are removed;

means spaced from said hopper and defining an exposure position at which the document sheets are located one face at a time for copying by such duplicating apparatus; and

means for circulating the set of plurality of times one-sheet-after-another, from said hopper to said exposure position and back to the set in said hopper, said circulating means including means for removing duplex sheets through said first exit and for presenting the second faces for copying in said exposure position on the first and every odd circulation of the set and for presenting the first faces for copying in said exposure position on the second and every even circulation of the set, and further including means for removing simplex document sheets through said second exit and for presenting the first faces in succession to said exposure position.

4,512,652

CONTROL SCHEME COMPENSATING FOR CHANGING CHARACTERISTICS OF A PHOTOCONDUCTIVE MEMBER USED IN AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

Kenneth J. Buck, Ontario; Robert E. Grace, Fairport, and Thomas A. Hayes, Jr., Leroy, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

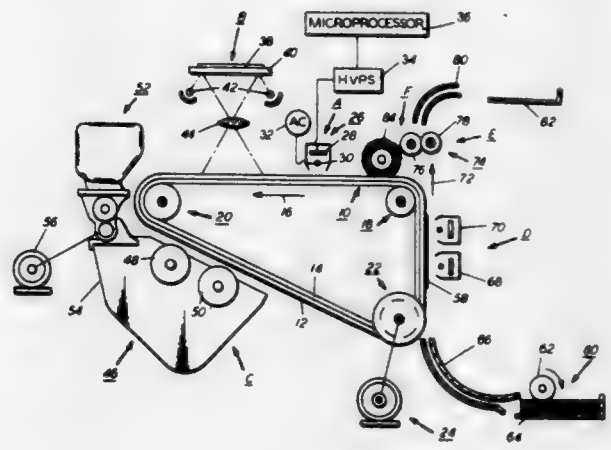
Filed Aug. 24, 1983, Ser. No. 525,855
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 CH 12 Claims

1. An electrophotographic printing machine, including:

a photoconductive member;

means for charging said photoconductive member to a selected potential; and

means for controlling said charging means to regulate the current charging said photoconductive member, said controlling means calculating a scale factor as a function of the time elapsed between successive operating cycles



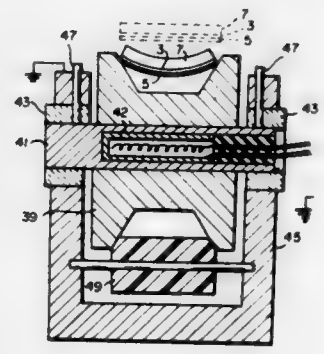
and a constant characterizing said photoconductive member and regulating the current charging said photoconductive member as a function of the calculated scale factor.

4,512,653

METHOD AND APPARATUS FOR THERMALLY-ASSISTED GROUNDING OF AN ELECTROGRAPHIC IMAGING MEMBER

Yee S. Ng, Rochester; James G. Jarvis, and John R. Thompson, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,759
Int. Cl.[3] G03G *15/12*
U.S. Cl. 355—16 13 Claims



1. In electrographic apparatus adapted for the use, along an operative apparatus path, with an image member having an electrically conductive, reference-potential layer covered by electrically insulative thermoplastic material, a contacting device comprising:

means for heating a portion of the thermoplastic material so that such portion is softened;

an electrically conductive contact member engageable with such softened portion;

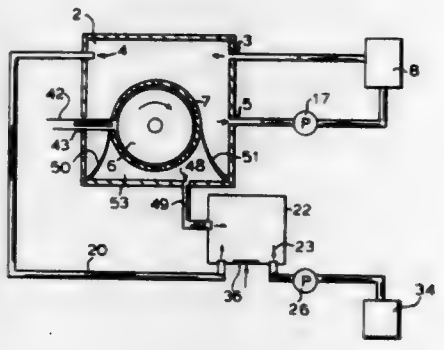
means for electrically coupling said contact member to a source of a reference potential; and

means for urging pressure engagement between said softened portion of the insulative material and said contact member so that the insulative material is displaced and a low resistance electrical connection is effected between said contact member and the conductive layer.

4,512,654
CONTROLLING AMMONIA EMISSIONS FOR DIAZO DEVELOPING EQUIPMENT

Eduard Feitzinger, Vestal, and Robert B. Seminski, Endwell, both of N.Y., assignors to R.Q.O. Holding Company, Jamestown, N.Y.

Filed Sep. 20, 1983, Ser. No. 534,095
Int. Cl.[3] G03D *7/00*; G03B *27/30*
U.S. Cl. 355—27 15 Claims



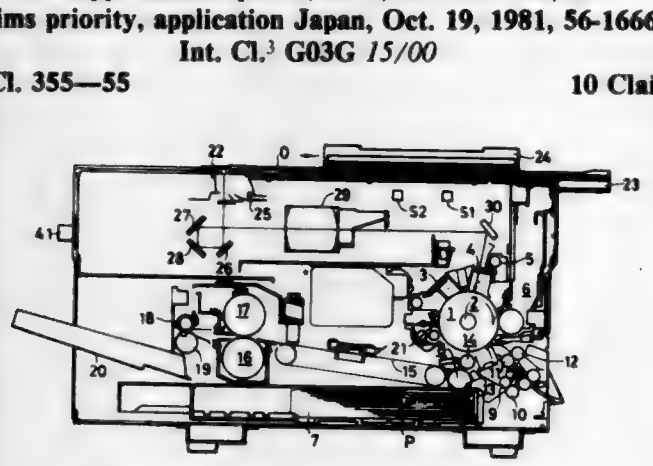
1. In a developing apparatus for photocopy machines comprising, in combination, a developing chamber having an inlet for receiving developing medium, an outlet for discharging said developing medium, means for transporting sensitized paper through the developing chamber and a vacuum pump in communication with the developing chamber to reduce the pressure within the developing chamber to a level below ambient pressure and thereby avoid external leakage of developing medium, the improvement which comprises:

a sealed fume collection chamber positioned adjacent to and in open contact with the means for transporting the sensitized paper; and open conduit means connecting the sealed chamber to evacuate collected fumes.

4,512,655
IMAGE REPRODUCING APPARATUS

Masato Ishida, and Hiroaki Takeda, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 434,250, Oct. 14, 1982, abandoned.
This application Apr. 25, 1984, Ser. No. 603,901
Claims priority, application Japan, Oct. 19, 1981, 56-16665
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—55 10 Claims



1. A variable magnification image reproducing apparatus comprising:

operable means for reproducing an original image, said operable means including a rotatable medium and means for changing a magnification of the original image to form an image having a changed magnification on said rotatable medium;

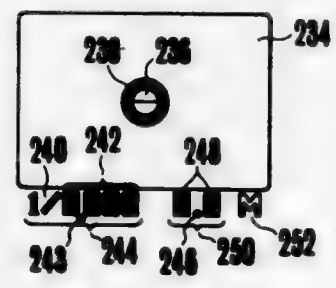
manual input means for selecting the magnification; and

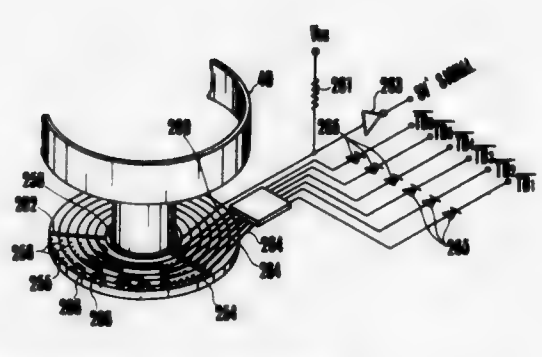
means for allowing entry of a signal for changing the magnification from said manual input means and for allowing an operation for changing the magnification by said magnification changing means in response to the signal from said manual input means while said rotatble medium is rotating and for allowing the entry of the signal for changing the magnification to another changed magnification while said magnification changing means is in operation.

4,512,656
CAMERA SYSTEM

Nobuhiko Shinoda, Tokyo; Nobuaki Sakurada, Yokohama; Masaharu Kawamura, Tokyo; Tadashi Ito; Fumio Ito, both of Yokohama, and Hiroyashu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 737,771, Nov. 1, 1976, Pat. No. 4,304,472. This application Dec. 11, 1980, Ser. No. 216,070
Claims priority, application Japan, Nov. 8, 1975, 50-134391
Int. Cl.[3] G03B *17/00*
U.S. Cl. 354—475 37 Claims





1. A photographic camera comprising:

an exposure parameter indicating device including:

(a) at least one display unit having a plurality of light emitting elements each with a one-way conductive characteristic and arranged so as to represent a predetermined pattern;

(b) a plurality of switching elements connected to a corresponding light emitting element of said display unit so as to enable at least one light emitting element corresponding to said predetermined pattern; and

(c) timing pulse generating means having a plurality of timing pulse output lines connected to said display unit so as to apply a driving voltage in sequence to each of said light emitting elements having the one-way conductive characteristic;

said film speed information generating device including:

(a) a single data output line;

(b) a film speed dial having positions corresponding to a plurality of film speed information values;

(c) a digital data plate having a number of patterns corresponding to the positions of said film speed dial, each of the patterns of said digital data plate composed of a plurality of marks arranged to represent one of said film speed information values;

(d) detecting means having a plurality of electrical elements to receive the timing pulses from said timing pulse generating means and for detecting the marks on the digital data plate one after another in synchronism with each timing pulse, each of said electrical elements of said detecting means being connected to one of the timing pulse output lines of said timing pulse generating means corresponding thereto;

(e) means coupled to the detecting means for supplying output digital signals from said detecting means corresponding to each of the marks; and

(f) a plurality of diodes each connected between said

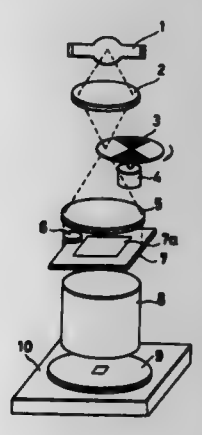
electrical elements corresponding thereto and the timing pulse output line corresponding thereto for preventing reverse current.

4,512,657

EXPOSURE CONTROL SYSTEM

Keiichiro Sakato, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 19, 1983, Ser. No. 533,598
Claims priority, application Japan, Sep. 20, 1982, 57-162162
Int. Cl.[3] G03B *27/74*
U.S. Cl. 355—68 3 Claims



1. An apparatus for controlling an exposure of an object to be exposed comprising:

(a) means for generating a radiation;

(b) means for directing said radiation from said radiation generating means to said object to be exposed, said radiation directing means including shutter means for opening and shutting a radiation path from said radiation generating means to said object to be exposed and thereby controlling the passage and interception of said radiation to said object;

(c) means for detecting an intensity of said radiation passed through said shutter means to generate detection signal indicative of said detected intensity;

(d) radiation measuring means responsive to said detection signal to measure an exposure value falling on said object from a start of an opening operation of said radiation path by said shutter means and generate an output signal indicative of an exposure value on said object;

(e) Shutter control means responsive to said output signal from said radiation measuring means to cause said shutter means to start shutting of said radiation path when the exposure value on said object reaches a predetermined value; and

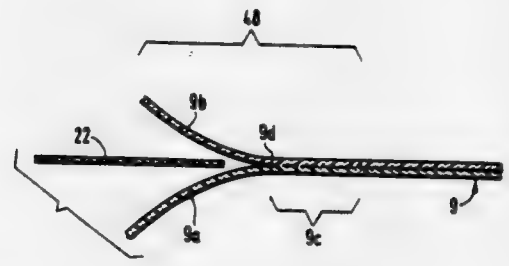
(f) radiation measurement control means for controlling a radiation measuring sensitivity of said radiation measuring means such that the exposure value measured by said measuring means during an interval between said start of opening of said radiation path by said shutter means and a completion of said opening represents a value indicative of a superposition of the exposure value on said object during the interval between said start of opening of said radiation path and the completion of said opening and the exposure value on said object during another interval between said start of shutting of said radiation path and a completion of said shutting.

4,512,658

ELECTROPHOTOGRAPHIC COPIER

Detlef Winkelmann, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 15, 1983, Ser. No. 485,504
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214653
Int. Cl.[3] G03G *15/00, 27/00*
U.S. Cl. 355—14 SH 17 Claims



1. An electrophotographic copier, comprising:

an exposing station having an entry zone with an entry plane on which an original to be copied is introduced into said entry zone; and

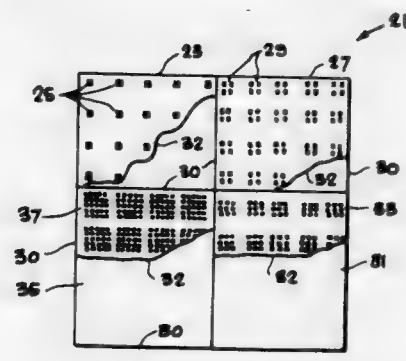
transport means for repetitively transporting an original through said exposing station from said entry zone, said transport means comprising: two film webs bonded at a joint seam to form a Y-shaped pocket for receiving a leading edge of an original to be copied, said Y-shaped pocket being positioned in said entry zone to receive an original to be copied from said entry plane; and means for closing said Y-shaped pocket on an original and drawing said film webs past said exposing station from said entry zone.

4,512,659

APPARATUS FOR CALIBRATING A SURFACE SCANNER

Lee K. Galbraith, and Jiri Pecen, both of Mountain View, Calif., assignors to Tencor Instruments, Mountain View, Calif.

Filed Aug. 10, 1983, Ser. No. 522,632
Int. Cl.[3] G01J *1/02*
U.S. Cl. 356—243 6 Claims



1. A device for calibration of light-scattering test instruments of the scanning type comprising,

a substrate having a planar surface, and

a plurality of identical microscopic light-scattering elements disposed on said surface, said elements grouped in grid-like clusters, the mutual spacing between elements in all clusters being equal to a first dimension, said clusters spaced apart from each other by a second dimension, the second dimension substantially exceeding the dimension of an illuminating beam, the first dimension being less than the dimension of an illuminating beam, some of said clusters grouped in a grid-like array of clusters having the same first element density, corresponding to a light scattering cross section associated with a flaw of a certain size

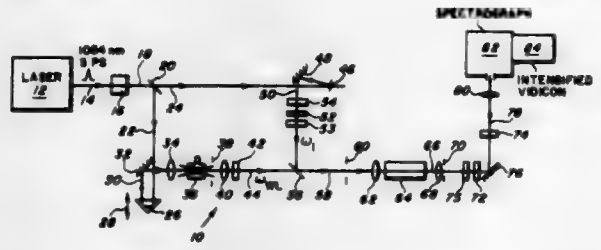
on said surface, said array positioned near other grid-like arrays of clusters, the other arrays each having clusters with the same element density within each array, different arrays having mutually different element densities and different from said first element density, said other densities corresponding to light scattering cross sections associated with flaws of other sizes on said surface, the grouping of arrays on the surface forming a pattern, said pattern repeated over said surface, with each pattern contiguous with at least one other pattern.

4,512,660

PICOSECOND BROADBAND CARS PROBE USING THE PICOSECOND CONTINUUM

Lawrence S. Goldberg, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1983, Ser. No. 484,810
Int. Cl.³ G01J *3/44*; G01N *21/65*
U.S. Cl. 356—301 **28 Claims**



1. A coherent anti-Stokes Raman spectroscopy (CARS) method for producing a picosecond broadband CARS vibrational spectrum of a sample comprising the steps of:

generating a probe pulse of coherent monochromatic radiation having a frequency ω_1, said probe pulse having a duration on the order of picoseconds;

generating a continuum pulse of broadband radiation, said continuum pulse having a range of frequencies ω_{WL} and a duration on the order of picoseconds, said range of frequencies ω_{WL} of said continuum pulse being related to said frequency ω_1 of said probe pulse such that the difference $\omega_1 - \omega_{WL}$ corresponds to a range of Raman active vibrational resonances in said sample;

spatially and temporally combining said probe pulse and said continuum pulse;

directing said combined probe pulse and continuum pulse into said sample to excite the Raman active vibrational resonances in said sample; and

detecting a beam of radiation emitted by said sample, said beam of radiation including an anti-Stokes spectrum of energy characteristic of said sample.

4,512,661

DUAL DIFFERENTIAL INTERFEROMETER

Richard O. Claus, Christianburg, Va., and Tyson M. Turner, Dallas, Tex., assignors to The United States of America as represented by the Aministration of the National Aeronautics and Space Administration, Washington, D.C.

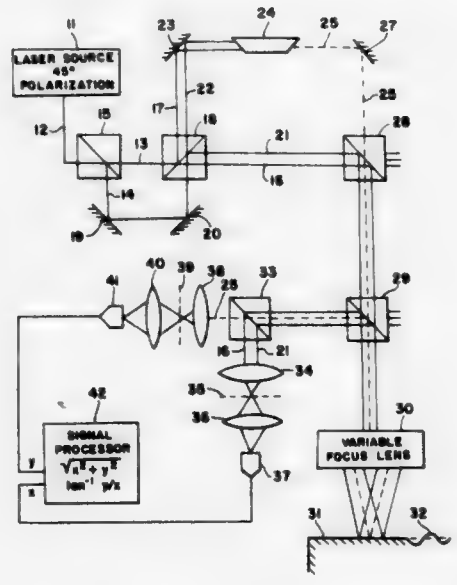
Filed Sep. 2, 1982, Ser. No. 414,237
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—351 **5 Claims**

1. A method for measuring both the amplitude and orientation of propagating, broadband ultrasonic surface waves comprising the steps of:

producing two pairs of laser beams including the step of orthogonally polarizing one pair with respect to the other;

focusing said two pairs of laser beams onto the ultrasonic surface waves to be measured such that the two beams in each pair of laser beams are one-half a wavelength of the ultrasonic surface waves apart and such that a straight line between the centers of the beams of one of said pairs of laser beams is perpendicular to a straight line between the centers of the other pair;

separating the reflected pairs of laser beams comprising the step of separating the two pairs of reflected beams in accordance with their polarizations;



detecting the separated pairs of laser beams to obtain two signals proportional to the surface wave motions along the two said straight lines; and

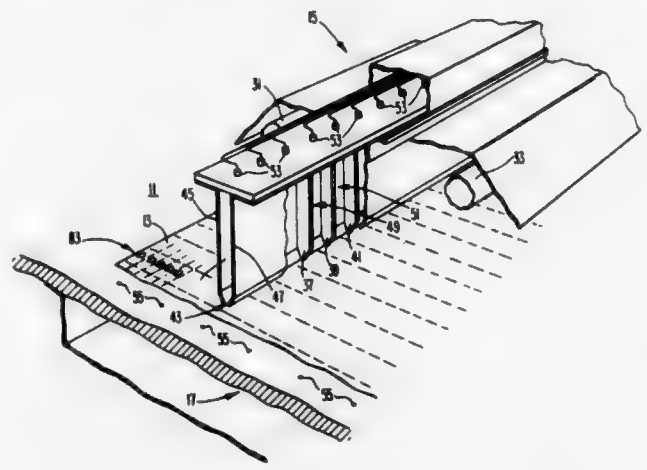
processing said two signals to obtain amplitude and orientation of propagation of the surface waves.

4,512,662

PLATE SCANNER FOR PRINTING PLATES

Philip E. Tobias, 1872 Watson Rd., Abington, Pa. 19001

Filed Jul. 6, 1981, Ser. No. 281,226
Int. Cl.³ G01B *11/28*
U.S. Cl. 356—380 **1 Claim**



1. An arrangement for use with a printing press which has a reservoir means and a plurality of adjustable means, where each adjustable means controls ink flow from said reservoir means onto a different associated zone of a plurality of zones along a printing plate used with said printing press and which arrangement provides information which can be used to determne the amount of printing area in each of said zones comprising in combination: printing area reference means formed integral as part of said printing plate whereby light reflected from a printing area and from said printing area reference means is uniform; non-printing area reference means formed on said printing plate; image area means formed on said printing plate and including printing areas and non-printing areas; holder means formed to hold said printing plate; reading head means including light source means and a plurality of light sensitive diodes, said reading head means formed to include a plurality of walled chambers; each of said walled chambers

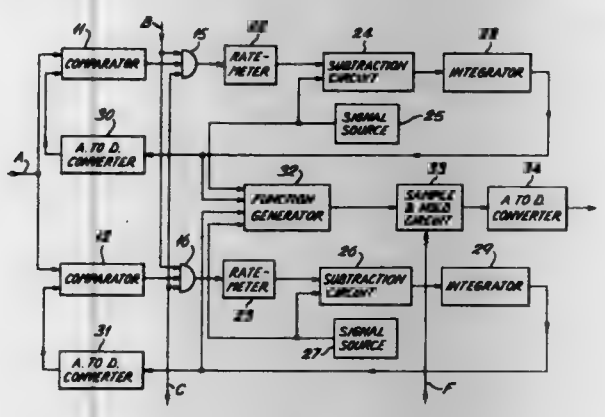
formed and disposed to define the width of an associated different one of said zones and formed to have an aperture therein lying substantially perpendicular to its associated zone; each of said light sensitive diodes disposed within a different one of said walled chambers to receive reflected light passing through said aperture of said associated walled chamber; said reading head means further formed and disposed to move over said printing area reference means, over said non-printing area reference means and over said image area means such that each of said walled chambers moves parallel to its associated zone and such that said light source means transmits light to said printing plate to effect reflected light therefrom, whereby each of said light sensitive diodes receives reflected light from along a different associated one of said zones to provide electrical signals indicative of the quantity of both printing areas and non-printing areas lying along said different associated one of said zones; means connected to said read head to transmit said electrical signals to data processing circuitry whereby for each of said zones, lying in the image area, the amount of printing area can be determined.

4,512,663

OPTICAL INSPECTION OF MACHINED SURFACES

Warren P. N. Bailey, High Wycombe, England, assignor to National Research Development Corporation, London, England

Filed Jan. 18, 1983, Ser. No. 459,032
Claims priority, application United Kingdom, Jan. 29, 1982, 8202552
Int. Cl.³ G01N *21/88*
U.S. Cl. 356—446 **5 Claims**



1. In a method of inspection of a machined surface, which method comprises deriving an electrical test signal in respect of said surface by causing an illuminated spot formed by a beam of light to scan over said surface and detecting the resultant variations of the proportion of the incident light returned from said spot, and sensing excursions in said test signal corresponding to decreases of said proportion below a preset threshold level:

the improvement comprising setting said threshold level in accordance with the result of an analysis of an electrical signal derived in respect to said surface in a similar manner to that in which said test signal is derived, said threshold level being set substantially to the value given by the expression

$$\frac{L_B \ln(N_A) - L_A \ln(N_B)}{\ln(N_A/N_B)},$$

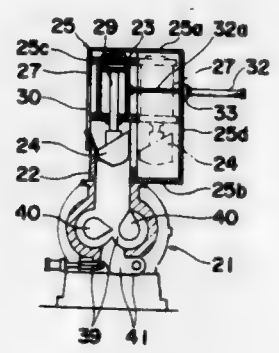
N_A and N_B being different values of N, there N is the fraction of the total length of the scan for which the value of said proportion falls below a given level L, and L_A and L_B being the values of L which respectively correspond to N_A and N_B.

4,512,664

INTERNAL MIXER

Isao Oiwa, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Feb. 2, 1984, Ser. No. 576,427
Claims priority, application Japan, Feb. 7, 1983, 58-19430
Int. Cl.³ B29B *5/02*
U.S. Cl. 366—76 **4 Claims**



1. A machine for mixing a material which comprises:

a mixer body having a mixing chamber defined therein and accommodating therein at least one rotor for mixing the material within the mixing chamber, said body having a material inlet communicated to the mixing chamber;

a floating weight movable between lifted and lowered positions and operable to load the material into the mixing chamber as it moves from the lifted position towards the lowered position, said floating weight when in the lowered position closing the material inlet;

a fluid-operated cylinder assembly having a piston rod carrying said floating weight;

a support structure for supporting the fluid-operated cylinder assembly for movement between operative and stand-by positions in a direction generally perpendicular to the longitudinal axis of said cylinder assembly only when the floating weight is in the lifted position, said cylinder assembly when in the operative position being positioned immediately above the material inlet, but when the stand-by position, being positioned laterally offset with respect to the material inlet; and

a drive mechanism for driving the cylinder assembly between the operative and stand-by positions one at a time.

4,512,665

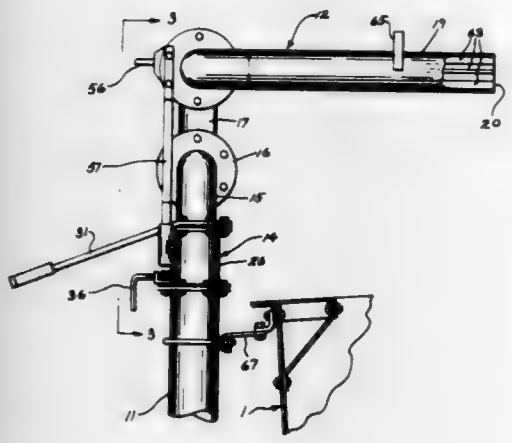
ADJUSTABLE OVER-THE-TOP AGITATOR FOR A LIQUID MANURE TANK

Kevin W. Cline, Arlington Heights, and Stephen L. Kretschmer, Elk Grove, both of Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Aug. 15, 1983, Ser. No. 523,131
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—167 **7 Claims**

1. A manure agitation system, comprising an open top tank to contain liquid manure slurry and having an upper end, a generally vertical delivery pipe mounted on the exterior of the tank for conducting liquid manure upwardly to the top of the tank, a connecting conduit having a generally vertical end and a generally horizontal end, said horizontal end being disposed above the upper end of said tank, first swivel means for connecting said vertical end of said connecting conduit to the upper end of said delivery pipe, first locking means for locking said first swiveling means to prevent rotational movement between said connecting conduit and said delivery pipe, a generally L-shaped discharge nozzle disposed above the upper end of the tank, second swivel means connecting the horizontal end of said connecting conduit to one end of said discharge nozzle, the opposite end of said discharge nozzle being swingable in a vertical plane about said second swivel means, second locking means for locking said second swivel means and preventing relative rotational movement between the horizontal

end of said connecting conduit and said discharge nozzle, and biasing means associated with said second swivel means for biasing said opposite end of said discharge nozzle to a generally horizontal position, said first and second swivel means



providing generally universal adjustment for the position of said discharge nozzle to thereby enable the stream of liquid manure being discharged from said nozzle to be selectively distributed to any desired location in said tank.

4,512,666

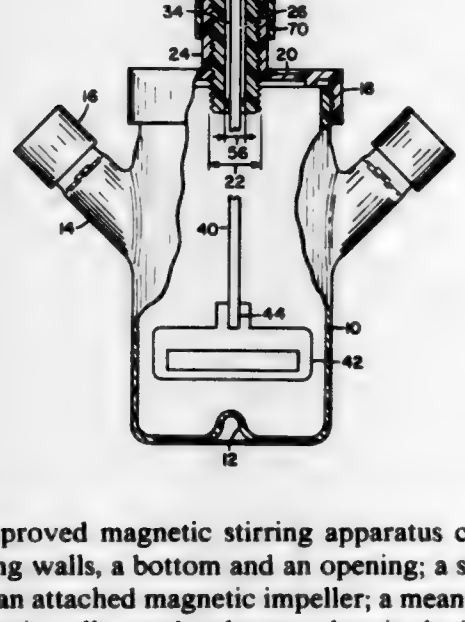
ADJUSTABLE HEIGHT MAGNETIC STIRRER

Dennis M. O'Connell, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 24, 1984, Ser. No. 583,576

Int. Cl.³ B01F *13/08*

U.S. Cl. 366—249 **3 Claims**



1. An improved magnetic stirring apparatus comprising: a vessel having walls, a bottom and an opening; a stirrer having a shaft and an attached magnetic impeller; a means for rotating the magnetic impeller; and a closure wherein the improvement is characterized by:

(a) a closure having an opening;

(b) a hollow adjustment support member dimensioned and configured to surround the opening in the closure:

(i) is connected to the closure about the opening;

(ii) upwardly projects from the closure; and

(iii) is at least partially threaded on the interior;

(c) a hollow sleeve being dimensioned and configured:

(i) with corresponding threads to screw into the adjustment support; and

(ii) with an interior diameter that can receive the shaft;

(d) an annular lower bearing surface:

(i) attached to the interior of the sleeve; and

(ii) having an opening dimensioned and configured to receive the shaft;

(e) a rotating upper bearing surface:

(i) having larger diameter than the opening in the lower bearing surface; and

(ii) which downwardly engages the lower bearing surface;

(f) the shaft:

(i) being connected to the upper bearing surface; and

(ii) projecting downwardly, through the lower bearing surface and the sleeve, into the vessel;

(g) an adjustment means having:

(i) an upper portion dimensioned and configured to engage a portion of the sleeve and permit the upper bearing to rotate;

(ii) a lower portion dimensioned and configured to slide over the exterior of the support; and

whereby when the means is placed over the support and engages the sleeve, the impeller height can be adjusted by turning the means.

4,512,667

PORTABLE INFORMATION DEVICE HAVING AN OUTPUT RELATED TO NATURAL PHYSICAL EVENTS

Romm Doulton, Residence l'Annonciade, 17th Ave. de l'Annonciade, Apt. 30, 15th Floor, Monte Carlo, Monaco, and Robert A. Chapman, 27 Blyth Ave., Thatcham, Newbury, Berkshire, England

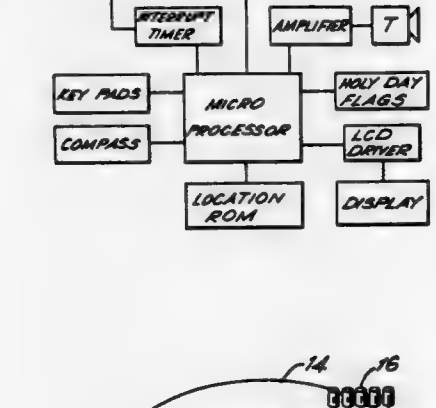
PCT No. PCT/GB82/00072, § 371 Date Nov. 1, 1982, § 102(e) Date Nov. 1, 1982, PCT Pub. No. WO82/03132, PCT Pub. Date Sep. 16, 1982

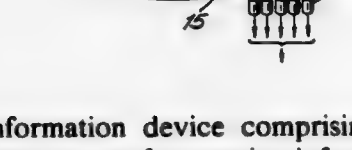
PCT Filed Mar. 4, 1982, Ser. No. 440,223

Claims priority, application United Kingdom, Mar. 4, 1981, 8106859; Jun. 16, 1981, 8118453

Int. Cl.³ G04B *47/00, 47/06*

U.S. Cl. 368—10 **24 Claims**





1. A portable information device comprising means for establishing a time base; means for entering information identifying any one of a plurality of geographical locations; means associated with the time base establishing means and the information entering means for determining one or more points in time having a predetermined temporal relationship to the occurrence, at the location entered, of one or more natural physical events the time of which is dependent on geographical location; means for providing an output at the time determined; and means associated with the information entering means for providing a signal indicative of the deviation from a basic terrestial direction of the direction from the location entered towards a predetermined location; wherein there are provided magnetic compass means for ascertaining the basic terrestial direction, disc encoding means defining plurality of arcuate slots associated therewith and plurality of light sources

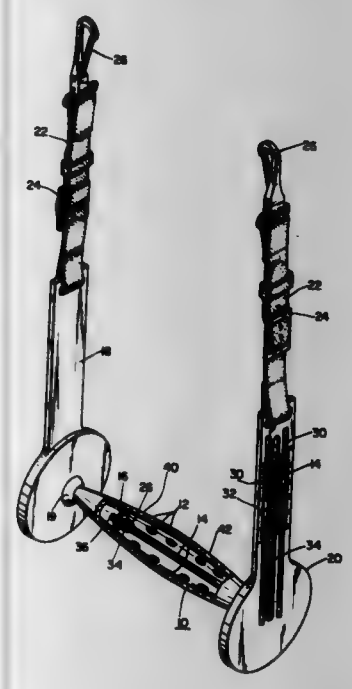
and receivers associated with the disc encoding means and with the deviation indicative signal to provide an output serving as a pointer towards the predetermined location.

4,512,668

THERMOMETER FOR OBTAINING THE TEMPERATURE OF HORSE

James M. Ivins, 112 Marengo St., Saint Michaels, Md. 21663

Filed Dec. 1, 1982, Ser. No. 446,025
Int. Cl.[3] G01K *5/00*
U.S. Cl. 374—194 7 Claims



1. A thermometer for obtaining the temperature of a horse which comprises:

a hollow tubular bit means having sufficient length to extend across the width of a horse's mouth,

a support in said hollow tubular bit means,

a temperature indicating means,

said temperature indicating means including a reservoir within said hollow tubular bit means and connected to one end of a glass tube,

said reservoir and said glass tube supported within said tubular bit means by said support in said hollow tubular bit means,

said support supporting each end of said hollow tubular bit means, a rigid support secured to end of said hollow tubular bit means with said glass tube extending through said rigid support and along said support in said hollow tubular bit means,

a heat expansible fluid in said reservoir and a portion of the length of said glass tube,

a temperature scale positioned relative to said glass tube and calibrated to indicate temperature of the horse which is indicated at the highest level of said heat expansible fluid in said glass tube.

4,512,669

ROCK BIT BEARING PRESSURE EQUALIZATION SYSTEM

Leslie B. Moore, Red Oak, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

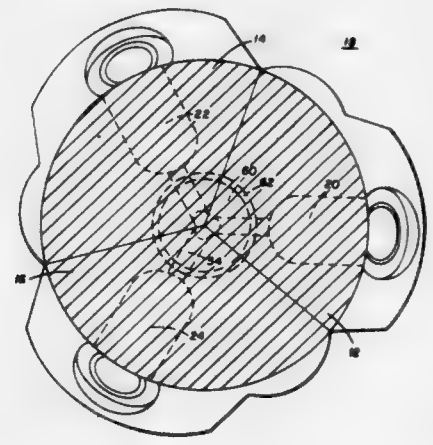
Filed Apr. 24, 1980, Ser. No. 143,394
Int. Cl.[3] F16C *33/10*
U.S. Cl. 384—93 1 Claim

1. An improved multiple segment sealed bearing rotary bit, wherein each segment includes: bearing structure between a stationary bearing pin and a rotatably mounted cutter element thereon and wherein each bearing structure has a separate sealed lubricant system for providing lubrication to the respective bearing structure, said lubricant system comprising:

a seal ring in sealing engagement between each pin and cutter element for substantially sealing said bearing structure from external matter;

sealed lubricant reservoir means in each segment and containing lubricant;

a flexible diaphragm means in sealing relationship with each said reservoir means and having one face thereof exposed to ambient conditions external to said bit, said system providing a generally closed lubricant expansion volume whereby internal pressure, as by expansion of said lubricant forces said seal ring into a non-sealing position or ruptures said diaphragm and, wherein the improvement comprises:



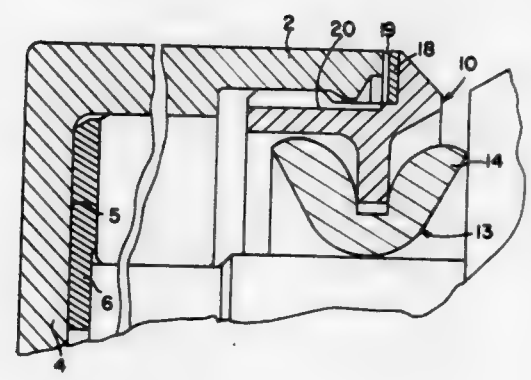
means providing fluid flow communication between each separate lubricant system of each segment whereby an expanded volume of lubricant in the system of one segment can be accommodated by the available volume in the system of any other segment to provide substantially equal lubricant pressure on the bearing structure of each segment and wherein said means providing fluid flow communication includes passages in each segment in alignment with like passages of each adjacent segment and wherein said aligned passages provide fluid flow communication between said lubricant reservoir means of said lubricant systems of adjacent segments.

4,512,670

SEALED BEARING CUP FOR UNIVERSAL JOINT

Armin Olschewski; Gerhard Herrmann, both of Schweinfurt, and Bernhard Bauer, Hassfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,436
Claims priority, application Fed. Rep. of Germany, May 15, 1982, 8214244[U]
Int. Cl.[3] F16C *33/78*
U.S. Cl. 384—147 7 Claims



1. Sealed bearing cup, in particular, for universal joints which has a support body connected to the bearing cup and a seal ring fastened to this body having at least one axially elasti-

cally deformable sealing lip, characterized in the the support body (10) with the seal ring (13) is arranged axially slidable in the bore of the bearing cup (2) and is provided with a radially outward flange (17) which is located opposite the front face (16) of the bearing cup (2), said support body (10) at its outside surface having several axially directed grooves (20) distributed over the periphery and running from the front face (21) to the radial flange (17) of the support body (10).

4,512,671

BALANCING MACHINE BEARING MOUNTING FOR FLEXIBLE ROTORS

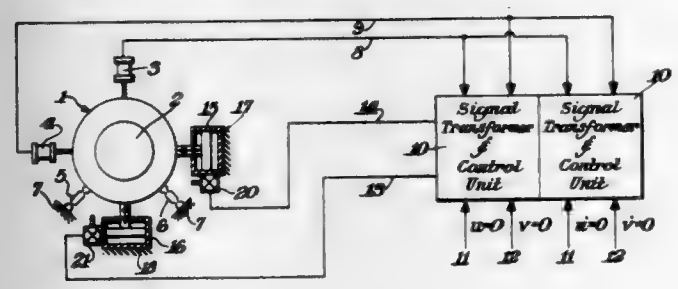
Alfred Giers, Rossdorf, and Manfred Heiland, Darmstadt-Neu-Kranichstein, both of Fed. Rep. of Germany, assignors to Carl Schenck AG, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 452,967

Claims priority, application European Pat. Off., Dec. 24, 1981, 81110778

Int. Cl.³ F16C *27/00*

U.S. Cl. 384—215 **8 Claims**



1. A balancing machine bearing mounting for flexible rotors with bearing heads for bearing journals of the flexible rotors and a foundation for supporting the bearing heads, characterized thereby that at least one measuring device per bearing journal is connected to the bearing head for determining the movement of the bearing head and/or bearing journal and generating a signal representative of that movement, means transmitting the measurement signal from the measurement device to a signal transformer for comparing the measurement signal with a reference value and generating a signal representative of that comparison, at least one power source connected to the bearing head, and means transmitting the comparison signal to the power source for inducing corresponding forces with given proportionality to the bearing heads and/or bearing journals.

4,512,672

FRONT SEAL FOR BEARING CUPS

Armin Olschewski; Gerhard Herrmann, both of Schweinfurt; Bernhard Bauer, Hassfurt, and Elisabeth Zirk, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

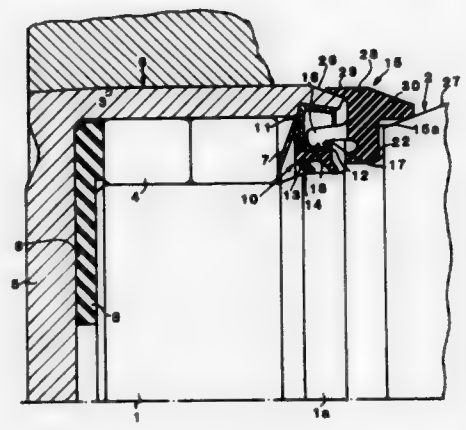
Filed May 27, 1983, Ser. No. 491,827

Claims priority, application Fed. Rep. of Germany, May 6, 1982, 8213146[U]

Int. Cl.³ F16C *33/76*

U.S. Cl. 384—477 **6 Claims**

1. A seal for sealing the space between a shaft member having first and second circumferentially extending seating surfaces, the second seating surface being tapered and a cup member having an oppositely tapered circumferentially extending third seating surface formed adjacent the open end of the cup member, said seal comprising a member made of an elastic material of generally T-shaped cross section defining a body portion having a pair, of oppositely directed sealing flanges projecting generally axially from said body portion and engageable with the second and third seating surfaces of the shaft member and cup member respectively, and wherein engagement of one of said sealing flanges with the second seating surface of the shaft effects a tilting action of said seal and a postiive sealing contact of said other sealing flange



against the third seating surface of the cup member, said body portion seating on the first seating surface of the shaft member.

4,512,673

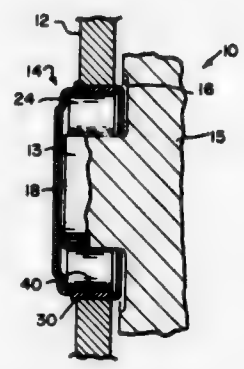
BEARING CUP WITH EXTERNAL RESTRAINING FLANGE

Charles E. Condon, Jr., Harwinton, and J. Peter Malik, Watertown, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Sep. 1, 1983, Ser. No. 528,603

Int. Cl.³ F16C *33/58*

U.S. Cl. 384—569 **3 Claims**



1. A bearing cup for rollers comprising: a cylindrical shell having at least one open end and an annular external restraining flange formed by longitudinally displacing a portion of the metal from one end of a cylindrical member having a constant outside diameter throughout its length, the annular external restraining flange separating the cylindrical shell into two sections of different outside diameters and having an annular surface extending substantially perpendicularly from the cylindrical shell smaller outside diameter section; and an inclined annular surface extending from the cylindrical shell larger diameter outside diameter section.

4,512,674

PRINTER CARTRIDGE AND CARTRIDGE RETAINING MEANS

Masayuki Suzaki, and Tetuo Kanno, both of Kanagawa, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 201,375, Oct. 27, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 404,987

Claims priority, application Japan, Oct. 30, 1979, 54-150421[U]

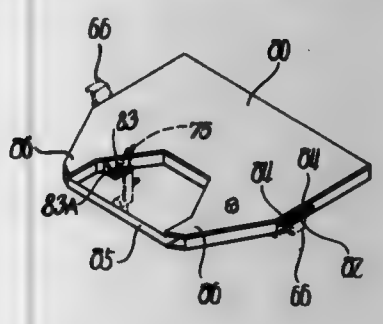
Int. Cl.³ B41J *32/00*

U.S. Cl. 400—208 **8 Claims**

1. In combination, a printing device and a ribbon cartridge pivotally mounted on a first member of said printing device for pivoting travel about a pivot axis between a predetermined position and a printing position,

wherein said ribbon cartridge comprises a cartridge body and an engaging member extending from said cartridge body at a location remote from said pivot axis,

wherein said printing device further comprises means for causing said pivoting travel of said cartridge, an upper stopper member mounted on a second member of said printer proximate said engaging member of said cartridge,



said upper stopper member comprising first and second contacting means for contacting said engaging member of said cartridge during said pivoting travel when said cartridge reaches said predetermined position and said printing position, respectively, wherein said first and second contacting means comprise means for establishing the limits of said pivoting travel of said cartridge.

4,512,675

SERIAL PRINTER

Fumihisa Hori; Tadao Tamukai, both of Tamayama, and Mikio Miyajima, Nishine, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

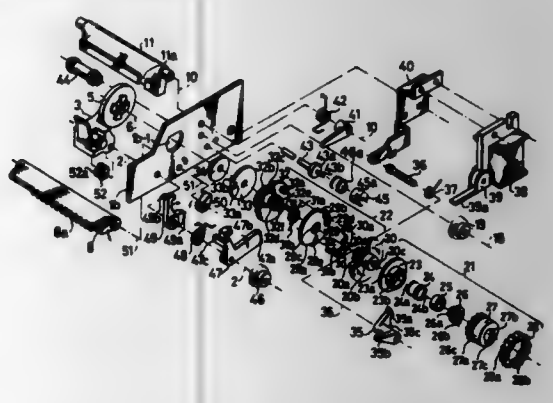
Division of Ser. No. 178,891, Aug. 18, 1980, Pat. No. 4,414,893. This application May 31, 1983, Ser. No. 499,559

Claims priority, application Japan, Aug. 20, 1979, 54-105673

Int. Cl.³ B41J *19/68*

U.S. Cl. 400—328

7 Claims



1. A printer including a carriage carrying at least one type wheel having a plurality of type elements around its circumference; means for moving said carriage along a line to be printed against a force urging said carriage to its initial position; said moving means including a gear element carried rotatably by said carriage for movement therewith along a line to be printed and having a cam surface, said cam surface including a first section extending substantially over half the circumference of said gear element and extending along the direction of rotation thereof, and a second section extending obliquely to the direction of rotation, a rack positioned along the path of movement of said carriage to mesh with said cam surface to move said carriage along said rack, and means for rotating said gear; and means for rotating said rack out of engagement with said gear to allow said carriage to return to its initial position.

4,512,676

LOCKING ASSEMBLY FOR RESTRICTING PIVOTAL MOVEMENT OF A PRINT UNIT TO A POSITION IN WHICH A PRINT ELEMENT CAN BE REPLACED

Hans L. Johansson, Karlshamn, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

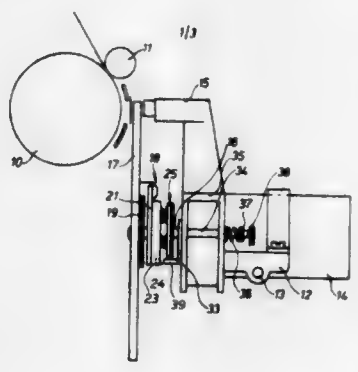
Filed Apr. 28, 1983, Ser. No. 489,310

Claims priority, application Sweden, May 5, 1982, 8202814

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2

8 Claims



1. In an apparatus for the assembly of a printing apparatus for an electric office machine comprising a print unit including an electric motor having a drive shaft and a disk-like type element removably secured to said shaft, said print unit being pivotably movable between a printing position, in which said element is drivingly coupled to said shaft, and a pivoted position in which said element is disengaged from said shaft for replacement, and locking means for permitting pivotal movement of the print unit from said printing position to said pivoted position only when said type element is in a predetermined angular position, the improvement wherein the locking means comprises a lock collar member rigidly attached to the motor shaft and having an end face, and a disengagement means including a disengagement member facing said end face of said collar member and displaceable axially of said shaft towards said collar member during pivotal movement of the unit, one of said members including a plurality of axially extending pins, the other member being provided with a plurality of complementary recesses which are in engagement with said pins only when said type element is in said predetermined annular position, the pivotal movement of said unit to said pivoted position being permitted only with said pins engaged in said recesses.

4,512,677

NO RINSE LIQUID CAR CLEANER KIT WITH LIQUID CLEANER AND BRISTLE PAD

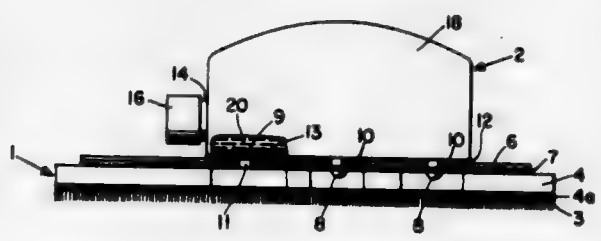
Toan Trinh, Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 26, 1982, Ser. No. 401,805

Int. Cl.³ A46B *1/00*; B08B *1/00, 3/00*; C11D *3/12*

U.S. Cl. 401—27

6 Claims



1. A car cleaner kit comprising a dispenser containing a predetermined amount of a liquid car cleaner composition and a pad for applying said liquid car cleaner on said car, said pad having resilient fibers and a base, said fibers attached substantially vertically to said base, said fibers having a length of from 3 to 15 mm, a diameter of from 10 to 150 microns, said fibers being attached to said base at a density of at least 500 fi-

bers/cm^2, said base having a minimum surface area of 60 cm^2, said pad has a Yield Force of at least 36 Newtons, said liquid cleaner having:

I. from 0.1% to 30% by weight of insoluble organic polymeric solids selected from the group consisting of:

A. polymeric particles of particle size in the range of from 1 micron to about 250 microns;

B. polymeric fibers of diameter between 1 micron and 50 microns, and length between 0.1 millimeter to 3 millimeters;

said polymeric solids can consist essentially of up to 100% of said polymeric particles at said 30%, said polymeric solids can consist essentially of 100% of said fibers at 10%;

II. from about 20% to about 95% of a liquid carrier for said particles, wherein said liquid carrier contains from about 10% to 90% by weight of the composition of an aliphatic hydrocarbon solvent;

III. an organic suspending agent in sufficient amount to suspend said particles in said liquid carrier; and

IV. from 0.1% to 20% by weight of silicone.

4,512,678

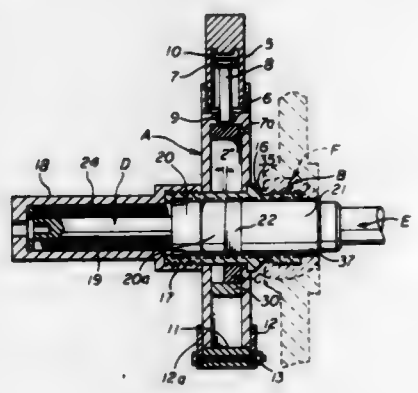
SLIDE RELEASE MECHANISM

James W. Bunker, Canyon Country, and Robert S. Ritchie, Valencia, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 30, 1982, Ser. No. 393,584

Int. Cl.^{3} F16B *1/00*

U.S. Cl. 403—15 **7 Claims**



1. A releasable support device comprising a body having an opening in a wall thereof, a load-carrying part extending through said opening into said body, a latch part slidable in said body, said load-carrying and latch parts having cooperating elements for, respectively, latching and releasing said load-carrying part as said latch part is shifted, means to shift said latch part, and means actuable as said load-carrying part is released to close said body opening, said means actuable also includes a portion following said load-carrying part for closing said body opening as said load-carrying part is expulsed from said body.

4,512,679

UNIVERSAL JOINT

Miloslav Petrzelka, Much-Kranüchel, and Herbert Taureg, Hennef-Löbach, both of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Aug. 3, 1982, Ser. No. 404,891

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3131000

Int. Cl.^{3} F16D *3/00*

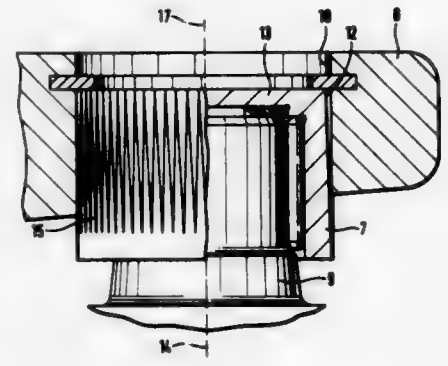
U.S. Cl. 403—57 **5 Claims**

1. A universal joint having a joint center comprising:

yoke means having a bore therein adapted to receive the journal of a cross member, said bore having an inner surface;

a cross member including a journal having a journal axis received in said bore of said yoke means;

bearing means including a bearing bush having an outer surface operatively positioned within said bore between



said yoke means and said journal engaged with a press fit between said outer surface and said inner surface; and

grooves formed in at least a part of at least one of said inner surface of said bore and said outer surface of said bearing bush, said grooves extending generally parallel to said journal axis and having an increasing depth with increasing distance from said joint center.

4,512,680

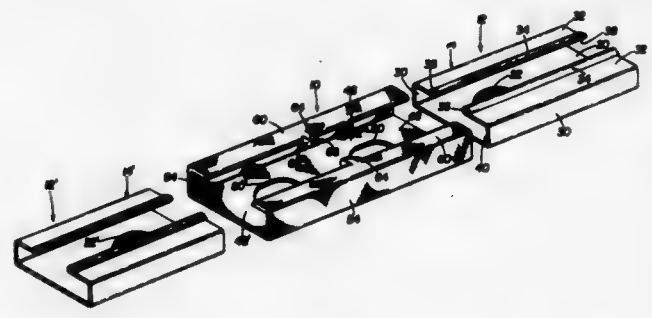
CHANNEL CONNECTOR

Walter Tomaszewski, Canton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 23, 1984, Ser. No. 602,864

Int. Cl.^{3} F16B *2/02*

U.S. Cl. 403—313 **11 Claims**



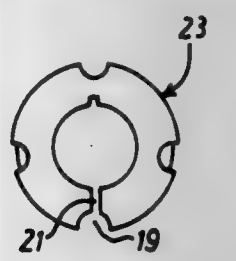
7. A channel connector comprised of a flexible resilient material, of a generally rectangular form in a transverse cross section, of a predetermined axial extent having:

(a) a substantially flat bottom wall, similarly projecting side walls and top walls, parallel to said bottom wall, said top walls being separated by a continuous central longitudinal slot;

(b) transverse abutment means, having first and second opposed sides, emanating from said top walls, at about the midpoint of said channel connector axial extent; and

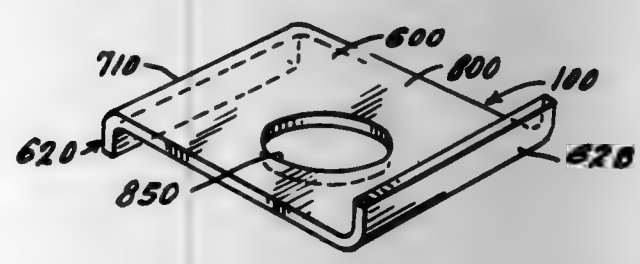
(c) said bottom wall having one or more apertures of a predetermined size whose axially outermost extents, relative to said abutment means, are equally axially spaced from said first and second opposed sides of said abutment means.

4,512,681
TAPER BUSH
Gordon A. Hayhurst, Hessle, and David A. Rayner, Burton Pidsea, both of England, assignors to J.H. Fenner & Co. Limited, England
Filed Jul. 31, 1981, Ser. No. 288,754
Claims priority, application United Kingdom, Aug. 5, 1980, 8025499
Int. Cl.³ F16B 2/00
U.S. Cl. 403—371 14 Claims



1. In a tapered, longitudinally-split contractable taper bush for securing pulleys, sprockets, coupling flanges or other machine elements onto cylindrical shafts and wherein the bush has a central axis and three holes extending axially of the bush at angularly spaced locations about said axis for receiving screws or bolts parallel to said axis for wedging the bush between the element to be secured and a shaft positioned axially within the bush and wherein the bush has a longitudinal slit extending throughout the axial length of the bush at a location between two of the holes opposite the third hole in the bush, the improvement comprising an enlargement of the longitidunal slit wherein the enlargement is of predetermined size and distance from said axis to impart substantial rotational balance to the bush and the element and shaft to be associated therewith during use thereof.

4,512,682
ALIGNMENT CONTROL DEVICE
Edwin M. Mungons, 5906 Cresthaven (Apt. D-1), Toledo, Ohio 43614
Continuation-in-part of Ser. No. 418,405, Sep. 15, 1982,. This application Jul. 8, 1983, Ser. No. 511,920
Int. Cl.³ F16B 7/00
U.S. Cl. 403—390 1 Claim

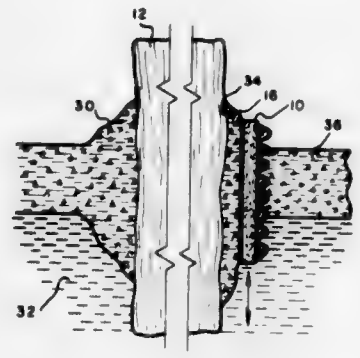


1. An adapter device for stabilizing two members relative to one another in order to prevent pivotal movement, said device comprising:

(a) a plate member having an upper surface and a lower surface with a bore in said plate extending from the lower surface to the upper surface, and said plate having four edges forming the perimeter of said plate disposed on respective opposing sides of said plate, and wherein the bore in said plate is disposed in a position offset from the geometrical center of said plate toward one corner of said plate

(b) first and second flange members disposed along the full length of opposing edges of said plate member, wherein the first flange member is disposed away from the upper surface of said plate in a direction opposite to the direction of said second flange member.

4,512,683
PILING PROTECTOR
Marino Cosenza, 351 Poplar Ave., Linwood, N.J. 08221
Filed Sep. 19, 1983, Ser. No. 533,655
Int. Cl.³ E02D 5/60
U.S. Cl. 405—216 6 Claims



1. Means for protecting a piling from being lifted by rising ice as the tide rises including:

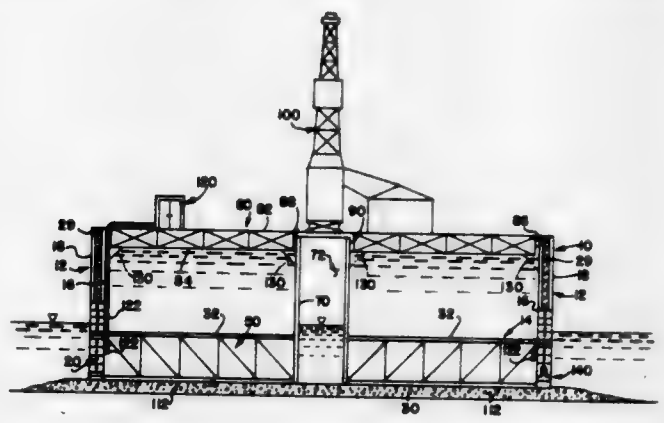
a substantially tubular sleeve member having a constant and uniform inner diameter greater than the diameter of the piling being protected;

said sleeve member having an outer casing with an uneven surface and a layer of rigid solid material inwardly, said uneven surface having a plurality of raised portions and a plurality of valleys so that ice forming therearound will tightly grip the sleeve member;

the average density of the sleeve member being slightly less than that of water so that the same floats in water with a small portion thereof being above the water level;

the innermost surface of the sleeve member facing said piling being even, continuous and smooth whereby said sleeve member is capable of easily sliding up or down across any ice which may form around said piling and between the piling and the sleeve member.

4,512,684
MOBILE OFFSHORE STRUCTURE FOR ARCTIC EXPLORATORY DRILLING
David R. Hale, Elmhurst; William A. Owen, Lombard, and James A. Orndorff, Jr., Glen Ellyn, all of Ill., assignors to CBI Offshore, Inc., Oak Brook, Ill.
Filed Jun. 13, 1983, Ser. No. 503,703
Int. Cl.³ E02B 15/02
U.S. Cl. 405—217 18 Claims



1. An offshore exploratory drilling floatable structure ballastable to rest on a sea floor but to extend above water level when so supported and adapted to withstand arctic ice loads, comprising:

a wall means having an outer substantially vertical cylindrical shell and an inner substantially vertical cylindrical shell;

the inner shell being positioned radially inwardly of the

outer shell with the inner and outer shells having a common vertical axis thereby defining an annular space between the inner and outer shells;

reinforcing means, in the annular space, extending between the inner and outer shells in the lower portion thereof which may be subjected to arctic ice loads when the structure rests on a sea floor;

a structural load bearing bottom having a pair of substantially equally spaced apart horizontal upper and lower discs connected to the wall means;

a structural load bearing means between and connecting the upper and lower discs together; and

a floatable vertically displaceable substantially horizontal circular load bearing structural deck inside of and having a diameter slightly less than the inner shell.

4,512,685

MORTARLESS RETAINING-WALL SYSTEM AND COMPONENTS THEREOF

Richard L. Hegle, Honolulu, assignor to Ameron, Inc., Monterey Park, Calif.

Filed Sep. 8, 1981, Ser. No. 300,308
Int. Cl.³ E02D *17/20*
U.S. Cl. 405—284 **28 Claims**



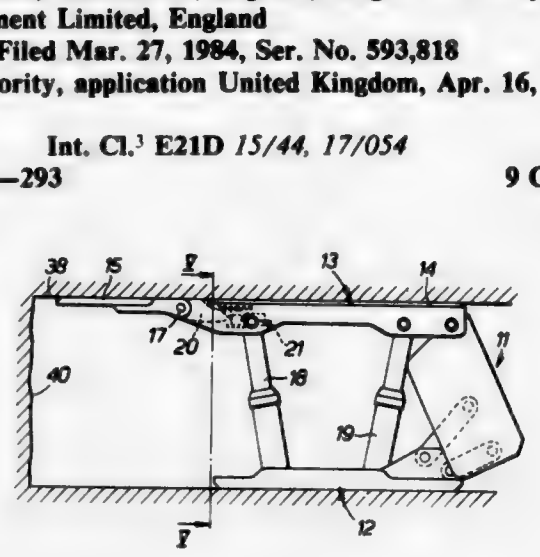
1. A building block made of concrete or the like comprising a front face, a back face, a top face, a bottom face, and a pair of side faces; the top face having a convex first surface comprising first and second planar surfaces with an obtuse convex vertex between the first and second planar surfaces extending between the side faces and a concave second surface comprising the second planar surface and a third planar surface with an obtuse concave vertex between the second and third planar surfaces extending between the side faces, the concave second surface lying between the convex first surface and the front face; the bottom face having a concave third surface comprising fourth and fifth planar surfaces with an obtuse concave vertex between the fourth and fifth planar surfaces extending between the side faces, and a convex fourth surface comprising the fifth planar surface and a sixth planar surface with an obtuse convex vertex between the fifth and sixth planar surfaces extending between the side faces, the convex fourth surface lying between the concave third surface and the front face, the convexity of the first and fourth surfaces matching the concavity of the third and second surfaces, respectively, wherein the concave second surface on the top face of the block has a smaller included angle than the convex first surface on the top face, so that the first and third planar surfaces coverge toward the front face of the block and wherein the convex third surface on the bottom face of the block has a larger included angle than the concave fourth surface on the bottom face of the block so that the fourth and sixth planar surfaces coverge toward the front face of the block at the same angle as the first and third planar surfaces converge.

4,512,686

ROOF SUPPORT SUITABLE FOR USE IN MINES

John H. Waters, Cheltenham, England, assignor to Dowty Mining Equipment Limited, England

Filed Mar. 27, 1984, Ser. No. 593,818
Claims priority, application United Kingdom, Apr. 16, 1983, 8310348
Int. Cl.³ E21D *15/44, 17/054*
U.S. Cl. 405—293 **9 Claims**



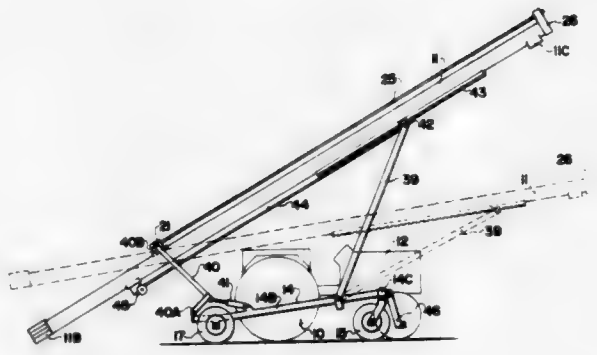
1. A roof support, suitable for use in mines, including a floor-engaging structure, extendible and contractible prop means carried by said structure, a roof-engageable canopy, supported by said prop means, which comprises a main portion and an extension portion pivotally-connected to the main portion, actuator means carried by said main portion, and a wedge member so carried by said main portion and so connected with the output member of said actuator means as to be slidable, upon operation of said actuator means, lengthwise of said main portion, the end portion of said wedge member remote from said actuator means having a wedging face which is co-operable with a complementary face formed on a part of said extension portion which projects substantially beyond the pivotal connection in the direction towards said actuator means, whereby sliding movement of said wedge member effects tilting of the extension portion with respect to said main portion.

4,512,687

CONVEYOR ASSEMBLIES FOR DETACHABLE MOUNTING TO A TRACTOR

Silvanus T. Enns, 14-224 Kennedy St., Winnipeg, Manitoba, Canada R3C 1T1

Filed Mar. 21, 1983, Ser. No. 477,320
Claims priority, application Canada, Apr. 16, 1982, 401170
Int. Cl.³ B65G *53/48*
U.S. Cl. 406—41 **9 Claims**



1. An auger for mounting to an associated tractor, having a longitudinal axis along which it normally moves, a drawbar hitch and a PTO at a rear position thereof in side by side relationship therewith, said assembly comprising in combination a freestanding tricycle undercarriage including a frame having a rear axle member arranged transverse to a longitudinal axis of said auger, a pair of spaced apart rear ground engaging wheels on respective ends of said axle member and a front castor wheel assembly mounted to said frame forwardly of said

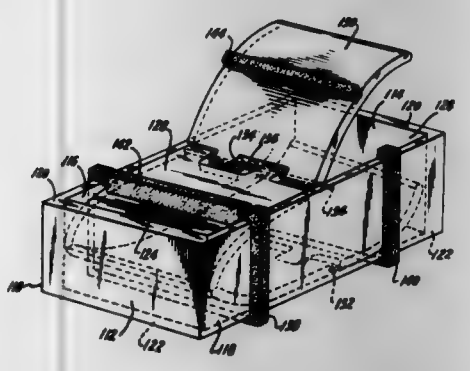
axle member, an auger tube having an inlet end and a discharge end and arranged substantially along said auger axis with said discharge end forwardly of said axle, means mounting said auger tube on said undercarriage for movement thereof so as to raise and lower said inlet and discharge ends from a transport position to various working positions and vice-versa, said frame including hitch means connected to said transverse axle member adjacent one rear wheel thereof and extending forwardly therefrom for connection to said drawbar hitch and interconnecting means arranged generally transverse to said auger axis and attached to said frame forwardly of said axle for connecting said frame to said tractor at a position thereof forwardly of said drawbar hitch whereby, when connected, said tractor can move said auger with the auger axis held parallel to the tractor axis, and drive connection means for taking drive from said PTO to drive said auger.

4,512,688

PNEUMATIC TUBE SYSTEM WITH CARRIER

Hans Hochradel, 89 Minnehaha Blvd., Lake Hiawatha, N.J. 07034

Filed Jan. 27, 1983, Ser. No. 461,680
Int. Cl.[3] **B65G** *51/32*
U.S. Cl. 406—111 **14 Claims**



1. A carrier for a pneumatic tube system comprising a rigid frame defining a single undivided chamber, said frame comprising spaced end sections, a pair of spaced side members, a top, and a bottom, said frame when viewed along the axis of the carrier's intended direction of movement in the pneumatic tube substantially complementing the cross-section of the pneumatic tube, a pair of doorways formed on at least one of the top or bottom, a door pivotably mounted in each of the doorways for swinging movement between open and closed positions about an axis which is perpendicular to the carrier's intended direction of movement in the pneumatic tube, said doors being free of latching means with the pivotal mounting of each door being inwardly disposed from the end sections of the frame so that in opening each door freely swings away from one end section, and spring means associated with each door and urging the door to assume an open position when the door is not confined by said pneumatic tube system.

4,512,689

CUTTING INSERT AND CUTTING TOOL THEREFOR

Sven O. Bylund, Sandviken, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Feb. 23, 1983, Ser. No. 468,939
Claims priority, application Sweden, Apr. 1, 1982, 8202092
Int. Cl.[3] **B26D** *1/12;* **B23P** *15/28;* **B23D** *77/00;* **B27G** *15/00*
U.S. Cl. 407—40 **11 Claims**

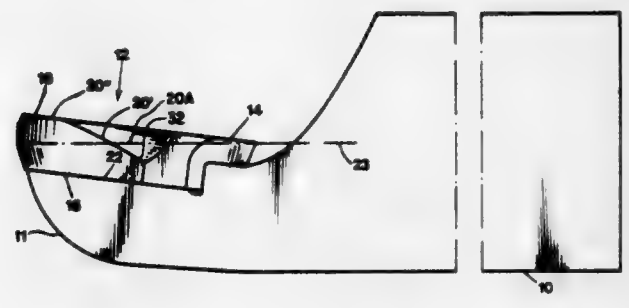
1. A cutting tool for the chipforming machining of workpieces, comprising:

a tool body rotatable in a direction of rotation about a longitudinal axis thereof, a longitudinally forward cutting end of said tool body including a recess having a support surface,

a cutting insert mounted in said recess and including:

first and second side surfaces spaced apart in said direction of rotation, said first side surface resting against said support surface of said recess and trailing said second side surface with reference to said direction of rotation, and

a convex cutting edge including a forward portion and a rear portion, said forward portion lying substantially in a plane defined by said second side surface and having a radially inner end located at a forward end of said second side surface and adjacent said axis, said forward portion extending radially outwardly and longitudinally



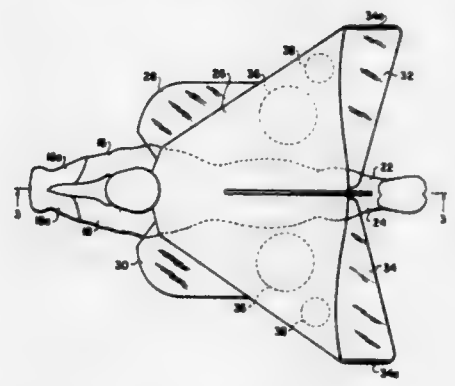
rearwardly and merging with said rear portion at a location spaced radially outwardly from said axis, said rear portion extending from said location along a path formed by components directed radially outwardly, longitudinally rearwardly, and toward said first side surface, respectively, such that a radially outer end of said rear portion is disposed longitudinally rearwardly of said radially inner end and closer to said first side surface than said radially inner end.

4,512,690

FLYING FIGURE TOY GLIDER

Mark E. Johnson, 122-C Trellis La., Escondido, Calif. 92026

Filed Nov. 14, 1983, Ser. No. 550,796
Int. Cl.[3] **A63H** *27/00*
U.S. Cl. 446—61 **17 Claims**



1. A toy flying figure glider, comprising:

a lightweight body formed in an outstretched configuration having a head, a pair of forwardly extending forward limbs, and a pair of rearwardly extending rear limbs,

a wing structure attached to the back of said body for supporting said body in flight in an airborne configuration, and

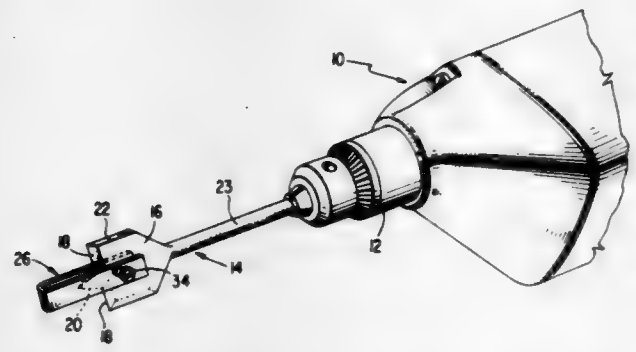
said wing structure comprising an opaque portion, said portion being arranged to have symmetry with respect to the length of the body, providing a wing area and simulating an outstretched cape worn by the body, and transparent means for inconspicuously expanding said wing area, said transparent means extending beyond the edges of said opaque portion and continuing said symmetry.

4,512,691

PILOT ADAPTOR FOR FLAT WOOD BORING BITS

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed May 19, 1983, Ser. No. 496,141
Int. Cl.[3] B23B *51/60*
U.S. Cl. 408—201 5 Claims



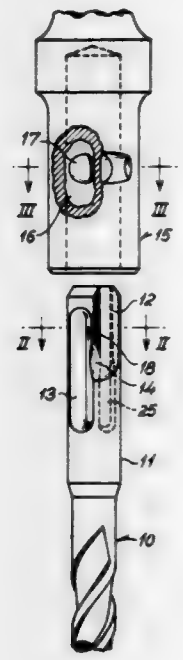
1. A pilot adaptor for a flat wood boring bit having a shank extending to two parallel flattened sides with an axially aligned orifice extending therebetween and terminating in opposed cutting edges on each side and rearwardly of a pilot tip, said pilot adaptor to accommodate said flat wood boring bit to a smaller pilot hole to enable said flat wood boring bit to drill a larger hole concentric to said pilot hole, said pilot adaptor comprising: an elongated rectangular sheet metal member bent substantially centrally thereof to form two parallel legs for receiving said parallel flattened sides of said flat wood boring bit therebetween, said parallel legs having parallel sides with diagonally opposite edges spaced apart the diameter of said pilot hole so that said legs are received therein, and means for supporting said pilot adaptor axially of said flat wood boring bit.

4,512,692

TOOL SHAFT FOR A TOOL OF THE PERCUSSIVE AND ROTATIVE TYPE

Mogens B. Nielsen, Glostrup, Denmark, assignor to Durofac-Kartro A/S, Valby, Denmark

Filed Jul. 19, 1982, Ser. No. 399,284
Claims priority, application Denmark, Jul. 24, 1981, 3335/81
Int. Cl.[3] B23B *31/06*
U.S. Cl. 408—226 9 Claims



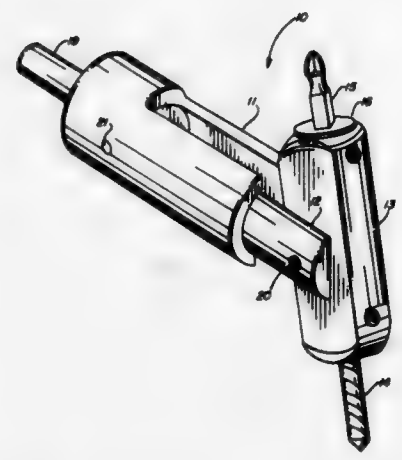
1. In a tool shaft configuration for a tool of the percussive and rotative type and having a substantially cylindrical end portion adapted to be releasably received within a cylindrical bore of a tool holder having at least one driving member extending radially into the bore, the cylindrical end portion of the shaft comprising at least one pair of axially coextending, peripherally off-set first and second recesses interconnected by a peripherally extending third recess, the first recess extending from the free end of the cylindrical end portion and the second recess having closed axially opposite ends and driving surface for drivingly engaging with a driving element of the tool, each of said first, second, and third recesses being adapted to slidably receive the driving member of the tool holder therein when the tool shaft is inserted in the holder, the improvement that the surface part defining the first recess is shaped so as to define between the pair of first and second recesses a separating shaft portion having a radially outward surface part substantially coinciding with the cylindrical outer surface of the cylindrical end portion, and wherein the peripherally extending third recess is connected to the second recess at a position spaced from the ends thereof, and that the first recess includes an extension extending axially beyond the position at which the second recess is connected to the first recess, whereby said tool shaft can be accommodated by socketed tool holders having fixed or radially extensible protuberances or both.

4,512,693

REVERSIBLE DRILL AND DRIVE TOOL HOLDER

Carl A. Swanson, 1351-B Chesapeake Ave., Naples, Fla. 33942

Filed Dec. 27, 1982, Ser. No. 453,522
Int. Cl.[3] B23B *31/04*
U.S. Cl. 408—239 R 5 Claims



1. A reversible drill and drive tool holder comprising: a hollow cylindrical locking sleeve having its open forward end forked to form a yoke with cylindrical interior sides and an axially bored cylindrical hole in its rear end,

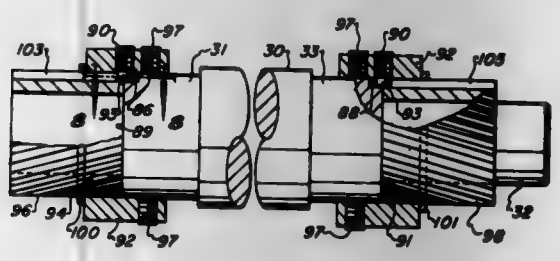
an elongated cylindrical shaft lying axially slidable partially within said sleeve and having a rear end of reduced diameter projecting through the hole in the rear end of the sleeve for insertion into the chuck of a drill and a forward end forked to form a yoke with parallel flat interior sides, an elongated two-ended tool holding member rotatably pinned at its center between the parallel flat sides of the yoke of said shaft, and

spring loaded means lying along the axis of the cylindrical shaft for locking said tool holding member into axial alignment with said sleeve and shaft by retaining the rearmost end of the tool holding member within the cylindrical interior of the front end of the sleeve.

4,512,694
METHOD AND APPARATUS FOR ALIGNMENT OF GEARING

Charles D. Foran, Dallas, and Jack D. Smith, The Colony, both of Tex., assignors to Associated Dynamics, Incorporated, Addison, Tex.

Filed Feb. 1, 1982, Ser. No. 344,383
Int. Cl.[3] B23F *3/00*
U.S. Cl. 409—12 24 Claims



1. A method of aligning at least one set of gears of a gear drive arrangement having a first set of gears mountable spaced apart on a first shaft so that each of said gears of said first set may be meshed with respective ones of a second set of gears mounted spaced apart on a second shaft substantially parallel to said first shaft whereby a driving load is transferred substantially evenly from said first set of gears to said second set of gears, said method comprising the steps of:

(a) providing one of said shafts with one of said sets of gears formed integral with said one shaft and aligned with each other so that the teeth of one of said gears of said one set are positioned in a predetermined relationship with the teeth of the other of said gears of said one set by:

(1) providing said one shaft with opposed recess means of predetermined dimensions formed spaced apart on said one shaft in predetermined alignment with each other;

(2) providing a first gear master part having at least one set of opposed tooth flanks forming at least one tooth space of predetermined proportions;

(3) providing a first fixture for holding said first gear master part and mountable on said one shaft, said first fixture including locating pin means thereon;

(4) mounting said first gear master part on said shaft in a predetermined position as determined by one of said recess means;

(5) mounting said first fixture on said one shaft with said locatingl pin means disposed in said one of said recess means and in a tooth space for locating said first gear master part in a predetermined position with respect to said one shaft prior to locating a cutting tool in said tooth space;

(6) premarking said tooth flanks of said first gear master part to indicate contact with said cutting tool and adjusting the position of said cutting tool with respect to said tooth flanks so as to substantially center said cutting tool in a tooth space on said first gear master part;

(7) positioning said cutting tool in said tooth space to locate said cutting tool with respect to at least one of said flanks and said one shaft for cutting said teeth of one of said gears of said one set in a predetermined alignment with respect to said one shaft;

(b) providing the other of said shafts with spaced apart alignment means aligned with each other;

(c) providing all gears of said other set with hubs for mounting said gears of said other set on said other shaft;

(d) providing a second fixture including means engageable with corresponding points on the profile faces of adjacent gear teeth, said second fixture including means for locating a reference point on said hubs;

(e) mounting said second fixture on each of said gears of said other set and marking each hub to locate alignment means on each hub on the basis of the location of said means on said second fixture for locating said reference point on said hub;

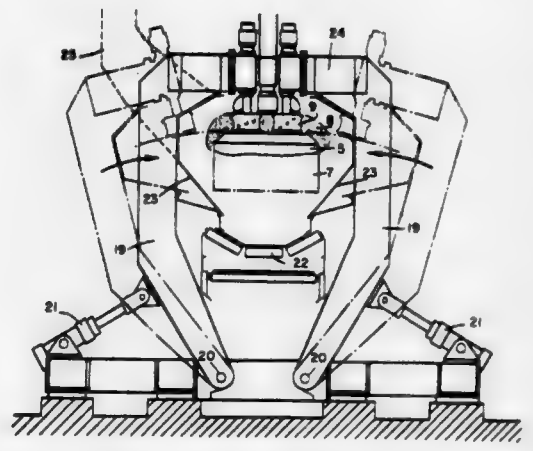
(f) providing alignment means in each of said gears of said other set based on the location of said marks; and

(g) mounting said gears of said other set on said other shaft with said alignment means on said gears of said other set aligned with respective alignment means on said other shaft.

4,512,695
APPARATUS FOR SEPARATING ELECTROLYSIS BATH RESIDUES ON PRECALCINED ANODES

Marcel Brun, Asnieres; Andre Perret, Chatou, and Claude Cailleux, Combs-la-Ville, all of France, assignors to Aluminium Pechiney, Lyons, France

Filed Jul. 1, 1982, Ser. No. 394,467
Claims priority, application France, Jul. 23, 1981, 81 14792
Int. Cl.[3] B23C *3/14*
U.S. Cl. 409—134 6 Claims



1. An apparatus for removing electrolysis bath residues from at least one used anode unit removed from an electrolysis cell for the production of aluminum by the Hall-Heroult process, wherein said at least one anode unit comprises a carbon residue, a plurality of studs sealed within said carbon residue, a suspension rod having flanges welded thereon, said flanges interconnecting said studs, and electrolysis bath residues on the surface of said unit, said apparatus comprising gripping and positioning means for said at least one anode unit including two arms having clamping jaws engagable with said suspension rod, means pivotally supporting said arms for swinging in a plane, a rotary milling cutter having an axis of rotation substantially parallel to the axis of said suspension rod, gripping and moving means for said rotary milling cutter comprising at least one pivotal arm located in a plane substantially transverse to the plane of said two pivotal arms, hooding means for collecting and extracting dust, and means for conveying the removed electrolysis bath residues, wherein the position of said cutter with respect to said anode unit is movable enabling said rotary milling cutter to pass successively between the studs and around the studs.

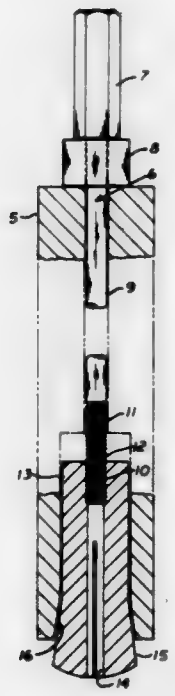
4,512,696
DRAW BAR FOR MACHINE TOOL

Mirko Cukelj, 11459 Chapin St., Chesterland, Ohio 44092

Filed Jul. 5, 1983, Ser. No. 510,987
Int. Cl.[3] B23B *31/10*
U.S. Cl. 409—233 4 Claims

1. A draw bar for collet chucking spindles comprising an elongated body having a wrench head at one end, first and second thread sections for collet operation at the opposite end, said first and second thread sections being of like configurations, means defining said sections to be separate, said sections being initially integral, said first section being at the extremity and subject to initial use for collet actuation, removal of said

first section being effected by severing the same from the second section when thread wear diminishes the actuating



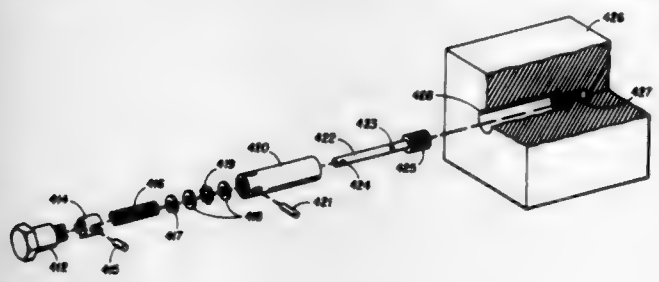
power thereof, the second section being thereby engageable with the collet for operation thereof.

4,512,697

TORQUE LIMITING FASTENER

Michael R. Cascini, Hudson, N.H., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 22, 1983, Ser. No. 468,254
Int. Cl.[3] F16B *31/02*
U.S. Cl. 411—7 3 Claims



1. A fastener comprising in combination:

a. a first assembly having a threaded region and an additional frictional region having a specified rotational friction characteristic;

b. a second assembly rotatably coupled to said first assembly and having a fastening configuration in one region thereof and an additional region in a proximal cooperating relationship with said frictional region of said first assembly; and

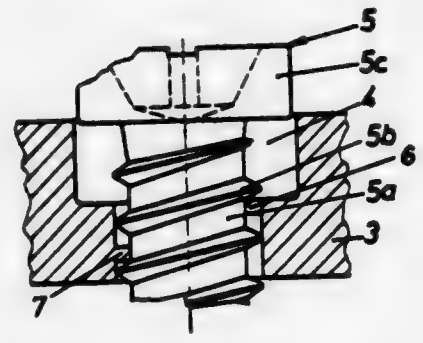
c. a threaded fastener for joining a first apparatus to a second apparatus wherein said fastening configuration of said second assembly is for connection to said second apparatus and is torque limited, preset, and including means for controllably joining said frictional region of said first assembly to said additional region of said second assembly, having a predetermined joining force and means for adjusting said predetermined joining force during assembly of said fastener, and means for preventing adjustment subsequent to assembly, said threaded fastener for connection to said first apparatus, and said first assembly for coupling said threaded fastener to said second assembly.

4,512,698

HOLDING MECHANISM, IN PARTICULAR FOR SKI BINDINGS

Al-Madhi Muad, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Feb. 9, 1983, Ser. No. 465,121
Claims priority, application Austria, Feb. 12, 1982, 548/82
Int. Cl.[3] F16B *21/00, 37/00*
U.S. Cl. 411—337 2 Claims



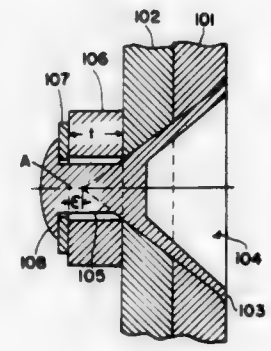
1. In a base member having a generally cylindrical bore for receiving a fastening screw, wherein the surface of the bore, for holding the fastening screw, has two shoulders which are offset circumferentially and axially in said bore relative to one another, the improvement comprising wherein each said shoulder, viewed in an axial direction, is defined by two nested circles of different radius, the larger radius being equal to the radius of said bore and the circles contacting one another substantially tangentially at a contact point, and wherein the contact points of the circles of the respective shoulder are angularly offset by 180° relative to one another.

4,512,699

DAZE FASTENERS

L. Robert Jackson, Newport News; Randall C. Davis, Poquoson, and Allan H. Taylor, Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 17, 1983, Ser. No. 495,380
Int. Cl.[3] F16B *33/00, 35/04*
U.S. Cl. 411—368 7 Claims



1. A fastener for connecting two or more structural elements having mating frusto-conical apertures therethrough to receive the fastener and wherein the structural elements and fastener have substantially different coefficient of thermal expansion physical property characteristics comprising:

a first elongated fastener element having an elongated body portion and an integral head portion formed on said elongated body portion;

said elongated body portion being positioned within and extending through the structural elements to be connected thereby and said head portion being provided with a frusto-conical exterior surface and being received in mating surface contacting engagement with the frusto-conical apertures formed in the structural elements to be con-

nected thereby and wherein the mating surfaces consist of line elements that when extended form a vertex;

a spacer washer element disposed about said elongated body portion and in engagement with one of said structural elements to be connected;

a metal washer also disposed about said elongated body portion and in engagement with said spacer washer wherein the contacting surfaces of said metal washer and said spacer washer are on a plane that passes through the vertex formed by line element extensions of the mating surfaces of said frusto-conical head and said frusto-conical apertures; and

means firmly engaging said metal washer to force said metal washer against said spacer washer and retaining the structural elements fastened together.

4,512,700

NESTING DRUMS-METHOD OF MAKING THE SAME

Cesar Santoni, Hamilton, Canada, assignor to Greif Bros. Corporation, Delaware, Ohio

Division of Ser. No. 468,951, Feb. 23, 1983,. This application Mar. 8, 1984, Ser. No. 587,612

Int. Cl.[3] B21D *51/00*

U.S. Cl. 413—4

10 Claims



1. A method of making a nestable drum comprising:

providing a cylindrical shell with one end having a first diameter;

flaring out a portion of said one end to form an edge;

providing a circular plate-shaped closure with a raised center, a disk, and a cylindrical side connecting said center to said disk, said side having a second diameter smaller than said first diameter and a plurality of ribs extending radially away from said center to form a circle having an outer diameter equal to said first diameter;

associating the shell with the closure so that the edge coincides with the disk and the center and the ribs are disposed within the shell; and

curling the edge and the disk together to form a seam.

4,512,701

PALLET HEIGHT SENSING MECHANISM

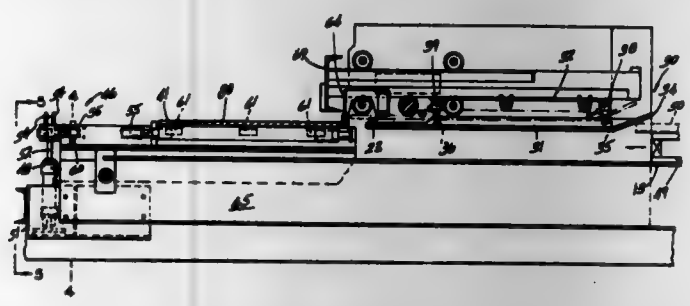
Julian D. Foust; Leonard M. Ysidro, Sr., both of Cleveland, and Danny R. Cross, Decatur, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Dec. 22, 1982, Ser. No. 452,261

Int. Cl.[3] B65G *43/08*

U.S. Cl. 414—101

17 Claims



1. In a conveyor for moving pallets along a predetermined path of travel, comprising in combination:

(a) sensing means positioned along the predetermined path of travel to sense the height of individual pallets as each pallet travels along the predetermined path of travel;

(b) signal means cooperative with the sensing means and activated by a pallet being sensed by the sensing means;

(c) control means cooperative with the signal means to receive a signal from the signal means indicating the height of the individual pallet;

(d) product receiving means overlying the predetermined path of travel and moveable upwardly in at least a generally vertical direction to permit individual pallets to pass thereunder along the predetermined path of travel without any interference; and

(e) elevation means cooperative with and responsive to the control means to move the product receiving means in the generally vertical direction.

4,512,702

INSTALLATION FOR FEEDING A SHAFT FURNACE

Pierre Mailliet, and Leon Ulveling, both of Howald, Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

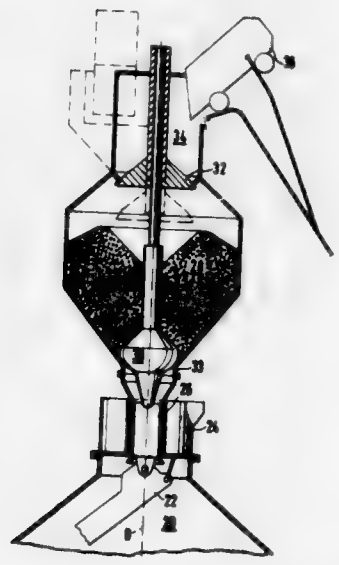
Filed Mar. 10, 1983, Ser. No. 473,965

Claims priority, application Luxembourg, Mar. 10, 1982, 84000

Int. Cl.[3] C21B *7/20*

U.S. Cl. 414—202

24 Claims



1. A feeding device for a shaft furnace comprising:

a storage chamber having upper and lower ends;

a feed channel at the lower end of said storage chamber, said feed channel having a vertical axis and having upper and lower ends;

rotatable distribution means at the lower end of said feed channel;

dosing means at the lower end of said storage chamber, said dosing means being symmetrically mounted about said vertical axis, said dosing means being variable between a closed position in which it is in sealing engagement with seat means on said storage chamber to prevent flow of material from said storage chamber and said feed channel, and a plurality of adjustable open positions for controlling flow of material from said storage chamber to said feed channel;

said dosing means including a conical element converging downwardly toward said vertical feed channel, wherein said dosing means defining a variable annular discharge orifice as said dosing means moves between said closed and open positions to establish and vary a vertical flow of charging material along said vertical axis of said feed channel; and

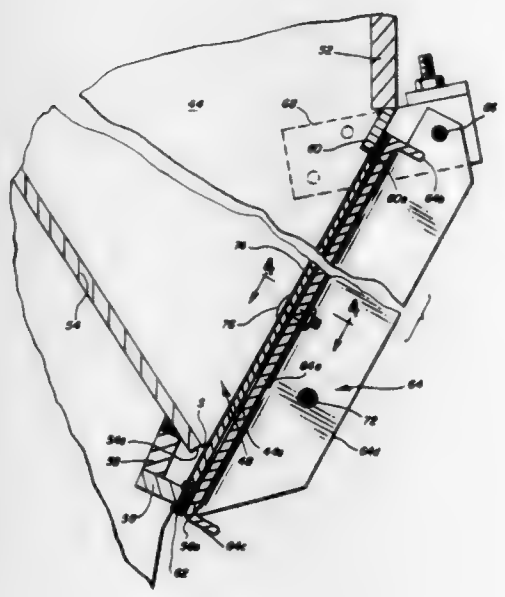
means for moving said dosing means between said closed and open positions.

4,512;703

BOTTOM SILO UNLOADER

James W. Lepley, Smithville, Ohio, assignor to Flying Dutchman, Inc., Smithville, Ohio

Filed Jul. 14, 1983, Ser. No. 513,714
Int. Cl.[3] B65G *3/10*
U.S. Cl. 414—288 14 Claims



1. A silo unloader for unloading silage contained in a silo through a discharge opening formed in a lower wall of the silo said unloader comprising:

a housing adapted to be mounted adjacent said discharge opening for receiving silage from the silo and including a discharge chute for said silage extending downwardly of said opening,

said chute including a sloping bottom wall terminating at a lower end forming a horizontal drip edge, and a pair of sidewalls extending upwardly along opposite sides of said sloping bottom wall, said sidewalls having free outer side edges spaced outwardly of said drip edge and sloping upwardly and outwardly away from said bottom wall and said horizontal drip edge, said free edge side edges defining opposite sides of a discharge outlet for silage and the like to be unloaded from said silo,

a discharge door mounted to pivot about a horizontal axis above said drip edge between open and closed positions with respect to said discharge outlet, said door having an inside surface spaced apart from said drip edge when said door is closed,

resilient sealing means adjacent edge portions of said door for sealing said discharge outlet when said door is closed, and

said chute including a lower sealing bar forming a lower edge of said discharge opening extending between said free outer side edges of said sidewalls, said sealing bar having a lower edge spaced below said drip edge and adapted to engage a lower edge portion of said sealing means when said discharge door is in said closed position,

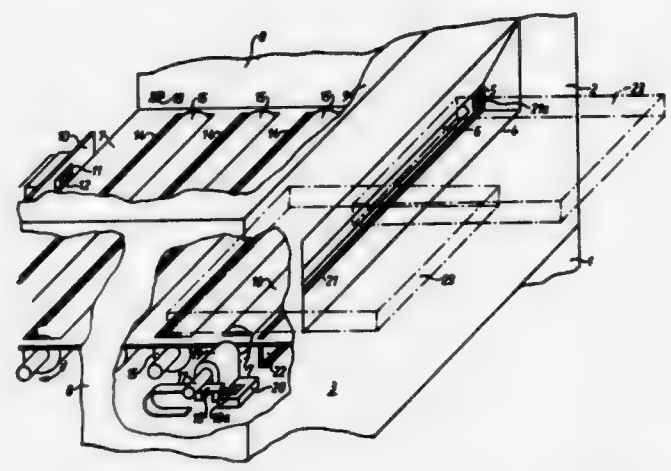
said drip edge being positioned in spaced apart relation inwardly of an inside face of said discharge door when said door is sealed in said closed position whereby any silage hanging over said drip edge does not prevent tight sealing along said lower edge of said discharge opening.

4,512,704

ARRANGEMENT FOR UNLOADING AND LOADING X-RAY FILM CASSETTES

Peter Hösel, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 384,162
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122581
Int. Cl.[3] B65G *43/08*
U.S. Cl. 414—292 10 Claims



1. In an arrangement for handling, especially unloading and loading, cassettes, particularly X-ray cassettes, a combination comprising means for defining a channel for receiving the respective cassette, having an inlet opening extending along a plane; means for transporting the respective cassette along said plane and through said inlet opening into and out of said channel, including a plurality of transporting elements situated in said channel and movable in two opposite transporting directions, and means for driving said transporting elements; means for light-tightly closing said inlet opening at least when the respective cassette is fully received in said channel; and means for controlling the operation of said driving means, including a switching member formed as a rotatable switching roller which is arranged immediately near said inlet opening parallel to said plane substantially over the entire width of said inlet opening as considered in said plane and mounted for movement between an extended position assumed when said channel is empty, and a retracted position assumed when a single cassette enters said channel or leaves said channel through said inlet opening, and means for switching said driving means between a deenergized and an energized state thereof in response to the movement of said switching roller from said extended to said retracted position thereof so that when a cassette enters said channel through said inlet opening said driving means is switched by said switching roller to the energized state to move said transporting elements in one transporting direction and to thereby transport the cassette into said channel, whereas after said driving means has been switched to move said transporting elements in the other opposite direction and to thereby transport the cassette out of said channel and after the cassette leaves said channel through said inlet opening said switching roller switches said driving means to the deenergized state and said transporting elements stop moving in the opposite direction.

4,512,705

HORIZONTAL PLOW SYSTEM METHOD AND APPARATUS FOR RECLAIMING AND HOMOGENOUSLY BLENDING BULK SOLID PARTICULATE MATTER SUCH AS COAL

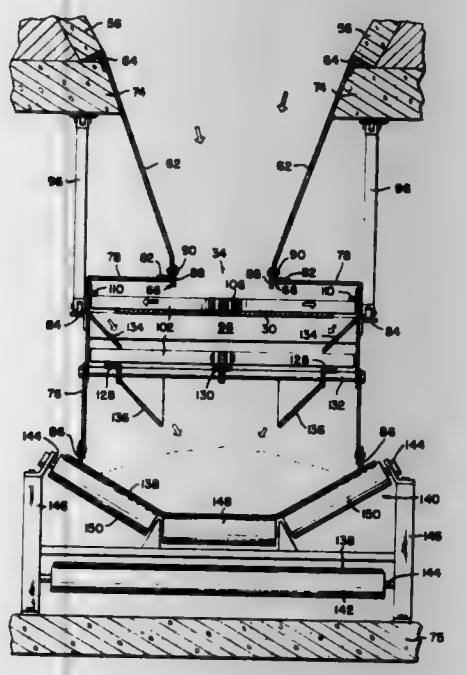
James L. Gutsch, 14909 W. 84th Ter., Lenexa, Kans. 66215

Filed May 17, 1983, Ser. No. 495,523
Int. Cl.[3] B65G *65/38*
U.S. Cl. 414—327 19 Claims

1. A horizontal plow system apparatus for the reclaiming

and homogenous blending of solid flowable particulate matter, such as coal, adapted to be positioned under a live storage facility having an opening at the bottom, and over a moving conveying means, comprising a displacement assembly, which in turn is comprised of:

(a) a receiving stationary top plate to be arranged in alignment with and beneath the opening of the live storage facility to receive the flow of coal which falls down onto the receiving stationary top plate via gravitational forces from the live storage facility; and



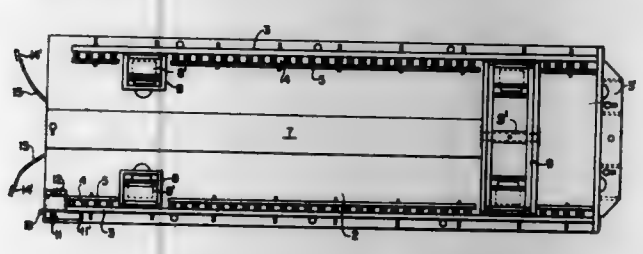
(b) a horizontal flight subassembly, supportively adapted for slidable travel on top of the receiving stationary top plate to continuously and simultaneously displace coal, which was previously deposited from the live storage facility from the sides of the receiving stationary top plate upon demand, during rotational end to end movement about said receiving stationary top plate, whereby the coal thereafter falls down onto the moving conveying means, to then be transported to the site of a downstream process at a plant facility.

4,512,706

SHEAR DOLLY FOR LONG WALL MINING

John P. Thompson, Canonsburg, Pa., assignor to Phillips Mine & Mill, Inc., Bridgeville, Pa.

Filed Mar. 18, 1983, Ser. No. 476,616
Int. Cl.³ E21C *29/02*
U.S. Cl. 414—373 **5 Claims**



1. For use in long wall mining operations, a dolly for moving a shear from place to place comprising:

a wheeled platform with a parallel rail extending along each side thereof defining a longitudinal axis between said parallel rails on which the shear may travel onto and off from the dolly out from and onto a pan-line in the mine, the wheeled platform adapted to travel along a path which is generally parallel to the longitudinal axis of said parallel rails carried thereon;

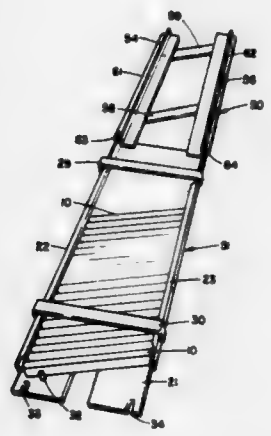
a rack bar ridgedly supported on and extending along at least one side of the platform and comprising one of said two parallel rails, one end of the rack bar on the wheeled platform being formed to provide an interfitting connection with a rack bar section at the end of the rack bar forming a part of the pan-line in the mine, said connection when the rack on the platform and the pan-line rack section are interfitted then forms a continuous toothed rack for engagement with a meshing drive gear on the shear, the other of the two rails on the platform also having an interfitting connection with a second rail of the pan-line.

4,512,707

SYSTEM FOR LOADING AND DISPENSING ARTICLES FROM A MAGAZINE

David R. Dines, Oklahoma City, and Vertis C. Webb, Shawnee, both of Okla., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 18, 1983, Ser. No. 495,561
Int. Cl.³ B65G *1/18*
U.S. Cl. 414—404 **8 Claims**



1. A system for dispensing bar-like articles, which comprises:

a parallelogram arrangement of pivotally connected frame members for initially supporting a supply of bar-like articles orthogonally with respect to a pair of opposed frame members when said frame members are in first positions, and for supporting the supply of bar-like articles at inclines to said opposed frame members when said frame members are pivoted to second positions;

a magazine having a pair of opposed rails spaced apart a distance equal to the spacing of said opposed frame members when said opposed frame members are in said second positions;

means for coupling the frame member arrangement in said second position to said opposed rails to enable the transfer of the bar-like articles from said frame member arrangement to said magazine; and

means secured to saidd magazine for supporting the bar-like articles between said rails in the inclined positions.

4,512,708

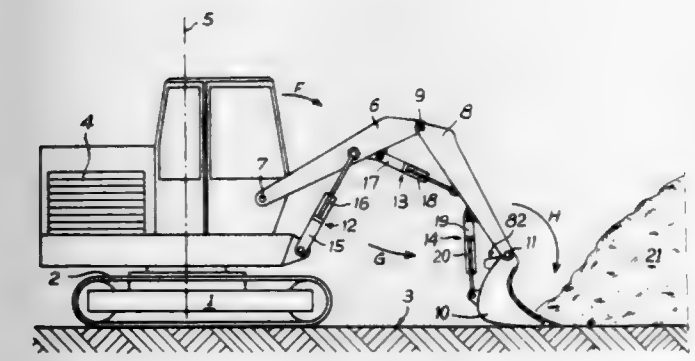
EARTH-MOVING MACHINE WITH BOOM, DIPPERSTICK AND BUCKET, EQUIPPED WITH MEANS FOR DIRECTIONALLY-ADJUSTING THE BUCKET

Claude P. Boichu, Nogent-sur-Oise, and Victor Yeou, Meaux, both of France, assignors to Poclain, Le Plesses-Belleville, France

Filed May 10, 1983, Ser. No. 494,433
Claims priority, application France, May 26, 1982, 82 09166
Int. Cl.³ E02F *3/42*
U.S. Cl. 414—694 **9 Claims**

1. An earth-moving machine of the loading type, having a frame, a boom mounted for pivoting with respect to said frame, a dipperstick mounted for pivoting with respect to said boom, a bucket for loading the material, mounted for pivoting with respect to the stick, a double-acting boom member controlling the relative pivoting movement of the boom with respect to the frame coupled between the boom and frame and compris-

ing two supply connections for respectively "raising" and "lowering" the boom, a double-acting stick member controlling the relative pivoting movement of the dipperstick with respect to the boom coupled between these two elements and comprising two supply connections for respectively "extending" and "retracting" the stick, a double-acting bucket member to adjust the relative pivoting movement of the bucket with respect to the dipperstick, coupled between these two elements and comprising two supply connections for respectively "filling" and "emptying" the bucket, at least one source of power, a three-position boom main control valve connected via three separate connections to a source of power and to the said boom "raising" and "lowering" connections, said boom main control valve connecting the said source of power, in its first position, with the boom raising connection, in its third position with the boom lowering connection, and in its second position, isolating said source of power from said connections, a three-position dipperstick main control valve connected by three separate connections with a source of power and with the stick- "extending" and "retracting" connections, said dipperstick main control valve connecting said source of power, in its first position, with the stick-extending connection, in its third position with the stick-retracting connection, and in its second position, isolating said two connections from said source of power, and a three-position bucket main control valve con-



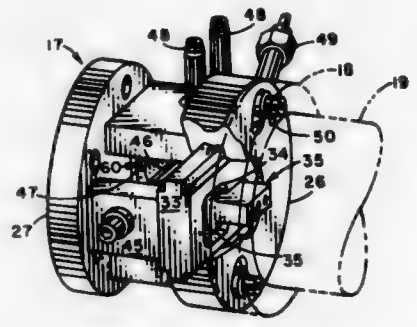
nected by three separate connections with a source of power and with the bucket "filling" and "emptying" connections, said bucket main control valve connecting said source of power, in its first position, with the bucket filling connection, in its third position, with the bucket emptying connection, and, in its second position, isolating said connections from said source of power, and said bucket main control valve being provided with a first means to adjust its position, said means being adapted to place said control valve in any one of its three positions be direct actuation by the machine operator, the bucket main control valve having second means to adjust its position adapted to place said bucket main control valve in its third position automatically from its second position, and being to this effect connected to a source of power by a control connection, an auxiliary control valve assembly with at least two positions being interposed on said control connection to ensure its continuity on either of its sides in its first position and break off said connection in its other positions, the auxiliary control valve assembly being placed in its first position solely when the boom and stick main control valves are in their third and first positions respectively and wherein in the first position of said auxiliary control valve assembly, the second means for adjusting the position of the bucket main control valve, effectively connected with the source of power, places said bucket main control valve in its third position.

4,512,709

ROBOT TOOLCHANGER SYSTEM

Daniel M. Hennekes, Morrow, Ohio; Richard A. Kolde, Ft. Thomas, Ky., and David E. Suica, Lebanon, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jul. 25, 1983, Ser. No. 516,972
Int. Cl.³ B66C *1/00*
U.S. Cl. 414—729 **4 Claims**



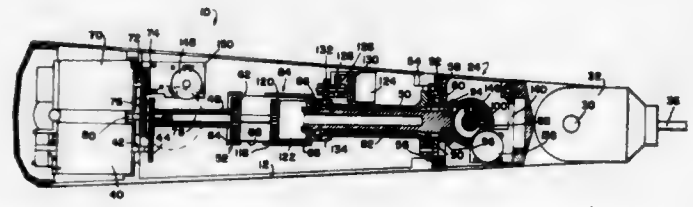
3. A robot toolchanger system, comprising in combination:
(a) a movable robot member having a movable end effector;
(b) a housing mounted to said end effector, said housing having spaced-apart front and rear plates rigidly connected to one another;
(c) a central opening through said front plate;
(d) a linear actuator mounted to said rear plate, between said plates, and having a rod movable transverse to said central opening between extended and retracted positions;
(e) a linear slideway extending through said front plate, transverse to said central opening;
(f) a linear slide carried in said slideway and affixed to said actuator rod and movable in accordance with said actuator movement between locking and unlocking positions, said slide further having an aperture alignable with said central opening and a ramp surface adjacent said aperture for engaging a tool retention member;
(g) a toolbase having a tool retention member affixed thereto said member insertable into said housing through said central opening and said slide aperture;
(h) means for positioning said toolbase on said housing; and
(i) means for positioning and securing said housing on said movable end effector.

4,512,710

ROBOT FOREARM

Carl R. Flatau, Middle Island, N.Y., assignor to Textron Inc., Providence, R.I.

Filed Sep. 3, 1982, Ser. No. 413,634
Int. Cl.³ B66C *23/00*
U.S. Cl. 414—735 **12 Claims**



1. Robot arm apparatus comprising a robot arm having a proximal end and a distal end, pivotal mounting means connected to the proximal end for pivoting the arm about the mounting means, axially rotatable means connected to a distal end of the forearm for axially turning with respect to a remainder of the forearm, angularly tiltable means connected to the axially rotatable means for tilting with respect to the axially rotatable means, first drive means connected to the forearm, a first drive shaft connected to the first drive means for turning by the first drive means, first drive gear means connected to the first drive shaft remote from the first drive means, first

driven gear means surrounding the first drive gear means and meshing therewith and having a greater number of teeth than the first drive gear means whereby the first driven gear means rotates at an angular rate less than the angular rate of rotation of the first drive gear means, and a first driven shaft connected to the first driven gear means for rotating therewith, the axially rotatable means being connected to the driven shaft for being rotated thereby, second drive means connected to the forearm, a second drive shaft connected to the second drive means for turning by the second drive means, second drive gear means connected to the second drive shaft remote from the second drive means, second driven gear means surrounding the second drive gear means and meshing therewith and having a greater number of teeth than the second drive gear means whereby the second driven gear means rotates at an angular rate less than the angular rate of rotation of the second drive gear means, and a second driven shaft connected to the second drive gear means for rotating therewith, the angular tiltable means being drivingly interconnected to the second shaft for being actuated thereby, the first and second drive shafts being concentric, the first drive shaft being a hollow drive shaft and the second drive shaft being concentrically mounted within the first drive shaft and extending outward therefrom at opposite ends thereof.

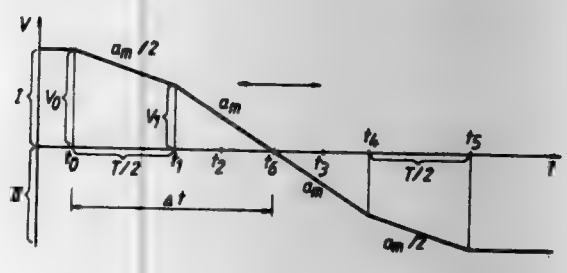
6. Robot forearm drive apparatus for rotation of a distal forearm portion and for angular tilting of a wrist connected to the distal forearm portion comprising first and second drive means, first and second input shafts connected respectively to the first and second drive means, the first input shaft comprising a hollow outer shaft and the second input shaft comprising an inner shaft concentrically positioned within the outer shaft, first and second speed reducing drive means having respective first and second input gear means respectively connected to the first and second input shafts and having first and second output gear means surrounding the first and second input gear means in substantial circumferential contact therewith, the first and second output gear means having greater numbers of teeth than the first and second input gear means, first and second output shafts respectively connected to the first and second output gear means of the speed reducing drives, the first output shaft comprising a hollow outer output shaft and the second output shaft comprising an inner output shaft concentrically positioned within the outer output shaft, the distal forearm portion being connected to a distal end of the first output shaft for turning with the first output shaft, the wrist being pivoted to the distal forearm portion, and wrist tilt means connected between the second output shaft and the wrist for angularly tilting the wrist.

4,512,711

UNLOADING OF GOODS, SUCH AS BULK GOODS FROM A DRIVEN, SUSPENDED LOAD-CARRIER

Bernt Ling, Västerås, and Mikael Sternad, Upsala, both of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 20, 1982, Ser. No. 420,379
Claims priority, application Sweden, Sep. 21, 1981, 8105570
Int. Cl.³ B66C *19/00*; B65G *65/00*
U.S. Cl. 414—786 **7 Claims**



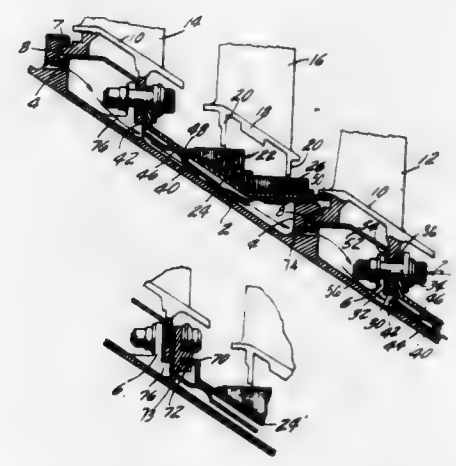
1. A method for controlling the lateral displacement of a trolley supporting goods to be unloaded, the goods being releasably attached to the trolley via an elongated flexible member and released from said flexible member at an unloading location during deceleration of the trolley, comprising moving the trolley laterally in one direction towards the unloading location with the flexible member extending vertically, decelerating the trolley to rest in a first and second deceleration steps, the first deceleration step having approximately half the deceleration of the second step, the flexible member having an angular velocity of about zero and a certain angle of deflection from vertical after said second deceleration step, releasing said goods from said flexible member during said second deceleration step, immediately accelerating the trolley in the opposite direction in first and second acceleration steps, the first acceleration step having approximately twice the acceleration of the second acceleration step, the flexible member being approximately vertical with approximately zero angular velocity after said second acceleration step.

4,512,712

TURBINE STATOR ASSEMBLY

Walter J. Baran, Jr., South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 1, 1983, Ser. No. 518,907
Int. Cl.³ F01D *25/08*
U.S. Cl. 415—116 **12 Claims**



1. A turbine stator construction including:

an annular turbine case having axially spaced pairs of inwardly extending circumferential flanges on its inner surfaces, each pair consisting of an upstream flange and a downstream flange spaced therefrom;

spaced rows of turbine vanes positioned within the case, each vane having an outer shroud and each shroud having a forwardly extending rib, a forwardly projecting lug spaced outwardly from the rib and an outwardly projecting flange;

the upstream flange having a groove in its downstream surface to receive the forwardly projecting lugs on the shrouds to hold them in radial position and the downstream flange having a notch engaging the outwardly projecting flanges on the shrouds;

a row of bolts extending through the dowstream flange and the outwardly projecting flanges to hold the shrouds and vanes in position;

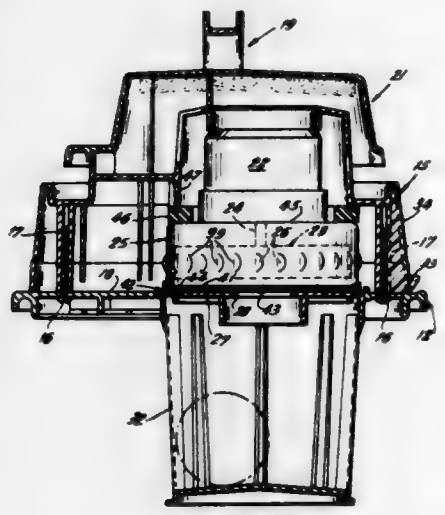
a ring of air seal segments extending between the rows of vanes at their outer shrouds, and

a row of clips held in position on the downstream side of the downstream flange by said bolts, said clips engaging the upstream edges of the segments and positioning the segments, the lower edges of the segments being engaged by the forwardly extending ribs on the shrouds, said ribs urging the segments outwardly to clamp the segments between the upstream flange surrounding the segments and said ribs.

4,512,713
VIBRATION ISOLATING MEANS

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Sep. 17, 1982, Ser. No. 419,213
Int. Cl.[3] A47L 9/22
U.S. Cl. 415—119 1 Claim

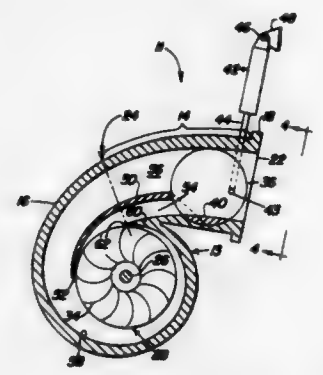


1. In a tank type vacuum cleaner having a motor and impeller housing connectable to the tank of said vacuum cleaner, said housing having a torque-resistant and vibration-reduced mounting for the motor; said housing including an electric motor structure, a device rotated by said motor and a support to which said motor and said device are mounted, said housing including a mounting surface, a clamping structure in said housing and means for moving said clamping structure of said housing toward said surface, said support of said motor and device having a section clamped between said mounting surface and said clamping portion, said section having oppositely facing first and second surfaces, a partially compressed vibration absorbing means interposed between said first surface and said mounting surface, another partially compressed vibration absorbing means interposed between said second surface and said clamping portion, a first of said vibration absorbing means including first and second rubber-like elements in frictional face-to-face engagement; each of the first and second rubber-like elements constituting a relatively thin flat ring-like member; and a second of said vibration-absorbing means including a third rubber-like element of a thickness at least as great as the combined thicknesses of said first and second rubber-like elements, with said thicknesses being measured in a direction perpendicular to the faces of said rubber-like elements; the mounting surface and the clamping portion constituting respective first and second clamp sections, said first rubber-like element being cemented to one of the surfaces of said support and said second rubber-like element being cemented to one of said clamp sections; the other of said vibration-absorbing means includes a third rubber-like element cemented to the other surface of said support; the motor, the device and the support are portions of a sub-assembly and frictional forces at the interface between said first and second rubber-like elements are sufficient to resist starting torque generated by said motor; the said housing including an annular partition surrounding said motor, said partition having a free edge constituting said clamping portion in compressing engagement with said third rubber-like element, a second of said vibration-absorbing means including a third rubber-like element, said housing including an annular partition surrounding said motor, said partition having a free edge constituting said clamping portion in compressing engagement with said third rubber-like element; the device comprises a fan impeller and the support comprises a casing for said impeller, said first and second surfaces partially defining said casing and being on the outside thereof, said second surface being above said first surface, said first and third rubber-like elements being cemented to the respective first and second surfaces, said second rubber-like element being cemented to said mounting surface and being positioned below said first rubber-like cement.

4,512,714
VARIABLE FLOW TURBINE

Merle L. Kaesser, Waverly, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 349,283, Feb. 16, 1982, abandoned. This application Sep. 6, 1983, Ser. No. 529,004
Int. Cl.[3] F01D 17/14, 17/18
U.S. Cl. 415—151 19 Claims

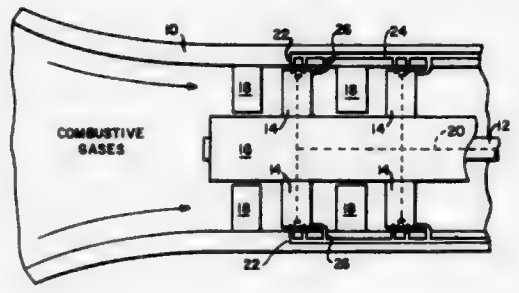


15. An improved variable flow turbine comprising:
(a) a housing including a curved section with an inlet at one end and joined at a second end to a volute section which is formed about an axis, said volute section having an outlet coaxially aligned with the axis, and said curved section being curved in the direction of said volute;
(b) a rotor positioned within said housing for rotation about the axis of said volute section, said rotor having a plurality of circumferentially spaced blades;
(c) a valve positioned at said inlet and within said curved section for controlling flow therethrough such that as said valve is moved towards a closed position, both the mass average radius of curvature and the velocity of the incoming exhaust gas are increased; and
(d) a divider wall formed in said housing and extending from said valve inwardly through said curved section and into said volute section for dividing said housing into inner and outer radial passages, each passage having a cross-sectional area within said volute section which is constantly decreasing as said passage approaches said rotor.

4,512,715
METHOD AND MEANS FOR RECAPTURING COOLANT IN A GAS TURBINE

Arthur Cohn, Palo Alto, and Robert B. Schainker, Woodside, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 171,131, Jul. 22, 1980, abandoned. This application Jul. 29, 1982, Ser. No. 403,162
Int. Cl.[3] F02C 7/12
U.S. Cl. 415—168 5 Claims



1. A gas turbine comprising a rotary shaft, a plurality of blades mounted on said shaft, a casing surrounding said blades and shaft for confining and directing the flow of a motive fluid past said blades, means for transmitting a liquid coolant

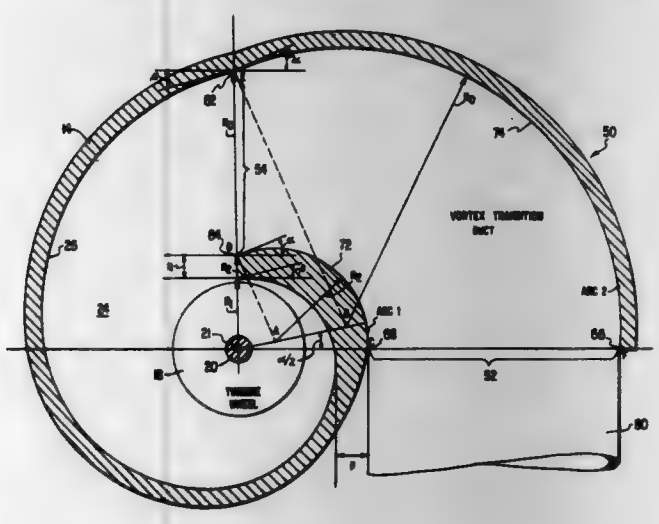
through said blades and ejecting said liquid from the ends of said blades, liquid receptive ports in said casing in radial alignment with said blades whereby liquid ejected radially from said blades is captured by said ports, and trough-means in said casing axially displaced from said blades and protruding from said casing so to be positioned to capture liquid coolant entrained in the blow-by gases that flow between the blade tips and the casing wall, said trough means including an annular wall extending inwardly from said casing in general radial alignment with the tips of said blades whereby capture of ejected liquid is facilitated.

4,512,716

VORTEX TRANSITION DUCT

M. Louise McHenry, Indianapolis, and Robert C. Bremer, Jr., Brownsburg, both of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,245
Int. Cl.[3] F01D *1/08, 25/24*
U.S. Cl. 415—205 18 Claims



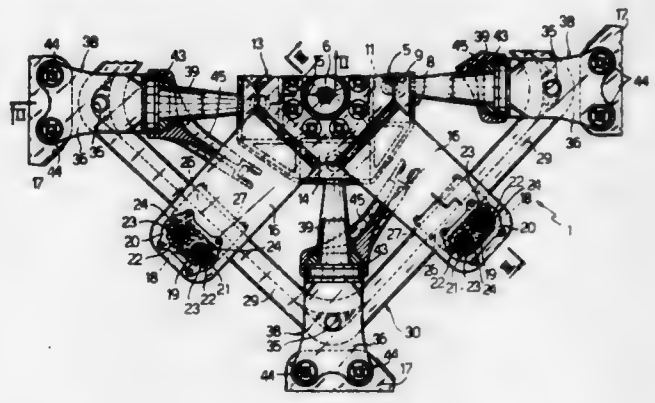
1. A radial inflow turbine construction, the turbine adapted to be employed with a compressor in a turbocharger for supercharging an internal combustion, reciprocating piston engine, the turbine including a radial inflow turbine wheel, a generally annular turbine volute housing having an inlet entrance opening for receiving exhaust gases from an internal combustion engine, the turbine wheel mounted for rotation within the housing, the volute housing interior defining an arcuate nozzle for discharging exhaust gas fed from an internal combustion engine into the housing inlet to the turbine wheel, the radially outermost surface of the arcuate nozzle being in the form of a spiral, so that the radially outermost surface of the nozzle becomes progressively nearer in passing into the turbine volute using, to the periphery of the turbine wheel, engine exhaust gases adapted to pass from the turbine housing inlet through the arcuate nozzle and radially inwardly of the turbine wheel to cause the turbine wheel to rotate, means coupled between the exhaust gas supply of an internal combustion engine and the exhaust gas inlet of the turbine volute housing for imparting a free vortex distribution of velocities to the exhaust gas as it enters the turbine volute housing, said means for imparting a free vortex velocity distribution being a vortex transition duct mounted with its exit end feeding engine exhaust gas into the inlet of the turbine housing, the transition duct having a radially innermost and a radially outermost wall, at least one of said walls varying in width along the length of the duct, whereby lower gas losses and improved gas turbine efficiency are both realized as compared to a distribution of velocities at the turbine housing inlet which is other than a free vortex distribution.

4,512,717

HELICOPTER ROTOR

Santino Pancotti, Gallarate, and Renato Mariani, Samarate, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed Mar. 12, 1984, Ser. No. 588,453
Claims priority, application Ituly, Mar. 15, 1983, 67285 A/83
Int. Cl.[3] B64C *11/06, 27/38*
U.S. Cl. 416—134 A 5 Claims



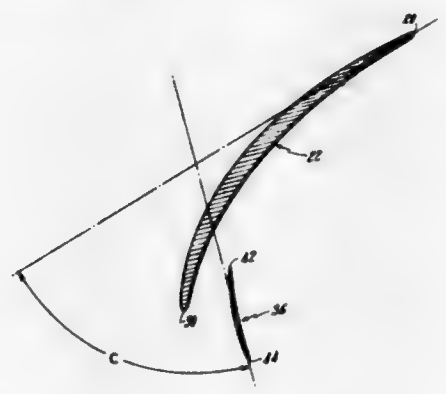
1. Helicopter rotor comprising a center hub (5), designed to fit on to a center drive shaft (2), a number of blades (17) extending outwards from the said hub (5), each said blade (17) being connected to the said hub (5) by connecting means designed to enable the blade (17) to oscillate in the plane parallel to the said drive shaft (2), in the plane perpendicular to the said drive shaft (2), as well as around its own axis; the said connecting means comprising, for each blade (17), a fork (38) extending outwards essentially radially from the said hub (5) and connected to it by first elastomer supporting means (46); the said fork (38) having two arms (36, 37) facing outwards and connected to the connecting end of the relative blade (17); characterised by the fact that the said connecting means also comprise an annular component (30) extending round the said hub (5) and through the said forks (38) and connected to each of the latter by second elastomer supporting means (57); the said hub (5) comprising an essentially star-shaped plate (13) with a number of radial arms (16) and connecting means (21) being mounted between each said arm (16) and a respective point on the said annular component (30) lying halfway between two adjacent said second elastomer supporting means (57).

4,512,718

TANDEM FAN STAGE FOR GAS TURBINE ENGINES

Hans Stargardter, Bloomfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 14, 1982, Ser. No. 434,215
Int. Cl.[3] F04D *29/38*
U.S. Cl. 416—231 B 5 Claims



1. A fan assembly for a turbofan gas turbine engine, wherein the fan assembly includes:
a fan disk;
a case circumscribing the fan disk and spaced apart there-

from to form a flowpath for working medium gases between the disk and the case;

a plurality of principal fan blades extending outwardly from the fan disk and across the flowpath for working medium gases into proximity with the circumscribing case, each blade having a camber angle which is sufficiently low such that the fundamental natural frequency of the blade in bending is less than the 2E multiple of engine rotor speed between flight idle and maximum power conditions for the turbofan engine in which the blade is installed;

a plurality of secondary fan blades at least one each corresponding to each principal blade and extending outwardly from the rotor disk near the trailing edge of the corresponding fan blade only partially across the flowpath for working medium gases wherein each principal fan blade and corresponding secondary fan blades form in composite the aerodynamic equivalent of a single blade having a camber greater than that of the principal fan blade.

4,512,719

HOT GAS WETTED TURBINE BLADE

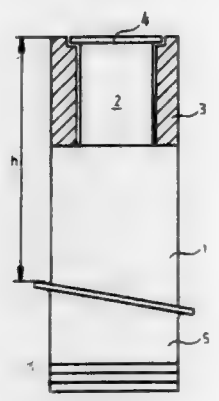
Axel Rossmann, Karlsfeld, Fed. Rep. of Germany, assignor to Motoren-un Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,344

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129304

Int. Cl.³ F01D *5/18*

U.S. Cl. 416—241 B **5 Claims**



1. A turbine blade adapted for use with hot gases comprising a radially inward portion constituted of metal, a metal core projecting radially from said inward portion, and a ceramic portion of airfoil section supported on said core and totally enclosing the same to form the entire airfoil section of the blade radially outwards of said metal inward portion, said ceramic portion extending radially less than one-half of the total span of the blade, said ceramic portion having a radially inward end of airfoil section adjacent said metal inward portion, said metal inward portion having an airfoil section which is continuous with that of said ceramic portion whereby the airfoil section of said blade is collectively composed by the metal inward portion and the outer ceramic portion.

4,512,720

PUMP IMPELLERS AND MANUFACTURE THEREOF BY CO-INJECTION MOLDING

Peter N. Cholakis, Hopkinton, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Apr. 12, 1983, Ser. No. 484,202

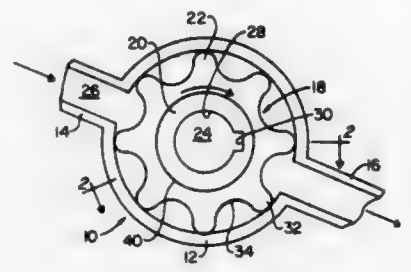
Int. Cl.³ F01D *5/14*

U.S. Cl. 416—241 A **7 Claims**

1. A pump impeller comprising:

a core section of a rigid thermoplastic polymeric material and

a vane section surrounding and secured to said core section, said vane section comprising a plurality of vanes and being made of a thermoplastic elastomeric material characterized in that said vane section is secured to said core section by direct bonding said rigid thermoplastic polymeric material to said thermoplastic elastomeric material through the fusion of a thin interfacial zone of said elastomeric and polymeric materials formed as a result of coinjection molding and wherein said thin interfacial zone has



a thickness on the order of 1×10^{-6} inch (2.5×10^{-6} cm), said core section being made of material having a flexural modulus in excess of 400,000 psi (28,000 kg cm^{-2}), and said vane section being made of a soft low modulus material having a Shore A scale durometer value between about 35 and about 85.

4,512,721

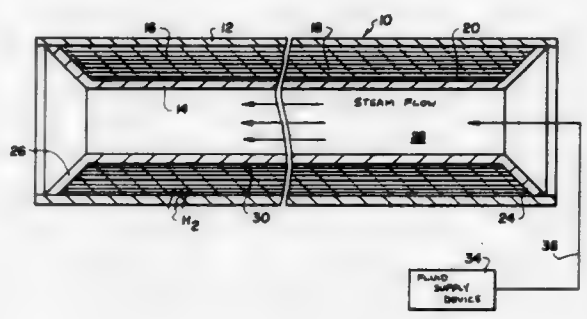
VACUUM INSULATED STEM INJECTION TUBING

Paul S. Ayres, Alliance; Burton D. Ziels, Lancaster, and Chou-Ming Chen, Louisville, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 31, 1982, Ser. No. 413,285

Int. Cl.³ F04B *37/02*

U.S. Cl. 417—51 **6 Claims**



1. Apparatus for the delivery of hot fluids to a well comprising:

an inner tubular having an outer surface and defining an inner space adapted for conveying fluids at a temperature within the range of about 400 to 700 degrees F.;

means for supplying fluid to said inner tubular within said temperature range which fluid supply means is connected to said inner tubular;

an outer tubular disposed around said inner tubular and defining an annular space therewith;

said inner and outer tubulars are composed of steel, exclusive of corrosion resistant coatings;

insulation disposed in said annular space;

means for connecting said inner and outer tubulars so that said annular space is closed to atmospheric pressure and a vacuum may be established in said closed annular space; and

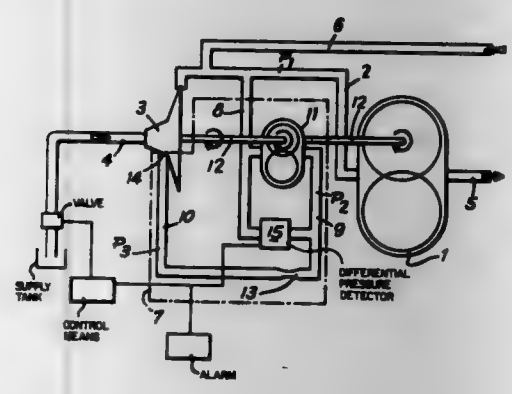
a getter material for absorbing at least one active gas in said closed annular space, said getter material is activatable at a temperature within said temperature range, said getter material is disposed in said closed annular space between said insulation and said outer surface of said inner tubular and adjacent said outer surface of said inner tubular, and said getter material includes at least one of the group consisting of titanium, an alloy of titanium, zirconium, and an alloy of zirconium.

4,512,722

DEVICE AND PROCESS FOR MONITORING CAVITATION IN A POSITIVE DISPLACEMENT PUMP

Pierre C. Mouton, Grigny, France, assignor to Societe Nationale d'Etude de Constudies de Mateurs d'Aviation, France

Filed Oct. 18, 1983, Ser. No. 543,067
Claims priority, application France, Oct. 28, 1982, 82 18053
Int. Cl.[3] F04B *21/00*
U.S. Cl. 417—63 14 Claims



1. A device for monitoring cavitation parameters of a positive displacement pump in a fluid system comprising:

(a) supply means to apply fluid to the positive displacement pump via a feeder line at a first pressure (P_1);

(b) a venturi;

(c) flow generating means for generating a flow of fluid proportional to the flow of the positive displacement pump, the flow generating means having an inlet connected to the feeder line and an outlet connected to the venturi inlet to supply fluid thereto at a second pressure (P_2), the capacity of the flow generating means the throat cross-section of the venturi being such that cavitation occurs in the venturi throat prior to cavitation occurring in the positive displacement pump; and,

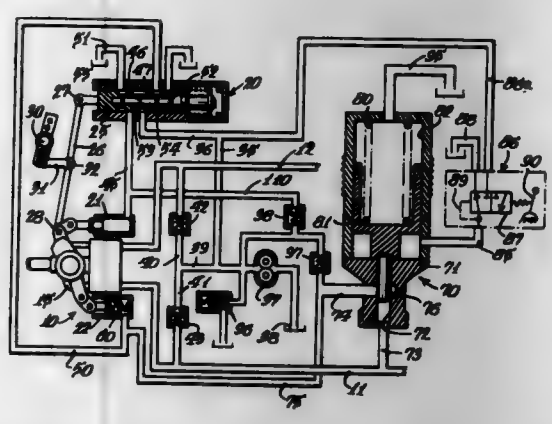
(d) detecting means to detect the difference between the first (P_1) and second (P_2) pressures and to generate a signal when the difference between P_1 and P_2 reaches or exceeds a predetermined limit.

4,512,723

PRESSURE LIMITER

Keith R. Williams, Nevada, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 17, 1983, Ser. No. 542,493
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—222 3 Claims



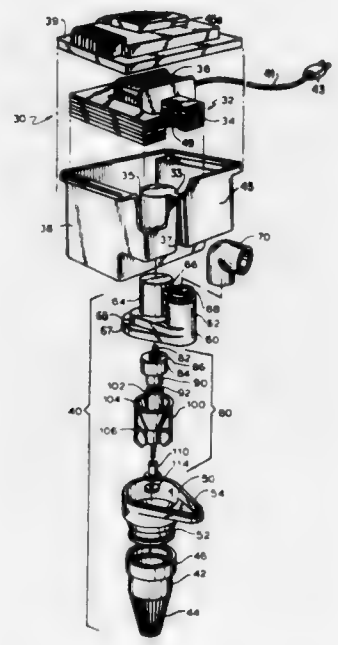
1. A remotely variable pressure limiter for a variable displacement pump having an adjustable swashplate and constructed to have pressure moments urging tha swashplate in a pump destroking direction, comprising, a pair of servo cylinders connected to said swashplate with one servo cylinder including a spring acting to urge the swashplate in the pump destroking direction, a displacement control valve having a pair of connections one to each of said servo cylinders, one of said connections providing connection of said one servo cylinder to a reduced case pressure through an orifice and the other connection providing for delivery of a displacement-setting pressure to the other of said servo cylinders, a pressure limiter valve for selectively connecting pump discharge pressure to said one servo cylinder to move the swashplate in a displacement reducing direction and having a movable valve member which moves from a first position to make said connection and which is urged away from said first position by pump discharge pressure, means for remotely setting the value of the discharge pressure which will move the valve member including a spring acting on the valve member, and a piston engaging said spring and acted upon by a remotely set control pressure to vary the force required to move the valve member, and a check valve communicating with said other servo cylinder to permit rapid discharge of fluid when pump discharge pressure is directed to said one servo cylinder.

4,512,724

ELECTRIC PUMP FOR USE IN FILTERING SYSTEM OF A TROPICAL FISH TANK OR THE LIKE

Tibor Horvath, Brooklyn, N.Y., assignor to Metaframe, Inc., Irvington, N.J.

Filed Mar. 17, 1983, Ser. No. 476,201
Int. Cl.[3] F04B *9/00, 39/06, 35/04*
U.S. Cl. 417—319 15 Claims



1. A pumping device comprising:

a stator unit including a first housing having a side wall and a socket defining open bottom cylindrical first shell and a rotor stator located in said first housing and extending about said first shell and a connecting portion extending between said socket and said side wall;

a rotor-impeller unit including a second housing having a plug defining bottom cylindrical second shell and a rotor-impeller assembly including an upper motor rotor registering with said second shell and exposed to the magnetic field of said stator and a pump impeller coaxial and rotatable with said rotor and disposed in said second housing below said rotor, said second housing having inlet and outlet ports in axial and peripheral communication respectively with said impeller, said first and second housing being separably coupled with said socket and plug in separable axial mutual engagement, said second housing including a chamber transversely offset from and extending to the level of said rotor and communicating with said impeller and said outlet port being formed in the upper part of said chamber and said housing including a channel extending radially from said plug shell to said chamber and being complimentary to and received by said connecting portion; and

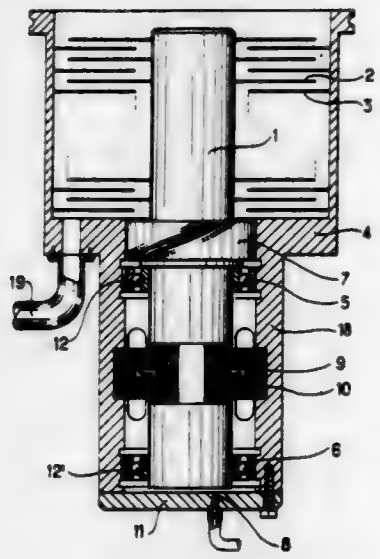
means releasably locking said first and second housings in said separably coupled condition.

4,512,725

ROTARY VACUUM PUMP

Claude Saulgeot, Veyrier-du-Lac, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Feb. 16, 1983, Ser. No. 467,045
Claims priority, application France, Feb. 16, 1982, 82 02496
Int. Cl.[3] F04B *17/00, 39/06;* H02K *9/00*
U.S. Cl. 417—366 6 Claims



1. A hard vacuum pump of the type having a pump body forming a pump chamber, a multi-stage stator and a multi-stage rotor mounted on a shaft carried by said body, a motor driving said shaft, at least two ball bearings disposed in a sleeve formed by an extension of said pump body, said bearings supporting said shaft, a dynamic molecular seal set on said shaft at the pump body end of the sleeve, the improvement wherein the dynamic molecular seal is disposed between the bearings and the pump chamber, the opposite end of the sleeve from said body end is closed, an inlet nozzle of small diameter communicating with an outside source of gas at atmospheric pressure being provided at said closed end, and means for connecting said pump body to an exterior primary vacuum pump; whereby said ball bearings and the rotor of said motor are permanently swept by gas at a pressure on the order of a few tens of Torrs entering via said nozzle and leaving via said dynamic seal, thereby reducing the axial load borne by the bearings.

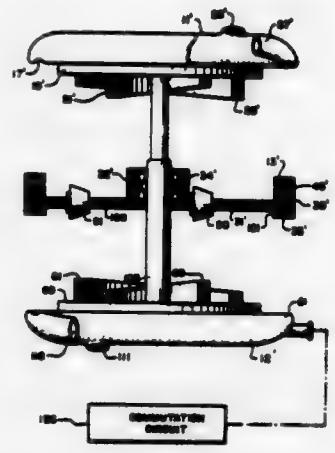
4,512,726

PUMP ADAPTABLE FOR USE AS AN ARTIFICIAL HEART

Walter E. Strimling, 63 Westcliff Rd., Weston, Mass. 02193

Filed Feb. 9, 1982, Ser. No. 347,184
Int. Cl.[3] F04B *43/04;* A61F *1/00;* A61M *1/03*
U.S. Cl. 417—412 9 Claims

1. A pump arrangement comprising first and second pump chambers each having entrance and exit conduits, first and second means for separating said chambers and for defining an intermediate chamber therebetween, means for moving said first and second means along an axis in a manner to change the volume of said first and second pump chambers alternately, wherein said means for moving includes drive means and means proximally contactable against the first and second means for pushing said first and second means housed in said intermediate chamber, wherein the contactable means includes a pair of opposing pusher plates, each plate associated with a respective one of the first and second means, the plates having cam surfaces thereon and connected by a variable length guide means and wherein the drive means includes a rotary electric motor mounted on the guide means and having a rotor carrying rollers for actuating the cams for effecting pumping by



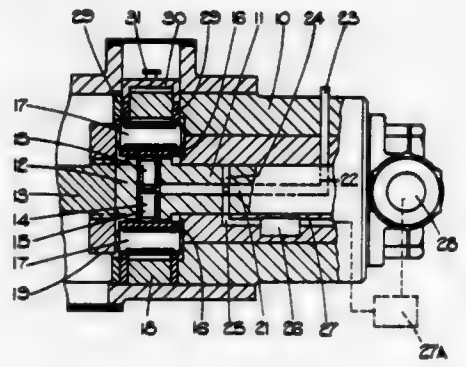
causing the pusher plates to alternately contact their respective first or second means.

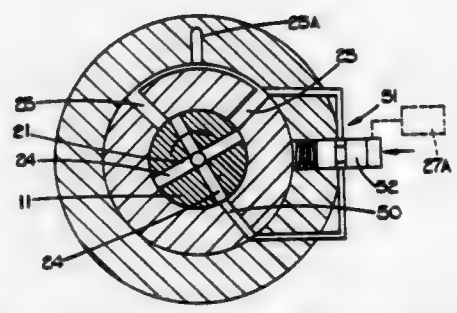
4,512,727

FUEL INJECTION PUMP OF THE ROTARY DISTRIBUTOR TYPE

William R. Burborough, Gillingham, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Nov. 18, 1983, Ser. No. 553,131
Claims priority, application United Kingdom, Dec. 21, 1982, 8236276
Int. Cl.[3] F04B *19/02;* F02M *39/00;* F02N *17/00*
U.S. Cl. 417—462 3 Claims





1. A fuel injection pump of the rotary distributor type comprising a body part, a rotary distributor member in the body part, the distributor member being arranged in use to be driven in timed relationship with an associated engine, a radial bore in the distributor member and a plunger slidable therein, a cam follower at the outer end of the plunger, an annular cam ring mounted in the body, said cam ring having a cam lobe on its internal peripheral surface whereby as the distributor member rotates inward movement will be imparted to the plunger, a delivery passage in the distributor member communicating with said bore and a plurality of outlet ports in the body, said delivery passage being positioned to register with said outlet ports to receive fuel displaced from the bore by the inward movement of the plunger, a plurality of inlet passages in the

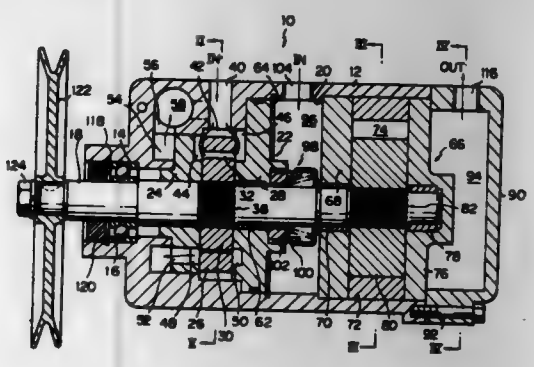
distributor member, said inlet passages communicating with said bore, an inlet port in the body, said inlet port communicating with an inlet passage to allow fuel flow to said bore during the time the plunger is permitted to move outwardly by the cam lobe, a low pressure pump for supplying fuel to said inlet port, throttle means for controlling the quantity of fuel supplied to said bore, a stop plate mounted in the body, said stop plate defining a stop surface engageable by the cam follower to control the maximum allowed outward movement of the plunger, said stop surface having a radial dimension which varies throughout the length of the surface, the pump further comprising an additional inlet port formed in the body, said additional inlet port being positioned to register with an inlet passage at least after the communication of the first mentioned inlet port with an inlet passage has been broken and valve means for controlling fuel flow through said additional inlet port.

4,512,728

COMBINED ROTARY PUMP AND COMPRESSOR UNIT

Hiromichi Nakano; Hideaki Sasaya; Mitsuo Inagaki, all of Okazaki; Kazuma Matsui, Toyohashi, and Kunimasa Yoshimura, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio; Nippondenso Co., Inc., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, all of, Japan

Filed Feb. 1, 1984, Ser. No. 575,999
Claims priority, application Japan, Feb. 8, 1983, 58-19944
Int. Cl.³ F01C *11/00, 19/00*
U.S. Cl. 418—3
10 Claims



1. A combined integrated rotary pump and compressor unit comprising:

an outer shell having a stepped bore therethrough extending from a front end to a rear end thereof, said stepped bore including a front eccentric small bore portion having a center line offset from the center line of said outer shell, the remaining portion of said stepped bore being substantially concentric to the center line of the shell;

a vane-type rotary pump assembly housed within said outer shell in the front part of said remaining concentric bore portion, said pump assembly including a pump front plate, a pump rear plate, a pump cylinder sandwiched between said pump front and rear plates to define a pumping chamber therebetween, and vaned pump rotor rotatably received in said pumping chamber and having a rotational axis aligned with the center line of said front eccentric bore portion;

a vane-type rotary compressor assembly received within said outer shell in the rear part of said concentric bore portion, said compressor assembly including a compressor front plate, a compressor rear plate, a compressor cylinder sandwiched between said compressor front and rear plates to define a compression chamber therebetween, and a vaned compressor rotor rotatably received in said compression chamber and having a rotational axis aligned with the center line of said front eccentric bore portion;

said compressor front plate being spaced from said pump rear plate to define therebetween within said outer shell a low pressure intake chamber for said compressor assembly, said intake chamber also serving as a seal chamber;

each of said pump front plate, pump rotor, pump rear plate, compressor front plate, and compressor rotor having a through bore longitudinally aligned with each other and centered on the center line of said front eccentric bore portion of the outer shell, said compressor rear plate having a forwardly open blind bore centered on the center line of said front eccentric bore portion;

a shaft journaled in said front eccentric bore portion in said outer shell and in said blind bore in said compressor rear plate and extending through said through bores to be drivingly coupled with said pump rotor and compressor rotor, said shaft having a forward end projecting forward through said front bore portion;

a drive pulley fastened to said forward end of the shaft;

a mechanical shaft seal assembly mounted in said seal chamber around said shaft to prevent leakage along the shaft;

an end cover secured spaced from said compressor rear plate to the rear end of said outer shell to define a high pressure delivery chamber also serving as an oil sump;

inlet means for introducing a working fluid into the suction zone of said pumping chamber;

outlet means for conducting the pump output from the high pressure zone of said pumping chamber;

inlet means for introducing a gaseous fluid into said low pressure intake chamber;

a passageway in said compressor assembly for communicating said low pressure intake chamber with the suction zone of the compression chamber;

a passageway in said compressor assembly for communicating the high pressure zone of the compression chamber with said high pressure delivery chamber; and

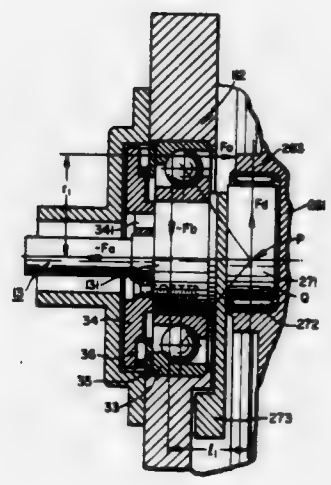
outlet means for transmitting the compressor output from the high pressure delivery chamber.

4,512,729

DRIVE BEARING DEVICE FOR A FLUID DISPLACEMENT APPARATUS

Seiichi Sakamoto, Gunma, and Kiyoshi Teranchi, Isesaki, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Oct. 12, 1982, Ser. No. 433,796
Claims priority, application Japan, Oct. 12, 1981, 56-162214
Int. Cl.³ F01C *1/02, 21/02;* F16C *19/16, 19/49*
U.S. Cl. 418—55
6 Claims



1. In a fluid displacement apparatus including a housing having a front end plate, a fixed fluid displacement member fixedly disposed relative to said housing, an orbiting fluid displacement member disposed within said housing and interfitting with said fixed fluid displacement member to make a plurality of line contacts to define sealed off fluid pockets, and a driving shaft which protrudes through said front end plate and is rotatably supported by said front end plate through a bearing, said drive shaft being connected to said orbiting fluid displacement member to effect orbital motion of said orbiting fluid displacement member, the improvement comprising:

an angular bearing which rotatably supports said drive shaft,

the pressure cone apex of said angular bearing coinciding in the axial direction with the driving point of said orbiting fluid displacement member;

a thrust race disposed on one axial end surface of said angular bearing;

a ring plate disposed within said front end plate, said ring plate facing said thrust race at a predetermined axial distance; and

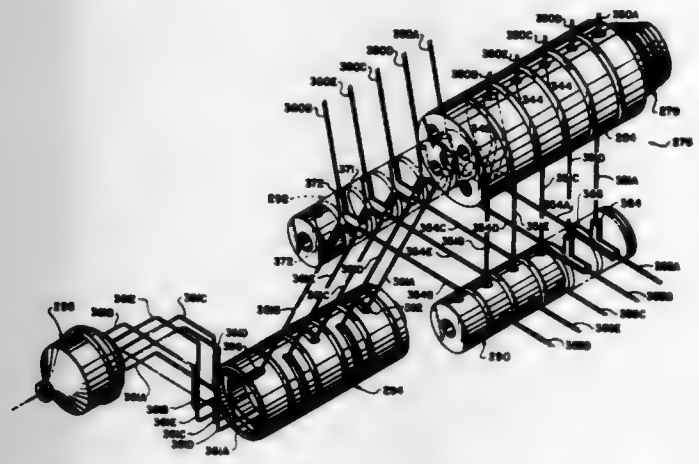
a thrust bearing placed between said thrust race and said ring plate to carry the thrust force from said angular bearing.

4,512,730

POLYMER FLOW STREAM REDIRECTING AND FEEDING DEVICE

Frederick G. Kudert, Niles; William A. Tennant, Schaumburg, and Thomas T. Tung, Hoffman Estates all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 13, 1983, Ser. No. 484,501
Int. Cl.³ B29F *1/00*
U.S. Cl. 425—130 **23 Claims**



1. An elongated polymer flow stream redirecting and feeding device for use with a runner block and with a multi-polymer co-injection nozzle having separate entrance ports in the rear of the nozzle for the polymer streams, in a multi-coinjection nozzle, multi-polymer injection molding machine, for receiving a plurality of separate polymer flow streams directed from the runner block at the device and, while maintaining the flow streams separate, redirecting them to flow axially out of the forward end of the device into the multi-polymer co-injection nozzle, which comprises:

a plurality of inlets cut radially into the periphery of the device, each for receiving one of the plurality of separate polymer flow streams directed at the device from the runner block,

a plurality of feed channels, each in communication with an inlet and having an inward portion cut toward the central axis of the device and an axial portion in communication with the inwardly cut portion and running axially forward through the device,

a forward end portion having a forward end, and

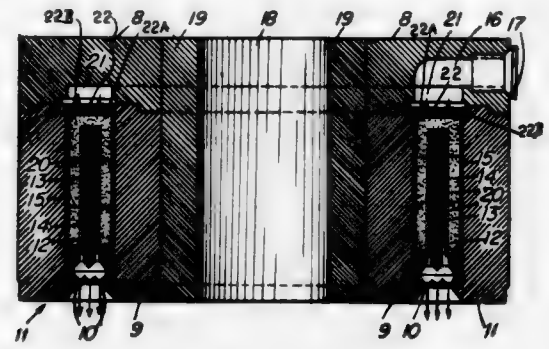
a plurality of exit holes in the forward end portion, each in communication with the axial portion of a feed channel, the plurality of exit holes being arranged in a spaced pattern for feeding the separate polymer flow streams therethrough in spaced relation into the separate rear entrance ports of the multi-polymer co-injection nozzle of the multi-polymer injection molding machine.

4,512,731

APPARATUS AND PROCESS FOR FILTERING MOLTEN POLYMER

Arnold J. Cobb, Florence, S.C., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 281,739, Jul. 9, 1981, Pat. No. 4,405,548.
This application Sep. 12, 1983, Ser. No. 531,371
Int. Cl.³ D01D *1/10*
U.S. Cl. 425—198 **4 Claims**



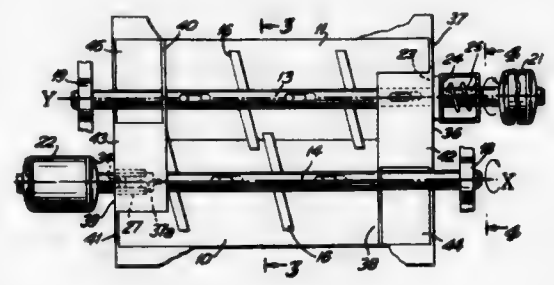
1. An improved filter for polymer fed from a pressurized source, including a filter body and a bed of permeable ceramic material therein, said bed comprising sintered bauxite particles containing a minimum of 5.6% by weight of Fe_2O_3, said bauxite particles having a roundness of at least 0.8, as determined by the Krumbein and Sloss Chart of 1955, and an API standard mesh size of at least 12, said filter further comprising a spinneret for forming filaments, said spinneret being located downstream of said filter.

4,512,732

HEAT TREATING OF MATERIAL IN FINELY DIVIDED FORM

Friedhelm R. Feder, Collierville, Tenn., assignor to Wedco Incorporated, Bloomsbury, N.J.

Division of Ser. No. 416,747, Sep. 10, 1982, Pat. No. 4,421,703, which is a continuation of Ser. No. 139,630, Apr. 14, 1980, abandoned. This application Jul. 20, 1983, Ser. No. 503,467
Int. Cl.³ B29B *1/03*
U.S. Cl. 425—222 **15 Claims**



1. An apparatus suitable for the heat treatment of material comprising

at least two intersecting, axially disposed, generally cylindrical drums,

a rotatably mounted rotor disposed in each drum, said rotor having radially projecting, axially spaced blades disposed over a length of each drum, at least some of the blades of the rotors axially overlapping,

an inlet opening in at least one of the drums for introduction of the material into one end portion of the apparatus,

a first outlet opening in at least one of the drums for withdrawal of the material from the other end portion of the apparatus, the first outlet opening being disposed at the circumferential periphery of the drum,

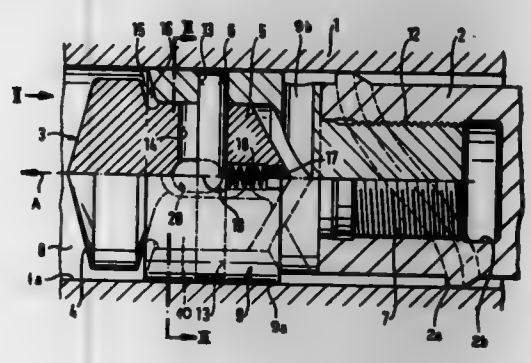
an end wall disposed at the end from which the material is withdrawn, and

a second outlet opening disposed in said end wall radially inwardly of the circumferential periphery of the drum.

4,512,733
ADJUSTABLE INJECTION MOLDING BACKFLOW PREVENTER

Martin Eichlseder, Tettenweis, and Erwin Bürkle, Benediktbeuern, both of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 19, 1983, Ser. No. 459,249
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203724
Int. Cl.[3] B29F *3/02*
U.S. Cl. 425—207
10 Claims



1. In an injection molding plastifying assembly in combination:

means defining a plastifying cylinder;

a plastifying worm received in a bore of said cylinder and having an end past which molten synthetic resin is displaced; and

a backflow preventer mounted on said end of said worm, said backflow preventer comprising:

a housing member affixed to said worm, said housing member being formed with at least one passage adapted to be traversed by the molten synthetic resin,

a valve member having a generally conical forward face received with direct all around clearance in said bore forwardly of said housing member and having a shank of a smaller diameter than said face slidably inserted into said housing member such that said valve member is axially shiftable slidably relative to said housing member between an open position permitting said molten synthetic resin to flow past said valve member and a closed position blocking the flow of molten synthetic resin past said valve member, axial displacement between said positions defining a stroke of said valve member, one of said members being provided with two circular cross section radial bores and the other of said members being provided with an opening elongated in the direction of said stroke, and

a pin accessible from the periphery of said housing member and selectively passing through one of said bores and said opening for limiting said stroke at least in one direction, said one of said members being provided with said radial bores in angularly offset relation to one another and such that one of said radial bores is offset from the other of said radial bores in said direction, said pin being selectively insertable into said radial bores for setting the stroke of said backflow preventer.

4,512,734
ARRANGEMENT FOR EXTERNALLY AFFIXING OR PLACING BANDEROLES OR STRIPS ON RECEPTACLES

Jean-Marc Dronet, and Jacques Resseguier, both of Falaise, France, assignors to Ste d'Application Platique Mecanique et Electronicque Plastimechanique S.A., Falaise, France

Filed May 19, 1981, Ser. No. 265,080
Claims priority, application France, May 19, 1980, 80 11089
Int. Cl.[3] B29C *17/00*
U.S. Cl. 425—305.1
7 Claims

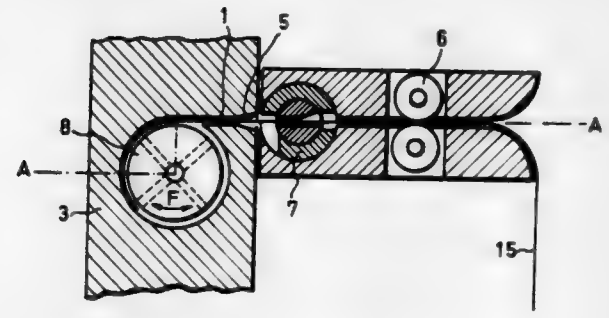
1. In a heat-forming machine for making receptacles from thermoplastic material, an improved arrangement for introducing cut banderoles or strips 1 into molds 2, via a member 3 having at least one guide passage, the improvement comprising:

band feeding means for feeding a band 15 through a lateral slit 5 in said member 3, said band feeding means include a pair of rollers 6,

transverse cutting means 7 operatively connected to said pair of rollers 6 for cutting said band 15 into banderoles 1 of predetermined length;

longitudinal cutting means 18, 19 operatively connected to said transverse cutting means 7, said operative connection between the transverse and longitudinal cutting means being rigorously precisely maintained by means of a pair of gear wheels 17 which synchronously engage each other and by selecting the diameter of the wheels 6 to be such that their circumference is exactly equal to the length of the banderole 1;

said pair of feed rollers 6 being coaxially mounted on a pair of parallel feed shafts 20, 21, at least one of said feed shafts



coaxially supports thereon the cutting wheel 18 of the cutting means 18, 19 for longitudinally cutting said band 15 and at least one of said feed shafts is operatively connected to the device of said transverse cutting means 7; the cutting edge of the cutting wheel 18 being disposed on a cylindrical surface of said cutting wheel 18 which is of the same diameter as the diameter of the wheels 6; said cutting edge coacts with a cylindrical surface 19 of an other wheel which is coaxially mounted on the other feed shaft, which cylindrical surface is of the same diameter as said cutting wheel 18;

the shafts 20, 21 supporting the wheels 6, the cutting wheel 18 and the cylinder 19, on the one hand, and on the other hand, the drive 21 for the transverse cutting means 7 being selectively fixed at a predetermined angular relationship so that the transverse cutting means 7 are cutting only when the feed shaft 20 is in a predetermined angular position.

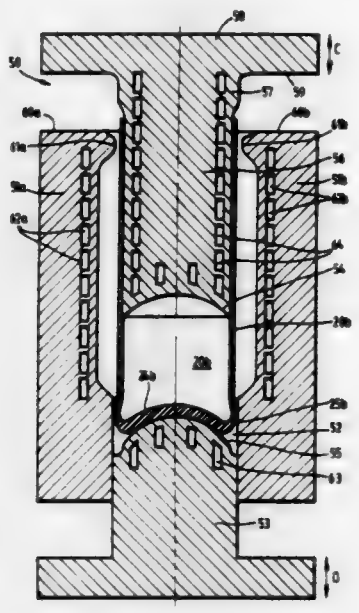
4,512,735
APPARATUS FOR BLOW MOLDING A CONTAINER HAVING AN UPWARD BULGED BOTTOM

Torsten Nilsson, Löddeköpinge, and Kjell M. Jakobsen, Skanör, both of Sweden, assignors to PLM AB, Malmo, Sweden

Filed Nov. 23, 1982, Ser. No. 443,938
Claims priority, application Sweden, Nov. 26, 1981, 8107044
Int. Cl.[3] B29C *1/00;* B29D *23/03*
U.S. Cl. 425—526
12 Claims

1. Apparatus for forming a container from a cylindrical preform having a side wall and a bottom closure, said apparatus comprising an internal mandrel on which the preform is fitted, a mold including two mold halves, and a bottom part in said mold in axial opposition to said mandrel, said mandrel and bottom part being movable axially of the mold relative to each other and relative to the mold halves for shaping the preform into a container, said mandrel having a concave end surface, said bottom part having a convex end surface facing said concave surface for enclosing and reshaping the bottom closure of the preform, said mold halves together defining a mold inner surface for engaging the wall of the preform at the outer surface thereof proximate said end closure, said mandrel having an outer surface engaging the wall of the preform at the inner

surface thereof, the engagement of the inner and outer surfaces of the preform in region of said end closure being without clearance to maintain the wall thickness of the preform during reshaping of the bottom closure of the preform, said end surfaces of said mandrel and said bottom part including respective central regions which a opposite one another and define a substantially uniform gap for engaging the inner and outer surfaces of the bottom closure of the preform to turn the bottom closure inwardly, said end surfaces further including peripheral regions which are opposite one another and of differing curvature to form an annular ring-shaped region in which the material of the preform in a ring-shaped transition region between the inwardly bulged bottom closure and the side wall is stretched and becomes oriented so that the inward bulged shaped of the bottom closure is stabilized and prevented from turning inside-out said bottom part being positionable within said mold inner surface such that said mold inner surface and said convex end surface define an annular molding recess therebetween.

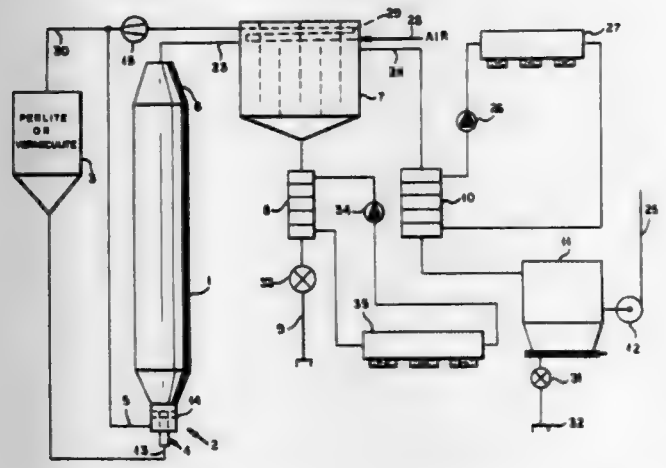


4,512,736

APPARATUS FOR THE EXPANSION OF MINERAL MATTER, ESPECIALLY PERLITE AND VERMICULITE

Heribert Wader, Herdecke, Fed. Rep. of Germany, assignor to Deutsche Perlite GmbH, Dortmund, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,758
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151164
Int. Cl.³ F27B *15/00, 14/00*
U.S. Cl. 432—58 3 Claims



1. An apparatus for the expansion of particles of a mineral such as perlite and vermiculite, comprising:

means forming an upwardly extending fluidized-bed furnace for expanding said particles;

a burner opening into a lower end of said furnace for generating a flame therein, said furnace being closed at said lower end except for said burner; and

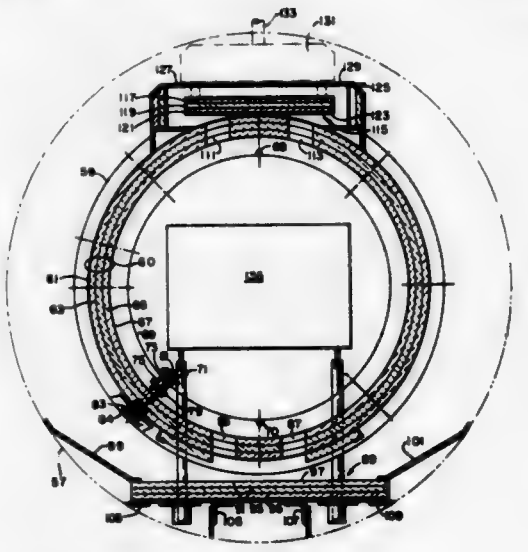
a pipe opening upwardly into said furnace at said lower end for feeding a mixture of said particles and a carrier gas into said flame whereby said particles pass generally in the direction of propagation of said flame through said flame into said furnace, said burner opening axially from below into said furnace and consisting of an annular fuel inlet duct coaxially surrounding said pipe and directed upwardly into said furnace, a combustion air duct opening axially upwardly into said furnace and at least one fuel inlet and coaxially surrounding said fuel inlet assembly, means for feeding fuel exclusively to said fuel inlet duct and means for feeding exclusively air to said combustion air duct, and said combustion air duct being formed with a ceramic ring around said fuel inlet duct and provided with a plurality of spaced apart axially extending bores opening into said furnace and parallel to said pipe and said fuel inlet duct, said ring having a planar horizontal upper surface, said pipe projecting upwardly beyond said surface.

4,512,737

HOT ZONE ARRANGEMENT FOR USE IN A VACUUM FURNACE

Clifford R. Pierce, Perkasie, Pa., assignor to Vacuum Furnace Systems Corporation, Souderton, Pa.

Filed May 23, 1983, Ser. No. 496,970
Int. Cl.³ F27B *5/04*
U.S. Cl. 432—205 3 Claims



1. A hot zone arrangement for use in a vacuum furnace, wherein said vacuum furnace has a housing and a means for selectively introducing cooling gas to effect cooling of a workpiece, comprising in combination: circular heating element means formed to have an external boundary and adapted to have electrical energy supplied thereto to generate heat; circular hot zone means having upper and lower sections and heat insulation means, said circular hot zone means disposed to substantially encircle said external boundary of said circular heating element means, thereby holding heat, generated by said heating element means, within said hot zone means; said hot zone means formed to have first and second aperture means in the periphery of said upper section and third and fourth aperture means in the periphery of said lower section; heat reflecting means disposed to lie outside said hot zone means and disposed to lie in close proximity to a tangent point of the circular hot zone, which tangent point is between said third and fourth aperture means such that heat passing from said hot zone means through said third and fourth aperture means is largely reflected back into said hot zone means

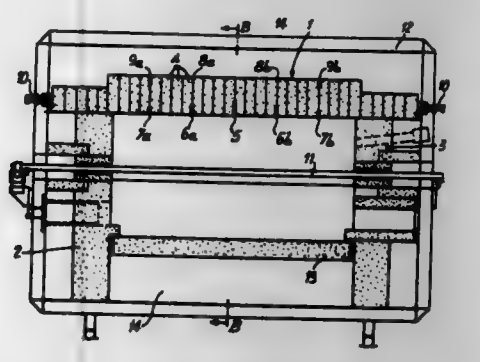
through said third and fourth aperture means; heat reflecting baffle means disposed to lie outside said hot zone means and in close proximity to a tangent point of the circular hot zone means, which tangent point is between said first and second aperture means such that heat passing from said hot zone means through said first and second aperture means is largely reflected back into said hot zone means through said first and second aperture means; channel forming means formed to have heat reflecting internal surfaces and formed to fit over said heat reflecting baffle means and over said first and second aperture means such that heat which is not reflected into said hot zone means by said heat reflecting baffle means will be reflected through said first and second aperture means by said heat reflecting internal surfaces, said channel forming means further formed to have an exit aperture therein disposed such that said heat reflecting baffle means is intermittent between said exit aperture and said first and second aperture means whereby cooling gas passing through said hot zone means and through said first and second aperture means will flow through said channel forming means, around said baffle means, out said exit aperture; gas drawing means formed and disposed to draw gas through said exit aperture whereby when a workspace is to be cooled, cooling gas is introduced into said vacuum furnace housing and passes through said third and fourth aperture means, passes through said hot zone means, comes in contact with said workpiece, passes through said first and second apertures, around said baffle means and into said gas drawing means.

4,512,738

HIGH-TEMPERATURE KILNS

Michel Hartmann, Hericourt, France, assignor to Societe d'Etudes et de Constructions Electriques et Mecaniques Secem, Paris, France

Filed Nov. 4, 1983, Ser. No. 549,184
Claims priority, application France, Nov. 19, 1982, 8219402
Int. Cl.³ F27D *1/00*; F23M *5/06*
U.S. Cl. 432—247 **11 Claims**



1. A high-temperature kiln, having a top wall or vault formed of ceramic bricks, wherein said top wall is in the form of a planar vault, said vault being comprised of said bricks, and said bricks are refractory bricks having a rectangular profile placed side-by-side, springs resting against a rigid external structure and subjecting said bricks to a resilient lateral compression thrust from said springs, said top wall being provided at intervals with narrow longitudinal notches in at least one of its lower and upper faces, the depth of said notches in the underface decreasing from the central region of the top wall towards lateral edges of said wall while the depth of the notches in said upper face of said top wall increases from its central region towards said lateral edges.

4,512,739

ORTHODONTIC RUBBER BAND APPLICATOR

Steven J. Kaniadakis, Tierra Verde Island, Tierra Verde, Fla. 33715

Filed Oct. 11, 1983, Ser. No. 540,321
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—3 **4 Claims**



1. A hand device of the type designed to facilitate yielding interconnection of upper and lower sets of orthodontic braces, or yielding intraconnections within upper or lower sets, by means of rubber band members, wherein the improvement comprises,

an elongate rod-like member having a bend formed substantially midlength thereof,

said bend being greater than 180 degrees so that a first arm member is obliquely disposed relative to a second arm member that is oriented in a generally horizontal plane when the device is in use,

said first and second arm members lying in a common vertical plane when said device is oriented for use,

said first arm member having a substantially 45-degree bend formed adjacent its distal end so that said distal end is disposed in diverging relation to the unbent distal end of said second arm member,

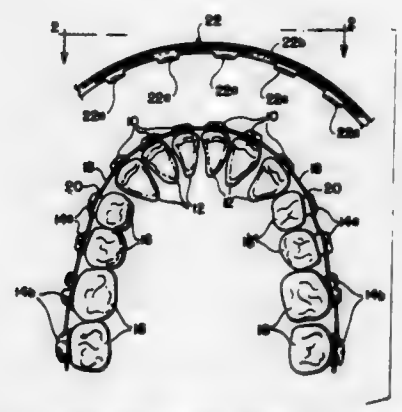
the respective distal ends of said first and second arm members having cooperatively positioned annular rubber band receiving groove means formed therein to maintain a rubber band in its open configuration when diametrically opposed portions thereof are engaged in said respective groove means.

4,512,740

PLASTIC SHIELD FOR ORTHODONTIC APPLIANCE

Craven H. Kurz, 465 N. Roxbury Dr., #1011, Beverly Hills, Calif. 90210

Filed Mar. 7, 1984, Ser. No. 587,220
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—22 **2 Claims**



1. A shield for an orthodontic appliance to protect the oral tissue of a patient from irritation when the patient is wearing the appliance, the appliance comprising a plurality of orthodontic attachments and an arch wire extending between the attachments, and a shield comprising an elongated arcuate member having a smooth outer face, and a plurality of fingers integral with said member and extending around the arch wire to engage the arch wire and hold the member in place covering the attachments of the appliance.

4,512,741

DENTAL INDICATING PASTE AND METHOD OF USE

James T. Mushta, 23014 Atlas Rd., Bothell, Wash. 98011

Filed Aug. 20, 1981, Ser. No. 294,637
Int. Cl.[3] A61C *1/00*
U.S. Cl. 433—70 10 Claims

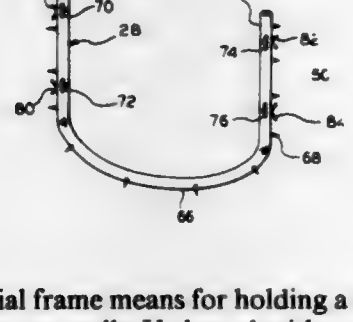
1. An aerosol dental indicating paste for detecting high spots on dental articles, wherein the paste comprises oils blended with indicating powder to form an easily displaceable paste which is non toxic, and is soft and creamy at room temperature, wherein said paste is packaged in an aerosol spray can means mixed with a propellant which is normally a liquid while within the spray can and which is normally a gas at room temperature and pressure, wherein the type and quantity of said propellant is chosen such that said paste is dispensable from said aerosol can in the form of a mist of very fine particles which form a layer of said soft, creamy paste on said dental article when dispensed thereon to enable high spots on said dental article to be detected by displacement of said soft, creamy paste; and wherein said oils in said paste are soluble in said propellant in said aerosol can to enable said paste to be liquified to be dispensed in the form of a mist of fine particles, and wherein said paste is in a soft and creamy, easily displaceable paste phase once again after being dispensed onto said dental article.

4,512,742

HOLDER FOR RUBBER DENTAL DAM

Kathleen A. Shanel, 428 Park Blvd., Glen Ellyn, Ill. 60137

Continuation of Ser. No. 790,567, Apr. 25, 1977, Pat. No. 4,215,477. This application Oct. 16, 1979, Ser. No. 85,252
Int. Cl.[3] A61C *5/12*
U.S. Cl. 433—136 4 Claims



1. A human facial frame means for holding a dental dam, said frame means being generally U-shaped with an arcuate bottom frame member with means comprising two upright members, said bottom member being adapted to extend around and in front of a human mandible, said arcuate bottom member being adapted to be wide enough to span the entire chin and mandible area and to fit on opposite sides of a patient's face, the uprights having a relatively short length so that they do not rest on the cheek bone, said arcuate bottom member further being adapted to surround a substantial arcuate portion of a patient's mandible, extending substantially from the molar area on one side to the molar area on the other side of the mandible, said two upright members of the U-shaped frame means being adapted to be positioned on opposite sides of the face and head, the width and angle of the uprights being adapted to cause said uprights to come to rest in a position where the upright members are generally parallel to a facial plane which is defined by the patient's nasion and the pogonion, said two upright members being adapted to be located at positions in the range of approximately one-quarter of the distance extending from the ear toward the facial plane, the origin of the two upright frame members being adapted to be located on opposite sides of the patient's head and over approximately the gonion, the bottom of the U-shaped means being adapted to rest on and pivoted around the pogonion in the front of the chin, the two upright frame members having said relatively short length which is adapted to have a top end which is well below and away from the patient's eyes in the direction of the ears when said uprights are in said resting position, a plurality of outwardly projecting means for securing a dental dam around the periphery of the U-shaped frame means, and means on the frame for adapting it to be anchored in place about a patient's head.

4,512,743

METHOD FOR MASKING DISCOLORATION ON TEETH

Edward A. Santucci, Plainsboro, and William B. Racz, Milltown, both of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Filed Feb. 5, 1982, Ser. No. 346,348
Int. Cl.[3] A61K *6/08*
U.S. Cl. 433—217 3 Claims

1. A method for masking discoloration on a tooth comprising the steps of:

(a) etching the surface of a tooth to be treated with an etching composition, said surface being substantially free of surface film;

(b) cleaning the etched tooth surface to remove the etching composition and debris;

(c) drying the etched tooth surface; and

(d) coating the dry etched tooth surface with a polymerizable composition having a viscosity at 24°+1° C. of 100,000 to 300,000 centipoises, said polymerizable composition comprising liquid polymerizable acrylic ester monomer, a polymerization initiator for said monomer, submicron silica filler, and a color concentrate containing pigments appropriate to match the appearance of the natural tooth enamel, the proportion of said filler being selected so as to impart levelling and nonslump properties to said polymerizable composition.

4,512,744

METHOD ENABLING RAPID IDENTIFICATION OF HUMANS AND ANIMALS

Bruce T. Michnick, Plainview, and Stanley Kitzis, Woodbury, both of N.Y., assignors to Dentistry Researchers & Designers, Inc.

Filed Oct. 28, 1983, Ser. No. 546,375
Int. Cl.[3] A61C *3/00;* A61B *1/24*
U.S. Cl. 433—229 6 Claims

1. A method enabling identification of human and animal subjects, comprising the steps of:

a. first, permanently affixing an indicia of identification information at a location within a face surface of a tooth of the subject which can be viewed by another looking into the subject's mouth; and

b. second, electronically scanning said identifying indicia from outside the subject's mouth, for non-destructively out-putting the information thereby stored thereon.

4,512,745

FLIGHT SIMULATOR WITH DUAL PROBE MULTI-SENSOR SIMULATION

Windell N. Mohon, Athens, Ala., and William T. Harris, Winter Park, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 16, 1983, Ser. No. 495,188
Int. Cl.[3] G09B *9/00*
U.S. Cl. 434—43 11 Claims

1. An apparatus for simulating multisensor imagery for use with a simulated vehicle, comprising, in combination:

means for providing simulated terrain;

means for generating a first video signal representative of said simulated terrain;

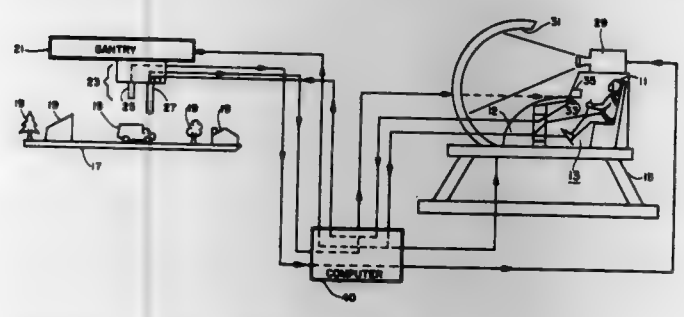
means for generating a second video signal representative of said simulated terrain, said means having a fixed spatial relation to said means for generating a first video signal, and an angular relation thereto variable therefrom in response to control signals input to said vehicle;

means for positioning said first video signal generating means and said second video signal generating means in

relation to said simulated terrain in accordance with control signals input to said simulated vehicle;

means for correlating control signals input to said vehicle with said positioning means operable connected therebetween;

means for converting said first video signal means into an image displayed as an optical image of said terrain in



relation to said vehicle, operably connected to receive input from said first video signal generating means;

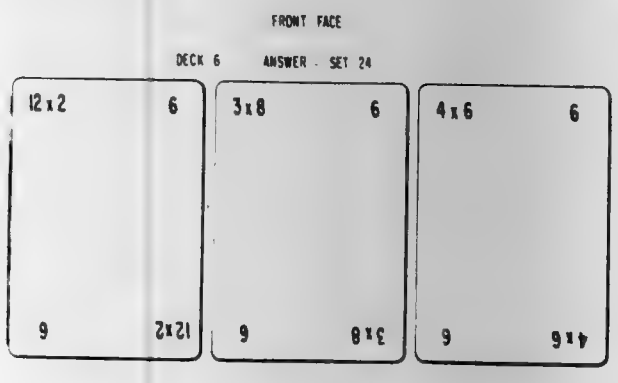
means for converting said second video signal into a negative image separately displayed within said simulated vehicle as a simulated forward-looking infrared sensor display, operably connected to receive inputs from said second video signal generating means.

4,512,746

MATHEMATICAL TEACHING CARDS

Donald Turner, 16 Bradley Ct., Rockville, Md. 20851

Filed Sep. 15, 1982, Ser. No. 418,203
Int. Cl.[3] G09B *19/02*; A63F *1/00*
U.S. Cl. 434—209 **6 Claims**



1. A series of multiplication table teaching cards having a plurality of decks of cards, each card having a front side and a back side, and each deck having;

a different subgroup of multiplication statements,

a plurality of sets of cards within each deck, each set including a plurality of cards, with each card within a set having a simple multiplication statement on the front side, and having an unstated answer which is the same answer as that of other cards within said set, and

said plurality of decks of cards being divided into sub-pluralities of decks, each sub-plurality having a different level of difficulty and having distinctive indicia indicating the level of difficulty of said sub-plurality.

4,512,747

MATERIAL CONVEYING SYSTEM SIMULATION AND MONITORING APPARATUS

Max W. Hitchens, 532 Timber Ridge Dr., #301A, and George B. Rote, 614 Willow Wood Dr., #107, both of Carol Stream, Ill. 60187

Filed Jan. 13, 1982, Ser. No. 339,139
Int. Cl.[3] G09B *25/02*
U.S. Cl. 434—428 **9 Claims**

1. An apparatus for emulating the operation of a material conveying system, which includes discrete material handling and sensing components, said apparatus including:

digital simulator means for storing, in a non-volatile manner, data representing discrete components of a material conveying system;

means for interfacing said apparatus to an independent control device which operates and controls a material conveying system;

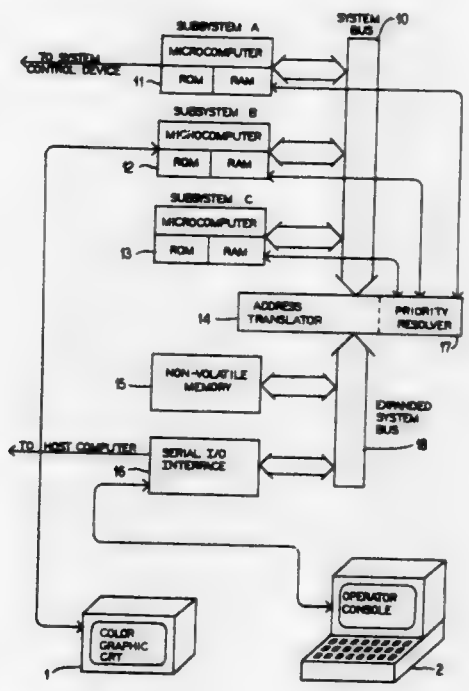
means under operator control for interactively operating said digital simulator means for causing said control device to respond as if a material conveying system was conveying material when said material conveying system is not conveying material, and said interactive operation including starting, stopping and incremental stepping modes; and

means for graphically displaying the simulated operation of a material conveying system by periodically depicting the position of material moving within a material conveying system and the condition of the discrete components.

5. A plant control system comprising:

(a) a material conveying system which includes discrete material handling and sensing components;

(b) independent control means for operating and controlling said material conveying system;



(c) emulator apparatus means for cooperating in operating said system and for comparing the actual operation of said material conveying system with an idealized mode of operation of an idealized material conveying system, said emulator means including:

(1) digital simulator means for storing data representing discrete components of said material conveying system in a non-volatile manner;

(2) means for interfacing said emulator apparatus and said independent control means;

(3) means for comparing data from the actual operation of said material conveying system with data generated in said simulator means;

(4) means for issuing an alarm in the event that the actual data is not within predetermined operating tolerances of the simulated data.

(5) means for graphically displaying the operation of the material conveying system by periodically depicting the position of material moving within the material conveying system and the condition of the discrete components, wherein said discrete components include said discrete material sensing components; and

(6) means under operator control for interactively manipulating stored data representing discrete components of the material conveying system and operating tolerances.

4,512,748
MECHANICAL PENDANT

Hajime Matsumoto, Nagareyama, and Yoichi Abe, Funabashi, both of Japan, assignors to Toybox Corporation, Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,480
Claims priority, application Japan, Mar. 1, 1982, 57-27121[U]
Int. Cl.³ A63H *13/00*
U.S. Cl. 446—354 7 Claims



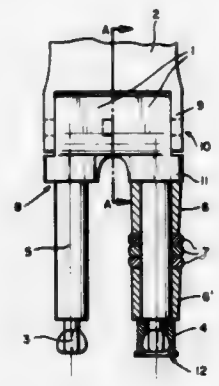
1. An amusement device, comprising:
(a) a housing;
(b) gear means connected to the housing having a first end and a second end, the gear means including a plurality of gears and a one-way drive arrangement;
(c) a member movably mounted on the housing and being operatively connected to the first end of the gear means; and
(d) compressible and expandable actuating means connected to the housing and being operatively connected to the second end of the gear means for moving the gear means and the movable member, the actuating means including
(i) a fixedly mounted projection extending from the housing;
(ii) a driving arm having a first end and a second end, the first end being a free end and the second end terminating in gear teeth for meshing with the gear means and being pivotally mounted to the housing opposite the projection; and
(iii) a spring connected to the driving arm normally biasing the driving arm away from the projection,
wherein the gear means permits disengagement of at least one of the plurality of gears from the rest of the plurality of gears during compression of the actuating means such that the one-way drive arrangement allows the actuating means to be compressed without moving the movable member and yet will permit moving of the movable member when the actuating means expands.

4,512,749
SYSTEM OF ARTICULATED LEGS FOR TOY FIGURES

Jorge Magri Deulofeu, Barcelona, Spain

Filed Nov. 5, 1982, Ser. No. 439,559
Claims priority, application Spain, Nov. 6, 1981, 261281[U]
Int. Cl.³ A63H *3/36, 3/12*
U.S. Cl. 446—390 5 Claims

1. An improved leg assembly for attachment to the body cavity of a toy figure comprising:
(a) a first section for connection to the body cavity of a toy figure to form an articulated joint therewith;
(b) a pair of major diameter sections extending from the first section for simulating the bottom portion of a pair of shorts;
(c) a smaller diameter section of cylindrical configuration, and including a free end, extending from each major diameter section for simulating the legs of the figure;
(d) plural sleeve sections of different colors slidably received on each smaller diameter section for simulating flesh coloration and socks worn by the figure; and
(e) means engageable onto the free end of each smaller diameter section for simulating the feet of the figure and

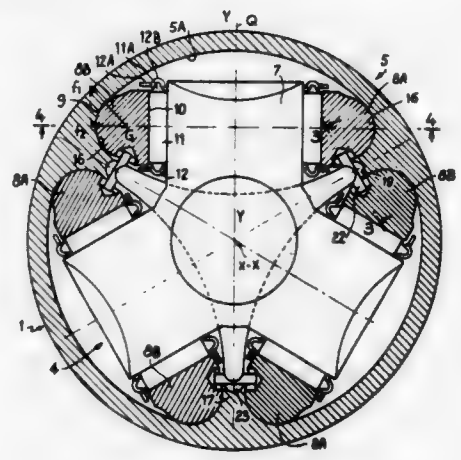


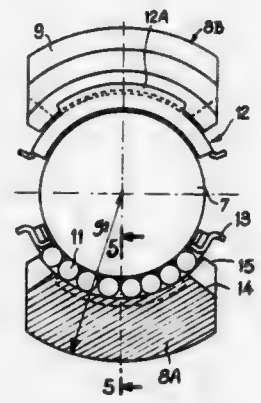
securing the sleeve sections on the smaller diameter sections.

4,512,750
TRANSMISSION JOINT AND IN PARTICULAR AN ARTICULATED CONSTANT-SPEED JOINT FOR A MOTOR VEHICLE

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Apr. 8, 1983, Ser. No. 483,843
Claims priority, application France, Apr. 20, 1982, 82 06768
Int. Cl.³ F16D *3/24*
U.S. Cl. 464—111 18 Claims





1. A constant-speed transmission joint for transmitting rotation of a driving shaft to a driven shaft while enabling angular displacement therebetween, said joint comprising:
a barrel element rigid with the driven shaft, said barrel element defining therein three pairs of tracks;
a tripod element rigid with the driving shaft and rotatable thereby about an axle, said tripod element extendng into said barrel element and having three radially extending arms;

three rolling means rotatively mounted on respective said arms for transmitting rotation of said tripod element to said barrel element while enabling angular displacement of said axis of said tripod element relative to the axis of rotation of said barrel element;

each said rolling means comprising two separate roller sectors disposed on opposite sides of a respective said arm and cooperating with a respective said pair of tracks; and

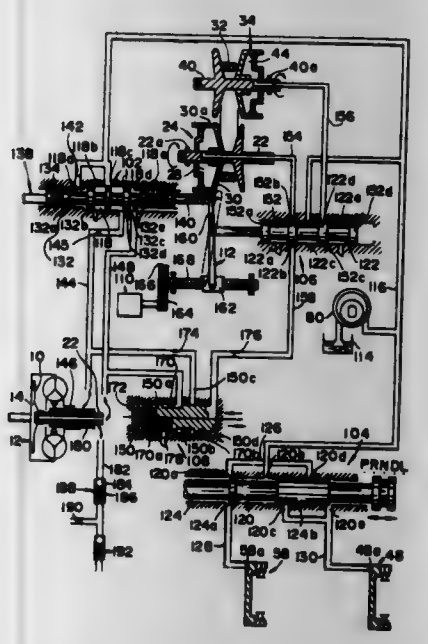
each said roller sector and the respective said track having cooperating surfaces enabling rolling movement therebetween without substantial sliding movement therebetween.

4,512,751

METHOD AND SYSTEM FOR CONTROLLING CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

Yoshikazu Tanaka, Yokohama; Sigeaki Yamamuro, Zushi; Hiroyuki Hirano, and Yoshiro Morimoto, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1982, Ser. No. 362,490
Claims priority, application Japan, Mar. 28, 1981, 56-44747
Int. Cl.³ F16H *11/06*
U.S. Cl. 474—28
3 Claims



1. A system for controlling a continuously variable transmission having a V-belt connecting a drive and a driven pulley, said drive pulley having a first cylinder chamber and first and second conical discs, said driven pulley having a second cylinder chamber and third and fourth conical discs, the first conical disc being secured to a drive shaft, the third conical disc being secured to a driver shaft, the second conical disc being controllably movable in an axial direction with respect to the drive shaft in response to a fluid pressure in the first cylinder chamber, the fourth conical disc being controllably movable in an axial direction with respect to the driven shaft in response to a fluid pressure in the second cylinder chamber, the hydraulic control system comprising:

means for supplying hydraulic fluid to said first and second cylinder chambers; and

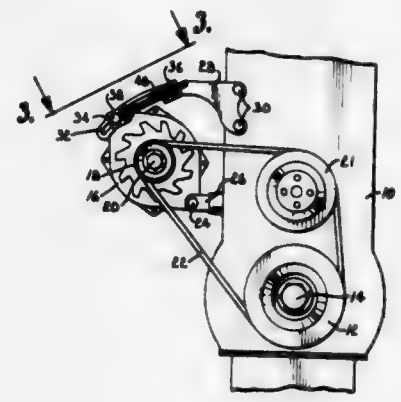
a shift control valve means connected to said supplying means for receiving the hydraulic fluid and for regulating a fluid supply to and discharge from the first and second cylinder chambers, said shift control valve means having a valve bore formed with a first port connected to receive the hydraulic fluid from said supplying means, a second port communicating with the first cylinder chamber and a third port communicating with the second cylinder chamber, the second and third ports being spaced from and disposed on opposite sides of the first port, the shift control valve means including a spool means operable for maintaining the fluid pressure within said first cylinder chamber substantially constant when varying the fluid pressure within said second cylinder chamber and for maintaining the fluid pressure within said second cylinder chamber substantially constant when varying the fluid pressure in said first cylinder chamber, said spool means being slidable within the valve bore, the spool means having a first land and a second land which cooperate with the second and third ports respectively, the first and second lands having axial lengths which are shorter than axial widths of the second and third ports respectively, and wherein an axial distance between outer side edge faces of the first and second lands is substantially equal to an axial distance between outer side walls of the second and third ports, such that said first and second lands cooperate with said second and third ports in a first position to provide a substantially equal pressure to both the first cylinder chamber and the second cylinder chamber, and such that, as said spool begins to move in a first direction from said first position, the pressure in one of said cylinder chambers constantly varies while the pressure in the other of said cylinder chambers remains constant, and as said spool begins to move in an opposite direction from said first position, the pressure in the other of said chambers constantly varies while the pressure in said one chamber remains constant.

4,512,752

BELT TENSIONING DEVICE

Gary W. Brenneman, Rte. 2, Meadville, Mo. 64659

Filed Jan. 3, 1983, Ser. No. 454,979
Int. Cl.³ F16H *7/14*
U.S. Cl. 474—114
15 Claims



1. A field installed tensioning device for an engine driven drive belt engaging an accessory pulley which serves to drive an accessory mounted on the engine for angular adjustment about a pivot axis to adjust the belt tension, said device comprising:

a slotted plate mounted on the engine and having an arcuate slot formed about said pivot axis;

first and second brackets;

a first bolt connecting said first bracket to said slotted plate;

a second bolt extending through said second bracket and said slot and engaging said accessory, said second bolt having a loose condition permitting angular adjustment of the second bracket and accessory about said pivot axis to vary the belt tension as said second bolt moves in said slot, and a tight condition wherein the second bolt secures the second bracket and accessory against movement relative to the slotted plate; and

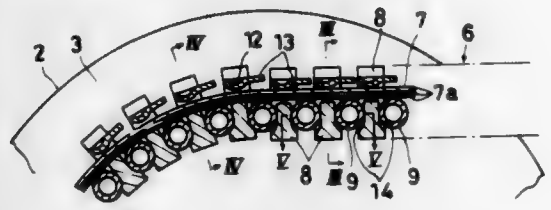
a screw extending between said brackets, said screw having a head end connected to one bracket in a manner to be capable of turning relative thereto and being in threaded engagement with the other bracket, whereby turning of the screw while said second bolt is in the loose condition effects movement of said brackets toward and away from one another to vary the belt tension.

4,512,753

V-BELT TRANSMISSION APPARATUS

Torao Hattori, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1984. Ser. No. 589,285
Claims priority, application Japan, Mar. 14, 1983, 58-40782; Mar. 14, 1983, 58-40783; Mar. 14, 1983, 58-40784
Int. Cl.³ F16G *5/16, 5/22*
U.S. Cl. 474—242 **8 Claims**



1. A V-belt assembly for use in a V-belt transmission, said V-belt assembly comprising:

(a) an endless belt;

(b) a plurality of V-shaped members disposed along said belt in the longitudinal direction thereof, each of said members having a belt engaging surface facing said belt and pulley engaging surfaces for engaging the surfaces of pulleys in the transmission; and

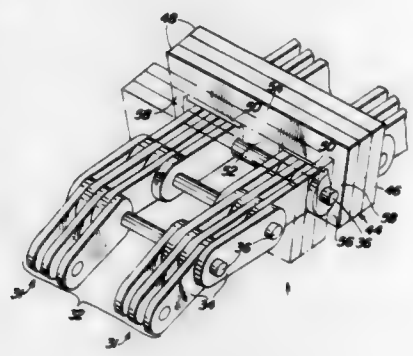
(c) a plurality of intermediate members, each intermediate member being interposed between adjacent V-shaped members on the inside of said belt, said intermediate members being held between corresponding adjacent V-shaped members by intermediate member engaging surfaces thereof, wherein said intermediate members are movable towards and away from said belt along said intermediate member engaging surfaces.

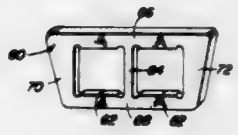
4,512,754

METAL CHAIN-BELT

Edward H. Cole, Jr., and Timothy J. Ledvina, both of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 18, 1983, Ser. No. 485,781
Int. Cl.³ F16G *13/08, 5/18*
U.S. Cl. 474—245 **11 Claims**





1. A chain-belt especially adapted to drivingly connect pulleys of a pulley transmission, said chain-belt comprising:

a plurality of transversely arranged sets of links, adjacent sets of links being interleaved with one another;

pivot means joining said adjacent sets of links to provide an endless assembly of links;

a plurality of load blocks, each of which is located between a pair of pivot means,

each load block having edges adapted to frictionally engage the pulleys of the pulley transmission,

each load block defining at least a pair of windows defined by an upper and a lower transverse span and an integral column which joins said spans and separates said windows,

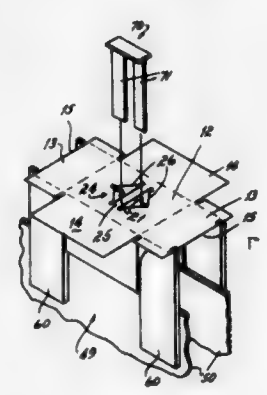
each load block windows encircling the links of one set of links, with said load block column separating some links of said one set of links from other links of said one set of links.

4,512,755

APPARATUS FOR ERECTING A BOTTLE CARRIER

Orison W. Stone, Middlebury, Vt., assignor to Pack Image, Inc., Middlebury, Vt.

Filed Mar. 7, 1983, Ser. No. 473,012
Int. Cl.³ B31B *1/44*
U.S. Cl. 493—92 **4 Claims**



1. Apparatus for forming a carrier,

longitudinal formers spaced apart to form a longitudinal slot for receiving and folding a central partition,

formers across the ends of said longitudinal slot for engaging transversely-creased end walls to erect said end walls,

said end formers being spaced longitudinally from said longitudinal formers to provide transverse slots for the formation of gussets between said central partition and end walls,

a thin plunger,

means for passing said plunger into said longitudinal slot and between said end formers,

said thin plunger being engageable with said central partition to drive it into said longitudinal slot thus folding said central partition upon itself and simultaneously effecting partial erection of said carrier by said longitudinal and end formers simultaneously applying forces to said central partition and end walls.

4,512,756

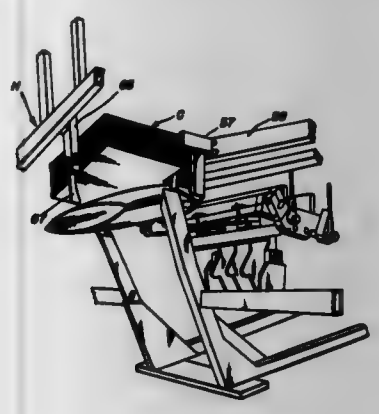
APPARATUS FOR FEEDING FROM A HOPPER AND FOR SETTING UP COLLAPSED ARTICLE CARRIERS

Willie M. Fields, Griffin, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 25, 1982, Ser. No. 342,179
Int. Cl.³ B31B *1/78, 1/80*
U.S. Cl. 493—312 **5 Claims**

1. Apparatus for feeding out of a hopper and for setting up a collapsed article carrier of the top gripping type initially stacked in the hopper with face contacting upper and lower planar elements comprising a pair of handle panels and a pair of side walls foldably joined to said handle panels respectively with outwardly collapsed end walls foldably joined to the ends of said side walls and wherein the lower one of said handle panels is formed with notches on opposite edges thereof, a pair of inwardly extending projections fixedly mounted on said hopper and in engagement with the parts of the upper one of said handle panels which coincide with said notches, each of said inwardly extending projections including a fixed base portion and a yieldable end portion which directly engages said parts of said upper handle panel, at least one notch formed on the bottom edge of the lower one of said side walls and at least one inwardly extending projection fixedly mounted on

said hopper and arranged to engage the part of the upper one of said side walls which coincides with said notch, feeder means engageable with said lower planar element for imparting movement thereto in a direction away from said upper



planar element thereby to initiate setting up of the carrier, and a pair of fixedly mounted guides disposed in spaced relation to each other and arranged to engage said end walls respectively following release of the carrier from the hopper thereby to aid in setting up the carrier.

4,512,757

DOUBLE-SEAM BAG-MAKING METHOD AND APPARATUS WITH OFFSET STACKING

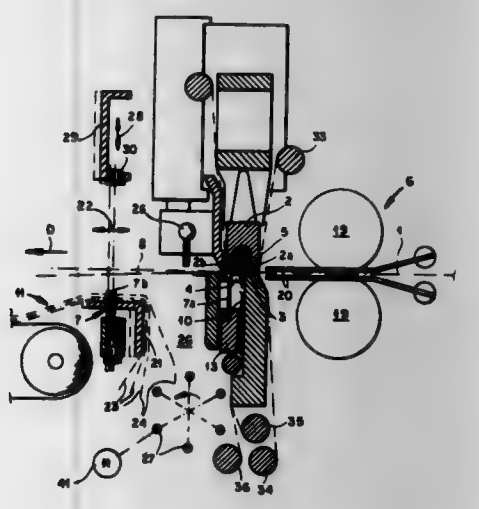
Karl Dreckmann, Hennef-Altenbödingen, Fed. Rep. of Germany, assignor to M. Lehmacher & Sohn GmbH Maschinenfabrik, Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Jan. 6, 1983, Ser. No. 455,904

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201170

Int. Cl.³ B31B *23/00*

U.S. Cl. 493—194 **12 Claims**



1. An apparatus for making bags from a multilayer synthetic-resin strip workpiece, the apparatus comprising:

transport means for conveying the workpiece longitudinally in a transport direction along a path;

an upper welding element along the path having relative to the direction an upper upstream welding tool extending across the path and generally parallel thereto an upper downstream welding tool;

respective lower upstream and downstream welding tools vertically aligned with the upper upstream and downstream tools;

a blade extending transverse to the path between one of the upstream tools and the respective downstream tool;

means for relatively vertically displacing the upper and lower tools with the workpiece between them toward one another to weld the workpiece together along upstream and downstream seams at the respective tools and to cut the workpiece across with the blade between the seams, and away from one another to free the severed downstream end section of the workpiece;

stacking means including a stack support downstream of the tools for catching and holding the severed end sections in a stack; and

means for displacing the stack support in the transport direction synchronously with displacement of the tools for offsetting the trailing ends of succeeding severed end sections in the stack.

4,512,758

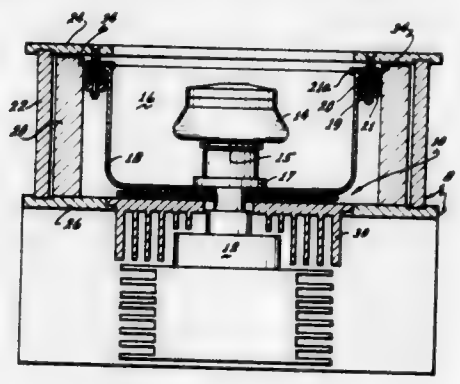
THERMOELECTRIC TEMPERATURE CONTROL ASSEMBLY FOR CENTRIFUGES

Robert C. Wedemeyer, San Francisco, and Robert H. Giebeler, Jr., Cupertino, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 30, 1984, Ser. No. 605,360

Int. Cl.³ B04B *15/02*

U.S. Cl. 494—13 **23 Claims**



17. A thermoelectric temperature control system for a centrifuge of the type having a rotor, a temperature controlled vessel, and a housing that at least partially encloses the vessel, including:

(a) a heat sink positioned under said vessel and supported by said housing,

(b) a thermoelectric temperature control assembly comprising:

(i) a nonconducting substrate, and

(ii) at least one thermoelectric device attached to the substrate,

(c) said assembly being positioned between the vessel and the heat sink so that the upper surface of the thermoelectric device is in direct thermal contact with the vessel and the lower surface of the thermoelectric device is in direct thermal contact with the heat sink,

(d) whereby the weight of the vessel lessens the thermal resistance of said thermal contacts.

4,512,759

DEVICE FOR THE SEPARATION OF PARTICLES FROM A STREAM OF GAS

Aloysius J. W. O. Alink, Zevenaar, and Berend P. van Marle, Dieren, both of Netherlands, assignors to Thomassen International B.V., Netherlands

Filed Feb. 9, 1983, Ser. No. 465,089

Claims priority, application Netherlands, Feb. 23, 1982, 8200725

Int. Cl.³ B04B *15/02*

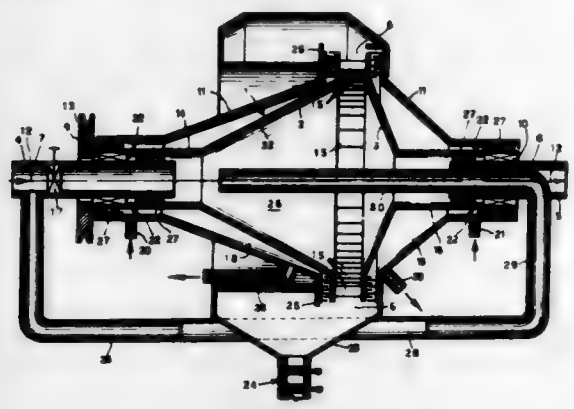
U.S. Cl. 494—14 **5 Claims**

1. A device adapted for the separation of suspended particles from a stream of gas by means of centrifugal force, comprising:

a rotationally symmetrical body provided with an inlet means for the stream of gas to be purified, an outlet means for the purified gas; said body comprising a conical casing and a conical cover both being coaxial and with their apexes turned away from each other such that their opposed bases define a common circumferential and annular opening for discharge of separated particles, the axis of

APRIL 23, 1985 GENERAL AND MECHANICAL

revolution coinciding with both apexes, the inlet means for the stream of gas being located at the apex of said casing, the outlet means for the purified gas being located at the apex of said cover valve means mounted within the inlet means, so that a part of the incoming gas stream may be diverted, and a branch pipe intersecting the gas inlet means prior to the valve means, so that a part of the incoming gas stream can be diverted into said branch pipe,



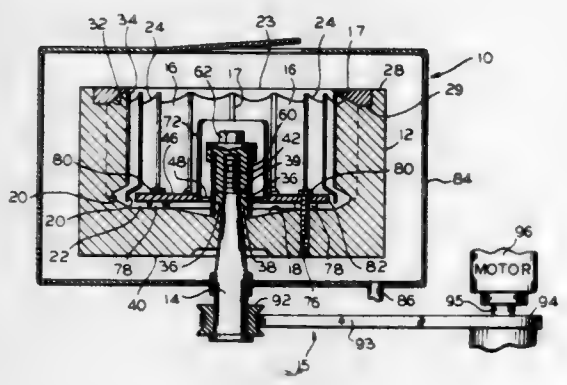
said branch pipe being connected with a pipe lying coaxially with the axis of revolution of said rotating body, said coaxial pipe positioned within said body and having an end positioned with respect to the gas inlet means such that gas flowing out said end will be opposed to the gas flowing through said gas inlet means, so that said gas flowing out of said end creates a toroidal flow pattern of gas to be cleaned along the inside wall of said casing.

4,512,760

METHOD AND DEVICE FOR SELECTIVE SEPARATION OF FINE METAL PARTICLES

William DeNicolo, 6832 N. Mendota, Chicago, Ill. 60646, and Pershing Nakada, 832 Poplar Ave., Elmhurst, Ill. 60126

Filed Jan. 19, 1984, Ser. No. 572,193
Int. Cl.³ B01D *21/26*
U.S. Cl. 494—37 **19 Claims**



1. A process for separating fine metal particles from a mixture of particles including particles having a specific gravity greater than a media substance and particles having a specific gravity less than the media substance, including the steps of:

rotating a container;

placing said media substance in the container to provide a wall of said media substance on the inside surface of said container when the container is rotating; and

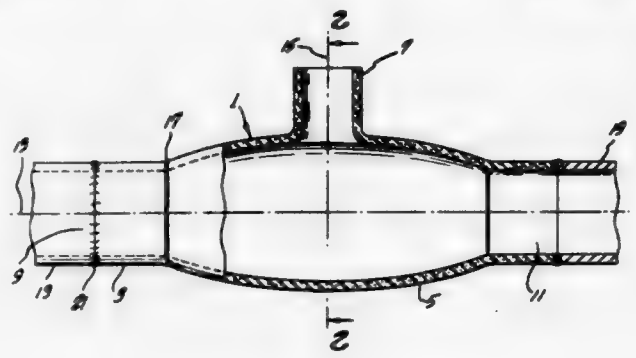
injecting said mixture of particles in said rotating container to flow against said media wall, so that said greater specific gravity particles in contact with the media penetrate the media and said particles having a specific gravity less than the media are rejected by the media.

4,512,761

BODY IMPLANTABLE CONNECTOR

Donald A. Raible, Irvine, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 292,846, Aug. 14, 1981, abandoned.
This application Oct. 6, 1983, Ser. No. 539,623
Int. Cl.³ A61B *19/00*
U.S. Cl. 604—8 **12 Claims**



1. A connector to replace a portion of the patient's internal body fluid or solid carrying conduit adapted to connect said body conduit to a vascular implant device for providing external access to said body conduit comprising:

a hollow tubular member of a grafting material, a portion of said tubular member being of expanded diameter to form a hollow bulbous portion positioned along the length of said tubular member, said bulbous portion being of a grafting material and being defined as having a partial elliptical contour, the elliptical contour being elongated substantially along a common center line between an inlet and an outlet to the hollow tubular member, truncated at its ends at the point of diameter expansion from the diameter of said tubular member to form said bulbous portion; and

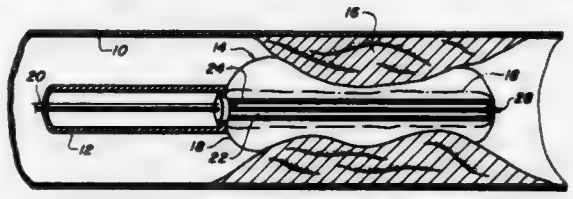
a side port of a grafting material at the approximate midpoint of said tubular member bulbous portion.

4,512,762

METHOD OF TREATMENT OF ATHEROSCLEROSIS AND A BALLOON CATHETER FOR SAME

James R. Spears, Boston, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Filed Nov. 23, 1982, Ser. No. 443,958
Int. Cl.³ A61B *6/08*
U.S. Cl. 604—21 **8 Claims**



1. A method for the treatment of atherosclerosis in a mammal by destruction of atheromatous plaque in a diseased blood vessel, said process comprising:

injecting a hematoporphyrin into the mammal to be treated for selective uptake into the atheromatous plaque;

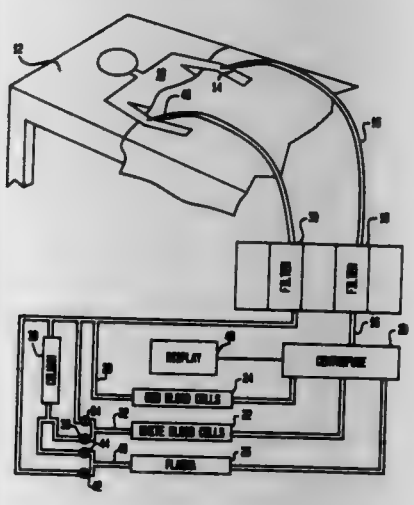
inserting a light-emitting catheter into the diseased vessel so that the light-emitting portion of the catheter is adjacent the atheromatous plaque to be lysed; and

exposing the hematoporphyrin within said atheromatous plaque to light transmitted through the catheter for lysis of the plaque.

4,512,763
METHOD AND APPARATUS FOR SELECTIVE REMOVAL OF CONSTITUENTS OF BLOOD

Barbara Schneider, Philadelphia, Pa., assignor to Gamma Medical Products, Inc., Glen Rock, N.J.

Filed May 4, 1981, Ser. No. 259,971
Int. Cl.[3] A61M *1/03*
U.S. Cl. 604—5 19 Claims



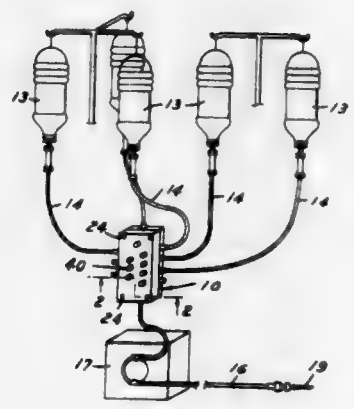
1. A method of removing a constituent such as immunoglobulins, lymphocytes, or immune complexes from a component of a patient's blood comprising the steps of:
(a) removing a volume of the patient's blood from a vein;
(b) separating the constituent containing component from the removed blood;
(c) preparing an antibody;
(d) contacting the patient's component with the antibody so that the antibody may adsorb the appropriate constituent from the component;
(e) recombining the antibody contacted component with the other components of the patient's blood; and
(f) injecting the combined components into a vein of the patient; wherein the antibody is prepared by the steps of:
(g) removing a volume of the patient's blood;
(h) separating the component from the removed blood;
(i) removing selected cells from the component;
(j) injecting the removed cells into a non-human animal such as a goat, rabbit or mouse;
(k) delaying sufficient time for the non-human animal to manufacture antibodies to the injected cells;
(l) removing blood from the non-human animal;
(m) separating the same component from the removed non-human animal's blood; and
(n) removing the antibodies from the non-human animal's component.

4,512,764
MANIFOLD FOR CONTROLLING ADMINISTRATION OF MULTIPLE INTRAVENOUS SOLUTIONS AND MEDICATIONS

Richard E. Wunsch, 207 Circle Dr., Traverse City, Mich. 49684

Filed Sep. 27, 1982, Ser. No. 423,978
Int. Cl.[3] A61M *5/14*
U.S. Cl. 604—80 8 Claims

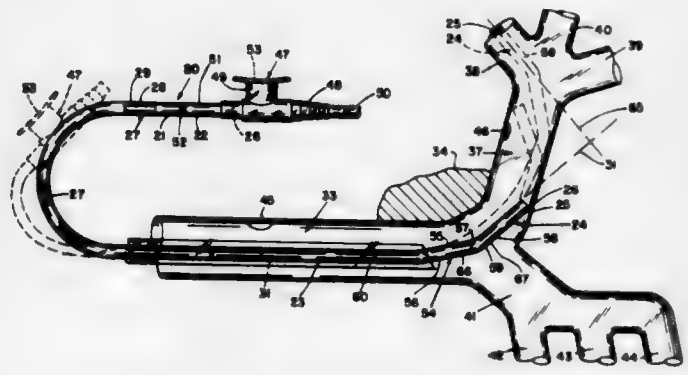
1. A manifold assembly adapted for administering a plurality of different intravenous solutions comprising:
a manifold plate having a pair of generally flat inner and outer surfaces, a pair of side surfaces and a pair of end surfaces, an elongated slot provided in said inner surface and extending from one end surface to the other end surface, said slot being of generally U-shape configuration;
a plurality of branch slots provided in said inner surface and extending from said elongated slot to said side surfaces of the manifold plate; some of said branch slots extending to one side surface and the remaining branch slots extending to the other side surface;
said branch slots being of generally U-shape configuration;
a disposable tubing manifold made of flexible tubing and having a trunk tube disposed in said elongated slot and a plurality of branch tubes equal in number to the number of branch slots disposed in said branch slots, with one branch tube in a branch slot, each branch tube being connected to the trunk tube on a first end and extending from the trunk tube towards one or the other side surface, said branch tubes being connected to said trunk tube to permit fluid flow from the branch tubes to the trunk tube;
female tubing connector means attached to one end of said trunk tube and a second end of each branch tube for attachment with a male connector of a solution supply tube;
means attached to the other end of said trunk tube for attaching the manifold to an intravenous solution supply tube;
a valve plate having a pair of generally flat inner and outer surfaces, with the inner surfaces of the manifold and valve plates abutting and attached together thereby enclosing said elongated slot and branch slots;
a plurality of valves mounted in said valve plate, with each of said valves having a clamp means movable towards and away from said tubing manifold for selectively engaging and thereby closing said branch tubes and said trunk tube to prevent fluid flow therethrough;
and means for releasing said clamp means to selectively permit fluid flow therethrough.



4,512,765
SELECTIVE TRACHEAL BRONCHIAL CATHETER

Rudolph Muto, 100 Amesbury St., Lawrence, Mass. 01840

Filed Jun. 9, 1983, Ser. No. 502,730
Int. Cl.[3] A61M *16/00, 25/00*
U.S. Cl. 604—119 8 Claims



1. A selective bronchial catheter comprising: an elongated, hollow cylindrical tube of uniform diameter, and of flexible material, with an open proximal end and an open distal end having a terminal tip;

said tube having a normally straight elongated, intermediate shank portion, with a central longitudinal axis, and a suction thumb control device extending angularly from one side of said shank portion at said proximal end of said tube;

and a preformed, double bend in said tube, extending angularly from the other side of said shank at the distal end of said tube proximate the terminal tip thereof;

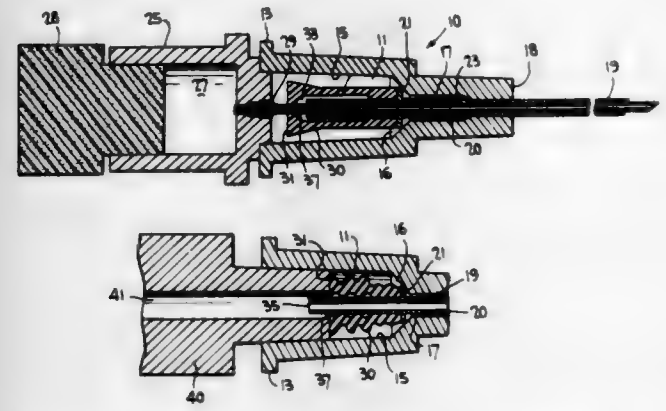
said preformed double bend being located in the area of the bronchial tubes and adapted to cause the open distal end of said tube to enter the left main bronchus and then the left upper lobar bronchus, when inserted in a tracheal tube in the trachea.

4,512,766

CATHETER VALVE

Vincent L. Vailancourt, Livingston, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

Filed Dec. 8, 1982, Ser. No. 447,935
Int. Cl.³ A61M *5/00*; A61B *5/00*
U.S. Cl. 604—169 **17 Claims**



1. An intravenous catheter assembly, comprising:

a catheter hub having first and second ends and an interior hub chamber which is opened at its first end and is perpherally bounded by a chamber wall;

elongated flow passage means having a near end disposed within said hub chamber and terminating in a remote end beyond said second end of said hub, said near end of said flow passage means being spaced from said chamber wall and having a first pre-determined cross-sectional configuration;

a valve member disposed in said hub chamber about said flow passage means at said near end of said flow passage means for blocking flow between said hub chamber and said near end of said flow passage means, said valve member being made of self-sealing resilient material which permits a needle to be inserted and then withdrawn from a puncture in said valve member from said open end of said hub chamber without destroying the flow blocking capability of said valve member, said valve member having a second pre-determined cross-sectional configuration which is larger than said first pre-determined cross-sectional configuration of said near end of said flow passage means in order to permit the valve member to be forced axially along the outside of said flow passage means with said near end extending through a puncture in said valve member;

bias means for urging said valve member axially toward said open end of said hub;

a needle and needle holding unit adapted to be inserted into said hub chamber from said open end with said needle extending through a puncture in said valve member and through said flow passage means to beyond the remote end of said flow passage means, said needle holding unit including a substantially transparent flashback chamber for receiving blood from said puncture via said needle; and

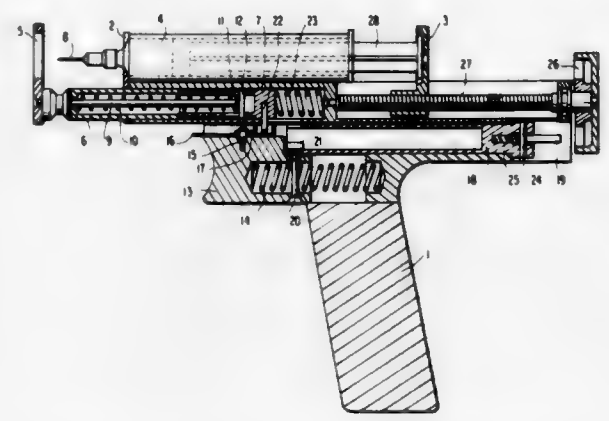
adaptor means adapted to be inserted into said open end of said hub for delivering fluid through said flow passage means after said needle and needle holder unit has been removed, said adaptor means comprising a supply passage having a cross-sectional configuration which is larger than said first pre-determined cross-sectional configuration but smaller than said second pre-determined cross-sectional configuration, whereby forcing said supply passage over said near end of said flow passage means forces said valve member axially in opposition to said bias means along said flow passage means with the near end of said flow passage means projecting into said supply passage through the puncture in said valve member through which said needle had been extended.

4,512,767

APPARATUS FOR PERFORMING INTRADERMAL, SUBCUTANEOUS OF INTRAMUSCULAR INJECTIONS

Raymond Denance, Le Marineland, 2170 Rte. de la Corniche, 83700 Boulouris St. Raphael, France

Filed Mar. 30, 1983, Ser. No. 480,327
Claims priority, application France, Mar. 30, 1982, 82 05380
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—137 **3 Claims**



1. An injection device useful either for manual injection or mechanical injection, comprising a cross frame (1) having the shape of a revolver, a removable injection syringe (4) having a syringe piston and at least one needle (8), a syringe cradle securing said syringe to the cross frame (1), means to position the penetration and to predetermine the degree of penetration of said at least one needle, a trigger (13) on the cross frame, a pawl (19) actuated by the trigger, a barrel (26) that is rotated step by step by the pawl upon repeated actuation of the trigger, a screw-threaded axle (27) rotated by the barrel, a screw-threaded slider (3) that is in screw-threaded engagement with said screw-threaded axle (27) and that moves forward upon rotation of said axle, and means (28) interconnecting said slider (3) and said syringe piston to advance said syringe piston stepwise upon repeated actuation of said trigger (13).

4,512,768

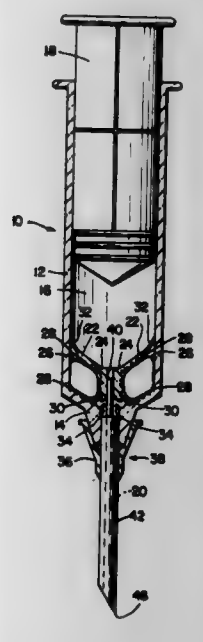
ANALGESIC SYRINGE

Avvari Rangaswamy, Stevens Hospital, Welch, W. Va. 24801

Continuation-in-part of Ser. No. 417,188, Sep. 10, 1982, abandoned. This application Feb. 15, 1983, Ser. No. 466,535
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—191 **5 Claims**

1. A syringe, comprising: means for releasing a first pharmaceutical into a porous needle as said porous needle is being inserted in a patient, and said porous needle being in fixed adjacent proximity with a continuous walled cannula or needle through which (1) a second pharmaceutical can be passed or (2) fluids can be withdrawn from the patient;

whereby said first pharmaceutical is infused substantially uniformly into the patient along the length of the inserted



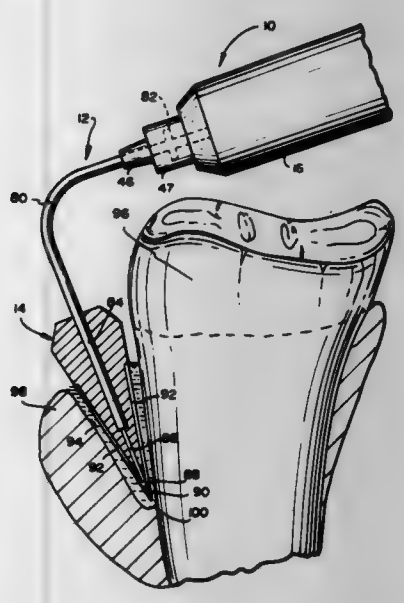
porous needle and therefore into the region which said continuous walled cannula or needle is passed.

4,512,769

PATIENT EMPLOYED DIGITAL OPERATED SYRINGE DEVICE FOR IRRIGATING PERIODONTAL POCKETS AND OTHER SOFT TISSUE SPACES

George Kozam, 234 E. Clinton Ave., Tenafly, N.J. 07670, and Pat Romanelli, 224 Brook St., Harrington Park, N.J. 07640

Filed Jul. 5, 1983, Ser. No. 510,986
Int. Cl.[3] A61M *5/00*
U.S. Cl. 604—209 9 Claims



1. A periodontal lavage syringe for self-administration of periodontal treatment fluids, comprising

a syringe body portion having at least one fluid retaining bore, a depressible plunger mounted in said bore, and fluid conduit means connecting said bore to a fluid outlet coupling,

an elongated flexible needle attached to and extending from the outlet coupling of said syringe body portion,

a conical nozzle secured to the free end of said needle, said nozzle having a pointed tip, tapered side walls progressively increasing in diameter from said tip to the opposite end thereof, an internal longitudinal bore communicating with the interior of said needle, at least one outlet opening located in the vicinity of said tip and communicating with said longitudinal bore, and a plurality of spaced reflux grooves in the surface of said nozzle extending from said outlet opening to an upper portion of said nozzle, and

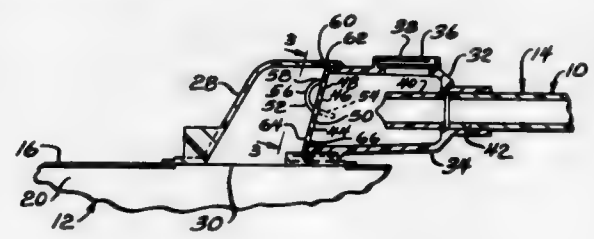
manually operable ratchet means mounted on said syringe body portion and operatively coupled to said plunger for depression of said plunger in selected calibrated increments upon manual actuation of said ratchet means by a digit of the hand of the user holding said syringe body portion.

4,512,770

LIQUID DRAINAGE SYSTEM WITH ANTI-REFLUX VALVE

James P. Cianci, Cary, and Terry N. Layton, Arlington Heights, both of Ill., assignors to The Kendall Company, Boston, Mass.

Filed Jan. 27, 1983, Ser. No. 461,350
Int. Cl.[3] A61M *1/00*
U.S. Cl. 604—323 7 Claims



7. A urine drainage system, comprising:

a receptacle having a chamber to receive and collect urine, and a connector attached to a wall of the receptacle and communicating with the chamber;

a drip chamber having a lower portion received in the connector, said drip chamber having a vent with a bacteria filter covering the vent, and an annular wall with a lower, open peripheral edge defining a valve seat, said seat being disposed at an acute angle relative to a horizontal plane when the receptacle is in an upright position, and thus defining a lower seat portion which is located nearest the receptacle and an upper seat portion which is located farthest from the receptacle;

an anti-reflux valve comprising a sheet of flexible material extending over said valve seat, said anti-reflux valve sheet being of sufficiently large dimensions to entirely cover said valve seat, said valve having an upper valve portion, underside and a lower valve portion; and

means for retaining said upper valve portion against said upper seat portion comprising a pair of opposed arcuate retaining arms, each arm having one end secured in a central portion of the drip chamber and extending through central portions of said valve seat and said valve, the arm terminating in an arcuate end engaging against said upper valve portion on the underside thereof and holding it against said upper seat portion.

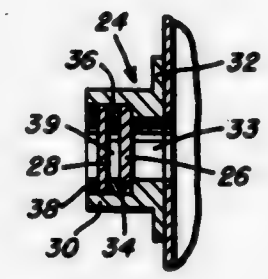
4,512,771

VENTING ASSEMBLY FOR A SEALED BODY FLUID DRAINAGE DEVICE

William J. Norton, Berkeley Heights, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Division of Ser. No. 309,130, Oct. 6, 1981, Pat. No. 4,457,758.
This application Feb. 16, 1984, Ser. No. 580,641
Int. Cl.[3] A61M 1/00
U.S. Cl. 604—824 14 Claims

6. In a closed body urine drainage system having a urine retaining drainage bag with means for communication with a body orifice, a vent assembly, said vent assembly including a filter support surface, a first inner gas permeable, liquid-repellant filter means supported on said support surface, annular spacer means located on said first filter means, a second outer gas permeable bacteria filter means located on said annular spacer means, said spacer means maintaining said second filter means in spaced non-contacting relation to said first filter means, said first filter means being adapted to shield said second filter means from wetting through outward movement of urine from said chamber with the non-contacting relation between the first filter means and second filter means precluding a urine wicking action therebetween and thereby preserving the effectiveness of the bacteria filter barrier while allowing the free passage of gas through the venting assembly.

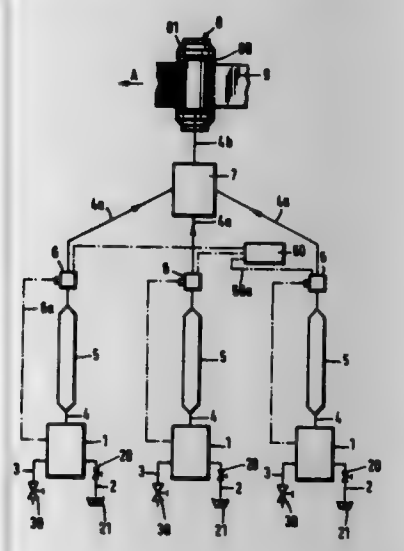


4,512,772

METHOD OF APPLYING FOAMED DYELIQUORS TO FIBROUS SUBSTRATES OR THE LIKE

Mathias Mitter, Falkenstr. 57, D-4815 Schloss Holte, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,109
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150937; Dec. 23, 1981, 3150939
Int. Cl.³ D06B *11/00, 19/00*
U.S. Cl. 8—477 13 Claims



1. A method of applying dyeliquors to a moving substrate, comprising the steps of separately foaming differently colored dyeliquors; merging specific proportions of foamed dyeliquors at a collecting location; and applying the thus merged foamed dyeliquors to the substrate, including passing the foamed dyeliquors through the interstices of a screen.

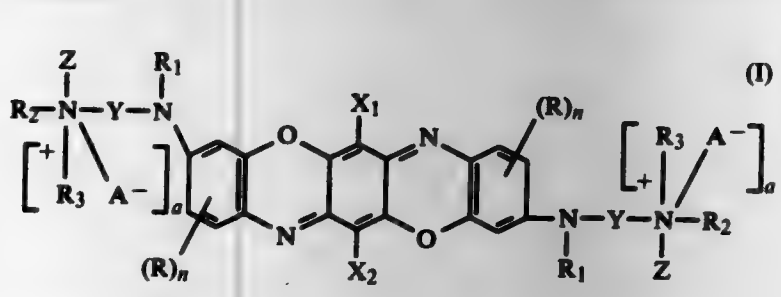
4,512,773

CATIONIC TRIPHENDIOXAZINE DYES, METHODS FOR THEIR MANUFACTURE AND THEIR USE FOR DYEING CELLULOSIC SUBSTRATES

Kenneth Anderton; Nigel Hall; Brian Parton; Andrew H. M. Renfrew, all of Lancashire, and Malcolm G. Shaw, Stirlingshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 10, 1983, Ser. No. 493,262
Claims priority, application United Kingdom, May 24, 1982, 8215052
Int. Cl.³ C09B *19/02;* D06P *3/58*
U.S. Cl. 8—657 9 Claims

1. A triphendioxazine dyestuff of blue shade having the formula:



(I)

wherein

X_1 and X_2 are both halogen;

$(R)_n$ represents n substituents R each of which is independently halogen and n is 0 or 1;

R_1 is hydrogen or a lower alkyl group;

Y is a linear or branched aliphatic group containing from 2 to 6 carbon atoms and optionally containing one or more hydroxy or alkoxy substituents;

R_2 is hydrogen, lower alkyl, hydroxy substituted lower alkyl, phenyl, 3- or 4- nitrophenyl, benzyl or beta-sulphatoethyl;

R_3 is hydrogen or a lower alkyl group;

A^- is an anion and a is 1 or 0; and

Z is hydrogen or a lower alkyl group.

4,512,774

RESIDUAL FUEL OIL CONDITIONERS CONTAINING METAL SALTS IN AQUEOUS SOLUTION

John G. Myers, Pittsburgh; Douglas P. Logan, and Jerry L. Walker, both of Coraopolis, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Dec. 27, 1978, Ser. No. 973,783
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 13 Claims

1. A residual fuel oil conditioner for improving combustion and preventing, inhibiting, or removing combustion deposits and corrosion of fuel burning equipment resulting from the burning of residual fuel oils, consisting essentially of an aqueous solution of

a. from 2.0 to 20.0% by weight of at least one water soluble metal salt selected from the halides, sulfates, and nitrates of magnesium, manganese, zinc, copper, lead, iron, nickel, aluminum, calcium and barium; and

b. from 0.1 to 25% by weight of a surfactant having an HLB of 12 to 17.

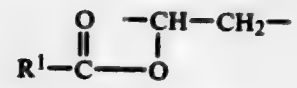
4,512,775

COLD FLOW IMPROVER

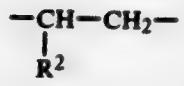
Jackson C. Chen, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 3, 1983, Ser. No. 538,502
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—62 22 Claims

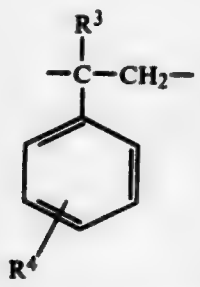
1. A polymer which is effective in lowering the cold flow temperature of middle distillate fuel, said polymer containing (a) about 50 to 90 weight percent of units having the structure $-CH_2CH_2-$, (b) about 10 to 40 weight percent of units having the structure



wherein R^1 is selected from the group consisting of hydrogen and aliphatic hydrocarbon groups containing 1–11 carbon atoms, (c) about 0.2 to 10 weight percent of units having the structure



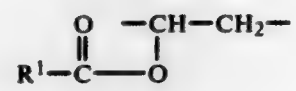
wherein R^2 is an aliphatic hydrocarbon group containing 1–28 carbon atoms and (d) about 1 to 30 weight percent of units having the structure



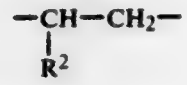
wherein R^3 is selected from the group consisting of hydrogen and methyl and R^4 is selected from the group consisting of hydrogen and aliphatic hydrocarbons containing 1–30 carbon atoms, said polymer having a number average molecular weight of about 1,000–10,000.

12. A distillate petroleum fuel containing an amount sufficient to improve cold flow properties of a polymer having a

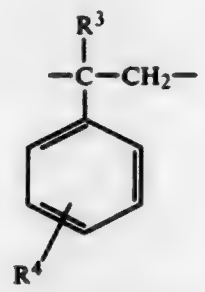
number average molecular weight of about 1,000–10,000 and containing (a) about 50 to 90 weight percent of units having the structure CH_2CH_2, (b) about 10 to 40 weight percent of units having the structure



wherein R^1 is selected from the group consisting of hydrogen and aliphatic hydrocarbon groups containing 1–11 carbon atoms, (c) about 0.2 to 10 weight percent of units having the structure



wherein R^2 is an aliphatic hydrocarbon group containing 1–28 carbon atoms and (d) about 1 to 30 weight percent of units having the structure



wherein R^3 is selected from the group consisting of hydrogen and methyl and R^4 is selected from the group consisting of hydrogen and aliphatic hydrocarbons containing 1–30 carbon atoms.

4,512,776

IONIC POLYMER-POLYLACTONE COMPOSITIONS AS FLOW IMPROVERS FOR OILS AND FUELS

Robert D. Lundberg, Bridgewater, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 23, 1983, Ser. No. 565,188

Int. Cl.³ C10L *1/24*

U.S. Cl. 44—62 **38 Claims**

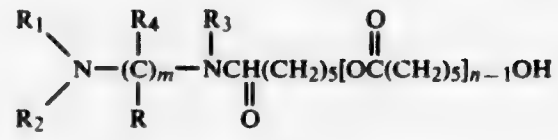
1. A process for decreasing the pour point of hydrocarbon oils and fuels which comprises adding about 25 parts per million to about 1.0 weight percent of said oil or said fuel of a sulfonated polymer to said fuel or said oil, said sulfonated polymer having about 5 to about 100 meq. of sulfonate groups per 100 grams of said sulfonated polymer, said sulfonate groups being neutralized with a polycaprolactone polymer having the formula:

wherein R_1 or R_2 is an alkyl, cycloalkyl heterocyclic or aryl group, R_3, R_4 and R_5 are a hydrogen or alkyl, cycloalkyl, or aryl groups, m equals 1 to 20 and n equals 1 to about 500.

21. A solution which comprises:

(a) a hydrocarbon oil or fuel; and

(b) about 20 to about 10,000 ppm of a polymer sulfonic acid which has about 5 to about 100 meq. of sulfonate groups per 100 grams of said sulfonated polymer, said sulfonate groups being neutralized with a polycaprolactone polymer having the formula:



wherein R_1 or R_2 is an alkyl, cycloalkyl heterocyclic or aryl group, R_3, R_4 and R_5 are a hydrogen or alkyl, cycloalkyl, or aryl groups m equals 1 to 20 and n equals about 1 to about 500.

4,512,777

PURIFICATION OF AQUEOUS EFFLUENTS

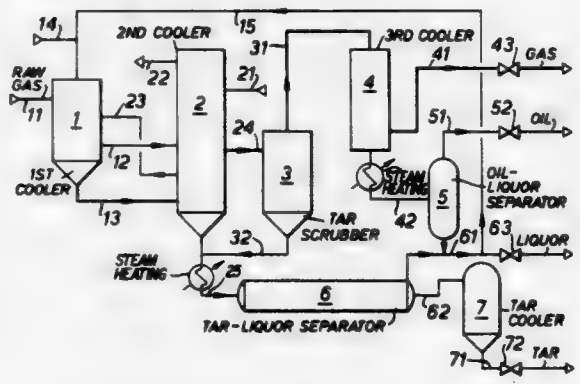
Keith R. Wild, Tamworth, England, assignor to British Gas Corporation, England

Filed Jul. 7, 1983, Ser. No. 511,585

Claims priority, application United Kingdom, Aug. 4, 1982, 8222489

Int. Cl.³ C10J *3/00*

U.S. Cl. 48—210 **4 Claims**



1. In a process for the separation of aqueous and organic condensible tar liquid from a synthesis gas produced by gasification of coal wherein said aqueous and organic tar liquid are condensed out by cooling, said condensation being effected at a pressure within the range 5 to 150 bar, the improvement consisting in effecting separation of the condensate into an aqueous phase and an organic tar liquid phase at a pressure of 5 to 150 bar and at a temperature of 125° C. to 250° C. in a separator.

4,512,778

ADSORPTION PROCESSES

Guy Simonet, and Léon Hay, both of Paris, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude l'Exploitation des Procedes Georges Claude, Paris, France

Filed Oct. 12, 1983, Ser. No. 541,082

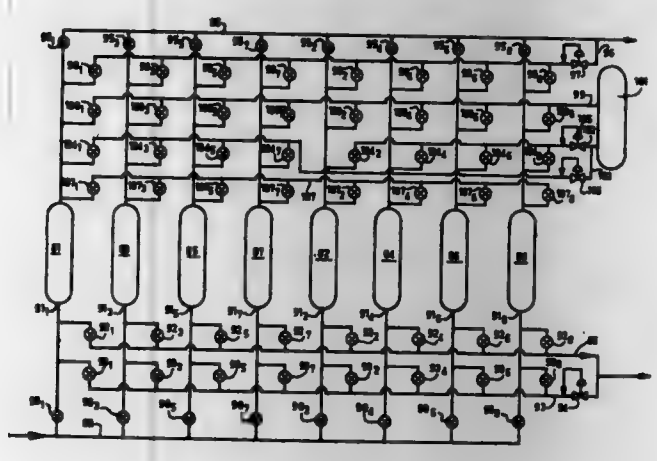
Claims priority, application France, Oct. 22, 1982, 82 17676

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **7 Claims**

1. In an adsorption process utilising a plurality of adsorbers with the following successive operating stages: isobaric production at so-called high pressure in equidirectional flow on several adsorbers at the same time, at least one decompression in equidirectional flow by balancing with another adsorber which is in the course of recompression in contradirectional flow, decompression to intermediate pressure in equidirectional flow, final decompression to so-called low pressure in contradirectional flow, elution at the said low pressure in contradirectional flow, recompression in contradirectional flow by at least one balancing action, final recompression in contradirectional flow by derivation of a part of the production flow, the improvement which consists in that the gas originating from the said decompression to intermediate pressure is fed into a buffer tank and the gas used for elution is drawn from the said buffer tank, and in that each adsorber has an operating cycle delayed by 1/nth of a cycle period (T) with

respect to a preceding one (n being the number of adsorbers), and in that each production stage has a duration of (x/n)T (x being the number of adsorbers in simultaneous production), with "n" greater than or equal to 6, and "x" greater than or



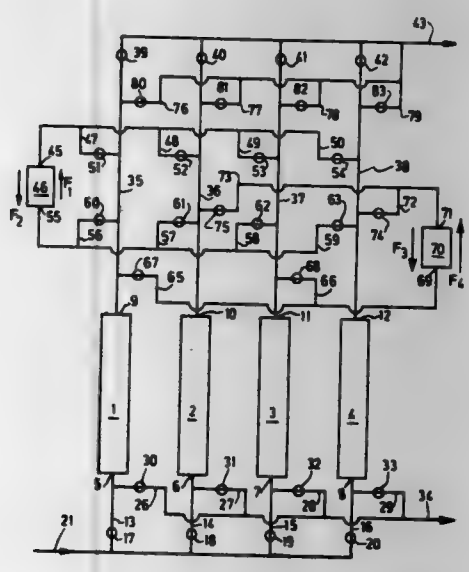
equal to 2, and in that the time period to decompress each adsorber to an intermediate pressure is less than the time period to elute each adsorber, and in that the gas drawn from the buffer tank for elution of an adsorber is supplied to that buffer tank by at least two different adsorbers.

4,512,779

METHOD AND INSTALLATION FOR SEPARATING A COMPOSITE GAS BY ADSORPTION

Léon Haÿ, Paris, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Oct. 31, 1983, Ser. No. 546,852
Claims priority, application France, Nov. 12, 1982, 82 19006
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 **14 Claims**



1. A method for separating by adsorption a composite gas constituted by at least two components, said method employing at least three adsorbers in each of which adsorbers are carried out, in a cyclic and staggered manner with respect to time from one adsorber to another adsorber, the following successive operational phases:

(a) a production operational phase with a co-current flow of said composite gas and production of a separated gaseous current and trapping of at least one component in said adsorber with, during a part of said production phase, the bypassing of a fraction of said separated gaseous current for a final counter-current repressurization of a second adsorber in course of repressurization in accordance with phase (g) mentioned below;

(b) a co-current depressurization phase with a drawing-off of a gaseous current for repressurization by balancing at an intermediate pressure level of an adsorber in the course of repressurization in accordance with phase (f) mentioned below, said depressurization phase corresponding to a balancing and being optionally divided into a plurality of depressurization stages, each one thereof, for the repressurization of various adsorbers, at intermediate pressure levels, again in accordance with said phase (f);

(c) a co-current depressurization phase down to a low intermediate pressure with drawing-off of a gaseous current for the purpose of the elution of an adsorber in the course of elution, in accordance with phase (e) mentioned below;

(d) a final counter-current depressurization phase down to a relatively low-pressure;

(e) a counter-current elution phase at regeneration pressure, the elution current coming from an adsorber in the course of depressurization in accordance with phase (c);

(f) a counter-current repressurization phase by balancing of pressures with an adsorber in the course of depressurization in accordance with phase (b), said repressurization phase being optionally divided into a plurality of successive stages by balancing of the pressures with the various adsorbers in the course of depressurization in accordance with phase (b);

(g) a final counter-current repressurization phase, the repressurization current coming from a bypassing of a fraction of the current issuing from an adsorber in course of production in accordance with phase (a);

the improvement wherein the successive balancing phases between a first pair of adsorbers and then a second, different pair of adsorbers are carried out by passing the balancing current from a co-current depressurization phase of one adsorber into one end of an auxiliary column employing a longitudinal segregation of the undesirable component or components, through that auxiliary column and out the other end thereof to a counter-current repressurization phase of another adsorber, currents corresponding to two successive balancings between the adsorbers in said first pair and then between the adsorbers in said second different pair flowing through said column in opposite directions of flow.

4,512,780

PRESSURE SWING ADSORPTION WITH INTERMEDIATE PRODUCT RECOVERY

Andrija Fuderer, Antwerpen, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 8, 1983, Ser. No. 549,746
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 **40 Claims**

1. A pressure swing adsorption process for the separation of a feed gas mixture containing a less readily adsorbable component, an intermediately adsorbable component and a more readily adsorbable component, with recovery of said intermediate component as a desired product, in an adsorption system having at least four adsorbent beds, in each of which, on a cyclic basis, undergoes a processing sequence comprising:

(a) introducing the feed gas mixture to the feed end of the adsorbent bed at a higher adsorption pressure, with the less readily adsorbent component being discharged from the product end of the bed, and with a leading adsorption front of said intermediate component of said feed gas mixture being established in the bed ahead of a trailing adsorption front of said more readily adsorbable component of said feed gas mixture;

(b) introducing to the feed end of the bed a displacement gas essentially free of the less readily adsorbent component, the molar concentration of said intermediate and/or more readily adsorbable components being greater in said displacement gas than in the feed gas mixture, said gas being introduced such that the less readily adsorbable component is essentially completely displaced from the bed prior to initiation of intermediate component recovery;

(c) cocurrently depressurizing said bed with discharge of said intermediate component from the product end thereof as a product of desired purity;

(d) countercurrently depressurizing and/or purging the bed to remove said more readily adsorbable component therefrom; and

(e) repressurizing said bed to the higher adsorption pressure, whereby the intermediately adsorbable component can be recovered as a separate product of desired purity rather than being recovered with the least readily adsorbable component, or with the more readily adsorbable component or as a waste stream with said less and more readily adsorbable components.

4,512,781

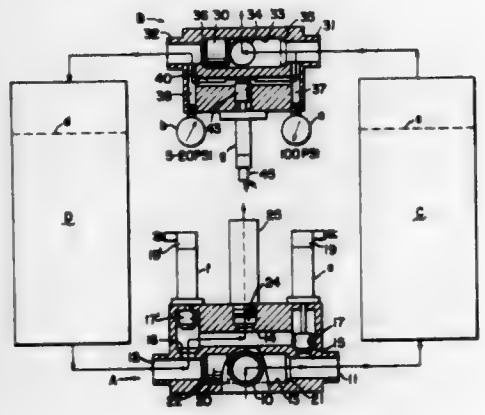
SHUTTLE VALVES AND SYSTEM FOR FLUID CONTROL

Michael J. Caralli, Irwin, and Gary W. Friedline, New Alexandria, both of Pa., assignors to Pittsburgh Brass Manufacturing Company, Irwin, Pa.

Filed Nov. 14, 1983, Ser. No. 551,146

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **17 Claims**



1. A system for automatically drying a gas such as air supplied under pressure thereto and for automatically rejuvenating desiccant used therein which comprises, a pair of drying tanks having desiccant material therein, a moist air input shuttle valve unit and a dry air output shuttle valve unit, each of said valve units having a main through-passageway therein, the main passageway of said input valve unit being connected at its opposite ends to one end of each tank, the main passageway of said output valve unit being connected at its opposite ends to the other ends of each tank, a moist pressurized air input port substantially centrally connected to the main passageway of said input valve unit, a dry air outlet connected substantially centrally to said main passageway of said output valve unit; said input valve unit having a by-pass passageway connected at its ends to opposite outer ends of the main passageway, secondary valve means adapted to open and close off opposite ends of said by-pass passageway with respect to the main passageway, an output discharge port open from said by-pass passageway; primary pressure-sensitive slide valve means for each of said valve units operatively positioned for closing-off opposite ends of the main passageway therein and adapted to shift from one end closing-off position to the other in accordance with difference in air pressure at opposite ends of the main passageway; said output valve unit having a by-pass passageway connected to opposite ends of its said main passageway and adapted to bleed-off a portion of dried air moving into its said main passageway and introduce it alternately in a purging reverse flow into each of said tanks, control valve means operatively carried by said output valve unit and positioned to automatically selectively control the pressure and amount of air flow through its said by-pass passageway, said secondary valve means of said input valve unit being adapted to alternatively open and close-off opposite ends of its said by-pass passageway when its said pressure-sensitive valve means is shifted within said main passageway to alternately close-off flow from said air input port to one of said pair of tanks and to open return flow from the other of said pair of tanks into said by-pass passageway for receiving purging air from the other tank for discharging it from said output discharge port, and said control valve means of said output valve unit being adapted to automatically decrease and then increase the pressure of air flow between opposite ends of its said by-pass passageway.

16. A method for automatically continuously drying a moisture-containing gas such as air supplied under pressure by alternate forward movement through a system having a pair of first and second tanks containing dessicant material which comprises, introducing and passing moisturized air forwardly under pressure through the first tank and out from one end thereof as dried air while bleeding-off a portion of the dried air and moving it under reduced pressure into and through the second tank in a counter-purging direction of flow therethrough, thereafter increasing the pressure of the air being bled-off into the second tank to substantially the full pressure of dried air leaving the first tank to substantially equalize pressure of air flow between the pair of tanks, and then shutting-off the flow of moisturized air into the tank first and introducing it into and passing it through the second tank and out from one end thereof as dried air while bleeding-off a portion of the dried air and moving it under reduced pressure into and through the first tank in a counter-purging direction of flow therethrough, thereafter increasing the pressure of air being bled-off into the first tank to substantially the full pressure of dried air leaving the second tank to substantially equalize air pressure between the two tanks, and then shutting-off the flow of moisturized air into the second tank and again introducing it into and passing it through the first tank and out from the one end thereof as dried air and repeating the defined operations.

4,512,782

MULTISTAGE RECTIFICATION OF GASEOUS HYDROCARBONS CONTAINING SOUR GASES

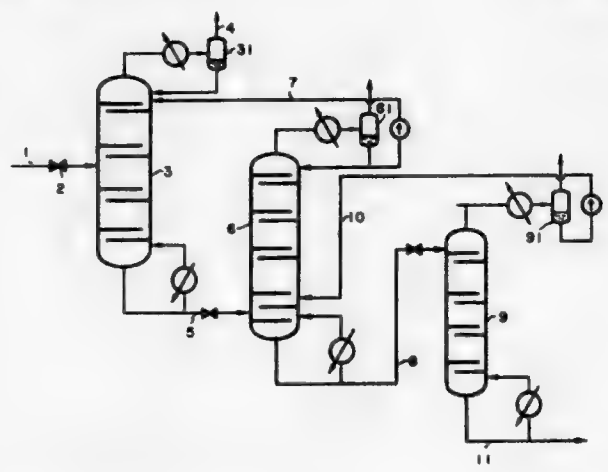
Heinz Bauer, Neuried, and Hans Becker, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,506

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303651

Int. Cl.³ B01D *19/00*

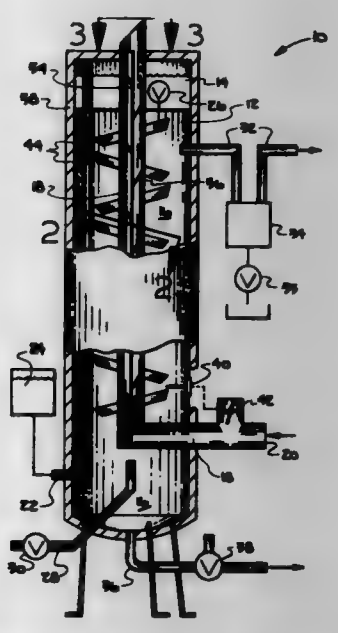
U.S. Cl. 55—48 **19 Claims**



1. A process for the fractionation of a gaseous mixture under pressure, said mixture containing methane, C_2, C_3, C_4+ inert gas, and sour gases comprising hydrogen sulfide, and carbon dioxide, the total of the sour gases being at least 1 mol %, wherein the higher hydrocarbons are separated by rectification as the bottoms product, the improvement comprising conducting the rectification in three rectification stages: in the first rectification stage, separating a head product substantially free of C_{4+} hydrocarbons; feeding the bottoms of the first rectification stage to the second rectification stage, and separating therein further C_{3-} hydrocarbons and a fraction of the hydrogen sulfide as the head product and recycling the second stage head product into the first rectification stage to function therein at least in part as reflux; passing bottoms product of the second rectification stage into the third rectification stage, and

separating residual hydrogen sulfide and residual proportions of C_3– hydrocarbons as the head product; and withdrawing H_2S-free C_{4+} hydrocarbons bottoms product from the third rectification stage.

4,512,783
GAS EXTRACTOR
Charles K. Stevenson, Wichita, Kans., assignor to Midland Gas Extractors, Inc., Wichita, Kans.
Filed Jan. 23, 1984, Ser. No. 573,288
Int. Cl.[3] B01D *49/00*
U.S. Cl. 55—160 10 Claims



1. An oil well gas extractor which treats the crude oil from the well and utilizes the heat from the exhaust gases of the internal combustion engine driving the pumping unit, the extractor including:

a vertical tank having an extractor chamber therein;

a crude oil reservoir located in the top portions of said tank, a supply line connecting a source of crude to the reservoir;

a first valve means in the reservoir controlling the oil flow rate from the reservoir to the extractor chamber;

an exhaust pipe passing longitudinally up through the vertical tank to atmosphere, the inlet end of the exhaust pipe connected to the exhaust gases from said engine;

temperature sensing means in the chamber;

a second valve means in the exhaust pipe positioned upstream of the tank, opening to atmosphere;

servo means controlled by the temperature sensing means which opens and closes the second valve means so as to bypass the exhaust gases and maintain a constant temperature in the extractor chamber;

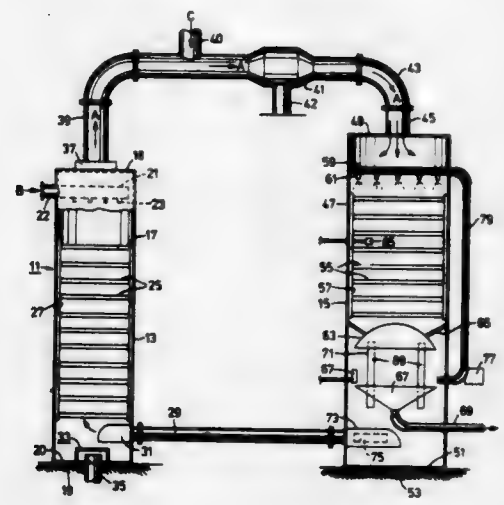
a gas outlet passage in the extractor chamber connected to the intake of said engine;

an oil drain line at the bottom of the extractor chamber; the improvement comprising:

a controlled air inlet passage in the extractor chamber; and

a plurality of baffle pans longitudinally positioned along the exhaust pipe in concentric relation to the axis of the pipe, each adjacent pan being oppositely tilted from the horizontal and having a drain opening in the lower side thereof whereby the oil flowing from one pan to the next flows across the bottom of each pan before draining to the next adjacent pan.

4,512,784
CLOSED LOOP WATER TREATING SYSTEM
Walter W. De Loach, 818 Cattlemen Rd., Sarasota, Fla. 33582
Filed Sep. 19, 1983, Ser. No. 533,216
Int. Cl.[3] B01D *19/00, 53/14*
U.S. Cl. 55—196 3 Claims



1. A raw water treating system comprising in combination:

(a) a first chamber formed by a first envelope having a top and a bottom;

(b) a first frame structure disposed within said envelop;

(c) a plurality of slat trays supported by said first frame structure and disposed in spaced apart vertical orientation within said first envelope;

(d) a raw water inlet conduit mounted to said first envelope adjacent the top thereof and fluidly communicating with said first chamber, said conduit having a plurality of spray heads mounted thereto within said envelope;

(e) a gas inlet conduit mounted to said first envelope adjacent the bottom thereof;

(f) a product water conduit mounted to said bottom and protruding thereabove;

(g) an air resistor mounted to said bottom within said envelope and surrounding said product water conduit;

(h) a demister mounted to said top and disposed outside of said first envelope and fluidly communicating with said first chamber;

(i) a second chamber formed by a second envelope having a top and a bottom;

(j) a second frame structure disposed within said second envelope;

(k) a plurality of slat trays supported by said second frame structure and disposed in spaced apart vertical orientation;

(l) a gas inlet conduit mounted to said top and fluidly communicating with said second chamber;

(m) a wash header conduit disposed in said second chamber beneath said top and above said slat trays;

(n) collecting means mounted within said second envelope beneath said slat trays for receiving precipitate material;

(o) means for removing precipitate material from said collecting means;

(p) shroud means above said collecting means and beneath said slat trays for preventing said precipitate material from entering a plurality of

(g) air relief ports disposed beneath said shroud means, said ports being so constructed and arranged that gaseous fluid is carried from beneath said shroud to a zone beneath said collector;

(r) conduit means for carrying iron salt solution to said wash header;

(s) pump means for moving said iron solution in said conduit means;

(t) means within said second chamber for determing when more iron salt solution is needed in said conduit means;

(u) means for removing gaseous fluid from the bottom zone of said second chamber;

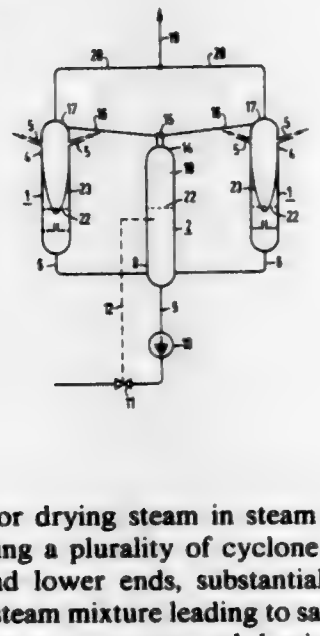
(v) means for dewatering said gaseous fluid before it is removed from said second chamber;
(w) means for conducting said gaseous fluid into said first chamber; and
(x) means for conducting gas from said demister into a top zone of said second chamber.

4,512,785

APPARATUS FOR DRYING STEAM IN STEAM POWER GENERATING STATIONS

Georg Lösel, Uttenreuth, and Egon Schneider, Grossenseebach, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,209
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211784
Int. Cl.³ B01D *53/24*
U.S. Cl. 55—204 **7 Claims**



1. Apparatus for drying steam in steam power generating stations, comprising a plurality of cyclone separators having upper regions and lower ends, substantially tangential feed lines for a water-steam mixture leading to said upper regions of said cyclone separators, a water tank having an upper region and a lower end, respective discharge lines connected from said lower ends of said cyclone separators to said water tank, a water drain line connected to said lower end of said water tank, and a plurality of upwardly extending equalizing lines respectively connected at a lower end thereof to highest points of said upper regions of said water tank, each of said equalizing lines being connected at an upper end thereof to the upper region of a different one of said cyclone separators above said feed lines thereof.

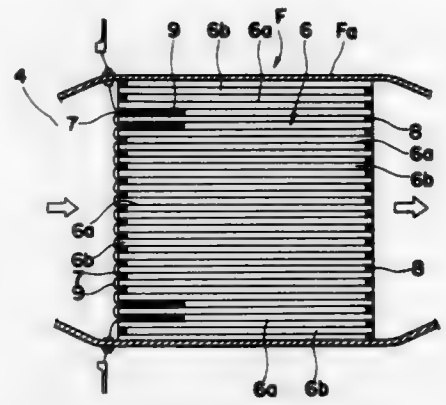
4,512,786

EXHAUST GAS PURIFYING DEVICE

Shigeru Sakurai, and Shigeki Hamada, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 20, 1983, Ser. No. 486,819
Claims priority, application Japan, Apr. 21, 1982, 57-58746[U]; Apr. 24, 1982, 57-60148[U]
Int. Cl.³ B01D *39/20, 46/24, 46/42*
U.S. Cl. 55—282 **3 Claims**

1. An exhaust gas purifying device comprising a housing having an inlet end, an outlet end and a generally elongated filter block disposed therebetween for use with a diesel engine having an exhaust passage for the discharge of exhaust gases from the engine to the atmosphere;
wherein said filter block has parallel channels defined therein so as to extend in a direction longitudinally of the filter block, said parallel channels being separated from one another by gas-permeable partition walls and having respective inlet ends for the introduction of exhaust gases thereinto and outlet ends for the discharge of exhaust gases therefrom;
a plurality of first blind plugs provided separate from the filter block and closing the inlet ends of some of the channels;
a plurality of second blind plugs closing the outlet ends of the other channels; and
an electric heating means comprised of at least one continuous heating wire having a plurality of generally U-shaped



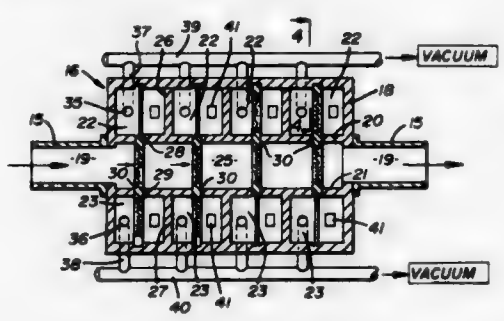
wire portions which are electrically connected in series with each other, said U-shaped wire portions being inserted into the inlet ends of said some of the channels and supported by the respective first blind plugs, said U-shaped wire portions, when the heating wire is electrically energized, incinerating the exhaust gas particulates collected in the filter block.

4,512,787

DEVICE FOR FILTERING STACK GASES

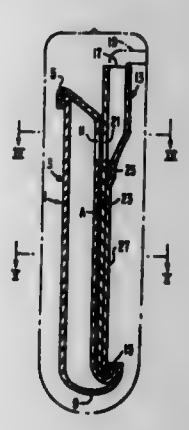
J. Paul Mathews, 7960 Market St., Youngstown, Ohio 44512

Filed Oct. 19, 1983, Ser. No. 543,486
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—284 **6 Claims**



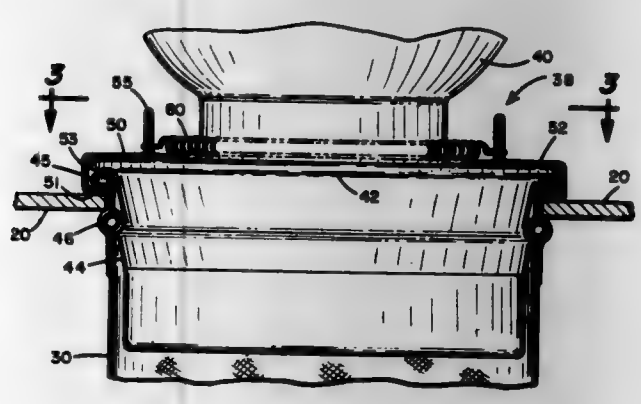
1. A device for filtering particulates from flue gases comprising a housing having top, bottom, side and end walls, said end walls having openings therein, first partitions in said housing defining a flue gas passageway therethrough communicating with said openings in said end walls, secondary partitions in said housing at right angles to said first partitions defining a plurality of chambers, said first partitions having slot-like openings therein communicating with each of said plurality of chambers, a plurality of panels slidably positioned in said slot-like openings for movement transversely of said first partitions and said flue gas passageway defined thereby, a plurality of filter elements positioned in side by side pairs in each of said plurality of panels, said chambers positioned to receive portions of said panels and one of each of said pairs of filter elements therein with the other one of each of said pairs of filter elements being in said flue gas passageway, said chambers having openings therein, means including vacuum conduits in communication with said openings for generating a substantial reverse air flow through each of said chambers and the filter elements therein so as to remove particulates from said filter elements, valves positioned and arranged in said vacuum conduits for allowing said reverse air flow through said chambers and said filter elements therein, said valves connected to said panels so as to be moved thereby.

4,512,788
TOP LOADING UPRIGHT VACUUM CLEANER BAG AND METHOD OF MANUFACTURING THE SAME
Raymond P. Weinstein, Raleigh, N.C., assignor to Home Care Industries, Inc., Oxford, N.C.
Filed Sep. 6, 1983, Ser. No. 529,568
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—374 19 Claims



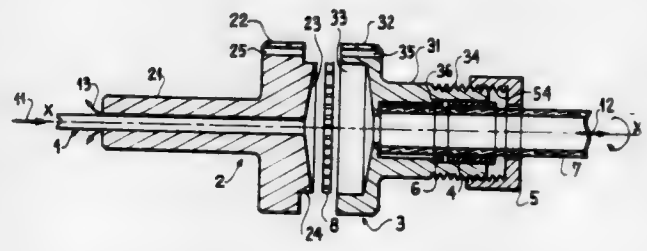
1. In a vacuum cleaner bag having a first collection tube of air pervious filter material having a closed top and a closed bottom and an aperture through one wall near the top thereof, and a second transfer tube having an open top and a narrower width than the first collection tube and an aperture in a wall thereof which cooperates with the aperture in the first collection tube, said first and second tubes adhesively secured together about the cooperating apertures, with the second transfer tube extending below said cooperating apertures, wherein said vacuum cleaner bag is for use with a top loading upright vacuum cleaner; the improvement wherein said second transfer tube has a thermoplastic coating within said tube around the inner walls thereof at least at the portion thereof adjacent the lower edge of the aperture therein and extending across said second transfer tube, and the inner walls of the second transfer tube are sealed together by fusion of said thermoplastic material at a location adjacent the lower edge of said aperture.

4,512,789
FILTER BAG CLAMP
Douglas L. Pettit, Owatonna, and Calvin E. Piilola, Minneapolis, both of Minn., assignors to General Resource Corporation, Minneapolis, Minn.
Filed Jan. 9, 1984, Ser. No. 569,039
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—378 7 Claims



1. An apparatus for securing a filter bag in suspension in a bag housing through an opening in a baffle plate, comprising
(a) a cover plate having a bottom downwardly projecting cylindrical section and having a top upwardly projecting mouth;
(b) at least one resilient O-ring fitted over said cylindrical section and adapted for constraining said bag against said cylindrical section;
(c) a first U-shaped clamp fitted over an edge of said cover plate, said first clamp having a lower leg for constraining a bag and said at least one O-ring against said cover plate and having an upper leg extending along the top of said cover plate, said upper leg having means for attachment of a spring thereto;
(d) a second U-shaped clamp fitted over an edge of said cover plate at a position opposite said projecting mouth relative to said first clamp, said second clamp having a lower leg for constraining a bag and said at least one O-ring against said cover plate and having an upper leg extending along the top of said cover plate, said upper leg of said second clamp having means for attachment of a spring thereto; and
(a) at least one tension spring attached between said first clamp and said second clamp.

4,512,790
ROTARY SEALING DEVICE
Michel Faure; Jean Y. Regeffe; Yves Lumineau, and André Jouanin, all of Conflans-Ste-Honorine, France, assignors to Lignes Telegraphiques & Telephoniques, Honorine, France
Filed Apr. 16, 1982, Ser. No. 369,275
Claims priority, application France, Apr. 21, 1981, 81 07914
Int. Cl.³ C03B *37/07*
U.S. Cl. 65—13 9 Claims

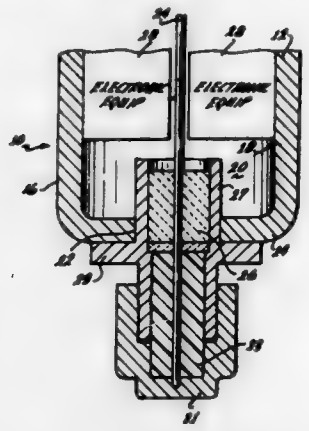


1. A rotary sealing device connecting a stationary gas supply pipe to a rotary tube means for rotating about its axis, comprising a first rotary means for slidably receiving said pipe and having a means defining a first opening for communicating with said pipe, a second rotary means for receiving and sealing said rotary tube means, said second rotary means being fixed to said first rotary means, and a third means clamped between said first and second rotary means for creating an overpressure within the first rotary means in which penetration of vapor from outside said device into said first opening and towards said second rotary means is opposed.

4,512,791
HERMETICALLY SEALED INSULATING ASSEMBLY
James C. Kyle, 2547 Fisher Rd., Roseburg, Oreg. 97470
Division of Ser. No. 322,014, Nov. 16, 1981, Pat. No. 4,461,926, which is a continuation of Ser. No. 111,787, Jan. 9, 1980, abandoned. This application May 2, 1984, Ser. No. 606,410
Int. Cl.³ C03C *27/02, 3/22;* H01B *17/26*
U.S. Cl. 65—21.1 5 Claims

1. A method of hermetically sealing first and second spaced members, including the steps of
providing a mixture of the oxides of lead, zinc, aluminum, silicon, cerium, lanthanum, cobalt, sodium, zirconium, bismuth and molybdenum,
heating the mixture to a temperature of at least 2000° F. for several hours,
quenching the mixture in water,
forming particles of the quenched mixture into beads,

disposing the beads in the space between the first and second spaced members,



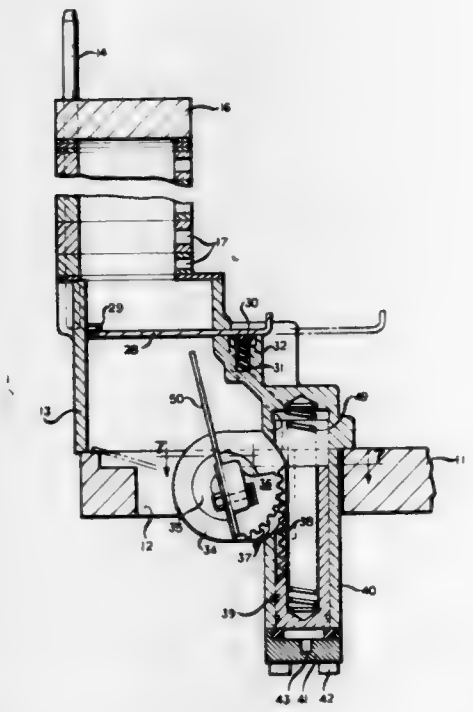
heating the assembly for a limited period of time at an elevated temperature in the order of 1900° F., and
then quenching the assembly.

4,512,792

COOLING WIND SHUT-OFF VALVE FOR GLASS FORMING MOLD

George W. Irwin, Holland, Ohio, and Eustace H. Mumford, Ottawa, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 11, 1983, Ser. No. 512,265
Int. Cl.[3] C03B *11/12*
U.S. Cl. 65—161 6 Claims



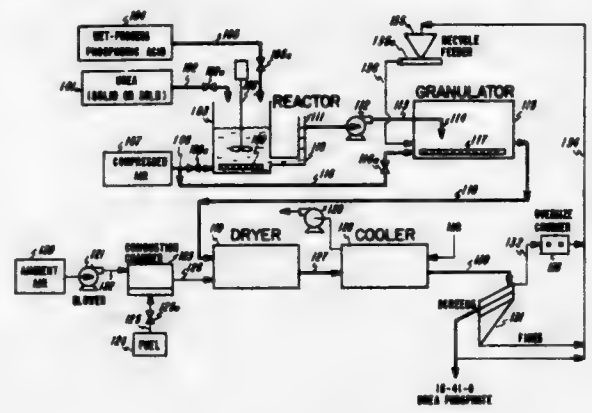
1. In a glass forming machine of the plural individual section type where a plurality of charges of molten glass are simultaneously formed in molds at a forming station and in a timed sequence other charges are formed in other forming stations with cooling air being supplied to the hollow base of each machine section, the improvement in the application of cooling air to the molds at the forming stations comprising, an elongated, hollow, generally horizontal, wind nozzle base mounted beside each of the sets of molds at the forming stations, said nozzle base overlying an opening in said machine base, said wind nozzle base comprising a casting having a pair of vertical cylinders formed therewith, said casting being positioned at the adjacent edges of two forming machine sections such that it is positioned between the molds on adjacent sections, each said cylinder constituting a vertical, fluid motor extending through an opening in a respective machine section base, wind directing nozzles on said nozzle base for receiving compressed cooling air from said base, a damper plate extending through a horizontal slot in the side of said wind nozzle base, said plate being manually movable relative to said base for regulating the flow volume of air from said base, means yieldably engaging said plate for maintaining said plate in its adjusted position, a fluid pressure operated rack in said motor, a gear sector mounted for rotation about a horizontal axis, said gear sector being in mesh with said rack, a vane mounted to said gear sector, said vane being of a size sufficient to close the air opening between the machine base and the nozzle base when rotated by said fluid motor, a source of fluid under pressure and a means for connecting said source to said motor for operating said motor.

4,512,793

GRANULATION OF UREA PHOSPHATE FROM UREA AND MERCHANT-GRADE PHOSPHORIC ACID

Cecil P. Harrison, Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 322,096, Nov. 16, 1981, Pat. No. T102,201. This application Apr. 30, 1984, Ser. No. 605,345
Int. Cl.[3] C05B *15/00*
U.S. Cl. 71—29 8 Claims



GRUM GRANULATION OF UREA PHOSPHATE

1. A process for the direct production, from wet-process phosphoric acid containing the congeneric impurities thereof therein and urea, of granular urea phosphate fertilizers having a predetermined closely controlled particle size range and excellent handling characteristics including relatively high granular crushing strength, said granular urea phosphate being eminently suitable, either alone or in homogeneous admixture with urea, for soil surface application agronomic particles, which process comprises the steps of:

(1) introducing into reactor means predetermined quantities of wet-process phosphoric acid and urea to effect a resulting slurry therein of urea phosphate, said predetermined quantities of said acid and said urea proportioned in said resulting slurry to effect a urea:H_3PO_4 mole ratio of about 1:1;

(2) mechanically agitating said slurry in said reactor means and introducing thereinto near the bottom portion thereof a stream of sweep air, the relative volume of said sweep air to the relative volume of said urea phosphate slurry ranging from about 4.0:1 to about 10:1, and being sufficient to physically remove from about 50 percent to about 70 percent of the free water in said urea phosphate slurry;

(3) subsequently removing from said reactor means at least a portion of the resulting dehydrated urea phosphate slurry material and introducing same into granulator means, together with recycled fines from a later-mentioned sizing step and predetermined quantities of additional sweep air introduced beneath the resulting granulation bed in said granulator means, said additional sweep air being in volumetric proportions to said granules in said granulator means ranging from about 10:1 to about 20:1 and being sufficient to remove substantially all of the remaining free

moisture in said urea phosphate slurry introduced thereinto; and

(4) removing at least a portion of essentially dry granular urea phosphate product from said granulator means and introducing same into drying, cooling, and sizing means wherefrom product size material is obtained and undersize as well as crushed initially oversize material is recycled to said granulator means;

said process characterized by the fact that at least about 99 percent of the free water present in said urea phosphate slurry formed in said reactor means is removed physically via sweep air introduced into both said reactor means and said granulator means and substantially no external heat energy is expended therein for such purposes.

4,512,794

MANUFACTURING AND USING NITROGEN FERTILIZER SOLUTIONS ON A FARM

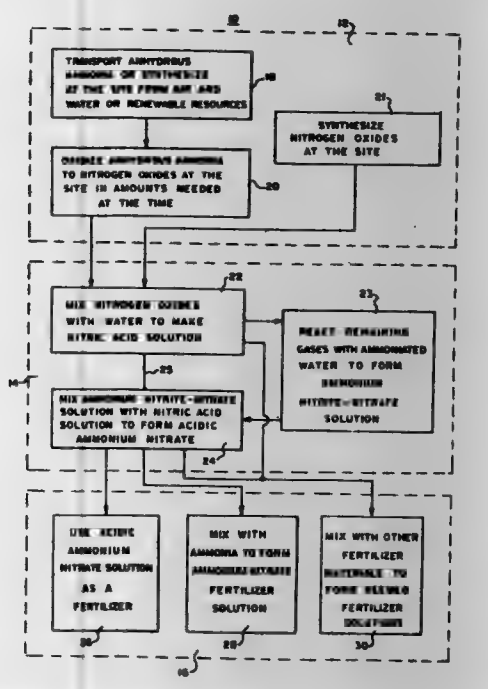
John A. Eastin, P.O. Box 389, Lincoln, Nebr. 69140

Division of Ser. No. 379,551, May 18, 1982, Pat. No. 4,427,434, which is a continuation-in-part of Ser. No. 100,825, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 824,289, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 728,788, Oct. 1, 1976, abandoned, which is a division of Ser. No. 581,050, May 27, 1975, abandoned. This application Jun. 23, 1983, Ser. No. 507,721

Int. Cl.[3] C05C *7/00, 3/00*

U.S. Cl. 71—54

25 Claims



1. A process of making nitrogen solutions from ammonia comprising the steps of:

oxidizing ammonia in air at a rate of less than 146 pounds of nitrogen per hour at a concentration of between 10% and 25% by volume of ammonia to air and at a temperature of between 1,000 and 2,000 degrees Fahrenheit in a continuous process at a pressure between atmospheric pressure and a vacuum pressure of ¼ of an atmosphere to form a continuous stream of nitrogen oxides whereby the ammonia is oxidized at a rate sufficiently slow to permit cooling by air circulation and single-pass water flow of less than 12 gallons per minute permitting the oxidation to proceed until at least equivalent quantities of nitrogen dioxide and nitric oxide are obtained;

mixing the nitrogen oxides with water at a rate of less than 12 gallons per minute to form nitric acid and nitric oxide by reaction of at least a portion of the nitrogen dioxide and water as the nitrogen oxides are formed;

flowing substantially all of the remaining nitrogen oxides and substantially all of the nitric oxide formed by the reaction of nitrogen dioxide with water to a reactor;

reacting the nitrogen oxides in the reactor with ammonium hydroxide in a continuous process at a pressure between atmospheric pressure and a vacuum pressure of ¼ of an atmosphere in a stream flowing in the range of less than 0.5 gallon each minute of ammoniated water per square foot of reactor cross section sufficiently ammoniated to provide a pH in the range of 8.0 to 8.4 passing through a mixture of nitrogen oxides in which the ratio of nitric oxide to nitrogen dioxide is greater than one to form an ammonium nitrate liquid solution at a pH above 6.7; and

combining the nitric acid and the ammonium nitrite at a pH of less than 2 to form ammonium nitrate, nitrogen dioxide and water, whereby a liquid is formed which includes ammonium nitrate.

4,512,795

NORBORNANE COMPOUNDS, PLANT GROWTH REGULATORS CONTAINING THESE COMPOUNDS, AND THEIR INTERMEDIATES

Norbert Rieber; Rolf Platz, both of Mannheim, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 11, 1983, Ser. No. 457,172

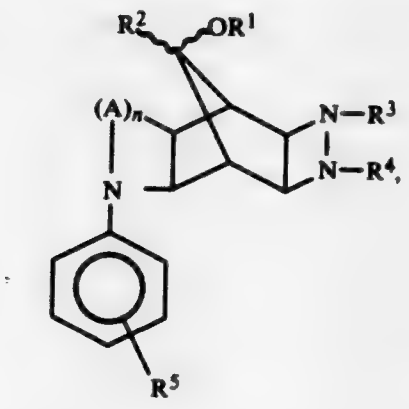
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201190; Mar. 6, 1982, 3208090; Mar. 6, 1982, 3208091

Int. Cl.[3] A01N *43/62, 43/64;* C07D *229/02, 249/16*

U.S. Cl. 71—88

3 Claims

1. A norbornane compound of the formula



II

where A is —N=N—, n is 0 or 1, R^1 is hydrogen, trimethylsilyl or trifluoroacetyl, or an acyclic or cyclic alkyl or alkylcarbonyl radical wherein each of the alkyl substituents contain from 1 to 5 carbon atoms, or R^1 and R^2 together constitute a bond, the steric arrangement of substituents OR^1 and R^2 at the C_1 bridge not being defined, and R^3 and R^4 are independently hydrogen or a C_1–C_4 alkyoxycarbonyl, or together constitute a bond, and R^5 is hydrogen, a halogen or C_1–C_4 haloalkyl wherein in each instance the halogen substituent is selected from the group consisting of fluorine, bromine and chlorine.

4,512,796

HALOACETYLAMINOMETHYL DIOXOLANE HERBICIDE ANTIDOTES

Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 286,328, Jul. 24, 1981, Pat. No. 4,406,686. This application May 25, 1983, Ser. No. 497,943

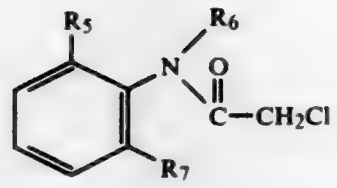
Int. Cl.[3] A01N *43/28*

U.S. Cl. 71—88

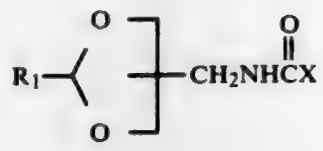
10 Claims

1. A herbicidal composition comprising:

(a) an herbicidally effective amount of an acetanilide compound of the formula



in which
R_5 and R_7 are independently each alkyl having 1–2 carbon atoms, inclusive; and
R_6 is alkoxyalkyl having 1–4 carbon atoms, inclusive; and
(b) a non-phytotoxic antidotally effective amount of a compound of the formula



in which
X is halomethyl, wherein halo is selected from the group consisting of chlorine, bromine, and iodine and the methyl group is mono-, di-, or tri-substituted; and
R_1 is selected from the group consisting of lower alkyl having 1–4 carbon atoms, inclusive, and alkenyloxy having from 2–6 carbon atoms, inclusive, provided that, if R_1 is alkyl the haloacetylaminomethyl moiety is attached to the ring at the 2-position.

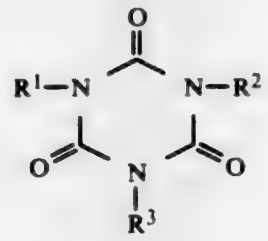
4,512,797

1,3,5-TRIAZINONES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Adolf Parg, Bad Durkheim; Gerhard Hamprecht, Weinheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

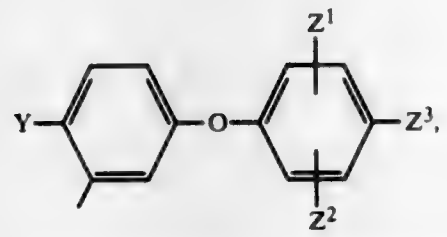
Continuation-in-part of Ser. No. 446,064, Dec. 1, 1982, abandoned. This application Jan. 28, 1983, Ser. No. 462,024
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147879
Int. Cl.³ C07D *251/34*; A01N *43/64*
U.S. Cl. 71—93 **8 Claims**

1. A 1,3,5-triazinone of the formula



(I)

where R^1 is



where Z^1 and Z^2 independently of one another are each hydrogen, halogen, nitro, cyano or carboxyl, or alkyl, haloalkyl or alkoxy, each of not more than 4 carbon atoms, Z^3 is halogen, nitro or cyano, or alkyl, haloalkyl, alkoxy, haloalkoxy, alkylmercapto, alkylsulfinyl, or alkylsulfonyl, each of not more than 4 carbon atoms, and Y is hydrogen, halogen, cyano or nitro, and R^2 is hydrogen or a saturated or unsaturated, straight-chain or branched aliphatic radical of not more than 20 carbon atoms, or R^2 is a saturated, straight-chain or branched aliphatic radical of not more than 10 carbon atoms which is substituted by halogen, cyano, hydroxyl or mercapto, or by alkoxy or alkylmercapto, each of not more than 4 carbon atoms, or by phenylmercapto, or by alkylamino or dialkylamino, where each alkyl is of 1 to 4 carbon atoms, or R^2 is cycloalkyl of 3 to 7 carbon atoms which is unsubstituted or substituted by alkoxy of 1 to 4 carbon atoms, or R^2 is phenyl which is unsubstituted or substituted by halogen, or by alkyl or alkoxy, each of 1 to 4 carbon atoms, or by nitro or cyano, or by haloalkyl, haloalkoxy or haloalkylmercapto, each of 1 to 4 carbon atoms, or R^2 is benzyl or halobenzyl, and R^3 is hydrogen, alkyl of not more than 4 carbon atoms or acyl of not more than 7 carbon atoms which is unsubstituted or substituted by halogen, or is an alkali metal ion or an ammonium ion or an alkylated ammonium ion.

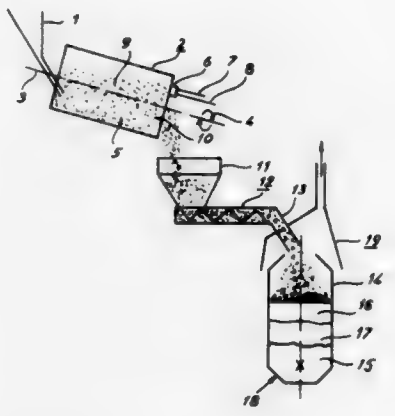
8. A process for controlling unwanted plant growth, wherein the unwanted plants and/or the area to be kept free from unwanted plant growth are treated with a herbicidally effective amount of a 1,3,5-triazinone of the formula I as claimed in claim 1.

4,512,798

METHOD FOR PRODUCING LEAD FROM SULPHIDIC AND OXIDIC AND/OR SULPHATIC LEAD RAW MATERIALS

Johan S. Leirnes, Skelleftehamn; Malkolm S. Lundström, Skellefteå; Martin L. Hedlund, Ursviken, and Kurt J. A. Burén, Skelleftehamn, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Apr. 30, 1984, Ser. No. 605,665
Claims priority, application Sweden, May 5, 1983, 8302584; May 5, 1983, 8302585
Int. Cl.³ C22B *13/02*
U.S. Cl. 75—3 **11 Claims**

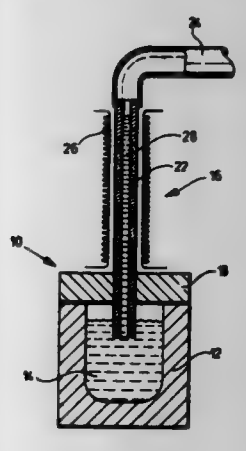


1. A method for producing lead from moist lead sulphide concentrates and at least one of oxidic lead raw material and sulphatic lead raw material comprising:
(a) introducing granules or pellets of at least one of oxidic lead raw material and sulphatic lead raw material with the moist lead sulphide concentrate into a drum-like vessel adapted for rotation about its longitudinal axis;
(b) drying the moist lead sulphide concentrate while rotating the vessel thereby forming dried sulphide-containing granulates;
(c) heating said dried sulphide-containing granulates with a flux in a furnace to form a melt composed of a lead-containing liquid slag phase and a molten lead phase;
(d) agitating the melt;
(e) adding a reducing agent to decrease the lead content of the liquid slag; and
(f) recovering the molten lead phase.

4,512,799
VACUUM TREATING STEELS

Joseph A. Mulcahy, Brooklin, Canada, assignor to J. Mulcahy Enterprises Incorporated, Whitby, Canada

Filed Jan. 30, 1984, Ser. No. 575,202
Int. Cl.[3] C21C 7/10
U.S. Cl. 75—49 10 Claims



1. A method for the vacuum treating of molten metals, which comprises:

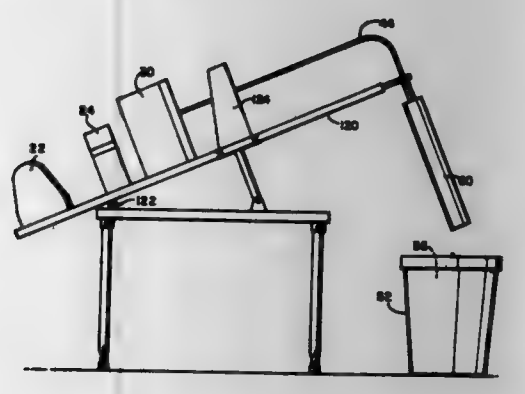
applying vacuum to a tube dipping into a molten bath of an electroconductive metal to draw said molten metal into said tube and to form an elongate rod of said molten metal within said tube, and

electromagnetically radially-inwardly compressing the elongate rod, so as to detach said elongate rod from the internal wall of said tube and to expose the external surface of the electromagnetically-compressed rod to said vacuum, thereby to withdraw dissolved gases from said molten metal rod.

4,512,800
WIRE INJECTION APPARATUS

Emil J. Wirth, Jr., Yardley, Pa., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 12, 1983, Ser. No. 522,753
Int. Cl.[3] C21C 7/00
U.S. Cl. 75—53 24 Claims



1. An apparatus for injecting a processing element in the form of a wire below the surface of a molten material, comprising:

a heat resistant nozzle, movable into an operative position wherein an inlet is disposed above said surface and an outlet is disposed below said surface, with said nozzle being provided with a bore having a funnel-shaped section terminating at its narrower end in a substantially circular aperture and a substantially cylindrical section of substantially uniform diameter into which said aperture opens, said funnel-shaped and substantially uniform diameter sections being concentric, said substantially uniform diameter being larger than the diameter of said aperture and the axial length of said uniform diameter section comprising only a minor portion of the axial length of the nozzle, and with the opening at the end of said substantially uniform diameter section opposite said aperture forming the outlet of the nozzle;

a gas-tight conduit connected at one end to the nozzle inlet;

means disposed at the other end of the conduit for sealably receiving the wire;

means for injecting an inert gas into the conduit; and

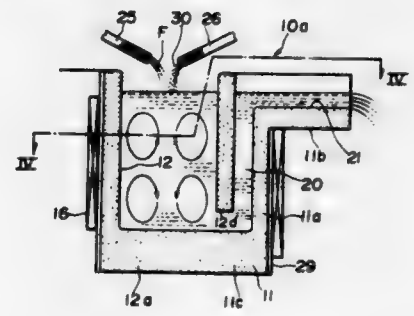
means for feeding the wire into and through the conduit and nozzle and directly into the interior of the molten material,

whereby the injected wire is centered in said nozzle outlet and inert gas leaving the nozzle outlet together with the wire substantially prevents closure of the outlet by solidified molten material and facilitates mixture of the processing element into the molten material through gas bubble agitation.

4,512,801
APPARATUS FOR AND METHOD OF DESULFURIZING AND HEATING MOLTEN METAL

Shigeyuki Shigihara, and Masahiro Tadokoro, both of Ise, Japan, assignors to Shinko Electric Co. Ltd., Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,650
Claims priority, application Japan, Dec. 21, 1982, 57-224666; Dec. 21, 1982, 57-224667
Int. Cl.[3] C21C 7/02
U.S. Cl. 75—58 3 Claims



1. Apparatus for desulfurizing and heating molten metal which comprises:

a. a body of a refractory material including an open top receptacle, an outlet, and a passageway extending upwardly from said receptacle at a bottom thereof to said outlet for communicating said receptacle with said outlet;

b. an electric coil disposed in surrounding relation to said receptacle, the upper end of said coil being disposed generally equal to the level of said outlet, so that the level of the molten metal in said receptacle is generally equal to the upper end of said coil;

c. a first feed means for supplying molten metal to said receptacle through said open top; and

a second feed means for supplying a desulfurizing agent to said receptacle through said open top;

e. whereby upon excitation of said coil, electric currents are induced in said molten metal to heat it and also to agitate it to mix said desulfurizing agent with said molten metal.

4,512,802
PROCESS FOR THE DECARBURIZATION OF MOLTEN METAL

Takeya Tohge, Yokohama, Japan, assignor to Nippon Yakin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,001
Int. Cl.[3] C21C 5/32
U.S. Cl. 75—60 3 Claims

1. A process which controls decarburization of a predetermined mass of molten metal comprising carbon and iron, said mass being contained within a refractory lined vessel having means for injecting oxygen and a diluting gas therein, and adjustable gas flow control means for varying the flow rate of the respective gases; said process comprising:

(a) setting said adjustable control means to establish a first

flow rate greater than zero for said oxygen and a first flow rate for said diluting gas;

(b) utilizing a computer to carry out the following sequence of steps:

(1) calculating amount of oxidization of metal using values obtained from following calculations:

(1-1) calculating amounts of carbon, silicon and manganese oxidized per unit time from product of concentration difference of each element between reaction interface and bulk metal by a vessel factor calculated from an actual data measured and a result calculated using a Model I, said Model I comprising:

(1) Oxygen-argon mixed refining gas injected into a refining vessel through plural tuyeres becomes bubbly, and as soon as oxygen gas comes into reaction with carbon, silicon, manganese and chromium in molten metal, CO, SiO_2, MnO and Cr_2O_3 are formed;

reactions in the vicinity of said tuyeres are shown by equations (1) to (4);

$$O_2 + 2C \longrightarrow 2CO \quad (1)$$

$$O_2 + 4/3Cr \longrightarrow \tfrac{2}{3}(Cr_2O_3) \quad (2)$$

$$O_2 + 2Mn \longrightarrow 2(MnO) \quad (3)$$

$$O_2 + Si \longrightarrow (SiO_2) \quad (4)$$

distributions of oxygen to the reactions shown by equations (1) to (4) are expressed by equations (5) to (8)

$$O_2(C) = \left(\frac{\frac{1}{2}J_C}{\Sigma J_j}\right) \cdot \dot{n}_{O_2}, \text{ mol/sec} \quad (5)$$

$$O_2(Cr) = \left(\frac{\frac{3}{4}J_{Cr}}{\Sigma J_j}\right) \cdot \dot{n}_{O_2}, \text{ mol/sec} \quad (6)$$

$$O_2(Mn) = \left(\frac{\frac{1}{2}J_{Mn}}{\Sigma J_j}\right) \cdot \dot{n}_{O_2}, \text{ mol/sec} \quad (7)$$

$$O_2(Si) = \left(\frac{J_{Si}}{\Sigma J_j}\right) \cdot \dot{n}_{O_2}, \text{ mol/sec} \quad (8)$$

and further the flux J_j to the interface from the bulk metal are shown in equations (9) and (10);

$$J_j = \frac{\rho_m}{100\,M_j} \cdot k_j \cdot A_B \cdot (\%\ C_{b,j} - \%\ C_{i,j}), \text{ mol/sec} \quad (9)$$

$$\Sigma J_j = \tfrac{1}{2} J_C + \tfrac{3}{4} J_{Cr} + \tfrac{1}{2} J_{Mn} + J_{Si}, \text{ mol/sec} \quad (10)$$

where:

j: any one selected from C,Si,Mn and Cr.

$\%C_{b,j}$: bulk concentration of j

$\%C_{i,j}$: concentration j at the interface

$\dot{n}_{O_2}$: amount of oxygen injected into vessel, mol/sec

ρ_m: density of liquid steel, g/cm^3

k_j: mass transfer coefficient of j, cm/sec

A_B: the surface of bubbles, cm^2/sec

(2) Cr_2O_3 and MnO formed in equations (2) and (3) ascend with bubbles in the molten metal, and in said ascending process are shown in equations (11)–(14), said Cr_2O_3 and MnO are reduced by carbon and silicon in molten metal (hereinafter said carbon and silicon are written as C and Si respectively);

$$\tfrac{1}{2}(Cr_2O_3) + C \longrightarrow \tfrac{3}{4}Cr + CO \quad (11)$$

$$(MnO) + C \longrightarrow Mn + CO \quad (12)$$

$$\tfrac{1}{2}(Cr_2O_3) + \tfrac{1}{2}Si \longrightarrow \tfrac{3}{4}Cr + \tfrac{1}{2}(SiO_2) \quad (13)$$

$$(MnO) + \tfrac{1}{2}Si \longrightarrow Mn + \tfrac{1}{2}(SiO_2) \quad (14)$$

rates of reaction in equations (11) to (14) depending upon a rate of mass transfer of oxygen in a high carbon region of the molten metal and depending upon a rate of mass transfer of carbon in a low carbon region of the molten metal, and further the rates of reaction in equations (11) to (14) depending upon free energy of said equations respectively;

changes of carbon monoxide concentration d(CO)/dx in ascending bubbles, changes of concentrations of chromium, manganese and silicon d(Cr)/dx, d(Mn)/dx, d(Si)/dx contained in respective oxides remained in bubbles and changes of nitrogen concentration in bubbles being indicated in equations (15) to (19);

$$\frac{d(CO)}{dx} = \frac{j_o}{V_B} \cdot \frac{\Delta G_{11} + \Delta G_{12}}{\Delta G_T}, \text{ mol cm} \quad (15)$$

$$\frac{d(Cr)}{dx} = -\frac{j_o}{V_B} \cdot \frac{\Delta G_{11} + \Delta G_{13}}{\Delta G}, \text{ mol/cm} \quad (16)$$

$$\frac{d(Mn)}{dx} = -\frac{j_o}{V_B} \cdot \frac{\Delta G_{12} + \Delta G_{14}}{\Delta G_T}, \text{ mol/cm} \quad (17)$$

$$\frac{d(Si)}{dx} = -\frac{j_o}{V_B} \cdot \frac{\Delta G_{13} + \Delta G_{14}}{G_T}, \text{ mol/cm} \quad (18)$$

$$\frac{d(N_2)}{dx} = \frac{\rho_m}{2800} \cdot \frac{A_B}{V_B} \cdot k_N(\%\ Nb - \%\ N,i), \text{ mol/cm} \quad (19)$$

where:

$\Delta G_{11,12,13,14}$: free energy of equation (11),(12),(13),(14) respectively cal

j_o: flux of oxygen, mol/sec

k_o: mass transfer coefficient of oxygen, cm/sec

k_N: mass transfer coefficient of nitrogen, cm/sec

V_B: ascending velocity of a bubble, cm/sec

%Oi: oxygen concentration equibrated with Cr_2O_3

%Ob: oxygen concentration in the bulk steel %Nb: nitrogen concentration in the bulk steel

%N,i: nitrogen concentration at the interface between bubble and liquid steel;

the flux of oxygen j_o from interface to bulk being indicated in equation (20);

$$j_o = \frac{\rho_m}{1600} \cdot AB \cdot k_o\,(\%\ Oi - \%\ Ob), \text{ mol/sec} \quad (20)$$

(3) material balance of the molten steel and the slag being calculated as follows; change of weight of the molten metal dWm/dt is indicated in equation (21) and change of composition of the molten metal d%/dt is indicated in equations (22) and (23);

$$\frac{dWm}{dt} = -\{\Sigma\,\Delta\,Ci \cdot Mi\} - \sum_j \frac{dW_{SC,1}}{dt}, \text{ g/sec} \quad (21)$$

$$\frac{d[\%\ Ci]}{dt} = \frac{100\,Mi}{Wm} \cdot \Delta\,Ci - \frac{\%\ Ci}{Wm} \cdot \frac{dWm}{dt} - \quad (22)$$

-continued

$$\Sigma \frac{\%\ Ci,1}{Wm} \cdot \frac{dW_{SC,1}}{dt}, \%/sec$$

where
i: C,Si,Mn,Ni,Cr respectively

$$\frac{d[\%\ N]}{dt} = -\frac{2800}{Wm} \cdot \Delta N_2 - \frac{[\%\ N]}{Wm} \cdot \frac{dW_m}{dt} + \frac{\rho_m \cdot k'_N \cdot A}{Wm} (\%\ N' - \%\ Nb), \%/sec \quad (23)$$

where
ΔCi: amount of oxidation of i, mol/sec
Mi: atomic weight of i, g/mol
1: kinds of scrap charged into vessel
W_{SC}: weight of scrap charged into vessel, g
ΔN_2: amount of denitrization in bubble, mol/sec
ρ_m: density of molten metal, g/cm^3
k'_N: mass transfer coefficient of nitrogen in the molten metal at free surface, cm/sec
N': nitrogen concentration at free surface, %
A: area of free surface, cm^2
change of weight of molten slag dWs/dt and change of composition of molten slag

$$\frac{d[\%\ M_XO_Y]}{dt}$$

are indicated in equations (24) and (25) respectively.

$$\frac{dWs}{dt} = \frac{M_{Cr_2O_3}}{2} \cdot \Delta Cr + M_{MnO} \cdot \Delta Mn + M_{SiO_2} \cdot \Delta Si + M_{FeO} \cdot \Delta Fe - \frac{dW_{CaO}}{dt}, g/sec \quad (24)$$

$$\frac{d[\%\ M_xO_y]}{dt} = \frac{100\ M_{MxOy}}{W_s} \cdot \Delta C_{MxOy} - \frac{\%\ MxOy}{Ws} \cdot \frac{dWs}{dt}, \%/sec \quad (25)$$

where
MxOy: Cr_2O_3,MnO,FeO,SiO_2
ΔCr: amount of Cr oxidized, mol/sec
ΔMn: amount of Mn oxidized, mol/sec
ΔSi: amount of Si oxidized, mol/sec
ΔFe: amount of Fe oxidized, mol/sec

(4) calculating heat balance from all heat of reaction produced in refining process, radiation loss through vessel mouth, heat loss through shell of vessel, heat of fusion of coolants and enthalpy of gas, and calculating change of temperature of molten metal from equation (26);

$$\frac{dT}{dt} = \Sigma\ Q/(C_{p,s}\ W_s + C_{p,m}\ W_m), °C/sec \quad (26)$$

where
$C_{p,s}$: specific heat of slag, cal/°C/g
$C_{p,m}$: specific heat of metal, cal/°C/g
ΣQ: sum of heat of reactions, heat losses from vessel and others, cal

(1-2) providing that remainders after substracting the amount of oxygen consumed in said oxidizing reactions of sub-step (1-1) from the amount of oxygen injected during said unit time is the amount of oxygen consumed for the oxidization of chromium;

(1-3) calculating the amount of iron oxidized by Cr_2O_3 using mole fraction ratio Cr/Fe in the slag which is obtained at an actual operation; said mole fraction ratio Cr/Fe being constant at any time in the reaction;

(2) calculating the amount of nitrogen absorbed per unit time in molten metal or removed per unit time from molten metal from product of concentration difference of nitrogen between reaction interface and bulk metal by the vessel factor obtained in (1-1);

(3) calculating change of temperature of the molten metal using values obtained from following calculations:

(3-1) calculating material balance from the amounts of oxidization of carbon, silicon, manganese, chromium and iron and from the amount of nitrogen absorbed in the molten metal or the amount of nitrogen removed from the molten metal, said amount being obtained by sub-steps (1) and (2);

(3-2) calculating change of weight of the molten steel, change of composition of the elements contained in the molten steel, change of weight of the molten slag and change of composition of the slag;

(3-3) calculating heat balance of the molten metal and the molten slag from heats of reaction at the oxidizing reaction, amount of heat loss out of said vessel and amount of heats of fusion of coolants;

(4) calculating weights, compositions and temperature of said molten metal and slag after predetermined time interval using said values of changes per unit time;

(c) changing the ratio of oxygen to a diluting gas to increase the proportion of said diluting gas and changing the amount of gases injected into said vessel at the point in time when amount of said decarburization calculated at sub-step (1) becomes less than a predetermined amount of decarburization;

(d) continuing blow of refining gas up to a time when carbon content in the molten metal calculated in sub-step (4) becomes equal to a predetermined carbon content;

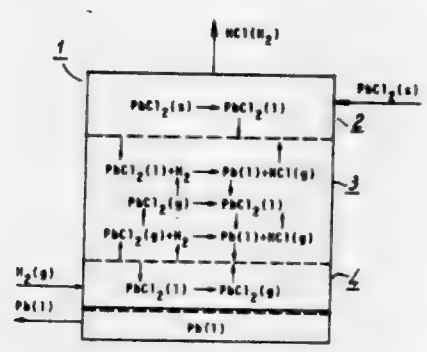
(e) charging a necessary amount of coolants to lower the temperature of the molten metal down to a predetermined temperature range when temperature of the molten metal becomes equal to a predetermined maximum temperature.

4,512,803

PROCESS FOR RECOVERING LEAD FROM LEAD CHLORIDE CONTAINING RAW MATERIAL

Erik G. Bäck, Helsingborg, and Björn-Eric Lundin, Huddinge, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Jan. 10, 1984, Ser. No. 569,657
Claims priority, application Sweden, Feb. 2, 1983, 8300536
Int. Cl.^{3} C22B *13/00*
U.S. Cl. 75—77 **16 Claims**



1. A method for recovering lead from lead chloride by reducing the lead chloride with a reducing gas in a reaction zone, said method comprising:

(a) introducing a major portion of the lead chloride in liquid or solid form into a lower part of the reaction zone;

(b) heating the lead chloride whereby a bath of liquid lead chloride is present and a portion of the liquid lead chloride is vaporized;

(c) introducing the reducing gas in a lower part of the reaction zone;
(d) contacting the liquid and vaporized lead chloride with the reducing gas whereby liquid lead chloride is reduced to liquid lead and vaporized lead chloride flows upward through the reaction zone with the remainder of the reducing gas and is reduced or condensed;
(e) introducing the remainder of the lead chloride into an upper part of the reaction zone thereby cooling said part of the reaction zone;
(f) contacting the lead chloride introduced into the upper part of the reaction zone with the upwardly flowing reducing gas;
(g) removing a gaseous effluent from the upper part of the reaction zone; and
(h) removing lead from the reaction zone, wherein the method is operated in the absence of an external recycle of liquid lead chloride and such that the upper part of the reaction zone is maintained at a lower temperature than the lower part of the reaction zone.

4,512,804

WORK-HARDENABLE AUSTENITIC MANGANESE STEEL AND METHOD FOR THE PRODUCTION THEREOF

Bernd Kos, Leoben, Austria, assignor to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed Mar. 30, 1983, Ser. No. 480,998
Claims priority, application Austria, Apr. 13, 1982, 1435/82
Int. Cl.³ C22C *38/38*
U.S. Cl. 75—123 N **16 Claims**

1. A work-hardenable austenitic manganese steel having an elongation at rupture of 10 percent to 80 percent, as measured according to L=5 d or L=10 d, and essentially consisting of, each in percent by weight:

0.7 to 1.7 C
5.0 to 18.0 Mn
0 to 3.0 Cr
0 to 4.0 Ni
0 to 2.5 Mo
0.1 to 0.9 Si
up to 0.1 P

with the proviso that the carbon-to manganese ratio is between 1:4 and 1:14, and containing an amount of micro-alloying elements in percent by weight:

0.0 to 0.05 Ti
0.0 to 0.05 Zr

with the proviso that the sum Ti +Zr is in the range of 0.002 percent by weight to 0.05 percent by weight, the remainder iron and impurities arising during the melting process.

4,512,805

VALVE METAL POWDER DOPED WITH BORON

Wolf-Wigand Albrecht, Bad Harzburg; Uwe Papp, Goslar, and Dieter Behrens, Bad Harzburg, all of Fed. Rep. of Germany, assignors to Hermann C. Starck Berlin, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 416,194, Sep. 9, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,109
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1981, 3140248
Int. Cl.³ C22C *1/08*; H01G *9/05*; B22F *1/00, 9/24*
U.S. Cl. 75—244 **18 Claims**

1. In a process for producing an agglomerated valve metal powder for use in electrolytic capacitors having a low relative leakage current and a high specific charge, wherein the valve metal powder is heated under vacuum or under inert gas until an agglomerated state of said valve metal powder is achieved, the improvement which comprises admixing boron or a boron compound in amount up to 0.5 percent by weight, relative to the metal content, with the valve metal powder before thus thermally agglomerating said powder.

3. In a process for producing a sintered valve metal anode which comprises forming a green valve metal anode with valve metal powder and sintering said green valve metal anode, the improvement which comprises adding a boron compound in liquid or gaseous phase to the green valve metal anode prior to or during sintering so that in the sintered final product boron of up to 0.5 percent by weight, relative to the metal content, is present in the metallic phase.

4. A sintered valve metal anode produced by the process of claim 3.

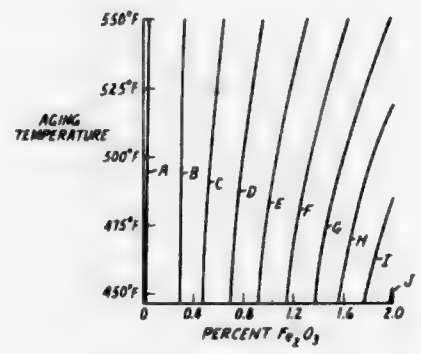
5. In a process for producing a doped valve metal powder for use in electrolytic capacitors having a low relative leakage current and a high specific charge, wherein a doping agent is added to raw material for producing the valve metal and said raw material is then processed to produce the valve metal in elemental and powdered form, the improvement which comprises during the production of said valve metal powder admixing boron or a boron compound as the doping agent with the raw material for producing said valve metal powder in an amount of up to 0.5 percent by weight relative to the total metal content of the resulting powder.

4,512,806

FLAME RESISTANT ASHALTIC COMPOSITIONS

Joseph Graham, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 206,275, Nov. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 59,614, Jul. 23, 1979, Pat. No. 4,234,639. This application Dec. 6, 1982, Ser. No. 446,880
Int. Cl.³ C09D *5/18*
U.S. Cl. 106—18.24 **20 Claims**



1. Composition comprising (a) 100 parts of asphalt, bitumen, or pitch; (b) 0.1 to 1 weight-part of a linear aliphatic saturated halogenated organic compound that (i) has a molecular weight of at least 300, (ii) includes halogen in an amount of at least 40 weight-percent, and (iii) decomposes to release halogen when heated by itself to a temperature greater than about 100° C. and when heated in the presence of an excess of iron oxide to a temperature less than about 250° C.; a and (c) at least 0.1 part of iron-containing compound adapted to react with said released halogen to form iron halide, whereby heating of the mixture causes catalysis of the asphalt, bitumen, or pitch to a more viscous state.

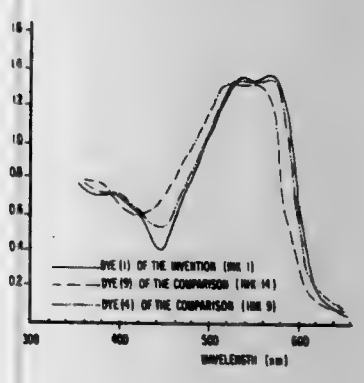
4,512,807

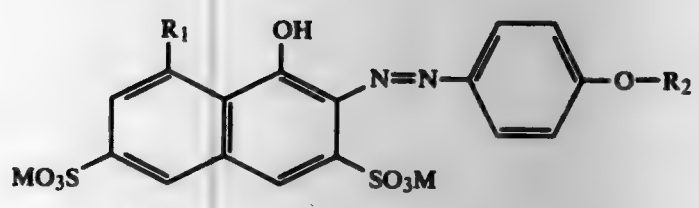
AQUEOUS INK COMPOSITION FOR INK-JET PRINTING

Akira Ogawa, and Toshiaki Asano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Feb. 17, 1983, Ser. No. 467,671
Claims priority, application Japan, Feb. 17, 1982, 57-24219
Int. Cl.³ C09D *11/02*
U.S. Cl. 106—22 **6 Claims**

1. An aqueous ink composition which contains water-soluble dye dissolved in water, said water-soluble dye comprising at least one water-soluble azo dye represented by formula (I)





wherein R_1 represents an amino group, R_2 represents an alkyl group, and M represents a hydrogen atom, an alkali metal, an ammonium group or an organic amine group, wherein the water-soluble dye is incorporated in the ink composition in an amount of from 0.2 to 10 wt% based on the weight of the ink composition.

4,512,808

BINDER COMPOSITIONS BASED ON ALKALI METAL SILICATE SOLUTIONS

Wolfgang Pesch, Grevenbroich, and Günter Beer, Duisburg, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 17, 1984, Ser. No. 601,393

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1983, 3314475

Int. Cl.³ C08L *91/00, 95/00*

U.S. Cl. 106—83 **18 Claims**

1. A binder composition comprising:

(a) at least one alkali silicate aqueous solution whose mol ratio of SiO_2 to Me_2O is about 3–5:1 and wherein the silicate content is about 12–30% by weight, based on the total weight of the composition;

(b) at least one water-soluble copolymer of maleic acid anhydride and an ethylene or a methylvinyl ether, whose anhydride groups are hydrolyzed and neutralized, present in about 0.1–1.5% by weight, based on the total weight of the composition; and

(c) water for the remaining balance.

4,512,809

PROCESS FOR PRODUCING, FROM ALUMINOUS SILICEOUS MATERIALS, CLINKER CONTAINING ALKALI METAL ALUMINATE AND DICALCIUM SILICATE, AND USE THEREOF

Hans C. A. Nielsen, Copenhagen, Denmark, and Roberto Schroeder, Mexico City, Mexico, assignors to Industrias Penoles S.A. de C.V., Mexico

Continuation of Ser. No. 392,389, Jun. 28, 1982, abandoned. This application Jan. 25, 1984, Ser. No. 573,811

Claims priority, application United Kingdom, Jul. 6, 1981, 8120849

Int. Cl.³ C04B *7/24*; C01F *7/02*

U.S. Cl. 106—103 **7 Claims**

1. A process for the production of clinker containing alkali metal aluminate and dicalcium silicate from aluminous siliceous starting materials including the steps of mixing and grinding the aluminous siliceous starting material with at least one of the group consisting of calcareous correction materials and alkali metal-containing correction materials to a finely ground dry raw mixture comprising oxides of aluminium, silicon, calcium and alkali metals having the mole ratios CaO/SiO_2 and Me_2O/Al_2O_3 (Me=alkali metal) equal to approximately 2 and 1, respectively, and sintering the raw mixture to clinker containing alkali metal aluminate and dicalcium silicate in a burning step comprising preheating said finely ground dry raw mixture to 700°–1050° C. by suspending said raw mixture in a hot gas in a preheating zone, precipitating said preheated material from said hot gas to provide a precipitated material and sintering said precipitated material to said clinker in a clinker burning zone in a rotary kiln in a period of 10 to 15 minutes.

4,512,810

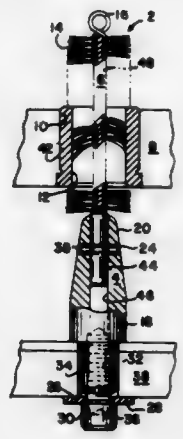
(I) BOLSTER PIN AND METHOD FOR CLEANING FLASK BUSHING

Earl C. Gahlinger, Ekron, Ky., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 18, 1984, Ser. No. 572,090

Int. Cl.³ B08B *1/00*

U.S. Cl. 134—8 **22 Claims**



18. A method of cleaning the bore in the flask flange of a mold set of flask with a bore and bolster with a bolster pin comprising:

attaching a bolster pin to a bolster flange, said bolster pin having a base portion adjacent to the bolster and an elongated member projecting towards the flask flange, said elongated member having brush elements generally projecting radially outward from said elongated element;

aligning the bore in the flask flange with said bolster pin;

joining the flask flange and the bolster flange; and

brushing the flask flange bore as said bolster pin brush elements move relative to the flask bore.

4,512,811

METHOD AND APPARATUS FOR CLEANING CONTAINERS

Rupert Binnig, Mainz-Bretzenheim; Günter Gerlach, Hochheim; Peter Nilles, and Jürgen Pankatz, both of Bad Kreuznach, all of Fed. Rep. of Germany, assignors to SEITZ ENZINGER NOLL Maschinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,265

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1982, 3207225

Int. Cl.³ B08B *9/08*

U.S. Cl. 134—10 **17 Claims**

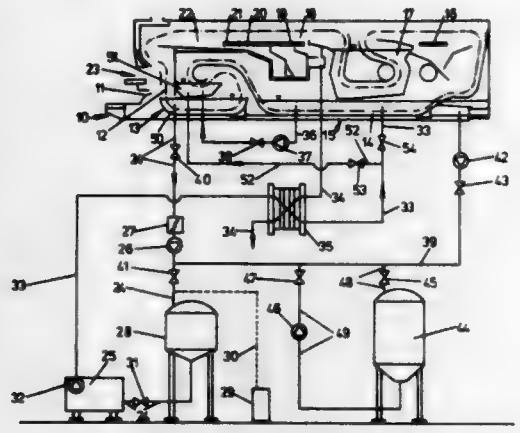
1. A method of reducing the amount of harmful material which could pass into waste water from a container cleaning machine which comprises a preliminary soaking tank, a subsequently arranged soaking and washing solution bath which includes at least one soaking bath, and spraying sections which are arranged after said soaking and washing solution bath; said method including the steps of:

providing soaking solution as bath solution for said preliminary soaking tank;

diverting at least a partial flow of said soaking solution taken from said preliminary soaking tank and thereupon cleaning harmful material from such partial flow for reducing harmful materials therewith;

returning said cleaned soaking solution to either said preliminary soaking tank of said at least one soaking bath, which are of comparable wash solution concentration, for further handling of containers while observing the bath solution levels which are to be maintained, and an adequate wash solution regeneration;

withdrawing used spray water from said spraying sections, while bypassing said preliminary soaking tank, and supplying said used spray water to the waste water;



returning said cleaned partial flow to said preliminary soaking tank;

replacing missing amounts of soaking solution in said preliminary soaking tank from said at least one soaking bath of said soaking and washing solution bath, which has a comparable wash solution concentration;

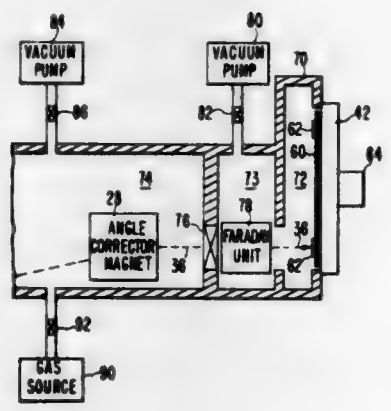
effecting an adequate wash solution regeneration of said soaking and washing solution bath by removing a partial quantity of bath solution from said soaking bath, cleaning same, and returning it to said soaking bath; and at predetermined time intervals, alternately supplying to a common wash solution cleaning device said partial flow removed from said preliminary soaking tank, and said partial quantity removed from said soaking bath.

4,512,812

METHOD FOR REDUCING PHOSPHOROUS CONTAMINATION IN A VACUUM PROCESSING CHAMBER

Reuel B. Liebert, Peabody, and Carl J. Russo, Ipswich, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 22, 1983, Ser. No. 534,950
Int. Cl.³ B08B *7/04, 9/00*
U.S. Cl. 134—21 **5 Claims**



1. A method for removing phosphorous contaminants from a vacuum processing chamber comprising the steps of:

introducing water vapor into said vacuum chamber to react with said phosphorous contaminants and form a compound more volatile than said phosphorous contaminants; and

removing said volatile compound from said vacuum chamber.

4,512,813

METHOD FOR TREATING WOODEN ARTICLES

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 455,317, Jan. 3, 1983, and a continuation-in-part of Ser. No. 455,268, Jan. 3, 1983, and a continuation-in-part of Ser. No. 442,296, Nov. 17, 1982, and a continuation-in-part of Ser. No. 444,667, Nov. 26, 1982, and a continuation-in-part of Ser. No. 453,282, Dec. 27, 1982, and a continuation-in-part of Ser. No. 453,496, Dec. 27, 1982. This application Apr. 7, 1983, Ser. No. 482,942
Int. Cl.³ B08B *3/08*; B29C *17/08*
U.S. Cl. 134—27 **19 Claims**

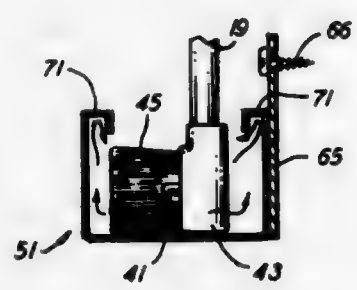
1. A method for treating the surface of a wooden article, which method comprises contacting said surface with a composition comprising the monourea adduct of sulfuric acid under conditions of contact time, dosage rate of said composition, and contact temperature sufficient to ablate at least a portion of the contacted surface of said wooden article.

4,512,814

BRUSH CONDITIONER FOR CAR WASH

James C. Buck, 269 Margaret St., Plattsburgh, N.Y. 12901

Filed Nov. 2, 1983, Ser. No. 547,859
Int. Cl.³ B08B *3/10*
U.S. Cl. 134—34 **7 Claims**



5. A method of storing and cleaning a long handled car washing brush having a nozzle for directing a stream of liquid through the brush bristles that includes the steps of

immersing the brush bristles within a bath of liquid cleaner contained within a trough having a top opening,

supporting the brush handle so that the nozzle is directed at a wall of the trough,

sending a stream of liquid through the nozzle with sufficient pressure to agitate the bath liquid and force it upwardly along said wall,

redirecting the agitated bath liquid back toward the brush bristles whereby the bristles are scrubbed by the liquid, and

heating the bath liquid to a temperature above the freezing temperature of the said liquid.

4,512,815

SIMPLIFIED BIFET PROCESS

Wadie N. Khadder, Sunnyvale; Jia T. Wang, San Jose, and Brian E. Hollins, Los Altos, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

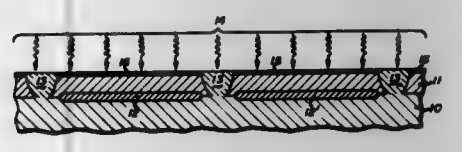
Division of Ser. No. 153,486, May 27, 1980, Pat. No. 4,412,238. This application Jan. 31, 1983, Ser. No. 462,498
Int. Cl.³ H01L *7/54, 29/78*
U.S. Cl. 148—1.5 **5 Claims**

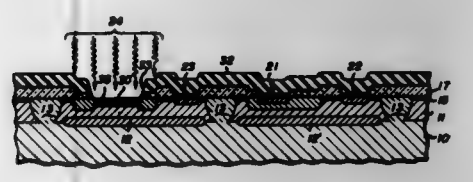
1. The process for fabricating an integrated circuit contain-

ing bipolar junction transistors and junction field effect transistors, in a common substrate semiconductor of one conductivity type having thereon an epitaxial layer of opposite conductivity type and isolation diffusions of said one conductivity type isolating individual tubs of said epitaxial layer, comprising the steps:

removing oxides from the top surface of said epitaxial layer;

ion implanting a slow diffusing first impurity having said opposite conductivity type into said surface;





thereafter, forming by oxide masked diffusion, the base regions of said bipolar junction transistors simultaneously with the spaced-apart source and drain electrodes of said junction field effect transistors;

ion implanting a second impurity of said one conductivity type into the gate regions of said junction field effect transistors in the space between said source and drain electrodes to a depth exceeding that of said first impurity, whereby said first impurity layer acts as a top gate electrode for said junction field effect transistors, and as a field inversion prevention layer for said integrated circuit.

4,512,816

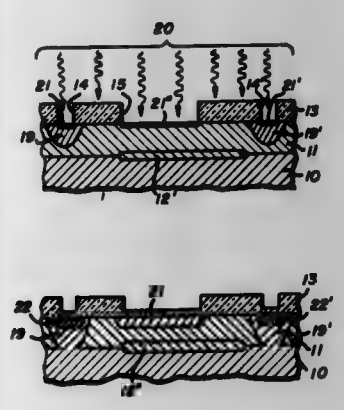
HIGH-DENSITY IC ISOLATION TECHNIQUE CAPACITORS

Amolak R. Ramde, San Jose; Wadie N. Khadder, Sunnyvale, and Surinder Krishna, Fremont, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 352,630, Feb. 26, 1982, abandoned, which is a continuation of Ser. No. 149,203, May 12, 1980, abandoned. This application Apr. 23, 1984, Ser. No. 602,264

Int. Cl.³ H01L *21/265, 21/20*

U.S. Cl. 148—1.5 **5 Claims**



1. In the process for creating an isolation diffusion in a monolithic integrated semiconductor device which includes active transistors that have emitter, base and collector regions, wherein a thin epitaxial layer of semiconductor is deposited upon an opposite conductivity type semiconductor substrate and employing a slow diffusing impurity type buried layer, the steps comprising:

forming a masking oxide layer over said epitaxial layer;

removing said masking oxide in those areas where isolation diffusion is desired and in those areas where transistor bases are desired whereby said transistor bases are automatically aligned with respect to said isolation;

temporarily masking the areas in which transistor bases are desired;

ion implanting a fast diffusing impurity species into said thin epitaxial layer in said areas of isolation diffusion; and

heating said semiconductor to diffuse said fast diffusing impurity completely through said epitaxial layer whereby the penetration of said buried layer into said epitaxial layer is minimized permitting a reduced thickness epitaxial layer to about 9μ.

4,512,817

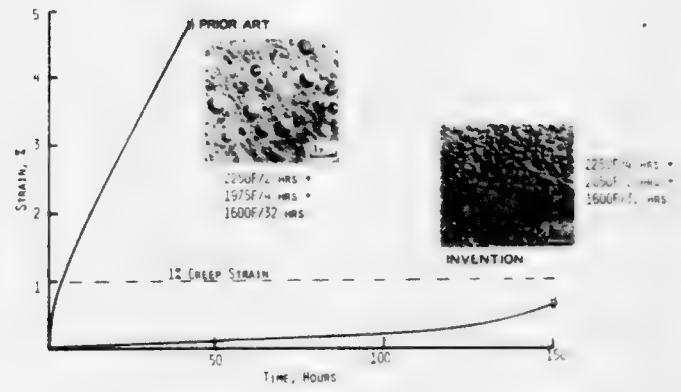
METHOD FOR PRODUCING CORROSION RESISTANT HIGH STRENGTH SUPERALLOY ARTICLES

David N. Duhl, Newington; Otis Y. Chen, Manchester, and Maurice L. Gell, Newington, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 30, 1981, Ser. No. 335,962

Int. Cl.³ C22F *1/10*

U.S. Cl. 148—3 **3 Claims**



1. A method for simultaneously improving the mechanical properties of an alloy article consisting essentially of: 20–25%, Cr, 1–5% W, 0.5–3% Ta, 1–4% Al, 1.7–5% Ti, 15–25% Co, 0–3% Cb, balance essentially nickel, said alloy having a gamma prime solvus temperature and an incipient melting temperature, while at the same time applying an adherent protective coating, comprising the steps of:

a. forming a single crystal article from the alloy;

b. solution treating the alloy at a temperature between the gamma prime solvus temperature and the incipient melting temperature;

c. applying a protective coating to the single crystal selected from the group consisting of aluminide coatings and overlay coatings;

d. heat treating the coated article at a temperature above but within about 100° F. of the gamma prime solvus temperature;

e. aging the coated article at a temperature below the gamma prime solvus temperature;

so that heat treated articles exhibit a rupture life in excess of about 400 hours when tested under conditions of 40 ksi at 1600° F. and the coating and substrate are not excessively interdiffused.

4,512,818

SOLUTION FOR FORMATION OF BLACK OXIDE

Silvester Valayil, Shrewsbury; Magda Abu-Moustafa, Lexington, and Terry A. Benjamin, Acton, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Continuation-in-part of Ser. No. 497,084, May 23, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 616,692

Int. Cl.[3] C23F *5/02, 5/04*

U.S. Cl. 148—6.14 R 22 Claims

1. A process for manufacturing a multilayer circuit board comprising laminating copper to a dielectric material using heat and pressure and contacting the laminate at elevated temperature with an aqueous alkaline solution of an oxidant selected from the group of salts of chlorites and per compounds containing a minor amount of a water soluble or dispersible synthetic polymer in a concentration varying between about 3 and 100 parts per million parts of solution for a time sufficient to form a dense, non-frangible oxide coating on said copper.

4,512,819

METHOD FOR MANUFACTURING A CLADDING TUBE OF A ZIRCONIUM ALLOY FOR NUCLEAR REACTOR FUEL OF A NUCLEAR REACTOR FUEL ASSEMBLY

Eckard Steinberg, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,795

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1982, 3248686

Int. Cl.[3] C22F *1/18*

U.S. Cl. 148—11.5 F 3 Claims

1. Method for manufacturing a cladding tube of a zirconium alloy for the nuclear reactor fuel of a nuclear reactor fuel assembly by deformation of a starting tube and subsequent post-treatment of the deformed starting tube, the improvement comprising imparting increased corrosion resistance to the outer surface of the cladding tube by first grinding the outer surface of the deformed tube for the post-treatment and then subjecting the ground tube to a final annealing treatment.

4,512,820

IN-PILE PARTS FOR NUCLEAR REACTOR AND METHOD OF HEAT TREATMENT THEREFOR

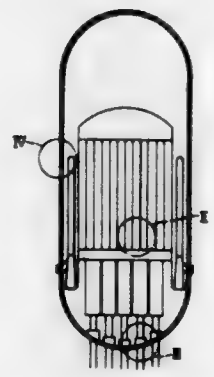
Yasuhiko Mori, Mito; Shigeo Hattori, Ibaraki; Isao Masaoka, and Hisao Itow, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,371

Claims priority, application Japan, May 30, 1980, 55-73208

Int. Cl.[3] C22C *19/05;* C22F *1/10*

U.S. Cl. 148—12.7 N 22 Claims



1. In-pile parts for a nuclear reactor made of alloy, of precipitation hardening type, consisting essentially of by weight 0.01–0.2% C, 10–21% Cr, 1–4% Ti, 0.3–2% Nb, 0.1–2% Al and the balance Ni wherein Ti content being higher than Nb content, said alloy having the microstructure of chromium carbides precipitated in the grain boundaries and a γ' phase precipitated in the grains such that in the vicinity of the grain boundaries γ' phase is precipitated in all zones, with the matrix thereof being austenite in microstructure, whereby said microstructure provides reduction of stress corrosion cracking of the alloy.

4,512,821

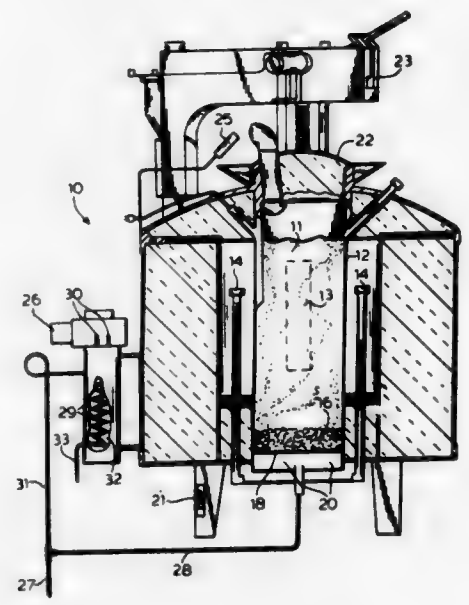
METHOD FOR METAL TREATMENT USING A FLUIDIZED BED

Robert Staffin, Colonia; Carol A. Girrell, North Brunswick, and Mario A. Fronzoni, East Brunswick, all of N.J., assignors to Procedyne Corp., New Brunswick, N.J.

Filed Dec. 20, 1982, Ser. No. 450,921

Int. Cl.[3] C21D *1/53*

U.S. Cl. 148—16.5 15 Claims



1. A method of producing chemically controlled atmospheres for treating metal workpieces in fluidized beds, which comprises:

providing a precursor liquid that upon decomposition establishes a desired atmosphere in a fluidized bed;

vaporizing the precursor liquid externally of the fluidized bed;

introducing the vaporized precursor liquid into a plenum associated with the fluidized bed;

maintaining the vaporized precursor liquid within the plenum at temperatures between its vaporization and decomposition temperatures;

introducing the vaporized precursor liquid to the fluidized bed wherein it thermally decomposes into selected chemical entities that provide at least a portion of the desired atmosphere.

4,512,822

NON-HYGROSCOPIC WELDING FLUX BINDERS

Eric A. Barringer, Waltham, and Thomas W. Eagar, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 29, 1984, Ser. No. 626,613

Int. Cl.[3] B23K *35/34*

U.S. Cl. 148—24 6 Claims

1. A process for making a welding flux comprising:

a. dissolving tetraalkylorthosilicate in alcohol;

b. diluting a strong acid in water;

c. reacting the tetraalkylorthosilicate and acid solutions;

d. adding at least one alkali compound;

e. adding at least one alkaline earth compound;

f. adjusting the solids content of the suspension of step (e) to 40–60% solids;

g. neutralizing the acid to cause gel formation; and

h. firing the 40–60% solids suspension at a temperature between 400° C. and 1000° C. for between six and 24 hours.

4,512,823

BARIUM OR CHROMIUM ADDITIVES TO MAGNESIUM OXIDE COATING SLURRY

Michael W. Howe, Pittsburgh, Pa., and Samuel W. Sopp, Foster City, Calif., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 421,664, Sep. 22, 1982, abandoned. This application Apr. 10, 1984, Ser. No. 598,641
Int. Cl.[3] H01F *1/04*
U.S. Cl. 148—113 5 Claims

1. A slurry for use in the initial coating of silicon steel prior to high temperature annealing, comprising 8 to 15 percent by weight magnesium oxide, at least 0.01 mole percent, on a magnesium oxide basis, of at least one inorganic compound selected from the group consisting of barium oxide, barium nitrate, chromium nitrate, and their hydrates, and the balance water.

3. A process for coating silicon steel, comprising initially coating the steel with a magnesium oxide slurry prior to high temperature annealing, the improvement wherein at least one inorganic compound selected from the group consisting of barium oxide, barium nitrate, chromium nitrate, and their hydrates is pre-mixed in the slurry so as to form a slurry that comprises 8 to 15 percent by weight magnesium oxide, at least 0.01 mole percent, on a magnesium oxide basis, of an inorganic compound selected from the group consisting of barium oxide, barium nitrate, chromium nitrate, and their hydrates, and the balance water.

4,512,824

DYNAMIC ANNEALING METHOD FOR OPTIMIZING THE MAGNETIC PROPERTIES OF AMORPHOUS METALS

Alan I. Taub, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,299
Int. Cl.[3] H01F *1/00*
U.S. Cl. 148—121 17 Claims



1. A method for forming a substantially stress-free discrete body, said body being in the form of a plurality of layers of a continuous length of a ribbon-like body of amorphous metallic alloy, comprising the steps of:

(1) traversing a single thickness of said ribbon-like body across at least one forming means to form each predetermined increment of said ribbon-like body to substantially the same configuration it is to have in the completed discrete body;

(2) heating the formed single thickness of said ribbon-like body while in contact with said forming means to the highest peak temperature at the most rapid heating rate attainable subject to the proviso that substantially no crystallization is induced in said ribbon-like body in the time required during this heating step to reduce the stresses in said material by at least 90% of the stresses present in said amorphous material immediately prior to initiation of said heating;

(3) rapidly cooling the formed single thickness of said ribbon-like body at a rate of at least about 100° C./min while in contact with said forming means; and

(4)thereafter wrapping said ribbon-like body about itself layer upon layer thereby forming said discrete body.

10. A method for forming a substantially stress-free discrete body, said body being in the form of a plurality of layers of a continuous length of a ribbon-like body of amorphous metallic alloy, comprising the steps of:

(1) traversing a single thickness of said ribbon-like body across at least one forming means to form each predetermined increment of said ribbon-like body to substantially the same configuration it is to have in the completed discrete body;

(2) heating the formed single thickness of said ribbon-like body while in contact with said forming means to the highest peak temperature attainable at a rate greater than about 300° C./min subject to the proviso that substantially no crystallization is induced in said ribbon-like body in the time required during this heating step to reduce the stresses in said material by at least 90% of the stresses present in said amorphous material immediately prior to initiation of said heating;

(3) rapidly cooling the formed single thickness of said ribbon-like body at a rate of at least about 100° C./min while in contact with said forming means; and

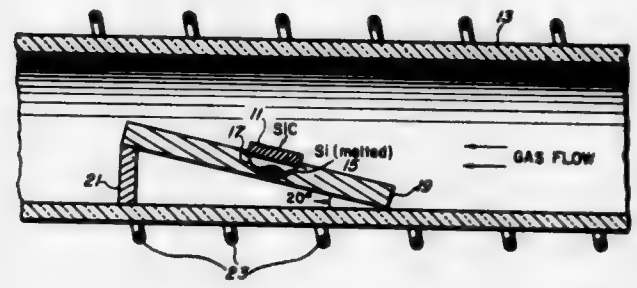
(4) thereafter wrapping said ribbon-like body about itself layer upon layer thereby forming said discrete body.

4,512,825

RECOVERY OF FRAGILE LAYERS PRODUCED ON SUBSTRATES BY CHEMICAL VAPOR DEPOSITION

Arrigo Addamiano, Alexandria, Va., and Philipp H. Klein, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 12, 1983, Ser. No. 484,346
Int. Cl.[3] H01L *21/205, 21/461*
U.S. Cl. 148—175 14 Claims



1. A method of recovering intact at room temperature a layer of a first material produced by depositing it from the gas phase at a deposition temperature above room temperature on a substrate of a second material having a lower melting point and a different coefficient of thermal expansion than that of the first material, the uncoated side of the substrate being the underside of the substrate and the side of the layer adjacent to the substrate being the underside of the layer, comprising the steps of:

supporting the substrate underside around its perimeter along a support plane at a non-orthogonal incline from horizontal;

separating the substrate from the layer by heating the substrate to melt the substrate from the layer;

receiving the freed layer underside around its perimeter along a plane parallel to the support plane after it displaces in the range of the thickness of the substrate; and

cooling the separated layer to room temperature,

whereby the separated layer is not subjected to stresses caused by the different thermal expansion of the substrate and layer when they are cooled to room temperature.

4,512,826

PRECIPITATE HARDENED TITANIUM ALLOY COMPOSITION AND METHOD OF MANUFACTURE

Sung-Hyun Whang, Brookline, Mass., assignor to Northeastern University, Boston, Mass.

Filed Oct. 3, 1983, Ser. No. 538,343

Int. Cl.³ C22C *14/00*; C22F *1/18*

U.S. Cl. 148—407 **22 Claims**

1. A titanium base alloy containing, a IIIA, a IVA metal, and a rare earth metal having a boiling point higher than the melting point of titanium, said alloy having been rapidly quenched at a rate which permits formation of spherical precipitates in the 50–100 Angstrom diameter range from the liquid form of the alloy to prevent segregation, said alloy containing a homogeneous compound of the rare earth, a IIIA, and a IVA metal in the form of said spherical precipitates, at least some of the spherical precipitates having diameters of 50–100 Angstroms prior to any annealing step.

4. A method of increasing the strength of an alpha-titanium or near alpha-titanium alloy comprising adding to said alloy a IIIA, IVA metal and a rare earth metal having a boiling point higher than the melting point of titanium, rapidly solidifying the resulting alloy at a rate which permits formation of spherical precipitates in the 50–100 Angstrom diameter range from the liquid form of the alloy to prevent segregation whereby said allow contains a homogeneous compound of the rare earth, a IIIA and a IVA metal in the form of said spherical precipitates, at least some of the spherical precipitates having diameters of 50–100 Angstroms prior to any annealing step, and heat treating the rapidly solidified alloy in an oxygen free atmosphere.

4,512,827

METHOD OF MANUFACTURING MINERAL INSULATED ELECTRIC CABLE AND LIKE ELEMENTS

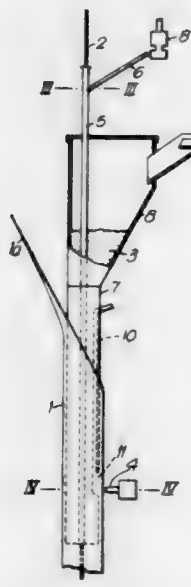
Dennis Gill, Lancashire, England, assignor to Associated Electrical Industries Limited, England

Filed Aug. 20, 1982, Ser. No. 410,051

Claims priority, application United Kingdom, Sep. 21, 1981, 8128424

Int. Cl.³ H01B *13/10*; H01C *1/03*

U.S. Cl. 156—48 **5 Claims**



1. The method of manufacturing mineral insulated electric conductive cable comprisng steps of

A. continuously at a first position bending a ductile metal strip into tubular form,

B. continuously at a second position downstream of the first position welding the edges of the strip together to form a sheath,

C. continuously at positions downstream of the second position introducing into the sheath being continuously formed

(i) electrical conductive wire

(ii) a filling of powdered insulating material and

(iii) a liquid hydrophobic material in the form of liquid silicone,

D. the liquid silicone being introduced into the sheath separately from the powdered insulating material, and

E. subsequently continuously reducing the diameter of the continuously formed sheath.

4,512,828

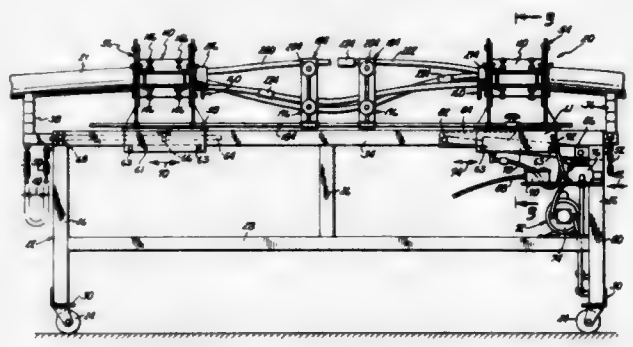
CABLE HOLDING AND POSITIONING APPARATUS AND SPLICING METHOD

Emanuel Helm, 528 E. Capitol Ave., Bismarck, N. Dak. 58501

Filed Dec. 27, 1983, Ser. No. 565,280

Int. Cl.³ H01B *13/00*

U.S. Cl. 156—49 **16 Claims**



1. An apparatus for holding and positioning a first multi-strand cable end portion and a second multi-strand cable end portion during splicing and wherein the first and second multi-strand cable end portions each have a plurality of electrical conductors, the apparatus comprising:

a support frame having an upper support surface;

first means for clamping the first multi-strand cable end portion movably disposed on the support frame;

second means for clamping the second multi-strand cable end portion disposed on the support frame;

hydraulic means for moving the first and second means for clamping in an axial direction of the cable relative to each other as the cable end portions are held in the means for clamping; and

conductor clamping means for clamping the individual conductors and holding the conductors in a selected splicing position attached to the support frame and disposed above the upper support surface and wherein the conductor clamping means includes a plurality of individual conductor clamps, each conductor clamp attached to a corresponding clamp support extending above the upper support surface and clamp support selectively positionable in the axial direction and in an angular direction.

14. A method for splicing a first multi-strand cable end portion with a second multi-strand cable end portion, each multi-strand cable end portion having a plurality of individual conductors, the method comprising:

positioning the first and second multi-strand cable end portions within first and second clamping mechanisms, respectively;

positioning and separating a plurality of the individual conductors of the first multi-strand cable, each conductor in a separate conductor clamp and positioning and separating a plurality of the individual conductors of the second multi-strand cable, each in a separate conductor clamp, so that ends of corresponding conductors of the first and second multi-strand cables are in substantial alignment with individual conductors of the same multi-strand cable being in a retained spaced-apart relationship with each other;

splicing individually one conductor of the first multi-strand cable end portion with one conductor of the second multi-strand cable end portion and continuing splicing until all

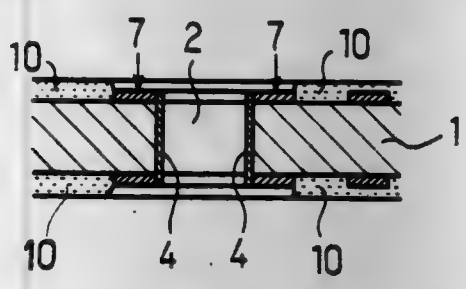
the individual conductors of the first and second multi-strand cable end portions are spliced;
moving the first clamping means away from the second clamping means to stretch and straighten and bring together all the spliced individual conductors; and
rotating the first clamping means in an angular direction so that the spliced conductors are placed in an angular twisted relationship with respect to the axis of the first and second cable end portions.

4,512,829

PROCESS FOR PRODUCING PRINTED CIRCUIT BOARDS

Hideo Ohta, Nara; Tatuzo Hakuzen, Osaka; Yasunori Ito, Osaka, and Fusao Takagi, Osaka, all of Japan, assignors to Satosen Co., Ltd., Osaka, Japan

Filed Apr. 6, 1984, Ser. No. 597,315
Claims priority, application Japan, Apr. 7, 1983, 58-61866; Apr. 7, 1983, 58-61867
Int. Cl.³ B05D *5/12*; C23F *1/02*; B44C *1/22*; C03C *15/00*
U.S. Cl. 156—659.1
5 Claims



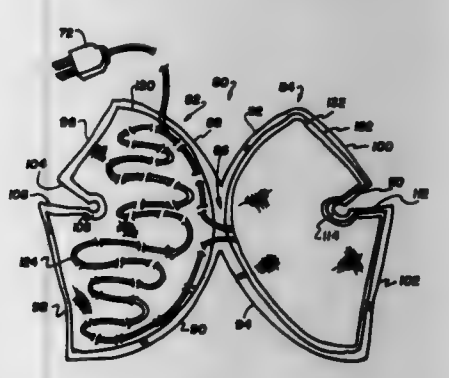
1. A process for producing a printed circuit board characterized by the steps of drilling holes in a copper clad laminate, treating the entire surface of the laminate including the hole-defining inner surfaces with a catalyst, removing the catalyst from the surface of the copper foil of the laminate by mechanically cleaning the surface of the copper foil, depositing electroless nickel only on the hole-defining inner surfaces, forming a pattern with an etching resist, etching away the copper foil except at the pattern area, removing the etching resist, masking with a solder resist the entire surface except at the hole-defining inner surfaces and the lands, and subjecting the hole-defining inner surfaces and the lands to electroless copper plating.

4,512,830

ELECTRICAL HEATING CAP

John G. Hulett, and Robert Rothenberger, both c/o Dallas Products, Inc., 13948 Distribution Way, Dallas, Tex. 75234

Division of Ser. No. 314,747, Oct. 26, 1981, Pat. No. 4,459,471. This application Oct. 20, 1983, Ser. No. 543,985
Int. Cl.³ B32B *3/00*; B29D *23/10*; H05B *3/06*; A42B *1/22*
U.S. Cl. 156—70
4 Claims



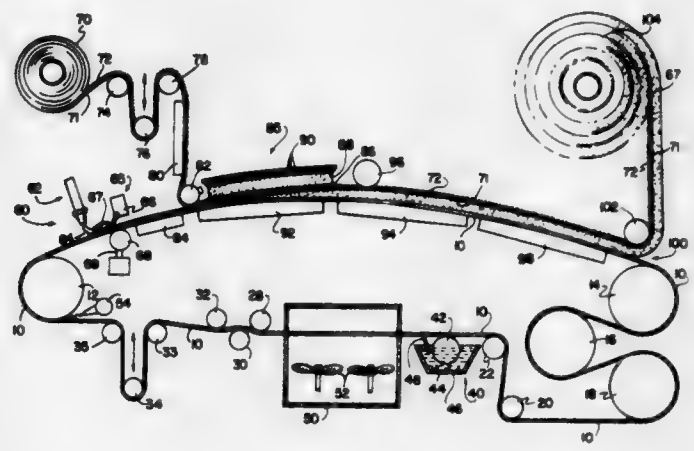
1. A method of manufacturing a heating cap to be worn during a hair treating process, comprising:
providing identically shaped first and second flat flexible plastic members, each member having a pair of wing-shaped portions which are mirror-images of each other, and which are joined together by a common bridge portion, each wing-shaped portion including first and second curvilinear edges separated by said bridge portion and opposed circular apertures formed in said members, respectively,
providing a piece of insulation material having the general shape of each of said wing-shaped portions,
placing one of said pieces of insulation material on each wing-shaped portion of said first member,
placing a resistance type electrical heating element on each piece of insulation material on said first member,
placing another of said pieces of insulation material on each piece of insulation material on said first member and covering said heating element on each wing-shaped portion,
placing said second member over said first member and aligned therewith so that the peripheral edges of said members including edges defining said apertures are coextensive;
securing said members together along said edges,
folding each of said first and second members along their respective common bridge portions so that the corresponding mirror-image wing-shaped portions of both members overlay and are aligned with each other; and
attaching the curvilinear edges formed by one of the wing shaped portions of said first and second members to the curvilinear edges of the mirror image wing shaped portions of said first and second members to form a flat heating cap having flexible sides which separate to form a cavity conforming substantially to the shape of a human head.

4,512,831

METHOD FOR FORMING A LAYER OF BLOWN CELLULAR URETHANE ON A CARPET BACKING

John G. Tillotson, Tiarco Dr., Dalton, Ga. 30720

Continuation of Ser. No. 000,478, Jan. 2, 1979, Pat. No. 4,405,393, which is a continuation of Ser. No. 872,341, Jan. 25, 1978, Pat. No. 4,132,817, which is a continuation-in-part of Ser. No. 782,636, Mar. 30, 1977, Pat. No. 4,171,395. This application Sep. 12, 1983, Ser. No. 531,282
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.³ B32B *31/00, 5/20*
U.S. Cl. 156—78
3 Claims



1. Method for producing a layer of flexible chemically blown urethane foam cushion having a density of between one and ten pounds per cubic foot on the back of a carpet product, in which a mixture of reactive urethane forming components, including isocyanate and polyol, is prepared, the mixture is depositioned on a carrier belt, the back of a preheated carpet product is brought into contact with the mixture, and the mixture which is in contact with the carpet back is chemically blown in a heated urethane foaming station into an enlarged layer of cellular urethane and cured under the effect of heat, comprising the steps of:
(1) mixing the reactive components together in a traversing mixer at a temperature of between 60° and 100° F. and

dispensing the mixed components onto an endless carrier belt which has been cooled to a temperature of between 50° and 100° F., said reactive components including water at a concentration of 0.01 to 5.0 parts per hundred parts of polyol over and above the water normally present in the reaction mixture and a catalyst which will promote a polyurethane formation reaction and concurrently promote a chemical blowing reaction so that an expansion of between 500 percent and 6400 percent is obtained for the polyurethane material;

(2) partially reacting the mixed components on the carrier belt by heating the mixed components to a temperature of between 90° and 150° F.;

(3) preheating the lower surface of an uncoated carpet material to a temperature of between 100° and 300° F.;

(4) bring the lower surface of the preheated carpet material into flush contact with the partially reacted urethane component mixture;

(5) passing the carrier belt, with its urethane mixture, and the carpet material through a urethane forming station at the same speed;

(6) heating the urethane mixture to a temperature of between 120° and 200° F. in the urethane forming station for a period of 15 seconds to 120 seconds and permitting upward movement of the carpet material as the reactive urethane mixture chemically blows during urethane formation; and

(7) curing the blown urethane foam by heating the foam to a temperature of between 150° and 350° F.

4,512,832

METHOD FOR MANUFACTURING A TUBE PACKAGE

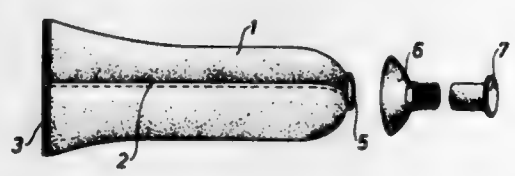
Hans Rausing, Lund, Sweden, assignor to Tetra Pak Developpement SA, Pully, Switzerland

Filed Jun. 17, 1982, Ser. No. 389,567

Claims priority, application Sweden, Jun. 18, 1981, 8103848

Int. Cl.³ B29C *27/10*

U.S. Cl. 156—86 **6 Claims**



1. A method for manufacturing tubular packing containers, comprising:

cutting a web of an oriented plastic material into shorter lengths substantially corresponding to a desired circumference of the tubular packing containers;

folding its shorter length of web into a tube by overlapping opposed end portions of the web, said opposing end portions having opposing surfaces;

extruding a string of melted plastic material onto at least one of said opposing surfaces of the overlapping opposed edge portions of the web;

pressing said overlapping edge portions of the web to each other aginst said string so as to prevent release of orientation stresses of the plastic material thereby avoiding shrinkage of the overlapping opposed edge portions of the web;

placing each tube of web material on a mandrel;

heating a portion of each tube thereby shrinking that portion of the tube over an underlying profiled portion of the mandrel; and

removing the tube from the mandrel.

4,512,833

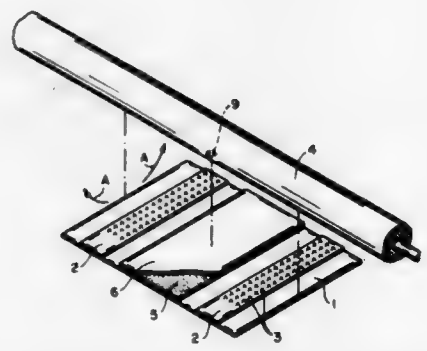
ALUMINUM-SHIELDED COAXIAL CABLE REPAIR

Thomas A. Kridl, Union City, and Carney P. Claunch, II, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 12, 1983, Ser. No. 560,286

Int. Cl.³ B32B *35/00*

U.S. Cl. 156—94 **13 Claims**



7. A method of repairing the aluminum shield of a coaxial cable comprising applying sealing means to close the opening in the aluminum shield to provide environmental seal of the opening; wrapping around the shield to cover an opening in the shield, a metallic sheet having thereon contact means having sufficient hardness to and being adapted to penetrate the surface of the aluminum shield; and applying a compression force to force the contact means into the surface of the aluminum shield.

4,512,834

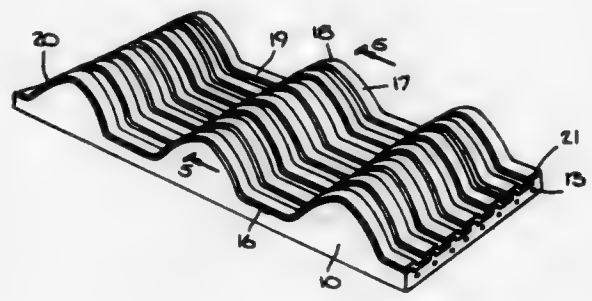
METHOD OF MAKING REDUCED NOISE POSITIVE DRIVE POWER TRANSMISSION SYSTEM

Robert C. Kohrn, Bethany, Conn., assignor to Uniroyal Inc., Middlebury, Conn.

Division of Ser. No. 75,476, Sep. 14, 1979, Pat. No. 4,416,649. This application Feb. 7, 1983, Ser. No. 464,447

Int. Cl.³ B29H *7/22*; F16G *5/20*

U.S. Cl. 156—138 **9 Claims**



1. A method of molding toothed positive drive transmission belts having surface discontinuities on the belts working surface, the teeth being spaced from each other by a land surface, comprising the steps of:

helically winding thread of a material which does not bond to the belts during molding around the outer circumference of a cylindrical mold having axially extending grooves therein to form belt tooth cavities;

applying at least one layer of fabric around the circumference of the mold over the thread;

helically winding an inextensible member in a plurality of convolutions around the circumference of the mold over the fabic to form a load carrying member for the belt;

applying a layer of moldable elastomer over the member;

heating and applying pressure to the layer of elastomer to force the softened elastomer through the spaces between successive convolutions of the member and filling the belt tooth cavities by forcing the fabric and the thread into contact with the walls of the grooves and filling the space between the fabric and the member with the elastomer;

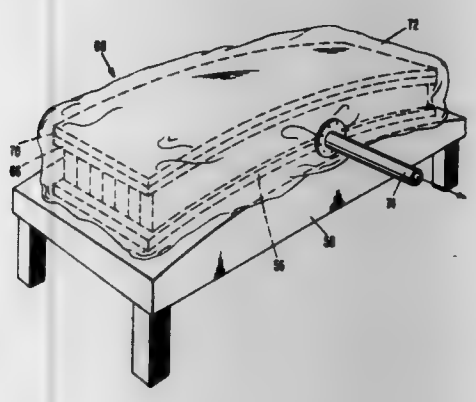
removing the resulting belt slab from the mold and removing the thread from the belt slab, thereby forming surface discontinuities in the belt extending substantially in the longitudinal operating direction of the belt.

4,512,835

METHOD OF MAKING A CURVED COMPOSITE BEAM

Richard J. Gardiner, Murray, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 6, 1983, Ser. No. 501,737
Int. Cl.³ B65H *81/00;* E04C *3/46*
U.S. Cl. 156—174 **1 Claim**



1. A method for manufacture of curved fiber-reinforced composite beams, each of said beams having a web that extends longitudinally in an arc, and at least one flange projecting laterally from said web, said method comprising:

(a) winding layers of high strength filaments about the exterior surfaces of each of a plurality of mandrels, each of said mandrels having a top surface, side surfaces and a bottom surface, and being curved lengthwise along the intended arc for each said beam, said layers of high strength filaments being wet with a curable resin,

(b) placing the resin-wet, filament-wound mandrels on a support surface having substantia11y the same curvature as that of said mandrels, said support surface being covered with a layer of filament-reinforced material, and said filament-wound mandrels being placed in a side-by-side relationship, the side surfaces of said filament-wound mandrels being contiguous with side surfaces of adjacent filament-wound mandrels and the bottom surface of each mandrel being contiguous with the layer of filament-reinforced material on said support surface,

(c) placing a second layer of filament-reinforced material over the top surface defined by the plurality of top surfaces of each of said mandrels, the top surfaces of said mandrels being contiguous with the second layer of filament-reinforced material,

(d) curing the resulting assemblage comprising the bottom layer of filament-reinforced material, the filament-wound mandrels and the top layer of filament-reinforced material and

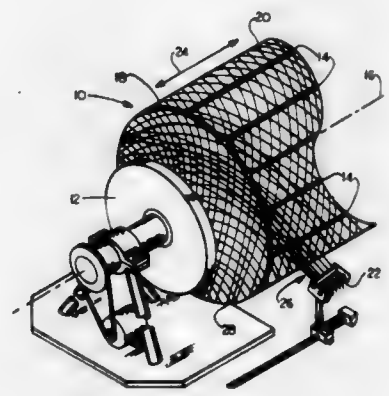
(e) cutting the resulting composite structure to provide a plurality of curved structural beams, in which each said web thereof is formed from those portions of filaments of said filament-wound mandrels that were on said contiguous side surfaces of said adjacent filament-wound mandrels.

4,512,836

METHOD OF PRODUCING COMPOSITE STRUCTURAL MEMBERS

Allan T. Tucci, Orange, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 22, 1983, Ser. No. 525,105
Int. Cl.³ B29D *3/02;* B29G *1/00;* B29C *17/14*
U.S. Cl. 156—174 **3 Claims**



1. The method of fabrication of a 3-Dimensional part comprising the steps of:

depositing a first layer of reinforcements impregnated with curable resin on a mandrel parallel to the surface of the mandrel;

placing separators on a only portion of said first layer;

depositing a second layer of reinforcements impregnated with curable resin over the separators and said first layer forming a layered structure;

cutting said layered structure at the separators;

removing said layers from the mandrel;

parting the layers along said separators;

removing said separators from said reinforcements;

inserting a reinforcing material between the layers to replace the separators and to reinforce edges of said layers;

placing said cut and partially separated layers in a mold;

conforming the layered structure to the shape of the mold;

curing said impregnated reinforcements into a composite part; and

removing said composite 3-Deimensional part from and mold.

4,512,837

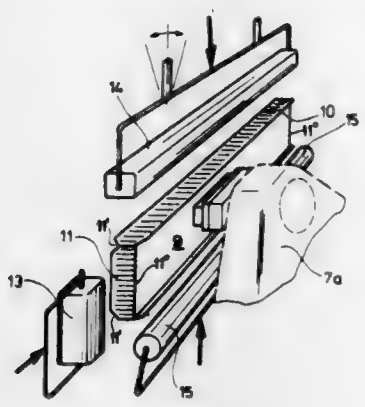
APPARATUS FOR MAKING A SURFACE TYPE STRUCTURAL COMPONENT, ESPECIALLY FOR AIRCRAFT

Branko Sarh, Hamburg, and Hartmut Pasenau, Bremen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 540,705, Oct. 11, 1983, which is a continuation of Ser. No. 228,680, Jan. 26, 1981, abandoned.
This application Oct. 20, 1983, Ser. No. 544,112
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003552
Int. Cl.³ B31C *13/00*
U.S. Cl. 156—189 **11 Claims**

1. An apparatus for producing a surface type structural component having a grid structure comprising: a plurality of mold bodies formed with guide elements, means for wrapping strips of impregnated fiber material around the periphery of said mold bodies to form multi-layed box frames mounted on said mold bodies, a plurality of longitudinal carrier beams formed with guide rails for receiving the mold bodies with guide elements for assembling the mold bodies and box frames mounted on said mold bodies into longitudinal grid elements, cross guide means arranged on said longitudinal carrier beams with a predetermined spacing between said cross guide means, a plurality of cross beams including cross guide rails for receiv-

ing said cross guide means and for assembling said longitudinal grid elements to form said grid structure, and a gluing means



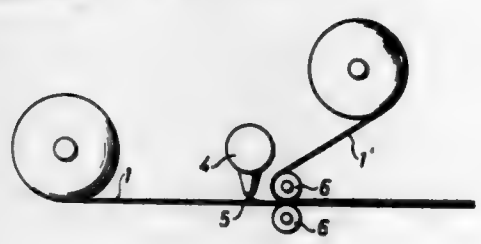
for applying a laminate sheathing to said assembled grid structure to form said surface type structural component.

4,512,838

EXTRUDED LONGITUDINAL JOINT

Anders R. Rausing, Lausanne, Switzerland, assignor to Tetra Pak Developpement SA, Pully, Switzerland

Filed Jan. 20, 1983, Ser. No. 459,700
Claims priority, application Sweden, Jan. 20, 1982, 82002890
Int. Cl.³ B29D *23/10*
U.S. Cl. 156—203 **6 Claims**



1. A method for heat-sealing together two portions of orientation-stretched laminated polyester material, each portion of said material including a central layer of polyester positioned between two surface layers of glycol-modified polyester, comprising:

depositing a strand of molten plastic material of sufficient size on a first one of the two surface layers of glycol-modified polyester along an intended joint area so that the strand will have sufficient heat content to heat the two surface layers of glycol-modified polyester

joning a second one of the two surface layers of glycol-modified polyester to said strand so as to form a joined material having a joint area; and,

fusing the first and the second surface layers of the glycol-modified polyester to the strand while cooling the joint area to prevent heat from the molten strand of plastic material from diffusing into said central layer of polyester.

4,512,839

MULTI-COLOR SIGN MAKING METHOD AND LAYUP

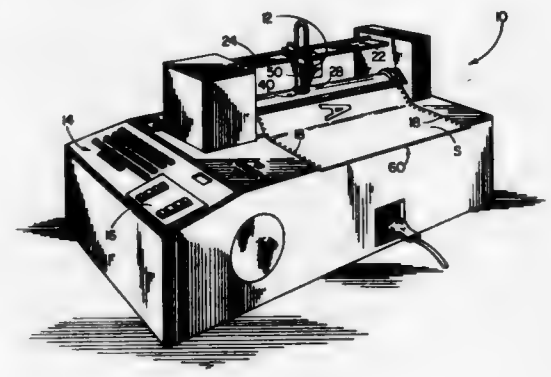
Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific, Inc., South Windsor, Conn.

Filed Oct. 29, 1982, Ser. No. 437,876
Int. Cl.³ B26D *7/10*
U.S. Cl. 156—248 **9 Claims**

1. A method of making signs in multiple colors comprising:

providing a multi-ply layup of sign material composed of colored plies with at least one ply having one color and another ply having another, different color, a releasable adhesive securing each ply to the other plies in the layup, the bottom colored ply of the layup having a releasable adhesive on the bottom surface for securing the bottom colored ply to another object, and a ply of strippable release material protecting the adhesive on the bottom surface of the bottom colored ply and preventing the layup from adhering before removal of the release material;

placing the multi-ply layup of sign material in a cutting machine having an adjustable depth cutting tool for cutting through selected colored plies of the sign material in the multi-ply layup in a controlled cutting operation;



adjusting the depth of the cutting tool to penetrate through a selected ply other than the bottom colored ply of the layup; and

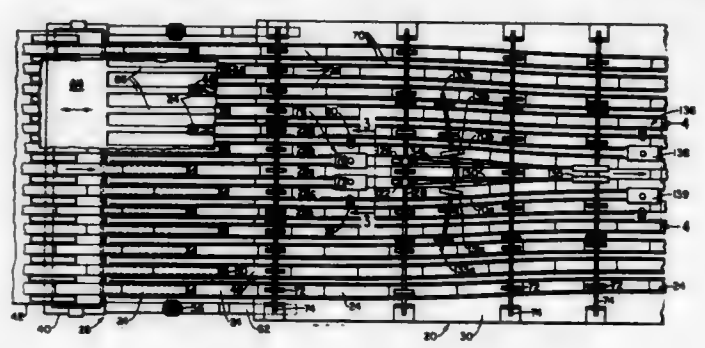
actuating the cutting machine to cut desired sign characters through the selected ply of sign material.

4,512,840

METHOD AND APPARATUS FOR WOOD FLOORING MANUFACTURE

Vincent J. Marino, 45 West St., Beverly Farms, Mass. 01915

Continuation-in-part of Ser. No. 231,862, Feb. 5, 1981, Pat. No. 4,360,992, which is a continuation of Ser. No. 963,094, Nov. 22, 1978, abandoned. This application Jul. 16, 1981, Ser. No. 284,077
Int. Cl.³ B32B *31/12, 31/20*
U.S. Cl. 156—304.1 **19 Claims**



5. Apparatus for assembling panel-like sections of flooring from fillets of wood or similar material, comprising

path means defining a plurality of substantially parallel elongated paths for rows of fillets to travel along said paths, including a central path and outer paths for central and outer rows of fillets,

moving means for moving said fillets along said paths,

a first glue station including glue-applying means between at least said central path and a second, outer path of said fillets for applying glue to opposing faces of fillets in said central and second paths,

a first pressing station located downstream of said glue station and including means for pressing fillets in said central and second paths, transversely to the elongation of said paths, whereby fillets in said central and second paths are bonded together,

a second glue station downstream of said first glue station and including second glue-applying means between at least said central path of fillets and a third, outer path of fillets for applying glue to opposing faces of fillets in said central and third paths, and

a second pressing station located downstream of said second

glue station and including second pressing means for pressing fillets in said central, second, and third paths transversely to the elongation of said paths, thereby to join together fillets in said central, second, and third paths.

15. A method for assembling panel-like sections of flooring from fillets of wood or similar material, said method comprising the steps of:

advancing first and second rows of fillets longitudinally side by side on assembly paths,

adhesively joining longitudinal edges of fillets in the first row to a first side of a fillet-separating cushion of compressible and expandable material, and

adhesively joining longitudinal edges of fillets in the second row to a second, opposite side of said cushion,

whereby said sections are assembled with said cushion, with said compression and expansion thereof, separating and holding together fillets of said first row and fillets of said second row.

4,512,841

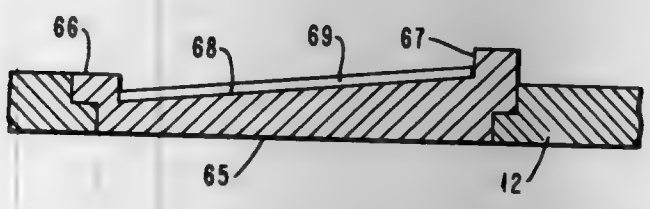
RF COUPLING TECHNIQUES

George F. Cunningham, Jr., Essex; John W. Lewis, Colchester; Robert B. McClure, Essex Junction, and Daniel J. Poindexter, South Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 2, 1984, Ser. No. 596,189

Int. Cl.[3] B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—345 19 Claims



1. In a plasma etching apparatus an improved electrode for holding the product to be etched comprising:

an electrode plate having a plurality of apertures therein;

a workpiece holder positioned in each aperture;

each holder for holding a wafer in a preselected position and being tailored to alter the plasma around and over the holder to provide uniform etching over the surface of the wafer in the holder.

4,512,842

LABELING MACHINE

Egon Schneider, Neutraubling, Fed. Rep. of Germany, assignor to Krones AG Herman Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,525

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304191

Int. Cl.[3] B65C *9/16, 9/42*

U.S. Cl. 156—357 6 Claims

1. A labeling machine wherein at least one glue pallet is moved in a circular path contiguous with a glue applicator, a label stack and a device for removing glue coated labels from the pallets for the labels to be applied to bottles conveyed through an application station, said machine comprising:

rotationally driven rotor means,

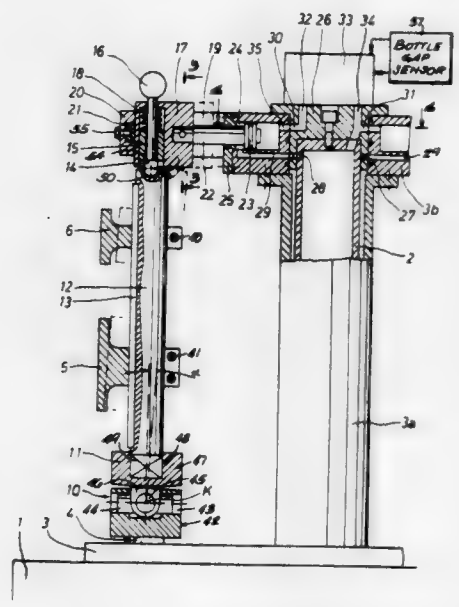
at least one oscillatingly driven member on said rotor means radially spaced from the rotor axis,

a pallet supporting shaft and a glue pallet mounted to the shaft, said shaft being coupled near one end to said driven member for being oscillated and for tilting between an active position most remote from said rotor axis and a neutral position closer to said axis,

movable support means mounted to said rotor means and bearing means on said support means supporting said shaft for oscillating,

means for sensing a gap in the series of bottles conveyed through said label application station, and

actuating means responding to a gap being sensed by moving said movable support means closer to said rotor axis to thereby tilt the continuously oscillating shaft to neutral position so the pallet on said shaft cannot contact said glue applicator or a label in said stack as it continues in the circular path.



4,512,843

MANUFACTURING A CARRIER TAPE OR TAPES

Shu Miyazaki, Fussa, Japan, assignor to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,862

Claims priority, application Japan, Sep. 30, 1982, 57-171178; 57-171179

Int. Cl.[3] C23F *1/02;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—644 12 Claims



1. A method of manufacturing a carrier tape having a plurality of sets of sprocket holes and finger leads formed successively therein, with the sprocket holes along each of the opposite edges of the tape and the finger leads in a middle portion of the tape between the sprocket holes, the method comprising:

providing as a raw material a metallic foil tape of a width greater than the required width of the carrier tape, forming perforations spaced at fixed intervals along each of the opposite edges of the metallic foil tape, applying photoresist to both of the opposite surfaces of the metallic foil tape over a width greater than or equal to the required width of the carrier tape, then positioning the metallic foil tape for exposure to radiation by means of the perforations, irradiating the photoresist layers to form, in the photoresist layers, patterns for the sprocket holes and finger leads, removing either the portions of photoresist which have been irradiated or the portions which have not been irradiated, subsequently etching the resulting uncovered portions of the metallic foil tape to form the required sprocket holes and finger leads, and removing the remaining portions of photoresist.

4,512,844

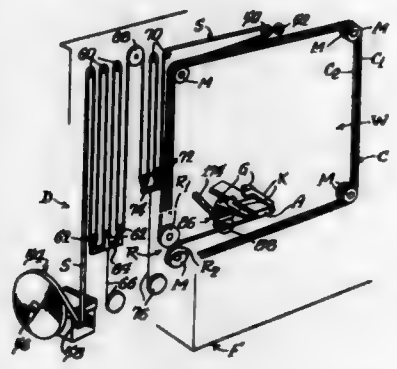
ANVIL, GRIPPER, AND CUTTER ASSEMBLY IN A STRAPPING MACHINE

Robert J. Kobiella, Rolling Meadows, Ill., assignor to Signode Corporation, Glenview, Ill.

Division of Ser. No. 442,524, Nov. 19, 1982, Pat. No. 4,479,834. This application May 21, 1984, Ser. No. 612,418

Int. Cl.³ B29C *27/08*; B65B *13/32*

U.S. Cl. 156—510 **4 Claims**



1. In an apparatus for securing a loop of thermoplastic strap around an article so that first and second overlapping portions of said strap are bonded together by means of a friction-fusion weld, said apparatus including (1) an anvil movable between an extended position for engaging said first overlapping strap portion and a retracted position spaced away from said extended position, (2) a strap engaging member for pressing against and gripping the outwardly directed surface of said second overlapping strap portion, (3) means for effecting relative movement between said anvil and at least said strap engaging member to compress said overlapping strap portions therebetween, and (4) means for moving said strap engaging member to cause bodily sliding frictional movement between the overlapping strap portions to melt interface regions which subsequently solidify to form said friction-fusion weld,

the improvement in said apparatus comprising:

a first carriage movable relative to said anvil between a retracted position and an extended position;

a second carriage movable relative to both said first carriage and said anvil between a retracted position and an extended position;

a pair of grippers pivotally mounted to said first carriage for pivoting between an open position and a closed position against the sides of said anvil to clamp an end of the strap against said anvil;

each said gripper being provided with a gripper link pivotally connected to the gripper and pivotally connected to said second carriage;

a pair of cutters pivotally mounted to said first carriage for pivoting between an open position and a closed position against, or partially extending into, the sides of said anvil to sever the strap at said anvil, a cutter link associated with each said cutter and being pivotally connected to the associated cutter and pivotally connected to said second carriage;

fixed, angled, abutment surfaces located to be engaged by a portion of each gripper when each gripper is pivoted away from the open position with the first carriage in the extended position; and

means for moving said second carriage from said extended position to said retracted position after said friction-fusion weld has been formed whereby rearward movement of said grippers and cutters is initially prevented as said grippers engage and slide along said angled abutment surfaces and pivot to said open positions and whereby said cutters, grippers, and first carriage are retracted with said second carriage after said grippers pivot to the fully opened positions disengaged from said angled abutment surfaces.

4,512,845

APPARATUS FOR JOINING A PLURALITY OF SUPER-IMPOSED WEBS RECEIVED FROM A ROTARY PRINTING MACHINE

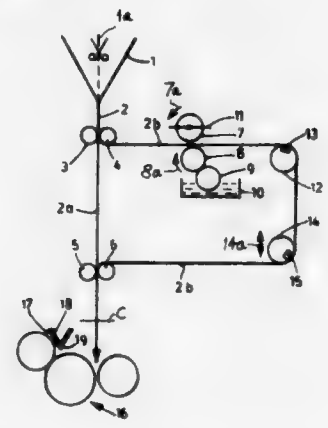
Ingo Köbler, Anhausen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,201

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226907

Int. Cl.³ B42D *1/00*

U.S. Cl. 156—548 **20 Claims**



1. For combination with a rotary printing machine delivering a plurality of continuously moving superimposed web portions (*2a*, *2b*),

apparatus for connecting said web portions at a folding line (**19**) extending transversely to the direction of movement of the web portions,

comprising means (**3**,**4**) receiving said web portions in superimposed condition and guiding said web portions in a first path,

deflection means (**4**) deflecting one (*2b*) of said web portions from superimposed position from the other (*2a*) and guiding said web portion in a separate path;

adhesive strip application roller means (**7**, **8**; **21**, **22**; **25**, **26**) rotating at the speed of movement of the web portions for applying a strip of adhesive on said deflected web portion (*2a*) at the side thereof facing the other web portion;

adjustable register roller means (**14**) for guiding said deflected web portion in a predetermined path having a predetermined path length within said separate path;

guide roller means (**6**) located downstream of said register roller means (**14**) guiding said deflected web portion into contact with the undeflected web portion (*2a*), the path length of said path between said receiving means (**3**,**4**) and the guide roller means (**5**,**6**) of the deflected web portion (*2b*) being longer than the path length of the undeflected web portion (*2a*);

and a folding apparatus (**16**) folding said two again superimposed web portions at the folding line and insuring adhesion of the previously deflected web portion (*2b*) against the undeflected web portion (*2a*) by the adhesive on the adhesive strip at the folding line.

4,512,846

METHOD FOR GROWTH OF CRYSTALS BY PRESSURE REDUCTION OF SUPERCRITICAL OR SUBCRITICAL SOLUTION

Paul J. Shlichta, San Pedro, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,944

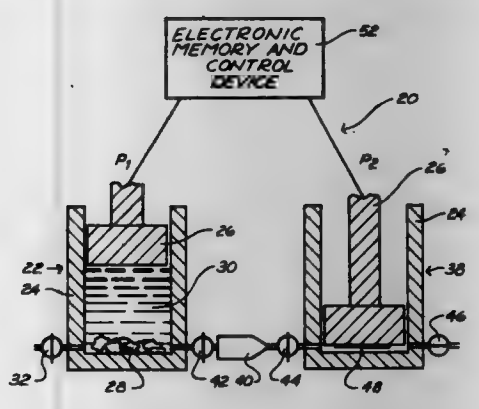
Int. Cl.³ C30B *7/10*

U.S. Cl. 156—623 Q **15 Claims**

1. A process for growing a crystal, comprising:

dissolving at least a portion of a substance to be grown into

a crystal in a suitable fluid solvent at a high pressure to yield a solution and at or near the critical temperature, and



gradually decreasing the pressure of the solution while minimizing heat flow between the solution and its environment to produce a substantial increase in volume.

4,512,847

METHOD OF MEASURING THE THICKNESS OF THE REMOVED LAYER IN SUBTRACTIVE WORKPIECE PROCESSING

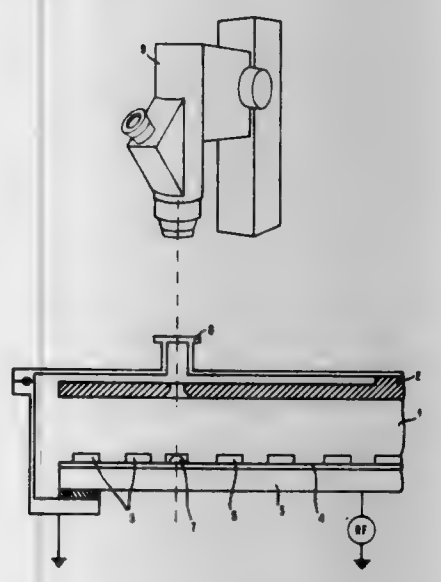
Arwed Brunsch, Stuttgart; Wolf-Dieter Ruh, and Gerhard Trippel, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,761

Claims priority, application European Pat. Off., Oct. 14, 1982, 82109514.8

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—626 **5 Claims**



1. The method of measuring the removed layer thickness is subtractive workpiece processing, said method comprising the steps of:

processing the workpiece simultaneously with a test sample consisting of the same material as the workpiece, the test sample consisting of a wedge and two covering pieces complementary to the two lateral surfaces of the wedge and protecting the surfaces against the processing;

measuring, in the plane of the surface formed by the wedge point and the covering pieces and exposed to processing, the respective distance x_1 between the two gaps which appear between the lateral surfaces of the wedge and the adjacent protecting pieces; and

determining the respectively removed layer thickness z_1 from the difference between the original distance x_0 and the measured distance x_1, taking into consideration the wedge angle α.

4,512,848

PROCEDURE FOR FABRICATION OF MICROSTRUCTURES OVER LARGE AREAS USING PHYSICAL REPLICATION

Harry W. Deckman, Clinton, and John H. Dunsmuir, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 6, 1984, Ser. No. 577,174

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—630 **14 Claims**



1. A process for the negative or positive replication of microstructures from a master comprising:

(a) coating said master with a layer of film forming polymer material so as to form a negative replica of said microstructures of said master onto one surface of said polymer material, such that said polymer becomes solidified, said material being a single polymeric material;

(b) separating said single solidified layer of polymer material from said master;

(c) placing said single solidified layer of polymer material onto a surface of a substrate so as to form a lithographic mask; and

(d) transferring a pattern derived from said lithographic mask to said substrate by etching.

4,512,849

WET-LAID, NON-WOVEN FABRICS

Ralph E. Brandon, Monroe; Charles J. Davis, Goshen; Michael Ring, Warwick, and Roy S. Swenson, Central Valley, all of N.Y., assignors to International Paper Company, New York, N.Y.

Continuation of Ser. No. 89,611, Oct. 29, 1979, abandoned, which is a continuation of Ser. No. 786,590, Apr. 11, 1977, Pat. No. 4,200,488, which is a continuation of Ser. No. 551,399, Feb. 20, 1975, Pat. No. 4,049,491. This application Jun. 8, 1984, Ser. No. 618,325

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ D21H *5/12*

U.S. Cl. 162—157.2 **11 Claims**

1. A wet-laid non-woven fabric containing a binder which comprises at least 50% by weight of synthetic, hydrophobic fibers, having a length to diameter ratio of about 1000 to 3000 and a length of at least ¼ inch; which has a microvariation in basis weight of not more than about 10% and a macrovariation in basis weight of not more than about 5%; and which is essentially free of knits, bundles and strings.

4,512,850

PROCESS FOR WET QUENCHING OF COAL-COKE

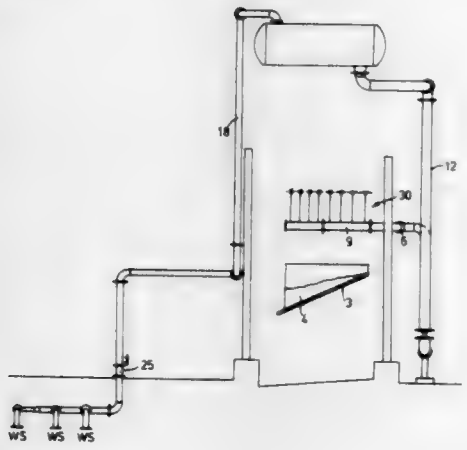
Wilhelm Mosebach, Kamen-Methler, Fed. Rep. of Germany, assignor to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,397

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049157

Int. Cl.³ C10B *39/08, 41/00*

U.S. Cl. 201—1 **6 Claims**



1. A process for wet-quenching of coke to limit wasteful particulate emission of coke dust during quenching, the process being of the type wherein hot coke from a coke oven is hauled under a quenching hood of a quenching tower in a positioned open wet-quenching car, any vapors generated during quenching being discharged through a chimney at the top of the quenching hood, the process comprising:

supplying quenching water from a reservoir to sprinklers in at least two distinct stages, said quenching water being supplied in a predetermined quantity at a substantially constant pressure head;

sprinkling in an initial stage using a first set of nozzles directed at a maximum height of coke deposited in said quenching car, a first quantity of water which is substantially more than half of said predetermined quantity of water over the hot coke during a predetermined first time-interval so as to create a water vapor barrier across the quenching hood and to wash any generated particulate coke dust down; and

in a second stage, sprinkling a second quantity of water which is less than said first quantity of water, over the coke for a second time-interval which is substantially larger than the first time-interval, until the end of sprinkling,

said step of sprinkling in an initial stage being started before said wet-quenching car is completely positioned under said hood of said quenching tower.

4,512,851

PROCESS OF PURIFYING A RECIRCULATING WORKING FLUID

Judson S. Swearingen, 2235 Carmelina Ave., Los Angeles, Calif. 90064

Filed Feb. 15, 1983, Ser. No. 466,430

Int. Cl.³ B01D *3/06, 3/42;* F01K *25/00, 27/00*

U.S. Cl. 203—88 **5 Claims**

1. A process for removing a less volatile minor contaminant from a volatile recirculating working fluid in a thermal power recovery system in which a pump draws the working fluid from a reservoir and pumps the working fluid under pressure through a heating means to vaporize the working fluid which then flows to a separating means where a portion of the working fluid not vaporized is collected and returned to the reservoir while the vaporized working fluid is delivered through a flow control device to an expansion engine where the working fluid expands and produces power which is transmitted to a shaft, the shaft having a seal to prevent contamination of the working fluid by a shaft contaminant, the resulting expanded vaporized working fluid flowing to a condenser where it is condensed and returned to the reservoir, the improvement comprising the steps of:

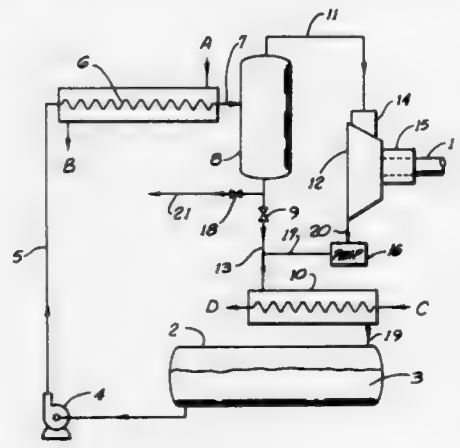
(a) reducing the rate at which a working fluid containing the contaminant is drawn from the reservoir; and

(b) adjusting the flow control device to reduce the pressure in the separating means, so that substantially all of the working fluid being vaporized in the heating means at a temperature and a pressure corresponding to a temperature/pressure dew-point substantially above that of a sample of uncontaminated working fluid to form a vaporized working fluid and a residual unvaporized contaminant;

(c) collecting the residual unvaporized contaminant from the vaporized working fluid in the separating means;

(d) passing the vaporized working fluid through the flow control device; and

(e) removing the residual unvaporized contaminant from the separating means.



4,512,852

IONIC CONCENTRATION MEASURING APPARATUS AND METHOD

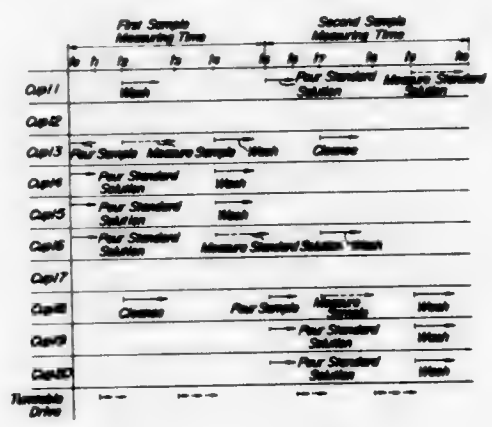
Kosaku Tsuboshima, Hachioji, and Shigeru Yoshinari, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Continuation of Ser. No. 433,531, Oct. 8, 1982, abandoned, which is a continuation of Ser. No. 195,641, Oct. 9, 1980, abandoned. This application Mar. 13, 1984, Ser. No. 587,853

Claims priority, application Japan, Oct. 18, 1979, 54-133574

Int. Cl.³ G01N *27/28*

U.S. Cl. 204/1 T **14 Claims**



1. A method of measuring an ionic concentration of samples, comprising:

pouring a sample into a sample receiving cup;

pouring washing liquid into at least one washing liquid receiving cup;

pouring standard solution into a standard solution receiving

cup, each of said cups being disposed on a rotatable turntable;

measuring the ion concentration of the sample solution in said sample receiving cup with an ion measuring electrode means;

washing said ion measuring electrode means in said washing liquid receiving cups;

measuring the ion concentration of the standard solution in said standard solution receiving cup with said ion measuring electrode means;

wiping said ion measuring electrode means by bringing said ion measuring electrode means into contact with a liquid absorbing member contained in an electrode receiving cup carried by said turntable; and

discharging the sample solution, the washing liquid and the standard solution from the sample receiving cup, the washing liquid receiving cup and the standard solution cup, respectively, after these cups have passed through the ion measuring electrode means.

7. An apparatus for measuring ionic concentration of successive samples comprising a turntable adapted to rotate and stop at a predetermined timing, a plurality of measuring cups disposed about a circle on the turntable, ion sensitive electrode means provided at a measuring position and a control means for inserting and removing the electrode means into and out of the measuring cups in synchronization with the intermittent movement of the turntable, wherein the improvement comprises:

a sample pouring means for delivering successive samples into measuring cups, the sample pouring means located at a sample pouring position;

an electrode washing liquid pouring means for delivering an electrode washing liquid into measuring cups, the electrode washing liquid pouring means being located at a washing liquid pouring position;

electrode wiping means comprising a liquid absorbing member contained in an electrode receiving cup carried by the turntable;

a standard solution pouring means for delivering a standard solution having a known ion concentration into measuring cups, the standard solution pouring means being located at a standard solution pouring position; and

a measuring cup washing means for washing the measuring cups, the measuring cup washing means being located at a measuring cup washing means position which corresponds to a position upon the turntable;

wherein the control means for inserting and removing the electrode means into and out of the measuring cups in synchronization with the intermittent movement of the turntable is constructed to provide for the ion sensitive electrode means to be exclusively inserted into the measuring cups into which the samples, the electrode washing liquid and the standard solution have been delivered, with all of said means operating at substantially the same instant.

4,512,853

METHOD OF MONITORING PH

David B. Wright, and Brian D. Sharpe, Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 377,756, May 18, 1982,. This application May 17, 1983, Ser. No. 495,219

Int. Cl.[3] G01N *27/46*

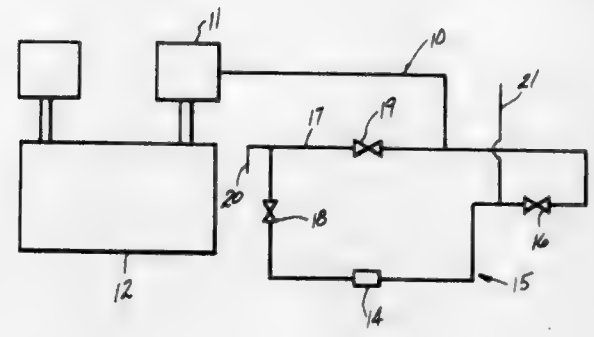
U.S. Cl. 204—1 T 12 Claims

1. A method of electrometrically monitoring the pH of the cell electrolyte in a chloralkali electrolytic cell with a pH sensor initially moistened by a wetting solution, the pH sensor further having a reference electrode with a porous polytetrafluoroethylene membrane comprising the steps of:

(a) placing the pH sensor in an electrolyte flow stream so that the membrane is constantly wetted with electrolyte;

(b) using the cell electrolyte as the reference electrolyte by having the wetting solution replaced by diffusion of the cell electrolyte into the membrane during an acclimation period;

(c) connecting the pH sensor to a potential measuring instrument;



(d) leaving the pH sensor ungrounded; and

(e) letting the reference electrode fluctuate with the electrical potential of the electrolyte flow stream.

4,512,854

METHOD OF ELECTROPLATING PRINTED CIRCUITS

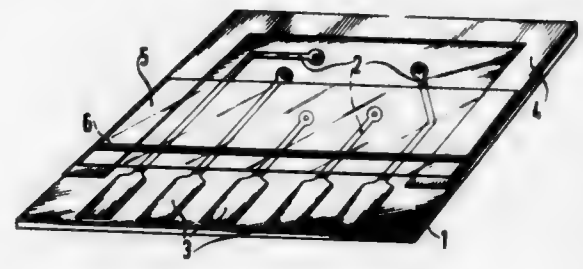
Klaus Grah, Solingen, Fed. Rep. of Germany, assignor to Beiersdorf AG, Hamburg, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 546,217

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1982, 3240387

Int. Cl.[3] C25D *5/02*

U.S. Cl. 204—15 6 Claims



1. In a process for electroplating a printed circuit board, the improvement comprising partially covering the surfaces of said printed circuit board with a masking tape, said masking tape comprising

(a) a foil-like carrier;

(b) a coating consisting of an adhesive material applied to one side of the foil-like carrier;

(c) at least one electrical conductor arranged on the coating of the masking tape and forming a unit therewith, said electrical conductor consisting of a mixture of varnish and metal powder; and

(d) a frame carried by the printed circuit board, said electrical conductor connecting the surfaces to be electroplated of the printed circuit board with one another and with the frame carried by the printed circuit board.

4,512,855

DEPOSITION OF METALS AS INTERLAYERS WITHIN ORGANIC POLYMERIC FILMS

Stephen Mazur, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

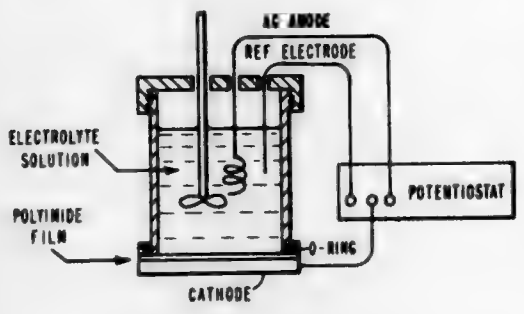
Filed Jul. 23, 1984, Ser. No. 633,502

Int. Cl.[3] C25D *7/00*

U.S. Cl. 204—22 34 Claims

1. Metal interlayer deposition process by means of which a metal is deposited in its zero-valent state in a spatially-controlled manner within an organic polymeric film having first and second surfaces, the process comprising supplying ions of the metal to at least a part of the first surface and electrons to

at least a part of the second surface, the metal ions being in a positive oxidation state and in a coordination state such that they are mobile within the polymeric film and are transported through the film in a general direction toward the second



surface, the polymeric film being capable of accepting electrons in a reversible manner at the second surface, and the electrons being mobile within the polymeric film and being transported through the film in a general direction toward the first surface.

4,512,856

ZINC PLATING SOLUTIONS AND METHOD UTILIZING ETHOXYLATED/PROPOXYLATED POLYHYDRIC ALCOHOLS

Vincent Paneccasio, Madison, Conn., assignor to Enthone, Incorporated, New Haven, Conn.

Continuation of Ser. No. 253,657, Apr. 13, 1981, abandoned, which is a continuation of Ser. No. 95,483, Nov. 19, 1979, abandoned. This application May 25, 1984, Ser. No. 614,693

Int. Cl.³ C25D *3/22*

U.S. Cl. 204—55 R **17 Claims**

1. An aqueous, acid zinc plating solution for electrodeposition of zinc coatings consisting essentially of:

(a) a source of zinc ions;

(b) an electrolyte which provides electrolytically charged ions capable of conducting an electric current;

(c) an organic acid or salt of an organic acid; and

(d) a grain refining agent comprising a polyhydric alcohol selected from the group consisting of glycerin having 5 to 30 moles of ethylene oxide substituted for hydroxyl groups, glycerin having 3 to 15 moles of propylene oxide substituted for hydroxyl groups, sorbitol having 6 to 100 moles of ethylene oxide substituted for hydroxyl groups, or sorbitol having 1 to 20 moles of propylene oxide substituted for hydroxyl groups.

4,512,857

PREVENTION OF CORROSION OF ELECTROLYTE CELL COMPONENTS

Ronald D. Chamberlin, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1982, Ser. No. 444,116

Int. Cl.³ C25B *1/34*; C23F *13/00*

U.S. Cl. 204—98 **8 Claims**

1. In a method of operating an electrolytic cell for the production of chlorine and aqueous alkali metal hydroxide by the electrolysis of an aqueous alkali metal halide having an anode, a cathode with an electrolyte permeable diaphragm or an electrolyte impermeable but cation permeable permionic membrane therebetween and a structure with exposed iron in the cell's catholyte compartment, said cathode and said exposed iron being in contact with the strongly alkaline catholyte liquid of the cell, and said cathode comprising a catalyst having a lower electronegativity than the said exposed iron, the improvement comprising maintaining a sacrificial anode of a metal more galvanically reactive under cell conditions than said exposed iron in proximity to the exposed iron while electrolyzing said alkali metal halide to reduce dissolution of the exposed iron into the catholyte liquor.

4,512,858

METHOD OF PRODUCING AN ELECTRODE USABLE AS A FLOW-THROUGH ANODE

Bernd D. Struck, Langerwehe; Francisco J. Dias, Jülich; Hartmut Luhleich, Düren, and Ursula Paffen nee Siebert, Würselen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,654

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305753

Int. Cl.³ C25B *1/22*

U.S. Cl. 204—104 **6 Claims**

5. Method of anodic oxidation of sulfur dioxide in an electrolytic cell, having anode and cathode electrodes, comprising the steps of:

preparing the anode electrode by coating an electrode body of graphite-like carbon material with a layer of cokable organic material selected from the group consisting of sugars, phenolic resins and asphalt pitch;

heating the coated electrode body in an inert atmosphere to a temperature in the range from 400° to 800° C., thereby coking said layer, and

directly thereafter heating said coated electrode to a temperature in the range from 1400° to 2000° C., followed by cooling;

then placing the cooled coated and heat treated electrode in said electrolysis cell, together with an aqueous electrolyte in said cell, having 30 wt. % to 50 wt. % sulfuric acid with an addition of 0.005 wt. % to 1 wt. % of hydrogen iodide, sulfur dioxide being provided to said electrolyte at a partial pressure of at least 0.1 bar and a temperature in the range between 80° and 120° C., while a current density of at least 100 mA/cm^2 is passed through said cell for anodic oxidation of said sulfur dioxide.

4,512,859

ABRASIVE POLISHING METHOD

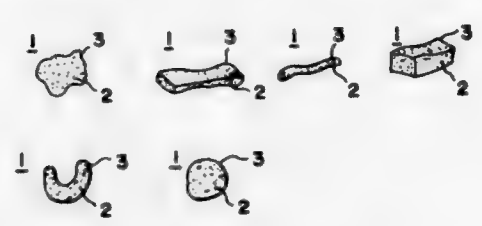
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Dec. 27, 1982, Ser. No. 453,174

Claims priority, application Japan, Dec. 26, 1981, 56-214389

Int. Cl.³ B24B *7/00*

U.S. Cl. 204—129.46 **16 Claims**



10. The method defined in claim 1 wherein said aggregate is of a predetermined quantity.

11. The method defined in claim 1 wherein said matrix consists at least in part of a synthetic or natural rubber.

4,512,860

CATHODIC ELECTROCOATING COMPOSITION COMPOUNDED WITH LATEX BINDER

Kirk J. Abbey, Cleveland, Ohio; James R. Erickson, Katy, Tex., and Barbara L. Kunz, Bay Village, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jul. 14, 1983, Ser. No. 513,621

Int. Cl.³ C25D *13/06, 13/24*

U.S. Cl. 204—181 C **12 Claims**

1. In a method for electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode, an anode, and an aqueous electrodepositable composition wherein net unidirectional electric current is

passed through said circuit for causing deposition of said composition on said cathode, the improvement which comprises using as said composition an aqueous suspension of cation-active, film-forming, amino-stabilized synthetic latex binder particles characterized by being practically free of amino monomers and amino initiator fragments and containing not substantially more than about 15% low molecular weight material including solvents based on the latex solids content.

3. A process for improving the electrodeposition of film-forming, cation-active, amino-stabilized synthetic latex which comprises removing therefrom cation-active low molecular weight material by contacting an aqueous dispersion of said latex with ion exchange resin in acid form.

4,512,861

ELECTROPHORETIC COATING PROCESS

Andrew Doroszkowski, Marlow, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 289,236, Aug. 3, 1981, abandoned, which is a continuation of Ser. No. 122,818, Feb. 19, 1980, abandoned. This application Dec. 30, 1983, Ser. No. 567,371

Claims priority, application United Kingdom, Feb. 27, 1979, 7906828

Int. Cl.³ C25D *13/10*

U.S. Cl. 204—181 R **8 Claims**

1. In a process of coating an electrically conductive substrate with a film-forming material wherein the substrate is immersed as an anode in a dispersion of the film-forming material in an aqueous medium and an electrical current is passed between the anodic substrate and a counter-electrode in electrical contact with the dispersion for a sufficient period of time to form a coating of desired thickness, the improvement characterised in that:

(a) the film-forming material is stabilised in the aqueous medium at a pH of greater than 3.9 by non-ionic stabilisation,

(b) the film-forming material is substantially free from ionic charges or contains and/or is associated with only an amount of ionic charges such as will not alone primarily determine the stability of the dispersion, and

(c) the dispersion also contains a chemical moiety, which is present in a further material constituent of the dispersion and/or in the film-forming material, which moiety is interactive with a non-ionic hydrophilic moiety providing the non-ionic stabilisation of the dispersion of film-forming material, the interaction between the moieties causing destabilisation and flocculation or precipitation of the dispersed film-forming material at a pH of 3.9 or less.

4,512,862

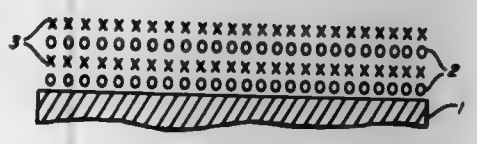
METHOD OF MAKING A THIN FILM INSULATOR

Eugene B. Rigby, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 8, 1983, Ser. No. 520,963

Int. Cl.³ B05D *5/12*

U.S. Cl. 204—192 D **6 Claims**



1. A process for forming a thin insulative coating on a substrate having an electrical surface charge in an acidic solution comprising the steps of:

preparing an up to 5% by weight silica solution containing particles of SiO_2 in the range between 50 Å and 400 Å, said solution having a pH in the range between 2 and 5 and a first charge;

preparing an approximately 1% by weight alumina solution containing alumina particles of approximately 50 Å size, said alumina solution having a pH in the range between 2 and 5 and a second charge opposite to said first charge;

dipping said substrate into the one of said solutions having a charge opposite to said surface charge and, thereafter, alternately dipping said substrate into said prepared solutions to form at least one layer of particles from each charged solution to thereby form alternate silica and alumina layers on said substrate, said alternating layers being formed until a coating thickness of at least 1000 Å is obtained; and

sealing the coated surface of said dipped substrate by (a) heating said substrate, or (b) dipping said substrate in a hydrolized orthosilicate solution, washing said dipped substrate and subsequently heating said substrate to a temperature between 250° to 350° C., or (c) dipping said substrate in a heated sodium silicate solution, washing said dipped substrate and subsequently heating said substrate.

6. A process as defined in claim 1, 2, 3 or 4 further comprising the step of sputtering an alumina layer over said sealed surface of said substrate.

4,512,863

STAINLESS STEEL PRIMER FOR SPUTTERED FILMS

Russell C. Criss, Pittsburgh, and F. Howard Gillery, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 9, 1983, Ser. No. 530,553

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **14 Claims**

1. A method for coating a nonmetallic substrate with a film by cathode sputtering, wherein the film comprises a metal characterized by low adhesion to the substrate surface, comprising the steps of:

a. first depositing onto the substrate surface a primer layer of a metal which bonds oxidatively to the nonmetallic substrate surface; and

b. subsequently sputtering the low adhesion metal film onto the primer layer.

4,512,864

LOW RESISTANCE INDIUM OXIDE FILMS

F. Howard Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 30, 1983, Ser. No. 556,657

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 P **9 Claims**

1. In a method for sputtering a metal oxide containing film onto a substrate surface from a cathode comprising a metal selected from the group consisting of indium, tin and mixtures thereof, in which a magnetic field is formed adjacent the cathode sputtering surface, the improvement which comprises maintaining the substrate at a temperature sufficiently higher than the ambient temperature during sputtering to produce a metal oxide containing film with a resistance significantly lower than that of a film similarly deposited on a substrate at ambient temperature.

4,512,865

ELECTROLYTIC STERILIZER FOR CONTACT LENSES

Masakatu Yamauchi, Kani, Japan, assignor to Tanica Electric Co., Ltd., Tajimi and Tomei Sangyo Kabushiki Kaisha, Nagoya, both of, Japan

Filed Jun. 6, 1984, Ser. No. 617,815

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—271 **2 Claims**

1. An electrolytic sterilizer for contact lenses, said sterilizer comprising:

(a) a main body accomodating a power source unit, said main body having a recess in the upper surface thereof;

(b) a pair of protrusions made of an electrically insulating material protruding upwardly from the bottom of said recess, said pair of protrusions defining a groove in the

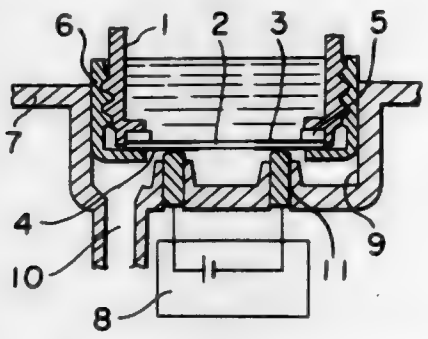
bottom of said recess which receives waste sterilizer solution accidentally spilled into said recess in said main body;

(c) a sterilizer container detachably mountable in said recess in said main body;

(d) a pair of electrolytic electrodes for conducting an electric current in said sterilizer container;

(e) a pair of sterilizing container contacts in electrical contact with said pair of electrolytic electrodes; and

(f) a pair of main body contacts in electrical contact with said power source unit, said pair of main body contacts being mounted in and protruding upwardly from said pair of protrusions and being positioned to make electrical



contact with said pair of sterilizer container contacts when said sterilizer container is mounted in said recess in said main body, whereby:

(g) the portions of said pair of main body contacts which come into contact with said pair of sterilizer container contacts are normally above the level of waste sterilizer solution accidentally spilled into said recess in said main body and

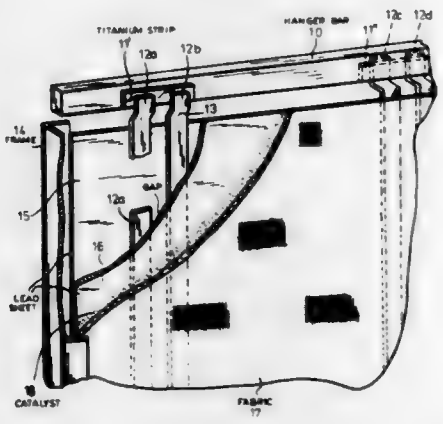
(h) said pair of protrusions made from an electrically insulating material normally prevent electrolysis from occurring in waste sterilizer solution accidentally spilled into said recess in said main body.

4,512,866

TITANIUM-LEAD ANODE FOR USE IN ELECTROLYTIC PROCESSES EMPLOYING SULFURIC ACID

Robert C. Langley, 214 Old Forge Rd., Millington, N.J. 07946

Filed Oct. 4, 1983, Ser. No. 538,799
Int. Cl.[3] C25B *11/00*
U.S. Cl. 204—290 F 6 Claims



1. An anode for use in electrolytic processes with an electrolyte containing sulfuric acid which comprises:

(a) a valve metal substrate;

(b) a lead or lead alloy antipassivation layer in contact with said valve metal substrate; and

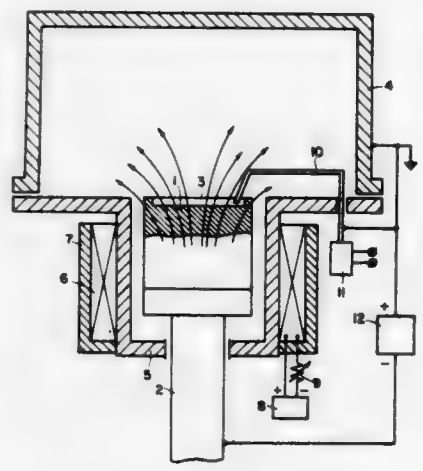
(c) a lead ruthenate or lead iridate catalyst in surface contact with the lead or the lead alloy.

4,512,867

METHOD AND APPARATUS FOR CONTROLLING PLASMA GENERATION IN VAPOR DEPOSITION

Anatoly A. Andreev, ulitsa Danilevskogo, 31, kv. 47, and Anatoly A. Romanov, ulitsa Valtera, 7, kv. 135, both of Kharkov, U.S.S.R.

Continuation of Ser. No. 324,537, Nov. 24, 1981, abandoned.
This application Aug. 29, 1983, Ser. No. 527,382
Int. Cl.[3] C23C *15/00*
U.S. Cl. 204—298 11 Claims



1. An apparatus for vapor deposition coating in which a plasma of coating material is generated from the surface of an electrode, said apparatus comprising:

(a) a sacrificial metal cathode having a plasma generating and face containing a depression whose bottom defines the plasma generating surface, so that cathode spots which are created on the generating surface are prevented from moving to the periphery of said end face;

(b) means for generating a plasma from said cathode;

(c) means for producing an electromagnetic field adjacent said plasma generating surface comprising a magnetic wire coil placed coaxially with said cathode and below the level of the plasma generating surface, so that the lines of force of said electromagnetic field extend in an inclined position with respect to the periphery of the plasma generating surface to influence the movement of the cathode spots on said plasma generating surface; and

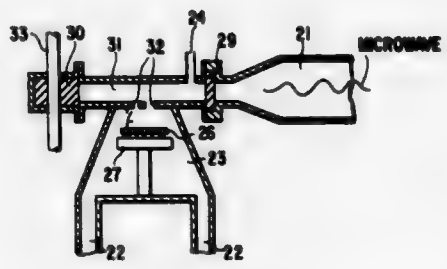
(d) means for altering the intensity of the electromagnetic field to selectively control the size of the portion of the cathode from which the plasma is generated, so that a uniform distribution of paths of movement of said cathode spots on said plasma generating surface is provided.

4,512,868

MICROWAVE PLASMA PROCESSING APPARATUS

Shuzo Fujimura, Tokyo, and Hiroshi Yano, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 9, 1984, Ser. No. 628,863
Claims priority, application Japan, Jul. 8, 1983, 58-124511
Int. Cl.[3] C23C *15/00*
U.S. Cl. 204—298 8 Claims



1. A plasma processing apparatus for semiconductor substrates comprising:

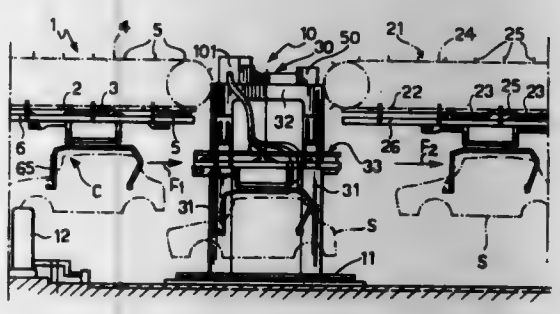
a microwave power source;
a microwave transmitting means including a waveguide;
a plasma generating region defined in a part of said waveguide;
a reacting region for processing a semiconductor substrate, coupled to said plasma generating region;
a dielectric window formed in said waveguide for defining a portion of said plasma generating region, said dielectric window transmitting microwave power;
a gas inlet through which the reactive gas is fed into said plasma generating region wherein free radicals of the reactive gas are generated in the plasma; and
radical transmitting means provided between said plasma generating region and said reacting region, said radical transmitting means transmitting the free radicals created in said plasma generating region into said reacting region and substantially preventing the leak of microwave energy and the plasma into the reacting region, wherein the free radicals act on the semiconductor substrate in said reacting region.

4,512,869

OVERHEAD CONVEYOR INSTALLATION FOR MOTOR VEHICLE BODIES PARTICULARLY FOR ELECTROPHORESIS PAINT LINES, AND A BODY CARRIER USABLE IN THIS INSTALLATION

Vitale Boccalatte, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed May 15, 1984, Ser. No. 610,411
Claims priority, application Italy, May 19, 1983, 67556 A/83
Int. Cl.³ B65G *49/02*; C25D *13/04, 13/12*
U.S. Cl. 204—300 EC **7 Claims**



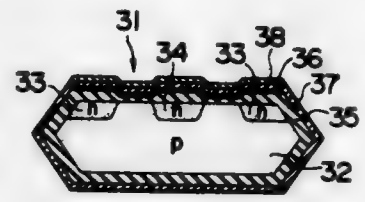
1. A body carrier for an overhead conveyor installation, said body carrier being arranged to carry a motor vehicle body having windshield and rear window apertures and internal engagement apertures, the body carrier comprising:
at least one trolley,
a support structure carried by said at least one trolley and arranged to receive and convey a motor vehicle body, said structure having front suspension means and rear suspension means for introduction into said body through said windshield and rear window apertures respectively and for engagement in said internal engagement apertures in the body;
at least one electrical contact member carried by the said structure and connectible to said body to allow connection of the body to an electric voltage source;
first locking means for simulaneously locking the said front suspension means and the said at least one electrical contact member respectively in an engaged position and in a position of contact with said body; and
second locking means for locking the said rear suspension means in an engaged position in the said body.

4,512,870

CHEMICALLY SENSITIVE ELEMENT

Satsuki Kohara, Koganei, and Noriaki Ono, Akishima, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Dec. 2, 1983, Ser. No. 557,610
Claims priority, application Japan, Dec. 6, 1982, 57-213693
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—416 **4 Claims**



1. A chemically sensitive element of the ion sensing field-effect transistor type including a semiconductor substrate having source, drain and channel regions; a gate insulating membrane disposed atop said channel region; an optically opaque membrane disposed atop said gate insulating membrane; a protecting membrane disposed atop said optically opaque membrane; and an ion sensing membrane disposed atop said protecting membrane.

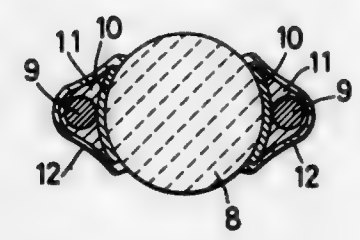
3. A chemically sensitive element of the ion sensing field-effect transistor type including a semiconductor substrate having an upper surface and source, drain and channel regions defined at said upper surface; a gate insulating membrane disposed atop said channel region; a protective membrane disposed atop said gate insulating membrane; an optically opaque membrane disposed atop said protective membrane and being at least coextensive with said upper surface; and an ion sensing membrane disposed atop said optically opaque membrane.

4,512,871

OXYGEN SENSOR WITH HEATER

Nobuhide Kato, Aichi, and Takao Murase, Konan, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Apr. 27, 1984, Ser. No. 604,473
Claims priority, application Japan, May 9, 1983, 58-68663[U]; May 9, 1983, 58-68664[U]; Dec. 23, 1983, 58-202830[U]; Dec. 23, 1983, 58-202831[U]
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—429 **15 Claims**



1. An oxygen sensor comprising:
a tubular solid electrolyte body having an elongate bore which is closed at one end of said tubular solid electrolyte body and open at the other end, and further having reference and measuring electrodes on inner and outer surfaces thereof, respectively;
a housing supporting said tubular solid electrolyte body such that said outer surface thereof is exposed at said one end to exhaust gas, said housing maintaining said elongate bore in gas-tight condition with respect to said exhaust gas; and
a bar-shaped heater inserted in said elongate bore in said tubular solid electrolyte body, and comprising a heating resistor having a positive temperature coefficient, a ceramic body carrying said heating resistor so as to embed the heating resistor, and a pair of lead wires for connecting said heating resistor to an electric power source,

said ceramic body having on its outer peripheral surface a pair of terminal pads connected to said heating resistor, an end portion of each of said lead wires being brazed to corresponding one of said terminal pads with a mass of brazing material containing silver, an exposed surface of said mass of brazing material being coated with a metallic layer made of metal which is different from silver or its alloy.

4,512,872

PROCESS FOR EXTRACTING BITUMEN FROM TAR SANDS

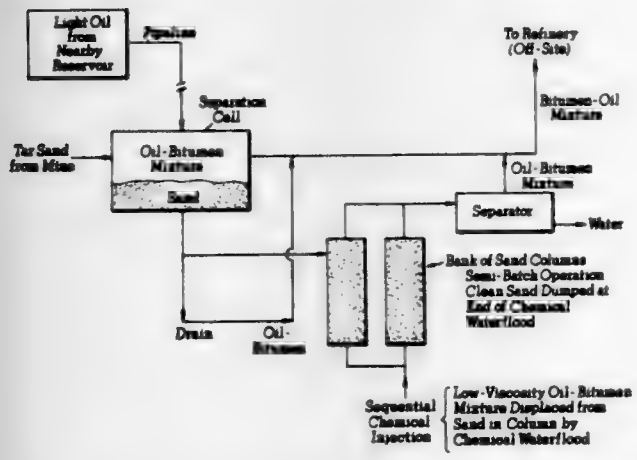
Harold S. Chung, Dallas, Tex., and Joseph J. Dickert, Jr., Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 495,568, May 18, 1983, Pat. No. 4,457,827, which is a continuation-in-part of Ser. No. 242,217, Mar. 10, 1981, abandoned. This application Feb. 16, 1984, Ser. No. 580,927

The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **9 Claims**



1. A process for the recovery of bitumen from mined tar sands that comprises the steps of:

(i) admixing mined tar sands with a liquid hydrocarbon which is miscible with the bitumen in said tar sands, whereby a portion of said miscible liquid hydrocarbon becomes dissolved in at least a portion of said bitumen, thereby becoming absorbed on said tar sand and reducing the viscosity of the bitumen remaining thereon;

(ii) essentially separating the mixture of step (i) into a liquid hydrocarbon portion and a solid tar sand portion, said solid tar sand portion containing bitumen of reduced viscosity; and

(iii) while maintaining said separated tar sand portion of step (ii) in an essentially fixed bed state in one or more columns, injecting into one end of said column or columns an aqueous chemical waterflooding composition comprising water and at least one chemical waterflooding additive selected from the group consisting of surfactants, viscosifying additives and mixtures thereof, whereby said waterflooding composition passes through said column or columns in a manner such that the tar sands in said column or columns are maintained in a fixed bed state with the substantial absence of agitation of the tar sand particles, and bitumen on said tar sand is displaced therefrom and is passed along with said waterflooding composition to the end of said column or columns opposite the point of injection.

4,512,873

PROCESS FOR LOW TEMPERATURE CARBONIZATION OF HYDROGENATION RESIDUES

Gert Escher, Gelsenkirchen; Rolf Holighaus, Julich, and Hans-Peter Wenning, Dorsten-Rhade, all of Fed. Rep. of Germany, assignors to Veba Oel Entwicklungs-Gesellschaft mbH, Gelsenkirchen, Fed. Rep. of Germany

Filed Jan. 6, 1984, Ser. No. 568,792

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300365

Int. Cl.³ C10G *1/06, 1/00, 17/00*

U.S. Cl. 208—13 **10 Claims**

1. In a process for the low temperature carbonization of residues obtained from the hydrogenation of oil or of coil in a heated rotary drum at temperatures between approximately 400° C. and 600° C.;

the improvement comprising introducing as the major source of heat a hot gas into said low temperature carbonization drum; wherein carbonization gas is employed as said hot gas after the separation of the condensable portions thereof; and

wherein said gas has been heated to temperatures between approximately 600° C. and approximately 950° C.

4,512,874

METHOD FOR PRODUCING MESOPHASE CONTINUOUSLY

Masami Watanabe, Tokyo, Japan, assignor to Kashima Oil Company Limited, Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 507,587

Int. Cl.³ C10C *3/00;* D01F *9/14*

U.S. Cl. 208—44 **1 Claim**

1. A method for continuously producing 100% mesophase having a softening point of about 209° to about 246° C. composed only of Q.I. Component and Q.S. Component comprising (i) subjecting a petroleum origin pitch to heat treatment with stirring under the atmospheric or superatmospheric pressure and in the presence of a stream of a non-oxidative gas selected from the group consisting of a hydrocarbon of small carbon number, a lower boiling point naphtha fraction and a dry gas by-product of the heat treatment of the raw material petroleum-origin pitch, at a temperature of 360° C. to 450° C. for from 30 minutes to 30 hours so that the mesophase content in the heat-formed pitch is between 5% to 50%, (ii) continuously transferring a predetermined amount of the heat-treated pitch from the heat-treatment step to a mesophase growing and coalescing step, (iii) heating the transferred heat-treated pitch in the mesophase growing and coalescing step to cause only the mesophase to grow and coalesce by aging under the atmospheric or superatmospheric pressure and in the presence or absence of a stream of the non-oxidative gas at a temperature higher than 280° C. and lower than 350° C. for from 5 to 30 hours, so as to separate the heat-treated pitch into an upper layer of a non-mesophase pitch and a lower layer of a mesophase pitch and (iv) continuously removing a 100% mesophase composed of Q.I. component and Q.S. component from the lower layer in the growing and coalescing step; and simultaneously and continuously removing non-mesophase pitch from the upper layer of the growing and coalescing step, in an amount corresponding to a predetermined amount of the heat-formed pitch transferred to the growing and coalescing step minus the amount of 100% mesophase continuously removed, and (v) adding new raw material pitch in an amount necessary to produce the amount of 100% mesophase continuously removed.

4,512,875

CRACKING OF CRUDE OILS WITH CARBON-HYDROGEN FRAGMENTATION COMPOUNDS OVER NON-ZEOLITIC CATALYSTS

Gary N. Long, Putnam Valley; Regis J. Pellet, Croton-On-Hudson, and Jule A. Rabo, Armonk, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 2, 1983, Ser. No. 490,952
Int. Cl.[3] C10G *11/04*
U.S. Cl. 208—114 14 Claims

1. The process for conversion of a crude oil feed comprising:

(a) combining the crude oil feed with between about 1 weight percent and about 25 weight percent, based on total feed weight, of a carbon-hydrogen fragmentation compound selected from the group consisting of alcohols, acetals, aldehydes, ketones, aliphatic ethers, olefins, napthenes, paraffins containing from about 13.0 to about 25 percent by weight hydrogen and mixtures thereof; and

(b) contacting the combined product of step (a) at effective catalytic cracking conditions with a catalyst comprising at least one non-zeolitic moleoular sieve selected from the group consisting of:

(1) microporous crystalline silicoaluminophosphate having a unit empirical formula in the as-synthesized and anhydrous form of:

$$mR:(Si_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" has a value of from zero to 0.3: "m" represents the moles of "R" present per mole of $(Si_xAl_yP_z)O_2$; "x", "y" and "z" represent the mole fractions of silicon, aluminum and phosphorus respectively, present as tetrahedral units, said mole fractions being such that they are within the pentaqonal compositional area defined by points A,B,C,D and E of the ternary diagram which is FIG. 1 of the drawings; and

(2) aluminophosphates having a framework structure whose chemical composition expressed in terms of mole ratios of oxides is:

$$Al_2O_3:1.0\pm0.2\ P_2O_5$$

each of said framework structures being microporous in which the pores are uniform and have nominal diameters within the range of about 3 to about 10 Angstroms, an intracrystalline adsorption capacity for water at 4.6 torr and 24° C. of at least 3.5 weight percent, the adsorption and desorption of water being completely reversible while retaining the same essential framework topology in both the hydrated and dehydrated state.

4,512,876

CATALYSIS OVER ACTIVATED HIGH SILICA ZEOLITES

Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 355,418, Mar. 8, 1982, Pat. No. 4,427,786. This application Nov. 16, 1983, Ser. No. 552,545
Int. Cl.[3] C10G *11/05, 11/08, 45/54*
U.S. Cl. 208—114 16 Claims

1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feed stock hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a supported crystalline zeolite having an initial silica-to-alumina mole ratio greater than about 100 prepared by a method which comprises compositing said crystalline zeolite with a support matrix material of alumina, gallia or a combination thereof, calcining the resulting supported zeolite at a temperature of from about 200° C. to about 600° C. for a period of time ranging from about 1 minute to about 48 hours, contacting said calcined supported zeolite with volatile boron fluoride in a dry environment at a temperature of from about 0° C. to about 100° C. until said supported zeolite is saturated with said boron fluoride, purging unreacted boron fluoride from said boron fluoride contacted supported zeolite, hydrolyzing said boron fluoride contacted supported zeolite, and converting said hydrolyzed material to hydrogen form.

4,512,877

PROCESS FOR IMPROVING THE QUALITY OF CATALYTICALLY CRACKED GASOLINE

Eduard P. Kieffer, and Swan T. Sie, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 11, 1984, Ser. No. 629,871
Claims priority, application Netherlands, Jul. 14, 1983, 8302520
Int. Cl.[3] C10G *35/06*
U.S. Cl. 208—136 14 Claims

1. A process for improving the quality of a gasoliine produced by catalytic cracking, characterized in that the gasoline is contacted with a mixture of two catalysts, one of which is a zinc-containing composition which, in addition to zinc, comprises chromium and/or aluminum, and which composition has been prepared starting from one or more precipitates obtained by adding a basic reacting substance to one or more aqueous solutions containing salts of the metals involved, the other being a crystalline metal silicate which, after one hour's calcination in air at 500° C. has the following properties:

(a) an X-ray powder diffraction pattern in which the strongest lines are the four lines mentioned in Table A,

TABLE A

d (Å)
11.1 ± 0.2
10.0 ± 0.2
3.84 ± 0.07
3.72 ± 0.06, and

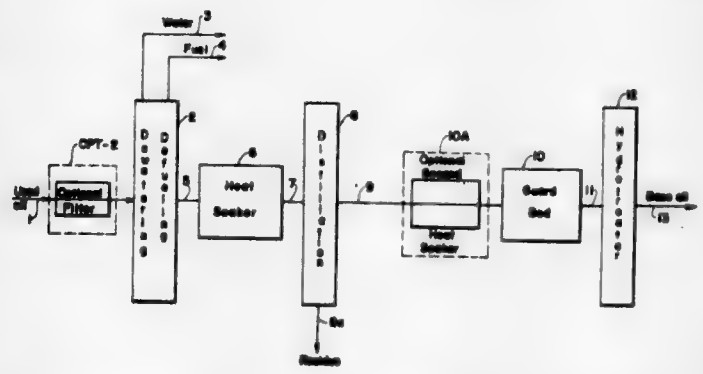
(b) a composition which, in addition to SiO_2, includes Fe_2O_3 or both Fe_2O_3, and in which the $SiO_2/(Fe_2O_3+Al_2O_3)$ molar ratio is higher than 10, the SiO_2/Fe_2O_3 molar ratio is lower than 250 and the SiO_2/Al_2O_3 molar ratio is at least 500.

4,512,878

USED OIL RE-REFINING

Lloyd E. Reid; Keith C. Yao, both of Sarnia, Canada, and Douglas G. Ryan, Rockaway, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 16, 1983, Ser. No. 467,032
Int. Cl.[3] C10M *11/00;* C10G *45/00*
U.S. Cl. 208—179 11 Claims



1. A process for re-refining used oils so as to produce a basestock oil essentially equivalent in quality to basestock

produced from virgin crude oil which process comprises the steps of:

(A) heat soaking the used oil at from 250° C.–340° C. for a time sufficient to maximize halide, phosphorus and sludge precursors removal by conversion of these materials into materials which go with the residue during the distillation step;

(B) passing the entire contents of the heat soaker directly to coke resistant distillation means;

(C) distilling the contents from the heat soaker under conditions of residence time, temperature and pressure selected to produce a distillate whose end point is essentially that of the target stock product and a residue;

(D) passing the distillate through a guard bed of activated material capable of removing residual phosphorus, halides and sludge from the distillate;

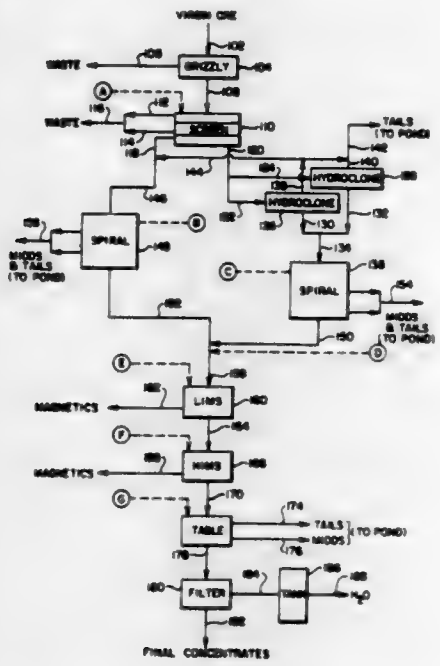
(E) hydrotreating the guard bed treated distillate under standard hydrotreating conditions, thereby producing a re-refined base stock.

4,512,879

PROCESS FOR PRODUCING A METALLIFEROUS CONCENTRATE FROM A PARTICULATE FEED MATERIAL

Yoary A. Attia, and Ted L. Tewksbury, both of Columbus, Ohio, assignors to Battelle Development Corp., Columbus, Ohio

Filed Jul. 20, 1983, Ser. No. 515,574
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—3 **6 Claims**



1. A process for producing a metalliferous concentrate from particles of varying sizes, said process comprising:

subjecting said particles to a preliminary separation step in which only particles smaller than about 10 mesh are retained;

dividing said retained particles into a first fraction containing large particles and a second fraction containing smaller particles;

subjecting said first and second fractions separately to a first gravity separation step, thereby producing from each of said first and second fractions a denser fraction and a lighter fraction;

subjecting said denser fractions to a low-intensity magnetic separation step producing at least one low-intensity non-magnetic fraction and at least one strongly magnetic fraction;

subjecting said at least one low-intensity non-magnetic fraction to a high-intensity magnetic separation step, thereby producing at least one non-magnetic fraction and a weakly magnetic fraction; and

subjecting said at least one non-magnetic fraction to a second gravity separation step, thereby separating a denser fraction to form said metalliferous concentrate.

4,512,880

METHOD OF REMOVING SLIMES FROM SLURRIES

James D. Connolly, P.O. Box 1238, Princeton, W. Va. 24740

Filed Apr. 28, 1983, Ser. No. 489,491
Int. Cl.³ B07B *1/04*; B01D *35/22*
U.S. Cl. 209—250 **3 Claims**



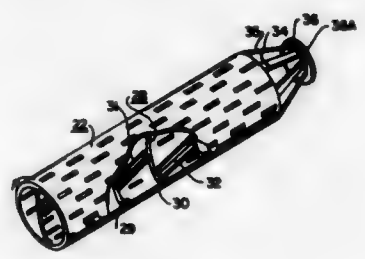
1. A method of removing slimes from a low solids content slime-containing liquid-solids mixture using without blinding a screen having a longitudinally dowhwardly sloping screen surface formed of laterally spaced transverse profile screen wires, comprising pressure feeding said mixture to said screen surface longitudinally of and at an acute impact angle relative to said surface at a pressure which, for the slime content and impact angle of the mixture, over the area of impact will drive liquid and contained slimes through and beyond a back of the screen for gravity discharge out of contact with said back.

4,512,881

MACHINE FOR RECOVERING PRECIOUS METAL VALUES FROM ORE

Merwin S. Shumway, 558 W. 400 North, and Earl D. Shumway, P.O. Box 237, both of Blanding, Utah 84511

Filed Sep. 30, 1983, Ser. No. 537,743
Int. Cl.³ B03B *5/56*
U.S. Cl. 209—270 **1 Claim**



1. A machine for processing ore to recover precious metal values, said machine including, in combination: an elongate, hollow drum having a series of perforations essentially from end to end; means for introducing water in said drum; means for supporting said drum for axial rotation; means for revolving said drum coupled thereto; elongate means having a reservoir-constructed lowered end and disposed beneath said drum for receiving ore and water droppings from said drum as fall through said perforations; auger means spacedly disposed proximate to and above said receiving means for advancing a portion of said droppings along and out said receiving means away from said lowered end, whereby to leave such precious metal values as exist in said ore, as is so processed by said machine, beneath said auger means and at said reservoir- con-

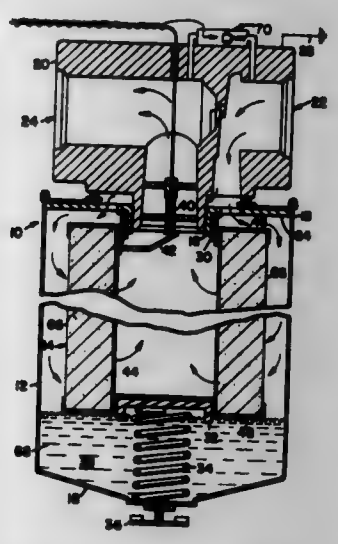
structed lowered end of said receiving means, available for discharge recovery; means coupled to said auger means for operationally revolving the same; and means for withdrawing said values coupled to said reservoir constructed lowered end at a lower portion thereof, and wherein said drum has a feed hopper at one end and also a series of mutually spaced conically-arranged bars affixed to the remaining end, and means joining said bars together.

4,512,882

SINGLE-ENDED, SPIN-ON FUEL WATER SEPARATOR

Paul M. Fischer, Menomonie, Wis., and Carl E. Schwarz, Burnsville, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Oct. 18, 1983, Ser. No. 543,060
Int. Cl.³ B01D *35/18*
U.S. Cl. 210—86 **8 Claims**



1. A fuel-water separator having a spin-on filter cartridge, said cartridge having a filter element attached at a first and a second surface within an electrically grounded housing, said housing including a separated water reservoir, said separator comprising:

means supplying an electrical potential from a power source to said filter element;

means for insulating said filter element from said housing, said insulating means located at said first and said second surfaces of attachment of said filter element to said housing;

means indicating a current flow through separated water within said reservoir between said filter and said housing;

a head, including means for supplying a mixture of fuel and water into said separator, upstream from said filter element;

means for discharging separated fuel from said separator downstream from said filter element, said head threadably engaging said spin-on filter cartridge, said discharging means including a passageway having an electrical contact affixedly suspended within said passageway, said contact insulated from said head and electrically connected to said power source; and

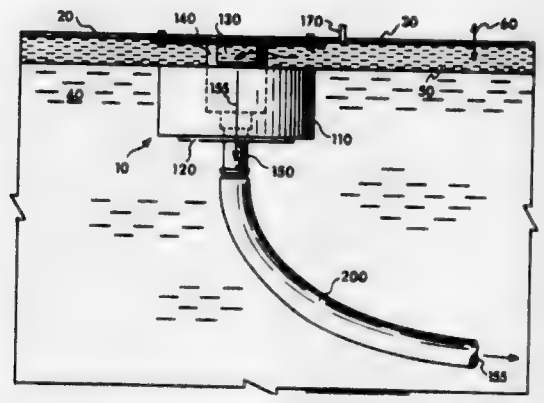
means for electrically connecting said filter element and said electrical contact when said filter cartridge is threadably engaged to said head, said electrically connecting means including a spring arm having a contact point, said arm affixed to said filter element near said first surface of attachment of said filter element to said housing, said spring arm extending into said passageway and contacting said electrical contact.

4,512,883

SKIMMER FOR FLOATING ROOF TANKS

Timothy J. Thompson, Detroit, Mich., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 449,951, Dec. 15, 1982, Pat. No. 4,431,536. This application Aug. 15, 1983, Ser. No. 523,241
The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.
Int. Cl.³ B03B *5/28*
U.S. Cl. 210—123 **7 Claims**



1. A skinner (10) for a floating roof tank (300), said floating roof tank (300) holding a mixture comprised of at least two immiscible liquids including a lowest specific gravity liquid (50) and at least one higher specific gravity liquid (40) with the roof (30) of said tank (300) floating on said mixture, said skimmer comprising:

a funnel (140) attached to the underside (20) of said roof (30), said funnel (140) extending downwardly into said liquid mixture (40, 50), said funnel (140) having formed perforations (130) near said attachment to said underside (20),

a float (110) operatively connected to said funnel (140) closing over said perforations (130) in a closed position when said float (110) is in said at least one higher specific gravity liquid (40) and opening said perforations (130) in an open position when said float (110) is in said lowest specific gravity liquid (50), and

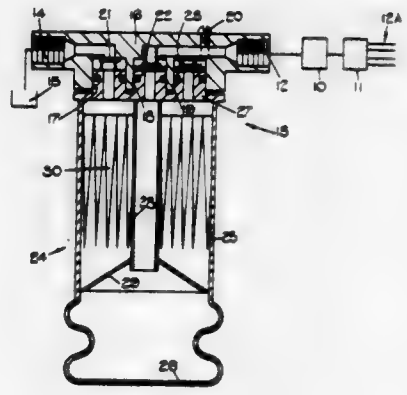
means (155) engaging said funnel (140) for delivering said lowest specific gravity liquid (50) from said underside (20) of said floating roof (30) when float (110) is in said open position.

4,512,884

FUEL TREATMENT DEVICE

William T. Wheatley, Walton-on-Thames, England, assignor to Lucas Industries, plc, Birmingham, England

Filed Jun. 14, 1982, Ser. No. 388,156
Claims priority, application United Kingdom, May 25, 1982, 8215237
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—136 **11 Claims**



1. A fuel treatment device for use in a fuel system of an internal combustion engine, comprising:

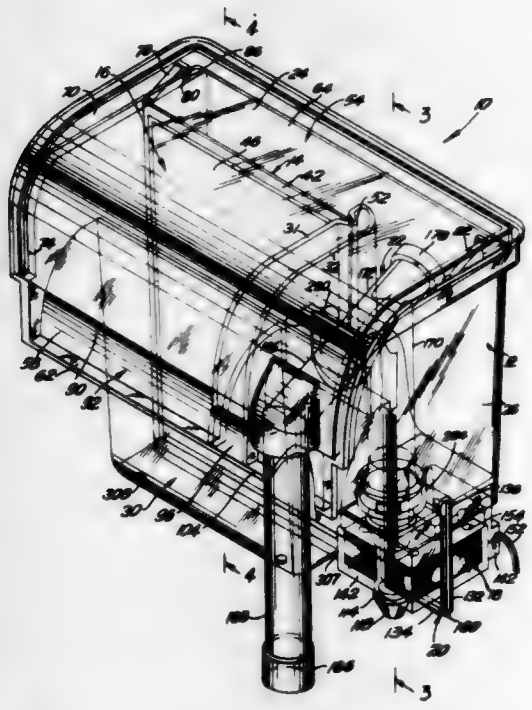
a casing means for containing a filter and for pumping fuel, said casing means comprising an outer wall means in direct contact with a fluid being filtered, said outer wall means including: a first section of generally cylindrical shape and having means thereon at one end thereof for attaching said casing means to a mounting, and a second pumping section means on another end of said first section for containing and pumping fluid, said second pumping section means closing said casing means and being collapsible to be moved axially of said casing means for reducing the volume within said casing means; a delivery tube attached to the mounting means to be located axially of said casing; a filter member located within said casing means first section and extending axially of said first section, and a dividing member attached to said delivery tube and spaced from said casing means first section to define a gap means for passing fluid from said filter member into said casing means second section, said delivery tube opening into said casing means second section for receiving fluid moved out of said second section when said second section is collapsed whereby fluid can be pumped by and from said casing means.

4,512,885

AQUARIUM FILTER ASSEMBLY

Allan H. Willinger, Englewood, N.J., assignor to Willinger Bros., Inc., Englewood, N.J.

Filed Jan. 7, 1983, Ser. No. 456,424
Int. Cl.³ E04H *3/20*
U.S. Cl. 210—136 **18 Claims**



1. An aquarium filter assembly, comprising:

a housing unit adapted to be mounted on a wall of an aquarium tank, and comprising an inlet chamber for receiving contaminated water from the aquarium tank, a filter chamber for filtering the contaminated water, said chambers being in fluid flow communication with each other, and means for introducing the filtered water back into the aquarium tank;

a motor unit supported by said housing unit, and

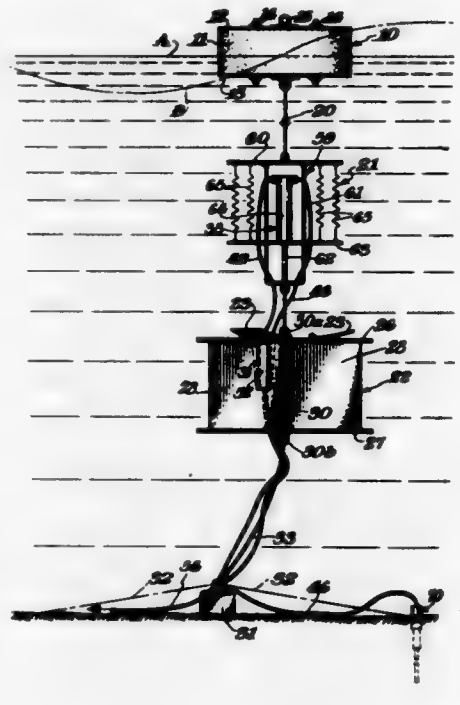
a removable unitary assembly supportably positioned by said housing and comprising an intake tube having an inlet end for insertion into the aquarium tank and a discharge end positioned in said inlet chamber thereby supplying the contaminated water from the aquarium tank to the inlet chamber, and a pump impeller unit depending from a position proximate said discharge end and comprising a fixed shaft, a magnet rotatably mounted on said shaft for positioning in magnetic flux relationship with said motor unit, and an impeller rotatable on said shaft and operably driven by said magnet thereby pumping the contaminated water through the filter assembly, and wherein said unitary assembly of said intake tube and pump impeller unit is removable as a single unit from said housing unit.

4,512,886

WAVE-POWERED DESALINATION OF WATER

Douglas C. Hicks, Newark, Del., and Charles M. Pleass, Havre de Grace, Md., assignors to University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 266,660, May 26, 1981, Pat. No. 4,421,461, which is a continuation-in-part of Ser. No. 76,217, Sep. 17, 1979, abandoned. This application Oct. 14, 1983, Ser. No. 542,248
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—170 **4 Claims**



1. A wave-powered desalination device comprising:

(a) a wave powered pumping device useful under trade wind conditions for producing water pressures of about 800 psi, said device comprising:

(i) a non-Archimedean wave follower connected in sequence with;

(ii) a piston pump having a cylinder within which is mounted a reciprocatory piston;

(iii) attachment means connecting one of the pair consisting of said cylinder and said reciprocatory piston with said wave follower and the other of said pair with mooring means, alone or in combination with a reaction unit;

said pump being in pressurized water communication with;

(b) a reverse osmosis desalination module, whereby to desalinate said water.

4,512,887

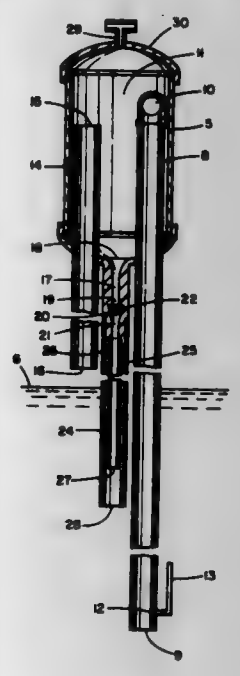
CHLORINE INJECTOR FOR TREATMENT OF EFFLUENT

Harold A. Ritke, and Randal G. Ritke, both of 1932 S. Kingsway Dr., Aurora, Ill. 60506

Filed Nov. 22, 1982, Ser. No. 443,761
Int. Cl.³ C02F *1/76*
U.S. Cl. 210—220 **7 Claims**

1. An injector of a water treating substance for treatment of water, comprising means defining a fluid passageway in communication with said water to be treated, first vacuum means to create a first vacuum in said passageway, second vacuum means to create a second vacuum in said passageway adjacent to and downstream from said first vacuum to add to and supplement the force of said first vacuum to provide a total vac-

uum force greater than either of said first and second vacuum means can provide acting separately, means defining a port opening to said passageway to introduce a water treating substance therein when said first and second vacuums are created, wherein said first vacuum means includes a venturi tubular member in said passageway, said venturi tubular member including a first nozzle, said first nozzle including an upstream end and a downstream end, a second nozzle positioned downstream of said first nozzle, said second nozzle including a flared end portion in registration with said downstream end of said first nozzle to create said first vacuum when fluid is flowed through said passageway, into and through said first and second nozzles of said venturi tubular member and the said flared end portion of said nozzles, wherein said second vacuum means includes an elongated tubular member in said passageway, said tubular member including an upstream end and a downstream end, means defining an inlet port opening to said upstream end of said elongated tubular member positioned above the surface of said water to be treated, means defining a discharge port opening to said downstream end of said elongated tubular member positioned below the surface of said water to be treated, said water to be treated providing back pressure at the said discharge port, and flow means to flow a fluid into said tubular member at a rate to fill such tubular



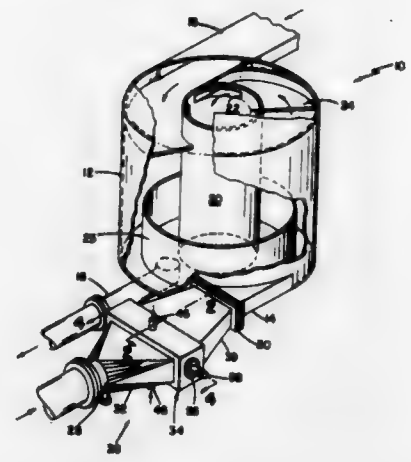
member until the pressure within said tubular member begins to exceed said back pressure resulting in more rapid discharge into said water to be treated and in creation of said second vacuum, said fluid filling said tubular member constituting a column of fluid extending from said inlet port to said discharge port of said tubular member, said column of fluid as it moves from said inlet port toward said discharge port causing a vacuum to form between said inlet port and said column of fluid as it moves toward said discharge port and said column of fluid as it moves toward said discharge port thereby creating said second vacuum, wherein said fluid passageway includes means defining a water chamber positioned above a body of effluent water to be treated, an effluent water inlet tube extending from said body of effluent water to said water chamber pressurized air means operatively associated with said effluent water inlet tube to flow effluent water upwardly into said water chamber, the bottom portion of said water chamber opening for flow of said effluent water outwardly of said chamber and past said first vacuum means to create said first vacuum, then past said second vacuum means to create said second vacuum, and means for introducing water treatment substance into the passageway wherein said water treating substance introduced into said passageway when said vacuums are created mixes with said effluent water flowing in said passageway for eventual discharge into said body of effluent water to treated.

4,512,888

APPARATUS FOR REMOVAL BY FLOTATION OF SOLID PARTICLES FROM LIQUID

Peter J. Flynn, North Attleboro, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Jul. 1, 1982, Ser. No. 394,290
Int. Cl.[3] B03D *1/24*
U.S. Cl. 210—221.2 16 Claims



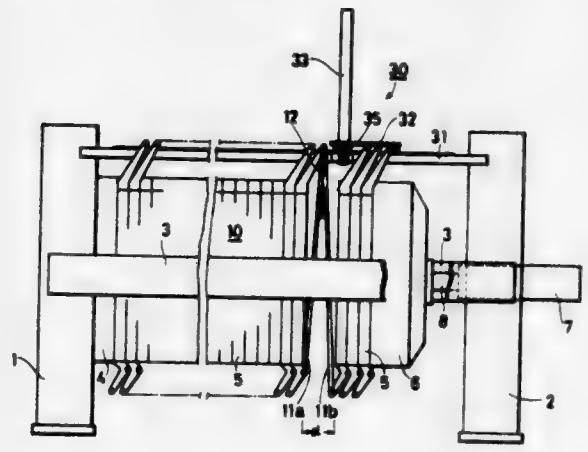
1. In apparatus for removal by flotation of solid particles contained in a liquid, which apparatus comprises a flotation cell having means defining an inlet for liquid to be treated, a first outlet for foam containing solid particles and a second outlet for cleaned liquid, and, upstream of said inlet, wall means defining a mixing chamber having a passage through which liquid passes before proceeding to said inlet and in which said liquid is charged with gas to form bubbles therein, the improvement wherein said wall means comprises a pair of opposed walls extending across said passage to form, with other said wall means, opposite faces of a flow path for liquid in said chamber of generally rectangular cross-section, said pair of walls converging to a restricted gap at their greatest convergence, said pair of walls diverging after said gap, and gas injection means for providing a flow of gas under superatmospheric pressure into the liquid as it flows through said restricted gap to form bubbles in the liquid distributed across the path of flow.

4,512,889

FILTER PRESS

Ichiro Noda; Yasuhiro Suekane, and Hisao Nakao, all of Sakaide, Japan, assignors to Ishigaki Kiko Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,371
Claims priority, application Japan, Oct. 19, 1982, 57-184078
Int. Cl.[3] B01D *25/12*
U.S. Cl. 210—225 1 Claim



1. A filter press having a multiplicity of filter plates arranged side by side on a pair of guide rails extending in parallel and

which can be separated one by one or twos, comprising a pair of filter cloths disposed between each two adjacent ones of the plates so as to cover the surfaces thereof and which are secured at the upper ends thereof to a filter-cloth suspension bar, one of said filter cloths being so disposed as to cover the surface of front-side one of said two plates and movably engaged and guided by a roller disposed below said rear-side plate, the lower end of said other filter cloth being secured to another filter-cloth securing bar, said filter-cloth securing bars being connected to said filter-cloth suspension bar through cord-like drive elements, each trained around a wheel disposed above the filter plates, and drive means for moving each of the filter cloths upwardly over the length of the filter cloth's portion extending between said suspension bar and one or the other of said rollers, said means consisting of a filter-cloth suspension-bar driving mechanism which comprises a pair of rails disposed above the filter plates and in parallel relation to said guide rails, a carriage movably mounted on said pair of rails, one or more hydraulic cylinders mounted on said carriage, a pair of arms having their respective bases pivotally supported at the front end of a piston rod for each hydraulic cylinder, and further hydraulic cylinders for simultaneously actuating free ends of said arms to open and close.

4,512,890

MEANS FOR THE SORPTION OF A PETROLEUM PRODUCT FROM A LIQUID

Seward J. Medbury, 28785 Oak Point, Farmington Hills, Mich. 48018

Filed Dec. 5, 1983, Ser. No. 557,863
Int. Cl.³ B01D *29/06*
U.S. Cl. 210—335 **6 Claims**



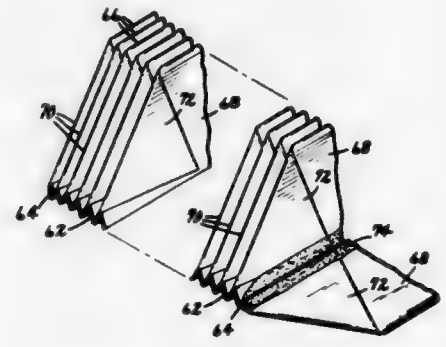
1. A filtering device for separating out oil from an oily liquid passed therethrough, said device comprising:
an outer housing having an inlet port and an outlet port;
a hollow inner member disposed within said housing and in communication with said inlet port, said member having a plurality of spaced apertures extending therethrough for communicating said oily liquid therethrough; and
a filter positioned over said apertures, said filter comprising:
a layer of sheet material;
a plurality of feathers; and
attachment means for individually attaching each of said feathers in a fixed position on the layer of sheet material to form at least one layer of said feathers;
wherein the feathers of said filter sorb the oil in the liquid and the sheet material passes the rest of the liquid therethrough upon relative movement between the liquid and the filter, said liquid thereafter passing out of the outlet port.

4,512,891

PLEATED FILTER ELEMENT WITH CONTROLLED EXPANSIBILITY AND FRAME THEREFOR

Mervin E. Wright, Apple Valley, and Donald D. Gronholz, Minneapolis, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Nov. 16, 1982, Ser. No. 442,234
Int. Cl.³ B01D *27/06, 46/52*
U.S. Cl. 210—445 **18 Claims**



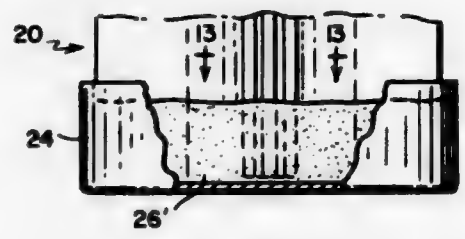
1. A filter assembly, comprising:
a pleated filter element having opposite sides;
said filter element including a sheet of filter media folded in alternate directions about longitudinally spaced-apart transverse fold lines to form accordion pleats extending between opposite edges and opposite ends of the sheet, the ends of at least some of the pleats on the same side of said filter element being folded inwardly about diagonal fold lines extending at predetermined angles between points spaced laterally inward along alternate transverse fold lines and points spaced longitudinally inward along the edges of the sheet from the next adjacent transverse fold lines toward the respective alternate transverse fold lines with the folded ends of the pleats being tucked between adjacent pleats so as to effect controlled pleat spacing and expansibility of said filter element;
a frame for peripherally supporting said filter element;
seal means positioned between said frame and filter elements; and
means for releasably retaining said filter element in said frame.

4,512,892

METHOD AND STRUCTURE FOR SEALING TUBULAR FILTER ELMENTS

Gary C. Ganzi, Lexington, and Charles T. Paul, Westford, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Feb. 14, 1980, Ser. No. 121,561
Int. Cl.³ B01D *27/06*
U.S. Cl. 210—493.2 **17 Claims**



1. In a tubular filter element comprising a pleated microporous membrane disposed for fluid flow therethrough from its upstream side to its downstream side and having its ends sealed in solidified liquid sealer, said membrane comprising a sheet material having pores between about 0.1 and 25 microns in size and about 50–80% voids by volume, the improvement wherein each end of the membrane on its upstream side includes a barrier strip of non-porous pleated film, one portion of the strip being joined fluid-tight to the membrane and the other portion

being free from the membrane to permit relative movement therebetween, the solidified sealer terminating on the other portion of the film and sealing fluid-tight to the film and downstream side of the membrane, whereby the membrane may flex away from the other portion of the strip in response to upstream pressure.

4,512,893

POROUS AROMATIC IMIDE POLYMER MEMBRANE AND A PROCESS FOR ITS MANUFACTURE

Hiroshi Makino; Yoshihiro Kusuki; Takashi Harada; Hiroshi Shimazaki, and Tosio Isida, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Chiba, Japan

Filed Apr. 13, 1982, Ser. No. 367,954

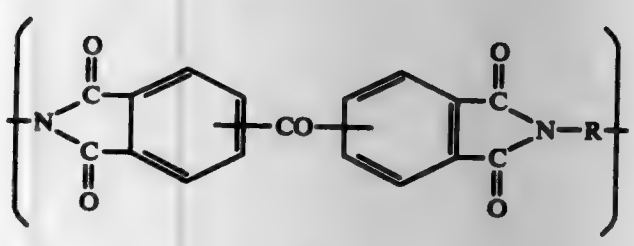
Claims priority, application Japan, Apr. 14, 1981, 56-54966; Apr. 14, 1981, 56-54965

Int. Cl.³ B29D *27/04;* B32B *9/02*

U.S. Cl. 210—500.2 **14 Claims**

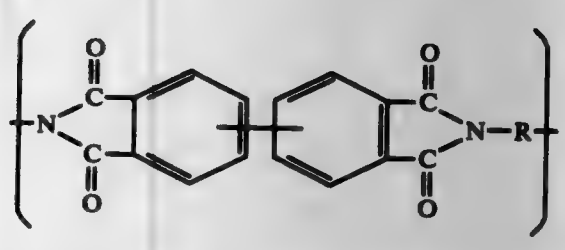
1. A process for producing a porous aromatic imide polymer membrane, comprising the steps of:

(1) dissolving 3 to 30% by weight of an aromatic imide copolymer which has a degree of imidization of at least 90% and comprises at least 80 molar % of at least one type of recurring unit selected from the group consisting of those of the formulae (I) and (II):



(I)

and



(II)

wherein R represents a member selected from divalent aromatic radicals, in 70 to 97% by weight of a solvent consisting essentially of a homogeneous mixture of:

(A) 100 parts by weight of a base solvent consisting essentially of at least one polar organic compound, which base solvent is capable of dissolving therein said aromatic imide polymer in a concentration of 5% by weight of more therein and of evaporating at a temperature of from 50° to 400° C., and

(B) 5 to 150 parts by weight of an additional liquid consisting essentially of at least one polar organic compound, which additional liquid is incapable of dissolving therein 3% by weight or more of said aromatic imide polymer and is capable of evaporating at a smaller evaporating rate than that of said base solvent at the above-mentioned evaporating temperature so as to provide a dope solution;

(2) forming a thin layer of said dope solution; and

(3) gradually and completely removing said solvent from said thin layer of said dope solution by means of a dry-evaporating method at a temperature of from 50° C. to 400° C., to form a porous aromatic imide polymer membrane.

14. A porous aromatic imide polymer membrane prepared by the process as claimed in claim 1.

4,512,894

PROCESS FOR THE PRODUCTION OF SEMIPERMEABLE POLYBENZIMIDAZOLE MEMBRANES AND THE RESULTANT PRODUCT

Donald G. J. Wang, Tamshui, Taiwan, assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,719

Int. Cl.³ B29D *27/00*

U.S. Cl. 210—500.2 **55 Claims**

1. In a process for the production of a semipermeable polybenzimidazole membrane wherein a film or hollow filament is formed from a solution of a polybenzimidazole polymer and subsequently subjected to an annealing step at elevated temperatures in the presence of an annealing medium, the improvement comprising conducting said annealing step in the presence of a non-aqueous annealing medium at a temperature below about 125° C. comprised of a solvent for said polymer and a non-solvent for said polymer whereby said membrane exhibits enhanced separative properties in contrast to a membrane having been annealed in an annealing medium which does not comprise a solvent for said polymer.

15. A semipermeable membrane produced in accordance with the process of claim 1.

4,512,895

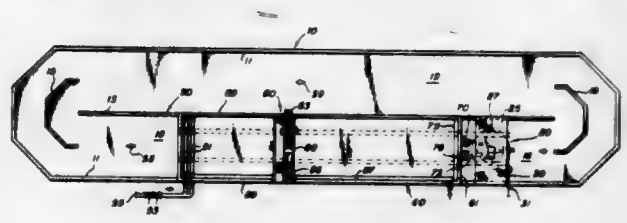
PUMPLESS CLARIFIER APPARATUS AND PROCESS FOR OPERATION THEREOF IN COMBINATION WITH A DRAFT TUBE CIRCULATOR/AERATOR

John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Continuation-in-part of Ser. No. 361,205, Mar. 29, 1982, Pat. No. 4,455,232, which is a continuation-in-part of Ser. No. 75,412, Sep. 14, 1979, Pat. No. 4,394,268, which is a continuation-in-part of Ser. No. 28,383, Apr. 9, 1979, Pat. No. 4,278,547, which is a continuation-in-part of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Oct. 12, 1982, Ser. No. 433,639

Int. Cl.³ C02F *3/20*

U.S. Cl. 210—627 **26 Claims**



18. A process for continuously clarifying a portion of mixed liquor being aerobically treated in a barrier oxidation ditch by gravity settling said portion in a clarifier to produce clarified liquor and settled sludge without utilizing a pump for mixed liquor feed to said clarifier, clarified liquor outflow from said clarifier, or sludge return from said clarifier to said ditch, said barrier oxidation ditch comprising an endless channel containing said mixed liquor which is moving in circuit flow therethrough, a barrier sealably disposed athwart said endless channel to form an intake channel and a discharge channel, and a circulator/aerator for aerating and pumping said mixed liquor from said intake channel to said discharge channel at high velocity, said process comprising:

A. locating at least one intake line for mixed liquor feed to said clarifier where said high velocity is available;

B. disposing said intake line so that said high-velocity liquor is intercepted and the pump head of said high-velocity liquor is selectively received; and

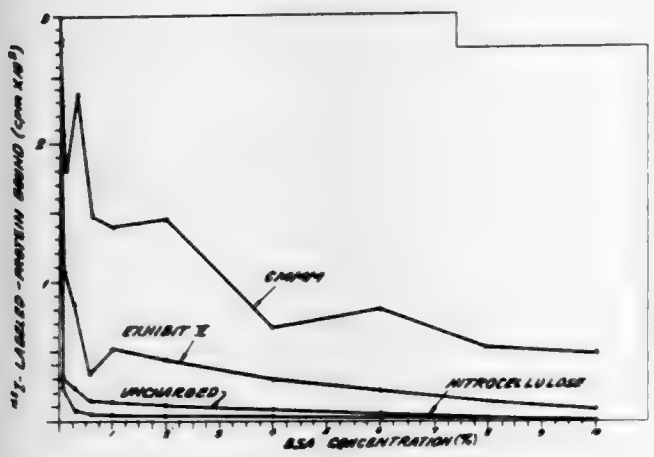
C. transferring said mixed liquor feed to said clarifier while conserving said pump head so that the surface of clarified liquor within said clarifier is higher than the surface of said mixed liquor within said endless channel, the contents of said clarifier being sealably isolated from the contents of said endless channel.

4,512,896

TRANSFER OF MACROMOLECULES FROM A CHROMATOGRAPHIC SUBSTRATE TO AN IMMOBILIZING MATRIX

Jonathan M. Gershoni, Hamden, Conn., assignor to Yale University, New Haven, Conn.

Filed Feb. 7, 1983, Ser. No. 464,609
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—635 **54 Claims**



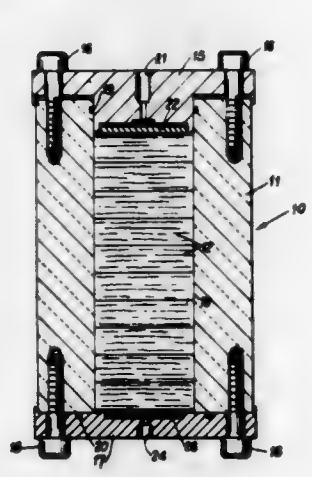
19. In a method for the transfer of macromolecule from a chromatographic substrate to an immobilizing matrix, the improvement which comprises employing as said matrix, a hydrophilic charge modified microporous membrane comprising an organic microporous membrane having a charge modifying amount of a cationic charge modifying agent bonded to substantially all of the surfaces of said membrane wetted by a fluid passing through said membrane or in which said membrane is immersed.

4,512,897

MOLECULAR SEPARATION COLUMN AND USE THEREOF

Alvin L. Crowder, III, Cromwell; Nils L. Dailey, Wallingford; Joseph V. Fiore, Fairfield all of Conn., and Kenneth C. Hou, San Antonio, Tex., assignors to AMF Incorporated, White Plains, N.Y.

Continuation of Ser. No. 287,609, Jul. 28, 1981, Pat. No. 4,384,957, which is a continuation-in-part of Ser. No. 184,822, Sep. 8, 1980, abandoned. This application Apr. 20, 1983, Ser. No. 474,947
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—656 **30 Claims**



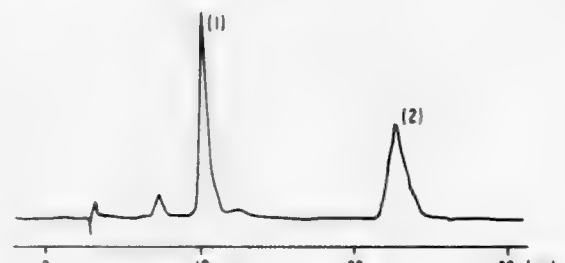
16. In a method of effecting a chromatographic separation by effecting a differential distribution of a sample's components between two phases by passing a mobile phase through a chromatography column containing a solid stationary phase, the improvement which comprises employing as said stationary phase a porous matrix of fiber having particulate immobilized therein, at least one of said fiber or particulate having chromatographic functionality and being effective for chromatographic separation, said solid stationary phase being substantially homogeneous with respect to each component thereof, wherein said solid stationary phase cooperates with the interior wall of the column to form a substantially fluid tight seal therewith, preventing any appreciable skewing or bypass of fluid around the solid stationary phase.

4,512,898

PACKING MATERIALS FOR CHROMATOGRAPHIC USE AND A METHOD FOR ANALYSIS OF AN ENANTIOMER MIXTURE USING THE SAME

Naobumi Oi, Kyoto, and Hajimu Kitahara, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Sep. 30, 1983, Ser. No. 538,011
Claims priority, application Japan, Sep. 30, 1982, 57-173003; Oct. 1, 1982, 57-173688
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—656 **12 Claims**



7. A method for liquid chromatography analysis which comprises separating and analyzing an enantiomer mixture of a compound having an —OH group, a —CONH— group,

a $-\overset{|}{C}ON-$ group,

a —COO— group, an —NHCOO— group, an —NHCONH— group or an

an $-NHC\overset{|}{O}N-$ group

bonded to an asymmetric carbon atom thereof by using a packing material for chromatographic use obtained by grafting on an inorganic carrier having hydroxyl groups at the surface thereof an organosilane derivative selected from the group consisting of an N-carbamoyl amino acid derivative obtained by reacting an optically active amino acid carbamoylated by isocyanate with an aminoalkylsilane and an O-carbamoyl hydroxy acid derivative obtained by reacting an optically active hydroxy acid carbamoylated by isocyanate with an aminoalkylsilane.

4,512,899

LIQUID CHROMATOGRAPHY TUBE CONNECTIONS

Lyman E. Goodnight, Jr., North Palm Beach, Fla., assignor to Milton Roy Company, St. Petersburg, Fla.

Filed Mar. 19, 1984, Ser. No. 590,893
Int. Cl.³ B01N *15/08*
U.S. Cl. 210—656 **5 Claims**

1. Liquid chromatography apparatus comprising:

a rigid tube to convey fluid under pressure within said apparatus having first and second ends, said first end being connected to a section of said apparatus containing fluid under pressure,

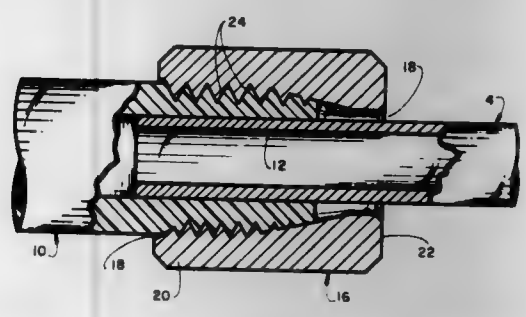
a pliable tube to convey fluid to or from said rigid tube having first and second ends, the I.D. of said pliable tube being substantially equal to the O.D. of said rigid tube,

said second end of said rigid tube being inserted a predetermined distance into said first end of said pliable tube,

a tubular member having:

a length about equal to said predetermined distance,

a threaded, tapered bore that extends longitudinally and centrally through said member, the largest I.D. of said



bore being greater than the O.D. of said pliable tube and the smallest I.D. of said bore being less than said O.D. of said pliable tube but greater than said O.D. of said rigid tube,

said tubular member surrounding said pliable tube at the position of insertion therein of said second end of said rigid tube with the threads of said bore deforming said pliable tube and compressing it against said second end of said rigid tube.

4,512,900

METHOD FOR TREATING WASTE COMPOSITIONS

George J. Macur, Endwell; W. Robert Pratt, Binghamton, and James E. Sharkness, Ithaca, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1983, Ser. No. 561,030
Int. Cl.[3] C02F *1/32*
U.S. Cl. 210—748 26 Claims

1. A process for treating liquid waste composition containing copper ions and an organic complexing agent for the copper ions which comprises:

reducing the concentration of copper ions in said liquid waste composition to a value less than about 8 ppm;

contacting the waste composition with H_2O_2 in an amount and in a concentration effective to destroy from about 20 to about 60% by weight of total organic content; and

then contacting the resulting partially-treated waste composition with an ozone-containing gas in an amount effective to react with and destroy complexing agent and organic materials and irradiating the ozone-containing waste composition with ultraviolet light.

4,512,901

SOLVENT ADDITION TO DEEP BED FILTER

Robert S. Kozar, Livonia, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Aug. 11, 1980, Ser. No. 176,658
Int. Cl.[3] B01D *23/10*
U.S. Cl. 210—792 2 Claims

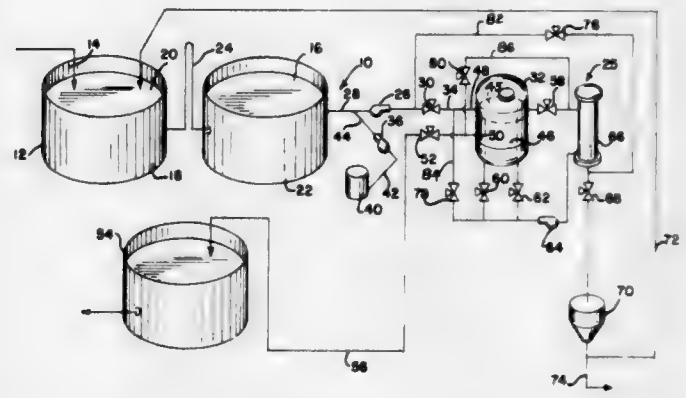
1. A method of filtering droplets of heavy, viscous oil mixed with an aqueous liquid, said method comprising the steps of:

flowing a batch of said aqueous liquid-oil mixture into a filter device,

adding a selective quantity of a solvate to said mixture upstream from said filter device, said quantity of said solvate being proximately equal to a quantity of said oil in said mixture and said solvate comprising a solvent portion and an emulsifying portion,

dispersing said solvent portion with said emulsifying portion of said solvate within said aqueous liquid-oil mixture to cause said solvent portion to interact with said oil droplets,

entrapping said interacted oil droplets in a bed of granular filter media held within said filter device to allow said aqueous liquid to flow from said filter device in a clean, substantially oil-free state, and



rejuvenating said filter media periodically by flushing said interacted oil droplets from said bed upon said entrapped oil droplets inhibiting an efficient flow of said aqueous liquid through said filter media.

4,512,902

PROCESS FOR AUGMENTING OR ENHANCING AROMA OF CONSUMABLE MATERIAL BY ADDING THERETO 1,2,3,3,5,6-HEXAMETHYL-BICYCLO[2.2.2]-OCT-5-EN-2-OL

William J. Evers, Locust; Braja D. Mookherjee, Holmdel; Anton Van Ouwerkerk, Livingston, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 371,930, Apr. 26, 1982, Pat. No. 4,434,085. This application Sep. 26, 1983, Ser. No. 536,161
Int. Cl.[3] C11D *3/50;* D06M *13/20*
U.S. Cl. 252—8.6 4 Claims

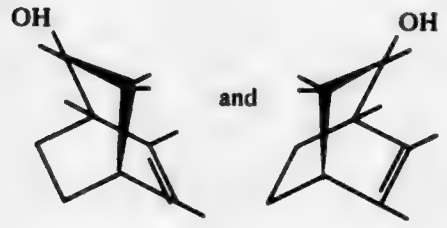
1. A process for augmenting or enhancing the aroma of any one of the following consumable materials:

(i) solid or liquid anionic, cationic, nonionic or zwitterionic detergents;

(ii) fabric softener compositions;

(iii) fabric softener articles; and

(iv) perfumed polymers comprising the step of intimately admixing with said consumable material, an aroma augmenting or enhancing quantity of at least one compound having a structure selected from the group consisting of:



4,512,903

LUBRICANT COMPOSITIONS CONTAINING AMIDES OF HYDROXY-SUBSTITUTED ALIPHATIC ACIDS AND FATTY AMINES

Raymond C. Schlicht, Fishkill, and Anthony P. Skrobul, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 23, 1983, Ser. No. 507,270
Int. Cl.[3] C10M *1/32*
U.S. Cl. 252—51.5 A 6 Claims

1. A lubricant composition comprising a major amount of an oil of lubricating viscosity and a minor effective friction-reduc-

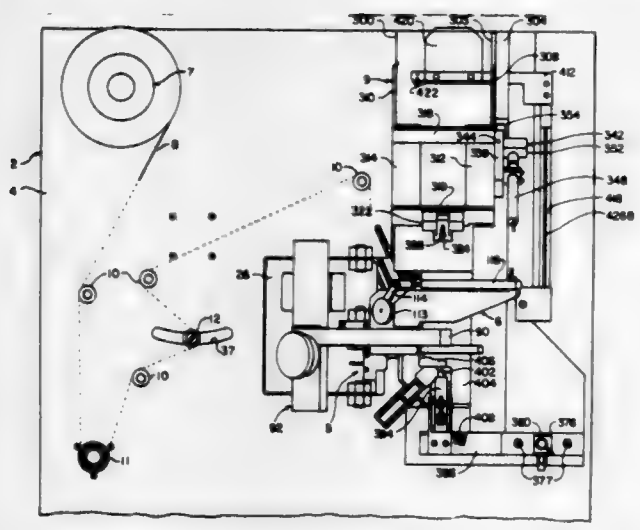
ing amount of a reaction product formed by reacting equimolar amounts of an amine represented by the forming RR'NH wherein R is an aliphatic-based hydrocarbyl radical of about 10 to about 30 carbon atoms and R' is hydrogen or an alkyl group having 12 to 18 carbon atoms, with a hydroxy-substituted aliphatic monocarboxylic acid selected from the group consisting of glycolic, lactic, and 2,2 bis-(hydroxymethyl)propionic acid, said reaction being conducted at a temperature ranging from about 60° to 180° C.

4,512,904

IN-CASSETTE LOADING MACHINE

James L. King, 8520 Bay Hill Blvd., Orlando, Fla. 32811

Filed Oct. 7, 1982, Ser. No. 433,237
Int. Cl.³ B65H *19/20*; B31F *5/06*
U.S. Cl. 242—56 R **41 Claims**



1. In a machine for loading tape into cassettes, a splicer head assembly comprising:

a splicing block support plate;

a first splicing block having a first guideway for receiving a first leader or use tape, said first block being affixed to said support plate for movement therewith;

a second splicing block having a second guideway for receiving a use tape and a third guideway for receiving a leader tape, said second and third guideways being parallel to said first guideway;

means rotatably mounting said second block to said support plate for rotation on a first axis extending parallel to said second and third guideways;

means rotatably mounting said support plate for pivotal movement about a second axis extending parallel to said first axis;

means for rotating said second block on said first axis between a first position in which said first and second guideways are aligned and a second position in which said first and third guideways are aligned; and

means for pivoting said support plate on said second axis on command between first and second limit positions.

4,512,905

METHOD OF MAKING SODIUM ZIRCONIUM SILICO-PHOSPHATES

Abraham Clearfield, College Station, Tex., and Paul Jerus, Louisville, Ky., assignors to The Texas A&M University System, College Station, Tex.

Continuation-in-part of Ser. No. 379,567, May 18, 1982, abandoned. This application Dec. 23, 1982, Ser. No. 432,795
Int. Cl.³ H01G *9/02*
U.S. Cl. 252—62.2 **9 Claims**

1. A method of preparing a crystalline compound which provides fast sodium ion transport which comprises heating a hydrated orthorhombic crystalline solid having the formula on a water-free basis

$$Na_{1+x+4y}Zr_{2-y}(SiO_4)_x(PO_4)_{3-x}$$

where x is between about 1.0 and about 2.8 and y is between 0 and 0.5, at a temperature between about 1,000° C. and about 1,250° C. until the orthorhombic crystalline solid is converted to a homogeneous, fast sodium ion conducting, monoclinic or rhombohedral crystalline sodium zirconium silico-phosphate of the formula indicated above, or a mixture of the two free from any separate, detectable zirconia phase.

4. A method of preparing a crystalline compound which provides fast sodium ion transport and having the formula:

$$Na_{1+x+4y}Zr_{2-y}(SiO_4)_x(PO_4)_{3-x}$$

where x is between about 1.0 and about 2.8 and y is between 0 and 0.5, which comprises the steps:

heating an aqueous dispersion comprising soda and silica in solution in a mol ratio of soda to silica of between about 0.9:1 and about 4:1 and a powdered zirconium phosphate having the formula $Zr(MPO_4)_2.zH_2O$ where M is hydrogen, sodium or a mixture of hydrogen and sodium, and z is an integer from 0 to 10, in an amount to provide a mol ratio of silica to zirconium phosphate of between about 1.2:1 and about 1.8:1, the proportions of the soda, silica and phosphate in the reaction mixture being in excess of the proportions of these materials in the final product, said heating being conducted at a temperature between about 250° C. and about 350° C., until reaction occurs and a precipitate is formed,

separating precipitated material from supernatant liquid, and washing and drying such separated precipitate to recover a hydrated orthorhombic crystalline solid, and

calcining the hydrated orthorhombic crystalline solid at a temperature between about 1000° C. and about 1250° C. until conversion to a homogeneous, fast sodium ion conducting, monoclinic or rhombohedral crystalline, sodium zirconium silico-phosphate of the formula indicated above, or a mixture of the two, free from any separate, detectable zirconia phase, is substantially complete.

4,512,906

WET PROCESS FOR PREPARING FERRITES OF MAGNETOPLUMBITE STRUCTURE IN FINE PARTICLE FORM

Masanori Hayakawa, and Satoshi Nishimura, both of Ube, Japan, assignors to Central Glass Company Limited, Ube, Japan

Continuation of Ser. No. 434,512, Oct. 15, 1982, abandoned. This application Sep. 6, 1984, Ser. No. 647,879
Claims priority, application Japan, Oct. 16, 1981, 56-164091
Int. Cl.³ C04B *35/26*
U.S. Cl. 252—62.63 **7 Claims**

1. A process for preparing fine particles of a ferrite having the magnetoplumbite structure, the process comprising:

subjecting to hydrothermal treatment in an aqueous alkali solution γ-Fe_2O_3 and at least one compound of a divalent metal selected from the group consisting of Ba, Sr and Pb, wherein said at least one compound of divalent metal is a salt selected from the group consisting of chlorides, nitrates and hydroxides, wherein the proportion of said γ-Fe_2O_3 to said at least one compound of divalent metal is such that the mole ratio of Fe_2O_3 to the total of BaO, SrO and PbO given by said at least one compound in the hydrothermal treatment, is in the range of from 4:1 to 6:1, and wherein said hydrothermal treatment is performed at temperatures in the range of from about 180° C. to about 260° C.

4,512,907

ICE MELTER AND METHOD OF MAKING SAME

Forrest M. McConnell, Lake Forest, Ill., assignor to Koos, Inc., Kenosha, Wis.

Filed Feb. 6, 1984, Ser. No. 577,257
Int. Cl.[3] C09K *3/18*
U.S. Cl. 252—70 3 Claims

1. An ice melter composition for use on driveways, sidewalks and the like comprising:

a salt combination and an amide,

said salt combination comprising a mixture of sodium and potassium chloride and said amide is urea,

said sodium choride being present in the ratio by weight of 3 to 1 of said potassium chloride.

4,512,908

HIGHLY ALKALINE LIQUID WAREWASHING EMULSION STABILIZED BY CLAY THICKENER

Bernard J. Heile, Apple Valley, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Jul. 5, 1983, Ser. No. 510,947
Int. Cl.[3] C11D *7/56*
U.S. Cl. 252—160 8 Claims

1. A highly alkaline composition having cleaning and stain removing properties which consists essentially of:

(a) water;

(b) 15-45% of a sodium condensed phosphate hardness sequestering agent;

(c) about 5 to 25% of sodium hydroxide or potassium hydroxide;

(d) about 2 to 35% of an inorganic source of chlorine; and,

(e) about 0.2 to 5% of a hectorite clay dispersant-thickening agent incorporating silicon dioxide, magnesium oxide, sodium oxide, lithium oxide and structural water of hydration in a ratio of about 25-75:20-40:1-10:0.1-1:1-10 wherein said agent is present in an amount effective to maintain the composition as a stable liquid emulsion or dispersion which is substantially resistant to deterioration under alkaline conditions.

4,512,909

USE OF A HYDROQUINONE COMPOUND WITH HYDRAZINE (1:1 MOLAR RATIO) AS AN OXYGEN-SCAVENGING AND A CORROSION-INHIBITING AGENT

Henry W. Schiessl, Northford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jun. 30, 1982, Ser. No. 393,831
Int. Cl.[3] C09K *15/08, 15/20;* C01B *21/16;* C02F *1/20*
U.S. Cl. 252—188.28 7 Claims

1. An oxygen-scavenging and corrosion-inhibiting composition for protecting metal surfaces against corrosion from oxygen-containing fluidic systems in contact therewith comprising a hydroquinone compound with hydrazine (1:1 molar ratio) which is formed by reacting hydroquinone and hydrazine in a mole ratio of at least about 0.75:1 about 0.75:1, said compound being spectroscopically characterized by a stretching vibration for a $-NH_3^+$ group at 2500 wave numbers and a bending vibration at 1480 wave numbers.

4. A method for scavenging oxygen and for protecting metal surfaces against corrosion caused by contact of an oxygen-containing fluid therewith comprising

adding an effective amount of a hydroquinone compound with hydrazine (1:1 molar ratio) to the fluidic system to scavenge at least a portion of the oxygen contained therein and to inhibit corrosion on the metal surfaces in contact therewith, said compound being formed by reacting hydroquinone and hydrazine in a mole ratio of at least about 0.75:1, and said compound being spectroscopically characterized by a stretching vibration for a $-NH_3^+$ group at 2500 wave numbers and a bending vibration at 1480 wave numbers.

4,512,910

PHOTOCURABLE COMPOSITIONS

Claude J. Schmidle, Trenton, N.J., assignor to Morton Thickol, Inc., Chicago, Ill.

Continuation of Ser. No. 343,659, Jan. 28, 1982, Pat. No. 4,377,679. This application Nov. 5, 1982, Ser. No. 439,449
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.
Int. Cl.[3] C09K *3/00;* C08G *18/00*
U.S. Cl. 252—188.31 10 Claims

1. A process for preparing compositions having a viscosity from about 20 to 30 poise, said process comprising:

reacting a polyether diol and an acrylic acid in about equal molar proportions.

4,512,911

PHOSPHOR

Noboru Kotera; Shusaku Eguchi, both of Odawara, and Norio Miura, Isehara, all of Japan, assignors to Kasei Optonix, Ltd., Japan

Continuation of Ser. No. 442,765, Nov. 10, 1982, abandoned, which is a continuation of Ser. No. 159,848, Jun. 16, 1980, abandoned. This application Sep. 20, 1983, Ser. No. 533,949
Claims priority, application Japan, Jun. 19, 1979, 54-77290; Jun. 19, 1979, 54-77291
Int. Cl.[3] C09K *11/467*
U.S. Cl. 252—301.4 H 5 Claims

1. A rare earth element activated complex halide phosphor represented by the formula

$$BaF_2 \cdot aBaX_2 \cdot bMgF_2 \cdot cBeF_2 \cdot dMe^{II}F_2 : eLn$$

wherein X is at least one halogen selected from the group consisting of chlorine, bromine and iodine; Me^{II} is at least one divalent metal selected from the group consisting of calcium and strontium, Ln is at least one rare earth element selected from the group consisting of divalent europium (Eu^{2+}), cerium (Ce^{3+}) and terbium (Tb^{3+}), and a, b, c, d and e are numbers satisfying the conditions of $0.90 \leqq a \leqq 1.05$, $0 \leqq b \leqq 1.2$, $0 < c \leqq 1.2$, $10^{-6} \leqq e \leqq 0.03$ and $0 < c+d \leqq 1.2$, respectively and BeF_2 is present in an amount sufficient to effect a phosphor exhibiting a higher luminance than said phosphor absent BeF_2 when stimulated by light of a wavelength ranging from 450 to 800 nm after exposure to X-rays.

4,512,912

WHITE LUMINESCENT PHOSPHOR FOR USE IN CATHODE RAY TUBE

Naotoshi Matsuda, Kawasaki; Yoshinori Tetsuishi, and Kazuaki Higuchi, both of Fukaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 6, 1984, Ser. No. 637,724
Claims priority, application Japan, Aug. 11, 1983, 58/145729
Int. Cl.[3] C09K *11/477*
U.S. Cl. 252—301.6 S 13 Claims

1. A white emitting luminescent phosphor for use in a cathode ray tube, which consists essentially of a mixture of from about 10 to 40 wt.% of a blue luminescent phosphor having the composition of ZnS:Ag, and having a 10% afterglow period of at least 10 microseconds, and at least one phosphor having a composition of the following formula:

$$In_{1-p-q-r}M_pEu_qTb_rBO_3$$

wherein M represents at least one element selected from the group consisting of Sc, Lu, Y, La, Gd and Ga; and each of p, q, and r represents a number satisfying the relationships of $p \geqq 0$, $q \geqq 0$, $r \geqq 0$ and $0 < p+q+r < 1$, and having a 10% afterglow period of 10 milliseconds or longer.

4,512,913

SOL-GEL SOLUTION PREPARATION

George W. Ritter, II, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 12, 1982, Ser. No. 397,667
Int. Cl.³ B01J *13/00*; C09K *3/00*
U.S. Cl. 252—313.1 10 Claims

1. A method of producing a hydrosol which comprises reacting a Group II water soluble metal salt with an aluminum chlorohydrate-alkylene glycol complex to produce a hydrosol and incorporating into said hydrosol a viscosity control agent selected from the group consisting of water soluble ether alcohols, ethers, and monoprotic acid salts of triethanol amine.

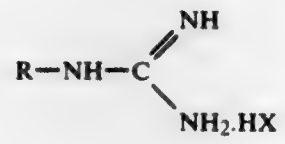
4,512,914

COMPOSITIONS AND METHOD FOR TREATING OIL SLICKS

Andre Lepain, Rosieres, and Robert D. E. M. Bronchart, Brussels, both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Feb. 3, 1983, Ser. No. 463,491
Int. Cl.³ B01F *17/02*
U.S. Cl. 252—355 10 Claims

1. Dispersing compositions for treating oil slicks on seawater, comprising at least one surface-active agent, at least one solvent, and a monoalkylguanidinium salt having the general formula



wherein R is an aliphatic hydrocarbon radical containing from about 8 to about 20 carbon atoms, and X is a halogen or an acid anion.

4,512,915

COMPOSITION AND METHOD OF INHIBITING CORROSION BY WATER OF METAL SUBSTRATES

Jean-Claude Lumaret, Bethune; Serge Gosset, Lestrem, and Michel Huchette, Merville, all of France, assignors to Roquette Freres, Lestrem, France

Filed Aug. 24, 1982, Ser. No. 410,987
Claims priority, application France, Aug. 31, 1981, 81 16601
Int. Cl.³ C23F *11/18*
U.S. Cl. 252—389 A 19 Claims

1. Composition for inhibiting corrosion by water of metal substrates comprising:

zinc gluconate or glucoheptonate and

at least one water-soluble inorganic polyphosphate selected from the group consisting of alkali metal hexametaphosphate and tripolyphosphate,

wherein the ratio by weight of zinc gluconate or glucoheptonate/polyphosphate is from 1/5 to 5/1.

4,512,916

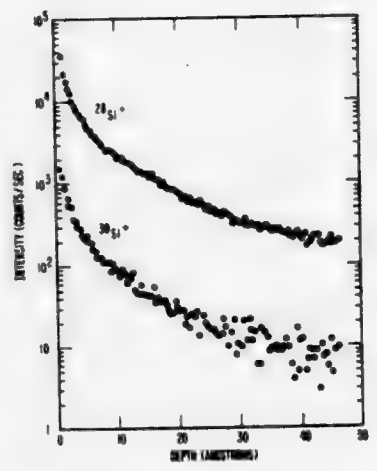
VIDEO DISC MOLDING COMPOSITION

Pabitra Datta, Cranbury, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 27, 1982, Ser. No. 452,915
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 22 Claims

1. A conductive molding composition comprising a polyvinylchloride-based resin, a sufficient amount of finely divided conductive carbon black particles such that the composition has a bulk resistivity below about 500 ohm-cm at 900 mHz, from about 0.5 to about 3 percent by weight of a lubricant, from about 1 to about 5 percent by weight of a plasticizer, from about 1 to about 5 percent by weight of a stabilizer, and from about 0.1 to about 1 percent by weight of an organo-silicone compound having polar groups.

11. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of molded plastic material containing a sufficient amount of finely divided conductive particles such that the material has a bulk resistivity below about 500 ohm-cm at 900 mHz and having an information track



in a surface thereof constituted by a surface relief pattern of such dimension to accommodate recovery of said signals upon establishment of said motion at said rate, the improvement comprising employing as said plastic material a conductive molding composition comprising a polyvinylchloride-based resin, finely divided conductive carbon black particles, from about 0.5 to about 3 percent by weight of a lubricant, from about 1 to about 5 percent by weight of a plasticizer, from about 1 to about 5 percent by weight of a stabilizer, and from about 0.1 to about 1 percent by weight of an organo-silicone compound ha..ng polar groups.

4,512,917

HEXABORIDE RESISTOR COMPOSITION

Paul C. Donohue, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 525,507, Aug. 22, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 581,601
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—521 8 Claims

1. A composition for the preparation of thick film resistors comprising an admixture of finely divided particles of:

A. 2–70% by weight, basis total solids, of conductive metal hexaboride selected from the group consisting of LaB_6, YB_6, rare earth hexaboride, CaB_6, SrB_6 and mixtures thereof; and

B. 98–30% by weight, basis total solids, of an alkali metal or alkaline earth metal aluminosilicate crystallizable glass comprising 70–95 mole % components which are irreducible by the conductive metal hexaboride having dissolved therein 30–5 mole % Ta_2O_5.

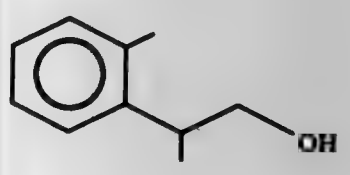
4,512,918

PERFUMERY USES OF PHENYL ALKANOLS

Wilhelmus J. Wiegers, Red Bank, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,823
Int. Cl.³ A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 R 4 Claims

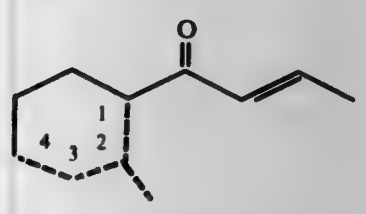
1. A composition of matter comprising a compound having the structure:



and intimately admixed therewith a compound selected from the group consisting of:

(a) 3-methyl-1-phenyl-pentanol-5; and

(b) at least one butanoyl cyclohexane derivative defined according to the structure:



wherein one or two of the dashed lines represent carbon-carbon double bonds and the other of the dashed lines represent carbon-carbon single bonds with the proviso that when the dashed lines represent two carbon-carbon double bonds, said carbon-carbon double bonds are conjugated.

2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of a composition of matter defined according to claim 1.

4,512,919

2-METHOXY-4-(2-METHYLPROPENYL) PHENYL ESTER OF ISOBUTYRIC ACID, AND USE IN AUGMENTING OR ENHANCING AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

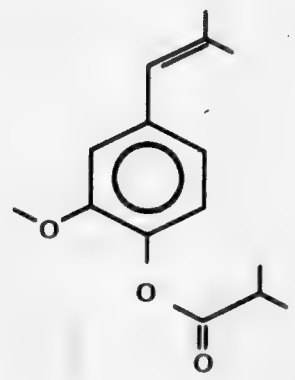
Richard A. Wilson, Westfield; Michael J. Zampino, North Bergen; David R. Bowen, Red Bank, and Domenick Luccarelli, Jr., Neptune, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 505,411, Jun. 16, 1983, Pat. No. 4,473,588. This application Sep. 26, 1983, Ser. No. 535,690

Int. Cl.³ A61K *7/46;* C11D *17/00*

U.S. Cl. 252—522 R **6 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of the compound having the structure:



4,512,920

SILANES USEFUL AS ANTI-TREEING ADDITIVES

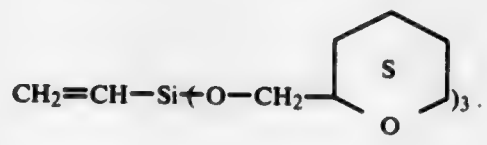
Harry Braus; Anthony Barlow, and Melvin F. Maringer, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,978

Int. Cl.³ H01B *3/18*

U.S. Cl. 252—573 **5 Claims**

1. A compound having the structure:



4,512,921

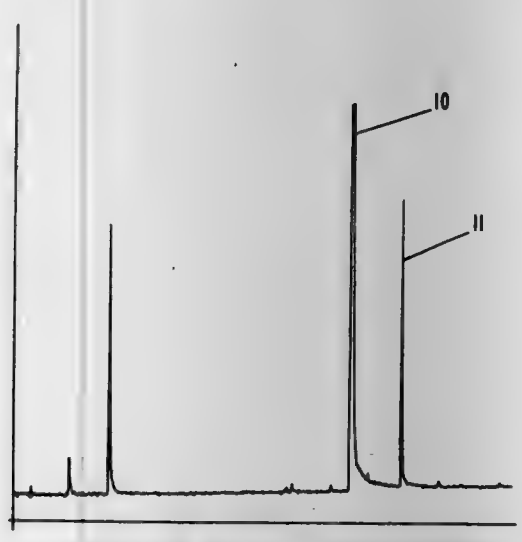
NUCLEAR REACTOR COOLING SYSTEM DECONTAMINATION REAGENT REGENERATION

Larry D. Anstine, San Jose; Dean B. James, Saratoga; Edward A. Melaika, Berkeley, and John P. Peterson, Jr., Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

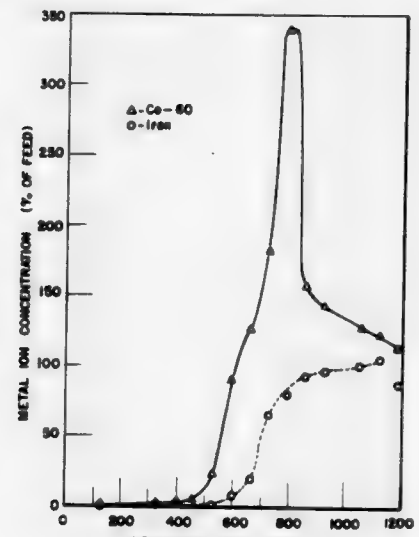
Continuation of Ser. No. 156,945, Jun. 6, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 420,464

Int. Cl.³ G21F *9/28;* G21C *19/30*

U.S. Cl. 252—626 **8 Claims**



GLC PROFILE FOR EXAMPLE I, BULKED FRACTIONS (3-8)



PRE-EQUILIBRATED ANION EXCHANGE RESINS.

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma

1. A method of removing corrosion products from the coolant system of a water-cooled nuclear reactor comprising the steps of:

(a) adding at least one soluble weak-acid organic complexing

agent selected from the group consisting of oxalic acid, citric acid, nitrilotriacetic acid and hydroxyethylethylenediaminetriacetic acid to the coolant to form a decontamination solution;

(b) adjusting the pH of the decontamination solution to from 2.5 to 4.0;

(c) circulating and decontamination solution at a temperature of from 60° to 100° C. throughout the coolant system to dissolve the corrosion products to form a complexed ion solution of Fe^{+2}, Fe^{+3}, $^{60}Co^{+2}$, and other metal ion complexes; and

(d) removing the Fe^{+2}, Fe^{+3} and $^{60}Co^{+2}$ complexes from the complexed ion solution and regenerating the decontamination solution by passing the complexed ion solution through an anion exchange resin, said anion exchange resin having been presaturated with the anions of the weak-acid organic complexing agent of the decontamination solution such that the concentration of the agents on the resin is substantially the same concentration of the agents in the decontamination solution and having the same pH of the decontamination solution.

4,512,922

PURIFICATION AND ACTIVITY ASSURANCE OF PRECIPITATED HETEROLOGOUS PROTEINS

Andrew J. S. Jones, San Mateo; Kenneth C. Olson, Burlingame, and Steven J. Shire, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 452,253, Dec. 22, 1982, abandoned.
This application Jun. 1, 1984, Ser. No. 615,679
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 R **9 Claims**

1. A process for solubilizing and maintaining the solubility of protein precipitated in the form of refractile bodies in a host cell culture, comprising solubilizing said refractile bodies in a strongly denaturing solution, and replacing the strongly denaturing solution with a different weakly denaturing medium while keeping the protein solubilized.

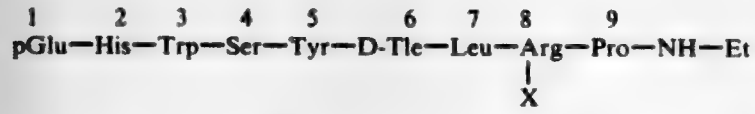
4,512,923

LUTEINIZING AND FOLLICLE STIMULATING HORMONES AND PROCESS FOR THE PREPARATION THEREOF

Martin Flegel; Jan Pospisek; Josef Picha; Drahomira Pichova; Milan Krojidlo, and Jiri Kolinsky, all of Prague, Czechoslovakia, assignors to SPOFA, spojene podniky pro zdravotnickou vyrobu, Prague, Czechoslovakia

Filed Aug. 8, 1983, Ser. No. 521,108
Claims priority, application Czechoslovakia, Aug. 6, 1982, 5868-82
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 LH **2 Claims**

1. Luteinizing and follicle stimulating hormone, capable of releasing factor analogs of high gonadotropic activity, of the formula



wherein X is selected from the group consisting of a hydrogen atom and a protective group.

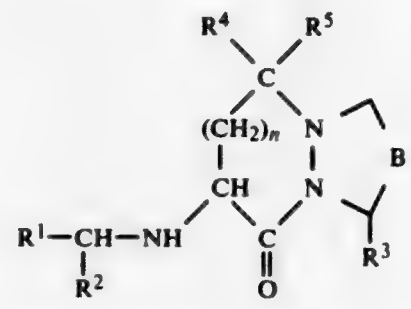
4,512,924

PYRIDAZO[1,2-a][1,2]DIAZEPINES

Michael R. Attwood, Hitchin; Cedric H. Hassall, Harpenden; Robert W. Lambert, Welwyn; Geoffrey Lawton, and Sally Redshaw, both of Hitchin, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

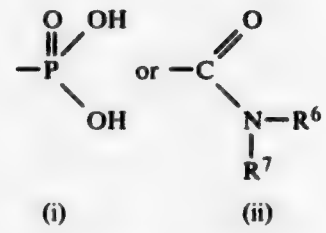
Filed May 12, 1983, Ser. No. 493,876
Claims priority, application United Kingdom, May 12, 1982, 8213850; Feb. 28, 1983, 8305505
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—243.3 **28 Claims**

1. Compounds of the formula



I

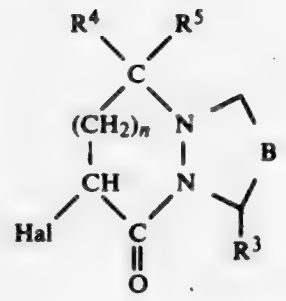
wherein B represents an ethylene group, R^1 represents a hydrogen atom or an alkyl, aralkyl, amino-alkyl, monoalkylamino-alkyl, dialkylamino-alkyl, acylamino-alkyl, phthalimido-alkyl, alkoxycarbonylamino-alkyl, aryloxycarbonylamino-alkyl, aralkoxycarbonylamino-alkyl, alkylaminocarbonylamino-alkyl, arylaminocarbonyl-aminoalkyl, aralkylaminocarbonylamino-alkyl, alkylsulphonylamino-alkyl or arylsulphonylamino-alkyl group, R^2 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group or a group of the formula



(i) (ii)

R^3 represents a carboxyl, alkoxy-carbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, R^6 and R^7 each represent a hydrogen atom or an alkyl or aralkyl group or R^6 and R^7 together with the nitrogen atom to which they are attached represent a 5-membered or 6-membered heteromonocyclic ring which may contain a further nitrogen atom or an oxygen or sulphur atom, and n is 2,
and pharmaceutically acceptable salts thereof.

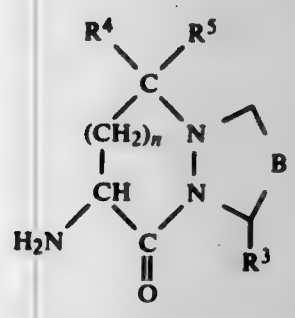
25. A compound of the formula



II

wherein B represents an ethylene group, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, Hal represents a halogen atom and n is 2.

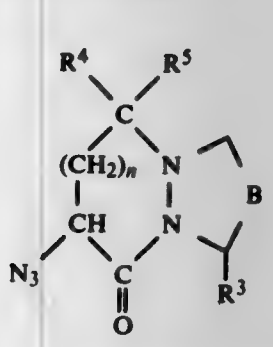
26. A compound of the formula



IV

wherein B represents an ethylene group, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent and oxo group and n is 2.

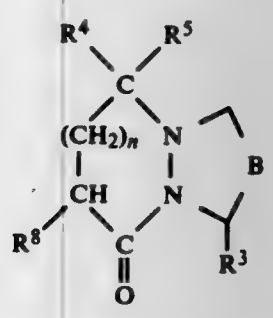
27. An azide of the formula



XV

wherein B represents an ethylene group, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group and n is 2.

28. A compound of the formula



XVIIa

wherein B represents an ethylene group, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, R^8 represents a phthaloylamino group and n is 2.

4,512,925

1,23-DIHYDROXYVITAMIN D COMPOUNDS

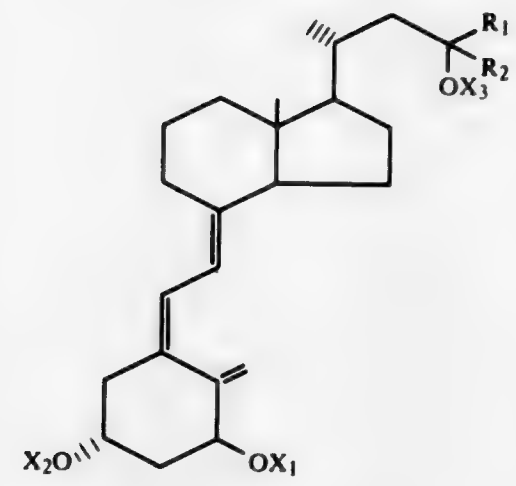
Hector F. DeLuca; Heinrich K. Schnoes, and Seok-Ho Lee, all of Madison, Wis., assignors to Wisconsin Alumini Research Foundation, Madison, Wis.

Filed Sep. 14, 1983, Ser. No. 531,964

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.2 **28 Claims**

1. Compounds selected from the group consisting of



wherein R_1 and R_2 are each selected from the group consisting of hydrogen and alkyl, and where X_1, X_2, and X_3 are selected from the group consisting of hydrogen and acyl.

4,512,926

PROCESS FOR THE SILYLATION OF UNSATURATED, NATURALLY OCCURRING OILS OR THE INTERESTERIFICATION PRODUCTS THEREOF

Wolfgang Kampf, Haltern; Roland Streck, and Horst G. Haag, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,217

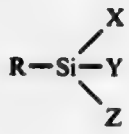
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3126845

Int. Cl.³ C07C *53/22, 57/00, 57/12*

U.S. Cl. 260—398 **6 Claims**

1. A process for silylating an unsaturated, naturally occurring oil or an interesterification product thereof,

consisting essentially of reacting, at a temperature of 200°–350° C. and under an inert gas, the unsaturated, naturally occurring oil or an interesterification product thereof with a silicon compound of the formula



wherein

R is an unsaturated aliphatic hydrocarbon of 2–6 carbon atoms,

X is halogen, C_{1-6}-alkoxy, C_{1-6}-alkoxyalkoxy, C_{6-12}-aryloxy, C_{1-8}-alkanoyloxy, C_{1-6}-ketoximato or C_{1-8}-hydrocarbylamido,

Y and Z independently are one of the X groups, alkyl of 1–8 carbon atoms, cycloalkyl of 5–12 carbon atoms, or optionally substituted phenyl.

4,512,927

NAPHTHYL ESTERS FROM TETRALIN

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 15, 1983, Ser. No. 504,701

Int. Cl.³ C09F *5/08*

U.S. Cl. 260—410.5 **8 Claims**

1. The process for preparing a member selected from the group consisting of naphthyl carboxylate and an indene carboxylate consisting essentially of reacting tetralin or indane respectively with oxygen and a carboxylic acid having from 2 to 19 carbon atoms at a temperature of from 120° C. to 200° C. in the presence of a catalyst which contains the elements Pd/Sb/M wherein M is at least one member selected from the group consisting of K and Cr.

4,512,928

PYROPHOSPHATO TITANATE ADDUCTS

Gerald Sugerman, Allendale, N.J., and Salvatore J. Monte, Staten Island, N.Y., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Division of Ser. No. 362,091, Mar. 26, 1982, Pat. No. 4,417,009, which is a division of Ser. No. 224,055, Jan. 12, 1981, Pat. No. 4,338,220, which is a division of Ser. No. 70,907, Aug. 29, 1979, Pat. No. 4,277,415. This application Jun. 21, 1983, Ser. No. 506,385

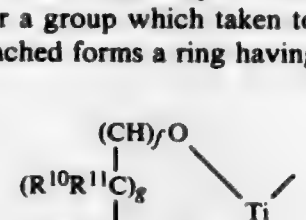
Int. Cl.³ C11C *3/02*

U.S. Cl. 260—410.9 R **6 Claims**

1. A method of transesterifying esters which comprises adding to the reaction medium a catalytic amount of a compound having the formula

$$X_cTi[OP(O)(OR^1)OP(O)(OR^2)(OR^3)]_{4-c}(NR^4R^5R^6)_d[P(OR^7)(OR^8)(OR^9)]_e$$

wherein c is 1 or 2; d is 0, 1 or 2; e is 0, 1 or 2; with the proviso that d plus e must be 1 or 2; with the proviso that if c is 1, X must be RO—; and with the proviso that when c is 2, X is either RO— or a group which taken together with the Ti to which it is attached forms a ring having the formula



(VI)

wherein each of f, g, h and i is 0 or 1, with the proviso that at least one of g, h and i is 1 and that the sum of f, g, h and i is 2 or 3; and wherein each R is independently selected from C_1 to C_{10} alkyl, C_3 to C_{10} alkenyl, C_7 to C_{10} dioxyalkylene; R^1, R^2, R^4, R^7, each R^{10} and each R^{11} are independently selected from hydrogen, C_6 to C_{10} aryl, C_7 to C_{20} aralkyl, C_1 to C_{20} alkyl, C_3 to C_{20} alkenyl, C_2 to C_{20} oxyalkylene and C_3 to C_{20} oligooxyalkylene, with the proviso that one and only one of R^1 and R^2 is hydrogen; R^5, R^6, R^8 and R^9 are independently selected from the same groups as are R^1, R^2, R^4, R^7, each R^{10} and each R^{11}, except that R^5, R^6, R^8 and R^9 may not be hydrogen, and, in addition, R^5 and R^6 are independently selected from C_1 to C_{10} alkanol, C_2 to C_6 alkanediol, C_7 to C_{10} aralkanol, substituted and unsubstituted C_1 to C_{10} alkyl, substituted and unsubstituted C_3 to C_{10} alkenyl, substituted and unsubstituted C_6 to C_{10} aryl, substituted and unsubstituted C_7 to C_{10} aralkyl, these last four groups being optionally substituted with 1 to 3 carboxylate groups or from 1 to 3 carboxamide groups, each such carboxylate group and each such carboxamide group being saturated or unsaturated and having from 1 to 5 carbon atoms; with the proviso that when aromatic carbons are present in any one of R, R^2, R^4, R^7, R^{10} or R^{11}, each of said carbons is optionally substituted with 1 or 2 independently selected halogen atoms.

4,512,929

1-ALKYL-2-ISOCYANATOMETHYL-ISOCYANATOBENZENES AND/OR 1-ALKYL-4-ISOCYANATOMETHYL-ISOCYANATOBENZENES

Erwin Hahn, Heidelberg, and Peter Neumann, Wiesloch, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

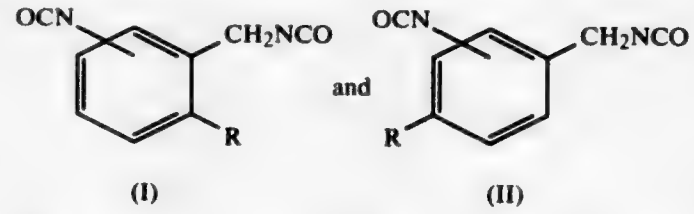
Filed Mar. 25, 1983, Ser. No. 478,696

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1982, 3212927

Int. Cl.³ C07C *119/048*

U.S. Cl. 260—453 AR **9 Claims**

1. An aromatic diisocyanate having a formula selected from the group consisting of



(I) (II)

in which R is an alkyl group with 1 to 12 carbon atoms.

4,512,930

PROCESS FOR SYNTHESIZING CARBONIC ACID ESTERS DERIVED FROM UNSATURATED ALCOHOLS AND POLYHYDRIC ALCOHOLS

Ugo Romano, Vimercate, Italy, assignor to ANIC, S.p.A., Palermo, Italy

Filed Apr. 26, 1982, Ser. No. 371,670

Claims priority, application Italy, May 21, 1981, 21884 A/81

Int. Cl.³ C07C *68/06*

U.S. Cl. 260—463 **8 Claims**

1. A process for synthesizing unsaturated bis-carbonates of polyhydric alcohols consisting essentially of the step of reacting an unsaturated alcohol selected from the group consisting of allyl alcohol, allyl carbinol, methallyl alcohol, crotyl alcohol, 3-buten-2-ol and 2-methyl-3-buten-2-ol with an alkyl carbonate selected from the group consisting of dimethyl carbonate, diethyl carbonate, dipropyl carbonate, dibutyl carbonate and dibenzyl carbonate and a polyhydric alcohol selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, butanediol, hexanediol, neopentyl glycol, glycerol, trimethylol propane, and pentaerythritol or a combination thereof, wherein the molar ratio of unsaturated alcohol to polyhydric alcohol is between about 2 and and about 40 and the molar ratio of said unsaturated alcohol to said alkyl carbonate is between about 2 and about 10, said reaction taking place in the presence of an alkaline catalyst selected from the group consisting of sodium hydroxide, sodium carbonate and organic bases.

4,512,931

INSECTICIDAL PRODUCT AND PREPARATION THEREOF

Michael J. Robson, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 26, 1983, Ser. No. 535,625

Claims priority, application United Kingdom, Oct. 18, 1982, 8229724

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—465 D **6 Claims**

1. A process for the relative enrichment of a solution of α-cyano-3-phenoxybenzyl 3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate with respect to the enantiomeric pair of isomers represented by (S)-αcyano-3-phenoxybenzyl (1R,cis)-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate and (R)-α-

cyano-3-phenoxybenzyl (1S,cis)-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate which comprises subjecting a solution comprising the enantiomeric pair of isomers (R)-α-cyano-3-phenoxybenzyl (1R,cis)-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate and (S)-α-cyano-3-phenoxybenzyl (1S,cis)-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate in an organic solvent to the action of a base to effect epimerisation.

4,512,932

WATER REMOVAL OF TRIMETHYL PHOSPHATE FROM PHOSPHORUS CONTAINING PESTICIDES

Dale E. Lyman, Bumpass, and James J. Anderson, Richmond, both of Va., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,824
Int. Cl.[3] C07F *9/09*
U.S. Cl. 260—990 13 Claims

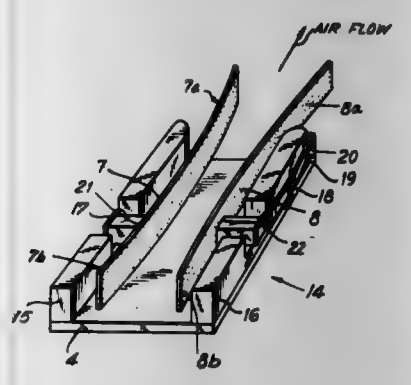
1. A method for treating a liquid phosphorus containing pesticide manufactured from trimethyl phosphite having limited water solubility and containing trimethyl phosphate (TMPO) comprising extracting the TMPO by contacting said pesticide with water until the pesticide raffinate contains less than 1000 ppm TMPO.

4,512,933

APPARATUS FOR DISPENSING VOLATILE SUBSTANCES

Theodore A. Harden, Middletown, N.Y., assignor to Takasago USA, Inc., Rockleigh, N.J.

Filed Dec. 9, 1983, Ser. No. 559,791
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—30 20 Claims



1. An apparatus for dispensing volatile substances, comprising a housing, a piezoelectric element having one end mounted to the housing and one end free, a generally planar impeller blade connected to the free end of the piezoelectric element and having its distal end unconstrained by the housing, means for detachably mounting a replaceable substrate cartridge containing a volatile substance in proximity to the distal end of the impeller blade, and means for applying a voltage to the piezoelectric element for oscillating its free end perpendicular to its plane at or close to resonance and propagating a traveling wave along the blade to generate and shed vortices at the distal end of the blade, such that the vortices contact the substrate cartridge, thereby dispensing the volatile substance.

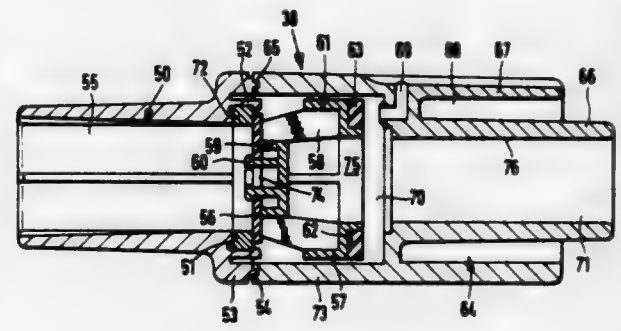
4,512,934

AIR BUBBLE HYDROMASSAGING APPARATUS

Heinz Bucher, Rottweil, Fed. Rep. of Germany, assignor to Metronic Electronic GmbH, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 581,703
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—64 B 20 Claims

1. Air bubble hydromassaging apparatus comprising a blower housed in a control unit, a bubble grid adapted to be placed into a bathtub, and air tubing enclosing a check valve to connect said control unit to said bubble grid, said control unit being provided with a bushing type compressed air outlet and said bubble grid being provided with a bushing type compressed air inlet, said air tubing having a first connector fitting on one end and a second connector fitting on the opposite end by which it is detachably and airtightly connectible to said compressed air outlet of said control unit and said compressed air inlet of said bubble grid, respectively, and said check valve being housed in said first connector fitting and serving to obstruct passage through said connector fitting when said blower is in an OFF condition and to permit passage through said connector fitting when said blower is in an ON condition, characterized in that said check valve is housed in said first



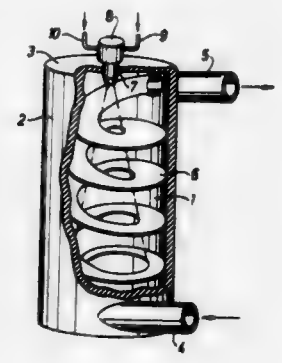
connector (38) on the side facing said control unit (10), said first connector (38) being connectible in an airtight relation solely to said compressed air outlet (14) of said control unit (10), that said second connector (43) on the side facing said bubble grid (25) is connectible in an airtight fashion solely to said compressed air inlet (28) of said bubble grid (25), that said check valve comprises permanent magnet (72) which in the inoperative condition of said blower retains valve plunger (61) which blocks the passage through said connector (38), and that in the operative condition of the blower said valve plunger (61) is lifted from said magnet (72) by the force of the compressed air exiting from said compressed air outlet (14) of said control unit (10) to permit passage through said connector (38).

4,512,935

APPARATUS FOR THE VOLATILIZATION OF A LIQUID

Anders Hilmersson, Helsingborg; Jan Lagerstedt, Malmö, and Helge Andersson, Lund, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Jan. 13, 1984, Ser. No. 570,491
Claims priority, application Sweden, Jan. 25, 1983, 8300356
Int. Cl.[3] A61L *2/22*
U.S. Cl. 261—79 A 3 Claims



1. An apparatus for volatilizing a liquid by blending the liquid with a heated gas comprising a casing having a chamber provided with feed and discharge lines for the gas so as to impart a circulating movement to the gas and, a helical shaped guide rail positioned inside said chamber and a nozzle to introduce the liquid as droplets into the circulating movement of the gas along a center axis of said helical shaped guide rail, wherein the helical guide rail is provided with a centrally located conical opening which widens in a direction opposite

the nozzle, the centrally located conical opening provided with a cone angle substantially corresponding to a spreading angle imparted to said droplets by said nozzle.

4,512,936

AERATION APPARATUS

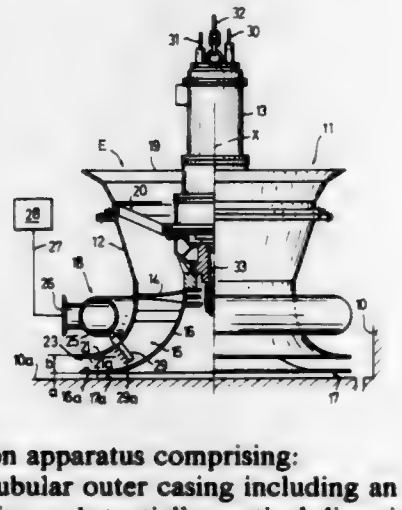
Masao Oshima; Yutaka Kato; Mitsuhiko Ogasawara, and Osamu Futamura, all of Tokyo, Japan, assignors to Ebara Corporation and Ebara-Infilco Co., Ltd., both of, Japan

Filed Jun. 30, 1982, Ser. No. 393,723

Claims priority, application Japan, Jul. 3, 1981, 56-103279; Jul. 7, 1981, 56-105066; Mar. 1, 1982, 57-30541

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—93 **22 Claims**



1. An aeration apparatus comprising:

a generally tubular outer casing including an axis generally extending in a substantially vertical direction;

driving means mounted in said outer casing;

an impeller adapted to be driven by said driving means so as to feed a liquid to be treated in a substantially axially and downwardly direction;

an inner casing disposed at the inner side of said outer casing at a predetermined distance from the latter so as to form an annular discharge passage for said liquid; and

gas supplying means having gas discharge ports positioned in said discharge passage for supplying an oxygen-containing gas to said liquid in said annular discharge passage;

wherein said annular discharge passage defined by said outer casing and said inner casing has an outlet end opening substantially radially outwardly in a direction substantially perpendicular to said axis,

said liquid is sucked through one end of said outer casing and discharged through said outlet end,

said discharge passage is defined between said outer casing and said inner casing disposed coaxially with said outer casing,

said discharge passage being gradually curved in the direction of flow of the liquid therethrough from a direction substantially downwardly and substantially parallel to said axis to a direction substantially perpendicular to said axis, and

said gas discharge ports being disposed in such a region between said impeller and said outlet end of said discharge passage that the angle formed between the meridian streamline of the liquid flow through said discharge passage and the horizontal is in the range of between about 0° and 60°.

4,512,937

GRID AND FILL SLATS FOR COOLING TOWERS

Paul D. Hoffmann, Kirkwood, Mo., assignor to Lilie-Hoffman Cooling Towers, Inc., St. Louis, Mo.

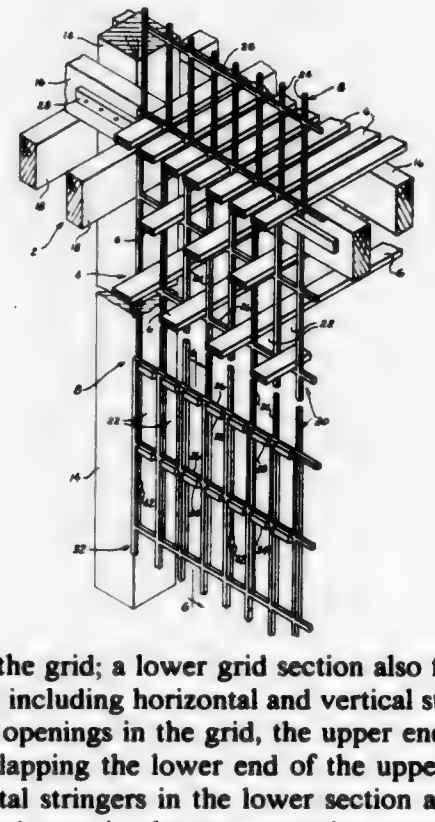
Filed Jan. 3, 1983, Ser. No. 455,027

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—111 **19 Claims**

1. A fill arrangement for a cooling tower, said fill arrangement comprising grids positioned vertically with each grid including horizontal and vertical stringers which delineate openings in the grid, the grid being formed from a polymer; slats extended through at least some of the openings in the grids, each slat being supported on the lower horizontal stringer for the opening through which it extends, at least some of the slats being formed entirely from a polymer that is extruded, the extruded polymer slats being hollow and rectangular in cross-sectional configuration, with each including a generally flat top wall, a generally flat bottom wall, and side walls connecting the top and bottom walls along the sides of those walls and also a web connecting the top and bottom walls intermediate the side walls.

13. In a cooling tower having a fill formed from a multiplicity of slats, an improved grid for supporting slats of the fill, said grid comprising: an upper grid section formed from a polymer and including horizontal and vertical stringers which define



openings in the grid; a lower grid section also formed from a polymer and including horizontal and vertical stringers which define more openings in the grid, the upper end of the lower section overlapping the lower end of the upper section such that horizontal stringers in the lower section are adjacent to horizontal stringers in the upper section at more than one elevation; and connectors joining adjacent horizontal stringers of the upper and lower sections together, with each connector preventing the lower section from moving downwardly with respect to the upper section and further preventing the lower section from moving laterally away from the upper section, the connectors being arranged at least in two elevations in the overlapping regions of the upper and lower sections, whereby the lower section is firmly attached to the upper section to form a downward extension of the upper section.

4,512,938

UNDULATING HEAT EXCHANGE PACKING

Bryan E. Jones, Feltham, and Anthony M. Kunesch, Great Bookham, both of England, assignors to Film Cooling Towers Limited, Richmond, England

Filed Jul. 14, 1982, Ser. No. 398,149

Claims priority, application United Kingdom, Jul. 16, 1981, 8121868; Jul. 16, 1981, 8121913

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—112 **6 Claims**

1. A heat exchange packing comprising:

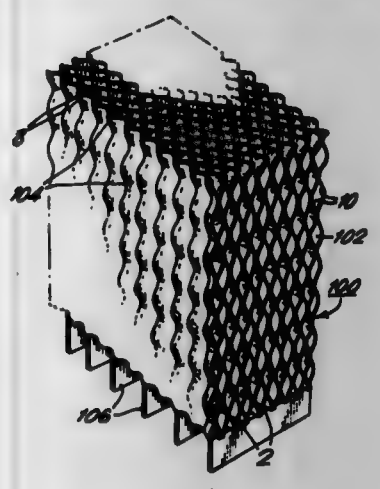
a plurality of packing sheets arranged in parallel, vertical upright, face to face relationship,

each of said packing sheets having a first waveform extending substantially transversely and a second waveform extending substantially longitudinally thereof,

said packing sheets being arranged adjacent to each other and being held in contact with each other at predetermined points, such that a plurality of substantially trans-

versely extending channels and a plurality of substantially vertically extending channels are defined within the packing,

and wherein each of said packing sheets has a third waveform extending substantially within the plane of the sheet



and at angles with respect to said transversely and longitudinally extending first and second waveforms, respectively, such that said first, second and third waveforms define a spiral channel formed around each of said substantially vertically extending channels.

4,512,939

METHOD FOR MANUFACTURING OXIDIC SINTERED NUCLEAR FUEL BODIES

Wolfgang Dörr, Herzogenaurach; Gerhard Gradel, Eckersdorf; Martin Peehs, Bubenreuth; Reinhard Schäfer, Rodenbach, and Thomas Sondermann, Kahl, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim and Reaktor Brennelement Union GmbH, Hanau, both of, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,615

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144684

Int. Cl.³ G21C *21/00*

U.S. Cl. 264—0.5 **12 Claims**

1. In a method for the manufacture of oxidic sintered nuclear fuel bodies by compacting UO_2-starting powder or a mixture of UO_2 and PuO_2 starting powder which contains up to 10% by weight rare-earth oxide as an additive into blanks and subsequent densification of these blanks by a heat treatment in a sintering atmosphere with reducing action, the improvement comprising compacting UO_2-starting powder which has at least one of the two properties consisting of a specific surface in the range of 2 to 4.5 m^2/g and a mean crystallite diameter in the range of 80 nm to 250 nm, and carrying out the heat treatment in the sintering atmosphere with reducing action at a temperature in the range of 1,500° C. to 1,750° C.

4,512,940

METHOD AND APPARATUS FOR THE PRODUCTION OF ELECTRET MATERIAL

Jeff L. Anderson, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 16, 1982, Ser. No. 450,311

Int. Cl.³ H01G *7/02*; B29D *7/22*

U.S. Cl. 264—22 **5 Claims**

1. The method of polarizing a dielectric material to form an electret which includes the steps of:

positioning spaced-apart first and second electrodes adjacent the same surface of the dielectric material;

connecting the electrodes to a source of voltage with each electrode having an opposite polarity enabling the electrodes to apply an electrical field to the longitudinal area of the dielectric material located between the electrodes;

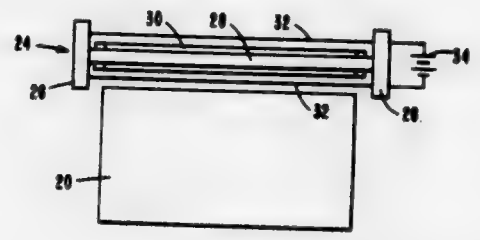
locating a source of radiant energy spaced from and between the electrodes;

applying the radiant energy on the dielectric material polarized by the electrical field;

and moving the electrodes and the source of radiant energy along the same surface of the dielectric material at a rate of speed enabling the polarized area of the dielectric material to return to its initial temperature upon reaching the second electrode.

3. An apparatus for producing an electret comprising:

a movable support member positioned adjacent a sheet of dielectric material which exhibits a residual polarization after being subjected to a polarization-enabling energy and to a polarizing electrical field;



a pair of spaced-apart electrode members mounted on said support member and positioned adjacent the same surface of the dielectric material;

a source of voltage connected to said electrode members enabling the electrode members to be of opposite polarity for applying a polarizing electrical field along the longitudinal axis of the dielectric material in the area located between said electrode members;

a source of polarizing-enabling energy mounted on said movable support member;

and means for directing said polarizing-enabling energy on the longitudinal area of the sheet of dielectric material located between the electrode members enabling the dielectric material to exhibit a residual polarization.

4,512,941

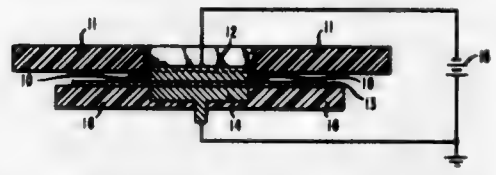
POLARIZING OF PIEZOELECTRIC MATERIAL

Heinz von Seggern, Westfield, and Tsuey T. Wang, Summit, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 14, 1983, Ser. No. 466,771

Int. Cl.³ B29D *7/20*

U.S. Cl. 264—22 **16 Claims**



1. A method of polarizing a sheet of polarizable material by steps comprising applying an electric field across a portion of said sheet

characterized in that

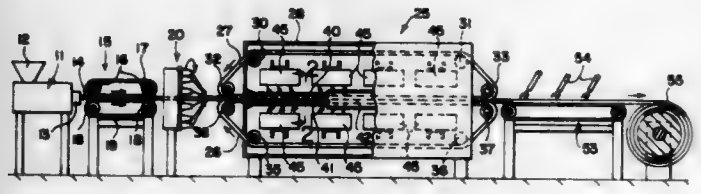
at least during said polarizing, at least one edge of said sheet is insulated from said portion by steps comprising pressing a compliant dielectric onto said sheet between said portion and said edge, whereby the voltage that can be applied to said sheet without breakdown is substantially increased.

4,512,942

METHOD AND APPARATUS FOR VULCANIZING HOSE

William R. Babbin, Barberton, and James W. Messerly, Stow, both of Ohio, assignors to B. F. Goodrich Company, New York, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,937
Int. Cl.³ B29H *5/01*
U.S. Cl. 264—26 **6 Claims**



1. A process for vulcanizing a continuous length of reinforced rubber hose which comprises the steps of advancing a continuous length of hose to a pair of endless moving belt molds that are cooperative on merging to encompass such hose and with said belt molds being made of material transparent to microwave energy, advancing said hose while captively held by said moving belt molds between pressure applying guides that are transparent to microwave energy, applying pressure to said hose through the cooperative action of said guides applying pressure on said belt molds, exposing said encompassed hose to microwave energy to effect vulcanization of said hose, advancing said belt molds out of contact with said guides to remove pressure on said hose, and parting said moving belt molds from said hose while directing said vulcanized hose therefrom for windup.

4. An apparatus for vulcanizing elastomeric articles comprising, an elongated chamber, said chamber having an entrance end and an exit end, a pair of endless conveyor belts having a pair of merging conveying runs operative in said chamber for movement along a longitudinally extending pass line, said conveyor belts being transparent to microwave energy, microwave energy transmitting devices mounted in said chamber on opposite sides of said pass line, each of said conveyor belts having a continuous recess which is operative to receive an elastomeric uncured article at said entrance end to confine said elastomeric article as said article moves through said chamber drive means connected to said belts for moving said conveyor belts in their endless path, (and) means for energizing said microwave devices to transmit microwave energy towards said conveying runs to effect vulcanization of elastomeric articles confined in said recesses as it moves through said chamber, and said chamber has guide means therein operative to exert pressure on said pair of merging conveying runs along said pass line to maintain pressure on said elastomeric article confined therein during vulcanization thereof.

4,512,943

EXTRUSION PROCESS FOR PRODUCING THERMOPLASTIC PIPE

Granville J. Hahn, and Raleigh N. Rutledge, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

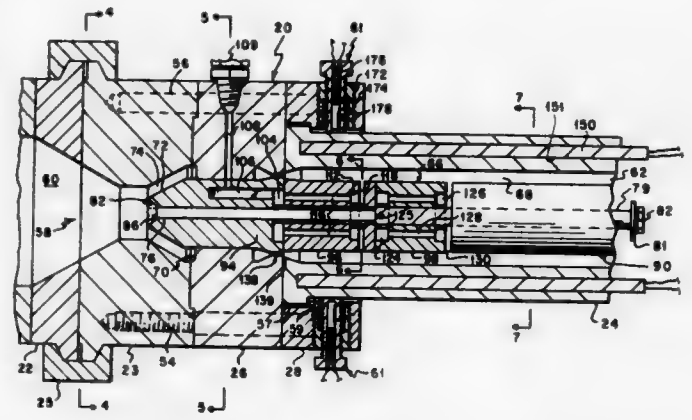
Filed May 20, 1983, Ser. No. 496,712
Int. Cl.³ B29F *3/08*
U.S. Cl. 264—173 **2 Claims**

1. A process for producing thermoplastic pipe comprising:

(a) transporting an annular stream of thermoplastic material through an annular extrusion passageway, a downstream annular portion of the extrusion passageway having a radially movable outer wall;

(b) radially moving the outer wall by heat expansion of an element thereagainst to change the thickness of an arcuate section of the stream;

(c) selectively heating an arcuate section of the passageway to change the final extruded thickness of the stream of thermoplastic material transported in proximity to the heated section, the selectively heated section positioned diametrically across the annular passageway from the section of the outer wall expanded against; and



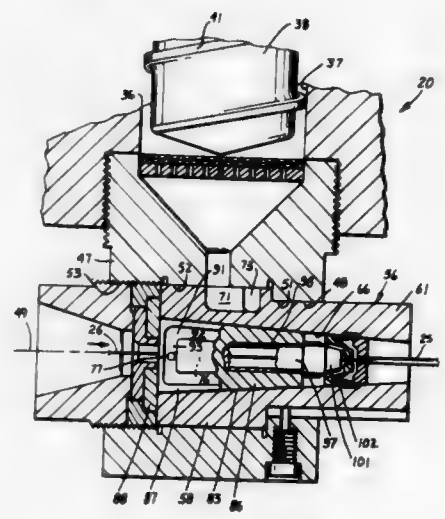
(d) commonly controlling the heating of the expansion element and the heating of the passageway to change the resulting thickness of an arcuate section of the stream.

4,512,944

METHODS OF AND APPARATUS FOR INSULATING A CONDUCTOR WITH A PLASTIC MATERIAL

Greg Astfalk, Levittown, Pa.; Timothy S. Dougherty, Roswell, Ga., and Montri Viriyayuthakorn, Trenton, N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 23, 1983, Ser. No. 507,262
Int. Cl.³ B29F *3/10*
U.S. Cl. 264—174 **16 Claims**



1. A method of extrusion covering a conductor with a plastic material, said method comprising the steps of:

advancing a conductor along a path of travel through a core tube which is positioned in a cavity of a die and through a passageway which connects the cavity with an exit orifice of the die;

providing a supply of a plastic material at a location which is spaced from the path of travel; and

causing the plastic material to be moved from the supply radially inwardly toward the conductor through a disc-like flow passage which is disposed concentrically about and perpendicularly to the path of travel, the flow passage having a width which is sufficiently small to minimize the distance along the path of travel through which the core tube can be moved before it engages a wall that defines the die and a length which is normal to the path of travel and which cooperates with the width to provide a uniform distribution of the plastic material circumferentially about the conductor adjacent to its entrance into the passageway and to dissipate stresses which have been induced in the plastic material.

8. An apparatus for extrusion covering a conductor with a plastic material, said apparatus comprising:

a die which includes a cavity and an exit orifice which communicates with said cavity through a passageway;

a core tube which is positioned within said die cavity;

moving means for advancing a conductor along a path of travel through the core tube, past an entrance of said passageway and through said passageway and said exit orifice of said die;

means for providing a supply of a plastic material at a location which is spaced from the path of travel; and

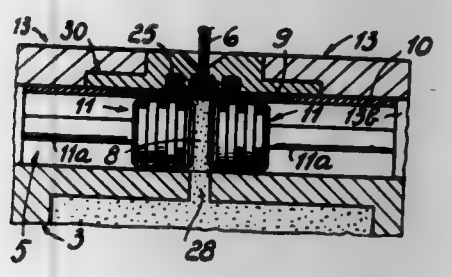
passage means for causing the plastic material to be directed from the supply radially inwardly toward the conductor, said passage means being disposed concentrically about and perpendicularly to the path of travel and having a width which is sufficiently small to minimize the distance along the path of travel through which the core tube can be moved before it engages a wall that defines the die and a length normal to the path of travel, the length and width being sufficient to provide a uniform distribution of the plastic material circumferentially about the conductor adjacent to the entrance of said passageway and to dissipate stress which have been induced in the plastic material.

4,512,945

DEVICE AND METHOD FOR SPREAD APPLYING LIQUIDS, IN PARTICULAR GLUE OVER BOOK SPINES

Giovanni Viganó , Milan, Italy, assignor to PLASTIVER S.a.s. di Giovanni e Vittorio VIGANO & C., Ciserano-Zingonia, Italy

Filed Feb. 22, 1984, Ser. No. 582,478
Claims priority, application Italy, May 19, 1983, 21182 A/83
Int. Cl.³ B32B *3/00*
U.S. Cl. 264—263 **13 Claims**



1. A device for spread-applying liquids, in particular glue over the spines of books, comprising glue storage members, glue extruder members having a plurality of nozzles, and means of entraining and guiding said books adapted to move said books past said extruder members, with said spines facing said nozzles, characterized in that said extruder members comprise: at least one reservoir chamber in communication with said nozzles, at least one pressure element adapted to diminish and alternately augment the internal volume of said reservoir chamber, and at least one pair of containment lateral sides extending alongside the path of movement of said spines and defining a chamber located on the opposed side to said reservoir chamber relatively to said nozzles and adapted to receive both said spine of a book and adjacent edges thereof, and in that said containment lateral sides are movable toward and away from each other under control by a drive member and are engaged with said pressure element and movable together with said pressure element.

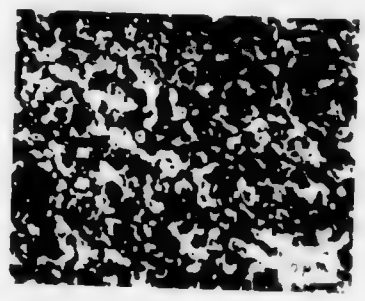
11. A method of spread-applying liquids, in particular glue over the spines of books, comprising an irrigation step carried out by extrusion, and characterized in that at the time of extrusion the area to be impregnated is enclosed between containment lateral sides, and in that said irrigation step by extrusion is alternated with a suction step, said steps being carried out by compressing and expanding a reservoir chamber containing said liquid.

4,512,946

MICROCOMPOSITE OF METAL BORIDE AND CERAMIC PARTICLES

Milivoj K. Brun, Ballston Lake; Minyoung Lee, and Lawrence E. Szala, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,784
Int. Cl.³ C04B *35/60*
U.S. Cl. 264—332 **14 Claims**



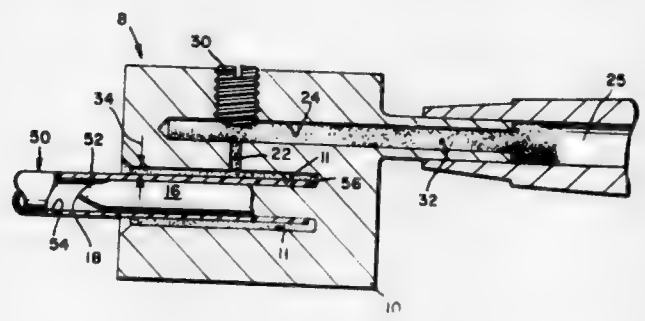
1. A process for producing a polycrystalline microcomposite consisting essentially of a continuous interconnecting phase of a boride of a metal selected from the group consisting of hafnium, niobium, tantalum, titanium, vanadium, zirconium and mixtures thereof and a phase of ceramic particles, said phases being distributed at least significantly uniformly in said microcomposite, said microcomposite having a density greater than 95% of the theoretical density for said microcomposite, which consists essentially of forming a particulate mixture of boron, a hydride of a metal selected from the group consisting of hafnium, niobium, tantalum, titanium, vanadium, zirconium and mixtures thereof, and a ceramic powder, hot pressing the particulate mixture under a pressure of at least about 200 psi at a temperature ranging from about 1200° C. to about 2000° C. decomposing said hydride of said metal producing said metal and by-product gas which vaporizes away and reacting said metal with said boron producing the boride of said metal as a continuous interconnecting phase, said continuous metal boride phase encapsulating at least about 20% by volume of said ceramic particles and either encapsulating or being intermixed with the balance of said ceramic particles, said process having no significant effect on said ceramic particles, said continuous interconnecting metal boride phase ranging from about 20% by volume to about 80% by volume of said microcomposite and the balance of said microcomposite consisting essentially of particles of said ceramic.

4,512,947

METHOD AND APPARATUS FOR APPLYING SOLVENT TO TUBING, OTHER CYLINDRICAL OBJECTS OR OTHER FLEXIBLE MATERIAL

Charles Wyle, Los Angeles, and Donald M. Shea, Torrance, both of Calif., assignors to Charles Wyle Engineering Corporation, Torrance, Calif.

Filed May 5, 1983, Ser. No. 491,740
Int. Cl.³ B29C *27/00*
U.S. Cl. 264—343 **40 Claims**



1. An apparatus for applying a solvent to the external surface of an object comprising:

a. a housing member;
b. a longitudinal internal chamber extending within said housing member;
c. the cross-section of said internal chamber being slightly larger than the cross-section of said object to which solvent will be applied;
d. the surface of said internal chamber containing a hole;
e. said housing member further containing a reservoir feed chamber which is connected to a supply reservoir;
f. a passage connecting said reservoir feed chamber to said hole in the surface of said internal chamber; and
g. said supply reservoir containing a solvent;
h. whereby when said object is inserted into said internal chamber, said solvent is fed under pressure by feeding means from said supply reservoir to said reservoir feed chamber, then through said passage and out said hole in the surface of said internal chamber and onto the external surface of said object such that capillary action resulting from the close distance between the object and internal chamber wall will cause said solvent to spread along and around the entire circumference of said object in the area adjacent said hole.

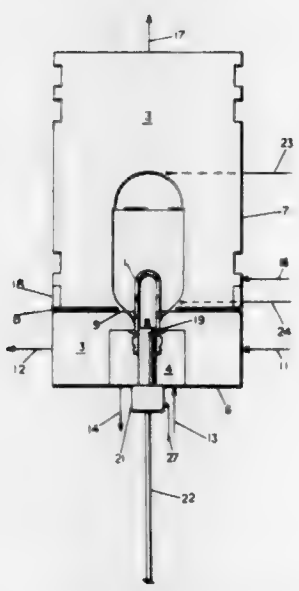
17. The method of applying solvent to the external surface of an object comprising:
a. inserting said object into a chamber contained within a housing member such that only a small gap exists between the external surface of the object and the internal surface of said chamber; and
b. feeding solvent under pressure from a supply reservoir to an opening in the surface of said chamber such that solvent is spread onto the external surface of said object;
c. whereby capillary action resulting from the close distance between the object and internal chamber surface will cause said solvent to spread along and around the entire circumference of said object in the area adjacent said opening.

4,512,948

METHOD FOR MAKING POLY(ETHYLENE TEREPHTHALATE) ARTICLE

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 3, 1982, Ser. No. 354,473
Int. Cl.[3] B29C *17/07*
U.S. Cl. 264—521 7 Claims



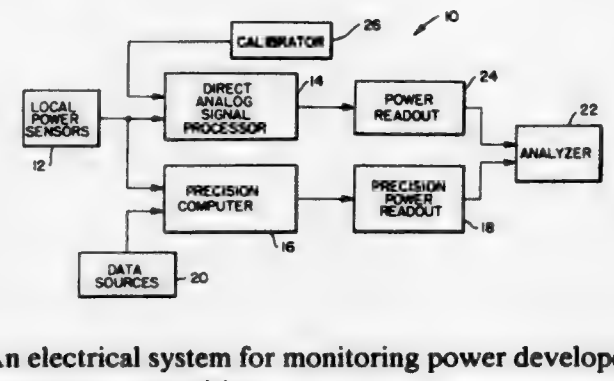
1. A method for making a high density, partially crystalline, biaxially oriented, heat set, polyethylene terephthalate hollow container, the container having a body with oriented sidewalls, the method comprising the steps of:
A. providing by blow molding a hollow article with oriented sidewalls,
B. while the article is still under a shrinkage reducing pressure, increasing the density of the oriented sidewalls to at least about 1.391 g/cc by heating the sidewalls to a heat setting temperature equivalent to a temperature of about 220° C. to 250° C. to provide the density of at least about 1.391 g/cc,
C. quenching the sidewalls while still under a shrinkage reducing pressure to provide the article with a shrinkage of less than about 5% of the volume and an onset of shrinkage temperature of at least about 105° C., the quenching being done at a temperature equivalent to that of about room temperature to 180° C. at a high heat setting temperature of 240° C., about 85° to 160° C. for a heat setting temperature of about 230° C., and about 120° C. to 150° C. for a lower heat setting temperature of about 220° C.

4,512,949

POWER PERFORMANCE MONITORING SYSTEM FOR NUCLEAR REACTOR FUEL CORE

Robert D. Smith, Bethesda, Md., assignor to Scandpower, Inc., Bethesda, Md.

Division of Ser. No. 229,797, Jan. 30, 1981, Pat. No. 4,411,858.
This application Jul. 7, 1983, Ser. No. 511,683
Int. Cl.[3] G21C *17/00*
U.S. Cl. 376—247 2 Claims



1. An electrical system for monitoring power developed in a nuclear reactor comprising:
sensors which generate heat in response to gamma radiation from fission products further generating electrical signals that are directly related to linear power generation rate of the fuel rods in said reactor;
a direct analog signal processor receiving said electrical signals from said sensors, said direct analog signal processor being controlled by an on line calibrator;
a precision computer receiving the same said electrical signals from said sensors, said precision computer having access to stored data sources on individual sensor precalibration and reactor condition parameters, said precision computer processing said signals and data into correct precision power signals;
a continuous power readout receiving an analog signal from said direct analog signal processor;
a precision power readout receiving a precision power signal from said precision computer; and
an analyzer which receives signals from said precision power readout and said continuous power readout for converting said signals to fuel failure forecasts and power distribution recommendations for failure avoidance purposes.

4,512,950

LEAD ALLOY SOFT SOLDER CONTAINING RADIOACTIVE PARTICLES USED TO MAKE MORE RELIABLE SEMICONDUCTOR DEVICES

Naoyuki Hosoda, Osaka; Naoki Uchiyama, and Ryusuke Kawanaka, both of Toyonaka, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

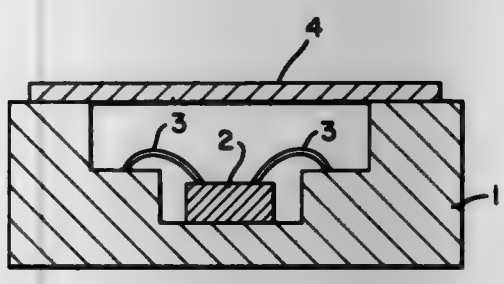
PCT No. PCT/JP83/00065, § 371 Date Oct. 31, 1983, § 102(e) Date Oct. 31, 1983, PCT Pub. No. WO83/03163, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 2, 1983, Ser. No. 552,038

Claims priority, application Japan, Mar. 2, 1982, 57-32678

Int. Cl.[3] B32D *15/02*

U.S. Cl. 420—563 2 Claims



1. A soft solder of Pb alloy for semiconductor devices that contains 1 to 65 wt% of Sn or In or both, the balance being Pb and incidental impurities which include less than 50 ppb of radioisotopes and the count of radioactive alpha-particles being not more than 0.5 CPH/cm^2.

4,512,951

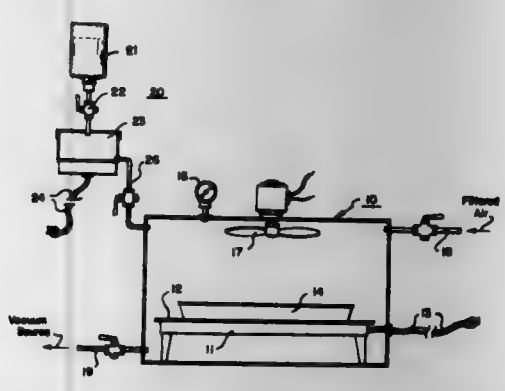
HYDROGEN PEROXIDE LIQUID FILM STERILIZATION METHOD

Edward Koubek, Annapolis, Md., assignor to American Sterilizer Company, Erie, Pa.

Continuation of Ser. No. 358,435, Mar. 15, 1982, abandoned, which is a continuation of Ser. No. 221,426, Dec. 30, 1980, abandoned. This application Aug. 4, 1983, Ser. No. 520,146

Int. Cl.[3] A01N *1/00*

U.S. Cl. 422—33 7 Claims



1. A method of liquid-contact sterilization which comprises:

vaporizing from an aqueous solution of hydrogen peroxide a gaseous vapor consisting of hydrogen peroxide and water vapor;

passing the said gaseous vapor into an evacuated sterilization zone and into contact therein with an article to be sterilized;

maintaining the article at a temperature below the dew point of the entering vapor so that aqueous hydrogen peroxide solution is condensed out of that said vapor in contact with the said article as a layer of liquid thereon; and

maintaining the said film of liquid on the article for a predetermined period to effect sterilization of the article.

4,512,952

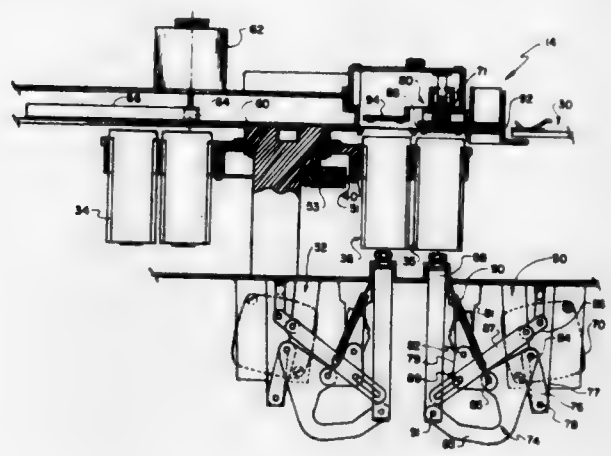
APPARATUS FOR STORING AND DISPENSING ANALYSIS SLIDES

Douglass L. Blanding, Rochester, and Martin F. Muszak, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,193

Int. Cl.[3] G01N *35/00*

U.S. Cl. 422—63 11 Claims



1. In a chemical analyzer for measuring a characteristic of a sample fluid wherein the fluid is deposited on an analysis slide which is analyzed after an appropriate period of time, the analyzer including

means for supporting a plurality of stacks of slides adjacent each other, each of said stacks having a longitudinal axis;

means for removing a slide from a selected stack, said removing means being movable along a path generally transverse to said axes; and

means for positioning said selected stack and said removing means relative to each other and to said supporting means such that a slide from the selected stack is in a position to cooperate with said removing means;

the improvement wherein

(a) said supporting means mounts said stacks in concentric rings with said slides of each stack being movable into and out of the plane of said removing means path, at least some of the stacks of one of said rings being positioned so that, when such one ring stacks are moved into the plane of said removing means path, they block the slides of a stack of the other ring from being removed by said removing means,

(b) said positioning means comprise means for selectively moving said selected stacks into the plane of said path,

(c) and movably mounted track means are cooperatively positioned with respect to the stacks of said one ring to provide a pathway for removal of slides from the stacks of said other ring when said one ring stacks are moved out of the plane of said removing means path, said track means being mounted to move along the same axis as, and in response to the movement of, said stacks of said one ring.

4,512,953

ANALYZING APPARATUS FOR THE ANALYSIS OF LIQUID SAMPLES

Hermann Marsoner; Christoph Ritter, both of Graz; Erich Kleinhappl, Kumberg, and Winfried Strutz, Graz, all of Austria, assignors to AVL AG, Schaffhausen, Switzerland

Filed May 21, 1982, Ser. No. 380,874

Claims priority, application Austria, May 25, 1981, 2343/81

Int. Cl.[3] G01N *35/00, 35/08*

U.S. Cl. 422—67 3 Claims

1. An analyzing apparatus for the analysis of liquid samples which comprises

a measuring means for measuring properties of liquid sam-

ples supplied thereto and for providing measurement signals representative of the measured properties,

an evaluation unit to which said measurement signals are fed, said evaluation unit acting to evaluate said measurement signals and display the evaluated results,

a sample input device, said sample input device including a single sample input unit and a serial sample input unit,

a first sample pipe connected between said single sample input unit and said measuring means for conveying single liquid samples from said single sample input unit to said measuring means,

a first control valve located in said first sample pipe,

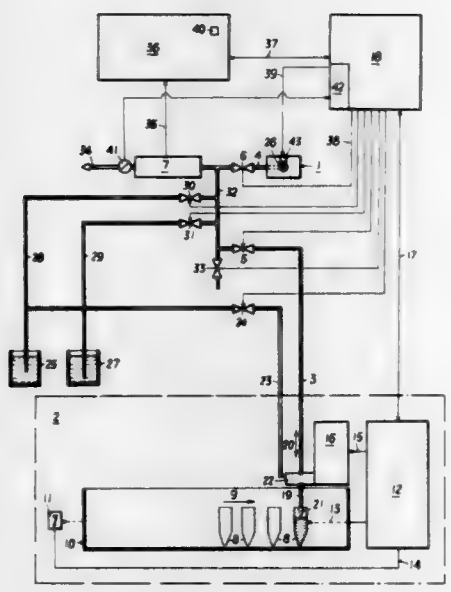
a second sample pipe connected between said serial sample input unit and said measuring means for conveying liquid samples from said serial sample input unit to said measuring means,

a second control valve located in said second sample pipe,

a central control unit connected to said first control valve and to said second control valve,

a switch means connected to said central control unit, and

a first sensor positioned downstream of said measuring



means for sensing the passage of each liquid sample through said measuring means and concurrently sending a corresponding first signal to said central control unit,

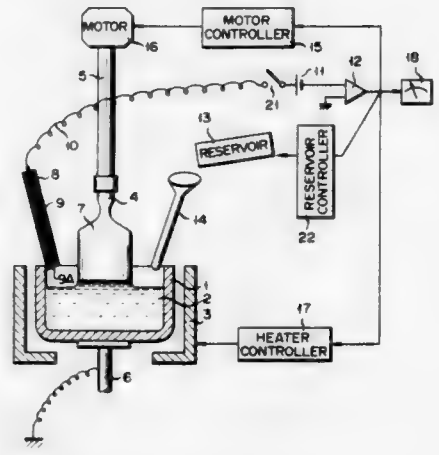
said central control unit having a first operative mode wherein it generates a second and third signal to respectively close said first control valve and open said second control valve to allow only liquid samples from said serial sample input unit to pass to said measuring means and a second operative mode wherein it generates a fourth and fifth signal to respectively close said second control valve and open said first control valve to allow only liquid samples from said single sample input unit to pass to said measuring means, and said switch means, when activated, generates a sixth signal to activate said central control unit to generate a seventh signal to stop the placing of liquid samples from said serial sample input unit into said second sample pipe and to change from said first operative mode to said second operative mode when said central control unit receives an eighth signal from said first sensor that all liquid samples which were in said second sample pipe when said switch means was activated have passed said measuring means.

4,512,954

CRYSTAL GROWING APPARATUS

Toshiro Matsui, Hyogo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 10, 1983, Ser. No. 521,826
Claims priority, application Japan, Aug. 19, 1982, 57-143707
Int. Cl.³ C30B *15/20*
U.S. Cl. 422—106 **4 Claims**



1. A crystal growing apparatus for growing a crystal by preparing a crystal raw material melt in a crucible, bringing a seed crystal into contact with the melt and pulling the seed crystal, comprising:

an electrode arranged above the melt at a distance therefrom,

means for detecting a change in a resistance of an atmosphere between said electrode and the melt, and

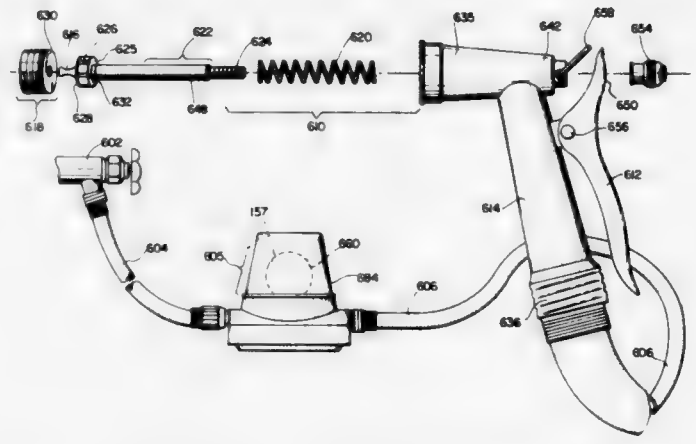
means for controlling a pulling speed of the crystal in accordance with a detection output from said detecting means, thereby controlling a dimension of the crystal.

4,512,955

APPARATUS FOR WATER TREATMENT

Kenji Etani, P.O. Box 188, West Townsend, Mass. 01474

Continuation-in-part of Ser. No. 40,302, Apr. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 934,425, Aug. 17, 1978, abandoned, which is a continuation of Ser. No. 717,514, Aug. 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,536, Jun. 30, 1975, abandoned. This application Feb. 18, 1982, Ser. No. 349,920
Int. Cl.³ B05B *7/24*
U.S. Cl. 422—266 **10 Claims**



1. Apparatus for adding chemicals in small amounts to water comprising:

a. a supply of water at main pressure,

b. an intermediate-velocity chamber,

c. a water delivery device,

d. a hose between said supply and said chamber,

e. a conduit between said chamber and said device,

f. a feeder in the form of a compact, stiff but flexible shell of

waterproof plastic of substantially neutral bouyancy adapted to be contained within said chamber, and

g. a dose of said chemical within said feeder, wherein:

(i) said supply, hose, chamber, conduit, and device are interconnected to comprise a water-and-pressure-tight channel from said supply through said hose, chamber, conduit, and device, and

(ii) said feeder is perforated by a number of small feed holes, selected to have a number, size, and distribution to provide a desired rate of feeding of said chemical, and is small enough and close enough to spherical in shape and to neutral bouyancy so that a normal flow rate through said chamber said feeder is free randomly to turn and move about, thereby to feed said chemical proportionately to said rate, wherein

(iii) said device is a nozzle providing quick-acting control and cut-off of the flow of water through said channel,

(iv) said feeder encloses trapped within it a bubble of gas, and

(v) the amount of said entrapped gas, and the size of said feed holes is selected to control water hammering, and to provide a desired size shot of chemical to the target area of said nozzle with each cycle of said control, thereby providing a second mode of operation of the feeder.

4,512,956

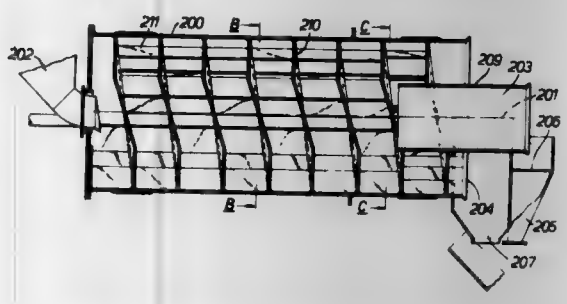
DIGESTER

Lee F. Robinson, 3 Athenaeum Hall, Vale of Health, London NW3 1AP, England; Francesco Salimbeni, Riva A Caccia 1, 6900 Lugano, Switzerland; Guiliano Porcari, 17, Via F. 20R21, 6900 Paradiso, Switzerland, and Mario Dente, Corso Sempione 38, Milan, Italy

Continuation-in-part of Ser. No. 330,600, Dec. 13, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 551,168

Int. Cl.³ B01D *11/02*

U.S. Cl. 422—270 **12 Claims**



1. A rotary digester for digesting solids comprising:

an outer shell;

means for entry of liquids and solids to be digested at one end of the shell;

a tubular, axially extending outlet at the other end of the shell for discharge of liquids;

a solids outlet at the same end as said liquids outlet, surrounding, but separated from, the liquids outlet; and

a screw which surrounds the tubular liquids outlet to urge solids to and through the solids outlet, which screw is secured at its outer periphery to the shell.

4,512,957

METHOD FOR THE SEPARATION OF URANIUM ISOTOPE COMPOUNDS ALREADY CONVERTED ISOTOPE-SELECTIVELY

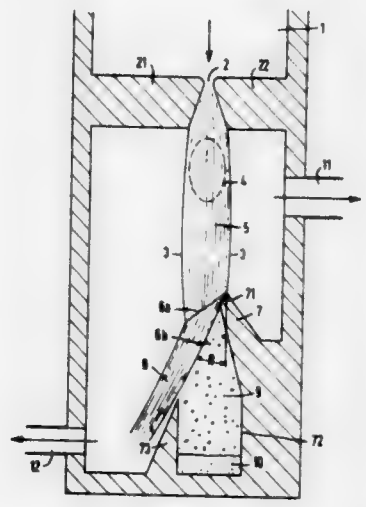
Hans-Joachim Niemann, and Josef Sprehe, both of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 92,643, Nov. 8, 1979, abandoned. This application Oct. 21, 1981, Ser. No. 313,617

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850648

Int. Cl.³ B01D *59/00*; **C01G** *43/06*

U.S. Cl. 423—3 **1 Claim**



1. Method for the separation of $U^{235}F_5$ within a gas jet having supersonic velocity and which gas jet contains a carrier gas, a reaction partner, gaseous $U^{238}F_6$ and condensed $U^{235}F_5$ produced by a preceding laser radiation of the gas jet chemically transforming $U^{235}F_6$ in the jet with the aid of the reaction partner to $U^{235}F_5$, which comprises applying a compression shock to the gas jet which contains the condensed $U^{235}F_5$ by means of a single rigid narrow surface which extends into the edge region of the gas jet and forms an acute angle of 10° to 30° with the direction of the gas jet, said compression shock effecting a deflection of the gaseous $U^{238}F_6$ molecules without essentially deflecting said condensed $U^{235}F_5$, and continuing the condensed $U^{235}F_5$ in the direction of the non-deflected gas jet to a collecting vessel whose opening is bounded at one side by the rigid narrow surface and downstream from the rigid narrow surface at the other side by a peeling-off edge which separates the deflected gas jet from the condensed $U^{235}F_5$.

4,512,958

METHOD OF RECOVERING MOLYBDENUM OXIDE

Günter Bauer, Fürth, and Joachim Eckert, Zirndorf, both of Fed. Rep. of Germany, assignors to GfE Gesellschaft für Elektrometallurgie mbH, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,510

The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.

Int. Cl.³ C01G *39/02*

U.S. Cl. 423—55 **1 Claim**

1. A method of producing molybdenum oxide which comprises the steps of:

(a) forming an aqueous suspension of a molybdenum sulfide impurity containing concentrate having a mean particle size in the range of 20 microns to 90 microns;

(b) subjecting the suspension produced in step (a) to an elevated oxygen partial pressure and an elevated temperature in an autoclave to oxidize the molybdenum sulfide of said concentrate to molybdenum oxide and produce another suspension, while maintaining the suspension density during oxidation within a range between 100 and 150 g of solids per liter;

(c) controlling the temperature and pressure in said auto-

clave by monitoring the temperature therein and adjusting the suspension density of the suspension fed from step (a) to said autoclave in response to the temperature in said autoclave;

(d) filtering said other suspension to recover molybdenum oxide therefrom and produce a first filtrate containing sulfuric acid;

(e) neutralizing said first filtrate at least partially by adding lime or limestone thereto to produce a third suspension containing calcium sulfate;

(f) filtering said third suspension to recover calcium sulfate and produce a second filtrate;

(g) recirculating said second filtrate to step (a) as the recirculated liquid, step (c) responding to a fall in temperature in said autoclave by increasing the suspension density and to a rise in temperature in said autoclave by adding water in step (a) to the suspension formed therein; and

(h) additionally controlling temperature and pressure in said autoclave at least in part for brief fluctuations in temperature in the autoclave by varying the oxygen partial pressure in said autoclave so as to reduce the temperature by reducing the oxygen partial pressure, the temperature in said autoclave being maintained between substantially 230° and 245° C. and the oxygen partial pressure in said autoclave being maintained between 1 and 5 bar.

4,512,959

METHOD FOR THE RECOVERY OF ALUMINA

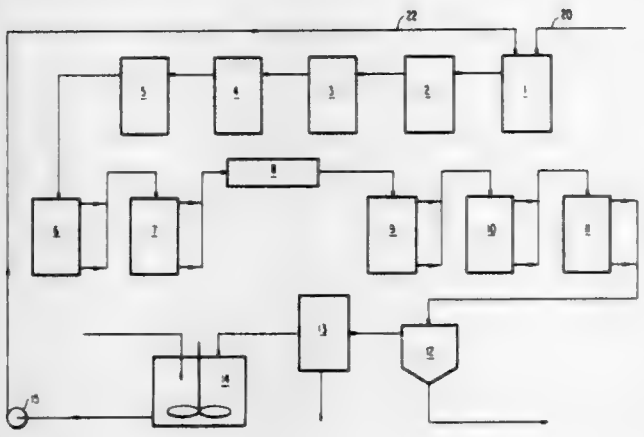
Horst Pohland, Limburgerhof, Fed. Rep. of Germany, and Arthur J. Tielens, Zurich, Switzerland, assignors to Alcoa Chemie GmbH, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,402

Claims priority, application European Pat. Off., Sep. 2, 1982, 82 108086.8

Int. Cl.³ C01F *7/06*

U.S. Cl. 423—121 **25 Claims**



1. Continuous process for the extraction of alumina hydrate from bauxite according to the Bayer process wherein a supersaturated sodium aluminate solution containing dissolved alumina hydrate is formed by wet decomposition of ground bauxite with sodium hydroxide and alumina hydrate is precipitated from the supersaturated sodium aluminate solution in coarse grained form in the presence of seed crystals, comprising:

(a) introducing a suspension of fine seed crystals into the first agglomerator of a cascade of series connected agglomerators, conducting the supersaturated sodium aluminate solution which has been adjusted to have a sodium hydroxide concentration of 200 to 300 g/l, calculated as Na_2CO_3, through the cascade of series connected agglomerators at temperatures from 80° to 65° C. and precipitating part of the dissolved alumina hydrate from the supersaturated sodium aluminate solution to form agglomerates, with the first agglomerator having a solids content of 10 to 50 g/l, calculated as Al_2O_3;

(b) thereafter conducting the sodium aluminate solution containing agglomerates from the last agglomerator through a first cascade of series connected crystallizers, with each crystallizer having an underflow and an overflow which comes from a clarification zone of each crystallizer, and precipitating part of the dissolved alumina hydrate in the first crystallizing cascade in such a manner that at least 80% of the fill volume of each crystallizer has a high solids content and the overflow, which comes from the clarification zone, has a solids content of no more than 20 g/l, with underflow being introduced into the next crystallizer of the first cascade only after being mixed together;

(c) combining the underflow and overflow from the last crystallizer of the first crystallizer cascade to form a combined discharge and cooling the combined discharge to a temperature between 55° C. and 45° C.;

(d) precipitating a part of the dissolved alumina hydrate in the cooled combined discharge in a second cascade of series connected crystallizers, with each crystallizer having an underflow and an overflow which comes from a clarification zone of each crystallizer, in such a manner that at least 80% of the fill volume of each crystallizer of the second cascade has a high solids content and the overflow, which comes from the clarification zone has a solids content of no more than 20 g/l, with underflow and overflow being introduced into the next crystallizer of the second cascade only after being mixed together; and

(e) withdrawing and combining the underflow and overflow of the last crystallizer of the second crystallizer cascade into a crystal suspension of alumina hydrate solids, and fractionating the withdrawn crystal suspension into fine seed crystals and coarse product crystals.

4,512,960

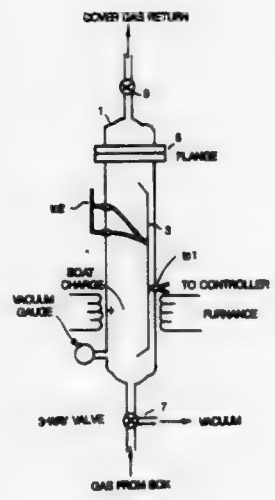
METHOD OF GAS PURIFICATION AND SYSTEM THEREFOR

Raphael Szwarc, Largo, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 29, 1983, Ser. No. 566,621

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—219 **11 Claims**



1. In a method of purifying inert gases by contacting said, gases with a gettering composition to remove water, oxygen and nitrogen, the improvement wherein said contacting is conducted with a composition of one of $Li_x B_{1-x}$, LiAl and LiSi, and wherein $0<x<1$, said LiAl composition is 10–30 weight percent lithium, and said LiSi composition is 34–54 weight percent lithium.

4,512,961

DEALUMINATION OF FAUJASITE-TYPE ZEOLITES USING ION EXCHANGE RESINS

Julius Scherzer, Anaheim, and Adrian P. Humphries, Claremont, both of Calif., assignors to Harshaw/Filtrol, Oakland, Calif.

Filed Aug. 22, 1983, Ser. No. 525,511
Int. Cl.[3] C01B *33/28*
U.S. Cl. 423—328 3 Claims

1. In the process of producing a dealuminated crystalline alumino-silicate zeolite of the Y-type by hydrothermally treating the zeolite to transfer a portion of its framework aluminum content to a nonframework position, followed by treatment to reduce nonframework aluminum content, carrying out the treatment to reduce nonframework aluminum content by a process comprising the steps of

(a) preparing an aqueous slurry of the hydrothermally treated zeolite,

(b) contacting the slurry with a strong acid cation exchange resin of the sulfonated polystyrene type in the hydrogen form in a resin to zeolite weight ratio ranging from 3:1 to 5:1 at a temperature of 100 degrees C. and for a time ranging from 1 to 4 hours, and

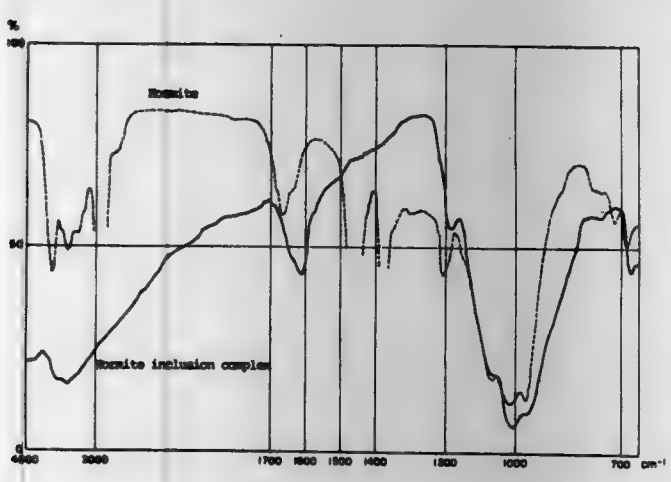
(c) recovering zeolite of increased silica to alumina ratio, reduced sodium content and high structural strength.

4,512,962

HORMITE INCLUSION COMPLEX WITH ADSORBED SULPHUR OR SULPHUR DONOR

Kazumi Matsuura, and Takeo Wada, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 13, 1983, Ser. No. 560,791
Claims priority, application Japan, Dec. 27, 1982, 57-230726
Int. Cl.[3] C03C *37/07;* C08K *5/36, 9/12*
U.S. Cl. 423—331 6 Claims



1. A hormite inclusion complex which comprises hormite having adsorbed and/or supported thereon at least one member selected from the group consisting of sulphur and a sulphur-donating agent.

4,512,963

PALLADIUM COMPOUND SYNTHESIS PROCEDURE

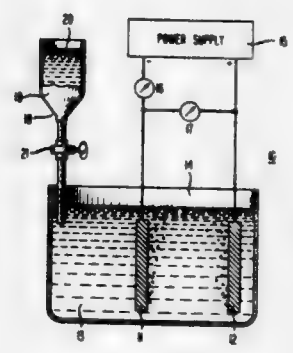
Joseph A. Abys, Bridgewater, and Yutaka Okinaka, Madison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 448,514, Dec. 10, 1982, Pat. No. 4,468,296. This application Jun. 14, 1984, Ser. No. 620,671
Int. Cl.[3] C25D *3/52*
U.S. Cl. 423—387 13 Claims

1. A process for synthesizing solid form of palladium diammine hydroxide from palladium diammine compound by a procedure comprising the steps of

a. dissolving the palladium diammine compound in aqueous ammonium hydroxide to form a first solution,

b. treating the first solution with an OH-form of anion exchange resin to form a second solution,



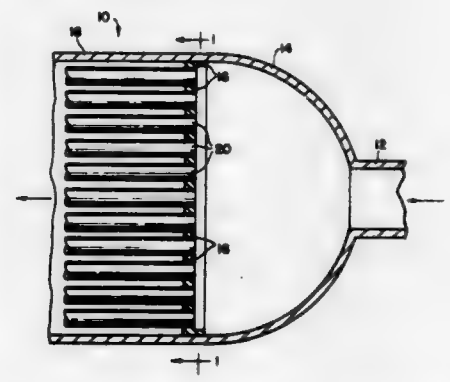
c. freeze-drying the second solution to obtain a solid form of palladium ammine hydroxide.

4,512,964

METHOD FOR FORMING NITRIC OXIDE FROM AMMONIA

Costas G. Vayenas, Wellesley Hills, and Catherine E. Teague, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 315,673, Oct. 27, 1981, abandoned, which is a continuation of Ser. No. 171,679, Jul. 24, 1980, abandoned. This application Mar. 21, 1984, Ser. No. 591,893
Int. Cl.[3] C01B *21/26*
U.S. Cl. 423—403 1 Claim



1. The process for oxidizing ammonia to form nitric oxide which comprises passing a feed gas containing ammonia and oxygen at an oxygen to ammonia volume ratio larger than 0.5 in contact with a stainless steel catalyst comprising stainless steel-316 containing 23% chromium, 18% nickel, 2% molybdenum, 0.5% carbon, the balance iron at a temperature between about 500° C. and 1000° C. and recovering nitric oxide produced.

4,512,965

HYDROGEN STORAGE MATERIALS OF HYPERSTOICHIOMETRIC ALLOYS

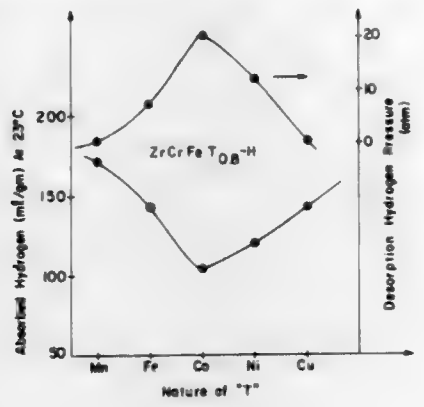
William E. Wallace, and Faiz Pourarian, both of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 21, 1983, Ser. No. 553,804
Int. Cl.[3] C22C *30/00;* C01B *6/00*
U.S. Cl. 423—644 11 Claims

1. Alloys of elements in an atomic ratio is expressed by the formula

$$ZrCrFeT_x$$

wherein T is selected from the group consisting of manganese, iron, cobalt, nickel and copper and wherein x has a value



between 0.1 and 1.0 except when T is iron and then x has a value between 0.1 and 0.6, and their hydrides.

4,512,966

HYDRIDE PRODUCTION AT MODERATE PRESSURE

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 2, 1983, Ser. No. 557,206
Int. Cl.³ C01B *6/26*
U.S. Cl. 423—644 **25 Claims**

1. A two stage process for the production of $NaAlH_4$, said process comprising the steps of:

(a) pressure hydrogenating sodium or sodium hydride with aluminum in a tertiary amine or hydrocarbon reaction medium at about 700–1500 psig at 130°–170° C. in the presence of a catalyst provided by adding an aluminum alkyl, so as to form Na_3AlH_6; and

(b) then reducing the temperature to 80°–120° C. while continuing pressure hydrogenation so as to convert the Na_3AlH_6 to $NaAlH_4$ at a substantially increased reaction rate compared to the reaction rate at the previous temperature.

4,512,967

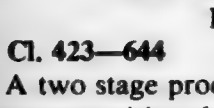
CATIONIC TECHNETIUM COMPLEXES USEFUL AS RADIODIAGNOSTIC AGENTS

Karen E. Linder, Somerville, Mass., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 2, 1982, Ser. No. 404,372
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **20 Claims**

1. A cationic lipophilic complex of technetium wherein all of the coordination positions of the technetium atom are filled with a donor atom having a pair of electrons available for forming a coordinate bond with technetium to form said cationic complex, said donor atoms being provided by ligands or salts thereof, said ligands having the following structure:

(A)



wherein:

i is an integer from 1 to 6;

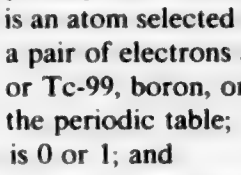
R, R^1, R^2, R^3, R^4, R^5 and R^6 are each independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups, and R plus R^i may be taken together to form a cyclic compound or separately to form a linear compound;

Y^1, Y^2, Y^3, Y^4, Y^5 and Y^6 are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A^1, A^2, A^3, A^4, A^5 and A^6 are each, independently, a donor atom having a free electron pair available for complexing with Tc-99m or Tc-99 to form a cationic complex; and

k_1, k_2, k_3, k_4, k_5 and k_6 are each independently zero or one;

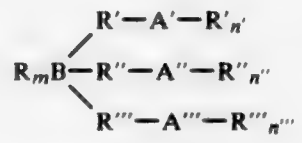
(B)



wherein:

R, R′ and R″ are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocylcloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

X and X′ are saturated or unsaturated alkyl groups; A, A′ and A″ are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex; t and t′ are independently 0 or 1; n is 0, 1 or 2; and n′ and n″ are independently the integer 1 or 2; or



wherein

R, R′, R″ and R‴ are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocylcloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A′, A″ and A‴ are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex;

B is an atom selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99, boron, or from the elements of Group IV A of the periodic table;

m is 0 or 1; and

n′, n″ and n‴ are independently the integer 1 or 2.

4,512,968

ORAL COMPOSITIONS

Noboru Komiyama, Tokyo; Hiroshi Itoi, Kamagaya, and Hiroshi Sano, Hachioji, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 555,111
Claims priority, application Japan, Nov. 30, 1982, 57-210817; Feb. 18, 1983, 58-24853
Int. Cl.³ A61K *9/68, 7/16, 7/22, 31/715*
U.S. Cl. 424—48 **10 Claims**

1. A composition for reducing dental caries, periodontoclasia and mouth odor, comprising an amount of at least 0.01 wt.% of a material selected from the group consisting of chitin, chitosan, pharmaceutically acceptable acid salts of chitosan and mixtures thereof, effective to reduce the incidence or severity of dental caries, periodontoclasia and mouth odor, said material being compounded in a dentifrice, toothpaste, tooth powder, liquid dentifrice, mouth rinse, oral freshener or chewing gum composition.

4,512,969

COMPOSITIONS CONTAINING HYDROPHOBIC ADDENDA UNIFORMLY LOADED IN LATEX POLYMER PARTICLES

Tsang J. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 327,528, Dec. 4, 1981, abandoned, which is a continuation of Ser. No. 882,282, Feb. 27, 1978, Pat. No. 4,304,769, which is a division of Ser. No. 778,184, Mar. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 744,842, Nov. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 653,816, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 575,689, May 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 506,919, Sep. 17, 1974, abandoned. This application May 27, 1982, Ser. No. 382,741

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ A01K *31/78*

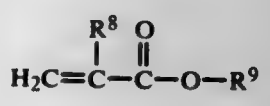
U.S. Cl. 424—81 **10 Claims**

1. A composition containing a continuous aqueous phase and loaded polymer particles having an average diameter of from 0.02 to 0.2 micron and consisting essentially of

(1) a loadable polymer consisting essentially of

(a) repeating units forming from 60 to 95 percent by weight of the polyumer derived from at least one of

(i) acrylate esters having the formula

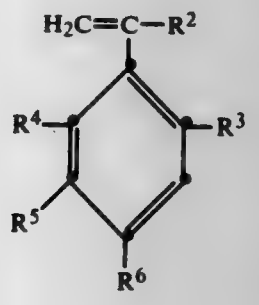


where

R^8 is hydrogen or methyl and

R^9 is lower alkyl having from 1 to 5 carbon atoms;

(ii) styrene-type monomers of the formula



where

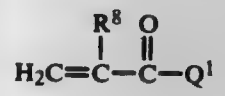
R^2 is hydrogen or methyl,

R^3, R^4 and R^6 are hydrogen or lower alkyl of from 1 to 5 carbon atoms,

R^5 is hydrogen or with R^4 constitutes the atoms necessary to complete a fused benzene ring or one of R^5 and R^6 is halomethyl and

(iii) vinyl acetate;

(b) repeating units forming from 5 to 15 percent by weight of the polymer derived from a hydrophilic ethenic monomer having a molecular weight of at most about 300 of the formula



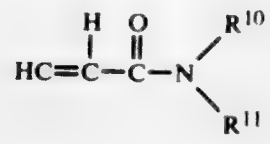
where

R^8 is as defined above,

Q^1 is —OM or a divalent organic radical which together with the carbonyl group of the formula forms an ester or amido linking group terminating in an ammonium or $-SO_3M$ solubilizing group and

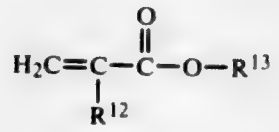
M is hydrogen, ammonium or alkali metal;

(c) repeating uinits forming from 0 to 30 percent by weight of the polymer derived from an acrylamide of the formula

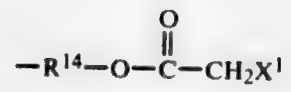


R^{10} and R^{11} are hydrogen or an alkyl or haloalkyl subtituent having from 1 to 5 carbon atoms;

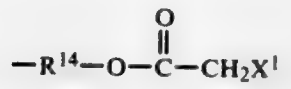
(d) repeating units forming from 0 to 10 percent by weight of the polymer derived from active methylene containing ethenic monomer exhibiting the formula



R^{12} is hydrogen, alkyl having from 1 to 12 carbon atoms or



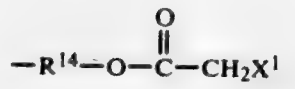
R^{13} is alkyl having from 1 to 10 carbon atoms, cycloalkyl having from 3 to 10 carbon atoms, phenyl or



R^{14} is alkylene having from 1 to 10 carbon atoms and

X^1 is cyano or alkylcarbonyl having from 1 to 8 carbon atoms,

provided that one and only one of R^{12} and R^{13} is always



(e) repeating units forming from 0 to 3 percent by weight of the polymer derived from a crosslinking monomer having a olecular weight of at most about 300 and having at least two independently polymerizable vinyl groups; and

(2) loaded into and distributed through said particles, a hydrophobic pesticide having a solubility in distilled water at 25° C. of less than 0.5 percent and capable of being dissolved in a water-miscible organic solvent, the weight ratio of the hydrophobic pesticide to said loadable polymer being from 1:3 to 1:1.

4,512,970

CHEMORECRUITINS OF LEUKOCYTES AND INFLAMED TISSUES

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max Planck Gesellschaft Zur Forderung der Wissenschaften, Gottingen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 357,880

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110561

Int. Cl.³ A61K *39/395, 37/02;* C07G *7/00;* C12P *21/00*

U.S. Cl. 424—85 **35 Claims**

1. Leukocyte derived chemorecruitin, characterized by the following properties:

(a) biological activities in vivo and in vitro:

specific induction of selective positive leukocytosis and-/or leftward shift reactions by recruitment of mature

and juvenile leukocytes from the bone marrow into the blood in vivo and in vitro;
positive mobilization of mature and juvenile leukocytes directly from the bone marrow in vitro (also in blood-free systems, for instance cell culture and salt solutions);
they are substantially free of other biological effects;
(b) physico-chemical properties:
no protein quaternary structure in the form of physically bound peptide subunits: each of the native proteins consists of only one peptide unit;
electrophoretic migration in acrylamide matrices at a pH of 7.40 is anodic;
soluble in aqueous media including in 15% ethanol at a pH value of at least 4.0 to 10;
constant temperature coefficient of solubility in ammonium sulfate solutions between −10° C. and +50° C.;
they contain, amongst others, the amino acids tyrosine, phenylalanine, alanine, glycine, lysine, valine, glutamic acid, arginine, leucine;
they adsorb reversibly in structure and biological activity on anion and cation exchangers, calcium phosphate gel and hydroxyapatite and can be subjected in native form to volume partition chromatography.

4,512,971

MITOGENS OF LEUKOCYTES AND INFLAMED TISSUES

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max Planck Gesellschaft Zur Forderung der Wissenschaften, Gottingen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,098
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110611
Int. Cl.³ A61K *39/395, 37/02;* C07G *7/00;* C12P *21/00*
U.S. Cl. 424—85 **37 Claims**

1. Leukocyte derived mitogens characterized by the following properties:
(a) biological activities in vivo and in vitro:
selective induction of division and differentiation (mitosis) of bone marrow or tissue leukocytes;
they are substantially free of other biological effects.
(b) physico-chemical properties:
electrophoretic migration in acrylamide matrices at a pH of 7.40 is anodic;
soluble in aqueous media including in 10% ethanol at a pH value of 4.0 to 10;
they adsorb reversibly in structure and biological activity on anion and cation exchangers, calcium phosphate gel and hydroxyapatite and can be subjected in native form to volume partition chromatography.

4,512,972

NASAL PREPARATION AND PROCESSES FOR THEIR PRODUCTION

Karl H. Schmidt-Ruppin, Arlesheim, Switzerland, assignor to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 164,642, Jun. 30, 1980, abandoned.
This application Aug. 24, 1981, Ser. No. 295,934
Int. Cl.³ A61K *39/145*
U.S. Cl. 424—89 **8 Claims**

1. A method of preventing infections caused by influenza A and B viruses of the respiratory tract, without inhibiting the formation of hemagglutinative serum antibodies against the virus, and without inhibiting plaque formation, which comprises applying into each nostril, up to seven days prior to infection, a preparation containing a prophylactically effective amount of krestin in a conventional medicinal formulation in order to protect the subject in the antibody-free latency period against infection by the same virus, to bridge the latency period of vaccination against influenza simultaneously with or directly after vaccination, or to ensure protection in the anti-body-free latency period without impairment of the antibody formation.

4,512,973

METHOD FOR OVERCOMING TRYPSIN INHIBITION

Mark S. Dennis, San Bruno; David A. Estell, Mountain View, and David R. Light, San Francisco, all of Calif., assignors to Genentech, Inc., San Francisco, Calif.

Filed Oct. 12, 1983, Ser. No. 541,208
Int. Cl.³ A61K *37/48;* A23L *1/20*
U.S. Cl. 424—94 **25 Claims**

1. A method for overcoming trypsin inhibition by soybean trypsin inhibitor (STI) in soy based foodstuffs, which method comprises treating the soybean meal used in said foodstuff with a proteolytically effective amount of starfish trypsin 1 (DIT_1) and with a proteolytically effective amount of supplementary proteolytic enzyme.

9. A method of overcoming trypsin inhibition by soybean trypsin inhibitor in a subject animal, which method comprises administering orally to said animal a proteolytically effective amount of, or a composition containing an proteolytically effective amount of, DIT_1 in a dosage form resistant to the digestive conditions of the stomach.

20. A composition suitable for confering the ability to inactivate STI in the intestinal tract of a subject animal, which composition comprises a proteolytically effective amount of DIT_1 in admixture with a pharmaceutically acceptable excipient.

25. A composition comprising soybean meal and a proteolytically effective amount of DIT_1, said soybean meal containing STI which has been substantially inactivated by proteolysis in the presence of the DIT_1.

4,512,974

TREATMENT OF PROTEIN MALNOURISHED SURGICAL PATIENTS

Lyle L. Moldawer, 1 E. Quinobequin Rd., Waban, Mass. 02169; George L. Blackburn, 100 Memorial Dr., Cambridge, Mass. 02142, and Bruce R. Bistrian, 189 Argilla Rd., Ipswich, Mass. 01938

Filed Dec. 8, 1982, Ser. No. 447,984
Int. Cl.³ A61K *35/16*
U.S. Cl. 424—101 **10 Claims**

1. The method of preparing a protein malnourished human for surgery comprising parenterally administering to a protein malnourished human prior to said surgery a sufficient amount of LEM to raise the body temperature of the protein malnourished human above normal during at least some of the time the protein malnourished human is undergoing surgery.

4,512,975

MACBECIN DERIVATIVES AND THEIR PRODUCTION

Tōru Hasegawa, Kawanishi; Masayuki Muroi, Suita, and Seiichi Tanida, Nagaokakyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 414,031, Sep. 2, 1982, Pat. No. 4,421,687.
This application Sep. 14, 1983, Ser. No. 532,051
Claims priority, application Japan, Sep. 26, 1981, 56-152644; Jun. 4, 1982, 57-96711
Int. Cl.³ A61K *35/74;* C12P *1/06*
U.S. Cl. 424—121 **1 Claim**

1. Antibiotic C-33196 E-4 or C-33196 E-4-R, which has the following properties:
(a) Antibiotic C-33196E-4:
(I) Melting point: 209°–210° C.
(II) Appearance: Yellow crystals
(III) Specific rotation: $[\alpha]_D^{25}+53°\pm5°$ (c=0.5, $CHCl_3$)
(IV) Elemental analysis (%): C, 63.14±0.5; H, 7.57±0.5; N, 5.26±0.5
(V) Mass spectrum (M^+): m/z 532
(VI) Ultraviolet absorption spectrum: λ_{max}^{MeOH} 276 nm±2

nm ($E_{1\ cm}^{1\%}$ 272±20); λ_{max}^{MeOH} 390 nm±2 nm ($E_{1\ cm}^{1\%}$ 33.5±5)

(VII) Infrared absorption spectrum, principal peaks (cm^{-1}): 1735, 1700, 1670, 1650, 1625, 1605, 1500, 1380, 1305, 1290, 1210, 1050

(VIII) Solubility: Sparingly soluble in petroleum ether, hexane, water; Soluble in chloroform, methylene chloride, toluene, diethyl ether; Readily soluble in acetone, ethyl acetate, methanol, dimethyl sulfoxide

(IX) Color reactions: Positive potassium permanganate test (decoloration); Negative ninhydrin, Ehrlich and Barton reactions

(X) Acidity, neutrality or basicity: Neutral

(XI) Estimated molecular formula: $C_{28}H_{40}N_2O_8$, or

(b) Antibiotic C-33196E-4-R (properties of the crystals containing one molecule of ethyl acetate as the solvent of crystallization):

(I) Melting point: 224°–225° C.

(II) Appearance: Colorless crystals

(III) Specific rotation: $[\alpha]_D^{25}+32°\pm5°$ (c=0,5, MeOH)

(IV) Elemental analysis (%): C, 60.96±0.5; H, 8.25±0.5; N 4.59±0.5

(V) Mass spectrum (M^+): m/z 534

(VI) Ultraviolet absorption spectrum: λ_{max}^{MeOH} 307 nm±2 nm ($E_{1\ cm}^{1\%}$ 75±8)

(VII) Infrared absorption spectrum, principal peaks (cm^{-1}): 1720, 1670, 1630, 1600, 1535, 1465, 1380, 1325, 1045

(VIII) Solubility: Sparingly soluble in petroleum ether, hexane, diethyl ether, chloroform and ethyl acetate; Soluble in methanol; Readily soluble in dimethyl sulfoxide

(IX) Color reactions: Positive Barton reaction; Negative ninhydrin and Ehrlich reactions

(X) Acidity, neutrality or basicity: Neutral

(XI) Estimated molecular formula: $C_{28}H_{42}N_2O_8.CH_3COOC_2H_5$.

4,512,976

ANTIBIOTIC STUBOMYCIN AND PROCESS FOR THE PRODUCTION THEREOF

Iwao Umezawa, Tokyo; Kanki Komiyama, and Hideo Takeshima, both of Kanagawa, all of Japan, assignors to The Kitasato Institute, Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,895

Claims priority, application Japan, Oct. 15, 1980, 55-143017

Int. Cl.³ A61K *35/74*; C12P *1/06*

U.S. Cl. 424—122 **2 Claims**

1. Stubomycin having the following physico-chemical properties:

(a) molecular formula: $C_{29}H_{35}NO_5$

elemental analysis:	C%	H%	N%
found:	72.33	7.35	2.83
calculated: (as $C_{29}H_{35}NO_5$)	72.58	7.47	2.80

(b) molecular weight: 477 (by mass spectrometry)

(c) crystal form: colorless plates (from MeOH)

(d) melting point: 243°–245° C. (decomposed)

(e) optical rotation $[\alpha]_D^{20}$: +246° (C=0.5, dimethyl sulfoxide)

(f) ultraviolet absorption spectrum (in MeOH): as shown in FIG. 1

(g) infrared absorption spectrum (KBr): as shown in FIG. 2

(h) solubility:

soluble: dimethyl sulfoxide, dimethylformamide, pyridine

slightly soluble: methanol

insoluble: ethanol, benzene, acetone, chloroform, ethylacetate, water

(i) color reaction:

positive: Rydon-Smith, Dragendorff, ferric chloride, and 2-4-dinitrophenylhydrazine reactions

negative: ninhydrin, Ehrlich, and anisaldehyde H_2SO_4 reactions

(j) nature: acidic substance

or its pharmaceutically acceptable salts.

4,512,977

THERAPEUTIC SELENIUM COMPOSITIONS AND THE USE THEREOF

Joseph R. Lundy, New York, N.Y. (Now by change of name from Joseph R. Levitt), assignor to Lundy Research Laboratories, Inc., New York, N.Y.

Division of Ser. No. 86,391, Oct. 18, 1979, Pat. No. 4,340,590, which is a continuation-in-part of Ser. No. 821,156, Aug. 2, 1977, abandoned. This application Jun. 7, 1982, Ser. No. 386,113

Int. Cl.³ A61K *33/04, 33/38*

U.S. Cl. 424—132 **21 Claims**

1. A therapeutic method for reducing or inhibiting edema in the skin tissue of humans and for accelerating the recovery thereof, said method comprising administering to said human a composition comprising

(i) a water soluble organic or inorganic selenium compound capable of being absorbed by the tissue to be treated to said human said inorganic compound selected from salts wherein the selenium is present in the form of selenate or selenite anions and the cation is pharmaceutically acceptable and said organic compound selected from the group consisting of selenium cystine, selenium methionine and aliphatic mono- and di-selenodicarboxylic acids having about 7 to 11 carbons in the carbon chain, and

(ii) a non-toxic pharmaceutically acceptable carrier or diluent therefor;

said composition being administered so as to provide the equivalent of 0.05 mg–1.0 mg of elemental selenium per day to the host in single or multiple dose form by means selected from oral, topical, parenteral and intravenous infusion.

4,512,978

DERMATOLOGICAL COMPOSITION USEFUL IN THE TREATMENT OF PSORIASIS

Louis R. Inwood, 1684 E. 18th St., Brooklyn, N.Y. 11229

Continuation of Ser. No. 114,910, Jan. 24, 1980, abandoned, and a continuation of Ser. No. 246,108, Mar. 20, 1981, abandoned. This application Oct. 15, 1982, Ser. No. 434,497

Int. Cl.³ A61K *33/30*

U.S. Cl. 424—145 **17 Claims**

1. A dermatological composition comprising 1–20% castor oil, 3–10% crude coal tar, 1–30% starch, 1–20% zinc oxide and 5–40% urea in a hydrophilic ointment base; all percentages expressed by weight of the final composition.

4,512,979

DIPEPTIDES CONTAINING THIALYSINE AND RELATED AMINO ACIDS AS ANTIHYPERTENSIVES

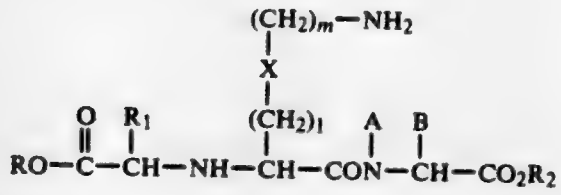
Arthur A. Patchett, Westfield, and Mu T. Wu, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 246,532, Mar. 23, 1981, abandoned. This application Jan. 26, 1982, Ser. No. 341,741

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 514—2 **14 Claims**

1. A compound of the formula:



(I)

wherein:

R and R_2 are independently hydrogen, loweralkyl, aralkyl;

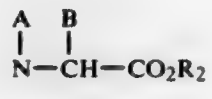
R_1 is alkyl containing one to ten carbon atoms which include

straight chain, branched, unsaturated and cyclic alkyl groups; substituted lower alkyl wherein the alkyl group has 1-6 carbon atoms and the substituent is amino, acylamino, loweralkylthio, arylthio, aryloxy, arylamino, or hydroxy; aralkyl, aralkenyl, heteroaralkyl or heteroaralkenyl wherein the alkyl portion has 1 to 5 carbon atoms such as, for example, phenethyl, cinnamyl, or indolylethyl; substituted aralkyl, aralkenyl, heteroaralkyl, or heteroaralkenyl wherein the alkyl or alkenyl group has 1 to 5 carbons optionally substituted by amino, acylamino or hydroxy and wherein the aryl of heteroaryl groups are optionally substituted by halo, dihalo, amino, aminoalkyl, hydroxy, lower alkoxy, aryloxy or lower alkyl;

X is S,

l is 1-2;

m is 2-3;

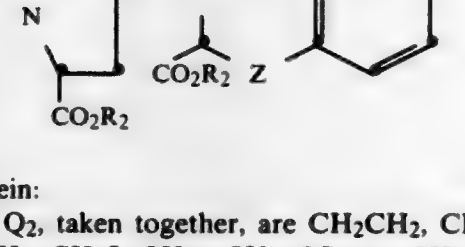


is a grouping wherein:

A is cycloalkyl containing 4-8 carbons in the ring, aryl, aralkyl, heteroaryl, or heteroaralkyl;

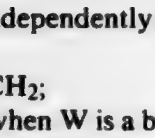
B is hydrogen or loweralkyl; or

A and B can be joined together to form ring structures, including the part-structure N—CH—CO_2R_2, having the formulae:



wherein:

Q_1 and Q_2, taken together, are CH_2CH_2, $CH_2CH_2CH_2$, $COCH_2$, CH_2S, CH_2—CH—OR_3, or CH_2—CH—SR_3 wherein R_3 is hydrogen, loweralkyl, aryl, aralkyl, or



wherein R_4 and R_5 are independently hydrogen, loweralkyl, or aralkyl;

W is a bond, CO, CH_2;

Z is a bond except when W is a bond, CO, CH_2, CH_2CH_2; and, the pharmaceutically acceptable salts thereof.

4,512,980

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi, Suita; Matsuhiko Aratani, Suita; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki; Hirokazu Tanaka, Takarazuka, and Masashi Hashimoto, Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co. Ltd., Osaka, Japan

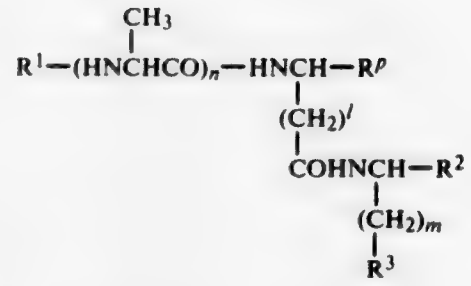
Division of Ser. No. 193,453, Oct. 3, 1980, Pat. No. 4,354,966. This application Jul. 28, 1982, Ser. No. 402,438

Claims priority, application United Kingdom, Oct. 11, 1979, 7935401; Oct. 15, 1979, 7935730; Oct. 17, 1979, 7936000; Mar. 28, 1980, 8010459

Int. Cl.[3] **C07C** *103/52;* **A61K** *37/02*

U.S. Cl. 514—18 **5 Claims**

1. A compound of the formula or its pharmaceutically acceptable salt:

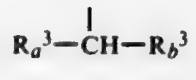


wherein

R^1 is hydrogen or acyl;

R^2 is carboxy or protected carboxy or a group of the formula: —COHN—R_a^2 wherein R_a^2 is carboxy (lower) alkyl or protected carboxy (lower) alkyl;

R^3 is carboxy, protected carboxy, lower alkyl, hydroxyphenyl, carbamoyl or a group of the formula:



wherein R_a^3 is hydrogen, amino, protected amino or acylamino, R_b^3 is carboxy or protected carboxy;

R^p is carboxy, protected carboxy, carbamoyl, carboxy (lower) alkyl or protected carboxy (lower) alkyl;

l is an integer 0;

m is an integer 3; and

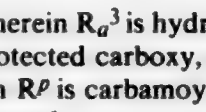
n is an integer 1, provided that

when R^1 is hydrogen or acyl,

R^2 is carboxy, protected carboxy or a group of the formula: —$CONHR_a^2$ wherein R_a^2 is carboxy (lower) alkyl or protected carboxy (lower) alkyl,

R^p is carboxy, or protected carboxy,

R^3 is carbamoyl, lower alkyl or hydroxyphenyl or a group of the formula:



wherein R_a^3 is hydrogen or acylamino and R_b^3 is carboxy or protected carboxy, and

when R^p is carbamoyl, then

R^1 is acyl.

4,512,981

METHOD OF TREATING INFLAMMATION USING INOSIPLEX

Paul Gordon, Chicago, Ill., assignor to Newport Pharmaceuticals International, Inc., Newport Beach, Calif.

Filed Dec. 20, 1982, Ser. No. 451,054

Int. Cl.[3] **A61K** *31/70*

U.S. Cl. 514—45 **10 Claims**

1. A method of treating an inflammatory disease having a non-specific component comprising administering to a mammal afflicted with such disease an amount of inosiplex effective to reduce the inflammation, the inosiplex being administered in the absence of indomethacin or aspirin.

4,512,982

9α-AZA-9α-HOMOERYTHROMYCIN COMPOUNDS, PHARMACEUTICAL COMPOSITION AND THERAPEUTIC METHOD

James R. Hauske, East Lyme, and Arthur A. Nagel, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

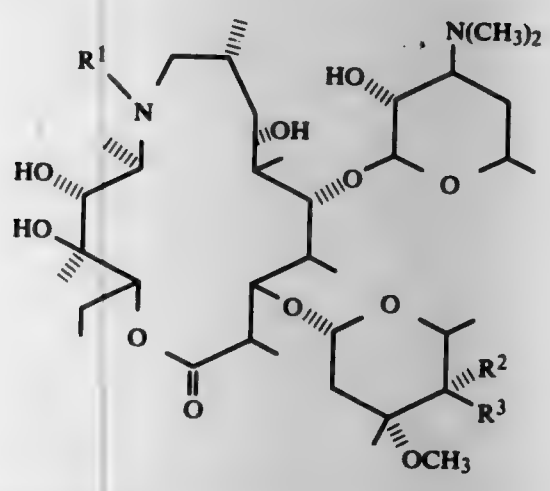
Filed Apr. 13, 1984, Ser. No. 600,252

Int. Cl.[3] **A61K** *31/70;* **C07H** *17/08*

U.S. Cl. 514—29 **12 Claims**

5. A method of treating a bacterial infection in a mammalian

subject, which comprises administering thereto an antibacterially effective amount of a macrolide antibiotic compound of the formula



or a pharmaceutically-acceptable acid-addition salt thereof; wherein

R^1 is selected from the group consisting of hydrogen and methyl; and

R^2 and R^3 are each selected from the group consisting of hydrogen and amino;

provided that R^2 and R^3 are always different.

4,512,983

METHOD FOR MAKING A SANITARY DRINK

Kunihiko Shino, Sakae-cho 17, Nerima-ku, Tokyo, 176, and Tamiji Matoba, 59, Tomei-cho 5-chome, Chikusa-ku, Nagoya-shi, 464, both of Japan

Filed Sep. 29, 1982, Ser. No. 426,458

Int. Cl.³ A61K *35/78, 31/70;* A23F *3/00*

U.S. Cl. 424—195.1 **14 Claims**

1. A method for the preparation of a beverage, which comprises:

mixing (1) basidiomycetes fungus of the family Polyporaceae and containing polysaccharides and organic germanium substances, with (2) hydrangea tea, to prepare a starting mixture thereof;

adding water to said starting mixture in an amount of from 5 to 20 times the weight of said starting mixture to obtain an aqueous mixture;

heating said aqueous mixture at a temperature in the range of 50° C. to 150° C. for a time period sufficient to extract, into the aqueous phase, water-soluble substances comprising polysaccharides and organic germanium compounds from said fungus and said tea;

removing solids from said aqueous mixture to thereby obtain an aqueous extract;

adding an organic acid which is physiologically harmless to human beings to said extract in an amount sufficient to reduce the pH of said extract to below 7;

allowing said extract to stand at a temperature higher than the freezing point thereof but lower than the temperature at which said extract begins to decay for a period sufficient to allow insoluble matter to precipitate from said extract;

removing said precipitated insoluble matter from said extract; and

heating said extract to thermally sterilize said extract, thereby forming said beverage.

4,512,984

DIFLUOROMETHOXYPHENYL THIOPHOSPHATES AS PESTICIDES

Walter Seufert, Speyer; Juergen Varwig, Heidelberg; Gerd Husslein, Ludwigshafen; Wolfgang Seppelt, Bobenheim-Roxheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

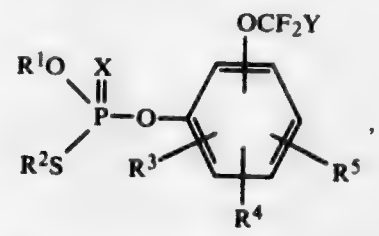
Filed May 27, 1983, Ser. No. 498,761

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220113

Int. Cl.³ A01N *57/14;* C07F *9/165*

U.S. Cl. 514—147 **7 Claims**

1. A difluoromethoxyphenyl thiophosphate of the formula



I

where R^1 is alkyl of not more than 3 carbon atoms, R^2 is unsubstituted alkyl of not more than 5 carbon atoms or said alkyl substituted by methoxy, ethoxy, isopropoxy, ethylthio or chlorine, Y is hydrogen or chlorine, X is oxygen or sulfur and R^3, R^4 and R^5 are each hydrogen or halogen.

2. A method of protecting crops from insects and other arthropods which comprises: applying to said crops a composition containing a carrier and an effective amount of a compound as defined in claim 1.

4,512,985

N-CARBAMOYL DERIVATIVES OF (5,4B)-ISOTHIAZOLO PYRIDINE-3-ONE AND ANTI-ACNE COSMETIC COMPOSITIONS CONTAINING THE SAME

Jean Maignan, Tremblay-les-Gonesse, and Braham Shroot, Antibes, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

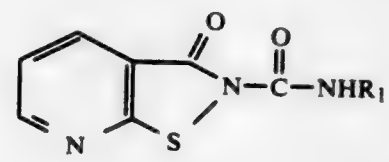
Filed Apr. 13, 1983, Ser. No. 484,619

Claims priority, application Luxembourg, Apr. 16, 1982, 84091

Int. Cl.³ A61K *31/425*

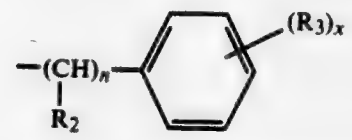
U.S. Cl. 514—301 **9 Claims**

1. N-carbamoyl derivative of (5,4b)-isothiazolo pyridine-3-one having the formula



wherein

R_1 represents hydrogen, linear or branched alkyl having 1–12 carbon atoms, cycloalkyl having 3–6 carbon atoms or

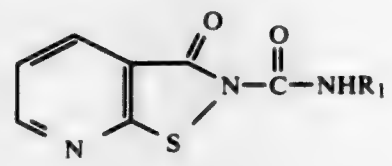


wherein n is 0 or 1, x is 1, 2 or 3, R_2 represents hydrogen or lower alkyl having 1–3 carbon atoms and R_3 represents hydrogen, lower alkyl having 1–3 carbon atoms, nitro, trifluoromethyl or halogen,

the salts thereof with a mineral or organic acid and

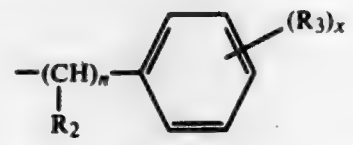
the optical isomers thereof when R_2 represents alkyl and n equals 1.

9. A method for the treatment of acne so as to inhibit the activity of *Corinebacterium acnes* and *Propionibacterium granulosum*, said method comprising applying an amount of an anti-acne cosmetic composition effective to inhibit said *Corinebacterium acnes* and *Propionibacterium granulosum* to the area of the skin affected by acne, said anti-acne composition comprising in an aqueous, alcoholic or hydroalcoholic carrier from 0.1 to 10 weight percent, based on the total weight of said composition, of a N-carbamoyl derivative of (5,4b)-isothiazolo pyridine-3-one having the formula



wherein

R_1 represents hydrogen, linear or branched alkyl having 1-12 carbon atoms, cycloalkyl having 3-6 carbon atoms or



wherein n is 0 or 1, x is 1, 2 or 3, R_2 represents hydrogen or lower alkyl having 1-3 carbon atoms, R_3 represents hydrogen, lower alkyl having 1-3 carbon atoms, nitro, trifluoromethyl or halogen, the salts thereof with a mineral or organic acid and the optical isomers thereof when R_2 represents alkyl and n equals 1.

4,512,986

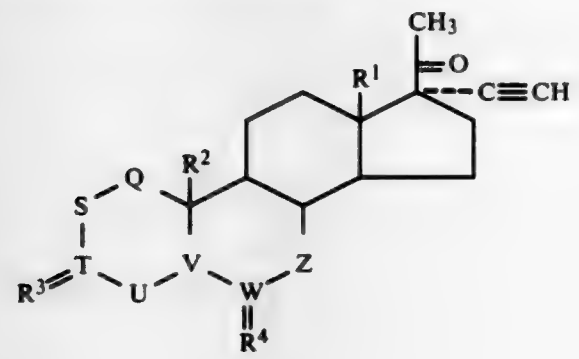
PROGRESTATIONALLY ACTIVE STEROIDS

Jerry R. Reel, Cary, and Clarence E. Cook, Chapel Hill, both of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Jul. 26, 1983, Ser. No. 517,457
Int. Cl.³ C07J 5/00
U.S. Cl. 514—170 **41 Claims**

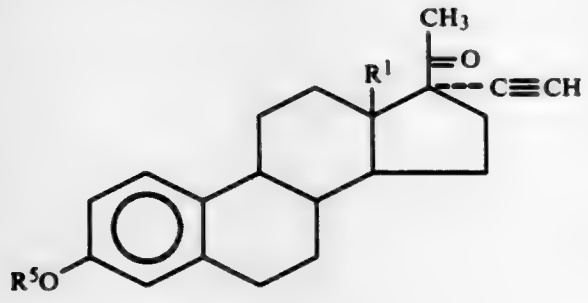
2. A steroid selected from the group consisting of

(a) a steroid having the formula



and

(b) a steroid having the formula

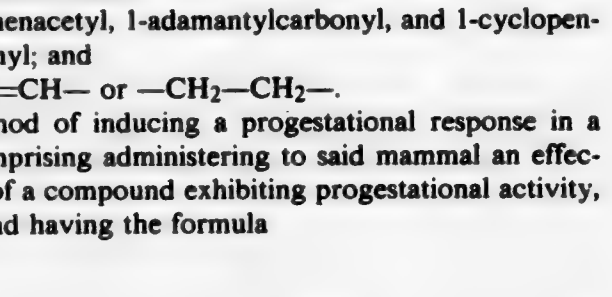


wherein

R^1 is selected from the group consisting of methyl, ethyl, and propyl;

R^2 is selected from the group consisting of H and methyl;

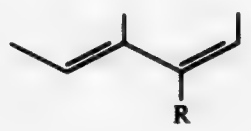
R^3 is selected from the group consisting of OXO and $H(OR^5)$;



(a)

wherein

R^4 is selected from the group consisting of H_2, H(methyl), H(Cl), H(F), and $=CH_2$; or



(b)

wherein;

R is selected from the group consisting of H, methyl, Cl, and F;

R^5 is H or a pharmaceutically acceptable substituent selected from the group consisting of:

acyl having from 1 to 12 carbon atoms,

2-tetrahydropyranyl, 4-tetrahydropyranyl,

1-cycloalkyl having from 5 to 7 carbon atoms,

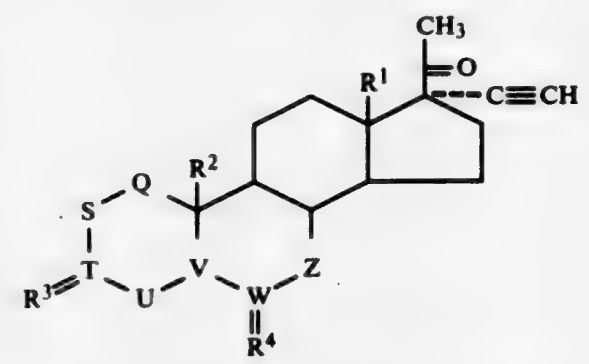
1-methoxycycloalkyl and 1-ethoxycycloalkyl in which the cycloalkyl group has from 5 to 7 carbon atoms,

cycloalkylcarbonyl wherein the cycloalkyl group has from 5 to 10 carbon atoms,

benzoyl, phenacetyl, 1-adamantylcarbonyl, and 1-cyclopentylcarbonyl; and

Q-S is CH=CH— or $—CH_2—CH_2—$.

14. A method of inducing a progestational response in a mammal, comprising administering to said mammal an effective amount of a compound exhibiting progestational activity, said compound having the formula



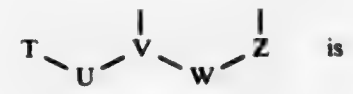
V

wherein

R^1 is selected from the group consisting of methyl, ethyl, and propyl;

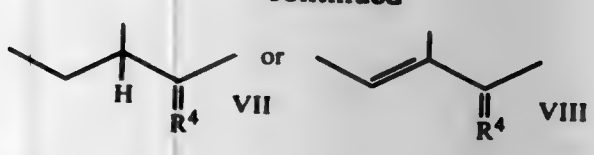
R^2 is selected from the group consisting of H and methyl;

R^3 is selected from the group consisting of OXO and $H(OR^5)$;



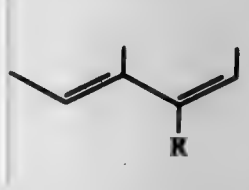
is

-continued



wherein

R^4 is selected from the group consisting of H_2, H(methyl), H(Cl), H(F), and $=CH_2$; or



wherein

R is selected from the group consisting of H, methyl, Cl, and F; and

Q-S is selected from the group consisting of —CH=CH— and $—CH_2—CH_2—$.

4,512,987

NEW PHARMACEUTICAL PREPARATIONS

Ctibor Schindlery, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 13, 1982, Ser. No. 434,094

Claims priority, application United Kingdom, Jul. 15, 1982, 8220561

Int. Cl.³ A61K *31/56*

U.S. Cl. 514—171 **10 Claims**

1. A pharmaceutical preparation for topical administration which contains the corticoid, 2-chloro-6α,9α-difluoro-16α-methyl 11β, 17α, 21-trihydroxy-pregna-1,4-diene-3,20-dione, and the antimicrobial agent, 2,4,4'-trichloro-2'-hydroxy-diphenyl ether, said preparation containing in the range of from about 0.01% to about 2.5% of said corticoid and from about 0.1% to about 5% of said antimicrobial agent.

8. A method of treatment of infected or infection prone: acute contact dermatitus, acute endogenous eczema, acute nummular eczema, acute seborrhoeic eczema, impetigo contagiosa, ostiofolliculitis, inflamed folliculitis barbae, ecthyma, intertrigo, erythrasma or acute inflamed superficial dermatomycoses, comprising administering an effective amount of a pharmaceutical composition according to claim 1 to a patient in need of the same.

4,512,988

ACYLAMINO OXO OR HYDROXY SUBSTITUTED ALKYLAMINO THIAZINES AND THIAZEPINES

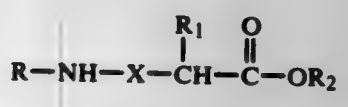
Harold N. Weller, III; Eric M. Gordon, both of Pennington; Donald S. Karanewsky, East Windsor, and Denis E. Ryono, Princeton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 1, 1984, Ser. No. 585,058

Int. Cl.³ C07D *279/06, 285/36*; A61K *31/55, 31/54*

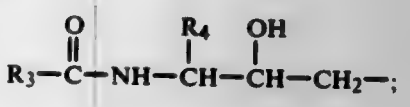
U.S. Cl. 514—211 **11 Claims**

1. A compound of the formula



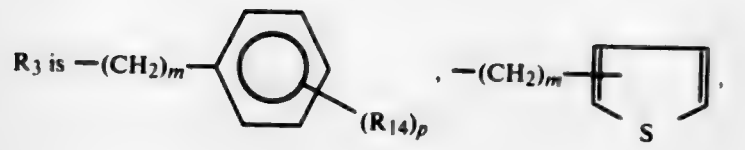
and a pharmaceutically acceptable salt thereof wherein

R is $R_3—C(=O)—NH—CH(R_4)—C(=O)—CH_2—$ or

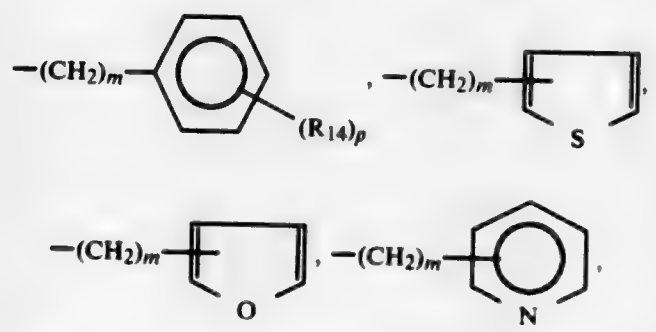


(a)

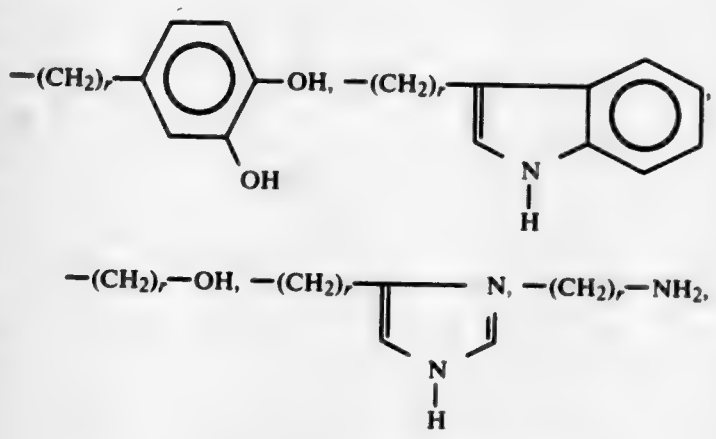
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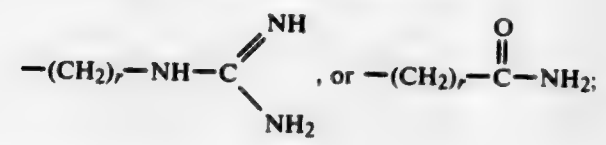
R_4 is hydrogen, lower alkyl,



halo substituted lower alkyl, $—(CH_2)_m—$cycloalkyl,



$—(CH_2)_r—SH$, $—(CH_2)_r—S—$lower alkyl,

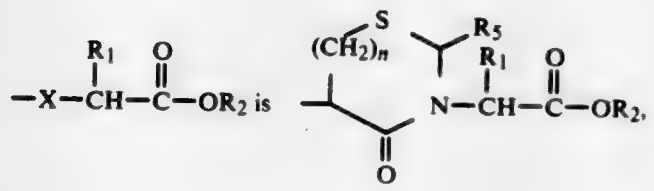


R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

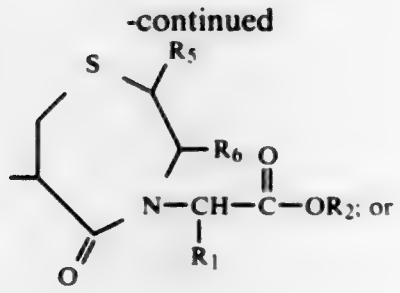
m is zero, one, two, three, or four;

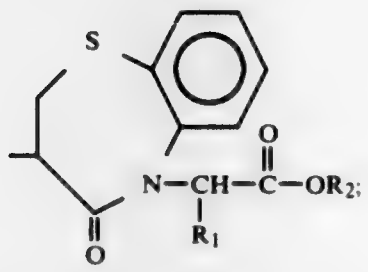
p is one, two or three provided that p is more than one only if R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;

r is one, two, three or four;



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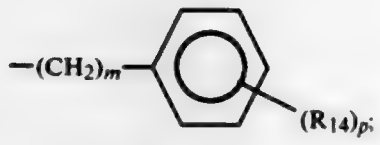




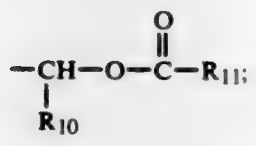
R_1 is hydrogen, lower alkyl, amino substituted lower alkyl, hydroxy substituted lower alkyl, or halo substituted lower alkyl;

n is one or two;

R_5 and R_6 are independently selected from the group consisting of hydrogen, lower alkyl, $-(CH_2)_m-$cycloalkyl and



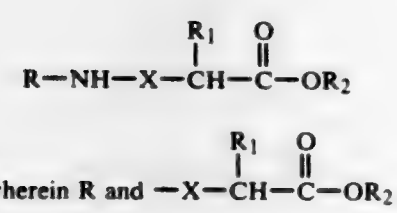
R_2 is hydrogen, lower alkyl, benzyl, benzhydryl, trimethylsilylethyl, salt forming ion, or



R_{10} is hydrogen, lower alkyl, cycloalkyl or phenyl; and

R_{11} is hydrogen, lower alkyl, lower alkoxy, cycloalkyl, phenyl, benzyl, or phenethyl.

10. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and an effective amount of a hypotensive agent or pharmaceutically acceptable salt thereof of the formula



are as defined in claim **1**.

4,512,989

1,2,4-TRIAZOLE DERIVATIVES AND FUNGICIDAL COMPOSITION CONTAINING THE SAME

Hiroshi Ohyama, Chigasaki; Ken Morita, Hiratsuka; Takuo Wada, Hatano, and Masahiko Miyahara, Atsugi, all of Japan, assignors to Hokko Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1982, Ser. No. 433,623

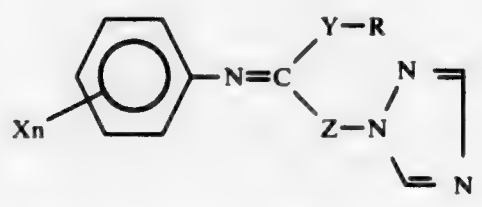
Claims priority, application Japan, Oct. 15, 1981, 56-163409

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.[3] **A01N** *43/64, 55/02;* **C07D** *249/08;* **C07F** *1/08*

U.S. Cl. 514—383 **12 Claims**

1. A 1,2,4-triazole derivative of the general formula



[I]

wherein X may be the same or different and denotes a halogen atom, a (C_1-C_4)alkyl group, a (C_1-C_4)alkoxyl group, a (C_1-C_4)alkylthio group, a (C_1-C_4)alkylsulfinyl group, a (C_1-C_4)alkylsulfonyl group, a trifluoromethyl group, a nitro group or a cyano group;

n is an integer of 0 to 5;

R denotes a (C_1-C_4)alkyl group, a (C_2-C_4)alkenyl group, a (C_2-C_4)alkynyl group, a (C_1-C_4)alkoxy-(C_1-C_4)alkyl group, a (C_1-C_4)alkylthio-(C_1-C_4)alkyl group, a (C_3-C_6)cycloalkyl group, a (C_3-C_6)cycloalkyl-(C_1-C_4)alkyl group, a phenyl group, a mono-halophenyl group, a di-halophenyl group, a tri-halophenyl group, or a phenyl(C_1-C_4)alkyl group of which the phenyl may optionally bear up to three substituents selected from a halogen atom, a (C_1-C_4)alkyl group, a (C_1-C_4)alkoxyl group, a (C_1-C_4)alkylthio group, a (C_1-C_4)alkylsulfonyl group, trifluoromethyl group, cyano group and nitro group, these substituents being the same or different from each other;

Y denotes an oxygen atom or a sulfur atom; and

Z denotes a linear or branched (C_1-C_6)alkylene group, and a salt of said 1,2,4-triazole derivative.

11. A fungicidal composition comprising as the active ingredient a fungicidally effective amount of a 1,2,4-triazole derivative as defined in claim **1**, or a salt thereof, in association with an acceptable carrier for the active ingredient.

4,512,990

BENZTHIAZINE ANALOGS AS ANTIINFLAMMATORY AGENTS

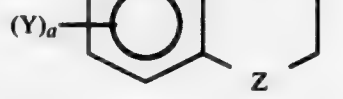
Peter H. Nelson, Los Altos; Howard J. Ringold, Woodside; Stefan H. Unger, and Thomas R. Thieme, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.), Inc., Palo Alto, Calif.

Filed Feb. 18, 1982, Ser. No. 349,738

Int. Cl.[3] **C07D** *279/16;* **A61K** *31/54*

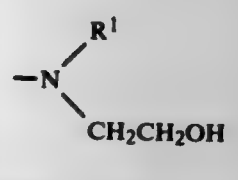
U.S. Cl. 514—225 **1 Claim**

1. A method for inhibiting, preventing, or reducing inflammation which method comprises administering to a subject in need of such treatment a therapeutically effective amount of a compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

Z is S;
Y is halo, alkoxy, alkyl, or dialkylamino;
a is 0, 1 or 2;
b is an integer from 2–12 with the proviso that if b is 2 or 3, a cannot be 0, and with the further proviso that if X is OH or NH_2, b cannot be 2–5; and
X is selected from the group consisting of: —OH, OR^1, —NH_2, —NHR^1, NR_2^1,



and —$NHCONHR^2$ in which
each R^1 is independently alkyl or cycloalkyl or, in —NR_2^1, both R^1s together are alkylene or form a piperazine ring optionally substituted at the ring N by alkyl or —CH_2CH_2OH; and
R^2 is alkyl, cycloalkyl, or phenyl optionally substituted with 1–3 substituents selected from the group consisting of halo, lower alkyl of 1–4 carbon atoms, lower alkoxy of 1–4 carbon atoms, hydroxy, and trifluoromethyl.

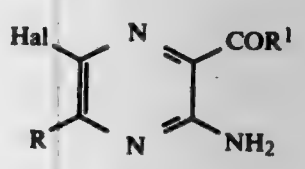
4,512,991

3-ACYL-2-AMINO-5-HALO-6-(SUBSTITUTED)PYRAZINE ANTIMICROBIAL COMPOUNDS

David B. R. Johnston, Warren, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 27, 1982, Ser. No. 453,054
Int. Cl.[3] **A01N** *43/60, 43/10;* **C07D** *241/16, 417/02*
U.S. Cl. 514—252 **14 Claims**

1. A compound of the formula:



(I.)

wherein
Hal is bromine or chlorine; and
R is chloro, but only when R^1 is other than hydrogen; mono- or di-substituted mono- or diloweralkylamino wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; thiocyano; mercapto; straight or branched chain C_{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; phenylthio:
R^1 is hydrogen; straight or branched C_{1-8} alkyl; phenyl; pyrrole; thiophene; wherein each of said phenyl, pyrrole, and thiophene groups may be substituted with up to two members selected from the group consisting of C_{1-3} alkyl, C_{1-3} alkoxy, halo, and mono- or di-C_{1-3} alkyl substituted amino; pyridin-2-yl; thiazol-2-yl; and C_{2-4} alkenyl.

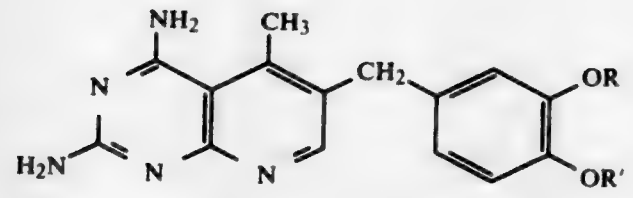
4,512,992

TREATMENT WITH DIALKOXY PYRIDOPYRIMIDINE COMPOUNDS

David S. Duch, Gary; Charles A. Nichol, Durham, and Carl W. Sigel, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., N.C.

Continuation of Ser. No. 159,241, Jun. 13, 1980, abandoned. This application Feb. 6, 1981, Ser. No. 231,977
The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.
Int. Cl.[3] **A61K** *31/505*
U.S. Cl. 514—258 **8 Claims**

1. A method of treating psoriasis in a mammal suffering from psoriasis comprising the administration of a non-toxic, effective antipsoriasis amount of a compound of formula (II):



(II)

wherein R and R′ are lower (C_1–C_6) alkyl, or pharmaceutically acceptable acid addition salt thereof to said mammal.

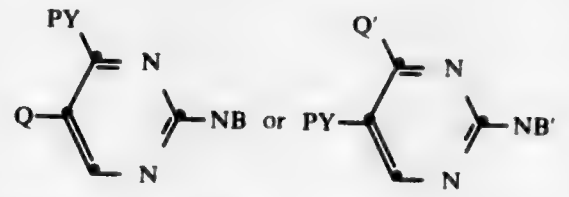
4,512,993

4(OR 5)-(PYRIDINYL)-2-PYRIMIDINAMINES AND CARDIOTONIC USE THEREOF

George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Jul. 25, 1983, Ser. No. 516,820
Int. Cl.[3] **A61K** *31/505;* **C07D** *239/24*
U.S. Cl. 514—275 **8 Claims**

1. A 4-PY-5-Q-2-pyrimidinamine or 5-PY-4-Q′-2-pyrimidinamine having the formula



or acid-addition salt thereof, where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, Q and Q′ are each hydrogen or methyl, NB is dimethylamino or N-(2-hydroxyethyl)methylamino and NB′ is amino or dimethylamino.

8. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a cardiotonically effective amount of 4-PY-5-Q-2-pyrimidinamine or 5-PY-4-Q′-2-pyrimidinamine according to claim 1 or pharmaceutically acceptable acid-addition salt thereof, where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, Q and Q′ are each hydrogen or methyl, NB is dimethylamino or N-(2-hydroxyethyl)methylamino and NB′ is amino or dimethylamino.

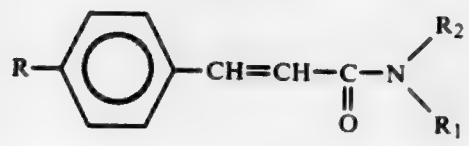
4,512,994

LONG-ACTING THEOPHYLLINE IN MEDICINAL FORM

Michel Bayssat, Charbonnieres; Maryse Belleville, and Marcel Grand, both of Lyons, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

Filed May 3, 1983, Ser. No. 491,025
Claims priority, application France, May 4, 1982, 82 07695; Apr. 14, 1983, 83 06075
Int. Cl.[3] **A61K** *31/52*
U.S. Cl. 514—374 **13 Claims**

1. A long-acting theophylline base medicinal composition, comprising a mixture of theophylline with an amount sufficient to increase the theophylline half-life in the blood of a cinnamamide compound of the formula



(I)

wherein R is hydrogen, halogen or acetyl; R_1 is hydrogen or methyl; R_2 is



(II)

wherein R_3 is hydrogen or methyl; or R_1 and R_2 together with the adjacent nitrogen form 2,2-dimethyl-3-oxazolidinyl.

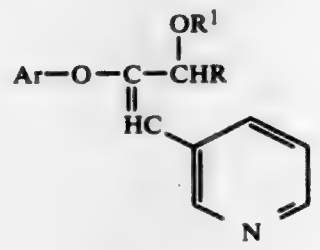
4,512,995

PHENOXYALKENYLPYRIDINE DERIVATIVES AND FUNGICIDAL METHODS OF USE

Allan F. Rose, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 3, 1983, Ser. No. 455,190
Int. Cl.³ C07D *213/30;* A01N *43/40*
U.S. Cl. 514—277 **19 Claims**

1. A compound having the formula



(I)

wherein

Ar is phenyl; substituted phenyl having one or two substituents independently selected from the group of halo, lower alkyl, or lower alkoxy;

R is phenyl or the group $—C(CH_3)_2)CH_2)R^2$ wherein R^2 is hydrogen lower alkyl having 1 through 4 carbon atoms, hydroxy, or halo; and

R^1 is lower alkyl, benzyl, allyl, or haloallyl having one or two halo substituents independently selected from the group of fluoro, chloro, bromo or iodo;

and non-phytotoxic salts thereof.

16. A method for controlling fungi which comprises applying a fungicidally effective amount of the compound of claim 1, to said fungi or to their habitat.

4,512,996

BENZOYLECGONINE OR BENZOYLNORECGONINE AS ACTIVE AGENTS FOR THE TREATMENT OF RHEUMATOID ARTHRITIS

Lowell Somers, 16630 Mountain View Rd., Desert Hot Springs, Calif. 92240

Division of Ser. No. 448,928, Dec. 13, 1982, Pat. No. 4,469,700, which is a continuation of Ser. No. 275,307, Jun. 19, 1981, abandoned. This application Feb. 29, 1984, Ser. No. 584,830
Int. Cl.³ A61K *31/46*
U.S. Cl. 514—304 **6 Claims**

1. A pharmaceutical formulation for the treatment of rheumatoid arthritis comprising one or more active agents selected from benzoylecgonine and benzoylnorecgonine in amounts of approximately 0.187 mg to about approximately 5.0 mg per dose, per kilogram body weight of the patient, said amounts being effective for treating rheumatoid arthritis in association with a pharmaceutical carrier, the formulation being adapted for oral administration and being an aqueous solution of the active ingredient and comprising one or more pharmaceutical carriers selected from a group consisting of mannitol, lactose, starch, magnesium stearate, talcum, cellulose, glucose, sucrose, gelatin, sorbitol and magnesium carbonate.

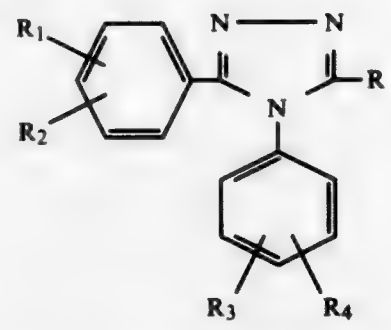
4,512,997

4,5-BIS(ARYL)-4H-1,2,4-TRIAZOLE DERIVATIVES AND ANALGESIC USE

Jean Meier, La Varenne Saint Hilaire, and Francois Clemence, Paris, both of France, assignors to Roussel Uclaf, Paris, France

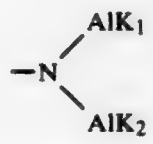
Continuation of Ser. No. 292,790, Aug. 14, 1981, abandoned. This application Nov. 17, 1983, Ser. No. 552,747
Claims priority, application France, Aug. 22, 1980, 80 18354
Int. Cl.³ A61K *31/395;* C07D *249/08*
U.S. Cl. 514—383 **28 Claims**

1. A compound selected from the group consisting of 4H-1,2,4-triazoles of the formula



I

wherein R_1, R_3 and R_4 may be in different positions of the benzene rings and are individually selected from the group consisting of hydrogen, —OH, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, $—CF_3$, $—NO_2$, $—NH_2$ and —NH—AlK and



and AlK, AlK_1 and AlK_2 are alkyl of 1 to 4 carbon atoms or R_1 and R_2 together and/or R_3 and R_4 together are methylenedioxy, R_2 is alkoxy of 1 to 4 carbon atoms, R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, $—CH_2—COOH$ and $—CH_2—COOAlK_3$ and AlK_3 is alkyl of 1 to 4 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

11. An analgesic composition comprising an analgesically effective amount of at least one compound of claim 1 and an excipient.

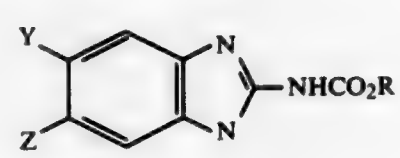
4,512,998

ANTHELMINTIC BENZIMIDAZOLE CARBAMATES

M.Mehdi Nafissi-Varchei, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

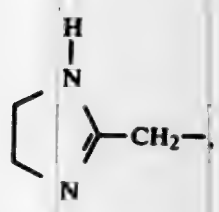
Filed Oct. 20, 1980, Ser. No. 198,423
Int. Cl.³ A61K *31/425, 31/415;* C07D *417/02, 513/04*
U.S. Cl. 514—367 **8 Claims**

1. A compound of the formula

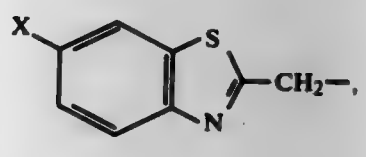


(I)

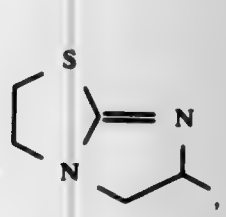
wherein R is alkyl having 1 to 4 carbon atoms; one of Y and Z is a heterocyclic moiety selected from groups of the formula



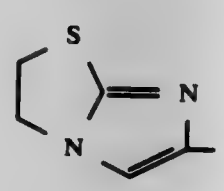
(II)



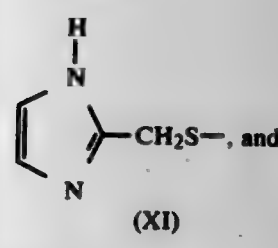
(V)



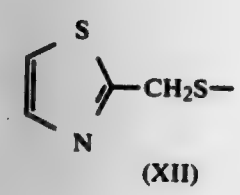
(IX)



(X)



(XI)



(XII)

wherein X is alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or hydrogen, and the other of Y and Z is hydrogen, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms.

5. A method of treating helminth infestation in mammals which comprises administering to an infected mammal an effective amount of a compound as claimed in any one of claims 2, 1 3 or 4.

4,512,999

METHOD OF INHIBITING β-LACTAMASE FORMING PATHOGENS

Solange Adam-Molina, St. Louis, France, and Werner Hofheinz, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

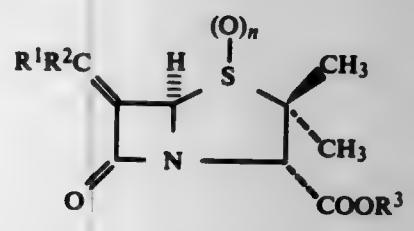
Filed Oct. 20, 1981, Ser. No. 312,956

Claims priority, application Switzerland, Oct. 24, 1980, 7946/80

Int. Cl.[3] **C07D** *499/00;* **A61K** *31/425*

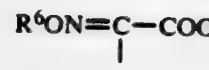
U.S. Cl. 514—192 **12 Claims**

1. A method of inhibiting beta-lactamase forming pathogens in an individual in need of such treatment which comprises treating said individual with an effective amount of a compound of the formula



I

wherein R^1 is cyano or a group of the formula R^4—CO— or R^5—A—CO, R^3 is hydrogen, lower alkyl or halogen, R^3 is hydrogen or a group selected from alkanoyloxyalkyl, alkoxycarbonyloxyalkyl, lactonyl, alkoxymethyl and alkanoylaminomethyl, n is the number 0, 1 or 2, R^4 is hydrogen, hydroxy, lower alkoxy, lower alkyl, phenyl or phenyl substituted by halogen, nitro, hydroxy, lower alkyl or lower alkoxy or a group of the formula



R^5 is halogen, lower alkoxy, lower alkylthio, lower alkylsulphinyl, lower alkylsulphonyl, di-(lower alkoxy)-phosphinyl, phenyl or phenyl substituted by halogen, nitro, hydroxy, lower alkyl or lower alkoxy, phenyloxy, phenylthio, phenylsulphinyl, phenylsulphonyl or phenyloxy, phenylthio, phenylsulphinyl and phenylsulphonyl substituted by halogen, nitro, hydroxy, lower alkyl or lower alkoxy, R^6 and R^7 are lower alkyl and A is lower alkylene, and pharmaceutically acceptable salts of carboxylic acids of formula I with bases.

4,513,000

INSECTICIDAL N-SUBSTITUTED O-PYRAZOL-4-YL CARBAMATES AND USE THEREOF

Fritz Maurer, Wuppertal; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

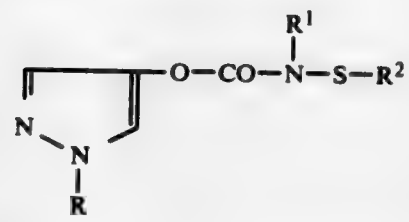
Filed Oct. 8, 1982, Ser. No. 433,337

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142857

Int. Cl.[3] **A01N** *43/56;* **C07D** *231/14, 403/12*

U.S. Cl. 514—407 **7 Claims**

1. A compound of the formula

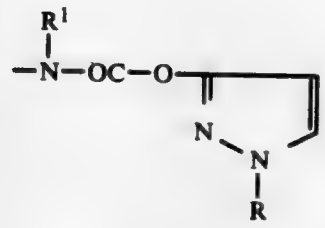


in which

R is a straight-chain or branched alkyl radical which has 1 to 6 carbon atoms;

R^1 is a straight-chain or branched alkyl radical having 2 to 6 carbon atoms;

R^2 is an alkyl radical which has 1 to 6 carbon atoms and is optionally substituted by up to 3 halogen atoms; or represents the radical



7. A method of combating insects which comprises applying to the insects or to a habitat thereof an insecticidally effective amount of a compound according to claim 1.

4,513,001

β-ADRENERGIC 1-[1-BENZIMIDAZOLYL]-N-[2-(4-HYDROXY-3-METHOXY-PHENYL)-2-HYDROXY-ETHYL]-3-AMINO BUTANE AND SALTS AND HYDRATES THEREOF

Michel Joannic, Neuilly-sur-Marne; Francoise Roquet, and Marcel Pesson, both of Paris, all of France, assignors to Laboratoire Roger Bellon, Neuilly sur Seine, France

Filed Mar. 22, 1983, Ser. No. 477,680

Claims priority, application France, Mar. 24, 1982, 82 05035

Int. Cl.³ A61K *31/415*; C07D *235/06*

U.S. Cl. 514—394 **8 Claims**

8. Method of treating asthma or premature labor, comprising administering to the patient a physiologically effective amount of beta-adrenergic 1-(1-benzimidazolyl-N-(2-(4-hydroxy-3-methoxy-phenyl)-2-hydroxy-ethyl)-3-amino butane or a non-toxic acid addition salt thereof or a hydrate of said salt.

4,513,002

CYCLOHEPTENE DERIVATIVES

Werner Aschwanden, Ettingen; Quirico Branca, Basel; Emilio Kyburz, Reinach, and Rudolf Pfister, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 14, 1981, Ser. No. 330,733

Claims priority, application Switzerland, Jan. 16, 1981, 273/81

Int. Cl.³ A61K *31/40*

U.S. Cl. 514—408 **2 Claims**

1. A method of controlling or preventing allergic reactions which comprises administering to a host requiring such treatment an effective amount of 1-[2-(4,5,10,11-tetrahydro-1H-dibenzo[a,d]cyclohepten-5-yl)ethyl]pyrrolidine or a pharmaceutically acceptable acid addition salt thereof.

4,513,003

PROCESS FOR PROTECTING WOOD USING N-(DICHLOROFLUOROMETHYLTHIO)-3,6-ENDOMETHYLENE-Δ⁴-TETRAHYDROPHTHALIMIDE

Engelbert Kühle, Bergisch-Gladbach; Erich Klauke, Odenthal; Wilfried Paulus, and Hermann Genth, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,632

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131250

Int. Cl.³ C07D *209/48*; A61K *31/40*

U.S. Cl. 514—411 **2 Claims**

1. A process for protecting wood against microbial alteration or damage by a microorganism which comprises applying to said wood a microbicidally effective amount of N-(dichlorofluoromethylthio)-3,6-endomethylene-Δ⁴-tetrahydrophthalimide.

4,513,004

INDOLE DERIVATIVES, PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS MEDICAMENTS

Karl-Heinz Boltze, Borod, and Harald Horstmann, Wuppertal, both of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. KG, Cologne, Fed. Rep. of Germany

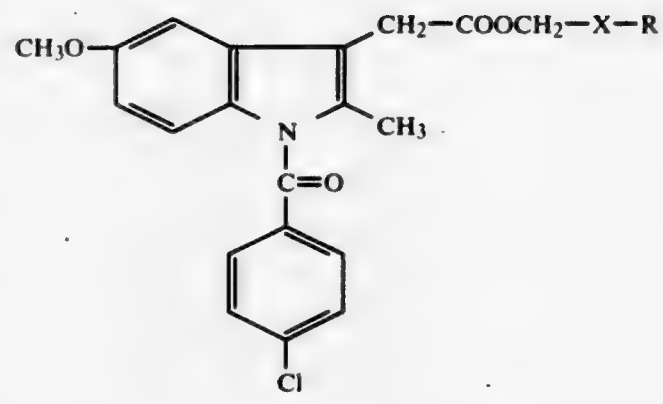
Filed Feb. 3, 1983, Ser. No. 463,370

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206885

Int. Cl.³ C07D *405/12*; A61K *31/405*

U.S. Cl. 514—414 **6 Claims**

1. An indole compound of the formula (I)



in which

X represents —COO— or —CONH— and

R represents a tetrahydrofuran-2-yl- or a tetrahydropyran-2-yl- group,

and their pharmaceutically acceptable salts.

4,513,005

SRS-A ANTAGONISTS

Stephen R. Baker, Eversley; William B. Jamieson, Woking; William J. Ross, Lightwater, and Alec Todd, Wokingham, all of England, assignors to Lilly Industries Limited, London, England

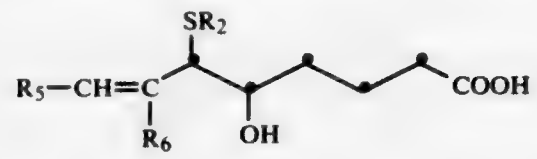
Filed Jun. 9, 1982, Ser. No. 386,570

Claims priority, application United Kingdom, Jun. 18, 1981, 8118720; May 7, 1982, 8213211

Int. Cl.³ C07C *149/20*; A61K *31/335, 31/23*

U.S. Cl. 514—451 **9 Claims**

1. A compound of the formula



in which R_2 is alkyl, cycloalkyl or alkenyl of up to 10 carbon atoms, unsubstituted or substituted by one or more substituents selected from aryl, cycloalkyl, halogen, hydroxy, NHR_3, and COX, where R_3 is H, C_{1-4} alkyl, aryl, or COX', X is OH, OR', or NH_2, X' is C_{1-4} alkyl or NH_2, and R' is C_{1-4} alkyl, R_5 is C_{10-14} alkyl or $R_7CH{=}CH{-}$, where R^7 is C_{8-12} alkyl, phenyl, or naphthyl, and R_6 is H or C_{1-4} alkyl, or pharmaceutically acceptable salts, esters, or internal lactones thereof.

9. A method of treating an allergic/inflammatory disorder which comprises administering an effective amount of a compound according to claim 1.

4,513,006

ANTICONVULSANT SULFAMATE DERIVATIVES

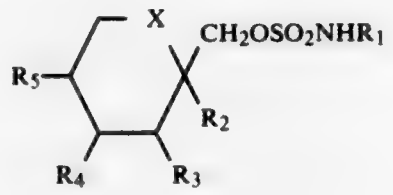
Bruce E. Maryanoff, New Hope, and Joseph F. Gardocki, Doylestown, both of Pa., assignors to McNeil Lab., Inc., Fort Washington, Pa.

Filed Sep. 26, 1983, Ser. No. 535,475

Int. Cl.³ A61K *31/35*; C07D *311/78, 311/94, 309/06*

U.S. Cl. 514—23 **12 Claims**

1. A sulfamate of the following formula (I):



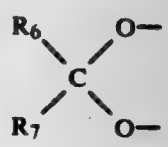
(I)

wherein

X is oxygen;

R_1 is hydrogen or alkyl; and

R_2, R_3, R_4 and R_5 are independently hydrogen or lower alkyl and R_2 and R_3 and/or R_4 and R_5 together may be a group of the following formula (II):



(II)

wherein

R_6 and R_7 are the same or different and are hydrogen, lower alkyl or are alkyl and are joined to form a cyclopentyl or cyclohexyl ring.

6. A pharmaceutical composition effective for the treatment of convulsions comprising an anticonvulsantly effective amount of a sulfamate of claim 1 and a pharmaceutically-acceptable carrier.

4,513,007

METHOD FOR TREATING HEART DISEASE

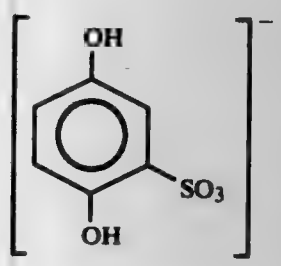
Alfred de Courten, Geneva; Adrian Schulthess, Begnins, both of Switzerland, and José Esteve-Soler, Barcelona, Spain, assignors to Laboratoires OM SA, Switzerland

Filed May 3, 1983, Ser. No. 491,295

Int. Cl.³ A61K *31/18*

U.S. Cl. 514—555 **7 Claims**

1. A method for treating a disorder selected from the group consisting of coronary heart disease, myocardial infarction and disturbances of the lymphatic circulation of the heart in a human or other animal, comprising administering to said human or other animal a therapeutically effective amount of a pharmaceutically acceptable salt selected from the group consisting of calcium, sodium, potassium, magnesium, diethylamine, ethanolamine and piperazine salts of the compound of formula



in a pharmaceutically acceptable carrier.

4,513,008

VIRUCIDAL COMPOSITIONS AND THERAPY

Emanuel Revici, New York, N.Y.; Bob E. Sherwood; Herman P. Benecke, both of Columbus, Ohio; John M. Rice, Westerville, Ohio, and Richard W. Geisler, Houston, Tex., assignors to The Vinoxen Company, Inc., Houston, Tex.

Filed Jul. 30, 1982, Ser. No. 404,199

Int. Cl.³ A61K *31/20, 31/11, 31/045*

U.S. Cl. 514—560 **16 Claims**

1. A method of inactivating enveloped virus, which comprises contacting said virus with a virucidally effective amount of a C_{20-24} linear polyunsaturated acid, aldehyde or primary alcohol having 5–7 double bonds, a pharmaceutically acceptable salt of said acid, or a mixture thereof.

4,513,009

AMINOACID DERIVATIVES AND THEIR THERAPEUTIC APPLICATIONS

Bernard Roques, Saint Maurice; Jean-Charles Schwartz, and Jeanne-Marie Lecomte, both of Paris, all of France, assignors to Societe Civile Bioprojet, Paris, France

Filed Apr. 14, 1981, Ser. No. 254,208

Claims priority, application France, Apr. 17, 1980, 80 08601

Int. Cl.³ A01N *37/12, 37/10*; C07C *153/00*

U.S. Cl. 514—513 **17 Claims**

1. A compound selected from the group consisting of:

N-[(R,S)-3-acetylthio-2-benzyl-propionyl]-glycine methyl ester;

N-[(R,S)-3-mercapto-2-benzyl-propionyl]-glycine;

N-[(R,S)-3-acetylthio-2-benzyl-propionyl]-L-alanine methyl ester;

N-[(R,S)-3-mercapto-2-benzyl-propionyl]-L-alanine;

O-benzyl,N-[(R,S)-3-mercapto-2-benzyl-propionyl]-L-serine;

N-[(R,S)-3-acetylthio-2-benzyl-propionyl]glycine benzyl ester;

N-[(R,S)-3-acetylthio-2-benzyl-propionyl]glycine p.fluorobenzyl ester;

N-[(R,S)-3-acetylthio-2-benzyl-propionyl]glycine 2,2,2-trifluoroethyl ester;

N-[(R,S)-3-acetylthio-2-benzyl-propionyl]glycine benzylamide;

N-[(R,S)-3-mercapto-2-benzyl-propionyl]glycine benzyl ester;

N-[(R,S)-3-mercapto-2-benzyl-propionyl]-glycine 2,2,2-trifluoroethyl ester;

N-[(R,S)-3-phenylacetylthio-2-benzyl-propionyl]-glycine benzyl ester; and

N-[(R,S)-3-benzylthio-2-benzyl-propionyl]-glycine benzyl ester.

4,513,010

METHOD OF TREATING NAVICULAR DISEASE IN HORSES

Lorimer J. Corbett, Sydney, Australia, assignor to Medical Research (Marketing) Pty, Ltd., North Ryde, Australia

Filed May 16, 1983, Ser. No. 495,111

Claims priority, application Australia, Jun. 18, 1982, PF4493

Int. Cl.³ A61K *31/135*

U.S. Cl. 514—651 **11 Claims**

1. A method of treating navicular disease in horses comprising the administration of an effective amount of Isoxsuprine over an extended period.

4,513,011

COMPOSITION IN THE FORM OF A SHAMPOO BASED ON ANTHRALIN

Jean-Francois Grollier, Paris; Georges Rosenbaum, Asnieres; Josiane Allec, Pierrefitte, and Braham Shroot, Antibes, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 22, 1982, Ser. No. 436,046

Claims priority, application France, Oct. 23, 1981, 81 19952; Apr. 5, 1982, 82 05864

Int. Cl.³ A61K *31/05*

U.S. Cl. 514—730 **5 Claims**

1. A shampoo composition for the treatment of the scalp which contains in aqueous solution or dispersion 0.01 to 5 percent by weight of anthralin, 8 to 47.5 percent by weight of an acid alkyl ester selected from the group consisting of ethyl myristate and acid alkyl esters in which the fatty acid has 5 to 18 carbon atoms and the alkyl radical has 3 to 18 carbon atoms, and 2.5 to 36 percent by weight of an anionic or nonionic surfactant, the composition being stable to oxidation for approximately one week when stored at a temperature of approximately +4° C.

4,513,012

POWDERED CENTER-FILLED CHEWING GUM COMPOSITIONS

Thomas J. Carroll, Astoria; Vincent G. Corsello, Albertson; Michael Glass, Flushing, and Dominic J. Piccolo, Brooklyn, all of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 13, 1983, Ser. No. 494,215

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—5 **19 Claims**

1. A center-filled chewing gum piece comprising an outer-shell and a cavity enclosed therein, said cavity containing a powdered center-fill comprising at least one sweetener and a lubricant selected from the group consisting of magnesium stearate, talc and colloidal silica in an amount from about 0.75% to about 1.0% by weight of the center-fill weight.

4,513,013

PREPARATION OF MALT AND BEER HAVING A LOW NITROSAMINE CONTENT

Vas J. Aalbers, Leiden, Netherlands, assignor to Heineken Technisch Beheer, B.V., Zoeterwoude, Netherlands

Continuation of Ser. No. 315,493, Oct. 27, 1981, abandoned, which is a continuation of Ser. No. 142,111, Apr. 21, 1980, abandoned. This application May 31, 1983, Ser. No. 498,036

Claims priority, application Netherlands, Mar. 28, 1980, 8001872

Int. Cl.³ C12C *1/00, 11/00;* A23L *1/202*

U.S. Cl. 426—16 **6 Claims**

1. In a malting process in which barley is moistened and kept at a germinating temperature until germinated barley is obtained, after which the germinated barley is kilned in a stream of heated air which is produced from low sulfur fuel and does not contain added sulphur dioxide, said kilning being continued until a dry malt is obtained, the improvement comprising producing a malt having a low nitrosamine level by treating the germinated barley up to 48 hours before the start of kilning with an aqueous liquid which contains from 0.2% to 0.8% by weight, based on the air-dry weight of the barley, of a carbohydrate material selected from the group consisting of monosaccharides and oligosaccharides.

4,513,014

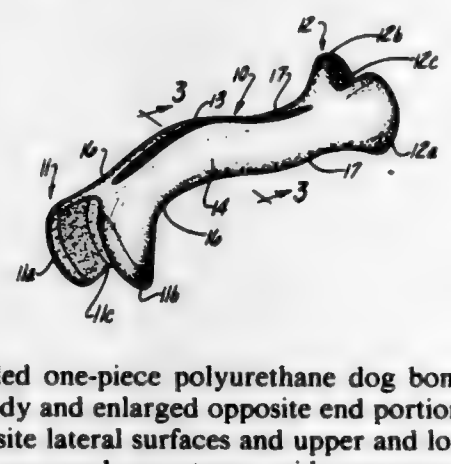
CHEWABLE TOY FOR ANIMAL

Philip L. Edwards, 14615 Klenk, Detroit, Mich. 48215

Filed Oct. 11, 1983, Ser. No. 540,987

Int. Cl.³ A61J *17/00*

U.S. Cl. 426—132 **11 Claims**



1. A molded one-piece polyurethane dog bone having an elongated body and enlarged opposite end portions; said bone having opposite lateral surfaces and upper and lower surfaces curving in compound curvatures; said curvatures comprising said upper and lower surfaces of said elongated body extending in one direction from the mid-region of said body curving upwardly, the upper and lower surfaces of said body extending in the opposite direction from said mid-region curving downwardly, the upper and lower surfaces of the end portion in said one direction curving upwardly and downwardly respectively, the last named upper surface comprising a continuation of the upward curvature of said upper surface of said body, the last named lower surface recurving downwardly from the upward curvature of said lower surface of said body, the upper and lower surfaces of the end portion in said opposite direction curving upwardly and downwardly respectively, the last named upper surface recurving upwardly from the downward curvature of said upper surface of said body, and the last named lower surface comprising a continuation of the downward curvature of said lower surface of said body.

4,513,015

METHOD OF SEALING A CONTAINER AND REMOVING AIR HEADSPACE

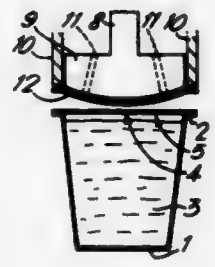
Graham Clough, Maidenhead, England, assignor to Nestec, S.A., Vevey, Switzerland

Filed Feb. 9, 1982, Ser. No. 347,110

Claims priority, application United Kingdom, Feb. 27, 1981, 8106326

Int. Cl.³ B65B *31/00*

U.S. Cl. 426—396 **11 Claims**



1. A process for sealing a thermoplastic container having structure defining an opening at the top of the container and a rim surrounding said opening, there being a food product disposed within said container, said process comprising the steps of:

(a) sealing a microporous gas-permeable intermediate membrane to said rim so that said intermediate membrane covers said opening, there is a headspace between the intermediate membrane and the food product and there is a gas within such headspace,

(b) extracting said gas from the headspace by deforming the intermediate membrane into the headspace towards the food product to thereby reduce the volume of the headspace and force the gas out of the headspace through the intermediate membrane, and

(c) sealing a barrier membrane to the rim so that the sealed barrier membrane is superposed on the intermediate membrane and overlies said opening,

said intermediate membrane retaining the food product within the container during the gas-extracting step to thereby prevent contamination of said rim by said food product during such step.

4,513,016

NO-STIR DRY MIX WITH PUDDING NUGGETS FOR CAKE WITH DISCONTINUOUS PUDDING PHASE

Jon R. Blake, 6901 Regent Ave N., Brooklyn Center, Minn. 55429; Richard K. Knutson, 6948 Valley View Rd., Corcoran, Minn. 55340, and Glenn J. VanHulle, 7608 Major Ave. N., Brooklyn Park, Minn. 55443

Filed Oct. 6, 1982, Ser. No. 433,074

Int. Cl.³ A21D *13/08*

U.S. Cl. 426—554 **25 Claims**

1. A dry mix for cakes which requires no mixing or aeration prior to baking and which after baking forms a baked cake having a discontinuous pudding phase, comprising:

A. from about 70% to 90% by weight of the dry mix of a layer cake component comprising flour, sugar, leavening and flavor in the form of granules, said granules having

1. a particle size of from about 0.85 to 2.8 mm.,

2. a bulk porosity of from about 0.50 to 0.64,

3. a density of from about 0.45 to 0.70 g./cc.,

4. an initial rate of moisture absorption of from about 0.055 to 0.075 g. of water per gram of cake component per second, and
5. a moisture content of less than about 5% based on said cake component, and;

B. from about 10% to 30% by weight of the dry mix of a pudding component in the form of nuggets, said nuggets comprising a matrix of sugar and pudding granules, said granules having
1. a particle size of from about 0.9 to 3.35 mm.,
2. a bulk porosity of from about 0.50 to 0.60,
3. a density of from about 0.5 to 0.7 g./cc.,
4. an initial rate of moisture absorption of from about 0.060 to 0.080 g. of water per gram of pudding granule per second, and
5. a moisture content of less than about 5% based on said pudding component,

wherein the weight ratio of sugar to granules in the matrix ranges from about 1:4 to 1:7, and wherein the granules comprise sugar, flavoring and pregelatinized starch.

4,513,017

PROCESS FOR PRODUCING A SPREAD STARTING FROM A BIMODAL DISPERSED PHASE

David P. J. Moran, Covington, and David G. Sharp, Putnoe, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,985
Claims priority, application United Kingdom, Oct. 7, 1981, 3130324
Int. Cl.[3] A23D *5/02*
U.S. Cl. 426—603 16 Claims

1. A process for producing an oil-in-water-in-oil emulsion, which comprises:

(i) producing a bimodal oil-in-water emulsion by
(a) preparing a cream comprising water, a stabilizing protein and oil in which the average diameter of the oil droplets ranges from 0.1 to 2 micrometers;
(b) adding to the cream thus obtained an amount of oil sufficient to cause the resulting mixture to comprise oil in the amount of 20 to 60 wt.% and applying an effective amount of shearing sufficient to ensure that oil droplets from the added oil are formed having an average diameter of at least 20 micrometers;

(ii) converting said bimodal emulsion into an oil-in-water-in-oil emulsion by applying conditions causing coalescence and crystallization of the larger oil droplets.

4,513,018

CONTINUOUS PRODUCTION OF CORN PRODUCTS

Manuel J. Rubio, 192 Benham Ave., Bridgeport, Conn. 06605

Continuation of Ser. No. 332,307, Dec. 18, 1981, abandoned, which is a division of Ser. No. 22,788, Mar. 22, 1979, Pat. No. 4,326,455. This application Aug. 3, 1983, Ser. No. 519,866
Int. Cl.[3] A23L *1/10*
U.S. Cl. 426—622 2 Claims

1. A method for continuously making grain flour from corn kernels comprising the continuous and successive steps of

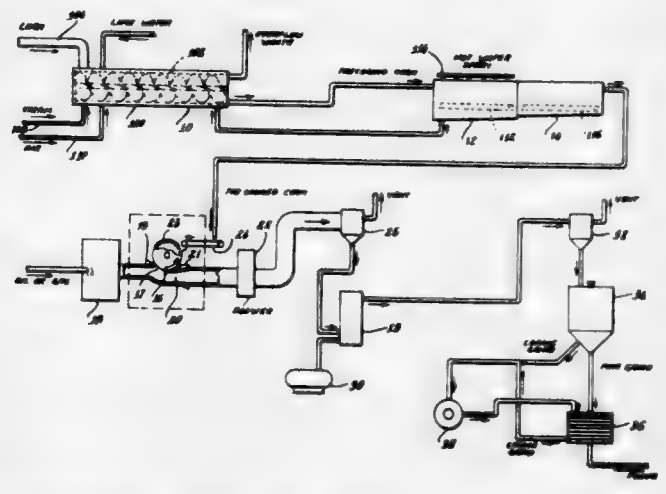
exposing said corn to a lime water solution to form an aqueous suspension and steeping the aqueous suspension under controlled conditions of heat at 86° to 94° C., for a time of 20–30 minutes and at an alkalinity of about 11.5,

passing the corn to a washer and washing the corn with water which is at a temperature of about 90° C. to remove any excess of lime-water from the corn and to impart heat to the corn for subsequent further processing,

passing the corn to a preconditioner wherein the corn is deposited on a conveyor and subjected to a transmit time through the preconditioner of at least about 35 minutes, the thickness of the layer and the time of transit being sufficient to cause the residual moisture constant of between 2% to 3% from between the corn kernels to be reabsorbed by the corn and to render the distribution of water within the corn kernels more nearly uniform cross-sectionally,

milling said corn into air-suspendable particles,

introducing said particles into a stream of super-heated air at a temperature of 550° C. to 650° C. and for a time which is sufficient partially gelatinize and cook the particles and



is sufficient to reduce the moisture content of the particles to 16% to 18%

cooling said particles while removing moisture therefrom to a content of about 9% to 12%,

segregating said particles into groups according to size, and collecting substantially all those among said particles which are of less than a predetermined size.

4,513,019

FILM-FORMING COMPOSITIONS FOR ENVELOPING SOLID FORMS, PARTICULARLY PHARMACEUTICAL OR FOOD PRODUCTS OR SEEDS, AND PRODUCTS OBTAINED, COATED WITH SAID COMPOSITIONS

Bernard Brancq, Le Chesnay, and Michel Malandain, Marly le Roi, both of France, assignors to SEPPIC, Paris, France

Filed Jul. 3, 1984, Ser. No. 627,665
Claims priority, application France, Jul. 6, 1983, 83 11276
Int. Cl.[3] G01N *25/00;* A61K *9/36*
U.S. Cl. 427—3 8 Claims

1. A process for enveloping solid forms such as pharmaceuticals, food products or seeds with a film-forming composition, comprising the steps of:

making a solution or dispersion of the components of a film-forming composition comprising, by weight, 15 to 85% of a cellulosic film-forming substance, 10 to 70% of at least one alpha-cellulose, and 5 to 30% of at least one plasticizer suitable for consumption; and

spraying said solution or dispersion on the form to be enveloped.

4,513,020

PLATELET METAL POWDER FOR COATING A SUBSTRATE

James Dickson, Stirling, N.J., and Charles Hays, Pearland, Tex., assignors to Allied Corporation, Morris Township, N.J.

Division of Ser. No. 285,885, Jul. 22, 1981, abandoned. This application Apr. 8, 1983, Ser. No. 483,330
Int. Cl.[3] B05D *1/00;* B22F *1/00*
U.S. Cl. 427—34 3 Claims

1. A method for depositing a coating free from interconnected porosity onto a substrate comprising:

(a) selecting an alloy based on Fe, Ni, Co or a combination thereof, said alloy being powder in platelet form, said powder being formed by fracturing of a brittle alloy and said powder having a particle size distribution such that at least 50% will not pass through a 270 Tyler mesh sieve and up to 15 percent will pass through an 80 Tyler mesh sieve but not through a 100 Tyler mesh sieve;

(b) processing said powder by passing it through a torch; and

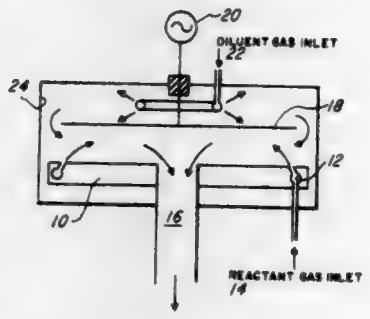
(c) depositing said processed powder onto a substrate.

4,513,021

PLASMA REACTOR WITH REDUCED CHAMBER WALL DEPOSITION

Andrew J. Purdes, and Thomas D. Bonifield, both of Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 344,590, Feb. 1, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,217
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **6 Claims**



1. A method for plasma-assisted deposition of materials, comprising the steps of:

providing a plasma reactor having a reaction chamber defined at least in part by sidewalls and including therein a substrate holder and an electrode parallel to and opposed to said substrate holder in spaced relation therewith;

introducing reactant gases into the reaction chamber of said plasma reactor at a first location and in a manner directing the reactant gases over the circumference of said substrate holder and radially inwardly with respect thereto, wherein said reactant gases are of respective chemical identities to produce a desired chemical material deposition as a reaction from a plasma formed therefrom;

creating an electric field within the reaction chamber in the space between said electrode and said substrate holder;

forming a plasma from the reactant gases in response to the creation of the electric field within the reaction chamber in the space between said electrode and said substrate holder;

exposing a substrate on said substrate holder to said plasma;

depositing the desired chemical material from said plasma as a coating on said substrate;

introducing diluent gas into the reaction chamber of said plasma reactor separately from the introduction of said reactant gases but while said reactant gases are being introduced into the reaction chamber at a second location apart from the space between said electrode and said substrate holder and different from said first location and in a manner directing the diluent gas flow along the internal sidewall surfaces of the reaction chamber in substantially circumferentially symmetric relation with respect to said substrate holder so as to deter the deposition of the desired chemical material from said plasma onto the internal sidewall surfaces of the reaction chamber; and

exhausting gases of the reacted plasma and the diluent gas from the reaction chamber via a location near the center of said substrate holder.

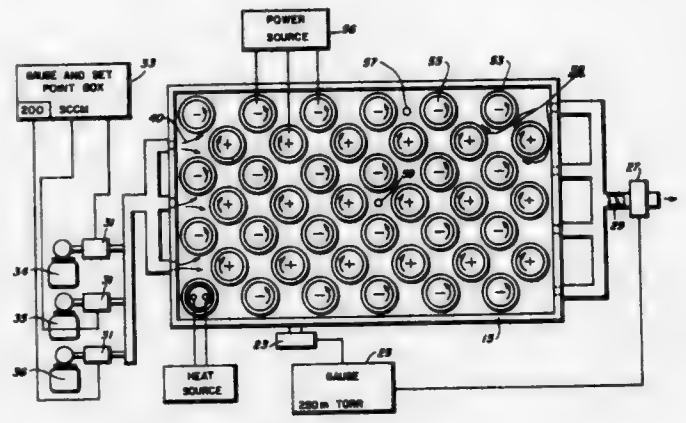
4,513,022

PROCESS FOR AMORPHOUS SILICON FILMS

Frank Jansen, Walworth, and Joseph Mort, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 456,935, Jan. 10, 1983, Pat. No. 4,466,380. This application May 25, 1984, Ser. No. 614,006
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—39 **4 Claims**

1. A process for preparing amorphous silicon photoconductors which comprises providing a vacuum chamber, containing therein a first electrode means, and a second counter electrode means, providing a cylindrical member on the first electrode means, heating the cylindrical member with heating elements contained in the first electrode means, to a temperature ranging from about 100° C. to about 300° C., causing the first electrode means to axially rotate, introducing a silane gas into the chamber means at a crossflow direction with respect to the cylindrical member, applying a current to the first electrode means, applying a current to the second electrode means, whereby the silane gas introduced is decomposed causing deposition of amorphous silicon on the cylindrical surface.

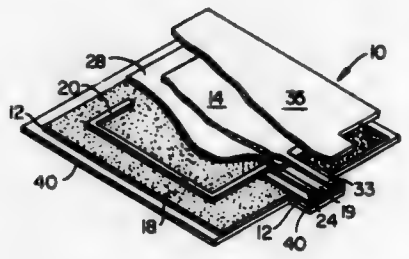


4,513,023

METHOD OF CONSTRUCTING THIN ELECTROLUMINESCENT LAMP ASSEMBLIES

John Wary, Noblesville, Ind., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 23, 1983, Ser. No. 468,936
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **19 Claims**



1. A method of constructing a thin electroluminescent lamp comprising the steps of:

(a) screen printing a band of silver conductive material substantially around the edges of a circumscribed area of a transparent conductive substrate with said area conforming to the desired configuration for the lamp and with said band forming an electrical bus bar for the lamp;

(b) forming an insulated support area over a section of said transparent conductive substrate extending from said silver conductive bus bar;

(c) depositing a finger-like section of silver conductive material over said insulated support area and extending from said bus bar to form a first electrical lead;

(d) forming a UV curable dielectric matrix by loading non-encapsulated particles of electroluminescent phosphor into a UV curable dielectric composition;

(e) depositing a coating of said UV curable dielectric composition over said circumscribed area of the transparent conductor and over said silver conductive bus bar;

(f) curing said coating composition by exposure to a source of ultraviolet light in a substantially inert atmosphere;

(g) superimposing a layer of a nontransparent conductive material over the surface of the UV curable dielectric coating with said nontransparent conductive layer having an elongated finger-like section extending over said insu-

lating support area to form a second electrical lead laterally spaced from said first electrical lead; and

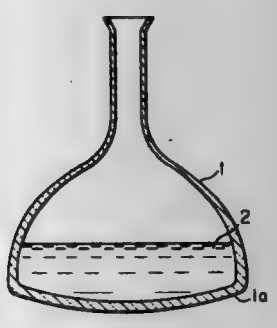
(h) applying a protective coating over said conductive layer and at least a portion of said first and second electrical leads.

4,513,024

PROCESS FOR FORMING PHOSPHOR SCREEN

Yasukazu Morita, and Naomitsu Watanabe, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,679
Claims priority, application Japan, Aug. 21, 1981, 56-130108
Int. Cl.³ B05D *5/06, 5/12*
U.S. Cl. 427—65 **10 Claims**



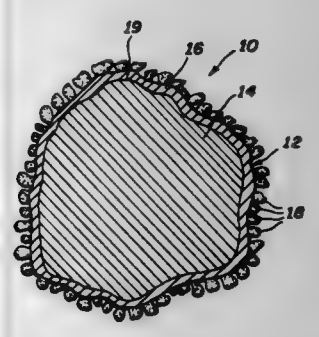
1. In a process for forming a phosphor screen on a cathode-ray tube faceplate by a settling process using a suspension of phosphor particles, the improvement which comprises using as the suspension one obtained by suspending phosphor particles which are susceptible to hydrolysis or dissolution in an alkaline aqueous solution which has a pH of 10 to 13 and contains a small amount of water glass.

4,513,025

LINE EMISSION PENETRATION PHOSPHOR FOR MULTICOLORED DISPLAYS

Thomas E. Clark, Acton, and Charles T. Burilla, Southboro, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed May 11, 1982, Ser. No. 377,120
Int. Cl.³ B05D *5/06;* H01J *31/20*
U.S. Cl. 427—68 **11 Claims**



1. A method for making a coated cathodoluminescent line emission penetration phosphor particle having a central region consisting of La_2O_2S:Tb, a non-luminescent barrier region substantially uniformly surrounding said central region consisting substantially of $La_2O_2SO_4$:Tb and forming a core particle with said central region and a layer of coating particles consisting substantially of YVO_4-Eu surrounding said barrier region, comprising the steps of:

selecting a host material consisting of particles of La_2O_2S:Tb with a diameter greater than the diameter of said coating particles;

oxidizing ones of said host particles to form said barrier region thereover in a thickness of about 0.5 to 1 micron thereby forming a plurality of core particles;

acidifying a first solution of gelatin with glacial acetic acid to pH in the range of 3 to 5;

agitating said core particles in said first acidified gelatin solution in a concentration of 0.1 gm/ml for a period of about 25 min. to apply a first gelatin coating;

removing an excess of said first acidified gelatin solution;

selecting a quantity of YVO_4:Eu substantially free of absorptive film material and having a ratio by weight to said core particles of about 1:3 and a particle size of about 0.5 to 2 microns and agitating in an aqueous solution having a pH of about 3.9;

agitating said core particles in said aqueous solution and said coating particles for about 25 min. sufficient to cause said coating particles to coat said core particles in at least a single layer thickness; and

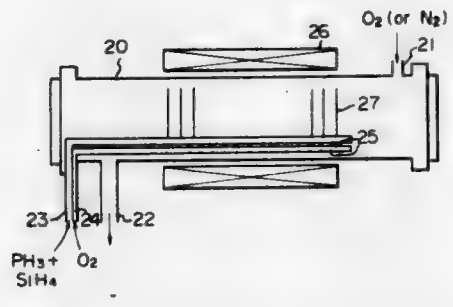
removing an excess of said aqueous solution from said core and said coating particles in said aqueous solution.

4,513,026

METHOD FOR COATING A SEMICONDUCTOR DEVICE WITH A PHOSPHOSILICATE GLASS

Hidekazu Miyamoto, Sagamihara; Yoshimi Shioya, Yokohama; Mamoru Maeda, Tama, and Mikio Takagi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 295,618, Aug. 24, 1981, abandoned.
This application Aug. 1, 1983, Ser. No. 518,329
Claims priority, application Japan, Aug. 29, 1980, 55-119357; Nov. 5, 1980, 55-155361
Int. Cl.³ H01L *21/316*
U.S. Cl. 427—85 **9 Claims**



1. A method for manufacturing semiconductor devices in a reaction tube provided with a gas inlet adjacent one end of the reaction tube, a gas outlet adjacent the opposite end of the reaction tube and at least two gas feed pipes having plural small openings pierced along the longitudinal direction thereof, comprising the steps of:

(a) positioning plural substrates for the semiconductor devices to be treated in the reaction tube so that the main surfaces of the plural substrates are substantially vertically aligned with respect to one another and are substantially perpendicularly intersected by the longitudinal axis of the reaction tube;

(b) introducing a silicon compound gas including a phosphorus compound gas through one of the at least two gas feed pipes having plural small openings into the reaction tube and introducing an oxidizing gas through the other of the at least two gas feed pipes out the plural small openings into the reaction tube, while maintaining the inside of the reaction tube under a reduced pressure by evacuating the inside of the reaction tube through the gas outlet; and

(c) introducing a gas into the reaction tube through the gas inlet to establish a gas flow, for the gases introduced into the reaction tube in said steps (b) and (c), in a direction along the longitudinal axis of the reaction tube from the gas inlet, via the periphery of the plural substrates, toward the gas outlet to expose the plural substrates to the gas flow, whereby phosphosilicate glass films are deposited on the main surfaces of the plural substrates.

4,513,027

UPC SCANNABLE MARKING COMPOSITION AND APPLICATIONS THEREOF

William T. Skukowski, Palmetto, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.

Division of Ser. No. 335,400, Dec. 29, 1981, Pat. No. 4,431,693. This application Feb. 9, 1984, Ser. No. 578,505

Int. Cl.³ B05D *5/06*; B41M *1/26, 1/34, 1/40*

U.S. Cl. 427—162 **12 Claims**

1. A process for marking a substrate exhibiting low reflectance in the visible and infrared region of from about 600 to about 1000 nm with a symbol suitable for use with code indicia scanning apparatus comprising imprinting indicia on said substrate in a negative mode so that the imprinted indicia comprise the reflective portion of the symbol and the voids between the printed indicia comprise the low reflective portion of the symbol, wherein the indicia are imprinted with a marking composition comprising a white pigment which reflects in said visible and infrared region and a colored pigment exhibiting insufficient reflectance itself in said visible and infrared region to be suitable for the reflective portion in a code symbol to be processed by a code indicia scanning means, with said pigments being present in amounts sufficient to provide a contrast in reflectance with the substrate suitable for processing by code indicia scanning apparatus.

4,513,028

ADHESIVE TAPE AND PROCESS FOR ITS PRODUCTION

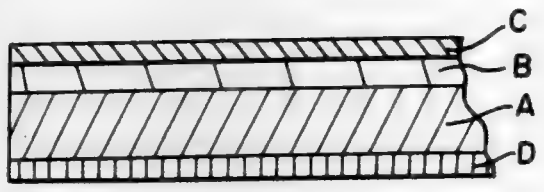
Toshiyuki Aritake, Nagahama, Japan, assignor to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Division of Ser. No. 397,237, Jul. 12, 1982, Pat. No. 4,447,485. This application Mar. 5, 1984, Ser. No. 567,870

Claims priority, application Japan, Aug. 4, 1981, 56-122294; Aug. 10, 1981, 56-125129; Oct. 5, 1981, 56-158439; Nov. 30, 1981, 56-192052

Int. Cl.³ B32B *31/16*

U.S. Cl. 427—173 **5 Claims**



1. A process for producing an adhesive tape which comprises forming an adhesive layer on one side of a base sheet of a polypropylene resin and a surface layer of a polypropylene resin having a melting point lower than that of the polypropylene resin of the base sheet and containing fine inorganic filler particles, on the other side of the base sheet to obtain an unstretched laminated sheet, and stretching the laminated sheet at a temperature of at least the melting point of the polypropylene resin of the surface layer to bring the thickness of the surface layer to be not more than the maximum particle diameter of said fine inorganic filler particles.

4,513,029

SEA WATER ANTIFOULING METHOD

Takaaki Sakai, Suita, Japan, assignor to Osaka Suda Co. Ltd., Osaka, Japan

Filed Jul. 18, 1983, Ser. No. 514,786

Claims priority, application Japan, Jul. 16, 1982, 57-124739

Int. Cl.³ B05D *5/04*

U.S. Cl. 427—204 **11 Claims**

1. A method for preventing fouling of a structure which may be in contact with sea water, which comprises coating an antifouling coating composition composed of

(a) an alkali silicate as a binder,

(b) about 15 to about 400% by weight, based on the amount of SiO_2 in component (a), of active magnesium oxide having an iodine adsorption of about 30 to about 300 mg.I/g.MgO,

(c) 0 to less than 15% by weight, based on the total amount of components (b) and (c), of calcium sulfite, and

(d) 0 to about 900% by weight, based on the total amount of components (b) and (c), of at least one member selected from the group consisting of metallic zinc and inorganic zinc compounds, on at least that portion of said structure which may be contacted with sea water, thereby preventing fouling marine organisms from attaching themselves to said contacting portion.

4,513,030

METHOD OF PRODUCING SILICON CARBIDE ARTICLES

John V. Milewski, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 18, 1982, Ser. No. 389,802

Int. Cl.³ B05D *3/10*; C23C *11/08*; C04B *35/54, 35/80*

U.S. Cl. 427—227 **4 Claims**

1. A method of forming a shaped product having a surface layer of silicon carbide (SiC) reaction bonded to an inner structure consisting essentially of carbon, comprising the steps of:

(a) generating SiO gas at a concentration of between about 5 and 50 volume percent by heating solid silicon dioxide (SiO_2) to a reaction temperature of between approximately 1500° and 1550° C. in an atmosphere of hydrogen, said solid silicon dioxide being in the form of a powder surrounding said structure:

(b) contacting said structure with said SiO gas at said reaction temperature of between approximately 1500° C. and 1550° C. for a period of time sufficient to form a layer of SiC on the surface of said structure by chemical conversion of carbon in said structure to SiC, whereby a layer of reaction-bonded SiC is formed on the surface of said structure without significantly changing the dimensions of said structure.

4,513,031

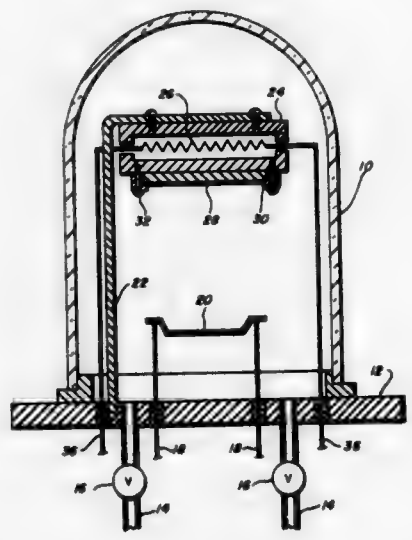
PROCESS FOR FORMING ALLOY LAYER

Lewis B. Leder, Chapel Hill, N.C., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 9, 1983, Ser. No. 530,841

Int. Cl.³ B05D *5/12*; C23C *11/00, 13/00*

U.S. Cl. 427—250 **21 Claims**



1. A method of forming an alloy layer on the surface of a substrate comprising forming in a vessel a molten bath comprising at least one vaporizable alloying component having a higher vapor pressure than at least one other vaporizable alloying component in said bath, forming a thin, substantially inert, liquid layer of an evaporation retarding film forming material on the upper surface of said molten bath, co-vaporiz-

ing at least a portion of both said vaporizable alloying component having a higher vapor pressure and said other vaporizable alloying component whereby said evaporation retarding film retards the initial evaporation of said vaporizable alloying component having a higher vapor pressure, and forming an alloy layer comprising both said vaporizable alloying component having a higher vapor pressure and said other vaporizable alloying component on said substrate.

4,513,032

PRODUCING A SOLID POLYMERIC ELECTROLYTE

Peter R. Klinkowski, Norwalk, Conn., assignor to Dorr-Oliver, Stamford, Conn.

Division of Ser. No. 285,196, Jul. 20, 1981, Pat. No. 4,419,209.
This application Aug. 23, 1983, Ser. No. 481,870
Int. Cl.[3] B05D *3/10*; C08D *5/20*; B01D *39/00, 39/14*
U.S. Cl. 427—336 **10 Claims**

1. A method for making a solid polymeric electrolyte member composed of three phases, comprising mixing an ion exchange resin, an organic binder and an organic solvent, impregnating a fibrous, woven or unwoven, substantially inert substrate with the resin-binder-solvent mixture and thereafter contacting the impregnated substrate with a diluent to effect precipitation of said binder from solution, thereby removing solvent and leaving a thin film of ion exchange resin tightly bonded by said binder to said fibrous substrate.

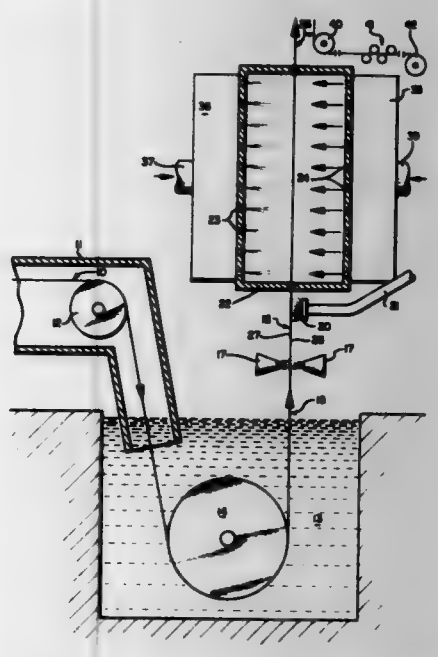
2. The method of claim 1 wherein the ion exchange resin is in the form of fine particles and the diluent is water.

4,513,033

DIFFERENTIALLY COATED GALVANIZED STEEL STRIP AND METHOD AND APPARATUS FOR PRODUCING SAME

Ram S. Patil, Munster; Donald F. Johnson, Hammond, and John T. Quasney, East Chicago, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jan. 20, 1984, Ser. No. 572,386
Int. Cl.[3] C23C *1/02*
U.S. Cl. 427—349 **16 Claims**



1. A method for producing a differentially coated, galvanized steel strip wherein one of two opposite strip sides has a relatively light coat composed of iron-zinc alloy and the other strip side has a relatively heavy coat at least the outer part of which consists essentially of zinc without surface bleed-throughs of iron-zinc alloy, said method comprising the steps of:

passing a steel strip having two opposite sides through a bath of molten coating metal consisting essentially of zinc to coat both sides of the strip with said molten coating metal;

adjusting the weight of said coating metal on opposite sides of the strip to provide one strip side with a relatively light coat of the coating metal and the other strip side with a relatively heavy coat of said coating metal, said heavy coat being at least partially molten;

simultaneously heating said one strip side and cooling said other strip side to transform the coating metal on said one strip side to iron-zinc alloy throughout while only partially transforming the coating metal on the other strip side to iron-zinc alloy;

and preventing intermittent bleed-throughs of iron-zinc alloy on said other strip side by precooling said other strip side between said weight adjusting step and said simultaneous heating and cooling step;

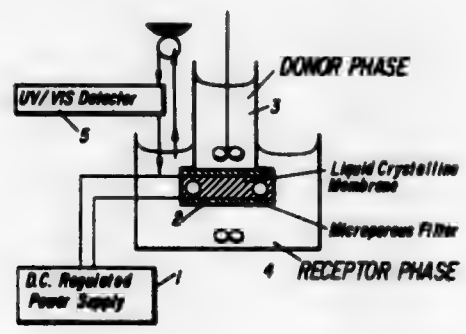
said precooling step comprising substantially fully solidifying the molten coating metal on said other strip side before the start of said simultaneous heating and cooling step.

4,513,034

VARIABLE PERMEABILITY LIQUID CRYSTALLINE MEMBRANES

Randall V. Sparer, and Ravi K. Bhaskar, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 14, 1984, Ser. No. 620,409
Int. Cl.[3] C09K *3/34*; G02F *1/13*
U.S. Cl. 428—1 **9 Claims**



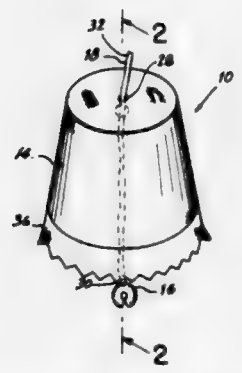
1. A variable permeability liquid crystalline membrane, comprising a porous structure containing a polymeric liquid crystal which can undergo a phase change.

4,513,035

ORNAMENT

Michelle D. Barfield, and George Spector, both of 233 Broadway, Rm 3615, New York, N.Y. 10007

Filed Sep. 26, 1983, Ser. No. 535,767
Int. Cl.[3] G10K *1/00*
U.S. Cl. 428—11 **2 Claims**



1. An ornament simulating a bell comprising:

(a) a hollow generally conical shaped inverted cup having an aperture in top portion, an outer skin forming an exterior surface and an open bottom mouth thereof;

(b) an outer covering placed about the exterior surface of said cup, said covering having an aperture in alignment with the aperture in said cup;

(c) a decorative element being spheroidal in shape simulating a bell clapper; and

(d) a hanger element disposed through the aperture in said outer covering and the aperture in said cup, one end of said hanger element affixed to said decorative element with other end of said hanger element extending outwardly from the top portion of said cup for attachment to a support from which said ornament is adapted to be supported, further comprising a trim placed about bottom edge of said outer covering to form an ornamental design thereof, wherein said outer covering and said trim is made of cloth material, said cloth material of said outer covering being of a different color than said cloth material of said trim, wherein said decorative element is a very small bell to make a series of light clinking sounds like a tinkle, wherein said hanger element is a strand of material and said cup is made of molded cellular polystyrene material, wherein

(e) two ribs, one rib formed around middle of the exterior surface and the other rib formed around bottom of the exterior surface near the open bottom mouth so that said ribs will give support to said cup and enable said cloth material to better engage the exterior surface of the cup; and

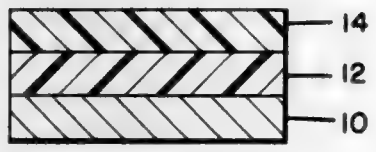
(f) a plurality of pin hooks placed around the exterior surface so that said pin hooks can engage said cloth material and enhance the design of the ornament.

4,513,036

BARRIER LAMINATES FOR CONTAINMENT OF ESSENTIAL OILS AND FLAVORS AND CARTONS MADE THEREFROM

Kenneth P. Thompson, Canton, N.C., and Richard C. Ihde, Strongsville, Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Oct. 17, 1983, Ser. No. 542,490
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—35 **24 Claims**



1. A container for liquids containing essential oils and/or flavors constructed from laminate a comprising an outer paperboard layer, a layer of propylene poiymer coated on an inner surface of said paperboard layer, and propylene polymer layer having an inner surface which has been treated to enhance adhesion, and a heat sealable layer of an olefin polymer coated on said treated inner surface of said propylene polymer layer.

4,513,037

MULTILAYERED HOLLOW POLYCARBONATE CONTAINERS

Patrick C. Collins, Pittsfield, Mass., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 29, 1983, Ser. No. 566,513
Int. Cl.³ B65D *1/00*; B32B *27/36*
U.S. Cl. 428—35 **15 Claims**

1. A multi-layered hollow container containing at least three layers comprised of:

(i) a polycarbonate inner layer comprised of at least one ply of a polycarbonate resin;

(ii) a polycarbonate outer layer comprised of at least one ply of a polycarbonate resin; and

(iii) an intermediate layer disposed between said inner layer and said outer layer comprised of at least one ply of a thermoplastic resin exhibiting gas-barrier properties.

4,513,038

MULTILAYER FILM HAVING A LAYER OF LOW PRESSURE, LOW DENSITY HETEROGENEOUS ETHYLENE COPOLYMERS

John Anthony, Downers Grove, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 317,936, Nov. 3, 1981, Pat. No. 4,464,426. This application Feb. 7, 1984, Ser. No. 577,801
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—35 **21 Claims**

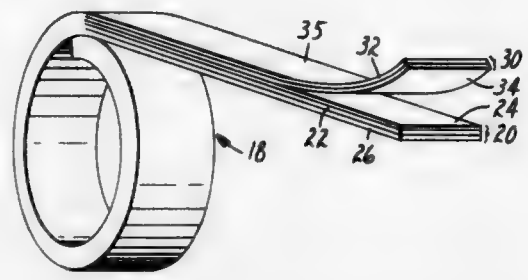
1. A coextruded multilayer film comprising a first outer layer of low pressure, low density gas phase heterogeneous copolymers formed from ethylene and at least one of propylene and butene-1 and at least one C_5–C_8 comonomer, and a second outer layer comprising high pressure, low density polyethylene, said copolymers having a melt index of between about 0.5 and about 5.0 decigrams per minute, and a density of between about 0.91 and about 0.94 grams per cubic centimeter.

4,513,039

COMPOSITE OF SEPARABLE PRESSURE-SENSITIVE ADHESIVE TAPES

Donald L. Esmay, Coon Rapids, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 439,047, Nov. 3, 1982,. This application Apr. 4, 1983, Ser. No. 481,814
Int. Cl.³ C09J *7/02*; A61F *13/02*
U.S. Cl. 428—40 **16 Claims**



1. Composite including a first tape comprising a flexible support on each face of which is a pressure-sensitive adhesive, and a second tape comprising a flexible support, on at least one face of which is pressure-sensitive adhesive,

said first and second tapes being releasably adhered together adhesive face to adhesive face, each pressure-sensitive adhesive

(a) being the polymerized product of a predominantly alkyl acrylate composition, the alkyl groups of which have an average of 4–12 carbon atoms, each said composition being physically compatible with the other,

(b) being substantially solvent-free,

(c) being crosslinked, and

(d) affording at each face a 180° Peelback Value of at least 10 N/dm.

11. Method of making a composite comprising the steps of

(1) coating onto each face of a first flexible support a substantially solvent-free photopolymerizable mixture,

(2) coating onto one face of a second flexible support a substantially solvent-free photopolymerizable mixture,

each said photopolymerizable mixture being physically compatible with the other said mixture and comprising an alkyl acrylate, the alkyl groups of which have an average of 4–12 carbon atoms, and a crosslinker, and

(3) exposing each coating to ultraviolet radiation to polymerize the acrylate to provide a pressure-sensitive adhesive layer which

(a) is crosslinked and

(b) affords at each face a 180° Peelback Value of at least 10 N/dm,

(4) superimposing the resulting two tapes adhesive face to adhesive face, which two tapes can later be peeled apart

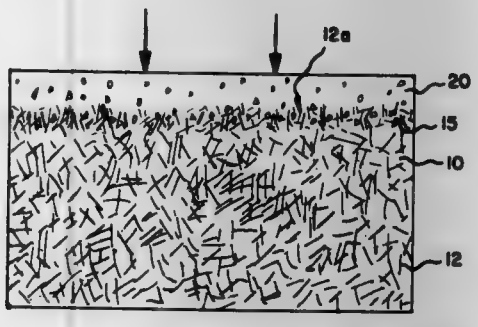
without delamination or offsetting of adhesive and used separately.

4,513,040

HIGHLY WEAR-RESISTANT STEEL FIBER REINFORCED CONCRETE TILES

David R. Lankard, Columbus, Ohio, assignor to Ribbon Technology, Inc., Gahanna, Ohio

Filed Apr. 22, 1983, Ser. No. 488,241
Int. Cl.[3] B32B *13/02*
U.S. Cl. 428—49 18 Claims



1. A heavy duty, wear, crack and spall-resistant concrete composite floor tile comprising:

a concrete substrate layer containing 4 to 16 volume percent of dispersed, fine, metal fibers, and

a wear-resistant concrete surface layer containing about 30 to 60 volume percent of wear-resistant, metallic aggregate or an inorganic aggregate having a Mohs hardness of at least 7,

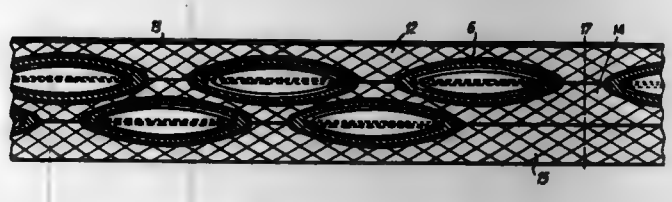
said tile being further characterized in that the layers are bonded to each other by a plurality of metal fibers in said substrate layer having one end embedded in and bonded to the substrate layer and the other end embedded in and bonded to the surface layer.

4,513,041

TUBULAR VACUUM-TIGHT ENCLOSURES FOR THERMAL AND ACOUSTICAL INSULATING PANELS

Rene E. Delluc, 2, Square du Berry, 91 300 Massy, France

Filed Aug. 12, 1983, Ser. No. 522,850
Int. Cl.[3] B32B *3/00*
U.S. Cl. 428—69 10 Claims



1. A cell for insulating panels comprising:

plastic gas impervious flexible sheath, having first and second sealed ends; and

at least one rigid hollow, plastic tubular element having first and second ends, said tubular element being disposed within said sheath;

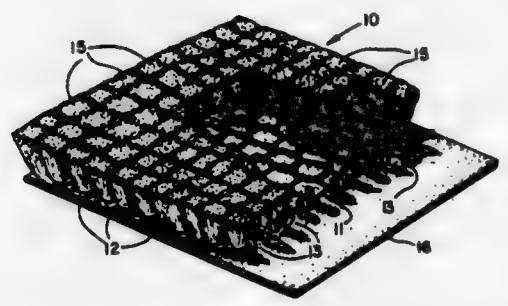
wherein said sealed sheath and tubular element have been substantially evacuated.

4,513,042

NONFLAMMABLE SLIVER KNIT HIGH PILE FABRIC

Douglas S. Lumb, Methuen, Mass., assignor to Glenoit Mills, Inc., New York, N.Y.

Filed Jul. 23, 1984, Ser. No. 633,291
Int. Cl.[3] B32B *3/02*
U.S. Cl. 428—95 7 Claims



1. A nonflammable sliver knit high pile fabric characterized by

(a) a backing fabric knitted from flame retardant aramid spun yarn,

(b) pile fibers composed of a mixture of flame retardant rayon fibers and superwashed wool fibers,

(c) said mixture of fibers falling within the general range of 55% to 70% of said rayon fibers and 45% to 30% of said wool fibers, and

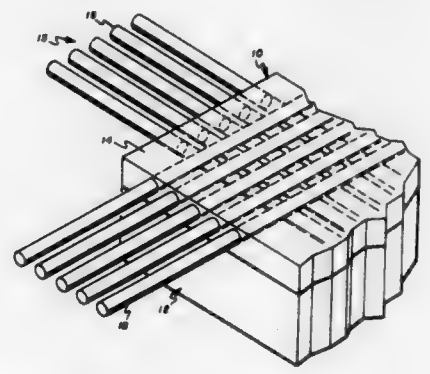
(d) a back coating composed of a flame retardant composition.

4,513,043

PRECISION WIRE GRID GLASS DIGITIZING TABLETS

Jack E. Smades, Scottsdale, Ariz., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 8, 1982, Ser. No. 433,602
Int. Cl.[3] B32B *5/12*
U.S. Cl. 428—113 11 Claims



1. An improved wire grid glass tablet for translating graphic location or movement information into corresponding electrical signals comprising:

a flat glass plate forming a structural base for the tablet;

a resin layer bonded to one surface of the glass plate;

a first grid of accurately spaced parallel wires immersed in the resin layer and arranged in a common plane parallel to the plane of the glass plate, said wires comprising a ductile material, said wires having been tensioned to beyond the yield point thereby exhibiting plastic flow and straightness;

a second grid of parallel wires immersed in the resin layer and spaced from the first grid, said second grid comprising accurately spaced parallel wires in a common plane parallel to the plane of the glass plate and the plane of the first grid, said second grid also comprising wires of ductile material, said wires having been tensioned to the yield point thereby exhibiting plastic flow and straightness;

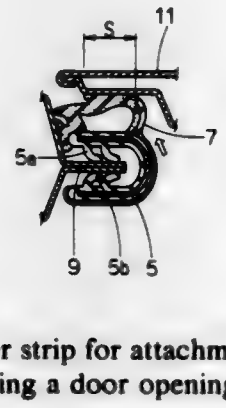
said resin layer being relatively thin with respect to the glass

plate and comprising a thickness in the cured state resulting from curing a layer of uncured at least partially settled resins supported on the glass plate when level under gravity and surface tension prior to immersing said grids in said resin layer.

4,513,044
COLORED WEATHER STRIP

Kiyoshi Shigeki, Shyuchi, and Kunio Maeno, Ama, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugaigun, Japan

Filed Dec. 29, 1983, Ser. No. 566,707
Claims priority, application Japan, Dec. 30, 1982, 57-198222
Int. Cl.³ E06B *7/16*
U.S. Cl. 428—122 **1 Claim**



1. A colored weather strip for attachment to a flange on an automobile body defining a door opening, said strip comprising:
a sealing portion formed from sponge rubber and having an outer surface including a door sealing area;
a U-shaped trim portion joined integrally with said sealing portion, formed from solid rubber;
a metal core being embedded in said solid rubber of said trim portion; and
a colored solid rubber layer having a color which differs from those of said sealing and trim portions, said colored layer covering an outer surface of said trim portion and extending beyond said trim portion to cover a part of said cover surface of said sealing portion to a point close to but not into said door sealing area.

4,513,045
SHEET TYPE FELT

Alfredo A. Bondoc, South Bound Brook; Eugene J. Flood, Haddonfield, and Frederick W. Sieling, Bound Brook, all of N.J., assignors to GAF Corporation, Wayne, N.J.

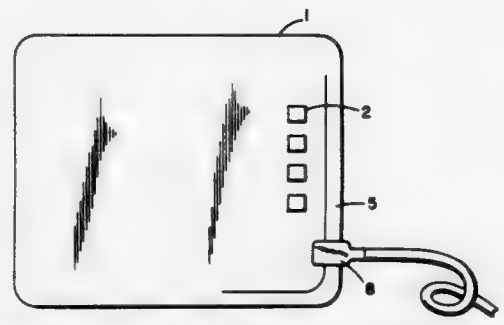
Division of Ser. No. 595,881, Apr. 2, 1984,. This application Aug. 3, 1984, Ser. No. 637,640
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—137 **8 Claims**

1. Rigid foamed insulation board comprising:
(a) a rigid closed cell foam core; and
(b) sheet type felt adhered to a face of said core, said felt comprising on a dry basis:
(1) between about 40 and about 80 wt % cellulosic fibers;
(2) between about 5 and about 20 wt % glass fibers;
(3) between about 5 and about 15 wt % binder; and
(4) between about 3 and about 20 wt % asphalt.

4,513,046
ANTISTATIC SUPPORT

Kurt Waniek, Purkersdorf, and Heinz Tichy, Vienna, both of Austria, assignors to Semperit Aktiengesellschaft, Traiskirchen, Austria

PCT No. PCT/AT81/00032, § 371 Date Aug. 2, 1982, § 102(e) Date Aug. 2, 1982, PCT Pub. No. WO82/02315, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 18, 1981, Ser. No. 406,238
Claims priority, application Austria, Dec. 22, 1980, 6240/80
Int. Cl.³ B25H *3/06, 1/10*
U.S. Cl. 428—156 **11 Claims**

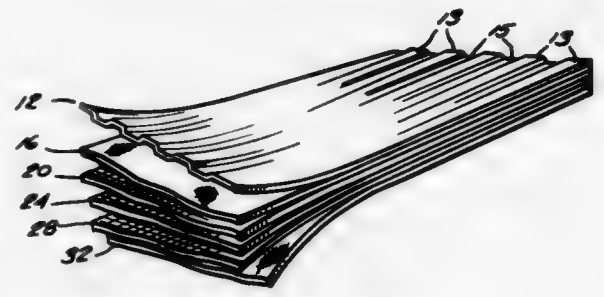


1. An antistatic grounded support for work places serving for the manipulation of electronic components, said antistatic support comprising:
a rubber layer having a specific volume resistance (according to DIN 53482) of at least 10^2 Ωcm, a sufficiently low surface resistance for conducting away any static charges which may accumulate thereon, and defining two surfaces;
at least a portion of one of said two surfaces of said rubber layer is provided with recesses having a bottom and serving for the reception of waste materials;
said one of said two surfaces of the rubber layer constituting the top surface thereof which is used for performing work thereupon; and
each said recess having, in top plan view, a dimension of at least 8 mm in at least one direction;
said recesses each have a depth in the range of 2 to 5 mm;
webs formed between said recesses; and
each said web having a width of material between the recesses in the range of 1 to 5 mm.

4,513,047
SORBENT INTERNALLY RIBBED CARBON-CONTAINING MATERIAL AND PROTECTIVE GARMENT FABRICATED THEREFROM

Jack Leach, Greensboro, and Delbert A. Davis, Kernersville, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 23, 1984, Ser. No. 572,751
Int. Cl.³ B32B *1/00*
U.S. Cl. 428—175 **12 Claims**



1. A laminate suitable for fabricating garments, comprising:
at least one layer of a woven activated carbon fabric;
an absorbent body-side rayon layer which underlays said at least one carbon fabric layer; and
an innermost layer of a fabric material having a plurality of

ribs which form perspiration-conducting channels, said innermost layer underlying said body-side rayon layer.

4,513,048

WEBBED MULTIPLE SHEETS

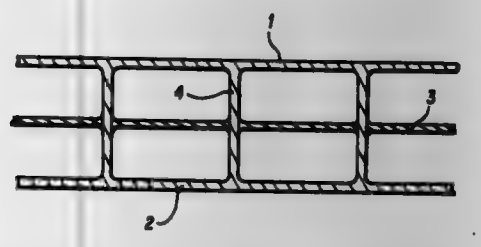
Peter Kaube, Rossdorf; Karl-Heinz Schanz, Muehltal; Heinz Vetter, Rossdorf, and Jens Müller, Griesheim, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,133

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 8225408[U]

Int. Cl.³ B32B *3/26, 27/08*

U.S. Cl. 428—188 **6 Claims**



1. Webbed multiple sheets comprising two substantially parallel, substantially plane polymethylmethacrylate outer layers and at least one center layer between said outer layers, wherein said outer layers and said center layers are bonded together into one piece by webs and wherein said said center layer or layers comprise a thermoplastic material having increased tenacity, increased zero viscosity or a combination thereof in molten condition, as compared with the material of said outer layers, thereby reducing sagging of said center layer or layers during extrusion, and wherein said thermoplastic material of said center layer or layers is selected from the group consisting of polycarbonates, polysulfones, thermoplastic polyesters and fluoropolymers.

4,513,049

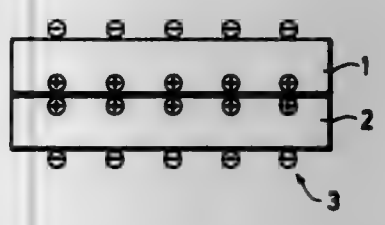
ELECTRET ARTICLE

Kazuyuki Yamasaki, Iwakuni, and Fukashi Kagawa, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,890

Int. Cl.³ B32B *3/02*

U.S. Cl. 428—194 **10 Claims**



1. An electret article comprising a laminate of a plurality of electret plastics films, said films being laminated together, the number of films in said plurality of films being an even number, with the juxtaposed internal surfaces of said films facing each other within said laminate being of the same polarity, said laminate having the same polarity on both external surfaces, each of said films having opposite polarities on opposite surfaces.

4,513,050

MATERIAL FOR PACKAGING LIGHT-SENSITIVE MATERIALS

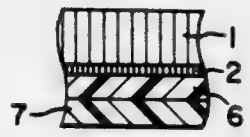
Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 22, 1983, Ser. No. 487,567

Claims priority, application Japan, Apr. 26, 1982, 57-68620

Int. Cl.³ B32B *27/00, 27/16*

U.S. Cl. 428—200 **14 Claims**



1. A material for packaging light-sensitive materials composed of a composite sheet comprising a substrate coated with at least a middle layer and at least a surface layer through melt co-extrusion, said surface layer being of thermoplastic resin which is heat sealable and yet has larger neck-in and which is selected from the group consisting of ethylene-vinyl acetate copolymer containing not more than 93 wt % ethylene, ethylene-acrylate copolymer containing not more than 93 wt % ethylene, ethylene-methacrylate copolymer containing not more than 93 wt % ethylene, linear low-density polyethylene, ionomer and mixtures thereof, said middle layer being of thermoplastic resin having small neck-in and good adhesion to the substrate and which is selected from the group consisting of low-density polyethylene, moderate-density polyethylene, high-density polyethylene, polypropylene, ethylene-acrylate copolymer containing not less than 95 wt % ethylene, ethylene-methacrylate copolymer containing not less than 95 wt % ethylene, ethylene-vinyl acetate copolymer containing not less than 95 wt % ethylene and mixtures thereof, and one or more layers of said composite sheet containing light-shielding material.

4,513,051

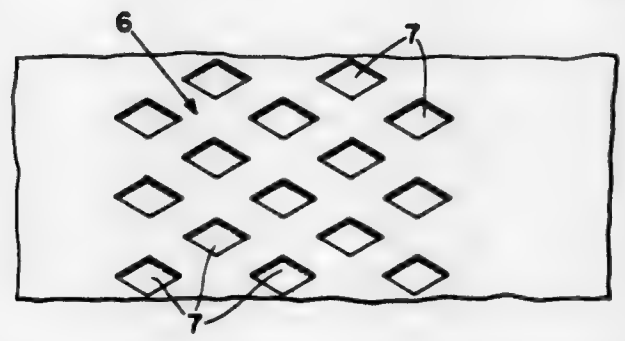
TISSUE PAPER PRODUCT

Bruce W. Lavash, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 5, 1984, Ser. No. 568,475

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—212 **5 Claims**



1. A personal care product comprising a planar substrate and an emollient carried by said substrate; said substrate comprising a laminate; said laminate comprising at least two plies of tissue paper in juxtaposed relation; at least one of said plies comprising a first layer and a second layer; said first layer being weak relative to said second layer and having its outwardly facing surface soft, relatively untextured, and smooth; said second layer being sufficiently strong to impart sufficient strength to said ply to enable it to perform its intended function; said plies being oriented in said laminate so that said outwardly facing surface of said first layer forms one exposed surface of said substrate; said emollient being distributed over at least a major portion of said exposed surface.

4,513,052

HEAT-SENSITIVE RECORDING MATERIAL

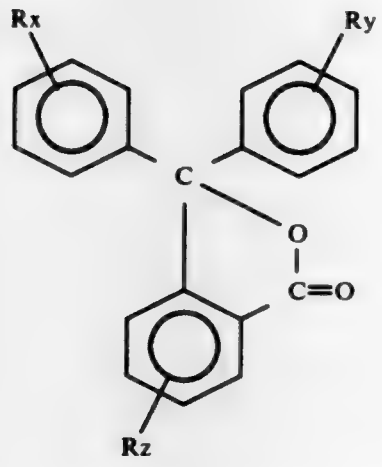
Keishi Kubo, Yokohama, and Eiichi Kawamura, Numazu, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 337,338, Jan. 6, 1982, abandoned. This application Nov. 16, 1983, Ser. No. 552,847
Claims priority, application Japan, Jan. 16, 1981, 56-5292
Int. Cl.³ B05D 3/06
U.S. Cl. 428—219 8 Claims

1. A heat-sensitive recording material comprising a support and a heat-sensitive, color-forming layer formed on said support, said color-forming layer comprising

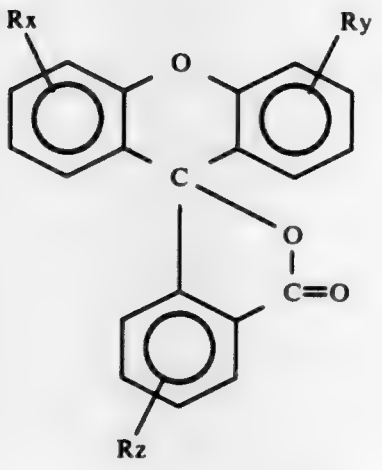
(1) 10 to 20 weight % of a colorless or pale leuco dye selected from the group consisting of

(A) triphenylmethane dyes of the formula:



wherein Rx, Ry and Rz are each hydrogen, hydroxyl, halogen, alkyl, nitro, amino, dialkylamino, monoalkylamino or aryl;

(B) fluoran dyes of the formula:



wherein Rx, Ry and Rz have the same meanings as defined above;

(C) fluoran dyes selected from the group consisting of

3-cyclohexylamino-6-chlorofluoran,

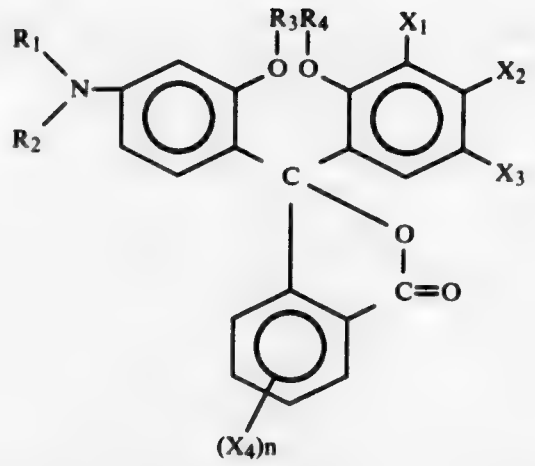
3-(N,N-diethylamino)-5-methyl-7-(N,N-dibenzylamino)fluoran,

3-pyrrolidino-6-methyl-7-anilinofluoran,

2-{N-(3'-trifluoromethylphenyl)amino}-6-diethylaminofluoran, and

2-{3,6-bis(diethylamino)-9-(o-chloroanilino)}xanthyl benzoic acid lactam;

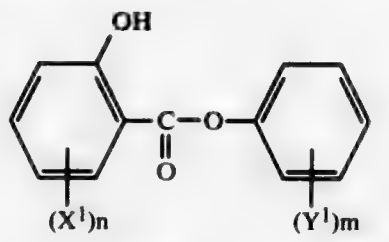
(D) lactone compounds of the formula:



wherein R_1 and R_2 are each hydrogen, lower alkyl, substituted or non-substituted aralkyl, substituted or non-substituted phenyl, cyanoethyl or β-halogenated ethyl, or R_1 and R_2, bonded together, are $-CH_2)_4$, $-CH_2)_5$ or $-CH_2)_2O-CH_2)_2$, R_3 and R_4 are each hydrogen, alkyl or phenyl, one of R_3 and R_4 being hydrogen, X_1, X_2 and X_3 are each hydrogen, lower alkyl, lower alkoxy, halogen, halogenated methyl, amino or substituted amino, X_4 is hydrogen, halogen, lower alkyl or lower alkoxy, and n is an integer of from 0 to 4,

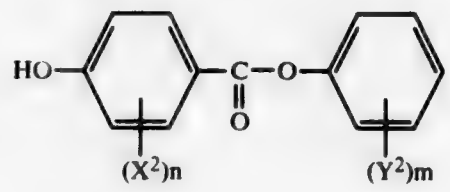
(2) 40 to 60 weight % of an acidic material capable of developing color in said leuco dye when said color-forming layer is heated to a developing temperature, wherein said acidic material is selected from the group consisting of phenolic compounds different from the compounds of the formulas (I), (II) and (III) set forth below, and

(3) 0.1 to 5.0 parts by weight, per 1 part by weight of said leuco dye, of at least one development-enhancing compound of the formula (I), (II) or (III):



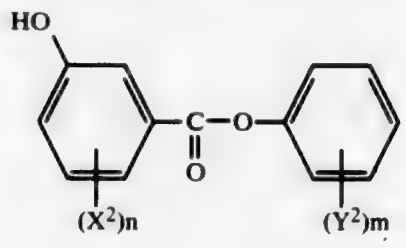
(I)

wherein X^1 is hydrogen or halogen; Y^1 is alkyl, alkoxy, halogen, benzyl, hydroxyl, carboxyl or allyl; m and n are integers in the range of from 1 to 3; and X^1 and Y^1 can be either identical or different from each other when m or n is an integer of 2 or more;



(II)

wherein X^2 is hydrogen or halogen; Y^2 is hydrogen, alkyl, alkoxy, halogen, benzyl, hydroxyl, carboxyl or allyl; m and n are integers in the range of from 1 to 3; and X^2 and Y^2 can be either identical or different from each other when m or n is an integer of 2 or more; and



(III)

wherein X^2, Y^2, n and m have the same meanings as defined above.

4,513,053

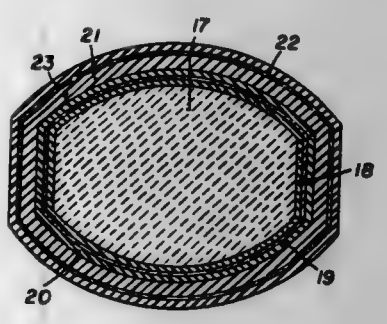
ENCAPSULATED PHASE CHANGE THERMAL ENERGY STORAGE MATERIALS AND PROCESS

Johnson C. H. Chen, and John L. Eichelberger, both of King of Prussia, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 504,029, Jun. 13, 1983, , which is a continuation-in-part of Ser. No. 466,802, Feb. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 145,228, Apr. 30, 1980, abandoned. This application May 14, 1984, Ser. No. 609,672

Int. Cl.³ B32D *3/26, 5/18;* **F24D** *5/10, 19/02*

U.S. Cl. 428—221 **54 Claims**



1. A concrete or gypsum building construction component having dispersed within the component less than about 75% by weight of a thermal energy storage composite product capable of incorporation within rigid building construction components without causing fracture or damage to the components or product after the product undergoes repeated thermal change cycles, said product comprising:

(a) an outer shell member having a longest dimension of from about ½ inch to about 1 inch and having interior surfaces defining an internal cavity that is adapted to permanently encase a thermal energy storage phase-change composition, said shell being comprised of at least one seamless layer of a wall-forming material that is substantially impermeable to and non-reactive with said phase-change composition or water, the total volume of the wall-forming material being from about 5% to 30% of the volume of said cavity; and

(b) a thermal energy storage phase-change composition permanently disposed within the cavity of the shell, said phase-change composition being capable of existing in solid form, a melted liquid form, or a transition state that includes both the liquid and the solid forms, the composition being present in a quantity such that the total volume of composition whether in the solid form, the liquid form, or the transition state does not exceed the volume of the cavity.

4,513,054

MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 375,683, May 6, 1982, abandoned. This application Mar. 5, 1984, Ser. No. 585,020

Claims priority, application Japan, May 7, 1981, 56-67641

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—329 **15 Claims**

1. A magnetic recording medium comprising a non-magnetic support and two or more magnetic recording layers superposed thereon in which ferromagnetic particles are dispersed in a binder, characterized in that the ferromagnetic particles of the outermost magnetic layer are given a main magnetic anisotropy by a magnetic annealing treatment and the direction of the magnetic anisotropy is vertical to the recording surface, the ferromagnetic particles of the outermost layer being ferrites, Fe-Co alloys and Fe-Ni alloys, and also being oval or cubic particles having a size of at most two microns and a length/width ratio of at most 2.

4,513,055

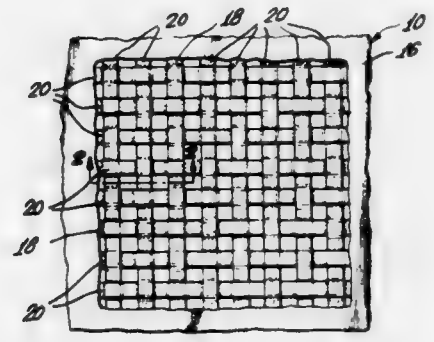
CONTROLLED THERMAL EXPANSION COMPOSITE AND PRINTED CIRCUIT BOARD EMBODYING SAME

Joseph D. Leibowitz, Culver City, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 30, 1981, Ser. No. 325,810

Int. Cl.³ B32B *7/00;* **D03D** *3/00;* **H01B** *17/54*

U.S. Cl. 428—245 **4 Claims**



1. A composite comprising:

a resin matrix,

a woven thermal expansion coefficient control fabric embedded in said resin matrix including a first group of generally parallel first and second yarns and a second group of generally parallel first and second yarns extending transverse to the yarns of said first group,

said first yarns having a positive coefficient of thermal expansion, and

said second yarns having a negative coefficient of thermal expansion.

4,513,056

CELLULOSIC MATERIALS RENDERED TRANSPARENT

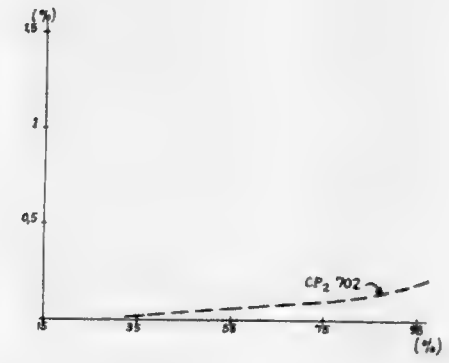
Michel Vernois, Courbevoie, and Jean-Paul Duboeuf, Charavines, both of France, assignors to Arjomari-Prioux, Paris, France

Filed Mar. 23, 1983, Ser. No. 478,050

Claims priority, application France, Mar. 25, 1982, 82 05124

Int. Cl.³ B32B *23/10, 27/08*

U.S. Cl. 428—264 **13 Claims**

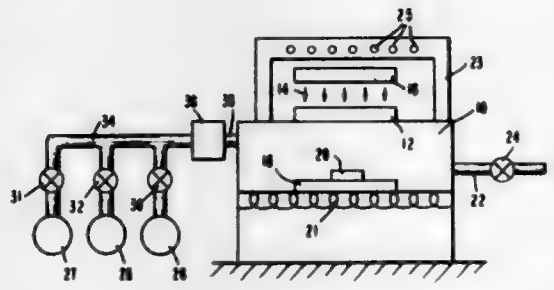


1. A transparentized paper comprising a cellulosic support containing cellulosic materials impregnated with a transparentizing amount of a transparentizing composition containing a ketone-aldehyde transparentization resin; a thermal cross-linking aminoplast or modified or modified alkyd resin; a solvent system, a plasticizer and wherein at least part of the solvent system is retained in the transparentized paper after the aminoplast or modified alkyd resin has been heat cross-linked.

4,513,057
PROCESS FOR FORMING SULFIDE LAYERS

John W. Peters, Malibu, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 387,086, Jun. 10, 1982, Pat. No. 4,447,469.
This application Jan. 23, 1984, Ser. No. 573,267
Int. Cl.[3] H01L *21/18*
U.S. Cl. 428—336 5 Claims

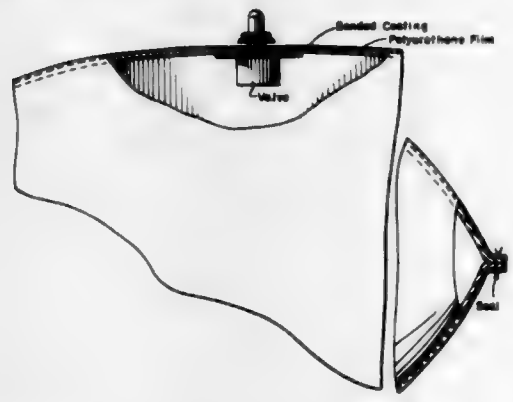


1. A semiconductor device having optimized electrical interface properties, formed by a process comprising the steps of:
(a) providing a substrate of a chosen semiconductor material;
(b) generating neutral sulfur atoms;
(c) exposing said substrate to said neutral sulfur atoms to cause a chemical reaction between said neutral sulfur atoms and the surface of said substrate to form a first layer of a native sulfide of said chosen semiconductor material, said native sulfide being formed in a manner which eliminates damage to said substrate due to exposure to charged species, high energy radiation, or elevated temperatures to thereby enhance the electrical properties in said native sulfide layer and at said surface of said substrate; and
(d) forming a second layer of a chosen dielectric passivation material on the surface of said first layer of said native sulfide, to form a native sulfide/insulator composite, whereby the interface of said substrate with said native sulfide/insulator composite has said optimized electrical interface properties.

4,513,058
IMPACT RESISTANT HIGH AIR RETENTION BLADDERS

Robin A. Martin, Park Ridge, Ill., assignor to Wilson Sporting Goods Co., River Grove, Ill.

Filed Apr. 17, 1984, Ser. No. 601,297
Int. Cl.[3] B05D *3/02;* B32B *27/40;* A63B *41/00*
U.S. Cl. 428—336 10 Claims



7. The method of manufacturing bladders for footballs or the like, comprising:
(a) applying a thin layer of a coating solution to one side of a polyurethane film capable of being formed into inflatible bladders, said film having a thickness of from 3 to 12 mils, said solution consisting essentially of a coating resin comprising a copolymer of vinylidine chloride and vinyl chloride dissolved in an organic carrier solvent which does not dissolve or react with the polyurethane film, said coating solution also containing from 5 to 15% by weight of an organic attack solvent miscible with said carrier solvent and which is capable of dissolving the polyurethane of said film, said resin being present in a coating concentration;
(b) rapidly evaporating the solvent from said applied coating solution;
(c) optionally repeating said applying and evaporating steps, if required, the resulting dried coating comprising a resin layer effectively fused with said polyurethane film and having a thickness of from 0.3 to 1.2 mils; and
(d) forming said coated film into inflatible bladders with said coated layers on the outside thereof, whereby high air retention polyurethane bladders are provided which resist impact delamination.

9. The method of claim 7 in which said film has a thickness of from 3 to 8 mils and said dried coating has a thickness of from 0.3 to 0.8 mils.

10. The bladders manufactured by the method of claim 9.

4,513,059
RELEASE COATING COMPOSITION

Winifred C. Dabroski, East Brunswick, N.J., assignor to Permacel, New Brunswick, N.J.

Continuation of Ser. No. 345,127, Feb. 2, 1982, abandoned. This application Dec. 21, 1983, Ser. No. 564,762
Int. Cl.[3] C09J *7/02*
U.S. Cl. 428—355 7 Claims

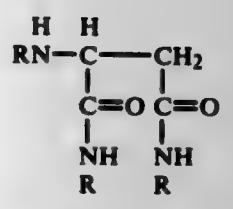
1. A method for the production of pressure sensitive adhesive paper tape comprising the steps of:
(a) mixing in aqueous solution a water-based film-forming polymer and a perfluorinated ester polymer, thereby forming a water-based backsize release coating composition, said composition comprising an aqueous mixture of
(i) a water-based film-forming polymer and
(ii) a perfluorinated ester polymer containing from about 30 to about 50 percent fluorine, said perfluorinated ester polymer being present in an amount of from about 0.5 to about 3.0 percent, dry weight of perfluorinated ester polymer per dry weight of water-based film-forming polymer;
(b) impregnating a paper tape backing with a solvent-based or latex-based saturant to improve internal properties of the backing;
(c) coating the backing on the backside surface with the release coating composition;
(d) drying and fluxing the coated backing at a temperature of from about 250° to 300° F.; and
(e) coating the backing on the side surface opposite to the backside with a pressure sensitive adhesive.

4,513,060
CHLOROSULFONATED POLYETHYLENE COATING COMPOSITION

Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 8, 1984, Ser. No. 578,031
Int. Cl.[3] C08L *23/34*
U.S. Cl. 428—416 13 Claims

1. A coating composition comprising 10–80% by weight of binder and 20–90% by weight of an organic solvent; wherein the binder consists essentially of about
(1) 40–85% by weight, based on the weight of the binder, of a chlorosulfonated polyethylene having a weight average molecular weight of about 75,000 to 300,000 determined by gel permeation chromatography and having a chlorine content of 20 to 50% by weight and a sulfur content of 0.7 to 2.0% by weight;
(2) 9–44% by weight, based on the weight of the binder, of an epoxy resin;
(3) 3–20% by weight, based on the weight of the binder, of a polyamine curing agent of the formula



where R is R^1NH_2 and R^1 is an aliphatic or cycloaliphatic radical; and

(4) 0.1–3% by weight, based on the weight of the binder, of a bicyclic amidine.

12. A substrate coated with a cured layer of the composition of claim 1.

4,513,061

PRIMER COMPOSITION

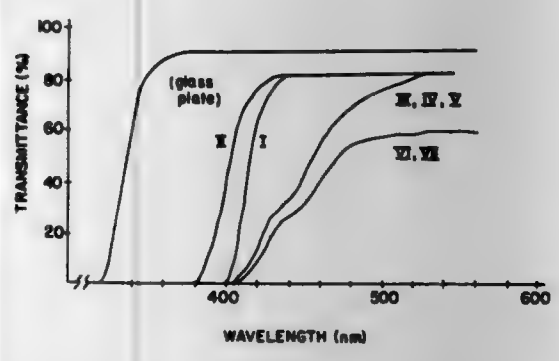
Fumio Kawakubo; Toshifumi Hirose; Tadashi Minokami, all of Kobe; Miyako Hosaka, Miki, and Katsuhiko Isayama, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 228,953, Jan. 27, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,291

Claims priority, application Japan, Jan. 29, 1980, 55-9511

Int. Cl.³ C08F *11/04;* C08C *9/18*

U.S. Cl. 428—429 **16 Claims**



1. In a coated glass surface consisting essentially of a primer coating directly on top of a glass surface and a sealant overcoating directly on top of said primer coating, wherein said sealant is a curable composition selected from the group consisting of modified silicon, urethane and polysulfide; the improvement consisting of said primer coating comprising 50 to 90 weight percent film forming substance, 0.5 to 35 weight percent ultraviolet light absorbing substance, and 0 to at least 0.1 weight percent pigment and/or dye, and said primer coating being formable into a film which substantially shields light have a wavelength of 380 nm or less and which is substantially transparent at other wavelengths with at least a transmission factor of at least 5% at the other wavelengths; whereby said primer coating does not substantially effect chemically said sealant coating, and whereby the period of adherence of said sealant onto said glass surface without deterioration is substantially lengthened.

4,513,062

CERAMIC BODY HAVING A METALLIZED LAYER

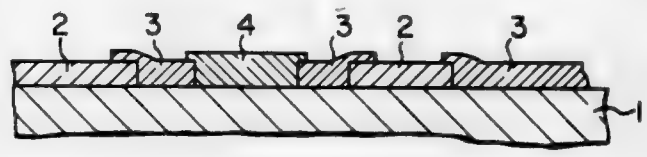
Go Suzuki, Nagoya, and Kazuo Michishita, Fujiyoshida, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 261,792, May 8, 1981, abandoned, which is a continuation of Ser. No. 48,455, Jun. 14, 1979, abandoned. This application Mar. 14, 1984, Ser. No. 589,540

Int. Cl.³ B22F *7/04, 7/08*

U.S. Cl. 428—565 **2 Claims**

1. A ceramic body having a printed-metallized layer which comprises a ceramic substrate of insulating material and at least one printed-metallized layer co-fired on the substrate to be integrated, the composition of the printed-metallized layer comprising 100 parts by weight of one or more of tungsten, molybdenum and tungsten carbide and one metal or metal mixture selected from the following groups (amounts being based on the total amount of tungsten, molybdenum and/or tungsten carbide):



0.5 to 25 parts by weight niobium,
0.5 to 10 parts by weight yttrium,
0.5 to 25 parts by weight niobium plus yttrium,
0.05 to 3 parts by weight nickel.

4,513,063

COATED RUBBER CORD

Takahiro Hashi, and Saeko Hashi, both of 1-1-9, Kasuya, Setagaya-ku, Tokyo, Japan (105)

Filed Jan. 7, 1983, Ser. No. 456,496

Claims priority, application Japan, Oct. 16, 1982, 57-181933

Int. Cl.³ B32B *15/00;* D02G *3/00;* D04C *1/02, 1/00*

U.S. Cl. 428—377 **13 Claims**



1. A coated rubber cord comprising a core member which consists of at least one rubber line coated with a woven cover material in the texture of which at least one discrete elongated rubber string is mixedly and spirally woven at substantially a constant pitch whereby to be reduced diametrically on elongation of the rubber cord and to maintain the woven cover material in a fixed position in relation to the core member no matter how the rubber cord may be stretched or allowed to contract so that provision of the woven cover material may not reduce the durability of the coated rubber cord.

4,513,064

PACKAGE FOR RUGGED ELECTRONICS

Ira R. Marcus, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1982, Ser. No. 450,617

Int. Cl.³ H01K *7/18;* H01R *9/09*

U.S. Cl. 428—582 **6 Claims**



1. An Electronic module for an ordnance projectile for utilization in environments wherein the substrate module would be subject to very high mechanical stress, comprising:

at least three substrates having electronic components thereon, each of said substrates having first and second

interconnecting tab means extending therefrom, each of which tab means interlocks with complementary tab means interlocks with complementary tab means extending from the substrate adjacent said tab means to form a module of relatively high mechanical strength in order to withstand high mechanical stress;

wherein each of said substrates is planar and has two sides and top and bottom edges and said first and second tab means are disposed on each side of each substrate, respectively; and each of said substrates are tapered inwardly toward the top such that the bottom edge of the substrate is longer than the top edge;

wherein said interconnecting tab means mechanically and electrically directly interconnect said substrate to the tab means on a similar adjacent substrate;

wherein said electrically interconnecting tabs are soldered to complementary electrically interconnecting tabs on a similar substrate so as to secure the the electrical conduction path across these complementary conducting traces; and wherein said mechanically interconnecting tab means interlock along a surface plane that is perpendicular to the direction of flight of said ordnance projectile wherein said direction of flight is also parallel to the direction in which primary mechanical stress occurs, while the electrically interconnecting tabs interlock along a surface plane that is parallel to said primary mechanical stress such that the mechanically interconnecting tabs receive most of the mechanical stress.

4,513,065

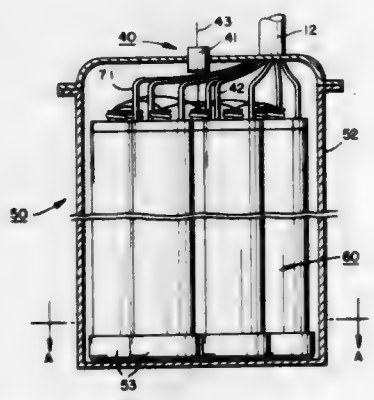
HYDROGEN GENERATOR

Otto J. Adlhart, Newark, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 399,057, Jul. 16, 1982, Pat. No. 4,463,063. This application May 16, 1984, Ser. No. 610,740

Int. Cl.³ H01N *8/18*

U.S. Cl. 429—19 **6 Claims**



1. A hydrogen generator of the type which relies at least partially on the process of anodic corrosion to generate hydrogen comprising:

(a) a drum means,

(b) a plurality of cartridges in the drum means, each cartridge having a container with an aqueous electrolyte therein, an anodic material mounted in the container having a relatively high ratio of surface area to volume, a cooperating cathode mounted in the container closely spaced from the surface of the anodic material and means for removing hydrogen from the cartridge,

(c) means for feeding the hydrogen removed from the cartridges out of the generator, and

(d) means for activating the cartridges allowing electric current to flow to produce hydrogen.

4,513,066

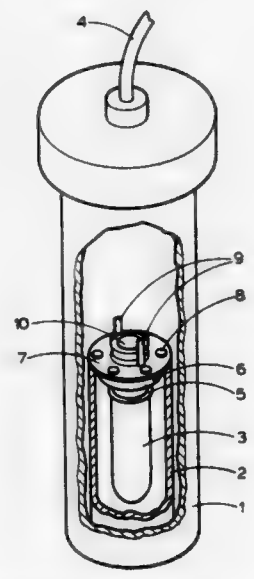
THIN-FILM, HIGH PRESSURE FUEL CELL

Donald R. Simon, East Windsor, N.J., assignor to Prutec Limited, London, England

Filed Mar. 30, 1983, Ser. No. 480,229

Int. Cl.³ H01M *8/08*

U.S. Cl. 429—42 **6 Claims**



1. A fuel cell comprising at least one oxygen electrode and at least one hydrogen electrode, the said electrodes being composed of, respectively, oxygen gas and hydrogen gas separated by thin-film porous membranes, wherein there is located between the oxygen gas and the hydrogen gas a hydrophilic porous membrane wetted with a solution of electrolyte, and between the said hydrophilic membrane and oxygen gas and also between the said hydrophilic membrane and hydrogen gas there are located two hydrophobic porous membranes each plated with a thin film of a noble metal catalyst and each being associated with an adjacent electrically-conducting metal element, the said thin films of catalyst each having a thickness of 200 to 1000 Å, and the said arrangement of gases, membranes, electrolyte, catalyst films and conducting elements being subjected to a gas pressure of 500 to 20,000 psi whereby the oxygen and hydrogen gases go into solution in the electrolyte and electric current generated by the reaction of the gases at the surface of the catalyst is taken from the electrically-conducting elements.

4,513,067

INORGANIC NON-AQUEOUS CELL

Han C. Kuo, Burlington; Donald L. Foster, Somerville; Carl R. Schlaikjer, Winchester; Mysore L. Gopikanth, Burlington, and Arabinda N. Dey, Needham, all of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 30, 1983, Ser. No. 509,691

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—101 **20 Claims**

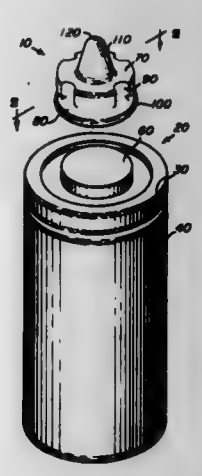
1. A non-aqueous, electrochemical cell comprising an anode comprised of an alkali or alkaline earth metal, an inorganic electrolyte comprised of SO_2 having dissolved therein an alkali or alkaline earth metal halide salt containing aluminum, tantalum, niobium or antimony whereby said SO_2 per se is not a cathode active material characterized in that said cell contains a cathode comprised of a conductive carbonaceous material having an apparent bulk density in excess of 80 gm/liter.

4,513,068

AUXILIARY BATTERY CHARGING TERMINAL

Harold Field, Plantation, and Robert E. Richter, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 20, 1983, Ser. No. 543,697
Int. Cl.[3] H01M 2/26
U.S. Cl. 429—121 8 Claims



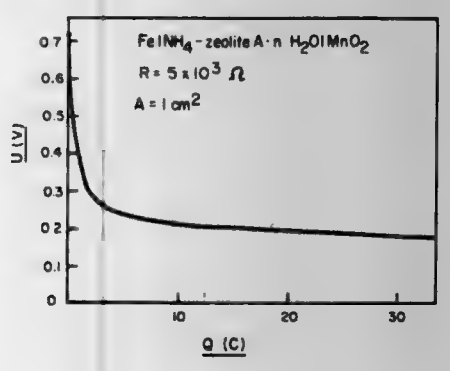
1. An improved rechargeable battery cell for selectively, electrically engaging charging circuitry comprising:
a cathode disk having a periphery and a projecting tip means for selectively, electrically engaging charging circuitry;
an anode jacket mechanically captivating said cathode disk periphery about a battery cell; and
an electrically insulating seal ring therebetween,
whereby said projecting tip electrically engages said charging circuitry, whereas said charging circuitry is not engaged in the absence of said projecting tip and
whereby said tip is axially constrained against lateral displacement within a battery charging receptacle.

4,513,069

GALVANIC CELL COMPRISING SOLID PROTON CONDUCTOR AS ELECTROLYTE

Klaus-Dieter Kreuer, Böblingen; Werner Weppner, and Albrecht Rabenau, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foederung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,954
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127820
Int. Cl.[3] H01M 6/18
U.S. Cl. 429—192 16 Claims



EXAMPLE OF A DISCHARGE CURVE

Cathode	Iron (Fe)
Anode	92% MnO_2, 8% Graphite
Electrolyte	NH_4-zeolite A, 14.5% H_2O
Area	1 cm^2
Open Cell Voltage	.72 V
Discharge Resistance	5 x 10^3 ohms

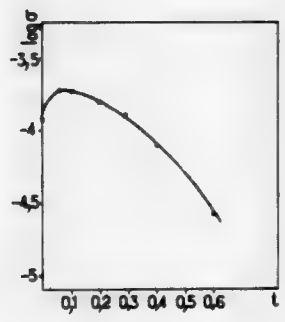
1. In a galvanic cell having a metal oxide or metal sulfide electrode, a metal electrode, and between them an electrolyte, the improvement wherein said electrolyte is a solid proton conductor comprising zeolites having proton-containing cations and having six-membered rings and/or larger rings as secondary structural groups of the zeolitic structure, and having in the crystal lattice passages of said zeolites, a phase which promoter proton transport.

4,513,070

VITREOUS MATERIALS WITH IONIC CONDUCTIVITY, THE PREPARATION OF SAME AND THE ELECTROCHEMICAL APPLICATIONS THEREOF

Brigitte Carette, Paris; Ali Kone, Abidjan; Jean-Louis Souquet, Grenoble; Michel Ribes, Clapiers, and Maurice Maurin, Montpellier, all of France, assignors to Centre National de la Recherche Scientifique, France

Filed Feb. 8, 1983, Ser. No. 465,030
Claims priority, application France, Feb. 9, 1982, 82 02083
Int. Cl.[3] H01M 6/18; C03C 3/04, 3/12, 3/16
U.S. Cl. 429—193 13 Claims



1. A doped vitreous material with a network former system, network modifier system, and a doping system having the general formula I:

$$xFo—yM—zD \quad (I)$$

in which:
Fo represents the network former system and comprises a compound of the formula A_aR_b or several compounds of said formula different from each other, A being selected from Si, Ge, P, S, B, Nb, As, V, Cr, Mo and R from O,S, Se, A and R further corresponding to chemically compatible elements,
M represents the network modifier system having the formula N_mR_c, N being selected from Li, Na, K and Ag and R having, independently, one of the meanings given above for the network former elements,
a b, m and c represent the indices corresponding to the stoichiometry of the constituents in a given group and,
x, y and z, different from 0 and whose sum equals to 1, represent the indices corresponding to the overall molar fractions respectively of the compound or compounds forming the former system, the modifier system and the doping salt of the material, the values of these indices being compatible with the vitreous range of a given material,
d represents the doping system,
wherein D is formed of at least two doping salts, the salt having the highest dissociation constant being partially substituted by an another salt or other salts whose dissociation constant are lower, in an amount giving an increase of conductivity, said doping system having formula N_nY_p, the meaning of N in the group NY, being for each salt identical to that of N in the group NR, Y having in each of these salts different meanings selected from I, Br, Cl, F, ClO_4, CF_3, SO_3, SCN, SO_4, and n and p represent the indices corresponding to the stoichiometry of the constituents in a given group and
the elements A, R and Y being such that the materials have a conductivity of at least $10^{-4}\Omega^{-1}cm^{-1}$, at room temperature when N represents Ag, and a conductivity of at least $10^{-8}\Omega^{-1}cm^{-1}$ at room temperature when N represents an alkaline metal, and with the proviso that Fo does not

represent a B_2O_3 or B_2O_3-SiO_2 former system and M a Li_2O modifier system when D is a composite $(LiCl)_2$ and Li_2SO_4 salt.

9. A process for preparing the materials according to claim 1, two or more dopes are dissolved simultaneously in a vitreous material formed of a network former compound and a network modifier compound, in proportions compatible with the vitreous range of the glass considered, while operating sheltered from the air, at a temperature, of the order of 700° to 800° C., sufficient for obtaining fusion of the glass and the dissolution of the doping salts.

11. Solid electrolytes, characterized in that they comprise a material according to claim 1.

12. Electrochemical devices, comprising an electrolyte according to claim 11.

4,513,071

ERASABLE INFORMATION RECORDING PROCESS USING CO-CRYSTALLINE DYE COMPLEXES

William Mey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,912
Int. Cl.³ G03C *1/72, 7/00;* G03G *5/026, 13/16*
U.S. Cl. 430—19 **11 Claims**

1. A process for recording information visibly, which comprises exposing a layer of aggregate dye complex to actinic radiation that deaggregates said complex and produces a color change in exposed areas, said aggregate dye complex comprising a co-crystalline complex of polymer and dye or of dye and dye.

3. A process according to claim 1, further comprising:
erasing recorded information by softening at least selected deaggregated areas sufficiently to allow reaggregation.

4,513,072

DUAL LAYER ELECTROPHOTOGRAPHIC RECORDING MATERIAL CONTAINING A LAYER OF SELENIUM, ARSENIC AND HALOGEN, AND THEREABOVE A LAYER OF SELENIUM AND TELLURIUM

Hartmut Dülken; Karlheinz Kassel, both of Warstein; Wolfgang Möws, Welver-Borgeln, and Hubert Walsdorfer, Warstein, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,466
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135229
Int. Cl.³ G03G *5/08*
U.S. Cl. 430—57 **10 Claims**

1. An electrophotographic recording material consisting of a conductive substrate, a first photoconductive selenium layer comprising 0.1 to 5 percent by weight arsenic and a halogen disposed on said substrate, and a second photoconductive selenium layer comprising 1 to 40 weight percent tellurium and arsenic in an amount of up to 1 weight percent disposed on said first photoconductive layer.

4,513,073

LAYERED PHOTOCONDUCTIVE ELEMENT

Frank R. Jeffrey, III, and James R. Shirck, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 18, 1983, Ser. No. 524,525
Int. Cl.³ G03G *5/082*
U.S. Cl. 430—65 **11 Claims**

1. In a photoconductive element comprising an electrically conductive, supporting substrate and a photoconductive layer carried by said substrate wherein a blocking layer means is carried adjacent at least one major surface of said photoconductor layer to suppress the flow of charge carriers attracted toward the photoconductive layer as a result of any surface charge applied to said element, wherein the improvement comprises a space charge layer interposed between said blocking layer means and said photoconductive layer, said space charge layer comprising a semiconductive material selected from the group consisting of n-type and p-type semiconductor materials, the space charge layer between said photoconductive layer and said blocking layer being selected so that upon charging said photoconductive element the electrical field at the interface between said space charge layer and said photoconductor is higher than the electric field at the interface between said space charge layer and said blocking layer.

4,513,074

STABLE CONDUCTIVE DEVELOPER COMPOSITIONS

Robert J. Nash, and Kent A. Randall, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 6, 1983, Ser. No. 501,666
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—106.6 **24 Claims**

1. An improved stable two-component conductive developer having a toner composition consisting essentially of (1) first resin particles of styrene methacrylate copolymers, grafted with or containing a low molecular weight wax composition, (2) second resin particles of a styrene, acrylate, acrylonitrile terpolymer, (3) pigment particles, (4) colloidal silica additive particles, (5) fatty acid metal salt additive particles, and (6) uncoated ferrite carrier particles.

4,513,075

DEVELOPER MATERIALS FOR ELECTROSTATIC IMAGES

Toshiaki Narusawa, Sagamihara; Seiji Okada, Kawasaki; Kiyohide Muramatsu, Tokyo; Teruo Yagishita, Kawasaki, and Hirofumi Okuyama, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 62,311, Jul. 30, 1979,. This application Nov. 12, 1981, Ser. No. 320,609
Claims priority, application Japan, Aug. 1, 1978, 53-93110; Mar. 26, 1979, 54-34221
Int. Cl.³ G03G *9/10*
U.S. Cl. 430—108 **14 Claims**

1. A developer material for electrostatic images comprising a mixture of a coated carrier and toner particles, wherein:

(1) said carrier comprises iron core beads coated with a coating resin comprising at least one butadiene homopolymer of a molecular weight of from 10,000 to 100,000, each said homopolymer being 1,2-polybutadiene or cyclized cis-1,4-polybutadiene, or a mixture of at least one of said homopolymers and a styrene/butadiene copolymer of a molecular weight of from 10,000 to 100,000, said mixture containing an effective amount of at least 7.5% by weight, based on the weight of said mixture, of butadiene in polymerized form; and

(2) said toner comprises, based on the weight of said toner:

(A) from 85 to 95% by weight of a binder resin comprising, based on the weight of said binder resin, at least 50% by weight of an epoxy resin of a molecular weight of from 900 to 8,000 and an epoxy equivalent in the range from 450 to 5,500, and an effective amount up to 50% by weight of a styrene/alkyl methacrylate copolymer, the alkyl group of said copolymer having from 1 to 4 carbon atoms, of a molecular weight of from 10,000 to 100,000;

(B) a colorant comprising, based on the weight of said toner, an effective amount up to 10% by weight of fine carbon and from about 0.5 to 8% by weight of a nigrosine dye, and

(C) an effective amount up to 8% by weight of a charge controlling agent, based on the weight of said toner, comprising a quaternary ammonium alkyl sulfonate, this alkyl group having from 4 to 20 carbon atoms, di-(polyhydroxy ethoxy ethyl)octadecyl amine, or a polyamine; and

the ratio of the total surface area of said carrier to the

total projection area of said toner particles being in the range of from 1:0.5 to 1:2.0.

4,513,076

ELECTRON BEAM SENSITIVE RESIST

David F. Lewis, Monroe, Conn., assignor to GAF Corporation, Wayne, N.J.

Filed May 24, 1983, Ser. No. 497,527
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—270 10 Claims

1. An improved high sensitivity electron beam resist polymer which is a metal complex, wherein the metal is selected from a group consisting of lead, rhodium, calcium or thallium, wherein the lead, calcium or thallium complex is a salt formed by an excess metal ion and carboxyl ion and the rhodium complex is a metal ion and an olifin group in a one to one relationship of the mixed half-ester reaction product of an alkyl vinyl ether-maleic anhydride copolymer with a terminally unsaturated alcohol and an N-hydroxyalkyl amide.

4,513,077

ELECTRON BEAM OR X-RAY REACTIVE IMAGE-FORMABLE RESINOUS COMPOSITION

Asao Isobe; Daisuke Makino, both of Hitachi, and Hiroshi Shiraishi, Kokubunji, all of Japan, assignors to Hitachi Chemical Company, Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,634
Claims priority, application Japan, Jun. 25, 1982, 57-110252
Int. Cl.[3] G03C *1/495*
U.S. Cl. 430—270 18 Claims

1. An electron beam or x-ray reactive image-formable resinous composition comprising a poly(olefinsulfone) and a matrix polymer, said matrix polymer being a novolac phenol resin obtained from the reaction of:

(1) a mixture consisting essentially of (i) at least 90% by weight of m-cresol and p-cresol as main components wherein the molar ratio of m-cresol/p-cresol is within the range of from 40/60 to 55/45 and (ii) from 0 to 10% of at least one phenolic compound selected from the group consisting of phenol and a derivative of phenol other than m-cresol and p-cresol; and

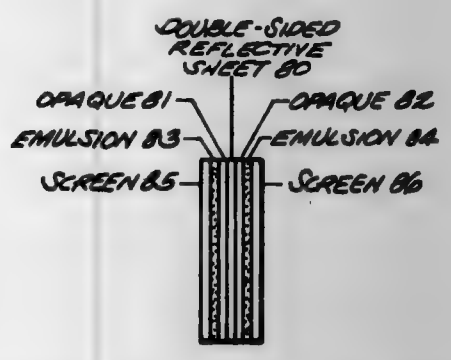
(2) formaldehyde, wherein the molar ratio of formaldehyde to the amount of said mixture is within the range of from 5/10 to 8/10.

4,513,078

FILM-BASED DUAL ENERGY RADIOGRAPHY

John M. Sandrik, and Norbert J. Pelc, both of Wauwatosa, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,786
Int. Cl.[3] G03C *1/84, 1/92;* G03B *41/16, 11/00*
U.S. Cl. 430—496 12 Claims



1. A film package for forming on one radiographic film an image of an anatomical region corresponding to an image made by exposing the region to one X-ray energy spectral band and for forming on another film an image of the same region corresponding to one made by exposing the region to another X-ray energy spectral band where both images are formed simultaneously by exposing the region to a polyenergetic X-ray beam having a broad energy spectrum, and there are first and second parallel X-ray intensifying screens arranged in the path of the beam emergent from the region which are excited to luminescence by the X-ray energy spectra which they absorb, said film package comprising:

first and second radiographic films having their planar image recording surfaces in parallelism with each other for being disposed between said intensifying screens and in contact with said first and second screens, respectively, so the emergent beam will be incident to the first screen,

a light-opaque sheet inserted between said films for transmitting to said second film and second screen some of the x-radiation that is not absorbed by said first screen and first film and for preventing light from one intensifying screen from exposing the film in contact with the other screen, and

an X-ray impervious device for being interposed in the emergent beam to produce congruent images of said device on both films when the films are parallel to each other during an exposure, said images constituting reference marks for relating picture elements on one film to corresponding picture elements on the other film when the films are separated from each other for readout.

4,513,079

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Kei Sakanoue, and Kozo Aoki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 14, 1983, Ser. No. 542,316
Claims priority, application Japan, Oct. 14, 1982, 57-180138
Int. Cl.[3] G03C *1/46*
U.S. Cl. 430—502 6 Claims

1. A silver halide color photographic material comprising:

a support having coated thereon;

at least one layer of silver halide emulsion containing a phenolic cyan coupler which is substituted by an acylamino group at the 5-position and by an ureido group at the 2-position; and

at least one layer, adjacent to said coupler-containing layer, containing a fine grain silver halide emulsion.

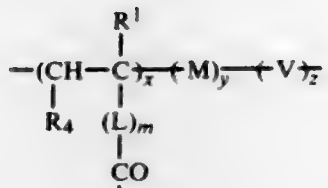
4,513,080

PHOTOGRAPHIC SILVER HALIDE CONTAINING RECORDING MATERIAL WITH CROSSLINKED MICROGEL PARTICLES

Günter Helling, Odenthal, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 488,362, Apr. 25, 1983, abandoned.
This application Sep. 10, 1984, Ser. No. 648,616
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 32170203
Int. Cl.[3] G03C *1/72*
U.S. Cl. 430—537 2 Claims

1. A photographic recording material comprising a layer support, one or more gelatin containing layers in which at least one layer is a light sensitive silver halide emulsion layer and the binder of at least one of the gelatin-containing layers consisting of at least 20% by weight of latices of cross-linked microgel particle-shaped water insoluble copolymer, the copolymer being represented by the following formula:



wherein

R^1 denotes a hydrogen atom or an alkyl group having 1 to 6 carbon atoms,

R^2 denotes a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 6 carbon atoms, an aralkyl group, a substituted or unsubstituted aryl group, a 5-membered or 6-membered substituted or unsubstituted heterocyclic ring containing oxygen, sulfur or nitrogen,

R^3 has the meaning of R^2, and R^2 and R^3 may be identical or different, with the proviso that R^2 or R^3 must not be a residue of an agent which is active in the photographic layer,

R^4 denotes a hydrogen atom or the group $—COOR^1$,

L denotes an alkylene residue having 1 to 6 carbon atoms, an arylene residue having 6 to 10 carbon atoms, an arylenealkylene residue having 7 to 11 carbon atoms or a group $—COOR^5$ or $—CONHR^5$ wherein R^5 denotes one of the bivalent residues mentioned above,

M denotes a residue of polymerized monomers containing an ethylenically unsaturated group,

V denotes a residue of a polymerized monomer containing at least two ethylenically unsaturated groups,

m is 0 or 1,

x represents at least 10% by weight,

y represents 89.5 to 0% by weight,

z represents 10 to 0.5% by weight, and the sum of proportions by weight x, y and z should in each case be 100%

and wherein the copolymer particles have a diameter of from 20 nm to 1 μm.

4,513,081

SILVER HALIDE PHOTOGRAPHIC EMULSION

Masaki Okazaki; Osami Tanabe; Satoshi Nagaoka; Yuji Mihara; Keizo Kimura, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

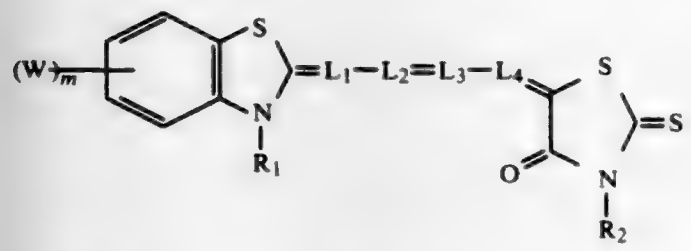
Filed May 21, 1984, Ser. No. 612,497

Claims priority, application Japan, May 19, 1983, 58-88081

Int. Cl.³ G03C *7/26*

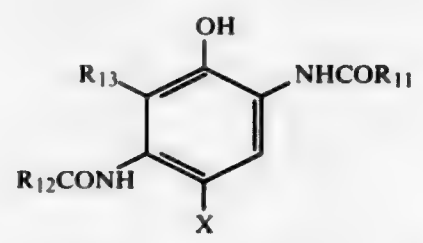
U.S. Cl. 430—550 **9 Claims**

1. A silver halide photographic emulsion containing in combination at least one sensitizing dye represented by formula (I) and at least one cyan coupler represented by formula (II):



(I)

wherein W represents a halogen atom, an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group, a hydroxyl group, an unsubstituted or substituted alkoxy group, an unsubstituted or substituted aryloxy group, an acyl group, an acyloxy group, an unsubstituted or substituted alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, a carboxyl group, or an unsubstituted or substituted benzo group; L_1, L_2, L_3, and L_4 each represents an unsubstituted or substituted methine group; R_1 represents an unsubstituted or substituted alkyl group; R_2 represents an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group or a heterocyclic group; provided that at least one of R_1 and R_2 represents a substituted alkyl group containing a sulfo group or a carboxyl group; and m represents 0, 1, or 2;



(II)

wherein R_{11} and R_{12} each represents an alkyl group, an aryl group, a heterocyclic group, an alkyloxy group, an aryloxy group, a heterocyclyloxy group, an alkylamino group, an arylamino group or a heterocyclylamino group; R_{13} represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an acyloxy group or an acylamino group; or R_{12} and R_{13} may be connected to each other to form a 5- or 6-membered ring; and X represents a group capable of being eliminated upon an oxidative coupling reaction with a developing agent.

4,513,082

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Nobuo Furutachi, and Takeshi Hirose, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

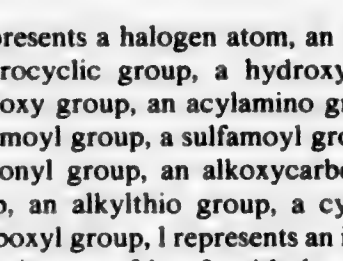
Filed Mar. 23, 1984, Ser. No. 592,995

Claims priority, application Japan, Mar. 28, 1983, 57-52923

Int. Cl.³ G03C *7/26*

U.S. Cl. 430—552 **7 Claims**

1. A silver halide color photographic light-sensitive material containing at least one coupler having a ballast group represented by the following general formula (I):



(I)

wherein X represents a halogen atom, an alkyl group, an aryl group, a heterocyclic group, a hydroxy group, an alkoxy group, an aryloxy group, an acylamino group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a ureido group, an alkoxycarbonyl group, an alkoxycarbonylamino group, a sulfonyl group, an alkylthio group, a cyano group, a nitro group or a carboxyl group, l represents an integer of 1 to 4, and m represents an integer of 1 or 2, with the proviso that when X represents a hydroxyl group, a substituent other than a hydroxy group is also present on the phenyl ring.

4,513,083

PREPARATION OF AN ANTIBIOTIC SELECTIVELY EFFECTIVE AGAINST STAPHYLOCOCCUS INFECTIONS

David S. Hodes, Cricket La., Dobbs Ferry, N.Y. 10522; Grace Leidy; Katherine Sprunt, both of 21 Glenwood Ave., Leonia, N.J. 07605, and Piper Weldy, 350 Bleeker St., New York, N.Y. 10014

Continuation-in-part of Ser. No. 364,330, Apr. 1, 1982, abandoned. This application Feb. 6, 1984, Ser. No. 577,038

Int. Cl.³ C12P *21/00*; C12N *1/20*; C12R *1/01*

U.S. Cl. 435—68 **13 Claims**

1. A biologically pure culture of the microorganism *Rothia dentocariosa*, having the identifying characteristics of ATCC

31918, said culture being capable of producing the antibiotic staphylocidin, having selective antimicrobial activity against staphylococci including *S. aureus* and *S. epidermidis*, in a recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances.

4. A staphylocidin-containing product, which comprises the cell murein recovered from the fermentation product of the biologically pure culture of either of claims 1 or 2:

(a) comprising a peptidoglycan polymer having the following approximate amino acid and amino sugar contents:

Amino Acid	Contents by Weight Relative to Alanine
Asp	0.16
Thr	0.09
Ser	0.07
Glu	0.43
Gly	0.16
Ala	1.00
Val	0.16
Ile	0.09
Leu	0.20
Tyr	0.06
Phe	0.08
Lys	0.34
His	0.04
Arg.	0.10
Muramic Acid	0.47
Glucosamine	1.04; and

(b) exhibiting the following R_f values upon thin layer chromatography in an isopropanol/acetic acid/water system on silica gel G plates, after digestion with lysozymen and lysostaphin:

Fraction	R_f Value
(1)	0.66 ± 0.01 [n-acetylglucosamine = 0.65]
(2)	0.58 ± 0.01
(3)	0.59 ± 0.01
(4)	0.74 ± 0.01 [n-acetylmuramic acid = 0.73]; and

(c) having bonded thereto the narrow-spectrum antibiotic staphylocidin, which is selectively effective against staphylococci including *S. aureus* and *S. epidermidis;*

the murein forming a staphylocidin-containing extract upon treatment with a glacial acetic acid or n-butanol solvent and evaporation of the solvent from the supernate, which extract exhibits the following characteristics:

(1) a biologically active component with an R_f value of 0.98–0.99 upon thin layer chromatography in a methanol/acetic acid/phosphate-buffered saline system on a microcrystalline cellulose plate and yellow-green fluorescence in long wave ultraviolet light;

(2) a biologically active component with an R_f value of 0.04 upon thin layer chromatography in a butanol/acetic acid/phosphate-buffered saline system on a microcrystalline cellulose plate and yellow-green fluorescence in long wave ultraviolet light;

(3) a biologically active component with an R_f value of 0.04 upon thin layer chromatography in an ethyl acetate/pyridine/water system on a microcrystalline cellulose plate and yellow-green fluorescence in long wave ultraviolet light;

(4) a component with an R_f value of 0.88 upon thin layer chromatography in a methanol/acetic acid/phosphate-buffered saline system on a silica gel plate and yellow-green fluorescence in long wave ultraviolet light; and

(5) the R_f 0.98–0.99 component containing staphylocidin and exhibiting the HPLC peaks plotted in FIG. 1 of the accompanying drawings.

4,513,084

MUTANT STRAIN OF *CLOSTRIDIUM THERMOACETICUM* USEFUL FOR THE PREPARATION OF ACETIC ACID

Frederick A. Keller, Jr., Naperville; Jeffrey S. Ganoung, Brookfield, and Susan J. Luenser, LaGrange Park, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Mar. 11, 1983, Ser. No. 474,608

Int. Cl.[3] **C12P** *7/54;* **C12N** *15/00, 1/20;* **C12J** *1/00*

U.S. Cl. 435—140 **9 Claims**

1. A biologically pure culture of a mutant strain of the microorganism *C. thermoaceticum,* ATCC No. 39,289, useful for the production of acetic acid when grown in an aqueous medium containing assimilable sources of carbon, nitrogen and inorganic substances, which grows at a pH below 5.0 at a temperature of from 50° C. to 65° C. and has a specific growth rate of at least about 0.30 hr^{-1} when grown in a continuous culture at pH 7 and 58° C.

2. In a method for converting carbohydrates to acetic acid by growing *C. thermoaceticum* in an anaerobic fermentor on an aqueous medium containing assimilable sources of carbon, nitrogen and inorganic substances and separating the acetic acid from the medium, wherein the improvement comprises using a biologically pure culture of the mutant strain of *C. thermoaceticum,* ATCC No. 39,289, in a pH controlled continuous fermentation at a pH of about 5 to about 8, at a temperature of about 50° C. to about 65° C. and at a dilution rate of about 0.01 to about 0.40 per hour.

4,513,085

FUNCTIONALLY INDEPENDENT CLONING VECTORS FOR USE IN STREPTOMYCES

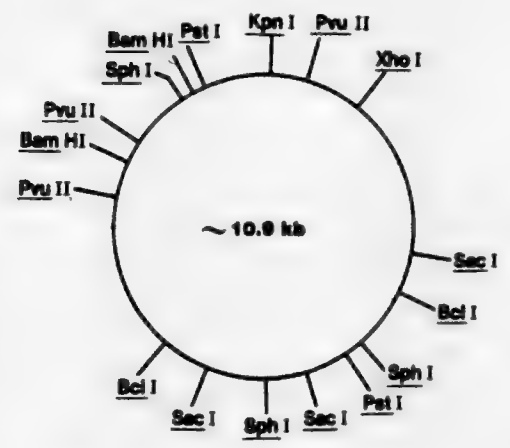
Walter M. Nakatsukasa, and James A. Mabe, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 7, 1982, Ser. No. 433,197

Int. Cl.[3] **C12N** *1/20, 15/00, 1/00;* **C07H** *15/12*

U.S. Cl. 435—253 **49 Claims**

Restriction Site Map of Plasmid pEL7



1. A functionally independent recombinant DNA cloning vector comprising:

(a) a functional origin of replication-containing restriction fragment of plasmid pEL7 and

(b) one or more DNA segments that confer resistance to at least one antibiotic when transformed into a sensitive host cell, said host cell being susceptible to transformation, cell division, and culture.

4,513,086

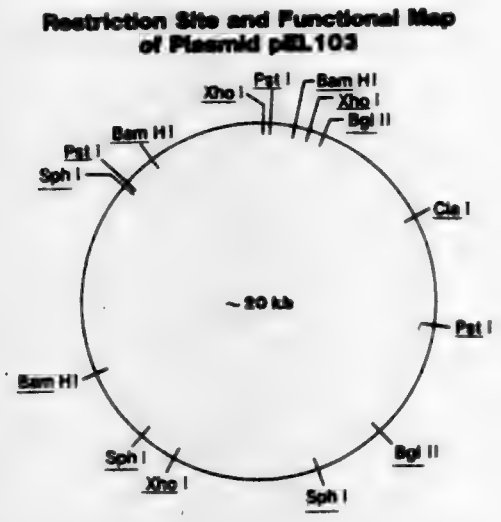
CLONING VECTORS FOR USE IN STREPTOMYCES AND RELATED ORGANISMS

Jeffrey T. Fayerman, and Mark A. Richardson, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 311,711, Oct. 15, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,082

Int. Cl.[3] **C12N** *1/00, 15/00, 1/20;* **C12P** *21/00, 21/02, 19/34;* **C07H** *21/04*

U.S. Cl. 435—317 **97 Claims**



1. A recombinant DNA cloning vector comprising:

(a) a functional origin of replication-containing restriction fragment of plasmid pEL103, and

(b) one or more DNA segments that convey resistance to at least one antibiotic when transformed into a sensitive restrictionless host cell, said host cell being susceptible to transformation, cell division, and culture.

4,513,087

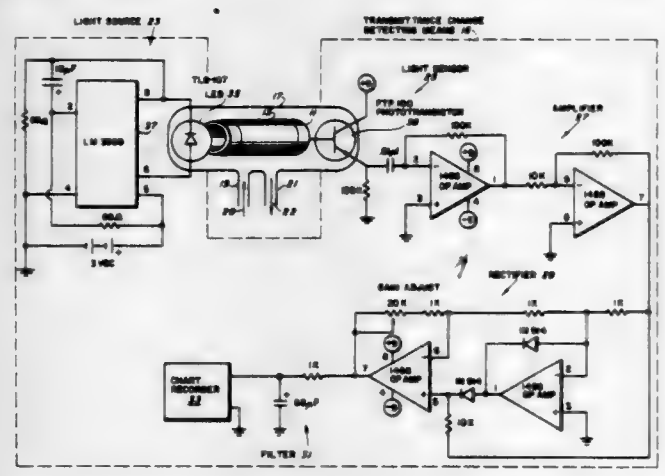
REVERSIBLE OPTICAL WAVEGUIDE VAPOR SENSOR

John F. Giuliani, Kensington, Md., and Henry Wohltjen, Burke, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1983, Ser. No. 462,493

Int. Cl.[3] **G01N** *21/00, 21/78*

U.S. Cl. 436—96 **21 Claims**



1. In combination,

an optical waveguide; and

an oxazine perchlorate dye film coated on the optical waveguide and having the property of changing from its normal color to another color when exposed to a chemical selected from the group consisting of ammonia, hydrazine, and pyridine, and returning to its original color when the chemical is removed;

whereby the optical transmittance of the waveguide varies with the color of the dye film coating.

20. A reusable method of detecting small amounts of a chemical selected from the group consisting of ammonia, hydrazine, or pyridine in a gas comprising the steps of:

transmitting light through an optical waveguide coated with an oxazine perchlorate dye film whose normal color changes to another color when exposed to the chemical and which returns to its original color when the chemical is removed;

circulating the gas having the chemical therein over the waveguide such that the chemical comes into contact with the oxazine perchlorate dye film; and

detecting changes in the optical transmittance of the waveguide caused by variation in the color of the dye film.

4,513,088

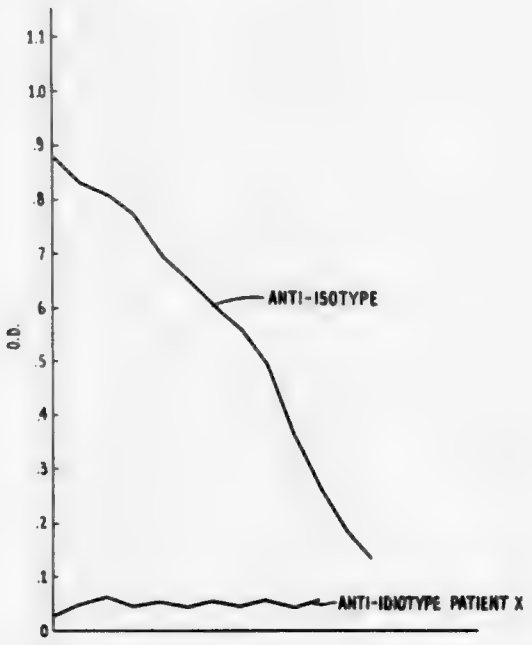
ASSAY FOR MONOCLONAL ANTIBODY AGAINST SURFACE IG OF A HUMAN B CELL TUMOR

Ronald Levy, Stanford; David G. Maloney, Palo Alto, and Kristiaan Thielemans, Stanford, all of Calif., assignors to The Board of Trustees of The Leland Stanford Junion University, Stanford, Calif.

Filed Mar. 30, 1983, Ser. No. 480,478

Int. Cl.[3] **G01N** *33/54*

U.S. Cl. 436—518 **10 Claims**



1. An immunoassay for detecting a monoclonal antibody that binds specifically to the surface IG of a human B cell tumor in a hybridoma culture medium suspected of containing the monoclonal antibody comprising:

(a) incubating a lysate of cells of the tumor with an antibody immobilized on a solid phase that binds to the surface Ig but not to the monoclonal antibody under conditions that promote binding of the surface Ig to the immobilized antibody;

(b) removing unbound lysate material from the solid phase;

(c) incubating the solid phase with the hybridoma culture medium under conditions that promote binding of any monoclonal antibody in the culture medium to immobilized antibody-surface Ig complex;

(d) removing unbound culture medium material from the solid phase;

(e) incubating the solid phase with a labeled antibody that binds to the monoclonal antibody under conditions that promote binding of the labeled antibody to immoblized antibody-surface Ig-monoclonal antibody complex;

(f) removing unbound labeled antibody from the solid phase;

(g) detecting the presence of labeled complex in the product of step (f).

4,513,089

SUPERREFRACTORY DRY RAMMING MATERIAL BASED ON ZIRCONIUM OXIDE FOR THE LINING OF INDUCTION-TYPE CRUCIBLE FURNACES

Peter Kummer, Siegburg, and Gerhard Rehfeld, Aachen, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 307,258, Sep. 30, 1981, abandoned. This application Oct. 25, 1983, Ser. No. 545,479

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037268

Int. Cl.[3] C04B *35/48*

U.S. Cl. 501—103 7 Claims



1. A superrefractory dry ramming material based on zirconium oxide for the lining of induction-type crucible furnaces consisting essentially of a zirconium oxide low in SiO_2 and conventionally stabilized with CaO, MgO, Y_2O_3, rare earths or their mixed oxides which has a particle size ranging up to 8 mm, and from 5 to 40 weight percent finely divided monoclinic, fused zirconium oxide containing less than 0.5 eight percent SiO_2 the superrefractory material having a rammed density of at least 4.3 g/cm^3.

4,513,090

CRYSTALLINE SILICA ZEOLITE-CONTAINING CATALYST

Paul E. Eberly, Jr., and William E. Winter, Jr., both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 9, 1981, Ser. No. 281,860

Int. Cl.[3] B01J *29/28, 29/04*

U.S. Cl. 502—66 9 Claims

1. A catalyst comprising a physical mixture of particles of (a) a crystalline silica zeolite having uniform pore diameters, and (b) a hydrogenation component composited with a non-zeolitic alumina-containing support comprising from about 1 to about 6 weight percent amorphous silica, based on the weight of said support.

2. The catalyst of claim 1 wherein said hydrogenation component is selected from the group consisting of Group VIB metal components, Group VIII metal components and mixtures thereof.

9. The catalyst of claim 1 wherein said crystalline silica zeolite is silicalite.

4,513,091

HYDROTHERMAL ZEOLITE ACTIVATION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 14, 1983, Ser. No. 465,987

Int. Cl.[3] B01J *29/28, 37/08*

U.S. Cl. 502—71 9 Claims

1. A method for introducing tetrahedrally bound aluminun into the structure of a high silica content crystalline zeolite having a silica to alumina ratio of at least 70:1 and a Constraint Index of 1 to 12, which method comprises:

forming a mixture of said zeolite and an alumina; and

hydrothermally treating said mixture with a dilute aqueous solution of sodium hydroxide at a temperature of about 80° C. to 370° C. and for a time effective to increase the tetrahedrally bound aluminum content of said zeolite.

3. The method described in claim 2 wherein said zeolite has a silica to alumina ratio above 500:1.

4,513,092

COMPOSITE CATALYST FOR HALOGENATION AND CONDENSATION OF ALKANES

Pochen Chu, Deptford, N.J., and Francis G. Dwyer, West Chester, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 568,153, Jan. 4, 1984,. This application Mar. 29, 1984, Ser. No. 594,583

Int. Cl.[3] B01J *29/30*

U.S. Cl. 502—71 8 Claims

1. A dual-function chlorination-condensation catalyst composition consisting essentially of (a) Deacon-type catalyst comprising cupric halide, alkaline earth halide and/or alkali metal halide, and/or rare earth metal halide and (b) crystalline aluminosilicate zeolite component having a silica to alumina ratio of at least 12 and constraint index of 1 to 12.

2. The catalyst composition of claim 1 wherein the Deacon-type catalyst comprises about 1 to 20 weight percent of the zeolite component.

3. The catalyst composition of claim 2 wherein the dual function catalyst contains 10 to 90 weight percent alumina binder.

4,513,093

IMMOBILIZATION OF VANADIA DEPOSITED ON SORBENT MATERIALS DURING TREATMENT OF CARBO-METALLIC OILS

H. Wayne Beck, Russell; James D. Carruthers, Catlettsburg; Edward B. Cornelius, Ashland; William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland; James L. Palmer, Flatwoods, and Oliver J. Zandona, Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

PCT No. PCT/US81/00357, § 371 Date Mar. 30, 1981, § 102(e) Date Mar. 30, 1981, PCT Pub. No. WO82/03226, PCT Pub. Date Sep. 30, 1982

PCT Filed Mar. 19, 1981, Ser. No. 277,752

Int. Cl.[3] B01J *21/16*

U.S. Cl. 502—84 29 Claims

1. A sorbent material wherein the composition of said sorbent comprises kaolin clay, a titania gel in an amount in the range of about 1 to about 8 weight percent of sorbent, and a metal additive sufficient to immobilize vanadium compounds in the presence of an oxygen containing gas at sorbent regeneration temperatures.

3. A composition of matter for use as a sorbent comprising kaolin clay, a zirconia gel in an amount of the range of about 1 to about 8 weight percent, and a metal additive in an amount sufficient to immobilize vanadium compounds in the presence of an oxygen containing gas at sorbent regeneration temperature.

6. A sorbent comprised of microspherical particles each containing a metal additive, in an amount sufficient to immobilize vanadium compounds in the presence of an oxygen containing gas at sorbent regeneration temperature, kaolin clay, a titania gel or a zirconia gel or a combination of titania gel and zirconia gel with an alumina gel, said gel material comprising about 1 to about 8 weight percent of said sorbent.

15. A composition of claims 1, 2, 3, 4, 5 or 6 wherein said metal additive to immobilize vanadium compounds comprises Mg, Ca, Sr, Ba, Sc, Y, La, Ti, Zr, Hf, Nb, Ta, Mn, Mi, In, Tl, Bi, Te, or an element in the lanthanide or actinide series, or an combination of two or more of said elements.

4,513,094

SINGLE-BATCH PROCESS TO PREPARE NOBLE METAL VANADIUM ALLOY CATALYST ON A CARBON BASED SUPPORT

Francis J. Luczak, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 20, 1983, Ser. No. 506,469

Int. Cl.[3] B01J *21/18, 23/64*

U.S. Cl. 502—101 **7 Claims**

1. A method for making a finely divided platinum alloy catalyst supported on carbon for use in a fuel cell comprising:

(a) preparing an aqueous dispersion of platinum ions and electrically conductive carbon support particles, heating the dispersion to about 45° C.,

(b) preparing a sulfur ion containing aqueous solution,

(c) adding the sulfur ion solution to the platinum dispersion and agitating while maintaining the dispersion at about 45° C.,

(d) adsorbing the platinum onto the carbon support by intimately contacting the platinum with the support particles by agitating and maintaining the dispersion at about 45° C.,

(e) preparing a second aqueous dispersion containing a salt of an element from transition Groups IV, V, VI or VII,

(f) adding the second aqueous dispersion to the platinum dispersion while maintaining the dispersion at about 45° C. and adjusting the pH to about 5.5,

(g) adsorbing the transition element onto the support particles by agitating while maintaining the dispersion at about 45° C.;

(h) removing the treated support particles from the dispersion, drying, sifting and heating the particles to form the catalyst.

4,513,095

INTERMETALLIC COMPOUNDS OF POLYMERIC TRANSITION METAL OXIDE ALKOXIDES AND CATALYTIC USE THEREOF

Anthony N. Speca, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 209,223, Nov. 24, 1980, abandoned, Ser. No. 209,224, Nov. 24, 1980, abandoned, Ser. No. 209,225, Nov. 24, 1980, abandoned, Ser. No. 209,226, Nov. 24, 1980, abandoned, Ser. No. 209,227, Nov. 24, 1980, abandoned, Ser. No. 209,228, Nov. 24, 1980, abandoned, Ser. No. 209,229, Nov. 24, 1980, abandoned, and Ser. No. 228,831, Jan. 27, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 483,054

Int. Cl.[3] C08F *4/64*

U.S. Cl. 502—111 **32 Claims**

31. An intermetallic compound comprising the reaction product of a polymeric transition metal oxide alkoxide with aluminum.

4,513,096

SYNTHESIS GAS REACTION IRON CONTAINING ACTIVE CARBON CATALYSTS

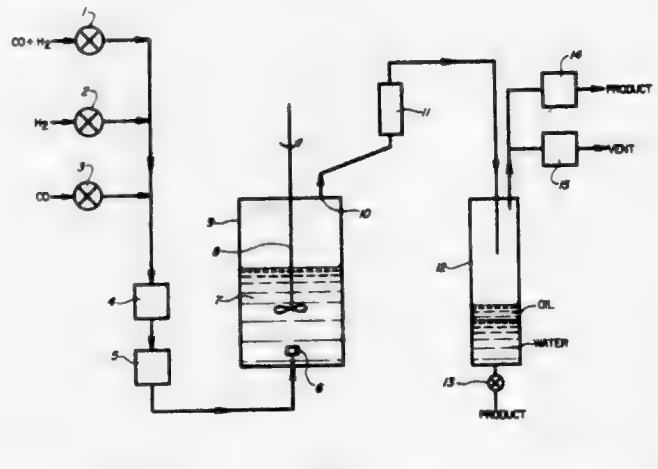
John F. Connolly, Glen Ellyn; Arnold N. Wennerberg, Chicago, and Robert F. Waters, Calumet City, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 497,401, May 23, 1983, Pat. No. 4,478,954. This application Aug. 22, 1984, Ser. No. 643,158

Int. Cl.[3] B01J *23/86, 23/85, 23/76*

U.S. Cl. 502—185 **1 Claim**

1. An active carbon catalyst comprising a substantially uniform dispersion of at least one of a chromium component, an aluminum component, a manganese component or a tungsten component in a porous carbon matrix and elemental iron either deposited thereon or substantially uniformly dispersed therein, wherein the concentration of active carbon in the catalyst is from about 20 to about 90 weight percent, based on the weight of the catalyst, wherein the concentration of elemental iron in the catalyst is from about 5 to about 50 weight percent, based on the weight of the catalyst, wherein the total concentration of the chromium component, the aluminum component, the manganese component or tungsten component or a combination thereof in the catalyst is from about 5 to about 40 weight percent, based on the weight of the catalyst and calculated as



the elemental metal or metals, and wherein each of the chromium, aluminum, manganese and tungsten components that is present is in the form of the elemental metal, its oxide or a combination thereof.

4,513,097

HYDROTREATING CATALYST AND A METHOD FOR PREPARING THE CATALYST

Paul K. Angmorter, Pomona; Howard D. Simpson, Irvine, and Ryden L. Richardson, Whittier, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 408,264, Aug. 16, 1982, Pat. No. 4,446,248. This application Mar. 9, 1984, Ser. No. 588,115

Int. Cl.[3] B01J *21/04, 23/88, 27/18*

U.S. Cl. 502—211 **23 Claims**

1. A catalyst composition useful for denitrogenation and desulfurization of hydrocarbon feedstocks by reaction with hydrogen, said catalyst composition comprising molybdenum, nickel and phosphorous active components on support particles comprising gamma alumina, said catalyst having been prepared by a method comprising the steps of:

(a) contacting said support particles with an aqueous ammonia solution;

(b) subsequently impregnating the resultant support particles with molybdenum, nickel and phosphorous by contacting said support particles with an acidic impregnating solution so as to provide composites containing molybdenum. nickel and phosphorous components;

(c) drying composites obtained from step (b) at temperatures less than about 150° F.; and

(d) calcining impregnated particles from step (c) at an elevated temperature in the presence of oxygen.

4,513,098

MULTIMETALLIC CATALYSTS AND THEIR METHOD OF PREPARATION FROM ORGANOMETALLIC PRECURSORS

Ying-Yen P. Tsao, Langhorne, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 28, 1983, Ser. No. 508,407

Int. Cl.[3] B01J *27/02, 31/12;* C10G *35/04, 35/06*

U.S. Cl. 502—216 **9 Claims**

1. A method for the preparation of multimetallic catalysts which comprises (1) contacting a porous solid refractory inorganic oxide support having suface hydroxyl groups thereon with a non-aqueous solution containing a hydrolysis-sensitive, metal pi-complex organometallic precursor which contains organic ligands, and reducing the resulting complex-containing support to remove said organic ligands therefrom to form a catalyst containing highly dispersed metal and/or metal oxide particles which serve as catchment sites for subsequently added metal complexes; (2) contacting said reduced support

with a non-aqueous solution containing a second metal pi-complex organometallic precursor which reacts with the catchment sites on the reduced support causing attachment of the second organometallic precursor thereto, and reducing the resulting loaded support to form a multimetallic catalyst containing highly dispersed metal and/or metal oxide particles; (3) contacting the resulting catalyst with one or more other metal pi-complex organometallic precursors and reducing the resulting catalyst and (4) activating the resulting catalyst by presulfiding to form a multimetallic catalyst containing highly dispersed metal and/or metal oxide particles.

4,513,099

OLEFIN METATHESIS AND CATALYST

Simon G. Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 518,557, Jul. 29, 1983, Pat. No. 4,465,891. This application Feb. 27, 1984, Ser. No. 584,220

Int. Cl.³ B01J *27/00, 27/10*

U.S. Cl. 502—228 **12 Claims**

1. A composition suitable for the disproportionation of olefins comprising silicon and at least one metal selected from tungsten, molybdenum, and rhenium produced by

(a) combining the metal or metal compound with a halosilane compound

(b) adding either water or silica to (a), and

(c) heating (b) to activate and form a metal/silicon-containing catalyst active for the disproportionation of olefins.

4,513,100

CATALYTIC SYSTEM FOR PRODUCING MIXTURES OF METHANOL AND HIGHER ALCOHOLS

Vittorio Fattore; Bruno Notari, both of S. Donato Milanese; Alberto Paggini, Spino D'Adda, and Vincenzo Laganà , Milan, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Oct. 28, 1982, Ser. No. 437,439

Claims priority, application Italy, Dec. 2, 1981, 25390 A/81

Int. Cl.³ B01J *23/06, 23/10, 23/26, 23/72*

U.S. Cl. 502—303 **3 Claims**

1. A catalytic system for producing mixtures of methanol and higher alcohols from synthesis gas, and having the empirical formula:

$$Zn.Cr_w.Cu_x.A_y.Me_z.O_t$$

in which

w lies between 0.1 and 0.8,

x lies between 0.005 and 0.05,

y lies between 0.002 and 0.2,

z lies between 0 and 0.1,

t lies between 3.75 and 1.3, its value being that necessary for satisfying the valency with which the various elements appear in the catalyst,

A is at least one alkali metal, and

Me is at least one metal selected from the group consisting of molybdenum, manganese, lanthanum, cerium, aluminum, titanium and vanadium.

4,513,101

SMALL BEAD AUTO EXHAUST CATALYST

Alan W. Peters, Rockville; Gwan Kim, Olney, and Michael V. Ernest, Baltimore, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,809

Int. Cl.³ B01J *21/04, 23/10, 23/58*

U.S. Cl. 502—304 **4 Claims**

1. A catalyst suitable for auto emission control comprising alumina particles having a geometric surface area to bulk volume ratio of from about 17 to 25 cm^2/cm^3, a low compacted bulk density of about 20 to about 36 pounds per cubic foot and a catalytically-effective amount of one or more platinum group metals deposited on the alumina particle.

4,513,102

CATALYST FOR COATING ANODES AND A PROCESS FOR ITS PREPARATION

Ron Hutchings, Rondebosch, South Africa; Ruzica Loitzl, Kirchdorf, and Klaus Müller, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 21, 1984, Ser. No. 581,991

Claims priority, application Switzerland, Mar. 11, 1983, 1344/83

Int. Cl.³ C25B *11/00*

U.S. Cl. 502—325 **5 Claims**

1. A catalytic powder for coating anodes in electrochemical cells, consisting essentially of 2 to 45 mol % of RuO_2, 2 to 45 mol % of IrO_2 and 10 to 96 mol % of SnO_2; wherein said powder belongs, at least partially as a mixed oxide, to the rutile crystal type having uniform lattice parameters, the values of which lie between those of RuO_2 and IrO_2 on the one hand and those of SnO_2 on the other hand.

4,513,103

7-OXABICYCLOHEPTANE ETHERS USEFUL IN THE TREATMENT OF THROMBOLYTIC DISEASE

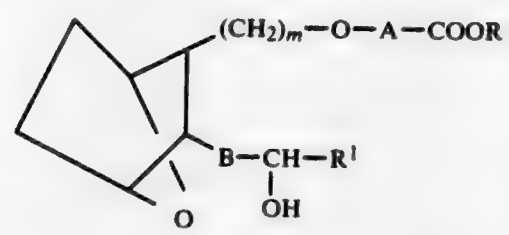
Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 21, 1983, Ser. No. 544,300

Int. Cl.³ A61K *31/34;* **C07D** *307/00*

U.S. Cl. 514—469 **15 Claims**

1. A compound of the structure



including all stereoisomers thereof, wherein m is 1 to 4, A is $(CH_2)_n$ or $-(CH_2)_{n'}-CH=CH-$; n is 1 to 8; n' is 1 or 2; B is $-CH=CH-$ or $-(CH_2)_2-$; R is H, lower alkyl or alkali metal; and R^1 is lower alkyl, aryl, arylalkyl, cycloalkyl or cycloalkylalkyl; wherein the term alkyl by itself or as part of another group contains up to 12 carbon atoms and may be unsubstituted or substituted with halo, trifluoromethyl or alkoxy; the term aryl by itself or as part of another group contains 6 to 10 carbons in the ring portion and may be unsubstituted or substituted with lower alkyl, halogen or lower alkoxy; and the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and may be unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups.

10. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,513,104

PROCESS USING IRON-THALLIUM CATALYSTS IN CO HYDROGENATION

Franklin J. Wright, Watchung; Michael A. Richard, Fanwood, and James C. Pirkle, Lebanon, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 299,014, Sep. 3, 1981, abandoned. This application Mar. 25, 1983, Ser. No. 478,915
The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.
Int. Cl.³ C07C *1/04*
U.S. Cl. 518—714 **22 Claims**

1. A process for producing liquid hydrocarbons, including those in the C_6-C_{11} hydrocarbon range, comprising the steps of:

(a) first depositing thallium on the surface of a supported or unsupported iron catalyst wherein the weight ratio of iron-thallium, taken as the free metals, is from about 100:1 to 1:100, and wherein said iron compounds contain iron value substantially in the trivalent state;

(b) contacting said iron-thallium catalyst with a mixture of CO and H_2 in a volume ratio of about 1:4 to 4:1, respectively, at a temperature ranging from 270° to 550° C., a pressure ranging from 0.1, to 10 MPa and a space velocity ranging from 10 to 10,000 v/v/hr., or equivalent conditions, for a sufficient time to substantially convert said thallium compounds to metallic thallium and said iron compounds to reduced and carbided iron; and

(c) continuing said contacting as described in step (b) at a pressure above 0.1 MPa, a temperature ranging from 230° to 550° C., to produce liquid hydrocarbons comprising about 40 weight percent and greater C_6–C_{11} liquid hydrocarbons and below about 5 weight percent C_{23+} hydrocarbons.

4,513,105

PARTICULATE POLYSTYRENE CONTAINING BLOWING AGENT AND HAVING IMPROVED EXPANDABILITY

Klaus Hahn, Kirchheim; Paül Wittmer, Landau; Isidoor De Grave, Wachenheim; Rupërt Schick, Limburgerhof, and Adolf Echte, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 531,658, Sep. 13, 1983,. This application Jun. 21, 1984, Ser. No. 623,211
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234660
Int. Cl.³ C08J *9/18, 9/20*
U.S. Cl. 521—56 **1 Claim**

1. In a process for the preparation of particulate polystyrene containing a blowing agent in which styrene is polymerized in an aqueous suspension and in which a volatile organic blowing agent is added before, during or after the polymerization has taken place, the improvement which comprises: adding from 0.1 to 10% by weight of a styrene oligomer having a number-average mean molecular weight of from 500 to 5,000 during the polymerization, at a styrene monomer conversion of from 0 to 90%.

4,513,106

PROCESS FOR EXPANDING MICROSPHERES

Anders Edgren; Jan Söderberg, and Bengt Bergström, all of Sundsvall, Sweden, assignors to KemaNord AB, Stockholm, Sweden

Filed Nov. 22, 1983, Ser. No. 554,313
Claims priority, application Sweden, Nov. 26, 1982, 8206733
Int. Cl.³ C08J *9/22*
U.S. Cl. 521—58 **8 Claims**

1. A method for expanding expandable organic thermoplastic microspheres containing a blowing agent, able to be vaporized upon heating, comprising the steps of

(a) providing a pumpable slurry of the unexpanded microspheres in an inert liquid,

(b) feeding the slurry into a pressure zone in which a pressure above the surrounding pressure is maintained,

(c) feeding to the pressure zone steam of a temperature and in an amount sufficient for heating the microspheres above the vaporization temperature of the blowing agent, at the pressure in the pressure zone, to thereby partially expand the microspheres,

(d) allowing the partially expanded microspheres to leave the pressure zone under a pressure drop whereby the spheres are further expanded and accelerated into a stream with a velocity of at least 1 meter per second,

(e) injecting the accelerated stream into gas volume whereby the stream is disintegrated and cooled, and

(f) separating essentially uniformly expanded and non-agglomerated spheres from the gas.

4,513,107

THERMALLY TRANSFERABLE INK COMPOSITIONS

Charles J. Fabbrini, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 27, 1980, Ser. No. 163,884
Int. Cl.³ C08F *14/06*
U.S. Cl. 524—56 **17 Claims**

1. A thermally transferable ink composition having a 20% elongation temperature of less than about 85° C. and an elongation at break of at least about 15% comprising:

(a) from about 50 to 95% by weight of a thermoplastic polymer selected from the group consisting of polyvinyl chloride, copolymers thereof, and blends thereof;

(b) from about 50 to 5% by weight of a flexibilizer for said thermoplastic polymer that is compatible with said thermoplastic polymer; and

(c) up to about 40% by weight of a colorant

wherein said composition is thermally transferable from a carrier to a receptor at a temperature in the range of 75° C. to 110° C.

4,513,108

THERMOPLASTIC PVC MOLDING COMPOSITIONS

Jesse D. Jones, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 16, 1983, Ser. No. 495,069
Int. Cl.³ C08L *27/06, 23/28, 25/08, 55/02*
U.S. Cl. 524—180 **38 Claims**

1. A thermoplastic molding composition which comprises in intimate admixture:

(a) a vinyl chloride polymer having a relative viscosity, as measured at a concentration of 1 gram per 100 grams of cyclohexanone at 25° C., falling within the range of from about 1.50 to about 1.85;

(b) a copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride having a number average molecular weight of at least 30,000 and in which the content of said vinyl aromatic compound is within the range of from about 90 to about 70 weight percent and the content of said anhydride is within the range of from about 10 to about 30 weight percent;

(c) as a first impact modifier, at least 3 parts by weight per hundred parts of components (a) and (b) of chlorinated polyethylene resin; and

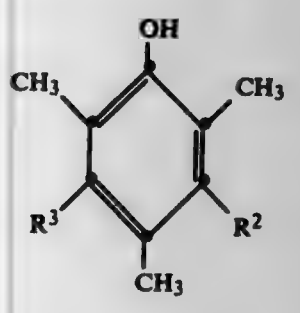
(d) as a second impact modifier, at least 3 parts by weight per hundred parts of components (a) and (b) of either a MBS impact modifier, an ABS impact modifier, a MABS impact modifier or a mixture of two or more of these, articles produced from said molding composition having a heat deflection temperature measured at 66 PSI of at least 75° C.

4,513,109
PHENOLS AND USE THEREOF AS STABILIZERS

Siegfried Rosenberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 520,374, Aug. 4, 1983, abandoned, which is a continuation of Ser. No. 445,889, Dec. 1, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 574,422
Claims priority, application Switzerland, Dec. 3, 1981, 7734/81
Int. Cl.³ C08K 5/13; C07C 39/12, 39/17
U.S. Cl. 524—342
5 Claims

1. A compound of formula I

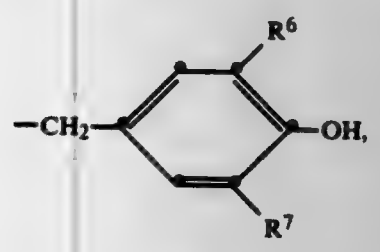


(I)

wherein

R^1 and R^4 are methyl,

R^2 and R^3 are each a radical of formula II



(II)

wherein R^6 is C_1–C_{12} alkyl, C_5–C_8 cycloalkyl, C_6–C_{10} aryl, C_7–C_{10} aralkyl or C_7–C_{10} alkaryl and

R^7 is C_4–C_{12} alkyl, C_5–C_8 cycloalkyl, C_6–C_{10} aryl, C_7–C_{10} aralkyl or C_7–C_{10} alkaryl.

5. A stabilized polymer composition which comprises

(a) a graft polymer based on acrylonitrile, butadiene and styrene or impact-resistant polystyrene, and

(b) an effective amount of a compound according to claim 1.

4,513,110
METHOD OF TREATING DIENE RUBBER AND IMPROVED RUBBER COMPOSITIONS

Charles P. Rader, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 9, 1983, Ser. No. 502,875
Int. Cl.³ C08L 7/00, 9/00, 9/06, 13/00
U.S. Cl. 524—432
35 Claims

1. A method for improving properties of diene rubber comprising incorporating into the rubber, with good dispersion, from 0.1 to 20 parts by weight per 100 parts of the rubber by weight of a compound selected from diketo compounds wherein the keto groups are in the ortho positions of a 6-carbon hydrocarbon ring containing at least one site of carbon-to-carbon unsaturation, or tautomers of said compounds, at an appropriate temperature above 130° C. for from 0.1 to 20 minutes.

26. A modified rubber composition which is the product of the reaction of a diene rubber and from 0.1 to 20 parts by weight per 100 parts of diene rubber by weight of a compound selected from diketo compounds wherein the keto groups are in the ortho positions of a 6-carbon hydrocarbon ring containing at least one site of carbon-to-carbon unsaturation, or tautomers of said compounds.

4,513,111
PROCESS FOR PRODUCING IMPACT-RESISTANT RESINS

Kazuo Kishida; Naoki Yamamoto; Kozi Nishida, all of Ohtake; Toshihito Narita, Yokohama, and Yasumasa Sato, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 227,583, Jan. 23, 1981, abandoned. This application Mar. 8, 1983, Ser. No. 473,369
Claims priority, application Japan, Jan. 30, 1980, 55-9709; Feb. 20, 1980, 55-20159
Int. Cl.³ C08F 2/16; C08L 9/04, 9/08, 9/10
U.S. Cl. 524—458
12 Claims

1. In a process comprising adding an ethylenic monomer or monomer mixture (B) to a rubbery polymer (A) latex, emulsion-polymerizing it to produce a graft copolymer (C) latex, then adding an acidic substance or an electrolyte to said graft copolymer (C) latex to partially coagulate the latex, and thereafter either first adding an ethylenic monomer or monomer mixture (D) and then adding a suspension polymerization stabilizer or simultaneously adding an ethylenic monomer or monomer mixture (D) and a suspension polymerization stabilizer, and carrying out suspension polymerization to obtain a graft copolymer (E) in the form of beads, a process for producing an impactresistant resin wherein:

(1) said rubbery polymer (A) contains at least 60% by weight of a diene monomer component and has a degree of swelling of 10–35, a gel content of 70% by weight or more and a weight average particle diameter of 0.2–0.5μ and the major part of the particles has a particle diameter ranging from 0.03μ to 1.0μ;

(2) said ethylenic monomer or monomer mixture of (B) and (D) independently comprising 50–100% by weight of an aromatic vinyl monomer and 50–0% by weight of a vinyl monomer copolymerizable therewith;

(3) said graft copolymer (C) has a free polymer rate of 10% or higher and a reduced viscosity (η_{sp}/C), determined by dissolving 0.1 g of its acetone-soluble fraction into 100 ml of N,N-dimethylformamide and measuring the viscosity at 20° C., or 0.3–1.0 dl/g;

(4) said rubbery polymer (A) is 25–70% by weight in said graft copolymer (E); and

(5) said acidic substance or electrolyte is added to said graft copolymer (C) latex to form a partial coagulum with a solid content of 15–50%.

4,513,112
HIGH BUILD, AMBIENT CURE COATING COMPOSITIONS

Bruce H. Ernst, Edinboro; Dennis D. Howard, Girard, and Thomas E. Gismondi, Erie, all of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Mar. 7, 1984, Ser. No. 587,032
Int. Cl.³ C08K 3/36
U.S. Cl. 524—590
4 Claims

1. A high build, ambient temperature-curable coating composition comprising a homogeneous mixture of

(a) at least one polymeric compound having at least two free isocyanate groups and containing from 0.5 to 40 percent by weight, based on total weight of such polymeric compound, of polyethylene oxide units having the structure $-(CH_2CH_2O)_n$, where n is at least 2;

(b) from 0.5 to 10 percent by weight, based on total weight of said isocyanate-functional ethylene oxide-containing polymeric compound, of colloidal silica; and

(c) at least one curing agent for said isocyanate-functional polymeric compound, wherein said curing agent comprises at least one ketimine, said ketimine comprising the reaction product of at least one aromatic amine having at least two primary amine groups and at least one aliphatic ketone, where the amount of said ketimine is in the range from 0.6 to 1.2 equivalents of amine per equivalent of isocyanate.

2. A high-build, ambient temperature-curable coating composition comprising a homogeneous mixture of

(a) at least one compound having at least two free isocyanate groups and being substantially devoid of polyethylene oxide repeating units having the structure $-CH_2CH_2O)_n$, wherein n is at least 2;

(b) at least one polymeric compound having at least two free isocyanate groups and containing recurring polyethylene oxide units having the structure $-CH_2CH_2O)_n$, where n is at least 2, the amount of such isocyanate-functional, polyethylene oxide-containing polymeric compound being sufficient to provide a polyethylene oxide content in the range from 0.5 to 40 percent by weight, based on the total weight of isocyanate-functional compounds(a) and (b);

(c) from 0.5 to 10 percent by weight, based on total weight of isocyanate-functional, polyethylene oxide-containing polymeric compound (b), of colloidal silica; and

(d) at least one curing agent for said isocyanate-functional compounds (a) and (b), wherein said curing agent comprises at least one ketimine, said ketimine comprising the reaction product of at least one aromatic amine having at least two primary amine groups and at least one aliphatic ketone, the amount of said ketimine being sufficient to provide from 0.6 to 1.2 equivalents of amine per equivalent of isocyanate.

4,513,113

AQUEOUS COATING COMPOSITION OF POLYESTERAMIDE

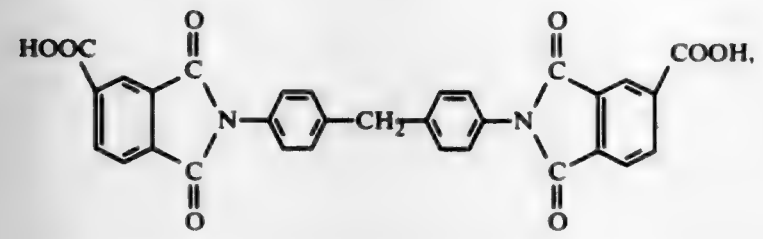
Marvin A. Peterson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 72,496, Sep. 4, 1979, abandoned, which is a division of Ser. No. 726,248, Sep. 24, 1976, Pat. No. 4,217,389, which is a division of Ser. No. 501,932, Aug. 30, 1974, Pat. No. 4,004,062, which is a continuation-in-part of Ser. No. 475,483, Jun. 3, 1974, Pat. No. 4,003,947, which is a continuation-in-part of Ser. No. 467,615, May 6, 1974, Pat. No. 4,073,788, which is a continuation of Ser. No. 822,899, May 8, 1969, abandoned. This application Nov. 19, 1981, Ser. No. 323,117

Int. Cl.³ C08G *73/10*; C08L *79/08*

U.S. Cl. 524—602 **5 Claims**

1. A coating composition for application to a substrate from an aqueous solution consisting essentially of the reaction product of isophthalic acid, propylene glycol, and the intermediate reaction product of 4,4'-methylene dianiline and trimellitic anhydride in the molar ratio of one to two respectively and having the structure



said reaction product having an acid number of about 66, and an aqueous solution of a volatile base selected from the group consisting of ammonia, ammonium hydroxide, primary amines, secondary amines, and tertiary amines, to form a solution having a solids level of about 34% and a pH of about 7.4, a coating of said composition on a substrate being curable upon the application of heat to form a cured resin coating on said substrate.

4,513,114

POLYESTER COMPOSITION

Katsuo Kunugi; Togi Suzuki; Tadashi Konishi, all of Matsuyama, and Shinji Ohwaki, Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 2, 1984, Ser. No. 636,912

Int. Cl.³ C08K *3/02, 3/32, 5/49*

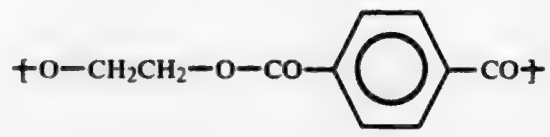
U.S. Cl. 524—706 **5 Claims**



X 10000

1. A polyester composition comprising:

(A) 100 parts by weight of a matrix polyester resin comprising at least 80 molar % of recurring ethylene terephthalate unit of the formula:



and

(B) 0.2 to 7 parts by weight of a dispersoid in the form of primary fine solid particles and/or secondary agglomerates each consisting of a plurality of said primary fine particles, dispersed in said matrix polyester resin,

said dispersoid being such that, when said dispersoid is contained in a predetermined amount in a typical matrix polyester resin consisting of a polyethylene terephthalate having an intrinsic viscosity of 0.640, the resultant exemplary polyester composition satisfies the relationship (I):

$$-\frac{(\eta\dot{\gamma}_1(w) - \eta\dot{\gamma}_1(0)) - (\eta\dot{\gamma}_2(w) - \eta\dot{\gamma}_2(0))}{\dot{\gamma}_1 - \dot{\gamma}_2} \geqq 83w^2 + 275w + 42 \quad \text{(I)}$$

wherein w represents the amount in % by weight of said dispersoid based on the entire weight of said exemplary polyester composition; γ_1 and γ_2 represent shearing rates of 0.01 sec^{-1} and 5.0 sec^{-1}, respectively; $\eta\gamma_1(w)$ and $\eta\gamma_2(w)$ represent melt viscosities in poise (1/10 $N\cdot sec\cdot m^{-2}$) of said exemplary polyester composition containing w % by weight of said dispersoid, determined at shearing rates of γ_1 and γ_2, respectively; $\eta\gamma_1(0)$ and $\eta\gamma_2(0)$ represent melt viscosities in poise (1/10 $N\cdot sec\cdot m^{-2}$) of said matrix polyester resin free from said dispersoid, determined at shearing rates of γ_1 and γ_2, respectively.

4,513,115

LOW MODULUS ONE COMPONENT RTV COMPOSITIONS PROCESSES

Dale M. Beers, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 349,537, Feb. 17, 1982, abandoned. This application Jul. 11, 1983, Ser. No. 512,566

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—731 **120 Claims**

1. A stable, one-package, substantially anhydrous and sub-

stantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a tack-free elastomer comprising: (1) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least 2 alkoxy radicals; (2) an effective amount of a condensation catalyst; (3) a stabilizing amount of silane scavenger for hydroxy functional groups having the formula

$$(R^1O)_{4-(c+f)}\overset{(R^2)_c}{\overset{|}{Si}}(X)_f$$

where R^1 is a $C_{(1-8)}$ aliphatic organic radical selected from the group consisting of alkyl, alkylether, alkylester, alkylketone, and alkylcyano radicals, or a $C_{(7-13)}$ aralkyl radical, R^2 is a $C_{(1-13)}$ monovalent substituted or unsubstituted hydrocarbon radical, X is a hydrolyzable leaving group selected from the group consisting of amido, amino. carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato, and ureido radicals, and c is a whole number equal to 0 to 3, inclusive, f is an integer equal to 1 to 4 inclusive, and the sum of c+f is equal to 1 to 4 inclusive; and (4) where X is enoxy or amido, an effective amount of a curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof; and (5) from 2 to 20 parts by weight per 100 parts by weight of said organopolysiloxane of a first plasticizer fluid containing a high degree of trifunctionality or mixtures of tri- and tetrafunctionality and comprising

(i) from 5 to 60 mole percent of monoalkylsiloxy units, siloxy units or a mixture of such units;

(ii) from 1 to 6 mole percent of trialkylsiloxy units and

(iii) from 34 to 94 mole percent of dialkyl siloxy units, said polysiloxane containing from about 0.1 to about 2% by weight of silicone-bonded hydroxyl groups.

4,513,116

PROCESS FOR THE MANUFACTURE OF HALOGENATED POLYMERS

Ronald C. Kowalski, New Providence; William M. Davis; Neil F. Newman, both of Edison, all of N.J., and Lewis Erwin, Winchester, Mass., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 1, 1983, Ser. No. 481,366

Int. Cl.³ C08F *8/22*

U.S. Cl. 525—53 **79 Claims**

1. A process for the continuous production of halogenated polymer wherein polymer and halogenating agent are contacted in a continuous flow device comprising means for conveying said polymer through said device wherein said polymer and said halogenating agent are present during contact as either co-continuous phases or wherein said halogenating agent is present as a continuous phase and said polymer is present as a discontinuous phase and said polymer is subject to deformation, disruption and generation of new surface and means for disengaging by-product of the halogenation reaction and unreacted halogenating agent from said halogenated polymer.

4,513,117

PROCESS FOR CONVERSION OF VINYL COPOLYMERS TO VINYLIC ALCOHOL COPOLYMERS BY HOMOGENEOUS REACTION WITH ORGANOMETALLIC COMPOUNDS

Richard W. Fries, Joliet, Ill., assignor to Northern Petrochemical Company, Omaha, Nebr.

Filed May 7, 1984, Ser. No. 607,709

Int. Cl.³ C08F *8/12, 8/36*

U.S. Cl. 525—60 **6 Claims**

1. A process for producing vinylic alcohol copolymers by reacting an organometallic compound wherein the metal is selected from the group consisting of titanium, magnesium, aluminum, and zinc with a copolymer selected from the group consisting of (a) copolymers of a vinyl ester and a comonomer selected from the group consisting of alpha olefins and styrene and (b) copolymers of carbon monoxide and a comonomer selected from the group consisting of alpha olefins and styrene.

4,513,118

EMULSION POLYMERS FOR MODIFYING IMPACT STRENGTH

Norbert Suetterlin, Ober-Ramstadt; Peter J. Arndt, Seeheim-Jugenheim; Ernst Heil, Stockstadt; Werner Siol, Darmstadt; Willi Tilch, Reinheim, and Wilhelm Wopker, Bickenbach, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 3, 1984, Ser. No. 567,793

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1983, 3300526

Int. Cl.³ C08L *33/08, 33/12*

U.S. Cl. 525—81 **4 Claims**

1. A multistage emulsion polymer adaptable to inclusion in a transparent methyl methacrylate thermoplastic molding compound to improve the impact strength thereof without loss of transparency and without stress whitening, said polymer comprising

(a) a hard, nonelastomeric core polymer having a glass transition temperature above 50° C., produced by the emulsion polymerization of a monomer component consisting of at least 80 percent by weight of methyl methacrylate and up to 20 percent by weight of at least one other, different, ethylenically unsaturated monomer copolymerizable therewith;

(b) an elastomeric intermediate polymer having a glass transition temperature below 0° C., produced by the emulsion polymerization, in the presence of the hard core polymer (a), of a monomer mixture consisting of (i) at least 90 percent by weight of at least one monoethylenically unsaturated monomer of which at least 50 percent by weight is at least one alkyl ester of acrylic acid having from 1 to 18 carbon atoms in the alkyl group or at least one alkyl ester of methacrylic acid having from 4 to 18 carbon atoms in the alkyl group, (ii) 0.2 to 3 percent, by weight of the mixture of stage (b), of at least one polyfunctional monomer having three or more acrylic or methacrylic groups, and (iii) the balance being at least one further monoethylenically unsaturated monomer such that the refraction index of polymer (b) matches that of polymethyl methacrylate; and

(c) a hard, nonelastomeric final polymer having a glass transition temperature above 50° C., produced by the emulsion polymerization, in the presence of the elastomeric polymer (b), of a monomer component consisting of at least 80 percent by weight of methyl methacrylate and up to 20 weight percent of at least one other monoethylenically unsaturated monomer copolymerizable therewith.

4,513,119

POLYCARBONATE RESIN MIXTURES

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Apr. 21, 1983, Ser. No. 487,170

Int. Cl.³ C08L *53/02, 23/00, 69/00*

U.S. Cl. 525—92 **9 Claims**

1. A resin mixture comprising:

(a) from about 60 to about 92 parts by weight of an aromatic polycarbonate resin; and

(b) a modifier combination therefor comprising

(i) from about 5 to about 20 parts by weight of a coupled resinous block-copolymer having blocks comprising polymerized vinyl aromatic units connected to blocks comprising polymerized diene units, wherein the residual dienic unsaturation is not removed by selective hydrogenation;

(ii) from about 2 to about 20 parts by weight of a copolymer of an olefin and at least one of a C_1–C_6 alkyl acrylate, a C_1–C_6 alkyl methacrylate, acrylic acid, methacrylic acid, or a mixture of any of the foregoing; and

(iii) from about 1 to about 10 parts by weight of a precompounded homogeneous resin composition, compatible under working conditions, of an olefinic resin selected from the group consisting of a polyethylene resin, a polypropylene resin, a polyethylene copolymer resin in which a major weight percentage of said copolymer comprises polyethylene, a polypropylene copolymer resin in which a major weight percentage of said copolymer comprises polypropylene and a mixture of polyethylene or polypropylene and one of the foregoing copolymers and an elastomeric polyisobutylene resin,

said modifier being present in said mixture in an amount at least sufficient to impart to said mixture a resistance to environmental stress crazing and cracking greater than that possessed by said polycarbonate resin, per 100 parts by weight of components (a), (b)(i), (b)(ii), and (b)(iii) combined, said polycarbonate resin comprising the reaction product of a dihydric phenol and a carbonate precursor, the dihydric phenol consisting essentially of one or more of the following dihydric phenols

2,2-bis-(4-hydroxyphenyl)propane;
hydroquinone;
resorcinol;
2,2-bis-(4-hydroxyphenyl)pentane;
2,4'-(dihydroxydiphenyl)methane;
bis-(2-hydroxyphenyl)methane;
bis-(4-hydroxyphenyl)methane;
bis-(4-hydroxy-5-nitrophenyl)methane;
1,1-bis(4-hydroxyphenyl)ethane;
3,3-bis(4-hydroxyphenyl)pentane;
2,2-dihydroxydiphenyl;
2,6-dihydroxynaphthalene;
bis-(4-hydroxydiphenyl)sulfone;
2,4'-dihydroxydiphenyl sulfone;
5'-chloro-2,4'-dihydroxydiphenyl sulfone;
bis-(4-hydroxyphenyl)diphenyl sulfone;
4,4'-dihydroxydiphenyl ether; and
4,4'-dihydroxy-3,3'-dichlorodiphenyl ether.

4,513,120

POLYPHENYLENE ETHER COMPOSITIONS

James G. Bennett, Jr., Menands, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 246,383, Mar. 23, 1981, Pat. No. 4,373,064, which is a continuation of Ser. No. 846,544, Oct. 28, 1977, abandoned, which is a continuation of Ser. No. 725,740, Sep. 23, 1976, abandoned, which is a continuation of Ser. No. 283,093, Aug. 23, 1972, abandoned. This application Dec. 9, 1982, Ser. No. 448,262

The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.

Int. Cl.[3] **C08F** *253/00, 257/02, 279/00*

U.S. Cl. 525—316 **3 Claims**

1. A rubber modified polystyrene resin, said rubber modified polystyrene comprising a polystyrene matrix in which there is uniformly dispersed a discontinuous phase comprising particles of a styrene homopolymer englobulated in a diene rubber membrane, said particles having an average size ranging from about 0.1 to about 0.7 microns, the membrane thickness being not in excess of about $\frac{1}{4}$th the average particle diameter, and the diene rubber content being from about 1 to about 10% by weight of the rubber modified polystyrene.

4,513,121

WET STRENGTH MATERIAL

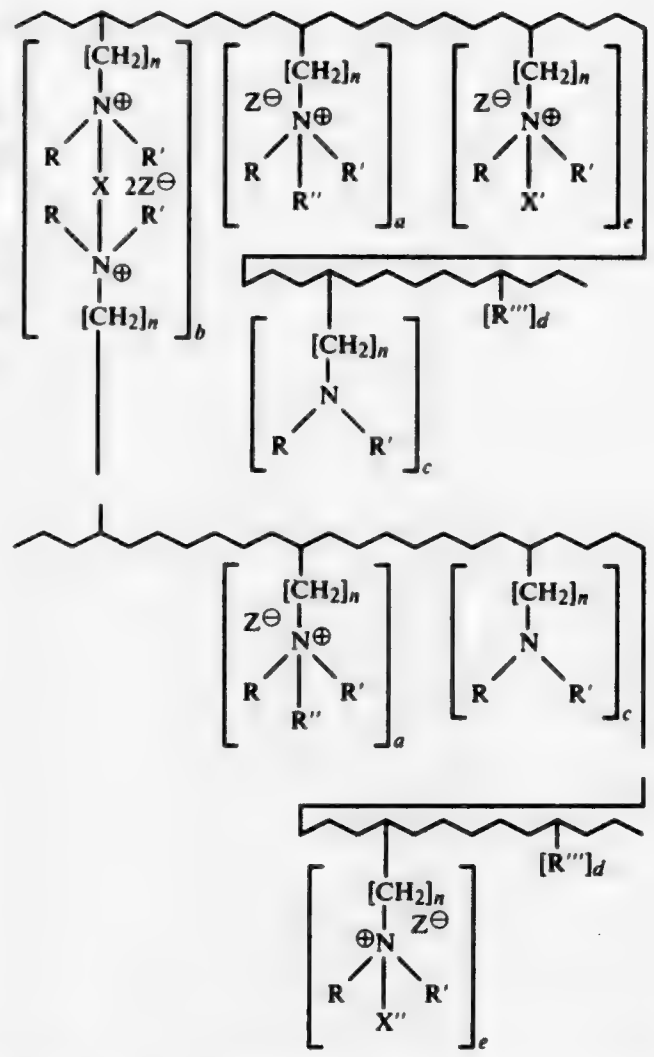
Per E. A. Hansson, and Felek Jachimowicz, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 18, 1983, Ser. No. 476,584

Int. Cl.[3] **C08S** *8/32*

U.S. Cl. 525—332.3 **6 Claims**

1. A polymeric product comprising a water soluble polymer having a substantially completely saturated polymeric backbone chain with a pendant alkylene amine groups represented by the formula:



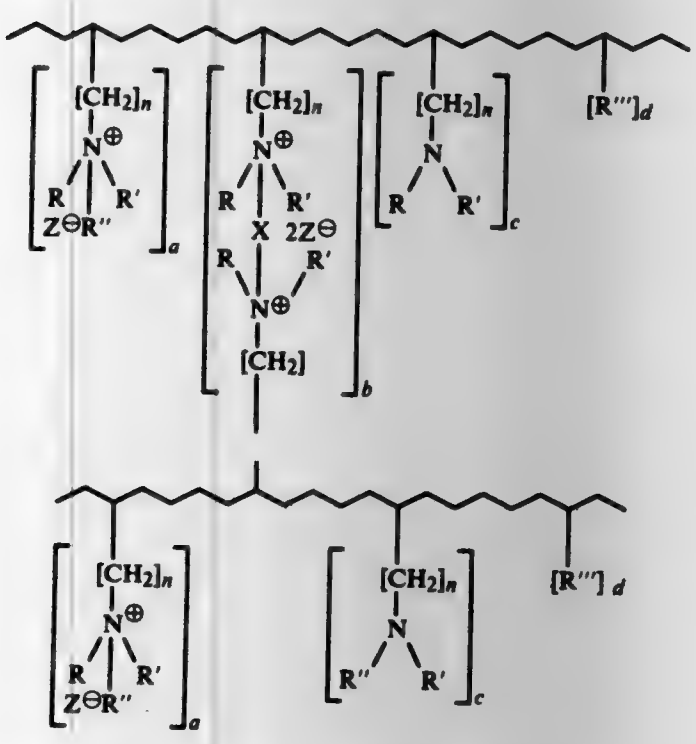
wherein ~~~ represents a substantially saturated hydrocarbon polymer chain, each R separately represents an unsubstituted or substituted C_1–C_6 alkyl, cycloalkyl or aryl; R' represents hydrogen or an R group; R'' represents hydrogen or a C_1–C_3 alkyl; R''' represents hydrogen or a comonomer pendant group or both, X is a residual organic group of a compound capable of covalently bonding with at least two nitrogen atoms of the polymer; X' represents a residual organic group having at least one unreacted functional group capable of reacting with secondary or tertiary amine or secondary hydroxy group; Z is a counterion; n is an integer of from 1 to 3; a, b, c, d and e are each integers such that a, c and e is from about 1 to 90 percent, b is from about 1 to 30 percent and d is from about 1 to 60 percent of the total sum of a+b+c+d+e; and the sum of the groups of a+c+e is at least 4 weight percent of the polymer product; said polymer is formed by reacting under substantially anhydrous conditions an olefinic bond containing polymer with an amine selected from a primary or secondary amine, hydrogen and carbon monoxide in the presence of a Group VIII metal containing compound to form a polymeric material having pendant alkylene amine groups and further reacting a portion of the alkylene amine groups with an agent which is at least difunctional with respect to the pendant secondary and tertiary amino groups, said difunctional agent being in molar ratio of from 0.3 to 1.1 with respect to said secondary amino groups and from 0.5 to 2.2 with respect to said tertiary amino groups.

4,513,122
RETENTION AND DRAINAGE AID

Eric A. Hansson and Felek Jachimowicz, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 18, 1983, Ser. No. 476,807
Int. Cl.[3] C08F 8/32
U.S. Cl. 525—332.3 22 Claims

1. A polymeric product comprising a water soluble polymer having a substantially completely saturated polymeric backbone chain with a pendant alkylene amine groups represented by the formula:



wherein ~~~represents a substantially saturated hydrocarbon polymer chain, each R separately represents an unsubstituted or substituted C_1–C_6 alkyl, cycloalkyl or aryl; R′ represents hydrogen or an R group; R″ represents hydrogen or a C_1–C_3 alkyl; R‴ represents hydrogen or a comonomer pendant group or both, X is a residual organic group of a compound capable of covalently bonding with at least two nitrogen atoms of the polymer and Z is a counterion; n is an integer of from 1 to 3; a, b, c, d and e are each integers such that a, c and e is from about 1 to 90 percent, b is from about 1 to 30 percent and d is from about 1 to 60 percent of the total sum of a+b+c+d+e; and the sum of the groups of a+c+e is at least 4 weight percent of the polymer product; said polymer is formed by reacting under substantially anhydrous conditions an olefinic bond containing polymer with an amine selected from a primary or secondary amine, hydrogen and carbon monoxide in the presence of a Group VIII metal containing compound to form a polymeric material having pendant alkylene amine groups and further reacting a portion of the alkylene amine groups with an agent which is at least difunctional with respect to the pendant secondary and tertiary amino groups, said difunctional agent being in molar ratio of from 0.3 to 1.1 with respect to said secondary amino groups and from 0.5 to 2.2 with respect to said tertiary amino groups.

4,513,123
SULFUR-CURABLE RUBBER SKIM STOCK COMPOSITIONS CONTAINING DITHIODIPROPIONIC ACID

Gary L. Day, Akron, and James P. Robertson, Norton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 14, 1983, Ser. No. 551,524
Int. Cl.[3] C08C 19/20
U.S. Cl. 525—332.6 9 Claims

1. A sulfur-curable rubber skim stock composition which comprises:

(a) 100 parts by weight of a rubber selected from the group consisting of natural rubber and blends of natural rubber and synthetic rubber;

(b) from about 30.0 to about 80.0 parts by weight of carbon black;

(c) an organo-cobalt compound present in sufficient amount to provide from about 0.05% to about 0.35% by weight of cobalt metal based on total weight of skim stock;

(d) from about 2.5 to about 9.0 parts by weight of sulfur; and

(e) from about 0.1 to about 2.5 parts by weight of dithiodipropionic acid.

4,513,124
PREPARATION OF A COPOLYMER POLYAHL USING AN ADDITION POLYMERIZABLE ADDUCT OF A POLYMERIC MONOAHL AND AN ETHYLENICALLY UNSATURATED COREACTANT

Dwight K. Hoffman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 195,155, Oct. 8, 1980, Pat. No. 4,394,491. This application Feb. 14, 1983, Ser. No. 466,240
The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.
Int. Cl.[3] C08G 18/14, 18/48; C08L 71/02, 75/08
U.S. Cl. 525—452 11 Claims

1. A method for making a stable dispersion of an addition copolymer in a polyahl which method comprises polymerizing an ethylenically unsaturated monomer dispersed in a continuous liquid phase of a polyahl which contains a dispersion stabilizing amount of an ethylenic addition polymerizable adduct of a monoahl and an active ethylenically unsaturated coreactant monomer having a coreactive moiety, said monoahl being an organic compound containing only one active hydrogen moiety capable of reacting with the coreactive moiety of the coreactive monomer to form the adduct and said polyahl being an organic compound having at least two active hydrogen moieties wherein the compound has a number average molecular weight of at least 62.

5. A stable copolymer dispersion comprising

(a) a polyahl having a number average molecular weight less than 400; and dispersed therein

(b) an ethylenic addition copolymerizate of (1) an ethylenic addition polymerizable adduct of a monoahl and an active ethylenically unsaturated coreactant monomer having a coreactive moiety and (2) at least one ethylenically unsaturated monomer other than the coreactant monomer ("other monomer"); or

(c) a mixture of (1) an adduct of (i) a monoahl and (ii) an addition copolymer of the coreactant monomer with at least one "other monomer" which is nonreactive with the coreactant monomer and the monoahl and (2) an ethylenic addition polymer of at least one "other monomer"; or

(d) a combination of (b) and (c); or

(e) a combination of (b) and/or (c) and an ethylenic addition polymer of at least one "other monomer," said monoahl and coreactant monomer being present in reacted form in an amount sufficient to stabilize the dispersion, said monoahl being an organic compound containing only one active hydrogen moiety capable of reacting with the coreactive moiety of the coreactive monomer to form the adduct and said polyahl being an organic compound having at least two active hydrogen moieties wherein the compound has a number average molecular weight of at least 62.

10. A polyurethane prepared by reacting the copolymer dispersion of claim 5 with an organic polyisocyanate.

11. The polyurethane of claim 10 in the form of a foam.

4,513,125

CROSSLINKABLE COMPOSITION OF MATTER - II

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 6, 1983, Ser. No. 456,068

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.[3] C08F *283/00;* C08G *59/14*

U.S. Cl. 525—528 30 Claims

1. A crosslinkable composition of matter, which composition comprises:

A. substantially gel-free diene-functionalized epoxy-amine adduct, comprising the reaction product of (i) polyhydroxy functional epoxy-amine reactant comprising the reaction product of polyepoxy reactant having an average of at least about 2 epoxy groups per molecule with secondary amine reactant having a total of less than about 20 carbons per amino nitrogen, wherein each hydroxy group, if any, of the secondary amine is removed at least 1 carbon from each amino nitrogen, with (ii) diene functional mono-isocyanate reactant; and

B. substantially gel-free substantially isocyanate-free dieneophile-functionalized polyisocyanate oligomer having number average dieneophile-functionality of at least about three, comprising the reaction product of (i) polyisocyanate reactant, with (ii) isocyanate-reactive dieneophile functional reactant, wherein said polyisocyanate reactant and said dieneophile functional reactant are reacted in molar equivalent ratio of one to at least about one, respectively.

4,513,126

ACRYLONITRILE POLYMER, PROCESS FOR THE PREPARATION THEREOF AND FIBER PREPARED THEREFROM

Kaoru Yamazaki, Akashi, and Fukashi Shibuya, Kobe, both of Japan, assignors to Konegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1982, Ser. No. 444,327

Claims priority, application Japan, Nov. 27, 1981, 56-191379

Int. Cl.[3] C08F *2/00*

U.S. Cl. 526—87 3 Claims

1. An acrylonitrile polymer consisting essentially of 40 to 80% by weight of acrylonitrile, 16 to 59.9% by weight of at least one of vinyl chloride and vinylidene chloride, 0–10% by weight of a copolymerizable monoolefinic monomer and 0.1 to 4% by weight of a mixture of (A) a sulfo group-containing vinyl monomer having a higher reactivity ratio than acrylonitrile selected from the group consisting of methacryloyloxypropylsulfonic acid, styrene sulfonic acid, vinylbenzylsulfonic acid, and salts thereof and (B) a methallyl sulfonic acid monomer selected from the group consisting of methallyl sulfonic acid and salts thereof, said acrylonitrile polymer being prepared by a solution polymerization process in which (1) the addition of the sulfo group-containing vinyl monomer (A) is completed before 70% by weight of the final polymer is produced, (2) the sulfo group-containing vinyl monomer (A) is added to the polymerization system so that the amount of the polymer produced within the period of actual addition of the sulfo group-containing vinyl monomer (A) is not more than 40% by weight of the final polymer, and (3) at least half the amount of the methallyl sulfonic acid monomer (B) to be used is added to the polymerization system substantially within the addition and reacting period of the sulfo group-containing vinyl monomer (A), the addition and reacting period of the sulfo group-containing vinyl monomer (A) being the total period of the actual addition of the sulfo group-containing vinyl monomer (A) to the polymerization system plus a period subsequent to each addition of the sulfo group-containing vinyl monomer (A) to the polymerization system during which 10% by weight of the final polymer is produced; and wherein the ratio of the sulfo group-containing vinyl monomer (A) to the methallyl sulfonic acid monomer (B) is from $\frac{1}{4}$ to 9/1 by weight; with the proviso that all of the sulfo group-containing vinyl monomer (A) and all of the methallyl sulfonic acid monomer (B) are not added to the polymerization system at one time prior to the initiation of the polymerization reaction.

4,513,127

SOLUBLE SULFIMIDE ACCELERATORS FOR FREE RADICAL CURED COMPOSITIONS

Anthony F. Jacobine, Meriden, Conn., assignor to Loctite Corporation, Newington, Conn.

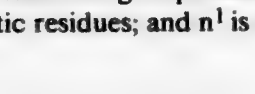
Filed Sep. 13, 1984, Ser. No. 650,750

Int. Cl.[3] C08F *2/00, 4/00, 4/16*

U.S. Cl. 526—194 13 Claims

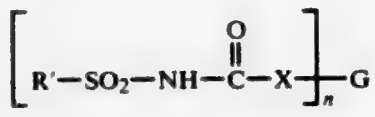
1. A free radical curable composition comprising;

(a) a monomer having at least one cureable acrylic functionality of the formula:



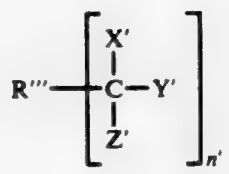
where R is H or alkyl;

(b) an accelerator compound soluble in said monomer defined by the formula:



where n is an integer, G is an n valent radical compatable with the cureable monomer; X is O, O—O, S NR^{11}; R^1 is a substituted or unsubstituted aromatic group and R^{11} is H or aryl; and, where X is not O—O,

(c) an initiator selected from hydroperoxides, peroxyesters, peroxycarbamates and halogen containing compounds defined by the formula:



wherein:

X^1 is selected from H, CH_3, Cl and Br; Y^1 and Z^1 are each selected independently from the group consisting of Cl and Br;

R^{111} is selected from the group consisting of aromatic and heteroaromatic residues; and n^1 is an integer from 1 to 3 inclusive.

4,513,128

FLUORINATED VINYL ETHER COPOLYMERS HAVING LOW GLASS TRANSITION TEMPERATURES

Ronald E. Uschold, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 23, 1983, Ser. No. 507,083

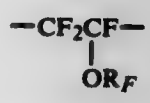
Int. Cl.[3] C08F *214/18, 214/24, 214/26*

U.S. Cl. 526—212 10 Claims

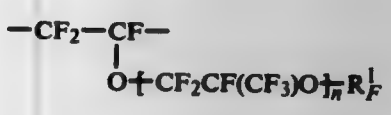
1. Substantially amorphous, fluorine-containing perhalogenated copolymer having a glass transition temperature of −15° C. to −100° C. and consisting essentially of the following structural repeat units in the recited molar amounts, with the total of the amounts being 100%:

(a) about 50 to about 80% of $—CF_2CX^1X^2—$ wherein each of X^1 and X^2 is independently selected from F and Cl;

(b) 5 to about 50% of



wherein R_F is C_{1-5} perfluoroalkyl;
(c) about 3 to about 50% of



wherein R_F^1 is C_{1-12} perfluoroalkyl and n is an integer and is 3 to 30: and
(d) 0 to about 10% of



wherein R_F^2 is C_{1-12} perfluoroalkylene or perfluorophenylene, Q is $-CO_2R$, —CN, —F, —Cl, —Br or I, R is C_1–C_4 alkyl, and
m is an integer and is 1, 2 or 3;
with the proviso that (i) the total molar concentration of (b), (c) and (d) is 20 to 50%; (ii) the concentration of (c) is at least 20 weight %; and (iii) when R_F^2 is perfluoroalkylene, Q is $-CO_2R$, —CN, —Br or —I.

8. Preparation of the substantially amorphous, fluorine-containing perhalogenated copolymer of claim 1 by means of an improved aqueous emulsion polymerization process comprising polymerizing appropriate monomers in an aqueous medium in the presence of a redox couple initiator and a surfactant at 20° C. to 90° C., the improvement consisting of polymerizing appropriate amounts of monomers of the formulas $CF_2=CX^1X^2$, $CF_2=CFOR_F$, $CF_2=CFO-CF_2CF(CF_3)O-_nR_F^1$ and $CF_2=CF_2O-CF_2CF(CF_3)O-_mR_F^2Q$ wherein X^1, X^2, R_F, R_F^1, R_F^2, Q, n and m are as defined in claim 1, in the presence of a fluorinated alcohol which is soluble in water and in the monomer of the formula $CF_2=CFO-CF_2CF(CF_3)O-_nR_F^1$.

4,513,129

ETHYLENE/TETRAFLUOROETHYLENE OR CHLOROTRIFLUOROETHYLENE COPOLYMER

Shinichi Nakagawa, Nara; Kiyohiko Ihara, and Toshio Sogabe, both of Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 18, 1984, Ser. No. 601,432
Claims priority, application Japan, Apr. 25, 1983, 58-73562
Int. Cl.³ C08F *12/20*
U.S. Cl. 526—249 **16 Claims**

1. A copolymer comprising monomeric units derived from ethylene, tetrafluoroethylene or chlorotrifluoroethylene and a fluorovinyl compound of the formula:

$$CH_2=CFRf \quad (I)$$

wherein Rf is a C_2–C_{10} fluoroalkyl group, the molar ratio of ethylene and tetrafluoroethylene or chlorotrifluoroethylene being from 40:60 to 60:40 and the content of the fluorovinyl compound being from 0.1% to 10% by mole.

7. A copolymer comprising monomer units derived from ethylene, tetrafluoroethylene and a fluorovinyl compound of the formula:

$$CH_2=CFRf$$

wherein Rf is a C_2–C_8 fluoroalkyl group selected from the group consisting of perfluoroalkyl, omega-hydroperfluoroalkyl, and omega-chloroperfluoroalkyl, the molar ratio of ethylene and tetrafluoroethylene being from 40:60 to 60:40 and the content of the fluorovinyl compound being from 0.1% to 10% by mole.

4,513,130

HYDROCARBON RESIN AND MODIFIED HYDROCARBON RESIN PRODUCT THEREOF

Kinya Mizui; Masami Takeda, both of Otake, and Tadao Iwata, Chiba, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,899
Claims priority, application Japan, Sep. 7, 1981, 56-140738
Int. Cl.³ C08F *232/08*
U.S. Cl. 526—283 **15 Claims**

1. A hydrocarbon resin consisting essentially of a copolymer of (A) at least one unsaturated hydrocarbon selected from the group consisting of (i) unsaturated chain hydrocarbons and (ii) cyclic hydrocarbons having vinylidene group and (B) at least one compound selected from the group consisting of 9,10-dihydrodicyclopentadiene and its derivatives, the amount of the polymerization unit of component (A) in the copolymer being 20 mol% to 98 mol% and that of component (B) in the copolymer being 80 mol% to 2 mol%.

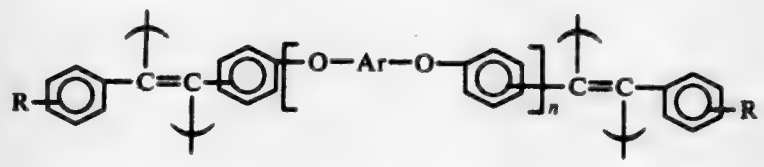
4,513,131

THERMALLY STABLE PHENYLACETYLENE TERMINATED ARYLETHER RESINS

Bruce A. Reinhardt, 1115 Edgebrook Dr., New Carlisle, Ohio 45344; Fred E. Arnold, 1583 Ambridge Rd., Centerville, Ohio 45459, and Marilyn R. Unroe, 69 Baltimore St., Dayton, Ohio 45404

Filed Jul. 25, 1984, Ser. No. 634,345
Int. Cl.³ C08F *38/00*
U.S. Cl. 526—285 **6 Claims**

1. A thermally stable resin of the general formula



wherein Ar is a divalent aromatic moiety, n is an integer in the range of 1 to 3, and R is —H, $-O-C_6H_5$, $-O-C_6H_5$ or $-O-C_6H_4-SO_2-C_2H_5$.

4,513,132

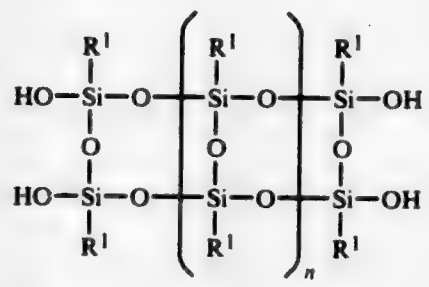
HEAT-RESISTANT SILICONE BLOCK POLYMER

Fusaji Shoji; Issei Takemoto; Fumio Kataoka, all of Yokohama; Hitoshi Yokono, and Tokio Isogai, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1983, Ser. No. 480,789
Claims priority, application Japan, Apr. 2, 1982, 57-53815
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—21 **7 Claims**

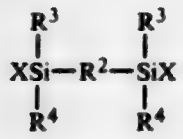
1. A heat-resistant silicone block polymer obtained by reaction of 100 parts by weight of organosilsesquioxane having the following formula (5):

(5)



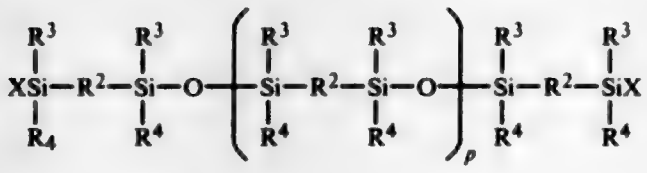
wherein R^1 is a lower alkyl group having 1 to 5 carbon atoms and/or an aryl group and n is an integer of from 0 to 4,000,

with 5 to 400 parts by weight of a silicone compound or organosiloxane represented by the formula (6) or (7):



(6)

wherein R^2 is an arylene group, R^3 and R^4 are lower alkyl groups having 1 to 5 carbon atoms, alkenyl groups and/or aryl groups, and X is a chlorine atom, a hydroxyl group, an alkoxy group or an N,N-dialkylamino group, or



(7)

wherein R^2, R^3 and R^4 and X have the same meanings as defined heretofore and p is an integer of from 0 to 100, in an organic solvent and in the presence of 0.1 to 200 parts by weight of a basic catalyst per 100 parts by weight of the compound of the general formula (5).

4,513,133

REACTION INJECTION MOLDED ELASTOMERS CONTAINING LOW MOLECULAR WEIGHT ORGANIC ACIDS

Richard J. G. Dominguez, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,234

Int. Cl.³ C08G *18/34, 18/48, 18/50*

U.S. Cl. 528—49 **24 Claims**

1. A reaction injection molded elastomer comprising the reaction product of ingredients comprising primary or secondary amine terminated polyethers of at least 2,500 molecular weight having greater than 50% of their active hydrogens in the form of amine hydrogens, a chain extender, an aromatic polyisocyanate and a low molecular weight organic acid in an amount effective to provide improved green strength, represented by the formulae:

$$R(CO_2H)_n \text{ or } (CO_2H)_2$$

where R=H or contains from 1 to 9-n carbon atoms and n=1-3.

4,513,134

METHOD OF PREPARATION OF 3-METHYLENE CEPHAM COMPOUNDS

Wan J. Kim; Cheol H. Lee, both of Seoul, and Moon H. Lee, Inchon, all of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

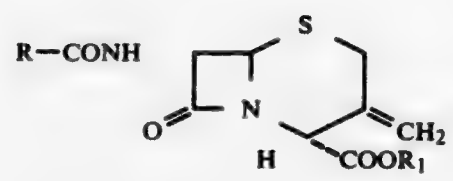
Filed Apr. 21, 1983, Ser. No. 487,421

Claims priority, application Rep. of Korea, Feb. 7, 1983, 1983-460

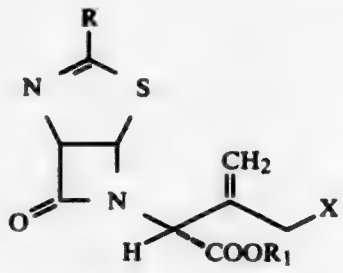
Int. Cl.³ C07D *501/02*

U.S. Cl. 544—16 **12 Claims**

1. A method for the preparation of 3-methylene cepham compounds of the formula (I) comprising reacting 3-halomethyl butenoate derivatives of thiazolinoazetidinone of the formula (II) with an aqueous acid solution in a mixed organic solvent.



(I)



(II)

Wherein R is benzyl or phenoxymethyl, R_1 is a carboxylic acid protecting group and X is halogen.

4,513,135

DIARYL-PYRAZINE DERIVATIVES AFFECTING GABA BINDING

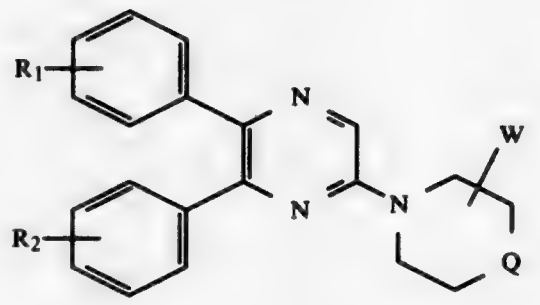
David T. Wong, and William B. Lacefield, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 5, 1982, Ser. No. 354,982

Int. Cl.³ C07D *241/10, 211/10, 211/18, 211/40*

U.S. Cl. 544—120 **10 Claims**

1. A compound of the formula



wherein

each R_1 and R_2 is independently C_1-C_3 alkyl

Q is oxygen or $—(CH_2)_n—$, where n is 0, 1, or 2;

W is hydrogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, keto, hydroxyimino, $(—OCH_2)_2$, hydroxy, hydroxymethyl, —OCHO, —OCOA, $—OSO_2A$, or —COB, where A is C_1-C_4 alkyl, phenyl, phenoxy, amino, C_1-C_3 alkyl substituted phenyl, or mono- or di-C_1-C_3 alkyl amino, and where B is C_1-C_3 alkoxy, amino, or mono- or di-C_1-C_3 alkylamino;

subject to the limitations that when Q represents oxygen, W is limited to hydrogen, and that when Q represents $—(CH_2)_n—$, W, except when hydrogen or C_1-C_3 alkyl, is not on a carbon atom adjacent to the ring nitrogen atom.

4,513,136

PROCESS FOR RECOVERING CAFFEINE FROM ACTIVATED CARBON

Saul N. Katz, Monsey, and George E. Proscia, West Sayville, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 306,276, Sep. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 159,724, Jun. 16, 1980, Pat. No. 4,298,736. This application Apr. 18, 1983, Ser. No. 484,354

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ C07D *473/12*

U.S. Cl. 544—275 **5 Claims**

1. A process for recovering caffeine from activated carbon comprising:

contacting activated carbon having caffeine adsorbed thereon with an aqueous acetic acid solution having a concentration of between about 50% and 80%, by weight, and which is capable of displacing at least a portion of the caffeine from active sites on the carbon;
maintaining the contact for a period of time, and at a temperature of at least 100° C., effective for the solution to displace at least a portion of the caffeine from the carbon and dissolve and displaced caffeine;
separating the carbon from the solution; and
recovering the caffeine from the solution by steam distilling the solution or evaporating the solution.

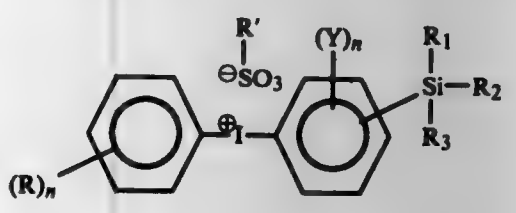
4,513,137

IODONIUM SALTS

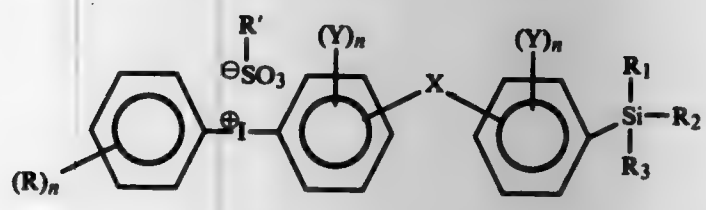
Gerald F. Koser, Munroe Falls, and Carol S. Carman, Alliance, both of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Apr. 9, 1981, Ser. No. 252,327
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—14 20 Claims

1. An iodonium salt, comprising: a compound having the formula



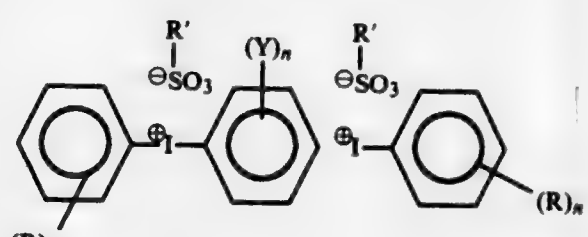
or the formula



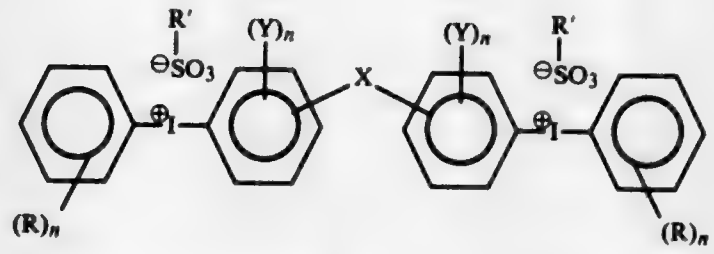
where n of $(R)_n$ is from 1 to 5,
where R can be benzo, a halo, an alkyl having from 1 to 20 carbon atoms, a cycloalkyl having from 3 to 20 carbon atoms, an aryl having from 6 to 40 carbon atoms, a halogen substituted aryl wherein said aryl has from 6 to 40 carbon atoms, a naphthyl, a halo substituted naphthyl, an alkyl substituted naphthyl wherein said alkyl has from 1 to 20 carbon atoms, a cycloalkyl substituted naphthyl wherein said cycloalkyl has from 3 to 20 carbon atoms, a hetero atom substituent substituted on an aryl with said aryl having from 6 to 40 carbon atoms, said hetero atoms selected from the group consisting of CN, NO_2, COOH, CHO, OH, an alkoxy having from 1 to 5 carbon atoms, an aryloxy having from 6 to 30 carbon atoms, and combinations thereof; a pyridinyl, alpha or beta furyl, thienyl, and combinations thereof;
wherein said R′ is hydrogen, an alkyl having from 1 to 20 carbon atoms, an aryl having from 6 to 40 carbon atoms, a halogen substituted aryl wherein said aryl has from 6 to 40 carbon atoms, a hetero atom substituent substituted on an aryl having from 6 to 40 carbon atoms, said hetero atom substituent selected from the group consisting of CN, NO_2, COOH, CHO, an alkoxy having from 1 to 6 carbon atoms, an aryloxy having from 6 to 30 carbon atoms, and combinations thereof;
wherein Y is hydrogen, an alkyl having from 1 to 5 carbon atoms, an aryl having from 6 to 12 carbon atoms, a halo, and a hetero group selected from the group consisting of NO_2, CN, COOH, CHO, OH, and combinations thereof;
wherein R_1, R_2, and R_3 is hydrogen, an alkyl having from 1 to 5 carbon atoms, a halo, an aryl having from 6 to 24 atoms, an alkoxy having from 1 to 5 carbon atoms;
wherein X is O, NH, S,

Sn, SO, SO_2, a ketone group, N-R‴ where R‴ is an alkyl having from 0 to 5 carbon atoms or an aryl having from 6 to 12 carbon atoms, $—CH_2—_n$ where n is from 0 to 10, $—CR'_2—C$ where R′ is an alkyl having from 0 to 5 carbon atoms, —C aryl (n) wherein said aryl has from 6 to 12 carbon atoms, and n is from 1 to 10; a $—SiR'''_{2(n)}$ where said R‴ is an alkyl having from 0 to 5 carbon atoms or an aryl having from 6 to 12 carbon atoms, and n is from 1 to 10, $—Si—_n$ where n is from 1 to 10, a phenylene repeating group having from 1 to 10 units.

6. An iodonium salt, comprising:
a compound having the formula



or the formula



where n of $(R)_n$ is from 1 to 5,
where R can be benzo, a halo, an alkyl having from 1 to 20 carbon atoms, a cycloalkyl having from 4 to 20 carbon atoms, an aryl having from 6 to 40 carbon atoms, a halogen substituted aryl wherein said aryl has from 6 to 40 carbon atoms, a naphthyl, a halo substituted naphthyl, an alkyl substituted naphthyl wherein said alkyl has from 1 to 20 carbon atoms, a cycloalkyl substituted naphthyl wherein said cycloalkyl has from 3 to 20 carbon atoms, a hetero atoms substituent on an aryl with said aryl having from 6 to 40 carbon atoms, said hetero atom selected from the group consisting of CN, NO_2, COOH, CHO, OH, an alkoxy having from 1 to 5 carbon atoms, an aryloxy having from 6 to 30 carbon atoms, and combinations thereof; a pyridinyl, alpha or beta furyl, alpha or beta thienyl, and combinations thereof;
wherein said R′ is hydrogen, an alkyl having from 1 to 20 carbon atoms, a halogen substituted aryl wherein said aryl has from 6 to 40 carbon atoms, a hetero atoms substituent substituted on an aryl having from 6 to 40 carbon atoms, said hetero atom substituent selected from the group consisting of CN, NO_2, COOH, CHO, an alkoxy having from 1 to 6 carbon atoms, an aryloxy having 6 to 30 carbon atoms, and combinations thereof;
wherein Y is hydrogen, an alkyl having from 1 to 5 carbon atoms, an aryl having from 6 to 12 carbon atoms, a halo, and a hetero group selected from the group consisting of NO_2, CN, COOH, CHO, OH, and combinations thereof;
wherein X is O, NH, S,

Sn, SO, SO_2, a ketone group, N—R''' where R''' is an alkyl having from 0 to 5 carbon atoms or an aryl having from 6 to 12 carbon atoms, $—CH_2—_n$ where n is from 0 to 10, —CR'$_2$—C where R' is an alkyl having from 0 to 5 carbon atoms, —C aryl (n) wherein said aryl has from 6 to 12 carbon atoms, and n is from 1 to 10; a —SiR'''$_{2(n)}$ where said R''' is an alkyl having from 0 to 5 carbon atoms or an aryl having from 6 to 12 carbon atoms, and n is from 1 to 10, $—Si—_n$ where n is from 1 to 10, a

wherein n is from 1 to 10 units, a phenylene repeating group having from 1 to 10 units.

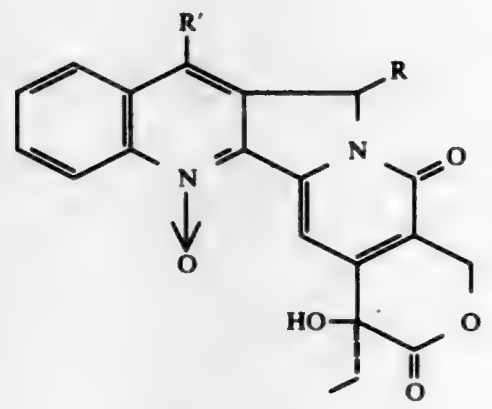
4,513,138

CAMPTOTHECIN-1-OXIDE DERIVATIVES

Tadashi Miyasaka, Kanagawa; Seigo Sawada, Tokyo; Kenichiro Nokata, Tokyo, and Masahiko Mutai, Tokyo, all of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 414,528
Claims priority, application Japan, Sep. 4, 1981, 56-138412
Int. Cl.^{3} C07D *491/22*; A61K *31/47*
U.S. Cl. 546—48 **8 Claims**

1. A 5- or 7-substituted camptothecin-1-oxide derivative of the formula:



wherein R is a hydrogen atom, a straight or branched C_1–C_{30} alkyl group, a C_5–C_7 cycloalkyl group, a hydroxyl group, a C_1–C_{30} alkoxy group or a C_1–C_{18} acyloxy group and R^1 is a hydrogen atom, a C_1–C_{30} alkyl group, a phenylalkyl group, a naphthylalkyl group, a hydroxymethyl group, a C_1–C_{18} acyloxymethyl group or a carboxymethyl group, with the proviso that both R and R^1 are not hydrogen.

4,513,139

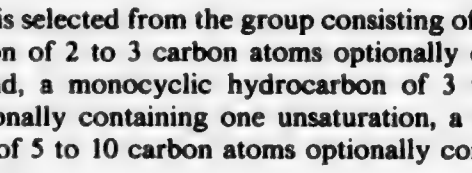
SUBSTITUTED LACTONES OF AMINO ACIDS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and André Tèche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

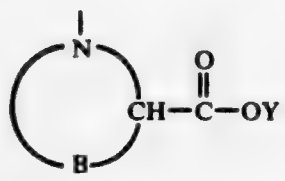
Division of Ser. No. 212,569, Dec. 3, 1980, Pat. No. 4,350,637. This application Jun. 30, 1982, Ser. No. 393,812
Claims priority, application France, Dec. 10, 1979, 79 30201
Int. Cl.^{3} C07D *405/04*
U.S. Cl. 546—196 **9 Claims**

1. A substituted lactone of amino acids in all their possible stereoisomeric forms or mixtures of the formula

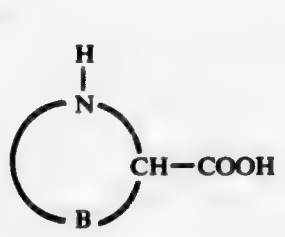
wherein A is selected from the group consisting of an aliphatic hydrocarbon of 2 to 3 carbon atoms optionally containing a double bond, a monocyclic hydrocarbon of 3 to 6 carbon atoms optionally containing one unsaturation, a bicyclic hydrocarbon of 5 to 10 carbon atoms optionally containing one unsaturation,



and X_4 and X_5 are individually selected from the group consisting of hydrogen, fluorine, chlorine, bromine and alkyl of 2 to 6 carbon atoms or taken together with the carbon atoms to which they are attached form a carbon homocycle of 3 to 7 carbon atoms and R is



Y is derived from an alcohol selected from the group consisting of primary aliphatic alcohols of 1 to 12 carbon atoms, primary cycloaliphatic alcohols of 4 to 8 carbon atoms and benzyl alcohol and B is the remainder of a heterocyclic amino acid of the formula



having a total of 3 to 6 carbon atoms in the acid.

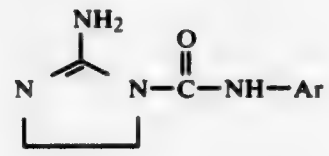
4,513,140

2-AMINO-4,5-DIHYDRO-1H-IMIZOLE-1-CARBOXANILIDES

Leonard R. Hecker, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Division of Ser. No. 316,601, Oct. 30, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,541
Int. Cl.^{3} C07D *233/46*
U.S. Cl. 548—315 **1 Claim**

1. A process for preparing an acid addition salt of a compound of the following formula (I) which is stable to rearrangement



(I)

wherein

Ar is phenyl substituted with from 0 to 3 substituents independently selected from the group consisting of fluoro, chloro, bromo, methyl, ethyl, methoxy, ethoxy, trifluoromethyl and methylthio, which comprises:

(i) reacting 2-iminoimidazolidine with an appropriate aryl isocyanate of the formula ArNCO at a temperature of about −10° to −20° C.;
(ii) reacting the free base resulting from step (i) with an appropriate acid; and
(iii) isolating the acid addition salt product of step (ii).

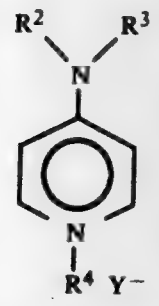
4,513,141

METHOD FOR MAKING AROMATIC ETHERS USING DIORGANOAMINO PYRIDINUM SALT CATALYST

Daniel J. Brunelle, Scotia, N.Y., and Daniel A. Singleton, Minneapolis, Minn., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,689
Int. Cl.³ C07B 29/00; C07D 207/444; C07C 41/01
U.S. Cl. 548—476 18 Claims

1. In the method for making an aromatic ether comprising the reaction between a nuclear activated aromatic compound substituted with a leaving group selected from a nitro or halo radical and an alkali metal phenoxide in the presence of a phase transfer catalyst, the improvement which comprises utilizing as the phase transfer catalyst a diorganoaminopyridinium salt of the formula,



where R^2 and R^3 are monovalent or divalent organo radicals selected from $C_{(1-13)}$ hydrocarbon radicals and $C_{(1-13)}$ substituted hydrocarbon radicals and $C_{(1-8)}$ divalent alkylene radicals which can be part of a cyclic structure forming a $C_{(4-12)}$ ring, R^4 is selected from $C_{(4-18)}$ linear or branched alkyl radicals and Y is a counter ion.

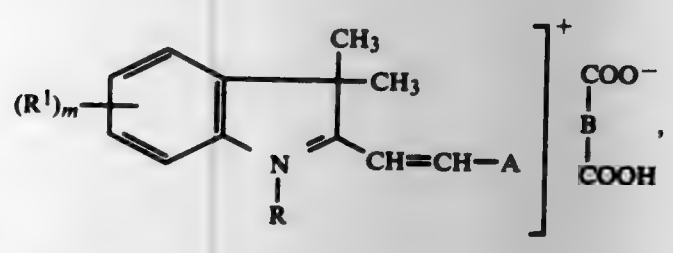
4,513,142

PREPARATION OF CATIONIC METHINE DYESTUFFS

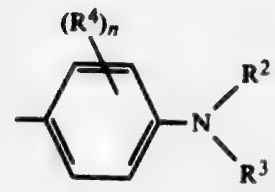
Roderich Raue; Volker Hühne, and Hans-Peter Kühlthau, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,644
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136583
Int. Cl.³ C09B 23/00
U.S. Cl. 548—507 6 Claims

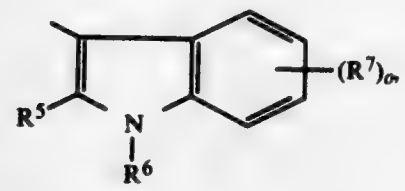
1. In the preparation of a dyestuff of the formula



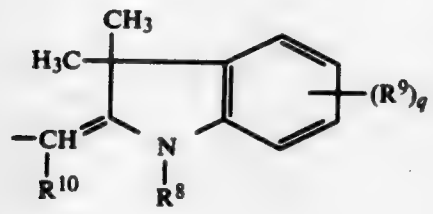
wherein
R represents an alkyl radical having 1 to 4 C atoms and which is optionally substituted by hydroxyl, alkoxy having 1 to 4 C atoms, acyloxy, halogen, cyano, carboxyl, C_1–C_4-carbalkoxy, carboxamido or acetyl,
R^1 represents hydrogen, an alkyl radical having 1 to 4 C atoms, halogen, alkoxy having 1 to 4 C atoms, hydroxyalkoxy having 2–4 C atoms, a phenoxy radical which is optionally substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, benzyloxy, benzyl, carboxyl, an alkyl carboxylate having 1 to 4 C atoms, a carboxamide group optionally substituted by 1 or 2 C_1–C_4-alkyl radicals, a sulphonamide group optionally substituted by 1 or 2 C_1–C_4-alkyl radicals, alkylsulphonyl having 1 to 4 C atoms, phenylsulphonyl or a cyano, trifluoromethyl, acetyl or benzoyl group, and
A represents a radical of the formula



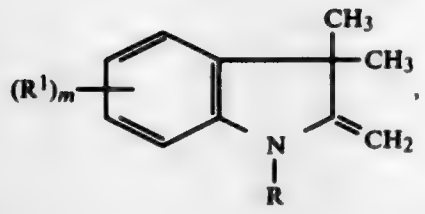
in which
R^2 and R^3 independently of one another represent an alkyl radical having 1 to 4 C atoms and which is optionally substituted by hydroxyl, C_1–C_4-alkoxy, halogen, cyano, phenyl, carbalkoxy having 1 to 4 C atoms, carboxamide, acyloxy, benzyloxy, sulphonamido or acylamino,
R^2 additionally also represents a phenyl or benzyl radical which is optionally substituted by halogen, C_1–C_4-alkyl or C_1 to C_4-alkoxy or R^2, together with the adjacent C atom of the benzene ring, can form a partially hydrogenated N- and, if appropriate, O-containing 5- or 6-ring, and
R^4 denotes hydrogen, an alkyl radical having 1 to 4 C atoms, an alkoxy radical having 1 to 4 C atoms or halogen,
or a radical of the formula



in which
R^5 denotes an alkyl radical having 1 to 4 C atoms, a pheny radical optionally substituted by halogen, C_1- to C_4-alkyl or C_1- to C_4-alkoxy or a carbalkoxy radical having 1 to 4 C atoms,
R^6 denotes hydrogen or an alkyl radical having 1 to 4 C atoms and which is optionally substituted by hydroxyl, halogen, alkoxy having 1 to 4 C atoms, cyano or acyloxy and
R^7 denotes hydrogen, halogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, carbalkoxy having 1 to 4 C atoms, C_1- to C_4-alkylsulphonyl, phenylsulphonyl, acetyl or benzoyl or a radical of the formula



wherein
R^8 and R^9 independently of one another have the same meaning as R and R^1,
R^{10} designates hydrogen or the cyano group, B represents a single bond or a C_1- to C_4-alkylene radical which is substituted by hydroxyl radicals and which is optionally substituted by one additional carboxyl group and the indices m, n, o and p independently of one another denote 1–4, by reacting a methyleneindoline compound of the formula



with an equimolar amount of an aldehyde of the formula

A—CHO

and with 1 to 5 times the molar amount of a dicarboxylic or tricarboxylic acid of the formula



wherein B is as defined above, the improvement which comprises effecting the reaction in the substantial absence of a solvent and removing water formed in the reaction.

4,513,143

PREPARATION OF KETENE ACETALS

Steven Y. Ng, San Francisco; Donald W. Penhale, Cupertino, and Jorge Heller, Woodside, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Dec. 1, 1982, Ser. No. 445,938
Int. Cl.³ C07D *319/00*
U.S. Cl. 549—335 **8 Claims**

1. A process for rearranging allyl acetals to produce ketene acetals which comprises intimately mixing an allyl acetal with an alkali metal lower alkyl dissolved in a water soluble primary amine and recovering a ketene acetal from the resultant mixture.

4,513,144

ACETAL PURIFICATION WITH SUPEROXIDES

Jeff T. Fenton, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Nov. 3, 1982, Ser. No. 438,672
Int. Cl.³ C07D *323/06*
U.S. Cl. 549—368 **10 Claims**

1. A method for purifying acetals comprising
(1) placing said acetals into a molten state,
(2) contacting molten acetals with alkali metal superoxides under substantially anhydrous conditions for a time sufficient to reduce impurities present, and
(3) recovering the purified acetal.

5. A method as described in claim 1 wherein step 2 is carried out in the presence of a phase transfer catalyst.

6. A method as described in claim 5 wherein the phase transfer catalyst is present in concentrations of from about 0.1 weight percent to about 10 weight percent based on the acetal present.

7. A method as described in claim 6 wherein the acetal is at least one material selected from the group consisting of trioxane, tetraoxane, 1,3-dioxane, 3-dioxane 4-methyl-1,3-dioxolane, 1,3-dioxolane, 1,3,6-trioxacyclooctane, 1,4-butane-diolformal, 1,4-butenediolformal, methoxymethylal, methylal and dimethoxymethylal.

8. A method as described in claim 7 wherein the phase transfer catalyst is at least one crown ether selected from the group consisting of 15-crown-5-ether, 18-crown-6-ether, dibenzo-18-crown-6 ether, dicyclohexyl-18-crown-6-ether, benzo-15-crown-5-ether, alkyl-18-crown-6-ether, alkyl-2,2,2-cryptate ether, benzo-2,2,2-cryptate, 2,2,2-cryptate, 2,2,1-cryptate, 2,1,1-cryptate, dibenzo-24-crown-6, and 12-crown-4.

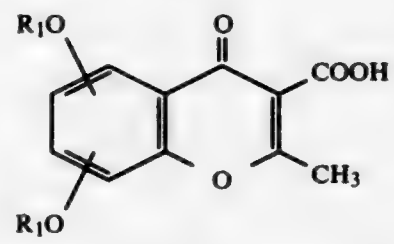
4,513,145

2-METHYLCHROMONE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Shigeto Negi; Seiichiro Nomoto; Takashi Kamiya; Yoshimasa Machida; Isao Saito, and Kyosuke Kitoh, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1983, Ser. No. 457,394
Claims priority, application Japan, Dec. 28, 1982, 57-232443
Int. Cl.³ C07D *311/22*
U.S. Cl. 549—402 **4 Claims**

1. A 2-methylchromone derivative represented by the general formula:



wherein R_1 means a hydrogen atom or a lower alkanoyl group.

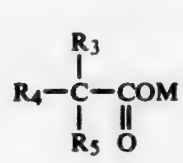
4,513,146

METHOD FOR PRODUCING ESTERS FROM HIGHLY HINDERED CARBOXYLIC ACIDS OR THEIR SALTS, AND CARBONATES

Ralph B. Thompson, Oakbrook, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 23, 1982, Ser. No. 422,221
Int. Cl.³ C07C *69/02*
U.S. Cl. 560—231 **30 Claims**

1. A method comprising reacting highly hindered carboxylic acid or salt thereof represented by the formula



wherein

a. R_3, R_4, and R_5 are each independently a monovalent organo group, and

b. M is hydrogen, monovalent metal, or the monovalent fractional part of a polyvalent metal,

with organic carbonate represented by the formula



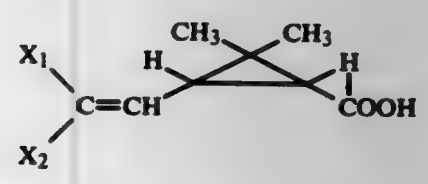
wherein R_1 and R_2 are each independently monovalent organic groups which may be the same or different, and wherein the alpha carbon of at least one of R_1 and R_2 is substantially sterically unhindered, to produce carboxylic acid ester.

4,513,147
PROCESS FOR PREPARING CIS-3-(2,2-DIHALOVINYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLIC ACID

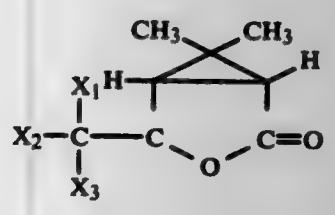
Jacques Martel, Bondy; Jean Tessier, Vincennes; Jean-Pierre Demoute, Montreuil-sous-Bois, and Jean Jolly, Fontenay-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 027,654, Apr. 6, 1979, Pat. No. 4,281,182, which is a division of Ser. No. 914,399, Jun. 12, 1978, Pat. No. 4,166,063. This application Mar. 30, 1981, Ser. No. 248,719
Claims priority, application France, Jun. 27, 1977, 77 19612
Int. Cl.³ C07C *69/743*
U.S. Cl. 562—506 6 Claims

1. A process for the preparation of cis 2,2-dimethylcyclopropane-1-carboxylic acid of the formula



wherein X_1 and X_2 are both chlorine or bromine and when different are selected from the group consisting of fluorine, bromine and chlorine comprising reacting a compound of the formula



wherein X_1, X_2 and X_3 when identical are selected from the group consisting of chlorine and bromine and when at least two are different, are selected from the group consisting of fluorine, chlorine and bromine with a reducing agent to eliminate the X_3 substituent which is the halogen with the higher atomic weight.

4,513,148
METHOD FOR THE PREPARATION OF METHYLNITRAMINE

George W. Nauflett, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1982, Ser. No. 394,084
Int. Cl.³ C07C *111/00*
U.S. Cl. 564—109 12 Claims

1. A process for the production of methylnitramine comprising:

(a) preparation of 1,3-dimethyl-1,3-dinitrourea using a mixture of nitric and sulfuric acid and dimethylurea to yield the nitrated dimethylurea;

(b) separation of 1,3-dimethyl-1,3-dinitrourea from the spent acids (used) after the nitration step has been completed by the use of an organic solvent selected from the group consisting of chloroform and methylene chloride;

(c) purification of 1,3-dimethyl-1,3-dinitrourea by washing with an aqueous solution contain an organic bottom phase that yields a two phase mixture with nitrated product in the bottom phase;

(d) taking the bottom phase and mixing this phase with hot water to yield a two phase mixture;

(e) removal of the bottom phase from step d that contains dimethyl dinitrourea in the organic solvent;

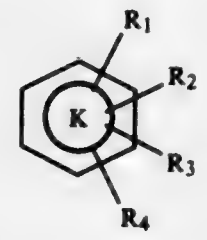
(f) hydrolysis of the dimethyldinitrourea in the organic solvent wth hot water to yield methylnitramine.

4,513,149
RANEY NICKEL ALLOY EXPANDED MESH HYDROGENATION CATALYSTS

Thomas J. Gray, Guilford, and Norman G. Masse, Wallingford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Apr. 5, 1982, Ser. No. 365,210
Int. Cl.³ C07C *85/24, 85/00*
U.S. Cl. 564—449 40 Claims

1. In a method for hydrogenating an aromatic ring compound of the type



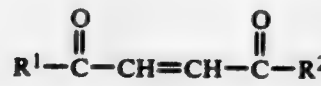
wherein K is either benzene or napththalene, R_1 is hydrogen atom or an aliphatic chain containing from about 1 to about 9 carbon atoms or a phenyl radical, R_2 is a hydrogen atom or an aliphatic chain containing from about 1 to about 3 carbon atoms, and R_3 and R_4 are hydrogen atoms, hydroxy, or nitro groups in the presence of catalyst, said catalyst comprising a structure comprised of a Raney metal alloy surface layer integral with and derived from a selected nickel alloy monolithic substrate mesh structure, wherein said surface layer is predominantly derived from an adherent $Ni_xM_{1-x}Al_3$ Beta phase structured crystalline precursory layer, where M is a catalytic activator selected from the group consisting of molybdenum, titanium, tantalum, ruthenium or mixtures thereof, and where x, the fraction of nickel in combined weight of Ni and M, is within the range of from about 0.80 to about 0.95.

4,513,150
PREPARATION OF BUT-2-ENE-1,4-DIONES SUBSTITUTED IN THE 1,4-POSITIONS

Rolf Fischer, Heidelberg; Hans-Martin Weitz, Bad Durkheim, and Hardo Siegel, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,908
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311320
Int. Cl.³ C07C *45/59*
U.S. Cl. 568—385 6 Claims

1. A process for the preparation of a but-2-ene-1,4-dione substituted in the 1,4-positions, of the formula



I

where R^1 and R^2 are each an aliphatic hydrocarbon radical of 1 to 17 carbon atoms, by oxidizing a 2,5-disubstituted furan of the formula



II

where R^1 and R^2 have the above meaning, wherein the oxidation is carried out using an aliphatic percarboxylic acid and in the presence of an aliphatic carboxylic acid at from 0° to 200° C.

4,513,151

ACETALDEHYDE PROCESS

Richard W. Wegman, South Charleston, and David C. Busby, Cross Lanes, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 2, 1983, Ser. No. 557,271
Int. Cl.³ C07C *45/49, 45/50*
U.S. Cl. 568—484 **24 Claims**

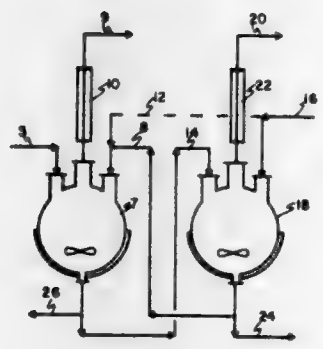
1. A process for the reaction of an inorganic or organic ester with carbon monoxide or synthesis gas at a temperature of from 100° C. to 300° C., a pressure of from 500 psig to 10,000 psig, a H_2:CO mole ratio in the synthesis gas of from 1:10 to 10:1, in contact with an Me homogenous catalyst system containing lithium iodide as the promoter, wherein the mole ratio of LiI:Me is from 50:1 to 1:50 to selectively produce an aldehyde, wherein Me is cobalt, rhodium or ruthenium.

4,513,152

CHLORAL PURIFICATION

Richard D. Schillawski, Boulder City, Nev., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 3, 1983, Ser. No. 538,698
Int. Cl.³ C07C *45/80*
U.S. Cl. 568—492 **30 Claims**



1. A process for purifying wet crude chloral using sulfuric acid in a plurality of contacting operations wherein the contacting and separating are conducted at a temperature above about 50° C. comprising:

(a) contacting the crude wet chloral with a sulfuric acid solution having a concentration necessary to produce two liquid phases wherein the sulfuric acid solution forms the top phase after agitation;

(b) separating the phases obtained in (a) by physical means;

(c) contacting the chloral recovered in (b) with a more concentrated sulfuric acid solution to obtain the dried product; and

(d) countercurrently cycling sulfuric acid solution recovered from (c) to (a) to purify subsequent crude chloral.

4,513,153

INTEGRATED PROCESS FOR PRODUCING TERT.BUTYL ALKYL ETHERS AND BUTENE-1

Romedio Sandrin, Milan, Italy, assignor to Snamprogetti S.p.A., Milan, Italy

Filed May 3, 1983, Ser. No. 491,067
Claims priority, application Italy, May 20, 1982, 21383 A/82
Int. Cl.³ C07C *41/06*
U.S. Cl. 568—697 **5 Claims**

1. An integrated process for producing tert-butyl alkyl ethers and butene-1 from a C_4 hydrocarbon feedstock optionally containing C_3 and C_5 components and non-hydrocarbon components, the butadiene having been previously separated from said feedstock, comprising

(a) feeding the C_4 hydrocarbon feedstock which is substantially free of butadiene to a tert-butyl alkyl ether synthesis section which is filled with a catalyst constituted by an acid ion exchange resin,

(b) reacting the isobutene contained in the C_4 hydrocarbon feedstock with an aliphatic alcohol in order to produce a tert-butyl alkyl ether,

(c) separating the tert-butyl alkyl ether from the residual C_4 hydrocarbons by distillation,

(d) subjecting the residual C_4 hydrocarbons to extractive distillation in the presence of a solvent in order to separate most of the C_4 saturated hydrocarbons and the lighter hydrocarbons (C_3) present as an overhead product from a bottom product which is an extract comprising the solvent, butene-1, butene-2, the remainder of the C_4 saturated hydrocarbons and the heavy hydrocarbons (C_5+),

(e) then subjecting the extract to stripping in order to separate the solvent from the remainder of the extract,

(f) recycling the solvent to the extractive distillation,

(g) distilling the remainder of the extract to give an overhead fraction constituted by butene-1 and a bottom fraction comprising butene-2 and butene-1 and the balance of the extract,

(h) passing the bottom fraction through an isomerization stage in which the butene-2 and the unrecovered butene-1 are partly converted into isobutene to obtain an isomerized hydrocarbon fraction containing butene-1, butene-2 and isobutene,

(i) separating said isomerized hydrocarbon fraction from the remainder of the products, and

(j) feeding the isomerized hydrocarbon fraction containing butene-1, butene-2 and isobutene to the tert-butyl alkyl ether synthesis.

4,513,154

PROCESS FOR CONSECUTIVE COMPETITIVE GAS PHASE REACTION

Bruce E. Kurtz, Marcellus, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 46,987, Jun. 8, 1979, abandoned, which is a division of Ser. No. 644,788, Dec. 29, 1975, Pat. No. 4,187,235, which is a continuation-in-part of Ser. No. 363,445, May 24, 1973, abandoned, which is a division of Ser. No. 167,733, Jul. 30, 1971, abandoned. This application Jul. 28, 1980, Ser. No. 172,725
The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.
Int. Cl.³ C07C *17/00*
U.S. Cl. 570—145 **21 Claims**



1. A process for suppression of partially halogenated intermediates in isothermal consecutive competitive gas phase reaction which comprises:

a. passing a first gas feed stream containing a carbon compound having labile hydrogen selected from the group consisting of straight and branched chain cyclic and acyclic alkanes and alkenes having no more than 12 carbon atoms, benzenes, alkenylbenzenes and alkylbenzenes having no more than 9 carbon atoms, their partially reacted intermediates and mixtures thereof under pressure into one end of a first elongated gas zone positioned within a substantially gas-impervious barrier;

b. passing a second gas stream containing a member selected from the group consisting of F_2, Cl_2 and Br_2 under pres-

sure into a second elongated gas zone positioned along said first zone, said first and second elongated gas zones being separated along the major length thereof by a porous member;

c. maintaining the pressure of the second gas stream in the second gas zone in excess of the pressure in the first gas zone to allow flow of said second gas through the porous member;

d. maintaining a Reynolds number N_{Re} for stream in the first gas zone at a non-zero value less than about 2,000 to effect consecutive-competitive reaction between the first gas and the second gas, in a reaction film on the surface of the porous member facing the first zone for production of more highly halogenated product and to suppress diffision of partially halogenated intermediates from said reaction film wherein the Reynolds number,

$$N_{Re} = \frac{4A\bar{v}\rho}{P\mu}$$

wherein

A=cross-sectional area of the first gas zone;

P=total length of the perimeter of the cross-sectional area of first gas zone;

ν=average velocity of the gas stream in the first gas zone;

ρ=density of the gas stream in the first gas zone;

μ=viscosity of the gas in the first gas zone; and

e. withdrawing a gas stream containing the halogenated product from the other end of the first gas zone.

4,513,155

LUBRICATING OIL FOR DIESEL ENGINES

Kunimitsu Tamura, Saitama, and Kunihiko Hosonuma, Tokyo, both of Japan, assignors to Nippon Mining Co., Ltd. and Mitsui Engineering & Shipbuilding Co., Ltd., both of, Japan

Filed Jun. 24, 1983, Ser. No. 507,386

Claims priority, application Japan, Jun. 24, 1982, 57-108769

Int. Cl.³ C10M *1/16*

U.S. Cl. 585—13 **22 Claims**

1. A lubricating oil for a trunk piston type diesel engine which reduces the wear of a piston ring of the engine and the clogging of a filter of lubricant purifier comprising a mixture of (A) a lubricating mineral base oil and (B) a highly aromatic light lubricating base oil, wherein said highly aromatic light lubricating base oil (B) has an aromaticity $fa \geqq 0.22$ wherein fa is an aromatic hydrocarbon distribution parameter, has a boiling point of about 270° to 450° C. as calculated at 1 atm., is at least one selected from the group consisting of alkylbenzenes, alkylnaphthalenes and alkylbiphenyls, and is present in said lubricating oil in an amount in the range of about 5 to 40 vol %, and said lubricating oil has a dynamic viscosity of 7 to 18 cSt at 100° C.

4,513,156

OLEFIN OLIGOMERIZATION USING EXTRACTED FEED FOR PRODUCTION OF HEAVY HYDROCARBONS

Samuel A. Tabak, Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,699

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—329 **10 Claims**

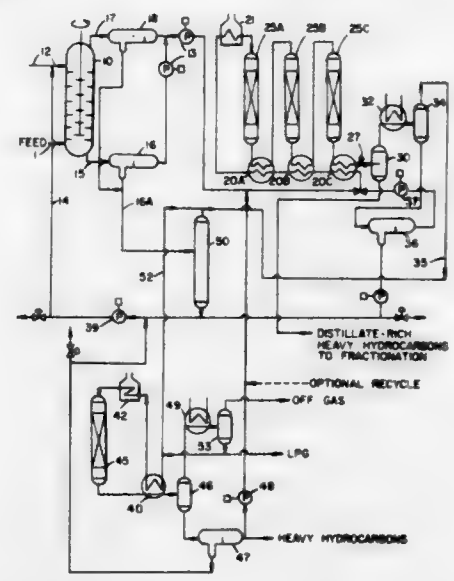
1. A process for converting olefins to heavier liquid hydrocarbons comprising

contacting an olefinic liquid hydrocarbon feedstream containing oxygenated hydrocarbons with a polar solvent under liquid extraction conditions and recovering a polar extract phase containing the oxygenated hydrocarbons and an olefinic liquid raffinate stream substantially free of oxygenated hydrocarbons;

contacting the olefinic liquid stream in a first catalyst reactor zone with oligomerization catalyst at elevated pressure and moderate temperature under conditions favorable for conversion of olefins to a first reactor effluent stream rich in distillate range hydrocarbons;

flashing the distillate-rich stream and separating the first reactor effluent stream into a liquid product stream rich in distillate and a vapor stream containing lower hydrocarbons;

separating oxygenated hydrocarbons from the polar extract phase; and



contacting at least a portion of the vapor stream from the flashing step and recovered oxygenated hydrocarbons in a second catalyst reactor zone with oligomerization catalyst at moderate pressure and elevated temperature under conditions favorable for conversion of lower olefins and oxygenates to a second reactor effluent stream rich in heavier hydrocarbons.

4,513,157

ISOMERIZATION OF ISOLATED DOUBLE BONDS TO CONJUGATED DOUBLE BONDS IN OPTIONALLY SUBSTITUTED CYCLOOCTADIENES

Peter Hänssle, Haltern, and Wolfgang Zaar, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,695

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1983, 3325268

Int. Cl.³ C07C *5/24*

U.S. Cl. 585—378 **17 Claims**

1. In a process for the isomerization of isolated double bonds to conjugated double bonds in optionally substituted cyclooctadienes using an isomerization catalyst, optionally in the presence of a solvent, the improvement wherein said isomerization catalyst comprises:

(a) a transition metal compound of the formula $Me(OR^1)_4$, wherein Me is Ti, Zr, or Hf, and R^1 and C_{1-4} alkyl; and

(b) an organoaluminum compound of the formula $AlR^2_{3-n}X_n$, wherein R^2 is C_{1-4} alkyl, n is 0, 1, 2 or a fraction between 1 and 2, and X is halogen, or when n is 1, X is halogen or hydrogen;

the molar ratio of (a):(b) being from 0.1:1 to 1:1.

4,513,158

POLYMERIZATION AND OLIGOMERIZATION WITH CATALYTICALLY ACTIVE AMORPHOUS SILICA

Dean A. Young, Yorba Linda, and Jeffery W. Koepke, La Habra, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 533,199, Sep. 16, 1983, , which is a continuation-in-part of Ser. No. 526,866, Aug. 25, 1983, Pat. No. 4,481,102, which is a division of Ser. No. 356,351, Mar. 9, 1982, Pat. No. 4,414,137. This application Sep. 10, 1984, Ser. No. 649,226

Int. Cl.[3] C07C *2/02*

U.S. Cl. 585—527 25 Claims

1. A process for promoting the oligomerization of a hydrocarbon compound containing at least one unsaturated carbon to carbon bond, said process comprising contacting said hydrocarbon compound under oligomerization conditions with a catalyst prepared by a method comprising forming a hydrogel or precipitate in a reaction mixture comprising water, silicate anions and an organic reactant selected from the group consisting of amines having a pK_a value above about 10.0, quaternary ammonium cations having a nitr_gen atom bonded to four carbon atoms, quaternary phosphonium cations having a phosphorus atom bonded to four carbon atoms, precursors of the foregoing and mixtures thereof, and dehydrating the resultant hydrogel or precipitate to yield a product containing amorphous silica.

4,513,159

ACETYLENE REMOVAL PROCESS

Cecil G. McFarland, League City, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 540,336, Jan. 13, 1975, abandoned, which is a division of Ser. No. 443,752, Feb. 19, 1974, abandoned. This application Oct. 12, 1979, Ser. No. 84,295

Int. Cl.[3] C07C *7/00*

U.S. Cl. 585—625 4 Claims

1. In a vapor phase process for the preparation of unsaturated hydrocarbon monoolefins and diolefins comprising oxidative dehydrogenation of a stream of C_3 to C_9 hydrocarbon compounds to produce a product stream comprising 3.5 to 80 mol percent of unsaturated hydrocarbon product and of about or from 0.0001 to 2.5 mol percent acetylenic compound impurity, about or from 0.0005 to 2.5 mol percent carbonyl compounds and 5 to 93 mol percent non-condensable gases, wherein the improvement comprises contacting said product stream in vapor phase at a temperature in the range of 250° to 900° C. and containing less than 5 mol percent free oxygen with a solid catalyst for reducing said acetylenic compounds in said product stream, said catalyst consisting essentially of oxides, carbonates or hydroxides of Fe, Ni and Zn, wherein Fe is the major metal component, an alkaline earth metal oxide, carbonate or hydroxide of Mg, Ca, Sr or Ba, and about 0.5 to 30 weight percent of an alkali metal oxide, carbonate or hydroxide of Li, Na, K or Rb determined as metal and based on the other metallic elements, said Ni being present in the range of 0.25 to 20 weight percent of the total weight of the catalyst, and

recovering said stream having the amount of acetylenic compounds therein reduced.

4,513,160

PROCESS FOR THE CONVERSION OF ALCOHOLS AND OXYGENATES TO HYDROCARBONS IN A TURBULENT FLUID BED REACTOR

Amos A. Avidan, Mantua, and Anthony Y. Kam, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,521

Int. Cl.[3] C07C *1/00, 1/20*

U.S. Cl. 585—640 3 Claims

1. A process for converting methanol, dimethylether or mixtures thereof to a gasoline-rich product containing at least about 70% of a hydrocarbon product higher boiling than the reactant comprising the steps of passing the reactant upwardly in a catalytic reactor through a fluidized bed of catalyst particles comprising ZSM-5 crystalline zeolite under conditions effective to provide turbulent regime fluidization, said catalyst particles having a particle density of about 0.9 to about 1.6 g/cc, an average catalyst particle size of about 40 to about 80 μm including about 5 to 40 weight percent of catalyst fines having a particle size less than 40 μm; and wherein effective conditions include a superficial fluid velocity of about 0.5 to about 7 fps, a pressure of about 15 to about 100 psia and a catalyst bed height of more than 8 feet, thereby converting more than 95 percent of the reactant in the reactor.

4,513,161

CONVERSION OF METHANOL TO HYDROCARBONS

Charles H. Mauldin, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1984, Ser. No. 626,025

Int. Cl.[3] C07C *1/00*

U.S. Cl. 585—640 9 Claims

1. A process useful for the conversion of methanol to hydrocarbons which comprises contacting at reaction conditions a feed comprised of an admixture of methanol and hydrogen, in methanol:hydrogen molar ratio equal to or greater than about 2:1 at total pressure equal to or greater than about 160 psig, over a catalyst which comprises ruthenium in catalytically active amount composited with titania or titania-containing support.

4,513,162

DEHYDROGENATION PROCESS

Ghazi R. Al-Muddarris, Surrey, England, assignor to Davy McKee Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 409,090, Aug. 18, 1982, abandoned. This application Jan. 6, 1984, Ser. No. 568,523

Claims priority, application United Kingdom, Aug. 18, 1981, 8125140

Int. Cl.[3] C07C *5/34*

U.S. Cl. 585—654 14 Claims

1. A continuous process for dehydrogenating an alkane comprising:

providing an admixture of said alkane with steam

contacting a plurality of at least three groups of dehydrogenation catalyst containing tubes with a heating medium within a single furnace chamber of a fired reactor;

feeding the admixture to common headers for each group of the catalyst containing tubes;

contacting the admixture with the catalyst in the groups of tubes in the fired tubular reactor under endothermic dehydrogenating conditions;

cyclically shutting off in turn a minority of the groups of tubes from alkane flow for reactivation, the ratio of the number of groups of tubes operating under dehydrogenating conditions to the number of groups of tubes undergoing reactivation having been determined as a function of the rate of catalyst deactivation;

admitting a reactivating medium to said minority of groups of tubes to cause exothermic reactivation of the catalyst, whereby the ctalyst in each minority of groups of tubes is cyclically reactivated during the process; and

admixing the effluents from all the tubes, including both tubes operating under dehydrogenating conditions and tubes operating under reactivation conditions, to form a common effluent stream.

4,513,163
CONVERSION OF AROMATICS TO ISO-PARAFFINS USING A $NaALCL_4/HALCL_4$ MOLTEN SALT CATALYST SYSTEM

Mark A. Plummer, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 30, 1983, Ser. No. 567,194
Int. Cl.[3] C07C 5/27
U.S. Cl. 585—700 14 Claims

1. A process for producing iso-paraffins from aromatic hydrocarbons comprising contacting said aromatic hydrocarbons with a molten mixture comprising $NaAlCl_4$ and from about 0.5 to about 25 weight percent $HAlCl_4$ at a temperature sufficient to maintain the molten state of said mixture.

4,513,164
CONDENSATION OF NATURAL GAS OR METHANE INTO GASOLINE RANGE HYDROCARBONS

George A. Olah, 2252 Gloaming Way, Beverly Hills, Calif. 90210

Division of Ser. No. 504,738, Jun. 16, 1983, Pat. No. 4,467,130, which is a division of Ser. No. 298,486, Sep. 1, 1981, Pat. No. 4,433,192. This application Feb. 14, 1984, Ser. No. 579,947
Int. Cl.[3] C07C 7/44
U.S. Cl. 585—700 4 Claims

1. A process for the direct heterogeneous catalytic gas-phase oxidative conversion of natural gas or methane into gasoline-range hydrocarbons by reacting natural gas or methane in the presence of an oxidizing agent comprised of air, oxygen-ozone mixture, sulfur, selenium, sulfur trioxide, nitrogen oxides or a halogen in the presence of a superacid catalyst having a Hammett activity function H_o of less than -11.9.

4,513,165
ALKYLATION PROCESS

Joe Van Pool, c/o Ste. 1107, 1825 K St., NW., Washington, D.C. 20006

Filed Jun. 15, 1984, Ser. No. 620,787
Int. Cl.[3] C07C 2/58
U.S. Cl. 585—723 10 Claims

1. A process for the acid-catalyzed alkylation of an isoparaffin with an olefin to produce an alkylate product which comprises the steps of

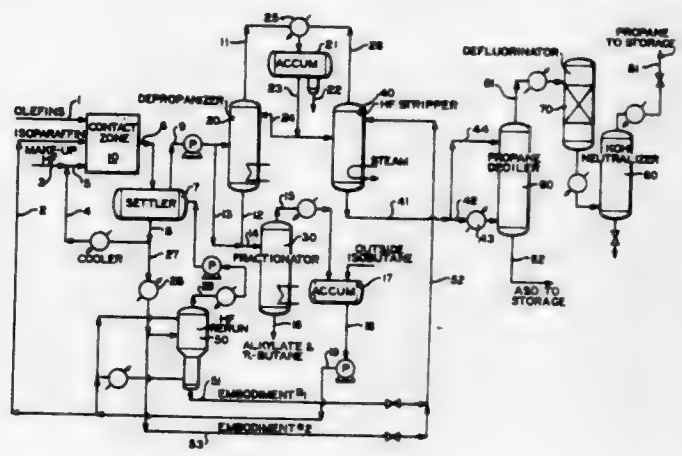
(a) reacting an isoparaffin with an olefin in the presence of hydrogen fluoride alkylation catalyst in a reaction zone,

(b) separating a hydrocarbon phase and a catalyst phase comprising HF acid and acid soluble oils (ASO) from step (a),

(c) passing said hydrocarbon phase to a fractionation zone operated at conditions selected to separate a vaporous overhead stream comprising HF acid and light paraffins, and a bottoms stream comprising alkylate product,

(d) cooling and condensing said vaporous overhead and separating the condensate formed into a hydrocarbon phase and a HF acid phase which can be recycled to said reaction zone in (a),

(e) passing at least a portion of said hydrocarbon phase in (d) as reflux to said fractionation in (c) and the remainder to HF acid stripping zone operated at conditions selected to withdraw overhead a stream comprising HF acid and a



bottoms stream comprising light paraffin and acid soluble oils (ASO),

(f) separating said bottoms stream in (e) into a light paraffin stream and an acid soluble oils stream (ASO), and

(g) passing at least a potion of said catalyst phase in (b) as a portion of the feed to said HF-acid stripping zone in (e).

4,513,166
PROCESS FOR THE LOW POLYMERIZATION OF ISOBUTENE

Satoshi Sakurada, Omiya; Takao Hashimoto, Saitama; Nobuaki Tagaya, Kawagoe; Tsugio Maeshima, Saitama; Kayako Ueda, Tokyo, and Masahiro Kokubo, Saitama, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 476,015, Mar. 15, 1983, Pat. No. 4,454,367. This application Apr. 6, 1984, Ser. No. 597,821
Claims priority, application Japan, Mar. 23, 1982, 57-44684; Mar. 26, 1982, 57-47316
Int. Cl.[3] C07C 7/01
U.S. Cl. 585—832 1 Claim

1. A method of purifying 1-butene containing isobutene, which comprises contacting an isobutene-containing hydrocarbon mixture with a solid acid catalyst having a solid acid quantity of 0.05 to 0.25 mmol/g.solid acid catalyst, represented by the adsorption of pyridine, thus selectively low-polymerizing isobutene and then separating the low polymers of isobutene from the 1-butene, said solid acid catalyst being a high silica mordenite having an SiO_2/Al_2O_3 mole ratio of 50 to 200.

4,513,167
ARRAYS OF POLARIZED ENERGY-GENERATING ELEMENTS

Aharon Brandstetter, Torrens, Australia, assignor to The Australian National University, Australia

PCT No. PCT/AU83/00045, § 371 Date Dec. 20, 1983, § 102(e) Date Dec. 20, 1983, PCT Pub. No. WO83/03925, PCT Pub. Date Nov. 10, 1983

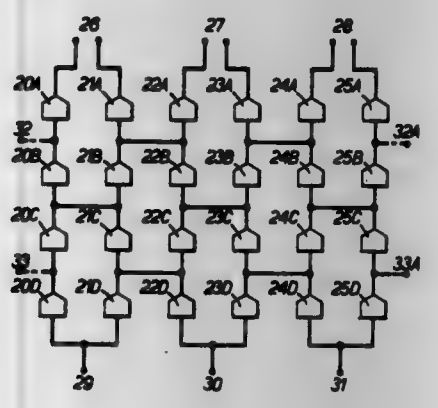
PCT Filed Apr. 18, 1983, Ser. No. 573,926

Claims priority, application Australia, Apr. 27, 1982, PF3735

Int. Cl.[3] H01L *31/04*

U.S. Cl. 136—244

30 Claims



1. An array of polarised energy-generating elements, the elements in the array being formed as a matrix having a plurality of rows of elements and a plurality of columns of elements, with the elements in each row and column being polarised in the same direction, characterised in that

(a) the positive pole of each element in each column is connected to the negative pole of the next adjacent element in the column;

(b) the positive pole of each second element in a column is connected to the positive pole of the corresponding element of one of the two adjacent columns; and

(c) the positive pole of each alternate second element in a column is connected to the positive pole of the corresponding element in the other of the two adjacent columns.

8. An array as defined in claim 1 further characterised in that there are an even number of columns in the array and the junctions between the alternate pairs of elements in the leftmost column of the matrix are connected, respectively, to the junctions between the alternate pairs of elements in the rightmost column of the matrix.

11. An array as defined in claim 8 in which each element is a battery.

4,513,168
THREE-TERMINAL SOLAR CELL CIRCUIT

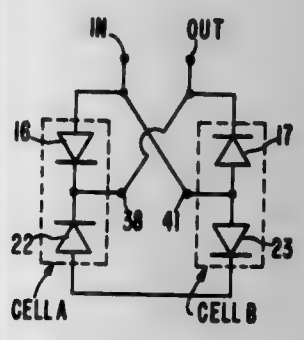
Peter G. Borden, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 19, 1984, Ser. No. 602,033

Int. Cl.[3] H01L *31/06*

U.S. Cl. 136—244

8 Claims



1. A photovoltaic generator unit comprising a pair of photovoltaic cells, said cells adapted to receive incoming light from a given direction, each cell comprising, in electrical connection in the said direction:

a light-permeable first electrode,

a first semiconductive layer containing a photovoltaic junction having a high band-gap energy and a first polarity with respect to said direction,

a light-permeable second electrode,

a second semiconductive layer containing a photovoltaic junction having a low band-gap energy and a second polarity opposite said first polarity, and

a third conductive electrode;

said first polarities of said cells being opposite,

said first electrode of each of said cells being electrically connected to said second electrode of the other cell,

said third electrodes being electrically connected together,

said low band-gap energies being approximately one-half of said high band-gap energies, and

means for external connection to each of said first electrodes.

4,513,169
TRANSFORMER BAR CONNECTOR COVER

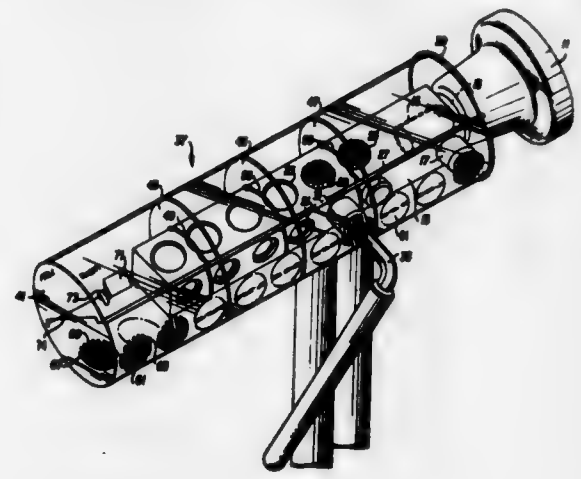
Eugene W. McGrane, Ormond Beach, Fla., assignor to Homac Mfg. Company, Ormond Beach, Fla.

Filed Jul. 19, 1983, Ser. No. 515,237

Int. Cl.[3] H01R *13/44*

U.S. Cl. 174—138 F

19 Claims



10. An insulator cover for an elongated transformer bar connector having a plurality of spaced installation ports extending along the length thereof and extending therethrough at substantially right angles to the longitudinal axis of said bar connector, a plurality of internally threaded boreholes equal in number to said installation ports and extending from said ports to the exterior of said connector at substantially right angles to the axes of said ports, and a threaded borehole for a transformer stud locking screw, said cover comprising

an elongated housing closed at one end and open at the other end;

at least two substantially parallel longitudinally aligned rows of access ports through the wall of said housing, each of said access ports of one row being peripherally spaced from the access ports of the other row substantially ninety degrees;

at least one alignment rib secured to and extending transversly within the interior of said housing;

aperture means in said alignment rib of a dimension to allow longitudinal passage of said connector bar therethrough while maintaining said cover in a substantially fixed position relative to said connector bar whereby said access ports will be aligned with said installation ports and boreholes in said bar connector when the cover is assembled thereon.

4,513,170

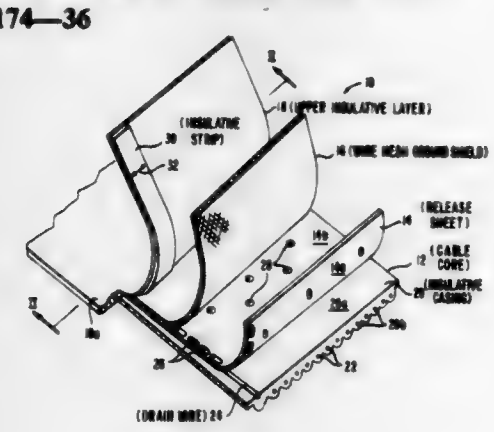
STRIPPABLE SHIELDED ELECTRICAL CABLE

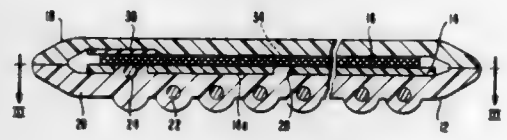
Jeffrey S. Apodaca, Los Angeles, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Feb. 28, 1983, Ser. No. 470,663

Int. Cl.³ H01B *7/08, 11/06*

U.S. Cl. 174—36 **17 Claims**





1. A shielded electrical cable comprising:

a plurality of elongate, spaced electrical conductors;

a casing of electrically insulative material enclosing said conductors, at least one of said conductors having an exposed portion free of said casing material;

an electrically conductive shield member adheringly overlying said casing and in electrical contact with said exposed conductor portion;

a layer of electrical insulation adheringly overlying said conductive shield member; and

barrier means disposed between said layer and said exposed conductor portion for providing a non-adhered relation between said layer and said exposed conductor portion.

4,513,171

AERIAL CABLE TERMINAL

Louis Suffi, Westchester; James E. Golden, Evanston, and Donald F. Jaycox, Deerfield, all of Ill., assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 14, 1983, Ser. No. 542,298

Int. Cl.³ H01R *9/00;* H02G *15/10*

U.S. Cl. 174—41 **20 Claims**

1. An aerial cable terminal, comprising:

an elongate housing, the housing including top and bottom walls, end walls and a back wall, and a dividing wall extending between said top and bottom walls to divide the interior of the housing into a back compartment and a front compartment, said housing being of unitary molded structure;

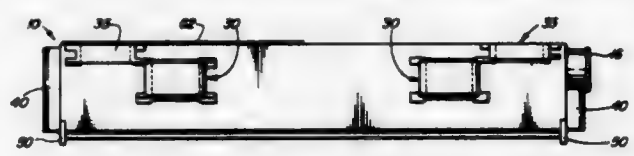
apertures in said dividing wall and a conductor terminal positioned in each aperture, each conductor terminal having a rear portion extending into said back compartment and a front portion extending into said front compartment;

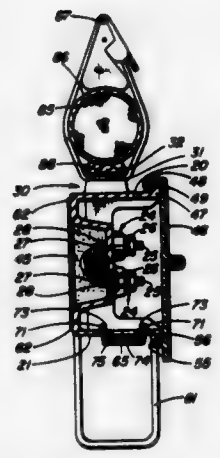
said rear portion of each conductor terminal adapted for connection of a stub cable conductor thereto;

access means in one end wall for entry of a stub cable;

an operable front cover closing the front of said front compartment; and

support hangers extending up from an outer surface of said top wall, said support hangers comprising a first pair of hangers spaced apart along said top wall at positions intermediate the front and back walls and a second pair of hangers spaced apart along said top wall and having one side flush with the back surface of the housing, the hangers of said first pair displaced along the housing relative to





the hangers of said second pair, said second pair of hangers positioned symmetrically on said housing to be continguous with the second pair of hangers of a second terminal when two terminals are positioned back-to-back.

4,513,172

CLAMP FIXING DEVICE

Kazuhiro Matsui, Toyoake, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

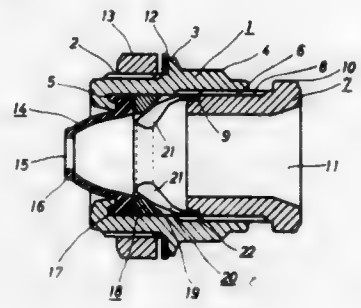
PCT No. PCT/JP81/00228, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/01296, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 9, 1981, Ser. No. 385,396

Claims priority, application Japan, Sep. 30, 1980, 55-136323; May 20, 1981, 56-72851[U]

Int. Cl.³ H02G *15/007*

U.S. Cl. 174—65 SS **8 Claims**



1. A cable fixing device comprising:

(a) an outer housing having an internal bore which is larger in diameter than the external diameter of any cable to be received in said cable fixing device;

(b) an inner housing having an internal bore which is larger in diameter than the external diameter of any cable to be received in said cable fixing device, said inner housing being threadedly received in said outer housing;

(c) a hanging bell-shaped packing mounted in the internal bore of said outer housing, said hanging bell-shaped packing having an axial hole sized and shaped to fit snugly around the periphery of a cable during use of said cable fixing device;

(d) a guiding ring slidably received in the internal bore of said outer housing and positioned to bear against said hanging bell-shaped packing, said guiding ring having an axial guiding hole which is larger in diameter than the

external diameter of any cable to be received in said cable fixing device and an axial camming surface on the end remote from said hanging bell-shaped packing;

(e) one of said hanging bell-shaped packing and said guiding ring having an axially protruding annular flange and the other of said hanging bell-shaped packing and said guiding ring having a corresponding annular recess sized, shaped, and positioned so as to receive said protruding annular flange, whereby said guiding ring fixes and holds said hanging bell-shaped packing; and

(f) a tightening ring slidably received in the internal bore of said outer housing, said tightening ring having a plurality of inwardly extending flexible fins sized and shaped to grip firmly the periphery of a cable during use of said cable fixing device, said tightening ring being positioned between said guiding ring and the axially inner end of said inner housing with the outer surface of said plurality of flexible fins bearing against the camming surface on said guiding ring and the axially inner end of said inner housing bearing against the end of said tightening ring remote from said guiding ring,

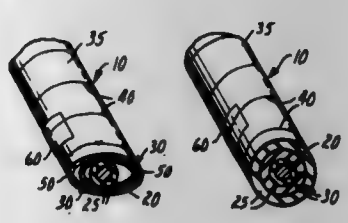
whereby, during use of said cable fixing device to clamp a cable, telescopic motion of said outer and inner housings relative to each other forces said tightening ring to slide axially in the internal bore of said outer housing, and the axial movement of said tightening ring causes the flexible fins on said tightening ring to be cammed inwardly by the axial camming surface on said guiding ring until the flexible fins firmly grip the periphery of the cable being clamped by said cable fixing device.

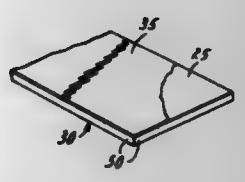
4,513,173

INTUMESCENT FIRE PROTECTIVE SHEATHS

Richard P. Merry, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 7, 1983, Ser. No. 501,887
Int. Cl.[3] H01B 7/34, 13/06
U.S. Cl. 174—121 A 12 Claims





1. An intumescent fire protective sheath for the protection of an electrical cable or conduit from the temperatures attainable from an open flame comprising:

a. at least one sheet of substantially inorganic intumescent fire protective material of a generally rectangular configuration having opposite major surfaces bound by four edge surfaces and capable of expansion generally only normal to the major surfaces, said sheet being loosely arranged around an electrical cable or conduit to abut adjacent edge surfaces and to form a generally fin-shaped protective layer spaced at least in part a distance from the electrical cable or conduit to permit dissipation of heat generated from within the electrical cable or conduit; and

b. high temperature resistant means for restraining the layer around the electrical cable or conduit, whereby the layer can essentially expand only generally inwardly towards the electrical cable or conduit and in the range of 2–4 times the average height of the edge surfaces so that cracking of the layer upon expansion is virtually eliminated.

10. A method of forming a fire protective sheath around an electrical cable or conduit comprising the steps of:

a. providing at least one sheet of substantially inorganic intumescent fire protective material of a generally rectangular configuration having opposite major surfaces bound by four edge surfaces and capable of expansion generally only normal to the major surfaces;

b. loosely arranging the sheet around the electrical cable or conduit and abutting adjacent edge surfaces to form a fin-shaped protective layer spaced at least in part a distance from the electrical cable or conduit to permit dissipation of heat generated from within the electrical cable or conduit; and

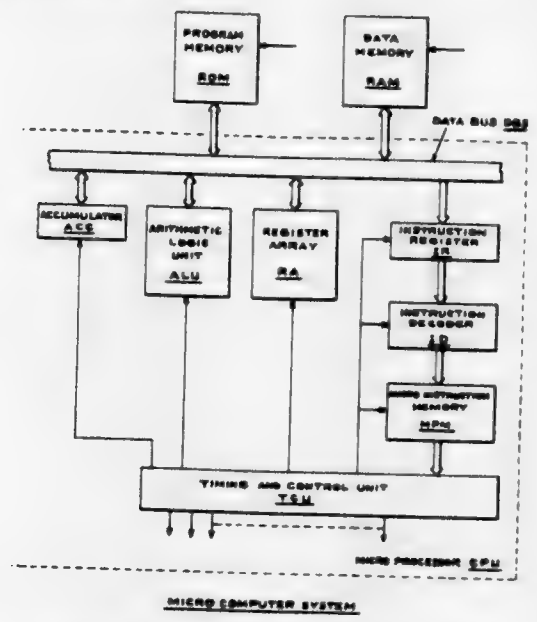
c. restraining the layer around the electrical cable or conduit with a high temperature resistant material, whereby the layer can expand generally only inwardly towards the electrical cable or conduit and in the range of 2–4 times the average height of the edge surfaces so that cracking of the layer upon expansion is virtually eliminated.

4,513,174

SOFTWARE SECURITY METHOD USING PARTIAL FABRICATION OF PROPRIETARY CONTROL WORD DECODERS AND MICROINSTRUCTION MEMORIES

Morton B. Herman, Huntington Station, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Mar. 19, 1981, Ser. No. 245,498
Int. Cl.[3] H04L 9/00; G06F 5/00
U.S. Cl. 178—22.08 4 Claims



1. For microcomputer systems which include a program memory and a microprocessor having executing means for executing sets of microinstructions, said executing means including a microinstruction memory for storing sets of microinstructions and an instruction decoder means for converting a control word to a microinstruction memory address, each set of microinstructions being assigned a publicly known OP code, and each set being activated in response to a related control word, the method of securing from unauthorized copying of a program stored in the program memory as a sequence of instructions wherein each instruction includes a control word, said method comprising the steps of

defining a set of proprietary control words wherein each control is assigned a distinct publicly known OP code and its set of microinstructions,

initially partially fabricating the microprocessors including their microinstruction memories such that each microin-

struction set starts at a known address, said partially initially fabricating step, including an incomplete fabrication of the instruction decoder means,

finishing the fabricating by completely fabricating the instruction decoder means such that each proprietary control word received by an instruction decoder means is converted to the address of the microinstruction memory which stores the first microinstruction of the set of microinstructions assigned to such received proprietary control word, and

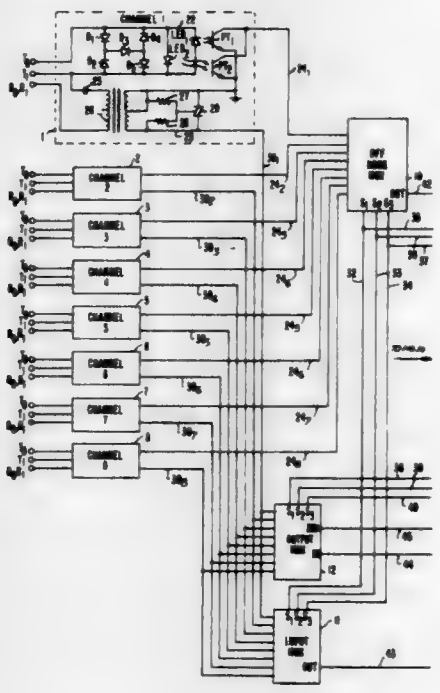
recording the program to be protected in the program memories wherein each instruction includes the proprietary control word assigned to a desired set of microinstructions.

4,513,175

AUTOMATIC CALLING SYSTEMS FOR ACCESSING COMMUNICATIONS NETWORKS

Fred J. Smith, Plantation, Fla., assignor to Jayem Dialer Corp., Westfield, N.J.

Filed Apr. 21, 1982, Ser. No. 370,605
Int. Cl.³ H04M *1/274, 3/44, 15/10*
U.S. Cl. 179—18 BA **29 Claims**



1. Automatic calling apparatus comprising:

a plurality of channel connector means for interconnecting a plurality of telephone sets to a plurality of telephone lines, each of said plurality of channel connector means connecting at least an associated one of said plurality of telephone lines to at least one of said plurality of telephone sets, each of said plurality of channel connector means including means for sensing an off hook condition of a telephone set connected thereto and signal means for conveying signal information between said telephone line and a telephone set connected thereto and for coupling and decoupling signal information to and from a connected telephone line and telephone set;

means for receiving signal information from said signal means present in any selected one of said plurality of channel connector means;

means for applying signal information to said signal means present in any selected one of said plurality of channel connector means;

means for receiving off hook condition information from said means for sensing in any selected one of said plurality of channel connector means; and

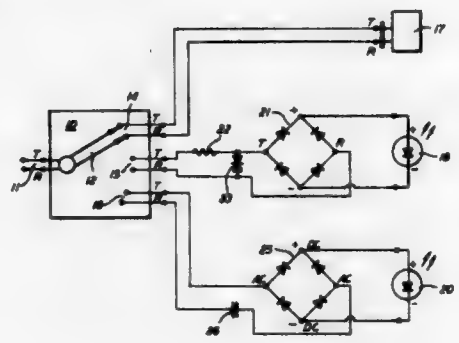
means for simultaneously monitoring for off hook condition information from said means for sensing and for signal information from said means for receiving signal information in any selected one of said plurality of channel connector means.

4,513,176

TEST APPARATUS FOR TELEPHONE EQUIPMENT

Edgar H. Fostveit, 728 Railroad St., DeRuyter, N.Y. 13052

Filed Feb. 28, 1983, Ser. No. 470,490
Int. Cl.³ H04B *3/46*
U.S. Cl. 179—175.1 R **11 Claims**



1. A self-contained, independent trouble source locater for use by a telephone customer who owns the telephone instruments and wiring in his home, the trouble source locater being operated by the customer alone without the need for any outside assistance, said wiring originating at a telephone company wiring junction at the customer's house, the wiring junction being connected to an external telephone company line; the trouble source locater comprising a single, multiple position switch connected on one side to the telephone company wiring junction at the customer's house, the switch having a first switch position connected through the customer owned wiring to his telephone instruments, the multiple position switch normally being maintained in its first switch position whereby the telephone instruments are operably connected to the telephone company wiring junction, the multiple position switch having another switch position, and a self-contained ringing test circuit operably connected to said other switch position, the ringing test circuit including means to indicate whether or not the telephone company's bell ringing voltage is being received at the wiring junction, movement of the switch out of its first position and into its other position being operable to disconnect the customer's wiring and telephone instruments from the telephone company wiring junction and to connect the latter to the ringing test circuit, the indicator means in the test circuit being actuated if the telephone company's bell ringing voltage is being received at the wiring junction and failing to be actuated if such voltage is not being received.

4,513,177

LOUDSPEAKING TELEPHONE SYSTEM

Masakazu Nishino, Yokohama, and Hisashi Fujisaki, Tokyo, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Electric Co., Ltd., both of Tokyo, Japan

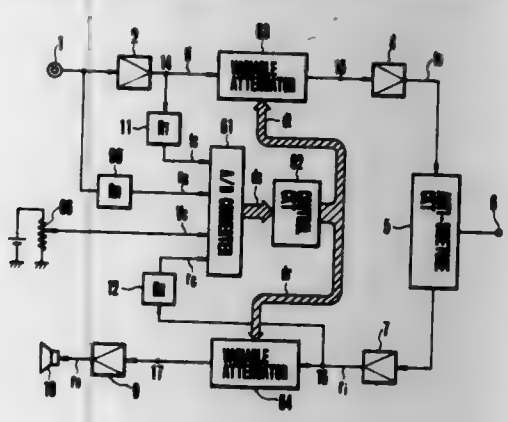
Filed Dec. 7, 1981, Ser. No. 328,088
Claims priority, application Japan, Dec. 9, 1980, 55-173470
Int. Cl.³ H04M *1/60*
U.S. Cl. 179—81 B **5 Claims**

1. In a loudspeaking telephone system of the type in which voice signals on transmission and reception speech channels are respectively detected to produce control signals, and these control signals are compared to judge the levels of the voice signals on both the speech channels so that the switching between both the channels is effected under the control of loss of digitally controlled attenuators inserted in both the speech channels, the improvement wherein said system comprises:

means for converting the control signals corresponding to the voice signals on both the transmission and reception

speech channels through analog-to-digital conversion into digital signals; and

means, with the use of a microprocessor as a calculating unit, for comparing the magnitudes of transmission and recep-



tion signals by arithmetic operation on the digital signals attained through said conversion, and effecting a control of the switching of the loss of said digitally controlled attenuators based on the result of said comparison.

4,513,178

SIGNAL PROCESSING ARRANGEMENT

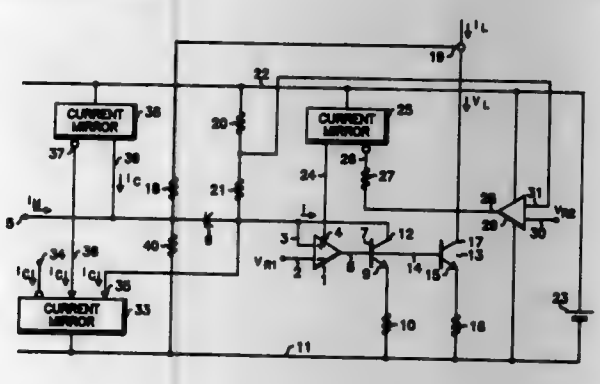
Sam A. Hing, Gland, Switzerland, and Michel Guillien, Gex, France, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 18, 1983, Ser. No. 485,819

Claims priority, application France, Apr. 21, 1982, 82 06865

Int. Cl.³ H04M *19/00*

U.S. Cl. 179—81 R **22 Claims**



1. A signal processing arrangement comprising:

an operational amplifier having a first input terminal for receiving a reference potential, a second input terminal, and an output terminal;

negative feedback means coupled between the output terminal of the amplifier and the second input terminal;

a further input terminal for receiving signals to be processed;

capacitive means coupled between the further input terminal and the second input terminal of the amplifier; and

means for coupling a predetermined control current to the second input terminal of the amplifier and as an equal and opposite current to the further input terminal;

whereby an output current of the signal processing arrangement derived from the output terminal of the operational amplifier is regulated in accordance with the predetermined control current, and the effects of unwanted A.C. components in the predetermined control current reduced.

4,513,179

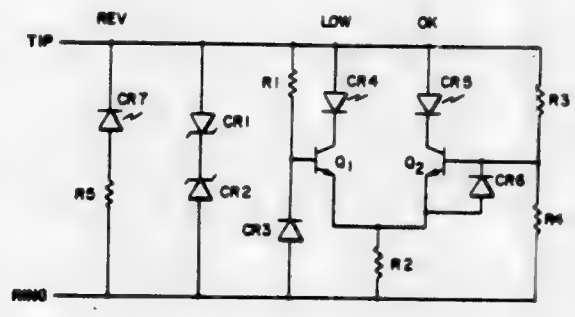
LOOP TEST CIRCUIT

Lot Phillips, Brookline; Hollis B. Austin, Manchester, and Kenneth S. Blakeslee, Sutton, all of N.H., assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 21, 1983, Ser. No. 487,057

Int. Cl.³ H04B *3/46*

U.S. Cl. 179—175.3 R **12 Claims**



1. An electrical test circuit for use in testing tip and ring conditions of a telephone subscriber's loop, the circuit comprising: a pair of terminals connectable to tip and ring, respectively, and three separate light emitters connected across the terminals and selectively energizable by loop current, first means for engerizing the first light emitter only in response to a reverse polarity condition of tip and ring, transistor means for energizing the second light emitter only in response to an abnormally low current, forward polarity condition of tip and ring, and transistor means for energizing the third light emitter only in response to a correct loop current, forward polarity condition of tip and ring.

4,513,180

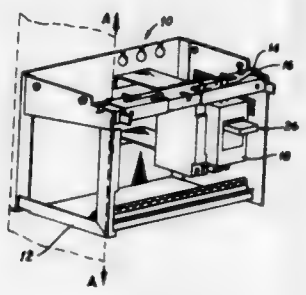
CIRCUIT BREAKER OPERATOR AND INTERLOCK

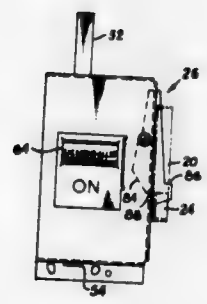
Samir F. Farag; Edgar W. Allen, and Thomas R. Little, all of Wichita Falls, Tex., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Jan. 24, 1984, Ser. No. 573,384

Int. Cl.³ H01H *9/20*

U.S. Cl. 200—50 R **20 Claims**





1. A circuit breaker operator, comprising:

a frame having a middle portion having an opening, a top portion having an opening and angularly extending from said middle portion in a preselected direction, a bottom portion angularly extending from said middle portion in a preselected direction, a mounting portion having an opening and being connected to said bottom portion, and a right edge portion;

an operator driver having an opening and a protrusion and being movable between a first position at which said

opening is displaced toward said bottom portion of said frame and said protrusion extends through said opening in said top portion of said frame a first preselected distance above said top portion and a second position at which said opening is displaced from said bottom portion and said protrusion extends a second preselected distance above said top portion, said second preselected distance being greater than said first preselected distance;

an operator assembly having a base portion having a latch stop and being connected to said operator driver and a handle portion connected to the base portion and protruding through said opening of said middle portion of said frame, said base portion being larger than said opening of said middle portion, said handle being moveable in concert with said operator driver between a first position at which said handle is displaced toward said bottom portion and said operator driver is at the first position and a second position at which said handle is displaced toward said top portion and said operator driver is at the second position;

first means for urging said operator driver and said handle toward the second position;

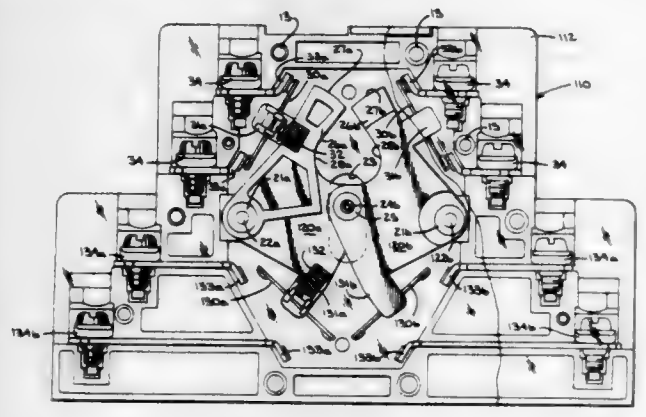
a latch assembly having latch member having a left edge portion, a protrusion, and an indentation engageable with said latch stop of said base portion of said operator assembly and second means for urging said latch indentation into engagement with said latch stop, said handle and operator driver being fixed at the first position in response to said indentation being engaged with said latch stop, said protrusion being movable between a first position at which said protrusion is generally aligned with said right edge portion of said frame and said indentation is engaged with said latch stop and a second position at which said protrusion extends beyond said right edge portion and said indentation is free of engagement with said latch stop, said latch stop automatically moving into abutting contact with said left edge portion in response to movement of said protrusion from the first position to the second position thereby freeing said operator driver and handle for movement from the first position to the second position.

4,513,181

COMBINATION MECHANICAL AND ELECTRICAL INTERLOCK MECHANISM

Gerd C. Boysen, Greenfield; Patrick S. Murray, Racine, and Marquis B. Robinson, Wauwatosa, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jan. 23, 1984, Ser. No. 581,742
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—50 C **9 Claims**



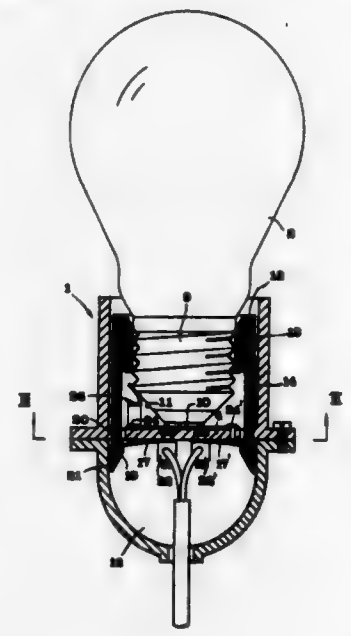
1. In an interlock mechanism for a pair of circuit controllers each having normally open contact assemblies concurrently operable with a respective circuit controller, said mechanism responsive to movement of individual controller elements movable in the same direction, said mechanism comprising a stationary support member, first and second movable operators supported by said support members, each of said operators including means for respectively engaging one of said individual controller elements, each of said operators including a blocking formation, said operators being independently movable from a first position to a second position, said operators positioned so that predetermined movement of either operator partway from its first position toward its second position places the blocking formation of this operator in the path of movement of the blocking formation of the other of said operators so that the latter is prevented from moving to its second position; the combination therewith of first and second electrical interlock contact assemblies, each electrical contact assembly respectively including a first and a second pair of stationary contacts and a first and second movable bridging contact, said bridging contacts each respectively operated by the said first and second operators from a first normally closed contact position to a second contact open position concurrently with contact closure of the auxiliary contact assembly of a respective one of said pair of circuit controllers, and biasing means urging each of the movable contacts of said interlock contact assemblies towards contact closed position.

4,513,182

LIGHTBULB SOCKET

Lars Juntti, Poppovägen 19, 82500 Iggesund, Sweden

Filed Oct. 12, 1982, Ser. No. 433,703
Claims priority, application Sweden, Oct. 13, 1981, 8106047
Int. Cl.³ H01R *33/18*
U.S. Cl. 200—51.09 **6 Claims**



1. A socket for connecting two electric conductors to a lightbulb having a threaded base with side and central electrodes, comprising:

a shell having an electrically insulating partition dividing the shell into a first region and an outwardly open second region, said partition having at least two apertures therein;

an element having an internally threaded receiving ring disposed in the second region of the shell to receive the base of the bulb, said element having at least two electrically insulating legs which extend through said at least two apertures in said partition and which have ends disposed in the first region of the shell, said element being movable between a first position in relation to the shell when the bulb is unscrewed from the receiving ring and a second position in relation to the shell when the bulb is screwed into the receiving ring;

first and second contact members mounted in the second portion of the shell for electric contact with the central and side electrodes of the bulb, respectively;

a pair of connector elements in electrical contact with said first and second contact members respectively, said connector elements passing through said partition; and

spring means for biassing said element toward said first position and for additionally electrically coupling said

contact members to respective ones of said electric conductors when said element is in said second position and breaking the electrical coupling when the element is in said first position, said spring means including a pair of bent or curved spring leaves disposed within the first region of the shell, each spring leaf being at one point attached to the partition, being mechanically connected, at a point spaced apart from said point of attachment, to a respective leg of said element adjacent an end thereof, being located adjacent a respective connector element so as to contact the respective connector element when the spring leaf is straightened by screwing the bulb into the receiving ring, and being electrically connected to a respective one of the electric conductors.

4,513,183

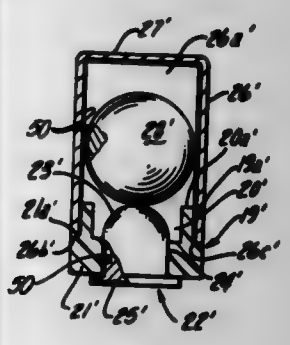
GRAVITY SWITCH

Clinton W. Hill, Romeo, Mich., assignor to U.S. Plastics Corporation, Mt. Clemens, Mich.

Continuation-in-part of Ser. No. 491,492, May 4, 1983, Pat. No. 4,467,154. This application Apr. 30, 1984, Ser. No. 605,036

Int. Cl.³ H01H *35/02*

U.S. Cl. 200—61.45 R **15 Claims**



1. A gravity switch comprising:

(A) a cylindrical shell member of conductive material closed at one end and open at the other end;

(B) a base member of dielectric material closing the open end of said shell member;

(C) an electrical contact extending axially through said base member to present a contact tip surface located adjacent the open end of the said shell member on the central axis of that member;

(D) a ball of conductive material positioned rollably within said shell member and having a diameter which is slightly less than the inner diameter of said shell member and more than half of the shortest distance between said contact tip surface and the inner surface of the closed end of said shell member;

(E) said shell member and electrical contact cooperating with said base member for hermetrically sealing the interior of said shell member within which said ball is rollable;

(F) said ball having a surface coating of conductive material different from the interior material of said ball; and

(G) said contact tip surface and the interior surface of said shell contactable by said ball comprising material having electrical properties comparable to the electrical properties of the material coating said ball.

4,513,184

FLOW ACTUATED SWITCH

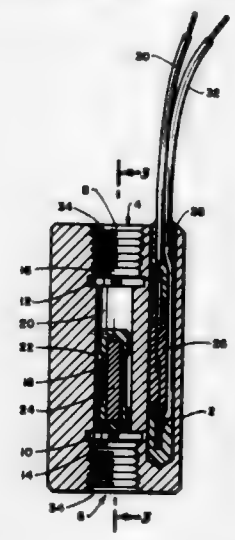
Richard E. Hughes, 821 Loma Dr., Hermosa Beach, Calif. 90254

Filed Sep. 16, 1983, Ser. No. 532,693

Int. Cl.³ H01H *35/40*

U.S. Cl. 200—81.9 M **8 Claims**

1. A fluid flow indicator comprising the combination of: a constant area body member defining a monitoring flow passageway having an inlet and an outlet, annular retaining channels at each of said inlet and outlet, first and second rod members removably positioned within said monitoring flow passageway in each of said annular retaining channels at each of said inlet and outlet, each of said first and second rod members being of inert, synthetic material and being sufficiently flexible to allow bending thereof for insertion of its termini into each of opposed portions of said annular retaining channels; and a magnetic plunger member captively disposed within said monitoring flow passageway intermediate said first and second rod members and being responsive to fluid flow by movement thereof and operatively associated switch means responsive to the position of said magnetic plunger member to energize or de-energize an electric circuit.



4,513,185

FLOAT OPERATED ELECTRICAL SWITCH ASSEMBLY

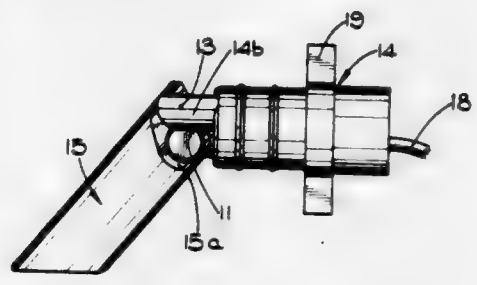
John Walters, Walsall, England, assignor to Lucas Industries, Birmingham, England

Filed Jan. 12, 1983, Ser. No. 457,373

Claims priority, application United Kingdom, Jan. 19, 1982, 8201425

Int. Cl.³ H10H *35/18*

U.S. Cl. 200—84 C **4 Claims**



1. A float operated electrical switch assembly including a body having a longitudinal axis, a float coupled to the body for pivotal movement relative thereto about a first axis being perpendicular to the longitudinal axis of the body, a permanent magnet carried by the float and having a dipole axis parallel to said first axis, a reed switch within the body, the reed switch being position with its longitudinal axis parallel to the longitudinal axis of the body and at right-angles to said first axis, and, said first axis being spaced transversely from the longitudinal axis of said reed switch, and said magnet being so positioned relative to said first axis such that the intended operating arc of pivotal movement of the magnet relative to the reed switch is in effect movement of the magnet along the length of the of the reed switch, the magnet being adjacent one end of the reed switch at one end of said arc, and being adjacent the contact region of the reed switch at the other end of said arc.

4,513,186

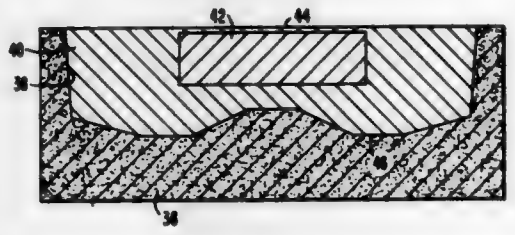
VACUUM INTERRUPTER CONTACT STRUCTURE AND METHOD OF FABRICATION

Robert L. Thomas, Big Flats, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1982, Ser. No. 452,263

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **6 Claims**



1. An electrical contact member for use in a vacuum interrupter, which contact member is electrically connectable by brazing to a conductive support stem, which contact member comprises a generally disk-like member of high temperature resistant chromium matrix material infiltrated with high conductivity copper, and comprises a predetermined density arc contact portion with a relatively high weight percentage of high conductivity copper and a higher density central back contact portion adapted to be brazed to the conductive contact support stem, which higher density central back contact portion contains about half the weight percentage of high conductivity copper as does the arc contact portion.

4,513,187

HIGH-VOLTAGE CIRCUIT BREAKER INCLUDING CUT-ON RESISTOR

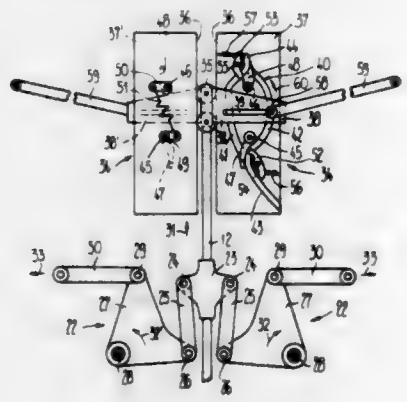
Walter Schaad, Oberentfelden, and Peter Kull, Schafisheim, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Dec. 12, 1983, Ser. No. 560,575

Claims priority, application Switzerland, Dec. 17, 1982, 7367/82

Int. Cl.³ H01N *33/16*

U.S. Cl. 200—144 AP **12 Claims**



1. A high-voltage circuit breaker comprising:
at least one primary switching position;
at least one auxiliary switching position connected in parallel to said at least one primary switching position;
at least one cut-on resistor series connected to said at least one auxiliary switching position;
a common drive rod operatively associated with both said at least one primary switching position and said at least one auxiliary switching position and reciprocatingly movable in substantially longitudinal direction in a predetermined direction of movement;
a first transmission system coupled to said drive rod and operatively associated with said at least one primary switching position;
a second transmission system coupled to said drive rod and comprising an actuator rod and a cam;
a follower member cooperating with said cam;
said actuator rod being controlled at one end thereof by said follower member cooperating with said cam and being operatively associated with said at least one auxiliary switching position;
said actuator rod being movable in a predetermined plane of movement;
means for providing during a cut-on stroke a chronological operational sequence in which first said at least one auxiliary switching position is closed, then said at least one primary switching position is closed, and thereafter said at least one auxiliary switching position is opened;
said means comprising:
a stationarily arranged cam track defined by said cam and containing a closed loop extending in a plane and having a width;
said closed loop being substantially arranged in said plane of movement of said actuator rod;
said cam track being engaged by said follower member;
a bracket mounted to said drive rod and extending substantially parallel to said plane in which said cam track is arranged;
said bracket possessing an elongated hole traversed by said follower member and extending transversely relative to said predetermined direction of movement of said drive rod at least across said width of said closed loop; and
means for guiding said follower member in only one revolving direction of movement through said closed loop.

4,513,188

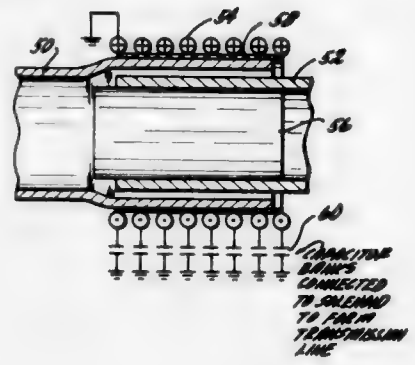
SYSTEM AND METHOD FOR IMPACT WELDING BY MAGNETIC IMPLOSION

Jack Katzenstein, 855 Haverford Rd., Ramona, Calif. 92065

Filed Oct. 20, 1981, Ser. No. 312,964

Int. Cl.³ H05B *5/00, 6/00*

U.S. Cl. 219—9.5 **13 Claims**



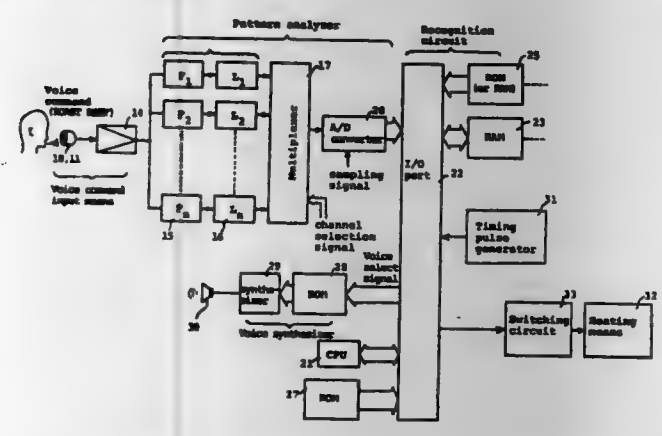
6. A system for impact welding by magnetic implosion applicable to pipe welding comprising:
a ballistic work piece in the form of a ring disposed about a work piece to be welded;
driving coil means in the form of a ring disposed upon said ballistic work piece, said driving coil means being connectable to a power source and being configured to maximize efficiency of conversion of electrical energy of said power source of kinetic energy of said ballistic work piece, by appropriate selection of a coupling paremeter of said power source and said driving coil means with said ballistic work piece; and
an insulator mounted between said ballistic work piece member and said driving coil means to prevent passage of electrical current between said coil means and said ballistic work piece.

4,513,189

HEATING APPARATUS HAVING VOICE COMMAND CONTROL OPERATIVE IN A CONVERSATIONAL PROCESSING MANNER

Shigeki Ueda, Nara, and Teruhisa Takano, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 217,685, Dec. 18, 1980, Pat. No. 4,340,800. This application Jun. 18, 1982, Ser. No. 390,138
Claims priority, application Japan, Dec. 21, 1979, 54-167407
The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.
Int. Cl.³ H05B 6/06
U.S. Cl. 219—10.55 B **4 Claims**



1. In a voice command controlled heating apparatus, for carrying out one of a plurality of preprogrammed cooking sequences, the improvement comprising:

an interactive voice command control system including means for operating in various modes, one at a time as follows:

(1) a first voice recognition mode for receiving a first voice command from a user;

(2) a voice syntheiszing mode wherein the appartus synthesizes voice data asking the user to make some choice that is related to his first voice command;

(3) a second voice recognition mode for receiving a user's second voice command indicating his choice, said second voice recognition mode recognizing a smaller number of kinds of voice commands which are determined responding to the first voice command, than that can be recognized by the first voice recognition mode, and

(4) an enforcing mode for carrying out a selected pre-programmed cooking sequence corresponding to the first and second voice commands, the control system generally progressing in operation from the first voice recognition mode to the enforcing mode with mode changes from the second voice recognition mode to either the first voice recognition mode or voice synthesizing mode permitted for clarifications of voice commands not recognized by said interactive voice command control system.

4,513,190

PROTECTION OF SEMICONDUCTOR WIRE BONDING CAPILLARY FROM SPARK EROSION

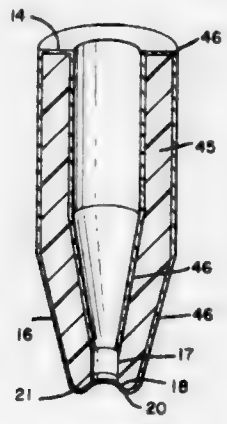
Kenneth W. Ellett, San Rafael, Calif., and Peter Glutz, Lyss, Switzerland, assignors to Small Precision Tools, Inc., San Rafael, Calif.

Filed Jan. 3, 1983, Ser. No. 455,038
Int. Cl.³ B23K 11/32
U.S. Cl. 219—56.21 **19 Claims**

1. A wire bonding capillary apparatus which includes in combination:

(a) a capillary member formed of hard, electrically non-conductive material, said capillary including an internal bore extending axially of said capillary, said bore having a first cylindrical shape for a first portion thereof, a frustoconical shape for an adjacent portion thereof and a second cylindrical shape for a portion adjacent said frustoconical portion remote from said first cylindrical shape, the outer surface of said member having a cylindrical shape for a first portion thereof and a frustoconical shape for an adjacent portion thereof, and a rounded portion connecting said frustoconical shape on said outer surface, and

(b) a continuous electrically conductive layer disposed on and adhered to the external surfaces of said bore and said outer surface of said capillary member, said conductive



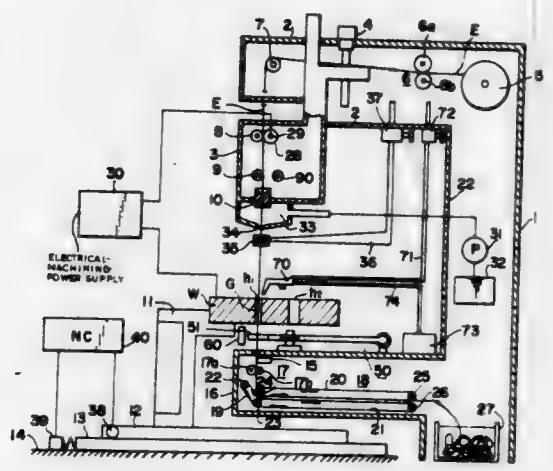
layer extending in said bore from substantially the outside edge of said second cylindrical shape portion to substantially the outside edge of said first cylindrical shape portion and extending on said outer portion from substantially the outside edge of said frustoconical shape portion to substantially the outside portion of said cylindrical shape portion.

4,513,191

METHOD OF AND APPARATUS FOR RESETTING A WIRE ELECTRODE IN AN OPERATING SETUP ON AN ELECTROEROSION MACHINE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed May 6, 1981, Ser. No. 261,269
Claims priority, application Japan, May 13, 1980, 55-62297; May 14, 1980, 55-62735
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 M **6 Claims**



1. A method of automatically resetting a wire electrode in an operating setup on a traveling-wire electroerosion machine, which method comprises the steps of:

(a) terminating a previous machining operation commenced with a given starting hole in a workpiece and performed with said machine, by shutting off the supply of a machining electrical current to said wire electrode, halting a machining axial advance of said wire electrode extending in a continuous stretch between a supply side and a collection side along a straight path traversing said workpiece, and discontinuing the supply of a machining liquid to said wire electrode;

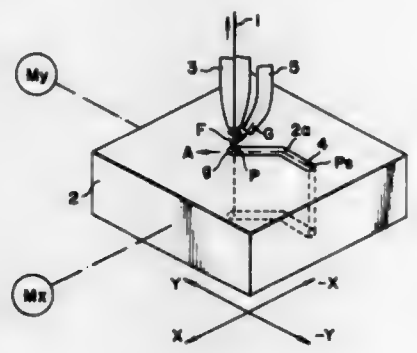
(b) blowing off with a high-pressure stream of gas, any residue of said machining liquid which remains adherent to said halted wire electrode at least in a region adjacent to said workpiece and located at one of the opposite sides thereof;
(c) subsequent to step (b), heating said wire electrode at least along said region to remove internal stress of said wire electrode in said region;
(d) breaking, by severing, the wire electrode in said heated region; and
(e) threading one broken end portion of the broken wire electrode through a new starting hole in a workpiece for machining a contour therein in the subsequent machining operation to reestablish a said continuous stretch of said wire electrode between said supply and collection sides.

4,513,192

TW-EDM METHOD AND APPARATUS WITH EXCESS FLUID STRIPPING GAS JET NOZZLE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 13, 1983, Ser. No. 503,846
Claims priority, application Japan, Jun. 11, 1982, 57-101077
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **4 Claims**



1. In a method of electrical-discharge-cutting an electrically conductive workpiece wherein a continuous electrode wire is axially transported from a supply side to a takeup side continuously to travel through the workpiece while a relative displacement is effected between the traveling wire and the workpiece such that the wire is advanced in the workpiece along a prescribed cutting path in a direction transverse to the axial transport of the wire and to the length dimension thereof as material is electroerosively removed from the workpiece by the a action of electrical discharges across a machining gap flooded within a weakly conductive aqueous machining fluid and maintained between the advancing wire and the workpiece, thereby progressively cutting the workpiece along the said path developing a groove of cutting behind the advancing electrode wire, the improvement which comprises increasing the rate of advance of the electrode wire along said cutting path in said direction by stripping a portion of said flooding machining fluid which is existent in said groove of cutting behind said advancing electrode wire, by directing a stream of a pressurized gas into the said region so that the discharge velocity of said fluid from behind said advancing electrode wire is greater than the passage of said fluid from the gap ahead of said advancing wire in said direction.

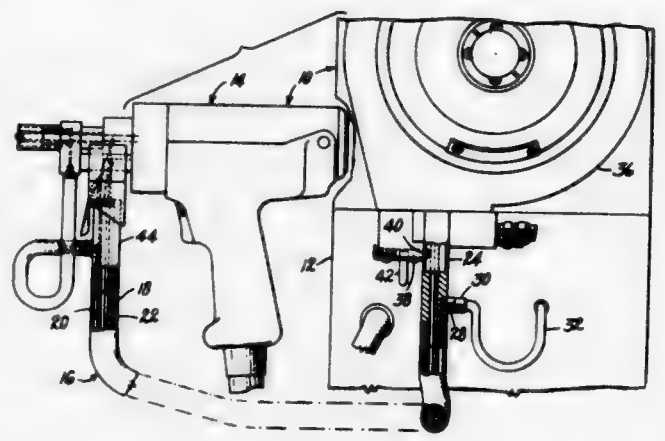
4,513,193

AUTOMATIC STUD WELDING EQUIPMENT WITH FLUID AND STUD FEEDING

Donald H. Ettinger, Royal Oak, Mich., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 10, 1982, Ser. No. 447,269
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—98 **5 Claims**

3. In combination with stud welding apparatus wherein fluid is fed from a remote source of supply and deposited about a weld area in a welding process and studs are automatically fed from a remote source of supply to a stud welding device, the improvement comprising a unitary tubular member for transporting both said studs and said fluid through separate passages



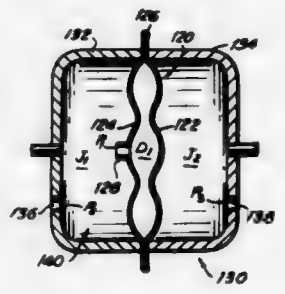
disposed in said tubular member to said welding device which includes means disposed at an end of said tubular member adjacent said stud welding device for disconnecting said tubular member from said stud source of supply without disconnecting said tubular from said fluid source of supply.

4,513,194

METHODS OF WELDING

Michael Mastromatteo, 61 Suffern La., Garnerville, N.Y. 10923

Continuation-in-part of Ser. No. 956,229, Oct. 30, 1978, Pat. No. 4,265,389. This application Mar. 16, 1981, Ser. No. 244,153
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EC **28 Claims**



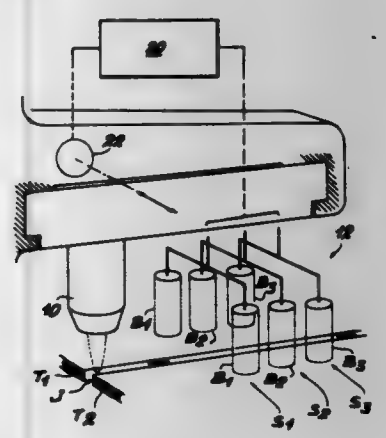
1. The method of welding, comprising:
(a) providing at least two housing sections with inner and outer peripheral edges and planar parallel surfaces therebetween;
(b) providing a diaphragm with a planar peripheral portion for being held by at least a part of the parallel surfaces of the housing sections;
(c) sandwiching the diaphragm between at least the two housing sections;
(d) selectively melting the housing sections along the outer peripheral edges of the sandwich, thereby expanding the liquid metal; the step of melting includes electron beam welding
(e) forcing the liquified metal of the housing sections out of the sandwich at the edges by the clamping of the housing sections to provide a component of force perpendicular to the sandwich edges
(f) cooling the melted portion of the sandwich to thereby cause the housing sections to solidify and draw together, forming an impenetrable seal and pressure-resistant weld.

4,513,195

METHOD AND APPARATUS FOR THE LATERAL POSITIONING OF A MEMBER RELATIVE TO A JOINT

Jean-Marie Detriche, Saint Germain en Laye, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 15, 1983, Ser. No. 532,394
Claims priority, application France, Sep. 15, 1982, 82 15569
Int. Cl.[3] B23K *9/12*
U.S. Cl. 219—124.34 12 Claims



1. A method for the lateral positioning of a member relative to a joint formed between two metal surfaces and having discontinuities, according to which use is made of at least two eddy current probes staggered in the direction of the joint, each probe having two coils positioned on either side of said joint and arranged symmetrically relative to a plane perpendicular to said surfaces and passing through the joint, in a transverse plane with respect to said joint, each probe supplying a first signal which is treated to obtain a positioning signal varying with the displacement of the axis of the probe with respect to the axis of the joint, said positioning signal being transmitted to servocontrol means controlling the lateral displacement of said member, wherein the positioning signal corresponding to each of these probes is compared to a given threshold, said threshold being below the amplitude of said signal when the corresponding probe is in front of a discontinuity, the transmission of one of the positioning signals to the servocontrol means being interrupted, when said one signal is above said threshold.

4,513,196

ELECTRIC SELF-DEFROSTING WINDSHIELD HEATING ARRANGEMENT PROVIDING FAST OR SLOW HEAT

Lutz Bartelsen, Hamminkeln, and Hans-Cristoph Neuendorf, Wesel, both of Fed. Rep. of Germany, assignors to Flachglas Aktiengesellschaft, Gelsenkirchen, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 514,150
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226393
Int. Cl.[3] H05B *1/02, 3/26;* B60J *1/00;* F06B *7/12*
U.S. Cl. 219—203 7 Claims

1. A heatable self-defrosting windshield comprising:

a transparent panel;

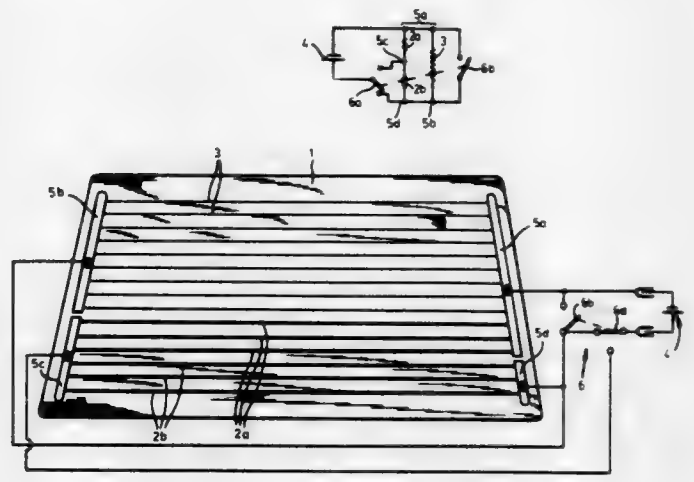
two low-resistance groups of wires embedded in the panel and defining a primary zone requiring rapid heating;

at least one high-resistance group of wires embedded in the panel and defining a secondary zone adjacent the primary zone and not requiring rapid heating; and

switch means connected to the wire groups and to an electric power source and movable between

a fast-heat position for connecting the two low-resistance groups in parallel with each other across the source and for effectively disconnecting the high-resistance wires, and

a slow-heat position for connecting the two low-resistance groups in series with each other and jointly in parallel with the high-resistance groups across the source, the



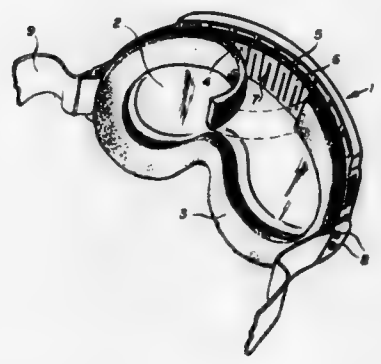
total resistance of the groups in the fast-heat position being generally the same as in the slow-heat position.

4,513,197

HEATED SEAL OF RESILIENTLY COMPRESSIBLE FOAM FOR MATCHING THE EDGE OF A HOLLOW PORTION OF AN ARTICLE TO AN IRREGULAR SURFACE

Guy Courvoisier, and Simon Arieh, both of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Feb. 24, 1983, Ser. No. 469,383
Claims priority, application Switzerland, Feb. 26, 1982, 1193/82
Int. Cl.[3] H05B *3/06*
U.S. Cl. 219—527 7 Claims



1. An article adapted to be applied to a surface of the irregular contour and shape, comprising:

an object having at least an edge portion adapted to be turned toward said surface and sealingly fitted thereto;

a body of resiliently commpresaible thermally softenable foam material on said object at least in the region of said edge portion;

an electric heating body embedded in said body of foam material and substantially coextensive with a face thereof adapted to confront said surface; and

electric terminals connected to said heating body for connection to a source of electric current to pass said electric current through said heating body to heat said body of foam material and thereby soften said body of foam material to cause the same to adopt the shape matching the shape and contour of said surface, thereby sealing said object to said surface at least all along said edge portion.

4,513,198

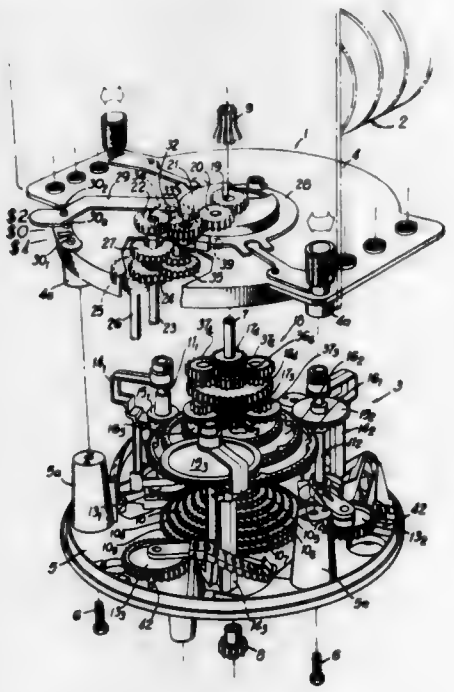
MECHANICAL COMPUTER ASSEMBLY

John C. Lockwood, Atlanta, Ga., assignor to Anniston Pump Shop, Inc., Anniston, Ala.

Continuation-in-part of Ser. No. 340,856, Jan. 20, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,950

Int. Cl.[3] B67D *5/22*; F16H *3/22*

U.S. Cl. 235—61 L 5 Claims



1. In a mechanical computer for registering the volume and price of liquid fuel and having a bottom plate and a top plate fixed in spaced relationship, a main shaft adapted to be driven by a fuel metering pump and projecting below said bottom plate, said main shaft extending through said bottom plate and top plate and projecting above said top plate, an output gear attached to said main shaft above said top plate, a stepped cone gear attached to said main shaft and disposed between said top plate and said bottom plate, a plurality of take-off gear assemblies disposed parallel to said stepped cone gear and radially disposed parallel to said stepped cone gear and radially disposed therefrom, each gear assembly consisting of a rotatable splined shaft journalled in said top plate and said bottom plate, a sliding gear mounted on said splined shaft, an idler gear engaging said sliding gear and adapted for selective engagement with any gear of said stepped cone gear, an output gear on said splined shaft engaging a differential gear mechanism disposed between said stepped cone gear and said top plate and concentric with said main shaft, each of said differential gear mechanisms in interconnected series relationship, successive take-off gear assemblies and differential gear mechanisms being in relative overall decade relationships to the preceding assembly, an output gear concentric with the main shaft and disposed above the said top plate and in engagement with the output of the last of the differential gear mechanism and further adapted to drive a price posting register, the improvement wherein the computer further comprises an auxiliary differential mechanism for establishing a further decade ratio input, said auxiliary differential mechanism being interposed between said last differential gear mechanism and said concentric gear and in all ratio of a decade greater than that of the previous last differential gear mechanism.

4,513,199

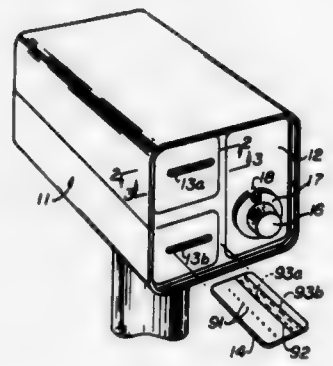
MAGNETIC CARD READ-OUT AND TIMING CIRCUITRY

George B. Sidline, Belmont, Calif., assignor to Eugene S. Elkus, Menlo Park, Calif.

Continuation-in-part of Ser. No. 201,693, Oct. 29, 1980, Pat. No. 4,361,755. This application Sep. 24, 1982, Ser. No. 422,608

Int. Cl.[3] G06K *5/00*

U.S. Cl. 235—449 10 Claims



1. A device for use in a system to energize apparatus external to said system comprising a carrier with at least one strip of magnetic material extending longitudinally along said carrier, a first track and a second track on said magnetic material, said tracks being adjacent but parallel to and spaced from each other, said first track being magnetically encoded with first signals representing data, said first signals consisting of pulses of "1" or "0", said second track being encoded with second signals consisting of pulses having a rate which is greater than the data rate of said first signals, the assertive edge of said second track signals coinciding with the start of said pulses of said first signals, whereby said second signals may be electronically used to strobe said first signals to determine whether each said pulse of said first signal is a "1" or "0".

4,513,200

FIBER OPTIC MOVEMENT MEASURING SENSOR

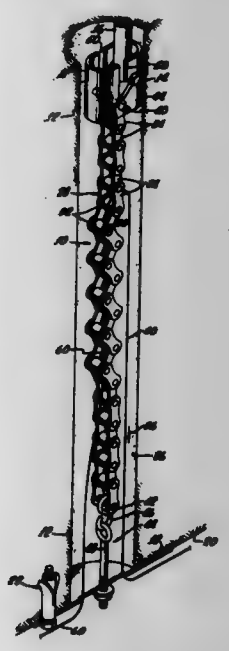
Dean C. Marvin, Irvine, and Neil A. Ives, Yucaipa, both of Calif., assignors to Occidental Research Corporation, Los Angeles, Calif.

Filed Jan. 24, 1983, Ser. No. 460,421

Int. Cl.[3] G02B *5/14*

U.S. Cl. 250—227 20 Claims

means, connecting said plurality of members, for moving said other members contacting the optic fiber and causing



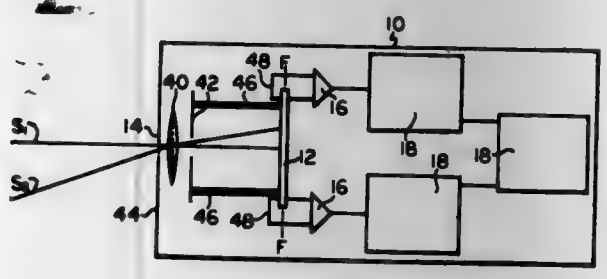
the optic fiber to bend as a function of movement between the two external points.

4,513,201

THERMOCOUPLE DETECTOR

R. Aaron Falk, Louisville, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jul. 21, 1983, Ser. No. 515,822
Int. Cl.³ G01B 11/26; H01L 35/02
U.S. Cl. 250—342 12 Claims



1. An apparatus for determining the directional orientation of a source of radiation comprising:

a detector having a substrate and two rectangular arrays of thermocouple strips fixed to opposite surfaces of the substrate,

aperture means for restricting the radiation incident on the detector from a distant source to a preselected small area for one of the rectangular arrays,

sensing means for sensing voltage differentials between the two rectangular arrays, and

means for calculating the orientation of the source based on the sensed differential.

4,513,202

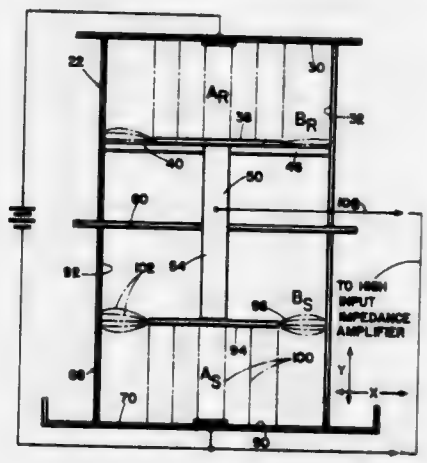
SELF COMPENSATING ION DETECTION DEVICE

member having third and fourth conductive surface portions;

(b) means for ionizing the gas within the chamber, said means placed physically in relation to the first, second, third, and fourth surface portions so as to create a substantially linear, ionization condition in the volume between respective pairs of said surface portions;

(c) means for creating a first electric field between a first pair of said surface portions consisting of said first and third surface conductive portions whereby a first ionization current flows substantially between said first and third surface conductive portions only; and

(d) means for creating a second electric field between a second pair of said surface portions consisting of said



second and fourth surface conductive portions whereby a second ionization current flows substantially between said second and fourth surface conductive portions only;

the area dimensions of the first and third surface portions and the second and fourth surface portions, the respective intervening volumes and distances there between, and the relative orientation of the surface pairs calculated and placed such that said first ionization current substantially equals in magnitude said second ionization current, and such that said first ionization current is axially orthogonal to said second ionization current;

said ionization chamber including openings whereby the surrounding gas medium can enter the chamber and pass through said intervening volumes.

4,513,203

MASK AND SYSTEM FOR MUTUALLY ALIGNING OBJECTS IN RAY EXPOSURE SYSTEMS

Harald Bohlen, Böblingen; Helmut Engelke, Altdorf; Johann Greschner, Pliezhausen; Reinhold Mühl, Altdorf; Peter Nehmiz, and Hans J. Trumpp, both of Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 381,666, May 24, 1982, abandoned.
This application Jun. 29, 1984 Ser. No. 625,586
Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121666
Int. Cl.³ G01N 21/00, 23/00
U.S. Cl. 250—491.1 23 Claims

4,513,198

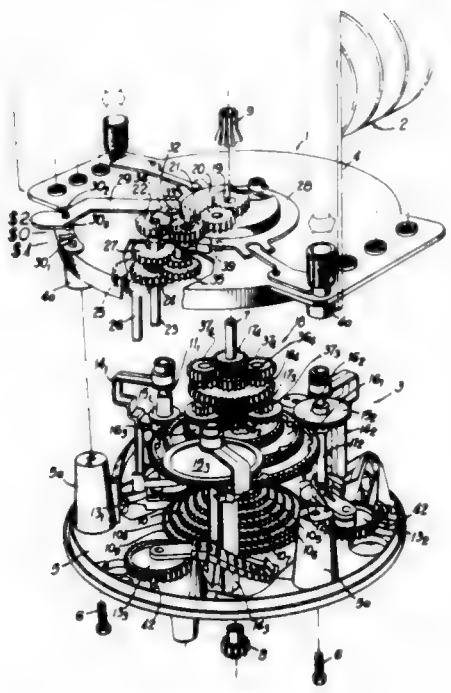
MECHANICAL COMPUTER ASSEMBLY

John C. Lockwood, Atlanta, Ga., assignor to Anniston Pump Shop, Inc., Anniston, Ala.

Continuation-in-part of Ser. No. 340,856, Jan. 20, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,950

Int. Cl.³ B67D *5/22*; F16H *3/22*

U.S. Cl. 235—61 L **5 Claims**



1. In a mechanical computer for registering the volume and price of liquid fuel and having a bottom plate and a top plate fixed in spaced relationship, a main shaft adapted to be driven by a fuel metering pump and projecting below said bottom plate, said main shaft extending through said bottom plate and top plate and projecting above said top plate, an output gear attached to said main shaft above said top plate, a stepped cone gear attached to said main shaft and disposed between said top plate and said bottom plate, a plurality of take-off gear assemblies disposed parallel to said stepped cone gear and radially disposed parallel to said stepped cone gear and radially disposed therefrom, each gear assembly consisting of a rotatable splined shaft journalled in said top plate and said bottom plate, a sliding gear mounted on said splined shaft, an idler gear engaging said sliding gear and adapted for selective engagement with any gear of said stepped cone gear, an output gear on said splined shaft engaging a differential gear mechanism disposed between said stepped cone gear and said top plate and concentric with said main shaft, each of said differential gear mechanisms in interconnected series relationship, successive take-off gear assemblies and differential gear mechanisms being in relative overall decade relationships to the preceding assembly, an output gear concentric with the main shaft and disposed above the said top plate and in engagement with the output of the last of the differential gear mechanism and further adapted to drive a price posting register, the improvement wherein the computer further comprises an auxiliary differential mechanism for establishing a further decade ratio input, said auxiliary differential mechanism being interposed between said last differential gear mechanism and said concentric gear and in operative engagement with each, a gear train consisting of two idler gears mounted on top of and external of the said top plate in engagement with said output gear on said main shaft, a pair of countershafts disposed between said top plate and said bottom plate, one of said countershafts extending through said top plate and having a gear attached thereon engaging said gear train external of said top plate, said countershafts further having interconnected gears mounted thereon disposed between said top plate and said bottom plate to establish a step up ratio, the output gear of said interconnected gears being adapted to drive the said auxiliary differential gear mechanism at an overall ratio of a decade greater than that of the previous last differential gear mechanism.

4,513,199

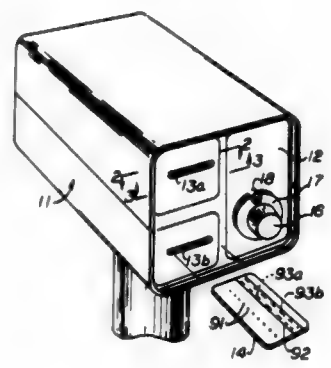
MAGNETIC CARD READ-OUT AND TIMING CIRCUITRY

George B. Sidline, Belmont, Calif., assignor to Eugene S. Elkus, Menlo Park, Calif.

Continuation-in-part of Ser. No. 201,693, Oct. 29, 1980, Pat. No. 4,361,755. This application Sep. 24, 1982, Ser. No. 422,608

Int. Cl.³ G06K *5/00*

U.S. Cl. 235—449 **10 Claims**



1. A device for use in a system to energize apparatus external to said system comprising a carrier with at least one strip of magnetic material extending longitudinally along said carrier, a first track and a second track on said magnetic material, said tracks being adjacent but parallel to and spaced from each other, said first track being magnetically encoded with first signals representing data, said first signals consisting of pulses of "1" or "0", said second track being encoded with second signals consisting of pulses having a rate which is greater than the data rate of said first signals, the assertive edge of said second track signals coinciding with the start of said pulses of said first signals, whereby said second signals may be electronically used to strobe said first signals to determine whether each said pulse of said first signal is a "1" or "0".

4,513,200

FIBER OPTIC MOVEMENT MEASURING SENSOR

Dean C. Marvin, Irvine, and Neil A. Ives, Yucaipa, both of Calif., assignors to Occidental Research Corporation, Los Angeles, Calif.

Filed Jan. 24, 1983, Ser. No. 460,421

Int. Cl.³ G02B *5/14*

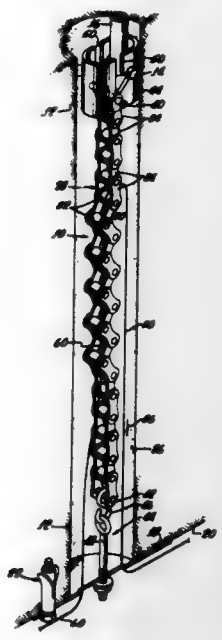
U.S. Cl. 250—227 **20 Claims**

1. A sensor for use in measuring movement between two points comprising:

a plurality of members having bearing surfaces thereon, two of said members having means attached thereto for connecting said two members to external points between which movement is desired to be measured, other members of said plurality of members being separated from, and not directly connected to, said external points;

an optic fiber disposed between at least two of said plurality of members and contacting the bearing surfaces thereon; and

means, connecting said plurality of members, for moving said other members contacting the optic fiber and causing



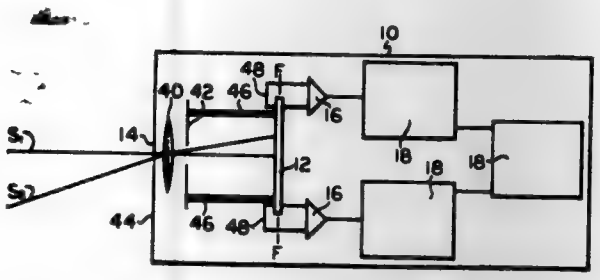
the optic fiber to bend as a function of movement between the two external points.

4,513,201

THERMOCOUPLE DETECTOR

R. Aaron Falk, Louisville, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jul. 21, 1983, Ser. No. 515,822
Int. Cl.³ G01B *11/26;* **H01L** *35/02*
U.S. Cl. 250—342 **12 Claims**



1. An apparatus for determining the directional orientation of a source of radiation comprising:

a detector having a substrate and two rectangular arrays of thermocouple strips fixed to opposite surfaces of the substrate,

aperture means for restricting the radiation incident on the detector from a distant source to a preselected small area for one of the rectangular arrays,

sensing means for sensing voltage differentials between the two rectangular arrays, and

means for calculating the orientation of the source based on the sensed differential.

4,513,202

SELF COMPENSATING FIRE DETECTION DEVICE

John M. Cholin, Hackensack, N.J., assignor to Firetek Corporation, Hawthorne, N.J.

Filed May 14, 1982, Ser. No. 378,090
Int. Cl.³ G08B *17/10;* **H01J** *47/02*
U.S. Cl. 250—385 **8 Claims**

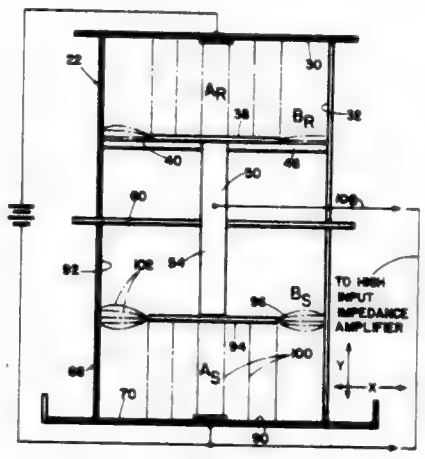
1. A self compensating device employing ionization principles, for responding to alterations in the condition of the gas medium in the environment in which the device is placed comprising:

(a) an ionization chamber including a first member having first and second conductive surface portions, and a second member having third and fourth conductive surface portions;

(b) means for ionizing the gas within the chamber, said means placed physically in relation to the first, second, third, and fourth surface portions so as to create a substantially linear, ionization condition in the volume between respective pairs of said surface portions;

(c) means for creating a first electric field between a first pair of said surface portions consisting of said first and third surface conductive portions whereby a first ionization current flows substantially between said first and third surface conductive portions only; and

(d) means for creating a second electric field between a second pair of said surface portions consisting of said



second and fourth surface conductive portions whereby a second ionization current flows substantially between said second and fourth surface conductive portions only;

the area dimensions of the first and third surface portions and the second and fourth surface portions, the respective intervening volumes and distances there between, and the relative orientation of the surface pairs calculated and placed such that said first ionization current substantially equals in magnitude said second ionization current, and such that said first ionization current is axially orthogonal to said second ionization current;

said ionization chamber including openings whereby the surrounding gas medium can enter the chamber and pass through said intervening volumes.

4,513,203

MASK AND SYSTEM FOR MUTUALLY ALIGNING OBJECTS IN RAY EXPOSURE SYSTEMS

Harald Bohlen, Böblingen; Helmut Engelke, Altdorf; Johann Greschner, Pliezhausen; Reinhold Mühl, Altdorf; Peter Nehmiz, and Hans J. Trumpp, both of Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 381,666, May 24, 1982, abandoned.
This application Jun. 29, 1984, Ser. No. 625,586
Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121666
Int. Cl.³ G01N *21/00, 23/00*
U.S. Cl. 250—491.1 **23 Claims**

1. In a system for exposing a substrate with respect to an alignment structure comprising

said alignment structure including means for detecting alignment radiation,

an exposure mask having a mask pattern thereon and a registration pattern thereon,

said exposure mask being in adjacent relation and close proximity to said substrate,

an electron beam means for generating electron beam alignment radiation adapted for use in detecting registration of said mask and said substrate,

said electron beam means generating said electron beam for

directing said alignment beam to pass through said registration pattern to said alignment structure whereby said means for detecting is energized by said alignment beam,

said exposure mask with said registration pattern being adapted to be registered with said alignment structure on said substrate by passage of said electron beam through said registration pattern,

an additional source of exposure rays other than an electron beam such as a source of x- or ion beam rays directed towards said exposure mask, said exposure rays being directed through said mask pattern,

means for applying a magnetic field to bend said electron beam,

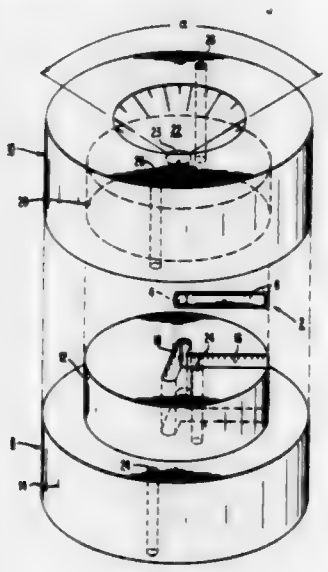
said magnetic field extending perpendicularly to said electron beam whereby said electron beam is bent to extend collaterally to said exposure rays which extend towards said substrate.

4,513,204

HOUSING FOR A RADIOACTIVE SOURCE

James R. Domnanovich, Roselle, and William D. Erwin, Prospect Heights, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Aug. 27, 1982, Ser. No. 412,224
Int. Cl.[3] G21F *5/02*
U.S. Cl. 250—496.1 11 Claims



1. A housing for a radioactive source which is to be attached to a patient, comprising in combination:

(a) a first shielding body having a protrusion, said protrusion containing a first recess for inserting said radioactive source therein,

(b) a second shielding body having

(b1) a second recess in the surface thereof, said second recess having a shape such that said protrusion fits therein, and

(b2) a conical aperture communicating with said second recess, said radioactive source emitting radiation through said conical aperture when said source is inserted into said first recess and when said protrusion is located in said second recess; and

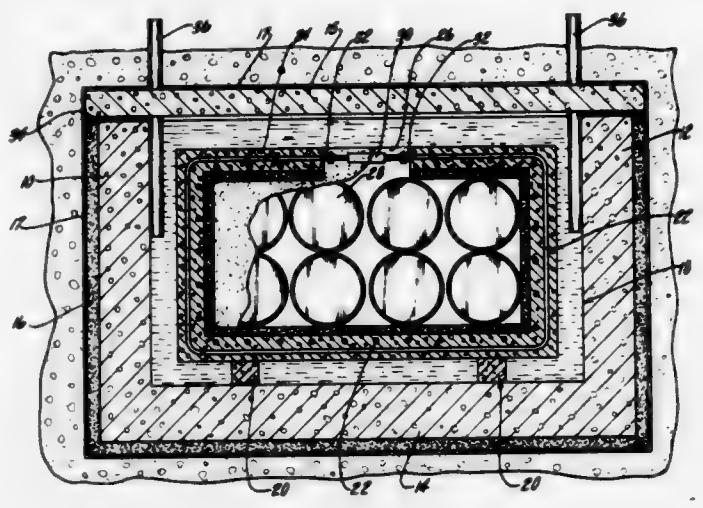
(c) connecting means for connecting said first shielding body to said second shielding body when said radioactive source is inserted into said first recess and when said protrusion is located in said second recess, said radioactive source thereby emitting radiation into the environment primarily through said conical aperture.

4,513,205

INNER AND OUTER WASTE STORAGE VAULTS WITH LEAK-TESTING ACCESSIBILITY

Bob C. Splinter, Badhoevedorp, Netherlands, assignor to Peckson USA Corp., New Haven, Mich.

Filed Feb. 9, 1983, Ser. No. 465,192
Claims priority, application PCT Int'l Appl., Jul. 28, 1982, PCT/NL82/00026
Int. Cl.[3] G21F *5/00*
U.S. Cl. 250—507.1 10 Claims



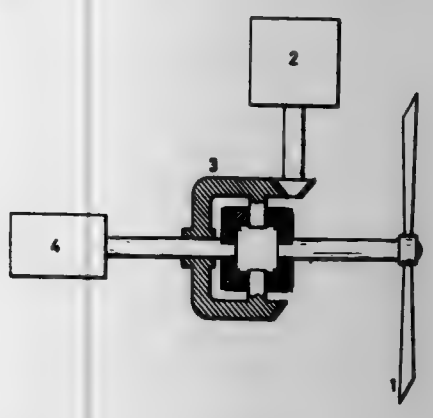
1. The method of storing waste material of the type that may pollute the environment which comprises sealing the waste materials in a container, placing the waste-filled container in a larger one-piece concrete permanent storage vault, said vault having an access opening therein to receive said container, filling the space between the walls of the container and the vault with bitumen through said access opening to completely seal the container within the vault, placing the permanent storage vault in a larger second concrete vault, the outer surfaces of which are coated with a liquid-proof material, the second vault having an open upper end closed by a cover sealed thereon, the first vault being placed in the second vault so that the top, bottom and side walls of the two vaults are spaced apart, filling said space between the two vaults with a liquid adapted to be contaminated by any waste material or radiation leaking through the walls of the permanent storage vault, sealing the second vault and providing an opening therein to said space to permit testing the liquid for contamination, and by means of said opening periodically testing the liquid for contamination.

4,513,206

EXPLOITATION OF WIND ENERGY FOR PRODUCING ELECTRICAL POWER

Vincenzo Gervasio, San Donato Milanese, and Dino Dinelli, Albano Laziale, both of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Sep. 1, 1981, Ser. No. 298,283
Claims priority, application Italy, Sep. 15, 1980, 24660 A/80
Int. Cl.[3] H02P 9/04; F03D 9/00
U.S. Cl. 290—4 C 2 Claims



1. An apparatus for producing electrical power by the use of wind energy, comprising a synchronous generator having an input shaft and a bevel pinion connected thereto; a wind rotor having a shaft connected thereto which is adapted to be rotated by said rotor in response to the speed of the wind; a prime mover having a shaft connected thereto which is adapted to be rotated at an angular speed, means operatively connected to said prime mover and said wind rotor for varying the angular speed of said prime mover shaft in response to the angular speed of said wind rotor shaft so that a constant angular speed drive is adapted to be transferred to said generator which equals the sum of the angular speeds of said prime mover and wind rotor shafts; a differential which sums the angular speeds of said shafts for transfer to said generator, including a carrier, a pair of planet pinions freely mounted on said carrier, a pair of sun pinions wherein one sun pinion is fixedly mounted on said prime mover shaft and wherein the other sun pinion is fixedly mounted on said wind rotor, and a planet pinion on such carrier which meshes with said bevel pinion for transfer of the sum of the angular speeds of said prime mover and wind rotor to said generator; and

a servo device connected to the shaft of the prime mover and to a feed control of the prime mover whereby the feed can be adjusted as a function of the speed of the wind rotor so that the wind rotor works at the maximum efficiency, including a tachometer connected to the shaft of the prime mover and to an injector control device, said injector control device is connected to a fuel injector which is connected to the prime mover for adjusting the angular speed to correspond to the maximum mechanical power at the shaft of the wind rotor.

4,513,207

ALTERNATING COMPARATOR CIRCUITRY FOR IMPROVED DISCRETE SAMPLING RESISTANCE CONTROL

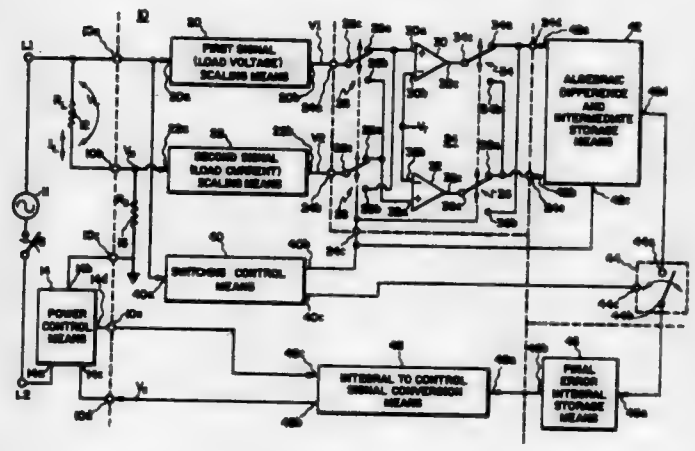
Milton D. Bloomer, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,306
Int. Cl.[3] H01H 47/00
U.S. Cl. 307—126 19 Claims

1. In a circuit for controlling the resistance of a load receiving energy from an electrical source, said circuit being of the type having: means connected between said source and said load for varying the current flowing through said load responsive to a control signal, means for monitoring the voltage across said load to provide a first signal; means for monitoring the current flowing through said load to provide a second signal; comparison means receiving said first and second signals and first and second reference signals for providing an output signal having a characteristic indicative of the time at which the magnitude of said first signal exceeds the magnitude of the first reference signal with respect to the time at which the magnitude of the second signal exceeds the magnitude of the second reference signal; and means for providing said control signal responsive to said comparison means output signal to cause said load resistance to be maintained at a substantially constant and predetermined value, the improvement wherein said comparison means comprises:

first and second comparators, each having a first input, a second input receiving one of said reference signals, and an output;

input switching means for connecting said first signal to said first comparator first input and said second signal to said



second comparator first input responsive to a first state of a comparison control signal and for connecting said first signal to said second comparator first input and said second signal to said first comparator first input responsive to another state of said comparison control signal;

intermediate means for temporarily storing the magnitude of a physical quantity to provide said comparison means output signal responsive to a change in said physical quantity magnitude; and

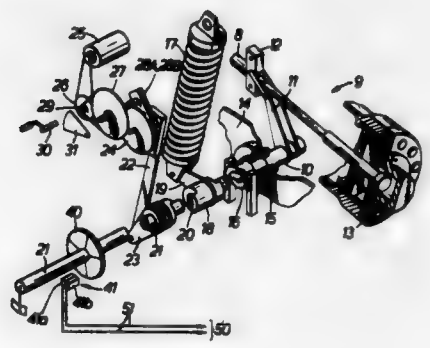
difference means for controlling the physical quantity magnitude responsive to the difference in the signals at said first and second comparator outputs during consecutive occurrences of the first and second comparison control signal states to effectively compensate the change in physical quantity magnitude for any errors introduced by at least one of the first and second comparators.

4,513,208

ELECTRICAL SWITCHGEAR

Isao Kamata, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 23, 1984, Ser. No. 582,765
Claims priority, application Japan, Feb. 28, 1983, 58-31024
Int. Cl.[3] H01H 71/04, 33/00
U.S. Cl. 307—139 5 Claims



1. An electrical switchgear which comprises:

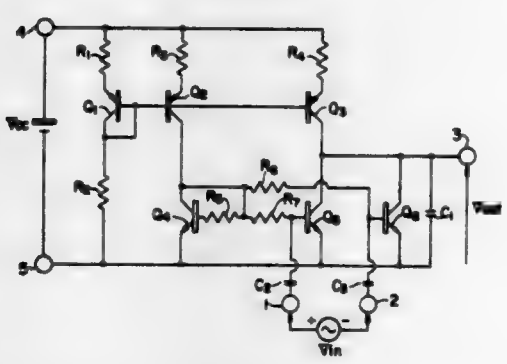
fixed and movable contacts arranged in a tank filled with insulating gas;
a switch mechanism driving said movable contact, and including a mainshaft;
an operating unit connected to said main shaft of said switch mechanism;
a first position detector means for optically detecting the operating state of said movable contact;
an optical control unit being connected to said first detector by means of an optical cable, said optical control unit outputting a signal to said operating unit for controlling said switch mechanism.

4,513,209

LEVEL DETECTOR

Kenzo Tanabe, and Junji Suzuki, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 11, 1982, Ser. No. 348,311
Claims priority, application Japan, Feb. 16, 1981, 56-22065
Int. Cl.[3] H03K *5/153, 5/22*
U.S. Cl. 307—350 2 Claims



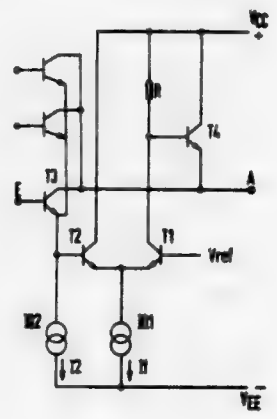
1. A level detector comprising:
first and second transistors of a first conductivity type, said first and second transistors having their bases connected together;
a third transistor of a second conductivity type opposite to that of said first conductivity type;
a resistor connected between said third transistor's base and collector;
fourth and fifth transistors of said second conductivity type, said fourth and fifth transistors having their collectors connected together;
a DC bias circuit operatively connected to said bases of said first and second transistors for supplying a DC bias thereto;
wherein said first transistor's collector is connected to said third transistor's collector, said fourth and fifth transistors' bases are respectively connected to said third transistor's collector through separate resistors, said first and second transistors' emitters are respectively connected to a first terminal of a DC power supply through separate resistors, said third and fourth and fifth transistors' emitters are connected to a second terminal of said power supply, said second transistor's collector is connected to said fourth and said fifth transistors' collectors;
wherein AC signals having the same amplitude but of opposite polarities are respectively supplied to said fourth and fifth transistors' bases and a level detected output signal is provided at said common collectors of said second and fourth and fifth transistors, and wherein said second transistor is biased in its saturation region when said AC signals are of zero amplitude levels.

4,513,210

CIRCUIT ARRANGEMENT CONSTRUCTED IN ECL CIRCUITRY

Claude Barre, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,232
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232199
Int. Cl.[3] H03K *19/086, 19/20*
U.S. Cl. 307—455 2 Claims



1. A circuit arrangement comprising:
first and second transistors each including a base, an emitter and a collector;
said emitters connected together;
said base of said first transistor connected to a reference potential;
means connecting said collectors to a first supply potential;
a first constant current source connected to said emitters and to a second supply potential;
an input emitter follower comprising a third transistor including a base for receiving an input signal, a collector and an emitter connected to said base of said second transistor;
a second constant current source connected to said emitter of said third transistor and to a second supply potential; and
an output emitter follower comprising a fourth transistor including a base connected to said collector of said first transistor, a collector connected to the first supply potential and an emitter connected to said collector of said third transistor,
whereby said second constant current source supplies both of said input and output emitter followers.

4,513,211

DEVICE FOR DETECTING THE PRESENCE OR ABSENCE OF A CHARGE QUANTITY AND FOR STORING THE RESULT OF THIS DETECTION

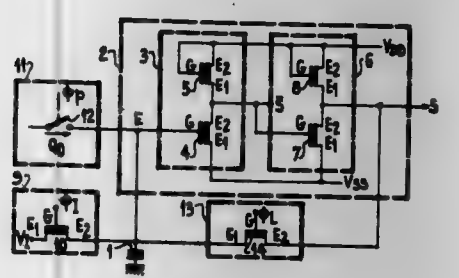
Jean L. Coutures, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 24, 1982, Ser. No. 422,383
Int. Cl.[3] H03K *3/356, 5/153;* G01R *19/165*
U.S. Cl. 307—530 7 Claims

1. A device for detecting the presence or absence of a charge quantity and for storing the result, comprising:
a capacitor (1);
first means (2) having an input and an output for sensing in the form of a high or a low level, a potential V_E of the capacitor, the output of said first means constituting an output of the detection and storage device, the input and output of said first means being respectively at high and low impedance, a potential V_S of said output being able to assume two stable states and said first means having a response curve $V_S(V_E)$ with a gain greater than one in the transition zone between the two stable states;
second means (9) for precharging in a first time, the potential

of the capacitor at a given value, so as to have an operating point located in a first zone of the response curve $V_S(V_E)$ of the first means where $(V_S/V_E)-1$ has a first sign;

third means (11) which, in a second time, modifies or does modify the potential of the capacitor, depending on whether or not the charge quantity is present or absent, in such a way as to bring the operating point into a second zone of the response curve $V_S(V_E)$ of the first means,



where $(V_S/V_E)-1$ has a second sign, or to maintain it in the first zone, depending on whether or not the charge quantity is present or absent; and

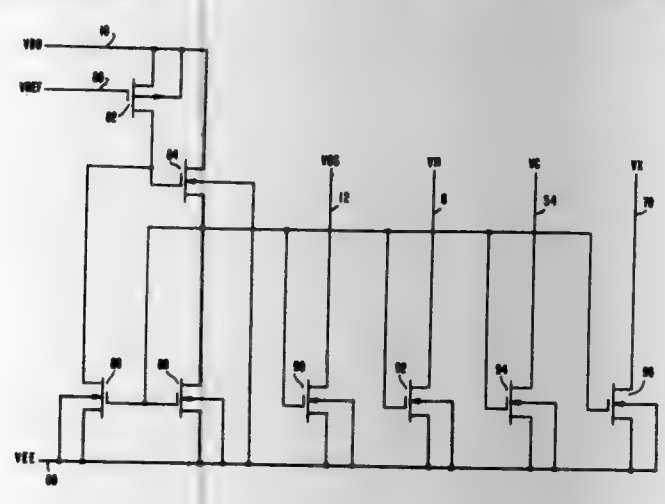
fourth means (13) which, in a third time latches the input potential V_E of the first means to equal the output potential V_S of the first means, such that the output potential V_S of the first means is at the stable state of the response curve $V_S(V_E)$ corresponding to the second or to the first zone, as a function of whether the charge quantity is present or absent.

4,513,212

AUTOMATIC P-WELL CLAMPING FOR CMOS INTEGRATED CIRCUIT

David K. Money, Pennant Hills, Australia, assignor to Electronics Pty. Ltd., Lane Cove, Australia

Filed Jul. 22, 1982, Ser. No. 401,012
Int. Cl.³ H03K *17/687, 5/01;* A61M *1/00*
U.S. Cl. 307—575 **24 Claims**



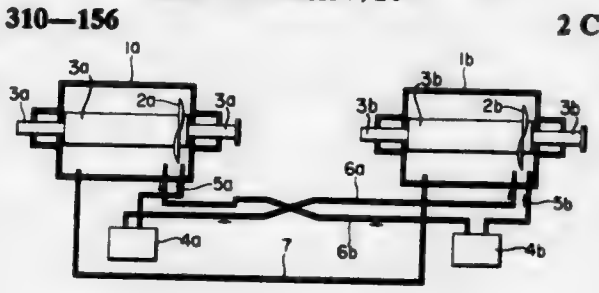
1. An integrated circuit having field-effect transistors comprising a plurality of N-channel transistors each having a P-well, source and drain terminals, and a gate terminal; a source of potential for powering all of said transistors; a plurality of nodes having potentials derived thereon, each of which may be the most negative potential in the integrated circuit at any given time; and a negative supply bus connected to all of said P-wells; characterized by a plurality of control transistors each having its drain terminal coupled to a respective one of said nodes; the source terminals of all of said control transistors being coupled to said negative supply bus; and means for applying a potential to the gate terminal of each of said control transistors to cause it to conduct a drain-to-source current; that one of the control transistors whose drain is at the most negative potential conducting a source-to-drain current to lower the potential of said negative supply bus to a value which is greater than said most negative potential by less than the forward voltage drop of a PN junction.

4,513,213

PRESSURE DENSITY EQUALIZING APPARATUS FOR TWO VESSELS

Tadao Tomiyama, Kakogawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,715
Claims priority, application Japan, Nov. 16, 1981, 56-171031
Int. Cl.³ H02K *9/26*
U.S. Cl. 310—156 **2 Claims**



1. A pressure density equalizing apparatus for a first vessel and a second vessel, both of which contain a gaseous coolant therein, said apparatus comprising:

a first gas drier and second gas drier, both operatively connected to the first and the second vessels;

a first high pressure gas pipe means for connecting the first vessel to the first gas drier;

a second high pressure gas pipe means for connecting the second vessel to the second gas drier;

a first low pressure gas pipe means for connecting the first gas drier to the second vessel;

a second low pressure gas pipe means for connecting the second gas drier to the first vessel;

a first blower mounted on a first rotary shaft in the first vessel; and

a second blower mounted on a second rotary shaft in the second vessel;

whereby, upon rotation of the first and second blowers, said gaseous coolant contained in the first and second vessels circulates from the first vessel, through the first high pressure pipe means, into the first gas drier, out of the first gas drier, through the first low pressure pipe means, into the second vessel, and from the second vessel, through the second high pressure pipe means, into the second gas drier, out of the second gas drier, through the second low pressure pipe means, into the first vessel, so that the gas pressure density in the first and the second vessels is equalized.

4,513,214

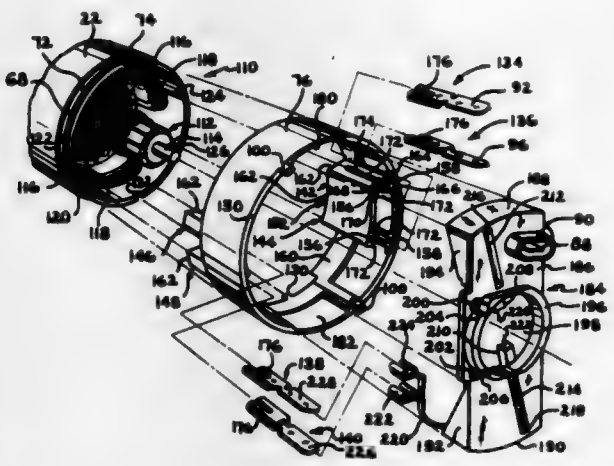
DYNAMOELECTRIC MACHINE

Bruce G. Dieringer, Toledo, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Oct. 3, 1983, Ser. No. 538,628
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—71 **7 Claims**

1. A dynamoelectric machine, comprising:

a tubular housing member having a first end and a second end;
field windings disposed within said housing member;
armature means including a shaft having a shaft extension portion and a commutator surface;
brush means adapted to be in electrical contact with said commutator surface;
said first end of said housing member being a closed end and having said shaft extension portion passing therethrough and rotatably supported thereby;
said commutator surface being disposed adjacent said second end;
means for making electrical connection to said commutator surface and to said field windings disposed adjacent said second end;
said means for making electrical connection including a first circular member and a second elongated member;
said first circular member having a generally circular outer periphery including projection means for engaging an end surface of said tubular housing member, and an inner radial periphery including at least one inwardly projecting pocket portion for receiving supporting insulation displacing contact means for making electrical connection with said field windings and with said brush means, and further including first and second opposing arcuate recesses, said first recess being arcuately longer than said second recess, said first and second recesses being adapted to retain said second elongated member;



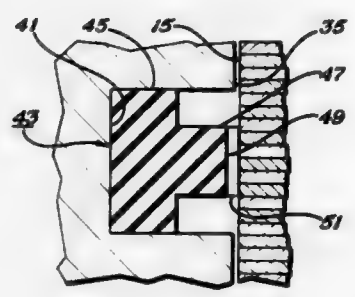
said first arcuate recess having a first end and said second arcuate recess having a second end, said first end and said second end being equally spaced in the same direction from a diameter of said first circular member to prevent incorrect orientation of said second elongated member;
said second elongated member including a first arcuate end portion adapted to be received in said first arcuate recess and a second arcuate end portion adapted to be received in said second arcuate recess;
said second elongated member defining an aperture therethrough, said aperture being centered between said first arcuate end portion and said second arcuate end portion for receiving said armature shaft therethrough;
said second elongated member further defining means for retaining said brush means in electrical contact with said commutator surface;
said second elongated member having a planar portion and first and second arcuate wall portions adjacent said respective first and second arcuate wall portions adjacent said respective first and second arcuate end portions, said wall portions being traverse to said planar portion and extending in a first direction therefrom;
said means for retaining said brush means each including a first radially-disposed wall portion extending from said planar portion in said first direction, a second wall portion parallel to said first wall portion and spaced therefrom and including a retaining ledge portion extending parallel to said planar portion and towards said first wall portion;
each said brush means being retained between said first and second wall portions and between said planar portion and said retaining ledge portion;
said brush means including a brush and a brush spring between each said brush and one of said first and second arcuate wall portions to urge said brush towards said commutator surface;
said second elongated member further including means for supporting a second electrical contact means connected to one said brush;
an end bell disposed adjacent said means for making electrical connection and rotatably supporting said armature shaft;
said second elongated member being disposed between said second end of said housing member and said end bell;
said second electrical contact supported by said second elongated member and said contact means supported by said inwardly projecting pocket portion of said first circular member passing through apertures in said end bell;
said tubular housing member defining an annular groove adjacent said second end;
a boot member enclosing said second end of said housing member, said boot member being provided with an inwardly directed annular flange adapted to be disposed in said annular groove to seal said boot member to said housing member;
said boot member further defining a tubular aperture for sealingly passing at least two electrical conductors each said conductors being provided with connector means adapted to be received on one of said insulation displacing contact means and said second electrical contact; and
a clamp being applied to said boot member adjacent said annular flange to retain said boot member to said housing member.

4,513,215

ANTI-ROTATION MOTOR BEARING

David I. Del Serra, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Oct. 3, 1983, Ser. No. 538,646
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—90 **5 Claims**

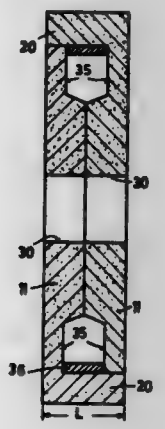


1. In a submersible pump motor having an oil filled housing, a stator composed of magnetic laminations mounted in the housing, a rotor which includes a plurality of spaced-apart rotor sections mounted on a shaft carried within the stator, an improved bearing assembly mounted between adjacent rotor sections for supporting the shaft, comprising in combination:
a stationary bearing having a cavity in its outer periphery; and
an element contained in the cavity, the element being of a material that swells due to influence of oil in the motor upon operation of the motor for frictionally engaging the stator to prevent rotation of the bearing.

4,513,216
MULTI-POLE ROTOR PARTICULARLY FOR SMALL AND MINIATURE ELECTRIC GENERATORS AND MOTORS

Werner Müller, Godesburg, Fed. Rep. of Germany, assignor to Magnetfabrik Bonn GmbH, vorm. Gewerkschaft Windhorst, Bonn am Rhein, Fed. Rep. of Germany

Filed Nov. 9, 1977, Ser. No. 850,049
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2727003
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156
2 Claims



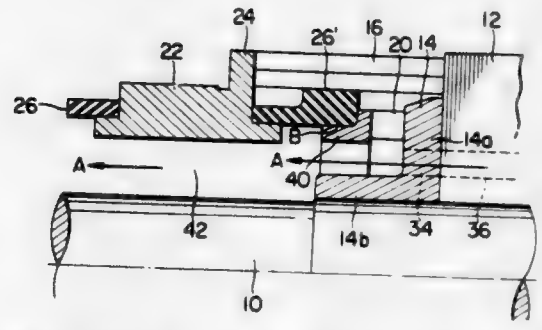
1. Multi-pole rotor for small and minature electric motors and generators for use in tachometers, stepping motors, synchronized clocks, and the like wherein a series of oppositely directed contiguous radially oriented magnetic poles are arranged segmentally about the periphery of the rotor extending parallel with each other and generally in the direction of the axial length of the rotor, said poles defining a continuous outer circumferential surface having alternating N-S-N-S . . . magnetic poles and a corresponding continuous inner circumferential surface having respective alternating S-N-S-N . . . magnetic poles, the respective end surfaces of all of said poles lying in only two axially spaced common planes and carrier means to mount said poles on a rotor shaft, said poles and carrier means being integrally fabricated from particulate highly coercive magnetic material with a binder, said carrier means comprising a pair of complementary disks with the integrally fabricated poles projecting generally axially from one side at the periphery of each disk, the poles of each disk being circumferentially spaced, whereby the poles of one disk will closely interfit with the poles of the other disk when the pair of disks are in axially facing abutting engagement.

4,513,217
ROTARY ARMATURE WITH COOLING OF COMMUTATOR

Syoji Kishimoto, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,434
Claims priority, application Japan, Dec. 15, 1982, 57-191734
Int. Cl.³ H02K *9/28*
U.S. Cl. 310—227
7 Claims

1. A rotary armature comprising:
a rotary shaft;
an armature core having an armature coil fitted onto said rotary shaft;
an armature clamp fitted onto the rotary shaft and abutting said armature core for holding said armature core in position on said rotary shaft;
a shrink ring type commutator having a plurality of commutator segments assembled into an annulus and having shrink rings at least the outsides of which are electrically insulating material on opposite ends thereof holding said segments in said annulus, the shrink ring on the end toward said armature core being rigidly connected to said armature clamp to leave a large annular ventilating space between the inner peripheral surface of said shrink ring type commutator and an outer peripheral surface of said

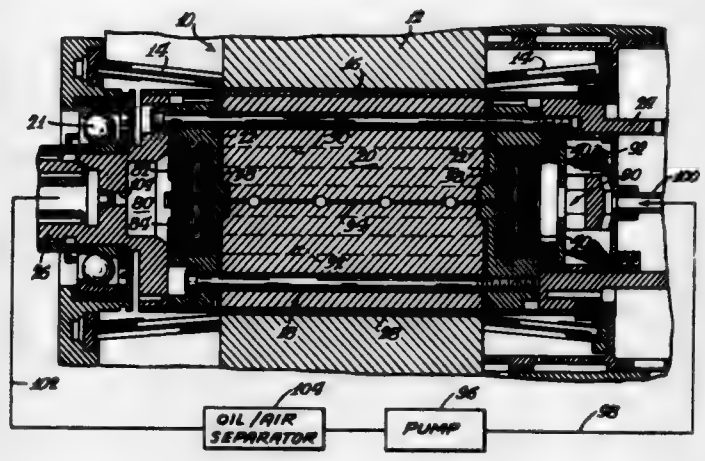


rotary shaft, said space being unobstructed at the end remote from said armature clamp.

4,513,218
ROTOR COOLING IN ROTARY ELECTRIC MACHINES

Wayne W. Hansen, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 17, 1983, Ser. No. 542,492
Int. Cl.³ H02K *3/46*
U.S. Cl. 310—270
3 Claims

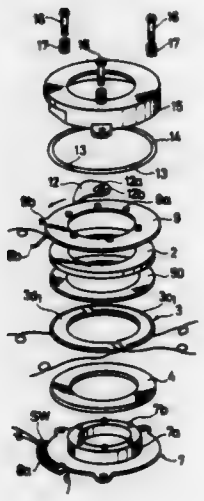


1. In a rotary electric machine the combination of:
a stator having a rotor receiving opening;
a rotor journalled within said opening, said rotor including
a body of magnetizable material having at least two opposed axially extending slots
an end turn support on each end of said body, each having a radially extending axially opening slot aligned with the slots on said body to define a continuous passage for the receipt of windings
at least one winding in said passage and composed of a plurality of turns of an electrical conductor having a generally circular cross section, said turns being precision wound in a plurality of layers such that each successive turn in a given layer is parallel to and in substantial abutment with the preceding turn and such that the turns in each successive layer are parallel to and in abutment with at least one turn in the preceding layer within said body slots,
the interstices between said turns defining axially extending coolant passages,
spacers in each of said slots in said end turn supports spacing the turns of adjacent layers a sufficient distance to allow a coolant to enter into or exit from said coolant passages, and
a pair of coolant galleries, one for each end turn support and in fluid communication with the associated slot in the corresponding end turn support; and
means interconnecting each of said galleries for circulating a liquid coolant between the same via said coolant passages and said slots in said end turn supports.

4,513,219
VIBRATION WAVE MOTOR

Makoto Katsuma, Kawasaki; Hiroyasu Murakami, Tokyo, and Akira Hiramatsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,373
Claims priority, application Japan, Nov. 25, 1982, 57-206299; Nov. 25, 1982, 57-206300
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 10 Claims

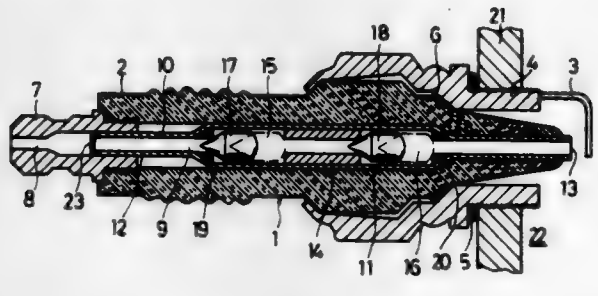


1. A vibration wave motor comprising:
(a) a pair of electro-strain element groups arranged or polarized phase-differentially, each group including at least one electro-strain element;
(b) a vibrating member for generating a travelling vibration wave by application of voltages having a phase difference therebetween to said pair of electro-strain element groups;
(c) a moving member press-contacted to said vibrating member to be friction-driven thereby;
(d) a DC voltage generator for generating a DC voltage which is supplied to each of said pair of electro-strain element groups; and
(e) a driving circuit for substantially applying an alternating voltage to said pair of electro-strain element groups by time divisionally alternating the direction of DC voltage to be applied to said pair of electro-strain element groups.

4,513,220
IGNITION PLUG WITH AIR PASSAGE AND DOUBLE CHECK VALVE

Mokichi Togashi, 16-10, Okudo 2-chome, Katsushika-ku, Tokyo, Japan

Filed Sep. 13, 1982, Ser. No. 417,168
Int. Cl.³ H01T *13/02;* F16K *15/00*
U.S. Cl. 313—120 5 Claims

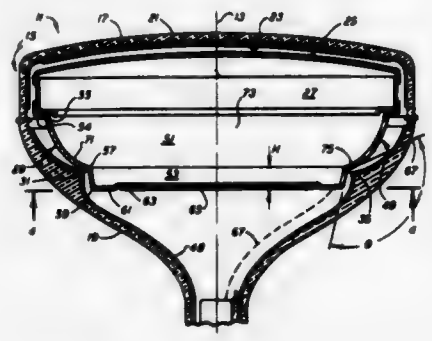


1. An ignition plug having one end thereof leading to the engine cylinder and the other end thereof leading to ambient air which comprises
a housing adapted to be secured to the engine cylinder,
an insulator inserted in said housing, said insulator having a central bore,
a tubular center electrode having an air passage extending therethrough, said electrode being disposed within the central bore of the insulator, said tubular electrode having a middle portion of enlarged cross-section for housing a check valve therein, said check valve including a tubular partition disposed within said middle portion for internally dividing said middle portion into two valve spaces, said tubular partition containing a central aperture therein to provide communication between said valve spaces,
a float member disposed in each of said valve spaces for selectively opening and closing said valve spaces to the engine cylinder or ambient air, said float member having a cylindrical configuration with a cone shaped end portion, and
a terminal element fixed to the rear portion of the insulator and connected to the center electrode, said terminal element also containing a central bore for connecting the air passage of the center electrode with ambient air, whereby when the pressure in the engine cylinder is higher than ambient air pressure, the check valve closes the air passage to ambient air, and when the pressure in the engine cylinder is lower than ambient air pressure, the check valve opens the air passage to ambient air.

4,513,221
CRT INTERNAL SHIELDING MEANS FOR A SPUN GLASS ENVELOPE FUNNEL SECTION

John D. Robbins, Seneca Falls, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,682
Int. Cl.³ H01J *29/80, 29/86, 1/52*
U.S. Cl. 313—402 2 Claims



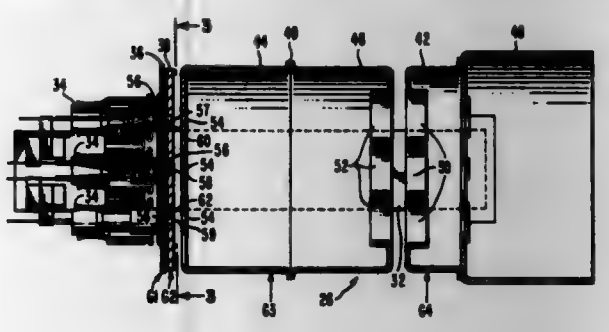
1. Internal magnetic shielding means formed for spatial positioning within the glass spun-funnel section of a CRT envelope, said spun-funnel having a substantially continuous built-up ridge of accumulated glass formed around the interior surface thereof, said shielding means being a shaped member having a substantially continuous sidewall formation with an axis therethrough characterized by a structure comprising:
a major sidewall portion formed about said axis as a flared skirt-like shaping defining a substantially full frontal opening and extending rearward in a constricted manner to a region of reduced periphery; and
a minor sidewall portion formed about said axis as a band-like waist formation integral with and extending rearward from the reduced periphery of said flared shaping at a defined transitional region normal to said axis, said waist formation having a terminal perimeter demarcated by a continuous ledge instanding in a common plane from said perimeter toward said axis with the terminal edge thereof defining a rear opening of said member smaller than the frontal opening thereof, said transitional region between said flared and waist sidewall formations being indented toward said axis as the apex of a substantially continuous re-entrant angle, whereby at least discrete portions thereof may be spatially adjacent determinate regions of said glass ridge on said spun-funnel envelope section.

4,513,222

COLOR PICTURE TUBE HAVING RECONVERGENCE SLOTS FORMED IN A SCREEN GRID ELECTRODE OF AN INLINE ELECTRON GUN

Hsing-Yao Chen, Landisville, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 27, 1983, Ser. No. 461,584
Int. Cl.[3] H01J *29/51, 29/62*
U.S. Cl. 313—412 16 Claims



1. In a color picture tube having an inline electron gun including at least a screen grid electrode and an accelerating and focusing electrode, said electrodes having a plurality of apertures therethrough including at least two outer apertures in portions facing each other, said apertures in said screen grid electrode being aligned with the facing apertures in said accelerating and focusing electrode, the improvement comprising:

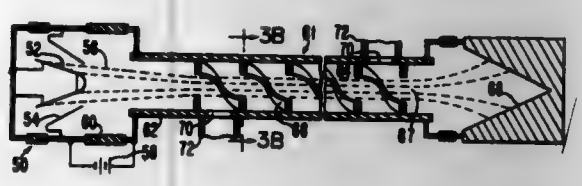
the portions of said screen grid electrode facing said accelerating and focusing electrode including two precisely located reconvergence slots formed therein which are spaced sufficiently close to and inward from said outer apertures to cause a distortion of an electrostatic field formed between said screen grid electrode and said accelerating and focusing electrode at said apertures, said reconvergence slots having a depth less than the thickness of said screen grid electrode.

4,513,223

ELECTRON TUBE WITH TRANSVERSE CYCLOTRON INTERACTION

Marvin Chodorow, Stanford, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 390,500, Jun. 21, 1982,. This application Jul. 6, 1982, Ser. No. 395,417
Int. Cl.[3] H01J *25/00*
U.S. Cl. 315—4 26 Claims



1. An electron tube comprising:

gun means for generating a beam of electrons having a velocity component along an axis,

means for generating velocity of said electrons transverse to said axis,

waveguide means for propagating an electromagnetic wave in the direction of said axis in energy-exchanging relation with said transverse velocity of said electrons,

means for generating a magnetic field parallel to said axis,

means for collecting said electrons after said beam emerges from said waveguide means,

means for extracting electromagnetic energy from said waveguide means,

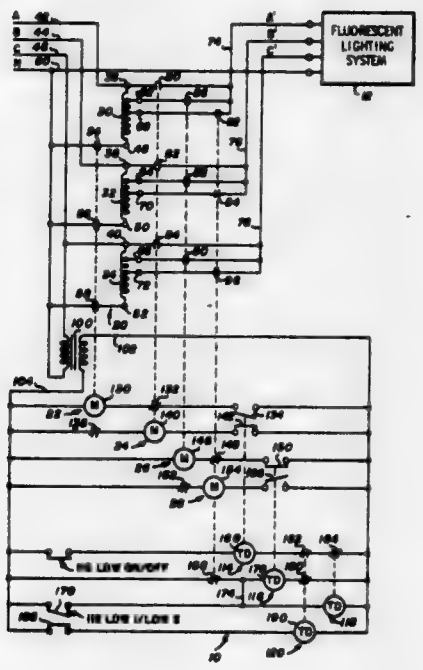
said waveguide means having a cross-sectional configuration perpendicular to said axis which configuration rotates with distance along said axis, said configuration and rotation being such that the orientation of the polarization of a transverse electric field component of a desired wave mode is locked in the same spatial relationship to said cross-sectional configuration everywhere along said waveguide.

4,513,224

FLUORESCENT-LIGHTING-SYSTEM VOLTAGE CONTROLLER

Stanley N. Thomas, Sunnyvale, Calif., assignor to Pacific Power Control, Inc., Sunnyvale, Calif.

Filed Sep. 22, 1982, Ser. No. 421,407
Int. Cl.[3] H05B *41/16*
U.S. Cl. 315—141 6 Claims



1. A voltage controller for connection between an AC-voltage-supplying system and a lighting system employing gaseous-discharge-type lamps, the voltage controller for coupling the full AC voltage to the lighting system for lamp starting and the voltage controller for developing a reduced voltage from the AC voltage and for coupling the reduced voltage to the lighting system during a predetermined period for power conservation, the voltage controller comprising in combination:

a neutral line;

a supply-system-hot line with said neutral line for connection to the supplying system to receive the AC voltage;

a lighting-system-hot line with said neutral line for connection to said lighting system to transmit power thereto;

a neutral-contactor means having a neutral-contact-set means;

a full-voltage-contactor means having a full-voltage-contact-set means;

a coupling means;

a transformer means including an auto-transformer-winding means having a hot-end means connected to said supply-system-hot line and selectively coupled by said full-voltage-contact-set means to said lighting-system-hot line, a neutral-end means selectively coupled by said neutral-contact-set means to said neutral line, and a tap means coupled to said lighting-system-hot line by said coupling means, said winding means for developing the reduced voltage between said tap means and said neutral-end means when said AC voltage is developed between said hot-end means and said neutral-end means; and

a contactor-switching means for causing said neutral-contact-set means to be open and said full-voltage-contact-set means to be closed for lamp starting and for causing said neutral-contact-set means to be closed and said full-voltage-contact-set means to be open during the predetermined period for power conservation, said contactor switching means being operative to open said full-voltage-

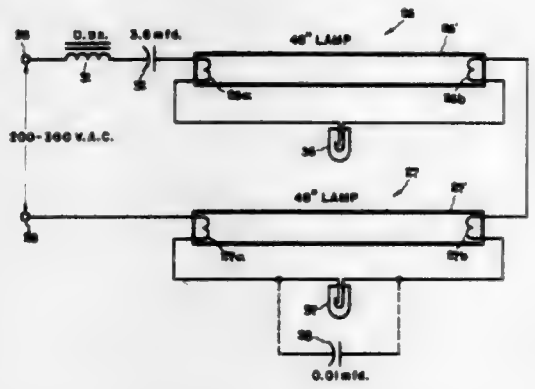
contact-set means before closing said neutral-contact set means when switching from the lamp-starting state to the energy conserving state and operative to open said neutral-contact-set means before closing said full-voltage-contact-set means when switching from said power conserving state to said lamp-starting state.

4,513,225

FLUORESCENT LAMP SERIES SYSTEM

Alfred E. Lemmers, Cleveland Heights, and Edward E. Hammer, Mayfield Village, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,088
Int. Cl.³ H05B *37/00, 39/00, 41/00*
U.S. Cl. 315—189 **7 Claims**



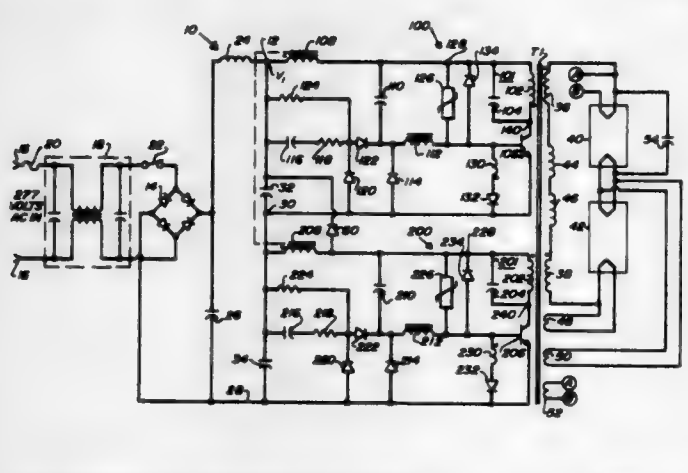
1. A fluorescent lamp lighting system for operation from an a-c voltage source in the range of about 200 to 300 volts at a frequency of about 50 or 60 hertz, comprising one or more fluorescent lamps connected to provide a total gas discharge path length of about 96 inches, cathode preheated means connected to said lamps, and ballast means connected in series combination with said gas discharge path to operate said lamps at a power consumption of less than ten watts per foot of lamp length, said series combination being adapted for connection across said a-c voltage source, said gas discharge path being contained in one or more lamp bulbs having outside diameters of about one and one-half inches, said lamp bulbs being devoid of any internal conductive starting aid material therealong and containing a gas fill of mercury vapor and a mixture of krypton and neon or argon in a volume ratio of about 80% to 20% at a pressure of about 1.5 torr.

4,513,226

ELECTRONIC BALLAST-INVERTER CIRCUIT

Elliot Josephson, Los Altos, Calif., assignor to Astec Components, Ltd., Santa Clara, Calif.

Filed Mar. 4, 1983, Ser. No. 472,153
Int. Cl.³ H05B *41/26, 41/14*
U.S. Cl. 315—219 **16 Claims**



1. An inverter circuit for powering one or more fluorescent lamps or the like comprising:

a DC voltage source including a power input terminal and a ground return terminal;

a transformer having first and second primary windings and at least one secondary winding adapted to be connected in series with a fluorescent lamp;

a first circuit including a first tank circuit having a predetermined resonant frequency, a first inductor connected in series between one side of said first tank circuit and said power input terminal and a first transistor connected to the other side of said first tank circuit operative when turned on to switchably connect said second side of said first tank circuit to an intermediate potential terminal, said first tank circuit comprising a first capacitor connected in parallel with said first primary winding;

a second circuit including a second tank circuit having a resonant frequency identical to said first tank circuit, a second inductor inductively coupled to said first inductor and connected in series between one side of said second tank circuit and said intermediate potential terminal, and a second transistor connected to the other side of said second tank circuit operative when turned on to periodically switchably connect said second side of said second tank circuit to a ground return terminal of said DC source, said second tank circuit comprising a second capacitor connected in parallel with said second primary winding;

means for generating a DC voltage offset between said first circuit means and said second circuit means such that a first portion of said DC source voltage amplitude exists between said power input terminal and said intermediate terminal and a second portion of said DC source voltage amplitude exists between said intermediate terminal and said ground return terminal; and

means for alternately turning on said first transistor and said second transistor at a rate determined by the resonant frequency of said first and second tank circuits.

4,513,227

HIGH INTENSITY DISCHARGE (HID) LAMP STARTING APPARATUS

William M. Labadini, Salisbury, and John A. Scholz, Danvers, both of Mass., assignors to GTE Products Corporation

Filed Jan. 10, 1983, Ser. No. 456,679
Int. Cl.³ H05B *37/00, 39/00, 41/14*
U.S. Cl. 315—290 **8 Claims**



1. High Intensity Discharge (HID) lamp starting and operating apparatus comprising:

an inductive ballast coupled to a high intensity discharge (HID) lamp;

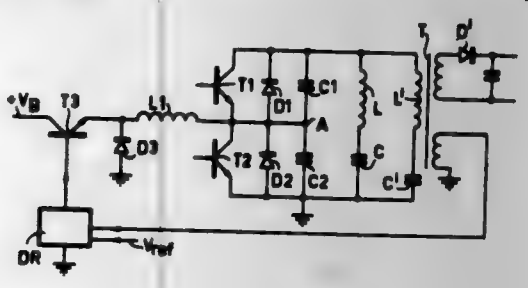
terminal means coupled to said ballast and to said (HID) lamp and formed for connection to a service voltage source;

timing and triggering circuit means shunting said high intensity discharge (HID) lamp including a series connected resistor and capacitor shunting said lamp, a series connected gated switch and non-linear dielectric element shunting said lamp and a bidirectional switching means coupling the junction of said series connected resistor and capacitor to the gate electrode of said gated switch.

4,513,228
CIRCUIT FOR GENERATING A SAWTOOTH-SHAPED CURRENT

Dirk J. A. Teuling, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,715
Claims priority, application Netherlands, Apr. 8, 1981, 8101721
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—408 13 Claims

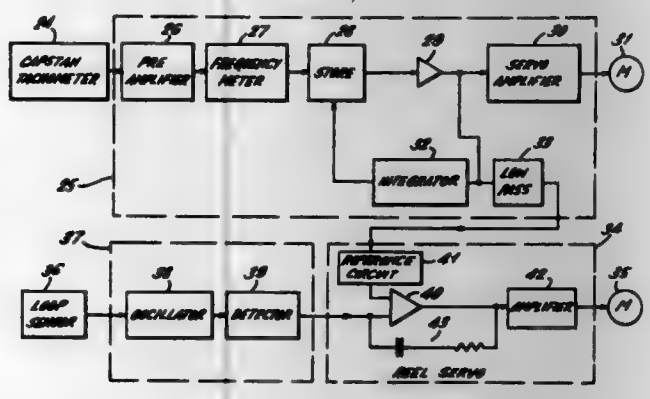


1. A circuit for generating a sawtooth-shaped current, having trace and retrace periods, through a coil which, during the trace period, is connected to a trace capacitor by means of a plurality of series-arranged controllable, periodically operated switches, which switches are nonconductive substantially simultaneously during the retrace period, in which retrace period the coil, the trace capacitor and a retrace capacitance are part of a resonant network the elements of which determine the duration of the retrace period and to which circuit, energy from a supply source is applied for replenishing energy losses, characterized in that a retrace capacitor is arranged in parallel with each switch, the supply source being d.c. connected in parallel with a number of series-arranged switches which is smaller than the total number of switches whereby, the voltage in operation across the trace capacitor is higher than that of the supply source.

4,513,229
REEL SERVO FOR TAPE TRANSPORT

Stefan Kudelski, Le Mont-sur-Lausanne, Switzerland, assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 15, 1983, Ser. No. 533,316
Claims priority, application United Kingdom, Sep. 17, 1982, 8226570
Int. Cl.³ B65H *59/38*
U.S. Cl. 318—7 15 Claims



1. In a tape transport which includes a motor-driven capstan for drawing tape past a cylindrical guide drum and tape is supplied to said drum by a driven supply reel, and including means for forming a loop of tape along a tape path between the supply reel and the cylindrical guide drum, the combination comprising:

means for energising the capstan motor;

means coupled to the energising means for supplying a signal representing the energisation of the capstan motor;

means for generating a signal representative of the tension in the tape from the supply reel;

means for providing a reference signal;

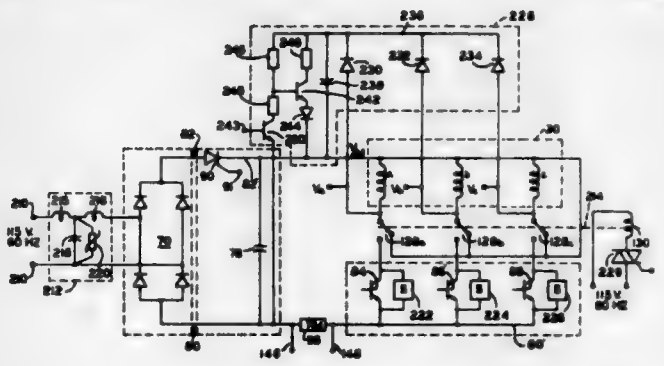
means for comparing the reference signal with the signal representative of the tape tension to provide an output signal for controlling the energisation of the supply reel motor; and

means for modifying the reference signal in response to the signal representing the energisation of the capstan motor.

4,513,230
LAUNDERING APPARATUS, METHOD OF OPERATING A LAUNDRY MACHINE, CONTROL SYSTEM FOR AN ELECTRONICALLY COMMUTATED MOTOR, AND METHOD OF OPERATING AN ELECTRONICALLY COMMUTATED MOTOR

David M. Erdman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 141,267, Apr. 17, 1980, abandoned, Continuation-in-part of Ser. No. 077,556, Sep. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 802,484, Jun. 1, 1977, Pat. No. 4,169,990, which is a continuation-in-part of Ser. No. 729,761, Oct. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 482,409, Jun. 24, 1974, Pat. No. 4,005,347. This application Jul. 21, 1982, Ser. No. 400,206
Int. Cl.³ H02P *1/18*
U.S. Cl. 318—254 82 Claims



1. A laundering apparatus comprising:

means operable generally in a washing mode for agitating water and fabrics to be laundered therein and operable generally in a spin mode for thereafter spinning the fabrics to effect centrifugal displacement of water from the fabrics;

an electronically commutated motor including a stationary assembly having a plurality of winding stages associated therewith and adapted to be selectively commutated, and rotatable means associated with said stationary assembly in selective magnetic coupling relation with said winding stages for driving said agitating and spinning means in the washing mode operation and in the spin mode operation thereof upon the commutation of said winding stages, each of said winding stages having at least first and second terminals, said first terminals of each of said windng stages being connected at a first common point;

means for providing a plurality of first waveshapes;

means for selecting one of the first waveshapes;

means for selectively setting the maximum amplitude of the selected first waveshape, the selected first waveshape representing a profile of desired angular velocity of said rotatable means;

means for producing an effective voltage from a DC voltage in accordance with the selected first waveshape

and for commutating said winding stages by applying the effective voltage thereto in at least one preselected sequence, including a plurality of switching means for connection in series with said winding stages, respectively, and means responsive to the angular position of said rotatable means for applying commutation signals in the at least

one preselected sequence to said switching means to control their conductivity;

first diode means separately connected between said second terminal of eachof said winding stages and a second common point;

said plurality of switching means being connected between a third common point and said second terminal of each of said winding stages;

capacitor means connected between said first and second common points;

first impedance means and first transistor means for connection in series between said first and second common points;

voltage divider means and second transistor means for connection in series between said second and third common points, said voltage divider means including second and third impedance means for connection at a fourth common point coupled to said first transistor means so that the voltage at said fourth common point controls the conductivity of said first transistor means;

means for deriving a signal representative of the actual angular velocity of said rotatable means and for generating an error signal from the velocity signal and the selected first waveshape; and

means for decreasing the conductivity of said second transistor means when the error signal has a value corresponding to an excess of the actual angular velocity over the desired angular velocity determined by said selecting means and said maximum amplitude setting means, the decreased conductivity of said second transistor means being effective to increase the conductivity of said first transistor means.

4,513,231

CONTROL CIRCUIT OF PULSE WIDTH MODULATION INVERTER

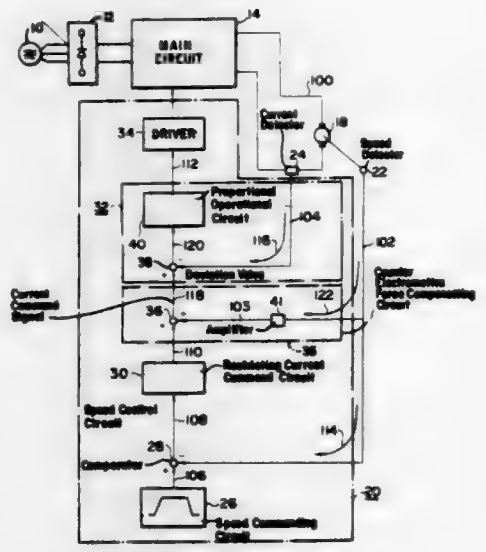
Toshitaka Kuno; Hiroshi Moribe, both of Nagoya, and Shojirou Miyamoto, Ama, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Feb. 7, 1983, Ser. No. 464,396

Claims priority, application Japan, Feb. 12, 1982, 57-21805

Int. Cl.³ H02P *5/06*

U.S. Cl. 318—341 **7 Claims**



1. A control circuit of a pulse width modulation inverter, connected to a converter for converting AC power to a predetermined direct current for driving a DC motor, said control circuit comprising:

a main circuit including main transistors arranged in bridge connection and switchingly-driven to supply positive and negative driving currents to said DC motor,

a speed command circuit for supplying a speed command signal,

a speed control circuit for comparing said speed command signal from said speed command circuit with a speed detection signal from a speed detector connected to said DC motor for detecting a rotational speed of said DC motor, said speed control circuit supplying a speed command deviation signal,

a current command restricting circuit, connected to said speed control circuit, for restricting said speed command deviation signal and for supplying a restricted current command signal,

a counter electromotive force compensating circuit, connected to said speed detector and said current command restricting circuit, for adding said speed detection signal to said restricted current command signal, and for supplying a current command signal,

a current control circuit comprising a comparator circuit, connected to said counter electromotive force compensating circuit and to a current detector, said current detector connected to said DC motor for detecting a driving current of said DC motor, said current control circuit compares said current command signal with said driving current from said current detector, and supplies a current command deviation signal,

a proportional operational circuit, connected to said current control circuit, for exercising a proportional control over said driving current in accordance with said current command deviation signal from said comparator circuit and for supplying a current control signal, and

a driver, connected to said current control circuit and said main circuit of said pulse width modulation inverter, and supplying a driving current to said main circuit for PWM switchingly driving said main transistors of said main circuit,

thereby compensating for an error in current control from a counter electromotive force of said DC motor.

4,513,232

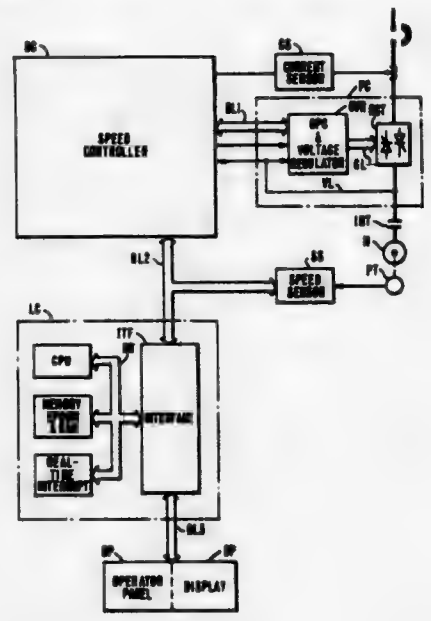
GENERAL PURPOSE AND OPTIMAL LENGTH CONTROLLER FOR CYCLIC DUTY MOTOR DRIVES

Mohammed Safiuddin, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 27, 1983, Ser. No. 498,607

Int. Cl.³ H02P *5/06*; G06F *15/46*

U.S. Cl. 318—341 **7 Claims**



1. A cyclic-duty motor drive system for repeatedly moving a cutting tool having mass inertia from a home position to a cutting position and back in relation to a continuous elongated member of material displaced at a predetermined constant speed, said successive cutting positions being separated along said member of material by a predetermined distance L and occurring with the duty cycle S of the motor drive, the motor drive including:

a speed controller responsive to a speed reference signal for

adjusting the speed of said motor drive in relation to said speed reference signal, comprising:

a length controller for applying to said speed controller a signal representative of a desired length L between said two positions and a signal representing a desired duty cycle;

memory means having stored therein digital data representing a standard parabolic speed profile as a function of time of standard maximum speed ω_{MAX} and a standard time interval between initial and final zero speeds on said profile;

means responsive to said length representative signal and to said duty cycle representative signal and operative with said memory means for generating, as said desired length signal and duty cycle signal, modified digital data representing a scaled profile derived from said stored digital data standard parabolic speed profile

said speed controller being responsive to said modified data for generating as a function of time said speed reference signal in relation to said scaled profile;

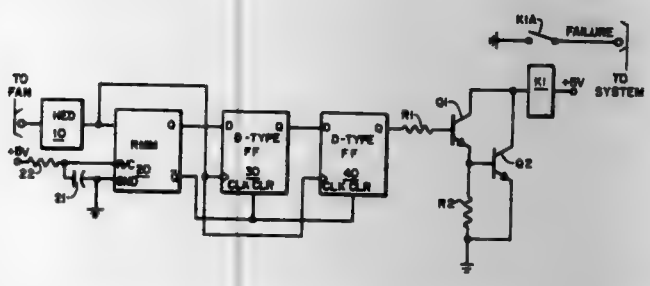
whereby said cutting tool is accelerated from zero speed to maximum speed and decelerated to zero speed in accordance with said scaled parabolic profile between said home and cutting positions.

4,513,233

PULSE MONITOR CIRCUIT FOR USE AS A FAN SPEED MONITOR

David P. Giammarrusco, Bartlett, Ill., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 22, 1983, Ser. No. 564,260
Int. Cl.³ G05B *23/02*
U.S. Cl. 318—565 **13 Claims**



1. A magnetic pulse monitor circuit for use in a system which includes a source of periodic magnetic flux signals, said magnetic pulse monitor circuit comprising:

magnetic flux sensing means which is connected in magnetic flux proximity to said source of periodic magnetic flux signals and its operative in response to said periodic magnetic flux signals to provide corresponding periodic magnetic flux detection signals;

detection means which is connected to said magnetic flux sensing means and is operative in response to periodic magnetic flux detection signals having a frequency greater than or equal to a predetermined frequency to provide a first frequency detection signal, and which is operative in response to periodic magnetic flux detection signals having a frequency less than said predetermined frequency to provide a second frequency detection signal;

storage means which is connected to said detection means and said magnetic flux sensing means and is operative in response to said first frequency detection signal and a magnetic flux detection signal to provide a first storage signal, and which is operative in response to said second frequency detection signal to provide a second storage signal; and

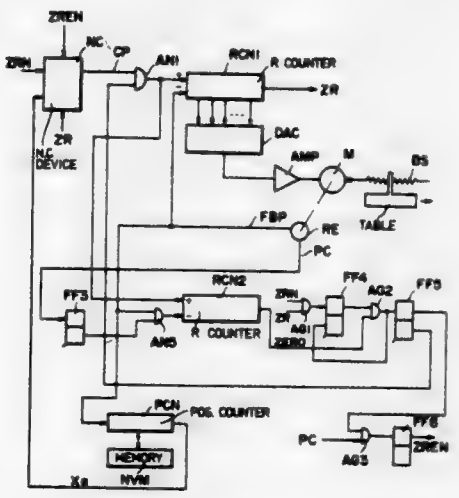
signalling means which is connected to said storage means and is operative in response to said first storage signal to provide a status signal of a first characteristic, and which is operative in response to said second storage signal to provide a status signal of a second characteristic.

4,513,234

METHOD AND APPARATUS FOR CONTROLLING ZERO-POINT RETURN OF A MOVABLE ELEMENT

Ryoichiro Nozawa, Tokyo, and Nobuyuki Kiya, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Minamitsuru, Japan

Filed Jun. 16, 1982, Ser. No. 388,925
Claims priority, application Japan, Jun. 16, 1981, 56-92798
Int. Cl.³ G05B *11/18*
U.S. Cl. 318—594 **5 Claims**



1. A method of controlling the return of a movable element of a machine tool to a predetermined grid point by controlling movable element drive means in accordance with feedback pulses generated while said drive means is being driven to transport said movable element between grid points, comprising the steps of:

specifying a position remote from said predetermined grid point by a distance which is less than the spacing between grid points;

computing a single deviation between said specified position and a current position of the movable element;

driving, positioning and stopping said movable element at said specified position by driving said drive means on the basis of the computed deviation and the feedback pulses; and

driving said drive means, after stopping at said specified position, at reduced speed to stop said movable element at the first grid point encountered following the initiation of reduced-apeed drive, thereby stopping at said predetermined grid point after two drive periods.

4,513,235

CONTROL APPARATUS

Donald J. Acklam; David Bird, both of Lancashire, and Graham A. Hill, Warton, all of England, assignors to British Aerospace Public Limited Company, London, England

Filed Jan. 24, 1983, Ser. No. 460,264
Claims priority, application United Kingdom, Jan. 22, 1982, 8201907; Oct. 22, 1982, 8230312
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—685 **3 Claims**

1. A control device for enabling an operator to control associated apparatus to which, in use, the control device is connected, the control device comprising:

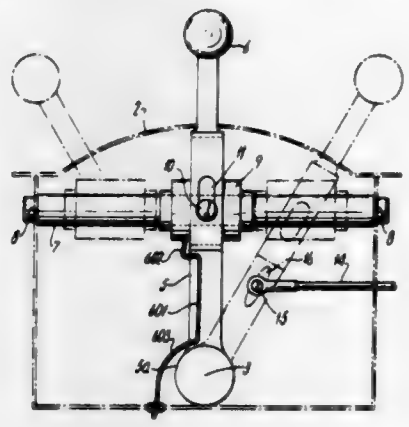
a fixed support member;

an elongate control lever pivotably connected to the support member for being pivotably moved by an operator with respect to the support member;

output means connected to the control lever and operable for transmitting to said associated apparatus control signals indicative of the position of the control member relative to the support member;

a linear electrical stepper motor including a fixed elongate stator supported by the support member and a mover

supported by the stator for linear movement therealong, said control lever being pivotably connected to said motor mover at a position on the control lever spaced from the position at which it is pivotably connected to the support member for said pivotable movement of the control lever to be accompanied by said linear movement of the motor mover; and



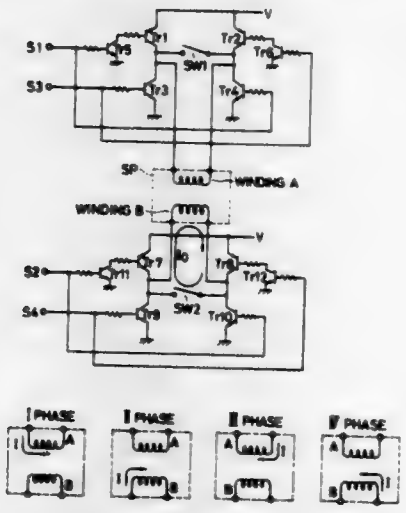
motor energization means which is connected to said stepper motor and which is operable for energizing said motor to generate, at least while said control member is at one or more discrete positions in its range of movement relative to the support member, an attractive force between the stator and mover of the motor tending to resist manual movement of the control lever.

4,513,236

CONTROL METHOD FOR STEPPING MOTOR

Noriyuki Kikukawa, Yokohama, and Yasuaki Yamada, Matsudo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,183
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **15 Claims**



1. A control method for controlling the operation of a stepping motor having a rotor, said method comprising the steps of

energizing plural coils in succession to move the stepping motor rotor to a target point, and

coupling two coils to one another, other than a coil being energized, to define a closed circuit containing said two coils, said coupling step comprising the step of grounding said two coils.

4,513,237

ENERGY EFFICIENT MULTI-PHASE DUAL VOLTAGE ELECTRIC MOTOR

Horace B. Ford, 715 Nassau Bay II, Granbury, Tex. 76048

Filed Mar. 29, 1984, Ser. No. 594,688
Int. Cl.³ H02P *7/48*
U.S. Cl. 318—768 **10 Claims**

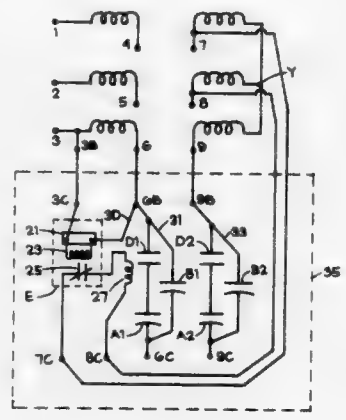
1. A system for use with an A-C three phase motor for allowing said motor to be connected for operation on one phase power, said motor having a Y connected stator winding comprising three windings, each winding comprising first and second winding sections, each winding section having two ends, said first winding sections having first ends connected together at a common point, said second winding sections having first ends connectable to line voltage, two of said first winding sections having ends opposite their first ends adapted to be connected to line voltage or to the ends of two of said second windings opposite their first ends, comprising:

first coil means for controlling two normally open contact means,

a first pair of leads coupled to opposite ends of said first coil means and connectable to the ends of said two of said first winding sections opposite their first ends thereof,

a second coil means for controlling a normally closed contact means connected to one of said first pair of leads,

a second pair of leads coupled to opposite ends of said second coil means and connectable across the other of said second winding sections such that when line voltage is applied to said three windings, said first coil means closes said two normally open contact means and as the motor RPM increases, a counter EMF voltage on said second pair of leads causes said second coil means to open said normally closed contact means thereby allowing said two normally open contact means to open,



first and second circuits each of which comprises a starting circuit and a running circuit connected together in parallel,

each starting circuit comprising one of said two pairs of normally open contact means and a starting capacitor,

each of said running circuits comprising a running capacitor,

one end of said first circuit being connectable to the end of said other of said second winding sections opposite its first end thereof which is adapted to be connected to line voltage,

one end of said second circuit being connectable to the end of the other of said first winding sections opposite its first end thereof which is connected to said common point,

for operation of said motor at a first line voltage level, the other end of said first circuit being connectable to the ends of said two of said second winding sections opposite their first ends thereof which are adapted to be connected to line voltage and the other end of said second circuit being connectable to line voltage,

for operation of said motor at a line voltage level greater than said first line voltage level, the other ends of said first and second circuits being connectable together.

4,513,238

AUTOMATIC BATTERY CHARGER WITH THERMAL CONTROL

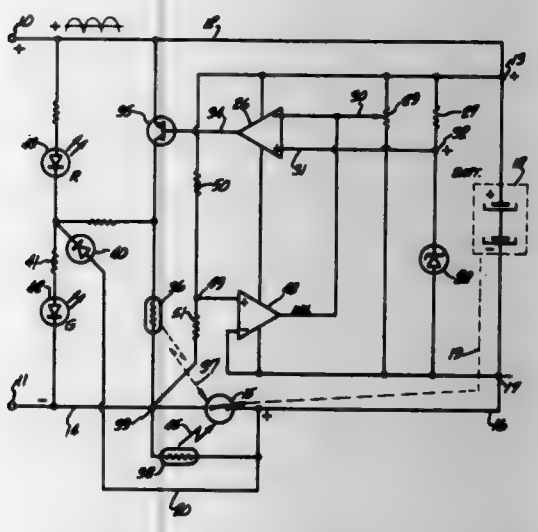
John M. Orban, Santa Monica, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed May 13, 1983, Ser. No. 494,562
Int. Cl.³ H02J *7/00*
U.S. Cl. 320—23 **8 Claims**

1. A battery charger for removable rechargable batteries,

the charger having fast charge and slow charge modes comprising

charging circuit means for providing to a removable battery to be charged charging current either at a fast charge rate or a slow charge rate,



oscillator circuit means for switching said charging circuit means between said fast charge rate and slow charge rate automatically prior to insertion of a battery to allow a user to select a desired charging mode, and

indicator means in said charger for indicating to a user whether the charger is operating at the fast charge rate or the slow charge rate.

4,513,239

APPARATUS FOR CONTROLLING A CHARGING GENERATOR

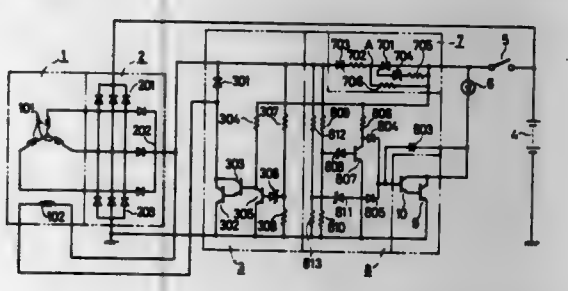
Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 7, 1983, Ser. No. 472,826

Claims priority, application Japan, Mar. 9, 1982, 57-38917; Mar. 9, 1982, 57-38918; Mar. 9, 1982, 57-38919; Mar. 23, 1982, 57-47926; Mar. 23, 1982, 57-47928

Int. Cl.³ H02J *7/14*

U.S. Cl. 322—99 **14 Claims**



1. An apparatus for controlling a charging generator having armature coils and a field coil, comprising:

(a) a rectifier for rectifying an a.c. output induced in said armature coils, said rectifier having a first rectifier output terminal, a second rectifier output terminal, and a ground terminal;

(b) a storage battery chargeable by an output from said first rectifier output terminal;

(c) a voltage regulator for turning a current flowing form said second rectifier output terminal to the field coil on and off to control an output voltage of the charging generator so as to be maintained at a preset value;

(d) a switch;

(e) an indicator connected between said storage battery and said ground terminal through said switch;

(f) a switch element connected in series between said indicator and said ground terminal;

(g) diagnostic means for detecting malfunctions of the charging generator for rendering said switch element conductive; and

(h) a switch unit connected between said switch and said second rectifier output terminal and comprising a thyristor having a gate and a zener diode connected to said gate.

4,513,240

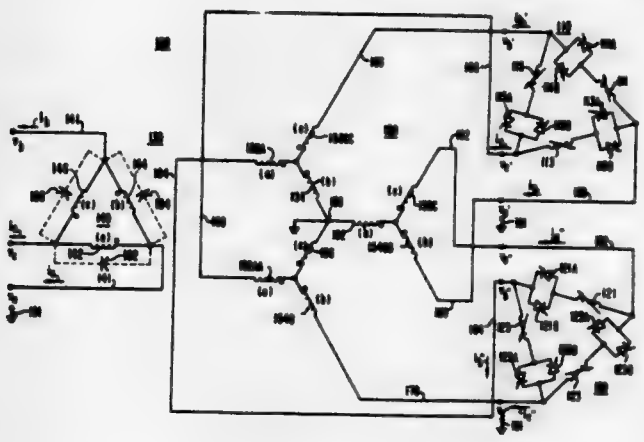
METHOD AND APPARATUS FOR SELECTIVE CANCELLATION OF SUBSYNCHRONOUS RESONANCE

Thomas H. Putman, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1983, Ser. No. 502,374

Int. Cl.³ G05F *1/70*

U.S. Cl. 323—210 **18 Claims**



1. An apparatus for the selective cancellation of harmonic frequencies of current of a multiphase dynamic stabilizer for a multiphase AC electrical network, comprising:

plurality of multiphase dynamic stabilizer means for providing electrical stabilization to the electrical network;

control means producing a control signal for controlling the operation of the stabilizer means on a periodic basis to produce the stabilization; and

transformer means electrically interconnected intermediate the phases of the electrical network and the phases of each of the stabilizer means, the transformer means rotating the phases of the selected harmonic frequencies of currents produced in each of the stabilizer means with respect to those of the other stabilizer means such that the selected harmonic frequencies are substantially cancelled in each of the stabilizer means.

4,513,241

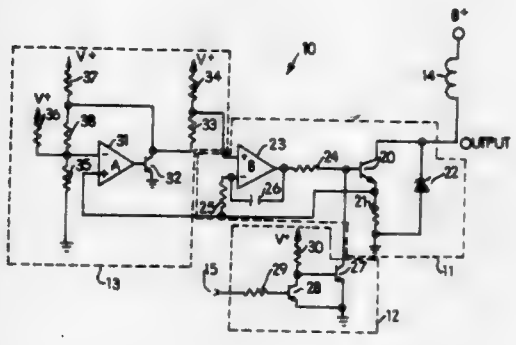
FOLDBACK CURRENT LIMITING DRIVER

Melvin B. Bowman, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

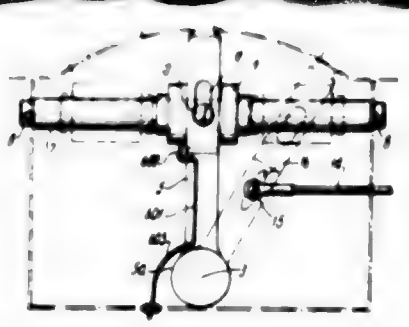
Filed Apr. 1, 1983, Ser. No. 481,426

Int. Cl.³ G05F *1/46*

U.S. Cl. 323—285 **8 Claims**



6. A voltage driving circuit having foldback current limiting characteristics comprising:



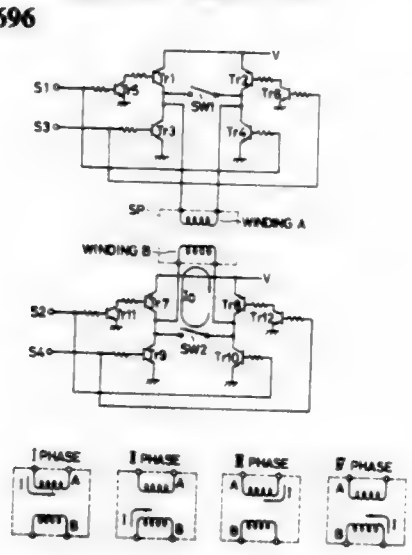
motor energization means which is connected to said stepper motor and which is operable for energizing said motor to generate, at least while said control member is at one or more discrete positions in its range of movement relative to the support member, an attractive force between the stator and mover of the motor tending to resist manual movement of the control lever.

4,513,236

CONTROL METHOD FOR STEPPING MOTOR

Noriyuki Kikukawa, Yokohama, and Yasuaki Yamada, Matsudo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,183
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **15 Claims**



1. A control method for controlling the operation of a stepping motor having a rotor, said method comprising the steps of

energizing plural coils in succession to move the stepping motor rotor to a target point, and

coupling two coils to one another, other than a coil being energized, to define a closed circuit containing said two coils, said coupling step comprising the step of grounding said two coils.

4,513,237

ENERGY EFFICIENT MULTI-PHASE DUAL VOLTAGE ELECTRIC MOTOR

Horace B. Ford, 715 Nassau Bay II, Granbury, Tex. 76048

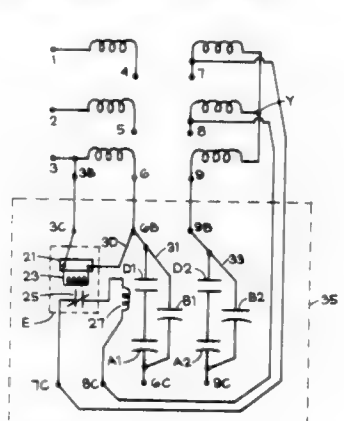
Filed Mar. 29, 1984, Ser. No. 594,688
Int. Cl.³ H02P *7/48*
U.S. Cl. 318—768 **10 Claims**

1. A system for use with an A-C three phase motor for allowing said motor to be connected for operation on one phase power, said motor having a Y connected stator winding

a first pair of leads coupled to opposite ends of said first coil means and connectable to the ends of said two of said first winding sections opposite their first ends thereof,

a second coil means for controlling a normally closed contact means connected to one of said first pair of leads,

a second pair of leads coupled to opposite ends of said second coil means and connectable across the other of said second winding sections such that when line voltage is applied to said three windings, said first coil means closes said two normally open contact means and as the motor RPM increases, a counter EMF voltage on said second pair of leads causes said second coil means to open said normally closed contact means thereby allowing said two normally open contact means to open,



first and second circuits each of which comprises a starting circuit and a running circuit connected together in parallel,

each starting circuit comprising one of said two pairs of normally open contact means and a starting capacitor,

each of said running circuits comprising a running capacitor,

one end of said first circuit being connectable to the end of said other of said second winding sections opposite its first end thereof which is adapted to be connected to line voltage,

one end of said second circuit being connectable to the end of the other of said first winding sections opposite its first end thereof which is connected to said common point,

for operation of said motor at a first line voltage level, the other end of said first circuit being connectable to the ends of said two of said second winding sections opposite their first ends thereof which are adapted to be connected to line voltage and the other end of said second circuit being connectable to line voltage,

for operation of said motor at a line voltage level greater than said first line voltage level, the other ends of said first and second circuits being connectable together.

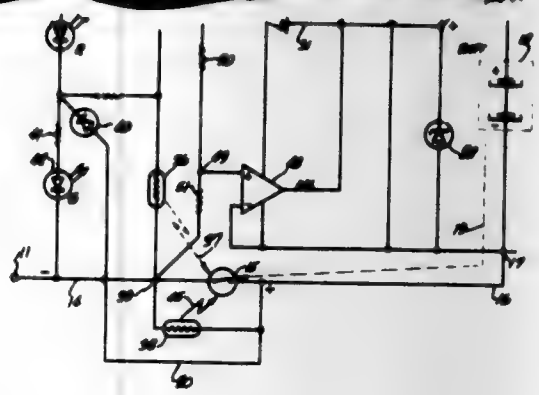
4,513,238

AUTOMATIC BATTERY CHARGER WITH THERMAL CONTROL

John M. Orban, Santa Monica, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed May 13, 1983, Ser. No. 494,562
Int. Cl.³ H02J *7/00*
U.S. Cl. 320—23 **8 Claims**

1. A battery charger for removable rechargable batteries,



oscillator circuit means for switching said charging circuit means between said fast charge rate and slow charge rate automatically prior to insertion of a battery to allow a user to select a desired charging mode, and

indicator means in said charger for indicating to a user whether the charger is operating at the fast charge rate or the slow charge rate.

4,513,239

APPARATUS FOR CONTROLLING A CHARGING GENERATOR

Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

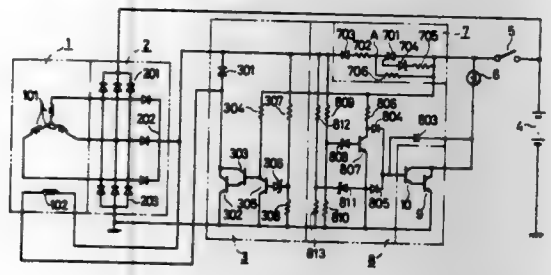
Filed Mar. 7, 1983, Ser. No. 472,826

Claims priority, application Japan, Mar. 9, 1982, 57-38917; Mar. 9, 1982, 57-38918; Mar. 9, 1982, 57-38919; Mar. 23, 1982, 57-47926; Mar. 23, 1982, 57-47928

Int. Cl.³ H02J 7/14

U.S. Cl. 322—99

14 Claims



1. An apparatus for controlling a charging generator having armature coils and a field coil, comprising:

(a) a rectifier for rectifying an a.c. output induced in said armature coils, said rectifier having a first rectifier output terminal, a second rectifier output terminal, and a ground terminal;

(b) a storage battery chargeable by an output from said first rectifier output terminal;

(c) a voltage regulator for turning a current flowing form said second rectifier output terminal to the field coil on and off to control an output voltage of the charging generator so as to be maintained at a preset value;

(d) a switch;

(e) an indicator connected between said storage battery and said ground terminal through said switch;

(f) a switch element connected in series between said indicator and said ground terminal;

(g) diagnostic means for detecting malfunctions of the charg-

...CELLATION OF SUBSYNCHRONOUS RESONANCE

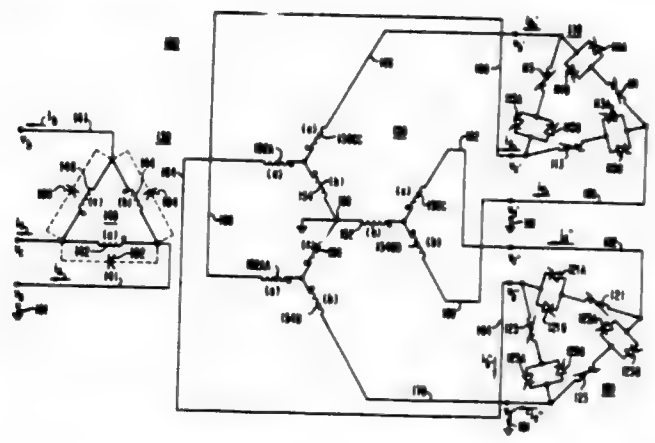
Thomas H. Putman, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1983, Ser. No. 502,374

Int. Cl.³ G05F 1/70

U.S. Cl. 323—210

18 Claims



1. An apparatus for the selective cancellation of harmonic frequencies of current of a multiphase dynamic stabilizer for a multiphase AC electrical network, comprising:

plurality of multiphase dynamic stabilizer means for providing electrical stabilization to the electrical network;

control means producing a control signal for controlling the operation of the stabilizer means on a periodic basis to produce the stabilization; and

transformer means electrically interconnected intermediate the phases of the electrical network and the phases of each of the stabilizer means, the transformer means rotating the phases of the selected harmonic frequencies of currents produced in each of the stabilizer means with respect to those of the other stabilizer means such that the selected harmonic frequencies are substantially cancelled in each of the stabilizer means.

4,513,241

FOLDBACK CURRENT LIMITING DRIVER

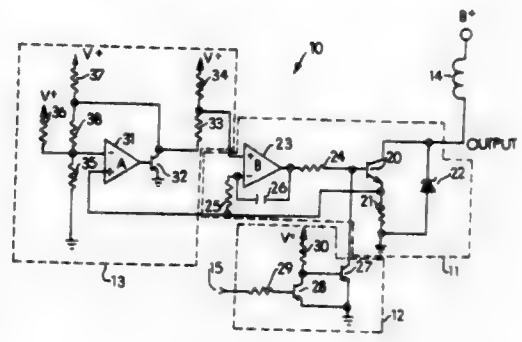
Melvin B. Bowman, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1983, Ser. No. 481,426

Int. Cl.³ G05F 1/46

U.S. Cl. 323—285

8 Claims



6. A voltage driving circuit having foldback current limiting characteristics comprising:

an input terminal means for receiving a logic signal;

a current limiting circuit means for restricting current through a load to a predetermined maximum value and coupled to said input terminal means;

a latching transistor means coupled to the input of said current limiting circuit means;

a comparator means having an output coupled to the base of said latching transistor means, a negative input to said comparator coupled to a reference voltage, and a positive input to said comparator means coupled to said current limiting circuit and receiving a signal indicative of the magnitude of load current for latching the load current at a level lower than said predetermined maximum value until a logic signal is applied to said input terminal means to turn off the load current, thereby providing lower power dissipation in the load and a faster load turnoff time as a result of less energy stored in the load and resulting in a more precise control of a variable duty cycle output;

a negative input of said comparator means being connected to ground through a first resistor, connected to a voltage source through a second resistor, and connected to the voltage source through a combination of a third and fourth resistor; and

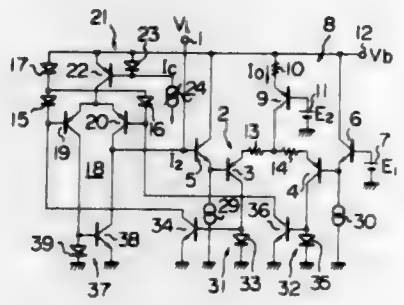
said latching transistor means being connected to the voltage source through the series combination of a fifth and sixth resistor and is also connected to a node intermediate said third and fourth resistor, the magnitudes of the resistors determining the switching points of the circuit.

4,513,242

ELECTRONIC IMPEDANCE DEVICE FOR PROVIDING A VARIABLE IMPEDANCE

Fumihiko Yokogawa, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,316
Claims priority, application Japan, Oct. 1, 1981, 56-156396
Int. Cl.³ H03H *11/00*
U.S. Cl. 323—352 **10 Claims**



1. An electronic impedance device, comprising in combination an input terminal to be connected to a source of a signal voltage;

differential voltage-to-current converting means having a relatively high input impedance and operative to convert said signal voltage into two differential output currents variable with the signal voltage;

a pair of p-n junction elements connected to said voltage-to-current converting means;

current transfer means comprising a pair of current mirror networks connected between said voltage-to-current converting means and said p-n junction elements, respectively, and operative to transfer said differential output currents to said p-n junction elements;

a differential current amplifier circuit which is responsive to voltages built up respectively across said p-n junction elements and which has an output terminal at which the amplifier circuit is to produce its output current; and

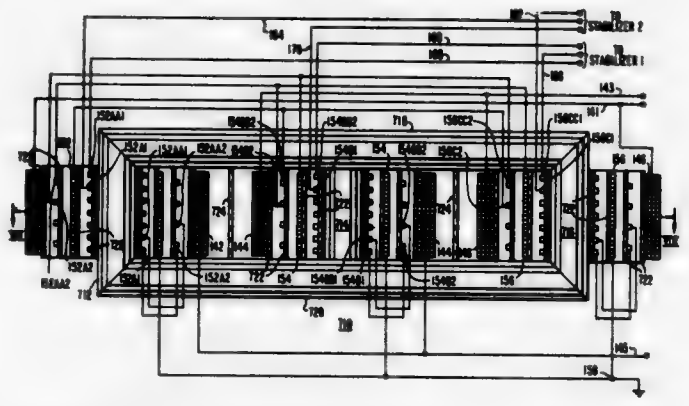
feedback means providing connection from the output terminal of said amplifier circuit to said input terminal for permitting the output current of the amplifier to be fed back to said input terminal.

4,513,243

CORE FORM TRANSFORMER FOR SELECTIVE CANCELLATION OF SUBSYNCHRONOUS RESONANCE

Paul G. Novak, Hubbard, Ohio, and Theodore R. Specht, Sharon, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1983, Ser. No. 502,379
Int. Cl.³ H01F *33/00*
U.S. Cl. 323—361 **5 Claims**



1. A three phase core form transformer, comprising:

a three legged magnetic core;

a plurality of primary windings corresponding to the phases;

two auxiliary secondary windings per phase, wound to provide first and second common bifilar portions;

a plurality of principal secondary windings corresponding to the number of primary windings;

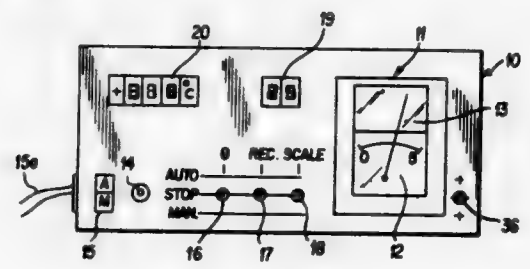
the first common bifilar portion, the principal secondary winding, the second common bifilar portion, and the primary winding being coaxial and radially adjacent, in the recited order, starting from each leg of the magnetic core, the primary windings being connected in delta, the principal secondary windings and auxiliary secondary windings being connected in a forked wye wherein one auxiliary secondary winding of each of the other two phases is electrically connected to a free end of each of the wye connected principal secondary windings resulting in all three phases being present in each combination of principal secondary windings and auxiliary secondary windings, wherein the leakage reactance of the principal secondary winding and the common leakage reactance of the auxiliary secondary windings attached thereto for each phase are positive in value with the leakage reactance of the principal secondary winding being about twice that of the common leakage reactance of the auxiliary windings.

4,513,244

MEASURING AND RECORDING APPARATUS

Claude le Henand, 15bis, rue des Meuniers, 45300 Pithiviers, France

Filed May 18, 1981, Ser. No. 264,846
Int. Cl.³ G01D *9/00, 15/16*
U.S. Cl. 324—51 **5 Claims**



1. A measuring and recording apparatus for testing the

operation of a home electrical appliance comprising, in a common housing:

multiscale electrical current displaying and recording means for providing a permanent record on a paper strip having an electrical motor for unwinding said strip,

a power line for delivery of electrical power to the home electrical appliance to be tested,

a current probe for measurement of the current in said power line,

a temperature probe adapted to be located in said home electrical appliance for detection of the temperature thereof,

digital temperature meter means associated with said temperature probe and provided with memory means operable to store a maximum value of the temperature sensed by said temperature probe,

electrical circuit means for operating said motor in response to detection of a current above a predetermined level by said current probe,

and change over means for alternately delivering signals representative of the current sensed by said current probe and of the temperature sensed by said temperature probe to said current recorder, whereby a permanent record of the current and temperature is obtained.

4,513,245

DC CURRENT DETECTOR

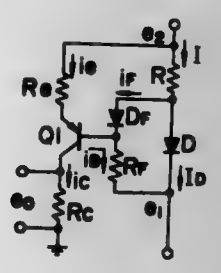
Tatsuo Yokoyama, Kakogawa, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Jul. 14, 1982, Ser. No. 398,383

Claims priority, application Japan, Jul. 15, 1981, 56-110275

Int. Cl.³ G01R *19/22, 1/30*

U.S. Cl. 324—119 **9 Claims**



1. A DC current detector comprising:

a current detecting resistor having first and second terminals;

a first diode connected to the first terminal of said current detecting resistor in series with said current detecting resistor in a forward direction relative to a current to be detected;

an emitter resistor connected to the second terminal of said current detecting resistor;

a second diode connected to the first terminal of said current detecting resistor;

a transistor having an emitter connected to said emitter resistor, having a base connected to said second diode at a first node, and having a collector;

a collector resistor having a first terminal connected to the collector of said transistor, having a second terminal, and having a detected voltage across the first and second terminals of said collector resistor; and

an equalizing resistor, operatively connected to said first node and said first diode, for equalizing the base-emitter voltage of said transistor and the forward voltage of said second diode.

4,513,246

CLAMP-ON AMMETER

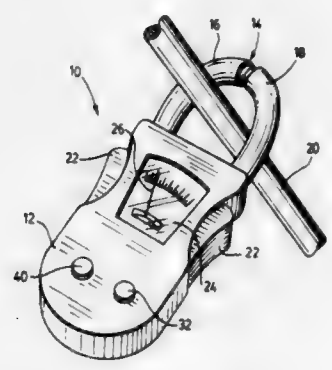
Aurele Blain, 23 Allanbrooke Dr., Islington, Ontario, Canada M9A 3N7

Filed Sep. 23, 1982, Ser. No. 422,243

Claims priority, application Canada, Sep. 16, 1982, 411606

Int. Cl.³ G01R *19/00*

U.S. Cl. 324—127 **8 Claims**



1. A device for measuring a current of magnitude less than a predetermined maximum value, flowing in a conductor comprising:

a magnetic locatable around the conductor;

residual flux reset means which can be momentarily activated to induce in the core a magnetic flux that produces in the magnetic core a residual magnetic flux substantially identical to the residual magnetism which is produced in the core when unmagnetized by a direct current of the predetermined maximum value flowing in a conductor around which the core is located;

offset flux generating means for inducing in the magnetic core an offsetting magnetic flux of substantially identical magnitude but of opposite direction to the residual magnetic flux;

indicator means for indicating the magnitude of the magnetic flux in the magnetic core;

whereby, with the residual flux resetting means momentarily activated to produce the residual magnetic flux in the magnetic core and with the magnetic core then located around the conductor, the indicator means respond to the magnetic flux induced in the core by current in the conductor and the signal generated by the indicator means is indicative of the magnitude of any DC current flowing in the conductor of magnitude less than the predetermined maximum value.

4,513,247

METHOD FOR RECORDING THREE-DIMENSIONAL NUCLEAR MAGNETIC RESONANCE SPECTRA AND A DEVICE FOR CARRYING OUT THE SAME

Richard R. Ernst, Winterthur, Switzerland, assignor to Spectrospin AG, Switzerland

Filed Nov. 1, 1982, Ser. No. 438,182

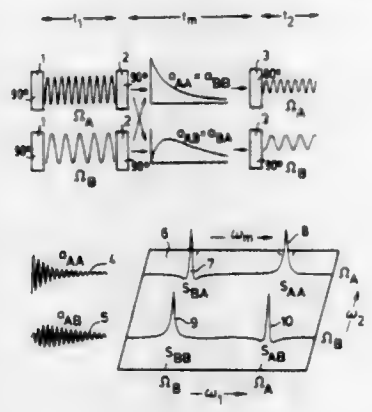
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143626

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **2 Claims**

1. A method for recording three-dimensional nuclear magnetic resonance spectra in which the nuclear spin system to be investigated is excited by three successive 90° pulses applied at intervals and an interferogram obtained after application of the third 90° pulse is subjected to Fourier analysis, in which further a plurality of such measurements is taken with different intervals between the first and the second 90° pulse known as the the evolution period t_1 and selected parameters of the resonance lines obtained by the said Fourier analysis are stored as instantaneous values of an additional interferogram and subjected to a second Fourier analysis, and in which finally the said measurements are taken for different time intervals between the second and the third pulse known as the mixing time

t_m to detect the variations with time of the selected parameters of the resonance lines determined by the two-fold Fourier transformation, characterized in that each time the measurement is repeated with a varied evolution period t_1, the mixing time t_m is simultaneously varied proportionally to the evolution period so as to cover a region of the mixing time of interest



with the given number of measurements taken with different evolution periods, and that the transient amplitude variation of the resonance lines is determined either from the shape of the obtained resonance lines or by reverse transformation of the individual resonance lines into the time domain along the frequency axis corresponding to the evolution period and mixing time, t_1, t_m respectively.

4,513,248

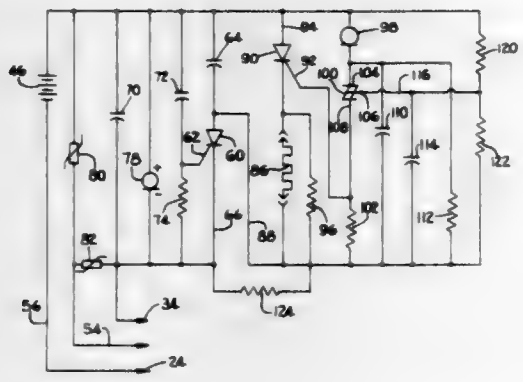
FLUID CONDUCTIVITY SENSOR

Francis M. Miller, Snyder, N.Y., assignor to Conax Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 207,340, Nov. 17, 1980, Pat. No. 4,382,231. This application Feb. 1, 1983, Ser. No. 462,913

Int. Cl.[3] **G01N** *27/02*

U.S. Cl. 324—439 **24 Claims**



1. A circuit for activating a device in response to a predetermined condition in the electrical conductivity of a fluid comprising:

(a) electrode means adapted to be exposed to said fluid;

(b) a conductivity sensing circuit having an input operatively connected to said electrode means and being responsive to a predetermined condition of the conductivity of said fluid, said circuit including energy storage means for storing electrical energy building up when said electrode means is exposed to an electrically conductive fluid;

(c) a current conducting device activated in response to electrical energy of a predetermined minimum magnitude being applied thereto; and

(d) circuit means connected to said conductivity sensing circuit and to said current conducting device;

(e) said circuit means having a first portion operative in response to said predetermined condition of the conductivity of said fluid as sensed by said conductivity sensing circuit for applying to said device electrical energy of sufficient magnitude to activate said device;

(f) said circuit means having a second portion responsive to a predetermined level of energy in said energy storage means when the conductivity of said fluid is less than said predetermined condition for causing flow of current through said device in a manner applying to said device electrical energy having less than said predetermined minimum magnitude required to activate said device;

(g) whereby a build-up of energy on said energy storage means in response to fluid having a conductivity less than said predetermined condition is removed from said energy storage means and conducted through said device without activating said device so as to prevent premature activation of said device.

4,513,249

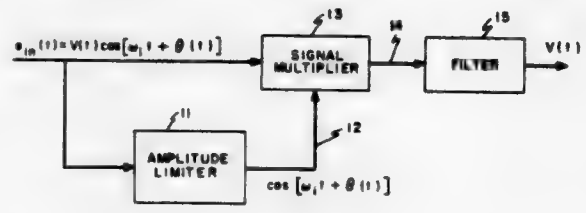
METHOD AND APPARATUS FOR SIGNAL DETECTION, SEPARATION AND SUPPRESSION

Elie J. Baghdady, 21 Overlook Dr., Weston, Mass. 02193

Division of Ser. No. 32,405, Apr. 23, 1979, Pat. No. 4,328,591. This application Mar. 12, 1982, Ser. No. 357,576

Int. Cl.[3] **H04B** *7/12;* **H04L** *1/04;* **H03K** *9/02*

U.S. Cl. 328—150 **6 Claims**



1. An envelope detector for an input signal of frequency ω comprising:

an amplitude limiter for providing an amplitude limited replica of the input signal;

means for multiplying said replica and the input signal; and

means for filtering the product of said multiplying means to pass all frequencies that make up the envelope including DC and block all frequencies that make up a component in said product centered at the frequency 2 ω.

4,513,250

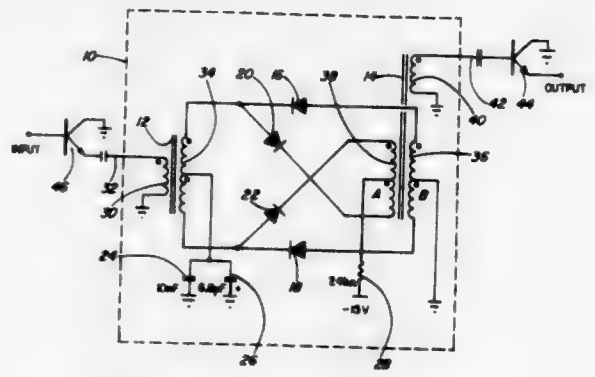
SIGNAL CUBER

Stephen G. Harman, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 31, 1983, Ser. No. 499,309

Int. Cl.[3] **H03B** *1/04;* **H03F** *1/32*

U.S. Cl. 328—163 **8 Claims**

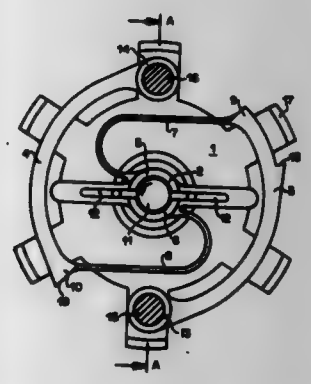


1. A signal cuber comprising a split-ring mixer having an input, an output, and two ports at which in response to an input signal applied to the input of the mixer there is produced a signal having a frequency component at the second harmonic of the input signal, and means for unequally terminating said ports to reflect at least part of said frequency component back into the mixer, thereby to produce a frequency component at the third harmonic of the input signal at the output of the mixer.

4,513,251
MILLER COMPENSATION FOR AN OPERATIONAL AMPLIFIER

Robert L. Vyne, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed May 13, 1983, Ser. No. 494,148
Int. Cl.³ H03F 1/14
U.S. Cl. 330—292 7 Claims

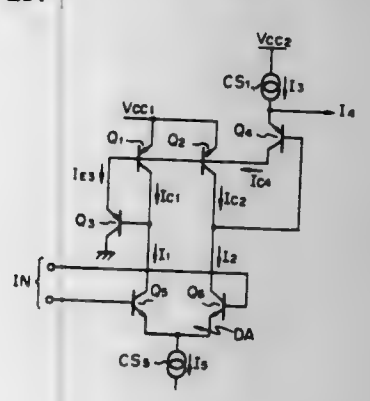


1. An operational amplifier for providing load current to an output terminal, comprising:
an input amplifier stage;
an output amplifier stage including first and second NPN output transistors each having base, emitter and collector terminals, said first NPN output transistor having an emitter coupled to the output terminal for conducting load current thereto and said second NPN output transistor having a collector coupled to said output terminal for sinking a load current therefrom;
a second amplifier stage including at least a first emitter-follower transistor coupled between the output of said input stage and the base of said second NPN output transistor;
a first capacitor coupled between the output of said input stage and said output terminal for establishing a frequency stability loop and broad banding the frequency response of said second stage; and
a second capacitor coupled between the base of said second NPN transistor and said output terminal, said first capacitor providing frequency compensation for said frequency stability loop established by said first capacitor.

4,513,252
ACTIVE LOAD CIRCUIT

Yoshiaki Sano, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 15, 1983, Ser. No. 561,966
Claims priority, application Japan, Dec. 25, 1982, 57-233262
Int. Cl.³ H03F 3/45
U.S. Cl. 330—257 3 Claims

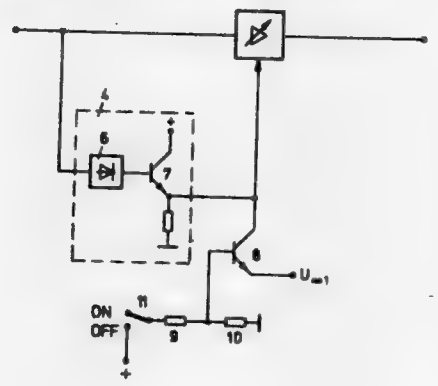


1. An active load circuit, comprising:
first and second transistors each having an emitter connected to a voltage source and each having a collector and a base;
a third transistor having an emitter connected to the bases of said first and second transistors and a base connected to one of the collectors of said first and second transistors, causing equal collector currents to flow in said first and second transistors;
a fourth transistor having a collector connected to the emitter of said third transistor, a base connected to the other of the collectors of said first and second transistors, and an emitter; and
a constant current source connected to the emitter of said fourth transistor.

4,513,253
ELECTRONIC AMPLIFIER HAVING A TRANSMISSION FACTOR THAT IS VARIABLE BY MEANS OF A CONTROLLABLE VOLTAGE, SPECIFICALLY AN EXPANDER

Ernst F. Schröder, Hanover, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,631
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150536
Int. Cl.³ H03G 3/20
U.S. Cl. 330—278 9 Claims



1. An electronic amplifier circuit, particularly an expander circuit, comprising in combination: an amplifier having a transmission factor which can be varied by means of a control voltage, said amplifier having a signal input, a signal output and a control voltage input; control circuit means, responsive to the signal in the transmission path of said amplifier, for generating a variable control voltage; a source of fixed control voltage; switching circuit means for applying said variable control voltage to said control input of said amplifier when in a first condition and for applying said fixed control voltage to said control input of said amplifier when in a second condition; and means, responsive to the condition of said switching circuit means, for reducing the output voltage of said control circuit means when said switching circuit means is in said second condition.

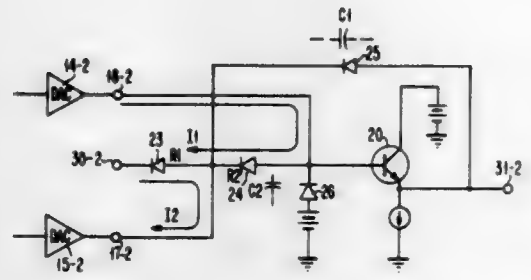
4,513,254
INTEGRATED CIRCUIT FILTER WITH ADJUSTABLE CHARACTERISTICS

Jerome D. Harr, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1983, Ser. No. 495,311
Int. Cl.³ H03F 1/34
U.S. Cl. 330—294 10 Claims

1. An adjustable filter having an input terminal and an output terminal and at least one control terminal, said filter comprising first and second resistor elements, first and second capacitor elements, an amplifier element, and means interconnecting said elements between said input and output terminals to define a SALLEN-KEY type filter configuration, said filter being formed on a semiconductor chip as an integrated circuit having a transistor amplifying device as said amplifier element, a first pair of diodes interconnected as said first and second resistor elements, said control terminal being connected between the base of said transistor amplifying device and said diode corre-

sponding to one of said resistor elements whereby the value of the first and second resistor elements may be adjusted in accor-



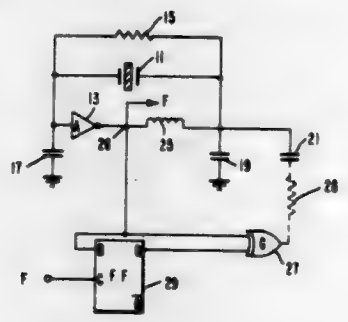
dance with an external control current supplied to said control terminal to adjust the cutoff frequency of said filter.

4,513,255

PHASE LOCKED CRYSTAL OSCILLATOR IMPLEMENTED WITH DIGITAL LOGIC ELEMENTS

William H. Terbrack, Irvine, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 25, 1983, Ser. No. 461,099
Int. Cl.³ H03B *5/32*; H03L *7/08*
U.S. Cl. 331—1 A **3 Claims**



1. A quartz crystal time-based oscillator circuit adapted to phase-lock onto a square wave reference frequency to produce an oscillator signal, said oscillator circuit including a quartz crystal having a single natural resonant frequency and a tuning circuit having reactive elements interconnectable into first and second predetermined electrical circuit configurations operative to set said oscillator to operate at first and second predetermined frequencies respectively, said oscillator circuit being characterized by digital control means for alternately switching said tuning circuit into its first and second configurations in response to reversals in the relative phases of said reference frequency and said oscillator signal, said control means includes a flip flop and a logic gate, said logic gate having its output connected to said tuning circuit, one of its inputs connected to respond to the oscillator signal and another of its inputs connected to respond to an output of said flip flop, said flip flop having a data input and a clock input, one connected to respond to said oscillator signal and the other connected to respond to said reference frequency.

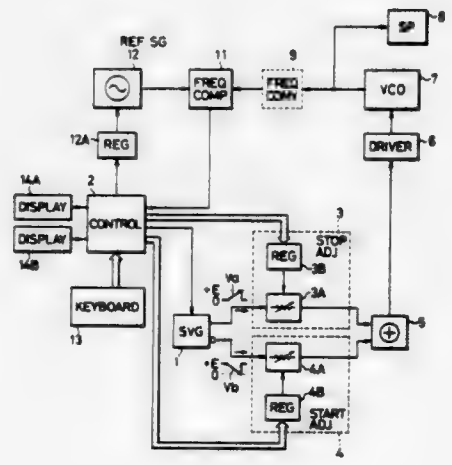
4,513,256

SWEPT FREQUENCY SIGNAL GENERATOR

Takenori Kurihara, Gyoda; Shigeki Tojo, Musashino, and Yohei Hirakoso, Gyoda, all of Japan, assignors to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 508,933
Claims priority, application Japan, Jul. 5, 1982, 57-117328
Int. Cl.³ H03B *23/00*; H03L *7/12*
U.S. Cl. 331—4 **11 Claims**

1. A swept frequency signal generator comprising:
a sweep voltage generator for generating a sweep voltage;
sweep stop adjusting means connected to the sweep voltage generator, for adjusting the amplitude of said sweep voltage to a first selected set value corresponding to the stop frequency of said sweep;
sweep polarity inverting means connected to the sweep voltage generator, for inverting the sweep direction of said sweep voltage;
sweep start adjusting means connected to the sweep polarity inverting means, for adjusting the amplitude of the inverted sweep voltage to a second selected set value corresponding to the start frequency of said sweep;
a first summing circuit connected to the sweep start and stop adjusting means, for summing the adjusted sweep voltages;
a voltage controlled oscillator connected to the first summing circuit and controlled in oscillation frequency by the output of the summing circuit to provide a frequency sweep;
a reference signal generator for producing a reference signal with a selected reference frequency;
comparing means coupled with the reference signal generator and the voltage controlled oscillator, for comparing the frequencies of the reference signal and the output of the voltage controlled oscillator;
a controller including
means for selectively setting said first and second set values of the sweep start and stop frequencies into the reference signal generator,



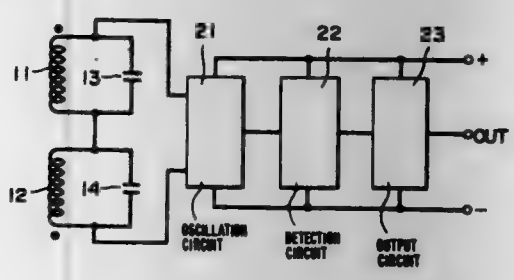
means for changing the respective first and second set values set in the sweep start and stop adjusting means to cause each respective frequency of the reference signal to agree with the respective output of the voltage controlled oscillator according to the output of said comparing means,
means for setting the sweep voltage generator in any mode of operation selected from a sweep start state, a reset state, a sweep stop holding state and a repetitive sweep mode state,
means for checking the output state of the comparing means,
means for controlling the setting of the sweep start adjusting means in accordance with the output state of the comparing means for bringing the oscillation frequency of the voltage controlled oscillator into agreement with the sweep start frequency, and
means for controlling the setting of the sweep stop adjusting means to bring the oscillation frequency of the voltage controlled oscillator into agreement with the sweep stop frequency; and
input means for setting and inputting data for said frequencies and modes of operation into the controller.

4,513,257

PROXIMITY SWITCH WITH OPPOSITELY POLARIZED COILS

Kiyoshi Miyamoto, Nagaokakyo, and Kenji Ueda, Otsu, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 1, 1982, Ser. No. 445,850
Claims priority, application Japan, Dec. 3, 1981, 56-195455; Dec. 17, 1981, 56-189180[U]
Int. Cl.³ G01P *13/00;* H01F *27/38*
U.S. Cl. 331—65 6 Claims



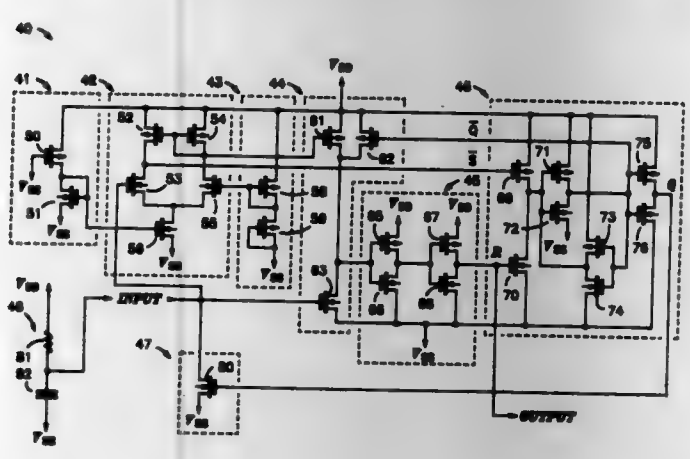
1. A proximity switch comprising
a detection coil,
a first capacitor connected in parallel with the detection coil for forming a resonant circuit,
an auxiliary coil,
a second capacitor connected in parallel with the auxiliary coil for forming a resonant circuit,
an oscillation circuit connected to said detection and auxiliary coils which are connected in series and in reverse winding directions, and
an output circuit connected to the oscillation circuit for detecting variations in the output of the oscillation circuit, said second capacitor having a capacitance larger than that of the first capacitor so that said second capacitor has a reduced low impedance at an oscillation frequency determined by the detection coil and the first capacitor.

4,513,258

SINGLE INPUT OSCILLATOR CIRCUIT

Michael J. Jamiolkowski, and Jules D. Campbell, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1983, Ser. No. 510,145
Int. Cl.³ H03K *3/354, 4/50*
U.S. Cl. 331—111 13 Claims



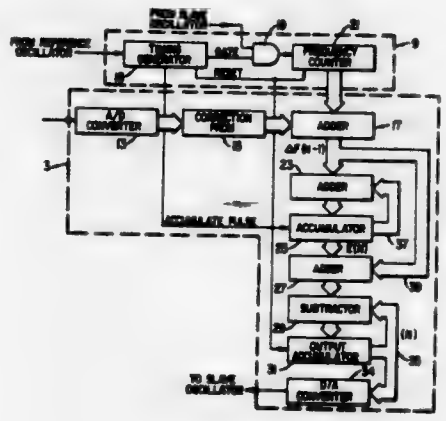
1. A single input oscillator circuit for providing an oscillating output signal in response to the presence of an input signal, comprising:
means for receiving an input signal;
a differential amplifier having a first input coupled to the means for receiving the input signal, a second input coupled to a reference voltage, and first and second outputs, for providing first and second output signals which are proportional to the difference between the reference voltage and the input signal;
reference voltage means connected to the second input for providing the reference voltage;
a gain stage with variable bias having an input coupled to the means for receiving the input signal, a first bias control terminal coupled to the second output of the differential amplifier, a second bias control terminal, and an output for providing the oscillating output signal;
latch means having a first input coupled to the first output of the differential amplifier, a second input coupled to the output of the gain stage, a first output coupled to the second bias control terminal, and a second output, for latching an output signal at a predetermined level in response to the level of the signals at the first and second inputs thereof; and
discharge means coupled between the means for receiving the input signal and a reference potential node, for selectively coupling the input of the oscillator circuit to the reference potential node in response to the output of the latch means.

4,513,259

CLOSED LOOP TEMPERATURE COMPENSATED FREQUENCY REFERENCE

Marvin E. Frerking, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 23, 1982, Ser. No. 452,641
Int. Cl.³ H03L *1/00*
U.S. Cl. 331—176 8 Claims



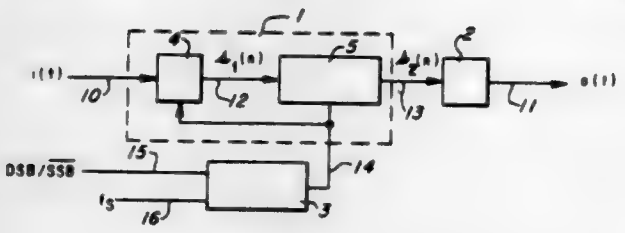
1. A closed loop frequency reference comprising:
controllable oscillator means for generating a first frequency signal in response to a control signal;
reference oscillator means for generating a second frequency signal;
comparator means for comparing the first frequency signal with the second frequency signal to obtain a composite signal; and
error signal generator means for generating the control signal during a selected period of time, said error signal generator means including:
frequency averaging means for averaging the first frequency signal between a preceding sample time and a current sample time representing a sample interval;
first accumulator means for accumulating frequency error up to the current sample time;
divisor means for obtaining a quotient of the accumulated frequency error over the sample interval;
summing means for summing the quotient with the averaged first frequency to obtain a weighted frequency error; and
subtractor means for subtracting the weighted frequency error from a previous correction factor to produce a new correction factor at the output of the subtractor means as the control signal.

4,513,260

PROGRAMMABLE FREQUENCY CONVERTING FILTER

Lawrence H. Ragan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 10, 1977, Ser. No. 758,365
Int. Cl.³ H03H *15/02, 17/06*
U.S. Cl. 333—165 **12 Claims**



1. A programmable frequency converting filter having a plurality of selectable operating frequency modes, said filter comprising:

a charge transfer device transversal filter and a frequency band selector;

said frequency band selector having

at least one control lead for receiving a logic signal,

logic circuitry means provided therein for selecting a frequency mode from the plurality of operable frequency modes in response to the logic signal received thereby to generate clock signals corresponding to the selected frequency mode, and

an output clock lead on which the generated clock signals of a frequency unique to the selected mode are transmitted; and

said transversal filter having

inputs coupled to the output clock lead of said frequency band selector for receiving said clock signals, and

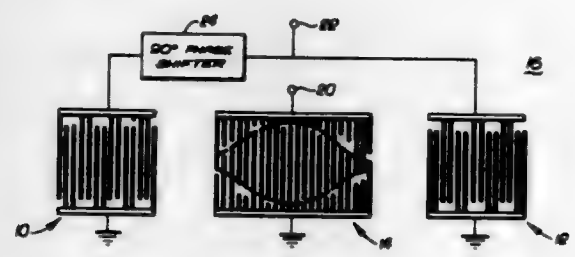
an output providing a plurality of passbands with each passband of said plurality of passbands having a width proportional to the frequency of said clock signals.

4,513,261

LOW-LOSS ACOUSTIC WAVE FILTER DEVICE

Kuo-Hsiung Yen, Manhattan Beach; Robert B. Stokes, Torrance; Kei-Fung Lau, Harbor City; Alvin M. Kong, and Reynold S. Kagiwada, both of Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 12, 1983, Ser. No. 493,917
Int. Cl.³ H03H *9/145, 9/64*
U.S. Cl. 333—194 **9 Claims**



1. An acoustic wave filter comprising:

a substrate of piezoelectric material;

a symmetric electroacoustic output transducer disposed on said substrate;

a pair of electroacoustic input transducers disposed on said substrate at equal distances on opposite sides of said output transducer, one of said input transducers being symmetric and the other being antisymmetric, the two having transfer functions that differ by a ninety-degree angle and having an aperture substantially equal to that of the output transducer; and

ninety-degree phase shifting means coupled to one of said input transducers, to compensate for the ninety-degree phase shift introduced by said antisymmetric input transducer;

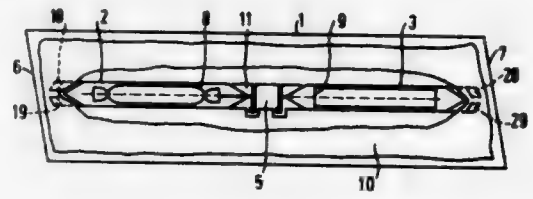
whereby signals reflected from said output transducer to said antisymmetric input transducer and back again will return with a 180-degree phase shift and will thereby cancel signals reflected from said output transducer to said symmetric input transducer and back again, and whereby the cancellation effect is relatively independent of frequency.

4,513,262

ACOUSTIC SURFACE WAVE DEVICE

John Schofield, Coulsdon, and Robert F. Milsom, Redhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 13, 1983, Ser. No. 531,806
Claims priority, application United Kingdom, Sep. 15, 1982, 8226282
Int. Cl.³ H03H *9/64, 9/145, 9/30*
U.S. Cl. 333—194 **7 Claims**



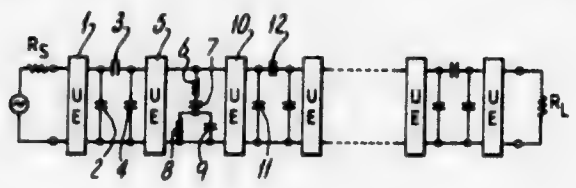
1. An acoustic surface wave device comprising a piezoelectric substrate for propagating acoustic surface waves at a surface thereof and an acoustic surface wave transducer formed on said surface to launch or to receive acoustic surface waves at said surface along a propagation direction parallel to the axis of the transducer, in which said transducer includes at least one interdigital array of two overlapping sets of electrodes with each set connected to one of a pair of opposite bus bars, characterized in that the overall width of an interdigital array between the outer boundaries of a said pair of bus bars measured in a direction at right angles to the acoustic surface wave propagation direction is so determined, in relation to the wavelength λ_c at the center frequency f_c of the acoustic surface wave pass-band of the transducer, and in relation to the electrode distribution, that a said interdigital array functions as an acoustic surface waveguide which will only propagate and transduce a single acoustic surface wave guided energy mode which is symmetrical about the central propagation axis of the array.

4,513,263

BANDPASS FILTERS

Brian J. Minnis, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,684
Claims priority, application United Kingdom, Dec. 24, 1981, 8138960
Int. Cl.³ H01P *1/203*
U.S. Cl. 333—204 **14 Claims**



1. A bandpass filter comprising portions of triple plate strip transmission line each having a length equal to a quarter of a wavelength at the center frequency of the stop band which is immediately above the lowest frequency pass band of the filter,

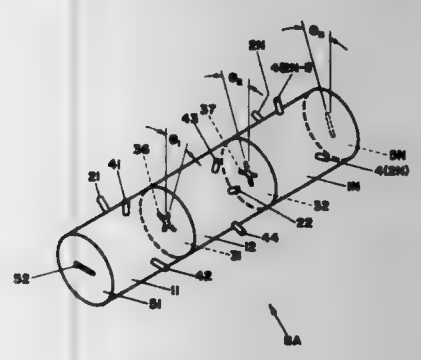
said filter comprising a cascade of said portions between two ports, said portions connecting series and shunt filter elements to form a succession of filter sections, said succession of sections comprising sections of a first type each including at least one series filter element and at least one shunt filter element, said elements being capacitive at frequencies below said center frequency of said stop band, and said succession comprising at least one section of a second type, each section of said second type being connected between two sections of the first type, said second type of section comprising an open circuit shunt stub formed from four of said portions having a combined path length equal to said wavelength.

4,513,264

BANDPASS FILTER WITH PLURALITY OF WAVE-GUIDE CAVITIES

James B. Dorey, and Wai-Cheung Tang, both of Kitchener, Canada, assignors to Com Dev Ltd., Cambridge, Canada

Filed Dec. 13, 1982, Ser. No. 448,969
Claims priority, application Canada, Aug. 25, 1982, 410124
Int. Cl.³ H01P *1/16, 1/208*
U.S. Cl. 333—212 **12 Claims**



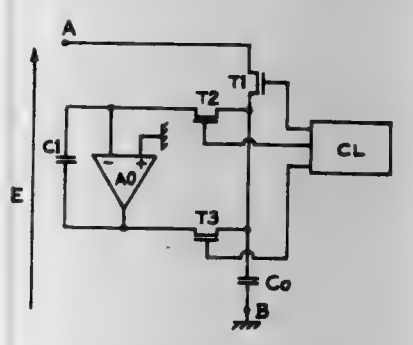
1. A bandpass filter comprising a plurality of cascaded waveguide cavities with inter-cavity coupling means, said filter having an input reference mode, at least one of said cavities being rotated with respect to said reference mode, thereby causing quasi-orthogonal coupling structures to be introduced into said cavities, each cavity having a length equal to n times the half-guide wave length at a centre frequency of the filter, where n is an integer and corresponds to the third mode index of a TE mode micro-wave to be transmitted.

4,513,265

3-PHASE SWITCHED CAPACITOR CIRCUIT HAVING AN INDUCTIVE CHARACTERISTIC

Boris Sokoloff, Grenoble, France, assignor to Societe Pour L'Etude Et La Fabrication De Circuits Integres Speciaux - E.F.C.I.S., Grenoble, France

Filed Sep. 24, 1982, Ser. No. 422,390
Claims priority, application France, Oct. 2, 1981, 81 18636
Int. Cl.³ H03H *11/48*
U.S. Cl. 333—214 **3 Claims**



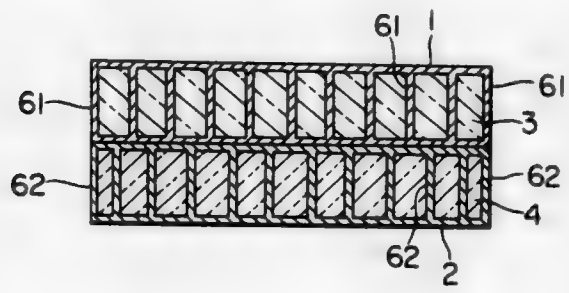
1. A circuit having an inductance characteristic, comprising a first terminal; a second terminal; an operational amplifier, having an input and an output; a first capacitor; a second capacitor; a first switch; a second switch; and a third switch; said switches being controlled by a switching control logic circuit according to a periodic cycle of not more than three non overlapping phases; said first, second and third switches being respectively closed during a first, second and third phase; said first switch being connected on one side to said first terminal, and on the other side being connected only to three components namely to a first side of said first capacitor and to one side second and third switches; said second switch being connected on the other side to said inut of operational amplifier; said third switch being connected on the other side to said output of said operational amplifier; said second capacitor being connected on one side to said input and on the other side only to said output and to the other side of said third switch; said first capacitor having a second side connected to said second terminal during said first phase and to ground during second and third phases.

4,513,266

MICROWAVE GROUND SHIELD STRUCTURE

Osamu Ishihara, Sanda, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 19, 1982, Ser. No. 435,116
Claims priority, application Japan, Nov. 28, 1981, 56-193520
Int. Cl.³ H01P *3/08*
U.S. Cl. 333—238 **2 Claims**



1. In a microwave circuit of a three plate construction having a plurality of independent circuits formed in an inner level, said inner level being sandwiched between two dielectric boards with conductive layers on their outer surfaces to provide a pair of outer grounded layers, the improvement comprising:

a plurality of through holes formed in said dielectric boards between the physically neighboring circuits in said plurality of independent circuits in said inner level and extending from one of said outer conductive layers to the other, said through holes being formed in line and connected to a common electrically conductive layer at intermediate portions thereof, said through holes being formed at offset positions on the opposite sides of the common electrically conductive layer, and

a metallized coating on the inner surfaces of said through holes connecting said outer conductive grounded layers and providing a ground shield between said neighboring circuits.

4,513,267

STATIONARY CONTACT STRAP TO ACHIEVE A CURRENT LIMITING BLOW-OFF EFFECT

David P. McClellan, Westminster, and Frank W. Kussy, Randallstown, both of Md., assignors to Siemens-Allis, Inc., Atlanta, Ga.

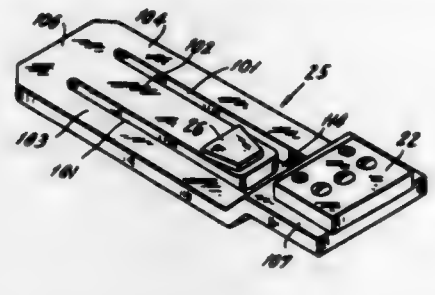
Filed Mar. 28, 1983, Ser. No. 479,367
Int. Cl.³ H01H *77/02*
U.S. Cl. 335—16 **12 Claims**

1. A circuit breaker including contact means adapted to be blown open by electrodynamic forces generated under severe fault current conditions, said contact means comprising a stationary section including a stationary contact, and a movable

section including a movable contact operable into and out of engagement with said stationary contact to respectively close and open said circuit breaker;

said stationary section also including an interior arm, first and second exterior arms disposed outboard of said interior arm along opposite sides thereof, each of said arms having a first end and a second end;

a connecting section electrically connecting said arms together at their said first ends and being co-planar with said interior arm and said exterior arms, a terminal section connecting said exterior arms together at their said second ends and adapted for fixed connection in an external circuit, said stationary contact being mounted to said interior



arm at its said second end and being disposed between said terminal section and said connecting section;

said movable section also including a movable arm having said movable contact mounted at one end thereof;

said movable arm extending from said one end toward said connecting section and having its other end adapted for fixed electrical connection in an external circuit;

with said contacts engaged said movable arm confronting said interior arm in closely spaced relationship and said exterior arms being disposed outboard of said movable arm whereby current flow in said interior arm is opposite to current flow in said movable and exterior arms resulting in a strong blowoff effect under severe fault current conditions.

4,513,268

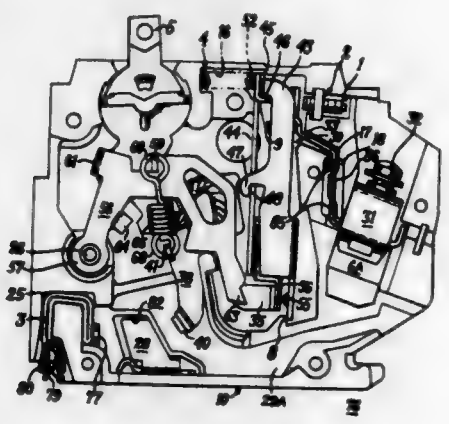
AUTOMATED Q-LINE CIRCUIT BREAKER

Raymond K. Seymour, Plainville; Joseph M. Palmieri, Southington; William J. Ashline, Bristol, and Dennis J. Doughty, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,259

Int. Cl.³ H01H *75/12*

U.S. Cl. 335—35 **14 Claims**



1. An electric circuit breaker for fully automated assembly comprising:

a molded plastic case having a plurality of retaining slots and guide channels formed therein;

a trip unit and terminal assembly consisting of a lug terminal and bi-metal at one end and a contact blade having top and bottom ends at an opposite end joined by means of a braided conductor;

a magnet assembly consisting of an armature and magnet core, said armature being formed from a single L-shaped metal piece having a narrow top piece and a wider angled bottom piece which includes a latch opening, said magnet core being formed from a single L-shaped metal piece having a top angled piece for providing a pivot to said core, a bottom angled piece and a hook extension for engaging said armature bottom piece which forms a closed magnetic loop in cooperation with said armature bottom piece;

a cradle formed from a U-shaped piece having a handle tab at a top for engaging a handle, a latch portion at an end of one leg of the U for releasably engaging said latch opening and a circular end member at an end of another leg of the U, said circular member pivotally supporting the cradle within said case; and

a mechanism spring connecting between said cradle and said contact blade to bias a moveable contact on said contact blade into contact with a fixed contact supported on said case when an operating handle is in a closed position for providing current flow through said contacts and for rapidly separating said contacts when said trip unit releases said cradle latch portion from said latch opening upon excess current flow through said contacts.

4,513,269

INTERLOCKING CONTACTOR ASSEMBLY

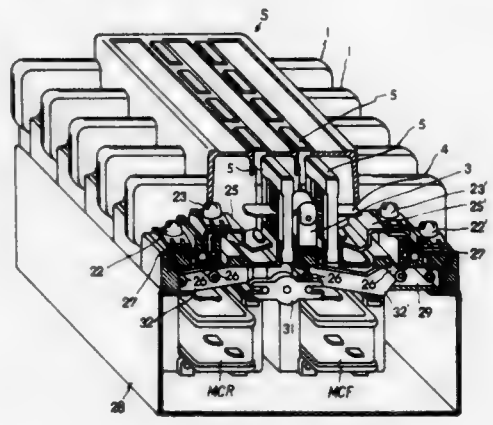
Motomu Miyamoto, 108 House Toritsudai, 12-21, 2-Chome, Nakane, Meguro-Ku, Tokyo, Japan

Filed Jun. 1, 1983, Ser. No. 500,148

Claims priority, application United Kingdom, Jun. 3, 1982, 57-95632

Int. Cl.³ H01H *9/20*

U.S. Cl. 335—161 **13 Claims**



1. A connector assembly, comprising

(a) a case member provided with a plurality of pole chambers which are serially and vertically sectioned;

(b) a traveling contact member arranged in each of said pole chambers, said traveling contact member including a bar having an arm portion-extending in the left direction, an arm portion extending in the right direction, and at least one traveling contact terminal provided at the tip of each of said left and right arm portions;

(c) a support frame made of conducting material suspended in each of said pole chambers for pivotally fixing said traveling contact members on the top portion thereof;

(d) a pair of right and left operation frames liftably arranged in each of said pole chambers adjacent the right and left arm portions of said traveling contact member, respectively, each of said operation frames being formed with a window through which the adjacent arm portion of said traveling contact member extends and including a pair of upper and lower contact springs arranged in said window for sandwiching said arm portion therebetween and an integral vertical leg portion extending downwardly from

one side of its lower surface, said pair of right and left operation frames being interlockingly connected at the lower ends of said leg portions with electromagnetic means,

(e) return springs provided on the lower surface of said operation frames and extending downwardly to said electromagnetic means; and

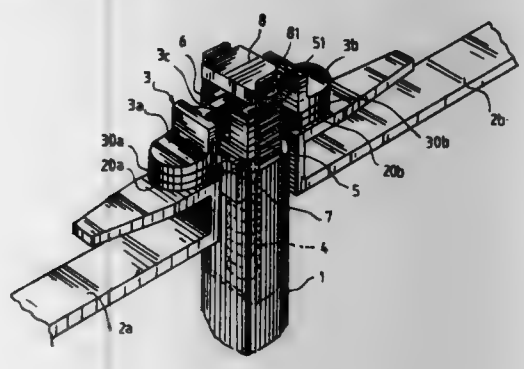
(f) stationary contact terminals provided in the path of movement of said traveling contact terminals, at least two connecting terminals provided at one side of said pole chamber, and at least one connecting terminal provided at the other side.

4,513,270

CONTACTOR HAVING SELF-PROTECTION MEANS AGAINST THE EFFECT OF THE FORCES OF REPULSION BETWEEN THE CONTACTS

Elie Belbel, Epinay sur Seine; Christian Blanchard, Nanterre; Michel Lauraire, Courbevoie; Louis Fechant, Le Vesinet, and André Haury, Le Raincy, all of France, assignors to La Telemecanique Electrique, France

Filed Nov. 30, 1982, Ser. No. 445,774
Claims priority, application France, Nov. 30, 1981, 81 22975
Int. Cl.³ H01H *77/08*
U.S. Cl. 335—195 **5 Claims**



1. A contactor comprising:

a. first and second conductive substantially flat stationary contact carriers symetrically arranged about an axis of symmetry and extending substantially at right angles with said axis of symmetry and first and second stationary contacts mounted on the first and second conductive stationary contact carriers respectively;

b. a movable insulating contact holder mounted for translation along the said axis of symmetry;

c. a U-shaped magnetic member having first and second legs and a groove between said first and second legs, said groove having a bottom, said U-shaped magnetic member being rigidly connected to the contact holder and forming a permanently open magnetic circuit;

d. a magnetic armature resiliently coupled to the contact holder and a permanently open air gap located between the said armature and the said U-shaped magnetic member;

e. a bridging conductive movable contact carrier resiliently coupled to said contact holder and having a central blade which is substantially at right angles with the stationary contact carriers, said blade extending substantially at right angles to the said axis with first and second portions symmetrically arranged with respect to the said axis and first and second movable contacts rigidly coupled to the said first and second portions respectively, the said stationary contact carriers having means for generating electrodynamic blow off forces on the said movable contact carrier, said blade engaging the said groove, whereby the magnetic flux developed in the U-shaped member when overload current flows through the central blade crosses the said groove thereby generating electrodynamic forces forcing the movable contact carrier towards the bottom of the groove and the movable contacts against the stationary contacts; and

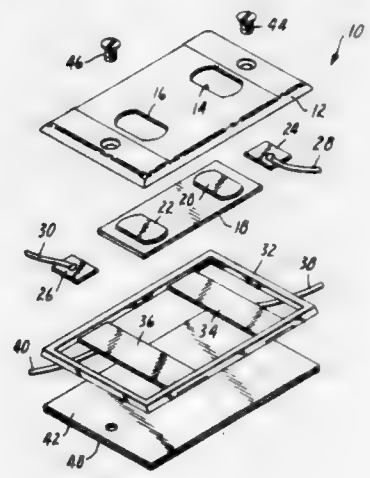
f. means for exerting on the contact holder a pulling force parallel to the said axis for carrying the said movable contacts into and out of engagement with the stationary contacts.

4,513,271

MOMENTARY CONTACT MAGNETIC SWITCH

Daniel E. Reisem, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 16, 1982, Ser. No. 399,261
Int. Cl.³ H01H *9/00*
U.S. Cl. 335—205 **21 Claims**



1. An electrical switch, comprising:

a magnetic cover plate having a plurality of apertures therein;

a flexible sheet magnet positioned in back of said cover plate at least partially covering said plurality of apertures, said flexible sheet magnet being positioned in a normal position magnetically attracted to said cover plate and being in part flexibly movable to an actuated position away from said cover plate at one of said plurality of apertures by manual actuation through said one of said plurality of apertures; and

contact means for each plurality of apertures positioned in cooperation with said flexible sheet magnet, said contact means for providing a change in electrical continuity when said flexible sheet magnet is moved between said normal position and said actuated position.

4,513,272

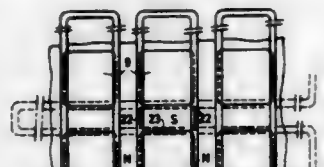
DEVICES FOR MANUFACTURING A MAGNETIC QUADRUPOLE POST-FOCUSING MASK

Jan Verweel, and Hinne Zijlstra, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 250,496, Apr. 2, 1981, Pat. No. 4,428,736.
This application May 16, 1983, Ser. No. 478,395
Claims priority, application Netherlands, Apr. 21, 1980, 8002303
Int. Cl.³ H01F *13/00*
U.S. Cl. 335—284 **7 Claims**

1. A device for manufacturing a magnetic quadrupole post-focusing mask for use in a color display tube, the mask including a plate of magnetizable material having at least two mutually spaced parallel rows of apertures provided through oppositely facing sides of the plate, the device comprising: a coil

including a pair of mutually parallel electrical conductors, the conductors being arranged such that, when the coil is provided



against one side of the plate, the two conductors extend along the material between the rows.

4,513,273

TRANSDUCER FOR CURRENT MEASUREMENT

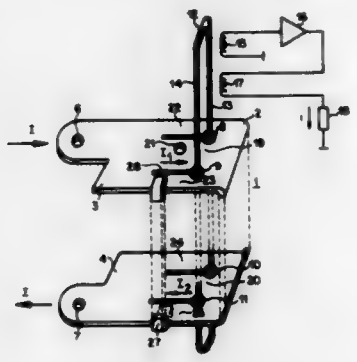
Richard Friedl, Brunswick, Fed. Rep. of Germany, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Feb. 23, 1984, Ser. No. 582,969

Claims priority, application Switzerland, Mar. 2, 1983, 1136/83

Int. Cl.³ H01F *27/08, 27/28*

U.S. Cl. 336—55 **11 Claims**



1. A transducer for measurement of a current, comprising in combination

a magnetic core, and

a single U-shaped flat conductor having two wings, and a crown joining said wings, each wing having two openings, said magnetic core passing through said openings,

said two wings constituting two conductive branches in thermal contact with one another, each branch being adapted to carry a component of said current, the current component carried by one branch differing from the current component carried by the other branch, said current components giving rise to opposite respective component fluxes in said magnetic core.

4,513,274

CURRENT TRANSFORMER FOR MEASURING INSTRUMENTS

Mathis Halder, Baar, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Apr. 14, 1983, Ser. No. 484,921

Claims priority, application Switzerland, Apr. 22, 1982, 2438/82

Int. Cl.³ H01F *40/00*

U.S. Cl. 336—173 **6 Claims**

1. A current transformer for use in electrical AC current measuring instruments,

comprising in combination,

first, second and third current circuits, each circuit including a first winding, and a second winding in series with said first winding, and each winding having respective predetermined numbers of turns,

first and second cores,

said first windings forming with said first core a first current transformer stage,

said second windings forming with said second core a second current transformer stage,

at least said first and third current circuits being connected in parallel,



said first and second windings of said first circuit being wound on said first and second cores in a predetermined sense,

said first winding of said third current circuit being wound on one of said cores in a sense opposite to said predetermined sense,

said second winding of said third current circuit being wound on the other core in said opposite sense,

a samll difference existing between the number of turns of said first and second windings of said third current circuit.

4,513,275

PUSH-BUTTON CONTROLLED MINIATURIZED THERMAL CUTOUT/SWITCH

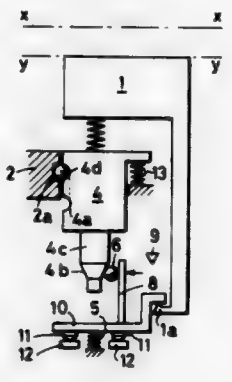
Gérard M. R. Jullien, Paris, France, assignor to L'Equipement et la Construction Electrique en abrege E.C.E., France

Filed May 2, 1983, Ser. No. 490,349

Claims priority, application European Pat. Off., Mar. 9, 1983, 83400481.4

Int. Cl.³ H01H *71/16*

U.S. Cl. 337—66 **5 Claims**



1. A miniaturized low-tension double contact switch with thermal overload protection, comprising:

a housing having two fixed contacts (12);

a push-button (1) movably mounted to said housing for movement in a first direction and for movement in a second opposite direction;

a movable contact support (10) movably mounted to said housing;

two movable contacts (11) connected to said support and aligned with said two fixed contacts for closing said two fixed contacts when said support is moved to engage said two movable contacts against said two fixed contacts;

actuation locking means (2,2*a*,4,4*a*,4*d*) engageable by said push button for movement into a first position with move-

ment of said push button in its first direction, for effecting movement of said support to close said two fixed contacts, and movable into a second position when said push button is again moved in its first direction for moving said support to open said fixed contacts;

overload locking means (4*b*,6,8) engaged between said actuation locking means and said movable contact support having a normal load position for transmitting movement of said actuation locking means to said support to move said support to close said fixed contacts with movement of said actuation locking means, and an overload position for disengaging movement of said support from movement of said actuation locking means; and

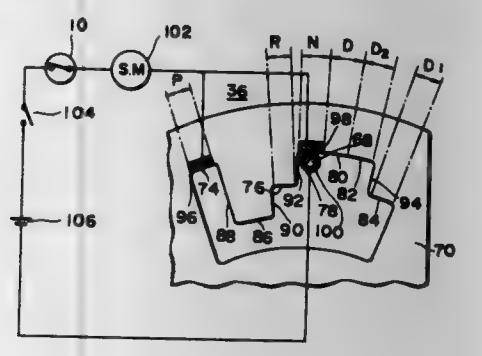
biasing means engaged between said housing and said movable contact support for moving said movable contact support into a position opening said fixed contact when said overload locking means is in its overload position.

4,513,276

SAFETY SYSTEM OF AUTOMOTIVE AUTOMATIC TRANSMISSION OPERATING DEVICE

Shikibu Kubota, and Shisaku Tsuji, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Feb. 1, 1982, Ser. No. 344,823
Claims priority, application Japan, Feb. 9, 1981, 56-17627
Int. Cl.[3] B60Q *1/00*; F02N *17/00*
U.S. Cl. 340—52 R **7 Claims**



1. In a motor vehicle having a starter motor, an electric power source, an automatic transmission, a shift lever movable into select positions for placing the transmission in corresponding gear conditions, means defining stepped operation surfaces, and a stop pin carried on said shift lever to move therewith and slidably engageable with said stepped operation surfaces for retaining said shift lever at ones of said select positions,

a safety system comprising:

(a) a starter switch interposed between said starter motor and said electric power source, and

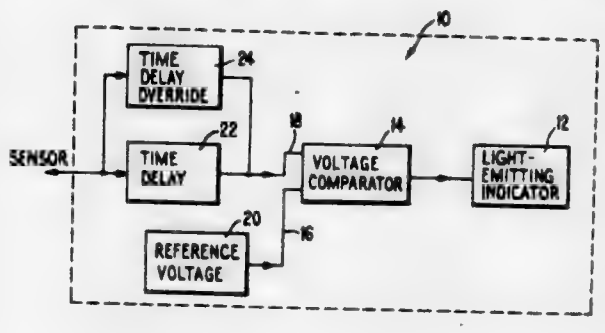
(b) a position detector switch connected in series with said starter switch for energizing said starter motor upon closure of said starter switch and said position detector switch, said position detector switch including at least one stationary contact member mounted to at least a part of one of said stepped operation surfaces, and a single movable contact member mounted to said stop pin at the portion engageable with said stepped operation surfaces whereby engagement of said stop pin with said at least one stationary contact member of said one stepped operation surface both retains said shift lever and closes an electrical circuit for energizing said starter motor.

4,513,277

LOW FUEL INDICATOR SYSTEM

John T. Moore, Nr. Wigan; Peter E. Corrigan, Liverpool, and James A. Gardner, Nr. Liverpool, all of England, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1983, Ser. No. 472,712
Claims priority, application United Kingdom, Mar. 9, 1982, 8206860
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—59 **4 Claims**



1. A low fuel indicator system for monitoring the operation of a fuel level sensor in a fuel tank in a motor vehicle having an ignition system, said indicator system having an input line supplied by the ignition system and comprising;

voltage comparator means having an output and first and second inputs,

a time delay circuit,

light-emitting indicator means connected to the output, the first input being connected to a reference voltage source and the second input being connected through the time delay circuit to said fuel level sensor to receive a voltage signal from said fuel sensor, said time delay circuit substantially isolating the comparator from the effects of rapid fluctuations in fuel level in said tank, said voltage comparator means being operable to compare the voltages on said two inputs to energize said light-emitting indicator means when said fuel sensor voltage signal corresponds to a predetermined low level of fuel in said tank,

the time delay circuit coupled to the input line and to the second comparator input and effective upon initial switching on of the ignition system to energize the indicator means for a variable time period dependent upon the relative fuel level so that higher fuel levels correspond to short indication periods and increasingly lower fuel levels result in increasingly longer indicator periods, whereby a fuel level indication is provided by the variable time period.

4,513,278

VIDEO SYNTHESIZER FOR A DIGITAL VIDEO DISPLAY SYSTEM EMPLOYING A PLURALITY OF GRAYSCALE LEVELS DISPLAYED IN DISCRETE STEPS OF LUMINANCE

Charles L. Seitz, San Luis Rey, Calif.; Paul Grunewald, Flemington, N.J.; Marshall M. Parker, San Diego, and Irvin G. Stafford, Carlsbad, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

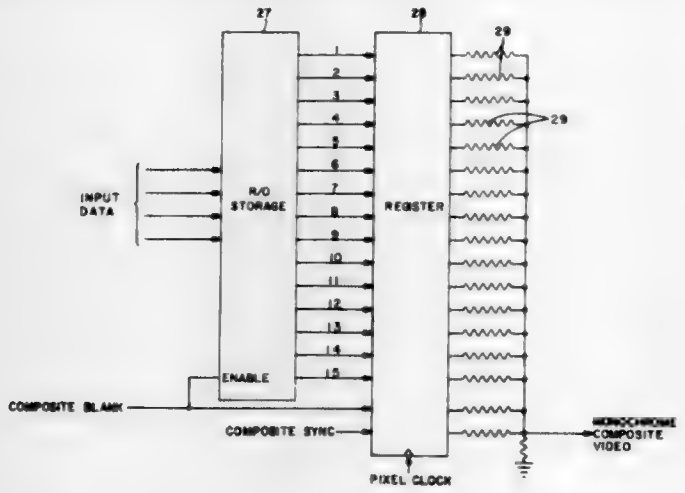
Continuation of Ser. No. 836,842, Sep. 26, 1977,. This application Oct. 9, 1979, Ser. No. 82,565
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 DA **5 Claims**

1. A video synthesizer for a digital video display system, said video synthesizer comprising:

a summing network to provide in sequence a plurality of different output voltage levels which levels are selected from three or more such levels to designate different luminance values to be displayed, said summing network having a plurality of different input leads, said summing network including a plurality of resistances coupled between said respective input leads and a common connec-

tion, said resistances having different resistance values to provide to said common connection different voltage levels which increase proportionately to a root of the luminance to be displayed;

a storage device having a plurality of output leads coupled to respective ones of said summing network input leads, said storage device storing different monotonic operation codes to activate different combinations of said input leads



such that an increase or decrease in the output voltage level only results from a corresponding increase or decrease respectively in the number of said input leads to be activated, and

means coupled to said storage device to transmit a binary code to said storage device which binary code designates a monotonic operation code to select the particular luminance to be displayed.

4,513,279

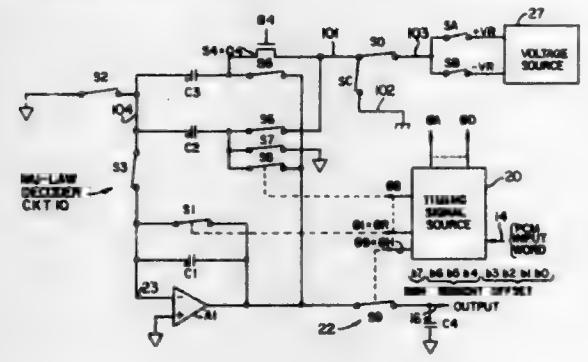
CHARGE REDISTRIBUTION MU-LAW PCM DECODER

Christopher W. Kapral, Belmont, Calif., assignor to GTE Communications Products Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 558,565, Dec. 5, 1983, Pat. No. 4,468,653, which is a continuation-in-part of Ser. No. 307,823, Oct. 2, 1981, abandoned. This application Dec. 5, 1983, Ser. No. 558,411

Int. Cl.[3] **H03K** *13/02*

U.S. Cl. 340—347 DA **15 Claims**



1. Apparatus for converting PCM code words into associated analog signal samples, each word including first, second and third code groups of one or more binary bits which define the polarity, prescribed segment, and step offset within the prescribed segment for an associated analog signal sample, said apparatus comprising:

first, second and third capacitor means each having one and other sides thereof and each having the same value of capacitance;

first means for impressing a prescribed reference voltage and ground on first and second bus lines, respectively;

operational amplifier means having input and output terminals thereof connected to said one and other sides of said first capacitor means, said input terminal essentially having ground impressed thereon; and

first switch means responsive to the second and third code groups (a) for cyclically connecting one and other sides of said second capacitor means to ground and to one of ground and said reference voltage, respectively, for discharging said second capacitor means and charging it with the reference voltage in accordance with the level of a bit in said third code group, and then connecting one and other sides of said second capacitor means to associated sides of said first capacitor means for redistributing charge thereon a number of times corresponding to the number of bits in said third code group defining the step offset in the prescribed segment; (b) for discharging said first capacitor means; (c) for storing charge on said second capacitor means while cyclically connecting one and other sides of said third capacitor means to ground and to said reference voltage for charging said third capacitor means, and then connecting opposite sides of said third capacitor means to associated sides of said first capacitor means for redistributing charge on them a first prescribed number of times (which may be zero) associated with the prescribed segment which is designated by the second code group; (d) for connecting one and other sides of said second capacitor means to said one side of said first capacitor means and ground, respectively, for transferring all charge on said second capacitor means to said first capacitor means for the prescribed segment; and (e) for cyclically connecting opposite sides of said third capacitor means to ground for discharging it and then connecting them to associated sides of said first capacitor means for redistributing charge on them a number of times corresponding to segments that are above the prescribed segment which is specified by the second code group.

4,513,280

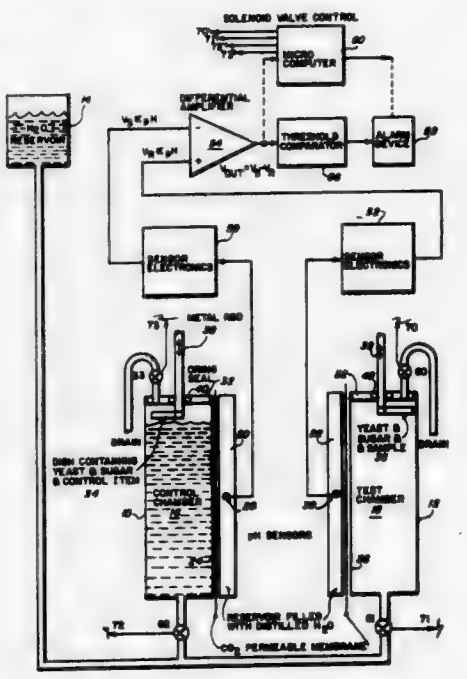
METHOD AND APPARATUS FOR THE DETECTION OF TOXICANTS

Patrick J. Hannan, Washington, D.C.; Arthur V. Stiffey, Slidell, La.; N. Lynn Jarvis, Woodbridge, and Henry Wohltjen, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1984, Ser. No. 656,208

Int. Cl.[3] **G08B** *17/10;* **C12Q** *1/04*

U.S. Cl. 340—632 **13 Claims**



1. A biological sensor for the detection of toxicants in a sample comprising:

a first and second CO_2 sensing cells, each sensing cell including a first chamber for holding a liquid flush medium, a

second chamber containing said liquid flush medium, a CO_2 permeable membrane disposed to separate said first and second chambers, and a pH sensor disposed in said second chamber,

said first chamber of said first CO_2 sensing cell including means adaptable for agitation for holding microorganisms, a growth medium, and a control item, said first chamber of said second CO_2 sensing cell including means adaptable for agitation for holding microorganisms, a growth medium, and a sample to be tested for toxicants;

a flush reservoir for containing said liquid flush medium for connection to said first chambers of said first and second CO_2 sensing cells;

wherein the CO_2 produced by said microorganisms from the mixture of said microorganisms and said growth medium in said flush medium contained in said first chambers of said first and second CO_2 sensing cells is passed through said CO_2 permeable membrane into said second chambers of said first and second CO_2 sensing cells containing said pH sensors; and

means for determining the difference between the outputs from said pH sensors in said first and second CO_2 sensing cells and generating an alarm signal if said difference equals or exceeds a predetermined threshold.

10. A biological method for detecting toxicants in a sample via the use of a first and second CO_2 sensing cells, with each CO_2 sensing cell including a first chamber and a second chamber, separated by a CO_2 permeable membrane, and a pH sensor disposed in a liquid in each of said second chambers, the method comprising the steps of:

disposing microorganisms, a growth medium for said microorganisms, and a sample to be tested for toxicants in said first chamber of said first CO_2 sensing cell along with a flush medium, while disposing microorganisms, a growth medium for said microorganisms, and a control item said first chamber for said second CO_2 sensing cell along with a flush medium;

agitating the contents of said first chambers;

sensing the pH in the liquid contained in each of said second chambers;

determining the difference between the outputs from said pH sensors; and

generating an alarm signal if said difference equals or exceeds a predetermined threshold.

4,513,281

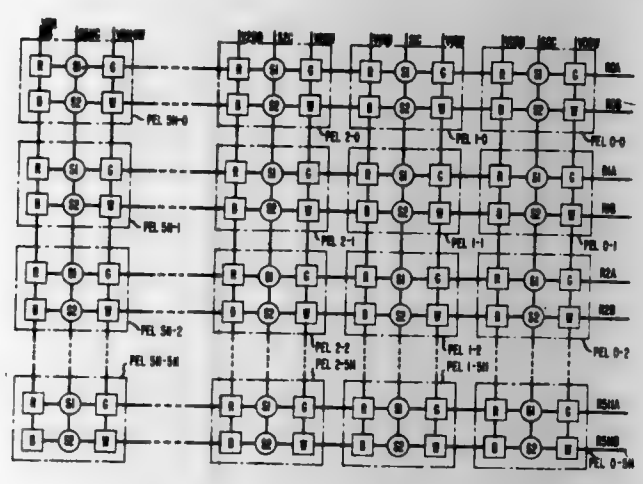
AC PLASMA PANEL SHIFT WITH INTENSITY CONTROL

Peter D. T. Ngo, Colts Neck, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 5, 1982, Ser. No. 365,460

Int. Cl.³ G09G 3/28

U.S. Cl. 340—703 **10 Claims**



1. A plasma panel having a plurality of discharge sites, each site having opposing dielectric surfaces and each site operable for ionizing the plasma gas at a particular panel location between said surfaces, said ionization including the periodic generation of an electron charge cloud,

characterized in that said panel also includes at least two migration sites associated with each said discharge site, each said migration site located along the same surface as said associated discharge site and each said migration site including means for independently and selectively attracting electrons from said associated discharge site during said electron charge cloud generation interval, each said migration site further including means responsive to the direct impingement of said attracted electrons thereupon for emitting light rays under control of said selectively attracted electrons, and

means for removing said impinged electrons from said migration site.

4,513,282

LIQUID CRYSTAL MATRIX DISPLAY DEVICE

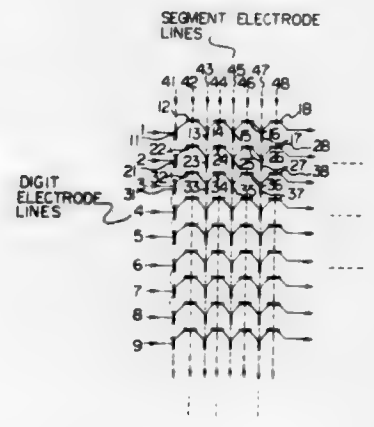
Tadahiko Nakagiri, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 24, 1980, Ser. No. 219,634

Claims priority, application Japan, Dec. 28, 1979, 54-173029; Dec. 28, 1979, 54-173027

Int. Cl.³ G09G 3/36

U.S. Cl. 340—765 **5 Claims**



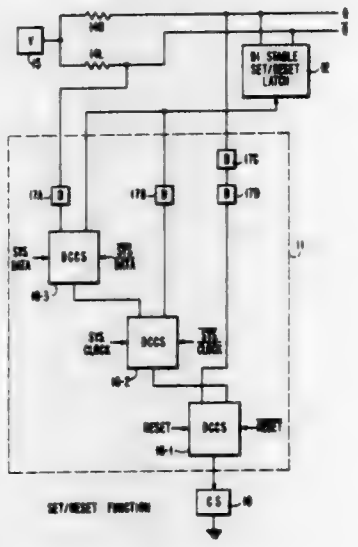
1. In a liquid crystal display device having a first transparent substrate with a first set of transparent segment electrodes formed thereon and a second transparent substrate with a second set of transparent digit electrodes formed thereon in positions corresponding to said first set of transparent electrodes, and a layer of liquid crystal enclosed between said first and second substrates, whereby a set of display segments is defined with each display segment being formed by one of said first set of transparent electrodes in conjunction with a corresponding one of said second set of transparent electrodes, the improvement whereby each of said display segments is of elongated shape and whereby said set of display segments comprises a matrix array of basic segment units, each of said basic segment units comprising at least a first display segment and a second display segment with the axes of elongation thereof orientated in mutually different directions, the improvement further comprising a plurality of digit electrode lines for applying drive signals to said display segments, each of said digit electrode lines being coupled to a row of said basic segment units in said matrix array, and a plurality of segment electrode lines each of which is coupled to a column of said display segments, each of said display segments being responsive to simultaneous application of drive signals to a corresponding digit electrode line and segment electrode line for being driven into excitation, with there being an even number of rows of said basic segment units with alternate ones of said digit electrode lines being positioned on opposite sides of a median axis of said matrix array of basic segment units, and with pairs of said digit electrode lines which are symmetrically disposed with respect to said median axis being connected in common.

4,513,283

LATCH CIRCUITS WITH DIFFERENTIAL CASCODE CURRENT SWITCH LOGIC

Joel C. Leininger, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,599
Int. Cl.³ H04Q *1/20*; H03K *19/00, 3/289*
U.S. Cl. 340—825.02 **21 Claims**



1. A set/reset latch circuit comprising in combination:

(a) a cross-coupled pair of transistors arranged as a bistable device having first and second stable states and first and second output terminals;

(b) a multi-level Differential Cascode Current Switch tree operable to develop set and reset control pulses for said circuit in response to logic input signals to switch said device respectively from said first state to said second state and vice versa;

(c) a constant current source;

(d) two load resistors, each of which is selectively connectable to said current source through said tree by said logic input signals;

(e) means connecting said first and second output terminals to said load resistors; and

(f) means for connecting said current source to said bistable device selectively through one of two different serial current paths of said tree to provide a current to one of said load resistors through one of said cross-coupled pair of transistors to hold said device in one of said stable states in the absence of said set and reset control pulses.

4,513,284

CONSOLE PRIORITY CONTROL

Robert W. Right, Huntington, Conn., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 24, 1983, Ser. No. 478,430
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.51 **9 Claims**

1. In a priority control circuit the combination comprising:

(a) a plurality of identical control console circuits identified in order of declining priority A, B, . . . N;

(b) each of said control circuits including a priority lead coupled in common and extending to at least one controlled remote station for exercising control thereover;

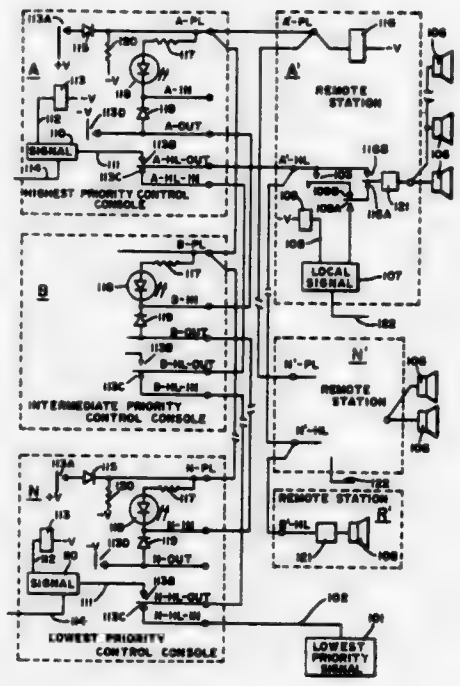
(c) each of said control console circuits including means for normally coupling a potential of a first polarity, through a current-limiting resistor, to said priority lead;

(d) first circuit means responsive to the activation of any one of said control console circuits for coupling a potential of a second polarity to said priority lead;

(e) each of said control console circuits including an "In" and and "Out" lead with a first diode coupled therebetween to pass current in only one direction between said "Out" lead and said "In" lead;

(f) indicator means coupled between said priority lead and the "In" lead at each of said control console circuits;

(g) second circuit means responsive to the activation of any one of said control console circuits for coupling a poten-



tial of said first polarity to the "out" lead of the activated control console circuit; and

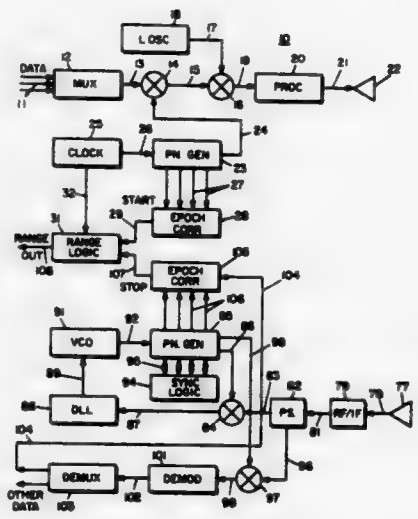
(h) third circuit means coupling the "Out" lead of each control console circuit to the "In" lead of the next lower priority control console circuit.

4,513,285

QUASI COHERENT TWO-WAY RANGING APPARATUS

Lawrence W. Pike, Salt Lake City; John W. Zacheile, Jr., Farmington, and Billie M. Spencer, Bountiful, all of Utah, assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,688
Int. Cl.³ G01S *13/08*
U.S. Cl. 343—5 PN **6 Claims**



1. Apparatus for determining the range between the first station and a second station by measuring the time required for radio frequency signals to be transmitted between the stations without turn-around coherency, the combination comprising:

a first pseudonoise generator for generating a plurality of unique coded signals,

a stable master clock for driving said first pseudonoise generator,

first station start epoch detecting means coupled to said first pseudonoise generator for detecting a predetermined one of said unique coded signals and for generating an epoch marker start signal,

a ranging system at said first station coupled to said epoch marker start signal,

first station transmitting means coupled to said first pseudonoise generator,

second station receiving means adapted to receive the transmitted first station pseudonoise generated signals,

second station tracking means coupled to said second station receiving means for locking-on said first station pseudonoise generated signals and for generating second station synchronized clock signals,

said second station tracking means comprising a second pseudonoise generator driven by said second station synchronized clock signal and for locking-on said first station pseudonoise generated signals,

second station detecting means for detecting the presence of said predetermined one of said unique coded signals and for simultaneously generating a new epoch read signal,

a third pseudonoise generator driven by said synchronized clock signals without being synchronized with said second pseudonoise generator,

second station transmitting means coupled to said third pseudonoise generator,

first station receiving means adapted to receive the second station transmitted signals from said third pseudonoise generator,

first station tracking means coupled to said first station receiving means for locking-on said second station pseudonoise generated signals and for generating first station synchronized clock signals,

said first station tracking means comprising a fourth pseudonoise generator driven by said first station synchronized clock signals for locking-on said second station pseudonoise generated signals,

first station stop epoch detecting means coupled to said fourth pseudonoise generator and said ranging system for detecting a new epoch and for generating a stop signal,

new epoch storage means responsive to said new epoch read signal from said second station detecting means for reading and storing a new unique coded signal from said third pseudonoise generator into said new epoch storage means to provide a new epoch signal,

said new epoch storage means being coupled to said second station transmitting means for selectively transmitting said new epoch signal to said first station receiving means and said first station stop epoch detecting means,

said new epoch signal being transmitted from said second station to said stop epoch detecting means in said first station and being stored and compared with the output signals from said fourth pseudonoise generator until said output signals compare with said stored new epoch to produce a new epoch stop signal, and

said ranging system comprising ranging logic being started by said epoch marker start signal and being stopped by said new epoch stop signal, whereby

the time duration between said epoch start signal and said new epoch stop signals is indicative of the range between said stations.

4,513,286

ADAPTIVE CONSTANT FALSE ALARM RATE (CFAR) PROCESSOR

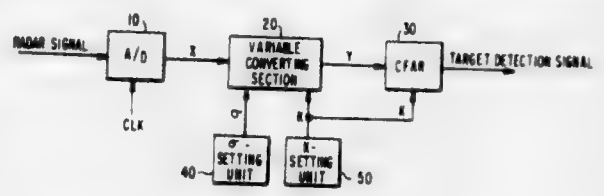
Takeru Irabu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,334
Claims priority, application Japan, Apr. 3, 1981, 56-50082
Int. Cl.³ G01S *7/34*
U.S. Cl. 343—5 CF **9 Claims**

1. An adaptive Constant False Alarm Rate (CFAR) processor for detecting a target signal at a constant false alarm rate out of a radar input signal which includes a clutter whose amplitude X exhibits any type of known cumulative distribution function F(X) or probability density function f(X), said processor being of the type wherein said radar input signal is converted in conversion means to a signal Y and wherein said signal Y is then processed and the processed signal compared to a threshold level in CFAR processing means to obtain a target indication signal, the improvement comprising:

said conversion means including a σ setting unit and a K setting unit for producing signals which indicate a predetermined arbitrary scale parameter σ and shape parameter K, respectively:

said conversion means comprising variable conversion



means for converting said radar input signal into said signal Y defined by

$$Y=\sigma[-ln\{1-F(X)\}]^{1/K}$$

in response to output signals of said σ setting unit and K setting unit; and

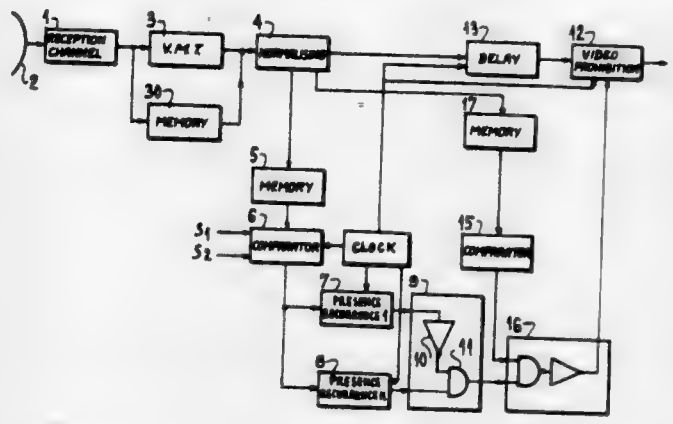
said CFAR processing means varying said threshold level in accordance with the value of said shape parameter K provided from said K setting unit.

4,513,287

DEVICE FOR THE ELIMINATION OF Nth TRACE MOVING ECHOES AND INTERFERENCE ECHOES IN A RADAR

Serge J. Penhard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 25, 1982, Ser. No. 411,567
Claims priority, application France, Aug. 28, 1981, 81 16466
Int. Cl.³ G01S *7/28, 9/02*
U.S. Cl. 343—5 CF **10 Claims**



6. In a pulse-burst radar system in whcih each pulse consists of a burst of recurrences 1 to n, and where the return recurrence echoes may be received for each of the radar's range cells, and wherein the radar system comprises an aerial, a reception channel connected to said aerial for receiving recurrence echoes 1 to n, a bulk memory connected to said reception channel for storing said recurrence echoes, moving target means connected to said bulk memory for visualizing said moving targets, said moving target means transparent to the first recurrence echo and processing recurrence echoes 2 to n, display means connected to said moving target means for displaying recurrence echoes, a device for eliminating nth trace moving echoes and radar interference echoes comprising:

normalizing means connected to said moving target means for normalizing the recurrence with respect to noise:

first comparing means connected to said normalizing means for comparing the strength of said first recurrence echo with a threshold S_1, and comparing the strength of said nth recurrence echo with a threshold S_2;

first determining means connected to said comparing means

for determining whether thresholds S_1 and S_2 have been exceeded by said first and n^{th} recurrence echoes, respectively;

first indicating means connected to said comparing means for generating a signal when both thresholds S_1 and S_2 have been exceeded;

delay means connected to said normalizing means for delaying recurrence echoes 1 to n; and

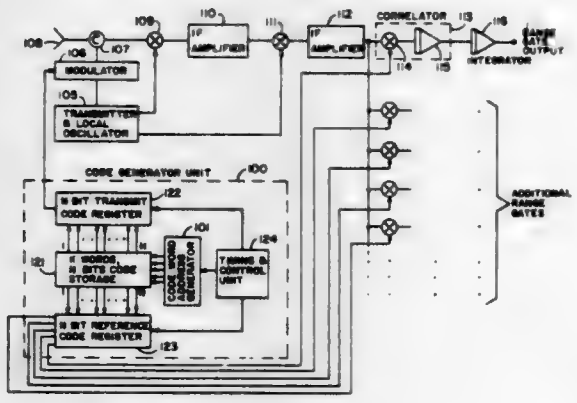
authorizing means connected to said delay means and to said first indicating means for authorizing said first recurrence echo to be displayed on said display means when said signal is received from said first indicating means.

4,513,288

GROUP-COMPLEMENTARY CODE SETS FOR IMPLEMENTING PULSE-COMPRESSION PROCESSING WITH OPTIMUM APERIODIC AUTOCORRELATION AND OPTIMUM CROSS-CORRELATION PROPERTIES

Glean D. Weathers, and Edward M. Holliday, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 29, 1982, Ser. No. 362,934
Int. Cl.³ G01S *7/28*
U.S. Cl. 343—17.2 PC **3 Claims**



1. In a pulse compression radar system for detecting a target in which a plurality of pulses are transmitted and reflection of those pulses from the target are received, the improvement comprising the method of arranging the temporal distribution of energy in each transmitted pulse by biphased binary coding of the phase of a carrier signal in accordance with a code word; utilizing a plurality of at least three different code words in series for a series of at least three transmitted pulses; providing a corresponding reference series of code words and combining them in a range gate manner with the reflection of the transmitted pulses whereby all autocorrelation side lobes are identically zero; arranging the code words in group-complementary codes having sets of word groups comprising of at least eight rows by at least six binary elements; and providing pulse compression over at least three pulses.

4,513,289

P1 POLYPHASE CODE EXPANDER-COMPRESSOR

Frank F. Kretschmer, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

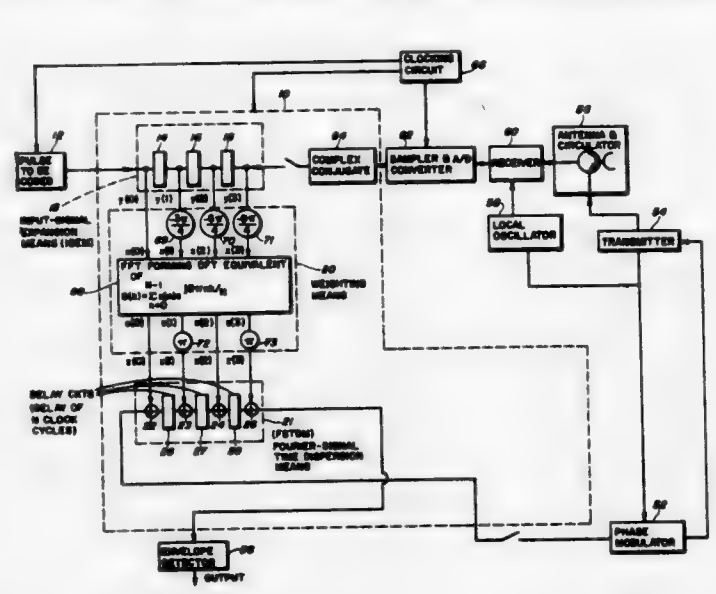
Filed May 11, 1982, Ser. No. 377,106
Int. Cl.³ G01S *13/28*
U.S. Cl. 343—17.2 PC **5 Claims**

1. A digital pulse-expander-compressor including

pulse coder means for providing a series of weighted pulses from a single input pulse, the time interval of the series being greater than that of the input pulse, the coder means including weighting means; and

pulse compression means of the matched-filter type for receiving and processing echo signals correspnding to the output signals of the coder means, the pulse compression means including weighting means which is the same weighting means as that employed in the coder means,

wherein the improvement comprises said weighting means including a discrete Fourier transform circuit; an ordered array of phase-shifters, the phase shift of each phase shifter



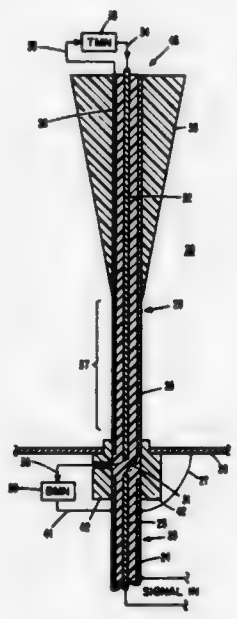
differing from that of the next by a common phase angle, the phase-shifters being connected in order, one per input, to consecutive inputs of the discrete Fourier transform circuit after the first input; and a plurality of inverters, a respective inverter being connected to every other output of the discrete Fourier transform circuit.

4,513,290

NON-RESONANT COAXIAL MONOPOLE ANTENNA

Donald K. Lefevre; Patrick W. Dennis, both of Salt Lake City, and Dennis F. Seegmiller, Kaysville, all of Utah, assignors to Sperry Corporation, New York, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,485
Int. Cl.³ H01Q *9/02, 9/38*
U.S. Cl. 343—745 **17 Claims**



1. A non-resonant broad band monopole antenna comprising:

a ground plane,

a coaxial input line having a center conductor, and an outer shield which is connected to said ground plane below said ground plane,

a fractional wavelength coaxial monopole antenna extending from said ground plane having a center conductor, and an outer radiator which is connected to said center conductor of said coaxial input line,

said monopole antenna having an exposed ground plane portion and a tip portion,

tip matching means coupled between the center conductor and the outer radiator of said coaxial antenna at the tip portion end remote from said ground plane,

base matching means coupled between the center conductor of said coaxial antenna and said ground plane at the ground plane portion end of said coaxial antenna, and

absorbing means covering a portion of said outer radiator of said coaxial monopole antenna remote from said ground plane,

said absorbing means having a thickness which varies along the length of the antenna increasing in thickness toward said tip matching means,

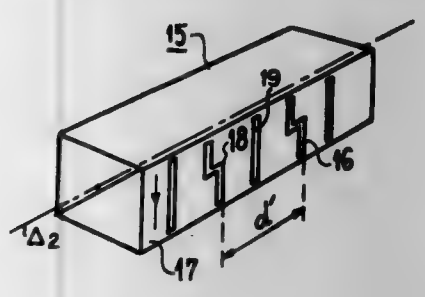
whereby said fractional wave length monopole antenna displays an equivalent infinite wavelength over a broad band of frequencies.

4,513,291

WAVEGUIDE HAVING RADIATING SLOTS AND A WIDE FREQUENCY BAND

Serge Drabowitch, Paris, France, assignor to Thomson-CSF, France

Filed Aug. 27, 1982, Ser. No. 412,210
Claims priority, application France, Sep. 11, 1981, 81 17236
Int. Cl.³ H01Q *13/10*
U.S. Cl. 343—771 **6 Claims**



1. A rectangular waveguide having pairs of narrow and wide sides and defining a longitudinal axis, said waveguide comprising direct-radiation slots, each slot being disposed on one of the narrow sides of the waveguide in parallel relation to each other and orthogonal to the longitudinal axis of the waveguide so as to be parallel to the lines of current flow along said one narrow side, each said slot having a lenght L in the vicinity of the operating wavelength λ of said waveguide and including a transverse stepped section formed in the central portion of the slot orthogonal to the current lines, and wherein a distance d is defined between the transverse stepped sections of successive slots so as to be in the vicinity of the wavelength λ of said waveguide.

4,513,292

DIPOLE RADIATING ELEMENT

David F. Bowman, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 428,586
Int. Cl.³ H01Q *9/28*
U.S. Cl. 343—795 **8 Claims**

1. A radiation structure for operation over a range of frequencies comprising:

a one piece radiating element in the form of a wide, thin electrical conductor, said conductor having first, second and third sections;

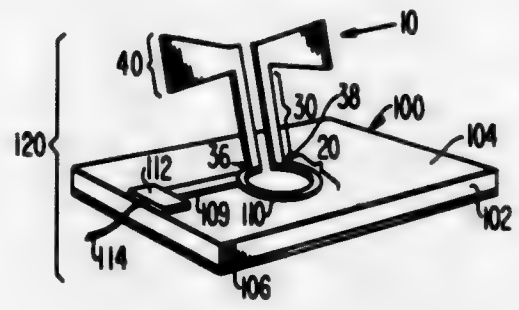
said first section adapted for connection to a feed circuit;

said second section connecting said first and third sections and spacing them apart;

said conductor having an elongated slot through its thin dimension direction which extends at least from within said first section to within said third section to separate said second section into first and second spaced apart balanced transmission line members;

said first section connecting said first transmission line member to said second transmission line member;

said first section having a length from said first transmission line member to said second transmission line member which is substantially an odd integer multiple of one-half wavelength at a frequency in said range of frequencies when said element is connected to said feed circuit;



said third section comprising a dipole electrically coupled to said first section by said balanced transmission line members of said second section; and

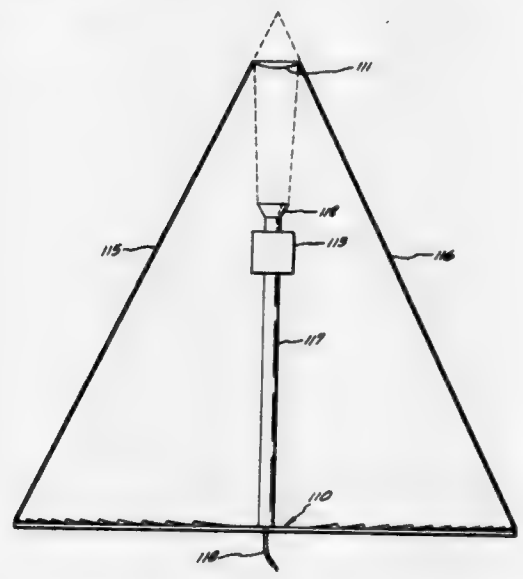
said element being free of ground conductors extending parallel to said second and third sections.

4,513,293

FREQUENCY SELECTIVE ANTENNA

Kenneth D. Stephens, St. Just, P.R., assignor to Communications Design Group, Inc., Nashville, Tenn.

Filed Nov. 12, 1981, Ser. No. 320,722
Int. Cl.³ H01Q *15/16*
U.S. Cl. 343—840 **13 Claims**



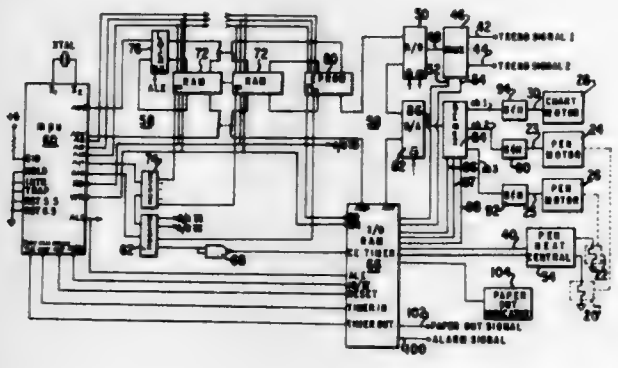
1. A high frequency reflective antenna which is preferentially frequency selective at a design frequency of a given frequency or narrow range of frequencies, comprising

a plurality of adjacent antenna sections comprising a central section and substantially concentric sections disposed radially outward from the central section, each section having a parabolic surface of different focal length, and each concentric section being offset with respect to the next preceding section by a distance M in a direction substantially parallel to the central axis of the antenna, where M is greater than one-half wavelength but not a precise multiple of one-half wavelength or of one wavelength of the design frequency of the antenna and M progressively increases for each succeeding concentric section.

4,513,294
PHYSIOLOGICAL TREND DATA RECORDER

Donald G. Anderson, Meriden, Conn., and Elisa M. Ferrara-Jordan, Longmeadow, Mass., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 14, 1982, Ser. No. 398,019
Int. Cl.[3] G01D 9/00; A61B 5/04
U.S. Cl. 346—33 ME 2 Claims



1. A strip chart recorder responsive to the occurrence of an alarm condition for recording first and second trend signals representative of a physiological condition on a strip chart comprising:

recording means operable for recording the first trend signals on the strip chart at a faster than real time rate in response to a first rate signal and for recording the second trend signals on the strip chart at a real time rate in response to a second rate signal;

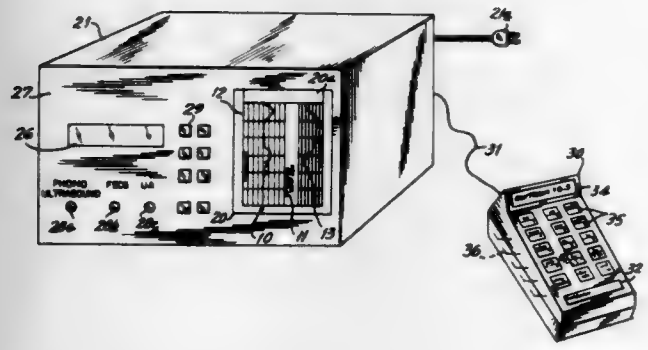
storing means for storing said first trend signals representative of said physiological condition in the past; and

controlling means operable for controlling the storing means so as to provide the stored first trend signals to the recording means in response to the occurrence of the alarm condition and for providing the first rate signal, the second rate signal and the second trend signals to the recorder; said second trend signals representative of the physiological condition at points in time subsequent to those represented by the first rate signal and being provided to the recorder after recordation of the first trend signals.

4,513,295
METHOD FOR RECORDING MEDICAL INFORMATION ON A STRIP CHART

Flave L. Jones, Guilford, and Mark L. Kelly, Middletown, both of Conn., assignors to American Home Products Corporation (Del.), New York, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,325
Int. Cl.[3] G01D 9/00; A61B 5/04
U.S. Cl. 346—33 ME 14 Claims



1. For printing by a strip chart recorder and displaying by a display device medical information, a method comprising:

communicating said medical information to switching membrane means;

scanning said switching membrane means;

generating one of a plurality of membrane signals in response to each communication and scan;

identifying said one of said plurality of membrane signals;

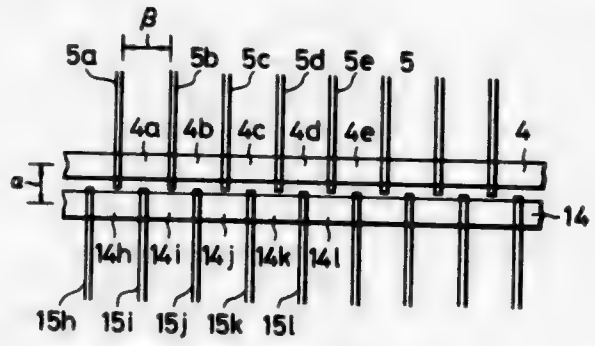
displaying by said display device said medical information in response to said identification; and

printing by said recorder said medical information in response to said identification.

4,513,296
HEAT-SENSITIVE RECORDING HEAD

Leng Svay; Haruhiko Moriguchi, and Toshiharu Inui, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Filed Feb. 7, 1983, Ser. No. 464,173
Claims priority, application Japan, Feb. 6, 1982, 57-16975
Int. Cl.[3] G01D 15/10
U.S. Cl. 346—76 PH 6 Claims



1. A heat-sensitive recording head, comprising:

two heat generating resistors which are obtained by dividing a conventional heat generating resistor;

the resistors being arranged substantially in parallel with each other on a substrate; and

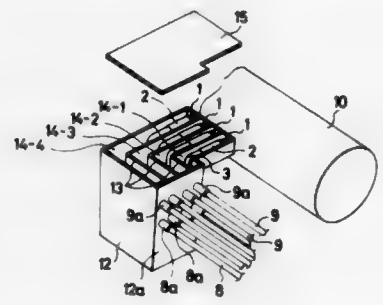
first and second groups of lead electrodes which are coupled to the two heat generating resistors, respectively, in such a manner that the first and second groups of lead electrodes are shifted by half a pitch from each other;

wherein the distance between the center lines of the two heat generating resistors is about half of the distance between two adjacent lead electrodes.

4,513,297
INK JET PRINTER RESERVOIR

Shigeru Okamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,207
Int. Cl.[3] G01D 15/16
U.S. Cl. 346—140 R 4 Claims



1. An ink jet printer, comprising:

(a) a platen for holding thereon a recording sheet;

(b) an ink container which moves along the axial direction of said platen, said ink container having:

(1) a container main body, a plurality of partition walls of substantially L-shaped cross-section dividing the interior of said container main body into a plurality of ink storing chambers; and

(2) an ink feeding tube connected with each of said ink storing chambers in said container main body and ar-

ranged in a direction parallel to said axis of said platen; and

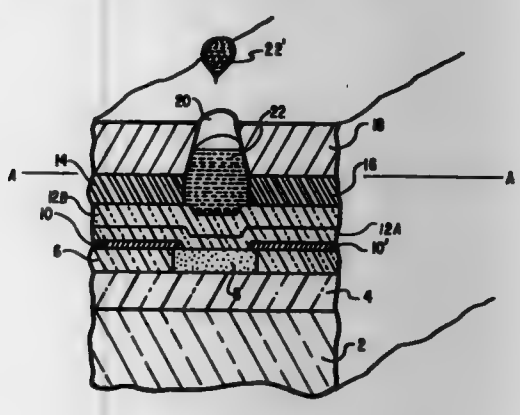
(c) a plurality of ink jet nozzles to eject ink stored in said ink storing chambers, said nozzles being provided in correspondence to said ink storing chambers.

4,513,298

THERMAL INK JET PRINTHEAD

Friedrich Scheu, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 25, 1983, Ser. No. 497,774
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **3 Claims**



1. In a thermal ink jet printhead assembly comprising a print head support member, an orifice plate having an orifice therein, means for supporting said orifice plate on said support member, and heating means formed of phosphorus diffused silicon disposed between said orifice plate and said support member and adjacent said orifice, the improvement comprising: a layer of a nitride of silicon disposed at least on said heating means, and a layer of silicon carbide disposed on said layer of said nitride of silicon.

4,513,299

SPOT SIZE MODULATION USING MULTIPLE PULSE RESONANCE DROP EJECTION

Francis C. Lee, San Jose, Calif.; Ross N. Mills, Boulder, Colo.; Robert N. Payne, San Jose, and Frank E. Talke, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,302
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **5 Claims**



1. A drop-on-demand ink jet printing system comprising an ink jet head having an ink cavity, an orifice communicating with said ink cavity, and an electromechanical transducer mounted in mechanical communication with said ink cavity, a source of electrical drive signals repeatable at a predetermined drop-on-demand drop production rate, and means to selectively actuate said electromechanical transducer in response to said electrical drive signals to force a single drop of ink from said orifice; the improvement comprising;

means for selectively producing at least one additional electrical drive signal each with a fixed time delay with respect to the immediately preceding electrical drive signal, said fixed time delay being short with respect to said drop-on-demand drop production rate; and

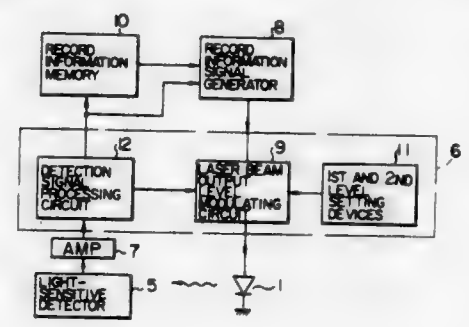
means to actuate said electromechanical transducer with each of said electrical drive signals to produce a quantity of ink having a predetermined volume from said orifice, said quantities of ink merging into a single drop of ink prior to the time the drop reaches the print medium for printing whereby each ink drop can be produced having a selected one of a plurality of possible drop sizes.

4,513,300

APPARATUS FOR DRIVING A SEMICONDUCTOR LASER FOR USE IN A LASER-BEAM PRINTER

Kimio Tatsuno, Kokubunji; Susumu Saito, Hachioji; Shoichi Ito, Ibaraki; Isamu Terashima, Hitachi; Yoshifumi Homma; Mitsugu Asano, both of Ibaraki, and Yoshifumi Ono, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Jun. 14, 1983, Ser. No. 504,380
Claims priority, application Japan, Jun. 18, 1982, 57-103761
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—160 **3 Claims**



1. An apparatus for driving a semiconductor laser for use in a laser-beam printer including a light-sensitive drum, a deflector for deflecting a laser beam from the semiconductor laser, a light-sensitive detector placed in the vicinity of one of the edges of the drum for generating a scanning start signal, deflection of the laser beam by the deflector being such that the drum and the detector are scanned by the deflected beam, and means for producing a record-information signal, the apparatus comprising:

first means responsive to the output of said record information signal generating means for modulating the intensity of a laser beam from said semiconductor laser for generation of a modulated laser beam;

second means for generating first and second intensity modulation control signals in synchronism with said scanning, said first modulation control signal being in a pulse-waveform having a period identical with one scanning period in the direction lateral of said drum and a duration time beginning in synchronism with said scanning start signal and continuing at least for a time period necessary for said laser beam to laterally scan the substantial part of said drum, and said second modulation control signal being in a pulse-waveform obtained by inverting the waveform of said first modulation control signal, said drum and said detector being scanned during the said time period and the remaining time period in said one scanning period, respectively; and

third means for determining first and second levels for the

intensity of said laser beam during the drum scanning time period and the remaining time period in said one scanning period, respectively, said first means being further responsive to one of said first and second modulation control signals to establish a D.C. operating level for said laser, said D.C. operating level being alternately representative of said first and second levels depending upon the level of said one modulation control signal of the pulse waveform.

4,513,301

HEAT-SENSITIVE RECORDING MATERIAL

Yukio Takayama, Hyogo; Akio Noguchi, Osaka, and Takao Matsushita, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Company Limited, Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,817
Claims priority, application Japan, Dec. 11, 1982, 57-217587
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—200 **6 Claims**

1. In a heat-sensitive recording material in which a resin layer is formed on a recording layer containing at least a color forming material and a color developing material which forms a color when reacted with the color forming material by contact, the improvement comprising said resin layer is essentially composed of an acetoacetylated polyvinyl alcohol, a copolymer comprising vinyl alcohol and acrylonitrile or a mixture of said acetoacetylated polyvinyl alcohol and said copolymer.

4,513,302

PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Rosalinde Braun, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,712
Claims priority, application Switzerland, Jun. 24, 1982, 3886/82; Jan. 20, 1983, 318/83
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 346—210 **21 Claims**

1. A pressure-sensitive or heat-sensitive recording material comprising a support having a developer or both a color former and a developer in or on the support, wherein the developer consists of a metal complex compound of the formula wherein

Me is an n-valent metal ion,

R is a unidentate or polydentate colorless organic ligand which is complexd with the metal ion through heteroatoms,

An is a r-valent anion,

k is the coordination number 4 or 6 of the metal ion, depending on the metal,

n is 1, 2, 3 or 4, and

r is 1 or 2.

4,513,303

SELF-ALIGNED METAL FIELD EFFECT TRANSISTOR INTEGRATED CIRCUIT

Shakir A. Abbas, Wappingers Falls, and Ingrid E. Magdo, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 167,253, Jul. 8, 1980, Pat. No. 4,359,816. This application Aug. 6, 1982, Ser. No. 405,811
Int. Cl.³ H01L *29/94, 29/76*
U.S. Cl. 357—23.3 **5 Claims**

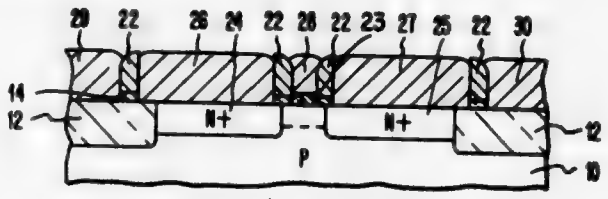
1. A field effect transistor self-aligned dynamic RAM integrated circuit structure comprising:

a silicon body having said field effect transistor dynamic RAM devices therein with regions of said devices extending to the major surface of said body;

silicon dioxide regions within said body for isolating groupings of said devices from one another;

at least some of said groupings of said devices including a PN junction drain and capacitor structure;

a pattern of narrow dimensioned dielectric regions on said surface of said body; and



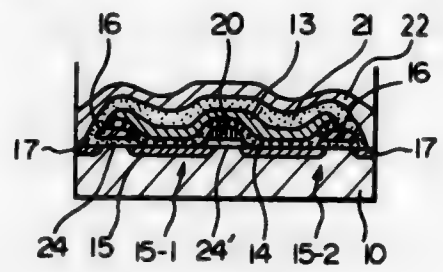
electrical contacts to said drain and capacitor filling the spaces between said narrow dimensioned regions and which contacts are self-aligned to said narrow regions and substantially planar with said narrow regions.

4,513,304

SEMICONDUCTOR MEMORY DEVICE AND PROCESS FOR PRODUCING THE SAME

Yoshihiro Takemae, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP80/00106, § 371 Date Jan. 12, 1981, § 102(e) Date Jan. 12, 1981, PCT Pub. No. WO80/02624, PCT Pub. Date Nov. 27, 1980
PCT Filed May 17, 1980, Ser. No. 229,596
Claims priority, application Japan, May 18, 1979, 54-61227
Int. Cl.³ H01L *29/78, 27/02*
U.S. Cl. 357—23.6 **24 Claims**



1. An improved semiconductor memory device of the type wherein a plurality of memory cells are fabricated on a semiconductor substrate having a first conductivity type, each memory cell including an MOS transistor having a gate electrode insulated from the substrate by a first insulating film and an MOS capacitor, wherein the improvement comprises:

each MOS capacitor comprises (a) a second insulating film of silicon nitride, (b) a capacitor electrode on one side of the second film, said second film additionally extending between the gate and capacitor electrodes to insulate one from the other, and (c) an electric charge storing region in the substrate on the other side of the second film, the charge-storing region including impurities introduced into the substrate so that the charge-storing region has a second conductivity type that is opposite that of the first conductivity type; and

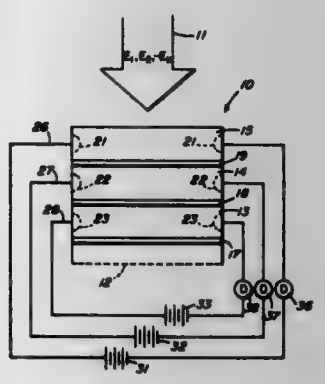
a combination of thick insulating films and field shield layers isolating the memory cells from each other, which films and layers extend in directions perpendicularly crossing with each other, each field shield layer being insulated from the substrate by a film having substantially the same composition and thickness as said first insulating film.

4,513,305

MULTI-WAVELENGTH DEMULTIPLEXER FOR FIBER OPTICAL COMMUNICATION

Walter L. Bloss, III, Sudbury, and Edward M. Brody, Wayland, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 6, 1982, Ser. No. 446,902
Int. Cl.[3] H01L *27/14*
U.S. Cl. 357—30 10 Claims



1. A multi-wavelength optical demultiplexer comprising
a substrate;
a first relatively thick layer of a direct band gap semiconductor material deposited on said substrate;
a first relatively thin layer of latticed matched material having a larger band gap than the materials in the first thick layer, deposited on said first relatively thick layer, for serving as a potential barrier to prevent photo-electrons generated in one layer from entering another;
a second relatively thick layer of direct band gap semiconductor material deposited on said first relatively thin layer;
a second relatively thin layer of latticed matched material having a larger band gap than the materials on said substrate, deposited on said second relatively thick layer, for serving as a potential barrier to prevent photo-electrons generated in adjacent thick layer from entering another;
a third relatively thick layer of direct band gap semiconductor material deposited on said second relatively thin layer; and
ohmic contacts of donor impurity diffusion at opposite ends of each of said relatively thick layers,
wherein each of said relatively thick layers is on the order of one to ten microns thick to achieve good absorption, and
wherein each of said relatively thin layers is on the order of 100 Angstroms thick, large enough to serve as electron barriers, but thin enough to pass optical frequencies without significant loss.

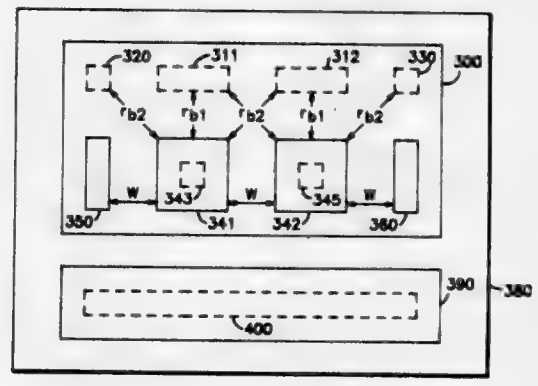
4,513,306

CURRENT RATIOING DEVICE STRUCTURE

Robert B. Davies, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,438
Int. Cl.[3] H01L *29/72*
U.S. Cl. 357—36 16 Claims

1. A current ratioing device structure being located on a surface of a body of semiconductor and comprising:
a region of a first conductivity type having at least three contact portions;
at least one medial region of a second conductivity type, each medial region being of a uniform area, being surrounded by said region of said first conductivity type, being separated from a nearest contact portion of said first conductivity type region by a first distance, being separated from each of two next nearest contact portions of said first conductivity type region by a second distance and having a contact portion;
two contactless lateral regions of said second conductivity type, each being separated from a nearest contact portions of said first conductivity type region by said first distance, being separated from a next nearest contact portion of said first type by said second distance, and being lateral to and in line with said at least one medial region, each lateral



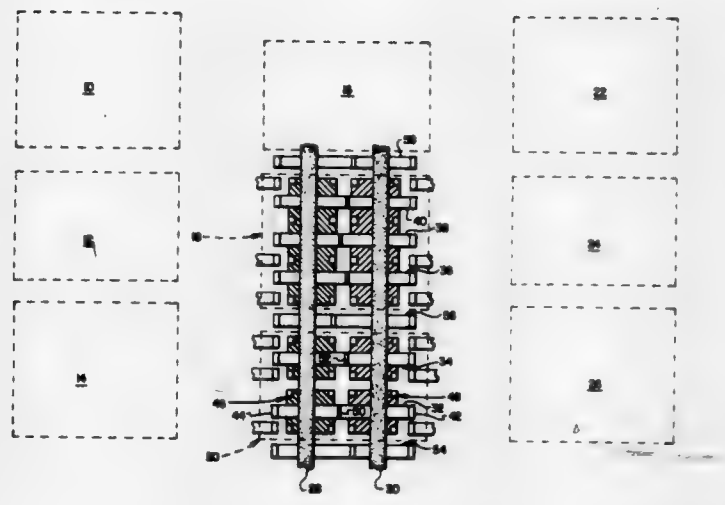
region being on an opposite side of said at least one medial region; and
a region of said second conductivity type surrounding said region of a first conductivity type.

4,513,307

CMOS/SOS TRANSISTOR GATE ARRAY APPARATUS

James L. Brown, Toddville, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 5, 1982, Ser. No. 375,059
Int. Cl.[3] H01L *27/12, 27/10, 29/78*
U.S. Cl. 357—42 10 Claims

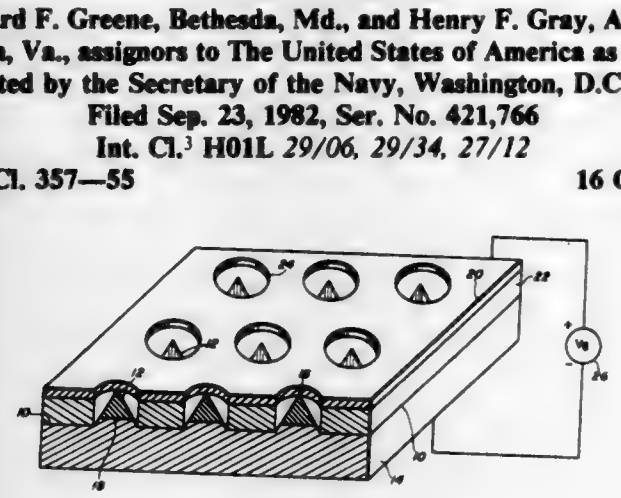


1. An integrated circuit transistor gate array comprising, in combination:
a substrate;
an array of groups of transistor gates, each transistor gate comprising a source, a drain and a control lead, fabricated on the substrate wherein each group comprises three contiguous transistor gates of a first polarity type connected in a drain-source series arrangement, two isolated transistor gates of said first polarity type, three contiguous transistor gates of a second polarity type connected in a drain-source series arrangement, and two isolated transistor gates of said second polarity type;
first means, attached to said substrate, connecting the control lead of each transistor gate of said first polarity to a control lead of a corresponding transistor gate of the second polarity in the group; and
insulation means covering a portion of said first means between said control leads whereby further leads can be attached to said substrate to interconnect noncontiguous transistor gates separated by said first means.

4,513,308
P-N JUNCTION CONTROLLED FIELD EMITTER ARRAY CATHODE

Richard F. Greene, Bethesda, Md., and Henry F. Gray, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 23, 1982, Ser. No. 421,766
Int. Cl.³ H01L *29/06, 29/34, 27/12*
U.S. Cl. 357—55 16 Claims

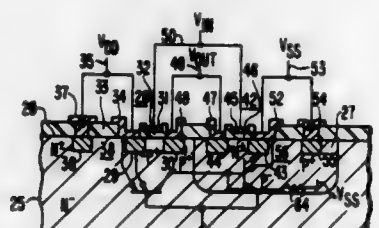


1. A field emitter array (FEA) comprising:
a semiconductor substrate,
an emitter surface formed on said substrate;
a plurality of field emitter sites, with each field emitter site including an emitter pyramid, with a tip, sides, and a base for emitting electrons in the presence of an electric field, wherein the base of said emitter pyramid is disposed upon said emitter surface, said emitter site also including a permanent reverse-biased p-n junction, where said junction is the boundary between a p-type layer and an n-type layer of semiconductor material, wherein said p-n junction is positioned relative to said emitter pyramid so that an electron current flowing from said substrate into said emitter pyramid must traverse said p-n junction and wherein said p-n junction is oriented so that the n-layer is disposed between said junction and the tip of said emitter pyramid and is isolated from all other emitter pyramid n-layers, said p-n junction acting to limit the magnitude of the current density flowing therethrough to j_{sat}, where j_{sat} is the saturation current density of said p-n junction in reverse bias; and
a grid, positioned above said emitter surface, for inducing the emission of electron current from said emitter pyramid where said grid is positively biased relative to said emitter pyramid with a bias voltage sufficient to cause said p-n junction to operate in reverse-biased saturation.

4,513,309
PREVENTION OF LATCH-UP IN CMOS INTEGRATED CIRCUITS USING SCHOTTKY DIODES

James R. Cricchi, Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1982, Ser. No. 438,835
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—42 18 Claims

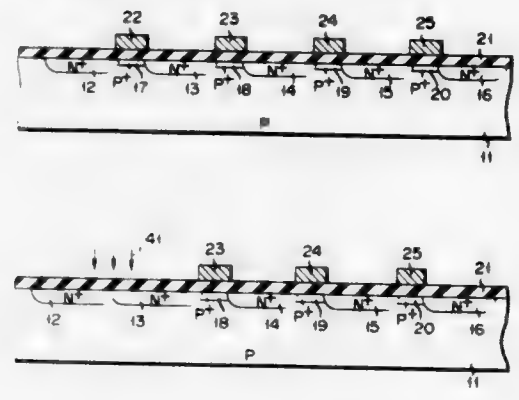


1. A field effect transistor with means to attenuate the injection of minority carriers into the body at times the source is forward-biased with respect to the body comprising,
a field effect transistor having a gate, drain, source and body, said drain and source formed by impurity regions of a first type in said body of a second type material,
a first Schottky barrier diode formed in said body having its anode coupled to said source.

4,513,310
SEMICONDUCTOR DEVICE CAPABLE OF STRUCTURAL SELECTION

Junichi Ohno, Yokohama, and Satoshi Konishi, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 10, 1983, Ser. No. 493,226
Claims priority, application Japan, May 12, 1982, 57-79415; May 12, 1982, 57-79416
Int. Cl.³ H01L *29/40, 29/04, 29/42;* B23K *9/24*
U.S. Cl. 357—68 9 Claims



1. A semiconductor device capable of structural selection in response to the output of a radiating means, said device comprising:
a semiconductor substrate of a first conductivity type;
first wiring means having at least three first semiconductor regions of a second conductivity type which are formed at predetermined intervals in a surface of said semiconductor substrate, and at least two second semiconductor regions of the first conductivity type which are formed one each between pairs of adjacent ones of said first semiconductor regions, said first wiring means being electrically disconnected in an initial state;
an insulation film located over at least a portion of said first wiring means; and
a plurality of second wiring means which are formed on said insulation film over said first wiring means in correspondence with said second semiconductor regions, respectively, with each of said second wiring means extending across said first wiring means and being electrically connected in the initial state, and with each of said second wiring means and a corresponding one of said second semiconductor regions being formed at positions such that said each of said second wiring means and said corresponding one of said second semiconductor regions may be subject to the output of said radiating means so as to electrically disconnect said each of said second wiring means while at the same time electrically connecting together said first semiconductor regions arranged one at each side of said corresponding one of said second semiconductor regions.

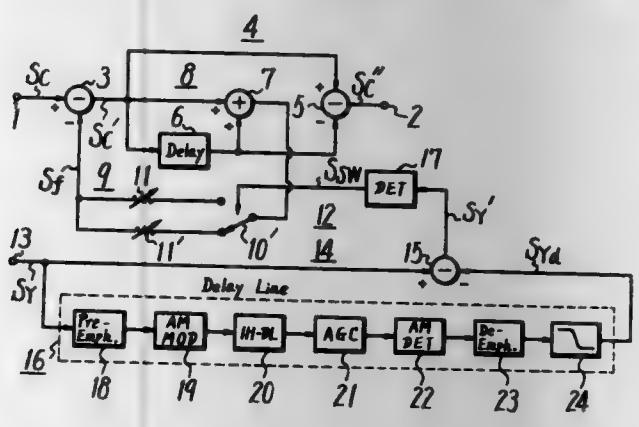
4,513,311
VIDEO SIGNAL PROCESSING UNIT

Jun Hirai, Tokyo, and Masayasu Kaneko, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,531
Claims priority, application Japan, Mar. 30, 1981, 56-46749
Int. Cl.³ H04N *9/491*
U.S. Cl. 358—40 22 Claims

1. A color video signal processing circuit for processing a composite color video signal containing a luminance compo-

nent and a chrominance component, the composite color video signal being formatted as a sequence of horizontal line intervals, each having a predetermined horizontal line period and each containing video information to be presented in vertical alignment with corresponding video information in an adjacent line interval, comprising chrominance comb filter means to which an intermediate chrominance signal is applied for providing a filtered chrominance component in which undesired signal components have been suppressed; an operational circuit providing a difference signal representing vertical correlation of the chrominance component in vertically aligned



portions of different horizontal line intervals; feedback loop circuit means for feeding back said difference signal and combining said chrominance component therewith to produce said intermediate chrominance signal, said feedback loop circuit means having variable non-zero feedback loop gains; detecting means for detecting correlation of video information in said luminance component in vertical aligned portions of different line intervals and providing a detecting signal in response to such detecting; and controlling means for adjusting said feedback loop gain to a respective non-zero value in accordance with said detecting signal.

4,513,312

SOLID-STATE COLOR TELEVISION CAMERA

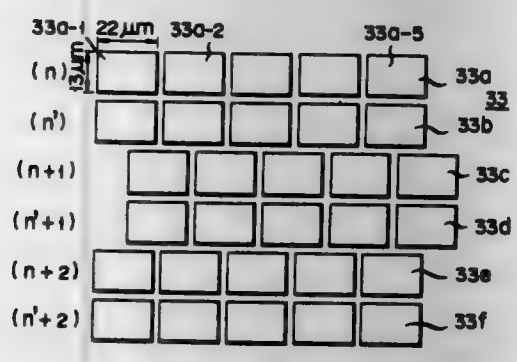
Yasuo Takemura, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 30, 1982, Ser. No. 429,011

Claims priority, application Japan, Sep. 30, 1981, 56-153564; Aug. 13, 1982, 57-139755

Int. Cl.³ H04N *9/07*

U.S. Cl. 358—44 **10 Claims**



1. A solid-state color television camera comprising:
an image pickup device;
a color filter array placed in front of said solid-state image pickup device;
a color separation circuit for extracting three primary colors, red, green and blue, from a multiplex signal derived from said image pickup device;
said filter array including a plurality of color filter rows arranged extending in the horizontal scanning direction, each of said color filter rows having color filter blocks with different color transmission characteristics alternately arranged, in which a first color filter row selected from said plurality of color filter rows is made up of first and second color filter blocks with first and second color transmission characteristics, said first color filter row is disposed adjacent to a second color filter row made up of and alternately arranged third and fourth filter blocks respectively having a third color transmission characteristic and a given transmission characteristic, and said first and second color filter blocks of said first color filter row are disposed and shifted a given length in the horizontal scanning direction, with respect to said third and fourth color filter blocks of said second color filter row; and
said solid-state image pickup device having a plurality of photosensors disposed corresponding to said color filter blocks of said color filter array.

4,513,313

SOLID STATE IMAGING DEVICE

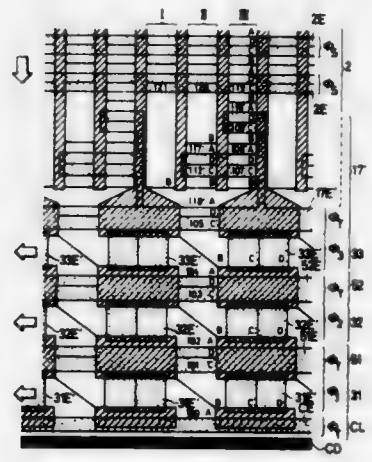
Takao Kinoshita, Tokyo, and Shinji Sakai, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,048

Claims priority, application Japan, Dec. 7, 1982, 57-214411; Dec. 10, 1982, 57-216391

Int. Cl.³ H04N *9/07, 3/14*; H01L *29/78*; G11C *19/28*

U.S. Cl. 358—44 **66 Claims**



13. A charge transfer device comprising:
(A) a storage portion including a plurality of storage cells each for storing an electrical charge, said storage cells being arrayed in at least one row, said one row being classified into a plurality of storage cell groups each including m adjacent storage cells, where m is an integer no smaller than three;
(B) (m—1) delay channels provided for each of said storage cell groups in said row of said storage portion, said delay channels being arranged to connect (m—1) storage cells to a remaining storage cell in each storage cell group and each having a different amount of delay; and
(C) a read-out portion for reading out the electrical charges of one row of said storage portion, said read-out portion being arranged to receive said electrical charges through said remaining storage cell in each storage cell group in said row of said storage portion.

4,513,314

INK USAGE ESTIMATOR

Karl M. St. John, Huntington Station; Nicholas J. Reeber, Hauppauge, and Sheldon J. Kerbel, Merrick, all of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,637

Int. Cl.³ H04N *1/46*

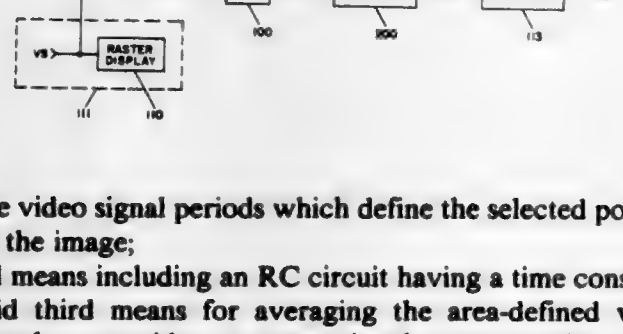
U.S. Cl. 358—76 **10 Claims**

1. An apparatus for providing an ink usage estimator signal representing the amount of ink required to print on a receptive media such as paper a portion of an image which is on film, said apparatus for use with a previewer which simulates the image

by providing to a raster display a video signal corresponding to the image, said apparatus comprising:

first means for selecting the portion of the image to be estimated and for providing area pulses during the periods of said video signal which represent the selected portion of the image;

second means for gating the video signal with the area pulses to provide an area-defined video signal corresponding to



the video signal periods which define the selected portion of the image;

third means including an RC circuit having a time constant, said third means for averaging the area-defined video signal to provide an output signal corresponding to an average of the area-defined video signal; and

fourth means for varying said time constant in accordance with the area of the selected portion of the image whereby said output signal is said ink usage estimator signal.

4,513,315

COMMUNITY ANTENNA TELEVISION ARRANGEMENT FOR THE RECEPTION AND DISTRIBUTION OF TV - AND DIGITAL AUDIO SIGNALS

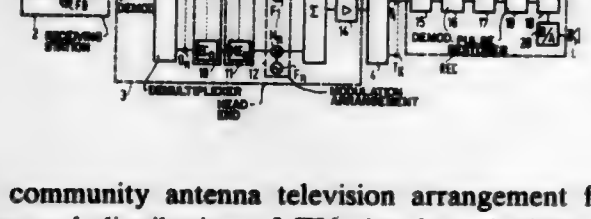
Cornelis B. Dekker, and Lodewijk B. Vries, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,907

Claims priority, application Netherlands, Jun. 25, 1981, 8103064

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—86 **6 Claims**



1. A community antenna television arrangement for the reception and distribution of TV signals and digital audio signals, particularly those signals which are transmitted by satellite, comprising a head-end, connected to a receiving antenna and a signal distribution network, a time-division multiplex signal which incorporates said digital audio signals in a time-division multiplex distribution being applied to said head end, which time-division multiplex signal is modulated on a sound carrier, characterized in that the head-end comprises a demodulation arrangement for demodulating the time-division multiplex signal to the baseband, a demultiplexing arrangement for demultiplexing the time-division multiplex signal, this demultiplexing arrangement having parallel outputs at which the digital audio signals are available in parallel, which outputs are connected to modulators of a modulation arrangement for modulating the digital audio signals on separate audio carriers, the modulation arrangement being connected to the signal distribution network for applying the digital audio signals to a plurality of subscribers' connecting points.

4,513,316

AUTOMATIC SURFACE INSPECTION SYSTEM

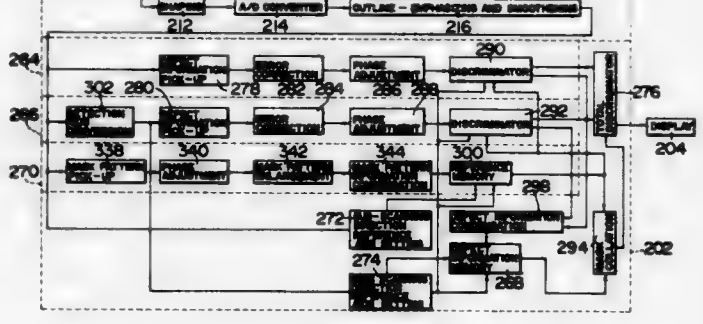
Yuji Kobayashi, Fujisawa, and Takao Okada, Kawasaki, both of Japan, assignors to Dai Nippon Printing Co., Ltd. and Ikegami Tsushinki Co., Ltd., both of Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,573

Claims priority, application Japan, Jul. 31, 1981, 56-120164

Int. Cl.³ H04M *7/18*

U.S. Cl. 358—106 **16 Claims**



1. An automatic surface inspection system comprising:

a surface scanning means for scanning the surface of an object to be inspected in main and sub-scanning directions, to output an analog picture element signal in each scanning direction;

a processing means having a pre-processing section adapted to receive said analog picture element signal from said surface scanning means for shaping said signal and converting it into a digital picture element signal, and a data processing section receiving said digital picture element signal from said pre-processing section for conducting surface inspection;

said data processing section including:

a first reference axis setting circuit adapted to receive said digital picture element signal from said pre-processing section for detecting a reference axis in the main scanning direction;

a second reference axis setting circuit receiving said digital picture element signal from said pre-processing section for detecting a reference axis in the sub-scanning direction;

a mask pattern circuit adapted to receive said digital picture element signal from said pre-processing section and the first and second reference axis information to produce mask pattern information on portions thereof which are not to be subjected to the surface inspection and storing the information in a reference memory;

a first detecting circuit having a first discriminating circuit receiving said digital picture element signal and said first and second reference axis information for conducting a surface inspection in the main scanning direction to produce a first defect signal while receiving said mask pattern information from said mask pattern circuit to make necessary masking treatment in the main scanning direction;

a second detecting circuit having a second discriminating circuit adapted to receive said digital picture element signal and said first and second reference axis information for conducting a surface inspection in the sub-scanning direction to produce a second defect signal while receiving said mask pattern information from said mask pattern circuit to make necessary masking treatment in the sub-scanning direction;

a defect information memory for storing said first and second defect signals until the second reference axis is detected;

a mask collation circuit for reading said first and second defect signals and masking the signals in accordance with

the mask pattern information from the reference memory; and

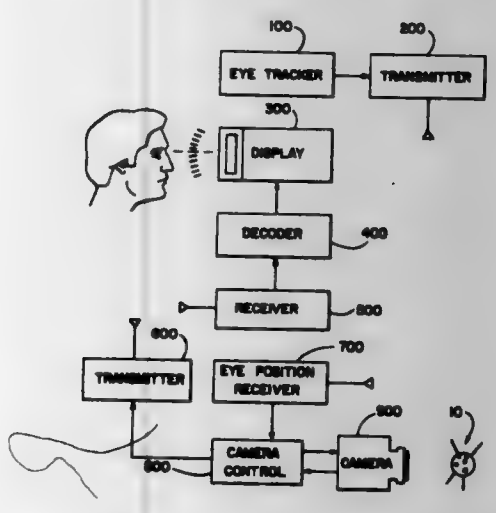
a total discriminating circuit adapted to receive the signals from said first and second discriminating circuits and an output from said collation circuit for deciding whether or not the surface of said object inspected is acceptable or defective.

4,513,317

RETINALLY STABILIZED DIFFERENTIAL RESOLUTION TELEVISION DISPLAY

Carl F. Ruoff, Jr., La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 28, 1982, Ser. No. 425,204
Int. Cl.³ H04N 7/18
U.S. Cl. 358—133 **12 Claims**



1. A differential resolution television apparatus for displaying images of a remote site comprising:

a raster-scanned CRT display means having a viewing screen for displaying said images, said display means adapted for selectable raster scan operation at a first resolution level and at a second resolution level;

eye tracking means for sensing the line of sight of an observer's eye relative to the viewing screen and generating first position signals indicative of the position of the observer's line of sight relative to the viewing screen;

video camera means adapted for selectable raster scan sampling at said first resolution level and at said second resolution level such that a first region of the image is sampled at said first resolution level and the remainder of said image is sampled at said second resolution level;

camera control means for controlling the resolution level of said camera means and the location of said first region in dependence upon said position signals from said eye tracking means;

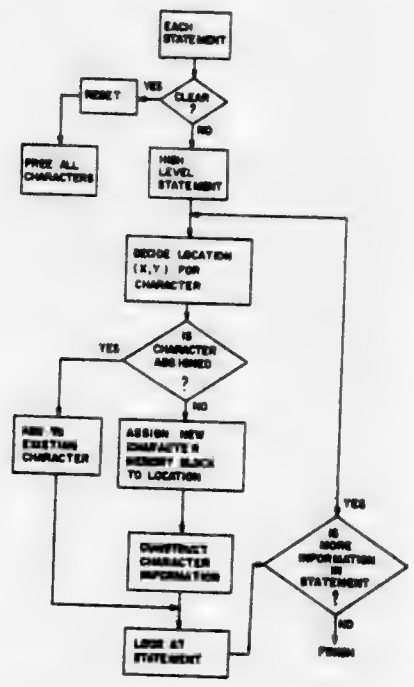
means for transmitting video data generated by said camera means to said CRT display means, said CRT display means being further adapted to display said image at said first resolution level within said first region and at said second resolution level for the remainder of said image; and wherein said first resolution level is obtained by selecting a fine CRT beam and using the same raster line scan interval to scan a line in said first region as to scan a line at said second resolution level.

4,513,318

PROGRAMMABLE VIDEO TEST PATTERN GENERATOR FOR DISPLAY SYSTEMS

Barry F. Wilensky, and Joseph A. Maggi, both of Brooklyn, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 429,927
Int. Cl.³ H04N 7/02, 9/62
U.S. Cl. 358—139 **12 Claims**



1. A programmable video test pattern generator for display systems characterized by:

(a) issuing a high level statement of a pattern;

(b) determining a coordinate location for a character on the display;

(c) determining if the coordinate location has been assigned a character;

(d) constructing a new pattern segment by adding new information obtained from the high level statement to information previously in the assigned character if the coordinate location has been assigned a character;

(e) obtaining a blank character from a memory and constructing a new pattern segment by adding information obtained from the high level statement to the blank character if the coordinate location has not been assigned a character;

(f) determining whether more information is available from the high level statement; and

(g) returning to step b and repeating steps b through g if more information is available from said high level statement.

4,513,319

METHOD FOR AUTOMATICALLY SETTING UP A TELEVISION CAMERA

Hendrik Breimer, Breda, Netherlands; Frederik J. Van Roessel, Upper Saddle River, N.J., and Engbert Tienkamp, Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,657
Claims priority, application Netherlands, Dec. 30, 1981, 8105897
Int. Cl.³ H04N 9/04
U.S. Cl. 358—163 **5 Claims**

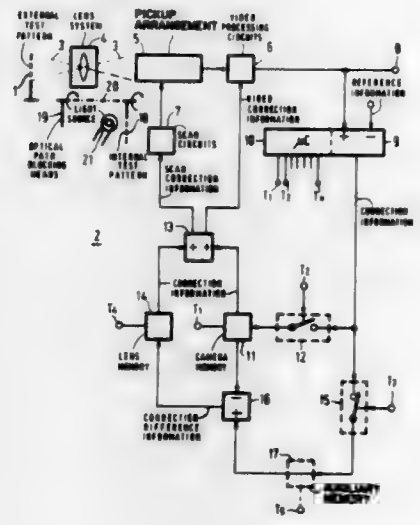
1. A method of producing lens system correction information for automatically setting up a television camera, said television camera having a lens system and a pickup arrangement on an optical path, said method comprising the steps of:

viewing an internal test pattern with the television camera to produce an internal test pattern correction signal, said

internal test pattern being viewed by blocking light from entering the lens system and by placing the internal test pattern in the optical path between the lens system and the pickup arrangement;

storing the internal test pattern correction signal in a camera memory;

viewing an external test pattern with the television camera



to produce an external test pattern correction signal, said external test pattern being viewed through the lens system;

subtracting the internal test pattern correction signal from the external test pattern correction signal to produce a lens system correction signal representing lens system correction information; and

storing the lens system correction signal in a lens memory.

4,513,320

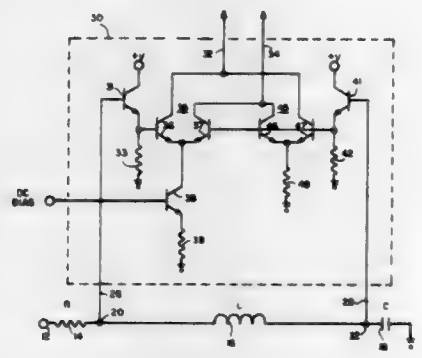
NON-LINEAR PEAKING SYSTEM

Daniel L. Reneau, Elmhurst; George J. Tzakis, Glenview, and Christopher M. Engel, Arlington Heights, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 7, 1983, Ser. No. 472,785

Int. Cl.³ H04N 5/14

U.S. Cl. 358—166 **8 Claims**



1. A television luminance signal peaking circuit of the type wherein a peaking signal comprising the second derivative of the low pass luminance signal in conjunction with the low frequency portion of the luminance signal is used for signal enhancement and wherein amplifier means are provided for deriving signals representing the low pass luminance signal and opposite polarities of the second derivative of the low pass luminance signal, the improvement comprising:

first and second differential amplifiers in said amplifier means connected such that the common mode gain of said amplifier means is substantially unaffected by the differential mode signal level and the differential mode gain of said amplifier means is substantially unaffected by the common mode signal level.

4,513,321

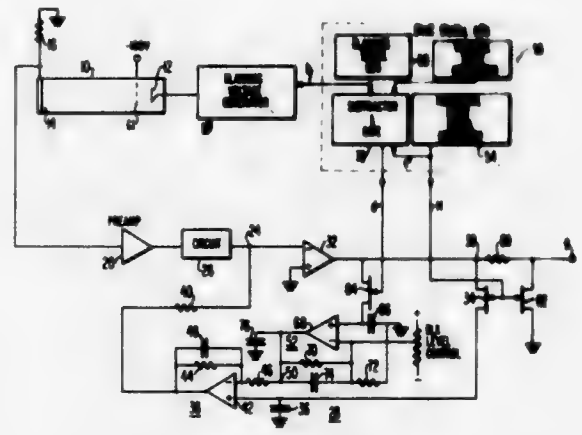
BLACK LEVEL CLAMP FOR TELEVISION SIGNALS

Charles L. Olson, Oaklyn, and John F. Mo[illegible]son, Marlton, both of N.J., assignors to RCA Corporation, N[illegible] York, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,[illegible]

Int. Cl.³ H04N 5/18

U.S. Cl. 358—172 **19 Claims**



1. An improved clamp arrangement for television signals derived from a source of television signals, comprising:

controllable offset voltage generating means coupled between said source of television signals and an output terminal for establishing an offset voltage therebetween under the control of a clamp control signal, to thereby generate clamped television signals;

first controllable sampling means coupled to said output terminal and operatively associated with a source of reference voltage for generating said clamp control signal for establishing said offset voltage, said first controllable sampling means generating said clamp control signal under the control of a first sampling control signal during an interval encompassing at least portions of recurrent horizontal retrace intervals of said television signal, whereby noise components may perturb the reference voltage provided by said source of reference voltage and cause said clamped television signals to drift;

wherein the improvement comprises said source of reference voltage including:

controllable reference voltage generating means coupled to said source of television signals for deriving said reference voltage from said television signals under the control of a second sampling control signal; and

second sampling control signal generating means coupled to said controllable reference voltage generating means for generating second sampling control signals at times within the vertical blanking interval of said television signals, but only at times other than the times of said horizontal retrace intervals, whereby said reference voltage is not perturbed by noise and said clamped television signal does not drift.

4,513,322

SWITCHING NETWORK WITH SUPPRESSED SWITCHING TRANSIENTS

Paul Filliman, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 29, 1982, Ser. No. 437,828

Int. Cl.³ H04N 9/535

U.S. Cl. 358—181 **19 Claims**

1. A signal sampling system operative during a reference interval and a subsequent sampling interval, comprising:

a source of input signals containing information to be sampled;

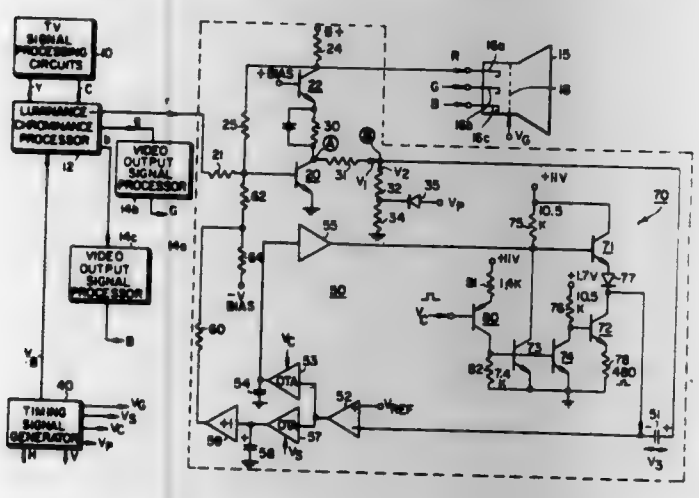
sampling means operative during said sampling interval and responsive to said input signals for providing an output signal representative of said information;

a source of switching signals; and

referencing means, including a capacitance, coupled to said

input signal source and said sampling means and operative during said reference interval to develop a reference bias on said capacitance for establishing a sampling reference bias condition for said sampling means, wherein said referencing means comprises:

first current conducting means responsive to said switching signals and coupled to said capacitance for providing currents for charging said capacitance;



second current conducting means responsive to said switching signals and coupled to said capacitance for providing currents for discharging said capacitance; and

means for rendering said first and second current conducting means non-conductive substantially simultaneously at the end of said reference interval, to suppress switching transients associated with the operation of said first and second current conducting means in response to said switching signals at the end of said reference interval.

4,513,323

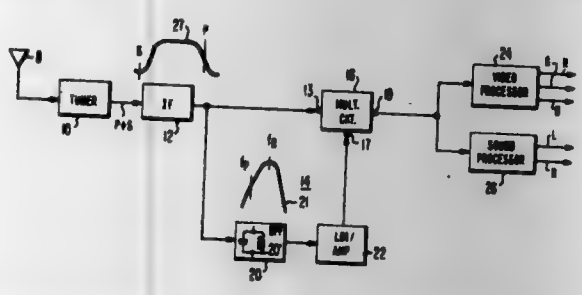
BUZZ REDUCTION FOR INTERCARRIER TYPE TELEVISION SOUND DETECTION

Chandrakant B. Patel, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,485

Int. Cl.³ H04N 5/62, 5/60

U.S. Cl. 358—197 **7 Claims**



1. In a television receiver including means for providing an intermediate frequency (IF) signal including an IF sound carrier frequency modulated (FM) with multichannel audio information and an IF picture carrier amplitude modulated (AM) with video information and including a double sideband (DSB) portion, said means for providing said IF signal having a filter response characteristic with a sloped attenuation portion of a given polarity which causes unequal attenuation to upper and lower sidebands of said DSB portion whereby said unequally attenuated sidebands impart an undesired phase modulation to said IF picture carrier, an intercarrier multichannel sound signal detector comprising:

a multiplier having a first input coupled to receive at least said FM modulated IF sound carrier and a second input coupled to receive a switching control signal for multiplying said signals applied to said first and second inputs and providing at an output an intercarrier multichannel sound signal;

stereo sound processing means responsive to said multichannel intercarrier sound signal for producing left and right stereo sound signals; and

a switching control signal generating circuit coupled between said means for providing said video IF signal and said multiplier second input and responsive to said AM modulated IF picture carrier for generating said switching control signal;

said switching control signal generating circuit including filter means for presenting a sloped attenuation response characteristic to said AM modulated IF picture carrier of a polarity opposite said given polarity of said filter response characteristic of said means for providing said IF signal so that said switching control signal has substantially equal amplitude upper and lower sidebands corresponding to said DSB portion of said AM modulated IF picture carrier thereby compensating for said undesired phase modulation of said IF picture carrier and a corresponding buzz in said stereo signals which could otherwise be produced.

4,513,324

TELEVISION SCANNING OF WIDE FRAME MOTION PICTURE FILMS

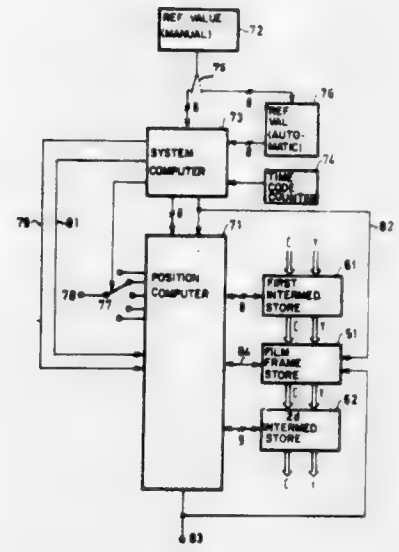
Dieter Poetsch, Ober-Ramstadt; Volker Massmann, Mühltal; Werner Becker, Mainz, and Horst Wagner, Griesheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 434,054

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142865

Int. Cl.³ H04N 3/36

U.S. Cl. 358—214 **8 Claims**



1. Method of television scanning in television format of wide-field format motion picture films, in which digitalized television signals are produced line by line by means of an array of sensors on which the entire width of the film frames are projected with compression of the frames in width, comprising the steps of:

expanding every motion picture frame horizontally by a first factor by writing said signals for each frame successively into a first intermediate store and reading correspondingly selected portions of each line of said frame out of said store at a slower picture point rate than the writing-in rate without change of line rate;

writing said portions of lines of each frame, read out from said first intermediate store, into a film frame store;

reading a set of lines of said frame store constituting a first of two television interlaced fields out of said film frame store and then performing the same step for the set of the remaining lines of said frame store constituting the second of said two interlaced fields out of said frame store each said set of lines thereby constituting a half-picture field of the same frame;

expanding each said half-picture field horizontally by a second factor after storage of signals in said film frame store by selecting corresponding portions of all lines of each said field and reading said selected line portions of each said field out into an external circuit, and

during repeated performance of the foregoing steps, varying from time to time the line portions selected in one or both of the steps in which portions of lines are selected, at intervals not shorter than the frame transfer interval for the first expansion step and at intervals not shorter than the field transfer interval in the case of the second expansion step, for horizontal shift of the picture portion to be reproduced after subsequent readout into said external circuit.

4,513,325

IMAGE OUTPUTTING DEVICE

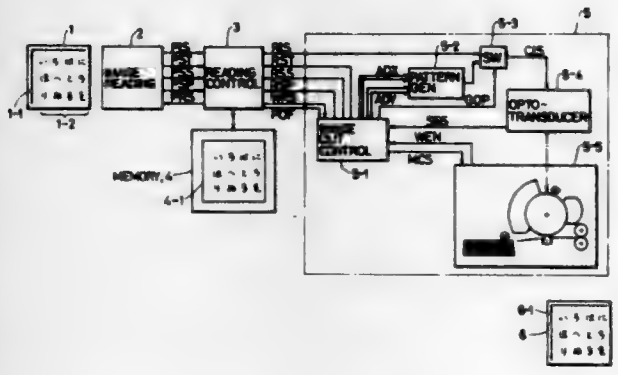
Satoru Itoh, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,124

Claims priority, application Japan, Mar. 13, 1981, 56-35402

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—280 **8 Claims**



1. An image outputting device for outputting an image of an original containing a reference pattern comprising:

means for reading each picture element of an original and for obtaining serial image signals of areas of said original other than the area containing said reference pattern, said reading being performed through main scanning and subscanning;

pattern generation means for generating reference pattern signals at a timing in accordance with prearranged picture element positions on a scanning line corresponding to said reference pattern;

means for producing combined image signals by combining said serial image signals with said reference pattern signals; and

means for reproducing said combined image signals on a recording medium as a visible image including a reproduced reference pattern to thereby reproduce said original including said reference pattern on said recording medium and to enable subsequent reproduction from said recording medium.

4,513,326

MAGNETIC PRINTING MACHINE EMPLOYING A MULTI-CHANNEL RECORDING HEAD WITH MINIMAL CROSS-TALK WITH SECONDARY SCANNING HEAD MOVEMENT

Norio Kokaji, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 141,162, Apr. 17, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,799

Claims priority, application Japan, Apr. 20, 1979, 54-48844

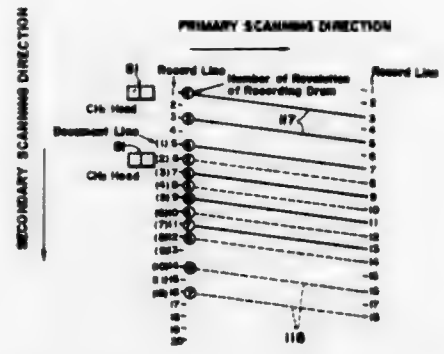
Int. Cl.³ H04N *1/24*

U.S. Cl. 358—301 **11 Claims**

1. A magnetic printing machine including a rotatable magnetic recording drum and a magnetic recording head arranged to be moved along the axial direction of said magnetic recording drum and fed with video signals to be processed, in which a first relative movement between said magnetic recording drum and said magnetic recording head in the peripheral direction of said magnetic recording drum is effected as a primary scanning, and a second movement between said magnetic recording drum and said magnetic recording head along the axial direction of said magnetic recording drum is effected as a secondary scanning; said machine comprising:

(A) a plurality of channels carried by said head, said channels being separated by a distance equal to a predetermined record line pitch multiplied by an integer P($P \geqq 3$), said record line pitch being defined as the distance traveled by one channel of said head in said secondary scanning direction during each revolution of said drum; and

(B) means for effecting said secondary scanning such that said magnetic recording head is moved along the axial direction of said magnetic recording drum a distance defined by the product of said predetermined record line pitch multiplied by the number of said channels of said magnetic recording head for each revolution of said drum.



4,513,327

DIGITAL SIGNAL RECORDING SYSTEM AND REPRODUCING APPARATUS

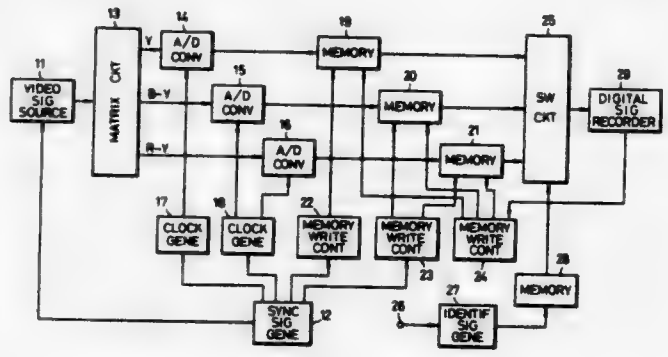
Nobuaki Takahashi, Yamato; Seiichi Takashima, Ayase; Takeshi Shibamoto, Sagamihara; Fujio Suzuki, Machida, and Koji Tanaka, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 24, 1983, Ser. No. 478,455

Claims priority, application Japan, Mar. 30, 1982, 57-51925; Mar. 30, 1982, 57-51926; Mar. 30, 1982, 57-51927; Mar. 30, 1982, 57-51928

Int. Cl.³ H04N *5/92*

U.S. Cl. 358—310 **11 Claims**



1. A digital signal recording system comprising:

first producing means for independently subjecting a luminance signal and two kinds of color difference signals of a color picture information to be recorded to digital pulse modulation, to produce a first digital luminance signal and first two kinds of digital color difference signals;

second producing means for alternately transmitting said first digital luminance signal and said first two kinds of digital color difference signals in terms of information of

one or a plurality of scanning lines, and producing a first digital video signal having a signal format wherein signal components of two sampling points of said first digital luminance signal are arranged within the same word and signal components of the same sampling point on a picture of said first two kinds of digital color difference signals are arranged within the same word;

third producing means for producing digital audio signals by subjecting audio signals of audio information to be recorded to digital pulse modulation; and

recording means for time-sequentially multiplexing said first digital video signal and said digital audio signals in terms of words, and recording the time-sequentially multiplexed signal onto the same one track on a recording medium.

4,513,328

METHOD OF RECORDING VIDEO SIGNALS WITHIN A PREDETERMINED BIT/UNIT TIME RECORDING RATE

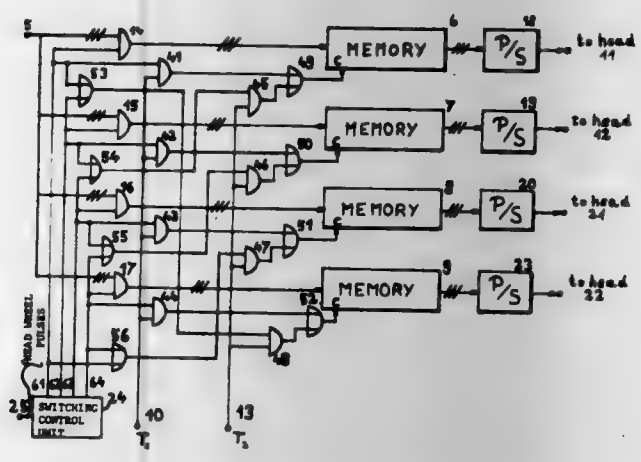
Jürgen Heitmann, Alsbach-Hähnlein, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 352,009

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107733

Int. Cl.³ G11B *5/00, 15/02*

U.S. Cl. 360—8 **16 Claims**



1. Method of transducing digital video signals to a magnetic tape (1), in which the digital signals are received at an input (5) at a predetermined bit rate, which may exceed the bit/unit time recording rate for recording of signals on the tape,

in which the tape (1) is passed in a helical path about the transducer scanning drum having a rotating head wheel (4) with at least three transducer heads (11, 12, 21, 22), spaced equally apart, which transduce signals on inclined tracks on the tape,

comprising the steps of

receiving the digital signal at its predetermined bit rate;

storing the digital signals at said predetermined bit rate;

reading-out the stored digital signals at said bit rate times the ratio of the angular spacing of the transducer heads to 180° to transform the video signals into time-expanded signals;

switching the signals being read-out to respective transducer heads then in contact with the tape;

and recording the signals being read-out on the tape.

4,513,329

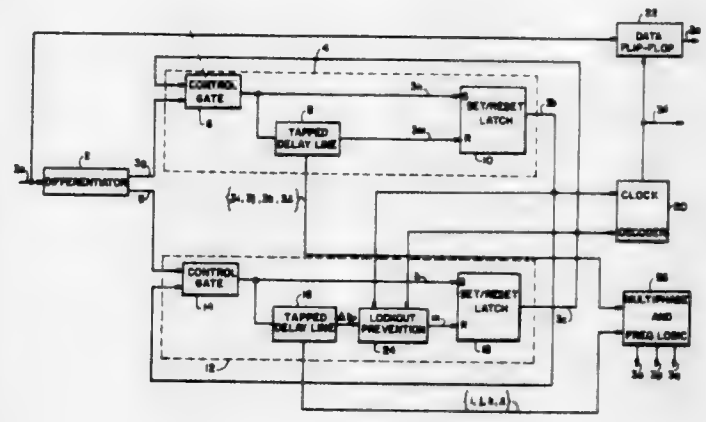
MANCHESTER DECODER CLOCK MULTIPLIER

Aldan D. Gomez, El Cajon, and Edward W. Gennetten, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1983, Ser. No. 528,386

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—42 **12 Claims**



1. A Manchester decoder clock multiplier which comprises:

means, disposed to receive an incoming conventionally encoded Manchester signal, for differentiating between positive voltage transitions and negative voltage transitions in the Manchester encoded signal, said differentiating means emitting separate trigger signals wherein the first trigger signal contains assertions of a predetermined pulse width associated with voltage transitions that correspond to data logic "0"'s within the conventionally encoded Manchester signal, and the second trigger signal contains assertions of a predetermined pulse width associated with voltage transitions corresponding to data logic "1"'s contained within the conventionally encoded Manchester signal;

first means, connected to receive the first trigger signal output from the differentiating means, for detecting and passing a signal waveform containing only those assertions in the first trigger signal that are associated with logic "0"'s within the Manchester signal, said first detecting means also selectively delaying and providing for output of a plurality of delayed waveforms from the passed signal waveform;

second means, connected to receive the second trigger signal output from the differentiating means, for detecting and passing a signal waveform containing only those assertions in the second trigger signal that are associated with logic "1"'s within the Manchester signal, said second detecting means also selectively delaying and providing for output of a plurality of delayed waveforms from the passed signal waveform;

means, connected to the first and second detecting means, for establishing a decoded clock signal by combining a select output signal from each of the first and second detecting means;

means, disposed to receive the incoming conventionally encoded Manchester signal and connected to the output of the establishing means, for decoding the Manchester signal to reveal the data which was encoded in the Manchester signal; and

means, connected to receive the plurality of delayed signals from both the first and second detecting means, for constructing a plurality of predetermined clock waveforms which differ in phase and frequency.

4,513,330

ACCIDENTAL ERASING PREVENTATIVE DEVICE FOR A CASSETTE TAPE RECORDER

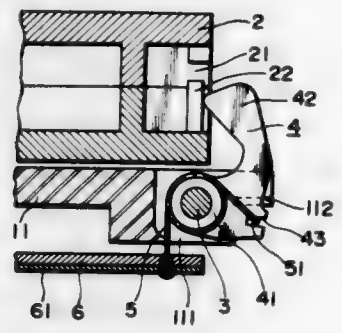
Toshihiro Nakao, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,292

Claims priority, application Japan, Feb. 24, 1981, 56-25088[U]; Feb. 24, 1981, 56-25089[U]

Int. Cl.³ G11B *15/04*

U.S. Cl. 360—60 **3 Claims**



1. A cassette tape recorder equipped with an accidental erasure preventive device comprising:

means defining a cassette compartment having a bottom side arranged to receive therein a tape cassette having in one lateral surface thereof at least one removable accidental erasure preventing lockout tab;

erasure-recording means for simultaneously erasing information recorded on tape contained within a tape cassette inserted into said cassette compartment and for recording other information thereon;

erasure-recording contact circuit means for controlling operation of said erasure-recording means, said control circuit means including switch means for preventing erasure and recording of information from and on said tape;

lever means disposed in a position to engage a lockout tab of a cassette inserted in said cassette compartment, said lever means being arranged to rotate for engagement with said lockout tab, said lever means being adapted to occupy a first position when a cassette inserted in said cassette compartment has a lockout tab thereon and a second position when a cassette inserted in said cassette compartment does not have a lockout tab thereon; and

spring means rotatively biasing said lever means in a direction toward engagement with a lockout tab of a cassette inserted in said cassette compartment and for simultaneously cooperating with said switch means to render said erasure-recording means inoperative to erase and record information when said lever means is in one of said first and said second positions and to enable erasure and recording by said erasure-recording means when said lever means is in the other of said first and second positions; and

wherein

said spring means comprise an electrically conductive member having one end thereof electrically connected with said erasure-recording control circuit means and the other end thereof adapted to be brought into and out of conductive engagement with said switch means in response to the position of said lever means.

4,513,331

METHOD AND APPARATUS FOR DISK DRIVE ALIGNMENT

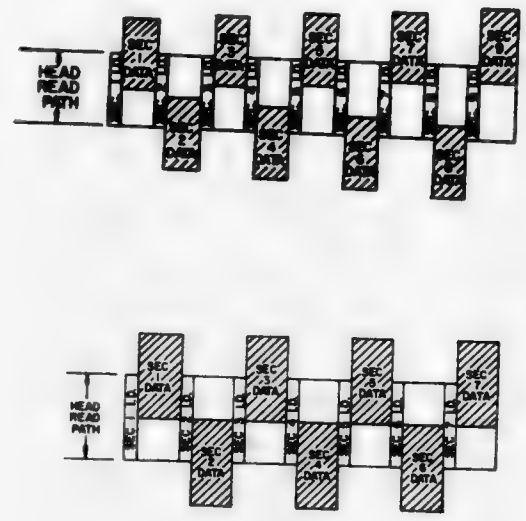
Bradley D. Baker, San Jose, and Richard L. Kelly, Santa Clara, both of Calif., assignors to Dysan Corporation, Santa Clara, Calif.

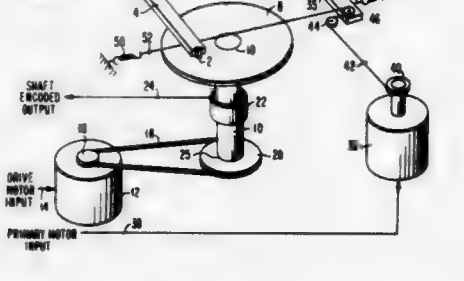
Filed Oct. 12, 1982, Ser. No. 433,950

Int. Cl.³ G11B *5/46*

U.S. Cl. 360—75 **10 Claims**

1. An improved digital diagnostic diskette for use in testing alignment and performance of a disk drive having a linear position mechanism for a transducer, said diskette comprising a magnetic recording disk having a first plurality of progressive offset concentric data tracks distributed there across at





different predetermined radial positions, each progressive offset track having an offset range exceeding the track width for which said transducer is designed.

4,513,332

DISK DRIVE HAVING FINE AND COARSE CONTROL OF THE READ/WRITE HEAD

Lauren V. Merritt, Los Altos, and William R. Maclay, Los Gatos, both of Calif., assignors to Datacopy Corporation, Mountain View, Calif.

Filed Aug. 4, 1982, Ser. No. 405,206

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **1 Claim**

1. A disk drive for recording and reproducing information in a magnetically-recorded data track on the surface of a disk placed on a disk spinner, comprising:

a transducer for recording and reproducing data signals with respect to said disk;

first-moving means, energizable for moving said transducer in coarse movement generally along a radius of said surface of said disk, between the rim of said disk and the operational center of said disk;

second-moving means, energizable for moving said transducer in fine movements generally along said radius of said surface of said disk;

third-moving means for spinning said disk spinner;

control means, coupled to said first-moving means and to

said second-moving means so that said transducer is selectively moved, through energization of said first-moving means, from track to track over the surface of said disk, and is caused to precisely follow a track selected by energization of said first moving means, through energization of said second-moving means;

said first-moving means including a cable wound around a drum, one end of said cable being connected to said transducer, such that as said first-moving means is energized and disenergized, said cable is wound onto said drum or unwound from said drum, to thereby move said transducer in coarse movements generally along said radius of said surface of said disk, and,

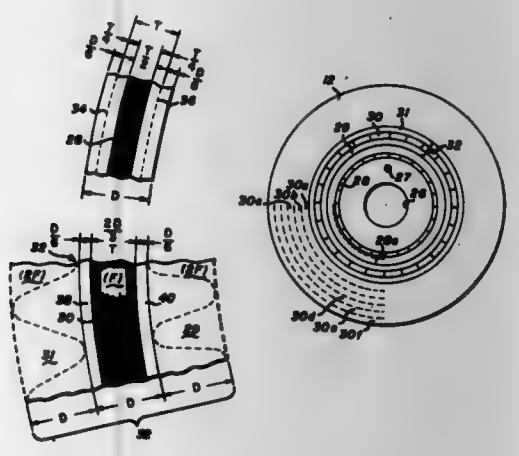
said second-moving means including means for exerting a force on said cable such that as said second-moving means is energized and disenergized, the effective cable length is changed to thereby move said transducer in fine movements generally along said radius of said surface of said disk.

4,513,333

DIAGNOSTIC RECORDING

Ronald E. Young, Los Gatos, and Duane C. Meulners, San Jose, both of Calif., assignors to Dymek Corporation, San Jose, Calif.

Continuation of Ser. No. 351,934, Feb. 24, 1982, abandoned.
This application Mar. 2, 1984, Ser. No. 585,829
Int. Cl.³ G11B *5/00, 5/46, 5/58, 23/34*
U.S. Cl. 360—77 **28 Claims**



1. A diagnostic magnetic record media for loading into a computer drive and readable by a computer system for enabling a user of the system to diagnose the signal-to-noise quality and the head location alignment of the system relative to predetermined acceptable limits, comprising:

a first data track having a magnetic test data signal recorded thereon of a predetermined amplitude and in a format readable by a computer system and of a frequency F, wherein F is a predetermined basic data recording frequency, the first data track being of width T wherein T is the width of written data recorded by a recording head;

a pair of spaces located on opposite sides of and in abutment with each edge of the first data track, each of said spaces being of a width of approximately D/6 wherein D is the distance between center lines of adjacent data tracks, whereby the spaces have a width of a value to allow for design tolerance within the computer system and resulting in acceptable off-track operation range;

a pair of interference tracks with each interference track located in abutment with one of the spaces, each of the interference tracks being recorded with a continuous wave magnetic interference signal recorded thereon of a frequency different from the frequency F whereby a noise wall is established on each side of the first data track; and

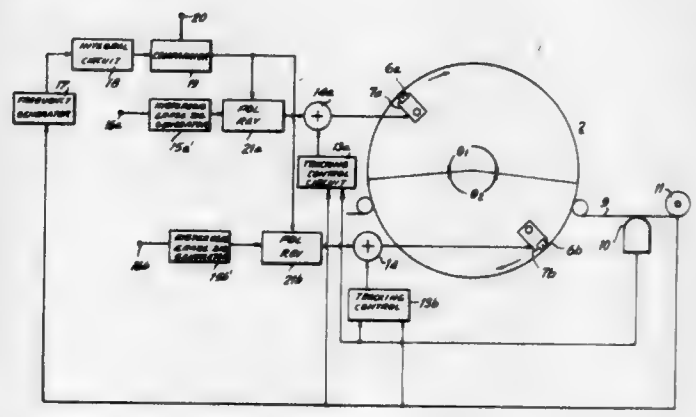
a narrowed data track of a width less than T and having recorded thereon a magnetic signal having an amplitude less than the amplitude of data recorded on the first data track whereby the signal-to-noise level of the computer system may be diagnosed relative to a predetermined reference level.

4,513,334

HEAD POSITIONING APPARATUS

Toru Otsuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 480,068
Claims priority, application Japan, Apr. 2, 1982, 57-54934
Int. Cl.³ G11B *5/52*
U.S. Cl. 360—75 **7 Claims**



1. A head positioning apparatus for a helical-scan tape reproducing device having a rotary transducer for reproducing signals from tracks on a record medium, electrically deflectable mounting means mounting the rotary transducer and positioning signal generating means for applying a positioning electrical signal to the mounting means for deflection thereof, the head positioning apparatus comprising:

hysteresis-erase signal means for applying a hysteresis-erasing electrical signal to the mounting means for deflection thereof to remove residual deflection resulting from deflection by said positioning signal means; and

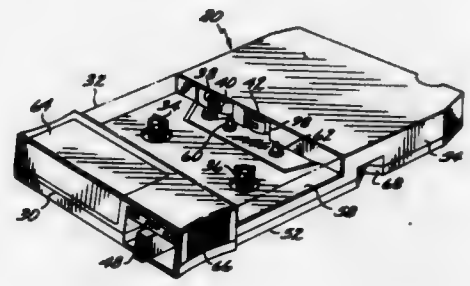
polarity selecting means for selecting the polarity of said hysteresis-erasing signal depending on the direction of deflection of said mounting means by said positioning signal.

4,513,335

8-TRACK CASSETTE ADAPTOR

Rudolf van Kreuningen, Torrance, Calif., assignor to Kraco Enterprises, Compton, Calif.

Filed Jun. 24, 1982, Ser. No. 391,924
Int. Cl.³ G11B *15/00*
U.S. Cl. 360—94 **14 Claims**



1. For use in a cassette adaptor, a tape transport mechanism, operable from the driven capstan of an 8-track tape player, for transporting tape from a rewind reel to a takeup reel and for later rewinding the tape, the mechanism comprising:

a main drive wheel, said wheel contacting the capstan of the 8-track tape player; and

linkage means selectively operable to alternatively

engage said main drive wheel with tape playing means for transporting the tape past a pickup head;

engage said main drive wheel with rewind drive means for rewinding the tape; and

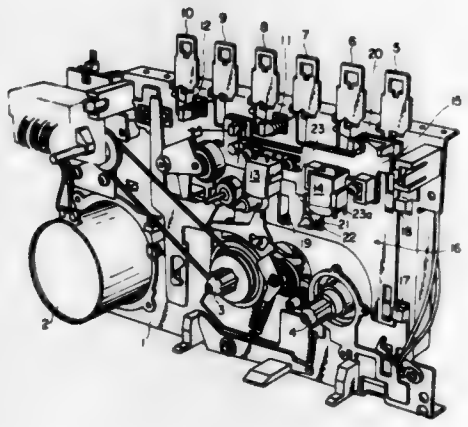
disengage said main drive wheel from both the tape playing means and the rewind means.

4,513,336

CASSETTE TAPE RECORDER

Kobun Yoshida, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,844
Claims priority, application Japan, Sep. 2, 1981, 56-130488[U]
Int. Cl.³ G11B *5/54*
U.S. Cl. 360—105 **7 Claims**



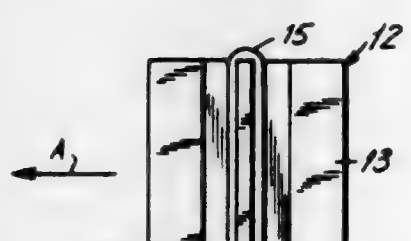
1. A cassette tape recorder comprising, a chassis of the type receiving a cassette tape at a fixed position thereon, at least one magnetic head for magnetically interacting with said cassette tape when positioned at a forward position with respect to a surface of said cassette tape, a head plate, a head base fixed to said head plate, said at least one magnetic head fixed to said head base, said head plate being slidably moveable relative to said chassis to move said at least one head towards said surface of said cassette tape in accordance with a record-playback operation of said recorder, said tape cassette being of the type having a guide pin thereon, means on said head base engageable with said guide pin for positioning said at least one head at said forward position when said engageable means is in contact with said guide pin.

4,513,337

MAGNETIC HEAD FOR PERPENDICULAR MAGNETIZATION RECORDING

Shin Shibata; Akira Aoyama, and Tetsuya Mino, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Japan

Continuation of Ser. No. 294,086, Aug. 19, 1981, abandoned.
This application Feb. 27, 1984, Ser. No. 602,621
Claims priority, application Japan, Aug. 20, 1980, 55-114171
Int. Cl.³ G11B *5/27, 5/22*
U.S. Cl. 360—121 **10 Claims**



1. A recording head for perpendicular magnetization recording of a magnetic recording medium, said medium including a recording film having a direction of travel and an easy axis of magnetization perpendicular to the plane of the magnetic recording medium and a layer of a high permeability backing said recording film, comprising:

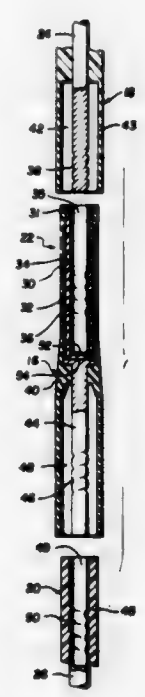
a core including a first magnetic pole and two second magnetic poles, said first pole having a shorter width than said second magnetic poles parallel to said direction of travel and in the plane of the medium, said first and second magnetic poles having equal length extending transversely to said direction of travel and parallel to the plane of the medium and being physically spaced apart in the direction of travel of said recording medium relative to said recording head and magnetically coupled together, an exciting coil wound on said core, said first and second poles being dimensioned for keeping said first and second magnetic poles at different magnetic potentials when said coil is excited, said two second magnetic poles being disposed one on each side of said first magnetic pole and spaced apart therefrom in said direction of travel of said recording medium, said first and second magnetic poles being positioned in opposition to the same face surface of said magnetic recording medium recording on said medium, whereby magnetic flux lines induced between said poles and passing through said medium are parallel to said direction of travel.

4,513,338

WHIP ANTENNA HIGH VOLTAGE PROTECTION DEVICE

Steve R. Goodall, Ocean; Palemon W. Dubowicz, and Donn V. Campbell, both of Eatontown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1984, Ser. No. 575,973
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—1 **5 Claims**



1. Apparatus for protecting from external high voltage power sources an elongated radio antenna having top and bottom antenna sections, said top and bottom antenna sections respectively having first and second antenna conductor elements including screw thread means, said top antenna section including an insulating covering surrounding said first antenna conductor element, said covering having a cylindrical cavity portion formed therein at the lower end thereof exposing a portion of the first antenna conductor element and screw thread means thereof, said apparatus comprising a high voltage series connected capacitance device exhibiting a very high capacitive reactance at power line frequencies and a relatively low capacitive reactance at radio frequencies, said capacitance device having inner and outer mutually separated coaxial conductors respectively coupled between said top and bottom

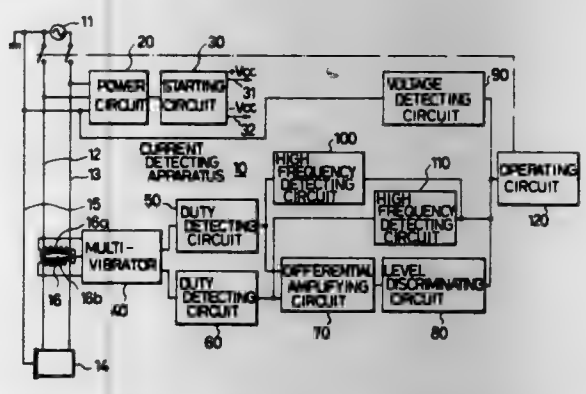
antenna sections, said inner conductor being connected to said first antenna conductor element and said outer conductor being connected to said second antenna conductor element, said inner and outer conductors including coupling means comprising respective screw thread means engageable with the screw thread means of said antenna conductor elements for connecting said inner and outer conductors to said first and second antenna conductor elements respectively, and an electrically insulating covering surrounding said outer conductor, so that the upper end of said capacitance device is insertable into said cavity and the screw thread means of the first conductor element engage the screw thread means of said inner conductor, whereby damage to the antenna or radio connected thereto is prevented and personnel are protected from injury in the event the antenna contacts an external power source.

4,513,339

CURRENT DETECTING APPARATUS

Yoshihisa Ishigami; Yasumasa Hashimoto; Tadaharu Kitado; Hiromi Nishimura, and Tetsuo Mori, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 29, 1983, Ser. No. 527,224
Claims priority, application Japan, Sep. 10, 1982, 57-158551
Int. Cl.³ H02H *3/28*
U.S. Cl. 361—45 **7 Claims**



1. A current detecting device comprising a power circuit providing a D.C. power to respective parts of said device, an operating circuit for driving an associated external device, a saturable reactor operatively associated with lines through which a current to be detected flows and provided with secondary and tertiary windings for detecting said current to be detected, a multivibrator circuit connected to said saturable reactor responsive to the value of the current to be detected and providing two outputs, a pair of duty detecting circuits respectively receiving each of said two outputs of said multivibrator circuit, a level discriminating circuit for discriminating level difference between outputs of said duty detecting circuits and energizing said operating circuit when said level difference exceeds a predetermined discrimination level, and a high frequency oscillation detecting circuit connected to the duty detecting circuits independently of said level discriminating circuit for detecting the oscillation of the saturable reactor and energizing the operating circuit.

4,513,340

POWER TRANSMISSION LINE PROTECTIVE APPARATUS

Robert E. Drain, Butte, Mont., assignor to The Montana Power Company, Butte, Mont.

Filed Dec. 13, 1982, Ser. No. 448,938
Int. Cl.³ H02H *3/28*
U.S. Cl. 361—62 **6 Claims**

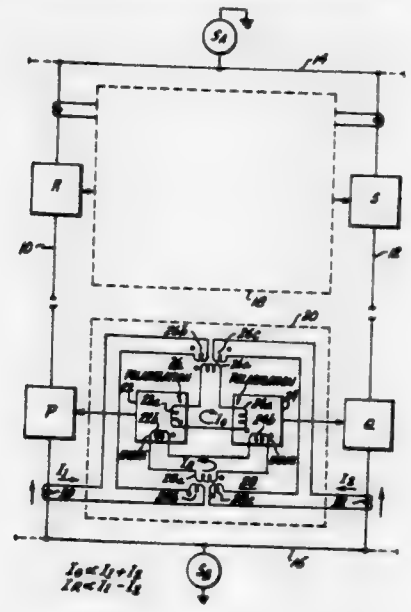
1. A protective system for parallel connected alternating current transmission lines interconnecting independent electrical power sources and having approximately equal line impedances, said protective system comprising:

independent line-opening circuit breakers connected in each of the respective lines at one end thereof;

separate directional relays each respectively associated with one of the circuit breakers and connected to trip its associated circuit breaker when energized by operating current at and above relay pickup level, each of said relays having a polarization winding and an associated operate winding;

current detectors coupled to each of the respective transmission lines, said current detectors each individually operable to derive a control current proportional to the line current in its associated transmission line;

means connected to said current detectors for producing a summation current for energizing said polarization windings of said directional relays in proportion to the sum of the control currents derived by the current detectors; and



means connected to said current detectors for producing a difference current for energizing each operate winding of said directional relays said difference current being proportional to the control current derived from one line subtracted from that derived from the other line such that the phasing between the summation and difference currents respectively energizes the polarization and operate windings of one of the relays, associated with a faulted transmission line, to cause that relay to pick up with its operate winding energized above a predetermined level while the other relay, associated with the nonfaulted line, does not pick up, the relative phasing in said polarization winding of the nonfaulted line relay being opposite the phasing in said faulted line relay.

4,513,341

OVERVOLTAGE PROTECTION CIRCUIT FOR POWER SUPPLY

Miklos J. Kollanyi, Cupertino, Calif., assignor to GTE Lenkurt Incorporated, Phoenix, Ariz.

Filed Jul. 25, 1983, Ser. No. 516,503
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—91 **15 Claims**

1. Apparatus responsive to an overvoltage indication from an overvoltage sensing circuit of a power supply for interrupting electrical connection of a pair of input lines that are connected between the power supply and a power source, comprising:

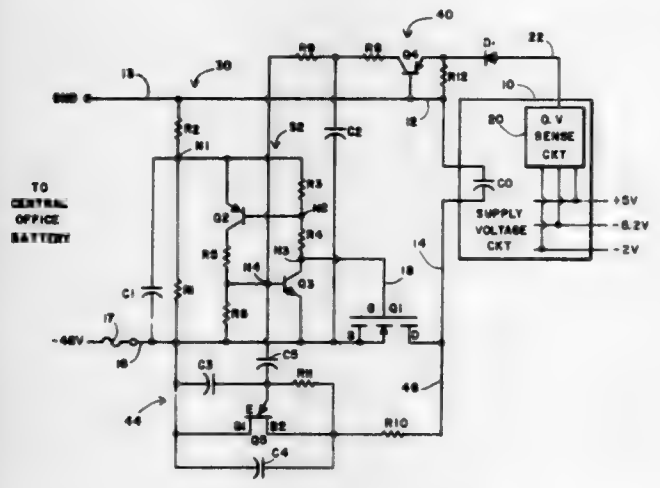
first means having a primary conduction path thereof electrically connected in series in one of the power supply input lines, said first means conducting substantial current in said primary conduction path in said one line in response to a prescribed control voltage of greater than a prescribed value applied to a control lead thereof;

second means electrically connected across the input lines for developing said control voltage of greater than the prescribed value at a node therebetween when the input lines are connected to the power source;

third means for electrically connecting said node to the control lead of said first means for causing the latter to

conduct current through the power supply when the control voltage is greater than the prescribed value; and

latch means electrically connected between said node and said one input line and having an input terminal connected to the overvoltage sensing circuit, said latch means being



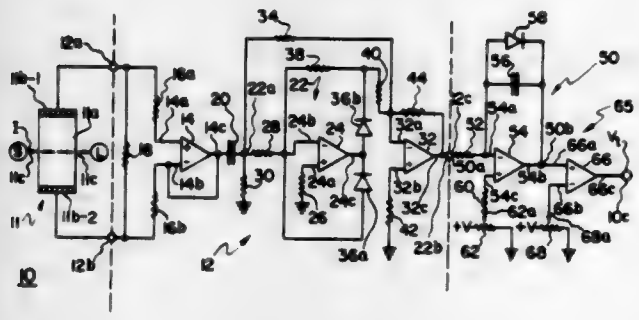
responsive to an overvoltage signal from said sensing circuit on said input terminal for decreasing the value of control voltage to much less than the prescribed value for cutting off said first means for causing said first means to block current flow in said one input line.

4,513,342

CURRENT-SQUARED-TIME (I^2T) PROTECTION SYSTEM

Henry A. F. Rocha, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,271
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—94 **10 Claims**



1. A system for protecting a load component operating by a flow of AC current from damage due to excessive current-time heating, comprising:

means for directly sensing the square of the instantaneous magnitude (i) of the AC current flowing through said load component to provide a sensing means output signal (i^2);

fixed-gain signal conditioning means for providing an output signal linearly varying as said square of the load component AC current (i^2) directly sensed by said sensing means;

self-resetting means for singly integrating, with respect to time, the signal conditioning means output signal only while the root-mean-square value of the load component current exceeds a preselected normal load component current (I_N) and providing an integrated conditioned signal equal to

$$c \int_0^t (i^2 - I_N^2)\, dt,$$

where c is a constant; and

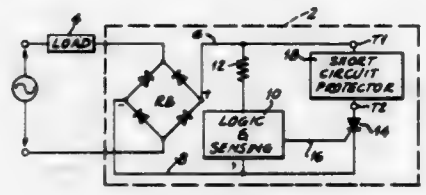
means for providing a trip signal only if the integrated conditioned signal value exceeds a preselected current square-time value, to cause current flow through said load component to terminate.

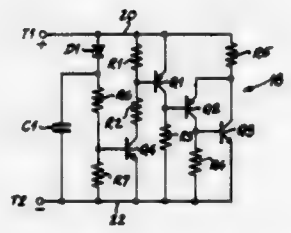
4,513,343

SHORT CIRCUIT PROTECTOR HAVING FOLD-BACK TRIP POINT FOR SOLID STATE SWITCHING DEVICE

Lawrence J. Ryczek, Nashotah, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 27, 1982, Ser. No. 453,206
Int. Cl.³ H02H *3/08*
U.S. Cl. 361—101 **5 Claims**





1. An overcurrent protection circuit for limiting current flow to a solid state switching device connected in series with said circuit, a load controlled by said switching device, and a full wave rectified DC source, said circuit comprising, in combination:

means rendering said circuit conductive in a low impedance state upon application of DC power to said circuit;

first detection means for sensing current in said circuit and causing said circuit to switch to a high impedance state when said current exceeds a first predetermined value and for connecting a second detection means in said circuit, said second detection means being responsive to a second predetermined current value less than said first predetermined current value for causing said circuit to switch to said high impedance state;

means switching said circuit to said low impedance state at the end of each half-cycle of DC power applied to said circuit; and

capacitor means for maintaining said second detection means connected in said circuit for subsequent successive half-cycles until said current does not exceed said second predetermined value.

4,513,344

PROTECTIVE RELAY FOR POWER SYSTEM

Masaji Usui, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 454,066
Claims priority, application Japan, Dec. 29, 1981, 56-212415; Mar. 5, 1982, 57-35383; Mar. 5, 1982, 57-35391; Mar. 5, 1982, 57-35392; Mar. 5, 1982, 57-35393
Int. Cl.³ H02H *1/00*
U.S. Cl. 361—113 **4 Claims**

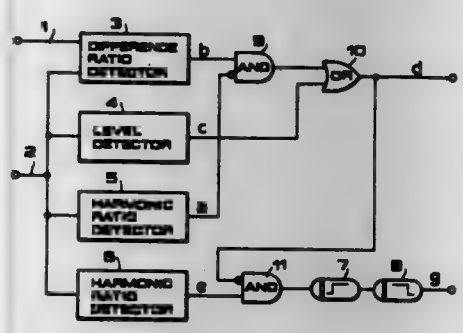
1. A protective relay which generates signals to protect an object in a power system that is to be protected in response to a differential signal and a suppress signal obtained from electric

currents that are detected from two separate points of the object, said protective relay comprising:

first detection means which produces a signal of first condition when said differential signal is greater than said suppress signal by more than a predetermined ratio;

second detection means which produces a signal of second condition when the level of said differential signal becomes greater than a predetermined value;

third and fourth detection means which produce a signal of third condition and a signal of fourth condition, respectively, when the second harmonic component contained in said differential signal is greater than the fundamental



wave component contained in the differential signal by more than a predetermined ratio; and

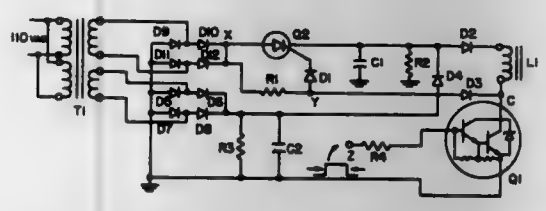
a logical decision circuit which has a first AND gate that receives said signal of first condition and that is opened when said signal of third condition is not supplied, an OR gate which performs logical OR operation with the output of said first AND gate and said signal of second condition, and a second AND gate which performs logical AND operation with the inverted logic of the output of said OR gate and said signal of fourth condition for producing a lock signal for disabling the function of said protective signal.

4,513,345

CONTROL CIRCUIT FOR INDUCTIVE LOAD

Stephen T. Pasquarella, Rochester, N.Y., assignor to Va. Inc., Rochester, N.Y.

Filed Sep. 2, 1983, Ser. No. 529,100
Int. Cl.³ H01H *47/22*
U.S. Cl. 361—155 **4 Claims**



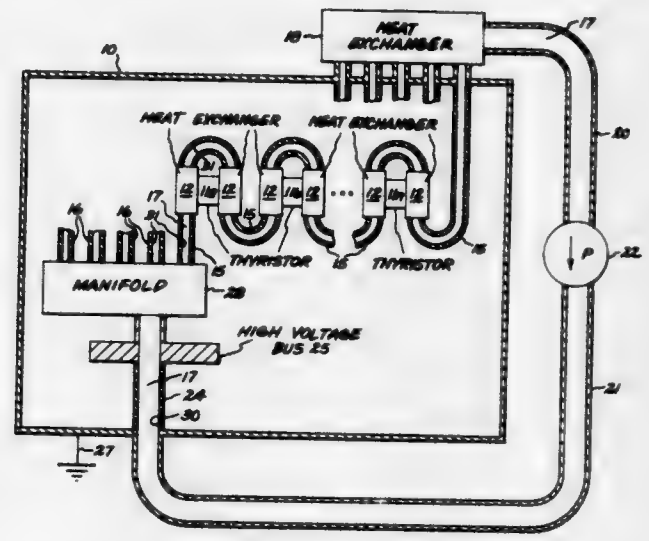
1. A control circuit for an inductive load comprising an initiating capacitor, switch means, means for connecting the capacitor and the switch means in series circuit with an inductive load, with the load being between the capacitor and the switch means, a rectifier, a triggerable avalanche device, means connecting the avalanche device between the rectifier and one terminal of the capacitor for charging the capacitor during times when the avalanche device is turned ON, and means connecting the gate electrode of the avalanche device to the switch means, the switch means being effective when in its closed condition to hold the gate electrode of the avalanche device at a voltage below the trigger voltage of the avalanche device.

4,513,346

MEANS TO IMPROVE THE DIELECTRIC PERFORMANCE OF AN INSULATIVE CONDUIT WITH A FLOW OF LIQUID DIELECTRIC COOLANT THEREIN

John C. Devins, Saratoga, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 259,396, May 10, 1981, abandoned.
This application Apr. 27, 1983, Ser. No. 488,913
Int. Cl.³ H05F *3/00*
U.S. Cl. 361—212 **22 Claims**



1. An apparatus to improve the dielectric performance of an insulative conduit containing a flowing liquid dielectric coolant therein, wherein a high voltage is impressed between two conductors which are spaced along the length of said insulative conduit, which conductors are in contact with said liquid dielectric coolant, said apparatus comprising:

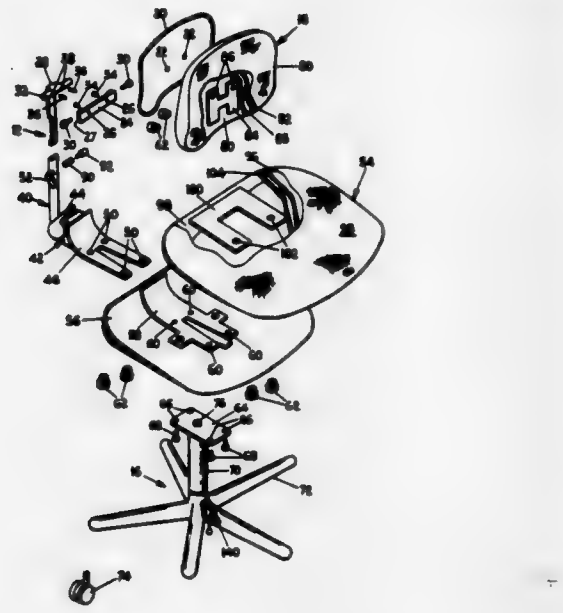
a low conductance path connected between said two spaced conductors and in contact with said liquid dielectric coolant, said low conductance path having a minimum conductance in excess of about the conductance value corresponding to a resistance per unit length of said low conductance path of 5×10^{8} ohms/cm.

4,513,347

STATIC PROTECTIVE CHAIR

Jeffrey S. Wilcox, Grand Rapids, and James H. Nienhuis, Wyoming, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Jul. 28, 1983, Ser. No. 518,082
Int. Cl.³ H05F *3/02*
U.S. Cl. 361—212 **24 Claims**



1. A chair adapted to continuously discharge electrostatic

charges which may be generated or carried by a chair user, said chair comprising:

a conductive base support having a bottom portion adapted to stand on a floor surface;

a seat including an insulating shell mounted to the base;

a backrest including an insulating shell mounted to the base;

a conductive upholstery material on said seat and backrest;

first means passing through said insulating shells forming a conductive path free of insulating materials between said conductive upholstery material on said seat and backrest and said conductive base; and

second means forming a conductive path between said conductive base support and the floor surface;

wherein electrical charges generated by the chair user are continuously discharged to the floor surface through said first and second conductive pathforming means.

4,513,348

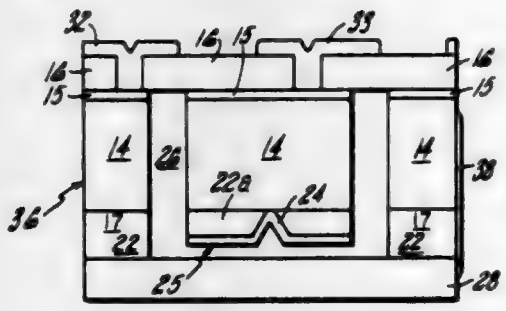
LOW PARASITIC CAPACITANCE PRESSURE TRANSDUCER AND ETCH STOP METHOD

Daniel H. Grantham, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 13, 1984, Ser. No. 570,552

Int. Cl.³ H01G *7/00*; G01L *9/12*

U.S. Cl. 361—283 **2 Claims**



1. A silicon capacitive pressure transducer comprising:

a thick layer of silicon having a moat extending therethrough thereby forming a central pedestral and the wall of a vacuum chamber with said pedestal disposed therein;

a layer of borosilicate glass disposed on the bottom of said wall;

a wafer of silicon bonded to said borosilicate glass forming the bottom wall of said chamber, and one of the plates of the capacitor, the other plate of the capacitor being the bottom of said pedestal;

a thin layer of aluminum on the upper edges of said pedestal and said wall; and

a layer of borosilicate glass disposed on said aluminum layer and across the upper end of said moat to form the top of said vacuum chamber and to form a hinge that allows the pedestal to move upwardly and downwardly with external pressure variations, thereby altering the capacitance of the capacitor, there being electrical contacts made through said upper borosilicate glass layer.

4,513,349

ACRYLATE-CONTAINING MIXED ESTER MONOMERS AND POLYMERS THEREOF USEFUL AS CAPACITOR DIELECTRICS

Daniel R. Olson, and Timothy W. O'Donnell, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,872

Int. Cl.³ H01G *4/18*; C08F *20/20*; C07C *69/54*

U.S. Cl. 361—311 **23 Claims**

6. An ester mixture prepared by reacting sequentially, in either order,

a polyhydroxy compound having the formula $R^1(OH)_n$, wherein R^1 is an aliphatic, alicyclic or mixed aliphatic-alicyclic radical having about 10–40 carbon atoms which optionally contains up to about three non-conjugated olefinic linkages and n is from 2 to 4, with

a first carboxylic acid having the formula

$$CH_2=\underset{\displaystyle R^2}{\overset{|}{C}}-COOH,$$

wherein R^2 is hydrogen or methyl, or a functional derivative thereof, and

a second carboxylic acid having the formula R^3COOH, or a functional derivative thereof, wherein R^3 is an aliphatic hydrocarbon radical containing about 2–20 carbon atoms and free from acetylenic and polymerizable ethylenic unsaturation,

the mole ratio of said first acid to said second acid being at least 1:1.

4,513,350

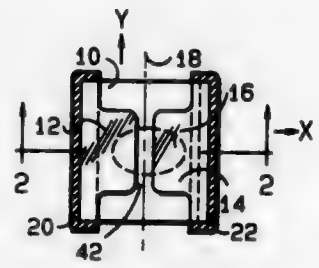
MONOLITHIC CERAMIC CAPACITOR AND METHOD FOR MANUFACTURING TO PREDETERMINED CAPACITY VALUE

James H. Coleman, Wichita Falls, Tex., assignor to Sprague Electric Company, North Adams, Mass.

Filed Feb. 2, 1984, Ser. No. 576,497

Int. Cl.³ H01G *3/07, 3/26*

U.S. Cl. 361—321 **15 Claims**



1. A monolithic ceramic capacitor comprising a ceramic body substantially of right-parallelepiped shape, first and second buried electrodes lying in one plane within said body and being separated from each other by a gap about in the middle of said body, each of said first and second electrodes extending outward to opposite faces of said body for electrical access thereto, a third and floating buried electrode not extending to a body face and lying in another plane that is spaced from and parallel to said one plane, the area of overlap between said floating and first electrodes being greater than the area of overlap between said floating and said second electrodes.

4,513,351

ELECTRONIC ASSEMBLY WITH FORCED CONVECTION COOLING

Michael I. Davis; Michael J. Garrett, and John A. Wiseman, all of Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,122

Claims priority, application European Pat. Off., Sep. 29, 1982, 82305175.0

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—384 **4 Claims**

1. An electronic assembly with forced convection cooling, comprising

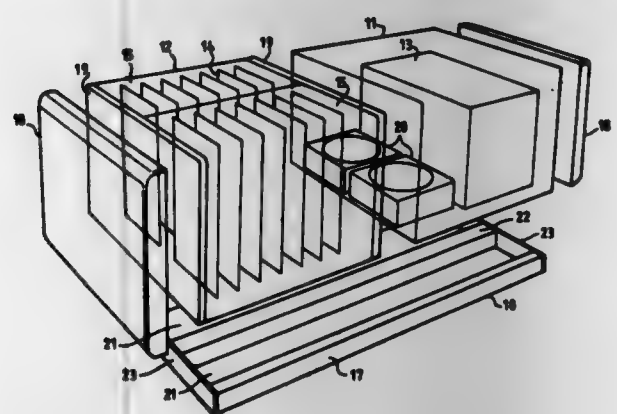
an elongated support plate,

a plurality of electronic equipment cabinets with electrical components therein mounted side by side on a common surface of the plate in the longitudinal direction thereof,

said support plate having at least one air distribution channel extending longitudinally of the plate in said common surface and open to the equipment cabinets and closed at

its ends for air distribution between the cabinets and the channel,

and a cooling fan mounted in one of the cabinets at a longitudinal position of the channel and forcing air (1) between the fan and the cabinets and cooling some of the electrical



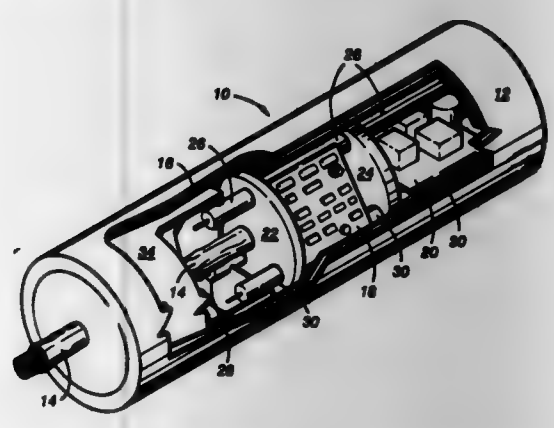
components therein and (2) along the air distribution channel in opposite direction between the fan and each of said ends and (3) between the air distribution channel and the cabinets for other cooling of electrical components therein.

4,513,352

THERMAL PROTECTION APPARATUS

Gloria A. Bennett; Michael G. Elder, both of Los Alamos, and Joseph E. Kemme, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 20, 1984, Ser. No. 591,650
Int. Cl.[3] H05K *7/20*
U.S. Cl. 361—385 5 Claims



1. Apparatus which thermally protects heat-sensitive components in tools used in geothermal boreholes, said apparatus comprising:

a. a housing;

b. a Dewar disposed within said housing;

c. thermally conductive bulkheads disposed within said Dewar and on either side of and thermally communicating with the heat-sensitive components;

d. a heat sink of suitable temperature disposed within said Dewar; and

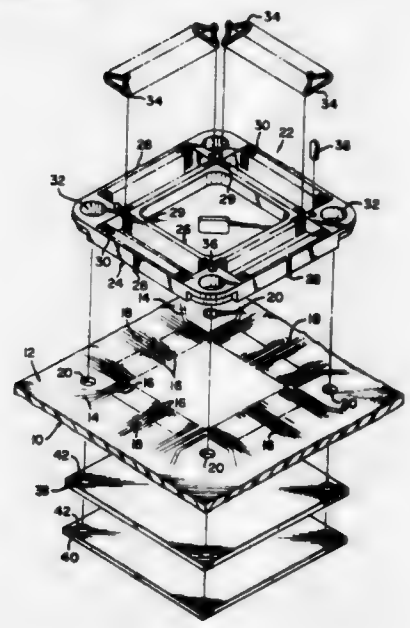
e. a heat pipe conducting heat from the components through said bulkheads and to said heat sink.

4,513,353

CONNECTION OF LEADLESS INTEGRATED CIRCUIT PACKAGE TO A CIRCUIT BOARD

Johannes C. W. Bakermans, Harrisburg, Pa.; Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 27, 1982, Ser. No. 453,074
Int. Cl.[3] H05K *1/18*
U.S. Cl. 361—399 7 Claims



1. A device for connecting a leadless integrated circuit chip carrier or package to a circuit board, comprising:

a circuit board having electrical conductors contained thereon;

mask means disposed on said circuit board thereby covering said electrical conductors contained thereon, said mask being selectively omitted from at least one portion of said circuit board thereby leaving exposed contact area on said electrical conductors and thereby defining a rib locating slot;

generally rectangular chip carrier housing means disposed on said circuit board for receiving a leadless integrated circuit chip carrier, said housing means having outer walls and interior walls said interior walls attached to said outer walls at each corner of said chip carrier housing;

outer and interior spacing barrier wall means in opposing relationship to each other disposed perpendicularly to said outer and said interior walls thereby defining a slot for receiving an electrically conductive contact and forming a space between outer and interior spacing barrier walls so as to minimize stray inductance and capacitance between electrical contacts disposed in adjacent slots;

an electrically conductive contact disposed in each of said slots for providing electrical communication between a leadless integrated circuit chip carrier and said electrical conductors contained on said circuit board;

at least one locating rib means disposed on said chip carrier housing means for engageably engaging said rib locating slot thereby allowing proper alignment of said contacts contained in said housing means with said electrical conductors contained on said circuit board;

a leadless integrated circuit chip carrier disposed on said housing means; and

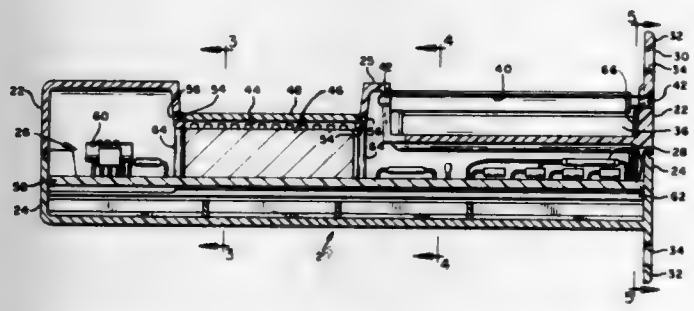
a plurality of chip carrier retaining bracket means disposed on said housing means for maintaining conductors contained on said integrated circuit chip carrier in aligned electrical contact with said contacts contained in said chip carrier housing means, said retaining brackets being generally rectangular and each of which is pivotally attached at one end to said chip carrier housing means and having latching slots at the remaining end for interlocking with pivot points of adjacent chip carrier retaining brackets.

4,513,354

HOUSING FOR AN ELECTRONIC CIRCUIT BOARD

William E. Abel, Portland, Oreg., assignor to Sentrol, Inc., Portland, Oreg.

Filed Sep. 26, 1983, Ser. No. 535,864
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—399 **22 Claims**



1. A housing for an elongate electronic circuit board having a deformation-sensitive portion located at one end thereof, comprising:

(a) a first elongate shell member;

(b) a second elongate shell member matingly joined with said first elongate shell member, said first and second elongate shell members defining a cavity therebetween and defining first and second ends of said housing;

(c) support rail means located in said first elongate shell member and extending longitudinally therein from a location adjacent said first end toward said second end, for supporting a first side of an elongate circuit board within said cavity by contact against respective longitudinal marginal portions thereof;

(d) support pin means, located in said second elongate shell member opposite said support rail means, for supporting a second side of said elongate circuit board by contact against respective longitudinal marginal portions of said second side of said elongate circuit board; and

(e) said support rail means extending longitudinally of said first shell member from said first end a distance more than half but less than the entire length of said first shell member, and said cavity being free from said support rail means and support pin means over a predetermined distance from said second end, and said housing defining protective means for enclosing within said cavity a self-supporting deformation-sensitive portion of said circuit board extending beyond said support rail means toward said second end without contact between either of said first and second shell members and said deformation-sensitive portion when said circuit board is held in said cavity with said support rail means and support pin means supporting said respective longitudinal marginal portions.

4,513,355

METALLIZATION AND BONDING MEANS AND METHOD FOR VLSI PACKAGES

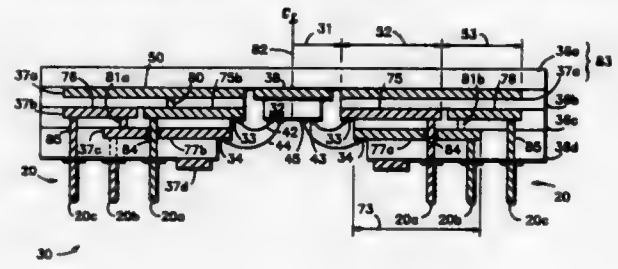
Jack A. Schroeder, Scottsdale, and Ernel R. Winkler, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 15, 1983, Ser. No. 504,696
Int. Cl.³ H01L *23/02, 23/12, 39/02*
U.S. Cl. 361—403 **14 Claims**

1. A device enclosure for containing a device with bonding pads, comprising:

N_1 lead runs arrayed on a first level, wherein said N_1 lead runs extend toward a central cavity adapted to contain a device, wherein each of said N_1 lead runs terminates in a first bonding area adapted to receive a first connection from a corresponding one of said bonding pads on said device, wherein at least one of said first bonding areas has associated therewith a first bond location indicator having a predetermined position defining a preferred bonding path from said one of said bonding pads to said corresponding bonding area; and

N_2 lead runs arrayed on a second level, different from said first level, wherein said N_2 lead runs extend toward said central cavity, wherein $N_2 > N_1$, wherein each of said N_2 lead runs terminates in a second bonding area adapted to receive a second connection from a corresponding other of said bonding pads on said device, wherein said second



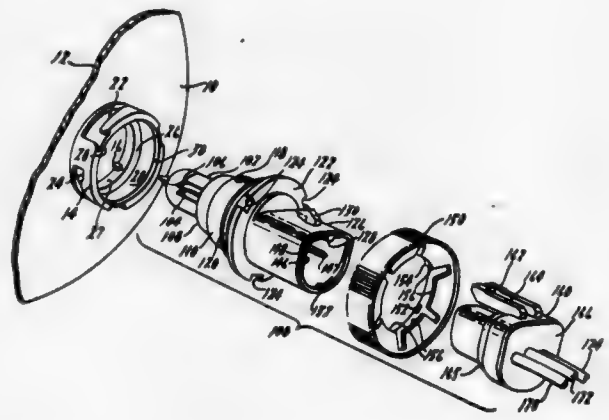
bonding areas are arranged in groups circumferentially positioned around said central cavity, wherein said groups are separated by N_3 spaces, wherein N_3 at least equals N_1, and wherein each of said N_3 spaces is aligned so as to be located substantially on an extension of a line drawn along said preferred bonding path.

4,513,356

REPLACEABLE LAMP ASSEMBLY AND LOCKING MECHANISM FOR A SEALABLE REFLECTOR HOUSING

James A. Mikola, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 339,194, Jan. 13, 1982,. This application Apr. 29, 1983, Ser. No. 474,374
Int. Cl.³ H01R *33/00*
U.S. Cl. 362—226 **9 Claims**



1. A replaceable lamp assembly for mating with a hermetically sealable lamp enclosure including a light transmitting lens, a light directing reflector and a socket opening in said reflector comprising:

a filament lamp light source;

plug means, containing said filament lamp, and having a body portion formed to be axially inserted into said socket opening, wherein said plug means includes means for supporting said lamp so that the filament of said lamp is located at a predetermined point and in a predetermined orientation with respect to said body portion, and means for sealing said lamp enclosure when said plug means is inserted into said socket opening;

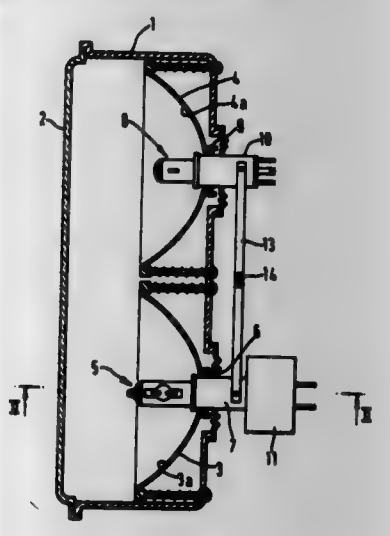
a base flange extending transverse to said body portion and having a diametric dimension larger than that of said socket opening for limiting the insertion distance of said plug means into said socket opening; and

means surrounding said base flange of said plug means and said socket for locking said plug means in said socket.

4,513,357
HEADLAMP UNIT WITH TIMED SWITCHING BETWEEN TWO LIGHTS

Yasuhiro Nieda, Yokosuka, and Kiyokazu Honda, Zushi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 17, 1984, Ser. No. 571,492
Claims priority, application Japan, Jan. 19, 1983, 58-6988; Jan. 19, 1983, 58-6989
Int. Cl.[3] F21M *15/00*
U.S. Cl. 362—228
2 Claims



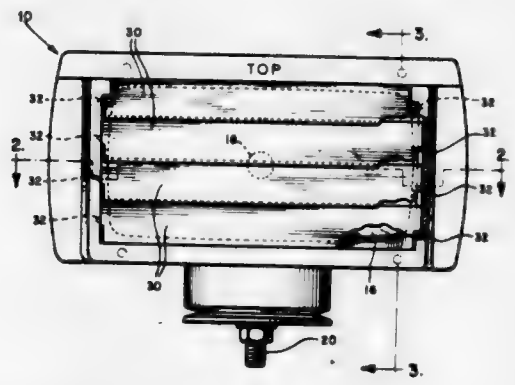
1. A headlamp unit for motor vehicles comprising:
a first light beam unit which comprises:
an incandescent lamp;
a first reflector means for reflecting light from said incandescent lamp wherein said incandescent lamp is disposed at about a focus of said first reflector means;
a second light beam unit which comprises;
a high intensity discharge lamp;
a second reflector means for reflecting light from said high intensity lamp, wherein said high intensity light is disposed at about a focus of said second reflector means;
timing means for stopping the lighting of said first light beam unit after a predetermined time approximating the time necessary for said second light beam unit to obtain a stable operation;
means for providing a high beam from said first light beam unit;
means for providing a high beam from said second light beam unit;
means for providing a low beam from said first light beam unit; and
means for providing a low beam from said second light beam unit.

4,513,358
LAMP COMPRISING AUTOMATICALLY ACTUATED LOUVER SYSTEM

Charles D. Lemme, Tucson, Ariz., assignor to Blazer International Corp., Franklin Park, Ill.

Filed Jul. 1, 1983, Ser. No. 510,207
Claims priority, application Japan, Sep. 21, 1982, 57-141917
Int. Cl.[3] F21V *17/02*
U.S. Cl. 362—276
18 Claims

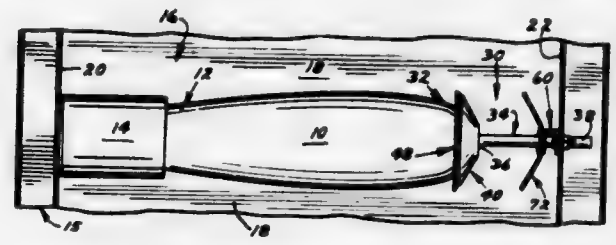
1. In a lamp comprising a lamp housing, a light source and a lens, the improvement comprising:
a louver system;
means for mounting the louver system to the housing such that the louver system is positioned in front of the lens and is movable between an open position, in which the louver system allows light from the light source to be projected forwardly, and a closed position, in which the louver system covers the lens;
a heat driven actuator coupled to the louver system to move the louver system to the open position when heat is applied to the actuator and to move the louver system to the closed position after the light source has been deactivated and the application of heat to the actuator has stopped;
means for automatically heating the actuator when the light source is actuated; and
a resilient overload protection element coupled between the heat driven actuator and the louver system to transmit louver actuating forces generated by the heat driven actuator to the louver system, said overload protection element having a sufficiently high resistance to distortion to transmit said actuating forces to the louver system and a sufficiently low resistance to distortion to bend and thereby to protect the heat driven actuator from excessive stretching forces transmitted to the overload protection element by the louver system.



4,513,359
LAMP STABILIZER

Wayne G. Nielson, Hutchinson, Minn., assignor to Sterner Lighting Systems, Incorporated, Winsted, Minn.

Filed Aug. 22, 1983, Ser. No. 525,233
Int. Cl.[3] F21V *21/06*
U.S. Cl. 362—389
19 Claims



1. A lamp stabilizer comprising:
(a) mount means adapted to be mounted with respect to a light fixture;
(b) an elongated rigid rod slidably mounted for movement along its axis with respect to the mount means;
(c) a lamp engaging socket having a base portion, an open end portion and an inner surface, the base portion of the lamp engaging socket being fixedly secured to one end of the rod and positioned such that an outer end of a lamp mounted in the electrical lamp socket of a light fixture mounting the mount means is received within the open end portion of the socket;
(d) friction clip means for adjustably limiting movement of the rod along its axis in direction away from such a lamp; and
(e) heat insulating and lamp cushioning means secured to the inner surface of the lamp engaging socket adjacent its open end portion for engagement with the outer end of such a lamp.

4,513,360

DC-DC CONVERTER HAVING ENERGY STORAGE INDUCTANCE ELEMENT CONNECTED IN FLYWHEEL CIRCUIT

Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Sendai-shi, Miyagi; Shin-yng Liu, Miyagi; Naoki Arai, Tokyo, and Shuichi Umemoto, Kanagawa, all of Japan, assignors to Tsuneo Ikenoue; Tohoku Ricoh Co., Ltd.; Stanley Electric Co., Ltd. and Micron Kiki Co. Ltd., all of Tokyo, Japan

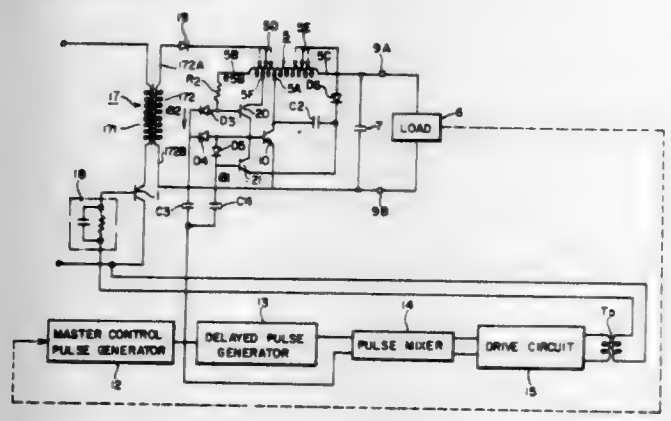
Continuation-in-part of Ser. No. 216,924, Dec. 16, 1980, Pat. No. 4,357,654. This application Sep. 2, 1982, Ser. No. 413,991

Claims priority, application Japan, Dec. 19, 1979, 54-165012

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ H02M *3/335, 3/155*

U.S. Cl. 363—20 **5 Claims**



1. A DC-DC converter of the type in which an inductance element stores energy when a main switching transistor having a control electrode is turned on and releases the stored energy when the main switching transistor is turned off, comprising:

a semiconductor active element used as a flywheel element which is turned off when said main switching transistor is turned on, and is turned on when said main switching transistor is turned off so as to provide a path for the current established by said release of said stored energy, said active element having a control terminal, said inductance element comprising a coil with a tap, connected in circuit so that the voltage induced between one end of said coil and said tap causes said semiconductor active element to turn on; and

means for applying to the control terminal of said semiconductor active element a signal substantially synchronized with the operation of said main switching transistor thereby causing said semiconductor active element to turn on and off.

4,513,361

MULTI-PHASE DC-TO-AC AND DC-TO-DC BOOST CONVERTER

Loman Rensink, Tujunga, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Feb. 15, 1983, Ser. No. 466,404

Int. Cl.³ H02M *3/335*

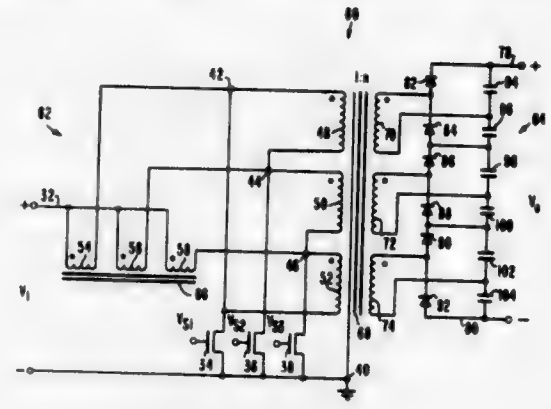
U.S. Cl. 363—21 **12 Claims**

1. A multi-phase voltage boost converter comprising:

(a) a plurality of transformer primary windings electrically interconnected in a single loop mesh configuration;

(b) a plurality of voltage boosting phase-channels electrically connected with said primary windings and commonly connected to a low voltage power source; and

(c) means for controlling said phase-channels such that each said phase-channel periodically provides a boosted voltage potential to said primary windings, the periodic boosted voltage potential being provided in a continuously cycling, multi-phase synchronous relationship to one another so that a corresponding multi-phase, high-voltage AC potential appears across each of said primary windings.



4,513,362

VOLTAGE INVERTER DEVICE

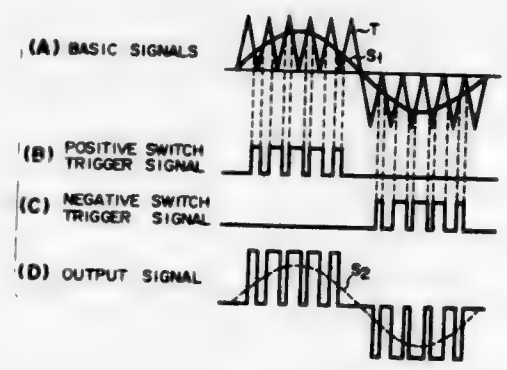
Yukio Aizawa, Mie, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 26, 1983, Ser. No. 488,811

Claims priority, application Japan, May 6, 1982, 57-75835

Int. Cl.³ H02M *7/217*

U.S. Cl. 363—41 **9 Claims**



1. A voltage inverter device for turning a main circuit switch on/off so as to convert a DC input voltage into an AC output voltage, comprising:

frequency setting means for setting an output frequency of the AC output voltage;

voltage/frequency converting means, connected to said frequency setting means, for producing pulses the number of which is proportional to the output frequency in response to a voltage signal supplied from said frequency setting means;

address counter means, connected to said voltage/frequency converting means, for counting the pulses from said voltage/frequency converting means and for producing an address signal;

electrical angle counter means, connected to said address counter means, for producing an electrical angle signal every time a count of said address counter means reaches a value corresponding to a predetermined electrical angle of the AC output-voltage;

memory means, connected to said address counter means, for reading out data stored therein in advance in response to the address signal;

oscillating means for generating a clock signal;

time counter means, connected to said oscillating means, for counting the clock signals so as to count time corresponding to the predetermined electrical angle;

comparing means, connected to said time counter and said memory means, for comparing data from said memory means with data from said time counter means;

logical circuit means, connected to said comparing means

and said electrical angle counter means, for generating a signal which turns said main circuit switch on/off in accordance with a comparison signal from said comparing means and the electrical angle signal from said electrical angle counter means; and

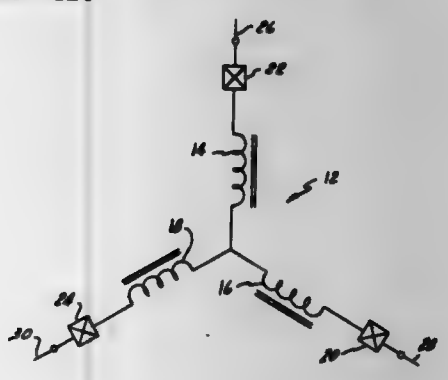
count control means, connected to said voltage/frequency converting means and said comparing means, for clearing a content of said time counter means in synchronism with the comparison signal from said comparator means so as to be ready to resume time counting for the next electrical angle, and stopping said time counter means when the count of said time counter means reaches a predetermined count.

4,513,363

STRUCTURE FOR AND METHOD OF REDUCING IMPEDANCE IN MULTIPHASE DIRECT CURRENT POWER SUPPLIES

John F. Farrow, Plymouth, Mich., assignor to Medar, Inc., Farmington Hills, Mich.

Filed Feb. 22, 1982, Ser. No. 350,987
Int. Cl.[3] H02M *7/06*
U.S. Cl. 363—126 19 Claims



1. In a multiphase direct current power supply including separate input energy phase lines, a transformer primary circuit including Y connected transformer primary windings having one, inner end connected together, the other, outer ends of the transformer primary windings being connected to the separate input energy phase lines and means connected in circuit with the primary circuit Y connected transformer primary windings for limiting current conduction through the transformer primary windings to current flowing only through two of the transformer primary windings in series at any one time.

4,513,364

THERMALLY CONTROLLABLE VARIABLE FREQUENCY INVERTER

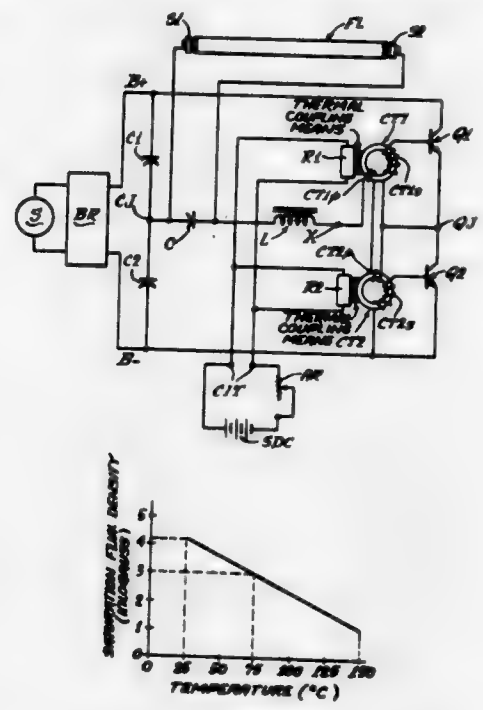
Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Continuation-in-part of Ser. No. 178,107, Aug. 14, 1980, abandoned. This application Oct. 24, 1983, Ser. No. 544,567
Int. Cl.[3] H02M *7/537*
U.S. Cl. 363—132 6 Claims

1. In an inverter circuit having at least one periodically conducting transistor in circuit with a DC voltage input and being operable to provide an AC voltage output, the improvement comprising:

drive current means comprising at least one saturable inductor means for providing transistor drive current to control the conduction period thereof; and

heating means for controllably heating the saturable inductor means, thereby to correspondingly decrease the saturation flux density and saturation time thereof, and



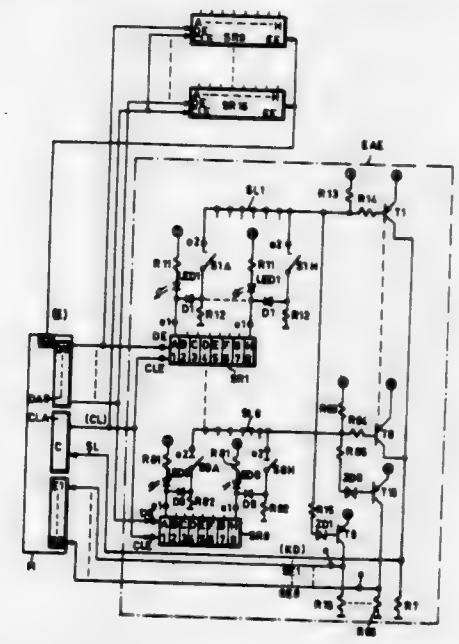
thereby to correspondingly increase the transistor inversion frequency.

4,513,365

FUNCTION SELECTOR

Reinhard Franz, Tulpenstrasse 15, D-5401 Emmelshausen, Fed. Rep. of Germany; Wilfried Dittmar, Halsenbach, and Günter Daubach, Leverkusen, both of Fed. Rep. of Germany, assignors to Reinhard Franz, Emmelshausen, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,252
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204787
Int. Cl.[3] G06F *15/46;* G09B *15/08;* G10G *1/02*
U.S. Cl. 364—140 33 Claims



1. An arrangement for indicating the operational status of switches, particularly for use in electronic musical instruments, comprising:

(a) a plurality of groups of switches, said switches being individually operable between ON and OFF states to cause the performance of selected functions;

(b) an indicator connected with each of said switches and designed to indicate the operational state of the respective switch;

(c) a plurality of devices each having a first input, a clocking input, and a series of stages designed to receive signals in

a predetermined sequence via the first input in response to the delivery of clocking pulses to the clocking input, each of said devices being associated with a different one of said groups, and each of said stages having a first output which is connected with a respective switch of the corresponding group and with the indicator for the switch;

(d) a control unit having a control input, and a clocking input common to and connected with all of said clocking inputs of said devices, said control unit comprising at least one memory having a plurality of sets of storage elements, and each of said sets being associated with a different one of said devices, each of said storage elements being associated with a different stage of the corresponding device, and said control unit having a plurality of second outputs each of which is connected with the first input of a different one of said devices and is designed to be sequentially connected with the storage elements of the corresponding set, said control unit further having a plurality of second inputs each of which is associated with a different one of said devices and is designed to be sequentially connected with the storage elements of the corresponding set, and said control unit being designed to generate a first series of clocking pulses subsequent to arrival of a control signal at said control input to thereby cause a reference signal to be advanced from one stage of each of said devices to another in the respective predetermined sequence, said reference signals resulting in the generation of identifying signals representative of the operational states of said switches, and each of said second inputs being connected with the storage elements of the associated set in substantial synchronism with the arrival of the reference signal at the corresponding stages to thereby permit information representative of said identifying signals to be stored in the respective storage elements, said control unit also being designed to generate a second series of clocking pulses subsequent to said first series, and said second outputs being connected with the storage elements of the associated sets in the respective predetermined sequence and in substantial synchronism with said clocking pulses of said second series so as to permit operating signals representative of said identifying signals to be furnished to the respective stages of said devices, each of said indicators providing an indication of the operational state of the associated switch in dependence upon the respective operating signal;

(e) a plurality of signal generating circuits each of which is associated with a different one of said groups and has a first conductor common to and connecting all switches of the group to the corresponding second input of said control unit, each of said circuits being designed to generate series of identifying signals in the respective predetermined sequence during said first series of clocking pulses and to transmit the series of identifying signals to the corresponding second input in the predetermined sequence, and each of said circuits also being designed to generate a control signal upon changing of at least one switch of the respective group to one of its states; and

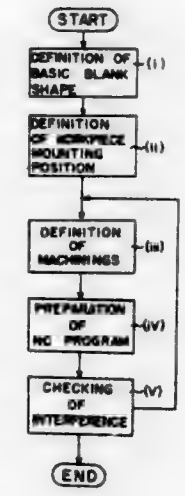
(f) a second conductor for transmitting control signals to said control input, said second conductor being common to all of said switches and connecting all of said circuits with said control input.

4,513,366

MENU PROGRAMMED MACHINE TOOL NUMERICAL CONTROLLER WITH AN INTERFERENCE CHECKING FUNCTION

Kenichi Munekata; Yoshio Doi, both of Kariya; Isao Suzuki, Okazaki, and Shigeru Doi, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 15, 1983, Ser. No. 475,509
Claims priority, application Japan, Mar. 23, 1982, 57-45945
Int. Cl.³ G05B *23/02, 9/02*
U.S. Cl. 364—167 **4 Claims**



2. In a machine tool numerical controller for controlling relative movement between a tool spindle and a work table respectively carrying a tool and a workpiece to be machined in accordance with a numerical control program, the improvement comprising:

data input means for inputting blank shape data indicating the blank shape and dimension of said workpiece and mounting position data indicating the mounting position of said workpiece on said work table;

data storage means for storing said numerical control program, said blank shape and mounting position data input by said data input means and a tool interference space defined outwardly from the outer periphery of said tool;

first calculation means connected to said data storage means for obtaining by calculation a workpiece interference space defined outwardly from the outer periphery of said workpiece, based upon said blank shape data and said mounting position data stored in said data storage means;

second calculation means connected to said data storage means for calculating based upon said numerical control program a tool path along which said tool spindle would be moved relative to said work table in accordance with said numerical control program; and

interference detection, means for detecting by calculation based upon said tool path, said tool interference space and said workpiece interference space, whether one of said tool and said tool interference space would be engaged with said workpiece interference space during any rapid feed positioning movement if relative movement between said tool spindle and said work table were controlled in accordance with said numerical control program.

4,513,367

CACHE LOCKING CONTROLS IN A MULTIPROCESSOR

Shiu K. Chan; John A. Gerardi, both of Poughkeepsie, and Bruce L. McGilvray, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

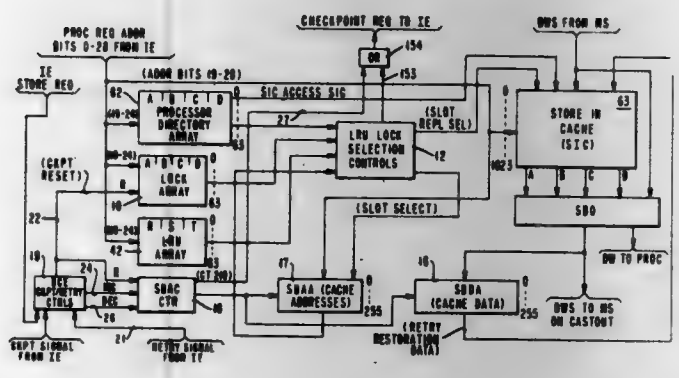
Filed Mar. 23, 1981, Ser. No. 246,788
Int. Cl.³ G06F *13/08*
U.S. Cl. 364—200 **14 Claims**

1. In a MP having a plurality of central processors (CPs), each CP having an instruction execution (IE) unit, a store-in-cache and a cache directory that has a plurality of congruence

classes respectively addressed by selected bits from an IE requested logical address, each congruence class being set-associative with a plurality of entries, each entry including a valid bit to indicate the validity or invalidity of data in a cache location associated with the entry, and a replacement selection circuit for selecting an entry as a replacement candidate in each congruence class, each CP also comprising:

a lock bit associated with each entry in the CP's cache directory, a cache entry being in a locked state when an associated lock bit is in an on state to provide a locked entry,

means for modifying the replacement selection circuit to exclude each locked entry in the congruence class from



being a cache replacement candidate for the congruence class,

lock bit reset means for resetting the lock bits for all cache entries, the states of the valid bits of the cache directory not being affected by operation of the lock bit reset means,

means for setting on the lock bit for a cache entry being accessed by the address of a store operand request to the cache directory,

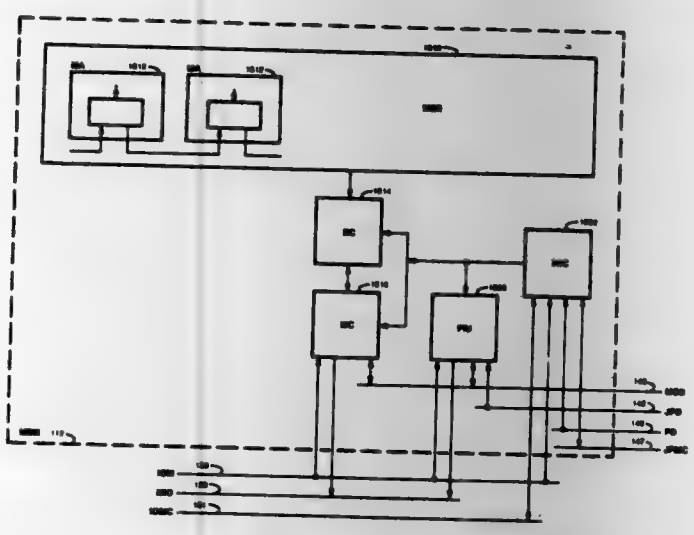
cache accessing means performing a fetch of cache data in response to a fetch request to the cache directory finding a valid cache entry without changing the state of the lock bit for the cache entry.

4,513,368

DIGITAL DATA PROCESSING SYSTEM HAVING OBJECT-BASED LOGICAL MEMORY ADDRESSING AND SELF-STRUCTURING MODULAR MEMORY

David L. Houseman, Cary, N.C., assignor to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,414
Int. Cl.[3] G06F *4/36*
U.S. Cl. 364—200 2 Claims



1. A memory for use in a digital data system, comprising:

memory bank means (MSB 1810) comprising a plurality of memory array means (MA 1812) for storing data,

memory control means (MIC 1822, BC 1814) connected from certain portions (ATU 10228 via PD 10146, FIGS. 270 & 18) of said data system for receiving first addresses for controlling operation of said memory, for providing second addresses corresponding to said first addresses for controlling said memory bank means, said second addresses representing storage locations for said data in said memory bank means, and for conducting said data between said memory bank means and said certain portions of said digital data system, and

memory array bus means (within MSB 1810) connected from said memory control means and to each one of said plurality of memory array means in parallel for conducting said data and said second addresses between said memory control means and each one of said plurality of memory array means,

each one of said plurality of memory array means comprising

data storage means connected from said memory array bus means for storing said data, and

memory array address means connected from said memory array bus means and responsive to said second addresses for controlling said data storage means, said memory array address means including adaptive address means (A within MA 1812), the adaptive address means comprising

means for indicating data storage capacity of said data storage means,

address range indicating means for:

(1) receiving from the memory control means a minimum address which the address range indicating means assigns to the lowest storage location within the corresponding memory array means, and

(2) adding said data storage capacity to said minimum address to produce the address of the highest storage location within the memory array means, and,

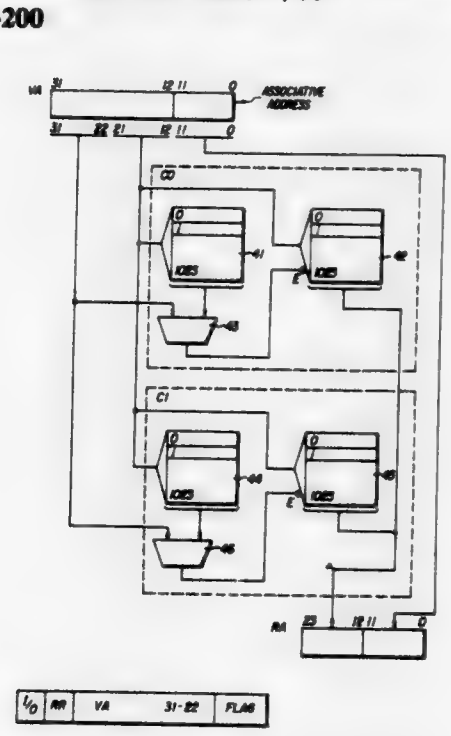
address comparison means for initiating operation of said memory array address means when one of the said second addresses occurs in the range between said lowest storage location within the corresponding memory array means and said highest storage location within the memory array means.

4,513,369

INFORMATION PROCESSING SYSTEM

Fumitaka Sato, Oume, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 17, 1982, Ser. No. 349,698
Claims priority, application Japan, Feb. 20, 1981, 56-23166
Int. Cl.[3] G06F *9/00*
U.S. Cl. 364—200 5 Claims



1. An information processing system including an address

translation system for mapping a plurality of virtual address spaces onto a real address space, comprising:

main memory means for storing information;

main memory controller means for accessing said main memory means with a real address, including translator means for translating a virtual address into said real address;

processing means, connected to said main memory controller means through a common bus, for delivering said virtual address to said main memory means in accessing the main memory means;

said translator means including;

address translation storage means for storing a table having a respective real address corresponding to said virtual address;

translation circuit means, connected to said address translation storage means for accessing said address translation storage means whereby the real address corresponding to said virtual address delivered to said main memory controller means is selected;

address translation buffer means, connected to said translation circuit means and having a plurality of entries, including an entry for storing a translation pair including the virtual address and the real address corresponding to said virtual address stored in said address translation storage means and selected by said translation circuit means; and

address translation buffer management means for replacing the address translation pair currently stored in said entry of said address translation buffer means to the new address translation pair corresponding to virtual address space used for the new access of said main memory means when said address translation buffer management means previously searches said address translation buffer means and said new address translation pair is not found in said address translation buffer means.

4,513,370

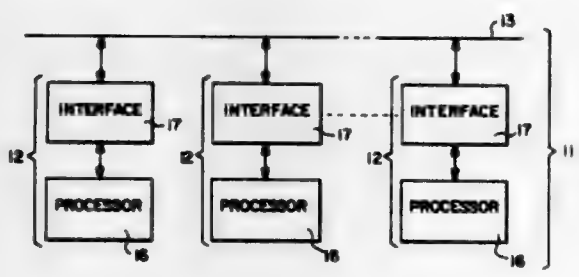
DATA TRANSFER CONTROL SYSTEM AND METHOD FOR A PLURALITY OF LINKED STATIONS

Pinhas Ziv, Supelveda, and Yiu-Keung Ng, Monterey Park, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Jul. 19, 1982, Ser. No. 399,240

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **6 Claims**



1. In a system for selectively transferring data over a data link between a plurality of stations: transmitting means at each of said stations for transmitting data over the data link when enabled, receiving means at each of said stations for receiving data over the data link when enabled, means defining a unique address for each of said stations, an address counter at each of said stations, means operating asynchronously of each other at the respective stations for stepping the address counters in a predetermined sequence, means at each of the stations for enabling the transmitting means at each of the stations to transmit data including a transmitting station address and a receiving station address when the count in the address counter at the station corresponds to the unique address of the station, means responsive to the transmitted transmitting station address for setting the address counters at all of the stations to a count corresponding to the transmitted transmitting station address, means responsive to the receiving station address for enabling the receiving means at the station whose unique address is transmitted to receive the transmitted data, and means for resetting all of the address counters to a predetermined count upon detection of the concurrent presence of signals from the transmitting means at two of the stations on the data link.

4,513,371

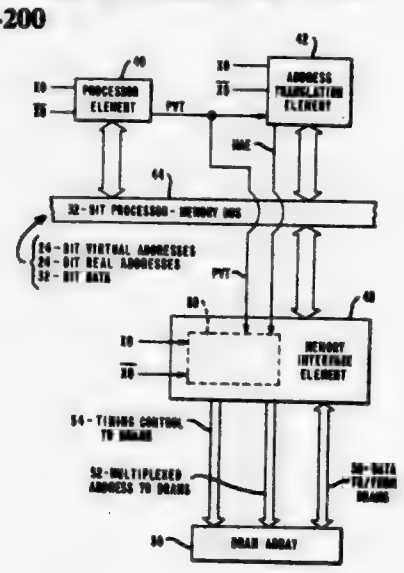
COMPUTER INTERFACE APPARATUS USING SPLIT-CYCLE LOOKAHEAD ADDRESSING FOR FASTER ACCESS TO PAGED MEMORY

John A. Celio, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 29, 1982, Ser. No. 402,883

Int. Cl.³ G06F *9/38, 13/00*

U.S. Cl. 364—200 **1 Claim**



1. In an apparatus for decreasing the access time to addressable memories containing pages of stored data addressable through real addresses, when virtual addressing is used wherein the apparatus uses a memory bus, at least one bank of addressable memory for storing pages of addressable data, a processor means coupled to the memory bus for providing a virtual address consisting of high and low order bits wherein the lower order bits correspond to real address bits and the higher order bits are translatable to real address bits, an address translator means coupled to the memory bus for translating the provided virtual addresses into real addresses and for forwarding the real address to the memory bus, and a memory interface means for interfacing the addressable memory to the memory bus, the improvement in the memory interface means comprising;

first means for receiving and gating said lower order virtual address bits to said addressable memory to commence memory access prior to the completion of translation by said address translator;

second means for receiving and gating the translated higher order bits of said provided virtual address corresponding to the real address from said memory bus to said addressable memory to complete memory addressing;

a decoder operatively coupled to said second means for receiving and converting select higher order address bits into addressable memory bank select signals;

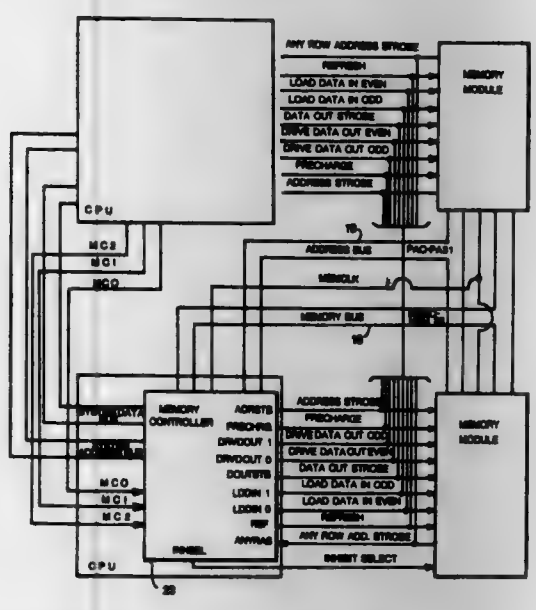
a first logic means responsive to a virtual address on said memory bus for controlling said first and said second means to cause said first and said second means to hold the high and the low order virtual address bits present on said memory bus during a first cycle and to hold the translated virtual address bits present on said memory bus during a second cycle; and

multiplexer means coupled to said first and said second means for receiving and alternately gating to said addressable memory the held low order virtual address bits during said first cycle and the held high order translated address bits during said second cycle.

4,513,372
UNIVERSAL MEMORY

Michael L. Ziegler, Whitinsville; Peter G. Marshall, Northboro, and David L. Whipple, Braintree, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Nov. 15, 1982, Ser. No. 441,968
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 10 Claims

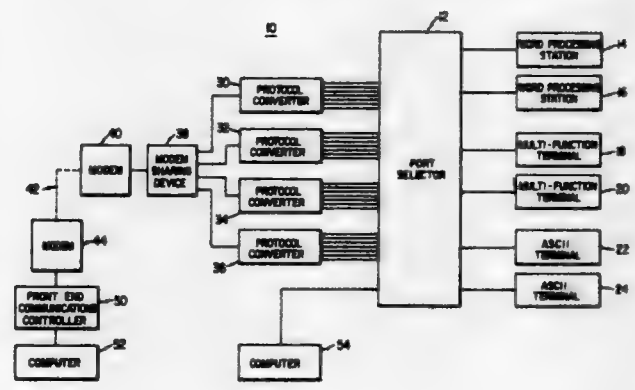


1. A memory device for a computer system,
said computer system including
system data bus; a system address bus;
a central processing unit connected to said system data and system address buses controller means
connected to said system data and system address buses for providing the following signals:
a MEMORY ADDRESS signal indicative of a memory location to be addressed,
a MEMORY DATA signal during a write operation of said memory device,
an ADDRESS STROBE signal,
a LOAD DATA IN EVEN signal during said write operation,
a LOAD DATA IN ODD signal during said write operation,
a DATA OUT STROBE signal during a read operation, of said memory device,
a DATA OUT EVEN signal during said read operation,
a DATA OUT ODD signal during said read operation, and
a PRECHARGE signal,
said memory device being provided with a memory address bus connecting said memory device to said controller, a memory data bus connecting said memory device with said controller, at least one memory module in said memory device and having an array of memory elements arranged nominally in odd and even halfs of rows and columns, means in said memory module responsive to said ADDRESS STROBE signal for latching said MEMORY ADDRESS signal, means in said memory module responsive to the concurrance of said ADDRESS STROBE signal and to module identification portions of said MEMORY ADDRESS signal for generating an ANY ROW ADDRESS STROBE signal for said controller means and for generating a ROW ADDRESS STROBE signal, first delay means responsive to said ROW ADDRESS STROBE signal for successively providing a row address portion of said memory address signal to said memory elements and providing a DELAYED ROW ADDRESS STROBE signal to groups of selected row of said memory elements and then providing a column address portion of said MEMORY ADDRESS signal to said memory elements, whereby both odd and even of said memory elements are addressed, means in said memory device responsive to said LOAD DATA IN EVEN signal for applying data signals on said memory data bus to even memory elements of said memory device, second delay means in each memory module responsive to said LOAD DATA IN EVEN signal for applying a DELAYED WRITE ENABLE signal to said even memory elements of said memory device, thereby enabling said even memory elements to store the DATA signals on said memory data bus, means in said memory device responsive to said LOAD DATA IN ODD signal for applying DATA signals on said memory data bus to odd memory elements of said memory device, third delay means in each memory module responsive to said LOAD DATA IN ODD signal for applying a DELAYED WRITE ENABLE signal to said odd memory elements of said memory device, thereby enabling said odd memory elements to store the DATA signals from said memory data bus, means in said memory device responsive to said DRIVE OUT STROBE signal for latching the outputs of all of the memory elements in the memory device for at least the duration of said DRIVE OUT STROBE signal, means in said memory device response to said DRIVE DATA OUT EVEN signal for enabling the output of the even memory elements of the selected memory module to be placed on the memory data bus, means in said memory device responsive to said DRIVE DATA OUT ODD signal for enabling the output of the odd memory elements of the selected memory module to be placed on the memory data bus, comparison means in each of said modules for determining whether a particular row of that module was accessed during an immediately preceding ADDRESS STROBE signal, means responsive to said comparison means for delaying the ROW ADDRESS STROBE signal until the termination of said PRECHARGE signal, means in said controller means responsive to the absence of the ANY ROW ADDRESS STROBE signal concurrent with the presence of the ADDRESS STROBE and PRECHARGE signals for delaying the transmission of any further signals to the memory device.

4,513,373
LOCAL AREA NETWORK

Duane R. Sheets, Garland, Tex., assignor to Electronic Data Systems Corporation, Dallas, Tex.

Filed Dec. 28, 1982, Ser. No. 454,054
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 5 Claims



1. A local area network, comprising:
a plurality of input/output terminals which transmit and receive data by use of a first communication format,
a multi-port communication switch having a plurality of ports thereof connected respectively to said input/output terminals wherein said switch can connect any one of said terminals to any other of said terminals or to other ports of said switch thereof,
means for converting data between said first communication format and a second communication format, said means

for converting connected to at least one of said ports of said switch,

a computer which transmits and receives data by use of said second communication format, and

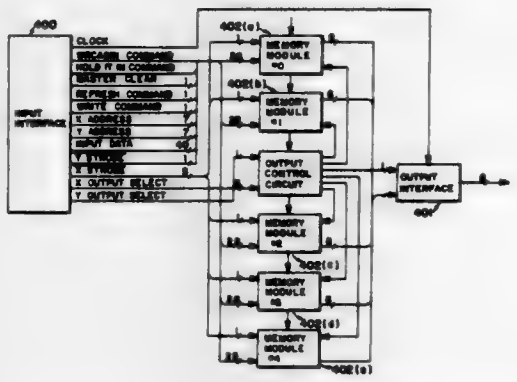
means for coupling said means for converting to said computer wherein any one of said input/output terminals can be connected through said switch to communicate with said computer.

4,513,374

MEMORY SYSTEM

John T. Hooks, Jr., Dallas, Tex., assignor to LTV Aerospace and Defense, Dallas, Tex.

Division of Ser. No. 305,741, Sep. 25, 1981, Pat. No. 4,463,380.
This application Nov. 25, 1983, Ser. No. 555,331
Int. Cl.³ G06F 9/06
U.S. Cl. 364—200 **24 Claims**



1. A relatively high speed memory system comprised of relatively slow speed electronic memory means, said memory system organized as a planar array of rows and columns of word positions and comprising:

(a) address generator means for generating sequences of N addresses to access sequences of N words of data along selected substantially straight paths in any direction across said memory array with each address generated having a set of most significant bits and a set of least significant bits;

(b) a plurality of electronic memory means, each of said memory means having address decoder means responsive to a plurality of address bits for selecting a memory element within said memory means and enable means responsive to an enable signal for enabling said memory means; and

(c) logic means coupling said address generator means to said electronic memory means, said set of least significant bits being selectively coupled to the enable means of said memory means for selectively enabling at least one of said memory means and said most significant bits being selectively coupled to said address decoder means for addressing a selected memory element within said enabled memory means; wherein

(d) N is greater than one and wherein no memory means is selected more than once per sequence of N memory accesses.

4,513,375

TRANSACTION NUMBERING APPARATUS

Robert M. Bruce, 14625 Rayen St., Apt. #110, Panorama City, Calif. 91402

Filed Aug. 18, 1982, Ser. No. 409,114
Int. Cl.³ G06F 15/21
U.S. Cl. 364—401 **15 Claims**

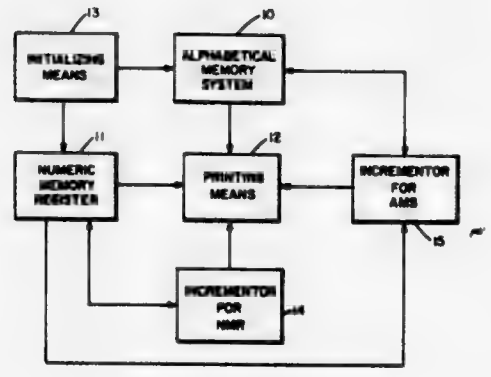
1. A consecutive transaction numbering apparatus comprising:

a. an alphabetical memory system having operable accessibility to a predetermined number of unique alphabetical characters in alphabetically retrievable order, and having a print position for only one of said alphabetical characters at a time;

b. at least one or more numeric memory registers, each of said numeric memory registers having operable accessibility to number characters representative of all ten arabic numerals arranged in numerically retrievable order, and having a print position for only one of said number characters at a time;

c. marking means operable for marking a transaction number upon the occurrence of a transaction which transaction number consists of a plurality of print positions including one and only one alphabetical character from said alphabetical memory system and one number character from each of said numeric memory registers, such that the characters of said marked transaction number are arranged in adjacent sequential order;

d. means to initialize said alphabetical memory system and said numeric memory registers so that said alphabetical memory system has the first-in-alphabetical-order of its accessible characters in the series print position farthest to the left relative to each of said numeric memory registers, and so that said numeric memory register which is in a series print position farthest to the right has a "1" in its print position, and each remaining numeric register has a "0" in its print position;



e. means to increment said numeric memory registers after each transaction number is marked by advancing, as a group, the numeric characters in the print position by one, and when all numeric characters in the print position are "9" and when said alphabetical memory system is not in the series print position farthest to the right, by advancing all numeric characters in the print position to "0" and interchanging the series print position of the alphabetical memory system with the series print position of the numeric memory register immediately to the right of the series print position of said alphabetical memory system; and

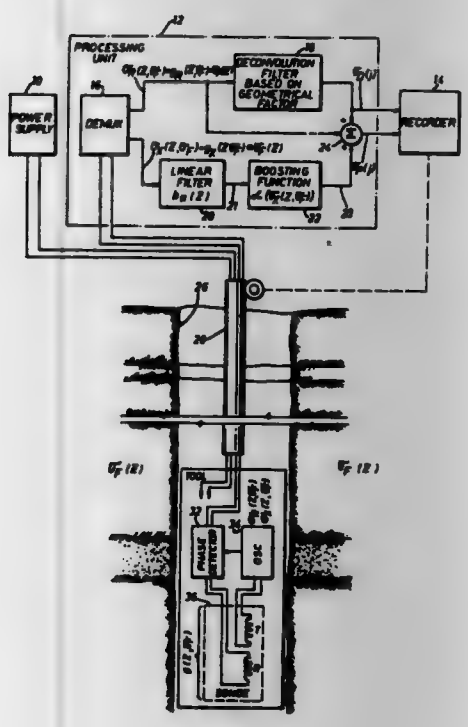
f. means to increment said alphabetical memory system when said alphabetical memory system is in the series print position farthest to the right relative to the series print position of each numeric memory register, and said numeric character in the print position of each numeric memory register is "9", after such transaction number has been marked and to reposition the series print position of said alphabetical memory system by shifting it to the farthest series print position to the left, and to shift the series print position of each numeric memory register one series print position to the right of its former series print position, and to advance all numeric characters in print position in each numeric memory register to "0".

4,513,376

PHASOR PROCESSING OF INDUCTION LOGS INCLUDING SKIN EFFECT CORRECTION

Thomas D. Barber, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jan. 12, 1982, Ser. No. 339,006
Int. Cl.[3] G01V *3/18, 3/38*
U.S. Cl. 364—422 14 Claims



1. A method of processing induction measurements of subsurface formations taken by an induction logging system at various depths in a borehole in the earth, the logging system having a spatial domain sonde response function with real and imaginary components which vary with the conductivity of the sub-surface formations being investigated, said method reducing both the unwanted contributions in each measurement from formation currents flowing in formations spaced apart from each measurement depth and the effects of variations in the sonde response function with formation conductivity, each log measurement consists of an in-phase and a quadrature-phase component where the real component of the sonde response function transforms the formation conductivity distribution into the in-phase components and the imaginary component of the sonde response function transforms the formation conductivity distribution into the quadrature-phase components, said method comprising the steps of:

(a) deconvolving the in-phase log measurements based on the real component of the sonde response function obtained at zero conductivity to obtain shoulder effect corrected log measurements;

(b) filtering the quadrature-phase component measurements according to a predetermined non-linear spatial filtering function to obtain correction component measurements representative of the change in the sonde response function as a function of formation conductivity; and

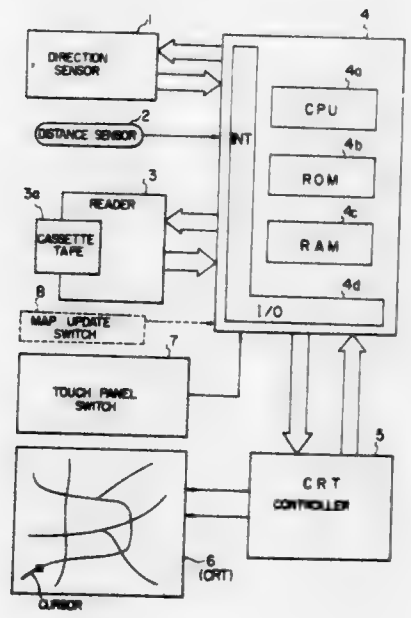
(c) summing the processed in-phase and correction component measurements to obtain the processed log measurements in which the unwanted contributions in each in-phase measurement to formation currents flowing in distant formations about each measurement point and the effects of variations in the sonde response function to variations in the conductivity of the formation being measured are reduced.

4,513,377

VEHICLE-MOUNTED NAVIGATOR

Koshi Hasebe, Anjo, Japan; Kunio Miura, Okazaki; Takashi Ono, Kariya; Kazushi Akutsu, Kariya, and Kazuaki Minami, Kariya, all of, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 8, 1982, Ser. No. 386,267
Claims priority, application Japan, Jun. 11, 1981, 56-90626; Jun. 15, 1981, 56-91949
Int. Cl.[3] G06F *15/50;* G09B *29/10*
U.S. Cl. 364—449 10 Claims



1. A vehicle-mounted navigator comprising:

distance sensor means for detecting the running distance of the vehicle;

direction sensor means for detecting the travelling direction of the vehicle;

calculation means responsive to detection signals from said distance sensor means and said direction sensor means for calculating a present position of the vehicle;

memory means for storing map data including a plurality of road maps corresponding to the vehicle's travelling regions;

display means for electronically displaying a road map corresponding to one of said plurality of travelling regions on a display surface thereof;

present position display control means for allowing said display means to display the present position of the vehicle calculated by said calculation means on the road map displayed on the display surface thereof;

decision means for deciding whether the present position of the vehicle displayed on said display surface exists in one of a plurality of adjacent regions located in the periphery of said display surface;

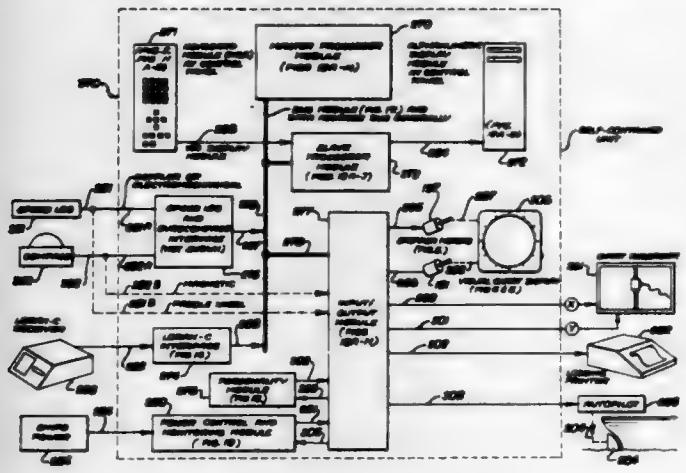
road map display control means for reading the map data of the adjacent region corresponding to the decided adjacent region from said memory means and for allowing said display means to display the road map of the adjacent region adjacent to the presently displayed vehicle travelling region instead of the display of the present road map, when said decision means decides that the displayed present position exists in one of said adjacent regions; and

correction means for automatically correcting said displayed present position in accordance with the positional relation between the presently displayed region and the adjacent region which is to be displayed, when said road map display control means changes the display of the presently displayed road map to the adjacent region.

4,513,378
HIGH-ACCURACY NAVIGATING APPARATUS WITH STEP-DRIVEN PROJECTED CHART

Edward T. Antkowiak, Harbour Hill, York, Me. 03909

Filed Oct. 20, 1981, Ser. No. 313,233
Int. Cl.[3] G01S *7/10, 7/46;* G06F *15/50*
U.S. Cl. 364—450 11 Claims



1. A navigational apparatus for use with a craft, said apparatus comprising:

an optical projection system having an optical path terminating in a visible display field;

an optically projectable map locatable in the optical path of said projection system, said map providing a scaled representation of a geographical area and including at least two calibration indicia at respective positions on said map corresponding to predetermined known coordinates,

map transport means for controllably effecting relative movement between said map and said projection system in accordance with applied transport control signals;

map calibration means for for moving said calibration indicia to a predetermined position within said projection system and for then coordinating said known coordinates with the position of the map transport means to derive calibration data used in thereafter generating transport control signals; and

transport drive means for generating said transport control signals in accordance with said calibration data and in accordance with supplied craft position data to vary said map position relative to said projection means in accordance with the geographic position of said craft.

4,513,379
CUSTOMIZATION WINDOW FOR A COMPUTER NUMERICAL CONTROL SYSTEM

William P. Wilson; Catherine M. Hewlett, and Werner P. Rieben, all of Charlottesville, Va., assignors to General Electric Company, Charlottesville, Va.

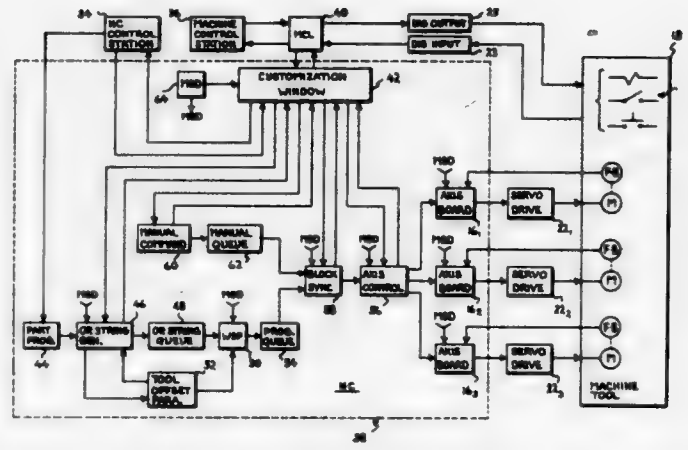
Filed Sep. 7, 1982, Ser. No. 415,041
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—474 23 Claims

9. The method for controlling the operation of a computer numerical control system for controlling the operation of a machine tool in the performance of specified operations with respect to a workpiece, comprising the steps of:

(a) executing a series of routines stored in a memory of a digital computer and controlling thereby plural axis motions of said machine tool, said routines being defined as the numerical control;

(b) executing a series of routines stored in the memory of said digital computer and controlling thereby auxiliary functions of said machine tool, said routines being defined as the machine control logic; and

(c) executing a series of routines stored in the memory of said digital computer and generating a plurality of status flags for implementing a customization window interface between said machine control logic and said numerical control, said machine control logic thereby accessing and controlling the numerical control under predetermined conditions, said numerical control returning said status



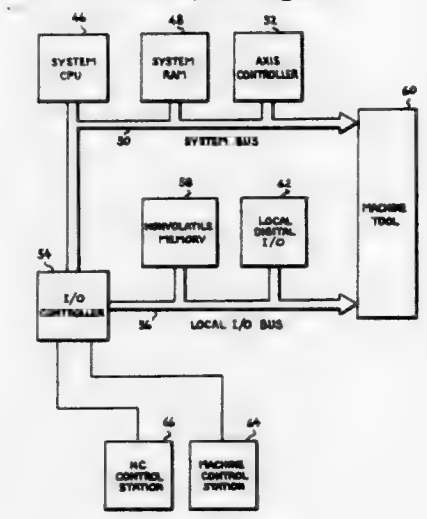
flags to said machine control logic for effecting a coordinated operation concurrently therebetween and performing thereby a specified operation on said workpiece.

4,513,380
METHOD OF TOOL RECOVERY IN THREADCUTTING APPARATUS

Jerrold C. Spooner, Waynesboro, Va., assignor to General Electric Company, Charlottesville, Va.

Filed Sep. 7, 1982, Ser. No. 415,508
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—474 2 Claims

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 32 Pages)



1. A method for interrupting a machine operation in a computer numerical control (CNC) system in which the CNC is programmed to position a cutting tool with respect to a workpiece such that relative motion between the tool and workpiece wil allow the workpiece to be machined to a desired configuration, the program defining a start point for the machining operation, the CNC system including input means for receiving an interrupt command, said method comprising in response to an interrupt command, the steps of:

(a) determining whether the system is operating in a threadcutting mode;

(b) providing, if in a threadcutting mode, a first command to cause the cutting tool to pull out from the workpiece while continuing motion in the direction of threadcutting;

(c) providing, if not in a threadcutting mode, an abort command to terminate all machining operations; and

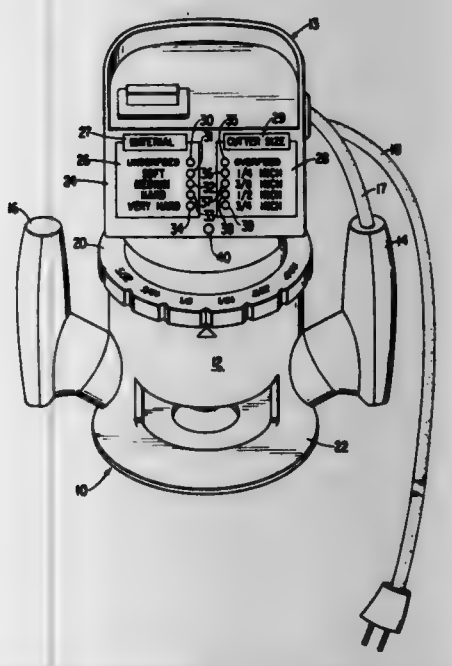
(d) generating a pull-out command to cause the tool to exit the workpiece.

4,513,381

SPEED REGULATOR FOR POWER TOOL

John Houser, Jr., Pickens, S.C., and Thomas C. Laughon, Alpharetta, Ga., assignors to The Singer Company, Stamford, Coan.

Filed Jun. 7, 1982, Ser. No. 385,631
Int. Cl.[3] H02P 1/22, 7/28
U.S. Cl. 364—475 8 Claims



1. A power tool for operating on a work material in which the feeding rate between the work material and the power tool is imposed by the direct muscular effort of an operator, said power tool having a frame supporting a motor, and a cutting implement driven by said motor, said power tool comprising:

(a) selecting means for selecting a work material to be operated upon;

(b) regulating means including memory means supported in said frame and responsive to a selected material for regulating speed of said motor to an optimum speed for said selected material from a first table of a first speed for various materials stored in said memory; and,

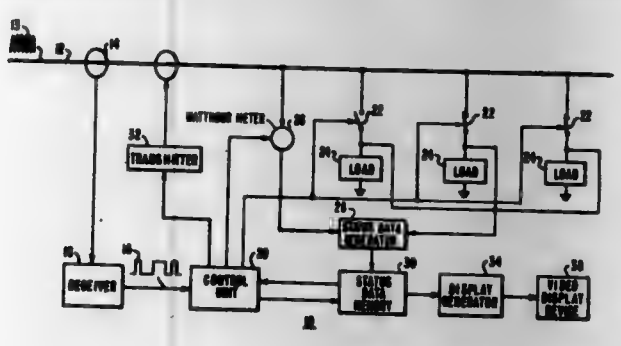
(c) responding means including said regulating means for responding to an operator imposed feed condition in which the loading imposed by the operator exceeds a preferred loading for operation of said power tool at said first speed, by increasing the speed of said cutting implement according to a second table of optimum speeds for various materials at various loadings stored in said memory of said regulating means.

4,513,382

ELECTRIC UTILITY AUTOMATED DISTRIBUTION APPARATUS WITH IMPROVED DATA DISPLAY

James V. Faulkner, Jr., Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1982, Ser. No. 408,957
Int. Cl.[3] H04B 7/00, 3/54; H04Q 9/00
U.S. Cl. 364—492 17 Claims



1. Remote terminal apparatus for use in an electric utility power line communications system for carrying control commands relating to the transmission and consumption of electric energy from a central station to a remote location, said apparatus comprising:

receiving means at said remote location for deriving said control means;

control means connected to said receiving means for executing control functions in response to said control commands;

means connected to said control means for generating data representative of the status of said receiving means location;

memory means connected to said status data generating means for storing said status data in a digital form;

a display generator for generating a composite video signal corresponding to an alphanumeric representation of digital signals applied to an input thereof;

means for coupling the input of said display generator to said memory means; and

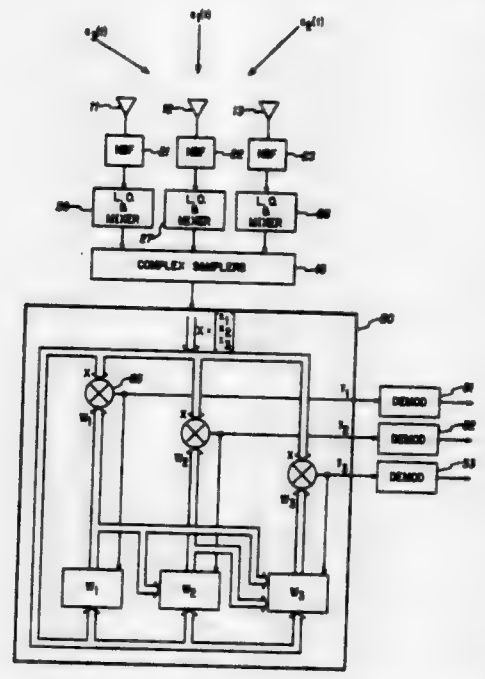
video display means coupled to said display generator for providing a visual display of said alphanumeric representation, whereby said status data is displayed to an operator at said receiving means location.

4,513,383

SEPARATION OF COMMUNICATION SIGNALS IN AN ADAPTIVE ANTENNA ARRAY

Charles M. Hackett, Jr., Irvine, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1981, Ser. No. 305,296
Int. Cl.[3] G06F 15/20; G01S 3/46
U.S. Cl. 364—517 11 Claims



1. A method for separating m radio frequency signals incident on an array n antenna elements, wherein there is, for each element, a time-varying signal from the element and a corresponding input signal capable of being processed by the method, which input signal is generated from the time-varying signal and can be representative of its complex envelope, said method comprising:

computing the weighted combination of the input signals for each set of weights in an ordered sequence of sets of weights, from a first set through an n-th set, with each of the resulting n computed combinations providing an output signal, designated with an index i as y_i, and associated with the i-th set of weights;

forming, for each one of the n output signals, a set of products of the one output signal and the complex conjugates of the input signals, and time smoothing each of said sets of products;

for each of the n sets of smoothed products, modifying the i-th set of smoothed products associated with the i-th output signal, in response to all of the sets of weights which precede the i-th set of weights in said sequence; and

for each of the n modified sets of smoothed products, normalizing the modified i-th set of smoothed products to provide the i-th set of weights, approaching that eigenvector of the cross-correlation matrix of the complex envelopes of said time-varying signals which corresponds to the -th largest eigenvalue of the matrix,

whereby each of said output signals corresponds predominately to a different one of said incident radio frequency signals for m less than or equal to n.

10. An apparatus for separating m radio frequency signals incident on an array of n antenna elements, wherein there is, for each element, a time-varying signal derived from the element and a corresponding input signal capable of being processed by the apparatus, which input signal is generated from the time-varying signal and can be representative of its complex envelope, said apparatus comprising:

means for computing the weighted combination of the input signals for each set of weights in an ordered sequence of sets of weights, from a first set through an n-th set, with each of the resulting n computed combinations providing an output signal, designated with an index i as y_i, and associated with the i-th set of weights;

means for forming, for each one of the n output signals, a set of products of the one output signal and the complex conjugates of the input signals, and time smoothing each of said sets of products;

means, for each of the n sets of smoothed products, for modifying the i-th set of smoothed products associated with the i-th output signal, in response to all of the sets of weigths which precede the i-th set of weights in said sequence; and

means, for each of the n modified sets of smoothed products, for normalizing the modified i-th set of smoothed products to provide the i-th set of weights, approaching that eigenvector of the cross-correlation matrix of the complex envelopes of said time-varying signals which corresponds to the i-th largest eigenvalue of the matrix,

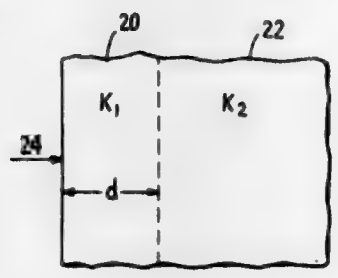
whereby each of said output signals corresponds predominantly to a different one of said input signals for m less than or equal to n.

4,513,384

THIN FILM THICKNESS MEASUREMENTS AND DEPTH PROFILING UTILIZING A THERMAL WAVE DETECTION SYSTEM

Allan Rosencwaig, Danville, Calif., assignor to Therma-Wave, Inc., Fremont, Calif.

Filed Jun. 18, 1982, Ser. No. 389,623
Int. Cl.³ G01N *25/00, 29/04;* G06F *15/00*
U.S. Cl. 364—563 **12 Claims**



1. A method for determining the thickness of at least one layer of material deposited on a substrate by measuring the value of either the phase or magnitude parameters of thermal wave signals generated by a focused periodic heat source comprising the steps of:

deriving a model that provides expressions for the temperature at and beneath the surface of a known reference sample and for the thermoelastic response beneath the surface of the known reference sample;

focusing said periodic heat source on the uppermost layer deposited on said substrate;

measuring the value of one of said parameters of the thermal wave signals at a plurality of selected modulation frequencies of said heat source wherein the number of modulation frequencies selected is greater than the number of layers whose thickness is to be determined;

normalizing the measured value of said parameter of each modulation frequency selected relative to the value of said parameter determined for said known reference sample; and

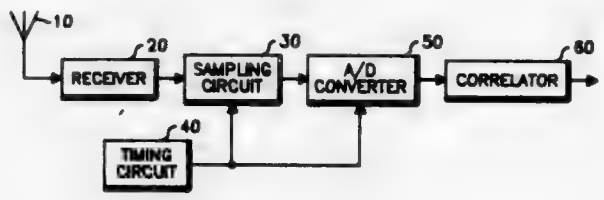
comparing said normalized values to expected normalized values derived from said model depicting the thermal process in said reference sample whereby the thickness of each said layer can be determined.

4,513,385

APPARATUS AND METHOD FOR SUPPRESSING SIDE LOBE RESPONSE IN A DIGITALLY SAMPLED SYSTEM

David L. Muri, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1983, Ser. No. 462,494
Int. Cl.³ G06F *3/05*
U.S. Cl. 364—572 **59 Claims**



55. A method of providing a computer with processing time for performing other tasks when said computer is functioning as a correlator for correlating a sampled signal with a predetermined pattern to determine the presence of a predetermined frequency, said method comprising the steps of:

sampling a first signal to produce samples thereof including a first sample during a first time segment of a predetermined observation window;

interrupting said sampling for a second time segment of said predetermined observation window to enable said computer to perform said other task thereby effectively ignoring said first signal during said second time segment;

sampling said first signal for the remainder of said predetermined observation window to produce samples thereof including a last sample; and

correlating said samples with said predetermined pattern to determine the presence of said predetermined frequency for a first time segment of said observation window.

4,513,386

RANDOM BINARY BIT SIGNAL GENERATOR

Sydney Glazer, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 18, 1982, Ser. No. 442,709
Int. Cl.³ H03B *29/00*
U.S. Cl. 364—717 **12 Claims**

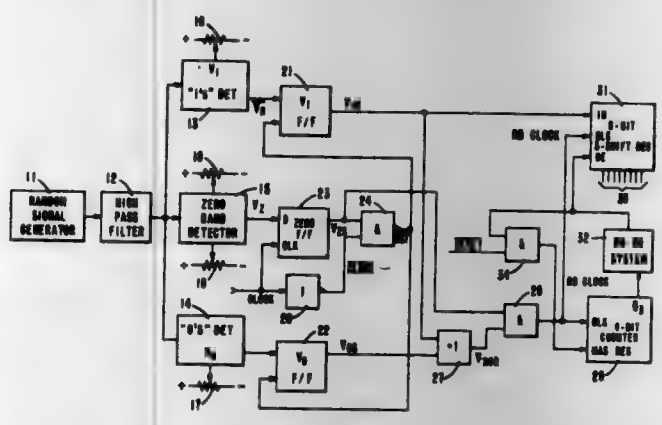
1. A random number signal generator comprising:

means to generate a random amplitude signal;

first detector means to determine when the random amplitude signal has made an excursion farther in one polarity from a zero value than a first level and then has returned to an intermediate range closer to the zero value than the first level to generate a signal having a first binary value; and

second detector means to determine when the random am-

plitude signal has made an excursion farther in the opposite polarity from the zero value than a second level and



has returned to the intermediate range to complete the generation of a signal having a second binary value.

4,513,387

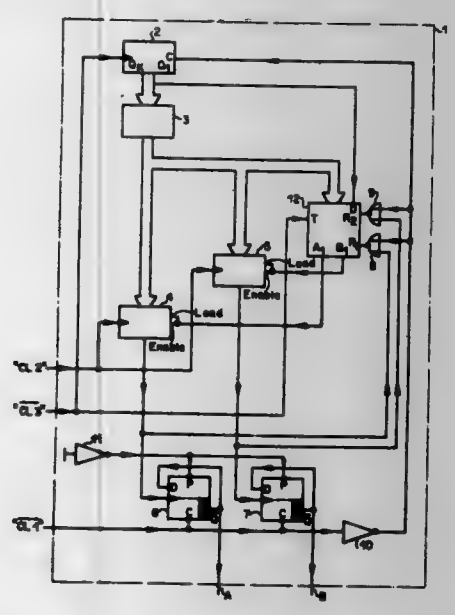
METHOD AND AN APPARATUS FOR GENERATING PERIODIC DIGITAL TIME FUNCTION SIGNALS

Norbert Neyer, Zürich, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Jul. 13, 1982, Ser. No. 397,825

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—718 **13 Claims**



1. In a method of obtaining digital periodic time function signals with the aid of a memory (3) having a plurality of storage cells, each time function signal having a first period (T), predetermined binary numbers stored in corresponding storage cells defining each periodic time function signal,

the steps comprising

for each of said digital periodic time function signals calculating a first group of binary numbers (x_j) representing relative time values of their positive and negative going edges by choosing for each of said relative time values an own zero reference point by taking into account the delay time of said memory (3), by using a second period (T_2) as a time unit,

allotting to said binary numbers (x_j) a predetermined, normally not used binary number (255="11111111"), in each case an edge is not to be produced,

assigning a prearranged number of said storage cells to each of said digital periodic time function signals to be obtained,

storing each one of said first groups of binary numbers (x_j) in those of said storage cells which belong to said digital periodic time function signal, and in such an order of succession that increasing absolute time values related to said binary numbers (x_j) correspond to increasing values of memory addresses, whereby said absolute time values correspond to said relative time values with the difference that the absolute time values have a single zero reference point common for all of them,

generating a first clock signal (CL1) for resetting purposes, having a period (T_1) equal to said first period (T) of said digital periodic time function signals,

generating a second clock signal (CL2) having said second period (T_2), which has a predetermined relationship to said first period (T),

deriving from said second clock signal (CL2) a third clock signal (CL3), having a third period (T_3) which is a multiple of said second period (T_2),

binary counting the number of said third periods (T_3) with the aid of an address counter (2) and allotting this second group of binary numbers to said memory addresses of said storage cells,

successive calling up said different storage cells belonging to said digital periodic time function signal, with the aid of said second group of binary numbers and the address inputs of said memory (3), and thereby successively reading of said binary numbers (x_j) of said first group of binary numbers out of said memory (3),

successive parallel loading said binary numbers (x_j) of said first group of binary numbers in period counters (4; 5),

delayed enabling between each of said loadings during an enabling time interval, only the counting of one of said period counters (4; 5) with the aid of a logic circuit (12), if an edge of said digital periodic time function signal which belongs to said one period counter must be produced during said enabling time interval,

counting the number of second periods (T_2) during said enabling time beginning with said loaded binary number (x_j) of said first group of binary numbers until a predetermined reference number is reached,

in the moment of reaching said predetermined reference number, inverting the digital instantaneous value of said digital periodic time function signal at the output of a D-flip-flop (6; 7) with the aid of this D-flip-flop.

4,513,388

ELECTRONIC DEVICE FOR THE EXECUTION OF A MATHEMATICAL OPERATION ON SETS OF THREE DIGITAL VARIABLES

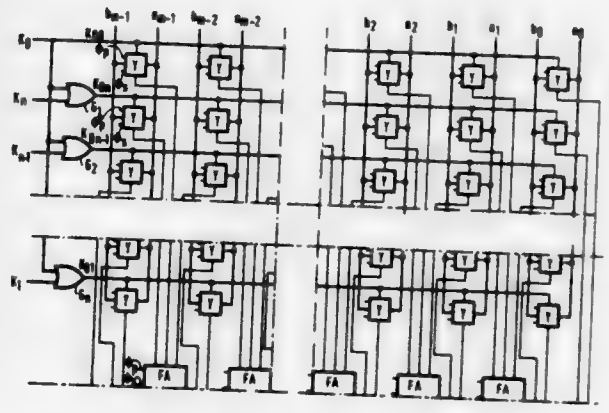
Hendrikus J. M. Veendrick; Leonardus C. M. G. Pfennings; Johannes G. Raven, and Antonius H. H. J. Nillesen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 305,423, Sep. 25, 1981, abandoned. This application Apr. 16, 1984, Ser. No. 601,093

Claims priority, application Netherlands, Oct. 6, 1980, 8005506

Int. Cl.³ G06F *7/38*

U.S. Cl. 364—736 **15 Claims**



1. An electronic device for executing on three digital variables (A, B, K) a mathematical operation of the kind $K A+(1-K) B$, said electronic device comprising:

first and second input means for receiving a first (A) and a second (B) m-bits ($m \geqq 0$) input signals representing two of said three digital variables, and third input means for receiving an $(n+1)$-bits ($n>0$) weighting factor signal K representing the third digital variable;

at least n logic gates, an ith logic gate (G_i) ($1 \leqq i \leqq n$) having a first input for receiving the ith bit coefficient value (K_i) of said weighting factor signal, each of said logic gates being a second input for receiving the zero order bit coefficient value (K_{00}) of said weighting factor signal, said i^{th} logic gate (G_i) being provided for generating and presenting at an output thereof a weighting signal $K_{0i}=K_i \, V \, K_{00}$, (where V stands for the mathematical "OR");

$(n+1)$ x m electronic circuits (Y) which are arranged as the elements of an $(n+1)$ by m matrix, a matrix element $Y_{i'j}$ of the j'^{th} column ($1 \leqq j' \leqq m$) and the i'^{th} row ($2 \leqq i' \leqq n+1$) (or vice versa) having a first and a second input for receiving the jth (a_j and b_j, $0 \leqq j \leqq m-1$) bit coefficient values of said first and said second input signals, and a third input connected to the output of a respective logic gate for receiving said weighting signal K_{0i} ($i=i'-1$), the matrix elements of a first row ($i'=1$) having a third input for receiving the zero order bit coefficient (K_{00}) of said weighting factor signal, each of said electronic circuits being provided for generating a partial output signal by executing the mathematical operation $Y_{ij}=K_{0i'}$-'$aj+(1-K_{0j'})bj$ ($o \leqq i'' \leqq n$) on the bit coefficient values presented at its inputs, each of said electronic circuits having an output for supplying said partial output signal, the outputs of said electronic circuits are connected to inputs of full adders which serve to sum all said partial output signal and for generating a digital output signal of the value $Z=KA+(1-K)B$; and

an output means for supplying said digital output signal.

4,513,389

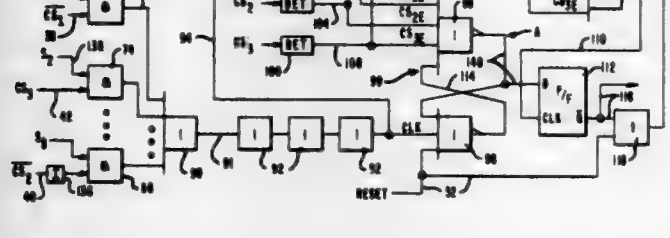
ROM SECURITY CIRCUIT

Rathindra N. Devchoudhury, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 12, 1981, Ser. No. 320,790

Int. Cl.³ G06F *13/00, 7/00*

U.S. Cl. 364—900 **15 Claims**



1. In a data processing system including a memory device and a processing device for outputting a plurality of memory enabling signals each of which has a predetermined voltage level required for enabling the operation of the memory device, a circuit for initiating the operation of the memory device including:

a plurality of serially-connected first logic circuit members each of which, when operated, outputs a first control signal enabling the succeeding first logic circuit member to be operated;

a second logic member connected to the last operated first logic circuit member and enabled upon receiving said first control signal for outputting a second control signal when operated;

first logic circuit means connected to each of said first logic circuit members for receiving said memory enabling signals and said first control signal for outputting a third control signal to said first and second logic circuit members in response to said memory enabling signals having the required predetermined voltage level for sequentially operating said first and second logic circuit members;

and means receiving one of said memory enabling signals and enabled by said second control signal to allow the received memory enabling signal to operate said memory device.

4,513,390

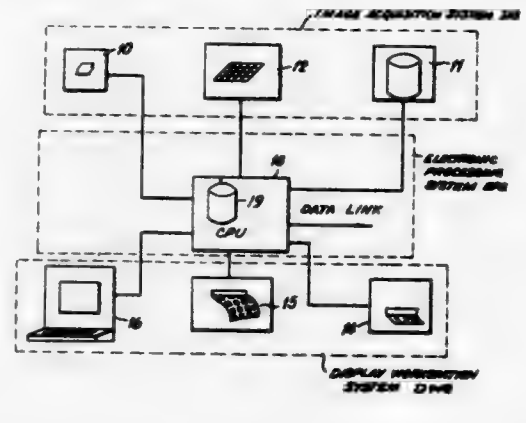
SYSTEM FOR DIGITAL TRANSMISSION AND SYNTHESIS OF INTEGRATED DATA

Gerard O. Walter, Potomac, Md., and William D. Sheppard, Lakeside, Calif., assignors to Planning Research Corporation, McClean, Va.

Continuation of Ser. No. 37,228, Jun. 8, 1979, abandoned. This application Nov. 16, 1981, Ser. No. 321,540

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—900 **15 Claims**



1. An information system for storage, retrieval, and generation of information from a plurality of multimedia sources, comprising an image-acquisition system, an electronic processing system, and a display workstation having a plurality of output modules, said electronic processing system including a serial input port module for receiving data from said image-acquisition system and coupling said data onto a local system bus, a program module coupled to said bus for directing the sequence and flow of information between said image-acquisition system and said display workstation via said electronic processing system, said workstation output modules being coupled to said bus, a functional control module coupled to said bus for controlling priority of operation of said workstation output modules coupled to said bus whereby said control module handles bus contention problems, a redundancy reduction module coupled to said bus for controlling the digital data rate of transfer of data through said bus, and a plurality of output port modules coupled to said bus for accessing various additional output modules including memory and communication modules.

4,513,391

TEXT PROCESSING APPARATUS WITH TWO-STAGE FORMATTING OF TEXT

Robert F. Maddock, Southampton, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1982, Ser. No. 360,093

Claims priority, application European Pat. Off., Apr. 8, 1981, 81301527.8

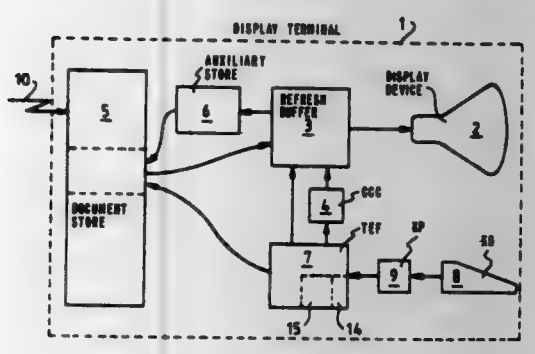
Int. Cl.³ G06F *15/00*

U.S. Cl. 364—900 **2 Claims**

1. Apparatus for editing and formatting text stored in a refresh buffer and display on a display device as lines, said apparatus comprising;

(a) logic means for causing said text to be edited in response to keystroke signals received from a keyboard, and in

absence of keystroke signals, for reformatting said edited text according to formatting requirements for said text; and



(b) means included in said logic means for (1) delaying editing of said text in response to said keystroke signals if overflow of a line being edited will result from said editing, and (2) reformatting said line being edited in order to avoid overflow during subsequent editing.

4,513,392

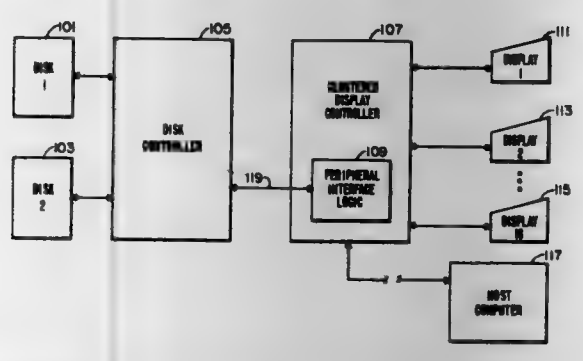
METHOD AND APPARATUS FOR GENERATING A REPETITIVE SERIAL PATTERN USING A RECIRCULATING SHIFT REGISTER

William H. Shenk, Acton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 25, 1982, Ser. No. 381,999

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—900 **12 Claims**



1. The method of generating a repetitive serial pattern using a recirculating shift register to reduce the amount of memory that would otherwise be required to hold a complete data pattern, said method comprising the steps of:

a. initializing the memory to contain a subset of the complete data pattern to be serialized;

b. reading a unit of data from the memory;

c. loading the unit of data into a parallel to serial shift register;

d. performing a parallel to serial conversion of the unit of data by shifting the unit of data in the shift register one bit at a time under the control of a bit clocking signal until all bits in the unit of data have been shifted out of a serial output of the parallel to serial shift register;

e. returning to step b and reading the next unit of data from the memory under the control of a unit clocking signal until the last unit of data is read from the memory;

f. detecting when the last unit of data is read from the memory and inhibiting the further loading of a unit of data from the memory into the parallel to serial shift register; and

g. recirculating the last unit of data in the parallel to serial shift register by connecting the serial output to a serial input of the shift register, and continuing to recirculate the last unit of data and shifting out bits under control of the bit clocking signal until no more bits of data are required as determined by a count of the number of units of data output by the parallel to serial shift register.

4,513,393

DOCUMENT HANDLING TERMINAL COMPUTER

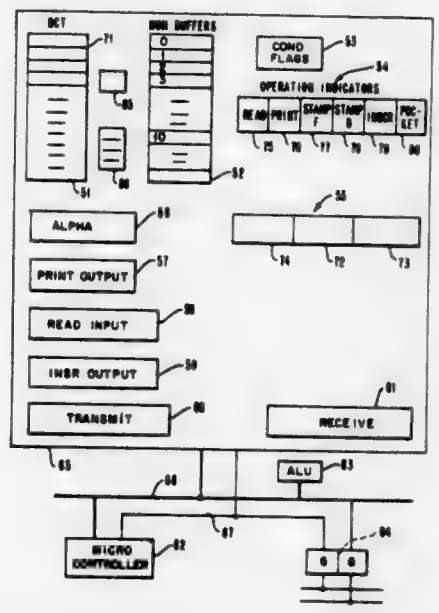
Olof A. Edlund; Mats A. Ensér, both of Lidingo; Jan W. Strage, Sollentuna; Svante B. Thunberg, and Erik I. Wallmark, both of Lidingo, all of Sweden, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,669

Claims priority, application European Pat. Off., Jun. 11, 1981, 81850108.2

Int. Cl.³ G06F *3/04, 15/30*

U.S. Cl. 364—900 **4 Claims**



1. A computer terminal for connection to a host computer, said terminal including a plurality of input/output devices, an information storage comprising a buffer area and an input/output area, and a terminal processor for controlling operation of said terminal wherein, the improvement comprises:

an operation table in said information storage, said table including a list of instructions loaded into said table from said host computer, each of said instructions having a condition field, said instructions being sequentially accessed and selectively executed by said terminal processor for controlling the operation of said input/output devices;

a condition register in said information storage for storing condition flags to be compared by said terminal processor with condition flags in said condition field of said instructions before an operation specified by an operation code in said instructions is allowed to be executed by said terminal processor;

a plurality of operation indicators stored in said information storage, each operation indicator settable by said terminal processor as said operation code of a corresponding one of said instructions is executed, said operation indicators controlling data transfer between said input/output area and said plurality of input/output devices by said terminal processor asynchronously with execution of said instructions in said operation table.

4,513,394

SYSTEM FOR PROVIDING A MULTI-BIT INPUT TO A COMPUTER CONTROLLED SYSTEM

Craig E. Deyer, Akron, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,545

Int. Cl.³ G06F *3/02*

U.S. Cl. 364—900 **10 Claims**

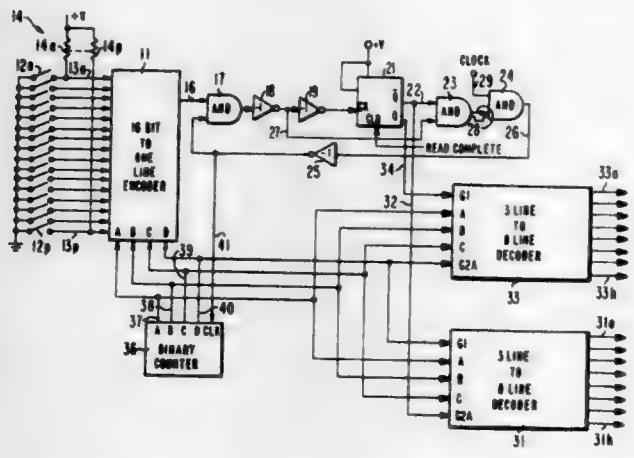
1. A system for providing a multi-bit input to a computer in response to the change of state of one of a plurality of system input lines comprising:

input logic means having a plurality of input terminals, a plurality of binary number terminals and at least one output terminal;

a plurality of means for changing the state of said input terminals, each of said input terminals being responsive to one of said means for changing state whereby a change of state on one of said input terminals sets and input position number into said logic means;

binary input means for providing binary inputs to said binary number terminals whereby said input logic means produces an output on said output terminal when said binary input equals said input position number;

clock means for providing clock pulses to said binary input means;



bistable logic means arranged between said input logic means and said clock means for receiving said output on said output terminal of said input logic means whereby said bistable logic means controls said clock means, said bistable logic means being responsively coupled to a read-complete signal from said computer; and

output logic means responsive to said binary input means and controlled by said bistable logic means for decoding said binary inputs into said input position number whereby said multi-bit input is provided to said computer when via said output logic means said binary input equals said input position number.

4,513,395

APPARATUS AND METHOD FOR ACQUIRING MULTIPLE GROUPS OF DATA SIGNALS FROM A SYNCHRONOUS LOGIC SYSTEM

Michael D. Henry, Portland; Bruce J. Ableidinger, Beaverton, and Nirmal K. Agarwal, Portland, all of Oreg., assignors to Northwest Instrument Systems, Inc., Beaverton, Oreg.

Filed Mar. 25, 1983, Ser. No. 479,089
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—900 **16 Claims**



1. An apparatus for acquiring data words which are present on synchronous logic circuitry of a system under test, comprising:

(a) detecting means coupled to said data bus for producing an acquisition signal indicative of the occurrence of at least one particular data word on said logic circuitry;

(b) data storage means having a plurality of storage locations and addresses corresponding with said locations, said data storage means coupled to said data bus for storing a plurality of successive data words; and

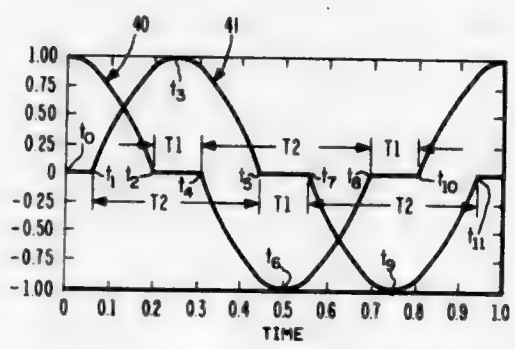
(c) addressing means, responsive to said acquisition signal and to the presence of data words on said data bus, for producing the storage addresses of said successive data words in said data storage means such that a predetermined number of successive data words preceding each said particular data word on said logic circuitry are stored in locations in said data storage means corresponding to said storage addresses.

4,513,396

METHOD OF OPERATING A MAGNETIC BUBBLE MEMORY WITH A DRIVE FIELD THAT TEMPORARILY STOPS

Sidney J. Schwartz, deceased, late of Vista, Calif. (by Marie A. Schwartz, legal representative), assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 29, 1983, Ser. No. 508,947
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—6 **10 Claims**



1. A method of operating a magnetic bubble memory of the type that includes a plurality of spaced apart propagate elements which define paths along which magnetic bubbles move in a plane in response to a magnetic drive field that rotates in said plane; said method including the steps of:

sending respective currents through a pair of field coils to produce said rotating magnetic fields;

generating at least one of said currents to consist of a series of positive and negative going waveforms separated by a dwell period so that the rotation of said field temporarily stops during said dwell period;

timing said dwell period to occur when said bubbles cross the spaces between said propagate elements;

increasing the magnitude of said field, while it is temporarily stopped, substantially over the largest magnitude which the field has when it is rotating; and

moving said bubbles across the spaces between said propagate elements by means of said temporarily stopped field with its substantially increased magnitude without the aid of any other separately generated field.

4,513,397

ELECTRICALLY ALTERABLE, NONVOLATILE FLOATING GATE MEMORY DEVICE

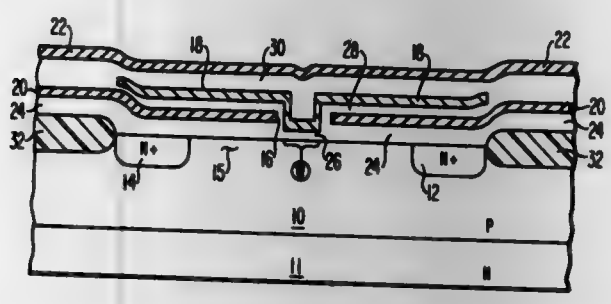
Alfred C. Ipri, Princeton, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 10, 1982, Ser. No. 448,690
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—185 **10 Claims**

1. In a floating gate memory device including a body of semiconductor material of a first conductivity type having first and second doped regions of a second conductivity type

formed in the semiconductor body at the surface thereof, the first and second doped regions spaced one from the other to define a channel region therebetween in the semiconductor body for supporting current flow between the doped regions, a first level conductive layer insulated from the body of the semiconductor material and a second level conductive layer positioned over both the channel region and the first conductive layer and insulated therefrom, the improvement comprising:

the first level conductive layer is a word line having a charging window formed therein aligned with the channel region and insulated from the body of semiconductor material by a layer of insulator material of a first thickness;



the second level conductive layer is a floating gate having a portion that extends through the charging window for coupling to the channel region and having a remaining portion that extends over the word line;

the portion of the floating gate that extends into the charging window is insulated from the channel region by a layer of insulator material of a second thickness; and

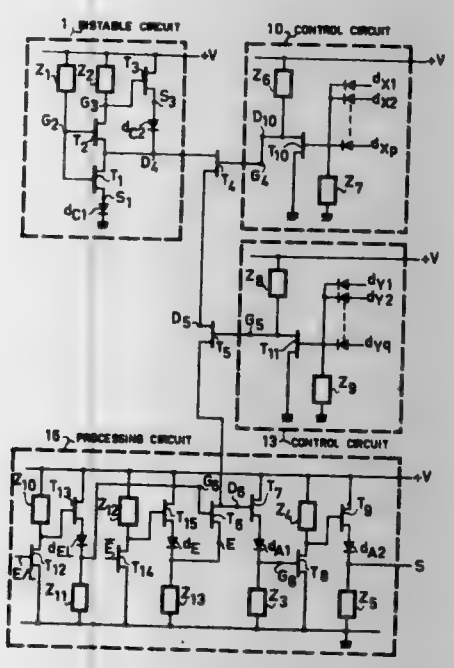
the portion of the floating gate that extends over the word line is insulated from the word line by a layer of insulator material of a third thickness that is thicker than the second thickness and thinner than the first thickness.

4,513,398

BISTABLE LOGIC CIRCUIT USING FIELD EFFECT TRANSISTORS WITH A LOW VOLTAGE THRESHOLD AND STORAGE DEVICE INCORPORATING SUCH A CIRCUIT

Tung Pham Ngu, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 16, 1982, Ser. No. 408,278
Claims priority, application France, Aug. 21, 1981, 81 16114
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **14 Claims**



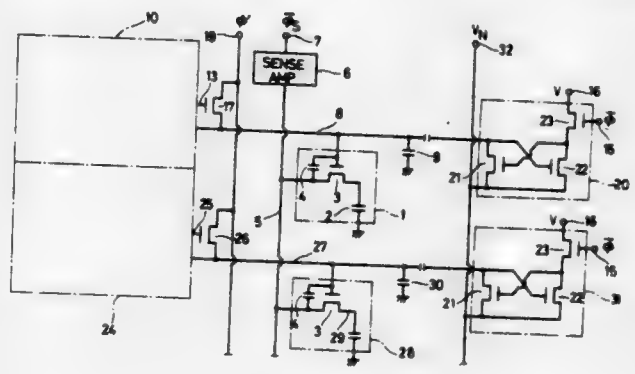
1. A bistable logic circuit using field effect transistors with a low threshold voltage connected between first and second terminals of a supply voltage generator, comprising first, second and third field effect transistors, said first and second field effect transistors being in series with their gates interconnected and connected to the first terminal of the supply voltage generator by a first load, the source of the first field effect transistor being connected to the second terminal of the supply voltage generator, the drain of the first field effect transistor being connected to the source of the second field effect transistor, the drain of the second field effect transistor being connected on the one hand to the first terminal of the supply voltage generator by a second load and on the other hand to the gate of the third field effect transistor, whose drain is connected to the first terminal of the supply voltage generator and whose source is connected via a Schottky diode to the common point constituted by the drain of the first transistor and by the source of the second transistor, said common point constituting the output terminal of the bistable circuit.

4,513,399

SEMICONDUCTOR MEMORY

Youichi Tobita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1983, Ser. No. 468,879
Claims priority, application Japan, Mar. 4, 1982, 57-35361
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **6 Claims**



1. A semiconductor memory comprising

a plurality of memory cells, each comprising a switching transistor having first and second main electrodes and a gate electrode, and storage capacitance connected to the first main electrode of said switching transistor,

a bit line connected to the second main electrode of said switching transistor for transmitting the data stored in said storage capacitance,

a clock source for generating a clock signal for controlling ON/OFF states of said switching transistors,

word lines connected to the gate of said switching transistor for transmitting said clock signal,

a decoder circuit for selecting a word line out of said word lines to apply said clock signal to the gate of corresponding said switching transistor,

a voltage source for generating a voltage lower than the level of a logical "0" of the data to be transmitted through said bit line,

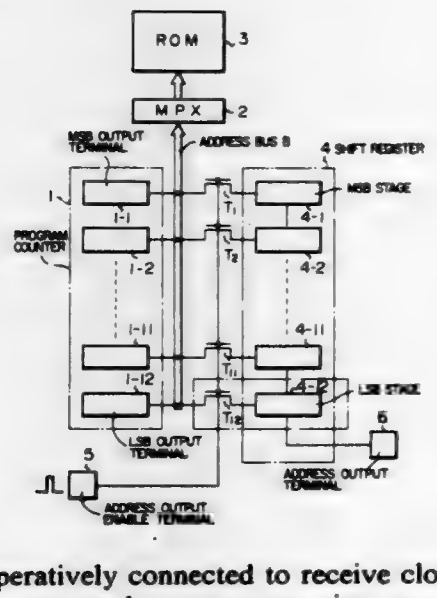
word line pull-down circuits each including a pull-down transistor having a first main electrode connected to said corresponding word line and a second main electrode connected to said voltage source, and

controlling signal supplying means for supplying to a gate of said pull-down transistor a controlling signal for controlling the impedance state of the pull-down transistor.

4,513,400
CIRCUIT FOR READING OUT ADDRESS DATA APPLIED TO A MEMORY IN A ONE-CHIP MICROCOMPUTER

Satoru Masaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 22, 1982, Ser. No. 390,875
Claims priority, application Japan, Jun. 25, 1981, 56-97396
Int. Cl.[3] G06F *1/00*; G11C *19/28*
U.S. Cl. 365—230 7 Claims



1. A circuit operatively connected to receive clock signals and operatively connected to a memory in a one-chip microcomputer, for reading out address data to the outside, comprising:

a program counter having a plurality of outputs for specifying readout addresses of the memory;

a shift register comprising a plurality of stages, each of said stages having an input operatively connected to said program counter and operatively connected to receive the clock signals, and having an output, said plurality of stages comprise the stages of a least significant bit stage to a most signifi ant bit stage, each stage being sequentially connected to the next upper bit stage;

a plurality of transfer gates, each respective transfer gate having an input operatively connected to one of said outputs of said program counter, having an ouput, respectively, operatively connected to one of said inputs of said shift register, and having a gate;

an address output enable terminal, operatively connected to said transfer gates, for receiving an address output enable signal, said outputs of said program counter being transferred through said transfer gates to said shift register when said address output enable signal is applied to said address output enable terninal; and

an address output terminal, operatively connected to one of said outputs of said shift register, for outputting the contents stored in said shift register.

4,513,401
MARINE CABLE LOCATION SYSTEM

Henning Ottsen, and Thruburn Barker, both of Ventura, Calif., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 16, 1982, Ser. No. 358,755
Int. Cl.[3] G01V *1/38*
U.S. Cl. 367—19 5 Claims

1. A method for locating a marine cable at a seismic marine exploration site, comprising the steps of:

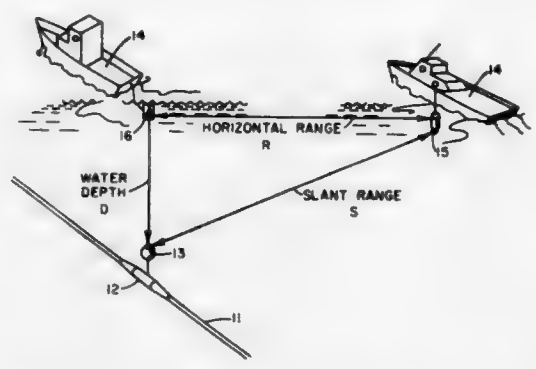
(a) traversing at least one path parallel to and offset horizontally from an estimated location for said cable with a vessel having means for interrogating each of a plurality of acoustic transponders along said cable,

(b) interrogating each of said transponders a plurality of times during each traverse of said vessel along said cable, each acoustic transponder transmitting an acoustic signal through the water to said vessel at a characteristic frequency differing from that of the other of said plurality of acoustic transponders each time it is interrogated,

(c) receiving said acoustic signals at said vessel and determining a plurality of slant range measurements for each acoustic transponder at the characteristic frequency of said acoustic transponder,

(d) measuring the water depth to said cable,

(e) plotting a set of loci of all possible positions for each



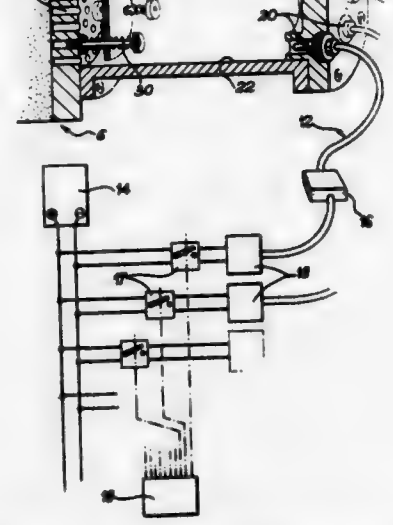
acoustic transponder from the plurality of slant range measurements obtained at each of said characteristic frequencies, the measured water depth to said cable, the known sound velocity in water, and the navigational coordinates of said vessel, and

(f) identifying the exact position of each acoustic transponder by the intersection point for the plotted set of loci of possible transducer positions for said acoustic transponder.

4,513,402
EARTHQUAKE SIMULATOR

Bernard Devaure, Gradignan, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 27, 1981, Ser. No. 287,085
Claims priority, application France, Aug. 13, 1980, 80 17866
Int. Cl.[3] G01V *1/30*; B06B *3/00*
U.S. Cl. 367—73 7 Claims



1. An earthquake simulator making it possible to produce seismic waves and apply them to a sample, wherein it comprises a generator able to produce shock waves, whose frequencies are similar to the shock wave frequencies produced in a natural earthquake, the ratio of similitude being equal to $1/\lambda$ in which λ is a positive integer, said generator being formed by a cylinder, closed at one of its ends by one of the walls of a cell containing the sample and at the other end by a thick wall to which are fixed means making it possible to produce shock

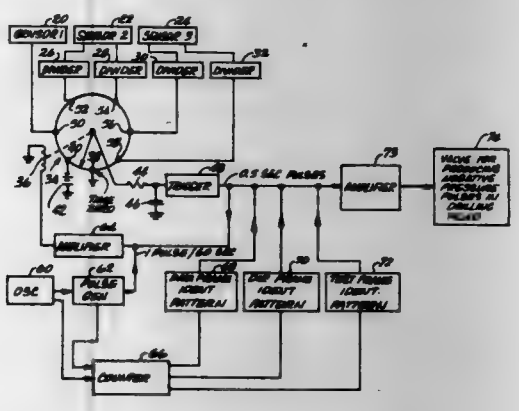
waves within the cylinder, said waves being transmitted from the interior of the cylinder to the interior of the cell by means of openings made in the walls, said waves causing movements of the sample similar to those encountered during natural earthquakes; a mechanical device functioning as a low pass filter and placed within the cylinder in the vicinity of the wall of the cell provided with the said openings, making it possible to eliminate the high frequency shock waves obtained by reflection within the cylinder, the mechanical device being constituted by studs screwed into the wall of the cell and by a plate located between two identical helical springs arranged round each of the studs, said plate havng no contact with the cylinder.

4,513,403

DATA ENCODING AND SYNCHRONIZATION FOR PULSE TELEMETRY

George W. Troy, Citrus Heights, Calif., assignor to Exploration Logging, Inc., Sacramento, Calif.

Filed Aug. 4, 1982, Ser. No. 405,063
Int. Cl.[3] G01V *1/40*; H04J *7/00*; G11B *5/09*
U.S. Cl. 367—83 19 Claims



1. Apparatus for encoding data in a pulse telemetry system comprising means for producing a train of encoded data pulses wherein the time intervals between pairs of successive data pulses constitute measurements of the magnitude of the data parameters, and means for producing redundant pulses at known time locations with respect to and between pairs of the data pulses, for enabling the telemetry system to distinguish data pulses from noise signals because of the known time relationship between the redundant pulses and the encoded data pulses.

8. A method of well logging by telemetering information in pressure pulses in the drilling fluid from the interior of a well to the surface comprising producing encoded data pulses wherein the time intervals between pulses constitute measurements of the magnitude of data measured in the well, producing redundant pulses at known times with respect to and between the data pulses, and producing pressure pulses in the drilling fluid in accordance with the occurrence of the data pulses and the redundant pulses.

4,513,404

ACOUSTIC REFLECTOMETER FOR SHEET FEED SENSING

Raymond W. Huggins, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

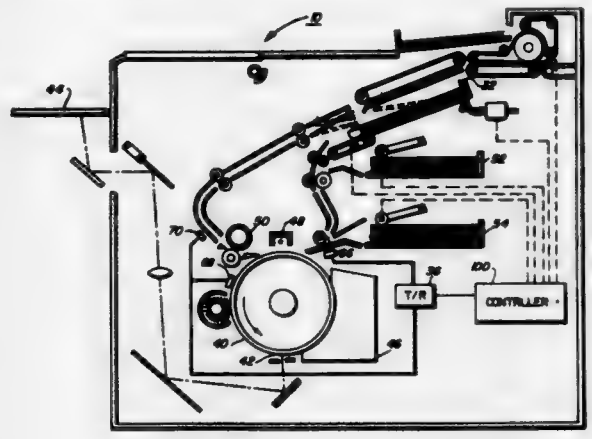
Filed Mar. 14, 1983, Ser. No. 474,914
Int. Cl.[3] G08B *21/00*
U.S. Cl. 367—93 11 Claims

1. In a sheet transport system for conveying a sheet along a path, a sheet sensor comprising

an elongated acoustic cavity, said cavity having a plurality of spaced ports, said ports being disposed along said path, the cavity comprising a transmitter portion having a plurality of orifices and a receiver portion having a plurality of orifices, each of the transmitter orifices being aligned with a receiver orifice, said aligned orifices providing said ports,

an acoustic transmitter attached to one end of the acoustic cavity for generating sound waves in the cavity, and

an acoustic receiver responsive to the sound generating



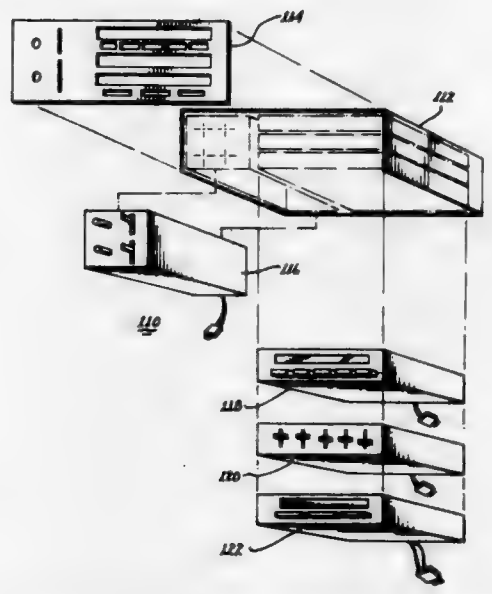
means for detecting changes in the sound waves at each of the ports in response to a sheet being present at the port wherein, in the absence of a sheet at a given port, a sound wave is transmitted from the transmitter through the transmitter orifice to the receiver orifice of the receiver portion of the acoustic cavity to the receiver.

4,513,405

AUTOMOTIVE SOUND SYSTEM

Joseph F. Hills, Scottsdale, Ariz., assignor to Jimmy's Radio & Television Corp., Phoenix, Ariz.

Filed Oct. 25, 1982, Ser. No. 436,575
Int. Cl.[3] H04B *1/20*
U.S. Cl. 369—12 16 Claims



1. A sound system for use in automobile dashboards which permits ab initio or subsequent selection of quality and complexity of electrical signal production through post manufacture addition, deletion or interchange of elements, said sound system comprising in combination:

(a) a chassis standardized in configuration and complying in size with the requirements and parameters attendant the dashboard of an automobile, said chassis including standardized mounting means for mounting said chassis without adaptation or modification in any of a plurality of automobiles having equivalent dashboard apertures;

(b) a plurality of discrete segregable electrical signal generating components secured within said chassis;

(c) means for in field adding, deleting and interchanging selected ones of said electrical signal generating components within said chassis;

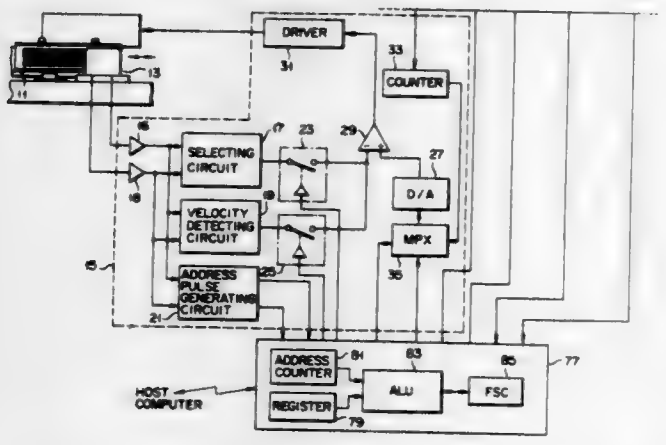
(d) means for electrically interconnecting within said chassis said electrical signal generating components; and
(e) a replaceable face plate for said chassis, said face plate being selectable from a group of equal sized face plates to be congruent with the components mounted within said chassis and comport with the dashboard aperture.

4,513,406

POSITIONING SERVO CIRCUIT FOR A DISK SYSTEM

Atsushi Ishihara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 30, 1982, Ser. No. 373,785
Claims priority, application Japan, May 1, 1981, 56-66472
Int. Cl.³ G11B 7/00
U.S. Cl. 369—32 **4 Claims**



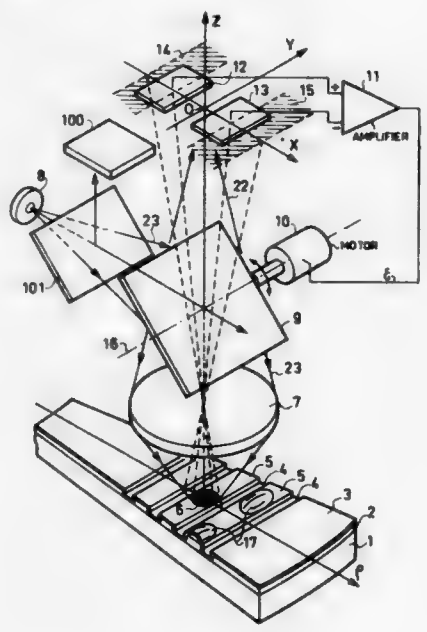
1. A device for recording data on and/or reading data from a disc having a recording area on which data can be recorded/-read in the form of tracks arranged in a spiral, comprising:
means for driving said disc;
a head for recording data on said disc and/or reproducing the data therefrom;
a movable mechanism for moving said head radially with respect to said disc;
a tracking servo circuit, connected to said head, for controlling said head to be positioned with respect to a desired one of said tracks for recording/reading data on/from said disc;
positioning servo means, connected to said movable mechanism, for controlling and driving said movable mechanism at the same velocity as a velocity at which said spiral data recording area is moved in the movement direction of said movable mechanism for controlling said head so as to accurately be aligned with respect to the desired track selected by said tracking servo circuit; and
means for controlling said positioning servo means and said tracking servo circuit;
wherein said positioning servo means comprises:
(a) a selecting circuit for receiving a detection signal from a detector which detects movement of said movable mechanism and for producing a position signal indicative of the position of said movable mechanism;
(b) a velocity detecting circuit, connected to said detector, for receiving the detection signal, for differentiating the detection signal, and for producing a velocity signal indicative thereof;
(c) an address pulse generator, connected to said detector, for generating address pulses for transmission to said controlling means in response to the detection signal;
(d) counting means for producing a reference position signal in response to a rotation synchronizing clock signal from said driving means;
(e) means for generating a differential signal between the position signal from said selecting circuit or the velocity signal from said velocity detecting circuit and the reference position signal from said counting means or a reference velocity signal from said controlling means; and
(f) driver means for driving said movable mechanism in response to the differential signal.

4,513,407

DEVICE FOR OPTICAL RECORDING AND READ-OUT OF DATA ALONG A PRERECORDED TRACK

Claude Bricot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 6, 1982, Ser. No. 395,307
Claims priority, application France, Jul. 17, 1981, 81 13979
Int. Cl.³ G11B 7/00, 21/10
U.S. Cl. 369—44 **11 Claims**



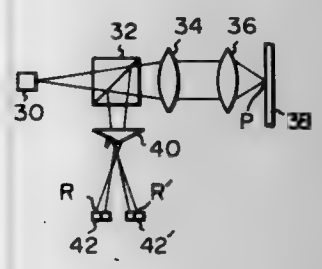
1. An optical device for recording and playback of information on and from an optical post recordable data carrier having a preformed pattern relief surface consisting of alternating track elements and lands to thereby define an optical track, said device comprising:
illuminating means for illuminating a scanned area of said track elements with spot illumination, said illuminating means being shiftable between centers of said track elements and said lands;
detecting means collecting radiation from said scanned surface area for detecting deviation of said spot illumination from said track elements and for generating a deviation signal in response to said detected deviation; and
control means operatively connected to said detecting means for receiving said deviation signal and for moving said spot illumination in response thereto to maintain tracking of said spot illumination on said track elements, and wherein
said illuminating means for (a) producing spot illumination on a center of a predetermined one of said lands to form overlapping regions with adjacent ones of said track elements, (b) producing spot illumination on a center of a predetermined one of said track elements to form overlapping regions with adjacent ones of said lands upon shifting of said illumination means from the center of said predetermined land to the center of said predetermined track element and (c) establishing a prerecording optical contrast having a predetermined sign when said spot illumination shifts from a center of said predetermined one of said track elements to the center of an adjacent one of said lands; and wherein
recording of said information produces a post recording optical contrast having said predetermined sign when said spot illumination is shifted from a post recorded area of one of said track elements to the adjacent land.

4,513,408

ERROR DETECTING SYSTEM OF VIDEO/AUDIO DISC PLAYER

Susumu Nomura, and Katsuharu Sato, both of Tokorozawa, Japan, assignors to Pioneer Video Corporation, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,244
Claims priority, application Japan, Jun. 5, 1981, 56-082958[U]
Int. Cl.[3] G11B *7/00*
U.S. Cl. 369—46 3 Claims



1. An optical information recording disc player in which an information recording disc optically carrying thereon video and/or audio information in the form of one or more circumferentially extending record tracks is rotated about the center axis thereof in the vicinity of an optical pick-up system, said pick-up system comprising:

optical means operative to emit a beam of light for tracing a target track of said record tracks and to produce a signal-carrying beam of light carrying thereon signals picked up from said record tracks during the rotation of the information recording disc;

beam-splitting means for splitting said signal-carrying beam of light into two component beam of light;

a first transducer element which is irradiated by one of said two component beams and has at least two discrete light-sensitive surfaces consisting of first and second light-sensitive surfaces which are separated from each other across a first junction line substantially parallel with a line tangent to said record tracks; and

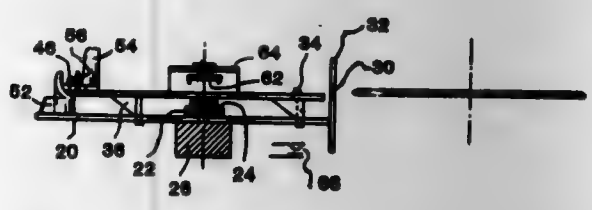
a second transducer element which is irradiated by the other component beam and has at least two discrete light-sensitive surfaces which are separated from each other by a second junction line substantially parallel with a line perpendicular to the record tracks.

4,513,409

HELICOIDAL LOADING AND UNLOADING MECHANISM FOR DISC PLAYER APPARATUS

Marcel J. Staar, Brussels, Belgium, assignor to Staar S. A., Belgium

Filed Dec. 29, 1982, Ser. No. 454,240
Claims priority, application Belgium, Dec. 29, 1981, 891649
Int. Cl.[3] G11B *25/04*
U.S. Cl. 369—77.1 28 Claims



1. A loading and unloading device for a slot type disc player comprising:

a frame having a horizontal slot for a disc;

disc drive means on said frame at a level below said slot and having a rotary axis;

a disc carrier plate independent of said disc drive means vertically movable from a first level adjacent said slot to receive or to eject a disc through said slot and a lower level below a disc position on said disc drive means; and

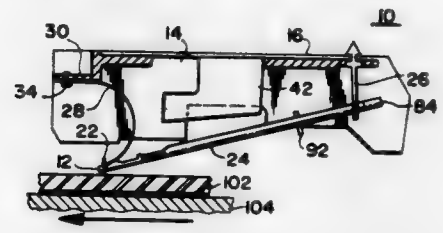
means mounting said disc carrier plate on said frame for simultaneous rotational and vertical movement providing helical movement between said levels about the axis of the disc drive means to transfer a disc between said disc carrier plate and said disc drive means.

4,513,410

PICKUP CARTRIDGE HAVING STYLUS HOLDER

David W. Fairbanks, Monmouth Junction, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 18, 1983, Ser. No. 476,908
Int. Cl.[3] G11B *3/44*
U.S. Cl. 369—126 12 Claims



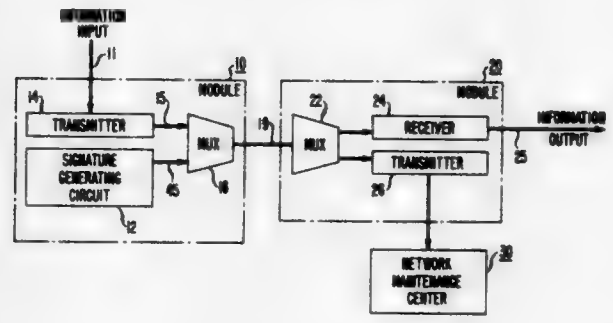
1. An elongated stylus holder for use with a flylead; said stylus holder having a stylus secured to one end thereof by inserting said stylus into said holder one end along a direction which is disposed at a non-perpendicular angle to the longitudinal axis of said holder; said one end of said holder being provided with a surface which is arranged substantially at right angles to said stylus insertion direction to facilitate said stylus insertion; said flylead having an end thereof attached to said holder-mounted stylus; said stylus holder having a raised portion adjacent to said one end of said stylus holder to guide said flylead away from said holder at a given angle when said flylead is secured to said stylus; said raised portion and said surface through which said stylus is inserted being disposed on the same side of said stylus holder; said stylus holder being dimensioned and shaped such that the resonance frequency of said stylus holder is disposed toward the upper end of the audible frequency range; wherein the disposition of the resonance frequency of said holder toward the upper end of the audible frequency range is achieved by providing a cutout in said holder on the same side thereof as said raised portion and said stylus insertion surface of said holder.

4,513,411

TRANSMISSION OF STATUS REPORT OF EQUIPMENT IN A DIGITAL TRANSMISSION NETWORK

Alexander G. Fraser, Bernardsville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 1, 1982, Ser. No. 413,606
Int. Cl.[3] H04J *3/14*
U.S. Cl. 370—13 11 Claims



1. Apparatus for use in the maintenance of a telecommunications network comprising

a first module for periodically transmitting a plurality of signatures for identifying equipment used in said network,

a second module at a maintenance center for receiving said signatures,

said first module comprising

means for transmitting a first stream comprising a plurality of frames of information bits,

means for periodically generating a plurality of bits representing said signature for said equipment located at said first module, and

in response to a first clock signal means for sequentially multiplexing one of said signature bits with one of said frames of said first information bit stream to derive a second bit stream.

4,513,412

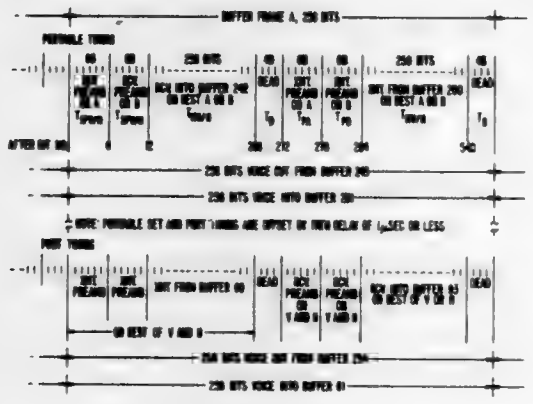
TIME DIVISION ADAPTIVE RETRANSMISSION TECHNIQUE FOR PORTABLE RADIO TELEPHONES

Donald C. Cox, Tinton Falls, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 25, 1983, Ser. No. 488,397

Int. Cl.³ H04B 7/02

U.S. Cl. 370—29 **17 Claims**



1. A portable transceiver comprising:

a controller capable or providing control signals during predetermined time periods of a time division sequence;

a transmitter capable of transmitting a digital preamble signal during a first and a second time slot of the time division sequence and a digital message signal during a third time slot of said time division sequence in response to control signals from the controller;

a receiver capable of receiving from a remote location a digital preamble signal during a fourth and a fifth time slot of said time division sequence and a digital message signal during a sixth time slot of said time division sequence and determining from said received preamble signals during the fourth and fifth time slots which includes the stronger signal;

a first and second spaced-apart antenna oriented substantially orthogonal to each other; and

means responsive to control signals from the controller for switching the transmitter to the first and second antenna during said first and second time slots, respectively, and to the antenna determined by the receiver to have received the stronger preamble signal during the fourth and fifth time slot of an immediately prior time division sequence during the third time slot and for switching the receiver to the first and second antenna during the fourth and fifth time slot, respectively, and to the antenna providing the stronger signal in the fourth and fifth time slot during the sixth time slot of said time division sequence.

4,513,413

COMMUNICATION SET AND METHOD

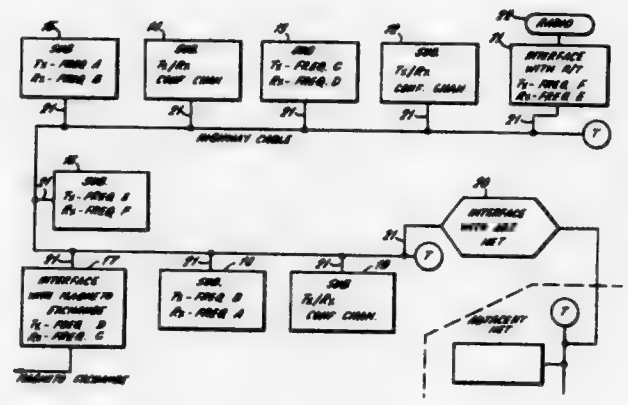
Anthony G. Gorman, Ruislip; Peter L. Smith, Prestwood, and Paul Q. Barrett, Hemel Hempstead, all of England, assignors to Racal Acoustics Limited, England

Filed Nov. 2, 1982, Ser. No. 438,450

Claims priority, application United Kingdom, Nov. 4, 1981, 8133303

Int. Cl.³ H04J 1/06

U.S. Cl. 370—30 **10 Claims**



1. A communication method for providing duplex communication between a plurality of pairs of stations on a single wire pair highway by frequency division multiplexing, each station having a station-identifying call code, the highway being assigned a plurality of pairs of frequencies for communication thereover, each pair of frequencies including a go frequency and a return frequency, said method comprising:

maintaining all presently non-communicating stations in a quiescent mode in which each monitors the highway for alert signals;

activating a quiescent station desiring to transmit information as a caller station to a called station by having such caller station monitor frequency pairs on the highway to select a pair of presently unused frequencies and, upon selecting such a pair of frequencies, to apply an alert signal and the go frequency of the selected pair of frequencies to the highway, the go frequency being modulated by the call code of the called station;

activating all quiescent stations in response to receipt thereby of the alert signal for monitoring of call codes on the go frequency of the selected pair of frequencies;

initiating transmission on the highway, by that station which was activated by the alert signal and which corresponds to the call code, of the return frequency of the selected pair of frequencies, while returning all noncalled stations which were activated by the alert signal to the quiescent condition; and

activating the caller station in response to receipt by it of the return frequency of the selected pair of frequencies to transmit on the highway the go frequency of the selected pair of frequencies modulated by the information to be transmitted.

4,513,414

CLOCKING ARRANGEMENT FOR TELEPHONE SWITCHING SYSTEM

Paul H. Knapke, Columbus, and Robert L. Miller, Westerville, both of Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,930

Int. Cl.³ H04J 3/14

U.S. Cl. 370—58 **28 Claims**

1. In a telephone switching system,

a first line clock having a given frequency;

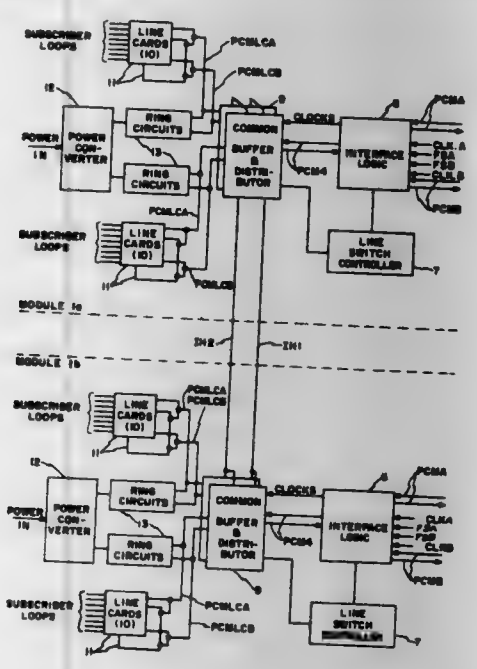
a second line clock having said given frequency;

first clock signal means for deriving a first clock from said first line clock;

second clock signal means for deriving a second clock from said second line clock;

first selector means coupled to said first and second clock signal means for selecting one of said first and second clock as a clock output in response to first control signals;

failure detecting means for detecting failures in said first and second line clocks and for providing signals indicating a failure; and



a microprocessor coupled to said first selector means for providing said first control signals to select said one of said first and second clocks, said microprocessor being coupled to said failure detecting means and responsive to said failure detecting means indicting a failure in said selected one clock for generating second control signals to cause said first selector means to select the other one of said first and second clocks as said clock output.

4,513,415

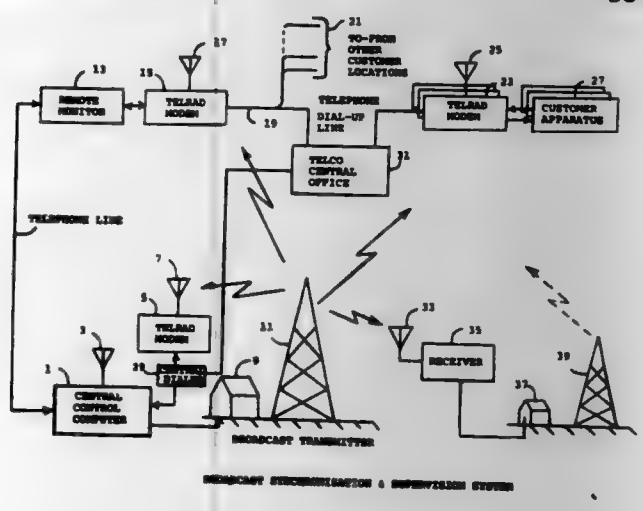
BROADCAST SYNCHRONIZATION AND SUPERVISION SYSTEM

Louis Martinez, Carson, Calif., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 87,543, Oct. 23, 1979, Pat. No. 4,322,842. This application Mar. 30, 1982, Ser. No. 363,613

Int. Cl.³ H04J *3/06, 3/12*

U.S. Cl. 370—92 **56 Claims**



1. A broadcast system for enabling independent communication with a plurality of remote locations comprising

broadcast station transmitter means for broadcasting normal program material

central control means at a central location for generating digital address and control signals

means coupled to said central control means and said broadcast station transmitter means for causing the broadcasting of said digital address and control signals with said normal program material in a manner so as to be substantially noninterfering with the reception of the normal program material

a plurality of remote receivers for receiving and detecting said digital address and control signals broadcast by said broadcast station transmitter, each said receiver having a preassigned address and including address detection means for determining the coincidence between a broadcast address and the preassigned address of the respective receiver, and

enabling means associated with each of said receivers and responsive to said address detecting means therein to enable the establishment of an independent bidirectional communication link between said remote location and said central location.

4,513,416

SYSTEM FOR ADJUSTING A TIME AXIS BY USING A CONTROL AND AN ADJUSTMENT TIME SLOT IN A SATELLITE STATION OF A TDMA NETWORK

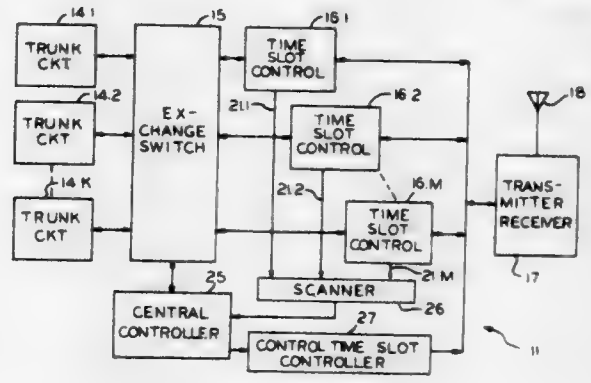
Ryuhei Fujiwara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,677

Claims priority, application Japan, Mar. 10, 1982, 57-36654

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—100 **4 Claims**



1. A time axis adjusting system for use in a radio communication network in which time division multiple access communication is carried out between a central station and a plurality of satellite stations by the use of signals sent in first frames and received in second frames at said central station, each of said first and said second frames comprising a predetermined number of consecutive speech time slots each having a common time slot length, said consecutive time slots being identified by consecutive number codes, each first frame further comprising a control time slot including a frame synchronization code as a part of said signals, said satellite stations comprising time axis generating means for generating time axes specific thereto, said generated time axis being for defining local time slots in which signals are sent to be received at said central station in said second frames from those of said satellite stations which are carrying out the time division multiple access communication, wherein said central station comprises:

first central station means for checking whether or not more than a preselected number of the speech time slots are idle time slots in each of said first and said second frames and for assigning one of said idle time slots in one each of said first and said second frames to one of said satellite stations as an adjustment time slot for use in adjusting the time axis specific to said one of the satellite stations; and

second central station means coupled to said first central station means for transmitting a number code in said con-

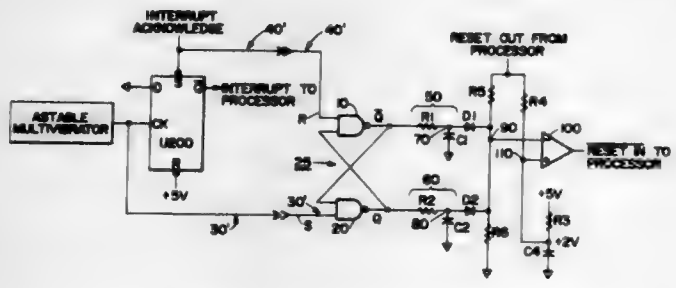
trol time slot, said number code being representative of the number given to said adjustment time slot.

4,513,417

AUTOMATIC PROCESSOR RESTART CIRCUIT

James S. Lamb, Portland, and Warren K. Wimmer, Tigard, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 29, 1982, Ser. No. 445,342
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—12 **3 Claims**



1. A processor restart circuit that monitors a regularly serviced processor signal and automatically provides a reset signal to a processor when the frequency of said regularly serviced processor signal changes, said restart circuit comprising:

flip-flop means coupled to receive the regularly serviced processor signal for providing an output signal having a duty cycle proportional to the frequency of the regularly serviced processor signal;

low-pass filter means having an input coupled to an output of said flip-flop means, and an output for providing a voltage proportional to the average value of said output signal of said flip-flop means;

reference means for providing a reference voltage against which the low-pass filter means output may be compared;

a comparator having a first input coupled to said output of said low-pass filter means, a second input coupled to said reference means to receive said reference voltage, and an output to provide the reset signal to said processor;

first reset input means having a first resistor, one end of said first resistor being coupled to said first input of said comparator and the other end being coupled to receive a reset configuration signal from the processor for providing hysteresis for the comparator inputs; and

second reset input means having a second resistor, one of said resistor being coupled to said second input of said comparator and the other end of said second resistor being coupled to receive a reset configuration from the processor for terminating the reset signal to the processor.

4,513,418

SIMULTANEOUS SELF-TESTING SYSTEM

Paul H. Bardell, Jr., Carmel, and William H. McAnney, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

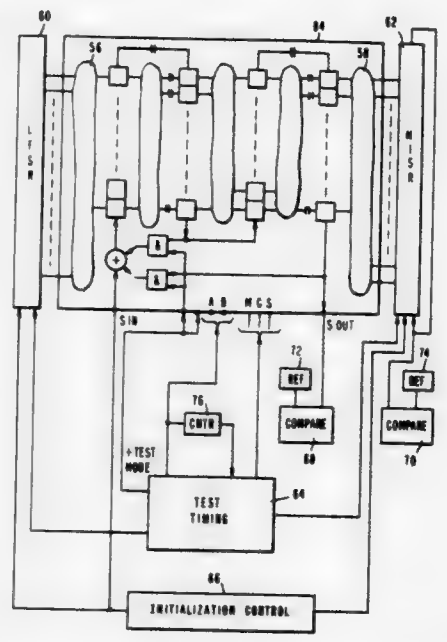
Filed Nov. 8, 1982, Ser. No. 440,070
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—25 **2 Claims**

1. In a combinational and sequential logic circuit with memory circuits on individual logic units coupled together to form a shift register scan path for testing logic circuits and uncoupled to disable the scan path while the logic circuit is performing its designed logic function, a method for performing self-testing using a multistage generator means to generate testing sequences for the self-testing and multistage data compression means to compress the responses of the logic circuits comprising:

(a) forming the shift register scan path on the logic unit into a single linear feedback shift register means capable of forming multistage random signal generator means for a multistage data compression means,

(b) shifting data through said linear feedback shift register means to transmit the data as a test input from memory circuits of said linear feedback shift register means and simultaneously capture the response to the shifted data in the same memory circuits of said linear feedback shift register means;

(c) using the captured response to the shifted data as a further test input transmitted from said memory circuits of



said linear feedback shift register means and capturing the response to said further test input in the same memory circuits;

(d) repeat step (c) n times;

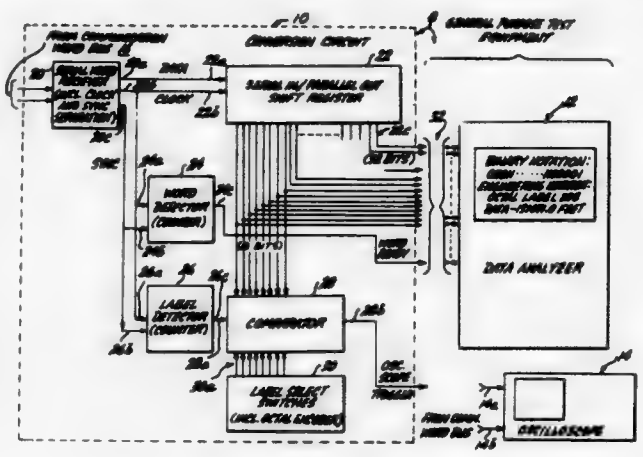
(e) reading the contents of said linear feedback means out of said scan path after step (d) as the test result.

4,513,419

DIGITAL CONVERSION CIRCUIT AND METHOD FOR TESTING DIGITAL INFORMATION TRANSFER SYSTEMS BASED ON SERIAL BIT COMMUNICATION WORDS

Vincent J. Small, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 25, 1982, Ser. No. 436,427
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—29 **8 Claims**



1. In an apparatus for testing systems that communicate by transmission and reception of electrical communication words having a predetermined, binary encoded, serial bit format in which successive words are separated by a predetermined synchronizing time gap, a circuit for receiving and reformating said communication words for facilitating analysis thereof, comprising:

signal receiving means having an input adapted to receive said communication words and including means for separating and outputting a serial data signal component and a

clock signal component, said clock signal component representing a bit rate of said serial data signal component, and wherein said signal receiving means further includes means for detecting and separately outputting a sync signal component representing said synchronizing time gap between successive communication words;

serial to parallel shift register means having a serial data input connected to said receiving means to receive said serial data signal component and said clock signal component, and having a plurality of parallel data outputs, one for each serial bit in said communication words, said serial to parallel shift register means further having a register section associated with a predetermined first subset of bits of said communication word and having means for reversing the serial order in said register section such that the corresponding parallel outputs present said first subset of data bits in a reverse order with respect to the order in which they are received by said serial to parallel shift register means; and

word detector means having an input connected to said signal receiving means and including clock signal counting means for receiving and counting said clock signal component, said word detector means producing a word loaded signal in response to said counting means accumulating a predetermined count corresponding to the number of serial bits in said communication word, and wherein said counting means of said word detector means is connected to receive said sync signal component and is provided with count reset means that resets said counting means in response to said sync signal component, whereby the occurrence of said word loaded signal represents the condition of said shift register means in which said plurality of parallel outputs, including those corresponding to said register section containing the reversed ordered first subset of data bits, are ready with the reformatted, parallel data, communication word.

4,513,420

ERROR DETECTING SYSTEM

Donald A. Collins, Easley, and Thomas B. O'Hanlan, Liberty, both of S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 22, 1982, Ser. No. 443,809
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 **1 Claim**

1. A computer memory system comprising;

a main processor device for receiving a plurality of data words to be stored in memory;

a large capacity dynamic random access memory with a refresh cycle for storing a plurality of data words received from said main processor device;

a small capacity static random access memory separate from said large capacity memory for storing a plurality of 15 bit error correction codes;

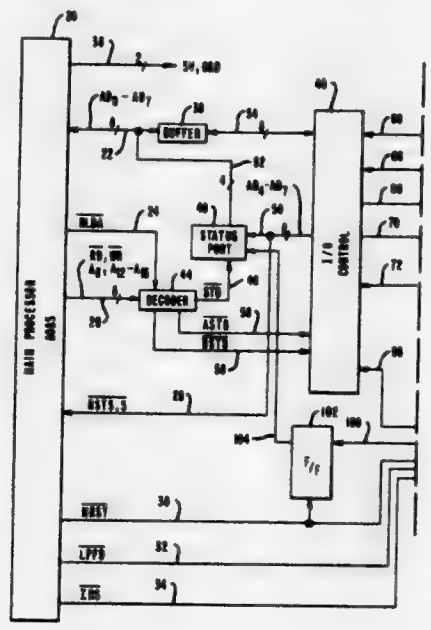
battery means connected to said static random access memory for operating said static memory when a system power failure occurs;

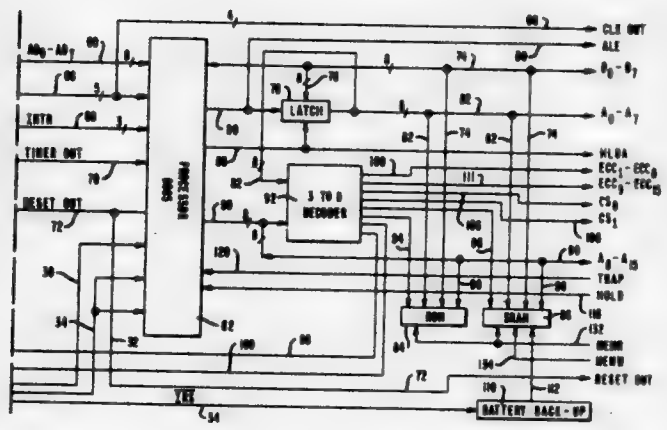
a control processor connected to said main processor and said large capacity memory for transferring data words between the main processor and the large memory;

a dynamic shift register circuit including a plurality of Exclusive OR circuits representing the terms of a polynomial which is divided into a data word shifted into said circuit to generate a multi-bit remainder comprising an error correction code for the data word;

a DMA controller connected to said control processor and said shift register circuit for simultaneously loading the same data word being written into and read from said large capacity memory into said shift register circuit enabling said register circuit to generate a first 15 bit error correction code for each data word being written into the large capacity memory and a second error correction code for the same data word when read from the large capacity memory, said first error correction code being stored in said small capacity memory at the same address as the address of its corresponding data word is stored in the large capacity memory;

address generating means connected to said large capacity memory and said small capacity memory for generating an address used in storing a data word in said large capacity memory and its corresponding error correcting code in said small capacity memory;





and said control processor being further connected to said small capacity memory and said shift register circuit for comparing the first and second error correction codes for each data word stored in said large capacity memory for detecting an error in a data word when the error correction codes do not match.

4,513,421

PERIPHERAL GAIN SUPPRESSION IN A LASER MEDIUM

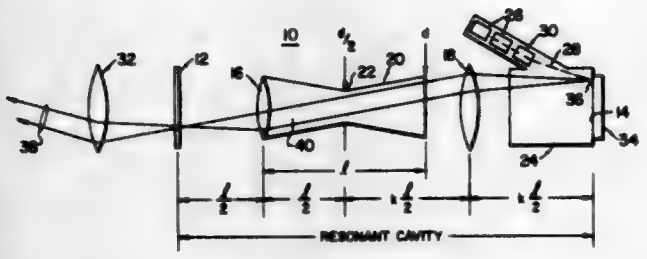
Albert B. Welch, Dallas, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Jul. 6, 1982, Ser. No. 395,847
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—24 **15 Claims**

1. An apparatus for generating a scanning laser beam comprising:

An active laser medium; means for pumping said laser medium in a resonant cavity to build a population inversion, said resonant cavity including a control reflector having a reflective surface with a fixed uniformly reflecting pattern of material disposed on the reflective surface of said control reflector and having a fixed reflectance so as to sustain optical oscillations at a first population inversion level providing a generally uniform population inversion in said laser medium, and a second pattern of material also disposed on the reflective surface of said control reflector

having a reflectance-transmissive state transition responsive to an external stimulation; and means for generating said external stimulation resulting in a selected pattern



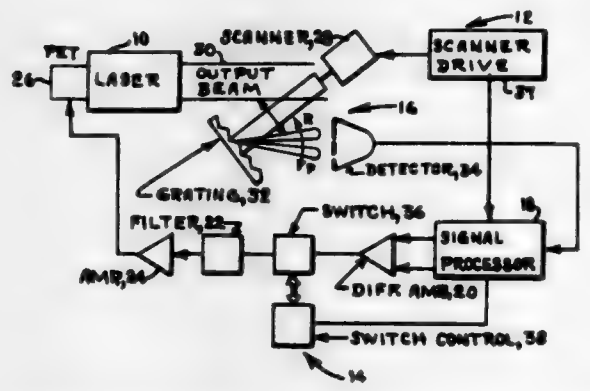
being formed on said reflective surface producing a reflectance state which maintains optical oscillations at a second population inversion level in said laser medium.

4,513,422

CO_2 LASER STABILIZATION AND SWITCHING

Neal E. Buholz, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 14, 1983, Ser. No. 504,353
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—29 **9 Claims**



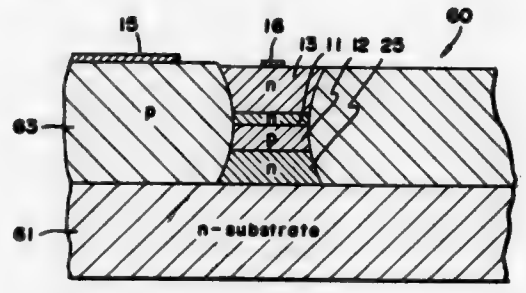
1. A laser stabilization and switching circuit comprising:
a laser for outputting a radiant energy carrier beam having therein a plurality of lines;
scanning means for extracting a portion of said carrier beam, said portion forming a detector beam that is reciprocally rotated by said scanning means;
detecting means for receiving said detector beam, said detecting means separating said detector beam having said plurality of lines therein into separate line beams, said detecting means outputting a power signal from each of said line beams;
a signal processor for outputting a plurality of line beam signals in parallel, said signal processor receiving said power signals and a scanning signal from said scanning means, the difference between each line beam signal indicating a difference in power between each of said plurality of lines in said radiant energy carrier beam from said laser for purposes of negative feedback control;
a differential amplifier, said differential amplifier receiving said plurality of line beam signals from said signal processor and outputting a feedback correction signal;
switching means for causing said laser to change operating points, said switching means receiving said feedback correction signal from said differential amplifier, said switching means outputting a stabilize/switch signal;
filter means for removing undesired frequencies from said stabilize/switch signal and outputting a filtered signal;
amplifying means for receiving said filtered signal and outputting an amplified signal; and
means for changing the operating point of said laser, said means for changing receiving said amplified signal from said amplifying means whereby said laser switches operating points in a predetermined manner and outputs said carrier beam having a different plurality of lines therein.

4,513,423

ARRANGEMENT FOR DAMPING THE RESONANCE IN A LASER DIODE

Joseph Katz, Pasadena; Amnon Yariv, San Marino, and Shlomo Margalit, South Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 4, 1982, Ser. No. 385,220
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—50 **16 Claims**



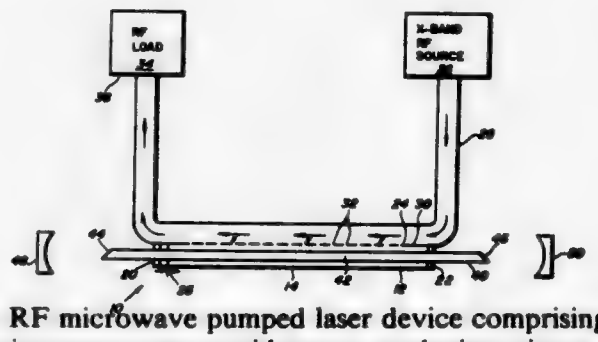
1. In a structure of an injection laser diode, an improvement comprising:
first, second, third and fourth layers of semiconductor material grown one upon the other, each of preselected properties, said second layer comprising the active region of said laser diode with said first and third layers on opposite sides of said second layer representing the diode's cladding layers, said first and second layers together forming an emitter of a bipolar transistor, said third layer forming the base and said fourth layer forming the transistor collector;
a laser diode driving source connected between said first and third layers respectively; and
impedance means comprising capacitance for providing an impedance which is not greater than a preselected value connected between said third and fourth layers when said laser is driven by said driving source with signals of a frequency not less than a preselected frequency.

4,513,424

LASER PUMPED BY X-BAND MICROWAVES

Ronald W. Waynant, 13101 Claxton Dr., Laurel, Md. 20708; Leonard Epp, Box 192, Gallant-Green Rd., Waldorf, Md. 20601, and Clad P. Christensen, Jr., 2233 Arlington Ter., Alexandria, Va. 22303

Filed Sep. 21, 1982, Ser. No. 420,990
Int. Cl.³ H01S *3/09, 3/23*
U.S. Cl. 372—68 **5 Claims**



1. In an RF microwave pumped laser device comprising:
an RF microwave source, said source producing microwave output radiation in the frequency range of 8 to 12 GHz;
cavity means resonant at the frequency of said microwave

output radiation of said source for receiving said microwave radiation and for producing a standing wave pattern therein in response thereto;

waveguide means for transmitting said microwave radiation from said source to said cavity means;

coupling means for coupling said microwave radiation from said waveguide means into said cavity means, said coupling means including a coupling plate forming a common wall between a portion of said waveguide means and a portion of said cavity means, said coupling plate including a plurality of openings therein through which said microwave radiation passes;

a plurality of laser tubes each containing a laser medium different from that contained in the remainder of said plurality of laser tubes, at least a portion of each of said plurality of laser tubes being located within said cavity means, each laser medium within each of said plurality of laser tubes being excited by said standing wave pattern; and

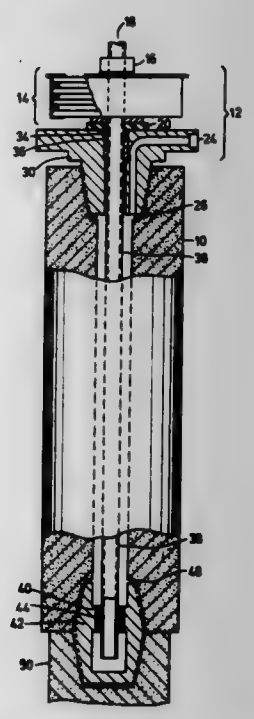
feedback means associated with said laser tubes for receiving optical radiation produced by said excited lasing mediums and for redirecting said optical radiation back into said lasing mediums.

4,513,425

COMPOSITE ELECTRODE FOR ARC FURNACE

Berch Y. Karagoz, Grand Island; Martin M. Turban, Lewiston; Lyman T. Moore, Niagara Falls, and Mark D. Travers, Ransomville, all of N.Y., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,266
Int. Cl.[3] H05B *7/06*
U.S. Cl. 373—88 **13 Claims**



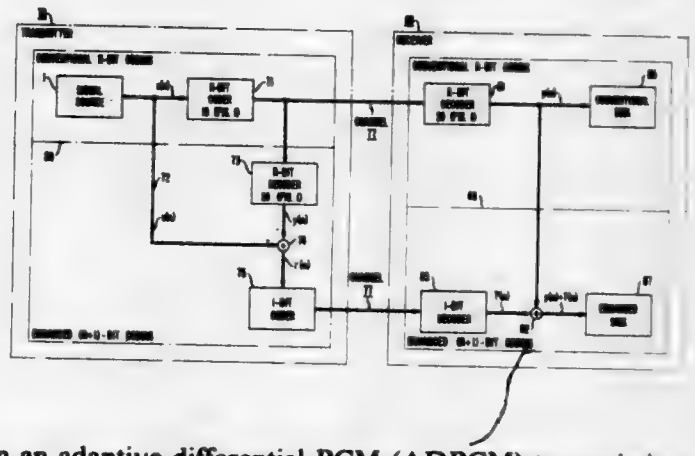
1. A water-cooled composite tubular electric furnace electrode having a hollow graphite body component with a central bore having a coolant supply pipe therein attached to a header assembly at one end, a hollow nipple at the other end, said coolant supply pipe utilized to create a compressive force on said electrode by tension between said header and said nipple prestressing said graphite body component.

4,513,426

ADAPTIVE DIFFERENTIAL PULSE CODE MODULATION

Nuggehally S. Jayant, Short Hills, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 20, 1982, Ser. No. 451,487
Int. Cl.[3] H04B *12/04*
U.S. Cl. 375—26 **2 Claims**



1. In an adaptive differential PCM (ADPCM) transmission terminal wherein an input source signal is converted into a quantized differential PCM output signal,

a difference circuit to which samples of the input signal and a signal estimate of the same are coupled, said difference circuit providing an output difference signal indicative of the difference between the two inputs thereto,

an integrator means for producing said signal estimate,

adaptive quantizing and encoding means for receiving said difference signal and providing at its output a quantized differential PCM encoded version of the difference signal, said differential PCM coded output comprising R-bit DPCM signals,

means for carrying out a noninstantaneous, explicit and separate coding of quantization noise comprising at the transmission terminal

means for reconstructing a replica of said source signal from its quantized differentially encoded version,

means for subtracting the replica of said source signal formed by the reconstructing means from said source signal to obtain a quantization noise error signal,

buffer means for storing a predetermined number N of R-bit DPCM signals,

average coder means for digitally coding samples of said quantization noise error signal into R-bits per sample, one bit per sample, or zero bits per sample such that the total number bits over a predetermined number of samples N is the same as said predetermined number N, and

allocation logic means responsive to said R-bit signals stored in said buffer means at a given time to control said average coder means to encode each maximum level noise error sample into an R-bit code, each minimum level noise error sample corresponding to granular noise into zero bits per sample, and all other noise error samples into a single bit.

4,513,427

DATA AND CLOCK RECOVERY SYSTEM FOR DATA COMMUNICATION CONTROLLER

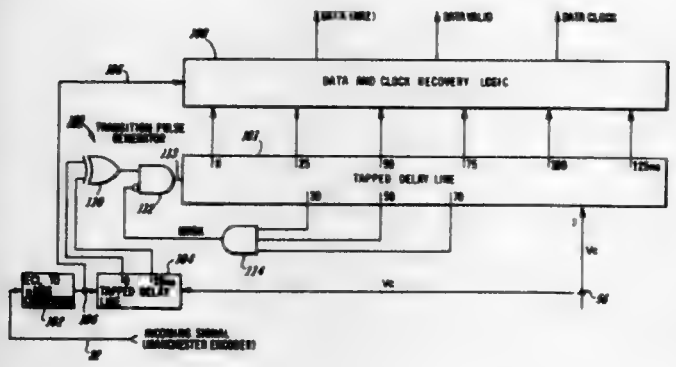
Gaetano Borriello; Richard F. Lyon, and Alan G. Bell, all of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1982, Ser. No. 412,637
Int. Cl.[3] H04L *7/06*
U.S. Cl. 375—110 **8 Claims**

1. A data and clock recovery system for recovery of phase encoded data from a data packet received by a data communication controller, said data packet including a plurality of data bit cells with one portion of each bit cell representing a logical complement of the bit value encoded and the other portion of each bit cell representing the bit value encoded whereby some transitions in a stream of said data bit cells represent one of two

bit values while others represent between bit transitions, said system comprising

delay means including a plurality of delay stages to apply a predetermined amount of unit delay to all of said transitions to generate a transition pulse for every transition in said data packet,



means to develop a mask from said transition pulses representative of the time occurrence of said between bit transitions,

means to apply said mask to said data packet whereby said encoded bit values are recovered therefrom, and

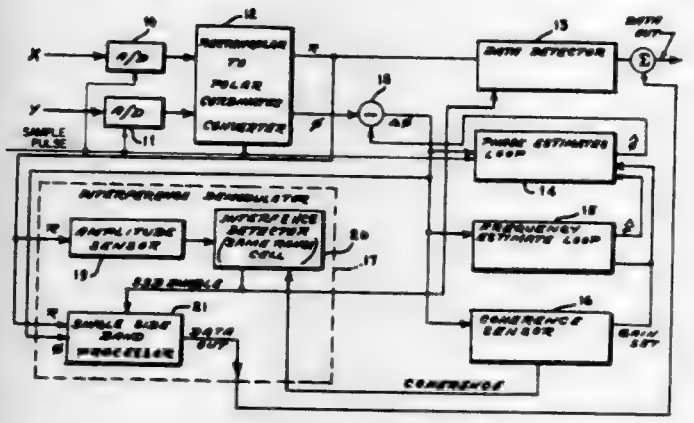
means to calibrate said delay means to ensure that each of said delay stages continuously impose said predetermined unit delay per stage.

4,513,428

SIMULTANEOUS DETECTION OF TIME COINCIDENT SIGNALS IN AN ADAPTIVE DOPPLER TRACKER

Allan W. Roeder, Whitesboro, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 3, 1981, Ser. No. 329,557
Int. Cl.³ H03D *13/00*
U.S. Cl. 375—120 **14 Claims**



1. In a communications system, a digital adaptive doppler tracker, including a sample data phase locked loop and a circuit for detecting and demodulating interfering signals: said sample data phase locked loop comprising:

rectangular to polar coordinate conversion means receiving digitized bipolar X, Y in-phase and quadrature input signals and outputting polar digital signals R, ϕ,

subtractor means subtracting a phase estimate signal ϕ from said phase signal ϕ to provide a phase error signal ϕE,

a coherence sensor receiving said phase error signal ϕ_E, and providing the coherence function $C_{(i+1)}=C_{(i)}-f(\phi_E)$, $f(\phi_E)$ being a function of phase estimate signal ϕ, said coherence sensor developing signals indicating coherence and non-coherence conditions and bandwidth control signals,

a frequency estimate loop receiving said phase error signal ϕ_E and said bandwidth control signal and providing the frequency function $F_{(i+1)}=\phi_{E(i)}\cdot K_2+F_{(i)}$,

a phase estimate loop receiving said phase error signal ϕE, said bandwidth control signal and said frequency function and providing the phase function $\phi_{(i+1)}=\phi_{E(i)}\cdot K_1+\phi_{(i)}+F_{(i)}$, K_1 and K_2 being values selected as a function of coherence function C, and

data detection means receiving polar digital signal R, phase estimate signal ϕ and the phase function output of said phase estimate loop and providing an output $D_o=R\cos\phi_E$ therefrom; and, said circuit for detecting and demodulating interfering signals comprising,

an amplitude sensor receiving polar amplitude signals R from said rectangular to polar coordinate conversion means and generating a strong signal output in response to interfering input signals,

an SSB processor receiving said phase error signal and the outputs of said rectangular to polar coordinate conversion means, and

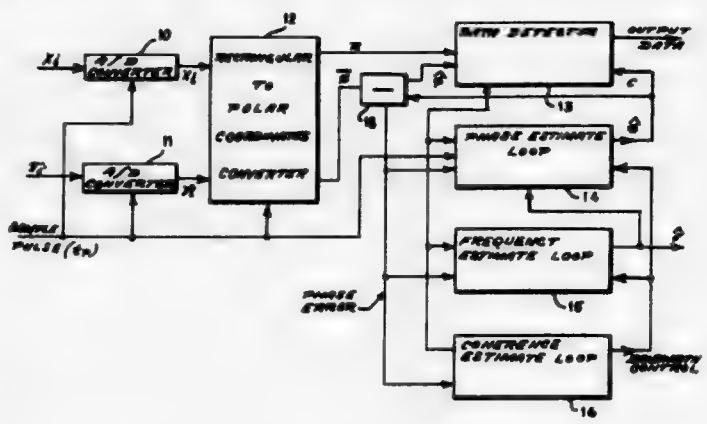
an interference detector receiving said strong signal from said amplitude sensor and signals indicating coherence and non-coherence from said coherence sensor and generating an SSB enable signal in response to the coincidence of said strong signal and a non-coherence condition signal, said SSB enable signal being applied to enable said SSB processor and disable said data detection means.

4,513,429

SAMPLE DATA PHASE LOCKED LOOP FOR ADAPTIVE DOPPLER TRACKER

Allan W. Roeder, Whitesboro, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 3, 1981, Ser. No. 329,558
Int. Cl.³ H03D *13/00*
U.S. Cl. 375—120 **12 Claims**



1. In a communications system a digital adaptive doppler tracker operating in response to system control signals, said adaptive doppler tracker including a sample data phase locked loop, said sample data phase locked loop comprising

rectangular to polar coordinate conversion means receiving digitized bipolar X, Y inphase and quadrature input signals and outputting polar digital signals R, $\hat{\phi}$,

subtractor means subtracting a phase estimate signal ϕ from said phase signal $\hat{\phi}$ to provide a phase error signal ϕ_E,

a coherence estimate loop receiving said phase error signal ϕ_E and providing the coherence function, $\hat{C}_{(i+1)}=\hat{C}_{(i)}-f(\phi_E)$, $f(\phi_E)$ being a function of phase error., said coherence estimate loop developing a bandwidth control output signal,

a frequency estimate loop receiving said phase error signal ϕ_E and said bandwidth control signal and providing the frequency function, $\hat{F}_{(i+1)}=\phi_{E(i)}\cdot K_2+\hat{F}_{(i)}$,

a phase estimate loop receiving said phase error signal ϕ_E said bandwidth control signal and said frequency function $\hat{F}$ and providing the phase function $\phi_{(i+1)}=\phi_{E(i)}\cdot K_1+\hat{\phi}_{(i)}+\hat{F}_{(i)}$ the values of K_1 and K_2 being selected as a function of coherence function $\hat{C}$, and

data detection means receiving polar digital signal R, phase estimate signal $\hat{\phi}$ and the phase function output of said

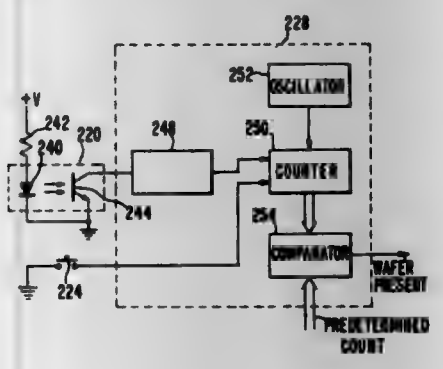
phase estimate loop and providing an output $D_o = R \cos \phi_E$ therefrom.

4,513,430

MISSING OR BROKEN WAFER SENSOR

Mahasukh Vora, and Rajender Malhotra, both of Beverly, Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 24, 1982, Ser. No. 381,290
Int. Cl.³ G01B *11/04*; G04F *10/04*
U.S. Cl. 377—39 **6 Claims**



1. Apparatus for detecting a condition wherein a wafer in a wafer transfer mechanism is missing or broken, said apparatus comprising:

transfer means for moving said wafer from a first position along a prescribed path to a second position;

oscillator means;

counter means having a count input coupled to the output of said oscillator;

first sensing means for sensing movement of said transfer means from said first position along said prescribed path and for thereupon enabling said counter means;

second sensing means for non-contact sensing of said wafer in said transfer means at an intermediate position along said prescribed path without interrupting the movement of said wafer and for thereupon inhibiting said counter means, said second sensing means comprising a light emitting element having a beam directed laterally across said prescribed path and a photosensor directed laterally across said prescribed path and positioned to receive said beam; and

comparator means for comparing the accumulated count in said counter means with a predetermined count representing the presence of a non-broken wafer and for providing an output signal of a first state when the accumulated count equals the predetermined count and of a second state when the accumulated count and the predetermined count are not equal,

said second state of said comparator output signal representing said condition wherein said wafer is broken or missing.

4,513,431

CHARGE COUPLED DEVICE OUTPUT CIRCUIT STRUCTURE

Savvas G. Chamberlain, Waterloo, Canada, and Eugene S. Schlig, Somers, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,587
Int. Cl.³ G11C *19/28*; H01L *29/78*
U.S. Cl. 377—60 **6 Claims**

1. An output circuit arrangement for operating a charge coupled device structure,

said structure comprising

a semiconductor substrate of one conductivity type,

a layer of semiconductor material of another type implanted on said substrate,

one deposit of enhanced semiconductor material of said other type diffused into said layer to form a floating diffusion,

another deposit of said enhanced semiconductor material diffused into said layer at a location spaced apart from the location of said one deposit to form a drain diffusion,

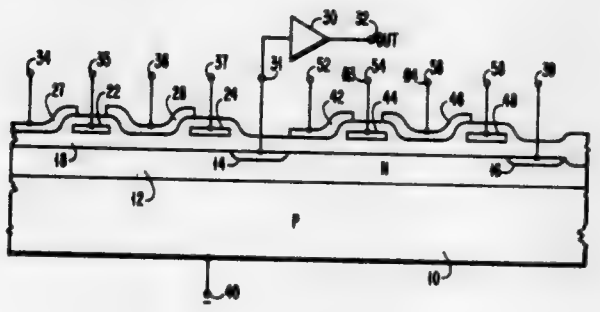
an output signal terminal electrically connected to said floating diffusion,

a return potential terminal electrically connected to said drain diffusion,

a multiple of at least two electrodes formed above said layer and spaced apart in succession preceding said one deposit,

a multiple of at least three electrodes formed above said layer and spaced apart in succession between said deposits with each electrode having an electric circuit terminal,

a layer of insulating material between said electrodes and said layer of implanted material,



an output potential translating circuit having an input terminal connected to said output terminal and having a circuit output terminal,

a source of first clocking wave connected to the first appearing electrode of said at least two electrodes preceding said floating diffusion and to the intermediate electrode of said multiple of electrodes succeeding said floating electrode,

circuitry for applying a second reset wave of pulse energy to the first of said multiple of at least three electrodes succeeding said floating diffusion, and

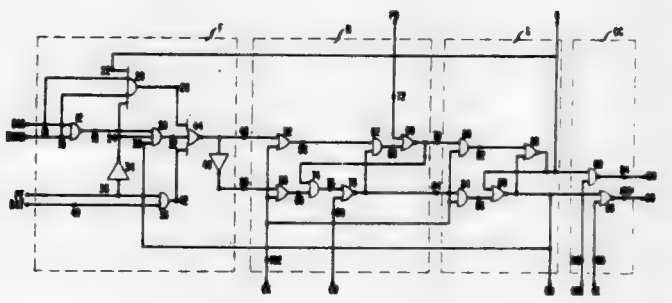
circuitry for applying set pulse energy to the second of the last of said at least two electrodes preceding said floating diffusion, and to the last of said multiple of at least three electrodes succeeding said floating diffusion.

4,513,432

MULTIPLE SELF-CONTAINED LOGIC GATE COUNTER CIRCUIT

Surender K. Gulati, Catasauqua, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 30, 1982, Ser. No. 393,544
Int. Cl.³ H03K *21/06, 21/10, 23/08*
U.S. Cl. 377—121 **8 Claims**



1. Circuitry comprising:

a plurality of interconnected essentially identical stages in which each stage, with the possible exception of the first and last stages, comprises:

a memory circuit having a first input terminal, a second input clock terminal which is for coupling to a source of clock signals, and a first output terminal which is characterized by being at a logic state determined by the memory circuit;

feedback circuit means having a first input feedback terminal coupled to the memory circuit output terminal, a second input inhibit terminal, and an output terminal coupled to the first input terminal of the memory circuit; and

carry circuit means having first and second input terminals and a first output terminal;

the first input terminal of the carry circuit means being coupled to the first output terminal of the memory circuit;

the second input terminal of the carry circuit means being coupled to the second inhibit input terminal of the feedback circuit means and being coupled to the first output terminal of the carry circuit means of a preceding stage if same exists;

the carry circuit means of each stage being characterized by generating a signal which selectively inhibits the memory circuit of a subsequent stage from changing the logic state of the output terminal thereof such that the circuitry performs a counting function.

4,513,433

FLUOROSCOPY APPARATUS FOR FORMING LAYER IMAGES OF A THREE-DIMENSIONAL OBJECT

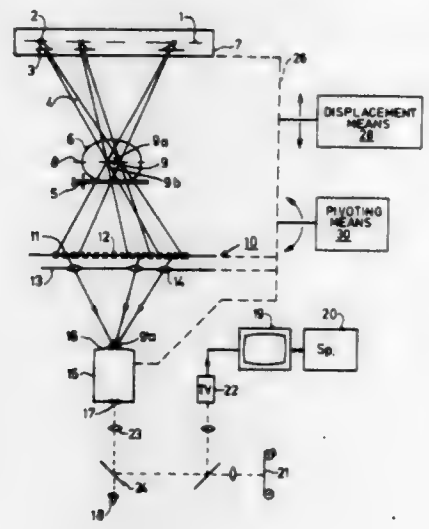
Hermann Weiss, Hamburg; Rolf Linde, Haseldorf; Ulf Tiemens, Iserlohn, and Erhard Klotz, Halstenbek, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 301,853, Sep. 14, 1981, abandoned. This application Mar. 22, 1984, Ser. No. 592,319

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037621

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—2 **7 Claims**



1. Apparatus for layer-wise imaging of an object (6) comprising:

a plurality of radiation source means (2), which are disposed adjacent the object in a single radiation source plane (1), each of which projects a beam (4) of penetrating radiation through the object in a geometry wherein all of the radiation beams have approximately the same cross section area in an irradiation plane (8) which intersects the object and all of the beams cover substantially the same region of the irradiation plane;

record carrier means (10), disposed on the opposite side of the object from the radiation source plane to receive the radiation beams which have passed through the object and to record therefrom perspective images of the object which are formed by the radiation beams;

image display means (15) including an image receiving surface (16);

imaging matrix means (13), comprising a plurality of imaging elements (14) which are disposed in a geometry which corresponds to the distribution of the radiation source means in the radiaton source plane, whih produce an image of a layer within the object by superpositioning the perspective images on the image receiving surface; and

means (28) for producing a relative displacement between the position of the irradiation plane and the object in a direction perpendicular to the irradiation plane.

4,513,434

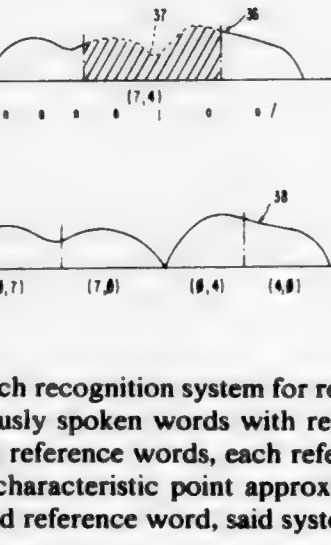
X-RAY REFLECTIVE OPTICAL ELEMENTS

Aubrey J. Dunn, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 7, 1982, Ser. No. 447,724

Int. Cl.³ G01N *23/20*

U.S. Cl. 378—85 **2 Claims**



1. A reflective optical element for incident penetrating electromagnetic radiation including an echelon array of reflectors for the radiation, wherein each reflector includes at least one crystal at the Bragg angle for the incident radiation, and successive members of said echelon have a successively greater number of crystals.

4,513,435

SYSTEM OPERABLE AS AN AUTOMATON FOR RECOGNIZING CONTINUOUSLY SPOKEN WORDS WITH REFERENCE TO DEMI-WORD PAIR REFERENCE PATTERNS

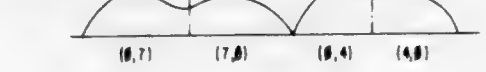
Hiroaki Sakoe, and Seibi Chiba, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,637

Claims priority, application Japan, Apr. 27, 1981, 56-63666

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—41 **7 Claims**





1. A continuous speech recognition system for recognizing a succession of continuously spoken words with reference to a plurality of preselected reference words, each reference word having an intra-word characteristic point approximately at a point of bisection of said reference word, said system comprising:

means for memorizing a plurality of discrete demi-word pair reference patterns, each reference pattern being given by a sequence of parameters characteristic of a demi-word

pair which lies between the intra-word characteristic point of a preceding reference word and the intra-word characteristic point of a succeeding reference word, said preceding and said succeeding reference words being continuously pronounced; and

means connected to said reference pattern memorizing means to be operable as a finite-state automaton to recognize said succession by using a pattern concatenation of optimum demi-word pair reference patterns which are selected from said discrete demi-word pair reference patterns and concatenated at least at an interface, said automaton being for controlling said concatenation so that no contradiction occurs at every interface.

4,513,436

SPEECH RECOGNITION SYSTEM

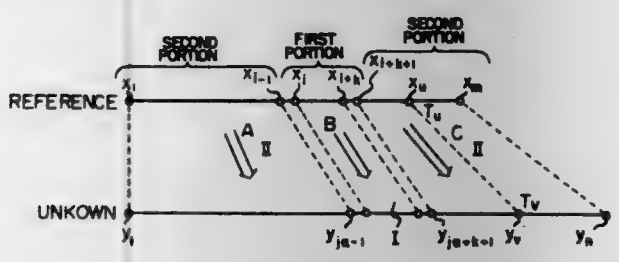
Isamu Nose, and Akihiko Umehara, both of Tokyo, Japan, assignors to Oki Electric Industry, Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 302,190, Sep. 14, 1981. This application Feb. 23, 1984, Ser. No. 582,134

Claims priority, application Japan, Sep. 16, 1980, 55-127122; Sep. 16, 1980, 55-127123

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—43 **3 Claims**



1. A method of recognizing speech wherein a reference feature vector system is partitioned in memory into a reference first portion of feature vectors, which has a constant time duration independent of a speaker, and a reference second portion of feature vectors, which has a time duration dependent on a speaker, and said reference feature vector system is compared to unknown speech having an unknown first portion of feature vectors and an unknown second portion of feature vectors, comprising the steps of:

(a) locating a first portion of feature vectors in said reference feature vector system,

(b) locating unwarped candidate first portions in said unknown speech by shifting said reference first portion through said unknown speech and comparing said reference first portion with said unknown speech,

(c) matching said reference first portion with one of said candidate first portions in said unknown speech; and

(d) matching said reference second portion with said unknown second portion by linearly designating each feature vector of said unknown second portion to a feature vector in said reference second portion.

4,513,437

DATA INPUT PEN FOR SIGNATURE VERIFICATION

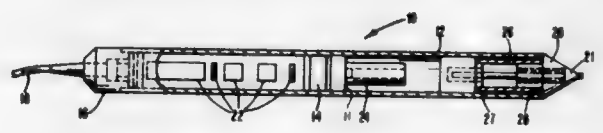
Timothy J. Chainer, Mahopac; Robert A. Scranton, South Salem, and Thomas K. Worthington, Tarrytown, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,043

Int. Cl.³ G06K *9/24*

U.S. Cl. 382—3 **10 Claims**

1. A data input pen particularly adapted for use within an electronic Signature Verification System comprising an elongated body member having a writing tip at one end and means at the other end for connecting the pen in signal transmitting relationship with a host computer, means within said pen for producing signals representative of transverse acceleration forces acting upon said pen, said last named means comprising at least two orthogonally disposed piezoelectric transducer elements cantilevered from a suitable support surface perpendicular to the pen axis and extending in a direction parallel to the pen axis, said transducer elements having electrodes on



opposite surfaces of their piezoelectrically active regions and extending for substantially the length of said elements, means for interconnecting electrodes on opposite sides of said elements to detect quadrature acceleration signals produced by said transducer elements.

4,513,438

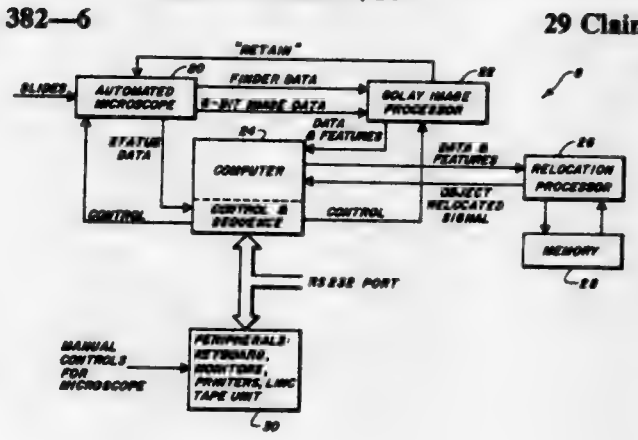
AUTOMATED MICROSCOPY SYSTEM AND METHOD FOR LOCATING AND RE-LOCATING OBJECTS IN AN IMAGE

Marshall D. Graham, Framingham, and David D. Cook, Jr., Concord, both of Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Apr. 15, 1982, Ser. No. 368,855

Int. Cl.³ G06K *9/20*

U.S. Cl. 382—6 **29 Claims**



1. A microscopy system for automatically locating objects-of-interest in an image having one or more objects against a background, each of said objects-of-interest being characterized by a predetermined set of features, comprising:

object identifier including

i. detecting means for scanning said image and detecting one or more of said objects during said scanning,

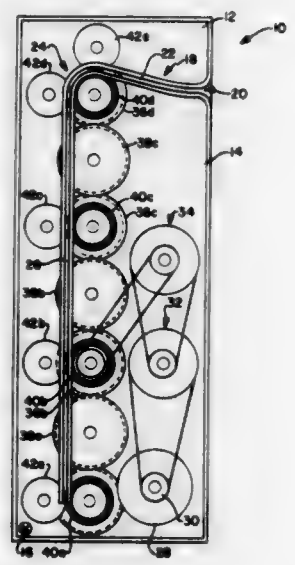
ii. feature extraction means for identifying ones of said detected objects having said predetermined set of features as objects-of-interest,

iii. object marker means for generating a marker signal for each of one or more identified object-of-interest, said marker signal having a feature portion representative of said predetermined set of features of said identified object-of-interest, and a pattern portion representative of the relative distance and relative orientation of a plurality of detected objects neighboring said identified object-of-interest.

4,513,439
SECURITY VALIDATOR

Robert L. Gorgone, Mentor; Gerald M. Iannadrea, Painesville; Anthony H. Doleja, Bedford Heights; Bruce R. Knox, Wickliffe, and Alan J. Kovach, Cleveland, all of Ohio, assignors to Ardac, Inc., Eastlake, Ohio

Filed Jul. 12, 1982, Ser. No. 397,023
Int. Cl.[3] G06K *9/00*
U.S. Cl. 382—7 1 Claim



1. A note acceptor for receiving and determining the authenticity of a paper security such as a currency, bank notes, and the like, comprising:

top and bottom plates defining a note path therebetween for receiving a paper offered as a valid security;

paired top and bottom rollers respectively received by said top and bottom plates in contacting engagement within said note path;

drive means connected to and driving said bottom rollers;

sensing means interposed along said note path between said top and bottom plates for acquiring data from specific areas on said paper as it passes along said note path;

control means interconnecting said drive means and sensing means for synchronizing the passing of said paper along said note path and the acquisition of data therefrom;

comparison means operatively connected to and receiving said data from said sensing means and determining the validity of the paper as a function of the difference between said data and reference values obtained from a plurality of valid securities, wherein:

said comparison means comprises a memory having said reference values stored therein;

said sensing means and control means acquire data from a plurality of points upon said paper security and obtain the result of a function including the difference between the data obtained from each point with a corresponding reference value for such point;

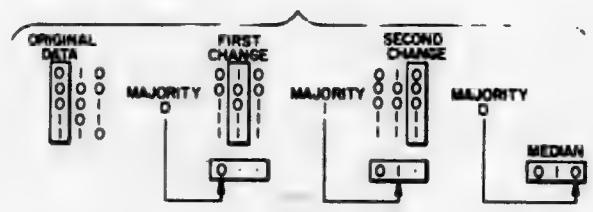
said comparison means further adds said result for each said point with the summation of results for all prior points, acquiring a final aggregate which is compared against a reference aggregate value to determine the validity of the paper; and

said control means obtains the results of a function including the difference between the data obtained from each point and a plurality of corresponding reference values for such point.

4,513,440
HARDWARE MEDIAN FILTER

Dennis J. Delman, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 29, 1982, Ser. No. 393,331
Int. Cl.[3] G06K *9/00;* G06F *7/06, 9/64*
U.S. Cl. 382—30 8 Claims



1. A signal processing apparatus for processing a plurality of multi component information signals to produce therefrom a multi component output signal representative of the median value of said plurality of multi component information signals comprising:

a multiplicity N of signal component processing sections each of which comprises:

a plurality of storage register means each of which stores the multiple components of a respective information signal; and

a majority decision circuit, coupled to receive a prescribed one of the componets of each information signal stored in said plurality of storage register means and producing an output signal component representative of the majority of the prescribed ones of the components of each information signal coupled thereto from said storage register means; and wherein

each of the first through $(N-1)^{th}$ processing sections further includes a plurality of control buffer means each of which is coupled to receive the components of a respective information signal stored in a respective one of said plurality of storage register means, and is controlled by the output of the majority decision circuit of that signal processing section to selectively modify the components of the information signal received thereby and couples the selectively modified components to a respective storage register means of the next succeeding stage; and

output register means for storing the output signal components produced by the majority decision circuits of said multiplicity N of processing sections as said multi component output signal.

4,513,441
IMAGE COMPARISON SYSTEM

Philip D. Henshaw, Lexington, Mass., assignor to Sparta, Inc., Lexington, Mass.

Filed Aug. 2, 1983, Ser. No. 519,736
Int. Cl.[3] G01N *21/32;* G06K *9/00*
U.S. Cl. 382—43 16 Claims

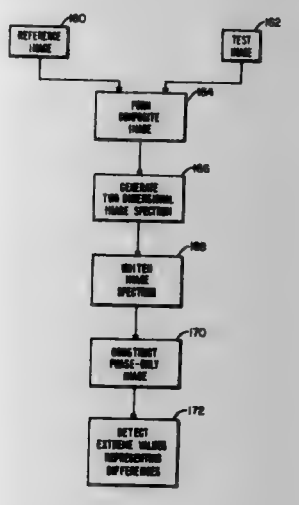
16. An image comparison method comprising:

forming a composite image composed of a reference image and a test image;

generating a two-dimensional image spectrum from said composite image;

whitening said two-dimensional image spectrum by setting the magnitude of every point of the two-dimensional image spectrum to a uniform level;

constructing the phase-only image of the composite image; and



detecting a value of the phase-only image exceeding a predetermined threshold representative of the location of a difference between said reference and test images.

4,513,442

METHOD FOR LOCATING AND CIRCUMSCRIBING TEXT AREAS ON A MASTER WHICH MAY CONTAIN TEXT, GRAPHICS AND/OR IMAGE AREAS

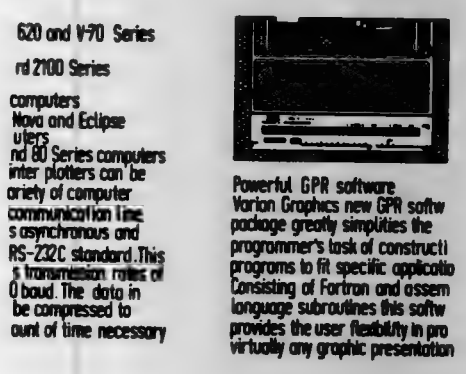
Wolfgang Scheri, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,279

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107655

Int. Cl.[3] **G06K** *9/60, 9/34*

U.S. Cl. 382—49 **10 Claims**



1. A method for locating and circumscribing text areas on a master which may contain text, graphics and/or image areas comprising the steps of:

optoelectronically scanning said master for generating analog signals corresponding to an optoelectronic imaging of said master;

converting said analog signals into digital signals by undertaking a decision operation by assigning a first binary number to analog signals representing a white level and assigning a second binary number to analog signals representing a black level;

expanding all points having a black level line-wise by a predetermined multiplier such that a horizontal stroke of predetermined length is respectively generated for each point whereby a black block is generated for each line of text on said master, said black block having a length equal to the length of the line of text plus a predetermined extension length for said black points;

expanding all points remaining after the previous step representing a white level by a predetermined multiplier for expanding said white points in a direction opposite to the expansion of said black points, the expansion of said white points being greater than the expansion of said black points;

extending said black block by a differential length with respect to the original length of the line of text such that a black block extending over the entire line of text is generated;

analyzing said black block with an operator for determining whether horizontal white/black transitions characteristic of text areas exist having a predetermined white column length and a predetermined black column length;

generating a vertical black stroke of predetermined length for every white/black transition such that an isolated black block is generated for each line of text;

listing the left and right extreme coordinates of said black block; and

statistically analyzing said extreme coordinates for said black blocks for determining whether said coordinates are boundaries for a line of text.

4,513,443

RADIO RECEIVER SUITABLE FOR USE IN A SPACED CARRIER AREA COVERAGE SYSTEM

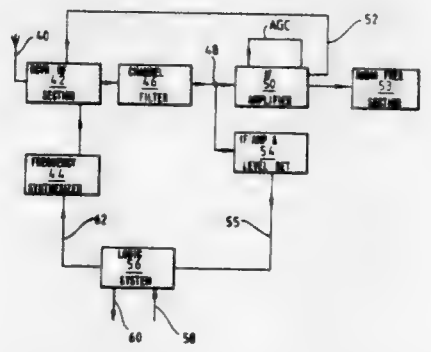
Duncan R. Louttit, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 340,161, Jan. 18, 1982, abandoned. This application May 21, 1984, Ser. No. 612,995

Claims priority, application United Kingdom, Feb. 4, 1981, 8103413

Int. Cl.[3] **H04B** *7/24, 1/26;* **H03J** *7/18*

U.S. Cl. 455—52 **5 Claims**



1. In a method for receiving signals in a spaced carrier area coverage system having at least two transmitters with modulated carrier waves having different carrier frequencies in a given frequency channel, wherein the method includes receiving signals in said channel, mixing said received signals with oscillations of a local oscillator to produce intermediate frequency signals in a given frequency band, and demodulating said intermediate frequency signals to produce output signals; the improvement further comprising the steps of:

a. limiting said intermediate frequency signals to a band width approximately equal to the band width of each one of said modulated carrier waves,

b. determining the signal strengths of each of said limited band width intermediate frequency signals,

c. selectively varying the frequency of said local oscillator to sequentially convert the signals received from said transmitters to the frequency band of said intermediate frequency signals,

d. scanning the signal strengths of each of said limited band width intermediate frequency signals to determine the received signals having the greatest signal strength,

e. adjusting the frequency of said local oscillator to select output signals from said coverage system, said selected output signals corresponding to received signals of the greatest signal strength as determined in d, when the signal strength of at least one of said limited intermediate frequency signals corresponding to at least one transmitter is greater than a first given threshold,

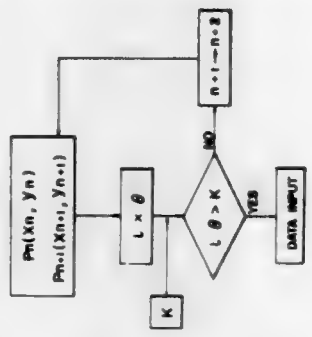
f. determining a second threshold as a function of the strength of the signal determined in d and adjusted to in e,
g. locking the frequency of said local oscillator onto a value so as to lock onto the transmitter signal of greatest strength determined in d until the signal strength of said limited intermediate frequency signal falls below said second threshold, and
h. repeating said steps d–g of scanning, adjusting the frequency of said local oscillator, determining a second threshold and locking, when the signal strength of said limited band width intermediate frequency signal to which said local oscillator has been locked, falls below said second threshold.

4,513,444

METHOD OF COMPRESSING DATA

Tsukasa Okai, and Shuichi Araki, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Jul. 18, 1983, Ser. No. 514,673
Claims priority, application Japan, Sep. 13, 1982, 57-159226
Int. Cl.³ G06K *9/36*
U.S. Cl. 382—56 **4 Claims**



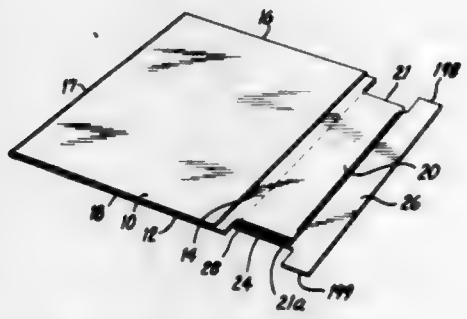
1. A machine method of compressing data derived by tracing the contour line of a character or a graphic symbol, characterized by the steps of:
selecting a plurality of sampling points along the contour line;
finding the length of a first line segment connecting a sampling point of interest and a preceding sampling point;
finding the angle defined by the first line segment and a second line segment defined by connecting the sampling point of interest with a following sampling point; and
determining whether the sampling point of interest is necessary data which needs to be retained or unnecessary data which may be disregarded according to the length of the first line segment and the angle defined by the first and the second line segments.

4,513,445

ADHESIVE CLOSURE BAGS AND METHOD FOR PRODUCING SAME

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 27, 1982, Ser. No. 453,170
Int. Cl.³ B65D *33/00*
U.S. Cl. 383—87 **5 Claims**



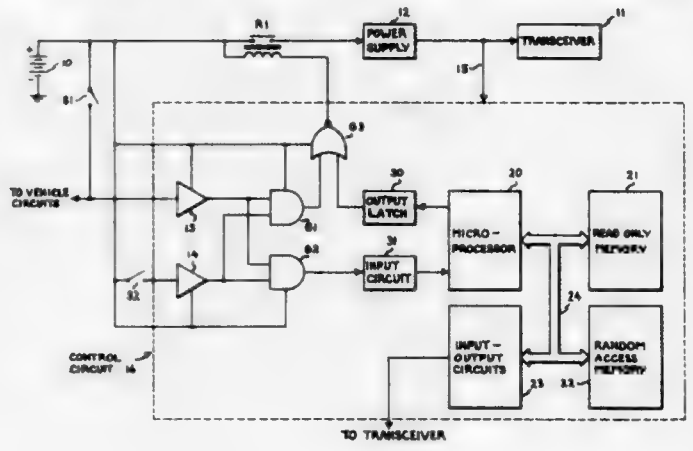
1. A bag which comprises a front wall member and a rear wall member, joined together at three edges to form a bag having an open bag mouth, a closure flap extending from said rear wall member beyond said bag mouth and adapted to be drawn over said bag mouth and into contact with said front wall member in order to close the bag, and an adhesive applied to said closure flap for adhering said flap to said front wall member, said closure flap being folded upon itself into a Z-fold with said adhesive disposed on one superimposed portion and releasably adhering to another superimposed portion of the Z-folded flap, thereby substantially covering said adhesive and protecting it from contact with air and other exterior objects, and at least a portion of said closure flap having a width that is less than the bag width and the edges of said flap being unsealed except by the adherence of said adhesive.

4,513,446

CONTROL CIRCUIT FOR A RADIO TRANSCEIVER

Samuel A. Leslie, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Feb. 9, 1983, Ser. No. 465,164
Int. Cl.³ H04B *1/38*
U.S. Cl. 455—73 **4 Claims**



1. A control circuit for a radio transceiver comprising:
a. a vehicular ignition switch coupled to a power source and having open and closed conditions;
b. a transceiver on-off switch coupled to said power source and having open and closed conditions;
c. first means coupled to said ignition and transceiver switches for sensing the conditions of both of said switches and producing a power-on signal in response to both said conditions being sensed;
d. second means coupled to said radio transceiver for sensing a communication thereon and producing a latch signal in response to and for the duration of said communication;
e. and third means coupled to said first means and to said second means for supplying power to said radio transceiver from said power source in response to said power-on signal or in response to said latch signal, or in response to both said power-on signal and said latch signal, said third means continue to supply power to said transceiver in response to and for the duration of said latch signal, despite the absence of said power-on signal.

4,513,447

SIMPLIFIED FREQUENCY SCHEME FOR COHERENT TRANSPONDERS

Lansing M. Carson, Temple, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 13, 1982, Ser. No. 449,344
Int. Cl.³ H04B *1/40, 1/59*
U.S. Cl. 455—76 **9 Claims**

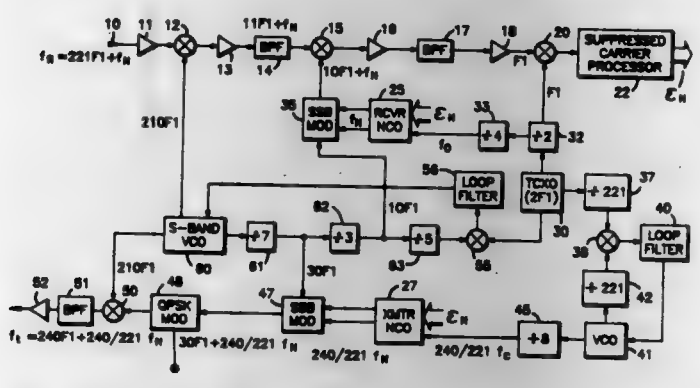
1. A coherent transponder for a communications system, including a transmitter and a receiver operating at different frequencies, comprising:
a first numerically controlled oscillator coupled to the re-

ceiver for controlling the operating frequency in at least a portion thereof;

a second numerically controlled oscillator coupled to the transmitter for controlling the operating frequency in at least a portion thereof;

a fixed frequency source;

a means for comparing the controlled operating frequency of the receiver to a predetermined frequency derived from



said fixed frequency source and providing a digital frequency control word representative of any error in the controlled operating frequency;

means coupling clock signals from said fixed frequency source and the frequency control word to said first and second numerically controlled oscillators for controlling said first and second numerically controlled oscillators to provide the different operating frequencies in the transmitter and receiver while maintaining coherence.

4,513,448

LOW POWER RADIO SYNTHESIZER WITH HARMONIC IDENTIFICATION FEATURE

Robert A. Maher, Carrollton, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 12, 1983, Ser. No. 522,949
Int. Cl.[3] H04B *1/16*; H03L *7/20*
U.S. Cl. 455—265 6 Claims

1. A channelized radio synthesizer comprising, in combination:

a. phase-lock loop means for locking to any one of a plurality of carrier frequencies, said phase-lock loop means comprising;

a voltage controlled oscillator for producing a preselected desired output carrier frequency corresponding to any one of a first plurality of harmonics of a reference signal;

a summer connected to apply to said voltage controlled oscillator a voltage summed from a first voltage and a second voltage;

a loop filter for producing said first voltage to be applied to said summer;

means for producing a first plurality of harmonics of a reference signal;

a sampling phase detector connected in circuit between the voltage controlled oscillator output and the phase loop filter input for receiving a harmonic of said first plurality of harmonics;

b. harmonic identification means comprising;

means for producing a second plurality of harmonics of a second signal offset in frequency slightly from said reference signal;

a mixer with an input signal combination of the preselected



desired output carrier frequency and a harmonic from said second plurality of harmonics, and an output signal corresponding to the difference frequency between said input signal combination;

counter means for producing a difference measurement signal representative of said difference frequency;

c. a microprocessor connected to receive said difference measurement signal from said counter means and the output of said sampling phase detector; and

d. a digital to analog converter having an input connected to the output of the microprocessor for providing said second voltage and connected to apply said second voltage to said summer,

said second voltage having a magnitude effective to change the output frequency of said voltage controlled oscillator in a direction towards said preselected desired output.

DESIGN PATENTS

GRANTED APR. 23, 1985

ERRATA

For CLASS	See PATENT NO.
D07–027	278,470
D06–309	278,558

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C

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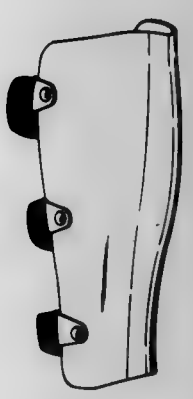
Martin
Spor

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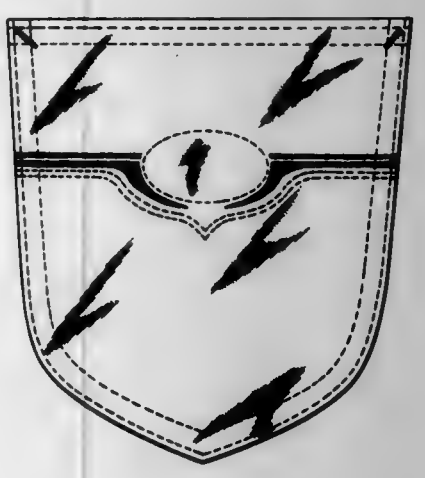
DESIGNS

APRIL 23, 1985

278,470
CALF GUARD
Lars Eghamn, Repslagarvägen 24, S-852 34 Sundsvall, Sweden
Filed Sep. 27, 1982, Ser. No. 425,125
Claims priority, application Sweden, Jun. 28, 1982, 82-1689
Term of patent 14 years
U.S. Cl. D2—27



278,471
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Sep. 22, 1982, Ser. No. 421,645
Term of patent 14 years
U.S. Cl. D2—28



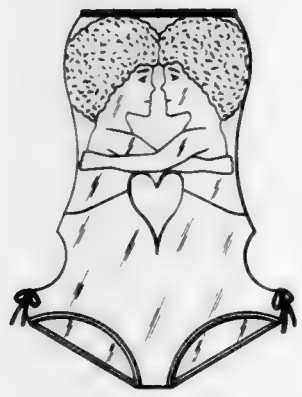
278,472
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,343
Term of patent 14 years
U.S. Cl. D2—40



278,473
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,641
Term of patent 14 years
U.S. Cl. D2—40



278,474
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,642
Term of patent 14 years
U.S. Cl. D2—40



278,475
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,644
Term of patent 14 years
U.S. Cl. D2—40



278,476
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,645
Term of patent 14 years
U.S. Cl. D2—41



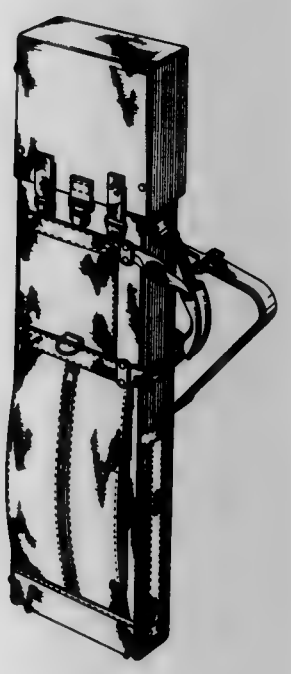
278,477
SHIRT
Masao Mizuno, 15-7, Nishiki 2-Chome, Naka-ku, Nagoya City, Aichi Prefecture, Japan
Filed Apr. 9, 1982, Ser. No. 367,190
Term of patent 14 years
U.S. Cl. D2—208



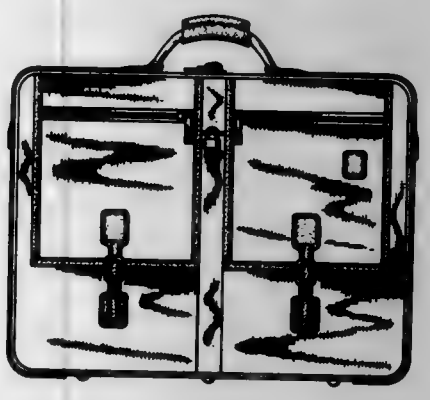
278,478
INSULATED SKI BOOT JACKET
Lorane K. Reecher, 38 Da Vinci, Lake Oswego, Oreg. 97034, and Sharman Reecher, 4085 Sugar Maple Dr., Danville, Calif. 94526
Filed Oct. 4, 1982, Ser. No. 435,928
Term of patent 14 years
U.S. Cl. D2—267



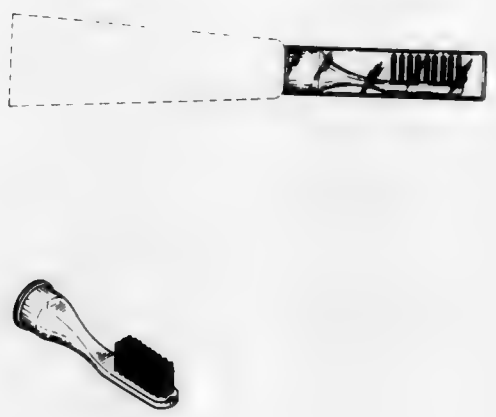
278,479
GOLF BAG
Ernest Bevilacqua, Wilton, Conn., and Theodore Knerr, New York, N.Y., assignors to Bost Enterprises, Inc., Norwalk, Conn.
Filed Mar. 22, 1983, Ser. No. 477,738
Term of patent 14 years
U.S. Cl. D3—37



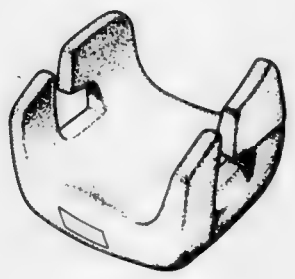
278,480
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Oct. 21, 1982, Ser. No. 435,810
Term of patent 14 years
U.S. Cl. D3—71



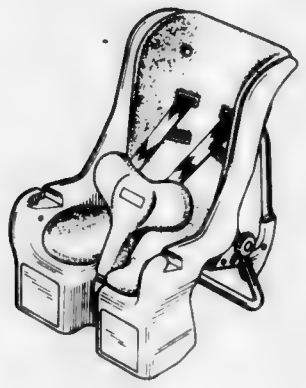
278,481
COMBINATION TOOTHBRUSH AND COVER THEREOF
Earl N. Ditgen, Rte. #1, Nickerson, Kans. 67561
Filed Mar. 29, 1982, Ser. No. 363,258
Term of patent 14 years
U.S. Cl. D4—104



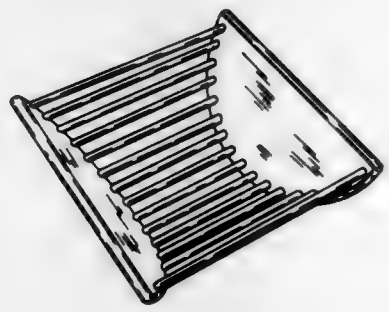
278,482
CHILD SAFETY SEAT FOR VEHICLES
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan
Filed Jan. 7, 1983, Ser. No. 456,417
Term of patent 14 years
U.S. Cl. D6—333



278,483
CHILD SAFETY SEAT FOR VEHICLES
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan
Filed Jan. 7, 1983, Ser. No. 456,415
Term of patent 14 years
U.S. Cl. D6—333



278,484
CHILD'S ROCKER
Christopher Duderstadt, 1327 10th Ave., San Francisco, Calif. 94122
Filed Jan. 13, 1983, Ser. No. 457,767
Term of patent 14 years
U.S. Cl. D6—348



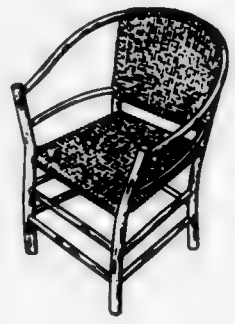
278,485
CHAIR
Edmund E. Ely, 2302 Wesleyan Ct., Louisville, Ky. 40222
Filed Oct. 27, 1982, Ser. No. 436,940
Term of patent 14 years
U.S. Cl. D6—365



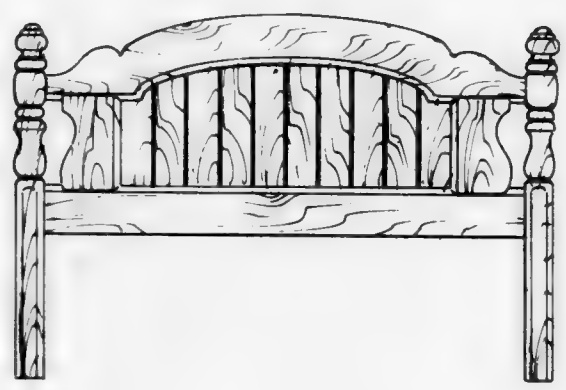
278,486
FOLDABLE CHAIR OR THE LIKE
Peter K. Bayly, Kangaroo Ground, Australia, assignor to Roplas Pty. Ltd., Victoria, Australia
Filed Jan. 28, 1983, Ser. No. 462,086
Claims priority, application Australia, Aug. 4, 1982, 1154/82
Term of patent 14 years
U.S. Cl. D6—368



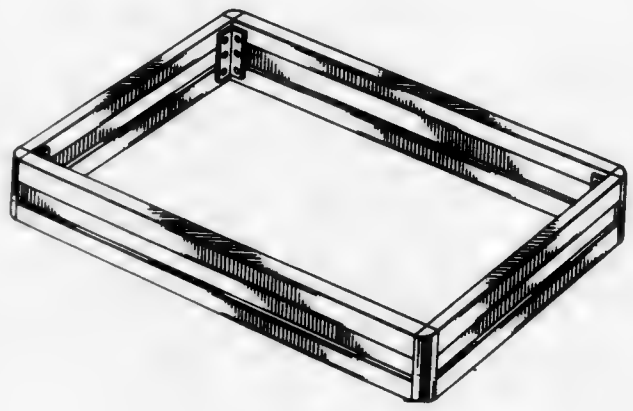
278,487
CHAIR
Bobby J. Welsh, Shelbyville, Ind., assignor to Hickory Furniture Works, Inc., Shelbyville, Ind.
Filed Oct. 12, 1982, Ser. No. 433,830
Term of patent 14 years
U.S. Cl. D6—369



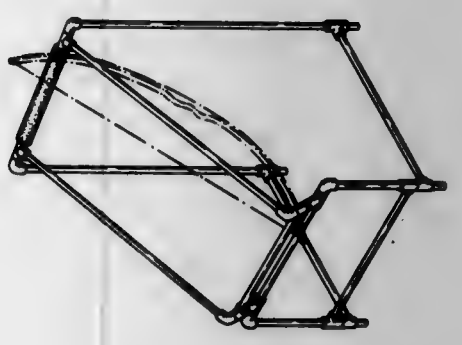
278,488
HEADBOARD
Haywood L. West, High Point, N.C., assignor to Hooker Furniture Corporation, Martinsville, Va.
Filed Sep. 13, 1982, Ser. No. 417,106
Term of patent 14 years
U.S. Cl. D6—508



278,489
WATER BED FRAME
Larry L. Ragland, P.O. Box 6691, Phoenix, Ariz. 85005
Filed Sep. 29, 1982, Ser. No. 427,800
Term of patent 14 years
U.S. Cl. D6—382

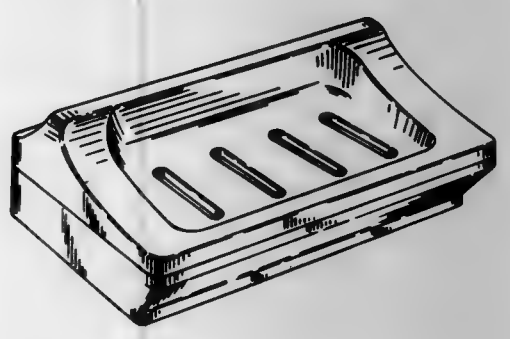


278,490
BOW RACK
Charles R. Stevens, Rte. 3, Box 395, Poplarville, Miss. 39470
Filed Aug. 23, 1982, Ser. No. 410,608
Term of patent 14 years
U.S. Cl. D6—462

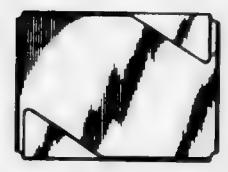




278,491
SOAP HOLDER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Nov. 1, 1982, Ser. No. 438,338
Claims priority, application Austria, May 5, 1982, 303/82
Term of patent 14 years
U.S. Cl. D6—536

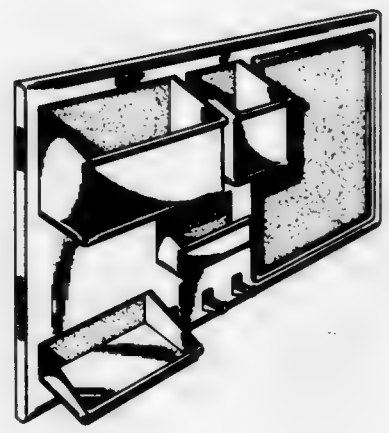


278,492
TISSUE DISPENSER
Walter R. Short, Barry, Wales, assignor to Rizla Limited, Mid-Glamorgan, Wales
Filed Mar. 11, 1983, Ser. No. 474,308
Claims priority, application United Kingdom, Sep. 13, 1982, 1008690
Term of patent 14 years
U.S. Cl. D6—518

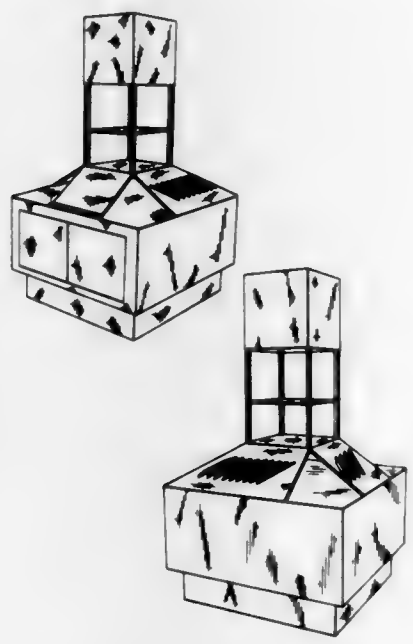




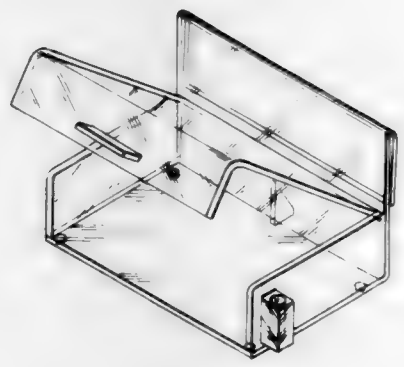
278,493
COMBINED HORIZONTAL STORAGE UNIT AND DISPLAY BOARD
Anthony Brescia, Liverpool, and Ross Deacon, Syracuse, both of N.Y., assignors to Syroco Inc., Syracuse, N.Y.
Filed Jun. 16, 1982, Ser. No. 388,915
Term of patent 14 years
U.S. Cl. D6—570



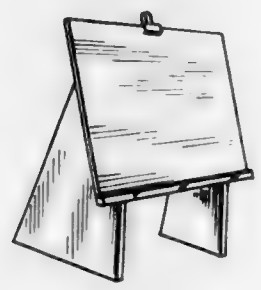
278,494
DISPLAY UNIT FOR CHINA AND CRYSTAL OR THE LIKE
Darrell McCluhan, Kansas City, Mo., assignor to Celebrity China Company, Lenexa, Kans.
Filed Jul. 6, 1982, Ser. No. 395,316
Term of patent 14 years
U.S. Cl. D6—436



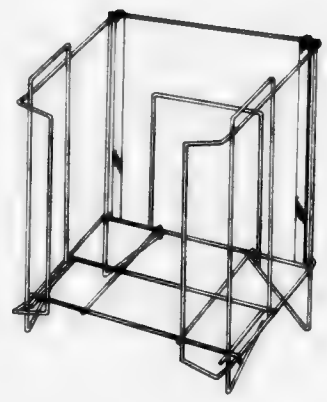
278,495
DISPLAY CASE
Milton S. Rattner, 180 E. End Ave., New York, N.Y. 10023
Filed Jul. 6, 1982, Ser. No. 395,827
Term of patent 14 years
U.S. Cl. D6—470



278,496
EASEL FOR PRONE INDIVIDUAL
Marcian C. Hausman, R.R. 3, Tuscola, Ill. 61953
Filed Aug. 4, 1982, Ser. No. 405,710
Term of patent 14 years
U.S. Cl. D6—310



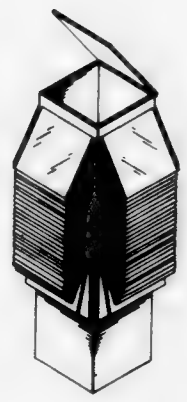
278,497
PILLOW RACK
Arline Walpin, 9400 Brighton Way, Beverly Hills, Calif. 90210
Filed Aug. 17, 1982, Ser. No. 408,804
Term of patent 14 years
U.S. Cl. D6—462



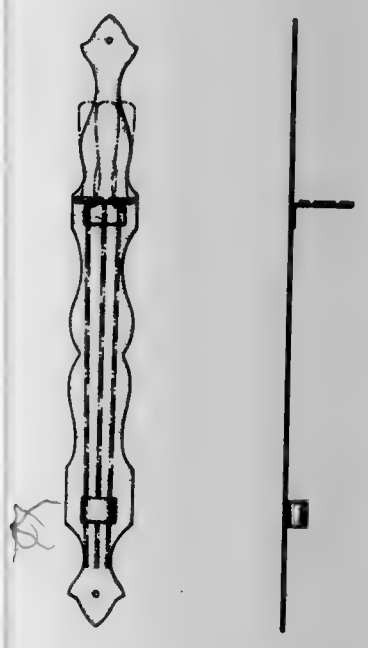
278,498
PICTURE HOLDER
Betty J. Corley, 6414 S. 990 West, Murray, Utah 84107
Filed Aug. 23, 1982, Ser. No. 410,846
Term of patent 14 years
U.S. Cl. D6—309



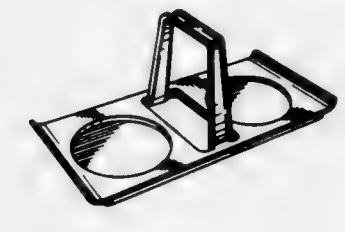
278,499
COMBINED RECORD CARROUSEL AND STORAGE UNIT
Walter Shannon, 8037 Champagne Dr., Stockton, Calif. 95210
Filed Sep. 14, 1982, Ser. No. 418,052
Term of patent 14 years
U.S. Cl. D6—407



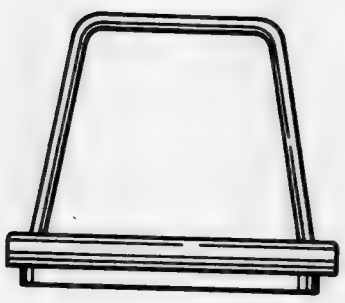
278,500
BARBEQUE SKEWER RACK
George A. Rafferty, Sr., 1400 NW. 46th St., Gainesville, Fla. 32605
Filed Aug. 16, 1982, Ser. No. 408,213
Term of patent 14 years
U.S. Cl. D6—572



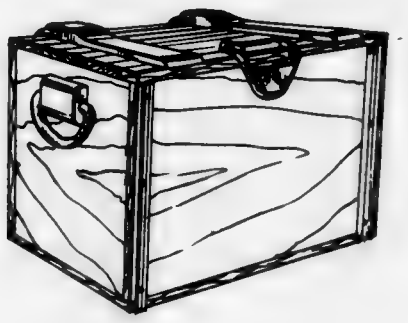
278,501
BOWL CARRIER OR THE LIKE
Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Sep. 7, 1982, Ser. No. 415,497
Term of patent 14 years
U.S. Cl. D7—19



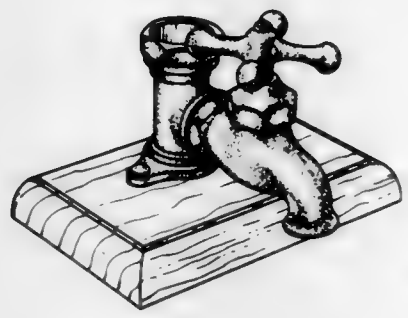




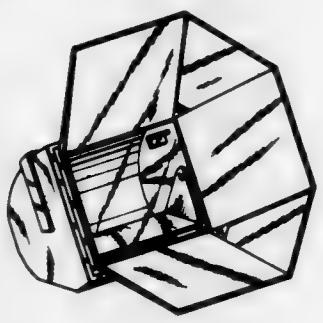
278,502
COOLER BOX
Edward A. Powell, Jr., Richmond, Va., assignor to Miller Manufcturing Company, Richmond, Va.
Filed Aug. 19, 1982, Ser. No. 409,568
Term of patent 14 years
U.S. Cl. D7—77



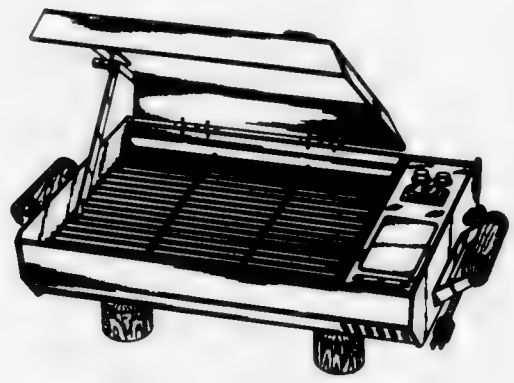
278,503
BOTTLED LIQUID DISPENSER
Gabor Kadar, 4635 White Oak Ave., Encino, Calif. 91316
Filed Sep. 20, 1982, Ser. No. 419,839
Term of patent 14 years
U.S. Cl. D7—301

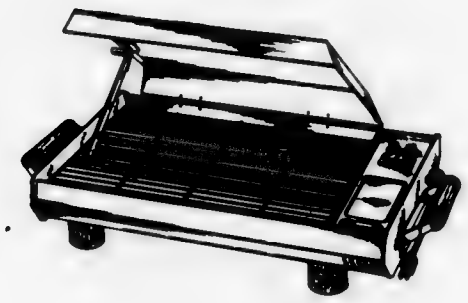


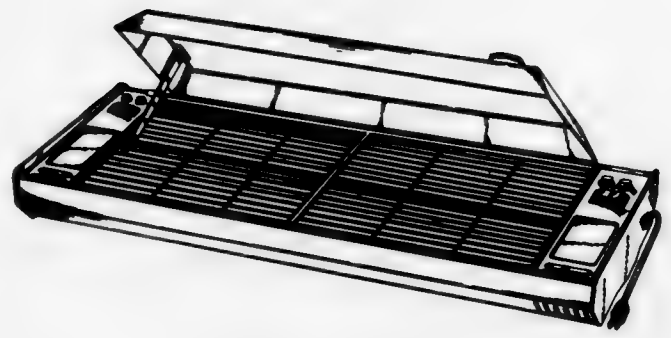
278,504
PORTABLE SOLAR OVEN
Bojan Jerman, Ljubljana, Yugoslavia, assignor to Gorenje- Tiki, Elektro Strojno Podjetje, p.o., Ljubljana, Yugoslavia
Filed Feb. 26, 1982, Ser. No. 352,561
Claims priority, application Yugoslavia, Aug. 28, 1981, M-307/81
Term of patent 14 years
U.S. Cl. D7—324



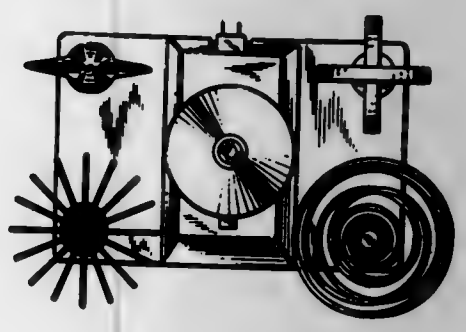
278,505
PORTABLE BARBECUE GRILL
Edward H. Mackin, Fair Haven, N.J., assignor to Maverick Industries, Inc., Union, N.J.
Filed Jul. 26, 1982, Ser. No. 401,849
Term of patent 14 years
U.S. Cl. D7—337



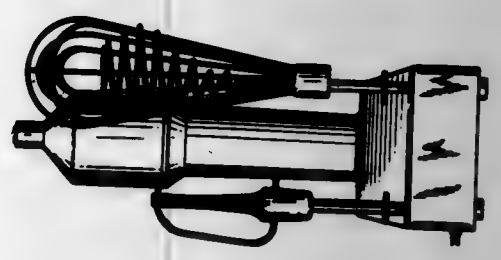


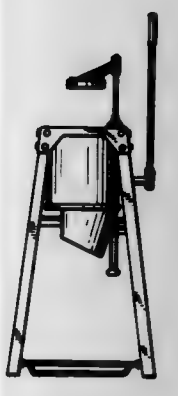


278,506
KITCHEN APPLIANCE
Barbara Kafka, 23 E. 92nd St., New York, N.Y. 10028
Filed Sep. 7, 1982, Ser. No. 415,265
Term of patent 14 years
U.S. Cl. D7—376

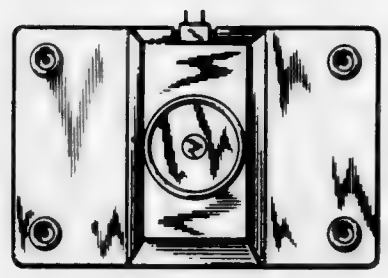


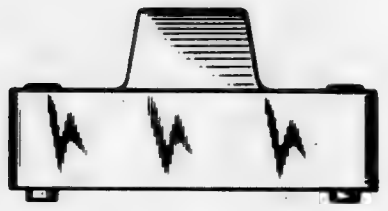
278,507
PINEAPPLE CUTTER
Kashichi Mori, Iwatsuki, Japan, assignor to Kowa Shoji Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 16, 1982, Ser. No. 349,110
Claims priority, application Japan, Aug. 20, 1981, 56-36308
Term of patent 14 years
U.S. Cl. D7—381





278,508
KITCHEN APPLIANCE BASE
Barbara P. Kafka, 23 E. 92nd St., New York, N.Y. 10028
Filed Sep. 7, 1982, Ser. No. 415,266
Term of patent 14 years
U.S. Cl. D7—386





278,509
BOTTLE CAP OPENER
Gary C. Middleton, and Kenneth R. Smith, both of Middleville, Mich., assignors to Middleville Tool & Die Co., Middleville, Mich.
Filed Jul. 8, 1982, Ser. No. 396,348
Term of patent 14 years
U.S. Cl. D8—18



278,510
WRENCH
Allan Schoeberlein, 235 Ashland, Aurora, Ill. 60505
Filed May 27, 1982, Ser. No. 382,626
Term of patent 14 years
U.S. Cl. D8—28



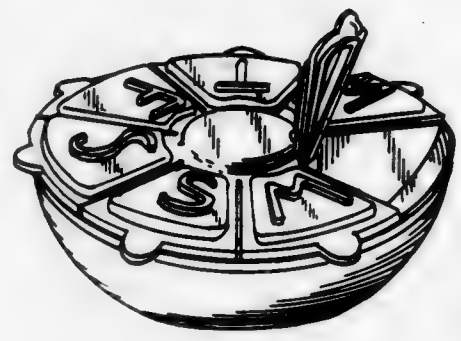
278,511
HAND SEAMER TOOL FOR STANDING SEAM ROOFS
Warren D. Smith, P.O. Box 3124, South Bend, Ind. 46619
Filed Jul. 15, 1982, Ser. No. 398,768
Term of patent 14 years
U.S. Cl. D8—52



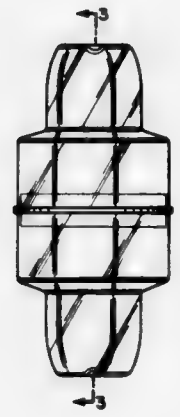
278,512
HOLDER FOR SPACKLE
Jozef Lojko, 101 Nassau Ave., Brooklyn, N.Y. 11222
Filed Jul. 1, 1982, Ser. No. 394,264
Term of patent 14 years
U.S. Cl. D8—71



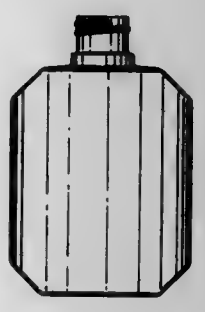
278,513
COMPARTMENTED PILL CONTAINER
Wade M. Ebeling, 1017 Beecher Ave., Brigham City, Utah 84302, and Arnold A. Thayer, 1415 Highland Dr., Logan, Utah 84321
Filed May 5, 1982, Ser. No. 374,982
Term of patent 14 years
U.S. Cl. D9—339



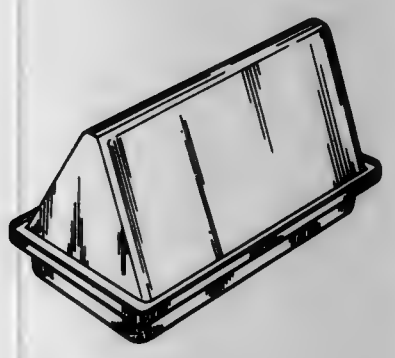
278,514
PACKAGING CONTAINER
Ronald K. Moore, Kempsey, England, assignor to Lewis Woolf Griptight Limited, Birmingham, England
Filed Jun. 22, 1982, Ser. No. 390,975
Claims priority, application United Kingdom, Jan. 8, 1982, 1004522
Term of patent 14 years
U.S. Cl. D9—341



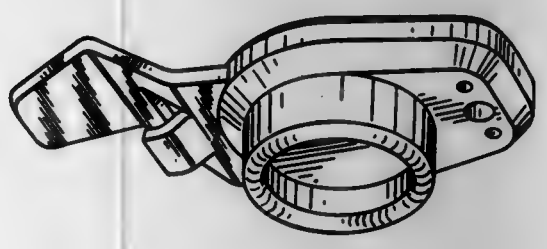
278,515
BOTTLE
Bert G. Adams, Norwalk, Conn., and Patrick J. Manna, New Rochelle, N.Y., assignors to Economics Laboratory, Inc., St. Paul, Minn.
Filed Jun. 29, 1982, Ser. No. 393,438
Term of patent 14 years
U.S. Cl. D9—403



278,516
CONTAINER FOR FOOD PRODUCTS
Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy
Filed Jan. 7, 1983, Ser. No. 456,505
Claims priority, application Italy, Jul. 21, 1982, 53548/82[U]
Term of patent 14 years
U.S. Cl. D9—425



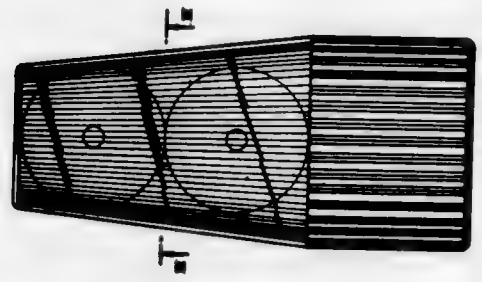
278,517
COMBINED BOTTLE TOP AND BOTTLE OPENER
Ivan Milin, 4 Hill Crescent, Scarborough, Ontario, Canada M1M 3T6
Filed Feb. 16, 1983, Ser. No. 466,829
Term of patent 14 years
U.S. Cl. D9—437



278,518
WRISTWATCH
Gilbert Kervan, Geneva, Switzerland, assignor to Ateliers Reunis S.A., Geneva, Switzerland
Filed Jan. 19, 1983, Ser. No. 459,097
Term of patent 14 years
U.S. Cl. D10—32



278,519
SAFETY LIGHT
Samuel C. Caldwell, Burke, Va., assignor to Caldwell Corporation, Burke, Va.
Filed Aug. 2, 1982, Ser. No. 404,479
Term of patent 14 years
U.S. Cl. D10—114

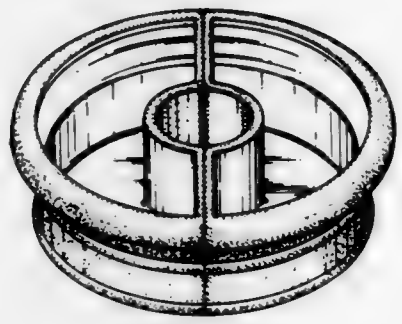


278,520
MULTIFUNCTION NECKLACE CONTAINER
Frank Hamtak, 11817 - 218th Ave., Bristol, Wis. 53104
Filed Sep. 27, 1982, Ser. No. 424,542
Term of patent 14 years
U.S. Cl. D11—2

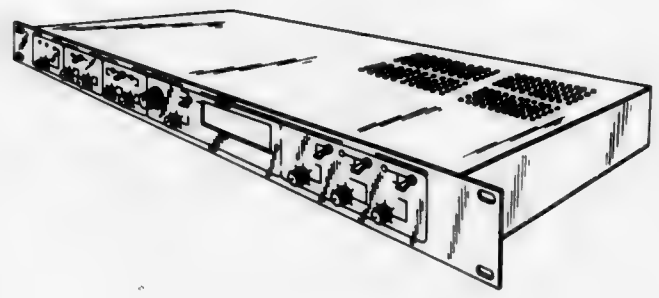




278,521
TWO PART FLOWER CONTAINER
Robert W. Baird, 3580 W. Loma Linda, Fresno, Calif. 93711, and Patricia Hopper, 556 E. Pontiac Way, Fresno, Calif. 93704
Filed Jul. 25, 1983, Ser. No. 517,239
Term of patent 14 years
U.S. Cl. D11—153



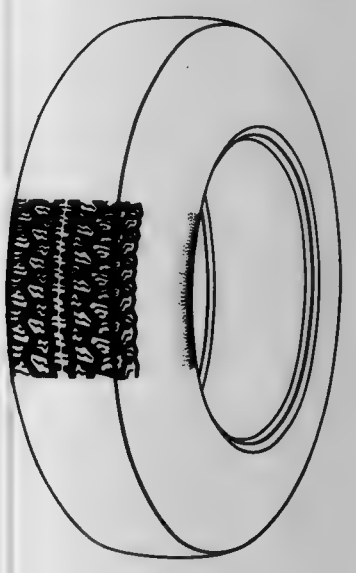
278,522
ELECTRONIC CIRCUIT CONTROL RACK MODULE
Gary A. Hardesty, 1000 SE. Bertelsen Rd., Suite 4, Eugene, Oreg. 97402
Filed May 3, 1982, Ser. No. 373,841
Term of patent 14 years
U.S. Cl. D13—12



278,523
WHEELED FOLDING CHAIR
A. Lester Tuley, 6381 San Andres Ave., Atascadero, Calif. 93422
Filed Aug. 9, 1982, Ser. No. 406,392
Term of patent 14 years
U.S. Cl. D12—131



278,524
TIRE
Joseph F. Molnar, Wadsworth, and Bill J. Wallet, Marshallville, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jul. 11, 1983, Ser. No. 512,260
Term of patent 14 years
U.S. Cl. D12—147



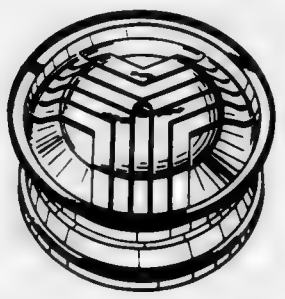
278,525
FLOOR MAT FOR A VEHICLE
Janusz Morawski, P.O. Box 562, Station "P", Toronto, Ontario, Canada
Filed Apr. 23, 1981, Ser. No. 256,721
Claims priority, application Canada, Oct. 27, 1980, 27-10-80-8; Nov. 5, 1980, 05-11-80-5
Term of patent 14 years
U.S. Cl. D12—203



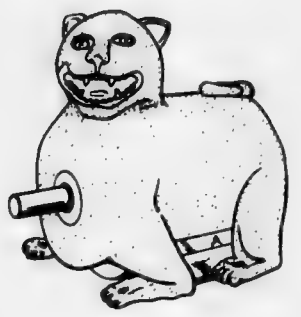
278,526
VEHICLE WHEEL
Giorgetto Giugiaro, Turin, Italy, assignor to Nihom Melber Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1982, Ser. No. 449,185
Term of patent 14 years
U.S. Cl. D12—204



278,527
VEHICLE WHEEL
Giorgetto Giugiaro, Turin, Italy, assignor to Nihon Melber Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1982, Ser. No. 449,510
Term of patent 14 years
U.S. Cl. D12—204



278,528
ELECTRIC MOTOR
Mario H. Gottfried, Holonda #3, Coyoacan OY21, Mexico, D.F., Mexico
Filed Dec. 8, 1982, Ser. No. 447,924
Term of patent 14 years
U.S. Cl. D13—1

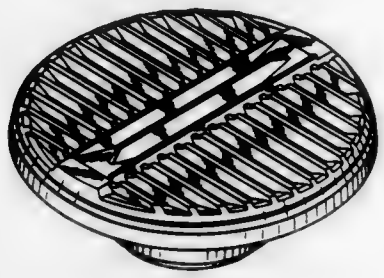


278,529
SECURITY LIGHT SWITCH WITH BUILT-IN TIME DISPLAY AND ON/OFF SWITCH OR A SIMILAR ARTICLE
Richard L. Hoogner, Sunnyvale, Calif., assignor to Security Switch, Ltd., San Ramon, Calif.
Filed May 14, 1982, Ser. No. 378,442
Term of patent 14 years
U.S. Cl. D13—32

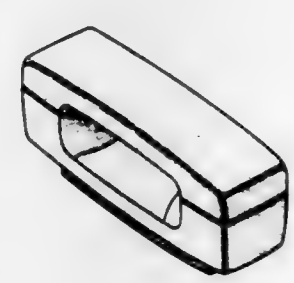


APRIL 23, 1985 U.S. PATENT AND TRADEMARK OFFICE 1971

278,530
LOUDSPEAKER
You Takagi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Aug. 9, 1982, Ser. No. 406,160
Claims priority, application Japan, Mar. 4, 1982, 57-8880
Term of patent 14 years
U.S. Cl. D14—30



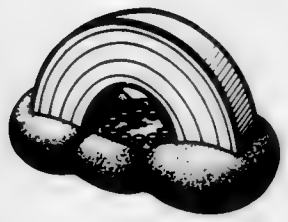
278,531
HOUSING FOR A TELEPHONE OR SIMILAR ARTICLE
John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Jul. 19, 1984, Ser. No. 632,187
Term of patent 14 years
U.S. Cl. D14—53



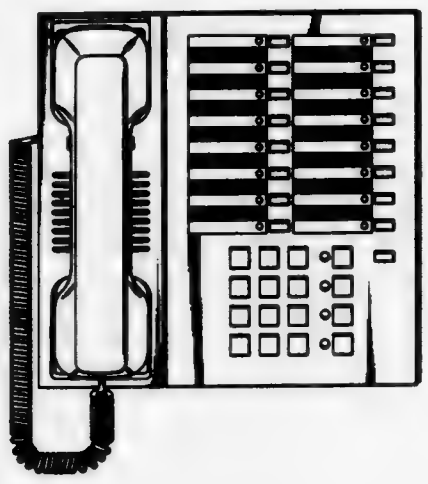


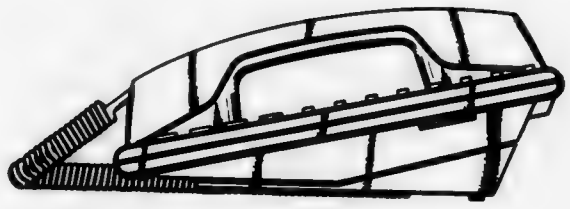
278,532
TELEPHONE
Denni F. Rivette, and Rouben T. Terzian, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 13, 1982, Ser. No. 449,139
Term of patent 14 years
U.S. Cl. D14—53





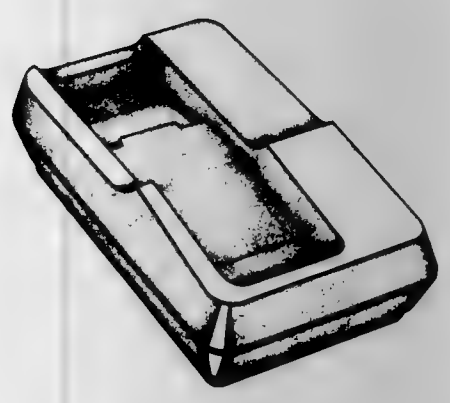
278,533
TELEPHONE
Tetsuro Ando, Tokyo, Japan, assignor to KabushikiKaisha Taikodenki Seisakusho, Tokyo, Japan
Filed Jun. 17, 1982, Ser. No. 389,379
Claims priority, application Japan, Dec. 18, 1981, 56-56292
Term of patent 14 years
U.S. Cl. D14—53





278,534
TELEPHONE STAND
Thomas B. Aldrich, Spring Valley; John Pardo, Yonkers, and Martin H. Snyder, New York, all of N.Y., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Jul. 19, 1984, Ser. No. 632,185
Term of patent 14 years
U.S. Cl. D14—60

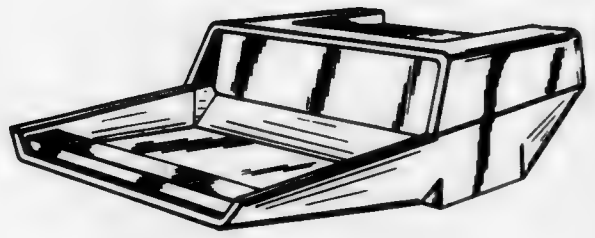




278,535
AM/FM FOLDABLE RADIO
Vinod S. Sujanani, Aberdeen, Hong Kong, assignor to Vhoom Systems Limited, Hong Kong, Hong Kong
Filed Sep. 28, 1982, Ser. No. 425,465
Claims priority, application United Kingdom, Aug. 13, 1982, 1008298
Term of patent 14 years
U.S. Cl. D14—68



278,536
CONSOLE FOR A DATA TERMINAL
Terence T. Caven, Beeston, England, assignor to Plessey Overseas Limited, Ilford, England
Filed Apr. 28, 1982, Ser. No. 372,711
Claims priority, application United Kingdom, Oct. 28, 1981, 1003269
Term of patent 14 years
U.S. Cl. D14—106



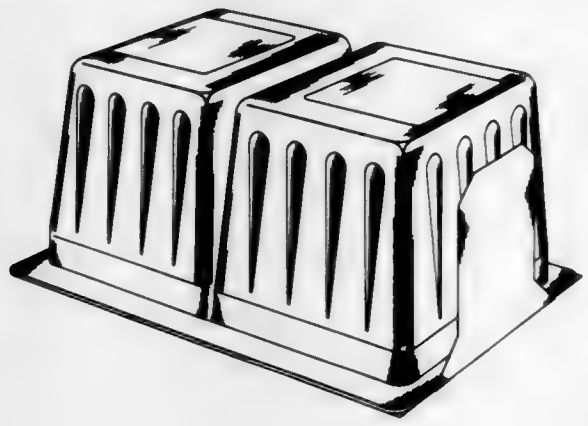
278,537
SNOW THROWER
Jacob Krapowicz, Ridgefield, Conn.; Douglas W. Smith, Belle Mead, N.J., and Michael E. Lande, Danbury, Conn., assignors to The Toro Company, Minneapolis, Minn.
Filed Apr. 29, 1983, Ser. No. 489,916
Term of patent 14 years
U.S. Cl. D15—12



278,538
PUMP AND OIL RESERVOIR HOUSING FOR A SEWING MACHINE OR THE LIKE
Versell H. Schroeder, Blaine; Alton H. Sterling, Prior Lake, and Josef H. Rozenberg, St. Louis Park, all of Minn., assignors to AXIA Incorporated, Minneapolis, Minn.
Filed Jun. 1, 1982, Ser. No. 382,787
Term of patent 14 years
U.S. Cl. D15—72



278,539
TONER CARTRIDGE
Paul J. Josephson, and Larry W. Lykins, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 9, 1983, Ser. No. 530,920
Term of patent 14 years
U.S. Cl. D16—32



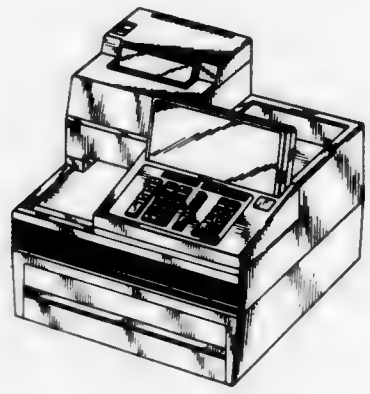
278,540
CLARINET THUMB REST
Charles Morris, 709 Eastside Blvd., Muskogee, Okla. 74401
Filed Aug. 13, 1982, Ser. No. 407,710
Term of patent 14 years
U.S. Cl. D17—13



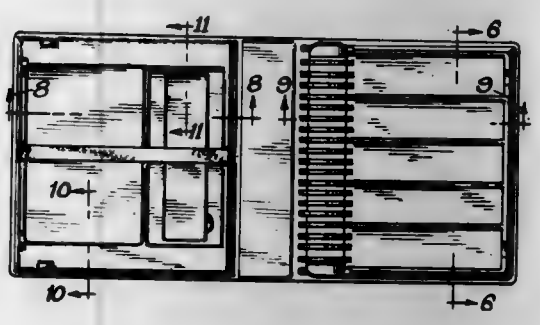
278,541
ELECTRICAL GUITAR
John J. Toth, Fairfield, Conn., assignor to Richelieu Electrics Corp., Bridgeport, Conn.
Filed Sep. 27, 1982, Ser. No. 424,451
Term of patent 14 years
U.S. Cl. D17—14



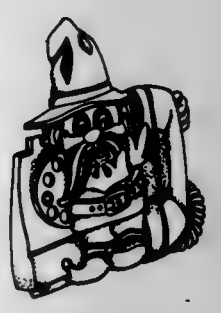
278,542
POINT OF SALE TERMINAL
Yoshinori Kakiuchi, Yokohama, and Masami Watari, Hatano, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 2, 1982, Ser. No. 438,694
Claims priority, application Japan, Jun. 22, 1982, 57-27800
Term of patent 14 years
U.S. Cl. D18—4



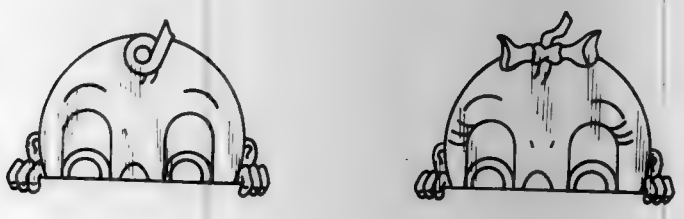
278,543
DISPLAY NOTEBOOK
Richard A. Gintz, 4465 Caminito Ocio, San Diego, Calif. 92108
Filed Sep. 29, 1982, Ser. No. 427,354
Term of patent 14 years
U.S. Cl. D19—27



278,544
MESSAGE MEMO HOLDER
James R. Dunn, Fairfield, Conn., assignor to Coats & Clark, Inc., New Rochelle, N.Y.
Filed Jan. 20, 1983, Ser. No. 459,629
Term of patent 14 years
U.S. Cl. D19—91



278,545
DECALOMANIA OR SIMILAR ARTICLE
Karl G. Byrd, Sr., 3812 Barrington Rd., Baltimore, Md. 21215
Filed Apr. 2, 1982, Ser. No. 364,630
Term of patent 14 years
U.S. Cl. D20—11



278,546
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982,. This application Jun. 29, 1984, Ser. No. 626,328
Term of patent 14 years
U.S. Cl. D21—190



278,547
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982,. This application Jun. 29, 1984, Ser. No. 626,539
Term of patent 14 years
U.S. Cl. D21—190



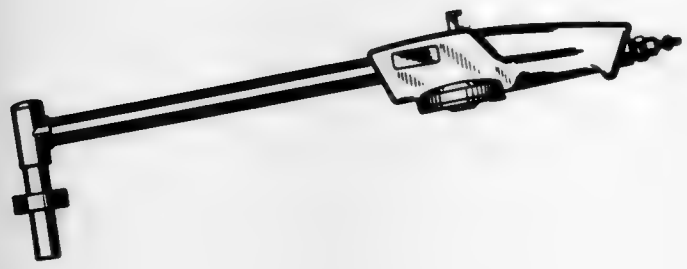
278,548
PHYSICAL EXERCISER
Dixie C. Backstrom, 5 Park Ave., Yale, Mich. 48097
Filed Dec. 17, 1982, Ser. No. 433,692
Term of patent 14 years
U.S. Cl. D21—191



278,549
CAGE-SHAPED SWING
John Kristich, Port Charlotte, Fla., assignor to Kristy Creations, Inc., Warren, Ohio
Filed Jan. 20, 1982, Ser. No. 340,982
Term of patent 14 years
U.S. Cl. D21—246

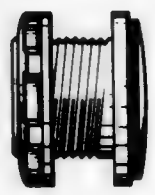


278,550
AUTOMATIC BATTERY WATER FILLER
Cecil G. Blank, Toledo, Ohio, assignor to Flow Systems, Toledo, Ohio
Filed Feb. 8, 1982, Ser. No. 346,903
Term of patent 14 years
U.S. Cl. D23—17

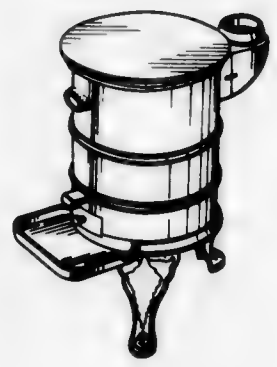


278,551
RELIEF VALVE
Ray Crossman, 2796 Wissemann Dr., Sacramento, Calif. 95826
Filed May 19, 1982, Ser. No. 379,728
Term of patent 14 years
U.S. Cl. D23—19

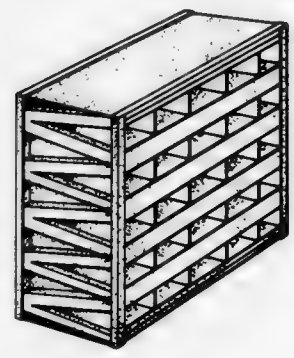




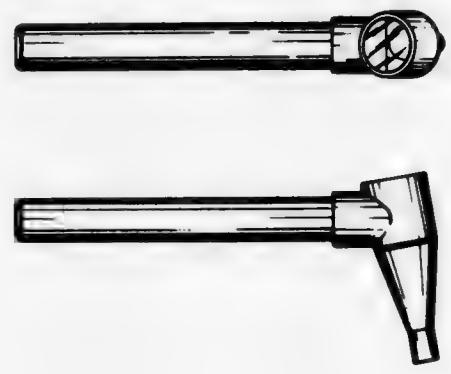
278,552
STOVE
Oreste G. Nosenzo, Asti, Italy, assignor to C.S. di NOSENZO Oreste, Asti, Italy
Filed Dec. 7, 1982, Ser. No. 447,552
Claims priority, application Italy, Apr. 3, 1981, 53079/81[U]
Term of patent 14 years
U.S. Cl. D23—97



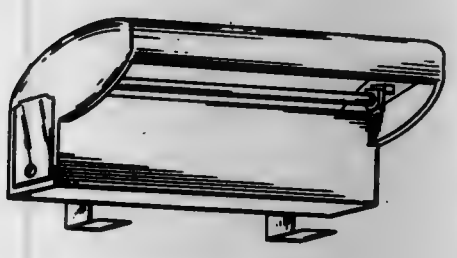
278,553
HIGH-EFFICIENT CHARCOAL FILTER OR THE LIKE
John L. Cherry, Washington, N.C., assignor to Charcoal Service Corporation, Bath, N.C.
Filed May 28, 1982, Ser. No. 383,283
Term of patent 14 years
U.S. Cl. D23—149



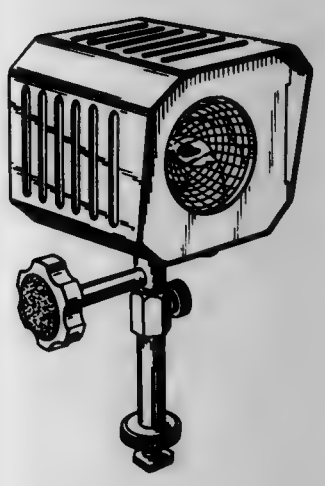
278,554
OTOSCOPE
Leroy D. Bain, Alpine, and Murray J. Risch, San Diego, both of Calif., assignors to B and B Marketing and Development Inc., San Diego, Calif.
Filed Sep. 2, 1982, Ser. No. 414,025
Term of patent 14 years
U.S. Cl. D24—17



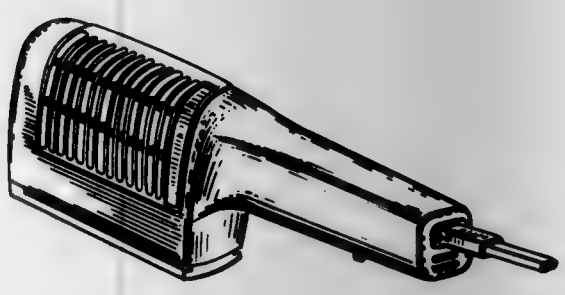
278,555
PICTURE LAMP
Jack D. Cummings, 10519 Monogram Ave., Granada Hills, Calif. 91344
Filed Nov. 20, 1982, Ser. No. 441,920
Term of patent 14 years
U.S. Cl. D26—60



278,556
SPOTLIGHT FOR VIDEO CAMERA
Kenneth L. Rubel, 300 W. Hill, Apt. 916, Chicago, Ill. 60610
Filed Sep. 30, 1982, Ser. No. 429,438
Term of patent 14 years
U.S. Cl. D26—63



278,557
STYLER DRYER
Witold Pajak, Wayne, N.J., assignor to Conair Corporation, Edison, N.J.
Filed Apr. 27, 1983, Ser. No. 489,196
Term of patent 14 years
U.S. Cl. D28—13

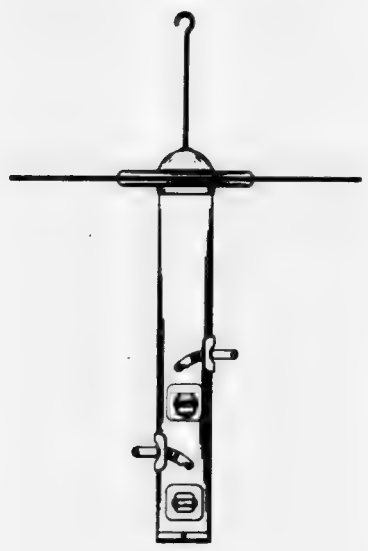


278,558
COVERED VANITY MIRROR
John E. Shenken, and Charles A. Haas, both of 420 E. Grand St., Des Moines, Iowa 50309
Filed Aug. 12, 1982, Ser. No. 412,559
Term of patent 14 years
U.S. Cl. D6—309

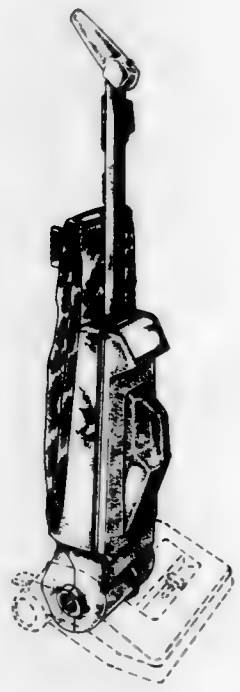




278,559
BIRD FEEDER
Peter A. Latham, Rye, NH, and Peter J. Sabean, Braintree, Mass., assignors to Opus, Inc., Framingham, Mass.
Filed Jan. 4, 1983, Ser. No. 455,602
Term of patent 14 years
U.S. Cl. D30—15



278,560
COMBINED SUCTION CLEANER UPPER HOUSING AND BAG OR THE LIKE
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Jun. 10, 1982, Ser. No. 387,175
Term of patent 14 years
U.S. Cl. D32—22



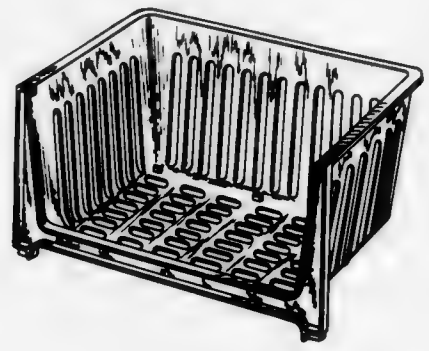
278,561
CONTAINER
George C. Anderson, Mount Prospect, Ill., assignor to Insilco Corporation, Wheeling, Ill.
Filed Sep. 13, 1982, Ser. No. 417,018
Term of patent 14 years
U.S. Cl. D32—53



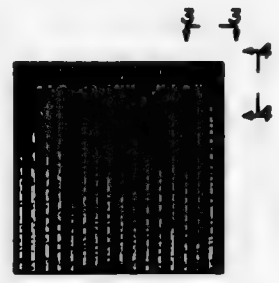
278,562
MOBILE STORAGE RACK FOR TRAY TABLES
Norbert L. Cwik, Northfield, Ill., assignor to Quaker Industries, Inc., Antioch, Ill.
Filed Apr. 26, 1982, Ser. No. 371,947
Term of patent 14 years
U.S. Cl. D34—26



278,563
COMBINED STACKABLE AND NESTABLE BIN
Robert T. Howitt, Leominster, Mass., assignor to Frem Corporation, Worcester, Mass.
Filed Sep. 29, 1982, Ser. No. 427,170
Term of patent 14 years
U.S. Cl. D34—40



278,564
CARPET TILE
Harold Reuben, Akron, Ohio, assignor to The Akro Corporation, Canton, Ohio
Filed Sep. 30, 1982, Ser. No. 431,139
Term of patent 14 years
U.S. Cl. D92—25



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF APRIL, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. O. Smith Harvestore Products, Inc.: *See—*
Cline, Kevin W.; and Kretschmer, Stephen L., 4,512,665, Cl. 366-167.000.

A. Stucki Company: *See—*
Horger, Oscar J., 4,512,261, Cl. 105-167.000.

Aalbers, Vas J., to Heineken Technisch Beheer, B.V. Preparation of malt and beer having a low nitrosamine content. 4,513,013, Cl. 426-16.000.

AB Vacuum-Extractor: *See—*
Uddenberg, Goran O., 4,512,347, Cl. 128-352.000.

Abbas, Shakir A.; and Magdo, Ingrid E., to International Business Machines Corporation. Self-aligned metal field effect transistor integrated circuit. 4,513,303, Cl. 357-23.300.

Abbey, Kirk J.; Erickson, James R.; and Kunz, Barbara L., to SCM Corporation. Cathodic electrocoating composition compounded with latex binder. 4,512,860, Cl. 204-181.00C.

Abbott, James B.; Kohn, Ernest O.; Berry, Christopher; and Slade, Mark N., to Metal Box plc. Method of forming flanged containers. 4,512,172, Cl. 72-68.000.

Abe, Michio; Maeda, Naoyuki; and Lynas, Robert M., to Tokai TRW & Co. Ltd. Rotation detecting apparatus. 4,512,367, Cl. 137-554.000.

Abe, Seiko: *See—*
Igashira, Toshihiko; Kawai, Hisasi; Tanaka, Takeshi; Iwamoto, Kenzi; Abe, Seiko; and Hashimoto, Eiji, 4,512,307, Cl. 123-383.000.

Abe, Shinichi; Taura, Mitsuharu; Amano, Hidetoshi; and Mizuno, Toshiaki, to Toyota Jidosha Kabushiki Kaisha; and Nippondenso Co., Ltd. Method of and device for controlling fuel injection in internal combustion engine. 4,512,320, Cl. 123-492.000.

Abe, Yoichi: *See—*
Matsumoto, Hajime; and Abe, Yoichi, 4,512,748, Cl. 446-354.000.

Abel, William E., to Sentrol, Inc. Housing for an electronic circuit board. 4,513,354, Cl. 361-399.000.

Abele, Gunter, to Machinefabriek G. J. Nijhuis B.V. Apparatus for unhairing slaughtered livestock. 4,512,058, Cl. 17-20.000.

Ableidinger, Bruce J.: *See—*
Henry, Michael D.; Ableidinger, Bruce J.; and Agarwal, Nirmal K., 4,513,395, Cl. 364-900.000.

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Valayil, Silvester; Abu-Moustafa, Magda; and Benjamin, Terry A., 4,512,818, Cl. 148-6.14R.

Abys, Joseph A.; and Okinaka, Yutaka, to AT&T Bell Laboratories. Palladium compound synthesis procedure. 4,512,963, Cl. 423-387.000.

ACF Industries, Inc.: *See—*
Tansuwan, Chusak, 4,512,309, Cl. 123-425.000.

Ackermann, Albert B.; Jones, Donald K.; and Holey, Timothy M., to Boeing Company, The. Escape slide deployment system. 4,512,539, Cl. 244-137.00P.

Acklam, Donald J.; Bird, David; and Hill, Graham A., to British Aerospace Public Limited Company. Control apparatus. 4,513,235, Cl. 318-685.000.

Acme Engineering & Manufacturing Corp.: *See—*
Bohanon, Hoy R., Sr., 4,512,242, Cl. 98-31.500.

Acorn Engineering Company: *See—*
Morris, Earl L.; and Hafner, V. Walter, 4,512,241, Cl. 98-32.000.

Adam-Molina, Solange; and Hofheinz, Werner, to Hoffmann-La Roche Inc. Method of inhibiting β-lactamase forming pathogens. 4,512,999, Cl. 514-192.000.

Adams, Ladd M.: *See—*
Hayatdavoudi, Asadollah; and Adams, Ladd M., 4,512,420, Cl. 175-67.000.

Addamiano, Arrigo; and Klein, Philipp H., to United States of America, Navy. Recovery of fragile layers produced on substrates by chemical vapor deposition. 4,512,825, Cl. 148-175.000.

Adlhart, Otto J., to Engelhard Corporation. Hydrogen generator. 4,513,065, Cl. 429-19.000.

Adolphi, Heinrich: *See—*
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,512,984, Cl. 514-147.000.

Adsorbent Products Inc.: *See—*
Goldman, Max, 4,512,245, Cl. 98-115.400.

Agarwal, Nirmal K.: *See—*
Henry, Michael D.; Ableidinger, Bruce J.; and Agarwal, Nirmal K., 4,513,395, Cl. 364-900.000.

Agbay, Albert J.; and Thomas, Ralph H., Sr., to Robert Linkletter Associates, Inc. Tamper resistant and tamper evident closures. 4,512,485, Cl. 215-225.000.

Agfa-Gevaert AG: *See—*
Helling, Gunter, 4,513,080, Cl. 430-537.000.
Hosel, Peter, 4,512,704, Cl. 414-292.000.

Aichi Steel Works, Ltd.: *See—*
Aoyama, Shigetsune; Yoshikawa, Kazuo; Hasegawa, Yoshimichi; and Higuchi, Junichi, 4,512,559, Cl. 267-47.000.

Air Preheater Company, Inc., The: *See—*
Goetschius, Gary C., 4,512,389, Cl. 165-10.000.

Air Products and Chemicals, Inc.: *See—*
Santangelo, Joseph G.; and Fernbacher, John M., 4,512,403, Cl. 166-261.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami; and Hashimoto, Kenji, 4,512,546, Cl. 251-65.000.
Ishikawa, Kazuo, 4,512,212, Cl. 74-733.000.
Kawabata, Yasuhiro; and Akagi, Motonobu, 4,512,153, Cl. 60-611.000.

Aisin Warner Kabushiki Kaisha: *See—*
Motomura, Jiro; Kamiya, Yasuhisa; and Nishikawa, Seiichi, 4,512,449, Cl. 192-3.280.

Aizawa, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage inverter device. 4,513,362, Cl. 363-41.000.

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Kawabata, Yasuhiro; and Akagi, Motonobu, 4,512,153, Cl. 60-611.000.

Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Material for packaging light-sensitive materials. 4,513,050, Cl. 428-200.000.

Akashi, Goro: *See—*
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Akita, Shigeyuki: *See—*
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, 4,512,189, Cl. 73-296.000.

Akutsu, Kazushi: *See—*
Hasebe, Koshi; Miura, Kunio; Ono, Takashi; Akutsu, Kazushi; and Minami, Kazuaki, 4,513,377, Cl. 364-449.000.

Al-Muddarris, Ghazi R., to Davy McKee Aktiengesellschaft. Dehydrogenation process. 4,513,162, Cl. 585-654.000.

Albert-Frankenthal AG: *See—*
Fischer, Emil, 4,512,506, Cl. 227-5.000.

Albrecht, Wolf-Wigand; Papp, Uwe; and Behrens, Dieter, to Hermann C. Starck Berlin. Valve metal powder doped with boron. 4,512,805, Cl. 75-244.000.

Alcoa Chemie GmbH: *See—*
Pohland, Horst; and Tielens, Arthur J., 4,512,959, Cl. 423-121.000.

Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., to University of Medicine and Dentistry of New Jersey. Bio-absorbable composite tissue scaffold. 4,512,038, Cl. 3-1.900.

Alexander, Martin. Method of measuring and/or monitoring the surface tension of fluids. 4,512,183, Cl. 73-64.400.

Alink, Aloysius J. W. O.; and van Marle, Berend P., to Thomassen International B.V. Device for the separation of particles from a stream of gas. 4,512,759, Cl. 494-14.000.

Allard, Joseph, to Eurotungstene. System for mounting tooth-carrier sectors on a cutter wheel or a milling-cutter drum. 4,512,612, Cl. 299-91.000.

Allec, Josiane: *See—*
Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,513,011, Cl. 514-730.000.

Allen-Bradley Company: *See—*
Boysen, Gerd C.; Murray, Patrick S.; and Robinson, Marquis B., 4,513,181, Cl. 200-50.00C.

Allen, Edgar W.: *See—*
Farag, Samir F.; Allen, Edgar W.; and Little, Thomas R., 4,513,180, Cl. 200-50.00R.

Allied Corporation: *See—*
Dickson, James; and Hays, Charles, 4,513,020, Cl. 427-34.000.
Dieringer, Bruce G., 4,513,214, Cl. 310-71.000.
Kurtz, Bruce E., 4,513,154, Cl. 570-145.000.
Pauwels, Michael A.; Wright, Danny O.; Harvey, Bruce J.; and Bauer, Thomas J., 4,512,317, Cl. 123-478.000.
Tomsa, Vladimir, 4,512,623, Cl. 339-143.00R.
Wilensky, Barry F.; and Maggi, Joseph A., 4,513,318, Cl. 358-139.000.

Alps Electric Co., Ltd.: *See—*
Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, 4,512,675, Cl. 400-328.000.

Alsthom-Atlantique: *See—*
Obrecht, Georges, 4,512,596, Cl. 285-81.000.

Altec Industries, Inc.: *See—*
Freudenthal, Frank D.; and Anderson, Carl M., 4,512,436, Cl. 182-2.000.

Altman, Frederick D.: *See—*
Mast, Steven C.; and Altman, Frederick D., 4,512,293, Cl. 123-65.00B.

Aluminium Pechiney: *See—*
Brun, Marcel; Perret, Andre; and Cailleux, Claude, 4,512,695, Cl. 409-134.000.
Aluminum Company of America: *See—*
La Barge, Robert L.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,512,253, Cl. 100-53.000.
Alvarez, Ernest. Interchangably headed tool. 4,512,381, Cl. 145-29.00R.
Alverth, Ronald W.; and Schumacher, Thomas H., to Mako-Tek Corporation, The. Pullout roller assembly. 4,512,564, Cl. 271-274.000.
AM International: *See—*
Crist, Lee D., 4,512,255, Cl. 101-230.000.
Amano, Hidetoshi: *See—*
Abe, Shinichi; Taura, Mitsuharu; Amano, Hidetoshi; and Mizuno, Toshiaki, 4,512,320, Cl. 123-492.000.
AMAX, Inc.: *See—*
Bowersox, Bruce V.; and Shepherd, Thomas I., 4,512,430, Cl. 177-163.000.
Ambrose, Albert R.; and Fancett, Scott F., to Cooper Industries Inc. Oscillating axle override system. 4,512,589, Cl. 280-6.00R.
Amdahl Corporation: *See—*
Ziv, Pinhas; and Ng, Yiu-Keung, 4,513,370, Cl. 364-200.000.
American Can Company: *See—*
Kudert, Frederick G.; Tennant, William A.; and Tung, Thomas T., 4,512,730, Cl. 425-130.000.
American Home Products Corporation: *See—*
Anderson, Donald G.; and Ferrara-Jordan, Elisa M., 4,513,294, Cl. 346-33.0ME.
American Home Products Corporation (Del.): *See—*
Jones, Flave L.; and Kelly, Mark L., 4,513,295, Cl. 346-33.0ME.
American Screen Printing Equipment Company: *See—*
Bubley, Henry J., 4,512,563, Cl. 271-85.000.
American Sterilizer Company: *See—*
Koubek, Edward, 4,512,951, Cl. 422-33.000.
Roche, John N., 4,512,106, Cl. 49-445.000.
Ameron, Inc.: *See—*
Hegle, Richard L., 4,512,685, Cl. 405-284.000.
AMF Incorporated: *See—*
Crowder, Alvin L., III; Dailey, Nils L.; Fiore, Joseph V.; and Hou, Kenneth C., 4,512,897, Cl. 210-656.000.
AMP Incorporated: *See—*
Bakermans, Johannes C. W.; Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,513,353, Cl. 361-399.000.
Kumar, Vijay, 4,512,618, Cl. 339-14.00R.
Ampex Corporation: *See—*
Kudelski, Stefan, 4,513,229, Cl. 318-7.000.
Amscomatic, Inc.: *See—*
Sylvester, John D., 4,512,464, Cl. 206-292.000.
AMSTED Industries Incorporated: *See—*
Kozar, Robert S., 4,512,901, Cl. 210-792.000.
Anderson, Carl M.: *See—*
Freudenthal, Frank D.; and Anderson, Carl M., 4,512,436, Cl. 182-2.000.
Anderson, Donald G.; and Ferrara-Jordan, Elisa M., to American Home Products Corporation. Physiological trend data recorder. 4,513,294, Cl. 346-33.0ME.
Anderson, James J.: *See—*
Lyman, Dale E.; and Anderson, James J., 4,512,932, Cl. 260-990.000.
Anderson, Jeff L., to NCR Corporation. Method and apparatus for the production of electret material. 4,512,940, Cl. 264-22.000.
Anderson, R. David: *See—*
Jacobs, George S.; and Anderson, R. David, 4,512,365, Cl. 137-413.000.
Andersson, Helge: *See—*
Hilmersson, Anders; Lagerstedt, Jan; and Andersson, Helge, 4,512,935, Cl. 261-79.00A.
Anderton, John J., to GTE Products Corporation. Splice casing assembly. 4,512,628, Cl. 350-96.200.
Anderton, Kenneth; Hall, Nigel; Parton, Brian; Renfrew, Andrew H. M.; and Shaw, Malcolm G., to Imperial Chemical Industries PLC. Cationic triphendioxazine dyes, methods for their manufacture and their use for dyeing cellulosic substrates. 4,512,773, Cl. 8-657.000.
Andre, Robert T.: *See—*
Landry, Walter J.; and Andre, Robert T., 4,512,142, Cl. 56-13.900.
Andreev, Anatoly A.; and Romanov, Anatoly A. Method and apparatus for controlling plasma generation in vapor deposition. 4,512,867, Cl. 204-298.000.
Andrews, Beatrice M.; Carr, Neil; Gray, George W.; and Hogg, Christine, to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdon of Great Britian and Northern Ireland of Whitehall, The. Liquid crystal compounds. 4,512,636, Cl. 350-350.00R.
Angicor Limited: *See—*
Kaster, Robert L.; and Domaas, Perry M., 4,512,471, Cl. 206-438.000.
Angmorter, Paul K.; Simpson, Howard D.; and Richardson, Ryden L., to Union Oil Company of California. Hydrotreating catalyst and a method for preparing the catalyst. 4,513,097, Cl. 502-211.000.
Anhalt, Richard C. Saw chain rivet spinner. 4,512,070, Cl. 29-243.530.
ANIC, S.p.A.: *See—*
Romano, Ugo, 4,512,930, Cl. 260-463.000.
Anniston Pump Shop, Inc.: *See—*
Lockwood, John C., 4,513,198, Cl. 235-61.00L.
Anstine, Larry D.; James, Dean B.; Melaika, Edward A.; and Peterson, John P., Jr., to United States of America, Energy. Nuclear reactor cooling system decontamination reagent regeneration. 4,512,921, Cl. 252-626.000.
Anthony, John, to Union Carbide Corporation. Multilayer film having a layer of low pressure, low density heterogeneous ethylene copolymers. 4,513,038, Cl. 428-35.000.
Antkowiak, Edward T. High-accuracy navigating apparatus with step-driven projected chart. 4,513,378, Cl. 364-450.000.
Aoki, Kozo: *See—*
Sakanoue, Kei; and Aoki, Kozo, 4,513,079, Cl. 430-502.000.
Aoyama, Akira: *See—*
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Aoyama, Shigetsune; Yoshikawa, Kazuo; Hasegawa, Yoshimichi; and Higuchi, Junichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho; Aichi Steel Works, Ltd.; and Chuo Hatsujyo Kabushiki Kaisha. Leaf spring construction. 4,512,559, Cl. 267-47.000.
Apodaca, Jeffrey S., to Thomas & Betts Corporation. Strippable shielded electrical cable. 4,513,170, Cl. 174-36.000.
Arad, Yoel. Portable gas heater particularly useful for heating foodstuffs. 4,512,328, Cl. 126-37.00B.
Aragona, Louis. Punching bag apparatus and adjustable supporting means. 4,512,569, Cl. 272-78.000.
Arai, Naoki: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,513,360, Cl. 363-20.000.
Araki, Shuichi: *See—*
Okai, Tsukasa; and Araki, Shuichi, 4,513,444, Cl. 382-56.000.
Aratani, Matsuhiko: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,512,980, Cl. 514-18.000.
Archer, Wendel E.; Luther, James M.; and Thieken, Michael L., to AT&T Bell Laboratories. Optical fiber switch, electromagnetic actuating apparatus with permanent magnet latch control. 4,512,627, Cl. 350-96.200.
Ardac, Inc.: *See—*
Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,513,439, Cl. 382-7.000.
Arias Mas, Gonzalo. Machine for making ice flakes from sea water or fresh water. 4,512,160, Cl. 62-71.000.
Arieh, Simon: *See—*
Courvoisier, Guy; and Arieh, Simon, 4,513,197, Cl. 219-527.000.
Aritake, Toshiyuki, to Mitsubishi Plastics Industries Limited. Adhesive tape and process for its production. 4,513,028, Cl. 427-173.000.
Arjomari-Prioux: *See—*
Vernois, Michel; and Duboeuf, Jean-Paul, 4,513,056, Cl. 428-264.000.
Armstrong, Richard J.: *See—*
Dickson, Edward J.; and Armstrong, Richard J., 4,512,535, Cl. 242-200.000.
Arndt, Eric D.: *See—*
La Barge, Robert L.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,512,253, Cl. 100-53.000.
Arndt, Peter J.: *See—*
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Arnold, Fred E.: *See—*
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Arthur D. Little, Inc.: *See—*
McCullough, John E., 4,512,066, Cl. 29-23.500.
Arts Et Techniques Nouvelles: *See—*
Augros, Jacques, 4,512,487, Cl. 215-274.000.
Asaba, Takao, to Yamaha Hatsudoki Kabushiki Kaisha. Engine with supercharger. 4,512,152, Cl. 60-601.000.
Asano, Mitsugu: *See—*
Tatsuno, Kimio; Saito, Susumu; Ito, Shoichi; Terashima, Isamu; Homma, Yoshifumi; Asano, Mitsugu; and Ono, Yoshifumi, 4,513,300, Cl. 346-160.000.
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Katayama, Sakae; Asano, Tadahiko; Marugame, Kazuo; Kanada, Sadaoki; and Kawasaki, Yoshinari, 4,512,552, Cl. 253-389.00R.
Asano, Toshiaki: *See—*
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ASC Incorporated: *See—*
Trostle, D. Mark; Kaltz, Milton C.; Moler, Ronald; and Cowsert, Lendell E., 4,512,606, Cl. 296-130.000.
Aschermann, Willi; and Haarhaus, Peter, to Gebr. Happich GmbH. Sun visor for automobiles. 4,512,605, Cl. 296-97.00G.
Aschwanden, Werner; Branca, Quirico; Kyburz, Emilio; and Pfister, Rudolf, to Hoffmann-La Roche Inc. Cycloheptene derivatives. 4,513,002, Cl. 514-408.000.
ASEA Aktiebolag: *See—*
Ling, Bernt; and Sternad, Mikael, 4,512,711, Cl. 414-786.000.
Ashai Kogaku Kogyo Kabushiki Kaisha: *See—*
Ito, Tokuhisa; Ohno, Hideaki; Kurata, Izumi; and Okuyama, Takashi, 4,512,642, Cl. 354-4.000.
Ashland Oil, Inc.: *See—*
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,513,093, Cl. 502-84.000.
Goel, Anil B., 4,512,927, Cl. 260-410.500.
Ashline, William J.: *See—*
Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., 4,513,268, Cl. 335-35.000.

Associated Dynamics, Incorporated: *See*—
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Associated Electrical Industries Limited: *See*—
Gill, Dennis, 4,512,827, Cl. 156-48.000.
Astec Components, Ltd.: *See*—
Josephson, Elliot, 4,513,226, Cl. 315-219.000.
Astfalk, Greg; Dougherty, Timothy S.; and Viriyayuthakorn, Montri, to AT&T Technologies, Inc. Methods of and apparatus for insulating a conductor with a plastic material. 4,512,944, Cl. 264-174.000.
AT&T Bell Laboratories: *See*—
Abys, Joseph A.; and Okinaka, Yutaka, 4,512,963, Cl. 423-387.000.
Archer, Wendel E.; Luther, James M.; and Thieken, Michael L., 4,512,627, Cl. 350-96.200.
Cox, Donald C., 4,513,412, Cl. 370-29.000.
Fraser, Alexander G., 4,513,411, Cl. 370-13.000.
Gulati, Surender K., 4,513,432, Cl. 377-121.000.
Jayant, Nuggehally S., 4,513,426, Cl. 375-26.000.
Ngo, Peter D. T., 4,513,281, Cl. 340-703.000.
Runge, Peter K., 4,512,630, Cl. 350-96.210.
von Seggern, Heinz; and Wang, Tsuey T., 4,512,941, Cl. 264-22.000.
AT&T Technologies, Inc.: *See*—
Astfalk, Greg; Dougherty, Timothy S.; and Viriyayuthakorn, Montri, 4,512,944, Cl. 264-174.000.
Dines, David R.; and Webb, Vertis C., 4,512,707, Cl. 414-404.000.
Ellis, Roland, Jr.; Jacobs, Brian E.; March, Edward J.; and Newman, Raymond J., 4,512,509, Cl. 228-180.200.
Attaway, Julian J., to MM Systems Corporation. Moldings. 4,512,127, Cl. 52-288.000.
Attia, Yosry A.; and Tewksbury, Ted L., to Battelle Development Corp. Process for producing a metalliferous concentrate from a particulate feed material. 4,512,879, Cl. 209-3.000.
Attwood, Michael R.; Hassall, Cedric H.; Lambert, Robert W.; Lawton, Geoffrey; and Redshaw, Sally, to Hoffmann-La Roche Inc. Pyridazo[1,2-a][1,2]diazepines. 4,512,924, Cl. 260-243.300.
Augros, Jacques, to Arts Et Techniques Nouvelles. Bottle stopper. 4,512,487, Cl. 215-274.000.
Aumann, James T.; and Filshtinsky, Michael, to Christensen, Inc. Coring device with an improved weighted core sleeve and anti-gripping collar. 4,512,423, Cl. 175-226.000.
Aumann, James T.: *See*—
Rowley, David S.; and Aumann, James T., 4,512,419, Cl. 175-58.000.
Austin, Hollis B.: *See*—
Phillips, Lot; Austin, Hollis B.; and Blakeslee, Kenneth S., 4,513,179, Cl. 179-175.30R.
Australian National University, The: *See*—
Brandstetter, Aharon, 4,513,167, Cl. 136-244.000.
Avidan, Amos A.; and Kam, Anthony Y., to Mobil Oil Corporation. Process for the conversion of alcohols and oxygenates to hydrocarbons in a turbulent fluid bed reactor. 4,513,160, Cl. 585-640.000.
AVL AG: *See*—
Marsoner, Hermann; Ritter, Christoph; Kleinhappl, Erich; and Strutz, Winfried, 4,512,953, Cl. 422-67.000.
Ayers, Buell O.; and Clardy, Edwin K. Pressure compensation for a chromatograph. 4,512,181, Cl. 73-23.100.
Ayres, Paul S.; Ziels, Burton D.; and Chen, Chou-Ming, to Babcock & Wilcox Company, The. Vacuum insulated stem injection tubing. 4,512,721, Cl. 417-51.000.
B. F. Goodrich Company: *See*—
Babbin, William R.; and Messerly, James W., 4,512,942, Cl. 264-26.000.
B & G Plastics, Inc.: *See*—
Kolton, Chester; and Spater, Stuart S., 4,512,093, Cl. 40-20.00R.
Babbin, William R.; and Messerly, James W., to B. F. Goodrich Company. Method and apparatus for vulcanizing hose. 4,512,942, Cl. 264-26.000.
Babcock, Daniel A. Clutch brake. 4,512,450, Cl. 192-12.00R.
Babcock & Wilcox Company, The: *See*—
Ayres, Paul S.; Ziels, Burton D.; and Chen, Chou-Ming, 4,512,721, Cl. 417-51.000.
Ghering, Walter L.; and Thompson, William L., 4,512,200, Cl. 73-861.040.
Wiener, Murray, 4,512,336, Cl. 126-442.000.
Babitzka, Rudolf; Haag, Gottlob; and Linder, Ernst, to Robert Bosch GmbH. Slip clutch. 4,512,452, Cl. 192-104.00C.
Bacardit, Juan S., to Bendiberica S.A. Hydraulic distributor with a reaction biased control member. 4,512,238, Cl. 91-370.000.
Back, Erik G.; and Lundin, Bjorn-Eric, to Boliden Aktiebolag. Process for recovering lead from lead chloride containing raw material. 4,512,803, Cl. 75-77.000.
Baghdady, Elie J. Method and apparatus for signal detection, separation and suppression. 4,513,249, Cl. 328-150.000.
Bailey, Warren P. N., to National Research Development Corporation. Optical inspection of machined surfaces. 4,512,663, Cl. 356-446.000.
Baker, Bradley D.; and Kelly, Richard L., to Dysan Corporation. Method and apparatus for disk drive alignment. 4,513,331, Cl. 360-75.000.
Baker Colony Farms Ltd.: *See*—
Maendel, Jonathan P., 4,512,393, Cl. 165-54.000.
Baker, Stephen R.; Jamieson, William B.; Ross, William J.; and Todd, Alec, to Lilly Industries Limited. SRS-A antagonists. 4,513,005, Cl. 514-451.000.
Bakermans, Johannes C. W.; Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. Connection of leadless integrated circuit package to a circuit board. 4,513,353, Cl. 361-399.000.
Balch, Duane C., to Chartwell Corporation. Locking drain valve. 4,512,547, Cl. 251-115.000.
Balenger, John W. Weight transducer for inexpensive electronic scale. 4,512,432, Cl. 177-211.000.
Balko, Alexander B.; and Shah, Dhiraj M. Process for restoring patency to body vessels. 4,512,338, Cl. 128-1.00R.
Ball Corporation: *See*—
Falk, R. Aaron, 4,513,201, Cl. 250-342.000.
Ballard, James W.; and Ballard, Larry R., to Bonnici, Charles. Ventilator having insert for controlling moisture and method of making same. 4,512,243, Cl. 98-42.010.
Ballard, Larry R.: *See*—
Ballard, James W.; and Ballard, Larry R., 4,512,243, Cl. 98-42.010.
Ballmer, Horst, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Method and means for stepwise charge control of electrochromic layers. 4,512,637, Cl. 350-357.000.
Ballu, Patrick J., to Tecnoma. Agricultural sprayer. 4,512,516, Cl. 239-168.000.
Banford, Dennis W., to Peachtree Doors, Inc. Rigidified doorway. 4,512,124, Cl. 52-207.000.
Banks, Robert L.: *See*—
Kukes, Simon G.; and Banks, Robert L., 4,513,099, Cl. 502-228.000.
Baran, Walter J., Jr., to United Technologies Corporation. Turbine stator assembly. 4,512,712, Cl. 415-116.000.
Baravaglio, Marie E. Bullet trap for a shooting stand. 4,512,585, Cl. 273-410.000.
Barber-Colman Company: *See*—
Trost, Wayne C., 4,512,373, Cl. 139-11.000.
Barber, Forest C. Arthroscopic surgery dissecting apparatus. 4,512,344, Cl. 128-305.000.
Barber, Thomas D., to Schlumberger Technology Corporation. Phasor processing of induction logs including skin effect correction. 4,513,376, Cl. 364-422.000.
Barcy, Michael F., to CT Harwood Limited. Engine preheaters. 4,512,322, Cl. 123-549.000.
Bardell, Paul H., Jr.; and McAnney, William H., to International Business Machines Corporation. Simultaneous self-testing system. 4,513,418, Cl. 371-25.000.
Barden Corporation, The: *See*—
Saravis, Lawrence M., deceased; Stein, Jeffrey A.; and Saravis, Darren S., 4,512,617, Cl. 308-6.00C.
Barfield, Michelle D.; and Spector, George. Ornament. 4,513,035, Cl. 428-11.000.
Barker, Thruburn: *See*—
Ottsen, Henning; and Barker, Thruburn, 4,513,401, Cl. 367-19.000.
Barlow, Anthony: *See*—
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,512,920, Cl. 252-573.000.
Barnes, Casper W., to North American Philips Corporation. Ultrasound imaging with FM detection. 4,512,196, Cl. 73-620.000.
Barnhill, Martin L., III; and Pagac, William T., to Snap-on Tools Corporation. Fast lead socket wrench. 4,512,220, Cl. 81-121.100.
Barre, Claude, to Siemens Aktiengesellschaft. Circuit arrangement constructed in ECL circuitry. 4,513,210, Cl. 307-455.000.
Barrera, Giorgio. Apparatus for forming stator coils of dynamo electric machines. 4,512,376, Cl. 140-92.100.
Barrett, Paul Q.: *See*—
Gorman, Anthony G.; Smith, Peter L.; and Barrett, Paul Q., 4,513,413, Cl. 370-30.000.
Barringer, Eric A.; and Eagar, Thomas W., to Massachusetts Institute of Technology. Non-hygroscopic welding flux binders. 4,512,822, Cl. 148-24.000.
Barry Wright Corporation: *See*—
Cholakis, Peter N., 4,512,720, Cl. 416-241.00A.
Bartelsen, Lutz; and Neuendorf, Hans-Cristoph, to Flachglas Aktiengesellschaft. Electric self-defrosting windshield heating arrangement providing fast or slow heat. 4,513,196, Cl. 219-203.000.
BASF Aktiengesellschaft: *See*—
Fischer, Rolf; Weitz, Hans-Martin; and Siegel, Hardo, 4,513,150, Cl. 568-385.000.
Hahn, Erwin; and Neumann, Peter, 4,512,929, Cl. 260-453.0AR.
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,513,105, Cl. 521-56.000.
Parg, Adolf; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,512,797, Cl. 71-93.000.
Rieber, Norbert; Platz, Rolf; and Jung, Johann, 4,512,795, Cl. 71-88.000.
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,512,984, Cl. 514-147.000.
Battelle Development Corp.: *See*—
Attia, Yosry A.; and Tewksbury, Ted L., 4,512,879, Cl. 209-3.000.
Battelle-Institut E.V.: *See*—
Beuter, Karl, 4,512,194, Cl. 73-579.000.
Battelle Memorial Institute: *See*—
Courvoisier, Guy; and Arieh, Simon, 4,513,197, Cl. 219-527.000.
Bauer, Bernhard: *See*—
Olschewski, Armin; Herrmann, Gerhard; and Bauer, Bernhard, 4,512,670, Cl. 384-147.000.
Olschewski, Armin; Herrmann, Gerhard; Bauer, Bernhard; and Zirk, Elisabeth, 4,512,672, Cl. 384-477.000.
Bauer, Ewald; and Krejza, Jurgen, to Wurttembergische Metallwarenfabrik AG. Saucepan lid with detachable handle. 4,512,495, Cl. 220-316.000.
Bauer, Gunter; and Eckert, Joachim, to GfE Gesellschaft fur Elektrometallurgie mbH. Method of recovering molybdenum oxide. 4,512,958, Cl. 423-55.000.

Bauer, Heinz; and Becker, Hans, to Linde Aktiengesellschaft. Multistage rectification of gaseous hydrocarbons containing sour gases. 4,512,782, Cl. 55-48.000.

Bauer, Thomas J.: *See—*
Pauwels, Michael A.; Wright, Danny O.; Harvey, Bruce J.; and Bauer, Thomas J., 4,512,317, Cl. 123-478.000.

Baus, Heinz G. Structural assembly, for shower partition or the like. 4,512,045, Cl. 4-610.000.

Bausch & Lomb Incorporated: *See—*
Clark, James A.; and Gabriel, Alfred P., 4,512,206, Cl. 74-10.540.

Bayer Aktiengesellschaft: *See—*
Kuhle, Engelbert; Klauke, Erich; Paulus, Wilfried; and Genth, Hermann, 4,513,003, Cl. 514-411.000.
Maurer, Fritz; Homeyer, Bernhard; and Hammann, Ingeborg, 4,513,000, Cl. 514-407.000.
Raue, Roderich; Huhne, Volker; and Kuhlthau, Hans-Peter, 4,513,142, Cl. 548-507.000.

Bayssat, Michel; Belleville, Maryse; and Grand, Marcel, to Lipha, Lyonnaise Industrielle Pharmaceutique. Long-acting theophylline in medicinal form. 4,512,994, Cl. 514-374.000.

BBC Brown, Boveri & Company, Limited: *See—*
Hutchings, Ron; Loitzl, Ruzica; and Muller, Klaus, 4,513,102, Cl. 502-325.000.
Keller, Jakob, 4,512,548, Cl. 251-124.000.

Beaver Products, Inc.: *See—*
Walston, Everett V., 4,512,126, Cl. 52-251.000.

Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., to Ashland Oil, Inc. Immobilization of vanadia deposited on sorbent materials during treatment of carbo-metallic oils. 4,513,093, Cl. 502-84.000.

Becker, Hans: *See—*
Bauer, Heinz; and Becker, Hans, 4,512,782, Cl. 55-48.000.

Becker, Werner: *See—*
Poetsch, Dieter; Massmann, Volker; Becker, Werner; and Wagner, Horst, 4,513,324, Cl. 358-214.000.

Beckman Instruments, Inc.: *See—*
Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., 4,512,758, Cl. 494-13.000.
Wright, Herschel E.; and Wedemeyer, Robert C., 4,512,202, Cl. 73-863.000.

Beckman, John H., to Union Carbide Corporation. Casing sizing means and method. 4,512,059, Cl. 17-45.000.

Beer, Gunter: *See—*
Pesch, Wolfgang; and Beer, Gunter, 4,512,808, Cl. 106-83.000.

Beers, Dale M., to General Electric Company. Low modulus one component RTV compositions processes. 4,513,115, Cl. 524-731.000.

Behrens, Dieter: *See—*
Albrecht, Wolf-Wigand; Papp, Uwe; and Behrens, Dieter, 4,512,805, Cl. 75-244.000.

Beiersdorf AG: *See—*
Grah, Klaus, 4,512,854, Cl. 204-15.000.

Belbel, Elie; Blanchard, Christian; Lauraire, Michel; Fechant, Louis; and Haury, Andre , to La Telemecanique Electrique. Contactor having self-protection means against the effect of the forces of repulsion between the contacts. 4,513,270, Cl. 335-195.000.

Belbin, Chesley E., Sr. Tablet storage and dispensing device. 4,512,500, Cl. 221-82.000.

Bell, Alan G.: *See—*
Borriello, Gaetano; Lyon, Richard F.; and Bell, Alan G., 4,513,427, Cl. 375-110.000.

Belleville, Maryse: *See—*
Bayssat, Michel; Belleville, Maryse; and Grand, Marcel, 4,512,994, Cl. 514-374.000.

Bendiberica S.A.: *See—*
Bacardit, Juan S., 4,512,238, Cl. 91-370.000.

Bendix Corporation, The: *See—*
Runkle, Dean E.; and Colpaert, James J., 4,512,445, Cl. 188-71.900.

Benecke, Herman P.: *See—*
Revici, Emanuel; Sherwood, Bob E.; Benecke, Herman P.; Rice, John M.; and Geisler, Richard W., 4,513,008, Cl. 514-560.000.

Benjamin, Terry A.: *See—*
Valayil, Silvester; Abu-Moustafa, Magda; and Benjamin, Terry A., 4,512,818, Cl. 148-6.14R.

Bennett, Gloria A.; Elder, Michael G.; and Kemme, Joseph E., to United States of America, Energy. Thermal protection apparatus. 4,513,352, Cl. 361-385.000.

Bennett, James G., Jr.; and Lee, Gim F., Jr., to General Electric Company. Polyphenylene ether compositions. 4,513,120, Cl. 525-316.000.

Benning, Larry J.: *See—*
van Ee, Dirk; and Benning, Larry J., 4,512,392, Cl. 165-54.000.

Benson, Glendon M., to New Process Industries, Inc. Constant temperature element. 4,512,150, Cl. 60-526.000.

Bentley Laboratories, Inc.: *See—*
Raible, Donald A., 4,512,761, Cl. 604-8.000.

Berfield, Robert C., to Shop-Vac Corporation. Vibration isolating means. 4,512,713, Cl. 415-119.000.

Bergstrom, Bengt: *See—*
Edgren, Anders; Soderberg, Jan; and Bergstrom, Bengt, 4,513,106, Cl. 521-58.000.

Berkowitz, Irving L., to Kason Industries Inc. Panel fastener system. 4,512,122, Cl. 52-127.900.

Berry, Christopher: *See—*
Abbott, James B.; Kohn, Ernest O.; Berry, Christopher; and Slade, Mark N., 4,512,172, Cl. 72-68.000.

Beth Israel Hospital Association, The: *See—*
Spears, James R., 4,512,762, Cl. 604-21.000.

Bethurum, Gary C., to Thomas & Betts Corporation. Flat cable pitch transition connector. 4,512,621, Cl. 339-99.00R.

Bettendorf Stanford Inc.: *See—*
Koberlein, Ross D., 4,512,137, Cl. 53-435.000.

Beuter, Karl, to Battelle-Institut E.V. Method and apparatus for controlling or measuring the thickness of material layers. 4,512,194, Cl. 73-579.000.

Bhaskar, Ravi K.: *See—*
Sparer, Randall V.; and Bhaskar, Ravi K., 4,513,034, Cl. 428-1.000.

BHS-Dr. Ing Hofler, Maschinenbau GmbH: *See—*
van de Locht, Heinrich, 4,512,109, Cl. 51-123.00G.

Bicocchi, Eugenio. Audio-visual device for gymnastic implements. 4,512,566, Cl. 272-72.000.

Bidegaray, Dominique A., to Christensen, Inc. Rotating bits including a plurality of types of preferential cutting elements. 4,512,426, Cl. 175-329.000.

Billings, Jeff. Excavator bucket with retractable scraper and scarifier. 4,512,090, Cl. 37-117.500.

Binder, Kurt: *See—*
Gast, Theodor; Kubach, Hans; and Binder, Kurt, 4,512,549, Cl. 251-137.000.

Binnig, Rupert; Gerlach, Gunter; Nilles, Peter; and Pankatz, Jurgen, to SEITZ ENZINGER NOLL Maschinenbau Aktiengesellschaft. Method and apparatus for cleaning containers. 4,512,811, Cl. 134-10.000.

Bird, David: *See—*
Acklam, Donald J.; Bird, David; and Hill, Graham A., 4,513,235, Cl. 318-685.000.

Bird Machine Company, Inc.: *See—*
Flynn, Peter J., 4,512,888, Cl. 210-221.200.

Bistrian, Bruce R.: *See—*
Moldawer, Lyle L.; Blackburn, George L.; and Bistrian, Bruce R., 4,512,974, Cl. 424-101.000.

Bixby, Lawrence B. Rungless motorized ladder. 4,512,440, Cl. 182-146.000.

Black & Decker Inc.: *See—*
Pfanzer, Gerhard, 4,512,078, Cl. 30-393.000.

Black, Maurice. Book holder. 4,512,542, Cl. 248-460.000.

Blackburn, George L.: *See—*
Moldawer, Lyle L.; Blackburn, George L.; and Bistrian, Bruce R., 4,512,974, Cl. 424-101.000.

Blaha, John F.: *See—*
Schriber, Louis; Stephens, Robert E.; and Blaha, John F., 4,512,256, Cl. 101-248.000.

Blain, Aurele. Clamp-on ammeter. 4,513,246, Cl. 324-127.000.

Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J. No-stir dry mix with pudding nuggets for cake with discontinuous pudding phase. 4,513,016, Cl. 426-554.000.

Blakeslee, Edward A., to Sperry Corporation. Stub draper drive for draper header. 4,512,140, Cl. 56-11.600.

Blakeslee, Kenneth S.: *See—*
Phillips, Lot; Austin, Hollis B.; and Blakeslee, Kenneth S., 4,513,179, Cl. 179-175.30R.

Blanchard, Christian: *See—*
Belbel, Elie; Blanchard, Christian; Lauraire, Michel; Fechant, Louis; and Haury, Andre , 4,513,270, Cl. 335-195.000.

Blanding, Douglass L.; and Muszak, Martin F., to Eastman Kodak Company. Apparatus for storing and dispensing analysis slides. 4,512,952, Cl. 422-63.000.

Blase, Manfred: *See—*
Wagener, Dietrich; and Blase, Manfred, 4,512,080, Cl. 33-125.00T.

Blazer International Corp.: *See—*
Lemme, Charles D., 4,513,358, Cl. 362-276.000.

Blevins, Milton L.; and Seiter, Charles R., to Combustion Engineering, Inc. Tube end deforming tool. 4,512,178, Cl. 72-393.000.

Bloomer, Milton D., to General Electric Company. Alternating comparator circuitry for improved discrete sampling resistance control. 4,513,207, Cl. 307-126.000.

Bloomfield, Philip E., to Pennwalt Corporation. Weight sensing apparatus employing polymeric piezoelectric film. 4,512,431, Cl. 177-210.00R.

Bloss, Walter L., III; and Brody, Edward M., to GTE Laboratories Incorporated. Multi-wavelength demultiplexer for fiber optical communication. 4,513,305, Cl. 357-30.000.

Boccalatte, Vitale, to Fiat Auto S.p.A. Overhead conveyor installation for motor vehicle bodies particularly for electrophoresis paint lines, and a body carrier usable in this installation. 4,512,869, Cl. 204-300.0EC.

Bodine, Albert G. Method for forming a cement annulus for a well. 4,512,401, Cl. 166-249.000.

Boehland, Burnell G.; and Coutts, Donald G., to Speedy Automatic Chimney Sweep, Inc. Chimney cleaning apparatus with motor drive. 4,512,055, Cl. 15-249.000.

Boeing Company, The: *See—*
Ackermann, Albert B.; Jones, Donald K.; and Holey, Timothy M., 4,512,539, Cl. 244-137.00P.
Small, Vincent J., 4,513,419, Cl. 371-29.000.

Bohanon, Hoy R., Sr., to Acme Engineering & Manufacturing Corp. Heat destratification method and system. 4,512,242, Cl. 98-31.500.

Bohlen, Harald; Engelke, Helmut; Greschner, Johann; Muhl, Reinhold; Nehmiz, Peter; and Trumpp, Hans J., to International Business Machines Corporation. Mask and system for mutually aligning objects in ray exposure systems. 4,513,203, Cl. 250-491.100.

Boichu, Claude P.; and Yeou, Victor, to Poclain. Earth-moving machine with boom, dipperstick and bucket, equipped with means for directionally-adjusting the bucket. 4,512,708, Cl. 414-694.000.

Boliden Aktiebolag: *See—*
Back, Erik G.; and Lundin, Bjorn-Eric, 4,512,803, Cl. 75-77.000.
Leirnes, Johan S.; Lundstrom, Malkolm S.; Hedlund, Martin L.; and Buren, Kurt J. A., 4,512,798, Cl. 75-3.000.

Boltze, Karl-Heinz; and Horstmann, Harald, to Troponwerke GmbH & Co. KG. Indole derivatives, processes for their preparation, and their use as medicaments. 4,513,004, Cl. 514-414.000.

Boms, Manfred: *See—*
Mahler, Gert; Falkenroth, Heinz-Jurgen; Leitermann, Wulf; and Boms, Manfred, 4,512,240, Cl. 98-2.040.

Bondoc, Alfredo A.; Flood, Eugene J.; and Sieling, Frederick W., to GAF Corporation. Sheet type felt. 4,513,045, Cl. 428-137.000.

Bonifield, Thomas D.; and Purdes, Andrew J., to Texas Instruments Incorporated. Plasma reactor sidewall shield. 4,512,283, Cl. 118-723.000.

Bonifield, Thomas D.: *See—*
Purdes, Andrew J.; and Bonifield, Thomas D., 4,513,021, Cl. 427-38.000.

Bonnici, Charles: *See—*
Ballard, James W.; and Ballard, Larry R., 4,512,243, Cl. 98-42.010.

Borden, Peter G., to Varian Associates, Inc. Three-terminal solar cell circuit. 4,513,168, Cl. 136-244.000.

Borg-Warner Corporation: *See—*
Cole, Edward H., Jr.; and Ledvina, Timothy J., 4,512,754, Cl. 474-245.000.

Borriello, Gaetano; Lyon, Richard F.; and Bell, Alan G., to Xerox Corporation. Data and clock recovery system for data communication controller. 4,513,427, Cl. 375-110.000.

Bowditch, Philip N., to Charles Stark Draper Laboratory, Inc., The. Automated assembly system for seamed articles. 4,512,269, Cl. 112-121.120.

Bowen, David R.: *See—*
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,512,919, Cl. 252-522.00R.

Bowersox, Bruce V.; and Shepherd, Thomas I., to AMAX, Inc. Electronic coupled-in-motion railroad track scale. 4,512,430, Cl. 177-163.000.

Bowman, David F., to RCA Corporation. Dipole radiating element. 4,513,292, Cl. 343-795.000.

Bowman, Melvin B., to Ford Motor Company. Foldback current limiting driver. 4,513,241, Cl. 323-285.000.

Boysen, Gerd C.; Murray, Patrick S.; and Robinson, Marquis B., to Allen-Bradley Company. Combination mechanical and electrical interlock mechanism. 4,513,181, Cl. 200-50.00C.

Brackmann, Warren A., to Rothmans of Pall Mall Canada Limited. Tobacco drying procedure. 4,512,353, Cl. 131-304.000.

Branca, Quirico: *See—*
Aschwanden, Werner; Branca, Quirico; Kyburz, Emilio; and Pfister, Rudolf, 4,513,002, Cl. 514-408.000.

Brancq, Bernard; and Malandain, Michel, to SEPPIC. Film-forming compositions for enveloping solid forms, particularly pharmaceutical or food products or seeds, and products obtained, coated with said compositions. 4,513,019, Cl. 427-3.000.

Brandon, Ralph E.; Davis, Charles J.; Ring, Michael; and Swenson, Roy S., to International Paper Company. Wet-laid, non-woven fabrics. 4,512,849, Cl. 162-157.200.

Brandstetter, Aharon, to Australian National University, The. Arrays of polarized energy-generating elements. 4,513,167, Cl. 136-244.000.

Brandtjen & Kluge, Inc.: *See—*
Ury, Frank, 4,512,561, Cl. 270-40.000.

Brasseur, Georg; and Rathmayr, Heinz, to Friedmann & Maier Aktiengesellschaft. Device for shutting down a fuel injection combustion engine. 4,512,306, Cl. 123-367.000.

Brauer, Hans; and Gerhards, Hans-Dieter, to Kocks Technik GmbH & Co. Tube release rolling mills. 4,512,173, Cl. 72-98.000.

Braun, Rosalinde, to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 4,513,302, Cl. 346-210.000.

Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., to National Distillers and Chemical Corporation. Silanes useful as anti-treeing additives. 4,512,920, Cl. 252-573.000.

Breen, Thomas J., to Rand McNally & Company. Tamper-resisting negotiable instruments containing a transparent verifying web. 4,512,595, Cl. 283-70.000.

Breimer, Hendrik; Van Roessel, Frederik J.; and Tienkamp, Engbert, to U.S. Philips Corporation. Method for automatically setting up a television camera. 4,513,319, Cl. 358-163.000.

Bremer, Robert C., Jr.: *See—*
Marr, Louise C.; and Bremer, Robert C., Jr., 4,512,716, Cl. 415-205.000.

Brenneman, Gary W. Belt tensioning device. 4,512,752, Cl. 474-114.000.

Bretford Manufacturing, Inc.: *See—*
Petrick, David C., 4,512,543, Cl. 248-670.000.

Bricot, Claude, to Thomson-CSF. Device for optical recording and read-out of data along a prerecorded track. 4,513,407, Cl. 369-44.000.

Briggs & Stratton Corp.: *See—*
Uuskallio, Arvo F., 4,512,499, Cl. 220-374.000.

British Aerospace Public Limited Company: *See—*
Acklam, Donald J.; Bird, David; and Hill, Graham A., 4,513,235, Cl. 318-685.000.

British Gas Corporation: *See—*
Wild, Keith R., 4,512,777, Cl. 48-210.000.

Brock, Kenneth A., to Christensen, Inc. Up-drill sub for use in rotary drilling. 4,512,425, Cl. 175-329.000.

Brody, Edward M.: *See—*
Bloss, Walter L., III; and Brody, Edward M., 4,513,305, Cl. 357-30.000.

Bronchart, Robert D. E. M.: *See—*
Lepain, Andre; and Bronchart, Robert D. E. M., 4,512,914, Cl. 252-355.000.

Brown, James L., to Rockwell International Corporation. CMOS/SOS transistor gate array apparatus. 4,513,307, Cl. 357-42.000.

Bruce, Robert M. Transaction numbering apparatus. 4,513,375, Cl. 364-401.000.

Brueggemann, Harry P., to Xerox Corporation. Scanner optics with no cross scan field curvature. 4,512,625, Cl. 350-6.800.

Brun, Marcel; Perret, Andre; and Cailleux, Claude, to Aluminium Pechiney. Apparatus for separating electrolysis bath residues on precalcined anodes. 4,512,695, Cl. 409-134.000.

Brun, Milivoj K.; Lee, Minyoung; and Szala, Lawrence E., to General Electric Company. Microcomposite of metal boride and ceramic particles. 4,512,946, Cl. 264-332.000.

Brunelle, Daniel J.; and Singleton, Daniel A., to General Electric Company. Method for making aromatic ethers using diorganoamino pyridinum salt catalyst. 4,513,141, Cl. 548-476.000.

Brunner, Arthur: *See—*
Ernst, Alfons; and Brunner, Arthur, 4,512,184, Cl. 73-116.000.

Bruno, Caminiti. Last with device for aperture adjustment as required and shield element for last adaptability to right and left shoes. 4,512,052, Cl. 12-116.200.

Brunsch, Arwed; Ruh, Wolf-Dieter; and Trippel, Gerhard, to International Business Machines Corporation. Method of measuring the thickness of the removed layer in subtractive workpiece processing. 4,512,847, Cl. 156-626.000.

Brunswick Corporation: *See—*
Hundertmark, James M., 4,512,292, Cl. 123-65.00B.

Bubley, Henry J., to American Screen Printing Equipment Company. Takeoff method and apparatus. 4,512,563, Cl. 271-85.000.

Bucher, Heinz, to Metronic Electronic GmbH. Air bubble hydromassaging apparatus. 4,512,934, Cl. 261-64.00B.

Buchmuller, Horst; and Michelbrink, Bernhard, to Deutsche Babcock Aktiengesellschaft. West ash remover. 4,512,265, Cl. 110-171.000.

Buck, Carl J., to Johnson & Johnson Products, Inc. Visible light cured orthopedic polymer casts. 4,512,340, Cl. 128-90.000.

Buck, James C. Brush conditioner for car wash. 4,512,814, Cl. 134-34.000.

Buck, Kenneth J.; Grace, Robert E.; and Hayes, Thomas A., Jr., to Xerox Corporation. Control scheme compensating for changing characteristics of a photoconductive member used in an electrophotographic printing machine. 4,512,652, Cl. 355-14.0CH.

Buderus Aktiengesellschaft: *See—*
Stiegler, Hartmut, 4,512,327, Cl. 126-21.00A.

Budinger, William D. Workpiece holder for polishing operation. 4,512,113, Cl. 51-236.000.

Buholz, Neal E., to United States of America, Air Force. CO_2 Laser stabilization and switching. 4,513,422, Cl. 372-29.000.

Bullivant, Kenneth W., to K-Tron International, Inc. Weighing apparatus and method. 4,512,428, Cl. 177-25.000.

Bunce, Earl G. Rotary engine. 4,512,302, Cl. 123-238.000.

Bunker, James W.; and Ritchie, Robert S., to United States of America, National Aeronautics and Space Administration. Slide release mechanism. 4,512,678, Cl. 403-15.000.

Burborough, William R., to Lucas Industries public limited company. Fuel injection pump of the rotary distributor type. 4,512,727, Cl. 417-462.000.

Burdg, Charles E.: *See—*
Umble, Don G.; Choong, Tsi-Pin; Izzo, Kenneth R.; Burdg, Charles E.; Hankin, Gary H.; and Dalke, Charles A., 4,512,179, Cl. 73-4.00R.

Buren, Kurt J. A.: *See—*
Leirnes, Johan S.; Lundstrom, Malkolm S.; Hedlund, Martin L.; and Buren, Kurt J. A., 4,512,798, Cl. 75-3.000.

Burilla, Charles T.: *See—*
Clark, Thomas E.; and Burilla, Charles T., 4,513,025, Cl. 427-68.000.

Burke, James W.; Krueger, John D.; and Krueger, John W., to Krubur, Inc. Aerosol cannister fitting. 4,512,587, Cl. 277-205.000.

Burkhardt, Horst, to Dr. Johannes Heidenhain GmbH. Error correction arrangement for digital length or angle measuring device. 4,512,082, Cl. 33-125.00R.

Burkle, Erwin: *See—*
Eichlseder, Martin; and Burkle, Erwin, 4,512,733, Cl. 425-207.000.

Burlington Industries, Inc.: *See—*
Leach, Jack; and Davis, Delbert A., 4,513,047, Cl. 428-175.000.

Burns, James W. P.: *See—*
Zaneveld, Lourens J. D.; and Burns, James W. P., 4,512,342, Cl. 128-303.00R.

Burroughs Corporation: *See—*
Schwartz, Sidney J., deceased, 4,513,396, Cl. 365-6.000.
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., 4,513,278, Cl. 340-347.0DA.

Burroughs Wellcome Co.: *See—*
Duch, David S.; Nichol, Charles A.; and Sigel, Carl W., 4,512,992, Cl. 514-258.000.

Burton, Rufus L., Jr.: *See—*
Dunham, David A.; Riggs, Robert P.; and Burton, Rufus L., Jr., 4,512,553, Cl. 254-89.00R.

Busby, David C.: *See—*
Wegman, Richard W.; and Busby, David C., 4,513,151, Cl. 568-484.000.

Bylund, Sven O., to Santrade Ltd. Cutting insert and cutting tool therefor. 4,512,689, Cl. 407-40.000.
C. R. Bard, Inc.: *See*—
Norton, William J., 4,512,771, Cl. 604-824.000.
Cailleux, Claude: *See*—
Brun, Marcel; Perret, Andre; and Cailleux, Claude, 4,512,695, Cl. 409-134.000.
Calame-Lonjean, Andre ; and Naujalis, Pierre, to Commissariat a l'Energie Atomique. Liquid sampling device. 4,512,203, Cl. 73-863.810.
Calgon Corporation: *See*—
Howe, Michael W.; and Sopp, Samuel W., 4,512,823, Cl. 148-113.000.
Myers, John G.; Logan, Douglas P.; and Walker, Jerry L., 4,512,774, Cl. 44-51.000.
Callegari, Stephen R., Sr.; and Rogers, Tommie L., to Rogers, Tommie. Pipe spinner. 4,512,216, Cl. 81-57.170.
Calvert, Rodney K.: *See*—
Scott, Dale K.; and Calvert, Rodney K., 4,512,135, Cl. 53-285.000.
Camco Incorporated: *See*—
Pringle, Ronald E., 4,512,411, Cl. 166-54.500.
Cameron, Robert W., to Timken Company, The. Cone type rock crusher and bearing arrangement therefor. 4,512,525, Cl. 241-207.000.
Campbell, Donn V.: *See*—
Goodall, Steve R.; Dubowicz, Palemon W.; and Campbell, Donn V., 4,513,338, Cl. 361-1.000.
Campbell, Gerald D.: *See*—
Cegielski, John M., Jr.; Campbell, Gerald D.; and Schaub, Clyde D., 4,512,267, Cl. 110-347.000.
Campbell, John W. Swinging fire apparatus pump operator panel. 4,512,412, Cl. 169-24.000.
Campbell, Jules D., Jr.: *See*—
Jamiolkowski, Michael J.; and Campbell, Jules D., Jr., 4,513,258, Cl. 331-111.000.
Campbell, Kirk B.: *See*—
Campbell, Richard J., Jr.; and Campbell, Kirk B., 4,512,274, Cl. 112-423.000.
Campbell, Richard J., Jr.; and Campbell, Kirk B. Seam for tube of cloth, fabric or flexible material. 4,512,274, Cl. 112-423.000.
Canon Kabushiki Kaisha: *See*—
Ishida, Masato; and Takeda, Hiroaki, 4,512,655, Cl. 355-55.000.
Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,513,219, Cl. 310-328.000.
Kikukawa, Noriyuki; and Yamada, Yasuaki, 4,513,236, Cl. 318-696.000.
Kinoshita, Takao; and Sakai, Shinji, 4,513,313, Cl. 358-44.000.
Mochizuki, Noritaka; Minami, Setsuo; and Matsui, Yoshiya, 4,512,641, Cl. 350-573.000.
Okamura, Shigeru, 4,513,297, Cl. 346-140.00R.
Shinoda, Nobuhiko; Sakurada, Nobuaki; Kawamura, Masaharu; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,512,656, Cl. 354-475.000.
Tokuda, Ryuji, 4,512,643, Cl. 354-21.000.
Tokumitsu, Jun; and Minoura, Kazuo, 4,512,632, Cl. 350-167.000.
Yoshida, Masaaki, 4,512,644, Cl. 354-149.100.
Cantec, Inc.: *See*—
Frei, Siegfried; and Koch, Jakob, 4,512,490, Cl. 220-72.000.
Caralli, Michael J.; and Friedline, Gary W., to Pittsburgh Brass Manufacturing Company. Shuttle valves and system for fluid control. 4,512,781, Cl. 55-26.000.
Carette, Brigitte; Kone, Ali; Souquet, Jean-Louis; Ribes, Michel; and Maurin, Maurice, to Centre National de la Recherche Scientifique. Vitreous materials with ionic conductivity, the preparation of same and the electrochemical applications thereof. 4,513,070, Cl. 429-193.000.
Carl Schenck AG: *See*—
Giers, Alfred; and Heiland, Manfred, 4,512,671, Cl. 384-215.000.
Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See*—
Ballmer, Horst, 4,512,637, Cl. 350-357.000.
Carman, Carol S.: *See*—
Koser, Gerald F.; and Carman, Carol S., 4,513,137, Cl. 546-14.000.
Carney, William V.; and Fasano, Michael, to Porta Systems Corp. Conductor guide means for telephone connector blocks. 4,512,622, Cl. 339-103.00M.
Carr, Neil: *See*—
Andrews, Beatrice M.; Carr, Neil; Gray, George W.; and Hogg, Christine, 4,512,636, Cl. 350-350.00R.
Carrier, Anthony. Winter boot. 4,512,089, Cl. 36-112.000.
Carroll, Thomas J.; Corsello, Vincent G.; Glass, Michael; and Piccolo, Dominic J., to Warner-Lambert Company. Powdered center-filled chewing gum compositions. 4,513,012, Cl. 426-5.000.
Carruthers, James D.: *See*—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,513,093, Cl. 502-84.000.
Carson, Lansing M., to Motorola, Inc. Simplified frequency scheme for coherent transponders. 4,513,447, Cl. 455-76.000.
Carydias, Roger; and Pacradouni, Chahan. Handling system for precast units. 4,512,121, Cl. 52-125.200.
Cascini, Michael R., to Rockwell International Corporation. Torque limiting fastener. 4,512,697, Cl. 411-7.000.
CBI Offshore, Inc.: *See*—
Hale, David R.; Owen, William A.; and Orndorff, James A., Jr., 4,512,684, Cl. 405-217.000.
Cegielski, John M., Jr.; Campbell, Gerald D.; and Schaub, Clyde D., to John Zink Company. Methods and apparatus for combusting ash producing solids. 4,512,267, Cl. 110-347.000.
Celanese Corporation: *See*—
Cobb, Arnold J., 4,512,731, Cl. 425-198.000.
Wang, Donald G. J., 4,512,894, Cl. 210-500.200.
Celio, John A., to NCR Corporation. Computer interface apparatus using split-cycle lookahead addressing for faster access to paged memory. 4,513,371, Cl. 364-200.000.
Central Glass Company Limited: *See*—
Hayakawa, Masanori; and Nishimura, Satoshi, 4,512,906, Cl. 252-62.630.
Centre National de la Recherche Scientifique: *See*—
Carette, Brigitte; Kone, Ali; Souquet, Jean-Louis; Ribes, Michel; and Maurin, Maurice, 4,513,070, Cl. 429-193.000.
Chainer, Timothy J.; Scranton, Robert A.; and Worthington, Thomas K., to International Business Machines Corporation. Data input pen for Signature Verification. 4,513,437, Cl. 382-3.000.
Chaki, Takao, to Clarion Co., Ltd. Pushbutton-operated waveband or station selector. 4,512,204, Cl. 74-10.330.
Chaki, Takao, to Clarion Co., Ltd. Arm mechanism of a pushbutton tuner. 4,512,205, Cl. 74-10.330.
Chamberlain, Savvas G.; and Schlig, Eugene S., to International Business Machines Corporation. Charge coupled device output circuit structure. 4,513,431, Cl. 377-60.000.
Chamberlin, Ronald D., to PPG Industries, Inc. Prevention of corrosion of electrolyte cell components. 4,512,857, Cl. 204-98.000.
Champion International Corporation: *See*—
Hain, Paul O.; and Lepisto, J. George, 4,512,479, Cl. 206-632.000.
Korte, Ralph J., 4,512,478, Cl. 206-611.000.
Thompson, Kenneth P.; and Ihde, Richard C., 4,513,036, Cl. 428-35.000.
Chan, Shiu K.; Gerardi, John A.; and McGilvray, Bruce L., to International Business Machines Corporation. Cache locking controls in a multiprocessor. 4,513,367, Cl. 364-200.000.
Chandler Evans Inc.: *See*—
Waterman, Harold J., Jr., 4,512,101, Cl. 42-71.00R.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Hydrothermal zeolite activation. 4,513,091, Cl. 502-71.000.
Chang, Clarence D.: *See*—
Miale, Joseph N.; and Chang, Clarence D., 4,512,876, Cl. 208-114.000.
Chang, Ning: *See*—
Hunt, Thomas K.; Goodson, William H., III; Chang, Ning; Knighton, David R.; Gottrup, Finn; and Firmin, Richard, 4,512,349, Cl. 128-632.000.
Chapman, Robert A.: *See*—
Doulton, Romm; and Chapman, Robert A., 4,512,667, Cl. 368-10.000.
Chappell, William A.; Tweed, William J.; and Higgins, David T., to Rival Manufacturing Company. Percolator including pump-type dispenser. 4,512,246, Cl. 99-312.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Bowditch, Philip N., 4,512,269, Cl. 112-121.120.
Charles Wyle Engineering Corporation: *See*—
Wyle, Charles; and Shea, Donald M., 4,512,947, Cl. 264-343.000.
Chartwell Corporation: *See*—
Balch, Duane C., 4,512,547, Cl. 251-115.000.
Chemische Werke Huels, AG: *See*—
Hanssle, Peter; and Zaar, Wolfgang, 4,513,157, Cl. 585-378.000.
Kampf, Wolfgang; Streck, Roland; and Haag, Horst G., 4,512,926, Cl. 260-398.000.
Chen, Chou-Ming: *See*—
Ayres, Paul S.; Ziels, Burton D.; and Chen, Chou-Ming, 4,512,721, Cl. 417-51.000.
Chen, Hsing-Yao, to RCA Corporation. Color picture tube having reconvergence slots formed in a screen grid electrode of an inline electron gun. 4,513,222, Cl. 313-412.000.
Chen, Jackson C., to Ethyl Corporation. Cold flow improver. 4,512,775, Cl. 44-62.000.
Chen, Johnson C. H.; and Eichelberger, John L., to Pennwalt Corporation. Encapsulated phase change thermal energy storage materials and process. 4,513,053, Cl. 428-221.000.
Chen, Otis Y.: *See*—
Duhl, David N.; Chen, Otis Y.; and Gell, Maurice L., 4,512,817, Cl. 148-3.000.
Chen, Tsang J., to Eastman Kodak Company. Compositions containing hydrophobic addenda uniformly loaded in latex polymer particles. 4,512,969, Cl. 424-81.000.
Chevron Research Company: *See*—
Rose, Allan F., 4,512,995, Cl. 514-277.000.
Simon, Ralph, 4,512,400, Cl. 166-245.000.
Chiba, Seibi: *See*—
Sakoe, Hiroaki; and Chiba, Seibi, 4,513,435, Cl. 381-41.000.
Chickering, Kenton, III: *See*—
Hinojosa, Alberto L.; Kim, Kee; and Chickering, Kenton, III, 4,512,359, Cl. 137-315.000.
Childers, Don A. Knife blade sharpener. 4,512,111, Cl. 51-157.000.
Chodorow, Marvin, to Varian Associates, Inc. Electron tube with transverse cyclotron interaction. 4,513,223, Cl. 315-4.000.
Cholakis, Peter N., to Barry Wright Corporation. Pump impellers and manufacture thereof by co-injection molding. 4,512,720, Cl. 416-241.00A.
Cholin, John M., to Firetek Corporation. Self compensating fire detection device. 4,513,202, Cl. 250-385.000.
Choong, Tsi-Pin: *See*—
Umble, Don G.; Choong, Tsi-Pin; Izzo, Kenneth R.; Burdg, Charles E.; Hankin, Gary H.; and Dalke, Charles A., 4,512,179, Cl. 73-4.00R.

Chow, Kirk K. Control bar for ratchet wrench. 4,512,218, Cl. 81-62.000.
Christensen, Clad P., Jr.: *See—*
Waynant, Ronald W.; Epp, Leonard; and Christensen, Clad P., Jr., 4,513,424, Cl. 372-68.000.
Christensen, Inc.: *See—*
Aumann, James T.; and Filshtinsky, Michael, 4,512,423, Cl. 175-226.000.
Bidegaray, Dominique A., 4,512,426, Cl. 175-329.000.
Brock, Kenneth A., 4,512,425, Cl. 175-329.000.
Rowley, David S.; and Aumann, James T., 4,512,419, Cl. 175-58.000.
Christine, William C., to Trinity Associates, a Partnership of the State of Pennsylvania. Fitment attachment methods in horizontal form/fill-/seal machines. 4,512,136, Cl. 53-410.000.
Christophersen, Steven L., to Snap-on Tools Corporation. Loosening tool for tie rod sleeves. 4,512,222, Cl. 81-464.000.
Chronister, Clyde H. Fabricated ball valve. 4,512,360, Cl. 137-326.000.
Chu, Pochen; and Dwyer, Francis G., to Mobil Oil Corporation. Composite catalyst for halogenation and condensation of alkanes. 4,513,092, Cl. 502-71.000.
Chung, Harold S.; and Dickert, Joseph J., Jr., to Mobil Oil Corporation. Process for extracting bitumen from tar sands. 4,512,872, Cl. 208-11.0LE.
Chuo Hatsujyo Kabushiki Kaisha: *See—*
Aoyama, Shigetsune; Yoshikawa, Kazuo; Hasegawa, Yoshimichi; and Higuchi, Junichi, 4,512,559, Cl. 267-47.000.
Chuwman, Tsutomu; Hagino, Tetsu; and Tsuchida, Shozaburo, to Toyota Jidosha Kabushiki Kaisha. Pin-sliding caliper disc brake with boot protector. 4,512,446, Cl. 188-73.380.
Cianci, James P.; and Layton, Terry N., to Kendall Company, The. Liquid drainage system with anti-reflux valve. 4,512,770, Cl. 604-323.000.
Ciba-Geigy Corporation: *See—*
Braun, Rosalinde, 4,513,302, Cl. 346-210.000.
Rosenberger, Siegfried, 4,513,109, Cl. 524-342.000.
Schindlery, Ctibor, 4,512,987, Cl. 514-171.000.
Cimilluca, Charles I., to Irex Corporation. Time gain control signal generator for an ultrasonic diagnostic system. 4,512,350, Cl. 128-660.000.
Cincinnati Milacron Inc.: *See—*
Hennekes, Daniel M.; Kolde, Richard A.; and Suica, David E., 4,512,709, Cl. 414-729.000.
Piotrowski, Tadeusz W., 4,512,068, Cl. 29-33.00P.
Citizen Watch Company Limited: *See—*
Nakagiri, Tadahiko, 4,513,282, Cl. 340-765.000.
Claar, Terry D.; and Petri, Randy J., to Institute of Gas Technology. High-temperature direct-contact thermal energy storage using phase-change media. 4,512,388, Cl. 165-1.000.
Clapper, Millard F. Centrifugal extractor for rotary air filters. 4,512,088, Cl. 34-58.000.
Clardy, Edwin K.: *See—*
Ayers, Buell O.; and Clardy, Edwin K., 4,512,181, Cl. 73-23.100.
Clarion Co., Ltd.: *See—*
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Chaki, Takao, 4,512,205, Cl. 74-10.330.
Clark, Henry S. Back-scrubber device. 4,512,054, Cl. 15-222.000.
Clark, James A.; and Gabriel, Alfred P., to Bausch & Lomb Incorporated. Actuating device for rotating shafts. 4,512,206, Cl. 74-10.540.
Clark, John T. M. Portable shower and bath mat. 4,512,044, Cl. 4-581.000.
Clark, Thomas E.; and Burilla, Charles T., to Sperry Corporation. Line emission penetration phosphor for multicolored displays. 4,513,025, Cl. 427-68.000.
Claunch, Carney P., II: *See—*
Kridl, Thomas A.; and Claunch, Carney P., II, 4,512,833, Cl. 156-94.000.
Claus, Richard O.; and Turner, Tyson M., to United States of America, National Aeronautics and Space Administration. Dual differential interferometer. 4,512,661, Cl. 356-351.000.
Clearfield, Abraham; and Jerus, Paul, to Texas A&M University System, The. Method of making sodium zirconium silico-phosphates. 4,512,905, Cl. 252-62.200.
Clemence, Francois: *See—*
Meier, Jean; and Clemence, Francois, 4,512,997, Cl. 514-383.000.
Cline, Kevin W.; and Kretschmer, Stephen L., to A. O. Smith Harvestore Products, Inc. Adjustable over-the-top agitator for a liquid manure tank. 4,512,665, Cl. 366-167.000.
Clipper, Eddie L. Game with marble agitation. 4,512,579, Cl. 273-123.00R.
Clough, Graham, to Nestec, S.A. Method of sealing a container and removing air headspace. 4,513,015, Cl. 426-396.000.
Cobb, Arnold J., to Celanese Corporation. Apparatus and process for filtering molten polymer. 4,512,731, Cl. 425-198.000.
Cohn, Arthur; and Schainker, Robert B., to Electric Power Research Institute, Inc. Method and means for recapturing coolant in a gas turbine. 4,512,715, Cl. 415-168.000.
Cole, Edward H., Jr.; and Ledvina, Timothy J., to Borg-Warner Corporation. Metal chain-belt. 4,512,754, Cl. 474-245.000.
Coleman, James H., to Sprague Electric Company. Monolithic ceramic capacitor and method for manufacturing to predetermined capacity value. 4,513,350, Cl. 361-321.000.
Coller, John H., to D. G. Shelter Products Company. Releasable latch bracket means for a vehicle sunroof. 4,512,598, Cl. 292-263.000.
Collins, Denver G., to State Industries, Inc. Water heater with combination magnetic and agitator means. 4,512,289, Cl. 122-380.000.
Collins, Donald A.; and O'Hanlan, Thomas B., to NCR Corporation. Error detecting system. 4,513,420, Cl. 371-38.000.
Collins, Patrick C., to General Electric Company. Multilayered hollow polycarbonate containers. 4,513,037, Cl. 428-35.000.
Colpaert, James J.: *See—*
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Com Dev Ltd.: *See—*
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Devaure, Bernard, 4,513,402, Cl. 367-73.000.
Communications Design Group, Inc.: *See—*
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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Saulgeot, Claude, 4,512,725, Cl. 417-366.000.
Conax Corporation: *See—*
Miller, Francis M., 4,513,248, Cl. 324-439.000.
Condon, Charles E., Jr.; and Malik, J. Peter, to Torrington Company, The. Bearing cup with external restraining flange. 4,512,673, Cl. 384-569.000.
Connolly, James D. Method of removing slimes from slurries. 4,512,880, Cl. 209-250.000.
Connolly, John F.; Wennerberg, Arnold N.; and Waters, Robert F., to Standard Oil Company (Indiana). Synthesis gas reaction iron containing active carbon catalysts. 4,513,096, Cl. 502-185.000.
Conoco Inc.: *See—*
Fenton, Jeff T., 4,513,144, Cl. 549-368.000.
Conover, William S. Linear ratchet. 4,512,217, Cl. 81-58.000.
Consolidated Papers, Inc.: *See—*
Damrau, Wayne A.; and Gauss, James C., 4,512,279, Cl. 118-411.000.
Container Corporation of America: *See—*
Lietzke, G. W., 4,512,541, Cl. 248-459.000.
Continental Disc Corporation: *See—*
Mozley, Robert M., 4,512,171, Cl. 72-55.000.
Control Data Corporation: *See—*
Logan, Max C.; and Nordstrom, Jon T., 4,512,161, Cl. 62-176.600.
Cook, Clarence E.: *See—*
Reel, Jerry R.; and Cook, Clarence E., 4,512,986, Cl. 514-170.000.
Cook, David D., Jr.: *See—*
Graham, Marshall D.; and Cook, David D., Jr., 4,513,438, Cl. 382-6.000.
Coolen, Toon, to Grays of Cambridge (Pakistan) Limited. Hockey stick having a U-shaped head. 4,512,573, Cl. 273-67.00A.
Cooper Industries Inc.: *See—*
Ambrose, Albert R.; and Fancett, Scott F., 4,512,589, Cl. 280-6.00R.
Cooper, Jack M., to General Screw Products Company. Blowdown fitting. 4,512,441, Cl. 184-105.00B.
Corbett, Lorimer J., to Medical Research (Marketing) Pty, Ltd. Method of treating navicular disease in horses. 4,513,010, Cl. 514-651.000.
Cordis Corporation: *See—*
Pohndorf, Peter J., 4,512,351, Cl. 128-786.000.
Cornelius, Edward B.: *See—*
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Corning Glass Works: *See—*
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Corrigan, Peter E.: *See—*
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Cosden Technology, Inc.: *See—*
Hahn, Granville J.; and Rutledge, Raleigh N., 4,512,395, Cl. 165-101.000.
Hahn, Granville J.; and Rutledge, Raleigh N., 4,512,943, Cl. 264-173.000.
Cosenza, Marino. Piling protector. 4,512,683, Cl. 405-216.000.
Costruzioni Aeronautiche Giovanni Agusta S.p.A.: *See—*
Pancotti, Santino; and Mariani, Renato, 4,512,717, Cl. 416-134.00A.
Cotterill, Lee A.: *See—*
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Coulter Electronics, Inc.: *See—*
Graham, Marshall D.; and Cook, David D., Jr., 4,513,438, Cl. 382-6.000.
Coulthard, T. Lionel; Townsley, Phillip M.; and Saben, Hugh S. Method for producing fungi. 4,512,103, Cl. 47-1.100.
Courvoisier, Guy; and Arieh, Simon, to Battelle Memorial Institute. Heated seal of resiliently compressible foam for matching the edge of a hollow portion of an article to an irregular surface. 4,513,197, Cl. 219-527.000.

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Coutts, Donald G.: *See—*
Boehland, Burnell G.; and Coutts, Donald G., 4,512,055, Cl. 15-249.000.

Coutures, Jean L., to Thomson-CSF. Device for detecting the presence or absence of a charge quantity and for storing the result of this detection. 4,513,211, Cl. 307-530.000.

Cowsert, Lendell E.: *See—*
Trostle, D. Mark; Kaltz, Milton C.; Moler, Ronald; and Cowsert, Lendell E., 4,512,606, Cl. 296-130.000.

Cox, Donald C., to AT&T Bell Laboratories. Time division adaptive retransmission technique for portable radio telephones. 4,513,412, Cl. 370-29.000.

Cox, Kenneth R. Stair climbing wheel chair. 4,512,588, Cl. 280-5.260.

Coy, Don R., Jr.; and Giannis, Peter M., to T/B & H Home Video. Cassette reel lock. 4,512,534, Cl. 242-198.000.

CPC International Inc.: *See—*
Keller, Frederick A., Jr.; Ganoung, Jeffrey S.; and Luenser, Susan J., 4,513,084, Cl. 435-140.000.

Crawford, James P. Induced stack draft apparatus. 4,512,264, Cl. 110-160.000.

Cricchi, James R., to Westinghouse Electric Corp. Prevention of latch-up in CMOS integrated circuits using Schottky diodes. 4,513,309, Cl. 357-42.000.

Criss, Russell C.; and Gillery, F. Howard, to PPG Industries, Inc. Stainless steel primer for sputtered films. 4,512,863, Cl. 204-192.00R.

Crist, Lee D., to AM International. Sheet handling mechanism for duplicating machine with duplexing capability. 4,512,255, Cl. 101-230.000.

Crook, Edward J., Jr., to Crosby Group, Inc., The. Load binder handle and extension therefor. 4,512,062, Cl. 24-71.00R.

Crosby Group, Inc., The: *See—*
Crook, Edward J., Jr., 4,512,062, Cl. 24-71.00R.

Cross, Danny R.: *See—*
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,512,701, Cl. 414-101.000.

Crossley, David W.; and Van Dore, Peter, to Mantua Metal Products Co., Inc. Model train coupler. 4,512,483, Cl. 213-75.0TC.

Crowder, Alvin L., III; Dailey, Nils L.; Fiore, Joseph V.; and Hou, Kenneth C., to AMF Incorporated. Molecular separation column and use thereof. 4,512,897, Cl. 210-656.000.

CT Harwood Limited: *See—*
Barcy, Michael F., 4,512,322, Cl. 123-549.000.

Cuisinarts, Inc.: *See—*
Williams, James E., 4,512,522, Cl. 241-37.500.

Cukelj, Mirko. Draw bar for machine tool. 4,512,696, Cl. 409-233.000.

Cummins Engine Company, Inc.: *See—*
DeVore, James R.; and Roettgen, Leslie A., 4,512,300, Cl. 123-196.0AB.
Wong, Victor W., 4,512,147, Cl. 60-274.000.

Cunningham, George F., Jr.; Lewis, John W.; McClure, Robert B.; and Poindexter, Daniel J., to International Business Machines Corporation. RF Coupling techniques. 4,512,841, Cl. 156-345.000.

D. G. Shelter Products Company: *See—*
Coller, John H., 4,512,598, Cl. 292-263.000.

Dabroski, Winifred C., to Permacel. Release coating composition. 4,513,059, Cl. 428-355.000.

Dahlgren, Lars. Strung racket and tension adjusting device therefor. 4,512,576, Cl. 273-73.00R.

Dai Nippon Printing Co., Ltd.: *See—*
Kobayashi, Yuji; and Okada, Takao, 4,513,316, Cl. 358-106.000.

Daikin Kogyo Co., Ltd.: *See—*
Nakagawa, Shinichi; Ihara, Kiyohiko; and Sogabe, Toshio, 4,513,129, Cl. 526-249.000.

Dailey, Nils L.: *See—*
Crowder, Alvin L., III; Dailey, Nils L.; Fiore, Joseph V.; and Hou, Kenneth C., 4,512,897, Cl. 210-656.000.

Daimler-Benz A.G.: *See—*
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Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Okai, Tsukasa; and Araki, Shuichi, 4,513,444, Cl. 382-56.000.

Dairy Systems, Inc.: *See—*
Heidecker, Robert F., 4,512,096, Cl. 40-304.000.

Dalferth, Gotthilf R. Device for releasing the flow of water in a water faucet. 4,512,551, Cl. 251-339.000.

Dalke, Charles A.: *See—*
Umble, Don G.; Choong, Tsi-Pin; Izzo, Kenneth R.; Burdg, Charles E.; Hankin, Gary H.; and Dalke, Charles A., 4,512,179, Cl. 73-4.00R.

Dallaire, Remy; and Larouche, Claude. Ring puzzle. 4,512,582, Cl. 273-158.000.

Dalton, Susan H. Ball and track game. 4,512,578, Cl. 273-110.000.

Damrau, Wayne A.; and Gauss, James C., to Consolidated Papers, Inc. Paper coating apparatus. 4,512,279, Cl. 118-411.000.

Dancsik, Josef J. Reciprocating mechanism. 4,512,207, Cl. 74-44.000.

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Hinojosa, Alberto L.; Kim, Kee; and Chickering, Kenton, III, 4,512,359, Cl. 137-315.000.

Danielson, Thomas R.; and Eberwine, Donald A., to Exxon Production Research Co. Moonpool guidance system for drill strings having attached umbilical lines. 4,512,408, Cl. 166-349.000.

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Gregory, Edward W.; Danielson, Thomas R.; and Eberwine, Donald A., 4,512,409, Cl. 166-352.000.

Danner, Helmut: *See—*
Thevis, Paul; and Danner, Helmut, 4,512,236, Cl. 89-128.000.

Dart Industries Inc.: *See—*
Grusin, Gerald M., 4,512,497, Cl. 220-369.000.

Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane ethers useful in the treatment of thrombolytic disease. 4,513,103, Cl. 514-469.000.

Data General Corporation: *See—*
Houseman, David L., 4,513,368, Cl. 364-200.000.
Ziegler, Michael L.; Marshall, Peter G.; and Whipple, David L., 4,513,372, Cl. 364-200.000.

Datacopy Corporation: *See—*
Merritt, Lauren V.; and Maclay, William R., 4,513,332, Cl. 360-77.000.

Datta, Pabitra, to RCA Corporation. Video disc molding composition. 4,512,916, Cl. 252-511.000.

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Franz, Reinhard; Dittmar, Wilfried; and Daubach, Gunter, 4,513,365, Cl. 364-140.000.

Davies, Robert B., to Motorola, Inc. Current ratioing device structure. 4,513,306, Cl. 357-36.000.

Davis, Charles J.: *See—*
Brandon, Ralph E.; Davis, Charles J.; Ring, Michael; and Swenson, Roy S., 4,512,849, Cl. 162-157.200.

Davis, Delbert A.: *See—*
Leach, Jack; and Davis, Delbert A., 4,513,047, Cl. 428-175.000.

Davis, James K.: *See—*
Vanderwal, Frank E., Jr.; and Davis, James K., 4,512,116, Cl. 51-347.000.

Davis, Michael I.; Garrett, Michael J.; and Wiseman, John A., to International Business Machines Corporation. Electronic assembly with forced convection cooling. 4,513,351, Cl. 361-384.000.

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Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; and Erwin, Lewis, 4,513,116, Cl. 525-53.000.

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Al-Muddarris, Ghazi R., 4,513,162, Cl. 585-654.000.

Day, Gary L.; and Robertson, James P., to Firestone Tire & Rubber Company, The. Sulfur-curable rubber skim stock compositions containing dithiodipropionic acid. 4,513,123, Cl. 525-332.600.

Deborde, Albert H.; and Remond, Pierre, to Saurer Diederichs Societe Anonyme. System for alternately inserting different weft yarns into the shed of a jet loom. 4,512,375, Cl. 139-435.000.

Dechelette, Helen, to Molex Incorporated. Insulation displacement terminal for an electrical connector and environmental sealing means therefor. 4,512,619, Cl. 339-94.00M.

Deckman, Harry W.; and Dunsmuir, John H., to Exxon Research and Engineering Co. Procedure for fabrication of microstructures over large areas using physical replication. 4,512,848, Cl. 156-630.000.

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Kaesser, Merle L., 4,512,714, Cl. 415-151.000.
Kuhn, John B.; and Lange, Henry J., 4,512,414, Cl. 172-112.000.

DeGood, Robert L.; and Malcolm, Eddie R., to Fike Metal Products Corporation. Dual range rupture disc assembly. 4,512,491, Cl. 220-89.00A.

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Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,513,105, Cl. 521-56.000.

Dekker, Cornelis B.; and Vries, Lodewijk B., to U.S. Philips Corporation. Community antenna television arrangement for the reception and distribution of TV - and digital audio signals. 4,513,315, Cl. 358-86.000.

Delang, Theodore G. Surgical instrument organizer. 4,512,466, Cl. 206-370.000.

De Lima Castro Netto, Eduardo. Security sealing system. 4,512,599, Cl. 292-307.00R.

Delluc, Rene E. Tubular vacuum-tight enclosures for thermal and acoustical insulating panels. 4,513,041, Cl. 428-69.000.

Delman, Dennis J., to Harris Corporation. Hardware median filter. 4,513,440, Cl. 382-30.000.

De Loach, Walter W. Closed loop water treating system. 4,512,784, Cl. 55-196.000.

Del Serra, David I., to Hughes Tool Company. Anti-rotation motor bearing. 4,513,215, Cl. 310-90.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Lee, Seok-Ho, to Wisconsin Alumini Research Foundation. 1,23-Dihydroxyvitamin D compounds. 4,512,925, Cl. 260-397.200.

Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,513,147, Cl. 562-506.000.

Denance, Raymond. Apparatus for performing intradermal, subcutaneous of intramuscular injections. 4,512,767, Cl. 604-137.000.

DeNicolo, William; and Nakada, Pershing. Method and device for selective separation of fine metal particles. 4,512,760, Cl. 494-37.000.

Dennis, Mark S.; Estell, David A.; and Light, David R., to Genentech, Inc. Method for overcoming trypsin inhibition. 4,512,973, Cl. 424-94.000.

Dennis, Patrick W.: *See—*
Lefevre, Donald K.; Dennis, Patrick W.; and Seegmiller, Dennis F., 4,513,290, Cl. 343-745.000.

Densen, Mark S. Readily erectable wardrobe cabinet and a mode of packaging the same. 4,512,477, Cl. 206-577.000.

Dente, Mario: *See—*
Robinson, Lee F.; Salimbeni, Francesco; Porcari, Guiliano; and Dente, Mario, 4,512,956, Cl. 422-270.000.
Dentistry Researchers & Designers, Inc.: *See—*
Michnick, Bruce T.; and Kitzis, Stanley, 4,512,744, Cl. 433-229.000.
DePakh, Stephan. Emission control device. 4,512,325, Cl. 123-572.000.
Derimiggio, John, to Eastman Kodak Company. Fuser apparatus. 4,512,649, Cl. 355-3.0FU.
DeSoto, Inc.: *See—*
Larkins, Bruce T., 4,512,330, Cl. 126-139.000.
Detriche, Jean-Marie, to Commissariat a l'Energie Atomique. Method and apparatus for the lateral positioning of a member relative to a joint. 4,513,195, Cl. 219-124.340.
Deulofeu, Jorge Magri. System of articulated legs for toy figures. 4,512,749, Cl. 446-390.000.
Deutsche Babcock Aktiengesellschaft: *See—*
Buchmuller, Horst; and Michelbrink, Bernhard, 4,512,265, Cl. 110-171.000.
Deutsche Perlite GmbH: *See—*
Wader, Heribert, 4,512,736, Cl. 432-58.000.
Devaure, Bernard, to Commissariat a l'Energie Atomique. Earthquake simulator. 4,513,402, Cl. 367-73.000.
Devchoudhury, Rathindra N., to NCR Corporation. ROM security circuit. 4,513,389, Cl. 364-900.000.
Devienne, Jules H. P., to Societe Nationale Industrielle et Aerospatiale. Device for maintaining a detonating cord against a transparent aircraft canopy member. 4,512,538, Cl. 244-122.0AF.
Devins, John C., to General Electric Company. Means to improve the dielectric performance of an insulative conduit with a flow of liquid dielectric coolant therein. 4,513,346, Cl. 361-212.000.
DeVore, James R.; and Roettgen, Leslie A., to Cummins Engine Company, Inc. Oil temperature control system for internal combustion engine. 4,512,300, Cl. 123-196.0AB.
Dewhurst, Alan, to Dewhurst & Partner P.L.C. Lift door control apparatus. 4,512,443, Cl. 187-57.000.
Dewhurst & Partner P.L.C.: *See—*
Dewhurst, Alan, 4,512,443, Cl. 187-57.000.
Dey, Arabinda N.: *See—*
Kuo, Han C.; Foster, Donald L.; Schlaikjer, Carl R.; Gopikanth, Mysore L.; and Dey, Arabinda N., 4,513,067, Cl. 429-101.000.
Deyer, Craig E., to RCA Corporation. System for providing a multi-bit input to a computer controlled system. 4,513,394, Cl. 364-900.000.
Dheur, Raymond J., to Fabrique Nationale Herstal. Pocket pistol. 4,512,100, Cl. 42-70.00A.
Dias, Francisco J.: *See—*
Struck, Bernd D.; Dias, Francisco J.; Luhleich, Hartmut; and Paffen nee Siebert, Ursula, 4,512,858, Cl. 204-104.000.
Diaz, Gerard J.: *See—*
McLaughlin, Thomas F.; and Diaz, Gerard J., 4,512,092, Cl. 40-2.00R.
Dicke, William C., to Singer Company, The. Pilot adaptor for flat wood boring bits. 4,512,691, Cl. 408-201.000.
Dickert, Joseph J., Jr.: *See—*
Chung, Harold S.; and Dickert, Joseph J., Jr., 4,512,872, Cl. 208-11.0LE.
Dickson, Edward J.; and Armstrong, Richard J., to Dickson, Edward John. Tape cassette with clutch assembly. 4,512,535, Cl. 242-200.000.
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Dickson, Edward J.; and Armstrong, Richard J., 4,512,535, Cl. 242-200.000.
Dickson, James; and Hays, Charles, to Allied Corporation. Platelet metal powder for coating a substrate. 4,513,020, Cl. 427-34.000.
Didier Engineering GmbH: *See—*
Wagener, Dietrich; and Blase, Manfred, 4,512,080, Cl. 33-125.00T.
Dieringer, Bruce G., to Allied Corporation. Dynamoelectric machine. 4,513,214, Cl. 310-71.000.
Dietrich, Paul: *See—*
Escher, Sina D.; and Dietrich, Paul, 4,512,352, Cl. 131-276.000.
Dills, Reuben H. Adhesive tape tab. 4,512,462, Cl. 206-53.000.
Dinelli, Dino: *See—*
Gervasio, Vincenzo; and Dinelli, Dino, 4,513,206, Cl. 290-4.00C.
Dines, David R.; and Webb, Vertis C., to AT&T Technologies, Inc. System for loading and dispensing articles from a magazine. 4,512,707, Cl. 414-404.000.
Dionex Corporation: *See—*
Mar, Dav, 4,512,545, Cl. 251-4.000.
Dittmar, Wilfried: *See—*
Franz, Reinhard; Dittmar, Wilfried; and Daubach, Gunter, 4,513,365, Cl. 364-140.000.
Dittrich, Horst. Yarn limiting disc device. 4,512,532, Cl. 242-116.000.
Dr. Johannes Heidenhain GmbH: *See—*
Burkhardt, Horst, 4,512,082, Cl. 33-125.00R.
Ernst, Alfons; and Brunner, Arthur, 4,512,184, Cl. 73-116.000.
Schmitt, Walter; and Michel, Dieter, 4,512,083, Cl. 33-143.00L.
Doi, Shigeru: *See—*
Munekata, Kenichi; Doi, Yoshio; Suzuki, Isao; and Doi, Shigeru, 4,513,366, Cl. 364-167.000.
Doi, Yoshio: *See—*
Munekata, Kenichi; Doi, Yoshio; Suzuki, Isao; and Doi, Shigeru, 4,513,366, Cl. 364-167.000.
Dolejs, Anthony H.: *See—*
Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,513,439, Cl. 382-7.000.
Domaas, Perry M.: *See—*
Kaster, Robert L.; and Domaas, Perry M., 4,512,471, Cl. 206-438.000.
Dominguez, Richard J. G., to Texaco Inc. Reaction injection molded elastomers containing low molecular weight organic acids. 4,513,133, Cl. 528-49.000.
Domnanovich, James R.; and Erwin, William D., to Siemens Gammasonics, Inc. Housing for a radioactive source. 4,513,204, Cl. 250-496.100.
Donaldson Company, Inc.: *See—*
Fischer, Paul M.; and Schwarz, Carl E., 4,512,882, Cl. 210-86.000.
Wright, Mervin E.; and Gronholz, Donald D., 4,512,891, Cl. 210-445.000.
Donohue, Paul C., to Du Pont de Nemours, E. I., and Company. Hexaboride resistor composition. 4,512,917, Cl. 252-521.000.
Donovan Wire & Iron: *See—*
Gurney, Anthony R., 4,512,210, Cl. 74-535.000.
Dorey, James B.; and Tang, Wai-Cheung, to Com Dev Ltd. Bandpass filter with plurality of wave-guide cavities. 4,513,264, Cl. 333-212.000.
Doroszkowski, Andrew, to Imperial Chemical Industries PLC. Electrophoretic coating process. 4,512,861, Cl. 204-181.00R.
Dorr-Oliver: *See—*
Klinkowski, Peter R., 4,513,032, Cl. 427-336.000.
Dorr, Wolfgang; Gradel, Gerhard; Peehs, Martin; Schafer, Reinhard; and Sondermann, Thomas, to Kraftwerk Union Aktiengesellschaft; and Reaktor Brennelement Union GmbH. Method for manufacturing oxidic sintered nuclear fuel bodies. 4,512,939, Cl. 264-0.500.
Dougherty, Timothy S.: *See—*
Astfalk, Greg; Dougherty, Timothy S.; and Viriyayuthakorn, Montri, 4,512,944, Cl. 264-174.000.
Doughty, Dennis J.: *See—*
Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., 4,513,268, Cl. 335-35.000.
Doulton, Romm; and Chapman, Robert A. Portable information device having an output related to natural physical events. 4,512,667, Cl. 368-10.000.
Dow Chemical Company, The: *See—*
Greenawalt, Eddie L., 4,512,138, Cl. 53-451.000.
Hoffman, Dwight K., 4,513,124, Cl. 525-452.000.
Dowty Mining Equipment Limited: *See—*
Waters, John H., 4,512,686, Cl. 405-293.000.
Drabowitch, Serge, to Thomson-CSF. Waveguide having radiating slots and a wide frequency band. 4,513,291, Cl. 343-771.000.
Drain, Robert E., to Montana Power Company, The. Power transmission line protective apparatus. 4,513,340, Cl. 361-62.000.
Dravo Corporation: *See—*
Manning, Edward T., Jr.; and Horan, Grant S., 4,512,260, Cl. 104-252.000.
Dreckmann, Karl, to M. Lehmacher & Sohn GmbH Maschinenfabrik. Double-seam bag-making method and apparatus with offset stacking. 4,512,757, Cl. 493-194.000.
Dresser Industries, Inc.: *See—*
Moore, Leslie B., 4,512,669, Cl. 384-93.000.
Snyder, Warren E., 4,512,304, Cl. 123-344.000.
Dronet, Jean-Marc; and Resseguier, Jacques, to Ste d'Application Platique Mecanique et Electronicque Plastimechanique S.A. Arrangement for externally affixing or placing banderoles or strips on receptacles. 4,512,734, Cl. 425-305.100.
Drumm, Philip R. Unsinkable all-purpose boat. 4,512,275, Cl. 114-39.000.
Drzewiecki, Tadeusz M.; Toda, Kenji; and Gurney, John, to United States of America, Army. Photofluidic interface. 4,512,371, Cl. 137-828.000.
Duboeuf, Jean-Paul: *See—*
Vernois, Michel; and Duboeuf, Jean-Paul, 4,513,056, Cl. 428-264.000.
Dubowicz, Palemon W.: *See—*
Goodall, Steve R.; Dubowicz, Palemon W.; and Campbell, Donn V., 4,513,338, Cl. 361-1.000.
Duch, David S.; Nichol, Charles A.; and Sigel, Carl W., to Burroughs Wellcome Co. Treatment with dialkoxy pyridopyrimidine compounds. 4,512,992, Cl. 514-258.000.
Duhl, David N.; Chen, Otis Y.; and Gell, Maurice L., to United Technologies Corporation. Method for producing corrosion resistant high strength superalloy articles. 4,512,817, Cl. 148-3.000.
Dulken, Hartmut; Kassel, Karlheinz; Mows, Wolfgang; and Walsdorfer, Hubert, to Licentia Patent-Verwaltungs-GmbH. Dual layer electrophotographic recording material containing a layer of selenium, arsenic and halogen, and thereabove a layer of selenium and tellurium. 4,513,072, Cl. 430-57.000.
Dunham, David A.; Riggs, Robert P.; and Burton, Rufus L., Jr., to Red Fox Industries, Inc. Jack-up unit. 4,512,553, Cl. 254-89.00R.
Dunleavy, James E., Jr., to Eastman Kodak Company. Collating document feeder and reproduction apparatus having copy duplexing capabilities. 4,512,651, Cl. 355-14.0SH.
Dunn, Aubrey J., to United States of America, Army. X-Ray reflective optical elements. 4,513,434, Cl. 378-85.000.
Dunphy, Gerald F.; and Newman, Donald J., to Ogden Industries Pty. Ltd. Cylinder lock and key. 4,512,166, Cl. 70-366.000.
Dunsmuir, John H.: *See—*
Deckman, Harry W.; and Dunsmuir, John H., 4,512,848, Cl. 156-630.000.
Du Pont de Nemours, E. I., and Company: *See—*
Donohue, Paul C., 4,512,917, Cl. 252-521.000.
Linder, Karen E., 4,512,967, Cl. 424-1.100.

Mazur, Stephen, 4,512,855, Cl. 204-22.000.
Uschold, Ronald E., 4,513,128, Cl. 526-212.000.
Vasta, Joseph A., 4,513,060, Cl. 428-416.000.

Duracell Inc.: *See—*
Kuo, Han C.; Foster, Donald L.; Schlaikjer, Carl R.; Gopikanth, Mysore L.; and Dey, Arabinda N., 4,513,067, Cl. 429-101.000.

Durofac-Kartro A/S: *See—*
Nielsen, Mogens B., 4,512,692, Cl. 408-226.000.

Dwyer, Francis G.: *See—*
Chu, Pochen; and Dwyer, Francis G., 4,513,092, Cl. 502-71.000.

Dymek Corporation: *See—*
Young, Ronald E.; and Meulners, Duane C., 4,513,333, Cl. 360-77.000.

Dynamit Nobel AG: *See—*
Kummer, Peter; and Rehfeld, Gerhard, 4,513,089, Cl. 501-103.000.

Dysan Corporation: *See—*
Baker, Bradley D.; and Kelly, Richard L., 4,513,331, Cl. 360-75.000.

E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu; and Haslanger, Martin F., 4,513,103, Cl. 514-469.000.
Weller, Harold N., III; Gordon, Eric M.; Karanewsky, Donald S.; and Ryono, Denis E., 4,512,988, Cl. 514-211.000.

Eagar, Thomas W.: *See—*
Barringer, Eric A.; and Eagar, Thomas W., 4,512,822, Cl. 148-24.000.

Earl, Webster B., to Fairchild Industries, Inc. Pressure transducer. 4,512,357, Cl. 137-82.000.

Eastin, John A. Manufacturing and using nitrogen fertilizer solutions on a farm. 4,512,794, Cl. 71-54.000.

Eastman Kodak Company: *See—*
Blanding, Douglass L.; and Muszak, Martin F., 4,512,952, Cl. 422-63.000.
Chen, Tsang J., 4,512,969, Cl. 424-81.000.
Derimiggio, John, 4,512,649, Cl. 355-3.0FU.
Dunleavy, James E., Jr., 4,512,651, Cl. 355-14.0SH.
Kocher, Haribhajan S., 4,512,650, Cl. 355-3.0FU.
Mey, William, 4,513,071, Cl. 430-19.000.
Ng, Yee S.; Jarvis, James G.; and Thompson, John R., 4,512,653, Cl. 355-16.000.

Eaton Corporation: *See—*
Ryczek, Lawrence J., 4,513,343, Cl. 361-101.000.

Ebara Corporation: *See—*
Oshima, Masao; Kato, Yutaka; Ogasawara, Mitsuhiko; and Futamura, Osamu, 4,512,936, Cl. 261-93.000.

Ebara-Infilco Co., Ltd.: *See—*
Oshima, Masao; Kato, Yutaka; Ogasawara, Mitsuhiko; and Futamura, Osamu, 4,512,936, Cl. 261-93.000.

Eberle, Jurg: *See—*
Reist, Walter; and Eberle, Jurg, 4,512,457, Cl. 198-479.000.

Eberly, Paul E., Jr.; and Winter, William E., Jr., to Exxon Research and Engineering Co. Crystalline silica zeolite-containing catalyst. 4,513,090, Cl. 502-66.000.

Eberwine, Donald A.: *See—*
Danielson, Thomas R.; and Eberwine, Donald A., 4,512,408, Cl. 166-349.000.
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Echte, Adolf: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,513,105, Cl. 521-56.000.

Eckenrode, Paul D.; Eisenbrei, Richard P.; and Nixon, James E., to Microdot Inc. Bottom pour ingot mould system. 4,512,544, Cl. 249-109.000.

Eckert, Joachim: *See—*
Bauer, Gunter; and Eckert, Joachim, 4,512,958, Cl. 423-55.000.

Economics Laboratory, Inc.: *See—*
Heile, Bernard J., 4,512,908, Cl. 252-160.000.

Edgren, Anders; Soderberg, Jan; and Bergstrom, Bengt, to KemaNord AB. Process for expanding microspheres. 4,513,106, Cl. 521-58.000.

Edlund, Olof A.; Enser, Mats A.; Strage, Jan W.; Thunberg, Svante B.; and Wallmark, Erik I., to International Business Machines Corporation. Document handling terminal computer. 4,513,393, Cl. 364-900.000.

Edwards, Bruce K., to Location Sample Service, Inc. Drill rate and gas monitoring system. 4,512,186, Cl. 73-151.500.

Edwards, Philip L. Chewable toy for animal. 4,513,014, Cl. 426-132.000.

Egan, John J.; and Witkowski, Andrew B., to International Harvester Company. Automotive engine with improved multifilter lubrication system. 4,512,299, Cl. 123-196.00A.

Eggert, Stig: *See—*
Nabb, Elis; and Eggert, Stig, 4,512,597, Cl. 292-143.000.

Eguchi, Shusaku: *See—*
Kotera, Noboru; Eguchi, Shusaku; and Miura, Norio, 4,512,911, Cl. 252-301.40H.

Eheim, Franz: *See—*
Hofer, Gerald; Straubel, Max; and Eheim, Franz, 4,512,308, Cl. 123-383.000.

Ehrhardt, Henry B. Tracking trailer construction. 4,512,593, Cl. 280-460.00R.

Eichelberger, John L.: *See—*
Chen, Johnson C. H.; and Eichelberger, John L., 4,513,053, Cl. 428-221.000.

Eichler, Kenneth M.: *See—*
Moore, William H.; Mandel, Alan F.; Trosky, William J.; Eichler, Kenneth M.; Tomas, Stephen P.; Tober, Edward; and Vasold, Thomas A., 4,512,442, Cl. 187-29.00R.

Eichlseder, Martin; and Burkle, Erwin, to Krauss-Maffei Aktiengesellschaft. Adjustable injection molding backflow preventer. 4,512,733, Cl. 425-207.000.

Eisai Co., Ltd.: *See—*
Negi, Shigeto; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; Saito, Isao; and Kitoh, Kyosuke, 4,513,145, Cl. 549-402.000.

Eisenbrei, Richard P.: *See—*
Eckenrode, Paul D.; Eisenbrei, Richard P.; and Nixon, James E., 4,512,544, Cl. 249-109.000.

Elco Corporation: *See—*
Tillotson, John D., 4,512,620, Cl. 339-97.00P.

Elcott, Teleb M. Fluid pulsation apparatus. 4,512,514, Cl. 239-99.000.

Elder, Michael G.: *See—*
Bennett, Gloria A.; Elder, Michael G.; and Kemme, Joseph E., 4,513,352, Cl. 361-385.000.

Eldon Industries, Inc.: *See—*
Evenson, Mel, 4,512,480, Cl. 211-11.000.

Electric Power Research Institute, Inc.: *See—*
Cohn, Arthur; and Schainker, Robert B., 4,512,715, Cl. 415-168.000.

Electro-Sound, Inc.: *See—*
Rehklau, George D.; Cotterill, Lee A.; and Langevin, Robert Z., 4,512,527, Cl. 242-56.00R.

Electronic Data Systems Corporation: *See—*
Sheets, Duane R., 4,513,373, Cl. 364-200.000.

Electronics Pty. Ltd.: *See—*
Money, David K., 4,513,212, Cl. 307-575.000.

Eli Lilly and Company: *See—*
Fayerman, Jeffrey T.; and Richardson, Mark A., 4,513,086, Cl. 435-317.000.
Nakatsukasa, Walter M.; and Mabe, James A., 4,513,085, Cl. 435-253.000.
Wong, David T.; and Lacefield, William B., 4,513,135, Cl. 544-120.000.

Elkus, Eugene S.: *See—*
Sidline, George B., 4,513,199, Cl. 235-449.000.

Ellett, Kenneth W.; and Glutz, Peter, to Small Precision Tools, Inc. Protection of semiconductor wire bonding capillary from spark erosion. 4,513,190, Cl. 219-56.210.

Ellis, Roland, Jr.; Jacobs, Brian E.; March, Edward J.; and Newman, Raymond J., to AT&T Technologies, Inc. Technique for bonding a chip carrier to a metallized substrate. 4,512,509, Cl. 228-180.200.

Endoh, Kazunori; and Suzuki, Haruo, to Jidosha Kiki Co., Ltd. Tandem type brake power servo booster. 4,512,237, Cl. 91-369.00A.

Engel, Christopher M.: *See—*
Reneau, Daniel L.; Tzakis, George J.; and Engel, Christopher M., 4,513,320, Cl. 358-166.000.

Engelbrecht & Lemmerbrock GmbH & Co.: *See—*
Johanning, Hermann, 4,512,521, Cl. 241-34.000.

Engelhard Corporation: *See—*
Adlhart, Otto J., 4,513,065, Cl. 429-19.000.

Engelhardt, Billy M.; and Moore, Dwane L., to Jamieson Film Company. Film processor tank with tank divider. 4,512,645, Cl. 354-324.000.

Engelke, Helmut: *See—*
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; Muhl, Reinhold; Nehmiz, Peter; and Trumpp, Hans J., 4,513,203, Cl. 250-491.100.

England, Robert C. Device for inserting and removing contact lenses. 4,512,602, Cl. 294-1.200.

Enns, Silvanus T. Conveyor assemblies for detachable mounting to a tractor. 4,512,687, Cl. 406-41.000.

Enser, Mats A.: *See—*
Edlund, Olof A.; Enser, Mats A.; Strage, Jan W.; Thunberg, Svante B.; and Wallmark, Erik I., 4,513,393, Cl. 364-900.000.

Enthone, Incorporated: *See—*
Paneccasio, Vincent, 4,512,856, Cl. 204-55.00R.

Epp, Leonard: *See—*
Waynant, Ronald W.; Epp, Leonard; and Christensen, Clad P., Jr., 4,513,424, Cl. 372-68.000.

Equipements Automobiles Marchal: *See—*
Wattier, Maurice F., 4,512,056, Cl. 15-250.230.

Erani, Homi K. Saddle assembly. 4,512,608, Cl. 297-201.000.

Erdman, David M., to General Electric Company. Laundering apparatus, method of operating a laundry machine, control system for an electronically commutated motor, and method of operating an electronically commutated motor. 4,513,230, Cl. 318-254.000.

Erickson, Charles D., to Getty Oil Company. Flow rate control and metering means for shear-sensitive liquids. 4,512,188, Cl. 73-198.000.

Erickson, James R.: *See—*
Abbey, Kirk J.; Erickson, James R.; and Kunz, Barbara L., 4,512,860, Cl. 204-181.00C.

Eriksson, Lars E.; and Rickardsson, Gote, to Eriksson, Lars Erik. Elements for supporting and bracing sealed-glazing units. 4,512,125, Cl. 52-209.000.

Eriksson, Lars Erik: *See—*
Eriksson, Lars E.; and Rickardsson, Gote, 4,512,125, Cl. 52-209.000.

Ernest, Michael V.: *See—*
Peters, Alan W.; Kim, Gwan; and Ernest, Michael V., 4,513,101, Cl. 502-304.000.

Ernst, Alfons; and Brunner, Arthur, to Dr. Johannes Heidenhain GmbH. Mounting arrangement for angle measuring device. 4,512,184, Cl. 73-116.000.

Ernst, Bruce H.; Howard, Dennis D.; and Gismondi, Thomas E., to Lord Corporation. High build, ambient cure coating compositions. 4,513,112, Cl. 524-590.000.

Ernst, Richard R., to Spectrospin AG. Method for recording three-dimensional nuclear magnetic resonance spectra and a device for carrying out the same. 4,513,247, Cl. 324-309.000.

Erwin, Lewis: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; and Erwin, Lewis, 4,513,116, Cl. 525-53.000.

Erwin, William D.: *See—*
Domnanovich, James R.; and Erwin, William D., 4,513,204, Cl. 250-496.100.

Escher, Gert; Holighaus, Rolf; and Wenning, Hans-Peter, to Veba Oel Entwicklungs-Gesellschaft mbH. Process for low temperature carbonization of hydrogenation residues. 4,512,873, Cl. 208-13.000.

Escher, Sina D.; and Dietrich, Paul, to Firmenich SA. Use of 4-methyl-2-hydroxy-benzaldehyde to improve the flavor characteristics of tobacco. 4,512,352, Cl. 131-276.000.

Esmay, Donald L., to Minnesota Mining and Manufacturing Company. Composite of separable pressure-sensitive adhesive tapes. 4,513,039, Cl. 428-40.000.

Estang, Bernard, to Thomson-CSF. System for equilibrating an imbalance couple and use of such a system for equilibrating an airborne radar antenna. 4,512,448, Cl. 188-378.000.

Estell, David A.: *See—*
Dennis, Mark S.; Estell, David A.; and Light, David R., 4,512,973, Cl. 424-94.000.

Esteve-Soler, Jose : *See—*
de Courten, Alfred; Schulthess, Adrian; and Esteve-Soler, Jose , 4,513,007, Cl. 514-555.000.

Etani, Kenji. Apparatus for water treatment. 4,512,955, Cl. 422-266.000.

Ethyl Corporation: *See—*
Chen, Jackson C., 4,512,775, Cl. 44-62.000.
Jones, Jesse D., 4,513,108, Cl. 524-180.000.
Nelson, Gunner E., 4,512,966, Cl. 423-644.000.

Etou, Kazumi; and Komoto, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Refrigerator. 4,512,162, Cl. 62-298.000.

Ettinger, Donald H., to USM Corporation. Automatic stud welding equipment with fluid and stud feeding. 4,513,193, Cl. 219-98.000.

Eurotungstene: *See—*
Allard, Joseph, 4,512,612, Cl. 299-91.000.

Evenson, Mel, to Eldon Industries, Inc. Article holding device. 4,512,480, Cl. 211-11.000.

Everest & Jennings, Inc.: *See—*
Nassiri, Joe-Massoud, 4,512,613, Cl. 301-1.000.

Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Process for augmenting or enhancing aroma of consumable material by adding thereto 1,2,3,3,5,6-hexamethyl-bicyclo[2.2.2]-oct-5-en-2-ol. 4,512,902, Cl. 252-8.600.

Exploration Logging, Inc.: *See—*
Troy, George W., 4,513,403, Cl. 367-83.000.

Exxon Production Research Co.: *See—*
Danielson, Thomas R.; and Eberwine, Donald A., 4,512,408, Cl. 166-349.000.
Gregory, Edward W.; Danielson, Thomas R.; and Eberwine, Donald A., 4,512,409, Cl. 166-352.000.

Exxon Research and Engineering Co.: *See—*
Deckman, Harry W.; and Dunsmuir, John H., 4,512,848, Cl. 156-630.000.
Eberly, Paul E., Jr.; and Winter, William E., Jr., 4,513,090, Cl. 502-66.000.
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; and Erwin, Lewis, 4,513,116, Cl. 525-53.000.
Lundberg, Robert D., 4,512,776, Cl. 44-62.000.
Mauldin, Charles H., 4,513,161, Cl. 585-640.000.
Reid, Lloyd E.; Yao, Keith C.; and Ryan, Douglas G., 4,512,878, Cl. 208-179.000.
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., 4,513,104, Cl. 518-714.000.

Eyre, Steven C. Safety ski binding. 4,512,594, Cl. 280-614.000.

Ezawa, Sadaaki; and Kitagawa, Hiroshi, to Kawai Musical Instrument Mfg. Co., Ltd. Electronic musical instrument. 4,512,230, Cl. 84-1.240.

F. L. Smidth & Co. A/S: *See—*
Jensen, Torkil D., 4,512,458, Cl. 198-507.000.

Fabbrini, Charles J., to Minnesota Mining and Manufacturing Company. Thermally transferable ink compositions. 4,513,107, Cl. 524-56.000.

Fabrique Nationale Herstal: *See—*
Dheur, Raymond J., 4,512,100, Cl. 42-70.00A.

Facit Aktiebolag: *See—*
Johansson, Hans L., 4,512,676, Cl. 400-144.200.

Fairbanks, David W., to RCA Corporation. Pickup cartridge having stylus holder. 4,513,410, Cl. 369-126.000.

Fairchild Camera & Instrument Corporation: *See—*
Vora, Madhukar B., 4,512,075, Cl. 29-577.00C.

Fairchild Industries, Inc.: *See—*
Earl, Webster B., 4,512,357, Cl. 137-82.000.

Falk, Ernst; and Knosel, Johann, to Richard Wolf GmbH. Medical coagulation device. 4,512,343, Cl. 128-303.170.

Falk, R. Aaron, to Ball Corporation. Thermocouple detector. 4,513,201, Cl. 250-342.000.

Falkenroth, Heinz-Jurgen: *See—*
Mahler, Gert; Falkenroth, Heinz-Jurgen; Leitermann, Wulf; and Boms, Manfred, 4,512,240, Cl. 98-2.040.

Fancett, Scott F.: *See—*
Ambrose, Albert R.; and Fancett, Scott F., 4,512,589, Cl. 280-6.00R.

Farag, Samir F.; Allen, Edgar W.; and Little, Thomas R., to Siemens-Allis, Inc. Circuit breaker operator and interlock. 4,513,180, Cl. 200-50.00R.

Farrow, John F., to Medar, Inc. Structure for and method of reducing impedance in multiphase direct current power supplies. 4,513,363, Cl. 363-126.000.

Fasano, Michael: *See—*
Carney, William V.; and Fasano, Michael, 4,512,622, Cl. 339-103.00M.

Fattore, Vittorio; Notari, Bruno; Paggini, Alberto; and Lagana , Vincenzo, to Snamprogetti S.p.A. Catalytic system for producing mixtures of methanol and higher alcohols. 4,513,100, Cl. 502-303.000.

Faulkner, James V., Jr., to Westinghouse Electric Corp. Electric utility automated distribution apparatus with improved data display. 4,513,382, Cl. 364-492.000.

Faure, Michel; Regeffe, Jean Y.; Lumineau, Yves; and Jouanin, Andre , to Lignes Telegraphiques & Telephoniques. Rotary sealing device. 4,512,790, Cl. 65-13.000.

Fayerman, Jeffrey T.; and Richardson, Mark A., to Eli Lilly and Company. Cloning vectors for use in streptomyces and related organisms. 4,513,086, Cl. 435-317.000.

Fechant, Louis: *See—*
Belbel, Elie; Blanchard, Christian; Lauraire, Michel; Fechant, Louis; and Haury, Andre , 4,513,270, Cl. 335-195.000.

Feder, Friedhelm R., to Wedco Incorporated. Heat treating of material in finely divided form. 4,512,732, Cl. 425-222.000.

Federighi, Alberto. Single or multiple dose container-closure assemblies. 4,512,475, Cl. 206-484.000.

Feinwerktecnik Schleicher & Co., Firma: *See—*
Goldhammer, Albert, 4,512,252, Cl. 100-53.000.

Feitzinger, Eduard; and Seminski, Robert B., to R.Q.O. Holding Company. Controlling ammonia emissions for diazo developing equipment. 4,512,654, Cl. 355-27.000.

Fenton, Jeff T., to Conoco Inc. Acetal purification with superoxides. 4,513,144, Cl. 549-368.000.

Ferag AG: *See—*
Reist, Walter; and Eberle, Jurg, 4,512,457, Cl. 198-479.000.

Fernbacher, John M.: *See—*
Santangelo, Joseph G.; and Fernbacher, John M., 4,512,403, Cl. 166-261.000.

Ferrara-Jordan, Elisa M.: *See—*
Anderson, Donald G.; and Ferrara-Jordan, Elisa M., 4,513,294, Cl. 346-33.0ME.

Fiat Auto S.p.A.: *See—*
Boccalatte, Vitale, 4,512,869, Cl. 204-300.0EC.

Ficht GmbH: *See—*
Ficht, Reinhold; and Schindler, Manfred, 4,512,290, Cl. 123-56.0BC.

Ficht, Reinhold; and Schindler, Manfred, to Ficht GmbH. Crank guide assembly for internal combustion engines, in particular two-stroke internal combustion engines with facing cylinders. 4,512,290, Cl. 123-56.0BC.

Fieberg, Donald E.: *See—*
Fieberg, Russell F.; and Fieberg, Donald E., 4,512,071, Cl. 29-278.000.

Fieberg, Russell F.; and Fieberg, Donald E., to Russtech Engineering Company, Inc. Tool holder. 4,512,071, Cl. 29-278.000.

Field, Harold; and Richter, Robert E., to Motorola, Inc. Auxiliary battery charging terminal. 4,513,068, Cl. 429-121.000.

Fields, Willie M., to Mead Corporation, The. Apparatus for feeding from a hopper and for setting up collapsed article carriers. 4,512,756, Cl. 493-312.000.

Figgie International: *See—*
Robinson, Mary K.; and Probst, Timothy F., 4,512,134, Cl. 53-248.000.

Fike Metal Products Corporation: *See—*
DeGood, Robert L.; and Malcolm, Eddie R., 4,512,491, Cl. 220-89.00A.

Filliman, Paul, to RCA Corporation. Switching network with suppressed switching transients. 4,513,322, Cl. 358-181.000.

Film Cooling Towers Limited: *See—*
Jones, Bryan E.; and Kunesch, Anthony M., 4,512,938, Cl. 261-112.000.

Filshtinsky, Michael: *See—*
Aumann, James T.; and Filshtinsky, Michael, 4,512,423, Cl. 175-226.000.

Fiore, Joseph V.: *See—*
Crowder, Alvin L., III; Dailey, Nils L.; Fiore, Joseph V.; and Hou, Kenneth C., 4,512,897, Cl. 210-656.000.

Firestone Tire & Rubber Company, The: *See—*
Day, Gary L.; and Robertson, James P., 4,513,123, Cl. 525-332.600.
Tomaszewski, Walter, 4,512,680, Cl. 403-313.000.

Firetek Corporation: *See—*
Cholin, John M., 4,513,202, Cl. 250-385.000.

Firmenich SA: *See—*
Escher, Sina D.; and Dietrich, Paul, 4,512,352, Cl. 131-276.000.

Firmin, Richard: *See—*
Hunt, Thomas K.; Goodson, William H., III; Chang, Ning; Knighton, David R.; Gottrup, Finn; and Firmin, Richard, 4,512,349, Cl. 128-632.000.

Fischer, Artur. High-pressure packing device for injecting synthetic resin into cracks in concrete. 4,512,123, Cl. 52-173.00R.
Fischer, Emil, to Albert-Frankenthal AG. System for the supply of staple wire to a stapler. 4,512,506, Cl. 227-5.000.
Fischer, Paul M.; and Schwarz, Carl E., to Donaldson Company, Inc. Single-ended, spin-on fuel water separator. 4,512,882, Cl. 210-86.000.
Fischer, Rolf; Weitz, Hans-Martin; and Siegel, Hardo, to BASF Aktiengesellschaft. Preparation of but-2-ene-1,4-diones substituted in the 1,4-positions. 4,513,150, Cl. 568-385.000.
Flachglas Aktiengesellschaft: *See*—
Bartelsen, Lutz; and Neuendorf, Hans-Cristoph, 4,513,196, Cl. 219-203.000.
Flakt Aktiebolag: *See*—
Widerby, Lennart, 4,512,356, Cl. 137-75.000.
Flatau, Carl R., to Textron Inc. Robot forearm. 4,512,710, Cl. 414-735.000.
Flegel, Martin; Pospisek, Jan; Picha, Josef; Pichova, Drahomira; Krojidlo, Milan; and Kolinsky, Jiri, to SPOFA, spojene podniky pro zdravotnickou vyrobu. Luteinizing and follicle stimulating hormones and process for the preparation thereof. 4,512,923, Cl. 260-112.5LH.
Fleming, James W., to Lawson & Jones Limited. Fast food serving tray. 4,512,512, Cl. 229-30.000.
Flood, Eugene J.: *See*—
Bondoc, Alfredo A.; Flood, Eugene J.; and Sieling, Frederick W., 4,513,045, Cl. 428-137.000.
Flying Dutchman, Inc.: *See*—
Lepley, James W., 4,512,703, Cl. 414-288.000.
Flynn, Peter J., to Bird Machine Company, Inc. Apparatus for removal by flotation of solid particles from liquid. 4,512,888, Cl. 210-221.200.
FMC Corporation: *See*—
Uppgren, John J., 4,512,385, Cl. 164-364.000.
Foam-Lag Industries Pty. Ltd.: *See*—
Willoughby, John C., 4,512,119, Cl. 52-58.000.
Foran, Charles D.; and Smith, Jack D., to Associated Dynamics, Incorporated. Method and apparatus for alignment of gearing. 4,512,694, Cl. 409-12.000.
Ford, Horace B. Energy efficient multi-phase dual voltage electric motor. 4,513,237, Cl. 318-768.000.
Ford Motor Company: *See*—
Bowman, Melvin B., 4,513,241, Cl. 323-285.000.
Holubka, Joseph W., 4,513,125, Cl. 525-528.000.
Mikola, James A., 4,513,356, Cl. 362-226.000.
Ford, Spencer K.: *See*—
Wells, Edward S.; Ford, Spencer K.; Werner, Jack E.; and Lindsay, Erin J., 4,512,163, Cl. 62-394.000.
Forester, Buford G. Geothermal expansion wellhead system. 4,512,410, Cl. 166-380.000.
Foster, Donald D. Down-locking dispensing pump with guided check valve hold-down structure. 4,512,501, Cl. 222-153.000.
Foster, Donald L.: *See*—
Kuo, Han C.; Foster, Donald L.; Schlaikjer, Carl R.; Gopikanth, Mysore L.; and Dey, Arabinda N., 4,513,067, Cl. 429-101.000.
Fostveit, Edgar H. Test apparatus for telephone equipment. 4,513,176, Cl. 179-175.10R.
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., to Olin Corporation. Pallet height sensing mechanism. 4,512,701, Cl. 414-101.000.
Franz, Reinhard; Dittmar, Wilfried; and Daubach, Gunter, to Franz, Reinhard. Function selector. 4,513,365, Cl. 364-140.000.
Fraser, Alexander G., to AT&T Bell Laboratories. Transmission of status report of equipment in a digital transmission network. 4,513,411, Cl. 370-13.000.
Freeman, Earl R.: *See*—
Sweatman, Ronald E.; Freeman, Earl R.; Gottschling, John; and Simon, John, 4,512,405, Cl. 166-278.000.
Frei, Siegfried; and Koch, Jakob, to Cantec, Inc.; and Gebrueder Hoffmann AG, a part interest. Strengthened can bodies of thin-walled metal. 4,512,490, Cl. 220-72.000.
Frerking, Marvin E., to Rockwell International Corporation. Closed loop temperature compensated frequency reference. 4,513,259, Cl. 331-176.000.
Freudenthal, Frank D.; and Anderson, Carl M., to Altec Industries, Inc. Platform rotating mechanism for aerial devices. 4,512,436, Cl. 182-2.000.
Friedl, Richard, to LGZ Landis & Gyr Zug AG. Transducer for current measurement. 4,513,273, Cl. 336-55.000.
Friedline, Gary W.: *See*—
Caralli, Michael J.; and Friedline, Gary W., 4,512,781, Cl. 55-26.000.
Friedman, Aaron M. Popcorn popping and coating apparatus. 4,512,247, Cl. 99-323.500.
Friedman, Robert H., to Getty Oil Company. Sand consolidation methods using adsorbable catalysts. 4,512,407, Cl. 166-295.000.
Friedmann & Maier Aktiengesellschaft: *See*—
Brasseur, Georg; and Rathmayr, Heinz, 4,512,306, Cl. 123-367.000.
Fries, Richard W., to Northern Petrochemical Company. Process for conversion of vinyl copolymers to vinylic alcohol copolymers by homogeneous reaction with organometallic compounds. 4,513,117, Cl. 525-60.000.
Fronzoni, Mario A.: *See*—
Staffin, Robert; Girrell, Carol A.; and Fronzoni, Mario A., 4,512,821, Cl. 148-16.500.
Fuderer, Andrija, to Union Carbide Corporation. Pressure swing adsorption with intermediate product recovery. 4,512,780, Cl. 55-26.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Mochizuki, Kenji, 4,512,316, Cl. 123-478.000.
Yamakawa, Toru, 4,512,301, Cl. 123-198.00F.
Fuji Photo Film Co., Ltd.: *See*—
Akao, Mutsuo, 4,513,050, Cl. 428-200.000.
Furutachi, Nobuo; and Hirose, Takeshi, 4,513,082, Cl. 430-552.000.
Inukai, Yuzo, 4,512,518, Cl. 239-223.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,513,054, Cl. 428-329.000.
Ogawa, Akira; and Asano, Toshiaki, 4,512,807, Cl. 106-22.000.
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; Kimura, Keizo; and Umemoto, Makoto, 4,513,081, Cl. 430-550.000.
Sakanoue, Kei; and Aoki, Kozo, 4,513,079, Cl. 430-502.000.
Fuji Xerox Co., Ltd.: *See*—
Itoh, Satoru, 4,513,325, Cl. 358-280.000.
Svay, Leng; Moriguchi, Haruhiko; and Inui, Toshiharu, 4,513,296, Cl. 346-76.0PH.
Fujimura, Shuzo; and Yano, Hiroshi, to Fujitsu Limited. Microwave plasma processing apparatus. 4,512,868, Cl. 204-298.000.
Fujisaki, Hisashi: *See*—
Nishino, Masakazu; and Fujisaki, Hisashi, 4,513,177, Cl. 179-81.00B.
Fujisawa Pharmaceutical Co. Ltd.: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,512,980, Cl. 514-18.000.
Fujitsu Fanuc Limited: *See*—
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,513,234, Cl. 318-594.000.
Fujitsu Limited: *See*—
Fujimura, Shuzo; and Yano, Hiroshi, 4,512,868, Cl. 204-298.000.
Masaki, Satoru, 4,513,400, Cl. 365-230.000.
Miwa, Hirohide; and Ueda, Mitsuhiro, 4,512,195, Cl. 73-602.000.
Miyamoto, Hidekazu; Shioya, Yoshimi; Maeda, Mamoru; and Takagi, Mikio, 4,513,026, Cl. 427-85.000.
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,513,075, Cl. 430-108.000.
Sano, Yoshiaki, 4,513,252, Cl. 330-257.000.
Takemae, Yoshihiro, 4,513,304, Cl. 357-23.600.
Fujitsu Ten Limited: *See*—
Yokoyama, Tatsuo, 4,513,245, Cl. 324-119.000.
Fujiwara, Ryuhei, to Nippon Electric Co., Ltd. System for adjusting a time axis by using a control and an adjustment time slot in a satellite station of a TDMA network. 4,513,416, Cl. 370-100.000.
Fukano, Michio, to Kabushiki Kaisha Tokyo Keiki. Accelerometer. 4,512,193, Cl. 73-517.00B.
Fukuhara, Masao, to Fukuhara Needle Company, Ltd. Pivoted latch needle. 4,512,164, Cl. 66-121.000.
Fukuhara Needle Company, Ltd.: *See*—
Fukuhara, Masao, 4,512,164, Cl. 66-121.000.
Fukuroi, Takeo, to Nippon Notion Kogyo Co., Ltd. Button. 4,512,063, Cl. 24-94.000.
Furutachi, Nobuo; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materials. 4,513,082, Cl. 430-552.000.
Futamura, Osamu: *See*—
Oshima, Masao; Kato, Yutaka; Ogasawara, Mitsuhiko; and Futamura, Osamu, 4,512,936, Cl. 261-93.000.
Gabriel, Alfred P.: *See*—
Clark, James A.; and Gabriel, Alfred P., 4,512,206, Cl. 74-10.540.
GAF Corporation: *See*—
Bondoc, Alfredo A.; Flood, Eugene J.; and Sieling, Frederick W., 4,513,045, Cl. 428-137.000.
Lewis, David F., 4,513,076, Cl. 430-270.000.
Gahlinger, Earl C., to International Harvester Company. Bolster pin and method for cleaning flask bushing. 4,512,810, Cl. 134-8.000.
Galbraith, Lee K.; and Pecen, Jiri, to Tencor Instruments. Apparatus for calibrating a surface scanner. 4,512,659, Cl. 356-243.000.
Galbraith, Lyle D., to Rocket Research Company. Propellant augmented, pressurized gas dispensing device. 4,512,355, Cl. 137-68.00A.
Galuschak, George; and Stomber, Richard J., to Singer Company, The. Heading indicator. 4,512,086, Cl. 33-324.000.
Gamma Medical Products, Inc.: *See*—
Schneider, Barbara, 4,512,763, Cl. 604-5.000.
Gano, John C.; and Perkins, Donald H., to Otis Engineering Corporation. Well packer. 4,512,399, Cl. 166-120.000.
Ganoung, Jeffrey S.: *See*—
Keller, Frederick A., Jr.; Ganoung, Jeffrey S.; and Luenser, Susan J., 4,513,084, Cl. 435-140.000.
Ganzi, Gary C.; and Paul, Charles T., to Millipore Corporation. Method and structure for sealing tubular filter elments. 4,512,892, Cl. 210-493.200.
Gardiner, Richard J., to Hercules Incorporated. Method of making a curved composite beam. 4,512,835, Cl. 156-174.000.
Gardner, James A.: *See*—
Moore, John T.; Corrigan, Peter E.; and Gardner, James A., 4,513,277, Cl. 340-59.000.
Gardocki, Joseph F.: *See*—
Maryanoff, Bruce E.; and Gardocki, Joseph F., 4,513,006, Cl. 514-23.000.
Garrett, Michael J.: *See*—
Davis, Michael I.; Garrett, Michael J.; and Wiseman, John A., 4,513,351, Cl. 361-384.000.

Gast, Theodor; Kubach, Hans; and Binder, Kurt, to Robert Bosch GmbH. Magnetic valve. 4,512,549, Cl. 251-137.000.
Gauss, James C.: *See—*
Damrau, Wayne A.; and Gauss, James C., 4,512,279, Cl. 118-411.000.
Gebr. Happich GmbH: *See—*
Aschermann, Willi; and Haarhaus, Peter, 4,512,605, Cl. 296-97.00G.
Mahler, Gert; Falkenroth, Heinz-Jurgen; Leitermann, Wulf; and Boms, Manfred, 4,512,240, Cl. 98-2.040.
Gebrueder Hoffmann AG: *See—*
Frei, Siegfried; and Koch, Jakob, 4,512,490, Cl. 220-72.000.
Geisler, Richard W.: *See—*
Revici, Emanuel; Sherwood, Bob E.; Benecke, Herman P.; Rice, John M.; and Geisler, Richard W., 4,513,008, Cl. 514-560.000.
Gell, Maurice L.: *See—*
Duhl, David N.; Chen, Otis Y.; and Gell, Maurice L., 4,512,817, Cl. 148-3.000.
Genentech, Inc.: *See—*
Dennis, Mark S.; Estell, David A.; and Light, David R., 4,512,973, Cl. 424-94.000.
Jones, Andrew J. S.; Olson, Kenneth C.; and Shire, Steven J., 4,512,922, Cl. 260-112.00R.
General Electric Company: *See—*
Beers, Dale M., 4,513,115, Cl. 524-731.000.
Bennett, James G., Jr.; and Lee, Gim F., Jr., 4,513,120, Cl. 525-316.000.
Bloomer, Milton D., 4,513,207, Cl. 307-126.000.
Brun, Milivoj K.; Lee, Minyoung; and Szala, Lawrence E., 4,512,946, Cl. 264-332.000.
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Devins, John C., 4,513,346, Cl. 361-212.000.
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Peterson, Marvin A., 4,513,113, Cl. 524-602.000.
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Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., 4,513,268, Cl. 335-35.000.
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Moore, John T.; Corrigan, Peter E.; and Gardner, James A., 4,513,277, Cl. 340-59.000.
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Cooper, Jack M., 4,512,441, Cl. 184-105.00B.
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Jandrasi, Frank J.; Pampell, Davy G.; and Stinson, Walter J., 4,512,363, Cl. 137-375.000.
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Genth, Hermann: *See—*
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Vann, Roy R.; George, Flint R.; and Warren, Dennis F., 4,512,406, Cl. 166-297.000.
Georg Knoblauch GmbH: *See—*
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Chan, Shiu K.; Gerardi, John A.; and McGilvray, Bruce L., 4,513,367, Cl. 364-200.000.
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LeBlond, Claude W., 4,512,079, Cl. 33-1.00M.
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Sigwardt, Peter L., 4,512,187, Cl. 73-198.000.
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Ghrist, William D., III, to Westinghouse Electric Corp. Steam turbine valve test system. 4,512,185, Cl. 73-118.000.
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Giers, Alfred; and Heiland, Manfred, to Carl Schenck AG. Balancing machine bearing mounting for flexible rotors. 4,512,671, Cl. 384-215.000.
Gilbert, Clark J.; Hassialis, Menelaos D.; Scrymgeour, Andrew H.; and Vera, Samuel I., to Mobil Oil Corporation. Mining system. 4,512,610, Cl. 299-13.000.
Gill, Dennis, to Associated Electrical Industries Limited. Method of manufacturing mineral insulated electric cable and like elements. 4,512,827, Cl. 156-48.000.
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Hayatdavoudi, Asadollah; and Adams, Ladd M., 4,512,420, Cl. 175-67.000.
Gillery, F. Howard, to PPG Industries, Inc. Low resistance indium oxide films. 4,512,864, Cl. 204-192.00P.
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Criss, Russell C.; and Gillery, F. Howard, 4,512,863, Cl. 204-192.00R.
Gioso, John. All purpose vehicle travel organizer. 4,512,503, Cl. 224-42.42R.
Girrell, Carol A.: *See—*
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Glazer, Sydney, to NCR Corporation. Random binary bit signal generator. 4,513,386, Cl. 364-717.000.
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Stritzel, Gene A., 4,512,211, Cl. 74-745.000.
Glenn, William K., III: *See—*
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Lumb, Douglas S., 4,513,042, Cl. 428-95.000.
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Mehrotra, Deepak; Shaw, Gerard J.; Go, Jok Y.; and Kant, Rajni, 4,512,076, Cl. 29-578.000.
Goel, Anil B., to Ashland Oil, Inc. Naphthyl esters from tetralin. 4,512,927, Cl. 260-410.500.
Goetschius, Gary C., to Air Preheater Company, Inc., The. Heat transfer element assembly. 4,512,389, Cl. 165-10.000.
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McGehee, R. Stephen, 4,512,285, Cl. 119-44.000.
Goldberg, Lawrence S., to United States of America, Navy. Picosecond broadband cars probe using the picosecond continuum. 4,512,660, Cl. 356-301.000.
Golden, James E.: *See—*
Suffi, Louis; Golden, James E.; and Jaycox, Donald F., 4,513,171, Cl. 174-41.000.
Goldhammer, Albert, to Feinwerktecnik Schleicher & Co., Firma. Baling press. 4,512,252, Cl. 100-53.000.
Goldman, Max, to Adsorbent Products Inc. Portable point source adsorber. 4,512,245, Cl. 98-115.400.

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Goodall, Steve R.; Dubowicz, Palemon W.; and Campbell, Donn V., to United States of America, Army. Whip antenna high voltage protection device. 4,513,338, Cl. 361-1.000.

Goodnight, Lyman E., Jr., to Milton Roy Company. Liquid chromatography tube connections. 4,512,899, Cl. 210-656.000.

Goodson, William H., III: *See—*
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Gopikanth, Mysore L.: *See—*
Kuo, Han C.; Foster, Donald L.; Schlaikjer, Carl R.; Gopikanth, Mysore L.; and Dey, Arabinda N., 4,513,067, Cl. 429-101.000.

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Gordon, Paul, to Newport Pharmaceuticals International, Inc. Method of treating inflammation using inosiplex. 4,512,981, Cl. 514-45.000.

Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., to Ardac, Inc. Security validator. 4,513,439, Cl. 382-7.000.

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Gosset, Serge: *See—*
Lumaret, Jean-Claude; Gosset, Serge; and Huchette, Michel, 4,512,915, Cl. 252-389.00A.

Gossett, Patricia W.: *See—*
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Gouilloud, Michel: *See—*
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Grabbe, Dimitry G.: *See—*
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Grace, Robert E.: *See—*
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Gradel, Gerhard: *See—*
Dorr, Wolfgang; Gradel, Gerhard; Peehs, Martin; Schafer, Reinhard; and Sondermann, Thomas, 4,512,939, Cl. 264-0.500.

Grah, Klaus, to Beiersdorf AG. Method of electroplating printed circuits. 4,512,854, Cl. 204-15.000.

Graham, Johnny R. Apparatus for installing poultry feather picking fingers. 4,512,072, Cl. 29-252.000.

Graham, Joseph, to Minnesota Mining and Manufacturing Company. Flame resistant ashaltic compositions. 4,512,806, Cl. 106-18.240.

Graham, Marshall D.; and Cook, David D., Jr., to Coulter Electronics, Inc. Automated microscopy system and method for locating and re-locating objects in an image. 4,513,438, Cl. 382-6.000.

Grand, Marcel: *See—*
Bayssat, Michel; Belleville, Maryse; and Grand, Marcel, 4,512,994, Cl. 514-374.000.

Grantham, Daniel H., to United Technologies Corporation. Low parasitic capacitance pressure transducer and etch stop method. 4,513,348, Cl. 361-283.000.

Grasse Family Trust: *See—*
Grasse, Palmer, 4,512,611, Cl. 299-37.000.

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Gray, George W.: *See—*
Andrews, Beatrice M.; Carr, Neil; Gray, George W.; and Hogg, Christine, 4,512,636, Cl. 350-350.00R.

Gray, Henry F.: *See—*
Greene, Richard F.; and Gray, Henry F., 4,513,308, Cl. 357-55.000.

Gray, Thomas J.; and Masse, Norman G., to Olin Corporation. Raney nickel alloy expanded mesh hydrogenation catalysts. 4,513,149, Cl. 564-449.000.

Graybeal, Walter C. Manhole closure with a single liquid impervious, two-way gas pressure relief valve. 4,512,492, Cl. 220-204.000.

Grays of Cambridge (Pakistan) Limited: *See—*
Coolen, Toon, 4,512,573, Cl. 273-67.00A.

Great Lakes Carbon Corporation: *See—*
Karagoz, Berch Y.; Turban, Martin M.; Moore, Lyman T.; and Travers, Mark D., 4,513,425, Cl. 373-88.000.

Green, David T., to United States Surgical Corporation. Surgical clip applying apparatus, and clips and clip train for use therein. 4,512,345, Cl. 128-325.000.

Green, Jacqueline M.; and Numbers, Jody L., to Green, Jacqueline M. Nipple holder. 4,512,489, Cl. 220-19.000.

Green, Jerrold D.: *See—*
La Barge, Robert L.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,512,253, Cl. 100-53.000.

Green, John L., to Combustion Engineering, Inc. Differential integral rotary knife control. 4,512,225, Cl. 83-38.000.

Green, Kenneth, to Green, Kenneth; and Thomas, Graham Edward. Rapid breathing, degassing and storage device for wine. 4,512,251, Cl. 99-472.000.

Greenawalt, Eddie L., to Dow Chemical Company, The. Form, fill and seal machine with hot gas and thermal impulse sealing. 4,512,138, Cl. 53-451.000.

Greene, Richard F.; and Gray, Henry F., to United States of America, Navy. p-n Junction controlled field emitter array cathode. 4,513,308, Cl. 357-55.000.

Greer, Terry N. Beverage dispensing apparatus. 4,512,377, Cl. 141-11.000.

Gregory, Edward W.; Danielson, Thomas R.; and Eberwine, Donald A., to Exxon Production Research Co. Moonpool guidance system for floating structures. 4,512,409, Cl. 166-352.000.

Greif Bros. Corporation: *See—*
Santoni, Cesar, 4,512,700, Cl. 413-4.000.

Greschner, Johann: *See—*
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Griner, Paul K.: *See—*
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Schuller, James T.; Smith, Barry L.; and Griner, Paul K., 4,512,454, Cl. 194-1.00D.

Groeschner, Donald L., to Perkin-Elmer Corporation, The. Pneumatic control valve manifold interface. 4,512,362, Cl. 137-356.000.

Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, to L'Oreal. Composition in the form of a shampoo based on anthralin. 4,513,011, Cl. 514-730.000.

Gronholz, Donald D.: *See—*
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Grunewald, Paul: *See—*
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., 4,513,278, Cl. 340-347.0DA.

Grusin, Gerald M., to Dart Industries Inc. Covered dish with adjustable opening. 4,512,497, Cl. 220-369.000.

GTE Automatic Electric Incorporated: *See—*
Giammarrusco, David P., 4,513,233, Cl. 318-565.000.

GTE Communications Products Corporation: *See—*
Kapral, Christopher W., 4,513,279, Cl. 340-347.0DA.

GTE Laboratories Incorporated: *See—*
Bloss, Walter L., III; and Brody, Edward M., 4,513,305, Cl. 357-30.000.

GTE Lenkurt Incorporated: *See—*
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Anderton, John J., 4,512,628, Cl. 350-96.200.
Labadini, William M.; and Scholz, John A., 4,513,227, Cl. 315-290.000.

Guillien, Michel: *See—*
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Gulati, Surender K., to AT&T Bell Laboratories. Multiple self-contained logic gate counter circuit. 4,513,432, Cl. 377-121.000.

Gurney, Anthony R., to Donovan Wire & Iron. Parking brake lever assembly. 4,512,210, Cl. 74-535.000.

Gurney, John: *See—*
Drzewiecki, Tadeusz M.; Toda, Kenji; and Gurney, John, 4,512,371, Cl. 137-828.000.

Gutsch, James L. Horizontal plow system method and apparatus for reclaiming and homogenously blending bulk solid particulate matter such as coal. 4,512,705, Cl. 414-327.000.

Guttler, Hermann: *See—*
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Haag, Gottlob: *See—*
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Haag, Horst G.: *See—*
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Haarhaus, Peter: *See—*
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Hackett, Charles M., Jr., to Rockwell International Corporation. Separation of communication signals in an adaptive antenna array. 4,513,383, Cl. 364-517.000.

Hafner, V. Walter: *See—*
Morris, Earl L.; and Hafner, V. Walter, 4,512,241, Cl. 98-32.000.

Hagemeister, Klaus, to Motoren-und Turbinen-Union Munchen GmbH. Method of manufacturing hollow flow profiles. 4,512,069, Cl. 29-156.80B.

Hagino, Tetsu: *See—*
Chuwman, Tsutomu; Hagino, Tetsu; and Tsuchida, Shozaburo, 4,512,446, Cl. 188-73.380.

Hahn, Erwin; and Neumann, Peter, to BASF Aktiengesellschaft. 1-Alkyl-2-isocyanatomethyl-isocyanatobenzenes and/or 1-alkyl-4-isocyanatomethyl-isocyanatobenzenes. 4,512,929, Cl. 260-453.0AR.

Hahn, Granville J.; and Rutledge, Raleigh N., to Cosden Technology, Inc. Multiple heat exchanger distribution apparatus. 4,512,395, Cl. 165-101.000.

Hahn, Granville J.; and Rutledge, Raleigh N., to Cosden Technology, Inc. Extrusion process for producing thermoplastic pipe. 4,512,943, Cl. 264-173.000.

Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, to BASF Aktiengesellschaft. Particulate polystyrene

containing blowing agent and having improved expandability. 4,513,105, Cl. 521-56.000.

Hain, Paul O.; and Lepisto, J. George, to Champion International Corporation. Container with easy opening closure. 4,512,479, Cl. 206-632.000.

Hakuzen, Tatuzo: *See*—
Ohta, Hideo; Hakuzen, Tatuzo; Ito, Yasunori; and Takagi, Fusao, 4,512,829, Cl. 156-659.100.

Halder, Mathis, to LGZ Landis & Gyr Zug AG. Current transformer for measuring instruments. 4,513,274, Cl. 336-173.000.

Hale, David R.; Owen, William A.; and Orndorff, James A., Jr., to CBI Offshore, Inc. Mobile offshore structure for arctic exploratory drilling. 4,512,684, Cl. 405-217.000.

Hall, Nigel: *See*—
Anderton, Kenneth; Hall, Nigel; Parton, Brian; Renfrew, Andrew H. M.; and Shaw, Malcolm G., 4,512,773, Cl. 8-657.000.

Haller, Walter, to Swiss Aluminium Ltd. Adjustable mold for electromagnetic casting. 4,512,386, Cl. 164-467.000.

Halliburton Company: *See*—
Heemstra, Timothy R., 4,512,424, Cl. 175-299.000.
Regalbuto, John A.; Patton, James B.; and Sumner, Cyril R., 4,512,418, Cl. 175-4.560.

Hamada, Shigeki: *See*—
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Hamann, Georg. Sailboard rig. 4,512,276, Cl. 114-39.000.

Hamm, Wilfried. Multi-purpose sports-kit. 4,512,572, Cl. 272-144.000.

Hammann, Ingeborg: *See*—
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Hammer, Edward E.: *See*—
Lemmers, Alfred E.; and Hammer, Edward E., 4,513,225, Cl. 315-189.000.

Hamprecht, Gerhard: *See*—
Parg, Adolf; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,512,797, Cl. 71-93.000.

Hankin, Gary H.: *See*—
Umble, Don G.; Choong, Tsi-Pin; Izzo, Kenneth R.; Burdg, Charles E.; Hankin, Gary H.; and Dalke, Charles A., 4,512,179, Cl. 73-4.00R.

Hannan, Patrick J.; Stiffey, Arthur V.; Jarvis, N. Lynn; and Wohltjen, Henry, to United States of America, Navy. Method and apparatus for the detection of toxicants. 4,513,280, Cl. 340-632.000.

Hannecke, Wolf-Dietrich. Article display stand. 4,512,262, Cl. 108-61.000.

Hansen, Wayne W., to Sundstrand Corporation. Rotor cooling in rotary electric machines. 4,513,218, Cl. 310-270.000.

Hanson, Eric G.; Hiskes, Ronald; and Schantz, Christopher A., to Hewlett-Packard Company. Optical fiber with hermetic seal and method for making same. 4,512,629, Cl. 350-96.300.

Hanson, Jay L., to Thermo King Corporation. Diesel glow plug tip enlargement protection. 4,512,295, Cl. 123-145.00A.

Hanssle, Peter; and Zaar, Wolfgang, to Chemische Werke Huels, AG. Isomerization of isolated double bonds to conjugated double bonds in optionally substituted cyclooctadienes. 4,513,157, Cl. 585-378.000.

Hansson, P. E. Anders; and Jachimowicz, Felek, to W. R. Grace & Co. Retention and drainage aid. 4,513,122, Cl. 525-332.300.

Hansson, Per E. A.; and Jachimowicz, Felek, to W. R. Grace & Co. Wet strength material. 4,513,121, Cl. 525-332.300.

Harada, Takashi: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,512,893, Cl. 210-500.200.

Haraguchi, Hiroshi; and Narita, Ko, to Nippondenso Co., Ltd. Ignition timing control system for internal combustion engines. 4,512,310, Cl. 123-425.000.

Harbeck, Martin E.: *See*—
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Harden, Theodore A., to Takasago USA, Inc. Apparatus for dispensing volatile substances. 4,512,933, Cl. 261-30.000.

Harding, LeRoy A., to Plastofilm Industries, Inc. Locking means for display package. 4,512,474, Cl. 206-461.000.

Harman, Stephen G., to Northern Telecom Limited. Signal cuber. 4,513,250, Cl. 328-163.000.

Harr, Jerome D., to International Business Machines Corporation. Integrated circuit filter with adjustable characteristics. 4,513,254, Cl. 330-294.000.

Harra, David J., to Varian Associates, Inc. Apparatus for thermal treatment of semiconductor wafers by gas conduction incorporating peripheral gas inlet. 4,512,391, Cl. 165-48.00R.

Harris Corporation: *See*—
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Harris Graphics Corporation: *See*—
Schriber, Louis; Stephens, Robert E.; and Blaha, John F., 4,512,256, Cl. 101-248.000.

Harris, William T.: *See*—
Mohon, Windell N.; and Harris, William T., 4,512,745, Cl. 434-43.000.

Harrison, Cecil P., to Tennessee Valley Authority. Granulation of urea phosphate from urea and merchant-grade phosphoric acid. 4,512,793, Cl. 71-29.000.

Harshaw/Filtrol: *See*—
Scherzer, Julius; and Humphries, Adrian P., 4,512,961, Cl. 423-328.000.

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Hartmannsgruber, Max; Kriechbaum, Kurt; Schulz, Gunter; and Gutler, Hermann, to Zinser Textilmaschinen GmbH. Method of controlling fiber-drawing apparatus. 4,512,061, Cl. 19-239.000.

Harvey, Bruce J.: *See*—
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Hasebe, Koshi; Miura, Kunio; Ono, Takashi; Akutsu, Kazushi; and Minami, Kazuaki, to Nippondenso Co., Ltd. Vehicle-mounted navigator. 4,513,377, Cl. 364-449.000.

Hasegawa, Toru; Muroi, Masayuki; and Tanida, Seiichi, to Takeda Chemical Industries, Ltd. Macbecin derivatives and their production. 4,512,975, Cl. 424-121.000.

Hasegawa, Yoshimichi: *See*—
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Hashi, Takahiro; and Hashi, Saeko. Coated rubber cord. 4,513,063, Cl. 428-377.000.

Hashimota, Yasumasa: *See*—
Ishigami, Yoshihisa; Hashimota, Yasumasa; Kitado, Tadaharu; Nishimura, Hiromi; and Mori, Tetsuo, 4,513,339, Cl. 361-45.000.

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Hashimoto, Mayuki: *See*—
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Hashimoto, Takao: *See*—
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Hassall, Cedric H.: *See*—
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Hattori, Shigeo: *See*—
Mori, Yasuhiko; Hattori, Shigeo; Masaoka, Isao; and Itow, Hisao, 4,512,820, Cl. 148-12.70N.

Hattori, Torao, to Honda Giken Kogyo Kabushiki Kaisha. V-belt transmission apparatus. 4,512,753, Cl. 474-242.000.

Haury, Andre : *See*—
Belbel, Elie; Blanchard, Christian; Lauraire, Michel; Fechant, Louis; and Haury, Andre , 4,513,270, Cl. 335-195.000.

Hauske, James R.; and Nagel, Arthur A., to Pfizer Inc. 9α-Aza-9α-homoerythromycin compounds, pharmaceutical composition and therapeutic method. 4,512,982, Cl. 514-29.000.

Hawkins, Ronald G.: *See*—
La Barge, Robert L.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,512,253, Cl. 100-53.000.

Hay, Leon, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method and installation for separating a composite gas by adsorption. 4,512,779, Cl. 55-26.000.

Hay, Leon: *See*—
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Hayakawa, Masanori; and Nishimura, Satoshi, to Central Glass Company Limited. Wet process for preparing ferrites of magnetoplumbite structure in fine particle form. 4,512,906, Cl. 252-62.630.

Hayashi, Chihiro; and Nakasuji, Kazuyuki, to Sumitomo Metal Industries, Ltd. Method of manufacturing metallic materials having a circular cross section. 4,512,177, Cl. 72-368.000.

Hayashi, Isao, to Nissan Motor Company, Limited. Engine lubricating system. 4,512,298, Cl. 123-196.00R.

Hayatdavoudi, Asadollah; and Adams, Ladd M., to Gill Industries, Inc. Downhole vortex generator. 4,512,420, Cl. 175-67.000.

Hayes, Thomas A., Jr.: *See*—
Buck, Kenneth J.; Grace, Robert E.; and Hayes, Thomas A., Jr., 4,512,652, Cl. 355-14.0CH.

Hayhurst, Gordon A.; and Rayner, David A., to J.H. Fenner & Co. Limited. Taper bush. 4,512,681, Cl. 403-371.000.

Hays, Charles: *See*—
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Hazeltine Corporation: *See*—
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Hecker, Leonard R., to McNeilab, Inc. 2-Amino-4,5-dihydro-1H-imizole-1-carboxanilides. 4,513,140, Cl. 548-315.000.

Heckler & Koch GmbH: *See*—
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Heemstra, Timothy R., to Halliburton Company. Tubular spring slip-joint and jar. 4,512,424, Cl. 175-299.000.

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Hegle, Richard L., to Ameron, Inc. Mortarless retaining-wall system and components thereof. 4,512,685, Cl. 405-284.000.

Heidecker, Robert F., to Dairy Systems, Inc. Animal identification band and method and means for permanently fastening same. 4,512,096, Cl. 40-304.000.

Heil, Ernst: *See—*
Suetterlin, Norbert; Arndt, Peter J.; Heil, Ernst; Siol, Werner; Tilch, Willi; and Wopker, Wilhelm, 4,513,118, Cl. 525-81.000.

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Heile, Bernard J., to Economics Laboratory, Inc. Highly alkaline liquid warewashing emulsion stabilized by clay thickener. 4,512,908, Cl. 252-160.000.

Heineken Technisch Beheer, B.V.: *See—*
Aalbers, Vas J., 4,513,013, Cl. 426-16.000.

Heitmann, Jurgen, to Robert Bosch GmbH. Method of recording video signals within a predetermined bit/unit time recording rate. 4,513,328, Cl. 360-8.000.

Heller, Jorge: *See—*
Ng, Steven Y.; Penhale, Donald W.; and Heller, Jorge, 4,513,143, Cl. 549-335.000.

Helling, Gunter, to Agfa-Gevaert AG. Photographic silver halide containing recording material with crosslinked microgel particles. 4,513,080, Cl. 430-537.000.

Helm, Emanuel. Cable holding and positioning apparatus and splicing method. 4,512,828, Cl. 156-49.000.

Hemmi, Keiji: *See—*
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Hennekes, Daniel M.; Kolde, Richard A.; and Suica, David E., to Cincinnati Milacron Inc. Robot toolchanger system. 4,512,709, Cl. 414-729.000.

Hennig, Franz, to Jagenberg AG. Spout for liquid packing apparatus. 4,512,379, Cl. 141-286.000.

Henry, Jill. Recreational towel. 4,512,049, Cl. 5-417.000.

Henry, Michael D.; Ableidinger, Bruce J.; and Agarwal, Nirmal K., to Northwest Instrument Systems, Inc. Apparatus and method for acquiring multiple groups of data signals from a synchronous logic system. 4,513,395, Cl. 364-900.000.

Henshaw, Philip D., to Sparta, Inc. Image comparison system. 4,513,441, Cl. 382-43.000.

Hercules Incorporated: *See—*
Gardiner, Richard J., 4,512,835, Cl. 156-174.000.

Herdeg, Donald F.; and Matseas, William G., to USM Corporation. Pattern selection system. 4,512,271, Cl. 112-158.00E.

Herman Miller, Inc.: *See—*
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Herman, Morton B., to Standard Microsystems Corporation. Software security method using partial fabrication of proprietary control word decoders and microinstruction memories. 4,513,174, Cl. 178-22.080.

Hermann C. Starck Berlin: *See—*
Albrecht, Wolf-Wigand; Papp, Uwe; and Behrens, Dieter, 4,512,805, Cl. 75-244.000.

Hermelin, Victor M. Force opposition type exerciser. 4,512,571, Cl. 272-126.000.

Herrington, Allen G.; and Herrington, Nicholas L. Distributor moisture guard. 4,512,296, Cl. 123-146.50R.

Herrington, F. John, Jr., to Mobil Oil Corporation. Plastic bag dispenser. 4,512,476, Cl. 206-554.000.

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Hewlett-Packard Company: *See—*
Hanson, Eric G.; Hiskes, Ronald; and Schantz, Christopher A., 4,512,629, Cl. 350-96.300.
Scheu, Friedrich, 4,513,298, Cl. 346-140.00R.

Hicks, Douglas C.; and Pleass, Charles M., to University of Delaware. Wave-powered desalination of water. 4,512,886, Cl. 210-170.000.

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Higashimoto, Tsuyoshi, to Higashimoto Kikai Co., Ltd. Apparatus for mincing frozen meat into ground meat. 4,512,523, Cl. 241-82.400.

Higgins, David T.: *See—*
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Higuchi, Kazuaki: *See—*
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Hill, Clinton W., to U.S. Plastics Corporation. Gravity switch. 4,513,183, Cl. 200-61.45R.

Hill, Graham A.: *See—*
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Hills, Joseph F., to Jimmy's Radio & Television Corp. Automotive sound system. 4,513,405, Cl. 369-12.000.

Hilmersson, Anders; Lagerstedt, Jan; and Andersson, Helge, to Tetra Pak International AB. Apparatus for the volatilization of a liquid. 4,512,935, Cl. 261-79.00A.

Hilty, Ronald L.: *See—*
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Hing, Sam A.; and Guillien, Michel, to Motorola, Inc. Signal processing arrangement. 4,513,178, Cl. 179-81.00R.

Hinojosa, Alberto L.; Kim, Kee; and Chickering, Kenton, III, to Daniel Industries, Inc. Valve mechanism with replaceable seal rings. 4,512,359, Cl. 137-315.000.

Hirai, Jun; and Kaneko, Masayasu, to Sony Corporation. Video signal processing unit. 4,513,311, Cl. 358-40.000.

Hirakoso, Yohei: *See—*
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Hirata, Mitsuki; Sato, Yoshitaka; and Matudaira, Kaname, to Kubota Ltd. Rotary cultivating apparatus of laterally shiftable type. 4,512,413, Cl. 172-74.000.

Hirose, Takeshi: *See—*
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Hirose, Toshifumi: *See—*
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Hiskes, Ronald: *See—*
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Hitchens, Max W.; and Rote, George B. Material conveying system simulation and monitoring apparatus. 4,512,747, Cl. 434-428.000.

Hochradel, Hans. Pneumatic tube system with carrier. 4,512,688, Cl. 406-111.000.

Hodes, David S.; Leidy, Grace; Sprunt, Katherine; and Weldy, Piper. Preparation of an antibiotic selectively effective against staphylococcus infections. 4,513,083, Cl. 435-68.000.

Hoechst Aktiengesellschaft: *See—*
Winkelmann, Detlef, 4,512,658, Cl. 355-14.0SH.

Hofer, Gerald; Straubel, Max; and Eheim, Franz, to Robert Bosch GmbH. Device for adjusting the full-load injection quantity of a fuel injection pump for internal combustion engines. 4,512,308, Cl. 123-383.000.

Hoffman, Dwight K., to Dow Chemical Company, The. Preparation of a copolymer polyahl using an addition polymerizable adduct of a polymeric monoahl and an ethylenically unsaturated coreactant. 4,513,124, Cl. 525-452.000.

Hoffmann-La Roche Inc.: *See—*
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Attwood, Michael R.; Hassall, Cedric H.; Lambert, Robert W.; Lawton, Geoffrey; and Redshaw, Sally, 4,512,924, Cl. 260-243.300.

Hoffmann, Paul D., to Lilie-Hoffman Cooling Towers, Inc. Grid and fill slats for cooling towers. 4,512,937, Cl. 261-111.000.
Hofheinz, Werner: *See—*
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Hogg, Christine: *See—*
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Hollins, Brian E.: *See—*
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Holmen Chemicals Limited: *See—*
Payne, John D., 4,512,180, Cl. 73-7.000.
Holubka, Joseph W., to Ford Motor Company. Crosslinkable composition of matter - II. 4,513,125, Cl. 525-528.000.
Homac Mfg. Company: *See—*
McGrane, Eugene W., 4,513,169, Cl. 174-138.00F.
Home Care Industries, Inc.: *See—*
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Hooks, John T., Jr., to LTV Aerospace and Defense. Memory system. 4,513,374, Cl. 364-200.000.
Horak, Charles F.; and Jordan, James M. Hand-held shoe polishing apparatus. 4,512,053, Cl. 15-28.000.
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Horger, Oscar J., to A. Stucki Company. Self-steering railway truck. 4,512,261, Cl. 105-167.000.
Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, to Alps Electric Co., Ltd. Serial printer. 4,512,675, Cl. 400-328.000.
Horstmann, Harald: *See—*
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Horvath, Tibor, to Metaframe, Inc. Electric pump for use in filtering system of a tropical fish tank or the like. 4,512,724, Cl. 417-319.000.
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Hosel, Peter, to Agfa-Gevaert AG. Arrangement for unloading and loading X-ray film cassettes. 4,512,704, Cl. 414-292.000.
Hosoda, Naoyuki; Uchiyama, Naoki; and Kawanaka, Ryusuke, to Mitsubishi Kinzoku Kabushiki Kaisha; and Mitsubishi Denki Kabushiki Kaisha. Lead alloy soft solder containing radioactive particles used to make more reliable semiconductor devices. 4,512,950, Cl. 420-563.000.
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Houseman, David L., to Data General Corporation. Digital data processing system having object-based logical memory addressing and self-structuring modular memory. 4,513,368, Cl. 364-200.000.
Houser, John, Jr.; and Laughon, Thomas C., to Singer Company, The. Speed regulator for power tool. 4,513,381, Cl. 364-475.000.
Howard, Dennis D.: *See—*
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Howe, Michael W.; and Sopp, Samuel W., to Calgon Corporation. Barium or chromium additives to magnesium oxide coating slurry. 4,512,823, Cl. 148-113.000.
Howell, Donald J., to Sponco Mfg., Inc. Control mechanism for aerial ladders. 4,512,439, Cl. 182-66.000.
Hsu, Sheng T., to RCA Corporation. Method of forming self-aligned contact openings. 4,512,073, Cl. 29-571.000.
Hsu, Yu-Wen, to Kaiser Aluminum & Chemical Corporation. Process and apparatus for strip flatness and tension measurements. 4,512,170, Cl. 72-17.000.
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Hughes Aircraft Company: *See—*
Peters, John W., 4,513,057, Cl. 428-336.000.
Rensink, Loman, 4,513,361, Cl. 363-21.000.
Terbrack, William H., 4,513,255, Cl. 331-1.00A.
Hughes, Richard E. Flow actuated switch. 4,513,184, Cl. 200-81.90M.
Hughes Tool Company: *See—*
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Hunt, Thomas K.; Goodson, William H., III; Chang, Ning; Knighton, David R.; Gottrup, Finn; and Firmin, Richard, to University of California, Regents of the. Method of direct tissue gas tension measurement and apparatus therefor. 4,512,349, Cl. 128-632.000.
Huon de Kermadec, Jean, to Soule Fer et Froid S.A. Automatic transport system comprising cable-drawn non-motorized vehicles. 4,512,259, Cl. 104-208.000.
Husqvarna Aktiebolag: *See—*
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Hutchings, Ron; Loitzl, Ruzica; and Muller, Klaus, to BBC Brown, Boveri & Company, Limited. Catalyst for coating anodes and a process for its preparation. 4,513,102, Cl. 502-325.000.
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Ichikawa, Sadao; and Kamiya, Tuyoshi, to NGK Spark Plug Co., Ltd.; and Nissan Motor Company, Limited. Apparatus for controlling energization of glow plugs. 4,512,297, Cl. 123-179.00H.
Igashira, Toshihiko; Kawai, Hisasi; Tanaka, Takeshi; Iwamoto, Kenzi; Abe, Seiko; and Hashimoto, Eiji, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Fuel quantity control apparatus of supercharged diesel engine with safety measures. 4,512,307, Cl. 123-383.000.
Ihara, Kiyohiko: *See—*
Nakagawa, Shinichi; Ihara, Kiyohiko; and Sogabe, Toshio, 4,513,129, Cl. 526-249.000.
Ihde, Richard C.: *See—*
Thompson, Kenneth P.; and Ihde, Richard C., 4,513,036, Cl. 428-35.000.
Ikegami Tsushinki Co., Ltd.: *See—*
Kobayashi, Yuji; and Okada, Takao, 4,513,316, Cl. 358-106.000.
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, to Ikenoue, Tsuneo; Tohoku Ricoh Co., Ltd.; Stanley Electric Co., Ltd.; and Micron Kiki Co. Ltd. DC-DC converter having energy storage inductance element connected in flywheel circuit. 4,513,360, Cl. 363-20.000.
Imperial Chemical Industries PLC: *See—*
Anderton, Kenneth; Hall, Nigel; Parton, Brian; Renfrew, Andrew H. M.; and Shaw, Malcolm G., 4,512,773, Cl. 8-657.000.
Doroszkowski, Andrew, 4,512,861, Cl. 204-181.00R.
Robson, Michael J., 4,512,931, Cl. 260-465.00D.
Inada, Masami; and Hashimoto, Kenji, to Aisin Seiki Kabushiki Kaisha. Solenoid actuated valve device. 4,512,546, Cl. 251-65.000.
Inagaki, Mitsuo: *See—*
Nakano, Hiromichi; Sasaya, Hideaki; Inagaki, Mitsuo; Matsui, Kazuma; and Yoshimura, Kunimasa, 4,512,728, Cl. 418-3.000.
Industrial Automation Corp.: *See—*
Peyton, John J., 4,512,456, Cl. 198-479.000.
Industrias Penoles S.A. de C.V.: *See—*
Nielsen, Hans C. A.; and Schroeder, Roberto, 4,512,809, Cl. 106-103.000.
Ingersoll-Rand Company: *See—*
Kurt, Ewald H., 4,512,417, Cl. 173-77.000.

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Inland Steel Company: *See—*
Patil, Ram S.; Johnson, Donald F.; and Quasney, John T., 4,513,033, Cl. 427-349.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,512,859, Cl. 204-129.460.
Inoue, Kiyoshi, 4,513,191, Cl. 219-69.00M.
Inoue, Kiyoshi, 4,513,192, Cl. 219-69.00W.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Abrasive polishing method. 4,512,859, Cl. 204-129.460.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for resetting a wire electrode in an operating setup on an electroerosion machine. 4,513,191, Cl. 219-69.00M.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. TW-EDM Method and apparatus with excess fluid stripping gas jet nozzle. 4,513,192, Cl. 219-69.00W.

Institut de Recherche en Sante et en Securite du Travail du Quebec: *See—*
Savage, Garry, 4,512,437, Cl. 182-3.000.

Institute of Gas Technology: *See—*
Claar, Terry D.; and Petri, Randy J., 4,512,388, Cl. 165-1.000.

Interlock Structures International, Inc.: *See—*
Lange, Fredric A., 4,512,117, Cl. 52-6.000.

International Business Machines Corporation: *See—*
Abbas, Shakir A.; and Magdo, Ingrid E., 4,513,303, Cl. 357-23.300.
Bardell, Paul H., Jr.; and McAnney, William H., 4,513,418, Cl. 371-25.000.
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; Muhl, Reinhold; Nehmiz, Peter; and Trumpp, Hans J., 4,513,203, Cl. 250-491.100.
Brunsch, Arwed; Ruh, Wolf-Dieter; and Trippel, Gerhard, 4,512,847, Cl. 156-626.000.
Chainer, Timothy J.; Scranton, Robert A.; and Worthington, Thomas K., 4,513,437, Cl. 382-3.000.
Chamberlain, Savvas G.; and Schlig, Eugene S., 4,513,431, Cl. 377-60.000.
Chan, Shiu K.; Gerardi, John A.; and McGilvray, Bruce L., 4,513,367, Cl. 364-200.000.
Cunningham, George F., Jr.; Lewis, John W.; McClure, Robert B.; and Poindexter, Daniel J., 4,512,841, Cl. 156-345.000.
Davis, Michael I.; Garrett, Michael J.; and Wiseman, John A., 4,513,351, Cl. 361-384.000.
Edlund, Olof A.; Enser, Mats A.; Strage, Jan W.; Thunberg, Svante B.; and Wallmark, Erik I., 4,513,393, Cl. 364-900.000.
Harr, Jerome D., 4,513,254, Cl. 330-294.000.
Lanning, Frederick E., 4,512,263, Cl. 109-66.000.
Lee, Francis C.; Mills, Ross N.; Payne, Robert N.; and Talke, Frank E., 4,513,299, Cl. 346-140.00R.
Leininger, Joel C., 4,513,283, Cl. 340-825.020.
Macur, George J.; Pratt, W. Robert; and Sharkness, James E., 4,512,900, Cl. 210-748.000.
Maddock, Robert F., 4,513,391, Cl. 364-900.000.
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International Flavors & Fragrances Inc.: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,512,902, Cl. 252-8.600.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,512,918, Cl. 252-522.00R.
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,512,919, Cl. 252-522.00R.

International Harvester Company: *See—*
Egan, John J.; and Witkowski, Andrew B., 4,512,299, Cl. 123-196.00A.
Gahlinger, Earl C., 4,512,810, Cl. 134-8.000.

International Paper Company: *See—*
Brandon, Ralph E.; Davis, Charles J.; Ring, Michael; and Swenson, Roy S., 4,512,849, Cl. 162-157.200.

International Telephone and Telegraph Corporation: *See—*
Knapke, Paul H.; and Miller, Robert L., 4,513,414, Cl. 370-58.000.

Inui, Toshiharu: *See—*
Svay, Leng; Moriguchi, Haruhiko; and Inui, Toshiharu, 4,513,296, Cl. 346-76.0PH.

Inukai, Yuzo, to Fuji Photo Film Co., Ltd. Atomizing head. 4,512,518, Cl. 239-223.000.

Inwood, Louis R. Dermatological composition useful in the treatment of psoriasis. 4,512,978, Cl. 424-145.000.

Ipri, Alfred C.; and Stewart, Roger G., to RCA Corporation. Electrically alterable, nonvolatile floating gate memory device. 4,513,397, Cl. 365-185.000.

Irabu, Takeru, to Nippon Electric Co., Ltd. Adaptive constant false alarm rate (CFAR) processor. 4,513,286, Cl. 343-5.0CF.

Irex Corporation: *See—*
Cimilluca, Charles I., 4,512,350, Cl. 128-660.000.

Irwin, George W.; and Mumford, Eustace H., to Owens-Illinois, Inc. Cooling wind shut-off valve for glass forming mold. 4,512,792, Cl. 65-161.000.

Isayama, Katsuhiko: *See—*
Kawakubo, Fumio; Hirose, Toshifumi; Minokami, Tadashi; Hosaka, Miyako; and Isayama, Katsuhiko, 4,513,061, Cl. 428-429.000.

Isham, Robert O.; and Reese, Wayne S. Van sofa bed. 4,512,048, Cl. 5-37.00R.

Ishida, Masato; and Takeda, Hiroaki, to Canon Kabushiki Kaisha. Image reproducing apparatus. 4,512,655, Cl. 355-55.000.

Ishigaki Kiko Co., Ltd.: *See—*
Noda, Ichiro; Suekane, Yasuhiro; and Nakao, Hisao, 4,512,889, Cl. 210-225.000.

Ishigami, Yoshihisa; Hashimota, Yasumasa; Kitado, Tadaharu; Nishimura, Hiromi; and Mori, Tetsuo, to Matsushita Electric Works, Ltd. Current detecting apparatus. 4,513,339, Cl. 361-45.000.

Ishihara, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Positioning servo circuit for a disk system. 4,513,406, Cl. 369-32.000.

Ishihara, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Microwave ground shield structure. 4,513,266, Cl. 333-238.000.

Ishikawa, Kazuo, to Aisin Seiki Kabushiki Kaisha. Vehicle automatic power transmission having a lock up clutch. 4,512,212, Cl. 74-733.000.

Ishikawa, Norio: *See—*
Kitaura, Mashio; Ishikawa, Norio; and Ishimura, Toshihiko, 4,512,646, Cl. 354-409.000.

Ishimura, Toshihiko: *See—*
Kitaura, Mashio; Ishikawa, Norio; and Ishimura, Toshihiko, 4,512,646, Cl. 354-409.000.

Isida, Tosio: *See—*
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,512,893, Cl. 210-500.200.

Isobe, Asao; Makino, Daisuke; and Shiraishi, Hiroshi, to Hitachi Chemical Company, Ltd.; and Hitachi, Ltd. Electron beam or X-ray reactive image-formable resinous composition. 4,513,077, Cl. 430-270.000.

Isobe, Toshiaki: *See—*
Ito, Toshimitsu; and Isobe, Toshiaki, 4,512,318, Cl. 123-492.000.

Isogai, Tokio: *See—*
Shoji, Fusaji; Takemoto, Issei; Kataoka, Fumio; Yokono, Hitoshi; and Isogai, Tokio, 4,513,132, Cl. 528-21.000.

Ito, Fumio: *See—*
Shinoda, Nobuhiko; Sakurada, Nobuaki; Kawamura, Masaharu; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,512,656, Cl. 354-475.000.

Ito, Shoichi: *See—*
Tatsuno, Kimio; Saito, Susumu; Ito, Shoichi; Terashima, Isamu; Homma, Yoshifumi; Asano, Mitsugu; and Ono, Yoshifumi, 4,513,300, Cl. 346-160.000.

Ito, Tadashi: *See—*
Shinoda, Nobuhiko; Sakurada, Nobuaki; Kawamura, Masaharu; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,512,656, Cl. 354-475.000.

Ito, Tokuhisa; Ohno, Hideaki; Kurata, Izumi; and Okuyama, Takashi, to Ashai Kogaku Kogyo Kabushiki Kaisha. Automatic focusing apparatus in optical drawing machine. 4,512,642, Cl. 354-4.000.

Ito, Toshimitsu; and Isobe, Toshiaki, to Toyota Jidosha Kabushiki Kaisha. Internal combustion engine with fuel injection system. 4,512,318, Cl. 123-492.000.

Ito, Yasunori: *See—*
Ohta, Hideo; Hakuzen, Tatuzo; Ito, Yasunori; and Takagi, Fusao, 4,512,829, Cl. 156-659.100.

Itoh, Satoru, to Fuji Xerox Co., Ltd. Image outputting device. 4,513,325, Cl. 358-280.000.

Itoi, Hiroshi: *See—*
Komiyama, Noboru; Itoi, Hiroshi; and Sano, Hiroshi, 4,512,968, Cl. 424-48.000.

Itou, Takaaki: *See—*
Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Takimoto, Masatami; and Teramura, Mitsuyoshi, 4,512,312, Cl. 123-439.000.

Itow, Hisao: *See—*
Mori, Yasuhiko; Hattori, Shigeo; Masaoka, Isao; and Itow, Hisao, 4,512,820, Cl. 148-12.70N.

Ives, Neil A.: *See—*
Marvin, Dean C.; and Ives, Neil A., 4,513,200, Cl. 250-227.000.

Ivins, James M. Thermometer for obtaining the temperature of horse. 4,512,668, Cl. 374-194.000.

Iwamoto, Kenzi: *See—*
Igashira, Toshihiko; Kawai, Hisasi; Tanaka, Takeshi; Iwamoto, Kenzi; Abe, Seiko; and Hashimoto, Eiji, 4,512,307, Cl. 123-383.000.

Iwata, Tadao: *See—*
Mizui, Kinya; Takeda, Masami; and Iwata, Tadao, 4,513,130, Cl. 526-283.000.

Iwatsu Electric Co., Ltd.: *See—*
Kokaji, Norio, 4,513,326, Cl. 358-301.000.

Izzo, Kenneth R.: *See—*
Umble, Don G.; Choong, Tsi-Pin; Izzo, Kenneth R.; Burdg, Charles E.; Hankin, Gary H.; and Dalke, Charles A., 4,512,179, Cl. 73-4.00R.

J.H. Fenner & Co. Limited: *See—*
Hayhurst, Gordon A.; and Rayner, David A., 4,512,681, Cl. 403-371.000.

J. Mulcahy Enterprises Incorporated: *See—*
Mulcahy, Joseph A., 4,512,799, Cl. 75-49.000.

Jabarin, Saleh A., to Owens-Illinois, Inc. Method for making poly(ethylene terephthalate) article. 4,512,948, Cl. 264-521.000.

Jachimowicz, Felek: *See—*
Hansson, P. E. Anders; and Jachimowicz, Felek, 4,513,122, Cl. 525-332.300.
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Jackson, L. Robert; Davis, Randall C.; and Taylor, Allan H., to United States of America, National Aeronautics and Space Administration. Daze fasteners. 4,512,699, Cl. 411-368.000.

Jacobine, Anthony F., to Loctite Corporation. Soluble sulfimide accelerators for free radical cured compositions. 4,513,127, Cl. 526-194.000.

Jacobs, Brian E.: *See—*
Ellis, Roland, Jr.; Jacobs, Brian E.; March, Edward J.; and Newman, Raymond J., 4,512,509, Cl. 228-180.200.
Jacobs, George S.; and Anderson, R. David. Pilot valve for an oil and gas separator. 4,512,365, Cl. 137-413.000.
Jacobson, Clayton J. Interface for water cooled engine manifolds. 4,512,148, Cl. 60-321.000.
Jacobstein, Benjamin, to Scientific Technology, Ltd. Contact lens handling device. 4,512,601, Cl. 294-1.200.
Jagenberg AG: *See—*
Hennig, Franz, 4,512,379, Cl. 141-286.000.
Jakobsen, Kjell M.: *See—*
Nilsson, Torsten; and Jakobsen, Kjell M., 4,512,735, Cl. 425-526.000.
James, Dean B.: *See—*
Anstine, Larry D.; James, Dean B.; Melaika, Edward A.; and Peterson, John P., Jr., 4,512,921, Cl. 252-626.000.
Jamieson Film Company: *See—*
Engelhardt, Billy M.; and Moore, Dwane L., 4,512,645, Cl. 354-324.000.
Jamieson, William B.: *See—*
Baker, Stephen R.; Jamieson, William B.; Ross, William J.; and Todd, Alec, 4,513,005, Cl. 514-451.000.
Jamiolkowski, Michael J.; and Campbell, Jules D., Jr., to Motorola, Inc. Single input oscillator circuit. 4,513,258, Cl. 331-111.000.
Jamison, Matthew; and Sharp, Charles C. Beehive ventilator. 4,512,050, Cl. 6-1.000.
Jandrasi, Frank J.; Pampell, Davy G.; and Stinson, Walter J., to General Signal Corporation. Slide valve. 4,512,363, Cl. 137-375.000.
Jansen, Frank; and Mort, Joseph, to Xerox Corporation. Process for amorphous silicon films. 4,513,022, Cl. 427-39.000.
Janssen, Caleb E., to Lockheed Corporation. Tool for installing electrical wire harness clamps and the like. 4,512,219, Cl. 81-121.100.
Japan Electronic Control Systems Company, Limited: *See—*
Tomisawa, Naoki, 4,512,315, Cl. 123-478.000.
Jarrett, David W. Compound lever bow. 4,512,326, Cl. 124-23.00R.
Jarund, Erik, to Tetra Pak International AB. Suction tube package. 4,512,472, Cl. 206-443.000.
Jarvis, James G.: *See—*
Ng, Yee S.; Jarvis, James G.; and Thompson, John R., 4,512,653, Cl. 355-16.000.
Jarvis, N. Lynn: *See—*
Hannan, Patrick J.; Stiffey, Arthur V.; Jarvis, N. Lynn; and Wohltjen, Henry, 4,513,280, Cl. 340-632.000.
Jayant, Nuggehally S., to AT&T Bell Laboratories. Adaptive differential pulse code modulation. 4,513,426, Cl. 375-26.000.
Jaycox, Donald F.: *See—*
Suffi, Louis; Golden, James E.; and Jaycox, Donald F., 4,513,171, Cl. 174-41.000.
Jayem Dialer Corp.: *See—*
Smith, Fred J., 4,513,175, Cl. 179-18.0BA.
Jeffrey, Frank R., III; and Shirck, James R., to Minnesota Mining and Manufacturing Company. Layered photoconductive element. 4,513,073, Cl. 430-65.000.
Jennette, William S. Pull plow with pull handles and runners and automobile selectively attached to plow. 4,512,415, Cl. 172-360.000.
Jensen, Torkil D., to F. L. Smidth & Co. A/S. Bridge scraper for direct material feeding. 4,512,458, Cl. 198-507.000.
Jerhammar, Lars O. Navigational aid device. 4,512,087, Cl. 33-431.000.
Jerus, Paul: *See—*
Clearfield, Abraham; and Jerus, Paul, 4,512,905, Cl. 252-62.200.
Jewell, Donald K.: *See—*
Schindler, James C.; and Jewell, Donald K., 4,512,250, Cl. 99-425.000.
Jidosha Kiki Co., Ltd.: *See—*
Endoh, Kazunori; and Suzuki, Haruo, 4,512,237, Cl. 91-369.00A.
Jimenez, Raul. Carriage for a trimming device. 4,512,143, Cl. 56-16.700.
Jimmy's Radio & Television Corp.: *See—*
Hills, Joseph F., 4,513,405, Cl. 369-12.000.
Joannic, Michel; Roquet, Francoise; and Pesson, Marcel, to Laboratoire Roger Bellon. β-Adrenergic 1-[1-benzimidazolyl]-N-[2-(4-hydroxy-3-methoxy-phenyl)-2-hydroxy-ethyl]-3-amino butane and salts and hydrates thereof. 4,513,001, Cl. 514-394.000.
Jobe, Howard L. Golf bag accessory. 4,512,465, Cl. 206-315.400.
Johanning, Hermann, to Engelbrecht & Lemmerbrock GmbH & Co. Apparatus for granulating and conveying corn-cob mix. 4,512,521, Cl. 241-34.000.
Johansson, Hans L., to Facit Aktiebolag. Locking assembly for restricting pivotal movement of a print unit to a position in which a print element can be replaced. 4,512,676, Cl. 400-144.200.
John Zink Company: *See—*
Cegielski, John M., Jr.; Campbell, Gerald D.; and Schaub, Clyde D., 4,512,267, Cl. 110-347.000.
Johnson, Donald F.: *See—*
Patil, Ram S.; Johnson, Donald F.; and Quasney, John T., 4,513,033, Cl. 427-349.000.
Johnson & Johnson Dental Products Company: *See—*
Santucci, Edward A.; and Racz, William B., 4,512,743, Cl. 433-217.000.
Johnson & Johnson Products, Inc.: *See—*
Buck, Carl J., 4,512,340, Cl. 128-90.000.
Johnson, Mark E. Flying figure toy glider. 4,512,690, Cl. 446-61.000.
Johnson, Violet M. Support cushion. 4,512,047, Cl. 5-432.000.
Johnston, David B. R., to Merck & Co., Inc. 3-Acyl-2-amino-5-halo-6-(substituted)pyrazine antimicrobial compounds. 4,512,991, Cl. 514-252.000.
Jolly, Jean: *See—*
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,513,147, Cl. 562-506.000.
Jones, Andrew J. S.; Olson, Kenneth C.; and Shire, Steven J., to Genentech, Inc. Purification and activity assurance of precipitated heterologous proteins. 4,512,922, Cl. 260-112.00R.
Jones, Bryan E.; and Kunesch, Anthony M., to Film Cooling Towers Limited. Undulating heat exchange packing. 4,512,938, Cl. 261-112.000.
Jones, Donald K.: *See—*
Ackermann, Albert B.; Jones, Donald K.; and Holey, Timothy M., 4,512,539, Cl. 244-137.00P.
Jones, Flave L.; and Kelly, Mark L., to American Home Products Corporation (Del.). Method for recording medical information on a strip chart. 4,513,295, Cl. 346-33.0ME.
Jones, Jesse D., to Ethyl Corporation. Thermoplastic PVC molding compositions. 4,513,108, Cl. 524-180.000.
Jones, John E.: *See—*
Laing, Gordon E.; Harbeck, Martin E.; Jones, John E.; Sumerau, William R.; and Glenn, William K., III, 4,512,057, Cl. 15-320.000.
Jones, Robert A., to Perkin-Elmer Corporation, The. Automated polisher for cylindrical surfaces. 4,512,107, Cl. 51-56.00R.
Jordan, James M.: *See—*
Horak, Charles F.; and Jordan, James M., 4,512,053, Cl. 15-28.000.
Josephson, Elliot, to Astec Components, Ltd. Electronic ballast-inverter circuit. 4,513,226, Cl. 315-219.000.
Jouanin, Andre : *See—*
Faure, Michel; Regeffe, Jean Y.; Lumineau, Yves; and Jouanin, Andre , 4,512,790, Cl. 65-13.000.
Juckett, David W., to Sandy Hill Corporation. Slitting apparatus and method. 4,512,226, Cl. 83-56.000.
Jullien, Gerard M. R., to L'Equipement et la Construction Electrique en abrege E.C.E. Push-button controlled miniaturized thermal cutout/switch. 4,513,275, Cl. 337-66.000.
Jung, Johann: *See—*
Rieber, Norbert; Platz, Rolf; and Jung, Johann, 4,512,795, Cl. 71-88.000.
Juntti, Lars. Lightbulb socket. 4,513,182, Cl. 200-51.090.
K-Tron International, Inc.: *See—*
Bullivant, Kenneth W., 4,512,428, Cl. 177-25.000.
Kaburagi, Katsuhiko: *See—*
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Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Minamida, Kazukiyo, 4,512,427, Cl. 177-1.000.
Kabushiki Kaisha Kansai Kougu Seisakusho: *See—*
Shigemizu, Akihiko, 4,512,524, Cl. 241-101.700.
Kabushiki Kaisha Kindai: *See—*
Terauchi, Isamu, 4,512,224, Cl. 82-48.000.
Kabushiki Kaisha Kito: *See—*
Nakamura, Takayoshi, 4,512,555, Cl. 254-350.000.
Kabushiki Kaisha Kyoto Daiichi Kagaku: *See—*
Uchigaki, Takatoshi; Saito, Akio; and Yamada, Naoki, 4,512,348, Cl. 128-632.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Takuma: *See—*
Shigaki, Masanobu, 4,512,266, Cl. 110-204.000.
Kabushiki Kaisha Tokyo Keiki: *See—*
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Kabushiki Kaisha Toshiba: *See—*
Matsuda, Naotoshi; Tetsuishi, Yoshinori; and Higuchi, Kazuaki, 4,512,912, Cl. 252-301.60S.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Aoyama, Shigetsune; Yoshikawa, Kazuo; Hasegawa, Yoshimichi; and Higuchi, Junichi, 4,512,559, Cl. 267-47.000.
Kuno, Toshitaka; Moribe, Hiroshi; and Miyamoto, Shojirou, 4,513,231, Cl. 318-341.000.
Kabushiki Kaisha Yakult Honsha: *See—*
Miyasaka, Tadashi; Sawada, Seigo; Nokata, Kenichiro; and Mutai, Masahiko, 4,513,138, Cl. 546-48.000.
Kaesser, Merle L., to Deere & Company. Variable flow turbine. 4,512,714, Cl. 415-151.000.
Kaganowicz, Grzegorz: *See—*
Robinson, John W.; and Kaganowicz, Grzegorz, 4,512,284, Cl. 118-723.000.
Kagawa, Fukashi: *See—*
Yamasaki, Kazuyuki; and Kagawa, Fukashi, 4,513,049, Cl. 428-194.000.
Kagiwada, Reynold S.: *See—*
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Kaiser Aluminum & Chemical Corporation: *See—*
Hsu, Yu-Wen, 4,512,170, Cl. 72-17.000.
Kaku, Yoshihiro; and Otsu, Keiichiro, to Taiho Kogyo Co., Ltd. Swash plate type compressor shoe and manufacturing method therefor. 4,512,175, Cl. 72-360.000.
Kakumoto, Hideki: *See—*
Tsuchida, Tsuyoshi; Kido, Yoshinobu; Kakumoto, Hideki; and Tanaka, Yuzuru, 4,512,313, Cl. 123-440.000.
Kaltz, Milton C.: *See—*
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Kam, Anthony Y.: *See*—
Avidan, Amos A.; and Kam, Anthony Y., 4,513,160, Cl. 585-640.000.
Kamata, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrical switchgear. 4,513,208, Cl. 307-139.000.
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, to Sumitomo Metal Industries, Ltd. Fluid distributor. 4,512,368, Cl. 137-561.00A.
Kamiya, Kenji; and Hosoi, Masatoshi, to Ricoh Watch Co., Ltd. Scoring system. 4,512,229, Cl. 84-1.010.
Kamiya, Masashi; Ueda, Katsunobu; Sumiya, Mitsuo; and Tsukada, Tameyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotating mirror scanner. 4,512,626, Cl. 350-6.800.
Kamiya, Takashi: *See*—
Negi, Shigeto; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; Saito, Isao; and Kitoh, Kyosuke, 4,513,145, Cl. 549-402.000.
Kamiya, Tuyoshi: *See*—
Ichikawa, Sadao; and Kamiya, Tuyoshi, 4,512,297, Cl. 123-179.00H.
Kamiya, Yasuhisa: *See*—
Motomura, Jiro; Kamiya, Yasuhisa; and Nishikawa, Seiichi, 4,512,449, Cl. 192-3.280.
Kamp, Ewald A., to Union Carbide Corporation. Adhesive closure bags and method for producing same. 4,513,445, Cl. 383-87.000.
Kampf, Eberhard. Winding machine. 4,512,529, Cl. 242-67.10R.
Kampf, Wolfgang; Streck, Roland; and Haag, Horst G., to Chemische Werke Huels AG. Process for the silylation of unsaturated, naturally occurring oils or the interesterification products thereof. 4,512,926, Cl. 260-398.000.
Kanada, Sadaoki: *See*—
Katayama, Sakae; Asano, Tadahiko; Marugame, Kazuo; Kanada, Sadaoki; and Kawasaki, Yoshinari, 4,512,552, Cl. 253-389.00R.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Kawakubo, Fumio; Hirose, Toshifumi; Minokami, Tadashi; Hosaka, Miyako; and Isayama, Katsuhiko, 4,513,061, Cl. 428-429.000.
Kaneko, Masayasu: *See*—
Hirai, Jun; and Kaneko, Masayasu, 4,513,311, Cl. 358-40.000.
Kaniadakis, Steven J. Orthodontic rubber band applicator. 4,512,739, Cl. 433-3.000.
Kanno, Tetuo: *See*—
Suzaki, Masayuki; and Kanno, Tetuo, 4,512,674, Cl. 400-208.000.
Kant, Rajni: *See*—
Mehrotra, Deepak; Shaw, Gerard J.; Go, Jok Y.; and Kant, Rajni, 4,512,076, Cl. 29-578.000.
Kanzaki Paper Manufacturing Company Limited: *See*—
Takayama, Yukio; Noguchi, Akio; and Matsushita, Takao, 4,513,301, Cl. 346-200.000.
Kapral, Christopher W., to GTE Communications Products Corporation. Charge redistribution mu-law PCM decoder. 4,513,279, Cl. 340-347.0DA.
Karagoz, Berch Y.; Turban, Martin M.; Moore, Lyman T.; and Travers, Mark D., to Great Lakes Carbon Corporation. Composite electrode for arc furnace. 4,513,425, Cl. 373-88.000.
Karanewsky, Donald S.: *See*—
Weller, Harold N., III; Gordon, Eric M.; Karanewsky, Donald S.; and Ryono, Denis E., 4,512,988, Cl. 514-211.000.
Karl Liebinger Medizintechnik GmbH & Co.: *See*—
Leibinger, Karl, 4,512,498, Cl. 220-371.000.
Kasei Optonix, Ltd.: *See*—
Kotera, Noboru; Eguchi, Shusaku; and Miura, Norio, 4,512,911, Cl. 252-301.40H.
Kashima Oil Company Limited: *See*—
Watanabe, Masami, 4,512,874, Cl. 208-44.000.
Kason Industries Inc.: *See*—
Berkowitz, Irving L., 4,512,122, Cl. 52-127.900.
Kassel, Karlheinz: *See*—
Dulken, Hartmut; Kassel, Karlheinz; Mows, Wolfgang; and Walsdorfer, Hubert, 4,513,072, Cl. 430-57.000.
Kaster, Robert L.; and Domaas, Perry M., to Angicor Limited. Storage unit. 4,512,471, Cl. 206-438.000.
Kataoka, Fumio: *See*—
Shoji, Fusaji; Takemoto, Issei; Kataoka, Fumio; Yokono, Hitoshi; and Isogai, Tokio, 4,513,132, Cl. 528-21.000.
Katayama Chemical Works Co., Ltd.: *See*—
Katayama, Sakae; Asano, Tadahiko; Marugame, Kazuo; Kanada, Sadaoki; and Kawasaki, Yoshinari, 4,512,552, Cl. 253-389.00R.
Katayama, Sakae; Asano, Tadahiko; Marugame, Kazuo; Kanada, Sadaoki; and Kawasaki, Yoshinari, to Katayama Chemical Works Co., Ltd. Corrosion inhibitor. 4,512,552, Cl. 253-389.00R.
Kateka B.V.: *See*—
Knaap, Jan J., 4,512,244, Cl. 98-98.000.
Kato, Nobuhide; and Murase, Takao, to NGK Insulators, Ltd. Oxygen sensor with heater. 4,512,871, Cl. 204-429.000.
Kato, Yutaka: *See*—
Oshima, Masao; Kato, Yutaka; Ogasawara, Mitsuhiko; and Futamura, Osamu, 4,512,936, Cl. 261-93.000.
Katou, Takashi: *See*—
Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Takimoto, Masatami; and Teramura, Mitsuyoshi, 4,512,312, Cl. 123-439.000.
Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, to Canon Kabushiki Kaisha. Vibration wave motor. 4,513,219, Cl. 310-328.000.
Katz, Joseph; Yariv, Amnon; and Margalit, Shlomo, to United States of America, National Aeronautics and Space Administration. Arrangement for damping the resonance in a laser diode. 4,513,423, Cl. 372-50.000.
Katz, Saul N.; and Proscia, George E., to General Foods Corporation. Process for recovering caffeine from activated carbon. 4,513,136, Cl. 544-275.000.
Katzenstein, Jack. System and method for impact welding by magnetic implosion. 4,513,188, Cl. 219-9.500.
Kaube, Peter; Schanz, Karl-Heinz; Vetter, Heinz; and Muller, Jens, to Rohm GmbH Chemische Fabrik. Webbed multiple sheets. 4,513,048, Cl. 428-188.000.
Kauffman, Kenneth W., to Kauffman, Kenneth W. Variable effect absorption machine and process. 4,512,394, Cl. 165-86.000.
Kawabata, Yasuhiro; and Akagi, Motonobu, to Aisin Seiki Kabushiki Kaisha. Turbocharger control system. 4,512,153, Cl. 60-611.000.
Kawada, Yasuyuki: *See*—
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,512,404, Cl. 166-274.000.
Kawai, Hisasi: *See*—
Igashira, Toshihiko; Kawai, Hisasi; Tanaka, Takeshi; Iwamoto, Kenzi; Abe, Seiko; and Hashimoto, Eiji, 4,512,307, Cl. 123-383.000.
Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Ezawa, Sadaaki; and Kitagawa, Hiroshi, 4,512,230, Cl. 84-1.240.
Kawakubo, Fumio; Hirose, Toshifumi; Minokami, Tadashi; Hosaka, Miyako; and Isayama, Katsuhiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Primer composition. 4,513,061, Cl. 428-429.000.
Kawamura, Eiichi: *See*—
Kubo, Keishi; and Kawamura, Eiichi, 4,513,052, Cl. 428-219.000.
Kawamura, Masaharu: *See*—
Shinoda, Nobuhiko; Sakurada, Nobuaki; Kawamura, Masaharu; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,512,656, Cl. 354-475.000.
Kawanaka, Ryusuke: *See*—
Hosoda, Naoyuki; Uchiyama, Naoki; and Kawanaka, Ryusuke, 4,512,950, Cl. 420-563.000.
Kawasaki, Yoshinari: *See*—
Katayama, Sakae; Asano, Tadahiko; Marugame, Kazuo; Kanada, Sadaoki; and Kawasaki, Yoshinari, 4,512,552, Cl. 253-389.00R.
Keesee, Kenneth C.; and Ruckman, James A., to Westvaco Corporation. Portable earth anchor. 4,512,132, Cl. 52-742.000.
Keller, Frederick A., Jr.; Ganoung, Jeffrey S.; and Luenser, Susan J., to CPC International Inc. Mutant strain of *Clostridium thermoaceticum* useful for the preparation of acetic acid. 4,513,084, Cl. 435-140.000.
Keller, Jakob, to BBC Brown, Boveri & Company, Limited. Valve with a device for the attenuation of acoustic vibrations self-excited by the working medium. 4,512,548, Cl. 251-124.000.
Kelly, Mark L.: *See*—
Jones, Flave L.; and Kelly, Mark L., 4,513,295, Cl. 346-33.0ME.
Kelly, Richard L.: *See*—
Baker, Bradley D.; and Kelly, Richard L., 4,513,331, Cl. 360-75.000.
KemaNord AB: *See*—
Edgren, Anders; Soderberg, Jan; and Bergstrom, Bengt, 4,513,106, Cl. 521-58.000.
Kemme, Joseph E.: *See*—
Bennett, Gloria A.; Elder, Michael G.; and Kemme, Joseph E., 4,513,352, Cl. 361-385.000.
Kendall Company, The: *See*—
Cianci, James P.; and Layton, Terry N., 4,512,770, Cl. 604-323.000.
Kenrich Petrochemicals, Inc.: *See*—
Sugerman, Gerald; and Monte, Salvatore J., 4,512,928, Cl. 260-410.90R.
Kerbel, Sheldon J.: *See*—
St. John, Karl M.; Reeber, Nicholas J.; and Kerbel, Sheldon J., 4,513,314, Cl. 358-76.000.
Kerklies, Bodo, to Gewerkschaft Eisenhutte Westfalia. Guide assembly for a curved section of a scraper-chain conveyor. 4,512,459, Cl. 198-729.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Struck, Bernd D.; Dias, Francisco J.; Luhleich, Hartmut; and Paffen nee Siebert, Ursula, 4,512,858, Cl. 204-104.000.
Khadder, Wadie N.; Wang, Jia T.; and Hollins, Brian E., to National Semiconductor Corporation. Simplified BIFET process. 4,512,815, Cl. 148-1.500.
Khadder, Wadie N.: *See*—
Ramde, Amolak R.; Khadder, Wadie N.; and Krishna, Surinder, 4,512,816, Cl. 148-1.500.
Kidde, Inc.: *See*—
Mentzer, William R., 4,512,482, Cl. 212-188.000.
Kido, Yoshinobu: *See*—
Tsuchida, Tsuyoshi; Kido, Yoshinobu; Kakumoto, Hideki; and Tanaka, Yuzuru, 4,512,313, Cl. 123-440.000.
Kieffer, Eduard P.; and Sie, Swan T., to Shell Oil Company. Process for improving the quality of catalytically cracked gasoline. 4,512,877, Cl. 208-136.000.
Kikukawa, Noriyuki; and Yamada, Yasuaki, to Canon Kabushiki Kaisha. Control method for stepping motor. 4,513,236, Cl. 318-696.000.
Kim, Gwan: *See*—
Peters, Alan W.; Kim, Gwan; and Ernest, Michael V., 4,513,101, Cl. 502-304.000.
Kim, Kee: *See*—
Hinojosa, Alberto L.; Kim, Kee; and Chickering, Kenton, III, 4,512,359, Cl. 137-315.000.

Kim, Wan J.; Lee, Cheol H.; and Lee, Moon H., to Korea Advanced Institute of Science and Technology. Method of preparation of 3-methylene cepham compounds. 4,513,134, Cl. 544-16.000.
Kimex International Technologies, Inc.: *See*—
King, Wladimir S., 4,512,333, Cl. 126-429.000.
Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, to Mitsubishi Kinzoku Kabushiki Kaisha. Apparatus for preparing high-melting-point high-toughness metals. 4,512,557, Cl. 266-171.000.
Kimura, Keizo: *See*—
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; Kimura, Keizo; and Umemoto, Makoto, 4,513,081, Cl. 430-550.000.
King, James L. In-cassette loading machine. 4,512,904, Cl. 242-56.00R.
King, Shaylor E., to QMP, Inc. Collapsible strut with pivot joint connector. 4,512,600, Cl. 292-338.000.
King, Wladimir S., to Kimex International Technologies, Inc. Solar collector panel and method. 4,512,333, Cl. 126-429.000.
Kinoshita, Takao; and Sakai, Shinji, to Canon Kabushiki Kaisha. Solid state imaging device. 4,513,313, Cl. 358-44.000.
Kirk, J. David. Internal combustion engine. 4,512,291, Cl. 123-56.0BC.
Kishida, Kazuo; Yamamoto, Naoki; Nishida, Kozi; Narita, Toshihito; and Sato, Yasumasa, to Mitsubishi Rayon Co., Ltd. Process for producing impact-resistant resins. 4,513,111, Cl. 524-458.000.
Kishimoto, Syoji, to Mitsubishi Denki Kabushiki Kaisha. Rotary armature with cooling of commutator. 4,513,217, Cl. 310-227.000.
Kita, Masakazu: *See*—
Tanabe, Toshio; and Kita, Masakazu, 4,512,077, Cl. 30-43.000.
Kita, Yasuo; Moriya, Michio; and Yoshida, Kenichi, to Sumitomo Electric Industries, Ltd. Brake controller. 4,512,615, Cl. 303-97.000.
Kitado, Tadaharu: *See*—
Ishigami, Yoshihisa; Hashimota, Yasumasa; Kitado, Tadaharu; Nishimura, Hiromi; and Mori, Tetsuo, 4,513,339, Cl. 361-45.000.
Kitagawa, Hiroshi: *See*—
Ezawa, Sadaaki; and Kitagawa, Hiroshi, 4,512,230, Cl. 84-1.240.
Kitagawa Industries Co., Ltd.: *See*—
Matsui, Kazuhiro, 4,513,172, Cl. 174-65.0SS.
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, to Nippon Soken, Inc. Liquid quantity detecting device. 4,512,189, Cl. 73-296.000.
Kitahara, Hajimu: *See*—
Oi, Naobumi; and Kitahara, Hajimu, 4,512,898, Cl. 210-656.000.
Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,513,054, Cl. 428-329.000.
Kitamura, Sotoo: *See*—
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, 4,512,189, Cl. 73-296.000.
Kitasato Institute, The: *See*—
Umezawa, Iwao; Komiyama, Kanki; and Takeshima, Hideo, 4,512,976, Cl. 424-122.000.
Kitaura, Mashio; Ishikawa, Norio; and Ishimura, Toshihiko, to Minolta Camera Kabushiki Kaisha. Acoustic indicating device for cameras. 4,512,646, Cl. 354-409.000.
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, to Fujisawa Pharmaceutical Co. Ltd. Peptide, process for preparation thereof and use thereof. 4,512,980, Cl. 514-18.000.
Kitoh, Kyosuke: *See*—
Negi, Shigeto; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; Saito, Isao; and Kitoh, Kyosuke, 4,513,145, Cl. 549-402.000.
Kitzis, Stanley: *See*—
Michnick, Bruce T.; and Kitzis, Stanley, 4,512,744, Cl. 433-229.000.
Kiya, Nobuyuki: *See*—
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,513,234, Cl. 318-594.000.
Klaila, William J. Racket having a refrigerant contained therein for heat dissipation. 4,512,574, Cl. 273-73.00J.
Klauke, Erich: *See*—
Kuhle, Engelbert; Klauke, Erich; Paulus, Wilfried; and Genth, Hermann, 4,513,003, Cl. 514-411.000.
Klein, Philipp H.: *See*—
Addamiano, Arrigo; and Klein, Philipp H., 4,512,825, Cl. 148-175.000.
Kleinhappl, Erich: *See*—
Marsoner, Hermann; Ritter, Christoph; Kleinhappl, Erich; and Strutz, Winfried, 4,512,953, Cl. 422-67.000.
Klinger AG: *See*—
Sledmere, Alan B., 4,512,190, Cl. 73-319.000.
Klinkowski, Peter R., to Dorr-Oliver. Producing a solid polymeric electrolyte. 4,513,032, Cl. 427-336.000.
Klinner, Wilfred E., to National Research De Development. Crop engaging device. 4,512,146, Cl. 56-364.000.
Klotz, Erhard: *See*—
Weiss, Hermann; Linde, Rolf; Tiemens, Ulf; and Klotz, Erhard, 4,513,433, Cl. 378-2.000.
Knaap, Jan J., to Kateka B.V. Ventilation grating for use in window frames together with sealed unit insulating glass. 4,512,244, Cl. 98-98.000.
Knapke, Paul H.; and Miller, Robert L., to International Telephone and Telegraph Corporation. Clocking arrangement for telephone switching system. 4,513,414, Cl. 370-58.000.
Knighton, David R.: *See*—
Hunt, Thomas K.; Goodson, William H., III; Chang, Ning; Knighton, David R.; Gottrup, Finn; and Firmin, Richard, 4,512,349, Cl. 128-632.000.
Knisley, Rondel. Apparatus for drilling oil and gas wells and a torque arrestor associated therewith. 4,512,422, Cl. 175-99.000.
Knoblauch, Georg, to Georg Knoblauch GmbH. Drill-bit index case. 4,512,467, Cl. 206-379.000.
Knosel, Johann: *See*—
Falk, Ernst; and Knosel, Johann, 4,512,343, Cl. 128-303.170.
Knox, Bruce R.: *See*—
Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,513,439, Cl. 382-7.000.
Knutson, Richard K.: *See*—
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,513,016, Cl. 426-554.000.
Kobayashi, Hiroshi, to Nissan Motor Company, Limited. Method of making liquid container having electrode plates to detect liquid level by measuring capacitance. 4,512,067, Cl. 29-25.410.
Kobayashi, Hiroshi; and Kousaka, Michio, to Toyo Seikan Kaisha Limited. Stopper assembly for medical liquid container and method and apparatus for manufacturing the same. 4,512,486, Cl. 215-249.000.
Kobayashi, Takahide, to Koken Co., Ltd. Lens working apparatus. 4,512,108, Cl. 51-101.0LG.
Kobayashi, Yuji; and Okada, Takao, to Dai Nippon Printing Co., Ltd.; and Ikegami Tsushinki Co., Ltd. Automatic surface inspection system. 4,513,316, Cl. 358-106.000.
Kobelt, Jacob. Single lever control assembly to permit disengagement between two functions. 4,512,451, Cl. 192-0.096.
Koberlein, Ross D., to Bettendorf Stanford Inc. Bread loaf processing. 4,512,137, Cl. 53-435.000.
Kobiella, Robert J., to Signode Corporation. Anvil, gripper, and cutter assembly in a strapping machine. 4,512,844, Cl. 156-510.000.
Kobler, Ingo, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Apparatus for joining a plurality of super-imposed webs received from a rotary printing machine. 4,512,845, Cl. 156-548.000.
Koch, Jakob: *See*—
Frei, Siegfried; and Koch, Jakob, 4,512,490, Cl. 220-72.000.
Kocher, Erich J., to Vilter Manufacturing Corporation. Sealing means for valve spindle. 4,512,550, Cl. 251-214.000.
Kocher, Haribhajan S., to Eastman Kodak Company. Fuser apparatus having a uniform heat distribution. 4,512,650, Cl. 355-3.0FU.
Kochs Adler AG: *See*—
Landwehr, Gunter, 4,512,272, Cl. 112-311.000.
Kocks Technik GmbH & Co.: *See*—
Brauer, Hans; and Gerhards, Hans-Dieter, 4,512,173, Cl. 72-98.000.
Koepke, Jeffery W.: *See*—
Young, Dean A.; and Koepke, Jeffery W., 4,513,158, Cl. 585-527.000.
Kohara, Satsuki; and Ono, Noriaki, to Olympus Optical Co., Ltd. Chemically sensitive element. 4,512,870, Cl. 204-416.000.
Kohler Co.: *See*—
Striegel, William H.; and Schmitz, Willard H., 4,512,042, Cl. 4-496.000.
Kohn, Ernest O.: *See*—
Abbott, James B.; Kohn, Ernest O.; Berry, Christopher; and Slade, Mark N., 4,512,172, Cl. 72-68.000.
Kohrn, Robert C., to Uniroyal Inc. Method of making reduced noise positive drive power transmission system. 4,512,834, Cl. 156-138.000.
Kokaji, Norio, to Iwatsu Electric Co., Ltd. Magnetic printing machine employing a multi-channel recording head with minimal cross-talk with secondary scanning head movement. 4,513,326, Cl. 358-301.000.
Koken Co., Ltd.: *See*—
Kobayashi, Takahide, 4,512,108, Cl. 51-101.0LG.
Kokubo, Masahiro: *See*—
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,513,166, Cl. 585-832.000.
Kolde, Richard A.: *See*—
Hennekes, Daniel M.; Kolde, Richard A.; and Suica, David E., 4,512,709, Cl. 414-729.000.
Kolinsky, Jiri: *See*—
Flegel, Martin; Pospisek, Jan; Picha, Josef; Pichova, Drahomira; Krojidlo, Milan; and Kolinsky, Jiri, 4,512,923, Cl. 260-112.5LH.
Kollanyi, Miklos J., to GTE Lenkurt Incorporated. Overvoltage protection circuit for power supply. 4,513,341, Cl. 361-91.000.
Kolton, Chester; and Spater, Stuart S., to B & G Plastics, Inc. Integral tag and tie. 4,512,093, Cl. 40-20.00R.
Komiyama, Kanki: *See*—
Umezawa, Iwao; Komiyama, Kanki; and Takeshima, Hideo, 4,512,976, Cl. 424-122.000.
Komiyama, Noboru; Itoi, Hiroshi; and Sano, Hiroshi, to Lion Corporation. Oral compositions. 4,512,968, Cl. 424-48.000.
Komoto, Tetsuo: *See*—
Etou, Kazumi; and Komoto, Tetsuo, 4,512,162, Cl. 62-298.000.
Kompanek, Harry W.; Ligman, James R.; and Plambeck, Eric D., to Sona-Tool Development Ltd. Casing tuned downhole tool. 4,512,402, Cl. 166-249.000.
Kondo, Kenshi, to Nihon Den-Nitsu Keiki Co. Ltd. Printed circuit board soldering apparatus. 4,512,510, Cl. 228-40.000.
Kone, Ali: *See*—
Carette, Brigitte; Kone, Ali; Souquet, Jean-Louis; Ribes, Michel; and Maurin, Maurice, 4,513,070, Cl. 429-193.000.
Konegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Yamazaki, Kaoru; and Shibuya, Fukashi, 4,513,126, Cl. 526-87.000.
Kong, Alvin M.: *See*—
Yen, Kuo-Hsiung; Stokes, Robert B.; Lau, Kei-Fung; Kong, Alvin M.; and Kagiwada, Reynold S., 4,513,261, Cl. 333-194.000.
Konishi, Satoshi: *See*—
Ohno, Junichi; and Konishi, Satoshi, 4,513,310, Cl. 357-68.000.

Konishi, Tadashi: *See*—
Kunugi, Katsuo; Suzuki, Togi; Konishi, Tadashi; and Ohwaki, Shinji, 4,513,114, Cl. 524-706.000.

Konrad, Peter; and Mechel, Adam, to Wassermesserfabrik ANDRAE GmbH & Co. Flow volumeter for liquids. 4,512,201, Cl. 73-861.790.

Koos, Inc.: *See*—
McConnell, Forrest M., 4,512,907, Cl. 252-70.000.

Koppensteiner, Werner, to Otis Elevator Company. Elevator buffer. 4,512,444, Cl. 187-67.000.

Koppers Company, Inc.: *See*—
Wallace, William E.; and Pourarian, Faiz, 4,512,965, Cl. 423-644.000.

Korea Advanced Institute of Science and Technology: *See*—
Kim, Wan J.; Lee, Cheol H.; and Lee, Moon H., 4,513,134, Cl. 544-16.000.

Korsunsky, Iosif: *See*—
Bakermans, Johannes C. W.; Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,513,353, Cl. 361-399.000.

Korte, Ralph J., to Champion International Corporation. Paperboard carton with improved perforated opening and method of making same. 4,512,478, Cl. 206-611.000.

Kos, Bernd, to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Work-hardenable austenitic manganese steel and method for the production thereof. 4,512,804, Cl. 75-123.00N.

Koser, Gerald F.; and Carman, Carol S., to University of Akron, The. Iodonium salts. 4,513,137, Cl. 546-14.000.

Kotera, Noboru; Eguchi, Shusaku; and Miura, Norio, to Kasei Optonix, Ltd. Phosphor. 4,512,911, Cl. 252-301.40H.

Koubek, Edward, to American Sterilizer Company. Hydrogen peroxide liquid film sterilization method. 4,512,951, Cl. 422-33.000.

Kouge, Shinichi: *See*—
Morishita, Mitsuharu; and Kouge, Shinichi, 4,513,239, Cl. 322-99.000.

Kousaka, Michio: *See*—
Kobayashi, Hiroshi; and Kousaka, Michio, 4,512,486, Cl. 215-249.000.

Kovach, Alan J.: *See*—
Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,513,439, Cl. 382-7.000.

Kovach, Stephen M.: *See*—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,513,093, Cl. 502-84.000.

Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; and Erwin, Lewis, to Exxon Research and Engineering Co. Process for the manufacture of halogenated polymers. 4,513,116, Cl. 525-53.000.

Kozam, George; and Romanelli, Pat. Patient employed digital operated syringe device for irrigating periodontal pockets and other soft tissue spaces. 4,512,769, Cl. 604-209.000.

Kozar, Robert S., to AMSTED Industries Incorporated. Solvent addition to deep bed filter. 4,512,901, Cl. 210-792.000.

Kraco Enterprises: *See*—
van Kreuningen, Rudolf, 4,513,335, Cl. 360-94.000.

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Long, Stanley E. Animal and insect exterminator. 4,512,102, Cl. 43-84.000.
Loper, Bernd, to Daimler-Benz A.G. Wheel cover with retainment system. 4,512,614, Cl. 301-37.00P.
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Ernst, Bruce H.; Howard, Dennis D.; and Gismondi, Thomas E., 4,513,112, Cl. 524-590.000.
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Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,513,011, Cl. 514-730.000.
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Louttit, Duncan R., to U.S. Philips Corporation. Radio receiver suitable for use in a spaced carrier area coverage system. 4,513,443, Cl. 455-52.000.
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Hooks, John T., Jr., 4,513,374, Cl. 364-200.000.
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Welch, Albert B., 4,513,421, Cl. 372-24.000.
Lucas Industries: *See—*
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Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,512,319, Cl. 123-492.000.
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Wheatley, William T., 4,512,884, Cl. 210-136.000.
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Burborough, William R., 4,512,727, Cl. 417-462.000.
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Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,512,919, Cl. 252-522.00R.
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Lueth, Roy C., to Ultra-Temp Corporation. Coffin delivery system for metallurgical furnace. 4,512,558, Cl. 266-249.000.
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M. Lehmacher & Sohn GmbH Maschinenfabrik: *See*—
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Maher, Robert A., to United States of America, Army. Low power radio synthesizer with harmonic identification feature. 4,513,448, Cl. 455-265.000.

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Mailliet, Pierre; and Ulveling, Leon, to Paul Wurth S.A. Installation for feeding a shaft furnace. 4,512,702, Cl. 414-202.000.

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Manning, Edward T., Jr.; and Horan, Grant S., to Dravo Corporation. Train holding apparatus with means for relieving the load imposed thereon during disengagement. 4,512,260, Cl. 104-252.000.

Manor, Ron. Irrigation apparatus retractile into pit. 4,512,517, Cl. 239-206.000.

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Marino, Vincent J. Method and apparatus for wood flooring manufacture. 4,512,840, Cl. 156-304.100.

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Marr, Louise C.; and Bremer, Robert C., Jr., to Wallace Murray Corporation. Vortex transition duct. 4,512,716, Cl. 415-205.000.

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Marsoner, Hermann; Ritter, Christoph; Kleinhappl, Erich; and Strutz, Winfried, to AVL AG. Analyzing apparatus for the analysis of liquid samples. 4,512,953, Cl. 422-67.000.

Martel, Jacques; Tessier, Jean; and Teche, Andre , to Roussel Uclaf. Substituted lactones of amino acids. 4,513,139, Cl. 546-196.000.

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Martin, Robin A., to Wilson Sporting Goods Co. Impact resistant high air retention bladders. 4,513,058, Cl. 428-336.000.

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Mathews, J. Paul. Device for filtering stack gases. 4,512,787, Cl. 55-284.000.
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Matsumoto, Hajime; and Abe, Yoichi, to Toybox Corporation. Mechanical pendant. 4,512,748, Cl. 446-354.000.
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Maurer, Fritz; Homeyer, Bernhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Insecticidal N-substituted O-pyrazol-4-yl carbamates and use thereof. 4,513,000, Cl. 514-407.000.
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Mehrotra, Deepak; Shaw, Gerard J.; Go, Jok Y.; and Kant, Rajni, to Raytheon Company. Semiconductor device fabrication process. 4,512,076, Cl. 29-578.000.
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Meier, Linus, to Mettler Instruments AG. Weighing apparatus for producing geographically-corrected measurements. 4,512,429, Cl. 177-25.000.
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Memmen, Robert L., to United Technologies Corporation. Clip attachment. 4,512,159, Cl. 60-752.000.
Mentzel, Lee R. Smoker adapter for kettle grills. 4,512,249, Cl. 99-352.000.
Mentzer, William R., to Kidde, Inc. Multiple offset crane boom extension. 4,512,482, Cl. 212-188.000.
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Mey, William, to Eastman Kodak Company. Erasable information recording process using co-crystalline dye complexes. 4,513,071, Cl. 430-19.000.

Miale, Joseph N.; and Chang, Clarence D., to Mobil Oil Corporation. Catalysis over activated high silica zeolites. 4,512,876, Cl. 208-114.000.
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Milewski, John V., to United States of America, Energy. Method of producing silicon carbide articles. 4,513,030, Cl. 427-227.000.
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Wells, Edward S.; Ford, Spencer K.; Werner, Jack E.; and Lindsay, Erin J., 4,512,163, Cl. 62-394.000.
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Mitter, Mathias. Method of applying foamed dyeliquors to fibrous substrates or the like. 4,512,772, Cl. 8-477.000.
Miura, Ieaki, to Tokico Ltd. Hydraulic damper. 4,512,447, Cl. 188-322.150.
Miura, Keiichi, to Mitsubishi Denki Kabushiki Kaisha. Automatic plate thickness control device. 4,512,169, Cl. 72-16.000.
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Miwa, Hirohide; and Ueda, Mitsuhiro, to Fujitsu Limited. Ultrasonic living body tissue characterization method. 4,512,195, Cl. 73-602.000.
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Miyamoto, Hidekazu; Shioya, Yoshimi; Maeda, Mamoru; and Takagi, Mikio, to Fujitsu Limited. Method for coating a semiconductor device with a phosphosilicate glass. 4,513,026, Cl. 427-85.000.
Miyamoto, Kiyoshi; and Ueda, Kenji, to Omron Tateisi Electronics Co. Proximity switch with oppositely polarized coils. 4,513,257, Cl. 331-65.000.
Miyamoto, Motomu. Interlocking contactor assembly. 4,513,269, Cl. 335-161.000.
Miyamoto, Shojirou: *See—*
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Miyazaki, Shu, to Sumitomo Metal Mining Company Limited. Manufacturing a carrier tape or tapes. 4,512,843, Cl. 156-644.000.
Mizokami, Kazunori, to Olympus Optical Co., Ltd. Program type automatic exposure controller for use in cameras. 4,512,648, Cl. 354-443.000.
Mizui, Kinya; Takeda, Masami; and Iwata, Tadao, to Mitsui Petrochemical Industries, Ltd. Hydrocarbon resin and modified hydrocarbon resin product thereof. 4,513,130, Cl. 526-283.000.
Mizukane, Masahiro: *See—*
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Mochizuki, Noritaka; Minami, Setsuo; and Matsui, Yoshiya, to Canon Kabushiki Kaisha. Compound eye projection device. 4,512,641, Cl. 350-573.000.
Mohon, Windell N.; and Harris, William T., to United States of America, Navy. Flight simulator with dual probe multi-sensor simulation. 4,512,745, Cl. 434-43.000.
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Molzer, Peter; Pollner, Jurgen; Topic, Nicola; Trummer, Gregor; and Zurek, Rudolf, to Krauss-Maffei Aktiengesellschaft. Apparatus for mounting rails on a rigid rail beam. 4,512,560, Cl. 269-20.000.
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Moran, David P. J.; and Sharp, David G., to Lever Brothers Company. Process for producing a spread starting from a bimodal dispersed phase. 4,513,017, Cl. 426-603.000.
Mori, Kei. Solar energy collecting apparatus. 4,512,335, Cl. 126-440.000.
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Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling a charging generator. 4,513,239, Cl. 322-99.000.
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, to Lion Corporation. Micellar slug for oil recovery. 4,512,404, Cl. 166-274.000.
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Muad, Al-Madhi, to IMC Corporation. Holding mechanism, in particular for ski bindings. 4,512,698, Cl. 411-337.000.
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Muller, Jens: *See—*
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Muller, Werner, to Magnetfabrik Bonn GmbH, vorm. Gewerkschaft Windhorst. Multi-pole rotor particularly for small and miniature electric generators and motors. 4,513,216, Cl. 310-156.000.
Mumford, Eustace H.: *See—*
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Munekata, Kenichi; Doi, Yoshio; Suzuki, Isao; and Doi, Shigeru, to Toyoda Koki Kabushiki Kaisha. Menu programmed machine tool numerical controller with an interference checking function. 4,513,366, Cl. 364-167.000.
Mungons, Edwin M. Alignment control device. 4,512,682, Cl. 403-390.000.
Murakami, Hiroyashu: *See—*
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Mushta, James T. Dental indicating paste and method of use. 4,512,741, Cl. 433-70.000.
Musser, Glenn A.; Rayfield, James F.; and Pucher, Richard A., to Sperry Corporation. Drive reverser actuating mechanism. 4,512,139, Cl. 56-11.200.

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Muto, Rudolph. Selective tracheal bronchial catheter. 4,512,765, Cl. 604-119.000.
Myers, John G.; Logan, Douglas P.; and Walker, Jerry L., to Calgon Corporation. Residual fuel oil conditioners containing metal salts in aqueous solution. 4,512,774, Cl. 44-51.000.
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Nafissi-Varchei, M.Mehdi, to Schering Corporation. Anthelmintic benzimidazole carbamates. 4,512,998, Cl. 514-367.000.
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Nagase, Ushiro, to Kyoto Central Co. Ltd. Geothermal energy conversion system. 4,512,156, Cl. 60-641.200.
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Nakagiri, Tadahiko, to Citizen Watch Company Limited. Liquid crystal matrix display device. 4,513,282, Cl. 340-765.000.
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Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Takimoto, Masatami; and Teramura, Mitsuyoshi, to Toyota Jidosha Kabushiki Kaisha. Variable venturi-type carburetor. 4,512,312, Cl. 123-439.000.
Nakamura, Takayoshi, to Kabushiki Kaisha Kito. Idling device for lever hoist. 4,512,555, Cl. 254-350.000.
Nakano, Hiromichi; Sasaya, Hideaki; Inagaki, Mitsuo; Matsui, Kazuma; and Yoshimura, Kunimasa, to Nippon Soken, Inc.; Nippondenso Co., Inc.; and Toyota Jidosha Kabushiki Kaisha. Combined rotary pump and compressor unit. 4,512,728, Cl. 418-3.000.
Nakao, Hisao: *See—*
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Nakao, Toshihiro, to Olympus Optical Co., Ltd. Accidental erasing preventative device for a cassette tape recorder. 4,513,330, Cl. 360-60.000.
Nakasuji, Kazuyuki: *See—*
Hayashi, Chihiro; and Nakasuji, Kazuyuki, 4,512,177, Cl. 72-368.000.
Nakatsukasa, Walter M.; and Mabe, James A., to Eli Lilly and Company. Functionally independent cloning vectors for use in streptomyces. 4,513,085, Cl. 435-253.000.
Narita, Ko: *See—*
Haraguchi, Hiroshi; and Narita, Ko, 4,512,310, Cl. 123-425.000.
Narita, Toshihito: *See—*
Kishida, Kazuo; Yamamoto, Naoki; Nishida, Kozi; Narita, Toshihito; and Sato, Yasumasa, 4,513,111, Cl. 524-458.000.
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, to Fujitsu Limited. Developer materials for electrostatic images. 4,513,075, Cl. 430-108.000.
Nash, Robert J.; and Randall, Kent A., to Xerox Corporation. Stable conductive developer compositions. 4,513,074, Cl. 430-106.600.
Nassiri, Joe-Massoud, to Everest & Jennings, Inc. Wheel hub latch mechanism for power wheelchairs. 4,512,613, Cl. 301-1.000.
National Distillers and Chemical Corporation: *See—*
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,512,920, Cl. 252-573.000.
Speca, Anthony N., 4,513,095, Cl. 502-111.000.
National Research De Development: *See—*
Klinner, Wilfred E., 4,512,146, Cl. 56-364.000.
National Research Development Corporation: *See—*
Bailey, Warren P. N., 4,512,663, Cl. 356-446.000.
National Semiconductor Corporation: *See—*
Khadder, Wadie N.; Wang, Jia T.; and Hollins, Brian E., 4,512,815, Cl. 148-1.500.
Ramde, Amolak R.; Khadder, Wadie N.; and Krishna, Surinder, 4,512,816, Cl. 148-1.500.
Nauflett, George W., to United States of America, Navy. Method for the preparation of methylnitramine. 4,513,148, Cl. 564-109.000.
Naujalis, Pierre: *See—*
Calame-Lonjean, Andre ; and Naujalis, Pierre, 4,512,203, Cl. 73-863.810.
Nawata, Yoshiaki: *See—*
Matsumoto, Hiroshi; and Nawata, Yoshiaki, 4,512,565, Cl. 271-294.000.
NCR Corporation: *See—*
Anderson, Jeff L., 4,512,940, Cl. 264-22.000.
Celio, John A., 4,513,371, Cl. 364-200.000.
Collins, Donald A.; and O'Hanlan, Thomas B., 4,513,420, Cl. 371-38.000.
Devchoudhury, Rathindra N., 4,513,389, Cl. 364-900.000.
Glazer, Sydney, 4,513,386, Cl. 364-717.000.
Neary, David, to Neary, David. Fuel preheater. 4,512,324, Cl. 123-557.000.
Neff, Karl: *See—*
Lipinski, Reinhard; and Neff, Karl, 4,512,208, Cl. 74-89.150.
Negi, Shigeto; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; Saito, Isao; and Kitoh, Kyosuke, to Eisai Co., Ltd. 2-Methylchromone derivatives and process for their preparation. 4,513,145, Cl. 549-402.000.
Nehmiz, Peter: *See—*
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; Muhl, Reinhold; Nehmiz, Peter; and Trumpp, Hans J., 4,513,203, Cl. 250-491.100.
Nelson, Gunner E., to Ethyl Corporation. Hydride production at moderate pressure. 4,512,966, Cl. 423-644.000.
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., to Syntex (U.S.A.), Inc. Benzthiazine analogs as antiinflammatory agents. 4,512,990, Cl. 514-225.000.
Nestec, S.A.: *See—*
Clough, Graham, 4,513,015, Cl. 426-396.000.
Neuendorf, Hans-Cristoph: *See—*
Bartelsen, Lutz; and Neuendorf, Hans-Cristoph, 4,513,196, Cl. 219-203.000.
Neumann, Peter: *See—*
Hahn, Erwin; and Neumann, Peter, 4,512,929, Cl. 260-453.0AR.
New Process Industries, Inc.: *See—*
Benson, Glendon M., 4,512,150, Cl. 60-526.000.
Newman, Donald J.: *See—*
Dunphy, Gerald F.; and Newman, Donald J., 4,512,166, Cl. 70-366.000.
Newman, Neil F.: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; and Erwin, Lewis, 4,513,116, Cl. 525-53.000.
Newman, Raymond J.: *See—*
Ellis, Roland, Jr.; Jacobs, Brian E.; March, Edward J.; and Newman, Raymond J., 4,512,509, Cl. 228-180.200.
Newport Pharmaceuticals International, Inc.: *See—*
Gordon, Paul, 4,512,981, Cl. 514-45.000.
Newton, Alan R. Speed reducer. 4,512,213, Cl. 74-805.000.
Neyer, Norbert, to LGZ Landis & Gyr Zug AG. Method and an apparatus for generating periodic digital time function signals. 4,513,387, Cl. 364-718.000.
Ng, Steven Y.; Penhale, Donald W.; and Heller, Jorge, to SRI International. Preparation of ketene acetals. 4,513,143, Cl. 549-335.000.
Ng, Yee S.; Jarvis, James G.; and Thompson, John R., to Eastman Kodak Company. Method and apparatus for thermally-assisted grounding of an electrographic imaging member. 4,512,653, Cl. 355-16.000.
Ng, Yiu-Keung: *See—*
Ziv, Pinhas; and Ng, Yiu-Keung, 4,513,370, Cl. 364-200.000.
NGK Insulators, Ltd.: *See—*
Kato, Nobuhide; and Murase, Takao, 4,512,871, Cl. 204-429.000.
Suzuki, Go; and Michishita, Kazuo, 4,513,062, Cl. 428-565.000.
NGK Spark Plug Co., Ltd.: *See—*
Ichikawa, Sadao; and Kamiya, Tuyoshi, 4,512,297, Cl. 123-179.00H.
Ngo, Peter D. T., to AT&T Bell Laboratories. AC plasma panel shift with intensity control. 4,513,281, Cl. 340-703.000.
Nichol, Charles A.: *See—*
Duch, David S.; Nichol, Charles A.; and Sigel, Carl W., 4,512,992, Cl. 514-258.000.
Nicholson, Peter. Method of recording holographic images in white light image plane holograms. 4,512,624, Cl. 350-3.690.
Nieda, Yasuhiro; and Honda, Kiyokazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Headlamp unit with timed switching between two lights. 4,513,357, Cl. 362-228.000.
Nielsen, Hans C. A.; and Schroeder, Roberto, to Industrias Penoles S.A. de C.V. Process for producing, from aluminous siliceous materials, clinker containing alkali metal aluminate and dicalcium silicate, and use thereof. 4,512,809, Cl. 106-103.000.
Nielsen, Mogens B., to Durofac-Kartro A/S. Tool shaft for a tool of the percussive and rotative type. 4,512,692, Cl. 408-226.000.
Nielson, Wayne G., to Sterner Lighting Systems, Incorporated. Lamp stabilizer. 4,513,359, Cl. 362-389.000.
Nieman, Mark D.: *See—*
Reslow, Leif F.; Nieman, Mark D.; and Swagert, Dean R., 4,512,254, Cl. 101-157.000.
Niemann, Hans-Joachim; and Sprehe, Josef, to Kraftwerk Union Aktiengesellschaft. Method for the separation of uranium isotope compounds already converted isotope-selectively. 4,512,957, Cl. 423-3.000.
Nienhuis, James H.: *See—*
Wilcox, Jeffrey S.; and Nienhuis, James H., 4,513,347, Cl. 361-212.000.
Nihon Den-Nitsu Keiki Co. Ltd.: *See—*
Kondo, Kenshi, 4,512,510, Cl. 228-40.000.
Nihoshi, Toshiaki, to Nippon Kogaku K.K. Polarizing microscope. 4,512,640, Cl. 350-510.000.
Niigata Engineering Co., Ltd.: *See—*
Takahashi, Susumu, 4,512,369, Cl. 137-614.040.
Nilles, Peter: *See—*
Binnig, Rupert; Gerlach, Gunter; Nilles, Peter; and Pankatz, Jurgen, 4,512,811, Cl. 134-10.000.

Nillesen, Antonius H. H. J.: *See*—
Veendrick, Hendrikus J. M.; Pfennings, Leonardus C. M. G.; Raven, Johannes G.; and Nillesen, Antonius H. H. J., 4,513,388, Cl. 364-736.000.
Nilssen, Ole K. Thermally controllable variable frequency inverter. 4,513,364, Cl. 363-132.000.
Nilsson, Torsten; and Jakobsen, Kjell M., to PLM AB. Apparatus for blow molding a container having an upward bulged bottom. 4,512,735, Cl. 425-526.000.
Nippon Electric Co., Ltd.: *See*—
Fujiwara, Ryuhei, 4,513,416, Cl. 370-100.000.
Irabu, Takeru, 4,513,286, Cl. 343-5.0CF.
Nishino, Masakazu; and Fujisaki, Hisashi, 4,513,177, Cl. 179-81.00B.
Sakoe, Hiroaki; and Chiba, Seibi, 4,513,435, Cl. 381-41.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kumano, Shinji, 4,512,234, Cl. 84-433.000.
Nippon Kogaku K.K.: *See*—
Nihoshi, Toshiaki, 4,512,640, Cl. 350-510.000.
Sakato, Keiichiro, 4,512,657, Cl. 355-68.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Ogahara, Fumio, 4,512,421, Cl. 175-71.000.
Nippon Mining Co., Ltd.: *See*—
Tamura, Kunimitsu; and Hosonuma, Kunihiko, 4,513,155, Cl. 585-13.000.
Nippon Notion Kogyo Co., Ltd.: *See*—
Fukuroi, Takeo, 4,512,063, Cl. 24-94.000.
Nippon Soken, Inc.: *See*—
Igashira, Toshihiko; Kawai, Hisasi; Tanaka, Takeshi; Iwamoto, Kenzi; Abe, Seiko; and Hashimoto, Eiji, 4,512,307, Cl. 123-383.000.
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, 4,512,189, Cl. 73-296.000.
Nakano, Hiromichi; Sasaya, Hideaki; Inagaki, Mitsuo; Matsui, Kazuma; and Yoshimura, Kunimasa, 4,512,728, Cl. 418-3.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Nishino, Masakazu; and Fujisaki, Hisashi, 4,513,177, Cl. 179-81.00B.
Nippon Yakin Kogyo Kabushiki Kaisha: *See*—
Tohge, Takeya, 4,512,802, Cl. 75-60.000.
Nippondenso Co., Inc.: *See*—
Nakano, Hiromichi; Sasaya, Hideaki; Inagaki, Mitsuo; Matsui, Kazuma; and Yoshimura, Kunimasa, 4,512,728, Cl. 418-3.000.
Nippondenso Co., Ltd.: *See*—
Abe, Shinichi; Taura, Mitsuharu; Amano, Hidetoshi; and Mizuno, Toshiaki, 4,512,320, Cl. 123-492.000.
Haraguchi, Hiroshi; and Narita, Ko, 4,512,310, Cl. 123-425.000.
Hasebe, Koshi; Miura, Kunio; Ono, Takashi; Akutsu, Kazushi; and Minami, Kazuaki, 4,513,377, Cl. 364-449.000.
Nishida, Kozi: *See*—
Kishida, Kazuo; Yamamoto, Naoki; Nishida, Kozi; Narita, Toshihito; and Sato, Yasumasa, 4,513,111, Cl. 524-458.000.
Nishikawa, Kiyotada, to Yoshida Kogyo K.K. Method of connecting pull tab with slide fastener slider. 4,512,064, Cl. 24-429.000.
Nishikawa, Seiichi: *See*—
Motomura, Jiro; Kamiya, Yasuhisa; and Nishikawa, Seiichi, 4,512,449, Cl. 192-3.280.
Nishimura, Hiromi: *See*—
Ishigami, Yoshihisa; Hashimota, Yasumasa; Kitado, Tadaharu; Nishimura, Hiromi; and Mori, Tetsuo, 4,513,339, Cl. 361-45.000.
Nishimura, Satoshi: *See*—
Hayakawa, Masanori; and Nishimura, Satoshi, 4,512,906, Cl. 252-62.630.
Nishino, Masakazu; and Fujisaki, Hisashi, to Nippon Telegraph & Telephone Public Corporation; and Nippon Electric Co., Ltd. Loud-speaking telephone system. 4,513,177, Cl. 179-81.00B.
Nissan Motor Company, Limited: *See*—
Hayashi, Isao, 4,512,298, Cl. 123-196.00R.
Ichikawa, Sadao; and Kamiya, Tuyoshi, 4,512,297, Cl. 123-179.00H.
Kobayashi, Hiroshi, 4,512,067, Cl. 29-25.410.
Kubota, Shikibu; and Tsuji, Shisaku, 4,513,276, Cl. 340-52.00R.
Maeda, Kouzo; and Tsujimura, Harutoshi, 4,512,604, Cl. 296-65.00A.
Suzuki, Shunsuke; Mori, Masanobu; and Miyata, Takeshi, 4,512,383, Cl. 164-35.000.
Tanaka, Yoshikazu; Yamamuro, Sigeaki; Hirano, Hiroyuki; and Morimoto, Yoshiro, 4,512,751, Cl. 474-28.000.
Nixon, James E.: *See*—
Eckenrode, Paul D.; Eisenbrei, Richard P.; and Nixon, James E., 4,512,544, Cl. 249-109.000.
Noda, Ichiro; Suekane, Yasuhiro; and Nakao, Hisao, to Ishigaki Kiko Co., Ltd. Filter press. 4,512,889, Cl. 210-225.000.
Noguchi, Akio: *See*—
Takayama, Yukio; Noguchi, Akio; and Matsushita, Takao, 4,513,301, Cl. 346-200.000.
Nokata, Kenichiro: *See*—
Miyasaka, Tadashi; Sawada, Seigo; Nokata, Kenichiro; and Mutai, Masahiko, 4,513,138, Cl. 546-48.000.
Nolan, William D. Portable hair shampoo and scalp treatment basin. 4,512,043, Cl. 4-516.000.
Nomoto, Seiichiro: *See*—
Negi, Shigeto; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; Saito, Isao; and Kitoh, Kyosuke, 4,513,145, Cl. 549-402.000.
Nomura, Susumu; and Sato, Katsuharu, to Pioneer Video Corporation. Error detecting system of video/audio disc player. 4,513,408, Cl. 369-46.000.
Nordstrom, Jon T.: *See*—
Logan, Max C.; and Nordstrom, Jon T., 4,512,161, Cl. 62-176.600.
North American Philips Consumer Electronics Corp.: *See*—
Robbins, John D., 4,513,221, Cl. 313-402.000.
North American Philips Corporation: *See*—
Barnes, Casper W., 4,512,196, Cl. 73-620.000.
Northeastern University: *See*—
Whang, Sung-Hyun, 4,512,826, Cl. 148-407.000.
Northern Petrochemical Company: *See*—
Fries, Richard W., 4,513,117, Cl. 525-60.000.
Northern Telecom Limited: *See*—
Harman, Stephen G., 4,513,250, Cl. 328-163.000.
Phillips, Lot; Austin, Hollis B.; and Blakeslee, Kenneth S., 4,513,179, Cl. 179-175.30R.
Suffi, Louis; Golden, James E.; and Jaycox, Donald F., 4,513,171, Cl. 174-41.000.
Northwest Instrument Systems, Inc.: *See*—
Henry, Michael D.; Ableidinger, Bruce J.; and Agarwal, Nirmal K., 4,513,395, Cl. 364-900.000.
Norton, Dennis J. Gate latch. 4,512,105, Cl. 49-394.000.
Norton, William J., to C. R. Bard, Inc. Venting assembly for a sealed body fluid drainage device. 4,512,771, Cl. 604-824.000.
Nose, Isamu; and Umehara, Akihiko, to Oki Electric Industry, Co., Ltd. Speech recognition system. 4,513,436, Cl. 381-43.000.
Notari, Bruno: *See*—
Fattore, Vittorio; Notari, Bruno; Paggini, Alberto; and Lagana , Vincenzo, 4,513,100, Cl. 502-303.000.
Novak, Paul G.; and Specht, Theodore R., to Westinghouse Electric Corp. Core form transformer for selective cancellation of subsynchronous resonance. 4,513,243, Cl. 323-361.000.
Nozaki, Keizo, to Yamato Mishin Seizo Kabushiki Kaisha. Hemming guide control for an overlock sewing machine. 4,512,270, Cl. 112-140.000.
Nozawa, Ryoichiro; and Kiya, Nobuyuki, to Fujitsu Fanuc Limited. Method and apparatus for controlling zero-point return of a movable element. 4,513,234, Cl. 318-594.000.
NPI New Products Investment AB: *See*—
Stenvall, Carl-Johan, 4,512,590, Cl. 280-11.230.
Numbers, Jody L.: *See*—
Green, Jacqueline M.; and Numbers, Jody L., 4,512,489, Cl. 220-19.000.
Nussdorfer, Theodore J.: *See*—
Sebestyen, George; Sinclair, Ronald R.; Smith, John A.; Sands, Timothy B.; and Nussdorfer, Theodore J., 4,512,537, Cl. 244-3.210.
Obrecht, Georges, to Alsthom-Atlantique. Anti-unscrewing devices. 4,512,596, Cl. 285-81.000.
Occidental Research Corporation: *See*—
Marvin, Dean C.; and Ives, Neil A., 4,513,200, Cl. 250-227.000.
O'Connell, Dennis M., to Corning Glass Works. Adjustable height magnetic stirrer. 4,512,666, Cl. 366-249.000.
O'Donnell, Timothy W.: *See*—
Olson, Daniel; R.; and O'Donnell, Timothy W., 4,513,349, Cl. 361-311.000.
Ogahara, Fumio, to Nippon Kokan Kabushiki Kaisha. Method for drilling coke oven top brick. 4,512,421, Cl. 175-71.000.
Ogasawara, Mitsuhiko: *See*—
Oshima, Masao; Kato, Yutaka; Ogasawara, Mitsuhiko; and Futamura, Osamu, 4,512,936, Cl. 261-93.000.
Ogawa, Akira; and Asano, Toshiaki, to Fuji Photo Film Co., Ltd. Aqueous ink composition for ink-jet printing. 4,512,807, Cl. 106-22.000.
Ogden Industries Pty. Ltd.: *See*—
Dunphy, Gerald F.; and Newman, Donald J., 4,512,166, Cl. 70-366.000.
Ogi, Katsumi: *See*—
Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, 4,512,557, Cl. 266-171.000.
O'Hanlan, Thomas B.: *See*—
Collins, Donald A.; and O'Hanlan, Thomas B., 4,513,420, Cl. 371-38.000.
Ohno, Hideaki: *See*—
Ito, Tokuhisa; Ohno, Hideaki; Kurata, Izumi; and Okuyama, Takashi, 4,512,642, Cl. 354-4.000.
Ohno, Junichi; and Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device capable of structural selection. 4,513,310, Cl. 357-68.000.
Ohta, Hideo; Hakuzen, Tatuzo; Ito, Yasunori; and Takagi, Fusao, to Satosen Co., Ltd. Process for producing printed circuit boards. 4,512,829, Cl. 156-659.100.
Ohwaki, Shinji: *See*—
Kunugi, Katsuo; Suzuki, Togi; Konishi, Tadashi; and Ohwaki, Shinji, 4,513,114, Cl. 524-706.000.
Ohyama, Hiroshi; Morita, Ken; Wada, Takuo; and Miyahara, Masahiko, to Hokko Chemical Industry Co., Ltd. 1,2,4-Triazole derivatives and fungicidal composition containing the same. 4,512,989, Cl. 514-383.000.
Oi, Naobumi; and Kitahara, Hajimu, to Sumitomo Chemical Company, Limited. Packing materials for chromatographic use and a method for analysis of an enantiomer mixture using the same. 4,512,898, Cl. 210-656.000.
Oiwa, Isao, to Sumitomo Rubber Industries, Ltd. Internal mixer. 4,512,664, Cl. 366-76.000.

Okada, Satoshi: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,512,980, Cl. 514-18.000.
Okada, Seiji: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,513,075, Cl. 430-108.000.
Okada, Takao: *See—*
Kobayashi, Yuji; and Okada, Takao, 4,513,316, Cl. 358-106.000.
Okai, Tsukasa; and Araki, Shuichi, to Dainippon Screen Seizo Kabushiki Kaisha. Method of compressing data. 4,513,444, Cl. 382-56.000.
Okamura, Shigeru, to Canon Kabushiki Kaisha. Ink jet printer reservoir. 4,513,297, Cl. 346-140.00R.
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; Kimura, Keizo; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 4,513,081, Cl. 430-550.000.
Oki Electric Industry, Co., Ltd.: *See—*
Nose, Isamu; and Umehara, Akihiko, 4,513,436, Cl. 381-43.000.
Okinaka, Yutaka: *See—*
Abys, Joseph A.; and Okinaka, Yutaka, 4,512,963, Cl. 423-387.000.
Okuyama, Hirofumi: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,513,075, Cl. 430-108.000.
Okuyama, Takashi: *See—*
Ito, Tokuhisa; Ohno, Hideaki; Kurata, Izumi; and Okuyama, Takashi, 4,512,642, Cl. 354-4.000.
Olah, George A. Condensation of natural gas or methane into gasoline range hydrocarbons. 4,513,164, Cl. 585-700.000.
Olin Corporation: *See—*
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,512,701, Cl. 414-101.000.
Gray, Thomas J.; and Masse, Norman G., 4,513,149, Cl. 564-449.000.
Schiessl, Henry W., 4,512,909, Cl. 252-188.280.
Wright, David B., 4,512,853, Cl. 204-1.00T.
Olschewski, Armin; Herrmann, Gerhard; and Bauer, Bernhard, to SKF Kugellagerfabriken GmbH. Sealed bearing cup for universal joint. 4,512,670, Cl. 384-147.000.
Olschewski, Armin; Herrmann, Gerhard; Bauer, Bernhard; and Zirk, Elisabeth, to SKF Kugellagerfabriken GmbH. Front seal for bearing cups. 4,512,672, Cl. 384-477.000.
Olson, Charles L.; and Monahan, John F., to RCA Corporation. Black level clamp for television signals. 4,513,321, Cl. 358-172.000.
Olson, Daniel; R.; and O'Donnell, Timothy W., to General Electric Company. Acrylate-containing mixed ester monomers and polymers thereof useful as capacitor dielectrics. 4,513,349, Cl. 361-311.000.
Olson, Kenneth C.: *See—*
Jones, Andrew J. S.; Olson, Kenneth C.; and Shire, Steven J., 4,512,922, Cl. 260-112.00R.
Olympus Optical Co., Ltd.: *See—*
Kohara, Satsuki; and Ono, Noriaki, 4,512,870, Cl. 204-416.000.
Mizokami, Kazunori, 4,512,648, Cl. 354-443.000.
Nakao, Toshihiro, 4,513,330, Cl. 360-60.000.
Tsuboshima, Kosaku; and Yoshinari, Shigeru, 4,512,852, Cl. 204-1.00T.
Omron Tateisi Electronics Co.: *See—*
Miyamoto, Kiyoshi; and Ueda, Kenji, 4,513,257, Cl. 331-65.000.
Ono, Noriaki: *See—*
Kohara, Satsuki; and Ono, Noriaki, 4,512,870, Cl. 204-416.000.
Ono, Takashi: *See—*
Hasebe, Koshi; Miura, Kunio; Ono, Takashi; Akutsu, Kazushi; and Minami, Kazuaki, 4,513,377, Cl. 364-449.000.
Ono, Yoshifumi: *See—*
Tatsuno, Kimio; Saito, Susumu; Ito, Shoichi; Terashima, Isamu; Homma, Yoshifumi; Asano, Mitsugu; and Ono, Yoshifumi, 4,513,300, Cl. 346-160.000.
Oppama Kogyo Kabushiki Kaisha: *See—*
Watanabe, Hiromi, 4,512,303, Cl. 123-335.000.
Orain, Michel A., to Glaenzer Spicer. Transmission joint and in particular an articulated constant-speed joint for a motor vehicle. 4,512,750, Cl. 464-111.000.
Orban, John M., to Vivitar Corporation. Automatic battery charger with thermal control. 4,513,238, Cl. 320-23.000.
Orndorff, James A., Jr.: *See—*
Hale, David R.; Owen, William A.; and Orndorff, James A., Jr., 4,512,684, Cl. 405-217.000.
Osaka Suda Co. Ltd.: *See—*
Sakai, Takaaki, 4,513,029, Cl. 427-204.000.
Oschmann, Klaus. Automatic filling device for battery cells. 4,512,378, Cl. 141-98.000.
Oshima, Masao; Kato, Yutaka; Ogasawara, Mitsuhiko; and Futamura, Osamu, to Ebara Corporation; and Ebara-Infilco Co., Ltd. Aeration apparatus. 4,512,936, Cl. 261-93.000.
Oswald, Leo A.: *See—*
Rauschert, William C.; and Oswald, Leo A., 4,512,530, Cl. 242-67.30R.
Otis Elevator Company: *See—*
Koppensteiner, Werner, 4,512,444, Cl. 187-67.000.
Otis Engineering Corporation: *See—*
Gano, John C.; and Perkins, Donald H., 4,512,399, Cl. 166-120.000.
Otsu, Keiichiro: *See—*
Kaku, Yoshihiro; and Otsu, Keiichiro, 4,512,175, Cl. 72-360.000.
Otsuka, Toru, to Sony Corporation. Head positioning apparatus. 4,513,334, Cl. 360-75.000.
Otto, Wolfgang K. F., to Milliken Research Corporation. Mechanical surface finishing apparatus for textile fabric. 4,512,065, Cl. 26-28.000.
Ottsen, Henning; and Barker, Thruburn, to Mobil Oil Corporation. Marine cable location system. 4,513,401, Cl. 367-19.000.
Outboard Marine Corporation: *See—*
Mohr, James W., 4,512,294, Cl. 123-73.00R.
Owen, William A.: *See—*
Hale, David R.; Owen, William A.; and Orndorff, James A., Jr., 4,512,684, Cl. 405-217.000.
Owens-Corning Fiberglas Corporation: *See—*
Rauschert, William C.; and Oswald, Leo A., 4,512,530, Cl. 242-67.30R.
Ritter, George W., II, 4,512,913, Cl. 252-313.100.
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Irwin, George W.; and Mumford, Eustace H., 4,512,792, Cl. 65-161.000.
Jabarin, Saleh A., 4,512,948, Cl. 264-521.000.
Owlett, Lois. Shopping organizer. 4,512,504, Cl. 224-42.46R.
Oy Wartsila Ab: *See—*
Nabb, Elis; and Eggert, Stig, 4,512,597, Cl. 292-143.000.
P.C.H. Constructions Pty. Ltd.: *See—*
Willoughby, John C., 4,512,119, Cl. 52-58.000.
Pachschwoll, Heino, to Zevatron GmbH, Gesellschaft fur Fertigungseinrichtungen der Elektronik. Method and apparatus for the machine soldering of workpieces. 4,512,508, Cl. 228-180.100.
Pacific Power Control, Inc.: *See—*
Thomas, Stanley N., 4,513,224, Cl. 315-141.000.
Pack Image, Inc.: *See—*
Stone, Orison W., 4,512,755, Cl. 493-92.000.
Pacradouni, Chahan: *See—*
Carydias, Roger; and Pacradouni, Chahan, 4,512,121, Cl. 52-125.200.
Padilla, Antonio A.: *See—*
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Paffen nee Siebert, Ursula: *See—*
Struck, Bernd D.; Dias, Francisco J.; Luhleich, Hartmut; and Paffen nee Siebert, Ursula, 4,512,858, Cl. 204-104.000.
Pagac, William T.: *See—*
Barnhill, Martin L., III; and Pagac, William T., 4,512,220, Cl. 81-121.100.
Paggini, Alberto: *See—*
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Pak Pro International, N.V.: *See—*
Torterotot, Roland, 4,512,133, Cl. 53-167.000.
Palmer, James L.: *See—*
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,513,093, Cl. 502-84.000.
Palmieri, Joseph M.: *See—*
Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., 4,513,268, Cl. 335-35.000.
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Jandrasi, Frank J.; Pampell, Davy G.; and Stinson, Walter J., 4,512,363, Cl. 137-375.000.
Pancotti, Santino; and Mariani, Renato, to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Helicopter rotor. 4,512,717, Cl. 416-134.00A.
Pane, Francis C., Jr.: *See—*
Striebel, Edmund E.; Matthews, John A.; Sepulveda, Domingo; and Pane, Francis C., Jr., 4,512,158, Cl. 60-740.000.
Paneccasio, Vincent, to Enthone, Incorporated. Zinc plating solutions and method utilizing ethoxylated/propoxylated polyhydric alcohols. 4,512,856, Cl. 204-55.00R.
Pankatz, Jurgen: *See—*
Binnig, Rupert; Gerlach, Gunter; Nilles, Peter; and Pankatz, Jurgen, 4,512,811, Cl. 134-10.000.
Papp, Uwe: *See—*
Albrecht, Wolf-Wigand; Papp, Uwe; and Behrens, Dieter, 4,512,805, Cl. 75-244.000.
Parg, Adolf; Hamprecht, Gerhard; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 1,3,5-Triazinones and their use for controlling undesirable plant growth. 4,512,797, Cl. 71-93.000.
Park, Hong K. Trammel head assembly. 4,512,081, Cl. 33-27.00C.
Parker, Marshall M.: *See—*
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., 4,513,278, Cl. 340-347.0DA.
Parsons, John R.: *See—*
Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,512,038, Cl. 3-1.900.
Parsson, Nils O., to Saab-Scania AB. Arrangement in a vehicle seat. 4,512,609, Cl. 297-331.000.
Parton, Brian: *See—*
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Pasenau, Hartmut: *See—*
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Pasquarella, Stephen T., to Va. Inc. Control circuit for inductive load. 4,513,345, Cl. 361-155.000.
Patchett, Arthur A.; and Wu, Mu T., to Merck & Co., Inc. Dipeptides containing thialysine and related amino acids as antihypertensives. 4,512,979, Cl. 514-2.000.
Patel, Chandrakant B., to RCA Corporation. Buzz reduction for intercarrier type television sound detection. 4,513,323, Cl. 358-197.000.
Patil, Ram S.; Johnson, Donald F.; and Quasney, John T., to Inland Steel Company. Differentially coated galvanized steel strip and method and apparatus for producing same. 4,513,033, Cl. 427-349.000.

Patton, James B.: *See—*
Regalbuto, John A.; Patton, James B.; and Sumner, Cyril R., 4,512,418, Cl. 175-4.560.
Paul, Charles T.: *See—*
Ganzi, Gary C.; and Paul, Charles T., 4,512,892, Cl. 210-493.200.
Paul Wurth S.A.: *See—*
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Paula Blaine International, Ltd.: *See—*
Levine, Paula B., 4,512,581, Cl. 273-153.00R.
Paulus, Wilfried: *See—*
Kuhle, Engelbert; Klauke, Erich; Paulus, Wilfried; and Genth, Hermann, 4,513,003, Cl. 514-411.000.
Pauwels, Michael A.; Wright, Danny O.; Harvey, Bruce J.; and Bauer, Thomas J., to Allied Corporation. Extended range throttle body fuel injection system. 4,512,317, Cl. 123-478.000.
Payne, John D., to Holmen Chemicals Limited. Pellet durability tester. 4,512,180, Cl. 73-7.000.
Payne, Robert N.: *See—*
Lee, Francis C.; Mills, Ross N.; Payne, Robert N.; and Talke, Frank E., 4,513,299, Cl. 346-140.00R.
Peachey, Kenneth G., to Sunwood Energy Products, Inc. Portable thermal exchange system. 4,512,334, Cl. 126-430.000.
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Banford, Dennis W., 4,512,124, Cl. 52-207.000.
Pecen, Jiri: *See—*
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Peckson USA Corp.: *See—*
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Pelc, Norbert J.: *See—*
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Pellet, Regis J.: *See—*
Long, Gary N.; Pellet, Regis J.; and Rabo, Jule A., 4,512,875, Cl. 208-114.000.
Penhale, Donald W.: *See—*
Ng, Steven Y.; Penhale, Donald W.; and Heller, Jorge, 4,513,143, Cl. 549-335.000.
Penhard, Serge J., to Thomson-CSF. Device for the elimination of nth trace moving echoes and interference echoes in a radar. 4,513,287, Cl. 343-5.0CF.
Pennel, Jean-Francois; and Vesnier, Patrick H. Coupling member and method of manufacturing such a coupling member. 4,512,176, Cl. 72-367.000.
Pennwalt Corporation: *See—*
Bloomfield, Philip E., 4,512,431, Cl. 177-210.00R.
Chen, Johnson C. H.; and Eichelberger, John L., 4,513,053, Cl. 428-221.000.
Pepin, Jean P. Insulation support. 4,512,130, Cl. 52-404.000.
Perkin-Elmer Corporation, The: *See—*
Groeschner, Donald L., 4,512,362, Cl. 137-356.000.
Jones, Robert A., 4,512,107, Cl. 51-56.00R.
Perkins, Donald H.: *See—*
Gano, John C.; and Perkins, Donald H., 4,512,399, Cl. 166-120.000.
Permacel: *See—*
Dabroski, Winifred C., 4,513,059, Cl. 428-355.000.
Perret, Andre: *See—*
Brun, Marcel; Perret, Andre; and Cailleux, Claude, 4,512,695, Cl. 409-134.000.
Pesch, Wolfgang; and Beer, Gunter, to Henkel Kommanditgesellschaft. Binder compositions based on alkali metal silicate solutions. 4,512,808, Cl. 106-83.000.
Pesson, Marcel: *See—*
Joannic, Michel; Roquet, Francoise; and Pesson, Marcel, 4,513,001, Cl. 514-394.000.
Peters, Alan W.; Kim, Gwan; and Ernest, Michael V., to W. R. Grace & Co. Small bead auto exhaust catalyst. 4,513,101, Cl. 502-304.000.
Peters, John W., to Hughes Aircraft Company. Process for forming sulfide layers. 4,513,057, Cl. 428-336.000.
Peters, Rex B., to Sundstrand Data Control, Inc. Two axis angular rate and specific force sensor utilizing vibrating accelerometers. 4,512,192, Cl. 73-505.000.
Peterson, John P., Jr.: *See—*
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Peterson, Marvin A., to General Electric Company. Coating composition. 4,513,113, Cl. 524-602.000.
Petri, Randy J.: *See—*
Claar, Terry D.; and Petri, Randy J., 4,512,388, Cl. 165-1.000.
Petrick, David C., to Bretford Manufacturing, Inc. Universal printer stand. 4,512,543, Cl. 248-670.000.
Petro-Tex Chemical Corporation: *See—*
McFarland, Cecil G., 4,513,159, Cl. 585-625.000.
Petrzelka, Miloslav; and Taureg, Herbert, to Uni-Cardan Aktiengesellschaft. Universal joint. 4,512,679, Cl. 403-57.000.
Pettit, Douglas L.; and Piilola, Calvin E., to General Resource Corporation. Filter bag clamp. 4,512,789, Cl. 55-378.000.
Peyton, John J., to Industrial Automation Corp. Force balanced actuator for mechanically actuated container grippers. 4,512,456, Cl. 198-479.000.
Pfanzer, Gerhard, to Black & Decker Inc. Jig saw with orbital mechanism. 4,512,078, Cl. 30-393.000.
Pfennings, Leonardus C. M. G.: *See—*
Veendrick, Hendrikus J. M.; Pfennings, Leonardus C. M. G.; Raven, Johannes G.; and Nillesen, Antonius H. H. J., 4,513,388, Cl. 364-736.000.
Pfister, Rudolf: *See—*
Aschwanden, Werner; Branca, Quirico; Kyburz, Emilio; and Pfister, Rudolf, 4,513,002, Cl. 514-408.000.
Pfizer Inc.: *See—*
Hauske, James R.; and Nagel, Arthur A., 4,512,982, Cl. 514-29.000.
Wirth, Emil J., Jr., 4,512,800, Cl. 75-53.000.
Pham Ngu, Tung, to Thomson-CSF. Bistable logic circuit using field effect transistors with a low voltage threshold and storage device incorporating such a circuit. 4,513,398, Cl. 365-189.000.
Phillips, Edwin. Non-stick glass stopcock. 4,512,364, Cl. 137-375.000.
Phillips, Lot; Austin, Hollis B.; and Blakeslee, Kenneth S., to Northern Telecom Limited. Loop test circuit. 4,513,179, Cl. 179-175.30R.
Phillips Mine & Mill, Inc.: *See—*
Thompson, John P., 4,512,706, Cl. 414-373.000.
Phillips Petroleum Company: *See—*
Kukes, Simon G.; and Banks, Robert L., 4,513,099, Cl. 502-228.000.
Phillips, Robert V. Exercise bicycle apparatus particularly adapted for controlling video games. 4,512,567, Cl. 272-73.000.
Piccolo, Dominic J.: *See—*
Carroll, Thomas J.; Corsello, Vincent G.; Glass, Michael; and Piccolo, Dominic J., 4,513,012, Cl. 426-5.000.
Picha, Josef: *See—*
Flegel, Martin; Pospisek, Jan; Picha, Josef; Pichova, Drahomira; Krojidlo, Milan; and Kolinsky, Jiri, 4,512,923, Cl. 260-112.5LH.
Pichova, Drahomira: *See—*
Flegel, Martin; Pospisek, Jan; Picha, Josef; Pichova, Drahomira; Krojidlo, Milan; and Kolinsky, Jiri, 4,512,923, Cl. 260-112.5LH.
Picone, John A. Electric powered adjustable wrench. 4,512,221, Cl. 81-170.000.
Pierce, Clifford R., to Vacuum Furnace Systems Corporation. Hot zone arrangement for use in a vacuum furnace. 4,512,737, Cl. 432-205.000.
Piilola, Calvin E.: *See—*
Pettit, Douglas L.; and Piilola, Calvin E., 4,512,789, Cl. 55-378.000.
Pike, Lawrence W.; Zscheile, John W., Jr.; and Spencer, Billie M., to Sperry Corporation. Quasi coherent two-way ranging apparatus. 4,513,285, Cl. 343-5.0PN.
Pioneer Electronic Corporation: *See—*
Yokogawa, Fumihiko, 4,513,242, Cl. 323-352.000.
Yoshida, Kobun, 4,513,336, Cl. 360-105.000.
Pioneer Video Corporation: *See—*
Nomura, Susumu; and Sato, Katsuharu, 4,513,408, Cl. 369-46.000.
Piotrowski, Tadeusz W., to Cincinnati Milacron Inc. Pallet receiver with compliant pin and socket registration. 4,512,068, Cl. 29-33.00P.
Pirkle, James C.: *See—*
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Pitozzi, Luigi, to SAME S.p.A. Delivery-regulation unit for in-line injection pumps. 4,512,305, Cl. 123-364.000.
Pittsburgh Brass Manufacturing Company: *See—*
Caralli, Michael J.; and Friedline, Gary W., 4,512,781, Cl. 55-26.000.
Plambeck, Eric D.: *See—*
Kompanek, Harry W.; Ligman, James R.; and Plambeck, Eric D., 4,512,402, Cl. 166-249.000.
Planning Research Corporation: *See—*
Walter, Gerard O.; and Sheppard, William D., 4,513,390, Cl. 364-900.000.
Plante, Jean-Paul. Hand truck. 4,512,591, Cl. 280-47.350.
PLASTIVER S.a.s. di Giovanni e Vittorio VIGANO & C.: *See—*
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Plastofilm Industries, Inc.: *See—*
Harding, LeRoy A., 4,512,474, Cl. 206-461.000.
Platz, Rolf: *See—*
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Pleass, Charles M.: *See—*
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PLM AB: *See—*
Nilsson, Torsten; and Jakobsen, Kjell M., 4,512,735, Cl. 425-526.000.
Plummer, Mark A., to Marathon Oil Company. Conversion of aromatics to iso-paraffins using a $NaAlCl_4/HAlCl_4$ molten salt catalyst system. 4,513,163, Cl. 585-700.000.
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Boichu, Claude P.; and Yeou, Victor, 4,512,708, Cl. 414-694.000.
Poetsch, Dieter; Massmann, Volker; Becker, Werner; and Wagner, Horst, to Robert Bosch GmbH. Television scanning of wide frame motion picture films. 4,513,324, Cl. 358-214.000.
Pohland, Horst; and Tielens, Arthur J., to Alcoa Chemie GmbH. Method for the recovery of alumina. 4,512,959, Cl. 423-121.000.
Pohlenz, Elmer E.: *See—*
La Barge, Robert L.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,512,253, Cl. 100-53.000.
Pohndorf, Peter J., to Cordis Corporation. Percutaneous lead introducing system and method. 4,512,351, Cl. 128-786.000.
Poindexter, Daniel J.: *See—*
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Pollner, Jurgen: *See—*
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Porcari, Guiliano: *See—*
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Porta Systems Corp.: *See—*
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Pospisek, Jan: *See—*
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Potts, Garfield C.: *See—*
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Pourarian, Faiz: *See—*
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PPG Industries, Inc.: *See—*
Chamberlin, Ronald D., 4,512,857, Cl. 204-98.000.
Criss, Russell C.; and Gillery, F. Howard, 4,512,863, Cl. 204-192.00R.
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Thompson, Ralph B., 4,513,146, Cl. 560-231.000.
ppm, Inc.: *See—*
Shofner, Frederick M., 4,512,060, Cl. 19-200.000.
Pratt, W. Robert: *See—*
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Pressure Systems, Inc.: *See—*
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Pringle, Ronald E., to Camco Incorporated. Fluid actuated energy charged well service line cutter. 4,512,411, Cl. 166-54.500.
Probst, Timothy F.: *See—*
Robinson, Mary K.; and Probst, Timothy F., 4,512,134, Cl. 53-248.000.
Procedyne Corp.: *See—*
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Procter & Gamble Company, The: *See—*
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Trinh, Toan, 4,512,677, Cl. 401-27.000.
PROMA Produkt-und Marketing Gesellschaft m.b.H.: *See—*
Lipinski, Reinhard; and Neff, Karl, 4,512,208, Cl. 74-89.150.
Propsom, George F., to Western Publishing Company, Inc. Improved game board with pieces cooperating for rotation. 4,512,584, Cl. 273-282.000.
Proscia, George E.: *See—*
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Prusak, John J.: *See—*
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Prutec Limited: *See—*
Simon, Donald R., 4,513,066, Cl. 429-42.000.
Pucher, Richard A.: *See—*
Musser, Glenn A.; Rayfield, James F.; and Pucher, Richard A., 4,512,139, Cl. 56-11.200.
Puhringer, Franz, to Steyr-Daimler-Puch Aktiengesellschaft. Lathe. 4,512,223, Cl. 82-2.500.
Purdes, Andrew J.; and Bonifield, Thomas D., to Texas Instruments Incorporated. Plasma reactor with reduced chamber wall deposition. 4,513,021, Cl. 427-38.000.
Purdes, Andrew J.: *See—*
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Putman, Thomas H., to Westinghouse Electric Corp. Method and apparatus for selective cancellation of subsynchronous resonance. 4,513,240, Cl. 323-210.000.
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R.Q.O. Holding Company: *See—*
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Rabenau, Albrecht: *See—*
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Racal Acoustics Limited: *See—*
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Racine, Jacques, to Hydro-Quebec. Levering tool for manhole cover. 4,512,554, Cl. 254-131.000.
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Santucci, Edward A.; and Racz, William B., 4,512,743, Cl. 433-217.000.
Rader, Charles P., to Monsanto Company. Method of treating diene rubber and improved rubber compositions. 4,513,110, Cl. 524-432.000.
Ragan, Lawrence H., to Texas Instruments Incorporated. Programmable frequency converting filter. 4,513,260, Cl. 333-165.000.
Raible, Donald A., to Bentley Laboratories, Inc. Body implantable connector. 4,512,761, Cl. 604-8.000.
Ramde, Amolak R.; Khadder, Wadie N.; and Krishna, Surinder, to National Semiconductor Corporation. High-density IC isolation technique capacitors. 4,512,816, Cl. 148-1.500.
Rand McNally & Company: *See—*
Breen, Thomas J., 4,512,595, Cl. 283-70.000.
Randall, Kent A.: *See—*
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Rangaswamy, Avvari. Analgesic syringe. 4,512,768, Cl. 604-191.000.
Rapp, Edward D. Detachable patient serving trays. 4,512,607, Cl. 297-153.000.
Rasmussen, Robert R. Casing arrangement for partition end caps. 4,512,118, Cl. 52-39.000.
Rathmayr, Heinz: *See—*
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Raue, Roderich; Huhne, Volker; and Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Preparation of cationic methine dyestuffs. 4,513,142, Cl. 548-507.000.
Rauschert, William C.; and Oswald, Leo A., to Owens-Corning Fiberglas Corporation. Apparatus for handling split-batt rolls. 4,512,530, Cl. 242-67.30R.
Rausing, Anders R., to Tetra Pak Developpement SA. Extruded longitudinal joint. 4,512,838, Cl. 156-203.000.
Rausing, Hans, to Tetra Pak Developpement SA. Method for manufacturing a tube package. 4,512,832, Cl. 156-86.000.
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Raytheon Company: *See—*
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RCA Corporation: *See—*
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Chen, Hsing-Yao, 4,513,222, Cl. 313-412.000.
Datta, Pabitra, 4,512,916, Cl. 252-511.000.
Deyer, Craig E., 4,513,394, Cl. 364-900.000.
Fairbanks, David W., 4,513,410, Cl. 369-126.000.
Filliman, Paul, 4,513,322, Cl. 358-181.000.
Hsu, Sheng T., 4,512,073, Cl. 29-571.000.
Ipri, Alfred C.; and Stewart, Roger G., 4,513,397, Cl. 365-185.000.
Olson, Charles L.; and Monahan, John F., 4,513,321, Cl. 358-172.000.
Patel, Chandrakant B., 4,513,323, Cl. 358-197.000.
Robinson, John W.; and Kaganowicz, Grzegorz, 4,512,284, Cl. 118-723.000.
Thorn, Joseph H.; and Prusak, John J., 4,512,455, Cl. 198-404.000.
VanBreemen, Bertram, 4,512,631, Cl. 350-128.000.
Ready, Robert J.; Whipple, Donald E.; and Sferra, James P., to Lighting Systems Inc. Sign frame and method for factory installing flexible sign facing material thereon. 4,512,098, Cl. 40-610.000.
Reaktor Brennelement Union GmbH: *See—*
Dorr, Wolfgang; Gradel, Gerhard; Peehs, Martin; Schafer, Reinhard; and Sondermann, Thomas, 4,512,939, Cl. 264-0.500.
Recker, Richard D.: *See—*
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,512,361, Cl. 137-355.270.
Red Fox Industries, Inc.: *See—*
Dunham, David A.; Riggs, Robert P.; and Burton, Rufus L., Jr., 4,512,553, Cl. 254-89.00R.
Redshaw, Sally: *See—*
Attwood, Michael R.; Hassall, Cedric H.; Lambert, Robert W.; Lawton, Geoffrey; and Redshaw, Sally, 4,512,924, Cl. 260-243.300.
Reeber, Nicholas J.: *See—*
St. John, Karl M.; Reeber, Nicholas J.; and Kerbel, Sheldon J., 4,513,314, Cl. 358-76.000.
Reel, Jerry R.; and Cook, Clarence E., to Research Triangle Institute. Progrestationally active steroids. 4,512,986, Cl. 514-170.000.
Reese, Wayne S.: *See—*
Isham, Robert O.; and Reese, Wayne S., 4,512,048, Cl. 5-37.00R.
Regalbuto, John A.; Patton, James B.; and Sumner, Cyril R., to Halliburton Company. Mechanically initiated tubing conveyed perforator system. 4,512,418, Cl. 175-4.560.
Regeffe, Jean Y.: *See—*
Faure, Michel; Regeffe, Jean Y.; Lumineau, Yves; and Jouanin, Andre , 4,512,790, Cl. 65-13.000.
Rehfeld, Gerhard: *See—*
Kummer, Peter; and Rehfeld, Gerhard, 4,513,089, Cl. 501-103.000.
Rehklau, George D.; Cotterill, Lee A.; and Langevin, Robert Z., to Electro-Sound, Inc. Cassette loading apparatus. 4,512,527, Cl. 242-56.00R.
Reid, John H. Pumpless clarifier apparatus and process for operation thereof in combination with a draft tube circulator/aerator. 4,512,895, Cl. 210-627.000.

Reid, Lloyd E.; Yao, Keith C.; and Ryan, Douglas G., to Exxon Research and Engineering Co. Used oil re-refining. 4,512,878, Cl. 208-179.000.

Reinhardt, Bruce A.; Arnold, Fred E.; and Unroe, Marilyn R. Thermally stable phenylacetylene terminated arylether resins. 4,513,131, Cl. 526-285.000.

Reisem, Daniel E., to Minnesota Mining and Manufacturing Company. Momentary contact magnetic switch. 4,513,271, Cl. 335-205.000.

Reist, Walter; and Eberle, Jurg, to Ferag AG. Apparatus for transporting continuously arriving flat paper products, especially a stream of printed products arriving in an imbricated formation. 4,512,457, Cl. 198-479.000.

Reitze, Frederick T. Key holder. 4,512,168, Cl. 70-456.00R.

Remenicky, Joseph M., to Sargent & Greenleaf, Inc. Variable position quick mount combination lock. 4,512,167, Cl. 70-443.000.

Remond, Pierre: *See—*
Deborde, Albert H.; and Remond, Pierre, 4,512,375, Cl. 139-435.000.

Reneau, Daniel L.; Tzakis, George J.; and Engel, Christopher M., to Zenith Electronics Corporation. Non-linear peaking system. 4,513,320, Cl. 358-166.000.

Renfrew, Andrew H. M.: *See—*
Anderton, Kenneth; Hall, Nigel; Parton, Brian; Renfrew, Andrew H. M.; and Shaw, Malcolm G., 4,512,773, Cl. 8-657.000.

Rensink, Loman, to Hughes Aircraft Company. Multi-phase DC-to-AC and DC-to-DC boost converter. 4,513,361, Cl. 363-21.000.

Research Triangle Institute: *See—*
Reel, Jerry R.; and Cook, Clarence E., 4,512,986, Cl. 514-170.000.

Reslow, Leif F.; Nieman, Mark D.; and Swagert, Dean R., to Motter Printing Press Co. Foam ink fountain. 4,512,254, Cl. 101-157.000.

Resseguier, Jacques: *See—*
Dronet, Jean-Marc; and Resseguier, Jacques, 4,512,734, Cl. 425-305.100.

Restaurant Technology, Inc.: *See—*
Schindler, James C.; and Jewell, Donald K., 4,512,250, Cl. 99-425.000.

Revici, Emanuel; Sherwood, Bob E.; Benecke, Herman P.; Rice, John M.; and Geisler, Richard W., to Vinoxen Company, Inc., The. Virucidal compositions and therapy. 4,513,008, Cl. 514-560.000.

Rhoades, James J., to Tapco Products Company, Inc. Combined sheet bending brake and platform. 4,512,174, Cl. 72-319.000.

Ribbon Technology, Inc.: *See—*
Lankard, David R., 4,513,040, Cl. 428-49.000.

Ribes, Michel: *See—*
Carette, Brigitte; Kone, Ali; Souquet, Jean-Louis; Ribes, Michel; and Maurin, Maurice, 4,513,070, Cl. 429-193.000.

Rice, John M.: *See—*
Revici, Emanuel; Sherwood, Bob E.; Benecke, Herman P.; Rice, John M.; and Geisler, Richard W., 4,513,008, Cl. 514-560.000.

Richard, Michael A.: *See—*
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., 4,513,104, Cl. 518-714.000.

Richard Wolf GmbH: *See—*
Falk, Ernst; and Knosel, Johann, 4,512,343, Cl. 128-303.170.

Richardson, Mark A.: *See—*
Fayerman, Jeffrey T.; and Richardson, Mark A., 4,513,086, Cl. 435-317.000.

Richardson, Ryden L.: *See—*
Angmorter, Paul K.; Simpson, Howard D.; and Richardson, Ryden L., 4,513,097, Cl. 502-211.000.

Richter, Robert E.: *See—*
Field, Harold; and Richter, Robert E., 4,513,068, Cl. 429-121.000.

Rickardsson, Gote: *See—*
Eriksson, Lars E.; and Rickardsson, Gote, 4,512,125, Cl. 52-209.000.

Ricoh Co., Ltd.: *See—*
Kubo, Keishi; and Kawamura, Eiichi, 4,513,052, Cl. 428-219.000.
Suzaki, Masayuki; and Kanno, Tetuo, 4,512,674, Cl. 400-208.000.

Ricoh Watch Co., Ltd.: *See—*
Kamiya, Kenji; and Hosoi, Masatoshi, 4,512,229, Cl. 84-1.010.

Rieben, Werner P.: *See—*
Wilson, William P.; Hewlett, Catherine M.; and Rieben, Werner P., 4,513,379, Cl. 364-474.000.

Rieber, Norbert; Platz, Rolf; and Jung, Johann, to BASF Aktiengesellschaft. Norbornane compounds, plant growth regulators containing these compounds, and their intermediates. 4,512,795, Cl. 71-88.000.

Rigby, Eugene B., to International Business Machines Corporation. Method of making a thin film insulator. 4,512,862, Cl. 204-192.00D.

Riggle, Rita C. Toilet guard. 4,512,046, Cl. 4-661.000.

Riggs, John F. Electrostud. 4,512,129, Cl. 52-364.000.

Riggs, Robert P.: *See—*
Dunham, David A.; Riggs, Robert P.; and Burton, Rufus L., Jr., 4,512,553, Cl. 254-89.00R.

Right, Robert W., to General Signal Corporation. Console priority control. 4,513,284, Cl. 340-825.510.

Ring, Michael: *See—*
Brandon, Ralph E.; Davis, Charles J.; Ring, Michael; and Swenson, Roy S., 4,512,849, Cl. 162-157.200.

Ringold, Howard J.: *See—*
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,512,990, Cl. 514-225.000.

Ritchie, Robert S.: *See—*
Bunker, James W.; and Ritchie, Robert S., 4,512,678, Cl. 403-15.000.

Ritke, Harold A.; and Ritke, Randal G. Chlorine injector for treatment of effluent. 4,512,887, Cl. 210-220.000.

Ritke, Randal G.: *See—*
Ritke, Harold A.; and Ritke, Randal G., 4,512,887, Cl. 210-220.000.

Ritter, Christoph: *See—*
Marsoner, Hermann; Ritter, Christoph; Kleinhappl, Erich; and Strutz, Winfried, 4,512,953, Cl. 422-67.000.

Ritter, George W., II, to Owens-Corning Fiberglas Corporation. Sol-gel solution preparation. 4,512,913, Cl. 252-313.100.

Rival Manufacturing Company: *See—*
Chappell, William A.; Tweed, William J.; and Higgins, David T., 4,512,246, Cl. 99-312.000.

Rizvi, Syed S. H.; and Gossett, Patricia W., to Cornell Research Foundation, Inc. Gelation measuring apparatus and method. 4,512,182, Cl. 73-64.100.

Robbins, John D., to North American Philips Consumer Electronics Corp. CRT Internal shielding means for a spun glass envelope funnel section. 4,513,221, Cl. 313-402.000.

Robert Bosch GmbH: *See—*
Babitzka, Rudolf; Haag, Gottlob; and Linder, Ernst, 4,512,452, Cl. 192-104.00C.
Gast, Theodor; Kubach, Hans; and Binder, Kurt, 4,512,549, Cl. 251-137.000.
Heitmann, Jurgen, 4,513,328, Cl. 360-8.000.
Hofer, Gerald; Straubel, Max; and Eheim, Franz, 4,512,308, Cl. 123-383.000.
Poetsch, Dieter; Massmann, Volker; Becker, Werner; and Wagner, Horst, 4,513,324, Cl. 358-214.000.

Robert Linkletter Associates, Inc.: *See—*
Agbay, Albert J.; and Thomas, Ralph H., Sr., 4,512,485, Cl. 215-225.000.

Roberts, Thomas G.; and Honeycutt, Thomas E., to United States of America, Army. Erectable large optic for outer space application. 4,512,639, Cl. 350-418.000.

Robertson, James P.: *See—*
Day, Gary L.; and Robertson, James P., 4,513,123, Cl. 525-332.600.

Robinson, John W.; and Kaganowicz, Grzegorz, to RCA Corporation. Glow discharge apparatus for use in coating a disc-shaped substrate. 4,512,284, Cl. 118-723.000.

Robinson, Lee F.; Salimbeni, Francesco; Porcari, Guiliano; and Dente, Mario. Digester. 4,512,956, Cl. 422-270.000.

Robinson, Marquis B.: *See—*
Boysen, Gerd C.; Murray, Patrick S.; and Robinson, Marquis B., 4,513,181, Cl. 200-50.00C.

Robinson, Mary K.; and Probst, Timothy F., to Figgie International. Universal type packing head. 4,512,134, Cl. 53-248.000.

Robson, Michael J., to Imperial Chemical Industries PLC. Insecticidal product and preparation thereof. 4,512,931, Cl. 260-465.00D.

Rocha, Henry A. F., to General Electric Company. Current-squared-time (i^2t) protection system. 4,513,342, Cl. 361-94.000.

Roche, John N., to American Sterilizer Company. Cable failure indicator. 4,512,106, Cl. 49-445.000.

Rocket Research Company: *See—*
Galbraith, Lyle D., 4,512,355, Cl. 137-68.00A.

Rockwell International Corporation: *See—*
Brown, James L., 4,513,307, Cl. 357-42.000.
Cascini, Michael R., 4,512,697, Cl. 411-7.000.
Frerking, Marvin E., 4,513,259, Cl. 331-176.000.
Hackett, Charles M., Jr., 4,513,383, Cl. 364-517.000.

Rodriguez, Larry A.; Padilla, Antonio A.; and Spake, Ned B. Power transformer waste heat recovery system. 4,512,387, Cl. 165-1.000.

Roeder, Allan W., to United States of America, Air Force. Simultaneous detection of time coincident signals in an adaptive doppler tracker. 4,513,428, Cl. 375-120.000.

Roeder, Allan W., to United States of America, Air Force. Sample data phase locked loop for adaptive doppler tracker. 4,513,429, Cl. 375-120.000.

Roettgen, Leslie A.: *See—*
DeVore, James R.; and Roettgen, Leslie A., 4,512,300, Cl. 123-196.0AB.

Roger, Harry. High and low pressure sensor. 4,512,370, Cl. 137-625.660.

Rogers, Frank S. Arc metal spray apparatus and method. 4,512,513, Cl. 239-8.000.

Rogers, Tommie: *See—*
Callegari, Stephen R., Sr.; and Rogers, Tommie L., 4,512,216, Cl. 81-57.170.

Rogers, Tommie L.: *See—*
Callegari, Stephen R., Sr.; and Rogers, Tommie L., 4,512,216, Cl. 81-57.170.

Rohm GmbH: *See—*
Suetterlin, Norbert; Arndt, Peter J.; Heil, Ernst; Siol, Werner; Tilch, Willi; and Wopker, Wilhelm, 4,513,118, Cl. 525-81.000.

Rohm GmbH Chemische Fabrik: *See—*
Kaube, Peter; Schanz, Karl-Heinz; Vetter, Heinz; and Muller, Jens, 4,513,048, Cl. 428-188.000.

Rohr, Gunter H., to Union Special GmbH. Method and apparatus for tensioning and sewing a tubular workpiece. 4,512,268, Cl. 112-63.000.

Romanelli, Pat: *See—*
Kozam, George; and Romanelli, Pat, 4,512,769, Cl. 604-209.000.

Romano, Ugo, to ANIC, S.p.A. Process for synthesizing carbonic acid esters derived from unsaturated alcohols and polyhydric alcohols. 4,512,930, Cl. 260-463.000.

Romanov, Anatoly A.: *See—*
Andreev, Anatoly A.; and Romanov, Anatoly A., 4,512,867, Cl. 204-298.000.

Roques, Bernard; Schwartz, Jean-Charles; and Lecomte, Jeanne-Marie, to Societe Civile Bioprojet. Aminoacid derivatives and their therapeutic applications. 4,513,009, Cl. 514-513.000.

Roquet, Francoise: *See—*
Joannic, Michel; Roquet, Francoise; and Pesson, Marcel, 4,513,001, Cl. 514-394.000.

Roquette Freres: *See—*
Lumaret, Jean-Claude; Gosset, Serge; and Huchette, Michel, 4,512,915, Cl. 252-389.00A.

Rose, Allan F., to Chevron Research Company. Phenoxyalkenylpyridine derivatives and fungicidal methods of use. 4,512,995, Cl. 514-277.000.

Rosenbaum, Georges: *See—*
Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,513,011, Cl. 514-730.000.

Rosenberger, Siegfried, to Ciba-Geigy Corporation. Phenols and use thereof as stabilizers. 4,513,109, Cl. 524-342.000.

Rosencwaig, Allan, to Therma-Wave, Inc. Thin film thickness measurements and depth profiling utilizing a thermal wave detection system. 4,513,384, Cl. 364-563.000.

Ross, William J.: *See—*
Baker, Stephen R.; Jamieson, William B.; Ross, William J.; and Todd, Alec, 4,513,005, Cl. 514-451.000.

Rossmann, Axel, to Motoren-un Turbinen-Union Munchen GmbH. Hot gas wetted turbine blade. 4,512,719, Cl. 416-241.00B.

Rote, George B.: *See—*
Hitchens, Max W.; and Rote, George B., 4,512,747, Cl. 434-428.000.

Rothenberger, Robert: *See—*
Hulett, John G.; and Rothenberger, Robert, 4,512,830, Cl. 156-70.000.

Rothmans of Pall Mall Canada Limited: *See—*
Brackmann, Warren A., 4,512,353, Cl. 131-304.000.

Roussel Uclaf: *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre , 4,513,139, Cl. 546-196.000.
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,513,147, Cl. 562-506.000.
Meier, Jean; and Clemence, Francois, 4,512,997, Cl. 514-383.000.

Rowley, David S.; and Aumann, James T., to Christensen, Inc. Coring device with an improved core sleeve and anti-gripping collar. 4,512,419, Cl. 175-58.000.

Rowley, James R.: *See—*
Thomaswick, Ronald J.; and Rowley, James R., 4,512,473, Cl. 206-454.000.

Rubio, Manuel J. Continuous production of corn products. 4,513,018, Cl. 426-622.000.

Ruckman, James A.: *See—*
Keesee, Kenneth C.; and Ruckman, James A., 4,512,132, Cl. 52-742.000.

Ruh, Wolf-Dieter: *See—*
Brunsch, Arwed; Ruh, Wolf-Dieter; and Trippel, Gerhard, 4,512,847, Cl. 156-626.000.

Ruhrkohle Aktiengesellschaft: *See—*
Mosebach, Wilhelm, 4,512,850, Cl. 201-1.000.

Runge, Peter K., to AT&T Bell Laboratories. Optical fiber connector. 4,512,630, Cl. 350-96.210.

Runkle, Dean E.; and Colpaert, James J., to Bendix Corporation, The. Adjustment assembly for a disc brake. 4,512,445, Cl. 188-71.900.

Ruoff, Carl F., Jr., to United States of America, National Aeronautics and Space Administration. Retinally stabilized differential resolution television display. 4,513,317, Cl. 358-133.000.

Russell, Steven J.: *See—*
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,512,319, Cl. 123-492.000.

Russo, Carl J.: *See—*
Liebert, Reuel B.; and Russo, Carl J., 4,512,812, Cl. 134-21.000.

Russtech Engineering Company, Inc.: *See—*
Fieberg, Russell F.; and Fieberg, Donald E., 4,512,071, Cl. 29-278.000.

Ruth, John V.; and Potts, Garfield C., to Ultra Mileager Company, Inc. Carburetor vaporizer. 4,512,323, Cl. 123-557.000.

Rutledge, Raleigh N.: *See—*
Hahn, Granville J.; and Rutledge, Raleigh N., 4,512,395, Cl. 165-101.000.
Hahn, Granville J.; and Rutledge, Raleigh N., 4,512,943, Cl. 264-173.000.

Rux, Paul R. Pet seat for automobiles. 4,512,286, Cl. 119-96.000.

Ryan, Douglas G.: *See—*
Reid, Lloyd E.; Yao, Keith C.; and Ryan, Douglas G., 4,512,878, Cl. 208-179.000.

Ryczek, Lawrence J., to Eaton Corporation. Short circuit protector having fold-back trip point for solid state switching device. 4,513,343, Cl. 361-101.000.

Ryobi Limited: *See—*
Tunoda, Kikuo, 4,512,531, Cl. 242-84.21R.

Ryono, Denis E.: *See—*
Weller, Harold N., III; Gordon, Eric M.; Karanewsky, Donald S.; and Ryono, Denis E., 4,512,988, Cl. 514-211.000.

Saab-Scania AB: *See—*
Parsson, Nils O., 4,512,609, Cl. 297-331.000.

Saben, Hugh S.: *See—*
Coulthard, T. Lionel; Townsley, Phillip M.; and Saben, Hugh S., 4,512,103, Cl. 47-1.100.

Safety Cross Mirror Co., Inc.: *See—*
Stout, Thomas R., 4,512,634, Cl. 350-632.000.

Safiuddin, Mohammed, to Westinghouse Electric Corp. General purpose and optimal length controller for cyclic duty motor drives. 4,513,232, Cl. 318-341.000.

St. John, Karl M.; Reeber, Nicholas J.; and Kerbel, Sheldon J., to Hazeltine Corporation. Ink usage estimator. 4,513,314, Cl. 358-76.000.

Saito, Akio: *See—*
Uchigaki, Takatoshi; Saito, Akio; and Yamada, Naoki, 4,512,348, Cl. 128-632.000.

Saito, Isao: *See—*
Negi, Shigeto; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; Saito, Isao; and Kitoh, Kyosuke, 4,513,145, Cl. 549-402.000.

Saito, Susumu: *See—*
Tatsuno, Kimio; Saito, Susumu; Ito, Shoichi; Terashima, Isamu; Homma, Yoshifumi; Asano, Mitsugu; and Ono, Yoshifumi, 4,513,300, Cl. 346-160.000.

Sakai, Masayuki: *See—*
Watanabe, Toshimitu; Sakai, Masayuki; Minami, Kazutoshi; and Takumi, Shigeji, 4,512,239, Cl. 98-2.030.

Sakai, Shinji: *See—*
Kinoshita, Takao; and Sakai, Shinji, 4,513,313, Cl. 358-44.000.

Sakai, Takaaki, to Osaka Suda Co. Ltd. Sea water antifouling method. 4,513,029, Cl. 427-204.000.

Sakamoto, Seiichi; and Terauchi, Kiyoshi, to Sanden Corporation. Drive bearing device for a fluid displacement apparatus. 4,512,729, Cl. 418-55.000.

Sakamoto, Toshiyuki; and Wataya, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Fuel control apparatus for an internal combustion engine. 4,512,314, Cl. 123-459.000.

Sakanoue, Kei; and Aoki, Kozo, to Fuji Photo Film Co., Ltd. Silver halide color photographic materials. 4,513,079, Cl. 430-502.000.

Sakato, Keiichiro, to Nippon Kogaku K.K. Exposure control system. 4,512,657, Cl. 355-68.000.

Sakoe, Hiroaki; and Chiba, Seibi, to Nippon Electric Co., Ltd. System operable as an automaton for recognizing continuously spoken words with reference to demi-word pair reference patterns. 4,513,435, Cl. 381-41.000.

Sakurada, Nobuaki: *See—*
Shinoda, Nobuhiko; Sakurada, Nobuaki; Kawamura, Masaharu; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,512,656, Cl. 354-475.000.

Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the low polymerization of isobutene. 4,513,166, Cl. 585-832.000.

Sakurai, Shigeru; and Hamada, Shigeki, to Mazda Motor Corporation. Exhaust gas purifying device. 4,512,786, Cl. 55-282.000.

Salimbeni, Francesco: *See—*
Robinson, Lee F.; Salimbeni, Francesco; Porcari, Guiliano; and Dente, Mario, 4,512,956, Cl. 422-270.000.

Salvagnini, Guido, to Salvagnini Transferica S.p.A. Apparatus for the automatic shearing of a sheet metal in several pieces of different size. 4,512,227, Cl. 83-104.000.

Salvagnini Transferica S.p.A.: *See—*
Salvagnini, Guido, 4,512,227, Cl. 83-104.000.

SAME S.p.A.: *See—*
Pitozzi, Luigi, 4,512,305, Cl. 123-364.000.

Sanden Corporation: *See—*
Sakamoto, Seiichi; and Terauchi, Kiyoshi, 4,512,729, Cl. 418-55.000.

Sanders Associates, Inc.: *See—*
Sebestyen, George; Sinclair, Ronald R.; Smith, John A.; Sands, Timothy B.; and Nussdorfer, Theodore J., 4,512,537, Cl. 244-3.210.
Smades, Jack E., 4,513,043, Cl. 428-113.000.
Westly, Pernie E.; and Leder, Uri, 4,512,505, Cl. 226-101.000.

Sandrik, John M.; and Pelc, Norbert J., to General Electric Company. Film-based dual energy radiography. 4,513,078, Cl. 430-496.000.

Sandrin, Romedio, to Snamprogetti S.p.A. Integrated process for producing tert.butyl alkyl ethers and butene-1. 4,513,153, Cl. 568-697.000.

Sands, Timothy B.: *See—*
Sebestyen, George; Sinclair, Ronald R.; Smith, John A.; Sands, Timothy B.; and Nussdorfer, Theodore J., 4,512,537, Cl. 244-3.210.

Sandy Hill Corporation: *See—*
Juckett, David W., 4,512,226, Cl. 83-56.000.

Sano, Hiroshi: *See—*
Komiyama, Noboru; Itoi, Hiroshi; and Sano, Hiroshi, 4,512,968, Cl. 424-48.000.

Sano, Yoshiaki, to Fujitsu Limited. Active load circuit. 4,513,252, Cl. 330-257.000.

Santangelo, Joseph G.; and Fernbacher, John M., to Air Products and Chemicals, Inc. In situ coal gasification. 4,512,403, Cl. 166-261.000.

Santoni, Cesar, to Greif Bros. Corporation. Nesting drums-method of making the same. 4,512,700, Cl. 413-4.000.

Santrade Ltd.: *See—*
Bylund, Sven O., 4,512,689, Cl. 407-40.000.

Santucci, Edward A.; and Racz, William B., to Johnson & Johnson Dental Products Company. Method for masking discoloration on teeth. 4,512,743, Cl. 433-217.000.

Saravis, Darren S.: *See—*
Saravis, Lawrence M., deceased; Stein, Jeffrey A.; and Saravis, Darren S., 4,512,617, Cl. 308-6.00C.

Saravis, Lawrence M., deceased (by Saravis, Nancy, executrix); Stein, Jeffrey A.; and Saravis, Darren S., to Barden Corporation, The. Linear ball bearing which accommodates shaft misalignment. 4,512,617, Cl. 308-6.00C.

Saravis, Nancy, executrix: *See—*
Saravis, Lawrence M., deceased; Stein, Jeffrey A.; and Saravis, Darren S., 4,512,617, Cl. 308-6.00C.

Sargent & Greenleaf, Inc.: *See—*
Remenicky, Joseph M., 4,512,167, Cl. 70-443.000.

Sarh, Branko; and Pasenau, Hartmut, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for making a surface type structural component, especially for aircraft. 4,512,837, Cl. 156-189.000.

Sasaki, Gen, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device utilizing selective oxidation and diffusion from a polycrystalline source. 4,512,074, Cl. 29-576.00W.

Sasaya, Hideaki: *See—*
Nakano, Hiromichi; Sasaya, Hideaki; Inagaki, Mitsuo; Matsui, Kazuma; and Yoshimura, Kunimasa, 4,512,728, Cl. 418-3.000.

Sato, Fumitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Information processing system. 4,513,369, Cl. 364-200.000.

Sato, Jun, to Shimano Industrial Company Limited. Fishing reel. 4,512,536, Cl. 242-218.000.

Sato, Katsuharu: *See—*
Nomura, Susumu; and Sato, Katsuharu, 4,513,408, Cl. 369-46.000.

Sato, Kazusuke: *See—*
Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, 4,512,557, Cl. 266-171.000.

Sato, Yasumasa: *See—*
Kishida, Kazuo; Yamamoto, Naoki; Nishida, Kozi; Narita, Toshihito; and Sato, Yasumasa, 4,513,111, Cl. 524-458.000.

Sato, Yoshitaka: *See—*
Hirata, Mitsuki; Sato, Yoshitaka; and Matudaira, Kaname, 4,512,413, Cl. 172-74.000.

Satosen Co., Ltd.: *See—*
Ohta, Hideo; Hakuzen, Tatuzo; Ito, Yasunori; and Takagi, Fusao, 4,512,829, Cl. 156-659.100.

Saulgeot, Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Rotary vacuum pump. 4,512,725, Cl. 417-366.000.

Saurer Diederichs Societe Anonyme: *See—*
Deborde, Albert H.; and Remond, Pierre, 4,512,375, Cl. 139-435.000.

Savage, Garry, to Institut de Recherche en Sante et en Securite du Travail du Quebec. Safety vest. 4,512,437, Cl. 182-3.000.

Sawada, Seigo: *See—*
Miyasaka, Tadashi; Sawada, Seigo; Nokata, Kenichiro; and Mutai, Masahiko, 4,513,138, Cl. 546-48.000.

Scandpower, Inc.: *See—*
Smith, Robert D., 4,512,949, Cl. 376-247.000.

Schaad, Walter; and Kull, Peter, to Sprecher & Schuh AG. High-voltage circuit breaker including cut-on resistor. 4,513,187, Cl. 200-144.0AP.

Schafer, Reinhard: *See—*
Dorr, Wolfgang; Gradel, Gerhard; Peehs, Martin; Schafer, Reinhard; and Sondermann, Thomas, 4,512,939, Cl. 264-0.500.

Schainker, Robert B.: *See—*
Cohn, Arthur; and Schainker, Robert B., 4,512,715, Cl. 415-168.000.

Schaller, Helmut F. K. Tremolo tailpiece and bridge device. 4,512,232, Cl. 84-313.000.

Schantz, Christopher A.: *See—*
Hanson, Eric G.; Hiskes, Ronald; and Schantz, Christopher A., 4,512,629, Cl. 350-96.300.

Schanz, Karl-Heinz: *See—*
Kaube, Peter; Schanz, Karl-Heinz; Vetter, Heinz; and Muller, Jens, 4,513,048, Cl. 428-188.000.

Schaub, Clyde D.: *See—*
Cegielski, John M., Jr.; Campbell, Gerald D.; and Schaub, Clyde D., 4,512,267, Cl. 110-347.000.

Scherf, Thomas W.: *See—*
La Barge, Robert L.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,512,253, Cl. 100-53.000.

Schering Corporation: *See—*
Nafissi-Varchei, M.Mehdi, 4,512,998, Cl. 514-367.000.

Scherl, Wolfgang, to Siemens Aktiengesellschaft. Method for locating and circumscribing text areas on a master which may contain text, graphics and/or image areas. 4,513,442, Cl. 382-49.000.

Scherzer, Julius; and Humphries, Adrian P., to Harshaw/Filtrol. Dealumination of faujasite-type zeolites using ion exchange resins. 4,512,961, Cl. 423-328.000.

Scheu, Friedrich, to Hewlett-Packard Company. Thermal ink jet printhead. 4,513,298, Cl. 346-140.00R.

Schick, Rupert: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,513,105, Cl. 521-56.000.

Schiessl, Henry W., to Olin Corporation. Use of a hydroquinone compound with hydrazine (1:1 molar ratio) as an oxygen-scavenging and a corrosion-inhibiting agent. 4,512,909, Cl. 252-188.280.

Schillawski, Richard D., to Stauffer Chemical Company. Chloral purification. 4,513,152, Cl. 568-492.000.

Schindler, James C.; and Jewell, Donald K., to Restaurant Technology, Inc. Apparatus for cooking eggs. 4,512,250, Cl. 99-425.000.

Schindler, Manfred: *See—*
Ficht, Reinhold; and Schindler, Manfred, 4,512,290, Cl. 123-56.0BC.

Schindlery, Ctibor, to Ciba-Geigy Corporation. New pharmaceutical preparations. 4,512,987, Cl. 514-171.000.

Schlaikjer, Carl R.: *See—*
Kuo, Han C.; Foster, Donald L.; Schlaikjer, Carl R.; Gopikanth, Mysore L.; and Dey, Arabinda N., 4,513,067, Cl. 429-101.000.

Schlicht, Raymond C.; and Skrobul, Anthony P., to Texaco Inc. Lubricant compositions containing amides of hydroxy-substituted aliphatic acids and fatty amines. 4,512,903, Cl. 252-51.50A.

Schlig, Eugene S.: *See—*
Chamberlain, Savvas G.; and Schlig, Eugene S., 4,513,431, Cl. 377-60.000.

Schlumberger Technology Corporation: *See—*
Barber, Thomas D., 4,513,376, Cl. 364-422.000.
Sinha, Bikash K.; and Gouilloud, Michel, 4,512,198, Cl. 73-703.000.

Schmidle, Claude J., to Morton Thickol, Inc. Photocurable compositions. 4,512,910, Cl. 252-188.310.

Schmidt, Erich, to MZW Maschinenfabrik Zuckermann Pachtgesellschaft mbH. Apparatus for the transverse and/or longitudinal machining of wooden workpieces. 4,512,380, Cl. 144-1.00A.

Schmidt-Ruppin, Karl H., to Kureha Chemical Industry Co., Ltd. Nasal preparation and processes for their production. 4,512,972, Cl. 424-89.000.

Schmitt, Walter; and Michel, Dieter, to Dr. Johannes Heidenhain GmbH. Measuring apparatus. 4,512,083, Cl. 33-143.00L.

Schmitz, Willard H.: *See—*
Striegel, William H.; and Schmitz, Willard H., 4,512,042, Cl. 4-496.000.

Schneider, Barbara, to Gamma Medical Products, Inc. Method and apparatus for selective removal of constituents of blood. 4,512,763, Cl. 604-5.000.

Schneider, Egon, to Krones AG Herman Kronseder Maschinenfabrik. Labeling machine. 4,512,842, Cl. 156-357.000.

Schneider, Egon: *See—*
Losel, Georg; and Schneider, Egon, 4,512,785, Cl. 55-204.000.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lee, Seok-Ho, 4,512,925, Cl. 260-397.200.

Schofield, John; and Milsom, Robert F., to U.S. Philips Corporation. Acoustic surface wave device. 4,513,262, Cl. 333-194.000.

Scholz, John A.: *See—*
Labadini, William M.; and Scholz, John A., 4,513,227, Cl. 315-290.000.

Schoonover, Kevin G., to Steam Systems and Services, Incorporated. Dual element desuperheater apparatus. 4,512,520, Cl. 239-440.000.

Schriber, Louis; Stephens, Robert E.; and Blaha, John F., to Harris Graphics Corporation. Business forms press. 4,512,256, Cl. 101-248.000.

Schroder, Ernst F., to Licentia Patent-Verwaltungs-GmbH. Electronic amplifier having a transmission factor that is variable by means of a controllable voltage, specifically an expander. 4,513,253, Cl. 330-278.000.

Schroeder, Jack A.; and Winkler, Ernel R., to Motorola, Inc. Metallization and bonding means and method for VLSI packages. 4,513,355, Cl. 361-403.000.

Schroeder, Roberto: *See—*
Nielsen, Hans C. A.; and Schroeder, Roberto, 4,512,809, Cl. 106-103.000.

Schuller, James T.; Griner, Paul K.; and Mak, Nai H., to UMC Industries, Inc. Vendor accountability system. 4,512,453, Cl. 194-1.00N.

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Schulthess, Adrian: *See—*
de Courten, Alfred; Schulthess, Adrian; and Esteve-Soler, Jose , 4,513,007, Cl. 514-555.000.

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Hartmannsgruber, Max; Kriechbaum, Kurt; Schulz, Gunter; and Guttler, Hermann, 4,512,061, Cl. 19-239.000.

Schumacher, Thomas H.: *See—*
Alverth, Ronald W.; and Schumacher, Thomas H., 4,512,564, Cl. 271-274.000.

Schwartz, Jean-Charles: *See—*
Roques, Bernard; Schwartz, Jean-Charles; and Lecomte, Jeanne-Marie, 4,513,009, Cl. 514-513.000.

Schwartz, Marie A., legal representative: *See—*
Schwartz, Sidney J., deceased, 4,513,396, Cl. 365-6.000.

Schwartz, Sidney J., deceased (by Schwartz, Marie A., legal representative), to Burroughs Corporation. Method of operating a magnetic bubble memory with a drive field that temporarily stops. 4,513,396, Cl. 365-6.000.

Schwarz, Carl E.: *See—*
Fischer, Paul M.; and Schwarz, Carl E., 4,512,882, Cl. 210-86.000.

Schwenk, Tyrone D., to United States of America, Army. Sealing tubulation and method. 4,512,488, Cl. 220-2.200.

Scientific Technology, Ltd.: *See—*
Jacobstein, Benjamin, 4,512,601, Cl. 294-1.200.

SCM Corporation: *See—*
Abbey, Kirk J.; Erickson, James R.; and Kunz, Barbara L., 4,512,860, Cl. 204-181.00C.

Scott, Dale K.; and Calvert, Rodney K., to Mead Corporation, The. Locking mechanism for wrap-around cartons. 4,512,135, Cl. 53-285.000.

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Chainer, Timothy J.; Scranton, Robert A.; and Worthington, Thomas K., 4,513,437, Cl. 382-3.000.

Scrymgeour, Andrew H.: *See—*
Gilbert, Clark J.; Hassialis, Menelaos D.; Scrymgeour, Andrew H.; and Vera, Samuel I., 4,512,610, Cl. 299-13.000.

Sebestyen, George; Sinclair, Ronald R.; Smith, John A.; Sands, Timothy B.; and Nussdorfer, Theodore J., to Sanders Associates, Inc. Canard control assembly for a projectile. 4,512,537, Cl. 244-3.210.

Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdon of Great Britian and Northern Ireland of Whitehall, The: *See—*
Andrews, Beatrice M.; Carr, Neil; Gray, George W.; and Hogg, Christine, 4,512,636, Cl. 350-350.00R.

Seegmiller, Dennis F.: *See—*
Lefevre, Donald K.; Dennis, Patrick W.; and Seegmiller, Dennis F., 4,513,290, Cl. 343-745.000.

Seely, James R., to Marketing Displays, Inc. Plastic poster frame with articulated bias member. 4,512,094, Cl. 40-156.000.

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Blevins, Milton L.; and Seiter, Charles R., 4,512,178, Cl. 72-393.000.

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Binnig, Rupert; Gerlach, Gunter; Nilles, Peter; and Pankatz, Jurgen, 4,512,811, Cl. 134-10.000.

Seminski, Robert B.: *See—*
Feitzinger, Eduard; and Seminski, Robert B., 4,512,654, Cl. 355-27.000.

Semperit Aktiengesellschaft: *See—*
Waniek, Kurt; and Tichy, Heinz, 4,513,046, Cl. 428-156.000.

Sendzimir, Tadeusz. Continuous spray casting. 4,512,384, Cl. 164-46.000.

Sentrol, Inc.: *See—*
Abel, William E., 4,513,354, Cl. 361-399.000.

Seppelt, Wolfgang: *See—*
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SEPPIC: *See—*
Brancq, Bernard; and Malandain, Michel, 4,513,019, Cl. 427-3.000.

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Striebel, Edmund E.; Matthews, John A.; Sepulveda, Domingo; and Pane, Francis C., Jr., 4,512,158, Cl. 60-740.000.

Servadio, Robert. Punching bag rebound adjuster. 4,512,568, Cl. 272-78.000.

SerVend International, Inc.: *See—*
Landers, Jerry L., 4,512,502, Cl. 222-413.000.

Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Difluoromethoxyphenyl thiophosphates as pesticides. 4,512,984, Cl. 514-147.000.

Sexton, John M., to Pressure Systems, Inc. Air purification system monitor. 4,512,191, Cl. 73-337.500.

Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., to General Electric Company. Automated Q-line circuit breaker. 4,513,268, Cl. 335-35.000.

Sferra, James P.: *See—*
Ready, Robert J.; Whipple, Donald E.; and Sferra, James P., 4,512,098, Cl. 40-610.000.

Shah, Dhiraj M.: *See—*
Balko, Alexander B.; and Shah, Dhiraj M., 4,512,338, Cl. 128-1.00R.

Shanel, Kathleen A. Holder for rubber dental dam. 4,512,742, Cl. 433-136.000.

Sharkness, James E.: *See—*
Macur, George J.; Pratt, W. Robert; and Sharkness, James E., 4,512,900, Cl. 210-748.000.

Sharp, Charles C.: *See—*
Jamison, Matthew; and Sharp, Charles C., 4,512,050, Cl. 6-1.000.

Sharp, David G.: *See—*
Moran, David P. J.; and Sharp, David G., 4,513,017, Cl. 426-603.000.

Shaw, Gerard J.: *See—*
Mehrotra, Deepak; Shaw, Gerard J.; Go, Jok Y.; and Kant, Rajni, 4,512,076, Cl. 29-578.000.

Shaw, Malcolm G.: *See—*
Anderton, Kenneth; Hall, Nigel; Parton, Brian; Renfrew, Andrew H. M.; and Shaw, Malcolm G., 4,512,773, Cl. 8-657.000.

Shea, Donald M.: *See—*
Wyle, Charles; and Shea, Donald M., 4,512,947, Cl. 264-343.000.

Sheets, Duane R., to Electronic Data Systems Corporation. Local area network. 4,513,373, Cl. 364-200.000.

Sheinbaum, Itzhak. Flowing geothermal wells and heat recovery systems. 4,512,155, Cl. 60-641.200.

Shell Oil Company: *See—*
Kieffer, Eduard P.; and Sie, Swan T., 4,512,877, Cl. 208-136.000.

Shenk, William H., to Honeywell Information Systems Inc. Method and apparatus for generating a repetitive serial pattern using a recirculating shift register. 4,513,392, Cl. 364-900.000.

Shepherd, Thomas I.: *See—*
Bowersox, Bruce V.; and Shepherd, Thomas I., 4,512,430, Cl. 177-163.000.

Sheppard, William D.: *See—*
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Sherwood, Bob E.: *See—*
Revici, Emanuel; Sherwood, Bob E.; Benecke, Herman P.; Rice, John M.; and Geisler, Richard W., 4,513,008, Cl. 514-560.000.

Shibamoto, Takeshi: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; and Tanaka, Koji, 4,513,327, Cl. 358-310.000.

Shibata, Shin; Aoyama, Akira; and Mino, Tetsuya, to Kabushiki Kaisha Suwa Seikosha. Magnetic head for perpendicular magnetization recording. 4,513,337, Cl. 360-121.000.

Shibuya, Fukashi: *See—*
Yamazaki, Kaoru; and Shibuya, Fukashi, 4,513,126, Cl. 526-87.000.

Shigaki, Masanobu, to Kabushiki Kaisha Takuma. City refuse incinerator for the prevention of clinker formation. 4,512,266, Cl. 110-204.000.

Shigeki, Kiyoshi; and Maeno, Kunio, to Toyoda Gosei Co., Ltd. Colored weather strip. 4,513,044, Cl. 428-122.000.

Shigemizu, Akihiko, to Takachiho Kogyo Yuugen Kaisha; and Kabushiki Kaisha Kansai Kougu Seisakusho. Crusher for concrete structures. 4,512,524, Cl. 241-101.700.

Shigihara, Shigeyuki; and Tadokoro, Masahiro, to Shinko Electric Co. Ltd. Apparatus for and method of desulfurizing and heating molten metal. 4,512,801, Cl. 75-58.000.

Shimano Industrial Company Limited: *See—*
Sato, Jun, 4,512,536, Cl. 242-218.000.

Shimazaki, Hiroshi: *See—*
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,512,893, Cl. 210-500.200.

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Shigihara, Shigeyuki; and Tadokoro, Masahiro, 4,512,801, Cl. 75-58.000.

Shino, Kunihiko; and Matoba, Tamiji. Method for making a sanitary drink. 4,512,983, Cl. 424-195.100.

Shinoda, Nobuhiko; Sakurada, Nobuaki; Kawamura, Masaharu; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, to Canon Kabushiki Kaisha. Camera system. 4,512,656, Cl. 354-475.000.

Shioya, Yoshimi: *See—*
Miyamoto, Hidekazu; Shioya, Yoshimi; Maeda, Mamoru; and Takagi, Mikio, 4,513,026, Cl. 427-85.000.

Shipley Company Inc.: *See—*
Valayil, Silvester; Abu-Moustafa, Magda; and Benjamin, Terry A., 4,512,818, Cl. 148-6.14R.

Shiraishi, Hiroshi: *See—*
Isobe, Asao; Makino, Daisuke; and Shiraishi, Hiroshi, 4,513,077, Cl. 430-270.000.

Shirck, James R.: *See—*
Jeffrey, Frank R., III; and Shirck, James R., 4,513,073, Cl. 430-65.000.

Shire, Steven J.: *See—*
Jones, Andrew J. S.; Olson, Kenneth C.; and Shire, Steven J., 4,512,922, Cl. 260-112.00R.

Shlichta, Paul J., to United States of America, National Aeronautics and Space Administration. Method for growth of crystals by pressure reduction of supercritical or subcritical solution. 4,512,846, Cl. 156-623.00Q.

Shofner, Frederick M., to ppm, Inc. Apparatus and methods for aeromechanical and electrodynamic release and separation of foreign matter from fiber. 4,512,060, Cl. 19-200.000.

Shoji, Fusaji; Takemoto, Issei; Kataoka, Fumio; Yokono, Hitoshi; and Isogai, Tokio, to Hitachi, Ltd. Heat-resistant silicone block polymer. 4,513,132, Cl. 528-21.000.

Shop-Vac Corporation: *See—*
Berfield, Robert C., 4,512,713, Cl. 415-119.000.

Shroot, Braham: *See—*
Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,513,011, Cl. 514-730.000.
Maignan, Jean; and Shroot, Braham, 4,512,985, Cl. 514-301.000.

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Shumway, Merwin S.; and Shumway, Earl D., 4,512,881, Cl. 209-270.000.

Shumway, Merwin S.; and Shumway, Earl D. Machine for recovering precious metal values from ore. 4,512,881, Cl. 209-270.000.

Sidline, George B., to Elkus, Eugene S. Magnetic card read-out and timing circuitry. 4,513,199, Cl. 235-449.000.

Sie, Swan T.: *See—*
Kieffer, Eduard P.; and Sie, Swan T., 4,512,877, Cl. 208-136.000.

Sieben, Joannes H. F. C., to U.S. Philips Corporation. Storage case for a magnetic-tape cassette. 4,512,470, Cl. 206-387.000.

Siegel, Hardo: *See—*
Fischer, Rolf; Weitz, Hans-Martin; and Siegel, Hardo, 4,513,150, Cl. 568-385.000.

Sieling, Frederick W.: *See—*
Bondoc, Alfredo A.; Flood, Eugene J.; and Sieling, Frederick W., 4,513,045, Cl. 428-137.000.

Siemens Aktiengesellschaft: *See—*
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Scherl, Wolfgang, 4,513,442, Cl. 382-49.000.

Siemens-Allis, Inc.: *See—*
Farag, Samir F.; Allen, Edgar W.; and Little, Thomas R., 4,513,180, Cl. 200-50.00R.
McClellan, David P.; and Kussy, Frank W., 4,513,267, Cl. 335-16.000.

Siemens Gammasonics, Inc.: *See—*
Domnanovich, James R.; and Erwin, William D., 4,513,204, Cl. 250-496.100.

Sigel, Carl W.: *See—*
Duch, David S.; Nichol, Charles A.; and Sigel, Carl W., 4,512,992, Cl. 514-258.000.

Signode Corporation: *See—*
Kobiella, Robert J., 4,512,844, Cl. 156-510.000.

Sigwardt, Peter L., to Getty Oil Company. Flow rate controller. 4,512,187, Cl. 73-198.000.
Simon, Donald R., to Prutec Limited. Thin-film, high pressure fuel cell. 4,513,066, Cl. 429-42.000.
Simon, John: *See—*
Sweatman, Ronald E.; Freeman, Earl R.; Gottschling, John; and Simon, John, 4,512,405, Cl. 166-278.000.
Simon, Ralph, to Chevron Research Company. Miscible displacement drive for enhanced oil recovery in low pressure reservoirs. 4,512,400, Cl. 166-245.000.
Simonet, Guy; and Hay, Leon, to L'Air Liquide, Societe Anonyme pour l'Etude l'Exploitation des Procedes Georges Claude. Adsorption processes. 4,512,778, Cl. 55-26.000.
Simpson, Howard D.: *See—*
Angmorter, Paul K.; Simpson, Howard D.; and Richardson, Ryden L., 4,513,097, Cl. 502-211.000.
Sinclair, Ronald R.: *See—*
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Singer Company, The: *See—*
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Galuschak, George; and Stomber, Richard J., 4,512,086, Cl. 33-324.000.
Houser, John, Jr.; and Laughon, Thomas C., 4,513,381, Cl. 364-475.000.
Laing, Gordon E.; Harbeck, Martin E.; Jones, John E.; Sumerau, William R.; and Glenn, William K., III, 4,512,057, Cl. 15-320.000.
Singh, Baldev: *See—*
Lesher, George Y.; and Singh, Baldev, 4,512,993, Cl. 514-275.000.
Singleton, Daniel A.: *See—*
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Sinha, Bikash K.; and Gouilloud, Michel, to Schlumberger Technology Corporation. Surface acoustic wave sensors. 4,512,198, Cl. 73-703.000.
Siol, Werner: *See—*
Suetterlin, Norbert; Arndt, Peter J.; Heil, Ernst; Siol, Werner; Tilch, Willi; and Wopker, Wilhelm, 4,513,118, Cl. 525-81.000.
SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; Herrmann, Gerhard; and Bauer, Bernhard, 4,512,670, Cl. 384-147.000.
Olschewski, Armin; Herrmann, Gerhard; Bauer, Bernhard; and Zirk, Elisabeth, 4,512,672, Cl. 384-477.000.
Skogward, Kenneth O. E., to Husqvarna Aktiebolag. Feeding mechanism in a sewing machine. 4,512,273, Cl. 112-315.000.
Skrobul, Anthony P.: *See—*
Schlicht, Raymond C.; and Skrobul, Anthony P., 4,512,903, Cl. 252-51.50A.
Skukowski, William T., to Tropicana Products, Inc. UPC Scannable marking composition and applications thereof. 4,513,027, Cl. 427-162.000.
Slade, Mark N.: *See—*
Abbott, James B.; Kohn, Ernest O.; Berry, Christopher; and Slade, Mark N., 4,512,172, Cl. 72-68.000.
Sledmere, Alan B., to Klinger AG. Magnetically operated liquid level indicator. 4,512,190, Cl. 73-319.000.
Smades, Jack E., to Sanders Associates, Inc. Precision wire grid glass digitizing tablets. 4,513,043, Cl. 428-113.000.
Small Precision Tools, Inc.: *See—*
Ellett, Kenneth W.; and Glutz, Peter, 4,513,190, Cl. 219-56.210.
Small, Vincent J., to Boeing Company, The. Digital conversion circuit and method for testing digital information transfer systems based on serial bit communication words. 4,513,419, Cl. 371-29.000.
Smith, Barry L.: *See—*
Schuller, James T.; Smith, Barry L.; and Griner, Paul K., 4,512,454, Cl. 194-1.00D.
Smith, David R., to Hesston Corporation. Flat fold implement frame. 4,512,416, Cl. 172-776.000.
Smith, Fred J., to Jayem Dialer Corp. Automatic calling systems for accessing communications networks. 4,513,175, Cl. 179-18.0BA.
Smith, Jack D.: *See—*
Foran, Charles D.; and Smith, Jack D., 4,512,694, Cl. 409-12.000.
Smith, John A.: *See—*
Sebestyen, George; Sinclair, Ronald R.; Smith, John A.; Sands, Timothy B.; and Nussdorfer, Theodore J., 4,512,537, Cl. 244-3.210.
Smith, Peter L.: *See—*
Gorman, Anthony G.; Smith, Peter L.; and Barrett, Paul Q., 4,513,413, Cl. 370-30.000.
Smith, Robert D., to Scandpower, Inc. Power performance monitoring system for nuclear reactor fuel core. 4,512,949, Cl. 376-247.000.
Smith, Russell G. Seal with preformed V-shaped packing rings and method. 4,512,586, Cl. 277-124.000.
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Fattore, Vittorio; Notari, Bruno; Paggini, Alberto; and Lagana , Vincenzo, 4,513,100, Cl. 502-303.000.
Gervasio, Vincenzo; and Dinelli, Dino, 4,513,206, Cl. 290-4.00C.
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Snap-on Tools Corporation: *See—*
Barnhill, Martin L., III; and Pagac, William T., 4,512,220, Cl. 81-121.100.
Christophersen, Steven L., 4,512,222, Cl. 81-464.000.
Snyder, Warren E., to Dresser Industries, Inc. Method and apparatus for controlling air to gas ratio in gas engines. 4,512,304, Cl. 123-344.000.
Societe Anonyme dite: L'Oreal: *See—*
Maignan, Jean; and Shroot, Braham, 4,512,985, Cl. 514-301.000.
Societe Civile Bioprojet: *See—*
Roques, Bernard; Schwartz, Jean-Charles; and Lecomte, Jeanne-Marie, 4,513,009, Cl. 514-513.000.
Societe d'Etudes et de Constructions Electriques et Mecaniques Secem: *See—*
Hartmann, Michel, 4,512,738, Cl. 432-247.000.
Societe Nationale d'Etude de Constudies de Mateurs d'Aviation: *See—*
Mouton, Pierre C., 4,512,722, Cl. 417-63.000.
Societe Nationale Industrielle et Aerospatiale: *See—*
Devienne, Jules H. P., 4,512,538, Cl. 244-122.0AF.
Societe Pour L'Etude Et La Fabrication De Circuits Integres Speciaux - E.F.C.I.S.: *See—*
Sokoloff, Boris, 4,513,265, Cl. 333-214.000.
Soderberg, Jan: *See—*
Edgren, Anders; Soderberg, Jan; and Bergstrom, Bengt, 4,513,106, Cl. 521-58.000.
Sogabe, Toshio: *See—*
Nakagawa, Shinichi; Ihara, Kiyohiko; and Sogabe, Toshio, 4,513,129, Cl. 526-249.000.
Sokoloff, Boris, to Societe Pour L'Etude Et La Fabrication De Circuits Integres Speciaux - E.F.C.I.S. 3-Phase switched capacitor circuit having an inductive characteristic. 4,513,265, Cl. 333-214.000.
Soldavini, Teodoro. Grass cutting apparatus. 4,512,144, Cl. 56-202.000.
Solheim, Karsten. Set of golf clubs. 4,512,577, Cl. 273-77.00A.
Somers, Lowell. Benzoylecgonine or benzoylnorecgonine as active agents for the treatment of rheumatoid arthritis. 4,512,996, Cl. 514-304.000.
Somerville Belkin Industries Limited: *See—*
Zimmermann, John, 4,512,511, Cl. 229-15.000.
Sona-Tool Development Ltd.: *See—*
Kompanek, Harry W.; Ligman, James R.; and Plambeck, Eric D., 4,512,402, Cl. 166-249.000.
Sondermann, Thomas: *See—*
Dorr, Wolfgang; Gradel, Gerhard; Peehs, Martin; Schafer, Reinhard; and Sondermann, Thomas, 4,512,939, Cl. 264-0.500.
Sony Corporation: *See—*
Hirai, Jun; and Kaneko, Masayasu, 4,513,311, Cl. 358-40.000.
Otsuka, Toru, 4,513,334, Cl. 360-75.000.
Sopp, Samuel W.: *See—*
Howe, Michael W.; and Sopp, Samuel W., 4,512,823, Cl. 148-113.000.
Soule Fer et Froid S.A.: *See—*
Huon de Kermadec, Jean, 4,512,259, Cl. 104-208.000.
Souquet, Jean-Louis: *See—*
Carette, Brigitte; Kone, Ali; Souquet, Jean-Louis; Ribes, Michel; and Maurin, Maurice, 4,513,070, Cl. 429-193.000.
Southgate, John P.: *See—*
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,512,319, Cl. 123-492.000.
Spake, Ned B.: *See—*
Rodriguez, Larry A.; Padilla, Antonio A.; and Spake, Ned B., 4,512,387, Cl. 165-1.000.
Sparer, Randall V.; and Bhaskar, Ravi K., to Merck & Co., Inc. Variable permeability liquid crystalline membranes. 4,513,034, Cl. 428-1.000.
Sparta, Inc.: *See—*
Henshaw, Philip D., 4,513,441, Cl. 382-43.000.
Spater, Stuart S.: *See—*
Kolton, Chester; and Spater, Stuart S., 4,512,093, Cl. 40-20.00R.
Spear Harvesters: *See—*
Lund, William J., 4,512,145, Cl. 56-327.00A.
Spears, James R., to Beth Israel Hospital Association, The. Method of treatment of atherosclerosis and a balloon catheter for same. 4,512,762, Cl. 604-21.000.
Speca, Anthony N., to National Distillers and Chemical Corporation. Intermetallic compounds of polymeric transition metal oxide alkoxides and catalytic use thereof. 4,513,095, Cl. 502-111.000.
Specht, Theodore R.: *See—*
Novak, Paul G.; and Specht, Theodore R., 4,513,243, Cl. 323-361.000.
Spector, George: *See—*
Barfield, Michelle D.; and Spector, George, 4,513,035, Cl. 428-11.000.
Leininger, Glenn; and Spector, George, 4,512,091, Cl. 37-278.000.
Spectrospin AG: *See—*
Ernst, Richard R., 4,513,247, Cl. 324-309.000.
Speedy Automatic Chimney Sweep, Inc.: *See—*
Boehland, Burnell G.; and Coutts, Donald G., 4,512,055, Cl. 15-249.000.
Spencer, Billie M.: *See—*
Pike, Lawrence W.; Zscheile, John W., Jr.; and Spencer, Billie M., 4,513,285, Cl. 343-5.0PN.
Sperry Corporation: *See—*
Blakeslee, Edward A., 4,512,140, Cl. 56-11.600.
Clark, Thomas E.; and Burilla, Charles T., 4,513,025, Cl. 427-68.000.
Lefevre, Donald K.; Dennis, Patrick W.; and Seegmiller, Dennis F., 4,513,290, Cl. 343-745.000.
Musser, Glenn A.; Rayfield, James F.; and Pucher, Richard A., 4,512,139, Cl. 56-11.200.
Pike, Lawrence W.; Zscheile, John W., Jr.; and Spencer, Billie M., 4,513,285, Cl. 343-5.0PN.
Splinter, Bob C., to Peckson USA Corp. Inner and outer waste storage vaults with leak-testing accessibility. 4,513,205, Cl. 250-507.100.

SPOFA, spojene podniky pro zdravotnickou vyrobu: *See—*
Flegel, Martin; Pospisek, Jan; Picha, Josef; Pichova, Drahomira; Krojidlo, Milan; and Kolinsky, Jiri, 4,512,923, Cl. 260-112.5LH.
Wichterle, Otto, 4,512,461, Cl. 206-5.100.

Sponco Mfg., Inc.: *See—*
Howell, Donald J., 4,512,439, Cl. 182-66.000.

Spooner, Jerrold C., to General Electric Company. Method of tool recovery in threadcutting apparatus. 4,513,380, Cl. 364-474.000.

Sports Marketing, Inc.: *See—*
Vacanti, Eugene J., 4,512,037, Cl. 2-2.000.

Sprague Electric Company: *See—*
Coleman, James H., 4,513,350, Cl. 361-321.000.

Sprecher & Schuh AG: *See—*
Schaad, Walter; and Kull, Peter, 4,513,187, Cl. 200-144.0AP.

Sprecker, Mark A.: *See—*
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,512,918, Cl. 252-522.00R.

Sprehe, Josef: *See—*
Niemann, Hans-Joachim; and Sprehe, Josef, 4,512,957, Cl. 423-3.000.

Sprunt, Katherine: *See—*
Hodes, David S.; Leidy, Grace; Sprunt, Katherine; and Weldy, Piper, 4,513,083, Cl. 435-68.000.

SRI International: *See—*
Ng, Steven Y.; Penhale, Donald W.; and Heller, Jorge, 4,513,143, Cl. 549-335.000.

Sriram, Sambamurthy; Steinbruegge, Kenneth; and Supertzi, Emmanuel, to Westinghouse Electric Corp. Wire grid polarizer. 4,512,638, Cl. 350-372.000.

Staar, Marcel J., to Staar S. A. Helicoidal loading and unloading mechanism for disc player apparatus. 4,513,409, Cl. 369-77.100.

Staar S. A.: *See—*
Staar, Marcel J., 4,513,409, Cl. 369-77.100.

Staffin, Robert; Girrell, Carol A.; and Fronzoni, Mario A., to Procedyne Corp. Method for metal treatment using a fluidized bed. 4,512,821, Cl. 148-16.500.

Stafford, Irvin G.: *See—*
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., 4,513,278, Cl. 340-347.0DA.

Standard Microsystems Corporation: *See—*
Herman, Morton B., 4,513,174, Cl. 178-22.080.

Standard Oil Company: *See—*
Hazel, James A., 4,512,398, Cl. 166-70.000.

Standard Oil Company (Indiana): *See—*
Connolly, John F.; Wennerberg, Arnold N.; and Waters, Robert F., 4,513,096, Cl. 502-185.000.

Stanley Electric Co., Ltd.: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,513,360, Cl. 363-20.000.

Stargardter, Hans, to United Technologies Corporation. Tandem fan stage for gas turbine engines. 4,512,718, Cl. 416-231.00B.

Stark, Walter. Housing for cross flow heat exchanger. 4,512,397, Cl. 165-166.000.

State Industries, Inc.: *See—*
Collins, Denver G., 4,512,289, Cl. 122-380.000.

Stauffer Chemical Company: *See—*
Schillawski, Richard D., 4,513,152, Cl. 568-492.000.
Walker, Francis H., 4,512,796, Cl. 71-88.000.

Ste d'Application Platique Mecanique et Electronicque Plastimechanique S.A.: *See—*
Dronet, Jean-Marc; and Resseguier, Jacques, 4,512,734, Cl. 425-305.100.

Steam Systems and Services, Incorporated: *See—*
Schoonover, Kevin G., 4,512,520, Cl. 239-440.000.

Stein, Jeffrey A.: *See—*
Saravis, Lawrence M., deceased; Stein, Jeffrey A.; and Saravis, Darren S., 4,512,617, Cl. 308-6.00C.

Steinberg, Eckard, to Kraftwerk Union Aktiengesellschaft. Method for manufacturing a cladding tube of a zirconium alloy for nuclear reactor fuel of a nuclear reactor fuel assembly. 4,512,819, Cl. 148-11.50F.

Steinbruegge, Kenneth: *See—*
Sriram, Sambamurthy; Steinbruegge, Kenneth; and Supertzi, Emmanuel, 4,512,638, Cl. 350-372.000.

Steiner, Alois, to Maschinenfabrik Sulzer-Ruti AG. Lamellae comb for weaving apparatus, particularly for a weaving rotor in a multiple longitudinal traversing shed weaving loom, and method for manufacturing the same. 4,512,374, Cl. 139-191.000.

Stenvall, Carl-Johan, to NPI New Products Investment AB. Roller skate. 4,512,590, Cl. 280-11.230.

Stephens, Kenneth D., to Communications Design Group, Inc. Frequency selective antenna. 4,513,293, Cl. 343-840.000.

Stephens, Robert E.: *See—*
Schriber, Louis; Stephens, Robert E.; and Blaha, John F., 4,512,256, Cl. 101-248.000.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Singh, Baldev, 4,512,993, Cl. 514-275.000.

Sternad, Mikael: *See—*
Ling, Bernt; and Sternad, Mikael, 4,512,711, Cl. 414-786.000.

Sterner Lighting Systems, Incorporated: *See—*
Nielson, Wayne G., 4,513,359, Cl. 362-389.000.

Stevenson, Charles K., to Midland Gas Extractors, Inc. Gas extractor. 4,512,783, Cl. 55-160.000.

Stewart, Roger G.: *See—*
Ipri, Alfred C.; and Stewart, Roger G., 4,513,397, Cl. 365-185.000.

Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Puhringer, Franz, 4,512,223, Cl. 82-2.500.

Stiegler, Hartmut, to Buderus Aktiengesellschaft. Muffle oven for heating foodstuffs. 4,512,327, Cl. 126-21.00A.

Stiffey, Arthur V.: *See—*
Hannan, Patrick J.; Stiffey, Arthur V.; Jarvis, N. Lynn; and Wohltjen, Henry, 4,513,280, Cl. 340-632.000.

Stinson, Walter J.: *See—*
Jandrasi, Frank J.; Pampell, Davy G.; and Stinson, Walter J., 4,512,363, Cl. 137-375.000.

Stokes, Robert B.: *See—*
Yen, Kuo-Hsiung; Stokes, Robert B.; Lau, Kei-Fung; Kong, Alvin M.; and Kagiwada, Reynold S., 4,513,261, Cl. 333-194.000.

Stoll, Donald H.: *See—*
Woodward, Stewart A.; Hilty, Ronald L.; and Stoll, Donald H., 4,512,199, Cl. 73-725.000.

Stomber, Richard J.: *See—*
Galuschak, George; and Stomber, Richard J., 4,512,086, Cl. 33-324.000.

Stone, Orison W., to Pack Image, Inc. Apparatus for erecting a bottle carrier. 4,512,755, Cl. 493-92.000.

Stout, Thomas R., to Safety Cross Mirror Co., Inc. Mounting assembly for school bus mirror. 4,512,634, Cl. 350-632.000.

Strage, Jan W.: *See—*
Edlund, Olof A.; Enser, Mats A.; Strage, Jan W.; Thunberg, Svante B.; and Wallmark, Erik I., 4,513,393, Cl. 364-900.000.

Straubel, Max: *See—*
Hofer, Gerald; Straubel, Max; and Eheim, Franz, 4,512,308, Cl. 123-383.000.

Strauchler, Irving D.: *See—*
Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,512,038, Cl. 3-1.900.

Stravitz, David M., to Lebo/Peerless Corp. Cassette storage device. 4,512,468, Cl. 206-387.000.

Streck, Roland: *See—*
Kampf, Wolfgang; Streck, Roland; and Haag, Horst G., 4,512,926, Cl. 260-398.000.

Striebel, Edmund E.; Matthews, John A.; Sepulveda, Domingo; and Pane, Francis C., Jr., to United Technologies Corporation. High blockage diffuser with means for minimizing wakes. 4,512,158, Cl. 60-740.000.

Striegel, William H.; and Schmitz, Willard H., to Kohler Co. Railing for spa or the like. 4,512,042, Cl. 4-496.000.

Strimling, Walter E. Pump adaptable for use as an artificial heart. 4,512,726, Cl. 417-412.000.

Stritzel, Gene A., to Gleason Works, The. Differential assembly having means for locking and positioning axle shafts therein. 4,512,211, Cl. 74-745.000.

Stroh, Alvin L., to McMillin Wire and Plating, Inc. Plastic bag rack for checkstand. 4,512,540, Cl. 248-95.000.

Struck, Bernd D.; Dias, Francisco J.; Luhleich, Hartmut; and Paffen nee Siebert, Ursula, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of producing an electrode usable as a flow-through anode. 4,512,858, Cl. 204-104.000.

Strutz, Winfried: *See—*
Marsoner, Hermann; Ritter, Christoph; Kleinhappl, Erich; and Strutz, Winfried, 4,512,953, Cl. 422-67.000.

Stump, Lee E., to Timesavers, Inc. Endless abrasive belts. 4,512,110, Cl. 51-141.000.

Suekane, Yasuhiro: *See—*
Noda, Ichiro; Suekane, Yasuhiro; and Nakao, Hisao, 4,512,889, Cl. 210-225.000.

Suetterlin, Norbert; Arndt, Peter J.; Heil, Ernst; Siol, Werner; Tilch, Willi; and Wopker, Wilhelm, to Rohm GmbH. Emulsion polymers for modifying impact strength. 4,513,118, Cl. 525-81.000.

Suffi, Louis; Golden, James E.; and Jaycox, Donald F., to Northern Telecom Limited. Aerial cable terminal. 4,513,171, Cl. 174-41.000.

Sugerman, Gerald; and Monte, Salvatore J., to Kenrich Petrochemicals, Inc. Pyrophosphato titanate adducts. 4,512,928, Cl. 260-410.90R.

Sugiyama, Keiichi, to Yamaha Hatsudoki Kabushiki Kaisha. Intake control system for multi-valve type internal combustion engine. 4,512,311, Cl. 123-432.000.

Suica, David E.: *See—*
Hennekes, Daniel M.; Kolde, Richard A.; and Suica, David E., 4,512,709, Cl. 414-729.000.

Sumerau, William R.: *See—*
Laing, Gordon E.; Harbeck, Martin E.; Jones, John E.; Sumerau, William R.; and Glenn, William K., III, 4,512,057, Cl. 15-320.000.

Sumitomo Chemical Company, Limited: *See—*
Oi, Naobumi; and Kitahara, Hajimu, 4,512,898, Cl. 210-656.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kita, Yasuo; Moriya, Michio; and Yoshida, Kenichi, 4,512,615, Cl. 303-97.000.
Yamanishi, Toru; Tsuneishi, Katsuyuki; and Yoshida, Masaaki, 4,512,281, Cl. 118-627.000.

Sumitomo Metal Industries, Ltd.: *See—*
Hayashi, Chihiro; and Nakasuji, Kazuyuki, 4,512,177, Cl. 72-368.000.
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, 4,512,368, Cl. 137-561.00A.

Sumitomo Metal Mining Company Limited: *See—*
Miyazaki, Shu, 4,512,843, Cl. 156-644.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Oiwa, Isao, 4,512,664, Cl. 366-76.000.

Sumiya, Mitsuo: *See—*
Kamiya, Masashi; Ueda, Katsunobu; Sumiya, Mitsuo; and Tsukada, Tameyasu, 4,512,626, Cl. 350-6.800.

Sumner, Cyril R.: *See—*
Regalbuto, John A.; Patton, James B.; and Sumner, Cyril R., 4,512,418, Cl. 175-4.560.
Suncast Corporation: *See—*
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,512,361, Cl. 137-355.270.
Sundstrand Corporation: *See—*
Hansen, Wayne W., 4,513,218, Cl. 310-270.000.
Williams, Keith R., 4,512,723, Cl. 417-222.000.
Sundstrand Data Control, Inc.: *See—*
Peters, Rex B., 4,512,192, Cl. 73-505.000.
Sunnen Products Company: *See—*
Vanderwal, Frank E., Jr.; and Davis, James K., 4,512,116, Cl. 51-347.000.
Sunwood Energy Products, Inc.: *See—*
Peachey, Kenneth G., 4,512,334, Cl. 126-430.000.
Superior Machinery Inc.: *See—*
Theien, Clarence M., 4,512,114, Cl. 51-288.000.
Supertzi, Emmanuel: *See—*
Sriram, Sambamurthy; Steinbruegge, Kenneth; and Supertzi, Emmanuel, 4,512,638, Cl. 350-372.000.
Surman, William K. Station locking rotary indexing table. 4,512,214, Cl. 74-820.000.
Suzaki, Masayuki; and Kanno, Tetuo, to Ricoh Co., Ltd. Printer cartridge and cartridge retaining means. 4,512,674, Cl. 400-208.000.
Suzuki, Fujio: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; and Tanaka, Koji, 4,513,327, Cl. 358-310.000.
Suzuki, Go; and Michishita, Kazuo, to NGK Insulators, Ltd. Ceramic body having a metallized layer. 4,513,062, Cl. 428-565.000.
Suzuki, Haruo: *See—*
Endoh, Kazunori; and Suzuki, Haruo, 4,512,237, Cl. 91-369.00A.
Suzuki, Isao: *See—*
Munekata, Kenichi; Doi, Yoshio; Suzuki, Isao; and Doi, Shigeru, 4,513,366, Cl. 364-167.000.
Suzuki, Junji: *See—*
Tanabe, Kenzo; and Suzuki, Junji, 4,513,209, Cl. 307-350.000.
Suzuki, Shigemi; and Mizukane, Masahiro, to Toto Ltd. Sliding guide. 4,512,616, Cl. 308-3.00R.
Suzuki, Shunsuke; Mori, Masanobu; and Miyata, Takeshi, to Nissan Motor Company, Limited. Die casting process and apparatus therefor. 4,512,383, Cl. 164-35.000.
Suzuki, Togi: *See—*
Kunugi, Katsuo; Suzuki, Togi; Konishi, Tadashi; and Ohwaki, Shinji, 4,513,114, Cl. 524-706.000.
Svay, Leng; Moriguchi, Haruhiko; and Inui, Toshiharu, to Fuji Xerox Co., Ltd. Heat-sensitive recording head. 4,513,296, Cl. 346-76.0PH.
Swagert, Dean R.: *See—*
Reslow, Leif F.; Nieman, Mark D.; and Swagert, Dean R., 4,512,254, Cl. 101-157.000.
Swanson, Carl A. Reversible drill and drive tool holder. 4,512,693, Cl. 408-239.00R.
Swearingen, Judson S. Process of purifying a recirculating working fluid. 4,512,851, Cl. 203-88.000.
Sweatman, Ronald E.; Freeman, Earl R.; Gottschling, John; and Simon, John, to Hughes Tool Company. Pneumatic transfer of solids into wells. 4,512,405, Cl. 166-278.000.
Sweet, Steven W. Heat circulating fireplace grate assembly for gas fired logs. 4,512,329, Cl. 126-121.000.
Swenson, Roy S.: *See—*
Brandon, Ralph E.; Davis, Charles J.; Ring, Michael; and Swenson, Roy S., 4,512,849, Cl. 162-157.200.
Swiss Aluminium Ltd.: *See—*
Haller, Walter, 4,512,386, Cl. 164-467.000.
Sylvester, John D., to Amscomatic, Inc. Method of folding T-shirts and folded shirt arrangement resulting therefrom. 4,512,464, Cl. 206-292.000.
Syntex (U.S.A.), Inc.: *See—*
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,512,990, Cl. 514-225.000.
Szala, Lawrence E.: *See—*
Brun, Milivoj K.; Lee, Minyoung; and Szala, Lawrence E., 4,512,946, Cl. 264-332.000.
Szwarc, Raphael, to United States of America, Energy. Method of gas purification and system therefor. 4,512,960, Cl. 423-219.000.
T/B & H Home Video: *See—*
Coy, Don R., Jr.; and Giannis, Peter M., 4,512,534, Cl. 242-198.000.
Tabak, Samuel A., to Mobil Oil Corporation. Olefin oligomerization using extracted feed for production of heavy hydrocarbons. 4,513,156, Cl. 585-329.000.
Tadokoro, Masahiro: *See—*
Shigihara, Shigeyuki; and Tadokoro, Masahiro, 4,512,801, Cl. 75-58.000.
Tagaya, Nobuaki: *See—*
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,513,166, Cl. 585-832.000.
Taiho Kogyo Co., Ltd.: *See—*
Kaku, Yoshihiro; and Otsu, Keiichiro, 4,512,175, Cl. 72-360.000.
Takachiho Kogyo Yuugen Kaisha: *See—*
Shigemizu, Akihiko, 4,512,524, Cl. 241-101.700.
Takagi, Fusao: *See—*
Ohta, Hideo; Hakuzen, Tatuzo; Ito, Yasunori; and Takagi, Fusao, 4,512,829, Cl. 156-659.100.
Takagi, Mikio: *See—*
Miyamoto, Hidekazu; Shioya, Yoshimi; Maeda, Mamoru; and Takagi, Mikio, 4,513,026, Cl. 427-85.000.
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; and Tanaka, Koji, to Victor Company of Japan, Ltd. Digital signal recording system and reproducing apparatus. 4,513,327, Cl. 358-310.000.
Takahashi, Susumu, to Niigata Engineering Co., Ltd. Emergency disconnector for fluid loading and unloading lines. 4,512,369, Cl. 137-614.040.
Takano, Teruhisa: *See—*
Ueda, Shigeki; and Takano, Teruhisa, 4,513,189, Cl. 219-10.55B.
Takasago USA, Inc.: *See—*
Harden, Theodore A., 4,512,933, Cl. 261-30.000.
Takashima, Hiroyuki: *See—*
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, 4,512,368, Cl. 137-561.00A.
Takashima, Seiichi: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; and Tanaka, Koji, 4,513,327, Cl. 358-310.000.
Takayama, Yukio; Noguchi, Akio; and Matsushita, Takao, to Kanzaki Paper Manufacturing Company Limited. Heat-sensitive recording material. 4,513,301, Cl. 346-200.000.
Takeda Chemical Industries, Ltd.: *See—*
Hasegawa, Toru; Muroi, Masayuki; and Tanida, Seiichi, 4,512,975, Cl. 424-121.000.
Matsuura, Kazumi; and Wada, Takeo, 4,512,962, Cl. 423-331.000.
Takeda, Hiroaki: *See—*
Ishida, Masato; and Takeda, Hiroaki, 4,512,655, Cl. 355-55.000.
Takeda, Masami: *See—*
Mizui, Kinya; Takeda, Masami; and Iwata, Tadao, 4,513,130, Cl. 526-283.000.
Takeda Riken Co., Ltd.: *See—*
Kurihara, Takenori; Tojo, Shigeki; and Hirakoso, Yohei, 4,513,256, Cl. 331-4.000.
Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor memory device and process for producing the same. 4,513,304, Cl. 357-23.600.
Takemoto, Issei: *See—*
Shoji, Fusaji; Takemoto, Issei; Kataoka, Fumio; Yokono, Hitoshi; and Isogai, Tokio, 4,513,132, Cl. 528-21.000.
Takemura, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid-state color television camera. 4,513,312, Cl. 358-44.000.
Takeno, Hidekazu: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,512,980, Cl. 514-18.000.
Takeshima, Hideo: *See—*
Umezawa, Iwao; Komiyama, Kanki; and Takeshima, Hideo, 4,512,976, Cl. 424-122.000.
Takeuchi, Hiroshi; and Maruno, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Diaphragm for loudspeakers. 4,512,435, Cl. 181-170.000.
Takimoto, Masatami: *See—*
Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Takimoto, Masatami; and Teramura, Mitsuyoshi, 4,512,312, Cl. 123-439.000.
Takumi, Shigeji: *See—*
Watanabe, Toshimitu; Sakai, Masayuki; Minami, Kazutoshi; and Takumi, Shigeji, 4,512,239, Cl. 98-2.030.
Talke, Frank E.: *See—*
Lee, Francis C.; Mills, Ross N.; Payne, Robert N.; and Talke, Frank E., 4,513,299, Cl. 346-140.00R.
Tamukai, Tadao: *See—*
Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, 4,512,675, Cl. 400-328.000.
Tamura, Kunimitsu; and Hosonuma, Kunihiko, to Nippon Mining Co., Ltd.; and Mitsui Engineering & Shipbuilding Co., Ltd. Lubricating oil for diesel engines. 4,513,155, Cl. 585-13.000.
Tanabe, Kenzo; and Suzuki, Junji, to Matsushita Electric Industrial Co., Ltd. Level detector. 4,513,209, Cl. 307-350.000.
Tanabe, Osami: *See—*
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; Kimura, Keizo; and Umemoto, Makoto, 4,513,081, Cl. 430-550.000.
Tanabe, Toshio; and Kita, Masakazu, to Matsushita Electric Works, Ltd. Electric shaver having improved shaving characteristics. 4,512,077, Cl. 30-43.000.
Tanaka, Hirokazu: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,512,980, Cl. 514-18.000.
Tanaka, Koji: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; and Tanaka, Koji, 4,513,327, Cl. 358-310.000.
Tanaka, Takeshi: *See—*
Igashira, Toshihiko; Kawai, Hisasi; Tanaka, Takeshi; Iwamoto, Kenzi; Abe, Seiko; and Hashimoto, Eiji, 4,512,307, Cl. 123-383.000.
Tanaka, Yoshikazu; Yamamuro, Sigeaki; Hirano, Hiroyuki; and Morimoto, Yoshiro, to Nissan Motor Company, Limited. Method and system for controlling continuously variable v-belt transmission. 4,512,751, Cl. 474-28.000.
Tanaka, Yuzuru: *See—*
Tsuchida, Tsuyoshi; Kido, Yoshinobu; Kakumoto, Hideki; and Tanaka, Yuzuru, 4,512,313, Cl. 123-440.000.

Tang, Wai-Cheung: *See—*
Dorey, James B.; and Tang, Wai-Cheung, 4,513,264, Cl. 333-212.000.
Tanica Electric Co., Ltd.: *See—*
Yamauchi, Masakatu, 4,512,865, Cl. 204-271.000.
Tanida, Seiichi: *See—*
Hasegawa, Toru; Muroi, Masayuki; and Tanida, Seiichi, 4,512,975, Cl. 424-121.000.
Tansuwan, Chusak, to ACF Industries, Inc. Spark control apparatus. 4,512,309, Cl. 123-425.000.
Tapco Products Company, Inc.: *See—*
Rhoades, James J., 4,512,174, Cl. 72-319.000.
Tarcisio, Re, to Victor Slicing Systems S.r.l. Automatic sausage slicing machine for salami and like products. 4,512,228, Cl. 83-355.000.
Tardivel, Georges M., to Tardivel, Monique M. Rope climbing exercise apparatus. 4,512,570, Cl. 272-112.000.
Tardivel, Monique M.: *See—*
Tardivel, Georges M., 4,512,570, Cl. 272-112.000.
Tatsuno, Kimio; Saito, Susumu; Ito, Shoichi; Terashima, Isamu; Homma, Yoshifumi; Asano, Mitsugu; and Ono, Yoshifumi, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Apparatus for driving a semiconductor laser for use in a laser-beam printer. 4,513,300, Cl. 346-160.000.
Taub, Alan I., to General Electric Company. Dynamic annealing method for optimizing the magnetic properties of amorphous metals. 4,512,824, Cl. 148-121.000.
Taura, Mitsuharu: *See—*
Abe, Shinichi; Taura, Mitsuharu; Amano, Hidetoshi; and Mizuno, Toshiaki, 4,512,320, Cl. 123-492.000.
Taureg, Herbert: *See—*
Petrzelka, Miloslav; and Taureg, Herbert, 4,512,679, Cl. 403-57.000.
Taylor, Allan H.: *See—*
Jackson, L. Robert; Davis, Randall C.; and Taylor, Allan H., 4,512,699, Cl. 411-368.000.
Teague, Catherine E.: *See—*
Vayenas, Costas G.; and Teague, Catherine E., 4,512,964, Cl. 423-403.000.
Teche, Andre : *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre , 4,513,139, Cl. 546-196.000.
Technical Support Services, Inc.: *See—*
McLaughlin, Thomas F.; and Diaz, Gerard J., 4,512,092, Cl. 40-2.00R.
Tecnoma: *See—*
Ballu, Patrick J., 4,512,516, Cl. 239-168.000.
Teijin Limited: *See—*
Kunugi, Katsuo; Suzuki, Togi; Konishi, Tadashi; and Ohwaki, Shinji, 4,513,114, Cl. 524-706.000.
Tektronix, Inc.: *See—*
Lamb, James S.; and Wimmer, Warren K., 4,513,417, Cl. 371-12.000.
Tencor Instruments: *See—*
Galbraith, Lee K.; and Pecen, Jiri, 4,512,659, Cl. 356-243.000.
Tennant, William A.: *See—*
Kudert, Frederick G.; Tennant, William A.; and Tung, Thomas T., 4,512,730, Cl. 425-130.000.
Tennessee Valley Authority: *See—*
Harrison, Cecil P., 4,512,793, Cl. 71-29.000.
Tenney, William L., to London Fog, Inc. Thermal fog generator. 4,512,515, Cl. 239-129.000.
Teramura, Mitsuyoshi: *See—*
Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Takimoto, Masatami; and Teramura, Mitsuyoshi, 4,512,312, Cl. 123-439.000.
Terashima, Isamu: *See—*
Tatsuno, Kimio; Saito, Susumu; Ito, Shoichi; Terashima, Isamu; Homma, Yoshifumi; Asano, Mitsugu; and Ono, Yoshifumi, 4,513,300, Cl. 346-160.000.
Terauchi, Isamu, to Kabushiki Kaisha Kindai. Slitter device. 4,512,224, Cl. 82-48.000.
Terauchi, Kiyoshi: *See—*
Sakamoto, Seiichi; and Terauchi, Kiyoshi, 4,512,729, Cl. 418-55.000.
Terbrack, William H., to Hughes Aircraft Company. Phase locked crystal oscillator implemented with digital logic elements. 4,513,255, Cl. 331-1.00A.
Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre , 4,513,139, Cl. 546-196.000.
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,513,147, Cl. 562-506.000.
Tetra Pak Developpement SA: *See—*
Rausing, Anders R., 4,512,838, Cl. 156-203.000.
Rausing, Hans, 4,512,832, Cl. 156-86.000.
Tetra Pak International AB: *See—*
Hilmersson, Anders; Lagerstedt, Jan; and Andersson, Helge, 4,512,935, Cl. 261-79.00A.
Jarund, Erik, 4,512,472, Cl. 206-443.000.
Tetsuishi, Yoshinori: *See—*
Matsuda, Naotoshi; Tetsuishi, Yoshinori; and Higuchi, Kazuaki, 4,512,912, Cl. 252-301.60S.
Teuling, Dirk J. A., to U.S. Philips Corporation. Circuit for generating a sawtooth-shaped current. 4,513,228, Cl. 315-408.000.
Tewksbury, Ted L.: *See—*
Attia, Yosry A.; and Tewksbury, Ted L., 4,512,879, Cl. 209-3.000.
Texaco Inc.: *See—*
Dominguez, Richard J. G., 4,513,133, Cl. 528-49.000.
Schlicht, Raymond C.; and Skrobul, Anthony P., 4,512,903, Cl. 252-51.50A.
Texas A&M University System, The: *See—*
Clearfield, Abraham; and Jerus, Paul, 4,512,905, Cl. 252-62.200.
Texas Instruments Incorporated: *See—*
Bonifield, Thomas D.; and Purdes, Andrew J., 4,512,283, Cl. 118-723.000.
Purdes, Andrew J.; and Bonifield, Thomas D., 4,513,021, Cl. 427-38.000.
Ragan, Lawrence H., 4,513,260, Cl. 333-165.000.
Textron Inc.: *See—*
Flatau, Carl R., 4,512,710, Cl. 414-735.000.
Thalenfeld, David R., to Trion Industries, Inc. Merchandise display hook. 4,512,481, Cl. 211-57.100.
Theien, Clarence M., to Superior Machinery Inc. Method for high tooth equalization of cutters. 4,512,114, Cl. 51-288.000.
Therma-Wave, Inc.: *See—*
Rosencwaig, Allan, 4,513,384, Cl. 364-563.000.
Thermo King Corporation: *See—*
Hanson, Jay L., 4,512,295, Cl. 123-145.00A.
Thevis, Paul; and Danner, Helmut, to Heckler & Koch GmbH. Sound dampened automatic hand firearm. 4,512,236, Cl. 89-128.000.
Thieken, Michael L.: *See—*
Archer, Wendel E.; Luther, James M.; and Thieken, Michael L., 4,512,627, Cl. 350-96.200.
Thielemans, Kristiaan: *See—*
Levy, Ronald; Maloney, David G.; and Thielemans, Kristiaan, 4,513,088, Cl. 436-518.000.
Thieme, Thomas R.: *See—*
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,512,990, Cl. 514-225.000.
Thomas & Betts Corporation: *See—*
Apodaca, Jeffrey S., 4,513,170, Cl. 174-36.000.
Bethurum, Gary C., 4,512,621, Cl. 339-99.00R.
Thomas, Graham Edward: *See—*
Green, Kenneth, 4,512,251, Cl. 99-472.000.
Thomas, Ralph H., Sr.: *See—*
Agbay, Albert J.; and Thomas, Ralph H., Sr., 4,512,485, Cl. 215-225.000.
Thomas, Robert L., to Westinghouse Electric Corp. Vacuum interrupter contact structure and method of fabrication. 4,513,186, Cl. 200-144.00B.
Thomas, Stanley N., to Pacific Power Control, Inc. Fluorescent-lighting-system voltage controller. 4,513,224, Cl. 315-141.000.
Thomassen International B.V.: *See—*
Alink, Aloysius J. W. O.; and van Marle, Berend P., 4,512,759, Cl. 494-14.000.
Thomaswick, Ronald J.; and Rowley, James R., to PPG Industries, Inc. Adjustable shipping container for frangible sheet-like units. 4,512,473, Cl. 206-454.000.
Thompson, John P., to Phillips Mine & Mill, Inc. Shear dolly for long wall mining. 4,512,706, Cl. 414-373.000.
Thompson, John R.: *See—*
Ng, Yee S.; Jarvis, James G.; and Thompson, John R., 4,512,653, Cl. 355-16.000.
Thompson, Kenneth P.; and Ihde, Richard C., to Champion International Corporation. Barrier laminates for containment of essential oils and flavors and cartons made therefrom. 4,513,036, Cl. 428-35.000.
Thompson, Ralph B., to PPG Industries, Inc. Method for producing esters from highly hindered carboxylic acids or their salts, and carbonates. 4,513,146, Cl. 560-231.000.
Thompson, Timothy J., to Marathon Oil Company. Skimmer for floating roof tanks. 4,512,883, Cl. 210-123.000.
Thompson, William L.: *See—*
Ghering, Walter L.; and Thompson, William L., 4,512,200, Cl. 73-861.040.
Thomson-CSF: *See—*
Bricot, Claude, 4,513,407, Cl. 369-44.000.
Coutures, Jean L., 4,513,211, Cl. 307-530.000.
Drabowitch, Serge, 4,513,291, Cl. 343-771.000.
Estang, Bernard, 4,512,448, Cl. 188-378.000.
Penhard, Serge J., 4,513,287, Cl. 343-5.0CF.
Pham Ngu, Tung, 4,513,398, Cl. 365-189.000.
Thorn, Joseph H.; and Prusak, John J., to RCA Corporation. Disc turnover device. 4,512,455, Cl. 198-404.000.
Thunberg, Svante B.: *See—*
Edlund, Olof A.; Enser, Mats A.; Strage, Jan W.; Thunberg, Svante B.; and Wallmark, Erik I., 4,513,393, Cl. 364-900.000.
Tichy, Heinz: *See—*
Waniek, Kurt; and Tichy, Heinz, 4,513,046, Cl. 428-156.000.
Tielens, Arthur J.: *See—*
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Tiemens, Ulf: *See—*
Weiss, Hermann; Linde, Rolf; Tiemens, Ulf; and Klotz, Erhard, 4,513,433, Cl. 378-2.000.
Tienkamp, Engbert: *See—*
Breimer, Hendrik; Van Roessel, Frederik J.; and Tienkamp, Engbert, 4,513,319, Cl. 358-163.000.
Tilch, Willi: *See—*
Suetterlin, Norbert; Arndt, Peter J.; Heil, Ernst; Siol, Werner; Tilch, Willi; and Wopker, Wilhelm, 4,513,118, Cl. 525-81.000.
Tillotson, John D., to Elco Corporation. Mass termination electrical connector. 4,512,620, Cl. 339-97.00P.
Tillotson, John G. Method for forming a layer of blown cellular urethane on a carpet backing. 4,512,831, Cl. 156-78.000.

Timesavers, Inc.: *See—*
Stump, Lee E., 4,512,110, Cl. 51-141.000.
Timken Company, The: *See—*
Cameron, Robert W., 4,512,525, Cl. 241-207.000.
Tingey, Albert R.: *See—*
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,512,319, Cl. 123-492.000.
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, to Suncast Corporation. Hose storage apparatus. 4,512,361, Cl. 137-355.270.
Tisbo, Thomas A.: *See—*
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,512,361, Cl. 137-355.270.
TMC Corporation: *See—*
Muad, Al-Madhi, 4,512,698, Cl. 411-337.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,513,166, Cl. 585-832.000.
Tober, Edward: *See—*
Moore, William H.; Mandel, Alan F.; Trosky, William J.; Eichler, Kenneth M.; Tomas, Stephen P.; Tober, Edward; and Vasold, Thomas A., 4,512,442, Cl. 187-29.00R.
Tobias, Philip E. Plate scanner for printing plates. 4,512,662, Cl. 356-380.000.
Tobita, Youichi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory. 4,513,399, Cl. 365-189.000.
Toda, Kenji: *See—*
Drzewiecki, Tadeusz M.; Toda, Kenji; and Gurney, John, 4,512,371, Cl. 137-828.000.
Todd, Alec: *See—*
Baker, Stephen R.; Jamieson, William B.; Ross, William J.; and Todd, Alec, 4,513,005, Cl. 514-451.000.
Togashi, Mokichi. Ignition plug with air passage and double check valve. 4,513,220, Cl. 313-120.000.
Tohge, Takeya, to Nippon Yakin Kogyo Kabushiki Kaisha. Process for the decarburization of molten metal. 4,512,802, Cl. 75-60.000.
Tohoku Ricoh Co., Ltd.: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,513,360, Cl. 363-20.000.
Tojo, Shigeki: *See—*
Kurihara, Takenori; Tojo, Shigeki; and Hirakoso, Yohei, 4,513,256, Cl. 331-4.000.
Tokai TRW & Co. Ltd.: *See—*
Abe, Michio; Maeda, Naoyuki; and Lynas, Robert M., 4,512,367, Cl. 137-554.000.
Tokico Ltd.: *See—*
Miura, Ieaki, 4,512,447, Cl. 188-322.150.
Tokuda, Ryuji, to Canon Kabushiki Kaisha. Exposure control device for camera. 4,512,643, Cl. 354-21.000.
Tokumitsu, Jun; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Original reading apparatus. 4,512,632, Cl. 350-167.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Aizawa, Yukio, 4,513,362, Cl. 363-41.000.
Etou, Kazumi; and Komoto, Tetsuo, 4,512,162, Cl. 62-298.000.
Ishihara, Atsushi, 4,513,406, Cl. 369-32.000.
Kamata, Isao, 4,513,208, Cl. 307-139.000.
Kamiya, Masashi; Ueda, Katsunobu; Sumiya, Mitsuo; and Tsukada, Tameyasu, 4,512,626, Cl. 350-6.800.
Matsui, Toshiro, 4,512,954, Cl. 422-106.000.
Matsumoto, Hiroshi; and Nawata, Yoshiaki, 4,512,565, Cl. 271-294.000.
Nieda, Yasuhiro; and Honda, Kiyokazu, 4,513,357, Cl. 362-228.000.
Ohno, Junichi; and Konishi, Satoshi, 4,513,310, Cl. 357-68.000.
Sasaki, Gen, 4,512,074, Cl. 29-576.00W.
Sato, Fumitaka, 4,513,369, Cl. 364-200.000.
Takemura, Yasuo, 4,513,312, Cl. 358-44.000.
Tomas, Stephen P.: *See—*
Moore, William H.; Mandel, Alan F.; Trosky, William J.; Eichler, Kenneth M.; Tomas, Stephen P.; Tober, Edward; and Vasold, Thomas A., 4,512,442, Cl. 187-29.00R.
Tomaszewski, Walter, to Firestone Tire & Rubber Company, The. Channel connector. 4,512,680, Cl. 403-313.000.
Tomei Sangyo Kabushiki Kaisha: *See—*
Yamauchi, Masakatu, 4,512,865, Cl. 204-271.000.
Tomisawa, Naoki, to Japan Electronic Control Systems Company, Limited. Electronically controlled fuel injection system for internal combustion engine. 4,512,315, Cl. 123-478.000.
Tomiyama, Tadao, to Mitsubishi Denki Kabushiki Kaisha. Pressure density equalizing apparatus for two vessels. 4,513,213, Cl. 310-156.000.
Tomsa, Vladimir, to Allied Corporation. Electrical connector assembly having means for shielding electromagnetic interference. 4,512,623, Cl. 339-143.00R.
Tone, Syoiti; and Kubota, Norio, to Murata Kikai Kabushiki Kaisa. Doffing control system in automatic winder. 4,512,526, Cl. 242-36.000.
Topic, Nicola: *See—*
Molzer, Peter; Pollner, Jurgen; Topic, Nicola; Trummer, Gregor; and Zurek, Rudolf, 4,512,560, Cl. 269-20.000.
Torrington Company, The: *See—*
Condon, Charles E., Jr.; and Malik, J. Peter, 4,512,673, Cl. 384-569.000.
Linnemeier, Elmer H., 4,512,209, Cl. 74-492.000.
Torterotot, Roland, to Pak Pro International, N.V. Device for sterilizing a thermoplastic strip used for the hot-forming of sterile containers and sterile packaging installation using the device. 4,512,133, Cl. 53-167.000.
Toto Ltd.: *See—*
Suzuki, Shigemi; and Mizukane, Masahiro, 4,512,616, Cl. 308-3.00R.
Townsley, Phillip M.: *See—*
Coulthard, T. Lionel; Townsley, Phillip M.; and Saben, Hugh S., 4,512,103, Cl. 47-1.100.
Toybox Corporation: *See—*
Matsumoto, Hajime; and Abe, Yoichi, 4,512,748, Cl. 446-354.000.
Toyo Seikan Kaisha Limited: *See—*
Kobayashi, Hiroshi; and Kousaka, Michio, 4,512,486, Cl. 215-249.000.
Toyoda Gosei Co., Ltd.: *See—*
Shigeki, Kiyoshi; and Maeno, Kunio, 4,513,044, Cl. 428-122.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Munekata, Kenichi; Doi, Yoshio; Suzuki, Isao; and Doi, Shigeru, 4,513,366, Cl. 364-167.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Abe, Shinichi; Taura, Mitsuharu; Amano, Hidetoshi; and Mizuno, Toshiaki, 4,512,320, Cl. 123-492.000.
Chuwman, Tsutomu; Hagino, Tetsu; and Tsuchida, Shozaburo, 4,512,446, Cl. 188-73.380.
Igashira, Toshihiko; Kawai, Hisasi; Tanaka, Takeshi; Iwamoto, Kenzi; Abe, Seiko; and Hashimoto, Eiji, 4,512,307, Cl. 123-383.000.
Ito, Toshimitsu; and Isobe, Toshiaki, 4,512,318, Cl. 123-492.000.
Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Takimoto, Masatami; and Teramura, Mitsuyoshi, 4,512,312, Cl. 123-439.000.
Nakano, Hiromichi; Sasaya, Hideaki; Inagaki, Mitsuo; Matsui, Kazuma; and Yoshimura, Kunimasa, 4,512,728, Cl. 418-3.000.
Watanabe, Toshimitu; Sakai, Masayuki; Minami, Kazutoshi; and Takumi, Shigeji, 4,512,239, Cl. 98-2.030.
Travers, Mark D.: *See—*
Karagoz, Berch Y.; Turban, Martin M.; Moore, Lyman T.; and Travers, Mark D., 4,513,425, Cl. 373-88.000.
Trindl, Mary F., executrix: *See—*
Vilchek, Andrew, deceased; and Trindl, Mary F., executrix, 4,512,438, Cl. 182-43.000.
Trinh, Toan, to Procter & Gamble Company, The. No rinse liquid car cleaner kit with liquid cleaner and bristle pad. 4,512,677, Cl. 401-27.000.
Trinity Associates, a Partnership of the State of Pennsylvania: *See—*
Christine, William C., 4,512,136, Cl. 53-410.000.
Trion Industries, Inc.: *See—*
Thalenfeld, David R., 4,512,481, Cl. 211-57.100.
Trippel, Gerhard: *See—*
Brunsch, Arwed; Ruh, Wolf-Dieter; and Trippel, Gerhard, 4,512,847, Cl. 156-626.000.
Tropicana Products, Inc.: *See—*
Skukowski, William T., 4,513,027, Cl. 427-162.000.
Troponwerke GmbH & Co. KG: *See—*
Boltze, Karl-Heinz; and Horstn.ann, Harald, 4,513,004, Cl. 514-414.000.
Trosky, William J.: *See—*
Moore, William H.; Mandel, Alan F.; Trosky, William J.; Eichler, Kenneth M.; Tomas, Stephen P.; Tober, Edward; and Vasold, Thomas A., 4,512,442, Cl. 187-29.00R.
Trost, Wayne C., to Barber-Colman Company. Feeding and guiding means for triaxial fabric forming machine. 4,512,373, Cl. 139-11.000.
Trostle, D. Mark; Kaltz, Milton C.; Moler, Ronald; and Cowsert, Lendell E., to ASC Incorporated. Convertible top boot cover. 4,512,606, Cl. 296-130.000.
Troy, George W., to Exploration Logging, Inc. Data encoding and synchronization for pulse telemetry. 4,513,403, Cl. 367-83.000.
Trummer, Gregor: *See—*
Molzer, Peter; Pollner, Jurgen; Topic, Nicola; Trummer, Gregor; and Zurek, Rudolf, 4,512,560, Cl. 269-20.000.
Trumpp, Hans J.: *See—*
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; Muhl, Reinhold; Nehmiz, Peter; and Trumpp, Hans J., 4,513,203, Cl. 250-491.100.
TRW Inc.: *See—*
Leibowitz, Joseph D., 4,513,055, Cl. 428-245.000.
Yen, Kuo-Hsiung; Stokes, Robert B.; Lau, Kei-Fung; Kong, Alvin M.; and Kagiwada, Reynold S., 4,513,261, Cl. 333-194.000.
Tsai, Tseng B. Dispensing device. 4,512,041, Cl. 4-227.000.
Tsao, Ying-Yen P., to Mobil Oil Corporation. Multimetallic catalysts and their method of preparation from organometallic precursors. 4,513,098, Cl. 502-216.000.
Tsou, John L., to McQuay, Inc. High pressure feedwater heater closure assembly. 4,512,496, Cl. 220-319.000.
Tsuboshima, Kosaku; and Yoshinari, Shigeru, to Olympus Optical Co., Ltd. Ionic concentration measuring apparatus and method. 4,512,852, Cl. 204-1.00T.
Tsuchida, Shozaburo: *See—*
Chuwman, Tsutomu; Hagino, Tetsu; and Tsuchida, Shozaburo, 4,512,446, Cl. 188-73.380.
Tsuchida, Tsuyoshi; Kido, Yoshinobu; Kakumoto, Hideki; and Tanaka, Yuzuru, to Mazda Motor Corporation. Engine control system having exhaust gas sensor. 4,512,313, Cl. 123-440.000.
Tsuji, Shisaku: *See—*
Kubota, Shikibu; and Tsuji, Shisaku, 4,513,276, Cl. 340-52.00R.
Tsujimura, Harutoshi: *See—*
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Tsukada, Tameyasu: *See—*
Kamiya, Masashi; Ueda, Katsunobu; Sumiya, Mitsuo; and Tsukada, Tameyasu, 4,512,626, Cl. 350-6.800.
Tsuneishi, Katsuyuki: *See—*
Yamanishi, Toru; Tsuneishi, Katsuyuki; and Yoshida, Masaaki, 4,512,281, Cl. 118-627.000.
Tucci, Allan T., to McDonnell Douglas Corporation. Method of producing composite structural members. 4,512,836, Cl. 156-174.000.
Tung, Thomas T.: *See—*
Kudert, Frederick G.; Tennant, William A.; and Tung, Thomas T., 4,512,730, Cl. 425-130.000.
Tunoda, Kikuo, to Ryobi Limited. Fishing reel with traverse-cam member rotatably mounted on anti-reverse shaft. 4,512,531, Cl. 242-84.21R.
Turban, Martin M.: *See—*
Karagoz, Berch Y.; Turban, Martin M.; Moore, Lyman T.; and Travers, Mark D., 4,513,425, Cl. 373-88.000.
Turner, Donald. Mathematical teaching cards. 4,512,746, Cl. 434-209.000.
Turner, Tyson M.: *See—*
Claus, Richard O.; and Turner, Tyson M., 4,512,661, Cl. 356-351.000.
Tweed, William J.: *See—*
Chappell, William A.; Tweed, William J.; and Higgins, David T., 4,512,246, Cl. 99-312.000.
Tzakis, George J.: *See—*
Reneau, Daniel L.; Tzakis, George J.; and Engel, Christopher M., 4,513,320, Cl. 358-166.000.
Tzeng, Kuo-Nan. Racquet having strings of equal length. 4,512,575, Cl. 273-73.00D.
UBE Industries, Ltd.: *See—*
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,512,893, Cl. 210-500.200.
Uchigaki, Takatoshi; Saito, Akio; and Yamada, Naoki, to Kabushiki Kaisha Kyoto Daiichi Kagaku. Device for automatically and continuously measuring the constituent parts of blood. 4,512,348, Cl. 128-632.000.
Uchiyama, Naoki: *See—*
Hosoda, Naoyuki; Uchiyama, Naoki; and Kawanaka, Ryusuke, 4,512,950, Cl. 420-563.000.
Uddenberg, Goran O., to AB Vacuum-Extractor. Obstetric suction device. 4,512,347, Cl. 128-352.000.
Ueda, Katsunobu: *See—*
Kamiya, Masashi; Ueda, Katsunobu; Sumiya, Mitsuo; and Tsukada, Tameyasu, 4,512,626, Cl. 350-6.800.
Ueda, Kayako: *See—*
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,513,166, Cl. 585-832.000.
Ueda, Kenji: *See—*
Miyamoto, Kiyoshi; and Ueda, Kenji, 4,513,257, Cl. 331-65.000.
Ueda, Mitsuhiro: *See—*
Miwa, Hirohide; and Ueda, Mitsuhiro, 4,512,195, Cl. 73-602.000.
Ueda, Shigeki; and Takano, Teruhisa, to Matsushita Electric Industrial Co., Ltd. Heating apparatus having voice command control operative in a conversational processing manner. 4,513,189, Cl. 219-10.55B.
Ueno, Takahiro. Method for driving a vehicle driven by an internal combustion engine. 4,512,154, Cl. 60-626.000.
Ukigai, Toshiyuki: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,512,404, Cl. 166-274.000.
Ultra Mileager Company, Inc.: *See—*
Ruth, John V.; and Potts, Garfield C., 4,512,323, Cl. 123-557.000.
Ultra-Temp Corporation: *See—*
Lueth, Roy C., 4,512,558, Cl. 266-249.000.
Ulveling, Leon: *See—*
Mailliet, Pierre; and Ulveling, Leon, 4,512,702, Cl. 414-202.000.
Umble, Don G.; Choong, Tsi-Pin; Izzo, Kenneth R.; Burdg, Charles E.; Hankin, Gary H.; and Dalke, Charles A., to General Electric Company. Instrument for calibrating pressure gauges. 4,512,179, Cl. 73-4.00R.
UMC Industries, Inc.: *See—*
Schuller, James T.; Griner, Paul K.; and Mak, Nai H., 4,512,453, Cl. 194-1.00N.
Schuller, James T.; Smith, Barry L.; and Griner, Paul K., 4,512,454, Cl. 194-1.00D.
Umehara, Akihiko: *See—*
Nose, Isamu; and Umehara, Akihiko, 4,513,436, Cl. 381-43.000.
Umemoto, Makoto: *See—*
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; Kimura, Keizo; and Umemoto, Makoto, 4,513,081, Cl. 430-550.000.
Umemoto, Shuichi: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,513,360, Cl. 363-20.000.
Umezawa, Iwao; Komiyama, Kanki; and Takeshima, Hideo, to Kitasato Institute, The. Antibiotic stubomycin and process for the production thereof. 4,512,976, Cl. 424-122.000.
Unger, Stefan H.: *See—*
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,512,990, Cl. 514-225.000.
Uni-Cardan Aktiengesellschaft: *See—*
Petrzelka, Miloslav; and Taureg, Herbert, 4,512,679, Cl. 403-57.000.
Union Carbide Corporation: *See—*
Anthony, John, 4,513,038, Cl. 428-35.000.
Beckman, John H., 4,512,059, Cl. 17-45.000.
Fuderer, Andrija, 4,512,780, Cl. 55-26.000.
Kamp, Ewald A., 4,513,445, Cl. 383-87.000.
Long, Gary N.; Pellet, Regis J.; and Rabo, Jule A., 4,512,875, Cl. 208-114.000.
Wary, John, 4,513,023, Cl. 427-54.100.
Wegman, Richard W.; and Busby, David C., 4,513,151, Cl. 568-484.000.
Union Oil Company of California: *See—*
Angmorter, Paul K.; Simpson, Howard D.; and Richardson, Ryden L., 4,513,097, Cl. 502-211.000.
Young, Dean A.; and Koepke, Jeffery W., 4,513,158, Cl. 585-527.000.
Young, Donald C., 4,512,813, Cl. 134-27.000.
Union Special GmbH: *See—*
Rohr, Gunter H., 4,512,268, Cl. 112-63.000.
Uniroyal Inc.: *See—*
Kohrn, Robert C., 4,512,834, Cl. 156-138.000.
United States of America
Air Force: *See—*
Buholz, Neal E., 4,513,422, Cl. 372-29.000.
Roeder, Allan W., 4,513,428, Cl. 375-120.000.
Roeder, Allan W., 4,513,429, Cl. 375-120.000.
Army: *See—*
Drzewiecki, Tadeusz M.; Toda, Kenji; and Gurney, John, 4,512,371, Cl. 137-828.000.
Dunn, Aubrey J., 4,513,434, Cl. 378-85.000.
Goodall, Steve R.; Dubowicz, Palemon W.; and Campbell, Donn V., 4,513,338, Cl. 361-1.000.
Maher, Robert A., 4,513,448, Cl. 455-265.000.
Marcus, Ira R., 4,513,064, Cl. 428-582.000.
Roberts, Thomas G.; and Honeycutt, Thomas E., 4,512,639, Cl. 350-418.000.
Schwenk, Tyrone D., 4,512,488, Cl. 220-2.200.
Weathers, Glenn D.; and Holliday, Edward M., 4,513,288, Cl. 343-17.2PC.
Energy: *See—*
Anstine, Larry D.; James, Dean B.; Melaika, Edward A.; and Peterson, John P., Jr., 4,512,921, Cl. 252-626.000.
Bennett, Gloria A.; Elder, Michael G.; and Kemme, Joseph E., 4,513,352, Cl. 361-385.000.
Milewski, John V., 4,513,030, Cl. 427-227.000.
Szwarc, Raphael, 4,512,960, Cl. 423-219.000.
National Aeronautics and Space Administration: *See—*
Bunker, James W.; and Ritchie, Robert S., 4,512,678, Cl. 403-15.000.
Claus, Richard O.; and Turner, Tyson M., 4,512,661, Cl. 356-351.000.
Jackson, L. Robert; Davis, Randall C.; and Taylor, Allan H., 4,512,699, Cl. 411-368.000.
Katz, Joseph; Yariv, Amnon; and Margalit, Shlomo, 4,513,423, Cl. 372-50.000.
Lansing, Fikry L., 4,512,332, Cl. 126-415.000.
Ruoff, Carl F., Jr., 4,513,317, Cl. 358-133.000.
Shlichta, Paul J., 4,512,846, Cl. 156-623.00Q.
Navy: *See—*
Addamiano, Arrigo; and Klein, Philipp H., 4,512,825, Cl. 148-175.000.
Giuliani, John F.; and Wohltjen, Henry, 4,513,087, Cl. 436-96.000.
Goldberg, Lawrence S., 4,512,660, Cl. 356-301.000.
Gomez, Aldan D.; and Gennetten, Edward W., 4,513,329, Cl. 360-42.000.
Greene, Richard F.; and Gray, Henry F., 4,513,308, Cl. 357-55.000.
Hannan, Patrick J.; Stiffey, Arthur V.; Jarvis, N. Lynn; and Wohltjen, Henry, 4,513,280, Cl. 340-632.000.
Kretschmer, Frank F., 4,513,289, Cl. 343-17.2PC.
Mohon, Windell N.; and Harris, William T., 4,512,745, Cl. 434-43.000.
Nauflett, George W., 4,513,148, Cl. 564-109.000.
von Gutfeld, Robert J.; and Wang, Sherman S., 4,512,197, Cl. 73-643.000.
U.S. Philips Corporation: *See—*
Breimer, Hendrik; Van Roessel, Frederik J.; and Tienkamp, Engbert, 4,513,319, Cl. 358-163.000.
Dekker, Cornelis B.; and Vries, Lodewijk B., 4,513,315, Cl. 358-86.000.
Louttit, Duncan R., 4,513,443, Cl. 455-52.000.
Minnis, Brian J., 4,513,263, Cl. 333-204.000.
Schofield, John; and Milsom, Robert F., 4,513,262, Cl. 333-194.000.
Sieben, Joannes H. F. C., 4,512,470, Cl. 206-387.000.
Teuling, Dirk J. A., 4,513,228, Cl. 315-408.000.
Veendrick, Hendrikus J. M.; Pfennings, Leonardus C. M. G.; Raven, Johannes G.; and Nillesen, Antonius H. H. J., 4,513,388, Cl. 364-736.000.
Verweel, Jan; and Zijlstra, Hinne, 4,513,272, Cl. 335-284.000.
Weiss, Hermann; Linde, Rolf; Tiemens, Ulf; and Klotz, Erhard, 4,513,433, Cl. 378-2.000.
U.S. Plastics Corporation: *See—*
Hill, Clinton W., 4,513,183, Cl. 200-61.45R.
United States Surgical Corporation: *See—*
Green, David T., 4,512,345, Cl. 128-325.000.
United Technologies Corporation: *See—*
Baran, Walter J., Jr., 4,512,712, Cl. 415-116.000.
Duhl, David N.; Chen, Otis Y.; and Gell, Maurice L., 4,512,817, Cl. 148-3.000.

Grantham, Daniel H., 4,513,348, Cl. 361-283.000.
Luczak, Francis J., 4,513,094, Cl. 502-101.000.
Memmen, Robert L., 4,512,159, Cl. 60-752.000.
Miller, Robert J., 4,512,115, Cl. 51-289.00R.
Stargardter, Hans, 4,512,718, Cl. 416-231.00B.
Striebel, Edmund E.; Matthews, John A.; Sepulveda, Domingo; and Pane, Francis C., Jr., 4,512,158, Cl. 60-740.000.

University of Akron, The: *See—*
Koser, Gerald F.; and Carman, Carol S., 4,513,137, Cl. 546-14.000.

University of California, Regents of the: *See—*
Hunt, Thomas K.; Goodson, William H., III; Chang, Ning; Knighton, David R.; Gottrup, Finn; and Firmin, Richard, 4,512,349, Cl. 128-632.000.

University of Delaware: *See—*
Hicks, Douglas C.; and Pleass, Charles M., 4,512,886, Cl. 210-170.000.

University of Edinburgh, The University Court of the: *See—*
Lewis, Jeffrey M. O., 4,512,366, Cl. 137-527.800.

University of Medicine and Dentistry of New Jersey: *See—*
Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,512,038, Cl. 3-1.900.

Unroe, Marilyn R.: *See—*
Reinhardt, Bruce A.; Arnold, Fred E.; and Unroe, Marilyn R., 4,513,131, Cl. 526-285.000.

Uppgren, John J., to FMC Corporation. Mold registration apparatus. 4,512,385, Cl. 164-364.000.

Ury, Frank, to Brandtjen & Kluge, Inc. Folder unit with means for simultaneous phase shifting of front and rear spiral sets. 4,512,561, Cl. 270-40.000.

Uschold, Ronald E., to Du Pont de Nemours, E. I., and Company. Fluorinated vinyl ether copolymers having low glass transition temperatures. 4,513,128, Cl. 526-212.000.

USM Corporation: *See—*
Ettinger, Donald H., 4,513,193, Cl. 219-98.000.
Herdeg, Donald F.; and Matseas, William G., 4,512,271, Cl. 112-158.00E.

Usui, Masaji, to Mitsubishi Denki Kabushiki Kaisha. Protective relay for power system. 4,513,344, Cl. 361-113.000.

Uuskallio, Arvo F., to Briggs & Stratton Corp. Gas cap assembly. 4,512,499, Cl. 220-374.000.

Uyeda, Tim M., to La Gard, Inc. High security padlock. 4,512,165, Cl. 70-32.000.

Uzrad, Mordechay, to Mifalei Matechet Naan. Sprinkler. 4,512,519, Cl. 239-381.000.

Va. Inc.: *See—*
Pasquarella, Stephen T., 4,513,345, Cl. 361-155.000.

Vacanti, Eugene J., to Sports Marketing, Inc. Protective pad assembly. 4,512,037, Cl. 2-2.000.

Vacuum Furnace Systems Corporation: *See—*
Pierce, Clifford R., 4,512,737, Cl. 432-205.000.

Vailancourt, Vincent L., to Whitman Medical Corporation. Catheter valve. 4,512,766, Cl. 604-169.000.

Valayil, Silvester; Abu-Moustafa, Magda; and Benjamin, Terry A., to Shipley Company Inc. Solution for formation of black oxide. 4,512,818, Cl. 148-6.14R.

Valeo: *See—*
Villeval, Denis, 4,512,396, Cl. 165-104.320.

VanBreemen, Bertram, to RCA Corporation. Rear projection television screen incorporating a prism lens. 4,512,631, Cl. 350-128.000.

Vandekeybus, Christiaan A. C. Device for tying-up an animal. 4,512,287, Cl. 119-147.00R.

van de Locht, Heinrich, to BHS-Dr. Ing Hofler, Maschinenbau GmbH. Rolling gear apparatus for an involute tooth gear cutting machine. 4,512,109, Cl. 51-123.00G.

van der Lely, Cornelis. Row-crop front and rear wheel drive articulated tractor for heavy-duty operations. 4,512,433, Cl. 180-235.000.

Vanderwal, Frank E., Jr.; and Davis, James K., to Sunnen Products Company. Feed-up means for expandable work engaging members. 4,512,116, Cl. 51-347.000.

Van Dore, Peter: *See—*
Crossley, David W.; and Van Dore, Peter, 4,512,483, Cl. 213-75.0TC.

van Ee, Dirk; and Benning, Larry J. Heat exchange apparatus. 4,512,392, Cl. 165-54.000.

VanHulle, Glenn J.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,513,016, Cl. 426-554.000.

van Kreuningen, Rudolf, to Kraco Enterprises. 8-Track cassette adaptor. 4,513,335, Cl. 360-94.000.

Van Loveren, Augustinus G.: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,512,902, Cl. 252-8.600.

van Marle, Berend P.: *See—*
Alink, Aloysius J. W. O.; and van Marle, Berend P., 4,512,759, Cl. 494-14.000.

Vann, Roy R.; George, Flint R.; and Warren, Dennis F., to GEO Vann, Inc. Bar actuated vent assembly. 4,512,406, Cl. 166-297.000.

Van Ouwerkerk, Anton: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,512,902, Cl. 252-8.600.

Van Pool, Joe. Alkylation process. 4,513,165, Cl. 585-723.000.

Van Roessel, Frederik J.: *See—*
Breimer, Hendrik; Van Roessel, Frederik J.; and Tienkamp, Engbert, 4,513,319, Cl. 358-163.000.

Varian Associates, Inc.: *See—*
Borden, Peter G., 4,513,168, Cl. 136-244.000.
Chodorow, Marvin, 4,513,223, Cl. 315-4.000.
Harra, David J., 4,512,391, Cl. 165-48.00R.
Liebert, Reuel B.; and Russo, Carl J., 4,512,812, Cl. 134-21.000.
Vora, Mahasukh; and Malhotra, Rajender, 4,513,430, Cl. 377-39.000.

Varwig, Juergen: *See—*
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,512,984, Cl. 514-147.000.

Vasold, Thomas A.: *See—*
Moore, William H.; Mandel, Alan F.; Trosky, William J.; Eichler, Kenneth M.; Tomas, Stephen P.; Tober, Edward; and Vasold, Thomas A., 4,512,442, Cl. 187-29.00R.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Chlorosulfonated polyethylene coating composition. 4,513,060, Cl. 428-416.000.

Vayenas, Costas G.; and Teague, Catherine E., to Massachusetts Institute of Technology. Method for forming nitric oxide from ammonia. 4,512,964, Cl. 423-403.000.

Veba Oel Entwicklungs-Gesellschaft mbH: *See—*
Escher, Gert; Holighaus, Rolf; and Wenning, Hans-Peter, 4,512,873, Cl. 208-13.000.

Veendrick, Hendrikus J. M.; Pfennings, Leonardus C. M. G.; Raven, Johannes G.; and Nillesen, Antonius H. H. J., to U.S. Philips Corporation. Electronic device for the execution of a mathematical operation on sets of three digital variables. 4,513,388, Cl. 364-736.000.

Vera, Samuel I.: *See—*
Gilbert, Clark J.; Hassialis, Menelaos D.; Scrymgeour, Andrew H.; and Vera, Samuel I., 4,512,610, Cl. 299-13.000.

Vereinigte Edelstahlwerke Aktiengesellschaft (VEW): *See—*
Kos, Bernd, 4,512,804, Cl. 75-123.00N.

Vernois, Michel; and Duboeuf, Jean-Paul, to Arjomari-Prioux. Cellulosic materials rendered transparent. 4,513,056, Cl. 428-264.000.

Verweel, Jan; and Zijlstra, Hinne, to U.S. Philips Corporation. Devices for manufacturing a magnetic quadrupole post-focusing mask. 4,513,272, Cl. 335-284.000.

Vesnier, Patrick H.: *See—*
Pennel, Jean-Francois; and Vesnier, Patrick H., 4,512,176, Cl. 72-367.000.

Vetter, Heinz: *See—*
Kaube, Peter; Schanz, Karl-Heinz; Vetter, Heinz; and Muller, Jens, 4,513,048, Cl. 428-188.000.

Victor Company of Japan, Ltd.: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; and Tanaka, Koji, 4,513,327, Cl. 358-310.000.

Victor Slicing Systems S.r.l.: *See—*
Tarcisio, Re, 4,512,228, Cl. 83-355.000.

Vigano , Giovanni, to PLASTIVER S.a.s. di Giovanni e Vittorio VIGANO & C. Device and method for spread applying liquids, in particular glue over book spines. 4,512,945, Cl. 264-263.000.

Vilchek, Andrew, deceased; and by Trindl, Mary F., executrix. Escape apparatus. 4,512,438, Cl. 182-43.000.

Villeval, Denis, to Valeo. Water box including a degassing passage, and a heat exchanger including such a water box. 4,512,396, Cl. 165-104.320.

Vilter Manufacturing Corporation: *See—*
Kocher, Erich J., 4,512,550, Cl. 251-214.000.

Vinoxen Company, Inc., The: *See—*
Revici, Emanuel; Sherwood, Bob E.; Benecke, Herman P.; Rice, John M.; and Geisler, Richard W., 4,513,008, Cl. 514-560.000.

Viriyayuthakorn, Montri: *See—*
Astfalk, Greg; Dougherty, Timothy S.; and Viriyayuthakorn, Montri, 4,512,944, Cl. 264-174.000.

Vivitar Corporation: *See—*
Orban, John M., 4,513,238, Cl. 320-23.000.

Volakakis, Dinos G. Rotisserie cooker. 4,512,248, Cl. 99-341.000.

von Gutfeld, Robert J.; and Wang, Sherman S., to United States of America, Navy. Apparatus for generating a focusable and scannable ultrasonic beam for non-destructive examination. 4,512,197, Cl. 73-643.000.

Von Holdt, John W. Molded bucket and lid having high stack strength. 4,512,493, Cl. 220-306.000.

Von Holdt, John W. Plastic container having tongue and groove retention. 4,512,494, Cl. 220-307.000.

von Seggern, Heinz; and Wang, Tsuey T., to AT&T Bell Laboratories. Polarizing of piezoelectric material. 4,512,941, Cl. 264-22.000.

Vora, Madhukar B., to Fairchild Camera & Instrument Corporation. Method of making an integrated injection logic cell having self-aligned collector and base reduced resistance utilizing selective diffusion from polycrystalline regions. 4,512,075, Cl. 29-577.00C.

Vora, Mahasukh; and Malhotra, Rajender, to Varian Associates, Inc. Missing or broken wafer sensor. 4,513,430, Cl. 377-39.000.

Vries, Lodewijk B.: *See—*
Dekker, Cornelis B.; and Vries, Lodewijk B., 4,513,315, Cl. 358-86.000.

Vyne, Robert L., to Motorola, Inc. Miller compensation for an operational amplifier. 4,513,251, Cl. 330-292.000.

W. R. Grace & Co.: *See—*
Hansson, P. E. Anders; and Jachimowicz, Felek, 4,513,122, Cl. 525-332.300.
Hansson, Per E. A.; and Jachimowicz, Felek, 4,513,121, Cl. 525-332.300.
Peters, Alan W.; Kim, Gwan; and Ernest, Michael V., 4,513,101, Cl. 502-304.000.
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,512,128, Cl. 52-361.000.

Wada, Takeo: *See—*
Matsuura, Kazumi; and Wada, Takeo, 4,512,962, Cl. 423-331.000.
Wada, Takuo: *See—*
Ohyama, Hiroshi; Morita, Ken; Wada, Takuo; and Miyahara, Masahiko, 4,512,989, Cl. 514-383.000.
Wader, Heribert, to Deutsche Perlite GmbH. Apparatus for the expansion of mineral matter, especially perlite and vermiculite. 4,512,736, Cl. 432-58.000.
Wagener, Dietrich; and Blase, Manfred, to Didier Engineering GmbH. Method and apparatus for measuring the flexure of a heating wall of a coke oven during operation thereof. 4,512,080, Cl. 33-125.00T.
Wagner, Horst: *See—*
Poetsch, Dieter; Massmann, Volker; Becker, Werner; and Wagner, Horst, 4,513,324, Cl. 358-214.000.
Walker, Francis H., to Stauffer Chemical Company. Haloacetylaminomethyl dioxolane herbicide antidotes. 4,512,796, Cl. 71-88.000.
Walker, Jerry L.: *See—*
Myers, John G.; Logan, Douglas P.; and Walker, Jerry L., 4,512,774, Cl. 44-51.000.
Wallace Murray Corporation: *See—*
Marr, Louise C.; and Bremer, Robert C., Jr., 4,512,716, Cl. 415-205.000.
Wallace, William E.; and Pourarian, Faiz, to Koppers Company, Inc. Hydrogen storage materials of hyperstoichiometric alloys. 4,512,965, Cl. 423-644.000.
Wallmark, Erik I.: *See—*
Edlund, Olof A.; Enser, Mats A.; Strage, Jan W.; Thunberg, Svante B.; and Wallmark, Erik I., 4,513,393, Cl. 364-900.000.
Walsdorfer, Hubert: *See—*
Dulken, Hartmut; Kassel, Karlheinz; Mows, Wolfgang; and Walsdorfer, Hubert, 4,513,072, Cl. 430-57.000.
Walston, Everett V., to Beaver Products, Inc. Panel module means. 4,512,126, Cl. 52-251.000.
Walter, Gerard O.; and Sheppard, William D., to Planning Research Corporation. System for digital transmission and synthesis of integrated data. 4,513,390, Cl. 364-900.000.
Walters, John, to Lucas Industries. Float operated electrical switch assembly. 4,513,185, Cl. 200-84.00C.
Wang, Donald G. J., to Celanese Corporation. Process for the production of semipermeable polybenzimidazole membranes and the resultant product. 4,512,894, Cl. 210-500.200.
Wang, Jia T.: *See—*
Khadder, Wadie N.; Wang, Jia T.; and Hollins, Brian E., 4,512,815, Cl. 148-1.500.
Wang, Sherman S.: *See—*
von Gutfeld, Robert J.; and Wang, Sherman S., 4,512,197, Cl. 73-643.000.
Wang, Tsuey T.: *See—*
von Seggern, Heinz; and Wang, Tsuey T., 4,512,941, Cl. 264-22.000.
Wániek, Kurt; and Tichy, Heinz, to Semperit Aktiengesellschaft. Antistatic support. 4,513,046, Cl. 428-156.000.
Ward, Randall W. Free-standing flexible container for fluids. 4,512,463, Cl. 206-216.000.
Warner-Lambert Company: *See—*
Carroll, Thomas J.; Corsello, Vincent G.; Glass, Michael; and Piccolo, Dominic J., 4,513,012, Cl. 426-5.000.
Warren, Dennis F.: *See—*
Vann, Roy R.; George, Flint R.; and Warren, Dennis F., 4,512,406, Cl. 166-297.000.
Wartenberg, Erwin W. Apparatus for coating plate-shaped bodies of glazed ceramic (tiles), glass or enamel. 4,512,282, Cl. 118-666.000.
Wary, John, to Union Carbide Corporation. Method of constructing thin electroluminescent lamp assemblies. 4,513,023, Cl. 427-54.100.
Wassermesserfabrik ANDRAE GmbH & Co.: *See—*
Konrad, Peter; and Mechel, Adam, 4,512,201, Cl. 73-861.790.
Watanabe, Hiromi, to Oppama Kogyo Kabushiki Kaisha. Ignition time controlling device in contactless ignition devices for internal combustion engines. 4,512,303, Cl. 123-335.000.
Watanabe, Masami, to Kashima Oil Company Limited. Method for producing mesophase continuously. 4,512,874, Cl. 208-44.000.
Watanabe, Naomitsu: *See—*
Morita, Yasukazu; and Watanabe, Naomitsu, 4,513,024, Cl. 427-65.000.
Watanabe, Toshimitu; Sakai, Masayuki; Minami, Kazutoshi; and Takumi, Shigeji, to Toyota Jidosha Kabushiki Kaisha. Vehicle air duct construction using center console box. 4,512,239, Cl. 98-2.030.
Wataya, Seiji: *See—*
Sakamoto, Toshiyuki; and Wataya, Seiji, 4,512,314, Cl. 123-459.000.
Waterman, Harold J., Jr., to Chandler Evans Inc. Rifle buttstock assembly. 4,512,101, Cl. 42-71.00R.
Waters, John H., to Dowty Mining Equipment Limited. Roof support suitable for use in mines. 4,512,686, Cl. 405-293.000.
Waters, Robert F.: *See—*
Connolly, John F.; Wennerberg, Arnold N.; and Waters, Robert F., 4,513,096, Cl. 502-185.000.
Wattier, Maurice F., to Equipements Automobiles Marchal. Windscreen wiper system. 4,512,056, Cl. 15-250.230.
Waynant, Ronald W.; Epp, Leonard; and Christensen, Clad P., Jr. Laser pumped by X-band microwaves. 4,513,424, Cl. 372-68.000.
Weadock, Glenn E., to Wetzel Enterprises, Inc. Solar powered fluid heating system. 4,512,157, Cl. 60-641.800.
Weathers, Glenn D.; and Holliday, Edward M., to United States of America, Army. Group-complementary code sets for implementing pulse-compression processing with optimum aperiodic autocorrelation and optimum cross-correlation properties. 4,513,288, Cl. 343-17.2PC.
Weaver, Paul E. Oil well pumping unit. 4,512,149, Cl. 60-371.000.
Webb, Vertis C.: *See—*
Dines, David R.; and Webb, Vertis C., 4,512,707, Cl. 414-404.000.
Wedco Incorporated: *See—*
Feder, Friedhelm R., 4,512,732, Cl. 425-222.000.
Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., to Beckman Instruments, Inc. Thermoelectric temperature control assembly for centrifuges. 4,512,758, Cl. 494-13.000.
Wedemeyer, Robert C.: *See—*
Wright, Herschel E.; and Wedemeyer, Robert C., 4,512,202, Cl. 73-863.000.
Wegman, Richard W.; and Busby, David C., to Union Carbide Corporation. Acetaldehyde process. 4,513,151, Cl. 568-484.000.
Weinstein, Raymond P., to Home Care Industries, Inc. Top loading upright vacuum cleaner bag and method of manufacturing the same. 4,512,788, Cl. 55-374.000.
Weiss, Andrew B.: *See—*
Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,512,038, Cl. 3-1.900.
Weiss, Hermann; Linde, Rolf; Tiemens, Ulf; and Klotz, Erhard, to U.S. Philips Corporation. Fluoroscopy apparatus for forming layer images of a three-dimensional object. 4,513,433, Cl. 378-2.000.
Weitz, Hans-Martin: *See—*
Fischer, Rolf; Weitz, Hans-Martin; and Siegel, Hardo, 4,513,150, Cl. 568-385.000.
Welch, Albert B., to LTV Aerospace and Defense Company. Peripheral gain suppression in a laser medium. 4,513,421, Cl. 372-24.000.
Weldy, Piper: *See—*
Hodes, David S.; Leidy, Grace; Sprunt, Katherine; and Weldy, Piper, 4,513,083, Cl. 435-68.000.
Weller, Harold N., III; Gordon, Eric M.; Karanewsky, Donald S.; and Ryono, Denis E., to E. R. Squibb & Sons, Inc. Acylamino oxo or hydroxy substituted alkylamino thiazines and thiazepines. 4,512,988, Cl. 514-211.000.
Wells, Edward S.; Ford, Spencer K.; Werner, Jack E.; and Lindsay, Erin J., to Minnesota Mining and Manufacturing Company. Integrated cardioplegia delivery system. 4,512,163, Cl. 62-394.000.
Wennerberg, Arnold N.: *See—*
Connolly, John F.; Wennerberg, Arnold N.; and Waters, Robert F., 4,513,096, Cl. 502-185.000.
Wenning, Hans-Peter: *See—*
Escher, Gert; Holighaus, Rolf; and Wenning, Hans-Peter, 4,512,873, Cl. 208-13.000.
Weppner, Werner: *See—*
Kreuer, Klaus-Dieter; Weppner, Werner; and Rabenau, Albrecht, 4,513,069, Cl. 429-192.000.
Werner, Jack E.: *See—*
Wells, Edward S.; Ford, Spencer K.; Werner, Jack E.; and Lindsay, Erin J., 4,512,163, Cl. 62-394.000.
West, Chester R. Storage receptacle for electronic storage media. 4,512,469, Cl. 206-387.000.
Western Publishing Company, Inc.: *See—*
Propsom, George F., 4,512,584, Cl. 273-282.000.
Westinghouse Electric Corp.: *See—*
Cricchi, James R., 4,513,309, Cl. 357-42.000.
Faulkner, James V., Jr., 4,513,382, Cl. 364-492.000.
Ghrist, William D., III, 4,512,185, Cl. 73-118.000.
Moore, William H.; Mandel, Alan F.; Trosky, William J.; Eichler, Kenneth M.; Tomas, Stephen P.; Tober, Edward; and Vasold, Thomas A., 4,512,442, Cl. 187-29.00R.
Novak, Paul G.; and Specht, Theodore R., 4,513,243, Cl. 323-361.000.
Putman, Thomas H., 4,513,240, Cl. 323-210.000.
Safiuddin, Mohammed, 4,513,232, Cl. 318-341.000.
Sriram, Sambamurthy; Steinbruegge, Kenneth; and Supertzi, Emmanuel, 4,512,638, Cl. 350-372.000.
Thomas, Robert L., 4,513,186, Cl. 200-144.00B.
Westly, Pernie E.; and Leder, Uri, to Sanders Associates, Inc. Convertible platen for graphics plotter. 4,512,505, Cl. 226-101.000.
Westvaco Corporation: *See—*
Keesee, Kenneth C.; and Ruckman, James A., 4,512,132, Cl. 52-742.000.
Wetzel Enterprises, Inc.: *See—*
Weadock, Glenn E., 4,512,157, Cl. 60-641.800.
Whang, Sung-Hyun, to Northeastern University. Precipitate hardened titanium alloy composition and method of manufacture. 4,512,826, Cl. 148-407.000.
Wheatley, William T., to Lucas Industries, plc. Fuel treatment device. 4,512,884, Cl. 210-136.000.
Whipple, David L.: *See—*
Ziegler, Michael L.; Marshall, Peter G.; and Whipple, David L., 4,513,372, Cl. 364-200.000.
Whipple, Donald E.: *See—*
Ready, Robert J.; Whipple, Donald E.; and Sferra, James P., 4,512,098, Cl. 40-610.000.
Whitman Medical Corporation: *See—*
Vailancourt, Vincent L., 4,512,766, Cl. 604-169.000.
Wichterle, Otto, to SPOFA, spojene podniky pro zdravotnickou vyrobu. Apparatus for planarizing and storing hydrophilic contact lens. 4,512,461, Cl. 206-5.100.
Widerby, Lennart, to Flakt Aktiebolag. Exhaust air valve. 4,512,356, Cl. 137-75.000.

Wiegers, Wilhelmus J.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Perfumery uses of phenyl alkanols. 4,512,918, Cl. 252-522.00R.
Wiener, Murray, to Babcock & Wilcox Company, The. Panel of vapor generating and superheating tubes. 4,512,336, Cl. 126-442.000.
Wilcox, Jeffrey S.; and Nienhuis, James H., to Herman Miller, Inc. Static protective chair. 4,513,347, Cl. 361-212.000.
Wild, Keith R., to British Gas Corporation. Purification of aqueous effluents. 4,512,777, Cl. 48-210.000.
Wilensky, Barry F.; and Maggi, Joseph A., to Allied Corporation. Programmable video test pattern generator for display systems. 4,513,318, Cl. 358-139.000.
Wm. Steinen Mfg. Co.: *See—*
Kuzma, Gregory S., 4,512,358, Cl. 137-116.000.
Williams, Donald F. Adjustable canoe pontoons. 4,512,277, Cl. 114-364.000.
Williams, James E., to Cuisinarts, Inc. Single vertical motion feedtube protector and actuator for a food processor. 4,512,522, Cl. 241-37.500.
Williams, Keith R., to Sundstrand Corporation. Pressure limiter. 4,512,723, Cl. 417-222.000.
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., to Lucas Industries Limited. Internal combustion engine. 4,512,319, Cl. 123-492.000.
Williams, Tommy A. Book support system. 4,512,603, Cl. 294-137.000.
Willinger, Allan H., to Willinger Bros., Inc. Aquarium filter assembly. 4,512,885, Cl. 210-136.000.
Willinger Bros., Inc.: *See—*
Willinger, Allan H., 4,512,885, Cl. 210-136.000.
Willoughby, John C., to Foam-Lag Industries Pty. Ltd.; and P.C.H. Constructions Pty. Ltd. Apparatus for roof flashing. 4,512,119, Cl. 52-58.000.
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., to International Flavors & Fragrances Inc. 2-Methoxy-4-(2-methylpropenyl) phenyl ester of isobutyric acid, and use in augmenting or enhancing aroma of perfume compositions, colognes and perfumed articles. 4,512,919, Cl. 252-522.00R.
Wilson Sporting Goods Co.: *See—*
Martin, Robin A., 4,513,058, Cl. 428-336.000.
Wilson, William P.; Hewlett, Catherine M.; and Rieben, Werner P., to General Electric Company. Customization window for a computer numerical control system. 4,513,379, Cl. 364-474.000.
Wimmer, Warren K.: *See—*
Lamb, James S.; and Wimmer, Warren K., 4,513,417, Cl. 371-12.000.
Winkelmann, Detlef, to Hoechst Aktiengesellschaft. Electrophotographic copier. 4,512,658, Cl. 355-14.0SH.
Winkler, Ernel R.: *See—*
Schroeder, Jack A.; and Winkler, Ernel R., 4,513,355, Cl. 361-403.000.
Winter, William E., Jr.: *See—*
Eberly, Paul E., Jr.; and Winter, William E., Jr., 4,513,090, Cl. 502-66.000.
Winther Family Members: *See—*
Winther, Harry C., 4,512,278, Cl. 116-34.00R.
Winther, Harry C., to Winther Family Members. Vehicle tire deflation signalling system. 4,512,278, Cl. 116-34.00R.
Wirth, Emil J., Jr., to Pfizer Inc. Wire injection apparatus. 4,512,800, Cl. 75-53.000.
Wisconsin Alumini Research Foundation: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lee, Seok-Ho, 4,512,925, Cl. 260-397.200.
Wiseman, John A.: *See—*
Davis, Michael I.; Garrett, Michael J.; and Wiseman, John A., 4,513,351, Cl. 361-384.000.
Wissler, Josef H., to Max Planck Gesellschaft Zur Forderung der Wissenschaften. Chemorecruitins of leukocytes and inflamed tissues. 4,512,970, Cl. 424-85.000.
Wissler, Josef H., to Max Planck Gesellschaft Zur Forderung der Wissenschaften. Mitogens of leukocytes and inflamed tissues. 4,512,971, Cl. 424-85.000.
Witkowski, Andrew B.: *See—*
Egan, John J.; and Witkowski, Andrew B., 4,512,299, Cl. 123-196.00A.
Wittmer, Paul: *See—*
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Wohltjen, Henry: *See—*
Giuliani, John F.; and Wohltjen, Henry, 4,513,087, Cl. 436-96.000.
Hannan, Patrick J.; Stiffey, Arthur V.; Jarvis, N. Lynn; and Wohltjen, Henry, 4,513,280, Cl. 340-632.000.
Wong, David T.; and Lacefield, William B., to Eli Lilly and Company. Diaryl-pyrazine derivatives affecting GABA binding. 4,513,135, Cl. 544-120.000.
Wong, Victor W., to Cummins Engine Company, Inc. Method and apparatus for removing carbon particles from engine exhausts. 4,512,147, Cl. 60-274.000.
Woodward, Stewart A.; Hilty, Ronald L.; and Stoll, Donald H., to General Electric Company. Transducer. 4,512,199, Cl. 73-725.000.
Wopker, Wilhelm: *See—*
Suetterlin, Norbert; Arndt, Peter J.; Heil, Ernst; Siol, Werner; Tilch, Willi; and Wopker, Wilhelm, 4,513,118, Cl. 525-81.000.
Worthington, Thomas K.: *See—*
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Wright, Danny O.: *See—*
Pauwels, Michael A.; Wright, Danny O.; Harvey, Bruce J.; and Bauer, Thomas J., 4,512,317, Cl. 123-478.000.
Wright, David B., to Olin Corporation. Method of monitoring pH. 4,512,853, Cl. 204-1.00T.
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., to Exxon Research and Engineering Co. Process using iron-thallium catalysts in CO hydrogenation. 4,513,104, Cl. 518-714.000.
Wright, Herschel E.; and Wedemeyer, Robert C., to Beckman Instruments, Inc. Pregrooved centrifuge tubes. 4,512,202, Cl. 73-863.000.
Wright, Mervin E.; and Gronholz, Donald D., to Donaldson Company, Inc. Pleated filter element with controlled expansibility and frame therefor. 4,512,891, Cl. 210-445.000.
Wu, Mu T.: *See—*
Patchett, Arthur A.; and Wu, Mu T., 4,512,979, Cl. 514-2.000.
Wuerzer, Bruno: *See—*
Parg, Adolf; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,512,797, Cl. 71-93.000.
Wunsch, Richard E. Manifold for controlling administration of multiple intravenous solutions and medications. 4,512,764, Cl. 604-80.000.
Wurttembergische Metallwarenfabrik AG.: *See—*
Bauer, Ewald; and Krejza, Jurgen, 4,512,495, Cl. 220-316.000.
Wyle, Charles; and Shea, Donald M., to Charles Wyle Engineering Corporation. Method and apparatus for applying solvent to tubing, other cylindrical objects or other flexible material. 4,512,947, Cl. 264-343.000.
Xerox Corporation: *See—*
Borriello, Gaetano; Lyon, Richard F.; and Bell, Alan G., 4,513,427, Cl. 375-110.000.
Brueggemann, Harry P., 4,512,625, Cl. 350-6.800.
Buck, Kenneth J.; Grace, Robert E.; and Hayes, Thomas A., Jr., 4,512,652, Cl. 355-14.0CH.
Huggins, Raymond W., 4,513,404, Cl. 367-93.000.
Jansen, Frank; and Mort, Joseph, 4,513,022, Cl. 427-39.000.
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Nash, Robert J.; and Randall, Kent A., 4,513,074, Cl. 430-106.600.
Yagishita, Teruo: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,513,075, Cl. 430-108.000.
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Yamada, Junichi: *See—*
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Yamada, Naoki: *See—*
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Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Sugiyama, Keiichi, 4,512,311, Cl. 123-432.000.
Yamakawa, Toru, to Fuji Jukogyo Kabushiki Kaisha. Internal combustion engine provided with a plurality of power units. 4,512,301, Cl. 123-198.00F.
Yamamoto, Naoki: *See—*
Kishida, Kazuo; Yamamoto, Naoki; Nishida, Kozi; Narita, Toshihito; and Sato, Yasumasa, 4,513,111, Cl. 524-458.000.
Yamamuro, Sigeaki: *See—*
Tanaka, Yoshikazu; Yamamuro, Sigeaki; Hirano, Hiroyuki; and Morimoto, Yoshiro, 4,512,751, Cl. 474-28.000.
Yamanishi, Toru; Tsuneishi, Katsuyuki; and Yoshida, Masaaki, to Sumitomo Electric Industries, Ltd. Method for coating optical transmission glass fibers. 4,512,281, Cl. 118-627.000.
Yamasaki, Kazuyuki; and Kagawa, Fukashi, to Mitsui Petrochemical Industries, Ltd. Electret article. 4,513,049, Cl. 428-194.000.
Yamatani, Yoshiichi. Intensifier. 4,512,151, Cl. 60-581.000.
Yamato, Akihiro, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control method for multi cylinder internal combustion engines after termination of fuel cut. 4,512,321, Cl. 123-493.000.
Yamato Mishin Seizo Kabushiki Kaisha: *See—*
Nozaki, Keizo, 4,512,270, Cl. 112-140.000.
Yamauchi, Masakatu, to Tanica Electric Co., Ltd.; and Tomei Sangyo Kabushiki Kaisha. Electrolytic sterilizer for contact lenses. 4,512,865, Cl. 204-271.000.
Yamazaki, Kaoru; and Shibuya, Fukashi, to Konegafuchi Kagaku Kogyo Kabushiki Kaisha. Acrylonitrile polymer, process for the preparation thereof and fiber prepared therefrom. 4,513,126, Cl. 526-87.000.
Yamazaki, Keiji, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm control and mirror release devices for cameras. 4,512,647, Cl. 354-441.000.
Yano, Hiroshi: *See—*
Fujimura, Shuzo; and Yano, Hiroshi, 4,512,868, Cl. 204-298.000.
Yao, Keith C.: *See—*
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Yariv, Amnon: *See—*
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Yen, Kuo-Hsiung; Stokes, Robert B.; Lau, Kei-Fung; Kong, Alvin M.; and Kagiwada, Reynold S., to TRW Inc. Low-loss acoustic wave filter device. 4,513,261, Cl. 333-194.000.
Yeou, Victor: *See—*
Boichu, Claude P.; and Yeou, Victor, 4,512,708, Cl. 414-694.000.

Yokogawa, Fumihiko, to Pioneer Electronic Corporation. Variable impedance circuit. 4,513,242, Cl. 323-352.000.

Yokono, Hitoshi: *See*—
Shoji, Fusaji; Takemoto, Issei; Kataoka, Fumio; Yokono, Hitoshi; and Isogai, Tokio, 4,513,132, Cl. 528-21.000.

Yokoyama, Tatsuo, to Fujitsu Ten Limited. DC current detector. 4,513,245, Cl. 324-119.000.

Yoo, Sin Y. Aerodynamic bass-reflex enclosure. 4,512,434, Cl. 181-146.000.

Yoshida, Kenichi: *See*—
Kita, Yasuo; Moriya, Michio; and Yoshida, Kenichi, 4,512,615, Cl. 303-97.000.

Yoshida, Kobun, to Pioneer Electronic Corporation. Cassette tape recorder. 4,513,336, Cl. 360-105.000.

Yoshida Kogyo K.K.: *See*—
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Yoshida, Masaaki, to Canon Kabushiki Kaisha. Flash device. 4,512,644, Cl. 354-149.100.

Yoshida, Masaaki: *See*—
Yamanishi, Toru; Tsuneishi, Katsuyuki; and Yoshida, Masaaki, 4,512,281, Cl. 118-627.000.

Yoshikawa, Kazuo: *See*—
Aoyama, Shigetsune; Yoshikawa, Kazuo; Hasegawa, Yoshimichi; and Higuchi, Junichi, 4,512,559, Cl. 267-47.000.

Yoshimura, Kunimasa: *See*—
Nakano, Hiromichi; Sasaya, Hideaki; Inagaki, Mitsuo; Matsui, Kazuma; and Yoshimura, Kunimasa, 4,512,728, Cl. 418-3.000.

Yoshinari, Shigeru: *See*—
Tsuboshima, Kosaku; and Yoshinari, Shigeru, 4,512,852, Cl. 204-1.00T.

Yoshioka, Toshiharu, to Honda Giken Kogyo Kabushiki Kaisha. Front fork reinforcing structure in motor bicycle or the like. 4,512,592, Cl. 280-279.000.

Young, Dean A.; and Koepke, Jeffery W., to Union Oil Company of California. Polymerization and oligomerization with catalytically active amorphous silica. 4,513,158, Cl. 585-527.000.

Young, Donald C., to Union Oil Company of California. Method for treating wooden articles. 4,512,813, Cl. 134-27.000.

Young, Ronald E.; and Meulners, Duane C., to Dymek Corporation. Diagnostic recording. 4,513,333, Cl. 360-77.000.

Ysidro, Leonard M., Sr.: *See*—
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,512,701, Cl. 414-101.000.

Zaar, Wolfgang: *See*—
Hanssle, Peter; and Zaar, Wolfgang, 4,513,157, Cl. 585-378.000.

Zampino, Michael J.: *See*—
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,512,919, Cl. 252-522.00R.

Zandona, Oliver J.: *See*—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,513,093, Cl. 502-84.000.

Zaneveld, Lourens J. D.; and Burns, James W. P., to Zaneveld, Lourens J. D.; and Burns, James W. P. Device and method for reversibly occluding a body duct. 4,512,342, Cl. 128-303.00R.

Zeigler, Theodore R. Display panel mounting clip. 4,512,097, Cl. 40-611.000.

Zenith Electronics Corporation: *See*—
Reneau, Daniel L.; Tzakis, George J.; and Engel, Christopher M., 4,513,320, Cl. 358-166.000.

Zevatron GmbH, Gesellschaft fur Fertigungseinrichtungen der Elektronik: *See*—
Pachschwoll, Heino, 4,512,508, Cl. 228-180.100.

Ziegler, Michael L.; Marshall, Peter G.; and Whipple, David L., to Data General Corporation. Universal memory. 4,513,372, Cl. 364-200.000.

Ziels, Burton D.: *See*—
Ayres, Paul S.; Ziels, Burton D.; and Chen, Chou-Ming, 4,512,721, Cl. 417-51.000.

Zijlstra, Hinne: *See*—
Verweel, Jan; and Zijlstra, Hinne, 4,513,272, Cl. 335-284.000.

Zimmermann, John, to Somerville Belkin Industries Limited. Divided display container. 4,512,511, Cl. 229-15.000.

Zinser Textilmaschinen GmbH: *See*—
Hartmannsgruber, Max; Kriechbaum, Kurt; Schulz, Gunter; and Guttler, Hermann, 4,512,061, Cl. 19-239.000.

Zirk, Elisabeth: *See*—
Olschewski, Armin; Herrmann, Gerhard; Bauer, Bernhard; and Zirk, Elisabeth, 4,512,672, Cl. 384-477.000.

Ziv, Pinhas; and Ng, Yiu-Keung, to Amdahl Corporation. Data transfer control system and method for a plurality of linked stations. 4,513,370, Cl. 364-200.000.

Zscheile, John W., Jr.: *See*—
Pike, Lawrence W.; Zscheile, John W., Jr.; and Spencer, Billie M., 4,513,285, Cl. 343-5.0PN.

Zurek, Rudolf: *See*—
Molzer, Peter; Pollner, Jurgen; Topic, Nicola; Trummer, Gregor; and Zurek, Rudolf, 4,512,560, Cl. 269-20.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF APRIL, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Wicanders Korkfabriker: *See—*
Harding, Sune, Re. 31,869, Cl. 215-254.000.

Cohen, Sam G., to Timex Corporation. Electro-optical display with circuitry for applying predetermined potentials to all display segments to effect activation of a selected segment only. Re. 31,872, Cl. 340-784.000.

Ernst Reiner, KG Feinmechanik und Apparatebau: *See—*
Wagner, Friedemann, Re. 31,870, Cl. 101-110.000.

Exxon Research and Engineering Co.: *See—*
Venero, Agustin F., Re. 31,871, Cl. 429-15.000.

Harding, Sune, to AB Wicanders Korkfabriker. Bottle caps. Re. 31,869, Cl. 215-254.000.

Timex Corporation: *See—*
Cohen, Sam G., Re. 31,872, Cl. 340-784.000.

Venero, Agustin F., to Exxon Research and Engineering Co. Metal halogen batteries and method of operating same. Re. 31,871, Cl. 429-15.000.

Wagner, Friedemann, to Ernst Reiner, KG Feinmechanik und Apparatebau. Means for yieldably coupling a shaft to counter wheels or the like. Re. 31,870, Cl. 101-110.000.

LIST OF DESIGN PATENTEES

Adams, Bert G.; and Manna, Patrick J., to Economics Laboratory, Inc. Bottle. 278,515, 4-23-85, Cl. D9-403.000.

Akro Corporation, The: *See—*
Reuben, Harold, 278,564, Cl. D92-25.000.

Aldrich, Thomas B.; Pardo, John; and Snyder, Martin H., to AT&T Technologies, Inc. Telephone stand. 278,534, 4-23-85, Cl. D14-60.000.

Anderson, George C., to Insilco Corporation. Container. 278,561, 4-23-85, Cl. D32-53.000.

Ando, Tetsuro, to KabushikiKaisha Taikodenki Seisakusho. Telephone. 278,533, 4-23-85, Cl. D14-53.000.

AT&T Technologies, Inc.: *See—*
Aldrich, Thomas B.; Pardo, John; and Snyder, Martin H., 278,534, Cl. D14-60.000.
McGarvey, John N.; and Tilley, Alvin R., 278,531, Cl. D14-53.000.

Ateliers Reunis S.A.: *See—*
Kervan, Gilbert, 278,518, Cl. D10-32.000.

AXIA Incorporated: *See—*
Schroeder, Versell H.; Sterling, Alton H.; and Rozenberg, Josef H., 278,538, Cl. D15-72.000.

B and B Marketing and Development Inc.: *See—*
Bain, Leroy D.; and Risch, Murray J., 278,554, Cl. D24-17.000.

Backstrom, Dixie C. Physical exerciser. 278,548, 4-23-85, Cl. D21-191.000.

Bain, Leroy D.; and Risch, Murray J., to B and B Marketing and Development Inc. Otoscope. 278,554, 4-23-85, Cl. D24-17.000.

Baird, Robert W.; and Hopper, Patricia. Two part flower container. 278,521, 4-23-85, Cl. D11-153.000.

Bayly, Peter K., to Roplas Pty. Ltd. Foldable chair or the like. 278,486, 4-23-85, Cl. D6-368.000.

Bevilacqua, Ernest; and Knerr, Theodore, to Bost Enterprises, Inc. Golf bag. 278,479, 4-23-85, Cl. D3-37.000.

Blank, Cecil G., to Flow Systems. Automatic battery water filler. 278,550, 4-23-85, Cl. D23-17.000.

Bost Enterprises, Inc.: *See—*
Bevilacqua, Ernest; and Knerr, Theodore, 278,479, Cl. D3-37.000.

Brescia, Anthony; and Deacon, Ross, to Syroco Inc. Combined horizontal storage unit and display board. 278,493, 4-23-85, Cl. D6-570.000.

Briggery Myles, Jacquelyn A. Swimwear. 278,472, 4-23-85, Cl. D2-40.000.

Briggery Myles, Jacquelyn A. Swimwear. 278,473, 4-23-85, Cl. D2-40.000.

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Byrd, Karl G., Sr. Decalomania or similar article. 278,545, 4-23-85, Cl. D20-11.000.

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CLASSIFICATION OF PATENTS

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23.1	4,512,181
64.1	4,512,182
64.4	4,512,183
116	4,512,184
118	4,512,185
151.5	4,512,186
198	4,512,187
	4,512,188
296	4,512,189
319	4,512,190
337.5	4,512,191
505	4,512,192
517 B	4,512,193
579	4,512,194
602	4,512,195
620	4,512,196
643	4,512,197
703	4,512,198
725	4,512,199
861.04	4,512,200
861.79	4,512,201
863	4,512,202
863.81	4,512,203

CLASS 74

10.33	4,512,204
	4,512,205
10.54	4,512,206
44	4,512,207
89.15	4,512,208
492	4,512,209
535	4,512,210
733	4,512,212
745	4,512,211
805	4,512,213
820	4,512,214

CLASS 75

3	4,512,798
49	4,512,799
53	4,512,800
58	4,512,801
60	4,512,802
77	4,512,803
123 N	4,512,804
244	4,512,805

CLASS 81

3.44	4,512,215
57.17	4,512,216
58	4,512,217
62	4,512,218
121.1	4,512,219
	4,512,220
170	4,512,221
464	4,512,222

CLASS 82

2.5	4,512,223
48	4,512,224

CLASS 83

38	4,512,225
56	4,512,226
104	4,512,227
355	4,512,228

CLASS 84

1.01	4,512,229
1.24	4,512,230
277	4,512,231
313	4,512,232
394	4,512,233
433	4,512,234

CLASS 86

23	4,512,235

CLASS 89

128	4,512,236

CLASS 91

369 A	4,512,237
370	4,512,238

CLASS 98

2.03	4,512,239
2.04	4,512,240
31.5	4,512,242
32	4,512,241
42.01	4,512,243
98	4,512,244
115.4	4,512,245

CLASS 99

312	4,512,246
323.5	4,512,247
341	4,512,248
352	4,512,249
425	4,512,250
472	4,512,251

CLASS 100

53	4,512,252
	4,512,253

CLASS 101

110	Re.31,870
157	4,512,254
230	4,512,255
248	4,512,256

CLASS 104

53	4,512,257
138 R	4,512,258
208	4,512,259
252	4,512,260

CLASS 105

167	4,512,261

CLASS 106

18.24	4,512,806
22	4,512,807
83	4,512,808
103	4,512,809

CLASS 108

61	4,512,262

CLASS 109

66	4,512,263

CLASS 110

160	4,512,264
171	4,512,265
204	4,512,266
347	4,512,267

CLASS 112

63	4,512,268
121.12	4,512,269
140	4,512,270
158 E	4,512,271
311	4,512,272
315	4,512,273
423	4,512,274

CLASS 114

39	4,512,275
	4,512,276
364	4,512,277

CLASS 116

34 R	4,512,278

CLASS 118

411	4,512,279
426	4,512,280
627	4,512,281
666	4,512,282
723	4,512,283
	4,512,284

CLASS 119

44	4,512,285
96	4,512,286
147 R	4,512,287

CLASS 122

20 B	4,512,288
380	4,512,289

CLASS 123

56 BC	4,512,290
	4,512,291
65 B	4,512,292
	4,512,293
73 R	4,512,294
145 A	4,512,295
146.5 R	4,512,296
179 H	4,512,297
196 A	4,512,299
196 AB	4,512,300
196 R	4,512,298
198 F	4,512,301
238	4,512,302
335	4,512,303
344	4,512,304
364	4,512,305
367	4,512,306
383	4,512,307
	4,512,308
425	4,512,309
	4,512,310
432	4,512,311
439	4,512,312
440	4,512,313
459	4,512,314
478	4,512,315
	4,512,316
	4,512,317
492	4,512,318
	4,512,319
	4,512,320
493	4,512,321
549	4,512,322
557	4,512,323
	4,512,324
572	4,512,325

CLASS 124

23 R	4,512,326

CLASS 126

21 A	4,512,327
37 B	4,512,328
121	4,512,329
139	4,512,330
190	4,512,331
415	4,512,332
429	4,512,333
430	4,512,334
440	4,512,335
442	4,512,336

CLASS 128

1 R	4,512,337
	4,512,338
41	4,512,339
90	4,512,340
200.21	4,512,341
303 R	4,512,342
303.17	4,512,343
305	4,512,344
325	4,512,345
335	4,512,346
352	4,512,347
632	4,512,348
	4,512,349
660	4,512,350
786	4,512,351

CLASS 131

276	4,512,352
304	4,512,353

CLASS 132

91	4,512,354

CLASS 134

8	4,512,810
10	4,512,811
21	4,512,812
27	4,512,813
34	4,512,814

CLASS 136

244	4,513,167
	4,513,168

CLASS 137

68 A	4,512,355
75	4,512,356
82	4,512,357
116	4,512,358
315	4,512,359
326	4,512,360
355.27	4,512,361
356	4,512,362
375	4,512,363
	4,512,364
413	4,512,365
527.8	4,512,366
554	4,512,367
561 A	4,512,368
614.04	4,512,369
625.66	4,512,370
828	4,512,371
862	4,512,372

CLASS 139

11	4,512,373
191	4,512,374
435	4,512,375

CLASS 140

92.1	4,512,376

CLASS 141

11	4,512,377
98	4,512,378
286	4,512,379

CLASS 144

1 A	4,512,380

CLASS 145

29 R	4,512,381

CLASS 148

1.5	4,512,815
	4,512,816
3	4,512,817
6.14 R	4,512,818
11.5 F	4,512,819
12.7 N	4,512,820
16.5	4,512,821
24	4,512,822
113	4,512,823
121	4,512,824
175	4,512,825
407	4,512,826

CLASS 152

408	4,512,382

CLASS 156

48 4,512,827
49 4,512,828
70 4,512,830
78 4,512,831
86 4,512,832
94 4,512,833
138 4,512,834
174 4,512,835
4,512,836
189 4,512,837
203 4,512,838
248 4,512,839
304.1 4,512,840
345 4,512,841
357 4,512,842
510 4,512,844
548 4,512,845
623 Q 4,512,846
626 4,512,847
630 4,512,848
644 4,512,843
659.1 4,512,829

CLASS 162

157.2 4,512,849

CLASS 164

35 4,512,383
46 4,512,384
364 4,512,385
467 4,512,386

CLASS 165

1 4,512,387
4,512,388
10 4,512,389
48 R 4,512,391
54 4,512,392
4,512,393
86 4,512,394
101 4,512,395
104.32 4,512,396
166 4,512,397

CLASS 166

54.5 4,512,411
70 4,512,398
120 4,512,399
245 4,512,400
249 4,512,401
4,512,402
261 4,512,403
274 4,512,404
278 4,512,405
295 4,512,407
297 4,512,406
349 4,512,408
352 4,512,409
380 4,512,410

CLASS 169

24 4,512,412

CLASS 172

74 4,512,413
112 4,512,414
360 4,512,415
776 4,512,416

CLASS 173

77 4,512,417

CLASS 174

36 4,513,170
41 4,513,171
65 SS 4,513,172
121 A 4,513,173
138 F 4,513,169

CLASS 175

4.56 4,512,418
58 4,512,419
67 4,512,420
71 4,512,421
99 4,512,422
226 4,512,423
299 4,512,424
329 4,512,425
4,512,426

CLASS 177

1 4,512,427
25 4,512,428
4,512,429
163 4,512,430
210 R 4,512,431
211 4,512,432

CLASS 178

22.08 4,513,174

CLASS 179

18 BA 4,513,175
81 B 4,513,177
81 R 4,513,178
175.1 R 4,513,176
175.3 R 4,513,179

CLASS 180

235 4,512,433

CLASS 181

146 4,512,434
170 4,512,435

CLASS 182

2 4,512,436
3 4,512,437
43 4,512,438
66 4,512,439
146 4,512,440

CLASS 184

105 B 4,512,441

CLASS 187

29 R 4,512,442
57 4,512,443
67 4,512,444

CLASS 188

71.9 4,512,445
73.38 4,512,446
322.15 4,512,447
378 4,512,448

CLASS 192

0.096 4,512,451
3.28 4,512,449
12 R 4,512,450
104 C 4,512,452

CLASS 194

1 D 4,512,454
1 N 4,512,453

CLASS 198

404 4,512,455
479 4,512,456
4,512,457
507 4,512,458
729 4,512,459
790 4,512,460

CLASS 200

50 C 4,513,181
50 R 4,513,180
51.09 4,513,182
61.45 R 4,513,183
81.9 M 4,513,184
84 C 4,513,185
144 AP 4,513,187
144 B 4,513,186

CLASS 201

1 4,512,850

CLASS 203

88 4,512,851

CLASS 204

1 T 4,512,852
4,512,853
15 4,512,854
22 4,512,855
55 R 4,512,856
98 4,512,857
104 4,512,858
129.46 4,512,859
181 C 4,512,860
181 R 4,512,861
192 D 4,512,862
192 P 4,512,864
192 R 4,512,863
271 4,512,865
290 F 4,512,866
298 4,512,867
4,512,868
300 EC 4,512,869
416 4,512,870
429 4,512,871

CLASS 206

5.1 4,512,461
53 4,512,462
216 4,512,463
292 4,512,464
315.4 4,512,465
370 4,512,466
379 4,512,467
387 4,512,468
4,512,469
4,512,470
438 4,512,471
443 4,512,472
454 4,512,473
461 4,512,474
484 4,512,475
554 4,512,476
577 4,512,477
611 4,512,478
632 4,512,479

CLASS 208

11 LE 4,512,872
13 4,512,873
44 4,512,874
114 4,512,875
4,512,876
136 4,512,877
179 4,512,878

CLASS 209

3 4,512,879
250 4,512,880
270 4,512,881

CLASS 210

86 4,512,882
123 4,512,883
136 4,512,884
4,512,885
170 4,512,886
220 4,512,887
221.2 4,512,888
225 4,512,889
335 4,512,890
445 4,512,891
493.2 4,512,892
500.2 4,512,893
4,512,894
627 4,512,895
635 4,512,896
656 4,512,897
4,512,898
4,512,899
748 4,512,900
792 4,512,901

CLASS 211

11 4,512,480
57.1 4,512,481

CLASS 212

188 4,512,482

CLASS 213

75 TC 4,512,483

CLASS 215

221 4,512,484
225 4,512,485
249 4,512,486
254 Re.31,869
274 4,512,487

CLASS 219

9.5 4,513,188
10.55 B 4,513,189
56.21 4,513,190
69 M 4,513,191
69 W 4,513,192
98 4,513,193
121 EC 4,513,194
124.34 4,513,195
203 4,513,196
527 4,513,197

CLASS 220

2.2 4,512,488
19 4,512,489
72 4,512,490
89 A 4,512,491
204 4,512,492
306 4,512,493
307 4,512,494
316 4,512,495
319 4,512,496
369 4,512,497
371 4,512,498
374 4,512,499

CLASS 221

82 4,512,500

CLASS 222

153 4,512,501
413 4,512,502

CLASS 224

42.42 R 4,512,503
42.46 R 4,512,504

CLASS 226

101 4,512,505

CLASS 227

5 4,512,506

CLASS 228

40 4,512,510
57 4,512,507
180.1 4,512,508
180.2 4,512,509

CLASS 229

15 4,512,511
30 4,512,512

CLASS 235

61 L 4,513,198
449 4,513,199

CLASS 239

8 4,512,513
99 4,512,514
129 4,512,515
168 4,512,516
206 4,512,517
223 4,512,518
381 4,512,519
440 4,512,520

CLASS 241

34 4,512,521
37.5 4,512,522
82.4 4,512,523
101.7 4,512,524
207 4,512,525

CLASS 242

36 4,512,526
56 R 4,512,527
4,512,528
4,512,904
67.1 R 4,512,529
67.3 R 4,512,530
84.21 R 4,512,531
116 4,512,532
129 4,512,533
198 4,512,534
200 4,512,535
218 4,512,536

CLASS 244

3.21 4,512,537
122 AF 4,512,538
137 P 4,512,539

CLASS 248

95 4,512,540
459 4,512,541
460 4,512,542
670 4,512,543

CLASS 249

109 4,512,544

CLASS 250

227 4,513,200
342 4,513,201
385 4,513,202
491.1 4,513,203
496.1 4,513,204
507.1 4,513,205

CLASS 251

4 4,512,545
65 4,512,546
115 4,512,547
124 4,512,548
137 4,512,549
214 4,512,550
339 4,512,551

CLASS 252

8.6 4,512,902
51.5 A 4,512,903
62.2 4,512,905
62.63 4,512,906
70 4,512,907
160 4,512,908
188.28 4,512,909
188.31 4,512,910
301.4 H 4,512,911
301.6 S 4,512,912
313.1 4,512,913
355 4,512,914
389 A 4,512,915
511 4,512,916
521 4,512,917
522 R 4,512,918
4,512,919
573 4,512,920
626 4,512,921

CLASS 253

389 R 4,512,552

CLASS 254

89 R 4,512,553
131 4,512,554
350 4,512,555

CLASS 256

34 4,512,556

CLASS 260

112 R 4,512,922
112.5 LH 4,512,923
243.3 4,512,924
397.2 4,512,925
398 4,512,926
410.5 4,512,927
410.9 R 4,512,928
453 AR 4,512,929
463 4,512,930
465 D 4,512,931
990 4,512,932

CLASS 261

30 4,512,933
64 B 4,512,934
79 A 4,512,935
93 4,512,936
111 4,512,937
112 4,512,938

CLASS 264

0.5 4,512,939
22 4,512,940
4,512,941
26 4,512,942
173 4,512,943
174 4,512,944
263 4,512,945
332 4,512,946
343 4,512,947
521 4,512,948

CLASS 266

171 4,512,557
249 4,512,558

CLASS 267

47 4,512,559

CLASS 269

20 4,512,560

CLASS 270

40 4,512,561
45 4,512,562

CLASS 271

85 4,512,563
274 4,512,564
294 4,512,565

CLASS 272

72 4,512,566
73 4,512,567
78 4,512,568
4,512,569
112 4,512,570
126 4,512,571
144 4,512,572

CLASS 273

67 A 4,512,573
73 D 4,512,575
73 J 4,512,574
73 R 4,512,576
77 A 4,512,577
110 4,512,578
123 R 4,512,579
148 A 4,512,580
153 R 4,512,581
158 4,512,582
168 4,512,583
282 4,512,584
410 4,512,585

CLASS 277

124 4,512,586
205 4,512,587

CLASS 280

5.26 4,512,588
6 R 4,512,589
11.23 4,512,590
47.35 4,512,591
279 4,512,592
460 R 4,512,593
614 4,512,594

CLASS 283

70 4,512,595

CLASS 285

81 4,512,596

CLASS 290

4 C 4,513,206

CLASS 292

143 4,512,597
263 4,512,598
307 R 4,512,599
338 4,512,600

CLASS 294

1.2 4,512,601
4,512,602
137 4,512,603

CLASS 296

65 A 4,512,604
97 G 4,512,605
130 4,512,606

CLASS 297

153 4,512,607
201 4,512,608
331 4,512,609

CLASS 299

13 4,512,610
37 4,512,611
91 4,512,612

CLASS 301

1 4,512,613
37 P 4,512,614

CLASS 303

97 4,512,615

CLASS 307

126 4,513,207
139 4,513,208
350 4,513,209
455 4,513,210
530 4,513,211
575 4,513,212

CLASS 308

3 R 4,512,616
6 C 4,512,617

CLASS 310

71 4,513,214
90 4,513,215
156 4,513,213
4,513,216
227 4,513,217
270 4,513,218
328 4,513,219

CLASS 313

120 4,513,220
402 4,513,221
412 4,513,222

CLASS 315

4 4,513,223
141 4,513,224
189 4,513,225
219 4,513,226
290 4,513,227
408 4,513,228

CLASS 318

7 4,513,229
254 4,513,230
341 4,513,231
4,513,232
565 4,513,233
594 4,513,234
685 4,513,235
696 4,513,236
768 4,513,237

CLASS 320

23 4,513,238

CLASS 322

99 4,513,239

CLASS 323

210 4,513,240
285 4,513,241
352 4,513,242
361 4,513,243

CLASS 324

51 4,513,244
119 4,513,245
127 4,513,246
309 4,513,247
439 4,513,248

CLASS 328

150 4,513,249
163 4,513,250

CLASS 330

257 4,513,252
278 4,513,253
292 4,513,251
294 4,513,254

CLASS 331

1 A 4,513,255
4 4,513,256
65 4,513,257
111 4,513,258
176 4,513,259

CLASS 333

165 4,513,260
194 4,513,261
4,513,262
204 4,513,263
212 4,513,264
214 4,513,265
238 4,513,266

CLASS 335

16 4,513,267
35 4,513,268
161 4,513,269
195 4,513,270
205 4,513,271
284 4,513,272

CLASS 336

55 4,513,273
173 4,513,274

CLASS 337

66 4,513,275

CLASS 339

14 R 4,512,618
94 M 4,512,619
97 P 4,512,620
99 R 4,512,621
103 M 4,512,622
143 R 4,512,623

CLASS 340

52 R 4,513,276
59 4,513,277
347 DA 4,513,278
4,513,279
632 4,513,280
703 4,513,281
765 4,513,282
784 Re.31,872
825.02 4,513,283
825.51 4,513,284

CLASS 343

5 CF 4,513,286
4,513,287
5 PN 4,513,285
17.2 PC 4,513,288
4,513,289
745 4,513,290
771 4,513,291
795 4,513,292
840 4,513,293

CLASS 346

33 ME 4,513,294
4,513,295
76 PH 4,513,296
140 R 4,513,297
4,513,298
4,513,299
160 4,513,300
200 4,513,301
210 4,513,302

CLASS 350

3.69 4,512,624
6.8 4,512,625
4,512,626
96.20 4,512,627
4,512,628
96.21 4,512,630
96.30 4,512,629
128 4,512,631
167 4,512,632
350 R 4,512,636
357 4,512,637
372 4,512,638
418 4,512,639
510 4,512,640
573 4,512,641
632 4,512,633
4,512,634
640 4,512,635

CLASS 354

4 4,512,642
21 4,512,643
149.1 4,512,644
324 4,512,645
409 4,512,646
441 4,512,647
443 4,512,648
475 4,512,656

CLASS 355

3 FU 4,512,649
4,512,650
14 CH 4,512,652
14 SH 4,512,651
4,512,658
16 4,512,653
27 4,512,654
55 4,512,655
68 4,512,657

CLASS 356

243 4,512,659
301 4,512,660
351 4,512,661
380 4,512,662
446 4,512,663

CLASS 357

23.3 4,513,303
23.6 4,513,304
30 4,513,305
36 4,513,306
42 4,513,307
4,513,309
55 4,513,308
68 4,513,310

CLASS 358

40 4,513,311
44 4,513,312
4,513,313
76 4,513,314
86 4,513,315
106 4,513,316
133 4,513,317
139 4,513,318
163 4,513,319
166 4,513,320
172 4,513,321
181 4,513,322
197 4,513,323
214 4,513,324
280 4,513,325
301 4,513,326
310 4,513,327

CLASS 360

8 4,513,328
42 4,513,329
60 4,513,330
75 4,513,331
4,513,334
77 4,513,332
4,513,333
94 4,513,335
105 4,513,336
121 4,513,337

CLASS 361

1 4,513,338
45 4,513,339
62 4,513,340
91 4,513,341
94 4,513,342
101 4,513,343
113 4,513,344
155 4,513,345
212 4,513,346
4,513,347
283 4,513,348
311 4,513,349
321 4,513,350
384 4,513,351
385 4,513,352
399 4,513,353
4,513,354
403 4,513,355

CLASS 362

226 4,513,356
228 4,513,357
276 4,513,358
389 4,513,359

CLASS 363

20 4,513,360
21 4,513,361
41 4,513,362
126 4,513,363
132 4,513,364

CLASS 364

140 4,513,365
167 4,513,366
200 4,513,367
4,513,368
4,513,369
4,513,370
4,513,371
4,513,372
4,513,373
4,513,374
401 4,513,375
422 4,513,376
449 4,513,377
450 4,513,378
474 4,513,379
4,513,380
475 4,513,381
492 4,513,382
517 4,513,383
563 4,513,384
572 4,513,385
717 4,513,386
718 4,513,387
736 4,513,388
900 4,513,389
4,513,390
4,513,391
4,513,392
4,513,393
4,513,394
4,513,395

CLASS 365

6 4,513,396
185 4,513,397
189 4,513,398
4,513,399
230 4,513,400

CLASS 366

76 4,512,664
167 4,512,665
249 4,512,666

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CLASS 369

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126 4,513,410

CLASS 370

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58 4,513,414
92 4,513,415
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CLASS 371

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CLASS 372

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CLASS 374

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CLASS 375

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120 4,513,428
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CLASS 376

247 4,512,949

CLASS 377

39 4,513,430
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CLASS 378

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CLASS 381

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CLASS 382

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CLASS 384

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147 4,512,670
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CLASS 400

144.2 4,512,676
208 4,512,674
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CLASS 401

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CLASS 403

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CLASS 405

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CLASS 407

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CLASS 408

201 4,512,691
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239 R 4,512,693

CLASS 409

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CLASS 411

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CLASS 413

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202 4,512,702
288 4,512,703
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327 4,512,705
373 4,512,706
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735 4,512,710
786 4,512,711

CLASS 415

116 4,512,712
119 4,512,713
151 4,512,714
168 4,512,715
205 4,512,716

CLASS 416

134 A 4,512,717
231 B 4,512,718
241 A 4,512,720
241 B 4,512,719

CLASS 417

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63 4,512,722
222 4,512,723
319 4,512,724
366 4,512,725
412 4,512,726
462 4,512,727

CLASS 418

3 4,512,728
55 4,512,729

CLASS 420

563 4,512,950

CLASS 422

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106 4,512,954
266 4,512,955
270 4,512,956

CLASS 423

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55 4,512,958
121 4,512,959
219 4,512,960
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331 4,512,962
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48 4,512,968
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132 4,512,977
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198 4,512,731
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16 4,513,013
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554 4,513,016
603 4,513,017
622 4,513,018

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250 4,513,031
336 4,513,032
349 4,513,033

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CLASS 430

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CLASS 436

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CLASS 446

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CLASS 455

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CLASS 464

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CLASS 474

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CLASS 493

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CLASS 494

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103 4,513,089

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81	4,513,118	285	4,513,131	196	4,513,139		CLASS 562		CLASS 570			723	4,513,165		
92	4,513,119		CLASS 528		CLASS 548	506	4,513,147	145	4,513,154			832	4,513,166		
316	4,513,120	21	4,513,132	315	4,513,140		CLASS 564		CLASS 585				CLASS 604		
332.3	4,513,121	49	4,513,133	476	4,513,141	109	4,513,148	13	4,513,155			5	4,512,763		
	4,513,122		CLASS 544	507	4,513,142	449	4,513,149	329	4,513,156			8	4,512,761		
332.6	4,513,123	16	4,513,134		CLASS 549		CLASS 568	378	4,513,157			21	4,512,762		
452	4,513,124	120	4,513,135	335	4,513,143	385	4,513,150	527	4,513,158			80	4,512,764		
528	4,513,125	275	4,513,136	368	4,513,144	484	4,513,151	625	4,513,159			119	4,512,765		
	CLASS 526		CLASS 546	402	4,513,145	492	4,513,152	640	4,513,160			137	4,512,767		
87	4,513,126	14	4,513,137		CLASS 560	697	4,513,153		4,513,161			169	4,512,766		
194	4,513,127	48	4,513,138	231	4,513,146			654	4,513,162			191	4,512,768		
212	4,513,128							700	4,513,163			209	4,512,769		
249	4,513,129								4,513,164			323	4,512,770		
283	4,513,130											824	4,512,771		

CLASSIFICATION OF DESIGNS

D2—	27	278,470		278,483	D7—	19	278,501		437	278,517			278,533		246	278,549
	28	278,471	348	278,484		77	278,502	D10—	32	278,518		60	278,534	D23—	17	278,550
	40	278,472	365	278,485		301	278,503		114	278,519		68	278,535		19	278,551
		278,473	368	278,486		324	278,504	D11—	2	278,520		106	278,536		97	278,552
		278,474	369	278,487		337	278,505		153	278,521	D15—	12	278,537		149	278,553
		278,475	382	278,489		376	278,506	D12—	131	278,523		72	278,538	D24—	17	278,554
	41	278,476	407	278,499		381	278,507		147	278,524	D16—	32	278,539	D26—	60	278,555
	208	278,477	436	278,494		386	278,508		203	278,525	D17—	13	278,540		63	278,556
	267	278,478	462	278,490	D8—	18	278,509		204	278,526		14	278,541	D28—	13	278,557
D3—	37	278,479		278,497		28	278,510			278,527	D18—	4	278,542	D30—	15	278,559
	71	278,480	470	278,495		52	278,511	D13—	1	278,528	D19—	27	278,543	D32—	22	278,560
D4—	104	278,481	508	278,488		71	278,512		12	278,522		91	278,544		53	278,561
D6—	309	278,498	518	278,492	D9—	339	278,513		32	278,529	D20—	11	278,545	D34—	26	278,562
		278,558	536	278,491		341	278,514	D14—	30	278,530	D21—	190	278,546		40	278,563
	310	278,496	570	278,493		403	278,515		53	278,531			278,547	D92—	25	278,564
	333	278,482	572	278,500		425	278,516			278,532		191	278,548			

CLASSIFICATION OF PLANTS

P.—	44	5,442	68	5,443	70	5,444		5,445	73	5,446		82	5,447				

Alaba
Alask
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GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,512,081
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4,512,639
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4,512,793
4,513,288
04 : 4,512,148
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4,512,570
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Donald J. Quigg, Acting Commissioner

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Vol. 1053 Number 5

OFFICIAL GAZETTE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 30, 1985 Volume 1053 Number 5

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 25/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

Note that the amount of the international search fee for the European Patent Office will change effective May 7, 1985 and the amounts of the International PCT fees will change effective May 28, 1985. For information on these fee changes see the notice appearing in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	No charge

Mar. 20, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 27, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,326,299 through 4,327,446

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Board of Appeals Decisions Rendered in the Month of Mar. 1985

Affirmed	173
Affirmed in Part	30
Reversed	69
Total	272

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,350,264, Re. S.N. 651,867, Filed Sept. 18, 1984, Cl. 221/067, VENDING MACHINE FOR FLAT SHEET ARTICLES, Alois Muller, Owner of Record: *Opal Manufacturing, Inc., Toronto, Ontario, Canada,* Attorney or Agent: John J. Byrne, et al., Ex. Gp.: 311

4,356,268, Re. S.N. 665,393, Filed Oct. 26, 1984, Cl. 435/253, MICROORGANISM FOR TREATING WASTE WATER, Norio Shimizu, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Thomas E. Beall, Jr., et al., Ex. Gp.: 127

4,376,963, Re. S.N. 712,578, Filed Mar. 15, 1985, Cl. 360/135, COMPOSITE MAGNETIC RECORDING DISK, Jack P. Knoop, et al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Henry E. Otto, Jr., et al., Ex. Gp.: 233

4,383,417, Re. S.N. 712,876, Filed Mar. 18, 1985, Cl. 062/127, SOFT-SERVE FREEZER CONTROL, Tom V. Martineau, Owner of Record: *Stoelting, Inc., Kiel, Wis.,* Attorney or Agent: Henry C. Fuller, Jr., Ex. Gp.: 344

4,391,388, Re. S.N. 712,545, Filed Mar. 15, 1985, Cl. 221/076, CONTROL SYSTEM FOR INCREASING THE VERSATILITY OF AN ALL PURPOSE MERCHANDISER, Merrill Krakauer, Owner of Record: *Inventor,* Attorney or Agent: Henry L. Shenier, et al., Ex. Gp.: 311

4,397,901, Re. S.N. 668,817, Filed Nov. 6, 1984, Cl. 154/428, COMPOSITE ARTICLE AND METHOD OF MAKING SAME, James W. Warnen, Owner of Record: *Refractory Composites, Inc., Whitlien, Calif.,* Attorney or Agent: Ellsworth R. Roston, et al., Ex. Gp.: 154

4,461,353, Re. S.N. 713,914, Filed Mar. 20, 1985, Cl. 166/322, WELL SAFETY VALVE, Michael B. Vinzant, et al., Owner of Record: *Otis Engineering Corp., Carrollton, Tex.,* Attorney or Agent: Roland O. Cox, Ex. Gp.: 356

4,466,862, Re. S.N. 710,596, Filed Mar. 11, 1985, Cl. 162/055, METHOD FOR SCREENING, SEPARATING, AND REMOVING FIBER BUNDLES, LUMPS, KNOTS AND FOREIGN MATTER FROM AQUEOUS DISPERSIONS USED IN FORMING NON-WOVEN FABRICS BY WET-LAYING, Michael Ring, et al., Owner of Record: *International Paper Co., New York, N.Y.,* Attorney or Agent: Charles B. Smith, et al., Ex. Gp.: 133

4,477,955, Re. S.N. 714,156, Filed Mar. 20, 1985, Cl. 029/157.1R, METHOD OF PRODUCING A LINED STRUCTURE, James R. Becker, et al., Owner of Record: *Cameron Iron Works, Inc., Houston, Tex.,* Attorney or Agent: Jack R. Springgate, et al., Ex. Gp.: 326

4,489,812, Re. S.N. 714,166, Filed Mar. 20, 1985, Cl. 187/29R, ELEVATOR WITH POWER RECOVERY, Loren B. Ferris, Owner of Record: *Inventor,* Attorney or Agent: George A. Brace, et al., Ex. Gp.: 311

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,435,155, Reexam. No. 90/000,746, Requested: Mar. 25, 1985, Cl. 360/119, POLE PIECES FOR MAGNETIC HEADS WITH ACCURATELY DETERMINED GAP HEIGHTS, Bastiaan van der Voo, Owner of Record: *North American Phillips Co., Inc., New York, N.Y.,* Attorney or Agent: Frank R. Trifari, Ex. Gp.: 233, Requester: Control Data Corp., Minneapolis, Minn.

3,716,065, Reexam. No. 90/000,750, Requested: Apr. 1, 1985, Cl. 132/53, HAIRPIECE, Paul V. Finamore, Owner of Record: *World of Wigs Mfg. Co., Inc., Chicago, Ill.,* Attorney or Agent: Olson, Trexler, et al., Ex. Gp.: 332, Requester: Jerry Casper, Inc. & Francis G. Casper, Chicago, Ill.

3,831,481, Reexam. No. 90/000,740, Requested: Mar. 15, 1985, Cl. 83/674, CUTTER REELS FOR FIBER CUTTING APPARATUS, Donald W. van Doorn, et al., Owner of Record: *Lummus Industries, Inc., Columbus, Ga.,* Attorney or Agent: Jennings, Carter, et al., Ex. Gp.: 324, Requester: D. M. & E. Corp., Charlotte, N.C.

4,275,974, Reexam. No. 90/000,744, Requested: Mar. 21, 1985, Cl. 405/222, INFLATION AND GROUT SYSTEM, Lloyd C. Knox, et al., Owner of Record: *Halliburton Co., Duncan, Okla.,* Attorney or Agent: James R. Duzan, Ex. Gp.: 351, Requester: LTV Energy Products Co., Dallas, Tex.

4,405,156, Reexam. No. 90/000,748, Requested: Apr. 1, 1985, Cl. 281/29, REINFORCED HINGE FOR BOOK COVER, Leewood C. Carter, et al., Owner of Record: *Book Covers, Inc., Newark, N.J.,* Attorney or Agent: Weinstein & Sutton, Ex. Gp.: 327, Requester: Mead Corp., Washington, D.C.

Marks Published for Opposition

The Apr. issues of the Official Gazette (Trademark Section) will present marks published for opposition in two separate sections.

Each section will contain both multiple class and single class applications. The first section will be printed at the beginning of the Official Gazette and the second section will be printed at the end of the Official Gazette, after the Index of Registrants.

The second section will be numbered separately from the first section, and each page will bear the notation Ap.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Jan. 10, 1985.

Patent Term Extension
Private Law 98-34

The term of U.S. Patent 3,376,198 granted Apr. 2, 1968, has been extended for a period of fifteen (15) years in accordance with Private Law 98-34, approved Oct. 19, 1984. The text of that law is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Commerce, acting through the Commissioner of Patents and Trademarks, shall, when patent numbered 3,376,198 (re-

lating to the production of antibodies in milk) expires, extend such patent for fifteen years, with all the rights pertaining thereto.

DONALD J. QUIGG
Acting Commissioner of Patents and Trademarks.

Apr. 5, 1985.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 4,028,319, David A. Jones, James M. Schlatter, Richard A. Mikulec, Judith A. Reuter and Robert H. Mazur, 2 AND 3-SUBSTITUTED ENKEPHALINS, Interference No. 101,285, decided Feb. 27, 1985, claims 4, 7, 10, 11 & 12.

Patent No. 4,089,830, Chojiro Tezuka and Yoshimitsu Karasawa, SETTING SOLUTION FOR DENTAL GLASS IONOMER CEMENTS, Interference No. 100,540, decided July 3, 1984 claims 1, 2 & 3.

Patent No. 4,151,260, Byron B. Woertz, HYDROGEN SULFIDE ABATEMENT IN GEOTHERMAL STEAM, Interference No. 100,265, decided Oct. 24, 1984, claim 25.

Patent No. 4,222,667, Charles R. Layne, FIZEAU FRINGE LIGHT EVALUATOR AND METHOD, Interference No. 100,741, decided Nov. 15, 1984, claims 1–15.

Patent No. 4,268,365, Tokuzo Iijima, Toshiharu Yamamoto, Kazuo Kishimoto, Takamichi Komabashiri and Toshiji Kano, METHOD OF ELECTROLYSIS OF AN ALKALI METAL CHLORIDE, Interference No. 100,783, decided Dec. 10, 1984, claims 1 & 9.

Patent No. 4,311,589, Robert C. Brumfield, TOROIDAL FLOW BLOOD REACTOR, Interference No. 101,098, decided Mar. 14, 1985, claims 1–5.

Patent No. 4,348,397, David C. May and Charles H. Jarboe, PROBENECID-DYPHYLLINE THERAPY, Interference No. 101,118, decided Feb. 15, 1985, claims 1–8.

Patent No. 4,370,494, George C. Wright and Ronald E. White, CONVERTING ENZYME INHIBITORS, Interference No. 101,111, decided Feb. 28, 1985, claim 1.

Patent No. 4,401,107, Terry M. Haber and William H. Smedley, INTESTINAL CONTROL VALVE, Interference No. 101,254, decided Feb. 20, 1985, claim 1.

Patent No. 4,404,652, Richard D. Holmes, SIDE FEED EXPANDER, Interference No. 101,215, decided Dec. 11, 1984, claims 1, 2, 3, 6 & 7.

Patent No. 4,418,321, Rolf Bohme, FEEDBACK AMPLIFIER OR THRESHOLD VALUE SWITCH FOR A CURRENT FEED DIFFERENTIAL STAGE, Interference No. 101,255, decided Feb. 21, 1985, claims 1, 2 & 6.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

Status of PTO Services

The following is an update of the status of PTO services for March 1985:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	30	Filings have increased 9% so far this year. Staff being augmented.
Trademarks	30	30	Reduced 11 days since last month.
Patent/Trademark Copies:			
Window Coupons	5	98% within 5 days	
Mail Coupons	29	98% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		March 15, 1985	
Current Mail Date being processed		March 22, 1985	
Certified Copies:			
Trademark Registrations	30	21	
Applications-As-Filed	20	99% within 7 days	
File-Wrapper/Contents	N/A	95% within 7 days	
Walk-up Certification	1	99% within 24 hours	
Trademark Search Library:			
Filing Pending Marks	21	31	Reduced 8 days since last month.
Filing Reg. Certificates	3	5	Reduced 4 days since last month.
Assignments:			
Patents	25	16	
Trademarks	25	17	
Avg. Days from Issue Fee Payment to Issue Date	90–100	88	
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Trademark Official Gazette:			
In Bookstore	Issue Date	Issue Date	
Mailed	Issue Date	Issue Date	
Trademark Regs. Mailed	Issue Date	On schedule	
Patent Copies Available	Issue Date	95% within 1 day	Significant improvement since last month.
Trademark Copies Available	Issue Date	99% on Issue Date	

*Figures include postal processing and delivery time.

IMPROVEMENTS TO SERVICES

- *Patent and Trademark Copies* — Air mail delivery of copies is available upon request. Customers who desire air mail delivery must have a deposit account with the PTO. The Office will determine applicable postage fees as the order is being filled and will charge them to the deposit account.
- *CASSIS* — The Classification and Search Support Information Systems (CASSIS) has been enhanced by the addition of the Manual of Patent Examining Procedure (MPEP). The MPEP can now be searched on CASSIS to locate and, if desired, display the sections containing a given word or words. A new "User's Guide" is available in the Patent Public Search Room.
- *Photocopy Service Survey* — In the 1984 User Survey, 54% of the respondents rated photocopy services in the Public Search Rooms as being poor or fair. Since the PTO's monitoring reports indicated the copiers were available 93–99% of the time and quality was good 96–99% of the time, a survey was conducted to try to highlight the exact nature of the perceived problem. A random sample of 80 public users of photocopy equipment indicated the following:

Frequency of Use	*88% Frequent*	*12% Infrequent*
Machines Operational Most of the Time	86% Yes	14% No
Problems using Equipment	79% No	21% Yes (primarily Maintenance related)
Satisfied with Quality of Copies	83% Yes	17% No
Overall Rating of Photocopy Services	3% Excellent 48% Good 36% Satisfactory	12% Fair 1% Poor

Specific recommendations made by the respondents are being analyzed.

HELPFUL HINTS FROM THE PTO

- *Patent Applications* — We are trying to expedite and improve preliminary processing of patent applications. Please help by putting patent applications and associated papers (e.g. assignments) in separate envelopes from all other mail. Identify on the outside of the envelope "PATENT APPLICATION".
- *Application File Drawings* — Application Branch personnel are having some difficulty matching drawings with applications during pre-exam processing. It would be helpful if the applicant's name, docket number and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels. Identification on the back of the drawings would be greatly appreciated.
- *Certification Services* — Expedited service requests for certification of copies that have been made by the requester shall be limited to those files open for public inspection. If there is such a need for expedited service, the request should be made to the Manager, Examination Services Division. All other requests for copies must be made to the Certifications Branch, which will fill your request within 7 days or less.
- *New Application Filing Problems* — Applications continue to be filed incorrectly under both 37 CFR 1.60 and 37 CFR 1.62. This causes problems not only for applicants but also for the Patent and Trademark Office. Filing dates are not granted to applications which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.

Most often, the problems that arise in this area can be characterized as the following:

— Applicants continue to fail to comply with the requirements of 37 CFR 1.60 with regard to what must be submitted upon filing under the rule. This is true even after the clarifying amendments (effective Apr. 1, 1984) were made to the rule. This problem was also addressed in the Official Gazette Notice of May 8, 1984 entitled "Filing of Patent Applications Pursuant to 37 CFR 1.60."
A true copy of the prior application must be filed including the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application.

— Applicants are using transmittal forms which request filings under one rule when, in fact, they wish to file under another rule. For example, a transmittal form requesting filing under 37 CFR 1.62 may be filed when it was really desired to file a divisional application under 37 CFR 1.60 and not to abandon the parent application.
Applications have also been filed with a transmittal form requesting filing under 37 CFR 1.60 when it was intended to file under 37 CFR 1.62. The confusion in the record of such applications must be clarified by a decision on petition before the applications can be processed for examination.

— Some applicants fail to realize that the parent application is abandoned by the filing of a continuing application under 37 CFR 1.62. Paragraph (g) of 37 CFR 1.62 states:

> "The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application."

Correction after such a mistaken filing under 37 CFR 1.62 usually requires a revival of the parent application under 37 CFR 1.137 (a) or (b) which expends resources of both the applicant and the PTO.

— Some applicants are attempting to file continuing applications under 37 CFR 1.62 after payment of the issue fee in the parent application. Such applications are improper and are not entitled to a filing date. Additionally, such filings will not affect the prior application, i.e., the parent application may issue as a patent. Paragraph (a) of 37 CFR 1.62 specifies that continuing applications may be filed under 37 CFR 1.62 "before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application".

— Some applicants are attempting to file continuation-in-part applications under 37 CFR 1.62 with a new specification rather than with the changes made by amendment to the prior application. As stated in 37 CFR 1.62(a) filings under 37 CFR 1.62 use the specification of the prior application.
Paragraph (c) of 37 CFR 1.62 also states:

> "In the case of a continuation-in-part application which *adds and claims additional disclosure by amendment,* an oath or delaration as required by §1.63 must also be filed. . . ." (emphasis added)

NOTICE

The February 12, 1985, Official Gazette Notice on "Availability of a Patent and Trademark Publication" is rescinded. The new edition of "The Story of the U.S. Patent Office" is not yet available.

Apr. 8, 1985.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 30, 1985

Pp. 5,315	4,442,360	4,470,664	4,482,356
Re. 31,155	4,443,197	4,470,697	4,482,559
D. 273,742	4,443,553	4,470,884	4,482,819
D. 275,212	4,444,652	4,471,101	4,482,854
D. 276,127	4,444,707	4,471,247	4,482,973
D. 276,173	4,444,769	4,471,310	4,483,092
D. 276,847	4,445,032	4,472,018	4,483,099
4,209,174	4,445,288	4,472,436	4,483,231
4,244,778	4,448,925	4,472,532	4,483,462
4,257,418	4,450,173	4,472,553	4,483,629
4,266,074	4,452,065	4,472,646	4,483,762
4,273,542	4,452,435	4,472,841	4,484,154
4,301,507	4,452,874	4,473,317	4,484,308
4,309,110	4,454,036	4,473,377	4,484,345
4,325,025	4,455,639	4,473,386	4,485,011
4,327,236	4,456,354	4,473,397	4,485,051
4,359,855	4,456,611	4,473,563	4,485,074
4,372,226	4,456,993	4,474,026	4,485,090
4,379,827	4,457,971	4,474,604	4,485,451
4,382,966	4,458,555	4,474,762	4,485,565
4,387,177	4,459,081	4,474,804	4,486,817
4,389,985	4,459,320	4,475,160	4,486,874
4,393,068	4,460,366	4,475,218	4,486,901
4,403,708	4,460,600	4,475,390	4,486,983
4,404,146	4,463,419	4,477,000	4,487,140
4,406,146	4,463,592	4,477,114	4,487,218
4,409,329	4,463,601	4,477,871	4,487,289
4,409,354	4,463,672	4,478,922	4,487,291
4,409,404	4,463,822	4,478,961	4,487,322
4,413,064	4,463,925	4,479,188	4,487,451
4,413,894	4,464,377	4,479,443	4,487,556
4,414,228	4,464,473	4,479,523	4,487,702
4,418,026	4,464,656	4,479,525	4,487,851
4,425,759	4,465,306	4,479,602	4,488,106
4,425,784	4,465,841	4,479,756	4,488,168
4,426,025	4,465,845	4,479,810	4,488,228
4,429,108	4,465,939	4,479,838	4,488,266
4,429,388	4,466,030	4,479,939	4,488,320
4,430,969	4,466,077	4,480,169	4,488,459
4,431,032	4,466,189	4,480,238	4,488,473
4,431,393	4,466,290	4,480,321	4,488,685
4,431,468	4,466,294	4,480,334	4,488,813
4,432,076	4,466,430	4,480,479	4,489,121
4,434,152	4,467,053	4,480,671	4,489,855
4,434,295	4,467,447	4,480,747	4,490,242
4,434,754	4,467,449	4,480,780	4,490,524
4,435,241	4,467,624	4,480,942	4,491,079
4,435,278	4,467,731	4,481,059	4,491,377
4,436,947	4,468,252	4,481,069	4,494,313
4,437,351	4,468,313	4,481,081	4,495,337
4,438,078	4,468,377	4,481,184	4,496,582
4,439,505	4,468,521	4,481,348	4,497,025
4,440,325	4,468,945	4,481,451	
4,441,266	4,469,539	4,482,260	
4,442,234	4,469,955	4,482,309	

Disclaimers

3,798,243.—*Istvan Toth,* Bottmingen, Base-Land, Switzerland. PROCESS FOR THE PRODUCTION OF 1-NITROANTHRAQUINONE. Patent dated Mar. 19, 1974. Disclaimer filed Nov. 7, 1983, by the assignee, *Fidelity Union Trust Co., Executive Trustee under the Sandoz Trust.*

Hereby enters this disclaimer to claims 1–4 and 6 of said patent.

3,948,441.—*Charles H. Perkins,* Newton Square; *Richard K. Nurnberg,* Norristown, both of Pa.; *Carl J. Goodhouse,* Litchfield, Conn. TIME VARIABLE THERMOSTAT. Patent dated Apr. 6, 1976. Disclaimer filed Mar. 11, 1985, by the assignee, *Robertshaw Controls Co.*

Hereby enters this disclaimer to claim 4 of said patent.

4,292,119.—*Howard L. Glass,* Orange, Calif. GROWTH OF SINGLE-CRYSTAL $2PBO.Fe_2O_3$. Patent dated Sept. 29, 1981. Disclaimer filed Mar. 18, 1985, by the assignee, *Rockwell International Corp.*

Hereby enters this disclaimer to claim 1 of said patent.

4,353,022.—*Richard A. Young,* Little Rock, Ark. TORQUE REVERSING MOTOR CONTROL STRUCTURE AND METHOD. Patent dated Oct. 5, 1982. Disclaimer filed Feb. 20, 1985, by the assignee, *Ceco Corp.*

The term of this patent subsequent to May 5, 1998 has been disclaimed.

4,367,004.—*Robert M. Booth, Jr.,* Wappingers Falls; *Chester A. Wasik,* Poughkeepsie, both of N.Y. SITU RATE AND DEPTH MONITOR FOR SILICON ETCHING. Patent dated Jan. 4, 1983. Disclaimer filed Mar. 11, 1985, by the assignee, *International Business Machines Corp.*

Hereby enters this disclaimer to claims 1–11 of said patent.

4,496,783.—*Ian M. Campbell; Donald L. Baulch,* Leeds, *Gary J. Audley,* Woking, all of England. NITRATION OF ORGANIC COMPOUNDS AND ORGANIC NITROGEN COMPOUNDS PRODUCED. Patent dated Jan. 29, 1985. Disclaimer filed Mar. 12, 1985, by the assignee, *Interox Chemicals Ltd.*

The term of this patent subsequent to Dec. 11, 2001 has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 30, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-12-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-28-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-03-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-20-81
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	7-19-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-20-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-05-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	3-22-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-21-83

Expiration of patents: The patents within the range of numbers indicated below expire during March 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,371,351 to 3,375,528, inclusive
Plant Patents ..... Numbers 2,797 to 2,801 inclusive

REEXAMINATIONS

REEXAMINATIONS

APRIL 30, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,326,938 (342nd)

PLANAR CARBON FIBER ELECTRODE STRUCTURE

Sankar Das Gupta; James K. Jacobs, and Samaresh Mohanta, all of Toronto, Canada, assignors to HSA Reactors Limited, Canada

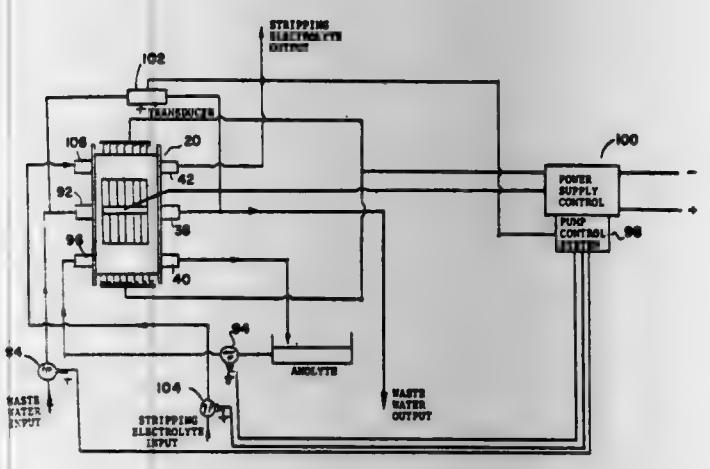
Reexamination Request No. 90/000,458, Oct. 12, 1983.

Reexamination Certificate for Patent No. 4,326,938, issued Apr. 27, 1982, Ser. No. 99,522, Dec. 3, 1979.

Claims priority, application Canada, Apr. 12, 1978, 317327

Int. Cl.³ C25B *11/02;* C02F *1/46;* H01M *4/00*

U.S. Cl. 204—228



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **9**, **17** and **25** are determined to be patentable as amended.

Claims **2–8**, **10–16**, **18–24** and **26–32**, dependent on an amended claim, are determined to be patentable.

1. [An electrode] *A mono-polar electrode capable of alternate use as both a cathode and an anode* comprising a secondary electrode component including a surface comprising a metal selected from the group consisting of titanium, tantalum, tungsten, niobium, hafnium, and alloys thereof, said secondary electrode component including a plurality of holes therethrough so as to permit a flow of electrolyte therethrough, electrical contact means in electrical contact with said secondary electrode component so that outside electrical contact to said electrode is made through said secondary electrode component, a primary electrode component comprising a porous conductive material *having an outer surface and being* in electrical contact with said secondary electrode component *said outer surface of said porous conductive material being substantially free of said secondary electrode component,* whereby said electrode is capable of alternating between acting as a cathode and an anode by said secondary electrode component being conductive when said electrode is acting as a cathode, by becoming non-conductive when said electrode is acting as an anode, and by being capable of converting back to being conductive when said electrode is again acting as a cathode.

B1 4,033,105 (343rd)

YARN PROCESSING

David L. McNeight, Congleton, and William J. Morris, Didsbury, both of England, assignors to Rieter-Scragg Ltd., Macclesfield, England

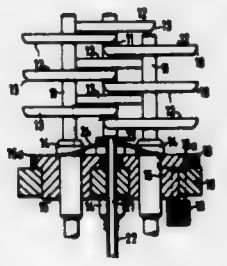
Reexamination Request No. 90/000,591, Jul. 12, 1984.

Reexamination Certificate for Patent No. 4,033,105, issued Jul. 5, 1977, Ser. No. 335,727, Feb. 26, 1973.

Claims priority, application United Kingdom, Mar. 6, 1972, 10328/72

Int. Cl.³ D02G *1/04;* D01H *7/92*

U.S. Cl. 57—339



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **8–16** is confirmed.

Claims **1**, **2**, **4**, **5** and **7** are determined to be patentable as amended.

Claims **3** and **6**, dependent on an amended claim, are determined to be patentable.

1. A method of friction twisting a travelling yarn which comprises the steps of causing the yarn to move in contact with a *plurality of* travelling *peripheral* surfaces *of sets of overlapping discs rotatably arranged on three parallel axes* in a direction *generally* transverse to the direction of travel of the surfaces, and of moving [the] *each* travelling surface at a selected speed and selected angle in relation to the yarn speed, and direction of travel respectively *by said surfaces being so closely spaced and arranged, that each surface controls the yarn with respect to an adjacent such surface* giving the yarn a rolling and substantially slip- or skid-free contact with [the] *each* surface.

B1 4,334,944 (344th)

METHOD OF PREPARING POLYUREA FOAM MATERIALS

Hubert S. Creyf, Brugge, Belgium, assignor to PRB N.V., Brussels, Belgium

Reexamination Request No. 90/000,456, Oct. 7, 1983.

Reexamination Certificate for Patent No. 4,334,944, issued Jun. 15, 1982, Ser. No. 36,452, May 7, 1979.

Claims priority, application Netherlands, May 8, 1978, 7804908

Int. Cl.³ B29D *27/04;* B32B *5/18*

U.S. Cl. 156—308.2

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3**, **6**, **17**, and **19** is confirmed.

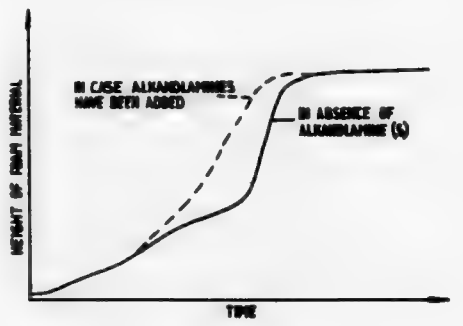
Claims **5** and **15** are cancelled.

Claims **4, 7–14, 18, 20, 22, 23, 25, 26, 28, 29** and **31** are determined to be patentable as amended.

Claims **16, 21, 24, 27** and **30**, dependent on an amended claim, are determined to be patentable.

New claims **32–42** are added and determined to be patentable.

1. A method of preparing polyurea foam materials, comprising reacting in the presence of at least one catalyst, at least one polyisocyanate with water, 0.5 to 50 parts by weight of at least one plasticizer per 100 parts by weight of polyisocyanate, 0.5 to 50 parts by weight, per 100 parts by weight of polyisocyanate, of at least one alkanolamine having a molecular weight of from 47 up to 2000, and having at least one hydroxyl group and at least one amine group to form a foam material and solidifying the foam as a semi-rigid polyurea foamed product characterized by a rise profile with an increased slope as compared with conventional polyurea foams.



REISSUES

APRIL 30, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,873

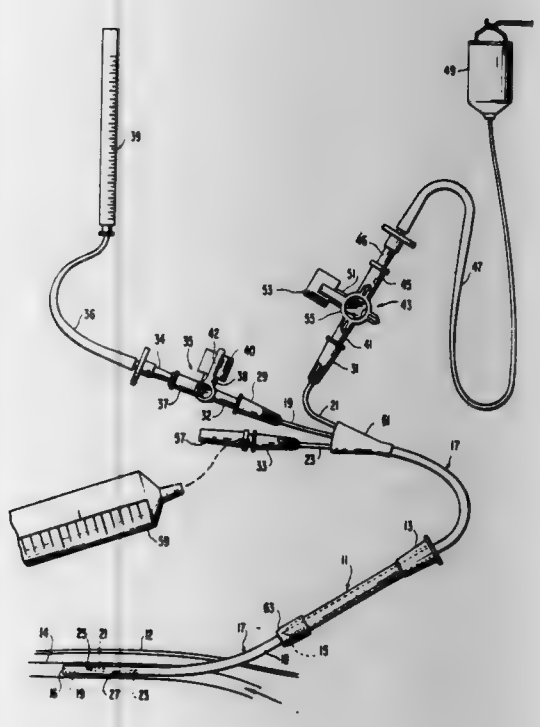
VENOUS CATHETER DEVICE

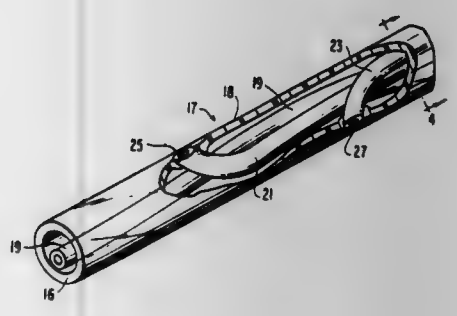
Randolph M. Howes, Rock Ranch Rd., Picayune, Miss. 39466

Original No. 4,072,146, dated Feb. 7, 1978, Ser. No. 721,215, Sep. 8, 1976. Application for reissue Jan. 19, 1983, Ser. No. 444,710

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—674 **5 Claims**





11. A venous catheter device including an elongated, flexible catheter tube provided with a distal end portion generally circular in cross-section and having a uniform outer diameter constructed for insertion into and capable of being fed longitudinally of a vein, a plurality of independent lumens extending freely through said catheter tube, each of said lumens having a distal terminus adjacent the distal terminus of the catheter tube and spaced from each other, one of said lumens having its distal end substantially coextensive with the distal end of said tube, the others of said lumens exiting at lateral openings in said tube and being joined thereto, at least two of said lumens providing means for infusing fluids into the blood stream, the proximate ends of the lumens extending beyond the proximate end of said catheter tube and being fitted with a lumen adapter for connection to independent fluid devices.

Re. 31,874

TREE-RESISTANT ETHYLENE POLYMER COMPOSITIONS

John K. Beasley, Wilmington, Del., and Edward J. Urban, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,374,224, dated Feb. 15, 1983, Ser. No. 301,513, Sep. 14, 1981. Application for reissue Nov. 2, 1983, Ser. No. 547,887

Int. Cl.³ C08K *5/12*

U.S. Cl. 524—298 **11 Claims**

1. A tree-resistant composition for use in [electrical equipment] *a power transmission cable*, said composition consisting essentially of an ethylene polymer selected from the group consisting of ethylene homopolymers and ethylene copolymers with at least one other ethylenically unsaturated monomer, ethylene being present in such copolymers in an amount of at least 85 weight percent, and, as a tree-growth inhibitor, an effective amount of at least one organic carboxylic ester having at least one *but no more than two* aromatic rings and at least three *but no more than four* carboxylic ester groups, *at least one carboxylic ester group being attached to one aromatic ring and the remaining carboxylic ester groups being attached to the other aromatic ring, if present, which is fused to the first aromatic ring or joined to it by a single bond, an alkylene group, a carbonyl group, or a hetero atom*, said inhibitor melting below about 50° C. and being liquid at the power transmission cable's intended operating temperature.

Re. 31,875

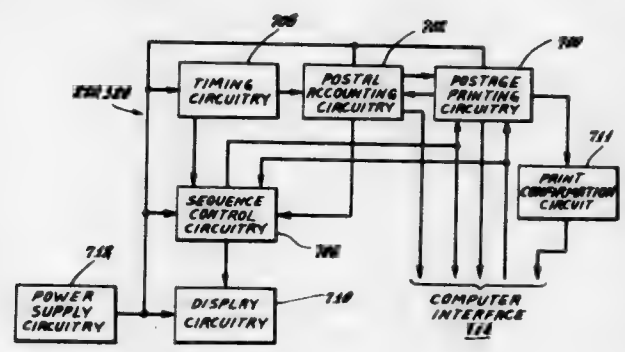
COMPUTER RESPONSIVE POSTAGE METER

Frank T. Check, Jr., Orange; Alton B. Eckert, Jr., Norwalk; Bruce E. Hinman, Ridgefield; Howell A. Jones, Jr., Fairfield; Raymond R. Lupkas, Trumbull, and Robert B. McFiggans, Stamford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Original No. 3,938,095, dated Feb. 10, 1976, Ser. No. 406,898, Oct. 16, 1973. Continuation-in-part of Ser. No. 195,694, Nov. 4, 1971, abandoned. Application for reissue Jan. 10, 1978, Ser. No. 868,473

Int. Cl.³ G06F *15/02, 15/24*; G07B *17/02, 17/04*

U.S. Cl. 364—900 **11 Claims**



1. In the combination of a computer and *postage* metering means arranged to print a numerical amount, said metering means including means for receiving from said computer a signal designating said amount, printing means responsive to said signal receiving means, an addressable memory for storing a *present* balance, an arithmetic unit responsive to said memory and said signal receiving means to alter said *present* balance by said computer-designated amount each time said printing means is actuated, memory addressing means for fetching a present balance from a predetermined memory address and conveying it to said arithmetic unit for said balance altering

PLANT PATENTS

operation and loading the new balance resulting from such operation back into said same memory address, said memory addressing means comprising:

a pulse stream source, a first counter responsive to said pulse stream, a gate responsive to said first counter, a second counter responsive to said gate, means for selecting a memory address in response to said second counter, means for detecting the beginning of a count sequence of said first counter, means for detecting the end of a count sequence of said second counter, and means responsive to both said count sequence detecting means for enabling said gate to start a memory addressing count sequence of said second counter at the beginning of said first count [sequence,] *sequence* and for disabling said gate at the end of said memory addressing count sequence.

Re. 31,876

PICTURE DISPLAY DEVICE

Masanori Watanabe, Katano; Kinzo Nonomura, Hirakata, and Yoshinobu Takesako, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original No. 4,227,117, dated Oct. 7, 1980, Ser. No. 32,752, Apr. 24, 1979. Application for reissue Oct. 5, 1982, Ser. No. 433,023

Claims priority, application Japan, Apr. 28, 1978, 53/51808; Apr. 28, 1978, 53/51810; Aug. 30, 1978, 53/106788

Int. Cl.³ H01J *29/70, 29/72*

U.S. Cl. 315—366 **19 Claims**

1. A picture display device comprising:

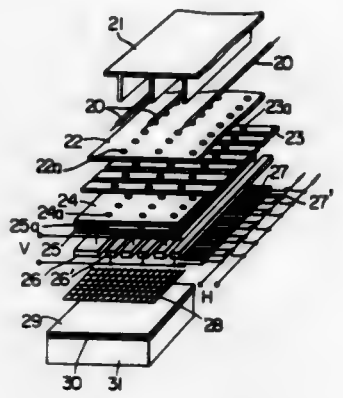
a plurality of linear thermionic cathodes;

partition means for separating said linear thermionic cathodes from one another;

electron beam extraction electrode means having a plurality of apertures formed therethrough in correspondence with said thermionic cathodes in the axial direction thereof for producing electron beams;

electron beam control electrode means comprising a plurality of electrodes including a plurality of apertures each thereof being coaxial with corresponding one of said apertures formed in said electron beam extraction electrode means, said control electrodes being arranged substantially perpendicular to said thermionic cathodes;

deflection electrode means for deflecting said electron beams;



acceleration electrode means for accelerating said electron beams; [and]

display means coated with a fluorescent substance which emits light when hit by said electron beams and including a display screen, at least said display screen being housed in a transparent glass container[.]; *and*

selective driving means for selectively driving said linear thermionic cathodes to emit an electron beam in cooperation with said electron beam extraction means.

PLANT PATENTS

GRANTED APRIL 30, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,448

ROSE PLANT—BLABEE

Daniel Blazey, Toledo, Ohio, assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 26, 1983, Ser. No. 535,738
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by Rhodonite red and green-white bicolored flowers of good form borne one to a stem and clusters of four to eight blooms on a vigorous, attractive plant.

5,449

ROSE PLANT—SAVANHOUR

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 26, 1983, Ser. No. 535,735
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by bright red flowers of good high centered form which open well and retain color upon aging.

5,450

ROSE PLANT—SAVASPIR

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 26, 1983, Ser. No. 535,737
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by bright currant red flowers of good exhibition form and medium to heavy petalage with petals reflexing upon opening while retaining good form and flowers which are very long lasting on the plant and after cutting.

5,451

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761

Filed Oct. 11, 1983, Ser. No. 540,412
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described, characterized particularly by off-white colored flowers of good form borne one to a stem and in small clusters on a vigorous plant and which provides a general tonality of white with a tannish haze.

5,452

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761

Filed Oct. 11, 1983, Ser. No. 540,411
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the

5,453

PLUM TREE, "EARLY GAR ROSA"

John M. Garabedian, 3104 E. Huntington Blvd., Fresno, Calif. 93702

Filed Sep. 26, 1983, Ser. No. 535,736
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree substantially as illustrated and described and broadly characterized by the ripening of its fruit approximately twenty days earlier than that of the unpatented Santa Rosa plum tree, which it most nearly resembles, but further differing therefrom in its regular and productive bearing of fruit having larger average size and firmer flesh when eating ripe, and the greater vigor of its tree.

5,454

NECTARINE TREE (MAY DIAMOND)

Norman G. Bradford, 11875 E. Savana Rd., Le Grand, Calif. 95333

Filed Sep. 23, 1983, Ser. No. 535,263
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of semi-freestone nectarine tree, substantially as illustrated and described, which most closely resembles May Grand Nectarine (U.S. Plant Pat. No. 4,791) and has fruit which ripens at the same time, but which is distinguished therefrom and is an improvement thereon in that its fruit colors earlier during ripening, and when shipping ripe has a fuller red color and is much firmer than May Grand and has a more acidic nectarine taste, and in that the pollen anthers frequently protrude out of the flower bud before the flower opens.

5,455

NECTARINE TREE (SPRING DIAMOND)

Norman G. Bradford, 11875 E. Savana Rd., Le Grand, Calif. 95333

Filed Sep. 23, 1983, Ser. No. 535,264
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of freestone nectarine tree, substantially as illustrated and described, which most closely resembles Mike Grand (U.S. Plant Pat. No. 4,791) but ripens about four days later and is further distinguished therefrom and an improvement thereon by fruit having a skin which is smoother and has a fuller red color when shipping ripe, and is somewhat larger and firmer when shipping ripe.

5,456

NECTARINE TREE (SUN DIAMOND)

Norman G. Bradford, 11875 E. Savana Rd., Le Grand, Calif. 95333

Filed Sep. 23, 1983, Ser. No. 535,265
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of freestone nectarine tree, substantially as illustrated and described, which most closely resembles Spring Red (U.S. Plant Pat. No. 3,619) but is distinguished therefrom and an improvement thereon by having fruit which ripens about seven days earlier and at shipping ripeness has a better firmness, a waxlike appearance of the skin, and a very symmetrical and attractive shape.

5,457

BLUE SPRUCE TREE "BABY BLUEYES" VARIETY

Verl L. Holden, 10374 Hazel Green Rd. NE., Silverton, Oreg. 97381

Filed Sep. 19, 1983, Ser. No. 533,277
Int. Cl.³ A01H *5/12*
U.S. Cl. Plt.50 **1 Claim**

1. A new and distinct variety of blue spruce tree, substantially as herein shown and described, characterized particularly as to novelty by its upright, semi-dwarf growth habit with early apical dominance; its naturally pyramidal configuration; its short, closely spaced needles; its high bud count; the delayed spring growth of its dormant buds; and its dense foliage, sky-grey in color.

PATENTS

GRANTED APR. 30, 1985

ERRATA

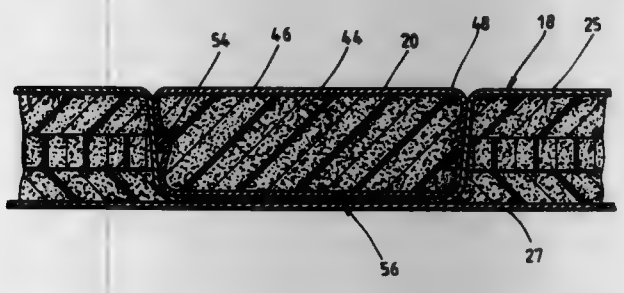
For CLASS	See PATENT NO.
132–011	4,513,842
248–544	4,513,994
138–106	4,514,103
514–184	4,514,390
514–002	4,514,391
514–148	4,514,392
514–213	4,514,394
514–224	4,514,395
514–222	4,514,396
514–247	4,514,397
514–245	4,514,398
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514–252	4,514,400
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514–250	4,514,402
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514–265	4,514,404
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514–215	4,514,411
514–397	4,514,412
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514–422	4,514,414
514–470	4,514,415
549–442	4,514,416
514–482	4,514,417
514–508	4,514,418
514–521	4,514,419
514–689	4,514,420
514–711	4,514,421
250–423	4,514,610
361–385	4,514,746

PATENTS

GRANTED APRIL 30, 1985

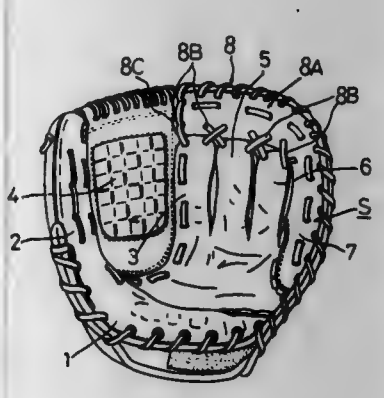
GENERAL AND MECHANICAL

4,513,449
SHOCK ABSORBING ATHLETIC EQUIPMENT
Byron A. Donzis, 23 Lana La., Houston, Tex. 77027
Continuation-in-part of Ser. No. 478,681, Mar. 25, 1983, which is a continuation-in-part of Ser. No. 357,588, Mar. 12, 1982, abandoned. This application May 18, 1983, Ser. No. 495,753
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **28 Claims**



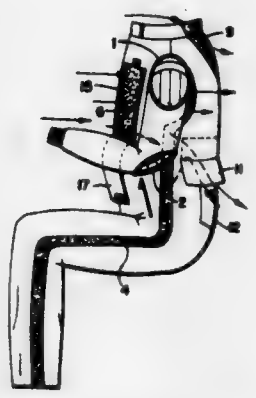
1. Shock absorbing athletic equipment for protecting a wearer from externally impacting forces, comprising:
a shock absorbing body portion designed to generally cover and protect at least a portion of a wearer's body, comprising,
a flexible enclosure defining an internal cavity therein, said flexible enclosure being generally impermeable to air,
means for placing said cavity within said enclosure in limited fluid communication with the exterior of said enclosure, and
a foam core retained within said cavity, said foam core formed of an open-celled material; and
a shock absorbing insert portion secured to said body portion and situated to contact a selected area of the body of said wearer, said insert having shock absorbing capability distinct from that of said shock absorbing body portion, said insert adapted to maintain said shock absorbing capability when impacted by a force of an anticipated magnitude.

4,513,450
BASEBALL CATCHING MEANS
Akio Aoki, Hirakata, Japan, assignor to Trion Corporation, Osaka, Japan
Filed Jan. 13, 1984, Ser. No. 570,318
Claims priority, application Japan, Dec. 28, 1983, 58-205107[U]
Int. Cl.³ A41D *13/10*
U.S. Cl. 2—19 **4 Claims**



1. A baseball glove, comprising:
a main body;
a thumb piece;
three finger pieces formed shorter than said thumb piece and each defining an upper end;
a little-finger piece, said thumb piece and three finger pieces being formed separately from each other, said thumb piece, three finger pieces and little-finger piece being connected to and extending from the main body;
a back stop disposed between said thumb piece and one of said finger pieces adjacent said thumb piece to connect said thumb piece and said finger-piece; and
a connection member formed integrally with said little-finger piece, said connection member being disposed along and connected to the upper ends of said three finger pieces and connected to said back stop, said connection member defining a ball catching surface along its extent.

4,513,451
VARIABLE VENTILATION SYSTEM FOR GARMENTS
Michael A. Brown, 5 Upper Trail, Fairfield, Pa. 17320
Filed Feb. 22, 1983, Ser. No. 468,584
Int. Cl.³ A41B *9/100*
U.S. Cl. 2—69 **17 Claims**



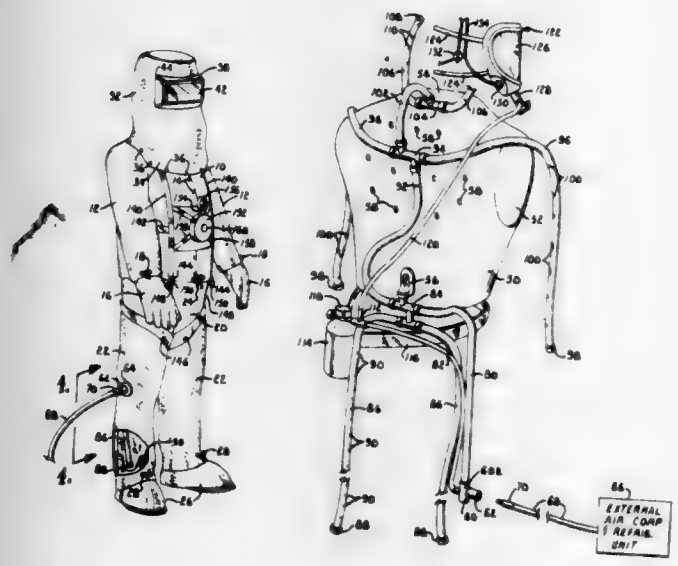
1. A ventilated outer garment comprising a front, back and two sides, said garment front being provided with one or more ventilation means disposed on the front of the garment for controllably permitting moving air to enter said garment and pass through said garment; the back of the garment being further provided with additional ventilation means for permitting said moving air to exit therefrom to thereby prevent billowing of the garment; entry of air through said front ventilation means being controlled by covering means disposed over said ventilation means and attached to said garment by means for permitting said covering means to be incrementally positioned over said front ventilation means.

4,513,452
HEAT RESISTANT SUIT FOR USE IN BOILER REPAIR
P. Phillip Rankin, Sr., R.R. #1, Box 178D, Tunas, Mo. 65764; R. Dewon Rankin, R.R. 2, Box 265, Buffalo, Mo. 65622, and Jacky P. Rankin, 302 S. Evergreen, Chanute, Kans. 66720
Filed Mar. 14, 1983, Ser. No. 475,061
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—81 **19 Claims**

1. A heat resistant suit for use in high temperature environments in excess of about 150° F., said suit comprising:
a pair of heat resistant boots;
heat resistant trousers having legs for overlapping the boots;
means for securing the trouser legs tightly against the boots in overlapping relation thereto;
a pair of heat resistant gloves;
a heat resistant coat having a waist portion for overlapping the trousers and a pair of arms for overlapping the gloves;
means for securing the waist portion of the coat tightly against the trousers in overlapping relation thereto;

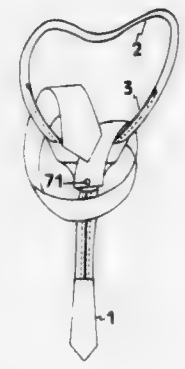
a heat resistant hood having a transparent lens and a nedk portion for overlapping the coat;
means for securing the neck portion of the hood tightly against the coat in overlapping relation thereto;
a plurality of interconnected tubes extending within the trousers, coat and hood for applying cool air therein for cooling the body;
an inlet fitting on one of said legs of the trousers connected with said tubes for delivering cool air thereto; and
an elongate flexible hose having one end for receiving refrigerated air from an external source thereof and an opposite end adapted for coupling with said inlet fitting to deliver cool air thereto, said opposite end being disconnected from said inlet fitting in response to pulling on the hose with a force in excess of a preselected level.

14. A heat resistant suit for use in high temperature environments in excess of about 150° F., said suit comprising:
a pair of heat resistant boots;
heat resistant trousers having legs for overlapping the boots;
means for securing the trouser legs tightly against the boots in overlapping relation thereto;
a pair of heat resistant gloves;



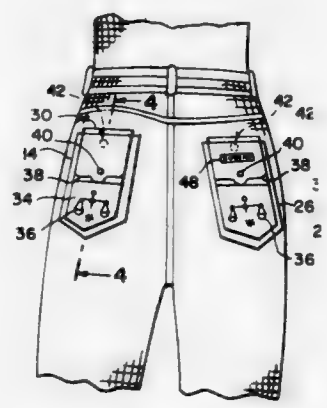
a heat resistant coat having a waist portion for overlapping the trousers and a pair of arms for overlapping the gloves;
means for securing the waist portion of the coat tightly against the trousers in overlapping relation thereto;
a heat resistant hood having a transparent lens and a neck portion for overlapping the coat;
means for securing the neck portion of the hood tightly against the coat in overlapping relation thereto;
a harness having a first set of straps on said coat and a second set of straps on said trousers;
releasable means for securing said first set of straps to said second set of straps when the coat and trousers are worn;
a reel carried on said harness;
a safety line wound on said reel and having a free end;
safety hook means on said free end of the safety line for releasable attachment to a support member; and
brake means for controlling the unwinding of said safety line from the reel,
whereby said safety hook means can be attached to the support member and a worker wearing the suit can descend therefrom with said brake means controlling the unwinding of said safety line from the reel to control the rate of descent of the worker.

4,513,453
PRE-TIED NECKTIE
Jiann Chen, and Ching H. Chen, both of No. 21, Alley 21, La. 244, Sec. 5, Yen-Ping North Rd., Taipei, Taiwan
Filed May 19, 1983, Ser. No. 496,057
Int. Cl.³ A41D *25/08*
U.S. Cl. 2—150 **5 Claims**



1. A necktie comprising an inner tie member, the upper end of said inner tie member being formed as a loop defining a neck-encircling opening; a zip fastener operatively mounted on said loop to enlarge and decrease the size of said opening, said zip fastener comprising a slide member having a slider plate attached thereto; a knot support having a hollow upper portion which is generally oval when viewed from above and tapers downwardly to a depending tongue; and an outer tie member; said inner tie member being disposed within said hollow knot support with the lower end thereof depending from the knot support; the upper end of said outer tie member, said knot support, and said slider plate being joined, each to the others, by fixing means; said outer tie member being formed into a knot around said knot support.

4,513,454
ZODIAC DESIGNER JEANS
Alan Anderson, 58 Canaan Circle, Greensboro, Ga. 30642, and George Spector, New York, N.Y., assignors to Alan Anderson, Greensboro, Ga.
Filed Oct. 24, 1983, Ser. No. 544,843
Int. Cl.³ A41D *27/20*
U.S. Cl. 2—246 **2 Claims**



1. A garment comprising:
a. a first piece of fabric formed for a pocket of the garment, slightly smaller in shape than the pocket having a symbol receiving area engaging the outer side of the pocket, a top flap member that is tucked inside the top of the pocket;
b. a second piece of fabric formed as an outer patch for the pocket of the garment, slightly smaller in shape than the pocket and attached to said symbol receiving area; and
c. means for removeably attaching said first piece of fabric to the pocket wherein said second piece of fabric having a zodiac symbol and a simulated pocket flap with snap wherein said means for removably attaching said first piece of fabric to the pocket is at least one press-stud

having a male portion attached to the top flap member and a female portion attached to said symbol receiving area so that when the top flap member is tucked into top of the pocket said male portion will be in alignment with said female portion and will pass through top of the pocket and into the female portion thereby causing said symbol receiving area and said flap member to lay in close engagement with said pocket.

4,513,455

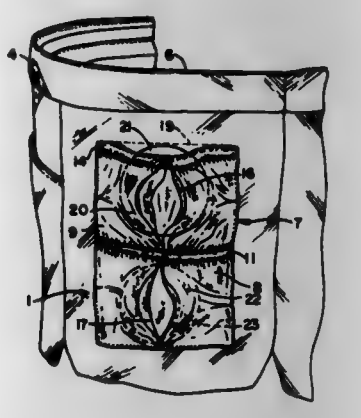
VERTICALLY STACKED DOUBLE POCKET

Gilbert C. Gerhardt, 225 Great Rd., Maple Shade, N.J. 08052

Filed Dec. 2, 1983, Ser. No. 557,625

Int. Cl.³ A41D *27/20*

U.S. Cl. 2—253 **9 Claims**



1. A vertically stacked double pocket affixed to the exterior of a garment, said pocket comprising a lower section and an upper section, said lower section closed at the bottom and open at the top into the bottom of said upper section, said upper section being open at the top and the bottom thereof, and a lower elastic band at the top of said lower section separating said upper and lower sections and an upper elastic band, said upper band being positioned at the top of said upper section, each said section closed at the top thereof only by said elastic band at the top thereof, each of said upper and lower sections being substantially equal in size and shape and vertically aligned and having the side edges of each section attached to said garment, and each section being dimensioned to receive and retain a ball.

4,513,456

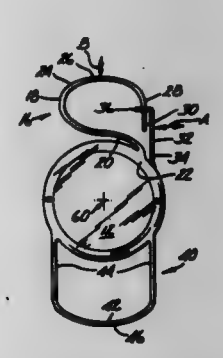
INTRAOCULAR LENS

Thomas C. White, 1127 Holly Dr., Sioux Falls, S. Dak. 57105

Filed Jun. 30, 1983, Ser. No. 509,420

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **3 Claims**



1. An intraocular lens device comprising:

(a) a lens for placement adjacent the side of the iris of an eye with its axis substantially aligned with the pupillary axis;

(b) fixation elements carried by the lens for supportive engagement with eye structure circumferential of the pupillary axis of the eye, at least one fixation element comprising an elongated resilient strut having a proximal portion carried by the lens, a medial portion having a contact surface engageable with said eye structure, and a distal portion extending inwardly from the medial portion toward the lens and having a free end to permit the contact surface to move elastically toward and away from the lens; and

(c) free end capture means comprising a second strut extending from the lens and having a loop at its outer end oriented to protectably receive the free end of the strut.

4,513,457

ARTICULATED HIP-JOINT FOR AN ARTIFICIAL LEG

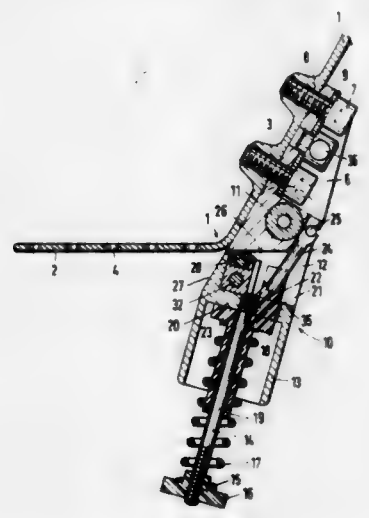
Richard Glabiszewski, Duderstadt, Fed. Rep. of Germany, assignor to Otto Bock Orthopädische Industrie KG, Duderstadt, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,848

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214773

Int. Cl.³ A61F *1/08, 1/04*

U.S. Cl. 3—15 **13 Claims**



1. An articulated hip-joint for an artificial leg, comprising a fastening angle including a substantially horizontal shank and a substantially upright shank extended at an obtuse angle to said horizontal shank; a first joint member connected to said upright shank; a second joint member connectable to the artificial leg and pivotally connected to said first joint member by a pivot so that said second member can be pivoted relative to said first member about said pivot between a first position corresponding to the standing position of the leg and a second position corresponding to the sitting position of the leg; stop surface means on said first member and said second member for limiting the pivoting movement of said second member relative to said first member; and elastic means on said second member for generating an elastic counter force applied to said second member when it is pivoted from said first position into said second position and vice versa so that said first joint member and said second joint member do not extend downwardly over an imaginary extension line drawn from said substantially horizontal shank, when the joint is in said second position.

4,513,458

FLOW SPOUT FOR LIQUID

Jean C. Delepine, 23 rue Clapeyron, 75008 Paris, France

Filed May 23, 1984, Ser. No. 613,256

Claims priority, application France, Jun. 24, 1983, 83 10480

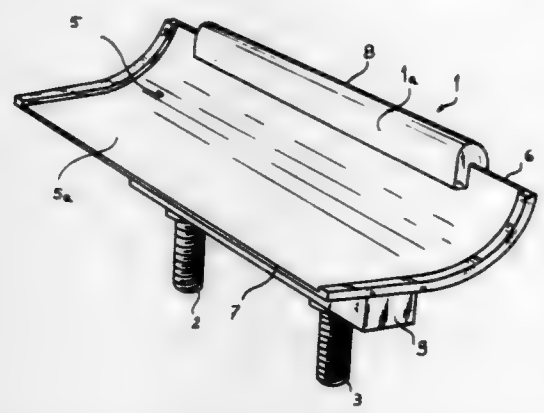
Int. Cl.³ E03C *1/04*

U.S. Cl. 4—192 **10 Claims**

1. A flow spout comprising a wide flat chamber in sheet form, in which at least one liquid inlet opens out, and which is in communication with the outside by a long narrow slot,

wherein it comprises a concave curved surface constituted at least in part by generatrices parallel to one another and disposed so that its generatrices are at least approximately horizontal and its rear edge is at a level higher than its front edge,

and said wide flat chamber is arranged so that its long, narrow slot is disposed on the rear edge side close to said



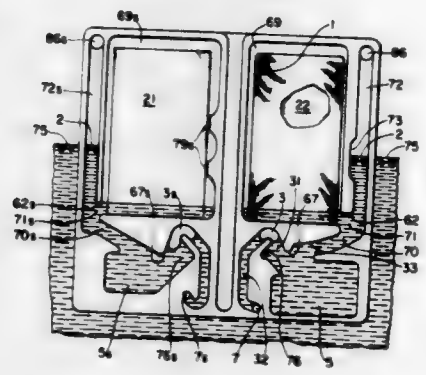
concave curved surface and at least substantially parallel to said generatrices.

4,513,459

BLEACH CAKE IN AN IMPROVED BLEACH RESISTANT PARTICLE RETAINING MEANS

Elexsis D. Doughty, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 20, 1984, Ser. No. 591,370
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—222 **11 Claims**



1. An article of manufacture comprising a solid cake of water-soluble calcium hypochlorite: CHARACTERIZED IN THAT:

a nonwoven water-permeable envelope contains said solid cake, said envelope made of a heat sealable substrate comprising a polyester fiber bonded with a polyvinyl chloride polymeric latex binder (PVC), said substrate having a basis weight of from 30 to 55 g/m^2, and a weight ratio of said PVC/Polyester of about 20:80 to about 60:40; said substrate having a minimum wet bending value of 3 mm.

4,513,460

SOFA SLEEPER SEAT SUPPORT SYSTEM

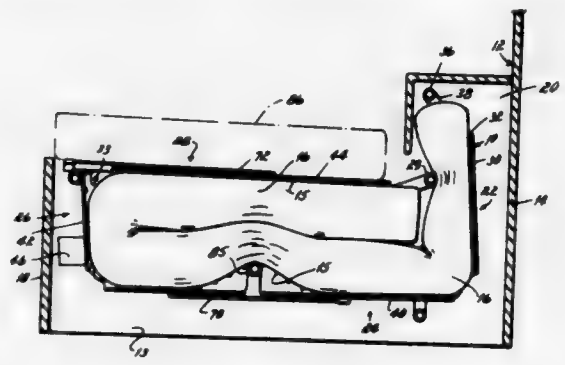
Darrell L. McIntire, St. Louis, Mo., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Apr. 21, 1983, Ser. No. 487,175
Int. Cl.³ A47C *17/04*
U.S. Cl. 5—13 **4 Claims**

1. A foldable sofa sleeper bed frame adapted to be mounted upon a sofa frame having back, front and side members which define a generally rectangular storage enclosure, said foldable bed frame comprising a plurality of pivotally interconnected head, body, intermediate and foot sections, said bed frame sections each including a pair of opposed side rails and a mattress supporting deck located between said side rails, and means supporting said bed frame for movement between (1) a retracted folded position in which the bed frame is contained within said storage enclosure, and (2) an extended position in which said bed frame lies above and extends forwardly over said front frame member to form a generally horizontal planar bed, said bed frame when in said extended position being supported by a first pair of foldable legs pivotally connected to the foot bed frame section and a second pair of foldable legs connected to said bed frame intermediate said first pair of foldable legs and said head end of said frame,

a foldable mattress mounted atop said mattress deck, and

a seat support system for engaging and supporting the underside of said mattress supporting deck when said bed frame is in said retracted folded position contained within said storage enclosure, said seat support system comprising,



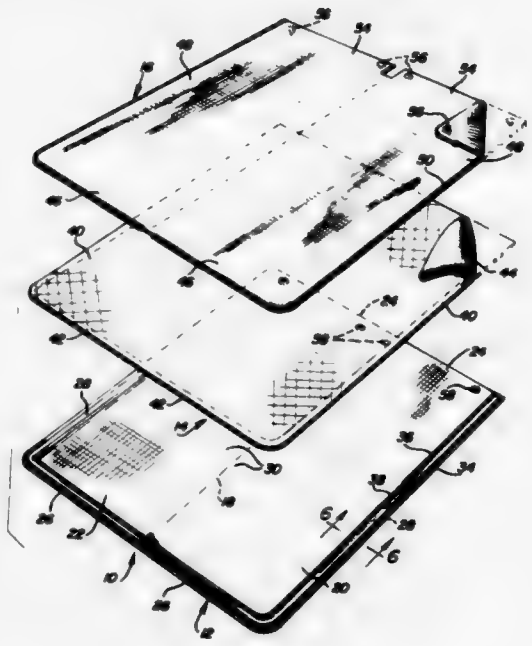
a cross brace attached to said second pair of legs, said cross brace being bowed between said second pair of foldable legs, the bow of said cross brace being convex substantially upward approximately two inches out of the horizontal plane when said bed frame is in a retracted folded position to form a sofa seat so that said cross brace is engageable with the underside of said mattress supporting deck to force said mattress supporting deck upwardly when said bed frame is in said retracted folded position.

4,513,461

SLEEPING BAG WITH REMOVABLE SHEET

Monique M. Tardivel, Sedona, Ariz., assignor to Georges M. Tardivel, Venice, Calif.

Filed Jan. 11, 1984, Ser. No. 570,608
Int. Cl.³ A47G *9/08*
U.S. Cl. 5—413 **9 Claims**



1. A flexible sleeping bag of the type including a first outer panel foldable upon itself to form opposing panel portions, each of said panel portions defining first and second transverse edges and first and second longitudinal edges, said second longitudinal edges being integrally joined by the portion of said panel to be folded, elongated inner and outer flaps extending along said second transverse edges and said first longitudi-

nal edges, the outer flap being equipped with first slide fastening means, for removably joining said second transverse edges and said first longitudinal edges, a second intermediate insulation panel of generally the same size and shape as, but slightly smaller than, said outer panel and overlying the latter, coacting strip fastener means extending along said first longitudinal edges and said second transverse edges as well as the corresponding edges of said insulation panel removably joining said insulation panel to said outer panel, and a third inner sheet panel of generally the same size and shape, but slightly smaller than said first panel, said inner flap and the corresponding edges of said third inner panel including coacting second slide fastener means extending therealong inwardly of said first slide fastener means removably joining said third panel to said inner flap of the first panel, said strip fastener means being anchored to said first longitudinal edges and said second transverse edges substantially beneath said inner flap.

4,513,462

THERAPEUTIC PILLOW

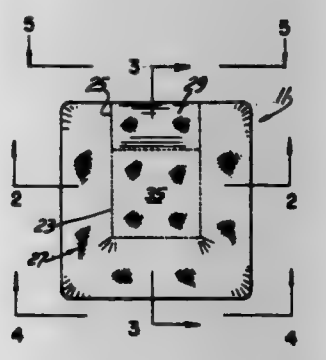
Charles R. Thomas, 9696 Northlawn, Detroit, Mich. 48204

Filed Nov. 28, 1983, Ser. No. 555,498

Claims priority, application European Pat. Off., Apr. 15, 1983, 83302133.0

Int. Cl.³ A47G *9/00*

U.S. Cl. 5—442 **10 Claims**



1. A therapeutic pillow comprising a soft resilient bottom pillow section;

a top pillow section superimposed thereover and peripherally secured thereto;

the top section including a top fabric cover and an underlying first bottom fabric cover with said covers peripherally interconnected;

continuous rectangular stitching interconnecting said covers and spaced inwardly of the corresponding peripheral connection of said covers;

spaced stitching extensions between said rectangular stitching and one edge of said covers defining a first tubular firm neck support of rectangular shape, exteriorly and transversely convex;

said peripheral connection and rectangular stitching defining a supplemental tubular firm neck support of U-shape, exteriorly and transversely convex;

first compacted stuffing of resilient fibrous material confined and retained within said first neck support;

second compacted stuffing of resilient fibrous material confined and retained within said supplemental neck support;

said bottom section including a second bottom fabric cover generally spaced from and parallel to said first bottom cover and peripherally connected thereto defining a rectangular chamber underlying said top pillow section;

and a loosely confined stuffing of resilient fibrous material enclosed and retained within said chamber yieldably underlying said top pillow section.

4,513,463

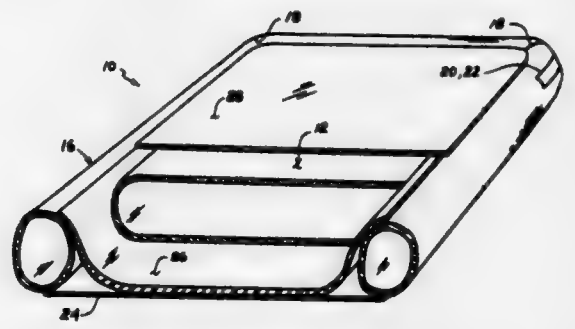
FLOATATION SLEEP SYSTEM

Philip J. Santo, 12 Mountain Rd., Rochester, N.Y. 14625

Continuation-in-part of Ser. No. 450,022, Dec. 15, 1982, abandoned. This application Mar. 14, 1983, Ser. No. 475,332

Int. Cl.³ A47C *27/10*; A61G *7/04*

U.S. Cl. 5—452 **14 Claims**



1. An improved floatation sleep system comprising:

means for supporting a human body;

means for forming a marginal perimeter support for said body supporting means, said support means including a continuous elongated chamber;

a first flexible, dimensionally stable, fluid impervious sheet connected to an upper portion of said elongated chamber, such sheet being of an overall dimension greater than the distance between opposed portions of such chamber and less than the distance between such opposed portions plus twice the vertical height of such chamber; and

a second flexible, dimensionally stable sheet extending between opposed portions of said elongated chamber, said second sheet being integrally connected to an upper portion of a part of such chamber and readily releasably secured to the remaining part of such upper portion; whereby said first and second sheets form a completely enclosed interior chamber adapted to receive and contain said body supporting means, such interior chamber being accessible through such releasably secured part of said second sheet and said elongated chamber.

4,513,464

METHOD FOR CONTROLLING THE ACCELERATION OF A CENTRIFUGING DEVICE

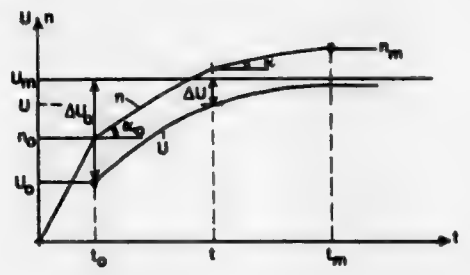
Jakob Rettich, Zürich, and Leonhard Spiewok, Wallisellen, both of Switzerland, assignors to Sulzer-Escher Wyss Ltd., Zürich, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,454

Claims priority, application Switzerland, Dec. 14, 1982, 7261/82

Int. Cl.³ D06F *33/02*

U.S. Cl. 8—159 **9 Claims**



1. A method for controlling the acceleration to design speed of a centrifuging device subject to variable imbalance, the method comprising the steps of measuring the imbalance as the device is accelerated; limiting speed changes of the device to a positive range of acceleration values including zero; and regulating acceleration of the device within that range solely as a function of the difference between the measured imbalance and

a threshold value, whereby the acceleration period is kept short while avoiding excessive imbalance.

4,513,465

STIFFENING GIRDER FOR A STAYED CABLE BRIDGE

Herbert Schambeck, Frieding-Andechs, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 10, 1982, Ser. No. 406,995

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132398

Int. Cl.[3] E01D *11/00*

U.S. Cl. 14—17 8 Claims



1. Stiffening girder, formed of one of reinforcing concrete and prestressed concrete, for a stayed cable bridge comprising a multi-cell box elongated in the long direction of said bridge and closed in the elongated direction, means for supporting said box including cables inclined in the elongated direction of and secured to said box, said cables arranged in at least one upwardly extending support plane extending in the elongated direction of and upwardly from said box, said box comprising only parts having the long dimension thereof extending in the long direction of said box and being free of parts having the long dimension thereof extending transversely of the long direction of said box, said box comprising a generally horizontally extending continuous roadway slab forming the upper part of said box and having a pair of opposite edges extending in the long direction of said box, at least a plurality of webs extending downwardly from said roadway slab with said webs elongated in the long direction of said box and extending continuously along the underside of said roadway slab, at least one said web located interiorly within said box, and a continuous bottom slab spaced downwardly from said roadway slab with said webs extending between said roadway slab and bottom slab, said roadway slab said webs and said bottom slab each comprises a plate-like member extending in the elongated direction of said box and said roadway slab said webs and said bottom slab form a truss extending in the direction transverse to the elongated direction of said box and capable of transferring vertical loads at the junction points of said truss whereby said truss is capable of transferring the forces acting in said box to said means for supporting said box without the use of additional structural members, such as transverse girders, tension or compression diagonal rods and the like, extending in the direction transverse to the long direction of said box, and at least some of said webs extending at an acute angle relative to the plane of said roadway slab and a different one of said webs located adjacent to each of said opposite edges of said roadway slab and extending upwardly at an acute angle relative to said roadway slab and bottom slab from said bottom slab to a location on said roadway slab adjacent to the corresponding one of said opposite edges.

4,513,466

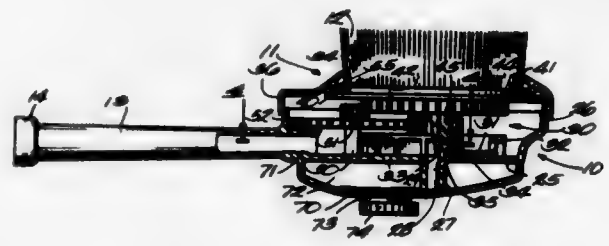
WATER-POWERED BRUSH

David P. Keddie, and Richard J. Shaw, both of Brookfield, Wis., assignors to Hempe Manufacturing Co., New Berlin, Wis.

Filed Sep. 24, 1984, Ser. No. 653,365

Int. Cl.[3] A46B *13/06*

U.S. Cl. 15—29 5 Claims



1. A water-powered brush comprising:

a housing having a generally planar nominally top wall and a perimetral wall defining the boundaries of the top wall and extending from the top wall to define the boundary of a bottom opening in the housing,

a curved barrier wall having the configuration of a segment of a circle projecting from said top wall toward said bottom opening,

a first boss projecting from said top wall toward said bottom opening and a first fixed shaft at the center of curvature of said barrier wall and extending from the boss such that the free end of the boss provides a bearing shoulder,

a water supply conduit joined to said housing and terminating in an orifice in said barrier wall for projecting a jet of water generally tangentially to the curvature of the barrier wall,

a turbine rotor comprised of a disk and a first pinion projecting integrally and coaxially from one side of the disk in the direction of said bottom opening, said disk and pinion having a coaxial bore of sufficient diameter to provide for fitting over said boss with substantial clearance, said disk having a plurality of circumferentially spaced apart peripheral turbine blades extending into proximity with said barrier wall for said jet to impel said rotor,

a second boss located radially outwardly of said circular barrier wall and extending away from said top wall and a second shaft extending from said second boss in parallelism with said first shaft,

a gear and a second pinion integral and coaxial with said gear and having a common bore for being jointly rotatable on the shaft extending from said second boss while bearing on said second boss with said gear meshing with said first pinion,

brush means including a circular base member having a circular array of bristles extending from one side and a second gear on the opposite side and a cylindrical shaft extending axially from the center of the second gear, said cylindrical shaft having a bore for fitting in bearing relationship on said first stationary shaft and having an outside diameter for fitting into the bore of the pinion on said turbine rotor so the rotor is journaled for rotation on said cylindrical shaft while the gear on said base member is meshed with said second pinion to drive said brush means rotationally, and

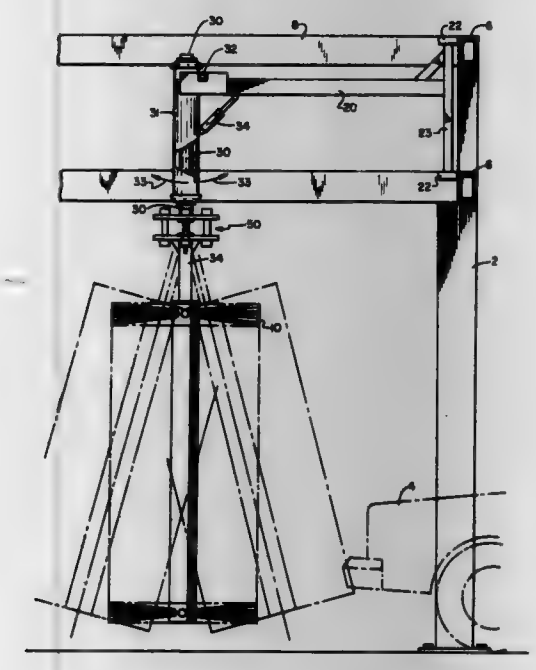
a retainer cover and means for coupling said cover to said housing to close its said bottom opening, said cover having a hole for said brush to extend through the rim of said hole underlying the margin of said circular base member to thereby retain said brush means on said first shaft whereupon said brush means is held in a position for preventing said gears, pinions and rotor from sliding off of their shafts.

4,513,467

VEHICLE WASHING APPARATUS HAVING A YIELDABLE BRUSH SHAFT COUPLING

James W. Roncaglione, 9807 Bridleridge Ct., Vienna, Va. 22180

Continuation of Ser. No. 415,928, Sep. 8, 1982, abandoned. This application May 23, 1984, Ser. No. 613,018
Int. Cl.[3] B60S *3/06*
U.S. Cl. 15—53 AB 8 Claims



1. A vehicle wash apparatus, comprising:

a generally horizontal overhead brush support arm wherein at least one end of said brush support arm is located above the path of a vehicle to be washed;

a generally vertical shaft housing pivotally connected with said support arm about a horizontal pivot axis;

a shock absorber connecting said shaft housing and said brush support arm for minimizing the swinging movement about said horizontal pivot axis between said shaft housing and said support arm;

an elongate rotatable brush arranged in the path of a vehicle to be washed, said rotatable brush being rotatable about a generally vertical axis of rotation for washing at least one end and one entire side surface of a vehicle moving relative thereto;

a lower rotatable shaft secured to said rotatable brush;

drive means for imparting rotational movement to said brush;

an upper rotatable shaft located in said shaft housing and being connected with said drive means; and

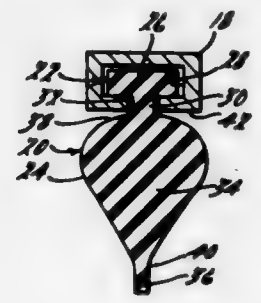
coupling means for coupling said upper and lower rotatable shafts, said coupling means including (a) an upper plate secured to said upper shaft, (b) a lower plate secured to said lower shaft, and (c) three or more rigid connecting members radially disposed about said axis of rotation which operably connected said upper plate with said lower plate, which prevent said upper and lower plates from moving more than a predetermined distance apart from each other, and which allow said plates to tilt relative to each other during rotation of said brush from a first normal position when said brush is rotating freely about said generally vertical axis of rotation to a second washing position when said brush contacts a vehicle being washed and tilts from said generally vertical axis of rotation.

4,513,468

WINDSHIELD WIPER ELEMENT

William L. Hayden, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 5, 1983, Ser. No. 520,881
Int. Cl.[3] B60S *1/38*
U.S. Cl. 15—250.36 2 Claims



1. A squeegee element for a windshield wiper blade of the type having a rigid backing strip having a channel formed therein for mounting the squeegee element, the squeegee element being integrally formed from an elastomer to comprise:

A. an elongated T-shaped mounting portion received in the backing strip channel including a unitary stem portion extending outwardly therefrom and a bullbous main body portion;

B. a tip portion of substantially rectangular cross-section formed at the end of the main body portion remote from the stem portion;

C. said main body portion being teardrop shaped in cross-section and having convex outer surfaces extending in the lateral direction and symmetrically arrayed about a vertical plane extending through the stem portion and the tip portion, said convex outer surfaces each having equal radii of curvature, and wherein convex upper surfaces are formed on each of the convex outer surfaces at locations adjacent the backing strip, each convex upper surface having a larger convex radius of curvature than the radii of curvature of said convex outer surfaces, the centers of the convex outer surfaces falling on either side of said vertical plane and the centers of the convex upper surfaces falling in the vertical plane; and

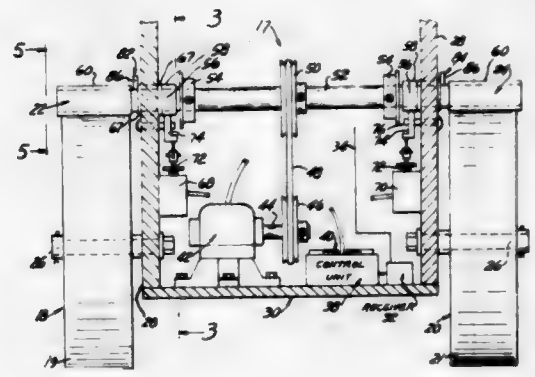
D. means defining a smooth cross-sectional transition on the surface of the element between said main body portion and said tip portion.

4,513,469

RADIO CONTROLLED VACUUM CLEANER

James O. Godfrey, and Robert E. Godfrey, both of 3612 Bali Dr., Sarasota, Fla. 33582

Filed Jun. 13, 1983, Ser. No. 503,771
Int. Cl.[3] A47L *9/28*
U.S. Cl. 15—319 16 Claims



1. A remote-radio controlled vacuum cleaner comprising a conventional vacuum cleaner having a body, radio signals transmitting means, radio signals receiving means mounted in

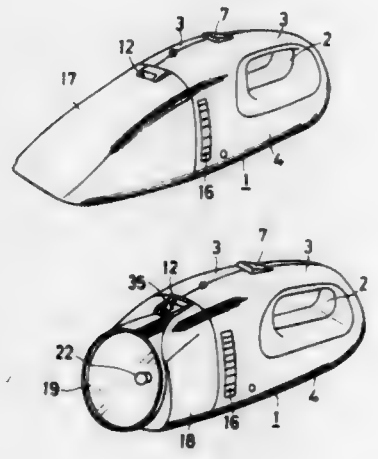
said body, a pair of ground engaging wheels each mounted on a side of said body, a driveshaft extending transversely through said body and having at each end a drive roller in frictional engagement with the periphery of one of said wheels, reversible electric motor drive means in said body for driving said driveshaft, and means for selectively disengaging one of said drive rollers from the periphery of a corresponding wheel upon said radio receiver receiving a steering control command signal, means for reversing the direction of drive of said electrical motor upon said radio receiver receiving an appropriate directional command signal, and means for allowing each said drive roller to be manually lifted from the periphery of each of said wheels for manual operation of said vacuum cleaner.

4,513,470

COMBINED STRUCTURE OF HAND-HELD CORDLESS VACUUM CLEANER AND FLASHLIGHT

Syouichi Toya, Sumoto, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 13, 1984, Ser. No. 579,718
Claims priority, application Japan, Jun. 13, 1983, 58-106551
Int. Cl.[3] A47L 5/24
U.S. Cl. 15—328 **10 Claims**



1. A combined structure of a hand-held cordless vacuum cleaner and a flashlight comprising;

a vacuum cleaner body having a handle portion, housing therein a battery and an electric powered blower driven by said battery, and including switch means adapted to control power fed to said blower;

a dust case housing therein a filter;

a flashlight case including a lighting unit and switch means for said lighting unit;

interconnecting means adapted to releasably interconnect either one of said dust case and said flashlight case to said vacuum cleaner body; and

electrical connection means adapted to electrically connect said battery in said vacuum cleaner body to said lighting unit in said flashlight case when said flashlight case is interconnected to said vacuum cleaner body by said interconnecting means,

said interconnecting means being composed of; an annular stepped portion formed in the front peripheral edge portion of said vacuum cleaner body; a clamping portion and an engaging portion respectively formed in the upper and lower part of said annular stepped portion; an annular recess formed in the rear peripheral edge portion of each of said dust case and said flashlight case and releasably fitted to the annular stepped portion of said vacuum cleaner body in a substantially fore-and-rear direction; and upper and lower locking portions formed in the vicinity of said annular recess to be respectively locked to the clamping portion and the engaging portion of said annular stepped portion,

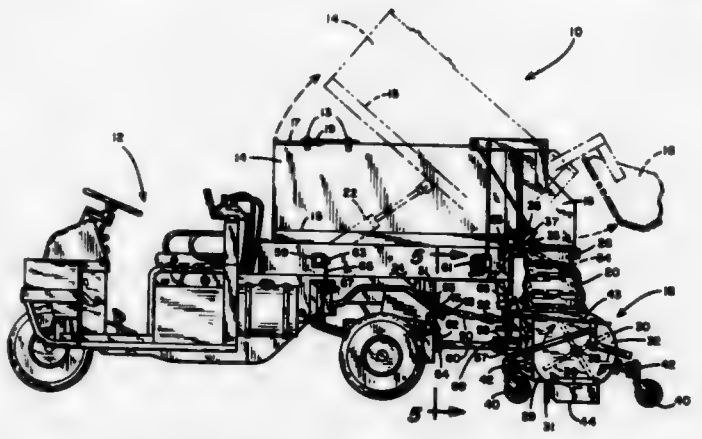
and said electrical connection means being composed of; a recess formed in the annular stepped portion of said vacuum cleaner body; battery side connection terminals disposed in said recess and led to said battery; and light bulb side connection terminals projected to the annular recess of said flashlight case, led to said lighting unit and coming into the recess in the annular stepped portion of said vacuum cleaner body to be brought into contact with said battery side connection terminals when said flashlight case is interconnected to said vacuum cleaner body.

4,513,471

SWEEPER BLOWER DEVICE

Raymond A. Rahn, 22125 Albatross Cir., Farmington, Minn. 55024

Filed Oct. 31, 1983, Ser. No. 547,369
Int. Cl.[3] A47L 5/12
U.S. Cl. 15—340 **13 Claims**



1. A refuse material collecting attachment for a motorized vehicle, said vehicle being of the type including a frame supported by a plurality of wheels, at least one of said wheels being driven by an engine, the engine having a power take-off member and said refuse material collecting attachment comprising:

(a) a box-like hopper having a floor, side, front and rear walls, the hopper being pivotably secured to said frame proximate the junction of said floor and said rear wall thereof, said hopper having an opening in said rear wall through which refuse material can pass;

(b) means for rotating said hopper about the pivot between a first disposition where the floor of said hopper is resting on said frame and a second disposition in which said floor is elevated relative to said frame;

(c) a wheel supported housing having a width dimension approximately the same as the width of said hopper and an elongated opening in the upper and lower surfaces of said housing;

(d) impeller means journaled for rotation within said housing about an axis which is aligned with the width dimension thereof, said impeller means having at least one flexible brush element;

(e) means coupling said impeller means to said power-takeoff member for rotating same whereby said brush element creates an upwardly directed suction force on articles of refuse material disposed below said opening in said lower surface of said housing;

(f) a flexible tubular conduit extending upwardly from said opening in said upper surface of said housing toward said opening in said rear wall of said hopper;

(g) a cover member pivotably secured to said hopper and extending between said opening in said rear wall and said tubular conduit when said hopper is in said first disposition for directing refuse material picked up by said impeller means through said opening in said rear wall of said hopper;

(h) means pivotably connected to said hopper proximate the intersection of said floor and said rear wall for gating the flow of refuse material; and

(i) linkage means extending between said cover member and said gate means for positioning said gate means in blocking

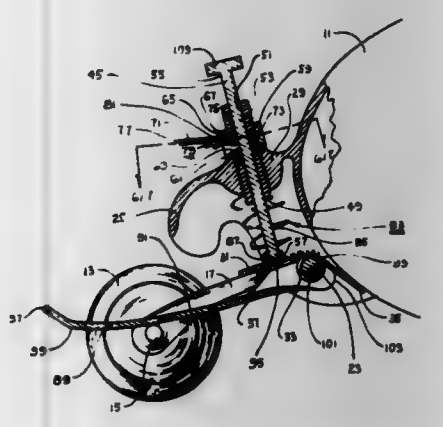
relationship with respect to said tubular conduit when said hopper is elevated to said second disposition.

4,513,472

HEIGHT ADJUSTMENT MECHANISM

R. Leon Wells, 1649 Manor Dr., Vista, Calif. 92083

Filed Nov. 7, 1983, Ser. No. 548,995
Int. Cl.[3] A47L *5/34*
U.S. Cl. 15—354 17 Claims



16. A foot-activated nozzle height-adjustment mechanism to replace the nozzle height-adjustment screw in an upright floor vacuum cleaner of the type characterized by having a front floor cleaning nozzle that is pivotally adjustable in height about the front wheels through raising and lowering an upwardly biased rear wheel carrier fork in contact with the screw, comprising:

(a) an elongated hollow tube of finite length, having top and bottom ends respectively, for threaded receipt in the same hole as the replaced adjustment screw;

(b) a shaft slideably received in said tube having top and bottom ends respectively wherein said bottom end extends beyond said bottom tube end for height-adjustment contact with the rear wheel carrier fork and said top end extends beyond said top tube end and includes a wide cap to prevent said shaft from dropping out of said tube;

(c) an exposed mounting cap encircling said tube and including a wide aperture formed in one side thereof tapering inwardly to expose said shaft and comprising top and bottom aperture surfaces;

(d) a first lever having one end in said aperture between said surfaces and having a hole formed therein, slightly larger than said shaft, for receipt therethrough by said shaft, and extending outward and rearward of the vacuum cleaner and arranged to loosen on said shaft when depressed and fixedly clasping said shaft to prevent upward movement within said tube when raised;

(e) leaf spring means in said aperture to bias said lever in an upward, shaft-locked position;

(f) coil spring means attached to said bottom end of said shaft to bias said shaft downward and against the rear wheel carrier fork of less bias pressure than the upward bias pressure on said carrier fork; and,

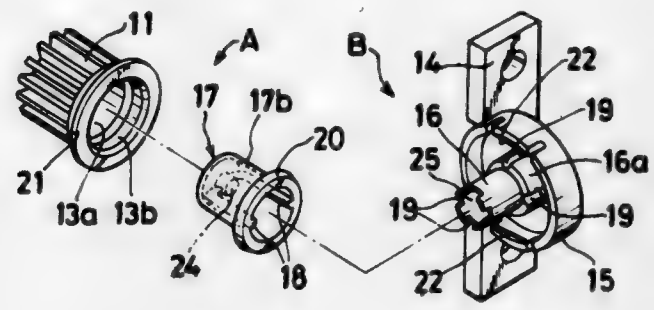
(g) a second lever centrally disposed between the rear wheels in fixed relationship against the rear wheel carrier and extending rearward beyond the vacuum cleaner rear support wheels terminating at an upwardly turned lip for depressing the rear wheels, such as by the operator's foot, to raise the rear end of the vacuum cleaner and pivotally lower the front cleaning nozzle, and wherein said lever extends forward and has formed therein an aperture for receipt therethrough of the rear wheel carrier fork attachment shaft and further includes a tab depending therefrom arranged to contact the vacuum cleaner body and prevent further lowering of the vacuum cleaner rear wheels beyond a desired point.

4,513,473

SEALED ROTARY MOTION DAMPER

Nobuaki Omata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Dec. 16, 1983, Ser. No. 562,061
Claims priority, application Japan, Dec. 23, 1982, 57-193979[U]
Int. Cl.[3] E05F *5/02*
U.S. Cl. 16—82 4 Claims



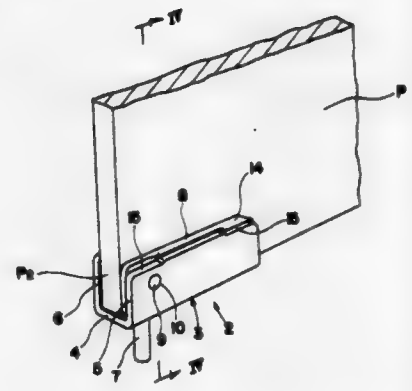
1. An oil type damper, comprising a rotor formed of a toothed wheel and a boss and provided with a hollow part coaxially formed in said toothed wheel and boss and opening at the end of said boss, a base seat incorporating a base for attachment to a given device and provided with a tubular part adapted to be fitted around the outer surface of said boss of said rotor and a shaft formed coaxially with respect to said tubular part and adapted to be inserted into said hollow part of said rotor, said tubular part and said shaft both being formed on said base, and a separate sealer element having the shape of a tube and having a closed end and an open end and being inserted into said hollow part of the rotor so as to define a space between the sealer element and said rotor wherein oil is contained in said space and said sealer element is provided at the open end with an annular flange that is in sealing contact with an inner surface of the open end of said hollow part of said rotor, one of said shaft of the base seat and said sealer element being provided with at least one recess and the other being provided with at least one projection to be matched to said recess so as to prevent rotation of said shaft of the base seat and said sealer element.

4,513,474

WEDGE HINGE HAVING AN AXIALLY MOVABLE PIVOT

Takaharu Watabe, Hirakata, Japan, assignor to Santo Industries Co., Ltd., Osaka, Japan

Filed Nov. 15, 1982, Ser. No. 441,913
Claims priority, application Japan, Aug. 27, 1982, 57-129968; Aug. 27, 1982, 57-129969
Int. Cl.[3] E05D *7/04*
U.S. Cl. 16—243 8 Claims



1. A hinge device comprising a main body in the form of a channel member having two parallel side walls and a web connecting said side walls, a mount pin projecting outward

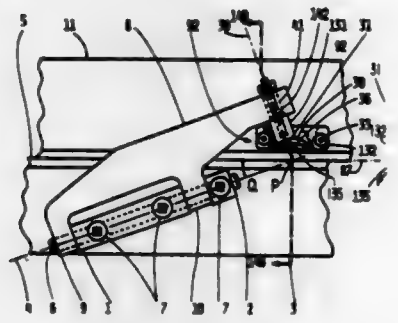
from said web, and a pressing plate having oppositely facing side surfaces, said pressing plate being connected adjacent to one of its ends to one of said side walls by an axially slidable pivot and being pivotally retractable into said channel member between said side walls, said pressing plate being provided with a wedge formation on the one of said side surfaces opposed to said one side wall, the other of said side surfaces of the pressing plates being planar and parallel to the other side wall of said channel member, said wedge formation being adapted in response to pivotal retraction of said pressing plate into said channel member to coact with said one side wall and translate said pressing plate toward the other side wall of said channel member, said other planar side surface of said pressing plate gradually approaching said other side wall in subtantially parallel relation therewith.

4,513,475

HINGES AND HINGED ARTICLES

Geoffrey J. Fenton, Sandfly, Australia, assignor to Magnetic Engineering Pty. Ltd., Australia

Filed Apr. 14, 1983, Ser. No. 485,067
Claims priority, application Australia, Apr. 14, 1982, PF3583
Int. Cl.³ E05D *3/10*
U.S. Cl. 16—360 **17 Claims**



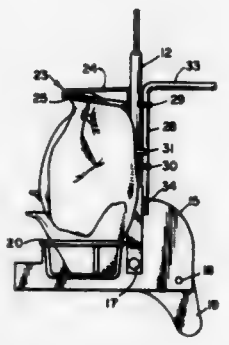
1. A hinged article comprising
first body (3),
second body (11),
hinge means interconnecting the first (3) and second (11) bodies and defining a hinge line (87)
and wherein the hinge means includes
a hinge which comprises
a first member (8) pivotally mounted to the first body (3) about a first pivot axis (4) which is inclined (Q) to the hinge line (87), and
a coupling (91, 92, 94) for articulating the first member (8) to the second body (11);
said coupling defining a second axis (39) fixed relative to the first member (8) such that a projection of the second axis (39) intersects a projection of the first axis (4),
said coupling (91, 92, 94) being arranged to lie entirely on one side of at least one plane passing through the intersection of the projections of the first (4) and second (39) axes, and
said coupling (91, 92, 94) additionally defining a third axis (88, 171, 17) fixed relative to the second body (11) about which the second axis (39) can pivot and which third axis (88, 171, 17) intersects a projection of the second axis (39) at a constant angle for all hinged orientations of the first body (3) and the second body (11),
the third axis (88, 171, 17) being defined by bearing surfaces (16, 18, 30, 31, 54, 58, 60) which extend on each side of a plane normal to the third axis (88, 171, 17) passing through the intersection of the projection of the second axis (39) and the third axis (88, 171, 17),
whereby loads borne, in use, by said coupling (91, 92, 94) will be distributed on each side of said plane normal to the third axis (88, 171, 17).

4,513,476

APPARATUS FOR PROCESSING POULTRY

Harold D. Olson, Smyrna; Charles Addison, Dunwoody, and J. Douglas Cagle, Roswell, all of Ga., assignors to Cagle's, Inc., Atlanta, Ga.

Filed Mar. 21, 1983, Ser. No. 477,269
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—44.1 **5 Claims**



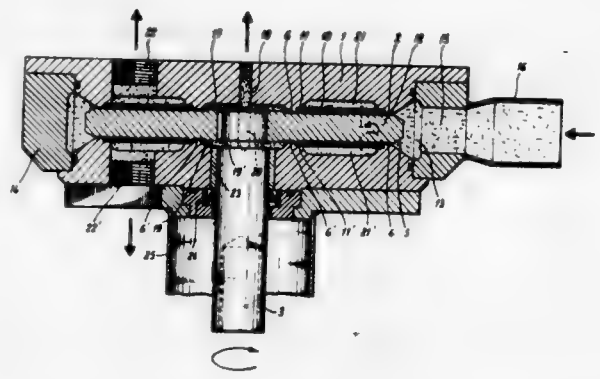
1. A shackle for conveying previously eviscerated, decapitated oven-ready poultry in a compact configuration comprising, in combination, an upright hanger bar; a basket sized and shaped to form a surface support for the carcass of a bird in an inverted attitude, said basket being pivotably mounted to a lower portion of said hanger bar for movement between a generally horizontal bird supporting raised position and a generally vertical bird-dumping lowered position; a canopy mounted to an upper portion of said hanger bar above said basket at a distance approximately corresponding to the length of the carcass of the bird for engaging the hocks of the bird and holding the thighs of the bird folded against the breast of the bird and holding an upper end of a bird supported upon the basket; and latch means for releaseably holding said basket in said raised position.

4,513,477

METHOD FOR REMOVING SOLID PARTICLES FROM A PASTY MASS

Gerardus H. J. Ketels, Grave, Netherlands, assignor to Procom, B.V., Oss, Netherlands

Division of Ser. No. 320,611, Nov. 12, 1981, Pat. No. 4,443,912. This application Nov. 7, 1983, Ser. No. 548,329
Claims priority, application Netherlands, Oct. 6, 1981, 8104544
Int. Cl.³ A22C *17/00*; B02C *18/20*; B02B *7/04*
U.S. Cl. 17—46 **3 Claims**



1. A method of separating solid particles such as bone particles from a fluid mass of particles such as meat particles comprising the steps of moving a mass of the combined particles along a path comprised of a channel having a width less than the length of the shortest solid particles to be removed for orienting the solid particles to be removed so that their long dimension extends generally in a plane parallel to the direction of movement along the path, separating the fluid particles from

the solid particles by permitting the fluid particles to escape from the path of movement in a direction generally perpendicular to the direction of movement of the mass along the path, at least a portion of said solid particles having a short dimension enabling them to pass radially outwardly with said fluid particles in the absence of said orientation and removing the solid particles at the end of the path.

4,513,478

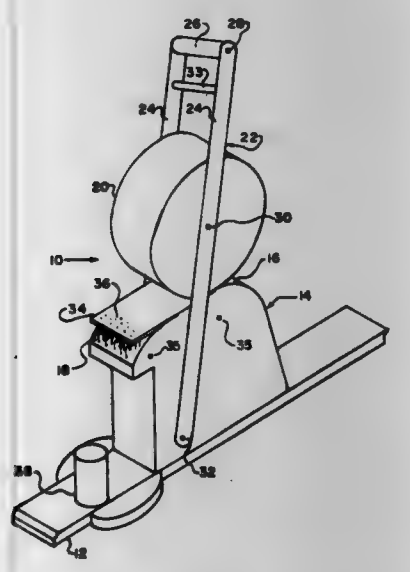
CRAB MEAT EXTRACTING DEVICE

Fred Trahan, Rte. 4, Box 225, Beaumont, Tex. 77705

Filed Apr. 14, 1983, Ser. No. 484,989

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—71 **6 Claims**



1. An apparatus for extracting meat from a crab including:
a base member;
a roller support member coupled to the base member;
a semi-circularly extending tracking surface formed on the roller support member;
a plurality of upwardly projecting members formed on the roller support member;
a roller pivotably mounted adjacent to the tracking surface on the roller support member; and
a plurality of downwardly projecting members mounted on the roller support member and in alignment with and spaced from the upwardly projecting members so that when the crab is placed in the space the roller can be pivoted to extract meat from the crab.

4,513,479

APPARATUS FOR OPENING TEXTILE FIBER BALES

Rolf Binder, Räterschen; Daniel Hanselmann, Oberwinterthur, and Walter Schlepfer, Winterthur, all of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Jun. 18, 1984, Ser. No. 621,998

Claims priority, application Switzerland, Jun. 24, 1983, 3446/83

Int. Cl.³ D01G *7/06*

U.S. Cl. 19—80 R **10 Claims**

1. In an apparatus for opening textile fiber bales, comprising:
a fiber extraction element for extraction of fiber flocks from upper surface layers of a textile fiber bale;
a pneumatic transport duct arranged above the fiber extraction element for transporting away fiber flocks delivered thereto from the fiber extraction element;
a fiber diverting means extending over the length of the fiber extraction element and immediately adjacent thereto for guiding fiber flocks delivered from the fiber extraction element into the pneumatic transport duct; the improvement which comprises:
means mounting the fiber diverting means for enabling pivoting of said fiber diverting means out of the region in the immediate vicinity of the fiber extraction element when a

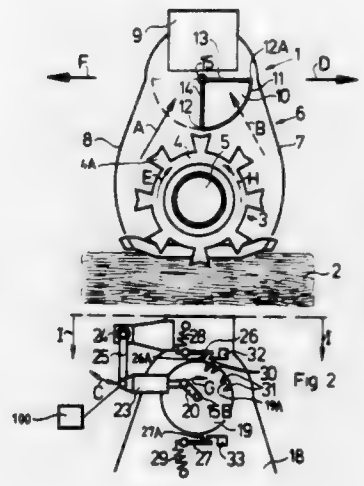


Fig 2

disturbing foreign object undesirably acts upon the fiber diverting means.

4,513,480

CARD CLOTHING FOR CARDING FLATS

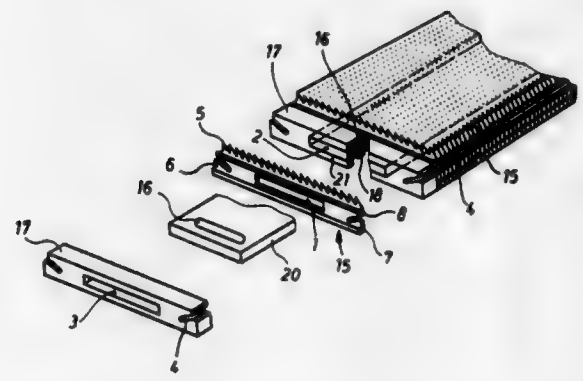
Werner Bisquolm, Siebnen; Jörg Bürki, Jona, and Othmar Teuscher, Mollis, all of Switzerland, assignors to Graf & Cie AG, Rapperswil, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,274

Claims priority, application Switzerland, Apr. 16, 1982, 2331/82

Int. Cl.³ D01G *15/24*

U.S. Cl. 19—113 **3 Claims**



1. An improved card clothing for the flats of a carding machine, which card clothing comprises a plurality of mutually abutting wire sections arranged side by side and having a row of teeth and a foot section each, the improvement comprising an elongated carrier member on which said wire sections are lined up side by side in a mutually prestressed condition, which said carrier member is provided with locking members which clampingly hold said wire sections permanently at a prestressed condition locked on said carrier member, said every wire section further comprises a web section which extends between said row of teeth and said foot section and comprises further a distance piece section projecting from said web at a location intermediate said row of teeth and said foot section, further wherein said carrier member is an elongated profile and a through opening is provided in the web of every said wire section, and wherein said carrier member is provided at least at one end with a through opening intended for receiving a locking element of said locking member for said web sections, said through opening located at one end of said carrier member is an elongated opening which extends parallel to its face surface, said locking element is a block-like structure slid onto said carrier member and provided with a through opening, said through opening having dimensions corresponding to the dimensions of the through opening located in said

web of said wire sections, further wherein the height of said block-like structure equals the height of said web inclusive said foot and said distance piece section of said wire sections such that said block-like structure contacts the outermost wire section at said foot and at said distance piece section, and wherein said locking element is a plastically deformable section of said block-like structure.

4,513,481

EASILY DISPLACEABLE BOTTOM TENSER

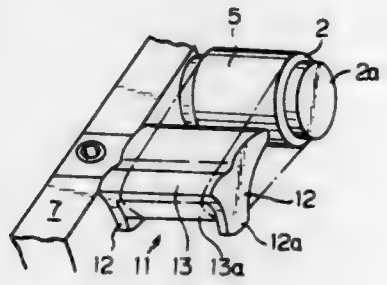
Yoshihisa Suzuki, Chiryu; Yoshiharu Yasui, Toyota; Kazuo Seiki, Kariya, and Shigeru Takasu, Nishio, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 17, 1983, Ser. No. 523,953

Claims priority, application Japan, Sep. 2, 1982, 57-151767; Sep. 8, 1982, 57-155111

Int. Cl.³ D01H *5/86*

U.S. Cl. 19—244 **10 Claims**



1. A tensioning device for tensioning an apron wrapped around a cantilever-mounted bottom roller of a drafting means in a spinning frame, said roller having an outer free end on one side from which said apron may be removed, said tensioning device being adapted to be mounted in juxtaposition with said roller so that said apron may be installed on and removed from said tensioning device on an access side of said tensioning device adjacent the free end of said roller, said tensioning device comprising:

a cantilever-mountable body having an apron-supporting surface and a free end on the access side;

a guide wall member connected to said body at said free end thereof and having a projection for preventing lateral movement of said apron toward said free end of said body when said projection is in a usage position, said guide wall member being movable with respect to said body to move said projection to an apron removal position so as to permit lateral movement of said apron over said free end of said body; and

connecting means for mechanically locking said guide wall member to said body to prevent movement of said guide wall member laterally of said body when said projection is in said usage position,

said connecting means permitting movement of said guide wall member relative to said body, to said apron removal position wherein said apron may be removed from or installed on the free end of said tensioning device.

4,513,482

FLUID-TIGHT SLIDE FASTENER STRINGER

Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Continuation of Ser. No. 410,130, Aug. 20, 1982, abandoned. This application Apr. 26, 1984, Ser. No. 603,988

Claims priority, application Japan, Aug. 20, 1981, 56-129440

Int. Cl.³ A44B *19/00*

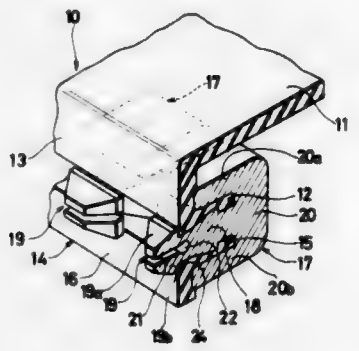
U.S. Cl. 24—384 **7 Claims**

1. A fluid-tight slide fastener stringer comprising:

(a) a support tape made of a fluid-tight soft material and having a longitudinal edge portion folded so as to provide therealong a contact portion adapted to engage a corresponding contact portion of a like companion stringer to effect a fluid-tightness between such two stringers; and

(b) a row of discrete coupling elements mounted on and along the folded edge portion of said tape, each of said coupling elements having

(1) a base portion disposed on an outer surface of said folded tape edge portion and extending transversely thereof, and



(2) a coupling head portion extending from one end of said base portion beyond said contact portion of said tape, said coupling head portion having a slot extending parallel to the general plane of said stringer transversely through the width of each said coupling element and also extending longitudinally of each said coupling element into said base portion, said slot defining first and second coupling head halves recoverably deformable in response to stress applied by a mating stringer independently of each other.

4,513,483

SLIDE FASTENER STRINGER

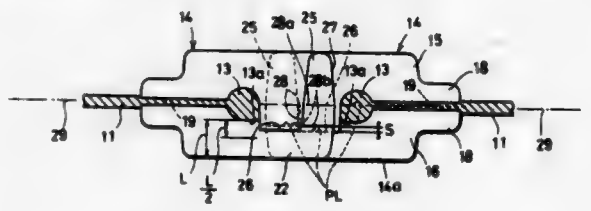
Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,116

Claims priority, application Japan, Dec. 13, 1982, 57-188379[U]

Int. Cl.³ A44F *19/04*

U.S. Cl. 24—409 **7 Claims**



1. A slide fastener stringer comprising:

(a) a stringer tape having a longitudinal edge portion;

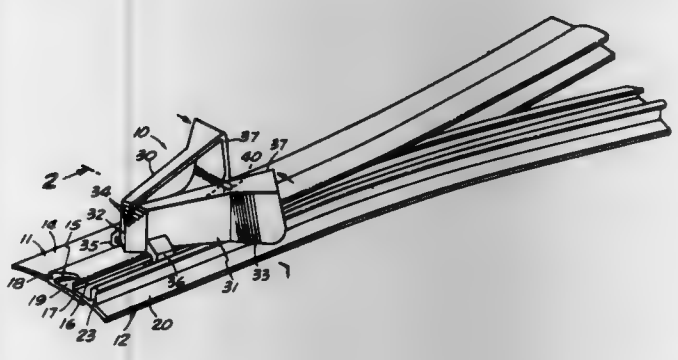
(b) a series of uniformly spaced coupling elements mounted on and along said longitudinal edge portion, each said coupling element including a pair of legs disposed astride said longitudinal edge portion, and a coupling projection extending from said legs away from said tape beyond said longitudinal edge portion; and

(c) said coupling projection having a pair of integral superposed first and second coupling portions having different shapes and respectively engageable with second and first coupling portions of a pair of adjacent coupling elements on a co-operating like stringer, said first portion extending from one side of said stringer tape toward the other side beyond the thickness of said longitudinal edge portion.

4,513,484
SEAM CLOSURE DEVICE

Jackson R. Iblings, Encino, Calif., assignor to Walter Allen Plummer, III, Tustin, Calif.

Filed Dec. 12, 1983, Ser. No. 560,497
Int. Cl.³ A44B *19/00*
U.S. Cl. 24—437 18 Claims



1. A seam closure device for progressively closing a pair of seam members each having a V-shaped portion extending lengthwise thereof sized and shaped for internesting assembly as one of said V-shaped portions seats behind an inturned hook on one leg of the other one of said V-shaped portions, said closure device comprising:

a pair of elongated finger grip members pivotally interconnected at one end;

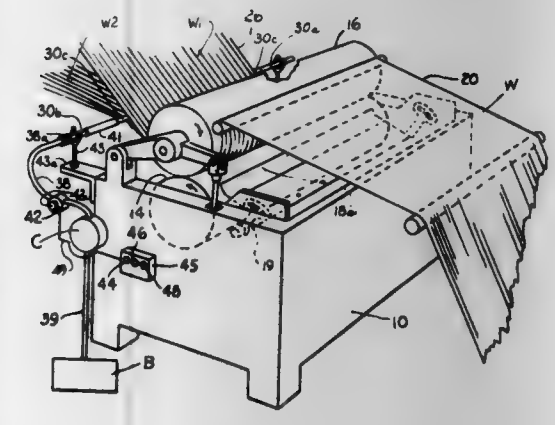
hook-like means facing toward one another from a respective one of the finger grip members adjacent said one end thereof and constructed to straddle the V-shaped portions of said seam members from one side thereof with one of said hook-like means seated against the interior apex of the smaller V-shaped portion and the other of said hook-like means seated against the exterior apex of the larger V-shaped portion; and

said finger grip members being pivotable toward one another and thereby operable to force said V-shaped portions progressively into internested assembly as said device is advanced along said seam members.

4,513,485
METHOD FOR SPLITTING TEXTILE WARP YARN SHEETS

William H. Cutts, P.O. Box 748, Clemson, S.C. 29631, and Scott O. Seydel, 80 Broad St., NW., Atlanta, Ga. 30303

Filed Oct. 5, 1981, Ser. No. 308,449
Int. Cl.³ D06B *1/14, 1/16*
U.S. Cl. 28—181 12 Claims



1. In a method of treating warp yarns preparatory to weaving on a loom of the type wherein a sizing solution is applied to the yarns arranged generally side-by-side in sheet form on a slashing machine followed by passing said yarns over a lease rod after application of said sizing solution splitting same into a pair of sheets defining a shed therebetween and subjecting said yarns to a drying process, the improvement comprising:

providing a hollow split lease rod including an outer porous layer having an exterior porous yarn contacting surface defined by a minute cellular pore structure so that substantially the entire yarn contacting surface of said lease rod is uniformly wetted to avoid sticking of said yarns without excessively lubricating said yarns;

placing said split rod in said shed;

splitting said yarns into said sheets by contacting said yarns with said porous yarn contacting surface; and

supplying a lubricant to said porous layer at a sufficient pressure to cause said lubricant to sweat through said layer and wet said yarn contacting surface by a predetermined amount sufficient to uniformly wet said porous yarn contacting surfaces to avoid said sticking of said yarns thereagainst.

7. A method of treating warp yarns in preparation for weaving said yarns on a loom of the type wherein a sizing solution is applied to the yarns arranged generally side-by-side in sheet form on a slashing machine followed by passing the yarns over at least one lease rod after application of said sizing solution to split the yarn sheet into a plurality of separated yarn sheets and then subjecting the yarns to a drying process, wherein the improvement comprises:

providing said lease rod having a porous outer layer and exterior yarn contacting surface defined by a minute cellular pore structure and a fluid communicating interior portion;

providing said porous exterior surface continuously over said yarn contacting surface corresponding generally to the entire width of said yarn sheets so that all of said yarns are prevented from sticking essentially continuously over said entire yarn contacting surface;

providing a source of fluid communicating with said interior portion; and

pressurizing said fluid to maintain fluid flow by sweating through said porous layer of sufficient quantity to form a fluid layer on said yarn contacting surface and prevent sticking of said sizing solution to said yarn contacting surface without excessive application of said fluid to said yarns.

4,513,486
VALVE RETAINER FOR AUTOMOTIVE VALVE REPAIR

Mieczyslaw J. Raczek, 159 Skyview Way, San Francisco, Calif. 94131

Filed Aug. 5, 1983, Ser. No. 520,716
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—220 5 Claims

1. A device for facilitating the repair of automotive cylinder valves comprising:

an elongated tool of generally cylindrical configuration, said tool comprising:

a first hollow cylindrical housing having a first threaded end disposed for threading into a spark plug opening of an automotive cylinder head;

a second hollow cylindrical housing concentric with said first housing having a first end disposed for positioning against the outer surface of said cylinder head;

hand operated knobs fixedly positioned on the second end of said housings;

a cylindrical shaft slidably positioned within said first housing engaging threaded means within said housing and disposed to penetrate into the interior of said cylinder;

a knob fixedly positioned on a first end of said shaft disposed for rotating said shaft thereby imparting longitudinal motion thereto;

a two-bar linkage mechanism engaging a second end of said shaft;

a hinged arm forming one link of said mechanism,

whereby, upward movement of said shaft causes rotation of said arm in a vertical plane;



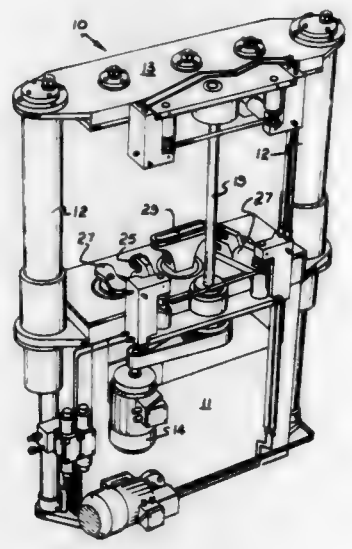
the other end of said arm being disposed to engage the under side of a valve in said cylinder head.

4,513,487

SEAMING MACHINE FOR MUFFLERS

Kevin D. Binnie, Taren Point, Australia, assignor to K. D. Binnie Engineering Pty. Ltd., New South Wales, Australia

Filed Aug. 2, 1983, Ser. No. 519,558
Claims priority, application Australia, Aug. 4, 1982, PF5209
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—243.5 **5 Claims**



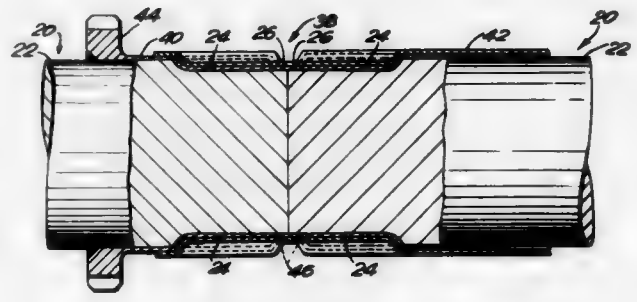
1. An apparatus to manufacture a metal casing having a side wall and end plate secured thereto by a seam joining the periphery of the end plate to an edge portion of the side wall, said apparatus comprising a base, a rotatable support mounted on the base and adapted to receive said end plate with said edge portion in abutting relationship with the periphery of said end plate, a pair of metal deforming assemblies also mounted the said base and spaced on opposite sides of said support; each assembly including a metal deforming roller to be moved into contact with said end plate and edge portion so as to deform same in co-operation with said support to form said seam, a cam rotatable about a fixed axis and having a cam profile, a movably mounted rotatable cam follower to engage said profile, said follower being operatively coupled to said deforming roller so that said deforming roller is moved in accordance with the cam profile in a direction towards said support, drive means to rotate the support and each cam in synchronism; and wherein each follower and its associated roller are located between the support and their associated cam and have a common support means movably mounting them on said base.

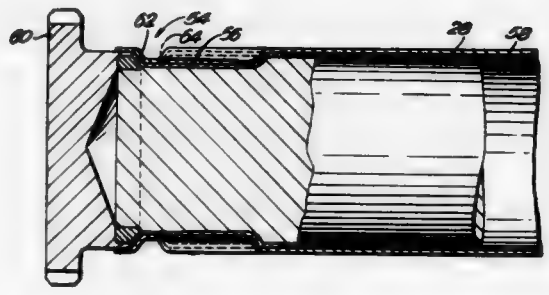
4,513,488

METHOD OF FABRICATING A TORQUE JOINT

Aldo Arena, Smithtown, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 8, 1982, Ser. No. 347,074
Int. Cl.³ B21D *39/00;* B23P *11/00*
U.S. Cl. 29—516 **3 Claims**





1. A method of fabricating a torque joint between two tubular members comprising the steps:

inserting an end of one tubular member, the inner member, into an end of the other tubular member, the outer member, to form an overlay region between said inner and outer tubular members;

forming a set of circumferential and axial grooves in a mandrel means, said circumferential groove being defined by reduced cooperating portions at the end of separable parts of the mandrel means;

inserting said mandrel means within said region of overlap between said inner and outer tubular members;

applying a deformation force to the exterior surface of said tubular members at a point opposite said mandrel means to impress said pattern of grooves of said mandrel means upon said inner and outer tubular members in said overlap region spaced from said overlapped ends of said inner and outer tubular members; and

extracting at least a part of said mandrel means from said joined tubular members.

4,513,489

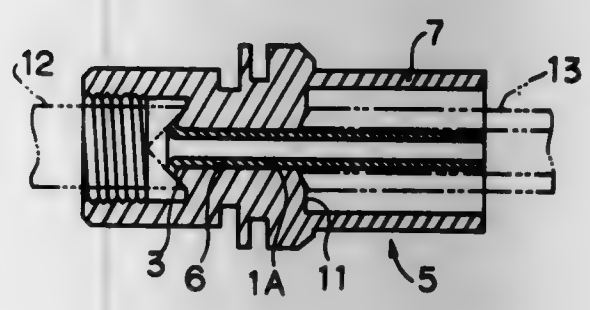
PROCESS FOR MANUFACTURING A HOSE MOUTHPIECE

Kenji Sugiyama, Gifu, and Takeshi Miyazaki, Aichi, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 5, 1983, Ser. No. 482,282
Claims priority, application Japan, Apr. 6, 1982, 57-57550
Int. Cl.³ B21D *39/00;* B23P *11/00*
U.S. Cl. 29—520 **2 Claims**

1. In a process for manufacturing a hose mouthpiece by joining a nipple, made of hard but somewhat elastic deformable material such as steel, to a mouthpiece body made of a similar material having a nipple holding hole, the improvement which comprises:

inserting said nipple having a radially outwardly spread end into said hole at one end thereof around which an externally frusto-conical first seat surface having a chamfered inner edge is formed on said body, until said spread end abuts on said seat surface, while the other end of said nipple projects outwardly from the other end of said hole;



press forming said spread end so that it may become flush with said seat surface; and

crimping a second seat surface about said nipple, said second seat surface being provided on said body and encircling said other end of said hole to define a seat for one end of a hose, whereby said nipple is secured to said body.

4,513,490

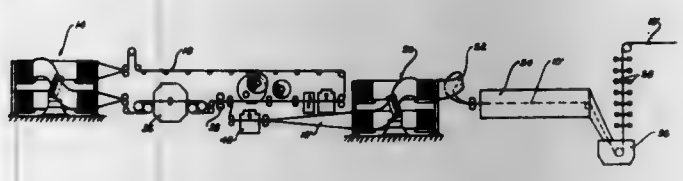
INTERMEDIATE ACCUMULATING SYSTEM IN PROCESSING STRIP MATERIAL

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn. 06720

Continuation of Ser. No. 162,681, Jun. 25, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,067

Int. Cl.³ B22D *11/126*; E05B *9/04*; B21C *47/02*

U.S. Cl. 29—527.6 **2 Claims**



1. The method of manufacturing metallic strip material by the passage thereof through a series of processing facilities prior to the coiling thereof upon exiting from the final processing facility, which comprises

(a) feeding the strip material into a high capacity spiral loop accumulator, whose entry and exit velocities are independently controllable, before said final facility and coiling of the strip material,

(b) feeding strip material in advance of said final facility into intermediate high capacity spiral loop accumulators, each in advance of an intermediate processing facility, with the entry and exit velocities of each accumulator being independently controllable,

(c) selectively connecting the strip material from the output of a selected intermediate processing facility to the input of a following intermediate processing facility,

(d) ultimately connecting the strip material from the output of any intermediate processing facility to the tail end of the strip at the entry end of the first-mentioned accumulator supplying the strip material to said final facility, and

(e) transporting the strip material between said facilities, for the major part of its travel, in a nearly vertical upright attitude.

4,513,491

METHOD OF ROLLING WIDE STRIP STARTING MATERIAL

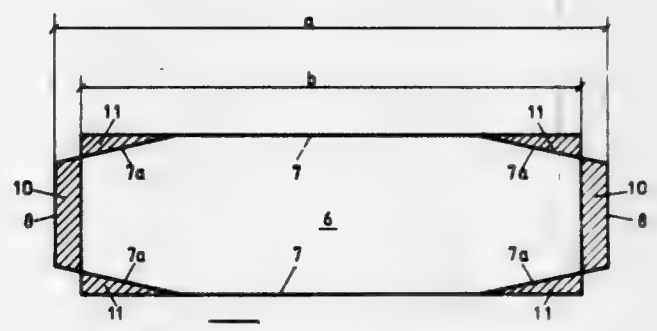
Heinrich Bohnenkamp, Neuss-Uedesheim, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,079

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225313

Int. Cl.³ B22D *11/126*

U.S. Cl. 29—527.7 **2 Claims**



1. A method of rolling wide strip starting material, in which an ingot slab is rolled approximately to the desired wide strip width by having its shorter sides edge-rolled, characterized by the steps of providing an ingot slab with a cross-section tapered towards the shorter sides of the slab at both edges, and edge-rolling the slab thereby reducing the slab width and causing the edge regions of the slab to adopt a rectangular shape by displacement of material from the slab edges to regions adjoining the initially tapered regions of the slab.

4,513,492

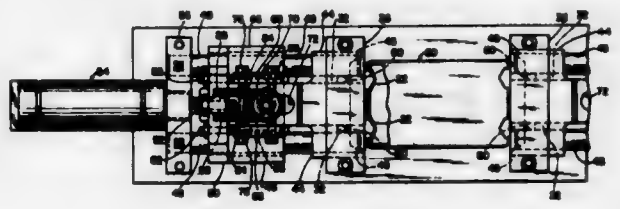
APPARATUS FOR FORMING CABLE ENTRY PORT

Gunter A. Gallas, New Hyde Park, N.Y., assignor to Slater Electric, Inc., Glen Cove, N.Y.

Division of Ser. No. 200,422, Oct. 24, 1980,. This application Mar. 28, 1983, Ser. No. 479,550

Int. Cl.³ B23P *23/00*

U.S. Cl. 29—564.7 **6 Claims**



1. Apparatus for pre-fracturing the webs of closure means for cable-entry ports in molded electrical outlet boxes, comprising:

a ram-like member having an edge for penetrating the web;

means for advancing said ram-like member towards the web; and

locating means including ramp means for maintaining the box in desired position to thereby center the web under the ram edge during advance of the ram-like member, said locating means being associated with said advancing means to engage the outlet box directly in conjunction with the advancing of said ram-like member,

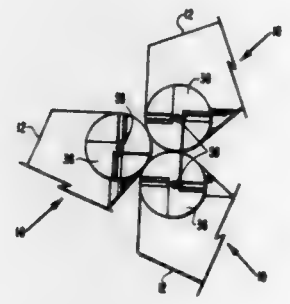
such that the closure means retain sufficient residual strength to withstand industry impact and other standards for closure of cable-entry ports.

4,513,493

COMPONENT LEAD PROCESSING DEVICE

George J. Whitley, Philadelphia, Pa., and Martin Rayl, Lawrenceville, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 14, 1981, Ser. No. 302,294
Int. Cl.[3] B23P *19/00;* H05K *3/30*
U.S. Cl. 29—566.3 15 Claims



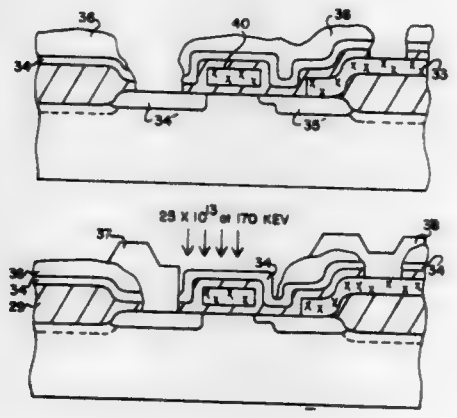
1. A component lead processing apparatus comprising:
a plurality of lead processing devices, each device comprising:
a support body;
a lead processing head rotatably mounted in said body for processing said component leads when the head is rotated about a given axis; and
actuating means secured to said body for operating said processing head to cause said head to rotate and process said leads, said head having an outer surface extending in a given radial direction with respect to said axis a first distance, said body extending in the same radial direction as said given radial direction from said axis a second distance substantially no greater than said first distance in a given angular segment about said axis, said actuating means extending in the same radial direction as said given radial direction a third distance substantially no greater than said first distance in said angular segment; and
means for locating said plurality of devices with at least a pair of said heads contiguous at said outer surface within said angular segment.

4,513,494

LATE MASK PROCESS FOR PROGRAMMING READ ONLY MEMORIES

Tarsaim Batra, Cupertino, Calif., assignor to American Microsystems, Incorporated, Santa Clara, Calif.

Filed Jul. 19, 1983, Ser. No. 516,064
Int. Cl.[3] H01L *21/265;* B01J *17/00*
U.S. Cl. 29—576 B 14 Claims



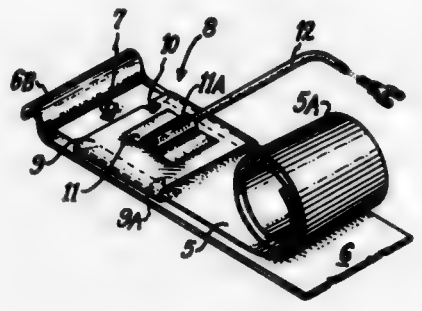
1. A process for producing a custom programmed read-only memory (ROM) in a semiconductor wafer, comprising:
fabricating in said wafer an array of MOS transistors, said MOS transistors being fabricated up to the stage of contact formation, each said MOS transistor having a source region, a drain region spaced apart from said source region, a channel region located between said source and drain region, and a gate located above and insulated from said channel region;
forming a protective layer over said MOS transistors;
forming an insulating layer over said protective layer, said insulating layer being of a thickness sufficient to absorb ions which are subsequently implanted;
forming vias to selected ones of said source and drain regions in said transistors through said protective layer and through said insulating layer;
forming electrical interconnections to said selected ones of said source and drain regions;
thereafter forming a program mask on said wafer, said mask exposing those portions of said insulating layer located above the channel regions of selected transistors in said array of transistors;
removing the exposed portions of said insulating layer to expose said protective layer; and
implanting ions through said protective layer into said channel regions of said selected transistors to alter the threshold voltages of said selected transistors, the remaining portions of said insulating layer serving to stop passage of said ions.

4,513,495

CONTACT AND TERMINAL ASSEMBLY FOR A BRUSH WEAR INDICATOR

Dan W. Kimberlin, Erie, Pa., assignor to General Electric Company, Salem, Va.

Division of Ser. No. 382,034, May 26, 1982, Pat. No. 4,420,705.
This application Sep. 22, 1983, Ser. No. 534,688
Int. Cl.[3] H02K *13/10;* H01R *43/14*
U.S. Cl. 29—597 4 Claims



1. A method of making a brush wear indicator contact and terminal assembly comprising the steps of providing a self-winding, brush-follower spring, forming a contact plate of electrically conductive material so that a ridge is formed on one surface of the plate and a groove is formed in an opposite surface thereof, positioning a conductor for a brush wear indicator circuit within said groove, bonding the conductor to the walls of the groove with a high-temperature resistant bonding material, subsequently bonding the contact plate to a first surface of a dielectric sheet, and adhering a second surface of the dielectric sheet to a predetermined portion of the brush-follower spring, thereby to mount the contact plate and the dielectric sheet in a desired fixed relationship to the spring where a coiled portion of the spring is effective to engage the ridge on the plate as a contactor, thereby to energize a brush wear indicating signal connected to said conductor, said desired fixed relationship being determined to correspond with the occurrence of a predetermined degree of wear of a brush operated in association with the contact and terminal assembly.

4,513,496

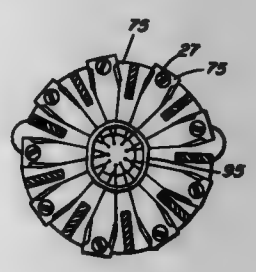
METHOD OF MAKING A PRINT PIN ACTUATOR

Cheng-hua Wang, Nashua, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Continuation-in-part of Ser. No. 458,306, Jan. 17, 1983, abandoned. This application Oct. 7, 1983, Ser. No. 540,043

Int. Cl.³ H01F *7/06*

U.S. Cl. 29—606 **3 Claims**



1. A method of fabricating a high speed pin actuator for dot matrix printing which comprises:

providing a permeable core structure which is generally U-shaped with one leg of the U being shorter than the other, the end of the other leg constituting a pole piece;

mounting a permanent magnet on said shorter leg and a permeable plate over said magnet which together make the length of said one leg substantially equal to the length of the pole piece leg;

finishing the end of the pole piece leg and said plate together to form a common plane;

providing a permeable bridge member which has a flat surface adapted to mate with said plate and which is adapted to extend therefrom to a region adjacent the pole piece, said bridge member being bifurcated generally in the plane of the U-shaped core structure;

mounting to said bridge structure, on the side opposite said flat surface, a plate-like spring, the rest position of said spring being generally parallel to said flat surface, said spring carrying an armature adapted to extend through the bifurcation in the bridge structure;

deflecting said spring an amount corresponding to the desired throw of a printing pin;

while said spring is so deflected, finishing the portion of the armature extending through said bifurcation to a common plane with said flat surface;

mounting a coil on said core, a printing pin on said spring, and said bridge on said U-shaped magnet structure, thereby forming an actuator assembly.

4,513,497

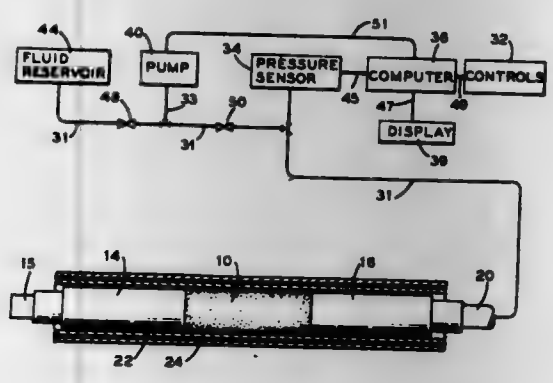
TUBE EXPANDING SYSTEM

Curtis L. Finch, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 445,609, Nov. 30, 1982, abandoned, which is a continuation of Ser. No. 156,543, Jun. 5, 1980, abandoned. This application Sep. 27, 1984, Ser. No. 655,985

Int. Cl.³ B23P *15/26*; B21D *39/08*

U.S. Cl. 29—727 **18 Claims**



1. A tube expanding system comprising: a hydraulic tube expander including distensible bladder means positionable within a tube; pump means for pressurizing fluid within said bladder means; means for monitoring changes in the fluid pressure within said bladder means; and means for detecting from the monitored pressure changes a decrease in the rate of fluid pressure increase, as a function of incremental action of said pump means, indicative that the yield point of the tube is reached whereby the increase in outside diameter of a tube within which a sleeve is expanded may be accurately limited by ceasing pressurizing of fluid within the bladder means when the yield point of the tube is reached.

4,513,498

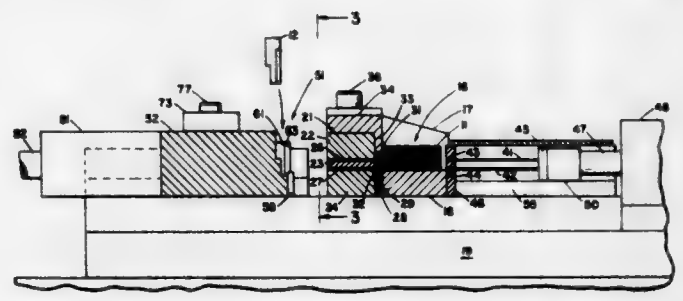
METHODS AND APPARATUS FOR SIMULTANEOUSLY INSERTING AN ARRAY OF FLEXIBLE PINS INTO A WORK PIECE

William C. Kent, Garland, Tex., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,611

Int. Cl.³ H05K *3/00*; B23P *19/04*

U.S. Cl. 29—845 **11 Claims**



1. An apparatus for inserting a row of pins into a row of holes formed in a work piece comprising:

a loader block having a first and a second surface with a row of passageways formed therein between said surfaces, said passageways being spaced apart distances equal to the distance between the holes in the work piece and having lengths less than the lengths of the pins;

a plurality of bins located on the first surface side of the block and aligned with the row of passageways for receiving stacks of pins;

a plurality of first pusher rods located adjacent to said bins and arrayed in a row with spaced apart distances equal to the spacings between the passageways, said pusher rods being mounted in alignment with individual pins in the respective bins;

a work holder located on the second surface side of the block and having a nest for receiving the work piece and positioning the holes in the work piece in alignment with the passageways;

means coupled to the pusher rods for reciprocating them to engage and move pins from the individual stacks into the passageways;

means located between the loader block and the bins and operated upon retraction of the pusher rods for closing the entries to passageways in said loader block; and

means coupled to the work holder for advancing it toward the loader block to seat the pins within the holes formed in the work piece.

8. A method of seating an array of spaced pins into a like array of holes formed in an article, which comprises:

supporting supplies of pins in stacks corresponding to the spacing of the holes in the article and with the lowermost pin of each stack aligned with a hole formed in the article;

picking off the lowermost pin in each stack and axially advancing the pins into an array of passageways corresponding to the array of holes formed in the article, said advancing step being sufficient to position the trailing extremities of the pins within said passageways and the

forward extremities of the pins projecting from the passageways;

blocking the passageways to prevent the trailing extremities of the pins from being pushed from the passageways; and

advancing the article to move said holes onto the projecting forward extremities of said pins while said pins are blocked from movement from said passageways.

4,513,499

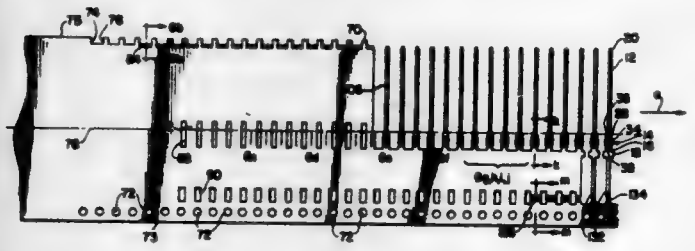
METHOD OF MAKING COMPLIANT PINS

Frank Roldan, 937 Paularino Ave., Costa Mesa, Calif. 92626

Filed Nov. 15, 1982, Ser. No. 441,405

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—874 **3 Claims**



1. An improved method for making an electrical contact pin from a generally flat strip of material, said pin having a shoulder segment, post segment, and, between the shoulder and post segments, a compliant segment which has a pair of outwardly biased beam members separated by an elongated opening having sharply pointed opposed ends, said method comprising the steps of:

(a) cutting generally spaced-apart aligned windows in the strip so that a solid section is provided between adjacent pairs of windows, the compliant segment of said pin being formed from this solid section;

(b) severing the solid section generally at right angles with respect to the longitudinal axis of the strip to form in the solid section a pair of metal pieces from which the beam members are made, one of said pieces moving in one direction away from the plane of the strip and the other piece moving in the opposite direction away from the plane of the strip;

(c) pressing the pair of metal pieces together so that they return to the plane of the strip and coining the edges of each metal piece furtherest from the severed interface;

(d) twisting the metal pieces to provide a generally V-shaped entryway between the severed interface of the pieces;

(e) inserting a first spreading element to move the metal pieces at a right angle to the plane of the strip to form the opening in the compliant section while coining the upper edges of the severed interface;

(f) inserting a second spreading element in an opposite direction from the insertion of the first spreading element to further coin the lower edges of the severed interface, and

(g) forming from the strip, integral with the metal pieces, the shoulder and post segments of this pin.

4,513,500

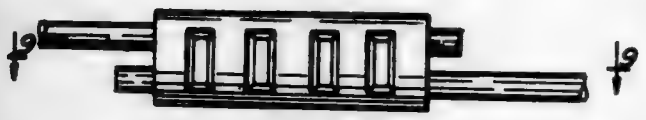
METHOD OF FORMING A WIRE SPLICE

Frank W. Knapp, and Caroline M. Knapp, both of Box 289, Mineral Point, Wis. 53565

Filed Nov. 14, 1983, Ser. No. 551,676

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—885 **6 Claims**



1. The method of producing sleeves or ferrules for joining a pair of wires together comprising:

(a) taking a piece of cold rolled and drawn steel tubing having a specific outer diameter and a specific inner diameter;

(b) then deburring each end and threading the inside of each sleeve;

(c) then forming each sleeve into an oval shape;

(d) then heat treating each sleeve;

(e) then zinc plating each piece, and then coating each sleeve with an olive drab chromium finish.

4,513,501

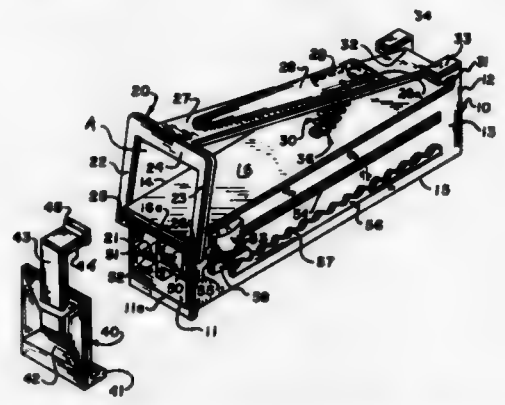
COMBINED STORING AND SLICING DEVICE FOR A STICK OF BUTTER OR MARGARINE OR THE LIKE

Jong S. Lee, 800 Forest Ave., Westfield, N.J. 07090

Filed Feb. 14, 1983, Ser. No. 466,163

Int. Cl.³ A01J *19/00*

U.S. Cl. 30—115 **8 Claims**



1. A combined storing and slicing device comprising:

a rectangular box-like container having a top, a bottom, two longer sides, a closed shorter side and an open shorter side through which a stick of butter or the like is received;

a cutting line and means holding the line in a taut condition; and

means mounting the holding means for movement of the cutting line between a first fast rest position at the top of the open side and a second position at the bottom of the open side while traversing the open side, said mounting means comprising an arm pivotally engaged at one end thereof to the top wall of the container at the closed shorter side and a spring biasing the arm upwardly and the cutting line against the peripheral wall of the said open shorter side.

4,513,502

BEVERAGE LID CUTTER

John J. Gacek, 292 Hendrick Ave., Albany, N.Y. 12204

Filed Feb. 28, 1983, Ser. No. 470,775

Int. Cl.³ B26D *7/01*; B26F *1/12*

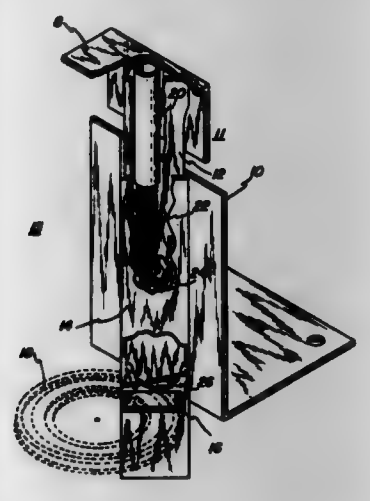
U.S. Cl. 30—229 **13 Claims**

1. A beverage lid cutter comprising:

a housing defining a plunger channel having at least one cutting wall and containing a slot transverse to the channel, said slot being configured so as to permit the insertion of a lid to a predetermined depth, thereby exposing a portion of the lid within the channel, and said slot also being configured so as to maintain the plane of the lid in a transverse orientation with respect to the channel;

a cutting assembly including a plunger slidably mounted within the channel, said plunger having a cutting edge with a configuration similar to that of the at least one cutting wall and being in slideable contact therewith, and said plunger being reciprocally operable within the channel between a retracted position and an advanced position such that the cutting edge passes the slot as the plunger moves from its retracted position to its advanced position, whereby the exposed portion of the lid inserted in the slot while the plunger is retracted will be removed as the plunger is moved to its advanced position, wherein the

cutting assembly is mounted within the channel by means of a guidebar mounted axially within the channel; and



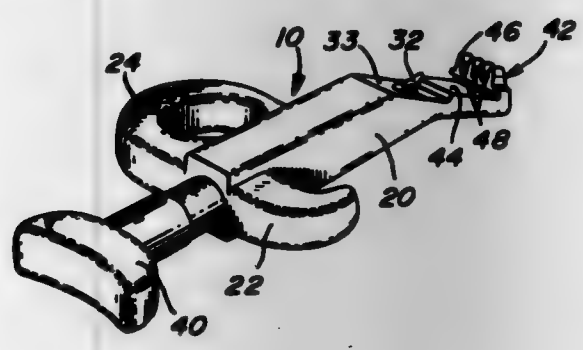
a sleeve rigidly connected to the cutting assembly, said sleeve being adapted to permit cooperative reciprocal movement of the plunger with respect to the guidebar.

4,513,503

WIRE CUTTING TOOL

Paul Tremblay, Montreal, Canada, assignor to Tekna Limited, Montreal, Canada

Filed Feb. 22, 1983, Ser. No. 468,709
Int. Cl.³ B26B *29/00*
U.S. Cl. 30—289 **14 Claims**



1. In combination, a connector block and a tool for cutting wires having portions embedded in the connector block and portions extending from at least one face of the connector block, said tool comprising:

an elongated hollow housing;

a plunger reciprocatingly mounted in said housing, said plunger having a cutting end at one extremity thereof;

anvil means mounted at one end of said housing, said anvil means including an inclined block-receiving portion making an acute angle with the longitudinal axis of said housing and for receiving said connector block thereon with said face in inclined facing relationship with the cutting end of said plunger, said block-receiving portion having a block resting surface and a block abutting surface extending orthogonally to said block resting surface wherein said block abutting surface includes in the upper part thereof, a series of grooves to receive therein wires extending from an opposite face of said block; and

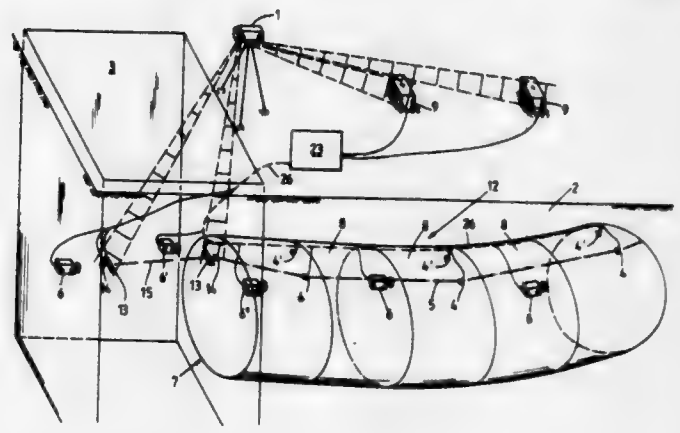
means for engaging the opposite extremity of said plunger and for forcing said cutting end in said block at a wire extending location on said face so that said cutting end penetrates said block underneath said wire to cut said wire at a distance inwardly of said face so as to leave the cut extremity of said wire portion in said block, recessed from said face.

4,513,504

METHOD FOR DETERMINING THE POSITION OF A PRESSED-AHEAD HOLLOW-SECTION LINE, AND APPARATUS FOR IMPLEMENTING THE METHOD

Manfred Nussbaumer, Leonberg; Eberhard Beitinger, Stuttgart, and Wolfgang Möhlenbrink, Esslingen, all of Fed. Rep. of Germany, assignors to Ed. Züblin Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 20, 1982, Ser. No. 380,082
Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120010
Int. Cl.³ G01B *11/27*
U.S. Cl. 33—1 H **3 Claims**



1. In a method for determination of position of a pressed-ahead hollow-section line which can provide spatial three-dimensional contortion therewith, the steps comprising:

in the hollow-section line, providing an arrangement of fixed measuring points with spacing from each other;

moving the measuring points along in the pressed-ahead direction with the hollow-section line;

distributing the measuring points over the entire length of the hollow-section line;

in the longitudinal direction of the hollow-section line, fixedly arranging several automatic sensing-detection devices in series over the entire length thereof and also moving these devices along the hollow-section line in the pressed-ahead direction;

determining the spatial three-dimensional position of the measuring points relative to each other via the sensing-detection devices;

in the longitudinal direction of the hollow-section line, measuring the distances of the sensing-detection devices to the respectively next sensing-detection device and the distances of the measuring points to the respectively next measuring point;

from the output signals of the sensing-detection devices and the measured distances, calculating a closed distance line, extending over the entire length of the hollow-section line and thereby determining the position of the hollow-section line.

4,513,505

DEVICE FOR INDICATING THE POLAR COORDINATE POSITION OF A GIVEN POINT ANYWHERE WITHIN A CIRCULAR AREA

William C. Young, Moorestown, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 19, 1983, Ser. No. 562,517
Int. Cl.³ G01B *3/00*
U.S. Cl. 33—1 MP **9 Claims**

1. A device for indicating the polar coordinate position of a point within a given area lying within a plane comprising:

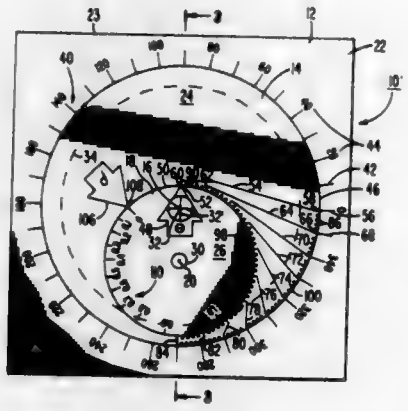
a member including means bounding said area and having angular scalar indicia thereon circumscribing said area;

a first element rotatably secured to said member for rotation about a first axis at the origin of said angular scalar indicia

normal to said plane, a portion of said first element of a given angular extent being adjacent said scalar indicia;

a second element rotatably secured to said first element for rotation about a second axis spaced from and parallel to said first axis, said second axis rotating with said first element about said first axis; and

said second element including first and second indicia, said first indicia representing the location of said point, said first element including third and fourth indicia, said third indicia being positioned and formed on said first element to couple said first indicia to said scalar indicia for indicating the angular location of said point with respect to a reference point coincident with said first axis, said second and fourth indicia being positioned and arranged to provide radial reference indicia on one of said elements aligned with radial displacement scalar indicia on the other of said elements to indicate the value of the relative radial displacement of said given point with respect to said reference point at said angular location, said radial displacement scalar indicia having an extent representing the maximum radial displacement of said given point from said reference point.

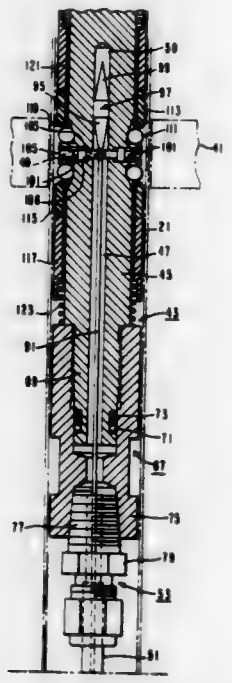


4,513,506

MEASURING OF TUBE EXPANSION

John P. Vogeleer, Greensburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1983, Ser. No. 522,290
Int. Cl.[3] G01B *13/10, 5/12*
U.S. Cl. 33—147 K
15 Claims



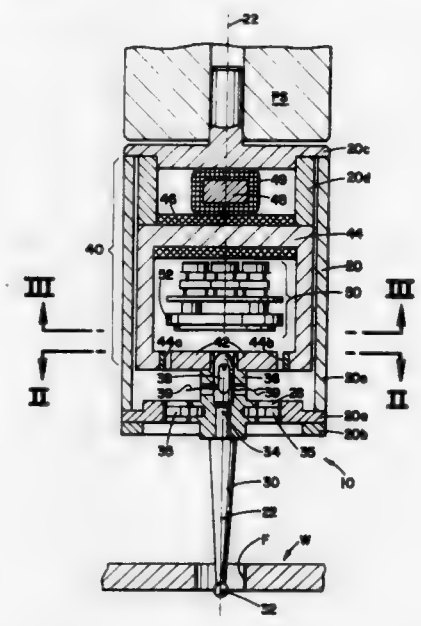
1. Apparatus for expanding a tube conducting the coolant from a nuclear reactor of the steam generator of a nuclear reactor plant, or a sleeve within a tube, the said apparatus including a tube-expansion mandrel to be disposed within said tube or sleeve and having a channel for conducting fluid under high pressure to expand said tube or sleeve, an elongated fluid-feed conductor, connected to said mandrel to supply said fluid to said channel, an elongated member extending through said mandrel and through said fluid-feed conductor to a position remote from the radioactive atmosphere within said generator, means, connected to said elongated member, responsive to the pressure of said fluid, for moving said member outwardly of said conductor, means to be interposed between said elongated member and said tube or sleeve, moveable by said moving means transversely of said member into engagement with said tube or sleeve as said tube or sleeve is expanded, the movement of said elongated member by said moving means to be limited by the engagement of said transversely moveable means with said tube or sleeve, and indicating means, connected to said elongated member at said position and responsive to the outward movement of said elongated member, for indicating the expansion of said tube or sleeve while said tube or sleeve is being expanded whereby the expansion of said tube or sleeve can be controlled.

4,513,507

CONTACT SENSING PROBE FOR A MEASURING APPARATUS

Edward L. Laskowski, Seven Hills, Ohio, assignor to Bendix Automation Company, Cleveland, Ohio

Filed Sep. 2, 1983, Ser. No. 528,827
Int. Cl.[3] G01B *11/24*
U.S. Cl. 33—169 R
8 Claims



1. A probe for contacting a workpiece for inspection and measuring comprising:

a body;

a stylus mounted with said body for pivoting movement and including a stylus tip for engaging a workpiece, a medial mounting of said stylus to said body allowing movement therebetween;

a source of light mounted within said body;

means for detecting the light from the light source;

said light source and detecting means mounted to cause a variation in light incident on said detector means with pivoting movement of said stylus and for thereby indicating the position of the stylus tip, said detecting means including:

a plurality of photoelectric sensors mounted to the body;

detecting circuit disposed within said body and coupled to said photoelectric detectors and detecting changes in the amount of light from the individual photodetector sensors as an indication of stylus tip displacement;

summing means operatively connected to said plurality of sensors and summing the total intensity of light incident

on said plurality of photoelectric sensors and producing a corresponding signal;

a constant value reference signal source;

comparison means comparing said signal of said summing means and said reference signal source and generating a feedback signal corresponding to any differences therebetween; and

means mounted within said body and operatively connected to said light source and responsive to said comparison means to vary the output of said light source so as to control the total intensity of light incident on the sensors to be effectively constant.

4,513,508

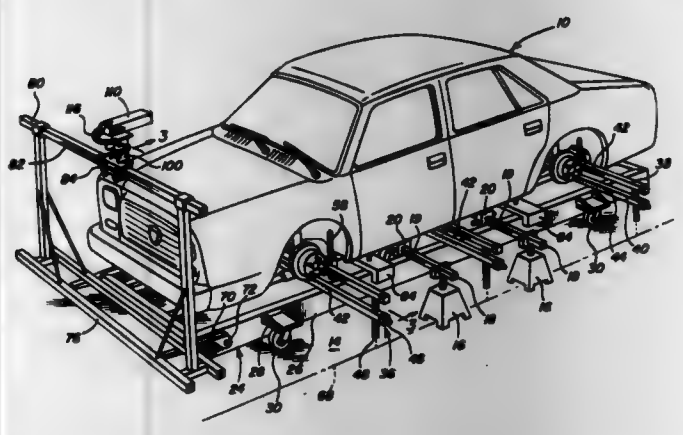
VEHICLE BODY AND FRAME MEASURING DEVICE

Davis R. Jarman, 612 Ward Dr., and Virgil H. Hinson, 206 Fairway Oaks Dr., both of Brunswick, Ga. 31520

Filed Nov. 9, 1983, Ser. No. 550,088

Int. Cl.³ G01B *11/26*

U.S. Cl. 33—288 **9 Claims**



8. In combination with a horizontal support bar positionable normal to a center vertical longitudinal plane of a stationarily supported vehicle body and wherein said bar includes linear scale means extending in opposite longitudinal directions along said bar from a center point thereon through which said plane passes, a light beam generating head, a follower mounted on said bar for adjustable positioning therealong, means mounting said head from said follower for adjusted and predetermined angular displacement relative to said follower about a first axis paralleling said bar and a second axis disposed normal to the first axis.

4,513,509

ATTITUDE DIRECTOR INDICATOR

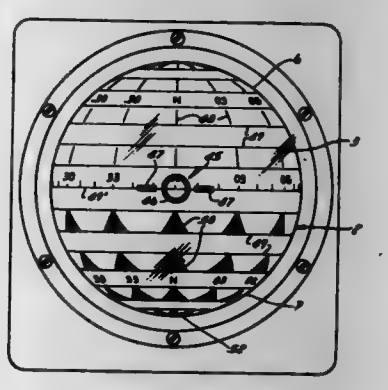
Lennart Nordström, Linköping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Jan. 5, 1984, Ser. No. 568,538

Claims priority, application Sweden, Jan. 7, 1983, 8300065

Int. Cl.³ G01C *19/44*; G08C *21/00*

U.S. Cl. 33—330 **7 Claims**



1. An instrument carried in an aircraft for displaying the attitude of the aircraft about its pitch and roll axes, said instrument being of the type having a gyro controlled spherical display on which there are delineations of regularly spaced meridians that maintain a vertical orientation relative to the earth and spaced parallels transverse to the meridians, one of which is an equator that divides the sphere into upper and lower hemispheres and corresponds to a horizon, said instrument further comprising indicator means relatively fixed with respect to the aircraft and substantially centered on said display delineating a reference that relates the attitude of the aircraft to said meridians and parallels, said instrument being characterized by:

a plurality of pointer indicia on the lower one of said hemispheres, at least one for each of said meridians, each having a pointing apex, each said indicium

(1) being symmetrical to its meridian with its apex on that meridian and

(2) having its apex proximal to said equator, so that the one of said indicia that is nearest said reference provides an unambiguous and self-explanatory indication of the "up" direction relative to the earth, and indicia adjacent to that one provide information about changes of the aircraft attitude relative to that "up" direction that will result from possible changes in its existing attitude.

6. An instrument carried in an aircraft for displaying the attitude of the aircraft about its pitch and roll axes, said instrument being of the type having a gyro controlled display in the form of a surface of revolution concentric to and rotatable about a first display axis parallel to said pitch axis and rotatable about a second display axis parallel to said roll axis, and whereon there is a delineation of an equator lying in a plane containing said first display axis that divides the display into upper and lower halves and corresponds to a horizon, said instrument further comprising indicator means relatively fixed with respect to the aircraft and substantially centered on said display delineating a reference that relates the attitude of the aircraft about its said axes to said equator, said instrument being characterized by:

a plurality of pointer indicia on said lower half of the display,

(1) each having a pointing apex which is proximal to said equator and which thus cooperates with said reference to provide an unambiguous and self-explanatory indication of the "up" direction relative to the earth, and

(2) said pointer indicia being spaced apart circumferentially at substantially regular intervals about said first display axis to cooperate with said reference in providing said "up" indication in all diving attitudes of the aircraft.

4,513,510

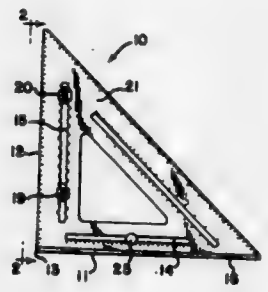
MEASURING TOOL

Ronald C. Swanson, P.O. Box 434, Oak Lawn, Ill. 60453

Filed May 18, 1984, Ser. No. 611,614

Int. Cl.³ B43L *7/00, 13/24*

U.S. Cl. 33—419 **8 Claims**



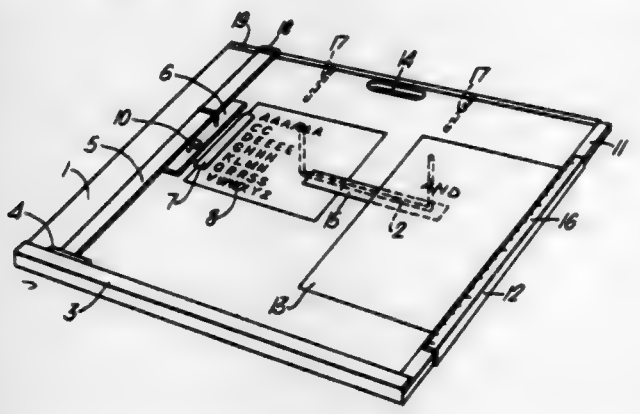
1. A measuring tool including:

a flat member having the shape of a right triangle and having upper and lower surfaces and a first side and second side which form a right angle at their intersection;

a tee affixed along the edge of said first side which is perpendicular to said flat member and extends from both said upper and lower surfaces of said flat member;

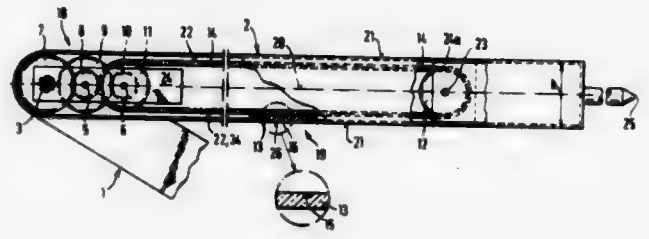
a first slot extending along said first side and running approximately parallel to said first side;
a first stop bolt slidably affixable in said first slot;
a second slot extending along said second side and running approximately parallel to said second side;
a layout bar having a thickness equal to that of the extension of said tee from said surface of said flat member;
said layout bar having a fastening slot perpendicular to said second slot and being alignable with said second slot;
said layout bar having a recessed channel running along its length; and,
a second stop bolt slidably affixable in said recessed channel so that said tee and said layout bar when affixed to said flat member provide a planar surface along said first and second sides, said planar surface being substantially parallel to said surface of said flat member, and said first and second stop bolts extend away from said surface of said flat member and beyond said planar surface formed by said tee and said layout bar.

4,513,511
LAYOUT BOARDS
Martin E. Dowzall, Wyckoff, and Vazgen J. Houssian, Union City, both of N.J., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Aug. 12, 1982, Ser. No. 407,581
Claims priority, application United Kingdom, Aug. 14, 1981, 8124883
Int. Cl.³ B43L *13/24*
U.S. Cl. 33—447 **7 Claims**



1. A layout board for use with a dry transfer sheet comprising a rectangular board having an upper support surface, a straight track along one edge of the board, a first carriage mounted for sliding movement along said track, an arm on said first carriage extending perpendicular to said track and across said upper support surface, a second carriage mounted slidingly for movement along said arm, means dividing the movement of the second carriage along said arm into a plurality of equally spaced steps, and means mounted on said second carriage for supporting a rectangular dry transfer sheet, said dry transfer sheet extending in a first direction laterally of the arm and having transferable indicia thereon, the support means engaging an edge of the dry transfer sheet parallel with said arm, said first direction being parallel with said track, magnetic clamp means extending parallel to the arm and along one edge of the base board, said magnetic clamp means comprising a fixed strip and an angled bar movable with respect thereto in a direction perpendicular to said track, and said strip and bar being releasably held together by magnetic attraction and adapted to clamp a receptor sheet at one edge, the sheet then extending across the board in a second direction opposite said first direction, and an elongate target area of contrasting color located on said upper support surface, parallel to said track and extending from a position substantially at the center of said upper support surface towards said clamp means,
whereby indicia can be transferred from said dry transfer sheet onto said receptor sheet in said target area.

4,513,512
ANGLE-MEASURING INSTRUMENT HAVING AN INDICATOR FOR THE DEGREE OF ANGLE
Walter Fischer, Dornstetten-Aach, Fed. Rep. of Germany, assignor to Nestle & Fischer, Dornstetten, Fed. Rep. of Germany
Filed Jul. 1, 1983, Ser. No. 510,368
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 8218967[U]
Int. Cl.³ G01B *3/56*
U.S. Cl. 33—471 **9 Claims**



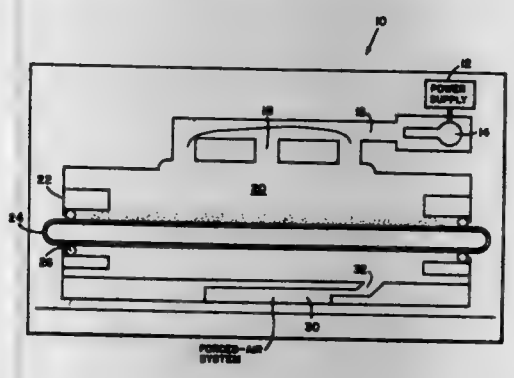
1. An angle-measuring instrument, comprising;
a first arm;
a first shaft rigidly connected to said first arm;
a second, at least partially hollow, arm which is connected to said first arm via said first shaft in such a way as to be pivotable relative thereto;
an indicator having a drive wheel, said indicator being disposed in said second arm and serving, by means of an indicating region, to indicate the angle of spread of said first and second arms relative to one another;
a viewing window arranged in said second arm in said indicating region of said indicator;
a transmission gearing, which is operative to move said indicator and is disposed in said second arm, and is provided with a drive gear which is driven by said first shaft as a function of the angular position of said first and second arms relative to one another;
a slip-free belt drive which is associated with said indicator and said transmission gearing, said belt drive including said drive wheel of said indicator, and an endless belt, the outer side of which, which faces the longitudinal sides of said second arm, being provided with a scale calibrated in degrees of angle of said angle of spread, and being guided along said viewing window, said viewing window being provided with a transparent pane, the inner side of which is provided with a line; and
at any given time, a portion of the outer side of said endless belt being in the vicinity of said viewing window, with the inner surface of said pane thereof being in the immediate vicinity of said last-mentioned portion of said endless belt.

4,513,513
MICROWAVE DRYING OF AMMONIUM PERCHLORATE GRINDING SPHERES
David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 10, 1983, Ser. No. 550,435
Int. Cl.³ F26B *3/34*
U.S. Cl. 34—1 **2 Claims**

1. A method of removing occluded moisture from the surfaces of ammonium perchlorate grinding spheres selected from silicon carbide and aluminum carbide, said method effecting the removal of occluded moisture to prevent its absorption by ammonium perchlorate during a grinding procedure, said method comprising:
(i) providing a tunnel oven having in combination therewith a microwave generator with an appropriate power supply, said tunnel oven arranged to receive microwave energy through transmission ducts in communication with a channeling device to distribute said microwave energy over said grinding spheres to be dried, said tunnel oven

provided with a heated air supply from a forced-air system to facilitate moisture removal during drying, and said tunnel oven provided with microwave traps and operating controls and safety interlocks to permit grinding spheres to be safely conveyed in and out of said tunnel oven by conveyor means having an adjustable-speed and a continuous meshed dielectric surface having compatibility with a microwave energy environment;

(ii) metering grinding spheres onto said conveyor means to provide a residence time and throughput quantity in and



through said tunnel oven to achieve moisture removal in accordance with a predetermined drying time;

(iii) exposing said grinding spheres to microwave energy having a predetermined frequency range from about 915 megahertz to about 2450 megahertz for a predetermined drying time of up to about 30 minutes to subject adhered or occluded moisture on said grinding spheres to molecular vibration to cause vaporization of said moisture; and

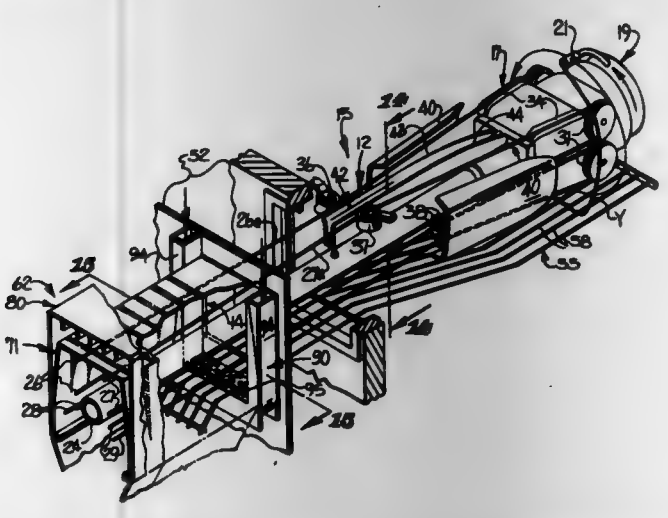
(iv) continuously removing said vaporized moisture by a stream of heated air which is fed through said tunnel oven at a predetermined pressure.

4,513,514

APPARATUS AND METHOD FOR THE HEAT TREATMENT OF YARN

Erwin Steiner, Clover, S.C., assignor to Technology Consulting Corporation, Charlotte, N.C.

Filed Apr. 21, 1983, Ser. No. 487,072
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—24 **21 Claims**



1. An energy efficient apparatus for heat treating a running yarn, and comprising

a yarn treatment chamber, including an entrance opening in one end wall, an exit opening in the opposite end wall, and means for heating the interior thereof,

yarn conveyor means extending through said chamber and through said entrance and exit openings for advancing a running yarn therealong and while supporting the yarn in downwardly hanging, relaxed helically arranged loops, and

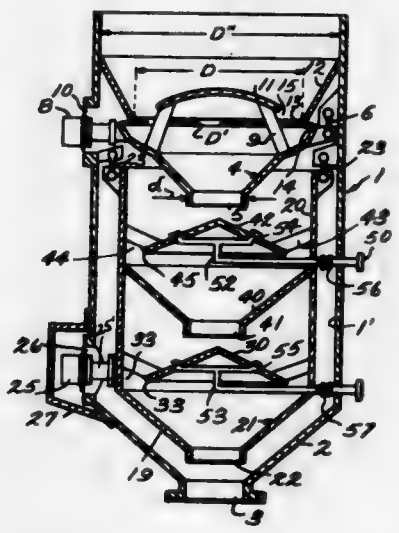
yarn loop support means underlying said conveyor means at least adjacent each of said entrance opening and said exit opening, for supporting and lifting the lower portions of the loops as they move through said openings to thereby reduce the vertical dimension of the loops without reducing the circumferential extent thereof, and so that the vertical dimension of each of said entrance and exit openings is not substantially greater than the vertical dimension of the loops as they move therethrough to thereby minimize the loss of heat through the openings and the entry of outside air into the chamber.

4,513,515

GAS TREATMENT OF PARTICULATE MATERIALS IN STORAGE CONTAINERS

Johan C. F. C. Richter, Oslo, Norway, and Ole J. Richter, Karlstad, Sweden, assignors to Kamyr AB, Karlstad, Sweden

Filed Feb. 22, 1983, Ser. No. 468,716
Claims priority, application Sweden, Feb. 25, 1982, 8201165
Int. Cl.³ F26B *3/16*
U.S. Cl. 34—33 **21 Claims**



1. A bin assembly for particulate material, comprising:

a vertical substantially cylindrical container having a vertical interior wall, a feed inlet at the top, and a particulate material discharge at the bottom;

a top interior wall structure of said container, having a bottom opening of diameter D;

a generally conical, generally rigid, first false bottom including an open top portion having a diameter D', wherein D' is greater than D, and having a bottom discharge opening of diameter d, wherein d is much less than D;

means for mounting said first false bottom beneath said top interior wall structure so that said diameters D and D' are substantially concentric, and for mounting said first false bottom for oscillation with respect to said top interior wall structure and said container, and so that said false bottom is a substantial distance above said container discharge opening;

a second generally conical, generally rigid, false bottom;

means for mounting said second false bottom so that it is below said first false bottom, and just above said container discharge outlet, and for mounting said second false bottom for oscillatory movement; and

power means for oscillating said first and second false bottoms.

4,513,516

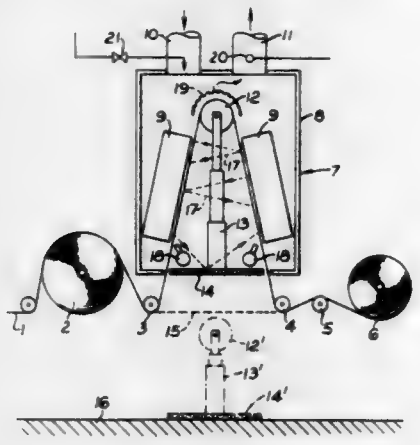
METHOD OF AND APPARATUS FOR THE HEAT-TREATMENT OF A CONTINUOUS WEB

Thomas Björnberg, Viksängen, S-460 60 Vargön, Sweden

Filed Aug. 23, 1983, Ser. No. 525,677
Claims priority, application Sweden, Sep. 8, 1982, 8205095
Int. Cl.³ F26B *3/32*
U.S. Cl. 34—41 **7 Claims**

1. A method of heat treatment of a continuous web, such as

a paper web, comprising the steps of providing a drying unit having at least one movable roller connected to a movable floor , taking the web through said drying unit with the aid of said at least one movable roller connected to said movable floor, constraining the web to follow a U-shaped path within said drying unit, arranging said movable floor to close the space between the two limbs of said U-shaped path within said



drying unit, exposing the web to drying elements within the drying unit, causing the web to follow a straight path outside said drying unit and disposing the movable roller in a rest position distant from and at the opposite end of said straight path prior to introduction of the web into the drying unit, and then taking the web, by the movable roller, into the drying unit so as to follow the U-shaped path defined by the movable roller, at its extreme position, and deflector rollers.

4,513,517

CYLINDER DRYER FOR PAPER MACHINE OR EQUIVALENT

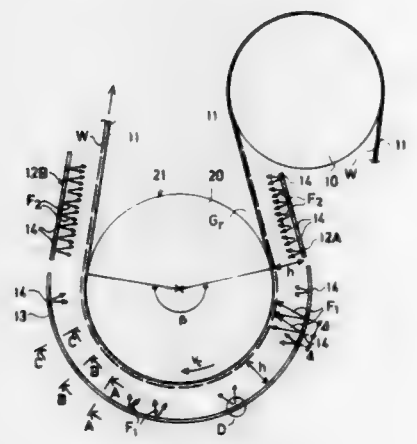
Timo Vedenpää, Jyväskylä, Finland, assignor to Valmet Oy, Finland

PCT No. PCT/FI81/00030, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO81/03351, PCT Pub. Date Nov. 26, 1981

PCT Filed May 8, 1981, Ser. No. 336,360

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—114 **21 Claims**



1. In a drying section of a paper machine comprising a plurality of drying cylinders, wherein a web with a leading strip thereof is conducted over each cylinder from one cylinder to the next, the leading strip having a substantially narrower width than the web, and comprising a supporting fabric for supporting the conducted web, the improvement comprising means for urging the leading strip of the web against the fabric as it passes about at least one of the cylinders, said means comprising at least one fluid conveying means of width substantially equal to the width of the leading strip, said fluid conveying means comprising a plurality of nozzle holes through which jets of fluid are directed against the leading strip.

4,513,518

SHOE INNER SOLE

Robert A. Jalbert, Swampscott; Anthony P. Galcenski, Jr., Groveland, and Charles C. Urmson, Hingham, all of Mass., assignors to Rogers Foam Corporation, Somerville, Mass.

Filed Sep. 30, 1982, Ser. No. 431,756

Int. Cl.³ A43B *13/40, 13/38*

U.S. Cl. 36—44 **12 Claims**



1. An innersole for athletic shoes and the like comprising
a foot-cushioning layer of polyurethane foam,
said polyurethane foam having a compression set of less than 10%,
a layer of polyethylene foam bonded to said polyurethane layer,
said polyethylene layer being thinner than said polyurethane layer,
said polyethylene layer having been thermoformed and thereby given a nonuniform thickness,
said polyurethane foam having a breakdown temperature below the temperature required for thermoforming said polyethylene layer,
said polyurethane foam having a thickness unaltered by thermoforming, and
said polyurethane foam being shaped by said thermoformed polyethylene layer.

4,513,519

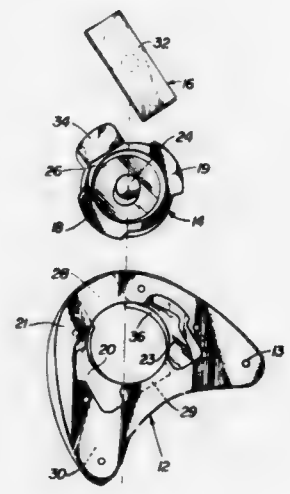
ADJUSTABLE SHOE TAP

George Hedrick, 14 Ponderosa Dr., Melville, N.Y. 11747

Filed Jul. 15, 1983, Ser. No. 514,081

Int. Cl.³ A43B *5/12*

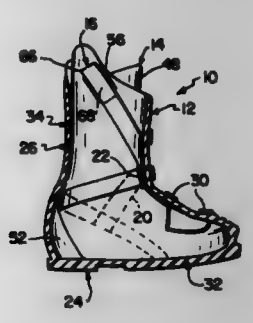
U.S. Cl. 36—113 **3 Claims**



1. A dancing tap for attachment to the sole or heel of a dancing shoe, comprising:
(a) a first plate-like body having a first and second face, a central through bore and means for attaching the first body to a shoe;
(b) a second plate-like body having a first and second face and constructed to be received in said central through bore of said first plate-like body and which is adapted to be articulated relative to said first body; and
(c) a sound spring operatively mounted in said first plate-like body so as to be movable by said second plate-like body

which creates a tapping sound when said second plate-like body articulates about said first body and flexes said sound spring; said first plate-like body contains first and second recesses on said first face and third and fourth recesses on said second face, both originating at said central through bore; said second plate-like body has a first and second protrusion extending from its second face, so as to allow said first and second protrusions of said second plate-like body to be received by said third and fourth recesses on said second face of said first plate-like body; said sound spring is disposed between said first and second plate-like bodies and is movably mounted at said first and second recesses on said first face of said first plate-like body so that said sound spring can flex and be easily removed or replaced.

4,513,520
SKI BOOT WITH INNER BOOT TIGHTENING MECHANISM
Albin G. Koch, Davos-Dorf, Switzerland, assignor to Heierling of Switzerland, Ltd., Warwick, R.I.
Filed Feb. 25, 1983, Ser. No. 469,896
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—119 **10 Claims**



1. In a ski boot having a substantially rigid outer shell, a flexible inner boot including an outer surface, an arch portion, a rear portion, an ankle portion and an instep portion and received in the outer shell, and closure means for closing the outer shell, the improvement comprising:

means, coupled to the inner boot and engaging the outer surface thereof, for tightening the inner boot relative to the foot of the skier,

said means including

means for forcing the arch portion of the inner boot generally upwardly towards the arch of the skier's foot,

means for forcing the outer side of the ankle portion of the inner boot generally inwardly towards the outer side of the skier's ankle,

means for forcing the rear portion of the inner boot generally forwardly towards the Achilles tendon of the skier's foot, and

means for forcing the instep portion of the inner boot generally downwardly towards the instep of the skier's foot,

said means further including a single tightening strap, said tightening strap having a first end rigidly coupled to the outer surface of the bottom of the inner boot at the arch portion and a free second end located rearward of the instep portion and above the ankle portion of the inner boot,

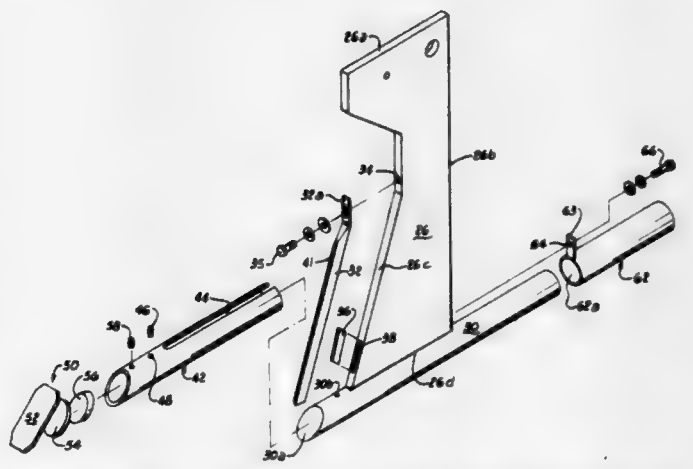
said tightening strap engaging the outer surface of the inner boot between said first and second ends;

means for releasably fastening said free second end to the inner boot rearward of the instep portion and above the ankle portion of the inner boot; and

a ring coupled to one of the inner boot outer surface and said tightening strap, and located adjacent the instep portion and on the outer surface of the inner boot,

said tightening strap extending rearwardly from its coupling at the arch portion, around the rear portion, around the ankle portion, through said ring, and then rearwardly for the releasably fastening of said second end.

4,513,521
TILLAGE TOOL FOR FORMING AN UNDERGROUND WATER RETENTION TUNNEL
W. F. McDaniel, Rte. 1, Box 58-A, Marland, Okla. 74644
Filed Jun. 21, 1984, Ser. No. 623,018
Int. Cl.³ E02F *5/18*
U.S. Cl. 37—193 **1 Claim**



1. A tillage tool for forming an underground tunnel communicating with the surface by a narrow slot comprising:

a vertically extending shank plate having an upper end portion adapted for attachment to a horizontally extending frame, and having a lower edge, a forward edge and a rear edge;

an elongated, horizontally extending cylindrical mounting bar secured to the lower edge of the shank plate and having a beveled forward face;

a forward cylindrical sleeve demountably telescoped over the forward end portion of said mounting bar and having a horizontally extending slot formed therein which receives said shank plate, said forward sleeve being cut transversely on a bevel at its forward end matching that of said beveled forward face;

a plow cap assembly secured to the beveled forward end of said forward sleeve and including a wear plate extending across the forward end of said forward sleeve at the angle of said beveled forward face;

a tubular rear sleeve of the same outside diameter as said forward sleeve telescoped over the rear end portion of said horizontally extending mounting bar and abutting at its forward end, the rear end of said forward sleeve;

a slicer bar detachably secured to the forward edge of said vertically extending shank plate; and

a strip of hard facing material secured to the leading edge of said slicer bar.

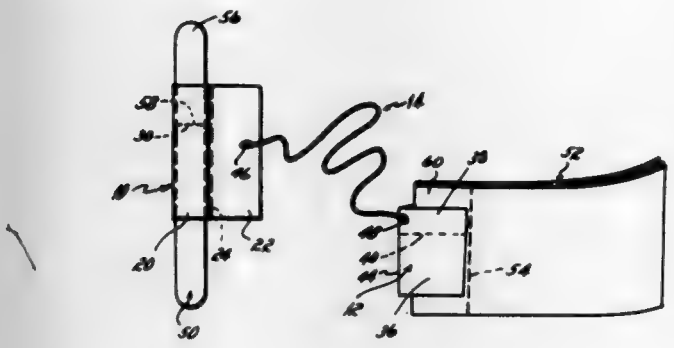
4,513,522
LABEL WITH PARTICULAR APPLICATION TO LABORATORY SPECIMEN CONTAINER IDENTIFICATION
William M. Selenke, 18 Gambier Cir., Cincinnati, Ohio 45218
Filed Sep. 16, 1982, Ser. No. 418,668
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—2 R **17 Claims**

1. An improved unitary label for attaching a multi-leaf pad to a container comprising:

first and second label elements,

the first label element having a front and a back, the back having an adhesive portion for affixing the first label element to the container, the second label element includ-

ing means for affixing the second label element to the multi-leaf pad, and



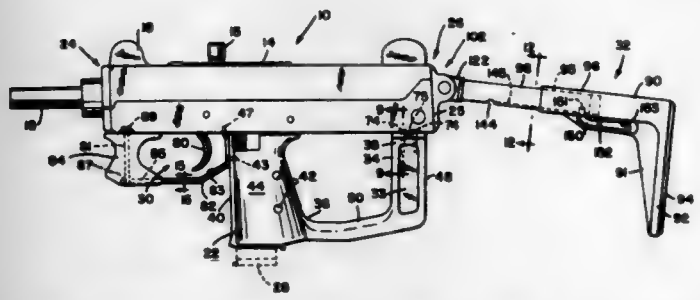
a flexible elongated member joining the first and second label elements in spaced apart relation when said elements are so affixed to the container and the multi-leaf pad.

4,513,523

GRIP AND STOCK ASSEMBLY FOR FACILITATING USE OF A COMPACT GUN

Uzi Gal, Philadelphia, Pa., assignor to Uzia R&D Associates, New York, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,828
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—72 **21 Claims**



1. An apparatus for use with a gun having an elongated receiver including a forward end, a rearward end and an undersurface, said apparatus comprising:

a pistol grip emanating outwardly from said undersurface a predetermined distance away from the rearward end of said receiver;

stabilizing means including a generally L-shaped bracket having two legs, the distal ends of said legs being secured respectively to the distal end of said pistol grip and the distal end of the receiver behind said pistol grip, said stabilizing means including a forearm receiving portion for stabilizing said gun by pressing up against the forearm of the hand holding said pistol grip; and

stock means pivotally mounted to a portion of said receiver behind said pistol grip, said stock means operative between two extreme positions, a first position where said stock means is in close proximity to said pistol grip and a second position suitable for shoulder firing, said stock means in said first position being adapted to stabilize said gun while firing by pressing up against the forearm of the hand of the user holding said pistol grip.

4,513,524

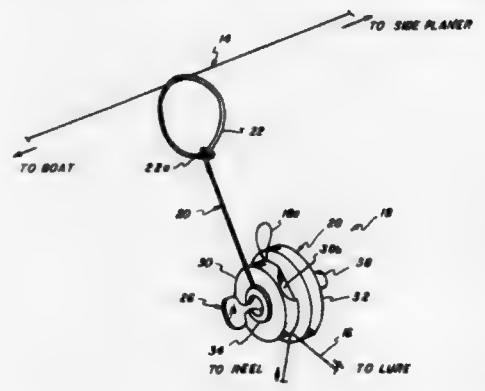
FISHING LINE RELEASE MECHANISM

William L. Jolliff, 640 Holt Rd., Webster, N.Y. 14580

Filed May 23, 1983, Ser. No. 497,090
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—43.12 **9 Claims**

1. A mechanism for releasably connecting a fishing line to an extension member, said mechanism comprising:

an elongated, substantially rigid, wire formed body including an open loop in one end thereof, said open loop having a substantially resilient portion adapted to releasably engage an intermediate portion of said body, so that said open loop can be threaded over said extension member and then said resilient portion can be engaged with said intermediate body portion whereby said body is selectively couplable to said extension member and, once coupled to said extension member is movable with respect such extension member to a desired location there along; and



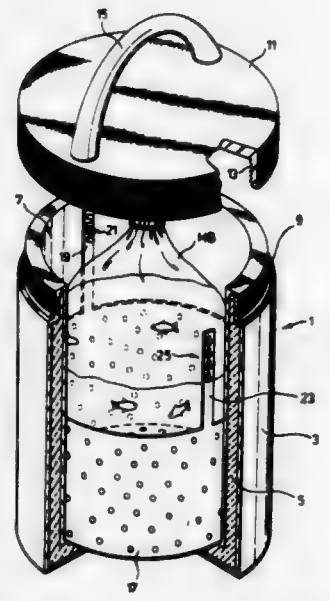
means, associated with said body, for receiving a fishing line, said means including a pair of juxtaposed elements, and hand engagable means for adjustably urging said elements manually into intimate contact, whereby (i) a fishing line can be received therebetween, and (ii) such line can be released therefrom by exertion of a preselected tension on such line.

4,513,525

FISHING BUCKET

Mai Ward, and Carmen Ward, both of 104 Imperial St. South, Massey, Ontario P0P 1P0, Canada

Filed May 11, 1983, Ser. No. 493,633
Int. Cl.³ A01K *97/04*
U.S. Cl. 43—55 **6 Claims**



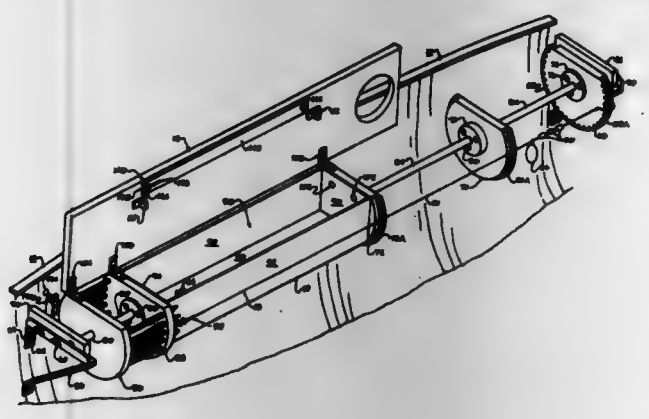
1. A container assembly for receiving fishing minnows and the like, said assembly comprising an outer bucket, a removable lid for sealing said bucket, handle means for carrying said bucket, and a strainer basket for fitting inside said bucket, said strainer basket having a pair of handle portions adapted to detachably engage one another, said handle portions when engaged providing a handle for lifting of said basket from said bucket and when detached from one another being moveable to an out of the way position for gaining access into said basket and being formed of plastic having a memory for springing to an upstanding position to either side of said basket when detached from one another and being resiliently bendable to engage with one another folded across said basket.

4,513,526

FISHING TACKLE ORGANIZER

Virgil Grace, 2900 E. Fourteenth St., Sioux Falls, S. Dak. 57103, and Jerry E. Grace, 7900 N. Harrington, Sioux Falls, S. Dak. 57101

Filed Jun. 7, 1983, Ser. No. 502,007
Int. Cl.[3] A01K *97/00*
U.S. Cl. 43—57.2 20 Claims



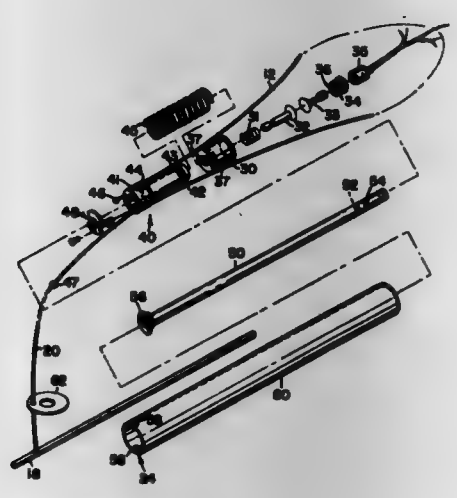
1. An apparatus for mounting in a boat to store and display elongated fishing devices such as spinners and snells when the fishing devices are not in use, wherein the fishing devices have first and second ends and a flexible line extending between the first and second ends, the apparatus comprising:
a first bracket for mounting to the boat;
a second bracket for mounting to the boat in spaced relation to the first bracket;
shaft means rotatably supported by the first and second brackets and defining an axis of rotation;
a first plate mounted on the shaft means and having a plurality of circumferentially spaced apertures adjacent its periphery for connection to the first ends of the fishing devices;
a second plate mounted on the shaft means in spaced relationship to the first plate;
resilient connecting means for connecting the second ends of the fishing devices to the second plate while applying resilient bias force which maintains the fishing devices in a taut elongated condition; and
a compartment coaxially aligned with and supported between the first and second plates.

4,513,527

ANIMAL TRAP

Dale L. Wicklund, Rte. 2, Box 157A, Deer River, Minn. 56636

Filed Oct. 22, 1982, Ser. No. 436,010
Int. Cl.[3] A01M *23/34*
U.S. Cl. 43—87 5 Claims



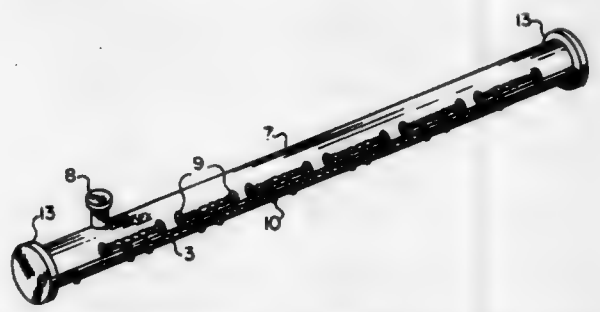
1. An animal trap comprising:
an animal entrapping assembly, said animal entrapping assembly including a shaft, cable block assembly, shoulder block and cable, said block being slidably mounted on said shaft, said cable having a first end attached to said cable block, said cable thereafter externally parallelling said shaft an passing within a first longitudinal groove on said shoulder block, said cable having a second end passing within a second longitudinal groove diametrically opposite to said first longitudinal groove on said shoulder block such that a loop is formed by said cable, said shoulder block being threadably mounted on said shaft;
spring means connected for biasing said entrapping assembly toward a closed position;
ball detent means for releasably holding the entrapping assembly in a set position; and
trigger means interactive with said ball detent means and operative when disturbed in either direction along any axis to cause said ball detent means to release said entrapping assembly from the set position allowing said spring means to move the entrapping assembly to a closed position.

4,513,528

ROPE WICK APPLICATOR

Jim E. Dale, Greenville, Miss., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 969,036, Dec. 13, 1978, abandoned. This application Sep. 18, 1979, Ser. No. 76,706
Int. Cl.[3] A01N *5/00*
U.S. Cl. 47—1.5 58 Claims



1. A rope wick applicator to dispense liquid agricultural chemical solutions upon physical contact with foliage and plants comprising in combination:
(a) a rotatable horizontal reservoir-boom containing a liquid agricultural chemical solution to treat foliage and plants;
(b) a plurality of holes spaced along the outer circumference of the reservoir-boom;
(c) a plurality of wick segments one end of which is fed into a hole in the reservoir-boom and the other end of which is fed into the next hole in the horizontal reservoir-boom thus thoroughly immersing the wick ends in the liquid agricultural chemical solution inside the reservoir-boom;
(d) a plurality of rubber grommets to hold the segments of wick in the holes as well as to prevent spillage or seeping of chemical solution from the reservoir-boom.

4,513,529

METHOD AND MEANS FOR PREVENTING FROST DAMAGE TO CROPS

Douglas R. Reich, 209 Gazelle, North, Fort Myers, Fla. 33903

Filed Aug. 1, 1983, Ser. No. 519,242
Int. Cl.[3] A01G *13/00*
U.S. Cl. 47—2 2 Claims

1. Apparatus for preventing frost damage to growing crops, of the type comprising a shell movable over the ground in a forward direction, blower means in said shell for drawing air thereinto through an air inlet therein and expelling it therefrom through outlet means therein, and fuel burning heater means in said shell for heating the expelled air, said apparatus being characterized by:
A. said shell comprising front, rear and side walls defining a plenum chamber which is substantially symmetrical to a

vertical plane extending through said front and rear walls and which has an open top that provides said air inlet;

B. said shell further comprising three tubes projecting substantially rearwardly from said rear wall of the plenum chamber,

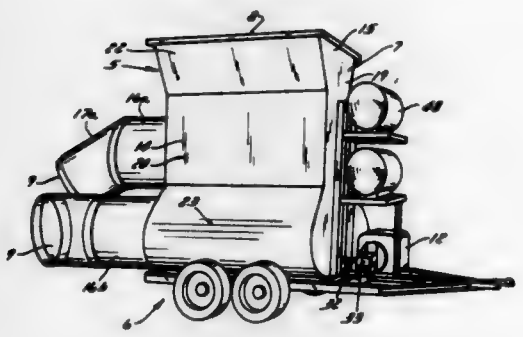
(1) each substantially unrestrictedly opening at its front end into the interior of said plenum chamber and

(2) each having its rear end portion formed to provide an air discharge outlet which cooperates with the air discharge outlets of the other tubes to comprise said outlet means,

(3) two of said tubes being at the bottom of said plenum chamber, spaced to opposite sides of said plane and having their rear end portions arranged to discharge air near ground level in obliquely rearwardly and laterally divergently directed streams that flow along the ground, and

(4) the third of said tubes being upwardly adjacent to said two tubes and having its rear end portion arranged to discharge air in an obliquely downwardly and rearwardly directed stream that flows along the ground;

C. said blower means comprising an air propeller coaxially rotatable in each of said tubes, near the front end thereof,



for drawing air from said plenum chamber and forcing it rearwardly through the tube;

D. said heater means comprising a fuel burner substantially coaxially mounted in each of said tubes, spaced rearwardly from the propeller therein and forwardly from said rear end portion thereof;

E. deflecting means in each tube, adjacent to the fuel burner therein, arranged to impart radially outward deflection to air flowing through the tube and to hot combustion gases issuing from the burner means, so that the stream issuing from the tube is substantially uniformly at a temperature substantially above freezing but low enough to be harmless to persons and plant life;

F. a propeller shaft for each propeller by which the propeller can be rotatably driven, each said shaft having a rear end portion on which its propeller is mounted and having a front end portion in said plenum chamber;

G. a drive shaft in the bottom portion of said plenum chamber having a front end portion that projects through the front wall of the plenum chamber for coupling to power drive means; and

H. transmission means in the plenum chamber drivingly connecting said drive shaft with each of said propeller shafts.

4,513,530

MACHINE FOR LAYING FILM MATERIAL

Duane A. Nyboer, Hamilton, Mich., assignor to Mechanical Transplanter Company, Holland, Mich.

Filed Jun. 22, 1983, Ser. No. 507,291

Int. Cl.³ A01G 7/00

U.S. Cl. 47—9 **1 Claim**

1. A machine for laying film material on the ground for agricultural purposes, comprising:

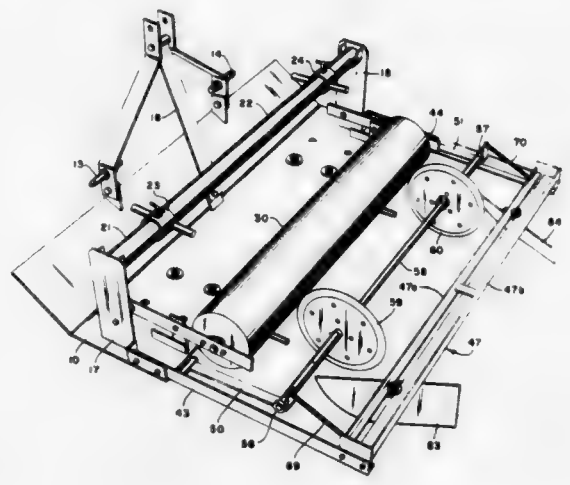
a skid plate having coupling means adapted to associate said machine with a vehicle;

a pair of laterally-spaced film roll brackets mounted on said skid plate; roll-support means engageable with said brackets;

a pair of laterally-spaced arms pivotally mounted on said roll brackets, respectively, and a pressure roller rotatably mounted at the opposite ends thereof on said arms, respectively;

laterally-spaced groove-forming means mounted on the underside of said skid plate;

scraper plates mounted on structure fixed with respect to said skid plate and disposed to scrape earth into the groove formed by at least certain of said groove-forming means;



a frame secured to said skid plate and having laterally spaced cantilever sides; a pair of trailing links pivotally attached to said frame sides, respectively;

an axle secured at its opposite ends, respectively, to said links;

wheels constituting film-depressing members rotatably mounted on said axle in rearward alignment with said groove-forming means, respectively;

a cross-member of said frame secured to said frame side members at the opposite ends thereof from said skid plate, said scraper plates being mounted on said cross-member; and

biasing means extending from said trailing links to said cross-member urging said wheels downward.

4,513,531

METHOD AND DEVICE FOR GROWING PRODUCTS

Jacobus W. Lestraden, Sassenheim, Netherlands, assignor to Schulte & Lestraden B.V., Sassenheim, Netherlands

Filed Jul. 14, 1982, Ser. No. 398,438

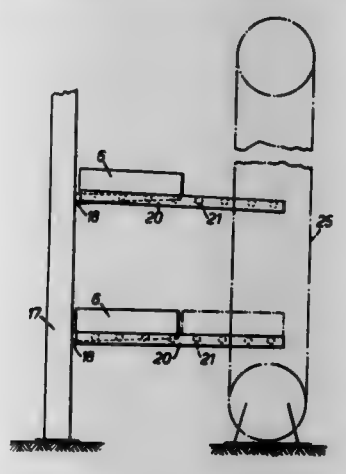
Claims priority, application Netherlands, Jul. 14, 1981, 8103335

Int. Cl.³ A47G 7/00

U.S. Cl. 47—39 **12 Claims**

1. A method of moving propagating cases into and out of a stander in which a plurality of propagating cases are supported one above the other by supporting members forming part of the stander, said supporting members being formed by vertically spaced beams having recesses, comprising the steps of:

inserting rollers through said recesses from below to raise said cases with respect to said beams; and



displacing said raised propagating cases with respect to the supporting members.

4,513,532

GENETIC FACTOR CAPABLE OF ALTERING LEAF NUMBER AND DISTRIBUTION IN MAIZE

Robert C. Muirhead, Jr., Plato Center, Ill., and Donald L. Shaver, Salinas, Calif., assignors to Cornnuts Hybrids, Inc., Oakland, Calif.

Filed Apr. 14, 1983, Ser. No. 484,791
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **27 Claims**

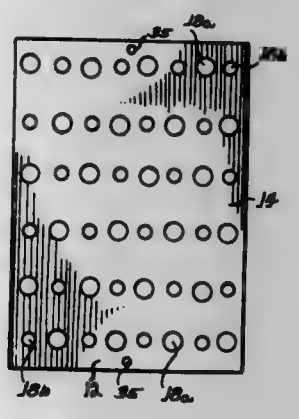
1. A method for producing hybrid seed corn, said method comprising crossing first and second maize plants, where at least one of said maize plants is characterized by a genetic factor which confers an extra leaf phenotype, said genetic factor being capable of transmission to said hybrid seed corn substantially as a single dominant gene.

4,513,533

METHOD AND APPARATUS FOR HYDROPONIC FARMING

Frank Gething, and Edward P. Glenn, both of Tuscon, Ariz., assignors to Kraft, Inc., Glenview, Ill.

Filed Nov. 30, 1982, Ser. No. 445,590
Int. Cl.³ A01G *31/00*
U.S. Cl. 47—63 **13 Claims**



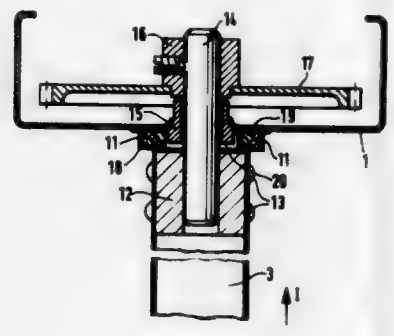
4. A system according to claim 1 wherein said grid means is a single grid and the holders of said grid on said upper face align with approximately one half of said openings.

4,513,534

SHUTTER FOR VENTILATION SYSTEMS

Emil Siegwart, Michael-Blatter-Strasse 6, D-6603 Sulzbach-Neuweiler, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,726
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 7920975[U]
Int. Cl.³ E06B *7/08*
U.S. Cl. 49—91 **19 Claims**



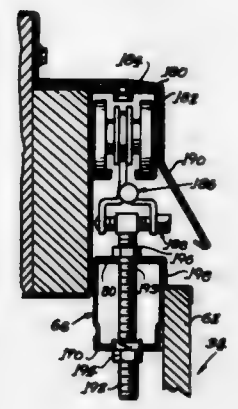
1. A flow control unit for ventilation systems, particularly a louver-type unit, comprising a support; a flow regulating member mounted on said support for movement between an open and a closed position and spaced from said support so as to define a gap therewith; and a resilient sealing member in said gap in sliding contact with said support, said flow regulating member being impressed into said sealing member and engaging the latter so that said sealing member moves with said flow regulating member during displacement of said flow regulating member between said open and closed positions.

4,513,535

BARN DOOR FRAMING SYSTEM

Billie J. Uphoff, Mackinaw, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Dec. 27, 1982, Ser. No. 453,693
Int. Cl.³ E05D *13/02*
U.S. Cl. 49—409 **2 Claims**



1. A door frame system for a sliding door construction for a barn or similar structure, comprising in combination: a frame including a plurality of frame members including vertically spaced top and bottom horizontal frame members and a pair of horizontally spaced vertical side frame members coupled with said top and bottom frame members to define a generally rectilinear door frame, wherein at least said top horizontal frame member comprises elongate, substantially U-shaped channel members; and a hanger assembly for hanging said door frame, said hanger assembly comprising: a truck assembly engageable in a guide track of a U-shaped construction, an elongate, externally threaded fastener member pivotally carried by said truck assembly for extending through an aperture in said top horizontal frame member of said door frame, a bracket member engaged against the open sidewall of said U-shaped top horizontal frame member, said bracket member including at least one upwardly projecting flange dimensioned to interfit closely within said open sidewall to oppose inward

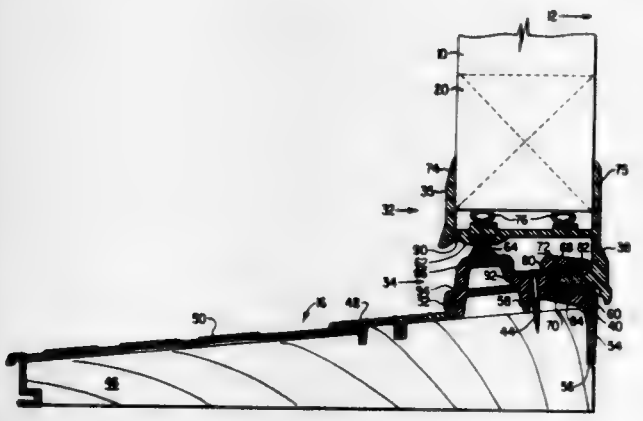
collapse of the adjacent sidewalls, and an aperture formed in said bracket member through which said elongate threaded fastener member extends and a pair of complimentary internally threaded fastener members threadably engaged with said elongate fastener member one engaged above said top horizontal frame member, the other engaged below against said bracket member for grippingly engaging said frame member therebetween and threadably movable to define the height of said door when hung from said elongate fastener member while substantially resisting vertical movement of the door in response to external forces applied thereto.

4,513,536

WEATHER TIGHT SEAL FOR THE SILL OF A HOUSEHOLD DOOR

Jean-Paul Giguère, St-Agapit, Canada, assignor to Donat Flamanc Inc., St.-Apollinaire, Canada

Filed Mar. 31, 1983, Ser. No. 480,677
Claims priority, application Canada, Nov. 12, 1982, 415437
Int. Cl.³ E06B *1/70*
U.S. Cl. 49—470 **5 Claims**



1. An improved threshold system for thermally insulating the lower end region of a domestic door comprising in combination:

a weather strip carrier extending along the lower edge of a door panel and relatively floatably connected thereto with a suitable degree of play for constant adjustment in the vertical direction,

a generally horizontal weather strip wiping surface on the sill of the door directly below said weather strip carrier,

a suitable weather strip extending along said weather strip carrier,

securing means on said weather strip carrier to hold said weather strip to said weather strip carrier in a straight line directly above said weather strip wiping surface, and

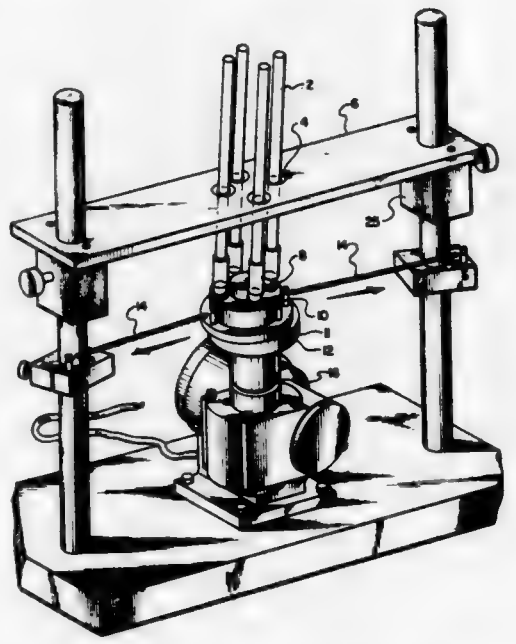
control means for automatically adjusting the floating height of said weather strip carrier above said weather strip wiping surface whenever said door panel assumes the closed position, said control means consisting of a substantial and close fitting tongue-and-groove engagement of said weather strip carrier with the sill of the door which engagement takes place upon closing of said door panel, whereby the floating distance between said weather strip wiping surface and said securing means and their parallelism are maintained independently of said weather strip and solely by virtue of said tongue-and-groove engagement.

4,513,537

DEVICE FOR PREPARING THIN SPECIMENS

Robert A. Spurling, Thousand Oaks; Burton I. Davis, Camarillo, and Norman G. Taylor, Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 26, 1983, Ser. No. 526,734
Int. Cl.³ B24B *11/00*
U.S. Cl. 51—71 **3 Claims**



1. A device for dishing specimens comprising:

a rotatable base;

a tool holder eccentrically positioned on said rotatable base by a pivot;

a tool mounted on said tool holder, said tool having a spherical surface;

a pivot plate having a hole extending therethrough, said plate being positioned above and spaced from said rotatable base;

a support for holding said pivot plate, and a spring coupled to said support and to said eccentric pivot to hold said tool in the same radial orientation as said base rotates;

a specimen holder positionable on said tool, said specimen holder comprising:

a rod extendable through said hole in said pivot plate;

means for mounting a specimen on an end of said rod;

a ferrule extending out from said end of said rod, said ferrule being positionable on said spherical surface with the specimen bearing on said spherical surface between said end of said rod and said spherical surface;

whereby rotation of said base causes said tool to grind against said specimen and form a dish in the surface of said specimen.

4,513,538

METHOD OF AND APPARATUS FOR THE SUPERFINISHING OF A THIN-WALL METAL WORKPIECE

Martin Wolters, and Gerd R. Meuer, both of Wuppertal, Fed. Rep. of Germany, assignors to Maschinenfabrik Ernst Thielenhaus GmbH, Wuppertal, Fed. Rep. of Germany

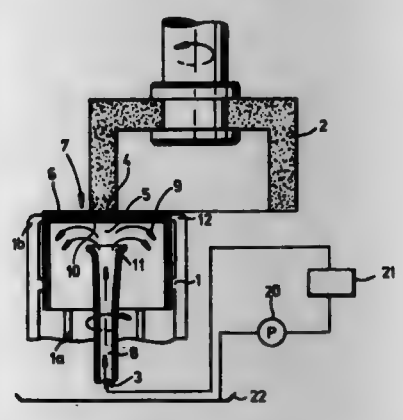
Filed Apr. 8, 1983, Ser. No. 483,249
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1983, 3306246
Int. Cl.³ B24B *5/00*
U.S. Cl. 51—131.3 **7 Claims**

1. A method of superfinishing a thin-wall workpiece which comprises the steps of:

juxtaposing a surface of said workpiece to be super-finished with a superfinishing tool with said surface being pressed against said tool in a zone of said surface;

rotating said tool about an axis thereof to super-finish said surface of said workpiece;

directing a stream of a coolant fluid against the counter surface of said workpiece in said zone directly opposite said surface of said workpiece, said coolant being directed against said counter surface of said workpiece generally perpendicularly thereto and the coolant fluid being de-



flected radially along said counter surface of said workpiece; and

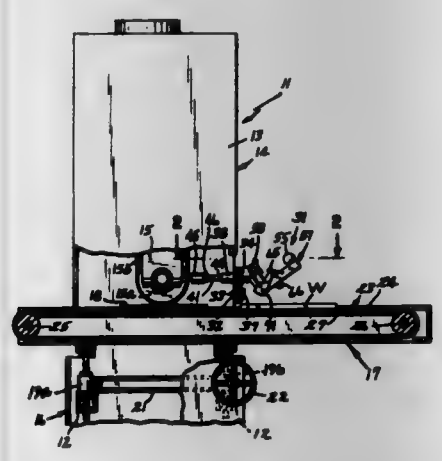
retaining said workpiece in a holder, rotating said holder about an axis of symmetry of said workpiece, and feeding said fluid along the axis of symmetry of said workpiece into contact with said counter surface.

4,513,539

POSITION SETTING DEVICE FOR ABRASIVE BELT GRINDING MACHINE

Clarence I. Steinback, Edina, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.

Filed Mar. 15, 1983, Ser. No. 475,534
Int. Cl.³ B24B *21/00, 49/00*
U.S. Cl. 51—138 **17 Claims**



17. A position setting device for use on a workpiece surfacing machine to establish a desired relative position between the workpiece surfacing means of the machine and the workpiece support therefor, the device comprising:

stationary frame means;

first sensor means movably carried by the frame means for engaging and sensing the position of the workpiece surfacing means;

second sensor means movably carried by the frame means for engaging and sensing the position of a workpiece on the workpiece support;

means for relating the position of the first and second sensor means so that the position of one is related to the position of the other;

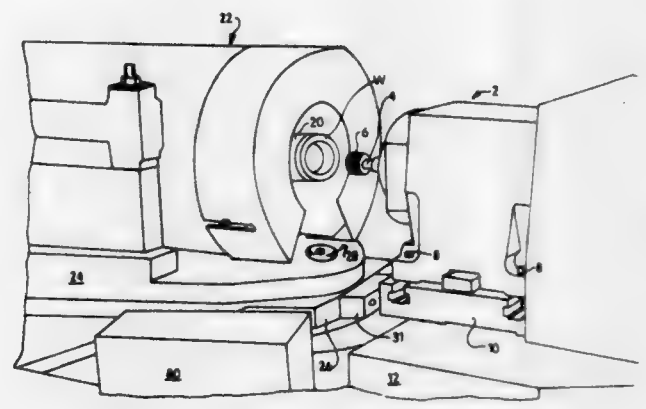
and indicator means having a predetermined reference position for sensing the position of one of said first and second sensor means, and for indicating such position relative to said predetermined reference position.

4,513,540

GRINDING MACHINE WITH CNC PIVOTABLE WORKHEAD

Victor F. Dzewaltowski, and Robert N. Hobbs, both of Springfield, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 11, 1983, Ser. No. 512,836
Int. Cl.³ B24B *49/00*
U.S. Cl. 51—165.71 **9 Claims**



1. In a grinding machine having a wheelhead with a grinding wheel rotatable about an axis and a workhead with workpart fixturing means holding a workpart on another axis, said wheelhead and workhead being carried on machine member means, the combination of

(a) a workhead support means on which the workhead is carried, said support means including a pivotable shaft means rotatably mounted on the machine member means by bearing means and on which the support means is pivoted relative to the wheelhead to vary the angular relationship of the workpart axis relative to the grinding wheel axis and including a driven portion remote from the pivotable shaft means,

(b) means drivingly engaging the driven portion of workhead support means remote from the pivotable shaft means for pivoting the workhead support means and its pivotable means,

(c) means for controlling the angular position of the workhead support means and workhead thereon, including rotary shaft position indicating means on and rotatable with the shaft for determining the angular position of the workpart axis by indicating angular movement of the pivotable shaft means of said workhead support means with respect to a reference position and means for actuating the pivoting means to pivot the workhead support means on its pivotable means until the position indicating means indicates that a position is reached corresponding to a desired angular relationship of the workpart axis to the grinding wheel axis, and

(d) fluid lift means between the workhead support means and machine member means remote from the pivotable shaft means adjacent the driven portion to counterbalance mass of the workhead support means and workhead thereon during pivoting.

4,513,541

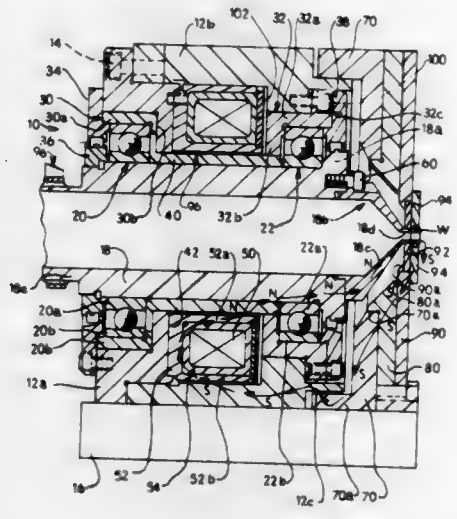
MACHINE WORKHEAD WITH MAGNETIC DRIVER

Lawrence I. Millay, and Victor F. Dzewaltowski, both of Springfield, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Nov. 23, 1982, Ser. No. 444,131
Int. Cl.³ B24B *5/02*
U.S. Cl. 51—237 R **7 Claims**

1. A machine workhead for rotating a workpart, comprising a stationary housing means, a spindle means rotatably mounted in the housing means for rotation about a longitudinal axis by multiple bearing means spaced apart exteriorily along the length of the spindle means between said spindle means and housing means and having a driving end outside the housing means for engaging a workpart, a magnet means disposed in the housing means radially and longitudinally in the space

between the bearing means in closely spaced radial juxtaposition to the spindle means with the spindle means extending therethrough such that when said magnet means generates magnetic flux said flux is guided by the spindle means and its driving end to traverse between said magnet means and workpart along a flux path from between the bearing means through



the spindle means interiorily of one of said bearing means, means for completing the magnetic flux path between the workpart and magnet means along a flux path through the housing means exteriorily of said one of said bearing means and returning to between the bearing means, and means for rotating the spindle means with the workpart held on the driving end by magnetic flux forces.

4,513,542

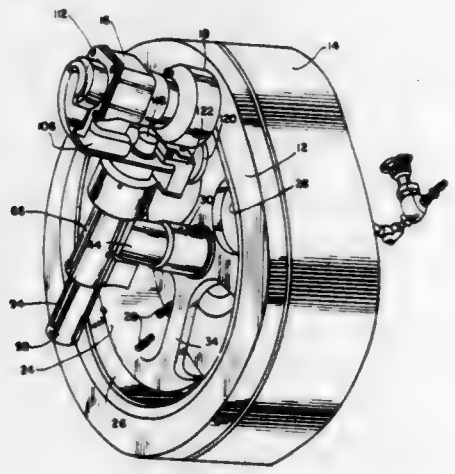
PORTABLE SURFACING MACHINE FOR BOILER MANHOLE

John F. Wilger, Honolulu; Gregory Nakano, Pearl City, and William A. Berman, Honolulu, all of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 14, 1983, Ser. No. 542,314

Int. Cl.³ B24B *19/08, 19/26*

U.S. Cl. 51—241 S **18 Claims**



1. A portable machine for in-place grinding of a noncircular face of a doorway, with a grinder which has a flat grinding surface, the doorway also having an opposite face and an edge therebetween, said machine comprising:

support means which is adapted to be fixedly mounted in the doorway and span the doorway edge;

a spindle rotatably mounted on the support means with its longitudinal axis substantially coextensive with the longitudinal axis of the doorway;

means mounted to the spindle for reciprocating the grinder in a direction normal to the spindle with the grinding surface maintained in a substantially parallel position with respect to the doorway face;

means for spring biasing the reciprocating means and grinder away from said spindle;

means mounted to the reciprocating means and responsive to the spring biasing means for following the noncircular contour of the doorway face when the spindle is rotated and correspondingly moving the reciprocating means to maintain the grinding surface in an opposed position with respect to the doorway face at all times while the spindle is being rotated,

whereby, upon mounting the grinder and rotating the spindle, the grinding surface of the grinder is engageable with the doorway face.

4,513,543

TREATMENT OF COATED GLASS

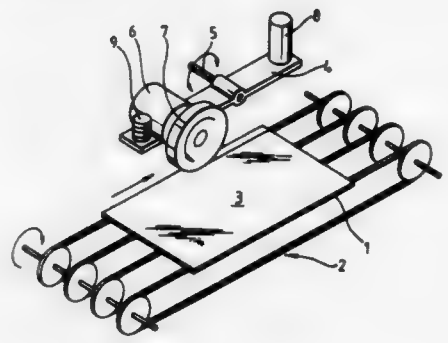
Jack Lawrenson, and Kevin M. Murphy, both of Merseyside, England, assignors to Pilkington Brothers P.L.C., St. Helens, England

Filed Mar. 22, 1983, Ser. No. 477,652

Claims priority, application United Kingdom, Mar. 30, 1982, 8209351

Int. Cl.³ B24D *11/00*

U.S. Cl. 51—283 R **6 Claims**



1. A method of removing a metallic coating layer from a coated glass surface, comprising subjecting the metallic coating layer to the abrasive action of a surface of a stripping material which surface comprises a particulate abrasive carried in a porous matrix of polyvinyl formal.

4,513,544

METHOD OF SAWING CRYSTALLINE RODS, AND MULTIPLE-BLADE INTERNAL-HOLE SAW FOR CARRYING OUT THE METHOD

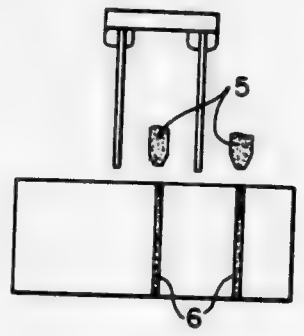
Gunter Lossl, Kirchweidach; Helmut Zauhar, and Horst Stock, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,200

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216200

Int. Cl.³ B24B *1/02*

U.S. Cl. 51—283 R **6 Claims**



1. A method for sawing a crystalline workpiece into wafers, comprising the steps of:

sawing an elongated workpiece of material, by a sequence of

cuts, into a plurality of thin wafers that are connected to one another, including the steps of simultaneously making at least two cuts in the workpiece by at least two blades in a manner to produce a plurality of wafers that are connected to each other, each blade separated from another by a distance greater than the thickness of each said wafer, and successively repeating said step of simultaneously making at least two cuts at different locations along said workpiece, one of said at least two successive cuts being between said previous at least two cuts; and

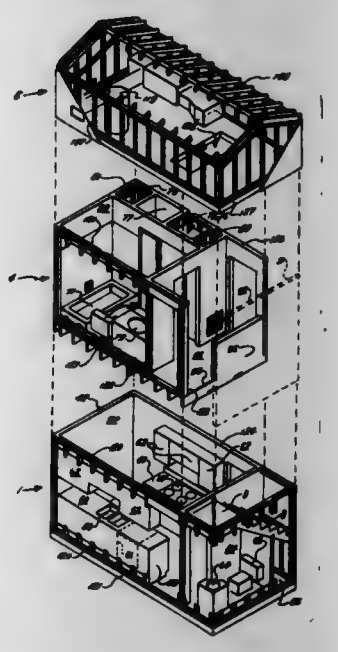
breaking the connection between each of the wafers after the sawing operation.

4,513,545

APPARATUS FOR AND METHOD OF CONSTRUCTING, TRANSPORTING AND ERECTING A STRUCTURE OF TWO OR MORE STORIES COMPRISED OF A PLURALITY OF PREFABRICATED CORE MODULES AND PANELIZED ROOM ELEMENTS

George D. Hopkins, Jr., 1546-48 Magazine St., New Orleans, La. 70130

Filed Sep. 20, 1982, Ser. No. 419,732
Int. Cl.[3] E04H *1/00*
U.S. Cl. 52—79.1 38 Claims



1. A prefabricated dwelling, having at least two stories comprising:

a. a plurality of prefabricated four-wall non-identical core modules, containing substantilaly all electrical, mechanical and plumbing components necessary to serve said dwelling, said core modules being adapted to be vertically aligned with each other;

b. a base pallet in a lower core module adapted to be received in a preformed monolithic concrete slab, which is provided with a preformed depression to receive said pallet and external utilities connectable with electrical and plumbing lines contained by said core modules;

c. a plurality of pannelized room elements, which interlockingly attach to said core modules to thereby complete said prefabricated dwelling.

4,513,546

CORNER KEY FOR WINDOW SPACER ELEMENT

Robert J. Gow, Granville, N.Y., assignor to Norton Company, Worcester, Mass.

Filed Mar. 12, 1980, Ser. No. 129,568
Int. Cl.[3] E06B *7/12*; E04C *2/38*
U.S. Cl. 52—172 8 Claims

1. A corner key means for use with hollow elongated spacer elements and a hot melt sealant to form a frame adapted to be used in the assembly of sheets of glass to form a thermal pane, each key comprising an enlarged body member of fixed length having a bottom and oppositely disposed side walls; a V-shaped notch extending from one side to the other through the body, said notch being positioned about midway of the length of said key with a line connecting the bottom of the V on each side wall lying over the bottom wall of said body member, leg members of a size slightly smaller than said body member integral with said body member, said slightly smaller sized leg members each extending outwardly from the opposite ends of the body and having a crossectional shape to telescopically



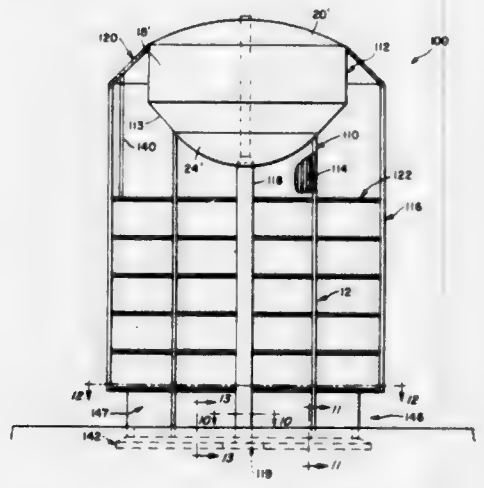
interfit in the ends of the hollow elongated spacer elements, and a layer of hot melt sealant applied to at least two of the side walls of said key and the spacer elements with which it is assembled, whereby when a plurality of said key means and spacer elements are assembled and coated with sealant, the assembly can then be bent on each of said lines across the bottom of said body members to close said V slots to produce a closed frame with a ring of sealant on at least two sides thereof for assembly with sheets of glass to be sealed thereto to form a thermal pane.

4,513,547

MULTI-PURPOSE ELEVATED WATER STORAGE FACILITIES

John O. Cliff, Franklin, and James Edwards, Nashville, both of Tenn., assignors to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed Sep. 10, 1982, Ser. No. 416,681
Int. Cl.[3] E04H *7/04, 14/00*
U.S. Cl. 52—194 9 Claims



1. An improvement in a multi-story elevated water storage facility comprising: an elevated water storage tank supported on a pillar and occupying substantially all of the top cross-sectional area of the pillar, means fluidly connected to the storage tank for distributing water from the tank to a user located outside the area immediately adjacent to the pillar, the facility having dividing means dividing the pillar into a plurality of levels beneath the tank to define a multi-story building which is located in an elevated water storage tank structure so that a single structure serves as both an elevated water storage facility and a multi-story building, said pillar forming a load bearing core for the water storage tank, a wall exterior to and surrounding the pillar and extending over substantially the full height of the facility, second dividing means dividing the volume defined by said exterior wall into a plurality of levels, the lowermost second dividing means being at a predetermined distance above a foundation level so that an overhang recess portion exists between the outside wall and the foundation

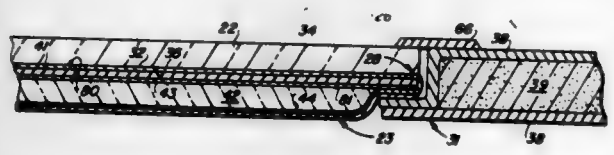
level, and said pillar bearing the load of the water storage tank thereon by thick cone plates affixed at an angle on the top of the pillar.

4,513,548

INSULATED WINDOW COVER APPARATUS

Gregory H. Parker, 6450 N. 78th St., #242, Scottsdale, Ariz. 85253

Filed Apr. 25, 1983, Ser. No. 488,261
Int. Cl.[3] E06B *3/26*
U.S. Cl. 52—202 **30 Claims**



1. An insulated window insert apparatus for use in motor vehicles having at least one window in the top thereof, said at least one window including a window pane and a window pane holder, comprising:

a generally rectangular sheet of support material for blocking out light from the sun;

insulation means operably disposed proximate said sheet of support material for absorbing heat from the sun while simultaneously preventing heat from the air conditioned cool air inside the vehicle from escaping through said top window pane; and

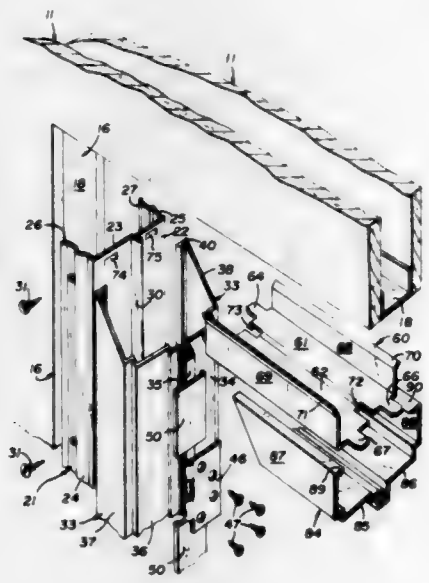
means for covering said generally rectangular sheet of support material and said insulation means, said covering means including a bottom portion having fabric means which substantially matches that of the motor vehicle interior for esthetic purposes and the like.

4,513,549

PRE-MITERED DOORFRAME ASSEMBLY FOR PARTITION WALL CONSTRUCTION

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Mar. 25, 1983, Ser. No. 480,150
Int. Cl.[3] E06B *1/04*
U.S. Cl. 52—211 **14 Claims**



1. A doorframe assembly adapted to be mounted in a door opening in a wall and to support a door, comprising in combination:

A. a pair of metal backer jamb members adapted to be mounted in said door opening, one for supporting a hinge jamb and the other for supporting a strike jamb, adapted for attachment to opposite sides of said door opening, said backer jamb members being of generally U-shaped structure and comprising a web portion having a pair of flanges defining a generally U-shaped structure, said flanges being adapted for fastening at opposite wall surfaces adjacent to said door opening,

B. a pair of header clips comprising a web portion having a pair of flanges forming a generally U-shaped structure,

C. means for affixing each header clip at one end to the upper end of one of said backer jamb members,

D. generally U-shaped jamb members adapted to be snap-mounted one on each of said backer jamb members, and

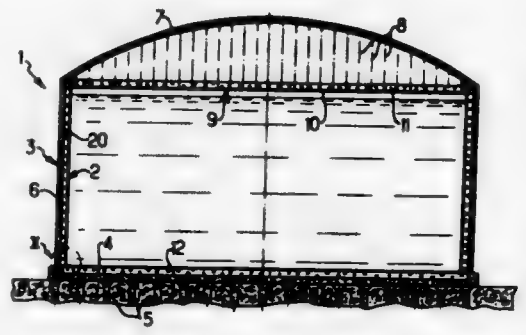
E. a generally U-shaped header member adapted to be snap-mounted on said header clips, the upper ends of said jamb members and both ends of said header members having complementary mitered ends to form a close mitered fit.

4,513,550

METHOD OF BUILDING A RESERVOIR FOR STORING A LIQUID AT LOW TEMPERATURE

Michel Kotcharian, Paris, France, assignor to Technigaz, France

Filed Feb. 8, 1981, Ser. No. 233,593
Claims priority, application France, Jun. 8, 1979, 79 14716
Int. Cl.[3] E04B *1/32*; F17C *3/02, 3/04, 13/00*
U.S. Cl. 52—249 **14 Claims**



1. A method of building a reservoir for storing a liquid at low temperature such as liquified natural gas, comprising an inner tank having a top and bottom and an outer casing or vessel having inner and outer walls separated from the tank by a space of relatively small width filled with heat-insulating means forming a secondary barrier, characterized in that it comprises previously building the outer vessel and in mounting therein the inner tank, and then in building the heat-insulating means in the aforesaid space by performing successive operations comprising the steps of:

arranging on the inner wall of the outer vessel a continuous lining forming a first fluid-tight barrier;

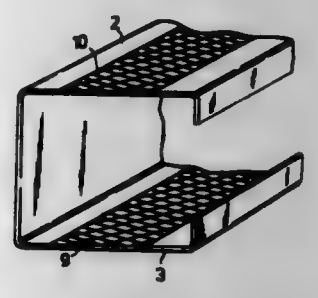
arranging bands or panels along the vertical walls of the inner tank without permanently securing said bands or panels, said bands or panels being made of material for forming a second fluidtight barrier, and jointing said bands or panels in a fluid tight manner formed of sub-blocks of complementary shapes contacting against one another so as to be slightly slidable on one another to compensate for the dimensional tolerances of said space between the inner tank and the outer vessel, associated with a second continuous, thin lining of cryogenic material forming a second fluid-tight barrier, the said structure being supported by the outer vessel and arranged simply around the inner tank, the building of the structure by stacking the blocks being performed either in horizontal slices or in vertical bands.

4,513,551

STRUCTURAL SUPPORT

Ulf Gauffin, Dagermansgatan 6, S-754 28 Uppsala, and Mikael Hellsten, Lärkvägen 29, S-185 00 Vaxholm, both of Sweden

Filed Mar. 31, 1983, Ser. No. 480,729
Claims priority, application Sweden, May 12, 1982, 8202993; Feb. 16, 1983, 8300873
Int. Cl.³ E04C *3/16*
U.S. Cl. 52—364 2 Claims



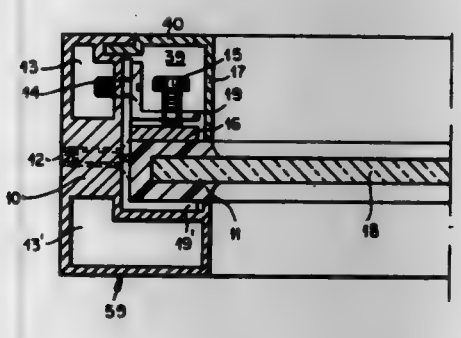
1. A structural support made of sheet metal, for example, for supporting a building panel or other structural member which is to be fastened to a surface on the support by means of screws, nails and like fasteners, said surface having an expanded metal portion, the expanded metal portion having elongated apertures each defined by narrow yieldable bands of metal, each narrow yieldable band of metal having surface portions inclined to the direction in which the fastener is driven to form fastener slide paths which will guide the point of the fastener into an aperture, the smallest dimension of each aperture being less than the diameter of the fastener so the fastener will force apart the metal bands forming an aperture as it is driven into said surface to firmly seat the fastener in the aperture.

4,513,552

SHEET ALUMINUM FIREPROOF CONSTRUCTION ELEMENT

Albert Breithaupt, Cologne, Fed. Rep. of Germany, assignor to Trube & Kings Kommanditgesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 241,381, Mar. 6, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,432
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009729
Int. Cl.³ E04B *1/62*
U.S. Cl. 52—400 17 Claims



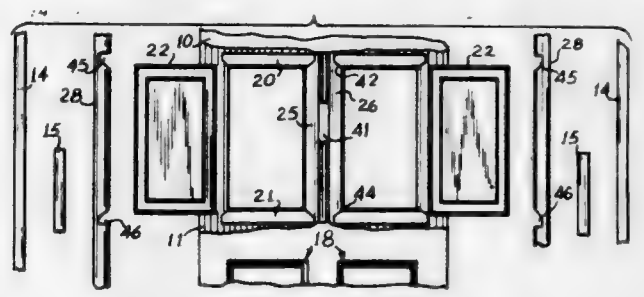
1. A fireproof building element comprising:
a four-sided panel of nonflammable material with two planar surfaces; and
a four-legged framework of nonflammable material surrounding said panel, each side of said panel being engaged by a leg of said framework having a rectangular cross-section divided in the plane of a surface of said panel into two frame portions together defining a recess accommodating an edge of said panel, said leg including at least one aluminum profile forming two opposite faces of said leg remote from said recess and parallel to said panel, at least one of said frame portions forming a chamber offset from said plane and separated from one of said faces by a sheet-aluminum wall having a thickness of at least one millimeter, said leg further having an aluminum core substantially in line with said panel and of greater thickness than the panel.

4,513,553

HOLLOW CORE DOOR AND METHOD FOR MAKING

David J. Barry, 1739 W. Nancy Creek Dr., N.E., Atlanta, Ga. 30319

Filed Jul. 11, 1983, Ser. No. 512,460
Int. Cl.³ E06B *3/70*
U.S. Cl. 52—456 8 Claims



1. A hollow core panel door including a front and rear facing defining cut-outs therein and located for defining a plurality of panels, a panel assembly between said facings for supporting said plurality of panels, said panel assembly including a plurality of top core rails located adjacent to the upper edge of said cut-outs, a plurality of bottom core rails located adjacent to the lower edge of said cut-outs, and a plurality of panel inserts, said top core rails and said bottom core rails defining grooves therein for slidably receiving said panel in sets, said panel assembly further including a first core stile defining a groove therein, said first core stile being located to receive one edge of said plurality of panels, a second core stile parallel to said first core stile and defining a groove receiving another edge of said plurality of panels, said first core stile and said second core stile defining notches therein for receiving the opposite ends fo each of said core rails, said panel door further including outside rails and outside stiles at the edges of said facings.

4,513,554

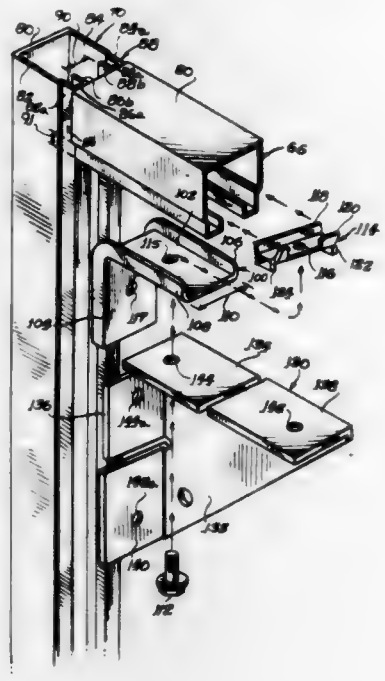
BARN DOOR FRAMING SYSTEM

Larry Johnson, Sterling, and Billie J. Uphoff, Mackinaw, both of Ill., assignors to Lawrence Brothers, Inc., Sterling, Ill.

Filed Dec. 27, 1982, Ser. No. 453,156
Int. Cl.³ E04C *2/38*
U.S. Cl. 52—657 9 Claims

1. A door frame system or a frame-and-panel door construction for a barn, or similar structure, comprising: a plurality of horizontal frame members including vertically spaced top and bottom horizontal frame members, and a plurality of horizontally spaced vertical side frame members joined with said top and bottom frame members to define a generally rectilinear frame structure, all of said frame members comprising elongate, substantially U-shaped channel members which are substantially identical in cross-section, wherein said channel member can be provided by stock material of identical U-shaped cross-section and cut to length as needed, to provide said frame member with each frame member including three continuous sidewalls and an open sidewall, and corner joining means comprising corner brackets for joining respective top and bottom frame members with respective adjacent vertical frame members to define corner joints for said substantially rectilinear frame structure said corner brackets including a pair of transversely disposed sections, each section including a pair of spaced side flanges, said corner brackets being disposed exteriorly of the frame members and at the periphery of a joint between said frame members, with the side flanges of a first one of said transverse sections engaging the opposed outer side walls of one of said frame members, and the side flanges of the

second of said transverse sections engaging the opposed outer side walls of the other of said frame members, and bracing means associated with each said corner joint and disposed



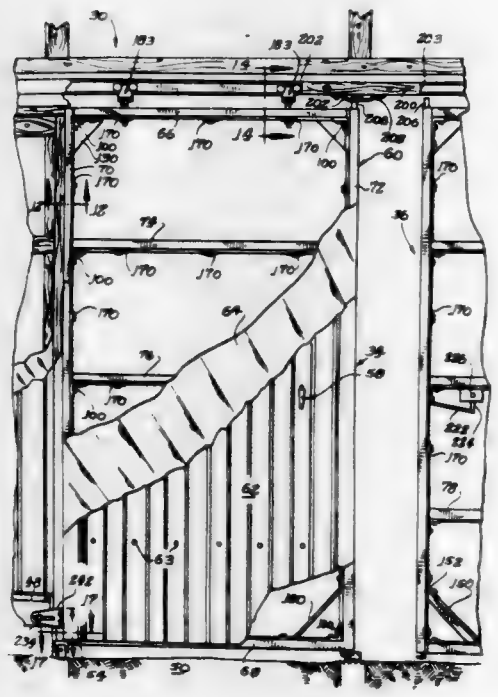
exteriorly of the frame members and cooperating with said corner brackets to further strengthen said joint and assure the substantially rectilinear configuration of said frame.

4,513,555

BARN DOOR FRAMING SYSTEM

Larry Johnson, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Dec. 27, 1982, Ser. No. 453,692
Int. Cl.³ E04C *2/38*
U.S. Cl. 52—657 **7 Claims**



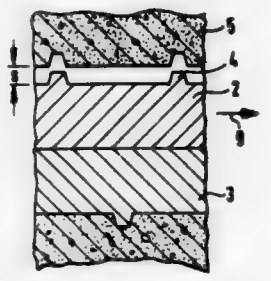
1. A door frame system for a frame-and-panel door construction for a barn, or similar structure, comprising: a plurality of horizontal frame members including vertically spaced top and bottom horizontal frame members, and a plurality of horizontally spaced vertical side frame members joined with said top and bottom frame members to define a generally rectilinear frame structure, said top, bottom and side frame members comprising elongate, substantially U-shaped channel members of similar cross-section, and corner joining means comprising corner brackets for joining respective top and bottom frame members with respective adjacent vertical side frame members to define corner joints for said substantially rectilinear frame structure, each said corner bracket comprising transversely disposed base sections, each said base section having spaced upstanding side flanges thereto to define a pair of similar U-shaped surface configurations for embracing respective outer side faces of the side walls of the respective U-shaped frame members, and clamping means for coupling said corner backets to the respective frame members.

4,513,556

REMOVABLE TENSION MEMBER FOR A GROUT ANCHOR

Thomas Herbst, Wessling, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 310,870
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039080
Int. Cl.³ E04B *1/38;* E02D *5/80*
U.S. Cl. 52—698 **12 Claims**



1. Tension member for a grout anchor such as for temporarily anchoring a structure to the earth, said tension member being insertable into a borehole formed in the earth so that in the inserted position said tension member can be grouted in for affording a temporary anchoring effect and subsequently can be removed from the borehole when the anchoring effect is no longer required, said tension member having an elongated central axis and comprising at least two elongated co-extensive complementary shaped bars extending in the direction of the central axis and capable of transmitting tensile forces and forming, in combination, a regular exterior periphery extending around and spaced radially outwardly from the central axis and defining the outside surface of said shaped bars, each said bar having a first end arranged to be inserted first into the borehole and a second end arranged to receive a pulling force, in the inserted position said bars disposed in spaced relation and having opposed facing first surfaces located inwardly of the exterior periphery directed toward the central axis and spaced outwardly from the central axis, ribs formed on and projecting outwardly beyond the exterior periphery of said bars with said ribs extending across the exterior periphery generally transversely of the elongated direction of said bars so that said ribs have a rectilinear transversely extending dimension, in the inserted position of said tension member forming a temporary anchor said ribs are arranged to be engaged within a settable grout material such as a cement grout, and first means extending in the elongated direction of said bars and having oppositely disposed second surfaces positioned between and being in axially sliding contact with the opposed facing first surfaces of said bars in the inserted position of said tension member for maintaining the facing first surfaces in spaced relation, said first means extending along the central axis, at least one of said first and second surfaces being smooth and flat in the elongated direction of said bars, said first means being slidably removable by rectilinear movement in the direction of the central axis from between said bars and, when removed, providing an open space of the same dimension in the central axis direction between the facing first surfaces and having at least a dimension perpendicular to the central axis direction and extending between the opposed facing first surfaces so that a pulling force exerted on the second end of said

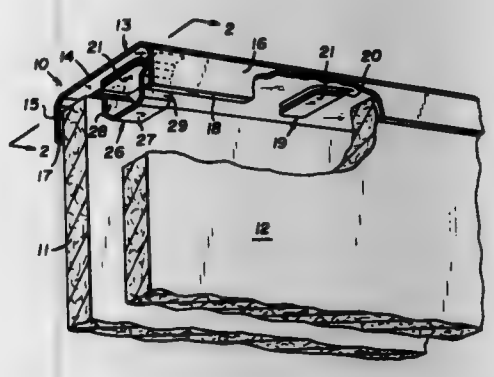
bars one at a time permits said bars to move inwardly toward the central axis freeing said ribs from engagement with the grout material whereby said bars can then be withdrawn from the borehole in the direction of the central axis.

4,513,557

CLIP FOR USE WITH RUNNER AND RUNNER ASSEMBLY INCLUDING THE CLIP

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Feb. 22, 1984, Ser. No. 582,547
Int. Cl.³ E04C *3/08*
U.S. Cl. 52—735 **14 Claims**



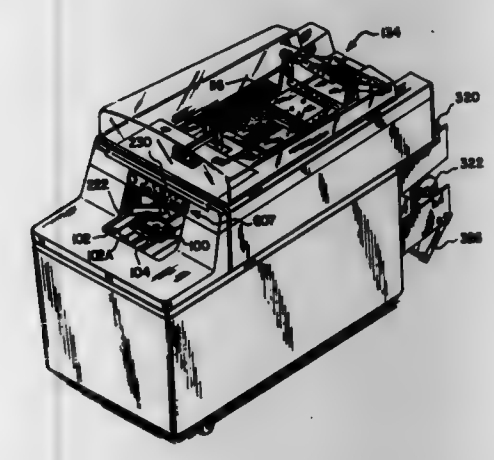
1. A clip adapted to be inserted and retained in a channel-form runner having integrally provided retention means for retaining said clip and cooperating with said runner to retain wall panels, said clip being channel-form and comprising a web, a pair of substantially parallel clip flanges each connected at one edge to an edge of said web, a pair of flat outwardly directed tabs, one extending from the outer edge of each of said clip flanges, and a pair of flat inwardly directed tabs, one tab struck from each of said clip flanges, said outwardly directed tab and said inwardly directed tabs being coplanar and substantially perpendicular to said clip flanges and adapted to engage retention means provided in said runner.

4,513,558

JAM DETECTION AND REMOVAL FOR WRAPPING MACHINE

Fritz F. Treiber, Centerville, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Apr. 26, 1982, Ser. No. 371,685
Int. Cl.³ B65B *11/54, 11/12*
U.S. Cl. 53—77 **5 Claims**



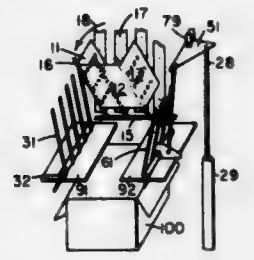
1. In a film wrapping machine including means for positioning a section of film for wrapping a generally rectangular package, a collapsible elevator for raising a package to be wrapped into said section of film, folder means having side underfolders and a rear underfolder for folding the film under three sides of a package while simultaneously collapsing said elevator to transfer support of a package from said elevator to said folder means, and pusher means for completing the wrapping of a package by ejecting the package from the machine, a jam detection and removal improvement comprising a control system including means for monitoring the operation of said wrapping machine to detect a jam condition and for stopping said machine upon detection of a jam condition, said control system further including means for operating said film wrapping machine in a reverse direction in discrete steps within a defined and limited range of the operating cycle of said machine to avoid the elevator collapse portion of said cycle whereby said film wrapping machine is rapidly stopped upon the occurrence of a jam condition and removal of the jam condition is facilitated by incremental reverse operation of said machine.

4,513,559

BAG TRANSPORTER, FOLDER AND LOADER AND METHOD FOR OPERATION

Fox J. Herrington, Jr., Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 329,371, Dec. 10, 1981,. This application Apr. 25, 1983, Ser. No. 488,243
Int. Cl.³ B65B *63/04*
U.S. Cl. 53—429 **34 Claims**



1. A swatter assembly comprising:
a pivotable swatter for moving thin sheet-like articles from a first location to a second location and comprising a rotatable shaft and at least one element projecting from said shaft for contacting and moving said article;
means adjacent said first location for conveying a said article to a position where it is contacted by and moved by said projecting element;
means adjacent said second location for receiving a said article moved by said swatter; and,
means for reciprocally rotating said shaft and comprising;
a driving cylinder including a driving rod;
a swatter arm fixedly connected to said shaft; and
means responsive to a constant velocity movement of said driving rod for moving said swatter arm to forwardly move said swatter toward said receiving means with a movement force which causes said swatter to gradually decelerate to a stop as it approaches said second location.

5. A method for sequentially folding and loading a plurality of thin, limp, sheet-type articles into a receptacle, comprising the following steps:
A. sequentially delivering each article of said plurality of articles to a folding station having a movable platform and a folding member in standby position, said article being gradually decelerated to a stop as it approaches said folding station;
B. folding said article at least once with said folding member, whereby the folded article is transversely spaced from and aligned with the bottom of a receptacle therefor while supported by said platform;
C. removing said platform from said folded article and simultaneously pushing said folded article toward said bottom by propelling said folding member;
D. loading said folded article within said receptacle;
E. returning said folding member to said folding station and to said standby position; and
F. returning said platform to said folding station.

24. An apparatus for sequentially delivering, folding and

loading a plurality of thin, limp, sheet-type articles into a receptacle having a bottom, after said articles have been sequentially conveyed to a pick-up station, and for packing said loaded articles within said receptacle, comprising:

A. a delivery assembly for sequentially delivering said articles to a folding station, comprising:

1. a pivotable swatter, having at least one member which is perpendicularly disposed to the axis of rotation of said swatter, which is disposed and actuated so that said member is pivotally beyond each said article when said article arrives at said pick-up station, whereby said article is lengthwise divided by said member of said swatter into three parts, and

2. a first actuator means for revolving said swatter through an arc, whereby said article is delivered to said folding station with a middle portion supported by said swatter and with first and second end portions partially folded beyond said member of said swatter, said first actuator means gradually decelerating said swatter to a stop as it approaches the end of its movement toward said folding station;

B. a folding assembly for sequentially folding said articles, comprising:

1. a pair of revolvable trays which are disposed in side-by-side relationship to form a platform which is aligned with, parallel to, but spaced from said bottom and is adapted to receive at least said middle portion,

2. a pair of pivotable flippers which are disposed approximately perpendicularly to said platform when in article-receiving position and are spaced apart by about the length of one said part to form said folding station, in combination with said trays, as a U-shaped channel,

3. a second actuator means for pivoting one said flipper through about 90° to lay said first end portion onto said middle portion and for returning said one flipper to said article-receiving position,

4. a third actuator means for pivoting the other said flipper through about 90° to lay said second end portion onto said first end portion, whereby said article is fully folded, and for returning said other flipper to said article-receiving position after said loading and said packing are completed; and

C. a loading assembly for loading said fully folded articles into said receptacle and for packing said articles against said bottom with a selected force, comprising:

1. a tray-removing means for sidewardly moving said pair of trays beyond said folding station,

2. a propulsion means for transversely moving said other flipper and said fully folded article toward said bottom to effectuate said loading and for returning said other flipper to said folding station after said packing, and

3. a packing means for exerting said selected force upon said fully folded article and against said bottom to accomplish said packing before said returning.

4,513,560

SKIN PACKAGING MACHINE WITH INCLINED OVEN

Alexander Hollingsworth, Anderson, S.C., assignor to Nordson Corporation, Amherst, Ohio

Filed Jun. 1, 1981, Ser. No. 265,674

Int. Cl.³ B65B *11/52*

U.S. Cl. 53—509 **1 Claim**

1. A skin packaging machine comprising,

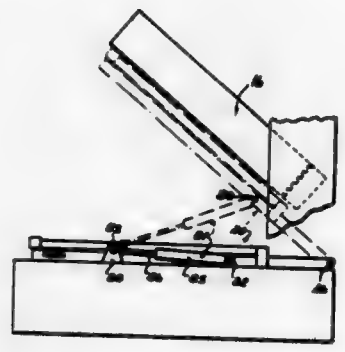
a base having a horizontal foraminous surface for receiving a porous board and an article to be packaged,

an oven mounted above said foraminous surface and having a downwardly-facing planar opening through which heat can be directed, said opening being inclined intermediate a vertical and a horizontal position,

a frame adapted to carry a film between positions adjacent said horizontal surface and said oven opening, respectively,

means for pivoting said frame to said base on a first axis to swing between said two positions,

and a pneumatic spring pivotally connected between said base on a second axis and said frame on a third axis for supporting said frame in an upper position adjacent said oven opening when said frame is swung to said upper position,



said pneumatic spring being movable to a first position holding said frame in an upper position wherein a line between said second and third pivot axes is above said first axis, and to a position holding said frame adjacent said horizontal surface wherein said line is below said first axis, whereby to direct the force of said pneumatic spring in such a way as to hold said frame in the desired position after the frame has been moved to the desired position.

4,513,561

FLEXIBLE SPUR HOLDERS AND SPURS

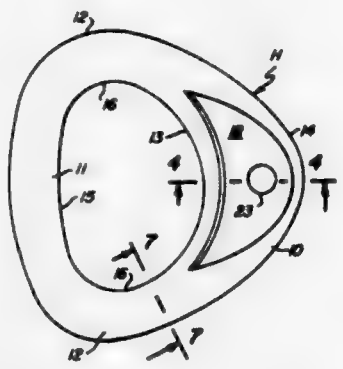
Charles L. Welton, Rte. 2, Box 505 V, Golden, Colo. 80401, and Pershing R. Van Scoyk, 7193 W. 32nd Ave., Wheatridge, Colo. 80033

Continuation-in-part of Ser. No. 289,808, Aug. 3, 1981, Pat. No. 4,443,996. This application Sep. 29, 1982, Ser. No. 428,351

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.³ A43C *17/00*

U.S. Cl. 54—83 R **9 Claims**



8. A spur for mounting on a boot, comprising:

a rear body, sides and front loop moulded integrally;

said front loop having a downward offset connecting said loop with each of said sides;

said sides extending from said front loop rearwardly in spaced, slightly converging relation to said rear body;

said rear body having a concave front surface slanted downwardly and forwardly;

said rear body and a major portion of each of said sides having an inwardly extending, downwardly tapered, integral rib adapted to engage a crevice between the heel and a counter heel of said boot, with said front loop engaging the front of said heel and said sides being stretched between said front loop and said rear body; and

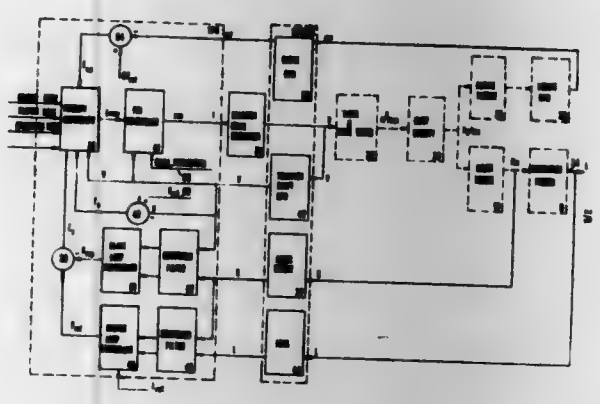
means connected to said rear body for supporting a spur rowel.

4,513,562

COMBINE GROUND SPEED CONTROL SYSTEM

Gilbert J. I. Strubbe, Loppem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Apr. 12, 1984, Ser. No. 599,380
Int. Cl.[3] A01D *41/02*
U.S. Cl. 56—10.2 16 Claims



1. In a combine harvester having an engine, a traction drive transmission, a header, a threshing and separating mechanism, and a machine throughput control system including a machine loading control loop operable to produce a signal representative of the machine loading, an improved throughput control system comprising:

a grain loss control loop operable to produce a signal representative of grain loss;

a grain loss controller operable continuously to establish a causal relationship between machine loading and grain loss, the machine loading signal, the causal relationship current with that machine loading signal, and a reference loss signal being applied to the grain loss controller to derive a reference machine loading signal therefrom; and

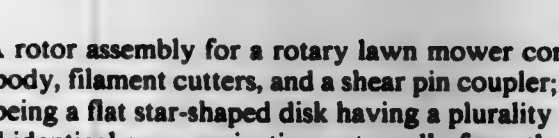
means for algebraically summing the machine loading signal and the reference machine loading signal to produce a machine loading error signal which is used to control machine throughput.

4,513,563

LAWN MOWER ROTARY ASSEMBLY

Carl A. Roser, Lake City, Fla., and Arthur J. Ehrler, Mission, Canada, assignors to Carl A. Roser, Kingsport, Tenn.

Filed Feb. 23, 1983, Ser. No. 469,170
Int. Cl.[3] A01D *55/18*
U.S. Cl. 56—295 16 Claims



1. A rotor assembly for a rotary lawn mower comprising a rotor body, filament cutters, and a shear pin coupler; said rotor body being a flat star-shaped disk having a plurality of equally spaced identical arms projecting outwardly from the center of said rotor, each of said arms having an arcuate leading edge and an arcuate trailing edge connecting the center of the rotor body to respective ends of the outer periphery of the rotor body, each of said arms including near its outer periphery a lug for gripping one end of a short length of filament, each said lug being located on said trailing edge adjacent the outer edge of respective said arm, each said lug having a passageway therethrough in the radial direction with respect to said rotor body for passing the short length of filament therethrough with the filament being disposed in generally the same arcuate direction as said arcuate trailing edge during rotation of said rotor assembly; said coupler being a disk fitting into a central counterbore in said rotor body and having two cylindrical members projecting upwardly from the upper surface of said disk and symmetrically positioned diametrically opposite from each other, the said menbers mating with two recesses in said counterbore, said disk having a central hub portion projecting upwardly for accommodating a drive shaft of a rotary lawn mower, said cylindrical members being sheared when said rotor engages an immovable object to minimize damage to said rotor and a motor driving same.

4,513,564

YARN

Magda Seehawer, Sonnhalde 9, 7400 Tübingen 1, Fed. Rep. of Germany

Filed Feb. 15, 1984, Ser. No. 580,545
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 8317790[U]
Int. Cl.[3] A41G *9/00;* D02G *3/00*
U.S. Cl. 57—206 10 Claims



1. A yarn, comprising at least two individual threads twisted with one another along their entire length, and a plurality of feathers having quill portions and feather portions and inserted into said twisted threads at predetermined intervals from each other and such that the quill portions of the feathers are fully inserted into the twisted threads and the feather portions thereof project outwardly from the threads to form a fleecy feather yarn.

4,513,565

SEWING THREAD

Takao Negishi, and Teiryo Kojima, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 292,424, Aug. 14, 1981,. This application Feb. 1, 1983, Ser. No. 463,030
Int. Cl.[3] D02G *1/02, 3/28, 3/46*
U.S. Cl. 57—236 14 Claims



1. A sewing thread (Y) comprising at least one false twisted polyester multifilament yarn (X) having an intrinsic viscosity (IV) of between 0.65 and 1.20 determined at a temperature of 25° C. in O-chlorophenol solution having a concentration of 8% by weight, wherein an individual constituent filament of said multifilament yarn (X) has portions partially interlaced with other filaments constituting said multifilament yarn (X) along the length-wise direction thereof and a part of the individual constituent filament of said multifilament yarn (X) is protruded from the surface of said multifilament yarn (X); and the torque of said sewing thread (Y), measured by each of the following two measuring steps, is at most 4 turns/50 cm, in spite of the fact that substantially all filaments constituting said sewing thread (Y) have been subjected to the same false twisting, wherein the torque is determined using the following procedure;

the number of turns of a loop around a vertical axis until said loop becomes stationary is counted in the following two steps (1) and (2):

(1) sewing thread (Y) is formed in a single loop having a circumference of 1 m and said loop is suspended by a thread made of the same material; and

(2) a weight of 1 gram/denier is applied to the lower end of said loop via a thread made of the same material and said weight is then removed from said loop.

4,513,566

RESILIENT SUPPORT FOR A HIGH-SPEED ROTOR

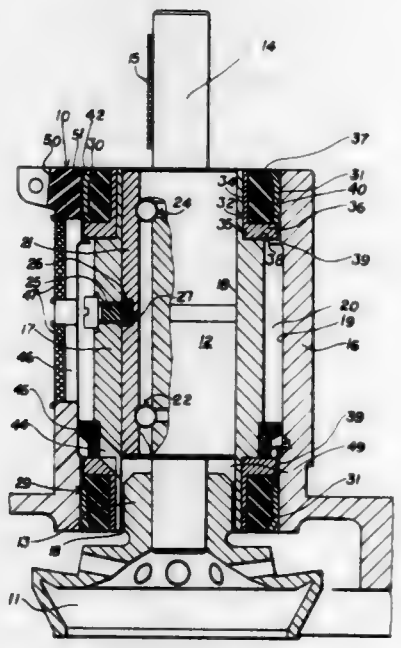
Zdenek Rajsigl, Brno; Milos Mladek; Michal Blasko, both of Usti n/Orl., and Josef Smatana, Bytca, all of Czechoslovakia, assignors to ZVL Vyzkumny ustav pro valiva loziska Brno koncernova ucelova organizace, Brno, Czechoslovakia

Filed May 31, 1983, Ser. No. 499,177

Claims priority, application Czechoslovakia, May 31, 1982, 3984-82

Int. Cl.³ D01H *7/882*

U.S. Cl. 57—406 **3 Claims**



1. A resilient support for a high-speed rotor mounted upon a rotor shaft for the spinning mechanism of an open-end spinning machine, said support including a housing for the spinning mechanism, said housing having a generally circular cylindrical passage therethrough, a central sleeve mounted within the passage in the housing coaxial thereof, the rotor shaft being disposed centrally within the central sleeve and coaxial therewith, a double-row rolling bearing for the rotor shaft, said bearing being disposed between the central sleeve and the rotor shaft, the rows of the rolling bearing being spaced substantially from each other along the length of the rotor shaft, resilient damping elements disposed near the respective ends of the central sleeve and between the central sleeve and the housing, the rotor having a hub with a circular cylindrical portion which is disposed within and end of the passage in the housing with a clearance between it and the wall of the portion of the passage through the housing in which it is disposed, annular seats at the opposite ends of the central sleeve receiving the resilient damping elements, the portion of the bore in the central sleeve disposed at the end thereof adjacent to the rotor having a diameter which is the same as the outer diameter of the double-row rolling bearing, the resilient damping elements each having an annular radially inner part and an annular radially outer part, there being an annular radially resilient intermediate part disposed between and bonded to the inner and outer parts of the resilient elements, the resilient damping means being provided with transverse shoulders which abut the end walls of the respective seats in the central sleeve, the housing having end orifices, said shoulders having their diameters reduced by the height of a limiting gap between them and the diameter of the end orifices of the housing of the spinning mechanism.

4,513,567

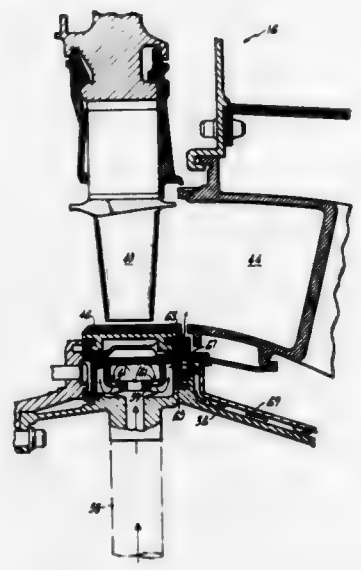
GAS TURBINE ENGINE ACTIVE CLEARANCE CONTROL

Paul J. Deveau, Ellington; Paul B. Greenberg, Manchester, and Roger E. Paolillo, Vernon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 317,633, Nov. 2, 1981, abandoned. This application Feb. 3, 1984, Ser. No. 576,770

Int. Cl.³ F02G *3/00*; F01D *11/08*

U.S. Cl. 60—39.02 **1 Claim**



1. A method of controlling the clearance between opposing seal elements of the rotor assembly and the stator assembly including supporting structure of a dual rotor gas turbine engine having high pressure compressor and high pressure turbine, low compressor and high pressure turbine rotors comprising the steps of:

flowing relatively low pressure, low temperature air from the compressor of the engine to a modulating and mixing valve;

flowing relatively high pressure, high temperature air from the compressor of the engine to said modulating and mixing valve;

mixing said relatively low pressure, low temperature air and said relatively high pressure, high temperature air at the modulating valve in proportions functionally related to engine operating condition to produce a mixture of air having a desired temperature, pressure and flow rate at that operating condition for thermally modifying the diameter of the turbine case adjacent said high pressure turbine;

flowing said mixed air to the high pressure turbine section of the engine and against the case thereof for thermally varying the diameter of said case to achieve control over clearances between the rotor and stator assemblies of said high pressure turbine and admitting the effluent mixed air from said case internally thereof so as to cool said supporting structure;

flowing relatively low pressure, low temperature air from the compressor of the engine to a second modulating and mixing valve;

flowing relatively high pressure, high temperature air from the compressor of the engine to said second modulating and mixing valve;

mixing said relatively low pressure, low temperature air and said relatively high pressure, high temperature air at the second modulating valve in proportions functionally related to engine operating condition to produce a mixture of air having a desired temperature, pressure and flow rate at that operating condition for thermally modifying the diameter of the turbine case; and

flowing said air mixed at the second modulating valve to the case of the low pressure turbine at a location downstream of the location to which the air mixed at the first modulating valve was flowed and against the case at that downstream location for thermally varying the diameter of the case at that location.

4,513,568

METHOD FOR THE TRANSFORMATION OF THERMAL ENERGY INTO MECHANICAL ENERGY BY MEANS OF A COMBUSTION ENGINE AS WELL AS THIS NEW ENGINE

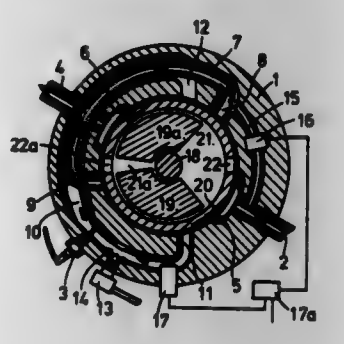
Roger Bajulaz, 825 Las Palmas Dr., Hope Ranch, Santa Barbara, Calif. 93110

Filed Nov. 18, 1982, Ser. No. 442,799

Claims priority, application Switzerland, Sep. 24, 1982, 5648/82

Int. Cl.³ F02G *1/00*

U.S. Cl. 60—39.6 **27 Claims**



1. Method for the transformation of thermal energy into mechanical energy by means of a combustion engine comprising a body provided with admission and exhaust ducts, as well as at least one member movable within said body defining at least one chamber having a variable volume, comprising establishing a cycle of more than four strokes, at least four of these strokes comprising:

a. compressing air contained in the variable volume chamber, through a reduction of the volume of said chamber, into a preheating chamber;

b. expanding the variable volume chamber through the expansion of the hot air contained in the preheating chamber;

c. compressing, through a reduction of the volume of the variable volume chamber, the hot expanded air in said variable volume chamber, into a combustion chamber in which fuel is introduced and causing the combustion of the mixture thus obtained; and

d. expanding the variable volume chamber through the expansion into said chamber of the combustion gases at high temperature and high pressure from the combustion chamber.

4,513,569

COMBUSTION LINER SUPPORT FOR COMBUSTION APPARATUS

Masafumi Sasaki, Zushi; Susumu Kashiwagi, and Takanori Hiyoshi, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 7, 1983, Ser. No. 464,482

Claims priority, application Japan, Feb. 15, 1982, 57-21316

Int. Cl.³ F02C *7/20*

U.S. Cl. 60—39.31 **5 Claims**

1. A combustion liner support for a combustion apparatus having a combustion outer casing and a fuel injection nozzle attached thereto, comprising:

a one-piece annular support bracket encircling said fuel injection nozzle and having an end secured to said combustion outer casing and the other end receiving therein an annular axial end of a combustion liner;

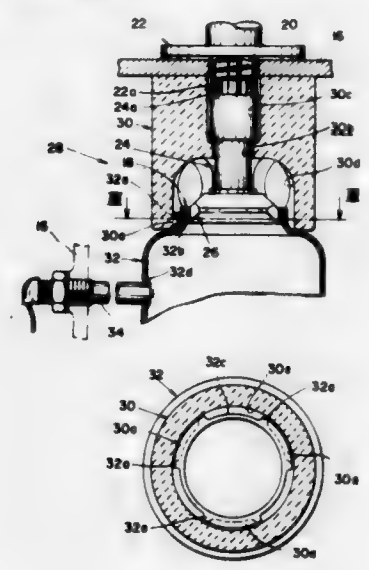
means for providing a plurality of outward projections to said combustion liner end;

means for providing a plurality of inward projections to said other end of said annular supporting bracket;

said combustion liner outward projections being releasably engageable with said supporting bracket inward projections when said combustion liner is inserted into said other end of said support bracket;

a pusher ring cooperating with said supporting bracket inward projections to interpose therebetween said combustion liner outward projections; and

biasing means for resiliently urging said pusher ring against said supporting bracket inward projections so that said combustion liner is resiliently supported on said combustion liner outer casing;



in which said fuel injection nozzle includes a slidable outer sleeve slidably received in a nozzle holder attached to said combustion outer casing, said injection nozzle outer sleeve has a rim adjacent the combustion liner side end thereof, said combustion apparatus further including a swirler of annular configuration fitted on said combustion liner side end of said injection nozzle outer sleeve in a manner to abut at the inner peripheral portion thereof onto said rim to that it is movable together with said injection nozzle outer sleeve, and in which said pusher ring is provided to the outer periphery of said swirler and formed integral therewith, said pusher ring being in the form of having a cylindrical body portion and an annular flange portion extending radially outwardly.

4,513,570

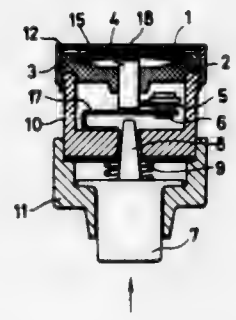
MANUAL RESET TYPE BIMETAL THERMOSTAT

Yasuhisa Yoshida, and Toshio Ohi, both of Tokyo, Japan, assignors to Nippon GT Corporation, Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 487,931

Int. Cl.³ F03G *7/06*

U.S. Cl. 60—529 **5 Claims**



1. A manual reset type bimetal thermostat where a reversible plate is substantially contiguous with a disc type bimetal which can reverse in response to temperature change, characterized in that at least either of said reversible plate and said bimetal is

provided with an air passage hole, said air passage hole being substantially free from solid structure in said thermostat.

4,513,571

METHOD OF SUPERCHARGING INTERNAL COMBUSTION ENGINES USING EXHAUST TURBOCHARGERS WITH VARIABLE EXHAUST GAS SWALLOWING CAPACITY

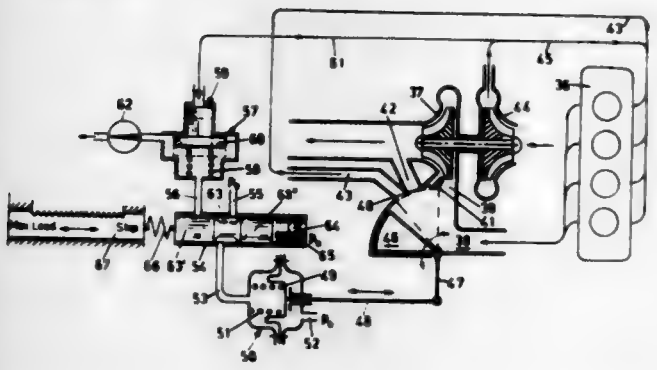
Ernst Jenny, Baden; Andreas Mayer, Niederrohrdorf, and Peter Moser, Boppelsen, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 16, 1982, Ser. No. 418,601

Claims priority, application Switzerland, Sep. 22, 1981, 6093/81

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—603 **7 Claims**



1. A method for supercharging an internal combustion engine of a vehicle by an exhaust gas turbocharger having a plurality of engine exhaust gas paths which include a turbine inlet path of variable area for directing at least some engine exhaust to a turbine of said turbocharger and a waste gate duct for selectively directing at least some engine exhaust so as to bypass said turbine, said waste gate duct serving to blow down surplus exhaust gas from said engine under a high engine load, which comprises:

operating the engine as a naturally aspirated engine in a lower load region;

holding fully open said engine exhaust gas paths once the engine is operating in said lower load region;

closing said exhaust gas paths to a minimum operational value of flow area such that said variable turbine inlet area has a minimum operational value and the remainder of said plurality of exhaust gas paths are closed when a medium load operating condition of said engine is attained; and

continuously opening the flow area of said variable turbine inlet area and subsequently opening a section of the waste gate duct upon the occurrence of an increasing load on the engine until a maximum predetermined permissible mean combustion pressure is attained.

4,513,572

METHOD OF RECOVERING ENERGY IN A POWER GENERATOR AND POWER GENERATOR FOR CARRYING OUT THE SAID METHOD

Pierre L. Bonnaud, Carrieres sur Seine, France, assignor to Societe d'Etudes de Machines Thermiques, S.E.M.T., Carrieres sur Seine, France

Filed Mar. 29, 1983, Ser. No. 479,995

Claims priority, application France, Apr. 12, 1982, 82 05800

Int. Cl.³ F01K *23/10*

U.S. Cl. 60—618 **5 Claims**

1. A method for recovering energy from exhaust gases discharged from an exhaust manifold of a turbocharged internal combustion engine, the method including delivering a flow of exhaust gases from the exhaust manifold of the engine to an inlet of an exhaust gas turbine, exiting a flow of the exhuast gases from an outlet of the exhaust gas turbine, driving a supercharging air compressor by the exhaust gas turbine, delivering a flow of compressed air from an outlet of the supercharging air compressor to an intake manifold of the engine, withdrawing a portion of the total flow of compressed air from the outlet of the compressor, and introducing the withdrawn portion of the flow of compressed air into the flow of exhaust gases before exit of the exhaust gases from the outlet of the exhaust gas turbine, wherein the improvement comprises:

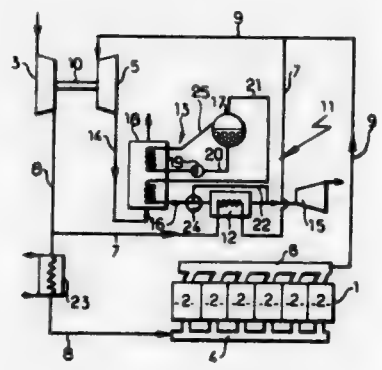
passing the exhaust gases, after their exit from the outlet of the exhaust gas turbine, through an auxiliary fluid vapor generator in heat exchanging relation to an auxiliary fluid in said vapor generator;

delivering a flow of vaporized auxiliary fluid from an auxiliary fluid outlet of the auxiliary fluid vapor generator;

passing said flow of vaporized auxiliary fluid in heat exchanging relation to the withdrawn portion of the flow of compressed air during at least low load operation of the engine for heating said withdrawn portion of the flow of compressed air before the latter is introduced into the flow of exhaust gases; and

then delivering said flow of vaporized auxiliary fluid to an inlet of an auxiliary vapor turbine.

4. Apparatus for recovering energy from exhaust gases discharged from an exhaust manifold of a supercharged internal combustion engine including a supercharging air compressor having an outlet connected to an intake manifold of the engine, an exhaust gas turbine drivingly coupled to the supercharging air compressor, the exhaust gas turbine having an inlet connected to the exhaust manifold of the engine and an outlet, a bypass passage connected from the outlet of the supercharing air compressor to the exhaust gas turbine upstream of the outlet of said turbine for withdrawing a portion of the flow of compressed air from the supercharging air compressor and introducing said withdrawn portion into the flow of exhaust gases, and an energy recovery device having an exhaust gas inlet connected to the outlet of the exhaust gas turbine, wherein the improvement comprises:



said energy recovery device comprises an auxiliary fluid vapor generator having an exhaust gas side disposed in heat transferring relation to an auxiliary fluid side, said exhaust gas inlet of the energy recovering device communicating directly with the exhaust gas side, said auxiliary fluid side of the vapor generator having an auxiliary fluid inlet, for connection to a source of auxiliary fluid, and an auxiliary fluid vapor outlet;

an auxiliary vapor turbine having an inlet coupled to the auxiliary fluid vapor outlet of the auxiliary fluid vapor generator via an auxiliary fluid conduit; and

a heat exchanger having a heating fluid side inserted in the auxiliary fluid conduit and a heated fluid side inserted in said bypass passage, for transferring heat from a flow of vaporized auxiliary fluid to the withdrawn portion of the flow of compressed air before delivery of the vaporized auxiliary fluid to the inlet of the auxiliary vapor turbine.

4,513,573

SYSTEM FOR TREATING AND RECOVERING ENERGY FROM EXHAUST GASES

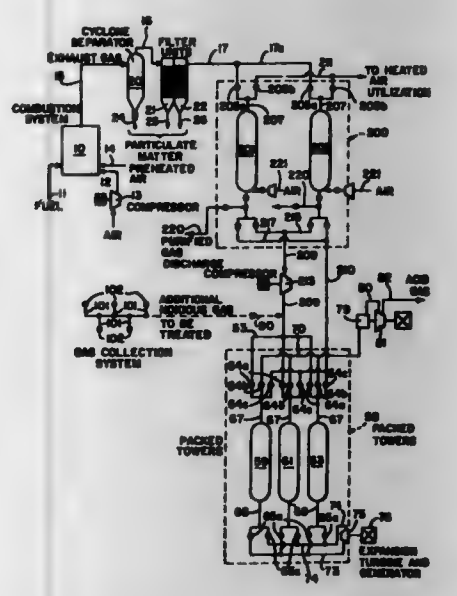
Harald F. Funk, 68 Elm St., Murray Hill, N.J. 07974

Continuation of Ser. No. 205,348, Nov. 10, 1980, Pat. No. 4,411,136, and a continuation-in-part of Ser. No. 962,103, Nov. 17, 1978, Pat. No. 4,265,088, which is a continuation-in-part of Ser. No. 674,219, Apr. 6, 1976, Pat. No. 4,126,000, which is a continuation-in-part of Ser. No. 565,045, Apr. 4, 1975, Pat. No. 3,970,524, which is a continuation-in-part of Ser. No. 486,562, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 252,610, May 12, 1972, abandoned. This application Sep. 9, 1983, Ser. No. 530,650

The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.

Int. Cl.[3] F01K *21/00, 3/00*

U.S. Cl. 60—648 6 Claims



1. In a power generating system for producing energy from steam, including furnace means for generating thermal energy-containing hot gases containing environmentally harmful components and boiler means for utilizing the thermal energy of the hot gases for converting feed water to steam, the improvement comprising:

boiler means consisting essentially of economizer means, superheater means, reheater means, convection and radiation heater means, said hot gases containing environmentally harmful components exiting said boiler means after passage through said economizer means;

means for treating said hot gases containing environmentally harmful components to separate said components and recover at least a portion of the residual thermal energy of said gases; and

means for directing said hot gases to said treating means from said economizer means without substantial cooling therebetween;

said treating means comprising

(a) separator means for removing particulate matter from said hot gases;

(b) first heat exchange means for passing said gases into direct heat exchange relationship with a relatively cool, relatively high heat capacitance solid material to exchange heat between said gases and said solid material, whereby said hot gases are passed through said first heat exchange means to concurrently cool said gases and heat said solid material;

(c) means for separating environmentally harmful components of said cooled gases from the balance thereof by separating the cooled gases into less volatile and more volatile components;

(d) second heat exchange means for passing a fluid into direct heat exchange relationship with a relatively hot, relatively high heat capacitance solid material to exchange heat between said fluid and said material, whereby a heat transfer fluid is passed through said second heat exchange means to concurrently cool said solid material and heat said fluid.

4,513,574

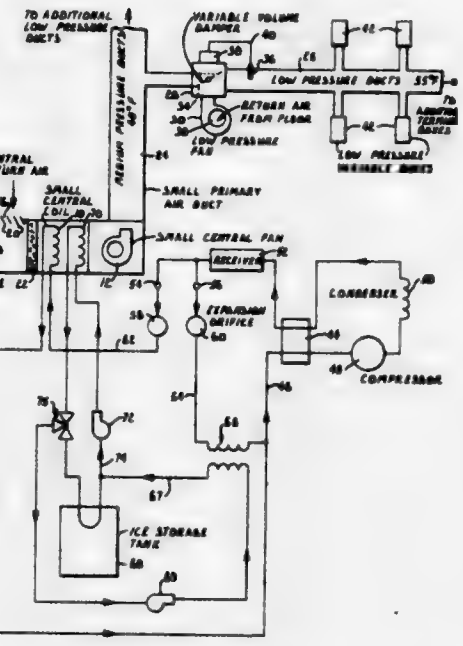
LOW TEMPERATURE AIR CONDITIONING SYSTEM AND METHOD

Norman G. Humphreys, Kansas City, Mo., and Raymond H. Dean, Shawnee Mission, Kans., assignors to Tempmaster Corporation, North Kansas City, Mo.

Filed Apr. 30, 1984, Ser. No. 605,272

Int. Cl.[3] F24F *13/00, 7/00*

U.S. Cl. 62—59 6 Claims



1. In a system for distributing conditioned air in a building at a preselected temperature, the combination of:

a primary air distribution duct extending in the building;

a primary cooling coil for cooling air to a low temperature below said preselected temperature;

a secondary cooling coil;

a refrigeration system for cooling said primary coil, said refrigeration system including a compressor having a suction side and a discharge side and a condenser connected with the discharge side of said compressor for condensing refrigerant compressed by the compressor;

an ice storage tank for holding ice;

a heat exchanger arranged in parallel with said primary cooling coil to produce a fluid temperature at or below 32° F. when refrigerant is directed through said heat exchanger at a temperature below 32° F.;

valve means for directing refrigerant to said primary coiling coil or to said heat exchanger;

a fluid line passing through said heat exchanger and said ice storage tank;

pump means for pumping fluid through said fluid line;

a cold water line passing through said ice storage tank and said secondary cooling coil;

pump means for pumping water through said storage tank and secondary coil to cool the latter, whereby the refrigerant can be directed through said heat exchanger to produce ice during off peak times and the refrigerant can be directed to said primary cooling coil during peak times and said secondary coil can receive cold water during peak times to provide supplemental cooling and to permit a higher temperature on the suction side of the compressor during peak times;

a central fan operable to force air past said primary cooling coil and said secondary cooling coil and through said primary duct at a preselected pressure level, thereby supplying conditioned air through the primary duct at said low temperature and said preselected pressure level;

a plurality of branch ducts each connected with said primary duct to receive the low temperature air therefrom, each branch duct serving a space in the building and extending to said space to deliver conditioned air thereto;

a low pressure fan for each branch duct having an inlet side receiving return air from the space served by the branch duct and a discharge side delivering the return air to the branch duct for mixing therein with the low temperature air, each low pressure fan delivering air downstream therefrom in the branch duct at a low pressure level below said preselected pressure level;

means in each branch duct for controlling the relative amounts of low temperature and return air mixed in the branch duct in a manner to maintain the air downstream from the low pressure fan substantially at said preselected temperature; and

a plurality of variable volume outlets for each branch duct located downstream from the low pressure fan for discharging air at said preselected temperature to the space served by the branch duct, each outlet being individually variable to vary the volume rate of discharge of the air entering the space through the variable volume outlet.

4,513,575

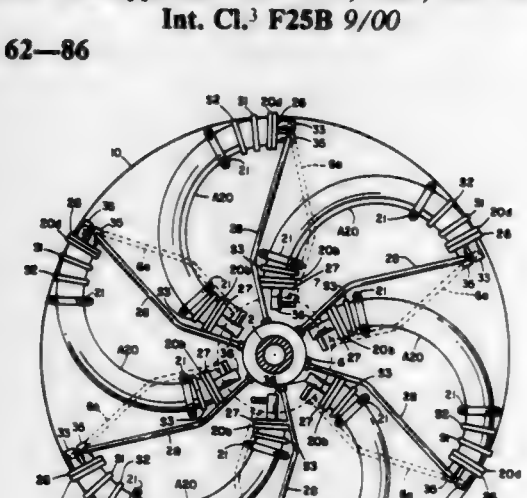
CENTRIFUGAL PISTON EXPANDER

Edwin W. Dibrell, San Antonio, Tex., assignor to Centrifugal Piston Expander, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 436,412, Oct. 25, 1982, Pat. No. 4,449,379, and Ser. No. 451,606, Dec. 20, 1982, Pat. No. 4,420,945. This application Nov. 22, 1983, Ser. No. 554,408

Int. Cl.³ F25B *9/00*

U.S. Cl. 62—86 **9 Claims**



1. Apparatus for extracting energy from a pressured gas comprising: a body rotatable about an axis; power means for rotating said body; a cylinder element secured to said rotating body; said cylinder element defining an elongated fluid pressure chamber; a free piston movable longitudinally in said fluid pressure chamber; said cylinder element being fixed on said rotatable body with the path of movement of said free piston extending from a position proximate to said axis to a position remote from said axis; whereby centrifugal force will move said free piston to said remote position; said path of movement being substantially non-radially disposed relative to said axis of rotation; inlet valve means communicating between a source of pressured gas and the remote end of said cylinder element; means for opening said inlet valve means only when said free piston is adjacent said remote position to receive a charge of pressured gas in said fluid pressure chamber, thereby moving said free piston inwardly toward said rotational axis; exhaust valve means communicating with said fluid pressure chamber and operable only when said free piston approaches said proximate position; and means on the radially inner end of each said cylinder element for opposing the inward movement of said free piston by a trapped gas column to thereby stop the inward movement of said free piston.

4,513,576

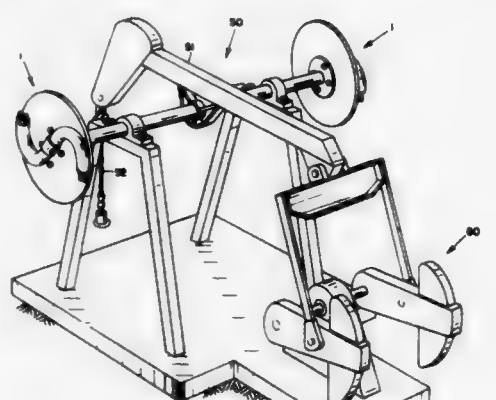
GAS PRESSURE OPERATED POWER SOURCE

Edwin W. Dibrell, and Charles D. Wood, both of San Antonio, Tex., assignors to Centrifugal Piston Expander, Inc., San Antonio, Tex.

Filed Dec. 12, 1983, Ser. No. 560,305

Int. Cl.³ F25D *9/00*

U.S. Cl. 62—87 **21 Claims**



1. Apparatus for producing oscillating movement of a body mounted for oscillating movement about an axis; cylinder means defining an elongated fluid pressure chamber having a longitudinal axis; means for rigidly mounting said cylinder means on said body with one end of said fluid pressure chamber being radially remote from said oscillation axis; said longitudinal axis being substantially non-radial throughout its length; said fluid pressure chamber having a uniform cross-section throughout its length; a free piston mounted in said fluid pressure chamber for sliding sealable movement throughout the length thereof; first and second valve means responsive to the position of said free piston for respectively supplying pressured gas to the ends of said fluid pressure chamber; third and fourth valve means responsive to the position of said free piston for respectively exhausting expanded gas from said fluid pressure chamber; thereby causing said piston to continuously reciprocate from one end to the other of said fluid pressure chamber and produce continuous oscillating movements of said body about said axis.

4,513,577

EVAPORATOR AND METHOD OF OPERATION

Neill R. Wilson, and Susan E. Wilson, both of P.O. Box 538, Berryville, Va. 22611

Filed Nov. 19, 1982, Ser. No. 443,025

Int. Cl.³ F25D *17/06*; F28D *3/00*

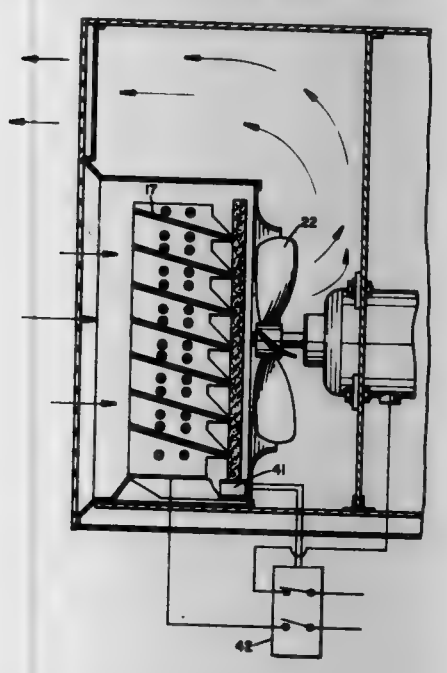
U.S. Cl. 62—91 **12 Claims**

1. A method of cooling moisture containing air comprising:

passing said air over a metal surface which is cooled by evaporation of a refrigerant, whereby the moisture condenses on said surface;

conducting said condensate to a point on the downstream air side of said surface;

thereafter dispersing said condensate whereby said condensate re-evaporates into said air; and,



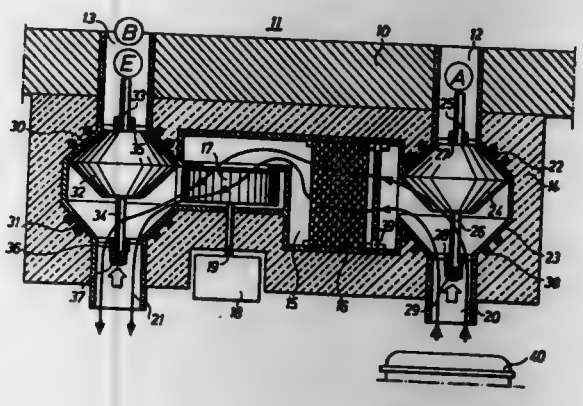
stopping the evaporation of said refrigerant for a period of time when an excess of condensate builds up on the downstream air side of said surface.

4,513,578

WEIGHT-MONITORED AIR-CONDITIONER CHARGING STATION

Robert H. Proctor, Cockeysville, and Arthur G. Hobbs, Jr., Hampstead, both of Md., assignors to Murray Corporation, Cockeysville, Md.

Filed May 23, 1983, Ser. No. 497,167
Int. Cl.³ F25B *45/00*
U.S. Cl. 62—149 **12 Claims**



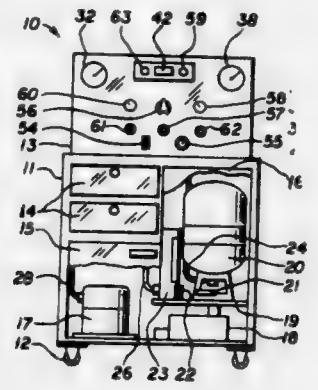
1. In an air-conditioner charging station, the combination of:
(a) a powered vacuum pump for evacuation of an air-conditioner;
(b) a reservoir of oil under pressure,
(c) a reservoir of refrigerant under pressure,
(d) conduit means and electrically operated valve means for selectively connecting said pump and each of said reservoirs to the air-conditioner to be serviced,
(e) weighing means, common to both said reservoirs, for sensing the combined weight thereof and for producing an output signal proportional to the combined weights of said reservoirs,
(f) electronic sequencing means operatively associated with said valve means and said weighing means for receiving said output signal for monitoring weight loss from said reservoirs as oil or refrigerant is discharged therefrom and for generating signals for controlling said valve means,
(g) adjustable weight differential input means operatively connected to said sequencing means for introducing into said sequencing means selected values representative of preselected weight of refrigerant and oil to be discharged from said reservoirs, and
(h) means for initiating operation of said sequencing means to receive and monitor said weighing means output signal and to provide signals to said control valve means for sequentially charging a preselected weight of oil from said oil reservoir and then a preselected weight of refrigerant from said refrigerant reservoir into the air-conditioner.

4,513,579

METHOD AND ARRANGEMENT FOR MAINTAINING A FROST-FREE FREEZER

Karl F. Andersson, Åkersberga, and Bolik A. G. Eriksson, Johanneshov, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

PCT No. PCT/SE82/00284, § 371 Date May 16, 1983, § 102(e) Date May 16, 1983, PCT Pub. No. WO83/01293, PCT Pub. Date Apr. 14, 1983
PCT Filed Sep. 16, 1982, Ser. No. 503,154
Claims priority, application Sweden, Sep. 29, 1981, 8105757
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—176.2 **8 Claims**



1. An arrangement in a freezer having a chamber in which refrigerated surfaces collect frost comprising: a duct, a moisture-absorbing regenerable filter mounted in said duct, a fan in said duct, said fan being arranged to circulate freezing chamber air through said filter in order to lower the humidity of the freezing chamber air and to counteract frost forming therein, a plurality of communication channels beetween said freezing chamber and said duct and between said duct and ambient air, and valve means arranged to open and close selected communication channels forming a first flow path between said freezing chamber and said duct, and to selectively bring said duct into communication with ambient air through other of said communication channels forming a second flow path, said fan being arranged to circulate said ambient air through the duct and thereby through the filter, and means for heating said filter to regenerate it when said ambient air is circulating through said filter, said heating means being arranged ahead of said valve means in said second flow path.

4,513,580

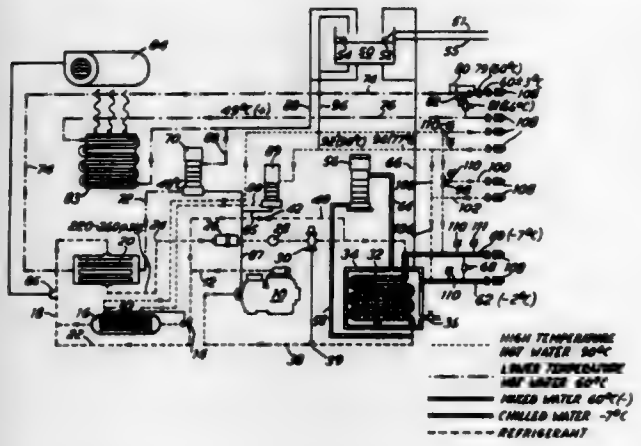
COMBINED REFRIGERATION AND HEATING CIRCUITS

Donald C. Cooper, 124B Reigate Rd., Ewell, Surrey, England

Filed Oct. 18, 1983, Ser. No. 543,072
Claims priority, application United Kingdom, Oct. 21, 1982, 8230081
Int. Cl.³ F25B *39/04*
U.S. Cl. 62—183 **8 Claims**

1. A combined refrigeration and heating circuit comprising a refrigerant, a compressor for compressing the refrigerant in gaseous form, a condenser, means for circulating the compressed refrigerant to the condenser where it is condensed to a liquid, an evaporator, means for circulating the liquid refrigerant to the evaporator where it becomes a gas, means for circulating the evaporated refrigerant gas back to the compressor, a

heating circuit for circulating heat-transfer fluid heated by heat taken from the condenser, sensing means for sensing the amount of heat being taken from the condenser, cooling means responsive to said sensing means for additionally cooling the refrigerant to ensure complete condensation thereof if insufficient heat is being taken from the condenser to allow condensation of refrigerant to be completed therein, a de-superheater



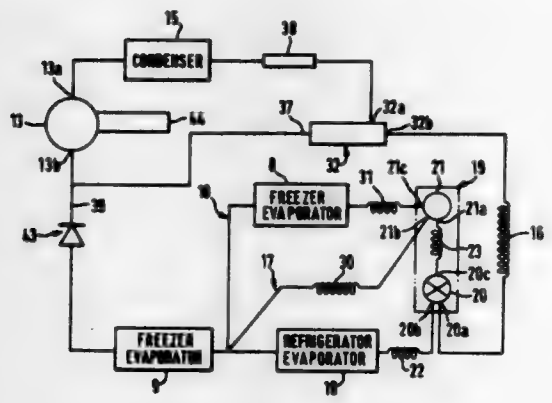
arranged between the compressor and the condenser and circulation means for circulating heat transfer fluid past the desuperheter to heat it to a temperature higher than the temperature of the heat-transfer fluid heated by the condenser, wherein the refrigerant is different from that for which the compressor was designed and chosen to obtain a higher condensation temperature.

4,513,581

REFRIGERATOR COOLING AND FREEZING SYSTEM

Norihiro Mizobuchi; Keiji Furukawa, and Takeshi Motoyama, all of Osaka, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 24, 1984, Ser. No. 573,345
Claims priority, application Japan, Mar. 9, 1983, 58-38728
Int. Cl.[3] F25B *41/00*
U.S. Cl. 62—197 **6 Claims**



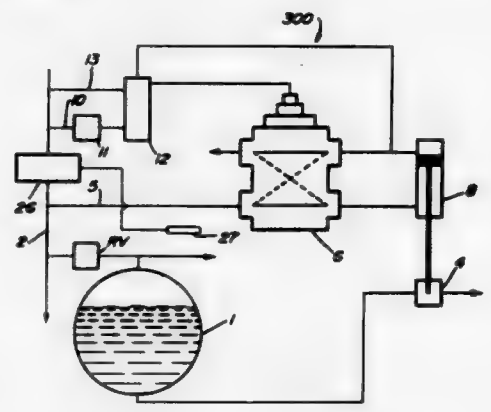
1. A refrigerator cooling and freezing system comprising:
a compressor;
a condenser connected to said compressor for condensing refrigerator from said compressor;
a refrigerator evaporator connected to said condenser for receiving flow of refrigerator to cool said refrigerant compartment;
a first freezer evaporator serially connected to said refrigerator evaporator and to said compressor so that refrigerator flowing therethrough is returned to said compressor;
means defining a first bypass path in parallel with said refrigerator evaporator;
a second freezer evaporator;
means defining a second bypass path in parallel with said refrigerator evaporator and said first path and directing flow through said second freezer evaporator;
selection means for controlling flow of refrigerator through said refrigerator evaporator, said first bypass path or said second bypass path;
a differential pressure regulating valve connected between said condensor and said refrigerator evaporator and non-return valve connected between said first freezer evaporator and compressor.

4,513,582

EXPENDABLE REFRIGERATION CONTROL

David Garside, Rosemere, Canada, assignor to 128980 Canada Inc., Claire, Canada

Filed May 11, 1982, Ser. No. 377,068
Int. Cl.[3] F25B *41/04, 19/00*
U.S. Cl. 62—222 **6 Claims**



1. An apparatus for controlling the opening and closing operation of a refrigerant flow valve dispensing refrigerant fluid fed thereto from a reservoir, using the inherent gas pressure from the reservoir, comprising in combination:
(a) an actuator operably connected to said flow valve for opening and closing the same;
(b) valve means including operator mechanism, operably connected to said actuator for activating the same; and
(c) control means for controlling the operation of said valve means, said control means comprising circuitry having at least one pressure operated oscillating pulse generator unit and a counting means operably connected to count the oscillations and thereby control the valve means operator mechanism, whereby facility to vary the ratios of "on" to "off" timing within a ratio range of 1:1 to 99999:1 are provided, normal maximum differential between the "on" and "off" durations may exceed a 5:1 ratio and the overall duration of a complete cycle may be extended beyond about two minutes without incurring the risk of hysteresis in the valve with consequential failure of the control function.

4,513,583

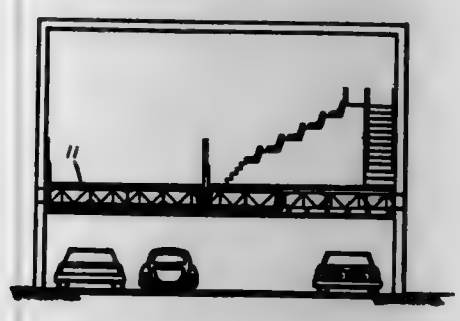
AIR COOLED ICE RINK CONSTRUCTION

Allan E. Watt, 414 Montgomery Ave., Riverview, New Brunswick, Canada E1B 1Z8

Filed Jun. 6, 1983, Ser. No. 501,247
Claims priority, application Canada, Jul. 26, 1982, 408052
Int. Cl.[3] A63C *19/10*
U.S. Cl. 62—235 **7 Claims**

1. An ice rink comprising:
(a) a floor means having a top surface for supporting ice thereon;
(b) insulating means positioned beneath and substantially coextensive with said floor means;
(c) cooling means intermediate the top surface of said floor means and said insulating means;

(d) support means for supporting said floor means, said cooling means and said insulating means at a level above



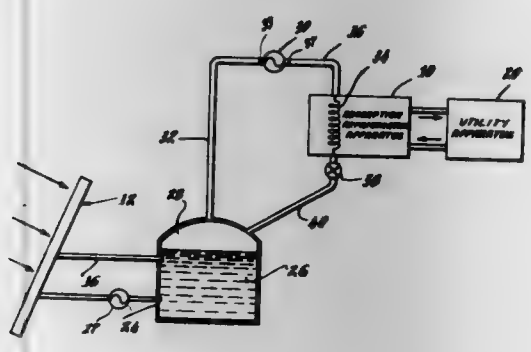
the ground sufficient to allow ambient air to circulate between such insulating means and the ground.

4,513,584

METHOD AND APPARATUS FOR ABSORPTION REFRIGERATION

John F. Woyke, 132 Long Lots Rd., New Canaan, Conn. 06840

Continuation-in-part of Ser. No. 111,090, Jan. 10, 1980, abandoned. This application Jul. 15, 1981, Ser. No. 283,510
Int. Cl.[3] A63C *19/10*
U.S. Cl. 62—235.1 1 Claim



1. An improved absorption refrigeration apparatus comprising:

a. an absorption refrigeration means having a generator in heat transfer relationship with an inlet fluid and an evaporator, said refrigeration means adapted to receive thermal energy supplied to said generator by said inlet fluid and to utilize said thermal energy for causing cooling at said evaporator;

b. said refrigeration means adapted to operate efficiently at and above an inlet fluid temperature T_1;

c. an enclosed vessel having a heat transfer medium and a rotary pump positioned therein;

d. said pump dividing said vessel into first and second relatively low and high pressure chambers respectively;

e. means for conveying said inlet fluid to said second chamber in heat transfer relationship therewith for heating said inlet fluid at least to the temperature T_1;

f. a solar energy source;

g. means for providing a heat transfer relationship between said solar energy source and said first chamber for heating said heat transfer medium in said first chamber to a temperature T_0 which is less than said temperature T_1;

h. means for imparting intermittent rotary motion to a pump piston for causing said pump to successively draw and vaporize said medium from said first chamber, compress said vaporized medium, and discharge said compressed vaporized medium to said second chamber; and,

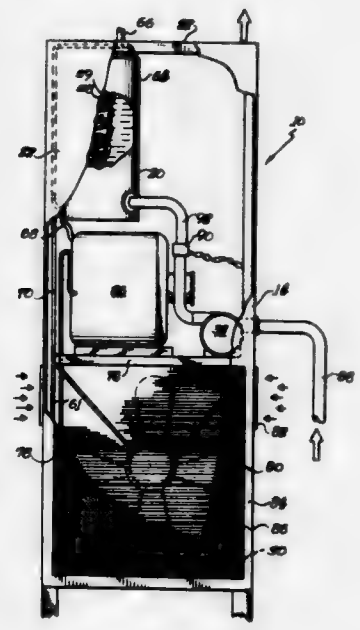
i. said vessel including means for conveying said heat transfer medium in liquid form from said second to said first chamber.

4,513,585

HOT WATER SYSTEM USING A COMPRESSOR

Richard Z. Maisonneuve, Shererville, Ind., assignor to Manoir International, Inc., South Holland, Ill.

Filed Jan. 12, 1981, Ser. No. 224,009
Int. Cl.[3] F25B *27/02*
U.S. Cl. 62—238.6 5 Claims



1. A conversion unit for an existing electric water heater having a hot water tank comprising:

refrigeration means having a compressor, a refrigerant metering device, an evaporator, and a condenser for a refrigerant,

conduit means for connection to an existing port in the tank for withdrawing water therefrom and for conveying water to the condenser, return conduit means for connection to an existing port in the tank for returning heated water to the hot water tank, a thermostatically controlled pump means operable independently of said hot water tank to circulate water through said refrigeration apparatus and said hot water tank,

a coiled water conduit in said condenser having a coil for receiving water being pumped through the conduit means and for flowing water through the condenser,

a coiled refrigerant conduit having a coil adjacent the water conduit in heat exchange relationship therewith to heat the water being pumped through said coil of said water conduit, each of said water and refrigerant conduits having separate walls so that a leak in the refrigerant conduit wall will not contaminate the water in the water conduit.

4,513,586

COMBINATION COMPRESSOR SUPPORT AND DRAIN PAN

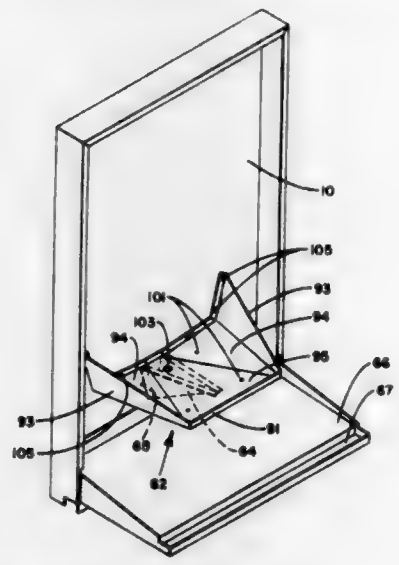
William B. Jennings, Collierville, Tenn.; Edward B. Shelton, Liverpool, and Richmond S. Hayes, Jr., Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 16, 1982, Ser. No. 450,392
Int. Cl.[3] F25D *23/12*
U.S. Cl. 62—263 8 Claims

1. A heat exchange unit including a refrigeration circuit having a compressor and an outdoor heat exchanger, said unit being divided by a vertical partition into an indoor section and an outdoor section wherein the compressor and outdoor heat exchanger are located, which comprises:

a horizontally extending support means secured to the partition a selected distance from the bottom of the unit, said support means including a bottom surface for supporting a compressor and for collecting condensate; and

a drain bracket secured to the partition and positioned to buttress the support means, said drain bracket additionally



acting to divert the condensate collected by the support means.

4,513,587

EVAPORATOR PARTICULARLY SUITABLE FOR AIR CONDITIONERS IN AUTOMOTIVE VEHICLES

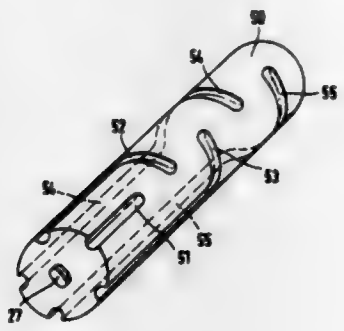
Bohumil Humpolik, Ludwigsburg, and Karl-Heinz Staffa, Stuttgart, both of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co., KG, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 394,876, Jul. 2, 1982, Pat. No. 4,430,868. This application Nov. 22, 1983, Ser. No. 554,302

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1981, 3136374; Mar. 16, 1982, 8207265[U]

Int. Cl.³ F25B *41/06*

U.S. Cl. 62—515 **22 Claims**



1. An evaporator, comprising:

a connector member;

a Venturi distributor connected to said connector member for receiving and distributing a coolant, wherein said Venturi distributor divides said coolant into a plurality of streams;

a plurality of channels formed in a body which comprises an insert for said connector member for conducting the coolant streams from said Venturi distributor, said channels corresponding in number to said streams with each channel being positioned to receive one of said streams from said Venturi distributor;

a plurality of evaporator pipes connected to said connector member in parallel flow arrangement, said pipes corresponding in number to said channels with each pipe being connected to one of said channels, thereby forming a continuous coolant flow path from said Venturi distributor via said channels to said evaporator pipes; and

a collection chamber formed in said connector member for receiving said coolant from said pipes.

4,513,588

FLAT KNITTING MACHINE FOR THE PRODUCTION OF KNITTED PIECES WITH INTARSIA

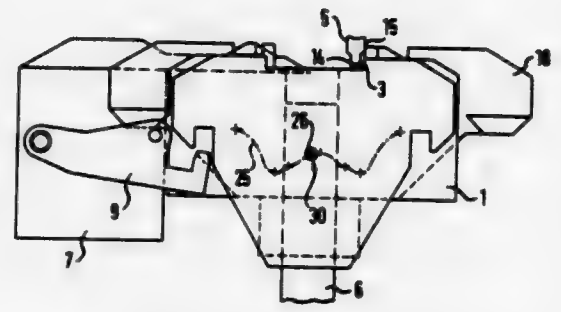
Albert Lutz, Westhausen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik, Westhausen, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 559,066

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245233

Int. Cl.³ D04B *15/52*

U.S. Cl. 66—126 R **9 Claims**



1. A flat knitting machine for the production of knitted pieces with intarsia, comprising a yarn guide with a yarn guide sheave mounted for vertical displacement on a yarn guide box, and a slider mounted for horizontal displacement on the yarn guide box and provided with at least two entraining edges at different vertical positions for engagement by an entrainer for the yarn guide box, said entraining edges co-operating with the yarn guide in such a manner that the yarn guide is lowerable downwards into its yarn-laying position with the yarn guide box stationary and can be raised upwards into its rest position from the yarn-laying position, wherein the yarn guide comprises an entraining pin engageable with a curved track which is connected to the carriage and has at least three different working levels for vertical displacement of the yarn guide, wherein the curved track comprises an elongate curved slot in the slider which guides the entraining pin positively in both directions with the vertical movement of the yarn guide, and wherein the elongate curved slot is formed such that with a movement of the slider relative to the yarn guide box from one lateral end position to the other lateral end position the yarn guide sheave

(a) is lowered from its uppermost rest position to a lowermost loop position below the yarn-laying position,

(b) is raised from this loop position to the yarn-laying position,

(c) is lowered from the yarn-laying position to a platting position between the yarn-laying position and the loop position, and

(d) is raised from the platting position to the rest position.

4,513,589

SOCK WITH SIMULATED LACE EDGE AND METHOD

Chester L. Kearns, Star, N.C., assignor to Montgomery Hosiery Mill, Inc., Star, N.C.

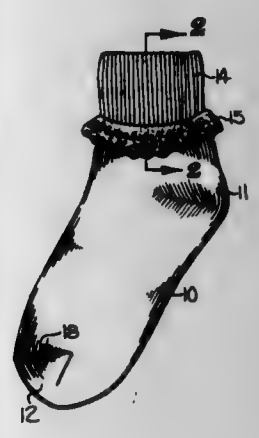
Filed Dec. 19, 1983, Ser. No. 562,978

Int. Cl.³ D04B *9/46*

U.S. Cl. 66—180 **7 Claims**

1. A sock including a foot, an upstanding and outwardly turned two-ply cuff, and a single-ply decorative simulated lace edge portion knit integrally with and extending downwardly from the lower edge of said two-ply cuff, a plurality of rounds of elastic yarn inlaid in the first course of said two-ply cuff said decorative edge portion including a plurality of successive courses forming adjacent wales of stitch loops, a purl side of all of said stitch loops facing outwardly, a knit side of all of said stitch loops facing inwardly, a selvage makeup along the lower edge, a first group of tuck stitch loops extending over a first group of multiple courses and being positioned in selected spaced-apart wales, plain stitch loops formed in the wales

between said first group of tuck stitch loops, a second group of tuck stitch loops extending over a second group of multiple courses and being positioned in selected spaced-apart wales which are offset relative to said selected spaced-apart wales in which said first group of tuck stitch loops are formed, and plain stitch loops formed in the wales between said second group of tuck stitch loops, said first and second groups of tuck stitch



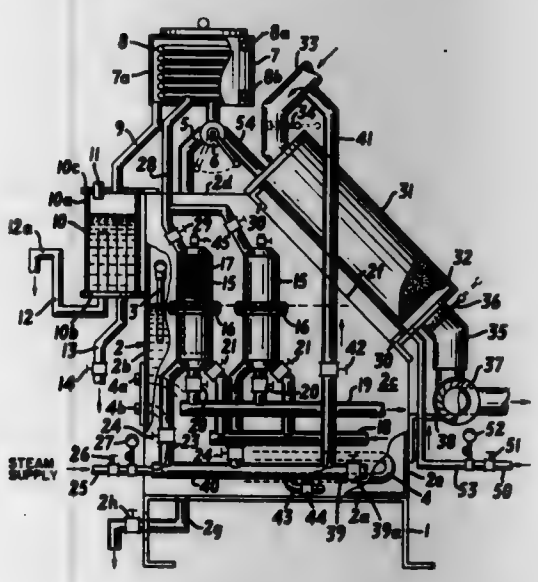
loops drawing said decorative edge portion together in a walewise direction and causing said plain stitch loops therebetween to be deformed inwardly and forming a checkerboardlike decorative pattern of alternating depressed fabric areas and tuck stitch loops, and said first group of tuck stitch loops drawing said selvage makeup upwardly in those wales in which said tuck stitch loops are formed and providing a scalloped lower edge on said decorative edge portion.

4,513,590

COMBINATION FILTER APPARATUS FOR USE WITH A DRY CLEANING MACHINE

Max Fine, Tamarac, Fla., assignor to Dual Filtrex, Inc., Tamarac, Fla.

Filed Mar. 8, 1983, Ser. No. 472,863
Int. Cl.³ D06F *43/08*; B01D *5/00*
U.S. Cl. 68—18 C **15 Claims**



1. Combination filter apparatus for use with a dry cleaning machine using dry cleaning solvent comprising:

steam supply means,

condensing means having a cooling coil for condensing water and solvent vapor to convert it from vapor phase to liquid phase, said condensing means having a vapor inlet and a liquid outlet;

solvent-water separator means for separating water from solvent, said separator means having an inlet connected with the outlet of said condensing means, a discharge for water and a separate discharge for solvent,

absorption means comprising an absorption housing and a bed of activated carbon pellets in said housing, said housing having an air and vapor inlet, an air outlet, a steam inlet and a vapor outlet, means for passing air containing solvent vapor through said absorber means from said air inlet to said air outlet for removal of solvent vapor from the air by said activated carbon pellets, valve-controlled conduit means for supplying steam to said steam inlet to heat said activated carbon pellets to vaporize absorbed solvent, and valve-controlled conduit means for conducting steam and solvent vapor from said absorption means to said condensing means for condensation therein,

a plurality of like filter cartridge housings each of which is of a size and shape removably to receive a filter cartridge and has a dirty solvent inlet, a clean solvent outlet, and a steam inlet and a vapor outlet;

first valve controlled conduit means for selectively conducting dirty solvent from a dry cleaning machine to the dirty solvent inlet of one or more of said filter cartridge housings for passage through a filter cartridge in said housing and for conducting clean solvent from said clean solvent outlet to the dry cleaning machine;

valve controlled drain means at the bottom of each of said filter cartridge housings for draining solvent therein,

second valve controlled conduit means for conducting live steam from said steam supply means selectively to said steam inlet of one or more of said filter cartridge housings to vaporize solvent in a filter cartridge therein and for conducting steam and solvent vapor to said vapor inlet of said condensing means and discharge of the resulting solvent and water to said solvent-water separator means for separation of said solvent from said water,

said first valve controlled conduit means and second valve controlled conduit means including separate valves for each of said cartridge housings, whereby dirty solvent from said dry cleaning machine can be passed through a filter cartridge in one of said filter cartridge housings simultaneously with steam being conducted to another of said filter cartridge housings to vaporize solvent in a filter cartridge therein, and

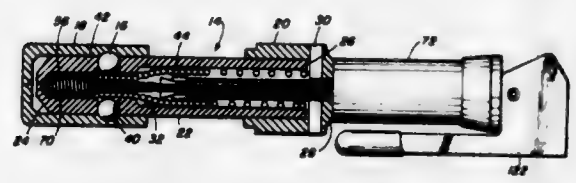
third valve controlled conduit means for selectively connecting said filter cartridge housings to said air and vapor inlet of said absorption means to draw air containing solvent vapor from said cartridge housings to said absorption means, said cartridge housing having valve-controlled vent openings for admission of air to said filter cartridge housings.

4,513,591

SPRING SECURITY LOCK

John H. Carlson, West Boylston, and Anthony J. Agbay, Auburn, both of Mass., assignors to Omco Inc., Holden, Mass.

Filed Oct. 31, 1983, Ser. No. 547,381
Int. Cl.³ E05B *67/36*
U.S. Cl. 70—34 **18 Claims**



1. A high security lock comprising:

(a) a hollow cylindrical lock barrel having a closed front end and an apertured rear end, said lock barrel having a stepped axially extending bore, the front bore having a relatively small diameter and the rear bore having a relativley large diameter;

(b) said stepped barrel bore having an annular shoulder forming the junction between said front bore and said rear bore;

(c) at least two radially extending passageways running from an outer aperture in the exterior surface of said lock barrel

to an inner aperture in the front bore of said lock barrel, and a locking member mounted in each said passageway for limited movement therein, said locking member restrained from completely escaping through said outer aperture; and

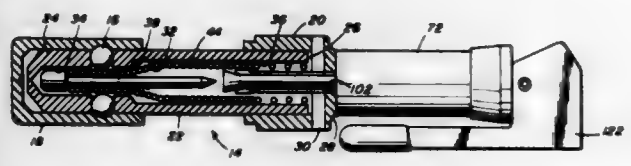
(d) compression spring means including main and secondary compression springs, said main compression spring having a stepped axially extending exterior surface with a front narrow neck and a rear enlarged body, said main compression spring sized and shaped to slidably fit and reciprocate within said stepped bore of said lock barrel, said secondary compression spring having a stepped axially extending exterior surface with a front enlarged body and a rear narrow neck, said rear narrow neck of said secondary compression spring sized and shaped to coaxially and slidably fit within said front narrow neck of said main compression spring, the forward movement of said front narrow neck of said main compression spring being limited by said enlarged body of said secondary compression spring, said front exterior narrow neck portion of said normally unretracted main compression spring extending across and closing said inner aperture of each said passageway thereby forcing each said locking member outwardly to its locking position, said front exterior narrow neck portion of said main compression spring when retracted, moving rearwardly across and opening said inner aperture of each said passageway thereby permitting each said locking member to move inwardly to its unlocking position;

(e) the operation of an authorized key inserted in said lock causing said main compression spring to be rearwardly compressed and causing said enlarged body of said secondary compression spring to be held forwardly of said passageways, said rearwardly compressed main compression spring and said forwardly maintained secondary compression spring co-operating to permit said locking members to fall to their inward unlocking position.

4,513,592
BARREL LOCK

Anthony J. Agbay, Auburn, Mass., assignor to Omco Inc., Holden, Mass.

Filed Oct. 31, 1983, Ser. No. 547,406
Int. Cl.³ E05B *67/36*
U.S. Cl. 70—34 13 Claims



1. A barrel lock comprising:

(a) a hollow cylindrical lock barrel having a closed front end and an apertured rear end, said lock barrel having a stepped axially extending bore, a front bore of said stepped bore having a relatively small diameter and a rear bore of said stepped bore having a relatively large diameter;

(b) said stepped barrel bore having an annular shoulder forming the junction between said front bore and said rear bore;

(c) at least two radially extending passageways running from an outer aperture in the exterior surface of said lock barrel to an inner aperture in said front bore of said lock barrel, and a locking member mounted in each said passageway for limited movement therein, said locking member restrained from completely escaping through said outer aperture;

(d) a compression spring having a stepped axially extending exterior surface with a front narrow neck and a rear enlarged body, said compression spring sized and shaped to slidably fit and reciprocate within said stepped bore of said lock barrel; and

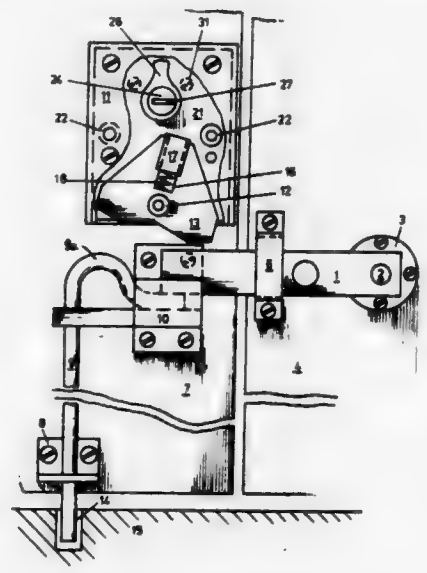
(e) a center pin having an axially extending shaft with a front enlarged head, said shaft sized and shaped to coaxially and slidably fit within said front narrow neck of said compression spring, said front exterior narrow neck portion of said normally unretracted compression spring extending across and closing said inner aperture of each said passageway and thereby forcing each said locking member outwardly to its locking position, said front exterior narrow neck portion of said compression spring, when retracted, moving rearwardly across and opening said inner aperture of each said passageway thereby permitting each said locking member to move inwardly to its unlocking position;

(f) operation of an uathorized key inserted in said lock causing said compression spring to be rearwardly compressed, said enlarged head being maintained forwardly of said passageways, said rearwardly compressed compression spring and said forwardly maintained enlarged head cooperating to permit said locking members to fall to their inward unlocking position.

4,513,593
LOCK ARRANGEMENT

Norman H. Wilson, 8 Charnwood Rd., St. Kilda, Victoria, Australia 3122

Filed Nov. 4, 1982, Ser. No. 439,273
Claims priority, application Australia, Apr. 28, 1982, PF3763
Int. Cl.³ E05B *63/14*; E05C *7/00*
U.S. Cl. 70—114 9 Claims



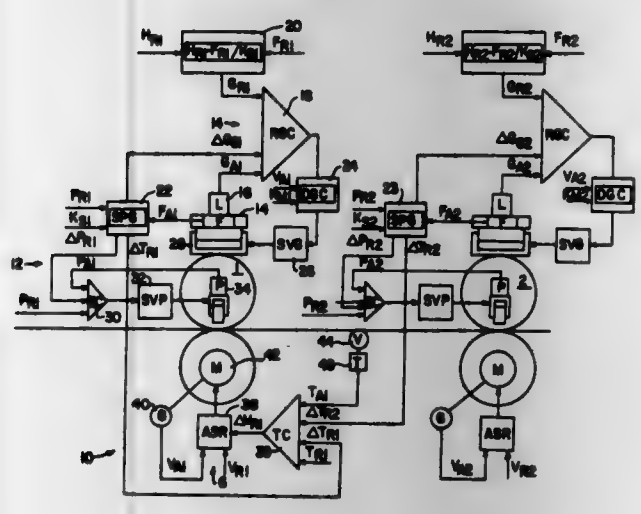
1. A locking arrangement for double gates or double doors comprising a latch plate for attachment to one gate or door of a pair and adapted to engagingly receive a latching bar attached to the other gate or door, a vertically slidable bolt member for attachment to said one gate or door and adapted in a downward position to engage a hole in a surface below said gates or doors and retain said one gate in a closed position, said bolt member having a projection adapted, in said downward position, for engagement with said latch plate, a locking bar adapted in a first locked position to retain said latching bar and said projection in engagement with said latch plate whereby both gates or doors are locked against opening and in a second locked position to retain only said projection in engagement with said latch plate whereby said one gate is locked against opening, and a lock mechanism for actuating said locking bar.

4,513,594

METHOD AND APPARATUS FOR COMBINING AUTOMATIC GAUGE CONTROL AND STRIP PROFILE CONTROL

Vladimir B. Ginzburg, Pittsburgh, and Sidney R. Snitkin, Leechburg, both of Pa., assignors to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Filed Aug. 22, 1983, Ser. No. 525,327
Int. Cl.[3] B21B *37/06, 37/08*
U.S. Cl. 72—8 9 Claims



1. A method of combining automatic gauge control and strip profile control in a tandem rolling mill having at least an upstream and downstream four high roll stand with roll bending means comprising:

detecting a signal representative of the actual roll separating force in the upstream stand; and

utilizing that signal to maintain a constant roll force in the upstream stand through interstand tension control within predetermined limits and where the limit would be exceeded utilizing said signal to simultaneously control the roll gap for gauge control and control the roll bending for strip crown control.

7. A combination automatic gauge control and strip profile control for a rolling mill having at least an upstream and downstream tandem four high roll stand with roll bending means and screw down means associated therewith comprising:

a strip crown and gauge controller receiving a roll separating force signal from the upstream stand, comparing it to a reference force and generating a signal representing any difference between forces, said signal represented as an interstand tension correction signal, a strip tension controller receiving said interstand tension correction signal and adjusting the interstand tension to maintain a constant roll force on the upstream mill stand;

a gauge controller receiving a roll gap correction signal from the strip profile and gauge controller when the tension controller exceeds an established tension limit, said gap correction signal adjusting the screw down means to achieve the desired gauge; and

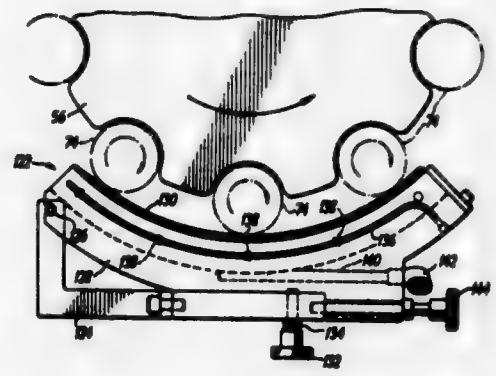
a roll bending pressure controller receiving a roll bending signal simultaneous with the gap correction signal when the tension correction signal exceeds said established limits, said roll bending signal adjusting the roll bending means to compensate for changes in rolling forces from the screw down adjustment.

4,513,595

METHODS OF NECKING-IN AND FLANGING TUBULAR CAN BODIES

Daniel S. Cvacho, 241 Kirkley Cir., Forest, Va. 24551

Division of Ser. No. 346,586, Feb. 8, 1982, Pat. No. 4,446,714.
This application Dec. 9, 1983, Ser. No. 559,809
Int. Cl.[3] B21B *45/02*
U.S. Cl. 72—43 5 Claims



1. A method of effecting relubrication of a necked-in portion of a can body immediately following the necking in operation which comprises the steps of

a. supporting said can bodies in spaced, semicircular pockets of a rotary star wheel with the longitudinal axis of each can body being in a horizontal plane,

b. positioning an arcuate runner member containing a lubricating fluid sufficiently close to said rotary star wheel to engage a necked-in portion of each container in said pockets and effect rotation of the containers within the pockets,

(1) said arcuate runner member being sufficiently long to engage a plurality of containers simultaneously and also long enough to effect lubrication of the entire circumference of each container held within said pockets,

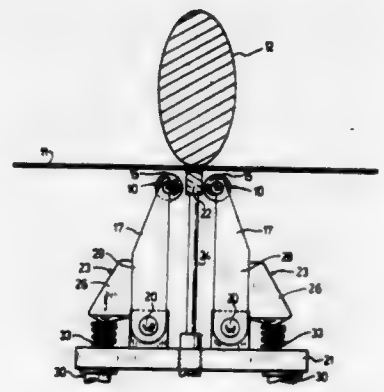
c. and delivering said can bodies to another star wheel for a second necking-in of said can bodies.

4,513,596

APPARATUS AND METHOD FOR FORMING SEAMED TUBE

George R. Usher, Brantford, Canada, assignor to Eagle Precision Tool Ltd., Canada

Continuation of Ser. No. 318,789, Nov. 6, 1981, abandoned, which is a continuation of Ser. No. 90,174, Jan. 11, 1979, abandoned. This application Feb. 1, 1983, Ser. No. 462,868
Claims priority, application Canada, Oct. 9, 1979, 337214
Int. Cl.[3] B21D *39/02, 51/28, 5/01*
U.S. Cl. 72—51 2 Claims



1. A machine for forming a seamed tube of arcuate section from sheet material comprising an elongated mandrel of desired arcuate cross section having a longitudinal axis, an elongated support means having a longitudinal axis parallel to the longitudinal axis of said mandrel for supporting said sheet

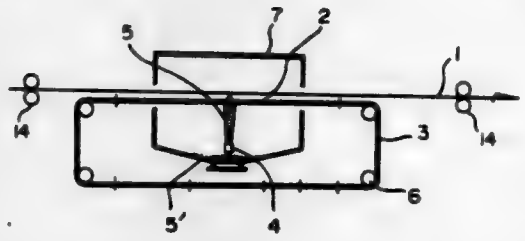
material adjacent said mandrel with the plane of said sheet tangential to an arc of said mandrel, first forming means comprising moveable platform means disposed below said support means for movement forward and away from said support means and disposed perpendicular to a plane passing through said longitudinal axes of said mandrel and said support means, a symmetrical pair of elongated roller means pivotally mounted on said platform on opposite sides of said plane, each of said roller means comprising an arm pivoted at one end on said platform means for pivotal movement about an axis parallel to the axis of said mandrel and having a plurality of axially aligned rollers rotatably mounted on the other end of said arm with the rollers being disposed immediately adjacent said plane and biasing means for biasing each of said pair of roller means towards said plane whereby upon movement of said platform means towards said mandrel said sheet will be pressed into engagement with said mandrel only by said rollers of each roller means as said rollers move upwardly from a point immediately adjacent said plane to at least a point adjacent a widest portion of said mandrel and second forming means operable to complete the forming of said sheet material around said mandrel by bringing opposed side edges of said sheet material adjacent one another and seaming means operable to form said opposed side edges into a longitudinal seam and thereby provide a seamed tube.

4,513,597

APPARATUS FOR REDUCING THE WATT LOSS OF A GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET

Tetsuo Kimoto, and Kiyoshi Orita, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 15, 1982, Ser. No. 398,328
Claims priority, application Japan, Sep. 30, 1981, 56-153965
Int. Cl.³ B21J *22/10*
U.S. Cl. 72—53 **7 Claims**



7. An apparatus for projecting particles onto substantially linear selected portions of a grain-oriented electromagnetic steel sheet, thereby producing strain in the spot-formed regions of said selected portions of said grain-oriented steel sheet, comprising:

an endless conveyor having the grain-oriented electromagnetic steel sheet disposed on a portion thereof and operable for transferring said sheet through a predetermined path; wherein

said endless conveyor has slits formed therein with said slits being spaced at a predetermined distance from each other and elongated in the direction perpendicular to said path; and

means for projecting particles, said means being located adjacent said portion of said conveyor and oriented to project particles toward said portion of said conveyor and thereby said path.

4,513,598

METHOD AND APPARATUS FOR PRODUCING A BULGE IN THIN METAL MATERIAL

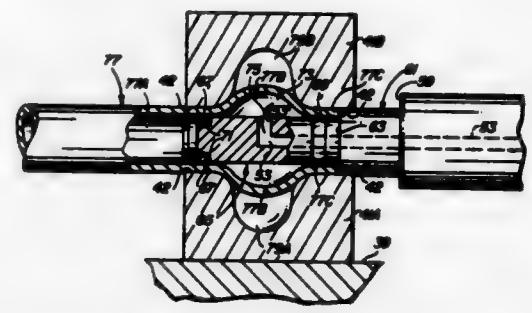
John J. Costabile, 7037 E. Moreland, Scottsdale, Ariz. 85257

Filed Jan. 27, 1982, Ser. No. 343,280
Int. Cl.³ B26D *26/02*
U.S. Cl. 72—62 **5 Claims**

3. A method of forming a ring-shaped bulge in a first portion of a piece of metal tube, said tube having a second portion adjacent to the first portion, said method comprising the steps of:

(a) inserting the first portion of said piece of tube into a cylindrical hole extending through a die apparatus so that the first portion of said tube is in aligned relation with a ring-shaped cavity around and in open communication with the cylindrical hole and defined by an annular enlargement in the wall of the cylindrical hole;

(b) applying a predetermined amount of pressure, by means of pressurized fluid inside said tube, to the inside wall of said tube to produce outward bulging of the first portion of said tube and thereby forming an initial portion of the ring-shaped bulge, the initial portion of the ring-shaped bulge extending into said ring-shaped cavity;



(c) after the forming of the initial portion of the ring-shaped bulge, applying a longitudinal force to the second portion of said tube, while continuing to apply pressure, by means of the pressurized fluid, to the inside wall of said tube, and thereby causing some of the second portion of said tube to slide into said ring-shaped cavity in order to allow the pressure of the fluid to cause further outward bulging of said initial portion into said ring-shaped cavity without thinning of said tube; and

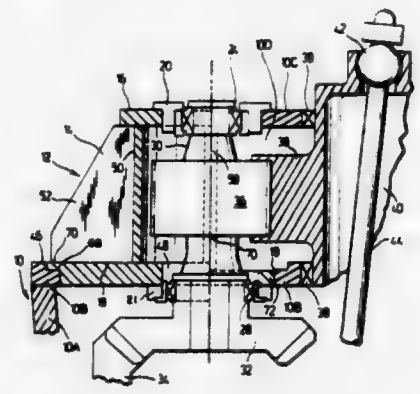
(d) simultaneously with step (c) preventing longitudinal movement of any of the first portion of said tube out of the ring-shaped cavity by causing a portion of the wall of said ring-shaped cavity contacting said initial portion of the ring-shaped bulge to resist longitudinal movement of any of the first portion of said tube out of said ring-shaped cavity.

4,513,599

STEEL MILL EDGER DRIVE SYSTEM

Thomas E. Harris, Point Claire, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada

Filed Sep. 15, 1983, Ser. No. 532,260
Claims priority, application Canada, Sep. 30, 1982, 412581
Int. Cl.³ B21B *31/08*
U.S. Cl. 72—238 **6 Claims**



1. In a drive modular unit for a roll of a steel mill edger, wherein said mill has a main casing and the roll is driven by a bullgear, said drive modular unit comprising:

a housing,

a shaft extending through said housing,

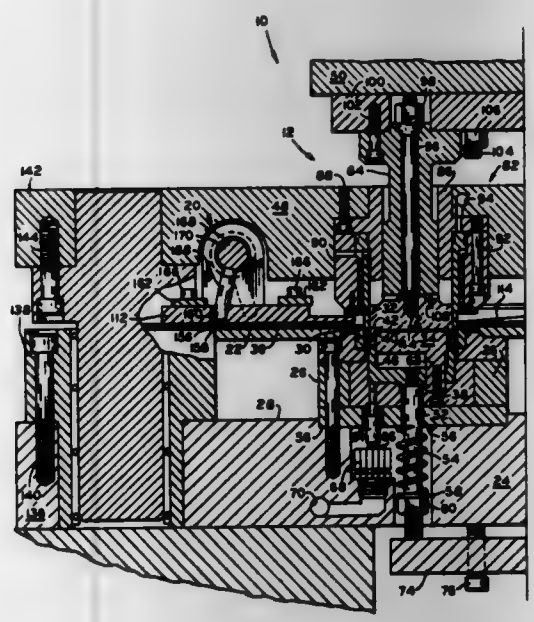
a pinion fixed to said shaft for engagement with said bullgear,
a drive gear fixed to said shaft on one side of said pinion,
a thrust bearing for said shaft on the side of said pinion remote from said drive gear, and
a bearing for said shaft intermediate said pinion and drive gear,
said two bearings being mounted in said housing,
said housing having a portion partially encircling the periphery of said pinion rigidly interconnected to an upper bearing mount for mounting said thrust bearing and a lower capsule element mounting said bearing intermediate said pinion and drive gear,
said shaft having an axis of rotation eccentric to the center of said lower capsule,
said capsule constructed and arranged to be received in said mating aperture in said main casing,
said housing further constructed and arranged to be secured to said casing along at least two angularly related separation planes oriented in a manner to permit movement of said drive modular unit axially of said shaft and then substantially radially to permit disengagement of said pinion from said bullgear and removal of said drive unit out of said main casing.

4,513,600

CAM ACTUATED EJECTOR FOR A SHELL PRESS

Arthur L. Grow, Versailles; Charles J. Gregorovich, St. Marys, and Donald N. Seyfried, New Bremen, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Jan. 3, 1983, Ser. No. 455,000
Int. Cl.[3] B21D *45/00*
U.S. Cl. 72—345 16 Claims



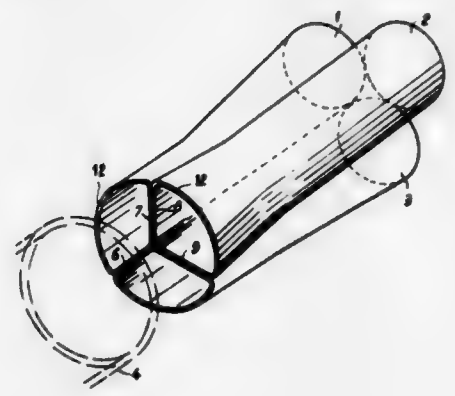
1. In a press including a crankshaft for reciprocating a slide adapted for having tooling connected thereto and having a forming station in which said tooling forms a part, a part ejector mechanism for ejecting the part after forming, comprising:
an ejector member having an end portion, said ejector member reciprocating in the plane of the position of the part to be formed between a first position wherein said end portion is located outside the forming station and spaced from a part to be ejected from the forming station and a second position wherein said end portion is located in the forming station in a space normally occupied by a part to be ejected,
means for cyclically moving said ejector member from the first to the second position and from the second to the first position comprising a cam element having a contoured cam surface and a cam follower member in engagement with said cam surface, said cam element and said cam follower member being operatively connected to said ejector member, and
means synchronized with said crankshaft for moving said cam element and said cam follower member to cause relative movement between said cam surface and said cam follower member to reciprocate said ejector member between the first and second positions, said ejector member being moved by positive contact between said cam surface and said cam follower member when moving from the first to the second position and from the second to the first position in synchronism with said press slide.

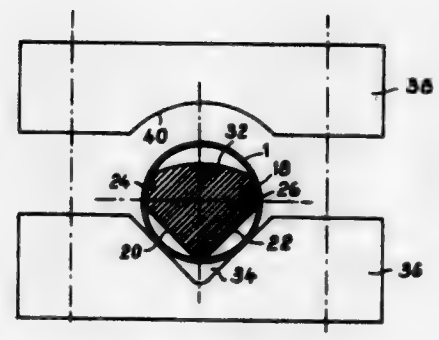
4,513,601

METHOD FOR LOCALLY DEFORMING A ROUND TUBE INTO A TUBE COMPRISING PLANAR SURFACES AND A FORMING PUNCH FOR CARRYING OUT SAID METHOD

Alain Herbulot, Valentigney, France, assignor to Cycles Peugeot, Valentigney, France

Filed Sep. 29, 1982, Ser. No. 426,535
Claims priority, application France, Oct. 9, 1981, 81 19036
Int. Cl.[3] B21D *41/00*
U.S. Cl. 72—398 9 Claims





1. A method for locally deforming a portion of a tube having an initial cylindrical wall of round section into a deformed tube portion having a wall which has parallel generatrices parallel to said initial cylindrical wall and an outer surface having a section in the shape of a sector of a circle, which circle has its centre substantially in axial alignment with the outer surface of said initial cylindrical wall, said method comprising axially inserting in the tube of round section an elongated punch having an outer surface which has parallel generatrices and a section in the shape of a sector of a circle with truncated corners between the circular part of the sector and the radii of the sector of the circle; placing said portion of the tube to be deformed containing the punch which has its generatrices parallel to said initial cylindrical wall on inclined lateral walls of a V-shaped groove of a die, which groove has parallel generatrices parallel to said initial cylindrical wall of the tubes, the V defining an angle identical to the angle defined by the radii of the sector of the punch; then applying on an outer free surface of said initial cylindrical wall of the tube a compression member which is also provided with a groove which has parallel generatrices parallel to said initial cylindrical wall of the

tube and a section having a radius identical to the radius of the circular outer surface of the deformed tube; exerting a force on the compression member until it causes the tube to contact the radiused part of the sector of the punch and causes the tube and punch to penetrate to an inner end of the V-shaped groove so that the tube conforms to the contour of a cavity defined by the grooves of the die and compression member and the section of the tube has said shape of a sector of a circle; then separating the compression member and the die; and axially withdrawing the punch from the tube.

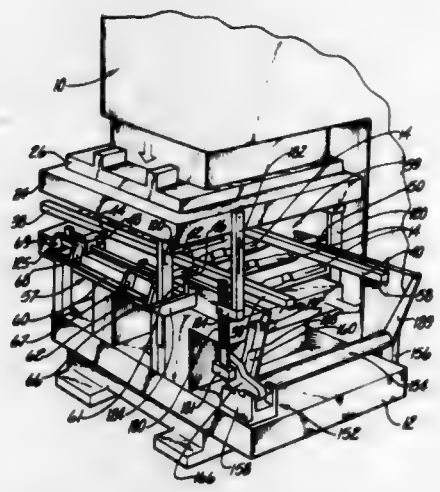
5. A forming apparatus comprising a die, a compression member and a forming punch for locally deforming a cylindrical tube having a wall of circular section, said punch having parallel generatrices and a section in the shape of a sector of a circle with truncated corners between the circular part of the sector and the radii of the sector of the punch, said truncated corners being inscribable within the circular inner surface of the wall of the tube of circular section and capable of centering the punch relative to the inner surface of the tube, the radii of the sector of the punch intersecting in a region which is also inscribable within said circular inner surface of the wall of the tube, said die having a V-section groove which has parallel generatrices, the branches of the V of the groove making an angle identical to the angle made by the radii of the sector of the punch, and the compression member defining a part-cylindrical groove having in section a radius of curvature larger than said radius of curvature of said sector of said punch to an extent corresponding to the thickness of the wall of said cylindrical tube, the generatrices of said V-section groove, said punch, and said part-cylindrical groove being parallel to one another.

4,513,602

TRANSFER DEVICE

Hugh M. Sofy, 201 Warrington, Bloomfield Hills, Mich. 48013

Filed Sep. 30, 1982, Ser. No. 432,080
Int. Cl.[3] B21J *13/08*
U.S. Cl. 72—405
8 Claims



1. A work transfer device for moving a plurality of workpieces progressively from station to station in a generally longitudinal direction in a press of the type having a reciprocable part and a series of in-line work stations in which operations are performed on said workpieces, said transfer device comprising

work-holding jaw means disposed laterally in opposed relation on opposite sides of said stations; and

first and second actuator means operatively connected to and actuated by said reciprocable part of said press, said first actuator means being adapted to reciprocatingly actuate said jaw means toward and away from each other in generally lateral directions transversely of said work stations into and out of clamping engagement with workpieces therein, said second actuator means adapted to longitudinally and reciprocatingly actuate said jaw means while said jaw means are clampingly engaged with said workpieces in order to longitudinally index said workpieces simultaneously to the next adjacent stations,

said second actuator means having a rock shaft drivingly interconnected with said jaw means, cam and cam follower means drivingly connecting said reciprocable part of said press to a second actuator clutch assembly, said clutch assembly drivingly connecting said cam and cam follower means to said rock shaft, said second actuator clutch assembly including resiliently yieldable means for drivingly disconnecting said cam and cam follower means from said rock shaft in response to a first predetermined level of resistance to the longitudinal movement of said jaw means while said jaw means are clampingly engaged with said workpieces, thereby substantially preventing damage to said work transfer device in the event of the jamming of a workpiece therein, said resiliently yieldable means drivingly disconnecting said cam and cam follower means from said rock shaft in response to a second predetermined level of resistance to the longitudinal movement of said jaw means while said jaw means are clampingly disengaged from said workpieces, said second predetermined level being greater than said first predetermined level of resistance,

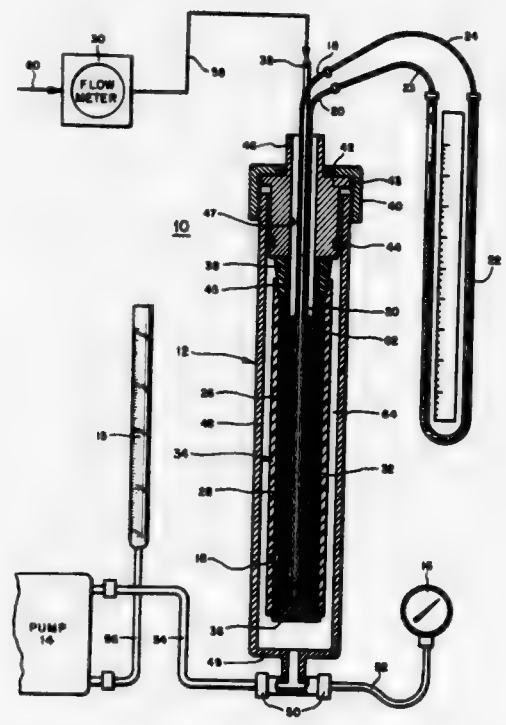
said second actuator clutch assembly and said cam and cam follower means being disposed laterally outward relative to said work stations and said rock shaft being vertically disposed below the level of said work stations, thereby permitting substantially unobstructed access to said work stations from an end area of said press.

4,513,603

SYSTEM FOR MEASURING CRUSH PROPERTIES OF A CATALYST

Lloyd A. Baillie, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 27, 1982, Ser. No. 453,369
Int. Cl.[3] G01M *3/00*
U.S. Cl. 73—37
25 Claims



21. An apparatus for measuring crush properties of a particulate bed comprising:

pressure vessel;

particulate vessel situated within said pressure vessel, said particulate vessel comprising a deformable wall adapted to transmit external pressures applied thereto by a substantially incompressible first fluid to the interior of said particulate vessel;

pump coupled to said pressure vessel for introducing said first fluid into the space between said pressure vessel and

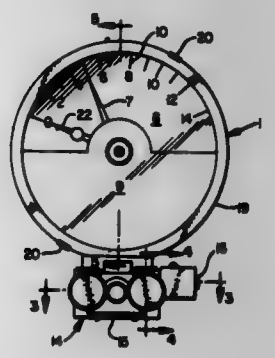
said particulate vessel, and pressurizing said first fluid to that sufficient to crush said particulate bed;
pressure gauge positioned to sense the pressure of said first fluid;
means for measuring the volume of said first fluid introduced by said pump into said space as a function of said pressure of said first fluid;
first tube extending from the exterior of said pressure vessel to a first location within said particulate vessel;
second tube extending from the exterior of said pressure vessel to a second location within said particulate vessel spaced apart from said first location;
means for establishing a pressure differential between said first and second tubes and for introducing a second fluid into said first tube in order to cause said second fluid to flow between said first and second locations;
first and second pressure sensor conduits extending from the exterior of said pressure vessel to second fluid pressure sensing points within said particulate vessel;
means for measuring the pressure differential between said first and second sensor conduits; and
means for sealing said particulate vessel around said first and second tubes and said first and second conduits to substantially exclude said first fluid from the interior of said particulate vessel.

4,513,604

METHOD AND APPARATUS FOR INDICATING LEAKAGE IN COMPRESSED AIR LINE

Virgil L. Frantz, P.O. Box 1099, and Robert W. Bowles, 650 Boon St., both of Salem, Va. 24153

Filed Aug. 24, 1983, Ser. No. 526,008
Int. Cl.[3] G01M *3/28*
U.S. Cl. 73—39 7 Claims



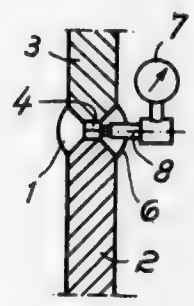
1. A differential flowmeter connectable to a compressed gas line upstream and downstream of a restriction in said line, said flowmeter comprising a casing, a dial on said casing, a pointer pivotally mounted on said dial and responsive to pressure differentials across said restriction for indicating said differentials on a scale on said dial, a rim attached to said casing forwardly of said dial, a concentric cylindrical track on an inside of said rim, a circumferentially gapped radially expandable resilient band compressed into and rotatable in said track relative to said rim, and indicator/pointer fixed to said band for swinging therewith along said scale, and a positioning pin fixed to and projecting radially from said band through and substantially contained against accidental actuation in a circumferential slot in said rim for manually shifting said indicator/pointer along said scale against yieldable resistance between said band and track.

4,513,605

METHOD AND DEVICE FOR TESTING WELDS OF THERMOPLASTIC PARTS

Manfred Hawerkamp, Altenrather Strasse 47, 5210 Troisdorf, Fed. Rep. of Germany

Filed Jan. 4, 1983, Ser. No. 455,484
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201515
Int. Cl.[3] G01M *3/28*
U.S. Cl. 73—40 1 Claim



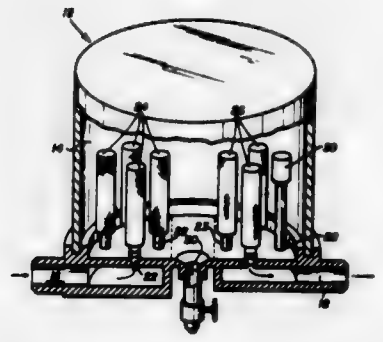
1. A method of testing a weld (1) between a first (2) and a second (3) constructional part made of thermoplastic material, the first and second parts each having edges with two opposite sides and the weld extending from one of the two opposite sides to the first part to one of the two opposite sides of the second part, comprising:
establishing a space between the edge of the first part (2) and the edge of the second part (3) before the weld to be tested (1) is formed;
forming an additional weld (6) between the other of the two opposite sides of the first part (2) and the other of the two opposite sides of the second part (3), the additional weld (6) spaced from the weld to be tested (1) to define a closed pressure cavity (4) between the first and second parts;
drilling a hole through the additional weld;
attaching a conduit (8) to the additional weld (6) which communicates with the hole;
supplying a fluid under pressure to establish a predetermined test pressure in the pressure cavity; and
detecting a leakage of the fluid supplied to the pressure cavity using a leak detector connected to the conduit.

4,513,606

SURFACTANT MONITOR FOR AVIATION FUEL FILTER/SEPARATORS

Donald L. Rhynard, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

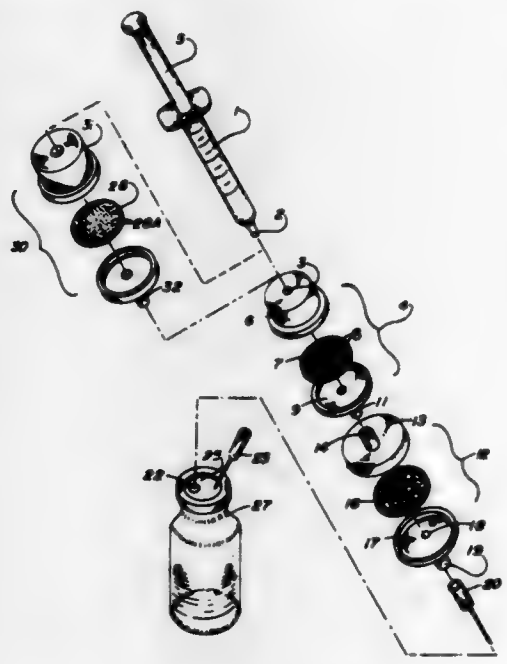
Filed Aug. 11, 1982, Ser. No. 407,201
Int. Cl.[3] G01N *15/00*
U.S. Cl. 73—61 R 2 Claims



1. In a filter/separator unit having two stages for separating moisture and filtering particulate matter the improvement comprising:
a replaceable cylindrical element for monitoring cumulative saturation of separating elements used to separate moisture from aviation fuel, constructed of a material readily testable for surfactant contamination, said cylindrical

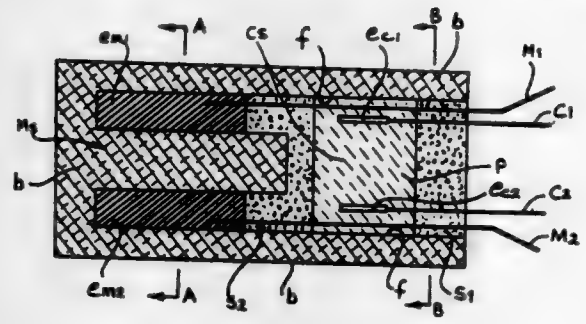
element adapted to be replaced in the unit whenever said separating elements have a moisture content below a predetermined level.

4,513,607
ANALYTICAL FILTRATION TECHNIQUE
John Coupal, 329 Melbourne Way, Lexington, Ky. 40502
Filed Oct. 20, 1981, Ser. No. 313,231
Int. Cl.[3] G01N *15/02*
U.S. Cl. 73—61.4 10 Claims



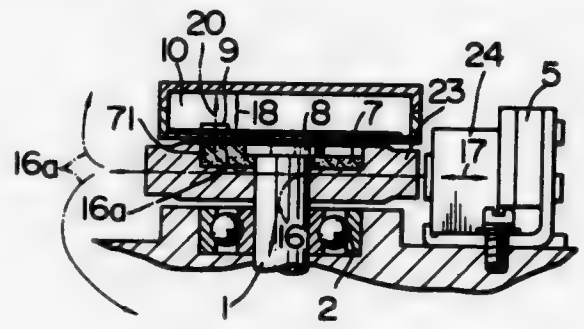
1. A procedure for classifying macroaggregate and colloidal particles in a liquid dispersion by size wherein the dispersion is passed through a first capillary filter of selected pore diameter to retain particles and then through a tortuous path provided by a fibrous filter composed of fibers having affinity for the colloidal substance for removal of a portion of the colloidal particles and the balance of the particles are retained in the liquid passing through the first filter and the fibrous filler.

4,513,608
MOISTURE SENSING AND CONTROL DEVICE
Kenneth J. Cuming, 68 Robinson Rd., Hawthorn, Victoria, Australia
Filed Nov. 9, 1982, Ser. No. 440,474
Claims priority, application Australia, Nov. 10, 1981, PF1504/81
Int. Cl.[3] G01R *27/20*; G01N *27/12*
U.S. Cl. 73—73 14 Claims



1. A moisture sensing assembly comprising a body having therein a first zone formed of porous material with a first range of pore size having a first mean pore size and a second zone formed of a porous material with a second range of pore size having a second mean pore size such that in use said body is located within a desired soil area under surveillance whereby both said first and second zones are placed in hydraulic conduction with the desired soil area, said first mean pore size being substantially greater than said second mean pore size such that the second zone will remain hydrated when the first zone is becoming dehydrated, and control means associated with each of said first and second zones for sensing an electrical property of each of said zones, said control means including electrode elements associated with each of said first and second zones in spaced relation and defining therebetween a respective electric current flow path through each of said first and second zones, said control means further including a magnetic coupling means for electrically isolating respective pairs of said electrode elements to thereby define electric current flow paths through said respective first and second zones.

4,513,609
ELECTROMAGNETIC ROTATION DETECTING APPARATUS
Akihiko Takenaka, Kariya; Miyao Arakawa, Nagoya; Masahiro Sato, Toyoake, and Toshiyuki Yamaguchi, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 9, 1983, Ser. No. 502,653
Claims priority, application Japan, Jun. 14, 1982, 57-100638
Int. Cl.[3] G01M *15/00*
U.S. Cl. 73—116 4 Claims

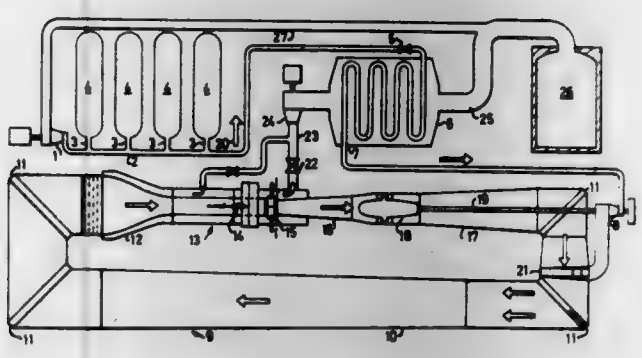


1. An electromagnetic rotation detecting apparatus for an internal combustion engine comprising:
a housing;
a rotary shaft rotatably received in said housing and adapted to be rotatably drive by said engine;
a signal rotor fixedly mounted on said rotary shaft, said rotor including magnetic pole means for producing a magnetic flux in a direction substantially perpendicular to a principal plane surface thereof;
first electromagnetic pickup means, facing said signal rotor in the diametrical direction thereof, for magnetically detecting and generating a first rotation signal from said rotor;
second electromagnetic pickup means, operatively associated with said magnetic pole means of said signal rotor, for magnetically detecting and generating a second rotation signal from said rotor;
case means for containing and holding said second electromagnetic pickup means so that it faces said magnetic pole means, said case means being positioned parallel to said principal plane surface of said signal rotor; and
means for mounting said case means such that the angular position of said case means relative to said housing is adjustable.

4,513,610
METHOD AND DEVICE FOR ATTAINING A GAS FLOW IN A WIND TUNNEL
Curt Nelander, Spånga, Sweden, assignor to AB Rollab, Sweden
Filed Nov. 10, 1983, Ser. No. 550,448
Claims priority, application Sweden, Sep. 6, 1983, 8304780
Int. Cl.[3] G01M *9/00*
U.S. Cl. 73—147 7 Claims

1. Method of attaining a gas flow in a wind tunnel, characterized in that a flow medium, preferably air, is caused to flow from a pressure storage (4) via a turbine (8) into the wind

tunnel (9), that the turbine (8) is arranged to drive a fan (18) positioned in the wind tunnel (9), and that a partial flow of the medium flowing in the wind tunnel (9) is deflected from the



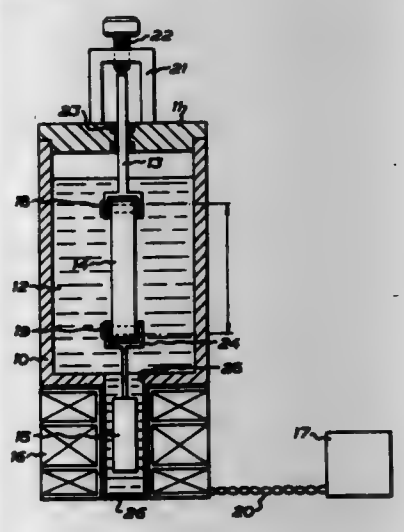
wind-tunnel circuit, whereas the main part is recycled and mixed with the flow being successively fed from the turbine (8).

4,513,611

APPARATUS FOR MEASURING THE SWELLING OR SHRINKAGE OF A SPECIMEN IN A FLUID

Leif R. Bohlin, Krankesjövägen 12, S-240 15 Södra Sandby, Sweden

Filed Aug. 29, 1983, Ser. No. 527,212
Claims priority, application Sweden, Sep. 1, 1982, 8204977
Int. Cl.³ G01N *33/44*
U.S. Cl. 73—150 R 4 Claims



1. An apparatus for measuring the effects of fluids such as gases and liquids on swelling or shrinkage of a specimen comprising a container for accommodating the specimen and the fluid; means for suspending the specimen in the fluid in the container; a transducer affixed to the specimen at a distance from the point of suspension thereof such that said transducer is maintained within said fluid and exerts minimized tension on the specimen; and a sensor isolated from the fluid, the sensor being connectable to indicating or recording apparatus and adapted to electromagnetically sense the movement of the transducer under the influence of the fluid on the specimen.

4,513,612

MULTIPLE FLOW RATE FORMATION TESTING DEVICE AND METHOD

Walter F. Shalek, Bellaire, Tex., assignor to Halliburton Company, Duncan, Okla.

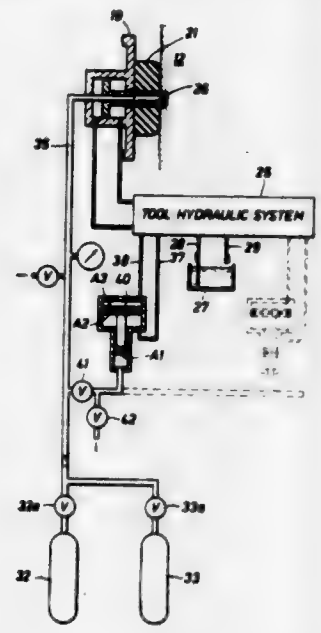
Filed Jun. 27, 1983, Ser. No. 508,304
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—155 12 Claims

1. A method for measuring the permeability of earth formations traversing a well bore, comprising:

(a) establishing, through the wall of the well bore and isolated from fluids within the well bore, direct fluid flow communication with an adjacent formation interval,

(b) drawing a first fluid sample from the formation interval to determine a first fluid permeability property for the interval,

(c) drawing a second sufficiently large fluid sample from the formation interval to substantially remove the well bore invasion fluid from the immediate area and flow connate formation fluid instead, and



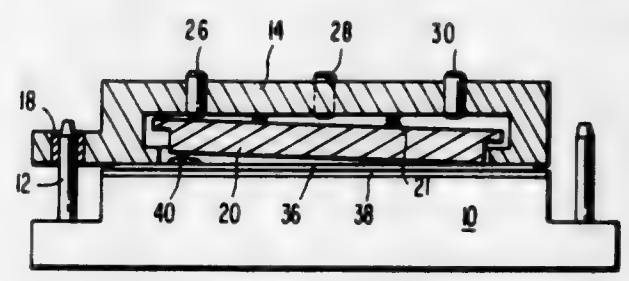
(d) subsequently making at least one flow test from the formation interval to determine the formation flow permeability property which obtains with the actual connate formation fluids from the interval and comparing this permeability property with said first fluid permeability property to determine the extent of possible formation damage due to prior invasion of drilling fluids from the well bore into the formation.

4,513,613

PARTICLE DETECTION SYSTEM

Yves Darves-Bornoz, LaGrangeville; George E. Melvin; Michael G. Ryan, both of Poughkeepsie, and Dennis L. Saylor, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1983, Ser. No. 502,057
Int. Cl.³ G01N *19/08*
U.S. Cl. 73—159 13 Claims



1. A system for detecting the presence of a contaminant that influences the planarity of a sheet comprising:

a stage having a surface for supporting said sheet;

a movable pick-up head having a surface conforming to the surface on said stage, said pick-up head movable into and out of position over said stage to deposit onto and remove said sheet from said stage;

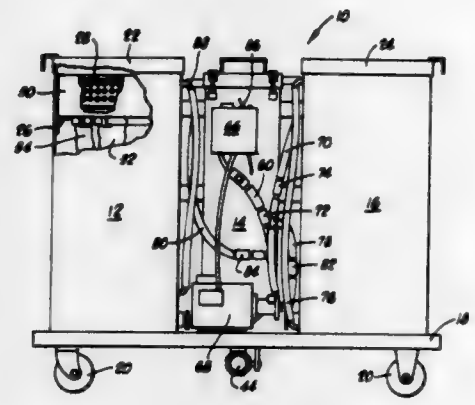
means on said head to sense whether or not said surface on said head is in uniform contacting engagement with said sheet supported by said stage; and

means receiving the output of said sensor means to determine whether or not said contacting engagement is achieved.

4,513,614
METHOD AND DEVICE FOR FILTERING LUBRICATING OIL FOR A DOUGH DIVIDER MACHINE

DL Adcock, 6412 S. Douglas Ave., Oklahoma City, Okla. 73139

Filed May 25, 1983, Ser. No. 498,064
Int. Cl.[3] G01N *5/00, 33/10;* B01D *37/00*
U.S. Cl. 73—169 3 Claims



1. A method of lubricating a dough divider machine of the type which continuously utilizes mineral oil as a lubricant, comprising:

capturing mineral oil, flour, dough and contaminants which become mixed as the dough divider machine operates;

filtering the captured mineral oil, flour, dough and contaminants so that substantially pure mineral oil is separated therefrom;

injecting the separated mineral oil back into the dough divider machine for lubrication;

measuring the weight of bakery products which are produced by the dough divider machine during a predetermined period;

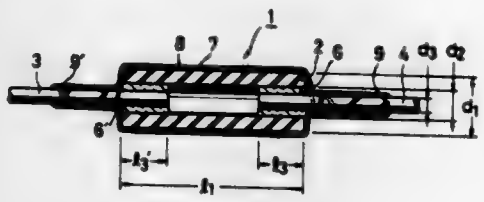
measuring the weight of mineral oil lost as mineral oil is used to lubricate the dough divider machine, is filtered and is returned to lubricate the dough divider machine during said predetermined period; and

determining from the measured weight of the bakery products and the measured weight of lost mineral oil, the amount of mineral oil in the bakery products produced during said predetermined period.

4,513,615
THERMAL AIR FLOW METER

Kanemasa Sato, and Sadayasu Ueno, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 558,278
Claims priority, application Japan, Dec. 8, 1982, 57-213869
Int. Cl.[3] G01F *1/68*
U.S. Cl. 73—204 5 Claims

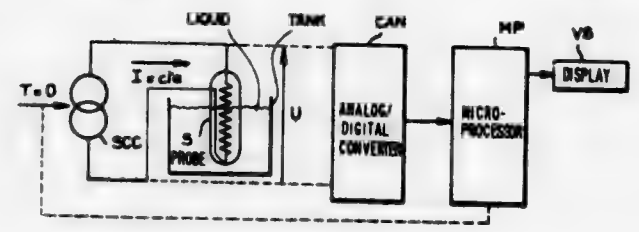


1. In a thermal air flow meter which consists essentially of a hollow cylindrical support made of an insulating material, a heat-sensitive resistor formed on top of said support, and lead wires inserted into the hollow part of said support from either end of said support and bonded to said support by a heat-insulating adhesive, and which measures the flow rate on the basis of changes in resistance due to the temperature of said heat-sensitive resistor, the improvement wherein the ratio of the inner diameter d_2 of said support to the outer diameter d_3 of said lead wires is at least 1.7.

4,513,616
APPARATUS FOR MONITORING THE LEVEL OF LIQUID BY RESISTIVE WIRE

Jean-Jacques Bezard, La Garenne; Charles H. Jourdain, Frepillon, and Bruno Lalanne, Courbevoie, all of France, assignors to J A E G E R, Levallois-Perret, France

Filed Sep. 27, 1982, Ser. No. 424,442
Claims priority, application France, Oct. 8, 1981, 81 18960
Int. Cl.[3] G01F *23/24;* G01K *7/16*
U.S. Cl. 73—295 26 Claims



1. An apparatus for determining a level of a liquid in a tank comprising:

a temperature dependent resistive wire probe at least partially immersed in said liquid in a generally vertical orientation in said tank, said resistive probe sensing variations in the liquid level;

a power supply for applying electrical energy to said resistive wire probe;

means for detecting an electrical parameter in said resistive wire probe;

means for memorizing an initial value of said electrical parameter when electrical energy is applied to said resistive wire probe;

means for monitoring any variation in said electrical parameter from its initial value and for generating a differential parameter representative of the variation in said electrical parameter, said differential parameter being related to the level of liquid;

converting means for converting said differential parameter into digital values;

means for storing a plurality of correspondence tables defining digital corrections of the differential parameter digital values generated by said converting means said tables being associated with initial values of said parameters being detected;

means for selecting the associated one of said plurality of correspondence tables depending upon the memorized initial value of said electrical parameter being detected;

means for determining from said selected correspondence table, a digital correction corresponding to the differential parameter digital value generated by said converting means, and for generating a corrected differential parameter digital value.

4,513,617
STORAGE TANK GAUGING MEASURING APPARATUS

Terry S. Hayes, Wichita, Kans., assignor to Mitch's Self Service Gas, Inc., Great Bend, Kans.

Filed Jan. 3, 1983, Ser. No. 455,289
Int. Cl.[3] G01F *23/10*
U.S. Cl. 73—313 11 Claims

1. A quantity indicator for a fluid storage system comprising:

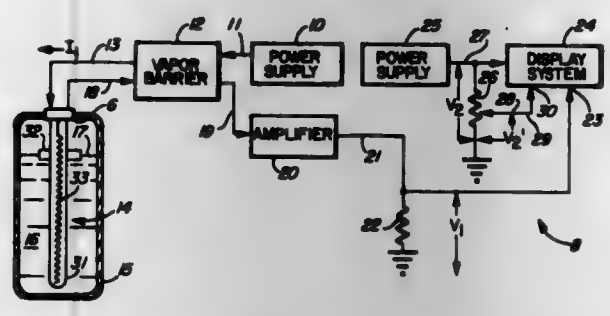
(a) measuring means an electrical power source means connected to meausring means, said measuring means coacting with float operated means mounted in said storage system to produce separate outputs in response to the maximum and minimum quantity of fluid remaining in said system;

(b) means for receiving said generated output responses, and converting said responses at corresponding voltage V_1;

(c) calibration means coupled to said receiving and converting means, for setting the maximum voltage deviation of

said voltage V_1 from said fluid storage system between a maximum and minimum condition;

(d) comparison voltage generation means developing an output voltage V_2;



(e) adjusting means for accepting said voltage V_2 and setting said voltage V_2 to a value V_2 corresponding to the value of V_1 at a maximum fluid quantity indication; and,

(f) display means accepting said voltage V_1 and V_2 and indicating the difference in said voltages, and displaying said difference.

4,513,618

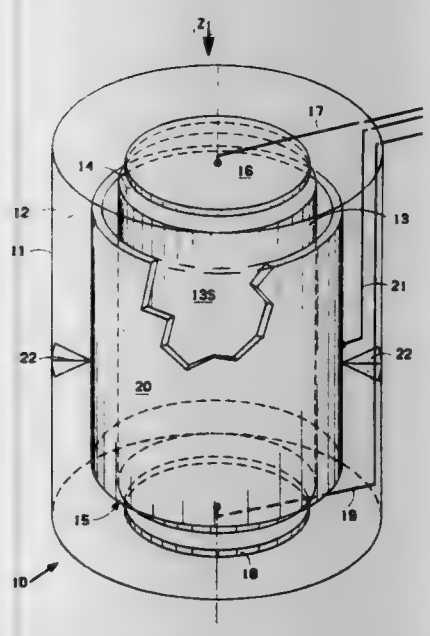
GRAVITY GRADIOMETER AND METHOD

Theodore V. Lautzenhiser, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 2, 1982, Ser. No. 364,740

Int. Cl.³ G01V *7/00*

U.S. Cl. 73—382 G **14 Claims**



1. Apparatus comprising:

a generally cylindrical housing having a vertical axis and containing a fluid;

float means suspended within said fluid and having an axis z oriented with the vertical gravitational field g(z) for responding to the vertical gradient $\partial g_z/\partial z$ of the vertical gravitational field g(z) by producing a force representative of the vertical gradient $\partial g_z/\partial z$ only of the vertical gravitational field, the float means having a weight substantially supported by its buoyancy in the fluid and having a mass distribution of a low mass-high mass dipole along the axis z, the force produced being representative of the vertical gradient $\partial g_z/\partial z$ and tending to a change of position of the float means in the fluid, the float means having an electrically conductive surface and being generally cylindrical in shape having a first end, a second end, and a radial surface and having a vertical axis generally coaxial with the vertical axis of the housing;

sensing and restoring means responsive to a change in position of the float means from a null position for generating and applying to the float means a countervailing force opposing the force representative of the vertical gradient $\partial g_z/\partial z$ of the vertical gravitational field and electrostatically maintaining the float means at the null position, the countervailing force thus being representative of the vertical gradient $\partial g_z/\partial z$ of the vertical gravitational field, the sensing and restoring means comprising a first capacitive element including a first electrically conductive plate adjacent the first end of the float means, a second capacitive element including a second electrically conductive plate adjacent the second end of the float means, a third capacitive element comprising a third electrically conductive plate adjacent the radial surface of the float means, and wherein at least the first capacitive element and the second capacitive element vary in capacitance responsive to the force tending to vertical displacement of the float means; and

signal means for taking off a signal representative of the thus generated countervailing force representative of the vertical gradient $\partial g_z/\partial z$ of the vertical gravitational field.

4,513,619

TESTING THE BALANCE OF A ROTATABLE MEMBER

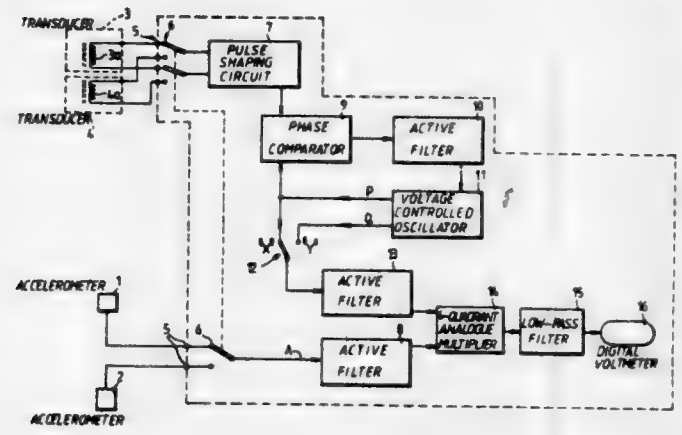
John A. Widdall, Woodford, England, assignor to British Aerospace Public Limited Company, London, England

Filed Jan. 12, 1983, Ser. No. 457,392

Claims priority, application United Kingdom, Jan. 13, 1982, 8200904

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—455 **3 Claims**



1. Apparatus for determining the amount and location of unbalance of an aircraft propellor, the apparatus comprising:

rotation sensor means, positioned near said propellor, for forming a train of pulses each indicative of movement of the propellor through a predetermined point in its rotation;

phase-locked voltage-controlled oscillator means, connected to receive said train of pulses, for forming first and second sinusoidal reference signals which are both locked in phase to said train of pulses and between which there is a phase-difference of substantially ninety degrees, the phase-locked oscillator means comprising regenerative feedback loop means incorporating an active inverting integrator, two reference signal output terminals respectively coupled to the input and output sides of the active inverting integrator, and phase-comparator means, having two inputs respectively connected to receive a portion of the signal formed at one of said signal output terminals and said pulse train, for forming an error signal indicative of phase error between said signal portion and said pulse-train, the output of the phase-comparator means being coupled to said regenerative feedback loop means for injecting said error signal into the regenerative feedback loop means;

accelerometer means, positioned on said aircraft, for generating a vibration signal indicative of radial force produced

as a result of unbalanced mass components of the rotating propellor;

selector switch means connected to said two reference signal output terminals of the oscillator means and operable for enabling one of the two reference signals to be passed to an output of the selector switch means;

multiplying means, connected to said accelerometer means and said selector switch means, for multiplying the vibration signal and the selected reference signal together; and

average value measuring means, connected to the multiplying means, for measuring the average value of its output.

4,513,620

SYSTEM FOR TESTING ARTICLES WITH RANDOM AND HARMONIC VIBRATIONS

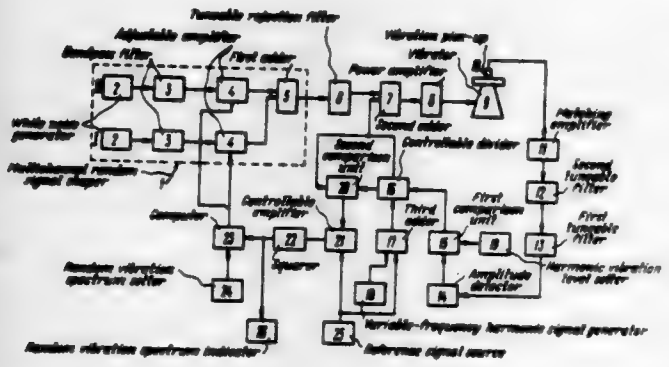
Yan S. Uretsky; Rashid R. Kajumov; Zaur A. Bashirov; Alfia G. Bashirova, and Alexandr A. Strelnikov, all of Kazan, U.S.S.R., assignors to Kazansky Aviatsionny Institut Imeni A. N. Tupoleva, U.S.S.R.

Filed Aug. 12, 1983, Ser. No. 522,385

Int. Cl.³ G01M *7/00*

U.S. Cl. 73—664

4 Claims



1. A system for testing articles with random and harmonic vibration comprising:

a multichannel random signal shaper having several channels, each channel having an intrinsic amplitude-frequency response and including:

a white noise generator;

a bandpass filter connected to said white noise generator;

an adjustable amplifier having two inputs and an output, the first input being connected to said bandpass filter; a first adder having several inputs whose number corresponds to the number of said channels and an output, said inputs of said adder being connected to the outputs of said adjustable amplifiers of the respective channels;

a tuneable rejection filter having two inputs and an output, the first input being connected to the output of said first adder;

a second adder having two inputs and an output, the first input being connected to said output of said tuneable rejection filter;

a power amplifier connected to the output of said second adder;

a vibrator connected to the output of said power amplifier;

a vibration pick-up mounted on the vibrator;

a matching amplifier connected to said vibration pick-up;

a second tuneable filter having a reverse amplitude-frequency response with respect to an amplitude-frequency response of said tuneable rejection filter and provided with two inputs and an output, the first input being connected to said matching amplifier;

a first tuneable filter having two inputs and a harmonic signal output and a suppression output, the first input being connected to said output of said second tuneable filter;

a variable-frequency harmonic signal generator having a signal output and a control output, said control output being connected to said second input of said rejection filter, to said second input of the first tuneable filter and to said second input of the second tuneable filter to enable synchronous tuning thereof;

a random vibration spectrum analyzer connected to said suppression output of the first tuneable filter, the output of said analyzer being connected to the second input of said adjustable amplifier in each channel.

4,513,621

ULTRASONIC TEST INSTRUMENT WITH CONTROLLABLE AMPLIFIER

Peter Renzel, Düren, and Klaus Kroesen, Bonn, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Inc., Lewistown, Pa.

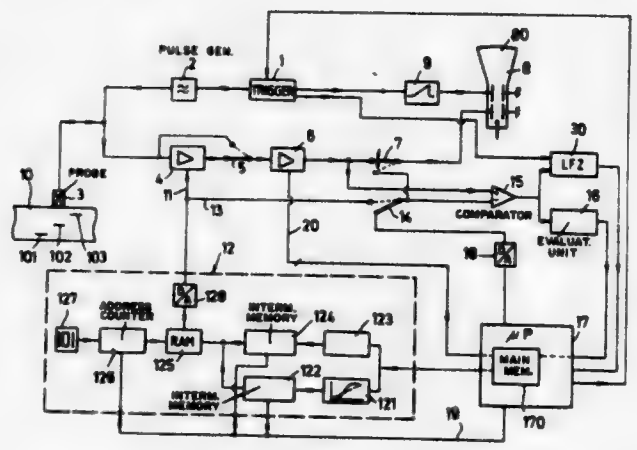
Filed Feb. 1, 1984, Ser. No. 575,878

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307224

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—631

1 Claim



1. An ultrasonic test instrument for nondestructive testing of materials having a controllable receiver amplifier and a cathode ray tube for displaying the received ultrasonic echo signals, in which the receiver amplifier is controlled in dependence upon time by means of a depth compensation signal, or else the ultrasonic echo signal amplified independently of time is evaluated by means of a time-dependent variable threshold signal, and in which both the depth compensation signals and the time-dependent threshold signals are derived from digital signal values stored in main memories and converted to corresponding analog values by means of a digital-to-analog converter, the improvement comprising:

a single main memory;

a first and a second intermediate memory coupled in series with said main memory, said first intermediate memory containing signal values corrected with respect to the signal values stored in said main memory taking into account the control voltage characteristic of the receiver amplifier, and said second intermediate memory containing inverse voltage signal values with respect to the signal values stored in the main memory;

a read-write memory coupled with its input to said first and said second intermediate memory;

the output of said read-write memory connected via said digital-to-analog converter to the controllable receiver amplifier and for displaying the threshold signal connected also via switches to said cathode ray tube, and

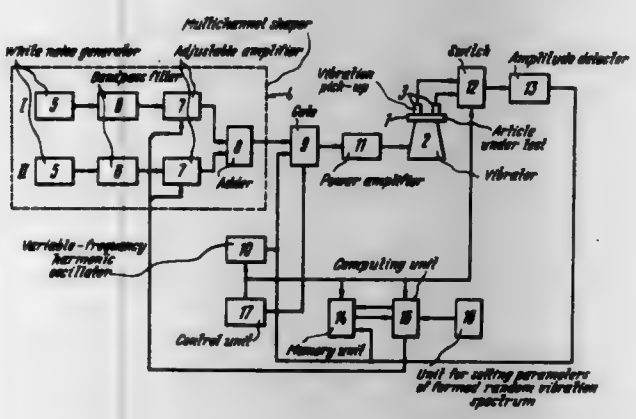
said controllable receiver amplifier coupled in series with a calibratable amplifier calibrated in decibels for determining the digital signal values stored in said main memory.

4,513,622

METHOD OF FORMING RANDOM VIBRATION SPECTRUM AND DEVICE THEREFOR

Yan S. Uretsky, Kazan, U.S.S.R., assignor to Kazansky Aviatsionny Institut Imeni A. N. Tupoleva, U.S.S.R.

Filed Aug. 22, 1983, Ser. No. 525,310
Int. Cl.[3] G01M 7/00
U.S. Cl. 73—664 3 Claims



2. A device for forming a random vibration spectrum at check points on an article under test comprising:

a multichannel random signal shaper having several channels, each channel thereof including:

a white noise generator;

a bandpass filter connected to said white noise generator;

an adjustable amplifier having two inputs and an output, the first input being connected to said bandpass filter;

an adder having several inputs whose number corresponds to the number of said channels and an output, said inputs of said adder being connected to the outputs of said adjustable amplifiers of the respective channels;

a gate having three inputs and an output, the first input being connected to the output of said adder;

a power amplifier connected to the output of said gate;

a vibrator mounting said article under test and connected to the output of said power amplifier;

vibration pick-ups mounted on said article under test at said check points;

a switch having several inputs whose number corresponds to the number of said vibration pick-ups connected to the respective vibration pick-ups, a control input, and an output;

an amplitude detector connected to said output of said switch;

a unit for setting parameters of spectral vibration acceleration density in each band of the predetermined frequency range at each check point on said article under test;

a computing unit having three inputs and two outputs, the first input being connected to said setting unit, while the first output is connected to the second input of said adjustable amplifier in each channel;

a memory unit having three inputs and an output connected to the second input of said computing unit, the first input being connected to the second output of said computing unit, while the second input is connected to the output of said amplitude detector;

a control unit having two outputs, the first output being connected to said control input of said switch, to the third input of said memory unit and to the third input of said computing unit, while the second output is connected to the third input of said gate;

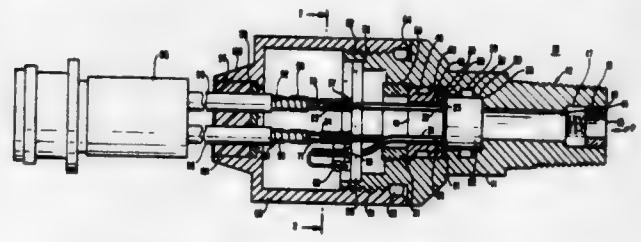
a variable-frequency harmonic oscillator having its input connected to the first output of said control unit and the output thereof connected to the third input of said gate and to the second input of said memory unit.

4,513,623

TRANSDUCER HOUSING EMPLOYING CRIMPED LEADS

Anthony D. Kurtz, Englewood, and Joseph R. Mallos, Jr., Franklin Lakes, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Sep. 9, 1983, Ser. No. 530,525
Int. Cl.[3] G01L 9/06
U.S. Cl. 73—721 20 Claims



1. A transducer housing apparatus, comprising,

a first housing section, said housing section having an internal bore extending from a first end to a second end with said bore having an opening at said first end and coaxial with a larger diameter transducer containing recess,

a transducer header located within said larger diameter recess and having a top surface facing said first end and in communication with said opening and having a bore with leads emanating from said bore, locking means coupling said header within said housing section,

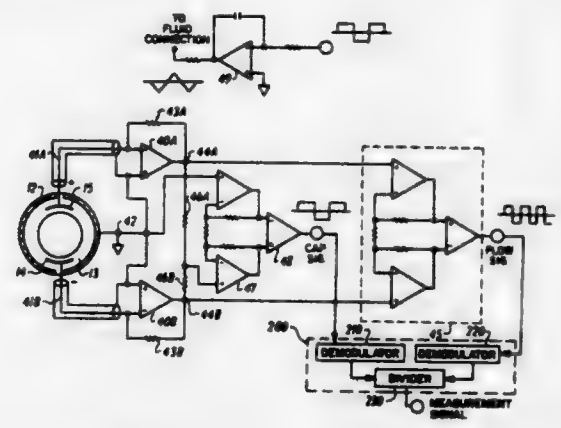
a second hollow housing section coupled to said first section and having tubular contact members depending therefrom into which members said leads are inserted to be crimped within said tubular contact members.

4,513,624

CAPACITIVELY-COUPLED MAGNETIC FLOWMETER

Edward J. McHale, Medfield, Mass.; Yousif A. Hussain, Horley, England; Michael L. Sanderson, Stockport, England, and John Hemp, Cranfield, England, assignors to The Foxboro Company, Foxboro, Mass.

Filed Jan. 20, 1983, Ser. No. 459,567
Int. Cl.[3] G01F 1/58
U.S. Cl. 73—861.12 19 Claims



1. A magnetic flowmeter for measuring the flow rate of a flowing fluid comprising:

a flow conduit having a dielectric portion through which a fluid whose rate of flow is to be determined is adapted to flow;

means for generating within said dielectric portion a time varying magnetic field transverse to the direction of flow;

electrode means capacitively coupled to the interior of said flow conduit through said dielectric portion for detecting an electrical signal induced by the intersection of the flowing fluid and said magnetic fields which is a function of flow rate; and

low-input-impedance means having an input impedance which is less than a prescribed percentage of the capacitive impedance presented by the capacitive coupling between said electrode means and the fluid,

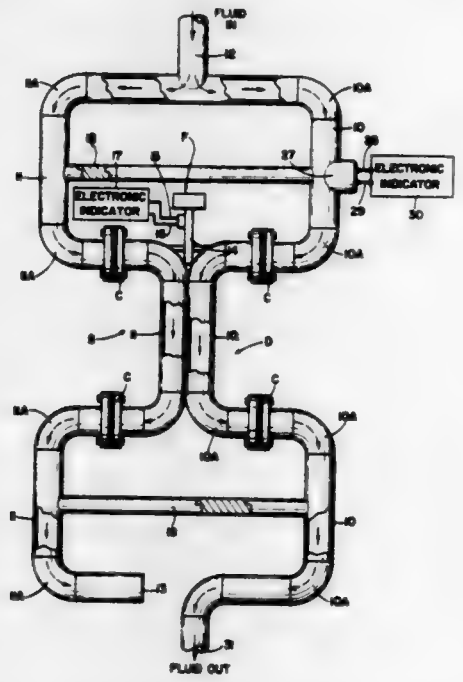
and said low-input-impedance means being coupled to said electrode means for producing a current signal proportional to said induced electrical signal, whereby said current signal is indicative of the flow rate of said fluid.

4,513,625

FLOW METER AND DENSITOMETER APPARATUS AND METHOD OF OPERATION

Keith S. Campman, and William B. Ernst, both of Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 30, 1983, Ser. No. 509,478
Int. Cl.[3] G01F *1/28*
U.S. Cl. 73—861.72 13 Claims



1. A mass flow meter apparatus, for measuring the flow rate of a fluid stream, the apparatus comprising:

a dynamic leg defined by a first conduit member having an inlet end and an outlet end, the first conduit member has several bends therein, and the bends are joined by several straight sections of the first conduit member;

a static leg defined by a second conduit member having an inlet end and a closed end, the second conduit member has several bends therein, and the bends are joined by several straight sections of the second conduit member;

the first conduit member and second conduit member are in contact with each other along one straight section of each conduit member;

a force measuring means is positioned at a point of contact between the first and second conduit members;

the first and second conduit members each have one straight section positioned upstream from the point of contact of said conduit members, one straight section positioned downstream from said point of contact, and each of said straight sections have a flexible connection therein; and wherein

the first conduit member is adapted for carrying the first part of a fluid stream from the inlet end, through the conduit member, and discharging the stream through the outlet end;

the second conduit member is adapted for carrying the second part of said fluid stream from the inlet end into the conduit member, where the fluid is retained, whereby said retained fluid exerts a fluid pressure equal to the fluid pressure of the first part of the fluid stream; and

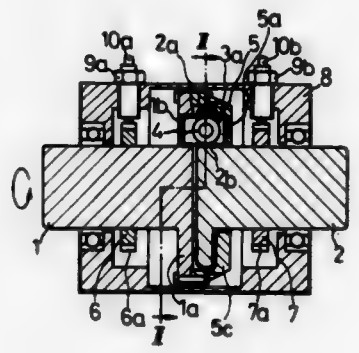
the first part of the fluid stream exerts a force, caused by its flowing motion through the first conduit member, which force is sensed and recorded by the force measuring means, and the flow rate of said first part of the fluid stream is then derived as a function of said force.

4,513,626

TORQUE DETECTOR

Hideki Obayashi, Okazaki; Tokio Kohama, Nishio; Kimitaka Saito, Okazaki; Hisasi Kawai, Toyohashi, and Toshikazu Ina, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 22, 1983, Ser. No. 468,715
Claims priority, application Japan, Feb. 22, 1982, 57-27921; Mar. 26, 1982, 57-49324; Apr. 22, 1982, 57-67547; May 8, 1982, 57-77232
Int. Cl.[3] G01L *3/14*
U.S. Cl. 73—862.34 11 Claims



1. A torque detector comprising:

(1) a first shaft adapted for integral connection with a driving shaft of an internal combustion engine so as to be rotated therewith;

(2) a second shaft adapted for connection to a load, which is arranged so as to be coaxially opposed to said first shaft, opposing ends of each of said shafts being provided with a flange so as to be opposed to each other, said flange of one of said shafts being provided with a plurality of long holes, each of which penetrates said flange and extends in the direction of rotation of said shafts along the periphery of said flange;

(3) a plurality of elastic members, said elastic members being accomodated within said long holes;

(4) elastic member receiving means for receiving both ends of each of said elastic members which are supported by the walls defining both ends of each of said long holes and projecting on both sides of said flange of said one shaft;

(5) a covering member which is integrally formed with said flange of the other one of said shafts so as to cover the peripheral portion of said flange of said one shaft, said covering member being provided with a wall portion which is opposed to said flange of said other shaft through said flange of said one shaft, a plurality of long grooves being formed in said flange of said other shaft and in said wall portion of said covering member so as to be opposed to each other through said long holes formed in said flange of said one shaft, both projecting ends of each of said receiving means projecting into said opposed long grooves formed in said flange of said other shaft and said covering member;

(6) angular phase difference detecting means for detecting the angular phase difference between said first and second shafts during the rotation thereof;

(7) data processing means for calculating torque from the angular phase difference; and

(8) display means for indicating the calculated torque.

4,513,627

TORQUE DETECTOR

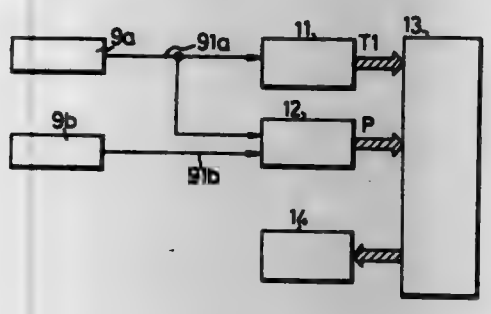
Tokio Kohama, Nishio; Hideki Obayashi; Kimitaka Saito, both of Okazaki; Toshikazu Ina, Nukata, and Seiichi Narita, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Jun. 6, 1983, Ser. No. 501,761

Claims priority, application Japan, Jun. 8, 1982, 57-96875

Int. Cl.³ G01L *3/14*

U.S. Cl. 73—862.34 **4 Claims**



1. A torque detector comprising:

(1) a first rotating member integrally connected to a driving shaft of an internal combusion engine so as to be rotated therewith;

(2) a second rotating member integrally connected to a load, which is provided so as to be coaxially opposed to said first rotating member;

each of said first and second rotating members being provided with a plurality of teeth or notches in the outer periphery thereof so as to be positioned in each combustion stroke of each piston of the engine, each of said plurality of teeth or notches formed in said first rotating member being opposed to each of said plurality of teeth or notches formed in said second rotating member;

(3) an elastic member for connecting the opposed ends of said first rotating member and said second rotating member;

(4) detecting means for detecting the passing of said teeth or notches of said first and second rotating member and generating pulse signals at the time when said detecting means detects the passing of said teeth or notches, which is provided so as to be opposed to the outer periphery of each of said first and second rotating members;

(5) a pulse phase difference detecting means for detecting pulse phase difference between said pulse signals;

(6) a rotating speed counting means for counting rotating speed of said engine;

(7) an angular phase difference detecting means for detecting angular phase difference between said first rotating member and said second rotating member from the pulse phase difference detected by said pulse phase difference detecting means, and the rotating speed counted by said rotating speed counting means; and

(8) a data processing means for calculating torque from the angular phase difference, for adding calculated torque in each combustion stroke of each piston and for averaging the added torque.

4,513,628

TORQUE DETECTOR

Tokio Kohama, Nishio; Hideki Obayashi, Okazaki; Toshikazu Ina, Nukata, and Seiichi Narita, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Inc., Kariya, both of, Japan

Filed Jun. 6, 1983, Ser. No. 501,762

Claims priority, application Japan, Jun. 8, 1982, 57-99033

Int. Cl.³ G01L *3/14*

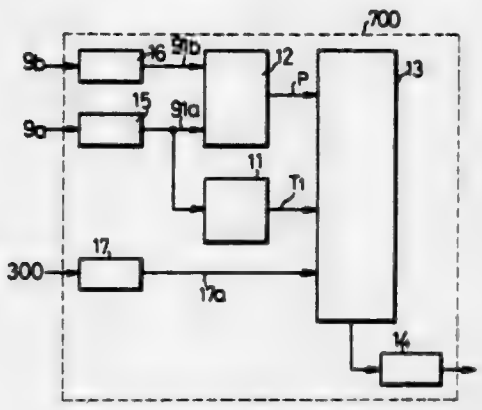
U.S. Cl. 73—862.34 **6 Claims**

1. A torque detector comprising:

(1) a first rotating member adapted for connection to a driving shaft of an internal combustion engine so as to be rotated therewith;

(2) a second rotating member adapted for connection to a load, which is provided so as to be coaxially opposed to said first rotating member;

(3) at least one elastic member for connecting said first rotating member to said second rotating member; said at least one elastic member deforming in response to torque applied to said first rotating member and producing an angular phase difference between said rotating members due to the deformation thereof;



(4) an angular phase difference detecting means for detecting angular phase difference between said first rotating member and said second rotating member;

(5) a no load condition detecting means for detecting a no load condition of said engine; and

(6) a data processing means for calculating accurate torque from the angular phase difference between said first rotating member and said second rotating member under a load condition and under the no load condition,

said no load condition detecting means supplying a no load condition signal to said data processing means when said engine is under the no load condition.

4,513,629

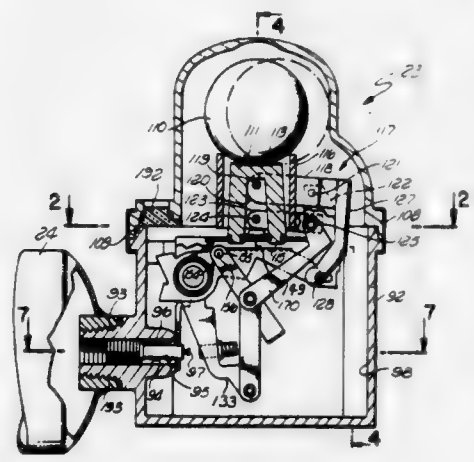
SHOCK RESPONSIVE DEVICE

William F. Keller, West Covina, and Richard D. Sibley, Anaheim, both of Calif., assignors to Koso International, Inc., Sante Fe Springs, Calif.

Filed Sep. 20, 1982, Ser. No. 420,050

Int. Cl.³ G05G *17/00*; F16K *17/36*

U.S. Cl. 74—2 **10 Claims**



1. A seismic actuator comprising:

a first arm mounted for swinging movement about an axis between first and second positions;

means yieldingly urging said first arm about said axis and toward said second position thereof;

a latch element engageable with said first arm at a location offset from said axis in a relation releasably retaining said first arm in said first position;

shock responsive means operable in response to shock forces to actuate said latch element in a direction automatically releasing said first arm for movement by said yielding means to said second position;

a second arm operable by swinging movement to actuate a controlled element;

first and second links connected pivotally together at first ends thereof and connected pivotally at second ends to a support structure and to said second arm respectively; and

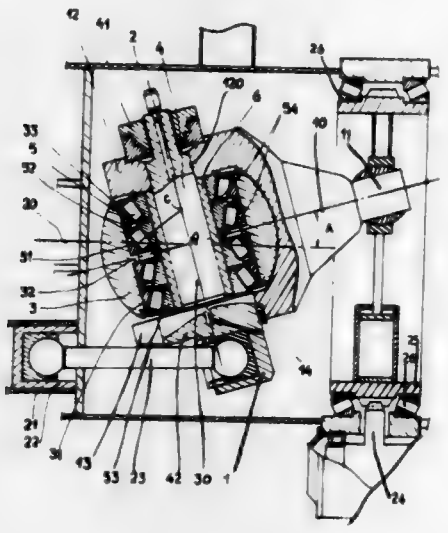
a third link extending between said first arm and at least one of said first and second links and operable to swing said first and second links from relatively angularly disposed positions toward essentially aligned positions in response to swinging movement of said first arm toward said second position thereof and in a relation swinging said second arm through an angle smaller than said first arm in a direction to actuate said controlled element.

4,513,630

MOTION CONVERSION MECHANISM

Gérard Pere, and Roger Badaut, both of Le Breuil, France, assignors to Creusot-Loire, Paris, France

Filed Jul. 6, 1982, Ser. No. 395,378
Claims priority, application France, Jul. 30, 1981, 81 14898
Int. Cl.³ F16H *23/00*; H03K *19/20*; F01B *3/00, 13/04*
U.S. Cl. 74—60 **5 Claims**



1. Mechanism for converting a rotary motion into a rectilinear to-and-fro motion, comprising

(a) an oscillating plate articulated about a pivoting axle on a supporting cross-piece pivotally mounted on a fixed housing about an axis intersecting said pivoting axle at a right angle at a center of oscillation;

(b) said oscillating plate comprising two spaced portions forming a yoke capping said cross-piece and supporting two ends of a coupling rod aligned with said pivot axle and passing into a central housing of said cross-piece;

(c) said central housing being bounded by an inner wall shaped as a cylinder of revolution about said pivoting axle;

(d) outer conical bearing cages fastened on said inner wall and centered on said pivoting axle

(e) said coupling rod being subjected to axial prestressing force taken up by inner cages of a bearing which are supported in axial direction and outwardly on two portions of said yoke, and inwardly on an annular spacer disposed between said yoke portions;

(f) an even number of substantially identical conical bearings stacked over the entire height of said housing;

(g) load center of said bearings being spaced symmetrically on either side of said center of oscillation;

(h) said inner cages being fitted onto a cylindrical bush itself fitted without play onto said coupling rod and extending over the entire space comprised between said two yoke portions;

(i) said inner cages being distributed over the entire length of said bush while leaving between them gaps in which are inserted spacer rings whose thickness is adjusted so that said pre-stressing force is distributed by said bearings and causes at least complete take-up of the play by radial elastic deformation of said cages;

(j) the length of said bush being equal to the total thickness of said inner cages and said spacer rings, reduced by compression enabling said play to be taken up;

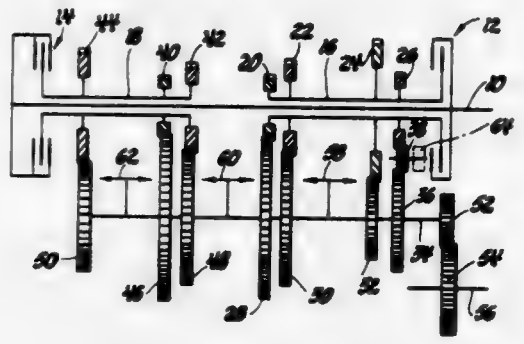
(k) said inner cages being applied to said bush, and said outer cages being applied to said cylindrical wall.

4,513,631

DUAL INPUT CLUTCH TRANSMISSION

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 16, 1983, Ser. No. 504,794
Int. Cl.³ F16H *3/08*
U.S. Cl. 74—360 **5 Claims**



1. A dual input clutch type transmission comprising: a drive shaft; a pair of input shafts; a pair of input clutches selectively operable to connect said drive shaft with respective ones of said input shafts; first, second and third ratio gears drivingly connected to one of said input shafts; first, second and fourth ratio gears drivingly connected to the other of said input shafts; output shaft means; a plurality of driven gear means rotatably supported on said output shaft means and meshing with said first, second and third ratio gears on said one input shaft and with said first, second and fourth ratio gears on said other input shaft; and a plurality of mechanical clutch means for selectively drivingly connecting said driven gear means with said output shaft means and for cooperating with said input clutches to selectively provide first, second, third and fourth ratios between said drive shaft and said output shaft means, whereby a shift from fourth ratio to second ratio can be accomplished by engaging the appropriate mechanical clutch means to establish second ratio between the one input shaft and the output shaft means while fourth ratio is established through the other input shaft and then interchanging said input clutches so that fourth ratio is disengaged from the drive shaft while second ratio is engaged with the drive shaft.

4,513,632

MOUNTING BRACKET FOR A STEERING COLUMN CONTROL STALK

Jack E. Swoveland, Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 16, 1984, Ser. No. 570,766
Int. Cl.³ H01H *9/00*; B25G *3/28*; A47H *1/14*
U.S. Cl. 74—484 R **4 Claims**

1. An improved mounting bracket for a vehicle steering column mounted control stalk, the steering column including an outwardly-extending boss having a key formed thereon, comprising:

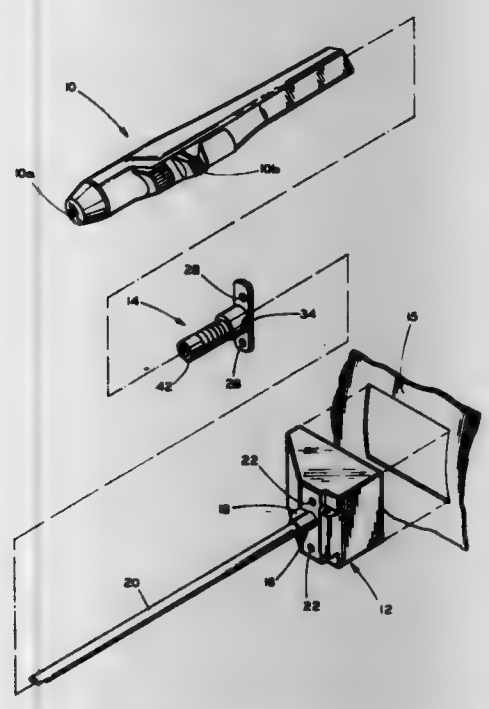
a generally flat base portion defining an aperture having a first inner diameter and adapted to receive said steering column boss;

an intermediate portion extending from a flat surface of said base portion, said intermediate portion defining a first passageway having a second inner diameter at least equal

to said first inner diameter of said aperture of said base portion;

a first slot formed in said base and intermediate portions adapted to receive said steering column key and extending axially co-extensively with said aperture and said first passageway;

a second slot formed in said base and said intermediate portions opposite said first slot, said second slot being smaller in size than said first slot;



an end portion extending from an end of said intermediate portion opposite said base portion, said end portion defining a second passageway having an inner diameter smaller than said second inner diameter of said intermediate portion, said end portion further including means for releasably engaging said steering column mounted control stalk; and

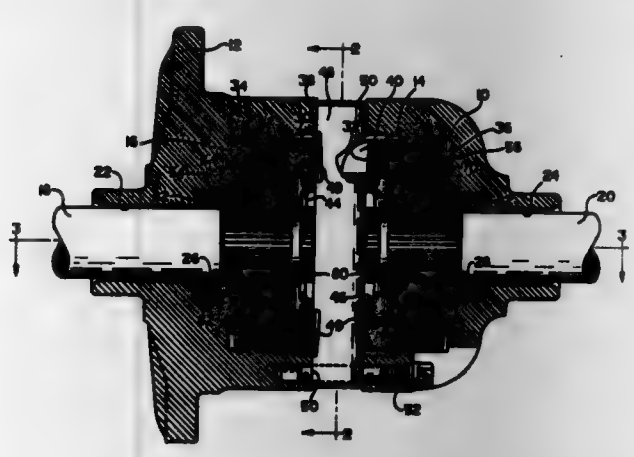
means for securing said base portion to said steering column.

4,513,633

POSITIVE DRIVE AND GENERATED CAM SURFACES THEREFOR

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 8, 1982, Ser. No. 366,611
Int. Cl.³ F16H *35/04, 1/44*; F16B *13/42*
U.S. Cl. 74—650 **21 Claims**



1. In a positive drive of the type including an input member adapted to be rotated by input driving torque transmitted from a power source, first and second output members, defining an axis of rotation of the drive, first and second clutch means operably associated with said first and second output members, respectively, each of said clutch means having a disengaged mode which allows its respective output member to rotate relative to said input member when said respective output member is rotating at an angular velocity in the direction of torque transmittal that is greater than one predetermined angular velocity of the other output member, and an engaged mode which maintains a predetermined rotational relationship between said respective output member and said input member when said respective output member is rotating at an angular velocity in the direction of torque transmittal that is equal to or less than another predetermined angular velocity of the other output member, first and second cam means operably associated with said first and second clutch means, respectively, to move said clutch means from said disengaged mode to said engaged mode, and shaft means, defining an axis, disposed between said first and second clutch means and mounted for rotation with said input member, operative movement of one of said cam means, to move the respective clutch means, occurring in response to pivotal movement of said shaft means through a range relative to said one cam means, the improvement comprising:

(a) said first and second cam means each including a circumferentially-extending ramp cam surface;

(b) said shaft means defining at least a pair of shaft cam surfaces, each of said shaft cam surfaces being disposed to engage one of said ramp cam surfaces of said first and second cam means; and

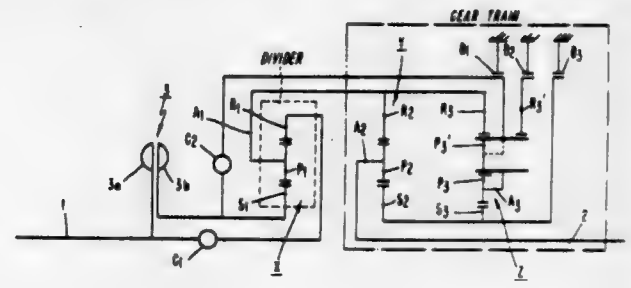
(c) each engaging pair of said ramp cam and shaft cam surfaces being defined by a common locus of generating lines, a major portion of said generating lines being oriented nonparallel with respect to the axis of said shaft means, to maintain substantial surface-to-surface contact between said shaft means and said one cam means over the range of said pivotal movement of said shaft means.

4,513,634

CHANGE-SPEED TRANSMISSION WITH SELECTIVE BYPASS OF HYDROKINETIC UNIT

Kunio Ohtsuka, Ebina, Japan, assignor to Nissan Motor Company, Limited, Japan

Division of Ser. No. 274,292, Jun. 16, 1981, Pat. No. 4,369,672, which is a continuation of Ser. No. 899,991, Apr. 25, 1978, abandoned. This application Aug. 19, 1982, Ser. No. 409,768
Int. Cl.³ F16H *47/08*
U.S. Cl. 74—688 **11 Claims**



1. A change-speed transmission comprising:

an input member (1) to receive the input torque;

an output member (2) to provide the output torque;

a hydrokinetic unit (3) having a pump (3*a*) connected to said input member for simultaneous rotation therewith and a turbine (3*b*);

a first and a second clutch (C_1C_2);

a divider in the form of a planetary gear set having at least a first, a second and a third rotary element;

a planetary gear train having a first planetary gear set and a second planetary gear set, each of said first and second planetary gear sets having at least a first, a second and a third rotary element, two of said first, second and third rotary elements of said first planetary gear set being constantly connected to two of said first, second and third rotary elements of said second planetary gear set, respectively, for simultaneous rotation therewith;

said first rotary element of said divider being connected to

one of said first rotary elements of said gear train for simultaneous rotation therewith;

said second rotary element of said divider being connectable through said second clutch (C_2) to one of said second rotary elements of said gear train for simultaneous rotation therewith when said second clutch is engaged;

said output member (2) being connected to a third rotary element of said planetary gear train for simultaneous rotation therewith;

said turbine (3b) being connected to one of said second and third rotary elements of said divider for simultaneous rotation therewith;

said input member being directly connectable through said first clutch (C_1) to the other one of said second and third rotary elements of said divider for simultaneous rotation therewith so as to bypass said hydrokinetic unit when said first clutch is engaged;

whereby the input torque of the input member may be split providing at least a portion of the output torque to the output member bypassing said hydrokinetic unit for increased efficiency.

4,513,635

DIFFERENTIAL GEAR FOR AUTOMOTIVE VEHICLES

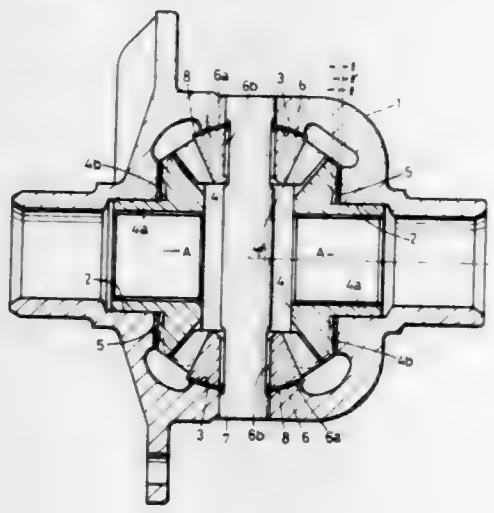
Keisuke Takimura, and Hideo Hamano, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 22, 1983, Ser. No. 477,855

Claims priority, application Japan, Apr. 22, 1982, 57-60225[U]

Int. Cl.³ F16H *1/40, 1/38, 55/18, 57/00*

U.S. Cl. 74—713 **3 Claims**



1. In a differential gear for automotive vehicles including a differential casing, a pair of side gears oppositely situated in and rotatably supported by the differential casing, said side gears having a pitch cone angle α, a pinion shaft arranged at right angle to the axis of the side gears and fixed to the differential casing at both ends thereof, a plurality of pinions rotatably mounted on the pinion shaft and adapted to mesh with the side gears and a spring washer interposed between the back of each side gear and the inner surface of the differential casing, whereby the gear teeth of the side gears and the pinions are adapted to mesh with each other at a predetermined pressure by the resilient force of the spring washer; the improvement comprising a washer interposed between the backs of said pinions and the inner surface of said differential casing and fitted to said pinion shaft, said washer having at most a thickness of $l \tan \alpha$ wherein l represents a displacement from an uncompressed condition of said spring washer to a compressed condition thereof exhibiting a predetermined pressure against said side gears.

4,513,636

GEARING TRANSMISSION

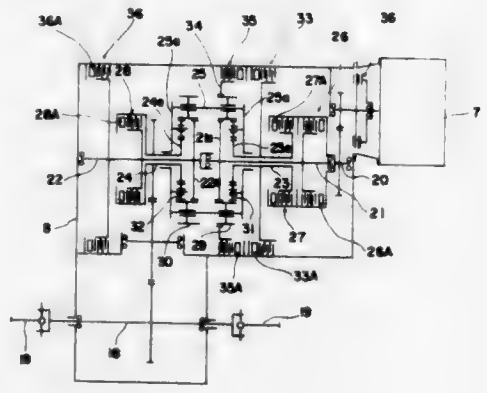
Denzaburo Harada, Katano, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Dec. 20, 1982, Ser. No. 451,369

Claims priority, application Japan, Feb. 1, 1982, 57-13383[U]

Int. Cl.³ F16H *57/10*

U.S. Cl. 74—761 **1 Claim**



1. A gear transmission comprising

an input shaft (20),

a first intermediate shaft (21),

a second intermediate shaft (22),

said shafts being coaxial with one another,

a tubular shaft for rearward travel (23) mounted for relative rotation on said first intermediate shaft (21),

a tubular output shaft (24) mounted for relative rotation on said second intermediate shaft (22),

a planetary gear mechanism comprising a spider (25) mounted at opposite ends on said two tubular shafts (23, 24) and rotatable relative thereto, a ring gear (34), a first planetary subunit, and a second planetary subunit,

said first planetary subunit including

a first sun gear (21*a*) secured to said first intermediate shaft (21),

a second sun gear (23*a*) secured to said tubular shaft for rearward travel (23),

a first planet gear (29) attached to said spider (25) to be in constant mesh with said first sun gear (21*a*), and

a second planet gear (31) attached to said spider (25) to be in constant mesh with said second sun gear (23*a*) and said first planet gear (29),

said second planetary subunit including

a third sun gear (22*a*) secured to said second intermediate shaft (22),

a fourth sun gear (24*a*) secured to said tubular output shaft (24),

a third planet gear (30) attached to said spider (25) in constant mesh with said third sun gear (22*a*), and

a fourth planet gear (32) attached to said spider (25) in constant mesh with said fourth sun gear (24*a*) and said third planet gear (30), wherein said spider (25) and said ring gear (34) are used commonly by said first and second planetary subunits,

a first clutch (26) for connecting said input shaft (20) and said first intermediate shaft (21),

a second clutch (27) for connecting said input shaft (20) and said tubular shaft (23) for rearward travel,

a third clutch (28) for connecting said second intermeidate shaft (22) and said tubular output shaft (24),

a first brake (33) which acts on said tubular shaft (23) for rearward travel,

a second brake (35) which acts on said sing gear (34) and

a third brake (36) which acts on said second intermediate shaft (22), whereby forward speeds are obtained by engaging said first clutch and selectively combining other said clutches and said brakes, and backward speeds are obtained by disengaging said first clutch, engaging said

second clutch and selectively combining said third clutch and said brakes.

4,513,637

GEARING ASSEMBLY

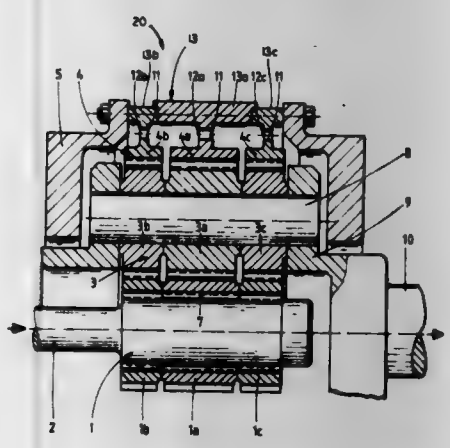
Manfred Hirt, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed May 27, 1982, Ser. No. 382,772

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3221662

Int. Cl.[3] F16H *1/28, 57/00*

U.S. Cl. 74—801 11 Claims



1. A gearing assembly comprising a plurality of composite gears in interengagement, each composite gear including three gear parts and means coupling the gear parts about an axis for unitary rotation, the coupling means of one of the composite gears including means nonrotationally fixing each gear part to an axial shaft, means independently rotatably mounting each gear part of the other composite gear to an axial shaft, the coupling means of the other composite gear comprising the toothed interengagement of the composite gears, the gear parts being arranged symmetrically along the axis of each composite gear, each part of each composite gear having a diameter, the diameter of each part of each composite gear being the same, each part of each composite gear having a number of gear teeth, the number and shape of all the gear teeth of each part of each composite gear being the same, a central gear part of each composite gear being twice the width of adjacent gear parts, each gear part of each composite gear being rotated relative to each adjoining gear part a distance less than a circular pitch length.

4,513,638

CONTROL MECHANISM FOR SELECTIVE CREEP OF AN AUTOMATIC TRANSMISSION

Masao Nishikawa, Tokyo; Torao Hattori; Takashi Aoki, both of Wako, and Hiroshi Yoshizawa, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

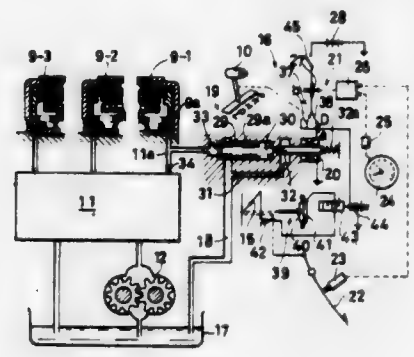
Filed Mar. 31, 1982, Ser. No. 364,027

Claims priority, application Japan, Apr. 4, 1981, 56-50818

Int. Cl.[3] B60K *41/18, 41/16*

U.S. Cl. 74—866 6 Claims

1. A control mechanism for a transmission of a vehicle having an internal combustion engine, the transmission including a torque convertor, a coupling member, a gear-train, and an operation lever having a neutral position and at least three other positions, the torque convertor, the gear-train, and the coupling member being interposed in a system line for transmitting output torque of the engine to a driving wheel of the vehicle, the operation lever being arranged to operate the coupling member to connect the torque convertor to the gear-train by being moved from the neutral position to one of the other positions; the control mechanism including coupling-preventing means operatively associated with the coupling member for preventing coupling when a throttle valve of the engine is in an idling position and the operation lever is moved from the neutral position to one of the other positions, and change-over means associated with the coupling-preventing means for selectively changing-over the coupling-preventing means from



an operative state preventing coupling to a rest state permitting coupling whereupon the coupling member connects the torque convertor to the gear-train even though the throttle valve is in an idling position.

4,513,639

CREEPING PREVENTING APPARATUS IN AUTOMATIC TRANSMISSION FOR VEHICLE

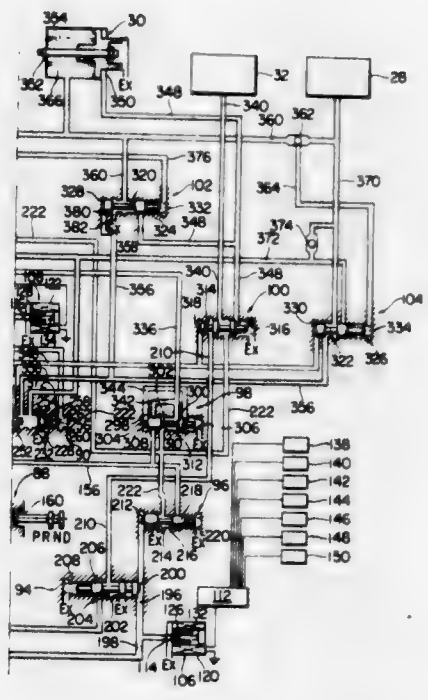
Takeo Hiramatsu, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 20, 1982, Ser. No. 451,385

Claims priority, application Japan, Dec. 23, 1981, 56-208540

Int. Cl.[3] B60K *41/18, 41/16, 41/12*

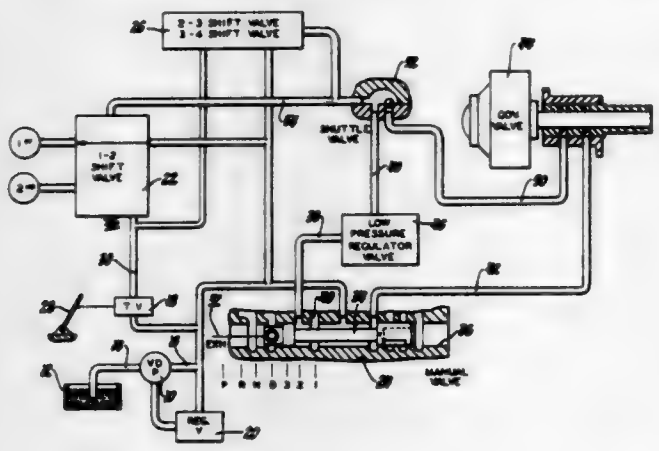
U.S. Cl. 74—866 3 Claims



1. In an automatic transmission for a vehicle comprising a plurality of friction engaging units hydraulically selectively actuated to establish a plurality of speed stages, said plural friction engaging units including at least a first friction engaging unit engaged for attaining a low forward speed stage of a relatively large gear ratio and a second friction engaging unit engaged together with said first friction engaging unit for attaining a high forward speed stage of a relatively small gear ratio, said second friction engaging unit only being released for carrying out a shift from said high forward speed stage to said low forward speed stage, an apparatus for preventing creeping of the vehicle comprising first sensor means for sensing whether or not the accelerator pedal is released or whether or not the throttle valve is full closed, second sensor means for sensing whether or not the vehicle is in its halted state, shift control means for engaging said first and second friction engaging units in response to the two output signals from said

first and second sensor means thereby attaining said high forward speed stage, and fluid pressure control means for reducing the pressure of hydraulic fluid supplied to said second friction engaging unit to a level lower than that of hydraulic fluid supplied to said first friction engaging unit, in response to the two output signals from said first and second sensor means.

4,513,640
TRANSMISSION SHIFT CONTROL
Paul D. Stevenson, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 10, 1983, Ser. No. 503,063
Int. Cl.³ B60K *41/16*
U.S. Cl. 74—870 **2 Claims**



1. A transmission control for a throttle controlled engine driven multispeed transmission having a low speed ratio and a plurality of higher speed ratios, said control comprising; a source of maximum system pressure; a source of throttle pressure proportional to engine throttle position; a source of governor pressure proportional to transmission output speed; a manual valve hydraulically connected to said maximum pressure source and being movable to a plurality of drive ratio conditions including an automatic drive range; shift valve means hydraulically connected to said source of throttle pressure for controlling the automatic shifting of said transmission between the low speed ratio and the next higher speed ratio; a fixed pressure regulator valve means for supplying a fixed pressure signal less than the pressure supplied by said source of governor pressure at a predetermined transmission output speed and being hydraulically connected to said source of maximum pressure through said manual valve when said manual valve is in said automatic drive range; and valve means for communicating the higher of said fixed pressure or said source of governor pressure to said shift valve means for controlling the shifting thereof, said fixed pressure being sufficient to prevent said shift valve from selecting the low speed ratio when the source of throttle pressure is below a predetermined value whereby the transmission will begin operation in the next higher speed ratio.

4,513,641
CLIMBING AID RETRIEVER
Joseph Murray, and Jesse Guthrie, both of 2791 Knollsville Land, Vienna, Va. 22180
Filed May 27, 1983, Ser. No. 498,510
Int. Cl.³ B25B *31/00*
U.S. Cl. 81—486 **11 Claims**

1. A climbing aid retriever comprising

(a) a fork body with longitudinally extended tines;

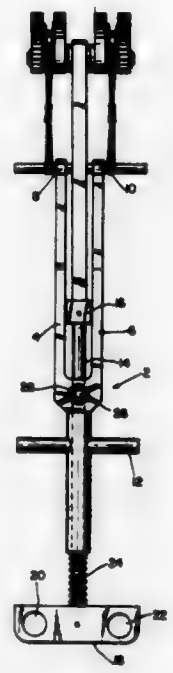
(b) hooks on the ends of said extended tines adapted to engage an operating bar of a climbing aid;

(c) means located on said fork body adapted for engagement by fingers of one hand of a climber;

(d) a longitudinal bore in said fork body extending from the base of the tines to the upper end of the fork body, said bore having a given length;

(e) a rod having first and second ends and having a length greater than said given length and mounted for reciprocation in said bore;

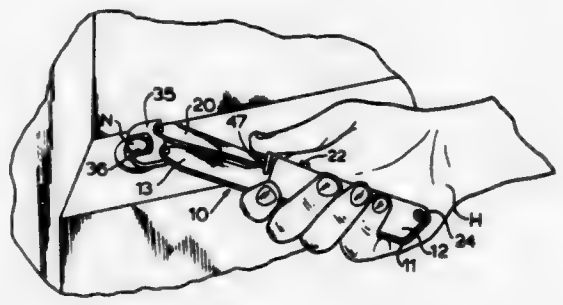
(f) a stop secured to said first end, guided in reciprocation by said longitudinally extending tines and adapted to apply pressure upon a support bar of a climbing aid;



(g) a threaded hole in said fork body extending into said bore and an adjustment screw engaged in said threaded hole for operation by said one hand of a climber for fixing said reciprocated stop while said pressure is applied upon said support bar; and

(h) a handle secured to said second end and adapted to engage the base of a thumb of a climber.

4,513,642
AUTOMATIC RETURN VARIABLE ADJUSTABLE WRENCH
John F. Castner, Sr., P.O. Box 7156, San Diego, Calif. 92107, and Martin I. Sheps, 16139 Ladera Piedra Way, Poway, Calif. 92064
Filed Apr. 28, 1983, Ser. No. 489,542
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—52 **27 Claims**



1. A wrench tool comprising:

a handle member,

an arm member slidingly engageable between an extended position and a retracted position with said handle member,

a wrench head releasably and pivotally attached to said handle member and said arm,

a locking device securing said arm and handle together to hold the head in a fixed selected position on the arm and handle during a rotation of the wrench handle in one direction while allowing limited shifting of the arm relative to the handle when the handle is rotated in the opposite direction, and

means for releasing said locking device and biasing means for returning said arm to an initial position when said locking means is released.

4,513,643

AUTOMATIC STUD DRIVING TOOL

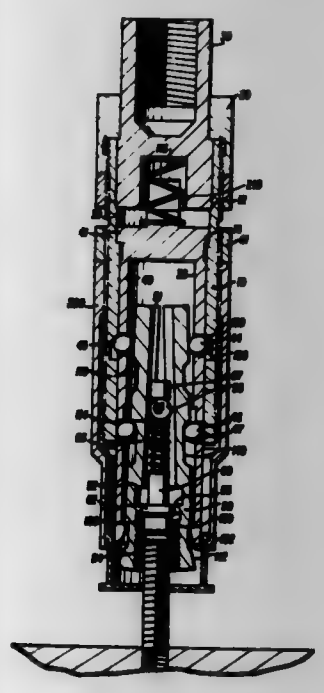
John A. McKean, Fairview, Pa., assignor to Titan Tool Company, Fairview, Pa.

Continuation-in-part of Ser. No. 360,821, Mar. 24, 1982, Pat. No. 4,470,329, which is a continuation-in-part of Ser. No. 265,706, May 21, 1981, abandoned, and a continuation-in-part of Ser. No. 579,288, Feb. 14, 1984, , which is a continuation of Ser. No. 405,365, Aug. 5, 1982, abandoned, which is a continuation of Ser. No. 179,444, Aug. 19, 1980, abandoned. This application Feb. 14, 1983, Ser. No. 466,069

Int. Cl.[3] B25B *19/00*

U.S. Cl. 81—53.2

17 Claims



1. An automatic stud driving tool comprising:

a hollow body,

a carriage disposed within said body and having a longitudinal axis, the carriage provided with a cavity extending therethrough along said axis;

a pair of opposed jaws provided partially within said cavity and capable of sliding simultaneously as a unit along the axis of said carriage, the jaws being substantially non-rotatable with respect to said carriage, means for assuring that the jaws are capable of moving with respect to said carriage to at least two positions relative to each other, an open and a closed position;

the pair of jaws being provided with gripping means for gripping a stud in a non-rotatable manner when said jaws are in said closed position, and for releasing said stud when said jaws are in said open position;

preventing means for positively preventing the jaws from moving from the open position to the closed position unless a stud is engaged with said gripping means;

holding means provided to prevent the removal of the jaws from the carriage when said jaws are in said open position, said holding means comprising a permanent holding contour on the surface said jaws, and a permanent holding contour of the surface of said cavity, such that when the jaws assume their open position the permanent holding contours abut and prevent removal of said jaws, but when said jaws assume their closed postion the permanent holding contours do not abut and the jaws can be removed from said carriage, such that said jaws are held within said carriage at the open position substantially only by said permanent contours;

wherein the carriage is axially movable with respect to said body; and

means are provided to rotate the carriage to thereby rotate the jaws, to in turn rotate the stud into a work piece.

4,513,644

FLUID POWERED TORQUE WRENCH

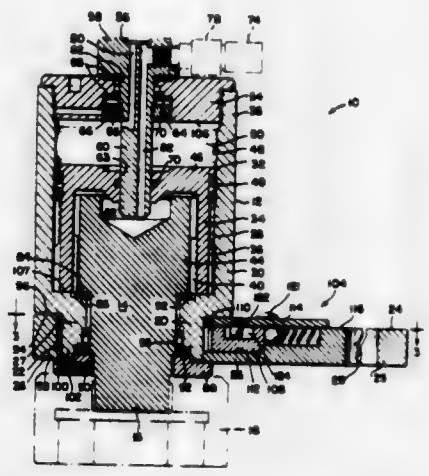
Paul P. Weyer, 48811 - 284th Avenue S.E., Enumclaw, Wash. 98022

Filed Dec. 28, 1983, Ser. No. 566,320

Int. Cl.[3] B25B *13/48*

U.S. Cl. 81—57.39

11 Claims



1. A fluid-powered torque wrench connectible to external fluid lines, comprising:

an outer elongated cylindrical body having ports for introducing pressurized fluid therein;

an output shaft with exterior helical splines rotatably supported within said body and having a drive end for detachably securing a socket or other tool thereto for engaging and driving a nut, screw, or the like by rotation of said shaft;

a linear-to-rotary transmission means disposed within said body and operable to provide relative rotational movement between said shaft and said body, said transmission means including a piston sleeve with exterior and interior helical splines and having a piston head for application of fluid pressure to a first side of said head to produce linear movement of said piston sleeve in a first direction, and for application of fluid pressure to an opposite second side of said head to produce linear movement of said piston sleeve in an opposite second direction, and further including spline means substantially stationary relative to said body for meshing with said exterior piston sleeve splines, said interior piston sleeve splines meshing with said exterior shaft splines, whereby linear movement of said piston sleeve in said first direction rotates said shaft to drive said nut, screw or the like and urges said body to rotate in a first rotational direction under the rotational counterforce occurring thereby, and movement of said piston sleeve in said second direction with said shaft held substantially stationary urges said body to rotate in an opposite second rotatonal direction under the rotational counterforce occurring thereby;

an elongated lever arm having a head end portion for rotatably receiving and supporting said body, with said drive end of shaft extending transversely thereto, and a handle end portion for holding said lever arm stationary;

a ratchet operative between said nead end portion and said body for preventing rotational movement of said body relative to said lever arm in said first rotational direction and permitting rotational movement of said body relative to said lever arm in said second rotational direction, said ratchet means converting the relative rotational movement between said shaft and said body resulting from the application of fluid pressure to said first side of said piston into rotation of said shaft relative to said lever arm for driving said nut, screw or the like by preventing rotation of said body in said first rotational direction, and said ratchet means converting the relative rotational movement between said shaft and said body resulting from the application of fluid pressure to said second side of said

piston into rotation of said body relative to said lever arm for repositioning said piston within said body for another driving stroke of said piston by permitting rotation of said body in said second rotational direction when said shaft is held substantially stationary; and

a stem axially aligned with said body and projecting from the exterior of said body through an end cap thereof and through said piston head, said stem being rotatably received by said end cap and said head, and slidably engaging said head, said stem extending sufficiently into said body to engage said head during the entire travel of said head within said body, and having a pair of interiorly disposed conduits, said one conduit communicating fluid between one of the external fluid lines and said first side of said head, and said other conduit communicating fluid between another of the external fluid lines and said second side of said head, said stem being in fluid-sealed relation with said end cap and said head.

4,513,645

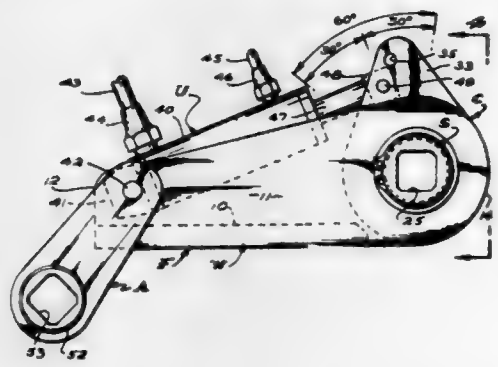
HYDRAULIC WRENCH

Bosko Grabovac, and Ivan N. Vuceta, both of P.O. Box 8830, City of Industry, Calif. 91748

Continuation-in-part of Ser. No. 337,535, Jan. 7, 1982, abandoned. This application Jan. 31, 1984, Ser. No. 575,568

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—57.39 **7 Claims**



1. A hydraulic wrench comprising an elongate horizontal frame with front and rear ends and laterally spaced side walls, a pair of axially aligned openings in the front end portion of the side walls, an elongate drive shaft extending freely between and through said openings, means at the shaft to establish driving engagement with work-engaging tools, an elongate crank with a lower end positioned between the side walls and having an elongate opening concentric with and through which the shaft freely extends, said crank has an upper end spaced radially from the axis of the shaft, an elongated double acting cylinder and ram unit with front and rear ends, connecting means pivotally connecting the rear end of the unit to the rear end of the frame and coupling means pivotally coupling the front end of the unit to the upper end of the crank, said unit operates to pivot the crank circumferentially forwardly and circumferentially rearwardly about the axis of the shaft; ratchet means between the shaft and the crank releasably establishing driving engagement therebetween when the crank is pivoted forwarded and establishing overriding engagement therebetween when the crank is pivoted rearward, said ratchet means includes an elogate ratchet wheel on and projecting radially outward from the shaft, the wheel is greater in axial extent than in radial extent and extends longitudinally of the shaft between the ends thereof, said wheel has a plurality of elongate longitudinally extending circumferentially spaced radially outwardly projecting teeth substantially coextensive with the longitudinal extent of the wheel and the opening in the crank, said teeth have elongate longitudinally extending circumferentially rearwardly and radially outwardly disposed flat rear drive flanks and elongate longitudinally extending circumferentially forwardly and radially outwardly disposed flat orienting flanks, the adjacent drive and orienting flanks of adjacent teeth are on right angularly related planes; a plurality of elongate longitudinally extending radially inwardly opening recesses in the crank in uniform circumferential spaced relationship about and coextensive with the opening in the crank, the recesses have circumferentially forwardly and radially inwardly disposed rear bearing surfaces coextensive with and extending longitudinally thereof; a plurality of elongate pawls substantially equal in longitudinal extent with and extending parallel with and longitudinally of the teeth and the recesses, the pawls have longitudinally extending circumferentially rearwardly and radially outwardly disposed rear bearing edges pivotally engaged in the rear bearing seats of related recesses, longitudinally extending circumferentially forward and radially inward disposed flat drive surfaces normally opposing and in flat uniform bearing engagement with the drive flanks of related teeth, longitudinally extending circumferentially rearwardly and radially inwardly disposed flat inner orienting surfaces normally opposing and in flat uniform bearing engagement with the orienting flanks of related teeth and outer surfaces disposed substantially radially outwardly toward their related recesses, the width of the pawls between their bearing edges and drive surfaces is less than one-half their longitudinal extent, said pawls are pivotally movable about the turning axes of their bearing edges and radially outward relative to their related recesses and from engagement with the ratchet wheel and into said recesses; and spring means in the recesses engaging the pawls and normally yieldingly urging the pawls radially inwardly into engagement with the wheel.

4,513,646

NUMERICALLY CONTROLLED MACHINE TOOL

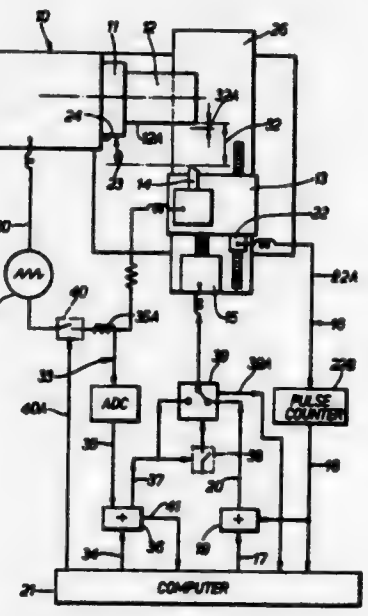
David R. McMurtry, Wotton-under-Edge, England, assignor to Renishaw Electrical Limited, Wotton-under-Edge, England

Filed Jun. 1, 1982, Ser. No. 384,100

Claims priority, application United Kingdom, Jun. 17, 1981, 8118665

Int. Cl.³ B23B *1/00, 25/06*

U.S. Cl. 82—1 C **5 Claims**



1. A method of operating a machine tool whereby a tool and workpiece are moved into engagement with each other, said machine tool having a datum surface established on a part thereof, comprising the steps of

moving said tool and said datum surface into engagement with each other;

separating said tool and said datum surface by a first distance;

generating a first feedback signal corresponding to said first distance;

moving said tool and said workpiece toward each other under the control of a first closed loop system in response to a first error signal corresponding to the difference between a first demand signal and said first feedback

signal, the distance between said tool and said workpiece being defined as a second distance;

sensing when said tool and said workpiece are separated by a second distance equal to a predetermined threshold value;

generating a second feedback signal corresponding to said second distance; and

switching control, in response to said second feedback signal, of the relative positions of said tool and said workpiece from said first closed loop system to a second closed loop system when said second distance is equal to said threshold value; and

continuing to move said tool and said workpiece toward each other under the control of said second closed loop system in response to a second error signal corresponding to the difference between a second demand signal and said second feedback signal.

2. A numerically controlled machine tool including means for supporting a tool and a workpiece for relative movement therebetween, said machine tool having a datum surface established thereon, comprising

motor means for moving said tool and workpiece relative to each other;

a first closed loop system including a first demand signal generating means and a first feedback signal generating means, said first feedback signal generating means generating a signal corresponding to the distance between said tool and said datum surface;

a second closed loop system including a second demand signal generating means and a second feedback signal generating means, said second feedback signal generating means generating a signal corresponding to the distance between said tool and said workpiece;

sensing means for determining when the distance between said tool and said workpiece has a predetermined value;

switching means for selectively coupling said first and second closed loop systems to said motor means, said switching means transferring actuation of said motor means from said first closed loop system to said second closed loop system when the signal generated by said second feedback signal generating means has a value corresponding to said predetermined threshold distance between said tool and said workpiece, said motor means being actuated by a first error signal corresponding to the difference between the signal generated by said first demand signal generating means and the signal generated by said first feedback signal generating means when said motor means is coupled by said switching means to said first closed loop system, and by a second error signal corresponding to the difference between the signal generated by said second demand signal generating means and the signal generated by said second feedback signal generating means when said motor means is coupled by said switching means to said second closed loop system.

4,513,647

PORTABLE PNEUMATIC WIRE CUTTER

Peter Eckelt, New Cumberland, and James A. Taylor, Jr., Camp Hill, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 273,631, Jun. 15, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,276

Int. Cl.³ B26D *5/26*

U.S. Cl. 83—203 **7 Claims**

1. A two cycle cutter assembly for severing an end of a multiconductor flexible cable, said assembly comprising

a frame member having two upright side members capable of supporting at least one feed reel containing multiconductor flexible cable,

multiple cable guide or support members and a horizontal mounting plate connecting the side members,

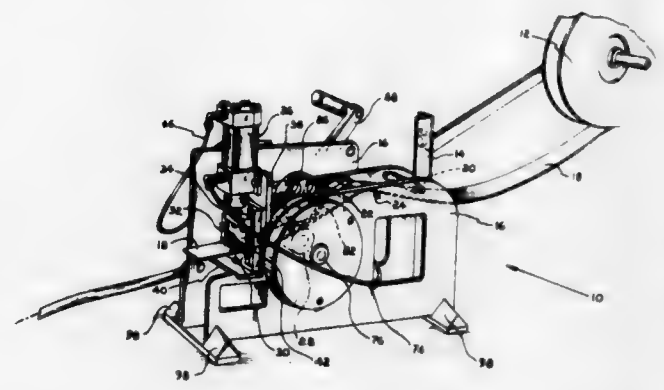
a first cable feed roller supported between the upright side members on a shaft connecting the side members,

a second cable roller mounted on a pressure release arm pivotable mounted at one end to a shaft connecting the side members, the second cable roller movable towards and away from the first cable feed roller in response to movement of the pressure release arm,

an air cylinder mounted on the frame above the horizontal mounting plate,

a blade support mounted on the frame between the air cylinder and the horizontal mounting plate,

a bottom knife blade fixedly mounted within the blade support and an upper knife blade movable within the blade support in response to actuation of the air cylinder,



an adjustment plate attached to one of the upright side members controlling maximum movement of the cable during a first cycle of the cutter, the adjustment plate being movable on the same side member within multiple adjustment slots, the position of the adjustment plate in the slots determining the maximum movement of the cable,

the cable being capable of moving from the reel between the first and second cable rollers and between the upright side members to a position between the knife blades in response to actuation of the first feed roller, and the cable capable of being severed after reaching the point of the maximum movement.

4,513,648

METHOD AND APPARATUS FOR OBTAINING SHEETS FROM A FLEXIBLE MATERIAL, PARTICULARLY A LATEX COAGULUM

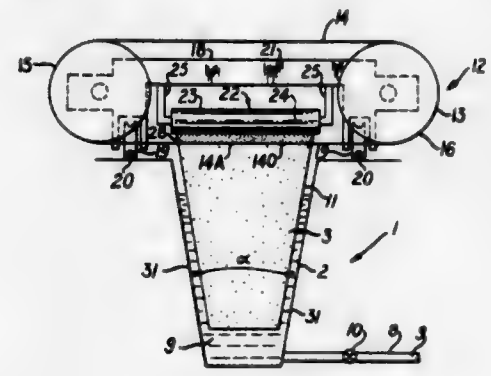
Robert Mioche, Durtol, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jun. 10, 1983, Ser. No. 502,977

Claims priority, application France, Jun. 10, 1982, 82 10283

Int. Cl.³ B26D *1/46, 3/28, 7/01*

U.S. Cl. 83—871 **23 Claims**



1. A method for obtaining sheets from a flexible material, characterized by the following features:

(a) the material is floated in a fluid so that a part of the material emerges above the fluid;

(b) a depression is produced on a portion of the emerged part by the use of depressing means;

(c) sheets are cut off from the depressed portion by the use of cutting means; and

(d) the thickness of the sheets is adjusted by varying the difference in height between the level of the depressing means and the level of the cutting means in the depressed portion.

4,513,649

CUTTING VITROUS SHEET CORNERS

Jean-Marie Dricot, Izegem, Belgium, assignor to Mirodan, Ets. Louis D'Haene & Sons, Kortrijk, Belgium

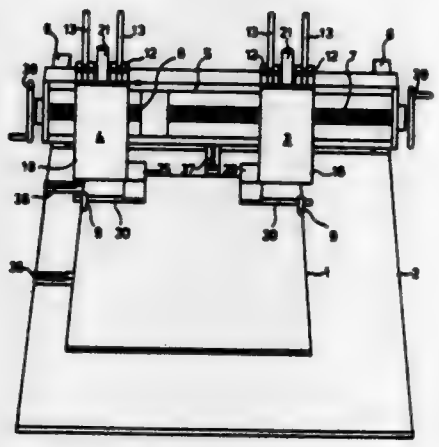
Filed May 27, 1983, Ser. No. 498,777

Claims priority, application United Kingdom, May 28, 1982, 8215717

Int. Cl.³ B26D *3/08*

U.S. Cl. 83—883

10 Claims



1. Apparatus for cutting the corners of a vitreous sheet, said apparatus comprising a support for a vitreous sheet, a pair of carriages mounted above the support for relative movement so that the spacing between said carriages can be adjusted, a pair of scoring heads each mounted for arcuate movement beneath a respective carriage, and means connected for driving said heads so that their arcuate movements are in respectively opposite senses for scoring corners of a vitreous sheet located on said support.

4,513,650

ELECTRONIC MUSICAL INSTRUMENT

Nobuyuki Nagasaka, and Yukichi Momoshima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

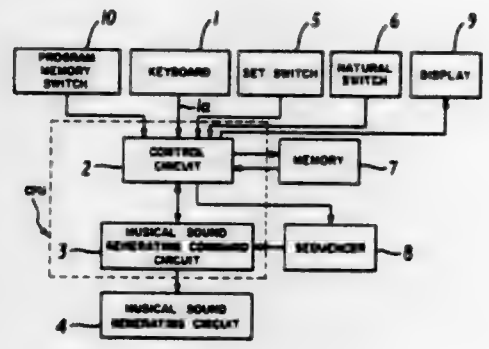
Filed Apr. 7, 1983, Ser. No. 482,918

Claims priority, application Japan, Apr. 16, 1982, 57-63286

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03

11 Claims



1. An electronic musical instrument comprising in combination: a keyboard having a plurality of white and black keys operative when depressed to produce corresponding key signals; a control circuit connected to receive the key signals; a musical sound generating circuit controlled by the key signals from said control circuit; a set switch operable to apply a semitone transfer information signal to said control circuit; a memory circuit for memorizing the semitone transfer information corresponding to certain depressed black keys according to an output signal from said set switch; said control circuit being operative to automatically transfer a semitone of said key information according to said semitone transfer information memorized in said memory whereby the instrument can play a semitone difference sound by actuation of only the white keys.

4,513,651

GENERATION OF ANHARMONIC OVERTONES IN A MUSICAL INSTRUMENT BY ADDITIVE SYNTHESIS

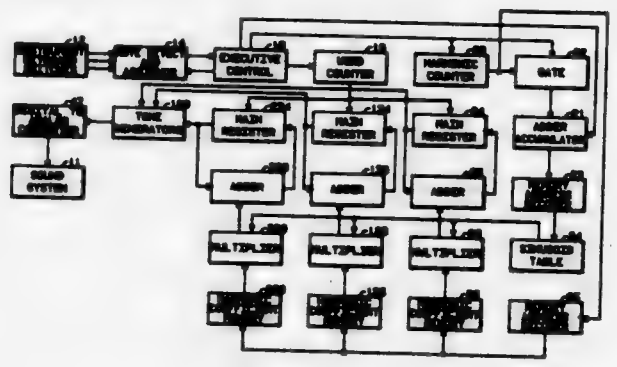
Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Sepulveda, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jul. 25, 1983, Ser. No. 517,157

Int. Cl.³ G10H *1/06*

U.S. Cl. 84—1.22

17 Claims



1. In a keyboard musical instrument, having a keyboard array of keyswitches, in which a plurality of data words corresponding to amplitudes of points defining the waveform of a musical tone are computed during each one of a sequence of computation cycles and transferred sequentially to a means for producing musical waveshapes, apparatus for producing a musical tone having anharmonic overtones in response to an actuated keyboard keyswitch comprising;

a plurality of harmonic coefficient memory means each of which stores a different preselected set of harmonic coefficients having a subset of zero-valued harmonic coefficients and wherein each said subset of zero-valued harmonic coefficients are selected to be mutually exclusive of any other said subset of zero-valued harmonic coefficients,

a harmonic memory addressing means whereby corresponding harmonic coefficients are simultaneously read out from each one of said plurality of harmonic coefficient memory means,

a plurality of waveshape memory means each of which is associated with a corresponding one of said plurality of harmonic coefficient memory means,

a means for computing responsive to harmonic coefficients read out from each one of said plurality of harmonic coefficient memory means whereby a plurality of component waveshape data points are computed during each one of said sequence of computation cycles wherein each one of said plurality of component waveshape data points is computed from a corresponding one of a preselected set of harmonic coefficients stored in an associated one of said plurality of harmonic coefficient memory means and whereby each one of said plurality of component data points is stored in a corresponding one of said plurality of waveshape memory means,

a plurality of waveshape memory reading means each of which is associated with a corresponding one of said plurality of waveshape memory means whereby the component waveshape data points are sequentially and repetitively read out of each one of said plurality of waveshape memory means at different memory advance rates preselected for each one of said plurality of waveshape memory means,

a data combining means whereby said waveshape data points read out of each one of said plurality of waveshape memory means are added to produce a composite set of

waveshape data points corresponding to said musical tone having anharmonic overtones, and

a means for producing musical waveshapes responsive to said composite set of waveshape data points whereby said musical tone having anharmonic overtones is produced.

4,513,652

SOLENOID ACTUATOR FOR USE IN AUTOMATIC PERFORMANCE PIANO

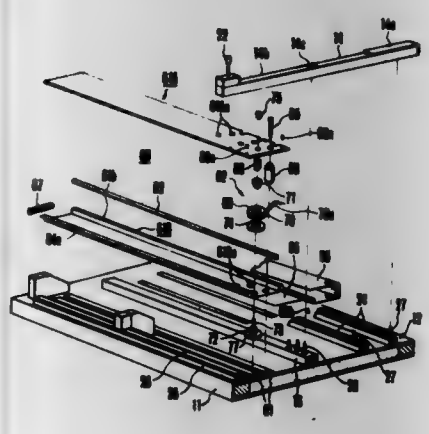
Shigeru Muramatsu, Shizuoka; Yuji Fujiwara, Hamamatsu; Hazime Hayashida, Hamamatsu, and Jun Yamamoto, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 18, 1982, Ser. No. 409,071

Claims priority, application Japan, Sep. 8, 1981, 56-132551[U]; Sep. 8, 1981, 56-132552[U]; Sep. 8, 1981, 56-132553[U]

Int. Cl.³ G10F *1/02, 3/00;* G10C *3/20*

U.S. Cl. 84—20 **10 Claims**



1. Solenoid actuators for use in a keyboard instrument including a key bed, and a plurality of keys mounted on said key bed through seesaw mechanisms, wherein said actuators comprise a plurality of electromagnetic plungers, and said actuators are disposed between said key bed and said keys for independently actuating said keys,

wherein the electromagnetic plungers for adjacent keys are displaced in the longitudinal directions of the keys so that the plungers as a whole are staggered and disposed between a single pair of integrally connected yoke members, which yoke members unite each of said plungers.

4,513,653

AUTOMATIC HYDRAULIC REVERSING VALVE FOR A DOUBLE-ACTION WORKING CYLINDER

Kurt Varlemann, Eidinghausener Strasse 117, D-4970 Bad Oeynhausen, Fed. Rep. of Germany

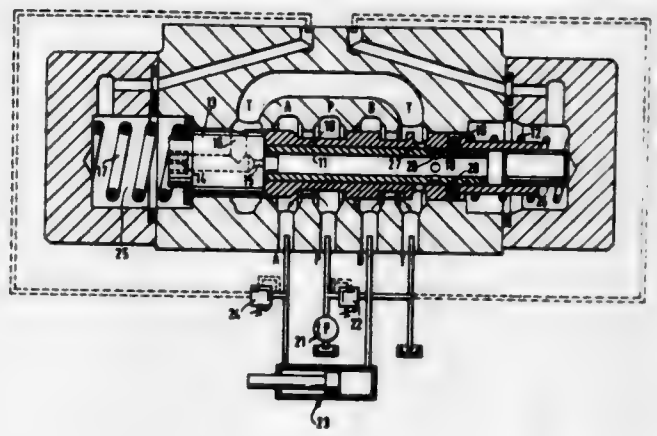
Filed May 13, 1983, Ser. No. 496,297

Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218527

Int. Cl.³ F01L *15/00*

U.S. Cl. 91—239 **5 Claims**

1. An automatic hydraulic reversing valve for operating a double-action working cylinder communicating therewith, a valve housing, a control piston located in said valve housing, a return spring engaging said control piston on one side for normally maintaining the control piston in a predetermined location, the other side of said control piston communicating with a relief pressure chamber formed in said housing and being subjected to hydraulic pressure from fluid directed into said chamber, said chamber being connected on the one hand to an operating connection of said working cylinder through an intermediate relief valve that communicates with a source of said fluid, and on the other hand to a reservoir tank through a throttle orifice, a thrust piston located in said housing and being responsive to a pressure buildup in said working cylinder in actuation of said relief pressure valve for moving said control piston to a starting position from a rest position, wherein the fluid source is placed in communication with said relief pressure valve for moving said thrust piston, said control piston in the starting position thereof being operable to open said operating connection to the thrust piston side of said control piston because of negative overlap, and a blocking slide valve



mounted in said control piston and being operable upon movement of the control piston to connect the thrust piston side of the control piston to the reservoir tank, said blocking slide valve being opened by a limit stop of the control piston on the spring side and closed by a limit stop of the control piston on the thrust piston side.

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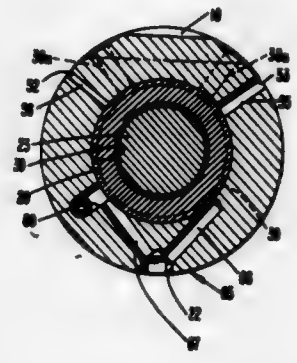
POWER STEERING GEAR WITH BALANCED VALVE

Peter H. Sheppard, R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Continuation of Ser. No. 112,294, Jan. 15, 1980, abandoned, which is a division of Ser. No. 974,347, Dec. 29, 1978, Pat. No. 4,294,161. This application Jul. 19, 1982, Ser. No. 399,698

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—378 **2 Claims**



1. In an integral hydraulic power steering gear for improving reversibility thereof and having a reciprocating piston, means to feed pressurized hydraulic fluid to said gear, and a reciprocating valve in a bore within the piston to selectively distribute the pressurized fluid to the ends of the cylinder for steering action, said feed means including a bifurcated delivery passage in said piston to feed said pressurized fluid to said valve, said fluid from said bifurcated delivery passage flowing directly around substantially all sides of said valve so as to substantially balance the valve within said bore.

4,513,655

DAMPER AND BLADE THEREFOR

Lloyd G. Dayus, 1735 Mattawa Ave., Mississauga, Ontario, L4X 1K5, Canada

Filed Nov. 30, 1983, Ser. No. 556,557

Int. Cl.³ F24F *13/08*

U.S. Cl. 98—121.2 **9 Claims**

1. An air damper comprising;

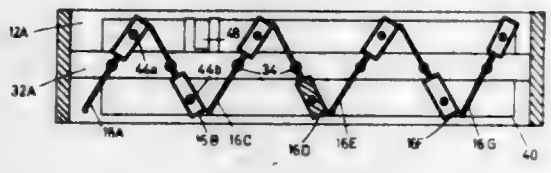
a generally rectangular frame;

blade support members on opposite sides of said frame of predetermined width and thickness;

a plurality of blade pivot pins extending normal to each such support member at spaced apart intervals therealong;

a plurality of generally linear blade members extending from side to side in said frame, said blade members having pin receiving recesses at opposite ends thereof for receiving pins on said supporting strip members, whereby said blade members may be pivoted with respect to said frame between open and closed positions;

a blade linkage member on at least one side of said frame located between a said blade support member and an adjacent portion of said frame, extending adjacent to the ends of said blades on said side of said frame, said linkage



member being slidably movable relative to said side of said frame and defining receiving means for engaging said blade support member, and,

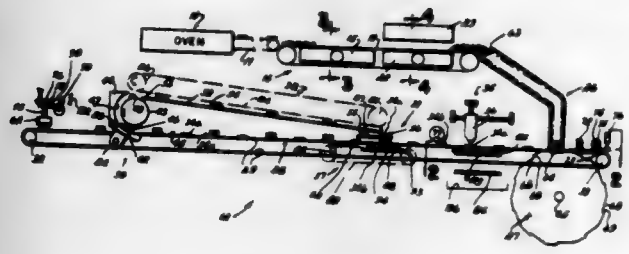
blade engaging formations extending from such linkage member around said blade support member into engagement with respective said blade members, movement of said blade linkage member being communicated thereby to all the said blade members simultaneously, for causing simultaneous pivotal movement of said blade members on said pivot pins wherein the linkage member defines a guide groove for receiving a respective said blade mounting member therein, said blade mounting member having a length greater than such linkage member, whereby when such linkage member is moved, such blade mounting member is held against movement.

4,513,656

SANDWICH MACHINE

Rudolph J. Fay, 6911 Wildflower Trail, Cincinnati, Ohio 45230

Filed Jun. 29, 1983, Ser. No. 508,861
Int. Cl.³ A21C 9/04
U.S. Cl. 99—450.4 **28 Claims**



1. A sandwich making machine for automatically making a sandwich having a topping material located between two individual objects, said machine comprising,

a row of magazine means for receiving rows of objects,

feeding means for feeding aligned rows of said objects from said magazine means into said machine,

first conveyor means for transporting said aligned rows of objects in a forward direction through said machine,

topping applicator means located in the path of travel of said conveyor for applying topping to rows of said objects,

a sandwich layering station located downstream of said topping applicator means,

second conveyor means for transporting untopped rows of objects to said sandwich layering station,

layering means at said sandwich station for placing rows of untopped objects from said second conveyor means on the tops of rows of topped objects passing said sandwich layering station,

said first conveyor means comprising multiple spaced endless conveyor belts, each of said objects in each of said rows being supported by a spaced pair of said belts, and

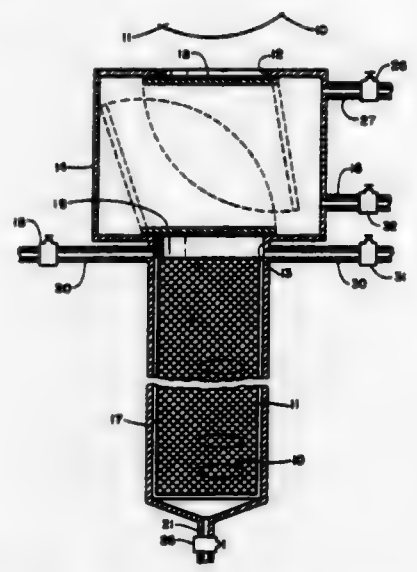
a topping takeoff conveyor belt located beneath said first conveyor means and beneath said topping applicator means, said topping takeoff conveyor belt being movable in a direction normal to the path of movement of said first conveyor means and being operable to receive and transport out of the machine any waste topping material deposited between the spaced belts as a result of the absence of an object on the first conveyor beneath said topping applicator means when said topping applicator means dispenses topping material.

4,513,657

FISH FOOD OR BAIT AND METHOD AND APPARATUS FOR MANUFACTURING SAME

Ronald D. Melancon, 1604 E. Bridge, Breaux Bridge, La. 70517

Filed Nov. 14, 1983, Ser. No. 551,678
Int. Cl.³ A23K 1/18; A23B 7/16
U.S. Cl. 99—472 **1 Claim**



1. An apparatus for saturating porous articles with a fish attractant liquid to form fish food or bait, which comprises

(a) a pressure vessel for receiving said porous articles;

(b) a basket for containing said articles within said pressure vessel;

(c) a first valve connected to said pressure vessel for pressurizing said pressure vessel;

(d) a second valve connected to said pressure vessel for creating a vacumn in said pressure vessel;

(e) a third valve connected to said pressure vessel for introducing said fish attractant liquid into said pressure vessel; and

(f) means for sealing said pressure vessel, said sealing means including

(1) an airlock chamber connected to said pressure vessel, said air lock chamber having a first opening communicating with said pressure vessel and a second opening communicating with said pressure vessel, said second opening also communicating with the exterior of said airlock chamber,

(2) a first inwardly opening door mounted in said airlock chamber for closing said first opening when a vaccumn is created in said pressure vessel, and

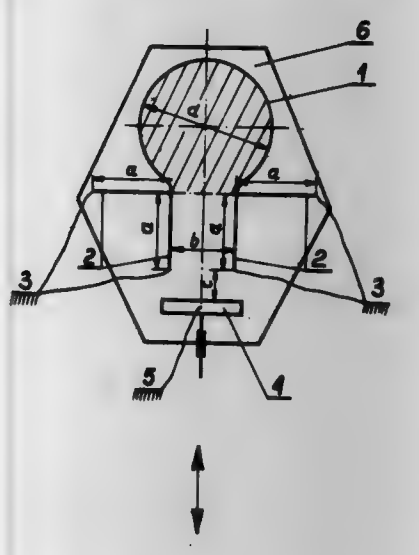
(3) a second inwardly opening door mounted in said airlock chamber for closing said second opening when said pressure vessel is pressurized, said airlock chamber also including a valve connected thereto for pressurizing said chamber to close said first and second doors.

4,513,658

CONTAINER FOR ACTIVATION OF MICROBIOPHYSICAL PROPERTIES OF SUBSTANCES ESPECIALLY FOOD-STUFFS

Ryszard Balinski, and Marek Sokulski, both of Warsaw, Poland, assignors to Osrodek Badawczo-Rozwojowy Aparatury Mleczarskiej, Warsaw, Poland

Filed Sep. 22, 1982, Ser. No. 421,387
Claims priority, application Poland, Sep. 22, 1981, 233126
Int. Cl.[3] A23B *4/00, 7/00*
U.S. Cl. 99—485 2 Claims



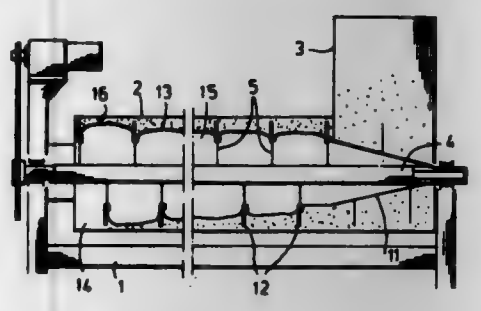
1. A container for activation of microbiophysical properties of a substance, especially food-stuffs and the like, comprising an upright cylinder mounted on a base and made of sheet metal, or the like, having a diameter (d) and a height, a portion of the side of the cylinder being open along the full height thereof, the width of said opening having a dimension (g), a pair of right angle plate member also formed of sheet metal or the like, and connected to the vertical edges defining said open side of said cylinder and arranged to be parallel to the vertical axis of said cylinder, each of said plates consisting of a pair of right angle flanges having a length of a dimension (a), and the remote edges thereof being electrically grounded, said plates being spaced apart by a dimension (b) corresponding to the side opening of said cylinder, a vertically arranged plate mounted on said base for radial movement toward and away from said cylinder and spaced from the edges of said right angle plate members by a distance (c), said movable plate also being electrically grounded, and a cover having a diameter (d) mounted above the top of said cylinder.

4,513,659

PRESS FOR THE EXPRESSION OF LIQUID FROM LIQUID-CONTAINING SUBSTANCES

Oskar Braun, Lindenfels, Fed. Rep. of Germany, assignor to Josef Willmes GmbH, Bensheim, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,086
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224086; May 13, 1983, 3317448
Int. Cl.[3] B30B *9/14*
U.S. Cl. 100—117 15 Claims



1. Press for expression of liquid from liquid-containing substances, namely agricultural and chemical products, with a container which has a filling- and an emptying-opening and within the container there is located a pressure membrane consisting of a flexible or elastic material which divides the interior into a pressure means- and press-space, characterized in that

(a) in the interior of the stationary container (2) a screw-conveyor (4) is located, and

(b) the screw-conveyor (4) is covered over by the pressure membrane (13, 13') secured in a pressure-tight fashion to selected portions of the screw conveyor to rotate therewith, and

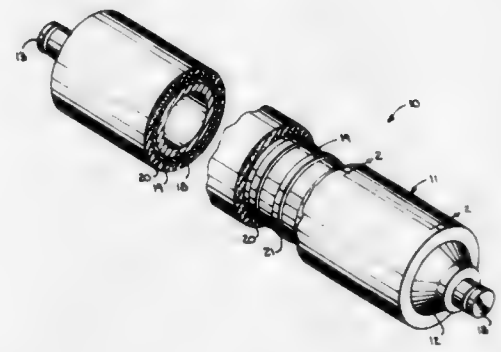
(c) the space (15) between the screw vanes (5) and the screw shaft (6) is the space for the pressure means.

4,513,660

IMPRESSION ROLLER FOR LIMITING CHARGE DISTRIBUTION

George B. Brands, Wilmette, and Bruce E. Hyllberg, Gurnee, both of Ill., assignors to American Roller Company, Union Grove, Wis.

Continuation of Ser. No. 584,615, Feb. 29, 1984, abandoned. This application Aug. 24, 1984, Ser. No. 644,645
Int. Cl.[3] B41F *13/18*
U.S. Cl. 101—1 3 Claims



1. A machine roller for conducting electrical current from a first region of relatively higher voltage to a second region of relatively lower voltage, the roller comprising:

an elongated body including an insulated cylindrical core and a layer of semiconductive material extending around the insulated core to provide the first and second regions of differing electrical voltage when electrical current is conducted through the semiconductive layer; and

a set of conductive elements spaced longitudinally along the body of the roller, each conductive element encircling the insulated core and contacting the semiconductive layer beneath the outer surface thereof, and each conductive element having an electrical resistance of at least two orders of magnitude less than the electrical resistance through twice the thickness of the layer of semiconductive material; and

the roller providing greater electrical resistance in the longitudinal direction than in the circumferential direction to limit electrical current in regions of the roller extending longitudinally beyond the first region of relatively higher voltage.

4,513,661

DOT MATRIX LINE PRINTER

Raymond F. Melissa, Santa Ana; Lorne H. Grummett, Costa Mesa, and John C. Chamberlain, Irvine, all of Calif., assignors to Trilog, Inc., Irvine, Calif.

Continuation of Ser. No. 259,697, May 1, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 482,133.
Int. Cl.[3] B41J *3/12*
U.S. Cl. 101—93.04 22 Claims

1. A printing apparatus defining an elongated paper path and

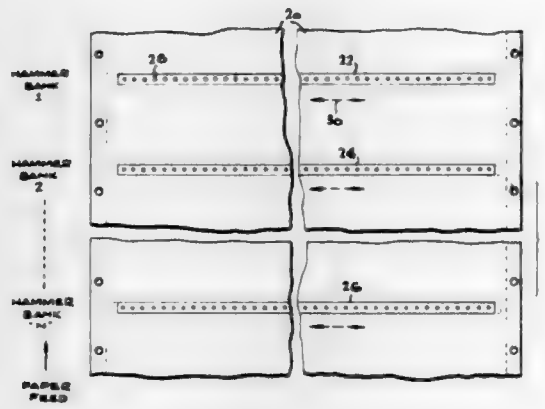
including means for moving paper along said path and means for printing a dot pattern on said paper in response to data signals defining a dot pattern for each of multiple dot rows to be printed, said apparatus comprising:

a plurality of print assembly banks including at least first and second banks;

said first print assembly bank including a plurality of print assemblies, each including a print element, mounted so as to align all of the print elements thereof along a first print row;

said second print assembly bank including a plurality of print assemblies, each including a print element, mounted so as to align all of the print elements thereof along a second print row;

means mounting said first and second print assembly banks



adjacent to said paper path for reciprocal movement of the print elements thereof along said first and second print rows extending substantially parallel to one another and across substantially the entire width of said paper path;

drive means coupled to said first and second banks for reciprocally moving said banks to sweep each print element thereof alternately in first and second directions across a portion of the width of said paper path;

each of said print assemblies being selectively actuatable to cause the print element thereof to print dots on paper on said path during each sweep in both said first and second directions across said paper path; and

means responsive to said data signals for concurrently actuating selected print assemblies on said first and second banks to concurrently print first and second dot rows on said paper.

4,513,662

INK FOUNTAIN DIVIDING KEY

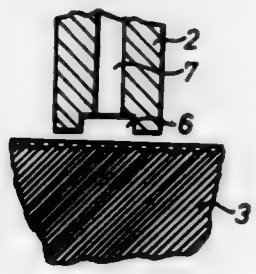
Georg Schneider, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 18, 1983, Ser. No. 542,945

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241124

Int. Cl.³ B41F *1/46, 31/18*

U.S. Cl. 101—207 **4 Claims**



1. An ink fountain dividing key for use in adjustably separating the surface of an ink fountain roller of uniform radius rotatable in an ink fountain of a rotary printing machine into a plurality of longitudinally spaced, separate ink applying surfaces, said ink fountain dividing key comprising:

a body having a curved front face, said curved front face having a radius of curvature the same as the uniform radius of the ink fountain roller disposed in the ink fountain, said curved front face being positioned closely adjacent and spaced from the surface of the ink fountain roller and being shiftable along the longitudinal length of the ink fountain roller;

a groove generally in the middle of said front face, said groove extending along said curved front face generally perpendicular to the longitudinal surface of the ink fountain roller and being closed at upper and lower ends of said curved front face;

a plurality of bore holes extending through said body of said ink fountain dividing key and terminating in said groove;

means for supplying compressed air to said groove through said bore holes, no part of said dividing key contacting said roller at any location said compressed air being the sole means contacting said roller to separate the surface of the ink fountain roller into separate ink applying surfaces; and

means for shifting said ink fountain dividing key longitudinally along the length of the ink fountain roller.

4,513,663

MECHANISM FOR VARYING THE AXIAL TRAVEL OF A DISTRIBUTING ROLLER IN A PRINTING MACHINE

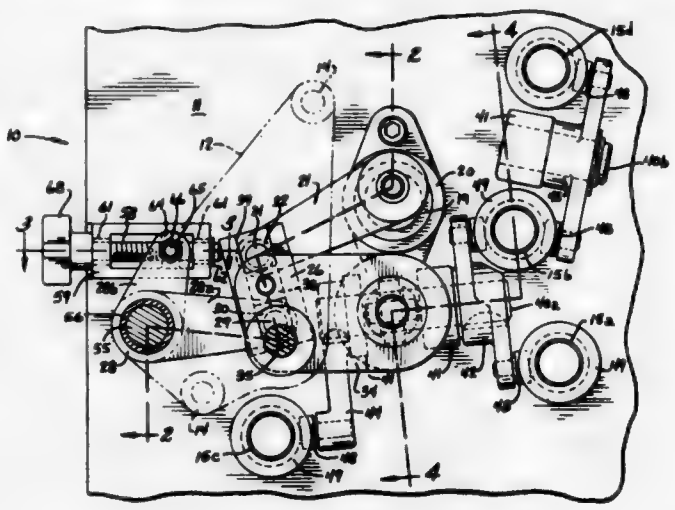
Peter Hummel, and Fred Kunkel, both of Offenbach, Fed. Rep. of Germany, assignors to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,585

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243582

Int. Cl.³ B41F *31/00*; B41L *27/00*

U.S. Cl. 101—349 **9 Claims**



1. In a printing press having a frame and a press drive for rotating rollers therein, a mechanism for axially reciprocating at least one ink distributing roller of the press comprising, in combination,

a first pivot mounted in selectively determined relation to said frame;

a rocker member pivotably mounted on said first pivot;

means for oscillating the rocker member about the first pivot;

a second pivot mounted in fixed relation to the frame;

an oscillating lever pivotably mounted on said second pivot;

means coupling said oscillating lever to said rocker member so that said lever is oscillated in response to oscillating movement of said rocker member;

means operatively connecting the oscillating lever to the distributing roller of the press for axially reciprocating the roller in response to the oscillation of the lever; and

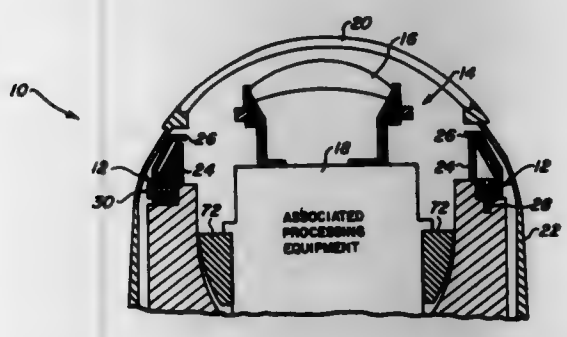
means for selectively adjusting the location of the first pivot with respect to the frame so as selectively alter the magnitude of travel of the oscillating lever and the reciprocation of the distributing roller.

4,513,664

IMPACT SWITCH FOR GUIDED PROJECTILES

David A. Edmonds, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1983, Ser. No. 494,156
Int. Cl.³ F42C *19/06*
U.S. Cl. 102—216 **20 Claims**



1. An impact switch for closing an electrical firing circuit of a guided projectile, comprising:

an annular base member formed of a non-metallic, non-conducting material fixedly secured in the forward end of the guided projectile;

an electrically-conductive film coating said annular base member over a substantial portion thereof with a portion of said film adapted for communication with the electrical firing circuit of said guided projectile;

said substantial portion of said film having an electrical discontinuity at at least one location on said annular base member to prevent eddy currents from being induced therein;

an annular crushable member formed of a non-metallic, non-conducting material mounted concentrically of, and in close proximity to, said annular base member; and

an electrically-conductive film coating said annular crushable member over a substantial portion thereof with a portion of said film adapted for communication with the electrical firing circuit of said guided projectile;

said substantial portion of said film having an electrical discontinuity at one location on said annular crushable member to prevent eddy currents from being induced therein;

whereby upon impact of said guided projectile with a target at an angle of incidence from 0° to approximately 70° said annular crushable member coated with said electrically-conductive film will be deformed into contact at at least one point with said electrically-conductive film of said annular base member to close the firing circuit of said guided projectile generating an electric current which detonates an explosive in said guided projectile.

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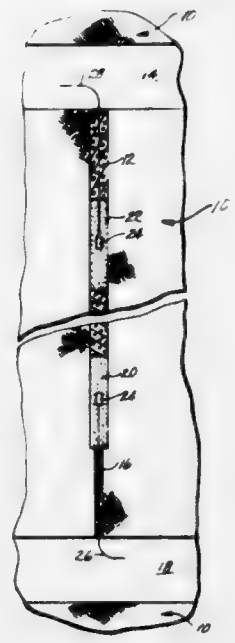
METHOD FOR LOADING EXPLOSIVE CHARGES INTO BLASTHOLES FORMED IN A SUBTERRANEAN FORMATION

Thomas E. Ricketts, and John E. Shaler, both of Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 6, 1983, Ser. No. 501,384
Int. Cl.³ F42D *3/00*
U.S. Cl. 102—312 **27 Claims**

1. A method for loading explosive charges into a blasthole formed in a subterranean formation between two void spaces, the method comprising the steps of:

placing a first explosive charge in a portion of the blasthole adjacent a first void space, the first explosive charge comprising at least one detonator operationally connected to a first explosive initiating lead that extends into the first void space; and



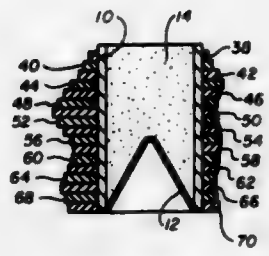
placing a second explosive charge in another portion of the blasthole adjacent a second void space, the second explosive charge comprising at least one detonator operationally connected to a second explosive initiating lead that extends into the second void space.

4,513,666

CONFINEMENT FABRICATION TECHNIQUE FOR ASYMMETRICALLY CONFINED SHAPED-CHARGE WARHEADS

Steven B. Segletes, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 18, 1983, Ser. No. 553,208
Int. Cl.³ F42B *13/10*
U.S. Cl. 102—476 **5 Claims**



1. A shaped-charge warhead confinement fabrication consisting of a series of stacked disks having non-concentric holes therein, a symmetric shaped-charge warhead having a given outer diameter, said holes having a diameter matching said outer diameter of said warhead, said warhead passing through said disk holes, thereby providing an asymmetrically shaped warhead.

4,513,667

HAND GRENADE SAFETY DEVICE

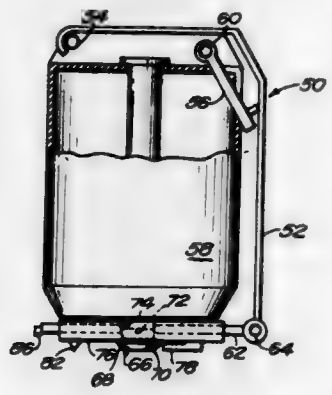
Anthony M. Caruso, 1620 Dallas St., Aurora, Colo. 80010

Continuation-in-part of Ser. No. 418,758, Sep. 16, 1982, abandoned. This application Nov. 25, 1983, Ser. No. 554,782
Int. Cl.³ F42B *27/00*
U.S. Cl. 102—487 **4 Claims**

1. A safety mechanism for a hand grenade comprising a

casing, a detonator fitting secured to one end of said casing, as safety handle mounted on said detonator fitting, a latch extending across the other end of said casing, and pivotally connecting an outer end of said handle, a detent engaging said latch in order to immobilize said safety handle relative to said grenade casing in order to provide a safety mechanism for the hand grenade;

said detent comprising a post protruding from the bottom of said casing and in alignment with said latch, the outer terminus of said post being formed as an enlarged head, said head being bifurcated into two resilient wings by a slot disposed along an axis of said post;



said latch having an aperture for engagement with said post, said head being oversized relative to said aperture to provide for an inward deflection of said wings into said slot during a passage of said latch aperture over said head; and wherein

said mechanism further comprises a slide translatably mounted on said latch for movement in a direction generally parallel with the bottom of said casing for engagement with said post, said slide including a tooth in alignment with and oriented for insertion within said slot in a direction generally parallel with the bottom of said casing to prevent said wing deflection, thereby retaining said latch on said post.

4,513,668

WEAR REDUCING PROJECTILE

Peter W. W. Fuller, Bromley, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB82/00242, § 371 Date Apr. 18, 1983, § 102(e) Date Apr. 18, 1983, PCT Pub. No. WO83/00737, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 4, 1982, Ser. No. 499,761

Claims priority, application United Kingdom, Aug. 18, 1981, 8125239

Int. Cl.³ F42B *11/20*

U.S. Cl. 102—511 **8 Claims**

1. A wear-reducing projectile, comprising:

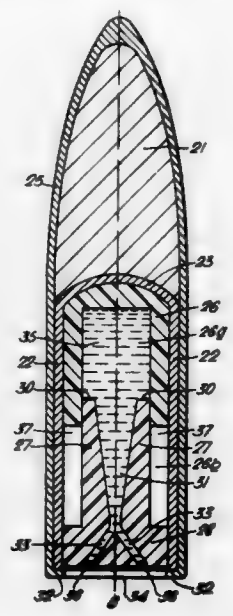
a propellant-opposable rear wall transverse to a lengthwise axis of said projectile;

a recess within said rear wall containing a charge of gun barrel wear-reducing additive;

a piston slidably located within said recess and having a forward face adjacent said charge and having a propellant opposable rear face; and

at least one additive extrusion port extending rearwardly through said piston from said recess to the exterior of the projectile; wherein

firing of said projectile causes said piston to be accelerated toward said charge and force said charge from the projectile through said at least one extrusion port with a degree



substantially in accordance with the wear-severity distribution of an associated gun barrel.

4,513,669

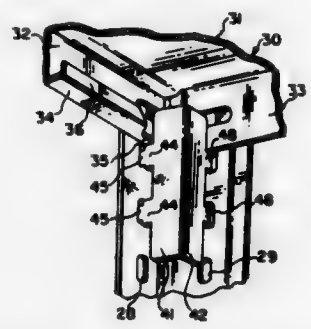
SHELVING STRUCTURE AND CLIP USED THEREIN

Mark H. Steinke, Montgomery, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill.

Filed Jan. 3, 1983, Ser. No. 455,195

Int. Cl.³ A47B *3/00*

U.S. Cl. 108—111 **20 Claims**



12. Shelving structure comprising an upright post including substantially perpendicular first and second post flanges, said first post flange having a first column of apertures, said second post flange having a second column of apertures, the apertures in said first column being respectively laterally aligned with corresponding apertures in said second column, each of said post flanges having an inner surface and an outer surface; a clip including first and second clip flanges substantially perpendicular to each other, a pair of first fingers coplanar with said first clip flange and extending outwardly therefrom, a pair of first coplanar hooks carried respectively by said first fingers and being substantially perpendicular thereto, a pair of second fingers coplanar with said second clip flange and extending outwardly therefrom, a pair of second coplanar hooks carried respectively by said second fingers and being substantially perpendicular thereto, said first fingers being respectively disposed within two of said first apertures, said first hooks facing the outside surface of said first post flange, said first clip flange having an edge spaced from and substantially parallel to the inner surface of said first post flange, said second fingers being respectively disposed within corresponding ones of said second apertures, said second hooks facing the outside surface of said second post flange, said second clip flange having an edge spaced from and substantially parallel to the inner surface of said second post flange; and a shelf including a substantially rectangular top wall and a pair of first shelf flanges depending

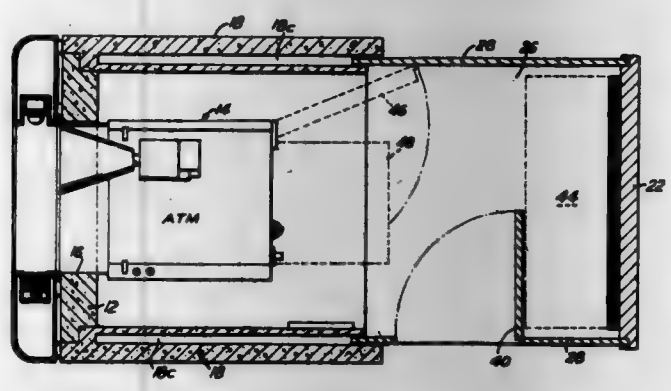
from opposite sides of said top wall, and a pair of second flanges depending from the two remaining sides of said top wall, one of said first shelf flanges being disposed in the space between said first post flange and said clip and resting on one of said first fingers, and the adjacent second shelf flange being disposed in the space between said second post flange and said clip and resting on one of said second fingers.

4,513,670

TELLER MACHINE ENCLOSURE

James Berman, 160 E. 93rd St., New York, N.Y. 10028

Filed Oct. 20, 1981, Ser. No. 313,209
Int. Cl.[3] G07G *5/00*
U.S. Cl. 109—24.1 6 Claims



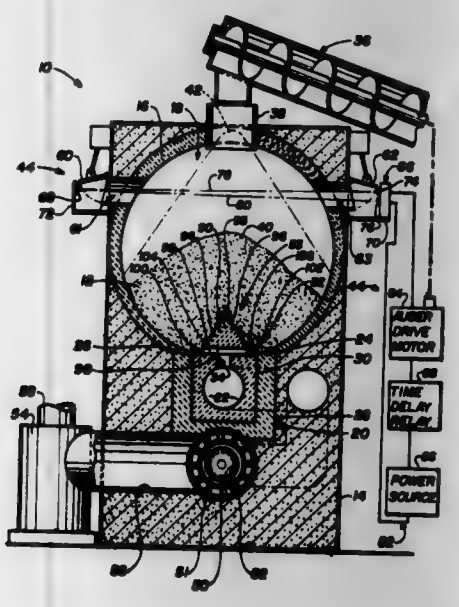
1. A teller machine enclosure comprising walls, a base, a roof and a movable wall component movable between a closed position and an extended position and which movable wall component is provided with walls, a ceiling, and an entry door so that when the movable wall component is in its extended position, there is established a service enclosure contiguous with the area enclosed by said teller machine enclosure, and wherein an automatic teller machine, having customer operated controls, is mounted in said teller machine enclosure so that the customer operated controls are accessible from outside the teller machine enclosure, and servicing of the machine is performed from the service enclosure formed when the movable wall component is in its extended position.

4,513,671

PARTICLE FUEL DELIVERY CONTROL DEVICE

Roger D. Eshleman, Waynesboro, Pa., assignor to Eshland Enterprises, Inc., Greencastle, Pa.

Filed Jul. 20, 1984, Ser. No. 632,925
Int. Cl.[3] F23K *3/22*
U.S. Cl. 110—101 CF 3 Claims



1. In a particle fuel burning furnace having an upper particle fuel holding and combustion chamber, a lower combustible gas afterburning chamber in flow communication with said upper chamber and means for delivering particle fuel into said upper chamber to form a pile of said fuel therein, a particle fuel delivery control device comprising:

(a) means forming a pair of openings in opposite sides of said upper chamber, said means including a pair of combustion air intake valves movable between open and closed positions; and

(b) means mounted outside of said furnace adjacent each of said openings for generating and transmitting a light beam through said openings and across said upper chamber, said light beam generating means including

(i) a photoelectric cell mounted outside of and adjacent to one of said openings in said upper chamber for transmitting a light beam across and receiving said beam back from said upper chamber, and

(ii) a reflector mounted outside of and adjacent to the other of said openings in said upper chamber for receiving and reflecting said transmitted light beam back to said cell;

(c) said light beam generating means operatively connected to said particle fuel delivering means such that absent interruption of said light beam by said particle fuel pile in said upper chamber said delivering means is activated to deliver more particle fuel into said upper chamber and onto said pile thereof whereas upon interruption of said light beam by said particle fuel pile said delivering means is deactivated to cease delivery of particle fuel into said upper chamber.

3. In a particle fuel burning furnace having an upper particle fuel holding and combustion chamber, a lower combustible gas afterburning chamber in flow communication with said upper chamber and means for delivering particle fuel into said upper chamber to form a pile of said fuel therein, a particle fuel delivery control device comprising:

(a) means forming a pair of openings in opposite sides of said upper chamber; and

(b) circuit means for sensing the presence and absence of said particle fuel pile at a predetermined level in said upper chamber for controlling operation of said particle fuel delivering means, said circuit means including

(i) means mounted outside of said furnace adjacent each of said openings for photoelectrically sensing said pile at said level in said upper chamber,

(ii) means for driving said particle fuel delivering means, and

(iii) a source of power for said drive means,

(iv) said driving means, power source and photoelectric sensing means forming a closed circuit for activating operation of said particle fuel delivering means upon said sensing means sensing the absence of said particle fuel pile at said predetermined level in said upper chamber and forming an open circuit for deactivating operation of said particle fuel delivering means upon said sensing means sensing the presence of said particle fuel pile at said predetermined level in said upper chamber.

4,513,672

EMBROIDERY SEWING MACHINE

Ikuo Tajima, Nagoya, Japan, assignor to Tokai Industrial Sewing Machine Co., Ltd., Kasugai, Japan

Filed Jul. 27, 1983, Ser. No. 517,839
Claims priority, application Japan, Nov. 22, 1982, 57-205281; Nov. 22, 1982, 57-205282
Int. Cl.[3] D05C *3/02*
U.S. Cl. 112—100 5 Claims

1. An embroidery sewing machine having a needle bar driving mechanism and a thread take-up mechanism whereby a piece of needle thread and a piece of lockstitch bobbin thread join in the formation of lockstitch seams comprising:

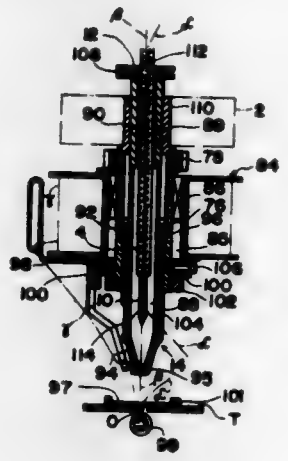
a rotating mechanism for a cylinder and bobbin having a cylinder and a rotary ring mounted thereon and rotatable

therewith around a needle, and a bobbin which is mounted on the rotary ring rotatable therewith,

a first shaft,

a device for transmitting the rotation of the first shaft to the cylinder to be rotated,

a cylinder lifting mechanism including an L-shaped arm and



a linking means which transmits the up and down lifting motion of said L-shaped arm to the cylinder and an eccentric cam means for moving said L-shaped arm up and down, and

a retainer member and a supporting arm retaining the L-shaped arm at a predetermined position and with which the retainer member is engaged.

4,513,673

STITCH INTERRUPTING DEVICE FOR SEWING MACHINES

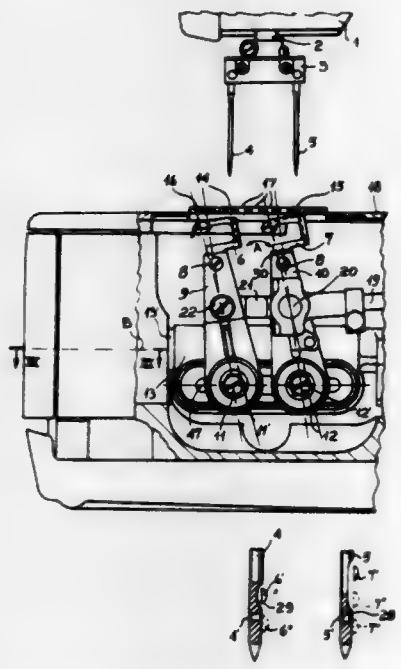
Gianfranco Brusasca, Cornaredo, and Franco Garzulano, Gallitate Novara, both of Italy, assignors to Rockwell-Rimoldi S.p.A., Italy

Filed Oct. 4, 1982, Ser. No. 432,586

Claims priority, application Italy, Oct. 16, 1981, 24527 A/81

Int. Cl.³ D05B *1/10, 69/28*

U.S. Cl. 112—166 **4 Claims**



1. A device for interrupting the formation of at least one line of stitching in a sewing machine of the type having a support structure for pivotably supporting at least two looper holders in tandem with individual loopers mounted on each holder and at least one needle in operative association with each looper for forming spaced and parallel lines of stitching, said device comprising:

a. means defining an elongated thread hole in one of the needles;

b. means for elevating that looper associated with the needle having the elongated thread hole on its looper holder to an operating level above the looper with which it pivots in tandem; and

c. means for displacing the points of pivot of said looper holders for effecting continued formation of stitches by the combination of the needle with said elongated thread hole and said elevated looper, and a cessation of stitches by the other needle and its looper.

4,513,674

MECHANISM GENERATING ELLIPTICAL MOTION

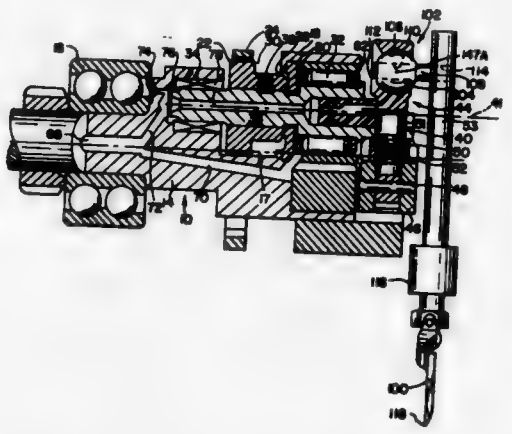
Chandrakant Bhatia, Buffalo Grove; George M. Toman, Chicago, and Thomas J. Bock, Schaumburg, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

Division of Ser. No. 904,204, May 9, 1978, Pat. No. 4,344,376.

This application Dec. 11, 1981, Ser. No. 329,796

Int. Cl.³ D05B *57/30; F16H 37/12*

U.S. Cl. 112—220 **7 Claims**



1. A Cardan gear assembly wherein rotary motion of the input shaft results in the elliptical like output of a work performing instrumentality, said Cardan gear assembly including a pinion output lever, main bearing means subjected to generally minimum load and moment and a double speed bearing means subjected to a constant load during operation wherein the improvement comprises:

means operative to convert elliptical two dimensional motion into elliptical like three dimensional motion, connected to the pinion output lever of said Cardan gear assembly means;

a means supporting said work performing instrumentality and being connected to said means operative to convert elliptical two dimensional motion into elliptical like three dimensional motion; and

a bearing means carrying said means supporting said work performing instrumentality such that rotary and reciprocatory motion occur therebetween.

4,513,675

PRESSER FOOT AUTOMATIC LIFTING DEVICE

Horst Meyer, Bad Salzuflen, and Günter Landwehr, Bielefeld, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,744

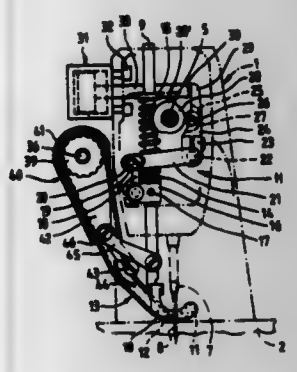
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216996

Int. Cl.³ D05B *27/06, 29/02*

U.S. Cl. 112—236 **8 Claims**

1. A sewing machine comprising a feed device for a workpiece to be sewn, said feeding device having a feed dog performing a four-motion feed movement and adapted to be positioned beneath the workpiece, a presser foot fixed to a presser foot bar, at least one needle, an arm shaft for raising and lowering said needle and a lifting gear for raising the presser foot

from the workpiece during the stitching cycle of said needle, said lifting gear being constructed in such a way that during the insertion of said needle into the workpiece during its down-



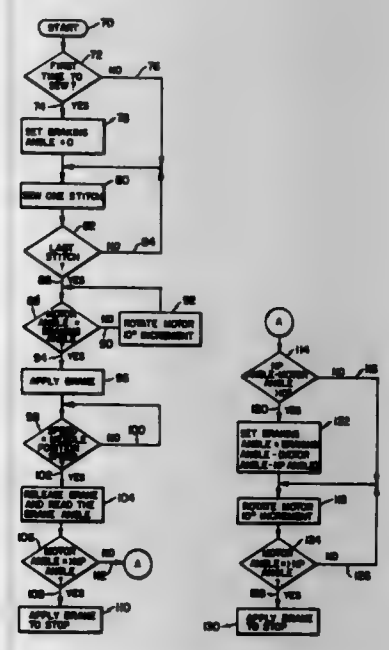
wardly directed movement and approximately until it reaches its bottom dead center position, the presser foot is raised from the workpiece.

4,513,676

METHOD AND APPARATUS FOR AUTOMATICALLY DECELERATING AND STOPPING A SEWING MACHINE MOTOR

Charles R. Martell; Donald D. Isett, and Paul A. Abney, all of Dallas, Tex., assignors to Microdynamics, Inc., Dallas, Tex.

Filed Aug. 30, 1982, Ser. No. 412,828
Int. Cl.[3] D05B *69/24, 69/26*
U.S. Cl. 112—262.1 20 Claims



1. A method for automatically decelerating a sewing machine motor and positioning a reciprocating needle on the sewing machine comprising:

sensing the motor angle;

decelerating the motor when the motor angle equals a predetermined braking angle to sew the desired number of stitches to complete the seam while reducing the speed to a needle positioning speed;

sensing the motor angle after deceleration to needle positioning speed and comparing the motor angle with a desired needle positioning angle;

decelerating the motor to stop reciprocation of the needle when the motor angle equals or is greater than the needle positioning angle such that needle reciprocation is stopped at the desired position in a minimum time duration without performing an additional stitch and;

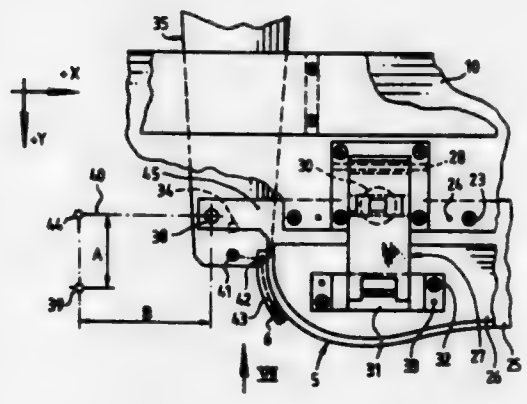
adjusting the predetermined braking angle as a function of previous braking operations to minimize the duration of the time that the motor operates at needle positioning speed.

4,513,677

METHOD AND DEVICE FOR SAFE OPERATION OF AN AUTOMATIC SEWING MACHINE

Hans Scholl, Oerlinghausen-Lipperreihe, Fed. Rep. of Germany, assignor to Koch Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 485,646
Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216529; Sep. 25, 1982, 3235576
Int. Cl.[3] D05B *21/00*
U.S. Cl. 112—262.3 12 Claims



1. A method for operating a computer with an automatic sewing machine to operate the sewing machine safely, comprising the steps of:

supplying the computer with a program for controlling a sewing contour to be produced, said program including an identification code;

providing an exchangeable workpiece clamp having a profile and an identification code readable by said computer;

controlling drive motors by said computer for generating said sewing contour within a work area having a firm reference point, said sewing contour representing a relative movement between a needle and said workpiece clamp;

applying a check step prior to a release of operation for comparing said program identification code with said workpiece clamp identification code, and

releasing a signal upon an identified matching of said both identification codes;

said check step comprising: transmitting a command by said computer to said motors for controlling a relative check motion between said needle and said profiled workpiece clamp, said check motion being limited by said reference point and a trigger point sensed by sensing means associated to a sewing head having stitch forming means with said needle, the distance between said points corresponding to said workpiece clamp identification code.

4,513,678

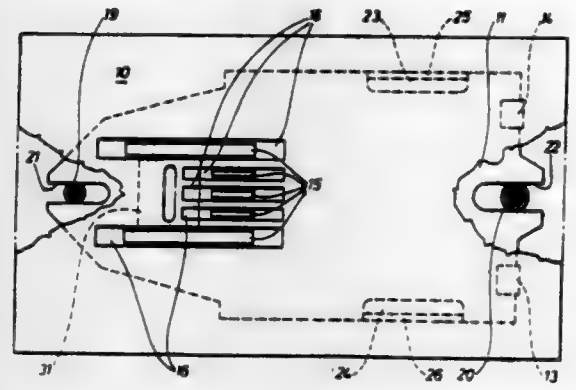
CLOTH FEEDER

Kenneth O. E. Skogward, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden

PCT No. PCT/SE82/00375, § 371 Date Jun. 24, 1983, § 102(e) Date Jun. 24, 1983, PCT Pub. No. WO83/01796, PCT Pub. Date May 26, 1983
PCT Filed Nov. 8, 1982, Ser. No. 514,818
Claims priority, application Sweden, Nov. 11, 1981, 8106700
Int. Cl.[3] F23M *9/00*
U.S. Cl. 112—323 5 Claims

1. In a cloth feeder in a sewing machine positioned below a stitch plate located in the working surface of a sewing machine, the plate having slots for the rows of teeth of the feeder, the improvement wherein, guiding means are cooperatively

arranged on the stitch plate and on the feeder respectively, to guide the centre longitudinal line of each row of teeth along



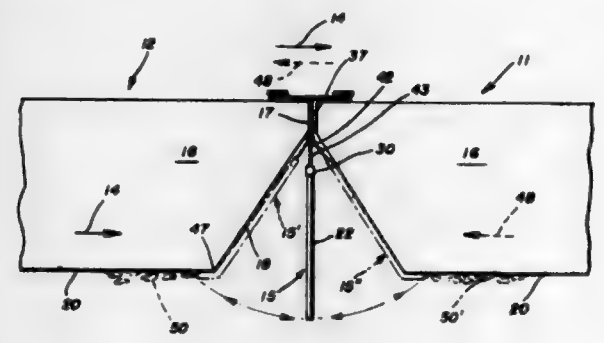
the centre line of the corresponding slot during a feeding movement of the feeder.

4,513,679

DRAG REDUCING DEVICE FOR BARGES

Sebree J. Allen, Rte. #2, Kevil, Ky. 42053

Filed Jan. 26, 1984, Ser. No. 574,018
Int. Cl.³ B63B *1/38*
U.S. Cl. 114—67 A **7 Claims**



1. A drag reducing device for an elongated barge having a transverse dimension, an end portion, a bottom surface, and a draft line, and adapted to move longitudinally through a body of water, comprising:

(a) a mat having a transverse dimension and a depthwise dimension and transverse top and bottom edge portions,

(b) a plurality of elongated air conduits carried by said mat and extending from said top edge portion to said bottom edge portion, and transversely spaced along said mat,

(c) each air conduit having a top opening and a bottom opening,

(d) attachment means suspending said top edge portion of said mat from the end portion of a barge, so that said mat hangs transversely of the barge for free-swinging movement longitudinally of the barge, said top openings being above the draft line and the bottom openings beinq below the bottom surface of the barge, whereby movement of the barge in one longitudinal direction in a body of water causes said mat to swing in an opposite longitudinal direction.

4,513,680

BOAT STEERING MECHANISM

Makoto Teraura, Takarazuka, Japan, assignor to Nippon Cable System, Inc., Takarazuka, Japan

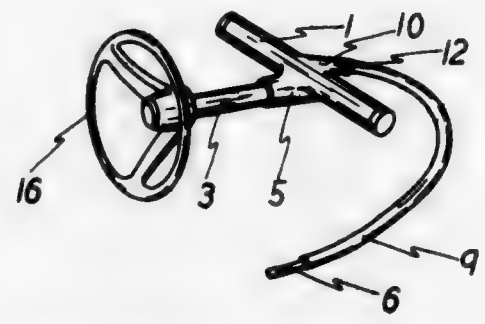
Filed Nov. 9, 1982, Ser. No. 440,332
Claims priority, application Japan, Jul. 9, 1982, 57-120125
Int. Cl.³ B63H *25/10*
U.S. Cl. 114—159 **3 Claims**

1. A boat steering mechanism for controling a remotely mounted rudder by means of a push-pull control cable having an outer cable casing and an inner cable which is slidably pushed and pulled in said outer cable casing, comprising:

a linear rack casing, said rack casing being formed with a pinion casing therein, and having a projection extending from the center thereof or its vicinity with a slight gradient as to the longitudinal direction of said rack casing;

a linear rack slidably received in said rack casing and provided with a series of teeth along a longitudinal side thereof, said rack being formed with a longitudinal groove therein for receiving said inner cable, and having a fitting member at one end of said groove for fastening one end of said inner cable to said rack;

a pinion disposed in said pinion casing and having teeth engaged and meshed with said teeth of said rack, said pinion being adapted to be attached to a steering shaft;



said projection on said linear rack casing having an inclined hole therethrough for slidably receiving said inner cable, said projection being formed with a triangular guide portion on its inner surface forming an inclined plane, said triangular guide portion projecting into said longitudinal groove in said rack, said inclined plane continuing smoothly from said inclined hole and having a concave groove therein for receiving said inner cable; and

means for connecting one end of said outer cable casing with said projection at the opening of said inclined hole;

whereby rotation of said pinion by said steering shaft will impart translatory sliding motion to said linear rack within said rack casing and exert push-pull forces on said inner cable positioned in said groove, and said inclined triangular guide portion projecting into said groove will smoothly guide said inner cable from said groove into said inclined hole when said inner cable is pushed.

4,513,681

WIRE ROPE TO CHAIN CONNECTOR FOR ANCHORING SYSTEMS

Edward J. Crook, Jr., Tulsa, Okla., assignor to The Crosby Group, Inc., Tulsa, Okla.

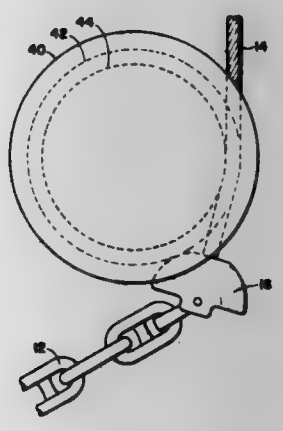
Continuation of Ser. No. 306,760, Sep. 29, 1981, abandoned. This application Feb. 17, 1984, Ser. No. 580,762
Int. Cl.³ B63B *21/50*
U.S. Cl. 114—293 **8 Claims**

1. A connector for coupling a chain to a wire rope comprising:

(a) an essentially hemispherical housing having a primary opening therethrough that is axially symmetric about a radius of said housing and is perpendicular to a planar portion of said hemispherical housing, said primary opening being adapted to accept and retain, in an assembled state, a wire rope and terminal fitting of said wire rope, said terminal fitting of said wire rope being a cylindrical sleeve that accepts and retains said wire rope and wherein said cylindrical sleeve is equipped with flat surfaces on opposite sides of said cylindrical sleeve said flat surfaces of said sleeve positionable opposite said co-axial openings, and said hemispherical housing equipped with co-axial openings which radially intersect with said primary opening;

(b) a substantially semi-circular connecting link member, the ends of said link member being pivotally connected to said

hemispherical housing adjacent said planar portion, said link adapted to accept and retain a chain in said assembled state; and



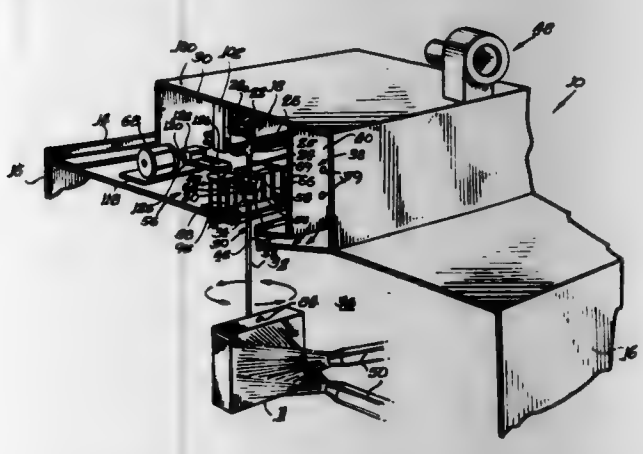
(c) a retaining pin passing through each of said co-axial openings terminating adjacent said flat surfaces to maintain said substantially semi-circular connecting link member, said terminal fitting and said hemispherical housing in said assembled state.

4,513,682

POSITIVE DRIVE ROTATOR

Tadeusz S. Otocki, Hanover Park, Ill., assignor to Protectaire Systems Co., Elgin, Ill.

Filed Mar. 24, 1982, Ser. No. 361,518
Int. Cl.³ B05B *15/04*
U.S. Cl. 118—322 **3 Claims**



1. An apparatus including a spray booth for conveying and rotating articles, said apparatus comprising:

an overhead beam support in said booth,

a conveyor for articles mounted on the overhead beam support for traveling therealong during a spraying operation,

hanging article supports attached to the conveyor and having rotatable lower portions for rotating the articles about a vertical axis,

toothed members of a predetermined vertical length connected to the rotatable lower portions to rotate the same at a predetermined number of revolutions per unit of travel by the conveyor,

an endless belt drive means depending from the overhead beam support and including an elongated endless drive belt,

an upper and lower spaced frame members on said belt drive means extending longitudinally beneath the overhead beam support,

belt sprockets rotatably mounted in said upper and lower spaced frame members at spaced locations to rotate about vertical axes,

a motor drive connected to one of the belt sprockets to drive the same at various predetermined speeds to change the number of rotations of the article per unit of conveyor travel, and

said elongated endless drive belt having a plurality of vertically extending elongated rods each of a length several times longer in the vertical direction than the predetermined vertical extent of the teeth on the toothed members to allow positioning of the toothed members at different vertical heights along the rods to distribute placement of the toothed members and wear therefrom along the rods in the vertical direction,

a protective housing about said conveyor and said upper and lower spaced frame members and having a bottom wall beneath said endless drive means and said frame members,

a slot in said protective housing through which depend said article hanging supports which are being rotated within said protective housing, and

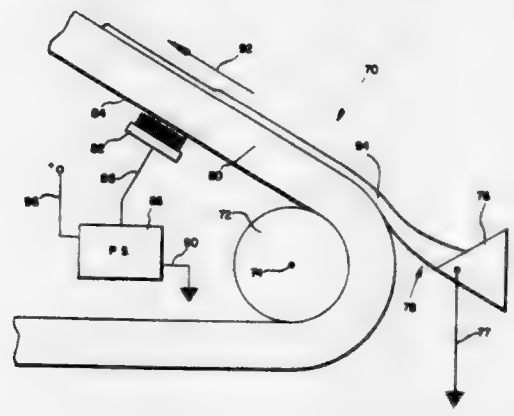
means to blow air through the slot to protect the endless belt drive means and said toothed members.

4,513,683

COATING UNIFORMITY IMPROVEMENT APPARATUS

Semyon Kisler, W. Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 222,334, Jan. 5, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 481,850
Int. Cl.³ B05B *5/02*; B05C *5/00*
U.S. Cl. 118—620 **11 Claims**



6. Apparatus for improving the uniformity of a wet coating deposited by an applicator arrangement on one surface of a moving web of charge-retaining material which retains residual charges following deposition, said apparatus comprising an electrode mounted in adjoining relation to the opposite side of said web downstream of the applicator arrangement at a point wherein said coating still remains wet, and means for applying a potential to said electrode to reduce the residual charge of said web and thereby enhance redistribution of the still wet coating so as to improve its uniformity.

4,513,684

UPSTREAM CATHODE ASSEMBLY

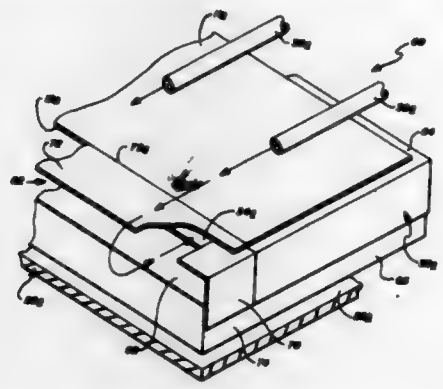
Prem Nath, Rochester, and Masatsugu Izu, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Dec. 22, 1982, Ser. No. 452,224
Int. Cl.³ C23C *13/10*
U.S. Cl. 118—718 **22 Claims**

1. In a glow discharge deposition apparatus which includes a dedicated deposition chamber; a substrate disposed in said chamber; means for introducing process gases into said chamber, said process gases adapted to flow across a surface of the substrate; downstream glow discharge means for developing a deposition plasma region between the substrate and said glow discharge means, whereby the process gases flowing through the deposition plasma region are adapted to be deposited as a semiconductor film onto said surface of the substrate; the improvement comprising, in combination:

upstream glow discharge means disposed upstream of the

deposition plasma region, said upstream glow discharge means adapted to provide electromagnetic energy to substantially all of the process gases so as to develop an upstream plasma therefrom in an upstream plasma region



for forming a deposit; and, means for collecting said deposit, whereby the semiconductor film deposited onto said surface of the substrate is of substantially homogeneous and uniform chemical composition across the entire surface of the large area substrate.

4,513,685

METHOD AND DEVICE FOR RAISING WORMS, METHOD OF RAISING WORMS IN NUTRITION LIMITED BY INHIBITING MEANS, METHOD OF PRODUCING WORM CASTINGS, AND HOLDER FOR RAISING WORMS

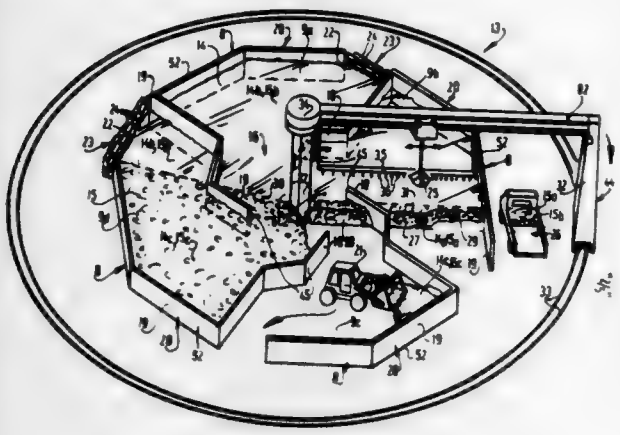
Petrus J. G. Frijters, v.d. Duynstraat 152, 2515 NL The Hague, and Antonie F. van Es, Maziestraat 18, 2514 GT The Hague, both of Netherlands

Filed Mar. 30, 1983, Ser. No. 480,375

Claims priority, application Netherlands, Apr. 7, 1982, 8201490

Int. Cl.³ A01K *67/00*

U.S. Cl. 119—1 **26 Claims**



1. A method for raising and harvesting worms in a nutrition-containing bedding comprising:

extending said bedding for defining a path by adding nutrition-containing material adjacent a portion of said bedding for inducing a worm population in said bedding to migrate along said path while said population is reproducing and increasing;

directing an accretion portion of said migrating worm population into means for separating said accretion portion from said bedding; and p1 maintaining the remaining portion of said migrating worm population in said bedding as a stock population.

4,513,686

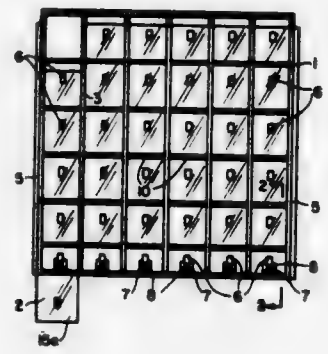
PIGEON CAGE ASSEMBLY

David J. Demko, R.D. 3 Box 232, Reading, Pa. 19606

Filed Sep. 8, 1983, Ser. No. 530,392

Int. Cl.³ A01K *31/02*

U.S. Cl. 119—15.6 **9 Claims**



1. A fully automatic cage assembly for pigeons and the like, comprising a plurality of stalls in stacked relationship arranged in a plurality of vertical rows, a unitary front door panel means slidably mounted vertically, one of said door panel means for each of said vertical rows for covering said plurality of stalls in a vertical row, a back for covering the rear of said cage assembly, a plurality of stops, one for each stall, fastened securely to said front door panel means, extending inwardly from said front door panel means, and electrically controlled arresting means at the bottom of each vertical column of stalls, operated at timed intervals so that said door panel means will be intermittently lowered to expose at least one stall at a time in a said vertical row, at timed intervals, said arresting means being in the form of an electro-magnetic solenoid at the bottom of each vertical column of stalls, each having an armature which normally extends outwardly in the path of the stops projecting in the stalls, and whereby, when energized, the armature is withdrawn to allow one stop at each solenoid energization to move downwardly past the end of the armature, means which immediately urges the said armature back out to the stop position as soon as the stop drops past the end of the armature, the said strip again being arrested as the next higher stop drops down to hit the solenoid armature a uniform time interval between each solenoid energization creating separate openings of each stall.

4,513,687

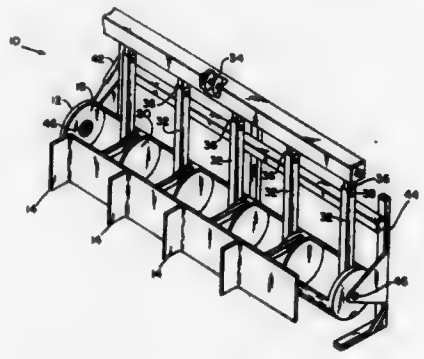
METHOD AND APPARATUS FOR FEEDING LIVESTOCK

Walter J. De Jong, 23430 High Bridge Rd., Monroe, Wash. 98272

Filed Jan. 31, 1984, Ser. No. 575,518

Int. Cl.³ A01K *5/02, 1/12*

U.S. Cl. 119—27 **4 Claims**



1. An apparatus for feeding livestock, which comprises:

an elongated manger including a plurality of longitudinally spaced-apart feeding locations therein;

means for dispensing feed into the feeding locations;

a plurality of dividing arms extending forwardly from the

manger to define feeding stalls in front of the manger corresponding to the feeding locations;

a plurality of entry control gates, each entry control gate pivotally mounted on a dividing arm such that when the gate is in a closed position, it will extend longitudinally outward from the dividing arm in a first direction to partially block a first stall adjacent the dividing arm and in a second direction to block entry to a second stall adjacent the dividing arm, the first side of the gate pivoting toward the manger and the second side pivoting away from the manger to move the gate into an open position wherein the gate extends outwardly from the dividing arm in a direction substantially aligned with the dividing arm to further define the first stall and permit entry into the second adjacent stall.

4,513,688

PELLETIZED MATERIAL FEEDER

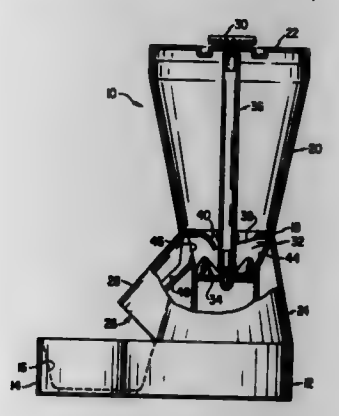
Arthur L. Fassauer, P.O. Box 124, Canyon, Tex. 79015

Filed Jan. 21, 1983, Ser. No. 459,767

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—52 A

7 Claims



1. A pellitized matter dispenser, comprising:

a hopper for storing the pellitized matter;

an agitation chamber mounted below said hopper and having upwardly and outwardly tapered sides in an inverted frusto-conical shape, said agitation chamber having a quadrilateral outlet port disposed through the upwardly tapered side thereof to allow passage of agitated pellitized matter;

an agitation assembly disposed on the bottom of said agitation chamber and having:

a rotating base rotatably mounted in the bottom of said agitation chamber and parallel therewith, and

a plurality of paddles disposed on the surface of said rotating base and radially oriented to the outer periphery thereof and perpendicular to the surface thereof,

said paddles having two flat surfaces directed perpendicular to either direction of rotation of said rotating base;

each of said paddles having a radial edge thereof tapered inwardly and upwardly from the bottom of said chamber such that a V configuration is formed with the outward tapered walls of said chamber beneath the bottom edge of said outlet port,

said radial edge urging the pellitized matter in said agitation chamber upward along the upwardly tapered walls of said chamber during rotation of said agitation assembly to exit said outlet port, the movement of the pellitized matter along the tapered walls in response to said radial edge moving through the agitation chamber allowing a substantial quantity of pellitized matter to be dispensed for each passage of one of said paddles proximate said outlet port;

means for rotating said agitation assembly at a low revolution rate; and

means for restricting flow of pellitized matter from said hopper to said agitation chamber when said agitation assembly is not rotating, said means for restricting allowing flow of particulate matter when said agitation assembly is rotating such that the amount of pellitized matter dispensed through said outlet port is replenished in said agitation chamber.

4,513,689

POULTRY-HARVESTING ASSEMBLY

Paul S. Berry, Bromham; John A. Benson, Wootton; Peter J. Kettlewell, Manchester, and Michael J. B. Turner, Clophill, all of England, assignors to National Research Development Corporation, London, England

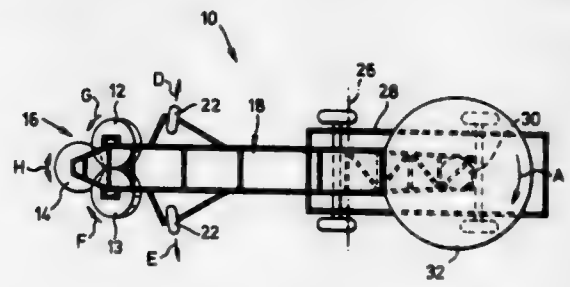
Filed Apr. 24, 1984, Ser. No. 603,335

Claims priority, application United Kingdom, Apr. 29, 1983, 8311814

Int. Cl.³ A01K *45/00*

U.S. Cl. 119—82

4 Claims



1. A poultry harvester comprising:

two rotors arranged side by side with each said rotor providing a continuous array of radially extending guide elements co-operating with the guide elements of the other rotor;

a third such rotor arranged in front of and co-operating with the other two rotors in a triangular formation;

means supporting said rotors;

drive means for rotating the rotors about vertical or predominately vertical axes so that the guide elements co-operate to capture and transmit birds between the rotors to a discharge location; and

conveyor means juxtaposed with said discharge location for elevating the captured birds and conveying them to a site which is arranged to permit removal and packing of the captured, transmitted, elevated and conveyed birds.

4,513,690

ANIMAL MUGGER

Curtis R. Waldron, Rte. 3, Box 2793, Okeechobee, Fla. 33472

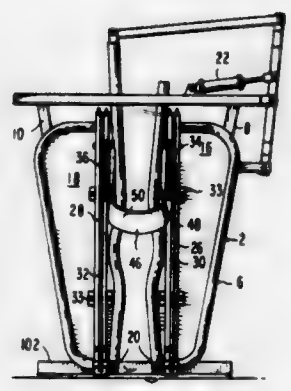
Continuation-in-part of Ser. No. 414,801, Sep. 3, 1980, Pat. No. 4,467,746. This application May 11, 1983, Ser. No. 493,622

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.³ A01K *1/062;* A61D *3/00*

U.S. Cl. 119—99

3 Claims



1. A mugger for use with a cattle chute having moveable sides and pivoted entrance and exit gates to immobilize the head of a cattle held within the chute which comprises:

first and second elongated tubular members,

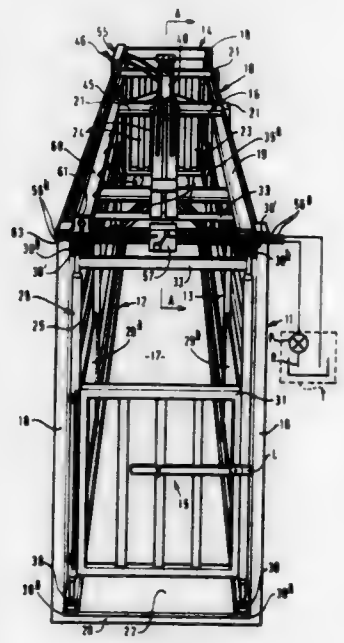
a longitudinal slot in each of said tubular members,
means to mount said tubular members vertically on the outside of the exit gate of a cattle chute with said slots facing away from said exit gate,
a first bracket member structured to slide vertically in said slot of one of said tubular members,
a second bracket member structured to slide vertically in said slot of the second of said tubular members,
a sling member fixed to said bracket members so said sling member may be moved by said bracket members from a position resting on the ground adjacent said exit gate of said animal chute to an elevated position to engage the head of an animal held in said chute,
and chain means to move said first and second bracket members vertically along said tubular members.

4,513,691

ANIMAL PENS

Kenneth E. Wood, Blakeway Farm, Harley, Nr. Shrewsbury, Shropshire, England SY5 6LT

Filed Nov. 25, 1983, Ser. No. 555,132
Int. Cl.³ A61D *3/00*
U.S. Cl. 119—99 **6 Claims**



1. An animal pen comprising a plurality of main frame members interconnected to provide an animal receiving structure having a front end and a rear end, door means adjacent the rear end of the structure for entry of the animal head first into the pen, an advancing means including said rear door means, mounted on the main frame for movement forwardly of the frame, to engage the rear of the animal to urge the animal forwardly in the structure, a first hydraulic ram means to actuate the advancing means, said first ram means comprising a cylinder part and a piston part, one of said cylinder and piston parts being connected to the advancing means and the other of said cylinder and piston parts being connected to the main frame, a yoke means comprising a pair of closure members mounted in the frame for movement forwardly and inwardly of the frame to close around a front part of the animal, a linkage mechanism connected to the closure members, a second hydraulic ram means to actuate the yoke means, said second ram means comprising a cylinder part and a piston part, one of said cylinder and piston parts being connected to the linkage mechanism and the other of said cylinder and piston parts being connected to the main frame.

4,513,692

ILLUMINATABLE PET LEASH

Alexandra Kuhnsman, Oxford, and Marian B. Morey, Somerville, both of N.J., assignors to Alexandra Enterpises, Inc., Oxford, N.J.

Filed Apr. 30, 1984, Ser. No. 605,197
Int. Cl.³ A01K *27/00*; A45B *3/04*
U.S. Cl. 119—109 **14 Claims**



1. A flexible illuminatable pet leash device which comprises:
(a) an elongated tube which is non-opaque and which is of sufficient length, strength and flexibility to be used as a pet leash;
(b) a handle which is connected to one end of said tube;
(c) a pet collar attachment mechanism connected to the end of said tube opposite said handle;
(d) a set of battery operated illumination circuitry of the flashlight type, being located within said handle;
(e) an on-off switch, being connected to said set of circuitry;
(f) a light bulb, being connected to said set of circuitry and being connectively positioned with respect to said handle so as to be capable of shining away from said handle and into said tube; and,
(g) at least one bundle of optical fibers contained within said tube, said bundle being positioned in the light path of said bulb so as to be capable of fiber optic illumination within said tube, said bundle being of varied lengths of optical fibers, the longest of which is approximately the tube length, the total number of optical fibers within all of said bundles being at least forty in number.

4,513,693

DEVICE FOR TYING-UP AN ANIMAL

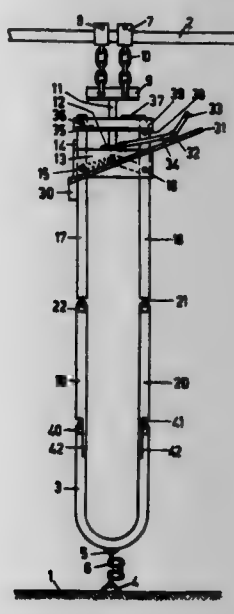
Christiaan A. C. Vandekeybus, Kloosterstraat 21, B-2190 Essen, Belgium

Filed Apr. 5, 1983, Ser. No. 482,173
Claims priority, application Belgium, Apr. 28, 1982, 2/59682; Jul. 9, 1982, 2/59771
Int. Cl.³ A01K *1/06*
U.S. Cl. 119—147 R **10 Claims**

1. A device for tying-up an animal comprising:
a suspension element,
a bottom yoke,
two legs forming with said bottom yoke a single yoke and defining with said suspension element and said bottom yoke a main yoke plane, each of said legs being comprised of:
a top part which hinges in the suspension element about an axis at right angle to the main yoke plane, and
a lower part which is connected through a first hinge to the top part and through another hinge to the bottom yoke,
the top part and the lower part of each leg being in line in a closed position of the yoke and the top parts and the lower parts of the two legs forming a parallelogram in an open

position of the yoke, the lower part of a leg extending in said open position towards the other leg up to and beyond the other hinge which forms its connection with the bottom yoke,

means which are movable between a first end position and a



second end position and which in said first end position retain the top parts in the closed position and in said second end position retain the top parts in the open position, and,

a spacer member which locks the top parts in the closed position.

4,513,694

VERTICAL RADIATION TANK

Willem Wiemer, No. 2 Veldmolen, 7491 Gn Delden, Netherlands

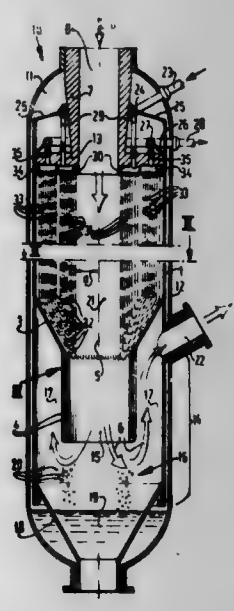
PCT No. PCT/NL83/00026, § 371 Date Feb. 17, 1984, § 102(e) Date Feb. 17, 1984, PCT Pub. No. WO84/00411, PCT Pub. Date Feb. 2, 1984

PCT Filed Jul. 12, 1983, Ser. No. 589,109

Claims priority, application Netherlands, Jul. 12, 1982, 8202818

Int. Cl.³ F22D *1/00;* C10J *3/48*

U.S. Cl. 122—7 R 3 Claims



1. A vertical radiation tank (10), more particularly for gaining heat from process gases of ash forming, carbon containing fuels, comprising a vessel (11) provided inside its jacket with diaphragm pipe walls (1) traversed by a coolant and bounding a flow space to be traversed by process gases, said space having at the top a central inlet for the process gas, on the lower side an inverting space for inverting the direction of flow of the process gas and adjacent thereto at least one outlet for the cooled process gas, said inverting space being bounded by a water space for capturing therein locally separated ash particles characterized in that the diaphragm pipe walls comprise a cylindrical, first diaphragm pipe wall concentric with the jacket of the vessel and covering the length of the flow space and the inverting space, a plurality of second pipe walls radially arranged inside the former, a funnel-shaped, third diaphragm pipe wall (3) bounding the radial pipe walls (2) on their underside and a short, cylindrical fourth diaphragm pipe wall adjoining the funnel-shaped diaphragm pipe wall, the third and fourth diaphragm pipe walls being formed by pipes branched from the first diaphragm pipe wall, the cylindrical first diaphragm pipe wall is formed by U-section pipes lying wholly or partly side by side, one limb of which at the top is connected with an annular collecting duct for the water supply and the other limb is connected with an annular collecting duct for the water outlet and the radial second pipe walls are formed by a plurality of co-planar U-section pipes, one limb of which at the top is connected with a collecting duct for the water supply and the other limb is connected with a collecting duct for the water outlet.

4,513,695

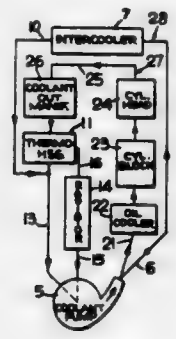
INTERCOOLER BYPASS RETURN IN AN INTERNAL COMBUSTION ENGINE

Paul Patchen, II, Homewood, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 11, 1983, Ser. No. 521,992

Int. Cl.³ F01P *3/12*

U.S. Cl. 123—41.1 5 Claims



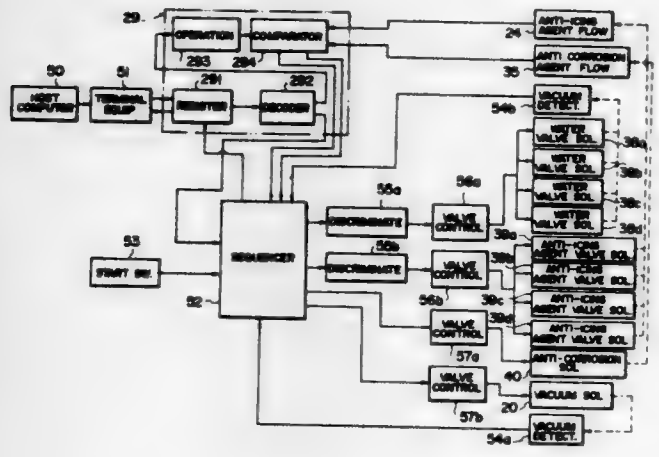
1. An engine cooling system on an internal combustion engine comprising, an internal combustion engine having the engine cooling circuit with coolant passages in said engine, a coolant pump circulating coolant in said engine cooling circuit, alternate return passages from the engine coolant passages including a bypass return conduit and a radiator for returning cooling fluid to said coolant pump, a thermostatic valve connected upstream of said bypass return conduit and said radiator selectively and alternatively diverting coolant through said bypass return conduit and said radiator responsive to the temperature of the coolant in said thermostatic valve, said thermostatic valve including a bypass chamber connected to said bypass return conduit, an intercooler cooling circuit including an intercooler, a coolant supply conduit connected to said coolant pump to said intercooler, an intercooler return conduit connected between said intercooler and said bypass chamber to return coolant from said intercooler to said coolant pump to thereby provide an improved flow rate and efficiency of said intercooler in said engine cooling system.

4,513,696

APPARATUS FOR CHARGING COOLING LIQUID TO ENGINE COOLING SYSTEM

Hiroshi Fujii, and Toshiharu Sakamoto, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed May 23, 1983, Ser. No. 496,945
Claims priority, application Japan, May 24, 1982, 57-87737; May 24, 1982, 57-87738
Int. Cl.³ F01P *11/06*
U.S. Cl. 123—41.02 **10 Claims**



1. An apparatus for charging a cooling liquid to an engine cooling system, said apparatus comprises additive reservoir means for storing at least one additive, cooling water reservoir means for storing cooling water, filler head means adapted to be connected with coolant inlet means of an automobile engine cooling system having a known volumetric capacity, additive conduit means extending between said additive reservoir means and said filler head means, cooling water conduit means extending between said cooling reservoir means, additive control means provided in said additive conduit means for controlling a quantity of the additive supplied to the engine cooling system in accordance with the capacity of the cooling system and a desired concentration of the additive, cooling water control means provided in said cooling water conduit means for controlling a quantity of the cooling water supplied to the engine cooling system in accordance with the capacity of the cooling system and the desired concentration of the additive, said additive control means includes additive flow measuring means to measure the quantity of the additive supplied to the engine cooling system, said cooling water control means including pressure detecting means for detecting a pressure in the engine cooling system, control circuit means being provided for terminating supply of the additive when a predetermined quantity is supplied and for terminating supply of the cooling water when the pressure in the engine cooling system has reached a predetermined value, whereby the cooling water is charged to the engine cooling system with the desired concentration of the additive.

4,513,697

PISTON FOR INTERNAL COMBUSTION ENGINE

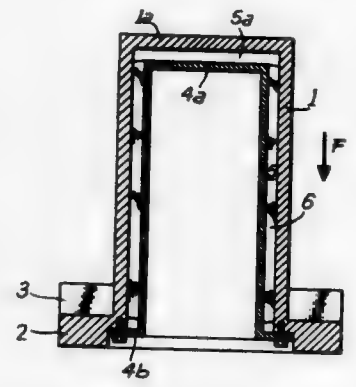
Auguste Moiroux, Ecully, France, assignor to Societe Civile Styled: BMB, Paris, France

Filed Jan. 23, 1984, Ser. No. 573,211
Claims priority, application France, Jan. 27, 1983, 83 01236
Int. Cl.³ F02P *1/04*
U.S. Cl. 123—41.35 **3 Claims**

1. A piston for an internal combustion engine, such as a free piston engine; said piston comprising:

an assembly of a pair of respectively inner and outer coaxial cylinders secured one to the other, at least the outer cylinder being hollow, the inner cylinder having an external diameter which is substantially less than the inner diameter of the outer cylinder, thus defining a closed and sealed annular chamber between said cylinders for receiving a volume of a cooling fluid less than the total volume of said chamber; and

longitudinal ribs in the closed and sealed annular chamber which ribs extend over most of the height of said chamber and are inclined in alternate directions with respect to the



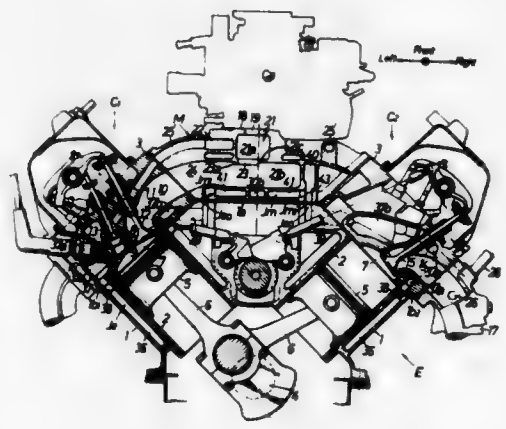
piston axis, thus defining in said chamber a first plurality of longitudinal channels whose section increases from one end of the piston to the other end and a second plurality of longitudinal channels whose section decreases from said one end to said other end.

4,513,698

INTAKE MANIFOLD STRUCTURE FOR INTERNAL COMBUSTION ENGINES

Akihisa Senga; Yoshiaki Hidaka, and Tadashi Tsuchiyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 368,983
Claims priority, application Japan, May 20, 1981, 56-76043
Int. Cl.³ F02M *35/00*
U.S. Cl. 123—52 MV **25 Claims**



1. An intake manifold structure for an internal combustion engine, comprising:

(a) a distribution plenum chamber divided by a partition wall into a vertical first sub-chamber and a horizontal second sub-chamber,

(b) inlet opening means formed in a top wall portion of the first sub-chamber for introducing an air-fuel mixture,

(c) a communication passage formed through the partition wall and having a cross-sectional area larger that the total cross-sectional area of said inlet opening means and smaller than the cross-sectional area in the direction of air-fuel mixture flow of each of said first and second sub-chambers,

(d) a plurality of intake branch passages extending laterally from the side wall of the second sub-chamber, and

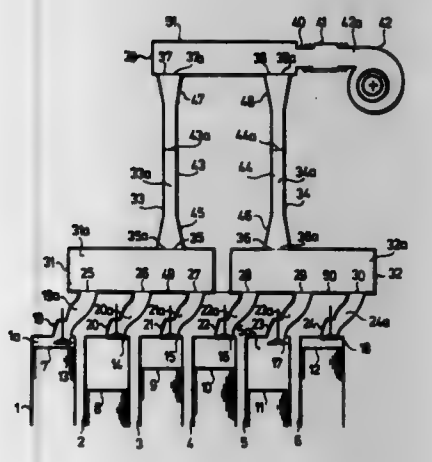
(e) a water jacket means underlying a substantial portion of said distribution plenum chamber and surrounding a substantial portion of an upper portion of said distribution plenum chamber.

4,513,699

INTAKE GAS RESONANCE SYSTEM FOR INTERNAL COMBUSTION ENGINES

Gyula Cser, Budapest, Hungary, assignor to Autóipari Kutató és Fejlesztö Vállalat, Budapest, Hungary

Filed Feb. 22, 1983, Ser. No. 468,384
Int. Cl.³ F02B *37/04*
U.S. Cl. 123—52 MB 8 Claims



1. In a reciprocating piston type internal combustion engine having a plurality of engine cylinders each including an intake opening; an intake gas resonance system associated with a group of the engine cylinders whose suction strokes do not significantly overlap; said intake gas resonance system comprising:

(a) a resonator vessel communicating with the intake openings of the cylinders of said group; said resonator vessel having a volume and an inner wall face;

(b) a resonance tube having an end operatively coupled to said resonator vessel for communicating therewith; said resonance tube having a longitudinal axis and a volume; said end of said resonance tube being located opposite said inner wall face of said resonator vessel; the distance between said end of said resonance tube and said inner wall face of said resonator vessel as measured along said longitudinal axis of said resonance tube being greater than the diameter of a circle whose area equals the cross-sectional area taken at said end of said resonance tube; said resonance tube having a diffusor means for reducing velocities of gases passing through said resonance tube into said resonator vessel; said diffusor means comprising a gradually widening diffusor portion forming part of said resonance tube and terminating in said end; said diffusor portion having cross-sectional areas continuously increasing towards said resonator vessel; a cross-sectional area taken at said end of the resonance tube perpendicularly to said longitudinal axis being at least 1.2 times greater than a cross section of minimum area of said diffusor portion with said cross section being substantially spaced from said end; and

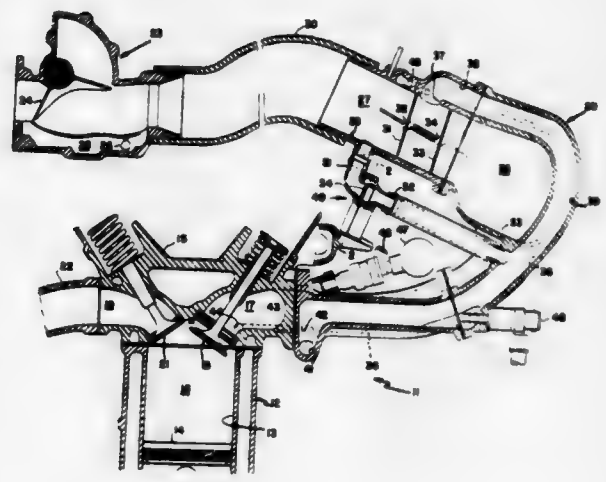
(c) a resonating space having a volume composed of said volume of said resonator vessel and an average cylinder volume related to one cycle of oscillation and communicating with said resonator vessel during one oscillating cycle; said volume of said resonating space being at least 2.5 times greater than said volume of said resonance tube.

4,513,700

INDUCTION SYSTEM FOR SPARK IGNITION ENGINE OF FUEL INJECTION TYPE

Takanori Hayashida, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 16, 1979, Ser. No. 39,598
Claims priority, application Japan, May 17, 1978, 53-57681
Int. Cl.³ F02M *61/14*
U.S. Cl. 123—179 L 10 Claims



1. An induction system for an internal combustion engine having a chamber of variable volume in which combustion occurs, a main induction passage terminating in a main intake port, an auxiliary induction passage terminating in an auxiliary intake port, said auxiliary intake port being disposed relative to said chamber so that said auxiliary induction passage discharges into said chamber at substantially undiminished velocity, the effective cross-sectional area of said auxiliary induction passage being substantially less than the effective cross-sectional area of said main induction passage, throttle valve means for controlling the ratio of communication of said main and auxiliary induction passages with said chamber during a given cycle of engine operation, said throttle valve means comprising a primary throttle valve and a secondary throttle valve, said primary throttle valve and said secondary throttle valve each being disposed in said main induction passage, said secondary throttle valve being positioned posterior to said primary throttle valve, said auxiliary induction passage having its inlet disposed in said main induction passage between said throttle valves wherein closure of said secondary throttle valves diverts flow into said auxiliary induction passage, and a charge forming device for delivering fuel to said chamber through at least one of said induction passages, the improvement comprising a fuel injection nozzle for delivering a cold starting and cold running enrichment to said chamber only through said auxiliary induction passage, temperature responsive means for providing additional air flow into the auxiliary induction passage when the temperature is below a predetermined temperature.

4,513,701

VALVE FOR AN INTERNAL COMBUSTION ENGINE

Rudolf Sternberg, Oberboihingen, and Martin Schnapper, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,681
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142670
Int. Cl.³ F01L *3/10*
U.S. Cl. 123—188 AA 1 Claim

1. A valve for an internal combustion engine comprising a valve stem provided near an end thereof remote from a valve disk with an annular groove having a rectangular cross section and rounded-off innermost corners, characterized in that the innermost corners of the annular groove are rounded-off with

a relatively small radius at a first innermost corner and said small radius effects a transition with a cylindrical portion of the annular groove thence to an adjoining larger radius at a second innermost corner wherein the larger radius is about three times as large as the smaller radius, the valve stem has an inductively hardened outer layer which extends from the end of the valve



stem remote from the valve disk and terminating at a location between the annular groove and said valve disk wherein the valve stem has a longitudinal axis and

the hardened outer layer in the area of the annular groove extends radially toward the axis to a depth greater than the groove to provide a hardened surface for and a hardened layer below the groove.

4,513,702

INTERNAL COMBUSTION ENGINE

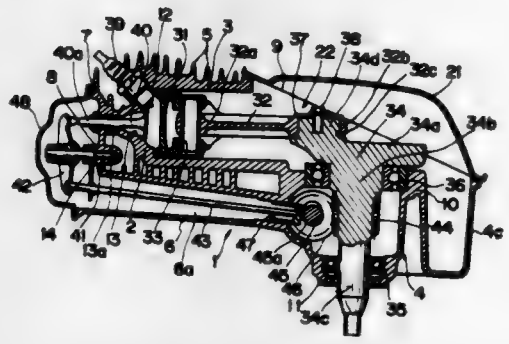
Noritaka Koga; Takanori Suzuki, both of Sakado; Kenji Nakamura, Wako; Hitoshi Suzuki, and Takeo Ogano, both of Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,260

Claims priority, application Japan, Oct. 29, 1981, 56-174338; Oct. 30, 1981, 56-162109[U]

Int. Cl.³ F02F *7/00*

U.S. Cl. 123—193 H **2 Claims**



1. A four cycle internal combustion engine comprising:

a vertically disposed cantilever crankshaft having a shaft portion and a center axis;

a main block including a cylinder block section having an inner bore with a horizontal axis, and a crankcase half section, said cylinder block section and said crankcase half section being formed as a single body, said crankcase half section having a bearing portion for supporting said crankshaft thereon, said shaft portion of said crankshaft being supported at two points of said bearing portion, one of said points being below and near to said inner bore and the other of said points being spaced downwardly therefrom, said crankcase half section being upwardly open in a direction of said center axis of said crankshaft and also in a direction of said horizontal axis of said inner bore to define an opening which has an opening edge arranged in an inclined relationship to said center axis of said crankshaft and also to said horizontal axis of said inner bore;

a camshaft rotatably mounted in said crankcase half section and disposed perpendicularly to said center axis of said crankshaft at a position wholly between a respective horizontal plane passing through each of said two points of said bearing portion; and

a crankcase half having an inclined opening edge corresponding to said opening edge of said crankcase half section for covering said opening of said crankcase half section.

4,513,703

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

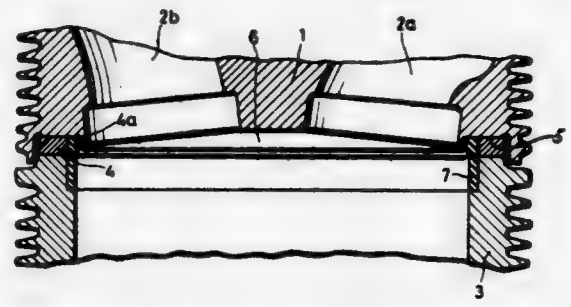
Rolf Eckert, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Sep. 28, 1983, Ser. No. 536,897

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236185

Int. Cl.³ F02F *1/18*

U.S. Cl. 123—193 CH **4 Claims**



1. A reciprocating piston internal combustion engine, each cylinder of which compriscs:

a light metal cylinder head which is provided with a combustion chamber and with an annular shaped recess which is disposed radially outwardly of the latter;

a cylinder sleeve having a thermal expansion differing from that of the cylinder head and which is adapted to be connected to said cylinder head; and

a sealing element which is disposed in said recess and forms a sealing surface between said cylinder head and said cylinder sleeve; at least that surface of said sealing element which faces said combustion chamber being provided with a heat insulating layer, said sealing element being a metal ring having a predetermined width, said heat insulating layer comprising a ceramic material, said cylinder sleeve, at that end adjacent said cylinder head, and on its radially inwardly directed surface, being provided with a heat insulating part which forms a contact surface for said heat insulating layer, said heat insulating part also comprising a ceramic material, said recess of said cylinder head having its outer periphery being wider than the width of said sealing element and said heat insulating layer forming a means to permit radial play of the sealing element via a spaced radial relationship.

4,513,704

PRESSURIZED LUBRICATION ASSEMBLY FOR MACHINERY HAVING A FLOW RESTRICTOR DEVICE

John W. Evans, Rte. 41, Sharon, Conn. 06069

Filed Dec. 2, 1983, Ser. No. 557,313

Int. Cl.³ F01M *1/00;* F02B *33/40*

U.S. Cl. 123—196 S **22 Claims**

1. An improved prelubricator and pressurized lubricant reservoir assembly for lubricating machinery, such as an internal combustion engine, when the lubricant pressure in the machinery is below a specified level said assembly comprising:

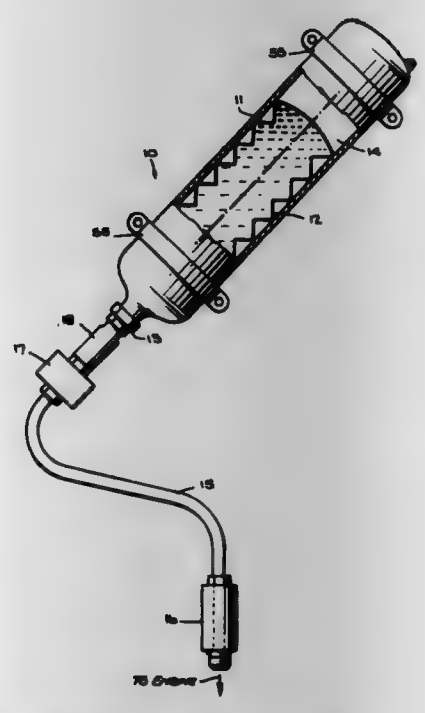
reservoir means for storing a quantity of lubricant under pressure;

conduit means for coupling said reservoir means and said machinery in fluid communication whereby lubricant

flows in said conduit means in a first direction from said machinery to said reservoir means and in a second direction from said reservoir means to said machinery;

valve means disposed in said conduit means for selectively permitting and preventing flow of lubricant in said conduit means;

flow restrictor means disposed in said conduit means, said flow restrictor means having a first operating position for providing for restricted lubricant flow in said first direction and a second operating position for providing for substantially unrestricted lubricant flow in said second direction; and



wherein said flow restrictor means comprises:

a casing having a fluid passage therethrough; and

a gate having an aperture therein pivotally mounted within said fluid passage wherein said gate assumes a closed position when said lubricant flows in said first direction whereby restricted lubricant flow from said machinery to said reservoir means through said aperture is permitted and wherein lubricant flow in said second direction opens said gate whereby substantially unrestricted lubricant flow from said reservoir means to said machinery is permitted by said open gate.

4,513,705

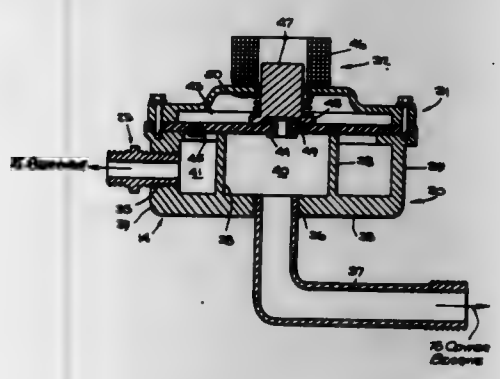
PRESSURIZED LUBRICATION ASSEMBLY FOR THE CENTER BEARING OF A TURBOCHARGER

John W. Evans, Rte. 41, Sharon, Conn. 06069

Filed Dec. 2, 1983, Ser. No. 557,321

Int. Cl.[3] **F02B** *33/40*

U.S. Cl. 123—196 S **15 Claims**



1. A pressurized lubrication assembly for a center bearing of an exhaust-driven turbocharger associated with an internal combustion engine wherein said engine includes means for providing flow of pressurized lubricant through first conduit means to said turbocharger when said engine is running, said lubrication assembly comprising:

reservoir means for storing a quantity of lubricant under pressure;

second conduit means coupled to said reservoir means and said first conduit means for permitting flow of lubricant between said reservoir means and said first conduit means;

valve means disposed in said second conduit means for controlling flow of lubricant between said first conduit means and said reservoir means wherein said valve means includes:

means for substantially restricting flow of lubricant from said first conduit means to said reservoir means when the pressure of lubricant flowing in said first conduit means is below a selected pressure;

means for permitting substantially unrestricted lubricant flow from said first conduit means to said reservoir means when the pressure of lubricant flowing in said first conduit means is at or exceeds a selected pressure;

means for preventing flow of lubricant from said reservoir means to said first conduit means when said engine is providing flow of pressurized lubricant to said turbocharger;

means responsive to shut down of said engine for providing substantially unrestricted flow of lubricant from said reservoir means to said first conduit means and thereby said turbocharger.

4,513,706

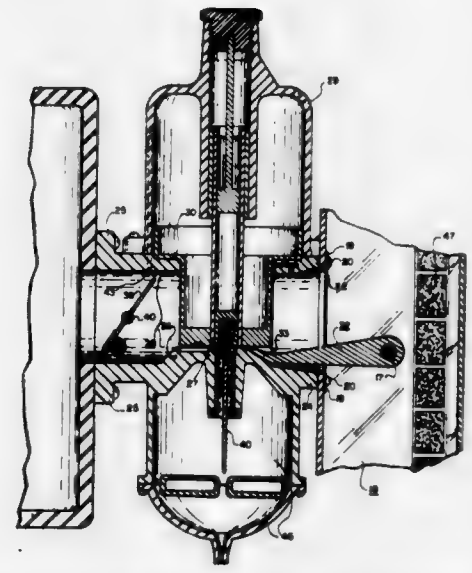
ANTI-DIESELING DEVICE FOR DEMAND CARBURETORS

Jon E. Atzet, 1754 S. 10th East, Salt Lake City, Utah 84105

Filed Jul. 26, 1984, Ser. No. 634,425

Int. Cl.[3] **F02M** *7/12;* **F02B** *77/08*

U.S. Cl. 123—198 D **7 Claims**



1. In combination: a side-draft demand-type carburetor having a venturi throat in part defined by a raised bridge and movable air valve disposed thereover and having an undersurface, a vacuum bowl slideably receiving said air valve as a piston and constructed to reflect intake manifold pressure behind said air valve, said air valve having a downwardly tapered fuel metering valve depending therefrom proximate said venturi throat, said bridge area being provided with a fuel jet receiving said fuel metering valve, whereby the cross-sectional spacing between said fuel metering valve and said fuel jet increases progressively as said fuel metering valve is progressively raised, said carburetor having air-intake and intake-manifold flanges on opposite sides of said venturi throat, said carburetor including a throttle-butterfly valve disposed between said venturi throat and said intake-manifold flange; a manual control; first means for selectively lifting said air valve; and second means intercoupling said manual control with said first means for translating movements of said manual control to

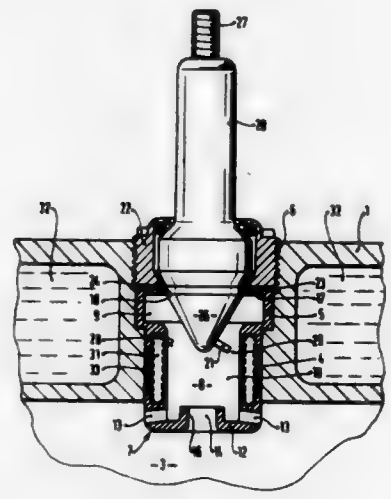
movement of said first means, whereby said first means selectively mechanically actuates said air valve independently of said vacuum bowl.

4,513,708

METHOD FOR IGNITING LEAN FUEL-AIR MIXTURES AND AN APPARATUS TO PERFORM THE METHOD

Reinhard Latsch, Vahingen; Hans Schlembach, Mühlacker, and Dieter Scherenberg, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 403,902, Jul. 30, 1982, Pat. No. 4,442,807, which is a continuation of Ser. No. 141,437, Apr. 17, 1980, abandoned. This application Dec. 21, 1983, Ser. No. 563,856
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916285
Int. Cl.³ F02B *19/18*
U.S. Cl. 123—263
19 Claims



1. An apparatus for igniting a combustible mixture in a main combustion chamber of an internal combustion engine, wherein the apparatus comprises:

a substantially rotationally symmetrical ignition chamber wall formed by a circumferential wall having a first diameter section which is of lesser diameter than a second diameter section with the length of said chamber greater than the diameter, a front wall integral with said first diameter section and extending into said combustion chamber of said engine, a first, axially aligned, overflow conduit which penetrates said front wall, and a plurality of second overflow conduits which substantially discharge into said ignition chamber at a tangent with said first diameter section of said chamber along a diametrical plane,

an ignition device having an insulator, a first electrode supported by said insulator, a second electrode connected to ground and a spark gap located between said first and second electrodes,

characterized in that

the second overflow conduits, at the outermost end toward the combustion chamber of the ignition chamber, discharge at a tangent to the circumferential wall of said first diameter section in a plane radial to the longitudinal axis of the ignition chamber,

said insulator protrudes into an end of the ignition chamber axially through said second diameter section and facing said front wall,

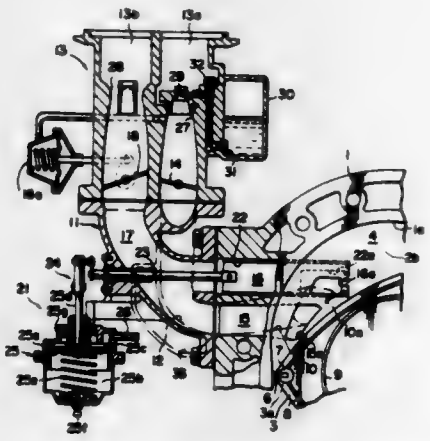
one end of said electrode supported by said insulator, which electrode defines a spark gap path and terminates in a vicinity near the circumferential wall in a reference plane located transversely to the longitudinal axis of the ignition chamber, which plane divides the volume of the ignition chamber into a first partial volume, adjacent to the front wall, and a second partial volume, into which the insulator plunges, the second partial volume being at least equal to said first partial volume.

4,513,707

MULTIPLE PORT INTAKE MEANS FOR ROTARY PISTON ENGINES

Tomoo Tadokoro; Haruo Okimoto, and Ikuo Matsuda, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 21, 1983, Ser. No. 487,052
Claims priority, application Japan, Apr. 22, 1982, 57-68185
Int. Cl.³ F02B *53/06*
U.S. Cl. 123—242
4 Claims



1. A rotary piston engine including a casing comprised of a rotor housing having a trochoidal inner wall and a pair of side housings secured to the opposite sides of the rotor housing to define a rotor cavity therein, a substantially polygonal rotor disposed in said rotor cavity for rotation with apex portions in sliding engagement with the inner wall of the rotor housing to define working chambers of variable volumes to conduct intake, compression, combustion, expansion and exhaust strokes, exhaust port means formed in said casing so as to open to said rotor cavity at the working chamber in the exhaust stroke, first intake port means formed in said casing so as to open to said rotor cavity at the working chamber in the intake stroke, second intake port means formed in said casing so as to open to said rotor cavity at the working chamber in the intake stroke and located so that it is disconnected from the same working chamber later than the first intake port means, control valve means provided in said second intake port means for opening the second intake port means in heavy load engine operation, third intake port means formed in said casing so as to open to said rotor cavity at the working chamber in the intake stroke and located so that it is disconnected from the same working chamber earlier than said first intake port means, primary intake passage means having primary throttle valve means and connected with said first intake port means, secondary intake passage means connected with said second and third intake port means and having second throttle valve means which is closed under light load.

4,513,709

INTERNAL COMBUSTION ENGINE AND CYLINDER HEAD THEREFOR

Richard J. L. Stace, Southend-On-Sea, England, assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/GB82/00065, § 371 Date Oct. 14, 1982, § 102(e) Date Oct. 14, 1982, PCT Pub. No. WO82/02924, PCT Pub. Date Sep. 2, 1982

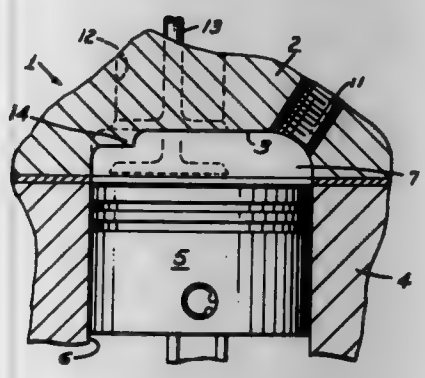
PCT Filed Feb. 26, 1982, Ser. No. 442,195

Claims priority, application United Kingdom, Feb. 27, 1981, 8106324

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306

3 Claims



1. A cylinder head for an internal combustion engine having walls comprising a recess having an upper substantially planar wall and side walls for cooperating with a piston and cylinder in a cylinder block to define a combustion chamber, and inlet and outlet apertures for seating axially movable inlet and outlet valves, the walls of the recess around the inlet aperture having means axially extending below the planar wall to impart a swirling action to gases flowing from the inlet aperture into the chamber as the inlet valve reaches a partially open position, the means extending axially less than that of full axial movement of the inlet valve to eliminate the swirl imparted action to the gases when the inlet valve is fully open.

4,513,710

ENGINE IDLING ROTATIONAL SPEED CONTROL DEVICE

Nobuyuki Kobayashi; Hiroshi Ito, and Nobuhisa Ohkawa, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

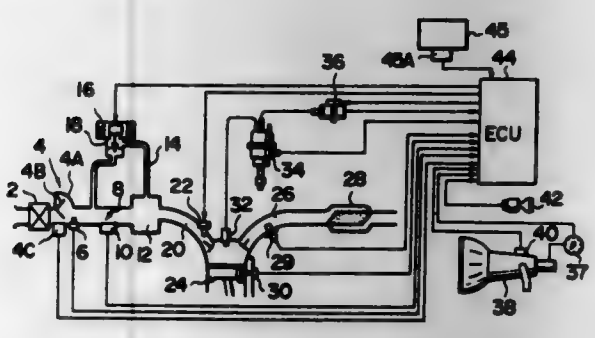
Filed Aug. 11, 1982, Ser. No. 407,169

Claims priority, application Japan, Aug. 13, 1981, 56-126886

Int. Cl.³ F02D *9/02, 31/00*

U.S. Cl. 123—339

6 Claims



1. An engine idling rotational speed control device comprising:

a throttle valve provided in a main intake passage and adapted to be substantially fully closed when an accelerator pedal is released;

a flow rate control valve provided in a bypass intake passage for controlling intake air quantity taken into a combustion chamber of an engine through said bypass intake passage;

a stepping motor for driving said flow rate control valve; and

an electronic control circuit means for:

controlling a step position of said stepping motor such that an engine rotational speed becomes within a target rotational speed range;

learning, whenever said engine rotational speed is within said target rotational speed range, an idle step number for the step position of said motor such that said idle step number coincides with a converted value, which value is obtained by cancelling an incremental step number for an idle up, required in accordance with a load on the engine and a coolant temperature, from a current step position of the stepping motor, said converted value being indicative of a step position converted by substituting a predetermined standard engine load and coolant temperature for the engine load and the coolant temperature which are used to control a current step position; and

determining a lower limit by subtracting a predetermined value from said idle step number, said lower limit being large enough to prevent full-close state of said intake air flow rate control valve, whereby said intake air flow rate control valve is prevented from being closed below said lower limit.

4,513,711

APPARATUS FOR REGULATING THE IDLING SPEED OF INTERNAL COMBUSTION ENGINES

Günter Braun, Freiberg; Alfred Kratt, Trossingen, and Rolf Schleicher, Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

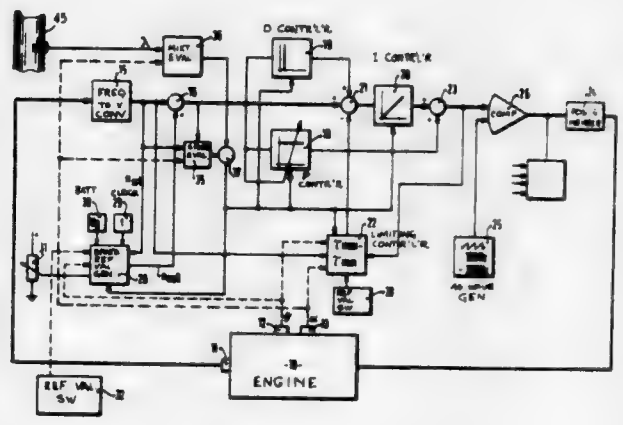
Filed Aug. 19, 1983, Ser. No. 524,685

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235186

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339

10 Claims



1. Apparatus for regulating the idling speed of an internal combustion engine of which the speed is controllable by a throttle valve in the intact duct of the engine, said apparatus including an electrically operable mechanical device (**24**) for determining the rate of air intake in the idling condition by setting a minimum-air-intake limit for the air intake control function performed by said throttle valve, and electrical comparison stage (**16, 28**) for comparison of actual engine speed with a reference desired speed value and having an output representative of said comparison, a controller stage (**18, 19, 20**) having components respectively of proportional, integral and differential (PID) behavior types and means for combining the outputs of said components, and in which at least one component control parameter (P, I or D) is of variable magnitude for control purposes, said controller stage being responsive to said output of said comparison stage and having its output connected for control of said mechanical device, said apparatus incorporating the improvement comprising:

first means for detecting engine speed fluctuations deviating upward and downward of said reference desired speed value with a speed deviation characteristic exceeding a

predetermined speed deviation characteristic and for providing an output signal when said fluctuations deviate both upward and downward of said reference speed value with a speed deviation characteristic exceeding said predetermined characteristic continue for a predetermined period of time, and

second means, responsive to said output signal of said first means for increasing the idling speed of said engine indirectly by reducing the magnitude of said at least one variable component control parameter of said controller stage.

4,513,712

APPARATUS FOR REGULATING THE IDLING RPM IN AN INTERNAL COMBUSTION ENGINE

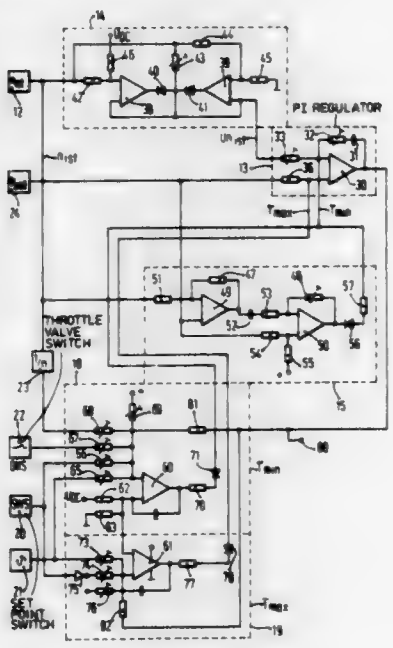
Hermann Gässler, Vaihingen/ENZ, and Wolfgang Kosak, Mölingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 417,936, Sep. 14, 1982, abandoned. This application May 31, 1984, Ser. No. 615,874

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149097

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339 **8 Claims**



1. An apparatus for regulating the idling rpm of an internal combustion engine in a manner to prevent stallout below critically low idle rpms incurred during accessory loading of the engine, comprising sensor means for the actual rpm and the temperature of said engine, a PI regulator for processing the output signal of said actual rpm sensing means and a signal related to the output signal of said temperature sensing means, and a control circuit acting on said actual rpm signal for changing the actual rpm signal input to said PI regulator to thereby permit the amplified PI-component to be switched into two ranges by means of said control circuit.

4,513,713

METHOD OF CONTROLLING OPERATING AMOUNTS OF OPERATION CONTROL MEANS FOR AN INTERNAL COMBUSTION ENGINE

Takashi Koumura, Saitama, and Toyohei Nakajima, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

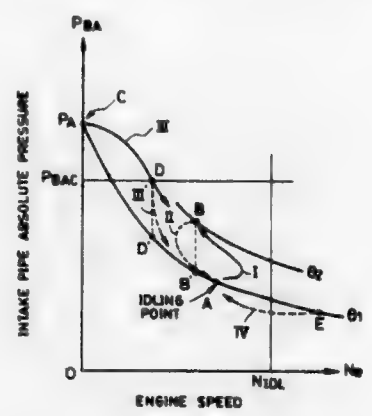
Filed Aug. 31, 1984, Ser. No. 646,684

Claims priority, application Japan, Sep. 6, 1983, 58-163789; Oct. 20, 1983, 58-196891

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—339 **11 Claims**

1. A method of electronically controlling an operating amount of an operation control means for controlling the operation of an internal combustion engine, comprising the steps of: (1) detecting a value of a first engine operating parameter indicative of loaded conditions of said engine; (2) detecting a value of a second engine operating parameter indicative of loaded conditions of said engine; (3) determining whether or not said engine is operating in a predetermined low load condition; (4) determining a desired operating amount of said operation control means in dependence on the detected value of said first engine operating parameter obtained at said step (1) when said engine is determined to be operating in said predetermined low load condition; (5) determining the desired operating amount of said operation control means in dependence on the detected value of said second engine operating parameter obtained at said step (2) when said engine is determined not to be operating in said predetermined low load condition; (6) determining first and second provisional desired operating amounts of said operation control means, respectively, in dependence on the detected values of said first and second engine



operating parameters, when it is determined that said engine has entered said predetermined low load condition from a condition other than said predetermined low load condititon; (7) comparing the determined first provisional desired operating amount with the determined second provisional desired operating amount; (8) determining the desired operating amount of said operation control means in dependence on the determined second provisional desired operating amount from the time it is determined that said engine has entered said predetermined low load condition to the time the determined second provisional desired operating amount becomes substantially equal to the determined first provisional desired operating amount, even while said engine is actually operating in said predetermined low load condition; and (9) controlling the operating amount of said operation control means on the basis of the desired operating amount determined at said step (4), (5) or (8).

4,513,714

METHOD OF ADJUSTING A PLURALITY OF FUEL INJECTION UNITS ASSOCIATED WITH RESPECTIVE CYLINDERS OF A MULTI-CYLINDER DIESEL ENGINE

Anton Dolenc, Vienna, and Leopold Rollenitz, Kirchstetten, both of Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Jan. 28, 1983, Ser. No. 462,098

Claims priority, application Austria, Feb. 3, 1982, 393/82

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—357 **2 Claims**

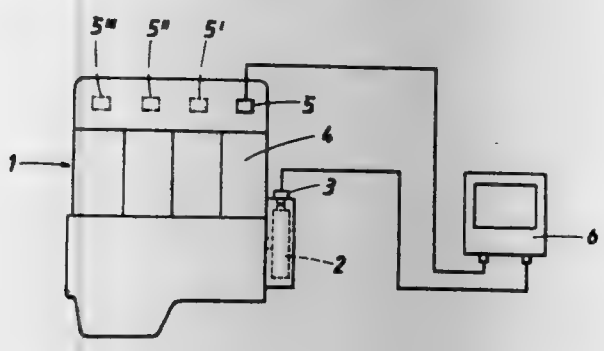
1. A method of adjusting a plurality of fuel injection units associated with respective cylinders of a multi-cylinder diesel engine having a crankshaft operatively connected to all said cylinders,

each of said fuel injection units comprising a fuel injection nozzle, a fuel injection pump connected to said nozzle and operable to discharge fuel therethrough, a housing accommodating said nozzle and said pump, drive means for driving said pump, a capacity control element for controlling the capacity of said pump, and a timing control ele-

ment for controlling the time at which said pump begins to discharge fuel through said nozzle,

the steps of connecting first sensor means to said engine for generating output signals representing the pressure in each of said cylinders, connecting second sensor means to said engine for generating output signals representing respective rotational positions of said crankshaft, and connecting, indicating means to said first and second sensor means for receiving the output signals thereof and for indicating for each of said cylinders a peak value of said pressure and the respective rotational position of said crankshaft at which said pressure begins to rise as a result of a combustion of the fuel,

wherein the improvement comprises



mounting each of said fuel injection units on, and operatively connected to, the associated cylinder of said engine,

operating said engine under idling conditions to effect the combustion of fuel in each of said cylinders and adjusting said capacity control element of each of said fuel injection units so that the pressure in each of said cylinders rises to the same peak value as a result of said combustion, and

subsequently operating said engine to effect a combustion of fuel in each of said cylinders and adjusting said timing control element of each of said fuel injection units so that said pressure in each of said cylinder begins to rise when said crankshaft is in a predetermined rotational position desired for the beginning of said combustion.

4,513,715

DISTRIBUTOR INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

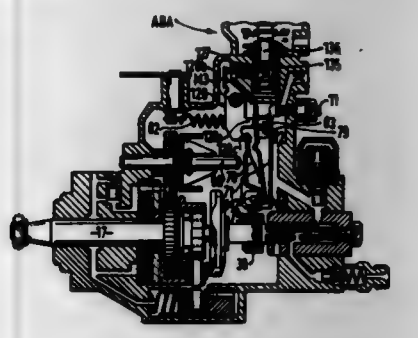
Wolfgang Braun, Ditzingen; Karl Konrath, Ludwigsburg, and Manfred Schwarz, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,609

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242108

Int. Cl.³ F02D *1/02*

U.S. Cl. 123—383 **10 Claims**



1. A distributor injection pump for an internal combustion engine including injection valves in which fuel is furnished to the injection valves of said engine, said pump comprising a housing, a drive means and a distributor piston coupled to said drive means for rotational and reciprocal movement thereby, said distributor piston aspirating fuel during an intake phase from an interior chamber of said housing and during a compression phase sending said fuel on to said injection valves, an end of an injection interval being fixed by a regulating governor slide means displaceably disposed on said distributor piston and cooperating with a control bore in said distributor piston, a relative position of said slide means to said control bore in said piston being controlled by a starting lever which is pivotable about a pivot means adjustably disposed in said pump housing, said starting lever having an elongated lever arm displaceable in one direction about said pivot means by a governor sleeve of an adjuster means counter to a force of a starting spring, said adjuster means being responsive to engine rpm, said starting spring being supported on a tensioning lever supported on said pivot means in common with said starting lever, wherein upon the attainment of a predetermined idling rpm said governor sleeve displaces the starting lever into abutting relation to said tensioning lever whereby the starting spring is overridden and the starting lever with the tensioning lever resting firmly thereon directly controls a movement of the slide means while a regulating function of said slide means is assumed by an idling spring, wherein said governor sleeve operates counter to a force of said idling spring and, upon the idling rpm being exceeded, additionally operates counter to a force of a governor spring influenced by a set position of a gas pedal, said pump being provided with a transducer device, which determines an utmost position of the tensioning lever in the direction of a force of the governor spring and of the idling spring with the aid of a control member abutting said tensioning lever, said control member having an extension, which upon starting of said engine lifts said starting lever from said governor sleeve in the presence of predetermined engine and use-specific operating conditions, as long as said governor sleeve is at least approximately in its outset position corresponding to zero rmp.

4,513,716

IGNITION TIMING CONTROL SYSTEM WITH KNOCK CONTROL FOR INTERNAL COMBUSTION ENGINES

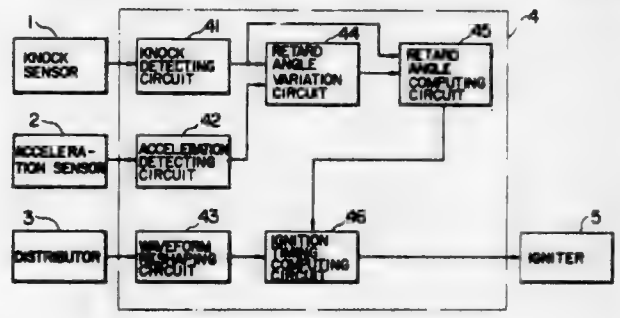
Hiroshi Haraguchi, Oobu; Ko Narita, and Toshiharu Iwata, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 30, 1982, Ser. No. 445,543

Claims priority, application Japan, Dec. 2, 1981, 56-194824; Dec. 3, 1981, 56-195142

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—425 **18 Claims**



1. An ignition timing control system with knock control for internal combustion engines, comprising:

a knocking sensor for detecting the occurrence of knocking in an engine and producing signals indicative thereof;

an acceleration sensor for detecting an acceleration condition of said engine and producing signals indicative thereof;

a control unit, responsive to detection signals from said knocking sensor and said acceleration sensor, for retarding ignition timing of said engine by a given retard angle, said control unit determining the presence or absence of knocking in accordance with the signals from said knocking sensor and determining whether present knocking signals exceed a predetermined level thereby constituting heavy knocking, said control unit further determining the presence or absence of acceleration in accordance with

the signals from said acceleration sensor and increasing the amount of retard per each determined knocking whenever both heavy knocking and acceleration are determined, but maintaining said given retard angle if either determination has not been made in accordance with the results of said determinations, and said control unit generating a control signal corresponding to the amount of retard; and

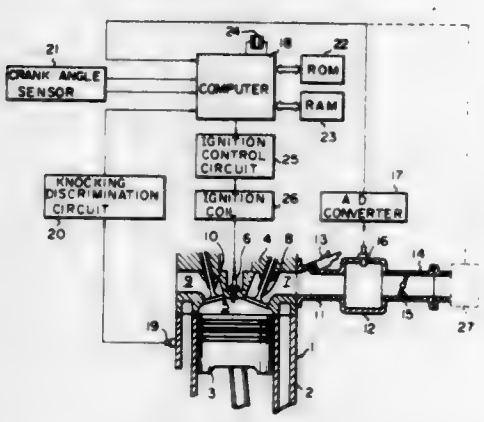
ignition means for igniting said engine at an ignition timing corresponding to said control signal from said control unit.

4,513,717

IGNITION TIMING CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

Tatsuo Kobayashi, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Tokota, Japan

Filed Mar. 9, 1983, Ser. No. 473,609
Claims priority, application Japan, Mar. 18, 1982, 57-041682
Int. Cl.³ F02P 5/04
U.S. Cl. 123—425
10 Claims



1. An ignition timing control device of an internal combustion engine having an intake passage and a spark plug, said device comprising:

first means for detecting the level of vacuum produced in the intake passage and producing an output signal indicating said level of vacuum;

second means for detecting the engine speed and producing an output signal indicating said engine speed;

third means for detecting the occurrence of a knocking and producing an output signal indicating a knocking intensity; and

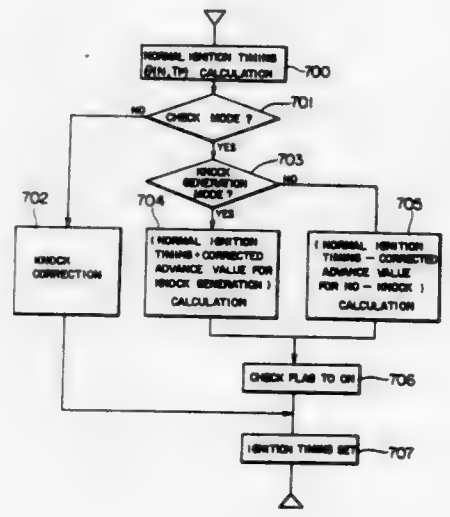
electronic control means controlling the ignition timing of said spark plug in response to the output signals of said first means, said second means and said third means, and storing therein a data map which indicates an optimum ignition timing corresponding to said level of vacuum and said engine speed, said optimum ignition timing including a first optimum ignition timing which corresponds to said engine speed and said level of vacuum, detected by said first means, and including a second optimum ignition timing which corresponds to said engine speed and said level of vacuum produced in the intake passage when the engine is operating with wide open throttle, said electronic control means normally maintaining the ignition timing of said spark plug at said first optimum ignition timing, but retarding the ignition timing of said spark plug to the range of an ignition timing between said second optimum ignition timing and the midpoint of said first and said second optimum ignition timings when a knocking occurs.

4,513,718

APPARATUS FOR CONTROLLING IGNITION TIMING FOR INTERNAL COMBUSTION ENGINES

Toshio Ishii, Katsuta, and Noboru Sugiura, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1984, Ser. No. 597,750
Claims priority, application Japan, Apr. 8, 1983, 58-60824
Int. Cl.³ F02P 5/14
U.S. Cl. 123—425
12 Claims



1. An ignition timing control apparatus for an internal combustion engine comprising:

a vibration sensor for detecting vibrations of said engine including knocking vibrations;

a knock detecting device for discriminating said knock vibrations by comparing the output of said vibration sensor with a predetermined level signal;

means for controlling ignition timing based on the output of said knock detecting device;

checking means for checking the detection sensitivity of said knock detecting device;

checking ignition timing generating means operable during the checking operation of said checking means for generating predetermined checking ignition timing, for at least one cylinder of said internal combustion engine, preset for the purpose of sensitivity check of said knock detecting device instead of generating a normal ignition timing obtained based on the output of said knock detecting device; and

means for correcting the sensitivity of said knock detecting device by checking by said checking means the reaction of said knock detecting device when ignition occurs by said checking ignition timing.

4,513,719

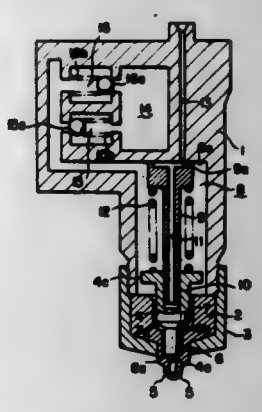
FUEL INJECTOR

Teruo Edo, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 22, 1983, Ser. No. 534,889
Claims priority, application Japan, Sep. 22, 1982, 57-142606[U]
Int. Cl.³ F02M 47/02
U.S. Cl. 123—447
3 Claims

1. A fuel injector for use in internal combustion engines including a fuel injector body, a nozzle means provided with injection orifices formed on the leading end thereof, a primary fuel accumulator chamber in the body, and a spring loaded or biased nozzle valve capable of opening inwardly disposed in the primary fuel accumulator chamber, wherein when said nozzle valve is moved to its open position by the pressure of the fuel under high pressure in the primary accumulator chamber, the fuel in the latter is injected through the injection

orifices into a combustion chamber of the engine, characterized by further comprising an auxiliary accumulator chamber



connected through first and second check valve means with said primary accumulator chamber.

4,513,720

FUEL INJECTION DEVICE FOR MOTOR VEHICLE

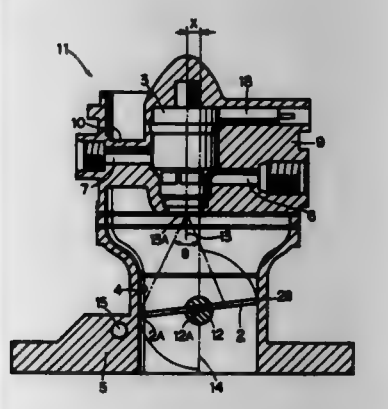
Keisou Takeda, Susono, and Toshiyuki Hirata, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 20, 1983, Ser. No. 515,668

Claims priority, application Japan, Dec. 14, 1982, 57-188884[U]

Int. Cl.³ F02M *61/14*

U.S. Cl. 123—470 **15 Claims**



1. A fuel injection apparatus for use in an internal, combustion engine, comprising:

a throttle body having a throttle bore therein;

a throttle valve means being rotatably responsive to an accelerator means, for controlling an amount of fuel-air mixture provided in said throttle bore, said throttle valve means having an upstream portion and a downstream portion, said upstream portion being located further upstream in the throttle bore with respect to the downstream portion upon opening of said throttle valve means; and

a fuel injection valve mounted upstream of said throttle valve means for injecting fuel primarily toward the downstream portion of the throttle valve means, said fuel being injected primarily toward said downstream portion by said fuel injection valve having its center-line oriented toward the downstream portion of said throttle valve means, wherein the fuel injected by said fuel injection valve assumes the shape of a hollow cone, and a distribution of the fuel-air mixture supplied to each cylinder of an engine is improved.

4,513,721

AIR-FUEL RATIO CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

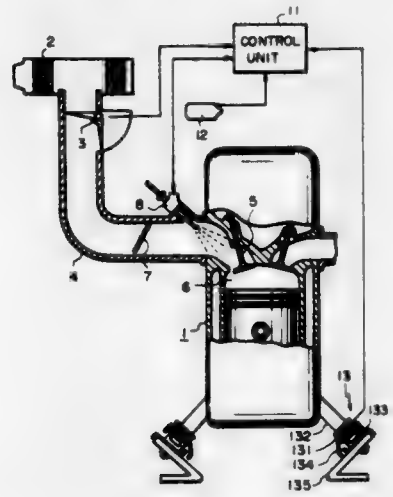
Toshikazu Ina, Aichi; Hideki Obayashi, Okazaki; Hisasi Kawai, Toyohashi; Tokio Kohama, Nishio; Daisaku Sawada, and Takashi Shigematsu, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 9, 1982, Ser. No. 406,527

Claims priority, application Japan, Aug. 11, 1981, 56-124661; Aug. 31, 1981, 56-135581

Int. Cl.³ F02B *5/00, 3/04, 3/02;* F02D *5/00*

U.S. Cl. 123—478 **7 Claims**



1. An air-fuel ratio control device for an engine having an engine mount, comprising

torque detection means for outputting detection signals from a pressure sensor axially mounted on the end of an engine arm the other end of which is connected to said engine, said pressure sensor being compressed between a rubber mount cover covering a rubber mount mounted on said engine mount and a flange on said engine arm;

fuel-injector means for selectively injecting fuel into said engine; and

control means for controlling at least the fuel injector means to control the air-fuel ratio of said engine in accordance with said detection signals, said control means including means for producing a fuel injector control signal by processing said detection signals through a bandpass filter of 1 to several Hz frequency band, comparing said filtered detection signals with a desired air-fuel ratio control value and outputting a command signal to said fuel injector based on said comparison.

4,513,722

METHOD FOR CONTROLLING FUEL SUPPLY TO INTERNAL COMBUSTION ENGINES AT ACCELERATION IN COLD CONDITIONS

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

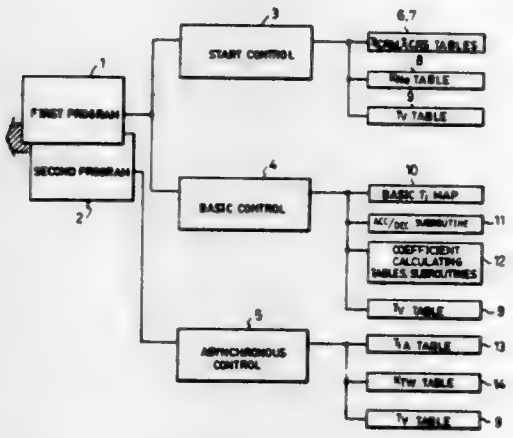
Division of Ser. No. 348,648, Feb. 12, 1982, Pat. No. 4,445,483. This application May 26, 1983, Ser. No. 498,272

Int. Cl.³ F02M *51/02*

U.S. Cl. 123—492 **9 Claims**

1. A method for electronically controlling fuel metering means for metering the quantity of fuel being supplied to an internal combustion engine, wherein a basic fuel quantity is set to a value corresponding to a condition in which the engine is operating, and said value of said basic fuel quantity thus set is corrected by means of correction coefficients including at least a first correction coefficient having a value dependent upon the temperature of the engine as well as the load of the engine, and a second correction coefficient, so as to supply a required quantity of fuel to the engine, the method comprising the steps of:

(a) setting the value of said second coefficient as a funciton of said first correction coefficient;
(b) determining whether or not the engine is operating in an accelerating condition;



(c) when it is determined in said step (b) that the engine is operating in said accelerating condition, correcting said basic fuel quantity by the value of said correction coefficient set in said step (a); and
(d) supplying the basic fuel quantity corrected in said step (c) to the engine.

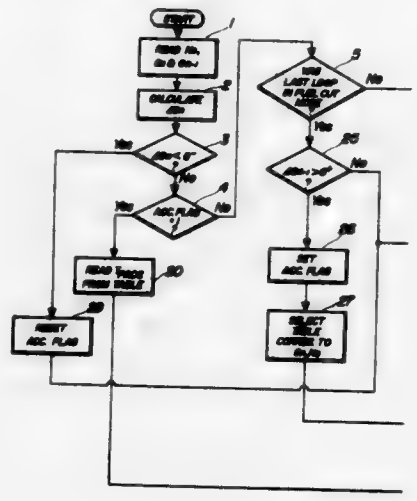
4,513,723

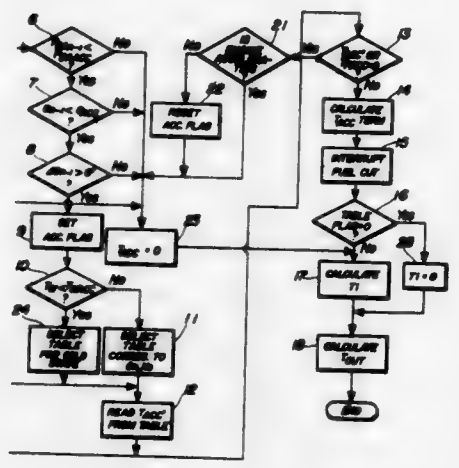
FUEL SUPPLY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES AT ACCELERATION

Yoshikazu Ishikawa, Saitama, and Makoto Hashiguchi, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1984, Ser. No. 623,846
Claims priority, application Japan, Jun. 22, 1983, 58-112298
Int. Cl.³ F02D *5/02*
U.S. Cl. 123—492 **15 Claims**

1. A method of controlling the quantity of fuel being supplied to an internal combustion engine to values appropriate to operating conditions thereof in synchronism with generation of pulses of a predetermined control signal, the method comprising the steps of:
(a) setting beforehand a plurality of groups of predetermined correction values for increasing the quantity of fuel to be supplied to said engine at acceleration thereof, said predetermined correction values being functions of at least two operating parameters of said engine;
(b) determining whether or not said engine is operating in a predetermined accelerating condition;
(c) when it is determined for the first time that said engine is operating in said predetermined accelerating condition, detecting values of said at least two operating parameters upon the same determination being obtained;
(d) selecting one of said groups of predetermined correction values which corresponds to the detected values of said at least two operating parameters; and
(e) successively applying different ones of said predetermined correction values of said selected one group for correction of the quantity of fuel being supplied to said engine, with passage of time after said determination that said engine is operating in said predetermined accelerating condition is obtained for the first time and as long as said





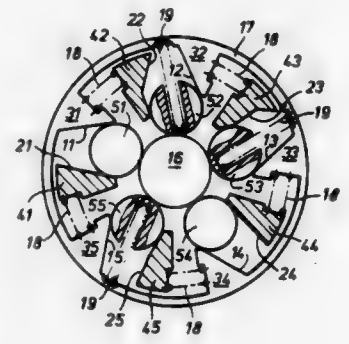
engine is determined to be operating in said predetermined accelerating condition.

4,513,724

FUEL INJECTION TIMER

Ewald Kamleitner, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU Motoren und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,440
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109655
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—500 **5 Claims**



1. A fuel injection timer for an internal combustion engine, the timer being adapted to cause a relative rotation between a shaft of a fuel injection pump and a drive shaft connected to the internal combustion engine as a function of a rotational speed of the internal combustion enine, the timer comprising a plurality of first track means adapted to be connected to the drive shaft, a plurality of second track means adapted to be

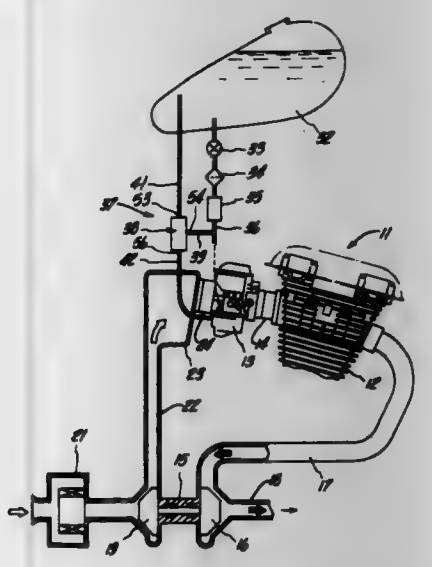
connected to the shaft of the fuel injection pump, the first and second track means being disposed in opposed pairs, oscillating means arranged between each pair of track means for transmitting drive torque for the fuel injection pump, the oscillating means being adapted to be displaced from a radially inner end position at a low rotational speed of the engine to a radially outer end position at a maximum rotational speed of the engine under an influence of centrifugal forces and spring forces, each pair of track means having a predetermined slope pattern for defining a displacement path for the oscillating means and for effecting relative rotation between the shaft of the injection pump and the drive shaft, the slope pattern of at least some of the opposed pairs of track means being nonuniform and including at least one segment having a slope pattern for enabling an automatic self-locking between the at least some pairs of opposed track means and the associated oscillating means, each at least one segment of the at least some pairs of opposed track means being associated with different rotational angles of the drive shaft and shaft of the fuel injection pump at which one of high torque peaks and oscillation caused by resonance occur, one of the track means of the at least some pairs of opposed track means including a plurality of segments having a slope pattern for enabling the automatic self-locking, at least one further segment having an extremely steep slope pattern disposed between the segments having a slope pattern for enabling the automatic self-locking, said at least some pairs of the opposed track means including at least two pairs of opposed track means arranged so as to effect an automatic self-locking between the drive shaft and shaft of the injection pump over an entire adjustment range of the injection timer.

4,513,725

DEVICE FOR SUPPLYING FUEL TO A PRESSURE CARBURETOR

Shunji Minami, Fukuroi, and Hiroshi Kimura, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 28, 1981, Ser. No. 297,320
Claims priority, application Japan, Aug. 29, 1980, 55-119559
Int. Cl.³ F02M *5/00*
U.S. Cl. 123—511 **6 Claims**



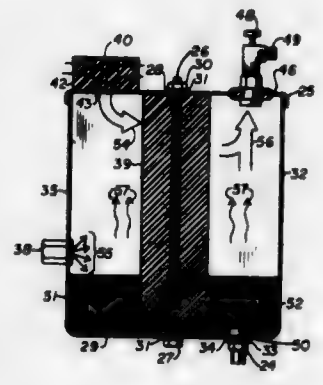
1. In a fuel feed and induction system for an internal combustion engine comprising a charge forming device having a fuel bowl, a float controlled valve for controlling the level of fuel in said fuel bowl, and a fuel discharge circuit fed by said fuel bowl, and a fuel pump for delivering fuel to said fuel bowl, the improvement comprising means for controlling the pressure at which said fuel pump delivers fuel to said fuel bowl in relation to the pressure above the fuel in said fuel bowl for maintaining a predetermined pressure differential between the delivery pressure and the pressure in the fuel bowl.

4,513,726

FUEL SAVING SYSTEM FOR A GASOLINE ENGINE

Richard Webb, Pratville, Calif., assignor to Misty Vapor, Inc., Orangevale, Calif.

Filed Apr. 6, 1984, Ser. No. 597,400
Int. Cl.³ F02M *17/00*
U.S. Cl. 123—523 **9 Claims**



1. In a fuel system for a vehicle having a carburetor, a gas tank fluidly coupled to the carburetor and a fuel pump disposed between the tank and carburetor for controlling the flow of fuel to the carburetor, and fuel vaporizing means in said system for delivering vaporized fuel to the combustion chambers of said vehicle, the improvement which comprises:

said vaporizing means including a vaporizing chamber having a top wall and a bottom wall and side walls and a fluid conduit coupling said chamber to a fluid conduit interconnecting said fuel pump to said carburetor:

an air inlet at the top of said chamber opening into the interior of said chamber;

a valve-controlled fluid conduit at the top of said chamber spaced from said air inlet communicating the interior of the top of said chamber with said carburetor;

a plate disposed underneath said carburetor in fluid communication both with the interior of said carburetor, said plate also being in fluid communication with said combustion chambers;

a valve controlled drain line fluidly coupled to a drain hole at the bottom of said vaporizing chamber and to a fluid conduit fluidly coupling said fuel pump to said gas tank;

first porous means disposed in said vaporizing chamber extending from the bottom to the top thereof;

second porous means disposed at the bottom of said vaporizing chamber; and a valve controlled fuel mist spray inlet in fluid communication with said fluid conduit interconnecting said fuel pump to said carburetor opening into the interior of said vaporizing chamber below the air inlet and above said second porous means adapted to spray fuel in a mist onto said first porous means whereby vapors are adapted to be created when air enters into said vaporizing chamber and mixes with said mist, said vapors being adapted to flow upwardly in said vaporizing chamber and exit out through said valve-controlled fluid conduit to said plate under carburetor.

4,513,727

PROCESS FOR CONTROLLING SECONDARY GAS FUEL TO NORMALLY LIQUID FUELED I.C. ENGINE

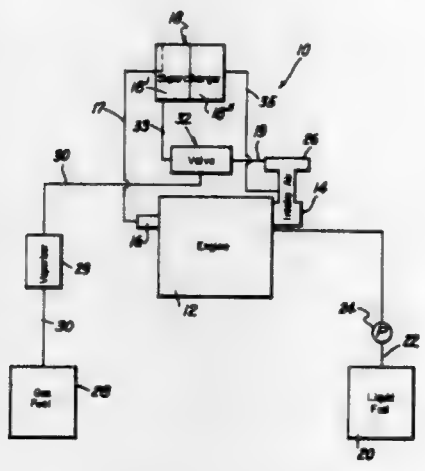
Thomas Lagano, Juno Beach, and William H. Batchelor, Jensen Beach, both of Fla., assignors to Propane Carburetion Systems, Inc., Stuart, Fla.

Division of Ser. No. 397,168, Jul. 12, 1982, Pat. No. 4,440,137. This application Nov. 23, 1983, Ser. No. 554,624
Int. Cl.³ F02M *21/07*
U.S. Cl. 123—525 **3 Claims**

1. A process for controlling the supply of gaseous secondary fuel to the intake air stream of an internal combustion engine that normally is supplied with a liquid primary fuel under the control of an engine speed controller comprising:

(a) supplying gaseous secondary fuel to the engine air intake

stream in accordance with a desired air to secondary fuel ratio during normal engine operation by using a moveable air flow responsive member in the direct path of the engine air intake stream to control the position of a moveable gas valve element in a gas fuel supply system; and,



(b) effecting positive closure of the gas valve element when the engine speed controller is at or approaches its idle or off position without effecting movement of the air flow responsive member, so the air flow responsive member is movable by response to intake air flow even when the gas valve is closed.

4,513,728

AIR/FUEL INDUCTION SYSTEM FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES, AND ELECTROMAGNETIC VALVES

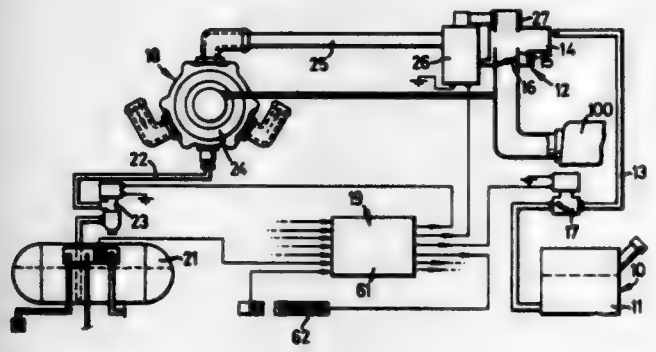
Thomas J. Ullman, Cranfield; Colin F. Shadbolt, Leighton Buzzard; Brian C. Pagdin; David J. Marriage, both of Dunstable; Peter J. Clarke, Leighton Buzzard, and Ian J. Sheppard, St. Albans, all of England, assignors to Solex (U.K.) Limited, Middlesex, England

Filed Dec. 14, 1982, Ser. No. 449,786

Claims priority, application United Kingdom, Jan. 15, 1982, 8201104

Int. Cl.³ F02M *13/06*

U.S. Cl. 123—527 **17 Claims**



1. An air/fuel induction system for a spark ignition internal combustion engine, the system comprising an air/fuel induction passage with a driver-operable throttle valve therein, and a fuel system by which gaseous fuel is presented to a location in the induction passage; the fuel system comprising pressure regulating means operable to regulate the pressure of the gaseous fuel and conduit means by which the gaseous fuel is conveyed to said location, the pressure regulating means being adapted to respond to changes in a depression which is established downstream of the throttle valve by operation of the engine and to effect a consequent change in the regulated pressure of the gaseous fuel such that it varies in the opposite sense to variations of said depression; wherein the pressure regulating means are adapted to maintain the gaseous fuel at a pressure higher than that established at said location by operation of the engine and comprise a single movable wall which separates two chambers, one of the two chambers containing gaseous fuel at the regulated pressure and the other chamber being in communication with said induction passage downstream of said throttle valve, there being an injection valve in said conduit means operable to effect injection of metered quantities of said gaseous fuel whereby said gaseous fuel is presented to said location, and control means responsive to certain engine operating conditions and operable to control operation of said injection valve in accordance with those conditions such that the volumetric flow rate at which said gaseous fuel is injected is matched to the operational requirements of the engine.

4,513,729

SYSTEM FOR SUPPLYING COMBUSTION AIR TO A SUPERCHARGED INTERNAL COMBUSTION ENGINE WITH CHARGE AIR COOLING

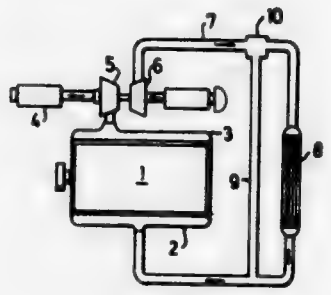
Sören Udd, Nödinge, Sweden, assignor to AB Volvo, Göteborg, Sweden

Filed Nov. 23, 1982, Ser. No. 444,036

Claims priority, application Sweden, Dec. 1, 1981, 8107168

Int. Cl.³ F02B *29/04*

U.S. Cl. 123—563 **6 Claims**



1. System for supplying combustion air to the cylinders in a combustion engine for vehicles, comprising a compressor for elevating the pressure of the air supplied to the air intake of the cylinders, a charge air cooler for cooling the charge air from the compressor, and a valve which permits the supply of charge air from the compressor past the charge air cooler directly to the engine air intake, characterized in that the valve is a two-way valve controlled by the charge air pressure, which at a charge air pressure less than a predetermined pressure conducts essentially all the charge air past the charge air cooler and at a charge air pressure exceeding a predetermined pressure conducts essentially all the charge air through the charge air cooler, said valve being provided with means for delaying the switching of the valve, in any position of the valve, when there is a rapid change in the charge air pressure.

4,513,730

SUPERCHARGED DIESEL ENGINE AIR INFLOW CONTROL SYSTEM

Robert L. Cholvin, Santa Monica; Charles E. McInerney, Rolling Hills Estates; James N. Nancarrow, Torrance, and Jack L. Gantz, Marina Del Rey, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 424,205, Sep. 27, 1982, Pat. No. 4,489,702. This application Apr. 9, 1984, Ser. No. 598,144

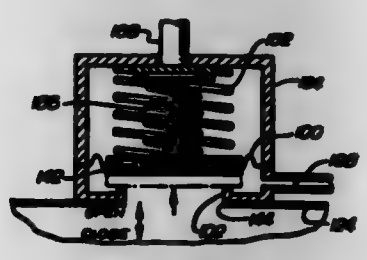
Int. Cl.³ F02D *23/02*

U.S. Cl. 123—564 **2 Claims**

1. An air inflow control system for a diesel engine system including a supercharging device for supplying air under pressure to an engine, an air inflow conduit coupled between the discharge side of the supercharging device and the intake side of the engine, and a fuel control rack for selectively controlling the flow of fuel to the engine, comprising:

a relief valve movable to open and close a relief port formed in the air inflow conduit to selectively divert a portion of the air flow from the engine; and

a controller including means for movably supporting said relief valve for movement relative to said relief port in response to the pressure of air within the air inflow conduit wherein said air pressure is indicative of engine air inflow, a first spring for biasing said relief valve with a predetermined force toward a position closing said relief port, a slide block coupled to the fuel control rack for movement in response thereto, and a second spring reacting between said slide block and said relief valve to adjustably bias said relief valve toward a position closing said relief port.

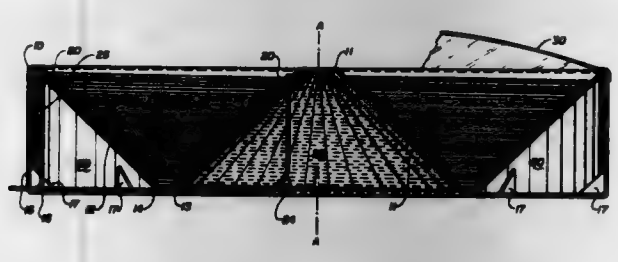


4,513,731

SOLAR HEAT COLLECTOR

Willis R. Campbell, R.D. #3, Box 58, Ephrata, Pa. 17522

Filed Sep. 30, 1982, Ser. No. 429,229
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—432 **20 Claims**



1. A solar collector comprising:

a frame defining an opening having a first diameter;

a downwardly converging frusto-conical wall portion of smaller diameter than said first diameter positioned within said frame and attached thereto;

an upwardly converging frusto-conical wall portion of smaller diameter than the minimum diameter of the downwardly converging frusto-conical wall portion positioned within said frame and within the downwardly converging frusto-conical wall portion and attached thereto;

fluid conduit means lying in parallel displacement on the downwardly and upwardly converging wall portions, said fluid conduit means being provided with inlet and outlet means to permit the flow of fluid into and out of said fluid conduit means, said fluid conduit means circulating fluid along a first spiral path disposed on said downwardly converging wall portion and a second spiral path disposed on said upwardly converging wall portion, said fluid conduit means being provided with a light absorbing surface to permit fluid to be heated by sunlight striking said fluid conduit means, said first and second spiral paths being interconnected;

circulating means for circulating fluid along a circulation path through said fluid conduit means, said circulation path including both said first and second spiral paths; and

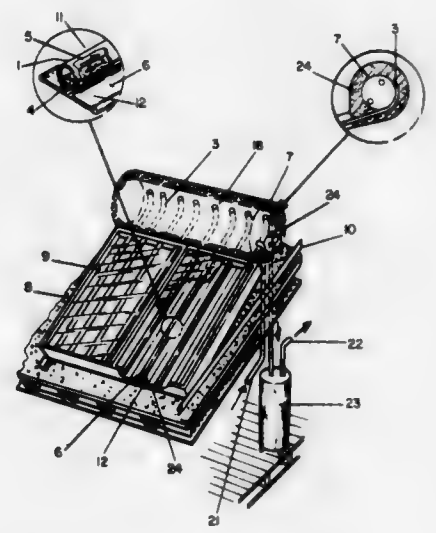
cover means fixed to said frame for covering said fluid conduit means yet permitting the passage of sunlight thereto.

4,513,732

PASSIVE INTEGRAL SOLAR HEAT COLLECTOR SYSTEM

Karl T. Feldman, Jr., 1704 Stanford Dr., N.E., Albuquerque, N. Mex. 87106

Continuation-in-part of Ser. No. 298,085, Nov. 10, 1981, abandoned. This application Oct. 19, 1983, Ser. No. 543,243
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **2 Claims**



1. A passive solar heating apparatus having at least one heat pipe with a first and a second end, with the first end serving as the heat absorber section located in a solar heat collector to absorb solar energy as heat and transfer it into the second end that serves as the heat removal section where an integral heat removal and storage means is attached to absorb and store the solar heat, wherein the passive solar heating apparatus comprises

a. a collector with at least one transparent cover on the top surface, thermal insulation on the bottom and edges, and a structural frame to hold the collector together, said structural frame comprising a rectangular box;

b. an absorber comprised of at least one heat pipe having sealed first and second ends, made from a hollow material capable of serving as a hermetically sealed vessel and having therein a volatile liquid that transfers heat by evaporation in the heated first end, said first end being located inside the collector to absorb solar heat, and condensation in the second end located outside of the collector where heat is removed, said absorber being tilted with the evaporator below the condenser so that condensate liquid will flow from the condenser to the evaporator by gravity and by surface tension forces and thereby provide one-directional heat transfer into the condenser but not out of it, said absorber being coated with an effective solar radiation absorber surface, each of said at least one heat pipe having externally an integrally extruded metal fin and internally an axially grooved wick lining on the inside wall to distribute the liquid to wet all of the internal surface for enhanced evaporation and condensation;

c. an integral heat removal and storage means to remove and store heat, said internal heat removal and storage means having an insulated tank of liquid with the bottom thereof closely mechanically contacting with low thermal resistance the condenser on the second end of each of said at least one heat pipe, said insulated tank having a cold liquid inlet and a hot liquid outlet pipe so that the solar heat removed and stored may be transferred to liquid flowing into and out of said insulated tank, said insulated tank further having a cover over the insulation with the surface of the cover adjacent to the collector being a refective surface to reflect additional solar radiation onto the collector; and

d. a support structure attached to said collector and to said

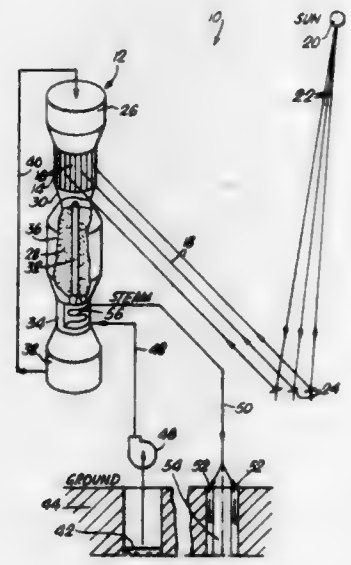
integral heat removal and storage means to hold them together and in proper orientation to receive solar energy and to resist environmental effects.

4,513,733

OIL FIELD STEAM PRODUCTION AND USE

Minel J. Braun, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 12, 1982, Ser. No. 441,322
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—435 **14 Claims**



1. A method of heating oil in a well comprising:
a. flowing heated refractory particles through a steam generator;
b. pumping untreated well water the source of which is the ground from out of the well through a first cavity in the ground and through tube means in the steam generator in heat exchange relation with the heated refractory particles to heat the untreated well water to generate steam; and
c. flowing the steam into the well through a second cavity in the ground to heat oil in the well.

8. Apparatus for heating oil in a well comprising solar receiver means for flowing refractory particles in heat exchange relation with solar radiation energy to heat the refractory particles, means for pumping untreated well water the source of which is the ground from out of a well through a first cavity in the ground, steam generating means for flowing untreated well water pumped from the well through tube means in heat exchange relation with the heated refractory particles to generate steam, and means for routing the steam into the well through a second cavity in the ground to heat oil in the well.

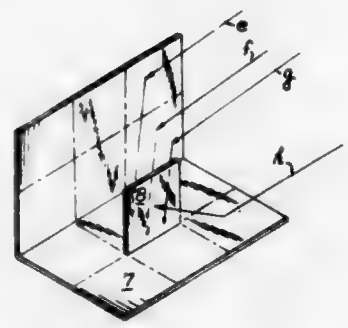
4,513,734

HIGH EFFICIENCY FLAT PLATE SOLAR ENERGY COLLECTOR

Robert F. Butler, 18805 Orange Ave., Sonoma, Calif. 95476

Filed Aug. 10, 1983, Ser. No. 521,923
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **5 Claims**

1. A high efficiency solar energy collector, which comprises:
(a) a flat plate collector element having two faces for the collection of solar radiation and so oriented that the sun's rays impinge thereon at oblique incident angles;
(b) a first, flat plate reflector element disposed substantially at right angles to and reflecting upon a first face of the collector element adjacent the base thereof, the dimensions of the reflector element being sufficient to reflect the maximum amount of solar radiation incident on the plane thereof onto the first face of the collector element;
(c) a second, flat plate reflector element disposed substantially at right angles to and reflecting upon the opposite face of the collector element adjacent the base thereof, the dimensions of the second reflector element being sufficient to reflect the maximum amount of solar radiation incident on the plane thereof on said opposite face of the collector element; and
(d) a third, flat plate reflector element disposed substantially parallel to the collector element and spaced therefrom by



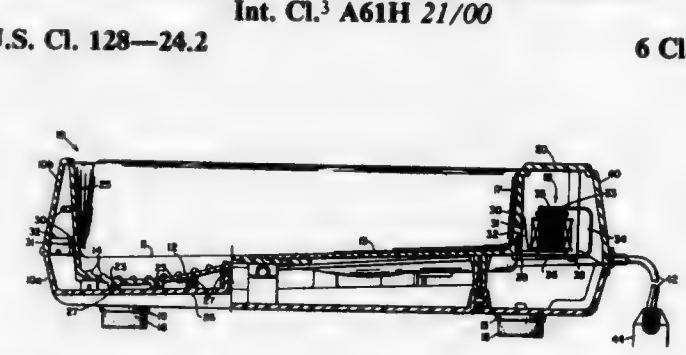
a distance at least equal to the length of the second reflector element disposed substantially perpendicular to the collector element, the dimensions of the third reflector element being sufficient to reflect the maximum amount of solar radiation incident on the plane thereof, either directly or indirectly by reflection on said second reflector element, onto said opposite face of the collector element.

4,513,735

APPARATUS FOR TREATING THE FEET

Belvin F. Friedson, Miami; Arnold Thaler, Plantation, and Ivan Saud, Miami, all of Fla., assignors to Windmere Corporation, Hialeah, Fla.

Division of Ser. No. 335,360, Dec. 29, 1981, Pat. No. 4,429,687.
This application Nov. 8, 1983, Ser. No. 549,726
Int. Cl.³ A61H *21/00*
U.S. Cl. 128—24.2 **6 Claims**



1. Apparatus for providing a heated massage treatment for the feet, said apparatus comprising: a casing including a tub for receiving and containing liquid for encircling the feet in such liquid, said tub having a floor with upwardly extending side walls; a foot receiving station located in said floor; and first and second heating means for providing heat to liquid within said tub for heating such liquid and maintaining the temperature of such liquid relatively uniform from top to bottom of the liquid and for providing heat directly to said foot receiving station; said first heating means being located below and adjacent to said floor, said first heating means including a rope heating element which is mounted in a channel located in the lower surface of the floor beneath each of the foot receiving stations, said rope heating elements extending the length and width of said foot receiving stations in a series of U-shaped or serpentine curves; said second heating means being mounted within said casing at a distance above the floor corresponding to the approximate upper level to which said tub is to be filled with liquid, said second heating means including a rope heating element mounted in brackets which extend inwardly from the exterior side walls; said casing further including a bottom member having means for locking the rope heating elements in position directly adjacent the floor of the tub; and, vibrator means mounted on the casing for transmitting vibrations to said casing, said vibrator including a C-shaped vibrator plate having upper and lower end portions, a power transformer mounted at the upper end portion of said plate with the lower

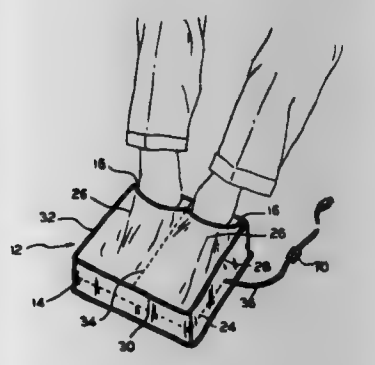
end portion of said plate being mounted on the casing at the level of the floor, and said vibrator being aligned with the longitudinal axis of said casing.

4,513,736

CUSHIONED MASSAGER

Robert J. Thurber, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

Continuation of Ser. No. 163,790, Jun. 27, 1980, abandoned.
This application Jun. 24, 1983, Ser. No. 507,942
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—41 10 Claims



1. Apparatus for massaging at least one human foot while said foot rests passively on said apparatus, said apparatus comprising powered vibration means, a cushion containing a stuffing material and enclosing said powered vibration means for vibrating said cushion and foot while said foot remains passively resting directly on said cushion, a cover for said cushion, said cover having a soft, limp, pliable and resilient material with an overlying member formed of said cover material and secured around at least part of the perimeter of said cover, said overlying member forming at least one pouch secured to the top of said cushion, the upper portion of the cover integrally attached to and forming the bottom part of said pouch, whereby said cover and pouch are made of said soft, limp and pliable and resilient material, and are shaped and proportioned to loosely receive and surround a major portion of a human foot inserted therein substantially independent of the posture of the body of the human whose foot is in the pouch, said pouch being limp and collapsible so that a body part may also rest on top of the cushion without being inserted into the pouch, said powered means enclosed within said cushion vibrating both said cushion cover and said pouch cloth when power is applied thereto whereby the upper part of the foot is lightly rubbed by the overlying member formed by the soft, limp and pliable and resilient pouch material.

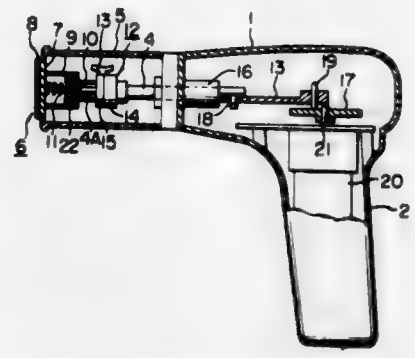
4,513,737

BEAUTY TREATMENT DEVICE

Kenichi Mabuchi, c/o Mabuchi Motor Co., Ltd. 14–11, Tateishi 3-chome, Katsushika-Ku, Tokyo, Japan, assignor to Kenichi Mabuchi, Japan

Filed Dec. 22, 1980, Ser. No. 219,360
Claims priority, application Japan, Dec. 29, 1979, 54-171725; Mar. 10, 1980, 55-30712[U]
Int. Cl.[3] A61H *7/00*
U.S. Cl. 128—52 2 Claims

1. A beauty treatment device for treating a person's body, comprising a housing, an actuator mounted in said housing for sliding to and fro oscillating movement, drive means connected to said actuator to oscillate it, a patter member carried by said actuator and movable therewith, resilient means associated with said patter member and said actuator permitting a resilient give of said patter after contact with the body, a connecting mechanism between said actuator and said patter member permitting separation of said actuator from said patter member, push button means associated with said connecting mechanism for connecting and disconnecting said patter member and said actuator, said push button means including a pawl groove provided on said patter member and a connecting pawl fixed to said actuator and being engageable and disengageable



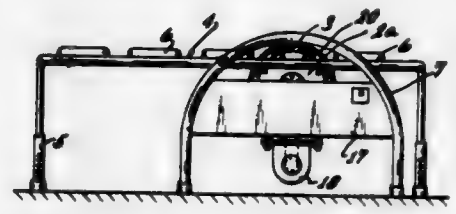
with said pawl groove and a push button movably mounted in said housing being movable to shift said pawl.

4,513,738

MASSAGE UNIT

Carl O. Niessen, Neckarsulmer Str. 4, 1000 Berlin 46, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,468
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135778
Int. Cl.[3] A61H *15/00*
U.S. Cl. 128—57 6 Claims



1. Massage unit comprising:
a stationary frame;
a drum rotatively mounted in the frame and having a peripheral mounting space;
a plurality of passively freely rotatable massage rollers journaled in said mounting space and being annularly arranged in the drum and defining in parts a periphery of the drum;
means on the frame connected for driving the drum, for rotation about its axis;
a height adjustable bed, further positionable in relation to the frame and the drum by shifting in a direction transverse to the axis of the drum and having a surface on which a person may lie, said surface including means for allowing a portion of the drum to extend above said surface for massagingly engaging the person lying on the bed's surface; and
fastening means for releasably connecting the bed to the frame and in different relative longitudinal positions in relation to each other, attained by shifting in a transverse direction.

4,513,739

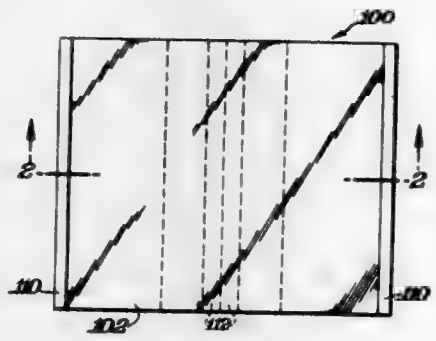
WOUND DRESSING

Owen L. Johns, Clearwater, Fla., assignor to Howmedica, Inc., New York, N.Y.

Filed Feb. 15, 1983, Ser. No. 466,770
Int. Cl.[3] A61L *15/00*
U.S. Cl. 128—156 17 Claims

1. An external wound dressing, which comprises:
(a) a first layer of backing sheet material having biocompatible adhesive coating on a first face thereof;
(b) a second layer of protective sheet material covering said first layer in releasible contact with said adhesive, said

second layer having means for separation in one or more sections from said first layer; and



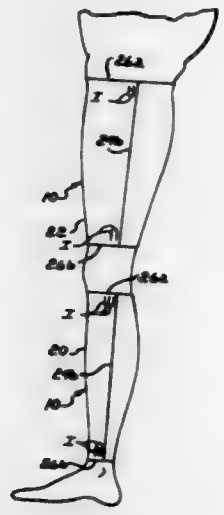
(c) release-retarding means along one edge or a pair of opposed edges of said dressing to require a greater force to separate said layers at said edges than at the remainder of the contacting area.

4,513,740

THERAPEUTIC STOCKING AND METHOD OF PLACEMENT

Betsy C. Westlake, Palatine, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 391,195, Jun. 23, 1982, abandoned.
This application Sep. 26, 1984, Ser. No. 654,489
Int. Cl.[3] A61F *13/08*
U.S. Cl. 128—165 8 Claims



1. A therapeutic stocking, comprising:

a first circumferential panel segment for placement on the leg below the knee, said first panel having a pair of substantially straight opposed side edges and a pair of opposed end edges connecting the side edges, said first panel having a sufficient width between said side edges to encircle the leg below the knee in overlapping relationship, said first panel having a sufficient length between said end edges to extend from the ankle to a point slightly below the knee, said first panel segment comprising a knitted fabric including an elastomeric yarn which exerts a compressive pressure on the wearer's leg gradually decreasing from the ankle to said point below the knee, and means for releasably securing the first panel about the leg below the knee such that said first panel is assured to exert said compressive pressure on the wearer's leg, gradually decreasing from the ankle to said point below the knee, said means for releasably securing said first panel about the leg including indicia means adjacent the lower and upper ends thereof for representing a selected number of possible circumferential measurements of a wearer's leg at the ankle and an area just below the knee, whereby, after a determination of the circumference of a selected wearer's ankle and at an area just below the knee, said first panel may be placed about the lower leg with the side edges overlapped to match the circumference of the wearer's leg in the region of said indicia, thus to assure said compressive pressure is properly applied to the wearer's lower leg; and

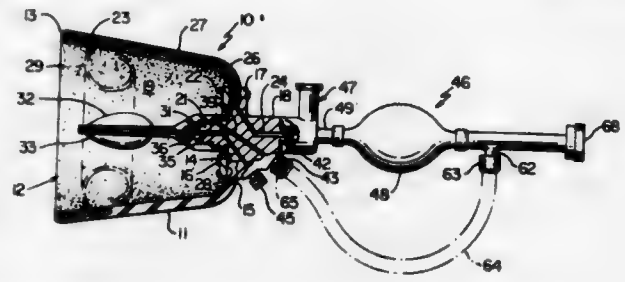
a second circumferential panel segment for placement on the leg above the knee, said second panel having a pair of substantially straight opposed side edges and a pair of opposed end edges connecting the side edges, said second panel having a sufficient width between said side edges to encircle the leg above the knee in overlapping relationship, said second panel having a sufficient length between said end edges to extend from a point slightly above the knee to the upper thigh, said second panel segment comprising a knitted fabric including an elastomeric yarn which exerts a compressive pressure on the wearer's leg gradually decreasing from said point above the knee to the upper thigh, and means for releasably securing the second panel about the leg above the knee such that said second panel is assured to exert said compressive pressure on the wearer's leg, gradually decreasing from said point above the knee to the upper thigh, said means for releasably securing said second panel about the leg including indicia means adjacent the lower and upper ends thereof for representing a selected number of possible circumferential measurements of a wearer's leg at an area just above the knee and about the upper thigh, whereby said second panel may be placed about the upper leg with the side edges overlapped to match the circumference of the wearer's leg in the region of the indicia, thus to assure said compressive pressure is properly applied to the wearer's upper leg.

4,513,741

APPARATUS ADAPTABLE FOR TREATING ANIMALS

Roy C. Demi, 736 Melvin Dr., Greensburg, Pa. 15601

Filed Feb. 14, 1983, Ser. No. 466,070
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.25 20 Claims



1. Apparatus adaptable for treating animals comprising:

muzzle means adapted to fit around the snout of an animal and formed of a flexible bag open at one end and having an aperture in the other end, plug means fitted in said aperture and having first, second and third bores therein;

an inflatable cuff having a first pressure chamber therein connected to and extending around said open end of said flexible bag;

a first passageway formed in said flexible bag interconnecting said first pressure chamber and said first bore in said plug means;

a mouthpiece attached to said plug means and extending into said flexible bag;

a muzzle pump and conduit means connecting said muzzle pump to said plug means and having a first passage communicating with said first bore in said plug means for pressuring said first closed chamber to inflate said inflatable cuff, said cuff and said mouthpiece cooperating to secure said muzzle means to said snout when said mouthpiece is inserted into said animal's mouth and said cuff is inflated;

said conduit means further including inlet and outlet passages communicating with said second and third bores in

said plug means said second and third bores communicating with the interior of said flexible bag; and

a respiratory valve positioned in each of said inlet and outlet passages, said respiratory valve in said inlet passage acting as an inhalation valve and said respiratory valve in said outlet passage acting as an exhalation valve through which said animal may breathe normally.

4,513,742

SAW BLADE WITH APERTURE

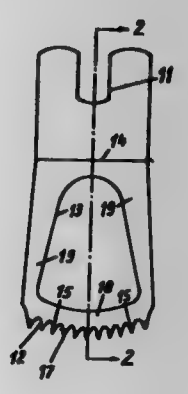
Richard E. Arnegger, Rietlirain, 8713 Uerikon, Switzerland

Filed Sep. 14, 1982, Ser. No. 418,070

Claims priority, application Switzerland, Oct. 13, 1981, 6523/81

Int. Cl.³ A61B *17/14*

U.S. Cl. 128—317 **10 Claims**



1. A thin plane saw blade for an oscillatory saw having at least a partial rotational action when in use for use in bone surgery, said saw blade having a distal end portion comprising: side faces parallel to a center plane of said blade; an outer edge located at the distal end portion of said blade; a row of teeth extending along a portion of said outer edge, the distance between said outer edge and the distal edge of the teeth defining a tooth height; at least one closed aperture which extends in the direction away from the row of teeth, the portion of the blade between the aperture and the row of teeth comprising a strip-like element, the distance between said aperture and said outer edge being uniform along the entire length of the strip and defining a strip height, said strip height being at most twice the tooth height; said saw blade aperture being of a form which is symmetrical with respect to a median plane arranged perpendicularly to said center plane, passing through the middle of the row of teeth and bisecting said aperture, the saw blade and its teeth being made of a single piece of hardened steel plate of which the closed aperture arrangement was worked out of the already hardened steel plate.

4,513,743

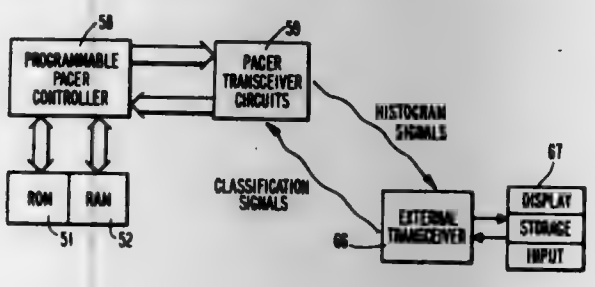
PHYSIOLOGICAL DEVICES SUCH AS PACEMAKERS AND METHOD FOR PROVIDING HISTOGRAM DATA

Gerrit W. van Arragon, Dieren; Kornelis A. Mensink, and Frederik H. M. Wittkampf, both of Brummen, all of Netherlands, assignors to Vitatron Medical B.V., Netherlands

Filed Nov. 12, 1982, Ser. No. 441,053

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—419 PG **34 Claims**



1. An implantable cardiac pacemaker, having means for determining the occurrence of selected cardiac events, means for delivering stimulus pulses, and means for measuring a predetermined parameter associated with each one of said selected cardiac events, further characterized by:

selecting means for selecting said selected cardiac events,

registering means for registering occurrences of said selected cardiac events,

classifying means for classifying each said registered event into respective classes of said parameter associated with said event in accordance with the measured value of said parameter,

means for accumulating counts of said registered events for each said class, thereby providing data of the distribution of said registered events; and

means for outputting signals representative of said accumulated counts to a location external of said implantable pacemaker.

4,513,744

SURGICAL COMPRESSION PLATE

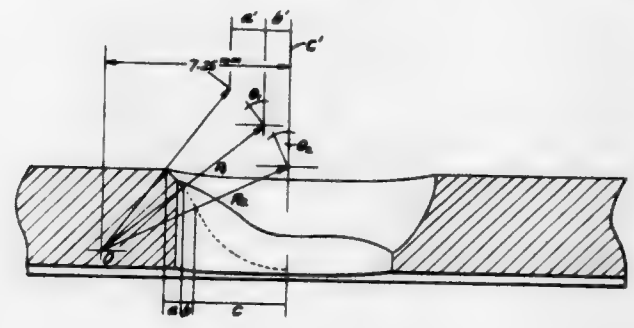
Kaj Klaue, Sierre, Switzerland, assignor to Synthes AG, Chur, Switzerland

Continuation-in-part of Ser. No. 358,389, Mar. 15, 1982,. This application Nov. 15, 1982, Ser. No. 441,633

Claims priority, application Switzerland, Mar. 16, 1981, 17731/81

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 D **9 Claims**



1. A compression plate for stabilizing a bone fracture or an osteotomy in compression osteosynthesis, said plate having an upper surface, a lower surface to be placed next to the bone, and at least one elongated hole, the walls of the hole being sloped downwardly, toward the lower surface, and inwardly, and an end wall of the hole having a camming portion curved convexly toward the center of the hole, said camming portion extending from the upper surface to a point adjacent the lower surface.

4,513,745

SURGICAL INSTRUMENTS AND METHODS PARTICULARLY ADAPTED FOR INTRA-OCULAR CUTTING AND THE LIKE

Selig P. Amoils, 4 Griswold Rd., Saxonwold, Johannesburg, South Africa

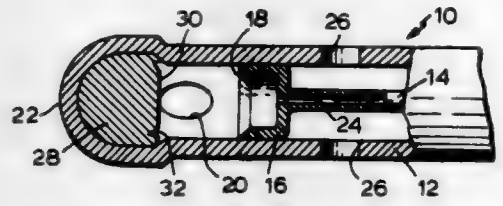
Continuation of Ser. No. 917,454, Jun. 21, 1978, abandoned. This application Nov. 7, 1980, Ser. No. 204,782

Int. Cl.³ A61B *17/32*

U.S. Cl. 128—305 **8 Claims**

1. In a surgical instrument for intra-ocular use, having in combination, a substantially cylindrical external hollow member, aperture means in said hollow member for receiving tissue-to-be-cut, annular cutting means disposed coaxially within the hollow member in close proximity to an inner wall thereof, the cutting means being adapted for reciprocatory motion within the hollow mmeber for effecting a guillotine cutting action on tissue drawn into said aperture means, and means cooperative with the cutting means for applying suction in the hollow member to draw the tissue-to-be-cut through the aper-

ture means into the path of the reciprocating cutting means, the improvement comprising anvil means within said hollow member, the anvil means having an anvil surface adjacent said aperture means for cooperation with the cutting means to



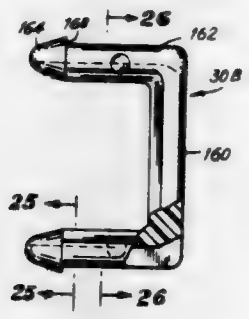
provide impact cutting of tissue drawn into said aperture means, the cutting means being adapted to effect said guillotine cutting action on tissue drawn into the aperture means prior to the impact cutting of the tissue against said anvil surface.

4,513,746

INSTRUMENT FOR APPLYING PLASTIC-LIKE SURGICAL FASTENING DEVICES

Ernie Aranyi, Shelton; Richard Ihasz, Milford; Roy D. Gravener, Bethany, and Hugh J. Tovey, Westport, all of Conn., assignors to United States Surgical Corp., Norwalk, Conn.

Filed Oct. 9, 1981, Ser. No. 310,412
Int. Cl.³ A61B *17/04*
U.S. Cl. 128—334 C **12 Claims**



1. A surgical fastening device for fastening body tissue, which comprises:

a unitary plastic-like retainer having a longitudinal extension; a hole extending longitudinally through the retainer and its longitudinal extension; the retainer being adapted to be positioned on the distal side of the tissue to be fastened; the longitudinal extension of the retainer being laterally expandable about the retainer hole; and

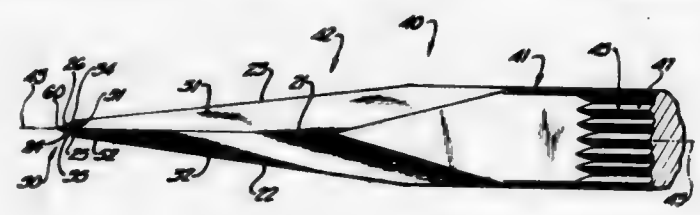
a unitary fastener, initially separate from the retainer, having a distally extending prong; the prong being sufficiently rigid to pass through a hole pierced in the tissue to be fastened without additional stiffening means; the fastener being adapted to be positioned on the proximal side of the tissue to be fastened; a laterally extending barb being provided on a lateral surface of the prong; the fastener being adapted to be moved distally so that the prong and its barb: (1) move distally through an opening pierced in the tissue to be fastened, and (2) then move distally into the retainer hole, with the barb urging the longitudinal extension of the retainer to expand laterally, until the barb extends distally of the longitudinal extension of the retainer and a proximal surface of the barb non-releasably engages a laterally extending, distal surface of the longitudinal extension of the retainer about the retainer hole to non-releasably hold the fastener and retainer together and further comprising: a channel extending longitudinally through the fastener and its prong and opening laterally outward from the prong; a pair of barbs on the prong on laterally opposite sides of the fastener channel: the longitudinal center line of the fastener channel; (1) being parallel to the longitudinal center line of the retainer hole and (2) extending within the retainer hole; and the fastener channel being adapted to allow a piercing member and the fastener to move longitudinally with respect to each other, such that: (1) the piercing member can move distally within and with respect to the fastener channel to pierce a hole through the tissue to be fastened, and (2) the fastener and its prong slide distally along the piercing member, such that the prong passes through the hole pierced in the tissue and into the retainer hole to non-releasably hold the fastener and retainer together.

4,513,747

HARD TISSUE SURGICAL NEEDLE

Daniel J. Smith, Englishtown, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Oct. 22, 1982, Ser. No. 436,221
Int. Cl.³ A61B *17/06*
U.S. Cl. 128—339 **23 Claims**



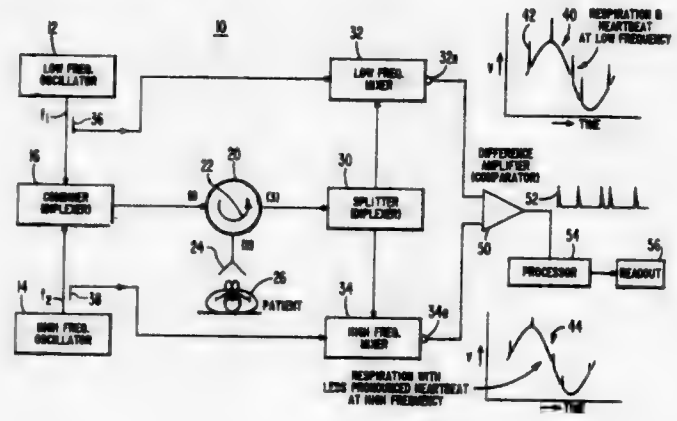
1. A surgical needle, comprising a body portion, a contiguous cutting portion which terminates near the tip of the needle and a tip portion, there being a plurality of planar surfaces forming cutting edges in said cutting portion, which cutting edges converge towards the tip of the needle, there being at least two additional planar surfaces intersecting in the tip portion of the needle forming additional cutting edges at the intersection between said additional planar surfaces and at intersections between said additional planar surfaces with selected ones of said plurality of planar surfaces.

4,513,748

DUAL FREQUENCY HEART RATE MONITOR UTILIZING DOPPLER RADAR

Markus Nowogrodzki, Sussex, and Daniel D. Mawhinney, Livingston, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 30, 1983, Ser. No. 527,768
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—653 **9 Claims**



1. A heart rate monitor comprising in combination:

first means for producing a first radio frequency (RF) signal at a relatively low frequency and for producing a second RF signal at a relatively high frequency;

second means coupled to said first means and adapted for radiating signals therefrom toward a patient whose heart rate is to be measured and for receiving doppler shifted signals back from said patient at the frequencies of said first and second RF signals;

third means for removing the respective RF frequencies from the returned signals leaving the doppler signal com-

ponents thereof, said doppler signal associated with both RF signals containing signal components of the same values corresponding to patient movement due to respiration, the doppler signal associated with the low RF frequency containing characteristics associated with patient movement due to heartbeat; and

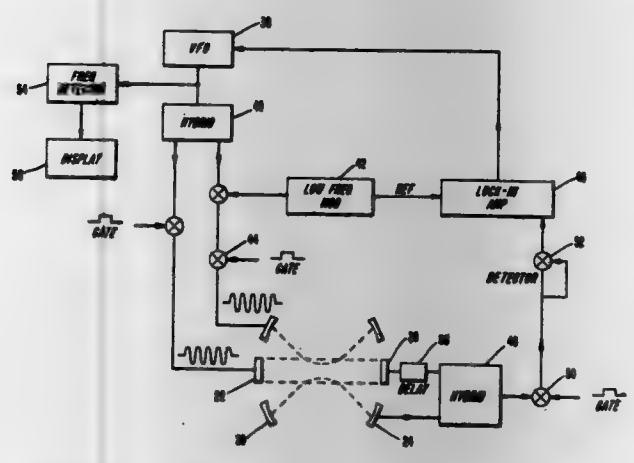
fourth means for combining the two doppler signals to remove the components thereof which are common to both signals and thereby leaving the component of signal which is associated with heartbeat, the number of heartbeats per unit time corresponding to heart rate.

4,513,749

THREE-DIMENSIONAL TEMPERATURE PROBE

Gordon S. Kino, Stanford; Simon D. Bennett, Palo Alto, and Didier Husson, Stanford, all of Calif., assignors to Board of Trustees of Leland Stanford University, Stanford, Calif.

Filed Nov. 18, 1982, Ser. No. 442,567
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—660 **22 Claims**



1. Apparatus for internally measuring variations in a body that affect the transmission of an energy wave through the body, comprising:

means for generating two coaxial energy beams, at least one of said beams being convergent and the other of said beams having generally the same cross-sectional area as said focused beam along most of the propagation path of said convergent beam and having a cross-sectional area that is greater than that of the convergent beam in the region of its convergence;

means for receiving said two beams after propagation through the region of the body being measured;

means for measuring changes in the relative phase angle between the received beams as an indication of variations in the body.

4,513,750

METHOD FOR THERMAL MONITORING SUBCUTANEOUS TISSUE

Joseph S. Heyman, Williamsburg, Va., and Gary H. Brandenburger, Bellevue, Wash., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

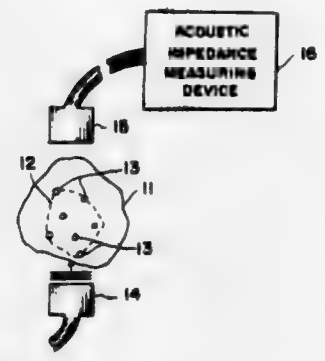
Filed Feb. 22, 1984, Ser. No. 582,492
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **8 Claims**

1. A method for monitoring temperatures about a selected temperature in any medium especially in subcutaneous tissue in a living body comprising the steps of:

inserting beads of a material having a melting point approximately equal to said selected temperature, into said medium;

directing ultrasonic signals at said beads; and

receiving the ultrasonic signals reflected by said beads whereby the received signals contain information repre-



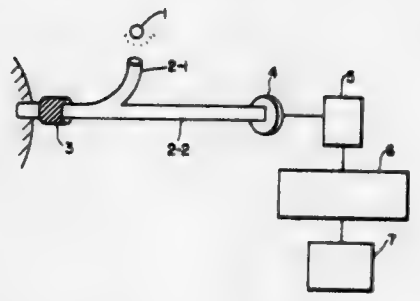
sentative of the acoustic impedance of said beads which is indicative of the temperature in said medium.

4,513,751

METHOD FOR MEASURING OXYGEN METABOLISM IN INTERNAL ORGAN OR TISSUE

Hiroshi Abe, No. 7-2, Fundo-cho, Nishinomiya-shi, Hyogo; Nobuhiro Sato, No. 1-5-11, Tachibana-cho, Toyonaka-shi, Osaka; Kimizo Ono, and Kazuo Hirano, both of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd.; Hiroshi Abe and Nobuhiro Sato, all of Osada, Japan

Continuation of Ser. No. 128,064, Mar. 7, 1980, abandoned. This application Mar. 11, 1983, Ser. No. 474,273
Claims priority, application Japan, Mar. 7, 1979, 54-27183
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—666 **7 Claims**



1. A method for measuring the metabolic rate for oxygen in an internal organ or in a tissue, comprising the steps of:

(a) interrupting the oxygen supply to a portion of said organ or tissue to be diagnosed by applying pressure at a predetermined point;

(b) directing light onto said portion;

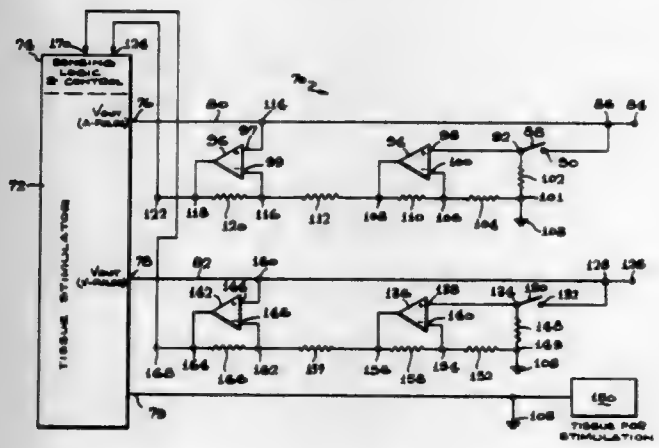
(c) sensing a first spectral characteristic of light reflected from said portion at at least one first wavelength, said first spectral characteristic varying in absorbance rapidly to a constant value following said step of interrupting said oxygen supply, and sensing a second spectral characteristic at at least one second wavelength of said reflected light, said second spectral characteristic continuing to change in absorbance after said first characteristic at said first wavelength has reached said absorbance constant value; and

(d) determining a rate of change of said second characteristic relative to said first characteristic after said first characteristic has reached said constant absorbance level said rate of change being indicative of the metabolic rate.

4,513,752
BIPOLAR SENSING SYSTEM

Robert R. Weyant, Claremont, Calif., assignor to Pacesetter Systems, Inc., Sylmar, Calif.

Filed Jan. 17, 1983, Ser. No. 458,248
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—696 9 Claims



1. A sensing amplifier circuit for a tissue stimulator for supplying or attenuating far field signal voltage artifacts comprising:

(a) a first amplifier means having a first input terminal connected to a switch means connected to a second signal voltage output of a sensing means, a second input terminal connected to ground with a first resistance means disposed between said second input terminal and ground, and said first amplifier means provides a first amplifier signal voltage output;

(b) a first feedback network having a second resistance means therein disposed connected between said first amplifier signal voltage output and said second input terminal of said first amplifier;

(c) a third resistance means connected between said first input terminal and ground;

(d) a second amplifier means having a first input terminal connected to a first signal voltage output from said sensing means, a second input terminal connected to said first amplifier signal voltage output with a fourth resistance means disposed between said first amplifier signal voltage output and said second input terminal, and said second amplifier means provides a second amplifier signal voltage output for input into a sensing circuit of said tissue stimulator; and

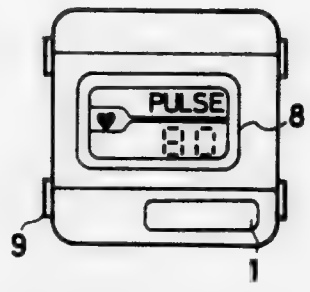
(e) a second feedback network having a fifth resistance means therein disposed connected between said second amplifier signal voltage output and said second input terminal of said second amplifier.

4,513,753
HEARTBEAT RATE INDICATOR

Junichi Tabata; Masahiro Torii; Hiroshi Oikawa; Minoru Sawada, and Yasuyuki Masui, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,324
Claims priority, application Japan, Nov. 17, 1981, 56-184247
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—706 9 Claims

1. A heartbeat rate indicator comprising: a depressible detection electrode; an amplifier connected to receive and amplify a signal from said detection electrode; a filter connected to said amplifier for passing part of the amplified signal output from said amplifier; an operation processing circuit connected to receive the filtered output signal from said filter for determining a heartbeat number; display means for indicating the heartbeat number; and switch means having a normally closed state for electrically connecting said detection electrode and one voltage potential of a power source to effect grounding of the detection electrode and being switchable to an open state upon

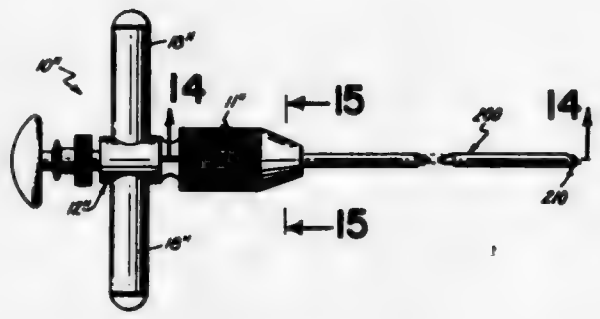


depression of said detection electrode to effect measurement of the heartbeat.

4,513,754
BIOPSY AND ASPIRATION UNIT WITH A REPLACEABLE CANNULA

Peter F. Lee, Edina, Minn., assignor to Southland Instruments, Inc., Edina, Minn.

Continuation of Ser. No. 306,305, Sep. 28, 1981, abandoned, and a continuation-in-part of Ser. No. 88,818, Oct. 26, 1979, Pat. No. 4,314,565, which is a continuation-in-part of Ser. No. 883,263, Mar. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 706,130, Jul. 16, 1976, abandoned. This application Jun. 19, 1984, Ser. No. 622,100
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—753 2 Claims



1. An improved bone marrow biopsy needle unit, comprising:

holding means including a collet chuck and a head portion aligned coaxially so that a line running along the common axis defines a longitudinal axis of said holding means, a bore of circular cross section along said longitudinal axis through said head portion and said collet chuck, and handle means extending from said head portion generally at right angles to said longitudinal axis, said collet chuck comprising a plurality of arms with external threading thereon, adjacent arms being separated by a generally longitudinally extending slot, each arm terminating in a jaw portion, and a collar nut to threadedly engage and radially compress said arms, each arm having an interior surface, said interior surfaces defining a segmented ellipse when said arms are not compressed by said collar nut;

an elongated stylet, of predetermined length and gauge of generally uniform circular cross-section mounted in said aligned bores, said stylet having a distal end, a proximal end, and a cap portion at said proximal end;

engaging means on both said stylet and said head portion cooperating to releasably engage said stylet and said holding means;

and a replaceable cannula, of predetermined length and gauge, of uniform hollow cylindrical configuration throughout the major portion of its length, having an open distal end, defining a cutting edge, an open proximal end, and an external proximal end surface portion;

said replaceable cannula being of single-piece, stainless steel construction;

said proximal end portion having a generally elliptical cross-section and formed as a continuous extension of said cannula major portion, said proximal end portion being adapted to be releasably mounted in said collet chuck with a bore thereof being coaxially aligned with said bore of said holding means,

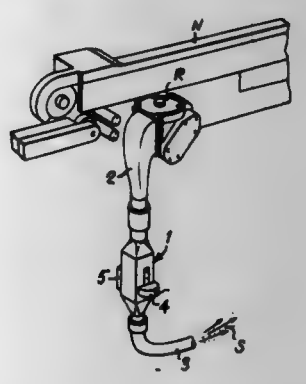
whereby said cannula is prevented from movement along or around said longitudinal axis by said proximal end portion being securely grasped by said arms of said collet chuck with said proximal end substantially abutting said collar nut and said collar nut compressing said interior surfaces of said arms of said collect chuck against said proximal end as said collar nut is threaded onto said collet chuck.

4,513,755

CONTROL DEVICE FOR REGULATING THE FEEDING OF CUT TOBACCO TO A CIGARETTE MAKING MACHINE

Bruno Baroni, San Giorgio di Piano, Italy, assignor to SASIB S.p.A., Bologna, Italy

Filed Apr. 23, 1982, Ser. No. 371,475
Claims priority, application Italy, Apr. 30, 1981, 12514 A/81
Int. Cl.³ A24C *5/18*
U.S. Cl. 131—84 C **13 Claims**



13. An automatic control device for use in combination with a continuous cigarette making machine, the machine including a tobacco distributor, a suction belt assembly for forming a uniform tobacco rod from cut tobacco dispensed by the tobacco distributor, a trimmer adjacent to the suction belt assembly for trimming excess tobacco from the uniform tobacco rod and a suction duct between the trimmer and the distributor for recirculating the trimmed excess tobacco to the distributor, said control device being operative for regulating the amount of recirculated tobacco without interrupting the operation of the cigarette making machine, said device comprising:

a detector head disposed in said suction duct, all of the trimmed excess tobacco being passed through said detector head, said detector head including a light source for producing a light beam and a photoelectric sensor disposed for receiving the light beam and producing a measurement signal proportional to the intensity of the light beam, the light beam attenuated by the trimmed excess tobacco passing through said head, wherein the measurement signal represents the amount of trimmed excess tobacco being recirculated to the distributor; and

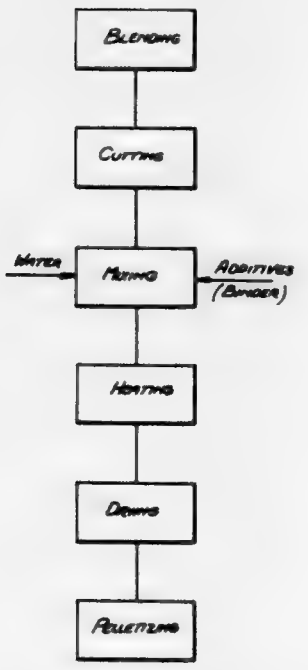
adjustable means connected for receiving the measurement signal and for controlling the tobacco dispensing rate of the distributor as a function of the measurement signal.

4,513,756

PROCESS OF MAKING TOBACCO PELLETS

Luther B. Pittman; Jennings M. Agner, and George F. Hunt, all of Owensboro, Ky., assignors to The Pinkerton Tobacco Company, Owensboro, Ky.

Filed Apr. 28, 1983, Ser. No. 489,389
Int. Cl.³ A24B *3/00*
U.S. Cl. 131—111 **11 Claims**



1. A process of making smokeless tobacco pellets, said process comprising the steps of

forming a blend of dark-fired and one-sucker tobacco, and a cased cigar type tobacco;

cutting said blend to obtain a shredded product sized to pass through a No. 20 Tyler screen;

adding a binder to the sized shredded product;

adding water to the sized granular product to obtain a mixture of tobacco, binder and water;

heating the mixture to a temperature sufficient to uniformly disperse the binder through the mixture;

thereafter drying the mixture to a moisture content of from 8% to 10% water by weight; and

pelletizing the dried mixture into individual discrete pellets.

4,513,757

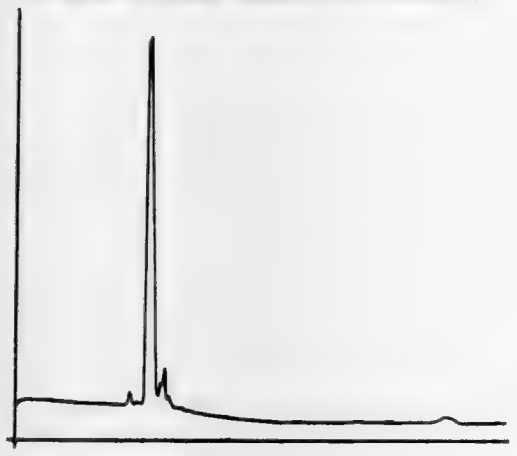
BRANCHED CHAIN SATURATED KETONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

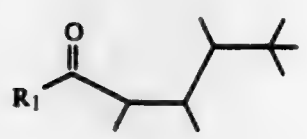
Richard M. Boden, Ocean, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 463,484, Feb. 3, 1983, which is a division of Ser. No. 399,067, Jul. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 354,389, Mar. 2, 1982, Pat. No. 4,405,820, which is a division of Ser. No. 252,334, Apr. 9, 1981, Pat. No. 4,336,164, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Mar. 14, 1984, Ser. No. 589,454
Int. Cl.³ A24B *3/12*
U.S. Cl. 131—276 **6 Claims**

4. A process for augmenting or enhancing the aroma or taste of a smoking tobacco composition or smoking tobacco article comprising the step of intimately admixing with a smoking tobacco composition or smoking tobacco article component an aroma or taste augmenting or enhancing quantity of a composition of matter consisting essentially of at least one compound defined according to the structure:

GLC PROFILE FOR BULKED FRACTIONS 10-16 OF EXAMPLE II





wherein R_1 is C_1–C_3 lower alkyl produced according to a process consisting essentially of the step of contacting with hydrogen at least one compound defined according to the structure:



wherein R_1 is C_1–C_3 lower alkyl and one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents carbon-carbon single bonds in the presence of a catalyst at a temperature in the range of 100°–200° C. and at a pressure in the range of from 40–400 psig.

4,513,758

METHOD AND APPARATUS FOR INCREASING THE VOLUME OF TOBACCO

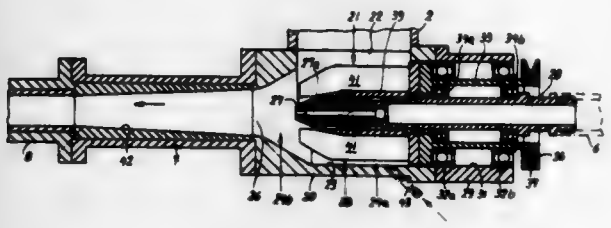
Bernard Henzelin, Boncourt, and Bernard Courbat-Chavanne, Buix, both of Switzerland, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed May 3, 1983, Ser. No. 491,066

Claims priority, application Fed. Rep. of Germany, May 11, 1982, 3217596

Int. Cl.³ A24B *3/18*

U.S. Cl. 131—291 **19 Claims**



1. A method of increasing the volume of tobacco particles, comprising the steps of introducing moist tobacco particles into a first portion of a path having a second portion whose cross-sectional area is less than that of the first portion; rapidly transporting the particles of tobacco from the first portion of said path, including admitting from the second into the first portion of the path a high-speed stream of a gaseous fluid which entrains the particles of tobacco from the first portion of said path; and admitting into the first portion of said path a second fluid medium in a direction having a component coinciding with the direction of flow of said stream from the second portion into the first portion of said path.

4,513,759

APPARATUS FOR EXPELLING MOISTURE FROM TOBACCO OR THE LIKE

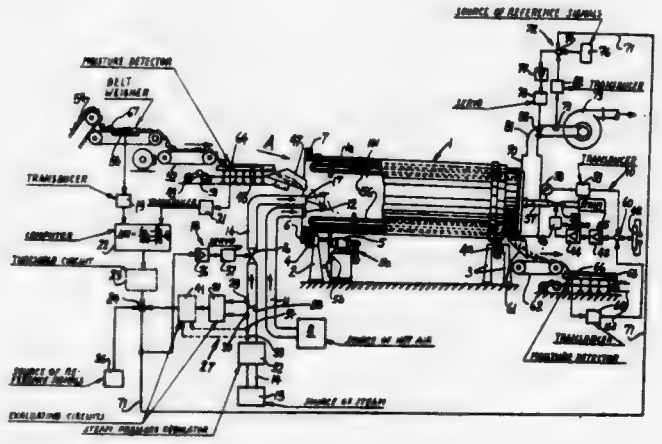
Waldemar Wochnowski, Hamburg-Meiendorf; Reinhard Hohm, Pinneberg; Reinhard Liebe, and Manfred Muss, both of Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,462

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126717

Int. Cl.³ A24C *9/00, 3/04*

U.S. Cl. 131—303 **16 Claims**



1. Apparatus for conditioning moisture-containing tobacco or a similar moisture-containing smokable material, comprising a transporting unit including a hollow rotary dryer defining a conditioning zone for the passage of a stream of moisture-containing smokable material therethrough; means for heating said dryer so that the latter transmits heat to and thereby expels moisture from the material during transport through said zone; and control means including means for monitoring the quantity of moisture in the material entering said zone per unit of time, a source of steam, adjustable steam admitting means for admitting steam from said source into said zone, and adjusting means for adjusting said steam admitting means so as to increase the quantity of admitted steam per unit of time when the quantity of moisture in the material entering said zone per unit of time decreases and vice versa.

4,513,760

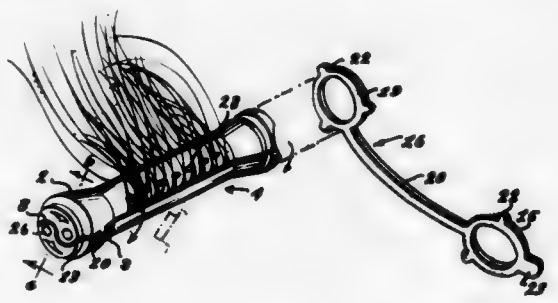
HINGED HAIR CURLING ROLLER

Walter Tihonovich, 1330 Pine, Pueblo, Colo. 81004

Filed Jun. 27, 1980, Ser. No. 163,927

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **4 Claims**



1. An elongated hair curling roller comprising in combination:

a pair of openable mating jaws having a pivotal hinge axis and wherein each of the jaws has a sinuous shaped interfacing surface reciprocally related to the other jaw taken in a cross-section parallel to the hinge axis, and further

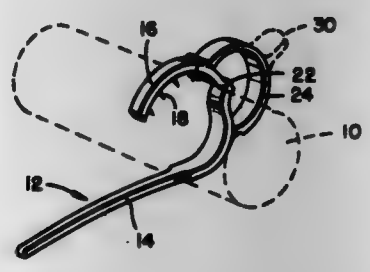
comprising cooperatively contoured outside surfaces forming a closed plane curve in similar cross-section.

4,513,761

HAIR ROLLER CLIP

Gary E. Van Deursen, Upper Saddle River, N.J., assignor to Black & Decker, Inc., Newark, Del.

Filed Mar. 26, 1984, Ser. No. 593,582
Int. Cl.[3] A45D *2/26*
U.S. Cl. 132—41 6 Claims



1. A hair roller clip comprising a one-piece self-adjusting member with components including a substantially straight base leg,

a connected top leg of semi-circular formation with a plurality of formed teeth interiorly thereof,

said base leg being a continuation of a second semi-circular formation connected to said top leg,

an over center spring member connected at each end to said respective circular formations,

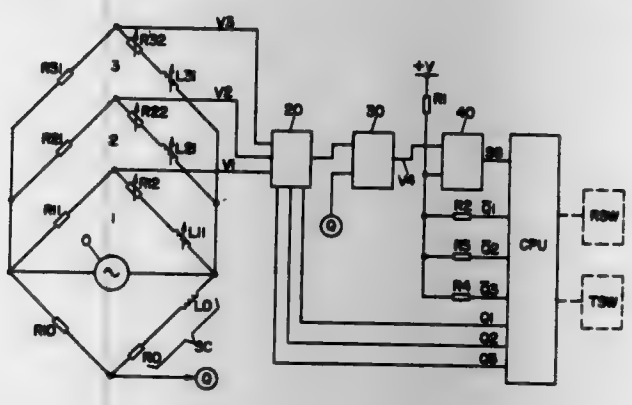
whereby hair wound on a roller is secured in place to retain the roller on the user's head.

4,513,762

COIN SORTER WITH TIME-SHARING CIRCUIT

Shinji Yokomori, and Yoshihisa Nakajima, both of Nagano, Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed Sep. 20, 1983, Ser. No. 534,087
Claims priority, application Japan, Sep. 28, 1982, 57-169272
Int. Cl.[3] G07D *5/08*
U.S. Cl. 133—3 R 7 Claims



1. A coin sorter for examining the genuineness of plural denominations of coins and for sorting the coins, comprising:

an AC bridge circuit having one arm comprising a detecting coil disposed along a coin passage on which coins roll, and having means for producing bridge output signals corresponding to different denominations of coins to be detected;

time-sharing signal generating means for producing time-sharing signals;

switching circuit means, connected to said time-sharing signal generating means, for receiving the bridge output signals and for successively delivering the bridge output signals to an output lead in response to the time-sharing signals;

a single amplifier means connected to the switching circuit output lead for amplifying the bridge output signals successively delivered by the switching circuit means; and

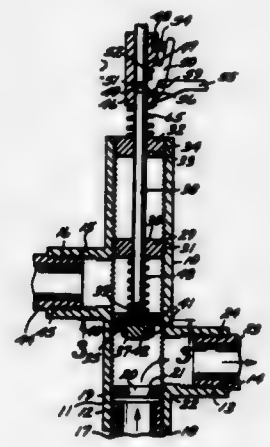
a comparator for comparing the outputs from the amplifier means with predetermined reference values and for producing output signals indicating the denomination of coin detected.

4,513,763

INERTIAL VALVE APPARATUS

Ray L. Ware, 6620 English Colony Way, Penryn, Calif. 95663

Filed Dec. 2, 1983, Ser. No. 557,326
Int. Cl.[3] F16K *17/36*
U.S. Cl. 137—38 15 Claims



1. Inertial valve apparatus comprising:

a housing tube having an inlet port, an outlet port, and a vent port;

a valve contained within said housing tube moveable between an unactuated position where said inlet port is open, said outlet port is open, and said vent port is closed, and an actuated position where said inlet port is closed, said outlet port is open, and said vent port is open;

biasing means urging said valve towards the actuated position;

latch means holding said valve in the unactuated position against the urging of said biasing means;

inertial trigger means for releasing said latch means in response to vibrations, causing said valve to move to the actuated position;

a lower valve seat, having a lower valve seat aperture and defining said input port and attached to one end of said housing tube;

an upper valve seat, having an upper valve seat aperture, attached to the interior of said housing tube, positioned so that said output port is located between said upper valve seat and said lower valve seat;

a lower valve stem guide having a lower valve stem aperture whose axis is parallel to the axis of said housing tube, attached to the interior of said housing tube so that said vent port is located between said lower valve stem guide and said upper valve seat; and

an upper valve stem guide having an upper valve stem aperture whose axis is parallel to the axis of said housing tube, attached to the other end of said housing tube.

4,513,764

VALVE

John H. Yonker, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 27, 1983, Ser. No. 498,746
Int. Cl.[3] E21B *43/12*
U.S. Cl. 137—68 R 8 Claims

4. A valve comprising:

a housing having a flowway,

a port in said housing communicating the flowway with the exterior of the housing,

a two-piece telescoping valve member controlling flow through said port,

a low pressure dome in said housing provided in part by a first pressure responsive member carried by said valve member,

first releasable latch means initially latching said valve member in port open position and released in response to a selected differential across said first pressure responsive member,



second releasable latch means latching said valve member in port closing position upon release of said first latch means and movement of the valve means to port closing position by said first pressure responsive member, and

a second pressure responsive member on said valve member exposed to pressure within said flowway on one side and pressure exterior of the housing on the other side with said valve member in closed position,

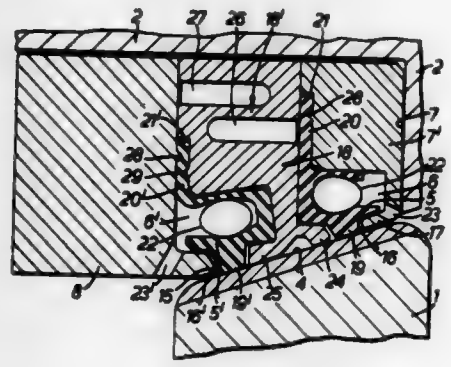
said second releasable latch means including means releasably latching the two pieces of said valve member together and releasable in response to a selected differential across said second pressure responsive member to move said valve member to port opening position.

4,513,765

ARRANGEMENT ON A BUTTERFLY VALVE

Erik Rishovd, and Sven Sorensen, both of Geithus, Norway, assignors to A/S Westad Armaturfabrik, Geithus, Norway

Filed Oct. 7, 1982, Ser. No. 433,410
Claims priority, application Norway, Oct. 14, 1981, 813467
Int. Cl.³ F16K *1/22*
U.S. Cl. 137—72 **4 Claims**



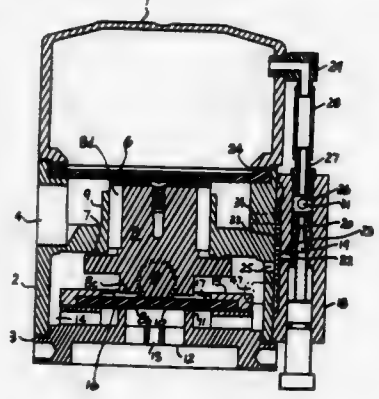
1. An arrangement on a fireproof butterfly valve, having a converging sealing surface, intended especially for use with cryogenic fluids, wherein the axis of rotation of the flap is displaced in relation to a plane through the spherical sealing surface of the flap, which cooperates with two soft sealing rings disposed in the valve housing and separated by an intermediate ring of metal, opposing lateral surfaces of said intermediate ring being of complementary configuration in relation to the facing lateral surfaces of the sealing rings for retaining the sealing rings in undercut grooves formed between said opposing lateral surfaces of the intermediate ring and, respectively, a retainer ring and a circular seat in the wall of the valve housing, said undercut grooves each having a radial, inwardly open slit through which a radial, inwardly projecting sealing lip on the sealing rings extends for engagement with the sealing surface of the flap when the flap is in a closed position, said sealing rings being of the type which are affected by both spring pressure and fluid pressure, characterized in that the intermediate ring has a weakened central cross-sectional section and at the radial, inner edge thereof is formed with two axially spaced, circular sealing lips of metal for engagement with the sealing surface of the flap of which one of the sealing lips has a radius greater than the other according to the convergence of the sealing surface when the intermediate ring is subjected to forces of pressure from one or the other side, said pressure causing axial deformation/flexure of said radial, inner section and axial displacement of the lips of the intermediate ring from a plane through the flexure points of the radial, inner section whereby one or the other of the sealing lips is pressed into contact against the sealing surface of the flap, thereby obtaining a fireproof seal in the event of fire in the valve which destroys the soft sealing rings.

4,513,766

VACUUM PULSATOR VALVES

Thomas L. Seaborne, 10 Collier Crescent, Brunswick, Victoria, Australia

Continuation of Ser. No. 349,153, Feb. 16, 1982,. This application Jul. 16, 1984, Ser. No. 630,349
Claims priority, application Australia, Feb. 13, 1981, 7594/81
Int. Cl.³ A01J *5/12*
U.S. Cl. 137—103 **26 Claims**



1. A vacuum pulsator adapted to supply pulses of vacuum alternately with non-vacuum pulses, said pulsator comprising a body including means for connecting a first zone of said body to a permanent vacuum source and a diaphragm valve comprising a first valve element cooperating with a first valve seat adapted to connect a second zone of said body to a non-vacuum source of air, said body further including a second valve seat adapted to be opened or closed to establish or prevent communication between said first and second zones, said body further housing a first deformable diaphragm having first and second opposed surfaces, means for alternately applying vacuum and non-vacuum pressures to the second surface of the first deformable diaphragm with said first surface of the first deformable diaphragm arranged for exposure to said permanent vacuum source, said first deformable diaphragm cooperating with said first valve element whereby said first valve element is movable such that when said second valve seat is closed, said first valve seat is open thereby applying non-vacuum air to said second zone, and when said second valve seat is open, said first valve seat is closed thereby applying vacuum to said second zone, the movement of said first de-

formable diaphragm and said first valve element being controlled by an adjustable ratio control valve means adapted to communicate a continuous restricted flow of non-vacuum air to the second surface of said first deformable diaphragm to control the ratio of vacuum/non-vacuum air in the pulses appearing in said second zone.

4,513,767

FLUID DISTRIBUTION SYSTEM

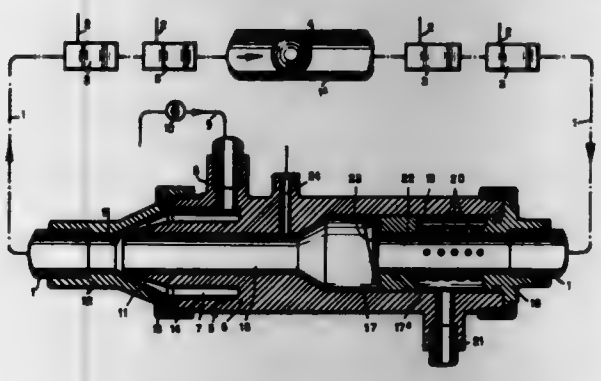
Eduard Soederhuyzen, 330 Staalmeesterslaan, 1057 PC Amsterdam, Netherlands

Filed Feb. 25, 1983, Ser. No. 469,588

Claims priority, application Netherlands, Feb. 26, 1982, 8200796

Int. Cl.³ A01G *27/00*

U.S. Cl. 137—119 **10 Claims**



1. In a fluid distribution system which comprises a conduit loop through which fluid can flow; means for supplying fluid to said conduit loop; a plurality of valve means located along said conduit loop, each valve means including a fluid outlet branch; and a plug positioned within said conduit loop and capable of passing therealong based on the flow of fluid therethrough, the sequential location of the plug in respective valve means causing fluid to flow through the associated fluid outlet branch,

the improvement wherein said plug is in the form of a smooth-surfaced sphere, and wherein each said valve means includes a housing defining an axial passageway therethrough and through which fluid can pass, and a passage member which is axially movable along said axial passageway, said passage member defining an axial channel therein and mounting movable retaining means which project radially inwardly thereof into said axial channel, said movable retaining means being fully extended into said axial channel and preventing movement of said smooth-surfaced sphere through said axial channel at first predetermined axial positions of said passage member within said axial passageway and being repositioned radially outwardly with respect to said axial channel and allowing said smooth-surfaced sphere to move through said axial channel at second predetermined axial positions of said passage member within said axial passageway, the axial positioning of the passage member in said housing determining whether or not fluid will pass through the fluid outlet branch connected thereto.

4,513,768

SOLAR ACTUATED DRAIN SYSTEM

Glen E. Sarver, and Bernard W. Worstell, both of Marietta, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 31, 1983, Ser. No. 528,191

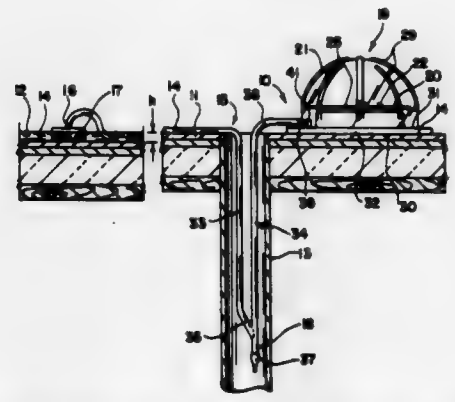
Int. Cl.³ F04F *10/00*

U.S. Cl. 137—142 **10 Claims**

1. A temperature actuated drain system for transferring a water accumulation from a roof surface to a lower level at which the water is discharged from the drain system, said drain system comprising:

(a) a siphon comprised of a first tubular member and a second tubular member, and

(b) an enclosed chamber with a bottom level comprised of a rigid upper component comprised of a wall that allows solar heat energy to pass therethrough into the interior of said chamber, a base member to which said upper component is hermetically sealed along its peripheral zone, and means confined within the confines of said chamber for absorbing solar heat energy during the period when the sun shines onto said chamber and radiating the collected heat energy into the confined air space within said chamber when the sun is not shining on said chamber, said first tubular member of said siphon having an inlet end for immersing in an accumulation of water to be drained from a roof surface and a distal end, said second tubular member of said siphon having a discharge end communicating with a pressure-responsive one-way valve means that



opens when the pressure within said siphon or the force of a column of water within said siphon and acting against said valve exceeds the force that maintains said valve normally closed and closes when the pressure within said siphon or the force of a column of water within said siphon and acting against said valve is less than the force that maintains said valve normally closed, said second tubular member of said siphon being in open communication with the interior space of said chamber at a location immediately adjacent the bottom level of the interior space of said chamber, said distal end of said first tubular member of said siphon being joined in communicating relationship with said second tubular member of said siphon, said discharge end of said second tubular member of said siphon being positioned at a level below the level of the inlet end of said first tubular member of said siphon during the operation of said drain system.

4,513,769

METHOD OF MANUFACTURING FAUCETS AND SPOUTS, FAUCET INSERTS, AND FAUCETS AND SPOUTS MANUFACTURED BY THE METHOD

Glenn T. Purcell, El Paso, Ill., assignor to Masco Corporation of Indiana, Taylor, Mich.

Filed Jun. 28, 1982, Ser. No. 392,887

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **25 Claims**

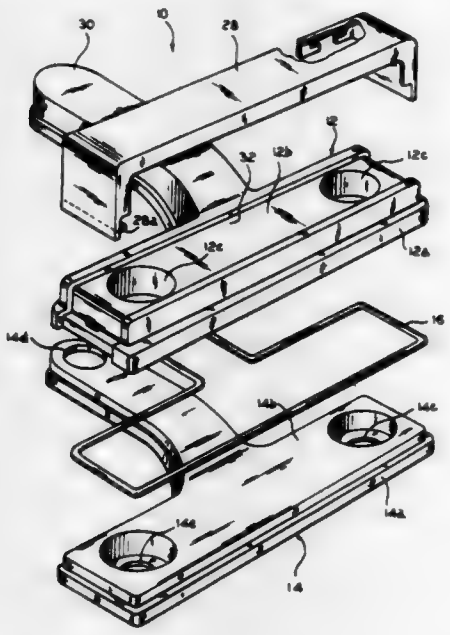
1. A faucet, characterized by:

a first housing member and second housing member connected together to form a fluid passageway therethrough having an inlet and outlet;

said members each have complementary flanges which mate with each other and to form a sealed seam that extends along the length of said fluid passageway;

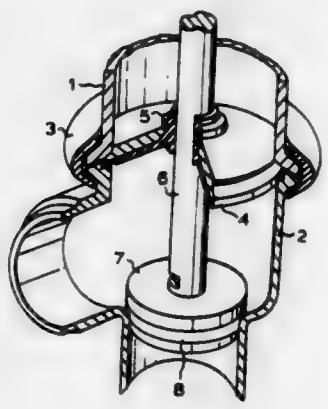
said first member also having an aperture therethrough aligned with an aperture in the second member; said apertures in communication with said fluid passageway;

operable valve means mounted in one of said apertures and the other of said apertures receiving a fluid line forming



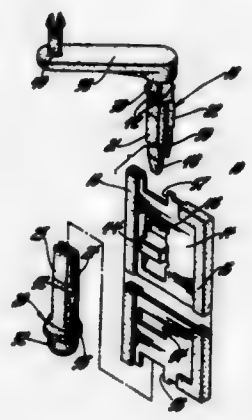
said inlet, with said valve means controlling fluid flow from said inlet and through said passageway to said outlet.

4,513,770
FLOW CONTROL VALVE
Philip A. Davy, Horsham, England, assignor to APV International Limited, Crawley, England
Continuation-in-part of Ser. No. 274,754, Jun. 18, 1981, abandoned. This application Dec. 20, 1982, Ser. No. 451,489
Int. Cl.³ F16K *43/00, 41/00*
U.S. Cl. 137—315 **4 Claims**



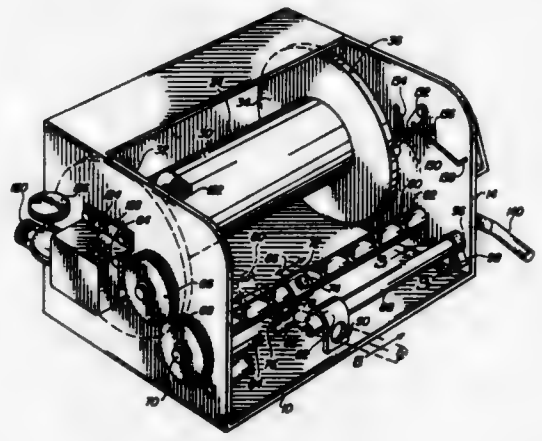
1. In a flow control valve having a casing made up from at least two separable casing parts, a flow control member mounted on a shaft axially movable in the said casing, a shaft seal mounted between said two of said separable casing parts and cooperable with the said shaft to isolate the interior of the casing, the said shaft seal comprising an insert having opposed faces and a resilient sealing member supported by the insert and having a pair of spaced sealing lips axially spaced along the shaft: the improvement that the sealing member includes a central boss carrying the spaced sealing lips and also a narrow radial flange and a wide radial flange mechanically interengaging on and about an inner edge of the insert, with the wide flange fitting flat against and covering the face of the insert on the interior side of the seal, and the insert and wide flange having peripheral edges located and trapped between the said two separable casing parts to present a substantially flat hygienic face of the wide flange to the interior of the valve casing with the insert isolated from the interior of the valve casing and fluid flow therethrough.

4,513,771
AIR VALVE
Michael J. Thomas, and David B. McDonald, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 7, 1983, Ser. No. 548,926
Int. Cl.³ F16K *1/22*
U.S. Cl. 137—315 **4 Claims**



1. An air valve adapted for installation in an air duct of a vehicle air conditioning, heating and defrosting system and the like characterized by a valve plate and a pivotal support and lever arrangement therefor comprising two separate support means each having a pair of fingers adapted to straddle said valve plate at opposite ends thereof, each said support means further having a bearing portion, said bearing portions adapted to be received in aligned support holes in said duct to thereby support said valve plate for pivotal movement therein, said valve plate and the fingers of both said support means having cooperating detent means for locking said support means on said valve plate so that said bearing portions are in axial alignment, at least one of said support means further having a lever, and snap-in means on said one support means intermediate its bearing portion and fingers for allowing installation of said one support means on said valve plate from external of and through one support hole in said duct but thereafter retaining such bearing portion in said one support hole to thereby retain both said lever and valve plate in place with said lever external of said duct.

4,513,772
AUTOMATIC HOSE REEL
Richard Fisher, 300 S. Val Vista #44, Mesa, Ariz. 85024
Filed Jul. 25, 1983, Ser. No. 516,518
Int. Cl.³ B65H *75/34*
U.S. Cl. 137—355.22 **17 Claims**



1. An apparatus for automatically winding a hose of the type which includes end couplers, said apparatus comprising:
a frame having first and second side members;
reel means rotatably and transversely coupled between said first and second side members for receiving said hose;
a motor coupled on said frame;

electrical switch means for coupling said motor to a source of power when in a first state, and for disconnecting said motor for said source of power when in a second state;

clutch means coupled between said motor and said reel means for selectively and imparting rotary motion from said motor to said reel means;

guide means coupled between said first and second side members for guiding hose to said reel means; and

first means coupled to said guide means and responsive thereto for substantially simultaneously disengaging said clutch and turning off said motor;

said guide means comprising an elongated externally threaded traversing screw journaled for rotation in said first and second side members and positioned substantially parallel to said reel means, second means coupled between said reel means and said traversing screw for rotating said traversing screw in response to rotation of said reel means, follower means mounted on said traversing screw and movable thereof on opposite directions during rotation of said traversing screw, and a guide assembly journaled for rotation in said first and second side members and positioned substantially parallel to said traversing screw for guiding hose to said follower means;

said guide assembly comprising:

a guide bar journaled for rotation in said first and second side members, and a yoke transversely slideable on said guide bar but rotatably fixed with respect thereto and having a transverse aperture therein of an inner diameter just sufficient to permit passage therethrough of said hose and insufficient to permit passage of said end couplers, said guide bar being caused to pivot when said yoke is engaged by one of said end couplers;

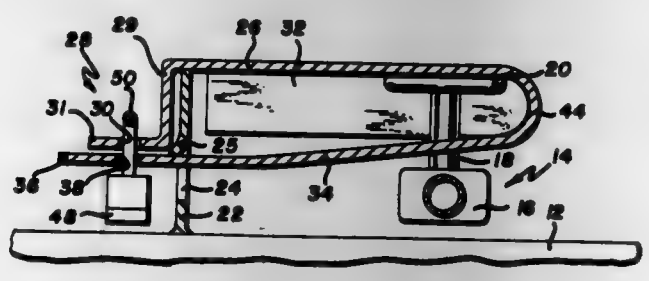
said first means comprising a projecting member fixedly coupled on said guide bar and pivotable therewith, a slide member hingedly coupled to said projecting member so as to move translationaly when said projecting member pivots, and a lever arm pivotably coupled in said frame and capable of assuming first, second and third positions in response to movement of said slide member, said first position for maintaining said electrical switch means in said first state and for maintaining engagement of said clutch means, said second position for disengaging said clutch means, and said third position for placing said electrical switch means in said second state.

4,513,773

VALVE GUARD

Brendon J. Hardiman, Jr., 258 Mower St., Worcester, Mass. 01602

Filed May 7, 1984, Ser. No. 607,601
Int. Cl.[3] F16K *35/10*
U.S. Cl. 137—382 8 Claims



1. Valve guard for a gas tank having a valve at the top of the tank which includes a casing, a valve stem which extends vertically from the casing and a valve handle at the top of the stem, the gas tank also having a vertical flange which is spaced from the valve and which has an opening that is horizontally aligned with the valve, said valve guard comprising:

(a) a top wall adapted to overlie said valve handle and said vertical flange and having a forwardly extending upper lip which is adapted to extend over and beyond said flange, said upper lip portion having a first aperture,

(b) a plurality of vertical walls extending downwardly from said top wall, and

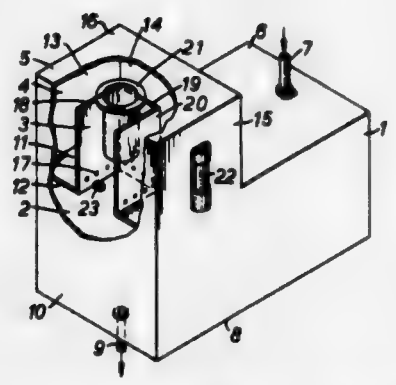
(c) a bottom wall operatively connected to said top wall and having a slot that enables the valve guard to be applied to the valve so that the bottom wall lies between the handle and the casing of the valve and the stem extends through said slot, the width of said slot being greater than the width of said stem and less then the width of said handle, said bottom wall having a forwardly extending lower lip which is adapted to extend through said flange opening and underlies said upper lip, said lower lip having a second aperture which is vertically aligned with said upper aperture for receiving the shackle of a lock.

4,513,774

APPARATUS FOR MINIMIZING THE AMOUNT OF FLUID LEAKED FROM A COMPONENT IN A HYDRAULIC POWER SYSTEM WHEN THE SYSTEM HAS FAILED

Donald J. Reid, Morpeth, England, assignor to British Gas Corporation, London, England

Filed Mar. 30, 1983, Ser. No. 480,306
Int. Cl.[3] F16K *21/28*
U.S. Cl. 137—392 8 Claims



1. Apparatus for minimizing the amount of fluid leaked from a component in a hydraulic power system when the component has failed, the apparatus comprising a tank for use as the reservoir for the hydraulic fluid, the tank having a first chamber for storing a main volume of the fluid and a second substantially smaller chamber for storing a substantially smaller reference volume of the fluid than the main volume stored by the first chamber, the second chamber being located immediately above the first chamber and communicating therewith, and means for deactivating the system power source when the quantity of fluid in the second chamber has fallen to or below a preset level as a result of leakage of that fluid from the system, whereby the relative volumes of the chambers are such that for a given quantity of fluid entering or leaving the tank, fluid level fluctuation in the second chamber is greater than the corresponding fluid level fluctuation which would occur in the first chamber if the fluid were only entering or leaving the first chamber.

4,513,775

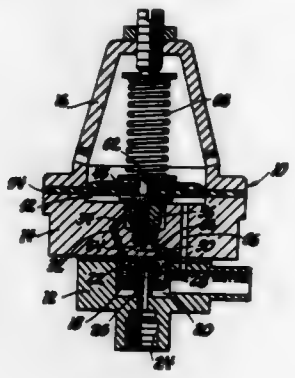
PRESSURE REGULATOR

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1983, Ser. No. 469,725
Int. Cl.[3] F16K *31/385*
U.S. Cl. 137—491 1 Claim

1. A pressure regulator assembly comprising a housing having a regulated pressure region, an operating pressure chamber and an inlet, said assembly having an aperture for flow from said inlet to said chamber and an orifice for flow from said chamber to said region, a primary valve controlling flow

through said orifice, a regulator diaphragm associated with said primary valve, said regulator diaphragm being responsive to the pressure in said region for positioning said primary valve so that flow through said orifice maintains said region at a desired pressure when said primary valve restricts flow through said orifice, said housing also having an opening for flow directly from said inlet to said region, a secondary valve controlling flow through said opening, and a control diaphragm associated with said secondary valve, said control diaphragm being responsive to the pressure in said chamber for positioning said secondary valve so that flow through said opening is obstructed when said primary valve restricts flow through said orifice and the pressure in said chamber approaches the pressure in said inlet, said control diaphragm



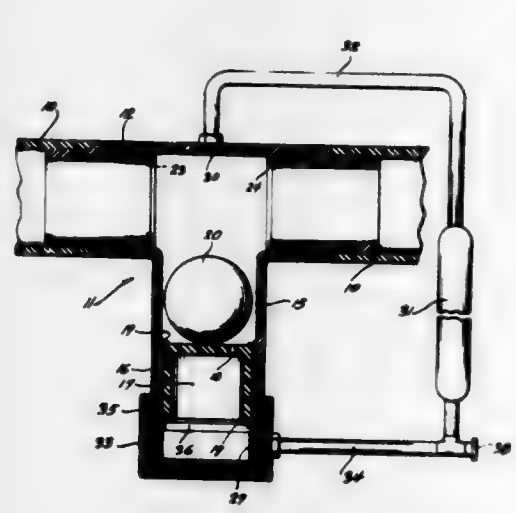
being further responsive to the pressure in said chamber for positioning said secondary valve so that flow through said opening supplements flow through said orifice to maintain said region at the desired pressure when said primary valve permits maximum flow through said orifice and the pressure in said chamber approaches the pressure in said region, and wherein said primary valve is a slidable valve pin having a lap fit in a bore formed in said housing, said orifice opens into the side of said bore, said valve pin is provided with a shoulder defining an annular recess adjacent said orifice and an axial groove extending from said recess to said chamber, said shoulder forming the portion of said valve pin adapted to restrict flow through said orifice, a spring urges said valve pin into engagement with said regulator diaphragm, and a ball is interposed between said spring and said valve pin.

4,513,776

AUTOMATIC GAS SHUTOFF VALVE

Keith A. Chen, Milwaukee, Wis., assignor to Wisconsin Gas Company, Milwaukee, Wis.

Continuation of Ser. No. 875,322, Feb. 6, 1978, abandoned. This application May 22, 1980, Ser. No. 152,356
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—498 **4 Claims**



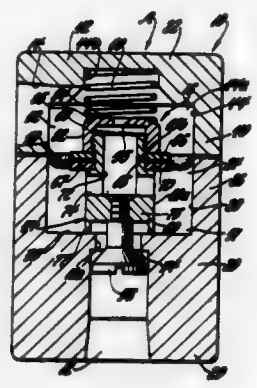
1. An automatic gas shutoff valve for interrupting the flow of gas in a distribution line upon the occurrence of a predetermined rate of drop of pressure in the line; a single cylinder having one end opening into the distribution line for admitting the gas into said cylinder; interrupting means comprising a sphere movably disposed within said cylinder so that a space is formed between said interrupting means and the closed end of said cylinder, said interrupting means being movable out of said cylinder and into said distribution line to interrupt the flow of gas through said distribution line and including an annular surface in said distribution line on each side of said cylinder, said annular surfaces being engageable by said sphere for interrupting the flow of gas in either direction depending upon which side of said cylinder the break in the distribution line occurred and the pressure differential on said sphere will retain it against one of said annular surfaces to prevent the flow of gas from the unbroken sides of the distribution line into the broken side of the distribution line; means admitting the gas from the line into the space at the closed end of said cylinder to equalize the pressure on both sides of said interrupting means, said admitting means restricting the rate of escape of the gas in said space so that when a predetermined rate of pressure reduction is exceeded in the distribution line due to a break in the line, a pressure differential will occur on said interrupting means causing the gas in said space to expand rapidly and shift said interrupting means into the distribution line to interrupt the flow of gas through the line.

4,513,777

PRESSURE COMPENSATED FLOW CONTROL VALVE ASSEMBLY FOR FLUIDS CONTAINING FINELY DIVIDED SOLIDS

Dolph D. Wright, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1983, Ser. No. 525,127
Int. Cl.³ G05D *7/01*
U.S. Cl. 137—501 **3 Claims**



1. A pressure compensating flow control valve assembly for fluids containing finely divided solids like paint comprising:

a housing means including first and second housing members each having an annular interior side wall and a bottom wall defining an interior bottom surface,

said housing members being secured together with their respective bottom walls facing each other,

an inlet passage through said bottom wall of said first housing member, said inlet passage adjacent said interior bottom surface of said first housing member being of a lesser diameter than the diameter of the remaining portion of the passage to define a valve seat,

an outlet passage in said second housing member,

a control means for controlling the flow of fluid from the inlet passage to the outlet passage,

said control means including a deflectable diaphragm whose outer periphery is clamped between the first and second housing members and which defines with said first and second housing members first and second chambers, respectively,

a valve means secured to said diaphragm, said valve means having a control orifice in communication with said second chamber, an axially extending passage in communication with said control orifice, transversely extending pas-

sages for communicating said axial passage with said first chamber, and a headed valve member disposed within said inlet passage and engageable with said valve seat, said valve means having an annular skirt adjacent said valve seat of said first housing member,

spring means having one end in abutting engagement with said bottom wall of said second housing member and the other end in abutting engagement with said valve means, said spring means plus the pressure of the fluid in said second chamber acting in opposition to the pressure of the fluid in said first chamber when fluid is flowing therethrough to normally bias said control means to a position in which said headed valve member is not in engagement with said valve seat to communicate said inlet passage with said first chamber,

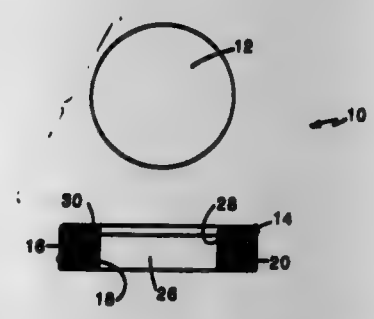
said control means being operable to maintain a substantially constant rate of flow of fluid through said valve assembly and causing said fluid to flow around the head of said valve member, then around the skirt into the first chamber, then laterally outwardly into the first chamber, then axially and laterally inwardly to said axial passage via said transverse passages in said valve means and then axially through said axial passage and control orifice and thence through said outlet passage whereby said fluid is agitated as it flows through the control valve assembly to minimize any settling out of said solids in said fluid.

4,513,778

CHECK VALVE

Amnon F. Vadasz, Caracas, Venezuela, assignor to Intevep, S.A., Caracas, Venezuela; Vereinigte Edelstahlwerke A.G., Vienna, Austria and Oficina Technica HGB, Estado Miranda, Venezuela

Filed Jul. 29, 1983, Ser. No. 518,193
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—533.11 **14 Claims**



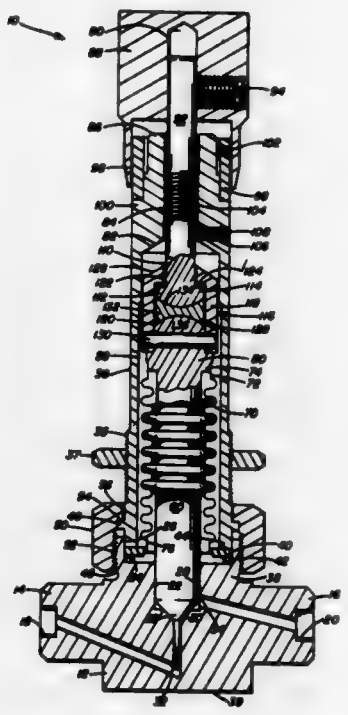
1. In a subsurface positive displacement pump used in the petroleum industry for pumping crudes characterized by a high degree of suspended particles, a ball check valve comprising a valve ball and a valve seat assembly wherein the valve seat assembly comprises a hollow cylindrical body defining an orifice through which pumped fluid passes, the hollow cylindrical body being provided with a recess on the surface facing the valve ball in the region defining the orifice wherein an insert which forms the actual valve seat for the ball valve is secured in the recess said insert is formed from a material having a hardness which is greater than the hardness of the material from which the valve ball is formed such that any effects of impact and erosion would tend to occur on the valve ball rather than the insert and said valve ball is formed from a material having a hardness which is greater than the hardness of the material from which the hollow cylindrical body is formed so as to dissipate the force generated by the impact of the valve ball on the insert.

4,513,779

METERING VALVE

James R. Owoc, McKeesport; John H. Thomas, and Richard W. Conley, both of Pittsburgh, all of Pa., assignors to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed Aug. 12, 1983, Ser. No. 522,388
Int. Cl.³ F16K *37/00, 41/10*
U.S. Cl. 137—556 **16 Claims**



1. A valve comprising,

a valve body having a chamber therein,

said chamber including an upper portion with an opening therethrough and a lower portion having a valve seat,

inlet and outlet openings extending through said valve body and communicating with said valve seat,

a bonnet positioned in said chamber upper portion and connected to said valve body, said bonnet having a passageway therethrough aligned with said chamber,

a stem positioned for longitudinal movement in said bonnet passageway,

said stem including a lower end portion extending into said chamber lower end portion and being adapted to sealingly engage said valve seat,

said stem including an upper end portion with an arcuate surface positioned in said bonnet passageway,

an actuator rotatably supported in said bonnet passageway above said stem, said actuator including an upper end portion and a lower end portion with an arcuate surface,

coupling means positioned in said bonnet passageway for connecting said actuator lower end portion to said stem upper end portion to convert rotation of said actuator to nonrotational, longitudinal movement of said stem in said bonnet passageway to move said stem lower end portion into and out of engagement with said valve seat,

said coupling means including a housing with a bore therethrough,

said actuator lower end portion being positioned in the upper portion of said bore and provided with means for retaining said actuator lower end portion in said housing bore,

said stem upper end portion being positioned in the lower portion of said housing bore in spaced relation with said actuator lower end portion,

a bushing positioned in said housing bore between said actuator lower end portion and said stem upper end portion,

said bushing having a lower arcuate surface complementary with said arcuate surface of said stem upper end portion and an upper arcuate surface complementary with said arcuate surface of said actuator lower end portion,

said bushing being positioned in positive contact with said stem upper end portion and said actuator lower end por-

tion at said respective complementary arcuate surfaces, and

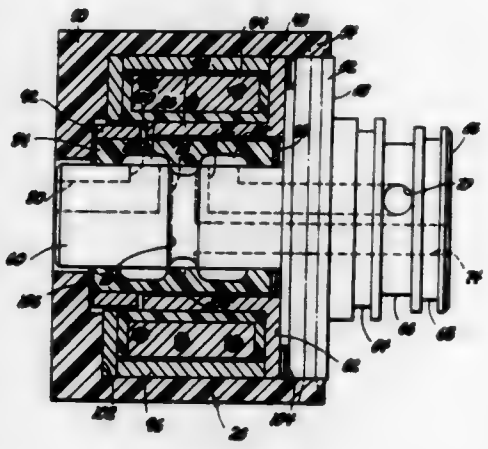
a pin extending through said coupling means and said stem upper end portion to move said arcuate surface of said stem upper end portion into compressive relation with said bushing lower arcuate surface and urge said bushing upper arcuate surface into compressive relation with said arcuate surface of said actuator lower end portion to maintain solid contact between said stem and said actuator through said bushing by the coaction through said complementary arcuate surfaces.

4,513,780

SOLENOID VALVE

David G. Evans, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1984, Ser. No. 578,124
Int. Cl.[3] F15B *13/044*
U.S. Cl. 137—625.65 3 Claims



1. A solenoid valve comprising; a central core member having a cylindrical portion with a supply passage, a control passage and an exhaust passage formed therein and an end wall; a sleeve valve member slidably disposed on said core member having a plurality of annular recesses circumjacent said cylindrical portion and being movable thereon to provide selective communication between said supply passage and said control passage and between said control passage and said exhaust passage and said sleeve valve member also including a magnetically attractable ring member disposed on the outer periphery thereof; the solenoid coil surrounding at least a portion of said sleeve valve member and said central core and including a casing member which is operable to magnetically attract said magnetically attractable ring member when said solenoid coil is energized, spring means for urging separation between said magnetically attractable ring member and said casing member; and housing means including in part said end wall enclosing said coil and said sleeve valve member.

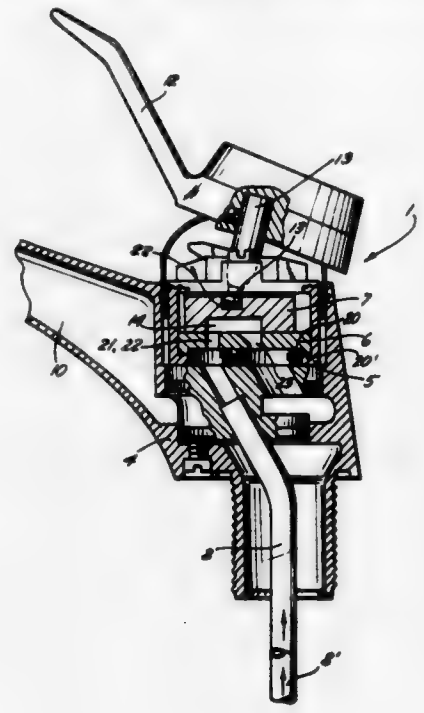
4,513,781

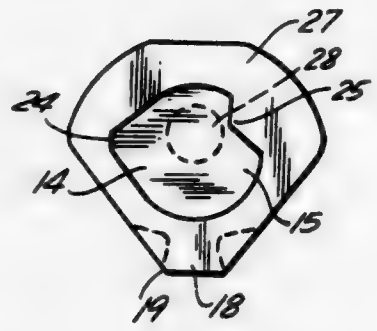
SANITARY SINGLE-CONTROL MIXER FITTING

Hans Nikolayczik, Minheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,674
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1983, 3310080
Int. Cl.[3] F16K *11/06, 19/00*
U.S. Cl. 137—625.41 2 Claims

1. A sanitary single-control mixer fitting comprising:
a valve body having regulating elements;
said regulating elements including at least two discs, of which one serves as a static valve seat disc, having two inlet ports for cold and hot water, and an outlet port;
said second disc is shiftably mounted on the said valve seat disc, and includes a mixing chamber cavity, which is sufficiently dimensioned for partial or complete connection of the inlet ports with the outlet port in said valve seat disc;
said mixing chamber cavity of said shiftable disc being asymmetrically formed in relation to a symmetrical formation of said inlets and outlet ports in the static valve seat disc; and





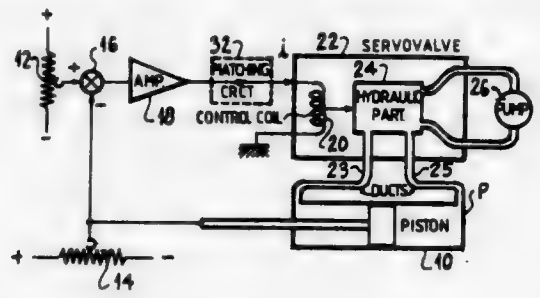
said mixing chamber cavity being shaped to reduce the flow cross sectional area of the inlet port for the cold water and is of greater cross sectional area than the hot water inlet so that the flow of hot water is substantially unaltered while the flow of cold water substantially reduced.

4,513,782

ELECTROHYDRAULIC SERVOVALVE DEVICE

Giulio Contartese, Paris, and Joachim Dietz, Rungis, both of France, assignors to Thomson-CSF, Paris and Moog S.A.R.L., Rungis, both of, France

Filed Aug. 31, 1982, Ser. No. 413,551
Claims priority, application France, Sep. 11, 1981, 81 17235
Int. Cl.[3] G05B *5/01*
U.S. Cl. 137—625.63 8 Claims



1. An electrohydraulic servovalve assembly comprising:
a hydraulic servovalve providing a hydraulic response as a function of a degree of opening of said servovalve;
electric servovalve control means responsive to an electric

control signal for controlling said degree of opening of said servovalve as a function of the magnitude and sense of said electric control signal, whereby a degree of opening of said servovalve in response to control signals of given magnitudes over the entire range of opening positions of said servovalve defines an actual response curve for said hydraulic response;

sensor means for sensing an actual servovalve hydraulic response in said actual response curve and outputting an actual response signal;

input means for providing an input signal corresponding to a desired servovalve response; and

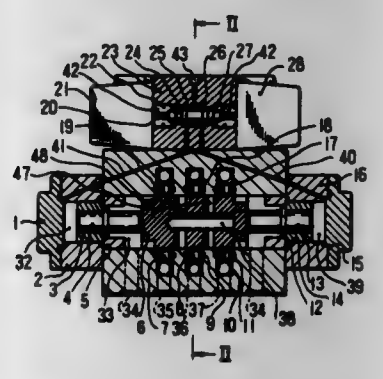
electric matching means preprogrammed with an ideal response curve of said hydraulic servovalve and receiving said input and actual response signals, said matching means being constructed so as to output a control signal to said control means of such a sense and magnitude that said actual response curve substantially matches said ideal response curve over said entire actual response for any actual response curve.

4,513,783

DIRECTIONAL CONTROL VALVE

Yukinobu Inoue, 70, Aza-Atsuta, Ohaza-Kochino, Kounan-shi, Aichi-ken 483, Japan

Continuation of Ser. No. 427,293, Sep. 29, 1982, abandoned, which is a continuation of Ser. No. 192,547, Sep. 30, 1980, abandoned. This application Sep. 24, 1984, Ser. No. 654,513
Claims priority, application Japan, Oct. 1, 1979, 54-126610
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—625.68 **1 Claim**



1. A multiple-way, linear reciprocating valve comprising:

a casing having a tank chamber;

a plate-type slide valve member slidably inserted in the tank chamber with a small clearance there-between and having a single internal pressure chamber bore inside the valve member, and notches on opposite ends of said member;

a slide valve member cover located on the upper surface of the casing;

a slide valve member base located on the lower surface of the casing, the slide valve member cover and base being spaced apart a distance which closely approximates the width of the valve member so that the valve member slides therein with a close tolerance;

three pairs of ring cups in the cover and the base aligned with each other and having biasing means consisting of coil springs biasing the ring cups towards the slide valve member;

only two pairs of upper and lower change-over ports in the slide valve member aligned with each other for selectively connecting the ring cups via the single internal pressure chamber bore inside the slide valve member, said two pairs of change-over ports communicating with each other through the single internal pressure chamber bore;

said slide valve member casing, cover and base forming at least one balance path between respective pairs of ring cups by communication therebetween;

port joints for respective ring cups for separately communicating with respective ones of the ring cups through the balance path and through the internal pressure chamber bore at a change-over position on account of the sliding of the slide valve member to cause a coincidence of respective ones of said change-over ports and ring cups; and

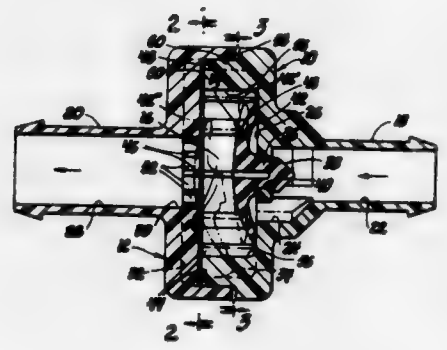
separate tank ports connected to opposite ends of said tank chamber, said notches in said opposite ends of said slide valve member serving to ensure drainage through said tank ports or port joints not coinciding with change-over ports.

4,513,784

CHECK VALVE ASSEMBLY

Robert M. Farrand, Saginaw, Mich., and Daniel Puzio, Boonton, N.J., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1984, Ser. No. 601,428
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—854 **3 Claims**



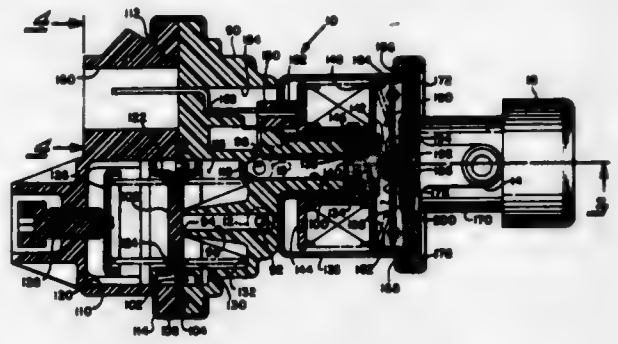
1. A check valve assembly having a valve chamber with an inlet port and an outlet port, an elastomeric umbrella valve contained in said chamber between said ports, a stem attaching said valve in a position to normally close said inlet port and be deflectable in response to differential fluid pressure acting in one direction to open said inlet port to permit forward fluid flow therethrough past said valve and through said chamber to said outlet port, inwardly projecting retention means in said chamber for retaining said valve in operational relationship with said inlet port in the event said valve becomes unattached so that any backward flow from said outlet port still forces closure of said valve on said inlet port, and bypass channel means in said chamber for maintaining forward fluid flow past said valve to said outlet port in the event said valve becomes unattached.

4,513,785

CONTROLLING ENGINE IDLE

Andrew A. Kenny, Roselle, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 1, 1982, Ser. No. 438,077
Int. Cl.³ F15B *13/06*
U.S. Cl. 137—881 **11 Claims**



1. A dual vacuum control signal generator comprising:

(a) housing means defining a vacuum control signal chamber

and a supply port therein adapted for connection to a source of vacuum;

(b) means defining a first valving surface in said chamber communicating with said supply port and a pressure responsive valve member moveable with respect to said valving surface for controlling fluid flow thereover between said vacuum chamber and said supply port operative for regulating vacuum level in said chamber about a predetermined level;

(c) means defining a first control signal port communicating with said vacuum chamber;

(d) means defining a venting passage in said vacuum control signal chamber including means defining a second valving surface;

(e) means biasing said pressure responsive valve member and applying a preload thereon;

(f) said housing means including means defining a venting chamber communicating with said venting passage and means defining a vent port communicating said venting chamber with atmospheric pressure;

(g) said housing means including a second control signal port communicating with said venting chamber and including means defining a third valving surface for controlling flow through said second control signal port;

(h) vent valve means moveable between a first position sealing said third valving surface with said second valving surface unsealed, and a second position sealing said second valving surface with said third valving surface unsealed;

(i) means biasing said vent valve means toward said first position;

(j) actuator means operable, upon receipt of an electrical control signal, to move said vent valve means between said first and second positions, wherein upon connection of said supply port to a source of vacuum, a vacuum output signal is provided to said first control signal output port, and upon connection of a regulated vacuum source to said second control signal port and upon said actuator means receiving an electrical control signal said vent valve means moves to control venting to said vacuum control chamber and said second control signal port thereby providing first and second control signals, respectively, to said first and second control signal ports.

4,513,786

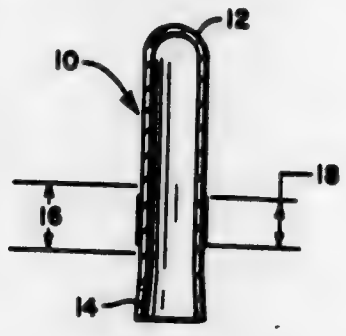
MECHANICAL TUBE PLUB

Jan H. Sodergren, and James W. Hales, both of Harrison, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 14, 1983, Ser. No. 484,742

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—89 **1 Claim**



1. Apparatus for removably sealing the end of an Inconel tube whichis thereby removed from service in a heat exchanger, including a hollow Inconel plug which can be inserted into the end of a tube, said plug having a substantially non-varying outer diameter throughout the major longitudinal portion located within the tube of slightly smaller diameter than that of the tube, said plug having a first closed end which enters the tube, and a second open end adapted to be flush with the tube end, a portion of plug near the second end being of slightly larger diameter to provide a light interference fit in the tube to hold the plug in place prior to and during the expansion thereof, and a band of ductile metal on a portion of the outer diameter of the plug, said band being approximately 2–4 mils thick, and being of either gold, silver, or pure iron, such that when the plug is expanded into tight engagement with the tube, the ductile metal is extruded into any crevices caused by irregularities in the inner wall surface of the tube.

4,513,787

CORRUGATED SHEATHING HOSE

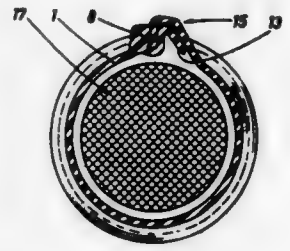
Wilhelm Hegler, Goethestrasse 2, D-8730 Bad Kissingen, and Ralph-Peter Hegler, Bad Kissingen, both of Fed. Rep. of Germany, assignors to Wilhelm Hegler, Bad Kissingen, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,744

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246594

Int. Cl.³ F16L *11/12*

U.S. Cl. 138—166 **14 Claims**



1. A corrugated sheathing hose of plastic, intended for electric installation, having a longitudinal slit along its side, comprising:

means, disposed along the longitudinal slit, for releasably connecting the two edges of the hose adjacent the slit, said connecting means defining a snap-locking closure including a detent recess which is continuous in the longitudinal direction and a corresponding detent protrusion, said detent protrusion having a detent nose disposed thereon and said detent recess including a corresponding undercut, said connecting means including opposing side walls, said side walls defining a longitudinal recess therebetween having an asymmetrical V-shape, said slit being located near, but offset from, the lowermost portion of said recess thereby forming said detent nose.

4,513,788

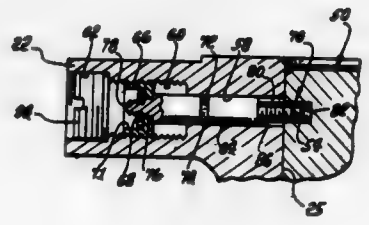
FLANGE SYSTEM FOR PIPELINE PLUGGING

Melvin D. Coker, Montebello, Calif., and John W. Wegner, Deer Park, Tex., assignors to Koppl Company Inc., Montebello, Calif.

Filed Nov. 28, 1983, Ser. No. 555,371

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—89 **9 Claims**



1. In a flange system for locking a plug in a pipeline flange, said plug having a first annular groove, the combination of:

a flange including an axial passage therethrough for receiving pipeworking tools or a pipeline plug, said flange having at least one radial passage for receiving locking means for locking a pipeline plug, each said radial passage including a threaded driver bore and a pin bore;

at least one locking means for engaging said first annular groove for locking a pipeline plug in place, said locking means including a driver threadedly carried in said driver bore and a pin carried and freely slidable in said pin bore and flexibly attached to said driver, with the axial distance moved by said pin in said pin bore being substantially equal to the axial distance moved by said driver by rotation thereof within said driver bore; and

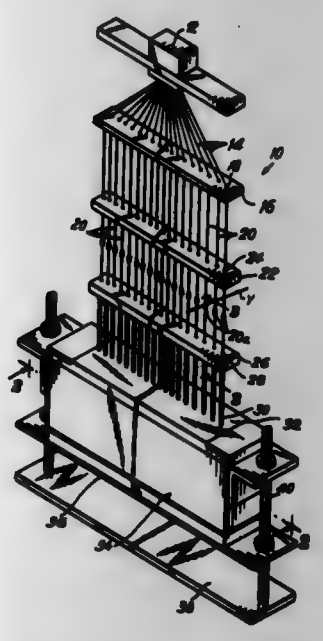
first attachment means for attaching said flange to a pipeline connection.

4,513,789

JACQUARD HARNESS ATTACHMENT MECHANISM

John C. Bowen, Jr., deceased, late of Morris County, N.J., and by Wiley C. Bowen, executrix, Lakewood, Ohio, assignors to The Baxter Corporation, Hawthorne, N.J.

Filed Jun. 13, 1983, Ser. No. 505,083
Int. Cl.³ D03C *3/00, 3/40, 3/44*
U.S. Cl. 139—85 **5 Claims**



1. In a Jacquard loom for producing woven patterns in fabric by selectively positioning a first group of yarn elements relative to a second group of yarn elements, under the control of predetermined program means, including a plurality of heddles linked individually to corresponding ones of said first group of yarn elements, spring means for exerting downward tension on each of said heddles, and alignment means including a plurality of apertures through which said spring means extend at their lower ends regions, said alignment means defining a retaining position for said spring means;

the improvement comprising that:

(a) each said spring means is a unitary spring having a plurality of interconnected helical coils, and

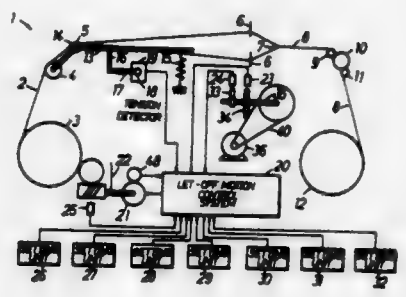
(b) each said spring includes a first segment connected to a respective one of said heddles and of a diameter to pass through a respective one of said apertures, and a second segment located below said alignment means and of a larger diameter then said first segment, said second segment being in substantial contact with a portion of said alignment means and incapable of passing through said aperture.

4,513,790

METHOD AND APPARATUS FOR CONTROLLING MOTOR-DRIVEN LET-OFF MOTION FOR LOOMS

Tsutomu Sainen; Toshiyuki Sakano; Yoshitaka Fujita, all of Kanazawa, and Toshiki Imai, Matsuto, all of Japan, assignors to Tsudakoma Corp., Kanazawa, Japan

Filed Feb. 13, 1984, Ser. No. 579,248
Claims priority, application Japan, Feb. 25, 1983, 58-31451
Int. Cl.³ D03D *49/10*
U.S. Cl. 139—110 **6 Claims**



1. A method of controlling a motor-driven let-off motion in a loom including a system for controlling a let-off motion motor, comprising the steps of:

(a) sampling a variation of warp tension during each revolution of a main shaft of the loom;

(b) effecting at least proportional and integral control modes on the average of sampled values;

(c) adding a proportional and integral output to a basic speed signal at a prescribed ratio; and

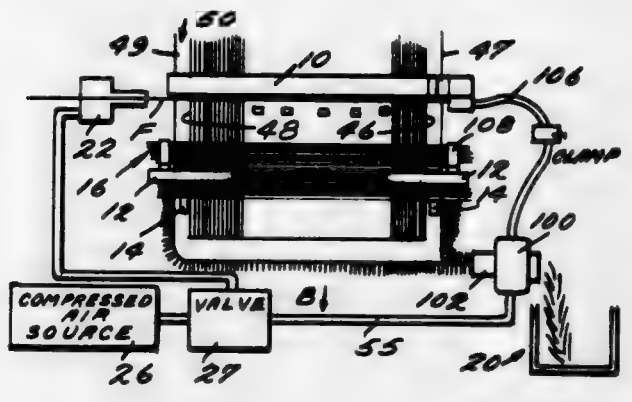
(d) applying a sum signal to the system for controlling the let-off motion motor.

4,513,791

LENO SELVAGING AND STRETCH NOZZLE SYSTEM

Douglas M. Dillon, Asheboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Feb. 1, 1983, Ser. No. 462,977
Int. Cl.³ D03D *47/34*
U.S. Cl. 139—194 **5 Claims**



1. In an air jet loom for weaving fabric from warp yarns and filling yarns, said loom comprising:

a reed disposed transversely of said warp yarns;

air jet means, including at least one pressurized air source, for effecting predetermined relative dispositions of said filling yarns to said warp yarns and reed, said filling yarns extending beyond said warp yarns and weaving with leno yarns to form respective fringes on the sides of said fabric;

tensioning means for providing tension in said filling yarns and comprising: a Venturi device, responsive to pressurized air from said air jet means pressurized air source and having at least first and second output ports, for generating a suction at said first output port and exhausting pressurized air at said second output port; and a suction nozzle, communicating with said Venturi device first output port and coupled for movement with said reed, disposed

for receiving said filling yarns whereby a tension is generated in said filling yarns; and

trimming means, for removing said fringes and disposed of the removed fringes, said trimming means including suction generating means, communicating with said Venturi device second port, and disposed to receive said removed fringes, for generating a suction from said exhaust pressurized air, which suction operates upon said removed fringes.

4,513,792

WEFT YARN TENSIONING DEVICE

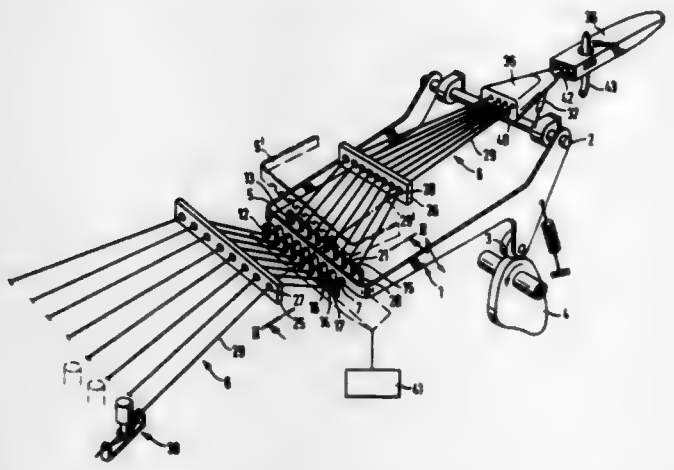
Paul Lincke, Zell, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 5, 1983, Ser. No. 482,243

Claims priority, application Switzerland, Apr. 7, 1982, 2145/82

Int. Cl.³ D03D *47/25, 47/34*

U.S. Cl. 139—439 **10 Claims**



1. A weft yarn tensioning device for a weaving machine, said device comprising

a rod of U-shaped transverse cross-section for disposition transversely of a row of weft yarns and movable between a yarn deflecting position and a yarn releasing position;

a plurality of retaining means for retaining the weft yarns at said deflecting position, each retaining means including a hook for movement between an extended position within said rod to engage a weft yarn and a retracted position spaced from the yarn; and

an activating means connected to said plurality of retaining means for selectively actuating each said retaining means to retain a selected yarn in said deflecting position and to release a selected yarn during movement of said rod to said releasing position.

4,513,793

SECURITY WIRE FABRIC AND APPARATUS AND METHOD FOR MAKING SAME

Herbert E. Rohrbacher, Whittier, Calif., assignor to Bergandi Manufacturing Co., Inc., South El Monte, Calif.

Filed Apr. 28, 1983, Ser. No. 489,540

Int. Cl.³ B21F *21/00*

U.S. Cl. 140—92.4 **26 Claims**

1. An apparatus for processing wire to produce a wire fabric of open construction and with the wire fabric formed with small openings relative to the gauge of the wire so as to form a security mesh, including,

coiling means for coiling the wire to have small loops,

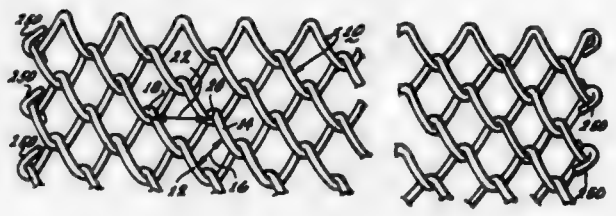
cutting means positioned adjacent the coiling means for cutting the coiled wire into individual lengths,

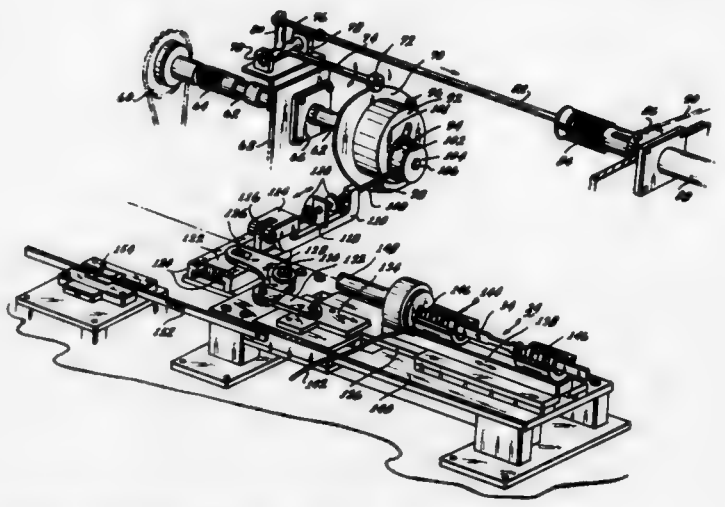
weaving means positioned adjacent the cutting means for repetitively interweaving the coiled wire before the coiled wire is cut with the coiled wire lastly cut to form the security mesh with the interweaving operation of one individual length of coiled wire at a time,

the cutting means cutting the coiled wire into individual lengths by cutting out a small portion of an individual loop of the coiled wire, and

shifting means coupled to the coiled wire for alternately shifting the coiled wire forward and backward for successive interweaving operations for providing the proper orientation for interweaving between the lengths of coiled wire before each interweaving operation.

12. A method of processing wire to produce a wire fabric of open construction and with the wire fabric formed with small openings relative to the gauge of the wire so as to form a security mesh, including the following steps:





coiling the wire to have small loops,

cutting the coiled wire into individual lengths by cutting out a small portion of an individual loop of the coiled wire,

repetitively interweaving the coiled wire before the coiled wire is cut with the coiled wire lastly cut to form the security mesh with the interweaving operation of one individual length of coiled wire at a time, and

alternately shifting the coiled wire forward and backward for successive interweaving operations for providing the proper orientation for interweaving between the lengths of coiled wire before each interweaving operation.

4,513,794

WIRE FORMING MACHINE

Fritz Witte, Wendlingen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,079

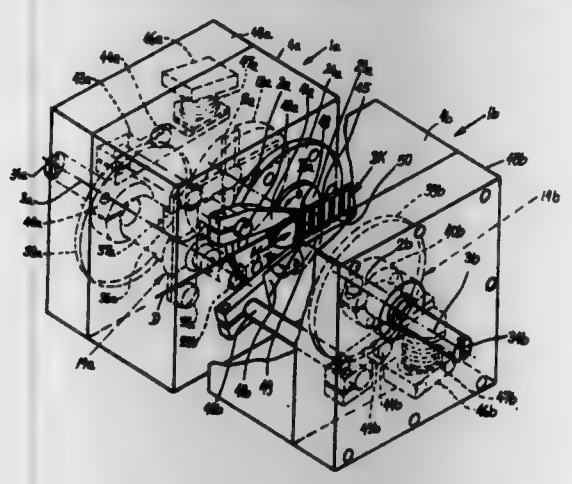
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145275

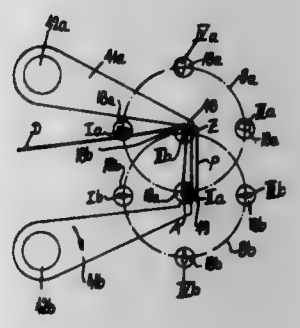
Int. Cl.³ B21F *1/00*

U.S. Cl. 140—105 **24 Claims**

1. A machine for converting a continuous length of wire into an undulate product, especially into an elongated comb-like product wherein closely adjacent substantially hairpin-shaped prongs alternate with substantially straight webs extending in the longiduinal direction of the product, comprising a support; first and second rotary tool carriers mounted in said support, defining a forming channel and being indexible about discrete first and second axes, said carriers having surfaces flanking said channel; wire deforming means including first and second sets of wire deforming tools eccentrically and movably mounted on the respective carriers and being equidistant from the respective axes as well as from one another, as considered in the circumferential directions of the respective carriers; means for

alternately indexing said first and second carriers in opposite directions about the respective axes so that the respective tools orbit along first and second endless paths which partially overlap each other in said channel, said indexing means being mounted in said support; means for supplying wire to said channel and into the range of said tools so that the wire is alternately engaged and deformed by said first and second tools; means for separating the thus deformed wire from the tools in said channel; means for moving said tools with reference to the respective carriers including means for introducing said tools into said channel prior to engagement of such tools with the wire and for retracting the tools from said channel upon completed bending of the wire by such tools, said separating means and said moving means being mounted in said support; and mobile wire urging means cooperating with said tools for maintaining the wire in contact with the tools in said channel during the intervals between successive indexing movements of the respective carrier.



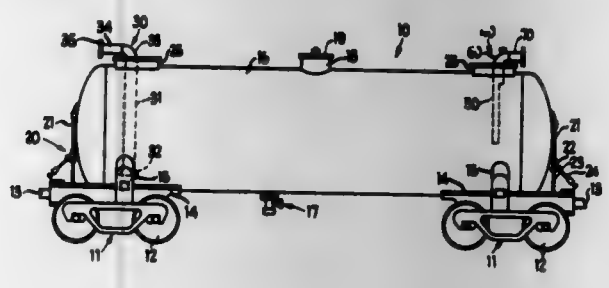


4,513,795

TANK WITH SELECTIVELY VARIABLE AUTOMATIC OUTAGE

Edward L. Davis, Youngstown, and Erling Mowatt-Larssen, Warren, both of Ohio, assignors to General American Transportation Corporation, Chicago, Ill.

Filed May 20, 1983, Ser. No. 496,576
Int. Cl.[3] B65B *31/00*; F17D *1/00*
U.S. Cl. 141—35 **20 Claims**



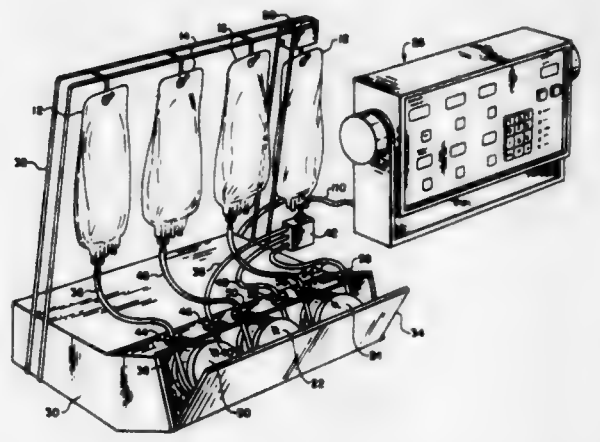
15. In a railway tank car having a tank adapted for interconnection and fluid communication with the tanks of associated like tank cars by connecting conduits for accommodating loading of liquid ladings into the tanks consecutively in series, wherein the tank includes a first lading conduit coupled thereto in fluid communication therewith and extending outwardly therefrom adjacent to the top thereof for connection to one of the associated connecting conduits, the improvement comprising: a second lading conduit coupled to the tank in fluid communication therewith, said second lading conduit having a first portion of relatively large cross-sectional area and a second portion of relatively small cross-sectional area, said first portion having an outer end extending outwardly from the tank adjacent to the top thereof for connection to another one of the associated connecting conduits and an inner end extending inwardly of the tank to the maximum fill level thereof, said second portion extending from the inner end of said first portion downwardly to the minimum fill level of the tank, said first portion having a vent opening at the inner end thereof completely within the perimeter thereof and outside the perimeter of said second portion, vent conduit means coupled to said second lading conduit in parallel with said second portion thereof, said vent conduit means communicating directly with said first portion of said second lading conduit at the vent opening therein and having an inner end disposed within the tank at a predetermined desired fill level between the maximum and minimum fill levels of the tank, and means for varying the level at which said inner end of said vent conduit means is disposed thereby to vary the predetermined fill level of the tank.

4,513,796

HIGH SPEED BULK COMPOUNDER

Carl Miller, Lake in the Hills, and Lawrence R. Hogan, Lake Villa, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 24, 1982, Ser. No. 391,759
Int. Cl.[3] B65B *3/30*
U.S. Cl. 141—83 **1 Claim**



1. A system for volumetrically compounding at least two fluids having different specific gravities comprising:
a source of a first fluid having a first specific gravity,
a source of a second fluid having a second specific gravity different than said first specific gravity,
a compounding container communicating with each of said filuid sources for receiving a desired volume of said first fluid and a desired volume of said second fluid,
first pumping means for conveying said first fluid from its source into said compounding container,
second pumping means for conveying said second fluid from its source into said compounding container, and
means for individually controlling said first and second pumping means including
means for entering and registering said first specific gravity and said desired volume of said first fluid to be conveyed into said compounding container,
means for registering a first control value comprising the product of said first specific gravity and said desired volume of said first fluid,
means for entering and registering said second specific grav-

ity and said desired volume of said second fluid to be conveyed into said compounding container,

means for registering a second control value comprising the product of said second specific gravity and said desired volume of said second fluid,

means for sensing the weight of the contents of said compounding container,

first control means operative, when said sensed weight of the contents of said compounding container is less than said first control value, for operating only said first pumping means to convey only said first fluid into said compounding container, and

second control means operative, when said sensed weight of the contents of said compounding container is equal to or exceeds said first control value, for terminating the operation of said first pumping means and for operating only said second pumping means to convey only said second fluid into said compounding container until the increase in said sensed weight of the contents of said compounding container during operation of said second pumping means generally equals said second control value.

4,513,798

SHARPENER, SPECIFICALLY FOR COSMETIC STICKS

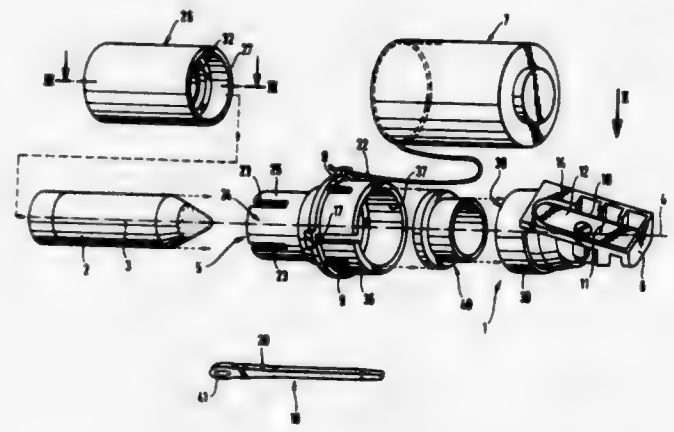
Werner Lüttgens, Erlangen, Fed. Rep. of Germany, assignor to A. Klebes GmbH & Co. K.G. Kunststoff- und Metallwarenfabrik, Erlangen, Fed. Rep. of Germany

Filed Nov. 17, 1982, Ser. No. 442,605

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145536

Int. Cl.³ B43L *23/00*

U.S. Cl. 144—28.11 **17 Claims**



1. A sharpener for sharpening an end of a writing stick which has a soft interior, sharpening being effected by inserting the writing stick into the sharpener and rotating the sharpener and the writing stick relative to each other, the sharpening of the writing stick generating waste material, said sharpener comprising:

a sharpener body having an insertion end with an opening for receiving the end of the writing stick and a longitudinal axis extending through the opening;

a sharpener blade mounted on said body and having a cutting edge arranged at an acute angle with respect to the longitudinal axis of said body;

a chip collecting cap having an interior wall and removably mounted on said body for enclosing an end of said body remote from said insertion end, said chip collecting cap being movable relative to said body between a secure position in which it is secured against rotation relative to said body and a released position in which it is rotatable relative to, and about the longitudinal axis of, said body; and

means defining a cleaning projection supported by said body, extending parallel to the longitudinal axis of said body into said chip collecting cap and being adjacent the interior wall of said chip collecting cap for scraping waste material from said interior wall when said chip collecting cap is rotated relative to said sharpening body.

4,513,797

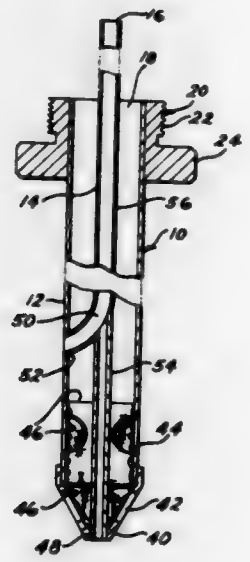
ONE-PIECE LIQUID FILLER TUBE

Roy J. Tompkins, Jr., Louisville, Ky., assignor to The Tomkins Co., Louisville, Ky.

Filed Jun. 14, 1984, Ser. No. 620,663

Int. Cl.³ B65B *3/18, 3/22*

U.S. Cl. 141—198 **9 Claims**



1. A liquid filler tube for insertion down through the neck of a bottle, said filler tube comprising:

a. a first elongated outer tube having an open upper end supplied with an external mounting connection adapted to be joined to a tank of a high speed bottle filling machine;

b. the lower end of the elongated tube having a conical tip with a wall and with a series of large radially spaced discharge holes in the wall, and a second series of large radially spaced discharge holes in the lower end of the said tube adjacent the conical tip and staggered with respect to the first series of discharge holes, and a coarse mesh screen covering each discharge hole;

c. and a second inner vent tube of smaller diameter extending completely through the elongated tube and joined at its lower end through the conical tip and at its upper end extending upwardly beyond the open upper end of the first tube;

d. the said vent tube having an intermediate conduit joined through the wall of the first tube and serving as a fill height limit means.

4,513,799

METHOD OF CUTTING SUBSTANTIALLY HORIZONTAL CANTILEVERED OBJECTS SUCH AS LOGS, AND APPARATUS FOR CARRYING OUT THE METHOD

Thore Lindblom; Jan-Erik Hedin, both of Alfta, and Sven Wickström, Bollnäs, all of Sweden, assignors to Ostbergs Fabriks AB, Alfta, Sweden

Filed Jun. 8, 1983, Ser. No. 502,128

Claims priority, application Sweden, Jun. 21, 1982, 8203852

Int. Cl.³ A01G *27/08;* B27B *1/00, 13/00*

U.S. Cl. 144—379 **13 Claims**

1. A method of cutting a substantially horizontal cantilevered object using an endless saw chain having an upper operative portion and a lower return part, said lower return part guided by a chain guide, said method comprising the steps of:

a. moving the upper operative portion of the saw chain upwards from below the cantilevered object to cut the object; and

b. providing a gap between the upper operative portion of

the saw chain and the lower return part and chain guide so that the lower edge portions of the cut surfaces of the cantilevered object may bear against each other under the bending moment of the cantilevered portion of the object without impairing the cutting action of the saw chain.

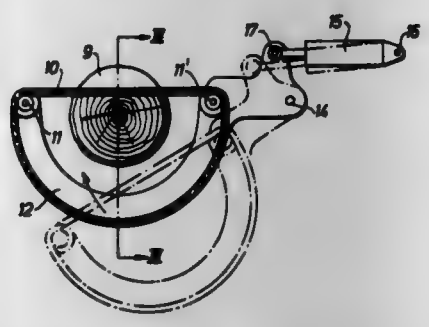
6. An apparatus for cutting a substantially horizontal cantilevered object using an endless saw chain having an upper cutting portion and a lower return part, said apparatus comprising:

saw support means for supporting the apparatus during the cutting of the object;

a substantially U-shaped chain guide means, mounted on said saw support, for arcuately guiding the lower return part of the saw chain;

a guide sprocket attached to one end of the chain guide means;

a drive sprocket attached to the other end of the chain guide means for driving the saw chain;



said guide sprocket and said drive sprocket guiding the upper cutting portion of said saw chain in a substantially straight line;

said upper cutting portion and said guide means being arranged so as to define an internal space through which no other part of the apparatus passes, said internal space having a width and height greater than that of the cantilevered object at the point of cutting; and

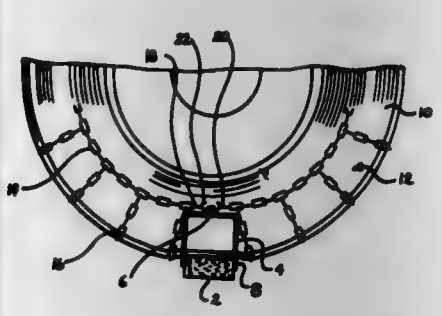
means for mechanically moving said chain guide means upwards from below said object such that said upper cutting portion of said saw chain cuts substantially from below and upwards through said object and such that said chain guide means remains disposed outside and below said object while the object is cut, and there being no other part of said apparatus passing through said internal space, the lower edge portions of the cut surfaces of said object are permitted to bear against each other without impairing the cutting action of the saw.

4,513,800

TIRE CHAIN MOUNTING DEVICE

Earl H. Vossenkemper, 10646 Arboretum Pl., San Diego, Calif. 92131

Filed Sep. 30, 1982, Ser. No. 429,976
Int. Cl.³ B60C *27/06*
U.S. Cl. 152—213 A **12 Claims**



1. A tire chain mounting device comprising:

(a) a spacer means adapted to space a tire a distance above a surface upon which the tire had been resting, the distance being suitable to permit disposition of portions of the chain beneath the tire, the spacer means being further adapted not to obstruct said disposition;

(b) an open link means used to couple end links of a side segment of the tire chain; and

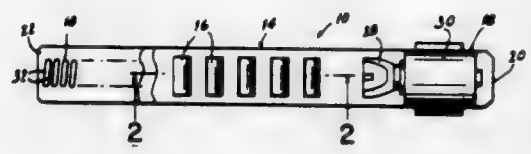
(c) an open link temporary holding means adapted to hold the open link means at a position suitable for a coupling of said end links, the open link temporary holding means being engaged with and held in place by the spacer means.

4,513,801

BAND GRIPS

Joseph F. Pedrick, and George Spector, both of 233 Broadway, RM 3615, New York, N.Y. 10007

Filed Mar. 9, 1984, Ser. No. 588,065
Int. Cl.³ B60C *27/02*
U.S. Cl. 152—213 R **4 Claims**



1. A gripping device for a motor vehicle tire which comprises:

(a) an elongated band of flexible material having a plurality of ground gripping outward deformations; and

(b) means for interconnecting respective ends of said band for securing said band about the tire, mounted on a vehicle wheel with the ground gripping outward deformations in place across tread of the tire wherein said means for interconnecting respective ends of said band being a worm-gear hose clamp type drive assembly.

4,513,802

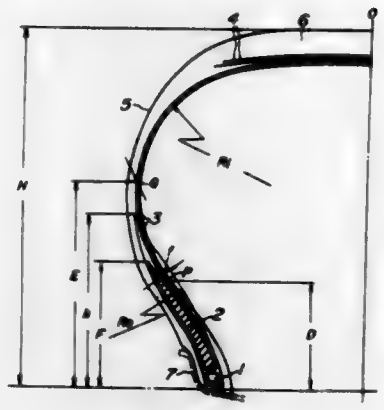
REDUCED ROLLING RESISTANCE PNEUMATIC RADIAL TIRE AND METHOD OF MANUFACTURING THE SAME

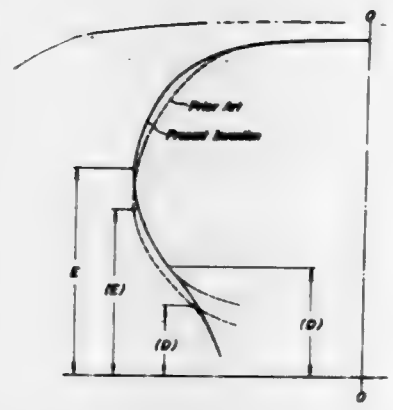
Minoru Togashi, Tokyo; Kenshiro Kato, and Shin-ichi Furuya, both of Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,390
Claims priority, application Japan, Mar. 16, 1982, 57-40231; Sep. 13, 1982, 57-158013
Int. Cl.³ B60C *3/00, 15/06*
U.S. Cl. 152—353 R **17 Claims**

1. In a reduced rolling resistance pneumatic radial tire including a pair of annular sidewalls having at inner ends bead portions, respectively, a crown portion extending between radially outer ends of said sidewalls, a carcass of at least one ply including organic fiber cord layers and having ends extending about bead wires embedded in said bead portions with distal ends extending radially outwardly to reinforce said bead portions, said sidewalls and said crown portion, and hard rubber fillers filled in turns of said ply extending about said bead wires, the improvement comprising said carcass having, on each side of a plane including an equatorial line of the tire in a radial cross-section passing through a rotating axis of the tire, an outwardly extending configuration with a center of a radius of curvature positioned in an inside of the carcass in a radially outer zone from a carcass maximum width position to said crown portion and further having an inwardly extending configuration continuous with said outwardly extending configuration with a center of a radius of curvature positioned in an outside of said carcass in a radially inner zone from said carcass maximum width portion to said bead portion when said tire mounted on a rim is filled with an inner pressure 5% of a normal inner pressure; said outwardly extending configuration of said carcass in said radially outer zone being maintained permitting a small change in configuration, while said inwardly extending configuration of said carcass in said radially

inner zone being changed into a modified inwardly extending configuration with an increased radius of curvature when said tire on the rim is filled with the normal inner pressure; and a height of said carcass maximum width portion from a bead base being within a range of 50–65% of a height of the outer-





most portion of said crown portion from said bead base and a height of a junction of said outwardly and inwardly extending configurations from said bead base being within a range of 20–35% of said height of the outermost portion of said crown portion when said tire on the rim is filled with said normal inner pressure and equilibrated.

4,513,803

INFLATING GAS FOR TIRES

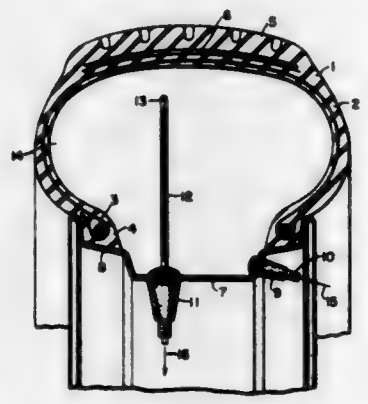
Thorsten Reese, Neustadt, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 121,642, Feb. 14, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,077

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906151

Int. Cl.³ B60C *29/00*

U.S. Cl. 152—427 **8 Claims**



1. A filling gas mixture for a vehicle tire provided with at least one hollow chamber, especially a vehicle tire, with a body of rubber or rubber-like material provided suitably with reinforcement inserts, the improvement therewith comprising: a chemically inert heavy filling gas mixture that consists of air and sulfur-hexa-fluoride and particularly that air volume in relation to volume of the sulfur-hexa-fluoride has a ratio in a range of approximately 1:1 to 1:8.5 having obstructive diffusion characteristics of sulfur-hexa-fluoride exclusively for inflation of the body of rubber or rubber-like material of the vehicle tire.

4,513,804

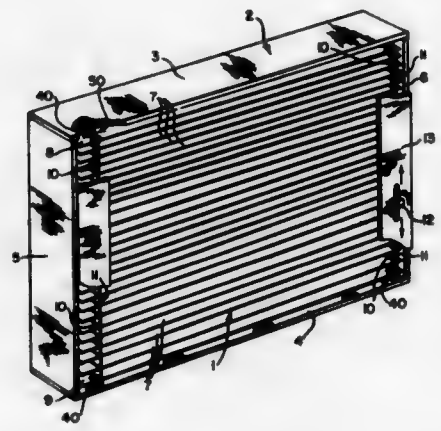
VENETIAN BLIND HANGER PIVOT ASSEMBLY INCLUDING A HANGER PIVOT MEMBER HAVING A SLAT ENGAGING SURFACE

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Totowa, N.J.

Division of Ser. No. 387,035, Jun. 10, 1982, Pat. No. 4,458,740, which is a continuation-in-part of Ser. No. 332,809, Dec. 21, 1981, abandoned. This application May 17, 1984, Ser. No. 611,208

Int. Cl.³ E06B *9/36*

U.S. Cl. 160—174 **2 Claims**



1. A veneitan blind assembly comprising a plurality of slats including an upper end slat and a lower end slat, a hanger pivot member connected to each said upper end and lower end slats and having a slat engaging surface, each said hanger member including a pivot bearing portion, slat supporting means including tape cables secured to each hanger pivot member and extending between said upper end slat and said lower end slat, and suspension means pivotally mounting said hanger pivot members to parts of a frame opening whereby pivotal movement of a hanger pivot member with respect to said suspension means will cause all of said slats to tilt.

4,513,805

DECELERATOR FOR USE IN ROLLER BLINDS

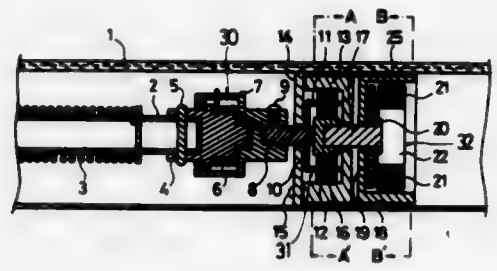
Ryoichi Mase, Tokyo, Japan, assignor to Toso Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1983, Ser. No. 486,577

Claims priority, application Japan, Apr. 30, 1982, 57-61938[U]

Int. Cl.³ F16H *3/44*; F06B *9/208*

U.S. Cl. 160—299 **5 Claims**



1. A decelerator for use in roller blinds of the type having a

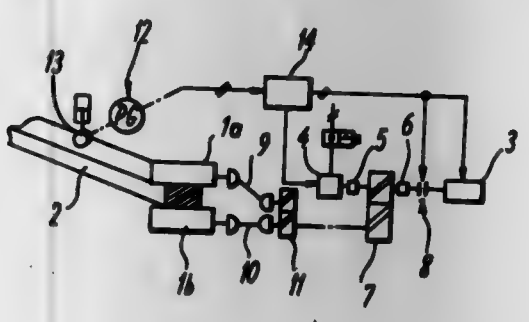
spring-motor interposed between a fixed shaft and a tube, comprising one-way clutch means having the stator thereof secured to the fixed shaft, epicyclic gearing means having a rear gear secured to the inside of the tube, a sun gear, a plurality of planet gears rotatably supported by the rotator of said one-way clutch means to engage said sun gear and said ring gear, and centrifugal braking means having a brake drum secured to the inside of the tube, a rotary shaft fixed to said sun gear, and centrifugally expansible brake shoes mounted on said rotary shaft, said one-way clutch permitting said planet gears to rotate about said sun gear together with the tube in a given direction but preventing said planet gears from rotating about said sun gear with the tube in the opposite direction.

4,513,806

APPARATUS FOR WITHDRAWING SOLIDIFIED ROD IN HORIZONTAL TYPE CONTINUOUS CASTING MACHINES

Shinzo Iida; Katsuji Ie, and Jun Miyazaki, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 23, 1983, Ser. No. 497,017
Int. Cl.³ B22D *11/16, 11/04*
U.S. Cl. 164—413 **7 Claims**



1. A horizontal type continuous casting apparatus including a means for withdrawing the cast strand, said apparatus comprising in combination:

a pair of pinch rollers;

a forward drive motor of a large capacity for driving said pinch rollers in a forward direction;

a clutch for disconnectedly connecting said forward drive motor to said pinch rollers;

a reversible constant-load motor for driving said pinch rollers in a reverse direction;

strand motion detectors for detecting forward and backward movements of said cast strand; and

a control means for engaging and releasing said clutch in response to output signals of said motion detection means.

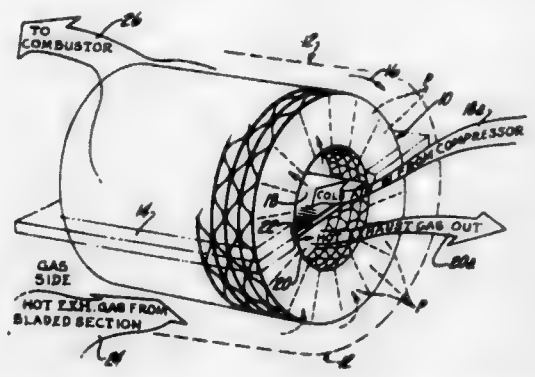
4,513,807

METHOD FOR MAKING A RADIAL FLOW CERAMIC ROTOR FOR ROTARY TYPE REGENERATOR HEAT EXCHANGE APPARATUS: AND ATTENDANT CERAMIC ROTOR CONSTRUCTIONS

Douglas N. Rose, Macomb, and John E. Becker, Oakland, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1983, Ser. No. 489,969
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—10 **2 Claims**

1. A unitary ceramic radial flow heat exchange regenerator, the regenerator having a generally toroidal configuration with a plurality of radially extending passages, the passages having a relatively smaller cross sectional area at the inner portion of the toroidal structure and a relatively larger surface area at the outer surface of the regenerator including: a continuous helically wound strip of ceramic material having a substantially uniform cross section, the edges of the strip being substantially the same length, the strip being formed in a nonuniform corrugated structure so that the innermost portion of the strip has a first wave structure and the outermost portion of the strip has a second wave structure, the first wave structure having a shorter wave length than the second wave structure, the upper and lower positions of the first and second wave structures lying in the same plane and the adjacent wraps of the strip



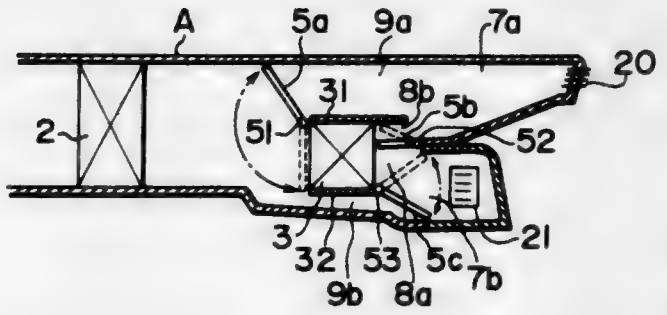
having a phase difference of one-half wave length so that the ridges of one wrap are in registry with the furrows of the adjacent wrap; and two annular ceramic sealing caps, one disposed on each end of the regenerator.

4,513,808

AUTOMOBILE AIR CONDITIONER

Tosikazu Ito, Ibaraki, and Reijiro Takahashi, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1982, Ser. No. 343,591
Claims priority, application Japan, Feb. 4, 1981, 56-14255
Int. Cl.³ B60H *3/00*; B61D *27/00*; F25B *29/00*
U.S. Cl. 165—43 **9 Claims**



1. An automobile air conditioner in which a warm air heated by a heater core and a cold air by-passing said heater core are mixed at a controlled ratio to provide conditioned chilled air and conditioned warm air, the conditioned chilled air being discharged to an upper part of a passenger compartment through an upper air outlet while the conditioned warm air is discharged to a lower part of the compartment through a lower air outlet, comprising: a main chilled air passage means and a sub-chilled air passage means for by-passing said heater core; an evaporator upstream of both of said main chilled air passage means and said sub-chilled air passage means; a main warm air passage means and a sub-warm air passage means for distributing warm air coming out of said heater core at a suitable ratio; a first duct means for mixing chilled air from said main chilled air passage means and the warm air from said sub-warm air passage means, said first duct means being adapted to introduce the mixture to said upper air outlet; a second duct means for mixing the chilled air from said sub-chilled air passage means and the warm air from said main warm air passage means, said second duct means being adapted to introduce the mixture to said lower air outlet; a first air mix door for controlling the ratio between the flow rate of chilled air introduced into said heater core and the flow rate of chilled air flowing into said main chilled air passage means, said first air mix door being on the inlet side of the heater core and disposed at a branching point of the main chilled air passage means and a passage for air flowing into the heater core and reciprocally controlling an opening area of the main chilled air

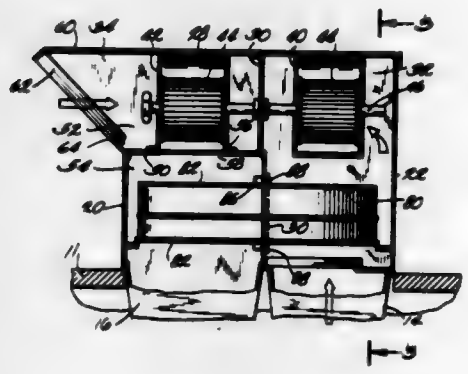
passage means and an opening area for the heater core from zero to maximum; and a second air mix door for controlling the ratio of mixing of the chilled air flowing from said sub-chilled air passage means into said second duct means and the warm air flowing from said main warm air passage means into said second duct means, said second air mix door being on the outlet side of the heater core and disposed at a meeting point of the main warm air passage means and the sub-chilled air passage means and reciprocally controlling an opening area of the main warm air passage means and an opening area of the sub-chilled air passage means from zero to maximum.

4,513,809

ENERGY RECOVERY VENTILATOR

Steven L. Schneider, Madison, and Konstantins Dravnieks, Thiensville, both of Wis., assignors to Wehr Corporation, Milwaukee, Wis.

Filed Jan. 3, 1983, Ser. No. 455,042
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—54 **5 Claims**



1. An energy recovery ventilator mounted on a roof and connected to the outlet of an exhaust air duct of a building ventilation system and to the inlet of an air supply duct of a building ventilation system, the energy recovery ventilator including

a housing including an exhaust air chamber and a supply air chamber, said exhaust air chamber and said supply air chamber being separated by a divider wall defining a generally vertical plane,

a circular heat transfer wheel positioned in said housing, a portion of said heat transfer wheel being housed in said exhaust air chamber and a portion of said heat transfer wheel being housed in said supply air chamber,

means for causing rotation of said heat transfer wheel about a central vertical axis of rotation,

exhaust means for causing exhaust air to pass through said exhaust air duct and through said heat transfer wheel and to be exhausted from said housing, said means including an exhaust fan housed in said exhaust air chamber and positioned above said heat transfer wheel and for drawing air from said exhaust air duct upwardly through said heat transfer wheel and discharging the exhaust air from the housing, said exhaust fan including a first impeller shaft,

means for causing outside air to pass through said supply air chamber and said heat transfer wheel into said air supply duct, said means for causing outside air to pass through said supply chamber including a supply air fan housed in said supply air chamber and positioned above said heat transfer wheel and drawing air into said supply air chamber and forcing said air drawn into said supply air chamber downwardly through said heat transfer wheel and into said air supply duct, said supply air fan including a second impeller shaft, said first impeller shaft and said second impeller shaft being joined together such that they can be driven by a common motor, and

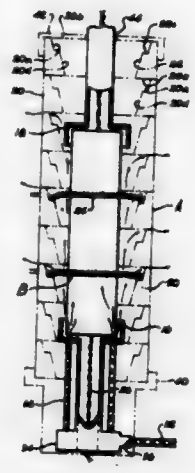
a motor drivingly connected to said first impeller shaft and to said second impeller shaft for driving said impeller shafts.

4,513,810

LOW GRAVITY EXOTHERMIC HEATING/COOLING APPARATUS

Richard M. Poorman, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 18, 1982, Ser. No. 359,627
Int. Cl.³ F24J *1/00*
U.S. Cl. 165—61 **2 Claims**



1. Apparatus for heating a material sample in low-gravity environments by means of an exothermic reaction and thereafter cooling said sample, said apparatus comprising:

casing means having a generally closed interior;

sample support means carried within said casing means for supporting said sample;

exothermic heat means rapidly releasing heat surrounding said sample supported by said support means for heating said sample to a desired temperature;

said exothermic heating means including a plurality of individual segments of said exothermic material which can be ignited to give off heat, stacked upon one another and arranged to provide a desired temperature profile for heating said sample;

each said segment including a central recess therethrough defining an open core when said segments are stacked upon one another, in which core said sample material is disposed and surrounded, said recess being defined by a first generally vertical surface extending from a top surface of said segment and terminating in a generally horizontal ledge surface, and a second generally vertical surface extending from said ledge surface terminating at a bottom surface of said segment;

ignition means activating said exothermic heating means to release said heat;

cooling means quenching said sample at a desired cooling rate for controlled cooling following heating to said desired temperature; and

insulation carried within said casing means surrounding said exothermic heating means and said sample support means;

whereby the sample may be rapidly heated and thereafter cooled for controlled processing of said sample.

4,513,811

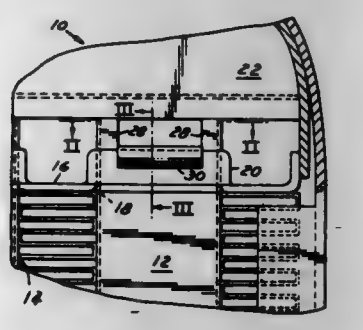
HEAT EXCHANGER

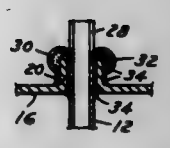
Thomas A. Lesniak, South Bend, Ind., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 9, 1983, Ser. No. 530,459
Int. Cl.³ F28F *7/00, 7/02*
U.S. Cl. 165—79 **3 Claims**

1. A heat exchanger comprising upper and lower headers, a plurality of aligned openings formed in the headers and each having outwardly extending flanges formed therearound, a plurality of tubes mounted between the headers and extended through said aligned openings and having end portions thereof

extended beyond said outwardly extending flanges, a pair of spaced vertical slits formed on each of opposite sides of said extended end portions of said tubes, said tube portions between





said vertical slits being curled toward and into engagement with said flanges, and solder applied between said tubes and the inner surfaces of said flanges and between the outer surfaces of said flanges and said curled tube portions.

4,513,812

HEAT SINK FOR ELECTRONIC DEVICES

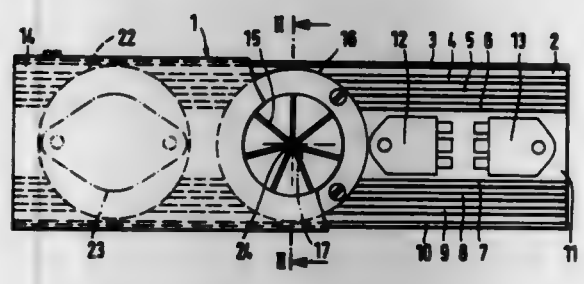
Georg Papst, St. Georgen; Guenter Wrobel, Villingen, and Ulrich Koletzki, St. Georgen, all of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,458

Claims priority, application Switzerland, Jun. 25, 1981, 4189/81

Int. Cl.³ H01L *23/36*

U.S. Cl. 165—80 B **13 Claims**



1. A heat sink for electronic devices comprising:
an elongated, rectangular plate;
a plurality of cooling ribs provided on one side of said plate, said ribs extending parallel to each other longitudinally of the plate and perpendicularly thereof;
a channel extending longitudinally in the center of said plate and separating said ribs into two longitudinally extending groups, said channel providing space for receiving and mounting electronic devices therein;
a recess formed in at least some of said ribs; and
a fan having a fan wheel, said fan being mounted on said plate with its axis perpendicular thereto and with the fan wheel in said recess.

4,513,813

AIR-COOLED STEAM CONDENSER

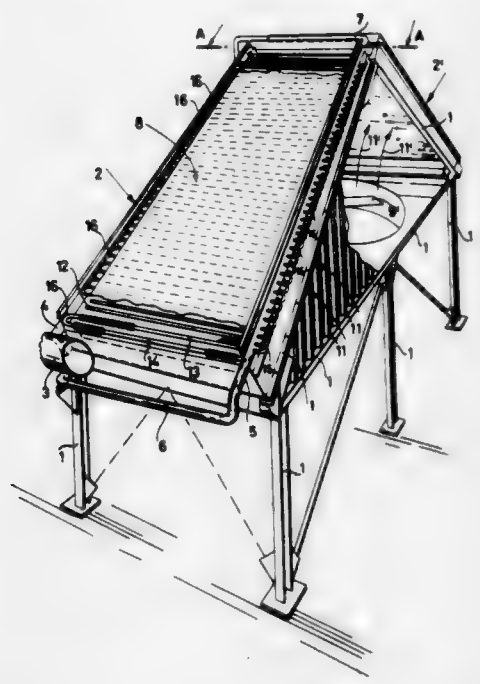
Alessandro Zanobini, Florence, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

Filed Feb. 1, 1982, Ser. No. 344,634

Claims priority, application Italy, Feb. 18, 1981, 19823 A/81

Int. Cl.³ F28B *1/00, 3/00, 9/10;* F24B *1/06*

U.S. Cl. 165—111 **2 Claims**



1. An efficient air-cooled steam condenser which suppresses backflow and inhibits the formation of ice therein, comprising:
an inlet for steam, an inlet manifold connected at the lower end to said steam inlet for receiving and dispensing the steam, an outlet manifold spaced from said inlet manifold for collecting condensate from the steam at the bottom thereof, and a conduit connected to the top of said outlet manifold on the side of the condenser opposite that of the steam inlet for venting the uncondensed gases, said manifolds positioned at an incline and parallel to one another so that the condensate flows downwardly in said outlet manifold and the uncondensed gases flow upwardly in said outlet manifold, thereby condensing any uncondensed residual steam in the outlet manifold,
an air blower positioned below said manifolds for blowing a cooling air stream upwardly and through the space between said manifolds, and
a bundle of parallel, horizontal heat exchange tubes in the space between said manifolds, wherein each tube is a coil including three convolutions arranged horizontally and parallel to one another in consecutive rows relative to the direction of the cooling air stream and having a slope in the direction of said outlet manifold, and wherein each tube is connected to said inlet manifold by the convolution thereof which is the first to be contacted by said cooling air stream and to said outlet manifold by the convolution thereof which is the last to be contacted by the cooling air stream.

4,513,814

GLASS PIPE HEAT EXCHANGER

Dieter Wallstein, Bochum, Fed. Rep. of Germany, assignor to Langbein & Engelbracht GmbH & Co. KG, Bochum, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,964

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1981, 3142485

Int. Cl.³ F28D *7/00;* F28F *9/22, 19/00*

U.S. Cl. 165—134 R **7 Claims**

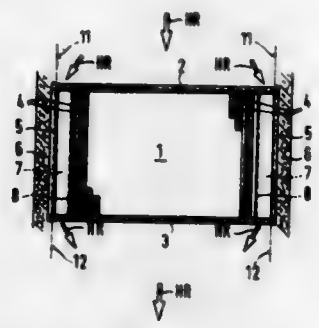
1. A heat exchanger, particularly for cooling of hot smoke

gases with aggressive components by clean gases to be heated, the heat exchanger comprising

elongated side walls each having two spaced ends;

bottom walls each arranged at a respective one of said ends of said side walls;

a plurality of glass pipes extending substantially parallel to each other and to said side walls and arranged so that a hot



smoke gas passes through said glass pipes in a first direction, while a cold clean gas passes in a second direction transversely to passage of said hot smoke gas; and

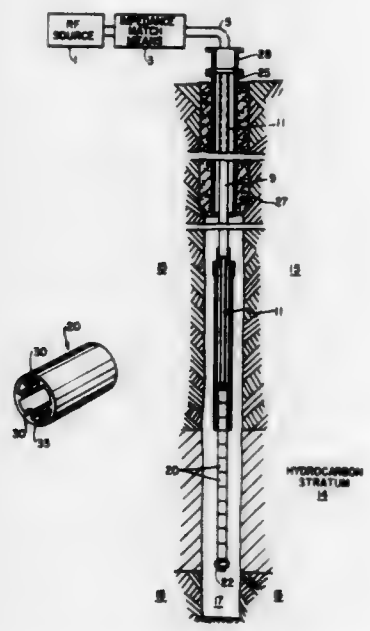
means forming flow passages for said hot smoke gases extending along said side walls in said first direction in said cold clean gas passage and preventing contact of said side walls only with said cold clean gas.

4,513,815

SYSTEM FOR PROVIDING RF ENERGY INTO A HYDROCARBON STRATUM

Herbert A. Rundell, and Kerry D. Savage, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,870
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—57 **10 Claims**



6. Insulator means for use with an RF applicator comprising:

shell means having a predetermined length for surrounding a portion of an inner conductor of the RF applicator which emits RF energy so as to insulate that portion of the inner conductor, and

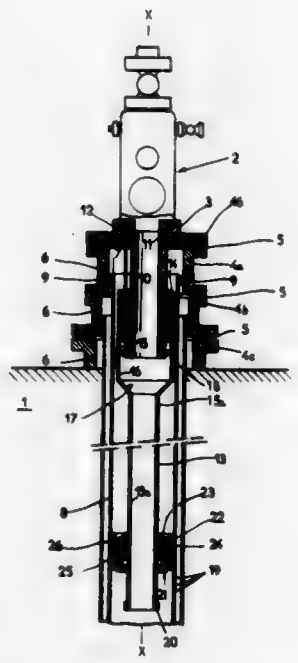
means for preventing the shell means from contacting the inner conductor.

4,513,816

SEALING SYSTEM FOR A WELL BORE IN WHICH A HOT FLUID IS CIRCULATED

Miffre Hubert, Elancourt, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Continuation of Ser. No. 349,314, Feb. 16, 1982, abandoned. This application Aug. 30, 1984, Ser. No. 646,036
Claims priority, application France, Jan. 8, 1982, 82 00172
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—75 R **32 Claims**



1. A sealing system for a well bore of the type in which a hot fluid is circulated, comprising a wellhead unit, at least one tubing string which is capable of undergoing deformation under the action of the hot fluid circulating within said tubing string, at least one casing string provided with a perforated zone opposite to a permeable producing formation, said tubing string being housed within said casing string, a connecting and sealing assembly above the perforated zone operatively interposed between the casing string and the tubing string to support said tubing string, casing string support members for supporting and securing said casing string mounted at or connected to the wellhead unit, a hollow seal support having an upper end rigidly fixed to a stationary member of the wellhead unit and a portion telescopingly engaging in and opening into the top portion of the tubing string to form an annulus between said lower portion of said seal support and said top portion of said tubing string, said top portion of the tubing string being free and capable of moving with respect to the seal support with the bottom portion of said tubing string rigidly fixed to said connecting and sealing assembly placed near the bottom of the well bore, seal means operatively interposed between the telescoping portions of said seal support and tubing string in said annulus to seal the annulus formed by and between said telescoping portions upon the application of pressure to at least one end of said seal means, and pressure means to apply pressure to said at least one end of said seal means.

4,513,817

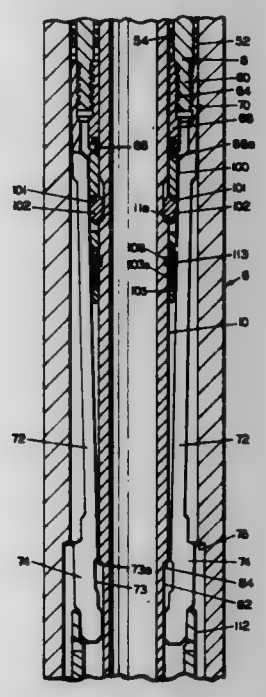
CASING BORE RECEPTACLE

Roger A. Weinberg, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Oct. 1, 1982, Ser. No. 432,210
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—138 **19 Claims**

1. A packoff assembly for a casing bore receptacle defining a polished bore surface, comprising: an annular seal carrier having an abutting means for engaging said casing bore receptacle, external seal means on said annular seal carrier for establishing sealing integrity with said polished bore surface; a tubing connectable mandrel having a polished external cylin-

drical surface portion cooperable with said internal seal means; radially shiftable latching means carried on said annular seal carrier; expanding means on said mandrel for expanding said latching means into engagement with said casing bore receptacle; an axially shiftable support sleeve surrounding a portion of said mandrel; and positioning means for concurrently positioning said support sleeve between said mandrel and said latching means when said latching means are engaged with said casing bore receptacle, and for locking said latching means in said engaged position, said mandrel being axially shiftable relative to said support sleeve when said positioning means are supported by said support sleeve rather than by said mandrel polished external cylindrical surface.

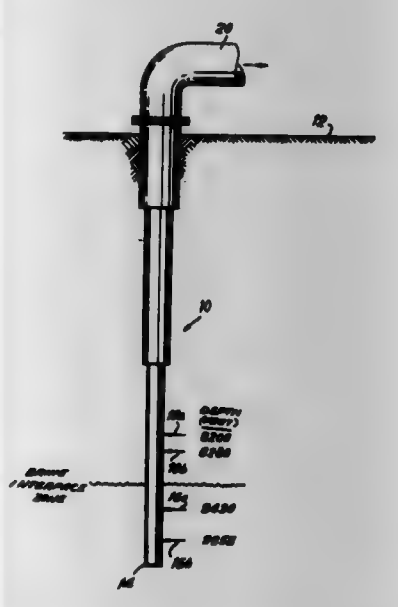


4,513,818

METHOD FOR REDUCING SCALE IN GEOTHERMAL SYSTEMS

Donald E. Michels, Whittier, Calif., assignor to Republic Geothermal, Inc., Santa Fe Springs, Calif.

Filed Mar. 23, 1983, Ser. No. 477,955
Int. Cl.³ E21B *41/02*
U.S. Cl. 166—244 C **7 Claims**



1. A method for reducing scale deposits in geothermal wellbores, surface piping, and heat energy extraction equipment along the geothermal fluid flow path wherein hot brine is removed from a well and used as a source of heat energy comprising the step of blending at least two naturally occurring hot brines in a single wellbore, each of said brines having interactive chemical qualities which when mixed reduces the quantity of residual, scale-forming constituents of the brine mixture from those of the separate, unmixed brines.

4,513,819

CYCLIC SOLVENT ASSISTED STEAM INJECTION PROCESS FOR RECOVERY OF VISCOUS OIL

Philip N. Islip, Plano, and Winston R. Shu, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,186
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—263 **10 Claims**

1. A method for recovering oil from a subterranean, viscous oil-containing formation including a tar sand deposit, said formation being penetrated by at least one injection well in fluid communication with only the lower 50% or less of the oil-containing formation and by at least one spaced-apart production well in fluid communication with a substantial portion of the oil-containing formation, said injection well and said production well having a fluid communication relationship in the bottom zone of the formation, comprising:

(a) injecting into the formation via the injection well a predetermined amount of a mixture of steam and a solvent with the production well shut-in;

(b) shutting-in the injection well and recovering fluids including oil from the formation via the production well until the fluid being recovered comprises a predetermined amount of water;

(c) shutting-in the production well and injecting a predetermined amount of steam or hot water; and

(d) shutting-in the injection well and recovering fluids including oil from the formation via the production well until the fluid being recovered comprises a predetermined amount of water.

4,513,820

METHOD OF EXTRACTING AND REUTILIZING SURFACTANTS FROM EMULSIONS

Jim Maddox, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,579
Int. Cl.³ E21B *43/22, 43/40*
U.S. Cl. 166—266 **22 Claims**

1. A method for extracting and concentrating enhanced oil recovery surfactants into a relatively small volume surfactant-rich middle phase from produced emulsions comprising oil, water and surfactant, which comprises:

mixing a produced emulsion with an extracting compound solution of water containing about 0.3% to about 6.0% of an extracting compound selected from the group consisting of the alkali metal salts and ammonium salts of propyl benzene sulfonate, cumene sulfonate, ethyl benzene sulfonate, methyl ethyl benzene sulfonate, diethyl benzene sulfonate, methyl propyl benzene sulfonate, xylene sulfonate and dicyclopentadiene sulfonate; and

allowing the mixture of produced emulsion and extracting compound solution to separate into at least three phases, including a substantially surfactant-free and water-free crude oil phase, a relatively low volume middle phase containing surfactant, oil and water, and an oil-free aqueous phase.

4,513,821

LOWERING CO_2 MMP AND RECOVERING OIL USING CARBON DIOXIDE

Winston R. Shu, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 3, 1984, Ser. No. 576,696
Int. Cl.³ E21B *43/16, 43/20*
U.S. Cl. 166—273 **10 Claims**

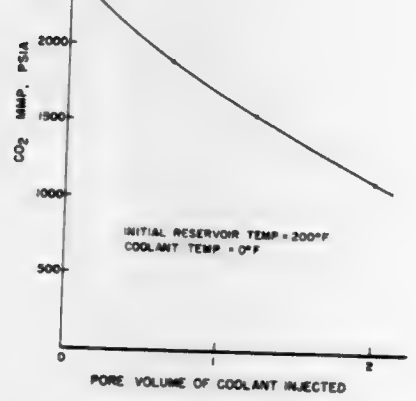
1. A method for the recovery of oil from a subterranean, oil-containing formation penetrated by at least one injection

well and at least one spaced-apart production well and having fluid communication therebetween, comprising the steps of:

(a) determining the minimum miscibility pressure at the temperature of said formation at which carbon dioxide will misicibly displace said formation oil;

(b) injecting a sufficient amount of coolant, substantially immiscible on first contact with said oil, into the formation via said injection well to lower the temperature of the formation between the injection well and production well to a temperature correspondig to a predetermined lower CO_2 minimum miscibility pressure;

(c) injecting a fluid into said formation to pressurize said



formation to a pressure at least equal to the predetermined lower CO_2 minimum miscibility pressure of step (b) at which miscibility exists between said carbon dioxide and said oil;

(d) injecting into said formation via said injection well a slug of carbon dioxide at said pressure of step (c) in an amount sufficient to establish a miscible transition zone of said slug with said formation oil;

(e) injecting a drive fluid into said formation via said injection well to drive the carbon dioxide and oil through the formation towards said production well; and

(f) recovering oil displaced by the carbon dioxide from the formation via the production well.

4,513,822

ANCHOR SEAL ASSEMBLY

Bruce Gilbert, Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.

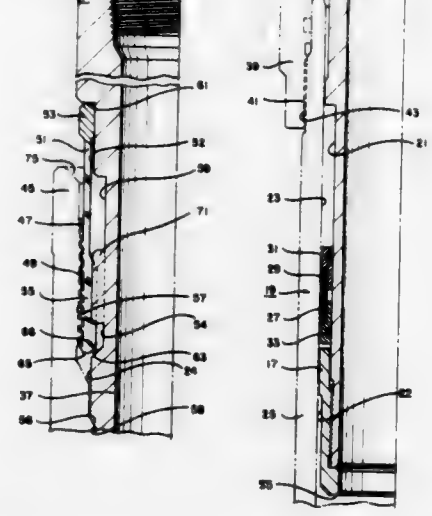
Filed Jun. 9, 1983, Ser. No. 502,829
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—382 **3 Claims**

1. A method of anchoring a string of production tubing within the bore of a packer to provide a seal between the packer bore and the production tubing, comprising the steps of:

providing a collet carrying tubing sub formed from a single piece of tubular conduit to eliminate potential leak paths, said tubing sub having an upper internally threaded connecting end for connection within a tubing string extending from the well surface, a collet receiving recess formed within the exterior surface of said tubing sub of lesser relative external diameter than said upper connecting end, and a lower end;

providing a threaded collet for circumscribing a portion of the exterior of said tubing sub, said collet having a collet base and externally threaded collet fingers for matingly engaging a threaded interior surface within said packer bore;

installing said collet on the exterior of said tubing sub by sliding said collet base first over said tubing sub lower end and expanding said collet fingers radially outwardly until said collet fingers are received within said recess, said tubing recess having a shoulder area at one end thereof for contacting said collet base and having a ramp area at the opposite end thereof for contacting said collet fingers, said collet being freely received within said recess prior to engaging said packer bore; and



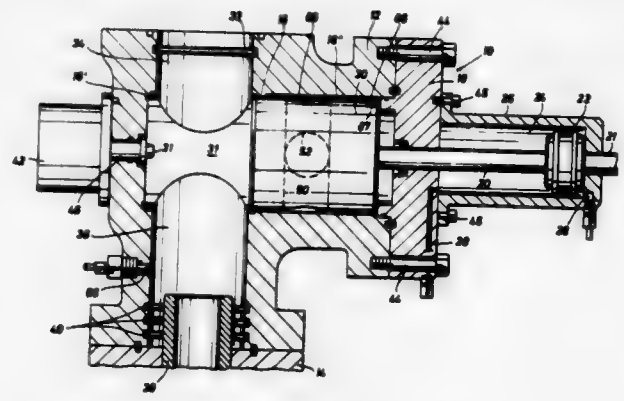
stabbing said tubing string downwardly into said packer bore whereby said collet base contacts said tubing recess shoulder area and said threaded collet fingers ratchet into engagement with said threaded interior surface to anchor said tubing within said packer bore.

4,513,823

CYLINDRICAL GATE VALVE APPARATUS AND METHOD

Joseph H. Hynes, Houston, and Charles D. Morrill, Humble, both of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Nov. 4, 1983, Ser. No. 549,201
Int. Cl.³ E21B *33/02, 43/12;* F16K *31/00*
U.S. Cl. 166—386 **18 Claims**



1. A valve comprising,

a housing having a vertical housing passage and a lateral housing passage, said vertical and lateral passages intersecting each other,

a cylindrical gate disposed in said lateral passage, said gate having a first gate passage disposed through it of a diameter smaller than that of said vertical housing passage,

means for laterally moving said gate within said lateral passage between two lateral positions:

a first lateral position where said gate is in the intersection of the vertical housing passage and the lateral housing passage, and

a second lateral position where the gate is out of the intersection of the vertical housing passage, thereby allowing full diameter access through the vertical housing passage, and

means for angularly rotating said cylindrical gate when it is in the first lateral position for angularly orientating said gate between at least two angular positions:

a first angular position where said first gate passage is coaxial with said vertical housing passage thereby allowing fluid flow from a lower portion of the vertical housing passage to an upper portion of the vertical housing passage via the first gate passage, and

a second angular position where a portion of said gate having no passage through it prevents upward fluid flow from a lower portion of the vertical housing passage via said gate passage.

16. In a well having a wellhead to which is attached a safety valve housing having an upper vertical housing passage and a lower vertical housing passage, the lower passage communicating with the wellhead, and each of the upper and lower vertical passages being open to a lateral passage in the housing, a laterally movable cylindrical gate disposed in said lateral passage, said gate having a first gate passage disposed through it of a diameter smaller than that of said vertical upper and lower passage, and means for laterally moving said gate within said lateral passage between a first lateral position where said gate is in the intersection of the upper and lower vertical passages and the lateral housing passage and second lateral position where the gate is out of the intersection of the vertical housing passage, and means for angularly moving said gate when in the first lateral position to a first angular position where said first gate passage is aligned with said upper and lower vertical housing passages or to a second angular position where said first gate passage is rotated substantially ninety degrees from the first angular position, the housing having a blowout preventer removably attached to the upper part of the housing with the vertical flow path of the blowout preventer communicating with the upper vertical housing passage of the safety valve, the diameter of the vertical flow path of the blowout preventer being substantially the same as or greater than that of the upper and lower vertical housing passages of the safety valve,

a method for controlling the well during installation of production tubing and a Christmas tree comprising the steps of,

setting tubing in the well through the blowout preventer and upper and lower vertical housing passages while the cylindrical gate is in the second lateral position,

laterally moving the gate to the first lateral position,

angularly moving the gate to the second angular position until the vertical fluid flow path to the upper vertical housing passage from the tubing is closed vertically,

removing the blowout preventer from the upper part of the housing,

installing a Christmas tree to the upper part of the housing, and

angularly moving the gate to the first angular position where the first gate passage completes the vertical flow path from the tubing in the wellhead below to the Christmas tree above the safety valve housing.

4,513,824

FLEXIBLE HORSESHOE

Donald F. Ford, 2011 D Sierra Rd., Concord, Calif. 94518

Filed Nov. 18, 1983, Ser. No. 553,274

Int. Cl.³ A01L *3/02, 5/00*

U.S. Cl. 168—4 **4 Claims**

1. An improved horseshoe for mounting on the hoof of a horse comprising:

a molded base, formed of a plastic material, for providing contact surface between the hoof and the ground;

a plurality of outer slot portions formed along a first surface of said base for supporting the hoof, each of said outer slot portions having a bumper lip for snugly fitting against the front of the hoof, with said plurality of outer slot portions spaced to allow the bending of the horseshoe to conform to the shape of the hoof while the lip molds the horseshoe to the hoof during the fastening of the horseshoe to the hoof;

a plurality of inner slot portions supporting the hoof spaced to allow the bending of the horseshoe to conform to the shape of the hoof; and,



a flex joint comprising a narrowed section of said base for allowing the horseshoe to flex with the hoof upon impact with the ground.

4,513,825

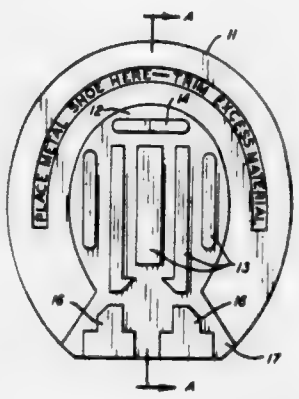
HORSESHOE FULL PAD

William Murphy, 19 Sherman Ave., Exeter, N.H. 03833

Filed Jan. 23, 1984, Ser. No. 573,063

Int. Cl.³ A01L *7/02*

U.S. Cl. 168—12 **8 Claims**



1. A horseshoe and pad affixed to a horse's hoof comprising a metal horseshoe having an open central portion and a cushioning full pad interposed between the hoof and the shoe, said full pad being of a molded foamed energy absorbing elastomeric plastic having a tough outer skin on both sides and a more resilient lower density core and being a sheet trimmed to said hoof, said sheet having on the turf side an integral central raised portion with stabilizer bars rising approximately to the height of said metal horseshoe.

4,513,826

HYDRAULIC CONTROL ARRANGEMENT FOR ACTUATING LIFTING MECHANISM OF AN AGRICULTURAL MACHINE

Werner Steprath, Dormagen, and Dieter Weigle, Urach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,969

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 3209396

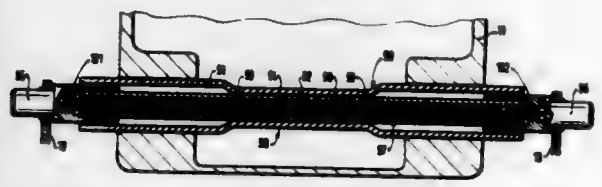
Int. Cl.³ A01B *63/112*

U.S. Cl. 172—7 **21 Claims**

1. A hydraulic control arrangement for actuating a lifting mechanism of an agricultural machine, comprising

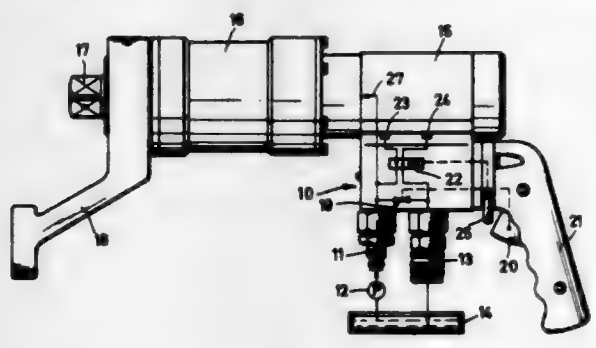
a hydraulic motor arranged to lift and lower at least one member of a lifting mechanism;

a hydraulic pressure medium source;
a directional control valve arranged to control said hydraulic motor;
a structural element having a bending elasticity arranged so that forces transmitted from said lifting mechanism member in a machine housing are at least partially transmitted via said structural element and the latter is bent when these forces are sufficient; and
a hydromechanical transformer having two parts movable relative to one another, and a hydraulic control circuit for controlling said directional control valve and arranged so that bending of said structural element is used by said transformer as an adjusting valve, said hydraulic control circuit providing



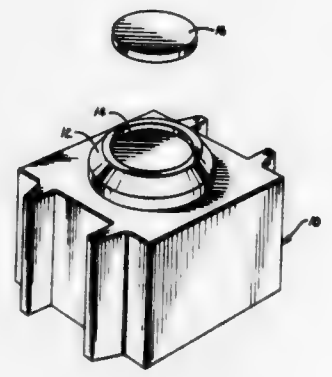
a pressure medium stream from said pressure medium source through said transformer, said structural element being directly formed by said parts movable relative to one another and influencing said pressure medium stream through said transformer, said parts including a first part which is hollow, has bending elasticity and is arranged to be exposed to the bending forces, and a second part which has less bending elasticity than said first part, is arranged so as to be free from exposure to the bending forces and is received in said first part, said second part being fixedly connected in at least one point with said first part, said first part having an end spaced from said at least one point, said second part having a free end formed with an adjustable throttle, said adjustable throttle being mounted in said end of said first part.

4,513,827
ROTARY TOOL
Oswald Dubiel, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to Paul-Heinz Wagner, Much-Birrenbachshohe, Fed. Rep. of Germany
Filed Apr. 13, 1983, Ser. No. 484,436
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214842
Int. Cl.³ B25B *23/145*
U.S. Cl. 173—12 **25 Claims**



1. A rotary tool comprising an input shaft and an output shaft, overload clutch means between said input and output shafts for selectively drivingly connecting and disconnecting said input and output shafts, said overload clutch means drivingly connecting said input and output shafts upon relatively low load conditions of said output shaft to effect a predetermined drive ratio between said input and output shafts, first and second reduction gear means between said input and output shafts for selectively varying said predetermined drive ratio upon an increase load condition of said output shaft to decrease output shaft speed and increase output shaft torque, said overload clutch means drivingly disconnecting said input and output shafts upon an increase load condition of said output shaft and overrunning clutch means between said first and second reduction gear means for drivingly connecting said first and second reduction gear means upon said overload clutch means drivingly disconnecting said input and output shafts whereby said output shaft is driven through said first and second reduction gear means from said input shaft to thereby decrease output shaft speed and increase output shaft torque, said overrunning clutch means includes first and second overrunning clutch members coupled to the respective first and second reduction gear means, said first overrunning clutch member being in driving relationship to said input shaft through said first reduction gear means, said first and second overrunning clutch members being drivingly connected upon said input shaft speed being greater than said output shaft speed, said first and second overrunning clutch members have surface portions in generally spaced telescopic coaxial relationship with clutch elements disposed therebetween, a first of said surface portions being generally cylindrical, and a second of said surface portions having a plurality of flats whereby the location of said clutch elements relative to said cylinder and flats effects the engagement and disengagement of said first and second overrunning clutch members.

4,513,828
PILE DRIVING CAP BLOCK CUSHION ASSEMBLY
Cecil C. Chappelow, Jr., and Thomas J. Byerley, both of Johnson County, Kans., assignors to Conmaco, Inc., Kansas City, Kans.
Filed Mar. 8, 1983, Ser. No. 473,268
Int. Cl.³ B23B *45/16*
U.S. Cl. 173—139 **13 Claims**



1. A pile driving assembly comprising:
a helmet adapted to be placed in overlying relationship to the pile being driven,
said helmet having a cone portion for receiving a cushion material; and
a fiber filled thermoplastic cushion material in particulate form disposed in said cone portion,
said cushion material undergoing partial deformation during a pile driving operation to form an encapsulated liquid center within said helmet,
whereby pile driving forces are transmitted through said thermoplastic material while some shock forces are absorbed by said material.

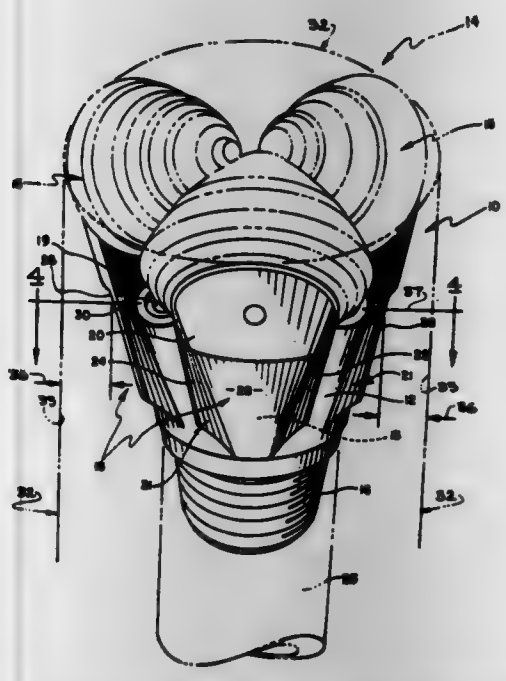
4,513,829
CHIP RELIEF FOR ROCK BITS
J. Randall Coates, Tonkawa, Okla., assignor to Smith International, Inc., Newport Beach, Calif.
Continuation-in-part of Ser. No. 337,929, Jan. 8, 1982,. This application Jan. 9, 1984, Ser. No. 569,060
Int. Cl.³ E21B *10/18*
U.S. Cl. 175—339 **2 Claims**

1. An air circulation, air lubricated, roller cone rock bit comprising:
a rock bit body having a first cutting end and a second threaded pin end, said body forming a chamber therein,

said chamber communicates with said circulation air through an opening formed in said second pin end, said pin end being connected to a drill string,

at least a pair of legs extending from said bit body, each leg forming a shirttail portion and a bearing, each bearing serves to support a roller cutter cone at said first cutting end of said bit, cutting elements adjacent the largest diameter of each roller cone form a gage of a borehole in a formation,

at least one nozzle formed in said bit body in communication with said chamber, said nozzle directs air past each roller cone into said borehole to lift detritus material out of the bottom of the borehole, and



relief means formed by said legs, said relief means serves to pass said detritus material from the bottom of said borehole by the rock bit body and out of said borehole by providing an annular space between an outer surface of said legs and walls formed by said borehole, said annular space, in a plane perpendicular to an axis of said bit, about adjacent an exit end of said at least one nozzle, is thirty-five percent or more of the area formed by said borehole through said plane, said annular space progressively enlarges in perpendicular planes between said exit end of said at least one nozzle and a shoulder formed in said bit body, said shoulder forms a thread termination base end for said second threaded pin end of said rock bit.

4,513,830

METHOD AND ARRANGEMENT FOR DETERMINATION OF VALUES RELATING TO THE MASS OF A FLOW OF MATERIAL

Sven-Eric Persbeck, Torslanda, and Bert Almqvist, Göteborg, both of Sweden, assignors to Utvecklingsaktiebolaget Teccon, Torslanda, Sweden

Filed Jan. 13, 1983, Ser. No. 457,586

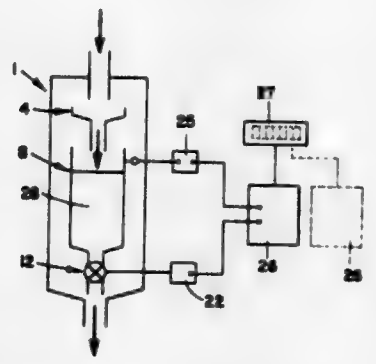
Claims priority, application Sweden, Jan. 20, 1982, 8200284

Int. Cl.³ G01G *17/00, 11/14, 13/24*

U.S. Cl. 177—1 **4 Claims**

1. A method for determining the weight of a fluid material by passing the same through a weighing apparatus having a single container provided with inlet and outlet means for receiving and discharging said material, comprising:

continuously directing said material into said container and periodically discharging the same from said container at a rate which exceeds the flow of material into said container, thereby to create successive collecting and discharge periods and causing the amount of said material in said container to change during collecting and discharge periods between a maximum weight at the end of each collecting period and a minimum weight at the end of each discharge period, weighing said container and its contents during collecting periods to obtain a series of values related to the increase of weight of the material during said periods and the length of said periods and the weight at the end of said periods immediately before the



start of said discharge period, and converting signals corresponding to said related values to determine the total weight of fluid flow by adding estimated weight values during said discharge periods on the basis of increased weight values at the end of said collecting periods.

4,513,831

WEIGHING SYSTEM

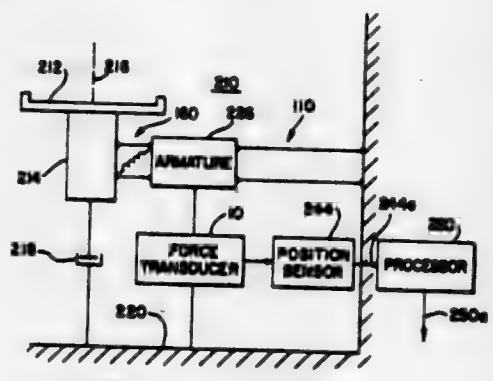
Shih-Ying Lee, Lincoln, and Dennis K. Briefer, Berlin, both of Mass., assignors to Setra Systems, Inc., Acton, Mass.

Continuation-in-part of Ser. No. 265,088, May 19, 1981, Pat. No. 4,382,479. This application May 9, 1983, Ser. No. 492,942

The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.

Int. Cl.³ G01G *23/06, 21/10, 3/14, 3/08*

U.S. Cl. 177—189 **19 Claims**



1. A weighing system comprising:

A. force input member for supporting an object-to-be-weighed,

B. a rigid armature member,

C. first linkage including means for coupling said armature and a reference member whereby said armature is constrained to motion substantially parallel to a reference axis, said reference axis being fixed with respect to said reference member,

D. mechanical means for coupling said force input member and said armature,

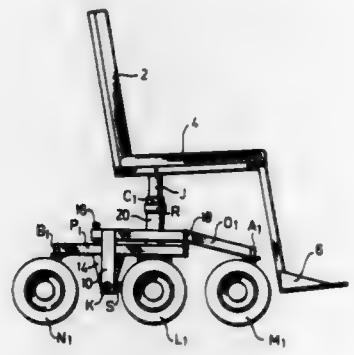
E. force transducer coupled between said armature and said reference member, said force transducer including a pair of complementary opposed surfaces having a mutual separation which is related to the force across said transducer, and

F. a position sensor for generating a signal representative of the separation between said complementary opposed surfaces of said force transducer.

4,513,832
WHEELED CHASSIS

Bo H. S. Engman, Sunds Bruk, Sweden, assignor to Permobil AB, Timra, Sweden

Filed May 3, 1983, Ser. No. 491,012
Claims priority, application Sweden, May 3, 1982, 8202763
Int. Cl.[3] B62D *61/10*
U.S. Cl. 180—6.5 12 Claims



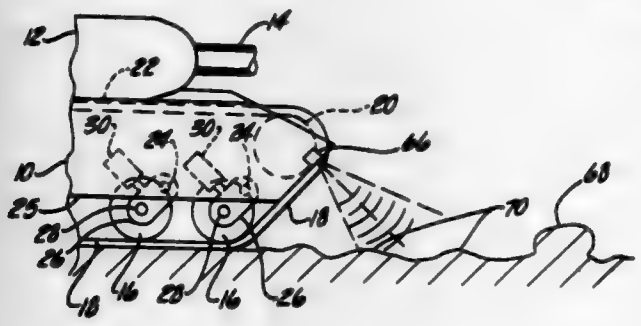
1. A maneuverable, motor-driven wheeled chasis, including a chassis structure carrying pairs of freely mounted support wheels separated in the longitudinal direction of the chassis, and a pair of drive wheels arranged between said support wheel pairs, characterized in that said chassis structure includes a first frame structure carrying a first pair of said support wheels and said pair of drive wheels, and a second frame structure pivotably connected to said first frame structure for movement in the vertical direction and carrying a second pair of said support wheels; said first frame structure including two parallel independently movably connected longitudinal members and said second frame structure similarly including two parallel independently movably connected longitudinal members connected at their ends to said first frame structure such that they are individually pivotable relative to it.

7. Chassis as claimed in claim 1, characterized in that means for driving the drive wheels are carried by the first frame structure and adapted such that the two drive wheels are drivable in the same direction, forwards or backwards, or in opposite directions for swiveling the chassis substantially about a vertical axis to enable optional alteration of the travelling direction of the vehicle.

4,513,833
CONTROLLED VEHICLE DAMPING

Daniel F. Sheldon, 23638 Oak, Dearborn, Mich. 48128

Filed Apr. 6, 1983, Ser. No. 482,694
Int. Cl.[3] B62D *55/00*
U.S. Cl. 180—9.1 5 Claims

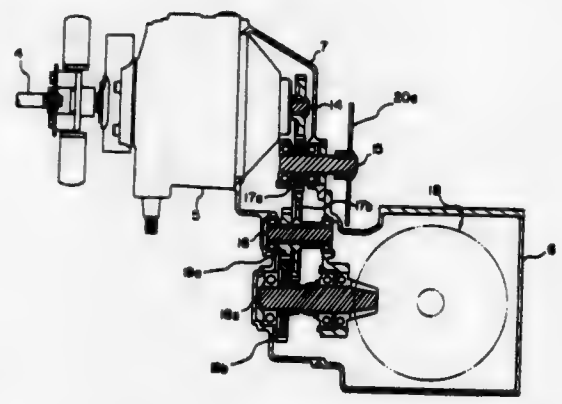


1. In a vehicle comprising a hull, a series of road wheels individually connected to the hull via swingable suspension arms, and a spring mechanism trained between each suspension arm and the hull to provide the vehicle suspension force: the improvement comprising separate unconnected hydraulic shock absorbers trained between the hull and selected ones of the suspension arms to exert dampener forces thereon during jounce motions of said suspension arms; each shock absorber comprising a liquid reservoir means (48), a cylinder means (34) and a piston (38) reciprocably movable in the cylinder means; said cylinder means and piston defining a variable volume chamber (46) that is pressurized during wheel jounce motion and depressurized during wheel rebound motion; check valve means (64) permitting substantially unrestricted flow into the variable volume chamber during rebound motion; metering valve means (54) controlling hydraulic flow out of the variable volume chamber during jounce motion; said reservoir means communicating with the check valve means and metering valve means to supply liquid to the variable volume chamber or accept liquid from said chamber; the reservoir, chamber, and valve means constituting a closed liquid system; and electrically-energized power means for operating the metering valve means between a high flow position and a low flow position, whereby the suspension arm movement rate can be varied in accordance with an electrical signal applied to said power means; each metering valve means comprising a rotary valve member located within the variable volume chamber in close adjacency to a boundary wall of the variable volume chamber, said rotary valve member and boundary wall having alignable ports (52, 56) therethrough, whereby rotation of the valve member changes the relative alignments of the ports, with corresponding changes in metered flow rate; said electrically-energized power means comprising a rotary servo motor mounted on the shock absorber outside the variable volume chamber; said motor having a rotary output shaft extending through said boundary wall to a driving connection with the rotary valve member.

4,513,834
AGRICULTURAL TRACTOR

Tetsuaki Hayashi, Osaka; Masahiro Kabu, Kawachinagano, and Nobuyuki Yamashita, Kitakyushu, all of Japan, assignors to Kubota, Ltd., Japan

Filed May 11, 1982, Ser. No. 377,178
Claims priority, application Japan, Jul. 31, 1981, 56-115028[U]; Aug. 3, 1981, 56-115923[U]
Int. Cl.[3] B60K *17/04*
U.S. Cl. 180—70.1 6 Claims



1. An agricultural tractor having front and rear wheels comprising:

an engine mounted at a front portion of the tractor;

a travelling transmission case mounted at a rear portion of the tractor and having an output shaft extending rearwardly therefrom;

differential case means for driving the rear wheels and for housing a differential drive shaft;

a driver's seat disposed above said differential case means; and

an elongated vertically oriented speed reduction case means for driving the rear wheels, said speed reduction case means operatively mounted between said travelling transmission case and said differential case means, said speed reduction case means housing a rear portion of said output shaft, a first transmission shaft, a second transmission shaft and a portion of said differential drive shaft;

said output shaft, first and second transmission shafts and

differential drive shaft each being arranged substantially vertically and serially;

said first transmission shaft including a portion extending rearwardly from said speed reduction case means and including brake means for braking said rearwardly extending portion of said first transmission shaft;

wherein said travelling transmission case, speed reduction case means and differential case means are rigidly interconnected by means defining a space between the front wheels and said differential case means for accommodating an implement therein; and

wherein said brake means includes a disc mounted on the rearwardly extending portion of said first transmission shaft and lever means having an elongated shape to apply a braking force to the disc, said brake means having a small dimension longitudinally of the tractor to define a utility space rearwardly of the brake means between the differential case means and the driver's seat for accommodating varied devices.

4,513,835

STEERING CONTROL APPARATUS

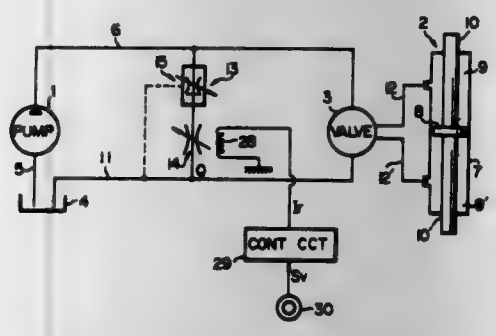
Masato Fukino, Yokohama; Tokiyoshi Yanai, Yokosuka; Hirotsugu Yamaguchi, Chigasaki, and Yutaka Aoyama, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 31, 1983, Ser. No. 480,820

Claims priority, application Japan, Apr. 30, 1982, 57-72699; Apr. 30, 1982, 57-72703

Int. Cl.[3] B62D *5/08*

U.S. Cl. 180—142 9 Claims



1. A fluid-operated steering control apparatus for a power-assisted vehicle steering system for a vehicle having a steerable road wheel and a manually driven steering wheel, comprising

a steering pressure pump;

a steering power cylinder which comprises a piston coupled to said steerable road wheel and which has first and second fluid chambers formed across the piston, the piston being axially movable by a differential fluid pressure developed between the first and second fluid chambers;

a steering pressure control valve intervening between said steering power cylinder and said steering pressure pump and operative to direct fluid under pressure from the steering pressure pump selectively to one of the first and second fluid chambers of the power cylinder and to drain fluid from the other of the fluid chambers at variable rates for developing a differential fluid pressure across said piston; and

fluid flow control valve means bypassing said pressure control valve and comprising

a valve member movable in first and second directions to provide increasing and decreasing the rate of bypass fluid;

solenoid-operated valve actuating means operative to actuate the valve member of the fluid flow control valve means to move in one of the first and second directions of movement thereof,

parameter detecting means for detecting a variable operational parameter of the vehicle and producing an output signal representative of the detected value of the operational parameter, and

a valve control circuit electrically connected to said valve actuating means and said parameter detecting means and comprising a plurality of signal generators each having stored therein a set of information representative of a predetermined relationship between said operational parameter and desired flow rates of fluid through the fluid flow control valve means, the respective relationships represented by the sets of information stored in said signal generators being different from each other, each of the signal generators being responsive to the output signal from said parameter detecting means and being operative to produce an output signal representative of a target flow rate of fluid through the fluid flow control valve means in response to the output signal from said parameter detecting means, said valve actuating means being operative selectively on the basis of one of the respective output signals from said signal generators.

4,513,836

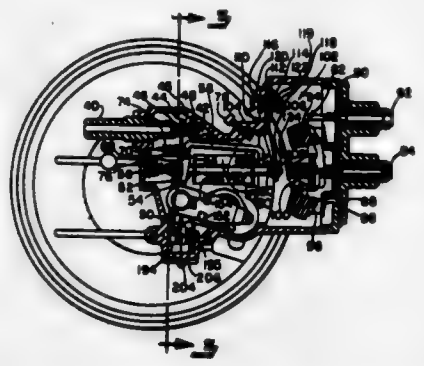
VEHICLE SPEED CONTROL

William A. Treadwell, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 50,237, Jun. 20, 1979, Pat. No. 4,346,775. This application Jun. 18, 1982, Ser. No. 389,656

Int. Cl.[3] B60K *31/00*

U.S. Cl. 180—177 2 Claims



1. A vehicle control mechanism having electrically operated means for rendering said control mechanism operable, switch means controlling the operation of said electrically operated means and having a normal condition and an actuated condition, and speed sensing means operable in response to the vehicle speed for operating said switch means, wherein the improvement comprises,

(a) a first elongated resilient switch leaf having one end mounted on a first support surface, said first switch leaf being flexibly mounted to said first support surface, said first switch leaf having an extension member extending outwardly therefrom;

(b) a first contact member mounted on a free end of said extension member,

(c) a second elongated resilient switch leaf having one end mounted on a second support surface, said second support surface being spaced from said first support surface, said second switch leaf being flexibly mounted to said second support surface;

(d) a second contact member mounted on said second leaf, and

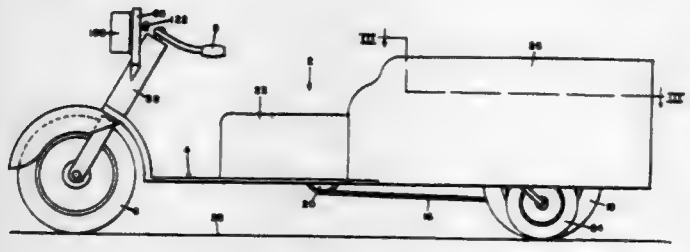
(e) whereupon said speed sensing means effects actuation of said switch means by deflecting a free end of said first resilient switch leaf toward a free end of said second resilient switch leaf until said first contact member abuts said second contact member, and thereafter simultaneously deflects both said switch leafs to effect a generally transverse wiping action between said first and second contact members while maintaining said abutting relationship therebetween.

4,513,837

MOTORCYCLE WITH OUTRIGGER WHEELS

Farley J. Archer, 508 Ida, Lansing, Kans. 66043

Filed Jul. 25, 1983, Ser. No. 516,919
Int. Cl.³ B62D *61/12*
U.S. Cl. 180—209 **7 Claims**



1. A system for stabilizing a two-wheeled self-propelled motorcycle vehicle against lateral overturning, said vehicle having a steerable front wheel and a powered rear drive wheel normally disposed in the same vertical plane, said stabilizing system comprising:

a. a pair of outrigger wheels carried by the vehicle frame for vertical movement relative thereto and disposed respectively at opposite sides of said drive wheel in laterally outwardly spaced relation therefrom,

b. wheel extension means operable to move said outrigger wheels downwardly into engagement with the roadway surface when their use is desired, said wheel extension means comprising spring means biasing said outrigger wheels to their extended position, and

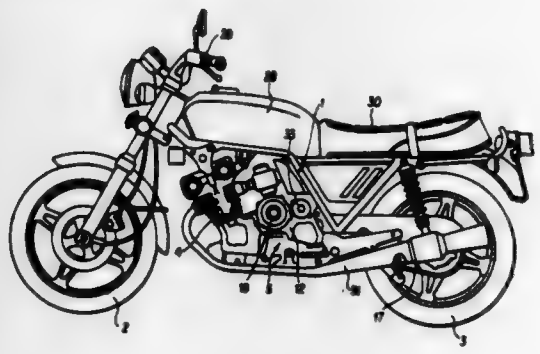
c. wheel retraction means powered by the vehicle drive system and operable when actuated to overcome and reverse the bias movement of said spring means, whereby to retract said outrigger wheels upwardly, said wheel retraction means constituting a fluid pressure system powered by the vehicle power plant and operable when actuated to overcome the bias of said spring means to retract said wheels, said fluid pressure system comprising a compressor operable when driven to deliver fluid under pressure to retract said wheels, an electric motor operable to drive said compressor and powered by the vehicle electrical system, an operating electrical circuit for said motor, and means operable to complete said motor circuit whenever retraction of said wheels is desired.

4,513,838

MOTORIZED TWO-WHEELED VEHICLE

Masaharu Tsuboi, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 350,350, Feb. 19, 1982, Pat. No. 4,462,482, which is a continuation of Ser. No. 101,110, Jun. 11, 1979, Pat. No. 4,331,212. This application Nov. 17, 1983, Ser. No. 552,953
Claims priority, application Japan, Sep. 25, 1977, 52-143214; Sep. 29, 1979, 52-129232
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.
Int. Cl.³ B60K *5/04*; B62M *9/00*
U.S. Cl. 180—219 **1 Claim**



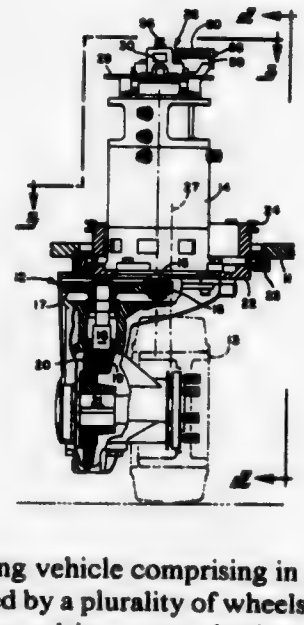
1. A motorized two-wheeled vehicle comprising a vehicle body frame having a front wheel and a rear wheel, an internal combustion engine positioned adjacent said front wheel having a crankshaft and a bottom portion, a transmission positioned rearwardly of the engine and driven thereby, characterized in that there is provided, between the crankshaft on the bottom portion of the engine and an input shaft on a front portion of the transmission, an intermediate shaft connected to the crankshaft in such a manner that the intermediate shaft is positioned above the crankshaft, and the intermediate shaft is provided on one end thereof with A.C. generator, on a middle portion thereof with a power transmission means from the crankshaft, and on a side portion thereof opposite said one end with a starter gear, and a starter motor connected to the starter gear is positioned at almost the same level with the intermediate shaft.

4,513,839

DISC BRAKE ARRANGEMENT FOR STEERING AND TRACTION UNIT

Robert A. Nieminski, and Walter R. Hinde, both of Philadelphia, Pa., assignors to Yale Materials Handling Corporation, Flemington, N.J.

Filed May 6, 1983, Ser. No. 492,113
Int. Cl.³ B60K *17/30*
U.S. Cl. 180—253 **6 Claims**



1. A material handling vehicle comprising in combination, a vehicle frame supported by a plurality of wheels, at least one of said wheels comprising a drive-steer wheel carried on an assembly rotatably journaled in said frame about a vertical steering axis, said drive assembly comprising a base member, an electric motor mounted vertically on said base member, the axis of said motor shaft being offset from the steering axis, a speed reduction gear train interposed between said motor shaft and said wheel for driving the wheel, means for rotating said drive assembly about the steering axis to steer said vehicle, a brake disc fixedly mounted on said motor shaft for rotation in a horizontal plane, a bracket rotatably mounted on said motor shaft adjacent said disc, a caliper brake secured to said bracket and operably cooperating with said disc to brake said drive-steer wheel, means to actuate the caliper brake, and means for connecting said brake bracket to the vehicle frame for grounding the reaction of said brake to the frame and permitting limited rotational movement of said bracket and caliper brake at various steering positions of the wheel.

4,513,840

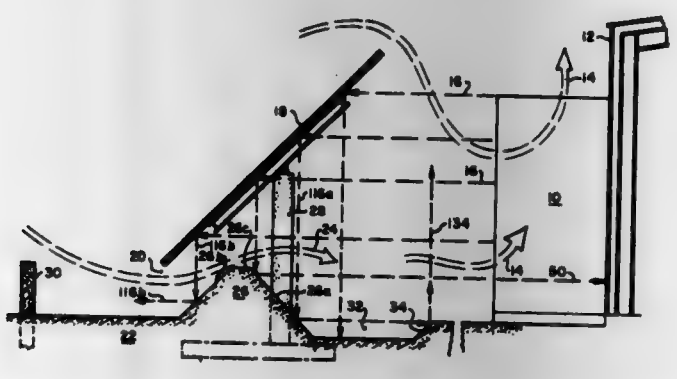
SOUND SUPPRESSION SYSTEM

Charles B. Johnson, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 13, 1983, Ser. No. 494,159
Int. Cl.³ B64F *1/26*
U.S. Cl. 181—210 **6 Claims**

1. A system for suppressing the sound emanating from ground based air breathing machinery, comprising

a solid, sound reflective barrier having a height in excess of said machinery and being supported in a vertically spaced apart relationship with the ground, said barrier being of an unbroken planar configuration, inclined toward said machinery at an angle of approximately 45° from the vertical, and defining an airflow slot with the ground for permitting the flow of air therebetween;



a plurality of vertical supports secured to said barrier for preventing the movement thereof; and

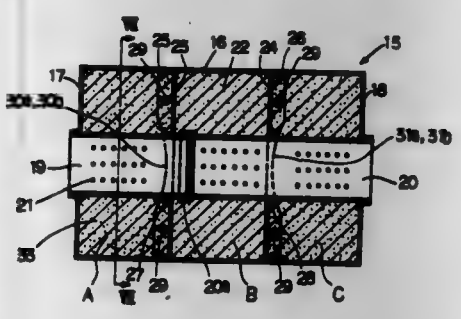
a dike located beneath said barrier and having a height in excess of the height of the lower end of said barrier for absorbing and reflecting any sound reflected downward therefrom, said dike running the entire length of said barrier.

4,513,841

MUFFLER FOR INTERNAL COMBUSTION ENGINES

Koji Shimoji, Okazaki; Suekiti Hangeisi, Toyota, and Keiji Itou, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Oct. 12, 1983, Ser. No. 541,282
Claims priority, application Japan, Apr. 1, 1983, 58-55286
Int. Cl.³ F01N *1/10*
U.S. Cl. 181—252 **10 Claims**



1. A muffler for absorbing noise created by an engine and transmitted therefrom through an exhaust pipe connected to the engine, comprising:

an outer cylinder;

end plates closing both ends of the outer cylinder and having openings therein;

inner pipes, being slidable relative to each other, inserted into the outer cylinder through the end plate openings and having a number of holes therein;

a plurality of separators for separating a space defined between the inner pipes and the outer cylinder, having outer flanges connected to the inner face of the outer cylinder and inner flanges connected to the outer faces of the inner pipes, the outer flanges having notches therein to provide for flexibility between the outer cylinder and the inner pipes; and

sound absorbing material in the space defined between the inner pipes, the separators and the outer cylinder.

4,513,842

CREDIT CARD HAIR COMB

Jerry J. Karlsberg, 4020 76th SE., Mercer Island, Wash. 98040

Filed Sep. 13, 1982, Ser. No. 417,129
Int. Cl.³ A45D *24/00*
U.S. Cl. 132—11 R **4 Claims**



1. A credit card hair comb comprising:

a thin, rectangular sheet of relatively rigid, but slightly flexible material having length, width and thickness dimensions substantially the same as the length, width and thickness dimensions of a credit card;

a plurality of teeth located along one of the edges of said thin, rectangular sheet of material, the end teeth of said plurality of teeth being substantially wider than the other teeth of said plurality of teeth and the length of said teeth near the ends of said plurality of teeth decreasing, said decrease in length being such that the profile of the joints between the teeth and the body of said thin, rectangular sheet of material is curved near the ends of said plurality of teeth;

fairing regions formed at the joints between the teeth and the body of said thin, rectangular sheet of material for reducing discontinuities and strengthening said joints; and,

removal assistance means located along the edge of said thin, rectangular sheet of material opposite the edge along which said teeth are located, said removable assistance means comprising a first rectangular depression of substantially constant depth having a tactilely textured bottom located on one side of said thin, rectangular sheet of material along the edge of said thin, rectangular sheet opposite the edge along which said teeth are located and a second rectangular depression of substantially constant depth having a tactilely textured bottom located on the other side of said thin, rectangular sheet of material along the edge of said thin, rectangular sheet opposite the edge along which said teeth are located, said second rectangular depression being aligned with said first rectangular depression and sized the same as said first rectangular depression, said first and second rectangular depressions creating a ridge along the edge of said thin, rectangular sheet of material opposite the edge along which said teeth are located.

4,513,843

RAILWAY CAR RETARDER FOR SHUNTING PURPOSES

Sten H. Danieli, Göteborg, Sweden, assignor to Carlfors Bruk E Bjorlund & Co., Huskvarna, Sweden

Filed Dec. 1, 1982, Ser. No. 445,962
Int. Cl.³ B61K *7/02*
U.S. Cl. 188—62 **10 Claims**

1. A railway car retarder for shunting railway cars having an actuating member which when contacted by wheels of a passing railway car will retard the speed thereof when said speed exceeds a pre-determined value comprising:

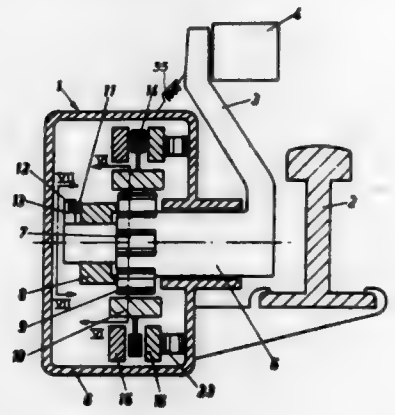
a housing member adapted to be mounted adjacent a railway track;

a shaft rotatably mounted in said housing;

an actuating member connected to said shaft and adapted to be engaged by a railway car wheel on which a railway car is moving;

a mechanical friction brake operatively mounted in surrounding relationship with respect to said shaft to produce a braking force when actuated; and

a speed-sensitive uni-directional clutch operatively interposed between said shaft and said brake so that said clutch will connect said shaft to said brake when the railway car



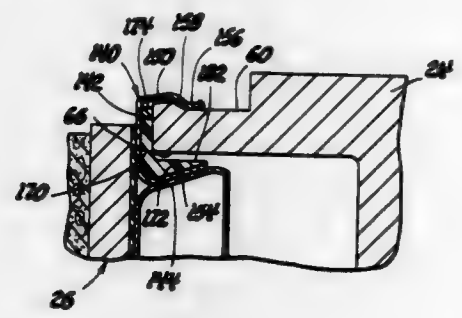
is moving in the direction in which the retarding is intended to be provided by the retarder and at a speed exceeding said pre-determined value.

4,513,844

DISC BRAKE SHOE RETAINER ASSEMBLY WITH INSULATION

Charles T. Hoffman, Jr., Waynesville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 7, 1982, Ser. No. 415,533
Int. Cl.³ F16D *65/84*
U.S. Cl. 188—71.6 **1 Claim**



1. For use in a disc brake, a disc brake shoe retainer assembly for holding a shoe to a disc brake actuating piston and providing noise and heat insulation, the piston having an annular end with an end surface adjacent the shoe to which the retainer assembly is attached, said retainer assembly comprising:

an annular retainer body formed to provide a channel-like configuration adapted to fit over the piston annular end, the channel-like configuration being defined by an outer peripheral side surface having means thereon for gripping the piston in retaining relation against movement axially away from the piston and fitting over an outer peripheral portion of the piston, an inner peripheral side surface arranged to fit within the piston annular end in inwardly spaced relation therefrom and having means thereon for gripping a suitable part of the shoe in retaining relation against movement of the shoe axially away from the piston, and a bottom surface adapted to be positioned axially between the end surface of the piston annular end and the shoe;

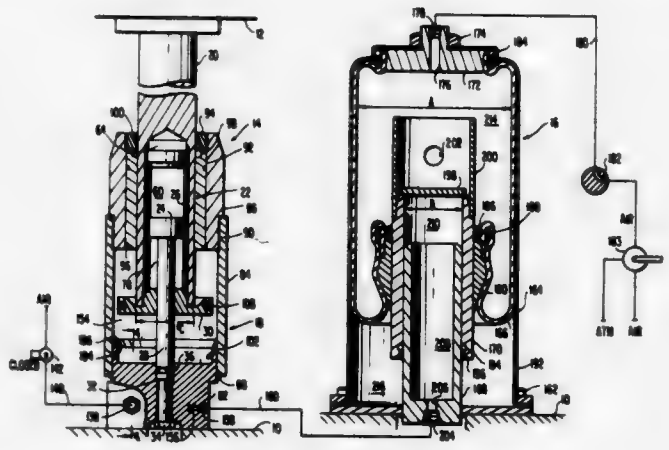
and insulation means received within said channel-like configuration and sufficiently coextensive with said bottom surface that the piston may transmit brake applying force from the end surface of the piston annular end through said insulation means and said bottom surface to the brake shoe when the disc brake is actuated, said insulation means being in surface engagement with said bottom surface and said inner peripheral side surface and engageable with the end surface of the piston annular end and radially spaced inwardly from the inner peripheral surface of the piston annular end when said retainer body is fitted to the piston.

4,513,845

SUSPENSION SYSTEM FOR A TILT CAB TRUCK

Robert Stephens, Brookfield, and Raymond Clark, Pewaukee, both of Wis., assignors to Applied Power Inc., Milwaukee, Wis.

Filed Nov. 24, 1982, Ser. No. 444,207
Int. Cl.³ F16F *9/06*; B60G *17/00*
U.S. Cl. 188—299 **5 Claims**



1. A suspension system for a tilt cab truck, said suspension system comprising:

(a) a plunger ending in a first piston;

(b) a cylinder which contains a first chamber having a first end and a second end, said plunger being slidably and sealingly received in the first end of said cylinder and said first piston being received in said first chamber, said first chamber having at least two portions having different cross-sections, a first portion adjacent the first end of said cylinder which receives said first piston in a fashion which permits passage of a working fluid around said first piston and a second portion adjacent the second end of said cylinder which slidably and sealingly receives said first piston;

(c) first fluid conduit means for conducting working fluid to and from said first portion of said first chamber;

(d) second fluid conduit means for conducting working fluid to and from said second portion of said first chamber comprising a first means of fluid communication leading from said second portion of said chamber to a reservoir for working fluid; and

(e) third fluid conduit means for blocking said second fluid conduit means, forming a hydraulic lock, when said first piston has seated itself against the end of said second portion of said first chamber comprising a normally open valve in said first means of fluid communication, said valve being opened by fluid pressure when said first piston enters said second portion of said first chamber, being closed when said first piston is seated against the end of said second portion of said first chamber, and being selectively openable when it is desired to break the hydraulic lock formed when said first piston has seated itself against the end of said second portion of said first chamber.

4,513,846

MOTION SNUBBING DEVICE

Toshio Yajima, Atsugi, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Aug. 19, 1983, Ser. No. 524,847
Claims priority, application Japan, Aug. 27, 1982, 57/148776
Int. Cl.³ F16F *7/10*
U.S. Cl. 188—380 **8 Claims**

1. A motion snubbing device provided between a supporting body and a supported body to permit low acceleration dis-

placements of the supporting and supported bodies relative to each other while restricting high acceleration displacements caused by a sudden external force, comprising:

a pair of cylindrical strut members capable of reciprocation relative to each other along the axial direction;

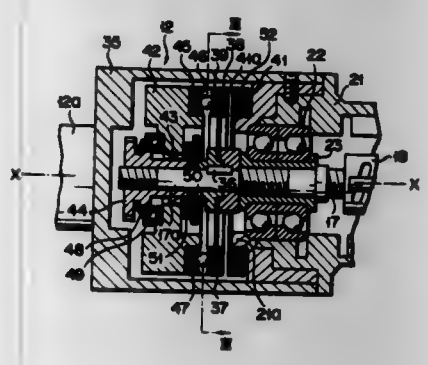
connecting means for connecting one end portion of one of said strut members to the supporting body and one end portion of the other strut member to the supported body;

motion converting means for converting relative reciprocation of both said supporting members into rotary motion;

a rotary shaft supported by one of said paired supporting members and capable of being rotated by said motion converting means;

a flexible member secured on said shaft and extending in the radial direction;

frictional wall means provided on one of said strut members



opposite to brake shoes provided on said flexible member on one side thereof;

an inertia mass provided so as to be freely rotatable on said rotary shaft opposite to said wall means and interposing said flexible member therewith;

resilient support means for supporting said inertia mass to be elastically movable in the axial direction of the shaft;

acceleration-responsive connecting means for connecting the flexible member and the inertia mass in such a manner as to rotate said inertia mass and said flexible member in unison in an ordinary condition and permit a delay of rotation of said inertia mass from that of said flexible member in response to a high acceleration displacement, thereby bringing said brake shoes provided on said flexible member into engagement with said frictional wall means in response to the delay motion of said inertia mass to restrict the rotation of said flexible member.

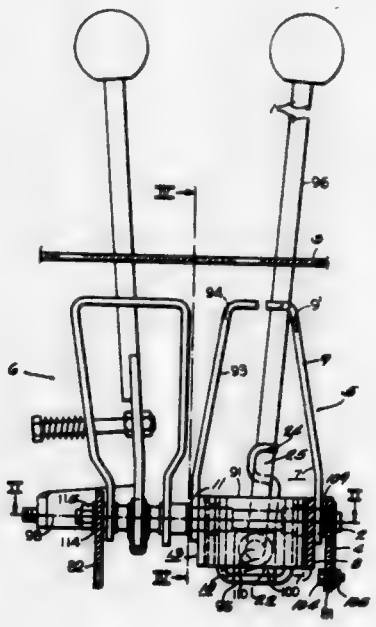
4,513,847

RANGE SHIFT AND PARK LOCK CONTROL

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 430,012
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A **6 Claims**

1. A range shift and park lock control mechanism for a vehicle transmission comprising, a control console, a control lever, a range shift control member, a park lock control member, means pivotally mounting said control members on a common axis on said control console, a pivot bracket pivotally mounted on said control console on said common axis, means pivotally mounting said control lever on said pivot bracket for movement about a pivot axis lying in a plane normal to said common axis, said control members having confronting portions disposed at opposite sides of said control lever defining notches selectively engageable by said control lever whereby said gear shift mechanism and said park lock mechanism may be selectively engaged by said control lever so as to be operated one at a time, a gate plate on said control console defining a slotted opening through which said control lever extends including a pair of parallel slots for guiding said control lever during movement to effect range gear shift and park lock control, respectively, a transmission including a park lock mechanism and a gear shift mechanism, means connecting said park lock mechanism to said park lock control member, means connecting said gear shift mechanism to said range shift control member and biasing means operatively interposed between



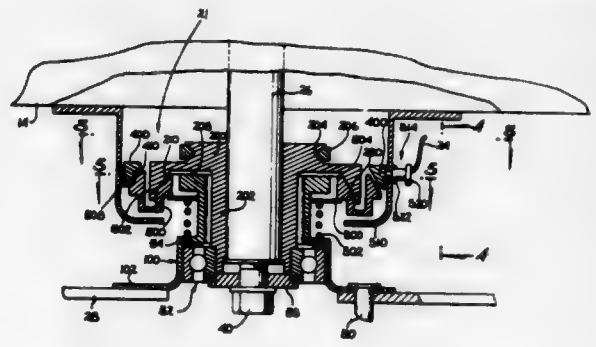
said pivot bracket and said control lever biasing the latter to pivot about said pivot axis toward said confronting portion of said range shift control member.

4,513,848

CLUTCH BRAKE ASSEMBLY FOR ROTARY LAWNMOWER

Ching P. Lo, Culver City, Calif., assignor to Amerosa Enterprises, Inc., Palos Verdes Estates, Calif.

Filed Jun. 15, 1981, Ser. No. 273,406
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—18 R **30 Claims**



1. A clutch assembly, for coupling and decoupling a rotary implement to a drive shaft, comprising:

a driving clutch member fixedly mounted to said drive shaft for rotation therewith;

a bearing having a first portion, secured for rotation with said driving clutch member and said drive shaft, and a second portion rotatable with respect to said first portion, said bearing secured against axial movement along said drive shaft;

a driven clutch assembly and said implement mounted for rotation with said second portion of said bearing;

said driven clutch assembly having a radially outwardly facing, combination conical wall and axial wall located radially inwardly of a corresponding and opposed radially inwardly facing combination conical wall and axial wall of said driving clutch member;

said driven clutch assembly being responsive to centrifugal force to move radially outwardly to cause said radially outwardly facing conical wall to engage said radially inwardly facing conical wall and slide axially and out-

wardly along the inwardly facing conical wall until the respective axial walls are engaged;

whereby said implement is centrifugally coupled with increasing frictional engagement for rotation with said drive shaft.

4,513,849

FRICTION CLUTCH

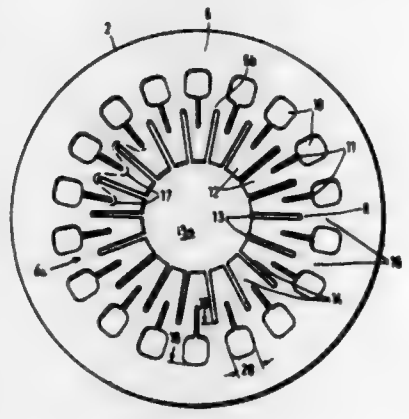
Wolfgang Reik, Bühl, Fed. Rep. of Germany, assignor to LuK Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,717

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204533

Int. Cl.³ F16B *13/44*; F16F *1/32*

U.S. Cl. 192—70.27 **15 Claims**



1. A friction clutch, comprising a cover; a pressure plate; a pair of annular seats adjacent to said cover; a diaphragm spring disposed between said seats and having an outer marginal portion located radially outwardly of said seats and engaging said pressure plate, a plurality of holes inwardly adjacent said marginal portion, webs alternating with said holes, an annular tension spring inwardly adjacent said holes and integral with said webs, an annulus of prongs disposed inwardly of said seats and said tension spring and defining a centrally located opening, and slots alternating with said prongs, said slots having inner ends communicating with said opening and closed outer ends disposed radially inwardly of said holes; fastener means extending through said holes and securing said spring to said cover; and actuating means for tilting said spring between said seats.

4,513,850

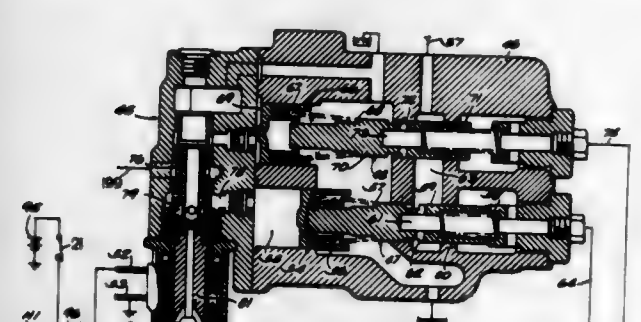
ELECTROHYDRAULIC POWER SHIFT TRANSMISSION SYSTEM

John R. Plate, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 9, 1983, Ser. No. 465,156

Int. Cl.³ F16D *25/10, 25/11*

U.S. Cl. 192—3.58 **2 Claims**



1. In a vehicle having an operator's station, a clutch pedal at the operator's station and a change speed transmission having hydraulically operated high and low speed clutches, an electrohydraulic transmission control system comprising:

a source of pressurized fluid,

a source of electrical energy,

a fluid supply control valve connected to said source of pressurized fluid and having a shiftable flow control element operatively connected to said clutch pedal,

pilot operated low and high speed clutch valves connected in fluid receiving relation to said control valve and in fluid delivery relation to said low and high speed clutches, respectively, each of said valves including a flow control element, a fluid pressure chamber and a shiftable plunger in the pressure chamber operable to shift the associated flow control element when said chamber is supplied pressurized fluid,

a solenoid valve connected to said source of pressurized fluid and to said pressure chambers and including a shiftable valve element resiliently biased to a low speed position in which pressurized fluid is supplied to said pressure chamber associated with the low speed clutch valve flow control element to position the latter to direct pressurized fluid to said low speed clutch, said solenoid valve including an electric coil and an armature which shifts, when said coil is electrically energized, to move said shiftable valve element to a high speed position in which pressurized fluid is supplied to said pressure chamber associated with said high speed clutch valve flow control element to position the latter to direct pressurized fluid to said high speed clutch, and

an electric control circuit interconnecting said source of electrical energy and said solenoid valve for controlling operation of the latter including

an electric relay operated switch,

an electric relay operable upon electrical energization to close said relay operated switch,

a clutch pedal operated switch shiftable from a normally closed position to an open position when said pedal is operated, and

a manually operated speed selecting switch intermediate said clutch pedal operated switch and said relay operated switch, said speed selecting switch having a low speed position of adjustment in which the speed selecting switch is open interrupting flow of electricity to said relay and to said relay operated switch whereby the latter opens, said manually operated speed selecting switch having a high speed position of adjustment in which said relay is electrically energized to close said relay operated switch and electricity flows to said solenoid valve electric coil and to said relay operated switch and said manually operated speed selecting switch having a neutral position of adjustment in which flow of electricity is permitted therethrough to said relay operated switch, said relay operated switch opening to cause said valve element of said solenoid valve to occupy its low speed position when said clutch pedal operated switch is in its open position.

4,513,851

COIN COUNTING AND RELEASE MECHANISM

Wells F. Stackhouse, Leesburg, Fla., assignor to American Locker Security Systems, Inc., Jamestown, N.Y.

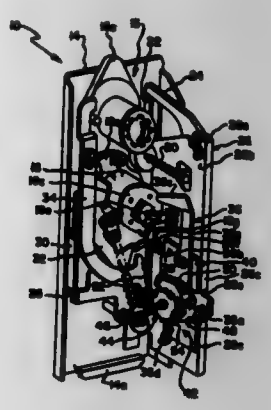
Filed Aug. 19, 1983, Ser. No. 524,537

Int. Cl.³ G07F *5/04*

U.S. Cl. 194—51 **18 Claims**

1. A multiple coin operated lock unit adapted for operation by a preselected number of coins of a given diameter and having a coin chute, a patron lock movable between unlocked and locked conditions upon sensing of a coin of said given diameter retained at a sensing station within said coin chute, a gauging surface adjacent said sensing station and retaining means adjacent said gauging surface and having coin gauging and release conditions corresponding to said unlocked and

locked conditions of said patron lock, said retaining means when in said gauging condition cooperating with said gauging surface to count the number of coins of said given diameter deposited in said coin chute for passage through said sensing station and to retain only a last deposited coin of said preselected number of coins of said given diameter in said sensing



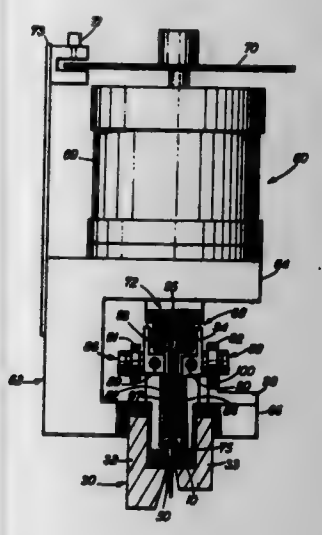
station, while permitting passage downwardly therebetween and through said sensing station of all previously deposited coins of said given diameter or of a smaller diameter of a like currency, and said retaining means when in said release condition releasing said last deposited coin for movement from said sensing station.

4,513,852

ORIENTING ASYMMETRICALLY SHAPED ARTICLES

Charles R. Fegley, Laureldale, and Joseph A. Tamashasky, New Philadelphia, both of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,581
Int. Cl.[3] B65G *47/24*
U.S. Cl. 198—399 3 Claims



1. Apparatus for reorienting at least one of a plurality of articles, each having a head and a body portion depending therefrom along a plane dividing the head asymmetrically wherein a first lateral portion has a first shape and a second lateral portion has a second shape, comprising:

means for guidably advancing the articles laterally to one another in a single file wherein the body portions are disposed with their respective dividing planes lying substantially along a common plane passing medially, longitudinally of a feed section of a track and each head has a first orientation when its first portion is facing in a first direction toward a first side of the track and a second orientation when its first portion is facing in a second, substantially opposite direction;

a turning station disposed in and containing a portion of the track, said station having means associated therewith for passing, blocking and turning the articles including:

a vertically extending housing having a lower portion rotatable in and containing the station track, there being wall segments adjacent the sides of said track with openings therein to accommodate blocking members;

a pair of blocking members suspended in the housing, such members having lower portions disposed at the station track, one in an active position in the track in the station and one in an inactive position out of said track such that an article entering the housing with the first orientation is guidably passed to a subsequent discharge section of the track and an article entering with the second orientation presents its first head portion having the first shape to the lower portion of the member in the active position and is blocked by said member from further advancement, said article also being so blocked that it further blocks advancement of the file before substantially any portion of a trailing article has entered the track in the housing;

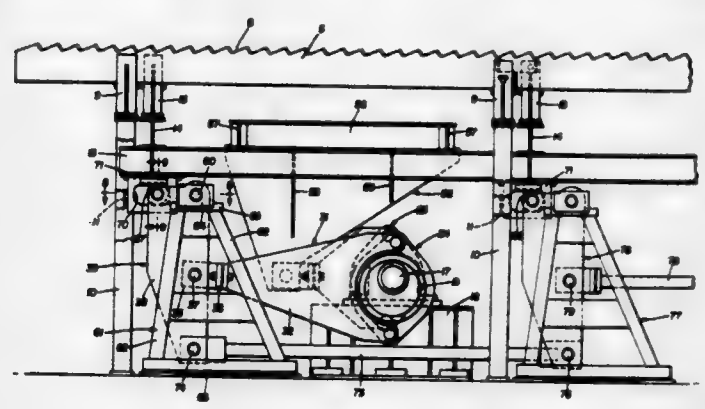
means for turning the housing with the station track and the blocked article therein sufficiently to engage a previously trailing end of the station track to the subsequent discharge track and for discharging thereto the turned article now having the first orientation, including on said wall segments of the housing, wedge portions which lead as the housing turns and engage arcuate portions of the wall segments against a trailing article to block the same from entering the station until the station is reset to pass or turn succeeding articles.

4,513,853

COOLING BED CONSTRUCTION

Otto H. Maier; James F. Seifert; John C. Ryder, all of Massillon, and William F. Grisez, Canton, all of Ohio, assignors to Maier Enterprises, Inc., Massillon, Ohio

Filed Sep. 27, 1982, Ser. No. 424,046
Int. Cl.[3] B65G *47/24*
U.S. Cl. 198—410 12 Claims



1. In an improved cooling bed construction of the type having a series of parallel, longitudinally horizontally extending notched beams, certain of which are fixed and certain others being reciprocally movable for advancing elongated bar material progressively along the fixed beams toward a discharge end, said improvement including: a single drive shaft extending transversely beneath the beams, reversible electric motor means for rotating said single drive shaft in forward and reverse directions, and first and second eccentric means mounted on the drive shaft and operatively connected to the movable beams for imparting reciprocal movement to the movable beams upon rotation of said drive shaft; the first eccentric means including a first disc eccentrically mounted on the drive shaft, a lever arm movably mounted on and reciprocally movable by the first disc, and a pivotally mounted bell-

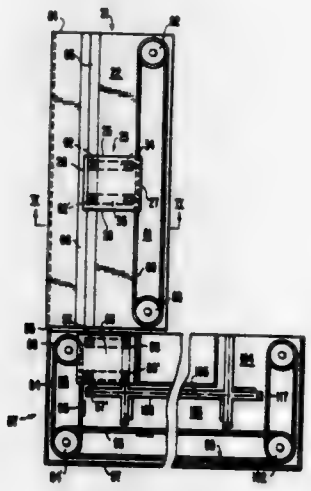
crank connected to and pivoted by the lever arm and operatively engageable with the movable beams for imparting a vertical raising and lowering motion on said movable beams upon rotation of the drive shaft; the second eccentric means including a second disc eccentrically mounted on the drive shaft and a lever arm movably mounted on and reciprocally movable by the second disc and operatively connected to the movable beams for imparting a horizontal reciprocating motion component to said beams upon rotation of the drive shaft; a series of notch means formed on the fixed and movable beams for holding the bars of material and for advancing said bars toward the discharge end upon reciprocal movement of the movable beams by rotation of the drive shaft in one direction and for turning the bars within their respective notch means without advancement upon rotation of the drive shaft in an opposite direction; and each of said notch means having a first surface extending downwardly in the forward direction of travel and a second surface extending upwardly in the forward direction of travel with said second surface having a smaller length and greater angle of slope than said first surface.

4,513,854

MACHINES FOR ASSEMBLING OR FOR MACHINING PARTS

Maurice Prodel, 153, rue de Verdun Carlepont, and Jacques Prodel, Rue de Cuts Carlepont, both of 60170 Ribecourt, France

Filed Mar. 3, 1983, Ser. No. 471,852
Claims priority, application France, Mar. 5, 1982, 82 03757
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—472 **30 Claims**



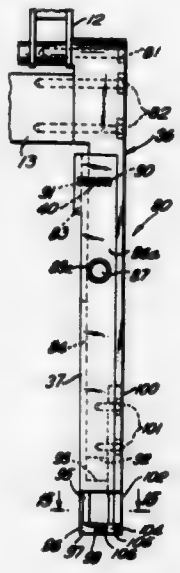
1. An installation for assembling and/or machining parts manually and/or automatically, the installation comprising a plurality of stations or modules through which part-carrying platens move along a path comprising successive horizontal path portions extending at right angles to one another, said platens being driven along successive path portions by successive belts which at least partially support the platens, wherein each module has as many belts as it has perpendicular path portions, with each belt comprising an endless loop having a driving portion and a return portion, said portions extending between a pair of vertical axis pulleys located in the vicinity of the ends of each path portion, with successive perpendicular endless loops being at different horizontal levels, whereby successive loops within a module share a common pulley having two loop-receiving grooves at said different levels, thereby enabling a single motor to drive all the endless loops within any one module.

4,513,855

SUBSTRATE ELEVATOR MECHANISMS

Ivan M. Fletcher, Clay Township, Hamilton County, and Gary W. Gladish, Buck Creek Township, Hancock County, both of Ind., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,347
Int. Cl.³ B65G *25/00, 65/02*
U.S. Cl. 198—473 **2 Claims**



1. An elevator mechanism for vertically transferring substrates between radial open-topped slots in a lower rotatable magazine and locations assigned to such substrates at the sides of an upper rotatable polygonal cage, said slots and locations being adapted by respective stepwise rotations of said magazine and cage about respective vertical axes therefor to by horizontally indexed transversely and laterally, respectively, past lower and upper transfer stations, respectively, and said mechanism comprising:

(a) a tray comprising:

(i) a frame adapted to hold substrates for carrying them between said slots and said locations;

(ii) a lug joined to the top of said frame nearer to one of its laterally opposite sides than the other,

(iii) a horizontal rod joined to said lug on one transverse side thereof and in vertically spaced relation from said frame,

(iv) and a tray tab forming a part of said rod which is salient from such lug in the direction opposite the saliency of said elevator tab from said stem and towards said other side of said frame, said tray tab being laterally and transversely offset from said lug and being on its underside of substantially cylindrical form,

(b) an elevator hook adapted to selectively engage and disengage with such tray and to move said tray vertically when engaged therewith, said hook comprising:

(i) a downwardly extending dolly arm,

(ii) a support arm disposed adjacent said dolly arm and extending downward generally parallel thereto, said support arm being pivotally coupled at its upper end to said dolly arm so as to be transversely rockable with respect thereto

(iii) a vertical stem fixed with, and projecting downward from, the lower end of said support arm,

(iv) a horizontal elevator bar fixedly joined to said stem on the front side thereof adjacent its bottom, such bar providing as part thereof an elevator tab horizontally salient from said stem, said elevator tab having an upper side laterally and transversely offset from said stem and in which is formed a horizontally extending substantially cylindrical groove adapted to receive and engage with the underside of said tray tab so as to move said tray vertically when said hook is so moved, the cylindrical groove on the top side of said elevator tab having a greater radius than that of the cylindrical surface of the underside of said tray tab so that said groove will

tend to retain said tray tab on said elevator tab in the event that said elevator tab becomes displaced from the horizontal,

(v) tray retaining means fixed to said dolly arm and including a retainer tab extending parallel to said elevator tab in frontwardly spaced relation therefrom, said tray retaining means providing between it and said stem and horizontal elevator bar a transverse gap laterally extending through said hook and adapted when opened wide to pass therethrough said lug of said tray,

(vi) spring means coupled between said dolly arm and rockable support arm and biasing the latter to urge said elevator bar in a direction which is towards said retainer tab and tending to close said gap therebetween so as to prevent separation between said tray and hook in the event of dislodgement of said tray tab from the upper side of said elevator tab; and

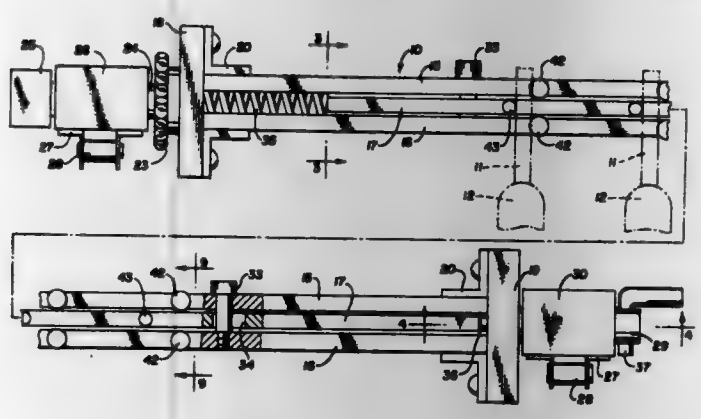
(c) endless belt conveyor means to which the upper end of said dolly arm of said hook is coupled, said conveyor means being adapted upon engagement of such tray tab with such elevator tab to convey said tray between said stations for purposes of transferring it and any associated substrate between said slots and said cage locations.

4,513,856

STICK TRANSPORT APPARATUS

Thomas F. Lowrance, 3601 Security St., Garland, Tex. 75040, and James B. Sharp, Edgewood, Tex., assignors to Thomas F. Lowrance, Dallas, Tex.

Continuation of Ser. No. 410,979, Aug. 24, 1982, abandoned. This application Jan. 17, 1984, Ser. No. 571,595
Int. Cl.³ B25G *25/00*
U.S. Cl. 198—695 **17 Claims**



1. A device for receiving and clamping a plurality of rod-like articles in fixed relationship comprising

an elongated housing having mounting means at each end; said housing having means on one side defining support surfaces, disposed in a common plane, for a plurality of longitudinally spaced, transversely oriented rod-like articles;

a plurality of longitudinally spaced abutment means projecting from said one side of said housing transverse to and beyond said support surfaces plane; each abutment means defining, with an associated support surface, a locating channel oriented transverse to said elongated housing for locating a single one of said rod-like articles in said transverse orientation;

an elongated clamping member mounted in said housing for relative longitudinal reciprocating movement; spring means urging said clamping member in one direction; cam means mounted on said clamping member for engagement by coacting cam means to move said clamping member in the other direction;

a plurality of longitudinally spaced clamping fingers projecting from said clamping member transverse to and beyond said support surface plane, each disposed in confronting coacting relation with one of said abutment means; and said spring means normally urging said clamping fingers toward respective abutment means, to clamp and confine rod-like articles in respective said locating channels;

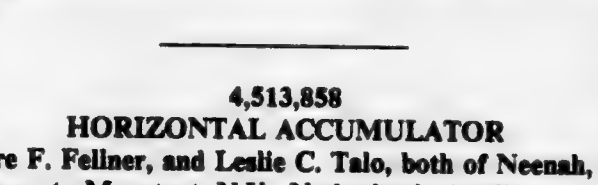
said clamping members being movable against the force of said spring means to space said clamping fingers from respective abutment means to define lateral access to said locating channels.

4,513,857

CONVEYOR LINKAGE

John M. Leach, P.O. Box 341, Port Jefferson, N.Y. 11777

Filed Aug. 4, 1982, Ser. No. 404,767
Int. Cl.³ B65G *19/14*
U.S. Cl. 198—716 **1 Claim**



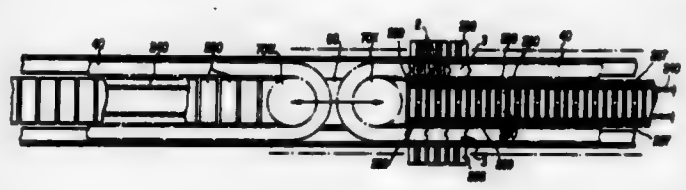
1. In a bulk material handling conveyor of the type in which bulk material is moved through a casing by flights each formed of a pusher disc suitably supported on a carrier having a ball socket on each side of each disc to receive one ball of a linkage having a ball on each end interconnected by a rod to form a universal joint between each rod end and each flight to thus form an extra flexible chain which can be driven through the casing by a suitable drive, the improvement which comprises a conveyor linkage as aforesaid including a steel rod the material of which has been heat treated independently of any other elements as specified by the steel manufacture to increase its tensile strength to the maximum, a diametrically enlarged threaded area on each end of the rod leaving an unthreaded part of the rod in between, two balls as aforesaid, both of which have been heat treated separately from the rod and each having a centrally positioned opening therein threaded to fit a threaded area on the rod and one of the balls threaded on each of the threaded areas of the rod, the rod threaded areas having root diameters of the threads at least thirty percent larger than the diameter of the unthreaded part of the rod, thus providing a linkage having uniform maximum tensile strength throughout its total length even when the tension is applied to the linkage through the ball and rod connection, and further characterized in that the terminus of each threaded part of the rod nearest to the unthreaded part of the rod is rounded off to form an extension of the spherical surface of the ball threaded upon it and thus eliminating a potential catch point for the edge of the ball socket.

4,513,858

HORIZONTAL ACCUMULATOR

Theodore F. Fellner, and Leslie C. Talo, both of Neenah, Wis., assignors to Mapatent, N.V., Netherlands Antilles

Division of Ser. No. 264,845, May 18, 1981, Pat. No. 4,413,724. This application Aug. 30, 1983, Ser. No. 527,838
Int. Cl.³ B65G *21/14*
U.S. Cl. 198—812 **17 Claims**



1. A power drive conveyor system for transporting a plurality of articles, comprising:

a horizontally oriented section for accumulating the plurality of articles;

an endless conveying means for transporting the plurality of articles along a horizontal serpentine path of movement

on the horizontally oriented section from a source to a destination;

said conveying means having a substantially continuous article supporting surface for permitting said articles to be infed onto and discharged from said conveying means on a continuous basis while said conveying means is in motion;

horizontally operated slide assembly means for reversibly extending the length of the serpentine path of movement of the endless conveying means on the horizontally oriented section;

a first plurality of fixed pulley wheel means, arranged on one end of the horizontally oriented section, for moving the endless conveying means around alternate fixed pulley wheel means and said slide assembly means along the serpentine path of movement on said horizontally oriented section; and

drive means for sequentially moving said slide assembly means and said endless conveying means associated therewith away from or towards said fixed pulley wheels to change the length of said accumulating section;

said drive means including an infeed drive mechanism and a discharge drive mechanism working in conjunction therewith, at least one of said infeed drive mechanism and said discharge drive mechanism comprising:

a first pulley wheel which directs said conveying means in a first direction along said horizontally oriented section;

a second pulley wheel which directs said conveying means below said horizontal plane in a direction approximately opposite to said first direction;

a third pulley wheel which directs said conveying means back to said first direction along said horizontally oriented section;

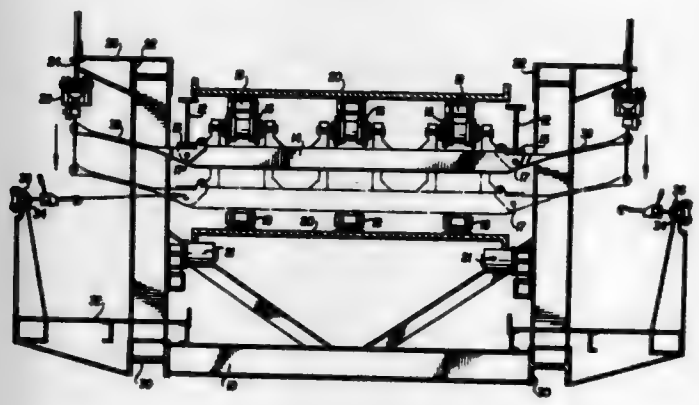
whereby the occurrence of slack is prevented in said conveying means and the required drive power is transmitted effectively and whereby the transported articles are accumulated on and discharged from the horizontally oriented section on a first-in, first-out basis, accumulated without any significant item back-pressure, and without any loss in orientation as delivered by the source and as required by the destination.

4,513,859

CONVEYOR WITH READILY REPLACEABLE ROLLER

Wallace H. Long, and Ralph Ruggiero, both of Tucson, Ariz., assignors to Duval Corporation, Houston, Tex.

Filed Nov. 19, 1982, Ser. No. 443,126
Int. Cl.³ B65G *39/10*
U.S. Cl. 198—842 **9 Claims**



1. A conveyor, comprising:

a substantially horizontal support frame comprising spaced first and second parallel horizontal members;

a roller-carrying bar extending between said first and second members, releasably secured to the undersides of said first and second members;

roller means secured on top of said roller-carrying bar;

an endless belt encircling said bar, and having a feed run supported by said roller means and a return run;

means for supporting said bar to allow said bar to be released from said first and second members and for lowering said bar so that said roller means is vertically clear of said first and second members; and

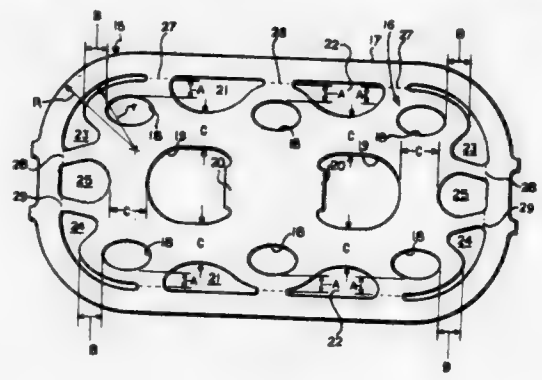
means for laterally moving said bar substantially perpendicular to said first and second members to move said roller means clear of said first and second members.

4,513,860

BOTTLE CARRIER

Roger R. Rhoads, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 9, 1983, Ser. No. 530,567
Int. Cl.³ B65D *85/62, 71/02*
U.S. Cl. 206—150 **10 Claims**



1. A bottle carrier for carrying a plurality of bottles having a body portion and a neck portion and a closure which is attached to the neck of the bottle which comprises

a generally flat blank formed of a material that is flexible and elastic,

said blank comprising a first part defining a central portion and a second part defining a band which is severable from the first part and is adapted to be stretched about a group of bottles,

said first part comprising a plurality of openings in spaced rows for receiving the necks of the containers and engaging the necks below the closures,

said carrier including webs between the bottle openings and the periphery of the first part,

the stress on the webs being less than 550 p.s.i., the stress being determined as follows:

$$\text{stress} = \frac{\text{package weight (lbs.)}}{\text{wed width (in.)} \times \text{thickness (in.)}},$$

any radii in the band being at least $\frac{1}{4}$" or greater,

the average stretch ratio of the band between the length of the band and the length of the periphery of the bottles engaged by the band is about 8% to 14%.

4,513,861

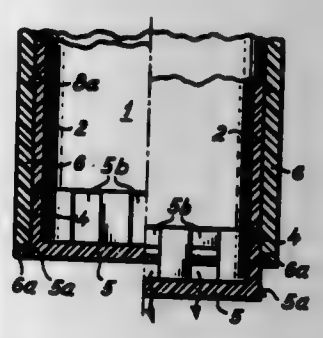
CARTRIDGE FOR CHEMICALS

Martin Baram, 13 Svanholmvej, DK-2660 Brondby-Strand, Denmark

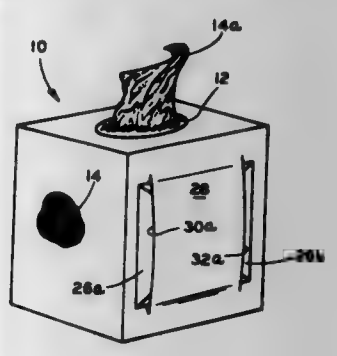
Filed Oct. 18, 1982, Ser. No. 435,107
Claims priority, application Denmark, Oct. 19, 1981, 4600/81
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—219 **12 Claims**

1. A cartridge for packaging, storing and dispensing chemical concentrates and similar materials, said cartridge being capable of submersion in any suitably dimensioned recipient container (B) by being inserted in a threaded neck (10,10*a*) thereof, said cartridge comprising a first cylindrical wall (6) with an outwardly extending flange (7) at its upper end, comprising also in overlaying relation a second cylindrical wall (1) extending in a frictionally sliding fit inside said first cylindrical wall (6) and having an integrated top wall (3) at its upper end and being generally open at its lower end, comprising further-

more a bottom piece (5 or 4,5) extending in a frictionally sliding fit inside said first cylindrical wall (6) abutting against said open lower end of said second cylindrical wall (2), comprising in addition fastening and sealing organs (5*a*, 6*a*, 8, 8*a*) inserted between on the one hand the first cylindrical wall (6) and on the other hand the second cylindrical wall (2) and said bottom piece (5 or 4,5) respectively, said organs being shaped and dimensioned to lock and maintain in sealed connection said cylindrical walls and bottom piece and thus to form a chamber (1) for the materials, said organs (5*a*, 6*a*, 8, 8*a*) being also shaped and dimensioned to permit a forced coaxial, downwardly oriented movement of said second cylindrical wall (2) and together with it of said bottom piece (5 or 4,5) relative to said first cylindrical wall (6) when the cartridge is inserted in said threaded neck (10, 10*a*) of said recipient container (B) and almost totally submerged therein with said flange (7) abutting against the upper rim of said neck (10, 10*a*) and when a fittingly threaded cap (H) belonging to said recipient container (B) is screwed onto said neck (10, 10*a*) pressing against said top wall (3) and thus said second cylindrical wall (2) together with said bottom piece (5, or 4,5) downwardly to create an opening at the lower end of said first cylindrical wall (6) for the discharge of the materials.

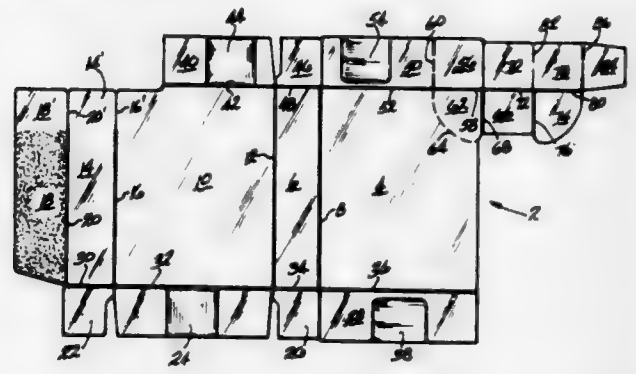


4,513,862
SCENTED TISSUE-DISPENSING CONTAINER
Peter Mallow, 450 Seventh Ave., New York, N.Y. 10123
Filed Mar. 18, 1983, Ser. No. 476,765
Int. Cl.³ B65D *5/08*
U.S. Cl. 206—233 **1 Claim**



1. A tissue-dispensing container of cardboard construction material of the type having walls including opposite side walls bounding a storage compartment and a stored supply stack of horizontally oriented absorbent paper tissues disposed in said storage compartment for removal one-at-a-time from the top of said stack, the improvement thereto comprising, in combination, a selected scent disposed in a porous cardboard packet of slightly smaller size than one said container side wall, and an operative position of said porous cardboard packet in physical contact with the edges of said horizontally oriented tissues which form the side of said absorbent supply stack of tissues so as to establish by said physical contact a seal against loss of fragrance from said container, said operative position consisting of an interposed position of said packet between said tissue supply stack and one said side wall so as to contribute to the transfer of the scent from said packet to said absorbent supply stack of paper tissues, said operative position being maintained by the projection of opposite sides of said packet through cooperating vertically oriented slits in said container side wall, whereby tissues removed from said container exhibit said scent by reason of said scent-absorbing adjacent position with said packet while said confined storage compartment for said tissues contributes to prolonging the time duration of the availability of said scent in said tissues.

4,513,863
FLIP TOP DISPENSER CARTON
Joseph F. Schillinger, Fulton, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Nov. 18, 1983, Ser. No. 552,926
Int. Cl.³ B65D *85/10, 85/12*
U.S. Cl. 206—264 **6 Claims**



1. A carton formed from a one-piece paperboard blank, said carton comprising front and back walls interconnected by opposed side walls and said carton having a pivotable top closure comprising:

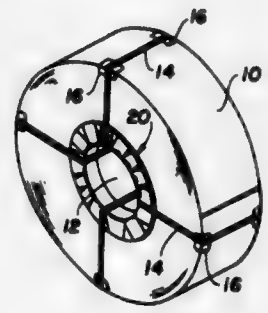
(a) a pair of wing panels, one of said wing panels being connected to one of said front and back walls by a rupturable interrupted cut score line, and the other of said wing panels overlying the other of said front and back walls;

(b) an outer closure panel foldably connected to each of said wing panels, said outer closure panel overlying one of said side walls;

(c) a plurality of top closure flaps foldably connected to said wing panels and said outer closure panel, said top closure flaps being overlapped and adhesively secured together; and

(d) at least one of said top closure flaps being foldably connected to a top cover flap which, in turn, is foldably connected to one of said front and back walls.

4,513,864
INTERIOR CORE PROTECTOR
Henry L. Liebel, Cincinnati, Ohio, assignor to Signode Paper Products Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 458,996, Jan. 18, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 598,220
Int. Cl.³ B65D *85/66*
U.S. Cl. 206—396 **9 Claims**



1. An interior core protector for positioning about the inner

circumference of a coil of material having a core to protect the material from damage, comprising:

a pair of rigid, preformed angles overlapping one another, and having first and second ends,

each said angle having a first leg and a second leg, said second leg having a plurality of spaced cuts therein extending from the angle to the outer edge thereof,

said first leg of each said angle being bendable whereby said first and second ends may be brought together to form an annulus,

the length of said angles being such that the circumference of said annulus is substantially at least as great as the circumference of the core,

said cuts in said second leg of each said angle widening on bending of said first legs permitting bending of said angles to conform to the circumference of the core,

said cuts in the second leg of one of said angles being offset with respect to the cuts in the second leg of the other of said angles so that when said interior core protector is operatively positioned in a coil of material each cut in either leg is covered by a portion of the other leg to provide protection for the coil of material around substantially the entire circumference of the core,

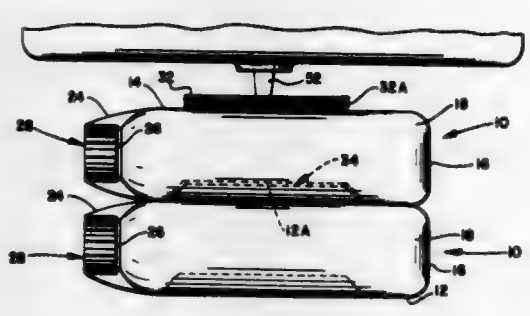
said angles having sufficient rigidity such that when said core protector is operatively positioned in a coil of material one of said second legs lies against the flat face of the coil and the other of said second legs lies against the said one of said second legs.

4,513,865

DISPOSABLE OIL DRAIN PAN AND CONTAINER COMBINATION

Edward R. Melzi, 3310 Ivanhoe La., Garland, Tex. 75042, and Arie Sharon, 1014 Wake Dr., Richardson, Tex. 75081

Filed May 20, 1983, Ser. No. 496,593
Int. Cl.³ B65D *21/02, 25/40, 81/36;* F16N *31/00*
U.S. Cl. 206—508 **1 Claim**



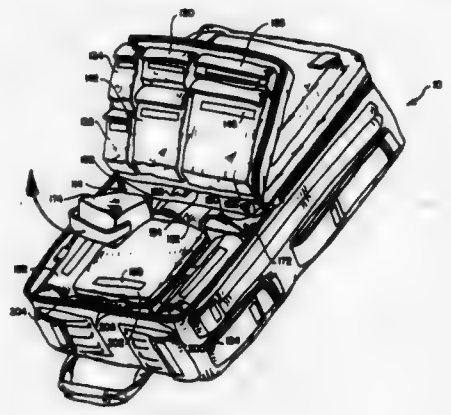
1. A container for collecting and storing a liquid such as motor oil and the like comprising a container body having a bottom panel and a top panel, said bottom and top panels being joined by sidewall panels thereby defining an interior reservoir, said top panel having a pour spout portion and a closure cap removably secured to said pour spout, and one of said sidewall panel members having a large diameter opening providing drainage access into said reservoir, and a large diameter closure cap removably secured to the sidewall portion of said sidewall panel member bounding said access opening, said large diameter closure cap projecting outwardly with respect to said sidewall panel member, said container wall having a sidewall panel member oppositely disposed with respect to the panel member in which the access opening is formed, said oppositely disposed panel member having a panel portion which is recessed inwardly toward said access opening, said recessed panel portion being generally conformed in depth and profile with said large diameter closure cap thereby defining a pocket whereby two or more of said container assemblies may be stacked together with the outwardly projecting closure cap of one container assembly being received in nesting engagement within the pocket defined by the recessed panel portion of another container assembly.

4,513,866

EMERGENCY MEDICAL PACK

Frank O. Thomas, 5167 South 600 East, Murray, Utah 84107

Filed Sep. 29, 1982, Ser. No. 428,103
Int. Cl.³ A45C *11/00*
U.S. Cl. 206—570 **25 Claims**



1. A medical pack for storing medical equipment, the pack comprising:

a body having a generally planar back with a plurality of sides extending upwardly from the peripheral edges of said back;

lid means forming a front on said back, said lid means being attached along a portion of one end thereof to at least one of said sides of said body, and said lid means being configured so as to provide a plurality of operable positions, each permitting user access to substantially all materials contained within the pack;

a connecting means for detachably securing said lid means along its remaining edges to said sides of said pack; and

at least one drawer pocket means located in the pack, each of said drawer pocket means securing a pouch within the pack, each said drawer pocket means being formed as a receptacle for said pouch with at least one side of each said drawer pocket means being capable of being opened such that said pouch is removable from the drawer pocket means, said pouch having a handle mounted to one end thereof for use in removing said pouch from said drawer pocket means, said pouch providing storage for medical equipment such that the medical equipment stored in the pouch is accessible by opening the drawer pocket neans when the pouch remains within the pack or by pulling on the handle to slide the pouch from the drawer pocket means of the pack.

9. An emergency medical pack for storing and transporting medical equipment to treat a seriously ill or injured person, the medical pack comprising:

a body having a generally planar back with at least three sides extending upwardly from the peripheral edges of said back;

lid means forming a front on said pack, said lid means being attached along a portion of one end thereof to one of said sides of said body, said lid means being configured so as to have operable positions of at least a closed position and a partially open position, said lid means being foldable at at least one position along its width so as to place it in said partially open position, the pack occupying substantially the same amount of surface space when the lid is in the partially open position as when the lid is in the closed position and user access to substantially all materials within the pack being permitted when the lid is in the partially open position;

a connecting means for detachably securing said lid means along its remaining edges to said sides of said pack; and

a plurality of pockets for securing and organizing medical equipment stored in said pack, at least one of said pockets being attached to said lid means and at least one of said pockets being attached to said body, at least one of said pockets attached to said body having an opening substan-

tially adjacent to said foldable position of said lid means so as to permit user access into that pocket when said lid means is in the partially open position, all of said pockets being oriented in the same direction within said pack when said pack is completely closed such that the contents of all of said pockets are accessible when said pack is in either the fully open or the partially open position.

4,513,867

SORTER FOR GRAINS, PULSES AND THE LIKE

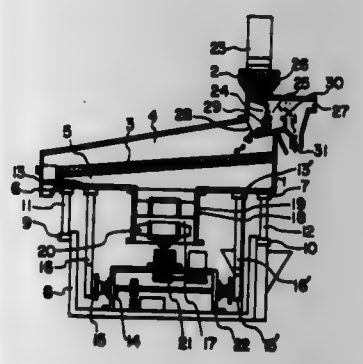
Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,235

Claims priority, application Japan, Jun. 16, 1981, 56-93217; Sep. 19, 1981, 56-148018

Int. Cl.³ B07C 5/34

U.S. Cl. 209—44.2 **6 Claims**



1. A sorter for granular material such as cereals, pulses and the like, the granular material comprising a mixture including complete grains each having a smooth outer configuration and liable to roll and damaged grains each having an irregular outer configuration, and said complete grains having a specific gravity higher than that of said damaged grains, said sorter comprising:

a movable frame;

a perforated sorting plate having a plurality of apertures therein and mounted on said frame for movement therewith and so as to be inclined longitudinally and laterally with respect to a horizontal plane in such a manner that said perforated sorting plate has a lower discharge end, an upper end, an upper side edge and an opposite lower side edge, said perforated sorting plate cooperating with said frame to define an air chamber below said perforated sorting plate, said apertures in said perforated sorting plate being in communication with said air chamber, said perforated sorting plate being corrugated so as to have a plurality of ridges having their respective ridgelines extending in generally parallel relation from said lower discharge end of said perforated sorting plate to said upper end thereof, said ridgelines being spaced from each other a distance at least equal to a size of each of said complete grains;

means drivingly connected to said frame for vibrating the same and therewith said perforated sorting plate;

means for supplying the mixture of complete grains and damaged grains onto an area of said perforated sorting plate adjacent to said upper end thereof, the inclination of said perforated sorting plate and the orientation of said ridgelines enabling the mixture of grains to flow down along said perforated sorting plate toward said lower discharge end thereof;

means disposed at said lower discharge end of said perforated sorting plate for receiving said grains; and

means for delivering pressurized air into said air chamber to cause the pressurized air to flow from said air chamber to a space above said perforated sorting plate through said apertures in the latter;

whereby, upon admission of pressurized air into said air chamber by said delivering means and upon vibration of said perforated sorting plate by said vibrating means, (a) said complete grains of the mixture supplied onto said perforated sorting plate are positively deflected toward said upper side edge of said sorting plate by said ridges on said sorting plate, and (b) said damaged grains of the mixture supplied onto said perforated sorting plate are, because of their high air resistance, subjected to upward force by the air flow through said apertures in said sorting plate, are floated up to a location further above the surface of said sorting plate than that of said complete grains, and are deflected toward said lower side edge of said sorting plate because of the higher specific gravity of said complete grains.

4,513,868

SORTING MACHINE

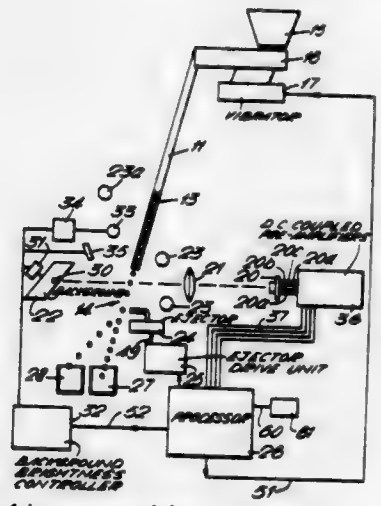
Michael J. Culling, Romford, and Benedict M. M. Deefholts, Kent, both of England, assignors to Gunson's Sortex Limited, London, England

Filed Oct. 14, 1981, Ser. No. 311,396

Claims priority, application United Kingdom, Jan. 19, 1981, 8101541; Jan. 19, 1981, 8101542

Int. Cl.³ B07C 5/342

U.S. Cl. 209—581 **28 Claims**



1. A sorting machine comprising:

viewing means for viewing objects to be sorted in a sorting zone to derive sorting signals indicative of whether light from at least a part of any object in at least one predetermined part of the spectrum is of an undesired character;

a background which is in the field of view of the viewing means;

feeding means for passing the objectis through the sorting zone and past the background so that the objects may be viewed against the background;

separating means, controlled by said sorting means, for effecting relative separation between any undesired objects which have been so viewed and the remaining objects;

means for periodically effecting temporary stoppages in the feeding means so as to stop the passage of the objects past the background;

examination means for periodically effecting an examination as to whether a predetermined relationship exists between said light in at least one predetermined part of the spectrum emanating from the background and the light in said part of the spectrum emanating from the average of the objects, said examination means comprising means for effecting, during passage of the objects across the background, a measurement representative of the average value of light which is simultaneously viewed by the viewing means both from the background and from the objects together, means for effecting, during a said stoppage a measurement representative of the value of light being viewed by said viewing means from the background alone, and means for comparing both said measurements to each other to determine whether said predetermined relationship exists; and

adjustment means, controlled by the examination means, for effecting, where necessary, an adjustment of the relative light coming from the background and the objects so as to tend to restore said predetermined relationship.

4,513,869

PEDESTAL CRANE MOUNTING SYSTEM

William E. Goudy, deceased, late of Gainesville, Tex. (by Ruth Goudy, administrator), assignor to Armco, Inc., Middletown, Ohio

Continuation of Ser. No. 348,028, Feb. 11, 1982, abandoned. This application May 17, 1984, Ser. No. 611,116

Int. Cl.[3] B66C *23/84*

U.S. Cl. 212—175 27 Claims



1. In a crane having a vertical pedestal with an upper end and a gantry structure with a boom attached thereto, mounting and slewing apparatus, comprising:

a fixed vertical shaft extending upwardly from the upper end of the pedestal;

a yoke connectable to a gantry structure;

a bearing cartridge supported on said vertical shaft, for providing rotation of the yoke and a connected crane gantry structure about the pedestal; and

means for supporting said yoke and attached crane gantry structure relative to the bearing cartridge, and for lowering the yoke and attached crane gantry structure to rest in support upon the upper end of the pedestal to permit removal of the bearing cartridge.

4,513,870

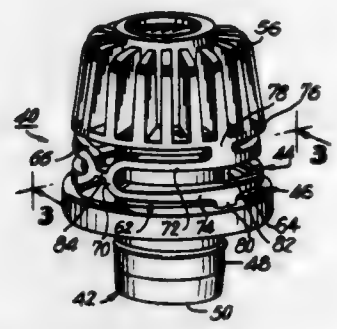
BOTTLE WITH A ONE-PIECE CORKING MEANS

Efim Zaltsman, Brooklyn, N.Y., assignor to Monarch Wine Co., Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 223,894, Jan. 9, 1981, abandoned, and Ser. No. 384,758, Jun. 3, 1982, Pat. No. 4,429,799. This application Feb. 3, 1984, Ser. No. 576,611

Int. Cl.[3] B65D *1/02, 55/16*

U.S. Cl. 215—31 11 Claims



1. For use with a bottle containing pressurized, carbonated, water-based, liquid contents and having: a body portion; an elongated neck portion; and a mouth portion, said neck portion having at least one circumferential squat, annular flange adjacent to the mouth portion;

a corking unit of a molded one-piece elastomeric plastic construction, said corking unit comprising:

(a) an elongated, generally circular, cylindrical sleeve, insertable with frictional engagement through the mouth portion into the neck portion of the bottle;

(b) a head connected to the sleeve;

(c) an annular, circumferential ring, shaped for reception on the neck portion of the bottle above the annular flange, said ring being positioned and spaced below the head as molded and being concentric with the sleeve, said ring being located above the flange upon initial reception of the sleeve on the neck portion with the ring above the flange, the internal diameter of the ring being slightly less than the external diameter of the flange and the ring being expandable when mechanically pushed down over the flange in order to descend past the flange and constrict below the flange so as to be captively retained on the neck portion of the bottle below the flange; and

(d) at least one set of flexible elongated tethers constituting a pair of tethers, each tether of said pair having one end connected to the ring and the other end connected to the head, said tethers joining the ring to the head, the points of connection of the tethers of each pair to the head being spaced from one another and the points of connections of the tethers to the ring being spaced from one another, the tethers of each pair being in a folded state as molded and each tether having a length as molded substantially greater than the distance between its ends as molded, each tether including at least a pair of branches and a retroverted bend interconnected thereby, at least one retroverted bend of one tether on the set having its closed end facing and adjacent to the closed end of the retroverted bend of the other tether and joined thereto by an energy-absorbing link molded in one piece with the tethers, said link assimilating a portion of the force that would tend to propel the sleeve away from the neck portion of the bottle upon removal of the sleeve from said neck portion.

4,513,871

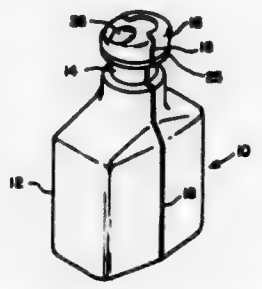
CONTAINER WITH INTEGRALLY FORMED NON-CORING AND NON-LEAKING PIERCING SITE

Eugene J. Meierhoefer, Hackettstown, N.J., assignor to Health Care Concepts, Inc., Allamuchy, N.J.

Filed May 30, 1984, Ser. No. 615,214

Int. Cl.[3] B65D *41/42*

U.S. Cl. 215—32 5 Claims



1. A blow molded sealed container of integral construction having a piercing site for penetration by a steel or plastic needle comprising:

a. a main body for containing or receiving a liquid;

b. a hollow neck portion extending from and communicating with the interior of said main body; and

c. hollow, fully enclosed main dome means formed on the opposite end of said neck portion communicating with the interior of said neck having a generally uniformly curved outwardly bulging shell of uniform thickness substantially circular in diameter greater than, and concentric with the central axis of, said neck, the outer surface of said shell having formed therein a needle penetration site consisting of a secondary dome axially offset from the center line of said neck and whose diameter is less than the diameter of said curved shell.

4,513,872

CONTAINERS

Cyril A. Bull, Mansfield, England; assignor to Metal Box, PLC, Reading, England

Filed Sep. 8, 1982, Ser. No. 416,039

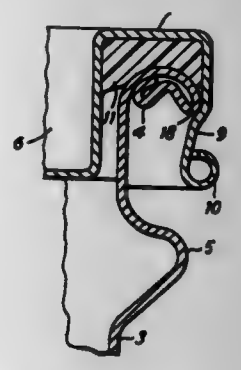
Claims priority, application United Kingdom, Nov. 19, 1981, 8134933

Int. Cl.[3] B65D *1/16*

U.S. Cl. 220—74 1 Claim

1. A container comprising a container body and a lid, said container body comprising a bottom wall and an upwardly, outwardly flaring tubular side wall terminating at one end in an

external body curl defining the mouth of a body, said body curl having a first annulus or arcuate cross-section defined by wall portions extending radially curved upwardly, curved outwardly and curved downwardly from the side wall to define a convex external surface and a concave internal surface, a radially outermost folded portion turning radially inwardly and upwardly from an outermost periphery of said first annulus downwardly extending wall portion, a second annulus defined by wall portions extending radially upwardly, inwardly and downwardly from and relative to said radially outermost folded portion, said second annulus upwardly and downwardly extended wall portions defining an angle therebetween, said second annulus inwardly extending wall portion having an arcuate curved cross-section defined by a convex external surface and a concave internal surface, said first annulus concave internal surface having a radius of generation appreciably



greater than a radius of generation of said second annulus convex external surface, said second annulus convex external surface being disposed immediately adjacent to but spaced from the concave internal surface of the first annulus, a radially innermost folded portion turning radially upwardly and outwardly from said second annulus downwardly extending wall portion and being sandwiched between the radially downwardly extending wall portion of said second annulus and the upwardly extending wall portion of the first annulus, said lid having a closure panel, and an annular channel portion surrounding to closure panel, extending axially from the channel portion to a peripheral skirt terminating in an outwardly directed curl and a gasket fixed within the channel portion, said gasket being engaged with the external surface of the convex first annulus, and said outwardly directed curl of the skirt being crimped radially inwards under the body curl so that the radially outermost folded portion engages the skirt.

4,513,873

CAPACITOR CAN HOUSING, PROCESS AND APPARATUS FOR ITS MANUFACTURE

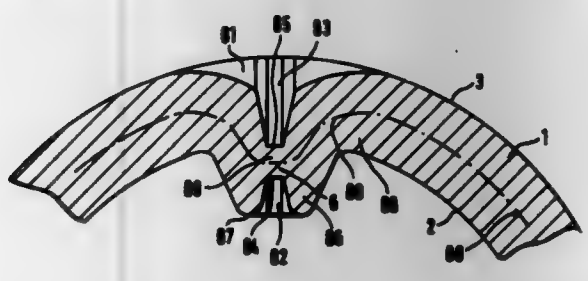
Rudolf Klaschka, 7896 Wutoeschingen 3, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,445

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138519; Jan. 22, 1982, 3201963

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—89 A **1 Claim**



1. A capacitor can housing comprising a can wall made of a ductile material with at least a circumferentially closed can side wall, means on said side wall defining a predetermined burst spot, said burst spot being a groove-shaped weakening of said can side wall formed by a deep drawn indentation extending inwardly of said can side wall, said burst spot having an outer indentation with a bottom surface and an inner indentation with a bottom surface, said outer indentation and said inner indentation being opposed to one another, the bottom wall of said inner indentation being disposed radially inwardly of the inner circumferential surface of said can side wall, said bottom surface of said outer indentation being circumferentially wider than said bottom surface of said inner indentation, said inner indentation having a generally wedge-shaped configuration.

4,513,874

PRESSURE RELIEF DEVICE FOR INTERNALLY PRESSURIZED FLUID CONTAINER

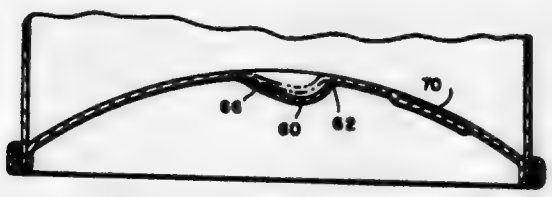
Walter J. Mulawski, Chelmsford, Mass., assignor to Sexton Can Company, Inc., Everett, Mass.

Continuation-in-part of Ser. No. 327,200, Dec. 3, 1981, Pat. No. 4,433,791, which is a continuation of Ser. No. 169,404, Jul. 16, 1980, abandoned. This application Jan. 25, 1984, Ser. No. 573,869

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

Int. Cl.³ B65D *51/16, 83/14*; F16K *17/14*

U.S. Cl. 220—89 A **12 Claims**



2. A pressure relief device for a container having a cylindrical side wall, said container being of a type adapted to contain fluid under pressure, said device comprising: an inwardly protruding generally concave metal closure element circumferentially joined to one end of said side wall, an integrally formed outwardly protruding central area in said closure element, said central area being partially circumscribed by a weakened line of reduced material thickness, said closure element having a structural integrity which reacts to an overpressurization of the fluid in said container by undergoing eversion which intitiates a fracture of the closure element along said weakened line, thereby permitting the over-pressurized fluid contents of said container to escape through said fracture.

4,513,875

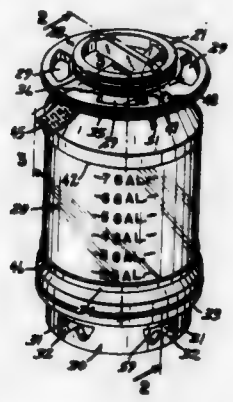
FLOWABLE SUBSTANCE CONTAINER AND DISPENSER

Jack W. Kuehn, Sr., 3500 W. Highway 13, Burnsville, Minn. 55337

Continuation-in-part of Ser. No. 485,661, Apr. 18, 1983, abandoned. This application Jan. 12, 1984, Ser. No. 570,235

Int. Cl.³ B65D *7/02*

U.S. Cl. 220—214 **83 Claims**



1. A device for storing and dispensing a flowable substance comprising:

(a) a container adapted to hold the flowable substance having a top end; a bottom end; a container sidewall having an

inner surface and an outer surface; and said container forming a container aperture proximate to said top end;

(b) a multiply positionable lid, having, with respect to said container aperture, a closed position, an access position and a remove position, said lid adapted to sealably and removably engage said top end of said container and said lid having a lid aperture;

(c) a frangible access seal interposed between said container and said lid; and

(d) a two-state lid removal indicator operably connected to said lid and said container, whereby, assuming that said lid removal indicator is initially in a first state, when said lid is in said closed position, the flowable substance is inaccessible and said indicator is in said first state; when said lid is in said access position, said container aperture is aligned with said lid aperture allowing access to the flowable substance upon altering said frangible access seal and said indicator is in said first state; and when said lid is in said remove position said lid removal indicator is irreversibly in a second state, and said lid can be removed to allow replacement of said frangible access seal.

4,513,876

CONTAINER LID WITH AN OPENER DEVICE

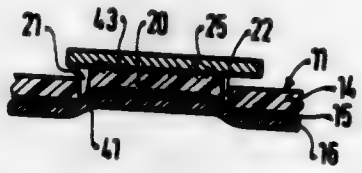
Norbert Buchner, Winnenden, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 13, 1984, Ser. No. 620,343

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321572

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **18 Claims**



1. A container lid comprising an outer, relatively thick carrier layer of a thermoplastic material, an inner sealing layer made of a thermoplastic material and adapted to be heat sealed to a container body, a middle barrier layer preferably comprising a thin metal foil, a weakened line stamped into the carrier layer and surrounding a tear-open part, wherein said barrier layer is weakened along a line coinciding in location with said weakened line in the carrier layer, at least in the area in which the tear is iniatially started.

4,513,877

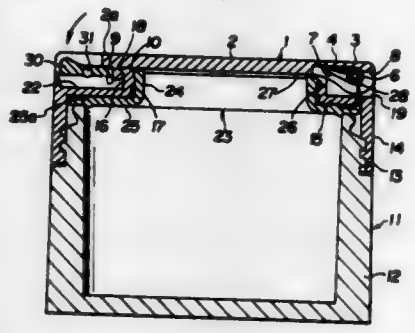
CONTAINER HAVING SPRING BIASED HINGE

Toshio Taguchi; Hisashi Akino, both of Yokohama, and Takamitsu Nozawa, Tokyo, all of Japan, assignors to Shiseido Co., Ltd. and Yoshino Kogyosho Co., Ltd., both of Tokyo, Japan

Filed Jul. 2, 1984, Ser. No. 626,904

Int. Cl.³ B65D *43/24*

U.S. Cl. 220—335 **10 Claims**



1. A container, comprising

a coiled spring, a hinge shaft engaged with the spring, a cover and a container body coupled with the cover through the hinge shaft engaged with the spring,

a recess formed at a shaft hole opening of the cover and the container body for containing the coiled spring with one end of the spring connected thereto,

a connecting portion formed at other end of the cover and the container body for connecting the other end of the coiled spring,

a connecting piece disposed substantially opposite to the connecting portion at the recess opening end for temporarily connecting the other end of the coiled spring, and

a packing of ring-shaped elastic material elastically contacted with lower surface of the cover over entire periphery at upper end thereof within the upper end of the container.

4,513,878

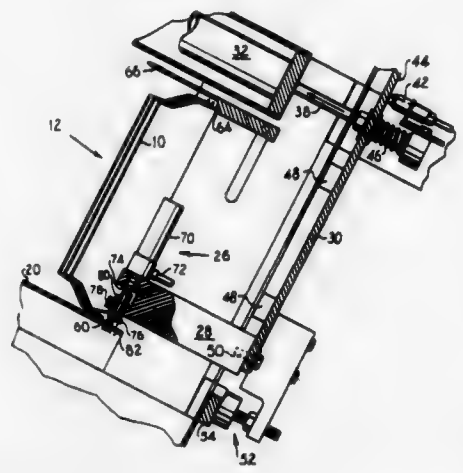
CARTON FEEDING APPARATUS

Thomas S. Hartness, and Thomas P. Hartness, both of Greenville, S.C., assignors to Hartness International, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 205,194, Nov. 10, 1980, Pat. No. 4,392,586. This application Mar. 29, 1983, Ser. No. 480,103

Int. Cl.³ B65H *3/08*

U.S. Cl. 221—40 **8 Claims**



1. An apparatus for feeding cartons in succession from a stack of cartons, said cartons being substantially rectangular in shape with an edge wall extending therearound, said apparatus comprising:

a support plate;

a plurality of picker fingers carried on said support plate;

said picker fingers including,

(i) a power-operated cylinder;

(ii) a gripping head carried on an end of a piston rod extending out of said power-operated cylinder said gripping head including a radially extending flange and an abutment spaced from said flange whereby activation of said cylinder retracts the piston moving the flange towards the abutment for grasping a carton edge therebetween;

means for selectively moving said support plate to and from said stack of cartons for positioning said picker fingers in a picking position adjacent an end carton in said stack;

means for activating said power-operated cylinder causing said gripping head to be retracted to a closed position grasping an edge of said end carton,

said means for moving said support plate and picker fingers away from said stack of cartons to a depositing position; and

means for deactivating said power-operated cylinder releasing said end carton.

4,513,879

HOT/COLD FOOD DISPENSING MACHINE

Linda Reiss, 63 Austin Rd., Sudbury, Mass. 01776

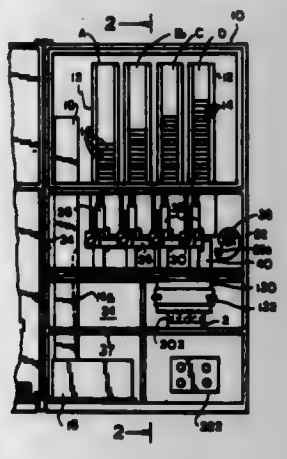
Continuation-in-part of Ser. No. 282,244, Jul. 13, 1981, Pat. No. 4,483,078. This application Dec. 29, 1983, Ser. No. 566,526

Int. Cl.³ G07F *11/72*

U.S. Cl. 221—150 HC **9 Claims**

1. In a food dispensing machine comprising a cabinet, a

refrigeration compartment disposed in an upper portion of said cabinet, including storage means in said refrigeration cabinet compartment storing articles of food, a food guide compartment disposed in a central portion of said cabinet, including selection means for selecting an article of food from said storage means and guide means for guiding such article generally downwards; and a food dispensing compartment disposed in said cabinet below said food guide compartment, including a microwave food heating device for selectively automatically heating articles of food, as desired by a user, means for receiving an article of food from said guide means and depositing the same into a cooking section of said microwave food heating device, means for controlling a heating and cooking cycle of said device in response to said article of food being so deposited into said cooking section, means for automatically ejecting the heated article of food at the end of a heating and cooking cycle, receptacle means for receiving the ejected article and presenting the same to the user, means for permitting evapo-



rated moisture generated during a heating and cooking cycle to escape from said cooking section, and means in said refrigeration compartment preventing condensed moisture forming therein from dripping into said food guide compartment; the improvement wherein said food guide compartment includes a blower disposed above said microwave food heating device for blowing evaporated moisture generated during a heating and cooking cycle from above said microwave food heating device to another section within said food guide compartment where the evaporated moisture can condense, condensing means in said other section for condensing said evaporated moisture, and means conducting the condensed moisture out of said other section of said food guide compartment, the blower and the conducting means thus preventing such moisture from dripping, as condensate, into said microwave food heating device, thereby minimizing the prospect of moisture-caused misoperation during periods of repeated use.

4,513,880

BILL RETENTION DEVICE

Yoshikazu Mori, Moroyama; Susumu Kojima, and Osamu Kobayashi, both of Sakado, all of Japan, assignors to Kabushiki Kaisha Nippon Coinco., Tokyo, Japan

Filed Aug. 17, 1982, Ser. No. 409,017
Claims priority, application Japan, Aug. 24, 1981, 56-131462
Int. Cl.³ B65H *5/28*
U.S. Cl. 221—260 **11 Claims**

1. A bill retention device comprising:

a first rotary member including a guide belt and a first winding drum to which one end of said guide belt is secured, said guide belt being unwindably wound on said first winding drum;

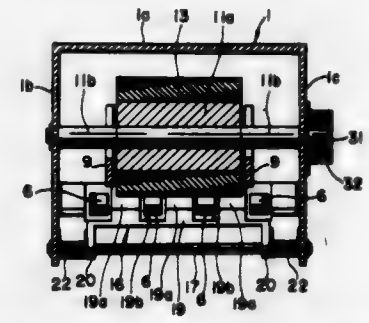
a second rotary member disposed in parallel to said first rotary member and including a second winding drum to which the other end of said guide belt is secured, said guide belt being windable on said second winding drum;

a guide path for introducing bills sent from outside into the interior of said bill retention device; and

guide means for guiding bills introduced through said guide path to a position in which said guide belt is wound on said second rotary member;

wherein the bills guided by said guide means are wound on said second rotary member with said guide belt as said second rotary member is rotated, thereby causing the bills to be retained in a state in which the bills are wound on said second rotary member with said guide belt;

said bill retention device further comprising a motor for rotating said second rotary member, said guide belt being wound on said second rotary member by rotation of said motor in a predetermined direction and said first rotary



member being thereby driven to unwind said guide belt by a length wound on said second rotary member;

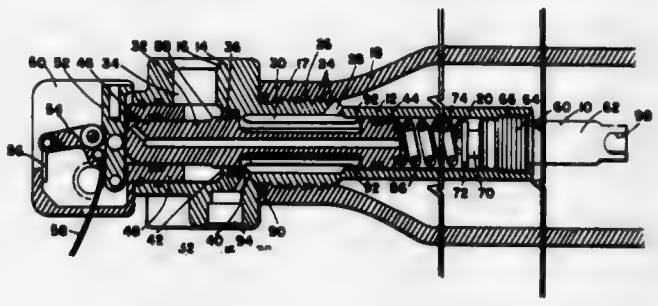
wherein said guide belt comprises a belt-like spring which is processed such that an automatic winding force is produced in a direction in which the guide belt is wound on said first rotary member and no automatic winding force is produced in a direction in which the guide belt is wound on said second rotary member and, when said guide belt is unwound from said second rotary member, said guide belt is automatically wound on said first rotary member by the automatic winding force.

4,513,881

TEMPERATURE COMPENSATOR FOR PRESSURE REGULATOR

John F. Helmovics, Jr., Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 7, 1983, Ser. No. 456,230
Int. Cl.³ B67D *5/08*
U.S. Cl. 222—54 **5 Claims**



1. A temperature compensator for a gas pressure regulator having:

(a) a valve member movable to open a pressurized gas discharge orifice, said valve member having at least a first effective end area exposed to gas under pressure in said regulator and positioned to provide a force for urging said valve member in a direction to close said orifice and a second effective end area exposed to gas under pressure and positioned to provide a force for urging said valve member in a direction to open said orifice; and

(b) a resilient means providing a force for urging said valve member in a direction to open said orifice;

wherein said temperature compensator includes a temperature sensitive adjusting means for adjusting the amount of valve member movement in response to increases in temperature providing smaller orifice openings at lower temperatures and larger orifices at higher temperatures to maintain an optimum flow of gas to an aspirator for filling inflatables with a gas and

air mixture under pressure where the temperature sensitive adjusting means comprises a piston and cylinder assembly mounted on said regulator and connected to said valve member, a fluid in the cylinder of said assembly, said fluid being expandable and contractable in response to an increase or reduction of temperature whereby the piston of said assembly is moved to different temperature compensating positions for adjusting the amount of valve member movement and said piston being engageable with said resilient means to vary the amount of force provided by said resilient means in response to said increases and reductions in temperature.

4,513,882

CONTINUOUS TRANSPORT METHOD AND APPARATUS

Robert Cabi-Akman, Chavannes, Switzerland, assignor to Nestec, S.A., Vevey, Switzerland

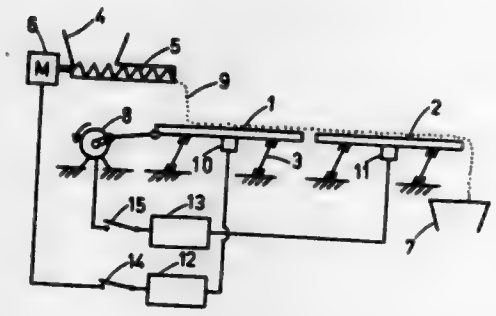
Filed Jul. 9, 1982, Ser. No. 396,760

Claims priority, application Switzerland, Jul. 23, 1981, 4804/81

Int. Cl.³ B67D *5/08*

U.S. Cl. 222—56

9 Claims



1. A continuous transport method which detects overloads on a tray, comprising the steps of supplying a particulate product to the tray, transporting a particulate product along the tray by vibrating the tray at a pre-determined basic frequency, and detecting an incipient product overload on the tray by monitoring the vibrations of the tray and comparing with a pre-determined critical threshold the amplitude of at least one harmonic of said basic frequency, which harmonic is sensitive to the load on the tray.

4,513,883

NO-FLIP, NO-DRIP CONTAINER

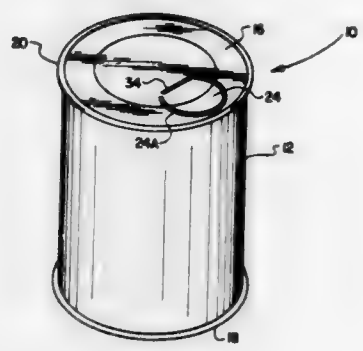
Edward R. Melzi, 3310 Ivanhoe La., Garland, Tex. 75042, and Arie Sharon, 1014 Wake Dr., Richardson, Tex. 75081

Filed Sep. 6, 1983, Ser. No. 529,509

Int. Cl.³ B67B *7/24*

U.S. Cl. 222—83

3 Claims



1. A disposable container assembly comprising a container body formed by a cylindrical sidewall member having opposite ends which are sealed along a rim by first and second lid members, said first and second lid members having first and second tab portions defined by curved score lines, and a rigid connecting rod disposed within the interior of said container and coupled between said first and second tab members whereby an inwardly directed force applied to one of said tab members causes the tab member to separate from said lid and rotate inwardly, and the other tab member to separate away from said lid and rotate outwardly.

4,513,884

DISPENSING SYSTEM AND A REFILL POUCH

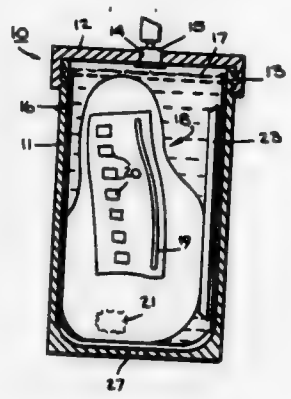
David J. Magid, Doylestown, Pa., assignor to Enviro-Spray Systems, Inc., Montgomeryville, Pa.

Filed Apr. 5, 1982, Ser. No. 365,552

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—94

11 Claims



1. A reusable pressurized dispensing system adapted for use in seriatum fashion with a plurality of pouches which contain therein the product to be dispensed and which comprises

container means including an opening therein adapted to house a pouch including therein the product to be dispensed;

removable closure means adapted to cover said container opening;

outlet means disposed in said removable closure means through which the product within the pouch is dispensed;

a sealed inflatable pouch including therein a prepackaged flowable product to be dispensed and which is disposed within said container means, said inflatable pouch being adapted to define a liner within said container upon expansion thereof;

a sealed expandable pressure generating bag disposed within said inflatable pouch for exerting pressure on said flowable product within said pouch;

means within said bag for expanding said bag within said pouch to dispense said prepackaged flowable product from said pouch through said container outlet means;

means for activating said bag expanding means disposed within said pouch;

means for generating additional bag expansion as product is dispensed from said pouch through said container outlet; and

means for opening said pouch to facilitate communication of said flowable product contained therein with said outlet means whereby said flowable product may be dispensed from said container.

4,513,885

DISPENSER HAVING A FLEXIBLE FLUID CONTAINER AND A ROTOR COMPRESSIBLE FLUID DISCHARGE TUBE

Lawrence R. Hogan, Lake Villa, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Continuation of Ser. No. 35,817, May 4, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 427,504

Int. Cl.³ F04B *43/12*

U.S. Cl. 222—95

20 Claims

1. A dispenser comprising, in combination,

a dispenser housing defining an interior chamber and includ-

ing side walls and a bottom wall having an opening therein, and a front, general vertical wall,

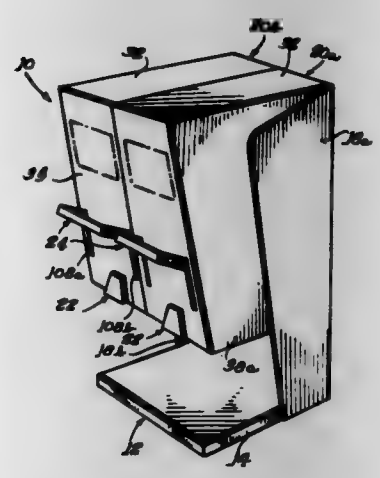
a disposable flexible fluid impervious container adapted to contain flowable product in substantially sealed relation therein, said container having an outlet opening through which said product may be removed from said container,

means cooperable with said container and said housing to releasibly support said container within said chamber so that said product is urged toward said outlet opening under the influence of gravity,

means defining an additional opening in said housing to admit said disposable container for attachment to said means for releasably supporting said container,

a disposable compressible discharge tube affixed to said container adjacent said outlet opening and having flow communication with product within said container,

a disposable discharge fitment mounted on an end of said discharge tube opposite said container and having a discharge orifice in flow communication with said discharge tube, said fitment being adapted for releasable cooperation with said housing so as to maintain said discharge fitment in predetermined relation to said housing,



a rotor rotatably supported within said housing for cooperation with said discharge tube so as to effect flow of product through said discharge tube from said container upon selective rotation of said rotor,

an actuating handle located at said front wall above said discharge fitment and cooperable with said rotor and operable to rotate said rotor with a downward pull on said handle through a predetermined stroke so as to effect a substantially predetermined quantity discharge from said container upon each actuating stroke of said handle, said discharge fitment being located beneath said handle,

a cam plate pivotally mounted on said housing adjacent said opening in the bottom wall and having an arcuate cam surface thereon, said cam plate being pivotally movable independently of said housing between a first position enabling loading of a flexible container and associated discharge tube within said chamber and a second position wherein said cam surface is positioned for cooperation with said discharge tube so as to effect occlusion of said discharge tube during rotation of said motor,

and means selectively cooperable with said housing and said cam plate for releasably retaining said cam plate in its said second position.

4,513,886

APPARATUS FOR FEEDING ADHESIVE IN ROD FORM

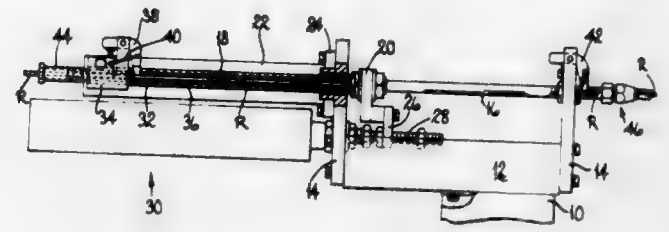
Frank C. Price, Leicester, England, assignor to USM Corporation, Farmington, Conn.

Filed Jan. 20, 1983, Ser. No. 459,385

Claims priority, application United Kingdom, Jan. 21, 1982, 8201704

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146.5 **7 Claims**



1. An apparatus for feeding adhesive in rod form progressively to a melt chamber, comprising:

a first tubular portion through which a rod of adhesive can pass and be guided thereby and which can be connected to a melt chamber, and a device by which the rod of adhesive can be engaged and which is movable, between a retracted and an advanced position, relative to the first tubular portion, whereby to fed the portion of adhesive rod accommodated in the latter to the melt chamber, characterized in that a second tubular portion is mounted for movement with the rod-engaging device relative to the first tubular portion, through which second tubular portion the adhesive rod can pass and which provides a sliding fit with said rod, and in that the external dimensions of the first tubular portion, the arrangement being such that, with the rod-engaging device in its retraced position, the downstream end of the second tubular portion is accommodated with the upstream end of the first tubular portion, and, as the rod-engaging device moves to its advanced position, the second tubular portion slides within the first tubular portion, the second tubular portion being supported at its upstream end by a third tubular portion, which also is movable with the rod-engaging member relative to the first tubular portion, through which also the adhesive rod can pass and the bore of which is alinged with that of the second tubular portion to minimize obstruction of the adhesive rod therewithin.

4,513,887

INSTANT HOT WATER DISPENSER

Charles A. Wicke, and Wayne C. Riley, both of Racine, Wis., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 421,633, Sep. 22, 1982, Pat. No. 4,424,767. This application Nov. 16, 1983, Ser. No. 552,465

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146.5 **1 Claim**

1. An instant hot water heater dispenser comprising:

a. tank means for storing and heating water prior to dispensing thereof, the tank means having an upper tank wall portion;

b. wall means formed integrally with the upper tank wall portion for defining an open top water expansion chamber;

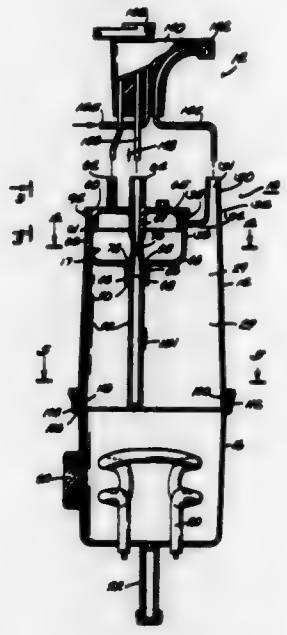
c. a valve chamber wall formed integrally with the wall means;

d. a cover for sealingly closing the expansion chamber, the cover including:

i. a vent and a cold water inlet stem formed integrally with the cover, the inlet stem extending downwardly from the cover and having an aspirator opening to provide communication between the inlet water and the expansion chamber; and

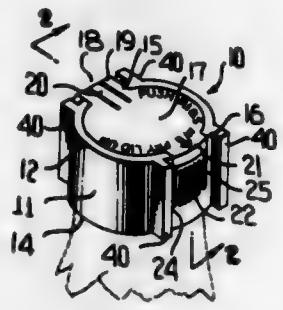
ii. a valve chamber wall formed integrally with the cover for cooperating with the wall means valve chamber

wall to define a valve chamber for confining an aspirating valve member therein; and



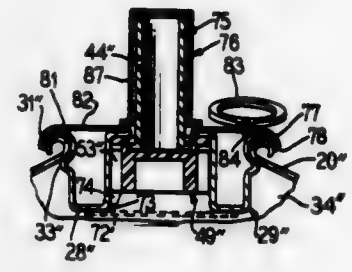
e. retainer means for locking the cover in place to the expansion chamber wall means.

4,513,888
DISPENSING CAP
John J. Curry, 2 S. 752 Theresa Ct., Oak Brook, Ill. 60521
Filed Sep. 30, 1982, Ser. No. 428,742
Int. Cl.[3] B65D *55/02*
U.S. Cl. 222—153
5 Claims



1. A dispensing cap comprising an annular ring having upper and lower terminal ends, an intermediate panel being positioned between said upper and lower terminal ends in a generally normal position to said terminal ends, said intermediate panel having a dispensing opening located therein, annular sealing means fixed to said intermediate panel and projecting generally parallel to said lower terminal end, retaining means projecting generally normal from said lower terminal end, said sealing means and said retaining means facilitating said cap to be attached to a container, said upper terminal end having two opposed recesses formed therein, a cover, a first of said recesses having hinge means for hingeably securing said cover to said annular ring, said hinge means including biasing means for maintaining said cover in an open position, said cover having a tab, a second of said recesses defining an opening to receive said tab when said cover is in a closed position, a portion of said annular ring having a flexible panel beneath said second recess, said flexible panel being capable of movement inwardly of said annular ring when radially inward pressure of sufficient force is exerted by a user to expose a portion of said cover tab thereby facilitating movement of said cover from the closed position upwardly to the open position, and said flexible panel being defined by two transverse substantially parallel slots extending from said second recess.

4,513,889
RECLOSABLE VALVE WITH REMOVABLE HERMETIC EXTERNAL SEAL MEANS
Walter C. Beard, South St., Middlebury, Conn. 06762
Filed Dec. 27, 1982, Ser. No. 452,953
Int. Cl.[3] B65D *55/08*
U.S. Cl. 222—153
10 Claims



1. An aerosol-type dispensing device comprising a fluid dispensing valve structure in combination with a pressurizable container, said valve structure being adapted to dispense the fill contents of said container, said valve structure comprising:

valve mounting cap having (a) a perimeter region which terminates in a rolled lip that is sealingly secured over a mating rolled lip formed about the mouth of said pressurizable container, (b) a central portion with an aperture defined therein, and (c) generally continuous wall portions extending between said central portion and said perimeter region and defining therebetween a cavity adapted for receipt thereinto of crimp forming means;

an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second end extending through said aperture;

resilient valve seat means positioned in said valve mounting cup body;

a movable valve means biasable against said valve seat means to close said valve structure, said movable valve means comprising a moveable cup that is slidably longitudinally reciprocal within portions of said valve body responsively to tilting movement of said one end of tubular nozzle means;

said tubular nozzle means being moveable and having said second end thereof adapted for moving said moveable valve means to open said valve structure;

said resilient valve seat means comprising a gasket circumferentially disposed about said second end of said tubular nozzle means whereby when said one end is tilted relative to said valve mounting cup body, said moveable cup is moved from said gasket, thereby to permit flow of said fill contents through said tubular nozzle means;

a gas-tight sealing member comprised of sheet metal and having a central region which is positioned over said tubular nozzle means and having peripheral portions positioned in spaced adjacent relationship to said central portion, and in contacting adjacent relationship to said perimeter region;

a gas-tight sealing means securing said peripheral portions to portions of said perimeter region;

a frangible zone extending in a closed pathway generally adjacent said central portion and defined in at least one of said sealing member and said sealing means, said frangible zone being rupturable in response to applied localized external force, whereby at least said central region is removable from said central portion and said nozzle means.

4,513,890

CAP FOR A PRESSURIZED CONTAINER AND THE CORRESPONDING UNIT

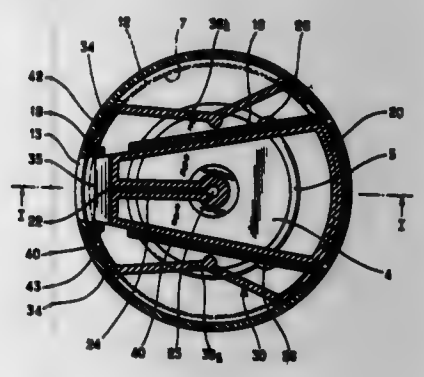
Antonin L. Goncalves, Groslay, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 258,291, Apr. 28, 1981, abandoned. This application Aug. 26, 1983, Ser. No. 526,514

Claims priority, application France, May 30, 1980, 80 12112; Jan. 23, 1981, 81 01221; Feb. 10, 1981, 81 02605

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—153 **29 Claims**



1. A presentation cap for a pressurised "aerosol spray" container, such cap comprising: fixed cap means including a cylindrical cap body having a side wall and a top wall provided with an opening, means effective to attach the cap body to a pressurised container, a sleeve within the cap body, said sleeve having mutually opposite concave wall portions curved with respect to the axis of said cylindrical cap body and facing radially outwardly, said concave wall portions having lower edges adapted to bear on top of a crimped rim of a valve mounting cup of a spray container, and said sleeve having at least two opposite arcuate convex wall portions in engagement with the cap body, means defining a window in said cap body side wall, and means for ensuring angular positioning of the cap body on said sleeve; movable cap means comprising a push button disposed in said opening in said cap body top wall so as to be maneuverable by a user's finger, said push button having first and second ends, means on said push button for receiving the outlet of a discharge valve of a said pressurised container, means at the first end of said push button defining a dispensing nozzle of said push button, said dispensing nozzle being located at one of said opposite wall portions of said sleeve, and means defining a duct communicating said valve outlet receiving means with said dispensing nozzle; and hinge means pivotally attaching said push button to said sleeve, said hinge means being located at said one opposite wall portion of said sleeve whereby said hinge means is located immediately adjacent said cap body side wall, with said dispensing nozzle in register with said window of the cap body.

4,513,891

SPRAY DISPENSING CONTAINER AND VALVE THEREFOR

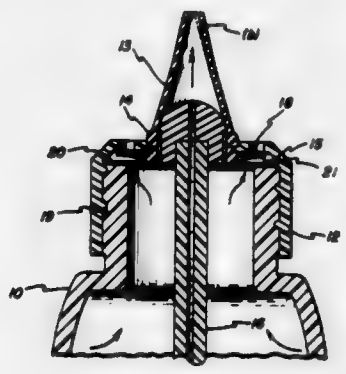
Robert W. Hain, Scotch Plains; Frederick B. Hadtke, New Providence, both of N.J., and Myron Paikoff, Colonie, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 15, 1982, Ser. No. 368,722

Int. Cl.³ B05B *11/04*

U.S. Cl. 222—213 **21 Claims**

1. In a squeeze bottle dispenser for use in the administration of nasal sprays having means for preventing inspiration of air through the exit opening of said dispenser during the recovery portion of a use cycle in order to thereby prevent contamination of the dispenser contents, the improvement for attachment to, and use with, a said squeeze bottle which comprises in combination: a closure cap defined generally by a top wall and a side skirt for removable attachment to the neck of said squeeze bottle, said cap having (1) one or more air inlet holes and a central hole in said top wall and (2) means for retaining within said central hole; a one piece, resilient spray nozzle unit comprising an exit nozzle portion and a flexible flanged portion and a flexible flanged portion; and a dip tube for conveying the contents of said bottle to said spray nozzle unit, said retaining means comprising an annular rim around the inside of said side skirt of said closure cap and spaced from said top wall thereof,



said spray nozzle unit being adapted to function as a two-way valve whereby, during the dispensing portion of a use cycle, said air inlet hole or holes are sealed by said flexible flange while said nozzle is open, and whereby, during the recovery portion of a use cycle, said air inlet hole or holes are opened and said nozzle is closed.

4,513,892

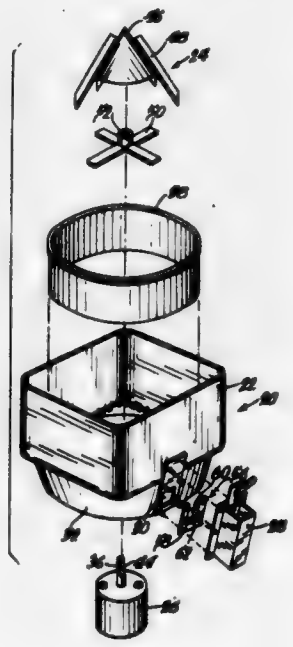
FLAKED ICE DISPENSER

Robert M. Koeneman; Benjamin D. Miller, both of Elmwood Park; Thaddeus M. Jablonski, Palatine, and Albert L. Schafer, Chicago, all of Ill., assignors to Remcor Products Company, Franklin Park, Ill.

Filed Apr. 15, 1983, Ser. No. 485,394

Int. Cl.³ B65D *23/00*

U.S. Cl. 222—235 **17 Claims**



1. An ice dispenser for small particles of ice, such as flaked ice, comprising a hopper for storage of a mass of small particles of ice, said hopper having a bottom wall, a trough around the outer periphery of said bottom wall and an opening therethrough in communication with said trough; an impeller rotatable in said hopper for rotating and agitating ice therein, said impeller including a generally cone shaped body mounted for rotation in said hopper about an axis coextensive with its altitude with its vertex above said bottom wall and its surface extending outwardly and downwrdly from said vertex, and a plurality of arms mounted in angularly spaced relationship on said body surface, said arms extending outwardly of said surface and along paths extending generally between said vertex and the base of said body; and means for rotating said impeller

in said hopper to rotate and agitate ice therein to prevent the small particles of ice from agglomerating and congealing, to move ice in said trough to and through said hopper opening for being discharged from said hopper, and to cause ice in said hopper overlying said trough to enter said trough to replace ice discharged through said opening, wherein said hopper, in cross section perpendicular to said axis of rotation of said impeller and between an upper end of said hopper and said bottom wall, has a substantially circular upper portion and a substantially polygonal lower portion, and said lower portion has corners which extend outwardly of the circumference of said upper portion, whereby as ice is discharged from said hopper ice in said upper portion falls into said corners and then into said trough.

4,513,893

APPARATUS FOR SPREADING A POLYURETHANE FOAMABLE COMPOSITON

Morimitsu Baba, Fukuoka, Japan, assignor to Asahi Glass Company Ltd., Tokyo and Baba Seisakusho Co., Ltd., Yame, both of, Japan

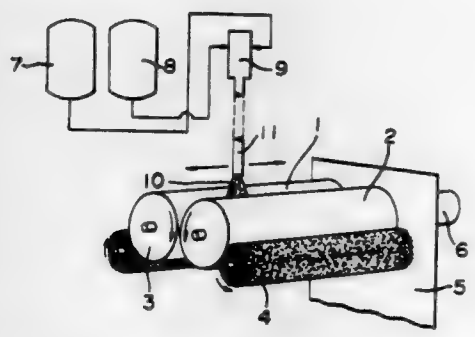
Continuation of Ser. No. 185,911, filed as PCT JP 79/00054, Mar. 7, 1979 published as WO 79/00734 Oct. 4, 1979 § 102(e) date Sep. 26, 1979, Pat. No. 4,332,281. This application Mar. 10, 1982, Ser. No. 358,852

Claims priority, application Japan, Mar. 10, 1978, 53-26633; Sep. 9, 1978, 53-110223

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ B05B *3/02*

U.S. Cl. 222—281 **3 Claims**



1. An apparatus for spreading a foamable composition for a polyurethane foam which comprises:

a pair of spreading rolls which are arranged in parallel with a gap having faced surfaces rotated downwardly;

a feed outlet for feeding said foamable composition for a polyurethane foam on the surfaces of said spreading rolls, at an upper position above said spreading rolls;

a pair of rotated scattering rolls having fibrous surface layers which are located below said spreading rolls with said fibrous layers being in contact respectively with said surfaces of said spreading rolls;

and said feed outlet for feeding said foamable composition being reciprocally movable in the longitudinal direction of said spreading rolls above said spreading rolls.

4,513,894

ABRASIVE SLURRY SUPPLY SYSTEM FOR USE IN METALLOGRAPHIC SAMPLE PREPARATION

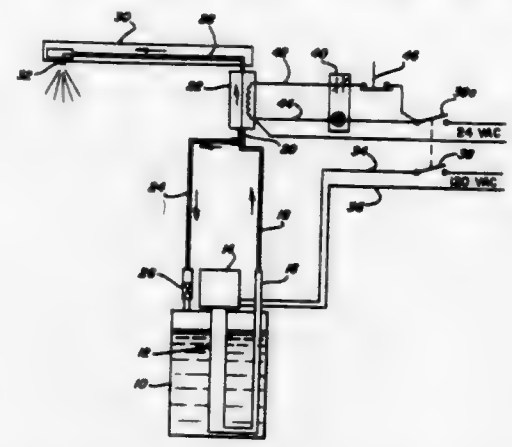
Ralph R. Doyle, Des Plaines, and Robert E. Zimmer, Niles, both of Ill., assignors to Buehler Ltd., Lake Bluff, Ill.

Filed Oct. 12, 1982, Ser. No. 433,633

Int. Cl.³ B24B *57/00*

U.S. Cl. 222—644 **7 Claims**

1. A slurry dispensing system for supplying a portion of abrasive slurry to apparatus for preparing the surface of metallurgical specimens, said system comprising, in combination, reservoir means for containing a supply of abrasive slurry, first conduit means leading from said reservoir means, pump means for pumping abrasive slurry from said reservoir means through said first conduit means, second conduit means leading from said first conduit means back to said reservoir means for recirculating abrasive slurry pumped by said pump means, third conduit means communicating with said first and second conduit means and including normally-open valve means leading to nozzle means for supplying a portion of abrasive slurry to said apparatus, said nozzle means being disposed at a higher level than said first and second conduit means, and said reservoir means being located at a lower level than said first and second conduit means, timer control means for closing said normally-open valve means at timed intervals, and means for



operating said pump continuously whereby when said valve means is open at least a portion of the abrasive slurry pumped from said reservoir means will be dispensed for use with said apparatus, when said timer control means closes said valve means, all of the slurry pumped by said pump means will be recirculated to said reservoir means, and when said pump means is inoperative the abrasive slurry in said first, second and third conduit means will automatically drain back to said reservoir means.

4,513,895

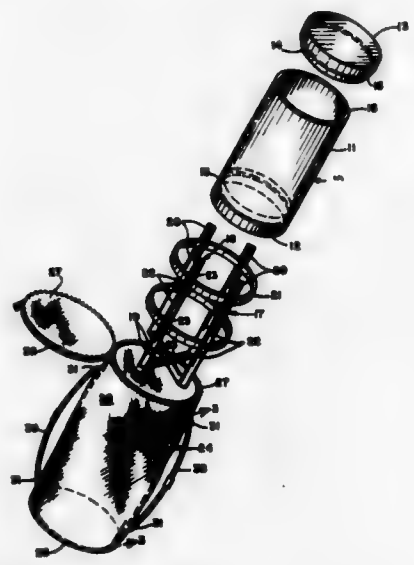
FLEXIBLE INSULATIVE CARRIER

Peter C. Leslie, 123 S. Justison St., Wilmington, Del. 19801

Continuation-in-part of Ser. No. 404,220, Aug. 2, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 588,212

Int. Cl.³ A45C *9/00*

U.S. Cl. 224—151 **12 Claims**



1. An improved thermally insulated carrier comprising:

(a) a container having a circular cylindrical wall, a fixed bottom closure and a removable, tight-fitting lid, fabricated entirely of a closed cell foam of a resilient polymer,

(b) a harness comprised of strong, wide webbing adapted to lie in close-fitting contact with the exterior of said cylindrical wall and bottom closure, said webbing crossing at several sites, and interengaged at said sites of crossing,

(c) a cloth jacket adapted to encompass said container and harness in close-fitting engagement therewith, said jacket comprising a sidewall portion made from flat fabric by

forming a straight seam, and a flat bottom portion joined to the sidewall portion by a circular seam,

(d) anchor means disposed upon the exterior of the sidewall portion of said jacket in sewn engagement with said jacket and said harness, and

(e) a pair of carrying straps adapted to engage said anchor means,

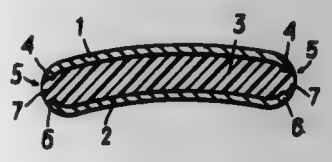
(f) whereby said carrier is adapted to be carried in the manner of a backpack, and the subcombination comprising the harness, jacket and carrying straps finds separate utility as a duffle bag.

4,513,896

BELT OR STRAP

Hermann Hirsch, Klagenfurt, Austria, assignor to Hermann Hirsch Leder- und Kunststoffwarenfabrik, Klagenfurt, Austria

Filed May 31, 1983, Ser. No. 499,514
Claims priority, application Austria, Jun. 17, 1982, 2346/82
Int. Cl.³ A44C *5/00*
U.S. Cl. 224—178 **5 Claims**



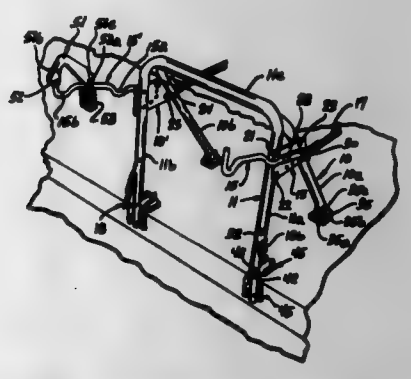
1. A flexible strap that simulates an all-leather strap, comprising a face material of leather and a lining of leather interconnected by an elastic layer whose thickness is substantially greater than that of the face material or the lining, at least one of said face material and lining being bent partway about said elastic layer at the longitudinal edges of the strap, the elastic layer extending adjacent to the longitudinal edges of the face material and lining as far as to the outside surface of the face material and the lining, the leather of said face material and lining having the flesh side adjacent and impregnated by said elastic layer.

4,513,897

VEHICLE ATTACHED CARRIER

John W. Graber, Stoughton, Wis., assignor to Graber Products, Inc., Madison, Wis.

Filed Jan. 27, 1984, Ser. No. 574,337
Int. Cl.³ B60R *9/10*
U.S. Cl. 224—314 **6 Claims**



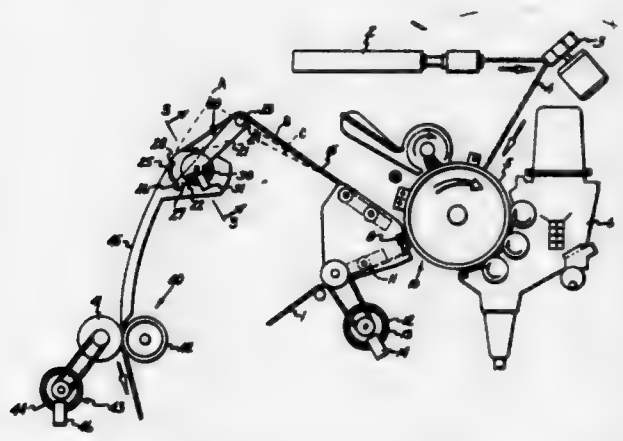
1. A carrier for mounting on the rear body portion of a vehicle, the carrier including carrier frame means having front and rear pairs of elongated legs interconnected at their upper ends and with their distal ends spaced apart to engage a rear body portion of a vehicle at spaced locations, a front vehicle engaging foot for the distal end of each of the front pair of legs, a rear vehicle engaging foot assembly on the distal end of each leg of the rear pair of legs, each rear vehicle engaging foot assembly including a pair of generally U-shaped bracket members disposed in generally parallel relation at opposite sides of the distal end of a respective one of the legs of the rear pair, each pair of bracket members having an intermediate web portion and first and second leg portions, first and second parallel pivot pins respectively extending between the first and second leg portions of each pair of bracket members adjacent the distal ends thereof, each vehicle engaging foot assembly including first and second vehicle engaging foot members each having a generally flat vehicle engaging face and a mounting portion extending above the vehicle engaging face, the mounting portions of the vehicle engaging foot members having openings therethrough generally paralleling the associated vehicle engaging face for receiving the respective first and second pivot pins to support the foot members for pivotal movement relative to the bracket members about the axis of the respective pivot pin, each rear vehicle engaging foot assembly including a bracket pivot pin extending through the web portions of the pair of bracket members and through the associated rear leg adjacent its distal end for pivotally mounting the pair of bracket members for movement about a bracket pivot axis transverse to the associated rear leg and parallel to and medially between the associated first and second pivot pins, the bracket pivot axes on the rear pair of legs being disposed in substantial axial alignment, the bracket pivot axis of each rear vehicle engaging foot assembly being offset from a plane through the associated first and second pivot pins a distance sufficient to allow the bracket members to pivot relative to the associated rear leg into positions in which the first and second rear vehicle engaging foot members are disposed at relatively opposite sides of the associated rear leg outwardly of the distal end thereof and into positions in which both the first and second rear vehicle engaging foot members are disposed at one side of the associated rear leg adjacent the distal end thereof, the first and second vehicle engaging foot members being movable about the first and second pivot axes relative to the associated pair of bracket members into positions in which the vehicle engaging faces on the first and second foot members converge to conform to convex exterior surfaces gn a vehicle and positions in which the vehicle engaging faces diverge to conform to concave exterior surfces on the vehicle, and strap means for holding the carrier on a vehicle.

4,513,898

WEB LOOP CONTROL APPARATUS AND METHOD

Merlin D. Spitsbergen, Rochester, Mich., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Mar. 22, 1982, Ser. No. 360,945
Int. Cl.³ B65H *25/04*
U.S. Cl. 226—44 **17 Claims**



1. A web loop control system for a web feeding apparatus, having a first roller means engaged with said web; a second roller means engaged with said web having a drive means and a drive means control; and a dancer member pivotally supported on said apparatus operationally intermediate said first roller means and said second roller means, said dancer member rotatably supporting a dancer roller, said dancer roller being biased into engagement with said web, said web sequentially

passing from said first roller means to said dancer roller to said second roller means and being disposed in a web loop between said first roller means and said second roller means, said dancer member pivoting to follow said web loop as the length of said web loop varies, the improvement comprising:

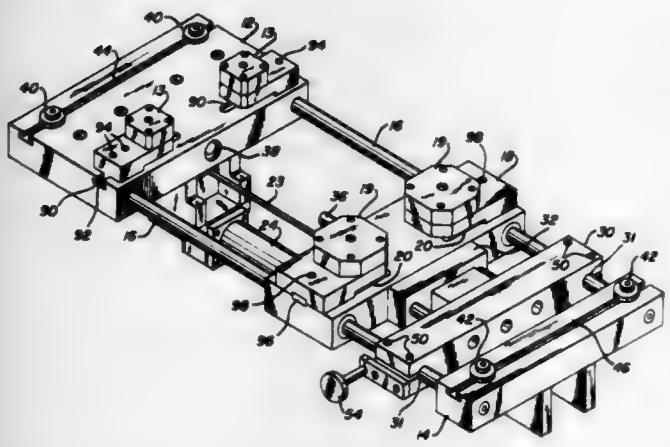
a code disk secured for rotation with said dancer arm, and an optical transmitting means and an optical receiving means, said optical transmitting means transmitting light towards said code disk, the rotational position of said code disk determining the light received by said optical receiver from said optical transmitter, said optical receiver generating said dancer arm position information in response to the light received, said dancer arm position information being transmitted to said second roller means motor control means to adjust said drive means for said second roller means as necessary to achieve a desired length for said web loop.

4,513,899

STOCK FEEDER WITH ADJUSTABLE WIDTH FEED PATH

Harry J. Ledgerwood, Conway, Mo., assignor to Plessey Incorporated, Melville, N.Y.

Filed Aug. 10, 1982, Ser. No. 406,766
Int. Cl.[3] B65H *17/36, 23/02*
U.S. Cl. 226—141 **5 Claims**



1. A stock feeder for repetitively feeding or advancing stock material, said stock feeder comprising:

a front block including two side edges, said feed block defining opposed first keyways extending from each side edge thereof, a first guide track extending between the side edges,

a pair of holding clamps means, each holding clamp means defining a projection slidably mounted in a different one of said first keyways, said pair of holding clamp means being independently slidable and releasably fixable in said first keyways and capable of abutting one another,

a slot defined by each holding clamp means extending across the entire width of the bottom surface of each holding clamp means and extending partially across the length of the bottom surface of each holding clamp means,

a piston reciprocatively mounted in each said holding clamp means to project into said slot defined by each holding clamp means,

first stock roller guides slidingly mounted in said first guide track,

means for releasably fixing each first stock roller guide in said first guide track,

a rear block including two side edges, said rear block defining a second guide track extending between the side edges thereof,

second stock roller guides mounted in said second guide track,

means for releasably fixing said second stock roller guide in said second guide track,

guide rods interconnecting said front block and said rear block, said guide rods being aligned parallel to each other,

a unitary feed block including two side edges, said unitary feed block slidably mounted on said guide rods, said unitary feed block located between said front block and said rear block, said unitary feed block defining opposed second keyways extending from each side edge thereof,

a pair of gripping clamps means, each gripping clamp means slidably mounted in a different one of said second keyways, said pair or gripping clamp means being independently slidable and releasably fixable in said second keyways and capable of abutting one another,

a slot defined by each gripping clamp means extending across the entire width of the bottom surface of each gripping clamp means and extending partially across the length of the bottom surface of each gripping clamp means,

a piston reciprocatively mounted in each said gripping clamp means to project into said slot defined by each gripping clamp,

a stop block slidingly mounted on said guide rods for adjusting the distance of travel of said unitary feed block, said stop block being located between said unitary feed block and said rear block,

means for releasably fixing said stop block to said guide rods,

a fine adjustment bar for further adjusting the distance of travel of said unitary feed block, said fine adjustment bar being located between said unitary feed block and said stop block,

means for adjusting said fine adjustment bar to change the distance between the fine adjusting bar and the stop block,

means for reciprocatively moving said unitary feed block along said guide rods, and

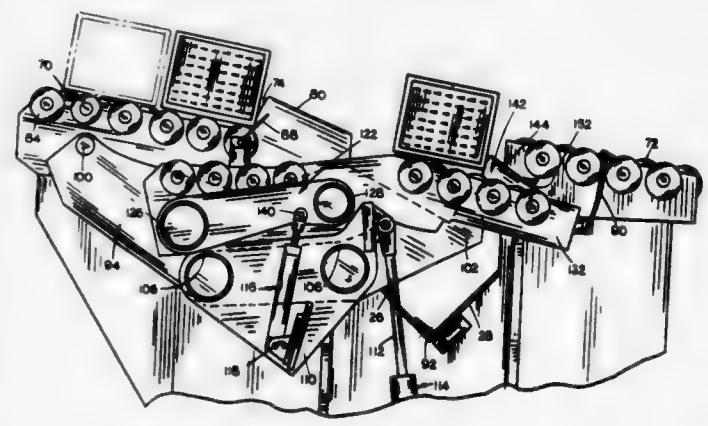
control means for controlling the advancement of successive segments of stock material by said unitary feed block.

4,513,900

WOOD CROSS-TIE END PLATING MACHINE

Gordon E. Matlock, 554 Sappington Bridge Rd., Sullivan, Mo. 63080

Filed Nov. 21, 1983, Ser. No. 553,779
Int. Cl.[3] A43D *71/00;* B25C *7/00*
U.S. Cl. 227—42 **6 Claims**



1. An end plating machine for wood cross ties, comprising,

a frame means including horizontally spaced-apart end frames,

each of said end frames having spaced-apart cross tie in-feed and out-feed portions,

each of said end frames having stop means thereon adjacent the inner ends of said in-feed portions for limiting the inward movement of said ties on said in-feed portions,

said in-feed portions adapted to receive the ends of at least one cross tie,

a first stationary platen means on one of said end frames,

a second stationary platen means on the other of said end frames,

said stationary platens adapted to support the ends of a cross tie thereon,

a first pair of movable platens on said one end frame,

a second pair of movable platens on the other of said end frames,

hydraulic cylinder means connected to each of said first and second pairs of movable platens for moving said movable platens toward said stationary platens for squeezing the ends of the cross tie positioned on said stationary platens,

a power ram means on each of said end frames for driving end plates into the ends of the cross tie,

a tie elevator assembly positioned between said end frames and having inner and outer ends, the outer end of said tie elevator assembly being pivotally connected, about a horizontal axis, to said end frames,

a first power cylinder connected to said tie elevator assembly for raising and lowering the inner end of said tie elevator assembly relative to said end frames,

a tie transporter assembly having inner and outer ends, said tie transporter assembly being pivotally connected, about a horizontal axis, intermediate the inner and outer ends thereof, to said tie elevator assembly, intermediate the inner and outer ends thereof,

a second power cylinder connected to said tie transporter assembly for pivotally raising and lowering the inner and outer ends of said tie transporter assembly relative to said tie elevator assembly,

control means for:

(a) extending said second power cylinder thereby causing the outer end of said tie transporter assembly to pivotally move upwardly to engage the innermost cross tie on said in-feed portion and to raise said innermost tie above said stop means so that said cross tie can move inwardly onto said tie elevator assembly;

(b) retracting said first power cylinder thereby causing said tie elevator assembly to pivotally move downwardly so that the tie is lowered onto the stationary platens;

(c) operating said hydraulic cylinder means to cause said movable platens to compress the ends of the cross tie;

(d) activating said power ram means to force the end plates into the ends of the cross tie;

(e) retracting said power ram means;

(f) operating said hydraulic cylinder means thereby moving the movable platens out of engagement with the cross tie;

(g) extending said first cylinder and retracting said second cylinder thereby causing the cross tie to be lifted upwardly out of the stationary platens and be delivered to the out-feed portions.

4,513,901

MACHINE FOR MANUFACTURING TACKLESS STRIPS

Clifford H. Gage, Fort Edward, N.Y., assignor to Annette Kowalczyk, Staten Island, N.Y.

Continuation of Ser. No. 317,239, Nov. 2, 1981, Pat. No. 4,447,000. This application Apr. 27, 1984, Ser. No. 604,599

The portion of the term of this patent subsequent to May 8, 2011, has been disclaimed.

Int. Cl.[3] B42F *7/02*

U.S. Cl. 227—49 **10 Claims**

1. A machine for automatically applying a plurality of nails into discrete strips of wood, comprising

a conveyor to transport strips of wood through the machine at spaced intervals;

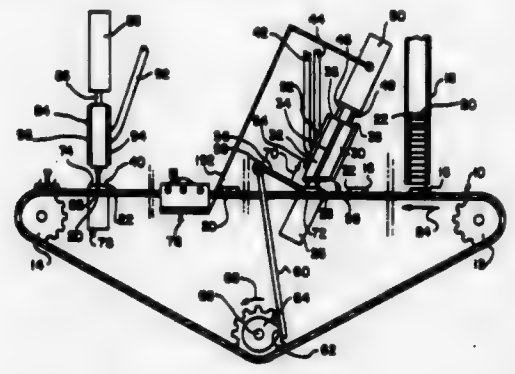
a first nailing station including a first reciprocating ram, the first ram being adapted to drive a plurality of first nails into one surface of each wood strip as the strip is carried to the first nailing station by the conveyor;

a turnover station downstream of the first nailing station;

the turnover station comprising a wood strip turner and means to rotate the turner, the turner being adapted to engage the first end portion of each nailed strip as it is carried from the first nailing station by the conveyor,

the means to rotate the turner comprising an arm connected to the first ram, the arm providing a linear reciprocating power input to the turner upon each reciprocation of the first ram;

the turner being adapted to engage an end portion of each strip and to turn over each strip at the turnover station through one hundred and eighty degrees,



whereby the nails applied at the first nailing station will be rotated through one hundred and eighty degrees at the turnover station.

4,513,902

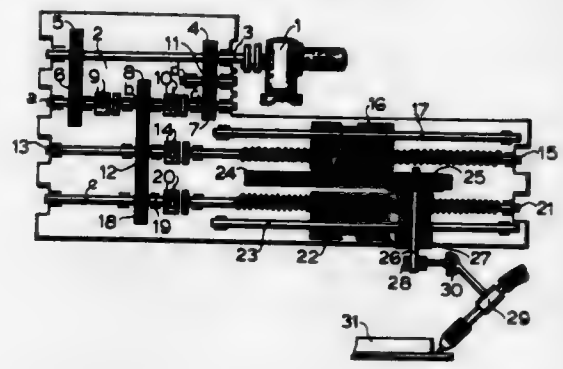
APPARATUS FOR THE AUTOMATIC WELDING OF COMPLEX SHAPES

Plamen V. Tzvetanov; Dyanko V. Chankov; Orlin A. Nikolov, and Alexander L. Ivanov, all of Sofia, Bulgaria, assignors to N P K "Zavarachna Technika", Sofia, Bulgaria

Filed Jul. 12, 1983, Ser. No. 512,932

Int. Cl.[3] B23K *1/00*

U.S. Cl. 228—25 **3 Claims**



1. An apparatus for the automatic welding of complex contours made up of rectalinear and curvilinear sectors, said apparatus including first and second carriages reciprocating parallel to each other, one of said carriages having a rack gear fixedly connected thereto and the other of said carriages having a shaft journalled thereon and carrying a gear in mesh with said rack gear, a welding torch mounted upon said shaft journalled on the second carriage, and means for selectively reciprocating the first and second carriages together in synchronism whereby to move the welding torch rectalinearly and for reciprocating only the first carriage while holding the second carriage in a fixed position whereby to move the welding torch in an arch.

4,513,903

METHOD OF REPAIRING LEAKS IN STEAM GENERATOR TUBES

Joel G. Feldstein, North Canton, Ohio, and James E. Gutzwiller, Jr., Forest Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 18, 1982, Ser. No. 444,402

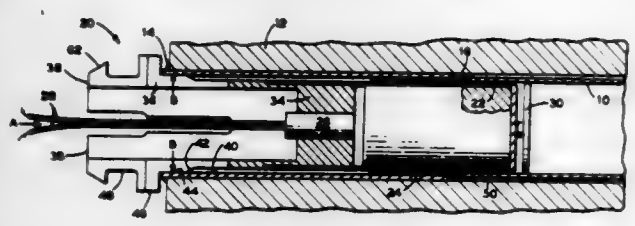
Claims priority, application United States, PCT/US82/01312

Int. Cl.[3] B23K *20/08*

U.S. Cl. 228—107 **2 Claims**

1. A method of rapidly repairing a steam generator tube having a defect in the tube in a location encompassed by a tube sheet, comprising the steps of:

cleaning the inside surface of the defective tube;
positioning an explosive welding device on remotely operated tooling;
mounting a thin metallic cylindrical sleeve on the explosive device;
inserting the explosive device with the thin sleeve within the tube using the remotely operated tooling;



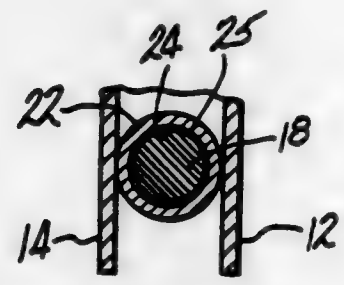
positioning the explosive device with the thin sleeve over the area containing the defect using the remotely operated tooling;
releasing the explosive device with the thin sleeve from the remotely operated tooling and removing the tooling; and
detonating the device to explosively weld the entire surface area of the sleeve to said tube.

4,513,904

METHOD TO REDUCE ELECTRICAL CONTACT RESISTANCE BETWEEN CONTACT SURFACES IN AN ELECTRODE

Kenneth E. Woodard, Jr., and Ronald L. Dotson, both of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 490,612, May 2, 1983, Pat. No. 4,452,685. This application Jul. 29, 1983, Ser. No. 518,595
Int. Cl.³ H01R *11/02*
U.S. Cl. 228—116 **8 Claims**



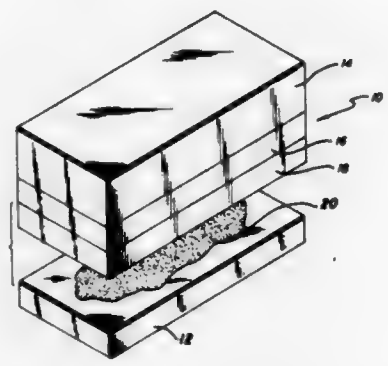
1. A method for reducing the electrical contact resistance between a first contact surface of copper and a second contact surface of a metal selected from the group consisting of titanium and nickel in an electrode of an electrolytic cell comprising:
(a) cleaning the first and second contact surfaces of said copper and said metal;
(b) coating the cleaned first and second contact surfaces with a conductive compound comprised of between about 20 and about 30 percent by weight of indium and about 80 and about 70 percent by weight of gallium;
(c) pressing said coated first and second contact surfaces together, whereby the contact resistance between the coated first and second contact surfaces is reduced.

4,513,905

INTEGRATED CIRCUIT METALLIZATION TECHNIQUE

Ronald S. Nowicki, Sunnyvale, Calif., and John F. Moulder, Sun Fish Lake, Minn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 518,728, Jul. 29, 1983, abandoned, which is a continuation of Ser. No. 244,568, Mar. 17, 1981, abandoned. This application May 9, 1984, Ser. No. 586,906
Int. Cl.³ B23K *1/20*; H01L *21/285*
U.S. Cl. 228—123 **12 Claims**



1. In the process of fabricating integrated circuits and other items where a wettable or bondable conductive material is required for reliable contact with other bondable or conductive material, the steps of forming a conductive or bondable layer comprising:
depositing a metal barrier layer on a prepared Si surface, said barrier layer being formed in the presence of N_2 so that N_2 is incorporated into the barrier layer;
depositing a layer of conductive or bondable material on said barrier layer and
subjecting said surface and layers to high temperature,
said barrier layer thus formed reduces migration of the Si through the conductive or bondable material to provide said wettable bonding material after the subjection of said layers to high temperature.

12. A method of fabricating integrated circuits and the like, in part performed in a sputtering apparatus, comprising:
providing a Si surface,
sputtering a barrier layer of a metal selected from the group consisting of chromium, titanium, titanium alloy or titanium plus refractory metals in the low atmospheric chamber of said sputtering apparatus which atmosphere includes N_2 thereby incorporating N_2 in said barrier layer,
sputtering a layer of conductive material on said barrier layer,
placing a bonding pad with a solder on one surface in contact with said conductive material, and
heating said layered material and pad to bond the layered material and pad together,
the barrier layer reducing the migration of Si through the conductive material during the heating step so that the conductive material adheres to the pad.

4,513,906

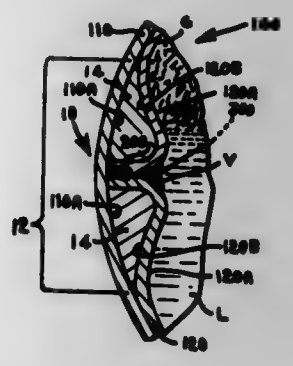
LIQUID TANK WELD CAVITATION PROTECTION

Yi M. Chang, 23146 Califa St., Woodland Hills, Calif. 91367, and James R. Fenwick, 10553 Limerick, Chatsworth, Calif. 91311

Filed Oct. 19, 1983, Ser. No. 543,592
Int. Cl.³ B23K *31/00*
U.S. Cl. 228—184 **12 Claims**

1. A method of protecting an edge weld of a thin metal bladder against a cavitation-induced collapse, wherein said bladder is to be partially filled with a pressurized liquid in motion, and wherein said bladder is disposed within a rigid walled tank, and also wherein the configuration of the interior surface of said bladder at said edge weld is in the structural form of a cavity which is horn-like in shape, said method

comprising the step of interposing a backing made of hard and ductile material between and in contact with the exterior surface of said bladder and the interior surface of said tank at a location adjacent to said edge weld of said bladder.

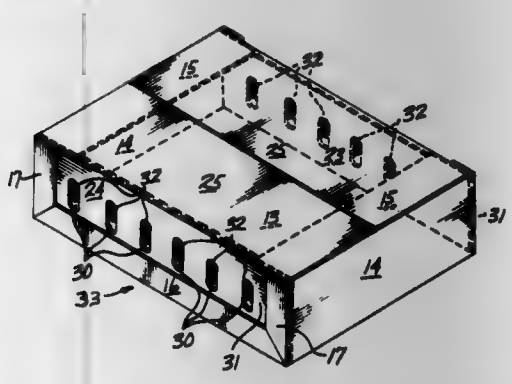


4,513,907

VENTILATED FRUIT FLY PROOF PRODUCE SHIPPER

Lee V. Grosshuesch, Kaneohe, Hi., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jul. 26, 1983, Ser. No. 517,488
Int. Cl.[3] B65D *13/04*
U.S. Cl. 229—23 R 24 Claims



1. A container for preventing insects from depositing eggs in produce contained therein comprising

two pair of opposed side panels,

a bottom panel,

a cover,

one of said panels being formed of two layers of corrugated board,

a plurality of vent holes in said one panel,

a screen between said panel layers and covering said vent holes, to prevent access to the interior of said container

said inner panel layer being of a thickness, each of said vent holes having a width and the mesh of said screen being of a size whereby said produce will be a distance from said screen which prevents an insect from depositing eggs in said produce within said container.

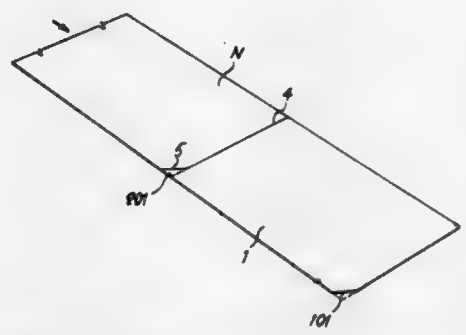
4,513,908

WRAPPER SHEET FOR CIGARETTE PACKS, AND METHOD FOR OBTAINING SAME

Renato Manservisi, Bologna, and Mario Fossi, Funo di Argelato, both of Italy, assignors to Sasib S.p.A., Bologna, Italy

Filed Jul. 7, 1981, Ser. No. 281,191
Claims priority, application Italy, Jul. 15, 1980, 15213/80[U]
Int. Cl.[3] B65D *65/00, 75/00*
U.S. Cl. 229—87 C 2 Claims

1. A wrapper sheet for forming the outer wrapping of a soft cigarette package, comprising a blank including a first portion and a second portion, said first and second portion having a common edge, said first portion having the shape of a rectangle and said second portion having the shape of a non-rectangular parallelogram joined to said first portion along the common edge.

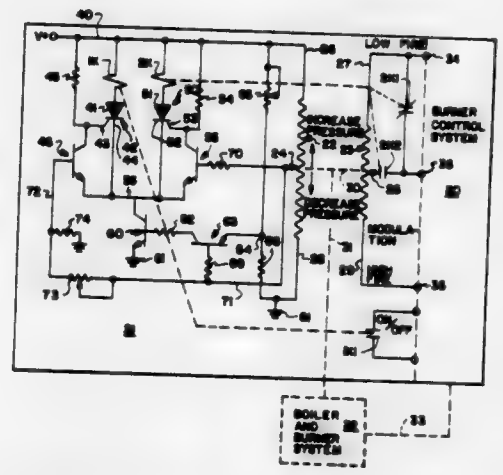


4,513,909

FUEL BURNER CONTROL SYSTEM WITH LOW FIRE HOLE

James I. Bartels, Hudson, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 17, 1984, Ser. No. 651,489
Int. Cl.[3] F22B *35/00*; G05D *15/00*
U.S. Cl. 236—26 R 8 Claims

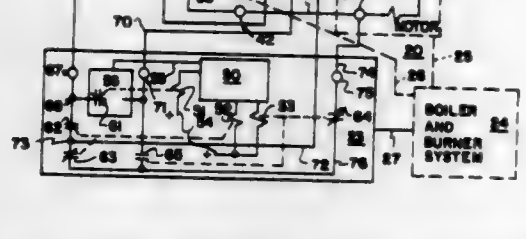


1. A control system adapted to control a fuel burner having a low fire mode, and a modulating mode including a high fire limit of operation for a boiler to provide a fluid pressure, including: pressure responsive means responsive to said fluid pressure in said boiler; said pressure responsive means having two variable impedance means with said two variable impedance means being operated together in response to changes in said pressure; switching circuit means connected to a source of potential and including two switching means with said switching means capable of being energized from said source of potential; a first of said switching means being energized upon said fluid pressure causing a first of said variable impedance means to approach a minimum desirable fluid pressure for said boiler; said first switching means having at least one switchable circuit to control said fuel burner in said low fire mode of operation; a second of said switching means being energized upon said first of said variable impedance means reaching said minimum desirable pressure for said boiler; said second of said switching means having a normally open switchable circuit and a normally closed switchable circuit; and a second of said variable impedance means adapted to be connected through said second switching means switchable circuits to control said fuel burner in said modulating mode when said second switching means is energized.

4,513,910
ADAPTIVE LOW FIRE HOLD CONTROL SYSTEM

James I. Bartels, Hudson, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 17, 1984, Ser. No. 651,490
Int. Cl.[3] F22B *35/00*; G05D *15/00*
U.S. Cl. 236—26 R 9 Claims

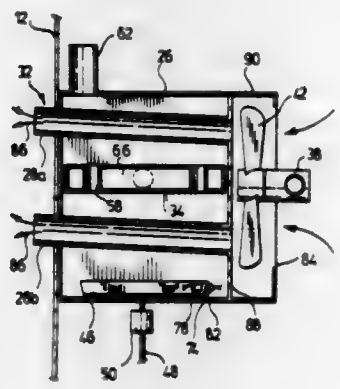


1. A control system adapted to control modulating motor means and a fuel burner with said burner having a low fire mode, and a modulating mode including a high fire limit of operation to heat a boiler to provide a fluid pressure, including: pressure responsive means responsive to said fluid pressure in said boiler; said pressure responsive means having variable impedance means being varied in response to said pressure; fuel burner sequencer means including program means to implement a control sequence for said modulating motor and said fuel burner in response to said variable impedance means; said program means having output means to control said modulating motor means and said fuel burner; impedance detection circuit means having input means and having an output connected to said fuel burner sequencer means; said impedance detection circuit input means being responsive to said variable impedance means with said impedance detection circuit means causing said fuel burner sequencer means to hold said fuel burner in said low fire mode upon a startup of said burner with said impedance detection circuit means detecting said impedance means in an impedance range indicating said fluid pressure is steady or rising; and said impedance detection circuit means causing said fuel burner sequencer means to release said fuel burner to said high fire limit and modulating mode upon a fall in said fluid pressure.

4,513,911
AUXILIARY VEHICLE SPACE HEATER

Francis F. Sanchez, 62 Gibbard Crescent, Collingwood, Ontario, Canada (L9Y 2C2)

Filed Jul. 5, 1983, Ser. No. 510,684
Int. Cl.[3] B60H *1/02*
U.S. Cl. 237—12.3 C 9 Claims

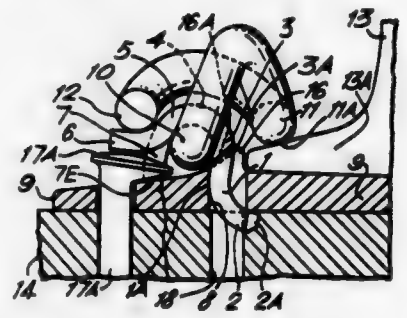


1. An auxiliary vehicle interior space heater comprising a hollow metal housing with a plurality of metal tubes extending generally parallel to each other and through the housing, said tubes having a first set of tube ends and a second set of tube ends in communication with the space exterior of said housing, a gas burner which uses a portable form of fuel located in said housing for heating said tubes, means for mounting said housing on an exterior vehicle wall which has a surface interior of a vehicle with an opening to place said second set of tube ends in communication with vehicle interior, said second set of tube ends extending beyond said housing to provide tube extensions of said second tube ends within a vehicle interior, said first set of tube ends being essentially flush with said housing, said mounting means when used on a vehicle exterior wall positioning said tubes to slant them slightly upwardly toward vehicle interior, said gas burner heating said tubes to heat air within and by convection cause the heated air to enter vehicle interior and means for venting combustion products from said gas burner to exterior of said housing.

4,513,912
HOLDING A RAILWAY RAIL DOWN ON A SUPPORT MEMBER

Jon S. Schumaker, Mantua, N.J., assignor to Pandrol Ltd., London, England

Filed Dec. 7, 1981, Ser. No. 328,069
Int. Cl.[3] E01B *9/34, 9/46, 9/62*
U.S. Cl. 238—349 15 Claims



1. A device for use in holding a railway rail down on a support member, said device comprising a first part for lying in a vertical hole through the support member and a second part at the bottom of the first part, the second part comprising a projection which extends sideways and a part of which is to lie vertically below a part of the support member which is beside the bottom of said hole, said device further comprising a third part at the top of the first part and extending upwardly therefrom, a fourth part extending sideways from the top of the third part and then a fifth part extending downwardly, the first part comprising a fulcrum portion so that when the first part is driven downwardly into said hole the fulcrum portion makes contact with the wall of said hole and forms therewith a pivot about which said device turns to cause said part of said projection to come vertically below said part of the support member, the third, fourth and fifth parts forming an arch under which a first portion of a rail-fastening clip can be driven, which portion will press upwardly on the fourth part of the said device, said device further comprising a sixth part extending sideways from the lowest extremity of the fifth part, the sixth part being for receiving a downwardly pressing second portion of the clip, and a seventh part extending downwardly from the lowest extremity of the fifth part for holding the sixth part above and spaced from the support member, the lowest portion of the seventh part being higher than the lowest portion of the second part, said projection being on one side of said first part, and said fourth, fifth, sixth and seventh parts being on the opposite side of said first part, and the whole of said seventh part being intermediate said first part and that extremity of said sixth part which is remote from said lowest extremity of said fifth part.

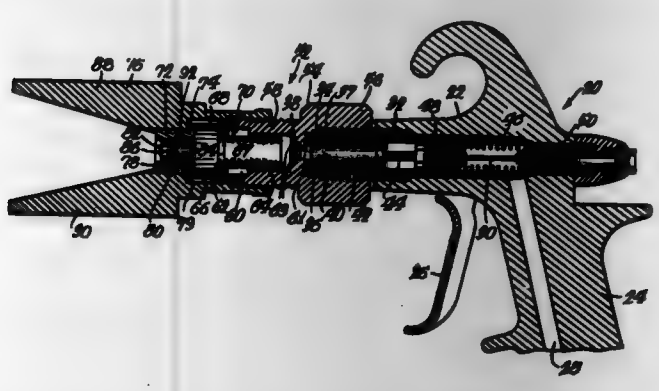
4,513,913
REVERSIBLE AIRLESS SPRAY NOZZLE

David H. Smith, Redwood City, Calif., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Nov. 10, 1982, Ser. No. 440,502
Int. Cl.[3] B05B *15/02*
U.S. Cl. 239—119 6 Claims

1. A spray nozzle assembly for reversible mounting on an

airless spray gun, comprising an adapter for sealed connection at a rearward end thereof with a forward fluid outlet end of the spray gun, said adapter having external threads at a forward end thereof and a passage therethrough defining a first passage section of a first diameter toward said adapter forward end; annular seal means at said adapter forward end; a cap having a passage therethrough and internal threads in a rearward end of said passage for connection with said adapter forward end, said cap passage forwardly of said threads defining a second passage section of a second diameter and a third passage section forwardly of said second section and having substantially said first diameter, said first diameter being less than said second and said second and third passage sections defining a shoulder therebetween; a spray tip assembly including a generally cylindrical housing having a passage extending axially therethrough and a radially outwardly extending annular flange at a rearward end thereof, and a spray tip in a forward end of said housing passage and having a bore therethrough terminating in a fluid outlet orifice at a forward end of said spray tip, said flange having a diameter greater than said first diameter and the portion of said housing forwardly of said flange having substantially said first diameter, said spray tip assembly in normal spraying position being positioned with said cylindrical



housing portion forwardly of said flange received in said cap third passage section and said flange received in said cap second passage section, said spray tip assembly being reversible for cleaning a blockage from said orifice by a reverse flow of fluid therethrough and when reversed being positioned with said cylindrical housing portion forwardly of said flange received in said adapter first passage section and said flange captured between said shoulder and said seal means; and a filter comprising a cylindrical body of filter material having a diameter less than said first diameter and a cylindrical mounting member at an end thereof, coaxial with and attached to said body of filter material and having a passage therethrough and a diameter greater than said first diameter, said filter, when said spray tip assembly is in normal position for spraying, being positioned with said filter material body extended into said first passage section and said cylindrical mounting member captured between said seal means and a rearward end of said spray tip assembly housing flange with a forward end of said flange abutting said shoulder, said cylindrical mounting member being of a resilient material and forming a seal with said housing flange, and said filter, when said spray tip assembly is in reverse position for cleaning, being removed from said adapter.

4,513,914

INSERTS FOR SQUEEZE BOTTLES

Norman Cook, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,830

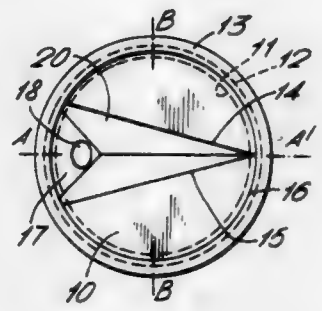
Claims priority, application United Kingdom, Oct. 30, 1981, 8132795

Int. Cl.³ B05B *1/28*

U.S. Cl. 239—121 **1 Claim**

1. An insert for a squeeze bottle having a bottle neck with an interior portion, said insert comprising a tubular plug portion engageable in a liquid-tight manner with said interior portion of said bottle neck and a re-entrant diaphragm disposed on said tubular plug portion, characterized in that:

(a) said diaphragm has a circumference and is substantially planar having a substantially tetrahedral re-entrant part recessed therein;



(b) said re-entrant part is formed with a nozzle angled to direct a jet of liquid at an angle of at least 20° to a vertical axis of said plug portion; and

(c) said re-entrant part is defined by two convergent chords wherein said chords meet at said circumference of said diaphragm thereby indicating visually the direction in which said jet of liquid is to be directed.

4,513,915

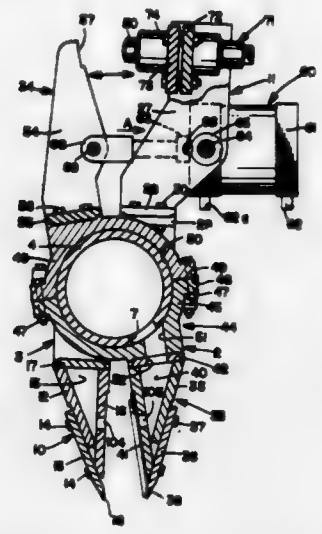
NOZZLE CONSTRUCTION FOR COATING EQUIPMENT

Gordon A. E. Kohler; John B. Kohler, both of North Canton, and Herbert B. Kohler, Greentown, all of Ohio, assignors to The Kohler Coating Machinery Corporation, Greentown, Ohio

Filed Dec. 6, 1982, Ser. No. 447,103

Int. Cl.³ B05B *1/04, 1/32*

U.S. Cl. 239—455 **24 Claims**



1. An improved fluid nozzle construction for coating equipment including: a transversely elongated nozzle body having a first moveable section, and a second fixed section forming a transversely elongated discharge opening for discharging a stream of fluid on a moving substrate, said second section having a transversely extending hollow conduit providing a fluid supply pipe adapted to be connected to a source of fluid pressure for supplying fluid to the nozzle body for discharge through the elongated discharge opening; pivot means for pivotally mounting the moveable section on the hollow conduit of the fixed section; and a plurality of pressure means mounted on and spaced along the fixed section and acting on the moveable section for moving said section with respect to the fixed section to vary the size of the discharge opening, and to limit and control the deflection of the first section with respect to the second section.

4,513,916

FUEL INJECTION NOZZLE

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries, Birmingham, England

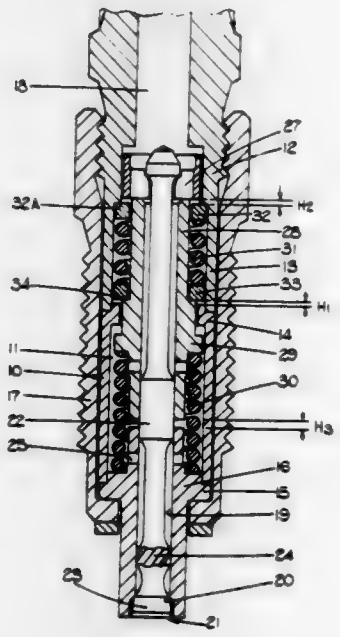
Filed Sep. 21, 1983, Ser. No. 534,283

Claims priority, application United Kingdom, Oct. 14, 1982, 8229329

Int. Cl.[3] F02M *61/08*

U.S. Cl. 239—453

2 Claims



1. A fuel injection nozzle for supplying fuel to an internal combustion engine, the nozzle being of the so-called outwardly opening type and comprising a valve assembly housed within a chamber, a fuel inlet to said chamber, the valve assembly including a valve body defining a bore, a seating defined adjacent one end of the bore, the portion of the bore downstream of the seating defining an outlet opening, a valve member slidable in said bore, the valve member having a head located in said outlet opening and being shaped to co-operate with said seating, a retaining member mounted on the stem of the valve member remote from the seating, a sleeve member mounted about the portion of the stem which extends from the bore, said sleeve member engaging said retaining member, a flange on the sleeve member, a first coiled compression spring acting between said flange and a surface on said body, said first spring acting to bias the head of the valve member into contact with the seating, a pair of annular spring abutments located about said sleeve member intermediate said retaining member and the flange, a second coiled compression spring positioned between the abutments, means defining a step in said chamber to limit the movement of the one spring abutment which is nearer to the valve head, the other spring abutment initially engaging a further step in the chamber, but being engaged by said retaining member during movement of the valve member, said one spring abutment initially engaging a step defined in the sleeve member the axial distance in the closed position of the valve member, between the first mentioned step in the chamber and the one spring abutment being less than the axial distance between the other spring abutment and the retaining member whereby initially the second spring opposes the action of the first spring until the one abutment engages the first mentioned step whereafter the first spring alone acts on the valve member until the other spring abutment is engaged by the retaining member.

4,513,917

SAND MILL ROTOR DISCS

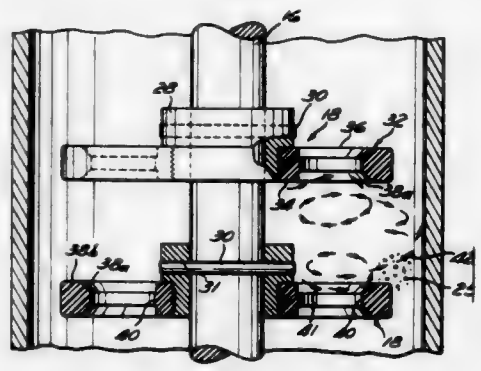
Edward J. Szkaradek, Santa Ana, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.

Filed Jun. 16, 1983, Ser. No. 504,937

Int. Cl.[3] B02C *17/16*

U.S. Cl. 241—46.11

18 Claims



1. Industrial milling apparatus for reducing the size of particles in liquid including a vessel, a rotor in said vessel having a shaft and a plurality of axially spaced rotor discs mounted on the shaft, a quantity of grinding media in the vessel to be agitated by said rotor as the liquid is pumped through the vessel, the improvement wherein:

said rotor discs each have a hub attached to the shaft, a generally planar, annular web extending out from the hub, the web being of substantially uniform thickness throughout its annular shape except for having a plurality of enlarged ports extending axially through the web for permitting the liquid and media to circulate in the vessel, and an annular rim extending outwardly from the web having an uninterrupted and substantially uniform axial thickness considerably greater than the axial thickness of the web.

4,513,918

DISPENSING APPARATUS

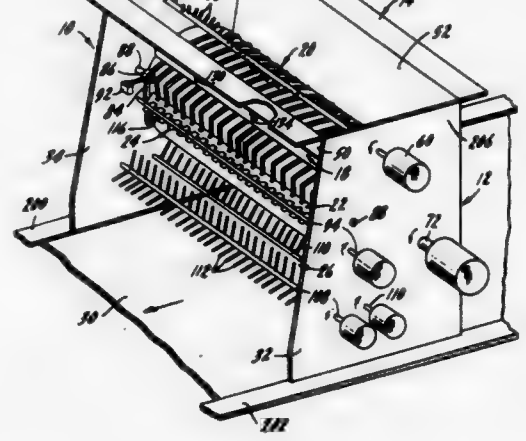
Roger F. Parson; Kenneth G. Rosenquist, and Justin M. Schmit, all of Duluth, Minn., assignors to Jeno's, Inc., Duluth, Minn.

Filed Nov. 12, 1982, Ser. No. 441,174

Int. Cl.[3] B02C *19/12*

U.S. Cl. 241—101.4

8 Claims



1. An apparatus for uniformly dispensing particulate food materials onto a moving article comprising:

(a) hopper means for holding a supply of the particulate material;

(b) said hopper means having a horizontally-disposed orifice through which particulate material may exit;

(c) a drum mounted adjacent and below said orifice and rotatable on an axis;

(d) a plurality of spaced fins protruding radially from the

surface of said drum and terminating in ends a predetermined distance from the surface of the drum, said fins being disposed on a zigzag pattern relative to the length of said drum and operable to counteract the tendency of the particulate material to fall off the drum;

(e) rotation of said drum in one direction causing particulate material which has compacted on the drum surface between said fins under the force of gravity to be rotated transversely of said opening and out of said hopper; and

(f) scraper means extending parallel to the drum surface below said orifice and adapted to engage said drum surface between said fins;

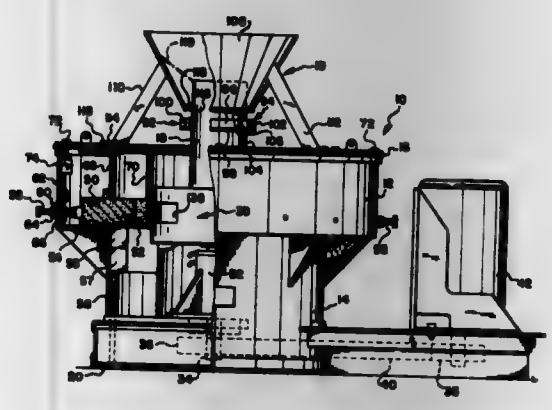
(g) said scraper means being operable to follow the zigzag pattern of said fins and to shift longitudinally of said drum during rotation thereof and effective to lift particulate material compacted in ribbons between said fins off of said surface and guide it to a discharge precipice over which it falls onto the moving article.

4,513,919

FEED ARRANGEMENT FOR A CENTRIFUGAL ROCK CRUSHER

Gabriel M. Terrenzio, Seattle, Wash., assignor to Acrowood Corporation, Everett, Wash.

Filed Nov. 18, 1983, Ser. No. 553,218
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—275 **7 Claims**



1. In a centrifugal impact rock crusher including a cylindrical housing with a vertically disposed central axis, means defining an impact surface positioned radially around the interior of said housing and transverse to said central axis, a housing cover for attachment to said housing having a circular housing feed opening defined therein concentric with said axis, impeller means having a landing surface therein, disposed for rotation concentrically within said housing and adapted to throw rock received upon said landing surface against said impact surface for crushing, and an impeller cover for attachment to said impeller means having a circular impeller feed opening defined therein concentric with said axis and of a diameter substantially equal to the diameter of said housing feed opening, the improvement comprising:

a hopper having at least one side wall with upper and lower edges and defining a circular exit opening at the bottom of said hopper having a diameter substantially equal to the diameters of said housing feed opening and said impeller feed opening;

means supporting said hopper with said exit opening disposed above and concentric with said housing feed opening;

a cylindrical feed tube having upper and lower ends of a diameter slightly less than the diameters of said exit opening, said housing feed opening and said impeller feed opening, and of a height greater than the distance between said exit opening and said impeller feed opening but less than the distance between said upper edge of said hopper side wall and said landing surface of said impeller, said feed tube being disposed in vertical orientation to pass through said exit opening and said housing feed opening and into said impeller feed opening with said upper end within said hopper and said lower end at or below said impeller feed opening; and

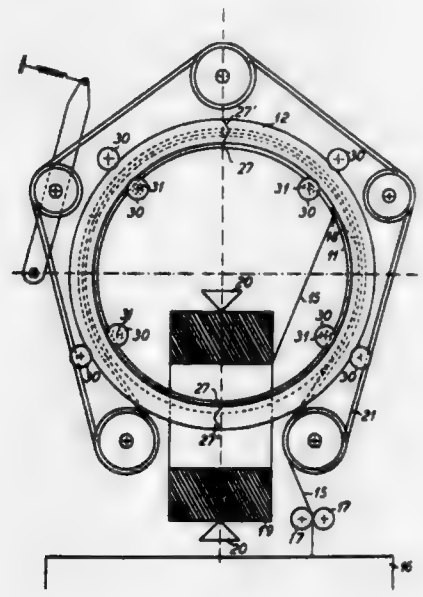
means for releasably securing said feed tube to said housing cover to permit downward adjustment of said feed tube as said bottom end thereof wears.

4,513,920

WINDING MACHINE FOR WINDING ELONGATE MEMBERS OR CORES

Jan B. Pedersen, Bredsten, Denmark, assignor to Tortrix A/S, Vejle, Denmark

Continuation-in-part of Ser. No. 174,496, Nov. 9, 1979, abandoned. This application Aug. 13, 1982, Ser. No. 407,959
Int. Cl.³ H01F *41/08*
U.S. Cl. 242—4 B **12 Claims**



1. A winding unit for use in a winding machine for the winding of a wire on elongate, particularly closed core members, such as toroidal cores, said winding unit comprising:

suspension means for supporting a core member for rotational movement in a first plane;

a substantially annular wire advancing member;

driving means coupled with said wire advancing member;

first individual bearing means for suspending said wire advancing member for rotational movement in a prescribed direction of revolution around its own axis in a plane substantially normal to said first plane and with a substantially circular path of movement encircling said core member;

a substantially annular wire magazine to provide a storage space for taking up wire from an external supply and having cross-sectional width and height dimensions considerably exceeding the diameter of said wire, said wire magazine having an internal side forming the bottom of said storage space and an external side providing an opening for filling wire into said storage space, said internal side having a diameter exceeding the external diameter of the wire advancing member;

second individual bearing means for suspending said wire magazine coaxially with said wire adcancing member with the internal side of the wire magazine extending in radial alignment with an external side of said wire advancing member throughout the axial width of said wire advancing member;

said first and second bearing means allowing said wire magazine to follow the rotational movement of said wire advancing member in said prescribed direction, but independent of the movement of the wire advancing member;

a bottom slit formed in the internal side of the wire magazine throughout the circumferential length thereof with an opening facing said axis for drawing out wire from said storage space simultaneously with the filling of wire into

said storage space through the opening in said external side of the wire magazine;

wire guide means formed on said wire advancing member in substantial radial alignment with said bottom slit; and

means at the external side of the wire magazine to close the storage space of the magazine on part of said external side.

4,513,921

METHOD AND APPARATUS FOR DETECTING FLUCTUATIONS OF MONITORING STANDARD OF THREAD-KNOTTING MONITOR IN AUTO-WINDER

Kinichiro Imoda; Toshinori Kawai, and Kimio Nishitani, all of Nagoya, Japan, assignors to Aichi Spinning Co., Ltd., Japan

PCT No. PCT/JP83/00198, § 371 Date Feb. 6, 1984, § 102(e) Date Feb. 6, 1984, PCT Pub. No. WO84/00148, PCT Pub. Date Jan. 19, 1984

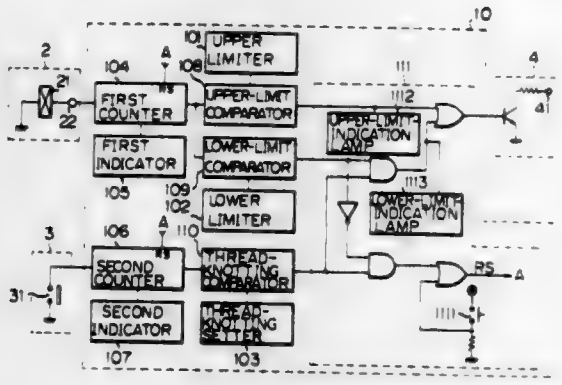
PCT Filed Jun. 18, 1983, Ser. No. 582,568

Claims priority, application Japan, Jun. 21, 1982, 57-107370

Int. Cl.³ B65H *54/20, 63/00*

U.S. Cl. 242—36

5 Claims



2. An apparatus constructed and arranged to detect fluctuation of a monitoring standard of a thread-knotting monitor in an auto-winder having an automatic thread-knotting machine, said apparatus comprising:

(a) first means for detecting an operation of said thread-knotting monitor;

(b) first means, connected to said first detecting means, for counting the number of operations of said thread-knotting monitor detected by said first detecting means;

(c) second means for detecting an operation of the automatic thread-knotting machine;

(d) second means, connected to said second detecting means, for counting the number of operations of said thread-knotting machine detected by said second detecting means;

(e) means for setting a pre-determined number of thread-knotting operations;

(f) an upper limiter associated with said first counting means and having a pre-determined upper limit number for the number of operations of said thread-knotting monitor relative to the pre-determined number of thread-knotting operations;

(g) a lower limiter associated with said first counting means and having a pre-determined lower limit number for the operations of said thread-knotting monitor relative to said predetermined number of thread-knotting operations;

(h) a thread-knotting comparator associated with said second counting means of said thread-knotting machine and said means for setting a pre-determined number of thread-knotting operations;

(i) an upper limit comparator associated with said upper limiter and said first counting means;

(j) a lower-limit comparator associated with said lower limiter and said first counting means;

(k) means for terminating the operation of the auto-winder; and

(l) means for interconnecting said operation terminating means with said upper-limit comparator and said lower-limit comparator;

said thread-knotting comparator including means for signalling said lower limiter when the number of operations of said thread-knotting machine equals the pre-determined number set by said setting means;

said lower-limit comparator including means for comparing the number of operations of said thread-knotting monitor received by signal from said thread knotting comparator with said pre-determined lower limit number and means for emitting a signal through said interconnecting means to said operation terminating means when said number of thread-knotting monitor operations is less than said pre-determined lower-limit number;

said upper limiter comparator including means for comparing the number of operations of said thread knotting monitor, received by signal from said first counting means, with said pre-determined upper limit number and means for emitting a signal through said interconnecting means to said operation terminating means when said number of operations of said thread-knotting monitor equals said pre-determined upper limit number.

4,513,922

AUTOMATIC MACHINE FOR COILING DOWN CABLE

Jacques Dufour, 27 rue Gerschell, 62100 Calais, France

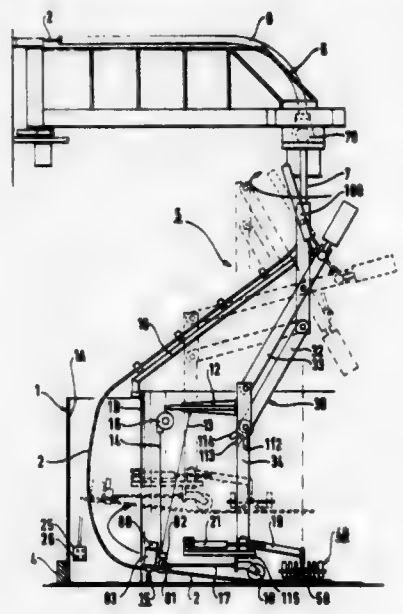
Filed Sep. 20, 1983, Ser. No. 534,057

Claims priority, application France, Sep. 20, 1982, 82 15770

Int. Cl.³ B21C *47/00*

U.S. Cl. 242—54 R

9 Claims



1. An automatic machine for coiling down successive layers of cable in a cylindrical tank having a vertical axis, the improvement wherein the machine comprises:

a movable beam to enable coiling down to take place in a selected one from a plurality of tanks;

a rotary arm suspended from the beam and rotatable about an axis which is movable by the beam into alignment with the axis of said selected tank;

a parallelogram linkage fixed to the free end of the rotary arm, said parallelogram linkage including a vertically fixed vertical arm connected to the rotary arm and a vertically movable vertical arm linked to the fixed arm;

a cable follower connected to the bottom end of the vertically movable arm by means of a rod articulated thereto; said cable follower being vertically movable by the parallelogram linkage and horizontally movable by said rod; and

a cable tractor supported by the parallelogram linkage and serving to regulate the speed of the cable as a function of the inward or outward direction of spiral winding for any given layer;

said members being provided with actuator means such as motors and jacks to enable said movements to be remotely controlled, and with position sensors and motion sensors

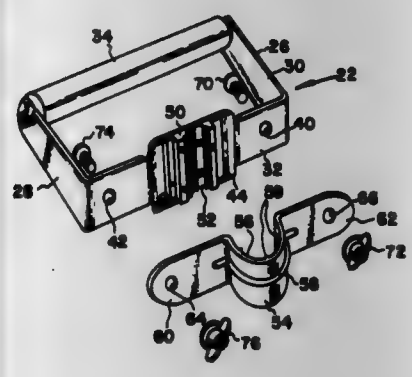
for sensing data which is applied to a computer for controlling and synchronizing said actuator means.

4,513,923

COMMODE TOILET TISSUE DISPENSER

George Ulics, 1300 Venice, Dearborn, Mich. 48124

Filed Oct. 31, 1983, Ser. No. 547,060
Int. Cl.[3] B65H *19/00*; E04G *3/00*
U.S. Cl. 242—55.2 4 Claims



1. Means for mounting a roll of tissue on a commode having a tubular member comprising:

a U-shaped bracket having a pair of spaced legs and an elongated bight;

roller means suitable for supporting a roll of tissue, the ends of the roller means being releasably connected to the bracket legs such that the roller means spans the two legs;

the bight of the bracket having a plurality of longitudinally spaced openings adapted to receive fastener means;

an insert engaging the bight of the bracket and having a pair of bulges received in a first pair of said openings in the bracket, the insert having a groove with a curvature complementing the curvature of the tubular member;

a clamp having a midsection embracing the tubular member, and a pair of ends adjacent a second pair of said openings in the bracket; and

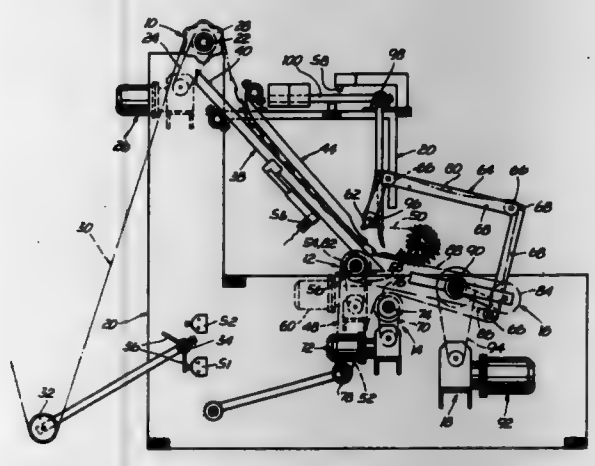
fastener means received in the second pair of openings to connect the clamp to the bight of the bracket.

4,513,924

PROCESS AND APPARATUS FOR PRODUCING ROLLS OF WIRE NETTING

Gerhard Lange, Brahmsstrasse 16, D-7410 Reutlingen 1, and Giovanni T. Angeli, Via Pietro de Crescenzo 32, I-48 018 Faenza (Ravenna), both of Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 416,970
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136207
Int. Cl.[3] B65H *17/12, 17/16, 25/04, 25/28*
U.S. Cl. 242—67.2 11 Claims



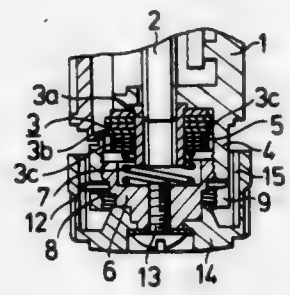
1. Apparatus for automatic production of reelless rolls of an endless web of wire netting formed of flat pressed wire rolls wound into each other comprising several parallel guide surfaces equally inclined to the horizontal, each of which is provided for a row of linking and hooking points of the netting; further comprising several endless winding strands extending in parallel vertical planes along paths which cover each other at least in corresponding sections when projected on each other in a horizontal direction perpendicular to the said vertical planes, each of which strands has a winding portion, a fixed deflecting body, and a displaceable deflecting body, said winding portion adjoining the guide surfaces and extending from said fixed deflecting body to said displaceable deflecting body which is displaceable relative to the fixed deflecting body, said winding portion and corresponding winding portions of the other winding strands which lie in a cylindrical surface with horizontal generatrix, together forming a receiver of variable form and size for the roll; also comprising at least one rocking holder for the displaceable deflecting bodies; and comprising a strand driving device for displacing the winding strands along their paths, the strand driving device acting without slippage on each winding portion by means of a strand driving wheel; characterized by a winding driving device for shortening the winding portions during the winding operation by means of a winding driving wheel acting without slippage on each winding strand outside its winding portion, which winding driving wheel is rotatable in the same sense and at a lower circumferential speed than the strand driving wheel which acts on the same winding strand; further characterized by a plurality of endless transport strands which extend in parallel vertical planes along paths which cover each other at least in sections, each of said strands having a transport portion with a beginning section adjoining one of said guide surface, at least the beginning sections of the transport portions lying in the aforesaid cylindrical surface; and by a transport driving device for transport of the roll during a lengthening of the winding portions, said transport being effected by a transport driving wheel acting without slippage on each transport portion.

4,513,925

DRAG BRAKE DEVICE FOR SPINNING REEL

Nobuyuki Yamaguchi, Tokyo, Japan, assignor to Daiwa Seiko Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1983, Ser. No. 529,976
Int. Cl.[3] A01K *89/02*
U.S. Cl. 242—84.5 A 1 Claim



1. In a spinning reel of the type having a brake member fitted at the rear of a spool-sliding shaft, and an adjustment member retractably screwed into the inside of a cylinder projecting from a housing around the outer periphery of said brake member and pressed into contact with said brake member via a resilient member so as to control the slippage of said spool-sliding shaft, a drag brake device for a spinning reel characterized in that an engagement portion and a through-hole are defined at an end portion of said cylinder opposite to each other, base ends of an annular spring fitting into said cylinder engaged with said engagement portion, a protuberance formed at the center of said annular spring fits into said through-hole, an anchoring step portion for said annular spring is formed at an end of a screw portion of said adjustment member, a knob cylinder positioned over the outer circumferential surface of said cylinder is attached integrally to said adjustment member,

and corrugations for engaging said protuberance of said annular spring are defined axially along an inner circumferential surface of said knob cylinder.

4,513,926

BAIL ARM CONTROL DEVICE FOR A SPINNING REEL

Kikuo Tsunoda, and Takehiro Kobayashi, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

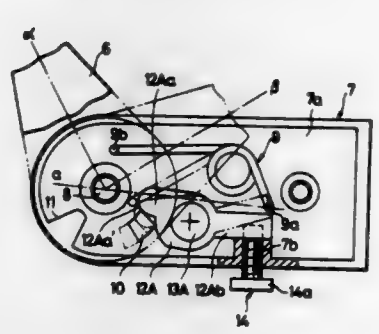
Filed May 4, 1982, Ser. No. 374,657

Claims priority, application Japan, May 5, 1981, 56-68030; May 5, 1981, 56-68031

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 G

9 Claims



1. In a bail arm control device for a fishing line having a housing, a bail arm, a bail arm lever carrying one end of said bail arm with said lever being pivotally supported on said housing for rotation between a winding position and a casting position, and a torsion spring having a dead point for biasing said lever to said positions which are located on the opposite sides of the dead point of said torsion spring, the improvement comprising a first stop boss provided on said bail arm lever, a second stop boss on said housing adapted to be engaged by said first stop boss when said bail arm lever is pivoted to said casting position and adjustable stop means, means for moveably mounting said stop means in said housing for engagement by said first stop boss when said bail arm lever is pivoted to said winding position whereby the position of said bail arm lever may be adjusted to compensate for wear in said bail arm control device.

4,513,927

REWINDING APPARATUS FOR VIDEO CASSETTE

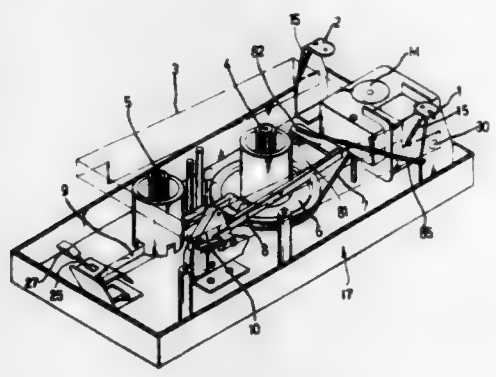
Yeh C. Tsai, No. 6, Lane 308, Pao-Shan Rd., Hsinchu City, Taiwan

Filed Aug. 8, 1983, Ser. No. 520,997

Int. Cl.³ G03B *1/02*; B65H *59/38*; G11B *15/13*

U.S. Cl. 242—191

2 Claims



1. An improved tape rewinding apparatus for a video cassette including a frame, a cassette compartment lid having an end pivoted at said frame, and a winding spindle driven by a transmission belt, the apparatus comprising:

a catch member disposed at said cassette compartment lid for fastening said cassette compartment lid in closed position;

a controlling member pivoted at said frame for controlling the release of said catch member, including a free end;

a spring member; and

a tension sensing member, biassed by said spring member to abut against said transmission belt and being moved in bias direction to actuate said free end of said controlling member to release said catch member in response to the decrease of tension of the transmission belt when the winding spindle is hindered from rotating.

4,513,928

MAGNETIC TAPE CASSETTE

Joseph Hackett, Dublin, Ireland, assignor to Eko Video Limited, Ireland

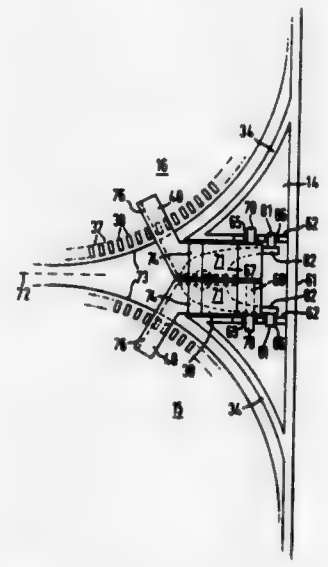
Filed May 5, 1983, Ser. No. 491,747

Claims priority, application Ireland, May 6, 1982, 1086/82

Int. Cl.³ G11B *15/32*

U.S. Cl. 242—198

7 Claims

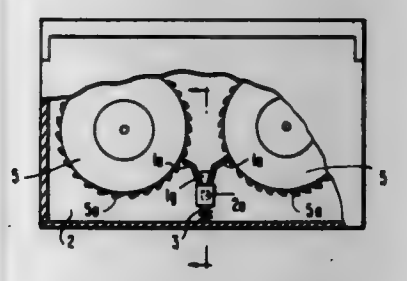


1. A tape cassette for use in a magnetic recording/reproducing apparatus, the cassette being of the kind comprising a housing having top and bottom plates with a pair of tape reels rotatably accommodated side-by-side in the housing between the said plates, a pair of spaced apertures in the bottom plate permitting entry into the housing of a pair of reel-engaging shafts of the said apparatus when the cassette is inserted into its position of use in the apparatus, and locking means automatically effective when the cassette is removed from the apparatus for substantially preventing inadvertent rotation of the reels when the cassette is not in its position of use, the locking means comprising a plurality of recesses formed on the outside surface of one flange of each tape reel adjacent the peripheral edge thereof, a pair of locking levers independently pivoted side-by-side about a common pivoted axis, said pair of locking levers having a pair of brake members, one on each locking lever extending mutually away from one another across the respective peripheral edges of the tape reel flanges each for engagement with any recess of a respective tape reel, means pivotally mounting the pair of locking levers with respect to the housing for rotation about an axis non-parallel to the rotational axes of the tape reels, means resiliently biasing the pair of levers for rotation in such a direction about the pivotal axis that the brake members are brought towards the said outside surfaces of the respective tape reel flanges into locking engagement with respective recesses of the reels when the cassette is not in its position of use, and an aperture in the cassette housing for a release pin which upon insertion of the cassette into its position of use in the apparatus is operative to rotate the pair of levers in opposition to the resilient biasing means to disengage the brake members from the tape reels, whereby each locking lever comprises a respective brake member.

4,513,929
MAGNETIC TAPE CASSETTE

Kengo Oishi, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 13, 1983, Ser. No. 494,470
Claims priority, application Japan, May 13, 1982, 57-68716[U]
Int. Cl.[3] G03B *1/04;* G11B *15/32*
U.S. Cl. 242—198 2 Claims

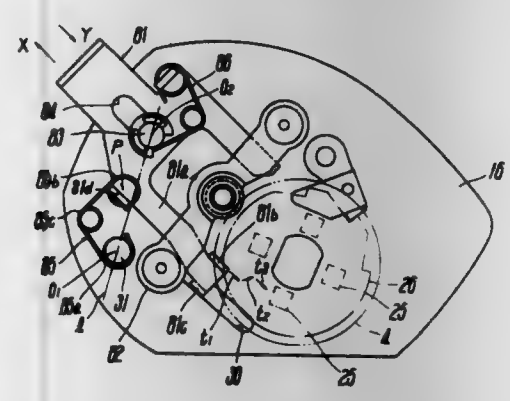


1. A magnetic tape cassette comprising a pair of reels rotatably mounted in said cassette with each reel having a geared peripheral portion, a brake member slidably mounted in said cassette for selectively engaging said gears to stop rotation of said reels and a brake releasing bar insertion hole located in a portion of said cassette adjacent said brake member, said brake member being comprised of a cover portion having a blind bore therein slidably engaging said cassette with said blind bore in communication with said hole whereby the inside of said cassette is isolated from the outside environment and a pair of end portions extending from said cover portion for engaging the geared peripheral portion of the respective reels.

4,513,930
FISHING REEL

Jun Sato, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 374,742, May 4, 1982, abandoned. This application Apr. 23, 1984, Ser. No. 602,266
Claims priority, application Japan, May 22, 1981, 56-78503
Int. Cl.[3] A01K *89/02*
U.S. Cl. 242—218 7 Claims

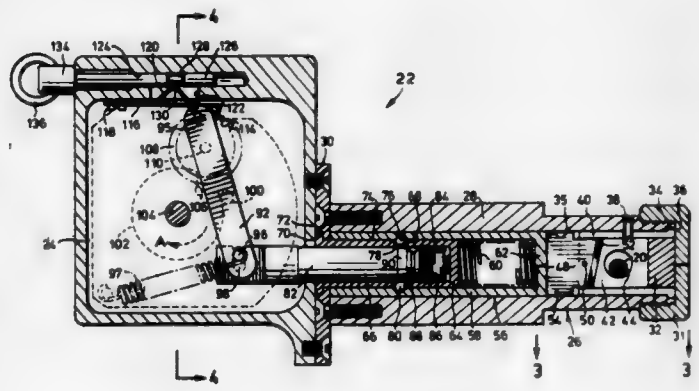


1. A fishing reel comprising,
a body frame,
a spool journalled to said frame and having a spool shaft,
a drive mechanism driving said spool and having a handle,
a clutch for interrupting a driving force transmitted from said drive mechanism to said spool, and
a clutch operating mechanism comprising a clutch lever which operates to disconnect said clutch, and return protuberances which rotate together with said handle to return said clutch lever to thereby connect said clutch, said clutch lever at said operating mechanism being supported to said frame in relation of being forwardly and backwardly movable and swingable around an axis which is parallel to a rotation axis of said return protuberances, said clutch lever for disconnecting said clutch having, at an utmost end in the direction of forward movement thereof an engaging portion which is non-movable relative to said clutch lever and which is engageable with each of said return protuberances, said clutch operating mechanism further comprising a torsion spring which biases said clutch lever in the swinging direction thereof and inverts the direction of biasing said clutch lever, during its forward movement, from moving said engaging portion away from each of said return protuberances to moving said engaging portion toward each of said return protuberances, and a restriction means for restricting a range of swinging motion of said clutch lever and comprising a guide groove having a width and a guide piece entering said groove, said torsion spring and restriction means coacting so that said engaging portion, when said clutch lever moves forwardly, is moved by action of said torsion spring on said lever step-wise radially inwardly from the radial outside with respect to each of said return protuberances, placing said engaging portion in the path of movement of said protuberances.

4,513,931
DEREEFING CUTTER

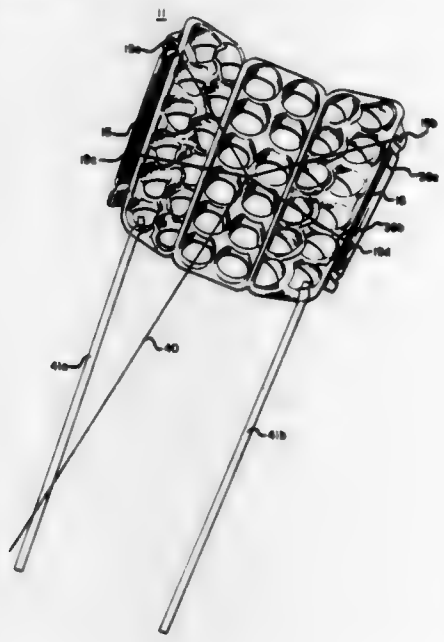
E. Dennis Kenzie, Fort Erie, Canada, assignor to Aero-Safe Technologies Inc., Fort Erie, Canada

Continuation of Ser. No. 212,182, Dec. 2, 1980, abandoned. This application Feb. 9, 1983, Ser. No. 465,220
Int. Cl.[3] B64D *17/36*
U.S. Cl. 244—152 20 Claims



20. A dereefing cutter for a parachute comprising a housing, an aperture in said housing to receive a reefing line, a knife to sever said reefing line and positioned to one side of said aperture, biasing means to bias said knife toward and across said aperture to sever a reefing line located in said aperture, latch means to oppose said biasing means and retain said knife to said one side, said latch means including a detent member slidably supported by a fixed member associated with said housing and operable upon a moveable member associated with said knife means, to hold said moveable member in a latched position against said biasing means, release means to release said latch means and permit movement of said knife means by said biasing means, said release means being operable to permit relative movement between said detent member and said fixed member to move said detent member out of latching engagement with said moveable member to permit relative movement, under the influence of said biasing means between said detent member and said moveable member, said release means including a release member moveable relative to said detent member from a first position in which said detent member prevents movement between said fixed and moveable members to a second position in which said detent member permits such relative movement, movement of said release member from said first to second position being in a direction opposite to that imparted to said moveable member by said biasing means.

4,513,932
RIGID MULTI-CONE KITE
Betty B. Sinha, 482 Madison Ave., Toms River, N.J. 08753
Filed Jun. 30, 1983, Ser. No. 509,343
Int. Cl.³ B64C *31/06*
U.S. Cl. 244—153 R **9 Claims**



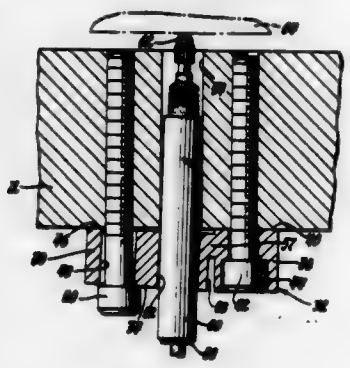
1. A lite comprising in combination three substantially identical rectangular sections of foam-like material comprising in combination:

a central section;

a pair of symmetrically disposed lateral sections contiguous with and extended along opposite edges and said central section, said lateral sections each being bent inwardly along said junctions at oppositely directed substantially equal internal angles and forming substantially equal external angles with the underside of the central section;

each of said sections comprising on its upper surface a plurality of rows of adjacent, hollow, substantially frustoconical members protruding from substantially circular concentric openings at the base of each of said members, a substantially identical portion of the sidewall of each of said frustoconical members being cut out to form an aerodynamical cup.

4,513,933
TRANSDUCER CLAMPING DEVICE
Willi H. Lueders, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 17, 1983, Ser. No. 505,178
Int. Cl.³ G12B *5/00*
U.S. Cl. 248—27.1 **1 Claim**



1. A clamping device adapted for use with a flow-through gage or the like to releasably mount and fixedly position a transducer probe having a tubular stem relative to the body of said flow-through gage or the like, comprising:

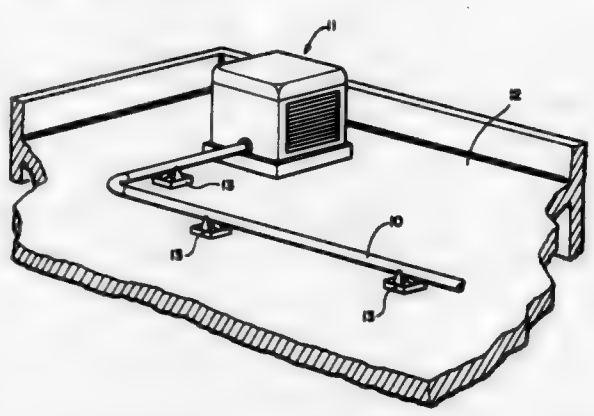
a block member having a first end rigidly attached to a surface of the gage body and a second end normally spaced from the surface of the gage body by a predetermined amount,

the block member further including a tunnel therethrough between the first and second ends normaliy axially aligned with a tunnel through the gage body, the wall of the gage body tunnel closely confining the tubular stem of the transducer probe, and the wall of the block tunnel being normally radially spaced from the tubular stem by a predetermined amount,

the block member also including a weakened portion between the block tunnel and the rigidly attached first end, and

tightening means in one mode engaging the second end with the gage body surface from which it is normally spaced by deforming the block member about the weakened portion causing a controlled axial misalignment of the block member tunnel relative to the tubular stem sufficient to bring the wall of the block member tunnel into clamping engagement therewith to fixedly position the probe relative to the gage body with the pressure holding said probe being absolutely controlled and predetermined by the engagement of the normally spaced second end with the gage body surface, the tightening means in another mode restoring the normal spacing of the second end from the gage body surface and the normal axial alignment of the tunnels to release the probe from the gage body.

4,513,934
PIPE-SUPPORTING DEVICE
Jerry R. Pruyne, Salt Lake County, Utah, assignor to Miro Industries, Inc., Midvale, Utah
Filed Nov. 3, 1982, Ser. No. 438,735
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—49 **12 Claims**



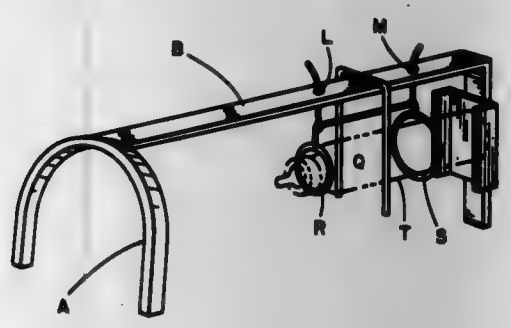
1. A pipe supporting device adapted to receive and support an exposed pipe on a roof, said device comprising a base having a flat bottom for resting on the roof; and upwardly tapered structure secured on and rising from said base to provide an upwardly divergent, substantially V recess having divergent line contacts for receiving the pipe and supporting it above said base, said line contacts minimizing contact area and friction between the pipe and said device, and said structure being made up of wall means, parts of which divergently recede from the respective line contacts at opposite arms of the V to provide mutually opposite, upwardly tapered towers, other parts of which slope upwardly from said base toward and meeting with the lower ends of said receding wall parts between said line contacts, and still other parts of which join the receding wall parts of the respective towers, said other wall parts and said still other wall parts having lower ends forming a symmetrical periphery at said base which substantially evenly distributes the pipe load on the base and on the roof.

4,513,935

NURSING BOTTLE SUPPORT

Everado M. Aguirre, LaPerpetua 1688 Del Country S.H.J., Guadalajara 2, Jalisco, Mexico

Filed Feb. 28, 1983, Ser. No. 433,820
Claims priority, application Mexico, Jan. 4, 1982, 190732
Int. Cl.[3] A47B *15/00*
U.S. Cl. 248—105 3 Claims



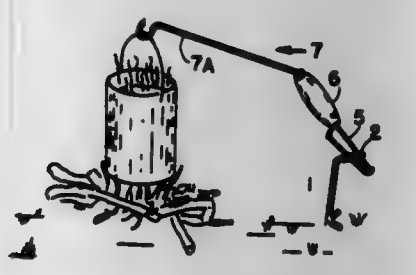
1. A nursing bottle support comprising a tripod consisting of a bar intended normally to extend in a generally horizontal plane, an arcuate member at one end of said horizontal bar providing two spaced apart legs as a part of said tripod and a vertically extending member at the other end of said bar providing a third leg of said tripod, a pair of spaced holes in said bar adjacent said third leg for receiving a pair of flexible members, a bottle holding support and a pair of flexible members attached to said bottle holding support and extending through said holes, and a U-shaped member extending over said bar and downwardly therefrom to engage the sides of a nursing bottle and limit the movement thereof.

4,513,936

ADJUSTABLE SUPPORT FOR COOKING POTS AND THE LIKE

Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127

Filed Mar. 25, 1983, Ser. No. 478,685
Int. Cl.[3] F16L *3/00*
U.S. Cl. 248—122 17 Claims



1. An adjustable support, comprising:

a first member having means for supporting itself on a level base surface and comprising a flat holding portion and means for holding said flat portion spaced up from said base surface, said flat portion having an opening defined by edges which are oriented in a generally horizontal position within the plane of said flat portion, and

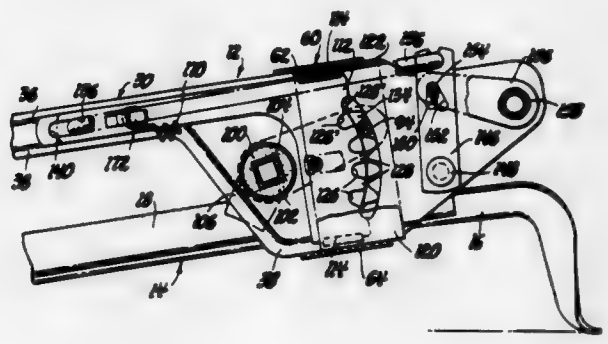
a second member, said second member being elongated in shape and unattached so that it is freely moveable, one end thereof comprising a tapered section, the wider end of said tapered section being wider than the maximum dimension of said opening of said holding portion, said tapered section having oppositely-facing tapered edges and said tapered section and said opening being sized and shaped so that said tapered section can be partially inserted into said opening and tilted to one side so that it can be positioned in any of a range of angular positions in said opening with its oppositely-facing tapered edges in contact with the opposite edges of said opening, such that said second member will be self supporting in any of a range of positions when its tapered section is placed in said opening and such that the height of the opposite end of said tapered portion can be adjusted, said second member having means for holding a workpiece at its other end.

4,513,937

VERTICAL SEAT ADJUSTER ARRANGEMENT FOR VEHICLE SEATS

Otto J. Langmesser, Jr., Fraser, and Richard W. A. Rees, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1982, Ser. No. 438,964
Int. Cl.[3] F16M *11/24, 13/00*
U.S. Cl. 248—394 3 Claims



1. A seat support mechanism for mounting a vehicle seat on a vehicle for vertical adjustment thereof relative to the vehicle comprising, in combination,

a seat support bracket secured to the seat and including a vertical extending arcuate slot therethrough,

pivot means fixable relative to the vehicle and extending to opposite sides of the bracket through the slot thereof,

a lever rotatably secured to the seat support bracket and to the pivot means, rotation of the lever about the pivot means vertically adjusting the seat support bracket,

a pair of lock plates, each including a plurality of vertically successive detent means spaced by intervening abutment means,

the detent means and abutment means of one lock plate being vertically offset from those of the other lock plate whereby a detent means of one lock plate is horizontally aligned with a corresponding abutment means of the other lock plate,

guide means mounting a lock plate on each side of the support bracket for horizontal sliding movement between a locked position wherein one of the detent means engages the pivot means to lock the seat support bracket against movement relative to the pivot means and a released position wherein one of the abutment means engages the pivot means to block engagement of the detent means with the pivot means,

means biasing both lock plates toward the pivot means to engage a detent means of one lock plate and an abutment means of the other lock plate with the pivot means and thereby locate the one lock plate in locked position and the other lock plate in released position,

an operator,

pin and slot means connecting the operator to the lock plates,

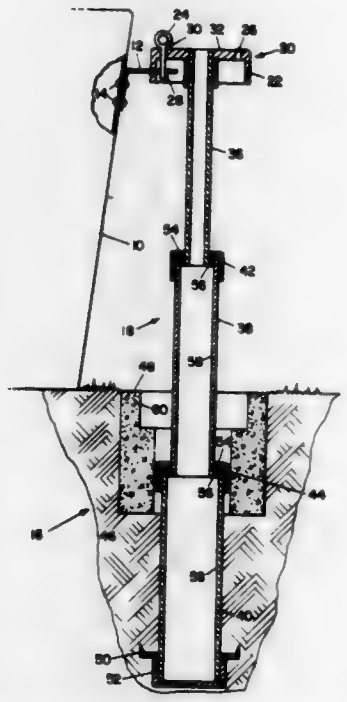
the pin and slot means being engaged between the operator and the one lock plate in locked position and being disengaged and freely slidable between the operator and other lock plate in released position whereby movement of the operator moves the one lock plate from locked position to released position while the other lock plate remains in released position.

4,513,938

RETRACTING REFUSE CAN SUPPORT

Charles M. Seymour, 1581 Oak Rd., Simi, Calif. 93063

Filed Aug. 28, 1981, Ser. No. 297,248
Int. Cl.³ A47B *97/00*
U.S. Cl. 248—507 **11 Claims**



1. A retractable apparatus for holding garbage or refuse cans in an erect position comprising:

hollow casing means for location in the ground and having an upper surface substantially flush with ground level;

support column means normally contained in said casing substantially flush with the upper surface of said casing means and with ground level, but extended to a firm upright position above ground;

means for releasably securing garbage or refuse cans to said support column means; whereby they are firmly held in an upright position and overturning by scavengers or the elements is precluded; and

said means for releasably securing garbage or refuse to said support column means including at least one horizontally disposed and outwardly extending blade attached near the top of a garbage or refuse can, a head fixture secured to said support column means, said head fixture having at least one horizontally oriented slot for receiving said blade, and means for releasably locking said blade within said slot.

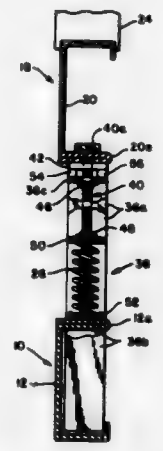
4,513,939

VIBRATION ABSORPTION MOUNTING FOR A ROOFTOP AIR HANDLING UNIT

Richard C. Berger, Off Split Rock Rd., Syosset, N.Y. 11791, and Paul L. Berger, 28 Moss La., Jericho, N.Y. 11753

Filed Oct. 11, 1983, Ser. No. 540,511
Int. Cl.³ E02D *27/44*; F16M *9/00*; E04B *1/36*
U.S. Cl. 248—544 **3 Claims**

1. An improved pre-assembled vibration absorption system for a rooftop mounted air handling unit comprising, in combination, a rectangular shaped upper curb adapted to have in attached relation thereto said air handling unit, plural bolts each bolted to extend in depending relation from said upper curb at selected locations therealong, a rectangular shaped lower curb adapted to be mounted on said rooftop in supporting relation beneath said upper curb, and at each location of one said depending bolt an inverted U-shaped housing attached to said lower curb bounding a compartment for a spring and having an opening in the top thereof through which said depending bolt has an operative position projected into said compartment, a first nut threadably engaged to said bolt in said compartment adjacent the underside of said top of said housing having an initial operative position bolting said housing to said upper curb such that said upper and lower curbs are correspondingly bolted to each other to facilitate the transit thereof to a rooftop site, a compressible helical spring disposed in each said compartment in surrounding relation about a cooperating depending bolt, and a second nut positioned beneath said first nut and downwardly adjustable along said bolt so as to cause compression of said spring and a corresponding increase in the upward force urgency therein, whereby following the unbolting of said upper and lower curbs from each other by the threadable adjustment of each said first nut the threadable adjustment of each said second nut down along said bolt causes compression of said helical spring and a force urgency therein effective to lift said upper curb into a spaced clearance position above said lower curb, to thereby permit vibrating movement of said upper curb relative to a stationarily mounted lower curb.



2. The improved pre-assembled vibration adsorption system as claimed in claim **1**, including unattached spacing blocks that are released for removal upon the threaded adjustment of each said second nut, to thereby contribute to enlarging the clearance provided for vibratory movement of said upper curb in relation to said lower curb.

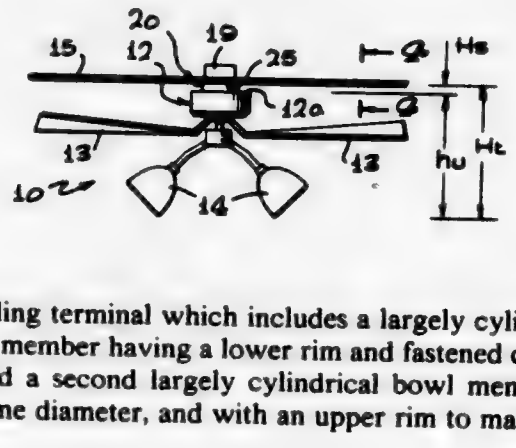
3. The improved pre-assembled vibration absorption system as claimed in claim **2**, including weather shields attached about said interconnected upper and lower curbs and having access openings therethrough for making threadable adjustments in each said second nut.

4,513,940

MEANS AND METHOD FOR ATTACHING FAN AND FIXTURE UNITS OR THE LIKE SUBSTANTIALLY FLUSH WITH A CEILING

Marvin Alperin, Los Angeles, and Joseph L. Brasswer, Tarzana, both of Calif., assignors to Albrass Enterprises, Inc., Los Angeles, Calif.

Continuation of Ser. No. 370,749, Apr. 22, 1982, Pat. No. 4,410,160. This application Oct. 14, 1983, Ser. No. 542,107
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—674 **2 Claims**



1. In a ceiling terminal which includes a largely cylindrical ceiling bowl member having a lower rim and fastened close to a ceiling, and a second largely cylindrical bowl member of about the same diameter, and with an upper rim to mate with

the ceiling member by one member closely fitting within the other, the improvement wherein:

one bowl member has a plurality of slots spaced about its rim, and the other bowl member has a plurality of projections that pass along said slots when said bowl members mate;

each of said slots has a first portion extending primarily vertically and having an outer end forming an opening in the rim of the slotted member and an inner end spaced from its rim, a second slot portion extending primarily horizontally from said inner end of said first slot portion and said second slot portion having an inner end opposite said first slot portion, and a third slot portion extending in a largely vertical direction from said inner end of said second slot portion and having an inner end furthest from the second slot portion, whereby a workman can install the second bowl member with any electrical device thereon by pressing up the second bowl member until he senses that the projections have reached the inner end of the first slot portions, turning the second member until the projections reach the inner end of the second slot portions, and then releasing the second member to move down slightly to move the projections to the inner ends of the third slot portions.

4,513,941

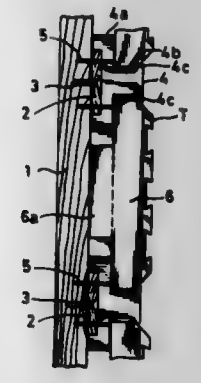
TILE HOLDING DEVICE FOR PRESETTING TILES

Masaharu Yamaguchi, Suita, Japan, assignor to Iwao Jiki Kogyo Kabushiki Kaisha, Saga, Japan

Filed Oct. 21, 1983, Ser. No. 544,302

Int. Cl.³ B32B *3/08, 23/22*

U.S. Cl. 249—91 **3 Claims**



1. A tile holding device for presetting tiles comprising a plurality of strip-shaped core members 2 attachable to the inner surface of a form panel 1 as arranged in parallel at a required spacing, a plurality of long joint members 4 made of elastic material and each mountable on the core member 2, and a plurality of short joint members 6 made of elastic material and to be arranged between and joined to each two adjacent long joint members.

4,513,942

PLATE MOLDING APPARATUS WITH INTERLOCKING CAVITY PLATES

Edwin A. Creasman, Fontana, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed May 25, 1983, Ser. No. 497,982

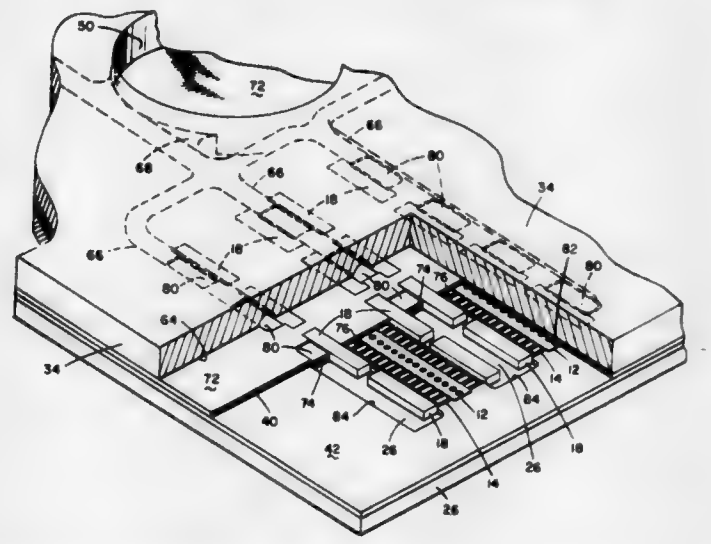
Int. Cl.³ B22D *19/04*

U.S. Cl. 249—95 **20 Claims**

1. An improved cavity plate assembly for an apparatus for encapsulating lead frame-mounted objects in molded packages of the type having first and second opposed mold plates with first and second molding surfaces, respectively; cavity plate means removably positionable between said first and second mold plates and having an array of multi-sided cavities in which said objects are held in a fixed position relative to and apart from said molding surfaces; passage means in said first mold plate for allowing the passage of liquid encapsulation material to said first molding surface; and channel means, in said first molding surface and in said cavity plate means, for communicating between said passage means and each of said cavities, whereby said liquid encapsulation material can be injected into said cavities via said passage means and said channel means, wherein the improvement comprises:

a first cavity plate having first and second opposed surfaces, said first surface being positionable against said first molding surface;

a plurality of elongate, flat-surfaced projections extending from said second surface of said first cavity plate;



means within said projections defining said array of cavities, all but one side of each of said cavities being defined by integral surfaces within one of said projections; and

a second cavity plate having a plurality of elongate slots therethrough, said slots located and dimensioned to register with and receive said projections;

whereby the remaining side of each of said cavities is defined by a mating surface formed by the juncture of said first and second cavity plates at the edge of one of said slots when said first and second cavity plates are fitted together with said projections received in said slots.

4,513,943

PRESSURE MEDIUM ACTUATED SERVO-MOTOR SYSTEM

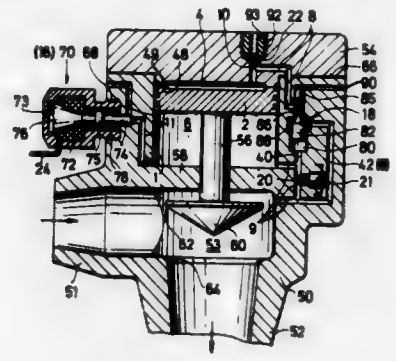
Steffen P. Russak, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 13, 1983, Ser. No. 531,702

Claims priority, application Switzerland, Sep. 17, 1982, 5510/82

Int. Cl.³ F16K *31/122;* **F15B** *13/043*

U.S. Cl. 251—31 **11 Claims**



1. A pressure medium actuated servomotor system comprising

a cylinder;

a piston slidably mounted in said cylinder to divide said cylinder into two chambers;

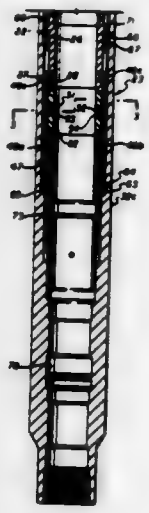
a first line communicating one of said chambers with a pressure medium source;
a second line communicating said one chamber with a pressure medium sink;
a third line communicating the other of said chambers with said pressure medium source;
a fourth line communicating said other chamber with said pressure medium sink;
a first control valve in one of said first and said second lines;
a first restrictor in the other of said first and said second lines;
a second control valve in one of said third and said fourth lines;
a second restrictor in the other of said third and fourth lines;
an external control line connected to one of said control valves; and
an internal control line communicating the other of said control valves with said chamber communicating with said one control valve for actuation of said other control valve with pressure medium from said chamber communicating with said one control valve.

4,513,944

VALVE WITH LATCHING MEANS

James B. Adams, Jr., Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation of Ser. No. 289,818, Aug. 3, 1981, abandoned, which is a division of Ser. No. 156,200, Jun. 3, 1980, Pat. No. 4,378,931. This application Jul. 19, 1984, Ser. No. 632,321
Int. Cl.³ F16K *31/00*
U.S. Cl. 251—89 **6 Claims**



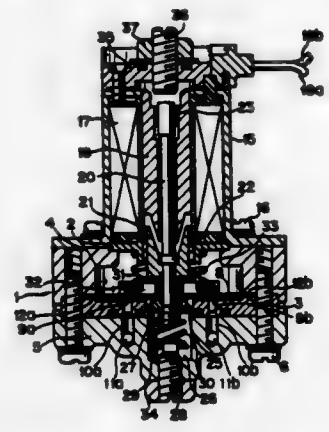
1. A valve comprising,
a tubular housing,
a tubular valve actuator in said housing,
means for reciprocating said valve actuator,
a valve member and cooperative seat moving between open and closed positions with reciprocation of said valve actuator,
means for mechanically latching said valve member in open position while leaving said actuator free to reciprocate in response to movement of said actuator beyond its normal travel range in moving the valve member between open and closed positions.

4,513,945

ELECTROMAGNETIC REED VALVE

Hiromi Otsuki, Anjo; Takashi Kondo, Toyota; Yoshiaki Kondo, Kariya; Haruyuki Obata; Takao Tate, both of Susono, and Norikatu Ishikawa, Mishima, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 10, 1982, Ser. No. 416,693
Claims priority, application Japan, Sep. 14, 1981, 56-136602[U]
Int. Cl.³ F16K *31/02*
U.S. Cl. 251—129 **1 Claim**



1. An electromagnetic reed valve comprising:
a housing defining therein a valve chamber, said housing including an inlet port through which fluid flows into the valve chamber and an outlet port through which fluid flows out of the valve chamber;
a reed valve body provided in the valve chamber capable of opening the outlet port of said housing, said reed valve body being secured at one end thereof and being free at the other end thereof;
a solenoid provided in said housing for varying the magnetic force thereof in response to the value of a current applied thereto;
a plunger moved at a stroke responsive to the magnetic force produced by the energization of said solenoid, said plunger having a lifter engaged with the free end of said reed valve body when said solenoid is energized so that the outlet port is opened in response to the stroke and disengaged from the free end of said reed valve body when said solenoid is deenergized so that the outlet port is closed; and
pressing means for urging that portion of said reed valve body which confronts at least the output port when said solenoid is deenergized, said pressing means including a pressing member mounted at said plunger, capable of contacting with that portion of said reed valve body which confronts at least the outlet port thereof, and a first urging member for pressing said pressing member in contact with said that portion of said reed valve body when said solenoid is deenergized, said solenoid moving said plunger against the urging force of said first urging member when said solenoid is energized whereby the outlet port is opened, said first urging member including a first coil spring engaged at one end thereof with said housing and engaged at the other end thereof with said pressing member.

4,513,946

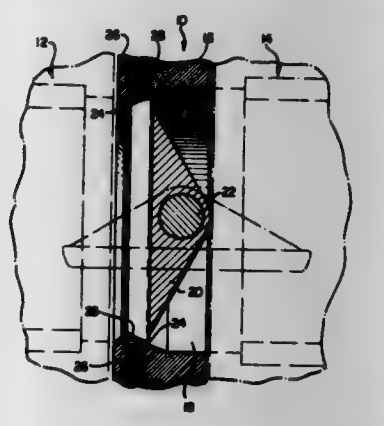
VALVE AND VALVE SEALING MEMBER

Werner K. Priese, Barrington, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 12, 1982, Ser. No. 397,147
Int. Cl.³ F16K *1/228*
U.S. Cl. 251—173 **6 Claims**

1. A valve comprising, in combination; a first element constituting a valve body and defining a flow passage extending

therethrough, a second element constituting a flow control member movably supported relative to said body for movement between an open position and a closed position for opening and closing said flow passage, one of said elements defining an annular sealing surface, and the other of said elements defining an annular sealing member support groove oriented to confront said sealing surface, an annular sealing member disposed in said support groove, said sealing member having a base section held in said support groove, and a sealing portion



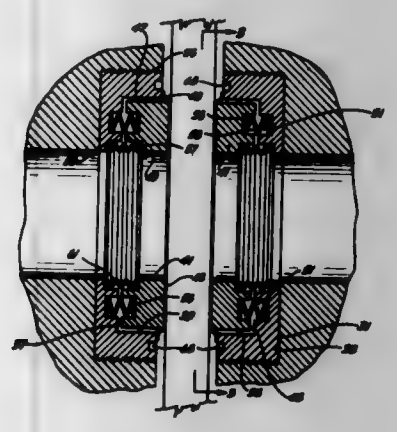
confronting said sealing surface for sealing engagement therewith, an intermediate section of metallic material joining said base section and said sealing portion including, a plurality of convolutions of decreasing thickness in the direction of said sealing portion so as to approximate a beam with uniform stress, for enabling said intermediate section to flex without permanent deformation while distributing stress in the convolutions substantially uniformly when the sealing member is in engagement with the sealing surface.

4,513,947

GEOTHERMAL VALVE

William E. Amend, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 18, 1983, Ser. No. 514,979
Int. Cl.[3] F16K *25/00*
U.S. Cl. 251—174 6 Claims



1. A valve for controlling the flow of geothermal brines, which comprises:

(a) a valve body defining a valve chamber and cylindrical inlet and outlet flow passages intersecting said valve chamber, said valve body further defining annular seat recesses about the intersection of said inlet and outlet flow passages and said valve chamber, each of said annular seat recesses being defined by a cooperative radial surface and a cylindrical surface,

(b) a gate element comprised of carbon steel having a cobalt alloy face and being movably positioned within said valve chamber and being movable between open and closed positions to control the flow of fluid through said flow passages;

(c) an annular ring being movably retained within each of said seat recesses and having a cobalt alloy sealing surface for establishing sealing engagement with said gate element and a rear surface opposing said radial surface, said annular ring having an outside surface conforming to said cylindrical surface and an inside surface conforming to the flow passage;

(d) at least three helical compression springs seated in cavities equi-axially spaced about said annular ring to resiliently urge said sealing surface against said gate element;

(e) a first flexible metal seal configured as an accordian-shaped member and secured to said valve body and the said inner surface, said metal seal being a high nickel alloy; and

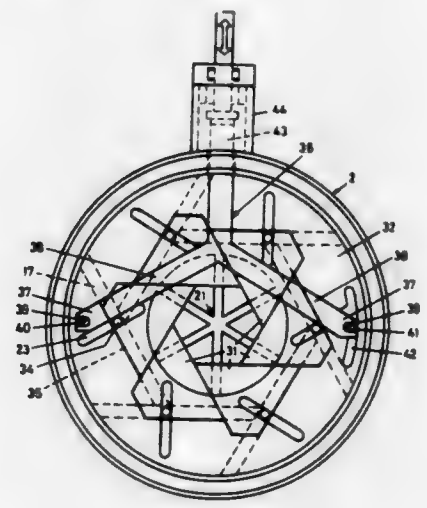
(f) a second flexible metal seal secured to said valve body and said sealing surface, whereby said spring is fluid-tightly isolated from said flowing corrosive fluid.

4,513,948

DIAPHRAGM REGULATING VALVE

Reinhard König, Altenbergstrasse 27, 7520 Bruchsal 7, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,757
Claims priority, application Switzerland, Jan. 14, 1981, 222/81
Int. Cl.[3] F16K *3/03*
U.S. Cl. 251—212 16 Claims



1. A diaphragm regulating valve for regulation of the flow of a fluid medium comprising: a plurality of flat diaphragm elements having contact edges in mutual contact; a housing, including two housing halves, defining a flow channel; said diaphragm elements arranged for insertion into said flow channel, and actuatable by at least one catch ring also mounted in the housing; at least one of the housing halves being provided with supporting ribs projecting into said flow channel and forming a star having a shape generally defined by the contact edges of said elements in said flow channel when the valve is closed, and said ribs fully covering the contact edges of said diaphragm elements in said flow channel when the valve is closed, the diaphragm being forced against the supporting ribs by fluid pressure.

4,513,949
VALVE ASSEMBLY

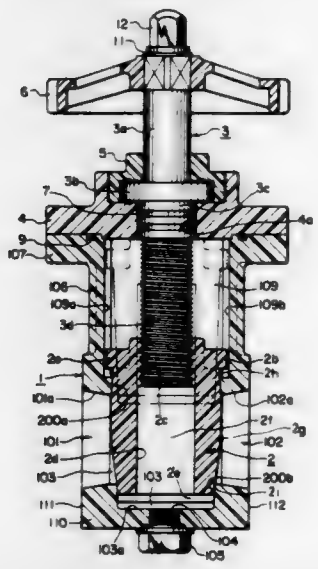
Tomoyuki Ueda, and Hirotoshi Ogawa, both of c/o Asahi Yukizai Kogyo Co., Ltd., of 5955, Nakanose-cho 2-chome, Nobeoka-shi, Miyazaki-ken, Japan

Continuation-in-part of Ser. No. 326,010, Nov. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 177,613, Aug. 13, 1980, abandoned. This application Dec. 15, 1983, Ser. No. 561,699

Claims priority, application Japan, Aug. 13, 1980, 55-45998

Int. Cl.[3] F16K *31/44*

U.S. Cl. 251—266 4 Claims



1. A valve assembly comprising in combination a valve body made of a hard synthetic resin preferably PVC and having a fluid passage laterally arranged therethrough;

a non-rotatable, axially bored valve member made of a hard synthetic resin softer than that of the valve body and movable within the valve body perpendicular to said fluid passage and holdable at any position at and between a full-closing position and a full-opening position relative to said fluid passage, said valve member taking a general imaginary shape close to a true cylinder and having a taper of 1/10–1/30, the practical configuration thereof being generally of a convexedly curved one in the direction of its taper;

a pair of separated valve seats formed in said valve body unit and around said fluid passage, each having a generally tapered planar surface corresponding with the taper of the valve member; and

a shallow concave recess formed on bottom wall surface of said valve member and kept in fluid connection with said axial bore of the latter adapted for avoiding fluid trapping which may otherwise occur when said valve member is being brought into its closing position; the material resin being softer than that of the valve body unit and preferably polypropylene.

4,513,950
GARAGE JACK FOR LIFTING AN AUTOMOBILE

Takeshi Yamagishi, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Japan

Filed May 13, 1983, Ser. No. 494,165

Claims priority, application Japan, Mar. 24, 1983, 58-47889

Int. Cl.[3] B60P *1/48*

U.S. Cl. 254—8 B 7 Claims

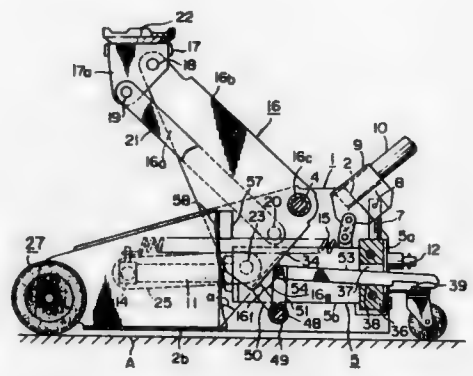
1. A garage jack for lifting an automobile provided with an arm lock mechanism for preventing inadvertent fall of a lifting arm, comprising:

a rotatable shaft which is provided with a first pawl and a second pawl in an angularly displaced relation;

a lock/unlock bar which may be selectively secured to a position to put the first and the second pawls out of their functions;

a first engagement means provided on the rear end of the lifting arm to prevent the fall of the lifting arm below a first position by engaging with the first pawl; and

a second engagement means provided on the lifting arm comprising of a pair of substantially triangular side plates, a top plate extending between the top ends of the two side plates and is rotatably supported by a tubular collar attached to a rear portion of each of side plates of the lifting arm for preventing the fall of the lifting arm below a second position by engaging with the second pawl;



said rotatable shaft carrying the first and the second pawls being normally biased by a spring means to their active states.

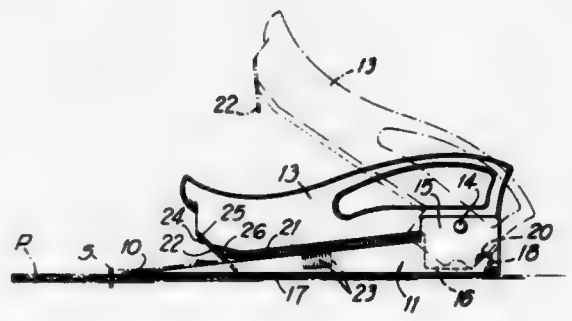
4,513,951
STAPLE REMOVER

E. Mark Rogers, 3052 Kingstowne Club Dr., Smyrna, Ga. 30080

Filed Mar. 12, 1984, Ser. No. 589,178

Int. Cl.[3] B25C *11/00*

U.S. Cl. 254—28 10 Claims

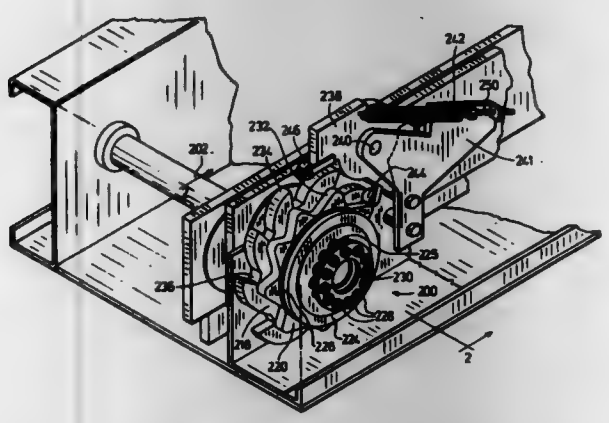


1. A staple remover and storage device to prevent scattering of staples comprising an elongated removed staple storage rail having an inclined upper face and tapering toward its leading end, said leading end terminating in a staple removing blade fixed on said storage rail and being in a common plane with a bottom surface of the storage rail, a cooperative handle having its rear end portion pivotally secured to a rear portion of said storage rail on a pivot axis extending transversely of the handle and storage rail, yielding means biasing said handle toward closely spaced parallel substantially coextensive relationship with the inclined upper face of the storage rail and allowing the handle to be swung away from the storage rail to facilitate emptying the storage rail of removed staples which have accumulated thereon, a yielding retainer element on a forward end portion of the handle disposed in a path of travel of removed staples entering onto the storage rail and preventing return movement of such staples beyond said retainer element toward the forward end of said rail, and a compressible strip of uniform thickness on a face of said handle which is normally opposed to said inclined upper face of the storage rail and exerting yielding stabilizing pressure on removed staples as they accumulate on and along the storage rail, swinging of said handle on said pivot axis away from the storage rail after the storage rail is filled with removed staples allowing such staples to be easily emptied from the storage rail.

4,513,952
DRIVE MECHANISM FOR CABLE DRUMS

Henry Vanlelinde, Scarborough, Canada, assignor to Swing Stage Limited, Scarborough, Canada

Continuation-in-part of Ser. No. 288,588, Jul. 30, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,334
Claims priority, application European Pat. Off., Oct. 5, 1982, 82305294.9
Int. Cl.³ B66D *1/14, 5/04*
U.S. Cl. 254—285 5 Claims



1. A drive mechanism for a plurality of hoist drums for rotating said drums in unison comprising, in combination,

a frame having a pair of spaced-apart, parallel support side walls, at least two axles journalled for rotation in said support walls of the frame, said axles journalled in a parallel, spaced-apart relation;

a drum adapted to receive a cable wound thereon mounted on at least one said axle concentric therewith;

three circular cam lobes of equal diameter rigidly mounted eccentrically on each of said axles between said support walls 120° angularly out of phase with each other, said cams having the same eccentricity relative to the axis of each axle;

three elongated link plates each having at least two circular holes formed therein adapted to receive and to interconnect the cam lobes on the axles inboard between the support walls in rotatable relationship whereby oscillatory motion imparted to the link plates by rotation of one of said axles rotates the other axle in unison;

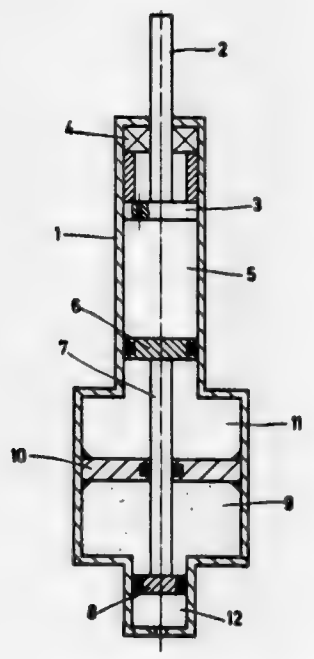
means for driving one of said axles; and

brake means for retarding the oscillatory motion of the link plates for slowing or stopping rotation of the drums, said brake means comprising a hub mounted on a said axle and rigidily secured to the cam lobes for rotation with the said cam lobes, cam means and detent means mounted on the hub for rotation thereon, and friction discs rigidly mounted on the hub for rotation therewith, said friction discs adapted to engage the cam means and detent means in frictional engagement for normal conjoint rotation together, and said cam means and detent means comprising a pair of control discs secured together for conjoint rotation, one of said discs having a plurality of equispaced cam lobes formed on its perimeter and the other of said discs having a plurality of corresponding dogteeth defining notches formed on its perimeter, a sensor-actuator having a cam follower and an engagement roller extending therefrom, said sensor-actuator being pivotally mounted and biased for rotation whereby said cam follower is urged against the disc cam lobes and tracks said lobes up to a predetermined rotary speed of the control discs and said cam follower leaves the surface of the cam lobes in excess of said predetermined rotary speed to cause the engagement roller to seat in a dogtooth to prevent further rotation of said discs and to cause the friction discs to stop rotation of the hub and the cam lobes secured thereto.

4,513,953
GAS SPRING WITH EXTENSION FORCE CONTROLLED AS A FUNCTION OF TEMPERATURE

Werner Molders, Plaidt; Rolf Langanke, Boppard; Egon Sentinger, Koblenz, and Hermann Reuschenbach, Rossbach, all of Fed. Rep. of Germany, assignors to Gas Spring Company, Division of Fichtel & Sachs Industries, Inc., Colmar, Pa.

Filed Apr. 14, 1983, Ser. No. 485,055
Int. Cl.³ F16F *9/52*
U.S. Cl. 267—121 11 Claims



1. A gas spring comprising a vessel the interior of which contains a volume of gas under pressure and forms a working chamber entered by a piston rod guided within the vessel and sealed off against the outside, the extension force acting on the piston rod being equal to the product of the pressure in the working chamber and the cross-sectional area of the piston rod, wherein the improvement comprises:

a sliding parting piston defining an axially movable wall of the working chamber and sealed against the vessel; and

means for moving said parting piston as a function of change in ambient temperature so as to vary the volume of the working chamber in a manner to maintain the extension force within desired limits, said parting-piston moving means comprising a chamber containing an expansion medium and means operatively coupling said sliding parting piston to said expansion chamber.

4,513,954
DAMPING CORE ARTICULATED JOINT FOR MECHANICAL ARTICULATED ARM SYSTEMS SUBJECT TO VIBRATIONS

Lorenzo Cantamessa, Solto Collina, Italy, assignor to DAMP S.p.A., Sovere, Italy

Filed Dec. 3, 1982, Ser. No. 446,637
Claims priority, application Italy, Jul. 1, 1982, 2923 A/82
Int. Cl.³ F16F *15/08*
U.S. Cl. 267—141.3 8 Claims



1. A damping core for an articulated joint between first and

second members, said core being adapted to be received in said first member and resisting relative rotational movement between the two members, said core comprising:

an elastomeric body which is elongated along an axis thereof, said body having a central opening for receiving said second member which opening is elongated along an axis thereof, the elongated axes of said body and opening being essentially coincident the width of said opening along said axis being greater at the ends of said elongated opening than at the middle of said elongated opening.

4,513,955

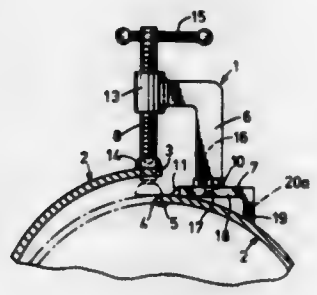
LEVEL CLAMP APPARATUS

Charles E. Daubon, 2271 S. 11th St., Milwaukee, Wis. 53215

Filed Jan. 24, 1983, Ser. No. 460,304

Int. Cl.³ B23Q *1/04*

U.S. Cl. 269—41 **7 Claims**



1. A level clamp apparatus for deflecting at least one of a pair of work members to product edge-to-edge alignment, comprising

an adaptor means having a support element adapted to be secured to one of said work members and having a plurality of working engaging members, said adaptor means having an outer mounting means secured to said support element,

a generally L-shaped member having intersecting first and second arms and a mounting means on the first arm complementing said adapter outer mounting means, and releasable attachment means for releasably interconnecting said mounting means to releasably affix said L-shaped member on said adaptor means for orienting of said L-shaped member and said support element with respect to said work members and

an adjustable forcing member secured to the outer end of said second arm of said L-shaped member and movable therethrough for engaging of the second of said work member.

4,513,956

CONVEYING DEVICE FOR SHEETS

Niels H. Sigvardt, Humlebaek, and Jan A. Baranski, Herlev, both of Denmark, assignors to Océ-Helioprint AS, Kvistgaard, Denmark

PCT No. PCT/DK82/00049, § 371 Date Jan. 18, 1983, § 102(e) Date Jan. 18, 1983

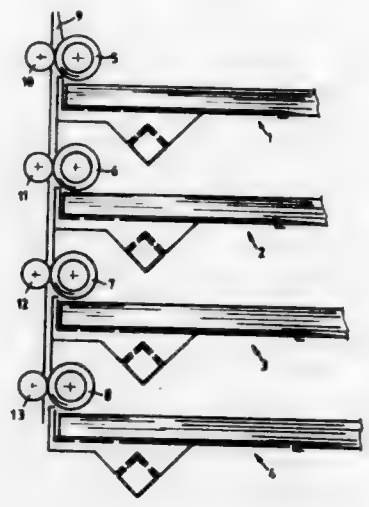
PCT Filed May 25, 1982, Ser. No. 460,245

Claims priority, application Netherlands, May 25, 1981, 8102551

Int. Cl.³ B65H *5/08*

U.S. Cl. 271—9 **14 Claims**

1. An apparatus for conveying sheets to a processing station, comprising: a plurality of sheet stack holders spaced apart along a conveyor path leading to said processing station; conveyor means for delivering a sheet from a stack on any selected one of said holders into said path and then along said path to said station, said conveyor means including a plurality of roller pairs mutually spaced apart along said path, each of said pairs comprising two relatively fixed rollers forming a nip to advance along said path a sheet gripped in the nip, with one roller of each pair disposed in part over a said stack holder and being selectively activatable to serve as a separation roller for feeding a sheet from the stack holder into said path; the portion of said path that leads from each stack holder situated nearer to said processing station coinciding with a portion of said path that leads from each stack holder situated farther from said processing station; means for bringing a sheet stack on any



selected one of said holders and the related separation roller in engagement and for activating that roller so as to feed a sheet from that stack into said path; and means operable when one of said separation rollers is activated to rotate all rollers of said pairs in unison.

4,513,957

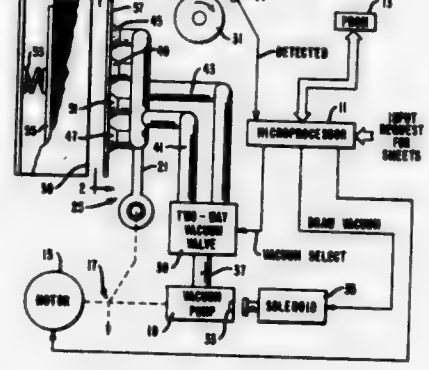
ITEM DISPENSING SYSTEM

William J. Schaefer, Jr., Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed May 3, 1983, Ser. No. 491,118

Int. Cl.³ B65H *3/08, 7/14, 7/16*

U.S. Cl. 271—90 **14 Claims**



1. A sheet dispensing system comprising:

a source of sheets;

a dispensing path;

pick-up means, including first and second means, movable between said sheet source and said dispensing path and being responsive to the application of a vacuum to one of said first and second means for feeding at least one sheet from said sheet source to said dispensing path;

means for generating a signal in response to the failure of said pick-up means to feed a sheet to said dispensing path when a vacuum is applied to said one of said first and second means; and

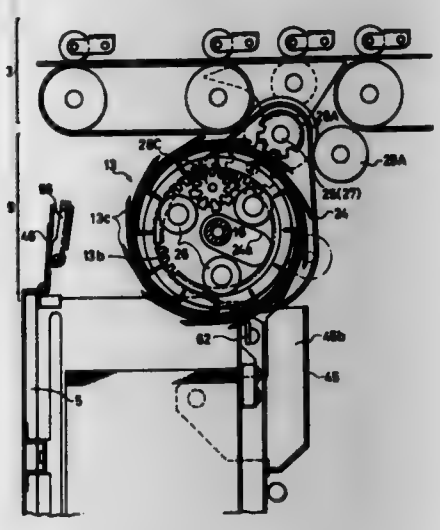
means being responsive to the signal for applying a vacuum to the other one of said first and second means:

4,513,958

DEVICE FOR SWINGING ACCUMULATING WHEEL FOR USE IN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

Eiichi Kokubo; Koichi Goi; Junichi Arikawa; Hideyuki Ebihara, and Hiroshi Chiba, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,054
Claims priority, application Japan, Feb. 4, 1982, 57-16597
Int. Cl.[3] B65H *29/00*
U.S. Cl. 271—187 1 Claim



1. In an automatic money depositing and disbursing machine including a plurality of boxes for containing bank notes and each having an upper opening through which bank notes are pulled out or stacked, and a plurality of accumulating wheels rotatably carried by an accumulating wheel oscillating shaft and positioned above respective boxes, each of said accumulating wheels having a plurality of paddles below which bank notes are inserted for delivery to respective boxes, and each of said accumulating wheels being swung to the lower accumulating position during the operation of accumulating and stacking bank notes into each of said boxes for passing the bank notes to the corresponding box and being swung to the upper retracted position during the operation of pulling out bank notes from said boxes, an improved device for swinging each of said accumulating wheels, which comprises a stopper integrally mounted on said accumulating wheel oscillating shaft and being biased by a spring to move said accumulating wheel normally and independently to said lower accumulating position, a swinging lug swingably mounted on said accumulating wheel oscillating shaft and adapted to be engaged with said stopper to swing the same in the direction so that said accumulating wheel is forcibly moved to the upper retracted position, and a link bar operatively connected to said swinging lug to swing the same between the angular positions for setting said accumulating wheel at the lower accumulating position and for setting said accumulating wheel at the upper retracted position.

4,513,959

SHEET DECELERATION APPARATUS

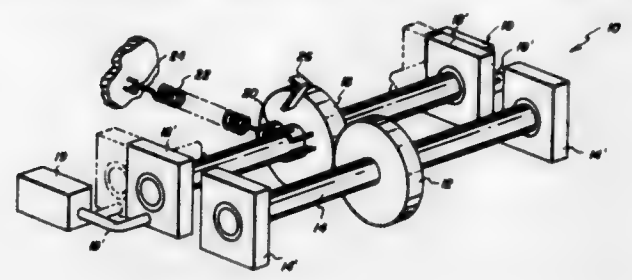
Robert J. Kindt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1982, Ser. No. 438,995
Int. Cl.[3] B65H *5/34*
U.S. Cl. 271—270 9 Claims

1. Apparatus for decelerating a sheet moving at a predetermined linear speed along a travel path, said apparatus comprising:

means, located in juxtaposition with the sheet travel path, for engaging a sheet traveling along such path, said means being actuated by engagement of a sheet to apply a deceleration force to such sheet during such engagement; and

means, operatively associated with said sheet engaging means and responsive to the engagement of a sheet by said sheet engaging means, for progressively increasing the deceleration force imparted to such sheet by said sheet



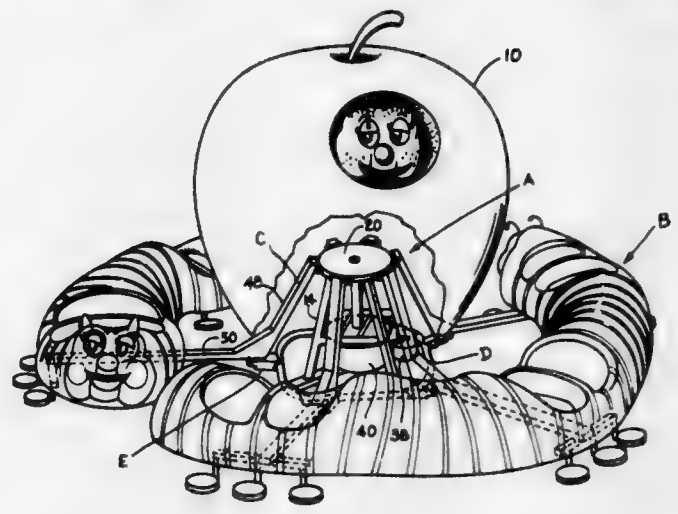
engaging means to gradually slow the linear speed of such sheet from the predetermined linear speed to a lesser linear speed.

4,513,960

UNDULATING AMUSEMENT RIDE APPARATUS

Gerald L. Barber, 10 Wittingtom Ct., Greenville, S.C. 29605, and Wayne P. Comstock, 23 Selwyn Dr., Greenville, S.C. 29615

Filed Oct. 17, 1983, Ser. No. 542,671
Int. Cl.[3] A63G *1/34*
U.S. Cl. 272—44 10 Claims



1. In an amusement ride device comprising:

base frame assembly means;

a driven vertical drive shaft rotatably carried by said base assembly;

hub means carried by the upper portion of said drive shaft;

ride supporting carrier arms pivoted to said hub means;

non-circular closed-loop track means carried by said base frame assembly means underneath said carrier arms having a track rail encircling said vertical axis;

a ride car unit carried by each said ride supporting carrier arm;

each said carrier arm including a pair of arm elements joined together at an apex portion;

a first of said arm elements having an upper end pivotally connected to said hub means;

a second of said arm elements having a free end extending away from said apex portion and on which end said car unit is carried above said second arm element;

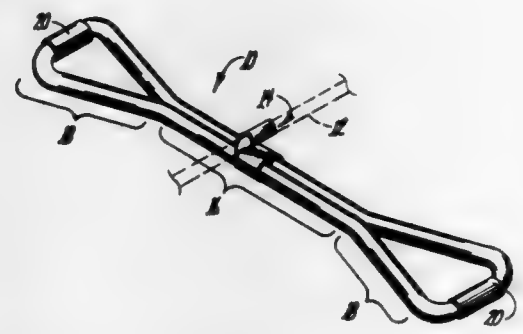
glide mechanism means pivotally carried by said carrier arm directly beneath said apex portion for pivotably interconnecting said carrier arm and said track means so that said carrier arm is supported thereby in a cantilevered manner;

whereby said carrier arms and passenger carrier means are vertically undulated on rotation of said vertical drive shaft.

4,513,961
TOGGLE BAR FOR EXERCISE AND HEALTH PURPOSES

Robert H. Killen, Pasadena, Calif., assignor to Gravity Guidance, Inc., Duarte, Calif.

Filed Jul. 1, 1982, Ser. No. 394,404
Int. Cl.[3] A63B *1/02*
U.S. Cl. 272—62 3 Claims

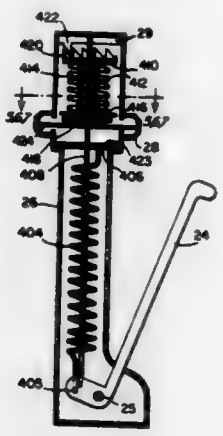


1. A toggle bar for exercise and health purposes comprising:
a continuous one-piece tubular member having a middle section and handle sections at opposite ends of said middle section;
said middle section comprising elongated, parallel and adjacent lengths of said tubular member;
said handle sections comprising outwardly extending lengths of said tubular member which first diverge from said ends of openings outwardly of said middle section having gripping portions at the extreme opposite ends of said tubular member; and
hanging means generally centered along said middle section having an upwardly extending inverted J-shaped hook connected to a securing means comprising top and bottom plates positioned on opposite sides of said middle section and retained by bolt means passing between said elongated, parallel and adjacent lengths of said middle section, said inverted J-shaped hanging hook having an inside concave arcuate surface for slidable pivoting reception of a suspension means, said top plate attached to said hook and having a bottom side with double concave surfaces for reception of and mounting on top of said middle section members and, said bottom plate having a top side with double concave surfaces for reception of and mounting on the bottom of said middle section members.

4,513,962
SPRING TYPE HAND GRIP EXERCISER

George E. Robson, 829 7th St., Hermosa Beach, Calif. 90254, and Paul R. Anderson, 23701 Surf Cove, Laguna Niguel, Calif. 92677

Filed Jul. 10, 1983, Ser. No. 510,258
Int. Cl.[3] A63B *23/00*
U.S. Cl. 272—68 3 Claims

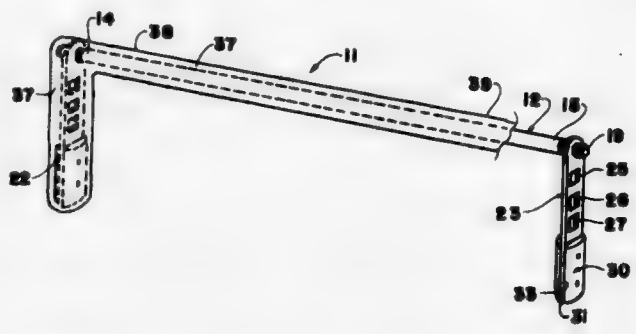


1. A spring type hand grip exerciser having a pair of members in which the initial force required to start bringing the two members together and the rate the force increases as the members are brought together is adjustable comprising:
a generally hollow body **26** having a first end and a second end, a base adjacent to said second end and being adapted to rest on a flat support surface such as a table;
a lever **24** extending into said body adjacent to said second end and attached to said body through a pivot pin **25** whereby said lever may be brought closer to said body by the exertion of force by a user, a first end of said lever extending outwardly from said hollow body and a second end of said lever engaging said pivot pin;
a first spring **404** one end of which is operatively connected to the second end **405** of said lever and the opposite end of which is fixedly connected to means **423** secured to said body at a location intermediate of the ends of said body;
a disc within said body, adjacent the first end of said body;
a rod **408**, one end of said rod being secured to the second end of said lever and the other end of said rod being fixed to said disc;
two compression springs in said hollow body, separate retainer means supporting each of said springs between said disc and a force selector plate in said body;
a force selector knob means rotatably mounted on said hollow body for controlling each of said retainer means to selectively disengage one or both of said separate spring retainer means so that movement of said lever is opposed selectively by (1) only said first main spring **404**, or (2) a combination of said first spring and one of said compression springs, or (3) a combination of said first spring and both of said compression springs.

4,513,963
WEIGHTED EXERCISING DEVICE

Bradley B. Nelson, 1105 6th Ave. NW, and Gregory T. Nelson, 2228 Central West, both of Great Falls, Mont. 59404

Filed Feb. 9, 1983, Ser. No. 464,786
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—128 7 Claims



1. Body exercise apparatus including a tubular member having a length significantly greater than the width of a person's shoulders, bearing means disposed within said tubular member adjacent the ends thereof, a bar member rotatably disposed within said tubular member along the axis thereof, the ends of said bar member extending through is exposed and beyond said bearing means, flat bar connector sections including a plurality of spaced openings extending along the length thereof engageable with the exposed end sections of said bar member, each of said openings being of a mateable and orientable configuration the same as that of the cross section of said exposed bar member end section and slightly larger, weight means for offering resistance to a user during an exercise, said weight means being permanently affixed adjacent the opposite end of each connector section, said weight means including pairs of weight sections affixed to opposite sides of said connector sections, said exposed bar member end section being mateably engageable with one of said connector section openings, means for orienting said connector sections with one another, fastener means releasably securing each connector section to an exposed bar member end section in the same orientation with one another and substantially perpendicular to said tubular member, and covering means disposed over at

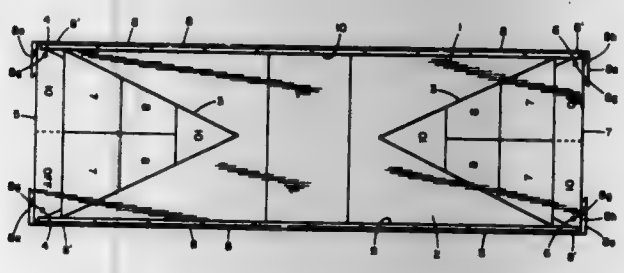
least said weight means for protecting the apparatus; whereby changing the openings that engage said bar member end sections changes the effective force exerted as said weight means are rotated about said tubular member.

4,513,964

PORTABLE SHUFFLEBOARD COURT

Arthur S. Gunderson, P.O. Box 215, 306 Illini Dr., Minooka, Ill. 60447

Continuation-in-part of Ser. No. 001,508, Jan. 8, 1979, abandoned. This application Mar. 3, 1980, Ser. No. 126,805
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—126 R **5 Claims**



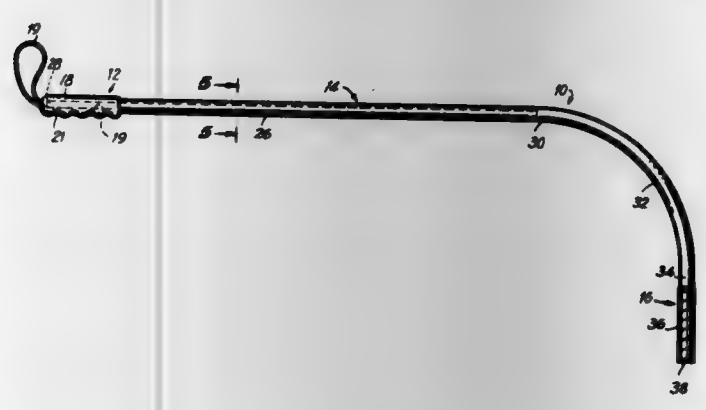
1. A portable shuffleboard court, comprising a length of flexible sheet material having a first end and a second opposite end, shuffleboard markings provided on said flexible sheet material, stiffening means to maintain said flexible sheet material flat for playing, anchor means to anchor said first and second ends for playing, said stiffening means including a plurality of substantially rigid elongated clips for detachably securing to side edges of said length of flexible sheet material, wherein a first one of said rigid elongated clips has a first end portion adjacent said first end of said length of flexible sheet material on a first side thereof, said first end portion including a laterally projecting planar portion, wherein said anchor means includes a first fastening member on said laterally projecting planar portion for cooperative fastening engagement with a corresponding second fastening member on said first end of said length of flexible sheet material.

4,513,965

BASEBALL BAT INSTRUCTION ACCESSORY UNIT

Kurt Aschermann, 1573 East Main Street, Mohegan Lake, N.Y. 10547

Filed Mar. 14, 1984, Ser. No. 589,619
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 R **1 Claim**



1. A baseball bat instruction accessory unit to teach the proper technique for hitting a baseball, which comprises:

(a) a gripping portion to allow the unit to be held by the batting instructor;

(b) a connecting portion defining a near end and a far end, said near end secured to the gripping portion, and a curved section so that the far end is not in axial alignment with the gripping portion; and

(c) an impact portion secured to the far end of the connecting portion, said impact portion having an impact designating means to present an appropriate target to the pupil,

said connecting portion being formed of hollow sheathing material and having a dowel positioned therein,

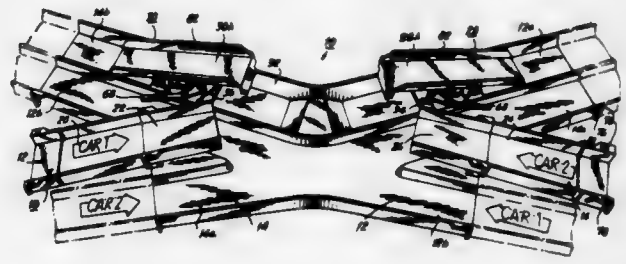
the dowel being in two parts, the parts spaced from each other, in order to prevent the full effect of the impact forces traveling from the distal part of the dowel into the gripping handle.

4,513,966

VEHICLE JUMP FOR A TOY VEHICLE GAME

Salvatore A. Mucaro, Maywood, N.J., and Neil Tilbor, Great Neck, N.Y., assignors to CBS Inc., New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 471,980
Int. Cl.³ A63F *9/14*
U.S. Cl. 273—68 B **12 Claims**



1. A vehicle jump for a toy vehicle game having two toy vehicles, said vehicle jump comprising jump means including launching ramp means for launching an independently propelled toy vehicle into the air and landing ramp means for accepting a toy vehicle launched from said launching ramp means; repeatably actuable adjusting means for providing with each actuation thereof a step-by-step change in the inclination of said landing ramp means between an operative position, wherein a toy vehicle can negotiate said jump means, and an inoperative position, wherein said landing ramp means does not properly accept a toy vehicle launched from said launching ramp means; and a main base member defining two lanes thereon, one for each toy vehicle, wherein:

said landing ramp means includes a landing ramp pivotally mounted to said main base member for movement between said operative and inoperative positions;

said landing ramp in said operative position has an angle of inclination sufficiently low to accept a toy vehicle launched from said launching ramp and in said inoperative position has an angle of inclination steep enough to interfere with a toy vehicle launched from said launching ramp;

at least one of said lanes includes said jump means; and

said adjusting means includes actuating means for cooperating with a toy vehicle in the other said lane as the vehicle passes said landing ramp to change the inclination of said landing ramp one step with each passage thereby of the vehicle in the other said lane.

4,513,967

TOY VEHICLE GAME WITH LAUNCHER AND RETURN MEANS

Wayne R. Halford, and Walter S. Nakano, both of Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 29, 1983, Ser. No. 566,591
Int. Cl.³ A63B *67/14*
U.S. Cl. 273—108 **5 Claims**

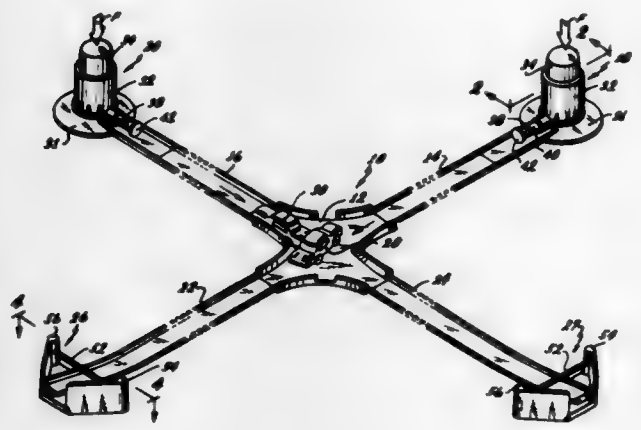
1. A toy car crash set comprising:

at least two nonsteerable unpowered toy cars;

an intersection having at least four ways;

at least two track sections having two ends, one end of each track section connected to the intersection and the other ends thereof leading to and attached to at least two launchers; and

at least two elastic return means connected to the outer ends of further track sections having their inner ends connected



to the intersection, diagonally opposite from each of the launchers.

4,513,968

DEVICE FOR HOLDING DISPLAY PLATE FOR GAME MACHINE

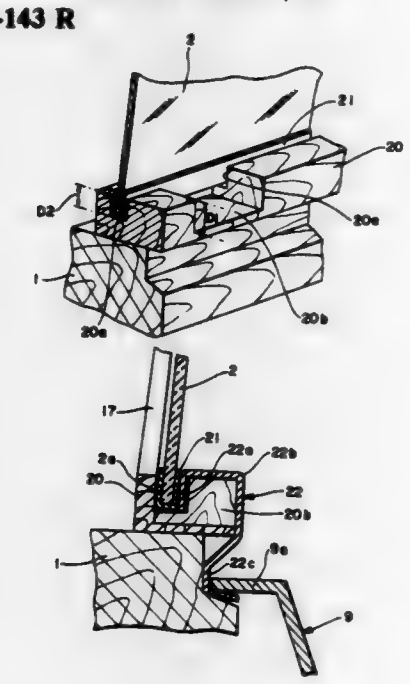
Tomoo Okada, Tochigi, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Sep. 20, 1983, Ser. No. 533,957

Claims priority, application Japan, Sep. 27, 1982, 57-144842[U]

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—143 R **6 Claims**



1. In a game machine, in which a display plate with display characters or the like thereon is fitted in a groove of a plate retainer secured to the front of a machine body and a front door is hinged to the machine body at a position beneath the display plate, a device for removably holding the display plate comprising:

a lower plate retainer secured to said machine body and having a groove for receiving the lower edge of said display plate and a notch perpendicular to said groove and having a greater depth than the depth of said groove; and

a cover plate disposed to cover the front of said lower plate retainer, said cover plate having a top bent lower portion inserted in said groove of said lower plate retainer adjacent to the lower edge of said display plate and also having a lower portion held urged by a top portion of said front door.

4,513,969

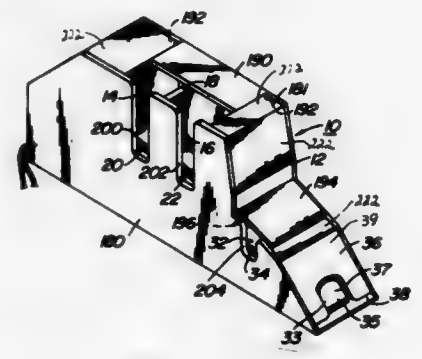
AUTOMATIC CARD SHUFFLER

J. Edward Samsel, Jr., Southampton, Pa., assignor to American Gaming Industries, Inc., Philadelphia, Pa.

Filed Sep. 20, 1982, Ser. No. 420,514

Int. Cl.³ A63F *1/12*

U.S. Cl. 273—149 R **23 Claims**



1. An automatic shuffling device for playing cards comprising

a housing defining at least two wells for receiving two stacks of playing cards,

a first electrically operated means to extract cards from said wells, and

an electrical controller to randomly actuate said first electrically operated means so as to randomly select cards from the wells and thereby randomly intermix the cards as they are extracted from said wells.

4,513,970

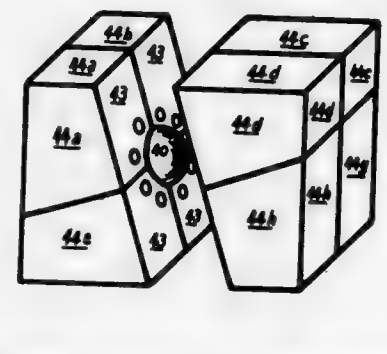
POLYMORPHIC TWIST PUZZLE

Ovidiu Opresco, 3177 33 St., Long Island City, N.Y. 11106, and Jon D. Marinesco, 90-02 63 Ave., Rego Park, N.Y. 11374

Filed Jan. 24, 1983, Ser. No. 465,562

Int. Cl.³ A63F *9/08*

U.S. Cl. 273—153 S **1 Claim**



1. A three dimensional combination puzzle comprising

a spherical core,

eight outer bodies each having a spherical inner surface movable over said core, three adjoining surfaces and an outer surface,

said adjoining surfaces mutually perpendicular to each other and defining planes of rotation intersecting at the center of said speherical core,

means associated with said adjoining surfaces releasably maintaining said outer bodies assembled about said core, and enabling said outer bodies to be rotated in sets of four about said core,

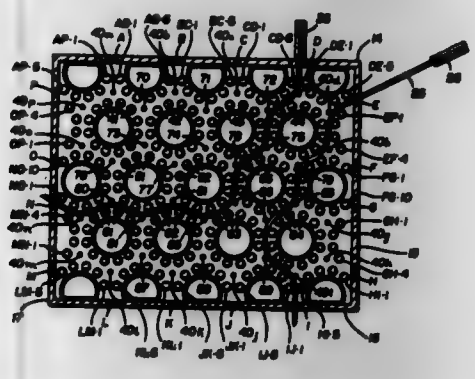
said outer surfaces forming a cube when said outer bodies are in proper combination and a plurality of said adjoining surfaces are not parallel to the faces of said cube.

4,513,971

MAZE AND FLEXIBLE WAND GAME APPARATUS

David L. Baldwin, 731 NE. 51st Court, Pompano Beach, Fla. 33064

Filed May 2, 1984, Ser. No. 606,154
Int. Cl.[3] A63F 9/06
U.S. Cl. 273—153 R
18 Claims



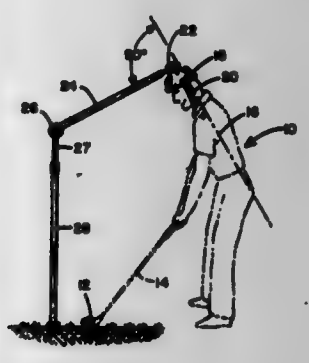
1. A game apparatus comprising:
a game board having a hollow interior and openings leading into its hollow interior, means providing abutments inside said game board defining a maze of passageways which communicate with said openings;
and an elongated flexible and resilient wand which is insertable through a selected one of said openings into said hollow interior of the game board to emerge at another of said openings, depending upon how a player manipulates the wand;
said wand having a leading end which is tapered on one side to determine the direction in which the wand is deflected by abutments it engages in said maze of passageways.

4,513,972

GOLFER'S HEAD MOVEMENT RESTRAINING DEVICE

John E. Empie, 5428 Halifax La., Minneapolis, Minn. 55424

Filed May 2, 1983, Ser. No. 490,431
Int. Cl.[3] A63B 69/36
U.S. Cl. 273—190 R
6 Claims



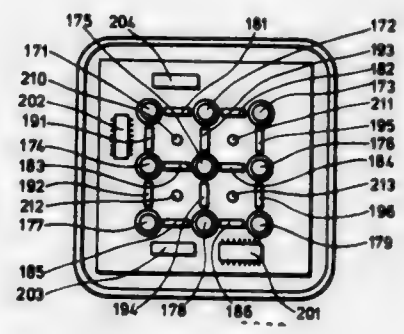
1. A golf training device for affixing an axis of the body of a golfer relative to a preferred axis for constraining body motion to aid in the development of a consistent swing, comprising
(a) a tubular pole having a first section adapted for insertion into the ground and having a second telescopic section extensibly fitted to said first section, said second section having a free end adapted for vertical projection
(b) an adjustable toothed clutch attached to said second section free end, said clutch having a selectively rotatable member forming a part thereof;
(c) a shaft having an end attached to said selectively rotatable member and having a second free end;
(d) a rotatable coupling attached to said shaft second free end, said coupling permitting only rotational movement about a preferred axis normal to said shaft and parallel to the axis of the body of a golfer to be affixed relative to the preferred axis; and
(e) a head cap attached to said rotatable coupling, said head cap having downwardly depending sides for tightly enclosing at least a portion of the head of a golfer and being adapted for tightly fitting over the head of a golfer, and said head cap having an adjustable chin strap adapted for securing about said head; whereby the head of a golfer is constrained to permit motion only about said preferred axis.

4,513,973

ELECTRONIC COMPLETING THE SQUARE GAME

Iain Sinclair, Willow House/Hildersham, Cambridge, England

Filed Oct. 25, 1983, Ser. No. 545,675
Claims priority, application United Kingdom, Oct. 27, 1982, 8230613
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—237
12 Claims



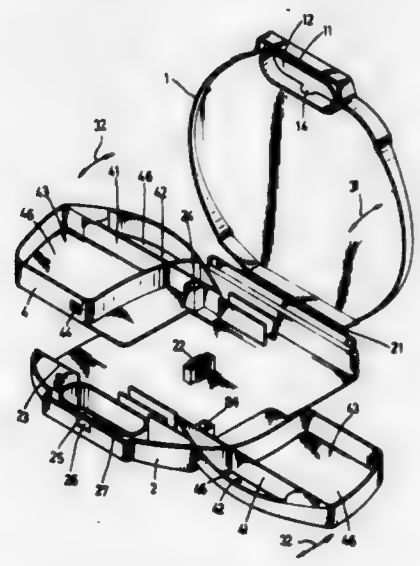
1. Electronic game apparatus comprising:
a playing surface;
a plurality of manually operable switch means arranged in a matrix of rows and columns on said playing surface,
a plurality of illuminable indicator means spaced over said playing surface with one between each pair of adjacent said switch means in said rows and columns thereof, and
electronic circuit means operable in response to the actuation of any two adjacent said switch means to cause illumination of said illuminable indicator means located between said two adjacent switch means.

4,513,974

CHESS BOX

Hong-Pei Lin, Fl. 2, No. 381, Sec. 5 Nan-Ching East Rd., Taipei, Taiwan

Filed Feb. 16, 1984, Ser. No. 580,728
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—239
6 Claims



1. A novel chess box comprising:
a main body portion having a magnet at its center;
a lid hinged on said main body portion;
a pair of containers each of which is pivoted on said main body portion and provided with a sheet iron which is

designed so that said sheet iron will be in contact with said magnet of said main body portion when said container is turned into said main body portion;

a positioning plate removably mounted on said main body portion;

a number of boards of various kinds of board games placed on said positioning plate and capable of being mounted on the top of said lid; and

a plurality of playing pieces for playing with said board games.

4,513,975

THERMALLY RESPONSIVE LABYRINTH SEAL

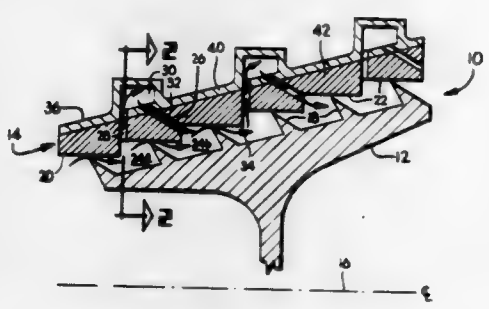
Ambrose A. Hauser, Wyoming; Rolf R. Hetico, Cincinnati, both of Ohio, and Thomas G. Wakeman, Greendale, Ind., assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 27, 1984, Ser. No. 604,561

Int. Cl.³ F16J *15/44*

U.S. Cl. 277—22

6 Claims



1. In a rotary seal including a first member with at least one ring shaped seal tooth and a second member with an abradable shroud and casing, wherein said members cooperate to inhibit flow of fluid from a first region to a second region, the improvement comprising:

a conduit for conducting a portion of said fluid through said casing from said first to said second region for heat transfer between said fluid and said casing.

4,513,976

ROTATING-LIP GREASE SEAL

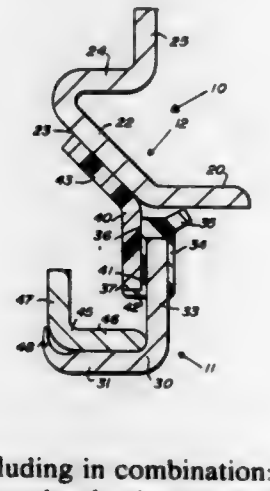
Gustavus A. Bentley, Ann Arbor; Stephen E. Nash, Farmington Hills, and Gerald P. Pichler, Dearborn, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Jun. 6, 1984, Ser. No. 617,699

Int. Cl.³ F16J *15/32, 15/34*

U.S. Cl. 277—25

6 Claims



1. A fluid seal, including in combination:

a stationary rigid member having a radially inner peripheral cylindrical portion joined to a peripheral frustoconical portion having a lip-engaging radial inner surface,

a sealing assembly having a supporting case provided with a radially outwardly extending flange lying radially within said rigid member,

an elastomeric body bonded to said flange and having, to one side of said flange, a radially outwardly projecting frustoconical auxiliary lip engaging said peripheral cylindrical portion, and

a main sealing lip comprising an annular, flexible, polytetrafluoroethylene planar wafer bonded to said body on the other side of said flange from said auxiliary lip and extending radially outwardly, said wafer normally tending to lie in a substantially radial plane, said wafer having an outer edge and first and second opposite faces, one said face engaging and being flexed away from said auxiliary lip by said lip-engaging surface of said frustoconical portion,

the centrifugal force of rotation of said rotating member in either direction tending to urge both lips more snugly against said rigid member lip-engaging radial inner surface.

4,513,977

STEEL FLOATING SEAL WITH REMELTED DEPOSIT-ALLOYED WEAR SURFACES

Genkichi Umeha, Tokyo, and Takeshi Hiraoka, Saitama, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

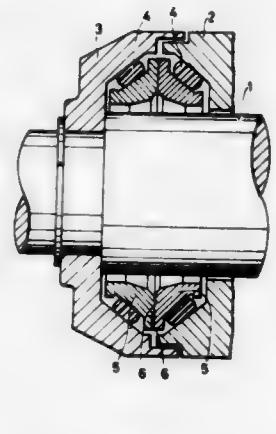
Filed Sep. 7, 1983, Ser. No. 530,151

Claims priority, application Japan, Sep. 7, 1982, 57-134910[U]

Int. Cl.³ C23F *7/04;* C21D *1/78;* F16J *15/34, 15/28*

U.S. Cl. 277—96.2

4 Claims



1. A floating seal comprising; a seal member having a seal face and a body, said body being formed of steel, said seal member being provided at said seal face with a surface remelted, deposit-alloyed surface having a thickness on the order of several millimeters, portions of said steel body adjacent said seal face being martensited.

4,513,978

CYLINDER HEAD GASKET

Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, Co. Durham, England

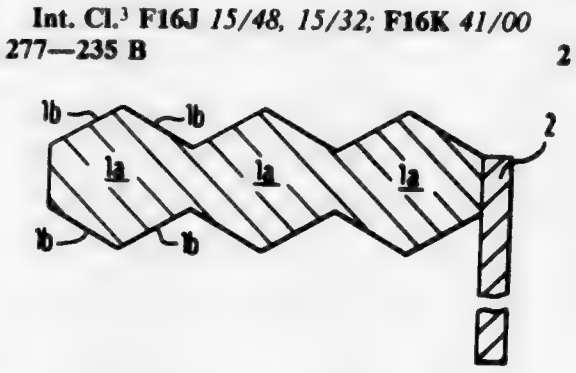
Filed Dec. 18, 1981, Ser. No. 332,211

Claims priority, application United Kingdom, Dec. 19, 1980, 8040880

Int. Cl.³ F16J *15/48, 15/32;* F16K *41/00*

U.S. Cl. 277—235 B

2 Claims



1. The combination of a gasket and cylinder head and cylinder block assembly including a cylinder liner having an end recess, said gasket comprising a substantially planar ring being in radial cross section of varying thickness corrugation, and having an annular skirt integrally depending from the outer

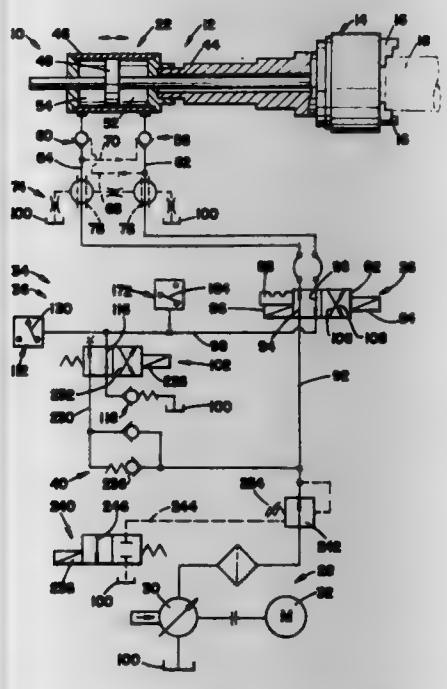
peripheral edge for locating said ring with respect to the bore of the liner said recess accommodating the corrugated radial cross section part of the gasket and a radially outward open recess which accommodates the gasket skirt.

4,513,979

MACHINE TOOL WITH CHUCKING CONTROLS

Martin L. Silverman, South Euclid, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Mar. 24, 1983, Ser. No. 478,566
Int. Cl.³ B23B *31/30*; F15B *13/042*
U.S. Cl. 279—4 **6 Claims**



1. A machine tool comprising chuck means for gripping a workpiece with a first force during a first machining operation and for gripping the workpiece with a second force which is less than the first force during a second machining operation, motor means having first and second motor chambers for holding fluid to effect operation of said chuck means to grip the workpiece with a force which varies as a function of a fluid pressure differential between said first and second motor chambers, said first motor chamber holding fluid at a first pressure during the first machining operation and holding fluid at a second pressure which is less than the first pressure during the second machining operation, said second motor chamber holding fluid at a minimum pressure which is less than the first and second pressures during the first and second machining operations, and chucking force control means for reducing the force with which said chuck means grips the workpiece from the first force to a transition force which is less than the second force while the first fluid pressure is present in said first motor chamber and for increasing the force with which said chuck means grips the workpiece from the transition force to the second force, said chucking force control means including pressure control means for increasing the fluid pressure in said second motor chamber from the minimum fluid pressure to a transition fluid pressure which is greater than the second fluid pressure and less than the first fluid pressure while the first fluid pressure is present in said first motor chamber and for simultaneously reducing the fluid pressures in said first and second motor chambers until the fluid pressure in said first motor chamber is equal to the second fluid pressure.

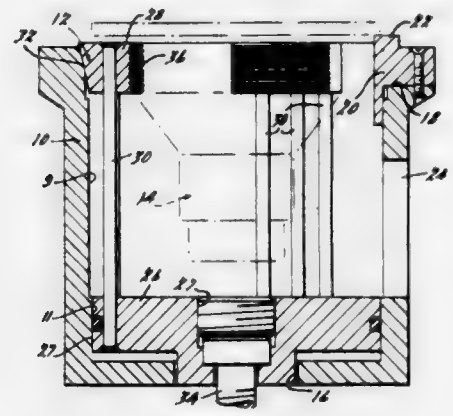
4,513,980

CHUCK COLLET

William C. Kruse, 1925 Vinsetta Blvd., Royal Oak, Mich. 48073

Filed Jan. 19, 1981, Ser. No. 226,490
Int. Cl.³ B23B *31/12*
U.S. Cl. 279—51 **1 Claim**

1. A chuck for a stationary machine tool for engaging a workpiece for rotation comprising; (a) an elongated support means adapted to be mounted for rotation on a machine, (b) an elongated chuck collet supported by said support means for solely axial motion with respect thereto, said support means having axially spaced first and second surfaces, said collet having axially spaced first and second surfaces, said first collet surface and said first support means surface being correspondingly tapered and engaging one another, for deflecting said first surface of said collet radially to grip said workpiece upon relative axial motion between said collet and said support means in one direction and to release said workpiece upon relative axial motion between said collet and said support means in the opposite direction, said second collet surface and said second support means surface being generally cylindrical and engaging one another for guiding axial movement of said chuck collet relative to said support means, said first collet



surface being defined by three or more annular jaw segments and said second collet surface being defined by an annular base, said jaw segments being connected to said base by at least three separate and elongated spring steel rods constructed so that they are stiff enough to support said jaw segments away from said workpiece and flexible enough to accommodate and grip workpieces having rough surfaces and/or having differing cross-sectional shapes, said flexible members being formed of a material chosen for its flexibility and said jaw segments being formed from a different material chosen for its hardness, said rods being disposed in holes in said base member with all of the rods connected to a single jaw segment intersecting said base member and said jaw segment along an arcuate path, and (c) means on said support means for transmitting rotary driving forces from said support means to said chuck collet without significantly tortionally stressing said flexible members.

4,513,981

RIDE-ON TOY VEHICLE WITH FRONT WHEEL DRIVE AND OUTBOARD FRONT WHEELS

Robert DeGraaff, 20 Kennedy Dr., Flanders, N.J. 07836, and Michael Langeiri, 425 Inverness La., Longmeadow, Mass. 01106

Filed May 4, 1983, Ser. No. 491,422
Int. Cl.³ B62K *9/00*
U.S. Cl. 280—1.11 R **8 Claims**

1. A child's pedal-powered vehicle comprising:

A. a body providing a sidewall portion, a seat portion enclosed thereby and a top wall portion;

B. a drive and steering assembly having a rotatable steering column extending upwardly through the front portion of said body and centrally thereof, said assembly including steering handle means adjacent the upper end of said steering member for effecting rotation thereof, said steering assembly having drive wheel means rotatably mounted adjacent the lower end of said column and pedal means for effecting rotation of said drive wheel;

C. means securing said drive and steering assembly on said body for rotation relative thereto;

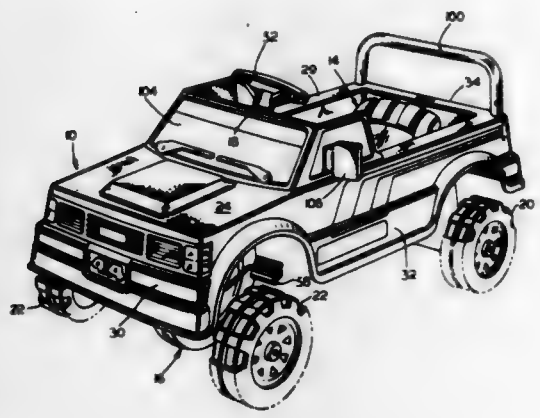
D. a rear wheel assembly comprising axle means and a pair

of rear wheels rotatably supported by said axle means adjacent said sidewall of said body;

E. means securing said rear wheel assembly on said body;

F. a pair of outboard front wheels disposed outwardly of said drive wheel and adjacent said sidewall of said body;

G. means mounting said front wheels on said body for normal disposition in the plane defined by the lowermost



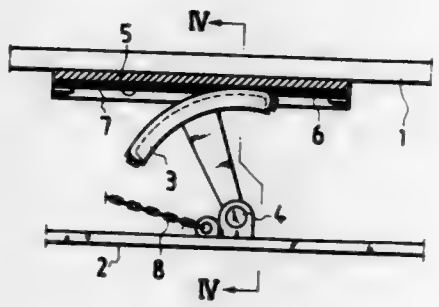
surfaces of said drive wheel and said rear wheels for rotation upon motion of said vehicle over a surface and for limited vertical movement relative to the plane defined by the lowermost surfaces of said drive wheel and rear wheels, whereby said front wheels have limited frictional contact with the support surface and move upwardly and downwardly independently of said drive wheel.

4,513,982

SLEDGE OR EQUIVALENT TRANSPORTING BASE

Pekka Niemelä , Säpikäsmutka 2 A, 96440 Rovaniemi 44, Finland

Filed Nov. 30, 1982, Ser. No. 445,736
Claims priority, application Finland, Dec. 15, 1981, 814017
Int. Cl.³ B62B *13/00*
U.S. Cl. 280—26
3 Claims



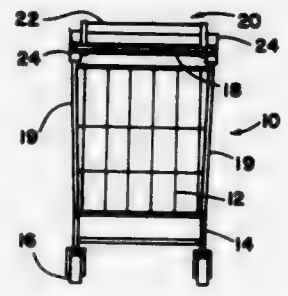
1. Sledge or equivalent transporting base consisting of a frame, at least one runner mounted under the frame, with reference to which the frame is movable longitudinally, an arc-shaped rolling member pivotally attached to the runner which has the center point of its radius located at the pivotal point and which is free to roll along an opposed counterface on the frame, and retaining ropes placed side by side provided between the rolling member and the counterface, the ends of one of said ropes being affixed at the front end of the rolling member and at the rear end of the counterface and the ends of the other rope being affixed at the rear end of the rolling member and at the front end of the counterface.

4,513,983

POINT-OF-PURCHASE ADVERTISING FOR SHOPPING CARTS

Robert E. Calder, 9292 Cincinnati-Dayton Rd., Cincinnati, Ohio 45241

Filed Jan. 28, 1983, Ser. No. 462,096
Int. Cl.³ G09F *11/02*
U.S. Cl. 280—33.99 A
15 Claims



4. A shopping cart comprising a merchandise receptacle,
frame structure supporting said receptacle,
wheels mounted on said frame structure and supporting said receptacle for rolling movement,
said frame structure including vertical frame members extending toward the rear of the receptacle and a handle extending between the upper ends of said vertical frame members, said handle being disposed behind and generally toward the upper end of said receptacle and spaced therefrom,
whereby the cart may be pushed by a user when shopping,
characterized by a rotary, point-of-purchase display,
said display including a tube, disposed adjacent the upper rear portion of the receptacle, and spaced from the handle a distance sufficient for the handle to be readily gripped by a shopper when using the cart,
said display tube being of polygonal cross section, thereby providing planar display portions, said display tube further being transparent, whereby advertisements positioned on the inner surfaces of the tube may be viewed by a shopper and protected from abuse,
means for journaling said display tube on said frame structure with its axis generally parallel to said handle,
means for positioning replaceable strips of printed advertising material against the inner surfaces of the planar display portions, whereby the display tube may be rotated to bring successive advertisements on the tube to the attention of shoppers as the cart is in use, and
further characterized by
end caps embracing the ends of the display tube and,
the journal means including
a pair of brackets respectively secured to the upper ends of the vertical frame members and having aligned bores, and
inwardly projecting trunnions secured in the bores of said brackets, said end caps having central bores in which the trunnions are journaled.

4,513,984

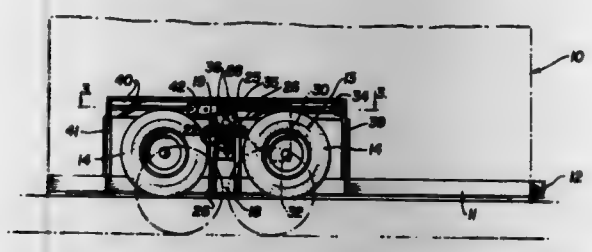
WHEEL GEAR FOR TRAILERS

Clem B. Wright, South Fulton, Tenn., assignor to Waymatic, Inc., Fulton, Ky.

Filed Apr. 12, 1983, Ser. No. 484,292
Int. Cl.³ B62D *61/10*
U.S. Cl. 280—43.23
5 Claims

1. A wheel suspension for special event trailers and the like comprising a frame adapted for connection rigidly with the framework of a trailer body portion, tandem wheel crank arms on said frame adapted to swing vertically, vertical trackway means on said frame between said crank arms, guided vertical carriage means engaged with the vertical trackway means and having follower means, spring means interconnecting said carriage means and crank arms, elevated substantially horizon-

tal trackway means on said frame, horizontally movable cam lifting means engaged guidingly with the horizontal trackway means and having an inclined edge portion and vertically



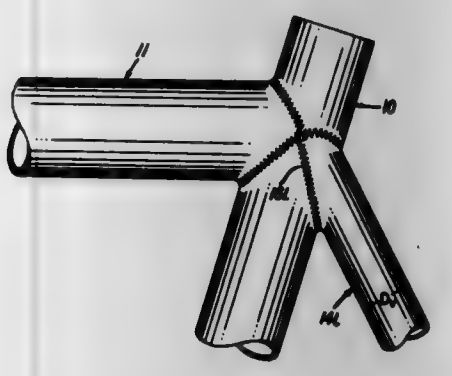
spaced horizontal edge portions all engageable with said follower means, and power means connected between said frame and the cam lifting means to move the cam lifting means in opposite directions along said horizontal trackway means.

4,513,985

BICYCLE FRAME SEAT STAYS

David R. Graham, West Redding, Conn., assignor to Cannondale Corporation, Georgetown, Conn.

Filed Jan. 6, 1983, Ser. No. 456,302
Int. Cl.³ B62K *19/02*
U.S. Cl. 280—281 R **4 Claims**



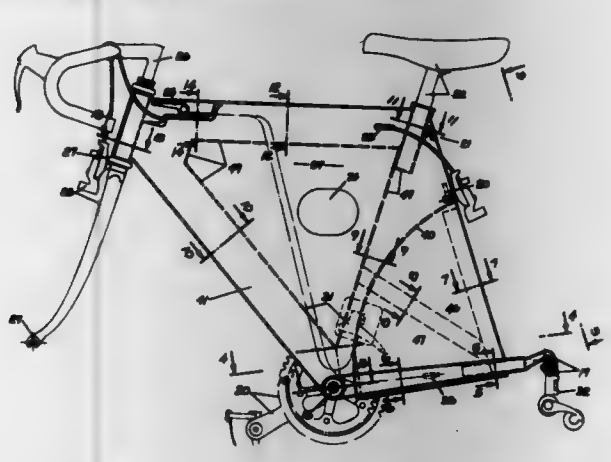
1. Seat stays of a bicycle frame, namely tubular members joining the upper portion of the seat tube to the respective rear wheel dropouts, characterized in that at each cross section along the length of each seat stay the area moment of inertia I_v about the vertical axis is substantially greater than the area moment of inertia I_h about the horizontal axis.

4,513,986

BICYCLE FRAME

James L. Trimble, 8628 Emerald Rd., Anchorage, Ak. 99502

Filed Jun. 28, 1983, Ser. No. 508,880
Int. Cl.³ B62K *3/02, 19/02*
U.S. Cl. 280—281 R **5 Claims**



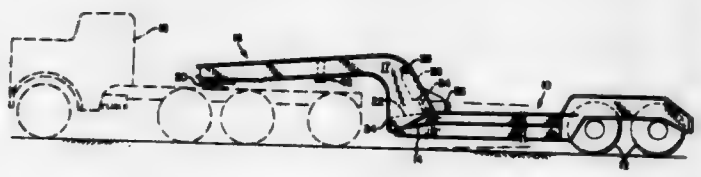
1. A bicycle frame comprising, in combination, a tubular steering support column formed to rotatably support a handle bar stem and front fork and wheel assembly; a tubular seat support column formed to support a seat post and seat assembly; a tubular pedal axle support column formed to rotatably support a pedal crank and chainwheel assembly; cantilever rear fork blades formed to support a rear wheel assembly, the frame having the form of (1) an exterior structural skin surface, connected to and extending between said columns and rear fork blades in such a manner that the perimeter edges of said skin define the outline of the frame's geometry from the side view and an airfoil section with a blunt edge at the steering support column, and a sharp edge at the seat support column, and lower rear sides adjacent to the portion of the rear wheel assembly which penetrates the frame's geometry arranged in spaced apart substantially, parallel configuration positioned as closely as possible to the rear wheel assembly, from the plan view, (2) an internal arcuate fender, formed of structural skin, which encloses the portion of the rear wheel assembly which penetrates the frame's geometry, and fits within lower rear sides of said exterior structural skin, and internal reinforcing means which, in combination with said structural skin, form structural members including, (3) tubular members connecting the steering support column and seat support column, and the steering support column and pedal axle support column formed by the addition of an elongate web member secured in a substantially perpendicular manner between opposing interior surfaces, and parallel to the perimeter edge of said structural skin, (4) spaced apart, diverging, tubular members connecting the pedal axle column and cantilever rear fork blades, so arranged as to allow external routing of rear wheel drive chain and external placement of rear wheel drive sprocket(s) and shifting mechanism, formed by an integral outward extension of the lower edge of said exterior structural skin forming top, outside, and bottom surfaces secured to a separately formed inner surface by flanges at the top and bottom, completing a substantially rectangular tube section provided with the pedal axle column and rear fork blade support means at respective ends; (5) elongate reinforcing strips connecting rear, inner ends of said tubular rear fork support members with said seat support column, and at an intermediate position roughly bisecting said rear fender, with a seat support web and connecting member, said reinforcing strips filling a void space between said exterior structural skin and said internal structural skin of fender, (6) an elongate web member connecting seat support column and pedal axle support column secured in a substantially perpendicular manner between opposing inner surfaces of said structural skin, and (7) a web member secured in a substantially perpendicular manner between opposing inner surfaces of said structural skin, placed above and parallel to a line connecting the pedal axle column and rear wheel axle, and connected to the pedal axle support column by a vertical connecting member.

4,513,987

SELF-CONTAINED LIFTING APPARATUS FOR LOW-BOY TRAILERS

Gene C. Whitaker, Wilbur, Oreg., assignor to Whitlog, Inc., Wilbur, Oreg.

Filed Sep. 30, 1982, Ser. No. 429,098
Int. Cl.³ B60P *1/34*; B62D *53/06*
U.S. Cl. 280—423 B **4 Claims**



1. A lifting apparatus for a trailer of the type which is connected to a towing vehicle by means of a gooseneck which is operably independent of the trailer and the towing vehicle, said apparatus comprising:

(a) said gooseneck and said trailer being rotatably coupled to one another at a common pivot point;

(b) extensible means extending between a first point located

on said trailer and a second point located on said gooseneck, wherein said extensible means is rotatably connected at one extremity thereof to said gooseneck and slidably contacts the trailer at the other extremity thereof;

(c) said first point, second point and pivot point being arranged relative to one another such that as said extensible means is extended and retracted said gooseneck and said trailer rotate about said pivot point in directions which are opposite to one another;

(d) said gooseneck being arranged such that said extensible means is substantially enclosed therein during the full range of travel of said extensible means; and

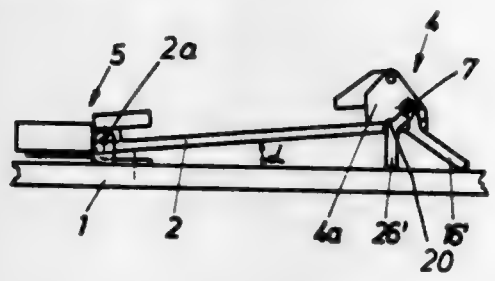
(e) first stop means associated with said gooseneck for limiting the extent of the transverse movement of said other extremity of said extensible means in a direction toward the towing vehicle.

4,513,988

DEVICE FOR CROSS-COUNTRY SKIING

Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Sep. 1, 1982, Ser. No. 413,914
Claims priority, application Austria, Sep. 11, 1981, 3946/81
Int. Cl.³ A63C 9/081
U.S. Cl. 280—615
19 Claims



1. A cross-country skiing device for a safety ski binding, comprising a cross-country plate with a front jaw and a heel holder, said cross-country plate being pivotal about an axis which extends transversely with respect to the longitudinal axis of the ski and movably supporting a bar which can be swung into a position below said cross-country plate for cross-country skiing, in which position said bar is held against further movement by stops provided on both sides of said cross-country plate, wherein said bar can be swung into a retracted position for downhill skiing, and wherein said bar, in relationship to the plane of said cross-country plate, can be adjusted to have different heights and includes two bar parts which each have two spaced legs, one said bar part being supported for pivotal movement relative to the other said bar part, and including reinforcing means disposed between and cooperable with said legs of each said bar part for rigidifying each said bar part.

4,513,989

GOLF CART

Norman Czajkowski, 8815 Walnut Hill Rd., Chevy Chase, Md. 20015

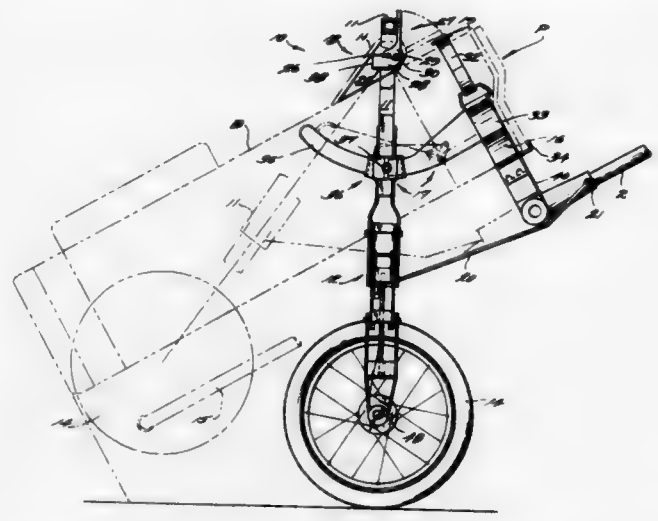
Filed Apr. 2, 1979, Ser. No. 26,166
Int. Cl.³ B62B 1/12
U.S. Cl. 280—645
27 Claims

2. A cart for mounting an elongated structurally rigid bag having an opening at one end thereof, and a single handle at one side thereof adjacent the opening, said cart comprising

a frame mechanism;

means for attaching a pair of wheels, rotatable about a common axis, to said frame mechanism; and

means for mounting said frame mechanism to a bag by its single handle so that the bag handle is on the opposite side of the bag as said wheels; and for providing pivotal movement of said frame mechanism with respect to the bag mounted thereby about an axis parallel to said wheels common axis and extending through the bag handle, said mounting means consisting of structures engaging said bag disposed only between the bag handle and the opening, and said mounting means comprising an insert having substantially the same exterior configuration as the interior configuration of the bag handle and having a pivot pin



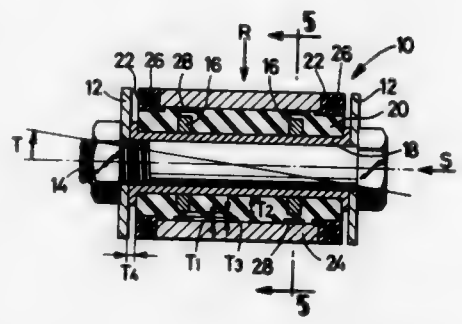
extending outwardly from the sides thereof, and releasable clamping means mounted to said frame mechanism for engaging said pivot pin to fix the position of said insert with respect to said frame mechanism while allowing relative pivotal movement therebetween.

4,513,990

BUSHING STRUCTURE IN A VEHICLE SUSPENSION SYSTEM

Yasuhiro Morita, Okazaki, and Yoshikazu Tsukamoto, Inuyama, both of Japan, assignors to Toyota Kidosha Kabushi Kaisha, Toyota and Tokai Rubber Industries, Ltd., Komaki, both of, Japan

Filed Jan. 24, 1983, Ser. No. 460,540
Claims priority, application Japan, Jan. 30, 1982, 57-12389[U]
Int. Cl.³ B60G 11/14
U.S. Cl. 280—725
8 Claims



1. A bushing structure in a vehicle suspension system including support means secured to vehicle members such as a chassis and an axle housing, a fulcrum shaft supported by the support means and rotatably supporting the bushing structure, and a suspension member pivotally connected to the bushing structure, said bushing structure comprising:

an outer metal fitting connected to said suspension member;

an inner cylindrical metal member in which said fulcrum shaft is inserted;

an annular resilient member secured to the outer periphery of said inner cylindrical metal member and press-fitted in said outer metal fitting together with said inner cylindrical metal member;

a plurality of radial stop rings positioned within said annular resilient member in spaced relation with one another axially of said annular resilient member; and

at least one annular elastic axial stop member including a stop ring embedded therein, said axial stop member being fitted on one of the axial end portions of the outer periph-

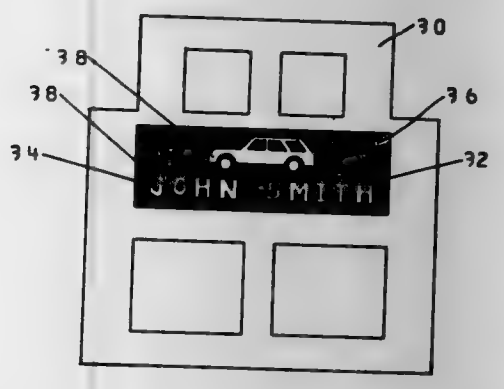
ery of said annular resilient member and engaging a corresponding end face of said outer metal fitting.

4,513,991

CONVERTIBLE DESIGN SURFACE, AND METHOD FOR FORMING THE DESIGN

Bruce J. Renaud, 1443 Seminole Ave., Detroit, Mich. 48214

Filed Jul. 16, 1982, Ser. No. 399,137
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—1 R **19 Claims**



1. In an article upon which a wide variety of designs may be made:

a surface comprising a grid-like field of closely arranged discrete projections;

each projection having a plurality of layers each of a different color; and

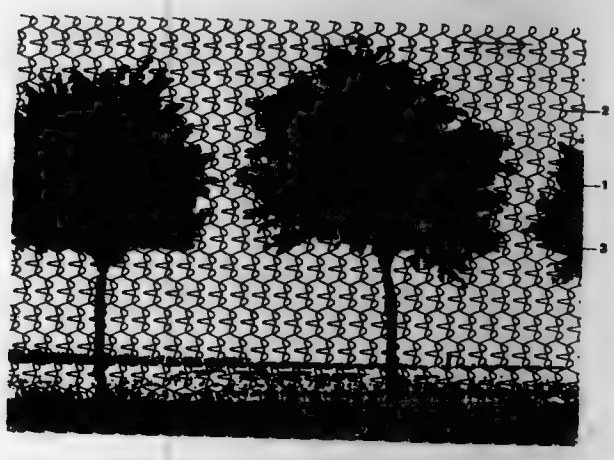
said projections being selectively removable at any desired locations within the field to create a pattern of different color cross-sections collectively exhibiting the desired design.

4,513,992

DATA CARRIER HAVING A PICTURE THEME SUPERIMPOSED BY A LINE PATTERN AND A METHOD OF PRODUCING SAME

Stefan May, Herbertshausen, and Hans Müller, Munich, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation and Organisation mbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 307,981, Oct. 2, 1981, Pat. No. 4,459,020.
This application Apr. 12, 1984, Ser. No. 599,429
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038179
Int. Cl.³ B42D *15/00*; G03B *27/02*
U.S. Cl. 283—94 **12 Claims**



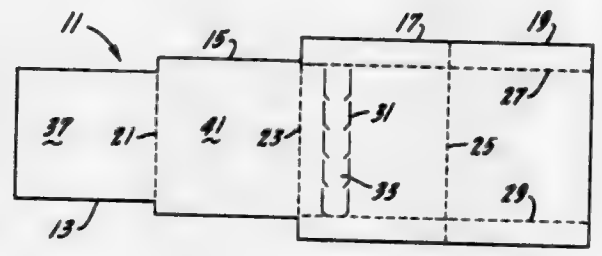
1. In a data carrier such as check paper or the like having a picture theme printed thereon and also having a security pattern printed thereon, the improvement comprising a picture theme overlapped by a negative security pattern which is formed by interruptions of the printed picture theme and which is geometrically similar or identical to the form of the printed security pattern, and the printed security pattern is printed congruently into the contour of said negative security pattern.

4,513,993

TEAR OPEN TAMPER RESISTANT GAME TICKET ASSEMBLY

Lyman J. Brown, Oak Brook, Ill., assignor to Bates Printing Specialties, Inc., Chicago, Ill.

Filed Mar. 21, 1983, Ser. No. 477,312
Int. Cl.³ B42D *15/00*; B41L *1/20*
U.S. Cl. 283—103 **3 Claims**



1. A tear open tamper resistant game ticket assembly including:

a rear panel, a front panel, an intermediate panel and a ticket panel,

the panels being cut from a single piece of paper and attached to one another by fold lines so that the panels can be folded over one another into a multi-layered assembly with the ticket panel located between the front panel and the intermediate panel and the intermediate panel located between the front panel and the rear panel,

the intermediate and ticket panels being narrower than the front and rear panels,

the rear panel being adhered to the intermediate panel and to portions of the front panel on opposite sides of the intermediate panel when the panels are folded into their multi-layered assembly,

perforated lines formed in the front and rear panels near the side edges thereof with the perforated lines located approximately in alignment with the side edges of the intermediate panel, and

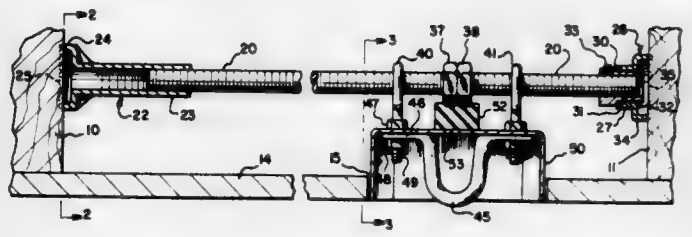
a tear tab formed by slit lines in the front panel and extending between the perforated lines on the opposite sides thereof.

4,513,994

CEILING FAN AND OUTLET BOX SUPPORT

Donald L. Dover, and William J. Leitch, both of Memphis, Tenn., assignors to Robbins & Myers, Inc., Dayton, Ohio

Filed Jan. 31, 1983, Ser. No. 462,246
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—544 **1 Claim**



1. A hanger and junction box assembly for supporting a ceiling fan or the like between a pair of ceiling joints, comprising:

an elongated threaded rod having a length less than the transverse space between said joists,

a first support piece having a tubular end thereof threaded on an end of said rod for extension and retraction move-

ment in response to relative rotation between said piece and said rod,

means on the end of said support piece defining an enlarged joist-gripping end remote from said rod,

a second support piece having a tubular body and an enlarged joist-gripping end,

an adapter mounting said second support piece on the opposite end of said rod for relative rotation into said second piece while maintaining a relatively fixed axial location with respect to said rod,

a pair of engagement nuts on said rod for applying a wrench or the like thereto for causing rotation of said rod when in an engageable position to bring said pieces into physical engagement with the adjacent surfaces of a spaced ceiling joist, said nuts being movable axially of said rod into selected drive positions to provide for access thereto through a prepared ceiling opening,

a pair of hanger eye bolts, one each slidably received on said rod on opposite sides of said nut and each having a threaded depending portion,

a junction box supported on said depending portions at said ceiling openings,

a block of elastomer compressed between the upper surface of said box and said nut to take up slack between said eye bolts and said rod, and

a generally U-shaped ceiling for hanging bracket carried on said depending portions in said box for supporting a ceiling fan thereon.

4,513,995

METHOD FOR ELECTROLYTICALLY TIN PLATING ARTICLES

Norbert Niehaus, Düsseldorf; Werner Friehe, Mülheim, and Wilhelm Schwenk, Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,426

Int. Cl.³ C25D *7/04, 5/50*

U.S. Cl. 285—55 **6 Claims**

1. Method for electrolytically metal-plating tube sections made of chromium, chromium-molybdenum, or chromium-nickel-molybdenum alloy stainless steel, by cleaning and degreasing such a section, by pickling the section in a diluted acid or an acid blend, by electrolytically metal-plating the section, by briefly melting and by cooling of the metal coating characterized in that the tube section has been provided with thread and after pickling at least the threaded portion of the section is first subjected to a currentless nickel coating step to provide a nickel layer of a thickness of about 1 micrometer and then subjected to a step of electrolytic metal plating, and that after the electrolytic metal plating of the threaded portion of the section, the section is at first stored at a temperature between about 150 degrees to about 200 degrees Centigrade for about 120 to 30 minutes and is heated from that temperature for a few seconds for melting the metal coating and is immediately thereafter quenched.

6. A string of tubing made of threaded tubes for the oil and gas industry, using threaded sleeves for interconnecting pin members, wherein all sleeve threads are treated in accordance with the method of claim 1 and threads of all the pin members have been phosphated or anodized.

4,513,996

TUBE COUPLING

Ralph Jost, Füllinsdorf, Switzerland, assignor to Hobas-Engineering AG, Switzerland

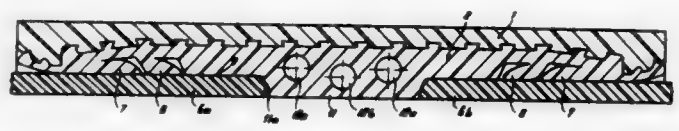
Filed Jun. 1, 1982, Ser. No. 384,003

Claims priority, application Switzerland, Jun. 17, 1981, 3990/81

Int. Cl.³ F16L *17/02*

U.S. Cl. 285—110 **6 Claims**

1. A tube coupling for coupling together one tube to another tube having predetermined interior and exterior diameter, comprising an outer sleeve having an interior bore, a sealing element lining said bore of an elastic material having an exterior positively engaged with said sleeve in its bore and having an interior formed substantially summetrically in respect to its radial mid plane and including at each end a plurality of inwardly directed sets of sealing protuberances following each other with cavities adjacent each protuberance into which it may be deflected by an engaged tube, and a central separating



flange between said sets of sealing protuberances defining an interior flange wall of a diameter substantially equal to the interior diameter of the associated tube to be coupled and having an end wall at each axial end of said flange forming a tube end stop, the axial length of said flange being a multiple of its radial height, said sealing element having at least one substantially annular cavity defined therein in the vicinity of said flange for taking up the material of the flange upon stressing of the flange by the inward pressure of the coupled tubes.

4,513,997

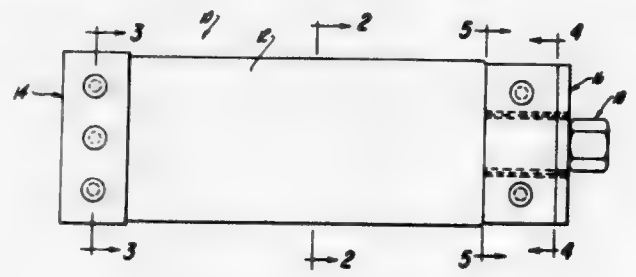
FITTING FOR AN INFLATABLE TUBE

Venkat R. Garlapaty, Utica, Mich., assignor to Greenco Corporation, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 431,846

Int. Cl.³ F16L *33/00*

U.S. Cl. 285—242 **9 Claims**



1. An expansion device comprising:

a resilient inflatable tube having open ends,

a first plate and a second plate, each plate having a convex central portion intermediate two flat portions,

a resilient bushing having a substantially cylindrical body and two flat end portions which extend radially outwardly from opposite sides of said body, said end portions being substantially coplanar, said body having an axial throughbore and said bushing being insertable into one end of said tube,

a fluid coupling having an elongated stem and a fluid connector on one end of the stem, said stem being insertable through said body throughbore so that said fluid connector is positioned axially adjacent said body,

said plates being positioned on opposite sides of said one end of said tube so that said tube and said bushing are sandwiched between said plates, said body being positioned between said convex central portions of said plates,

means for compressably securing said plates together, said securing means comprising at least two threaded fasteners, one fastener extending through said plates and one flat end portion and the other fastener extending through said plates and the other flat end portion wherein upon tightening of said fasteners, said tube compresses against said bushing and said bushing compresses against said fluid coupling, and

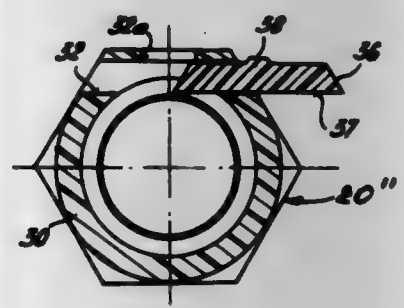
means for closing the other end of said tube.

4,513,998

CONNECTING NIPPLE FOR CIRCUMFERENTIALLY RIBBED INSULATING TUBES

Alfred Grossauer, Korbackerweg 7, CH-5502 Hunzenschwil, Switzerland

Filed Aug. 13, 1982, Ser. No. 407,733
Claims priority, application Switzerland, Jul. 9, 1981, 5748/81
Int. Cl.³ F16L *37/00*
U.S. Cl. 285—308
1 Claim



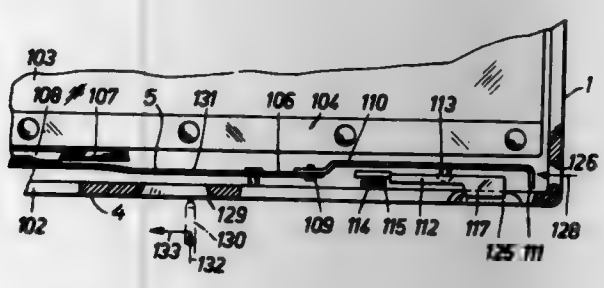
1. A connecting nipple for engagement with a tube having a circumferential surface with a locking groove therein, comprising a cylindrical body defining a socket portion and having an open end to which the tube is engageable, a tangential hole extending through said socket portion tangentially into an interior thereof and defining a socket wall, a locking slide engageable in said tangential hole and being of a size to engage in a locking groove of the tube, said socket wall having a bore therethrough overlying said locking slide when said locking slide is in said hole, said locking slide having a projection thereon which extends in said bore with said slide in said hole for holding said slide in said hole, said projection being sufficiently elastic so that said slide can be forced into said tangential hole while said projection passes said socket wall into said bore.

4,513,999

CASSETTE FASTENING STRUCTURE

Reiner Gollwitzer, Augsburg, Fed. Rep. of Germany, assignor to Regogollwitzer GmbH and Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 164,377, Jun. 30, 1980, abandoned, which is a continuation of Ser. No. 29,408, Apr. 12, 1979, abandoned, which is a continuation of Ser. No. 939,611, Sep. 5, 1978, abandoned, which is a continuation of Ser. No. 745,679, Nov. 29, 1976, abandoned. This application Apr. 9, 1981, Ser. No. 252,479
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1975, 2553671; Feb. 18, 1976, 7604823
Int. Cl.³ E05C *1/16*; A45C *13/10*
U.S. Cl. 292—161
9 Claims



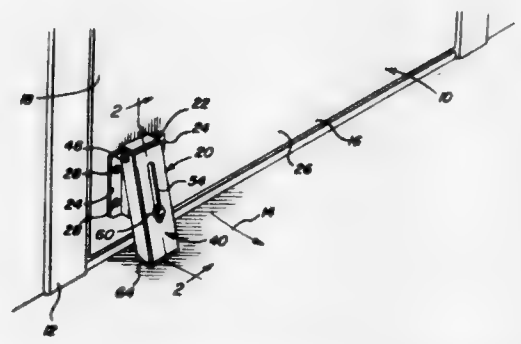
1. A device for opening and closing photographic cassettes, which cassettes include a frame having opposite longitudinal sides and a lid hinged at one longitudinal side of the frame, comprising a closure system situated along the other longitudinal side of the frame, which closure system includes a locking rod displaceable parallel to the longitudinal side of the frame and preloaded in one direction of displacement by spring means and having a set of locking elements which when the lid is pressed shut come into engagement with a second set of locking elements on the lid and which may be disengaged by displacement of the locking rod, said locking rod being constructed in two parts and comprising a section which is guided in a longitudinally displaceable manner on the cassette frame and a section coupled pivotably on the one extremity of the first-mentioned locking rod section at right angles to the plane of the cassette, the second-mentioned locking rod section having a free extremity and being coupled via a slot and pin joint to a closure lever which is pivotally journalled on the cassette frame at right angles to its plane and wherein in the area of the locking rod the cassette frame has excisions for insertion of an entraining element and the locking rod has engagement portions in the area of the excisions, one of which is at the free extremity of the second-mentioned locking rod section, for impingement of the entraining element.

4,514,000

SPRING BIASED DOOR STOP HAVING A VERTICALLY MOVABLE TENSION MEMBER

Jimmie A. Chezem, Sparta, and Gary E. Burks, Pikeville, both of Tenn., assignors to Plateau Products Corporation, Sparta, Tenn.

Filed Jan. 20, 1983, Ser. No. 459,590
Int. Cl.³ E05C *17/54*
U.S. Cl. 292—338
15 Claims



1. A door stop including a base for stationary mounting upon a door and including an elongated upright guide for support adjacent the lower marginal edge portion of the surface of the door which faces in the direction in which the door is moved toward the open position, a vertically elongated prop member pivotally mounted at its upper end from an upper portion of said guide for oscillation about a horizontal axis generally paralleling said surface and for movement between a first inoperative downwardly and outwardly inclined position with the lower end of the prop member disposed at a high level and a second operative position with the lower end of said prop member swung inward and downward to a low level to project at least slightly below said lower marginal edge portion for engagement with a horizontal surface over which said lower marginal edge moves when said door is shifted toward the open position thereof, means operatively connected between said base and prop member yieldingly biasing the latter toward said inoperative position, and elongated tension member means extending between said guide and prop member and including opposite end portions thereof slidably anchored to the guide and prop member for guided gravity movement downwardly therealong and with said tension member means preventing movement of said prop member toward said inoperative position from an operative position thereof independent of upward movement of said tension member means along said prop member and guide, wherein said guide and prop member include registered upstanding slots formed therethrough, said tension member means comprising an elongated tension member having its opposite ends slidably received through said slots and equipped with enlarged head means on the terminal ends thereof disposed on remote sides of said slots, wherein said tension member includes an elongated rigid rod member, the length of said rigid rod member

enabling the prop member to swing to said inoperative posi-

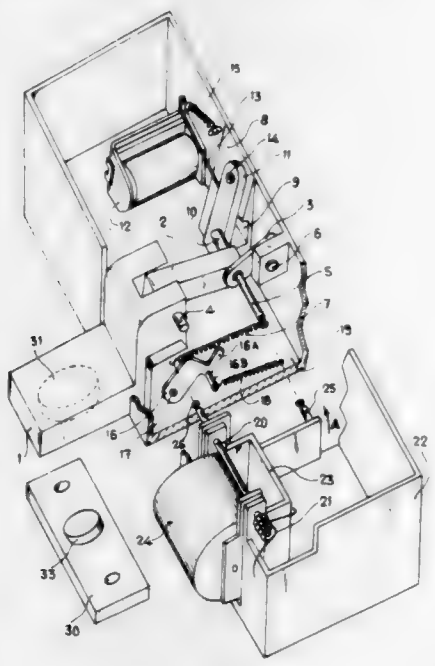
tion when the rigid member is moved upwardly in the slots toward the pivot axis, said rigid member falling by gravity away from the pivot axis as the prop member swings toward said operative position until the lower end thereof contacts the floor, said rigid member automatically and positively retaining the prop member in any position to which it is moved when the lower end contacts the floor.

4,514,001

ELECTRO-MECHANICAL LOCK

Antonio D. Garcia, Alcorcon, Spain, assignor to Segutronica, S.A., Alcorcon, Spain

Continuation-in-part of Ser. No. 322,622, Nov. 18, 1981, abandoned. This application Jun. 14, 1984, Ser. No. 621,123
Claims priority, application Spain, Nov. 21, 1980, 254.587[U]
Int. Cl.³ E05B *15/02*; E05C *3/16*
U.S. Cl. 292—341.16 **8 Claims**



1. An electro-mechanical lock comprising:
(a) a housing having a wall with a channel therein;
(b) a bolt rotatably mounted on said housing, said bolt being rotatable between extended and open positions;
(c) a connecting rod articulated to said bolt;
(d) a crank articulated to said connecting rod by means of a pin having a head extends away from said connecting rod, said crank further being articulated to said housing;
(e) a spring coupled to said pin;
(f) said crank and connecting rod providing an over-center arrangement such that said spring is fully extended when said bolt is between its extended and open positions and said spring urges said bolt to both its extended and open positions;
(g) said head of said pin moving into said channel when said bolt is rotated to its open position;
(h) means for selectively blocking said channel whereby said pin is selectively blocked from entry into an exit from said channel; and
(i) an electromagnet for operating said blocking means.

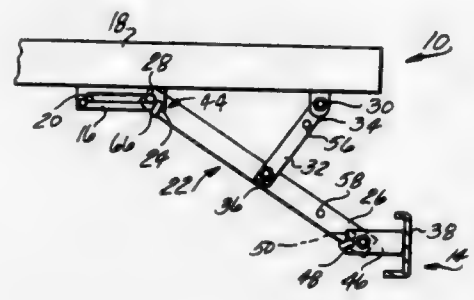
4,514,002

TWO-POSITION BUMPER

Donald S. McIntosh, Davisburg, Mich., assignor to John D. McIntosh and Mike Charles Giegler, both of Highland, Mich., part interest to each

Filed Mar. 8, 1982, Ser. No. 356,094
Int. Cl.³ B60R *19/02*
U.S. Cl. 293—118 **5 Claims**

1. A two-position bumper for off the road vehicles comprising:
a cam plate affixed to the vehicle frame and having a longitudinal cam slot formed therein;
a pivoting longitudinal member including a front end and a rear end, a cam follower pin laterally projecting from the front end to slidingly and pivotally engage the cam slot and pivotally and slidingly support the front end of the pivoting longitudinal member;
a rear pivot support attached to the vehicle frame a distance rearward from said cam plate;
an intermediate support arm pivotally supported at an upper



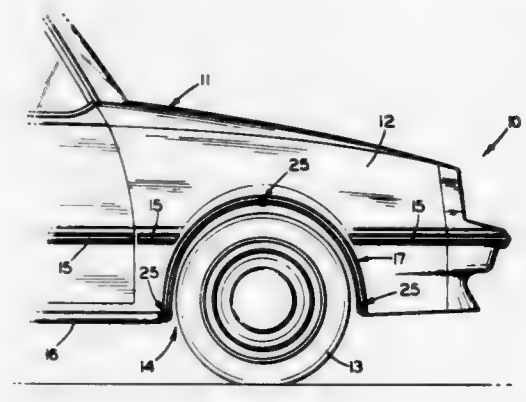
end by said rear pivot support and pivotally attached at a lower end to said pivoting longitudinal member;
the bumper attached to said rear end of said longitudinal member, whereby the bumper is movable from the first position in proximity with and rearward of the vehicle frame to clear ground obstacles for off the road travel, to a second position downward and rearward from the vehicle frame, the bumper serving as a conventional bumper in both of the first and second positions;
means for securing the bumper in the first position; and
means for securing the bumper in the second position.

4,514,003

MOUNTING OF AUTOMOBILE TRIM STRIPS

Robert R. Guy, North Royalton, Ohio, assignor to LOF Plastics Inc., Detroit, Mich.

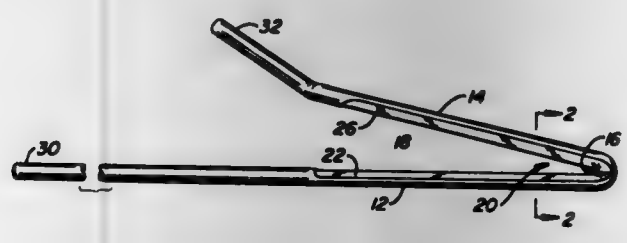
Filed Sep. 14, 1981, Ser. No. 301,778
Int. Cl.³ B62D *25/16*
U.S. Cl. 293—128 **2 Claims**



1. A decorative and protective ornamentation upon an automotive vehicle body, comprising an elongated molding strip extending along an edge of the sheet material forming said body and including a main body portion, a first surface on said main body portion adapted to face a corresponding surface of said vehicle body, means adhesively securing said molding strip throughout its length to said vehicle surface, a second surface on said main body portion opposite said first surface and including a bulbous rib projecting outwardly thereof, and a spring clip having an arcuate portion of complementary configuration hooked over said bulbous rib and engaging said vehicle body at at least one selected location along said strip, said clip urging said corresponding surfaces together and preventing failure of said adhesive securing means and separation

of said molding strip from said vehicle surface due to excessive stresses at said location.

4,514,004
WIRE-ROUTING DEVICE
John M. Morgan, 230 Echo Summit, Vallejo, Calif. 94590
Filed Jul. 14, 1983, Ser. No. 513,556
Int. Cl.³ B25B *27/00*
U.S. Cl. 294—19.1 **9 Claims**



1. A device adapted to be mounted on a pole and used for routing a length of wire or the like across an inaccessible area, said device comprising:

a member having a pair of opposed edges meeting in an acute angle to define an angulated hook for snagging said wire, said edges being provided with friction means for retaining a snagged wire within said angulated hook; and

means for mounting said member on said pole.

4,514,005
FIBER OPTIC CABLE GRIP
David E. Fallon, Pawcatuck, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.
Filed Apr. 15, 1983, Ser. No. 485,322
Int. Cl.³ F16L *3/00*; G02B *7/26*
U.S. Cl. 294—86.42 **12 Claims**



1. A grip for pulling fiber optic cable including an optical fiber core, a strength member located adjacent the core and an outer jacket enclosing the strength member with an exposed end of the strength member extending therefrom, the combination comprising:

a hollow member having a lead end and a tail end and an inner surface;

a pulling eye coupled to said hollow member lead and;

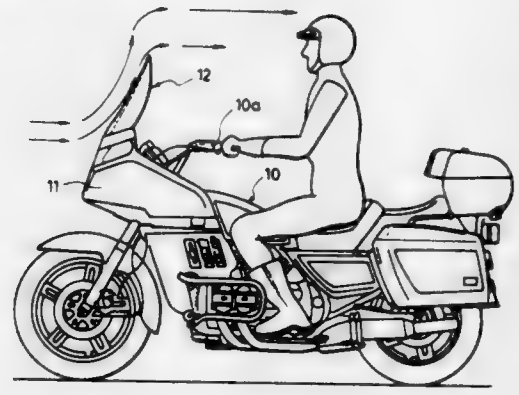
a wire mesh sleeve coupled to said hollow member at said tail end thereof and adapted to receive the fiber optic cable therein and grip the outer jacket thereof; and

coupling means, coupled to said hollow member, for coupling the exposed end of the strength member to said hollow member for increased support during pulling,

said coupling means comprising

means for releasably clamping the strength member directly against said inner surface and under an outwardly directed clamping force.

4,514,006
SYNTHETIC RESIN WINDSCREEN FOR MOTORCYCLES, MOTOR TRICYCLES, ETC.
Sigehiro Maruoka, Ohmiya, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1982, Ser. No. 442,099
Claims priority, application Japan, Nov. 17, 1981, 56-184287; Nov. 17, 1981, 56-184288
Int. Cl.³ B62J *17/02*
U.S. Cl. 296—78.1 **4 Claims**



1. A molded synthetic resin windscreen for use with a motor vehicle having a vehicle body and means for substantially vertically mounting the windscreen onto the vehicle body, comprising:

a fitting edge portion adapted to be fixed to said windscreen mounting means;

a screen surface main portion having a platelike configuration and extending upwardly from said fitting edge portion; and

a screen surface peripheral edge portion extending along an outer periphery of said screen surface main portion, amd forming a whole outer perimeter of said windscreen in cooperation with said fitting edge portion,

said screen surface peripheral edge portion comprising a first curved portion facing forwardly of the vehicle body and having a predetermined radius of curvature, and a second curved surface portion facing rearwardly of the vehicle body and having a radius of curvature larger than said predetermined radius of curvature of said first curved portion;

said screen surface main portion being curved forwardly of the vehicle body with a radius of curvature thereof kept substantially constant from a portion thereof adjacent said fitting edge portion to a portion thereof adjacent said screen surface peripheral edge portion,

said screen surface main portion having a thickness gradually and continuously decreasing from a portion thereof adjacent said fitting edge portion to a portion thereof adjacent said screen surface peripheral edge portion;

said fitting edge portion, said screen surface main portion and said screen surface peripheral edge portion being integrally formed in one piece and having thicknesses different from each other while being sufficient for ensuring respective required values of mechanical strength thereof;

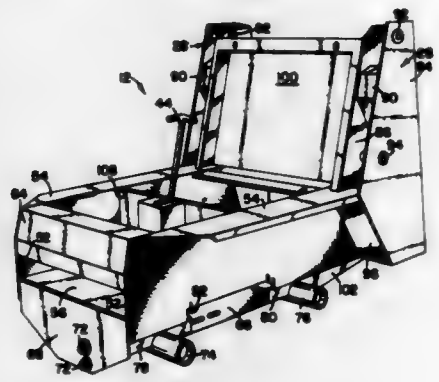
the thickness of said windscreen becoming smaller in the order of said fitting edge portion, said screen surface peripheral edge portion, and said screen surface main portion.

4,514,007

VEHICLE FRAME

Jon A. Macht, Owatonna, Minn., assignor to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Dec. 7, 1982, Ser. No. 447,667
Int. Cl.[3] B62D *11/04*
U.S. Cl. 296—183
18 Claims



1. A unitary, monocoque-type frame for a skid steer loader, comprising:

an elongate, hollow transmission case having closed front and rear ends, top and bottom sides, and lateral sides;

a plurality of longitudinally spaced apart axles housings extending from the lateral sides of said transmission case, said axle housings being arranged in opposite coaxial pairs;

a floor plate secured to the top side of said transmission case, said floor plate having opposite longitudinal edges and front and rear portions with the front portion extending at least to the front end of said transmission case and the rear portion extending beyond the rear end of said transmission case;

a pair of longitudinal side plates secured to said floor plate in laterally spaced apart relationship outward from said transmission case, said side plates having generally vertical lower portions and upper portions with the upper portions of said side plates being formed into fenders and the lower portions being secured along the longitudinal edges of said floor plate;

a front cross member secured between said side plates;

a brace secured between each axle housing, lower portion of the associated side plate, and said transmission case;

a pair of uprights secured in laterally spaced apart relationship to the rear portion of said floor plate, each upright also being secured to the associated side plate; and

a rear cross member secured between said uprights and said side plate in spaced relationship with said floor plate.

4,514,008

VEHICLE BODY FLOOR CONSTRUCTION OF MOTOR VEHICLE

Hiroyuki Watanabe, and Yasushi Tanaka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1982, Ser. No. 374,937
Claims priority, application Japan, Jun. 5, 1981, 56-87234; Jun. 12, 1981, 56-90275; Jun. 12, 1981, 56-86600[U]
Int. Cl.[3] B62D *27/02*
U.S. Cl. 296—204
20 Claims

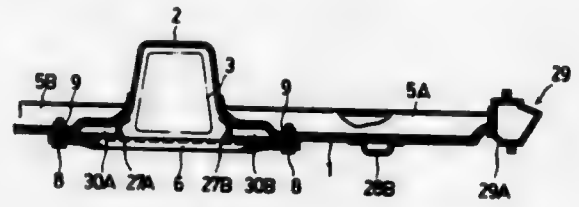
1. A vehicle body floor construction of a motor vehicle, comprising:

(a) an upwardly projecting and downwardly opening tunnel disposed in a longitudinal direction of a vehicle and formed at the central portion of a transverse direction of a floor panel of said vehicle, said tunnel having a first end and a second end;

(b) a fuel tank disposed in said tunnel;

(c) a first pair of cross members integrally formed in the transverse direction on said floor panel, said cross members traversing said tunnel at a forward end and at a rear end of said fuel tank and substantially at the bottom level of said fuel tank disposed in said tunnel to block said tunnel and protect said fuel tank;

(d) a second pair of cross members comprising a left cross member and a right cross member connected to said floor panel in the transverse direction, a first end of said left cross member and a first end of said right cross member being connected to opposite outer side surfaces of said tunnel at a point which is substantially equidistant in the longitudinal direction from said first end and said second end of said tunnel;



(e) a bulkhead traversing the opening of said tunnel below said fuel tank disposed therein, said bulkhead being connected to said floor panel at a point which is substantially equidistant in the longitudinal direction from said first end and said second end of said tunnel formed therein; and

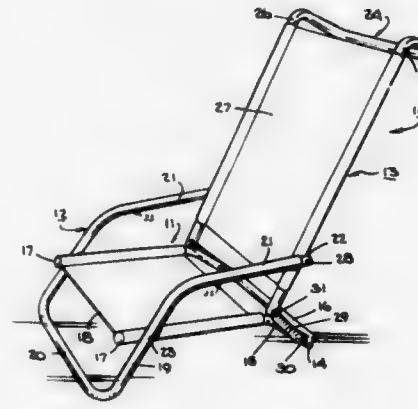
(f) at least two longitudinally extending closed cross-sectional reinforcing portions integrally formed on said floor panel at transversely opposite sides of the opening of said tunnel, said closed cross-sectional reinforcing portions extending for at least the length of said fuel tank.

4,514,009

COLLAPSIBLE LOUNGE CHAIR

Robert D. Vanderminden, Granville, N.Y., and Paul Parker, Poultney, Vt., assignors to The Telescope Folding Furniture Co. Inc., Granville, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,627
Int. Cl.[3] A47C *4/00, 1/02*
U.S. Cl. 297—27
7 Claims



1. A collapsible lounge chair comprising

a seat frame defining a first leg support;

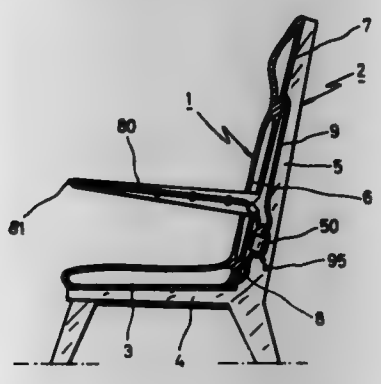
an arm frame pivotally connected to said seat frame and defining a second leg support, said arm frame including a pair of telescoping arms; and

a back frame pivotally mounted on said seat frame to move between a raised upright position and a lowered reclined position and between said upright position and a collapsed position, said back frame having a projecting portion at one end to define a third leg support in said lowered position and being pivotally secured at an intermediate portion to each telescoping arm.

4,514,010
ARRANGEMENT FOR THE DISTRIBUTION OF PRESSURIZED FLUID TO A SEAT UNIT HAVING A BACKREST

Buenaventura Sabater González, Denia 23, Barcelona, Spain

Filed Apr. 21, 1983, Ser. No. 487,054
Claims priority, application Spain, May 6, 1982, 264.985; Jan. 22, 1983, 269.906
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—284 9 Claims



1. An arrangement for the distribution of pressurized fluid to a seat unit having a backrest and a seat area, comprising:

(a) a first fluid-containing chamber adaptable to the seat area of the seat unit so as to receive, at least in part, the user's weight;

(b) at least one inflatable chamber adaptable to the backrest;

(c) lines communicating between said first chamber; and each at least one backrest chamber; and

(d) normally closed valve means connected to each of said lines, the valve means including

(i) at least one opening means having an opening control and being positioned in the seat unit so as to be easily accessible to the user thereof,

(ii) a valve body with two access ports to the interior thereof,

(iii) at least one valve seat; and

(iv) a stopper made from relatively lightweight material for bearing against each said valve seat,

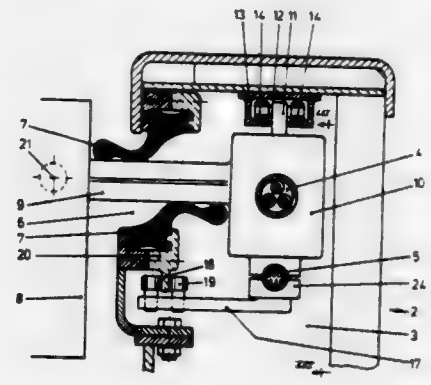
wherein the or each valve seat comprises a resilient washer positioned between the stopper and one of the access ports, and wherein the opening means is associated with each washer forming each valve seat, is capable of penetrating from the space opposite that occupied by the stopper in the washer orifice and preventing the stopper from seating against the valve seat, is partially housed in a sealed tubular member fixedly attached to the valve body and comprises a filiform member moveable in a longitudinal direction and a spring member urging the filiform member away from the washer orifice, the opening control causing such longitudinal movement.

4,514,011
POWER AND LIQUID SUPPLY SYSTEM FOR MINING MACHINES

Klaus Lodwig, Bochum, and Friedhelm Schefers, Dortmund-Brackel, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Jul. 15, 1983, Ser. No. 514,301
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3229989
Int. Cl.³ E21C *27/34*
U.S. Cl. 299—42 9 Claims

1. In a mining machine arrangement wherein a mining machine is adapted to traverse an elongated course of travel along a mine face, the combination comprising: a housing structure extending along the course of travel adjacent one side of the mining machine, the interior of said housing accommodating extended lengths of a power supply cable and a liquid supply conduit which are coextensive with at least a portion of the course of travel of the mining machine, said housing having a face plate provided with an elongated slot extending along the course of travel of the mining machine, a side arm mounted on the mining machine and extending through said slot, a junction box rigidly carried on an end of said side arm within said interior of said housing, junction means within said junction box for connecting power cable means leading from said mining machine to said extended length of power cable in the

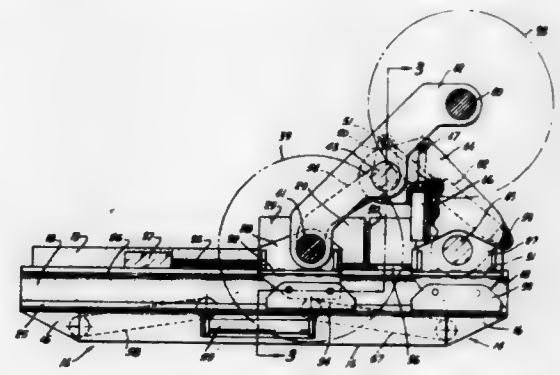


interior of said housing, and coupling means carried by said arm for coupling a liquid supply conduit leading from the mining machine to said extended length of liquid supply conduit in the interior of said housing structure, and said side arm being mounted on the mining machine for relative movement with respect thereto during traverse of the mining machine over its course of travel to facilitate guiding of said junction box within said interior of said housing.

4,514,012
EXCAVATORY MACHINE FOR USE IN COAL AND OTHER MINING OPERTIONS

John L. Wallace, Woonona, Australia, assignor to Maintel Pty. Limited, New South Wales, Australia

Filed Jul. 25, 1983, Ser. No. 516,730
Claims priority, application Australia, Jul. 28, 1982, PF5092
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—57 25 Claims



1. An excavatory machine, for use in a mine presenting a face from which work is commenced and sustained, said machine consisting of a machine base structure, means to advance said base structure along the floor of said mine and towards said face and a cutter-head assembly mounted on said base structure for excavatory presentation to said face, said machine comprising:

a saddle mounted on and reciprocatable from side-to-side of said base structure and having two interconnected parts adjustably spaced apart, said parts having means to hold them in selected adjustment of one relative to the other,

means applied to one of said parts to reciprocate said saddle as aforesaid,

a first lever fulcrumed on said one of said parts,

means for varying the angular disposition of said first lever

relative to said saddle and for holding said first lever in selected angular disposition relative to said saddle,

a second lever medially fulcrumed on the free end of said first lever,

the other of said parts being linked to the fulcrum of said second lever,

means for part rotating said second lever between angularly spaced-apart positions therefor and for holding said second lever in a selected one of those positions, and

a pair of power-rotatable cutters respectively borne on the ends of said second lever.

4,514,013

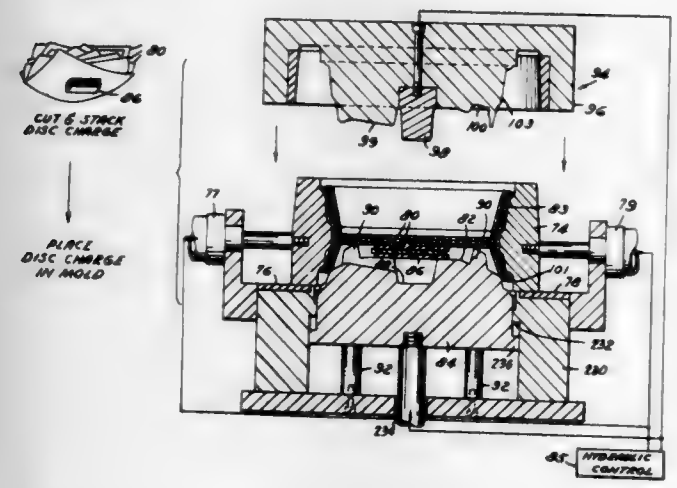
FIBER-REINFORCED COMPOSITE WHEEL CONSTRUCTION

James A. Woelfel, and Richard W. Smith, both of Lansing, Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Continuation of Ser. No. 277,657, Jun. 26, 1981, abandoned, which is a division of Ser. No. 119,128, Feb. 6, 1980, Pat. No. 4,294,639, which is a continuation-in-part of Ser. No. 14,265, Feb. 22, 1979, abandoned. This application Dec. 12, 1983, Ser. No. 559,623

Int. Cl.³ B60B *5/02*

U.S. Cl. 301—63 PW **19 Claims**



1. A composite wheel construction of fiber-reinforced resin comprising a disc portion wherein reinforcing fibers comprise discontinuous fibers disposed predominantly in multiple axially distinct layers and oriented in each of said layers substantially randomly of the wheel axis, and a rim portion integral with said disc portion wherein reinforcing fibers include discontinuous fibers at least some of which are oriented substantially circumferentially of the wheel axis and in which said fibers are disposed predominantly in multiple essentially radially distinct circumferential layers.

4,514,014

INTEGRAL IDLER TRACK ADJUSTING AND RECOIL APPARATUS

David J. Balzer, East Peoria; Thomas M. Dennison, Peoria; Marvin G. Getz, and Eldon D. Oestmann, both of Morton, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00545, § 371 Date Apr. 26, 1982, § 102(e) Date Apr. 26, 1982

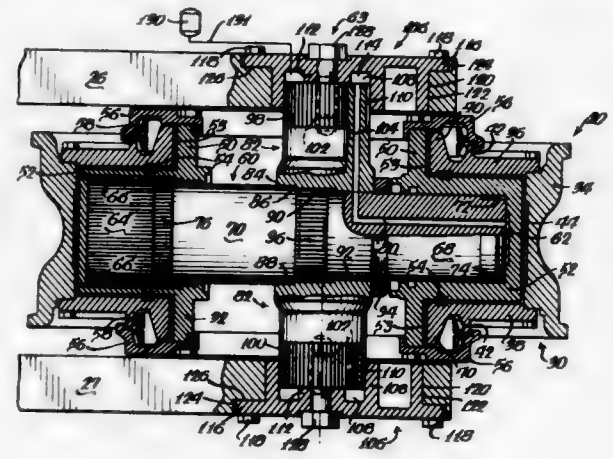
PCT Filed Apr. 26, 1982, Ser. No. 388,765

Int. Cl.³ B62D *55/30*

U.S. Cl. 305—10 **4 Claims**

1. In a track laying vehicle (10) of the type having a continuous track assembly (12) driven about a track frame (26, 27), an idler (20) engaging said track assembly 912), a cross member (82) connected to said frame (26, 27) and extending into said idler (20), means for adjusting the position of the idler (20) to tension the track assembly (12) and recoil means for providing recoil to said idler (20), the improvement comprising:

said adjusting means (68, 62) including a piston (68) and a cylinder (62) within said idler (20) and being adapted to adjustable journal said idler (20) to said cross member (82), said adjusting and recoil means includes means (80) for interposing fluid between said piston (68) and cylinder (62) and adjusting the relative position of said idler (20) relative to said cross member (82), and an accumulator



(146) in fluid communication with said cylinder, said accumulator (146) being annular and further including a piston (148) adapted to be displaced within said accumulator (146) in response to receipt of fluid from said cylinder (62), said piston (148) being biased to return fluid into said cylinder (62).

4,514,015

BALL AND SOCKET LINKAGE AND BEARING ASSEMBLY

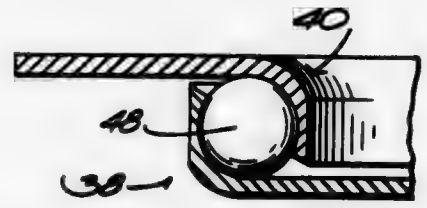
Jack W. Sullivan, 2236 Island Beach Rd., Oshkosh, Wis. 54901

Continuation of Ser. No. 110,196, Jun. 7, 1980, abandoned, which is a continuation of Ser. No. 13,149, Feb. 21, 1979, abandoned, which is a division of Ser. No. 859,325, Dec. 12, 1977, Pat. No. 4,164,062. This application Oct. 10, 1980, Ser. No. 195,887

Int. Cl.³ F16C *17/10, 19/10*

U.S. Cl. 308—2 R **7 Claims**





1. An assembly comprising,

inner metallic means having an axis and having outwardly facing curved metal contact surfaces constrained against axial movement by a unitary structure,

an outer metallic member having an integral inwardly facing curved metal surface mating with said contact surfaces more than 90° as measured in a plane including said axis,

the curved surface of said outer member engaging said contact surfaces for more than 180° as measured about said axis,

said outer member including a flat portion integral with the curved surface and lying in a plane normal to said axis and extending inwardly from said inwardly facing curved metal surface past the center of curvature of said contact surfaces,

said inner means including an integral continuous metallic inner race and a multiplicity of balls between said race and the outer member,

each of the balls having an outwardly facing contact surface mating with the curved surface of the outer member,

said inner race being said unitary structure and embracing more than 90° of each ball as measured in a plane including said axis and having an integral flat portion parallel to the first named flat portion and extending from the curved surface of the inner race past the center of the balls,

the integral curved metal surface of the outer member being a continuous outer race,

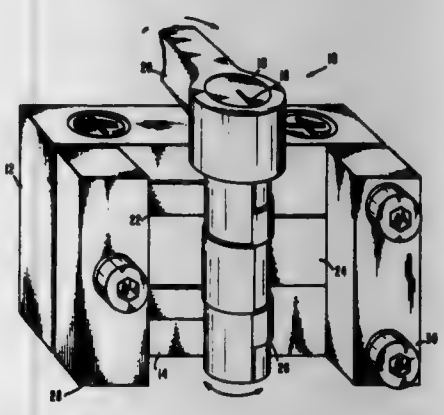
neither of the races being split.

4,514,016

LOW FRICTION PIVOT

Roland O. Davis, Santa Ynez, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Division of Ser. No. 295,053, Aug. 21, 1981, Pat. No. 4,438,983.
This application Oct. 14, 1983, Ser. No. 541,941
Int. Cl.³ F16C *32/00*
U.S. Cl. 308—2 A **3 Claims**



1. A pivot structure comprising:

a flat base member;

a cylindrical pivot pin member;

band means including metallic bands each having a first portion and a second portion, with said first portion affixed by way of first affixing means to said cylindrical member and said second portion affixed by way of second affixing means to said flat base member, one of said bands extending around said cylindrical member in a first circumferential direction and another of said bands extending around said cylindrical member in a second circumferential direction opposite from said first direction, the thickness of said metallic bands being such that said bands are not stretched beyond their fatigue limit, said bands configured so that the bending forces of said pivot pin are substantially balanced;

said bands interposed between said pivot pin member and said flat base member;

said interposed bands abutting said flat base member on one side of said bands;

said interposed bands abutting said pivot pin member on the opposite side of said bands;

said flat base member and said interposed bands limiting movement of said pivot pin member in a direction towards said flat base member;

said flat base member positioned as a load bearing support surface for said pivot pin means and said interposed band means; and

said flat base member serving to support loads on said pivot pin member which are directed normal to and towards said flat base member and transmitted through said interposed band means;

wherein there are three bands, with two of said bands extending around said pivot pin member in one circumferential direction and a third band extending around said pivot pin in the opposite circumferential direction;

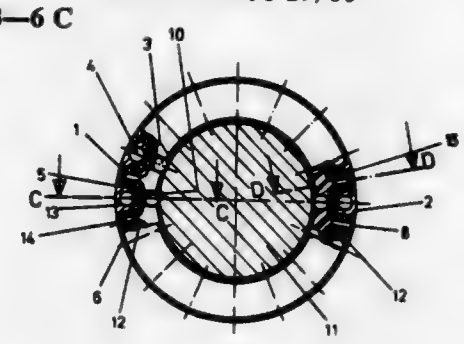
and wherein said bands are of substantially equal thickness and the width of said third band is substantially equal to the sum of the widths of the two other bands.

4,514,017

ROLLING BEARING FOR LENGTHWISE MOVEMENT

Lothar Walter, Schweinfurt, and Walter Reith, Bad Bocklet, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,122
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207516
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **8 Claims**



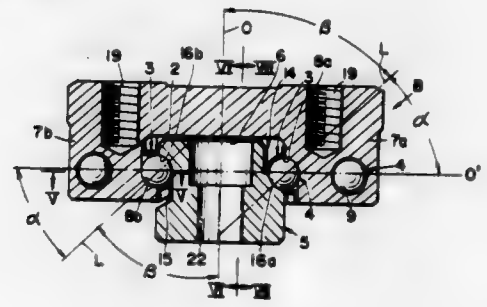
1. In a rolling bearing for lengthwise movement having circumferentially distributed endless rows of rolling bodies, a support having first axially extending channels in its outer surface, said support radially outwardly supporting the loaded rolling bodies, and a cage for guiding the unloaded rolling bodies in the reverse direction and turning them around at the ends of the support; the improvement wherein the support is deformed to have a corrugated or undulating cross-section in the circumferential direction, the corrugations or undulations extending throughout the axial length of the support and defining second axially extending channels for the rolling bodies.

4,514,018

LINEAR SLIDE BEARING AND LINEAR SLIDE TABLE UNIT EMPLOYING THE SAME

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 567,980
Claims priority, application Japan, Apr. 21, 1983, 58-69237
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **15 Claims**



1. A linear slide bearing comprising:

a slide block constituted by a block body of U-shaped cross-section having on the inner surfaces of both arms thereof a pair of right and left obliquely upward and downward directed raceways extending longitudinally thereof, said block body further having non-load carrying ball bores

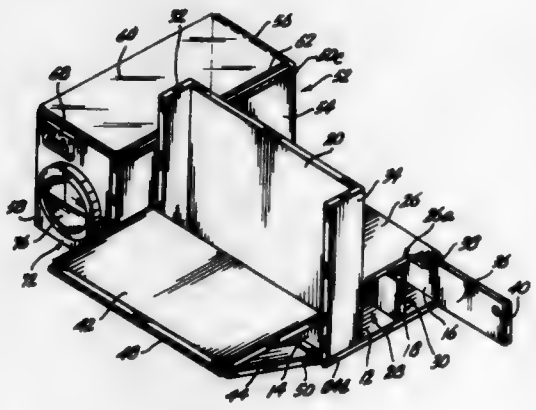
longitudinally extending through solid portions of said arms;

a track shaft fitted in a recess of said slide block so as to be slidable longitudinally thereof, said track shaft being formed on both its side portions facing the inner surfaces of both the arms with obliquely upward and downward directed raceways facing the raceways on said arms, respectively, to form load carrying ball grooves in cooperation with these raceways;

a pair of side covers attached to both side surfaces of said slide block and having respective guide grooves for providing communication between said load carrying ball grooves and the associated non-load carrying ball bores, respectively; and

a multiplicity of balls accommodated in two rows of endless tracks formed by said load carrying ball grooves, non-load carrying ball bores and guide grooves, said balls being adapted to recirculate through the insides of said endless tracks.

4,514,019
PORTABLE DENTAL OPERATORY
Peter E. Moore, Redmond, Wash., assignor to Mobile Dental Equipment Corporation, Redmond, Wash.
Filed Jul. 20, 1981, Ser. No. 285,155
Int. Cl.³ A47B *43/00*
U.S. Cl. 312—209 **24 Claims**



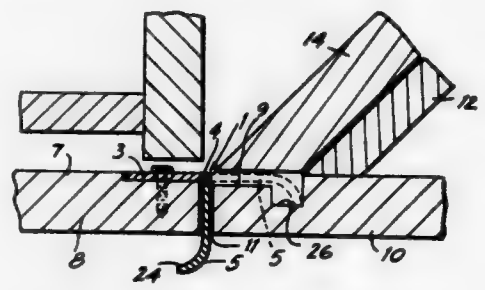
1. A portable dental operatory comprising:

a cabinet, said cabinet including a generally rectangular base having front and rear sides, an upright tool support panel mounted on said base between said front and rear sides and extending substantially parallel to said front and rear sides, a front panel having first and second opposite edges, said front panel being hinged along said first edge to said front side of said base for swinging motion between an upright position wherein said front panel is substantially parallel to said tool support panel and a substantially horizontal position wherein said front panel extends from said base to form a work surface positioned in front of said tool supprt panel, a top panel having first and second edges, said first edge of said top panel being hinged to said second edge of said front panel for relative folding motion of said top panel and said front panel, connecting means for attaching said second edge of said top panel to said base beneath said first edge of said front panel such that said top panel braces said front panel in said substantially horizontal position, and whereby said top panel is foldable upwardly and over said tool support panel to assemble said cabinet for transport;

an electric air compressor mounted on said base behind said tool support panel; and

a removable enclosure mountable on said base behind said tool support panel so as to enclose said air compressor, said removable enclosure including a rear wall and opposing end walls, said removable enclosure further including a substantially transparent top panel hinged to the upper edge of said rear wall, means for attaching said enclosure to said cabinet, and connecting means for attaching said second edge of said top panel to said removable enclosure so as to assemble the operatory for transport.

4,514,020
DESK LOCK SYSTEM
Thomas Strasser, 15 Glens Dr. E., Boynton Beach, Fla. 33436
Filed Jun. 9, 1983, Ser. No. 502,758
Int. Cl.³ E05C *7/06*
U.S. Cl. 312—220 **12 Claims**



1. A lock system for a desk including:

adjacent first and second door panels each hving an interior face and open and closed positions;

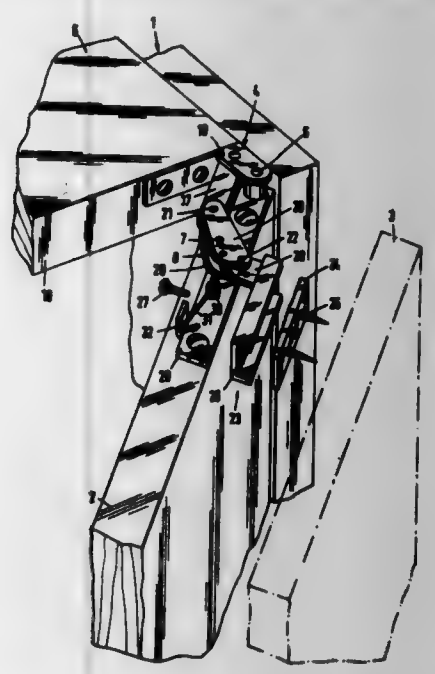
locking means to selectively lock said second panel in its closed position;

hinge means to selectively lock said first panel in its closed position when said second panel is locked, said hinge means comprising a first hinge plate attached to the first panel at the interior face of said first panel, a second hinge plate which protrudes from between said first and second panel when they are closed and unlocked, and which abuts the interior face of the second panel when they are closed and locked; and a joint means pivotally connecting said first and second hinge plates and having a limited angle of rotation; wherein the interior faces of said first and second panel doors are co-planar when they are in their closed and locked positions.

4,514,021
CABINET WITH DOUBLE DOOR CONSISTING OF AN INNER DOOR AND AN OUTER DOOR
Gunter Sundermeier, Bunde, and Dieter Waltemate, Hullhorst, both of Fed. Rep. of Germany, assignors to Paul Hettich & Co., Kirchlengern, Fed. Rep. of Germany
Filed Apr. 20, 1983, Ser. No. 486,774
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1982, 3215607
Int. Cl.³ E05F *17/00*
U.S. Cl. 312—291 **11 Claims**

1. In a cabinet receptive of an appliance shell and having a double door including an inner door for the appliance shell and an outer door for the cabinet, hinging means mounted on the inner door and the appliance shell to enable the inner door to pivot on a given axis, the improvement comprising: at least one means coupling the outer door, the inner door and the shell of the appliance to effect the pivotal movement of the inner door about the given axis in response to the opening and closing of the double door and including drive means mounted for piv-

otal movement on the inner door about an axis parallel to the given axis and is connected to the outer door and the appliance



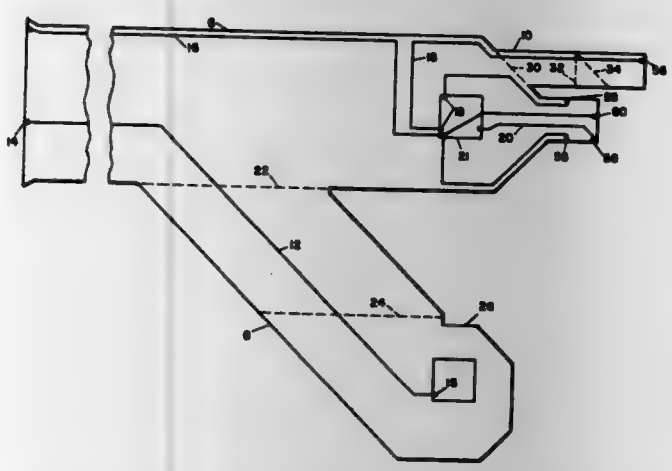
shell for forcing the outer door to one side and away from the given axis when the double door is opening.

4,514,022

PROBE CABLE ASSEMBLIES

David G. Payne, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 29, 1983, Ser. No. 509,827
Int. Cl.[3] H01R *23/72*; H01L *21/66*
U.S. Cl. 339—17 F
2 Claims



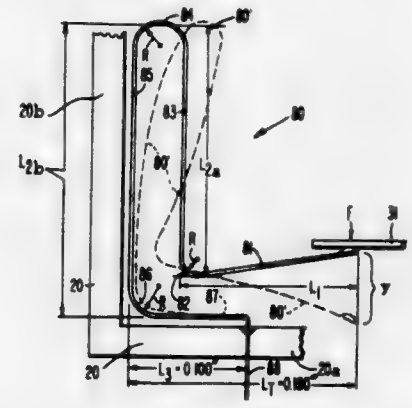
1. A probe cable assembly for use in connecting a monitoring instrument to an electronic system under test, which system has a receptacle for receiving a multiple terminal electronic component, to analyze the interaction between the system and the component, said cable assembly comprising a flexible circuit cable having an instrument end, a probe end and an auxiliary interconnect end, a probe element secured to the cable at the probe end thereof and capable of fitting in the receptacle of the system under test, said probe element having a plurality of terminals, and an auxiliary receptacle for receiving the multiple terminal electronic component said auxiliary receptacle being secured to the cable and having a plurality of terminals in a predetermined array, and said cable comprising a plurality of conductors supported by a dielectric matrix, a first group of said conductors extending between said instrument end of the cable and the auxiliary interconnect end and terminating at said auxiliary interconnect end in an array corresponding to said predetermined array, and a second group of said conductors extending between the terminals of the auxiliary receptacle and corresponding terminals of said probe element, the cable being folded to bring the terminations of the first group of conductors into registry with the terminals of the auxiliary receptacle so that conductors of the first group are connected both to predetermined terminals of the auxiliary receptacle and to corresponding terminals of the probe element.

4,514,023

INTEGRATED CIRCUIT PACKAGE CONNECTOR

Rex Rice, Menlo Park, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 343,258, Jan. 27, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 552,605
Int. Cl.[3] H01R *23/72*
U.S. Cl. 339—17 CF
12 Claims



1. An electro-mechanical connector for connecting an integrated circuit package to an electronic system in a replaceable fashion; said connector including a frame having a plurality of electrical conductors mounted therein; and said frame being shaped to hold said integrated circuit package such that each electrical conductor of said plurality aligns with a corresponding lead in said integrated circuit package; wherein:

each electrical conductor is comprised of an elongated planar piece of material having four bends respectively at lengths L_1, L_{2a}, L_{2b} and L_3 along said conductor which make the maximum bending stress S in said conductor equal to $S=k_1F(L_1)$ and independently make the distance y by which said conductor deflects as said conductor pushes against said corresponding lead proportional to $y=k_2F(L_1)^3+L_1 \tan [k_3FL_1(L_{2a}+L_{2b})]$ where F is the force by which said conductor pushes and k_1, k_2, and k_3 are constants;

said lengths L_1, L_{2a}, L_{2b} and L_3 being straight and of the same order of magnitude;

a first one of said bends being a U-shaped bend which provides two legs;

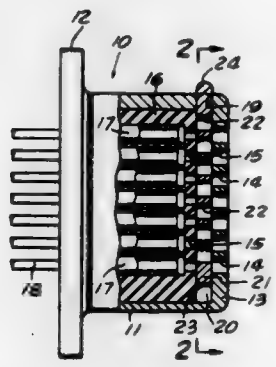
one of said legs having a second one of said bends of approximately 90° in a first direction at length L_{2a} from said U-shaped bend to thereafter provide a straight first leg portion of length L_1 for pushing against and making ohmic contact with a corresponding lead in said integrated circuit package;

the other of said legs having a third one of said bends of approximately 90° in said first direction at length L_{2b} from said U-shaped bend which is longer than said length L_{2a}, and having a fourth one of said bends of approximately 90° at length L_3 further along its length in a direction perpendicular to said first direction to thereafter provide a second leg portion for making ohmic contact with said electrical system.

4,514,024
SHIELDED ELECTRICAL CONNECTOR

Thomas A. Clark, Santa Monica, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Sep. 3, 1982, Ser. No. 414,918
Int. Cl.[3] H01R *13/453*
U.S. Cl. 339—40 4 Claims



1. An electrical connector having a metal receptacle shell within which at least one socket contact is carried within an insulative insert, and an open-ended metal plug shell adapted for fitting receipt onto the receptacle shell and including an insulative insert with a pin contact for interconnecting with socket contact on mating of the plug and receptacle shells, comprising:

a face wall integral with the receptacle shell and having an opening lying opposite the socket contact and through which the pin contact passes during mating of the plug and receptacle;

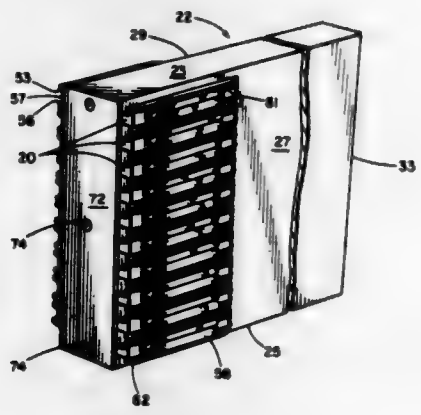
a platelike member slidably located within a cavity between the face wall and the insulative insert within the receptacle shell, and having an opening therein, said platelike member further having an edge that extends outwardly of the receptacle shell when the plug and receptacle shells are disengaged and which, on mating engagement of the plug and receptacle shells, means on the plug shell moves the outwardly extending plate-like member edge into the receptacle shell to a first position aligning the platelike member opening with the face wall opening; and

spring means urging the platelike member toward a second position where the face wall opening and the platelike member opening are out of alignment.

4,514,025
LOW RESISTANCE ELECTRICAL CONNECTOR

Aymon A. Maulandi, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.

Filed Nov. 8, 1982, Ser. No. 440,137
Int. Cl.[3] H01R *21/28, 11/22*
U.S. Cl. 339—64 M 13 Claims



1. An electrical connecting assembly adapted for plug-in connection to a female conductor, said assembly comprising:

a terminal block portion including a first end adapted for insertion into said conductor, said terminal block having a top terminal surface, a bottom terminal surface and opposite side terminal surfaces;

a wafer carried by said terminal block intermediate said top terminal surface and said bottom terminal surface;

said wafer including opposite side wafer surfaces spaced outward from the respective side terminal surfaces;

first resilient contact means positioned intermediate said wafer and said terminal block for providing electrical connection between said wafer and said terminal block while enabling relative motion between said wafer and said terminal block;

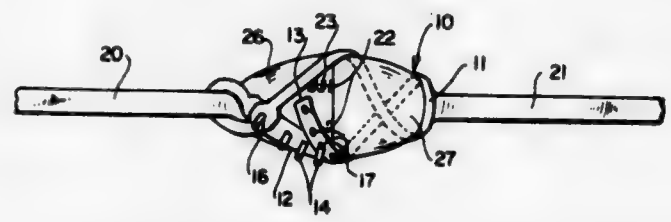
second resilient contact means associated with at least one of said wafer side surfaces for providing electrical connection between said wafer and said female conductor; and

retaining means for retaining said wafer intermediate said top terminal surface and said bottom terminal surface.

4,514,026
PLUG LOCKING DEVICE

Phil Herbert, 685 W. 1600 North, Mapleton, Utah 84663

Filed Sep. 2, 1983, Ser. No. 528,745
Int. Cl.[3] H01R *13/62*
U.S. Cl. 339—75 P 6 Claims



1. A retaining device for preventing accidental separation of an extension cord plug from a primary cord plug wherein the extension plug is mated to the primary plug by means of an insertion prong and receptacle which are carried in the respective plugs, said device comprising:

a flat, elongated, single, integrally formed strap having a first end, a second end and an intermediate section therebetween;

said first end having first male and female fastening means spaced apart at a sufficient distance to enable a portion of the strap between the first male and female fastening means to be wrapped around and fastened at one of the mated plugs;

said first end further including a second male fastening means which is positioned thereon such that it remains exposed when the first male and female fastening means are fixed around the plug;

said second end including a second female fastening means adapted for attachment to the second male fastening means of the first end;

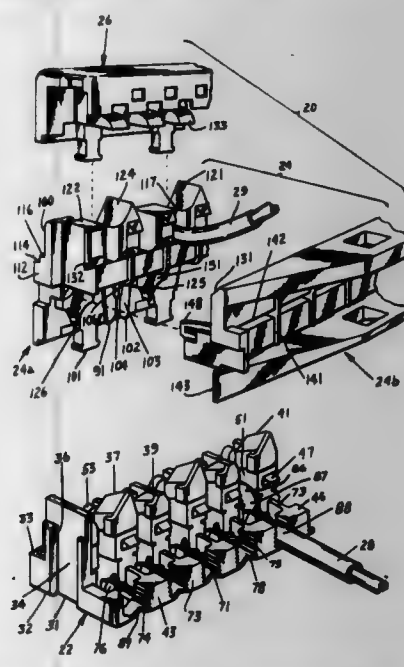
said intermediate section having sufficient length to enable its placement around the second plug in a manner wherein the respective plugs are secured together so that plugs cannot be pulled apart;

said single strap having sufficient overall length to permit the first end to be secured at one plug, the intermediate section to be wrapped at least once around the mated plugs, and the second end to be returned and attached to the first end at the original plug.

4,514,027
CONNECTORIZED CABLE AND METHODS OF MAKING

Roland H. Seidel, Cobb County, Ga., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,055
Int. Cl.[3] H01R *13/58*
U.S. Cl. 339—105 14 Claims



8. A connector for holding conductors of a cable in a spaced array, said connector comprising:

an elongated plastic member which includes a plurality of spaced grooves being defined by walls of said connector with portions of the conductor capable of being disposed in preselected grooves; and

a plurality of latching tabs which are adapted to be extended into the preselected grooves into securing relationship with the conductor portions therein and which are connected to said walls adjacent to inverts of said grooves to secure conductors against unintended movement, wherein each latching tab is integral with an associated one of said walls along one portion of the tab, which is adjacent and parallel to the groove defined by said associated wall, and along sides adjacent to said one portion, and wherein each said tab is formed by a partially separated portion of its associated wall which is adapted to be moved pivotally about said one portion and deflected inwardly into enclosing relationship with a conductor portion whereupon portions of said sides of each said latching tab are disconnected from its associated wall but interposed between the tab and its associated wall to maintain the tab locked in the enclosing relationship with the conductor portion.

4,514,028
CRT UPDATED METHOD AND APPARATUS FOR IDENTIFYING INTEGRATED CIRCUIT PINS

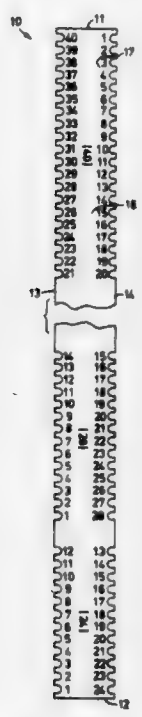
Wei H. Kuo, 3805 Avenue B, No. 201, Austin, Tex. 78751

Filed May 9, 1983, Ser. No. 492,565
Int. Cl.[3] H01R *3/00*
U.S. Cl. 339—113 R 9 Claims

1. An integrated circuit pin identifier for placement either between multiple pins of an integrated circuit which are arranged substantially in two rows or for placement against the outside edge of a row of pins of the integrated circuit, comprising:

a rectangular frame having opposite ends with a width less than the distance between the two rows of multiple pins, and having sides substantially longer than the width, the sides having a plurality of notches formed along at least one-half the entire length so that when at least one of the sides is placed adjacent the pins, each of the pins fits substantially inside one of the notches; and

labeling means placed on at least one face of the rectangular frame to correlate a predetermined notch with a predeter-

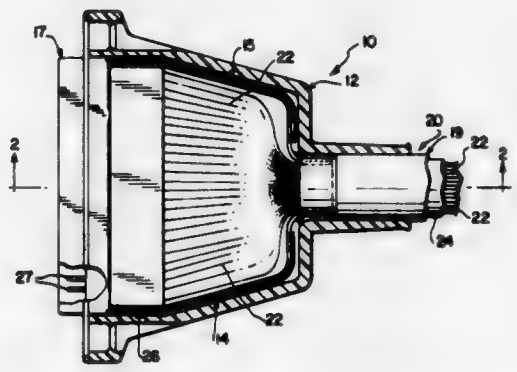


mined number, said predetermined number representing the number of the adjacent pin of the integrated circuit.

4,514,029
SHIELDED CONNECTOR AND METHOD OF FORMING SAME

Ronald G. Lax, Los Gatos; Robert G. Johnson, Santa Clara; Charles G. Henningsen, Portola Valley, and J. Scott Ellis, San Jose, all of Calif., assignors to Quintec Interconnect Systems, Mountain View, Calif.

Filed May 3, 1982, Ser. No. 374,287
Int. Cl.[3] H01R *13/504, 13/658*
U.S. Cl. 339—143 R 11 Claims



1. In a shielded connector for a shielded cable including a cable having a plurality of insulated conductors, an outer insulating jacket enclosing the conductors and a shield layer interposed between the conductors and the jacket with the conductors and the shield layer extending past an end of the insulating jacket; and a metallic connector housing coupled to an insulated terminal block which supports terminals electrically connected to the conductors, the improvement comprising:

a pair of opposed, rigid shield members located between the connector housing and the end of the insulating jacket and receiving the insulated conductors extending past the jacket therebetween;

means for interconnecting said opposed shield members;

means for electrically connecting and bonding said shield members to the shield layer;

means for electrically connecting and bonding said shield members to the connector housing;

a unitary, preformed and self-supporting outer housing enclosing said opposed shield members, a portion of the connector housing, and a portion of the insulating jacket therein, said outer housing comprising a continuous tube; and

adhesive means interposed between said outer housing and said shield members and between said outer housing and said portion of said insulating jacket so enclosed.

4,514,030

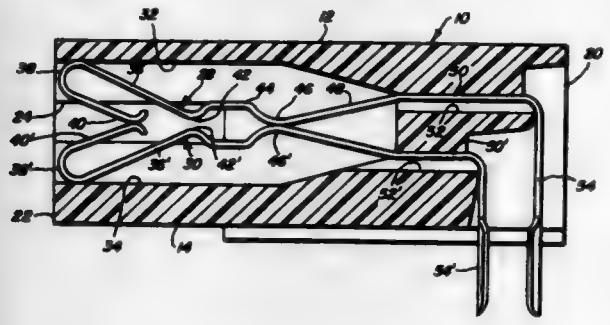
SHORTING EDGE CONNECTOR

Irvin R. Triner, Stickney, and John N. Martinowich, Warrenville, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Continuation of Ser. No. 296,898, Aug. 27, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 529,203

Int. Cl.³ H01R 9/09

U.S. Cl. 339—176 MP **6 Claims**



1. In an edge connector of the type having an insulative housing with an opening therein for receiving an edge portion of a printed circuit board, and two series of contacts mounted in opposed relation in said housing for engagement with opposite sides of the leading edge of a board inserted in said opening to make electrical contact with circuitry on the sides of said board, the improvement comprising, in combination said series of contacts being a plurality of deflectable contacts arranged in opposed pairs, each contact having a first outer contact portion which projects into said opening toward the opposing contact and makes engagement with the adjacent side of the leading edge of a printed circuit board inserted in said opening, a second intermediate contact portion which projects into said opening toward the opposing contact and also makes separate spaced engagement with the adjacent side of the leading edge of a printed circuit board inserted in said opening after the leading edge of said board has deflected and moved past said first contact portion, and a third inner contact portion which projects toward the opposing contact, said contacts being formed so that at least the third inner contact portions of an opposing pair of contacts are in engagement in the absence of a board in said opening, thereby shorting said contacts until the leading edge of a board has been inserted in engagement with said second contact portions, the outer end portions of said contacts being made elongated and sufficiently flexible that insertion of the leading edge of a printed circuit board past said first contact portions will effect only localized deflection of said first contacts into engagement with adjacent side of the board whereby said third contact portions will remain engaged at least until said board engages and deflects said second contact portions, and said second contact portions being sufficiently proximate in spaced relation to said third contact portions that deflection of said second contact portions by the leading edge of a printed circuit board will cause said third contact portions to separate thereby completing a circuit through said board, said contacts being formed so that said first outer contact portions of an opposing pair of contacts are also in engagement in the absence of a board in said opening.

4,514,031

RECOVERABLE ARTICLE

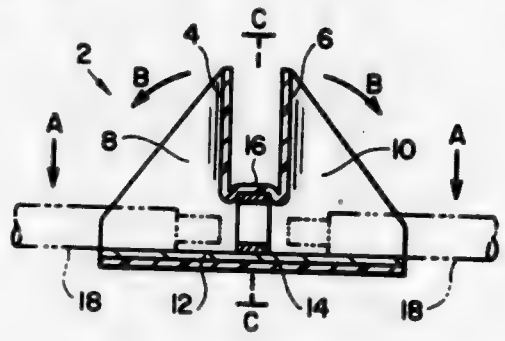
Richard Lionnet, Parmain, France, assignor to Raychem Pontoise, S. A., France

Filed Jun. 11, 1982, Ser. No. 387,371

Claims priority, application United Kingdom, Jun. 23, 1981, 8119347

Int. Cl.³ H01B 17/00; H01R 4/10, 43/02

U.S. Cl. 339—205 **12 Claims**



1. A recoverable article comprising an enclosure having two openings facing away from each other for receiving elongate substrates;

said enclosure having a recoverable state and a recovered state and in its recovered state, an axis along which the elongate substrates are disposed;

said enclosure in its recoverable state having the openings arranged so as to be capable of receiving the substrates translationally from a direction generally perpendicular to said axis;

said enclosure having a component of its recovery movement from said recoverable state to said recovered state towards the substrates and generally perpendicular to said axis;

said enclosure in its recovered state encloses the substrates and aligns the substrates with each other and with said axis.

4,514,032

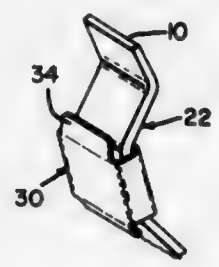
CONTACT ELEMENT

George J. Lawrence, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 31, 1983, Ser. No. 547,186

Int. Cl.³ H01R 3/00, 13/50

U.S. Cl. 339—278 C **4 Claims**



1. An improved contact element for card edge connectors of the type having a card slot for receiving a circuit card and contact elements on each side of the card slot for interconnecting circuits on a circuit card located in the slot to circuits on a circuit board on which the connector may be mounted, said improved contact element comprising:

a. retaining means for being received in the connector and for retaining the element therein;

b. depending means attached to a lower end of the retaining means and for being attached to circuits on a circuit board on which the connector may be mounted;

c. an elongated cantilever beam attached to the retaining means and extending upwardly alongside a card slot in the

connector, said beam having a flat section located near a free end of the beam;

d. a noble-metal plated, convex surface located on the flat section and facing towards the card slot; and

e. a clip having a center plate with an outer surface being plated with a non-noble metal and an inner surface being plated with a noble metal and attaching means for slidingly attaching the clip to the flat section on the beam with the inner surface bearing against the convex surface and the outer surface facing the card slot for engagement with a circuit card which may be positioned therein.

4,514,033

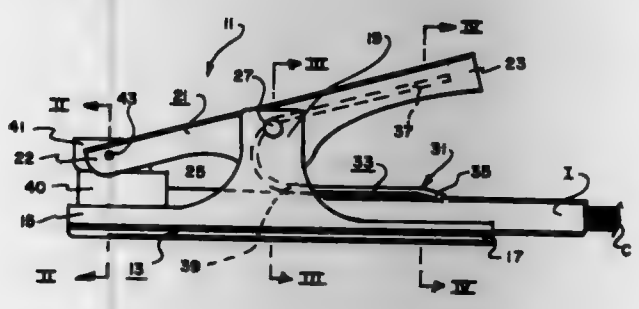
ARC WELDING CLAMP

Charles G. Matthews, 1647 Semmes, Memphis, Tenn. 38114

Filed Oct. 24, 1983, Ser. No. 544,470

Int. Cl.³ H01R *11/22*

U.S. Cl. 339—255 P **7 Claims**



1. An arc-welding clamp for electrically joining an electrically conductive cable to an electrically conductive workpiece, said clamp comprising:

(a) an electrically nonconductive first member having first and second ends;

(b) an electrically nonconductive second member having first and second ends;

(c) an electrically conductive jaw member for being mounted on said first end of said first member and for being electrically coupled to the cable;

(d) pivot means for pivotally coupling said first and second members to one another intermediate said first and second ends thereof; and

(e) spring means for urging said first ends of said first and second members toward one another, said spring means including a spring member having a first end for pressing the cable against said second end of said first member and having a second end for pressing against said second end of said second member.

4,514,034

METHOD FOR MANUFACTURING A WAVEGUIDE SWITCH INCLUDING THE FORMATION OF BEADS OR CRIMPS TO ALIGN A PAIR OF OPTICAL FIBERS

Helmut Bruch, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

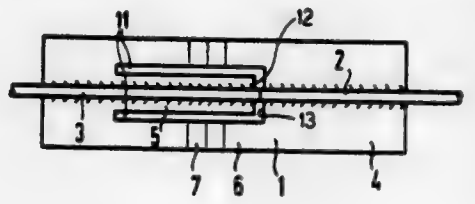
Filed Sep. 9, 1982, Ser. No. 416,332

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138709

Int. Cl.³ G02B *7/26, 5/14*

U.S. Cl. 350—96.20 **1 Claim**

1. A method for manufacturing a switch for opening and closing an optical connection between two end faces of a pair of first and second fiber-optical waveguides wherein the first waveguide is a stationary waveguide that is attached to a carrier part which is rigidly fixed in the switch and the second waveguide is a movable waveguide that is attached to a flexible switch tongue with an end face of the waveguide being spaced a predetermined amount from an end face of the stationary waveguide, said switch having connecting means for interconnecting the switch tongue to the carrier part, the method comprising the steps of providing a single piece having a plurality of slots formed therein to create the tongue having an end being connected to the carrier part by at least one integral stay with the end of the tongue being spaced from one edge of the carrier part; then forming a shallow bead in each stay extending transverse thereto to cause the end of tongue to move toward the one edge of the carrier part; securing the first waveguide on the carrier part with an end face being adjacent



said one edge of said carrier part; securing the second waveguide on the tongue with an end face of the second waveguide being aligned and engaged with the end face of the first waveguide; and then pressing the shallow bead out of each of the integral stays to cause the end of the switch tongue and the end face of the second waveguide to move a predetermined distance away from the one edge of the carrier part and the end face of the first waveguide.

4,514,035

CABLE WITH AN OUTER JACKET OF GNAW RESISTANT MATERIAL

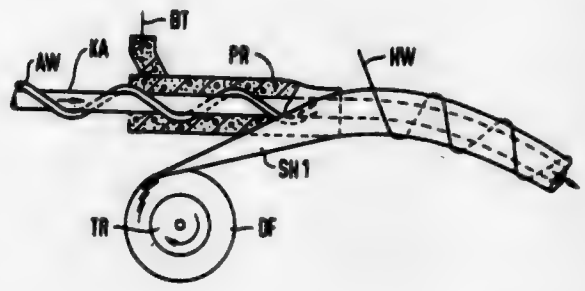
Peter Steinmann, and Norbert Sutor, both of Deisenhofen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 19, 1982, Ser. No. 409,713

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139897

Int. Cl.³ G02B *5/16*

U.S. Cl. 350—96.23 **16 Claims**



1. A cable comprising a cable jacket surrounding parts of the cable and means being additionally provided on the outside of the cable jacket to prevent animal gnawing, said means including a layer of resistant, hardenable material, said material only hardening when treated with a hardening agent while installing the cable, said material comprising concrete which is hardened subsequent to the cable installing operation.

4,514,036

CABLE HAVING A LAMINATED PLASTIC INSULATING SHEATH

Neil McDonald, Manchester, England, assignor to Raydex International Limited, Lancashire, England

Continuation of Ser. No. 309,750, Oct. 8, 1981,. This application Aug. 1, 1983, Ser. No. 518,328

Claims priority, application United Kingdom, Oct. 10, 1980, 8032787

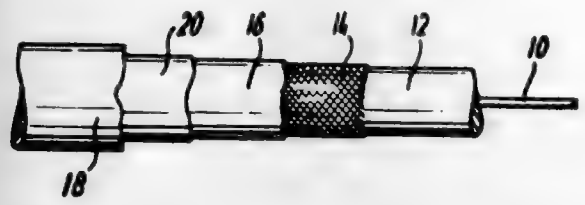
Int. Cl.³ B32B *27/00;* G02B *5/16;* H01B *7/00*

U.S. Cl. 350—96.23 **7 Claims**

1. A cable having conductor means surrounded by an insulating sheath, the exterior of the sheath constituting the exterior of the cable, the sheath consisting essentially of:

a flexible relatively soft inner layer of polyethylene,

a relatively hard abrasion-resistant outer layer of polypropylene having low frictional resistance characteristics, the polypropylene being sufficiently thin so as not to substantially limit the flexibility of the cable, said polypropylene forming the outermost layer of the cable,



an intermediate layer intimitely bonding together the inner and outer layers, the intermediate layer being a homogeneous mixture of said polyethylene and said polypropylene,

said intermediate layer and outer layer being formed by extruding them on to the inner layer.

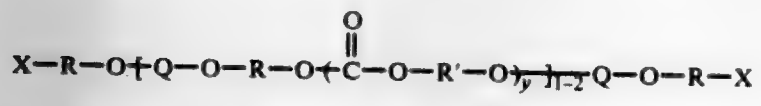
4,514,037

ULTRAVIOLET CURABLE OUTER COATINGS FOR OPTICAL FIBER

Timothy E. Bishop, Arlington Hgts.; Joseph J. Stanton, Buffalo Grove; George Pasternack, Lincolnshire, and Orvid R. Cutler, Jr., Rolling Meadows, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

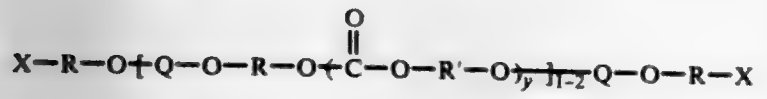
Filed Oct. 21, 1983, Ser. No. 544,010
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.23 **7 Claims**

1. A resin buffer-coated and topcoated optical glass fiber in which the topcoat is an ultraviolet cured coating of an ultraviolet curable coating composition which, when formed into a 3 mil cured test film, has a tensile strength of at least 2500 psi., a tensile modulus measured at room temperature of at least 50,000 psi., and an elongation in excess of about 40%, said composition comprising from 30% up to about 80% of total reactive components of diacrylate-functional polyurethane which is the linear polyurethane reaction product of polycarbonate diol with organic diisocyanate end capped with acrylate groups and having the formula:



in which R is alkylene having from 1–20 carbon atoms; R′ is the residue of an alkylene diol containing from 2–12 carbon atoms; Q is the residue of an organic diisocyanate; X is the residue of acrylic acid; y is at least 1; and R′ and y are selected to provide a molecular weight for the polycarbonate diol reactant of from 300 to 3000, and at least 15% of total reactive components of liquid monoethylenically unsaturated monomer having a glass transition temperature above about 55° C.

5. A method of overcoating resin buffer-coated optical glass fiber in which the topcoat has the high strength and modulus combined with good elongation and water resistance associated with extruded jacket coatings, but which is applied by ordinary coating procedures and cured by exposure to ultraviolet radiation comprising, applying to resin buffer-coated optical glass fiber an ultraviolet-curable coating composition comprising from 30% up to about 80% of total reactive components of diacrylate-functional polyurethane which is the linear polyurethane reaction product of polycarbonate diol with organic diisocyanate end capped with acrylate groups and having the formula:



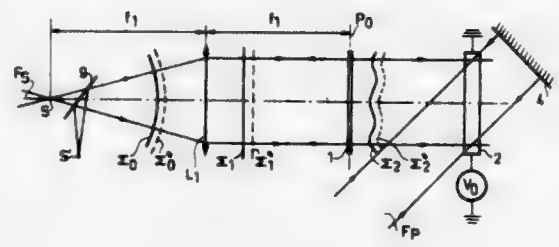
in which R is alkylene having from 1–20 carbon atoms; R′ is the residue of an alkylene diol containing from 2–12 carbon atoms; Q is the residue of an organic diisocyanate; X is the residue of acrylic acid; y is at least 1; and R′ and y are selected to provide a molecular weight for the polycarbonate diol reactant of from 300 to 3000, and at least 15% of total reactive components of liquid monoethylenically unsaturated monomer having a glass transition temperature above about 55° C., and then exposing the wet-coated fiber to ultraviolet light to cure the coating.

4,514,038

OPTICAL FOURIER TRANSFORMER DEVICE AND OPTICAL CORRELATOR INCORPORATING THE SAID DEVICE

Laurence Pichon, and Jean P. Huignard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 2, 1982, Ser. No. 345,018
Claims priority, application France, Feb. 6, 1981, 81 02410
Int. Cl.³ G06G 9/00
U.S. Cl. 350—162.13 **8 Claims**



1. An optical Fourier transformer device comprising:

a convergent lens;

a coherent radiation point source located at the focal distance from said convergent lens for producing a source beam;

means for positioning a modulating object in the collimated beam emerging from said convergent lens, thereby forming a modulated beam;

a photoexcitable interaction medium having an index of variation which receives the modulated beam and which receives a pumping beam,

a plane reflector arranged so as to reflect in normal incidence and towards the said photoexcitable interaction medium the undiffractive radiation emerging from said medium so as to create a diffracted wave emerging from said medium conjugate to said modulated beam, and wherein said convergent lens forms at a Fourier transform plane the Fourier transform of the light incident thereon,

a semi-transparent plate positioned between the said point source and said convergent lens for deflecting toward a Fourier transform plane of said convergent lens the radiation contained in the conjugate wave re-radiated by said medium in the direction of said lens.

4,514,039

LENS MOUNTING

Tohru Kawai, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,077
Claims priority, application Japan, Dec. 25, 1981, 56-209310
Int. Cl.³ G02B 7/02
U.S. Cl. 350—255 **4 Claims**

1. A lens mounting assembly defining an optical axis comprising:

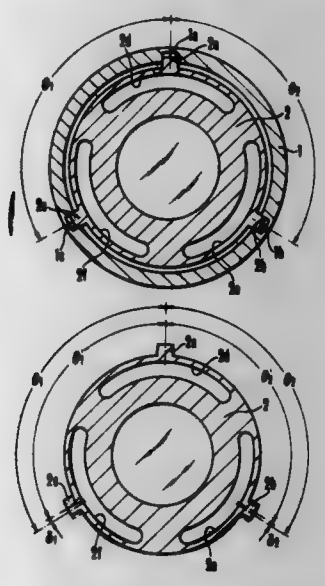
a generally cylindrical support member having an inner surface;

an integrally formed sleeve fitted within said support member for sliding movement relative thereto;

guide means interposed between said sleeve and said inner surface to guide movement of said sleeve relative to said

support member longitudinally along said optical axis, said guide means including guide members projecting radially outwardly from said sleeve for sliding engagement with said support member;

lens support means on said sleeve formed integrally with said guide means for supporting a lens member therein; and



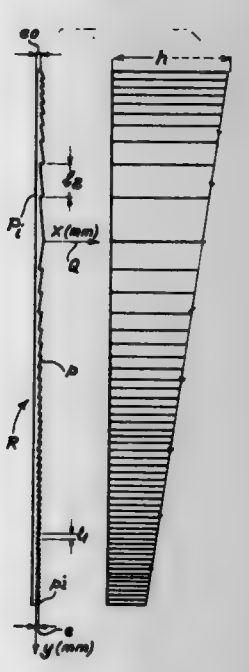
cutout portions on said sleeve between said guide means and said lens support means for imparting resiliency to parts of said sleeve having said guide portions thereon to enable said guide portions to resiliently adjust in position when said sleeve is fitted into said support member.

4,514,040

PRISMATIC REFRACTOR FOR CONCENTRATING SOLAR ENERGY ON A SUITABLE COLLECTING SURFACE, OF FIXED POSITION WITH RESPECT TO TIME

Tazio Pinelli, Pavia, and Francesco Sebastiano, Termoli, both of Italy, assignors to Societa' Italiana Vetro-Siv-S.p.A., San Salvo, Italy

Filed Feb. 23, 1983, Ser. No. 468,994
Claims priority, application Italy, Mar. 11, 1982, 20105 A/82
Int. Cl.³ G02B *5/04, 3/08*
U.S. Cl. 350—286 4 Claims



1. A stationary refractor for concentrating solar energy onto a planar collecting region in a concentration ratio of at least 2.6 for a substantial period during the day,

said concentration ratio being the ratio of the width of the refractor to the width of the portion of the collecting region illuminated by the sun during said period,

said width being perpendicular to the length and height of said refractor and said length and height being perpendicular to each other;

said refractor comprising a flat base surface and a serrated top surface,

the serrated top surface comprising a plurality of optical elements as follows:

a central, non-focussing, straight prismatic element and a plurality of adjacent, non-focussing, straight prismatic elements on both sides of said central element, said prismatic elements having two exposed faces,

said central and adjacent prismatic elements having a maximum height of 3 mm., independent of said base,

said refractor having an axis disposed parallel to the length of said straight prismatic elements, said axis dividing said refractor into an upper and a lower portion,

said central prismatic element being disposed on said axis and having both faces thereof intersecting at said axis but said both faces not being perpendicular to said base,

the next adjacent element on either side of said central element having a face perpendicular to said base and in contact with the bottom of a face of said central element and a face which forms a diagonal which intersects said perpendicular face,

the remaining adjacent elements having a face perpendicular to said base and a face intersecting said face perpendicular to said base,

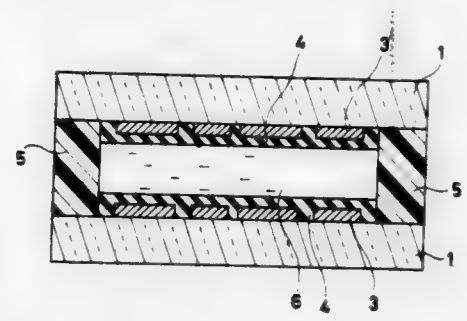
said lower portion and said upper portion containing an unequal number of said prismatic elements, the lower portion having a greater number of said elements than the upper portion, the width of the prismatic elements in the lower portion being equal to or greater than 4 mm. and equal to or greater than 6.5 mm. in the upper portion and the faces which form diagonals on opposite sides of said axis facing each other.

4,514,041

POLARIZER WITH ELECTRODE THEREON IN A LIQUID CRYSTAL DISPLAY

Hiroaki Tanaka, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 181,962, Aug. 28, 1980, abandoned.
This application Jun. 13, 1983, Ser. No. 501,974
Claims priority, application Japan, Aug. 30, 1979, 54-119887[U]
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—337 2 Claims



2. A liquid crystal display cell consisting of:

a pair of polarizers each comprising a layer of polyacetylcelluose bonded by a pair of polyvinylalcohol layers each having formed on one surface thereof by low-temperature sputtering a patterned transparent electrode having a maximum resistance ratio of about 300 Ω/cm^2 and a thickness of about 800 Å, at least one of said polarizers having superimposed over said transparent pattern electrode an orientation film, said polarizers being bonded together such that said patterned electrodes face each other in a manner so as to form a cavity therebetween; and

a liquid crystal mixture present between said transparent electrode bearing surfaces of said polarizers within said

cell cavity at least one of said polarizers exhibiting properties of cutting ultraviolet radiation.

4,514,042

THIN STRUCTURE OF DISPLAY PANEL

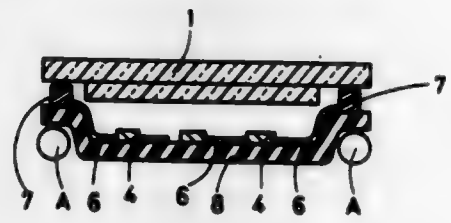
Takashi Nukii; Shigeo Nakabu, both of Nara; Masaru Iwasaki, Izumisano, and Katunobu Awane, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1982, Ser. No. 422,140

Claims priority, application Japan, Sep. 30, 1981, 56-157142; Jan. 30, 1982, 57-114463

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—331 R **7 Claims**



1. A display module comprising:

display means for displaying visual information;

electrode means disposed on said display means;

first circuit board means shaped as a plate for carrying wiring lines connected to a first circuit means for driving said display means said plate comprising a curled flange portion rising above a bottom portion; and

electrically conductive elastomer body means for connecting said wiring lines and said electrode means;

said conductive elastomer body means being placed between said electrode means and said flange portion of said circuit board means and said first circuit means is placed on said bottom portion of said circuit board means.

4,514,043

METHOD FOR THE PREPARATION OF ORIENTATION LAYERS FOR LIQUID CRYSTAL DISPLAYS AND LIQUID CRYSTAL DISPLAYS HAVING ORIENTATION LAYERS

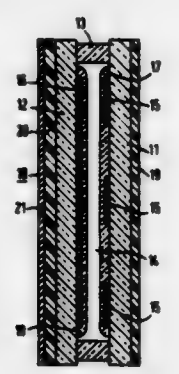
Hellmut Ahne, Röttenbach; Hans Krüger, Munich, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 350,826

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107520

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—341 **7 Claims**



1. In a method for the preparation of orientation layers for liquid crystal displays wherein a solution of an organic prepolymer is applied to a transparent substrate and the prepolymer then annealed to form the desired polymer which is then subjected to rubbing as an orientation treatment, the improvement comprising utilizing as said prepolymer a prepolymer for a polyisoindoloquinazoline dione or a polyquinazoline dione, which prepolymer does not need to be radiation-sensitive, and which prepolymer produces a volatilizable side product when polymerized during annealing, the amount of said side product volatilized being a high weight percentage relative to the weight of the polymer.

4,514,044

1-(TRANS-4-ALKYLCYCLOHEXYL)-2-(TRANS-4'-(P-SUBSTITUTED PHENYL) CYCLOHEXYL)ETHANE AND LIQUID CRYSTAL MIXTURE

Tomoki Gunjima, Yokohama, and Ryutaro Takei, Tokyo, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

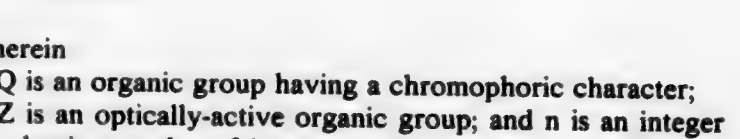
Filed Aug. 16, 1983, Ser. No. 523,607

Claims priority, application Japan, Aug. 27, 1982, 57-147829

Int. Cl.³ C09K *3/34*; G02F *1/13*; C07C *23/18, 121/00, 13/28, 25/18*

U.S. Cl. 350—350 R **7 Claims**

1. A compound represented by the general formula:



(I)

where X is a halogen atom, an alkyl group having from 1 to 8 carbon atoms or a cyano group, and R is an alkyl group having from 1 to 8 carbon atoms.

4,514,045

HELICHROMIC-SMECTIC LIQUID CRYSTAL COMPOSITIONS AND DISPLAY CELLS

William A. Huffman, Minneapolis, and Harvey A. Brown, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 274,184, Jun. 22, 1981, Pat. No. 4,394,070, which is a continuation-in-part of Ser. No. 169,275, Jul. 16, 1980, abandoned. This application Oct. 22, 1982, Ser. No. 436,030

Int. Cl.³ C09K *3/34*; G02F *1/13*

U.S. Cl. 350—351 **26 Claims**

1. A composition consisting essentially of a smectic liquid crystal material, and, in admixture therewith, an organic, nonionic, nonliquid-crystalline helichromic compound, said helichromic compound being soluble in said smectic liquid crystal material, said helichromic compound being a circularly dichroic dye, and said helichromic compound having the general formula

$$Q{-}Z)_n$$

wherein

Q is an organic group having a chromophoric character;

Z is an optically-active organic group; and n is an integer having a value of 1 or greater.

16. A thermally addressable liquid crystal display device having no auxiliary polarizers, which provides a high contrast image against a background comprising:

a layer of a composition consisting essentially of a liquid crystal medium in admixture with an organic, nonionic, nonliquid-crystalline helichromic compound, said layer disposed between a top substrate and a bottom substrate, said helichromic compound being soluble in said liquid crystal medium, said helichromic compound being a circularly dichroic dye, and said helichromic compound having the general formula

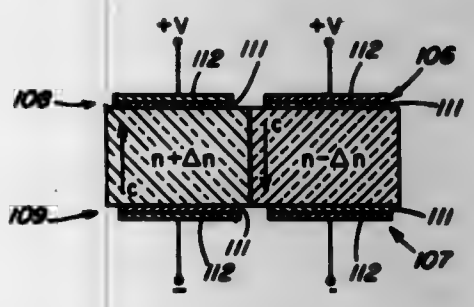
$$Q(Z)_n$$

wherein

Q is an organic group having a chromophoric character;

Z is an optically-active organic group; and
n is an integer having a value of 1 or greater;
said liquid crystal medium being thermally sensitive and having a transition between at least two thermal phases, an upper phase being a nematic phase and a lower thermal phase being a smectic phase, said mixture having two possible states of orientation in said smectic phase, a first orientation state being substantially light absorbing and a second state being substantially light transmissive;
a means of affecting a thermal transition between said lower thermal phase and said upper thermal phase; and
a means of electrically addressing portions of said mixture to develop said second light transmissive state when said mixture passes rapidly into said lower thermal state from said upper thermal state, the remaining unaddressed portions of said mixture developing said first substantially light absorbing state when said mixture passes rapidly into said lower thermal state from said upper thermal state.

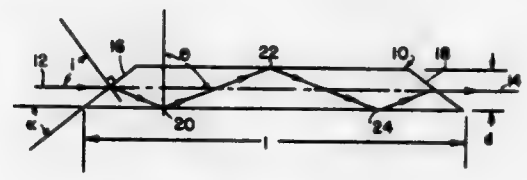
4,514,046
POLARIZATION-INSENSITIVE OPTICAL SWITCH AND MULTIPLEXING APPARATUS
W. John Carlsen, Boston, and Paul Melman, Newton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Division of Ser. No. 327,873, Dec. 7, 1981,. This application Dec. 16, 1983, Ser. No. 562,327
Int. Cl.[3] G02F *1/03*
U.S. Cl. 350—385 5 Claims



1. In combination,
a first electro-optical crystal,
a second electro-optical crystal,
a dielectric beam splitting coating affixed to portions of said crystals with coated portions of such crystals being juxtaposed,
first means for varying the index of refraction of one beam path through one of said crystals with respect to the index of refraction of one beam path through the other of said crystals, and
second means for varying the index of refraction of another beam path through said one of said crystals with respect to the index of refraction of another beam path through said other of said crystals, said second means being independent from said first means.

4,514,047
ON-AXIS ACHROMATIC QUARTERWAVE RETARDER PRISM
Haim M. Haskal, and Robert A. Briones, both of Colorado Springs, Colo., assignors to Magnetic Peripherals Inc., Bloomington, Minn.
Filed Oct. 12, 1982, Ser. No. 433,933
Int. Cl.[3] G02F *1/00*
U.S. Cl. 350—394 2 Claims

1. A quarterwave retarder prism for polarized light having an emerging light beam optical axis collinear with the entering light beam optical axis and prism faces for the entering and emerging light beams inclined with respect to the light beams and using three internal reflections to obtain a quarterwave retardation and for which the prism angle α is chosen according to the following formula:



$$\tan\frac{\delta}{2} = \frac{\cos\theta\sqrt{\sin^2\theta - n^{-2}}}{\sin^2\theta} \quad \text{FOR } \delta = \pi$$

$$\sin^2\theta = \frac{1+n^{-2} \pm \sqrt{(1+n^{-2})^2 - 4(\cos\frac{\pi}{2})^{-2}}}{2(\cos\frac{\pi}{2})^{-2}}$$

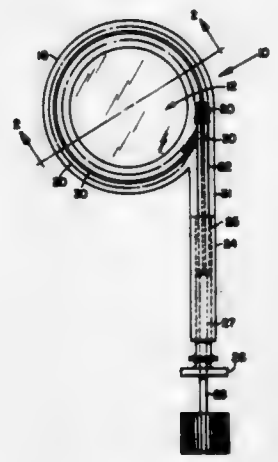
$$\alpha + \sin^{-1}\left(\frac{\cos\alpha}{n(\lambda_0)}\right) - \theta(\lambda_0) = 0$$

$\lambda = \lambda_0$, THE DESIGN WAVELENGTH

$$\frac{\delta}{2} = 3\tan\theta + (\tan\alpha)^{-1}$$

$$\alpha + \sin^{-1}\left(\frac{\cos\alpha}{n(\lambda_0)}\right) - \theta(\lambda_0) = 0$$

4,514,048
VARIABLE FOCUS ELASTOMERIC LENS SYSTEM
Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Aug. 17, 1981, Ser. No. 293,230
Int. Cl.[3] G02B *3/10, 15/00;* G02C *7/08*
U.S. Cl. 350—423 11 Claims



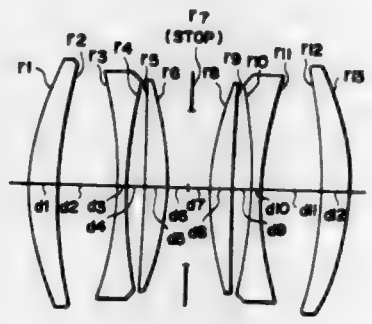
1. A variable focus lens system comprising:
a single lens element formed of at least one transparent, homogeneous, solid, elastomeric material selectively shaped to provide said lens element with a predetermined optical power when said lens element is in a relaxed state; and
means for supporting said lens element about its peripheral edges while in said relaxed state and for exerting a continuously variable tensile stress directly to and substantially uniformly distributed around the peripheral edges of said lens element to alter the relaxed shape of said lens element in a predetermined manner so that said optical power of said lens element can be changed in a continuous manner over a predetermined range.

4,514,049

ZOOM LENS SYSTEM FOR FINITE CONJUGATE DISTANCES

Nagayoshi Hirano, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed Jul. 14, 1983, Ser. No. 513,684
Claims priority, application Japan, Sep. 30, 1982, 57-172095
Int. Cl.³ G02B *15/16, 17/00*
U.S. Cl. 350—425 **2 Claims**



1. A zoom lens system for finite conjugate distances comprising first to sixth elements arranged in this order from front to rear with a stop disposed between the third and fourth elements, the first element being a positive lens convex to the front, the second element being a negative lens concave to the front, the first and second elements together forming a first stationary lens group having negative power, the third element being a positive lens forming a first movable lens, the sixth, fifth and fourth elements being reverse duplicates of the first, second and third elements, the fourth element forming a second movable lens, the fifth and sixth elements together forming a second stationary lens group, said zoom lens system being axially movable as a unit, and the first and second movable lenses being axially movable in response to the axial movement of the entire lens system to vary the magnification of the image without changing the distance between the object plane and the image plane, wherein the following conditions are satisfied,

$$0.4 < fV/f_{1.0} < 0.61$$

$$-0.55 < fV/r_5 = fV/-r_9 < 0.3$$

$$0.72 < d_9/d_4 < 1.39$$

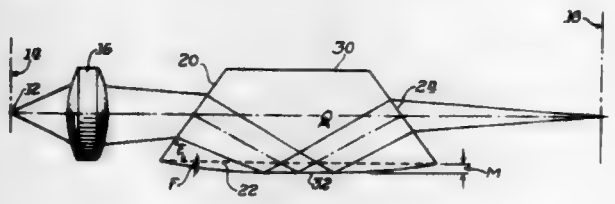
wherein fV represents the focal length of the movable lenses, $f_{1.0}$ represents the focal length of the entire lens system when it is adjusted for unit magnification, r_5 and r_9 respectively represent the radii of curvature of the surfaces of the movable lenses facing the stationary lens groups, d_9 represents the axial space between the first stationary lens group and the first movable lens, and d_4 represents the axial space between the second stationary lens group and the second movable lens.

4,514,050

DOVE PRISM FOR CONVERGENT LIGHT PATHS

David G. Stites, Elgin, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jul. 22, 1982, Ser. No. 400,810
Int. Cl.³ G02B *5/04, 17/00*
U.S. Cl. 350—444 **7 Claims**



1. Apparatus for correcting chromatic and astigmatic aberrations in prisms in convergent light paths comprising:

a transparent entrance face permitting converging imaging rays to enter the prism;

a transparent exit face permitting the converging imagining rays to exit the prism;

a third face connecting the entrance and exit faces and reflecting substantially all of the imaging rays received from the entrance face internally into the prism and towards the exit face;

the third face disposed at an acute angle with respect to both the entrance and exit faces, with the angle between the third face and the entrance face different than the angle between the third face and the exit face, the angles selected to create a compensating chromatic aberration to compensate for chromatic abberrations caused by the prism when used in convergent light paths and the compensating chromatic aberration is a chromatic spectrum of the proper magnitude and sign to substantially compensate for lateral chromatic aberrations of the prism,

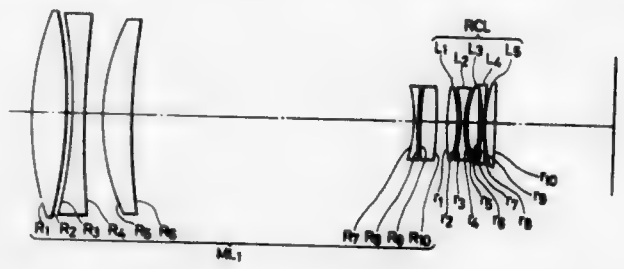
the third face further having a spherical, convex curvature which produces a compensating astigmatic aberration to compensate for the astigmatic aberration caused by the entrance and exit faces acting on the converging imaging rays.

4,514,051

REAR CONVERSION LENS

Yoshinari Hamanishi, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Continuation of Ser. No. 422,950, Sep. 24, 1982, abandoned. This application Aug. 15, 1984, Ser. No. 641,361
Claims priority, application Japan, Jan. 20, 1982, 57-6079
Int. Cl.³ G02B *13/02*
U.S. Cl. 350—465 **11 Claims**



1. A rear conversion lens for a single lens reflex camera capable of maintaining excellent image forming performance, even if it is mounted on an objective lens having a relatively short back focus, a large aperture ratio, and an exit pupil which is at a relatively distant position from the image plane, comprising:

a front lens unit including, in the sequence from the object side, a positive lens, a negative biconcave lens and a positive lens; and

a rear lens unit including a negative lens with its surface of sharper curvature facing the object side, and further satisfying the following conditions:

$$0.1 < \frac{\Sigma_d}{-f_R} < 0.2$$

$$0.95 < \frac{B_f}{-d_0} < 1.2$$

$$n_{-} > 1.82$$

$$\nu_{-} > 35$$

where, Σ_d denotes the distance between the frontmost surface and the rearmost surface of said rear conversion lens; f_R represents the focal length of said rear conversion lens; B_f is the back focus when said rear conversion lens is mounted on the objective lens; d_0 designates the distance between the frontmost surface of said rear conversion lens

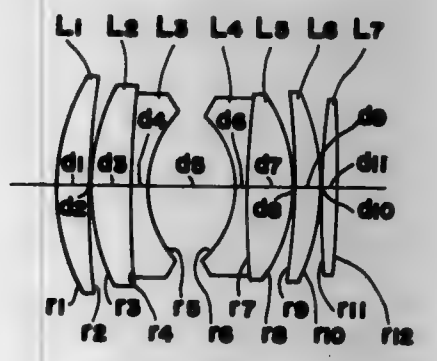
and the rear focal point of said objective lens; n_- denotes the refractive index of the negative lens which has the highest refractive index in said rear conversion lens; and ν_- represents the Abbe number of the negative lens which has the lowest Abbe number in the rear conversion lens.

4,514,052

HIGH SPEED OBJECTIVE LENS SYSTEM WITH AN ASPHERIC SURFACE

Tamikazu Yamaguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1982, Ser. No. 446,653
Claims priority, application Japan, Dec. 7, 1981, 56-197239
Int. Cl.³ G02B *9/60*
U.S. Cl. 350—466 **8 Claims**



1. A high speed objective lens system with an aspheric surface comprising, from the object to image side:

a front lens group consisting of a first positive lens, a second positive lens and a third negative lens; and

a rear lens group consisting of a fourth negative lens, a fifth positive lens cemented to the fourth negative lens, a sixth positive meniscus lens and a seventh biconvex lens, wherein the second positive lens has an aspheric surface at its object side, which increases the deviation from its paraxial radius to the object side in accordance with the increase of the height from the optical axis, the d-line modulation transfer function being substantially 1.0 for a resolution of 0 to 20 lines/millimeter when the lens system fulfills the following conditions:

$$0.65 < Da/db < 1.1$$

$$B < 0$$

$$C < 0$$

wherein:

Da represents the sum of axial distance from the object side surface of the second positive lens to the image side surface of the third negative lens;

Db represents the sum of axial distance from the object side surface of the fourth negative lens to the image side surface of the fifth positive lens;

B and C represent the aspheric surface coefficients, respectively, in the following equation provided that X represents the distance, measured toward the image side along the direction parallel with the optical axis, from the center of the aspheric surface to a point on the aspheric surface at the height, Y from the optical axis, and r_0 represents the paraxial radius of curvature of the aspheric surface:

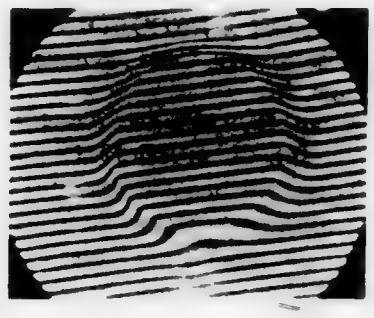
$$X = \frac{Y^2}{r_0 + r_0\sqrt{1 - \left(\frac{Y}{r_0}\right)^2}} + AY^2 + BY^4 + CY^6 + DY^8 + \ldots .$$

4,514,053

INTEGRAL PHOTOSENSITIVE OPTICAL DEVICE AND METHOD

Nicholas F. Borrelli, Elmira; David L. Morse, and Paul A. Sachenik, both of Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,178
Int. Cl.³ G02B *5/18, 3/00*
U.S. Cl. 350—162.2 **11 Claims**



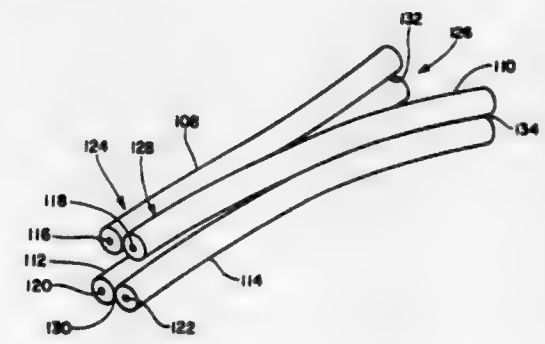
1. An integral optical device composed of a body of photosensitive glass having an optical pattern developed therein by a spatially varying property due to formation of colloidal metal particles and/or a crystalline microphase nucleated by such particles.

4,514,054

QUADRATURE FIBER-OPTIC INTERFEROMETER MATRIX

David W. Stowe, Buffalo Grove, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 340,672, Jan. 19, 1982, Pat. No. 4,418,981. This application Jun. 28, 1983, Ser. No. 508,762
Int. Cl.³ G02B *5/172;* G01B *9/02*
U.S. Cl. 350—96.15 **8 Claims**



1. A fiber optic interferometer for monitoring phase modulation of a modulated light signal with respect to a reference light signal, comprising:

first, second, third, and fourth optical fibers (**108, 110, 112, 114**) each having a central axis (**116, 118, 120, 122**) and each having longitudinally extending portions of substantially equal lengths with respect to one another, each portion having a light-entrance end (**124**) and a light-exit end (**126**), said first fiber (**108**) receiving said modulated light at its light-entrance end (**124**), said third fiber (**112**) receiving said reference light signal at its light-entrance end (**124**), said first and second fibers (**108, 110**) being coupled to one another toward said light-entrance end (**124**) to allow said modulated signal to be coupled into said second fiber (**110**), said third fiber (**112**) being coupled to said fourth fiber (**114**) toward said entrance end (**124**) to allow said reference signal to be coupled into said fourth fiber (**114**), said first and third fibers (**108, 112**) being coupled together toward said exit end (**126**), and said second and fourth fibers (**110, 114**) being coupled together

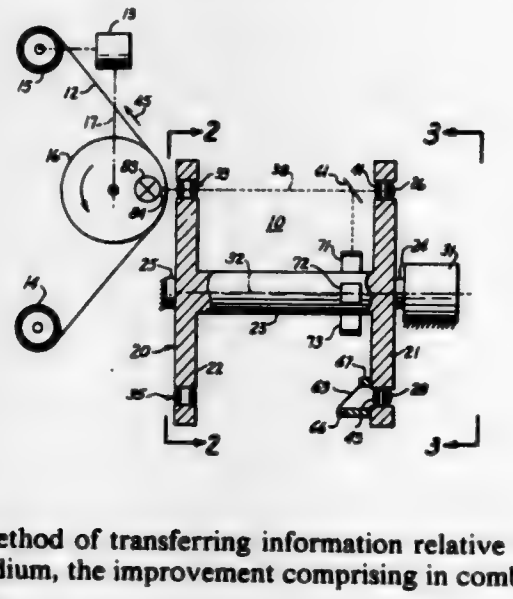
toward said exit end (126) to allow said modulated signal in said first and second fibers (108, 110) to be coupled with said reference signal in said third and fourth fibers (112, 114) respectively, said first, second, third, and fourth fibers (108, 110, 112, 114) being situated in generally parallel juxtaposition with one another along said longitudinally extending portions so said central axis (116, 118, 120, 122) of each fiber defines the corners of a rectangle in a plane perpendicular to said longitudinally extending portions.

4,514,055

INFORMATION TRANSFERRING SYSTEMS OPERATING ON A RECORDING MEDIUM

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 20, 1983, Ser. No. 459,441
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.3 **32 Claims**



1. In a method of transferring information relative to a recording medium, the improvement comprising in combination the steps of:

bending said medium about a first axis;

moving an information transfer stimulus in an arc over said bent medium about a second axis laterally offset from and extending at an angle to said first axis;

imparting to said bent medium a wave-shaped configuration for accommodating said arc in a perpendicular plane through said second axis; and

transferring information relative to said medium with the aid of said moving stimulus.

4,514,056

ACOUSTICALLY TUNED OPTICAL FILTER SYSTEM

Victor Azgapetian, deceased, late of Costa Mesa, Calif. (by Alice M. Azgapetian, executrix), assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1982, Ser. No. 439,493
Int. Cl.³ G02F *1/11*
U.S. Cl. 350—372 **3 Claims**

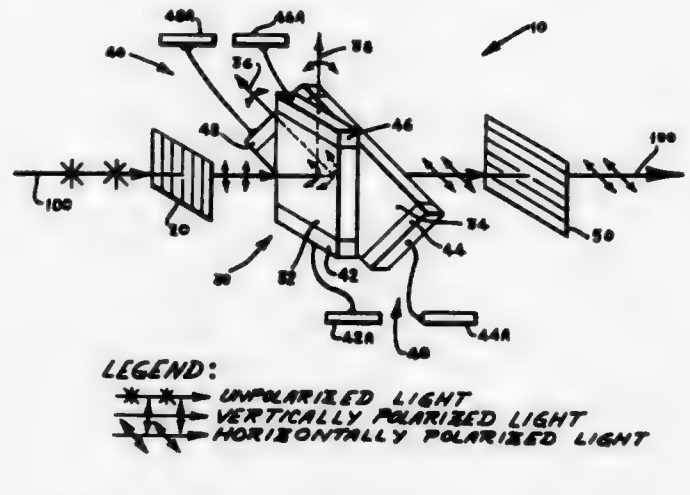
1. An acoustically tuned optical filter system for use with electromagnetic radiation in the visible/infrared light wavelength region, said optical filter system comprising:

a. a polarizer in optical alignment with said radiation, whereby said radiation impinges upon and is transmitted by said polarizer as polarized light;

b. an acoustically tuned optical filter assembly disposed in optical alignment with said polarizer, wherein this assembly includes:

(1) a plurality of rotatable crystals made of acousto-optical material, with each crystal of said plurality being in parallel spaced relationship with its adjacent crystal, and with each crystal having its front surface and its extraordinary axis in perpendicular relationship to said transmitted radiation, whereby said crystals can be rotated such that said extraordinary axes of said crystals can be selectively rotated angularly, and thereby variably, with respect to each other, and wherein each crystal of said plurality of crystals has two mutually opposed side edges; and

(2) means, operably associated with said plurality of crystals, for acoustically exciting each of said plurality of crystals, said means for acoustically exciting each crystal includes a different pair of acoustic generators operably associated with each crystal, with one generator of said pair of generators operably associated with one of said two edges of its crystal, and with the other generator of said pair of generators operably associated with the other edge of said two edges of its crystal; and



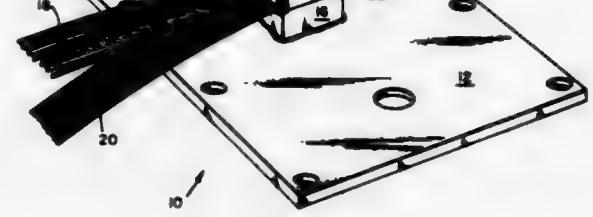
c. an analyzer in optical alignment with said acoustically tuned optical filter assembly.

4,514,057

FIBER OPTIC COUPLER ARRAY AND FABRICATION METHOD

John P. Palmer, Pomona, and Phillip B. Ward, Jr., Brea, both of Calif., assignors to General Dynamics Pomona Division, Pomona, Calif.

Filed Dec. 23, 1981, Ser. No. 333,955
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.15 **28 Claims**



1. Apparatus providing a plurality of substantially identical optical fiber couplers in an integral assembly comprising:

a first sub-assembly including a first support block having an arcuate surface with a plurality of equally spaced grooves aligned in a circumferential direction across the arcuate surface and a plurality of first optical fibers positioned individually in corresponding ones of said grooves;

a second sub-assembly including a second support block having an arcuate surface with a plurality of equally spaced grooves aligned in a circumferential direction across the arcuate surface and a plurality of second optical fibers positioned individually in corresponding ones of said grooves;

portions of epoxy resin applied to each of said arcuate surfaces to at least partially encase the respective optical fibers positioned in said grooves;

the respective portions of epoxy and encased optical fibers being lapped to predetermined depths to develop opposed, mating, optically flat planar surfaces with the optical fibers being lapped to expose at least portions of the cores of the optical fibers along said planar surfaces, the exposed portions of corresponding fibers in the respective sub-assemblies being aligned to establish a plurality of individual couplers effective to couple light between fibers of one of said sub-assemblies and corresponding fibers of the other sub-assembly;

the fibers of said second sub-assembly being smaller in diameter than the fibers of the first sub-assembly and being lapped to a depth sufficient to sever said fibers; and

means for affixing said sub-assemblies together with the respective fibers in said aligned relationship.

4,514,058

TRANSMISSION CABLE WITH HELICAL SUPPORT ELEMENTS OF CURVILINEAR PROFILE

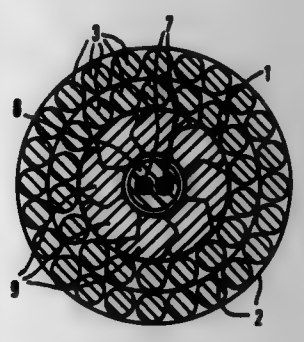
John M. Walton, Doncaster, England, assignor to Bridon Limited, England

Filed Mar. 5, 1982, Ser. No. 355,155

Claims priority, application United Kingdom, Mar. 6, 1981, 8107035

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.23 **4 Claims**



1. In a strain cable comprising a core which includes at least one transmission element; a stfucture which includes a tubular layer of interlocking metallic support members which are helically spun so as to form a single central passage accommodating the core; and at least one layer of metallic load-carrying elements helically spun around the structure, the improvement wherein the interlocking support members are wires of curvilinear profile having a helical pitch of 10° to 30° , the interlocking wires being at most twelve in number and the width, radial height and cross-sectional shape of the wires being such that the structure formed by the wires is radially and longitudinally self-supporting and sufficiently strong to resist reduction of the cross-section of the central passage when tension is applied to the cable in normal use and to protect the core against transverse stress.

4,514,059

INCOHERENT OPTICAL HETERODYNE FOURIER TRANSFORMER

Michael M. McDonnell, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 15, 1982, Ser. No. 418,318

Int. Cl.³ G06G *9/00*; G02B *5/18*

U.S. Cl. 350—162.16 **13 Claims**

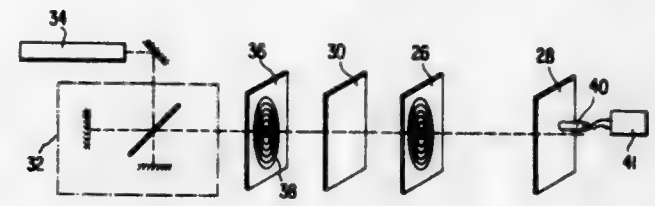
1. A method for performing a Fourier transform of a transparent image, comprising:

providing a first zone plate comprising alternating transparent and opaque zones;

providing a second zone plate comprising alternating transparent and opaque zones;

positioning the image between said first and second zone plates;

passing incoherent light through said first zone plate, the image, and said second zone plate;



phase modulating said first zone plate at a known rate;

detecting the output from said second zone plate and generating a signal representative of the output; and

filtering said signal to isolate therefrom signals of a frequency equal to said known rate.

4,514,060

EXTERNAL REAR VIEW MIRROR FOR MOTOR VEHICLES WHICH FOLDS

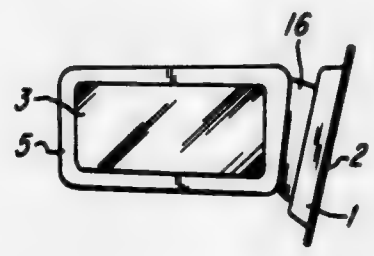
Bernhard Mittelhäuser, No. 57, 3002 Wedemark 2, Fed. Rep. of Germany

Filed Mar. 3, 1982, Ser. No. 354,167

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1981, 3107988

Int. Cl.³ B60R *1/06*

U.S. Cl. 350—632 **11 Claims**



1. An external rear view mirror for motor vehicles, comprising:

a base adapted to be fastened to a vehicle;

a housing for receiving a mirror body, said housing being pivotably mounted to said base in such a way that a gap formation exists during tilting between said base and said housing when an impact has been exerted upon said housing in a particular direction including a tilting occurrence during an accident; and

a relatively flat seal which is adapted to span said gap formation during tilting between said base and said housing, said seal having a first edge directed toward said base, and a second edge directed toward said housing, with one of said base and said housing being provided with at least one groove in the vicinity of said seal; with one of said first and second edges of said seal being securely fixed at only one of said edges relative to one of said base and said housing, and with the other of said first and second edges of said seal being readily releasably engageable with a positive connection in, and also being readily capable of being lifted away from, said at least one groove whereby the mirror folds into different positions dependent upon occurrence of tilting between said base and said housing to make sure that a sealing effect exists even though a gap formation occurs when a tilting has arisen.

4,514,061

PROGRESSIVE POWER OPHTHALMIC LENSES

John T. Winthrop, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation of Ser. No. 246,139, Apr. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 232,755, Feb. 9, 1981, abandoned. This application Oct. 20, 1983, Ser. No. 543,223

Int. Cl.[3] G02C *7/06*

U.S. Cl. 351—169 10 Claims



1. In a progressive power ophthalmic lens having two refractive surfaces one of which is divided into three viewing zones comprising an upper distance portion, an intermediate progressive portion and a lower near portion, and having a principal vertical meridian defined by a sequence of points traversing said zones, wherein said distance portion occupies approximately the upper half of said lens and is of substantially spherical configuration providing a substantially constant focal length for distant vision, wherein said near portion occupies a lower portion of said lens and is of substantially spherical configuration providing a substantially constant focal length for near vision, and wherein said intermediate progressive portion lies between and has defined boundaries with said distance and near portions and has a varying curvature which increases continuously and progressively along said meridian from a minimum value, which approximates the curvature of said distance portion, to a maximum value, which approximates the curvature of said near portion, the improvement wherein said intermediate progressive portion is defined by a series of generating curves passing successively through all points of the meridian within said progressive portion, said generating curves being the lines of intersection of an ordered sequence of spheres and a corresponding ordered sequence of cylinders, said spheres being tangent to points on the meridian and having radii equal to the radius of curvature of the meridian at each point, and said cylinders having generating lines parallel to a line normal to the center point of said lens, the generating curves being so constructed and arranged that aberrations are distributed uniformly around said near portion with at least approximate preservation of orthoscopy.

4,514,062

INSTRUMENT FOR INDIRECT OPHTHALMOSCOPY AND ELECTRICAL ENERGY PRODUCING MEANS THEREFOR

James L. Fitzgerald, 20 Mason St., Williamstown, Mass. 01267

Filed Apr. 8, 1982, Ser. No. 366,698

Int. Cl.[3] A61B *3/10*

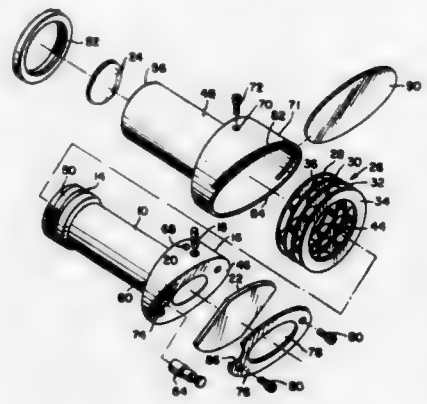
U.S. Cl. 351—205 23 Claims

1. In an ophthalmoscope for observing the fundus of an eye including a casing having an image receiving aperture and an image viewing aperture, illuminating means including a light source for providing a light beam for illuminating the fundus and lens means for viewing the illuminated fundus, the improvement comprising electrical energy producing means for providing electrical energy to said light source, said electrical energy producing means comprising a substantially annular battery, said battery including:

(a) first and second substantially annular contact members; and

(b) a plurality of battery cells arranged in spaced relation and disposed between and electrically connected to said contact members,

said electrical energy producing means adapted to be removably supported on said casing and extending substantially



completely around and substantially conforming to the outer surface of a section of said casing and means electrically connecting said light source and said electrical energy producing means.

4,514,063

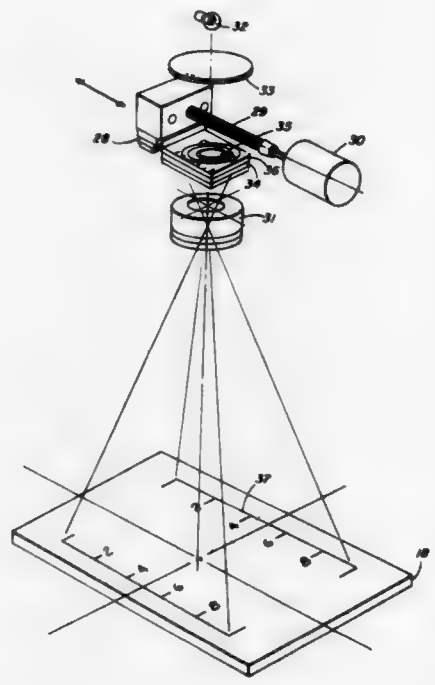
SCANNER DOCUMENT POSITIONING DEVICE

An Wang, Lincoln, and Burton G. McConchie, Reading, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Apr. 28, 1983, Ser. No. 489,642

Int. Cl.[3] G03B *21/00*

U.S. Cl. 353—28 19 Claims



1. A document positioning device used to locate a document so that desired material thereon may be scanned without further repositioning of the document, said document positioning device comprising:

means for scanning said document, and

means for projecting an image onto said document, said projected image defining the area on said document that will subsequently be scanned by said scanner and the portion of said document that is desired to be scanned is placed in said area.

4,514,064
ELECTROMAGNETIC SHUTTER

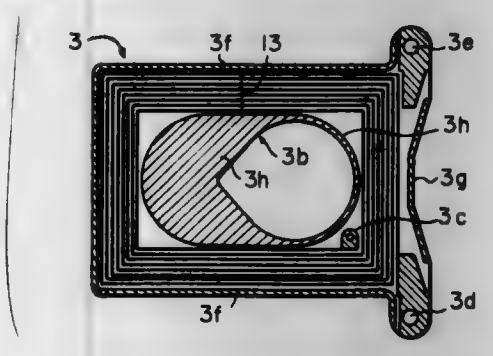
Tomio Kurosu, Iwatsuki, and Yukio Yoshikawa, Tokyo, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,617

Claims priority, application Japan, Nov. 4, 1981, 56-163696[U]; Nov. 10, 1981, 56-166618[U]; Nov. 10, 1981, 56-166619[U]

Int. Cl.³ G03B 9/14

U.S. Cl. 354—234.1 20 Claims



1. In an electromagnetic shutter having an exposure aperture for passing light;

a plurality of shutter sectors made of a plastic material and adapted to be opened from closed positions preventing light from passing through said aperture so that said aperture is uncovered to allow light to pass through said aperture and closed to said closed positions so as to complete an exposure by said shutter;

printed electric coil means operatively coupled with said shutter sectors;

permanent magnet means fixed in said shutter so as to cooperate with said printed electric coil means so that, when electric current is supplied in a predetermined direction to said printed electric coil means for a predetermined time period, an electromagnetic force is generated by said printed electric coil means by virtue of the cooperation thereof with said permanent magnet means to cause said shutter sectors to be opened for said predetermined time period and thereafter closed to complete a required exposure;

a mechanically relatively sliding portion movable with each said shutter sectors;

a wear-resisting layer made of the same material as that of said printed electric coil means simultaneously formed on said portion as said printed electric coil means;

a pair of said shutter sectors having substantially the same configuration and adapted to be moved symmetrically oppositely with respect to said aperture along a straight line passing through the center of said aperture and each formed with a light receiving window for passing therethrough the light when at least a portion of said window is brought in alignment with said aperture;

said printed electric coil means being formed on at least a surface of each of said shutter sectors and said wear-resisting layer being formed on the peripheral edge portion on both surfaces of each of said shutter sectors simultaneously with the formation of said printed electric coil means;

each of said shutter sectors being provided with a light intercepting layer of the same material as that of said printed electric coil means adjacent to said window on the surface of said shutter sector; and

said light intercepting layer being formed simutaneously with the formation of said printed electric coil means and said wear-resisting layers by one and the same forming process and being of such a configuration that the same positively interrupt the light from passing through said aperture when said light intercepting layer is in alignment with said aperture.

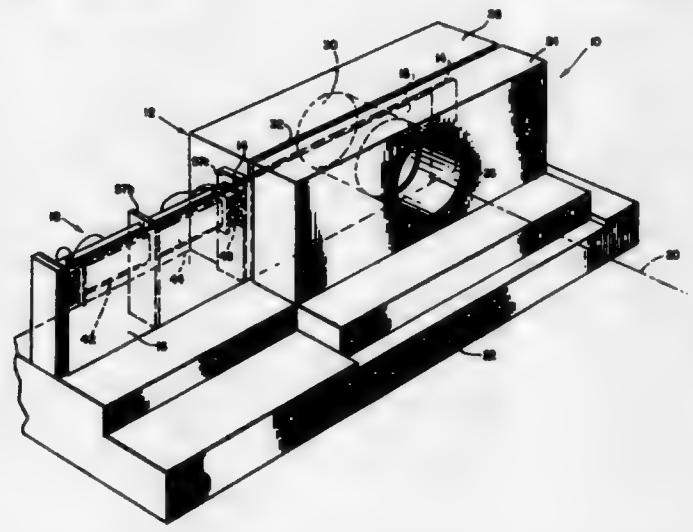
4,514,065
THIN BLADE MEMBERS HAVING MAGNETIC REPELLING FORCES THEREBETWEEN

Jacinto P. Carrera, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 19, 1982, Ser. No. 399,754

Int. Cl.³ G03B 9/14

U.S. Cl. 354—235.1 14 Claims



14. A blade mechanism comprising at least a pair of blade members, means for mounting said blade members for movement along a given path with one planar surface of each of said blade members in facing relations to the other, drive means for advancing said blade members relative each other along said given path, and permanent magnetic means on said blades for providing repelling magnetic fields at the facing surfaces of said blade members to reduce the frictional engagement therebetween.

4,514,066
MECHANISM FOR INDICATING AND SETTING THE PARAMETERS OF EXPOSURE APERTURE AND/OR EXPOSURE TIME FOR PHOTOGRAPHIC CAMERAS

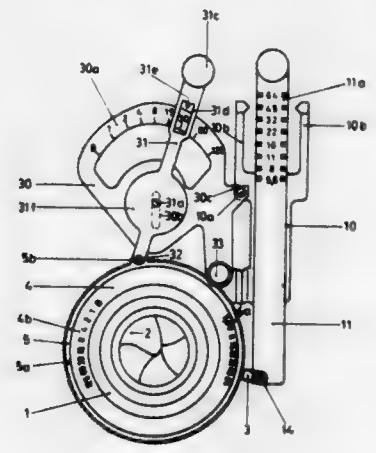
Franz Starp, Mittlere Steige 36, 7547 Wildbad 5, and Werner Deisenroth, Böcklinstrasse 1, 8000 München 19, both of Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,311

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209919

Int. Cl.³ G03B 9/02

U.S. Cl. 354—273 20 Claims



1. Photographic exposure parameter indicating and setting mechanism for a photographic camera lens shutter housing having a manually operatable exposure parameter setting device, which comprises carrier means adapted to be mounted on such lens shutter housing, a guide plate mounted on and carried by the carrier means and having a photographic exposure parameter setting plate scale operatively arranged thereon, and

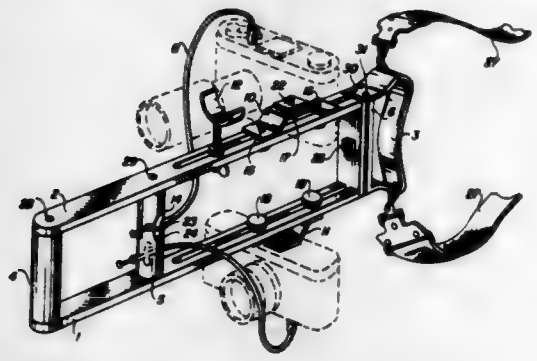
a cooperating pointer lever pivotally and relatively movably guidedly mounted on the guide plate and having a pointer portion arranged for pointing to the scale in any position of movement of the lever relative to the guide plate along the extent of the scale and a lever connecting portion adapted to be articulatedly connected to the manually operatable exposure parameter setting device of the lens shutter housing, whereby upon mounting the carrier means on the lens shutter housing and articulatedly connecting the lever connecting portion to the manually operatable exposure parameter setting device thereof, the exposure parameter may be set and indicated by movement of the lever relative to the guide plate.

4,514,067

TWIN CAMERA, SHOULDER CARRY, ROTARY, STABILIZATION POD

John C. Gallegos, 602 University Ave., Las Vegas, N. Mex. 87701

Filed Feb. 14, 1983, Ser. No. 443,585
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—293 **14 Claims**



1. A shoulder mounted apparatus for supporting a plurality of cameras in a manner that enables each camera to be sequentially brought into operative, upright position;

said apparatus comprises a main frame and a shoulder piece;

said main frame includes spaced members having opposed parallel surfaces, said members have a far end opposed to a near end; said members being held together in fixed relationship by at least one handle which is affixed at the far end of said members and a back plate which is affixed at the near end of said members;

a shoulder piece having a shoulder receiving side made into a configuration which generally conforms to one's shoulder, said shoulder piece includes an opposed side for attachment to said back plate;

swivel means located along a longitudinal axis of said main frame by which said back plate and said opposed side of the shoulder piece are affixed to one another so that said main frame can be rotated along the longitudinal axis thereof respective to said shoulder piece;

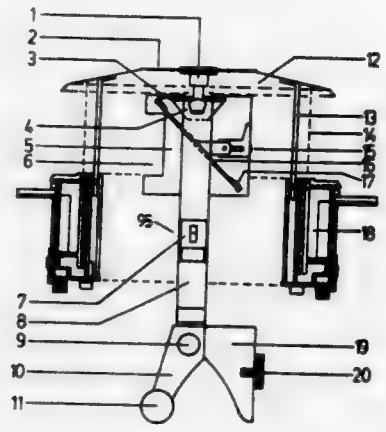
said spaced members have confronting sides which are held in fixed spaced relationship by said handle and said back plate; means formed on said opposed surfaces for releasably attaching a camera thereto so that a camera attached to one opposed surface is opposed to a camera attached to the other opposed surface; so that said shoulder piece can be brought to bear against one's shoulder while said main frame can be rotated respective to said shoulder piece and thereby sequentially bring a camera mounted on the opposed parallel surfaces into operative position.

4,514,068

CAMERA MOUNTING SYSTEM

Kevin G. Urquhart, 22 Flood St., Barraba, New South Wales, 2347, Australia

Filed Aug. 5, 1983, Ser. No. 520,814
Claims priority, application Australia, Aug. 18, 1982, PF5447
Int. Cl.³ G03B *17/56, 29/00*
U.S. Cl. 354—293 **10 Claims**



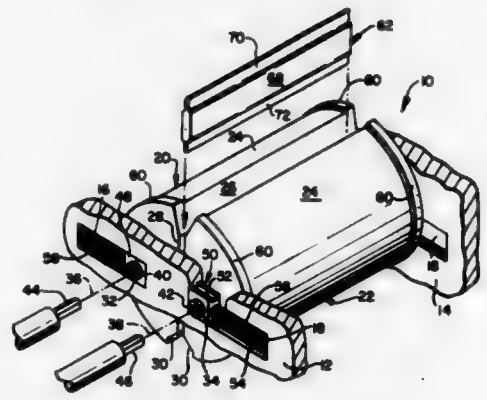
1. A camera mounting system comprising frame support means adapted to be affixed adjacent an opening in the roof of a vehicle or the like; a mounting assembly receivable in said opening and supported by said frame support means, said assembly having a telescoping cap portion extendable from a retracted position wherein the cap portion covers said opening to an extended position outwardly of said opening; a camera mount bracket releasably attachable to said cap portion from within said mounting assembly, said camera mount bracket comprising a mirror adjusted to reflect light from outside said opening to a camera positioned inside on said camera mount bracket, said camera mount bracket being rotatable within said opening.

4,514,069

PHOTOGRAPHIC SHEET PROCESSOR HAVING LARGE DIAMETER ROLLING SURFACES

Gordon F. Kinsman, Billerica; Ronald F. Lambert, Wayland, and David A. Morrison, Framingham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1983, Ser. No. 566,332
Int. Cl.³ G03B *9/02*
U.S. Cl. 354—304 **14 Claims**



1. A processor for advancing a predetermined quantity of processing fluid as a uniform layer over mutually facing surfaces between a pair of juxtaposed photographic sheets, said processor comprising:

a pair of calendering members, each having a calendering surface defined by a cylindrical sector and having a circumference approximating the length of the sheets;

means for supporting said calendering members rotatably about spaced parallel axes so that the respective calendering surfaces of said members define a processing gap; and

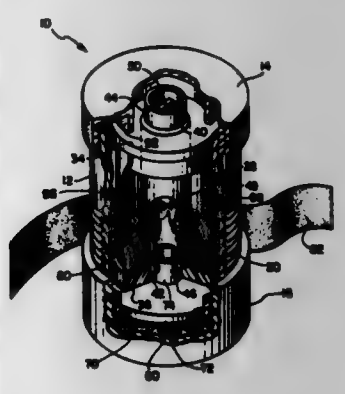
means for rotating said members to advance the sheets through said processing gap.

4,514,070

FILM ASSEMBLAGE INCLUDING A CANNISTER FOR HOUSING A FILM CASSETTE DURING PROCESSING OF FILM

Philip R. Norris, No. Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1984, Ser. No. 606,204
Int. Cl.[3] G03D *13/04*
U.S. Cl. 354—313 10 Claims



1. A photographic film assemblage for use with commercially available, compact, still picture cameras of the type having means for operably locating a film cassette containing a single roll of film in a position in which the film is adapted to be progressively withdrawn from the film cassette and exposed prior to being rewound into the film cassette, said film assemblage comprising:

a cannister having means for defining a first chamber for housing a film cassette containing a roll of film, means for defining a second chamber for containing a supply of processing fluid, means connecting said first and second chambers, and means for temporarily blocking the movement of processing fluid from said second chamber via said connecting means;

a supply of processing fluid located within said second chamber;

a film cassette for housing a roll of self-developing type film, said film cassette including means defining a lighttight opening through which the film is adapted to be moved to the exterior of said film cassette for exposure thereof;

a length of self-developing type film coiled within said film cassette, said film including a first end attached to a support member located within said film cassette and a second opposite end which is adapted to extend through said lighttight opening for subsequent attachment to a film take-up member of a camera;

a support member rotatably supported within said film cassette said support member cooperating with an interior surface of said film cassette to define a third chamber for accommodating said film, said support member including means for directing a flow of said processing fluid from said connecting means to said third chamber when said film cassette is located within said first chamber of said cannister, and

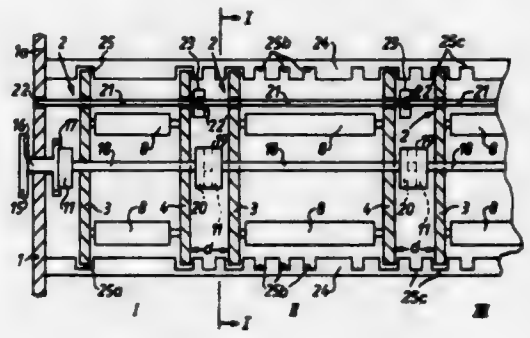
means for rendering said blocking means inoperable thereby permitting the flow of said processing fluid from said first chamber to said third chamber where it will initiate the formation of visible images in any photographically exposed film contained therein.

4,514,071

DEVICE FOR COUPLING THE SHAFTS OF TRANSPORTING UNITS IN DEVELOPING MACHINES OR THE LIKE

Horst Köninger, Munich; Klaus Lehnert, Unterhaching, and Günter Schirk, Munich, all of Fed. Rep. of Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,448
Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220236
Int. Cl.[3] G03B *3/08*
U.S. Cl. 354—320 20 Claims



1. A coupling device for use in developing machines for photosensitive material, comprising at least substantially coaxial first and second shafts; first and second gears provided on the respective shafts, said first shaft including a portion extending beyond said first gear and toward said second shaft; a sleeve having an internal gear meshing with said first gear and being movable between first and second positions in which said internal gear respectively meshes with and is out of mesh with said second gear; and means for releasably holding said sleeve in said first position, said holding means including male and female detent elements, one of said elements being provided in said sleeve and the other of said elements being provided on said portion of said first shaft, said male and female detent elements being in engagement with one another in the first position of said sleeve.

4,514,072

X-RAY FILM HOLDER APPARATUS

Arthur B. Buckley, 1506 Maple Ave., Northbrook, Ill. 60062

Filed Oct. 18, 1983, Ser. No. 543,043
Int. Cl.[3] B08B *3/08;* G03D *13/08*
U.S. Cl. 354—337 12 Claims

1. An improved X-Ray film holder apparatus for restrainably maintaining a plurality of substantially bowed X-Ray films in position within conventional developing tank insert trays, said apparatus comprising:

substantially flat holder fixture means having upper and lower end members as well as a plurality of film holder members operably disposed between said top and bottom end members in a direction substantially parallel to the longitudinal axis of said holder fixture means;

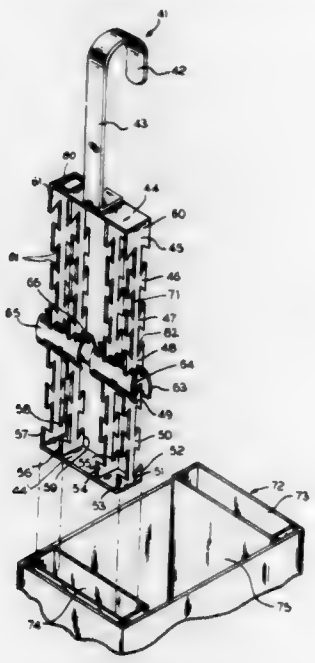
two or more of said film holder members comprising an alternating series of substantially trapezoid-shaped flange portions and substantially trapezoid-shaped recess portions so as to describe plurality of notched regions into which the opposite peripheral edges of a substantially bowed X-Ray film may be restrainably positioned;

each one of said two or more film holder members having said alternating series of flange portions and recess portions being in overall substantial alignment, with said flange and recess portions in a first of said two or more film holder members being in operable respective alignment with corresponding flange and recess portions in a second of said two or more film holder members,

said first and second aligned film holder members collectively describing aligned ones of said notched regions for

each of said bowed X-Ray films positionable therewithin so as to describe at least two notched regions into which each of said opposite peripheral edges of said bowed film comes into restrainable contact;

fixture position maintenance means operably attached along one of said upper and lower ends for facilitating the loading, maintenance and unloading of said film holder apparatus in and from said conventional developing tank insert tray;



means for precluding the undesired and inadvertent contact of articles with said bowed films restrainably positioned within said film holder apparatus,

said holder fixture means being of such a thickness and height with said bowed films restrainably positioned therewithin so as to be closely and telescopically received by one or more of said developing tank's insert trays.

4,514,073

AUTOMATIC EXPOSURE CONTROL CAMERA

Nobuyuki Taniguchi, Tondabayashi; Hiroshi Hosomizu, Nara; Toru Inoue, Toyonaka; Masaaki Nakai, Nara; Takanobu Omaki, Sennan; Masatake Niwa, and Minoru Sekida, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

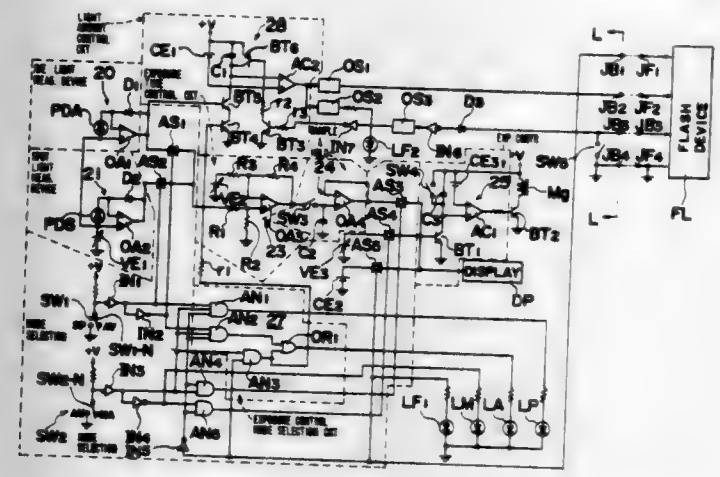
Filed Oct. 7, 1983, Ser. No. 540,039

Claims priority, application Japan, Oct. 21, 1982, 57-185638

Int. Cl.³ G03B *17/08, 15/05, 17/18*

U.S. Cl. 354—414

10 Claims



1. An automatic exposure control camera capable of controlling both the camera exposure and the flash light amount to be emitted by an electronic flash device comprising:

means for measuring light and capable of alternatively producing a first signal indicative of a light measuring result covering a relatively wide area of the object scene and a second signal indicative of a light measuring result covering a relatively narrow area of the object scene;

first means for automatically controlling the camera exposure in response to said first signal and said second signal and including means for selectively storing either said first or second signal prior to actual exposure, said first controlling means being respective to the signal stored by said storing means;

second means for automatically controlling the flash light amount in response to said first signal; and

means for selecting said first controlling means from said second controlling means to respond to said first and second signals, said selecting means including first means for interconnecting said first controlling means with said measuring means to enable said first controlling means to selectively respond to either of said first and second signals in controlling the camera exposure, and said selecting means further including second means for interconnecting said second controlling means with said measuring means to restrict said second controlling means to respond to said first signal in controlling the flash light amount.

4,514,074

EXPOSURE CONTROL CIRCUIT FOR TTL AUTOMATIC ELECTRONIC FLASH

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

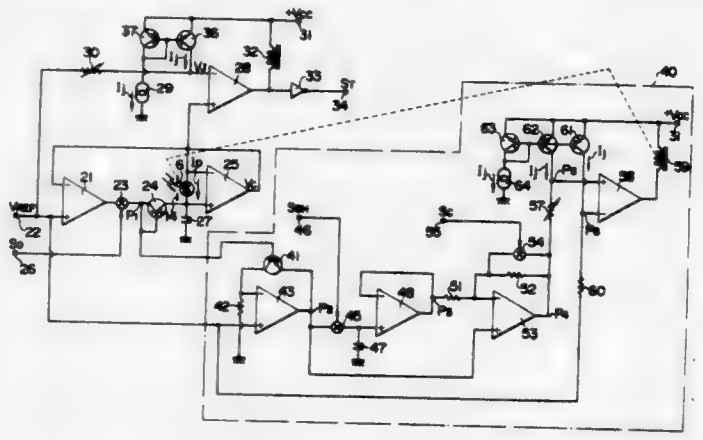
Filed Oct. 8, 1982, Ser. No. 433,455

Claims priority, application Japan, Dec. 28, 1981, 56-211657

Int. Cl.³ G03B *7/16*

U.S. Cl. 354—416

13 Claims



1. In a TTL direct photometry camera capable of photometry of reflection from a film surface and having the capability to control the amount of light emission from a TTL automatic electronic flash, an exposure control circuit associated with the TTL automatic electronic flash, comprising:

a photometric circuit for deriving a voltage corresponding to an output current from a photoelectric transducer element which is used for the purpose of photometry:

a circuit for calculating a diaphragm value, the circuit being operative whenever the TTL automatic electronic flash is used in combination with the camera, and responsive to the magnitude of the output voltage from the photometric circuit which depends on the brightness of an object being photographed, for calculating a diaphragm value for the camera to establish an exposure period which is equal to or greater than the exposure period synchronized with the operation of the electronic flash so long as the brightness value is below a predetermined upper limit;

a reference voltage circuit for providing a reference voltage corresponding to the exposure period which is equal to or greater than the exposure period synchronized with the operation of the electronic flash;

a comparator for comparing an output voltage from the

calculation circuit against the reference voltage supplied from the reference voltage circuit;

means for controlling a diaphragm opening in accordance with an output from the comparator; and

an exposure control circuit for establishing an exposure period in accordance with the brightness of an object being photographed.

4,514,075

AUTOMATIC CONTROL APPARATUS FOR PHOTOGRAPHIC CAMERA

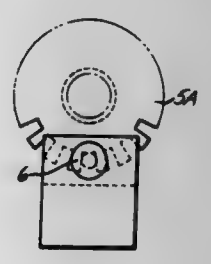
Kiyoshi Negishi; Masahiro Kawasaki, both of Tokyo, and Eiichi Tano, Kamifukuoka, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

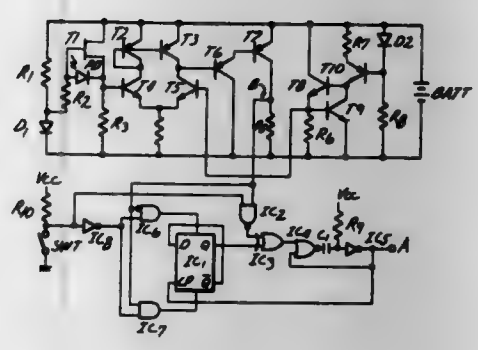
Filed Apr. 28, 1981, Ser. No. 258,043

Claims priority, application Japan, Apr. 30, 1980, 55-59668[U]

Int. Cl.³ G03B 7/08

U.S. Cl. 354—446 **12 Claims**





1. Automatic control apparatus for a photographic camera comprising:

means for stopping down a diaphragm;

first means for generating square wave pulses, the number of which represents the extent of diaphragm stop down, the square wave pulses alternately assuming an H-level and an L-level;

second means for generating short pulses responsive to the leading and trailing edges of the square wave pulses, the second pulse generating means comprising a bistable device alternately assuming the H-level and the L-level, an exclusive OR gate having a first input, a second input and an output that assumes the H-level when either the first input or the second input but not both assume the H-level, and otherwise assumes the L-level, means for connecting the bistable device to the first input, means for connecting the first pulse generating means to the second input, and means for inverting the state of the bistable device each time the output of the exclusive OR gate assumes the H-level;

means for counting the short pulses; and

means for arresting the diaphragm stop down means after a predetermined number of short pulses are counted.

4,514,076

PHOTOGRAPHIC CAMERA

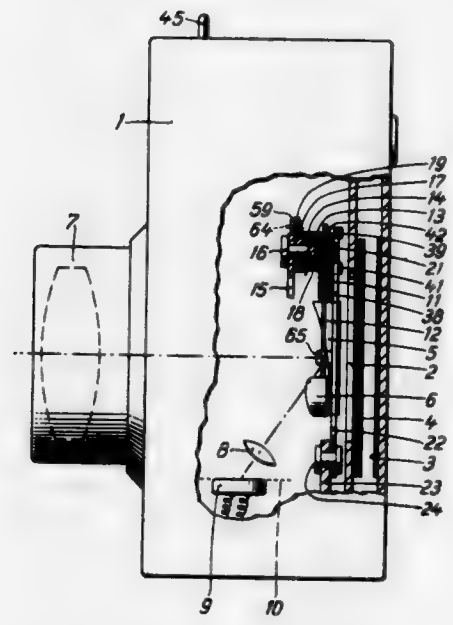
Peter Loseries, Wetzlar-Nauborn, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzler GmbH, Wetzlar, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,595

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247764

Int. Cl.³ G03B 7/099

U.S. Cl. 354—481 **9 Claims**



1. A photographic finder camera, adapted to utilize interchangeable photographic lens objectives and having a shutter and a photoelectric detector system for measuring light flux passing through the photographic lens objective being utilized, wherein:

(a) the photoelectric detector system is mounted in a plane in which a representative light flux can be collected from various image heights and all apertures of the photographic lens objective being utilized;

(b) at least one optical component is movably disposed in the camera housing, said movable component being pivoted in front of the aperture of said camera parallel to a plane defined by film in the camera and directing when in a use position in the beam path of said photographic lens objective at least part of the light flux coming from the object to be measured and passing through the photographic lens objective, to the photoelectric detector system; and

(c) control means are provided which selectively bring said movable optical component into the use position and transfer the optical component into a non-use position depending on actuation of the camera shutter.

4,514,077

MAGNETIC TONER DEVELOPING DEVICE

Virgil W. Westdale, Barrington; James L. Hanrahan, Mt. Prospect, and William C. Anderson, McHenry, all of Ill., assignors to AM International, Inc., Chicago, Ill.

Filed Feb. 18, 1983, Ser. No. 467,781

Int. Cl.³ G03G 15/09

U.S. Cl. 355—3 DD **4 Claims**

1. A magnetic toner developing device for developing an image on a charged sheet during transport of the sheet through a development zone comprising:

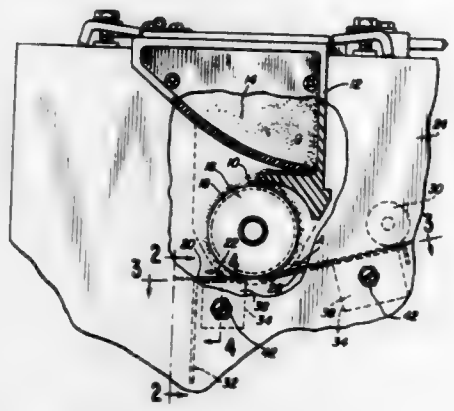
a support frame;

a magnetic developer roller brush for applying a single component toner to the sheet;

means for supplying a relatively thin layer of said single component toner to the developer roller brush;

a guide plate extending beneath the developer roller brush in close proximity thereto for supporting the sheet in its

transport through the development zone formed between the developer roller brush and the guide plate; and



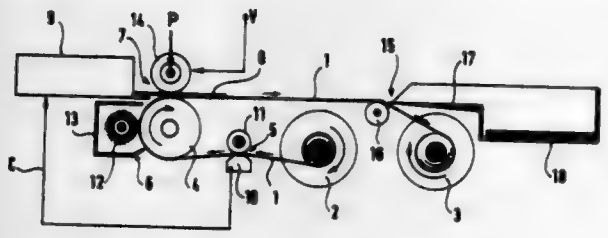
means for electrically isolating said guide plate from said support frame to eliminate electrostatic clamping of said charged sheet to said guide plate.

4,514,078

INDIRECT ELECTROSTATIC PRINTER

Michel Béduchaud, Villebon sur Yvette, and Patrice Playe, Houilles, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Apr. 4, 1983, Ser. No. 482,084
Claims priority, application France, Apr. 2, 1982, 82 05726
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 BE **4 Claims**



1. An indirect electrostatic printer using an intermediate image medium, said printer comprising:

a printing station for printing an electrostatic latent image on the intermediate medium,

a developer station for developing the image on the intermediate medium,

a combined transfer and fixing station for both transferring the image onto a final medium and for fixing the image thereon, and

a coply delivery station,

the improvement wherein said intermediate image medium comprises a flexible dielectric tape and

means for mounting said tape in an open loop path running in sequence from a supply reel as a lower run, around an auxiliary roller from bottom to top over which its path is folded forming a top run passing across and above the supply reel and onto a take up reel, said open loop path running through all three of said stations in succession,

means for driving said tape comprising at least one of said take up reel and said auxiliary roller,

a pressure roller operatively associated with said auxiliary roller to define said combined transfer and fixing station for simultaneously transferring and fixing the image on the final medium, and

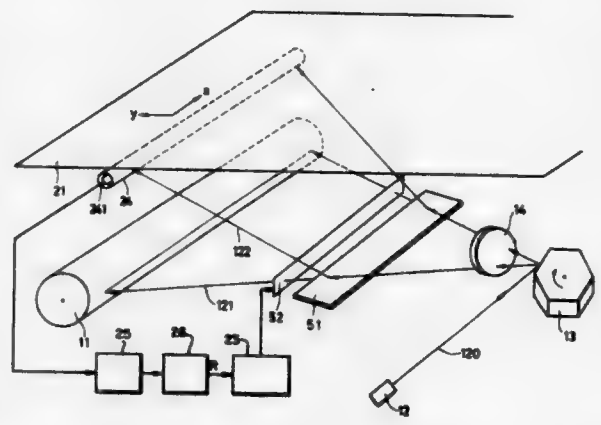
means for supplying said final medium in the form of individual sheets to said combined transfer and fixing station between the nip of said pressure roller and said dielectric tape while in contact with the periphery of said auxiliary roller for driving said sheets by said auxiliary roller and said pressure roller onto the top run of said dielectric tape for conveying said sheets sequentially to said copy delivery station.

4,514,079

OPTICAL INPUT AND OUTPUT SCANNING SYSTEM

Kunihiro Okada, Nishitama; Hirohide Endo, Tokorozawa; Susumu Saito, Hachiohji, and Kenji Kataoka, Kawagoe, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,901
Claims priority, application Japan, Jul. 20, 1981, 56-112169
Int. Cl.³ F03G *15/04*
U.S. Cl. 355—8 **5 Claims**



1. An optical input and output scanning system comprising: generating means for generating a laser light in the form of a beam; a photo-conductive drum adapted to be formed with an electro-latent image according to the intensity of said laser light; a sheet of paper carrying a picture image to be received; scanning means including an optical system for condensing said laser light upon said photo-conductive drum and said paper to linearly scan the surfaces of said photo-conductive drum and said paper; and photoelectric converting means for receiving the laser light reflected from the paper surface scanned by said scanning means and for generating an electric signal according to the intensity of the light received, said scanning means including optical means for reflecting and deflecting the laser light generated by said generating means and distributing optical means for simultaneously distributing the reflected and deflected beam of laser light between said photo-conductive drum surface and said paper surface thereby to irradiate the same, said distributing optical means including a half mirror for reflecting a portion of the deflected incident beam of laser light and allowing the other portion of the same to transmit therethrough; and an optical shutter interposed between said half mirror and said photo-conductive drum for enabling one of passing and blocking of said laser light to said photo-conductive drum.

4,514,080

APPARATUS FOR CONTROLLING OPTICAL SYSTEM FOR COPYING MACHINE

Kiyoshi Matsuzawa, and Noriyuki Inoue, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,480
Claims priority, application Japan, Jul. 26, 1982, 57-130053
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C **5 Claims**

1. An apparatus for controlling an optical system in a copying machine, said optical system being movable to a plurality of positions at which different reduction/magnification factors are obtained, said apparatus comprising:

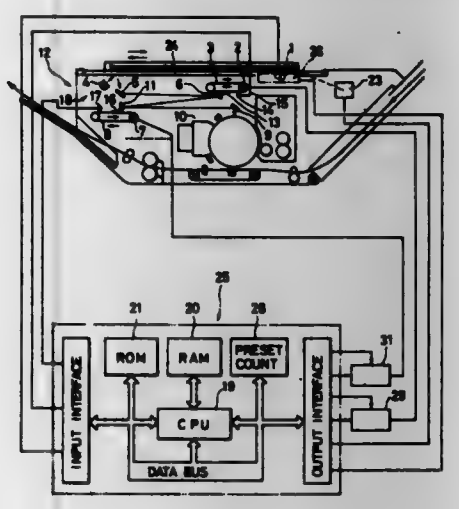
first means for generating a first signal corresponding to a desired one of said plurality of reduction/magnification factors;

second means responsive to said first signal for providing a desired position signal representing the distance from a predetermined reference position to the position corresponding to said desired reduction/magnification factor;

third means for generating a current position signal corre-

sponding to the distance from said predetermined reference position to the present position of said optical system;

fourth means responsive to said current and desired position signals for generating a difference signal representing the



distance and direction from said current position to said desired position; and

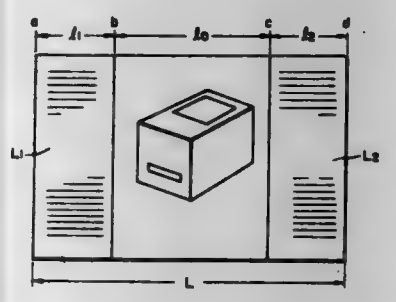
fifth means responsive to said difference signal for moving said optical system to said desired position.

4,514,081

IMAGE MAKING SYSTEM AND APPARATUS THEREFOR

Yasuyuki Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 347,933, Feb. 11, 1982,. This application Feb. 10, 1983, Ser. No. 465,576
Claims priority, application Japan, Feb. 17, 1981, 56-22106
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **2 Claims**



1. An image forming apparatus capable of forming a combined image including an image corresponding to an original and an image corresponding to an information signal comprising:

a movable member;

an original supporting means;

scanning means movable relative to said original supporting means for scanning the original;

an adjusting member to set the position of the rear end of the original, the adjusting member being mounted on said original supporting means at a position along the side of which the scanning of the original by said scanning means is completed;

conveying means to convey a transfer material toward said photosensitive member;

variable setting means for setting a first time during the imaging operation for initiating the projection of light corresponding to said information signal to said photosensitive member, and for setting a second time, which is later than said first time, for initiating the projection of light corresponding to the original to said photosensitive member; and

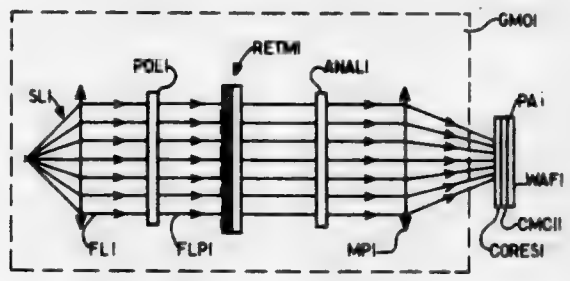
setting means for setting a time for initiating the movement of said conveying means in correspondence with the said first time.

4,514,082

PATTERN GENERATOR FOR INTEGRATED CIRCUITS AND PROCESS OF GENERATING PATTERNS BY MEANS OF SAID GENERATOR

Catherine Gueugnon, Paris, and Pierre Bernstein, Meudon, both of France, assignors to Cii Honeywell Bull (Societe Anonyme), Paris, France

Filed Nov. 23, 1983, Ser. No. 554,804
Claims priority, application France, Nov. 29, 1982, 82 19997
Int. Cl.³ G03B *27/44, 27/32*
U.S. Cl. 355—54 **6 Claims**



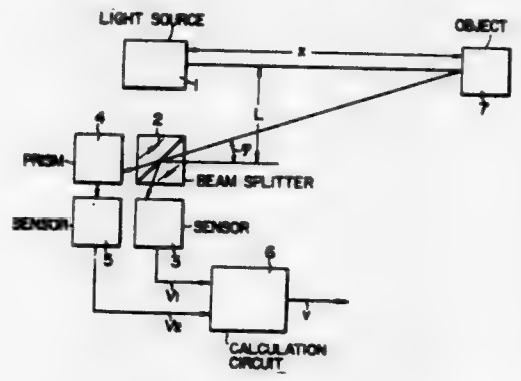
1. A pattern generator for integrated circuits consisting of a stack of various layers comprising: a source (SLI) transmitting a beam of light; for each one of the layers at least one associated reticle (RETMI) bearing patterns to be reproduced thereon and which is transparent, at least one portion of its surface, to the beam of light from said source; optical means (MPI) for projecting the image of the patterns onto a layer coated with photosensitive resin, a light polarizer (POLI) connected to the source, the reticle (RETMI) comprising a thin layer of magnetooptical material with a magnetization which is at right angles to its surface, where the patterns are made up of magnetic domains (D1, D2, D3) with a given shape and a given magnetization which is opposite to the magnetic environment surrounding them, the image of said pattern being restituted by a light meter (ANALI).

4,514,083

DISTANCE MEASURING APPARATUS

Kenji Fukuoka, Fussa, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,909
Claims priority, application Japan, Feb. 3, 1981, 56-14700
Int. Cl.³ G01C *3/10;* G01B *11/26*
U.S. Cl. 356—1 **12 Claims**



1. A distance measuring apparatus comprising:

illumination means for projecting a collimated light beam of a reduced cross sectional area toward an object whose distance is being determined along an optical axis;

beam splitting means disposed at a given distance from the illumination means in a direction perpendicular to the optical axis therefor for receiving collimated light re-

flected from the object and for splitting the received light into a first and a second light component;

first light detecting means for generating a first signal representing the intensity of the first light component from the beam splitting means;

optical conversion means having a predetermined index of refraction and having at least one surface defining a boundary with an adjacent media having a different index of refraction, said optical conversion means receiving the second light component from the beam splitting means, said second light component impinging on said one surface at an angle of incidence near its critical angle, said optical conversion means altering the intensity of the second light component by reflection at said surface, said second light component exiting from said optical conversion means with an intensity which is a function of the angle formed between the optical axis and the direction in which the reflected light impinges upon the beam splitting means from the object;

second light detecting means for generating a second signal representing the intensity of the second light component as outputted by the conversion means; and

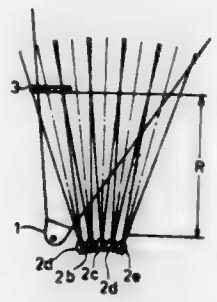
calculation means responsive to said first and second signals for calculating the distance to the object.

4,514,084

DISTANCE MEASURING APPARATUS

Hiroshi Makino, Hirakata; Masaru Higuchi, Toyonaka, and Kazuou Murata, Settsu, all of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Feb. 24, 1982, Ser. No. 352,066
Claims priority, application Japan, Mar. 3, 1981, 56-30736
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—4
1 Claim



1. A distance measuring apparatus comprising:

light projecting means for projecting a flash of light which spreads as it travels from a discharge lamp which discharges by consuming a charge stored in a capacitor,

light receiving means comprising an array of light receiving devices for receiving light reflected from an object, a distance to which is to be measured, said array of light receiving devices comprising a predetermined number of light receiving devices each having a predetermined restricted directivity with their optical axes of directivities at predetermined substantially uniform angular pitches, and each outputting signals respectively representing their received reflected light, and

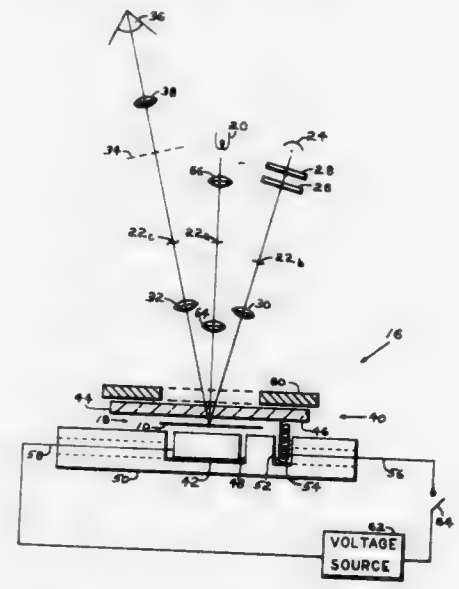
a distance signal producing circuit which detects the one signal which is the highest output level among plural output signals output by said light receiving devices, said distance circuit comprising a differentiating circuit for differentiating said output signals of said light receiving devices to thereby produce a distance signal by comparing said detected highest output level with plural predetermined reference levels corresponding to respective various distances.

4,514,085

MARKING AND AUTHENTICATING DOCUMENTS WITH LIQUID CRYSTAL MATERIALS

Wilbur I. Kaye, Corona del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 28, 1982, Ser. No. 392,838
Int. Cl.³ G06K *7/10, 9/74*
U.S. Cl. 356—71
14 Claims



1. A method of repeatably authenticating documents comprising the steps of:

(1) applying a liquid crystal material to the document, which material exhibits a predetermined response to an electrical or magnetic stimulus, and

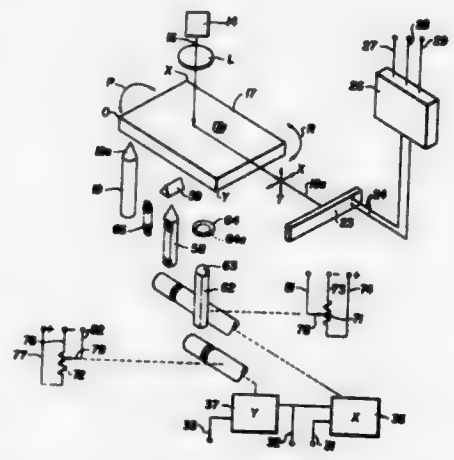
(2) examining the document for detectable characteristics of the predetermined response of the liquid crystal material when said stimulus is applied.

4,514,086

APPARATUS FOR MEASURING REFRACTIVE PROPERTIES OF LENSES AND OTHER TRANSMISSIVE DEVICES

Edward V. Stine, 247 Congressional La., Rockville, Md. 20852

Filed Jan. 5, 1982, Ser. No. 337,275
Int. Cl.³ G01B *9/00*
U.S. Cl. 356—124
3 Claims



1. An apparatus for automatically measuring the deflection of a radiation beam for determining certain parameters of a diverting means, said apparatus comprising: a radiation generating means, a reflective surface of a substantially planar base, a supporting means, a first rack means, a second rack means, radiation detection means, drive means, signal processing means, spring means and measuring means; said radiation generating means directing a beam of radiation onto said reflective surface, said diverting means being interposed between said radiation generating means and said reflective surface for

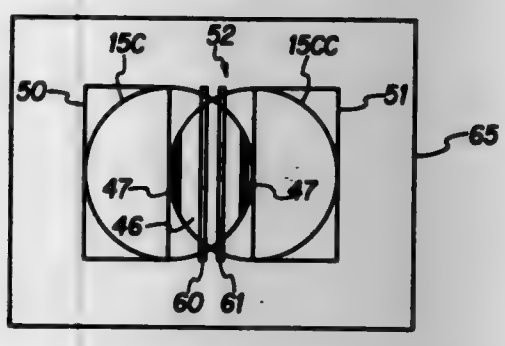
deflecting said radiation beam, said supporting means supporting said base upon a fixed pivot for movement of said base in mutually-perpendicular X and Y plane, said first rack means being operatively connected to said base to move said base in said X plane about said fixed pivot, said second rack means being operatively connected to said base to move said base in said Y plane about said fixed pivot, said radiation detection means detecting the amount of deviation of the deflected radiation beam, said drive means including respective servo motors having respective shafts provided with first and second pinions, said signal processing means being responsive to said radiation detection means to actuate said servo motors to rotatively drive said shafts, said first and second pinions operatively engaging said first and second rack means, respectively, to move said base to a null position as defined by the deviation of the deflected radiation beam, said spring means being operatively connected to said base and said first and second rack means to constantly urge said base against said first and second rack means and to maintain said pinions in constant mesh with said respective rack means to preclude backlash, and said measuring means being operatively associated with the rotation of said respective shafts to measure the amount of the deviation in said X and Y planes.

4,514,087

RING LASER GYROSCOPE READOUT FOR PARTIALLY OVERLAPPING BEAMS

Frederick Vescial, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 23, 1982, Ser. No. 410,790
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **18 Claims**



1. A ring laser gyroscope comprising:
a laser ring having counter rotating light beams which have a frequency difference relatable to the rate of rotation of said ring about an axis of rotational sensitivity,
means for removing a portion of the counter rotating light beams from the ring,
means for displacing the removed counter rotating beams whereby a portion of the light of the removed beams overlaps and a portion of each of the beams does not overlap,
means for receiving said displaced beams including means for detecting each non-overlapping beam portion and means for detecting fringe motion of said overlapping beams.

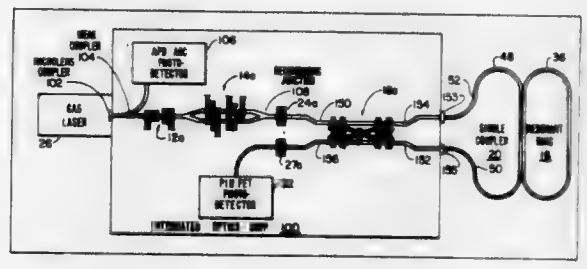
4,514,088

SINGLE-COUPLER GUIDED-WAVE PASSIVE RESONANT-RING OPTICAL-GYRO INSTRUMENT

Joseph D. Coccoli, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambrige, Mass.

Filed Apr. 1, 1983, Ser. No. 481,481
Int. Cl.³ G01B *9/02*; G01C *19/64*
U.S. Cl. 356—350 **7 Claims**

1. A single-coupler guided-wave passive resonant-ring optical gyro instrument responsive to a coherent light source, comprising:
an optical-fiber resonant ring;
a single wave coupler for exciting input clockwise and counterclockwise traveling waves in said resonant ring and for extracting the output signals representative of the level of excitation of those waves;
switching means for selectively, alternately applying the light waves from the coherent light source to the clockwise and counterclockwise inputs of said single wave coupler;
means for selectively exciting the orthogonal polarization states of the optical modes of the resonant ring;



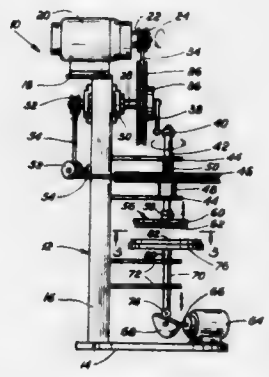
means for separating the orthogonal polarization states of the optical modes of the resonant ring;
means for tuning the optical frequency of the input light waves to match and track the resonant frequencies of said resonant ring; and
means for sensing said output signals representative of the level of excitation of the clockwise and counterclockwise waves in the resonant ring.

4,514,089

APPARATUS TO PROCESS PIZZA DOUGH

Armando E. Meynet, 674 Keil St., Elmont, N.Y. 11003

Filed Jul. 26, 1984, Ser. No. 634,457
Int. Cl.³ B28C *1/16*; A21C *1/00*
U.S. Cl. 366—69 **10 Claims**

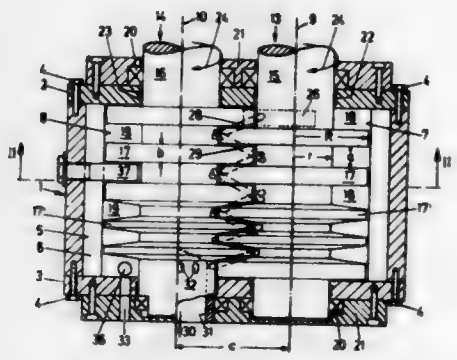


1. An apparatus to process pizza dough, and the like, said apparatus comprising:
a platform having a surface to support the dough to be processed;
a platen having a work surface spaced from said platform;
a plurality of spaced apart finger-like projections projecting from said work surface and positioned to operatively come in contact with the dough;
said platform and said platen being movable relative to one another;
first motive means to cause said platform and said platen to oscillate relative to one another along an axis perpendicular to said dough support surface;
second motive means to cause said platform and said platen to move relative to one another in a plane parallel to said dough support surface; and
said first and second motive means coupled to operate in a predetermined timed relationship to one another;
whereby said projections engage the supported dough during operation of said first and second motive means to process the dough.

4,514,090
APPARATUS FOR PROCESSING VISCOUS SUBSTANCES OR SUBSTANCES WHICH BECOME VISCOUS THROUGH PROCESSING

Wilhelm Neubauer, Murr, and Hans Werner, Stuttgart, both of Fed. Rep. of Germany, assignors to Werner and Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,559
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3208973
Int. Cl.[3] B29B *1/06*; B01F *7/12*
U.S. Cl. 366—91
12 Claims



1. An apparatus for processing viscous substances, or substances which can be made viscous during processing, said apparatus comprising a casing having at least two bores with at least one gusset area between them, two disk rotor means each comprising an elongated rotatable shaft provided with closed disks mounted in corresponding ones of said bores, the disks having a limited clearance with respect to the walls of the bores and defining between them at least one chamber having a damming-back point, said chamber having an outlet in front of said damming-back point, said outlet forming an overflow passage in at least one of said gusset areas and extending tangentially to a particular disk in the direction of a longitudinal axes of the elongated disk rotors, said disks interconnecting oppositely displaced chambers in the direction of the longitudinal axes, said disk rotors being arranged in an axially parallel relationship, partly interpenetrating the bores, the disks of each disk rotor projecting into the chamber or into each other disk rotor, and the outer circumference of the disks being clearance-free with respect to the shaft of the other rotor.

4,514,091
CONTAINER ASSEMBLY FOR VISCOUS TEST SPECIMEN MATERIALS

Klaus P. Kaspar, Tutzing; Jürgen Becker, Penzberg-Maxkron, and Marion Huber, Kleinengstingen, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,491
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139702
Int. Cl.[3] B01F *13/00*
U.S. Cl. 366—130
20 Claims

1. A container assembly for treating a viscous specimen material comprising:

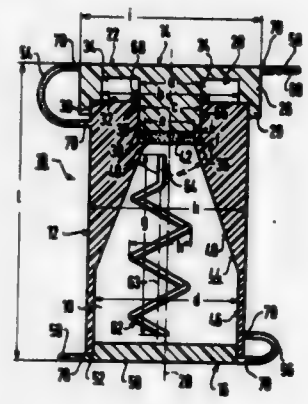
a container main body having at least one open end and defining a container interior within which specimen material may be treated;

a cover on said container main body for closing said at least one open end to seal said container interior;

a projecting part extending from said cover on that side of the cover facing said container interior, said projecting part being formed with a specimen recess with a predetermined volume for receiving an equal volume of viscous specimen material, said recess opening in said container interior when said cover is closed, said projecting part having a first planar annular end face surrounding said recess and further having an outer circumferential surface adjacent said end face and extending between said end face and said side of said cover facing said container interior, said annular end face lying completely within a single, flat, level plane and extending continguously from the rim of said recess between said recess and said outer circumferential surface;

wiping means defined on said container main body shaped in conformance with said projecting part for wiping excess material deposited on said outer circumferential surface away from said first annular end face; and

excess material receptacle means for receiving excess material wiped by said wiping means, said excess material receptacle means being defined as a volume between said



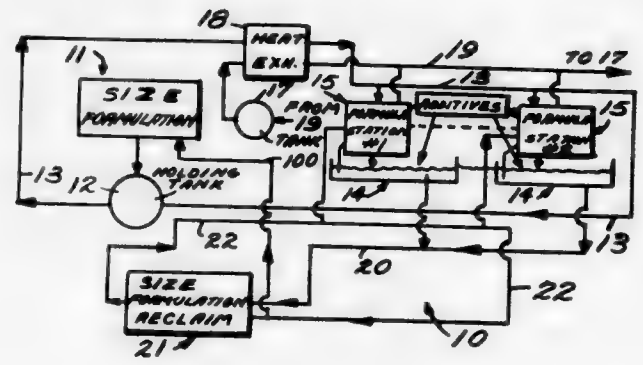
cover and said container main body, which volume is sealed when said cover is closed;

said predetermined volume of viscous specimen material being obtainable for treatment within said conainer interior by filling said specimen recess with said viscous specimen material and subsequently smoothing said viscous specimen material within said specimen recess to a level defined by said first annular end face across said specimen recess, excess specimen material being deposited on said outer circumferential surface and adjacent said first annular end face and finally, in closing said cover, said wiping means wiping said excess material into said excess material receptacle.

4,514,092
AUTOMATED SIZING SYSTEM CONTROLLING

Frederick D. Pritchard, Clarksville, and John E. Pittard, Halifax, both of Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed May 4, 1983, Ser. No. 491,274
Int. Cl.[3] B01F *15/02*
U.S. Cl. 366—136
45 Claims



1. A method of providing size formulation to one or more of a plurality of size boxes associated with a plurality of slashers, comprising the steps of:

(a) at atmospheric pressure, mixing and heating a number of size formulation components to produce a size formulation having a predetermined composition and temperature;

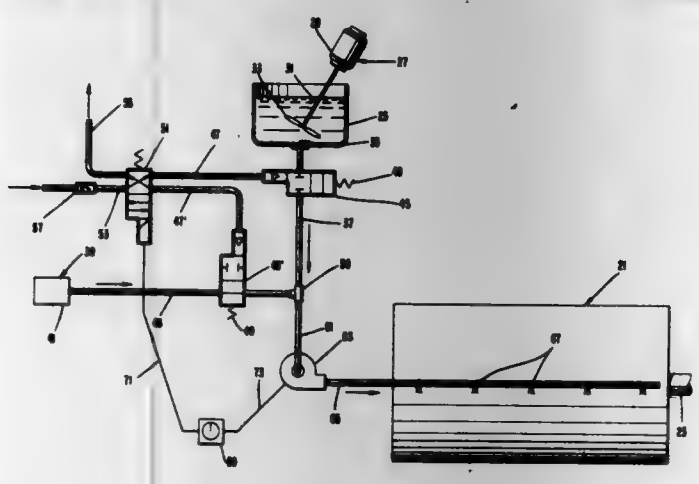
(b) pumping the size formulation in a closed loop past each of said size boxes;
(c) sensing the amount of size in each size box; and
(d) responsive to a predetermined condition sensed in step (c), withdrawing size formulation from said closed loop and supplying it to a size box.

4,514,093

METHOD AND APPARATUS FOR DELIVERY OF A POWDER

Lester Coch, Northport, and Kurt Rauch, Kew Gardens, both of N.Y., assignors to Waldes Kohinoor, Inc., Long Island City, N.Y.

Filed Feb. 1, 1983, Ser. No. 463,023
Int. Cl.[3] B01F *9/04*
U.S. Cl. 366—138 8 Claims



8. A method of intermittently delivering an insoluble powder to a processing station, comprising the steps of:
supplying a slurry comprised of the insoluble powder and at least water;
pre-flushing a fluid network for supplying fluids to the processing station;
delivering a predetermined quantity of the slurry through the fluid network to the processing station;
post-flushing the fluid network to remove any residual slurry; and
agitating the slurry prior to delivery to the fluid network.

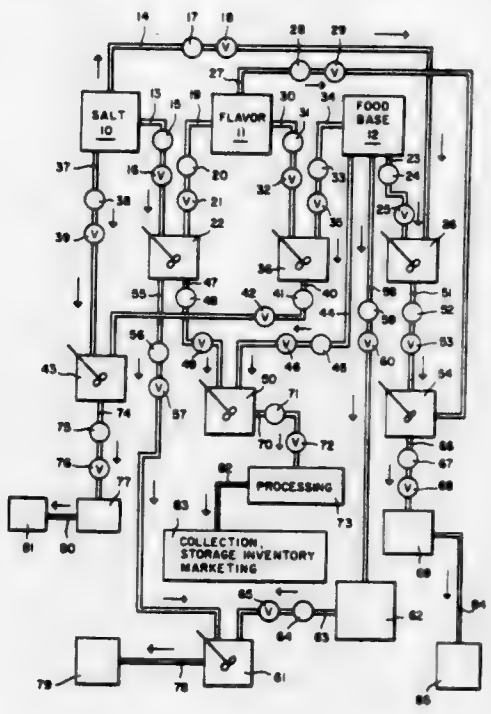
4,514,094

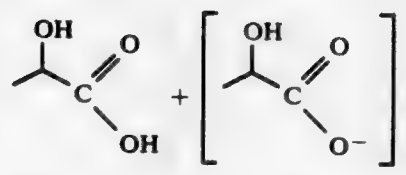
MIXED SEASONING

Lawrence Buckholz, Jr., Jackson; Richard A. Wilson, Westfield, and Roger Kleinberg, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

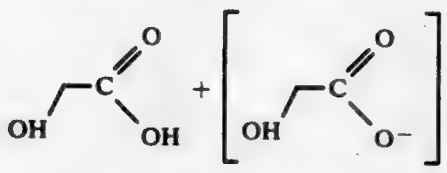
Division of Ser. No. 507,289, Jun. 23, 1983, Pat. No. 4,471,002, Continuation-in-part of Ser. No. 455,766, Nov. 30, 1982, abandoned. This application Apr. 26, 1984, Ser. No. 604,265
Int. Cl.[3] A23L *1/22*; A23C *19/00*
U.S. Cl. 366—160 3 Claims

1. Apparatus for producing a flavored foodstuff having a variable composition depending upon marketing information input used to control the apparatus using an electronic program controlling means comprising:
(i) at least one mixing vessel having a means of ingress and a means of egress;
(ii) means for supplying in controlled and variable amounts according to market requirements to at least one of said mixing vessels, a variably mixed seasoning composition of matter consisting essentially of:
(a) from about 0.25 up to about 0.80 mole percent on a dry basis of a lactic acid/lactate species mixture having the structures:





(b) from 0 up to about 0.09 mole percent on a dry basis of glycollic acid/glycollate ion species mixture having the structure:



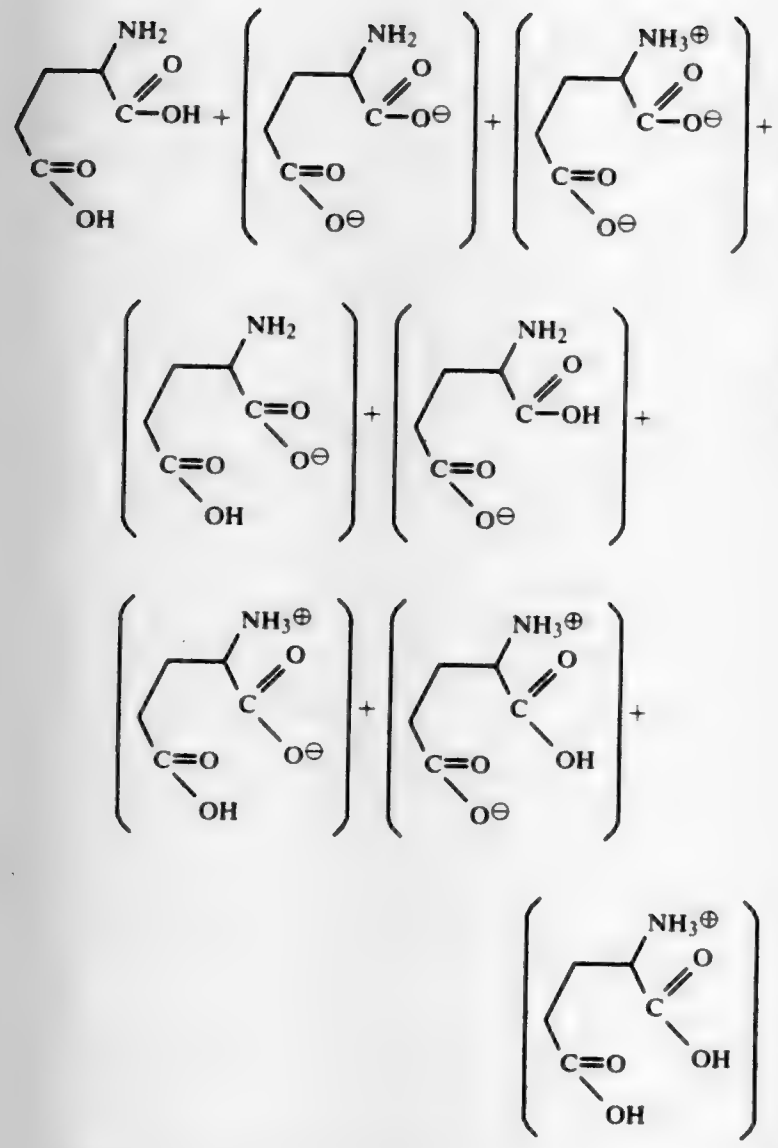
(c) from 0 up to about 10.0 mole percent on a dry basis of magnesium ion;
(d) from about 6 mole percent up to about 50 mole percent on a dry basis of a phosphate/monoacid phosphate/diacid phosphate/phosphoric acid species mixture having the formula:

$$[PO_4^{\equiv}]+[HPO_4^{=}]+[H_2PO_4^{-}]+H_3PO_4$$

taken alone or taken further together with at least one of the species tripolyphosphate, pyrophosphate and/or polymetaphosphate;
(e) from 0 mole percent up to about 40 mole percent on a dry basis of sodium ion;
(f) from about 8 mole percent up to about 50 mole percent on a dry basis of potassium ion;
(g) from about 0.3 mole percent up to about 16 mole percent on a dry basis of chloride ion;
(h) from 0 mole percent up to 30 mole percent on a dry basis of carbonate/bicarbonate/carbonic acid species mixture having the formula:

$$[CO_3^{=}]+[HCO_3^{-}]+H_2CO_3$$

(j) from 0 mole percent up to about 2.0 mole percent on a dry basis of monobasic glutamate/dibasic glutamate/-glutamic acid species mixture having the formulae:



(k) from 0 up to about 0.6 mole percent on a dry basis of calcium ion;

with the provisio that the sum total of mole percent on a dry basis of sodium ion, potassium ion, magnesium ion and calcium ion is from about 48 mole percent up to about 60 mole percent; and with the proviso that the sum total of carbonate/bicarbonate/carbonic acid ion species mixture having the formula:

$$[CO_3^{=}]+[HCO_3^{-}]+H_2CO_3$$

taken together with the sum total mole percent on a dry basis of the phosphate/monobasic phosphate/dibasic phosphate species mixture having the formula:

$$[PO_4^{\equiv}]+[HPO_4^{=}]+[H_2PO_4^{-}]+H_3PO_4$$

taken alone or taken further together with at least one of the species tripolyphosphate, pyrophosphate and/or polymetaphosphate is from about 50 mole percent the term "mole percent" being based upon the total moles of cations, anions and free organic acid which is substantially non-ionized in the composition;

(iii) means for supplying to at least one of said mixing vessels at a variably controlled rate according to market requirements and according to the rate of input of said mixed seasoning composition a flavoring formulation;

(iv) means for supplying to at least one of said mixing vessels in a variably controlled manner according to market requirements and according to the rate of supply of said flavoring formulation and said mixed seasoning composition, a foodstuff base; and

(v) means for conveying at variable mass flow rates accoridng to market input using electronic program control systems, said mixed seasoning composition, said flavoring formulation and said foodstuff to blending means whereby said mixed seasoning composition, said flavoring formulation and said foodstuff are blended in accordance with market requirements using said electronic program control systems.

4,514,095

MOTIONLESS MIXER

Wolfgang Ehrfeld, and Gunther Krieg, both of Karlsruhe, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

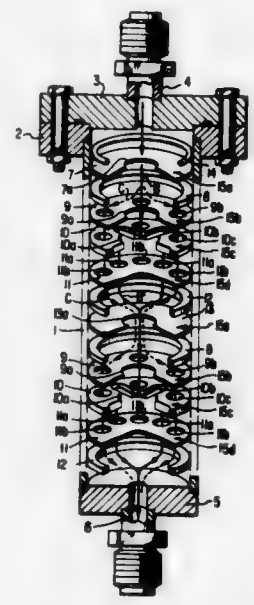
Filed Nov. 4, 1983, Ser. No. 549,179

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241089

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—340

5 Claims



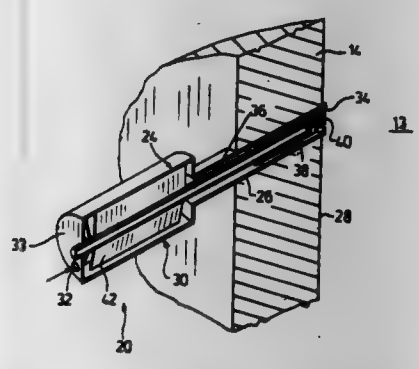
1. A motionless mixer for blending a fluid, comprising a tubular casing having a longitudinal axis and an inner cross-sectional contour; a fluid inlet and a fluid outlet axially spaced from one another in said casing and defining a flow direction of the fluid from the fluid inlet to the fluid outlet; a plurality of discs each having opposite faces and throughgoing apertures for allowing passage of the fluid; said discs having a periphery conforming to said inner cross-sectional contour; said discs being supported in said tubular casing in a face-to-face oriented relationship to form an axially extending disc stack; the apertures in said discs forming a core channel and fringe channels in said stack for dividing a fluid stream into a core stream and fringe streams in a first zone, for dividing the core stream into fringe streams in a second zone being downstream of said first zone as viewed in said flow direction and for centripetally combining said fringe streams into a central stream in a third zone being downstream of said second zone; and means for preventing said discs from angular displacements relative to one another; said discs comprising a first disc having a central opening and a plurality of spaced peripheral openings; a second disc adjoining downstream said first disc and having a central opening, a plurality of elongated openings extending radially from the central opening of the second disc, peripheral openings in said second disc situated between the elongated openings thereof; said peripheral openings in said second disc being in axial alignment with respective said peripheral openings of said first disc; a third disc adjoining downstream said second disc and having a plurality of peripheral openings being in alignment with respective said peripheral openings of said second disc and with outer zones of said elongated openings; a fourth disc situated downstream of said third disc and having a central opening; said fourth disc being maintained at an axial distance from said third disc by spacer means; said first disc being situated in said first zone, said second and third discs being situated in said second zone and said fourth discs being situated in said third zone.

4,514,096

FURNACE WALL ASH DEPOSIT FLUENT PHASE CHANGE MONITORING SYSTEM

John R. Wynnyckyj, Kitchener; Edward Rhodes, Waterloo, and Allan K. Chambers, Edmonton, all of Canada, assignors to University of Waterloo, Waterloo, Canada

Division of Ser. No. 320,604, Nov. 12, 1981, Pat. No. 4,408,568.
This application Sep. 2, 1983, Ser. No. 529,094
Int. Cl.[3] G01K *17/00;* G01N *25/02*
U.S. Cl. 374—27 2 Claims



1. A heat flux measuring device, comprising:

an enclosed elongate housing having air flow paths extending therethrough from an air inlet adjacent one end of said enclosure to an air outlet adjacent the other end of said enclosure,

heat flux sensing means located adjacent said air outlet to permit air flowing through said enclosure to flow over said heat flux sensing means and prevent the build-up of ash thereon,

elongated evacuated tube means containing water and extending generally axially within said housing from adjacent said one end of said enclosure towards said other end of said enclosure,

heat sink means in heat conducting relationship with an end of said evacuated tube adjacent said other end of said enclosure, said heat flux sensing means being mounted to and in heat conducting relationship with said heat sink means, and

heat exchange means within said enclosure in heat conducting relationship with the other end of said evacuated tube, whereby, upon said flux sensing means being heated by heat flux, and heat sink means conducts said heat flux to said tube means to evaporate said water in said tube while said heat exchange means cools said tube and condenses the steam formed by said water evaporation, so that heat is removed from said flux detection means.

4,514,097

FRICTION BEARING ASSEMBLY HAVING A SERIES OF RINGS CONSTITUTING A BUSHING THEREFOR

Jeffery E. Daly, Houston, Tex., assignor to Reed Rock Bit Company, Houston, Tex.

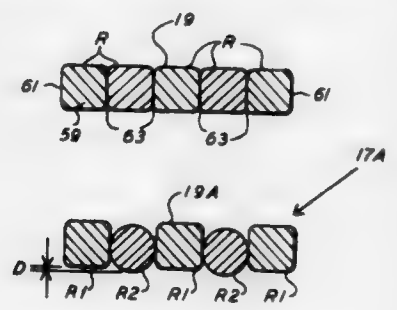
Filed Sep. 22, 1982, Ser. No. 421,213
Int. Cl.[3] F16C *33/26*
U.S. Cl. 384—93 12 Claims

1. A rotary drill bit comprising:

a bit body having at least one depending leg at its lower end, said leg having a generally cylindrical bearing journal at its lower end;

a roller cutter having a recess of generally circular section therein receiving the bearing journal for rotatably mounting the roller cutter on the bearing journal; and

bushing means of generally annular configuration between the bearing journal and the roller cutter having an inner and an outer diameter so related to the diameter of the bearing journal and the diameter of the recess in the roller cutter as to enable the bushing means to rotate relative to both the bearing journal and the roller cutter, the bushing means further being of a width, as measured in the direction of its longitudinal axis, which is substantially greater than its thickness, as measured along a radius thereof, so as to present relatively large bearing surfaces, the bushing means comprising a plurality of relatively thin, narrow



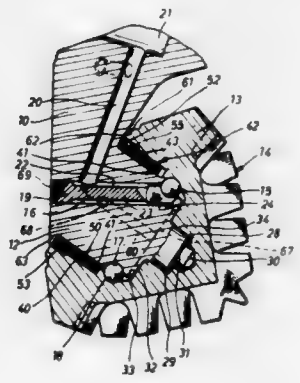
elongate metal members each formed (configured) into a circular (form) configuration and constituting a split ring having a single gap therein extending across the width thereof.

4,514,098

WOUND WIRE BEARING

Rodolfo M. Ippolito, Euless, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 1, 1982, Ser. No. 413,774
Int. Cl.[3] E21B *10/22, 10/24;* E16C *33/10*
U.S. Cl. 384—95 14 Claims



1. An earth boring member defining:

a body having a journal pin providing a first cylindrical surface;

a rotary cutter having an internal axially extending recess defining a second cylindrical surface for receipt therein of said first cylindrical surface;

journal bearing means interposed between said cylindrical surfaces for rotatably supporting said cutter on said pin, said means defining a sleeve-like member having an inner annular surface and an outer annular surface with one of said annular surfaces, prior to assembly, having a diameter requiring resilient deformation of said member upon assembly for positive non-rotative engagement with one of said cylindrical surfaces, such deformation thereby defining a corresponding deformation of the other of said annular surfaces for defining the diameter of a bearing surface in rotational bearing engagement with the other cylindrical surface; and,

axially opposed shoulder means extending radially from said cylindrical surface and abutting opposite axial ends of said bearing member to prevent axial movement of said bearing member with respect to said cylindrical surface; and wherein said journal bearing means comprises:

an axially helically wound wire member forming a series of helical turns, each turn providing a bearing surface independently translationally moveable with respect to the bearing surface of the next adjacent turn and said bearing surface of adjacent turns defining an axial space therebetween providing a lubricant reservoir.

4,514,099

HYDRODYNAMIC BEARING ASSEMBLY

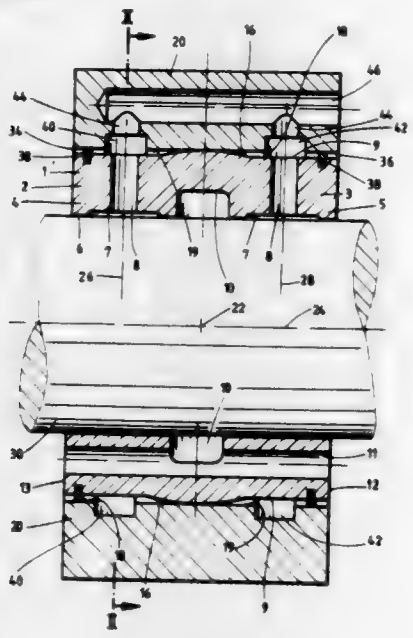
Erich John, and Erich Pollak-Banda, both of Augsburg, Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk AG, Augsburg, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,259

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231133

Int. Cl.³ F16C *17/02*

U.S. Cl. 384—100 **8 Claims**



1. A hydrodynamic bearing assembly of the type wherein a shaft mounted therein exerts a load thereon, comprising:

a pair of hydrodynamic bearing races arranged side by side on the shaft and spaced apart from each other by an annular groove located therebetween said two bearing races being connected together to form an inner bearing member,

a housing located radially outwardly from said inner bearing member,

universal means interconnecting the inner bearing member with said housing for permitting limited universal swivelling movement of the inner bearing member within the housing, about a center point lying on the shaft axis and midway between the radial central planes of the two bearing races,

said annular groove opening onto the shaft, such that a portion of the fluid discharging from the two hydrodynamic bearing races flows along the interior of the inner bearing member to the annular groove, from which it is discharged, while another portion of said fluid flows oppositely, in a direction opposite from the annular groove, to the axial exterior of the inner bearing member,

at least one fluid passageway through the housing and through the inner bearing member, opening at the inner surface of the bearing races into fluid pockets located thereat,

said fluid passageway including an enlarged annular space formed between the radial inner surface of said housing and the adjacent outer surface of the inner bearing member.

4,514,100

MOUNTING APPARATUS FOR DOT MATRIX PRINT HEAD

Richard E. LaSpesa, Chicago, Ill., assignor to AT&T Teletype Corporation, Skokie, Ill.

Filed Aug. 19, 1983, Ser. No. 524,518

Int. Cl.³ B41J *3/10*

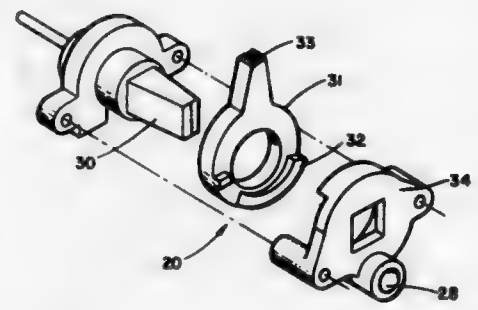
U.S. Cl. 400—55 **6 Claims**

1. Apparatus for releasably mounting a dot matrix print head on a carriage located in a printer and arranged to move the print head laterally across a record medium supported on a platen rotatably mounted in the printer, the carriage having a front and back portion, the front portion positioned near the platen, the apparatus comprising:

a cylindrical projection extending from the front portion of the carriage towards the back portion, the projection having its longitudinal axis substantially perpendicular to the path of travel of the carriage;

the print head having a nose portion and a tail portion and containing a plurality of actuatable print wires having their printing ends located in the nose portion;

the nose portion having a cylindrical opening extending



therethrough, the opening arranged to slidably receive the cylindrical projection such that the end of the projection enters through the first end of the opening and after passing through the entire length of the opening exits through the second end of the opening;

a rotatable camming surface positioned behind the second end of the opening so that the end surface of the projection butts up against a portion of the camming surface;

means for rotating the camming surface; and

means for applying a force to the print head to maintain the projection in the opening and against the camming surface.

4,514,101

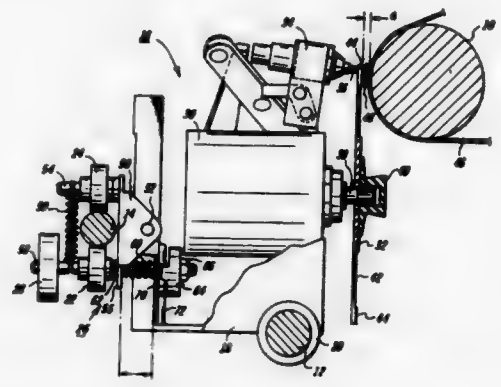
PAPER THICKNESS ADJUSTING MECHANISM FOR IMPACT PRINTER

Henry E. Smith, Pleasanton, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1983, Ser. No. 561,266

Int. Cl.³ B41J *11/20*

U.S. Cl. 400—59 **3 Claims**



1. An impact printer comprising a platen, a pair of fixed guide rails positioned parallel to one another and said platen, a marking module including first bearing means for supporting said module upon one of said guide rails and second bearing means for supporting said module upon the other of said guide rails, said first and second bearing means supporting said module for reciprocating movement parallel to said platen, and including adjustment means for pivoting said first bearing means about the axis of said one of said guide rails, and for causing said second bearing means to rotate and to be laterally displaced about the axis of said other of said guide rails, said adjustment means being characterized by including

a toggle member including a first section pivotably connected to said marking module,

a rotatable shaft acting on a second section of said toggle member for moving said toggle member to shift the position of said marking module, said rotatable shaft being substantially normal to said guide rails,

said second bearing means including a first portion supported upon said toggle member, and a second portion supported upon said rotatable shaft, said first and second bearing portions opposing one another on opposite sides of said other of said guide rails,

biasing means for urging said first and second bearing portions toward one another,

resilient means for separating said marking module from said second section of said toggle member, and

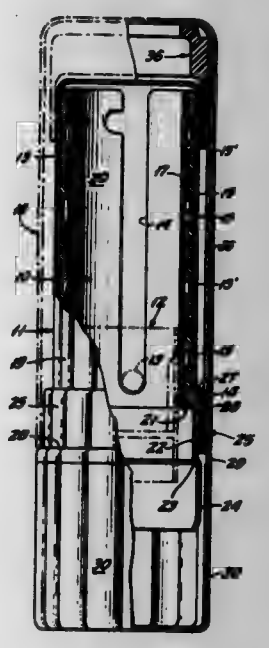
control means secured upon said rotatable shaft for adjusting the distance of separation between said marking module and said second section of said toggle member upon rotation of said shaft, said control means comprising positioning means and a control knob for locating said positioning means.

4,514,102

COSMETIC CONTAINER CONSTRUCTION

Walter T. Ackerman, Watertown, and Edward F. Klimeck, Waterbury, both of Conn., assignors to Eyelet Specialty Co., Inc., Wallingford, Conn.

Filed Oct. 4, 1983, Ser. No. 538,908
Int. Cl.³ A45D *40/06, 40/00*
U.S. Cl. 401—78 **16 Claims**



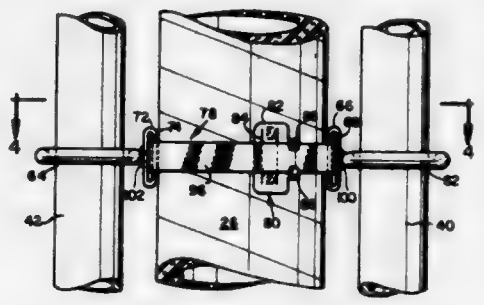
1. In a swivel lipstick or the like container having an open end for the dispensing of cosmetic substance, wherein a central carrier member of the container has a cam follower engaged to propulsion cams of inner and outer tubular members which are relatively rotatable to develop propel/repel displacement of the carrier member with respect to the open end of the container, and wherein a closure cap is removably applicable over the open end and in longitudinal overlap of the propulsion-cam region of the container with friction engagement to one of said tubular members, the improvement wherein the inner tubular member is of metal and is characterized (1) by a radially outward shoulder formation between an elongate upper propulsion-cam portion of lesser diameter and a circumferentially continuous first cylindrical base portion of greater diameter and (2) by a lower circumferentially continuous second cylindrical base portion of still greater diameter, wherein the outer tubular member includes a sleeve of molded plastic with an elongate cam-characterized bore in running clearance with the upper portion of said inner tubular member, and wherein the outer tubular member integrally includes a circumferentially continuous radially outward flange having a lower surface in thrust-bearing engagement with said shoulder formation and of diameter less than said greater diameter, and a circumferentially continuous cylindrical metal collar having a bore in metal-to-metal force-fitted assembly to the outer surface of said first base portion to thereby become part of the inner tubular member, said collar including at its upper end a radially inward flange in axially locating relation with the upper surface of the flange of said outer tubular member, said collar including at its lower end a radially outward flange formation, and a base cup member having a bore in force-fitted assembly to the outer surface of said second base portion of the inner tubular member, the bore of the closure cap engaging over said collar to the point of limiting abutment with the lower-end flange formation of said collar.

4,514,103

SAFETY GUIDES FOR USE WITH A ROTARY HOSE AND KELLY SPINNER HOSES AND THE COMBINATION THEREOF

Thomas J. Wise, and John N. Garratt, both of Houston, Tex., assignors to Goodall Rubber Company, Trenton, N.J.

Filed Jul. 28, 1982, Ser. No. 402,761
Int. Cl.³ F16L *3/22*
U.S. Cl. 138—106 **7 Claims**



1. A safety guide for kelly spinner hoses comprising:

a pair of opposed separate guide rings each adapted to loosely receive and guide a kelly spinner hose when it is attached at one end to a spinner, and

means for fixedly securing said rings to a rotary hose substantially in a plane perpendicular to the axis of the rotary hose so that the spinner hoses are positioned substantially parallel to the rotary hose and are adapted to slide and turn in the guides in response to wind and pressure and movement of the spinner hoses when they are being raised and lowered.

4,514,104

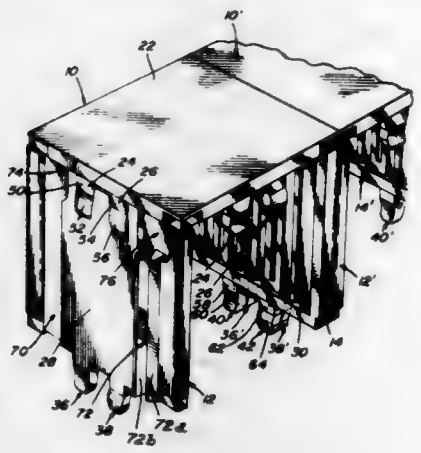
SELF-SUPPORTING ELEMENT FOR MOSAIC DISPLAY PANEL

Frank Taylor, St-Eustache, and Klemens Maurer, Candiac, both of Canada, assignors to Monitronik Ltee, Quebec, Canada

Filed Jun. 18, 1982, Ser. No. 390,056
Int. Cl.³ F16B *5/07*
U.S. Cl. 403—14 **7 Claims**

1. A self-supporting element for use in the assembly of a mosaic display panel, comprising: a rectangular body having a sidewall displaying on the outer face thereof outwardly projecting longitudinal guide means and longitudinal channel means spaced transversely from said guide means and disposed generally parallel thereto; said channel means having a cross-section so dimensioned as to include therein the cross-section of said guide means whereby the guide means and channel means of a similarly constructed sidewall of an adjacently disposed element slidably interfit in said channel means and said guide means, respectively; each said channel means including at one end thereof entry pocket means, having a width significantly than said channel means, for facilitating initial

engagement of the guide means of a first of two of said self-supporting elements with the channel means of a second of said



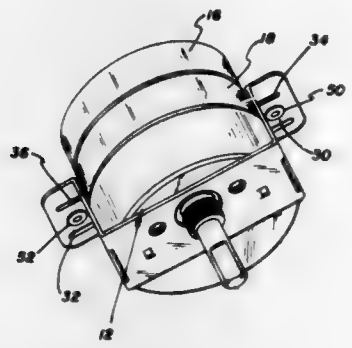
elements, and vice versa, during sliding motion of said elements with respect to each other.

4,514,105

MOUNTING MEANS FOR TIMER-MOTOR ASSEMBLY

George W. Adams, Greenwood, and C. Bruce Banter, Indianapolis, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Sep. 1, 1982, Ser. No. 413,627
Int. Cl.[3] **F16D** *1/00;* **F16F** *15/04;* **G05G** *17/00;* **F16H** *29/00*
U.S. Cl. 403—24 **1 Claim**



1. A timer-motor assembly comprising:
(a) A motor assembly,
(b) A timer assembly, and
(c) A bracket trapping said timer assembly between said motor assembly and said bracket, said bracket being U-shaped to cradle said timer assembly, said timer-motor assembly further comprising first ears extending from said bracket and having apertures therein, second ears extending from said motor assembly having apertures therein and mating said first ears, and rivet means extending through said apertures and connecting said first and second ears together.

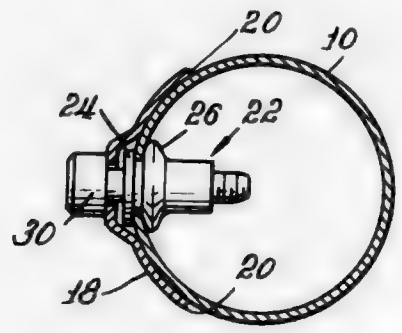
4,514,106

TABLE UPRIGHT CONNECTOR MEMBER AND PROCESS FOR MAKING THE SAME

Mark T. Slager, 53654 Bruce Dr., Bristol, Ind. 46507

Filed Feb. 7, 1983, Ser. No. 464,776
Int. Cl.[3] **F16B** *7/08*
U.S. Cl. 403—190 **2 Claims**

1. In a T-joint between tubular members comprising a tubular cross-member and a tubular stem member, the improvement which comprises:
a tubular segment complementary to said tubular cross-member and rigidly secured to the end of said stem member and having a radius of curvature slightly less than that of said tubular cross-member;
draw means for drawing said tubular segment onto said tubular cross-member in such a manner that the edges of said tubular segment first engage the tubular cross-member and are sprung apart until the inner surface of said tubular segment is in engagement with the outer surface of said tubular cross-member, said draw means comprising nuts having head portions and stem portions and being riveted into the wall of said tubular cross-member and bolts threaded therein having heads adapted to engage the outer surface of said tubular segment on each side of said tubular stem member, said head portions projecting above said stem portions passing through the wall of said tubular cross-member, said head portions abutting the outside of the wall of said tubular cross-member, and malleable portions integral with said stem portions and said head



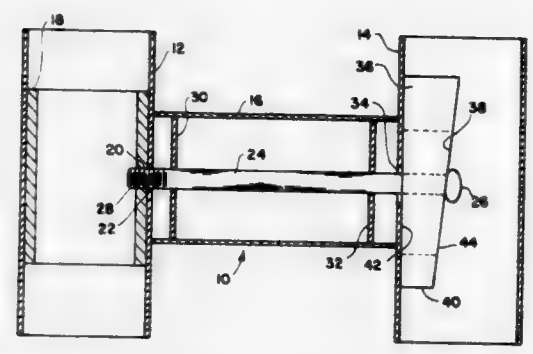
portions, said malleable portions being upset into contact with the inner wall of said tubular cross-member in such a way that the wall around said stem portion is clamped between said head portions and said malleable portions, said head portions projecting above the surface of said tubular member, said tubular segment having depressions therein to receive the head portions of said nuts, which depressions have holes therein through which said bolts project and a flat outer surface on which the heads of said bolts seat, and in which the chord dimension of the tubular segment is substantially the diameter of the tubular stem member and the tubular stem member is welded onto said tubular segment along substantially 360° of contact, whereby the resistance of the tubular segment to being sprung is enhanced.

4,514,107

DEVICE FOR JOINING TUBULAR MEMBERS

Gil G. Moreno, 4106 Dellbrook Dr., Tampa, Fla. 33624

Filed May 25, 1983, Ser. No. 498,022
Int. Cl.[3] **F16B** *7/08*
U.S. Cl. 403—230 **9 Claims**



1. A device for joining a transverse tubular member between two parallel members comprising in combination:
a first tubular member;
a second tubular member disposed parallel to said first tubular member;
a transverse tubular member extending between said first and second tubular members;
a first aperture defined by the wall of said first tubular member;

a rod extending through said first aperture;

anchoring means disposed within said first tubular member for anchoring one end of said rod;

a plurality of spacers disposed along the length of said rod, said spacers supporting said transverse tubular member relative to said rod;

a second aperture defined by the wall of said second tubular member;

a head disposed on said rod, said head being disposed at the end of said rod remote from said anchoring means;

a wedge disposed within said second tubular member for locking said head within said second tubular member when said head is introduced into said second tubular member through said second aperture;

said wedge defining a longitudinal slot, said slot being closed at one end such that when said wedge is introduced into said second tubular member said slot receivably engages said rod to urge a sloping wedge surface defined by said wedge into engagement with said head and to urge a curved surface defined by said wedge into engagement with the internal surface of said second tubular member; and

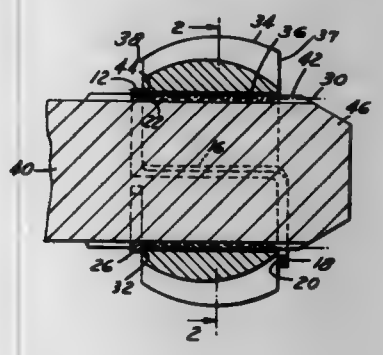
said sloping wedge surface and said curved surface of said wedge being disposed between said head and the internal surfaces of said second tubular member such that said wedge interacts with said head for rigidly securing said first, second and transverse members together.

4,514,108

RETENTION RING FOR SPLINED JOINT

Daniel V. Sagady, Oxford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1982, Ser. No. 447,743
Int. Cl.³ F16D *1/10*
U.S. Cl. 403—359 **14 Claims**



1. A splined joint for transmitting torque between connected members comprising:

an inner member having axially directed spline teeth formed on its outer surface and a groove formed near an axial end of the spline teeth;

an outer member having axially directed spline teeth meshing along their length with the spline teeth of the inner member;

a clip having a first arcuate ear located within the groove of the inner member and abutting an adjacent surface of the outer member, a second arcuate ear spaced axially from the first ear and abutting an adjacent surface of the outer member at the axially opposite side from that at which the groove is located, and an axially extending arm connecting the first and second ears preventing relative axial displacement of the first and second ears; and

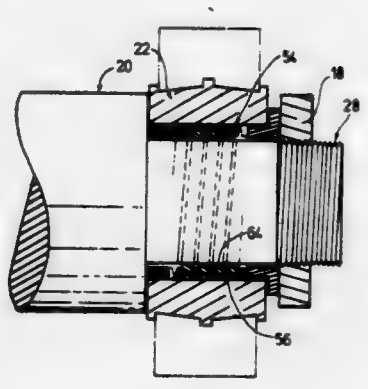
means providing a space within which the arm of the clip is located.

4,514,109

CIRCULAR LOCKING DEVICE

James J. McKenna, 157 Parkview Dr., Ancaster, Ontario, Canada

Filed Feb. 2, 1982, Ser. No. 345,064
Int. Cl.³ F16D *1/06*
U.S. Cl. 403—370 **11 Claims**



1. A circular coupling for interconnecting an inner rigid element to a surrounding outer rigid element, said coupling comprising a coil arrangement of a first inner and second outer coil having a plurality of intertwined turns adapted to surround such inner element and fit within a hole in such outer element and compression means adapted to compress said coil arrangement along its axial length for displacing contacting coil turns of said coil arrangement to engage such inner element with such outer element, said compression means being capable of compressing said coil arrangement to an extent to provide sufficient frictional engagement of said coil arrangement with such inner and outer elements, the configuration of such inner and outer surfaces being such to provide sufficient areas of frictional contact to interconnect said elements, one of first inner and second outer coils having a mean diameter which is slightly greater than the diameter of the other of said first inner and second outer coils to prearrange adjacent coil turns to direct displacement of the coil turns during compression and the second outer coil having an axial length greater than that of said first inner coil for displacing said second outer coil outwardly when said compression means axially compresses said coil arrangement.

4,514,110

GATE ASSEMBLY FOR PONDS

Stanley Powell, Lowton, Near Warrington, England, assignor to British Nuclear Fuels Limited, Risley, England

Filed Dec. 21, 1982, Ser. No. 451,856
Claims priority, application United Kingdom, Dec. 30, 1981, 8139014
Int. Cl.³ E02B *7/26, 7/54*
U.S. Cl. 405—104 **4 Claims**

1. A gate assembly for subdividing a pond, reservoir and the like into separate compartments comprising a frame having side and base members fixed in the walls and floor of the pond, reservoir and the like, a vertically movable gate slidable in and supported by the frame, a sealing member extending along the base and sides on one of the frame and the gate and cooperable with an opposing face on the respective gate and frame to effect a substantially liquid-tight seal therebetween, and cooperable wedge members on the frame and the gate to urge the gate into sealing engagement with the frame as the gate is lowered into position in the frame, in which the sealing member includes a primary seal and a secondary seal, the primary seal being a profiled block, two continuous spaced-apart sealing lips on the block engageable with said opposing face, a

channel in the block between the sealing lips, the secondary seal being housed in the channel and comprising a flexible and



inflatable member operable upon inflation to sealingly engage said opposing face on the respective gate and frame.

4,514,111
METHOD OF AND APPARATUS FOR INSTALLING SOLDER BOLTS IN ROCK BOLTING
Onni Issakainen, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland
Filed Sep. 28, 1982, Ser. No. 426,004
Claims priority, application Finland, Jun. 4, 1982, 822004
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—260 **8 Claims**



1. A method of installing solder bolts into preformed hole in a rock, comprising the steps of:

(A) preforming of at least one said hole in the rock;

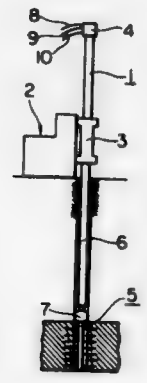
(B) filling of said hole with a soldering material;

(C) inserting of a portion of said bolt into said hole;

(D) producing of at least one bend on a fastening portion of said bolt extending out of said hole, said fastening portion of the bolt being bent to such extent that a width of an axial projection of said bolt becomes bigger than an inside diameter of said hole; and

(E) inserting of said bended fastening portion of said bolt into said hole in a such manner that in an inserted condition said bolt is firmly pressed between opposite wall portions of said hole and is retained in a place by a force of friction between said bolt and said wall portions of the hole.

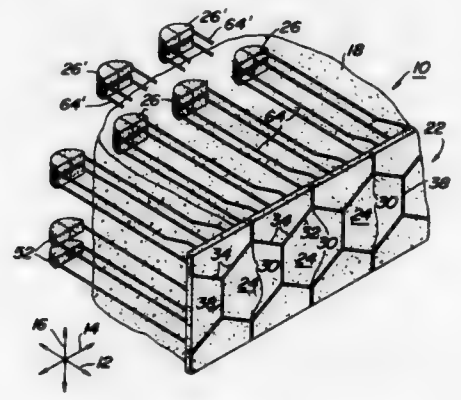
4,514,112
METHOD FOR INJECTING GROUTING AGENT AND APPARATUS FOR CONDUCTING THE METHOD
Sakae Sano; Hisashi Kitajima, both of Tokyo; Hiroshi Iimori, Yokohama, and Tadashi Nishio, Koganei, all of Japan, assignors to Toa Grout Kogyo Co., Ltd.; Mitsui Toatsu Chemicals, Inc. and Tonan Kaihatsu/Kogyo Co., Ltd., all of Tokyo, Japan
Filed Apr. 10, 1984, Ser. No. 598,648
Claims priority, application Japan, Apr. 19, 1983, 58-67786
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—269 **6 Claims**



1. A method for injecting a grouting agent comprising a first step of injecting a grouting agent under a controlled injection pressure by setting a discharge rate to a low value, thereby keeping a tensile stress to be developed in the ground by the injection of the grouting agent lower than the tensile strength of the ground, and forming an initial injection region where the grouting agent is uniformly infiltrated in the vicinity of an injection rod among a desired region destined to the injection by the grouting agent in the ground, and

a second step of further injecting the grouting agent under a controlled injection pressure by continuously or stepwise increasing the discharge rate of the grouting agent, thereby keeping a tensile stress to be developed by the further injection of the grouting agent in the ground lower than the tensile strength in the ground outside the initial injection region, and forming an injection region where the grouting agent is further uniformly infiltrated outside the initial injection region.

4,514,113
EARTH RETAINING WALL SYSTEM
Albert Neumann, 5401 Graywing Ct., Columbia, Md. 21045
Filed Jul. 27, 1983, Ser. No. 517,639
Int. Cl.³ E02D *29/02, 17/00*
U.S. Cl. 405—286 **20 Claims**



1. An earth retaining wall system comprising:

(a) a substantially planar frontal wall including a multiplicity of matingly interfacing panel members including a liquid porous fabric layer inserted between said matingly interfacing panel members for allowing moisture to pass external said wall system;

(b) a plurality of anchor block members longitudinally aligned and displaced from said frontal wall panel members; and,

(c) means for coupling said anchor block members to said frontal wall panel members, said means for coupling said anchor block members to said frontal wall panel members including means for securing a pair of matingly adjacent interfacing panel members to a singular anchor block member, said means for securing said pair of matingly interfacing panel members being at least partially embedded within each of said matingly adjacent interfacing panel members.

4,514,114

SEED AND/OR FERTILIZER DISTRIBUTOR

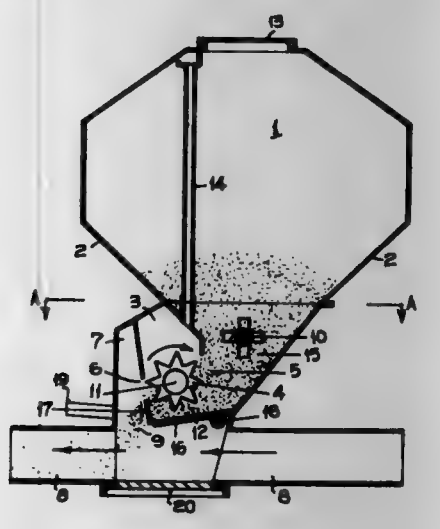
Albert K. Fuss, 1 Jellicoe St.; Eric W. Fuss, 3 Heller St.; Jarvis R. Fuss, 143 Tourist Rd., and Roy M. Fuss, 21 Leslie St., all of Toowoomba, Queensland, Australia (4350)

Filed Aug. 10, 1982, Ser. No. 406,698

Claims priority, application Australia, Jul. 8, 1982, PF4770

Int. Cl.³ B65G *53/46*

U.S. Cl. 406—65 **10 Claims**



1. An improved seed and/or fertilizer distributor having a hopper to contain seed and/or fertilizer, said hopper having a sealed top and opening at its lower part to metering means adapted to discharge measured quantities of seed and/or fertilizer into delivery duct means leading to distributor means, characterised by an equalizing chamber containing the said delivery means opening on a first side to the said hopper and on a second opposite side to a duct in turn opening to the said delivery duct means, said chamber extending above the said openings and having a closed top, metering means situated in the said equalizing chamber opening to the said chamber along its length and arranged to move measured quantities of seed and/or fertilizer from the said hopper to the said duct transversely through the said equalizing chamber over the floor thereof, said metering means being positioned to be confined in the said equalizing chamber between the said feed opening and the said discharge opening, and an air equalization line communicating at one end with the upper part of said equalizing chamber and at the other end with the upper part of the said hopper.

4,514,115

TAP HOLDER

Yukimasa Akashi, Minohshi, Japan, assignor to Showa Seiki Kabushiki Kaisha, Osaka, Japan

Filed Sep. 1, 1982, Ser. No. 413,644

Claims priority, application Japan, May 19, 1982, 57-85362

Int. Cl.³ B23G *1/46*; B23B *3/00*

U.S. Cl. 408—139 **7 Claims**

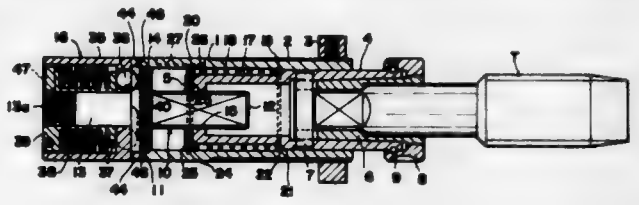
1. A tap holder adapted to be attached to a spindle of a machine, comprising

a cylindrical body to be rotated by said spindle, said cylindrical body having first and second means for defining a first space at the inner periphery thereof, said first and second means being axially spaced from each other to define the axial ends of the first space,

a tap holding spindle slidably situated in said cylindrical body, said tap holding spindle having means to receive a tap at a forward end thereof, and third and fourth means for defining a second space at the outer periphery thereof, said third and fourth means being axially spaced from each other to define the axial ends of the second space, the axial length of the second space being equal to the axial length of the first space,

means for transmitting torque from said cylindrical body to said tap holding spindle, said torque transmitting means being coupled to the tap holding spindle so that the tap holding spindle can be axially moved relative to the cylindrical body,

a floating mechanism situated in the first and second spaces of the cylindrical body and the tap holding spindle, said floating mechanism having a first stop ring to abut against the first means of the cylindrical body and the third means



of the tap holding spindle, a second stop ring to abut against the second means of the cylindrical body and the fourth means of the tap holding spindle, the diameter of the second stop ring being radially changeable upon exertion of radial force thereon, and a spring situated between the first and second stop rings, and

means for imparting restricted movement to the second stop ring, said means for imparting restricted movement being formed on one of the inner surface of the cylindrical body and the outer surface of the tap holding spindle so that when the tap holding spindle is urged in the axial direction relative to the cylindrical body, the second stop ring initially engages with and finally passes through the means for imparting restricted movement by changing the diameter of the second stop ring, said second stop ring being smoothly moved after passing the means for imparting restricted movement, whereby when the tap holder is actuated initially, the tap holding spindle can be relatively strongly pushed against a workpiece to allow the tap to bite the workpiece but the tap holding spindle can thereafter be held almost floatingly relative to the cylindrical body.

4,514,116

DRIVE MECHANISM FOR RADIAL ADJUSTMENT OF A DRILLING TOOL

Theo Kaminsky, Pfungstadt, Fed. Rep. of Germany, assignor to Santrade Ltd., Lucerne, Switzerland

PCT No. PCT/DE81/00215, § 371 Date Aug. 6, 1982, § 102(e) Date Aug. 6, 1982, PCT Pub. No. WO82/02011, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 5, 1981, Ser. No. 406,230

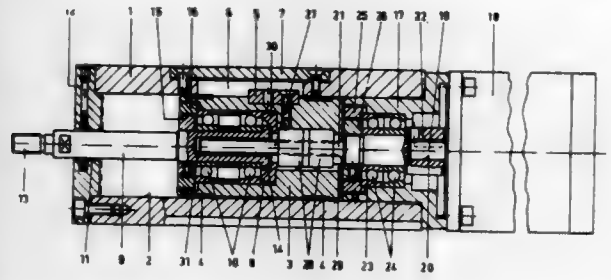
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046210

Int. Cl.³ B23B *47/00*

U.S. Cl. 408—161 **1 Claim**

1. In a drive mechanism for effecting radial adjustment of a drilling tool in a drill head, said drive mechanism comprising a housing, a thrust body mounted in said housing for axial sliding movement therein, a first axial bearing carried by said thrust body, a rotatable drive rod rotatably mounted in said first axial bearing for rotation about a longitudinal axis, said drive rod being movable along said longitudinal axis along with said

thrust body between longitudinally inner and outer positions for radially adjusting a drilling tool, a second axial bearing disposed in said housing, a screw shaft mounted in said second bearing for rotation about said longitudinal axis, means preventing longitudinal movement of said screw shaft, said screw shaft including an externally threaded extension extending along said longitudinal axis toward said drive rod, an internally threaded element carried by said thrust body and being non-rotatable relative thereto, said threaded element being thread-



edly mounted on said threaded extension, a drive motor operably connected to said screw shaft to rotate the latter about said longitudinal axis for producing longitudinal movement of said threaded element along said extension to longitudinally move said drive rod, the improvement wherein an end of said drive rod facing said screw shaft has an outer diameter larger than that of said extension and includes a bore disposed in said end, said bore extending along said longitudinal axis in alignment with said extension to telescopingly receive said extension when said drive rod is in its longitudinally inner position.

4,514,117

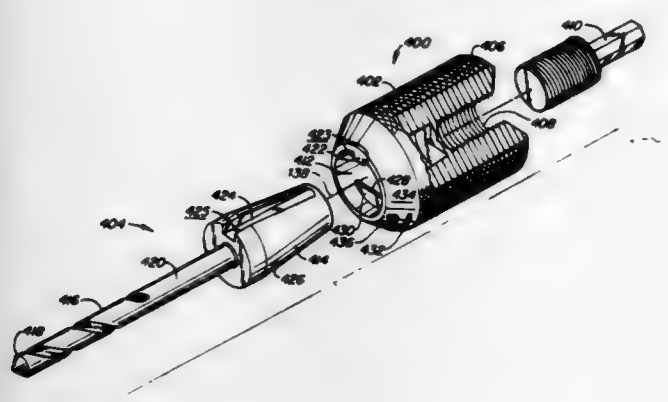
QUICK-CHANGE TOOL HOLDER AND TOOL

Larry Scott, 2821 Eagle Dr., Fort Collins, Colo. 80526

Continuation-in-part of Ser. No. 271,394, Jun. 8, 1981, abandoned. This application May 14, 1982, Ser. No. 377,889

Int. Cl.³ B23B *31/10*

U.S. Cl. 408—239 R **1 Claim**



1. A quick-release rotary tool system for use with rotary drive comprising:

a tool holder having inner and outer ends and an outwardly tapering conical central bore surface defining a central axis;

adaptor means for coupling said tool holder to the rotary drive for rotation of the tool holder about said central axis;

a tool bit assembly including a cutting edge and a base end, said base end having a conical base surface configured for complementary engagement with said central bore surface;

said base surface and said central bore surface including complementary drive surface portions to transmit drive forces between said tool bit assembly and said tool holder, said base surfae of said base end including a recessed portion therein;

quick-release means for axially releasably securing the base end of said tool bit assembly within the central bore defined by said central bore surface, said quick-release means including a latch plate having first and second ends and being pivotally mounted to said tool holder for movement in a radial plane about a pivot pin at said first end between a released position and a locked position, said latch plate positioned so that an inner edge thereof engages the recessed portion of said base end when said base end is substantially fully mounted within said central bore and said latch plate is in said locked position;

means for biasing the inner edge of said latch plate toward said locked position;

said latch plate including an axially extending release pin at said second end of said latch plate; and

said tool holder including a finger recess for providing access to said release pin when said latch plate is in said locked position to allow a user to pivot said latch plate from said latched position toward said released position to allow said tool bit assembly to be removed from said tool holder.

4,514,118

METHOD FOR FABRICATING GEARS

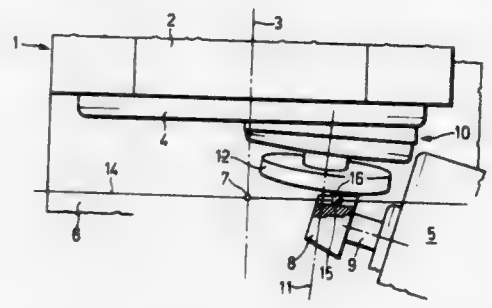
Erich Kotthaus, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Jul. 20, 1981, Ser. No. 285,054

Claims priority, application Switzerland, Aug. 12, 1980, 6092/80

Int. Cl.³ B23F *9/14*

U.S. Cl. 409—26 **11 Claims**



1. In a method of fabricating gears possessing lengthwise crowned teeth by cutting tooth flanks with a cutter head rotating about a cutter head axis and equipped with cutters possessing external cutting edges and internal cutting edges in a continuous gear-cutting operation, wherein the cutters at the cutter head are arranged such that pitch points of the external cutting edges are positioned at a first circle having a first radius and pitch points of the internal cutting edges are positioned at a second circle having a second radius different from the first radius and the external cutting edges are arranged such that each is displaced out of a uniform angular distribution by the amount of a first predetermined angle and the internal cutting edges are arranged such that each is displaced out of the uniform angular distribution by the amount of a second predetermined angle, the improvement comprising the steps of:

pivoting the cutter head axis out of a normal to a tangential plane taken through an operating pitch point of tooth lengthwise line of a pitch surface of a gear and within a vertical plane which is disposed substantially perpendicular to the tangential plane and extends at least approximately parallel to a radius of curvature of the tooth lengthwise line at the operating pitch point; and

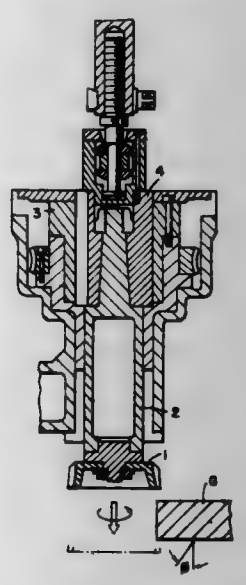
setting at the cutter head the external cutting edges and the internal cutting edges of the cutters such that, during use thereof and upon penetration through the operating pitch point, they each form a respective angle with a normal to the tangential plane, and said normal extending in non-parallel relationship to the cutter head axis.

4,514,119

METHOD OF SHAPING A HELICAL GEAR

Masatoshi Izumo, Kyoto, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,685
Int. Cl.[3] B23F *1/08*
U.S. Cl. 409—60 4 Claims



3. A method of making a helical gear from a gear blank, with a gear shaper having a cutter spindle movable in a helical guide having a spiral lead of length L in a longitudinal direction, comprising the steps of:

(1) providing on the spindle a pinion cutter having an angle of twist ϕ, a pitch circle diameter d and a module m_n, such that $d=(L/\pi)\cdot\tan\phi$, the quantity

$$Z=\frac{L\cdot\sin\phi}{m_n\cdot\pi}$$

is a non-integer, and the pinion cutter has a number of teeth given by the integer closest and less than Z, the pinion cutter having a circular pitch which is larger than $m_n\cdot\pi$ at one and only one location on its circular periphery and a pitch equal to m_n at all other locations on its circular periphery;

(2) imparting a spiral motion to said spindle along the helical guide while rotating the gear blank such that the teeth of the pinion cutter cuts the periphery of the gear blank; and

(3) interrupting said step of imparting spiral motion to said spindle as the portion of the pinion cutter of circular pitch, larger than $m_n\cdot\pi$, approaches the gear blank, to separate the gear blank and the pinion cutter and increase the speed of the spindle relative to the gear blank until said portion has passed a point of contact with the gear blank, and the resuming said step of imparting spiral motion.

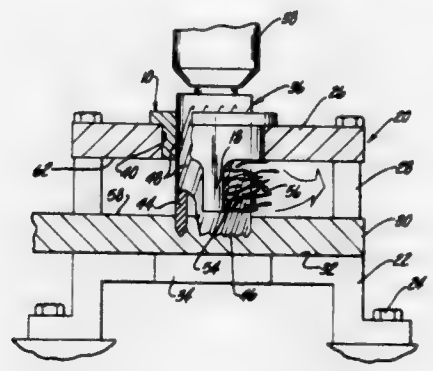
4,514,120

CHIP BREAKER FOR ANNULAR HOLE CUTTING TOOLS

Everett D. Hougen, G-5072 Corunna Rd., Flint, Mich. 48504

Filed Apr. 29, 1982, Ser. No. 372,975
Int. Cl.[3] B23B *47/34*; B23C *9/00*
U.S. Cl. 409—137 10 Claims

1. A chip breaking device for use with a rotating annular cutter for forming holes in a workpiece by advancing the cutter through the workpiece, the cutter being of the type having a cylindrical side wall provided with a plurality of cutting teeth spaced circumferentially around the leading end of the cutter and a plurality of helical flutes extending upwardly from said teeth around the outer periphery of the side wall, comprising support means adapted to be positioned in a fixed relation to the workpiece while the cutter is being rotated and advanced axially through the workpiece, a chip breaker fixedly mounted on said support means, said chip breaker including a lug having a leading face and a trailing face extending axially of the cutter and radially to closely adjacent the cylinder of revolution generated by the outer periphery of the cutter side wall, said lug and support means being disposed relative to each other such that one axial end of the lug extends axially to closely adjacent the face of the workpiece in which the hole is to be formed and is spaced axially from said face of the workpiece a distance substantially less than the axial length of said lug, said lug and support means also being disposed relative to each other such that the peripheral zone around the cutter is unobstructed on circumferentially opposite sides of the lug and throughout the axial length of the lug for a circumferential extent substantially greater than the maximum circumferential extent of the lug between said leading and trailing faces, said lug having an axial length substantially greater than the circumferential extent of the lug between said leading and trailing faces, whereby chips cut by the cutter teeth advance axially upstream through the flutes of the rotating cutter, flare radially outwardly into said unobstructed zone as they emerge from the face of the workpiece in which the hole is being cut and impinge against and are severed by said leading face of said lug.

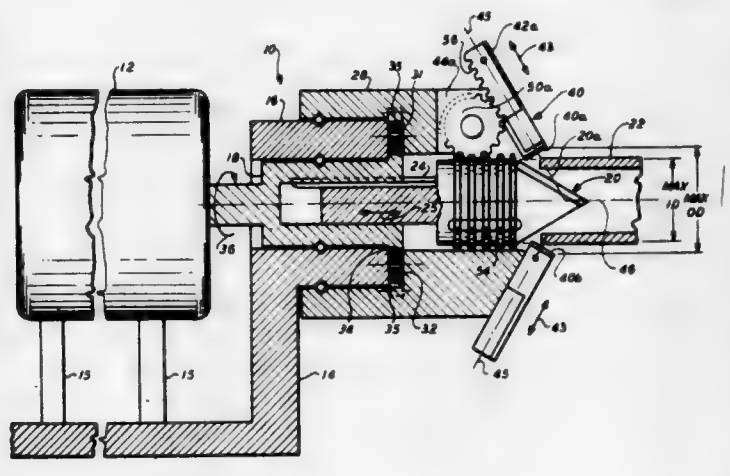


4,514,121

CHAMFERING APPARATUS

Francis J. Fuchs, Jr., 593 104th Ave., Naples, Fla. 33940

Filed Jan. 26, 1983, Ser. No. 461,154
Int. Cl.[3] B23C *3/12*
U.S. Cl. 409—138 7 Claims



1. Chamfering apparatus for simultaneously chamfering the I.D. and O.D. of the ends of tubular members, comprising:

first chamfering means for chamfering said I.D.;

second chamfering means for chamfering said O.D,; and

mounting means for mounting said first and second chamfering means including means for dependently feeding said first and second chamfering means whereby upon the end of a tubular member first engaging either said first chamfering means or said second chamfering means movement will be imparted to the other of said chamfering means to cause the other chamfering means to engage said end of said tubular member whereby the I.D. and O.D. of the end of said tubular member are simultaneously chamfered and including means for imparting counter rotation to said

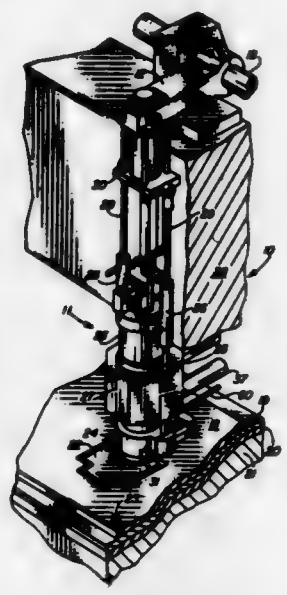
first and second chamfering means to minimize net torque imparted to said tubular members by said simultaneous chamfering.

4,514,122

PRESSURE FOOT FOR MACHINE TOOL

James H. Campbell, 1210 W. Alameda, Suite #108, Tempe, Ariz. 85282

Filed Sep. 30, 1982, Ser. No. 431,318
Int. Cl.³ B23C *9/00*
U.S. Cl. 409—190 **11 Claims**



1. A device for mounting around a spindle assembly of a machine tool for holding a workpiece during a cutting operation comprising:

an open ended cylindrical housing,

said housing defining a chamber for positioning around said spindle assembly and having a projecting annular face at one end thereof for positioning adjacent a workpiece, and

an open ended hollow annular member mounted within said chamber and having one end thereof extending outward of said projecting annular face of said housing,

the outer periphery of said annular member defining a wall having at least one circumscribing slot divided into at least two segments which are separated by web means extending substantially longitudinally of said annular member,

said housing when moved to position said annular face against the workpiece compressing said annular member by laterally distorting the wall of said annular member forming said slot.

4,514,123

ADAPTIVE CONTROL SYSTEM FOR MACHINE TOOL OR THE LIKE

Richard Johnstone, and Edward E. Kirkham, both of Brookfield, Wis., assignors to Kearney & Trecker Corporation, Milwaukee, Wis.

Division of Ser. No. 316,059, Oct. 29, 1981,. This application Nov. 9, 1983, Ser. No. 549,944
Int. Cl.³ B23C *9/00*; F16C *13/00*; F01M *11/10*
U.S. Cl. 409—231 **8 Claims**

1. An apparatus for rotatably supporting a member journaled in a frame by anti-friction bearings which comprises:

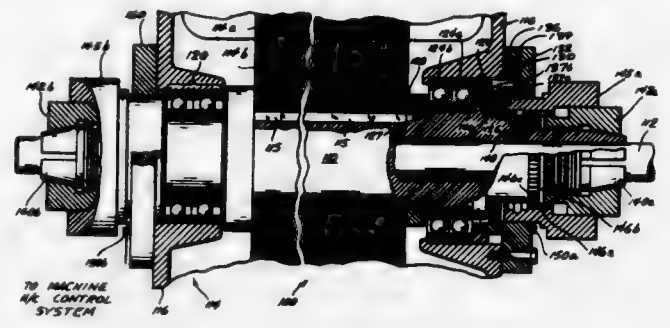
sensing means in position to sense the thrust imposed upon said rotatable member and produce a signal representing the sensed thrust;

pressure means disposed to apply a pressure to said bearings for preloading the bearings;

pressure adjusting means connected to regulate said pressure for varying the preloading of said bearings;

a control connected to receive the signal from said sensing means representing the thrust on a rotatable member; and

means connecting said control to said adjusting means for regulating the operation of said adjusting means in accordance with the signal received from said sensing means so



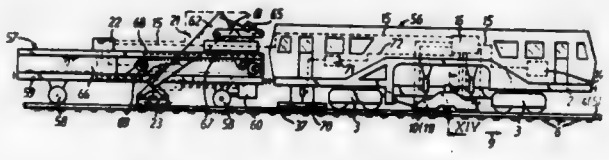
that the preload pressure applied to said bearings is continually adjusted to suit the prevailing conditions.

4,514,124

MOBILE MACHINE FOR REMOVING SURFACE IRREGULARITIES FROM A RAIL HEAD OF A RAILROAD TRACK

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 151,122, May 19, 1980, Pat. No. 4,372,714. This application Oct. 30, 1981, Ser. No. 316,838
Claims priority, application Austria, Jan. 17, 1980, 248/80
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.³ B23D *1/20*; E01B *31/15*
U.S. Cl. 409—295 **7 Claims**



1. A mobile rail planing maching mounted on a railroad track for continuous movement in an operating direction, the track including two rails each having a rail head defining a gage side, a field side and a running surface, the gage and field sides extending from the running surface to a lower edge of the rail head, the machine being arranged for continuously removing such surface irregularities as ripples, corrugations and overflow metal during the continuous movement and comprising

(a) a frame running on the track on undercarriages having flanged wheels engaging the gage and field sides in a zone adjacent the running surface,

(b) a rail planing tool mounting linked to the machine frame in association with each rail,

(1) the mountings being in substantial alignment in a direction extending transversely to the rails,

(c) transversely extending spacing members linking the mountings to each other,

(d) hydraulic drives for continuously adjusting the spacing members and the mountings linked thereto to the track gage,

(e) hydraulic drive means for vertically adjusting the mountings relative to the running surface of the rail head of the associated rail and for pressing the mountings thereagainst,

(f) guide roller means for vertically and laterally guiding the mountings along the rail heads of the associated rails, the guide roller means including

(1) two guide rollers laterally guiding each mounting without play along a selected one of the sides of the rail head of the associated rail and engaging the selected rail head side in a region extending from the lower edge to below the zone adjacent the running surface, and

(2) a plurality of additional guide rollers vertically guiding each mounting along the running surface of the rail head of the associated rail, the additional guide rollers engaging the running surface and each having an axis extending substantially parallel to the track plane,

(g) a tool head including a tool holder, the tool head being mounted centrally between the guide rollers and for displacement in relation to the mounting in planes parallel to the track plane and to a vertical plane passing through the associated rail and the tool holder including clamping means,

(h) further hydraulic drives connected to each tool head for displacing the same in said planes,

(i) a rail planing tool replaceably mounted in the clamping means of the tool holder, the tool holder detachably carrying

(1) a cutting blade having a cutting edge for planing chips or shavings off the rail head to obtain a selected rail head configuration, and

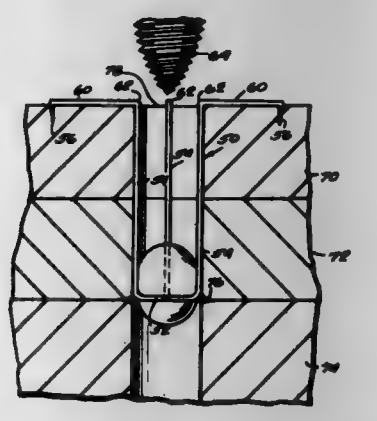
(j) means for removing the chips or shavings.

4,514,125

FASTENER IMPROVEMENT INCLUDING INTRODUCTION OF SELECTED CAPSULE OF ADHESIVE INTO POROUS BASKET HUNG IN BORE FOR ACTIVATION BY FASTENER INSTALLATION

Israel Stoi, Moaroeville, Pa., assignor to Invocas, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 359,894, Mar. 19, 1982, abandoned. This application Jul. 14, 1982, Ser. No. 398,448
Int. Cl.³ F16B *39/02*
U.S. Cl. 411—82 **12 Claims**



1. A fastener improvement, comprising:

material to be fastened, having means defining a bore therein through a face thereof, said bore having a mouth, an axially extending peripheral sidewall and an inner end;

a fastener having a shank with a tip end and a head, the fastener being adapted to have the tip end and shank thereof received in said bore through said mouth;

a basket for adhesive capsule means including floor means for supporting adhesive capsule means, and means for disposing the floor means at a selected intermediate level in said bore substantially before said inner end; and

adhesive capsule means including at least one thin-walled jacket encapsulating a respective quantum of adhesive, each such capsule being adapted to be received in the bore and supported upon said floor means ahead of the tip end of said fastener and to have the jacket thereof ruptured by compressive engagement between the fastener tip end and the floor means of said basket so as to spread said adhesive into the interfacial fastening region that is defined between said fastener shank and said material within said bore;

said floor means disposing means said basket include tab means for externally engaging said material about the perimeter of said bore mouth, and connector means extending axially between said floor means and said tab means; and

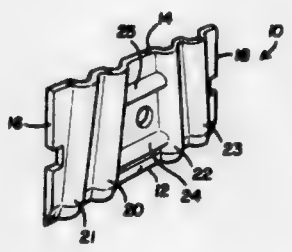
said connector means and tab means being provided as a plurality of respective leg members each having a connector means portion integrally joined to a tab means portion.

4,514,126

CORRUGATED STAPLE

James Knowles, 1275 Club Dr., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 113,370, Jan. 18, 1980, abandoned. This application Dec. 18, 1981, Ser. No. 332,165
Int. Cl.³ E04C *3/12, 3/292*
U.S. Cl. 411—477 **3 Claims**



1. An improved metal staple of the type used for securing together pieces of wood in an abutting relationship, said staple being generally flat and rectangular and having a leading edge and a trailing edge, said leading edge defined as the edge which is inserted into the pieces of wood, said staple further having opposed sides the improvement comprising:

first corrugation means extending from the leading edge to said trailing edge, said first corrugation means including two parallel spaced apart corrugations which are generally semi-circular in cross-section, each of said corrugations of said first corrugation means having a longitudinal axis oriented at an acute angle relative to said leading edge;

second corrugation means extending from said leading edge to said trailing edge, said second corrugation means including two parallel spaced apart corrugations which are generally semi-circular in cross-section, each of said corrugations of said second corrugation means having a longitudinal axis oriented at an acute angle relative to the leading edge of said staple;

the longitudinal axes of the corrugations of said second corrugation means intersecting the longitudinal axes of the corrugations of said first corrugation means; and

third corrugation means wherein said third corrugation means includes upper and lower spaced apart parallel corrugations which are generally semi-circular in cross-section, said upper and lower corrugations extending between and interconnecting a corrugation of said first corrugation means and a corrugation of said second corrugation means, the longitudinal axis of said upper corrugation being adjacent to said trailing edge and the longitudinal axis of said lower corrugation being adjacent to said leading edge, said upper corrugation being shorter than said lower corrugation, and the longitudinal axes of said upper and lower corrugations being parallel to said leading edge, and wherein all of said corrugations are formed on the same surface of said staple.

4,514,127

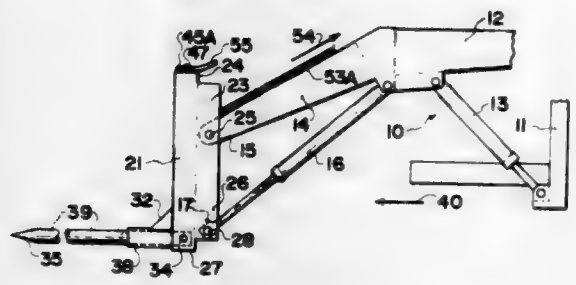
ROUND BALE UNROLLER

Joseph W. Maier, Box 93, Paradise Hill, Saskatchewan, Canada S0M 2G0

Filed Jul. 22, 1983, Ser. No. 515,994
Claims priority, application Canada, Jan. 6, 1982, 393648
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.6 **19 Claims**

1. A round bale unrolling device for attachment to a fork lift mechanism on a tractor or the like; comprising in combination a substantially rectangular frame, means on the rear side of said frame operatively mounting said frame to the fork lift mecha-

nism for raising and lowering the frame and tilting said frame around a substantially horizontal mounting axis, at least one round bale axis engaging member extending from adjacent the base of said frame and means mounting said member by the inner end thereof for pivotal movement from a forwardly extending position from said frame to a sideways extending position substantially 90° from said forward position position



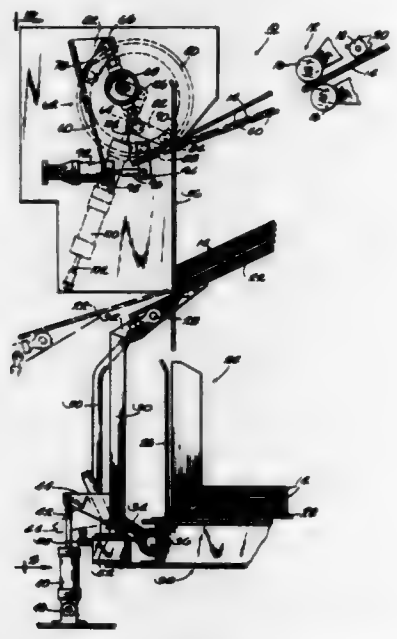
and vice versa, the tilting of said frame around a substantially horizontal axis, moving said frame from an upwardly inclined position to a downwardly inclined position and vice versa, the tilting of said frame fromthe upwardly inclined position to the downwardly inclined position, swinging said round bale engaging member from the sideways extending position to the forwardly extending position, by gravity.

4,514,128

SIGNATURE STACKER INCLUDING IMPROVED INTERCEPT MEANS

Robert Hedrick, Elm Grove, Wis., assignor to Mailroom Systems, Inc., Germantown, Wis.

Filed Jul. 12, 1982, Ser. No. 397,103
Int. Cl.³ B65H *31/30, 31/32*
U.S. Cl. 414—49 **23 Claims**



1. A signature stacker for forming bundles containing a preselected number of signatures from an incoming stream of signatures delivered to the stacker, the signature stacker comprising a frame, an infeed conveyor means for receiving the signature stream, a bundle outfeed means, a stacking blade assembly positioned below said infeed conveyor means and for receiving a preselected number of signatures from said infeed conveyor means and for forming a bundle of signatures, said stacking blade assembly being moveable between a stacking position wherein said stacking blade assembly can receive signatures and a retracted position wherein said bundle is dropped onto said bundle outfeed means, and an interceptor blade assembly positioned between said infeed conveyor means and said stacking blade assembly, said interceptor blade assembly including a first blade assembly having a first interceptor blade and a second blade assembly having a second interceptor blade, and said interceptor blade assembly including means for supporting said first blade assembly and said second blade assembly for selective rotational indexing movement around a horizontal axis, one of said blade assemblies being supported on one side of said horizontal axis in a first position and the other of said blade assemblies being supported on an opposite side of said horizontal axis in a second position, and means for causing indexing rotation of said interceptor blade assembly around said horizontal axis in a single rotational direction, said means for causing indexing rotation including a lever arm connected to said interceptor blade assembly and a fluid cylinder assembly including a first fluid cylinder housing a first extensible piston and a second fluid cylinder housing a second extensible piston, said first fluid cylinder and said second fluid cylinder being fixed together in linearly aligned relation, said fluid cylinder assembly being connected to said lever arm to cause indexing rotation of said lever arm around said horizontal axis.

17. A signature stacker for forming bundles containing a selected number of signatures from an incoming stream of signatures delivered to the signature stacker, the signature stacker comprising:

a frame,

an infeed conveyor means for receiving the signature stream,

a bundle outfeed means,

a stacking blade assembly positioned below said infeed conveyor means and for receiving a selected number of signatures from said infeed conveyor means and for forming a bundle of signatures, said stacking blade assembly including at least one stacking blade adapted to support the bundle of signatures, and means for supporting said stacking blade for movement from a first position over said bundle outfeed means and wherein said stacking blade supports signatures thereon and a retracted position wherein said stacking blade drops said bundle onto said bundle outfeed means,

means for interrupting the stream of signatures when said stacking blade is moved to said retracted position, said means for interrupting including an interceptor blade selectively moveable from a first position, to an intercept position wherein said interceptor blade moves into the path of said stream of signatures so as to support a stack of signatures, and to a retracted position wherein said interceptor blade will drop the signatures supported thereon onto said stacking blade,

means for counting a preselected number of signatures passing through said infeed conveyor means and for causing said stacking blade to move from said stacking position to said retracted position and said interceptor blade to move from said first position to said intercept position,

means for causing said stacking blade to return to said stacking position as soon as said stacking blade reaches said retracted position,

and means for causing said interceptor blade to move to said retracted position as soon as said stacking blade approaches said stacking position and before said stacking blade reaches said stacking position,

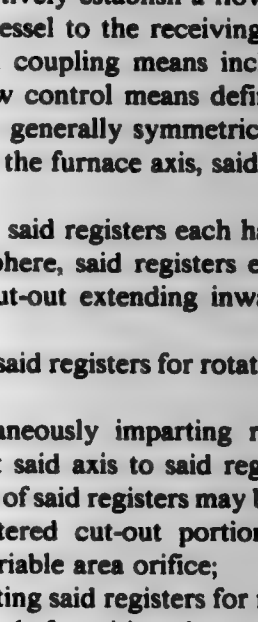
and said means for interrupting the stream of signatures including an interceptor blade assembly positioned between said infeed conveyor means and said stacking blade assembly, said interceptor blade assembly including a first blade assembly having a first interceptor blade and a second blade assembly having a second interceptor blade, each of said interceptor blades having a blade tip, and said interceptor blade assembly including means for supporting said first blade assembly and said second blade assembly for selective rotational indexing movement around a horizontal axis, one of said blade assemblies being supported on one side of said horizontal axis in a first position and, the other of said blade assemblies being supported on an opposite side of said horizontal axis in a retracted position.

4,514,129

FURNACE CHARGING INSTALLATION

Edouard Legille, Luxembourg; Pierre Mailliet, Howald, and Emile Lonardi, Bascharage, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Mar. 8, 1982, Ser. No. 355,531
Claims priority, application Luxembourg, Apr. 3, 1981, 83279
Int. Cl.[3] F23K *3/06*
U.S. Cl. 414—200 21 Claims



1. A charging installation for a pressurized furnace, the furnace having an axis and an internal distributor which has its receiving end aligned with the said axis, the furnace further having a charge material supply opening which is coaxial with said axis, said charging installation comprising:

an intermediate charge material storage vessel, said vessel having an axis, said vessel further having a discharge opening at its lower end and a loading opening in its upper end, said discharge opening being coaxial with said vessel;

means supporting said vessel above and coaxially with the furnace; and

means for coupling said vessel discharge opening to the furnace to selectively establish a flow of charge material from the said vessel to the receiving end of the furnace distributor, said coupling means including flow control means, said flow control means defining a variable area orifice which is generally symmetrical with respect to a prolongation of the furnace axis, said flow control means comprising:

a pair of registers, said registers each having the shape of a segment of a sphere, said registers each also being provided with a cut-out extending inwardly from an edge thereof;

means supporting said registers for rotation about a common axis; and

means for simultaneously imparting rotation in opposite directions about said axis to said registers whereby said cut-out portions of said registers may be placed in registration, said registered cut-out portions of said registers defining said variable area orifice;

said means supporting said registers for rotation comprising:

a common support shaft positioned to one side of a prolongation of said vessel discharge opening; and

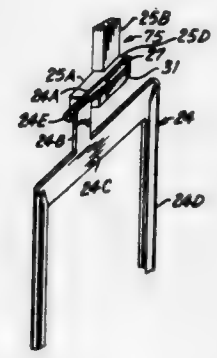
a pair of coaxial, rotatable support shafts positioned at the opposite side of said vessel discharge opening prolongation with respect to said common shaft, said coaxial shafts being coupled to respective of said registers and being rotatable relative to one another, said common and coaxial support shafts defining said common axis.

4,514,130

SUBSTRATE ELEVATOR MECHANISMS

Gary W. Gladish, Buck Creek Township, Hancock County, Ind., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,376
Int. Cl.[3] B65G *25/00, 65/02*
U.S. Cl. 414—416 8 Claims



1. An elevator mechanism for vertically transferring substrates between radial open-topped slots in a lower rotatable magazine and locations assigned to such substrates at the sides of an upper polygonal rotatable cage, said slots and locations being adapted by respective stepwise rotations of said magazine and cage about respective vertical axes therefor to be horizontally indexed transversely and laterally, respectively, past lower and upper transfer stations, respectively, and said mechanism comprising, a tray adapted to be transferred between said slots and locations and which comprises: a vertically oriented frame for receiving and holding at least one of said substrates, said frame having a center plane which is vertically and laterally oriented, a vertical lug joined to the top of said frame nearer to one of its vertical sides than the other and projecting upwards from said frame, and a horizontal rod joined to said lug on one side thereof adjacent its top in vertical spaced relation from said frame, said rod being parallel to said plane of said frame, and said rod providing as part thereof a tab for such tray, such tray tab being laterally and transversely offset from said lug and being on its underside of cylindrical form and said mechanism further comprising, a hook comprising a vertical stem and a horizontal elevator bar joined to said stem on one side thereof adjacent its bottom, such bar providing as part thereof an elevator tab horizontally salient from said stem in the direction opposite the salient direction of said tray tab from said lug, said elevator tab having an upper side laterally and transversely offset from said stem and having formed in such upper side a horizontally extending cylindrical groove disposed parallel to the plane of said frame and adapted to receive and engage with the underside of said tray tab so as to provide an areal contact bearing surface therefor, and such mechanism also comprising endless belt conveyor means to which the upper end of said hook is coupled, said conveyor means being adapted upon engagement of such tray tab's underside with the groove of such elevator tab to convey said tray between said station for purposes of transferring it and any associated substrate between said slots and said cage locations.

4,514,131

AUTOMATIC SELF-LOCKING ROLL BACK CARRIER FOR A VEHICLE

James P. Godwin, Sr., Rte. 5, Box 8, Dunn, N.C. 28334

Filed Jan. 10, 1983, Ser. No. 456,568
Int. Cl.[3] B60P *1/00*
U.S. Cl. 414—480 3 Claims

1. An automatic self-locking roll back tiltable load carrier adapted to be mounted on a vehicle comprising:

A. a sub-frame structure;

B. a lift frame movably mounted to said sub-frame structure and movable between a generally horizontal transport position and an inclined loading position;

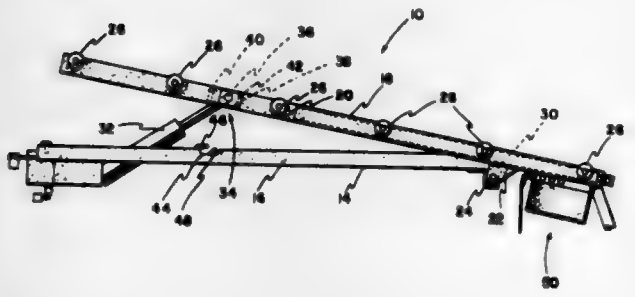
C. means associated with said lift frame and said sub-frame

structure for moving said lift frame between said transport and loading position;

D. a load bed movably mounted on said lift frame and movable back and forth thereon from a transport position to a loading position wherein in said loading position said load bed extends to a surface underlying and supporting the vehicle having said roll back carrier mounted thereon whereby a load such as a vehicle can be conveniently moved onto said load bed;

E. means for moving said load bed between said transport and loading positions;

F. a latching assembly operatively associated with said sub-frame structure and said lift frame for locking said lift frame to said sub-frame structure when said lift frame is disposed in the transport position, said latching assembly including a latch structure secured to said sub-frame structure; a locking bar assembly movably mounted within said lift frame and movable between a locked position in which case said locking bar assembly is engaged with said latch structure and a lifting position, said locking bar assembly comprising an elongated locking bar with a pair of laterally spaced lifting plates secured thereto with said locking bar and lifting plates being movable together within said lifting frame between said locked and lifting positions; a pair of laterally spaced lifting stops secured to said lift frame and disposed in the path of travel of said lifting plates as the same are moved between said locked and



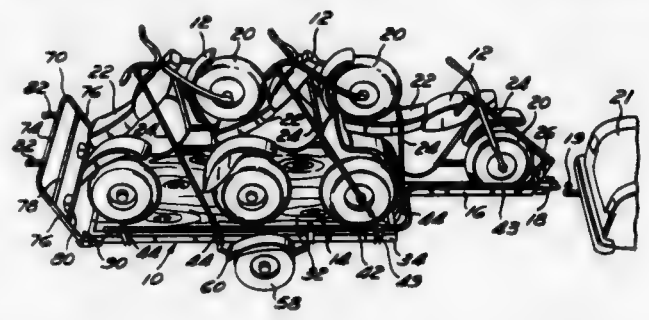
lifting positions with said lifting stops being spaced from said lifting plates when the locking bar assembly assumes said locked position and wherein said lifting stops actually engage said lifting plates when said locking bar assembly assumes said lifting position; and a locking and lifting hydraulic cylinder interconnected between said sub-frame and said locking bar for moving said locking bar assembly from said locked position to said lifting position wherein in the lifting position said lifting plates of said locking bar assembly actually engage said lifting stops on said lift frame for continuing to move said locking bar and the lifting plates thereof against said lifting stops to raise said lift frame from said horizontal transport position to said inclined loading position, said locking and lifting hydraulic cylinder further functioning to both lower said lift frame and to lock the same to said sub-frame via said latching assembly by moving said locking bar back downwardly towards said sub-frame where said lifting plates separate from said lifting stops in response to said lift frame reaching its horizontal transport position and being supported by said sub-frame after which said transverse locking bar is pulled into a locked position within said latch structure secured to said sub-frame by said same hydraulic cylinder, whereby said hydraulic cylinder functions to both lock and unlock said lift frame to said sub-frame and to raise and lower said lift frame relative to said sub-frame.

4,514,132

TRAILER WITH RAMP

Denny B. Law, San Marcos, and Bernhardt P. Goettker, Escondido, both of Calif., assignors to Unique Functional Products, San Marcos, Calif.

Filed Feb. 28, 1983, Ser. No. 470,230
Int. Cl.³ B60P 3/07
U.S. Cl. 414—537 **20 Claims**



1. The improvement in a vehicle to carry motorcycles, three-wheelers or the like, comprising:

(a) a load-supporting body and wheel means supporting said body,

(b) said body having a main broad flat platform extending throughout the major portion of said body and extending to the rear of said vehicle, said body having a narrow track member extending forwardly from said main platform in the manner of a tongue and having a ball coupler to connect to the ball of a towing vehicle so that said track member serves the function of a tongue, said platform being at least several times wider than said track member,

(c) said track member having a single beam forming a track operative to support forward of said platform only a single wheel of a motorcycle, three-wheeler or the like in transportation and during loading onto and off of said track member, said track member having a bow member at its forward end extending in an oblique plane forwardly as it extends upwardly, said ball coupler adjustably securing to said bow member lengthwise of said bow member so as to adjust for the height of the ball of a towing vehicle,

(d) said platform being formed from plywood and a metal rectangular frame therearound secured to said plywood and lateral supports under said plywood secured to said frame,

(e) on each side of said body a continuous tubular retainer supported on bracket means and by said bow member and extending forwardly along the side of said platform and bending around the platform front edge and then bending along the side of said truck member, said retainer being disposed in a plane parallel to and spaced above the plane of said platform and in plan view outlying the borders of said platform and track member, strap securing means spaced along the length of said tubular retainer for securing of one end of tie-down straps having their other ends secured to said motorcycles, three-wheelers or the like, and

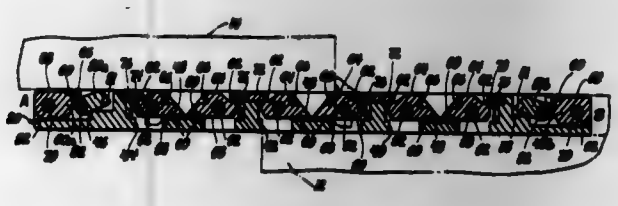
(f) a loading ramp having a first tube of U-shape with a long base portion and shorter arm portions and connecting means pivotally connecting the end of each arm position to opposite rear portions of said platform, at least a second tube juxtaposed to and spaced from said base portion and secured to said arm portions medially thereof, and leg means on said base portion of said first tube on the side away from the pivotal connection thereof operative to rest on the ground when the ramp is lowered whereby said leg means spaces said base portion from the ground and whereby motorcycles, three-wheelers and the like can be loaded onto and unloaded from the vehicle by contacting successively, in loading, the ground, said base portion, said second tube and the rear portion of said platform and by contacting successively, in unloading, the rear portion of said platform, said second tube, said base portion, and the ground, the tubes of said rump being uncovered so that they are the direct load carrying ramp members.

4,514,133

DIE ENGAGING BLOCK FOR A DIE CHANGE TRUCK

Oscar D. Vercruysse, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 15, 1983, Ser. No. 522,981
Int. Cl.[3] B66F *9/19*
U.S. Cl. 414—512 2 Claims



1. In a die change truck or the like of the type having a substantially planar, horizontal bed for supporting a die to be pulled from or pushed onto the bed of a press located to either side of the truck bed, and having at least one elongated powered member extendible and retractible relative to either side of the truck bed with a stroke less than the width of a die to be changed so that the die must be moved by the powered member in successive stroke stages, an improved means for selectively engaging and disengaging the powered member with the die comprising:

a plurality of first pusher-puller blocks spaced along the length of the powered member and mounted thereto for movement between a stored position not above the plane of the truck bed and an operative position extending above the plane to engage a die,

a plurality of second pusher-puller blocks spaced along the length of the powered member and interspersed with the first blocks and mounted to the powered member for movement between a stored position not above the plane of the truck bed and an operative position extending above the plane to engage a die,

first stop means engageable between each first pusher-puller block and the powered member to prevent movement out of the operative position so that each first block in its operative position may pull a die from a press bed on one side of the truck bed or push a die toward a press bed on the other side of the truck bed,

and second stop means engageable between each second pusher-puller block and the powered member to prevent movement out of the operative position, so that each second block in its operative position may pull a die from a press bed on the said other side of the truck bed or push a die toward a press bed on the said one side of the truck bed, the first and second stop means being disengageable from its respective block to allow free rotation of said blocks back to stored position,

the cooperation of a selected one of said plurality of interspersed first and second pusher-puller blocks with a respective one of said first and second stop means providing a rapid means for engaging, disengaging and re-engaging a die with the powered member at any given relative position of the die and the powered member as the powered member extends or retracts so that the die may be more quickly changed.

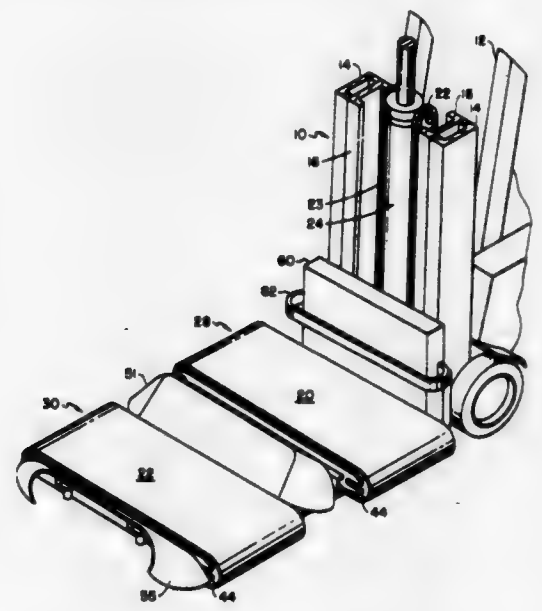
4,514,134

DOUBLE SIDEWINDER

Samuel M. Frye, Joanna, and James O. Singleton, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 18, 1983, Ser. No. 467,769
Int. Cl.[3] B66F *9/14*
U.S. Cl. 414—659 1 Claim

1. A load handling vehicle of the lift truck type having a substantially vertical mast and a vertically moveable lift fork extending horizontally from said vertical mast and being connected thereto, the improvement comprising: a pair of conveying systems mounted on said lift fork, each of said conveying systems having a conveyor belt, said conveyor belts being spaced from one another and being moveable in either direction independent of the movement of the other, deflection means mounted between said conveyor belts to guide a load



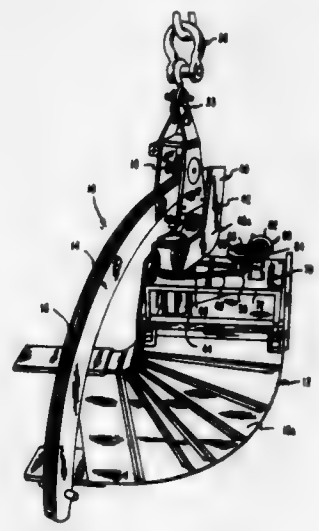
onto one or the other of said conveyor belts and a control means operated with said conveying system to control the independent movement of each of the conveyor belts and the independent rotation of each of said belts.

4,514,135

APPARATUS FOR TRANSPORTING AND ARTICULATING AN ARTICLE

J. Weldon Cade, Orange, and Stanley I. Stein, La Mirada, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 13, 1983, Ser. No. 513,540
Int. Cl.[3] B66F *9/00*
U.S. Cl. 414—682 6 Claims



1. Transport apparatus for transporting and articulating an article into and out of a housing, comprising:

a lifting beam having moving means mounted thereon;

a lifting assembly including means for connection to a hoist and a first drive assembly for driving said lifting assembly relative to said moving means and said lifting beam so as to rotate said article about a first axis;

rotational means connected to one end of said lifting beam and including driven sprocket means and a shaft member rotatable relative to said lifting beam; and support means connected to said one end of said lifting beam, said support means including an L-shaped bracket through which said shaft member extends, to be rotatably connected to

said support means, said driven sprocket means rotating said shaft member relative to said support means;

a second drive assembly including a sprocket and chain for driving said driven sprocket means and shaft member so as to rotate said article relative to said lifting beam and about a second axis; and

removable attachment means for removably attaching said transport apparatus to said article to be transported.

4,514,136

PIVOT ANGLE ADJUSTING MEANS FOR THE ARM OF A MATERIAL HANDLING DEVICE

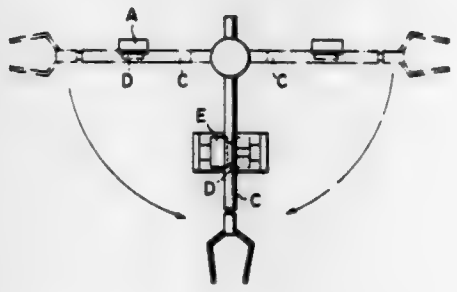
Masatoshi Abe, Yokohama, Japan, assignor to Okamura Corporation, Yokohama, Japan

Filed May 17, 1982, Ser. No. 379,151

Claims priority, application Japan, Dec. 25, 1981, 56-197453[U]

Int. Cl.³ B65G *47/90*

U.S. Cl. 414—744 A **5 Claims**



1. Pivot angle adjusting means for the arm of a material handling device comprising:

(a) an arm mount for holding an arm;

(b) a support which supports the arm mount;

(c) a rotary shaft which is rotatably mounted to the support,

(d) a cylindrical vane chamber having a rotary vane, mounted to the support, in which the rotary vane secured to the rotary shaft is adapted to be pivoted by a fluid supplied to the cylindrical vane chamber;

(e) a stopper mounted by means of a spur wheel having upper and lower peripheries, to the rotary shaft below said rotary vane;

(f) a pair of sensors mounted to the support, and which are actuated by a pair of further stoppers for detecting the pivot angle of the rotary shaft;

(g) a stop having a U-shaped mounting piece being mounted to the support and being movable a certain distance in the direction of the movement of the stopper, and said stop being adapted to be placed in the locus of the movement of the stopper so as to stop the stopper at a certain intermediate point which is the same point within the pivot movement of the stopper when the stopper is pivoted clockwise or counterclockwise; said stop being adapted to be movable a distance equal to the sum of the thickness of the stopper and double the thickness of said stop; and

(h) and wherein said stopper comprises a mount piece of substantially U-shaped cross section, and having end bent upwardly and downwardly so as to engage in a periphery of flanges formed in said upper and lower peripheries of said spur wheel, a toothed piece having teeth engageable with teeth of said spur wheel in its inner end and having a tapered outer end surface facing a lower skew or slant, a wedge piece positioned between said toothed piece and the outer end of said mount piece, having a tapered inner end surface which faces an upper skew or slant and contacts with said tapered outer end surface of said toothed piece, and adjustable screw means mounted to the lower part of said mount piece, for pushing up on the bottom of said wedge piece.

4,514,137

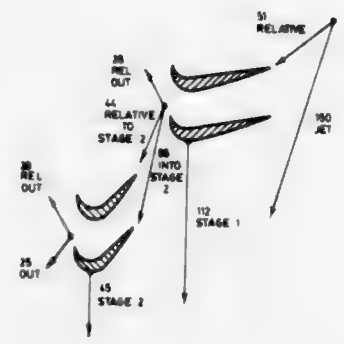
METHOD FOR DRIVING TWO-PHASE TURBINES WITH ENHANCED EFFICIENCY

David G. Elliott, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 161,257, Jun. 20, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 431,420

Int. Cl.³ F01D *1/04*

U.S. Cl. 415—1 **3 Claims**



1. An improved method of driving a two-phase fluid turbine having at least a first and second stage of bladed rotors sequentially receiving the two-phase fluid to extract kinetic energy for driving an output shaft through a gear box connecting the respective rotors and the output shaft, comprising the steps of:

(a) introducing into the first stage bladed rotor, at a predetermined linear flow velocity, a flow of the two-phase fluid;

(b) causing the two-phase fluid to pass through the first and second stages so that the stages rotate in the same direction;

(c) maintaining the tangential velocity of the first stage bladed rotor tips at a velocity greater than fifty percent of the predetermined linear flow velocity entering the first stage;

(d) maintaining the tangential velocity of the second stage rotor blade tips at a fixed ratio of about fifty percent of the tangential velocity of the first stage bladed rotor; and

(d) exhausting the two-phase fluid from the second stage whereby a power efficiency of at least two-thirds is extracted from the kinetic energy of the two-phase fluid introduced into the first stage.

4,514,138

LEAKAGE WATER DISCHARGE METHOD AND APPARATUS IN A REVERSIBLE HYDRAULIC MACHINE

Taizo Inagaki, Yokohama; Kentaro Ichikawa, Chigasaki; Hitoshi Kido, and Yozo Kawase, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1983, Ser. No. 469,271

Claims priority, application Japan, Feb. 26, 1982, 57-30208

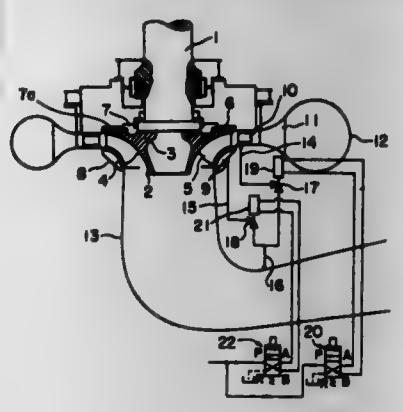
Int. Cl.³ F03B *15/04*

U.S. Cl. 415—1 **1 Claim**

1. A method of discharging water leaking past a plurality of guide vanes of a reversible hydraulic machine when the plurality of guide vanes are closed and a runner chamber in said hydraulic machine has been provided with compressed air to depress a water level within said runner chamber, the reversible hydraulic machine having a runner, the runner adapted to rotate in one of a first direction and a second direction opposite to the first direction, and having a plurality of curved runner blades, each runner blade having a concave face which leads the runner blade when the runner rotates in the first direction, and a convex face which leads the runner blade when the runner blade rotates in the second direction, a first cover disposed above the runner, a second cover disposed below the runner, said runner chamber being defined between said runner

and one of said first and second covers, a draft tube disposed adjacent and below the runner, first discharge means connected to the runner and to the draft tube for discharging water from the runner chamber to the draft tube when the first discharge means is open, second discharge means connected to the runner chamber and to the draft tube for discharging water from the runner chamber to the draft tube when the second discharge means is open, the plurality of guide vanes being disposed radially outward of the runner, comprising the steps of:

opening both of the first and second discharge means to maintain a water film of predetermined thickness on said



inner surfaces of said guide vanes when the runner is rotating in the first direction; and

opening only one of the first and second discharge means to maintain said water film of predetermined thickness on said inner surfaces of said guide vanes when the runner is rotating in the second direction;

thereby to maintain said water film of predetermined thickness on said inner surfaces of said guide vanes regardless to direction of rotation of said runner, so as to substantially seal said compressed air within said runner chamber without overheating or unnecessarily dissipating the rotational kinetic energy of said runner.

4,514,139

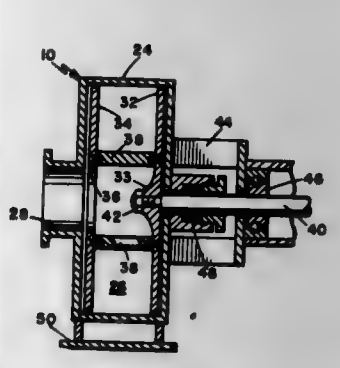
METHOD AND APPARATUS FOR PUMPING FRAGILE ARTICLES

Max I. Gurth, 1937 Dehesa Rd., El Cajon, Calif. 92020

Continuation of Ser. No. 352,160, Feb. 25, 1982, abandoned, which is a continuation of Ser. No. 166,186, Jul. 7, 1980, abandoned, which is a continuation of Ser. No. 938,224, Aug. 30, 1978, abandoned. This application Feb. 17, 1983, Ser. No. 467,457

Int. Cl.³ F01D *1/36*

U.S. Cl. 415—90 **4 Claims**



1. A rotary disc incompressible liquid pump for pumping an incompressible liquid medium, said pump comprising in combination:

a housing having a pair of circular end walls disposed in spaced apart parallel planes and connected together by a peripheral wall defining a rotor chamber having a constant radius at any selected plane parallel to and between said parallel planes;

one of said end walls having means defining an inlet opening co-axially of said chamber;

said peripheral wall having tubular means defining an outlet communicating with said rotor chamber and extending outwardly from said housing in a direction parallel to and between said parallel planes at a tangent to the housing walls at the outer diameter of said chamber;

an impeller shaft rotatably mounted in the other of said end walls and terminating with an inner end in said rotor chamber adjacent said other end wall;

a rotary disc impeller co-axially mounted on said inner end of said impeller shaft in said chamber for rotation therein and comprising a plurality of circular co-axially disposed discs spaced a predetermined distance apart and each disc having a pair of oppositely disposed parallel continuous planar faces and an outer diameter defined by a peripheral edge that is a uniform distance no greater than ten percent of the diameter of said discs from said peripheral wall of said chamber, one of said discs mounted directly on the end of said impeller shaft, another of said plurality of discs having a co-axial circular opening therein defining an inner diameter no greater than one-half said outer diameter and connected by a plurality of spacer pins to said one of said discs at the edge of said circular opening; and

said predetermined distance said discs being spaced apart being no greater than the outer diameter of said discs sufficient to permit the unobstructed passage of articles of a predetermined size having no dimension greater than said predetermined distance in liquid from said inlet through said co-axial circular opening and between said discs to the outlet.

4,514,140

AXIAL FAN

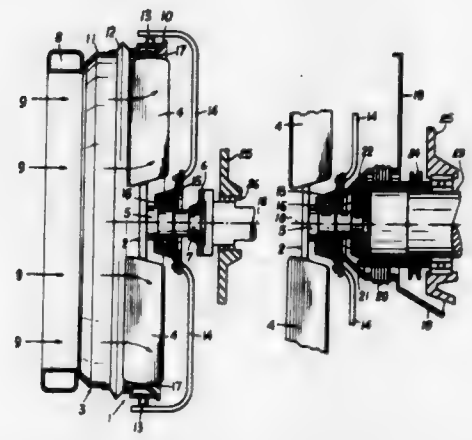
Franz Knopf, Graz, Austria, assignor to Hans List, Graz, Austria

Continuation of Ser. No. 288,809, Jul. 31, 1981, abandoned. This application Nov. 9, 1983, Ser. No. 550,178

Claims priority, application Austria, Aug. 5, 1980, 4047/80

Int. Cl.³ F04D *29/66*

U.S. Cl. 415—119 **1 Claim**



1. An air duct housing for an axial fan having impeller blades mounted on the drive shaft of a water-cooled internal combustion engine mounted on a support and having a cooling radiator, comprising an annular fan guard surrounding the tips of said blades and defining therewith a narrow annular gap in the range of 2 to 5 mm, a roller bearing on said shaft and lying outwardly of the engine, a mounting plate supported on said bearing independently of the engine support and independently of the engine, radial arms spaced from and unattached to the engine and interconnecting said fan guard with said mounting plate for centering said fan guard on the fan axis and for isolating any engine movement from said fan guard to thereby maintain said narrow annular gap, the housing further comprising an annular part rigidly connected to the engine radiator, means interconnecting said fan guard with said annular part for preventing rotation of said fan guard relative to said

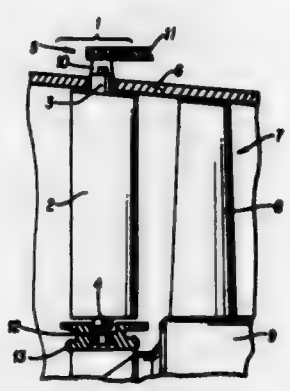
drive shaft, and a sound-insulated housing surrounding the engine with a portion of said sound-insulated housing lying within the space between said arms and the engine, whereby any noise sounds emanating from the engine are not transmitted outwardly of said sound-insulated housing via said radial arms.

4,514,141

SAFETY STOP FOR A VARIABLE SETTING STATOR BLADE PIVOT

Daniel J. Marey, Paris, France, assignor to S.N.E.C.M.A., Paris, France

Filed Apr. 7, 1983, Ser. No. 482,940
Claims priority, application France, Apr. 8, 1982, 82 06117
Int. Cl.³ F01B *25/02*
U.S. Cl. 415—160 **5 Claims**



1. A safety stop for a variable setting stator vane, said vane having top and bottom pivots, said top pivot being monitored by blade orientation means, said bottom pivot being set in a bearing of a stator ring, said safety stop comprising:

a cam arm having at least one cam portion;

means for securing said cam arm onto said bottom pivot;

stop elements associated with said stator ring, said cam arm and stop elements being constructed and arranged such that said rotation of said stator vane beyond a predetermined angular range causes contact between said cam portion and said stop elements so as to limit rotation of said stator blade, wherein said stator ring includes a recess into which said bottom pivot extends, wherein said cam arm is located in said recess, and wherein said stop elements comprise lateral walls of said recess, wherein said recess comprises a circumferential channel in a radially inner wall of said stator ring; and

an element fixed to said radially inner wall of said stator ring and covering said channel.

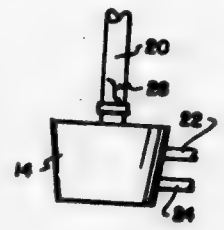
4,514,142

POWER MANAGEMENT PROCESS

Harvey R. Young, Williamsburg, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 364,573, Apr. 1, 1982, Pat. No. 4,488,851.
This application Dec. 12, 1983, Ser. No. 560,366
Int. Cl.³ B64C *11/46*
U.S. Cl. 416—1 **1 Claim**

1. In the operation of a helicopter engine wherein operating conditions change power demands, such as wherein under flight conditions an increase in rotor blade pitch causes a demand for increased engine power, a process for making excess power available for a thrusting device of the helicopter when no such demand for increased power is made, comprising generating a first signal which is proportional to the total amount of engine power available, continuously sensing the amount of engine power utilized under the flight conditions, generating a second signal proportional to the amount of excess power remaining for the thrusting device, and utilizing



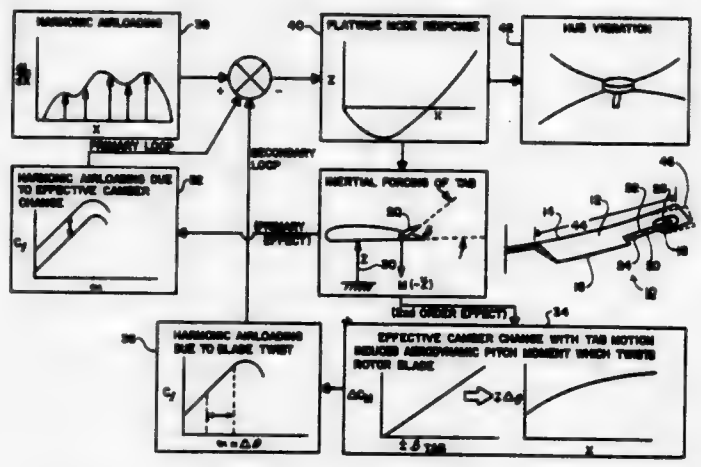
said second signal for physically limiting to that excess the amount of power which can be applied to the thrusting device.

4,514,143

AIRCRAFT ROTOR BLADE WITH PASSIVE TUNED TAB

Thomas G. Campbell, Cheshire, Conn., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 28, 1983, Ser. No. 489,675
Int. Cl.³ B64C *13/00*
U.S. Cl. 416—23 **5 Claims**



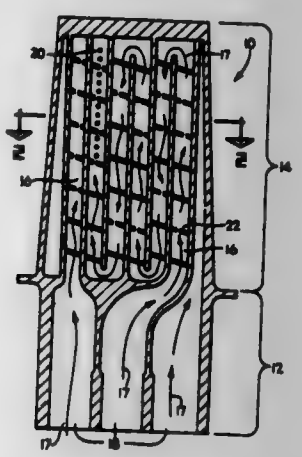
1. A structure for reducing vibratory airloading in a rotor blade which comprises a rotor blade having an airfoil cross-section with a leading edge and a trailing edge and a cut-out portion at the trailing edge, a substantially wedge shaped cross-section, inertially deflectable tab having a leading edge, a trailing edge, and a pivot axis near the leading edge, said tab being pivotally mounted in said cut-out portion so that said tab may rotate about said pivot axis and the trailing edge of said tab may move above and below said rotor blade, weight means secured to the leading edge of said tab for maintaining the center of gravity of said tab and weight means between said pivot axis and said blade leading edge, a torsion bar biasing means connected between said rotor blade and said tab for applying force against said tab when the trailing edge of said tab is above and below said rotor blade, said biasing means including a torsion bar and a torsion bar restraining member slidably movable along said torsion bar to vary the torsional biasing force supplied by said torsion bar to said tab.

4,514,144

ANGLED TURBULENCE PROMOTER

Ching-Pang Lee, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 506,156, Jun. 20, 1983, abandoned. This application Nov. 7, 1983, Ser. No. 549,219
Int. Cl.[3] F01D 5/18
U.S. Cl. 416—96 R 8 Claims



1. A turbine blade with at least one internal cooling passage, said passage including first and second opposite walls, and a plurality of first and second turbulence promoting ribs, wherein:

said first ribs are integral with said first wall of said passge and disposed at a first angle with respect to the center line of said first wall;

said second ribs are integral with said second wall of said passage and disposed at a second angle with respect to the center line of said second wall; and

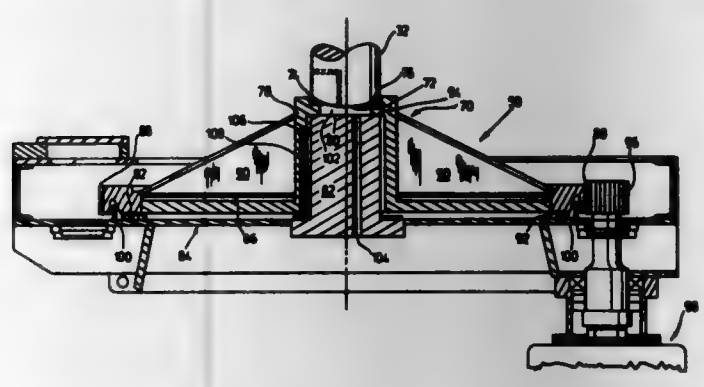
each of said first and second ribs comprises two rib members separated by a turbulence promoting gap.

4,514,145

GEAR BOX ASSEMBLY

Charles F. Wood, 3141 Given St., Mississauga, Ontario, Canada

Filed Dec. 21, 1981, Ser. No. 332,859
Int. Cl.[3] F03D 11/02
U.S. Cl. 416—170 R 36 Claims



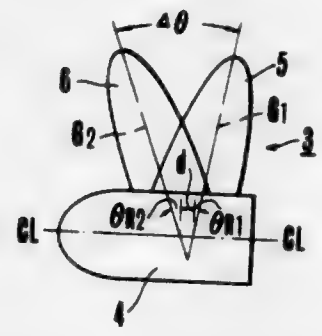
1. A vertical axis wind turbine having a rotor having a centrally disposed axis or rotor shaft oriented in the vertical direction, and an improved hydraulic suspension system for supporting the rotor shaft of the vertical axis wind turbine, the improvement comprising the rotor shaft having a bottom surface sitting on a spherical bearing surface and supported for angular rotation by the bearing surface and hydraulic fluid presented under pressure to a space directly below, and in communication with the bottom surface for providing radial and vertical support, respectively.

4,514,146

PROPELLER FOR SHIP

Takeo Nojiri, Kamakura, and Yasuo Irie, Yokohama, both of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1982, Ser. No. 436,988
Int. Cl.[3] B63H 1/20
U.S. Cl. 416—200 R 6 Claims



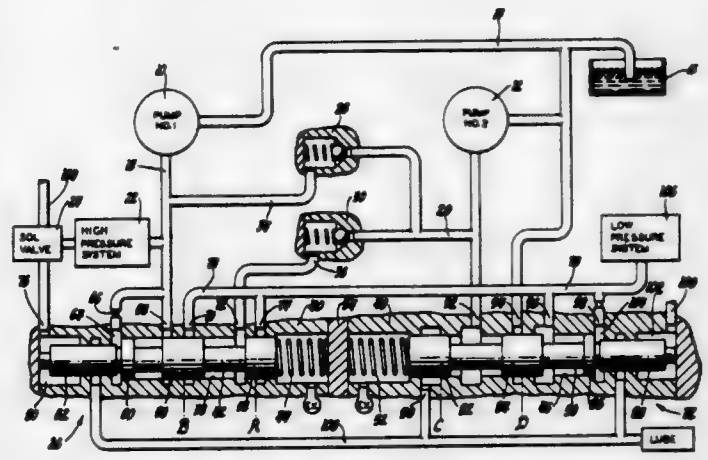
1. A propeller for use in a ship comprising a plurality of pairs of blades having axially overlapping roots anchored to a common hub, at least one of two adjacent blades being inclined forwardly or rearwardly so as to make different the rake angles of the two adjacent blades, and the pitch angle of a rearward blade being made larger than that of a forward blade, the difference in said rake angles being at least 10° to locate the effective area of said rear blade in the accelerated flow from said forward blade.

4,514,147

CONTROLLED VALVING FOR A DUAL PUMP SYSTEM

August H. Borman, Farmington, and Erkki A. Koivunen, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1984, Ser. No. 598,242
Int. Cl.[3] F04B 47/08
U.S. Cl. 417—288 3 Claims



1. Hydraulic control for a dual pump hydraulic system wherein the pumps provide hydraulic fluid for a high pressure operating system, a low presure operating system and a lubricating system, one of said pumps being a relatively small displacement pump; said control comprising first regulator valve means including a control chamber, spring means, pressure regulator chamber means, a pair of low pressure outlet port means connected to the low pressure operating system and a pair of inlet port means connected with said small displacement pump and the other pump respectively; first check valve means connecting the output of the other pump to both the output of the small displacement pump and one of said inlet port means; second check valve means disposed between said other pump and the other of said inlet port means; second regulator valve means including an inlet port continuously connected to the outlet of said other pump, a lube pressure outlet port, a regulating chamber connected with the low pressure system, a return

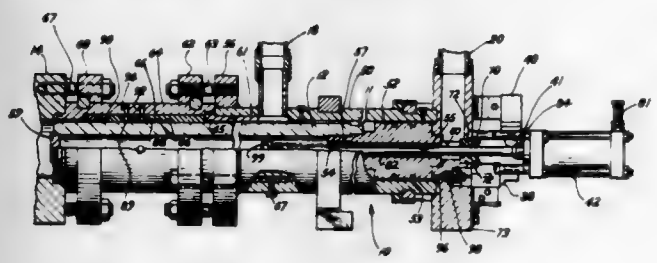
port connected to the inlet portions of both pumps, a control chamber, and spring means; and means for supplying control pressure to said control chambers on both said regulator valves for urging said regulator valves against the respective springs thereof, said first regulator valve responding to pressure in said high pressure system acting on said pressure regulator chamber means to sequentially connect said other pump through said second check valve means to said low pressure system and pass excess fluid from said small displacement pump to said low pressure system, and said second regulator valve responding to low pressure fluid operating in said regulating chamber to sequentially open said lube pressure outlet port to bypass fluid from said low pressure system to said lubricating system and open said return port to bypass the excess fluid in said low pressure system.

4,514,148

HYDRAULICALLY ACTUATED PUMP

George F. Topinka, Glen Ellyn, Ill., assignor to Carter Controls, Inc., Lansing, Ill.

Filed Nov. 1, 1982, Ser. No. 438,323
Int. Cl.[3] F04B *21/08*
U.S. Cl. 417—403 7 Claims



1. An hydraulically-operated cylinder for actuating a reciprocating pump at high speed and pressure comprising a primary cylinder having a head end and a cap end,

a primary piston mounted for reciprocation within said cylinder, said piston having a piston rod, a spool casing connected at one end to the head end of said primary cylinder, said casing enclosing said piston rod, said rod being adapted to operate within a pump connected to the other end of said casing,

said casing and said primary cylinder each having an external circumferential flange for detachably securing said casing and cylinder together in axial alignment,

a bearing sleeve within said spool casing,

said sleeve having two sets of sealing rings therein, axially spaced from each other, a wiper exclusion ring disposed between the two sets of sealing rings and bearing against said primary piston rod, and

radial ports extending through said sleeve and said spool casing for discharging foreign material from the area of the rod and sealing rings.

4,514,149

CUTTING FLUID SUPPLY APPARATUS

Hiromu Kanebako, and Yasukiro Hisatomi, both of Chiba, Japan, assignors to Kuroda Precision Industries Ltd., Japan

Filed Oct. 13, 1983, Ser. No. 541,547
Claims priority, application Japan, May 7, 1983, 58-79959
Int. Cl.[3] F04B *9/08;* F15B *21/02*
U.S. Cl. 417—403 2 Claims

1. In a fluid supply apparatus including a piston pump consisting of a piston cylinder for supplying fluid and an air cylinder for reciprocating said piston cylinder;

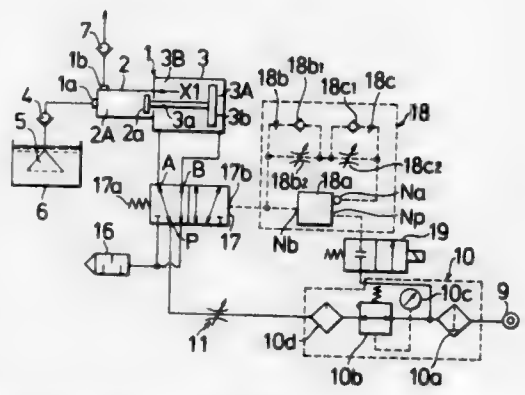
a direction change-over valve for making said air cylinder reciprocate, said change-over valve being changeable between two positions each providing for reciprocating movement by said air cylinder in a respective direction, such reciprocating movement causing corresponding pulsation in the flow of said fluid;

a compressed air source supplying compressed air to said cylinder through said direction change-over valve;

the improvement comprising:

a pulse frequency controlling means of self-oscillating character for controlling the position of said direction change-over valve within time limits, thereby determining the frequency of pulsations in the flow of said fluid; said pulse frequency controlling means being air operated, being thereby operable by air from said compressed air source, said direction change-over valve being also air-operated in response to air from said compressed air source controlled by said pulse frequency controlling means;

said pulse frequency controlling means comprising a fluidic NOT device having an air supply port for receiving compressed air from said source, an output port for supplying the compressed air to said direction change-over valve,



and an input port for causing the output port to provide compressed air from said source as as inverted function of air being supplied to said input port;

said pulse frequency controlling means including flow rate controlling valve means interconnecting said output port and said input port of said NOT device for controlling said time limits and comprising first and second flow rate regulating valves connected in series between said output port and said input port of said NOT device, said first and second check valves connected across the respective regulating valves to permit air to flow for a given direction between said input and output ports only through one of said regulating valves, said regulating valves each being adjustable respectively to provide a first time limit for a fluid intake stroke of said piston cylinder and a second time limit for a fluid dischage stroke of said piston cylinder.

4,514,150

SCROLL TYPE COMPRESSOR WITH DISPLACEMENT ADJUSTING MECHANISM

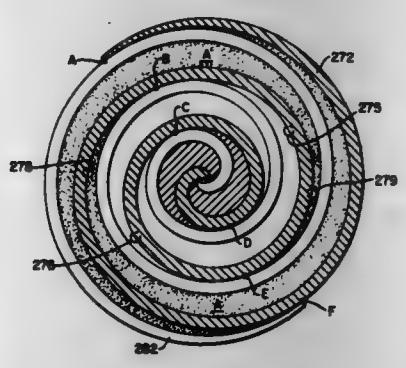
Masaharu Hiraga, Honjo; Atsushi Mabe, Isesaki, and Yuji Yoshii, Takasaki, all of Japan, assignors to Sanden Corporation, Gunma, Japan

Continuation-in-part of Ser. No. 356,648, Mar. 9, 1982, Pat. No. 4,468,178. This application Dec. 10, 1982, Ser. No. 448,490
Claims priority, application Japan, Mar. 9, 1981, 56-33646; Dec. 10, 1981, 56-198987
Int. Cl.[3] F04B *49/02;* F04C *18/02, 29/08*
U.S. Cl. 417—440 6 Claims

1. In a scroll type compressor including a pair of scrolls each having an end plate and a wrap extending from one side surface of said end plate, said wraps interfitting at an angular and radial offset to make a plurality of line contacts between said wraps to define at least one pair of sealed off fluid pockets, and a driving mechanism operatively connected to one of said scrolls for orbiting said one scroll relative to the other one of said scrolls while preventing rotation of said one scroll to thereby change the volume of the fluid pockets, the improvement comprising:

one end plate having at least two pairs of holes in fluid communication with a suction chamber, said holes of each

pair of holes being located at symmetrical locations along the wrap which extends from said one end plate so that said other wrap simultaneously crosses over both of said holes in each pair of holes, the most inwardly placed hole of said pairs of holes being located within an area defined by ϕend-2(n−1)π>ϕ1>ϕend-2nπ, where ϕend is the final involute angle of said wrap which extends from said one end plate, ϕ1 is the involute angle at which said most inwardly placed hole is located and n is the number of pairs of holes, the most outwardly placed hole of said pairs



of holes being located within an area defined by ϕ(n−1)+2π>ϕn>ϕend-2π, and the intermediate holes of said pairs of holes being located within an area defined by ϕ(k−1)+2π>ϕk>ϕ(k+1)−2π, where ϕk is the involute angle at which the kth hole from the most inwardly placed hole is located; and

control means for selectively opening and closed said pairs of holes to permit fluid communication therethrough to said suction chamber to thereby selectively control the displacement volume of said compressor.

4,514,151

LIQUID PULSATION DAMPENER DEVICE

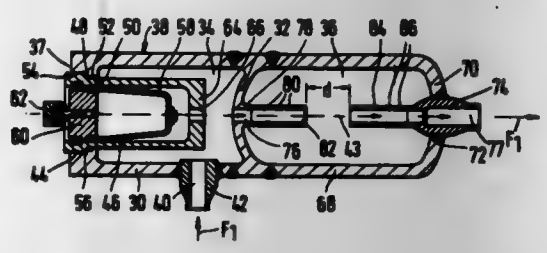
Christian Anders, Weidstasse 48, D-6710 Frankenthal, and Roland Beiersdörfer, Wählingstrasse 4, D-6520 Worms 24, both of Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,093

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044082

Int. Cl.³ F04B *11/00*; F16L *55/04*

U.S. Cl. 417—540 **4 Claims**



1. A liquid pulsation dampening arrangement for use in a piping network having a positive displacement pump with a delivery side for delivering fluid to the network in a flow direction comprising:

a hydro-pneumatic dampener having a first chamber with a bladder member therein for separating a pneumatic fluid space from a liquid fluid space in said first chamber;

a first connection from said network downstream of said pump delivery side to said liquid fluid space;

a dynamic dampener having a second chamber with an inlet, an outlet and the means extending from said inlet and outlet for reducing vibrations in the liquid fluid;

a second connection in the network between said first connection and said second chamber inlet for connecting said dynamic dampener downstream of said hydropneumatic dampener in said network;

said means for reducing vibrations comprising a first pipe section extending from said inlet into said second chamber and a second pipe section extending from said outlet into said second chamber, said first and second pipe sections separated by a selected spacing in said second chamber;

a housing defining said second chamber and a third chamber, said first chamber defined in said third chamber, said first connection comprising an opening into said third chamber and an opening between said first chamber and said third chamber, said dynamic dampener inlet extending between said third chamber and said second chamber;

said housing including a longitudinal axis, said dynamic inlet and outlet and said opening between said first and third chambers axially aligned along said longitudinal axis, said first connection opening into said third chamber extending at an angle to said longitudinal axis; and

a partition which is convex toward said third chamber extending across said housing before dividing said housing into said third and second chambers, said dynamic dampener inlet extending centrally through said partition.

4,514,152

GEROTOR POWER STEERING APPARATUS WITH DRIVEN ROTARY SLEEVE VALVE

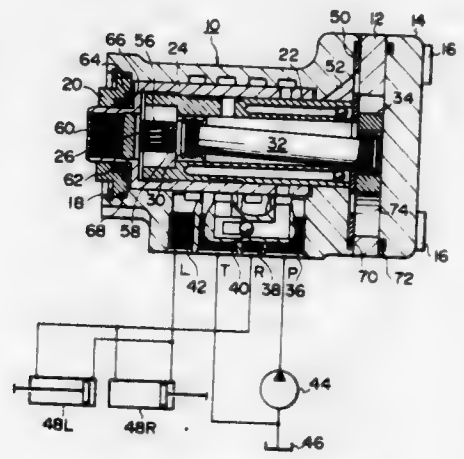
Takashi Takamatsu, Chigasaki, and Tetsuo Ohnuki, Fujisawa, both of Japan, assignors to Tokyo Keiki Company, Ltd., Tokyo, Japan

Filed Jul. 22, 1983, Ser. No. 516,442

Claims priority, application Japan, Aug. 2, 1982, 57-135012; Aug. 4, 1982, 57-136103

Int. Cl.³ B62D *5/08*; F15B *13/04*

U.S. Cl. 418—61 B **4 Claims**



1. A gerotor steering apparatus comprising:

a housing;

a gerotor mechanism provided with a stator fixed to said housing and having teeth, a rotor having teeth of a number less by one than the number of said teeth of said stator, and a plurality of liquid chambers formed between said stator and said rotor so as to be expandable and contractible in accordance with rotation of said rotor; and

rotary valve mechanism means having fluid paths to be switched over by a steering operation for rotating said rotor of said gerotor mechanism in a direction corresponding to the steering operation and for supplying pressurized liquid in an amount proportional to the degree of the steering operation from said liquid chambers contracted by the rotation of said rotor to actuators of a steering mechanism, said rotary valve mechanism comprising:

a sleeve rotatably positioned within said housing and including means for direct connection at all times to a rotary shaft to be rotated within said housing by a steering operation;

a spool positioned within said sleeve for rotation relative thereto;

switchover fluid paths for supplying pressurized fluid from a source to said gerotor mechanism to rotate said rotor in response to rotation of said sleeve, said fluid

paths comprising perforations formed in said sleeve and in said spool and through holes formed in said housing at positions closely adjacent said gerotor mechanism, said through holes opening into said liquid chambers; and

means connecting said rotor to said spool for transmitting rotation of said rotor to said spool in a follow-up manner.

4,514,153

ROTARY VANE PUMP WITH CLUTCH

Rainer Südbeck, Duisburg, and Hans Baumgartner, Viersen, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG., Neuss, Fed. Rep. of Germany

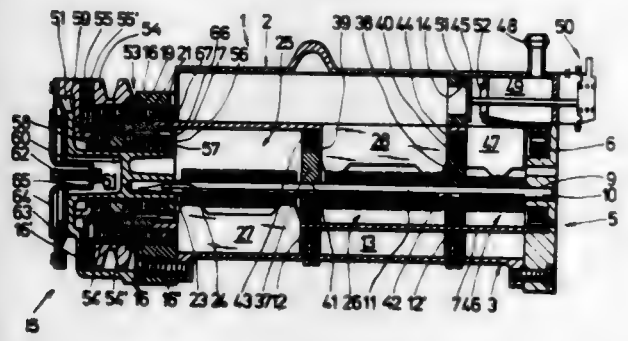
Filed May 4, 1982, Ser. No. 374,882

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1981, 3128432

Int. Cl.³ F04C *2/00, 11/00, 27/00;* F16D *25/02*

U.S. Cl. 418—69

13 Claims



1. In a vane pump comprising a pump housing, a hollow cylindrical rotor mounted for rotation about its own axis within said housing, said rotor having a cylindrical wall containing a plurality of circumferentially spaced and axially extending openings, a driving means at one end of said housing for rotating said rotor, a vane shaft mounted to extend eccentrically within said rotor, a plurality of rotatable vanes mounted on said vane shaft whereby said vanes extend axially on said shaft and project radially through said openings in said cylindrical wall of said rotor, said vanes thereby being rotated about the axis of said vane shaft when said rotor is rotated, means defining a pump chamber within said housing which is swept by said vanes as said vanes are rotated by said rotor, and inlet and outlet means for the fluid to be pumped communicating with said pump chamber, the improvement wherein said vane shaft has opposite ends with each said opposite end non-rotatably and directly mounted in said pump housing whereby only said vanes are driven by said rotor, said driving means includes a driving wheel mounted coaxially with respect to said rotor and a clutch for coupling and uncoupling said driving wheel with said rotor, said clutch comprises a follower member mounted coaxially with said driving wheel whereby said follower member is axially displaceable into and out of engagement with said driving wheel and is rotatably fixed to said rotor, a thrust bearing carried by said follower member and having a cap, a spring biassing said follower member out of engagement with said driving wheel, a movable cover operatively connected to said thrust bearing cap, a fixed part defining with the movable cover an enclosed chamber, and a connection for the supply of pneumatic pressure to said chamber for operating said clutch.

4,514,154

SELF-SEALING ABUTMENT

Concezio Mazzagatti, Sante Fe 3786, 4° A, Buenos Aires, Argentina

Continuation of Ser. No. 341,126, Jan. 20, 1982, abandoned. This application Apr. 20, 1984, Ser. No. 601,749

Claims priority, application Argentina, Jul. 16, 1981, 286122

Int. Cl.³ F01C *19/02;* F04C *27/00*

U.S. Cl. 418—129

14 Claims

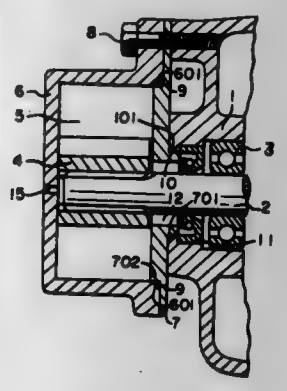


1. In a fluid-operated machine which includes a stator casing, said stator casing having a substantially cylindrical inner face that defines a substantially cylindrical space therein, said substantially cylindrical space having an imaginary axial line therethrough; an elongated housing extending outwardly from said stator casing, said elongated housing extending parallel to said imaginary axial line, said housing having opposite sides and an interior chamber which communicates with the substantially cylindrical space in said stator casing; an eccentric piston rotor positioned in the substantially cylindrical space in said stator casing, a portion of the periphery of said piston rotor being in sealing contact with the inner face of said stator casing; a piston shaft connected to said piston rotor, said piston shaft extending along said imaginary axial line, rotation of said piston shaft causing said portion of the periphery of said piston rotor to move along the inner face of said stator casing and divide said substantially cylindrical space into two variable volume chambers; a self-sealing abutment member movably positioned in the inner chamber in said elongated housing to move in and out of the substantially cylindrical space in said rotor housing based on the rotational positioning of the piston rotor therein; and a spring means located with the interior chamber in said elongated housing so as to bias said abutment member toward said piston rotor, the improvement wherein said abutment member consists of at least one plate assembly, each plate assembly consisting of two generally coplanar flat plates, each of said two generally coplanar flat plates defining a bottom surface, an outer side surface, a top surface and an inner side surface, the bottom surfaces of said flat plates being parallel and in sliding contact with the periphery of said piston rotor, the outer side surfaces of said flat plates being parallel and in sliding cooperation with the opposite sides of said elongated housing, the inner side surfaces of said two flat plates having respective lower ends which merge with the associated lower surfaces of the flat plates and upper ends which are always located within the interior chamber within said elongated housing, the lower portion of the inner side surface of the first of said two flat plates being straight and extending upwardly from its associated bottom surface at an obtuse angle, the lower portion of the inner side surface of the second of said two flat plates being straight and extending upwardly from its associated bottom surface at an acute angle, the inner side surfaces of said two flat plates being in sliding cooperation with one another such that as said first flat plate moves downwardly with respect to said second flat plate to maintain the bottom surfaces of said two plates in alignment with one another and in sealing relationship with the periphery of said piston rotor, their outer side surfaces will maintain sealing cooperation with the opposite sides of said elongated housing.

4,514,155
ROTARY VANE PUMP WITH PACKING MEANS FOR THE HOUSING COMPONENTS

Hitoshi Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 374,927, May 5, 1982, abandoned. This application Jun. 25, 1984, Ser. No. 623,542
Claims priority, application Japan, May 11, 1981, 56-68099[U]; May 11, 1981, 56-68100[U]
Int. Cl.³ F04C *27/00*
U.S. Cl. 418—149 2 Claims

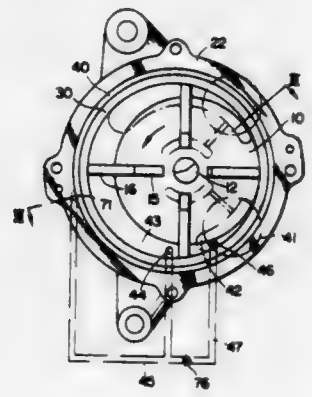


1. A pump device which comprises:
a housing comprising a cylindrical operation chamber, said operation chamber comprising
a cylindrical inner wall,
a substantially closed front end, and
a rear opening having a diameter equal to that of said cylindrical inner wall, said rear opening being chamfered, said housing further comprising a flat rear face normal to the axis of said operation chamber and containing said rear opening of said operation chamber,
said pump device further comprising an intake port and an exhaust port, both in communication with said operation chamber,
a rotatable driving shaft, one end of which is disposed in said operation chamber, the axis of said driving shaft being parallel to and offset from said axis of said operation chamber,
a rotor fixed to said driving shaft in said operation chamber,
a plurality of radially-extending vanes disposed in said rotor, said vanes being in sliding contact with said cylindrical inner wall of said housing to forcibly feed a fluid from said intake port to said exhaust port,
a plate fixed and fitted to said rear face of said housing and having a front face, a rear face and a cylindrical bore for the passage of said driving shaft, said front face of said plate further comprising a front flat land for snugly contacting said flat rear face of said housing, and a cylindrical front shoulder raised from said front flat land, said front shoulder of said plate extending into said operation chamber through said chamfered opening and mating with said cylindrical inner wall of said operation chamber,
a first packing disposed around said front shoulder of said plate and being compressed between said front face of said plate and said chamfer of said rear opening of said operation chamber,
said rear face of said plate comprising a rear flat land and a cylindrical rear shoulder raised from said rear flat land, said rear shoulder being concentric about said cylindrical bore for the passage of said driving shaft,
an end frame comprising means for rotatably supporting said driving shaft, a flat front face, and a chamfered cylindrical passage, in which said driving shaft is disposed, opening into said flat front face of said end frame, said rear face of said plate being fixed and fitted to said front face of said end frame, said rear shoulder of said plate extending into said cylindrical passage in said end frame and mating with the cylindrical wall thereof, said rear flat land of said plate snugly contacting said flat front face of said end frame, and
a second packing disposed around said rear shoulder of said plate and being compressed between said rear face of said plate and said chamfer of said cylindrical passage of said end frame, wherein said front shoulder of said plate and said rear shoulder of said plate respectively comprise means for establishing and maintaining proper positioning of said first and second packings during assembly of said pump device.

4,514,156
ROTARY-SLEEVE BEARING APPARATUS FOR ROTARY COMPRESSOR

Hiroshi Sakamaki, Utsunomiya; Yukio Horikoshi, Kazo, and Kikuji Yanagihashi, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed May 14, 1984, Ser. No. 609,994
Claims priority, application Japan, May 20, 1983, 58-87737
Int. Cl.³ F04C *18/348*
U.S. Cl. 418—173 2 Claims

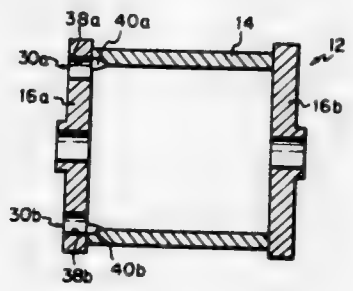


1. A rotary-sleeve bearing apparatus for rotary compressor provided with a center housing, a rotary sleeve rotatably mounted in said center housing, a rotor disposed within said rotary sleeve, a plurality of vanes movably fitted in said rotor, and a discharge chamber, said apparatus comprising a thin air-bearing room defined between the inner periphery of said center housing and the outer periphery of said rotary sleeve, an inlet provided on the compression-side inner surface of said center housing, and an air-supply passage extending from a compression working space immediately before internally connected to said discharge chamber, said air-supply passage being connected to said discharge chamber through an auxiliary passage provided with a check valve.

4,514,157
ROTARY VANE COMPRESSOR

Teruo Nakamura, and Shoichi Fukuda, both of Konan, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed May 25, 1984, Ser. No. 613,996
Claims priority, application Japan, Jun. 3, 1983, 58-84985[U]
Int. Cl.³ F04C *18/00*
U.S. Cl. 418—259 1 Claim



1. A rotary vane compressor comprising:
a cylinder having a bore and a delivery port formed therein;

a pair of side blocks for closing respectively opposite open ends of said cylinder;

a rotor rotatably disposed in said bore of the cylinder and formed with a plurality of substantially radially extending slots;

a plurality of vanes slidably received in said slots in one-to-one correspondence and individually engaged with an inner periphery of said bore of the cylinder;

a compression chamber defined by the cylinder, the rotor and any of the vanes; and

an opening formed through one of the side blocks and extended such that radially outer part of a rim of said opening is positioned radially outwardly of the inner periphery of the cylinder, and a notch formed in the inner periphery of the cylinder to be aligned with said outer part of the rim of said opening, said opening and said notch defining the suction port in combination.

4,514,158

PLANT FOR COLD ISOSTATIC PRESSING

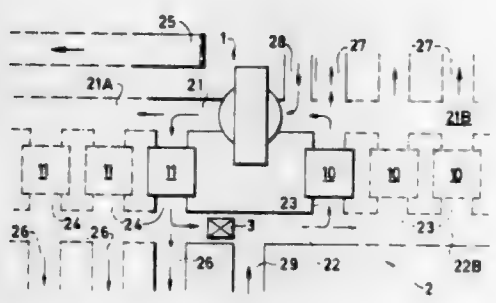
Ola Pettersson, Höganäs, Sweden, assignor to KB Cold Isostatic Press Systems CIPS, Hoganas, Sweden

Filed Mar. 20, 1984, Ser. No. 591,593

Claims priority, application Sweden, Apr. 19, 1983, 8302200

Int. Cl.³ B29C *3/00*

U.S. Cl. 425—78 **6 Claims**



1. A device for cold isostatic pressing of powder to pressed bodies, including an isostatic press, a plurality of press tools, a circulation conveyor path for the tools, and means for advancing the tools along the path, the tools being arranged along the path to pass a tool filling station, the path including; a first and second straight conveyor section positioned parallel and separate to each other, the first conveyor section extending through the press, a plurality of third, straight, mutually parallel sections, each of said third parallel sections extending through an associated filling station and connecting at a right angle between the second conveyor section and the first conveyor section at a portion of the conveyor path situated to one side of the press, a plurality of fourth conveyor sections, each of said fourth conveyor sections extending through an associated emptying station and connecting at a right angle between the second conveyor section and the first conveyor section at a second portion of the conveyor path situated on an opposite side of the press, a first service conveyor connected to the second conveyor section for permitting discharge of inoperative tools from the circulation conveyor path, a second service conveyor connected to the circulation conveyor path for supplying said tools to said circulation conveyor path so as to replace tools removed by said first service conveyor, a third service conveyor connected to the first conveyor section so as to permit the removal of inoperative tools from the circulation conveyor path subsequent to passing said filling station and prior to delivery to the press, and wherein the tools are provided with a substantially rectangular base, a side of said base being substantially as long as the conveyor path width.

4,514,159

APPARATUS FOR PRODUCING MOLDED PLASTIC ARTICLES SUCH AS PACKAGING TUBES

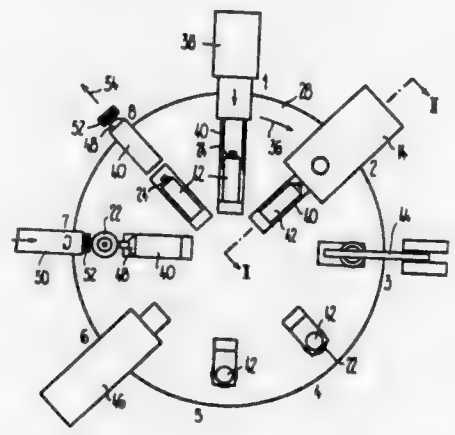
Karl Mägerle, Kusnacht, Switzerland, assignor to KMK Karl Mägerle Lizenz AG, Zug, Switzerland

Division of Ser. No. 364,792, Apr. 2, 1982, Pat. No. 4,419,064, which is a division of Ser. No. 165,396, Jul. 2, 1980, Pat. No. 4,352,775. This application Jul. 7, 1983, Ser. No. 511,623

Claims priority, application Switzerland, Jul. 12, 1979, 6502/79

Int. Cl.³ B29D *23/04*

U.S. Cl. 425—125 **12 Claims**



1. Apparatus for producing a molded article from plastic material, in which a blank of plasticizable, heated plastic material is introduced into a shaping cavity and pressed thereagainst with a stamp to produce a molded article,

said apparatus comprising:

a rotary table means;

a plurality of upwardly opening shaping cavity means provided on said rotary table means at equi-angularly distributed locations in a coaxial ring, each shaping cavity means having shaping surface means therein;

a respective plurality of stamps, each paired with a respective shaping cavity means, and mounted by mounting means to rotate with said rotary table means;

each stamp being movably mounted by the respective mounting means for movement between a first position wherein that stamp is spatially displaced from vertically obstructing relation to the respective shaping cavity means and extending substantially horizontally and a second position, wherein such stamp is vertically juxtaposed upon the respective shaping cavity means in vertically obstructing relation thereto and positioned to be thrust into partially filling, closing relation with the respective shaping cavity means;

means coordinated with rotation of said rotary table means for periodically moving each stamp between said first and second positions thereof, and for thrusting that stamp once into said partially filling, closing relation then withdrawing during each time interval that stamp is in said second position thereof;

a supply means for plasticizable, heated plastic material, said supply means having an extruding-type material supply head in vertical juxtaposition over the rotary table means at a site so spatially determined, that as said rotary table means rotates, the shaping cavity means are successively temporarily brought into directly underlying relation with said material supply head for dispensing into each such shaping cavity means a respective blank of plasticizable, heated plastic material, said supply head having a substantially vertically downward extruding direction;

said stamp moving means also being coordinated with regard to approaching juxtaposition of each succeeding stamp and shaping cavity means pair, so that as each said pair approaches said site, the respective stamp is moved from said second position thereof to said first position thereof to be out of the way in time to permit the material

supply head to dispense a blank of plasticizable, heated plastic material into the respective shaping cavity.

4,514,160

INJECTION NOZZLE WITH DIRECT ELECTRIC HEATING

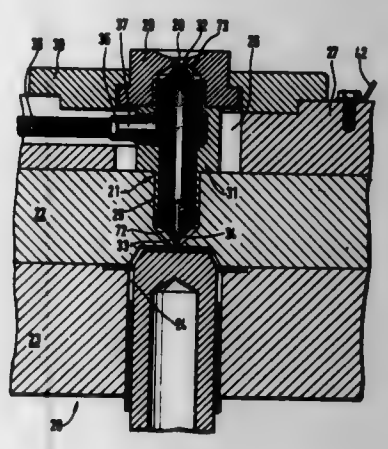
Walter F. Davidsmeyer, Glatzer Weg 15, 3004 Isernhagen 2, Fed. Rep. of Germany

Filed Jan. 11, 1984, Ser. No. 569,906

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1983, 3301272

Int. Cl.³ B29F *1/03, 1/08*

U.S. Cl. 425—143 **21 Claims**



1. A device for feeding flowable materials from an injection molding unit to a mold with at least one hot channel nozzle which possesses a nozzle channel, for the flow of the material up to a nozzle bore, an electrical heat conductor, wherein the nozzle channel is constructed as a tube of electrically conductive material and acts as an electrical resistance heater up to the nozzle bore the tube construction being such that resistance per unit length differs for different portions of said tube so that an essentially uniform temperature of the flowable material is insured up to the nozzle outlet bore.

4,514,161

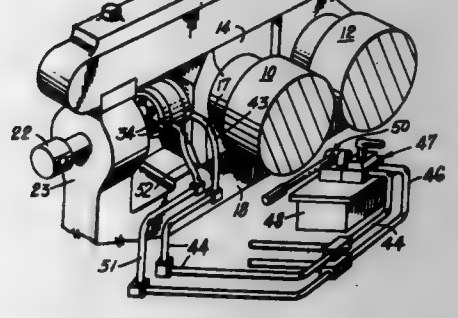
HYDRAULIC ROLL PROTECTION SYSTEM

William J. Winter, Trumbull, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 9, 1983, Ser. No. 559,952

Int. Cl.³ B29C *15/00;* B30B *3/04*

U.S. Cl. 425—154 **6 Claims**



1. A hydraulic roll protection system for cooperating rolls forming a nip gap including journal boxes carrying the rolls for rotation, at least one roll being movable with respect to a fixed roll for varying the nip gap therebetween, said movable roll being carried by journal boxes slidable in guideways, an adjustable screw associated with each slidable box for adjusting the movable roll toward and away from the fixed roll, a fluid operated piston and cylinder device interposed between one end of each screw and the associated journal box, means including a hand operated pump for pressurizing one end of each cylinder and piston device for movement into extended condition, a pressure relief valve between the pump and the device for controlling the pressure in the cylinder acting to hold the movable roll in adjusted closed condition and to relieve excessive pressure in the cylinder on overload conditions between the rolls, and a valve for switching the fluid pressure from the pump from the one end of the cylinder to the other end of the cylinder to move the piston and cylinder device into retracted condition for retracting the movable roll from the fixed roll.

4,514,162

APPLIANCE FOR HEATING AN ELECTROCONDUCTIVE MATERIAL IN THE FORM OF A CONTINUOUS STRAND

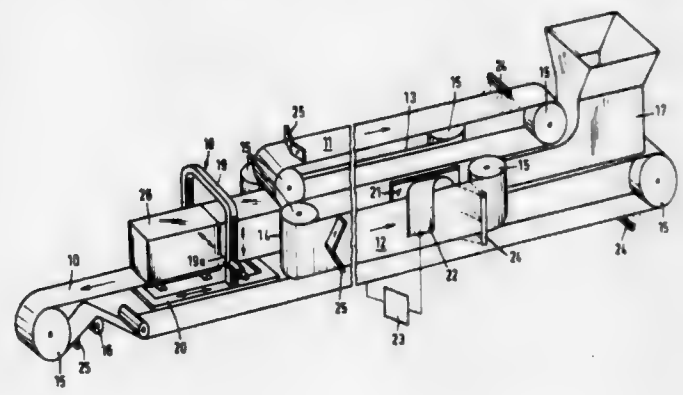
Eckhard Schulz, Wallenhorst, Fed. Rep. of Germany, assignor to Sicowa Verfahrenstechnik fur Baustoffee GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 21, 1983, Ser. No. 459,951

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1982, 3203131

Int. Cl.³ B29C *15/00*

U.S. Cl. 425—174.8 R **16 Claims**



1. An Appliance for heating an electroconductive material, preferably one which hardens as a result of this heating process, this material being in the form of a continuous strand comprising: a high-frequency generator (**23**), a channel (**14**) formed by walls (**10** to **13**) composed of an electrically insulating material and within which the continuous strand is guided, two capacitor-plates (**30**) arranged on two oppositely located sides of the channel (**14**), the capacitor plates (**30**) being staggered by at least their length and being connected to a non-earthed terminal of the high-frequency generator (**23**), while two further capacitor plates (**31,32**) are arranged on each of the two sides, adjacent to the two capacitor plates (**30**), the further capacitor plates (**31, 32**) being connected to the earthed terminal of the high-frequency generator (**23**) and extending along the channel (**14**) for a distance such that the strand outside the heating zone is no longer on poential with respect to earth potential.

4,514,163

SYNTHETIC RESIN EXTRUDING MEANS

Kensaku Nakamura, 272-1, Bessho-cho, Matsubara, Osaka, Japan

Filed Nov. 28, 1983, Ser. No. 555,651

Int. Cl.³ B29F *3/00, 3/02*

U.S. Cl. 425—204 **2 Claims**

1. In a synthetic resin extruding apparatus, the improvement comprising:

an elongated cylindrical screw shaft comprising a screw shaped grooved surface on the outer periphery thereof;

a cylindrical heater coaxially surrounding said screw shaft;

a feed mouth disposed at one end of said screw shaft for feeding a first raw material for kneading by said screw shaft; and

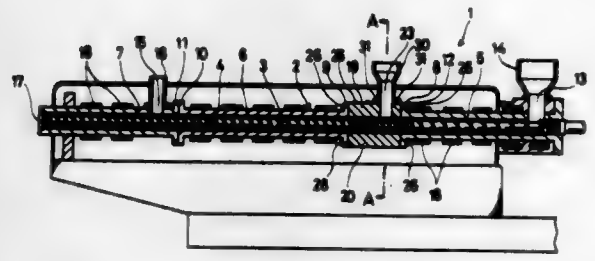
an exit mouth disposed at another end of said screw shaft for exiting of said material after kneading by said screw shaft;

said screw shaft comprising at least two segments, a first segment having said grooves, and a second segment having said grooves with teeth on walls forming said grooves;

a lower block disposed about substantially a lower part of said second segment;

an upper block movably connected to said lower block so that in a closed position said upper and lower blocks surround said second segment of said screw shaft, and having an open position in which said upper and lower blocks are partially disconnected from each other to permit access thereto and thereby to enable manual replacement of auxiliary kneading shafts;

said upper and lower blocks each comprising a corresponding first elongated cylindrical hollow portion for fitting about said screw shaft, a corresponding second elongated



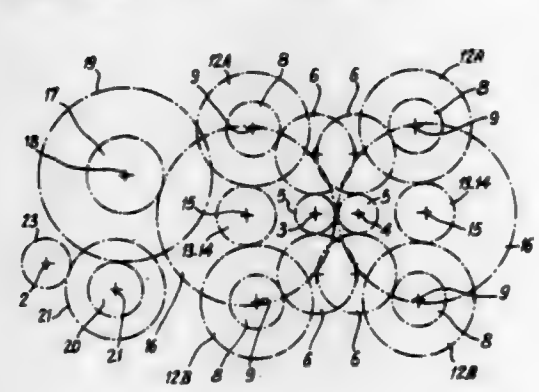
cylindrical hollow portion of a smaller diameter than said first hollow portion and disposed parallel to said first hollow portion, for holding a manually replaceable auxiliary kneading shaft, and a corresponding third elongated cylindrical hollow portion of a smaller diameter than said first hollow portion and disposed parallel to said first hollow portion, for holding a manually replaceable auxiliary kneading shaft, and feed means having access to said first hollow portion for feeding a second raw material for working by said screw shaft operable in conjunction with said first and second auxiliary shafts; said first and second replaceable auxiliary kneading shafts having screw shaped groove surfaces on the periphery thereof with teeth on the walls defining the grooves, said teeth being engagable with said teeth on said screw shaft.

4,514,164

REDUCTION GEAR SYSTEM FOR TWIN SCREW EXTRUDING SYSTEM

Jean L. Poulin, Saint-Die, France, assignor to Societe dite: USINES BEYER FRERES, France

Filed Feb. 23, 1984, Ser. No. 582,766
Claims priority, application France, Mar. 2, 1983, 83 03443
Int. Cl.³ B29F *3/02*
U.S. Cl. 425—208 **8 Claims**



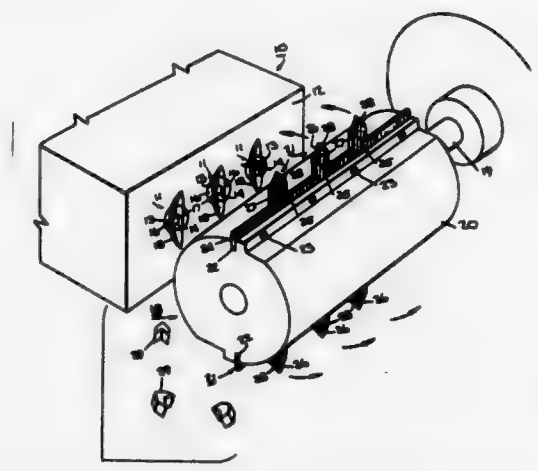
1. In a twin screw extruding machine, a reduction gear system comprising a casing, an input shaft, two output shafts supported by said casing, each in alignment with a respective one of said screws, a respective first pinion on each of said output shafts, said first pinions being offset relative to one another in the axial direction and said first pinion on a first of said output shafts being a helical pinion so as to develop a component of force in the axial direction opposite a reaction to the thrust exerted by the associated screw of the extruding machine, two first helical gears meshing with said first pinion on said first output shaft at diametrically opposite points thereon, a respective second helical pinion meshing with each of said first helical gears, a respective thrust shaft to which each of second helical pinions is keyed, a respective thrust bearing at one end at least of each of said thrust shafts, a respective second helical gear keyed to each of said thrust shafts, said second helical gear keyed to one of said thrust shafts having its teeth inclined in the direction opposite that of the teeth of said second helical pinion on said one thrust shaft and said second helical gear keyed to the other of said thrust shafts having its teeth inclined in the same direction as the teeth of said second helical pinion on said other thrust shaft, a respective third helical pinion meshing with each of said second helical gears, said third helical pinions having teeth inclined in opposite directions, a common shaft to which said third pinions are fixed, and a third gear keyed to said common shaft and adapted to be driven by said input shaft.

4,514,165

APPARATUS FOR MAKING BILLOWED FILLING ELEMENTS FOR PACKAGING

Harry Bussey, Jr., P.O. Box 115 Serpentine Rd., Navesink, N.J. 07752

Division of Ser. No. 400,719, Jul. 22, 1982, Pat. No. 4,440,704, which is a division of Ser. No. 230,113, Jan. 29, 1981, abandoned.
This application Nov. 9, 1983, Ser. No. 550,125
Int. Cl.³ B29C *17/10*; B29F *3/00*
U.S. Cl. 425—311 **9 Claims**



1. In an apparatus for making filling elements for packaging, the combination comprising an extruder for extruding a heat-plastified mass of thermoplastic material containing an expanding agent, said extruder having a die at one end, said die having a surface with at least one orifice therein for extrusion of the heat-plastified mass there-through along a longitudinal axis, and a rotary cutter having at least one cutting blade having a non-linear cutting edge for cutting the mass extruded through said orifice, said edge being shaped so as to mate with said die surface, said cutter being disposed in proximity to said extruder on an axis of rotation perpendicular to said longitudinal axis and in spaced facing relation to said die to move said non-linear edge of said blade through an arcuate path to mate with said die and orifice in an extrudate cutting relationship to cut individual pieces from the extruded mass.

4,514,166

DEVICE FOR REMOVING AND CONVEYING INJECTION-MOLDED PIECE

Yoshiyuki Ichizawa, Sohka; Tsugio Nomoto, Kurume, and Mamoru Oshida, Funabashi, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1979, Ser. No. 32,970

Claims priority, application Japan, Apr. 24, 1978, 53-48573; Apr. 24, 1978, 53-48575; Apr. 24, 1978, 53-54350[U]

Int. Cl.[3] B29F *1/14*

U.S. Cl. 425—436 R

9 Claims



1. A device for removing injection molded cylindrical preforms, having gates at closed ends thereof, from an injection molding machine, comprising:

holding means for releasably gripping said preforms in said injection molding machine by said gates; and

moving means for moving said holding means to and from said injection molding machine,

wherein said holding means comprises first and second relatively slidable plates with holes perforated therethrough and sliding means for relatively slidably moving said first and second plates, whereby said gates are gripped after insertion through corresponding holes on said first and second plates by relative sliding movement of said first and second plates.

4,514,167

OVEN HEATING SYSTEM

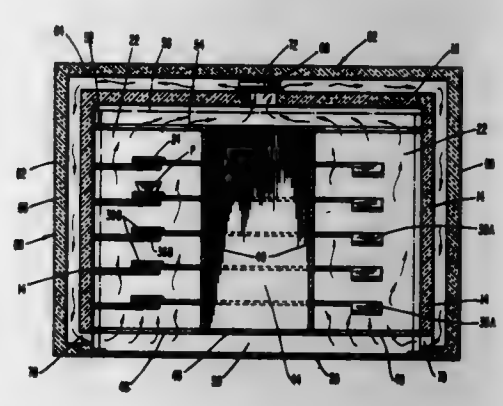
Wayne H. Royer, Felton, Pa., assignor to Santrade Ltd., Lucerne, Switzerland

Filed Oct. 11, 1983, Ser. No. 540,924

Int. Cl.[3] F27D *3/00, 7/00;* F27B *9/22, 9/00*

U.S. Cl. 432—11

28 Claims



1. A baking oven comprising:

an enclosure containing therein a horizontally annular baking chamber,

conveyor means arranged to travel in an endless helical path through said baking chamber while carrying a product to be baked,

heating means located beneath at least some of the runs of said conveyor means for heating the air within said baking chamber, air distributing means comprising:

conduit means for conducting air from an upper portion of said baking chamber to a lower portion of said baking chamber, and

air circulating means for transferring air through said conduit means from said upper portion of said baking chamber to said lower portion of said baking chamber, to attain a more uniform air temperature within said baking chamber, and

a floor beneath a substantial portion of said baking chamber, said conduit means delivering air to a lower air space beneath said floor, said floor being air permeable such that the air travels through said floor and into said baking chamber, the degree of air permeablility of said floor increasing in a direction away from an air inlet where said conduit means delivers air to said lower air space.

4,514,168

PROCESS FOR HEATING SOLIDS IN A TRANSFER LINE

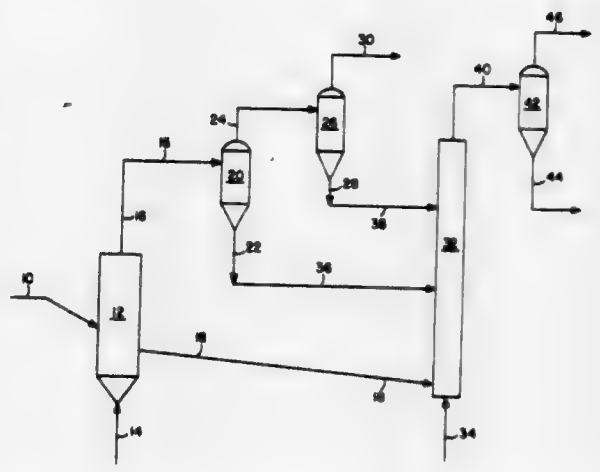
Henry G. McMath, and Gary K. Stenerson, both of Houston, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 15, 1983, Ser. No. 523,480

Int. Cl.[3] F27B *15/00;* F26B *3/08*

U.S. Cl. 432—14

13 Claims



1. A process for preheating solids containing particles of varying sizes without deleteriously affecting yields in a subsequent conversion process to which the preheated solids are fed by contacting said solids with a hot gas in a transfer line which comprises:

(a) separating said solids into a plurality of size fractions;

(b) introducing said hot gas into said transfer line at a point near one end;

(c) introducing a size fraction of solids produced in step (a) as a first fraction of solids into said transfer line at or downstream of the point where said hot gas is introduced;

(d) separately introducing one or more other size fractions of solids produced in step (a) that contain smaller particles than said first fraction into said transfer line at a predetermined distance or distances downstream of where said first size fraction is introduced, wherein the predetermined distance or distances are inversely related to the size of the particles comprising the other size fraction or fractions so that the size fraction of solids containing the smallest particles is introduced into said transfer line at a point furthest away from the point where said first size fraction is introduced; and

(e) withdrawing preheated solids from said transfer line which are ready for passage to downstream processing units.

4,514,169

DENTAL HANDPIECE

Ernst Strohmaier, Schussenried, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Riss, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,692

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332628

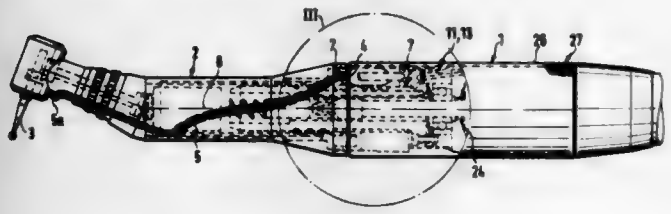
Int. Cl.[3] A61C *3/00*

U.S. Cl. 433—29

31 Claims

1. In a dental handpiece, including a connector portion and an elongated, exchangeable gripping sleeve portion coupled to

said connector portion, including a treating implement arranged on said gripping sleeve portion end distant from said connector portion, an incandescent lamp in said connector portion, and a light conductor in said gripping sleeve portion having the end of said light conductor distant from said connector portion directed towards the area of the implement, and the end of said light conductor distant from said implement being suppliable with light from said incandescent lamp; the improvement comprising in that switch contacts are operatively associated with said incandescent lamp, said switch contacts being movable relative to each other so as to be in a contact position facilitating power supply to said incandescent



lamp, and wherein at least said gripping sleeve portion includes adjusting elements effectuating movement of said contacts into a contact position upon coupling of said gripping sleeve portion to said connector portion and effectuating the return movement of the contact into the contact-breaking position responsive to uncoupling of said connector and gripping sleeve portions, said contacts being arranged on respectively the connector portion and on said incandescent lamp, said contacts in said connector portion being supported therein for reciprocal motion in the direction of the longitudinal axis of said handpiece, and said adjusting elements effectuating the reciprocating motions of the incandescent lamp.

4,514,170

APPARATUS FOR THE HEAT TREATMENT OF FINE-GRAINED MATERIAL

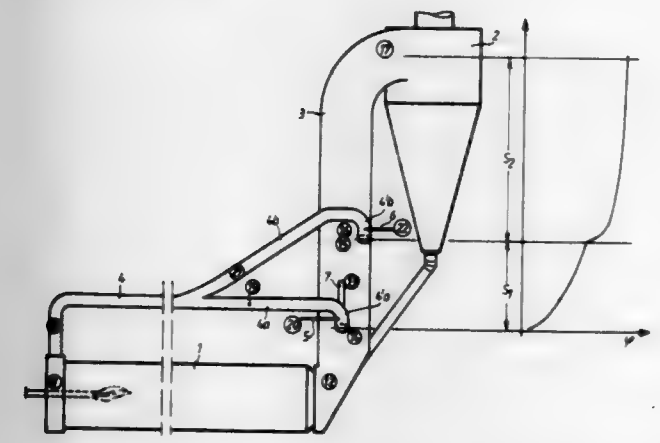
Detlev Kupper, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,603

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237689

Int. Cl.³ F27B *7/02*

U.S. Cl. 432—106 **11 Claims**



1. In apparatus for the heat treatment of fine-grained material having a multistage preheater communicating with a kiln via an upwardly extending exhaust gas duct forming a precalcination zone into which fuel is introduced between said kiln and said preheater, and a cooler into which heat treated material is delivered from said kiln, the improvement comprising a pair of cooling air ducts extending between said cooler and said exhaust gas duct and communicating with the latter at vertically spaced zones; means for introducing said fuel into each of said ducts to form a mixture of fuel and air for delivery into said exhaust gas duct adjacent each of said zones; and material duct means communicating between said preheater and the lower one of said cooling air ducts for delivering preheated material to the latter from said preheater.

4,514,171

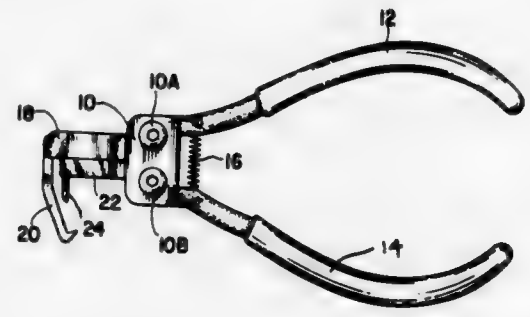
ORTHODONTIC TOOL

Craven H. Kurz, 465 N. Roxbury Dr., #1011, Beverly Hills, Calif. 90210

Filed Jul. 30, 1984, Ser. No. 635,562

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—4 **5 Claims**



1. A tool for removing an adhesively bonded orthodontic bracket or tube from the lingual surface of a tooth which comprises: first and second members pivotally coupled to one another, said first and second members defining first and second handles and first and second heads for the tool; a depending post mounted on one of the heads in position to engage the top of a bonded bracket or tube to be forced between the bracket or tube and the tooth to which it is bonded; and an elongated depending catch member mounted on the other of the heads and having a tip at the distal end thereof in position to extend under the edge of the bracket or tube when the post engages the top of the bracket or tube as the handles are squeezed together.

4,514,172

APPARATUS SUPPORTING A PLURALITY OF DENTAL INSTRUMENTS

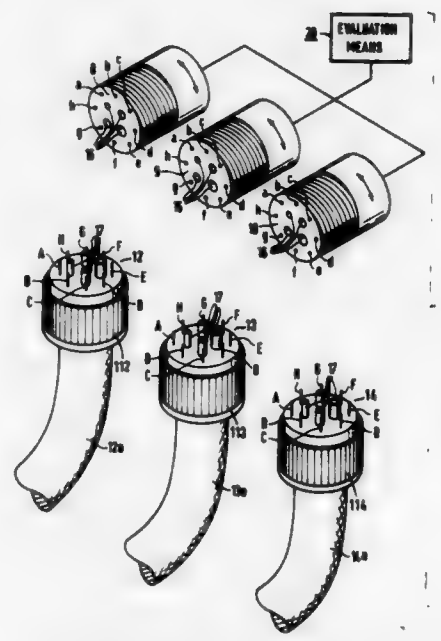
Wolfgang Behringer, Bensheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,779

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243294

Int. Cl.³ A61C *1/08*

U.S. Cl. 433—126 **6 Claims**



1. In an apparatus for supporting a dental handpiece and for supplying necessary operating agents to the handpiece, said

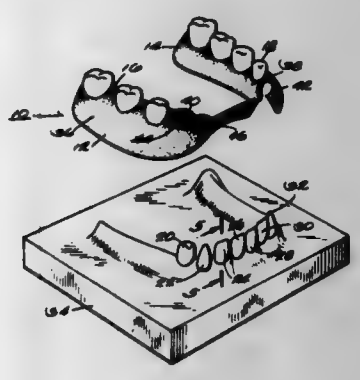
handpiece having a hose containing supply lines extending to a connecting member, said apparatus including a housing having support means including at least one support recess for receiving and storing a dental handpiece, a coupling member for each support means coacting with the connecting member of the handpiece to connect agent supply lines in the housing to the supply lines of the hose of the handpiece, and control means for controlling the flow of agents to the elements in the coupling member, the improvements comprising said housing including a source of water, a source of air and at least one source of electrical power, each coupling member being disposed in an easily accessible portion of the housing, said connecting and coupling members being designed for easy releasable interconnection, said coupling member being constructed with elements for separately transferring electrical power, air and water from the sources in the housing to the connecting member of the handpiece, said control means having evaluation means for receiving signals indicating the type of handpiece being connected to the coupling member and selectively connecting the various sources to the elements of the coupling member in response to the indicated type of handpiece, and said coupling member and connecting member having cooperating coding means for creating a signal to indicate the type of handpiece being connected by the coupling member so that the evaluation means automatically selects the desired agents for a specific type of handpiece when that handpiece is connected to the coupling member.

4,514,173

DENTURE COUPLING

Eugene L. Re, 1920 SW. 52nd Ter., Plantation, Fla. 33317

Filed Jan. 30, 1981, Ser. No. 229,827
Int. Cl.³ A61C *13/02*
U.S. Cl. 433—178 **1 Claim**



1. In a prosthetic denture of the type adapted for repetitive detachable engagement with at least the terminal teeth of a series of consecutive remaining natural teeth, said denture comprising buccal and lingual flanges depending from an artificial tooth anchoring portion thereof, said buccal flange having first and second separated portions extending generally posteriorly of said terminal teeth, wherein a portion of said denture positioned adjacent at least one of said remaining natural teeth has no buccal flange; the improvements comprising:

A. clasping members defined by horseshoe-shaped walls integrally formed in the anterior ends of said first and second separated portions to embrace the neck portions of at least said terminal teeth; and

B. a sealing member for each wall comprising elastomeric material bonded to and substantially coextensive with said wall for forming a continuous line seal between said wall and the embraced portion of the terminal teeth;

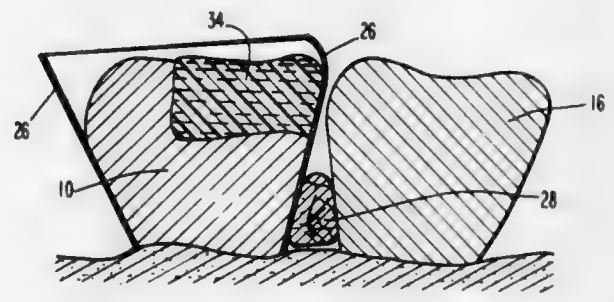
whereby to anchor said denture to said terminal teeth while preventing the entry of foreign matter between said walls and the embraced portions of said teeth.

4,514,174

METHODS FOR POSTERIOR DENTAL RESTORATION EMPLOYING LIGHT CURABLE PACKABLE COMPOSITIONS

Emery W. Dougherty, York, Pa.; John B. Heyde, Milford, Del.; Richard J. Bennett, Milford, Del.; Roy L. Smith, Milford, Del.; Louis H. Tateosian, and George T. Eden, both of York, Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Nov. 19, 1982, Ser. No. 443,154
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—226 **24 Claims**



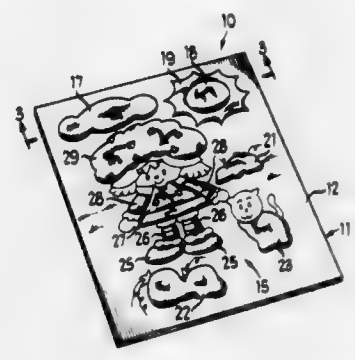
14. A method for the restoration of a tooth comprising:
selecting a tooth in need of restoration;
removing a portion of said tooth to form a cavity preparation;
applying to said cavity preparation a light curable restorative composition having a resistance to penetration of at least about 175 g./mm^2; compacting said composition and polymerizing said composition by exposure thereof to actinic light for a time sufficient substantially to harden said composition.

4,514,175

CHILDREN'S STUFFED-ART CRAFT SET

John V. Zaruba, Chicago; Steven P. Hanson, Winnetka; Beth E. Luecke, Chicago, and Wayne A. Kuna, Oak Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 20, 1984, Ser. No. 572,302
Int. Cl.³ G09B *11/00*
U.S. Cl. 434—82 **15 Claims**



1. A children's craft set comprising:
a backing board having a face surface and an opposite surface;
two-dimensional graphics defining a plurality of elements on the face surface;
a first opening conforming in shape to at least one of the elements extending through the background board;
a first backing piece conforming in shape to the first opening and fitting into the first opening leaving a first peripheral gap; and
a first piece of resilient material large enough to cover the opening with some extra material remaining to wedge into the first peripheral gap between the first backing piece and the first opening when the first piece of material and the

APRIL 30, 1985 GENERAL AND MECHANICAL 2241

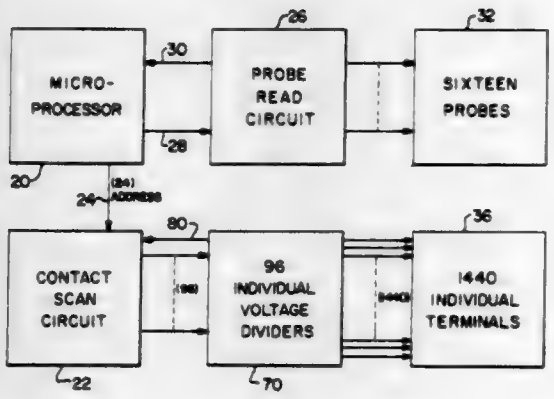
first backing piece are pushed into the first opening from the opposite side to secure the first backing piece in the first opening.

4,514,176

AUTOMATIC TEACHING APPARATUS AND METHOD

Don S. Boyer, Placentia, and John C. Freeborn, West Covina, both of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 13, 1983, Ser. No. 484,652
Int. Cl.³ G09B 5/00
U.S. Cl. 434—224 **4 Claims**



1. In a teaching machine, in combination:

a plurality of resistors interconnected at junction points in a plurality of individual series circuits:

a plurality of simulator terminals, at predetermined locations, connected in known relation to said junction points:

a plurality of simulator probes engagable individually with any one of said terminals:

voltage responsive output means;

means selectively connecting said output means to said probes individually in a first sequence;

means initially maintaining all said junction points at a predetermined voltage, so that when a selected probe is brought into engagement with any terminal, said output means gives an output, whereby to indicate which of said probes is engaging some contact by the site in said first sequence at which said output is given;

and means for successively establishing voltage differences across selected ones of said circuits in a second sequence, so that the voltages at said junction points in each selected circuit differ mutually and from said predetermined voltage, whereby, when the terminal engaged by said probe is in connection with a junction in the selected circuit, said output changes to a value which identifies the location of the terminal.

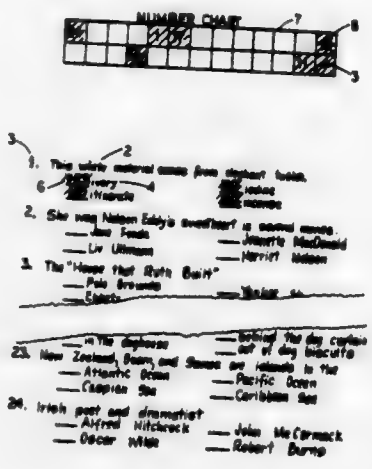
4,514,177

INVISIBLE INK QUIZ GAME

Leon G. Lenkoff, Louisville, Ky., assignor to Stry-Lenkoff Co., Louisville, Ky.

Filed Jan. 23, 1984, Ser. No. 572,882
Int. Cl.³ G09B 3/06; A63F 9/18
U.S. Cl. 434—328 **13 Claims**

1. A quiz game device including a first defined area with a number of questions and associated specific identifying indicia visibly set forth thereon, each question having at least two visibly marked selectable answers with chemically treated invisibly marked designations adjacent thereto to indicate correctness of the answer selected and responded to by a player when marked visible; a chemically treated marking means to mark said answers visible, and a second defined area having random chance selection means in the form of a number of randomly marked invisible identifying indicia which, when marked visible with said marking means, serve to expressly



designate specifically the correspondingly specific visible identifying indicia of the question to be responded to by a player.

4,514,178

METHOD AND APPARATUS FOR COORDINATION OF GARMENTS

Peter Noto, Staten Island, and Michael Reid, New York, both of N.Y., assignors to Garan, Inc., New York, N.Y.

Continuation of Ser. No. 366,178, Apr. 7, 1982, abandoned. This application Jan. 31, 1984, Ser. No. 551,112
Int. Cl.³ G09B 25/00
U.S. Cl. 434—395 **11 Claims**



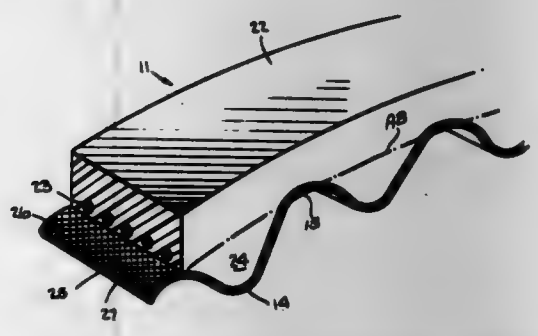
1. Apparatus for coordination of one or more members of a first set of garments with one or more members of a second set of garments by the visual characteristics thereof, each of the garment sets comprising a plurality of members, at least some of which have different visual characteristics from others, said apparatus comprising first and second sets of marking bearing devices, a different one of the devices in said first device set being associated with each member of the first garment set, a different one of the devices in said second device set being associated with each member of the second garment set, each of said devices in said first device set bearing a single marking from a set of markings comprising a plurality of different markings, all of said devices in said second device set bearing each of said markings in said marking set, and means, associated with each of said devices in said second device set, for designating one or more of said markings thereon, said designated markings corresponding to a subset of said devices in said second device set which bear the same marking as the designated marking, each of the members of the first garment set associated with a device in said subset of devices coordinating with the member in said second garment set associated with the device of said second device set bearing said designated marking.

4,514,179

POWER TRANSMISSION BELT WITH FABRIC COVER

William A. Skura, New Haven, Conn., assignor to Uniroyal, Inc., Middlebury, Conn.

Filed Mar. 2, 1983, Ser. No. 471,923
Int. Cl.[3] F16G *1/28*
U.S. Cl. 474—204 12 Claims



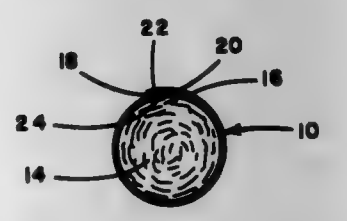
1. A positive drive power transmission belt having an elastomeric body portion, a tensile band embedded in the body portion, a plurality of teeth of elastomeric material integral with the body portion and each possessing a predetermined spring rate, said teeth being positioned along a peripheral surface of the belt, and a fabric cover formed over the teeth and over the land portions between the teeth, said fabric comprising warp and weft yarns and locking means cooperating with said warp and weft yarns for substantially locking them with respect to each other at the intersections thereof for dimensionally substantially stabilizing said fabric, said locking means at least partially obstructing the interstices of said fabric whereby said interstices are substantially free of said elastomeric material, said fabric cover cooperating with said teeth such that the spring rate of each fabric covered tooth is greater than 1.2 times and less than 3 times the spring rate of such tooth alone.

4,514,180

METHOD OF MAKING FILTER FOR A CIGARETTE PRODUCT

Kurt A. Manecke, Valley Station, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Division of Ser. No. 254,804, Apr. 16, 1981,. This application Jul. 6, 1982, Ser. No. 395,428
Int. Cl.[3] A24C *5/50*
U.S. Cl. 493—41 2 Claims



1. A method of making a cylindrical filter for a cigarette product comprising the steps of:

applying spaced parallel lines of a hot melt adhesive along opposite longitudinal portions of and to the same surface of a web of porous filter wrap material having a width slightly greater than the circumference of the cylindrical filter the distance between said spaced parallel lines of adhesive being substantially equal to the circumference of said filter rod;

adding a cylindrical filter plug to the web of filter wrap material so that the surface of the web having said adhesive lines is contiguous to the cylindrical filter plug; and,

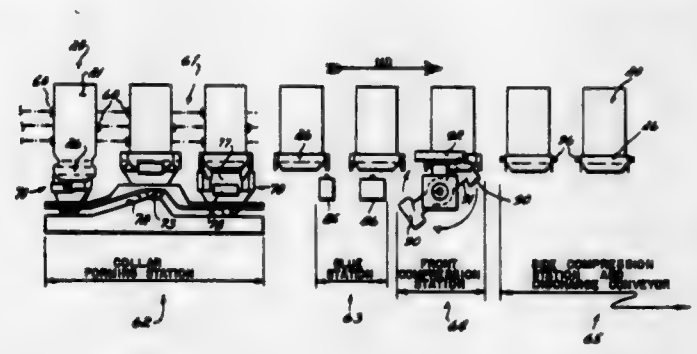
forming the web of filter wrap around the filter plug and overlapping the longitudinal edges of the web whereby one of said lines of adhesive is disposed between the overlapping longitudinal edges of the web of filter wrap securing the overlapping longitudinal edges of the web of filter wrap together and the other line of adhesive is disposed between the web of filter wrap and the filter plug superimposed with the first line of adhesive thereby anchoring the filter wrap to the filter plug.

4,514,181

APPARATUS FOR FORMING A FLIP TOP CARTON

Charles C. Hughes, Villa Hills, Ky., assignor to R. A. Jones & Co. Inc., Covington, Ky.

Filed Sep. 15, 1983, Ser. No. 532,455
Int. Cl.[3] B31B *1/62*
U.S. Cl. 493—131 9 Claims



1. Apparatus for forming the top portion of a flip top carton having interconnected front and side flaps and a separate rear flap, said front and side flaps being transversely creased or scored to present a lower section foldable on the top portion of the carton, a middle section foldable on said lower section, and a glue flap, said apparatus comprising,

a transport conveyor for carrying a plurality of cartons erected to a tubular form, and aligned so that the longitudinal axis of each carton is transverse to the conveying direction,

a forming conveyor parallel to said transport conveyor for carrying a plurality of formers each engageable with the top of a respective carton,

cam means associated with said forming conveyor for moving said formers toward and away from said cartons,

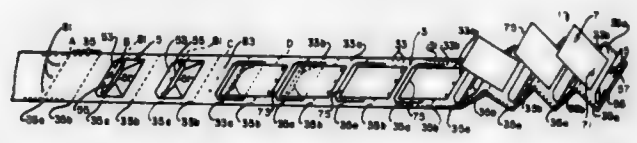
each said former having surfaces engageable with said middle and lower sections of a carton to fold said lower sections upon the top portion of said carton and to fold said middle section on said lower section.

4,514,182

METHOD OF AFFIXING ENVELOPES AND LETTERHEADS TO A CARRIER SHEET AND ASSEMBLY FORMED THEREBY

H. Richard VerMehren, 1395 Yaqui Dr., Florissant, Mo. 63031

Filed Dec. 13, 1982, Ser. No. 449,519
Int. Cl.[3] B31B *1/90*
U.S. Cl. 493—216 8 Claims



7. A method for affixing envelopes and letter sheets to a continuous carrier sheet having a plurality of panels in such a manner that the envelopes and letter sheets alternate and are continuously shingled, each of said envelopes comprising a body part and a closure flap connected to the body part along a closure flap fold, said method comprising a step of affixing envelope flaps and letter sheets to the same specific panels of the carrier sheet and on the same side of said carrier sheet so that said letter sheets are affixed to said panels at a position not covered by said envelope bodies, with said envelopes in an open position, and a step of closing said envelopes without removing said envelopes from said carrier sheet by folding and turning said envelope bodies about said closure flap folds

thereby overlapping said letter sheets when in said closed position.

4,514,183

CENTRIFUGE WITH SELF-EMPTYING DRUM

Werner Kohlstette, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

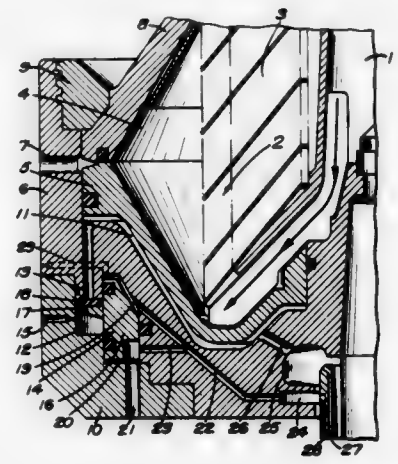
Filed Mar. 2, 1983, Ser. No. 471,419

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208808

Int. Cl.³ B04B *11/02*

U.S. Cl. 494—27 **3 Claims**

1. In a centrifuge having a self-emptying drum with expulsion openings which are opened and closed by piston slide movable in response to pressure from closure fluid in a closure chamber having outlet channels therearound which are opened and closed by a valve body actuated by control fluid received in control chambers thereof, the expulsion openings and outlet channels being opened during emptying, the improvement comprising: first means forming a blocking chamber fluid-tightly separated from the control chambers and into which the outlet channels communicate when opened by the valve body, the blocking chamber having throttled outlets and configured to accommodate a part of the closure fluid from the closure chamber; and second means for supplying closure fluid to the closure chamber during emptying to effect a blocking of the outlet channels by the closure fluid in the blocking chamber to initiate a closing motion of the piston slide upon a reduction in pressure in the drum; whereby an opening motion of the



valve body initiates an opening motion of the piston slide for partial opening with the valve body maintained in an open position during partial emptying and closed after the piston slide has reached a closing position.

4,514,184

LEATHER TREATMENT COMPOSITION AND LEATHER TREATING

John A. Thompson, Milwaukee, Wis., assignor to Henkel Corporation, Minneapolis, Minn.

Division of Ser. No. 374,577, May 3, 1982, Pat. No. 4,491,645. This application Nov. 9, 1984, Ser. No. 670,529

Int. Cl.³ C14C *3/22, 9/00, 9/04*

U.S. Cl. 8—94.21 **11 Claims**

1. A process for treating leather comprising contacting the leather article with a mixture comprising:

(a) from about 0.15% to about 1.25% by weight aliphatic cyclic anhydride;

(b) from about 1.5 to about 4.5% by weight of a vinyl acrylate copolymer having free carboxyl groups and a glass transition temperature of from about 35° C. to about 45° C.;

(c) from about 1.5% to about 4.5% of a vinyl acrylate copolymer having free hydroxyl groups and a glass transition temperature of from about 15° to about 22° C.;

(d) from about 88% to about 96% by weight of water; and

(e) a sufficient amount of base to maintain an alkaline pH,

thereby coating said article, followed by heating the coated article.

4,514,185

FABRIC WASHING PROCESS AND DETERGENT COMPOSITION FOR USE THEREIN

Robert S. Lee, and Reginald V. Scowen, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,395

Claims priority, application United Kingdom, Jun. 18, 1981, 8118802

Int. Cl.³ B08B *3/00, 3/08*

U.S. Cl. 8—137 **8 Claims**

1. A method of washing fabrics in water containing calcium hardness, comprising:

(a) contacting the fabrics with a wash liquor to which has been added at least:

(i) a synthetic detergent active material;

(ii) an alkali metal carbonate as a primary detergent builder material; and

(b) subsequently effectively contacting the wash liquor with a secondary detergency builder, at or after the wash liquor has reached the critical state and adding the secondary detergency builder in such an amount as to reduce the free calcium ion concentration in the wash liquor to about 10^{-5} or less within at most 60 minutes from the addition of the alkali metal carbonate to the hard water, the amount of the secondary builder being insufficient in the absence of said carbonate, to reduce the free calcium ion concentration to less than about 10^{-5} molar.

4,514,186

AQUEOUS FORMULATIONS OF WATER-INSOLUBLE OR SPARINGLY WATER-SOLUBLE DYES AND HYPOPHOSPHITE/UNSATURATED ACID TELDMER

Alain Lauton, Saint-Louis, France, and Zdenek Koci, Binningen, Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

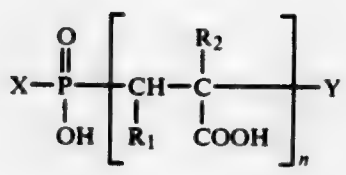
Filed Oct. 25, 1983, Ser. No. 545,416

Claims priority, application Switzerland, Apr. 11, 1982, 6415/82

Int. Cl.³ C09B *67/40;* **D06P** *1/52*

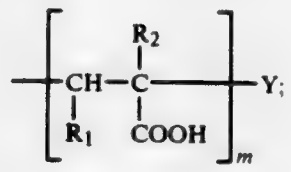
U.S. Cl. 8—527 **8 Claims**

1. An aqueous dyestuff formulation comprising at least one water-insoluble or sparingly water-soluble dye, an anionic dispersant, as well as optionally further ingredients, which formulation contains at least one telomer of the formula I

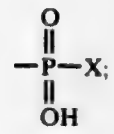


(I)

or a salt thereof, wherein X is hydrogen or



Y is hydrogen, $-SO_4H$ or



each of R_1 and R_2 independently of the other is hydrogen, C_1-C_4 alkyl which is unsubstituted or substituted by a carboxyl group or is carboxyl; and the sum of $n+m$ is an integer from 2 to 350.

4,514,187

PROCESS FOR DYEING DIFFERENTIAL-DYEING POLYAMIDE FIBRES

Hans U. Schütz, Basle; Helmut Raisin, Riehen, and Th s Bouwknegt, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

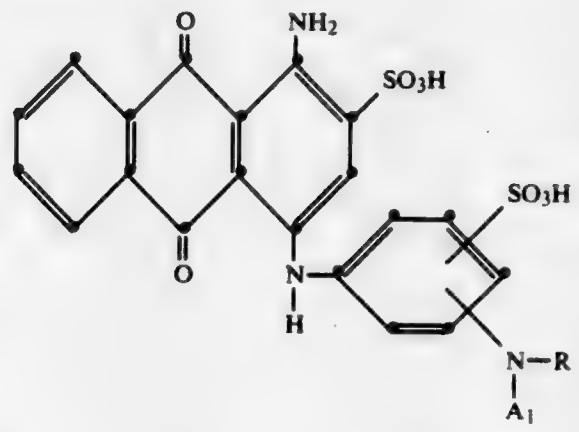
Filed Jul. 14, 1983, Ser. No. 513,596

Claims priority, application Switzerland, Jul. 21, 1982, 4450/82

Int. Cl.³ C09B *1/34;* **D06P** *3/06*

U.S. Cl. 8—531 **33 Claims**

1. A process for the differential dyeing of polyamide fibers or mixtures of polyamide fibers which have components of different dyeability, comprising the step of applying to said fibers an aqueous liquor which contains a disulfo dye of the formula



in which A_1 is hydrogen or C_{1-4}-alkyl and R is C_{2-5}-alkanoyl, C_{3-6}-alkenoyl, phenoxycarbonyl, C_{1-4}-alkylsulfonyl or phenylsulfonyl, the alkyl, alkenyl, alkoxy, phenoxy or phenyl moieties of which are unsubstituted or substituted.

4,514,188

USE OF DISAZO-COPPER COMPLEX DYESTUFFS FOR DYEING NATURAL AND SYNTHETIC MATERIALS

Martin Michna, and Hermann Henk, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

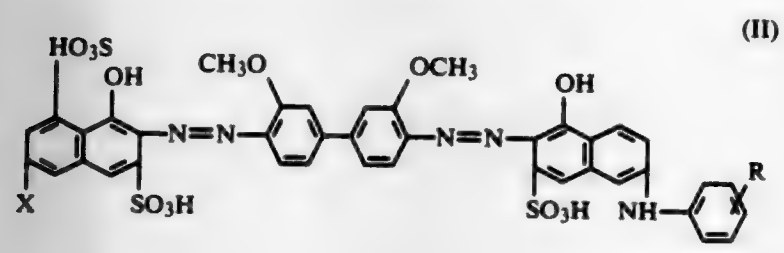
Filed Oct. 3, 1983, Ser. No. 538,686

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239509

Int. Cl.³ C09B *45/28;* D06P *1/10;* D21H *1/46*

U.S. Cl. 8—641 **7 Claims**

1. A process for dyeing cellulose fibre material wherein the dyestuff is a mono-copper complex (I) of a dyestuff of the formula II



(II)

wherein

X is SO_3H and

R is H, C_1-C_4-alkyl, C_1-C_4-alkoxy, carboxyl, halogen or sulpho,

or of a mixture thereof with a bis-copper complex (III) of a dyestuff of the formula (II), wherein the total mixtures contain up to 50% by weight of (III).

4,514,189

CARBONACEOUS MATERIALS WATER MIXTURES

John G. Papalos, Ledgewood, and Joseph V. Sinka, Mendham, both of N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Feb. 24, 1983, Ser. No. 469,168

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **12 Claims**

1. A water slurry of solid particulate carbonaceous materials having present a condensate which is a condensation product of

(a) an aldehyde having from about 1 to about 7 carbon atoms,

(b) a benzene derivative selected from the group consisting of benzene sulfonic acid, an alkyl benzene sulfonic acid having at least one alkyl group of from about 1 to about 20 carbon atoms and mixtures thereof, and optionally

(c) a naphthalene derivative selected from the group consisting of naphthalene sulfonic acid, an alkyl naphthalene sulfonic acid having at least one alkyl group of from about 1 to about 12 carbon atoms and mixtures thereof,

the condensate being present in an amount sufficient to reduce viscosity of the water slurry, to stabilize carbonaceous materials in the water network, to form a soft sediment and to improve pumpability of the water slurry.

4,514,190

SYNTHETIC FUEL COMPOSITION

Thomas J. Cousineau, and John A. Cengel, both of Wheaton, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 436,443, Oct. 25, 1982,. This application Jan. 16, 1984, Ser. No. 571,376

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—70 **4 Claims**

1. A two-cycle engine fuel composition comprising a liquid hydrocarbon of gasoline boiling range in admixture with a lubricant which comprises di-n-hexyl 1,3-cyclohexanedicarboxylate, wherein the ratio by weight of gasoline hydrocarbon to lubricant is from about 15:1 to about 100:1.

4,514,191

SLAG REMOVAL APPARATUS

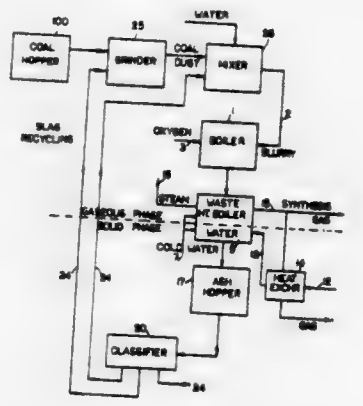
Josef Langhoff, Dinslaken-Hiefeld, and Jürgen Seipenbusch, Essen, both of Fed. Rep. of Germany, assignors to Ruhrkohle AG, Essen, Fed. Rep. of Germany

Division of Ser. No. 216,826, Dec. 15, 1980, Pat. No. 4,425,254. This application Sep. 27, 1982, Ser. No. 424,639

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828562

Int. Cl.³ C10J *3/52*

U.S. Cl. 48—77 **27 Claims**



1. An apparatus for the removal of slag particles evolving in a coal-gasification process including a reactor with coal inlet means and oxygen containing gas inlet means located at the top of said reactor for reaction of coal with a gasification medium at predetermined reactive pressure and temperature levels located above a water bath means contained at the bottom of said reactor, means for removing the generated gas from said reactor above said water bath means, wherein said slag particles collect by free-fall through said water bath means to the bottom thereof, said apparatus comprising: a water bath means located substantially at a bottom region of said reactor; annular duct means connected to a source of oil additive agent and having nozzles positioned for spraying the additive agent transversely of a fall trajectory of said slag particles for wetting the slag particles and causing the slag particles to stick to one another, said spraying means being substantially in a region of said water bath means, the apparatus including a water duct means located superjacent to said annular means for feeding water to said water bath means; and means connected at the bottom of said water bath means for removing the collected slag particles.

4,514,192

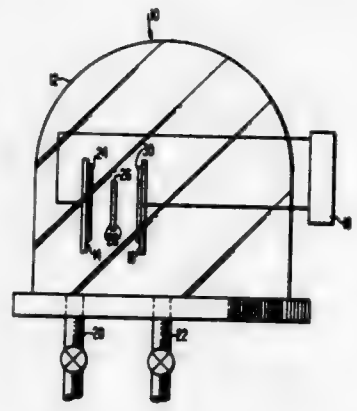
SILICON OXIDE LAPPING COATINGS

Surendra K. Verma, Carmel, and George A. Kim, Indianapolis, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 27, 1982, Ser. No. 402,379

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—295 **11 Claims**



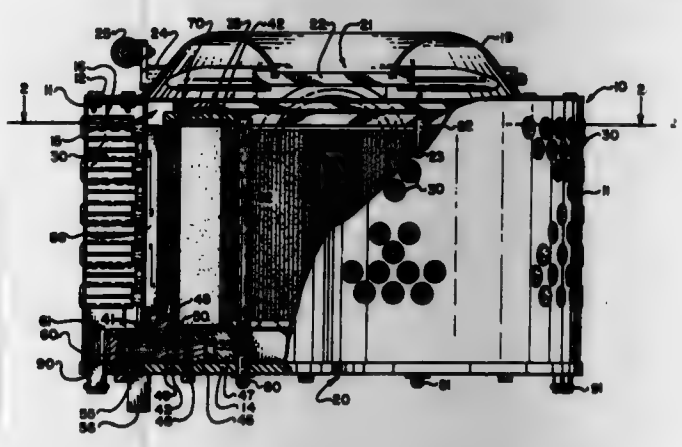
1. In a lapping disc comprising a substrate and an SiO_x lapping coating thereon, where $1 \leqq x \leqq 2$,

the improvement wherein the SiO_x coating contains a dopant selected from the group consisting of boron and phosphorous in an amount sufficient to enhance the micromachining abilities of said coating.

4,514,193
SELF-CLEANING AIR CLEANER ASSEMBLY WITH ROTATING FILTER ELEMENT AND INERTIAL PRE-CLEANER

Donald S. Booth, Burnsville, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jul. 26, 1984, Ser. No. 634,462
Int. Cl.[3] B01D *50/00*
U.S. Cl. 55—290 12 Claims



1. An air cleaner assembly comprising:

a plurality of wall members defining a cylindrical filter element chamber having an outlet port and a scavenging air chamber;

a plurality of inertial tube pre-cleaners supported in said air chamber for receiving air to be filtered from outside the filter, separating solid materials from said air, and delivering separated air to said element chamber;

a scavenging air outlet port formed through one of said wall members and adapted to be coupled to a negative pressure source for drawing scavenged air and solid materials intermixed therewith from said scavenging air chamber;

a cylindrical barrier filter element concentrically disposed in said element chamber with the interior of said filter element in fluid communication with said outlet port;

turntable and seal means for supporting said filter element for rotational movement and for sealing said filter element to prevent the leakage of separated air around said filter element and out of said outlet port;

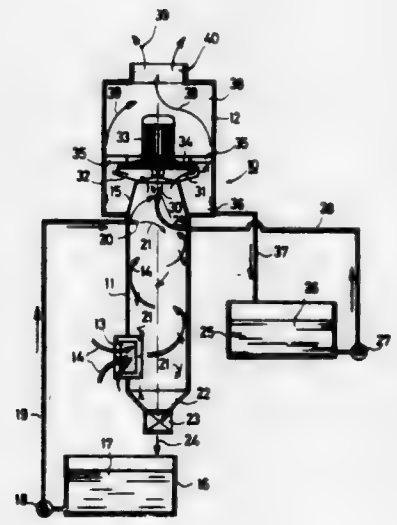
air nozzle means disposed on the interior side of said filter element with its axis substantially parallel to the axis of the filter element and in close proximity to said filter element, said nozzle connectable to a source of pressurized air for directing a reverse flow of air through said filter element to dislodge filtered particles accumulated on said filter element; and

means providing a port between said filter element chamber and said scavenging air chamber to provide a fluid path from said filter element chamber to said scavenging air chamber whereby dislodged particles are carried away from the outward surface of said filter.

4,514,194
APPARATUS AND METHOD FOR REMOVING GASEOUS COMPONENTS AND/OR SOLID IMPURITIES PRESENT IN A GASEOUS FLUID FLOW

Viljo J. Järvenpää, Vellamontie 21 as. 6, 04200 Kerava, Finland

Continuation-in-part of Ser. No. 409,533, Aug. 19, 1982, Pat. No. 4,478,616. This application Sep. 20, 1983, Ser. No. 533,961
Int. Cl.[3] B01D *47/06, 47/12*
U.S. Cl. 55—91 14 Claims



1. Apparatus for removing gaseous components and/or solid impurities from a gaseous fluid flow, comprising:

a pre-purification section for the pre-purification of the gaseous fluid flow including a pre-purification chamber, inlet means through which the gaseous fluid flow is introduced into said pre-purification chamber, outlet means through which the pre-purified gaseous fluid flow is discharged from said pre-purification chamber, and first scrubbing liquid means for conducting a first scrubbing liquid into contact with the gaseous fluid flow to pre-purify the latter;

a fine-purification section for the fine-purification of the pre-purified gaseous fluid flow discharged from said pre-purification section, said fine-purification section including a fine-purification chamber, scrubber means disposed in said fine-purification chamber, and outlet means through which the fine-purified gaseous fluid flow is discharged from said fine-purification chamber;

flow passage and accelerating means for conducting the pre-purified gaseous fluid flow from said pre-purification section directly to said scrubber means of said fine-purification section and for accelerating the pre-purified gaseous fluid flow prior to the latter reaching said scrubber means of said fine-purification section;

means for conducting a second scrubbing liquid into contact with the pre-purified gaseous fluid flow as the latter is accelerated in its conduction to the scrubber means of said fine-purification section; and

said scrubber means include impeller means for accelerating a total fluid flow comprising the second scrubbing liquid flow from said second scrubbing liquid conducting means and the pre-purified gaseous fluid flow to higher velocities and for separating droplets of the second scrubbing liquid from the total fluid flow.

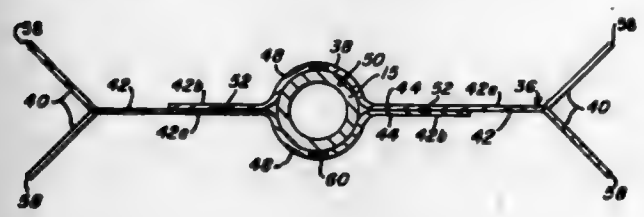
4,514,195
DISCHARGE ELECTRODE

Everett L. Coe, Jr., Downey, Calif., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 192,589, Oct. 1, 1980, abandoned, which is a continuation of Ser. No. 946,925, Sep. 28, 1978, abandoned, which is a division of Ser. No. 788,171, Apr. 18, 1977, abandoned. This application Apr. 25, 1984, Ser. No. 603,978

Int. Cl.[3] B03C *3/41*

U.S. Cl. 55—152 16 Claims



1. A discharge electrode assembly for use in an electrostatic precipitator for propagation of corona discharge wherein said discharge electrode assembly includes an elongated support portion which is substantially longitudinally coextensive with at least a major portion of the longitudinal extent of said electrode assembly and is located laterally intermediate a pair of laterally spaced apart longitudinal side portions of said assembly, said electrode assembly comprising: a pair of elongated formed body elements each substantially longitudinally coextensive with at least a major portion of the longitudinal extent of said electrode assembly; each of said body elements including a pair of laterally spaced apart edge portions longitudinally coextensive therewith and an elongated formed intermediate portion substantially coextensive therewith and spaced laterally from at least one of said pair of edge portions; said pair of body elements being maintained in mutually juxtaposed laterally overlapping relationship with respect to each other to form said electrode assembly in a manner that one of said edge portions of each said body element extends laterally outward of the overlapping portions of said body elements to form the laterally outermost extent of a respective one of said side portions and the respective formed intermediate portions of said body elements cooperate to form said elongated support portion; and at least one of said body elements including longitudinally extending corona discharge means formed integrally therewith adjacent the respective said one edge portion thereof and spaced laterally from said elongated support portion, said discharge means extending at least a major portion of the longitudinal extent of said electrode assembly.

4,514,196
ABSORPTION TOWER FOR GAS WASHING

Bo Herrlander, Växjö, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

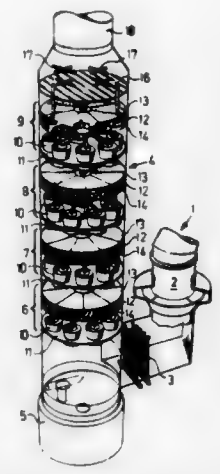
Filed May 6, 1983, Ser. No. 492,357

Claims priority, application Sweden, May 10, 1982, 82029208

Int. Cl.[3] B01D *47/10*

U.S. Cl. 55—223 5 Claims

1. An absorption tower for gas washing having upstanding walls defining a vertical flow passage in which the gas flows, a gas inlet in the lower portion of the tower, and an outlet at the top, so that the gas flows upwards through the passage while making contact with washing fluid, the tower being provided with at least two transverse baffles extending between the walls to prevent downward flow of washing liquid in the tower through or past the baffles to define at least two washing stages, each stage comprising at least one restricted tube extending upright through the baffle through which the gas is subjected to a speed increase, supply means including a fluid nozzle in the gas flow path for discharging washing fluid into the gas exhausted from the restricted tube, any fluid which is not entrained in the upwardly flowing gas passing through the gas and onto the baffle, the tube in each washing stage projecting above the baffle at a height to cause the baffle to collect a body of the washing fluid on the baffle, and drain means to discharge the washing fluid from the body of fluid on the baffle and a conduit to recirculate the washing fluid from the baffle to the fluid nozzle, said supply means being positioned adjacent the upper portion of said tube and constructed and arranged to discharge the recirculated washing fluid into



the exhausted gas substantially concurrently therewith and in directions forming angles to the vertical, at least the major portion of said fluid discharge being at such angle and at such velocity that the fluid passes past the top opening of the tube into the collecting baffle and will not be permitted to flow backwards into the opening of the tube even if the gas flow through the tower is interrupted.

4,514,197
FILTER FOR AIR CIRCULATOR

Joseph M. Armbruster, 2700 NE. 47th St., Lighthouse Point, Fla. 33064

Filed Feb. 15, 1983, Ser. No. 467,074

Int. Cl.[3] B01D *50/00*

U.S. Cl. 55—316 2 Claims



1. A filter for use with an air circulator having an airflow passage, said filter comprising a frame, a pair of screens having peripheral portions connected to the frame to form an enclosure with the main portions of the screens being spaced apart to form a space, at least one screen being corrugated with alternate crests being disposed upstream and downstream of the airflow, and a layer of activated carbon filling the space between the screen with the carbon conforming with the corrugations to increase the surface area exposed to the airflow, said downstream screen being flat, said corrugated screen having alternate crests adjacent the flat screen, said corrugated screen having V-shaped corrugations to define a plurality of areas filled with filter material of triangular cross sectional configuration with the apexes upstream, thereby providing a filter with the thinnest areas of the filter being located at the points of adjacency of the flat screen and alternate crests of the corrugated screen, said frame including an inwardly extending flange in spaced overlying relation to the upstream apexes of the corrugated screen, and a prefilter in the form of a panel of flexible, resilient foam plastic material engaging the apexes of the corrugated screen remote from the flat screen with the periphery of the resilient panel being inserted under the inwardly extending flange on the frame to prefilter air entering the airflow passage prior to it engaging the activated carbon

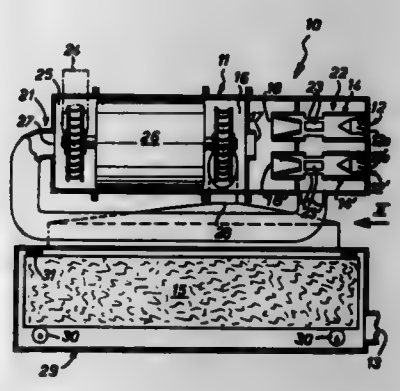
with the inwardly extending flange retaining the prefilter panel in place and the flexibility of the foam plastic enabling the prefilter panel to be removed so that particulate material removed from the air by the prefilter panel can be easily washed from the foam material by holding it under running water or squeezing it while immersed in water or other cleaning solution, said triangular areas of activated carbon providing a maximum surface scrub area and providing equal static pressure along the inner surface of the prefilter to assure that air will scrub over the entire corrugated surface of the activated carbon with the evenly distributed air passing through the prefilter traveling down the sides of the triangular areas of the activated carbon and scrubbing against such surfaces while maintaining a low static pressure requirement to move air through the carbon material at the areas in which the corrugated screen crests are disposed adjacent the flat screen.

4,514,198

APPARATUS FOR PRESSURIZATION AND FILTRATION OF CONTAMINATED AIR

Guy Develle, Domont, and Gerard Martin, La Garenne-Colombes, both of France, assignors to Sofiltra Poelman, La Garenne-Colombes, France

Filed Mar. 8, 1983, Ser. No. 473,613
Claims priority, application France, Mar. 8, 1982, 82 03818
Int. Cl.[3] B01D *50/00*
U.S. Cl. 55—337 9 Claims



1. In an apparatus for the pressurization and filtration of contaminated air, comprising at least one dust separator having a contaminated air inlet and a dust outlet and an air outlet, at least one filter in flow communication with said air outlet so as to receive air from said air outlet, a first blower positioned and arranged for forcing the latter air through the at least one filter, a second blower in flow communication with said dust outlet so as to receive dust from said dust outlet and evacuates the latter dust from the apparatus; the improvement comprising a single driving device, said first and second blowers being coupled to said single driving device at either side thereof, the intake of at least one of said first and second blowers being positioned and arranged close to one of said air outlet and dust outlet.

4,514,199

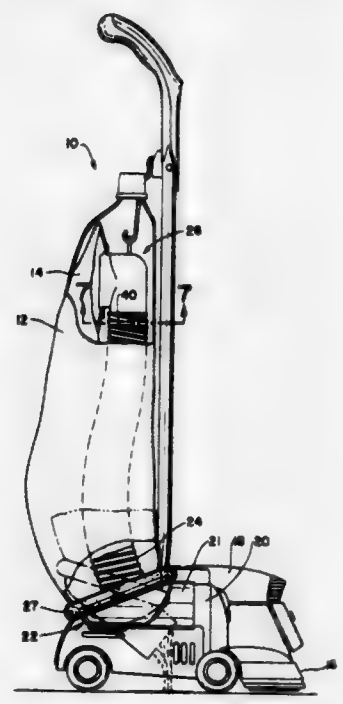
VACUUM CLEANER DIRT BOX

Roger S. Ford, North Ridgeville; Herman J. Shie, III, Elyria, both of Ohio, and Thomas E. Baird, Sr., Springfield, Ill., assignors to The Scott & Fetzer Company, Cleveland, Ohio

Filed May 25, 1984, Ser. No. 614,261
Int. Cl.[3] B01D *50/00*
U.S. Cl. 55—337 5 Claims

1. In an upright vacuum cleaner having a blower and a blower outlet tube, a dirt-collecting box comprising a top wall which slants downwardly in the lengthwise direction in the normal position of use of the box, a side wall which is elliptical in shape where it is adjacent said top wall, a bowl-shaped permanently closed bottom wall, said walls defining a dirt box chamber, an inlet neck connected to said blower outlet tube and opening through said bowl-shaped bottom wall into the chamber in the lengthwise direction and spaced below one end of the top wall, said opening of the inlet neck into the chamber being spaced downwardly from said one end of the top wall by said elliptical portion of said side wall, the center of said inlet neck being aimed in a lengthwise direction but to one side of the center of the chamber and also being aimed convergently toward said downwardly slanting top wall, and a laterally centered outlet port in the top wall, the center of said outlet port being longitudinally offset from the center of the top wall toward the end thereof associated with said one end of the top wall whereby air passes through said dirt box with a swirling motion and heavy objects are caught within said chamber and separated with relatively little turbulence of the passing air, said chamber being emptyable by disconnection of said inlet neck from said blower outlet tube and downward tilting of said neck for emptying of said chamber therethrough.

4. A dirt-collecting box for an upright vacuum cleaner comprising a chamber having a top wall which slants downwardly from front to back in the normal position of use of the box, said chamber also having a side wall which is elliptical in shape where it is adjacent said top wall, said elliptical shape being divided into symmetrical lateral halves by a first imaginary plane of symmetry passing through the long axis of the elliptical shape and being divided into symmetrical front and back halves by a second imaginary plane of symmetry passing through the short axis of the elliptical shape, lower portions of said side wall fairing into a bowl forming a bottom wall for the chamber, an outlet port in the top wall, said outlet port being generally symmetrical with respect to said first imaginary plane of symmetry, the central axis of said outlet port being offset forwardly of said second imaginary plane of symmetry but generally parallel thereto, an inlet neck extending into said bowl from the front end thereof, the central axis of said inlet neck forming an acute angle with its own projection on said second plane, said last-named axis being offset from said first imaginary plane of symmetry but generally parallel thereto.



5. In an upright vacuum cleaner, a fill tube leading from the outlet of a dirt box to a connection to a disposable bag, said outlet including a threaded outlet collar at the outlet port of the dirt box, said fill tube comprising a helically ridged and grooved flexible plastic tube having one end engaging the threading of the collar along at least part of the length of the collar, said threading having a generally flat crest with a relatively sharp crest edge on the side of the thread that faces the dirt box and a relatively rounded crest edge on the opposite side of the thread, said tube sealing to said sharp edge in the absence of a clamp or cable tie.

4,514,200

FILTER BAG FOR FLOOR CARE APPLIANCE

William R. Sumerau, Easley, and Gordon E. Laing, Anderson, both of S.C., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 30, 1984, Ser. No. 605,098
Int. Cl.[3] B01D *46/02*
U.S. Cl. 55—368 2 Claims



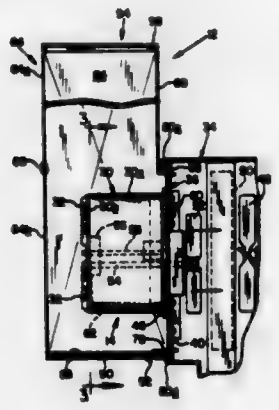
1. A filter bag comprising filter sheet material configured into a single elongate tubular form with substantially flat opposing walls and accordion pleated portions joining said walls, the opposite ends of said elongate tubular form being folded, said end folds being secured to define air impermeable seals, one of said flat opposing walls being formed with two spaced apertures, the first being an inlet opening arranged inwardly of one of said end folds, a second of said spaced apertures being arranged generally midway between said end folds and inwardly of said first aperture, said elongate tubular form being folded upon itself along a transverse line bisecting said second of said spaced apertures with said apertured wall arranged with confronting contiguous plies inside the folded tubular form, and means sealing said confronting contiguous plies of said apertured wall together surrounding said folded upon itself second aperture.

4,514,201

AIR INTAKE ANTI-FOULING STACK

Duane G. Brown, 812 SW. Carden, Pendleton, Oreg. 97801

Filed Feb. 18, 1983, Ser. No. 467,768
Int. Cl.[3] B01D *46/24, 46/48;* B60K *11/04*
U.S. Cl. 55—385 B 3 Claims



1. An anti-fouling, air intake stack for use on a combine having an engine, a housing enclosing the engine including a vertical portion having an aperture through which air travels for cooling the engine, and a rotary screen air-filtering basket mounted on the vertical portion and extending outwardly around the periphery of the aperture, said stack comprising:

a vertical, single-chambered box having an open top, and an open bottom, said box including a member positioned and arranged to be selectively movable between a first position closing said bottom and a second position in which the bottom is at least partially open, and vertical sides attached to and extending from the bottom,

including one side with an opening disposed adjacent said bottom and sized to allow passage of the basket freely therethrough, said one side being fixedly mountable on the vertical portion so as to allow the basket to extend through the side opening,

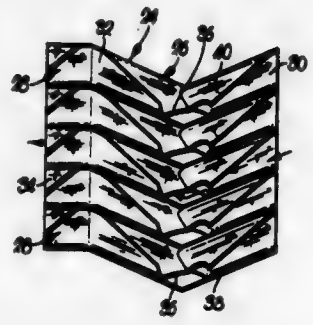
said box being sized to receive internally, entirely and unobstructedly the basket when said one side is mounted on the vertical portion.

4,514,202

AIR STREAM ENTRAINED WATER ELIMINATOR FOR CROSS FLOW COOLING TOWER

Ohler L. Kinney, Jr., Leawood, and Joyce D. Holmberg, Overland Park, both of Kans., assignors to The Marley Cooling Tower Company, Mission, Kans.

Continuation of Ser. No. 488,096, Apr. 25, 1983, abandoned. This application Sep. 12, 1984, Ser. No. 649,617
Int. Cl.[3] B01D *45/16*
U.S. Cl. 55—440 6 Claims



1. A drift eliminator adapted to be positioned in a crossflow cooling tower between the fill assembly and outlet chamber for removing moisture from the crossflowing, moisture-laden air exiting the fill assembly in a generally horizontal direction, said eliminator comprising:

a plurality on imperforate, spaced, aligned, upright wall members each having first, second and third angularly interconnected generally parallel, planar panels;

a plurality of upright, corrugated wall elements, each corrugated element being secured between adjacent wall members and having first, second and third angularly interconnected panels of longitudinally serpentine configuration, said first, second and third serpentine panels being disposed adjacent respective first, second and third planar panels,

said serpentine panels forming peaks and valleys each of which has a linear extent, the linear extent of the peaks and valleys being at an angle with respect to adjacent zones of merger of the planar panels and the linear extent of the peaks and valleys of each of the serpentine panels being at an angle with respect to the linear extent of the peaks and valleys of the next adjacent serpentine panel;

each corrugated wall element having peaks and valleys and the respectively adjacent wall members cooperating to define spaces which present a plurality of generally vertically stacked, discrete air-receiving cells, each cell presenting inlet, intermediate and outlet diversion sections wherein

the spaces between the first serpentine panel of each corrugated wall element and the first planar panels of the adjacent wall members present a plurality of vertically stacked, elongated inlet air diversion sections longitudinally oriented upwardly in a first direction,

the spaces between the second serpentine panel of each corrugated wall element and the second planar panels of the adjacent wall members present a plurality of vertically stacked, elongated, intermediate diversion sections longitudinally oriented upwardly in a second direction different from said first direction,

the spaces between the third serpentine panel of each

corrugated wall element and the third planar panels of the adjacent wall members present a plurality of vertically stacked, elongated outlet diversion sections longitudinally oriented upwardly in a third direction different from said second direction; and

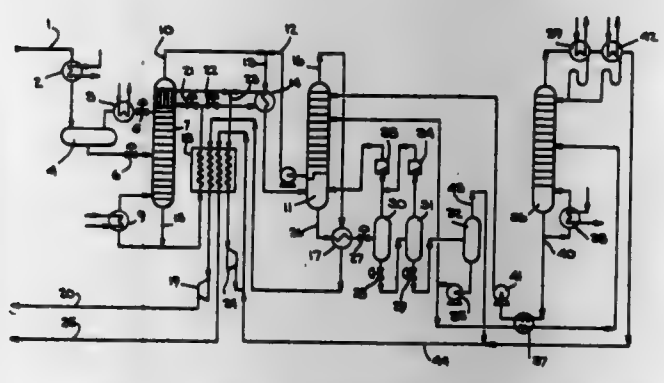
each corrugated wall element having a plurality of individual perforations extending therethrough and disposed in upright alignment, the perforations being located at the zones of merger of the first and second serpentine panels and in each of the peaks of the corrugations of said first and second serpentine panels, perforations being operable to clear moisture from the walls of each cell as the cross-flowing, moisture-laden air transits therethrough, the generally aligned perforations providing a downward moisture flow path through the cells for collecting moisture in the lowermost portion of the cooling tower.

4,514,203

CRYOGENIC PROCESS FOR REMOVING ACIDIC GASES FROM GAS MIXTURES

Luigi Gazzi, Milan; Giancarlo Cotone, S. Donato Milanese; Gianfraco Soldati, S. Donato Milanese; Alessandro Ginnasi, S. Donato Milanese; Alessandro Vetere, Milan, and Carlo Rescalli, S. Donato Milanese, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Jun. 23, 1982, Ser. No. 391,282
Claims priority, application Italy, Jul. 23, 1981, 23081 A/81
Int. Cl.³ F25J *3/00, 3/02*
U.S. Cl. 62—17 **20 Claims**



1. A cryogenic process for removing acidic gases, such as H_2S and CO_2, from natural gas or syngas consisting the steps of:

(a) feeding the natural gas or syngas to a distillation column under a pressure of from 30 to 75 absolute atmospheres at a head temperature between −80° C. and −30° C. and a bottom temperature between −7° C. and +50° C.;

(b) feeding the partially purified gas exiting from the distillation column with a solvent for selective absorption of acidic gases, the solvent being selected from the group consisting of methyl formate, methyl acetate, ethyl acetate, tetrahydropyran, 1,3-dioxolane, tetrahydrofuran, methyltetrahydrofuran, 1,2-dimethoxyethane, 1-methoxyethanol, 2-methoxyethylacetate and dimethoxydiethyleneglycol and mixtures thereof; to an absorption column under the same pressure as the distillation column and at a temperature between −100° C. and −10° C. to further reduce the acidic gas content to a desired level;

(c) regenerating the spent solvents from said absorption column by one or more expansion stages to recover the solvents;

(d) removing the acidic gases by one or more additional expansion stage; and

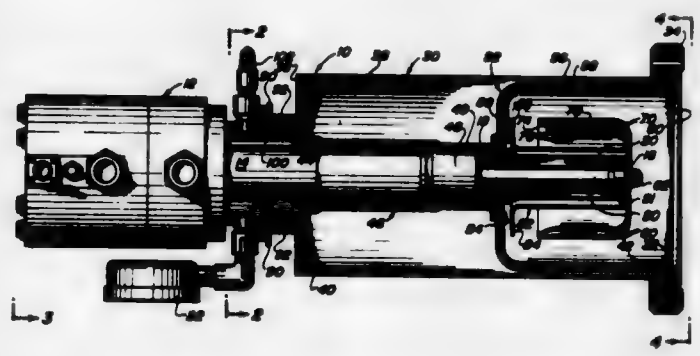
(e) recycling the recovered solvents to said absorption column.

4,514,204

BAKEABLE CRYOPUMP

Glenn E. Bonney, and Ralph C. Longsworth, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 21, 1983, Ser. No. 477,478
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—41 **14 Claims**



1. A bakeable cryopump comprising in combination:

a flange designed for mounting said cryopump to a vacuum chamber normally operated at vacuums of 10^{-10} torr or below; a generally cylindrical refrigerator housing fixed to said flange, said refrigerator housing designed and arranged to receive a two-stage displacer-expander refrigerator head so that a coldest stage of said refrigerator head can be brought in thermal contact with a closed end of said refrigerator housing said refrigerator removable from said housing without loss of vacuum inside said cryopump, said refrigerator housing further designed and arranged in combination with a thermal transfer media contained in said housing at approximately 1 atmosphere pressure to thermally contact a warmer stage of said refrigerator; at least one cryopanel fixed to said closed end of the refrigerator housing said cryopanel including means to minimize radiant heat loads and to cryopump hydrogen, said housing and said cryopanel fabricated from materials and by methods to minimize out-gassing of the structure under vacuum; said refrigerator head being designed to be readily removed from said refrigerator housing and said cryopump housing heated to temperatures above 200° C. under vacuum conditions to remove adsorbed gases from said cryopanel.

4,514,205

FIBER COOLING APPARATUS

Charles M. Darcangelo, Corning; Max R. Montierth, Elmira, both of N.Y., and Yang-Chou M. Ni, Lexington, Ky., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 318,374, Nov. 5, 1981,. This application Mar. 9, 1984, Ser. No. 587,816
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—12 **7 Claims**

1. In an apparatus for drawing a single optical fiber comprising, in order of relative location:

a solid glass preform having at one end thereof a softened root portion wherein the preform cross-sectional area tapers to the cross-sectional area of said single fiber,

means situated along said fiber below said root portion for measuring the diameter of said fiber,

means for cooling said fiber,

means for applying protective coating material to said fiber, and

means for drawing said fiber, characterized in that said means for cooling comprises

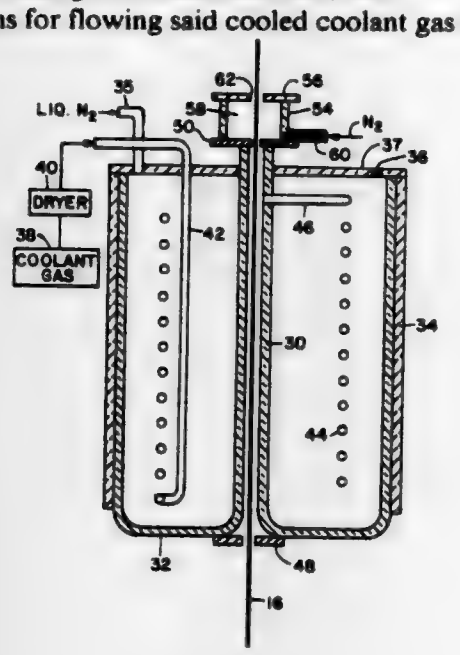
an elongated tube surrounding said fiber, the top of said tube being below said diameter measuring means,

means supplying coolant gas,

a reservoir in which said tube is centrally disposed, said reservoir containing liquified gas,

means for cooling said coolant gas prior to the time that said coolant gas reaches said tube, and

means for flowing said cooled coolant gas through said tube



and axially along that portion of said fiber within said tube whereby said fiber is cooled to a temperature that is sufficiently low that said fiber does not adversely affect said protective coating material.

4,514,206

METHOD FOR THE PRODUCTION OF A TRANSVERSE CORRUGATED OR SERRATED INTERIOR PIPE OF A DOUBLE-WALLED SPECIAL GAS DISCHARGE PIPE WITH HIGH ANGLE SELECTIVITY

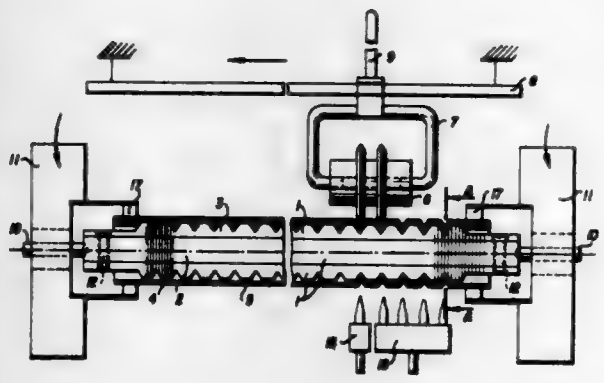
Udo Roselt, Lobeda-Ost; Lothar Nolte, Jena, and Manfred Pöhler, Halle-Neustadt, all of German Democratic Rep., assignors to VEB Kombinat Feinmechanische Werke Halle, Halle, German Democratic Rep.

Filed Jan. 5, 1984, Ser. No. 573,895

Claims priority, application German Democratic Rep., Apr. 11, 1983, 249730

Int. Cl.³ C03B *23/04*; B29C *17/07*

U.S. Cl. 65—108 **20 Claims**



1. A method for the production of a substantially transversely deformed cylindrical pipe which comprises:

(a) providing a smooth-walled substantially rectilinear cylindrical pipe, said pipe being principally composed of a thermoplastic solid material;

(b) providing a first transformation tool, said first tool having a substantially rectilinear central shaft and a one-part transformation tool element, said one-part tool element being mounted to a portion of the outer surface of said central shaft, and being provided with a plurality of parallel substantially identical external recesses in its outer surface, said first tool being configured so as to fit within said pipe and extend longitudinally therethrough with a substantial clearance fit;

(c) inserting said first tool longitudinally into said pipe, so that said central shaft and said pipe are substantially coaxial, with said pipe being concentrically disposed about said central shaft and contiguously external to said one-part tool element;

(d) centrally mounting the opposed ends of said central shaft on first support elements, so that said first tool is rigidly and fixedly mounted on said first support elements, whereby said first tool is stationary, said first support elements being both longitudinally and transversely displaceable, said first tool being detachably mounted to said first support elements;

(d) mounting the opposed ends of said pipe on second support elements said second support elements being rotatable about the central longitudinal axis of said pipe, said pipe being detachably mounted to said second support elements;

(f) providing a second transformation tool, said second tool being external to and juxtaposed with said pipe, and aligned opposite to said one-part tool element, said second tool having a plurality of substantially circular and rotatable coaxially aligned dependent solid transformation elements, said circular transformation elements being substantially identical and of the same size with equal diameters, said elements being spaced apart and juxtaposed in registration, and being dependent from third support elements, so that said circular transformation elements are oriented substantially perpendicular to said pipe and are displaceable into contact with or spaced away from said pipe, and alternately displaceable parallel to the axis of said pipe when spaced away from said pipe, the spacing between adjacent pairs of circular transformation elements being substantially equal to the spacing between adjacent pairs of the external recesses in said one-part tool element, with the common central axis of said juxtaposed circular transformation elements being parallel to the longitudinal axis of said pipe, the perimeters of said circular transformation elements being configured so as to complement said external recesses in said one-part tool element;

(g) rotating said pipe about its central longitudinal axis, and about said stationary first tool;

(h) externally heating a first portion of said pipe during step (g), so that said first pipe portion becomes plastic and deformable, said first pipe portion being aligned with both said second tool and said one-part tool element;

(i) displacing said second tool towards said first pipe portion during step (h), so that each of said circular transformation elements extends into one of said external recesses in said one-part tool element and is pressed against said first pipe portion, and is rotated by static friction with the external surface of said first pipe portion, whereby said first pipe portion is transversely deformed, thereby forming a plurality of parallel substantially identical recesses in said first pipe portion;

(j) displacing said second tool away from said first pipe portion, and thereafter to a subsequent position in which said second tool is juxtaposed with a second pipe portion immediately adjacent to said first pipe portion;

(k) displacing said first tool transversely away from said first pipe portion, so that clearance is provided between said recesses in said first pipe portion and said one-part tool element, and thereafter both longitudinally followed by transversely, to a subsequent position in which said one-part tool element is contiguously juxtaposed with said second pipe portion;

(l) maintaining the heating of said first pipe portion;

(m) externally heating said second pipe portion, while maintaining the rotation movement of said pipe according to step (g), so that said second pipe portion becomes plastic and deformable;

(n) displacing said second tool towards said second pipe

portion during step (m), so that each of said circular transformation elements extends into one of said external recesses in said one-part tool element and is pressed against said second pipe portion, and is rotated by static friction with the external surface of said second pipe portion, and concomitantly guiding at least one of said circular transformation elements into one of the recesses previously formed in said first pipe portion according to step (i), and whereby said second pipe portion is transversely deformed, thereby forming at least one recess in said second pipe portion, said one recess being, parallel to and substantially identical with said recesses previously formed in said first pipe portion according to step (i);

(o) maintaining the heating of said first and second pipe portions, and any subsequent deformed pipe portions, which have been subsequently deformed seriatim, to form the requisite number of parallel and substantially identical recesses in and along said pipe;

(p) thereafter displacing said second transformation tool away from said pipe;

(q) terminating the heating of said pipe;

(r) subsequently removing said first transformation tool from within said pipe, thereby permitting the completed and substantially transversely deformed cylindrical pipe to cool in a tension-free environment; and

(s) removing said pipe from said second support elements, thereby recovering a product substantially transversely deformed cylindrical pipe having a plurality of spaced-apart parallel and substantially identical recesses in and along its length.

4,514,207

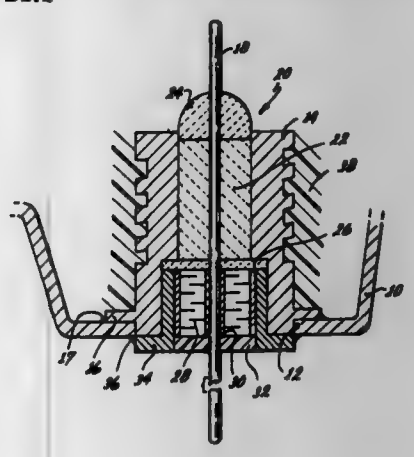
METHOD FOR MAKING TERMINAL ASSEMBLY FOR HEART PACEMAKER

James C. Kyle, 2547 Fisher Rd., Roseburg, Oreg. 97470, assignor to James C. Kyle, Roseburg, Oreg.

Division of Ser. No. 322,013, Nov. 16, 1981, Pat. No. 4,456,786, which is a continuation of Ser. No. 95,613, Nov. 19, 1979, abandoned. This application May 2, 1984, Ser. No. 606,394

Int. Cl.[3] **C03C** *27/02;* **H01B** *17/26*

U.S. Cl. 65—21.1 **9 Claims**



1. A method of forming insulating material for a terminal, including:

forming beads of a first insulating material having a partially crystalline and a partially amorphous composition from oxides of lead, boron and silicon and oxides of zinc and zirconium, where the oxides of lead, boron and silicon provide a flux,

forming beads of a second insulating material having a partially crystalline and a partially amorphous composition from the oxides of lead, boron and silicon and oxides of zinc and zirconium where the oxides of lead, boron and silicon provide a flux and the percentage of the flux in the second insulating material is greater than the percentage of the flux in the first material,

forming beads of a third insulating material having a partially crystalline and a partially amorphous composition from the oxides of lead, boron and silicon and oxides of zinc and zirconium and an inert material where the oxides of lead, boron and silicon provide a flux,

forming separate layers from the respective beads of the first, second and third insulating materials, and

applyng heat at a particular temperature for a limited period of time to fuse the beads of the first, second and third insulating materials.

4,514,208

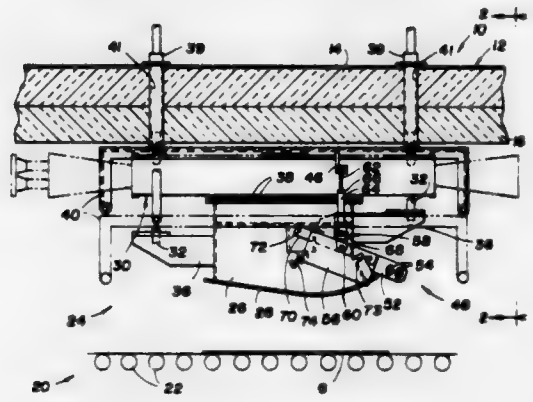
APPARATUS FOR BENDING GLASS SHEETS

Dean M. Nitschke, Maumee, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Filed Oct. 20, 1983, Ser. No. 543,916

Int. Cl.[3] **C03B** *23/035*

U.S. Cl. 65—273 **11 Claims**



1. In a glass sheet bending station including a conveyor for conveying glass sheets generally horizontally, and a holder assembly including a holder having a curved surface for receiving heated glass sheets from the conveyor, the improvement comprising:

a bending member mounted on the holder assembly for movement from a storage position located above the conveyor to a position below the curved surface and thereafter upwardly for engaging a heated glass sheet received by the holder from the conveyor to provide bending thereof to the curved shape of the holder surface.

4,514,209

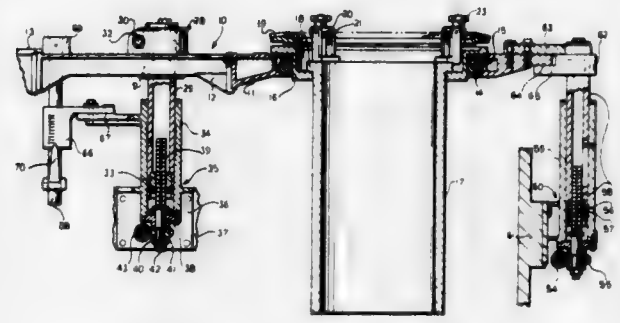
GLASS FEEDER TUBE SUPPORT

Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 1, 1983, Ser. No. 556,810

Int. Cl.[3] **G03B** *7/08*

U.S. Cl. 65—328 **6 Claims**



1. Apparatus for supporting a glass feeder tube in a feeder bowl, comprising a main horizontal frame having a circular opening therethrough, an annular bearing and ring mounted in said opening for supporting said feeder tube for rotation about its vertical axis, a drive motor mounted at one end of said frame, a drive shaft extending from said motor to said tube to said ring for rotating said tube, a first adjustable, vertical, support mounted to said feeder bowl and extending up to said frame, said support connected to said frame at one side of said

tube, a second adjustable vertical support mounted to said feeder bowl and extending up to and connected to said frame at a point on the opposite side of said tube, and means for adjusting the length of said supports in equal increments.

4,514,210

HERBICIDALLY ACTIVE METHYL-SUBSTITUTED TETRAHYDRO-2-PYRIMIDINONE DERIVATIVES

Masahiro Aya; Junichi Saito; Kazuomi Yasui, all of Tokyo, and Kozo Shiokawa, Kanagawa, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,696

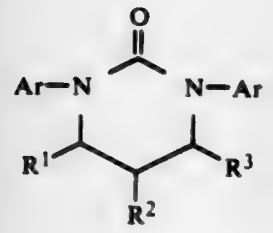
Claims priority, application Japan, Feb. 16, 1982, 57-22109

The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.

Int. Cl.[3] **C07D** *239/10;* **A01N** *43/54*

U.S. Cl. 71—92 **12 Claims**

1. A methyl-substituted tetrahydro-2-pyrimidinone of the formula



in which

Ar each independently is a phenyl or α-naphthyl group optionally substituted by at least one substituent selected from halogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, C_1 to C_6 akylthio, nitro, phenoxy and trifluoromethyl, and

R^1, R^2 and R^3 each independently is a hydrogen atom or a methyl group, at least one of R^1, R^2 and R^3 being a methyl group.

4,514,211

BENZOFURAN AND BENZOTHIOPHENE SULFONAMIDES

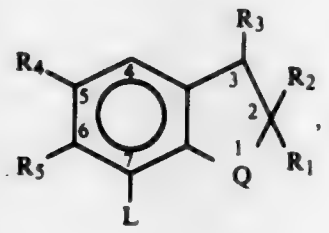
Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 410,993, Aug. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 317,183, Oct. 16, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 489,099

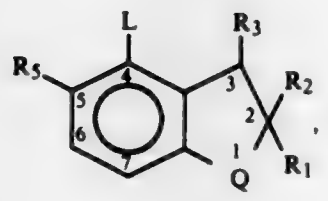
Int. Cl.[3] **C07D** *405/12, 409/12;* **A01N** *47/36*

U.S. Cl. 71—92 **52 Claims**

1. A compound selected from:

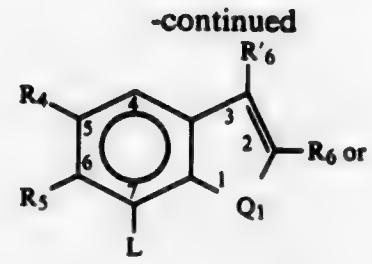


I

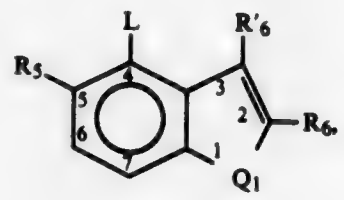


I'

-continued



II

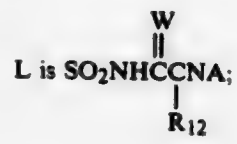


II'

wherein

Q is O, S, SO or SO_2;

Q_1 is O, S or SO_2



L is $SO_2NHCCNA$;

R_1 is H or C_1–C_4 alkyl;

R_2 is H or C_1–C_4 alkyl;

R_3 is H or CH_3;

R_4 is H, Cl, CH_3, CF_3, OCH_3, Br, F, SCH_3 or OCF_2H;

R_5 is H, CH_3, OCH_3, Cl, Br, NO_2, CO_2R_7, SO_2R_8, OSO_2R_9, $SO_2NR_{10}R_{11}$, F, CF_3, SCH_3, OCF_2H or $SO_2N(OCH_3)CH_3$;

R_6 is H, Cl, Br of C_1–C_4 alkyl;

R_6' is H, CH_3, Cl or Br;

R_7 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;

R_8 is C_1–C_3 alkyl;

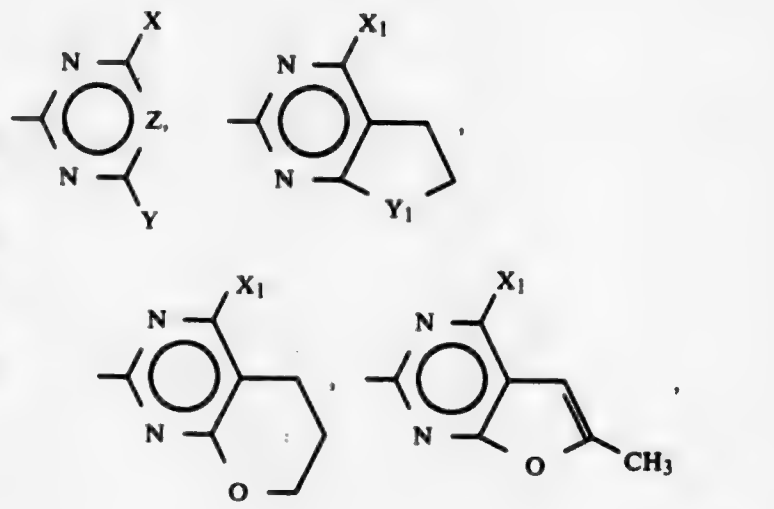
R_9 is C_1–C_3 alkyl or CF_3;

R_{10} and R_{11} are independently C_1–C_2 alkyl;

R_{12} is H or CH_3;

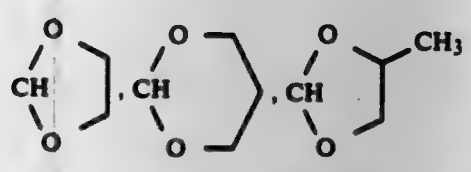
W is O or S;

A is



X is H, CH_3, OCH_3, Cl, F, OCF_2H or SCF_2H;

Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, $CH(OCH_3)_2$, $CH(OCH_2CH_3)_2$, C_2H_5, CF_3, $CH_2{=}CHCH_2O$,



$CH{\equiv}CCH_2O$, CF_3CH_2O, OCH_2CH_2Cl, OCH_2CH_2Br, OCH_2CH_2F, CN, $CH_2OCH_2CH_3$, $OCH_2CH_2OCH_3$ or GCF_2T wherein G is O or S and T is H, CHClF, CHBrF, CF_2H or $CHFCF_3$;

Z is CH, N, CCH_3, CC_2H_5, CCl or CBr;

Y_1 is O or CH_2;

X_1 is CH_3, OCH_3, OC_2H_5 or OCF_2H;

X_2 is CH_3, C_2H_5 or CH_2CF_3;

Y_2 is C_2H_5, CH_3, OCH_3, OC_2H_5, SCH_3 or SC_2H_5; and

X_3 is CH_3 or OCH_3; provided that

(1) in Formulae II and II', when R_5 is NO_2, then R_6 is C_1–C_4 alkyl and R_6' is CH_3;

(2) when X is Cl or F, then Z is CH and Y is OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;

(3) when Q is SO, then W is O;

(4) when R_4 is other than H, then R_5 is H; and

(5) R_1 and R_2 taken together are not more than four carbon atoms.

4,514,212

N-PHENYLSULFONYL-N'-TRIAZINYLUREAS

Willy Meyer, Riehen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

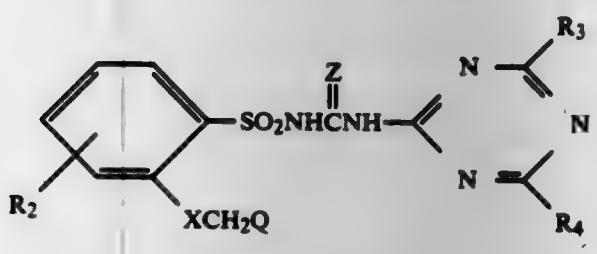
Continuation-in-part of Ser. No. 282,779, Jul. 13, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,594

Claims priority, application Switzerland, Jul. 17, 1980, 5481/80; Nov. 5, 1980, 8216/80; Jun. 17, 1981, 3991/81

Int. Cl.[3] **C07D** *251/42, 251/44, 251/46;* **A01N** *43/66*

U.S. Cl. 71—93 **19 Claims**

1. A compound selected from the group consisting of an N-phenylsulfonyl-N'-triazinylurea of the formula:



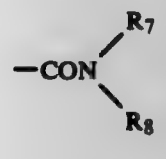
wherein

Q is $-CH_2Cl$, $-CCl_3$, $-CHClCH_2Cl$, $-CHBrCH_2Br$, $-CHClCHClCH_3$, $-CHBrCHBrCH_3$, $-CHBrCBr(CH_3)_2$, $-CBr(CH_3)CH_2Br$ or $-CCl(CH_3)CH_2Cl$;

X is —S—, —O—, —SO— OR SO_2—;

Z is —O—, OR —S—;

R_2 is hydrogen, halo, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, haloalkyl of 1 to 4 carbon atoms, nitro, $-YR_5$, —COOR6 or



in which

Y is —O—, —S—, —SO— or $-SO_2$—;

each of R_5 and R_6 is alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, or alkynyl of 2 to 6 carbon atoms; and

each of R_7 and R_8 independently of the other is hydrogen, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms or alkynyl of 2 to 6 carbon atoms; and

each of R_3 and R_4 independently of the other is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms, halo, or alkoxyalkyl of 2 to 4 carbon atoms; and

the amine, quaternary ammonium, alkali metal and alkaline earth metal salts thereof.

14. A herbicidal and growth regulating composition which comprises an effective amount of at least one compound according to claim 1, together with a suitable carrier therefor.

4,514,213

HERBICIDAL SULFONAMIDES

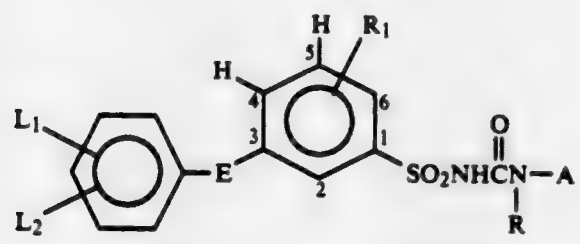
William T. Zimmerman, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1984, Ser. No. 590,881

Int. Cl.[3] **C07D** *251/18, 251/46;* **A01N** *43/66, 43/70*

U.S. Cl. 71—93 **19 Claims**

1. A compound of the formula



I

wherein

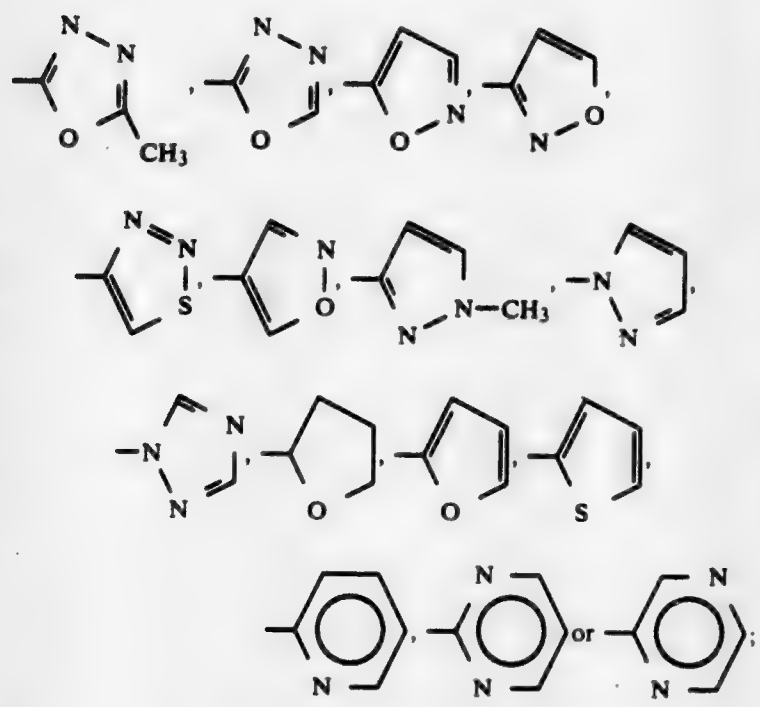
E is O or a single bond;

L_1 is H, F, Cl, Br, NO_2, CH_3, OCH_3 or CF_3;

L_2 is H, F, Cl, Br, CH_3 or OCH_3;

R is H or CH_3;

R_1 is CO_2R_2, $S(O)_nR_3$, $SO_2NR_4R_5$, $SO_2N(OCH_3)CH_3$, OSO_2R_6, WCF_3, $WCHF_2$, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_1–C_2 alkyl substituted with OCH_3 or OC_2H_5, CH_2CH_2Cl, CF_3,



R_2 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;

R_3 is C_1–C_3 alkyl or $CH_2CH{=}CH_2$;

R_4 is H or C_1–C_2 alkyl;

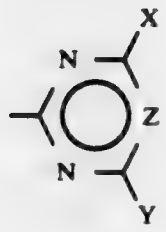
R_5 is C_1–C_2 alkyl;

R_6 is C_1–C_3 alkyl, CF_3 or $N(CH_3)_2$;

W is O or S;

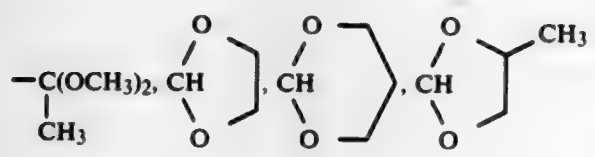
n is 0, 1 or 2;

A is

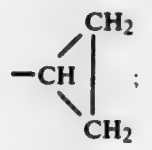


X is CH_3, OCH_3, OCH_2CH_3, OCF_2H, CH_2F, CH_2Cl, CH_2Br or CF_3;

Y is H, CH_3, OCH_3, OCH_2CH_3, CH_2OCH_3, $CH_2OCH_2CH_3$, NH_2, $NHCH_3$, $N(CH_3)_2$, $N(OCH_3)CH_3$, CH_2CH_3, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, OCH_2CF_3, $OCH_2CH_2OCH_3$, CH_2SCH_3, OCF_2H, OCH_2CH_2F, —CH-$(OCH_3)_2$,



$CH(OCH_2CH_3)_2$ or



Z is N.

8. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim **1** and at least one of the following: surfactant, solid or liquid inert diluent.

4,514,214

HERBICIDAL SULFAMATES

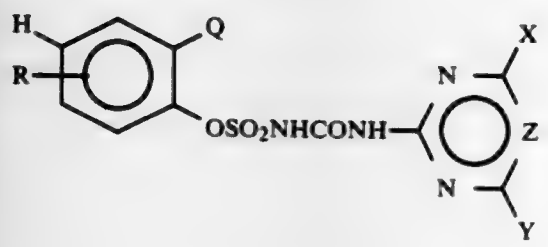
Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 473,322, Mar. 15, 1983, Pat. No. 4,475,944, which is a continuation-in-part of Ser. No. 386,680, Jun. 9, 1982, abandoned. This application Aug. 6, 1984, Ser. No. 637,783

Int. Cl.[3] **C07D** *403/12;* **A01N** *43/66;* **C07D** *413/12, 417/12*

U.S. Cl. 71—93 **36 Claims**

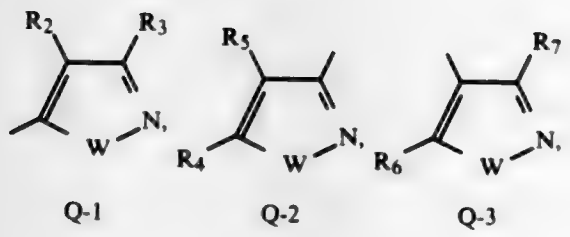
1. A compound of the formula:



I

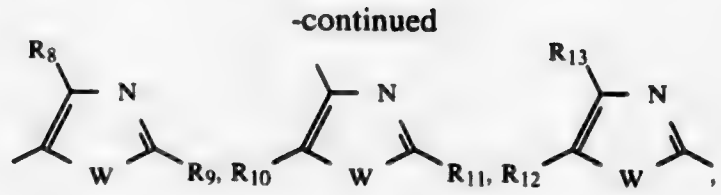
where

Q is

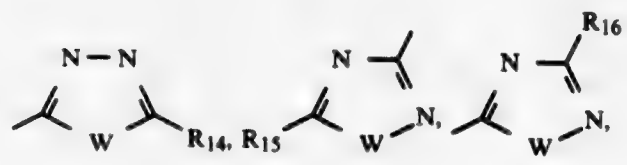


Q-1 Q-2 Q-3

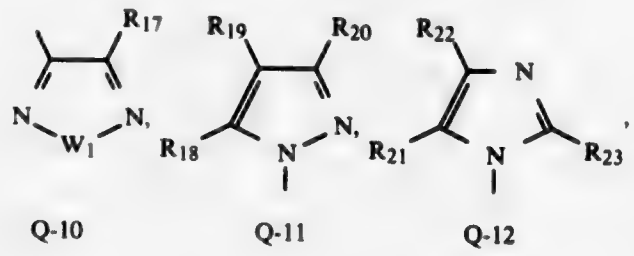
-continued



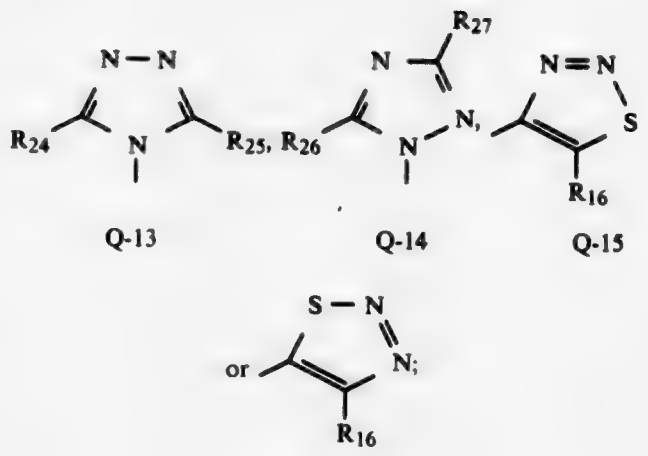
Q-4 Q-5 Q-6



Q-7 Q-8 Q-9



Q-10 Q-11 Q-12



Q-13 Q-14 Q-15

Q-16

R is H, F, Cl, Br, CH_3, CF_3 or OCH_3;

W is O, S or NR_1;

W_1 is O or S;

R_1 is C_1–C_3 alkyl;

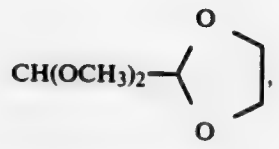
R_2, R_3, R_4, R_5, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{19}, R_{21}, R_{22}, R_{23}, R_{25} or R_{27} are independently H, CH_3 or C_2H_5;

R_6, R_7, R_{17}, R_{24} or R_{26} are independently H or CH_3;

R_{18} or R_{20} are independently H or C_1–C_3 alkyl;

X is Cl, CH_3, OCH_3, OCF_2H or SCF_2H;

Y is CH_3, C_2H_5, OCH_3, OC_2H_5, OCH_2CF_3, CH_2OCH_3,



or GCF_2T where G is O or S and T is H, CHClF, CHBrF, CF_2H or $CHFCF_3$; and Z is N;

provided that when X is Cl, then Y is OCH_3 or OC_2H_5; and their agriculturally suitable salts.

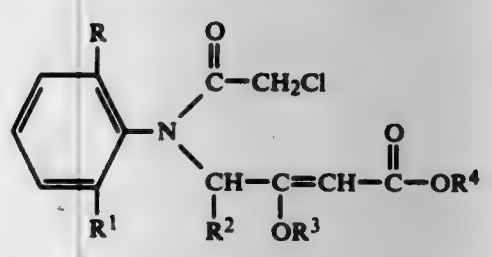
23. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim **1** and at least one of the following: surfactant, solid or liquid diluent.

4,514,215
4-(2,6-DIALKYLPHENYLAMINO)-3-ALKOXY-2-BUTENOIC ACID AND THEIR USE AS HERBICIDES

James B. Heather, Hercules, and David B. Kanne, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

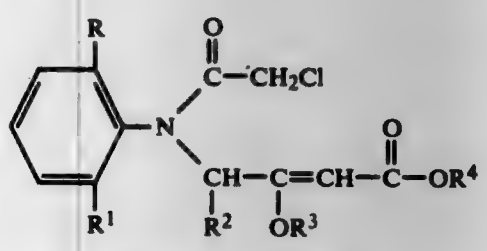
Filed Dec. 12, 1983, Ser. No. 560,621
Int. Cl.³ A01N *37/10*; C07C *101/453*
U.S. Cl. 71—107 10 Claims

1. A compound having the structural formula



wherein R is Chd 1-C_4 alkyl; R^1 is C_1–C_4 alkyl; R^2 is hydrogen or methyl; R^3 is methyl or ethyl; and R^4 is C_1–C_4 alkyl.

6. The method of controlling grasses comprising applying pre-emergence or pre-plant to the area where control is desired, an herbicidally effective amount of a compound having the formula

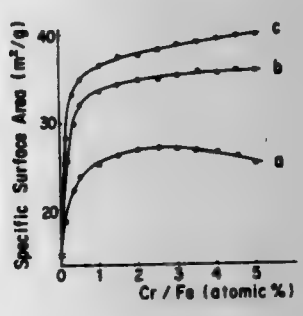


wherein R is C_1–C_4 alkyl; R^1 is C_1–C_4 alkyl; R^2 is hydrogen or methyl; R^3 is methyl or ethyl; and R^4 is C_1–C_4 alkyl.

4,514,216
ACICULAR FERROMAGNETIC ALLOY PARTICLES FOR MAGNETIC RECORDING AND PROCESS FOR PRODUCING THE SAME

Akio Mishima; Yoshiro Okuda; Tosiharu Harada; Akira Mukaizaka, and Tomoyuki Imai, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Jan. 24, 1984, Ser. No. 573,489
Claims priority, application Japan, Apr. 30, 1983, 58-77166; May 31, 1983, 58-98506
Int. Cl.³ H01F *1/09, 1/33*
U.S. Cl. 75—0.5 AA 6 Claims



1. Acicular ferromagnetic alloy particles for magnetic recording, comprising the acicular ferromagnetic alloy particles containing Si, Cr, Ni and P impregnated with phosphorus compound and silicon compound.

4,514,217
METHOD OF PRODUCING LEAD FROM SULPHIDIC LEAD RAW-MATERIAL

Stig A. Petersson, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed May 10, 1984, Ser. No. 608,948
Claims priority, application Sweden, May 17, 1983, 8302764
Int. Cl.³ C22B *4/04, 13/00*
U.S. Cl. 75—10 R 7 Claims

1. A method for producing lead from sulphidic lead raw material comprising:

(a) autogenously smelting the sulphidic lead raw material in a shaft in the presence of oxygen gas or air enriched in oxygen thereby forming an oxide-containing molten product;

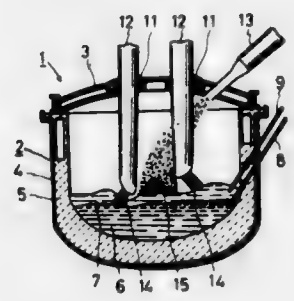
(b) passing the oxide-containing molten product directly through a heated coke bed arranged in the lower part of the shaft thereby forming a molten lead phase and a slag phase depleted in lead, said coke bed being heated by at least one of partial combustion of carbon therein and electrical energy; and

(c) recovering the molten lead phase.

4,514,218
REDUCED IRON MELTING METHOD USING ELECTRIC ARC FURNACE

Etsuo Inagaki, Nagoya, Japan, assignor to Daidotokushuko Kabushikikaisha, Japan

Filed Jun. 6, 1984, Ser. No. 617,778
Int. Cl.³ C21C *5/52*
U.S. Cl. 75—12 1 Claim



1. A process for melting reduced iron by using an electric arc furnace having a space for melting in its inside and verically movable electrodes in the upper part, the process comprising the following steps (a) to (c):

(a) forming a pool of molten metal at the bottom of the melting space of the furnace while forming a layer of slag overlying said molten metal;

(b) continuously charging reduced iron and melting the charged reduced iron; and

(c) feeding electric power to said electrodes to form arcs between the electrodes and molten metal, said arcs piercing through said slag layer, to make up for the drop of temperature of slag and molten metal caused by melting of said charged reduced iron, said process being further characterized by incorporating the following steps (d) to (h):

(d) detecting the temperature change of said molten metal and the temperature change of slag;

(e) increasing the input power to said electrodes and elongating the arc length by lifting up the electrodes to increase the slag temperature while maintaining the molten metal temperature constant in case the slag temperature has dropped;

(f) decreasing the input power to the electrodes and shortening the arc length by lowering the electrodes to reduce slag temperature alone while maintaining the molten metal temperature unchanged in case the slag temperature has risen;

(g) increasing the input power to the electrodes and shortening the arc length by lowering the electrodes to elevate

the molten metal temperature alone while maintaining the slag temperature unchanged in case the molten metal temperature has dropped; and

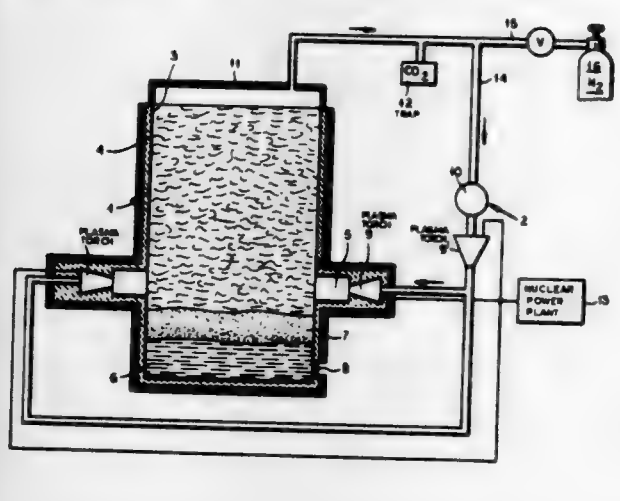
(h) decreasing the input power to the electrodes and elongating the arc length by lifting up the electrodes to reduce molten metal temperature alone while maintaining the slag temperature unchanged in case the molten metal temperature has arisen.

4,514,219

METHOD OF PRODUCING MOLTEN METAL

Lucien de Saint Martin, Metz, France, assignor to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Feb. 1, 1984, Ser. No. 575,853
Claims priority, application France, Feb. 3, 1983, 83 01841
Int. Cl.³ C22B *1/248*
U.S. Cl. 75—43 **9 Claims**



1. A method of making a ferrous metal which comprises the steps of:

(a) forming a charge of a ferriferous material selected from the group which consists of iron scrap, pig iron and sponge iron, and a quantity of coke substantially just sufficient for the carburization of the melt;

(b) electrically heating a substantially non-oxidizing gas to a temperature at least equal to the melting point of iron; and

(c) passing said gas after the heating thereof through said charge in a shaft furnace to melt iron of said ferriferous material at a location spaced from that at which said gas is electrically heated and form a bath of molten iron below said charge, the ferriferous material being melted by the sensible heat carried by said gas.

4,514,220

METHOD FOR PRODUCING STEEL IN A TOP-BLOWN VESSEL

Joseph W. Tommaney, Butler County, Pa., and Harry L. Bishop, Jr., Delmar, N.Y., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Apr. 26, 1984, Ser. No. 604,098
Int. Cl.³ C21C *5/34, 7/10*
U.S. Cl. 75—60 **17 Claims**

1. A method for producing steel in a top-blown molten metal vessel having a hot metal charge to form a bath, the method comprising:

top blowing a refining gas from a lance onto or beneath the surface of the bath;

said refining gas being substantially oxygen when carbon in the bath is in excess of about 1%, and being a mixture of oxygen and inert gas when carbon in the bath is less than about 1%;

introducing inert gas at a low flow rate to the bath from beneath the surface of the bath during said top blowing;

establishing an overall ratio of oxygen-to-inert gas being injected into the bath of more than 1/1 when top blowing commences;

decreasing the top-blown oxygen while increasing the top-blown inert gas so as to decrease the overall ratio of oxygen-to-inert gas progressively as the carbon is reduced during said top blowing; and

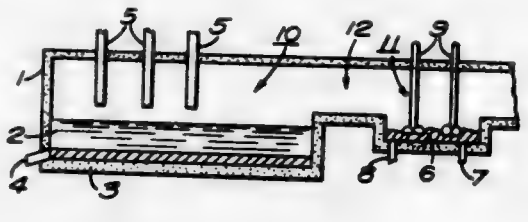
stopping said top blowing when the desired carbon content is reached and with said ratio being less than 1/1.

4,514,221

METHOD OF SMELTING ZINC BY INJECTION SMELTING

Sakichi Goto, Tokyo, Japan, assignor to The Japan Mining Promotive Foundation, Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,669
Int. Cl.³ C22B *19/04*
U.S. Cl. 75—63 **4 Claims**



1. A method of recovering metallic zinc by smelting zinc calcine which contains Fe, SiO_2 and Au, Ag, and Cu as impurities and in which the ratio of Fe/SiO_2 is from about 1 to 3.5, in the presence of a reducing agent, comprising the steps of:

(a) Forming in a smelting furnace a molten bath comprising a slag layer having an Fe/SiO_2 ratio close to that of said zinc calcine and a crude lead layer beneath said slag layer;

(b) Introducing into said furnace said zinc calcine, oxygen-enriched air and a reducing agent selected from the group consisting of pulverized coke and pulverized coal in a manner to contact and mix with said molten bath;

(c) Simultaneously smelting the components of steps a and b so charged to the furnace to produce an effluent gas of zinc vapor, CO, CO_2 and N_2 and to capture in said crude lead layer gold, silver and copper present in small amounts in the zinc calcine;

(d) Passing the effluent gas from the smelting step to a condenser disposed in close proximity to said smelting furnace and providing therein a spray of molten lead or zinc to condense said zinc vapor contained in said effluent gas from said smelting furnace;

(e) separating and recovering from said condensing step metallic zinc and an exhaust gas of high calorie content; and

(f) separating said crude lead layer containing gold, silver, and copper for recovery of same.

4,514,222

HIGH INTENSITY LEAD SMELTING PROCESS

William T. Denholm, Camberwell; John M. Floyd, Glen Waverley; William J. Errington, and Anthony N. Parry, both of Mount Isa, all of Australia, assignors to Mount Isa Mines Limited, Queensland, Australia

Filed Nov. 18, 1982, Ser. No. 442,656
Claims priority, application Australia, Nov. 26, 1981, PF1721
Int. Cl.³ C22B *13/00*
U.S. Cl. 75—77 **9 Claims**

1. A method of smelting a concentrate containing lead sulfide characterized by the steps of:

(1) adding the lead sulfide concentrate to a refractory lined reactor containing iron oxide in a molten, highly-fluid, silicate slag bath maintained in a strongly oxidized and vigorously agitated condition;

(2) mixing all the metal sulfides that are members of the group consisting essentially of lead sulfide, zinc sulfide,

copper sulfide, calcium sulfide, bismuth sulfide, silver sulfide, magnesium sulfide and aluminum sulfide in the silicate slag bath to form a single phase;

(3) maintaining the single phase slag bath in a vigorously agitated, strongly oxidized condition and at a predetermined temperature by injecting hot combustion gases with air in excess of that required to convert all the sulphides to their corresponding oxides through a downwardly extended lance having an outlet submerged in the silicate slag bath;

(4) oxidizing said metal sulfides to their corresponding metal oxides to produce a silicate slag bath rich in lean oxide; and

(5) adding lump coal to the silicate slag bath to reduce the lead oxide to elemental lead.

4,514,223

CONTINUOUS DIRECT PROCESS OF LEAD SMELTING

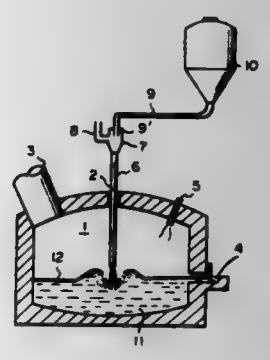
Shizuo Kawakita, Kagawa; Takeyoshi Shibazaki, Tokyo, and Hiromi Mochida, Saitama, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,639

Claims priority, application Japan, May 2, 1983, 58-076286

Int. Cl.³ C22B *13/00*

U.S. Cl. 75—77 **9 Claims**



1. A continuous direct process of lead smelting by top blowing comprising blowing through a lance pipe at a flow rate of at least 100 m/sec a compounded feddstock containing particulate or powdered lead sulfate concentrate and flux and also containing fuel when oxygen-enriched air is used and a stream of oxygen-enriched air or oxygen into a smelting zone containing a molten lead bath so as to penetrate said compounded feedstock through a slag layer and into said molten lead bath which has been preheated to a temperature at which the oxidation reaction of said lead sulfide concentrate is sustained, whereby said oxidation of lead sulfide is avoided in a zone maintained at 1000° to 1300° C. above said bath and said lead sulfide being oxidized in said molten lead bath to form molten crude lead and slag, transferring said molten crude lead and slag to a reduction zone and contacting said slag in said reduction zone with a reducing agent to reduce the lead substances in said slag and to return the reduced lead to the crude lead.

4,514,224

TOUGH CARBIDE BASE CERMET

Kenichi Nishigaki, Urawa, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 208,539, Nov. 20, 1980, abandoned, which is a continuation of Ser. No. 919,289, Jun. 26, 1978, abandoned. This application Nov. 22, 1983, Ser. No. 554,168

Claims priority, application Japan, Aug. 11, 1977, 52-95531

Int. Cl.³ C22C *29/00*; B22F *3/00*

U.S. Cl. 75—238 **3 Claims**

1. A tough carbide base cermet which consists essentially of a chromium carbide free dispersed phase of from 70 to 95% and a binder phase of from 5 to 30% with all percentages being by weight;

(1) said dispersed phase consisting essentially of

(i) titanium nitride in an amount of from 10 to 25%,

(ii) at least one of tungsten, molybdenum and carbides thereof in an amount of from 10 to 30%,

(iii) zirconium carbide in an amount of from 0.2 to 5.0%,

(iv) aluminum nitride of a particle size up to 3 μm in an amount of from 0.1 to 5.0%,

(v) the balance being a composite carbide comprising (a) titanium carbide, and (b) at least one of tantalum carbide and niobium carbide in an amount of from 3 to 50% of said composite carbide; and

(2) said binder phase consisting essentially of

(vi) at least one metal selected from the group consisting of iron, cobalt and nickel and when (a) said at least one metal is only one metal, that metal is nickel and when (b) said at least one metal is more than one metal, at least one of said metals is nickel; and

(vii) also containing aluminum, titanium and incidental impurities; and

said tough carbide base cermet being produced by mixing powders of the materials (i), (ii), (iii), (iv), (v), (vi) and (vii), compressing said powder to form a green compact and then sintering at high temperature under vacuum to form said tough carbide base cermet.

4,514,225

TRIORGANOTIN ACETYLSALICYLATES AND BIOCIDES CONTAINING THE SAME

Horst Landsiedel, Froendenberg, and Hans Plum, Hamm, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

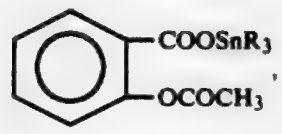
Filed Feb. 21, 1984, Ser. No. 581,652

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306036

Int. Cl.³ C09D *5/14*

U.S. Cl. 106—15.05 **13 Claims**

1. A method for controlling the growth of bacteria, fungi, algae marine organisms on or in a substrate, which method comprises adding or applying to said substrate a compound of the formula



wherein R is cyclohexyl, phenyl, or alkyl having from 3 to 8 carbon atoms.

4,514,226

MONOAZO PYRIDONE COLORANTS

Hermann Leoffler, Speyer, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

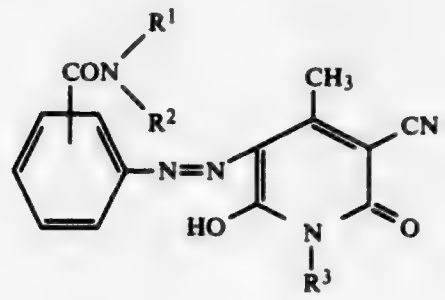
Filed Mar. 10, 1982, Ser. No. 356,729

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111648

Int. Cl.³ C09B *29/42*; C09D *11/02*; C10J *1/24*; C10M *1/40*

U.S. Cl. 106—23 **8 Claims**

1. A colorant of the formula:



wherein R_1 R_2 and R_3 independently of one another are each C_1–C_{18}-alkyl, C_1–C_{18}-alkenyl, C_4–C_9-alkoxyalkyl, C_4–C_9-aryloxyalkyl, C_9–C_{11}-aralkoxyalkyl, C_7–C_{11}-aralkyl, C_4–C_{13}-acyloxyalkyl, C_6–C_{14}-alkoxycarbonyloxyalkyl, C_6–C_{12}-alkylaminocarbonyloxyalkyl or C_4–C_9-dialkylaminoalkyl, with the proviso that the sum of the carbon atoms of the radicals R^1 to R^3 is from 14 to 36 and the sum of the ether oxygen atoms in these radicals ranges from 0 to 2.

8. A method of coloring a coating composition, an organic solvent or a mineral oil product, comprising: dissolving the compound of claim 1 in said coating composition, said organic solvent or said mineral oil product.

4,514,227

METHOD OF MANUFACTURING A FOUNDRY MOULD MIX CONTAINING A MOULD BINDER

Ervin I. Szabó, Manotic, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 419,506, Sep. 19, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 579,452
Claims priority, application Canada, Dec. 11, 1981, 392120
Int. Cl.³ B28B *7/36*
U.S. Cl. 106—38.2 **6 Claims**

1. A method of manufacturing a foundry mould mix containing a mould binder comprising:

(a) mixing a binder with foundry sand in the range 15 to 150 grams of binder per kilogram of foundry sand, the binder consisting essentially of:

(i) at least one monobasic acid selected from the group consisting of formic acid, acetic acid, propiolic acid, propionic acid, and acrylic acid;

(ii) a precipitant for the acid, the amount of precipitant present in the binder components being equivalent to at least 50% of the stoichiometric requirement of the total acid content of the binder components, said precipitant comprising at least one substance selected from the group consisting of calcium carbonate, dolomite, magnesium oxide, magnesium hydroxide, magnesium carbonate and zinc oxide, said precipitant being substantially non-fluxing with foundry sand, and substantially non-reactive with respect to other mould components than the said total acid content, and substantially non-reactive with respect to metal which is to be cast in the mould, and

(iii) water, the water being present in an amount no greater than 1.5 times the weight of total acid content, calculated on that acid component being in a water free state.

4,514,228

COMPOSITION FOR MAKING IMPERMEABLE WALLS AND OTHER UNDERGROUND STRUCTURES

Daniel Gouvenot, Nanterre, France, assignor to Soletanche, Nanterre, France

Continuation-in-part of Ser. No. 350,298, Feb. 19, 1982, abandoned. This application Jul. 8, 1983, Ser. No. 512,207
Claims priority, application France, Feb. 20, 1981, 81 03410
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—98 **8 Claims**

1. Composition for making impermeable walls and other under-ground structures comprising water, a cement, a silica compound in a dispersed form and an activating agent selected from the group consisting essentially of an alkaline base and an alkaline salt of a weak acid which do not contain silica, the ratio by weight of lime to silica being less than 1 and preferably between approximately 0.3 to 0.5.

4,514,229

PAPER SIZING COMPOSITION

Atsushi Sato, Tokyo; Yoshikazu Murai, Yokohama; Masahito Goto, Kawasaki, and Kanji Mochizuki, Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Filed Apr. 13, 1984, Ser. No. 599,933
Claims priority, application Japan, Apr. 16, 1983, 58-67187
Int. Cl.³ C08K *5/15, 5/48;* D21D *3/00*
U.S. Cl. 106—135 **12 Claims**

1. A paper sizing composition which comprises:

20 to 90% by weight of (A) a reaction production and/or its hydrogenation product which reaction product is obtained by reacting maleic anhydride to branched internal mono-olefins having 16 to 28 carbon atoms which are obtained by oligomerizing one or a mixture of straight chain mono-olefin starting materials having 6 to 18 carbon atoms and

10 to 80% by weight of (B) another reaction product and/or its hydrogenation product which reaction product is obtained by reacting maleic anhydride with straight chain internal mono-olefins having 15 to 24 carbon atoms.

4,514,230

ALKYD COMPOSITION FOR HIGH SOLIDS COATINGS

David T. Passmore, Golborne, and Brian P. Windibank, Formby, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 23, 1984, Ser. No. 573,187
Int. Cl.³ C08L *93/00, 91/00*
U.S. Cl. 106—243 **5 Claims**

1. An alkyd composition adapted to be dissolved in a solvent and used as a high solids coating, said alkyd composition being derived from the following components:

(A) about 75 to about 85 mole % terephthalic or phthalic acid,

(B) about 15 to about 25 mole % of adipic, sebacic or azelaic acid,

(C) about 6 to about 12 mole % of trimethylol ethane or trimethylol propane,

(D) about 80 to about 90 mole % neopentyl glycol, and

(E) about 4 to about 8 mole % 2,2,4-trimethyl -pentane-1,3-diol,

said alkyd composition having a molecular weight of about 1000–1500, and a hydroxyl number of about 75–105, and said mole percentages being based on a total of 100 mole % acids and 100 mole % glycols in said composition.

4,514,231

NATURAL OXIDIC OR SILICATE FILLER MODIFIED ON THE SURFACE, A PROCESS FOR ITS PRODUCTION

Dieter Kerner; Peter Kleinschmit, both of Hanau; Alan Parkhouse, Wesseling, and Siegfried Wolff, Bornheim-Merten, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 602,768
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314742
Int. Cl.³ C09C *3/12;* C08K *9/06;* C08L *21/00*
U.S. Cl. 106—309 **10 Claims**

1. A process of preparing a surface modified natural oxidic or silicate filler which comprises

(a) emulsifying in a water insoluble organosilicon compound of the formula

$$[R^1_n(RO)_{3-n}Si\text{-}(Alk)_m\text{-}(AR)_p]_2[S]_x \quad (I)$$

where

R is an alkyl group having 1 to 4 carbon atoms, or is a C_1–C_4-alkyl-C_1–C_4 alkoxy group or a phenyl group and R^1 is an alkyl group having 1 to 4 carbon atoms or the phenyl group,

n is 0, 1, or 2,

Alk is a divalent straight or branched hydrocarbon group having 1 to 6 carbon atoms,
m is 0 or 1,
Ar is an arylene group having 6 to 12 carbon atoms in the rings,
p is 0 or 1 with the proviso that p and m cannot simultaneously be zero, and x is a number from 2 to 8,

(b) with stirring mixing this emulsion with an aqueous suspension of a finely divided oxidic or silicate filler or a mixture of such fillers at a temperature of 10° to 50° C.,
(c) heating the mixture to a temperature of 50° to 100° C., and
(d) after 10 to 120 minutes, filtering off the modified filler and drying the suspension at a temperature of 100° to 150° C., or spray drying the suspension.

4,514,232

PROCESS FOR STRIPPING SILICON OIL BASE THERMAL GREASE

Joseph G. Ameen, Apalachin, N.Y.; Richard H. Hogrogian, Oakland, N.J., and Samuel L. Smey, Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1982, Ser. No. 449,941
Int. Cl.³ B08B *3/12*
U.S. Cl. 134—1 **2 Claims**

1. A process for stripping a silicone oil base thermal grease from circuit module caps which comprises the steps of:
mixing a solution of 8–12% by volume of a particular composition and 88–92% by volume of methylene chloride, said particular composition comprising 60–80% by volume of ethylene glycol monomethyl ether, the remainder of said composition comprising wetting agents, color, an oxygenated solvent, and a strong base;
placing said caps having said thermal grease in a container of said solution;
ultrasonically agitating said container of solution for one minute;
removing said caps from the container and subjecting them to water rinsing and air blow drying leaving a water-break-free surface;
immersing the cleaned caps in a first solution of 10% by volume of said particular composition and 90% by volume of methylene chloride and ultrasonically agitating the solution for one minute; and
immersing said cleaned caps in a second solution of 10–30% by volume of nitric acid and ultrasonically agitating the solution for one minute.

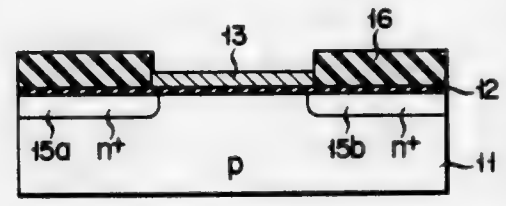
4,514,233

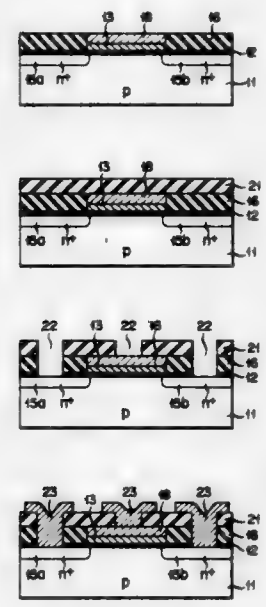
METHOD OF MAKING IMPROVED ALUMINUM METALLIZATION IN SELF-ALIGNED POLYSILICON GATE TECHNOLOGY

Katsuhiro Kawabuchi, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 17, 1983, Ser. No. 523,835
Claims priority, application Japan, Aug. 25, 1982, 57-147055
Int. Cl.³ B01J *17/00*; H01L *21/26*
U.S. Cl. 148—1.5 **11 Claims**

1. A method for manufacturing a semiconductor device, comprising the steps of:
(a) sequentially forming a gate insulation film, a polycrystalline silicon film and a self-alignment film on a semiconductor substrate of one conductivity type;
(b) selectively removing said polycrystalline silicon film and said self-alignment film to form a laminate structure having a pattern corresponding to a desired gate electrode pattern and comprising the remaining polycrystalline silicon film and the remaining self-alignment film formed thereon;
(c) ion-implanting an impurity of an opposite conductivity type into said substrate using said laminate structure as a mask, thereby forming at least one impurity region;
(d) forming an insulation layer on an entire surface of the structure obtained in step C including said laminate structure;
(e) etching said insulation layer in a direction of thickness thereof until the surface of said laminate structure, thereby allowing said insulation layer to remain only around said laminate structure, said remaining insulation layer having a surface flush with that of said laminate structure is exposed;





(f) removing said remaining self-alignment of film from said laminate structure so as to expose said remaining polycrystalline silicon film of said laminate structure;
(g) forming an aluminum film only on said exposed remaining polycrystalline silicon film, thereby providing a gate electrode structure comprising said remaining polycrystalline film and said aluminum film, said aluminum film having a surface flush with that of said remaining insulation layer; and
(h) performing annealing to activate said impurity ion-implanted into said substrate, before said aluminum film is formed.

4,514,234

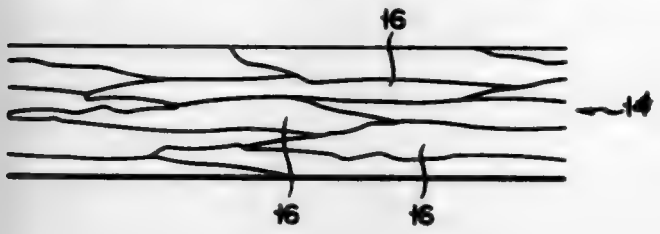
MOLYBDENUM BOARD AND PROCESS OF MANUFACTURING THE SAME

Yoshiharu Fukasawa; Tatsuhiko Matsumoto; Mituo Kawai; Shigeru Ueda, all of Yokohama; Hideo Koizumi, Tokyo, and Hiroyuki Saitou, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 9, 1984, Ser. No. 578,580
Claims priority, application Japan, Feb. 10, 1983, 58-19779; Feb. 10, 1983, 58-19780
Int. Cl.³ B22F *3/16*
U.S. Cl. 148—11.5 P **10 Claims**

1. A molybdenum board consisting essentially of molybde-

num recrystallized grains having a ratio L/W of not less than 2 and a W of 5 to 1,000 μm and containing 0.005 to 0.75% by



weight of at least one element selected from the group consisting of aluminum, silicon and potassium.

4,514,235

FROG, IN PARTICULAR FROG POINT, FOR RAIL CROSSING OR RAIL SWITCHES AS WELL AS PROCESS FOR PRODUCING SAME

Hubert Augustin, Leoben, and Robert Pirker, Zeltweg, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Sep. 12, 1983, Ser. No. 531,399
Claims priority, application Austria, Sep. 15, 1982, 3457/82
Int. Cl.³ C22C *38/08*
U.S. Cl. 148—37 **3 Claims**

1. A frog for rail crossings or rail switches wherein said frog having a surface, for wheels to travel upon, characterized in that the frog or the surface of the frog is made of an age-hardened steel consisting essentially of

C 0.01 to 0.05%	Ti 0.1 to 1%
Si 0.01 to 0.2%	Cr 0 to 13%
Mn 0.01 to 0.2%	Al 0 to 0.2%
Co 0 to 15%	B 0 to 0.1%
Mo 1.5 to 6%	Zr 0 to 0.1%
Ni 7 to 20%	

and the balance of iron.

4,514,236

METHOD OF MANUFACTURING AN ARTICLE OF NON-MAGNETIC AUSTENITIC ALLOY STEEL FOR A DRILL COLLAR

William T. Cook, Sheffield; Michael Cristinacce, Rotherham, and Rajendra K. Amin, Sheffield, all of England, assignors to British Steel Corporation, England

Filed Mar. 1, 1983, Ser. No. 470,975
Claims priority, application United Kingdom, Mar. 2, 1982, 8206104
Int. Cl.³ C22C *38/40*
U.S. Cl. 148—38 **8 Claims**

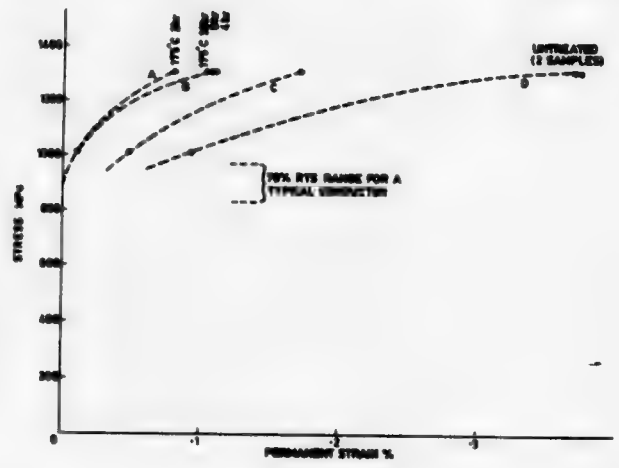
1. A non-magnetic drill collar manufactured by a method comprising the steps of producing a feedstock having a composition consisting essentially of, by weight, up to 0.50% carbon, from 12 to 20% manganese, up to 1% silicon, up to 0.10% phosphorus, up to 0.10% sulphur, up to 20% chromium, up to 1% molybdenum, up to 1% nickel, from 0.20 to 0.60% nitrogen, from 0.20 to 1% vanadium, up to 0.1% niobium, balance iron apart from impurities and incidental ingredients, heating the feedstock to a temperature of between 1100° C. and 1250° C., rolling the heated feedstock to the cross-section required for the article in a controlled manner to achieve a finish temperature below 1100° C. and quenching the rolled feedstock, the article produced being characterized by a proof stress at 0.2% in excess of 700 N/mm^2 in the as-rolled condition.

4,514,237

METHOD OF HEAT TREATING STEEL WIRE

Olaf Nigol, 272 Markland Dr., Toronto, Ontario, Canada M9C IR7, and John S. Barrett, R.R. #8, Orangeville, Ontario, Canada (L9W 3T5)

Filed Jan. 17, 1983, Ser. No. 458,319
Int. Cl.³ C21D *9/52*
U.S. Cl. 148—142 **10 Claims**



1. A method of treating hard-drawn carbon steel core wire having breaking strain values greater than 3.0% and having a carbon content in the range 0.50–0.85% and used in aluminum conductor, steel reinforced power transmission lines, whereby to reduce the ductility of the wire and its susceptibility to permanent elongation under tensile strain, which method comprises heating the wire to a temperature in the range 150° C.–200° C. while maintaining the wire in an untensioned state at said temperature for at least one hour, the wire thereafter being cooled to ambient temperature, wherein permanent strain in the wire after said treatment is in the range of 0.01% to 0.02% after 70% RTS loading of the wire.

4,514,238

INTERNALLY OXIDIZED AG-SN-BI ALLOY ELECTRICAL CONTACT MATERIALS

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo K.K., Japan

Continuation-in-part of Ser. No. 586,877, Mar. 8, 1984, abandoned, which is a continuation of Ser. No. 347,500, Feb. 10, 1982, abandoned. This application Oct. 29, 1984, Ser. No. 666,032
Claims priority, application Japan, Feb. 12, 1981, 56-18096; May 2, 1981, 56-66185
Int. Cl.³ C22C *5/06*
U.S. Cl. 148—431 **1 Claim**



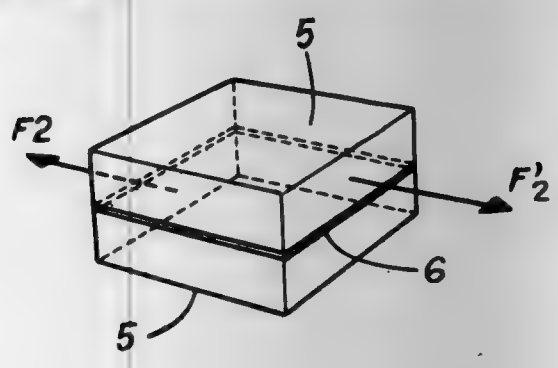
1. An electrical contact material comprising an alloy of silver and solute metal elements, said alloy having a matrix consisting of silver, said solute metal elements comprising more than 6 weight percent to 20 weight percent of Sn, and an additive for accelerating the internal oxidation of said alloy consisting essentially of more than 2 weight percent to 5.5 weight percent of Bi, and said alloy being completely internally oxidized so that said solute metal elements are present in said alloy totaly as oxides which are very finely precipitated throughout said silver matrix, said matrix presenting substantially no silver grain crystalline boundaries.

4,514,239
Patent Not Issued For This Number

4,514,240
METHOD FOR ADHESIVELY BONDING PARTS MADE OF REFRACTORY MATERIALS

Louis Heraud, Bordeaux, France, assignor to Societe Europeenne De Propulsion, Puteau, France

Continuation of Ser. No. 313,961, Oct. 20, 1981, abandoned. This application Jan. 11, 1984, Ser. No. 569,929
Claims priority, application France, Oct. 30, 1980, 80 23215
Int. Cl.³ C03B *29/00*; C04B *33/34, 37/00*
U.S. Cl. 156—89 **9 Claims**



1. Method for bonding together into an integral assembly preformed members each comprised of a composite refractory material which is porous or become porous upon pyrolysis, said method comprising the following steps:

assembling said members with a bonding layer between mutually adjacent faces thereof, said bonding layer consisting essentially of an adhesive which upon pyrolysis leaves a porous refractory residue, and a filler constituted by refractory particles of dimensions comprised between 1 and 150 microns, said layer having a substantially constant thickness which has a value selected in the range of 0.1 to 1 mm;

subjecting the thus-formed assembly to pyrolysis to create between the members thereof a porous refractory bond containing said filler between the mutually adjacent faces of said members, and

densifying the pyrolyzed assembly by chemical vapor deposition into the pores thereof of a refractory material, whereby said densifying refractory material is deposited simultaneously and continuously in the pores of said bond and of the adjacent member to produce an integral densified assembly.

4,514,241
REINSULATION OF PIPE JOINTS

Pekka J. Maukola, Kessel-lo, Belgium, assignor to N. V. Raychem S.A., Kessel-lo, Belgium

Filed Mar. 9, 1984, Ser. No. 586,912
Claims priority, application United Kingdom, Mar. 11, 1983, 8306693
Int. Cl.³ B32B *31/26*
U.S. Cl. 156—79 **19 Claims**

1. A method of insulating a joint between thermally insulated pipes, the insulation of which ends short of the joint leaving a portion of the pipe bare of insulation, which method comprises:

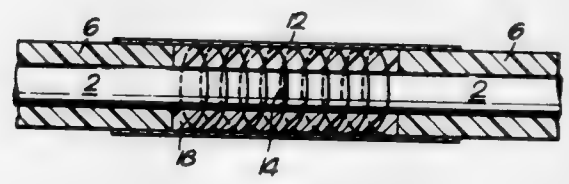
(a) positioning around the bare portion of pipe a support at least part of which is provided by a coiled member;

(b) positioning a recoverable cover such that a first segment thereof is positioned around the support such that when the support is positioned around the pipe, at least one other segment of the cover is positioned so as to engage the insulation of the pipe upon recovery of the cover;

(c) recovering the first segment of the cover into engagement with the support;

(d) recovering at least one other segment of the cover into engagement with the insulation of the pipe; and

(e) providing a thermally insulating material between the recovered cover and the bare portion of pipe.



15. A kit of parts for insulating a joint between an insulated main pipe and a branch-off pipe, the insulation of which ends short of the joint, which comprises:

(a) a support which comprises a coiled member that can be positioned around a bare portion of the branch-off pipe, and a further part that can be wrapped around the bared portion of the main pipe; and

(b) a recoverable cover having a first tubular portion for covering the installed coiled member and a second wrap-around portion for covering the further part of the support;

wherein the support is coated on an outer surface thereof with an adhesive or sealant such that it is capable of adhering to said cover.

4,514,242
METHODS FOR OSCILLATORY BONDING OF DISSIMILAR THERMOPLASTIC MATERIALS

Donald N. MacLaughlin, Midland, Mich., and Vincent E. Fortuna, Huntington Beach, Calif., assignors to Vercon Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 371,363, Apr. 23, 1982, Pat. No. 4,462,849. This application Aug. 27, 1984, Ser. No. 644,190
Int. Cl.³ B29C *27/08*
U.S. Cl. 156—73.5 **11 Claims**

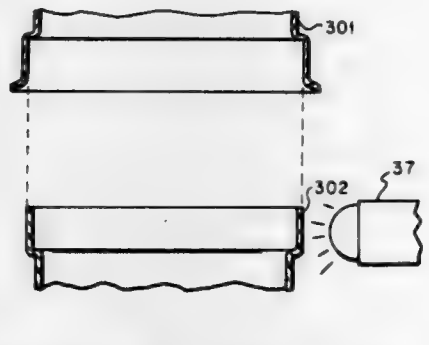
1. A method of welding at least two similarly configured thermoplastic sections together having relatively tight-fitting complementary joinder portions, said method comprising:

preheating at least one of said sections in its joinder portion;

sliding said tight-fitting portions together into telescopic conjoinment;

oscillating said portions axially with respect to each other at a sufficiently rapid rate and for a sufficient period of time

to generate enough heat to melt the areas of contact therebetween; and,



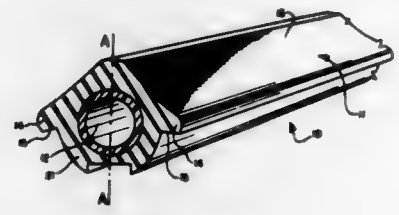
bringing said sections into a final desirable position and allowing said heated areas to cool, thereby welding said sections together.

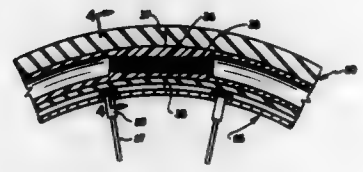
4,514,243

TIRE FOR WHEELCHAIRS AND THE LIKE

Dan T. Moore, III, and Michael F. Fischer, both of Cleveland Heights, Ohio, assignors to Dan T. Moore Co., Cleveland, Ohio

Filed Jul. 9, 1982, Ser. No. 396,694
Int. Cl.³ B29H *11/00*; B60C *7/12*
U.S. Cl. 156—113 **2 Claims**





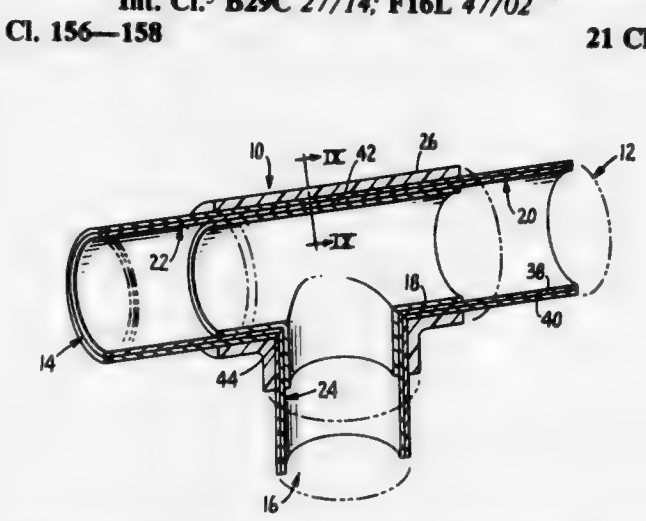
1. A method of making a tire for a wheelchair or the like, comprising the steps of extruding an elastomeric casing of relatively low modulus of elasticity over a semirigid, thermoplastic, creep-resistant hollow core of relatively high modulus of elasticity, cutting the extruded casing and core to the circumferential length of the tire, positioning a ferromagnetic insert in opposite ends of the core, said insert being coated with a thermoplastic elastomer which is fuse-compatible with the elastomer of the core, abutting the ends of the casing and core, exposing the zone of the ferromagnetic insert to high frequency electromagnetic radiation to inductively heat the surfaces of the insert and generate sufficient heat to thermally fuse the material in the vicinity of the insert to the inside surfaces of the core to effectuate a permanent coupling of the ends of the tire whereby the core provides the major resistance to hoop stress in the tire.

4,514,244

PLASTIC PIPE ELEMENTS AND METHODS FOR MAKING SAME

Robert R. Shaefer, and Kenneth J. Matthews, both of Louisville, Ky., assignors to Nibco Inc., Elkart, Ind.

Division of Ser. No. 303,757, Sep. 21, 1981, Pat. No. 4,457,542.
This application Mar. 12, 1984, Ser. No. 588,703
Int. Cl.³ B29C *27/14*; F16L *47/02*
U.S. Cl. 156—158 **21 Claims**



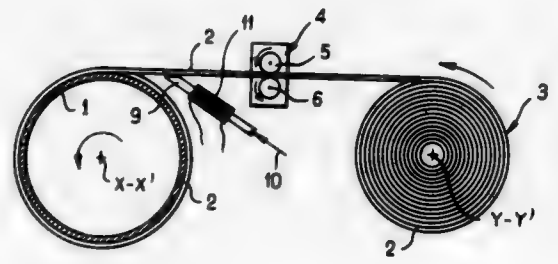
1. A method of forming a pipe fitting comprising the steps of:
A. forming a liner of thermoplastic material which defines a fluid passage therethrough;
B. forming at least first and second pipe sections, each pipe section being formed by embedding a plurality of reinforcement fibers in an outer layer of thermosetting resin such that said fibers are encompassed within said resin layer and bounding said outer layer to an inner lining of thermoplastic material;
C. bounding said first pipe section onto an outer surface of a first section of said liner such that an end edge of said first pipe section overlies said liner;
D. bonding said second pipe section onto an outer surface of a second section of said liner such that an end edge of said second pipe section overlies said liner;
E. forming an external reinforcement sheet by embedding a layer of reinforcement fibers in a layer of thermosetting, resin such that said fiber layer is encompassed within said resin sheet; and
F. bonding said external reinforcement sheet to the exterior surfaces of said pipe sections, covering said end edges.

4,514,245

METHOD FOR REINFORCING A HOLLOW BODY MADE BY WINDING A PROFILED SECTION

Gilbert Chabrier, Montmorency, France, assignor to Spie-Batignolles, Puteaux and Coflexip, Paris, both of, France

PCT No. PCT/FR81/00119, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982, PCT Pub. No. WO82/01159, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 16, 1981, Ser. No. 380,868
Claims priority, application France, Sep. 26, 1980, 80 20666
Int. Cl.³ B65H *81/08*
U.S. Cl. 156—161 **5 Claims**



1. A method of reinforcing a cylindrical hollow body (1) intended to contain a fluid under pressure, comprising winding

on the hollow body a series of substantially contiguous turns (*2a, 2b, 2c*) of a flexible strip (2) so as to form on said body at least one layer of said strip, said strip being comprised of fibers (7) embedded in an unfused completely polymerized synthetic resin and extending lengthwise of the strip, applying to the strip during winding a tension, said tension and the thickness of the layer of said strip on said body being such that when the hollow body contains a fluid under pressure the stresses which occur in the body and in the turns of the strip reach their maximum limits at substantially the same time, said tension being obtained solely by said winding and the unfused condition of the resin precluding migration of the fibers radially inwardly through the resin, and fixing continuously said strip on the hollow body and the different turns together.

4,514,246

METHOD OF CUTTING AND LABELING SHEET MATERIAL

Robert E. Forrer, Los Alamitos, Calif., and Robert A. Postier, Flagstaff, Ariz., assignors to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Nov. 3, 1982, Ser. No. 438,926
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—264 **6 Claims**



1. A method for spreading sheet material on a support surface of a cutting table between opposite first and second ends of said cutting table and applying labels to said sheet material in preparation for cutting a plurality of pattern pieces from said sheet material with each piece bearing an identifying label comprising at least the following steps:

providing at the first end of the cutting table a spreading and labeling carriage that is movable over the support surface of said cutting table under automatic control;

clamping a ply of sheet material adjacent a free end thereof to the spreading and labeling carriage while said carriage is located adjacent the first end of the cutting table and the sheet material is located off of said cutting table;

moving the spreading and labeling carriage over the support surface from said first end of said cutting table toward said second end and drawing the clamped sheet material onto the support surface to spread the sheet material on said cutting table;

releasing the clamped free end of the sheet material from the spreading and labeling carriage after said sheet material has been so spread;

controllably returning the spreading and labeling carriage back to the first end of the table after releasing the material spread on the support surface; and

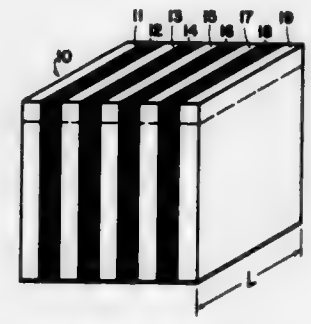
applying labels from the spreading and labeling carriage to the areas of the spread sheet material from which pattern pieces are to be cut during the return movement of the spreading and labeling carriage to the first end of the table.

4,514,247

METHOD FOR FABRICATING COMPOSITE TRANSDUCERS

John Zola, Ramsey, N.J., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,309
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—250 **12 Claims**



1. A method for manufacturing composite transducers comprising the steps of:

bonding together a plurality of plates of an electrically active material with plates of a passive material to form a laminated block having alternating regions of said electrically active material and said passive material;

cutting the laminated block along planes which form an angle with the interfaces of the plates to obtain a plurality of laminated plates; and

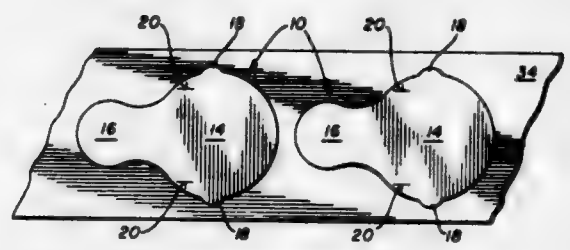
bonding said laminated plates together with a plurality of plates of additional passive material to form a laminated block which comprises strips of said electrically active material which are wholly surrounded by regions of said passive material.

4,514,248

METHOD OF MAKING A FLEXIBLE STERILE CLOSURE SYSTEM FOR CONTAINERS

Robert Cummings, Richardson, Tex., assignor to U.S. Clinical Products, Inc., Richardson, Tex.

Division of Ser. No. 386,021, Jun. 7, 1982, Pat. No. 4,423,819, which is a continuation-in-part of Ser. No. 294,331, Aug. 19, 1981, Pat. No. 4,390,104. This application Oct. 11, 1983, Ser. No. 540,638
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—268 **13 Claims**



1. The method of assembling a thin film closure for resealing a container, comprising:

bonding a first layer of plastic film to a second layer of plastically deformable film with a layer of adhesive, at least one of said first or second layers being substantially impervious to moisture and bacteria;

forming a cover region and pull-tab region from said bonded first and second layers;

applying a layer of adhesive material to the exposed major surface of said second layer to form an adhesive-coated bottom surface of the cover;

slitting the cover region adjacent said pull-tab region to form a tear line for promoting the tearing of the cover upon its removal from the container;

attaching the adhesive-coated bottom surface of the cover to a carrier liner;

packaging the attached sealing cover and carrier liner; and

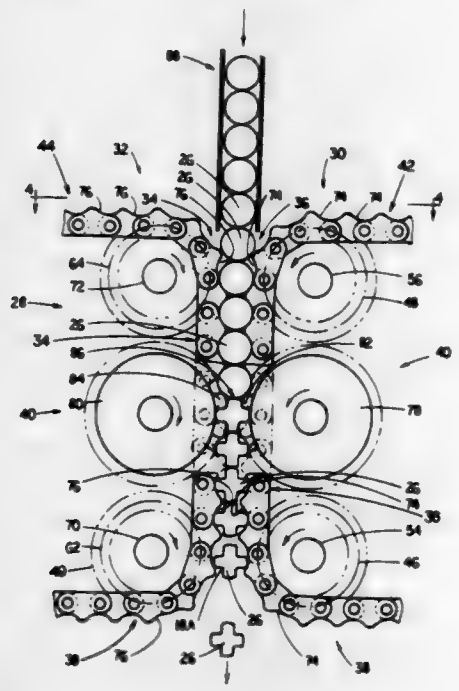
sterilizing the packaged sealing cover and carrier liner.

4,514,249

DEVICE FOR MAKING GROOVES IN CIGARETTE FILTERS

Steven P. Reed, Felton, Calif., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 19, 1984, Ser. No. 632,509
Int. Cl.[3] B28B *11/08*
U.S. Cl. 156—553 16 Claims



1. An apparatus for forming grooves in a cigarette filter rod comprising:

first endless conveyor means;

second endless conveyor means located next to the first endless conveyor means with one flight of the second endless conveyor means in facing, spaced apart, generally parallel relationship to one flight of the first endless conveyor means;

means associated with the first and second endless conveyor means for holding the filter rods at predetermined spaced apart intervals along the space between the facing flights of the first and second endless conveyor means; and,

grooving means located between the ends of the endless conveyor means for forming grooves in the filter rods in the space between the facing flights of the first and second endless conveyor means as the filter rods move with the facing flights from one end of the endless conveyor means to the other end of the endless conveyor means.

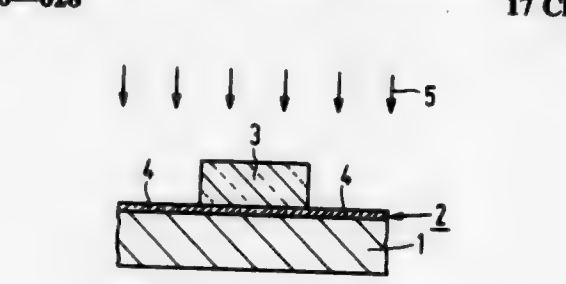
4,514,250

METHOD OF SUBSTRATE HEATING FOR DEPOSITION PROCESSES

James C. Hwang, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 18, 1982, Ser. No. 434,925
Int. Cl.[3] B05D *3/06;* H01L *21/20;* C23C *13/00*
U.S. Cl. 156—610 13 Claims

1. A process for vacuum depositing a material on a heated substrate comprising the steps of heating said substrate to a temperature that induces deposition of said material from a deposition medium and forming said material on said heated substrate by contacting said substrate with said medium characterized in that said deposition is performed at reduced pressures, and said heating comprises (1) providing said substrate with a surface, other than that upon which said deposition is to occur, that is at least 80 percent reflective, (2) providing a reflective environment for said reflective surface, and (3) providing radiant energy which is in part absorbed during any single impact with said reflective surface wherein the combination of said reflective surface and said reflective surrounding



causes multiple reflection of the predominant portion of said radiant energy.

4,514,251

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE, IN WHICH PATTERNS ARE FORMED IN A LAYER OF SILICON NITRIDE BY MEANS OF ION IMPLANTATION

Alfred H. van Ommen; Henricus G. R. Maas; Johannes A. Appels, and Wilhelmus J. M. J. Josquin, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,092
Claims priority, application Netherlands, Apr. 11, 1983, 8301262
Int. Cl.[3] B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—628 17 Claims

1. A method of manufacturing a semiconductor device comprising the steps of

implanting ions into portions of a layer of silicon nitride,

then heat treating said layer of silicon nitride at a temperature above 750° C. to form a higher resistance to etching at the implanted portions of said layer than at non-implanted portions of said layer, and

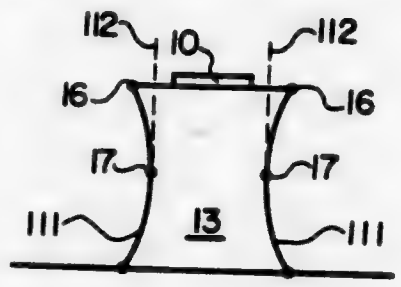
thereafter etching said layer to remove said non-implanted portions of said layer.

4,514,252

TECHNIQUE OF PRODUCING TAPERED FEATURES IN INTEGRATED CIRCUITS

James P. Roland, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 18, 1982, Ser. No. 442,545
Int. Cl.[3] B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 5 Claims



1. A process of generating tapered walls in a process of the

type in which a mask having a plurality of features is generated on a workpiece to be etched and the workpiece is exposed to etchants through the open areas of the mask to replicate the features of the mask into a workpiece, thereby producing, at the boundaries of each feature, walls which have upper corners at the interface between the mask and the workpiece, said process, in order to cut back the upper corners to taper the walls generated in the workpiece, further comprising the steps of:

(a) after replicating the mask features into the workpiece, isotropically etching the boundaries of the mask features away from the associated walls produced in the workpiece to expose the upper corners, the distance which the boundaries of the mask are etched away from the associated walls not being determined by an additional mask; and

(b) exposing the workpiece to etchants to etch away the upper corners to a lesser depth than the depth of the walls of the mask pattern replicated into the workpiece.

4,514,253

MANUFACTURE OF THIN FILM TRANSISTOR

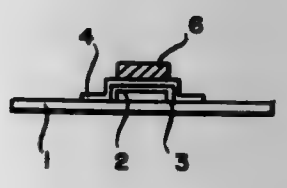
Shigehiro Minezaki, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 288,330, Jul. 30, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 517,042

Claims priority, application Japan, Jul. 31, 1980, 55-106887

Int. Cl.[3] H01L *21/312*; C23F *1/02*; B44C *1/22*; C03C *15/00*

U.S. Cl. 156—659.1 14 Claims



1. A method of making a thin film transistor device comprising an insulator substrate, a gate electrode, a semiconductor layer and a source/drain electrode disposed on said insulator substrate, which comprises:

providing a insulator substrate with a gate electrode formed thereon said gate electrode having a gate insulating oxide coating;

forming selectively a semiconductor layer thereon;

superimposing a mask over selected portions of said gate insulating coating and said semiconductor layer and depositing a source/drain electrode material thereon;

removing said mask and depositing a uniform coating of a photo-resist material on said source/drain electrode material which remains on said substrate;

selectively exposing said photo-resist material to light and developing said exposed material to form a resist pattern;

etching said resulting patterned configuration to form a desired source/drain electrode pattern thereon to provide said thin film transistor.

4,514,254

GROUNDPLANE POST-ETCH ANODIZATION

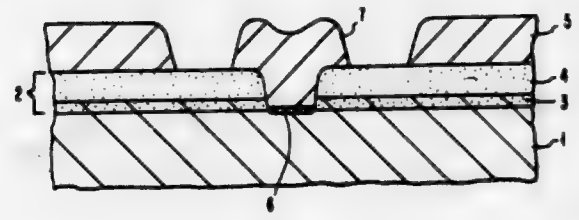
Stephen P. Klepner, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,141

Int. Cl.[3] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—656 2 Claims

1. A process for producing low temperature integrated circuit intermediate process wafers, having steps including the production of one or more large metal groundplane areas, covering the groundplane with a composite insulating/spacing etch-stop layer of grown oxide and an overlying deposited oxide, subsequently carrying out deposition and patterning steps for one or more layers of metallization, one or more of such steps being sufficiently corrosive as to present a finite probability of opening pinholes in the composite insulating/-spacing etch-stop layer characterized by a step of post-etch anodizing the integrated circuit wafer to grow sealant layers of



groundplane metal oxide at sites of groundplane metal exposing pinholes, to seal such pinholes permanently prior to further processing steps.

4,514,255

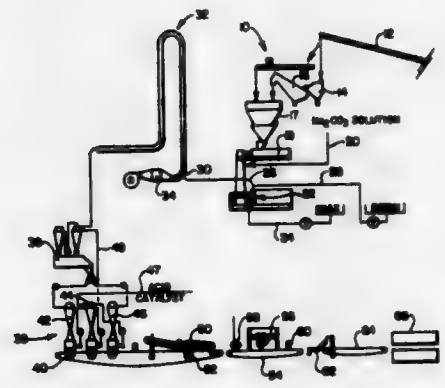
PROCESS FOR THE MANUFACTURE OF DRIED, RESIN-TREATED FIBER FURNISH

John W. Maxwell, West Redding, Conn., and Brian Vyse, East Wellow Romsey, England, assignors to Borden, Inc., Columbus, Ohio

Filed Aug. 19, 1983, Ser. No. 524,883

Int. Cl.[3] D21C *9/00*

U.S. Cl. 162—9 19 Claims



1. A process for forming a dried, resin-treated fiber furnish from a naturally-acidic fiber comprising:

adding to said fibers not more than about 1% of the dry weight of said fibers of an alkaline material thereby neutralizing at least part of the acid in said fibers, and raising the pH of said fibers into the range of about 4 to about 7;

blow-line blending said fibers with a urea-formaldehyde resin; and

drying said resin-blended fibers to produce a dried, resin-treated fiber furnish, said drying being effected at a temperature sufficiently low that curing of said resin does not occur during said drying.

4,514,256

METHOD OF MINIMIZING SLAGGING IN THE BURNING OF BLACK LIQUID

Alfred E. Kober, 81 Claire Dr., Bridgewater, N.J. 08807, and Stanley E. Gilewicz, 44 Center Grove Rd., Randolph, N.J. 07869

Filed Apr. 18, 1983, Ser. No. 485,750

Int. Cl.[3] D21C *11/12*; C10L *10/00*; F23J *1/00*

U.S. Cl. 162—30.11 30 Claims

1. The method of minimizing the problem of slag formation in a black liquor furnace which comprises applying to the furnace surfaces above the combustion zone where slag tends to form, substantially progressively as black liquor is burned in the furnace, a substance from the group consisting of sodium persulfate, manganese dioxide, cupric oxide, ferric oxide and mixtures thereof, said substance being introduced essentially solely into the system upstream of said surfaces at a location which permits it to reach said surfaces in essentially unreduced

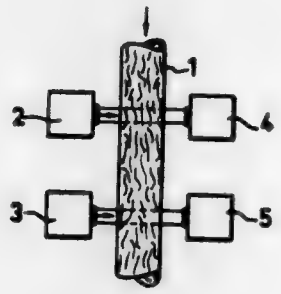
form, said substance then reacting at said surfaces with combustion products of the furnace to oxidize said products and be itself reduced.

4,514,257

METHOD OF MEASURING FINES IN PULP SUSPENSIONS

Hakan I. Karlsson, Akersberga, and Jan G. T. Pettersson, Täby, both of Sweden, assignors to Svenska Traforskningsinstitutet, Sweden

Filed Mar. 12, 1982, Ser. No. 357,476
Claims priority, application Sweden, Mar. 19, 1981, 8101741
Int. Cl.³ G01N *15/00, 21/00, 21/31*
U.S. Cl. 162—49 **10 Claims**



1. A method of measuring the content of crill particles in a suspension of pulp fibers wherein said crill particles have a first mean particle diameter and said pulp fibers have a second mean particle diameter, said first mean particle diameter being substantially less than said second mean particle diameter, said method comprising passing a first light radiation having a first wavelength through said pulp suspension, said first wavelength being of the same magnitude as said first mean particle diameter, passing a second light radiation having a second wavelength through said pulp suspension, said second wavelength being longer than said first wavelength but shorter than said second mean particle diameter, collecting said first and second light radiations after they have passed through said pulp suspension, measuring first and second absorbencies for said first and second collected light radiations, respectively, and determining the content of said crill in said pulp suspension from said first and second absorbencies.

4,514,258

REINFORCED WOOD PARTICLE BOARD AND A METHOD OF PRODUCING IT

Lars Hammarberg, Avant. Poste 3, CH-1005 Lausanne, Switzerland

PCT No. PCT/SE81/00358, § 371 Date Jul. 30, 1982, § 102(e) Date Jul. 30, 1982, PCT Pub. No. WO82/01849, PCT Pub. Date Jun. 10, 1982
PCT Filed Dec. 7, 1981, Ser. No. 403,668
Claims priority, application Sweden, Dec. 5, 1980, 8008552
Int. Cl.³ D21H *3/82*
U.S. Cl. 162—107 **18 Claims**

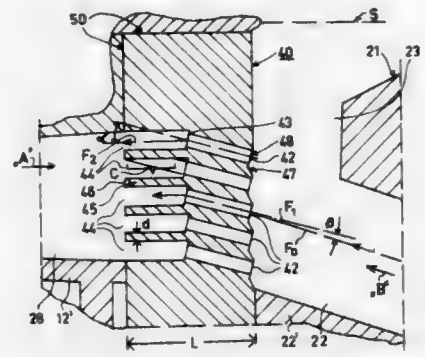
1. A method of producing a wet laid continuous glass fiber thread reinforced wood particle board comprising, coating the glass fiber threads with an adhesive, dewatering an aqueous wood particle stock to form a first wet layer of wood particles, continuously applying said coated glass fiber threads onto said first wet layer of wood particles at a side to side spacing of between about 10 mm to about 100 mm, applying a second wet layer of wood particle stock on said coated glass fiber threads and first wood particle layer whereby said coated glass fiber threads are embedded and fixed between said first and second wood particle layer pressing to form said board.

4,514,259

HEADBOX FOR A PAPER MACHINE

Erkki Koski, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Sep. 30, 1982, Ser. No. 432,370
Claims priority, application Finland, Oct. 12, 1981, 81958
Int. Cl.³ D21F *1/06*
U.S. Cl. 162—343 **24 Claims**



1. In a headbox for a paper machine including a distributor beam part communicating with a distribution part, and a turbulence part followed by a slice part, said turbulance part comprising a turbulence generator member provided with a plurality of flow bores, each flow bore having an inlet mouth and an outlet mouth, the improvement comprising:

said plurality of flow bores being elongated and disposed in a plurality of substantially transverse rows, said flow bores each having a substantially circular cross-section;

a plurality of elongated flow slots of substantially rectangular cross-section formed in said turbulence generator member with the outlet mouths of a respective, substantially transverse row of said flow bores opening into a respective flow slot; and

wherein a central plane of each flow slot forms an angle with the axes of said flow bores in the respective row, the magnitude of said angle being in the range of about 5° to 45° and angles of all said plurality of slots with said respective rows extending in the same direction with respect to one another.

4,514,260

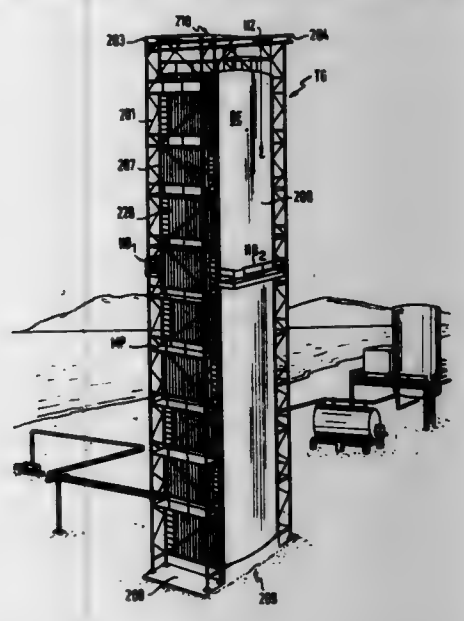
APPARATUS FOR THE DESALINATION OF SEA WATER

Gamal el Din Nasser, Puchheim, Fed. Rep. of Germany, assignor to D.V.T. Büro für Anwendung Deutscher Verfahrenstechnik H. Morsy, Dusseldorf, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,708
Claims priority, application Fed. Rep. of Germany, May 24, 1982, 3219456
Int. Cl.³ B01D *3/00*
U.S. Cl. 202—270 **10 Claims**

1. Apparatus for the pressure-tight enclosure of a column, such as a heat exchanger column for desalinating sea water in a multi-effect evaporation process, comprising elements designed, sized and arranged for facilitating manufacture, transport, assembly and maintenance of a tall, narrow pressure-tight heat exchange column including an upwardly extending support structure, an upwardly extending tall narrow container positioned within said support structure and including four upwardly extending elongated side walls arranged in two pairs with said side walls of each said pair facing one another and disposed in spaced relation, and two spaced facing end walls extending across the opposite ends of said side walls and forming the top and bottom of said container, said end walls and one pair of said side walls are fixed to said support structure and the other pair of said side walls are movably secured to the support structure, a lifting tackle is located on said support structure above said top end wall of said container, a movable working platform located across each movable side wall of said container form movement in the upward direction, and means for securing said movable side walls in pressure-tight condition

relative to said side walls and end walls fixed to said support structure and said means being releasable for moving said



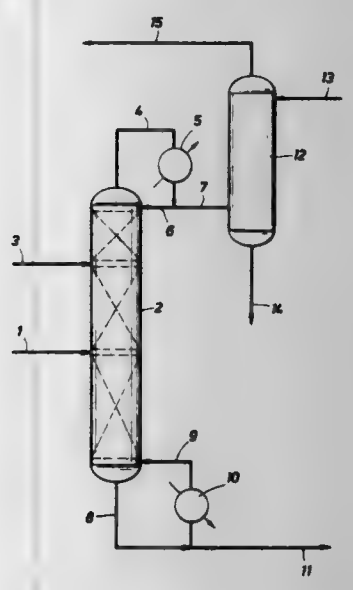
movable side walls into the open position for affording access to the interior of the said container.

4,514,261

REFINING OF TERTIARY BUTYLSTYRENE

Glen F. Crum, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed Aug. 31, 1984, Ser. No. 646,267
Int. Cl.³ B01D *3/40*; C07C *7/08*
U.S. Cl. 203—9 **10 Claims**



1. A process for the refining of a t-butylstyrene stream containing isopropenylstyrene comprising:

introducing said stream as feed to an extractive distillation zone; subjecting said feed to extractive distillation with sulfolane as solvent; removing overhead refined t-butylstyrene depleted in isopropenylstyrene and removing sulfolane-containing isopropenylstyrene as bottoms.

4,514,262

SEPARATION OF BENZENE FROM NON-AROMATIC HYDROCARBONS BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Aug. 2, 1982, Ser. No. 404,448
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.³ B01D *3/40*; C07C *7/08*
U.S. Cl. 203—51 **5 Claims**

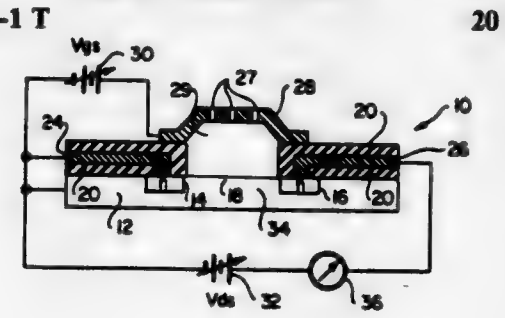
1. A method for separating benzene from close boiling non-aromatic hydrocarbons which comprises distilling a mixture of benzene and close boiling non-aromatic hydrocarbons in a rectification column in the presence of a sufficient amount of an extractive agent to provide a relative volatility of 2.0 or greater comprising effective proportions of at least phthalic anhydride and at least one solvent from the group consisting of acetophenone, adiponitrile, anisole, benzophenone, benzyl acetate, butoxypropanol, butyl benzyl phthalate, diethyl maleate, diethyl oxalate, diethylene glycol, N,N-dimethyl acetamide, N(N,N-dimethylaminopropyl)-2-pyrrolidine, dimethylformamide, dimethylsulfone, dimethylsulfoxide, dipropylene glycol, ethyl acetoacetate, ethylene glycol diacetate, ethylene glycol phenyl ether, formamide, furfural, glycerol triacetate, isobornyl acetate, isophorone, N-isopropyl-2-pyrrolidone, 1-methyl-2-pyrrolidinone, nitrobenzene, 2-nitrotoluene, 3-nitrotoluene, n-octanol, 2,4-pentanedione, phenol, phenyl acetate, phenyl acetic acid, sulfolane, sulfolene, tetrahydrofurfuryl alcohol, and triethylene glycol diacetate.

4,514,263

APPARATUS AND METHOD FOR MEASURING THE CONCENTRATION OF COMPONENTS IN FLUIDS

Jiri Janata, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 338,943, Jan. 12, 1982, Pat. No. 4,411,741. This application Oct. 21, 1983, Ser. No. 544,359
The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T **20 Claims**



1. An apparatus for detecting a concentration of components in a fluid, comprising:

a semiconductor substrate having a doping polarity;

at least two diffusion regions located at a surface of said substrate;

an electrically insulating layer overlying the surface of said substrate except for that portion of the substrate surface between said diffusion regions;

a bridge member mounted to said insulating layer so as to form a gap between said bridge member and said substrate, said bridge member allowing for passage of fluid into said gap and said bridge member being capable of having an electrical charge imposed upon it, said gap further providing for electrical insulation between said bridge member and the surface of said substrate between said diffusion regions;

means for imposing an electrical charge on said bridge member; and

means for imposing an electrical potential between said diffusion regions.

17. A method for detecting a concentration of components in a fluid, comprising the steps of:

doping a semiconductor substrate so as to impart a doping polarity to the substrate;

forming at least two diffusion regions at the surface of the substrate;

positioning an electrically insulating layer over the surface of the substrate except for that portion of the substrate surface between the diffusion regions;

mounting a bridge member to the insulating layer so as to form a gap between the bridge member and the substrate, the gap providing for electrical insulation between the

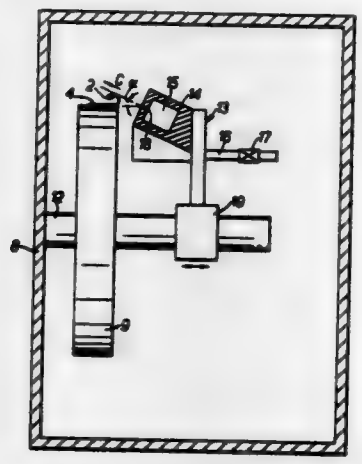
bridge member and the surface of the substrate between the diffusion regions;
imposing an electrical charge on the bridge member;
imposing an electrical potential between the diffusion regions;
introducing a fluid through the bridge member and into the gap between the bridge member and the substrate; and
detecting current flow between the diffusion regions.

4,514,264

METHOD AND DEVICE FOR GALVANICALLY APPLYING A METAL COATING ON METAL OBJECTS

Harry C. Piepers, Eindhoven, Netherlands, assignor to Meco Equipment Engineers B.V., Netherlands

Filed Feb. 21, 1984, Ser. No. 581,930
Int. Cl.³ C25D *5/02, 5/08, 17/28*
U.S. Cl. 204—15 **17 Claims**



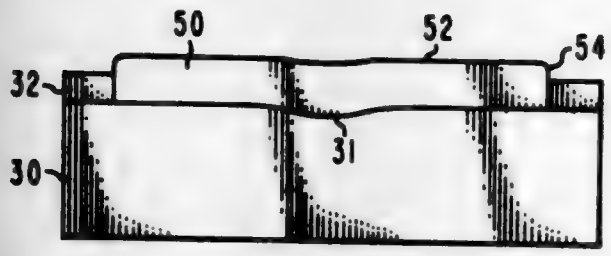
1. A method of galvanically applying a metal coating to metal objects with the aid of an electrolyte which is brought into contact with at least the parts of the metal objects to be covered with metal, the metal objects being guided along the outer circumference of a curved surface, the electrolyte being expelled from a supply means with a speed of at least 3 m/sec. in the form of a thin curtain at least substantially tangential to the parts to be covered with metal of the objects adhering in an elongate tape, so that after having passed along the parts to be covered, the electrolyte can freely flow away without coming into contact with other parts of the objects.

4,514,265

BONDING PADS FOR SEMICONDUCTOR DEVICES

Srinivas T. Rao, Kendall Park, and Frank Z. Hawrylo, Hamilton Township, Mercer County, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 5, 1984, Ser. No. 627,921
Int. Cl.³ C25D *5/02*
U.S. Cl. 204—15 **5 Claims**



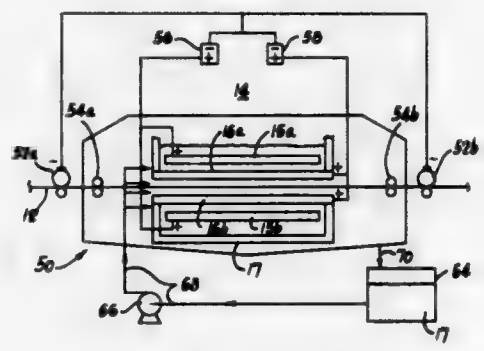
1. In a method of electroplating one or more bonding pads onto the surface of a nonplanar semiconductor body comprising
connecting the semiconductor body to a negative terminal of a power supply;
connecting a suitable anode to a positive terminal of said power supply;
submerging the semiconductor device and the anode into an electrolyte solution of the bonding pad material; and
applying a direct current from the power supply to the electrolyte so that a layer of bonding pad material of the desired thickness is deposited onto the semiconductor body; the improvement comprising
modulating the current such that it is turned off and on continuously during the deposition whereby the non-planarities are substantially planarized and a bonding pad layer having low stress, a fine grain structure and straight walls is provided.

4,514,266

METHOD AND APPARATUS FOR ELECTROPLATING

Frank J. Cole, and Henry N. Hahn, both of Parma, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Sep. 11, 1981, Ser. No. 301,429
Int. Cl.³ C25D *7/06, 17/12*
U.S. Cl. 204—28 **16 Claims**



1. An apparatus for electroplating at least one surface of a cathodic workpiece in an electrolytic cell comprising:
(a) a structure defining a workpiece position;
(b) a non-consumable anode having a plate with apertures therethrough positioned in a spaced apart relationship with respect to the workpiece plating position and in part defining a first plating solution flow path between the workpiece position and the plate; said non-consumable anode contoured to maintain a substantially uniform spacing between a substantially planar surface of said anode and a substantially planar workpiece plating surface;
(c) a consumable anode positioned outside the first plating solution flow path, in a spaced apart relationship with respect to the workpiece position to define a second solution flow path between the consumable anode and the workpiece through the spaced apertures in said non-consumable anode plate, the relative positioning of the non-consumable and consumable anodes such that said second flow path at least partially co-incides with said first flow path in a region between the apertured plate and said workpiece position;
(d) fluid supply means for supplying an electroplating solution that substantially fills the first and second plating solution flow paths by directing solution past the consumable anode to and through said spaced apertures to permit electroplating current flow between a workpiece and each of the anodes; and,
(e) a power supply for applying a direct current potential between a workpiece and each of the anodes such that the direct current potential between such workpiece and the non-consumable anode is no higher than that between the consumable anode and such workpiece.

11. A process of plating a surface of a steel workpiece with a metal comprising:
(a) positioning an anode chamber in which a non-consumable anode at least in part forms a wall of the chamber in spaced relationship with a workpiece with the non-consumable anode having a surface oriented toward a surface to be plated of the workpiece and maintained in a predetermined spacial relationship with the workpiece surface

such that a desired and predetermined current density can be achieved across the workpiece surface;
(b) positioning a consumable anode in the anode chamber in non-contacting relationship with the non-consumable anode and with the non-consumable anode between the consumable anode and the workpiece surface;
(c) flowing plating solution into said chamber and through apertures in said non-consumable anode into contact with the workpiece;
(d) maintaining the flow at sufficient volume to substantially fill at least a portion of the space between the non-consumable anode surface and the workpiece surface being plated and to maintain the consumable anode at least partially immersed in such solution;
(e) establishing electroplating current flow between the workpiece and each of the anodes by applying direct current potential between the workpiece and each of said anodes, and plating the workpiece surface while maintaining the potential between the consumable anode and the workpiece at least as high as the potential between the non-consumable anode and the workpiece.

4,514,267

ZINC ELECTROPLATING ADDITIVE CONCENTRATE

Ronald J. Lash, Rochester, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed May 7, 1984, Ser. No. 606,464
Int. Cl.³ C25D *3/22, 3/56*
U.S. Cl. 204—44.2 **8 Claims**

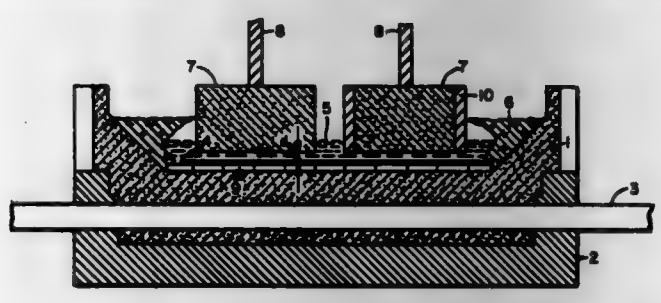
1. An aqueous concentrate adapted for dilution with water for use in the make-up and replenishment of zinc or zinc alloy plating baths of the chloride and mixed chloride types comprising an aqueous solution containing zinc chloride present in an amount of about 10 to about 400 g/l, a hydrophobic organic brightening agent selected from the group consisting of aryl aldehydes, halo aryl aldehydes, aryl alkenyl ketones, aryl alkenyl aldehydes, heterocyclic alkenyl ketones, heterocyclic alkenyl aldehydes and mixtures thereof present in an amount of about 10 to about 200 g/l, and a solubilizing agent comprising an alkyl phenyl sulfonate compound, said solubilizing agent present in an amount of at least about 10 g/l up to an amount in combination with said zinc chloride of about 270 g/l to about 570 g/l for each 100 g/l or fraction thereof of said brightening agent present in said concentrate.

4,514,268

ELECTROLYTIC AL PRODUCTION WITH REACTION SINTERED CERMET COMPONENT

Thomas P. DeAngelis, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,670
Int. Cl.³ C25C *3/06*
U.S. Cl. 204—67 **20 Claims**



1. A component of an electrolytic aluminum production cell which in use is normally in contact with molten aluminum or in electrical contact with another component which is normally in contact with molten aluminum, characterized in that it has a portion made of a fine-grained, homogeneous, intimate interdispersion of:
(a) 30–95 mole percent of first phase or phases having a maximum grain size not greater than about 10 μm and being boride, carbide, nitride, silicide, sulfide or combination thereof of one or more of the elements of Groups 4b, 5b and 6b, and
(b) 5–70 mole percent of second phase or phases being aluminum, alloy or intermetallic compound thereof, or combination thereof;
which cermet contains 0 to 4 weight percent oxygen and is prepared by the process comprising:
(c) admixing particulate reactants of maximum particle size substantially not greater than 150 μm and being elements, compounds, intermetallic compounds, alloys or combination thereof in stoichiometric proportions to substantially form the first and second phases, and
(d) shaping and heating the admixture to form the reactive sintered cermet, the heating being done in nonreactive atmosphere and at temperature at which the reaction and sintering occurs between the reactants to substantially form the first and second phases.

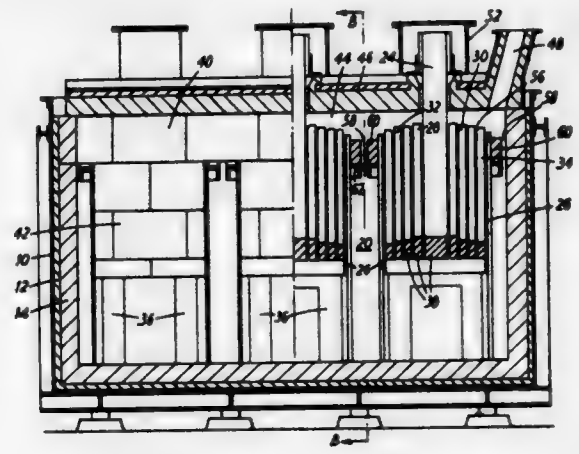
20. In a method of producing aluminum by electrolysis in an electrowinning or electrorefining cell the improvement characterized by using a cell component as claimed in claim 1.

4,514,269

METAL PRODUCTION BY ELECTROLYSIS OF A MOLTEN ELECTROLYTE

Olivo G. Sivilotti, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Filed Jul. 13, 1983, Ser. No. 513,234
Claims priority, application United Kingdom, Aug. 6, 1982, 8222665
Int. Cl.³ C25C *3/02, 3/04*
U.S. Cl. 204—69 **6 Claims**



1. A process for the production of a metal by electrolysis of a molten metal chloride electrolyte which is more dense than the metal, which method comprises,
introducing electrolyte into the lower ends of interelectrode regions between the electrodes of one or more assemblies each comprising an anode, a cathode and one or more intermediate bipolar electrodes,
passing an electric current between the anode and the cathode whereby chlorine is generated at anodic electrode faces, the metal is generated at cathodic electrode faces, and an electrolyte/metal/chlorine mixture is caused to rise up the interelectrode regions,
causing the electrolyte/metal mixture which emerges from the upper ends of the interelectrode regions to spill over the or each intermediate bipolar electrode and over the cathode and to pass down a restricted passage behind the cathode,
maintaining the liquid surface level at a substantially constant height to effect substantially complete separation of chlorine from the electrolyte metal mixture at or upstream of the restricted passage without permitting a significant proportion of electric current to by-pass the intermediate electrode(s), and
downstream of the restricted passage, separating and recov-

ering metal from the electrolyte/metal mixture into an inverted channel leading to a metal collection region and recirculating the electrolyte to the lower ends of the interelectrode regions.

4,514,270

PROCESS FOR REGENERATING CLEANING FLUID

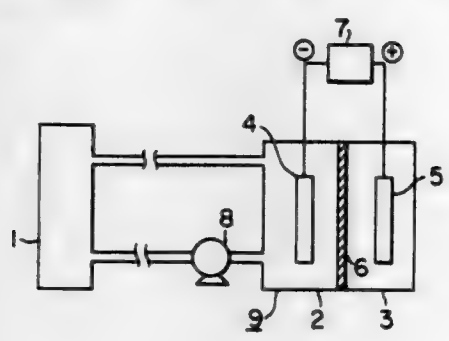
Yasumasa Furutani, Katsuta; Yasuo Hira, Hitachi; Takashi Hasegawa, Ibaraki; Akira Minato, Hitachi; Osao Sumita, Hitachi, and Hisao Itow, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,195

Claims priority, application Japan, Sep. 25, 1981, 56-150627

Int. Cl.³ C25C *1/06*; B01D *13/02*

U.S. Cl. 204—151 **20 Claims**



13. A process for regenerating a cleaning fluid obtained from a cleaning step in nuclear plants, which comprises:

introducing a cleaning fluid containing metal oxides obtained by cleaning operation into a cathode chamber of an electrolytic cell having an anode and a cathode, said cleaning fluid being a chemical decontamination solution containing one or more decontamination reagents in amounts of 1% by weight or less as a total and said electrolytic cell being divided into a cathode chamber and an anode chamber by a cation exchange resin film,

passing a direct current through said cleaning fluid between the two electrodes,

removing said metal oxides by depositing dissolved metal ions on the cathode as metals from the cleaning fluid to recycle the resulting regenerated cleaning fluid from the cathode chamber, and

recycling the regenerated cleaning fluid from the cathode chamber to the cleaning step.

4,514,271

STABLE DISPERSION OF ALKYLATED POLYVINYLPYRROLIDONE AND VINYL PYRROLIDONE

Earl P. Williams, Pen Argyl, Pa., and Lindley S. Wood, Montclair, N.J., assignors to GAF Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 280,032, Jul. 2, 1981, abandoned. This application May 23, 1983, Ser. No. 496,789

Int. Cl.³ C08F *2/50, 271/02*

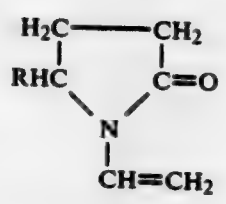
U.S. Cl. 204—159.15 **11 Claims**

1. Composition consisting essentially of:

a. Poly(alkylated vinylpyrrolidone) which is a linear copolymer of:

1. alpha olefin having at least two carbon atoms; and

2. N vinyl monomer of the formula



where R represents H, CH_3 and C_2H_5; and

b. N-vinyl-2-pyrrolidone as diluent monomer, the N-vinyl-2-pyrrolidone being present in an amount between about 25 and about 30 wt % based on the total of N-vinyl-2-pyrrolidone and poly(alkylated vinylpyrrolidone).

6. Method of forming a radiation cured coating which comprises:

a. forming composition of claim 1;

b. mixing a minor amount of said composition of claim 1 as a dispersion aid with a multi-component radiation curable coating composition having as a component N-vinyl-2-pyrrolidone;

c. forming said radiation curable coating composition into an uncured coating; and

d. subjecting said coating to radiation to produce a cured coating.

4,514,272

PROCESS AND DEVICE FOR BREAKING STABILIZED EMULSIONS, ESPECIALLY OIL-WATER EMULSIONS

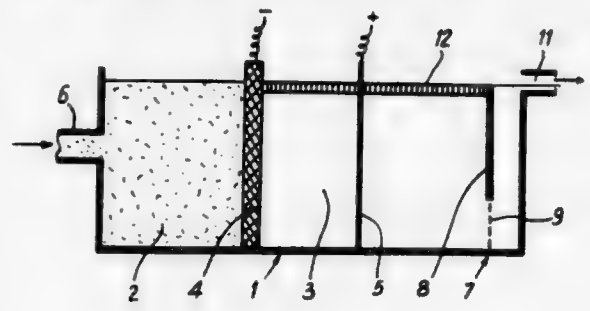
Jean-Pierre Dubreuil, Lagor; Jean Blazejczak, and Bernard Tramier, both of Billere, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Feb. 21, 1984, Ser. No. 581,800

Claims priority, application France, Feb. 21, 1983, 83 02746

Int. Cl.³ B01D *17/06*; B03C *5/00*

U.S. Cl. 204—186 **17 Claims**



1. Process to break stabilized emulsions, comprising feeding an emulsion into a space defined in part by one face of a surfactant treated permeable membrane constituting a precolating electrode, applying an electric current to the membrane, and removing effluent flowing through the membrane from a space defined in part by another face of the permeable membrane.

4,514,273

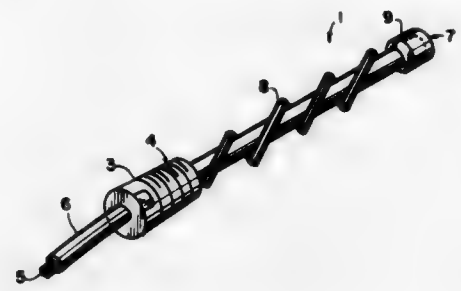
APPARATUS FOR STIMULATING REMOVAL OF ELECTROLYTIC ENERGY FROM FLUIDS

Leonard L. Vollman, St. Louis County, Mo., assignor to Scale Free Systems, Inc., St. Louis, Mo.

Filed Feb. 8, 1984, Ser. No. 578,271

Int. Cl.³ C23F *13/00*; H05F *3/02*

U.S. Cl. 204—196 **17 Claims**



1. An apparatus for stimulating removal of electrolytic energy from a vessel of water or other charge conveying liquid, said apparatus including a conductive member provided for disposition within the vessel and below its waterline, a conductor electrically connecting with said conductive member and provided for extending externally of any vessel in which the said member is disposed, said conductor capable of being

grounded, a nonconductive mounting means secured with the conductive member and disposed for electrically insulating the said member from the vessel in which it is disposed, said mounting means being nonabsorbent of moisture and free of electrical conductivity even after its sustained submersion in water within the vessel, a projecting means mounted upon the conductive member and extending substantially along its length from its connection with the mounting means and to its most inwardly disposed end within the vessel, whereby the said conductive member and its projecting means retains an electrically isolated state with respect to the vessel in which it mounts and is capable of conducting electrostatic charge from the water located in any such vessel.

4,514,274

ELECTRODE FOR ELECTROCHEMICAL PROCESSES

Bernard Hesketh, Frodsham, and Nicholas W. J. Pumphrey, Runcorn, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 450,200, Mar. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 289,742, Sep. 15, 1972, abandoned. This application Nov. 8, 1979, Ser. No. 92,515

Claims priority, application United Kingdom, Sep. 16, 1971, 43190/71; Oct. 26, 1973, 49898/73

Int. Cl.³ C25B *11/00*

U.S. Cl. 204—290 F **12 Claims**

1. In an electrode suitable for use as an anode in a mercury cathode cell which comprises a support member made of a film-forming metal or a film-forming metal alloy and an electrocatalytically active coating thereon comprising an electroconducting material selected from the group consisting of platinum group metals, oxides thereof and mixtures of at least one such metal or oxide with one or more non-noble metal oxides, such coating being obtained by thermally decomposing a precursor for each component thereof, the improvement whereby said coating consists of a matrix of said electroconducting material having embedded therein a non-conducting refractory material in discrete form and having a resistivity greater than about 10 ohms-cm, said embedded refractory material being selected from the group consisting of:

(a) particulate non-conducting refractory material wherein the particles have a size range of up to 200 microns,

(b) fibrous non-conducting refractory material wherein no dimension of individual fibers exceeds 1 mm and

(c) mixtures of such fibrous and particulate refractory material, the embedded refractory material being present in particulate and/or fibrous form in admixture with the precursors for said coating before said precursors are thermally decomposed to form said coating and remaining essentially in said form throughout the preparation of said coating, the proportion of embedded refractory material in the coating being 5% to 95% by volume calculated on the total volume of the components in the coating, said embedded refractory material modifying the surface characteristics of the coating and thereby increasing the electrical contact resistance thereof to mercury with consequent reduction in undesirable shorting effects.

4,514,275

APPARATUS FOR PHYSICAL VAPOR DEPOSITION

Hisashi Shimada, Nagoya; Tohru Arai, Toyoake, and Junji Endo, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Continuation-in-part of Ser. No. 345,423, Feb. 3, 1982, abandoned. This application Mar. 30, 1984, Ser. No. 594,444

Claims priority, application Japan, Feb. 12, 1981, 56-20495

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **13 Claims**

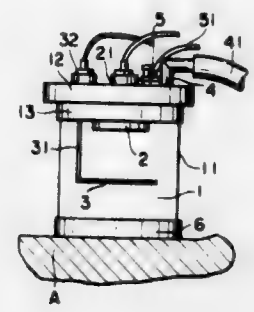
1. An apparatus for physical vapor deposition for coating a surface to be treated of a large or immovable body comprising:

a casing having an opening at one end thereof;

a sealing member provided at an opening end of said casing in contact with said surface to be treated, for air-tightly sealing a vacuum chamber formed by said casing and said surface to be treated;

electrode means for sputtering provided in said vacuum chamber and connected to a power source for emitting vapor of coating material to said surface to be treated;

a bias electrode comprising a ring-shaped member, having a larger diameter than the diameter of said electrode means, provided in said vacuum chamber between said electrode



means and said surface to be treated and connected to a power source so as to have a higher potential than said surface to be treated and said electrode means;

an exhaust hole provided at a predetermined wall portion of said casing, for exhausting gases from said casing; and

a gas introducing hole provided at a predetermined wall portion of said casing independently of said exhaust hole for introducing a specific gas into said casing, whereby said emitted vapor reaches said surface to be treated.

4,514,276

MICROELECTRONIC SENSOR ASSEMBLY

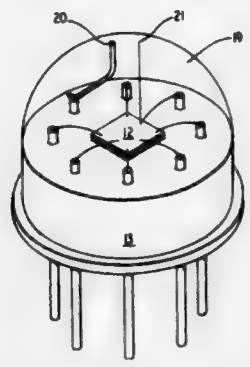
Arthur K. Covington, Newcastle Upon Tyne, and Alastair Sibbald, Whitley Bay, both of England, assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,710

Claims priority, application United Kingdom, Oct. 31, 1981, 8132895

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—415 **5 Claims**



1. A miniature sensor assembly for the detection and electrochemical measurement of oxygen and other chemical properties of the environment to which it is exposed, said sensor comprising:

an electrically insulating substrate comprising a microelectronic header having a first surface,

an integrated circuit amplifier mounted on said first surface of said substrate, said amplifier having at least an input terminal,

a plurality of conductive posts situated around the periphery of said first surface of said substrate, said amplifier being centrally disposed with respect to said posts,

said amplifier, said plurality of conductive posts, and the adjacent surface of said substrate being encapsulated in a chemically-resistant, electrically inert material having at least one exposed surface,

a first noble metal wire connected at one end thereof to one

of said conductive posts, said noble metal wire being connected at a point between the ends thereof to said amplifier input terminal, the end of said first noble metal wire opposite said one end extending from said amplifier input terminal in a direction substantially perpendicular to the first surface of said header and terminating at said exposed surface of said electrically inert material, and

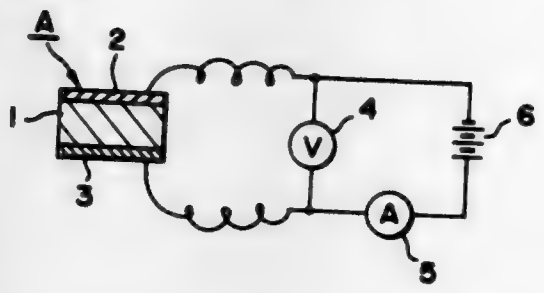
a conductive electrode encapsulated in said electrically inert material, one end of said conductive electrode terminating at said exposed surface of said electrically inert material, said conductive electrode being electrically connected to one of said plurality of conductive posts, said electrically inert material surrounding said first noble metal wire and said conductive electrode throughout their entire lengths.

4,514,277

OXYGEN SENSOR ELEMENT

Shigenori Sakurai; Takashi Kamo; Toshinobu Furutani; Shirou Kimura; Yoshio Torisu, all of Toyota, and Mari Okazaki, Chiryu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 30, 1982, Ser. No. 429,458
Claims priority, application Japan, Dec. 24, 1981, 56-210311
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—424 **2 Claims**



1. An oxygen sensor element of an oxygen sensor of an oxygen concentration cell comprising an oxygen ion-permeable solid electrolyte shaped in a tabular or columnar shape, with electrode layers formed on both sides of said solid electrolyte, wherein at least one of said electrode layers consists of a uniform fired body containing 100 weight parts of metal powder and 0.1 to 10 weight parts of glass powder consisting of particles having a diameter of 5 to 20 micrometers, and wherein said glass powder consists of reinforcing glass fiber for cement, which consists of the following materials in molar amounts: SiO_2, 62–75%; ZrO_2, 7–11%; R_2O, 13–23%; R'O, 1–10%, Al_2O_3, 0–4%; B_2O_3, 0–6%; Fe_2O_3, 0–5%, CaF_2, 0–2%; and TiO_2, 0–4%; wherein R_2O is Na_2O which is substantially pure or is substituted by Li_2O within 2 mole percent thereof; and R'O is an oxide selected from the group consisting of the alkaline-earth metal oxides, ZnO and MnO.

4,514,278

TRACE WATER SENSOR

James B. Stephens, LaCrescenta; Mary M. Yang, Berkeley, and Eric G. Laue, San Marino, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

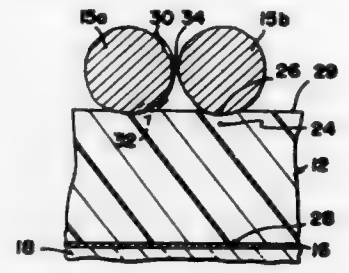
Filed Jan. 14, 1983, Ser. No. 457,992
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—430 **5 Claims**

1. A moisture sensor comprising:

a layer of hygroscopic electrolytic material having first and second opposite faces;

first and second electrodes laying respectively against said first and second faces of said layer;

said second electrode comprising a multiplicity of juxtaposed wire portions lying against said layer and extending parallel to one another, wherein each wire portion abuts the adjacent wire portion to leave only gaps primarily due to variations in wire width and wherein said second face



of the electrolytic material is exposed to the ambient through said gaps.

4,514,279

SOLID HYDROCARBON LIQUEFACTION WITH A CATALYST HAVING CHROMIUM AND MOLYBDENUM

John A. Mahoney, Glen Ellyn; John J. Helstrom, and A. Martin Tait, both of Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 25, 1983, Ser. No. 555,173
Int. Cl.³ C10G *1/08*
U.S. Cl. 208—10 **5 Claims**

1. A method for recovering upgraded liquid products from a solid carbonaceous material, comprising: contacting the carbonaceous material with hydrogen under hydrogenation conditions comprising a temperature in the range of from about 300° C. to about 500° C. in the presence of a hydrocarbon conversion catalyst consisting essentially of molybdenum component and a chromium component on porous refractory inorganic oxide support particles and having a surface area of from about 140 m^2/gm to about 300 m^2/gm, a total pore volume, as determined by mercury penetration and nitrogen desorption measurements, of from about 0.4 cc/gm to about 1.2 cc/gm, a bimodal pore volume distribution with at least about 3% of its total pore volume in macropores having pore diameters greater than 600 Å and at least about 60% of its total pore volume in micropores having pore diameters less than 600 Å, with an average micropore diameter of from about 100 Å to about 200 Å, with each metal component being in the form of the elemental metal, its oxide or sulfide or a mixture thereof, with the molybdenum component at a concentration of from about 3 wt % to about 30 wt %, calculated as MoO_3 and based on the weight of the catalyst, and with the chromium component at a concentration of from about 2 wt % to about 20 wt %, calculated as Cr_2O_3 and based on the weight of the catalyst, and wherein, when the carbonaceous material is coal, coke, lignite or biomass, the carbonaceous material is also contacted with a hydrogen-donor solvent.

4,514,280

DEWAXING WAXY OIL BY DILUTION CHILLING EMPLOYING STATIC MIXING MEANS

David H. Shaw, Sarnia, Canada, and Ralph R. Hall, Morristown, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 582,652, Jun. 2, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,577
Int. Cl.³ C10G *73/06*
U.S. Cl. 208—33 **2 Claims**



1. In a continuous solvent dewaxing process for separating

solid wax from waxy petroleum distillate oil stock, wherein said waxy oil stock, heated for dissolving all wax therein, is treated with dewaxing solvent in a volume ratio of solvent to oil of about 1.5:1 to 5:1, wherein the oil/solvent mixture is cooled at a rate below about 10° F./min. to a temperature for forming a mixture of wax crystals in oil-solvent solution, wherein said wax/oil/solvent mixture is separated, in a solid-liquid separation zone, into a dewaxed oil-solvent solution and wax; the improvement which comprises:

(a) heating a continuously flowing mixture of waxy oil stock and aromatic hydrocarbon dewaxing solvent to a temperature above the melting point of solid wax for forming a waxy oil/aromatic solvent solution;

(b) cooling said heated waxy oil/aromatic solvent solution, at a rate below about 10° F./min. to a dewaxing temperature for crystallizing wax and forming a wax/oil/aromatic solvent mixture;

(c) mixing said wax/oil/aromatic solvent mixture with cold ketone dewaxing solvent, under conditions of plug flow radial mixing, to form a second wax/oil/solvent mixture; and

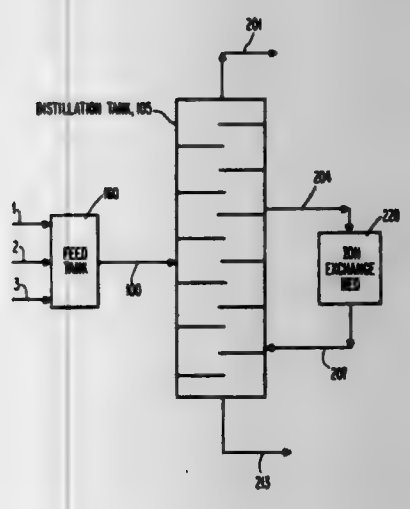
(d) flowing said second wax/oil/solvent mixture, at said dewaxing temperature, to said solid-liquid separation.

4,514,281

CORROSION INHIBITION FOR DISTILLATION APPARATUS

Kenneth L. Baumert, Emmaus, Pa.; Alberto A. Sagues, Lexington; Burtron H. Davis, Georgetown, both of Ky., and Frank K. Schweighardt, Upper Macungie, Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Mar. 21, 1984, Ser. No. 591,665
Int. Cl.³ C10G *7/10, 45/02*
U.S. Cl. 208—47 **3 Claims**



1. In a coal liquifaction system including a distillation tower having trays for holding distilling materials, the improvement wherein chloride-amine-complex-containing-streams accumulated in the 400° to 450° F. range trays of said tower are removed from said tower, contacted with a chloride ion exchange material for removal of a substantial fraction of said chloride contained in said streams, and returned to said tower for further distillation.

4,514,282

HYDROGEN DONOR DILUENT CRACKING PROCESS

Paul C. Poynor, and Joseph W. Burdett, both of Ponca City, Okla., assignors to Conoca Inc., Ponca City, Okla.

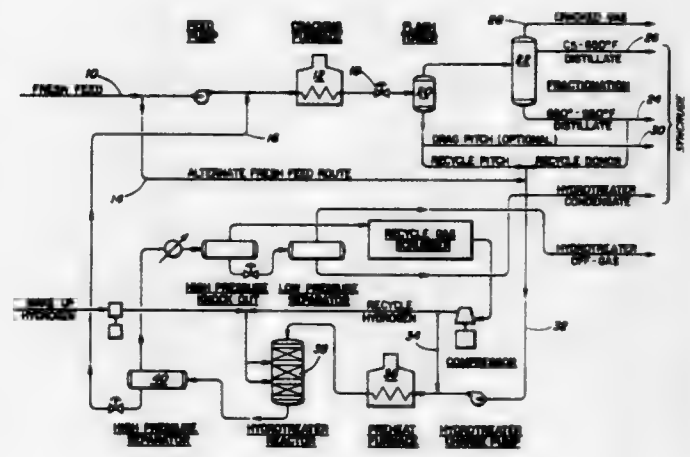
Filed Jul. 21, 1983, Ser. No. 515,733
Int. Cl.³ C10G *69/06*
U.S. Cl. 208—56 **8 Claims**

1. A process for converting heavy hydrocarbonaceous oil into lighter distilate products comprising:

(a) thermally cracking said oil in the presence of a hydrogen donor solvent to produce distillate products and residual pitch;

(b) recovering recycle donor solvent from said distillate products;

(c) catalytically hydrotreating said recycle donor solvent and at least a part of said residual pitch;



(d) combining hydrotreated recycle donor solvent and hydrotreated residual pitch with additional heavy hydrocarbonaceous oil; and

(e) subjecting said combined materials to thermal cracking as in step (a).

4,514,283

PROCESS FOR SEPARATING AND CONVERTING HEAVY OIL ASPHALTENES IN A FIELD LOCATION

Philip J. Closmann; Monroe H. Waxman, and Charles T. Deeds, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 26, 1984, Ser. No. 574,303
Int. Cl.³ C10G *53/04, 55/04*
U.S. Cl. 208—86 **5 Claims**

1. A process for treating at least the relatively high boiling components of an asphaltenic viscous crude oil in a field location, in order to produce a pumpable liquid oil product, comprising:

mixing the crude oil or its heavy ends with an asphaltene precipitating agent at least as effective for asphaltene precipitation as normal heptane and recovering at least a portion of the precipitated asphaltenic components of the crude oil;

thermally converting the recovered asphaltenic components to non-viscous liquid asphaltenic conversion products by heating said recovered asphaltenic components at a pressure of from about one to three atmospheres for a time and temperature substantially as effective as heating said recovered asphaltenic components at substantially atmospheric pressure at from about 625° F. to 700° F. for from about one to three days; and

mixing products of said conversion comprising the non-viscous liquid asphaltenic conversion products with at least the maltene components of the crude oil or its heavy ends from which asphaltenic components were precipitated in order to form a pumpable liquid oil product having a viscosity of no more than about 10,000 centipoise.

4,514,284

REACTIVATION OF IRIDIUM-CONTAINING CATALYSTS

Tom Wairegi, Burlington; Joseph P. Boyle, and John B. Gilbert, both of Sarnia, all of Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 24, 1984, Ser. No. 643,798
Int. Cl.³ B01J *23/90*
U.S. Cl. 208—140 **17 Claims**

1. In a process for the catalytic conversion of hydrocarbons

wherein a hydrocarbon feedstock is contacted with a catalyst comprised of an iridium component composited with a porous refractory inorganic oxide support at hydrocarbon conversion conditions, the catalyst having been at least partially deactivated during contact with said feedstock by coke deposition thereon, the steps of regenerating said catalyst after discontinuing contact of said catalyst with said feedstock which comprise:

(i) providing a bed of said catalyst in a reaction zone with a chloride level on the catalyst ranging from about 0.9 percent to about 1.5 percent, based on the weight of the catalyst,

(ii) burning a preponderance of the coke from the catalyst while adding a gas containing hydrogen chloride sufficient to maintain the chloride level on the catalyst within a range of from about 0.9 percent to about 1.5 percent, based on the weight of the catalyst, and oxygen in concentration ranging up to about 5000 parts, based on the volume of gas, to provide a flame front temperature not exceeding about 425° C. sufficient to burn the coke from the catalyst without significant agglomeration of the iridium component of the catalyst,

(iii) increasing further the chloride level of the catalyst to at least about 1.6 percent, based on the weight of the catalyst, and then contacting said catalyst with a gas containing hydrogen chloride at up to about 5000 parts, based on the volume of the gas, and up to about 5000 parts per million parts oxygen, based on the volume of the gas to provide a flame front temperature greater than about 425° C. sufficient to substantially complete the removal of coke from the catalyst without agglomeration of the iridium component of the catalyst.

4,514,285

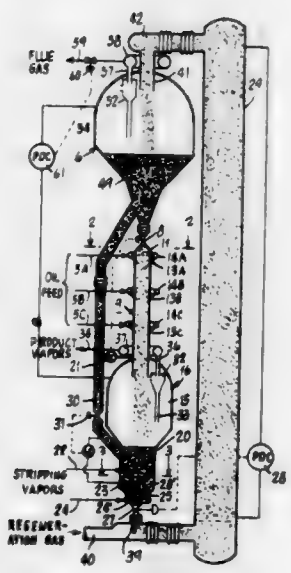
CATALYTIC CRACKING SYSTEM

Phillip K. Niccum, and Dorrance P. Bunn, Jr., both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 23, 1983, Ser. No. 478,018

Int. Cl.³ C10G *11/14*; F27B *15/08*

U.S. Cl. 208—148 **5 Claims**



1. In a fluidized catalytic hydrocarbon cracking process wherein hydrocarbon conversion is carried out in a downflow transport type reaction zone in the presence of hot freshly regenerated catalyst, spent catalyst from said reaction zone is separated from reaction products and stripped of volatile hydrocarbons in a fluidized bed catalyst stripping zone, stripped catalyst is regenerated with an oxygen-containing gas in a catalyst regeneration zone, and hot freshly regenerated fluid catalytic cracking catalyst from the regeneration zone is supplied by gravity in the absence of a carrier fluid into the upper end of a vertical transport downflow reaction zone of relatively small cross-sectional area as compared with its length the improvement which comprises discharging reaction products and catalyst from said reaction zone axially downward directly into the upper portion of an unobstructed ballistic separation zone having a cross-sectional area within the range of 20 to 30 times the cross-sectional area of said reaction zone and open at its lower end to said stripping zone thereby permitting unobstructed free fall of catalyst under the influence of gravity from said reaction zone through said separation zone directly into said stripping zone, introducing hydrocarbon feedstock into said reaction zone along the path of flow of said catalyst forming a mixture consisting of regenerated cracking catalyst and hydrocarbon feedstock vapors at an elevated temperature in the range of 900° F. to 1100° F., maintaining contact between catalyst and hydrocarbon reactants in said reaction zone for an average contact time in the range of 0.5 to 5 seconds, maintaining a fluidized bed level in said stripping zone well below the discharge end of said reaction zone, and effecting substantially complete separation of spent catalyst from hydrocarbon conversion products in said separation zone solely by particle inertia and gravity, withdrawing hydrocarbon conversion products separated from said catalyst in said separation zone at substantially the level of discharge from said reaction zone such that said products are drawn horizontally outward away from the downwardly moving catalyst particles in said separation zone, and collecting separated catalyst from said ballistic separation zone in a fluidized bed in said stripping zone.

4,514,286

FUEL SWEETENING WITH ORGANIC PEROXIDES

Sophia Wang, Houston; Glenn L. Roof, Sugar Land, and Beth W. Porlier, Missouri City, all of Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Oct. 21, 1983, Ser. No. 544,163

Int. Cl.³ C10G *27/06*

U.S. Cl. 208—196 **5 Claims**

1. A process for reducing the mercaptan concentration of a sour petroleum distillate which comprises treating said petroleum distillate with a hydroperoxide compound in combination with a strong base catalyst chosen from the group consisting of quaternary ammonium hydroxide salts from the group consisting of tetraethylammonium hydroxide, tetrapropylammonium hydroxide, tetremethylammonium hydroxide, tetrabutylammonium hydroxide, and mixtures thereof.

4,514,287

PROCESS FOR THE SOLVENT DEASPHALTING OF ASPHALTENE-CONTAINING HYDROCARBONS

Masaki Ikematsu; Isao Honzyo, and Kazuo Sakai, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,831

Claims priority, application Japan, Jan. 8, 1982, 57-999; Apr. 2, 1982, 57-53695; Apr. 2, 1982, 57-53696; Apr. 2, 1982, 57-53933; Apr. 2, 1982, 57-53934

Int. Cl.³ C10G *21/06, 25/00*

U.S. Cl. 208—309 **7 Claims**

1. A process for the solvent deasphalting of asphaltene-containing hydrocarbon which comprises (I) mixing

(A) 100 parts by weight of asphaltene-containing hydrocarbon with

(B) 0.05–10 parts by weight per 100 parts by weight of said asphaltene-containing hydrocarbon of aluminum sulfate

(C) 50–2,000 parts by weight per 100 parts by weight of said asphaltene-containing hydrocarbon of at least one solvent selected from the group consisting of

(1) aliphatic and alicyclic hydrocarbons having 3–30 carbon atoms,

(2) saturated aliphatic and saturated alicyclic monohydric alcohols,

(3) liquid hydrogen sulfide, and

(4) liquid carbon dioxide

to form a mixture of the materials (A), (B) and (C) and then (II) allowing the thus formed mixture to stand still to precipitate and separate the asphaltene therefrom thereby obtaining a

deasphalted oil, wherein the step of mixing, precipitation and separation of the asphaltene are effected at a temperature of 20°–200° C. and a pressure of 0.5–150 kg/cm^2 with the proviso that the lower limit of the pressure is such that the solvent used does not evaporate at the temperature used.

4,514,288

ORE BENEFICIATION PROCESS

Ross A. Kremer, Ringoes, and Stephen W. Saunders, Plainsboro, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,765
Int. Cl.^{3} B03B *1/00*
U.S. Cl. 209—5 **8 Claims**

1. A method for modifying the formation of clay suspensions and phosphate ore beneficiation, whereby the clays coagulate and consolidate more rapidly to a higher final clay density, which comprises adding to a phosphate matrix slurry of the phosphate ore, prior to classification and froth flotation a minor amount of ethylenediaminetetraacetic acid of the formula

$$(HOOCCH_2)_2NCH_2CH_2N(CH_2COOH)_2$$

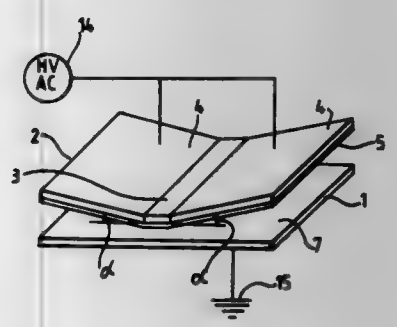
followed by classification and forth flotation with recovery of phosphate.

4,514,289

METHOD AND APPARATUS FOR SEPARATING PARTICULATE MATERIALS

Ion I. Inculet, London, Canada, assignor to Blue Circle Industries PLC, London, England

Filed Nov. 15, 1983, Ser. No. 551,916
Claims priority, application United Kingdom, Nov. 17, 1982, 8232853
Int. Cl.^{3} B03C *7/04*
U.S. Cl. 209—127.3 **21 Claims**



1. A method of separating particles having different physical properties, which comprises generating an alternating electric field; introducing the particles into the field; charging at least some of the particles; and causing the particles to move along a path in the field in a given direction; characterized in that the electric field has a first region having field lines curved convexly in a first direction away from said path and generally perpendicular to said given direction and has a second region having field lines curved convexly in a second direction away from said path and generally perpendicular to said given direction, whereby a charged particle acted upon by the electric field in either of the first and second regions is subjected to a centrifugal force in the respective first or second direction.

4,514,290

FLOTATION COLLECTOR COMPOSITION AND ITS USE

Piotr Swiatkowski, Huddinge, and Thomas Wiklund, Nacka, both of Sweden, assignors to KenoGard AB, Stockholm, Sweden

Filed Mar. 1, 1983, Ser. No. 471,006
Claims priority, application Sweden, Mar. 5, 1982, 8201363
Int. Cl.^{3} B03D *1/14*
U.S. Cl. 209—166 **13 Claims**

1. A process for separation of apatite, scheelite, magnesite, baryte, calcite or fluorspar minerals which contain calcium, barium or magnesium from silica, silicate or iron mineral gangues by froth flotation which process comprises the steps of:

(1) forming a pulp of the raw mineral,

(2) treating the pulp with an effective amount of a collector composition comprising a combination of

(a) 5 to 85 percent by weight of a fatty acid or a salt thereof,

(b) 10 to 75 percent by weight of an amidocarboxylic acid or an amidosulfonic acid, or a salt thereof, and

(c) 3 to 40 percent by weight of a partial ester of phosphoric acid and at least one alkoxylated alcohol, and

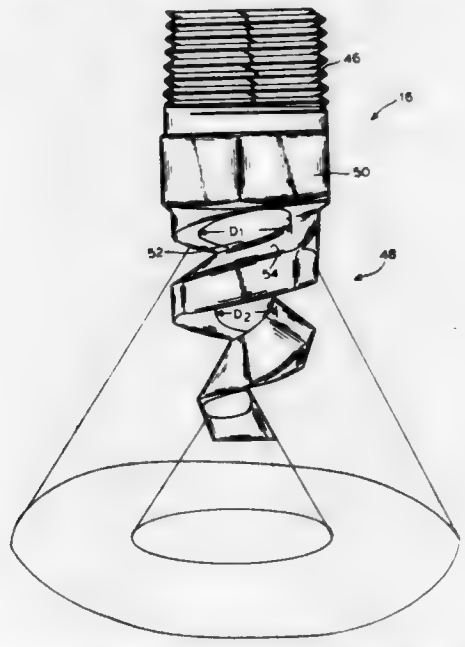
(3) separating the apatite, scheelite, magnesite, baryte, calcite or fluorspar minerals containing calcium, barium or magnesium by flotation at a pH above 6 and collecting them as froth product, and removing the gangues as tailings.

4,514,291

APPARATUS AND METHOD FOR FLOTATION SEPARATION UTILIZING AN IMPROVED SPIRAL SPRAY NOZZLE

Phillip E. McGarry, Palmerton; David E. Herman, Jim Thorpe; Robert A. Treskot, Walnutport, and David C. Fistner, Sr., Bethlehem, all of Pa., assignors to The Standard Oil Company, Cleveland, Ohio

Filed May 18, 1983, Ser. No. 495,626
Int. Cl.^{3} B03D *1/14*
U.S. Cl. 209—166 **7 Claims**



5. A method for froth flotation separation of the components of a slurry having particulate coal therein, said method comprising the steps of:

a. spraying, under pressure in a range of from 2 to 25 psig and under a relatively low back pressure, an input slurry having particulate coal therein through at least one 50° spiral, open flow spray nozzle adapted to cause a hollow cone spray pattern of fine droplets so that the particulate coal is dispersed through an aeration zone of increasing cross-sectional area into a liquid surface to create a froth on the surface in which a quantity of the particulate coal is floating;

b. controlling the agitation created by said at least one spiral spray nozzle to provide a zone of turbulence extending a limited distance beneath the liquid surface; and
c. removing the froth from the liquid surface.

4,514,292

FROTH FLOTATION PROCESS

Charles L. Burdick, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 9, 1983, Ser. No. 550,163
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—167 **8 Claims**

4. In the beneficiation of ores containing metallic minerals or coal by subjecting an aqueous pulp of said ore or coal to a froth flotation process in the presence of a depressant for associated gangue and ash-producing constituents and recovering the beneficiated minerals or coal as a flotation froth concentrate, the improvement wherein the depressant is a water-soluble composition consisting essentially of, by weight, (a) from about 95% to about 5% of at least one salt selected from the group consisting of alkali metal sulfite, ammonium sulfite, alkali metal bisulfite and ammonium bisulfite and (b) from about 5% to about 95% of at least one salt of a sulfonated compound selected from the group consisting of benzene disulfonic acids, naphthalene disulfonic acids, condensates of formaldehyde and naphthalene sulfonic acids, naphthol sulfonic acids, lignin sulfonic acids and sulfonated quebracho.

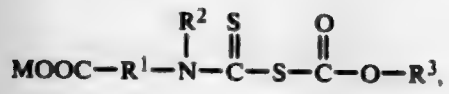
4,514,293

ORE FLOTATION AND FLOTATION AGENTS FOR USE THEREIN

Clarence R. Bresson, and Harold W. Mark, both c/o French, Hughes and Doescher, P.O. Box 2443, Bartlesville, Okla. 74005

Filed May 10, 1984, Ser. No. 608,826
Int. Cl.³ B03D *1/06*; C07C *154/02*; C09K *3/00*; C22B *3/00*
U.S. Cl. 209—167 **19 Claims**

5. A process for producing a composition having the formula



(I)

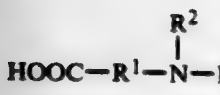
wherein M is selected from the group consisting of ammonium and alkali metals, R^1 is selected from the group consisting of alkylene radicals each having no more that 4 carbon atoms, R^2 is selected from the group consisting of H, and alkyl radicals each having no more than 2 carbon atoms, and R^3 is selected from the group consisting of alkyl and alkenyl radicals each having no more than 6 carbon atoms, comprising the steps of:

(a) reacting a hydroxide having the formula



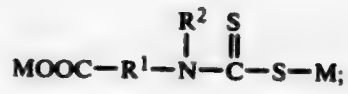
(II),

wherein M is selected from the group consisting of ammonium and alkali metals, with CS_2 and an acid having the formula



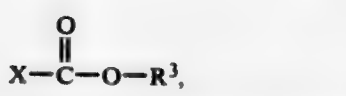
(III)

wherein R^1 is selected from the group consisting of alkylene radicals each having no more than 4 carbon atoms, and R^2 is selected from the group consisting of H and alkyl radicals each having no more than 2 carbon atoms, to form



(IV)

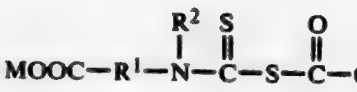
(b) reacting the product of formula (IV) with a haloformic ester having the formula



(V)

wherein X is selected from the group consisting of Cl, Br, and I, and R^3 is selected from the group consisting of alkyl and alkenyl radicals each having no more than 6 atoms, to form a composition having the formula (I); and
(c) recovering said thus formed composition as the product of the process.

15. A process for recovering minerals comprising:
(a) mixing crushed ore containing minerals, water and a composition having the formula



(I)

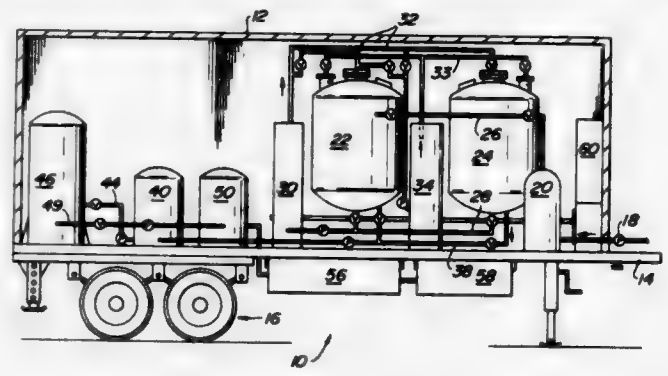
wherein M is selected from the group consisting of ammonium and alkali metals from, R^1 is selected from the group consisting of alkylene radicals each having no more than 4 carbon atoms, R^2 is selected from the group consisting of H, and alkyl radicals each having no more than 6 carbon atoms, and R^3 is selected from the group consisting of alkyl and alkenyl radicals, to establish a pulp;
(b) aerating said thus established pulp to produce a froth containing said minerals; and
(c) recovering said minerals from said thus produced froth.

4,514,294

APPARATUS FOR DECONTAMINATING HYDROCARBONS CONTAINING PCB

Robert G. Layman, Box 417 R, Barto, Pa. 19504, and Linwood B. Kemp, 5 Rega La., Birdsboro, Pa. 19508, assignors to Robert G. Layman and Linwood B. Kemp, both of Birdsboro, Pa.

Filed Oct. 3, 1983, Ser. No. 538,307
Int. Cl.³ B01D *57/00*
U.S. Cl. 210—87 **6 Claims**



1. Apparatus for removing PCB from hydrocarbons comprising a common support for the following components and the components themselves:
a filter for removing water from hydrocarbons, a reactor, a heat exchanger for heating hydrocarbons containing PCB, a vessel selectively communicating with said reactor for introducing sodium into the hydrocarbons for reacting with the chlorine in the PCB, and a separator for separating reactant sodium chloride and phenyl polymer from the hydrocarbon having less than two ppm PCB, the outlet of said filter being connected to said reactor, an outlet of said

reactor being coupled to an inlet of said heat exchanger and an outlet of said heat exchanger being coupled to an inlet of said reactor so that hydrocarbon containing PCB may flow through a closed circuit including said reactor and said heat exchanger, an outlet of said reactor being coupled to an inlet of said vessel and an outlet of said vessel being connected to an inlet of said reactor so that hydrocarbons containing PCB may selectively flow through a closed circuit including said reactor and said vessel, an outlet of said reactor being connected to an inlet of said separator.

4,514,295

DIALYSIS APPARATUS

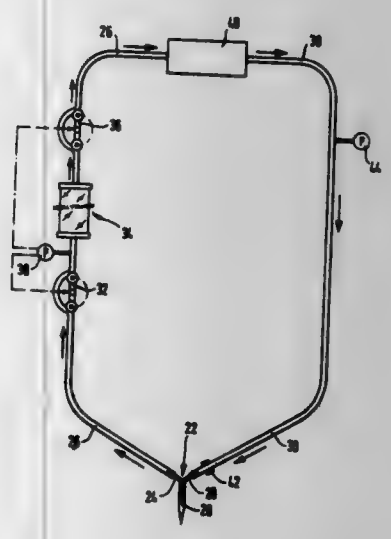
Bernd Mathieu, Spiesen, and Hans-Dietrich Polaschegg, Oberursel, both of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Aug. 2, 1982, Ser. No. 404,557

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3131075

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—90 **17 Claims**



1. Apparatus for freeing blood of products of metabolism comprising

a dialysis diaphragm having

a first access means to one side thereof for receipt of blood to be treated and a first outlet means therefrom for the treated blood,

a second access means to the other side thereof for the dialysis fluid and a second outflow means therefrom for said fluid,

a single connection means for connecting said apparatus to the blood vessel of the patient in need of treatment,

a first pipe means for leading blood from said connecting means to said first access means,

a second pipe means for connecting said first outflow means back to said single connecting means,

valve means in said first and said second pipe means,

at least one pump for driving the blood through the apparatus,

control means for opening and closing said valve means and controlling said pump means,

and an accumulator located in one of said blood pipes, said accumulator comprising a housing having at least one opening therein and a flexible pipe of high elasticity mounted inside said housing having jointing connections at both ends thereof, said opening in said housing providing pressure communication means between the interior of said housing and the atmosphere surrounding said housing.

4,514,296

APPARATUS FOR PRODUCING ION EXCHANGE PARTICLES CHARGED WITH URANYL IONS

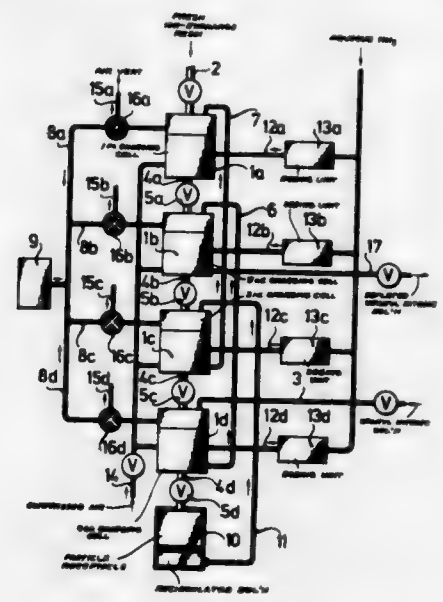
Helmut Ringel, Niederzier-Hambach; Erich Zimmer, Jülich, and Nabil Abdelmonem, Niederzier-Hambach, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Division of Ser. No. 926,103, Jul. 19, 1978, Pat. No. 4,279,866. This application Jan. 5, 1981, Ser. No. 222,640

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733396

Int. Cl.³ B01J *8/08*

U.S. Cl. 210—96.1 **4 Claims**



1. An apparatus for charging weakly acidic cationic ion exchange resin particles with uranyl ions comprising:

at least two contactors arranged in a vertical cascade one above the other;

means for introducing fresh resin particles into the uppermost contactor;

closeable conduits connecting said uppermost contactor with the next lower contactor and connecting the next lower contactor with a further contactor therebelow;

means for introducing a uranyl nitrate solution having relatively high uranyl ion concentration into said further contactor;

means for transferring uranyl nitrate solutions of progressively reduced uranyl ion concentration from said further contactor to said next lower contactor and from said next lower contactor to said uppermost contactor;

means for withdrawing a depleted solution from said next lower contactor; and

means for metering the flow of an alkaline agent into each of said contactors to maintain a pH level therein optimum for the maximum transfer of uranyl ions to the particles therein.

4,514,297

BIOREACTOR

Johan R. Enqvist, Kauniainen, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Dec. 7, 1983, Ser. No. 558,931

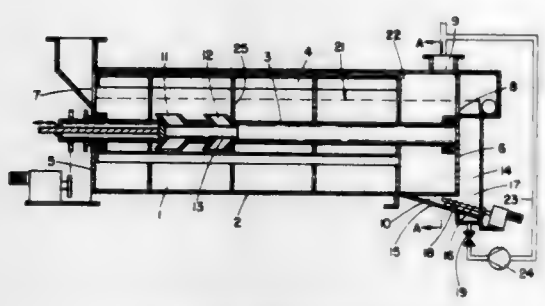
Claims priority, application Finland, Dec. 9, 1982, 824229

Int. Cl.³ C12M *1/06, 1/02;* C02F *3/28*

U.S. Cl. 210—194 **2 Claims**

1. A reactor for anaerobic digestion of an organic sludge and for the production of methane gas, comprising an essentially horizontal, cylindrical vessel (1) having an inlet end and an outlet end, an inlet (7) for the sludge at the inlet end of the vessel, a first outlet for the digested sludge (8) at the opposite outlet end, means for stirring the sludge in the proximity of the inlet end and throughout a major portion of the vessel and

extending up to the outlet end, a second outlet (9) for the removal of methane gas connected to a gas chamber in the upper portion of the vessel, means for returning the sludge settled at the bottom of the vessel at the outlet end to the inlet end, comprising a first channel (10) with an inclined bottom in the lowermost point of the vessel at the outlet end for receiving the settled sludge, said inclined bottom having perforations, a second channel (14) at the outlet end of the vessel, said means for stirring the sludge comprising a horizontal hollow perforated shaft (3) provided with blades and means for rotating said shaft, said second channel (14) fluidly connecting said first channel (10) to said perforated hollow shaft, means for discharging said gas from the second outlet (9) to said channel with an inclined bottom and said perforated shaft is provided with openings disposed a distance apart from each other in the direction of the shaft and a slide is disposed in the shaft to guide the solids to be recycled to a predetermined part of the vessel and valve means for controlling the gas flow and the amount of settled sludge which is returned to the inlet.



4,514,298

TUBE PRESSURE FILTER

George W. Wall, Par, and Glyn T. Jones, St. Austell, both of England, assignors to English Clays Lovering Pochin & Company, Ltd., Cornwall, England

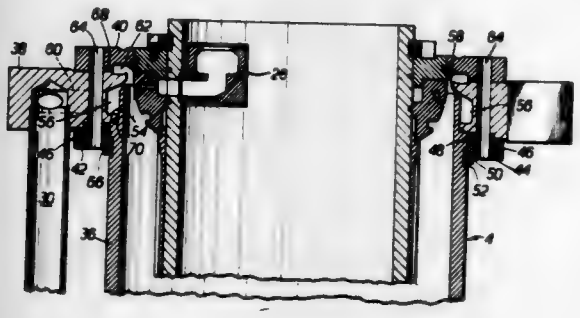
Filed Feb. 2, 1984, Ser. No. 576,103

Claims priority, application United Kingdom, Feb. 7, 1983, 8303306

Int. Cl.[3] B01D *29/10*

U.S. Cl. 210—232

13 Claims



13. A tube pressure filter comprising:

an inner assembly;

a generally tubular outer assembly which surrounds the inner assembly to provide between the assemblies an annular chamber;

an impermeable diaphragm which is disposed within the outer assembly and which divides the annular chamber into inner and outer compartments;

a filter element disposed within the inner compartment;

means for supplying a mixture of a liquid and a particulate solid to the inner compartment; and

means for supplying fluid under pressure to the outer compartment so as to cause the liquid in the inner compartment to be forced through the filter element leaving the particulate solid material deposited on the filter element, the outer assembly comprising a central cylindrical member and two end assemblies, at least one of the end assemblies comprising a first annular member which defines with the cylindrical member an annular chamber for receiving the fluid under pressure and passage means extending between the annular chamber and the outer compartment, and retaining means which releasably engages the cylindrical member and to which the annular member is releasably secured to retain the annular member on the cylindrical member, a second annular member, and at least one nut and bolt assembly which releasably secures together the first and second annular members and the retaining means.

4,514,299

APPARATUS FOR THE RECOVERY OF OILS OR OTHER SIMILAR POLLUTANTS FLOATING ON BODIES OF WATER, INCLUDING THE OPEN SEAS

Giuseppe Ayroldi, Via Guido Zanobini, N. 55, Rome, Italy

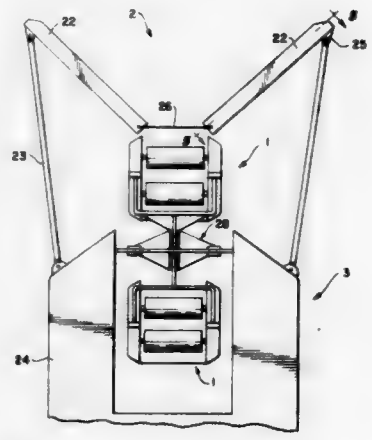
Filed Mar. 1, 1984, Ser. No. 585,231

Claims priority, application Italy, Mar. 1, 1983, 47828 A/83

Int. Cl.[3] E02B *15/04;* C02F *1/40*

U.S. Cl. 210—242.3

5 Claims



1. An apparatus for the recovery of fluid substances or the like floating on water and even in open seas, comprising:

(a) a conveying apparatus adapted to be moved on the water by a support vessel, the conveying apparatus including two flexible floating arms which are more flexible in a vertical plane than in a longitudinal plane, the floating arms being linked to each other in their rear parts by a rod and assuming the shape of a V;

(b) swinging forks for connecting the conveying apparatus to the support vessel, the swinging forks allowing the conveying apparatus and the support vessel to float independently of each other;

(c) a self-floating recovery unit adapted to be moved on the water by said support vessel, the recovery unit including a rotating horizontal drum for recovery of said floating fluid substances, an apron around the sides and rear of the drum for containing a layer of the floating fluid substances directed towards the drum by the floating arms of the conveying apparatus, and means for removing fluid substances from the drum after being recovered by the drum; and

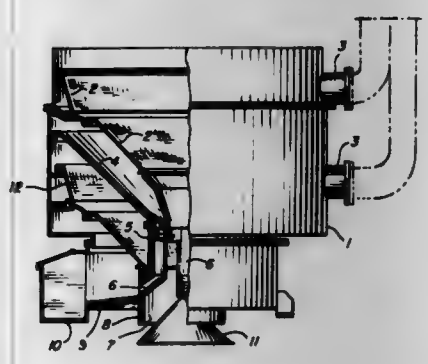
(d) means for connecting the recovery unit to the support vessel, the means including a swinging fork which allows the recovery unit and the support vessel to float independently of each other, and the means further including a hinge which allows the recovery unit to rotate about its longitudinal axis independently of the support vessel.

4,514,300

DEHYDRATING CENTRIFUGAL SIEVE

Adolf Szczesny; Reiner Kleinert, both of Zabrze; Antoni Jedo, Gliwice, and Zygmunt Gutorski, Katowice, all of Poland, assignors to Centrum Mechanizacji Gornictwa "Komag", Gliwice, Poland

Filed Aug. 9, 1983, Ser. No. 521,564
Claims priority, application Poland, Aug. 16, 1982, 237942
Int. Cl.[3] B01D *21/26*
U.S. Cl. 210—342 2 Claims



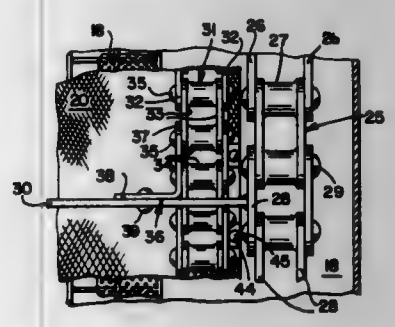
1. A dehydrating centrifugal sieve assembly for separating solid particles from liquids, comprising a housing and at least two generally conical shaped sieves in the form of inverted frustum cones mounted in the housing, disposed one below the other and substantially nested one inside the other, each two adjacent conical sieves being separated from each other by a funnel also of an inverted generally conical shape and nested therebetween, each funnel having a bottom center portion with a circumferential liquid collecting gutter, each conical sieve having an upper circumference and having an input nozzle connected approximately tangentially to said sieve adjacent said upper circumference, a particulate discharge conduit means situated in a central bottom portion of each conical sieve and being arranged vertically and interconnected to a single discharge, a clarified liquid discharge means being situated on a radially outward side near the bottom of the housing, each of said circumferential gutters having passage means vertically situated inside the discharge conduit means, and connected with a collecting chamber for the clarified liquids, said chamber being situated under the lowest conical sieve within the housing and above a flow-off surface on a bottom portion of the housing.

4,514,301

CONTINUOUS MEDIA FILTER

David G. Parshall, Northville, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Aug. 24, 1981, Ser. No. 295,651
Int. Cl.[3] B01D *33/02*
U.S. Cl. 210—400 2 Claims



1. A filter apparatus for removing suspended solids from a liquid suspension, said apparatus comprising

(a) a tank including a base and upstanding end and side walls defining a chamber in which said liquid suspension is received;

(b) a filtrate chamber in said tank;

(c) said filtrate chamber including a perforate wall through which the liquid filtrate flows into said filtrate chamber;

(d) an endless flexible media having laterally spaced and longitudinal extending edges, said filter media being mounted on said tank so that a length thereof overlies said perforate wall and another length is disposed exterior of said tank;

(e) endless conveyor means mounted on said tank and located so as to provide a path of travel similar to the path of said filter media;

(f) said conveyor means including a holddown chain having a run overlying a marginal edge portion adjacent each of said longitudinal edges of said filter media to maintain a first inboard marginal edge portion of said filter media in contact with said perforate wall and a conveyor chain located outboard of a second marginal edge portion outboard of said first marginal edge portion;

(g) means fixing said outboard second marginal edge portion of said filter media to the outboard face of said holddown chain for movement therewith; and

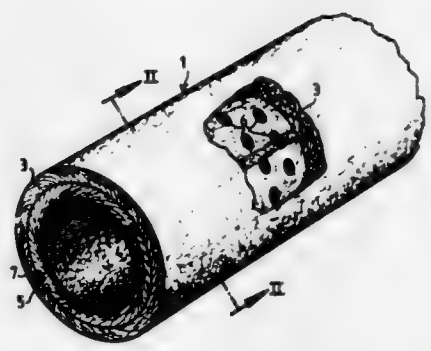
(h) drive means for driving said conveyor means.

4,514,302

NON-WOVEN TUBE FOR MEMBRANE FILTRATION

Cornelis van Zon, Zwolle; Gerrit J. Jonkeren, and Hilbert Eggengoor, both of Bruchterveld, all of Netherlands, assignors to Wafilin B.V., Zwolle, Netherlands

Filed Dec. 13, 1982, Ser. No. 449,318
Claims priority, application Netherlands, Dec. 14, 1981, 81 05621
Int. Cl.[3] B01D *39/14*
U.S. Cl. 210—433.2 5 Claims

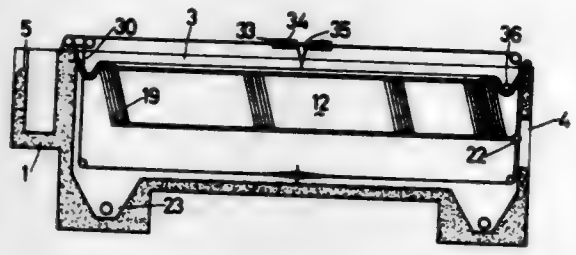


1. A tube of a heat-sealable non-woven material comprising in a longitudinal direction a connecting seal obtained by ultrasonic sealing, said tube being a composite tube (1) and comprising at least an innermost non-woven tube (2) and another outermost non-woven tube (3) surrounding the innermost non-woven tube (2) and each comprising in a longitudinal direction an extending connecting seal, said non-woven tubes being mutually fixed against shifting with respect to each other and wherein the first connecting seal (4) of the innermost non-woven tube and another connecting seal (5) of the other outermost non-woven tube are positioned in a staggered manner with respect to each other, the innermost and the other outermost non-woven tube being locally interconnected by the influence of a heat melting glue, said composite tube being provided with a membrane (8) for membrane filtration, and the seal (5) in the outermost non-woven tube extending partially into the innermost tube by means of a region of interfused non-woven fibers of the innermost non-woven tube, said region not extending into the inner side of the innermost tube.

4,514,303
SLUDGE TRACTION AND DESLUDGING SYSTEM

Richard P. Moore, cor. Black Reef Rd. & Moore St., Germiston, Transvaal Province, South Africa

Filed Jun. 9, 1983, Ser. No. 502,621
Int. Cl.³ B01D *21/24*
U.S. Cl. 210—519
17 Claims



7. A settlement tank installation comprising:

(a) means defining a separating chamber having an inlet for liquid to be directed to an elongated horizontal feed area in the chamber;

(b) means defining a collection channel having a top level controlling outlet opening;

(c) an inclined plate assembly in the separating chamber comprising:

(i) a multiplicity of spaced flexible sheet weighted at their lower ends;

(ii) upper means to suspend the sheets from their upper ends; and,

(iii) lower means connected with the lower ends of the sheets such that the lower ends are movable relative to the upper ends to adjust the inclination of the sheets to the desired angle; and,

(d) perforated side wall means disposed between the separating chamber and the collection channel adjacent to the inclined plate assembly, the perforations extending over the greater part of the height of the inclined sheets, and wherein the top level controlling outlet controls the liquid at the top of the flexible sheets.

4,514,304
METHOD FOR PURIFYING AND CONCENTRATING ORGANIC MATTERS

Yoshiyuki Miyaki; Yoshitaka Fujita; Kazunori Se, and Teruo Fujimoto, all of Nagaoka, Japan, assignors to Toyo Soda Manufacturing Ltd., Shinnanyo, Japan

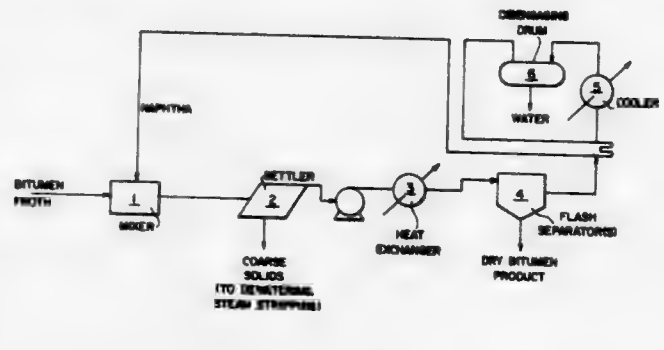
Filed Sep. 30, 1983, Ser. No. 537,625
Claims priority, application Japan, Feb. 9, 1983, 58-18878
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—638
12 Claims

1. In a method for purifying and concentrating organic matters containing inorganic salts, the improvement comprising (a) employing an amphoteric ion-exchange membrane which is made of a ternary block copolymer consisting of a macromolecule poly A^- having cation-exchange group, a macromolecule poly B^+ having an ion-exchange group and a macromolecule poly C having no ion-exchange group, said amphoteric ion-exchange membrane characterized in that it allows sodium chloride to permeate at a concentration not lower than 100% of that in a starting aqueous solution when a pressure of 50 kg/cm^2 is given to a starting aqueous solution of sodium chloride of 0.01 g/dl concentration, and (b) by allowing inorganic salts to selectively permeate from an aqueous solution of the organic compounds containing the inorganic salts through the membrane by applying an increased pressure thereto.

4,514,305
AZEOTROPIC DEHYDRATION PROCESS FOR TREATING BITUMINOUS FROTH

John E. Filby, Calgary, Canada, assignor to Petro-Canada Exploration, Inc., Calgary, Canada

Filed Dec. 1, 1982, Ser. No. 446,029
Int. Cl.³ C10G *33/04*
U.S. Cl. 210—703
13 Claims



1. A method for separating the water, coarse solids and bitumen contained in a bituminous froth obtained by admixing water with bituminous sands in order to recover bitumen which comprises: mixing said bituminous froth with a naphtha diluent capable of forming an azeotrope with water; separating part of the coarse solids from the mixture; heating the remaining mixture to a temperature sufficient to cause vaporization of said diluent and the water as an azeotrope; and flashing the heated mixture to substantially separate all water and diluent from the bitumen and remaining solids.

9. A continuous method for separating the water, coarse solids and bitumen contained in a bituminous froth obtained by admixing water with bituminous sands in order to recover bitumen, which comprises: (a) continuously mixing said froth with naphtha diluent capable of forming an azeotrope with water and in an amount only sufficient to remove the water by azeotropism; (b) separating part of the solids and water by decantation; (c) continuously azeotropically dehydrating the resulting mixture of step b, to continuously remove substantially all the water and diluent therefrom, thereby obtaining a substantially dry bitumen and solids product suitable for further upgrade processing; (d) continuously collecting the azeotropic distillate from c, said distillate comprising water and diluent phases and continuously withdrawing the dry bitumen obtained in c; (e) continuously separating the diluent phase from the aqueous phase of the azeotropic distillate collected in d; and (f) continuously recovering said separated diluent for recycling in the process and continously recovering a purified water substantially free of diluent, bitumen and solids.

4,514,306
METHOD OF AND APPARATUS FOR CONTROLLING THE QUANTITY OF FILTER AID FED TO A SEDIMENT FILTER SO AS TO MAINTAIN VIRTUALLY CONSTANT A PRESELECTED OPTIMUM SPECIFIC CAKE RESISTANCE

Carlos M. Pato, Staten Island, N.Y., assignor to Monarch Wine Co., Inc., Brooklyn, N.Y.

Continuation of Ser. No. 449,866, Dec. 15, 1982, abandoned, and a continuation-in-part of Ser. No. 277,890, Jun. 26, 1981, abandoned. This application Mar. 29, 1984, Ser. No. 594,766
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—740
13 Claims

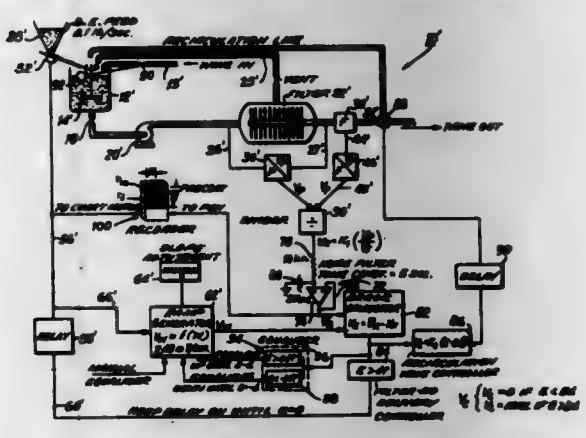
1. In a process comprising the separation of suspended solids from a liquid where the solids are retained by being entrapped in the porous structure of a filtration cake formed by particles of a filter aid material fed to the liquid upstream of the filtration cake, a control method wherein:

(a) the filter aid feed is regulated in successive incremental steps in a manner such that successive incremental layers of cake produced maintain a practical specific cake resis-

tance r* at a pre-selected value even if the concentration of solids suspended in the liquid varies with time,

(i) the specific cake resistance r* being the ratio $\Delta R/\Delta W$ where ΔW is a small increment of filter aid weight fed to build up an incremental layer, and

(ii) a predetermined increase in cake resistance to flow attained upon the addition of an incremental layer of



filter aid feed corresponding to that increment ΔW and which has solids entrapped therein just sufficient to result in the said resistance increase ΔR,

(iii) both increments being expressed on a per unit of filtration area, and

(iv) where the resistance to flow R is the quotient of the differential pressure P across the cake divided by the flow rate per unit of filtration area F.

4,514,307

METHOD OF STABILIZING ORGANIC WASTE

Raymond Chestnut, Ridley Park; John J. Colussi, Norristown; Donald J. Frost, Chalfont; William E. Keen, Jr., Flourtown, and Margaret C. Raduta, Riegelsville, all of Pa., assignors to Conversion Systems, Inc., Horsham, Pa.

Filed Jul. 26, 1983, Ser. No. 517,753

Int. Cl.³ C02F *11/14*; C04B *1/00*

U.S. Cl. 210—751 **10 Claims**

1. A method of disposing of a physically unstable, water-containing, non-biologic organic waste material, said waste material being comprised of at least 20% by weight on a wet weight basis non-biologic, water insoluble, organic compounds said method consisting essentially of mixing said waste material with cementitious reactants in the presence of water, said cementitious reactants consisting essentially of lime and fly ash, to form a compactible mixture in which the relative proportions of said waste material, lime fly ash, and water are sufficient to permit said lime and fly ash to react at atmospheric conditions to form a cementitious matrix in which the nonaqueous portion of said waste material is encapsulated and permitting said mixture to react under atmospheric conditions to form a relatively impermeable, load-bearing material, wherein said mixture comprises at least 0.5% (by weight on a dry basis) CaO equivalents, and at least 30% (by weight on a wet weight basis) fly ash.

4,514,308

SULFONATED ASPHALT

Richard L. Clampitt, and Jeffrey A. Russell, both c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Jul. 29, 1983, Ser. No. 518,703

Int. Cl.³ C08L *25/10, 53/02, 95/00*

U.S. Cl. 252—8.5 C **11 Claims**

1. A well working fluid comprising a fluid medium and a sulfonated blend of from about 10:1 to about 5:1 parts by weight of asphalt to parts by weight of a hydrogenated conjugated diene-monovinyl aromatic copolymer substantially free of olefinic unstauration and wherein said copolymer contains a major proportion of monovinyl aromatic, said sulfonated blend being dispersed in said fluid medium and present in an amount sufficient to reduce the filtration loss of said well working fluid and inhibit shale and clay disintegration.

8. A process for producing a sulfonated asphalt which comprises sulfonating a feedstock blend of from about 10:1 to 5:1 parts by weight of asphalt to parts by weight of a hydrogenated conjugated diene-monovinyl aromatic copolymer containing a major proportion of monovinyl aromatic and which copolymer is substantially free of olefinic unsaturation with a sulfonating agent, neutralizing the resulting sulfonic acids with an alkaline neutralizing agent, separating the resulting sulfonated product, and drying the resulting separated sulfonated asphalt product.

4,514,309

CROSS-LINKING SYSTEM FOR WATER BASED WELL FRACTURING FLUIDS

Suresh K. Wadhwa, Midland, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 27, 1982, Ser. No. 453,051

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—8.55 R **4 Claims**

1. A water based fracturing fluid, comprising:

water;

a hydratable polymer capable of gelling in the presence of a cross-linking system, said polymer being selected from the group consisting of guars and derivitized guars, locust bean gum, karaya gum, carboxymethyl cellulose, carboxymethylhydroxyethyl cellulose, hydroxyethyl cellulose, and mixtures thereof;

a liquid cross-linking system, said cross-linking system comprising a mixture of organotitanate constituent and a boron constituent in a liquid carrier, said organotitanate constituent comprising a mixture of two titanates, one of said titanates having a lactate base and the other of said titanates having a triethanolamine base, and said boron constituent being selected from the group consisting of alkali metal borates, alkaline earth metal borates, boric acid, and mixtures thereof; and

wherein said hydratable polymer is present in said water based fracturing fluid in the range from about 20 to 50 pounds of hydratable polymer per 1,000 gallons of water used, and said liquid cross-linking system is added in the range of about 0.50 to 2.50 gallons of liquid cross-linking system per 1,000 gallons of water used.

4,514,310

HIGH TEMPERATURE STABLE FLUIDS FOR WELLBORE TREATMENT CONTAINING NON-AQUEOUS SOLVENTS

Israel J. Heilweil, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 413,575, Aug. 31, 1982,. This application Jun. 7, 1983, Ser. No. 502,054

The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.

Int. Cl.³ E21B *37/00*; C09K *7/06*

U.S. Cl. 252—8.55 R **12 Claims**

1. A method for flushing potentially formation damaging materials from a wellbore prior to perforation, said method comprising flushing said material with a completion fluid, said completion fluid comprising a density increasing salt dissolved in a solvent for said salt, said solvent comprising at least about 50% by weight of N-methyl-2-pyrrolidone, and said salt being present in said fluid in an amount sufficient to increase the density of said fluid in order to balance formation pressure.

4,514,311
WEAR-RESISTANT AIRCRAFT ENGINE LUBRICATING OIL

Rodney Lu-Dai Sung, Fishkill; William M. Sweeney, Wappingers Falls, and Benjamin H. Zoleski, Beacon, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 9, 1983, Ser. No. 492,779
Int. Cl.[3] C10M *1/46*
U.S. Cl. 252—32.5 25 Claims

1. An aircraft engine lubricating oil composition which comprises

(a) a major portion of a lubricating oil; and

(b) a minor wear-inhibiting amount of, a reaction product of

(i) a polyprimaryamine

$$R(OR'')_a(NH_2)_b$$

wherein

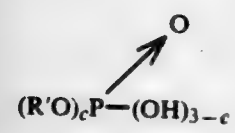
R is a hydrocarbon group;

R'' is a divalent lower alkyl hydrocarbon group;

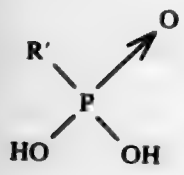
a is an integer 1–6;

b is an integer 2–5; and

(ii) a phosphate ester



wherein R' contains 1–30 carbon atoms and is alkyl, alkenyl, alkaryl, aralkyl, cycloalkyl, or aryl, and c is an integer 1–2; or a phosphonic acid



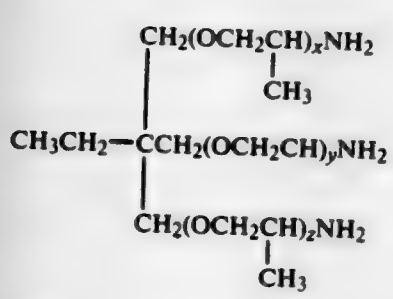
wherein the reaction product is prepared at ambient conditions and wherein the ratio of amine groups to free hydrogen on the phosphate ester or phosphonic acid is 1–3:1.

11. An aircraft engine lubricating oil composition which comprises

(a) a major portion of a lubricating oil; and

(b) a minor wear-inhibiting amount of, a reaction product of

(i) a polyprimaryamine



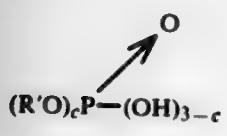
wherein

x is 1–3;

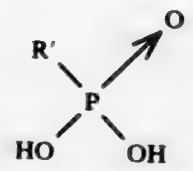
y is 1–3;

z is 1–3; and the sum of x, y, and z is 3–6; and

(ii) a phosphate ester



wherein R' contains 1–30 carbon atoms and is alkyl, alkenyl, alkaryl, aralkyl, cycloalkyl, or aryl, and c is an integer 1–2; or a phosphonic acid



wherein the reaction product is prepared at ambient conditions and wherein the ratio of amine groups to free hydrogen on the phosphate ester or phosphonic acid is 1–3:1.

18. A novel composition comprising the reaction product of

(i) a polyprimaryamine

$$R(OR'')_a(NH_2)_b$$

wherein

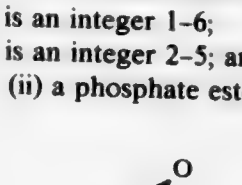
R is a hydrocarbon group;

R'' is a divalent lower alkyl hydrocarbon group;

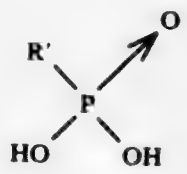
a is an integer 1–6;

b is an integer 2–5; and

(ii) a phosphate ester



wherein R' contains 1–30 carbon atoms and is alkyl, alkenyl, alkaryl, aralkyl, cycloalkyl, or aryl, and c is an integer 1–2; or a phosphonic acid



wherein the reaction product is prepared at ambient conditions and wherein the ratio of amine groups to free hydrogen on the phosphate ester or phosphonic acid is 1–3:1.

4,514,312
LUBRICANT COMPOSITIONS COMPRISING A PHOSPHATE ADDITIVE SYSTEM

Jon C. Root, Leawood; John F. Barnes, Olathe, both of Kans., and Jack E. Coovert, Kirkwood, Mo., assignors to Witco Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 400,728, Jul. 22, 1982, abandoned. This application Apr. 12, 1984, Ser. No. 599,653
Int. Cl.[3] C10M *1/46*
U.S. Cl. 252—32.5 15 Claims

1. A lubricant composition for use under extreme pressure conditions while being substantially inert with respect to elastomeric substances over a wide temperature range, comprising: a major proportion of a low-sulfur lubricating oil base grease, and a minor proportion of an additive system consisting essentially of a mixture of an oil-soluble, sulfur-free organic phosphate or phosphite and one or more oil-insoluble, sulfur-free inorganic phosphates, said additive system being present in an amount sufficient to impart extreme pressure properties to the lubricant composition, while at the same time being substantially inert with respect to elastomeric substances with which the lubricant composition may come into contact.

4,514,313

HIGH ALKALINITY SULFURIZED ALKYLPHENATES OF ALKALINE EARTH METALS AND METHOD OF MAKING SAME

Jean-Louis Le Coent, Le Havre, France, assignor to Orogil, Courbevoie, France

Filed Jun. 24, 1983, Ser. No. 507,804
Claims priority, application France, Jun. 24, 1982, 82 11060
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—42.7 26 Claims

1. A method of preparing high alkalinity sulfurized alkylphenates of alkaline earth metals, comprising the steps of:

(a) neutralizing a sulfurized alkylphenol in a neutralization medium with an alkaline earth base, the quantity of said alkaline earth base being such as to yield an alkaline earth base to alkylphenol molar ratio of from about 0.4/1 to about 3/1, said neutralization being performed in the presence of such quantities of a dilution oil, a glycol, and halide ions, the glycol being present in the form of a mixture with an alcohol having a boiling point above 150° C., so as to yield an alcohol to glycol molar ratio of at least about 0.4/1, an alkaline earth base to glycol molar ratio of from about 2.6/1 to about 8/1, and a molar ratio of halide ions to alkaline earth base of from about 0.01/1 to about 0.15/1;

(b) removing alcohol, glycol, and water from the medium;

(c) removing sediment from the medium;

(d) carbonating the medium, in the presence of halide ions, with a quantity of CO_2 so as to yield a CO_2 to alkaline earth metal molar ratio of from about 0.25/1 to about 0.75/1;

(e) removing alcohol, glycol, and water from the medium; and

(f) removing sediment from the medium.

4,514,314

OIL SOLUBLE ESTER POUR POINT DEPRESSANT ADDITIVE FOR LUBRICANTS

Albert Rossi, Warren, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 269,754, Jun. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 98,626, Nov. 29, 1979, abandoned. This application Dec. 23, 1983, Ser. No. 565,161
Int. Cl.³ C10M *1/28*
U.S. Cl. 252—56 D 3 Claims

1. A lubricating oil composition comprising a major proportion of a mineral lubricating oil and at least a pour point depressing amount, in the range of about 0.05 to 0.3 weight %, based on the total weight of said composition of a pour depressing copolymer having a number average molecular weight ranging from 1500 to 40,000, wherein said copolymer is a copolymer of C_{14} to C_{18} 1-olefin and maleic anhydride esterified with 1.2 to 2.0 moles of C_{32} to C_{36} 2-alkyl alkanol per molar proportion of maleic anhydride moiety, and wherein said alkyl portion contains 14 or 16 carbon atoms and the alkanol portion contains 18 or 20 carbon atoms.

4,514,315

ALUMINUM CORROSION INHIBITOR COMPRISING ALKYLENE-SILANE GRAFT COPOLYMER

William N. Matulewicz, Montgomery; Paul H. Mohr, Chappaqua, and Paul L. Matlock, Ossining, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 27, 1983, Ser. No. 508,179
Int. Cl.³ C09K *5/00*
U.S. Cl. 252—75 31 Claims

1. An aluminum corrosion inhibitor composition concentrate comprising:

(a) alcohol or water or mixtures thereof, and

(b) an ethylenically unsaturated alkylene silane monomer grafted onto a polyalkylene oxide polymer comprising the reaction product of said ethylenically unsaturated grafting silane monomer and a base polymer consisting of a poly-(oxyalkylene) compound of the formula:

$$R''((OC_nH_{2n})_zOR')_a$$

wherein R' is a member selected from the group consisting of a hydrocarbon radical, a hydrogen atom, or an acyl radical and R'' is a member selected from the group consisting of a hydrocarbon radical, a hydrogen atom, an amine-containing radical, or an acyl radical, a is an integer having a value of 1 to about 4, n has a value of 2 to 4 inclusive, z is an integer having a value of from 4 to 2300 inclusive, said grafted polymer having a percent silane graft of up to about 60%, said base polymer having a number average molecular weight of between about 200 and about 100,000, and wherein the amount of component (b) is between greater than about 0.01 wt. % and about 20 wt. % based on the total amount of component (a) plus component (b) in said concentrate.

4,514,316

POLYISOCYANATE COMPOSITIONS USEFUL FOR POLYURETHANE BINDERS

Robert A. Laitar, Woodridge, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Continuation-in-part of Ser. No. 508,781, Jun. 29, 1983, Pat. No. 4,436,881. This application Dec. 8, 1983, Ser. No. 559,567
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.³ C09K *3/00;* H05B *33/00*
U.S. Cl. 252—182 6 Claims

1. A mixture comprising a polyisocyanate component and from about 0.02% to about 3% by weight of the polyisocyanate of one or more organic phosphorous compounds which retard premature uncatalyzed reaction between the polyisocyanate and a polyhydroxy compound wherein the organic phosphorous compounds are selected from the groups: dichloroarylphosphines, chlorodiarylphosphines, arylphosphonic dichlorides and diarylphosphinyl chlorides.

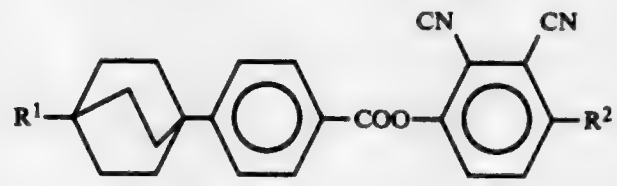
4,514,317

ANISOTROPIC COMPOUNDS AND LIQUID CRYSTAL MIXTURES

Huynh-Ba Tuong, Baden; Stephen M. Kelly, Oberrohrdorf, and Maged A. Osman, Zurich, all of Switzerland, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jan. 25, 1983, Ser. No. 460,943
Claims priority, application Switzerland, Feb. 4, 1982, 675/82
Int. Cl.³ C09K *3/34;* G02F *1/13;* C07C *121/64*
U.S. Cl. 252—299.62 4 Claims

1. An anisotropic compound having a negative DC anistropy and improved photochemical stability of the formula



wherein R^1 and R^2 each are alkyl with in each case 1 to 12 C-atoms in a straight or branched chain, which may be chiral.

4,514,318

STABILIZING POLYSACCHARIDE-THICKENED AQUEOUS MEDIUM AND STABLE AQUEOUS GEL

Philip A. B. Rodriguez, Mont-St.-Hilaire, Canada, assignor to C-I-L Inc., North York, Canada

Filed Feb. 15, 1984, Ser. No. 580,188
Claims priority, application Canada, Apr. 14, 1983, 425914
Int. Cl.³ B01J *13/00*; C08L *3/02, 5/00*
U.S. Cl. 252—315.3 **5 Claims**

1. A method of stabilizing a polysaccharide-thickened aqueous medium which comprises adding to a polysaccharide/water mixture from 0.01% to 1% by weight of the total composition of a water-insoluble, oxidizable, sulphur-containing compound selected from the group consisting of tetrabutyl thiuram disulphide, tetraethyl thiuram disulphide, tetramethyl thiuram disulphide, dithiomorpholine and tetramethyl thiuram monosulphide.

4. A stable aqueous gel comprising a mixture of water and a polysaccharide thickener and from 0.01% to 1% by weight of the total composition of a stabilizer comprising a water-insoluble, oxidizable, sulphur-containing compound selected from the group consisting of tetrabutyl thiuram disulphide, tetraethyl thiuram disulphide, tetramethyl thiuram disulphide, dithiomorpholine and tetramethyl thiuram monosulphide.

4,514,319

ANTIFOAM COMPOSITION CONTAINING HYDROCARBON-SILICON COPOLYMER, HYDROPHOBIC FILLER AND HYDROCARBON OIL

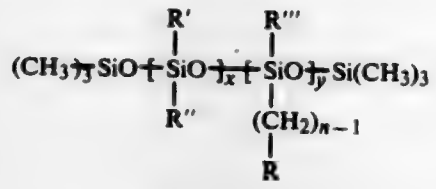
Ravi D. Kulkarni, Milpitas, Calif.; E. Desmond Goddard, Haworth, N.J., and Michael P. Aronson, Valley Cottage, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 25, 1983, Ser. No. 478,718
Int. Cl.³ B01D *19/04*
U.S. Cl. 252—321 **19 Claims**

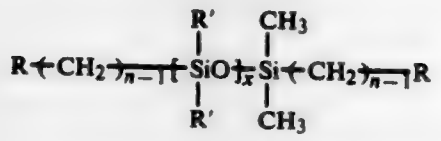
1. A novel hydrocarbon oil based silicone antifoam composition comprising:

(a) from 1 to 60 weight percent of a hydrocarbon-silicon copolymer with a percent CH_2 content in the range of from 30% to 70% inclusive, which hydrocarbon-silicon copolymer is soluble in a hydrocarbon carrier oil and is selected from the group consisting of

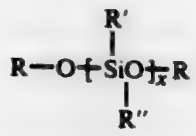
(1) random or block copolymers of the general formula:



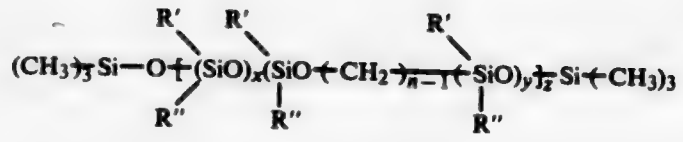
(2) non-hydrolyzable ABA block copolymers of the general formula:



(3) hydrolyzable ABA block copolymers of the general formula:

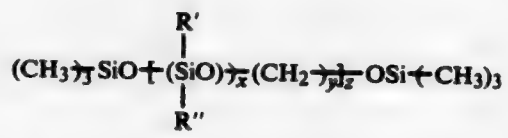


(4) non-hydrolyzable AB_z block copolymers of the general formula:



and

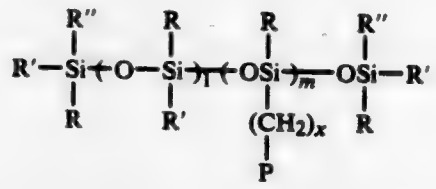
(5) hydrolyzable AB_z block copolymers of the general formula:



wherein R is an alkyl, aryl, aralkyl or alkaryl group containing from six to thirty carbon atoms, R′, R″ and R‴ are individually selected from the group consisting of hydrogen or methyl, ethyl, propyl, hydroxy, and phenyl groups provided that no more than 5% of the total R′, R″ and R‴ groups are hydrogen hydroxy, phenyl or a combination thereof, and x,y,z and n are such a value so that the overall % CH_2 content is in the range of from 30% and 70%

(b) from 1 to 20 weight percent of an hydrophobic filler having a particle size on the average of 200 to 5,000 A;

(c) from 0 to 25 weight percent of a organo-silicone surfactant of the general formula:



wherein R, R′ and R″ are individually alkyl groups having from 1 to 18 carbon atoms inclusive, or hydrogen, hydroxy or phenyl groups provided that no more than 5% of the total R, R′ and R″ groups are hydrogen, hydroxy, phenyl or a combination thereof. P is either a polyoxyethylene group, a polyoxypropylene group, a polyoxybutylene group or a mixture thereof which can be terminated with either an alkyl or hydroxyl group, l and m are such that the surfactant is liquid, has limited solubility and an HLB of from 4–14; and x has a value of from 2 to 5

(d) from 20 to 98 weight percent of a hydrocarbon carrier oil; and

(e) optionally from 0 to 20 weight percent of a silicone oil.

4,514,320

HALIDE FREE CORROSION INHIBITORS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis

Division of Ser. No. 200,817, Oct. 27, 1980,. This application Mar. 12, 1984, Ser. No. 588,593
Int. Cl.³ C23F *11/14*
U.S. Cl. 252—392 **4 Claims**

1. A corrosion inhibiting composition comprising non-halogen salts of alkylpyridines and N-alkyldihydropyridines, said composition also containing an effectiveness enhancing amount of an oxyalkylate surfactant.

4,514,321

THICK FILM CONDUCTOR COMPOSITIONS

Vincent P. Siuta, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 25, 1983, Ser. No. 526,400
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—512 **9 Claims**

1. A copper-containing thick film conductor composition comprising a mixture of finely divided particles of:

(a) 85–98.8% wt. conductive material consisting essentially of 28–100% wt. copper and 72–0% wt. noble metal;
(b) 10–1% wt. inorganic binder having a softening point below 800° C.; and
(c) 5–0.2% wt. of a noncuprous material selected from the group consisting of tungsten, molybdenum, rhenium and alloys and mixtures thereof

dispersed in organic medium, the composition being further characterized in that

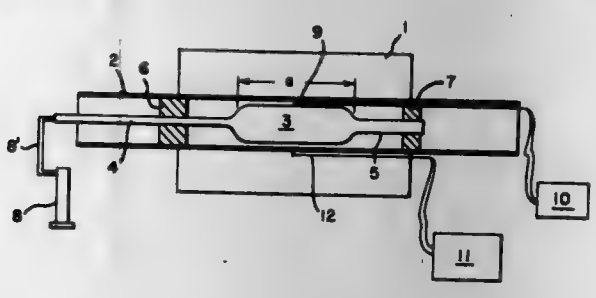
(1) the copper particles have a maximum size below 10 μm and an average size of 2–4 μm; and
(2) the noncuprous metal particles have a maximum size below 5 μm and an average size of 0.2–3 μm.

4,514,322

PHOSPHOROUS-DOPED TIN OXIDE POWDER

Thomas J. Swoboda, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 19, 1984, Ser. No. 602,000
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—518 **7 Claims**



1. Process for preparing a powder of phosphorus-doped tin oxide comprising the steps

(a) combining dehydrated metastannic acid with red phosphorus in proportions to provide from about 1 to 4 atom % phosphorus in the doped tin oxide and sand milling the composition in an azeotropic liquid comprising methanol in trichlorotrifluoroethane,
(b) evaporating the azeotropic liquid from the product obtained in (a),
(c) separating the milled phosphorus and tin oxide mixture from the sand, and
(d) heating the mixture of phosphorus and tin oxide in an inert gas at a temperature within the range of 450° C. to 700° C. and for a time sufficient to obtain a phosphorus-doped tin oxide powder having a conductivity of at least 0.1 $ohm^{-1}cm^{-1}$ at a density of 3.48 g/cm^3.

4. Phosphorus-doped tin oxide powder exhibiting a conductivity of at least 0.1 $ohm^{-1}cm^{-1}$ at a density of 3.48 g/cm^3, said powder having a particle size within the range of 0.02 to 1.5 microns and containing from about 1 to 4 atom % phosphorus.

7. A conductive composition comprising the powder of claim 4 dispersed in a thermoplastic synthetic polymer in an amount of about 65 to 75% by weight of the composition.

4,514,323

UTILIZATION OF 2-HYDROXY-3,4,4-TRIMETHYL-CYCLOPENT-2-EN-1-ONE AS PERFUMING INGREDIENT

Sina D. Escher, Le Lignon, and Anthony F. Morris, Gingins, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Nov. 1, 1982, Ser. No. 438,315
Claims priority, application Switzerland, Nov. 27, 1981, 7596/81
Int. Cl.³ C11B *9/00*; D06M *13/12*; C11D *3/50*
U.S. Cl. 252—522 R **3 Claims**

1. Process to confer to or improve or modify the odorous properties of perfumes and perfumed articles which comprises adding thereto a fragrance effective amount of 2-hydroxy-3,4,4-trimethyl-cyclopent-2-en-1-one to impart a warm and spicy odorous note thereto.

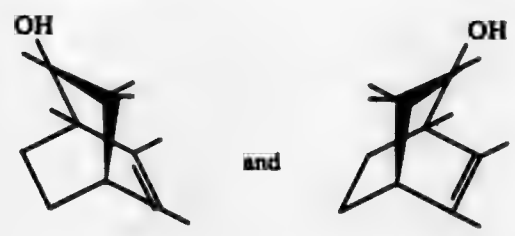
4,514,324

1,2,3,3,5,6-HEXAMETHYL-BICYCLO[2.2.2]OCT-5-EN-2-OL, AND ORGANOLEPTIC USES OF SAME

William J. Evers, Locust; Braja D. Mookherjee, Holmdel; Anton Van Ouwerkerk, Livingston, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 535,800, Sep. 26, 1983, Pat. No. 4,471,135, which is a division of Ser. No. 371,930, Apr. 26, 1982, Pat. No. 4,434,085. This application Apr. 20, 1984, Ser. No. 602,569
Int. Cl.³ A61K *7/46*; C11B *9/09*
U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfumed article comprising the step of adding to said perfumed polymer, an aroma augmenting or enhancing quantity of at least one compound having a structure selected from the group consisting of:



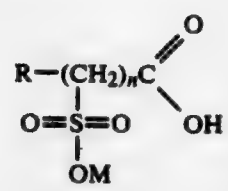
4,514,325

AQUEOUS METAL TREATING COMPOSITIONS AND METHOD OF USE

Anthony Russo, Grand Rapids, and Thomas Mauthner, Livonia, both of Mich., assignors to J. Hall Company, Grand Rapids, Mich.

Filed Apr. 13, 1984, Ser. No. 600,165
Int. Cl.³ C11D *1/28*
U.S. Cl. 252—557 **15 Claims**

1. A storage stable water based metal cleaning and degreasing composition comprising water, about 5 to about 20% by weight of water insoluble lipophilic organic solvent and a coupling agent comprising a compound having the formula



I

where R—$(CH_2)_n$ is the residue of a sulfonated monounsaturated C_{12} to C_{18} fatty acid having the C—S attachment in one of the carbon atoms of the residue and M is an alkali metal, alkaline earth metal or amine, the weight ratio of solvent to coupling agent being from about 1:1 to 2:1.

4,514,326

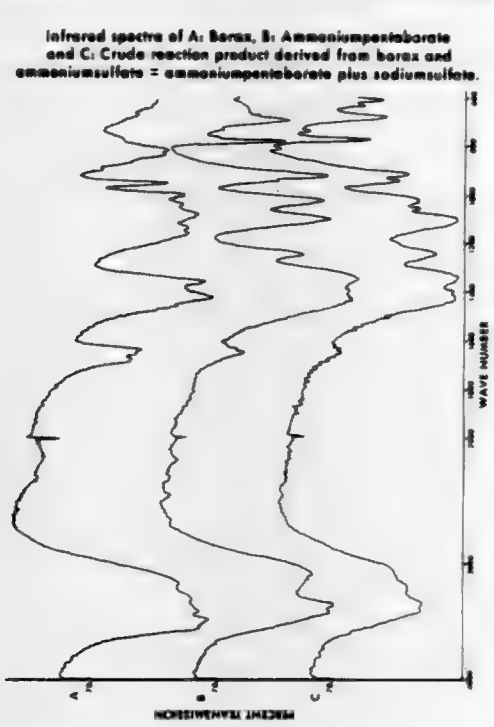
PERMANENT FLAME RETARDANT AND ANTI-SMOLDERING COMPOSITIONS

Stephen I. Sallay, 2918 Glencairn Dr., Fort Wayne, Ind. 46815

Continuation-in-part of Ser. No. 489,176, Apr. 27, 1983, which is a continuation-in-part of Ser. No. 286,042, Jun. 22, 1981, Pat. No. 4,382,025, which is a continuation-in-part of Ser. No. 135,177, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 927,340, Jul. 24, 1978, Pat. No. 4,196,177. This application Apr. 24, 1984, Ser. No. 603,340
Int. Cl.³ C09K *3/28*
U.S. Cl. 252—602 **20 Claims**

1. A solid composition having flame retardant, antismoldering and noncorrosive properties comprising as a first compo-

nent, ammoniumpentaborate, and as a second component an alkali and/or alkaline earth metal sulfate, sulfite, hydrophosphate or mixtures thereof wherein the molecular ratios of the



respective two components are between 0.4–0.8 for ammoniumpentaborate and 0.5–1.0 mole equivalent amounts for the alkali and/or alkaline earth metal salt(s).

4,514,327

FIRE RETARDANT MEANS AND METHOD

James E. Rock, 412 E. Lorengo Ave., Norfolk, Va. 23503

Filed Jan. 10, 1983, Ser. No. 456,706
Int. Cl.³ C09K *7/00*
U.S. Cl. 252—607 **17 Claims**

1. A fire retardant composition formed from the following ingredients: ammonium sulfate; borax; boric acid; and monoammonium phosphate whereby a fire retardant compound is formed which has fire retardant properties and smoke inhibiting factors which are greater than sum of the individual ingredients.

8. The method of applying a fire retardant to fiberous products comprising: placing such products within a sealed enclosure; drawing a vacuum of approximately 28 inches of mercury within said enclosure for approximately 10 minutes while maintaining said vacuum; filling said enclosure with a fire retardant solution including ammonium sulfate, borax, boric acid, monoammonium phosphate, until said products are submerged, creating a pressure within said enclosure of between 45 and 100 psi; maintaining such pressure from 10 to 60 minutes; draining the solution from the enclosure; and redrawing a vacuum of approximately 28 inches of mercury within said enclosure for a period of approximately 10 inches whereby superior fire retardant properties can be given to said fiberous products.

4,514,328

PARTICULATE MATERIAL REDUCING THE IGNITABILITY OF COMBUSTIBLE SUBSTANCES

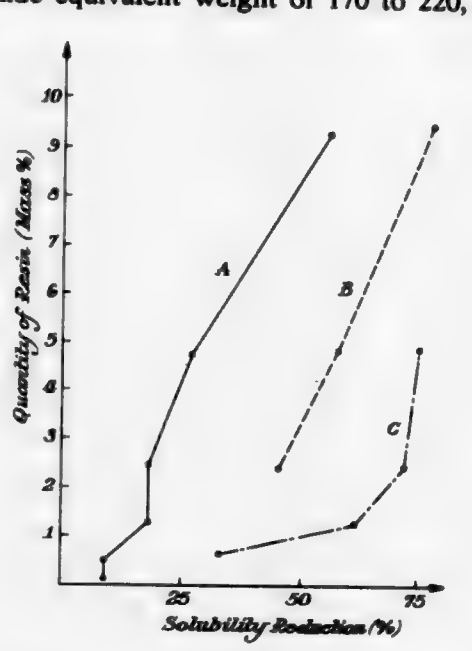
Horst Staendeke, Lohmar; Franz-Josef Dany, and Joachim Kandler, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 15, 1983, Ser. No. 485,291
Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217816
Int. Cl.³ C08K *3/28, 3/32*
U.S. Cl. 252—609 **6 Claims**

6. Particulate agent for flameproofing polyurethanes or polyurethane foam plastics based on a free-flowing, pulverulent ammonium polyphosphate of the general formula

$$H_{(n-m)+2}(NH_4)_mP_nO_{3n+1}$$

in which n stands for a whole number with an average value of 20 to 800 and the ratio of m/n is about 1, and an epoxide resin with an epoxide equivalent weight of 170 to 220, the agent containing:



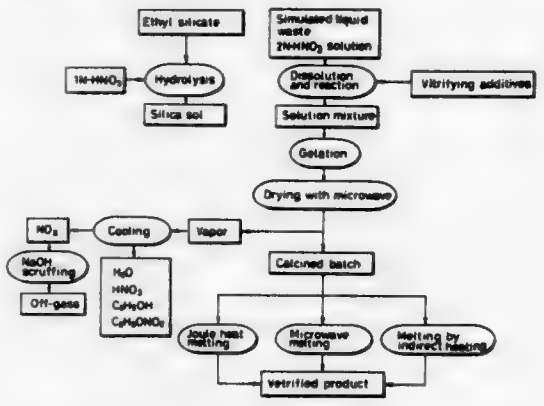
(a) 80 to 99.5 mass percent ammonium polyphosphate, and
(b) 0.5 to 20 mass percent hardened epoxide enveloping the individual ammonium polyphosphate particles, and the agent being present in the polyurethane foam plastics in amounts from 5 to 25 mass percent.

4,514,329

PROCESS FOR VITRIFYING LIQUID RADIOACTIVE WASTE

Hajimu Wakabayashi, Kawanishi; Ryohei Terai, Ibaraki; Hiroshi Yamanaka, Ikeda, and Shigeo Hara, Osaka, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,748
Claims priority, application Japan, Jul. 6, 1981, 56-106047
Int. Cl.³ G21F *9/16, 9/14*
U.S. Cl. 252—629 **3 Claims**



1. A process for vitrifying liquid radioactive waste, comprising the steps of:

dissolving at least one water-soluble vitrifying-facilitating inorganic compound selected from the group consisting of boric acid, aluminum hydroxide, lithium nitrate, lithium carbonate, lithium sulfate, magnesium nitrate, magnesium carbonate, magnesium sulfate, calcium nitrate, calcium carbonate, barium nitrate, aluminum nitrate, zinc nitrate, zinc sulfate, zirconium oxynitrate and a hydrate thereof, into a liquid radioactive waste acidified with nitric acid

adding to the resulting solution an alcoholic silica sol obtainable through hydrolysis with an acid of at least about 1 part by weight of alkyl silicate to 1 part by weight of the at least one inorganic compound, based on the weight of the oxide, and allowing the resulting solution mixture to gel at a temperature of from room temperature to 50? C.,

calcining the resulting gel by microwave radiation, and heating the resulting calcined product to melt, followed by cooling to obtain a vitrified product.

4,514,330

CARBON-7-SUBSTITUTED ATINOMYCIN D ANALOGUE

Sisir K. Sengupta, Needham, Mass., assignor to Trustees of Boston University, Boston, Mass.

Filed Jun. 28, 1983, Ser. No. 508,689
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **2 Claims**

1. The compound 7-(2,3-epoxypropoxy)actinomycin.

4,514,331

PEPTIDE HORMONES WITH CALCITONIN-LIKE ACTIVITY

Emil T. Kaiser, and Gregory Moe, both of New York, N.Y., assignors to University Patents, Inc., Westport, Conn.

Filed Jun. 29, 1983, Ser. No. 509,123
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 T **2 Claims**

1. The compound of the formula:

$$H_2N\text{—}Cys\text{—}Gly\text{—}Asn\text{—}Leu\text{—}Ser\text{—}Thr\text{—}Cys\text{—}Leu\text{—}Leu\text{—}$$
$$\text{—}Gln\text{—}Gln\text{—}Trp\text{—}Gln\text{—}Lys\text{—}Leu\text{—}Leu\text{—}Gln\text{—}Lys\text{—}Leu\text{—}$$
$$\text{—}Lys\text{—}Gln\text{—}Leu\text{—}Pro\text{—}Arg\text{—}Thr\text{—}Asn\text{—}Thr\text{—}Gly\text{—}Ser\text{—}$$
$$\text{—}Gly\text{—}Thr\text{—}Pro\overset{O}{\overset{\|}{C}}NH_2$$

and the pharmaceutically acceptable salts thereof.

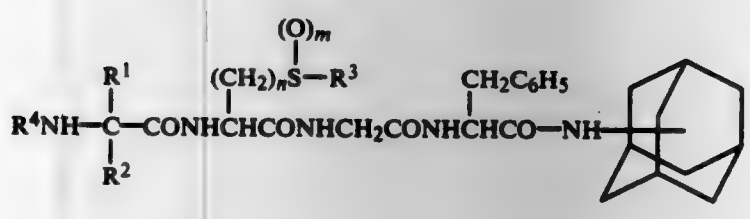
4,514,332

TETRAPEPTIDE ADAMANTYL AMIDES

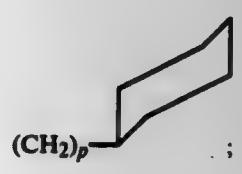
Donald W. Hansen, Jr., Chicago; John S. Baran, Winnetka, and William H. Owens, Arlington Heights, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 16, 1984, Ser. No. 600,650
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E **23 Claims**

1. A compound of the formula:



wherein R^1 is:
(a)



;

or
(b) straight or branched chain alkyl of 1 to 6 carbon atoms, inclusive;
wherein R^2 is:
(a) hydrogen; or
(b) alkyl of 1 to 3 carbon atoms, inclusive;
wherein R^3 is:
(a) $CH_2C_6H_5$; or
(b) alkyl of 1 to 3 carbon atoms, inclusive.
wherein R^4 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive;
wherein m is 0, 1, or 2;
wherein n is 1 or 2;
wherein p is 0, 1, or 2;
and the stereochemical configuration of each of the optically active amino acid residues may independently be D, L or DL; and the pharmaceutically acceptable salts thereof.

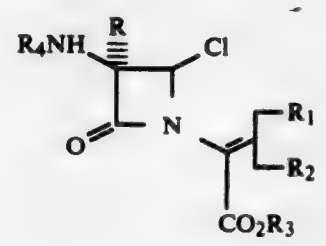
4,514,333

INTERMEDIATES FOR PROCESS FOR 1-OXACEPHEM DERIVATIVES

Saul Wolfe, Kingston, and Chia-Cheng Shaw, Montreal, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Division of Ser. No. 356,236, Mar. 8, 1982, Pat. No. 4,391,975, which is a continuation-in-part of Ser. No. 330,838, Dec. 15, 1981, abandoned. This application Feb. 10, 1983, Ser. No. 465,549
Int. Cl.³ C07D *205/08, 403/12, 403/14, 403/04*
U.S. Cl. 260—239 A **4 Claims**

1. 2-Azetidinyl-3-methyl-2-butenoates of the formula



1

in which
R is hydrogen or methoxy,
R_1 is a hydroxyl group,
R_2 is chlorine, bromine, $OCOCH_3$, or SHET,
R_3 is hydrogen or a group selected from loweralkyl, benzyl, benzyhydryl, loweralkoxy-loweralkyl, loweralkoxybenzyl, phenacyl, trimethylsilyl, 2,2,2-trichloroethyl or pivaloyl,
R_4 is hydrogen or a cleavable acyl group, or R_4NH represents phthalimido, and
HET is a five membered unsaturated heterocyclic ring containing two double bonds with 1–4 hetero atoms, which are the same or different and comprise O, S or N, and optionally substituted with loweralkyl, di-lower alkylamino, mono-lower alkylamino, formylamino, alkanoylamino of 2 to 5 carbons, halogen, amino, cycloalkyl containing 3–7 carbon atoms or lower alkoxy.

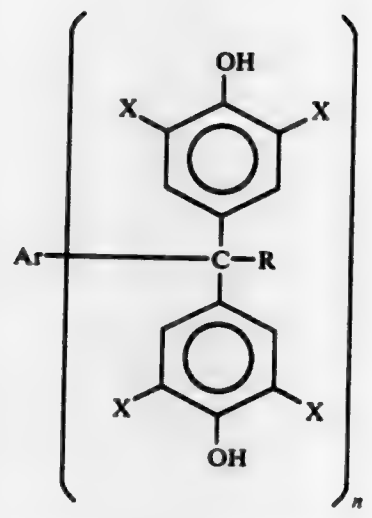
4,514,334

POLYPHENOLIC COMPOUNDS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 44,039, May 31, 1979, Pat. No. 4,426,513. This application Oct. 17, 1983, Ser. No. 542,528
Int. Cl.³ C09B *11/06, 11/04*; C07C *15/16, 15/12*
U.S. Cl. 260—395 **6 Claims**

1. A polyphenolic compound of the formula



wherein Ar is a mono, -di- or trinuclear aromatic C_{6-14} hydrocarbon radical; R is hydrogen or a C_1–C_5 alkyl radical; each X substituent is independently selected from H, Cl, Br, C_1–C_5 alkyl and phenyl; and n is either 2, 3 or 4.

4,514,335

C_{21}-DICARBOXYLIC ACID ISETHIONATES AS PRIMARY ANIONIC SURFACTANTS

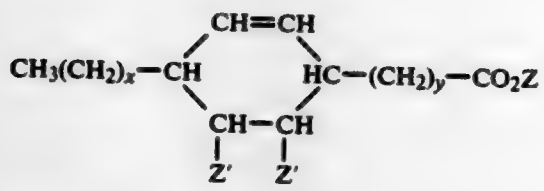
Richard B. Du Vernet, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 395,252, Jul. 6, 1982, Pat. No. 4,476,055. This application Sep. 16, 1983, Ser. No. 532,698

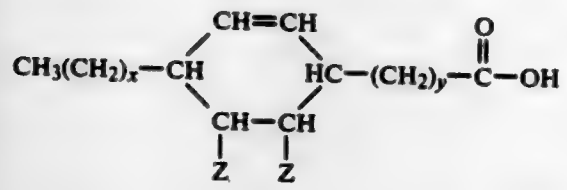
Int. Cl.³ C07C *143/90*; C11D *1/28*

U.S. Cl. 260—400 **9 Claims**

1. A process for preparing hemi-isethionates of the formula



wherein x and y are integers from 3 to 9, x and y together equal 12, Z is selected from the group consisting of hydrogen and $CH_2CH_2SO_3M$, one Z′ is hydrogen and the remaining Z′ is COOH when Z is $CH_2CH_2SO_3M$, and $CO_2CH_2CH_2SO_3M$ when Z is hydrogen, where M is selected from the group consisting of alkali metal cation, alkaline earth metal cation and ammonium cation , which comprises reacting, in an inert environment, a hydroxyethane sulfonate selected from the group consisting of alkali metal, alkaline earth metal and ammonium 2-hydroxyethane sulfonate with C_{21}-dicarboxylic acid of the formula



wherein x and y are integers from 3 to 9, x and y together equal 12, one Z is hydrogen and the remaining Z is COOH, at a temperature between 180° C. to 260° C. for from 1 to 10 hours in an acid:alcohol equivalent ratio of from 1.2 to 2.0 in the presence of a catalytic amount of a member of the group consisting of phosphoric acid, p-toluene sulfonic acid and zinc oxide.

4,514,336

HOMOLOGOUS CARBOXYLIC ACIDS PRODUCTION

Robert C. Ryan, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 28, 1982, Ser. No. 382,988

Int. Cl.³ C07C *51/12, 53/08, 53/122, 53/124*

U.S. Cl. 260—413 **2 Claims**

1. A process for homologating as feed a reactant aliphatic alcohol having a carbon number from 1 to about 20 to a series of homologous aliphatic carboxylic acids having one or more carbon atoms than the reactant alcohol which comprises contacting the reactant alcohol with hydrogen and carbon monoxide at a temperature ranging from about 150° C. to about 250° C. and a pressure ranging from about 2,000 psi to about 10,000 psi in the presence of a homogeneous catalyst comprising a catalytically effective amount of ruthenium and rhodium and an iodide promoter and a titanium(IV) promoter, wherein the molar ratio of ruthenium to rhodium ranges from about 2:1 to about 4:1, the molar ratio of iodide to ruthenium plus rhodium ranges from about 6:1 to about 20:1, and the molar ratio of titanium(IV) promoter to ruthenium plus rhodium ranges from about 1.5:1 to about 2.5:1 and the titanium(IV) promoter is selected from titanium(IV) C_1–C_6 alkoxides.

4,514,337

GROUP IVA METAL HYDRIDE CATALYSTS AND PREPARATION THEREOF

Guido P. Pez, Boonton, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 303,261, Sep. 17, 1981, Pat. No. 4,409,411. This application Jun. 30, 1983, Ser. No. 509,528

Int. Cl.³ C07F *7/00, 7/28*

U.S. Cl. 260—429.3 **8 Claims**

1. A method of producing a solid carbonaceous group IVa metal hydride which comprises reacting a group IVa metal halide with a hydrocarbon solution of an alkyllithium or aryllithium at a temperature between about 0° and about 120° C., recovering the solid carbonaceous product, and reacting the solid carbonaceous product with hydrogen to produce the solid carbonaceous group IVa metal hydride.

4,514,338

PANTHENOL DERIVATIVES

Alfred Hanck, Riehen, and Horst Pauling, Bottmingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

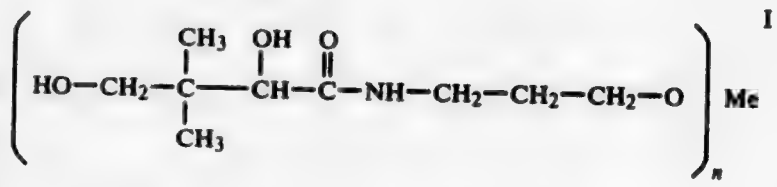
Filed Jan. 26, 1983, Ser. No. 461,093

Claims priority, application Switzerland, Feb. 12, 1982, 890/82

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—429.9 **5 Claims**

1. A compound of the formula D or DL



wherein

Me is aluminium and n is the integer 3 or Me is zinc and n is the integer 2.

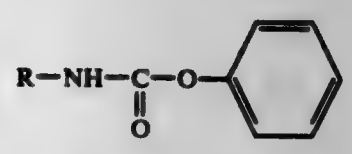
4,514,339

PROCESS FOR PREPARING ALKYL ISOCYANATES

Ugo Romano, Vimercate; Franco Rivetti, Schio, and Giacomo Sasselli, S. Donato Milanese, all of Italy, assignors to Enichimica S.p.A., Milan, Italy

Filed May 10, 1984, Ser. No. 608,984
Claims priority, application Italy, May 13, 1983, 21081 A/83
Int. Cl.³ C07C *69/00*
U.S. Cl. 260—453 P 5 Claims

1. Process for the preparation of alkyl isocyanate which can be defined by the general formula R—N=C=O, wherein R is an alkyl radical having from 1 to 4 carbon atoms, by thermal decomposition of phenyl-N-alkyl urethans which can be defined by the general formula:



wherein R has the above defined meaning, characterized in that said thermal decomposition is carried out without using any substance having a catalytic action upon the decomposition reaction, by heating to a temperature of from 180° C. to 210° C. and under the atmospherical pressure or a slightly reduced pressure, a mixture of phenol and phenyl-N-alkyl urethan, in a molar ratio of the former to the latter equal to, or about equal to 1:1, removing by vaporization the phenol and the alkyl isocyanate as they are being formed, recovering the alkyl isocyanate from said vaporized products and maintaining in the reaction mixture, substantially during the entire thermal decomposition reaction time, a molar ratio of phenol to phenyl-N-alkyl urethan not lower than 1:1.

4,514,340

CYANO-POLYCARBOXYLATES

Jacob S. Tou, and Alfred A. Schleppnik, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 413,009, Apr. 30, 1982, Pat. No. 4,442,298. This application Sep. 12, 1983, Ser. No. 531,104
Int. Cl.³ C07C *121/66*
U.S. Cl. 260—465 D 2 Claims

1. Pentamethyl 6-cyano-7-phenyloctane-1,2,2,5,6-pentacarboxylate.

2. Tetramethyl 2,6-dicyano-7-phenyloctane-1,2,5,6-tetracarboxylate.

4,514,341

STORAGE STABLE NITROGLYCERIN

H. William Voigt, Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1984, Ser. No. 601,878
Int. Cl.³ C07C *77/02*
U.S. Cl. 260—467 4 Claims

1. In an improved nitroglycerin fluid which is stable for large bulk storage, the improvement consisting essentially of the incorporation in said nitroglycerin of a soluble liquid inert epoxy plasticizer selected from the group consisting of:

A. The condensation product of epichlorohydrin and bisphenol A,
B. Pentaerythritol tetraepoxy stearate,
C. Epoxidized soybean oil,
D. Glyceryl triepoxy acetoxy stearate,
E. Epoxidized linseed oil,
F. Butyl ester of epoxidized linseed oil, and
G. Epoxidized octyl tallate

said liquid plasticizer is present in an amount between about 0.24 and about 5.0 percent by weight.

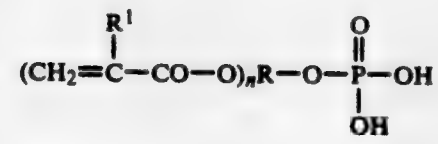
4,514,342

POLYETHYLENICALLY UNSATURATED MONOPHOSPHATES

Richard W. Billington, London; Gordon B. Blackwell, Surrey, and Terence E. Prodger, Sussex, all of England, assignors to Dentsply Limited, Surrey, England

Filed Feb. 7, 1983, Ser. No. 464,778
Claims priority, application United Kingdom, Feb. 16, 1982, 8204511
Int. Cl.³ C07F *9/113*; A01K *6/02*
U.S. Cl. 260—952 6 Claims

1. Polyethylenically unsaturated monophosphates of the formula:



and salts thereof, in which:

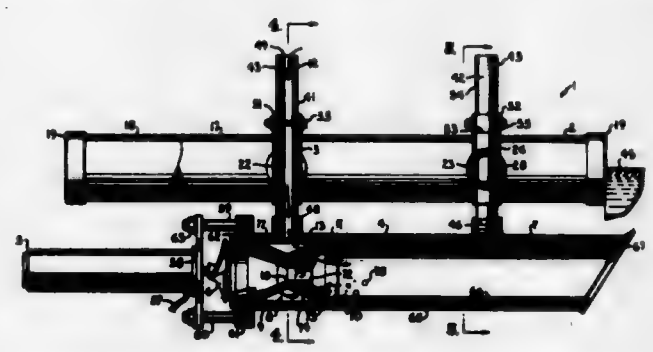
R is a pentaerythritol radical having a valency of n+1 and containing from 4 to 16 carbon atoms;
R^1 is a hydrogen atom, alkyl C_1–C_3, halogen or CN radical, and
n is an integer of at least 3.

4,514,343

ASPIRATING HORIZONTAL MIXER

Barry G. Cramer, and Roy A. Cramer, both of Kansas City, Mo., assignors to Air-O-Lator Corporation, Kansas City, Mo.

Filed Sep. 29, 1982, Ser. No. 428,098
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—37 5 Claims



1. An aeration and liquid mixing apparatus comprising:
(a) flotation means;
(b) a selectively tiltable support means adjustably connected to said flotation means and having a lower end extending downwardly therefrom for positioning at various selected heights;
(c) an air delivery conduit;
(d) a mixer unit mounted to said lower end, supported by said support means, and selectively adjustable in height and tilt therewith; said mixer unit including a submersible motor powering a propeller and a nozzle member situated in the flow path of liquid from said propeller;
(e) said nozzle member having wall means with an internal surface extending longitudinally therethrough and venturi means for mixing air from said air delivery conduit with liquid flowing therethrough;
(f) said venturi means including a converging wall formation forming a constriction; and
(g) means forming an air injection port positioned adjacent said constriction for mixing air with said liquid.

4,514,344

APPARATUS FOR THE MIXING OF DIFFERENT STREAMS OF AIR IN A COOLING TOWER

Hans Ruscheweyh, Aachen, Fed. Rep. of Germany, assignor to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

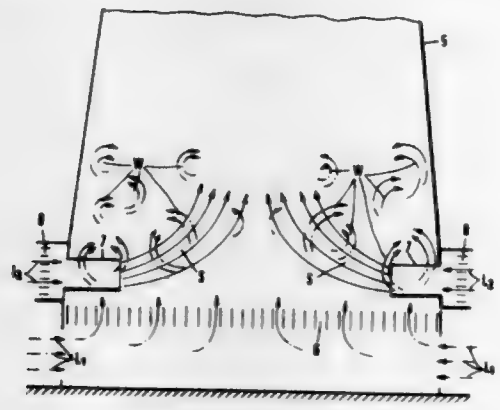
Continuation of Ser. No. 533,625, Sep. 19, 1983, abandoned, which is a continuation of Ser. No. 158,174, Jun. 10, 1980, abandoned. This application Jun. 13, 1984, Ser. No. 619,697

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925462

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—159

6 Claims



1. In a wet-dry cooling tower having trickle inserts in the inside of the cooling tower for the direct cooling of water charged onto said trickle inserts by a first stream of wet air vertically ascending within the cooling tower, the improvement comprising

heat exchange elements for the indirect cooling of water flowing in the heat flowing in the heat exchange elements by second streams of dry air which are heated by indirect heat exchange in the heat exchange elements,

means for feeding said second streams adjacent to and above the trickle inserts to the first stream of wet air in the inside of the cooling tower, said means including cylindrical air inlet tubes extending from the periphery of said cooling tower and located above the trickle inserts and radially aligned in a cross sectional plane, the latter being perpendicular to the longitudinal axis of the cooling tower, at least a part of said second streams of dry air being fed through said air inlet tubes, said tubes each have a uniform cross section throughout the length of said tubes and an effective eddy-current generating surface with respect to the first stream of air vertically ascending in the cooling tower, the radial length of said tubes is between 20 to 40% of the radius of the cooling tower, and the ratio of the length of said tubes to their diameter is between 1.5 and 4,

a separate fan is operatively flow communicatingly arranged in each of said tubes, respectively,

said air inlet tubes in cooperation with said fans with said at least a part of said second streams form air jets emerging from said air inlet tubes effectively extending the effective eddy-current generating surface of the latter, the tubes as well as said air jets being distributed uniformly over the circumference of the cooling tower and being perpendicularly directed towards the longitudinal axis of the cooling tower such that

said air inlet tubes and said air jets both form the effective eddy-current generating surfaces transversely crossing the vertically ascending first stream of air, such that said effective eddy-current generating surfaces are acted on transversely by the first stream of air vertically ascending in the cooling tower and produce effectively across the entire radius of the cooling tower along which radius a corresponding of said tubes extends a separation of the flow of said first stream on opposite sides of said effective eddy-current generating surfaces of said air inlet tubes and said air jets, forming eddy current fields having components which extend transversely to the vertically ascending first stream, with the eddy current fields developed from said effective eddy-current generating surfaces having axes substantially parallel to the longitudinal axes of the corresponding air inlet tubes, respectively, causing an intensive mixing of said second streams of dry air with said first stream of wet air so as to make the moisture content of the streams uniform by said mixing.

4,514,345

METHOD OF MAKING A FORAMINOUS MEMBER

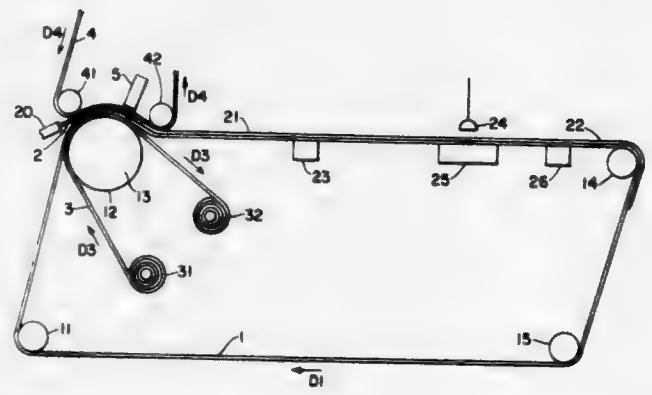
Bruce A. Johnson, and Andrew J. Wnuk, both of Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 23, 1983, Ser. No. 525,591

Int. Cl.³ B29D *7/20*

U.S. Cl. 264—22

15 Claims



1. A continuous method of making a foraminous member the gross foramina of which define a preselected pattern, said method comprising the steps of

(a) Applying a backing film to the working surface of a forming unit;

(b) Juxtaposing a foraminous element to said backing film so that said backing film is interposed said foraminous element and said forming unit;

(c) Applying a coating of liquid photosensitive resin to the surfaces of said foraminous element;

(d) Controlling the thickness of said coating to a preselected value;

(e) Juxtaposing a mask in contacting relation with said coating of said liquid photosensitive resin, said mask comprising opaque and transparent regions, said opaque regions defining therein said preselected pattern;

(f) Exposing said coating of said liquid photosensitive resin to light having an activating wavelength through said mask thereby inducing curing of said liquid photosensitive resin in those regions thereof in register with said transparent regions; and

(g) Removing from said foraminous element substantially all uncured liquid photosensitive resin.

4,514,346

METHOD OF MAKING THERMAL-SHOCK RESISTANT MOLDED ARTICLES ON THE BASIS OF SILICON CARBIDE

Hartmut Luhleich, Düren, and Francisco J. Dias, Jülich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft Mit Beschrankter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 233,475, Feb. 11, 1981, abandoned. This application Sep. 16, 1982, Ser. No. 418,679

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005587

Int. Cl.³ C04B *35/34*

U.S. Cl. 264—29.5

11 Claims

1. A process for the production of homogeneous and uniformly and throughgoingly porous molded articles or parts,

utilizing carbonaceous particles selected from the group consisting of ground coke, natural graphite, electrographite, charcoal, and carbon black, as a starting material in the form of powder or granules, and including the steps of coating particles of said powder or granular material wih an organic binder, molding a mass of the coated particle to form a "green" molded body, and coking said body up to a maximal temperature in the range from 800° to 1,000° C., said process comprising the improvement which consists in that:

the powdery or granular starting material is a mixture consisting essentially of particles of silicon and said carbonaceous particles in a predetermined mixture proportion and containing substantially no silicon carbide particles;

the coating of the particles with a binder is performed the binder is precipitated by introducing the suspension into a liquid serving to precipitate the binder on the particles as an even coating;

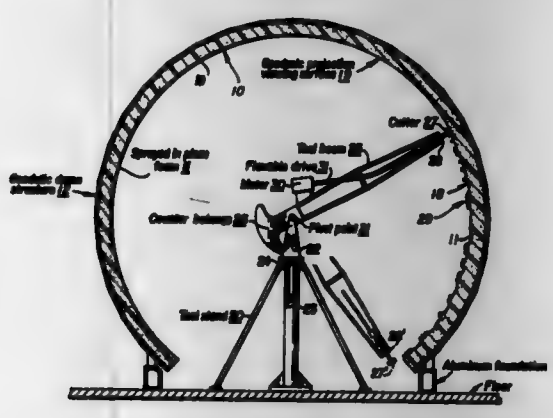
after the coking step, the molded body is heated up, to convert silicon and carbon into silicon carbide, to a temperature in the range from 1,400° C. to 1,600° C., in an inert gas atmosphere at a pressure not less than about 1 bar, said heating up, at least in the temperature range around and above 1,400° C., being at a rapid rate, in order to mitigate the evaporation of silicon.

4,514,347

SPHERICAL PROJECTION-TYPE SCREEN FOR USE IN A VEHICLE SIMULATOR

John T. Reed, New Milford, Pa., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 21, 1982, Ser. No. 451,985
Int. Cl.³ E04B *1/16, 1/32;* B29D *27/04;* B29C *17/12*
U.S. Cl. 264—32 **10 Claims**



1. A method of manufacturing a geodesic dome for use as a spherical, projection-type viewing surface in a vehicle simulator to present to an observer a maximum of realism which matches substantially real world conditions, comprising:

erecting a geodetic generally dome-shaped structure with an inner surface;

applying a coating of predetermined thickness of synthetic material to said inner surface;

smoothing the inner portion of said coating of synthetic material to form a substantially smooth mathematically-derived surface, so that the inner portion forming said surface provides a one-piece, seamless screen for viewing a scene in said vehicle simulator; and

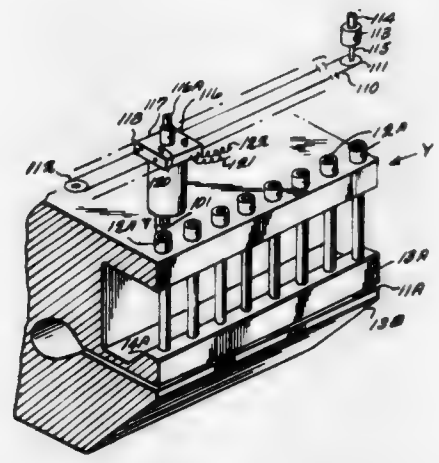
setting up a tool stand with a pivot point to locate the predetermined center of curvature of the geodesic dome, so that all of said step of smoothing the inner portion of said coating of synthetic material is performed about such pivot point to achieve said maximum of realism.

4,514,348

METHOD AND APPARATUS FOR ADJUSTING DIE CLEARANCE

Katsuhiko Iguchi, Susono; Hidemi Wada, Namazu, and Ryuichi Wakita, Mishima, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,836
Claims priority, application Japan, Nov. 15, 1981, 56-177443
Int. Cl.³ B29F *3/04*
U.S. Cl. 264—40.1 **11 Claims**



1. An apparatus for adjusting die clearance between an upper die and a lower die of an extruder for producing a sheet with a plurality of adjusting bolts extending between said upper and lower dies at separated locations across the width of said sheet for adjusting the clearance comprising:

means for measuring the thickness of said sheet at said separated locations after said sheet has emerged from said extruder and producing a signal for each location indicating the measured thickness;

means for calculating for each bolt from the signal of the associated location a desired bolt displacement δB and producing a rough bolt displacement $\delta B(R)$ and a fine bolt displacement of $\delta B(F)$ such that $\delta B = \delta B(R) + \delta B(F)$;

means mounted adjacent said bolts for receiving said rough bolt displacement signals $\delta B(R)$ and mechanically tightening or loosening each bolt in accordance with the associated $\delta B(R)$ signal; and

means adjacent each said bolt for receiving said fine bolt displacement signal $\delta B(F)$ associated with the adjacent bolt and heating the adjacent bolt in accordance with the received signal $\delta B(F)$.

11. A method for adjusting die clearance between an upper die element and a lower die element for an extruder extruding a sheet of material comprising the steps of:

storing the desirable thicknesses of the sheet at a plurality of positions in the direction of width across the sheet;

measuring the thicknesses of the sheet at each said position;

storing the values of spring constant (k) of said adjusting members and a plurality of matrix data $f_{I,J}$ defined as coefficient factors of simultaneous linear equations representing the relationships between each compensating incremental force value (ΔP_1, ΔP_2, $\Delta P_3 \ldots \Delta P_n$);

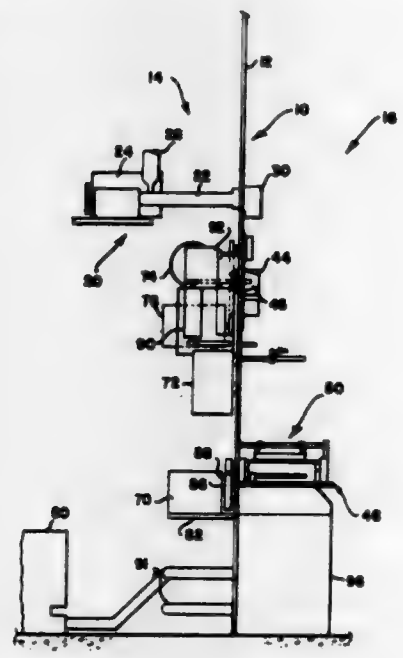
comparing the measured thicknesses with the desirable thicknesses, thereby producing a difference signal (e_I) by which the die clearance is to be adjusted through an adjusting member located at the position "I";

calculating each increment of forces (ΔP_I, ΔP_2, $\ldots \Delta P_n$) acting on the backface of the die element by solving multiple simultaneous linear equation formed with said values of the difference (e_I), the stored matrix data ($f_{I,J}$) and said each increment of forces;

determining the displacement quantity signal δBI for adjusting members to be adjusted at the position "I" on said die element by adding said difference (e_I) to a compensation value expressed as $\Delta P_I/K$; and

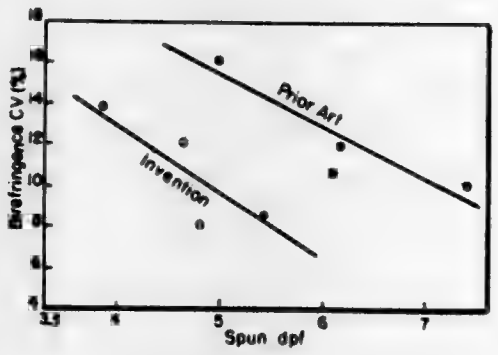
applying said displacement quantity signal to means for applying a force to said adjusting members.

4,514,349
METHOD AND MEANS FOR PRODUCING YARN
Barry Lipschitz, P.O. Box 77, Atlantis, South Africa
Filed May 5, 1983, Ser. No. 491,903
Int. Cl.³ D02G *1/20*
U.S. Cl. 264—103 **3 Claims**



1. In a method of producing yarn in which a filament is coated with a tacky layer of synthetic plastic material and discrete staple fibers are then applied to the coated filament by machinery comprising some parts which necessarily have to be in a staple fiber containing environment and other parts which do not, the improvement which comprises partitioning the factory space in which said yarn is produced so as to provide a first region and a second region, maintaining a pressure differential across said partitioning, the pressure in said first region being lower than that in said second region, said parts which necessarily have to be in a staple fiber environment being in said first region and said other parts being in said second region, said partitioning minimizing transmission of fibers from said first region to said second region.

4,514,350
METHOD FOR MELT SPINNING POLYESTER FILAMENTS
Douglas D. Roth, Matthews, and Fredrick A. Ethridge, Waxhaw, both of N.C., assignors to Celanese Corporation, New York, N.Y.
Filed Sep. 23, 1982, Ser. No. 422,116
Int. Cl.³ B29F *3/04*
U.S. Cl. 264—176 F **11 Claims**



1. An improved process for melt-spinning polymeric filaments comprising (1) extruding the same molten polymer through at least two groups of orifices in a single spinnerette, wherein each group of orifices is arranged in at least one row; (2) directing quench vapor or gas successively across the first group of filaments and thence across the second group of filaments; (3) thereafter collecting partially oriented filaments; wherein the improvement comprises:

extruding at an average mass-flow rate of polymer through the second group of orifices, m_2, that is less than the average mass-flow rate of polymer through the first group of orifices, m_1,

whereby there is less difference in degree of orientation between the first group of melt-spun filaments and the second group of melt-spun filaments.

4,514,351
PROCESS FOR THE MANUFACTURE OF ARTICLES OF HIGH MECHANICAL STRENGTH FROM THERMOPLASTIC SYNTHETIC RESINS
Helmut Kaeufer, Metzkausen; Lutz Rautenberg, and Joachim Pahl, both of Berlin, all of Fed. Rep. of Germany, assignors to Deutsche Solvay Werke GmbH, Solingen, Fed. Rep. of Germany
Filed Aug. 25, 1982, Ser. No. 411,291
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133897
Int. Cl.³ B29D *7/08*
U.S. Cl. 264—210.2 **20 Claims**

1. A process for preparation of a shaped article of high mechanical strength from a thermoplastic resinous material comprising the steps of:

heat plastifying the thermoplastic material;

extruding the heat plastified thermoplastic material to form an extruded mass;

cooling the extruded mass to a temperature below its melting or softening point;

forcing the extruded mass in a first pressure-forming step either during or subsequent to said cooling step through an outlet orifice having a cross-section which is reduced in relation to the cross-section of said shaped article at a pressure within the range from about 155 N/mm^2 to 1000 N/mm^2; and

introducing the thermoplastic material after said first pressure-forming step into a second pressure-forming step in which the pressure is maintained on said thermoplastic material for a period from about 1 second to 5 minutes to produce an oriented, shaped article having a predetermined cross-sectional configuration;

the ratio of the surface area of the extruded mass per unit weight of the surface area of the shaped article comprising from about 30:1 to 1.1:1.

4,514,352
SHOTSHELL CASING WITH PARTIALLY TELESCOPED BASEWAD
Luke J. Davich; Jack A. Erickson, both of Anoka, and Richard W. Proulx, Forest Lake, all of Minn., assignors to Federal Cartridge Corporation, Minneapolis, Minn.
Division of Ser. No. 224,267, Jan. 16, 1981, abandoned. This application Sep. 22, 1983, Ser. No. 535,005
Int. Cl.³ B29C *17/02*; F42B *7/06*
U.S. Cl. 264—230 **14 Claims**

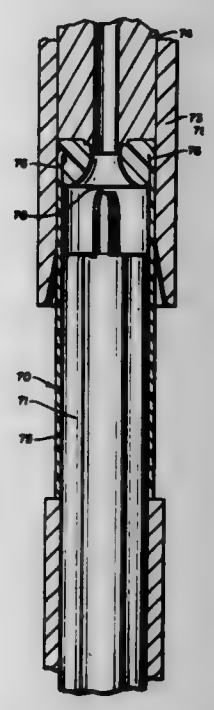
1. The method of producing a cartridge casing consisting in:

(a) heating only the very outer end portion of one end of a biaxially stretched thermoplastic tube having wall structure with inner surfaces only sufficiently to soften same and cause its sidewalls thereat to shorten axially and thicken radially to form an integral dollup supported by relatively rigid sidewalls on that end of the tube;

(b) mechanically telescoping a portion of that dollup from an exterior position to an interior position within the relatively rigid sidewalls which support the dollup; and

(c) forming the telescoped dollup into an integral transverse

internally homogenous base section which is devoid of internal physical boundaries and is disposed in contiguous



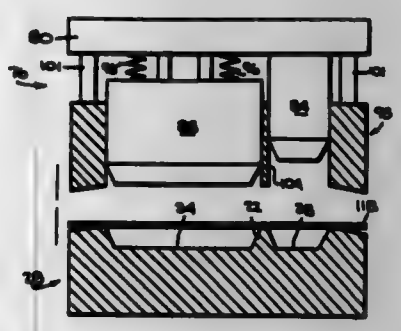
relation with the inner surfaces of the wall structure of the tube and with an axially extending primer opening therein.

4,514,353

APPARATUS AND METHOD FOR FORMING A MULTI-COMPARTMENTED TRAY FROM A SHEET MATERIAL

Garold W. Alexander, Delaware, and William H. Haase, Dublin, both of Ohio, assignors to International Paper Company, New York, N.Y.

Filed Jun. 29, 1983, Ser. No. 509,166
Int. Cl.[3] B29C *17/00*
U.S. Cl. 264—294 13 Claims



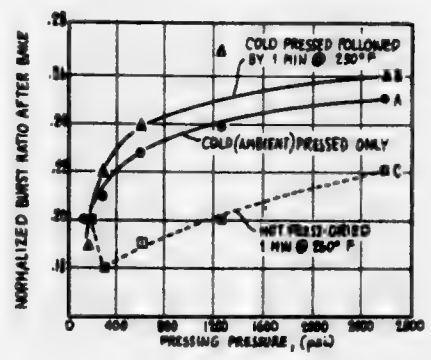
1. An apparatus for forming multi-compartmented trays from sheet material, said apparatus comprising: first and second dies movable relative to each other, between a first relative position in which they are spaced apart and a second relative position in which they fit together; means for moving said dies from said first relative position toward said second relative position for gripping a piece of material between said dies for forming such piece of material into a multi-compartmented tray; said first die including first and second compartment-formers for forming first and second spaced-apart compartments in such piece of material, said first and second compartment-formers being positioned such that the lower surface of said first compartment-former is spaced below an equivalent surface of said second compartment-former so that movement of said dies toward said second relative position causes said first compartment-former to form a first compartment in such piece of material to substantially the full intended depth of such first compartment before said second compartment-former forms a second compartment in such piece of material.

4,514,354

MANUFACTURE OF MOLDED PAPERBOARD ARTICLES

Sheldon I. Schlesinger, East Windsor, N.J.; Walter S. Cerenzia, Morrisville, Pa., and Thomas D. Wilson, Hamilton Square, N.J., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Filed Dec. 10, 1982, Ser. No. 448,647
Int. Cl.[3] B29G *5/00*
U.S. Cl. 264—324 5 Claims



1. A method of forming an ovenable paperboard container from paperboard sheet by press forming between a pair of forming dies, said container having improved burst strength after exposure to a temperature of 450° F. for one hour as compared with that of hot pressed paperboard of the same base stock, which comprises adjusting the moisture content of sheet paperboard base stock consisting of cellulosic fiber pulp to a water content within the range of from about 50% to about 100% by weight based on the dry weight of fiber; pressing said paperboard stock in the absence of externally applied heat into a shaped paperboard container at a pressure in a range from about 325 psi to about 2600 psi; and drying the pressed shaped container.

4,514,355

PROCESS FOR IMPROVING THE HIGH TEMPERATURE FLEXURAL STRENGTH OF TITANIUM DIBORIDE-BORON NITRIDE

Lionel C. Montgomery, Bay Village, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 22, 1982, Ser. No. 452,183
Int. Cl.[3] C04B *35/60*
U.S. Cl. 264—332 8 Claims

1. A process for producing an intermetallic composition comprising titanium diboride and boron nitride having enhanced high temperature flexural strength characteristics, said process comprising forming a uniform blend of titanium diboride and boron nitride powders containing oxygen in a bond phase, hot pressing said uniform blend in an inert atmosphere at elevated temperatures to form a solid body, discontinuing the hot pressing of the body and subsequently heating the solid body between approximately 1600° C. and 2200° C. in an inert atmosphere for from about four hours to about 10 hours to vaporize said bond phase of said hot pressed body.

4,514,356

METHOD OF MOLDING A PLASTIC TOILET SEAT HINGE CONNECTABLE BED PLATE

David E. Harrison, Star Rte. Box 315, Columbus, Miss. 39701

Division of Ser. No. 418,388, Sep. 15, 1982, Pat. No. 4,391,001.
This application Apr. 8, 1983, Ser. No. 483,931
Int. Cl.[3] B29F *1/022;* A47K *13/12*
U.S. Cl. 264—328.12 1 Claim

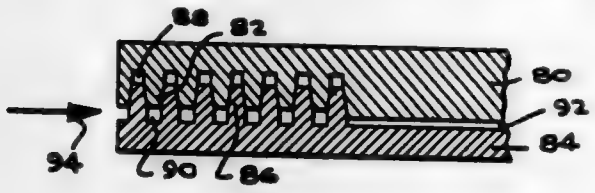
1. A method of molding a plastic toilet seat bed plate having a horizontally extending rectangular opening positioned between upper and lower parallel horizontal rib members of quadrilateral cross-section extending between side wall components, said method comprising the steps of:

providing an upper mold member having a plurality of

upper elongated horizontal downwardly facing parallel spaced rib teeth between which a plurality of linear upper grooves extend in parallel horizontal alignment with each other;

providing a lower mold member beneath said upper mold member having a plurality of elongated horizontal parallel equidistantly spaced upwardly facing spaced rib teeth between which a plurality linear lower grooves extend in parallel horizontal alignment with each other, said linear lower grooves being individually in vertical alignment with one of said downwardly facing parallel spaced rib teeth;

effecting relative vertical movement of said upper and lower mold members toward each other so that said upwardly facing spaced rib teeth are individually partially received in respective ones of said upper grooves and said downwardly facing parallel spaced rib teeth are individually partially received in said lower grooves so that the upwardly facing teeth and the downwardly facing teeth are interleaved over a portion of their vertical length with the space occupied by the interleaved portions of the rib teeth being coextensive with the rectangular shape of the horizontally extending opening to be formed and the space in the lower end of said lower grooves not occupied by the upper rib teeth and the upper ends of said upper grooves not occupied by the lower rib teeth being respectively identical in cross-section to said upper and lower horizontal rib members;



injecting molten plastic between said mold members to fill all open spaces between said mold members to provide a body of plastic having the required shape of the toilet seat bed plate;

permitting said molten plastic to solidify;

effecting relative vertical movement between said upper and lower members for achieving separation thereof; and

removing the resultant molded plastic toilet seat bed plate from one of said mold members.

4,514,357

PRODUCTION OF MOLDED ARTICLES HAVING EXCELLENT OPTICAL CHARACTERISTICS

Yoshikazu Kawaguchi; Seiichro Maruyama, and Hiroyuki Kawasaki, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 450,039
Claims priority, application Japan, Jan. 22, 1982, 57-8315
Int. Cl.³ B29F *1/08*; B29D *11/00*
U.S. Cl. 264—328.16
5 Claims

1. A method for producing a molded article having excellent optical characteristics, the quality of said optical characteristics being established by the fact that said article in molded disc form of 1.2 mm thickness and 120 mm in diameter has a retardation of not more than 60 mμ and a warpage of not more than 0.2 mm, comprising: injection molding, at a resin temperature of 330° to 400° C. and at a mold temperature of 50° to 110° C., a resin composition of bis(hydroxyphenyl)alkane polycarbonate having an average molecular weight of 12,000 to 18,000 and containing 0.005 to 0.5 wt. %, based on the polycarbonate resin, of a phosphorous ester of the formula:

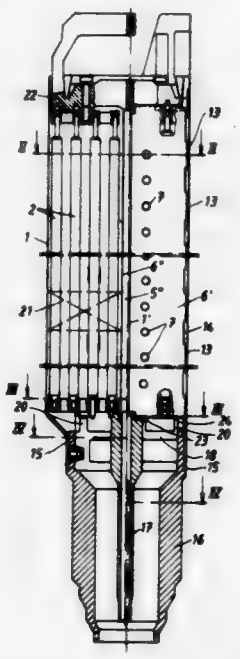
wherein each of R^1 and R^2 independently is an alkyl or aryl group, and R^3 is hydrogen, an alkyl group or aryl group.

4,514,358

FUEL ASSEMBLY

Bo Borrman; Erik Hellman; Bengt Ode, and Aart van Santen, all of Västerås, Sweden, assignors to AB ASEA-ATOM, Västerås, Sweden

Continuation of Ser. No. 249,561, Mar. 31, 1981, abandoned. This application Mar. 23, 1984, Ser. No. 592,741
Int. Cl.³ G21C *15/00*
U.S. Cl. 376—362
6 Claims



1. A fuel assembly for a boiling water reactor, said fuel assembly including a plurality of vertical fuel rods enclosed within a fuel channel separate from said fuel rods, said fuel channel being of substantially rectangular cross-section, wherein said fuel rods are positioned with the aid of top grid means, bottom grid means and a plurality of spacer devices, said fuel channel surrounding an elongated stiffening device for said fuel channel, said stiffening device being separate from said fuel rods and extending along a predominant portion of the length of said fuel rods, the vertical center line of said stiffening device lying in the vicinity of the vertical center line of said fuel channel, said stiffening device having four stiffening wings arranged in vertical planes and having angular distances of about 90° between themselves, said stiffening wings below said top grid means and above said bottom grid means being mechanically and fixedly connected to each other in the vicinity of the vertical center line of said fuel channel and welded to corresponding walls of said fuel channel to prevent said fuel channel from deforming outwardly during reactor operation, said wings constituting partitions between four bundles of fuel rods and each of said wings comprising at least one vertical internal water passageway extending along a predominant portion of the length of said fuel rods, whereby water flowing upward through said internal water passageway is prevented from contacting said fuel rods thus minimizing the void content of the water in said internal water passageway while maximizing its moderator effect, and said stiffening device comprising for elongated vertical sheet-metal bodies of substantially L-shaped cross-section arranged in spaced relationship to each other to define said water passageways, the cor-

ners of said sheet-metal bodies being disposed in the vicinity of said vertical center line of said fuel channel.

4,514,359

NONPRECIOUS DENTAL ALLOY

Henry L. Andrews, Old Saybrook, Conn., assignor to Austenal International, Inc., Chicago, Ill.

Filed Mar. 30, 1983, Ser. No. 480,426
Int. Cl.³ C22C *19/07*
U.S. Cl. 420—436 2 Claims

1. A nonprecious dental alloy consisting essentially of the following constituents in approximate percentage by weight:

chromium—25–30
molybdenum—5–7
manganese—0–1.0
silicon—0–1.0
carbon—0–0.3
gallium—1.5–3
indium—1.5–3
cobalt—balance

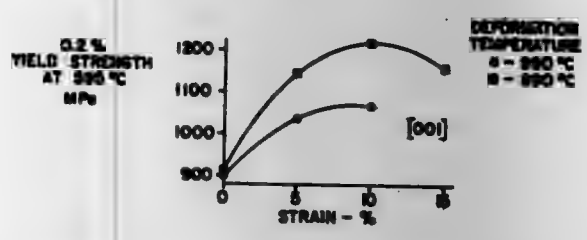
said constituents accounting for at least 99.5 weight percent of the alloy, the sum of the manganese and the silicon being at least about 0.5 percent.

4,514,360

WROUGHT SINGLE CRYSTAL NICKEL BASE SUPERALLOY

Anthony F. Giamei, Middletown, Conn., and Bernard H. Kear, Whitehouse Station, N.J., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 6, 1982, Ser. No. 447,067
Int. Cl.³ C22C *19/05*; C21D *8/00*
U.S. Cl. 420—454 10 Claims



8. A single crystal nickel base superalloy of the gamma-gamma prime type having a composition substantially free of boron, hafnium and zirconium, less than 0.03 carbon, and 40–70 volume percent gamma prime, produced by deforming the alloy 2–15% at a strain rate of 10^{-1} to 10^{-4} second^{-1} in the temperature range 700°–1100° C., said superalloy having a yield strength at least 15 percent greater than the same composition and heat treatment superalloy which has not been deformed, and the superalloy having a tensile yield strength in the crystal [001] direction of at least about 1000 MPa at 595° C.

4,514,361

STEAM STERILIZATION INDICATOR

Arthur Hirsch, Elizabeth, N.J., assignor to Arvey Corporation, Chicago, Ill.

Filed Sep. 24, 1982, Ser. No. 423,242
Int. Cl.³ A61L *2/06*; G01N *21/80, 31/22*
U.S. Cl. 422—26 9 Claims

2. A steam sterilization indicator comprising a carrier, a pH value indicator that exhibits a change in color at a pH value of about 5.8 to about 6.2 affixed to said carrier and an acidic chemical composition associated with said carrier, the pH value of said acidic chemical composition increasing under steam sterilizing conditions to exceed a pH value of about 5.8 to about 6.2, said acidic chemical composition containing a mixture of a first and a second carboxyl group-containing submixture, said mixture including 2,4-dihydroxybenzoic acid and a salt of 2,4-dihydroxybenzoic acid as the first of said submixtures, and phenylpropiolic acid and a salt of phenylpropiolic acid as the second of said submixtures, the molar ratio of said first and second carboxyl group-containing submixtures to each other being about 1:4 to about 4:1.

7. A method for indicating that an article has been sterilized by steam comprising the steps of:

supplying the steam sterilization indicator of claim 2;
placing said indicator into a steam sterilizing apparatus along with an article to be sterilized and closing said apparatus;
supplying pressurized steam into the closed sterilizing apparatus; and
maintaining said supply of pressurized steam into said closed sterilizing apparatus until the color of the pH value indicator changes, thereby indicating that the pH value of said composition exceeds about 5.8 to about 6.2, and that said article has been sterilized.

4,514,362

BREATH SPECIMEN MIXER

Frank L. Buchanan, Jr., 4812 Frieda Dr., Los Angeles, Calif. 90065, and Bob B. Buchanan, 23721 Monument Canyon Dr., Diamond Bar, Calif. 91765

Filed Oct. 28, 1982, Ser. No. 437,351
Int. Cl.³ G01N *1/00*; B01F *5/00*; B01L *11/00*
U.S. Cl. 422—99 2 Claims



1. Apparatus for mixing a heterogeneous gas specimen to produce a substantially homogeneous product consisting essentially of:

a hollow container having means forming an inlet opening and an outlet opening coaxial with said inlet opening through the walls thereof for introducing said heterogeneous gas specimen and withdrawing said product, said container including an aligned pair of substantially hemispherically shaped halves and means for detachably clamping said halves together to form an easily disassemblable unit, the walls of said container defining a chamber which is substantially symmetrical about an axis centered in said openings,

mixing means positioned within said container substantially spaced apart from the inner surfaces of the walls thereof for causing said gas specimen to be disbursed and mixed about said means upon passage through said container from said inlet opening to said outlet opening, said mixing means comprising a globe suspended within said container so that its center is positioned substantially on said axis of the inlet and outlet opening in said container, said globe ranging in volume from about one third to about two thirds the interior volume of said container, said globe being substantially concentric with said container but spaced apart therefrom,

suspension means comprising a plurality of spring members affixed about the inner surface of one of said hemispherically shaped halves for detachably engaging said globe for suspending the same, while permitting said globe to be easily removed from said container, said globe including engaging means affixed to the outer surface of said globe and positioned to engage said spring means,

said clamping means comprising opposing aligned flanges on said hemispherically shaped halves and an arcuate channel

member for enclosing and sealingly clamping together the periphery of a substantial portion of said flanges, and

a base member for supporting said container, said channel member being mounted on said base member facing arcuately upwardly, said channel member being sized to engage a substantial portion of but less than half of said periphery of said flanges.

4,514,363

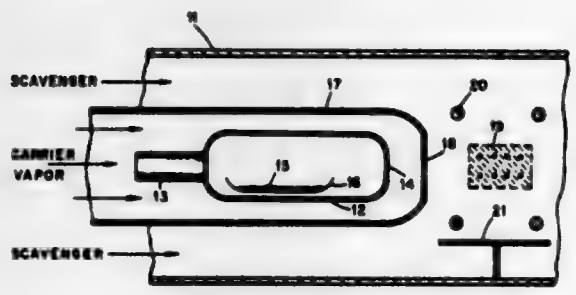
METHOD FOR ISOTOPE ENRICHMENT BY PHOTOINDUCED CHEMIIONIZATION

James W. Dubrin, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 150,251, May 2, 1980, abandoned, which is a continuation of Ser. No. 683,156, May 4, 1976, abandoned. This application Sep. 15, 1981, Ser. No. 302,341

Int. Cl.³ B01D *59/00*

U.S. Cl. 423—3 7 Claims



1. A method for isotope enrichment wherein the isotope source is an atomic vapor of uranium present in a plurality of isotopes, said atomic vapor being characterized by an absorption spectrum exhibiting a significant isotope shift such that there exists a frequency at which irradiation of said vapor excites atoms of a first isotope of the element without substantially exciting atoms of a second isotope of the element, which method comprises:

a. providing a vapor phase mixture of said atomic vapor and a reactant species capable of transforming excited atoms of said element into an ionic product by a chemiionization reaction without substantial reaction with unexcited atoms of said element under the conditions of said irradiation, said reactant species being selected from the group consisting of a halogen, an alkali metal atom, an alkaline earth metal atom, a Group III metal, CO and NH_3;

b. subjecting said vapor phase mixture to irradiation at said frequency, thereby exciting atoms of said first isotope without substantially exciting atoms of said second isotope and transforming the excited atoms into an ionic product enriched in said first isotope by said chemiionization reaction without substantial transformation of the unexcited atoms into an ionic product; and

c. electrically extracting the resulting ionic product enriched in said first isotope from the vapor mixture.

4,514,364

METHOD FOR REPROCESSING A NUCLEAR REACTOR FUEL ROD

Wolfgang Stoll, Hanau, and Karl Ennerst, Kleinostheim, both of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,142

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228979

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—4 5 Claims

1. Method for reprocessing a nuclear reactor fuel rod which contains nuclear fuel in pellet form in a metal cladding tube to effect separation of the cladding tube from the nuclear fuel, which comprises uniformly heating the cladding tube in hermetically sealed condition together with the nuclear fuel contained therein to permanently expand the diameter of the cladding tube without the formation of cracks in the cladding tube, increasing the distance between the nuclear fuel and the cladding tube to permit the nuclear fuel to freely flow from the



cladding tube; opening the expanded cladding tube at one end; separating the nuclear fuel from the cladding tube by discharging the nuclear fuel through the opening in the cladding tube, and recovering the separated nuclear fuel substantially free of cladding tube content.

4,514,365

PROCESS FOR RECOVERING A URANIUM-CONTAINING CONCENTRATE AND PURIFIED PHOSPHORIC ACID FROM A WET PROCESS PHOSPHORIC ACID CONTAINING URANIUM

Cornelis A. M. Weterings, Stein, and Johannes A. Janssen, Schinveld, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 115,248, Jan. 21, 1980,. This application Nov. 5, 1982, Ser. No. 439,599

Claims priority, application Netherlands, Jan. 25, 1979, 7900579; Jan. 25, 1979, 7900580; Jan. 25, 1979, 7900581

Int. Cl.³ C01G *43/06, 43/00*

U.S. Cl. 423—15 12 Claims

1. Process for recovering a uranium containing concentrate and a purified phosphoric acid from a wet process phosphoric acid comprising the steps of,

(a) treating said wet process phosphoric acid first with (i) from about 0.15% to about 7% by weight of ammonium fluoride calculated as fluoride in relation to the amount by weight of P_2O_5 in the phosphoric acid, and (ii) a reducing agent, and thereafter with from about 120% to about 900% by weight of an aliphatic ketone calculated in relation to the amount by weight of P_2O_5 in the phosphoric acid, to form an uranium containing precipitate,

(b) separating said precipitate from the remaining mixture of phosphoric acid and aliphatic ketone, and

(c) recovering purified phosphoric acid from said mixture of phosphoric acid and aliphatic ketone.

2. The process of claim 1, wherein the aliphatic ketone is selected from the group consisting of acetone, methylethylketone, or mixture thereof.

5. Process for recovering a uranium containing concentrate and a purified phosphoric acid from a wet process phosphoric acid containing uranium wherein the sulphate content of said wet process phosphoric acid is less than about 0.6% by weight calculated in relation to the amount by weight of P_2O_5 comprising the steps of,

(a) admixing, to a wet process phosphoric acid containing uranium, a compound that reacts with sulphate ions to

form a resultant precipitate that is insoluble in phosphoric acid,

(b) separating out the resultant precipitate from the wet process phosphoric acid containing uranium,

(c) treating the wet proces phosphoric acid containing uranium of step (b) first with (i) from about 0.15% to about 7% by weight of ammonium fluoride calculated as fluorine in relation to the amount by weight of P_2O_5 in the phosphoric acid, and (ii) a reducing agent and thereafter with from about 120% to about 900% by weight of an aliphatic ketone calculated in relation to the amount by weight of P_2O_5 in the phosphoric acid to form a resultant uranium containing precipitate,

(d) separating out said uranium containing precipitate from the remaining mixture of phosphoric acid and aliphatic ketone, and

(e) recovering the phosphoric acid from said mixture of phosphoric acid and aliphatic ketone.

4,514,366

PRODUCTION OF FLUID FERTILIZER FROM PHOSPHORUS FURNACE WASTE STREAM

James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Division of Ser. No. 428,840, Sep. 30, 1983, Pat. No. 4,451,277, which is a continuation-in-part of Ser. No. 301,378, Sep. 11, 1981, Pat. No. 4,383,847, which is a division of Ser. No. 223,122, Jan. 7, 1981, Pat. No. 4,372,929. This application Jun. 10, 1983, Ser. No. 502,929

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—318 **6 Claims**

1. A process for the production of phosphoric acid wherein:

(a) A mixture of phosphate ore containing fluoroapatite, phosphoric acid, and ground phosphate is agglomerated by tumbling;

(b) agglomerates in step (a) are indurated in the temperature range of 220° to 1500° F.;

(c) indurated agglomerates in step (b) are mixed with reducing carbon and silica rock;

(d) mixture in step (c) is smelted in a submerged-arc electric furnace wherein a phosphorus-containing gas is evolved;

(e) phosphorus-containing gas in step (d) is cooled in an adiabatic condenser wherein water is sprayed into the condenser, collected in a sump, and recirculated in a stream to the condenser;

(f) a stream of water is bled off;

(g) phosphorus and phosphorus sludge condensed in the adiabatic condenser is separated by gravitational settling;

(h) phosphorus sludge in step (g) is burned in a graphite combustion chamber to produce a gas and phosphoric acid

(i) gases from combustion chamber in step (h) are contacted with bleedoff water from step (f) in a hydrator constructed of carbon blocks;

(j) gases from hydrator in step (i) are treated in a venturi scrubber;

(k) phosphoric acid collected in combustion chamber, hydrator, and venturi scrubber is recycled to step (a);

(l) liquid phosphorus separated in step (g) is processed into phosphoric acid in a stainless steel production unit.

4,514,367

METHOD FOR SEPARATING RARE EARTH METALS

Tadao Asami, Yokohama; Tetsuro Suehiro; Hisao Ichijo, both of Yatabemachi; Aizo Yamauchi, Sakuramura; Shigeo Ogawa, Yatabemachi; Mitsuo Suzuki, and Mitsutaka Uzumaki, both of Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology; Nitivy Co., Ltd. and Seimi Chemical Co., Ltd., all of, Japan

Filed May 25, 1983, Ser. No. 497,871

Int. Cl.³ C01F *17/00*

U.S. Cl. 423—21.5 **3 Claims**

1. In a method for separating gadolinium, samarium, neodymium, praseodymium, and lanthanum prepared from bastnaesite by selective adsorbing these rare earth metals on an ion exchanger and then fractionally eluting the respective metals with an aqueous solution of a chelating agent, the improvement in that an ion exchange fiber having a sulfonic group and a carboxyl group is used as the ion exchanges, and the elution is conducted at a space velocity of 5.0 or above.

4,514,368

LEACHING NICKEL, COBALT, MOLYBDENUM, TUNGSTEN, AND VANADIUM FROM SPENT HYDROPROCESSING CATALYSTS

Gale L. Hubred, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 422,761

Int. Cl.³ C01G *39/00, 41/00, 31/00, 51/00*

U.S. Cl. 423—54 **4 Claims**

1. A process to extract nickel, vanadium, cobalt and molybdenum from spent hydroprocessing catalyst particles containing carbon residue comprising:

(a) roasting said catalyst particles in an atmosphere containing molecular oxygen at a temperature in the range of between about 400° C. and 600° C.; and

(b) contacting said roasted catalyst particles with an aqueous solution of ammonia and a compound selected from the group consisting of ammonium carbonate and ammonium sulfate, said solution being maintained at a temperature in the range of 85° C. to 95° C., wherein said aqueous solution has a pH in the range of 9.5 to 11 and concentrations of ammonia plus ammonium do not exceed 6M, such that at least 85 percent of molybdenum, 70 percent of vanadium, 45 percent cobalt, and 70 percent nickel is recovered from said roasted catalyst particles.

2. The process of claim 1 wherein said aqueous solution contains at least six-fold molar ratio of ammonia compared to the nickel and cobalt on said catalyst particles, and less than 2M concentration of ammonium ion.

3. The process of claim 1 including monitoring the concentration of cobalt leached, thereby leaching the maximum amount of cobalt.

4,514,369

RECOVERY OF COBALT, MOLYBDENUM, NICKEL, TUNGSTEN AND VANADIUM FROM AN AQUEOUS AMMONIA AND AMMONIUM SALT SOLUTION BY COEXTRACTING MOLYBDENUM, TUNGSTEN AND VANADIUM AND SEQUENTIAL EXTRACTION OF NICKEL AND COBALT

Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 422,987, Sep. 24, 1982, Pat. No. 4,434,141. This application Feb. 22, 1984, Ser. No. 582,366

The portion of the term of this patent subsequent to Feb. 22, 2001, has been disclaimed.

Int. Cl.³ C01G *39/00, 41/00, 51/00, 31/00*

U.S. Cl. 423—54 **5 Claims**

1. A process for separating the metal values in a pregnant liquor from an ammoniacal ammonium aqueous leach solution containing:

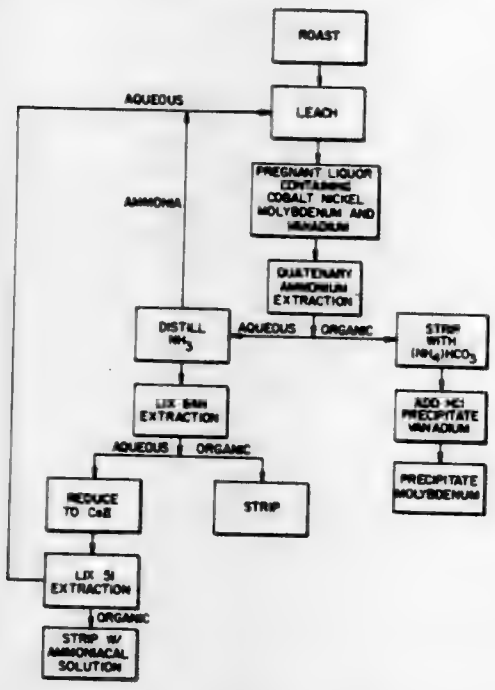
(i) at least one metal value selected from the group consisting of cobalt and nickel; and

(ii) at least one metal value selected from the group consisting of vanadium, tungsten, and molybdenum; comprising:

(a) transferring said molybdenum, tungsten, and vanadium metal values from said pregnant liquor into a first organic solution by means of a first organic liquid extractant comprising a quaternary ammonium compound;

(b) stripping said first organic solution with a first aqueous ammonium bicarbonate stripping solution to form an aqueous solution containing said molybdenum, tungsten, and vanadium metal values;

(c) transferring nickel metal values from said pregnant liquor into a second organic solution by means of an organic nickel extractant comprising an oxime;
(d) reducing cobalt metal values in said pregnant liquor to divalent cobalt;
(e) transferring cobalt metal values from said pregnant liquor into a third organic solution by means of an



organic cobalt extractant selected from the group consisting of dioximes, hydroxy-oximes, and beta-diketone; and
(f) stripping each of said second and third organic solutions with aqueous stripping solutions to form a cobalt-containing aqueous solution and a nickel-containing aqueous solution.

4,514,370
PROCESS FOR PREPARING SILICON NITRIDE POWDER

Hiroshi Inoue, Kawaguchi; Katsutoshi Komeya, Oiso; Akihiko Tsuge, Yokohama; Kazunari Koide, Kariya; Masaaki Mori, Okazaki, and Tetsuro Urakawa, Kariya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Toshiba Ceramics Co., Ltd, Tokyo, both of, Japan

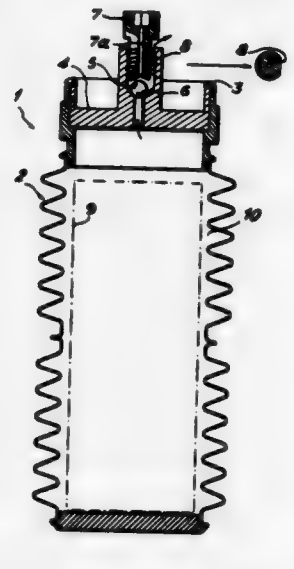
Continuation of Ser. No. 443,680, Nov. 22, 1982, abandoned.
This application Jun. 8, 1984, Ser. No. 618,524
Claims priority, application Japan, Nov. 25, 1981, 56-187762
Int. Cl.[3] C01B *21/068*
U.S. Cl. 423—344 **13 Claims**

1. A process for preparing silicon nitride powder, which comprises baking a powdery mixture comprising (i) 1 part by weight of silica powder, or a silica-containing substance in terms of silica, (ii) 0.4 to 4 parts by weight of carbon powder, or a substance generating carbon by baking, in terms of carbon and (iii) 0.005 to 1 part by weight of silicon nitride powder synthesized by a silica reduction method, at a temperature of from 1350° to 1550° C. in a nonoxidative atmosphere containing nitrogen.

4,514,371
PROCESS AND DEVICE FOR THE ACCELERATED DENSIFICATION OF A POROUS CARBONACEOUS SUBSTRATE BY DECOMPOSITION OF A HYDROCARBON SUBSTANCE

Jean Jamet, Janvry; Jean-Jacques Poupeau, Saint-Remy-les-Chevreuse; Jacqueline Omnès, Paris, and Claude Le Pennec, Vincennes, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Office National d'Etudes et de Recherche Aerospatiales (ONERA), Chatilcon, both of, France

Continuation of Ser. No. 244,877, Mar. 18, 1981, abandoned.
This application Jul. 8, 1983, Ser. No. 511,724
Claims priority, application France, Mar. 28, 1980, 80 07034; Sep. 18, 1980, 80 20089
Int. Cl.[3] C01B *31/04, 31/02*
U.S. Cl. 423—449 **1 Claim**



1. A process for the accelerated densification of a porous carbonaceous substrate comprising decomposing a hydrocarbon substance in the presence of said substrate under high pressure and at a high temperature, decomposition being effected inside a closed reactor allowing the elimination of hydrogen as it is produced during the reaction, the walls of said reactor having the necessary suppleness for the inner volume thereof to be adapted at each instant under the effect of the pressure applied to the volume of a liquid phase which it contains, the hydrocarbon substance to be decomposed being a substance containing free carbon in the amount of about 30% by weight.

4,514,372
PROCESS OF PRODUCING COBALT-CONTAINING SOLUTIONS AND SALTS

Eric A. Devuyst, Toronto, and Victor A. Ettel, Mississauga, both of Canada, assignors to INCO Limited, Toronto, Canada

Filed Mar. 9, 1983, Ser. No. 404,613
Int. Cl.[3] C01G *51/08*
U.S. Cl. 423—493 **8 Claims**

1. The process for dissolving metallic cobalt in hydrochloric acid solution characterized in that said hydrochloric acid solution contains thiosulfate ion.

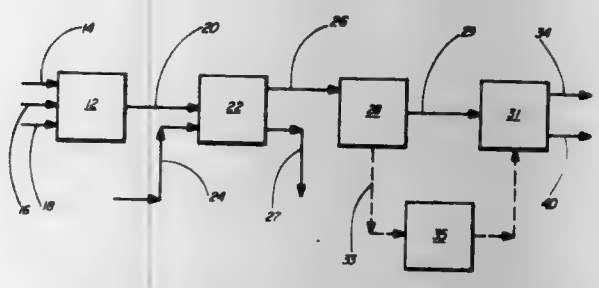
4,514,373
PURIFICATION OF ALUMINUM CHLORIDE

Ronald Wyndham, Thibodaux, La., assignor to Toth Aluminum Corporation, Metairie, La.

Filed Dec. 6, 1983, Ser. No. 558,539
Int. Cl.[3] C01F *7/62*
U.S. Cl. 423—495 **17 Claims**

1. A process for purifying aluminum chloride comprising the steps of:
a. providing solid crude aluminum chloride containing at least one sulfur containing member selected from the group consisting of elemental sulfur and/or functionally equivalent sulfur containing compounds;

b. adding at least one solid aluminum containing member selected from the group consisting of elemental aluminum and/or functionally equivalent aluminum containing compounds to said crude aluminum chloride to form a blend;
c. heating the blend of solid crude aluminum chloride containing sulfur and the aluminum metal to at least 180° C. under at least one atmosphere of pressure; and



d. subliming substantially pure aluminum chloride from the solid blend, the at least one sulfur containing member contained in the solid blend being present in an amount to increase the yield and rate of formation of pure aluminum chloride.

4,514,374

METAL BROMIDE PREPARATION

Warren B. Kirsch, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 15, 1982, Ser. No. 434,504
Int. Cl.³ C01F *11/34*
U.S. Cl. 423—497 **6 Claims**

1. A process for preparing an aqueous metal bromide solution which comprises contacting in an aqueous medium a compound selected from the group consisting of calcium hydroxide, calcium carbonate and lime, with bromine in the presence of a lower alkanol as a reducing agent, the amount of lower alkanol being stoichiometric to slightly in excess of stoichiometric based upon bromine wherein said stoichiometric amount is about 1 mole of alkanol for each 3 moles of bromine.

4,514,375

METHOD OF RECOVERING SULFUR FROM THE HYDROGEN SULFIDE CONTAINED IN COKE OVEN GASES

Dieter Laufhütte, Recklinghausen, Fed. Rep. of Germany, assignor to Firma Carl Still G.m.b.H. & Co. KG, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,495
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209858
Int. Cl.³ C01B *17/02*; C01C *3/00*
U.S. Cl. 423—573 G **2 Claims**

1. A method of treating hydrogen sulfide and ammonia vapors that are stripped from coke oven gases having hydrogen sulfide and ammonia therein, to recover sulfur from the hydrogen sulfide contained in the gases under a Claus treating plant process, comprising:

washing ammonia and hydrogen sulfide out of the coke oven gases in a closed cycle water and ammonia scrubber to form a raw vapor and stripping the raw vapor of wash liquors and concentrating the stripped raw vapor to form the hydrogen sulfide and ammonia vapors to be treated, the hydrogen sulfide and ammonia vapors containing hydrogen cyanide and hydrocarbon;

directing the vapors (1) along with combustion (2) and oxidation (3) gases, into a first combustion furnace (5) and buring them therein to form a burned vapor including ammonia and hydrogen sulfide, sufficient combustion and oxidation gases being directed with the hydrogen sulfide and ammonia vapors in the first combustion furnace to burn the vapors and raise their temperature to a range between 1000° and 1200° C.;

directing the burned vapor through a nickel catalyzer (6) to decompose the burned vapor and the ammonia present therein to form decomposed gases, the burned vapor being supplied to the nickel catalyzer at the temperature range of 1000° to 1200° C., hydrogen sulfide in the burned vapor being uneffected in the nickel catalyzer;

supplying about one-third of the decomposed gases (8) directly to a burner (10) of a second furnace (11) for burning;

supplying a remaining two-thirds of the decomposed gases (12) into a cooler (39) to cool them and to liberate condensate therefrom to form liberated gases;

directing the liberated gases (16) into the second furnace (11) to form at least some sulfur dioxide;

adding air (9) to the burner (10) in an amount to partly combust the liberated gases with the relative one-third and two-thirds amounts of decomposed gases being selected to regulate a proportion of the hydrogen sulfide to sulfur dioxide needed for the Claus plant process to be 2 to 1;

cooling the gases from the second furnace which are partially combusted to 200° to 250° C.; and

delivering gases from the second furnace which are partially combusted and cooled, to the Claus plant process to obtain sulfur.

4,514,376

PREGENERATION OF TETRAHYDROANTHRAQUINONES IN A MAKE-UP SOLUTION TO BE ADDED TO A HYDROGEN PEROXIDE WORKING SOLUTION

Dalbir S. Sethi, Cranbury, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 19, 1984, Ser. No. 601,834
Int. Cl.³ C01B *15/02*
U.S. Cl. 423—588 **23 Claims**

1. In a process for producing hydrogen peroxide by the cyclic steps of reducing, oxidizing, and extracting a working solution containing as a working compound an alkylated anthraquinone and the corresponding hydroquinone, tetrahydroanthraquinone and tetrahydroanthrahydroquinone, the improvement which comprises increasing the mol ratio of the nuclearly-hydrogenated, tetrahydro components of the working compound in a first solution which is to be added to the working solution by adjusting the concentration of the nonnuclearly hydrogenated working compounds to be not greater than the maximum solubility of the alkylated anthrahydroquinone formed in the first solution at the hydrogenation temperature, hydrogenating the first solution in the presence of a palladium catalyst at a pressure of 50 to 400 kilopascals at a temperature of not greater than 50° C. thereby increasing the mol ratio of the tetrahydro components of the working compound without forming substantial quantities of undesirable by-products and adding said hydrogenated first solution to the working solution.

4,514,377

PROCESS FOR THE EXCHANGE OF HYDROGEN ISOTOPES BETWEEN STREAMS OF LIQUID WATER AND GASEOUS HALOHYDROCARBON AND AN APPARATUS THEREFOR

Edward A. Symons; John H. Rolston, both of Deep River; Michel J. Clermont, Ottawa, and Linda M. Paterson, Petawawa, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

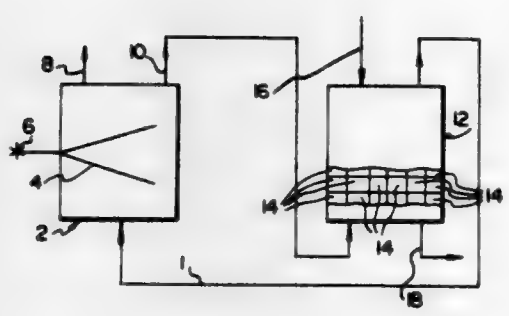
Filed Nov. 26, 1982, Ser. No. 444,860
Claims priority, application Canada, Dec. 4, 1981, 391537
Int. Cl.³ C01B *5/00*
U.S. Cl. 423—648 A **13 Claims**

1. A process for the exchange of hydrogen isotopes between

streams of liquid water and gaseous halohydrocarbon comprising:

(a) bringing the streams into contact with one another, and a catalytically active mass, of packing elements each comprising a roll of a corrugated open mesh screen and a plane web and a catalyst filling in the roll consisting of a porous anion exchange resin in the hydroxide ion form, the screen and the web being wound together with open, corrugation interstices for the flow of liquid water and gaseous fluoroform therealong, the streams and catalytically active mass being brought into contact at an operating temperature in the range of the order of 0° to 100° C., the liquid water stream containing a concentration of a hydrogen isotope in excess of that which it would contain when the liquid water and gaseous halohydrocarbon streams are in isotopic equilibrium at the operating conditions of temperature and mass flow rates of the streams, and the gaseous halohydrocarbon stream being a deficient stream and containing a concentration of that hydrogen isotope which is less than that which it would contain when the liquid water and gaseous halohydrocarbon streams are in equilibrium at said operating conditions, so that the said deficient, gaseous halohydrocarbon stream is enriched by transfer of that hydrogen isotope from the liquid water stream,

(b) decomposing the said gaseous halohydrocarbon stream enriched in that hydrogen isotope by isotope selective photo-decomposition into a first stream of gaseous products, enriched in that hydrogen isotope, and a second stream of gaseous halohydrocarbon depleted in that hydrogen isotope,



(c) removing as a product the first stream enriched in that isotope, and

(d) recycling the second stream for enrichment once again with that hydrogen isotope.

6. Hydrogen isotope exchange apparatus for effecting exchange between streams of liquid water and gaseous halohydrocarbon comprising:

(a) a catalytically active mass of packing elements each comprising a roll of a corrugated open mesh screen and a plane web and a catalyst filling in the roll consisting of a porous anion exchange resin in the hydroxide ion form, the screen and the web being wound together with open, corrugation interstices for the flow of liquid water and gaseous fluoroform therealong,

(b) contacting means, comprising an ion exchange column containing the packing elements as a catalyst packed bed, for bringing the streams into contact with one another, and the catalytically active mass, at an operating temperature in the range of the order of 0° to 100° C., whereby, when the liquid water stream in the said contacting means containing a concentration of a hydrogen isotope in excess of that which it would contain when the liquid water and gaseous halohydrocarbon streams are in isotopic equilibrium at the operating conditions of temperature and mass flow rates in the said contacting means, and the gaseous halohydrocarbon stream being a deficient stream and containing a concentration of that hydrogen isotope which is less than that which it would contain when the liquid water and halohydrocarbon streams are in equilibrium at said operating conditions, the deficient, gaseous halohydrocarbon stream will be enriched by transfer of that hydrogen isotope from the liquid water,

(c) isotope selective photo-decomposition apparatus for decomposing the said gaseous halohydrocarbon stream enriched in that hydrogen isotope into a first stream of gaseous products, enriched in that hydrogen isotope, and a second stream of gaseous halohydrocarbon depleted in that hydrogen isotope,

(d) pipe means connected to the isotope selective photo-decomposition apparatus for removing therefrom the first stream enriched in that isotope as a product, and

(e) a recycling pipe connected to the isotope selective photo-decomposition apparatus and the exchange column for recycling the second stream for enrichment once again with that isotope.

4,514,378

PROCESS FOR RECOVERING URANIUM FROM SPENT SHALE

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,750
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—18 **9 Claims**

1. A process for recovering uranium from spent shale comprising:

(a) treating the spent shale with an effective amount of a compound selected from the group consisting of methanol, a mixture of methanol and water, and a mixture of methanol mixed with sodium methoxide at a temperature of between about 240° and 450° C. and a pressure of atmospheric or higher;

(b) leaching the treated spent shale with an aqueous acid solution so as to dissolve uranium from the spent shale; and

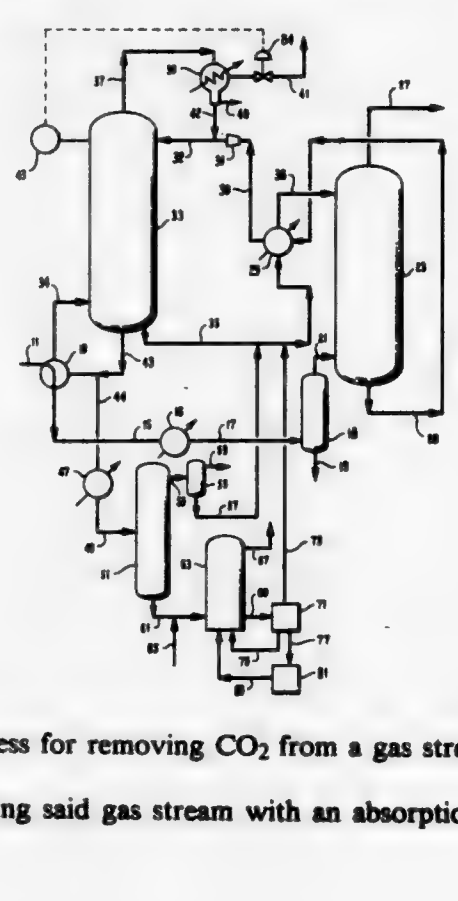
(c) recovering uranium from the leaching solution.

4,514,379

CATALYTIC PROCESS FOR CONVERTING 2-OXAZOLIDINONES TO THEIR CORRESPONDING ALKANOLAMINES

Alex E. Miller, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 28, 1983, Ser. No. 508,719
Int. Cl.³ B01D *53/34*; C07C *91/04*
U.S. Cl. 423—228 **21 Claims**



11. A process for removing CO_2 from a gas stream which comprises:

(a) contacting said gas stream with an absorption solution

comprising an alkanolamine to provide a spent absorption solution comprising absorbed CO_2,

(b) desorbing CO_2 from said spent absorption solution to provide a regenerated absorption solution comprising said alkanolamine and an oxazolidinone compound derived from said alkanol amine and CO_2,

(c) passing a slip-stream of said regenerated absorption solution to a reclaimer and therein distilling overhead said alkanolamine and recovering a bottoms comprising said oxazolidinone compound and said alkanolamine, said alkanolamine being present in said bottoms in an amount effective to eliminate the induction period of the hydrolysis of said oxazolidinone compound,

(d) passing said bottoms to a hydrolysis zone and therein heating said bottoms to hydrolyze said oxazolidinone compound to its alkanolamine precursor, and

(e) passing said hydrolyzed bottoms to a distillation zone and therein distilling overhead said alkanolamine and recovering a residue comprising said oxazolidinone compound and compounds having a boiling point higher than said oxazolidinone compound.

4,514,380

METHOD OF PREPARING TETRARHODIUM DODECACARBONYL

Douglas L. Hunter, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 9, 1984, Ser. No. 569,356
Int. Cl.³ C01G *1/04*
U.S. Cl. 423—417 **4 Claims**

1. In a process for preparing tetrarhodium dodecacarbonyl by reacting rhodium trichloride with carbon monoxide in the presence of activated copper metal and an alkali metal halide under a pressure greater than atmospheric, the improvement which comprises conducting the reaction at a pressure of from about 50 to about 500 psig (3.52 to 35.2 kg/cm^2) and at a temperature of 25°–75° C. for a time of less than about two hours.

4,514,381

Patent Not Issued For This Number

4,514,382

ORAL PRODUCT FOR CONTROLLING GINGIVITIS

Abdul Gaffar, Somerset; Calvin B. Davis, Newark, and Margita L. Vasers, Piscataway, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 442,405, Nov. 17, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 570,446
Int. Cl.³ A61K *7/22, 7/16*
U.S. Cl. 424—54 **11 Claims**

1. An oral composition, which is a mouthwash having a pH of about 5 to 7.5, for treating gingivitis and periodontitis comprising an oral vehicle and an effective amount, which is about 0.1–5% by weight, of the water insoluble antigingivitis agent, 1-imidazoyl-1-(p-chlorophenoxy)3-3-dimethyl 2-butanone, solubilized in a nonionic compound containing a hydrophobic radical and about 10–80% by weight of hydrophilic units of polyoxyethylene of sufficient length to effect solubilization, in the weight ratio of 3:1 to 25:1 nonionic; antigingivitis agent, said agent being selectively effective against the gram negative anaerobic microorganisms *Bacteriodes assaccharolyticus, Bacteriodes gingivalis* and mixtures thereof.

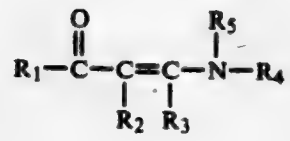
4,514,383

SUNSCREEN COMPOSITIONS CONTAINING VINYLOGOUS AMIDES

William V. Murray, Belle Mead; Charles E. Clum, Kingston, and Elvin R. Lukenbach, Somerset, all of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed May 5, 1982, Ser. No. 375,072
Int. Cl.³ A61K *7/42, 31/13*
U.S. Cl. 424—59 **7 Claims**

1. A sunscreen composition comprising an extending medium and from about 1 to 20% by weight of the total composition of at least one vinylogous amide compound of the formula



wherein

R_1 is selected from alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, substituted aryl or alkaryl of from 1 to 18 carbon atoms;

R_2 and R_3 may be the same or different and are selected from hydrogen, alkyl, alkenyl, cycloalkyl or cycloalkenyl of from 1 to 18 carbon atoms;

R_4 and R_5 may be the same or different and are selected from hydrogen, alkyl, alkenyl, aryl and substituted aryl, alkaryl, cycloalkyl or cycloalkenyl of from 1 to 18 carbon atoms.

4,514,384

HEMORRHOID TREATMENT METHOD

Damian J. Gallina, 2856 W. 33rd St., Erie, Pa. 16506

Filed Mar. 14, 1983, Ser. No. 475,342
Int. Cl.³ A61K *31/56, 31/79*
U.S. Cl. 424—80 **15 Claims**

1. A method of treating hemorrhoids by applying to hemorrhoidal tissues a composition comprising hydrocortisone and a peroxide selected from the group of urea hydrogen peroxide and benzoyl peroxide in pharmaceutically effective amounts for treatment of said hemorrhoidal tissues.

5. A method of treating hemorrhoids as set forth in claim 1 wherein said composition includes a vehicle of polyvinylpyrrolidone.

4,514,385

ANTI-ACNE COMPOSITIONS

Nalinkant C. Damani; Haresh G. Bhagat, and Ramon L. McElhaney, all of Fort Worth, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Oct. 5, 1981, Ser. No. 308,385
Int. Cl.³ A61K *31/78, 31/605*
U.S. Cl. 424—81 **6 Claims**

1. A stable single phase composition for the treatment of acne and seborrhea comprising:

an aqueous gel of between about 0.1 and about 4.0 percent by weight of a fully hydrated carboxy vinyl polymer resin in the absence of an agent that gels said resin through neutralization, between about 0.1 and about 25 percent by weight finely divided particles of salicylic acid dispersed in said gel, and between 0.5 and about 25 percent by weight finely divided particles of benzoyl peroxide dispersed in said gel.

4,514,386

CREAM PREPARATION

Yoshiya Yamahira, Osaka; Katsuhiko Shima, Kobe; Chikako Matsusaka, Osaka, all of Japan, and Tetsuo Noguchi, Lawrence, Kans., assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 366,703, Apr. 8, 1982, abandoned. This application Dec. 6, 1983, Ser. No. 558,571

Claims priority, application Japan, Apr. 14, 1981, 56-564494

Int. Cl.³ A01U *31/78*

U.S. Cl. 424—81 **10 Claims**

1. A cream preparation which consist essentially of a pharmacologically active antiinflammatory substance which is hardly soluble in water in a base composition comprising 1 to 25 parts by weight of a medium chain fatty acid triglyceride of which the fatty acid has 6 to 12 carbon atoms, 0.3 to 3 parts by weight of a carboxypolymethylene and 75 to 99 parts by weight of purified water with an adjusted pH of 4 to 10, based on the weight of the base composition.

4,514,387

CHEMOKINESINS AND CHEMOTAXINS OF LEUKOCYTES AND INFLAMED TISSUES

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften, Gottingen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,097

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110610

Int. Cl.³ A61K *39/395, 37/02;* C07G *7/00;* C12P *21/00*

U.S. Cl. 424—85 **46 Claims**

1. Leukocyte derived chemokinesins and chemotaxins, characterized by the following properties:

(a) biological activities in vivo and in vitro:

selective reversible influence on the motility of leukocytes (chemokinesis) or selective chemical attraction of leukocytes (chemotaxis) in vitro;

(b) physico-chemical properties:

soluble in aqueous media including in 15% ethanol at a pH value of at least 4.0 to 10;

insoluble in ammonium sulfate solution at 90% saturation (3.6 mol/l)

electrophoretic migration in acrylaminde matrices at a pH of 7.40 is anodic.

they adsorb reversibly in structure and biological activity on anion and cation exchangers, calcium phosphate gel and hydroxyapatite and can be subjected in native form to volume partition chromatography.

4,514,388

PROTEOLYTIC ENZYMES IN THE ZYMOGEN FORM TO TREAT SARCOMA CELLS

Nicholas G. Psaledakis, 1296 Middlesex St., Lowell, Mass. 01852

Continuation of Ser. No. 436,316, Mar. 22, 1983, abandoned. This application Jul. 27, 1983, Ser. No. 517,801

Int. Cl.³ A61K *37/54, 37/547*

U.S. Cl. 424—94 **3 Claims**

1. A method for the prophylatic treatment of sarcoma cancer tumor cells in a host body to prevent or at least reduce further development of said tumor cells comprising contacting said tumor cells with a proenzyme selected from the group consisting of trypsinogen, chymotrypsinogen and mixtures thereof in a concentration at least in excess of said proenzymes produced by the host body in the area of said tumor cells.

4,514,389

GASTRIC ANTACID AND METHOD FOR CONTROLLING PH OF GASTRIC JUICE

Shigeo Miyata, Takamatsu, Japan, assignor to Kyowa Chemical Industry Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 260,887, May 6, 1981, abandoned. This application Nov. 8, 1982, Ser. No. 439,993

Int. Cl.³ A61K *33/42*

U.S. Cl. 424—128 **9 Claims**

1. A pharmaceutical composition comprising an amount, effective as an antacid, of a phosphate ion-containing hydrotalcite of the following formula

$$Mg_xAl_2(OH)_{2x+6-n1z1-n2z2}(A_1^{n1-})_{z1}(A_2^{n2-})_{z2}.mH_2O$$

wherein A_1^{n1-} represents at least one anion having a valence of n_1 selected from the group consisting of $H_2PO_4^-$ and HPO_4^{2-}, and PO_4^{-3}, A_2^{n2-} represents at least one anion having a valence of n_2 other than the A_1^{n1-}, selected from the group consisting of CO_3^{2-}, tartrate ion $(CHOHCOO)_2^{2-}$, salicylate ion $C_6H_5(OH)COO^-$, citrate ion $C_3H_4OH(COO)_3^{3-}$, glycine ion $NH_2CH_2COO^-$, glutamate ion $C_5H_7NO_4^{2-}$, cystine ion $C_3H_6NO_2S^-$, lactate ion $CH_3CHOHCOO^-$ and malate ion $CHOHCH_2(COO)_2^{2-}$, and x, z_1, z_2, and m are positive numbers satisfying the following expressions

$$2<x<40,$$

$$0.05\leqq z_1\leqq 2,$$

$$0.1\leqq z_2\leqq 2$$

$$0<m<40,$$

$$0.5\leqq z_1+z_2\leqq 2,$$

and a pharmaceutically acceptable diluent or carrier.

4,514,390

MELAMINYLTHIOARSENITES

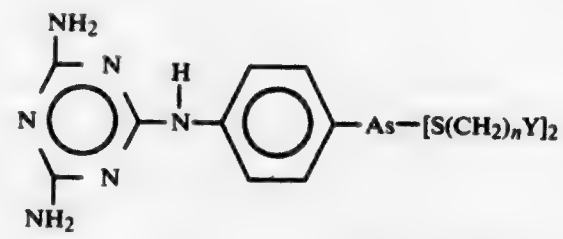
Ernst A. H. Friedheim, New York, N.Y., assignor to The Rockefeller University, New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,562

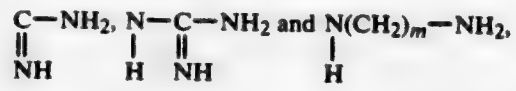
Int. Cl.³ C07D *251/70;* C07F *9/80, 9/65;* A61K *31/53*

U.S. Cl. 514—184 **18 Claims**

1. A compound represented by the formula

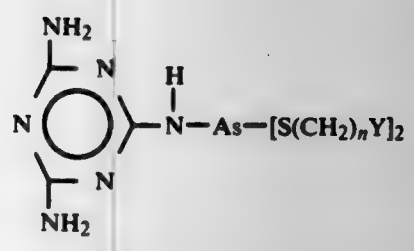


wherein Y is selected from the group consisting of NH_2,

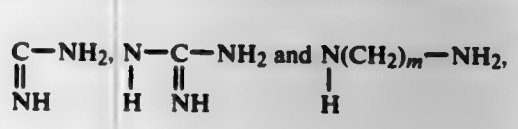


and n and m are both integers from 2 to 12 with the proviso that the value of n plus m is no more than 12, and the pharmaceutically acceptable acid addition salts thereof.

7. A composition useful for treating infections caused by trypanosomes or filaria comprising a pharmaceutically acceptable carrier and, as the principal active ingredient in an amount which is effective for treating such infections, a compound of the formula:



wherein Y is selected from the group consisting of NH_2,



and n and m are both integers from 2 to 12 with the proviso that the value of n plus m is no more than 12, and the pharmaceutically acceptable acid addition salts thereof.

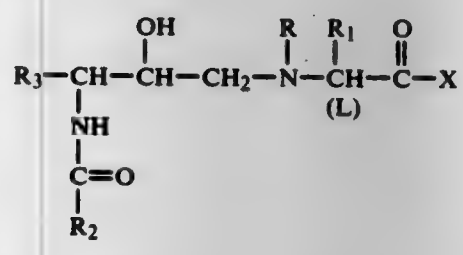
4,514,391

HYDROXY SUBSTITUTED PEPTIDE COMPOUNDS

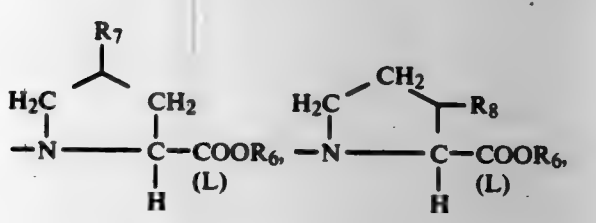
Eric M. Gordon, Pennington; Jollie D. Godfrey, Jr., Lawrenceville, and Sesha I. Natarajan, Neshanic Station, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

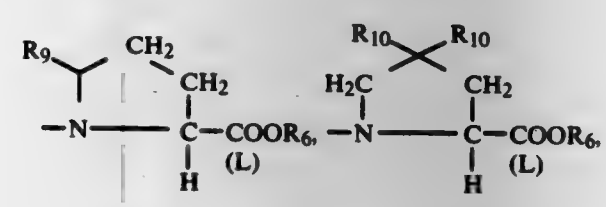
Filed Jul. 21, 1983, Ser. No. 515,729
Int. Cl.[3] A61K *37/00*; C07C *103/52*
U.S. Cl. 514—2 24 Claims

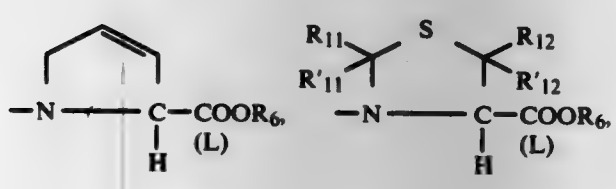
1. A compound of the formula

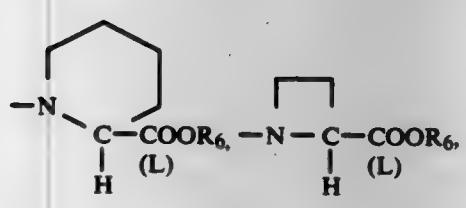


or a pharmaceutically acceptable salt thereof wherein X is

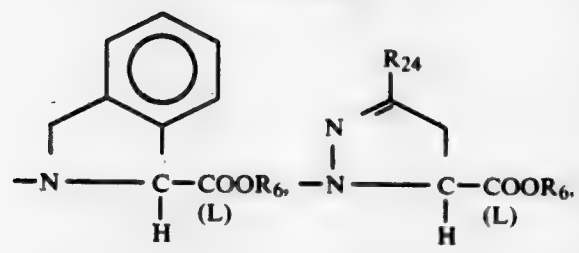


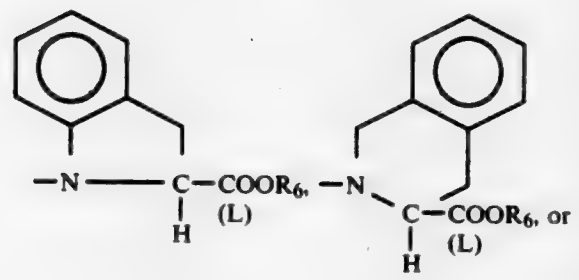


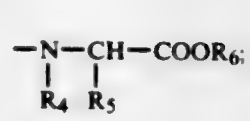




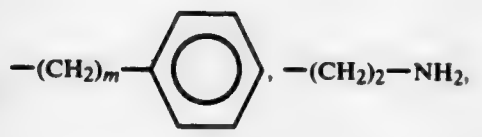
-continued







R is hydrogen, lower alkyl, cycloalkyl,



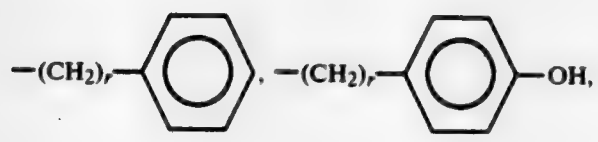
$-(CH_2)_3-NH_2$, $-(CH_2)_4-NH_2$,

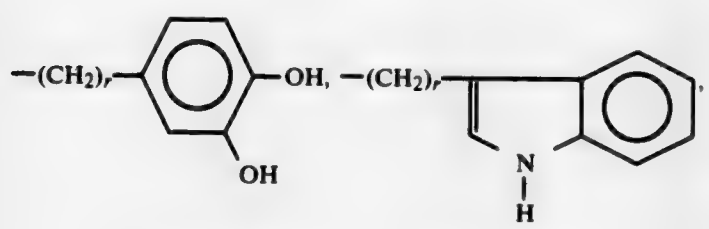
$-(CH_2)_2-OH$, $-(CH_2)_3-OH$,

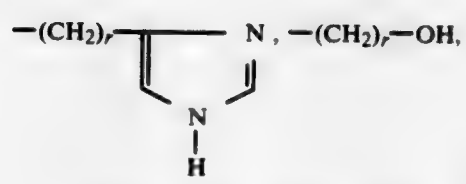
$-(CH_2)_4-OH$, $-(CH_2)_2-SH$,

$-(CH_2)_3-SH$, or $-(CH_2)_4-SH$;

R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,

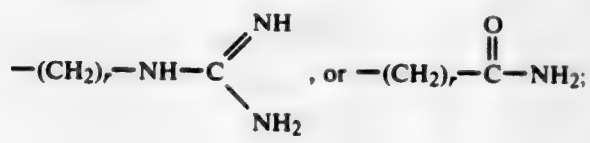




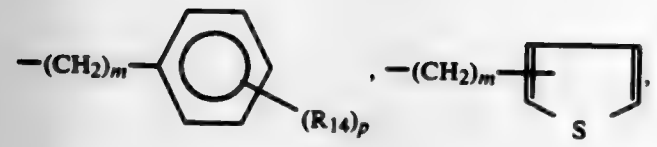
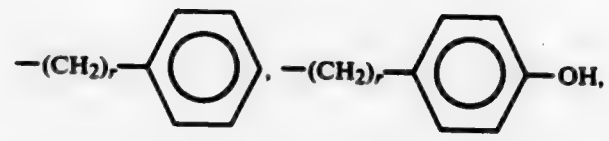
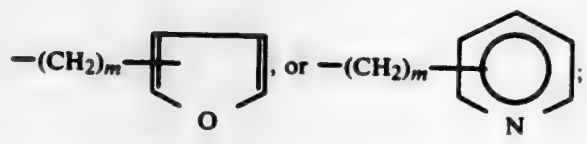
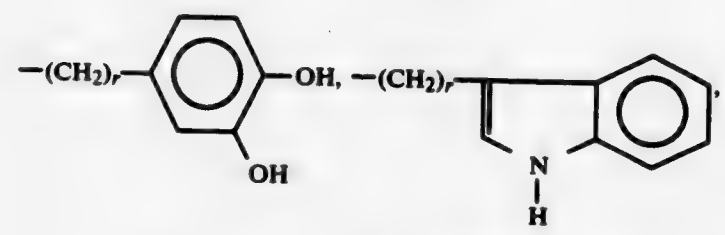


$-(CH_2)_r-NH_2$, $-(CH_2)_r-SH$,

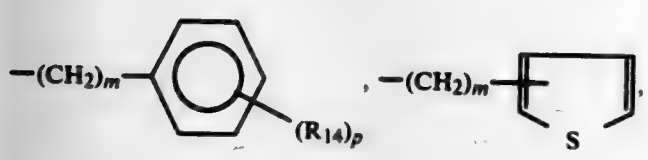
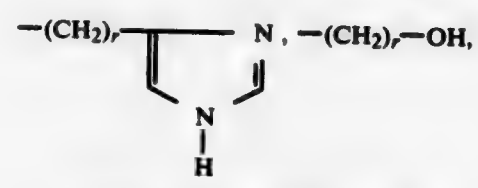
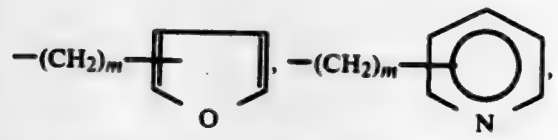
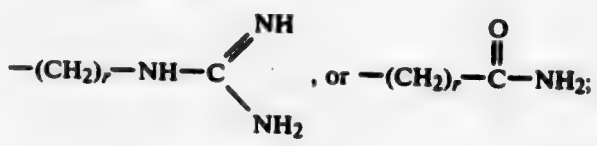
$-(CH_2)_r-S-$lower alkyl, $-(CH_2)_2-S-(CH_2)_2-NH_2$,



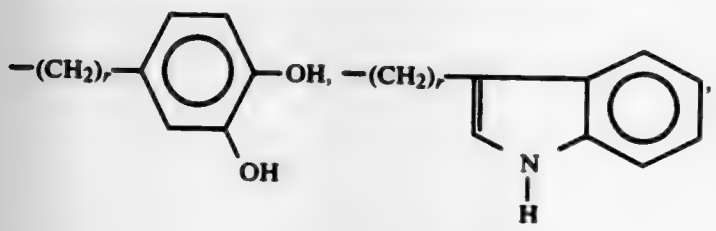
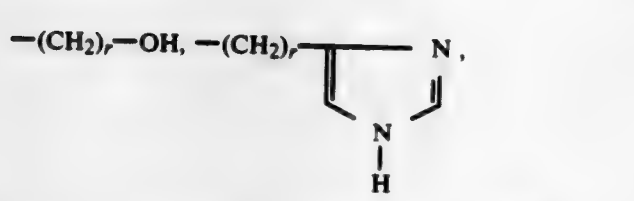
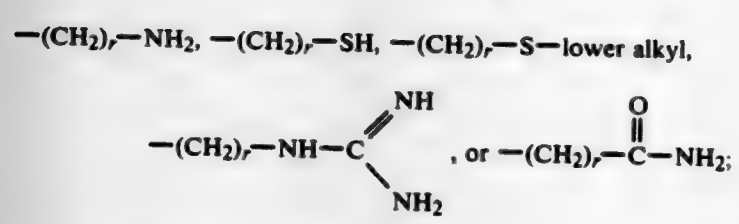
R_2 is

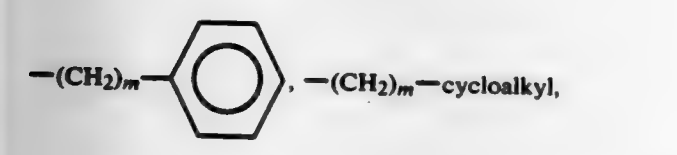
R_3 is hydrogen, lower alkyl,

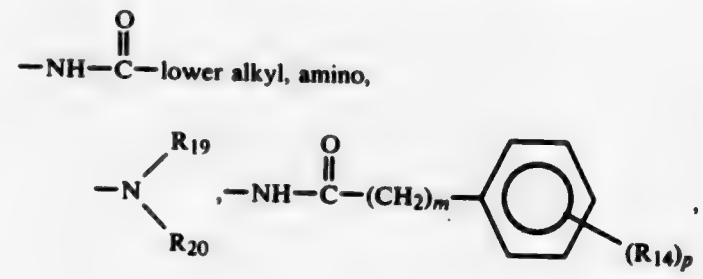
halo substituted lower alkyl, $-(CH_2)_m-$cycloalkyl,

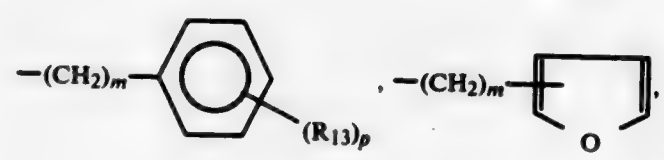
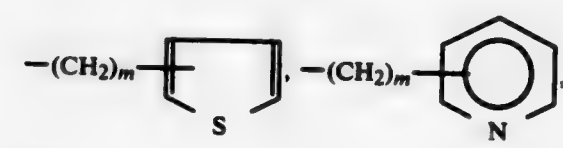




R_4 is hydrogen, lower alkyl,

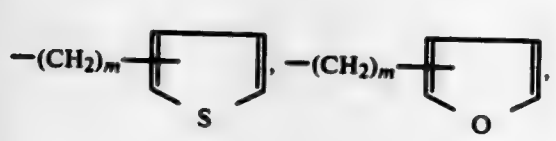
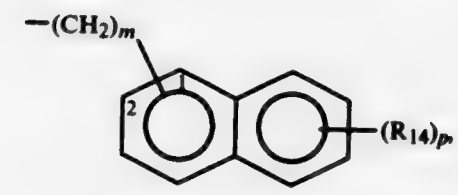
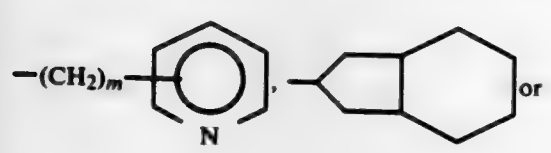
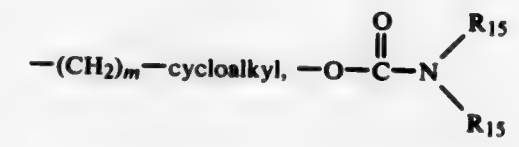
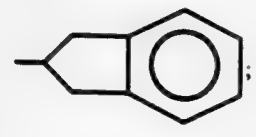
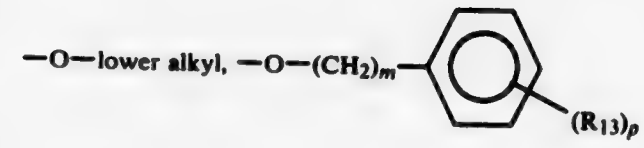


r is an integer from 1 to 4;
R_7 is hydrogen, lower alkyl, halogen, hydroxy,



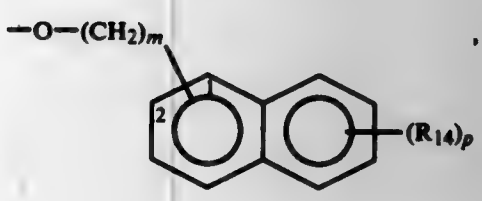



a 1- or 2-naphthyl of the formula

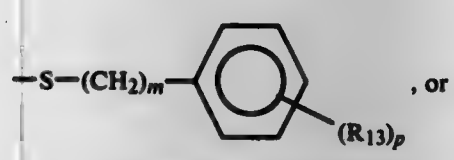







R_5 is hydrogen, lower alkyl,

a 1- or 2-naphthyloxy of the formula

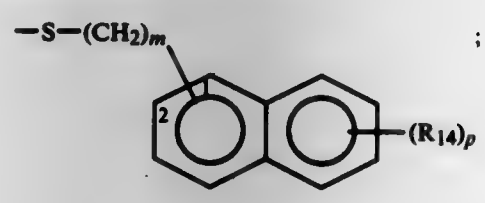


, —S—lower alkyl,



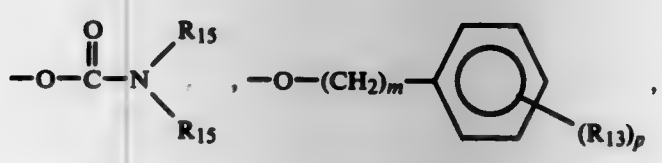
, or

a 1- or 2-naphthylthio of the formula

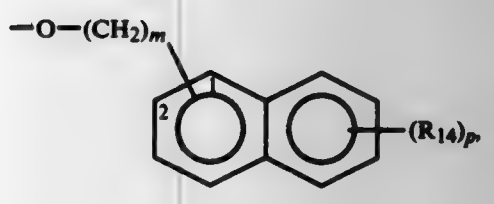


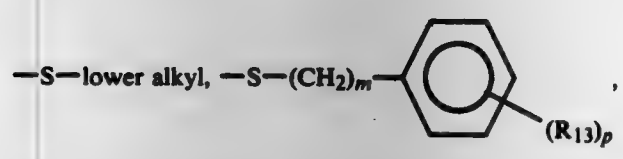
;

R_8 is halogen,

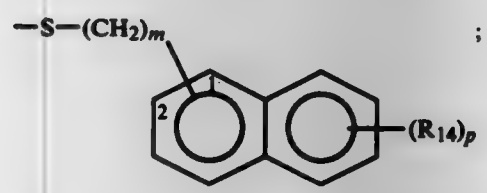


—O-lower alkyl, a 1- or 2-naphthyloxy of the formula



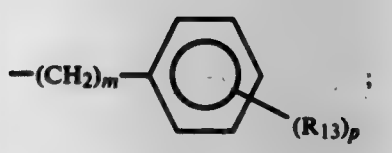


or a 1- or 2-naphthylthio of the formula



;

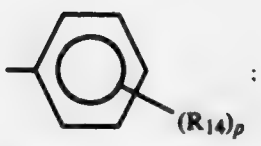
R_9 is keto or



;

R_{10} is halogen or —Y-R_{16};

R_{11}, R_{11}', R_{12} and R_{12}' are independently selected from hydrogen and lower alkyl or R_{11}', R_{12} and R_{12}' are hydrogen and R_{11} is



:

R_{13} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;

R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

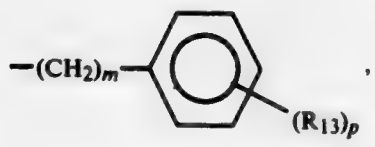
m is zero, one, two, three, or four;

p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;

R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;

Y is oxygen or sulfur;

R_{16} is lower alkyl of 1 to 4 carbons,



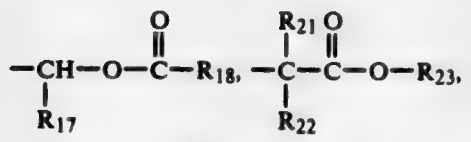
,

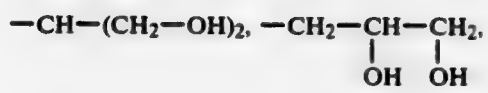
or the R_{16} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;

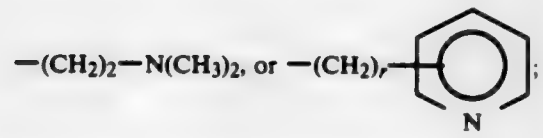
R_{19} is lower alkyl, benzyl, or phenethyl;

R_{20} is hydrogen, lower alkyl, benzyl or phenethyl;

R_6 is hydrogen, lower alkyl, benzyl, benzhydryl,



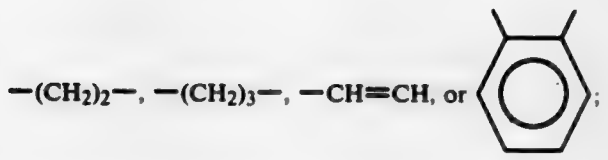




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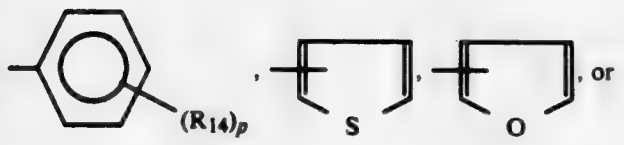
R_{17} is hydrogen, lower alky!, cycloalkyl or phenyl;

R_{18} is hydrogen, lower alkyl, lower alkoxy, phenyl, or R_{17} and R_{18} taken together are

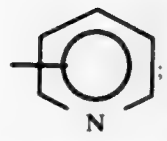


;

R_{24} is hydrogen, lower alkyl,



-continued



R_{21} and R_{22} are independently selected from the group consisting of hydrogen and lower alkyl; and
R_{23} is lower alkyl.

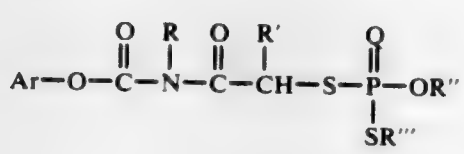
4,514,392

PESTICIDAL ARYL N-(ALKYLTHIO-PHOSPHOROTHIO)ACYL-N-ALKYL-CARBAMATES

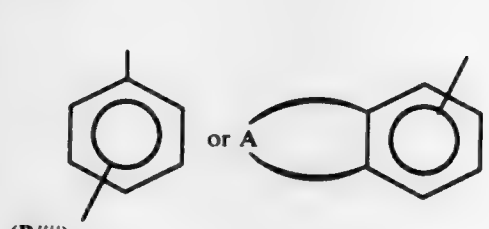
Themistocles D. J. D'Silva, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1983, Ser. No. 509,707
Int. Cl.³ A01N *57/12, 57/16;* C07F *9/165*
U.S. Cl. 514—148 **18 Claims**

1. Compounds having the structure:



wherein:
Q is oxygen or sulfur;
R is C_{1-4} alkyl;
R′ is hydrogen or C_{1-4} alkyl;
R″ is C_{1-6} alkyl;
R‴ is C_3–C_6 alkyl;
Ar is:



n is an integer having a value of zero to five;
each R⁗ is independently alkyl, halogen, alkoxy, haloalkoxy, aloxy-alkoxy, alkoxy-haloalkoxy, alkylthio, alkenyloxy, alkynyloxy, dialkylamino, alkylthioalkyl, 2-(1,3-dithiolanyl), 2-(1,3-oxathiolanyl) or 2-(1,3-dioxalanyl) substituents in any combination provided that no individual R⁗ may contain more than six aliphatic carbon atoms, and
A is a three or four membered, saturated or unsaturated, divalent chain composed of carbon atoms and not more than two oxygen or sulfur atoms wherein the carbon atoms of said chain may be substituted with one or more alkyl substituents containing no more than four carbon atoms each.

2. A method for controlling insects and mites comprised of subjecting them to a pesticidally effective amount of the compound of claim 1.

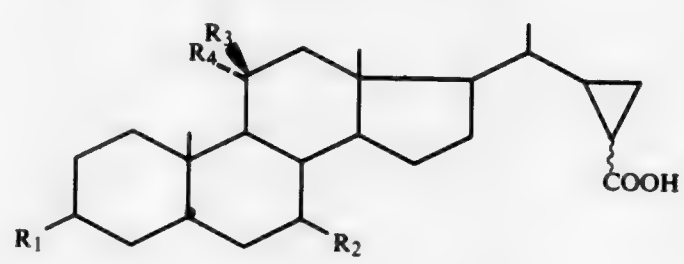
4,514,393

NEW DERIVATIVES OF BILIARY ACIDS, PROCESS FOR THE PRODUCTION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Virginio Castagnola, Milan; Giuliano E. Frigerio, Bresso-Milan, and Roberto Pellicciari, Perugia, all of Italy, assignors to Lehner AG, Muttenz, Switzerland

Filed Jul. 22, 1983, Ser. No. 516,251
Claims priority, application Italy, Jul. 29, 1982, 22632 A/82; Jul. 1, 1983, 21909 A/83
Int. Cl.³ A01N *45/00*
U.S. Cl. 260—397.1 **14 Claims**

1. A bilary acid compound of formula I



(I)

wherein R_1 and R_2 are an hydroxy group being α or β oriented; R_3 is hydrogen and R_4 is an hydroxy group or vice versa, or R_3 and R_4, taken together, form a keto group, and pharmaceutically acceptable salts thereof with alkaline or alkali-earth metals, or with organic bases and stereoisomers thereof.

2. A compound according to claim 1, which is 3α,7α,12α-trihydroxy-5β-cholan-22,23-methanate-24-oic acid (22,23-methanate-cholic acid), (Ia).

8. Pharmaceutical composition characterized by containing as active principle the compound according to claim 2.

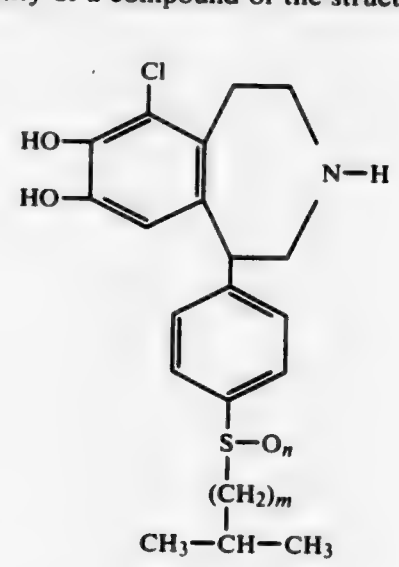
4,514,394

ANTI-HYPERTENSIVE USE OF 1-(4′-BRANCHED ALKYLSULFONYLPHENYL)-6-CHLORO-7,8-DIHYDROXY-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

Pamela A. Chambers, Wayne, and Joseph Weinstock, Phoenixville, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed May 25, 1983, Ser. No. 498,351
Int. Cl.³ A61K *31/55*
U.S. Cl. 514—213 **7 Claims**

1. The method of inducing anti-hypertensive activity in a subject in need thereof comprising administering orally or parenterally to said subject an anti-hypertensively effective, nontoxic quantity of a compound of the structural formula:



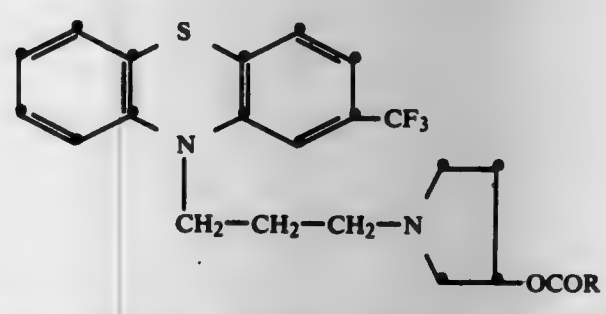
in which:
m is 0 or 1, and
n is 0 or 2, a pharmaceutically acceptable, acid addition salt or a di-C_{2-6}-alkanoyl ester derivative thereof.

4,514,395
PHENOTHIAZINE DERIVATIVES AND ANTI-PSYCHOTIC DRUGS CONTAINING THE SAME

Noriyasu Hirose, Tokyo; Shizuo Kuriyama, Saitama; Kiyomi Yamatsu, Kanagawa; Akifumi Kitahara, and Takeshi Uzuo, both of Saitama, all of Japan, assignors to Eisai Ci., Ltd., Tokyo, Japan

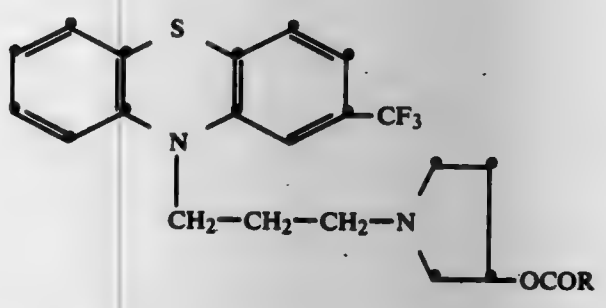
Filed Feb. 20, 1980, Ser. No. 123,008
Claims priority, application Japan, Feb. 22, 1979, 54-19052
Int. Cl.[3] A61K *31/54;* C07D *417/06*
U.S. Cl. 514—224 11 Claims

1. Phenothiazine derivatives having the general formula:



wherein R represents a straight or branched alkyl, alkenyl or aralkyl group having 5–15 carbon atoms and their pharmaceutically acceptable acid addition salts.

9. Anti-psychotic drugs which contains an anti-psychotically effective amount of a phenothiazine having the general formula:



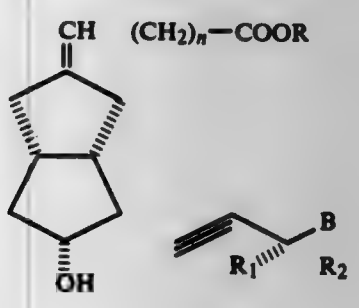
wherein R represents a straight or branched alkyl, alkenyl or aralkyl group having 5–15 carbon atoms or their pharmaceutically acceptable acid addition salts together with pharmaceutically acceptable excipients.

4,514,396
15-CYCLOALIPHATIC DERIVATIVES OF 13,14-DIDEHYDRO-CARBOPROSTACYCLINS AND PROCESS FOR THEIR PREPARATION

Nicola Mongelli, and Carmelo Gandolfi, both of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Sep. 28, 1983, Ser. No. 536,460
Claims priority, application United Kingdom, Oct. 1, 1982, 8228143
Int. Cl.[3] C07C *177/00;* A61K *31/557*
U.S. Cl. 514—222 14 Claims

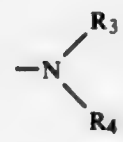
1. An optionally active or racemic compound of the following formula (I)



(I)

wherein

R is hydrogen or a C_1–C_6 alkyl group optionally substituted by a group



wherein each of R_3 and R_4 is, independently, hydrogen or C_{1-C6} alkyl, or R_3 and R_4, taken together with the nitrogen atom to which they are linked, form a pentatomic or hexatomic heteromonocyclic ring optionally containing a further heteroatom chosen from O and S;

n is an integer of 1 to 5

one of R_1 and R_2 is hydrogen or C_1**14** C_6 alkyl and the other is hydroxy; and

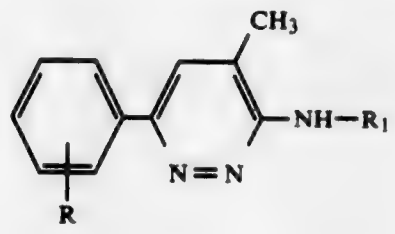
B represents: (a) a C_4–C_7 monocycloaliphatic group either unsubstituted or substituted by one or more substituents chosen from C_1–C_6 alkyl, C_2–C_6 alkylidene, (b) norbornyl; or (c) adamantyl, and the pharmaceutically or veterinarily acceptable salts thereof.

4,514,397
DERIVATIVES OF 4-METHYL 6-PHENYL PYRIDAZINE ACTIVE ON THE CENTRAL NERVOUS SYSTEM

Camille G. Wermuth, Strasbourg; Kathleen Bizière, Clapiers, and Horace Davi, St. Gely du Fesc, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 405,169, Aug. 4, 1982,. This application Oct. 19, 1983, Ser. No. 543,173
Claims priority, application France, Aug. 10, 1981, 81 15435
Int. Cl.[3] C07D *413/12, 237/14, 237/20;* A61K *31/50*
U.S. Cl. 514—247 6 Claims

1. Compounds of 4-methyl 6-phenyl pyridazine of formula:

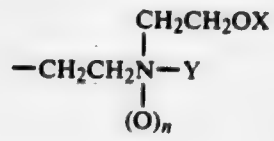


(I)

in which:

R is H or OH

R_1 represents the group



where n=0 or 1

and X and Y taken together form an ethylene or oxoethylene group, with the following conditions:

X+Y represents an ethylene group only when R represents OH and

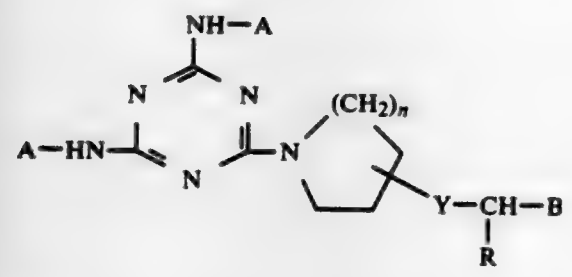
n can be equal to 1 only if X+Y represents an ethylene group and the pharmaceutically acceptable acid additon salts thereof.

4,514,398
DISUBSTITUTED POLYMETHYLENE IMINES

Gilbert Regnier, Chatenay-Malabry; Alain Dhainaut, Chatou; Michel Laubie, Vaucresson, and Jacques Duhault, Croissy s/Seine, all of France, assignors to ADIR, Neuilly-sur-Seine, France

Filed Mar. 25, 1983, Ser. No. 478,715
Claims priority, application France, Mar. 30, 1982, 82 05373
Int. Cl.[3] C07D *401/04, 403/04;* A61K *31/53*
U.S. Cl. 514—245 8 Claims

1. A compound selected from the group consisting of: disubstituted polymethylene imines of the formula I:



(I)

in which:

A is selected from the group consisting of saturated hydrocarbon radicals containing from 3 to 5 carbon atoms inclusive in straight and branched chain, the corresponding unsaturated hydrocarbon radicals containing one and two double bonds, and the corresponding mono- and di-hydroxy (saturated and unsaturated hydrocarbon radicals,

n is selected from the group consisting of zero and the integers 1 and 2;

Y is selected from the group consisting of oxygen and a radical of the formula: N—R_1 in which R_1 is selected from the group consisting of hydrogen, alkyl and hydroxyalkyl each having from 1 to 5 carbon atoms inclusive, cycloalkyl and cycloalkenyl each having from 3 to 7 carbon atoms inclusive, and acetyl;

R is selected from the group consisting of: hydrogen, alkyl having from 1 to 5 carbon atoms inclusive, cycloalkyl having from 5 to 7 carbon atoms inclusive, unsubstituted phenyl and phenyl mono- and poly-substituted by a substituent selected from the group consisting of fluorine and chlorine; and

B is selected from the group consisting of:

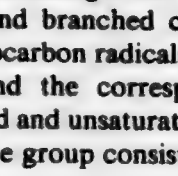
hydrogen,

alkyl having from 1 to 5 carbon atoms inclusive,

alkenyl having from 2 to 5 carbon atoms inclusive,

phenyl, naphthyl, benzofuranyl, benzothienyl, benzodioxolyl, benzodioxanyl, benzodioxinyl, Δ_3-chromenyl, thiochromenyl and chromanyl, and all these radicals mono- and poly-substituted by a substituent selected from the group consisting of fluorine and chlorine and alkyl and alkoxy each having from 1 to 5 carbon atoms inclusive, and

a radical of the formula:



in which R_2, R_3 and R_4 which are the same or different, are each selected from the group consisting of hydrogen, unsubstituted phenyl and phenyl mono- and poly-substituted by a substituent selected from the group consisting of chlorine and fluorine; and

physiologically tolerable acid addition salts thereof.

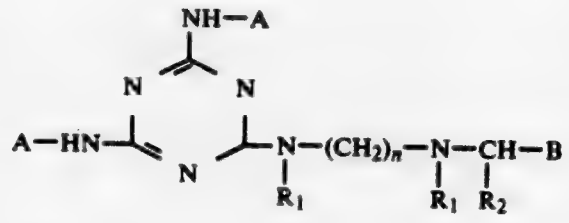
7. A pharmaceutical composition, suitable for use in the treatment of hypoxia, containing as active ingredient a compound of claim 1, in an amount effective for such purpose, together with a suitable pharmaceutical carrier.

4,514,399
N-N'SUBSTITUTED POLYMETHYLENE DIAMINES

Gilbert Regnier, Chatenay Malabry; Alain Dhainaut, Chatou; Michel Laubie, Vaucresson, and Jacques Duhault, Croissy-Sur-Seine, all of France, assignors to Adir, Neuilly-sur-Seine, France

Filed Apr. 18, 1983, Ser. No. 486,013
Claims priority, application France, Apr. 21, 1982, 82 06813
Int. Cl.[3] C07D *251/70;* A61K *31/53*
U.S. Cl. 514—241 6 Claims

5. A pharmaceutical composition, suitable for use in the treatment of hypoxia, containing as active ingredient a compound selected from the group consisting of: N,N'-substituted polymethylene diamines of the formula I:



(I)

in which:

A is selected from the group consisting of: saturated hydrocarbon radicals containing 3 to 5 carbon atoms inclusive, in straight and branched chain, the corresponding unsaturated hydrocarbon radicals containing one and two double bonds, and the corresponding mono- di-hydroxy (saturated and unsaturated) hydrocarbon radicals;

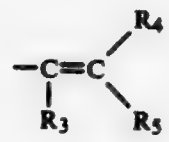
n is selected from the group consisting of the integers 2 to 6 inclusive;

R_1 is selected from the group consisting of: hydrogen and alkyl having 1 to 5 carbon atoms inclusive;

R_2 is selected from the group consisting of: hydrogen, alkyl having 1 to 5 carbon atoms inclusive, cycloalkyl having 5 to 7 carbon atoms inclusive, unsubstituted phenyl and phenyl mono- and poly-substituted by a substituent selected from the group consisting of fluorine and chlorine; and

B is selected from the group consisting of: phenyl, naphthyl, benzofuranyl, benzothienyl, benzodioxolyl, benzodioxanyl, benzodioxinyl, 3-chromenyl, thiochromenyl and chromanyl and each of these radicals mono- and poly-substituted by a substituent selected from the group consisting of fluorine and chlorine, alkyl and alkoxy each having 1 to 5 carbon atoms inclusive, and methylene dioxy; and

a radical of the formula:



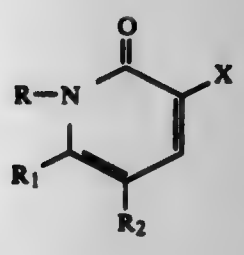
in which: R_3, R_4 and R_5, which may be the same or different, are each selected from the group consisting of hydrogen, unsubstituted phenyl and phenyl mono- and poly-substituted by a substituent selected from the group consisting of chlorine and fluorine; and physiologically tolerable acid addition salts thereof, in an amount effective for such purpose, together with a suitable pharmaceutical carrier.

4,514,400
CARDIOTONIC 5-HETEROARYL-PYRIDONE

Henry F. Campbell, Lansdale, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Filed Oct. 26, 1981, Ser. No. 314,692
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.[3] A61K *31/495, 31/505;* C07D *401/00*
U.S. Cl. 514—252 11 Claims

1. A compound having the formula:



wherein X is selected from the group consisting of hydrogen, alkyl, cyano, halogen, trifluoromethyl, alkoxy, hydroxy, hydroxyloweralkyl, amino, alkylamino, dialkylamino, acylamino, ureido, guanidino, carbamylguanidino, cyanoguanidine or thioureido; R is selected from the group consisting of hydrogen, loweralkyl or hydroxyloweralkyl; R_1 is selected from the group consisting of hydrogen or loweralkyl; R_2 is a nitrogen containing heterocyclic ring selected from the group consisting of pyrimidinyl, pyridazinyl, pyrazinyl, or a pyrimidinyl, pyridazinyl or pyrazinyl having one or more substituents selected from the group consisting of loweralkyl, hydroxyloweralkyl, hydroxyl, alkoxy, alkanoyl, amino, alkylamino or dialkylamino, and the pharmaceutically acceptable salts thereof.

4,514,401

CARBOSTYRIL DERIVATIVES

Michiaki Tominaga; Yung-hsiung Yang; Hidenori Ogawa, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

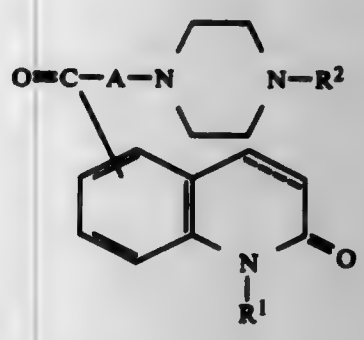
Continuation of Ser. No. 265,501, May 20, 1981, abandoned. This application Aug. 11, 1982, Ser. No. 407,099

Claims priority, application Japan, Sep. 1, 1981, 56-137984; Dec. 25, 1981, 56-210368

Int. Cl.³ C07D *215/00*; A61K *31/47*

U.S. Cl. 514—253 **17 Claims**

1. A carbostyril derivative or a pharmaceutically acceptable salt thereof, said derivative being represented by the formula (1),



(1)

wherein R^1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a phenyl-lower alkyl group; R^2 is a lower alkanoyl group, a lower alkoxycarbonyl group, a furoyl group, a lower alkane-sulfonyl group, a benzoyl group (which benzoyl group may have (a) 1 to 3 substituents on the phenyl ring selected from the group consisting of a lower alkyl group, a lower alkoxy group, a halogen atom, and an amino group, (b) 1 substituent on the phenyl ring selected from the group consisting of a nitro group and a cyano group or (c) a lower alkylenedioxy group as the substituent on the phenyl ring), a phenyl-lower alkenylcarbonyl group (which may have 1 to 3 lower alkoxy groups as the substituents on the phenyl ring), a phenoxy-lower alkyl group, or a phenylsulfonyl group (which may have a lower alkyl group as the substituent on the phenyl ring); A is a lower alkylene group; the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond; and the substituted position of the side-chain of the formula,



may be any one of the 5-, 6-, 7- or 8-positions in the carbostyril skeleton.

4,514,402

MIXTURE OF FUNGICIDAL AGENTS

Wilhelm Brandes, Leichlingen; Helmut Kaspers, Leverkusen; Paul Reinecke, Leverkusen; Hans Scheinpflug, Leverkusen, and Wolfgang Krämer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

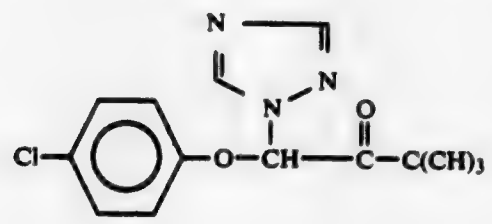
Filed Feb. 22, 1983, Ser. No. 468,729

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208142

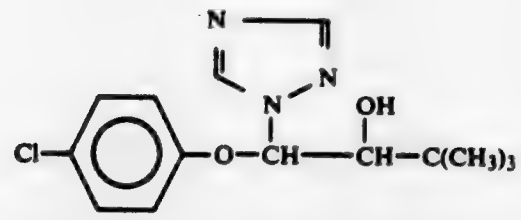
Int. Cl.³ A01N *43/48, 43/64*

U.S. Cl. 514—250 **4 Claims**

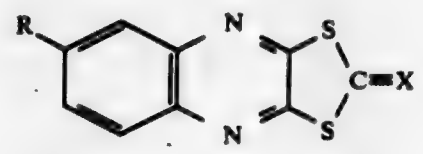
1. A fungicidal composition comprising a fungicidally effective amount of compound I selected from the group consisting of



and



and an approximately equal weight of compound II selected from the group consisting of a quinoxaline derivative of the formula



wherein for compound (IIa), R is $-CH_3$ and X is O and wherein for compound (IIb), R is H and X is S.

4,514,403

HYDROURACIL COMPOUNDS

Chiaki Tashiro, Fukuoka; Takeshi Kawakita, Oita; Ichiro Horii, Fukuoka, and Koretake Anami, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Japan

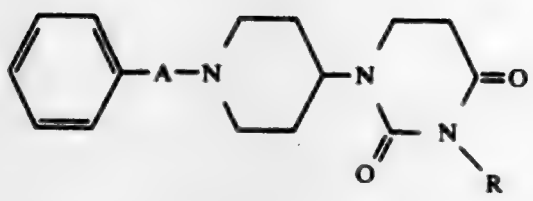
Filed Sep. 17, 1981, Ser. No. 303,269

Claims priority, application Japan, Sep. 17, 1980, 55/129816

Int. Cl.³ A61K *31/505*; C07D *401/04*

U.S. Cl. 514—274 **6 Claims**

1. A hydrouracil compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein A represents —CH=CH—CH_2— or —CH_2CH_2—, and R represents hydrogen or methyl.

6. A pharmaceutical composition comprising the compound of claim 1 in combination with a pharmaceutically acceptable inert carrier, said compound being present in a therapeutically effective amount.

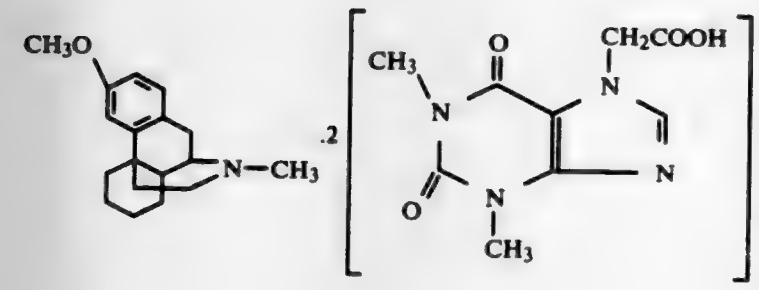
4,514,404

PROCESS FOR OBTAINING COMPLEX OF 3-METHOXY-N-METHYLMORPHINAN WITH 7-THEOPHYLLINEACETIC ACID (1:2)

Dagmar V. Veit, Barcelona, Spain, assignor to Prodes, S.A., Barcelona, Spain

Filed Nov. 17, 1983, Ser. No. 552,677
Claims priority, application Spain, Nov. 19, 1982, 517.500
Int. Cl.³ C07D *473/04*; A61K *31/52*
U.S. Cl. 514—265 5 Claims

3. A complex of 3-methoxy-N-methylmorphinan with 7-theophyllineacetic acid having the formula



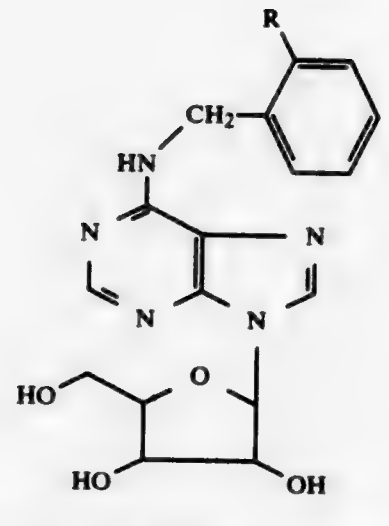
4,514,405

USE OF ADENOSINE DERIVATIVES AS ANTICONVULSANTS

Klaus Irmscher, Darmstadt, and Jürgen Uhl, Seeheim, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 303,295, Sep. 17, 1981, abandoned. This application Jan. 23, 1984, Ser. No. 573,178
Int. Cl.³ A61K *31/52, 31/70*
U.S. Cl. 514—46 14 Claims

1. A method of achieving an anticonvulsant effect in a patient suffering from an indication which can be treated by achieving such an effect, which comprises administering to such a patient an amount of a compound of the formula



I

wherein R is H, F, Cl, Br or CF_3 or a physiologically acceptable acid addition salt thereof, effective to achieve an anticonvulsant effect in the patient which relieves the indication.

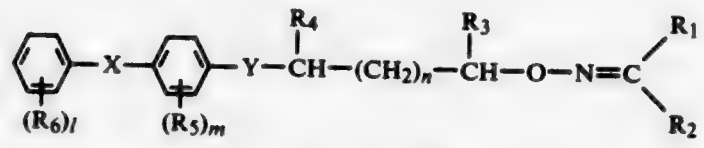
4,514,406

OXIME ETHERS AND THEIR USE

Tadashi Ohsumi, Funabashi; Makoto Hatakoshi, Minoo, and Hiroshi Kisida, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 16, 1983, Ser. No. 466,905
Claims priority, application Japan, Mar. 4, 1982, 57-34553
Int. Cl.³ A01N *43/40, 33/24*; C07C *131/00*
U.S. Cl. 514—352 24 Claims

1. A compound of the formula:



wherein R_1 and R_2 are, same or different, each a hydrogen atom, a C_1–C_3 alkyl group optionally substituted with halogen, an alkoxyalkyl or alkylthioalkyl group of the formula: R_7—Z—$(CH_2)_q$—, a C_2–C_3 alkenyl group, a C_2–C_4 alkynyl group, a C_1–C_2 alkoxy group, a C_1–C_2 alkylthio group, a phenyl group, a pyridyl group, a furyl group or a thienyl group, or R_1 and R_2 may be combined together to form a saturated or unsaturated 5- or 6-membered ring optionally having not more than 2 oxygen or sulfur atoms within the ring, R_3 and R_4 are, same or different, each a hydrogen atom or a methyl group, R_5 is a methyl group or a halogen atom, R_6 is a C_1–C_4 alkyl group, a methoxy group, a halogen atom, a trifluoromethyl group or a nitro group, R_7 is a methyl group or an ethyl group, X is an oxygen atom, a sulfur atom or a methylene group, Y and Z are each an oxygen atom or a sulfur atom, l is an integer of 0 to 5, m is an integer of 0 to 4, n is an integer of 0 to 2 and q is an integer of 1 or 2.

12. A composition for controlling insects which comprises as an active ingredient an insecticidally effective amount of the compound according to claim 1 and an inert carrier or diluent.

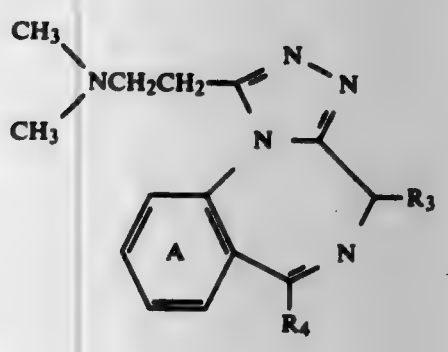
4,514,407

1-ETHANAMINE-TRIAZOLO-BENZODIAZEPINES AS DIURETICS

Jackson B. Hester, Jr., Comstock Township, Kalamazoo County, and James H. Ludens, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

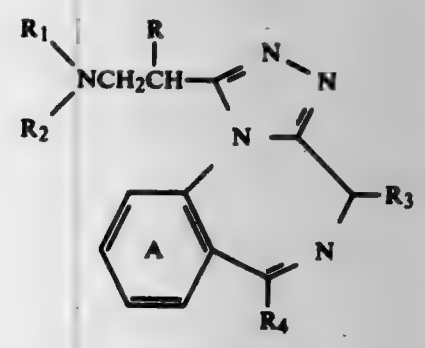
Filed Mar. 17, 1983, Ser. No. 476,181
Int. Cl.³ A61K *31/55*; C07D *487/04*
U.S. Cl. 514—220 16 Claims

1. A process for inducing diuresis in a warm-blooded animal patient which comprises administering to such patient a safe, non-toxic, effective amount of a compound of the Formula I



I

wherein
R_3 is hydrogen or C_1 to C_3-alkyl;
R_4 is phenyl or 2-, 3-, or 4-pyridinyl;
ring A is substituted by one or more fluorine, bromine, iodine, C_1 to C_3-alkyl, hydroxy, C_1 to C_3-alkyloxy, C_1 to C_3-alkylthio, amino, C_1 to C_3-alkylamino, di(C_1 to C_3-alkyl)amino, trifluoromethyl, or nitro;
or of a compound of the Formula II



II

wherein
R is phenyl substituted by zero to two methoxy or ortho-chlorine groups;
R_1 and R_2 are independently hydrogen or C_1 to C_3-alkyl;
R_3 is hydrogen or C_1 to C_3-alkyl;
R_4 is phenyl or 2-, 3-, or 4-pyridinyl;
ring A is substituted by one or more fluorine, chlorine, bromine, iodine, C_1 to C_3-alkyl, hydroxy, C_1 to C_3-alkyloxy, C_1 to C_3-alkylthio, amino, C_1 to C_3-alkylamino, di(C_1 to C_3-alkyl)amino, trifluoromethyl, or nitro;
or a pharmaceutically acceptable salt thereof.

16. A method for treating hypertension in a warm-blooded animal patient which comprises administering to said patient an amount effective to lower blood pressure of a compound of Formula I or II of claim 1.

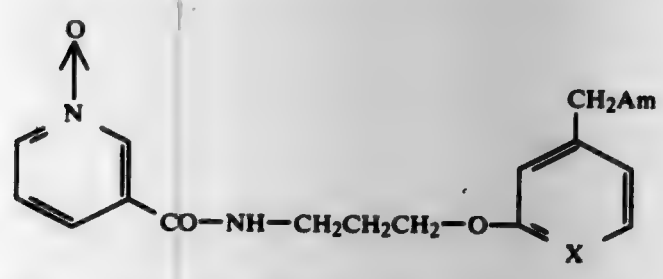
4,514,408

N-SUBSTITUTED NICOTINAMIDE 1-OXIDE AS HISTAMINE H_2 RECEPTOR BLOCKERS

Dino Nisato, Pavia, and Sergio Boveri, Tortona, both of Italy, assignors to Sanofi, Paris, France

Filed Aug. 12, 1983, Ser. No. 522,749
Claims priority, application France, Aug. 13, 1982, 82 14128; Apr. 22, 1983, 83 06681
Int. Cl.³ A61K *31/455*; C07D *401/12*
U.S. Cl. 514—212 **7 Claims**

1. A N-substituted nicotinamide 1-oxide of formula



wherein X represents a nitrogen atom or a CH group; Am represents an amino group substituted by lower alkyl, lower alkyl bearing a hydroxy or phenyl group or a cycloalkyl group of from 3 to 6 carbon atoms, or by a radical selected from the group consisting of lower alkenyl, lower alkynyl, phenyl and cycloalkyl of from 3 to 6 carbon atoms; an amino group substituted by two identical or different lower alkenyl or lower alkynyl groups; an amino group substituted by two identical or different (hydroxy)lower alkyl or (lower alkoxy)lower alkyl groups; a lower dialkylamino group; a lower dialkylamino group substituted by a phenyl, cycloalkyl of from 3 to 6 carbon atoms, methoxy or hydroxy group; a pyrrolidino group; a morpholino group; a thiomorpholino group; a hexamethyleneimino group; a piperidino group; a piperidino group substituted by a methyl, hydroxy or hydroxymethyl group or by two methyl groups; a piperazino group substituted in the 4-position by a lower alkyl group or a (hydroxy)lower alkyl group; a piperazino group substituted in the 4-position by a lower alkyl group or a (hydroxy)lower alkyl group and also bearing a methyl group in the 3- and/or 5-position; or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition in dosage unit form having histamine H_2-blocking action comprising from 10 to 1000 mg of a compound as claimed in one of claims 1 to 5 in admixture with a pharmaceutical carrier.

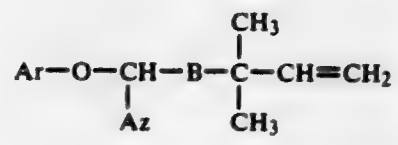
4,514,409

COMBATING FUNGI WITH NOVEL 5-ARYLOXY-5-AZOLYL-3,3-DIMETHYLPENT-1-EN-4-ONES AND -OLS

Gerhard Jäger, Leverkusen; Manfred Jautelat; Karl H. Büchel, both of Burscheid; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,028
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130435
Int. Cl.³ A01N *43/50, 43/64*; C07D *233/60, 249/08*
U.S. Cl. 514—383 **10 Claims**

1. A 5-aryloxy-5-azolyl-3,3-dimethylpent-1-en-4-one or -ol of the formula



in which
Ar is a phenyl group or a phenyl group substituted by at least one substituent selected from the group consisting of halogen, alkyl having 1 to 4 carbon atoms, halogenoalkyl having 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl part, nitro, cyano or phenyl which is optionally substituted by halogen and/or alkyl having 1 or 2 carbon atoms.
Az is a 1,2,4-triazol-1-yl, 1,2,4-triazol-4-yl or imidazol-1-yl group, and
B is a keto group or a CH(OH) grouping, or an addition product thereof with a physiologically acceptable acid or a metal salt.

9. A method of combating fungi comprising applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound or addition product according to claim 1.

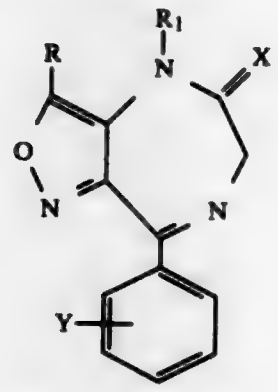
4,514,410

SUBSTITUTED 8-PHENYLISOXAZOLO[4,3-e][1,4]DIAZEPIN-5-ONES

John J. Tegeler, Bridgewater, and Craig J. Diamond, Budd Lake, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed May 31, 1984, Ser. No. 615,857
Int. Cl.[3] A61K *31/55*; C07D *498/04, 261/14*
U.S. Cl. 514—221 73 Claims

1. A compound having the formula



wherein R is lower alkyl; R_1 is hydrogen, propargyl, amino lower alkyl and lower alkyl; X is oxygen and sulfur; and Y is halogen, trifluoromethyl, lower alkyl, lower alkoxy and hydrogen; and the pharmaceutically acceptable acid addition salts thereof.

4,514,411

SUBSTITUTED 4,10-DIHYDRO-10-OXOTHIENO BENZOXEPINS

Lawrence L. Martin, Lebanon, and Linda L. Setescak, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 474,218, Mar. 10, 1983, Pat. No. 4,477,465. This application Aug. 10, 1984, Ser. No. 639,548
Int. Cl.[3] A61K *31/42*; C07D *495/04*
U.S. Cl. 514—215 4 Claims

1. The compound which is 2-(4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-yl)methyl-4,4-dimethyloxazoline or a pharmaceutically acceptable salt thereof.

2. An anti-inflammatory or an analgesic composition which comprises an effective anti-inflammatory or pain alleviating amount of 2-(4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-yl)-methyl-4,4-dimethyloxazoline or a pharmaceutically acceptable salt thereof.

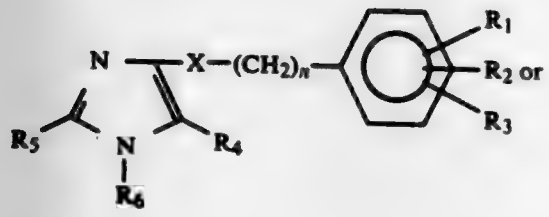
4,514,412

SUBSTITUTED IMIDAZOLE DERIVATIVES AND THEIR USE AS ANTI-THROMBOSIS AGENTS

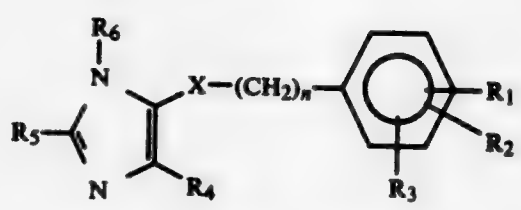
Arto J. Karjalainen, and Kauko O. A. Kurkela, both of Oulu, Finland, assignors to Farmos Yhtyma Oy, Turku, Finland

Filed Feb. 3, 1982, Ser. No. 345,548
Claims priority, application United Kingdom, Feb. 5, 1981, 8103620
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.[3] A61K *31/415*; C07D *233/54, 233/66*
U.S. Cl. 514—397 29 Claims

1. A substituted imidazole of the formula:

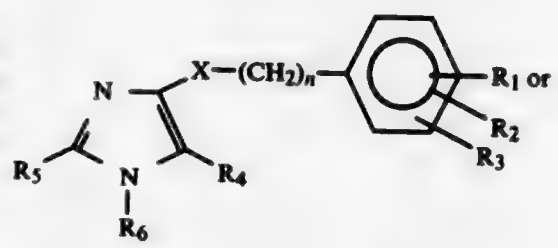


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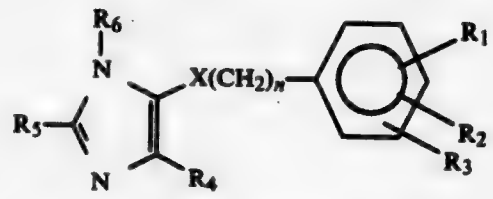


wherein each of R_1, R_2 and R_3, which can be the same or different, is hydrogen, chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro and at least one of R_1, R_2 and R_3 is other than hydrogen; R_4 is hydrogen or an alkyl radical of 1 to 7 carbon atoms; R_5 is hydrogen or a straight or branched alkyl group of 1 to 5 carbon atoms or a phenyl group; R_6 is hydrogen or an alkyl group of 1 to 7 carbon atoms or benzyl which is unsubstituted or substituted by chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro; X is —CH_2—, —CHOH— or —CH=CH—; and n is 0–4, provided that R_5 and R_6 are simultaneously hydrogen only when n is 4 and X is —CH=CH— and that when n is 2, X is CHOH, R_1, R_2, R_4 and R_5 are all hydrogen, and R_6 is methyl, then R_3 is a substituent other than 2-amino; and its nontoxic, pharmaceutically acceptable acid addition salts.

3. A method of reducing and preventing thrombosis which comprises administering to a patient subject thereto an effective amount of a compound selected from the glass consisting of a substituted imidazole of the formula:



(I)



wherein each of R_1, R_2 and R_3, which can be the same or different, is hydrogen, chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro and at least one of R_1, R_2 and R_3 is other than hydrogen; R_4 is hydrogen or an alkyl radical of 1 to 7 carbon atoms; R_5 is hydrogen or a straight or branched alkyl group of 1 to 5 carbon atoms or a phenyl group, R_6 is hydrogen or an alkyl group of 1 to 7 carbon atoms or benzyl which is unsubstituted or substituted by chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy, or nitro; X is —CH_2—, —CHOH— or CH=CH—; and n is 0–4, provided that R_5 and R_6 are simultaneously hydrogen only when n is 4 and X is —CH=CH—; and its non-toxic pharmaceutically acceptable acid addition salts.

4,514,413

GASTRIC ACID SECRETION INHIBITING N-(IMIDAZOL-1-YLALKYL)THIOUREA DERIVATIVES

Bernd Ostersehlt, Ludwigshafen; Albrecht Franke, Wachenheim; Fritz-Frieder Frickel, Deidesheim; Marco Thyes, Ludwigshafen; Ludwig Friedrich, Bruehl; Josef Gries, Wachenheim, and Dieter Lenke, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

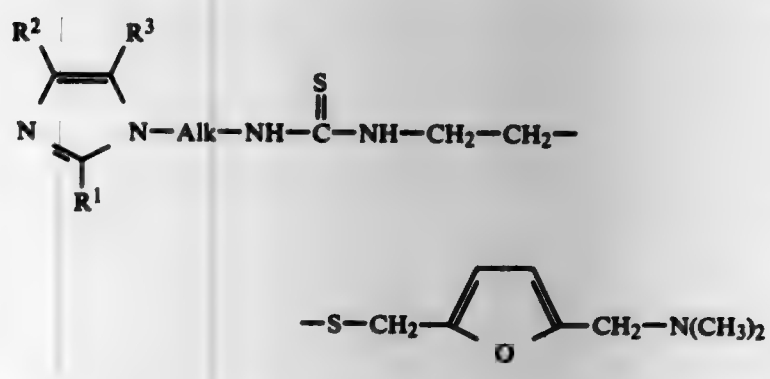
Filed Apr. 7, 1983, Ser. No. 482,790

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213509

Int. Cl.³ A61K *31/415;* C07D *233/61*

U.S. Cl. 514—397 7 Claims

1. An N-substituted imidazole derivative of the formula I



where R^1, R^2 and R^3 are identical or different and are each hydrogen or alkyl of 1 to 3 carbon atoms and Alk is an alkylene chain of 2 to 4 carbon atoms, and its salts with physiologically tolerated acids.

7. A composition for treating disorders associated with gastric hyperacidity which comprises a pharmaceutically acceptable carrier and/or diluent and an amount of a compound of the formula I as set forth in claim 1, effective to inhibit the secretion of gastric acid, or one of its physiologically tolerated salts.

4,514,414

N-SUBSTITUTED PYRROLIDINEACETIC ACIDS AND THEIR ESTERS

William E. Bondinell, Cherry Hill, N.J.; John J. Lafferty, Levittown, and Charles L. Zirkle, Berwyn, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Oct. 25, 1982, Ser. No. 436,232

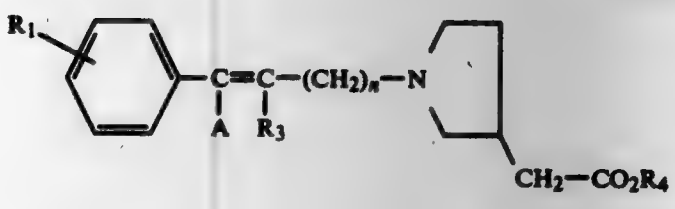
The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ A61K *31/40;* C07D *207/08*

U.S. Cl. 514—422 6 Claims

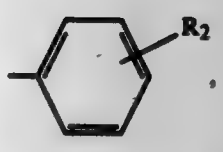
1. A compound represented by one of the formulas:

FORMULA I



wherein:

A is



2-thienyl, 3-thienyl or cyclohexyl;

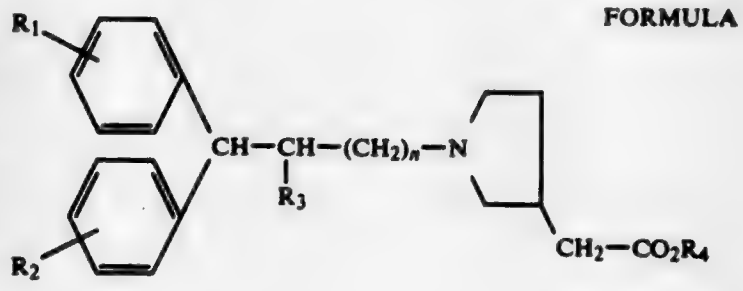
R_1 and R_2, which are the same or different, are hydrogen, fluorine, chlorine, methyl or methoxy;

R_3 is hydrogen or methyl;

n is a positive whole integer 2 or 3; and

R_4 is hydrogen or lower alkyl of from 1 to 3 carbon atoms;

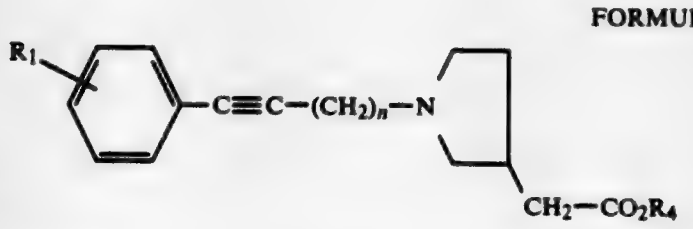
FORMULA II



wherein:

R_1, R_2, R_3, R_4 and n are as defined above for formula I; and

FORMULA III



wherein:

R_1, R_4 and n are as defined above for formula I or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition for inhibiting GABA uptake in dosage unit form comprising a pharmaceutical carrier and an amount sufficient to produce said inhibition of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof.

4,514,415

BENZOFURAN-2(3H)-ONES USED AS ANTI-INFLAMMATORY AGENTS

Paul Wenk, Allschwil; Werner Breitenstein, and Marcus Baumann, both of Basel, all of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

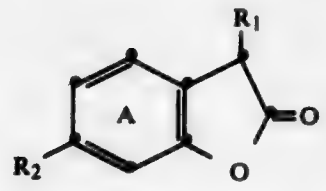
Filed Oct. 21, 1982, Ser. No. 435,594

Claims priority, application Switzerland, Oct. 28, 1981, 6881/81

Int. Cl.³ C07D *307/83;* A61K *31/365*

U.S. Cl. 514—470 11 Claims

1. A benzofuranone of the formula



(I)

in which R_1 represents hydrogen or lower alkyl, R_2 represents an amino group di-substituted by two lower alkyl groups which are unsubstituted or substituted by 3- to 7-membered cycloalkyl, by unsubstituted phenyl or by phenyl substituted by lower alkyl, lower alkenyl, lower alkylene, hydroxy-lower alkyl, halogeno-lower alkyl, lower alkoxy, lower alkylthio, lower alkanesulphinyl, lower alkanesulphonyl, hydroxy, halogen, lower alkanoyloxy, lower alkanoyl and/or nitro, and the aromatic ring A is unsubstituted or additionally substituted by lower alkyl, hydroxy-lower alkyl, halogeno-lower alkyl, lower alkenyl, 3- to 4-membered alkylene having 3 to 8 carbon atoms, lower alkoxy, lower alkylthio, lower alkanesulphinyl, lower alkanesulphonyl, hydroxy, halogen, lower alkanoyloxy, lower alkanoyl and/or nitro, or a pharmaceutically acceptable salt or tautomer thereof.

4,514,416

AMIDINE COMPOUND, PROCESS FOR PRODUCING SAME AND ANTI-COMPLEMENT AGENT COMPRISING SAME

Setsuro Fujii, Toyonaka; Takashi Yaegashi; Toyoo Nakayama, both of Funabashi; Yojiro Sakurai, Kamakura; Shigeki Nunomura, Chiba, and Toshiyuki Okutome, Tokyo, all of Japan, assignors to Torii & Co. Ltd., Tokyo, Japan

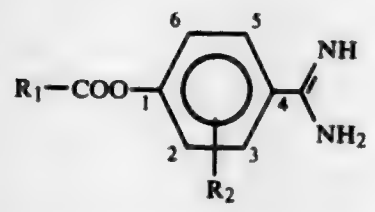
Continuation of Ser. No. 350,963, Feb. 22, 1982, abandoned. This application May 21, 1984, Ser. No. 611,937

Claims priority, application Japan, Feb. 27, 1981, 56-27974; Sep. 7, 1981, 56-140650

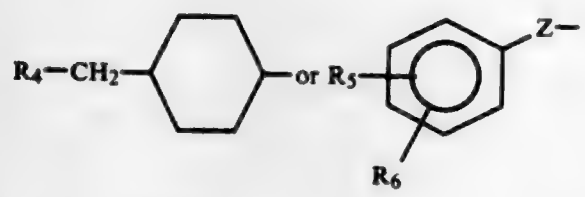
Int. Cl.[3] **C07C** *119/00;* **A61K** *31/22, 31/235*

U.S. Cl. 549—442 **7 Claims**

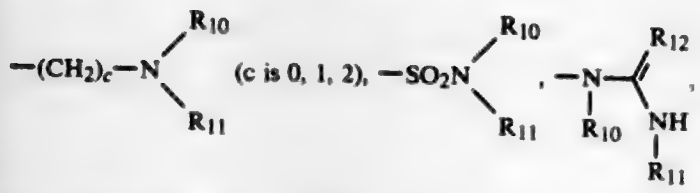
1. An amidino compound or a pharmaceutically acceptable acid addition salt thereof, said amidino compound being represented by the formula



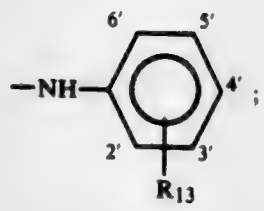
wherein R_1 represents a straight or branched chain alkyl group of 1 to 6 carbon atoms, a straight or branched chain alkenyl group of 2 to 6 carbon atoms including 1 to 3 double bonds, $R_3—(CH_2)_a—$, $R_4(CH_2)_b—$,



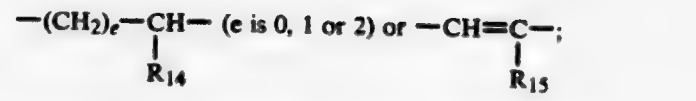
where R_3 is cycloalkyl group of 3 to 6 carbon atoms or cycloalkenyl group of 3 to 6 carbon atoms including 1 to 2 double bonds; a is 0, 1, 2 or 3; R_4 is amino or guanidino group possessing radical protecting group or not; b is a number of 1 to 5; R_5 and R_6, which may be the same or different, are each a hydrogen atom, straight or branched alkyl group of 1 to 4 carbon atoms, $—OR_7$, methylenedioxy group, $—SR_7$, $—COOR_7$, $—COR_8$, $—OCOR_9$, $—NHCOR_9$,



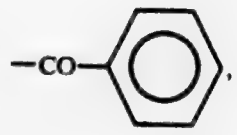
NO_2, CN, halogen atom, $—CF_3$ or



R_7 is hydrogen atom, straight or branched alkyl group of 1 to 4 carbon atoms or benzyl group; R_8 is hydrogen atom, straight or branched alkyl group of 1 to 4 carbon atoms; R_9 is straight or branched alkyl group of 1 to 4 carbon atoms; R_{10} and R_{11}, which may be the same or different, are each a hydrogen atom, straight or branched alkyl group of 1 to 4 carbon atoms, or amino radical protecting group R_{12} is O, S or NH; R_{13} is 2',3'-dimethyl or 3'-CF_3 group; Z is $—(CH_2)_d—$(d is 0, 1, 2 or 3),



R_{14} is straight or branched alkyl group of 1 to 4 carbon atoms; R_{15} is hydrogen atom, straight or branched alkyl group of 1 to 4 carbon atoms; R_2 represents $—OR_{16}$, NO_2 or



wherein R_{16} is straight or branched alkyl group of 1 to 4 carbon atoms; wherein said protecting group is an amino or guanidino radical protecting group selected from the group consisting of t-butoxycarbonyl, benzyloxycarbonyl, acetyl, benzoyl, tosyl, nitro, benzyl and t-butyl groups.

4,514,417

COMBATING FUNGI WITH NEW N-SULPHENYLATED ALLOPHANATES

Engelbert Kühle, Bergisch-Gladbach; Hermann Hagemann, Leverkusen; Volker Paul, Solingen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

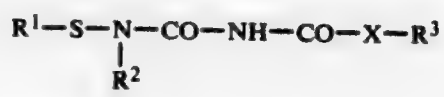
Filed Dec. 7, 1981, Ser. No. 328,318

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049440

Int. Cl.[3] **C07C** *83/10;* **A01N** *37/00*

U.S. Cl. 514—482 **8 Claims**

1. A N-sulphenylated allophanate of the formula



in which

R^1 represents trichloromethyl or fluorodichloromethyl,

R^2 represents an optionally halogenated, saturated or unsaturated aliphatic radical which has up to 6 carbon atoms and can optionally be interrupted by one or more nitrogen and oxygen atoms; a cycloaliphatic radical with 5 to 8 carbon atoms; a lower hydrocarbyl araliphatic radical which has 7 to 10 carbon atoms and of which the aromatic part can optionally carry cyano groups, nitro groups, trifluoromethyl groups, alkyl and alkoxy groups with up to 4 carbon atoms; or a phenyl radical which can optionally carry one or more substituents selected from halogen, nitro groups, cyano groups, trifluoromethyl groups and alkyl groups, alkylthio groups and alkoxy groups with in each case up to 4 carbon atoms, and

R^3 represents an optionally halogenated, saturated or unsaturated aliphatic radical which has up to 8 carbon atoms and can be interrupted by one or more nitrogen, oxygen and sulphur atoms; a cycloaliphatic radical which has 5 to 7 carbon atoms and is optionally substituted by alkyl with up to 4 carbon atoms; a phenylalkyl radical of which the phenyl part can optionally carry one or more substituents selected from halogen, cyano groups, nitro groups, trifluoromethyl groups and alkyl groups, alkylthio and alkoxy groups with in each case up to 4 carbon atoms; or a phenyl radical which can optionally carry one or more substituents selected from halogen, nitro groups, cyano groups, trifluoromethyl groups and alkyl groups, alkylthio groups and alkoxy groups with in each case up to 4 carbon atoms, and

X represents oxygen or sulphur.

7. A method of combating fungi comprising applying to the

fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

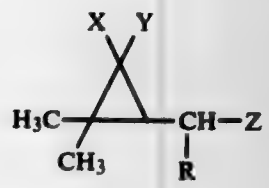
4,514,418

2,2-DIHALOGENO-3,3-DIMETHYLCYCLOPROPANE DERIVATIVE FUNGICIDES

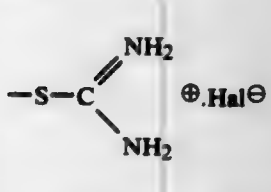
Junichi Saito, Mitaka, and Shinzo Kagabu, Hachioji, both of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,410
Claims priority, application Japan, Apr. 20, 1982, 57-64701
Int. Cl.³ A01N *37/00, 47/46, 41/02;* C07C *69/00*
U.S. Cl. 514—508 **13 Claims**

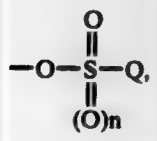
1. A 2,2-dihalogeno-3,3-dimethylcyclopropylmethyl derivative of the formula



in which
X and Y each independently is halogen,
R is a hydrogen atom or a methyl group,
Z is a cyano group, a thiocyano group, a group of the formula



or a group of the formula



Hal is a halogen atom,
n is 0 or 1, and
Q is a lower alkyl group, a halo-lower alkyl group, a phenyl group, or a phenyl group substituted by at least one of halogen, lower alkyl and nitro.

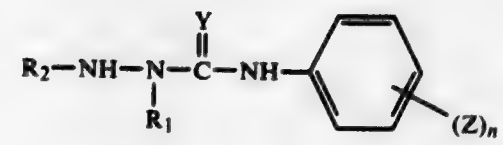
4,514,419

NEMATICIDAL USE OF HYDRAZINECARBOXAMIDES AND CARBOTHIOAMIDES

Philip A. Cruickshank, Princeton; Carmine P. DiSanzo, Lawrenceville, both of N.J.; Kiyosi Kondo, Kanagawa, and Hiromichi Kono, Yamaguchi, both of Japan, assignors to FMC Corporation and Kanagawa Chemical Laboratory, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 375,424, May 6, 1982, abandoned. This application May 18, 1983, Ser. No. 495,859
Int. Cl.³ A01N *33/26*
U.S. Cl. 514—521 **18 Claims**

1. A method of controlling nematodes which comprises applying to or incorporating into nematode-infested soil a nematicidally effective amount of a nematicidal composition including in admixture with an agriculturally acceptable carrier at least one nematicidal compound of the formula



wherein
R_2 is H or CH_3,
Y is S or O,
n is 0–5,
Z is substituted for H and independently selected from F, Cl, Br, CH_3, C_2H_5 (when R_2 is H), CF_3, NO_2, and phenoxy, and either
(1) R_1 is CH_3, with the provisos that when Y is S and n=1, Z is not 3-Cl if R_2 is CH_3; no more than one Z may be C_2H_5; when Y is O and n=2, Z is not 3-Cl and 5-Cl; and no more than one Z may be Br if R_2 is CH_3; or
(2) R_1 is C_2H_4OH or C_2H_4CN, with the provisos that when Y=O and n=1, Z is not 4-Cl or 4-Br; and when n=2, Z is not 3-Cl and 4-Cl.

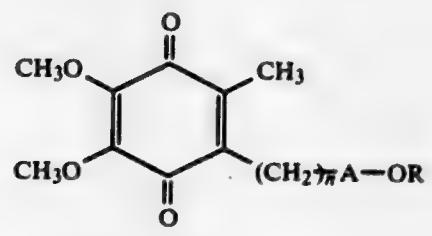
4,514,420

ANTIFIBROTIC AGENT

Isuke Imada, Izumi, and Masazumi Watanabe, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 25, 1983, Ser. No. 479,074
Claims priority, application Japan, Apr. 6, 1982, 57-57474
Int. Cl.³ A61K *31/12, 31/19, 31/215*
U.S. Cl. 514—689 **10 Claims**

1. A method for treatment of a mammal suffering from fibrosis due to excessive collagen accumulation, which comprises administering to the mammal an effective amount of a compound of the formula:



wherein A is methylene or carbonyl, n is an integer of 2 to 21, inclusive, and R is hydrogen or lower alkyl.

4,514,421

DIETARY AND PHARMACEUTICAL USES OF METHYLSULFONYLMETHANE AND COMPOSITIONS COMPRISING IT

Robert J. Herschler, 3080 NW. 8th Ave., Camas, Wash. 98607

Continuation-in-part of Ser. No. 277,592, Jun. 26, 1981, Pat. No. 4,477,469, which is a division of Ser. No. 71,068, Aug. 30, 1979, Pat. No. 4,296,130. This application Sep. 14, 1982, Ser. No. 418,110
Int. Cl.³ A61K *31/10*
U.S. Cl. 514—711 **18 Claims**

1. A method for ameliorating the symptoms associated with physiological response to stress comprising at least one of gastrointestinal upset and inflammation of the mucous membranes which comprises orally administering to a patient manifesting such symptoms an amount of methylsulfonylmethane effective to ameliorate those symptoms.

4,514,422

NON-STALING GUM COMPOSITION AND METHOD OF PREPARATION

Robert Yang, and Martin M. Rieger, both of Morris Plains, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 22, 1981, Ser. No. 333,523
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—3 **26 Claims**

1. A chewing gum composition having improved resistance to staling, comprising a substantially anhydrous mixture of a gum base, at least one sugar alcohol and glycerin present in an amount ranging from greater than about 10% to about 18% by weight of the chewing gum composition, wherein the gum base possesses a water content of less than 3.5% by weight, the glycerin possesses a water content of less than 1% by weight, the sugar alcohol possesses a water content of less than 0.7% and wherein said chewing gum composition contains no greater than 2% by weight thereof, of water in any form.

4,514,423

PROCESS OF PREPARING AN IMPROVED BUBBLE CHEWING GUM

Shichigoro Tezuka, Kawasaki; Yoshinori Sato, Niiza; Masaki Shibata, Tokyo, and Nobuyuki Harikae, Funabashi, all of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 266,434, May 22, 1981, abandoned.
This application Feb. 1, 1984, Ser. No. 576,761
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—3 **6 Claims**

1. In the process for preparing a bubble gum having strengthened membrane forming properties wherein a bubble gum base including vinyl acetate resin, filler, emulsifiers and flavor, color and fragrance additive is prepared, the improvement of forming said base free of an ester gum, and incorporating therewith a fat or oil ingredient in an amount of between 2.5% to 15% by weight of said product, rubber in an amount not less than 15% by weight of said product, and a wax in an amount of between 15 to 17 parts by weight of said product while maintaining said product free of any ester gum.

4,514,424

FERMENTATION COMPOSITION USING A SELECTED LACTOBACILLUS

Moshe Raccach, Tempe, Ariz., assignor to Microlife Technics, Inc., Sarasota, Fla.

Division of Ser. No. 268,354, May 29, 1981, Pat. No. 4,407,828.
This application Feb. 22, 1983, Ser. No. 468,145
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.
Int. Cl.³ A23L *1/31, 1/08;* C12R *1/245*
U.S. Cl. 426—56 **6 Claims**

1. A composition containing a culture of a lactobacillus adapted for meat fermentations which comprises:

(a) a culture of a strain of a lactobacillus at a concentration of at least about 1×10^7 of the lactobacillus per ml and having a pH between about 4 to 8 wherein the strain of lactobacillus has the meat fermentation characteristics at least as rapid as *Lactobacillus casei* subspecies *alactosus* NRRL-B-12,344 so as to produce a pH of less than about 5 at 24° C. and wherein the strain is unable to ferment glycogen, lactose or starch in the meat containing between about 0.01 to 50% by weight of the culture; and

(b) a food grade metal salt in an amount sufficient to accelerate the fermentation of the lactobacillus in the meat by providing a concentration of the metal ion between 0.01 ppm and 1500 ppm in the meat.

4,514,425

MOLD GROWTH INHIBITOR AND METHOD

Herbert J. Rebhan, New Richmond, Wis., assignor to Domain, Inc., New Richmond, Wis.

Filed Mar. 29, 1982, Ser. No. 363,123
Int. Cl.³ A23B *9/00*
U.S. Cl. 426—93 **8 Claims**

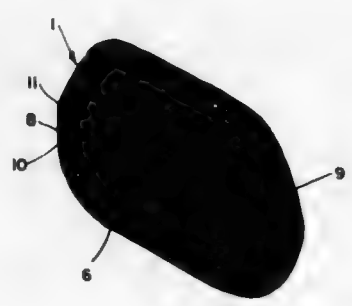
1. Method of inhibiting mold growth in grain comprising coating the grain with an effective amount of a dry, particulate mixture containing synergistic mold-inhibiting quantities of sodium diacetate and sorbic acid or a salt thereof in which the weight ratio of sorbic acid or its salt to sodium diacetate ranges from about 0.2/1 to about 0.7/1.

4,514,426

PACKAGE AND METHOD FOR THE AUTOMATIC CONTROL OF THE DEGREE OF COOKING OF A CEREAL

J. Kirk Jordan, Franklin, and Sandra L. Scherling, Nashville, both of Tenn., assignors to Martha White Foods, Inc., Nashville, Tenn.

Filed Jul. 27, 1983, Ser. No. 517,674
Int. Cl.³ A23L *1/168;* B65B *29/08;* B65D *81/34*
U.S. Cl. 426—113 **39 Claims**



1. A package containing cereal for the automatic control of the degree of cooking of cereal when said package containing said cereal is disposed in an excess volume of hot water, comprising:

(1) a porous closed container having a predetermined volume and made of a hot water resistant material such that the container may be disposed in said excess volume of hot water for extended periods of time without substantial deterioration thereof;

(2) a predetermined amount of uncooked granular cereal disposed within said container such that the ratio of the predetermined volume of the container when the cereal is fully cooked and the container, if flexible, is expanded to its maximum volume, in cubic centimeters, to the weight of uncooked cereal, in grams, disposed within the container is from 3:1 to 8:1;

said container having pore sizes such that a substantial amount of the uncooked granular cereal disposed in the container cannot pass through said pores, but said pores being of sizes such that water from the excess volume of hot water may freely pass through said pores when the container is disposed in said excess volume of hot water but wherein said pores will be substantially closed to the passage of water to said cereal after it is expanded and fully cooked;

said predetermined amount of uncooked granular cereal disposed within said container and said predetermined volume of said container when the cereal is fully cooked and said ratio therebetween is sufficient to allow for the cereal at a predetermined time to expand to a volume which is at least substantially the same as the predetermined volume of the container and the expansion of the cereal at said predetermined time being sufficient to cause the cereal to substantially contact and close substantially all of the pores of the container with said closing of the pores at said predetermined time thus preventing any substantial amount of additional hot

water from passing from the excess volume of hot water outside the container to the cereal inside the container; said predetermined time being that time when the cereal reaches its fully cooked state and not before it reaches its fully cooked state and not after it reaches its fully cooked state, such that the cereal is not under cooked, that is runny, or overcooked, that is too thick.

4,514,427

REMOVAL OF BITTER NARINGIN AND LIMONIN FROM CITRUS JUICES CONTAINING THE SAME

Donald H. Mitchell; Richard M. Pearce, both of Winter Haven; C. Byron Smith, Lake County, and Sand T. Brown, Lakeland, all of Fla., assignors to Mitco Water Laboratories Inc., Winter Haven, Fla.

Filed May 19, 1983, Ser. No. 496,340
Int. Cl.³ C12H *1/04*; A23L *2/00*
U.S. Cl. 426—271 **3 Claims**

1. A method of concurrently reducing acidity and the naringin and/or limonin content of citrus juices containing the same which comprises contacting such juice with a mass of particles of a weak base anionic exchange resin having a matrix of a styrene polymer and functional groups derived from a mono or polyamine, the duration of such contact being sufficient to substantially reduce simultaneously said naringin and/or limonin content and the acidity of said juice.

4,514,428

CRISP APPLE SNACK AND PROCESS FOR MAKING SAME

Richard W. Glass, College Station, and Dennis W. Koerner, Bedford, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Apr. 13, 1983, Ser. No. 484,488
Int. Cl.³ A23L *3/34, 1/212*
U.S. Cl. 426—321 **10 Claims**

1. A process for preparing crisp wafer-shaped apple snacks comprising the steps of

slicing whole apples to form slices having a thickness in the range from about 0.040 to 0.120 inches;

washing the seeds from the slices;

treating the washed slices with an anti-browning agent;

steeping the treated slices in a sugar solution at a temperature of about 37°–60° C. for a period of about 3 to 10 minutes; and

rapidly drying the steeped slices in less than 30 minutes at a temperature within the range of about 200° to 300° F.

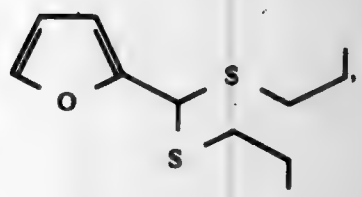
4,514,429

FLAVORING WITH FURFURYL MERCAPTALS

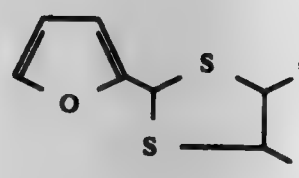
Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 541,151, Oct. 12, 1983,. This application Aug. 24, 1984, Ser. No. 643,710
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—535 **4 Claims**

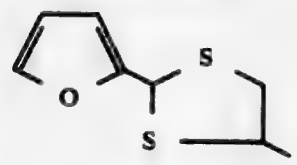
1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from 0.5 parts per million up to about 100 parts per million based on the total composition of at least one mercaptal selected from the group consisting of



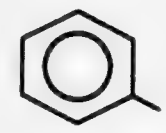
, and



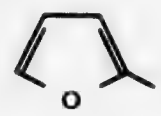
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wherein the dashed line represents a carbon-carbon single bond or no bond; wherein R_1 and R_2 are the same or different and each represents hydrogen, methyl or ethyl; wherein p is 0 or 1; and wherein X represents a phenyl moiety having the structure:



or a furyl moiety having the structure:



4,514,430

PROCESS FOR PREPARING BAKED GOODS WITH IMPROVED FLAVOR AND FLAVOR CHIP TEXTURE

Kenneth T. Hartman, Irving, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Jul. 27, 1983, Ser. No. 517,812
Int. Cl.³ A21D *2/00*
U.S. Cl. 426—549 **21 Claims**

1. A process for preparing a dough or batter to be used in making baked goods, wherein the contents of said dough or batter include flavor chips and edible oil or fat, comprising:

(a) pre-mixing said flavor chips with a fluid, heated edible oil, said oil having a melting point below about 100° F.;

(b) soaking said flavor chips in said oil, without melting said flavor chips, until the oil and fat content of said flavor chips is at least about 33% by weight;

(c) chilling said mixture of oil and flavor chips to a temperature at which said flavor chips are substantially solid; and

(d) admixing said chilled mixture of oil and flavor chips with a dough or batter.

4,514,431

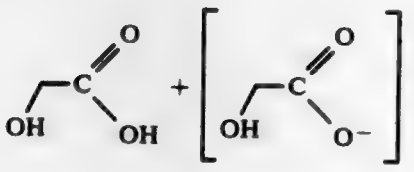
ENHANCING THE TASTE OF A MEAT-FLAVORED FOODSTUFF

Lawrence Buckholz, Jr., Jackson; Richard A. Wilson, Westfield, and Roger Kleinberg, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 507,289, Jun. 23, 1983, Pat. No. 4,471,002, which is a continuation-in-part of Ser. No. 445,766, Nov. 30, 1982, abandoned. This application Apr. 26, 1984, Ser. No. 604,266
Int. Cl.³ A23L *1/22*
U.S. Cl. 426—641 **10 Claims**

1. A process for enhancing the taste of a meat-flavored foodstuff comprising the step of adding to said foodstuff a taste enhancing quantity of a mixed seasoning composition of matter consisting essentially of:

(a) from about 0.25 up to about 0.80 mole percent on a dry basis of a lactic acid/lactate species mixture having the structure:



(b) from 0 up to about 0.09 mole percent on a dry basis of glycollic acid/glycollate ion species mixture having the structure:



(c) from 0 up to about 10.0 mole percent on a dry basis of magnesium ion;

(d) from about 6 mole percent up to about 50 mole percent on a dry basis of a phosphate/monoacid phosphate/diacid phosphate/phosphoric acid species mixture having the formula:

$$[PO_4^{---}]+[HPO_4^{--}]+[H_2PO_4^{-}]+H_3PO_4$$

taken alone or taken further together with at least one of the species tripolyphosphate, pyrophosphate and/or polymetaphosphate;

(e) from 0 mole percent up to about 40 mole percent on a dry basis of sodium ion;

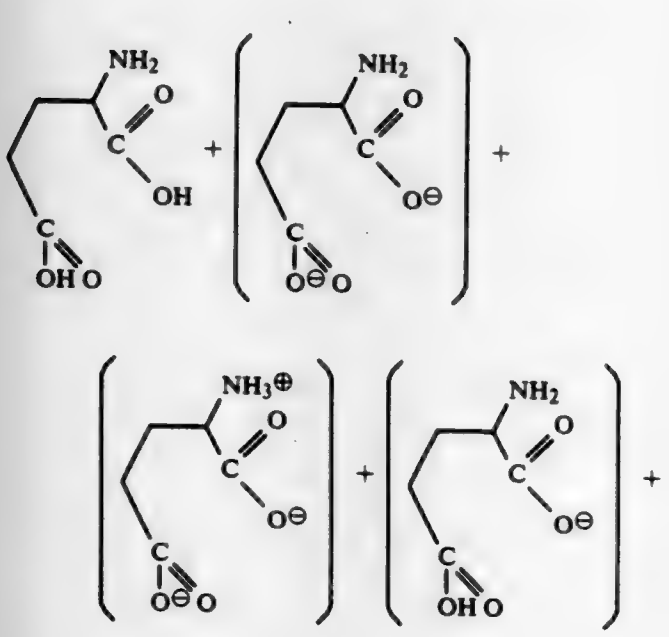
(f) from about 8 mole percent up to about 50 mole percent on a dry basis of potassium ion;

(g) from about 0.3 mole percent up to about 16 mole percent on a dry basis of chloride ion;

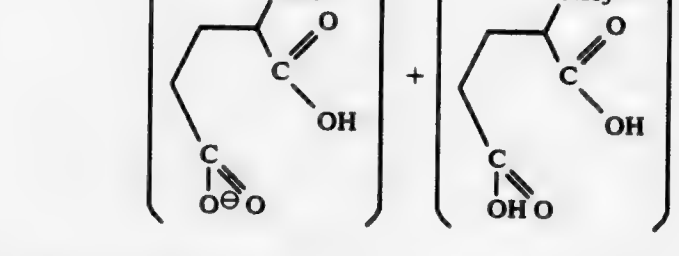
(h) from 0 mole percent up to 30 mole percent on a dry basis of carbonate/bicarbonate/carbonic acid species mixture having the formula:

$$[CO_3^{--}]+[HCO_3^{-}]+H_2CO_3$$

(j) from 0 mole percent up to about 2.0 mole percent on a dry basis of monobasic glutamate/dibasic glutamate/glutamic acid species mixture having the formulae:



-continued



(k) from 0 up to about 0.6 mole percent on a dry basis of calcium ion;

with the proviso that the sum total of mole percent on a dry basis of sodium ion, potassium ion, magnesium ion and calcium ion is from about 48 mole percent up to about 60 mole percent; and with the proviso that the sum total of carbonate/bicarbonate/carbonic acid ion species mixture having the formula:

$$[CO_3^{--}]+[HCO_3^{-}]+H_2CO_3$$

taken together with the sum total mole percent on a dry basis of the phosphate/monobasic phosphate/dibasic phosphate species mixture having the formula:

$$[PO_4^{---}]+[HPO_4^{--}]+[H_2PO_4^{-}]+H_3PO_4$$

taken alone or taken further together with at least one of the species tripolyphosphate, pyrophosphate and/or polymetaphosphate is from about 34 mole percent up to about 50 mole percent; the term "mole percent" being based upon the total moles of cations, anions and free organic acid which is substantially non-ionized in the composition and with the additional proviso that the sum total of:

(i) magnesium ion;

(ii) monobasic glutamate/dibasic glutamate/glutamic acid species mixture; and

(iii) calcium ion is greater than 0, is of a finite amount and is functionally effective.

4,514,432

HEN-EGG ALBUMEN SUBSTITUTE AND METHOD FOR ITS MANUFACTURE

Michael Grzinia, Schwaikheim, Fed. Rep. of Germany, assignor to Milei GmbH, Leutkirch, Fed. Rep. of Germany

Filed Mar. 25, 1983, Ser. No. 479,006

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211681

Int. Cl.³ A23J *3/02, 1/02*

U.S. Cl. 426—656 **12 Claims**

1. Method for manufacturing aa hen-egg albumen substitute comprising dry-mixing a protein mixture comprising 35 to 90% by weight protein and a salt mixture comprising:

33.9 to 47.3% by weight Monocalcium phosphate

26.1 to 38.7% by weight Calcium hydroxide

6.0 to 20% by weight Calcium chloride

3.0 to 20.0% by weight Calcium Stearate

3.0 to 20.0% by weight Xanthane

wherein the weight ratio of monocalcium phosphate to calcium hydroxide is between 1.0:1.0 and 1.3:1.0, and wherein the salt mixture comprises 12.5 to 20% by weight of the total dry mixture.

4,514,433
PROCESS FOR PRODUCING AN ASEPTIC PACKED TOFU

Masaru Matsuura, Noda, Japan, assignor to Kikkoman Corporation, Noda, Japan

Filed Oct. 21, 1983, Ser. No. 544,379
Claims priority, application Japan, Oct. 22, 1982, 57-184674; Feb. 23, 1983, 58-27668
Int. Cl.³ A23J *3/00;* A23L *1/20*
U.S. Cl. 426—634 10 Claims

1. In a process for producing an aseptic packed tofu comprising:

(a) a step of putting into a grinder soybeans with 3–5 times their dry weight of water and grinding the soybeans to obtain a soybean slurry;

(b) a step of heating the soybean slurry at 80° to 100° C. and then filtering the heated soybean slurry to obtain a soybean milk;

(c) a step of heat-sterilizing the soybean milk at a temperature not lower than 130° C. for at least 1 second;

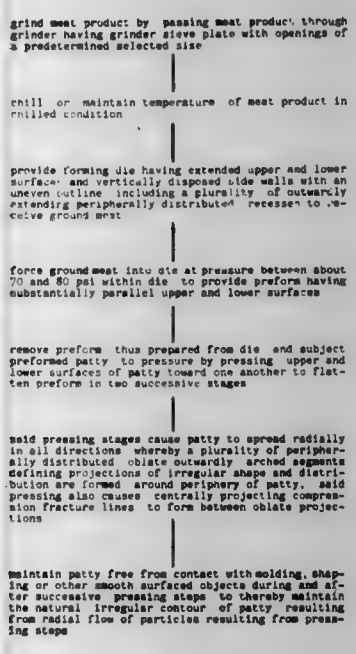
(d) a step of aseptically adding a sterilized coagulant to the sterilized soybean milk, mixing them, aseptically packing the mixture into a sterilized container and sealing the container; and

(e) a step of heating the sealed mixture at 70° to 100° C. to coagulate it, the improvement which comprises carrying out the step of grinding soybeans at 40° to 50° C.

4,514,434
MEAT PATTY AND PROCESS FOR FORMING THE SAME

Robert D. Goldberger, Wayzata, and James F. Stower, South St. Paul, both of Minn., assignors to Goldberger Foods Inc., Minneapolis, Minn.

Filed Apr. 21, 1983, Ser. No. 487,285
Int. Cl.³ A22C *7/00*
U.S. Cl. 426—646 13 Claims



1. A meat product comprising,

a chilled compressed patty of predetermined weight composed of ground meat particles having a particle grind size of from about 3/32 to about 5/32",

the chilled patty being compressed to a state sufficient to provide enough cohesion between said particles to cause the patty to resist falling apart when cooked in a frying pan or on a grill and the compression of the patty being limited such that said patty when cooked has a loose chewing texture with little resiliency so that bites fall apart easily when chewed and said patty has a repeated compression value of less than 70% following cooking,

the patty having extended upper and lower surfaces that are substantially parallel to each other and connected together by a peripheral side edge composed of a series of outwardly arched segments defining projections of varying shape and distribution, said peripheral edge being free from smooth molded surfaces as produced by shaping, forming or molding members

said projections having natural flow contours of meat displaced outwardly from the center of the patty

said projections causing the patty to fall apart more naturally and easily when chewed and making possible taste and texture variations during cooking due to the projections cooking at a different rate and reaching a different cooking temperature than central portions of the patty,

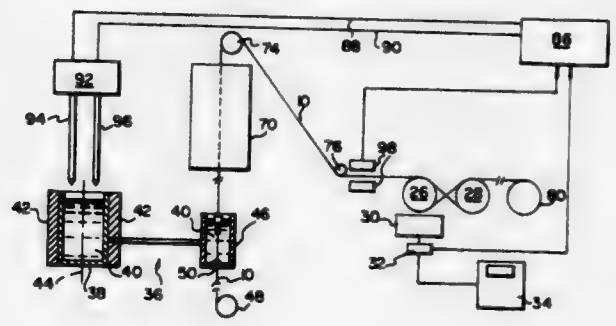
said patty having centrally projecting fracture lines between the projections, at least some of said fracture lines extending from the upper to the lower surfaces of the patty and from the edge partially toward the center of the patty and

the fracture lines and interstices between particles being adapted to absorb and retain cook-out juices for flavor enhancement.

4,514,435
METHOD FOR PRODUCTION OF DIELECTRIC INSULATION LAYERS UPON ELECTRICAL CONDUCTORS

Michael A. Shannon, Glenburnie, and Robert J. Howat, Kingston, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 6, 1984, Ser. No. 597,393
Int. Cl.³ B05D *1/04*
U.S. Cl. 427—8 7 Claims



1. A method of monitoring a quantity of magnetically permeable particles in a dry dielectric carrier layer surrounding a conductor comprising passing the conductor surrounded by the layer along a feedpath and through a magnetic field created by a magnet means to cause a magnetic attraction between the particles and the magnet means, the degree of which is dependent upon the strength of the magnetic field and the quantity of particles in the layer which are affected by the field, and monitoring the degree of relative movement towards each other of the conductor and magnet means as the conductor moves along its path, while applying a resisting force against such relative movement.

4,514,436
METHODS OF HIGHLIGHTING PINHOLES IN A SURFACE LAYER OF AN ARTICLE

Kenneth G. Moerschel, Bethlehem, Pa., assignor to AT&T Technologies, Inc., New York, N.Y.

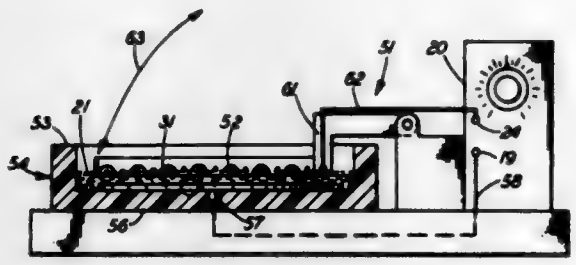
Filed Jul. 28, 1983, Ser. No. 518,189
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—10 18 Claims

1. A method of highlighting pinholes in a dielectric layer on a surface of an article such pinholes having been formed in an etching process through similar pinholes in a protective photoresist layer covering the dielectric layer, which comprises:

submersing into a liquid at least a portion of the article including the photoresist layer covering the dielectric layer wherein pinholes are to be highlighted;

applying an electrical potential through the pinholes in the photoresist layer between the liquid and the article to

dissolve, in regions adjacent to such pinholes, the photoresist layer in a localized reaction at an interface between



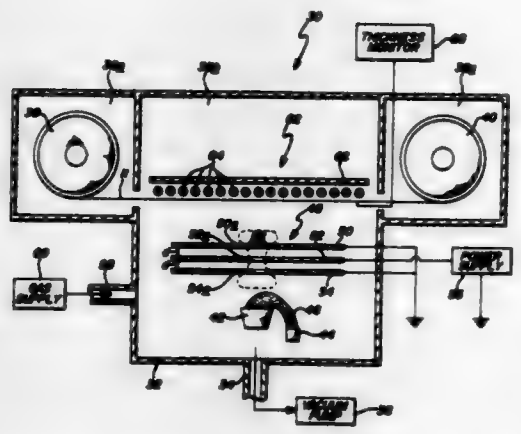
the liquid and the article at each of the pinholes formed in the dielectric layer.

4,514,437

APPARATUS FOR PLASMA ASSISTED EVAPORATION OF THIN FILMS AND CORRESPONDING METHOD OF DEPOSITION

Prem Nath, Rochester, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 2, 1984, Ser. No. 606,014
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—39 29 Claims



1. An improved method of depositing a thin film onto a substrate, said method including the steps of:
vacuumizing a chamber;
providing an electrically unbiased substrate in the chamber;
providing a supply of solid vaporizable material in the chamber;
heating the solid material with electron beam means so as to vaporize said material in a vapor zone formed between the substrate and the supply of solid material;
disposing electrode means in the vapor zone, said electrode means operatively disposed in electrical communication with a source of alternating current;
providing an ionizable gas; and,
activating the source of alternating current so as to energize the electrode means and develop an ionized plasma from at least the ionized gas, said ionized plasma developed in a plasma region formed proximate the electrode means; whereby the vaporized solid material is activated by the plasma and deposited as a thin film onto the substrate.

14. Apparatus for depositing a thin film onto a substrate, said apparatus including:
a vacuum chamber;
means for vacuumizing the chamber;
means for supporting an electrically unbiased substrate;
a source of solid vaporizable material operatively disposed in the vacuum chamber;
electron beam means adapted to vaporize the solid material in a vapor zone formed between the substrate and the supply of solid material;
a source of ionizable gas;
electrode means operatively disposed proximate the source of solid material in the vapor zone; said electrode means adapted to develop an ionized plasma from at least the ionizable gas, said plasma developed in a plasma region formed proximate the electrode means; and
a source of alternating current operatively disposed in electrical communication with the electrode means, whereby activating the source develops the plasma and the plasma activates the vaporized solid material for the deposition thereof as a thin film onto the substrate.

4,514,438

USE OF RADIATION-CURABLE ACRYLATES TO SURFACE MODIFY POLYETHYLENE TEREPHTHALATE TO IMPROVE ADHESION TO STANDARD RUBBER ADHESIVES AND THEREBY TO RUBBER-BASED MATERIALS

Gunilla E. Gillberg-LaForce, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,882
Int. Cl.[3] C08J *7/18*; C08L *9/08, 61/06, 67/02*
U.S. Cl. 427—54.1 35 Claims

1. A process for the surface modification of a polyethylene terephthalate material to provide improved adhesion in subsequent rubber-reinforcing applications which comprises (1) applying to the surface of said material at least one radiation-curable acrylate monomer and photopolymerizing said at least one acrylate monomer by exposure of the material to a radiation source to obtain surface modification of said polyethylene terephthalate material; and (2) applying a phenolic-aldehyde-latex adhesive to said acrylate-modified material wherein improved adhesion to rubber is attained.

12. A process for pretreating polyethylene terephthalate filament or yarn to attain improved adhesion in subsequent rubber reinforcing applications which comprises (1) applying a spin finish to the filament or yarn; (2) applying at least one radiation-curable acrylate monomer to said filament or yarn and photopolymerizing said at least one acrylate monomer by exposure of the filament or yarn to a radiation source to obtain surface modification of said polyethylene terephthalate filament or yarn; and (3) applying a phenolic-aldehyde-latex adhesive to said filament or yarn wherein improved adhesion to rubber is attained.

4,514,439

DUST COVER

Nicholas A. Rounds, New Britain, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 16, 1983, Ser. No. 533,096
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—54.1 13 Claims

1. A process for forming an optically transparent polymeric protective layer on an information disc which comprises, placing the disc in a stationary horizontal position, applying a monomer containing liquid radiation curable coating to the surface of said stationary disc from an applicator disposed above the disc, applying said coating by equally spaced sequential movement of said applicator on a plane parallel to the surface of said staitonary disc, allowing said liquid coating to spread evenly across said disc surface, and curing said coating by means of radiation to form a thin, even, optically transparent polymeric protective layer over said disc.

4,514,440

SPIN-ON DOPANT METHOD

Bruce H. Justice, East Aurora, and Robert F, Aycock, Clarence, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 12, 1983, Ser. No. 560,473
Int. Cl.[3] B05D *5/12, 3/12;* H01L *7/44*
U.S. Cl. 427—85 8 Claims

1. A single furnace method for boron dopant deposition and diffusion of a p-type semiconductor substrates comprising:

(a) applying a dopant layer to said semiconductor substrate from a gaseous dopant source until an initial resistivity in the range of about 4 to about 200 ohms per square is attained;

(b) producing a conducting interfacial layer between said semiconductor substrate and said dopant layer by maintaining a temperature of at least about 900° C.;

(c) removing said dopant source by maintaining a steam atmosphere of at least about 900° C.;

(d) thermal ramping said treated semiconductor substrate to a drive in temperature for the doping in an atmosphere selected from inert, oxidizing or steam;

(e) oxidizing excess silicon boride by subjecting said treated semiconductor substrate for about 5 to 20 minutes in a steam atmosphere at a temperature of the order of 1050° C. to 1250° C.; and

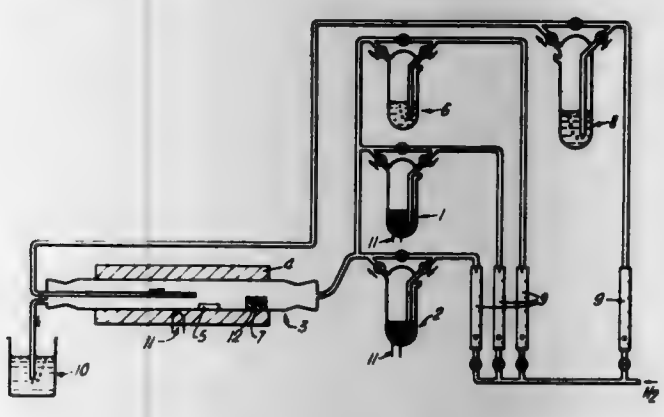
(f) driving the boron present in said interfacial layer to the desired depth and resistivity level in an inert or oxidizing atmosphere.

4,514,441

DIELECTRIC MATERIALS

John H. Alexander, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,197
Claims priority, application United Kingdom, Nov. 17, 1982, 8232779
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—126.6 6 Claims



1. A method of manufacturing thin film dielectric material comprising the steps of:

directing vapors of reactants containing lead and at least two additional metals including Fe and Nb and an oxidizing gas onto a substrate having a temperature at which oxides result from the reaction of the reactants with the oxidizing gas in a solid form on the substrate to form a thin film dielectric material layer thereon.

4,514,442

METHOD OF PROTECTING A ROOF

Allen E. Crepeau, Southbury, Conn., assignor to Uniroyal, Inc., Middlebury, Conn.

Division of Ser. No. 381,259, May 24, 1982, Pat. No. 4,461,875, which is a continuation-in-part of Ser. No. 363,325, Mar. 29, 1982, abandoned. This application Apr. 16, 1984, Ser. No. 600,250
Int. Cl.[3] B32B *35/00*
U.S. Cl. 427—140 13 Claims

1. A method of protecting a roof against water leaks comprising the disposition upon said roof of a composition comprising:

(a) 100 parts of an elastomer selected from the group consisting of EPDM, butyl rubber and mixtures thereof;

(b) 0.1 to 3.0 parts of a compound having the structural formula $[(CH_2)_nNCS]_2S_6$, where n is 4 or 5; and

(c) 0 to 5.0 parts of a sulfur donor curative;

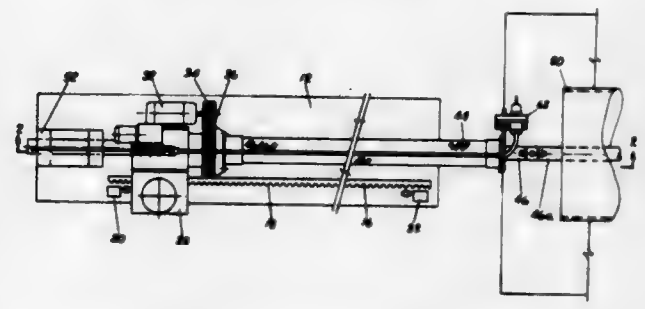
wherein said components (b) and (c) provide at least 0.25 part of total available sulfur, all parts being by weight.

4,514,443

COATING INTERNAL SURFACES OF CURVED CONDUITS

Gene Kostecki, 40 Bramwell Rd., Noranda, Australia

PCT No. PCT/AU82/00224, § 371 Date Sep. 8, 1983, § 102(e) Date Sep. 8, 1983, PCT Pub. No. WO83/02573, PCT Pub. Date Aug. 4, 1983
PCT Filed Dec. 30, 1982, Ser. No. 537,456
Claims priority, application Australia, Jan. 29, 1982, PF2503; Sep. 22, 1982, PF6007; Sep. 22, 1982, PF6008
Int. Cl.[3] B05D *7/22;* B05C *7/00*
U.S. Cl. 427—230 20 Claims



1. A method of coating an internal wall of a curved conduit which comprises the steps of inserting a guide means in the conduit which guide means extends substantially axially of the conduit, said guide means having a longitudinally flexible member in association with it so as to cause the flexible member to be longitudinally guided by the guide means, connecting a coating member to one end of said flexible member, providing drive means for moving said flexible member and then said coating means relative to and longitudinally of said conduit, causing the coating means to deposit a layer of protective material in a strip extending longitudinally of said conduit and then rotationally incrementally stepping the flexible member and the coating means to an adjacent position and reversing the drive means so as to cause the coating means to deposit a further strip of protective material adjacent the first coated strip.

2. An apparatus for use with a coating means to coat an internal wall of a curved conduit with a layer of protective material, comprising:

means including a longitudinally flexible member which is transversely substantially rigid and guide means for said flexible member;

means for mounting the coating means adjacent a first end of the flexible member, for incremental rotation with the flexible member;

a drive means for driving the flexible member relative to the curved conduit to be coated, so that the coating means can enter the curved conduit and so that the coating means

can deposit a strip of protective material longitudinally of the curved conduit; and

stepping means coupled to the flexible member for automatically stepping the flexible member and the coating means by a rotational increment after the coating means has completed a traverse of the conduit.

4,514,444

FABRIC CLEANING/CONDITIONING COMPOSITIONS

Donald T. Ives, Covington, Ky.; Michael J. Madill, and Philip G. Sliva, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 3, 1984, Ser. No. 576,597

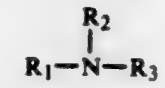
Int. Cl.³ D06M *13/18, 13/20, 13/36, 13/40*

U.S. Cl. 427—242 **14 Claims**

1. Fabric conditioning nodules which comprise:

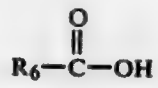
(a) a fabric conditioning agent comprising a salt of

(i) a tertiary amine having the formula



wherein R_1, R_2 and R_3 are each, independently, saturated or unsaturated and wherein R_1 is a long chain aliphatic group having from 12 to 22 carbon atoms and R_2 and R_3 are the same or different from each other and are selected from the group consisting of aliphatic groups containing from 1 to 22 carbon atoms, hydroxyalkyl groups of the formula $-R_4OH$ wherein R_4 is an alkylene group having from 1 to 3 carbon atoms, and alkyl ether groups having the formula $R_5O(C_nH_{2n}O)_m$—wherein R_5 is hydrogen or an alkyl or alkenyl group having from 1 to 20 carbon atoms, n is 2 or 3, and m is from 1 to 20; and

(ii) a carboxylic acid having the formula



wherein R_6 is hydrogen, or an alkyl, alkenyl, aryl, alkaryl or aralkyl group having 1 to 22 carbon atoms, or a substituted alkyl, alkenyl, aryl, alkaryl, or aralkyl group having from 1 to 22 carbon atoms wherein the substituents are selected from the group consisting of halogen, carboxyl, and hydroxyl; and

(b) from about 0.5% to about 15% by weight based on the weight of the fabric conditioning nodules of polyethylene glycol having a molecular weight from about 2000 to about 16,000;

wherein the particle size of said nodules is from about 0.03 mm. to about 1 mm.

11. A fabric cleaning/conditioning composition which comprises:

(a) fabric conditioning nodules according to claim 1 wherein the amount of amine salt is from 3% to 20% of the composition; and

(b) detergent granules comprising:

(i) from 5% to 30% by weight of the composition of surfactant selected from the group consisting of water soluble salts of alkyl benzene sulfonate, alkyl sulfate, alkyl polyethoxy ether sulfate, paraffin sulfonate, alpha-olefin sulfonate, alpha-sulfocarboxylates and their esters, alkyl glyceryl ether sulfonate, fatty acid monoglyceride sulfates and sulfonates, alkyl phenol polyethoxy ether sulfate, 2-acyloxy-alkane-1-sulfonate and soaps; and

(ii) from 10% to 60% by weight of the composition of detergency builder selected from the group consisting of alkali metal carbonates, borates, phosphates, polyphosphates, bicarbonates and silicates; water-soluble aminopolycarboxylates, water-soluble polyphosphonates, water-soluble salts of polycarboxylate polymers and copolymers, citric acid, and crystalline and amorphous sodium aluminosilicates.

4,514,445

PROCESS FOR FORMING A CORROSION RESISTANT COATING

Sadakazu Hokamura, Yamato; Seiji Yamada, Yokohama; Mitsutoshi Aritomi, and Yuji Yoshida, both of Ami, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Mitsubishi Yuka Fine Chemicals Co., Ltd., Tokyo, both of, Japan

Filed Nov. 8, 1983, Ser. No. 549,735

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—410 **4 Claims**

1. A process for forming a corrosion resistant coating, which comprises (i) a step of priming a solvent-type coating composition on a corrodible substrate and drying it to form a prime coat, and (ii) a step of coating a radical-polymerizable, and oxidation-polymerizable, room temperature curing solventless coating composition on the dry prime coat and polymerizing it to form a cured coating,

wherein the solvent-type coating composition contains a volatile organic solvent and is selected from the group consisting of a boiled drying oil coating composition, an alkyd resin coating composition, an epoxy resin coating composition, a polyurethane resin coating composition, a chlorinated rubber coating composition and a vinyl resin coating composition, and

wherein the radical-polymerizable and oxidation-polymerizable, room temperature curing solventless coating composition is composed essentially of a curing catalyst and a resin component comprising (A) from 30 to 70% by weight an oil-modified alkyd resin having an oil length of from 30 to 70% and modified with an α,β-unsaturated monocarboxylic acid selected from the group consisting of sorbic acid, crotonic acid and 2-(β-furyl) acrylic acid, the content of the α,β-unsaturated monocarboxylic acid in the alkyd resin being from 0.5 to 30% by weight, and (B) from 70 to 30% by weight of a polymerizable monomer in which the ingredient (A) is dissolved.

4,514,446

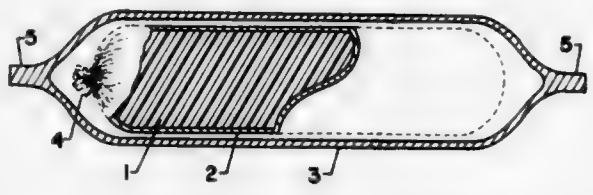
WATER IMPERMEABLE PACKAGE FOR ROOM TEMPERATURE-MOISTURE CURING ONE-PART SEALANTS

Motoaki Kadono, and Shingo Tamura, both of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 931,594, Aug. 7, 1978, abandoned. This application Jun. 15, 1981, Ser. No. 273,696

Int. Cl.³ B65D *81/34*

U.S. Cl. 428—35 **10 Claims**



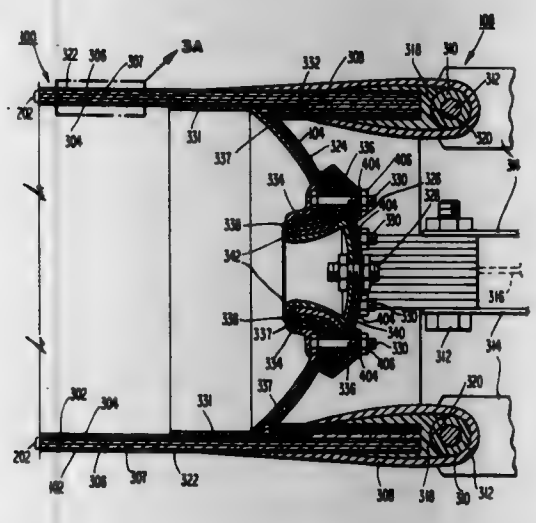
1. A method of storing room temperature moisture curing one-part sealants which consists of placing a moisture curable, one-part sealant in a sealable inner flexible resin film container, which container is enclosed by a separate sealable outer resin film wrap which outer resin film wrap has, on at least one surface, a thin layer of aluminum.

4,514,447

INFLATABLE STRUCTURAL COLUMN

James G. Boxmeyer, 512 S. 47th St., Philadelphia, Pa. 19143

Filed Mar. 23, 1984, Ser. No. 592,615
Int. Cl.[3] F16L *55/12*
U.S. Cl. 428—36 14 Claims



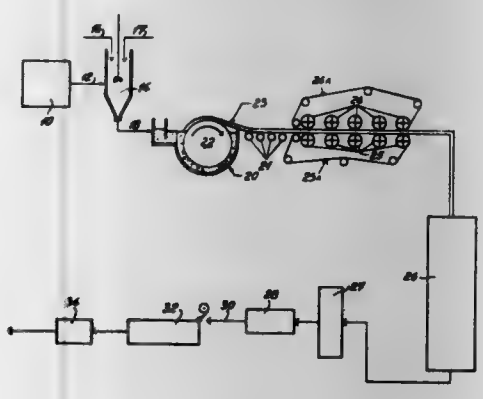
1. An inflatable support member comprising a substantially tubular body having attachment means on at least one end thereof, said tubular body being collapsible prior to introduction of inflating fluid and comprising:
(a) a sealable inner liner impermeable to said inflating fluid;
(b) at least one first layer of filaments spirally wound in a first direction at a first predetermined angle with respect to the longitudinal axis of said tubular body;
(c) at least one second layer of filaments spirally wound in a second direction opposite said first direction, at a second predetermined angle with respect to said longitudinal axis;
(d) a layer of longitudinally oriented filaments disposed between said first and second layers of filaments;
(e) means for bonding said filaments together, said bonding means becoming stiff after curing; and
(f) means for inhibiting the curing of said bonding means until after said support structure has been inflated.

4,514,448

HARDBOARD-LIKE PANEL

Jacques Grignon, Neuville, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Dec. 28, 1982, Ser. No. 454,072
Int. Cl.[3] B32B *11/02, 11/04*
U.S. Cl. 428—68 4 Claims



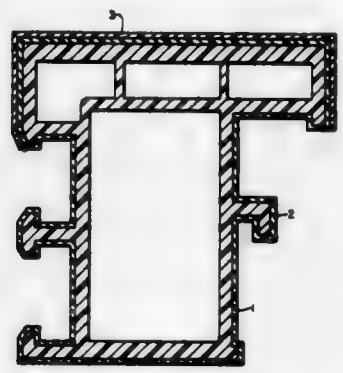
1. A rigid and light panel having a rigid core, and a wrapping enclosure surrounding said core, said rigid core comprising wood fibres and asphalt intimately mixed together, said asphalt being 10–30% by weight of said core, and at least 50% by volume of said core being air cells, said wrapping enclosure comprising a resin-impregnated paper glued to the rigid core so as to form a hard shell thereabout, said panel having a R value of at least 0.8.

4,514,449

PROFILE STRIP, ESPECIALLY FOR THE PRODUCTION OF WINDOW OR DOOR FRAMES

Wolfgang Budich, Troisdorf-Eschmar; Bertram Gasper, Troisdorf-Spich; Josef Kurth, Troisdorf-Spich; Karl-Günter Scharf, Troisdorf-Spich, and Waldemar Wissinger, Siegburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 461,871
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202918
Int. Cl.[3] B32B *5/16, 27/30*
U.S. Cl. 428—76 16 Claims



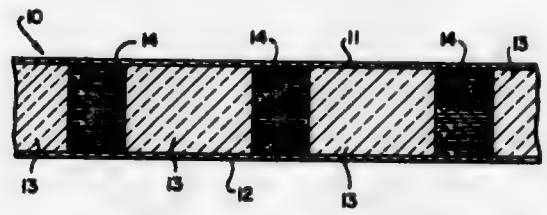
1. A profile strip for the manufacture of frames for windows or doors comprising a core profile formed of reinforced synthetic resin and a synthetic resin shell surrounding at least a part of the core profile; said core profile being formed of a glass fiber-reinforced polyvinyl chloride resin-containing composition, additionally containing per 100 parts by weight of a polyvinyl chloride resin having a K value between 55 and 75, 40 to 100 parts by weight of glass fibers having a diameter of between 5 and 25 μm with a length of up to 12 mm, and 0 to 25 parts by weight of a mineral filler with an average particle diameter of below 50 μm; said core profile exhibiting a microporous, slightly roughened surface, and said core profile being bonded to the shell; said shell being free of glass fibers, being formed of a synthetic resin that is compatible with polyvinyl chloride resin and exceeding the impact resistance of the core profile and said strip exhibiting, in the extrusion direction, a modulus of elasticity of at least 8000 N/mm^2 at 23° C.

4,514,450

PEG SUPPORTED THERMAL INSULATION PANEL

Jeffert J. Nowobilski, Orchard Park, and William J. Owens, Kenmore, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 1, 1983, Ser. No. 547,622
Int. Cl.[3] B32B *7/00*
U.S. Cl. 428—120 14 Claims



1. An insulation panel suitable for use to insulate a high temperature enclosure comprising two spaced, aligned, thin metal sheets of identical surface area, said metal sheets spaced by a plurality of insulation pegs having no external stabilizing means, having a density of from 30 to 80 pounds per cubic foot and produced by a process comprising:
(a) providing a stack of substantially binderless glass fiber sheets in an amount sufficient to achieve an insulation peg of desired density from 30 to 80 pounds per cubic foot;
(b) providing a press to compress the stack;

(c) heating the stack and the press to a temperature in the range of from the glass strain temperature to less than the glass softening temperature for a time period sufficient to achieve thermal equilibrium of the stack and the press surface;

(d) thereafter compressing the stack by applying a light vertically compressive force of from 2.0 to 20.0 pounds per square inch to the stack for a time period sufficient to produce said desired density and to substantially relieve stress within the compressed stack;

(e) cooling the compressed glass fiber stack to ambient temperature;

said pegs covering from 4 to 30 percent of said surface area and oriented such that the glass fibers are parallel to said metal sheets, with the remaining space between said metal sheets filled with high performance insulation.

4,514,451

POLYESTER SUBSTRATE FOR MAGNETIC RECORDING MEDIUM HAVING OLIGOMER PROTRUSIONS THEREON

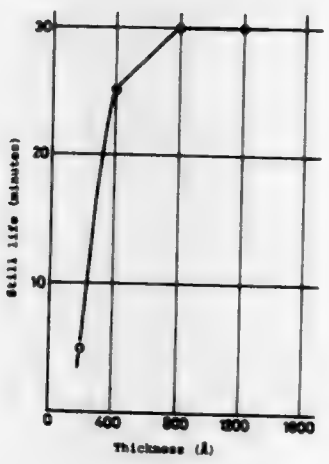
Takashi Suzuki, Takatsuki; Koichi Shinohara, Kobe; Masaru Odagiri, Kawanishi; Takashi Fujita, Kawanishi, and Shigeki Kawase, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 18, 1983, Ser. No. 514,607

Claims priority, application Japan, Jul. 22, 1982, 57-128784

Int. Cl.³ B32B *3/00*; G11B *5/70*

U.S. Cl. 428—141 **9 Claims**



1. A magnetic recording medium comprising:

a polyester substrate having oligomer protrusions at least on its principal face, said protrusions present at a density of 1000/mm^2 or higher, and

a ferromagnetic thin film having a thickness of 400 Å or larger formed on said principal face, wherein

the heights of said oligomer protrusions are 100Å–14 2000 Å and

the lateral spread of said oligomer protrusions is 1 μm or smaller.

4,514,452

MAGNETIC RECORDING DISK

Kazuhiro Tanaka; Ken-ichi Kawakami, and Toshiya Yoshii, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 11, 1984, Ser. No. 599,136

Claims priority, application Japan, Apr. 20, 1983, 58-68299

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—141 **19 Claims**

1. A magnetic recording disk which comprises (1) a three-layered laminate consisting of a core layer of a biaxially oriented polyolefin film which has a birefringence of not more than 0.01 and an amorphous-region orientation coefficient of not more than 0.2 and two outer layers of a biaxially oriented polyester film adhered to said core layer, and (2) a magnetic layer formed on at least one side of the laminate.

4,514,453

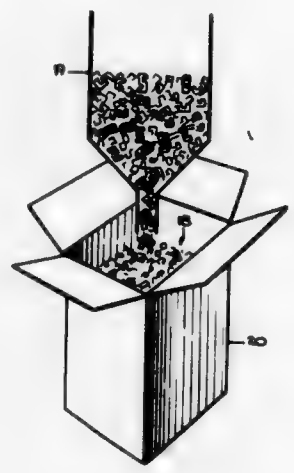
LOOSE FILL PACKING ELEMENT OF HOOKED CONFIGURATION

Harry Bussey, Jr., P.O. Box 115, Serpentine Rd., Navesink, N.J. 07752

Filed May 2, 1983, Ser. No. 490,663

Int. Cl.³ B32B *3/00*; B65D *81/02*

U.S. Cl. 428—159 **9 Claims**



1. A loose fill free flowing packing material comprising a plurality of resilient thermoplastic elements, each said element having a substantially uniform thickness, a body portion having a first flat surface on one side and a second flat surface on an opposite side, a first leg extending integrally from one end of said body portion and passing through a plane of said first surface, a second leg extending integrally from an opposite end of said body portion and passing through a plane of said second surface, a first recess in said first flat surface adjacent said first leg, and a second recess in said second flat surface adjacent said second leg each leg being of a width at the end thereof greater than the width of a respective recess at the mouth thereof, each said leg being of decreasing width inwardly of said end thereof and each said recess being of increasing width inwardly of said mouth thereof to prevent each leg from fitting into a recess of a like element.

4,514,454

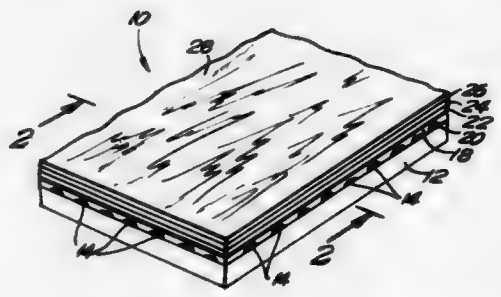
HEAT DISSIPATING DECORATIVE LAMINATE

James Cooley, Orangeburg, S.C., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 24, 1983, Ser. No. 544,774

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—195 **11 Claims**



1. A heat resistant decorative laminated panel comprising:

a wood substrate having at least one substantially planar surface;

a discontinuous metal layer applied to said planar surface of said wood substrate, said metal layer covering at least 50% but less than 100% of said planar surface of said wood substrate;

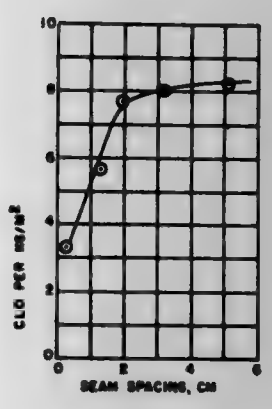
a layer of isocyanate solution extending continuously across the metal layer and penetrating to the wood substrate at the discontinuities in the metal layer to securely bond the metal to the wood substrate;
a layer of adhesive disposed on said isocyanate layer;
a decorative laminate disposed on said adhesive; and
a top coating extending continuously across said decorative laminate, whereby when a heated object is placed on said panel, the heat is rapidly dissipated by the metal layer preventing discoloration and damage to the panel.

4,514,455

NONWOVEN FABRIC FOR APPAREL INSULATING INTERLINER

Sang-Hak Hwang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 26, 1984, Ser. No. 634,780
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—198 5 Claims



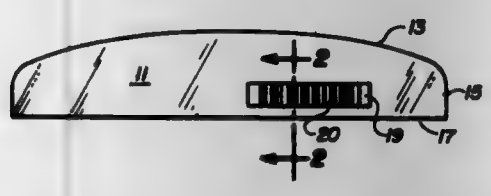
1. A composite nonwoven fabric comprising a batt of crimped polyester staple fibers and a bonded nonwoven sheet of continuous polyester filaments, the batt and the sheet being in surface contact with each other and being attached to each other by a series of parallel seams having a spacing of at least 1.7 cm between successive seams, the staple fiber batt weighing in the range of 100 to 250 g/m^2 and containing a blend of light and heavy fibers, the heavier fibers having a dtex no greater than 20 and being at least twice but no greater than 15 times the dtex of the lighter fibers and the lighter fibers having a dtex in the range of 1 to 3 and amounting to 40 to 85 percent of the batt weight, the filament sheet weighing in the range of 10 to 25 g/m^2, and the nonwoven fabric having an average density in the range of 15 to 24 kg/m^3 and a thermal insulation value per unit weight of at least 7 CLO per kg/m^2.

4,514,456

METHOD OF MAKING A CODED MARKING IN A GLASS WORKPIECE EMPLOYING A TRISILICATE COATING AND PRODUCT THEREOF

Samuel B. Deal, and Barry M. Cushman, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 20, 1982, Ser. No. 420,496
Int. Cl.³ B32B *3/10, 5/16, 7/00*
U.S. Cl. 428—204 10 Claims



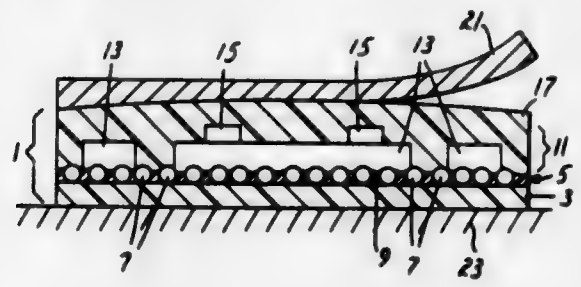
1. In a method for producing a machine-readable coded marking in a surface of a glass workpiece, said method including
(a) applying to a selected surface area of said glass workpiece an undercoating comprising a first aqueous suspension consisting essentially of first pigment particles and a first alkali silicate binder,
(b) drying said undercoating,
(c) applying to said dry undercoating an overcoating comprising a second aqueous suspension of second pigment particles and a second alkali silicate binder,
(d) drying said overcoating and
(e) recessing a plurality of related marks through said overcoating,
the improvement wherein at least one of said alkali silicate binders consists essentially of a mixture of dissolved sodium silicate, dissolved potassium silicate, and a lithium-stabilized silica sol.

4,514,457

LOW-PROFILE TRANSFER ARTICLE

Makoto Sasaki, Mishimia, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 17, 1983, Ser. No. 467,435
Claims priority, application Japan, Feb. 19, 1982, 57-25688
Int. Cl.³ B32B *3/18;* B41M *5/00*
U.S. Cl. 428—204 8 Claims



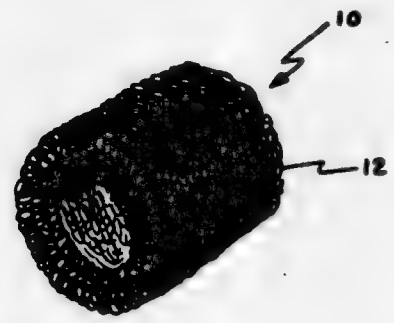
1. A low profile flexible transfer article comprising:
(a) a first layer comprising an adhesive capable of bonding said article to a given substrate.
(b) a second layer securably adhered to said first layer, said second layer comprising a coating of discrete, inert particles, said particles being sufficiently proximately placed relative to one another to present an ink-printable surface, and, optionally, a matrixing agent which fills the voids between said adjacent particles without covering said particles, and
(c) a third layer adhered to said ink-printable surface of said second layer, said third layer comprising at least one stratum of ink defining a predetermined pattern, said article being free of a permanent self-supporting base film.

4,514,458

SPRING-LIKE MATERIAL FORMED OF COMPRESSED METALLIC WIRE

Richard P. Thorn, and Bhagwati P. Gupta, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Nov. 9, 1983, Ser. No. 550,133
Int. Cl.³ D03D *13/00*
U.S. Cl. 428—222 8 Claims



1. A resilient and durable metallic material for supporting

loads and accommodating motions within a preselected range of magnitudes, comprising:

a substantially homogeneous mass of drawn metallic wires extending in substantially random relationship to each other; said wires having a predetermined density and high tensile strength, and the diameter thereof being within the range of 0.0035 inch to 0.020 inch;

said wires as initially incorporated within said mass including three-dimensional helical coils spaced along the length thereof at pitch intervals within the range of 0.05 to 0.30 inch and having diameters at least ten times the wire diameter and within the range of 0.05 inch to 0.30 inch;

said mass of coil-containing wires being compacted, by a compression force greater than the maximum force to be applied to the material during use, to impart thereto a preselected shape and a density within the range of 10 percent to 50 percent of said predetermined density;

said wires being substantially free of stress risers other than ones produced by the compaction of mass;

the compression stress/strain properties of said compacted mass being in accordance with the relationship

$$\sigma \leqq 500\ (200^{3.3\epsilon}) \text{ and } \geqq 1000^{1.25\epsilon}$$

for values of ϵ from 0 to 0.50, wherein σ is stress in psi and ϵ is strain in inches per inch, and said properties being substantially isotropic at strain levels of from 0 to 0.20.

4,514,459

WOVEN FABRIC HAVING A VELVETY APPEARANCE

Junyo Nakagawa; Shinji Yamaguchi; Kiyoshi Hirakawa, all of Kurashiki; Isao Tokunaga, Okayama, and Masaaki Ito, Saijo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 23, 1984, Ser. No. 613,225
Claims priority, application Japan, Jun. 2, 1983, 58-99069
Int. Cl.³ D03D *3/00*
U.S. Cl. 428—229 **8 Claims**



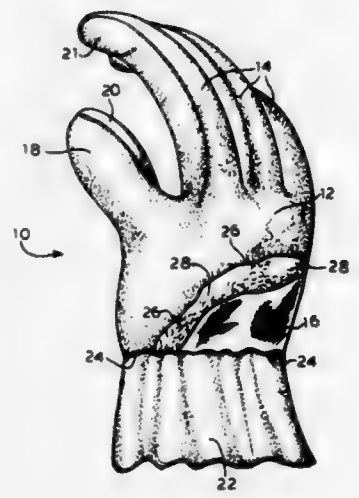
1. A dyed woven fabric having a velvety appearance and excellent bulkiness, characterized in that at least either warp yarns or weft yarns in the fabric comprise flat conjugate fibers having a cross sectional configuration such that the flatness L/W (where L: maximal length of the cross section, and W: maximal width of the cross section) is 3.5–15.0 and the bending angle is 180°–150° and having two kinds of polymers, one different from the other in shrinking percentage in boiling water by more than 2%, conjugating in side-by-side relation in the width-wise direction of the cross section, and the flat conjugate fibers content being more than 20% by weight relative to the entire warp and weft yarns constituents; in that in every section of the fabric as cut parallel to the warp or weft yarns thereof, individual conjugate fibers representing more than 35% by weight of the conjugate fibers content of the fabric, other than the conjugate fibers present at formation points of the fabric, have a cross sectional configuration inclined relative to the surface of the fabric at the angle of inclination (α) being 45°–90°; and in that the floating distance between the formation points of the fabric covers a length of more than ¼ of the pitch of the twist (P) in the conjugate fiber.

4,514,460

SLIP RESISTANT SURFACES

Michael D. Johnson, Coshocton, Ohio, assignor to Becton, Dickinson and Company, Paramus, N.J.

Continuation-in-part of Ser. No. 436,253, Oct. 25, 1982,. This application Jul. 11, 1983, Ser. No. 512,266
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—245 **4 Claims**



1. A laminate for providing a breathable garment having a textured exposed gripping surface for use in a work environment characterized by

(a) a substrate, said substrate being a member selected from the group consisting of a non-woven fibrous web, a woven web, and a knitted web;

(b) a foamed layer applied to one surface of said substrate;

(c) said foamed layer forming the outer exposed gripping surface for a garment made from such laminate; and

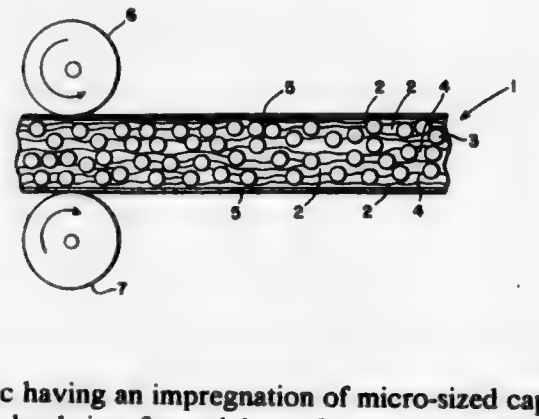
(d) said foamed layer having an air content within the range of between about 40 and 95 percent.

4,514,461

FRAGRANCE IMPREGNATED FABRIC

Yen-Kong Woo, 1545 Geary Blvd., San Francisco, Calif. 94115

Continuation-in-part of Ser. No. 130,728, Mar. 17, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,443
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—240 **1 Claim**



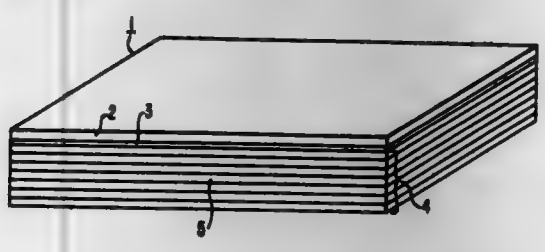
1. A fabric having an impregnation of micro-sized capsules;

said capsules being formed by a fragrance emitting core encapsules in a micro-sized container of sufficient strength to resist breakage under normal handling of the fabric but sufficiently fragile to rupture under suitably exerted hand pressure to release said fragrance;

said impregnation having the characteristic of being sprayed with said capsules in company with a liquid binder by a forceful spray to insure complete and uniform penetration of said fabric by said capsules;

said fabric having the characteristic of having passed lightly between heated pressure rollers to insure absence of any capsules on its surface thus providing a smooth surface on said fabric.

4,514,462
WARP RESISTANT LAMINATES HAVING A CORE IMPREGNATED WITH A MIXTURE OF PHENOLIX RESIN AND ALKYL SUBSTITUTED PHENOL
Lenon G. Brooker, Hampton, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 14, 1983, Ser. No. 485,089
Int. Cl.[3] B32B *17/10, 27/04*
U.S. Cl. 428—285 9 Claims



1. A sheet material, impregnated with a reaction mixture composition consisting essentially of:
(1) a phenolic component selected from the group consisting of phenol, cresol, xylenol, resorcinol, naphthol, and mixtures thereof,
(2) alkyl substituted phenol, where alkyl contains from 4 to 13 carbon atoms, and
(3) aldehyde; where the mole ratio of phenolic component:alkyl substituted phenol is from about 1:0.0035 to 0.5, said composition being in the dried "B"-stage.

4,514,463
LAMINATE SUITABLE AS SEALING LINER FOR LIQUID CONTAINERS
Josef Alteepping, Ochtrup, and Dietrich E. Bornemann, Coesfeld, both of Del.X, assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed Mar. 22, 1984, Ser. No. 592,382
Int. Cl.[3] B32B *27/00*
U.S. Cl. 428—286 8 Claims

1. A liner for a liquid container comprising a laminate comprising a layer of ethylene/butylacrylate copolymer in an amount of 600 to 1200 grams per square meter thermally bonded to a heat-set, non-woven polyolefin fabric having a weight of 100 to 300 grams per square meter, said ethylene/-butylacrylate copolymer containing 15 to 25 percent butylacrylate on a weight basis.

4,514,464
LAMINATES OF POLYCARBONATE OR ACRYLATE AND PLASTICIZED POLYVINYL BUTYRAL
I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mich.
Filed Dec. 7, 1983, Ser. No. 559,069
Int. Cl.[3] B32B *27/08, 27/30, 27/36*
U.S. Cl. 428—332 7 Claims

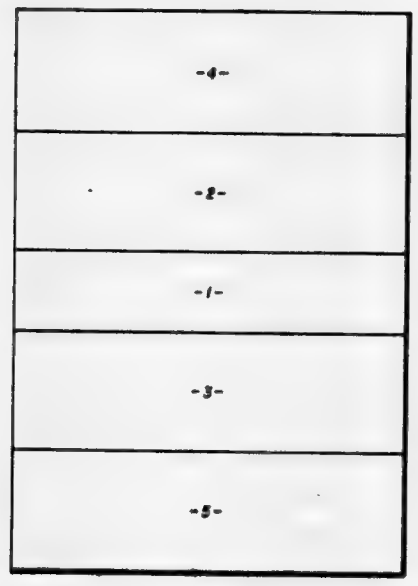
1. A laminate comprising a sheet of polycarbonate or polyacrylate, a sheet of polyvinyl butyral plasticized with a plasticizer which does not significantly craze said polycarbonate or polyacrylate when said plasticized polyvinyl butyral contacts said polycarbonate or polyacrylate and a layer of polyvinylidene chloride or cured urethane acrylate resin interposed between the interfacial surfaces of said sheet of polycarbonate or polyacrylate and said sheet of polyvinyl butyral for bonding said sheets together and resisting delamination on impact at temperatures at least as low as about minus 10° C.

2. The laminate of claim 1 wherein said interposed layer is polyvinylidene chloride.

3. The laminate of claim 1 wherein said interposed layer is urethane acrylate resin.

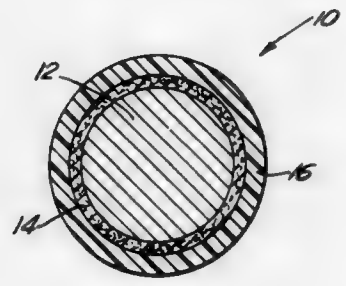
4. The laminate of claim 1, 2 or 3 wherein the thickness of said interposed layer is about 0.013 to 0.13 mm.

4,514,465
STORM WINDOW FILM COMPRISING AT LEAST FIVE LAYERS
Julian H. Schoenberg, Greenville, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.
Filed May 30, 1984, Ser. No. 615,418
Int. Cl.[3] B32B *27/08*
U.S. Cl. 428—339 21 Claims



1. An oriented multilayer film comprising:
a cross-linked core layer comprising either (a) an ethylene vinyl acetate copolymer or (b) a three component blend of (1) a linear low density polyethylene, (2) a linear medium density polyethylene and (3) an ethylene vinyl acetate copolymer;
two cross-linked interior layers each comprising a linear low density polyethylene; and
two cross-linked surface layers each comprising a four component blend of (1) a linear low density polyethylene, (2) a linear medium density polyethylene, (3) an ethylene vinyl acetate copolymer and (4) at least one ultraviolet light stabilizer.

4,514,466
FIRE-RESISTANT PLENUM CABLE AND METHOD FOR MAKING SAME
Joseph A. Leon, Jr., and Joseph C. Caprino, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Jun. 4, 1982, Ser. No. 385,227
Int. Cl.[3] B32B *27/00;* H01B *7/00*
U.S. Cl. 428—383 4 Claims



1. A tough, fire resistant electrically conductive cable comprising:
(a) an electrically conductive metal core;
(b) a thin continuous tape layer of a resin impregnated mica paper laminated to a glass support selected from the group consisting of a mat, a fabric and a roving wrapped on said metal core; and
(c) an outer coating of platinum catalyzed heat cured silicone rubber over said tape layer.

4,514,467

METHOD OF OBTAINING A POSITIVE BOND BETWEEN PAINTED ARTICLES AND CONCRETE

Heinz Riemer, Bottrop; Joern-Volker Weiss, Haltern, and Friedhelm Mutzberg, Muelheim, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 505,039

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222529

Int. Cl.³ B32B *27/38*; B05D *3/02, 1/36*

U.S. Cl. 428—413 **15 Claims**

1. A method for bonding a painted surface to concrete, comprising treating the painted surface with an epoxy resin-cement mortar mixture comprising an epoxy resin-salt emulsion which comprises:

(a) a liquid epoxy resin,

(b) about 30–130 wt. % of water based on the amount of epoxy resin,

(c) an emulsifying effective amount of an emulsifier comprising a primary, aliphatic alcohol of 8–14 carbon atoms, an adduct thereof with up to 10 ethylene oxide groups, or a mixture thereof, and

(d) an effective amount of a latent curing agent comprising a reaction product of the essentially complete neutralization of a diamine of the formulae

$$H_2N—CH_2—R—NH_2$$

or

$$H_2N—R—CH_2—R—NH_2$$

with oxalic acid,

wherein R is alkyl substituted alkylene or cycloalkylene each of 6–9 carbon atoms in total, or phenyl alkylene of 7–9 carbon atoms in total,

or

(a) a liquid epoxy resin,

(b) water,

(c) an emulsifier comprising a primary aliphatic alcohol of 12–14 carbon atoms; an adduct thereof with up to 5 ethylene oxide groups; or a polyglycol ester of a C_{10-22}-aliphatic carboxylic acid, and

(d) a latent curing agent comprising the reaction product obtained by complete neutralization with oxalic acid of (i) a polyamine of the formula

$$H_2N—CH_2—CH_2—NH—_xH$$

wherein x=2, 3, or 4,

or of (ii) a reaction product, containing amino groups, of such a polyamine with a fatty acid;

and drying the applied mixture to form a bond to the painted surface.

2. A method for bonding a painted surface to concrete, comprising treating the painted surface with an epoxy resin emulsion which comprises:

(a) a liquid epoxy resin,

(b) about 30–130 wt. % of water based on the amount of epoxy resin,

(c) an emulsifying effective amount of an emulsifier comprising a primary, aliphatic alcohol of 8–14 carbon atoms, an adduct thereof with up to 10 ethylene oxide groups, or a mixture thereof, and

(d) an effective amount of a latent curing agent comprising a reaction product of the essentially complete neutralization of a diamine of the formulae

$$H_2N—CH_2—R—NH_2$$

or

$$H_2N—R—CH_2—R—NH_2$$

with oxalic acid,

wherein R is alkyl substituted alkylene or cycloalkylene each of 6–9 carbon atoms in total, or phenyl alkylene of 7–9 carbon atoms in total,

or

(a) a liquid epoxy resin,

(b) water,

(c) an emulsifier comprising a primary aliphatic alcohol of 12–14 carbon atoms; an adduct thereof with up to 5 ethylene oxide groups; or a polyglycol ester of a C_{10-22}-aliphatic carboxylic acid, and

(d) a latent curing agent comprising the reaction product obtained by complete neutralization with oxalic acid of (i) a polyamine of the formula

$$H_2N—CH_2—CH_2—NH—_xH$$

wherein x=2, 3, or 4,

or of (ii) a reaction product, containing amino groups, of such a polyamine with a fatty acid;

drying the applied emulsion;

treating the emulsion coated surface with a cement mortar mixture; and

drying the applied mixture to form a bond to the painted surface.

15. An article having a painted surface, which is bound to an epoxy resin-cement mortar mixture, and which is prepared by the method of claim 1.

4,514,468

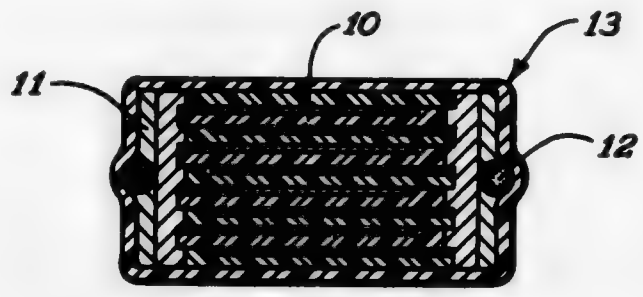
ELECTRONIC COMPONENT WITH UV-CURED COATING

Michael F. Lucey, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed May 26, 1983, Ser. No. 498,374

Int. Cl.³ C08F *8/00*; B29C *5/00*

U.S. Cl. 428—418 **6 Claims**



1. An electronic component having a coating of an ultraviolet light curable composition directly against said component, said coating consisting essentially of a completely ultraviolet light cured product obtained from a mixture of 51 to 59% of a bisphenol A epoxy diacrylate, 34.8 to 44.4% of a cycloaliphatic methacrylate, about 2% of a photoinitiator, about 2% of a peroxide, about 0.2% of a wetting agent, and about 2% of a wet adhesion monomer.

4,514,469

PEENED OVERLAY COATINGS

Joseph F. Loersch, Bolton, and James W. Neal, Columbia, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 10, 1981, Ser. No. 300,727

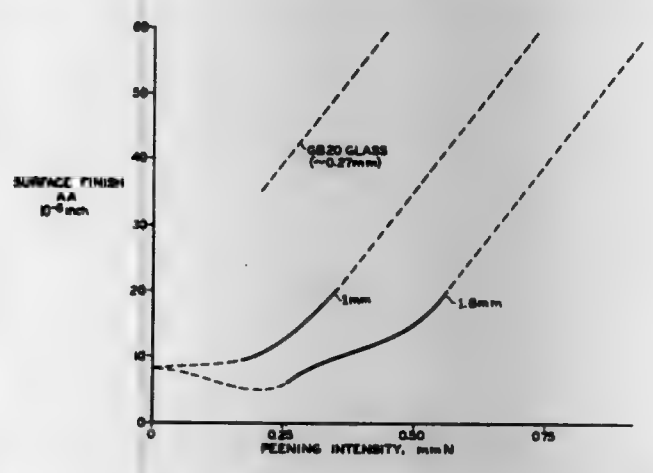
The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.

Int. Cl.³ B22F *7/04*; C21D *7/06*

U.S. Cl. 428—553 **12 Claims**

1. An article having an overlay coating with a surface finish smoother than about 50×10^{-6} inch Arithmetic Average pro-

duced by a process which comprises first applying a coating to a workpiece, and then peening the coating surface with spherical shot having a diameter uniform to ±4% and a velocity uniform to ±4%, the diameter of the shot lying in the range 1–2.5 mm.



4,514,470

DIFFUSION BONDING BETWEEN TITANIUM BASE ALLOYS AND STEELS

Dan G. Rosenthal, Huntington, and Louis J. Fiedler, Trumbull, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 22, 1982, Ser. No. 443,469
Int. Cl.³ B32B *15/01*
U.S. Cl. 428—662 **7 Claims**

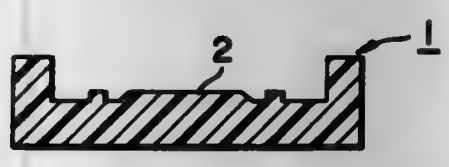
1. A composite comprising (a) an inner material comprising titanium; (b) an outer material comprising iron, nickel or mixtures thereof; and (c) a three-layered metallic interlayer material which is used to diffusion bond said inner material and said outer material, said interlayer material comprising a first layer comprising nickel, said first layer in contact with said outer material, a third layer comprising a Group V-B metal, said third layer in contact with said inner material and a second layer comprising copper, said second layer sandwiched between said first layer and said third layer.

4,514,471

PROCESS FOR THE PREPARATION OF ELECTRON BEAM CURING GYPSUM PANEL

Kenji Sugimoto, Chigasaki, and Osamu Isozaki, Hiratsuka, both of Japan, assignors to Taisei Corporation, Tokyo and Kansai Paint Co., Ltd., Amagasaki, both of, Japan

Continuation of Ser. No. 410,844, Aug. 23, 1982, abandoned. This application Mar. 29, 1984, Ser. No. 594,434
Claims priority, application Japan, Aug. 26, 1981, 56-132635
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—703 **7 Claims**



1. A process for preparing gypsum panels coated with a resin composition that is cured by electron beam irradiation, said process comprises the steps of:

(1) adding to a hydrated gypsum slurry formed by adding water to α-type hemihydrate gypsum in an amount of from 28 to 60 parts by weight of water per 100 parts by weight of gypsum

(i) an organic additive selected from acrylic copolymer resin emulsion and melamine resin powder in an amount of from 0.1 to 10 parts by weight of solids per 100 parts by weight of the gypsum in the hydrated gypsum slurry,

(ii) a granular inorganic additive selected from silica sand, calcium carbonate and marble powder having a particle size of from No. 3 or 20 mesh 80% pass to No. 6 or 100 mesh 75% pass according to JIS G-5901 in an amount of from 20 to 80 parts by weight per 100 parts by weight of the gypsum in the hydrated gypsum slurry, and

(iii) an organic or inorganic fibrous material selected from pulp, glass fibers and volcanic ash fibers in an amount of from 0.2 to 3.0 parts by weight per 100 parts by weight of the gypsum in the hydrated gypsum slurry;

(2) casting the resulting slurry to form a first slurry layer int a flat plated mold or a mold having a pattern embossed thereon, the pattern having a thickness of from 0.4 to 6 mm;

(3) defoaming said slurry layer with vibration, then setting and drying to form a first gypsum substrate;

(4) coating on the surface of the gypsum substrate an electron beam curing resin composition consisting essentially of

(i) a reaction product between a functional group-containing base resin and a vinyl monomer having a group capable of effecting an addition or condensation reaction with said functional group, the molecule of said reaction product having an ethylenically unsaturated bond of from 0.3 to 3.0 moles/kg of molecule,

(ii) a cross-linkable oligomer having a molecular weight less than 1000 and have from 2 to 4 polymerizable vinyl groups in an amount of from 1 to 300 parts by weight per 100 parts by weight of the reaction product, and

(iii) at least one of an inorganic pigment, organic pigment and metallic pigment; and thereafter

(5) exposing the resin coating to accelerated electron beam irradiation thereby curing the resin composition on the surface of the gypsum substrate.

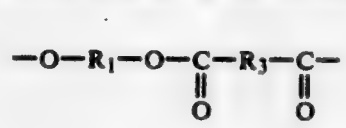
4,514,472

PACKAGING FILM PERMEABLE TO SMOKE CONSTITUENTS AND PACKAGED SMOKED FOODSTUFF

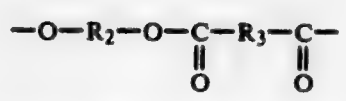
Cornelius M. F. Vrouenraets, Dieren, Netherlands, assignor to Akzo nv, Arnhem, Netherlands

Filed Dec. 1, 1983, Ser. No. 557,000
Claims priority, application Netherlands, Dec. 2, 1982, 8204674
Int. Cl.³ B32B *27/36*; A22C *13/00*
U.S. Cl. 428—220 **13 Claims**

1. Packaging film, particularly for foodstuffs, which is permeable to smoke constituents, wherein the film entirely or substantially consists of a thermoplastic copolyester which is built up of recurrent long-chain and short-chain ester units which are joined head-to-tail through ester bonds, the long-chain ester units corresponding to the formula



and the short-chain ester units to the formula:



where R_1 is a divalent radical remaining after removal of the terminal hydroxyl groups from a poly(alkylene oxide) glycol having a molecular weight in the range of 600 to 6000 and a carbon to oxygen ratio of 2.0 to 2.7; R_2 is a divalent radical remaining after removal of the hydroxyl groups from a diol having a molecular weight not higher than 250; R_3 is a divalent radical remaining after removal of the carboxylic acid groups

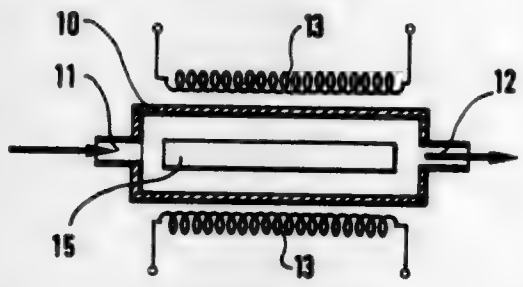
from a dicarboxylic acid; with the proviso that said long-chain ester units amount to 20 to 60% by weight of the copolyester and at least 70% of the R_3 groups are 1,4-phenylene radicals, and the phenol number of the film, expressed in mg per m^2, is at least 20, the thickness of said film being in the range of 1 to 300 microns.

4,514,473

METHOD OF MANUFACTURING AN ELECTRODE FOR AN ELECTROCHEMICAL CELL, AND AN ELECTRODE MANUFACTURED BY THE METHOD

John Atkin, St Médard en Jalles, and Marie-Thérèse Loustau, Bordeaux, both of France, assignors to Societe Anonyme Dite: SAFT, Romainville, France

Filed Jan. 31, 1984, Ser. No. 575,566
Claims priority, application France, Feb. 8, 1983, 83 01923
Int. Cl.³ H01M *2/00*
U.S. Cl. 429—10 **13 Claims**



1. A method of manufacturing an electrode for an electrochemical cell, said electrode comprising an active material and a conductive metal powder, the method comprising the steps of:

preparing an intimate mixture of said powder and said active material in granular form; and

passing the mixture through a pulsed alternating magnetic field, the pulse duration and the interval between pulses being selected to heat the conductive metal powder sufficiently to sinter the powder without deteriorating the grains of active material.

11. An electrode obtained by implementing the method of claim 1, wherein said mixture comprises the following percentages by weight:

10% to 90% metal powder; and

90% to 10% active material.

4,514,474

AIR CATHODE STRUCTURE MANUFACTURE

William R. Momyer, Palo Alto, and Ernest L. Littauer, Los Altos Hills, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

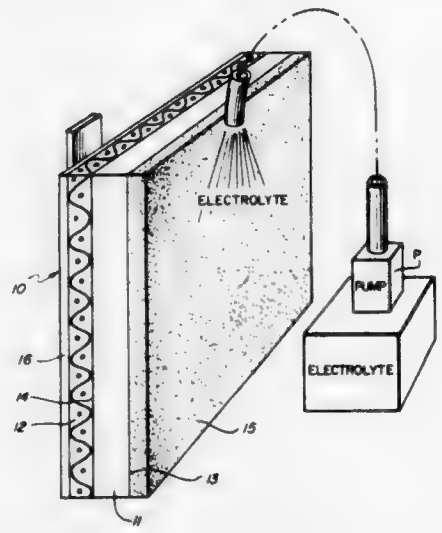
Filed Mar. 11, 1983, Ser. No. 474,502
Int. Cl.³ H01M *12/04*
U.S. Cl. 429—27 **6 Claims**

1. A primary battery comprising an alkali metal anode and an air cathode structure spaced from said anode, said anode and cathode being adapted to contact an aqueous alkaline electrolyte during operation of said battery, said air cathode structure comprising:

a matrix active layer defining an air surface on one face thereof;

a current collector grid on said one face of the matrix active layer; and

a porous, electrically nonconductive polypropylene separator on the opposite face of the matrix active layer between said matrix active layer and said anode, said collector grid and separator being permanently bonded to the matrix active layer, said separator having a preselected porosity providing low IR losses and high resistance to air flow



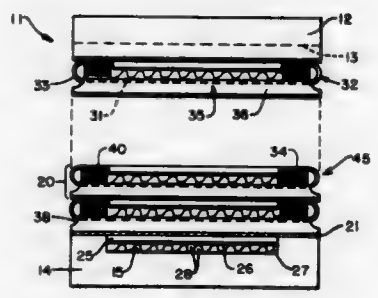
through the matrix active layer to maintain high bubble pressure characteristics thereof.

4,514,475

FUEL CELL SEPARATOR WITH COMPRESSIBLE SEALING FLANGES

Anthony P. Mientek, Glastonbury, Conn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1984, Ser. No. 595,012
Int. Cl.³ H01M *8/02*
U.S. Cl. 429—35 **20 Claims**



1. A fuel cell separator comprising: a substantially flat, planar, gas-impermeable plate and gas-impermeable seal means along a peripheral edge of said plate projecting from the plane thereof, said seal means including adjustment means accommodating resilient compression of said seal means toward the plane of said plate.

4,514,476

INSTRUMENT FOR INDIRECT OPHTHALMOSCOPY AND ELECTRICAL ENERGY PRODUCING MEANS THEREFOR

James L. Fitzgerald, 20 Mason St., Williamstown, Mass. 01267

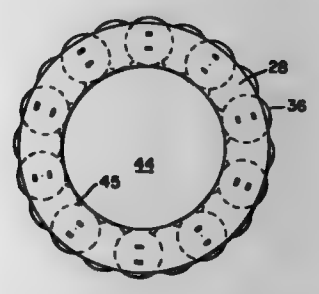
Division of Ser. No. 366,698, Apr. 8, 1982,. This application May 22, 1984, Ser. No. 612,914
Int. Cl.³ H01M *6/46*
U.S. Cl. 429—94 **4 Claims**

1. Electrical energy producing means comprising an annular battery adapted to extend completely around and substantially conform to the outer surface of a support means, said battery including:

(a) first and second annular contact members; and

(b) a plurality of battery cells arranged in spaced relation and disposed between and electrically connected to said contact members, said battery cells being arranged in parallel with the positive terminals of each of said cells

electrically connected to one of said first and second contact members and negative terminals of each of said



cells electrically connected to the other of said contact members.

4,514,477

CASSETTE-TYPE POWER UNIT FOR A MOTOR TOY

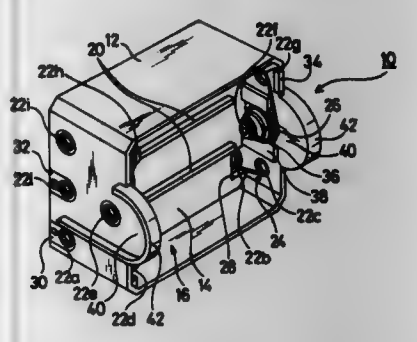
Masao Kobayashi, Tokyo, Japan, assignor to Shinsei Kogyo Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1983, Ser. No. 534,654

Claims priority, application Japan, Sep. 25, 1982, 57-145259[U]

Int. Cl.³ H01M *2/02, 2/20*

U.S. Cl. 429—98 **5 Claims**



1. A cassette-type power unit for a motor toy which comprises a rectangular casing provided at its middle part with a partition, at either side of which is arranged each battery chamber for receiving a plurality of batteries in parallel, forming two battery layers; connecting terminals for ensuring all batteries in the battery chambers to be connected in series; contact pieces provided as power terminals on an outer face of the casing and conductive to an extreme pair of and a middle one of said connecting terminals; and holding pieces protruded from the casing at its opposite sides, each of said holding pieces being provided with a flange for serving as a guide and a stopper upon connection to the motor car.

4,514,478

METHOD OF MAKING A POROUS CARBON CATHODE, A POROUS CARBON CATHODE SO MADE, AND ELECTROCHEMICAL CELL INCLUDING THE POROUS CARBON CATHODE

Michael Binder, Brooklyn, N.Y.; Eric R. Petersen, Manchester, N.J.; Charles W. Walker, Jr., Freehold, N.J.; William L. Wade, Jr., Neptune, N.J., and Sol Gilman, Rumson, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 13, 1984, Ser. No. 640,265

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—196 **17 Claims**

1. Method of making a porous carbon cathode for an electrochemical cell, said method including the steps of

(A) wetting the carbon black with a 1:1 to 1:3 mixture of isopropyl alcohol:water,

(B) adding a binding agent thereto,

(C) smearing the resulting stiff paste on a thin expanded metal screen and pressing and rolling to the desired thickness,

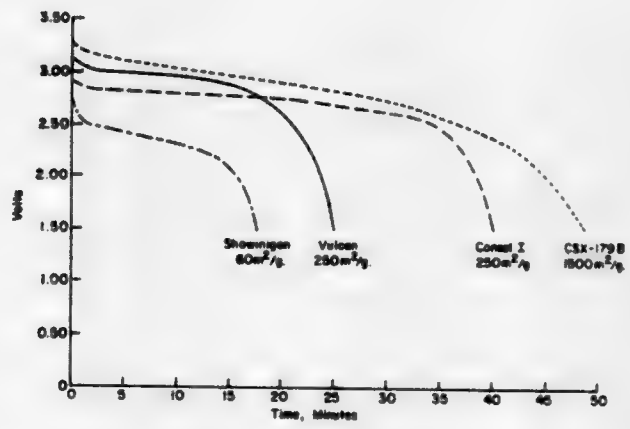
(D) drying the cathode sheet in a vacuum oven at about 100° C. for about one hour while weight is placed above and below the cathode sheet which is sandwiched between two pieces of blotting paper, the total weight applied being sufficient for the cathode to retain structural integrity,

(E) removing the weight and blotting paper and inserting the cathode sheet in an elevated drying oven at about 280° C. for about one hour, and

(F) cooling the cathode sheet between blotting paper, repressing, and rolling.

13. An electrochemical cell comprising lithium as the anode, a solution of 1 molar lithium aluminum chloride in sulfuryl chloride as the electrolyte and a porous carbon cathode, said porous carbon cathode being made by the steps of:

(A) wetting the carbon black with a 1:1 to 1:3 mixture of isopropyl alcohol:water,



(B) adding a binding agent thereto,

(C) smearing the resulting stiff paste on a thin expanded metal screen and pressing and rolling to the desired thickness,

(D) drying the cathode sheet in a vacuum oven at about 100° C. for one hour while a weight is placed above and below the cathode sheet which is sandwiched between two pieces of blotting paper, the total weight applied being sufficient for the cathode to retain structural integrity,

(E) removing the weight and blotting paper and inserting the cathode sheet in an elevated drying oven at 280° C. for one hour, and

(F) cooling the cathode sheet between blotting paper, repressing, and rolling.

4,514,479

METHOD OF MAKING NEAR INFRARED POLARIZERS

Ronald A. Ferrante, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1980, Ser. No. 165,000

Int. Cl.³ G03H *1/18;* G03C *5/00;* C23F *1/02*

U.S. Cl. 430—2 **6 Claims**

1. A method of making thin film wire grid polarizers for the infrared spectral region comprising the steps of:

coating a layer of material transparent to said spectral region on a substrate with high transmission in said spectral region;

depositing a layer of photoresist over said coating;

exposing said layer of photoresist to a two-beam laser interference pattern where a grating is recorded which is given as functions of the interbeam angle by the grating equation.

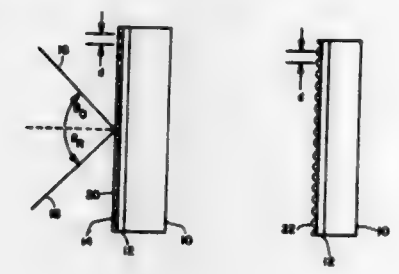
$$\nu = \frac{n(\sin\theta_o + \sin\theta_R)}{\lambda_a}$$

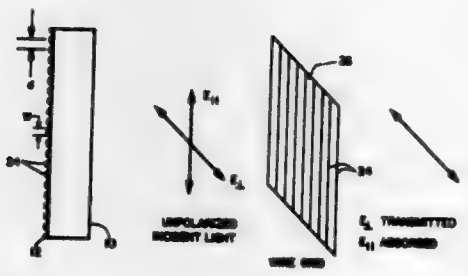
where

ν=spatial frequency,

n=photoresist refractive index, λ_a=exposing wavelength, and

$\theta_O\theta_R$=angle of incidence of object and reference waves measured in the photoresist:





developing said exposed photoresist to produce a surface relief grating; and

ion milling the surface relief grating to reproduce the relief surface in said transparent material.

4,514,480

METHOD OF CONTROLLING TONER CONCENTRATION FOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

Kenichi Wada, Sakai; Tateki Oka, Toyohashi, and Kenji Tabuchi, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

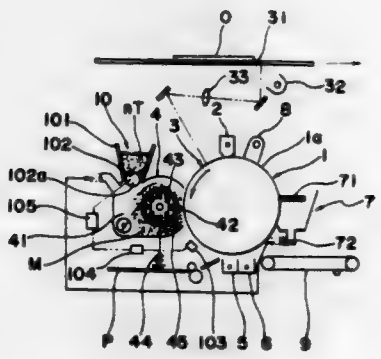
Continuation-in-part of Ser. No. 329,204, Dec. 9, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,776

Claims priority, application Japan, Dec. 19, 1980, 55-181030; Oct. 26, 1981, 56-171617

Int. Cl.³ G03G *13/09*

U.S. Cl. 430—30

8 Claims



1. A method of controlling toner concentration in an electrophotographic copying apparatus in which an electrostatic latent image formed on a photosensitive member is subjected to magnetic brush development by impression of a developing bias voltage having the same polarity as that of said electrostatic latent image and which uses a dual component developing material composed of toner particles and magnetic particles which are triboelectrically charged to polarities different from each other, said method comprising the steps of magnetically detecting the amount of said magnetic particles adhering to said photosensitive member, and supplying an amount of replenishing toner according to the amount of said magnetic particles thus detected.

4,514,481

4H-THIOPYRAN-1,1-DIOXIDE AND ELECTROPHOTOGRAPHIC LAYERS AND ELEMENTS COMPRISING SAME

Michael Scozzafava, Rochester; Chin H. Chen, Webster, both of N.Y.; George A. Reynolds, Gainesville, Ga., and Jerome H. Perlstein, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 9, 1984, Ser. No. 588,169

Int. Cl.³ G03G *5/06, 5/14*

U.S. Cl. 430—58

14 Claims

6. An electrophotographic element comprising a charge-generating electrophotographic layer in electrical contact with a charge-transport layer characterized in that the charge-transport layer comprises a 4H-thiopyran-1,1-dioxide having

(a) an electron withdrawing group in the 4-position and

(b) a half wave potential more positive than −0.5 volts as measured against a saturated calomel electrode.

4,514,482

PHOTOCONDUCTIVE DEVICES CONTAINING PERYLENE DYE COMPOSITIONS

Rafik O. Loutfy, Willowdale, and Cheng-Kuo Hsiao, Mississauga, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

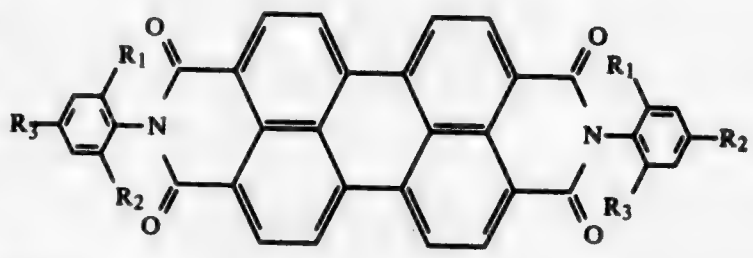
Filed Mar. 8, 1984, Ser. No. 587,483

Int. Cl.³ G03G *5/07*

U.S. Cl. 430—78

26 Claims

1. An improved photoresponsive device comprised in the order stated of (1) a supporting substrate, and (2) a photoconductive layer comprised of perylene dye compositions of the following formula:



wherein R_1, R_2, and R_3 are independently selected from the group consisting of alkyl groups and aryl groups.

4,514,483

METHOD FOR PREPARATION OF SELENIUM TYPE ELECTROPHOTOGRAPHIC ELEMENT IN WHICH THE SUBSTRATE IS SUPERFINISHED BY VIBRATING AND SLIDING A GRINDSTONE

Tadashi Matsuura, and Yasuo Kadomatsu, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1983, Ser. No. 480,601

Claims priority, application Japan, Apr. 2, 1982, 57-55114

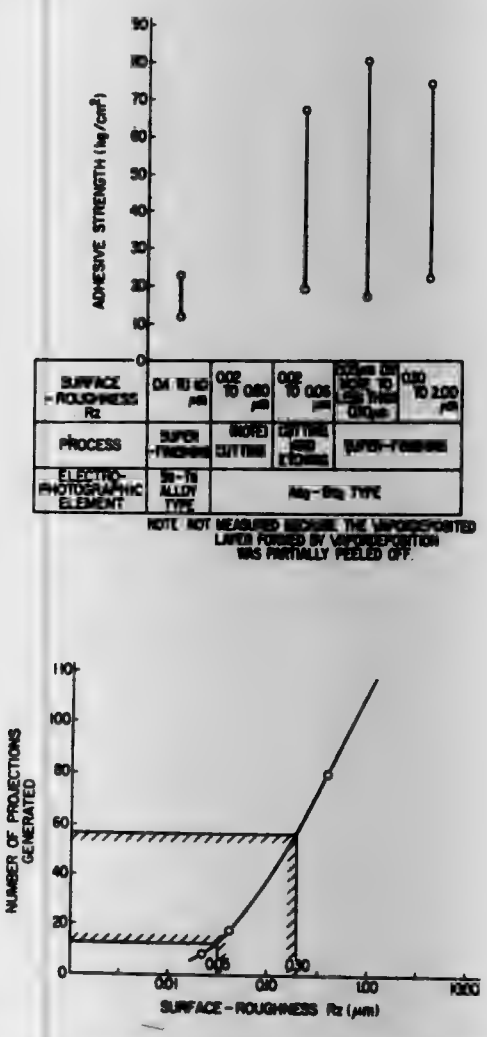
Int. Cl.³ G03G *5/08, 5/04, 5/00*

U.S. Cl. 430—84

4 Claims

1. A method for preparing an electrophotographic element which includes an electrically conductive substrate having a metal surface and a photoconductive layer on said substrate, which method comprises the steps of: superfinishing said metal surface of said substrate, using a grindstone effective for superfinishing, by placing said grindstone in contact with said metal surface, vibrating said grindstone, and effecting relative sliding movement between said metal surface and said vibrating grindstone until the surface roughness of said metal surface is from

0.05 μm to less than 0.3 μm whereby to obtain a superfinished metal surface; and then vapor-depositing As_2Se_3 on said superfinished metal surface to form said photoconductive layer consisting essentially of As_2Se_3.



4,514,484

POWDER FOR DEVELOPING LATENT IMAGES AND A METHOD OF PRODUCING THE POWDER

Francois Pon, Danjoutin; Jean-Philippe Voirin, Hericourt, and Andre Lucan, Belfort, all of France, assignors to Compagnie Internationale Pour L'Informatique Cii/Honeywell Bull (Societe Anonyme), Paris, France

Continuation of Ser. No. 65,053, Aug. 9, 1979, abandoned. This application Jan. 6, 1981, Ser. No. 223,005
Claims priority, application France, Sep. 12, 1978, 78 26113
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—106.6 **22 Claims**

1. A dry powder for developing magnetic latent images formed on an image carrying member, said powder comprising finely-divided particles including from 5 to 80% by weight of a ferromagnetic material, each of said particles comprising a core of said material firmly embedded within a polymerized mixture including at least one organic thermoplastic resin which has been previously melted and hot mixed with a silane in a ratio from 0.01 to 10% by weight based on the weight of said powder.

4,514,485

DEVELOPER FOR ELECTROPHOTOGRAPHY HAVING CARRIER PARTICLES, TONER PARTICLES AND ELECTROCONDUCTIVE FINE POWDERS

Hisayuki Ushiyama, Hiratsuka; Hisayuki Ochi; Tatsuo Miyamae, both of Tokyo, and Katsutoshi Wakamiya, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1982, Ser. No. 409,500
Claims priority, application Japan, Sep. 3, 1981, 56-139164
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—106.6 **8 Claims**

1. An electrophotographic developer which comprises magnetic particles coated with a low surface energy resin, toner particles and electroconductive fine powders from 0.001–1 micron selected from tin oxide and zinc oxide.

4,514,486

METHOD FOR THE FORMATION OF IMAGES

Meizo Shirose, Hino; Kunio Ito, Tama; Hiroyuki Takagiwa; Jiro Takahashi, both of Hachioji, and Kouichi Gunzi, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,812
Claims priority, application Japan, Aug. 30, 1982, 57-149053
Int. Cl.³ G03G *5/38*
U.S. Cl. 430—124 **11 Claims**

1. A method for the formation of images comprising the step of thermally fixing a toner image with the use of a fixing device having a heat roller,

wherein said heat roller is of a cylindrical metal whose wall thickness is not more than 2 mm,

said fixing of said toner image being made with the use of a toner which melts at a prescribed temperature for said fixing device and which becomes increasingly elastic with time.

4,514,487

METHOD FOR MANUFACTURING TONER FOR ELECTROPHOTOGRAPHY

Takahira Kasuya; Hideaki Morita; Hiroyuki Takagiwa, and Goichi Yamakawa, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 215,416, Dec. 11, 1980, abandoned. This application Apr. 14, 1983, Ser. No. 484,692
Claims priority, application Japan, Dec. 17, 1979, 54-162843
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—137 **10 Claims**

1. A method for manufacturing toner for electrophotography which comprises polymerizing a monomer to give a polymer constituent of said toner in the presence of a coloring agent and an anti-offset agent, said anti-offset agent selected from the group consisting of

(a) polyolefins having a weight average molecular weight between 1000 and 45,000,
(b) metal salts of fatty acids,
(c) esters of fatty acids,
(d) partially saponified esters of fatty acids,
(e) higher fatty acids,
(f) higher alcohols,
(g) paraffin wax,
(h) esters of polyalcohols,
(i) fatty acid amides,
(j) silicon varnish,
(k) oligomers of stearylacrylate, and
(l) oligomers of copolymers containing stearylacrylate,

wherein said polymer constituent is a homopolymer or copolymer of one or more of the monomers selected from the classes of

styrenes,
ethylenically unsaturated mono olefins,
vinyl halides,
vinyl esters,
esters of α-methylene aliphatic monocarboxylic acids,
acrylics,
methacrylics,
vinyl ethers,
vinyl ketones,
N-vinyl compounds,
vinyl naphthalenes, and
diolefins

or condensation polymers of

(I) polyalcohols with polycarboxylic acids or
(II) polyamines with polycarboxylic acids.

4,514,488

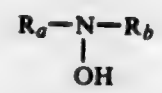
SILVER SALT DIFFUSION TRANSFER PROCESS USING HYDROXYLAMINE AND PYRAZOLIDINONE DEVELOPING AGENTS

Yoshio Idota, and Noriyuki Inoue, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 28, 1984, Ser. No. 594,235
Claims priority, application Japan, Apr. 4, 1983, 58-58989
Int. Cl.³ G03C *5/54, 5/30, 5/38, 1/42*
U.S. Cl. 430—234 **12 Claims**

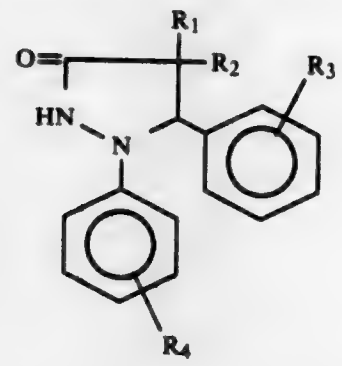
7. In a film unit for a silver salt diffusion transfer process comprising a photosensitive element provided with a photosensitive silver halide emulsion layer on a support, an image-receiving element provided with a layer containing silver-precipitating nuclei on a support, and a processing element provided with breakable containers which hold a viscous aqueous alkali solution containing a silver halide solvent, wherein one of said photosensitive element, said image-receiving element and said processing element contains a developing agent, the film unit for a silver salt diffusion transfer process prepared by using a hydroxylamine of the following formula (I) as said developing agent, using a cyclic imide compound as said silver halide solvent, and adding a 1-aryl-3-pyrazolidinone compound represented by the following general formula (II) to at least one of said three elements:

general formula (I):



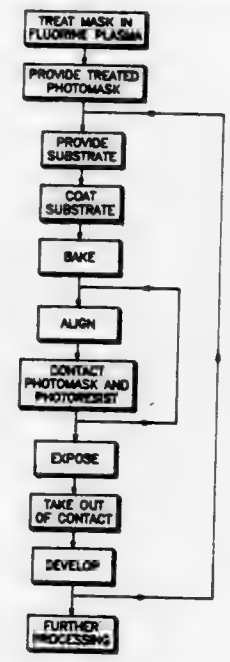
where R_a is an alkyl, alkoxyalkyl or alkoxyalkoxyalkyl group; R_b is hydrogen, or an alkyl, alkoxyalkyl, alkoxyalkoxyalkyl, or alkenyl group;

general formula (II):



where R_1 and R_2 are the same or different, and are hydrogen or an alkyl of 1 to 3 carbon atoms, and R_3 and R_4 are the same or different, and are hydrogen or an alkyl group of 1 to 2 carbon atoms.

ing a patterned photomask having an opaque pattern on a surface thereof, the improvement comprising: treating the



surface of said photomask in a mixture of fluorinated carbon and oxygen plasma.

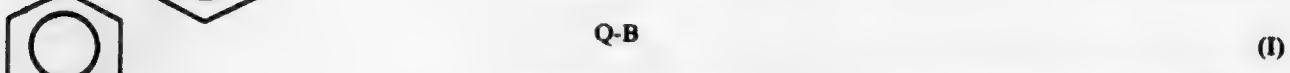
4,514,490

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuo Seto; Takayoshi Kamio, and Kozo Aoki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Sep. 8, 1983, Ser. No. 530,437
Claims priority, application Japan, Sep. 8, 1982, 57-156404
Int. Cl.³ G03C *1/46*
U.S. Cl. 430—505 **13 Claims**

1. A color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing therein a coupler represented by the following general formula (I):



wherein Q represents a coupler capable of forming a magenta color image upon the coupling reaction with an oxidation product of a developing agent which is a 3-anilino-5-pyrazolone type magenta color forming coupler residue; and B represents a group containing an unsubstituted or substituted methylenedioxybenzene group which is connected to a non-coupling position of Q.

4,514,489

PHOTOLITHOGRAPHY PROCESS

Carlos N. Garcia, Tolleson; Bryan C. Rigg, and Sally A. Tanner, both of Phoenix, all of Ariz., assignors to Motorola, Inc., Shaumburg, Ill.

Filed Sep. 1, 1983, Ser. No. 528,500
Int. Cl.³ G03C *5/00;* G03F *9/00*
U.S. Cl. 430—327 **5 Claims**

1. In a process for fabricating a semiconductor device including one or more photolithographic patterning steps utiliz-

4,514,491

PHOTOSENSITIVE SILVER HALIDE EMULSION

Takeo Koitabashi, Sagamihara; Syoji Matsuzaka, Hino; Yuji Hotta, Hachioji, and Masatoshi Iwata, Akishima, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,481
Claims priority, application Japan, May 6, 1981, 56-67917
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—567 **6 Claims**

1. A photosensitive silver halide emulsion comprising photosensitive silver halide grains which essentially consist of monodisperse globular-shaped grains, wherein the ratio of the standard deviation to the average grain size of said monodisperse globular-shaped grains contained in the emulsion is not more than 0.15.

4,514,492

ELIMINATION OF DEFECTS IN CYSTEINE-SENSITIZED EMULSIONS

Raymond J. LeStrange; John H. Bayless, Jr., both of Hendersonville, and Allan R. Schoenberg, Asheville, all of N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 15, 1983, Ser. No. 561,525
Int. Cl.[3] G03C *1/34, 1/28*
U.S. Cl. 430—600 9 Claims

1. In a process of coating a gelatino-silver halide emulsion sensitized with cysteine and/or thiazolidine type compounds on a support having at least one subbing layer, and optionally overcoating with an auxiliary layer, in which process the emulsion is subject to desensitization by nonferrous metal contamination, the improvement comprising incorporating in one or more of the subbing, emulsion, or auxiliary layers a quinoline, ethylenediamine, ethanoldiglycine, or acid chelating agent in amounts sufficient to complex nonferrous metals.

9. A photographic film comprising a support, a subbing layer on said support, a gelatino-silver halide emulsion layer, and optionally an auxiliary layer, characterized in that the emulsion is sensitized with cysteine and/or thiazolidine compounds present as emulsion and/or auxiliary layer additions, and wherein a chelating agent with a high formation constant for aluminum, copper or zinc is incorporated into one or more of the subbing, emulsion, or auxiliary layers, said chelating agent being present in an amount sufficient to reduce desensitization defects due to nonferrous metal contaminations of said photographic film.

4,514,493

HEAT-DEVELOPABLE LIGHT-SENSITIVE MATERIAL WITH BASE PRECURSOR PARTICLES

Hiroyuki Hirai; Kozo Sato, and Ken Kawata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 22, 1984, Ser. No. 592,197
Claims priority, application Japan, Mar. 25, 1983, 58-50000
Int. Cl.[3] G03C *1/06, 5/24*
U.S. Cl. 430—617 4 Claims

1. A heat-developable light-sensitive material containing fine particles of a substantially water-insoluble base precursor incorporated in a binder.

4,514,494

PHOTOGRAPHIC COLOR MATERIAL INCORPORATING DEVELOPING AGENTS FOR COLOR DEVELOPMENT

Raymond G. Lemahieu, Mortsel, and Wilhelmus Janssens, Aarschot, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 4, 1983, Ser. No. 548,784
Claims priority, application United Kingdom, Nov. 12, 1982, 8232449
Int. Cl.[3] G03C *7/40, 7/16, 1/02*
U.S. Cl. 430—376 13 Claims

1. A photographic material suited for the production of at least one azine dye image, comprising (a) at least one silver halide emulsion layer or (b) at least one silver halide emulsion layer and at least one non-light-sensitive hydrophilic colloid layer in water-permeable relationship with such an emulsion layer, which contains in at least one such layer:

(1) a heterocyclic hydrazone compound,

(2) a phenol, naphthol or active methylene coupler compound capable of forming an oxidative coupling with compound (1) an azine dye, and

(3) a developing agent which is an electron transfer agent capable of forming a positively charged semiquinone on oxidation with exposed silver halide,

(4) an anti-oxidant which is a reducing agent capable of reducing said semiquinone in acidic medium, and having in the pH range of 2–5 a polarographic half-wave potential (E ½) determined according to the European Convention which is at least 40 mV more negative than the polarographic half-wave potential of the ETA-compound in the same pH range, and

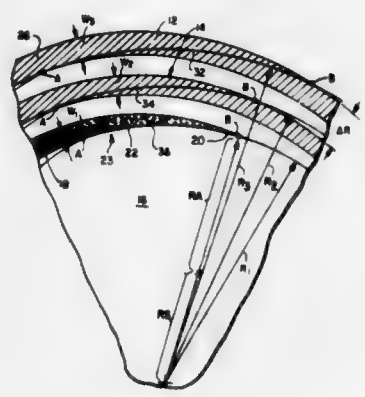
(5) a sufficient amount of an acidic medium for said anti-oxidant that when 1 sq.dm. of said material is immersed in 100 ml. of distilled water for 30 min. said water exhibits an acid pH lower than pH 7.

4,514,495

METHOD FOR TESTING MICROBIAL INTERACTION WITH GROWTH AFFECTING SUBSTANCES

Samuel Schalkowsky, and Ellen R. Schalkowsky, both of Chevy Chase, Md., assignors to Spiral Systems Instruments, Inc., Bethesda, Md.

Filed May 18, 1982, Ser. No. 379,281
Int. Cl.[3] C12Q *1/18, 1/24, 1/29;* C12M *1/26*
U.S. Cl. 435—32 28 Claims



1. A method for investigating the effect of a growth interacting substance on microbial growth comprising:

(a) applying a programmed pattern of a microbe containing solution on an interaction plate;

(b) applying a programmed solution of the growth interacting substance on the interaction plate in the same pattern as the microbial solution in contact with the microbes;

(c) incubating the interaction plate for a time sufficient to produce visible microbial colonies; and

(d) detecting the presence or absence of visible microbial colonies on the interaction plate at a point of interest where the growth interacting substance has contacted the microbe containing solution and directly determining the potency of the growth interacting substance at the point of interest on the incubated interaction plate by correlating the position of the point of interest with the programmed volume of the growth interacting substance at that point of interest.

4,514,496

PROCESS FOR PRODUCING ALCOHOL BY FERMENTATION WITHOUT COOKING

Hajime Yoshizumi, Takatsuki; Nobuya Matsumoto; Osamu Fukuda, both of Ibaraki, and Osamu Fukushi, Usuki, all of Japan, assignors to Suntory Limited, Osaka, Japan

Continuation of Ser. No. 326,283, Dec. 1, 1981, abandoned. This application Dec. 16, 1983, Ser. No. 562,995
Claims priority, application Japan, Dec. 16, 1980, 55-178523; May 7, 1981, 56-68974; May 28, 1981, 56-82217; Jun. 1, 1981, 56-84823
Int. Cl.[3] C12P *7/06, 7/14;* C12C *7/00;* C12G *3/00*
U.S. Cl. 435—162 34 Claims

1. A process for producing a fermented mash containing from 12.2 to 17.1 V/V% of alcohol, which comprises mixing at least one non-heated raw cereal with a mashing liquor in a weight ratio (weight of said raw cereal: weight of mashing liquor) of from 1:3.4 to 1:1.8 to form a slurry; thereafter without heating the slurry, without adjusting the pH of the slurry and without adding liquefying enzyme, adding a saccharifying

enzyme preparation derived from a microorganism source in an amount of at least 3.5 units of saccharifying titer per gram of said raw cereal on a wet basis to the slurry, adding an alcoholic fermenting yeast having an initial concentration of at least 2×10^7 cells/ml of slurry, and fermenting the slurry at a pH of from 4.0 to 5.0, at a temperature of 25° to 35° C. for 90 to 120 hours.

4,514,497

MODIFIED LIVE PSEUDORABIES VIRUSES

Malon Kit, and Saul Kit, both of Houston, Tex., assignors to Novagene, Ltd. and Baylor College of Medicine, both of Houston, Tex.

Filed Dec. 30, 1983, Ser. No. 567,018
Int. Cl.³ C12N *7/00*; A61K *39/205*
U.S. Cl. 435—235 **39 Claims**

1. A temperature-resistant pseudorabies virus which fails to produce any functional TK as a result of mutagen-induced mutation.

21. A temperature-resistant pseudorabies virus which fails to produce any functional TK as a result of a deletion in the tk gene.

4,514,498

HYBRID CELL LINES PRODUCING MONOCLONAL ANTIBODIES DIRECTED AGAINST TREPONEMA

John R. Kettman, Carrollton, and Michael V. Norgard, Plano, both of Tex., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Filed May 26, 1982, Ser. No. 381,929
Int. Cl.³ C12N *5/00, 15/00*; C07G *7/00*
U.S. Cl. 435—240 **9 Claims**

1. A composition of matter consisting essentially of a continuous murine hybrid cell line that produces monoclonal antibody against an antigenic determinant of *Treponema pallidum*, which cell line is formed as a fusion between a murine myeloma cell and a differentiated murine lymphoid cell immunized with *Treponema pallidum* antigen.

4,514,499

CELL CULTURE USING A MONOLITHIC SUPPORT

Lee A. Noll, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 4, 1983, Ser. No. 464,040
Int. Cl.³ C12N *5/00*
U.S. Cl. 435—240 **18 Claims**

1. An immobilized cell composite comprising:

(a) a high surface area monolithic support having an inlet and an outlet end, a multiplicity of mutually parallel channels passing therethrough, the channels having walls formed of a medium-insoluble, non-toxic, composition and the support having at least about 20 channels per square inch of cross-sectional area; and

(b) a population of plant or animal tissue cells anchored to the porous channel walls.

4,514,500

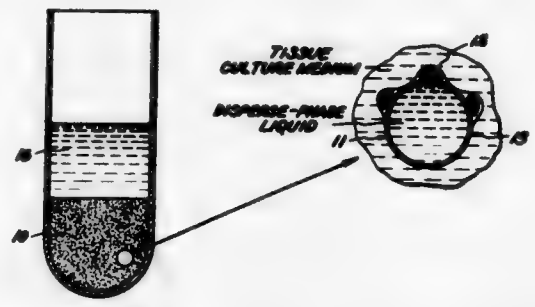
CELL GROWTH ON LIQUID-LIQUID INTERFACES

Ivar Giaever, Schenectady, and Richard C. Keese, Schoharie, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 19, 1982, Ser. No. 442,981
Int. Cl.³ C12N *5/02, 5/00*; C12R *1/91*
U.S. Cl. 435—241 **12 Claims**

1. The method of growing cells in tissue culture medium wherein the cells attach, spread and divide comprising the steps of

(a) preparing a heterogeneous system in which a first liquid is dispersed in the form of a large number of small droplets in a second liquid; said second liquid being a sterile, aqueous tissue culture medium containing proteins; said first liquid being non-toxic to living cells, being relatively immiscible with said second liquid and containing sufficient surface active polar additive previously dissolved therein to electrically charge the surface of said droplets to a charge density in excess of about 10 charges per square nanometer whereby proteins from said culture medium coat said droplets;



(b) bringing living cells into contact with said protein-coated droplets; and

(c) permitting sufficient time to elapse with suitable conditions of temperature, pH, carbon dioxide concentration and oxygen tension prevailing in said system for cell growth to occur over said protein-coated droplets.

4,514,501

METHOD FOR CULTIVATION OF MICROORGANISM

Yukio Kita, Tokyo; Kazuo Koide, Urayasu, and Kouki Horiko, Tokyo, all of Japan, assignors to Oji Paper Company, Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,194
Claims priority, application Japan, Feb. 21, 1981, 56-23672
Int. Cl.³ C12N *1/24, 1/20*; C02F *3/34*; D21C *11/00*
U.S. Cl. 435—251 **2 Claims**

1. A method for cultivating a microorganism comprising the steps of:

inoculating at least one microorganism which grows well under alkaline conditions and is selected from the group consisting of *Bacillus* SP. FERM-P No. 5861 and SP. FERM-P No. 5862, *Arthrobacter* SP. FERM-P No. 5863 and SP. FERM-BP No. 88, *Corynebacterium* SP. FERM-BP Nos. 89 and 90, and *Brevibacterium* FERM-BP Nos. 91 and 92, into a culture medium containing, as a carbon source, extracted liquor or spent liquor derived from alkaline pulping; and

cultivating the inoculated microorganism in the culture medium at a pH of 8.0 to 12.5 under an aerobic condition; whereby organic acids contained in the extracted liquor or spent liquor are utilized.

4,514,502

COMPOSITE PLASMID

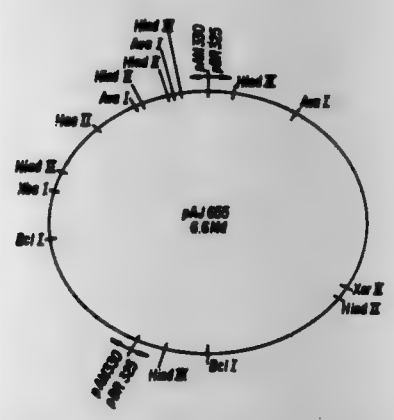
Kiyoshi Miwa, Matsudo; Mahito Terabe, Yokohama; Koichi Ito, Kawasaki; Masaaki Ishida, Kawasaki; Kazuhiko Matsui, Kawasaki; Shigeru Makamori, Yokohama, and Konosuke Sano, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 386,980
Claims priority, application Japan, May 4, 1982, 57-74845
Int. Cl.³ C12N *1/20, 15/00, 1/00*; C12R *1/15*
U.S. Cl. 435—253 **18 Claims**

1. A composite plasmid which comprises

(A) a minimum genetic region, necessary for controlling the capability of gene propagation in a *Coryneform glutamic* acid-producing bacterium, derived from a plasmid (a)

selected from the group consisting of pAM 330, pAM 286 and pHM 1519, and



(B) a gene fragment derived from a plasmid (b) capable of propagating in *Escherichia coli* or *Bacillus subtilis* having at least a region expressing drug resistance.

4,514,503

REAGENT AND PROCESS FOR DETECTING FURFURAL IN PETROLEUM PRODUCTS

Richard B. Orelup, Upper Saddle River, N.J., assignor to Morton Norwich Products, Chicago, Ill.

Filed Sep. 1, 1982, Ser. No. 413,833
Int. Cl.³ G01N *21/78, 33/26*
U.S. Cl. 436—60 **25 Claims**

11. A process for detecting the presence of furfural in a petroleum product containing same, said process comprising admixing in a suitable containier with a major quantity of said petroleum product a minor quantity of a first component of a two-component liquid reagent, said first component comprising on a weight basis from about 18 to about 25 percent of an acid selected from the group consisting of citric acid, lactic acid, formic acid and phosphoric acid, from about 35 to about 45 percent of diethylene glycol and from about 35 to about 45 percent of ethanol, adding to said admixture of petroleum product and said first component a minor quantity of the second component of said liquid reagent, said second component comprising on a weight basis from about 15 to about 22 percent of a primary amine selected from the group consisting of aniline, meta aminophenol, para anisidine, meta toluidine and para toluidine, from about 35 to about 45 percent of diethylene glycol, from about 35 to about 45 percent ethanol and from about 1 to about 2 percent of an antioxidant, with the proviso that when in the first component the amine is aniline then in the second component the acid is selected from the group consisting of citric acid, lactic acid and formic acid, shaking the resultant mixture and allowing the mixture to stand and separate into two layers whereupon a red color characteristic of furfural is visible in the lower layer.

4,514,504

MONITORING METHOD FOR POLYACRYLIC ACIDS IN AQUEOUS SYSTEMS

Alan M. Rothman, Jenkintown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 22, 1983, Ser. No. 516,613
Int. Cl.³ G01N *1/00, 31/06;* B01D *15/00, 12/00*
U.S. Cl. 436—85 **12 Claims**

8. A method for quantitatively determining the concentration of polyacrylic acids and organophosphonates in an aqueous system comprising:

(a) adjusting the pH of said aqueous system to suppress ionization of said polyacrylic acids;

(b) selectively adsorbing said ion suppressed polyacrylic acids on a non-polar adsorbent and separating said organophosphonates and aqueous solution from said adsorbed, ion suppressed polyacrylic acids;

(c) collecting the non-adsorbed aqueous system containing said organophosphonates;

(d) desorbing said adsorbed, ionization suppressed, polyacrylic acids from said adsorbent with a suitable displacement fluid;

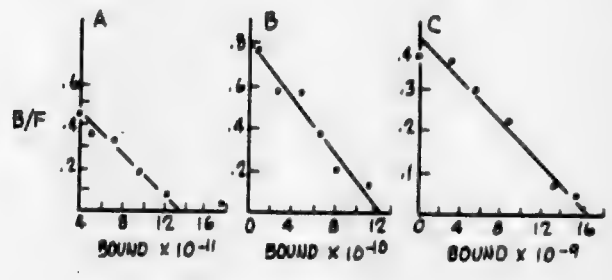
and subsequently measuring the concentration of the desorbed polyacrylic acids and the non-adsorbed organophosphonates separately.

4,514,505

MONOCLONAL ANTIBODY MIXTURES AND USE THEREOF FOR ENHANCED SENSITIVITY IMMUNOASSAYS

Robert E. Canfield; Paul H. Ehrlich, both of New York, N.Y., and William R. Moyle, Piscataway, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed May 21, 1982, Ser. No. 380,959
Int. Cl.³ G01N *33/54, 33/74, 33/76*
U.S. Cl. 436—500 **16 Claims**



1. An immunoassay for an antigen providing enhanced sensitivity which comprises contacting the antigen under suitable conditions with effective assaying amounts of each of at least two monoclonal antibodies which bind to different antigenic sites on the antigen and which are capable under appropriate conditions in a totally liquid phase of forming a stable complex which includes the antigen and all of the monoclonal antibodies, the monoclonal antibodies being further characterized in that they form a stable complex with the antigen when subjected to gel electrophoresis in the presence of the antigen and when subjected to gel filtration chromatography in the presence of the antigen, and detecting the complex which results from contacting the antigen with the monoclonal antibodies.

4,514,506

METHOD FOR THE IDENTIFICATION AND PURIFICATION OF HUMAN LUNG TUMOR-ASSOCIATED ANTIGENS (HLTAA) AND CLINICAL DETECTION AND DETERMINATION OF THESE ANTIGENS

James A. Braatz, Beltsville; Kenneth R. McIntire, Kensington, and Gerald L. Princler, Frederick, all of Md., assignors to The Government of the United States as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 351,588, Feb. 23, 1982,. This application Jan. 28, 1983, Ser. No. 462,022
Int. Cl.³ G01N *33/54, 33/56, 33/58*
U.S. Cl. 436—518 **17 Claims**

1. A substantially purified human lung tumor-associated antigen (hLTAA) associated with lung tumors comprising small cell carcinomas, large cell undifferentiated carcinomas, squamous cell carcinomas and adenocarcinomas, characterized by

a diffusion coefficient ($D_{20,w}$) of $4.2–4.3 \times 10^{-7}$ cm^2sec^{-1}, a sedimentation coefficient ($S_{20,w}$) of 4.5–4.6 S; and a Stokes radius of 51 Å;

immunological reactivity with a xenoantiserum containing heterologous species antibodies raised in a heterologous

species animal as an immune response to a crude extract of at least one of said lung tumors; and

no antigenic cross-reactivity with α_1-antichymotrypsin.

4,514,507

ASSAY FOR INTERFERON

David S. Secher, 2, Nightingale Ave., Cambridge CB1 4SQ, England

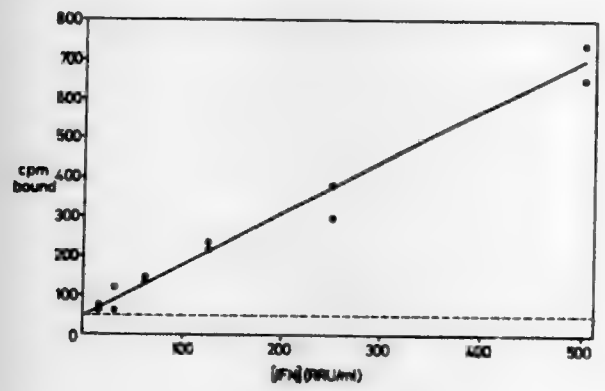
PCT No. PCT/GB81/00239, § 371 Date Jun. 28, 1982, § 102(e) Date Jun. 28, 1982, PCT Pub. No. WO82/01773, PCT Pub. Date May 27, 1982

PCT Filed Nov. 9, 1981, Ser. No. 396,911

Claims priority, application United Kingdom, Nov. 7, 1980, 8035884

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—518 **18 Claims**



1. An immunoassay for interferon involving an interferon antibody attached to a solid support, and a labelled monoclonal antibody, each of which antibodies is capable of specifically binding to at least one antigenic determinant of interferon, said process comprising the steps of:

placing a sample to be assayed in contact with the solid support allowing immunocomplexes to form between interferon in the sample and the interferon antibody bound to the solid support,

placing the labelled monoclonal antibody in contact with the solid support allowing immunocomplexes to form between interferon bound to the solid and the labelled monoclonal antibody, and

estimating the immunocomplexes.

7. An immunoassay reagent kit for use in the assay of interferon comprising:

a first container containing a first antibody, and

a second container containing a second antibody, each of which antibodies is capable of specifically binding to an antigenic determinant of interferon, at least one of which antibodies is a monoclonal antibody and one of which antibodies is a labelled antibody.

4,514,508

ASSAYING FOR A MULTIPLICITY OF ANTIGENS OR ANTIBODIES WITH A DETECTION COMPOUND

Steven Hirschfeld, New York, N.Y., assignor to Biond Inc., New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,263

Int. Cl.³ G01N *33/54, 33/58*

U.S. Cl. 436—518 **19 Claims**

1. A method for assaying the presence or level of a multiplicity of antigens or haptens in a liquid complex mixture comprising the steps of:

(a) adding the test sample containing the antigens or haptens to a solid phase matrix to form antigen-antibody complexes, said matrix having attached to it in identifiable positions antibodies or portions thereof, said antibodies or portions thereof directed against the antigens or haptens;

(b) adding to the mixture formed in step (a) a known amount of labeled Detection Compound for antigen-antibody complexes; and

(c) measuring the amount of labeled Detection Compound which remains bound to one or more of the identifiable positions of the solid phase matrix, and correlating that measurement with the presence or level of antigen or hapten in the identified positions.

4,514,509

METHOD FOR THE DIAGNOSIS OF LEGIONNAIRES' DISEASE

Richard B. Kohler, and Arthur C. White, both of Indianapolis, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Sep. 21, 1981, Ser. No. 304,274

Int. Cl.³ G01N *33/56*; C12Q *1/20*

U.S. Cl. 436—518 **10 Claims**

1. A method for the detection of antigens of the organism *Legionella pneumophila* in a human donor-patient, which comprises the steps of:

(a) inoculating a culture medium with *Legionella pneumophila* thereby forming a Legionella innoculated culture medium;

(b) incubating said Legionella inoculated culture medium thereby producing *Legionella pneumophila* organisms;

(c) removing, incubating and heating by auto-claving said Legionella organisms in a buffer thereby forming suspended Legionella organisms;

(d) inoculating a mammal with said suspended Legionella organisms thereby producing anti-Legionella immunoglobulin G in said mammals;

(e) recovering anti-Legionella immunoglobulin G from the mammal;

(f) isotopically labelling at least some of the anti-Legionella immunoglobulin G thereby forming isotopically-labelled anti-Legionella immunoglobulin G;

(g) forming a layer capable of binding *Legionella pneumophila* antigen but substantially incapable of adsorbing anti-Legionella immunoglobulin G on a test surface thereby forming an antigen binding test surface;

(h) depositing a test sample obtained from a donor-patient on the antigen binding test surface thereby forming a test sample-treated test surface;

(i) forming a layer of the isotopically-labelled anti-Legionella immunoglobulin G on said test sample-treated test surface thereby forming a radioactively labelled surface in which the emitted radiation is proportional to the presence of *Legionella pneumophila* antigen; and

(j) measuring the radiation emitted by the radioactively-labelled surface thereby obtaining a test value indicative of the presence of *Legionella pneumophila*.

4,514,510

HYDROGEN ENRICHED WATER SWELLABLE CLAY HAVING REDUCED ACID DEMAND AND STABLE AT LOW PH

William Alexander, Naperville, Ill., assignor to American Colloid Company, Skokie, Ill.

Filed Sep. 8, 1983, Ser. No. 530,430

Int. Cl.³ B01J *13/00*; C04B *33/04*

U.S. Cl. 501—148 **19 Claims**

1. A water swellable clay composition having a pH of 9–10, a weight ratio of Aluminum to Magnesium of 0.5 to 5.5, and meeting existing acid demand specifications for Magnesium Aluminum Silicate comprising a montmorillonite and at least one other clay selected from the group consisting of saponite, hectorite, beidellite, and nontronite wherein at least one of said clays is hydrogen enriched by contacting said clay with a hydrogen ion exchange resin.

4,514,511

PREPARATION OF SPHEROIDAL ALUMINA PARTICULATES

Roland Jacques, Ales, and Thierry Dupin, Garges/les/Gonesse, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed May 19, 1983, Ser. No. 496,138
Claims priority, application France, May 19, 1982, 82 08774
Int. Cl.³ B01J *37/00, 21/04*
U.S. Cl. 502—8 11 Claims

1. A process for the preparation of spheroidal alumina particulates, which comprises drop coagulating an aqueous suspension or dispersion of alumina, or an aqueous solution of a basic aluminum salt, said suspension, dispersion or solution comprising an oil-in-water emulsion, wherein the viscosity of said emulsion ranges from 100 and 800 centipoises, said suspension, dispersion or solution further comprising an alumina filler, with the proportion of the filler being up to 90% by weight, expressed in Al_2O_3, with respect to the total alumina content, and thence recovering, drying and calcining the gelled particulates which result.

4,514,512

METHOD FOR THE PRODUCTION OF SOLID TITANIUM TRICHLORIDE CATALYST

Akinobu Shiga, Ehime; Yukio Naito, Chiba; Toshio Sasaki; Junpei Kojima, both of Ehime; Hiroshi Yoshioka, Saitama, and Akira Nunose, Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Mar. 31, 1983, Ser. No. 480,648
Claims priority, application Japan, Feb. 19, 1982, 57-26508
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—107 10 Claims

1. A method for the production of a solid titanium trichloride catalyst by the steps of (1) preparing a titanium trichloride composition comprising a solid reduction product obtained by reducing titanium tetrachloride with an organoaluminum compound represented by the formula, $R^1_nAlY_{3-n}$ (wherein R^1 is a hydrocarbon group having 1 to 18 carbon atoms; Y is a halogen atom or a hydrogen atom; and n is a number satisfying the equation, $1<n\leqq3$), or a solid product obtained by thermally treating said solid reduction product at a temperature of not more than 150° C.; (2) reacting said titanium trichloride composition comprising said solid reduction product obtained in step (1) in an aromatic hydrocarbon solvent with a mixture consisting of a halogen compound represented by the formula, X_2 (wherein X is Cl, Br, or I), or an interhalogen compound represented by the formula, XX'_a (wherein X and X' are each Cl, Br, or I, and a is 1 or 3), and an ether compound represented by the formula, $R^2—O—R^3$ (wherein R^2 and R^3, which may be the same or different, are each an alkyl group having 1 to 10 carbon atoms); (3) subjecting the resulting reaction mixture to solid-liquid separation; and (4) washing the resulting solid product with an inert hydrocarbon solvent, which method is characterized by using an aliphatic hydrocarbon as a washing medium during at least the first of washing treatments performed subsequently to said solid-liquid separation of said reaction mixture.

4,514,513

PREACTIVATED CATALYST FOR PRODUCING α-OLEFIN POLYMERS

Akihiro Sato, Chiba; Kazutsune Kikuta, Ichiharashi; Kenji Matsuda, Ichiharashi; Toshihiro Uwai, Ichiharashi, and Tohru Hanari, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 497,077, May 23, 1983, abandoned, which is a continuation of Ser. No. 243,691, Mar. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 149,684, May 14, 1980, Pat. No. 4,309,521. This application Apr. 12, 1984, Ser. No. 599,741
Claims priority, application Japan, Feb. 27, 1980, 55-23785
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—112 18 Claims

1. A preactivated catalyst for producing alpha-olefin polymers obtained by the steps which comprise:

(a) reacting one mol of an organoaluminum compound (O-Al_1) with 0.1 to 8 mols of an electron donor (ED_1) in a solvent at a temperature of −20° to 200° C., to obtain a solid product (I);

(b) reacting this solid product (I) with $TiCl_4$ in a ratio (Al/Ti) of the number of atoms of aluminum to that of Ti in $TiCl_4$, of 0.05 to 10, at a temperature of 0° to 200° C., and thereafter removing the resulting liquid portion and $TiCl_4$ freed by washing, to obtain a solid product (II);

(c) reacting 100 g of this solid product (II) with 10 to 1,000 g of an electron donor (ED_2) and 10 to 1,000 g of an electron acceptor at a temperature of 40° to 200° C., to obtain a solid product (III) having an X-ray diffraction spectrum with a line corresponding to the plane of lattice distance of 4.80 to 5.10 Å and having no infrared absorption spectrum in the vicinity of 3,450 cm^{-1};

(d) combining 1 g of this solid product (III) with 0.1 to 500 g of an organoaluminum compound (O-Al_2) and subjecting the resulting combination to polymerization treatment with 0.01 to 5,000 g of an alpha-olefin; and

(e) adding to 1 g of said solid product (III) and 0.1 to 500 g of said organoaluminum compound (O-Al_2), either prior to or subsequent to said polymerization treatment with 0.01 to 5000 g of an alpha-olefin, 0.05 to 10 g of a reaction product (RP) obtained by reacting (1) 1 mol of an organoaluminum compound (O-Al_3) with (2) 0.01 to 5 mols of an electron donor (ED_3), (3) such reaction being carried out at a temperature of −30° to 100° C. to thereby obtain a prepreactivated catalyst.

5. A preactivated catalyst according to claim 1 wherein said organoaluminum compounds (O-Al_1), (O-Al_2) and (O-Al_3) may be the same or different and are expressed by the general formula $AlR_nR'_{n'}X_{3-(n+n')}$ wherein R and R' each represent an alkyl, aryl, alkaryl, cycloalkyl or alkoxy group; X represents fluorine, chlorine, bromine or iodine; and n and n' each represent an optional number of $0<n+n'\leqq3$.

4,514,514

PROCESS AND VANADIUM CATALYST FOR OLEFIN POLYMERIZATION

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 28, 1983, Ser. No. 489,445
Int. Cl.³ C08F *4/68*
U.S. Cl. 502—121 20 Claims

1. A process for preparing a solid particulate catalyst component comprising (A) reacting reactants comprising

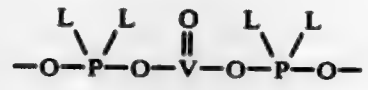
(1) a vanadium compound having a V—X linkage where X is halogen,

(2) an organoaluminum compound selected from those having the formula AlR'_nX_{3-n} wherein X is halogen, each R' is individually selected from the group consisting of alkyl radicals, aryl radicals, cycloalkyl radicals, and alkoxy radicals, and n is a number from 1 to 3, and

(3) an organophosphorus compound having a P—L linkage wherein L is selected from the group consisting of alkyl

radicals, alkoxy radicals, aryl radicals, aryloxy radicals, cycloalkyl radicals, cycloalkyloxy radicals, cycloalkylaryl radicals, alkylamino radicals, and haloalkyloxy radicals, or

(B) reacting reactants comprising said organoaluminum compounds as defined for (2) and a composition having functionality of the formula



wherein each L is individually selected from the group consisting of the L's as defined for (3), under suitable conditions in a liquid which allows the product of the reaction to form as a particulate solid, said liquid consisting essentially of nonaromatic halocarbon.

4,514,515

PROCESS FOR MANUFACTURING A CATALYST COMPRISING RHODIUM AND AT LEAST ONE METAL SELECTED FROM THE GROUP CONSISTING OF TIN, GERMANIUM AND LEAD AND THE CATALYST PRODUCED BY THE PROCESS

Christine Travers, Rueil-Malmaison; Trinh D. Chan, Le Vesinet; Roger Snappe, Sevres, and Jean-Paul Bournonville, Chatou, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 497,631, May 24, 1983, Pat. No. 4,456,775. This application Apr. 6, 1984, Ser. No. 597,288
Claims priority, application France, May 24, 1982, 8209099
Int. Cl.³ B01J *21/04, 21/08, 23/62*
U.S. Cl. 502—154 **25 Claims**

1. A process for manufacturing a catalyst comprising rhodium and at least one of tin, germanium and lead, comprising admixing a carrier with a rhodium compound and at least one metal compound selected from the group consisting of the alkyl, cycloalkyl and aryl tin, germanium and lead compounds.

4,514,516

METHOD FOR MANUFACTURE OF AMS-1B CRYSTALLINE BOROSILICATE MOLECULAR SIEVE WITH LOW SODIUM CONTENT

Imre Puskas, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 297,174, Aug. 28, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 528,847
Int. Cl.³ C01B *35/10*
U.S. Cl. 502—202 **9 Claims**

1. A method to prepare AMS-1B crystalline borosilicate molecular sieve containing a low sodium content comprising reacting under crystallization conditions an aqueous mixture consisting essentially of sources for a silicon oxide, a boron oxide, sodium cation and an amine selected from the group consisting of methylamine and dimethylamine, wherein the ratio of moles of amine to sodium cation is about 1 to about 10.

3. The method of claim 1 wherein the source of sodium cation is sodium hydroxide.

4,514,517

SUPPORTED, SELF-PROMOTED MOLYBDENUM AND TUNGSTEN SULFIDE CATALYSTS FORMED FROM BIS(TETRATHIOMETALLATE) PRECURSORS, AND THEIR PREPARATION

Teh C. Ho, Scotch Plains, and Wie-Hin Pan, Fanwood, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 29, 1983, Ser. No. 518,360
Int. Cl.³ B01J *27/02, 31/12*
U.S. Cl. 502—220 **19 Claims**

1. As a composition of matter, supported, self-promoted catalysts obtained by compositing a pre-selected quantity of porous, refractory inorganic oxide with one or more carbon-containing, bis(tetrathiometallate) precursor salts selected from the group consisting of $(NR_4)_2[M(WS_4)_2]$, $(NR_4)_x[M(MoS_4)_2]$ and mixtures thereof and heating said composite in a non-oxidizing atmosphere in the presence of sulfur and hydrogen at elevated temperature for a time sufficient to form said catalyst, wherein (NR_4) is a carbon-containing, substituted ammonium cation, wherein R is selected from the group consisting of (a) alkyl groups, aryl groups and mixture thereof and (b) mixture of (a) with hydrogen, wherein promoter metal M is covalently bound in the anion and is Ni, Co or Fe and wherein x is 2 if M is Ni and x is 3 if M is Co or Fe and wherein promoter metal M is tetracoordinated with four sulfur atoms with each of the two tetrathiometallate groups providing two of each of the said four sulfur atoms.

4,514,518

FLUORIDE-SUBSTITUTED COBALT SPINELS

Walter W. Henslee, and Stephen I. Foster, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 247,428, Mar. 25, 1981, abandoned. This application Apr. 22, 1982, Ser. No. 370,700
Int. Cl.³ C01G *51/04, 51/08;* B01J *23/74*
U.S. Cl. 502—229 **7 Claims**

1. The fluoride-substituted cobalt spinel compounds conforming substantially to the formula $Co_3O_xF_y$,

where $x+2y \simeq 4$ and where y is an amount, not zero, such that $F \leqq 2$ weight percent of the compound,

said cobalt oxide spinels being characterized as being substantially unstable at temperatures above 600° C.

4,514,519

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 403,257, Jul. 29, 1982, Pat. No. 4,439,627. This application Jan. 16, 1984, Ser. No. 571,264
Int. Cl.³ B01J *23/02*
U.S. Cl. 502—243 **6 Claims**

1. A catalyst comprising 0.005 to 5 wt. % of iron, 0.1 to 10 wt. % of tungsten, and 0.01 to 2 wt. % of an alkali or alkaline earth component on a carrier material.

4,514,520

CATALYST AND METHOD OF ITS PREPARATION

Jan Uytterhoeven, Leuven; Pierre Jacobs, Gooik; Ludo Adriaensen, Deerlijk, and Jan Geerts, Sint-Katelijne-Waver, all of Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Nov. 4, 1983, Ser. No. 548,826
Claims priority, application Netherlands, Nov. 18, 1982, 8204478
Int. Cl.³ B01J *23/72, 23/74*
U.S. Cl. 502—337 **16 Claims**

1. A catalyst comprising a metallic carrier having a catalytically active metal-containing surface layer, the catalytic metal being other than a noble metal, whereby the catalytically active surface layer is formed out of a homogeneous metallic carrier by oxidizing in an oxidizing gas and subsequently reducing the surface of the metallic carrier at a temperature at which the active metal is substantially not sintered, whereby the thus prepared catalytically active surface layer is in the form of a catalytically active metal-containing spongy mass, characterized in that the carrier is a web or felt of fibers with a diameter between 4 and 100 microns.

4,514,521

MANUFACTURE OF OXYGENATED COMPOUNDS

David W. Smith, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 323,002, Nov. 19, 1981, Pat. No. 4,429,056, which is a continuation of Ser. No. 142,287, Apr. 21, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 456,910

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.³ C07C *27/06, 31/08*

U.S. Cl. 518—700 46 Claims

1. A process for forming acetaldehyde in a first stage reaction and then reducing said aldehyde to form ethanol in a second stage reaction which comprises reacting carbon monoxide and hydrogen at a temperature of from about 150° to about 300° C. and superatmospheric pressure in the presence of a catalyst system comprising (a) a preformed ruthenium carbonyl complex or a ruthenium carbonyl complex formed in situ by reaction between ruthenium metal and carbon monoxide or a ruthenium compound which undergoes reaction with carbon monoxide to provide said ruthenium carbonyl complex and (b) a source of halide anion, said catalyst system being present at least during said first reaction stage.

4,514,522

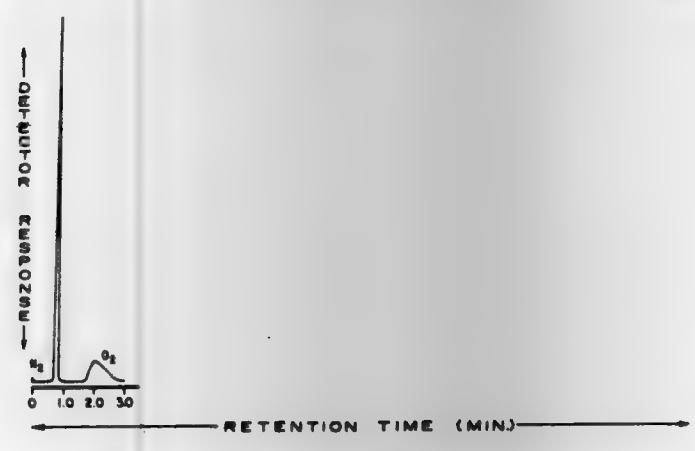
OXYGEN SORBENT

Robert E. Sievers, and John N. Gillis, both of Boulder, Colo., assignors to University Patents, Inc., Westport, Conn.

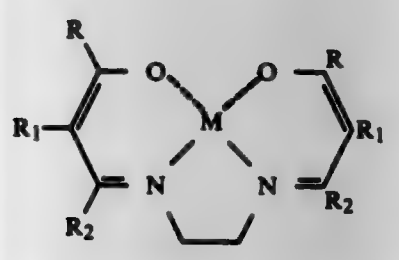
Filed Jul. 27, 1984, Ser. No. 635,320

Int. Cl.³ C08J *9/40*

U.S. Cl. 521—53 9 Claims



1. A metallic complex of a Schiff base of the general formula



wherein R, R_1 and R_2 are selected from the group consisting of hydrogen, lower alkyl containing from 1 to 10 carbon atoms, and polyfluoromoieties containing from 1 to 10 carbon atoms bonded to a porous synthetic organic polymer containing a nitrogen functionality.

4,514,523

METHOD OF PRODUCING POLYESTER FOAMS USING BOROHYDRIDE DISPERSIONS

Thomas M. Burton, and Helena Z. Kucharska, both of Sarnia, Canada, assignors to Fiberglas Canada Inc., Toronto, Canada

Filed May 4, 1984, Ser. No. 607,046

Claims priority, application Canada, Dec. 12, 1983, 443119

Int. Cl.³ C08J *9/06*

U.S. Cl. 521—85 20 Claims

1. A method of making a foamed polyester resin comprising mixing a thermosetting liquid, unsaturated polyester, which is a condensation product of a polyhydric alcohol and a polycarboxylic acid, at least one of which is ethylenically unsaturated, with a liquid borohydride foaming agent selected from a liquid borohydride complex, a borohydride complex dissolved in an organic liquid medium and an inorganic borohydride salt dispersed in an organic rubber liquid medium which medium is at least substantially non-reactive with the borohydride salt.

4,514,524

INTUMESCENT FLEXIBLE POLYURETHANE FOAM

Gerald Fesman, Teaneck, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 13, 1984, Ser. No. 630,460

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—107 20 Claims

1. In a process for preparing a flexible, resilient, flame retardant and intumescent polyurethane foam by the reaction of a polyether polyol and an organic polyisocyanate wherein the improvement comprises:

adding to the polyurethane forming reactants at least one blowing agent, at least one surfactant, at least one catalyst and a flame and dripping ember retardant effective amount of an additive combination comprising:

i. a polyester polyol,

ii. an halogenated flame retardant, and

iii. water or alcohol soluble uncrosslinked urea-formaldehyde resin which is unreactive with said organic polyisocyanate.

4,514,525

PROCESS FOR PREPARING SMOKE-RETARDANT POLYISOCYANURATE FOAM

Kaneyoshi Ashida, Chofu; Masaaki Ohtani, Kawasaki, and Shoichi Ohkubo, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Mar. 10, 1976, Ser. No. 665,527

Claims priority, application Japan, Mar. 13, 1975, 50-30601

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—112 12 Claims

1. A process for preparing a smoke retardant polyisocyanurate foam, which comprises: reacting an organic polyisocyanate in the presence of a blowing agent, an isocyanate trimerization catalyst and an amount of an organosilicone surfactant having a silicon content of from 4–22% such that the silicon content of the foam product ranges from 1.5% to 5%, and selected from the group consisting of an organopolysiloxanepolyoxyalkylene copolymer, a polyvinyl silane having a polyoxyalkylene side chain and modified products thereof wherein the mole % of the ethylene oxide units of the polyoxyalkylene moiety of the organosilicone surfactant is greater than 40 mole % based on the total number of ethylene oxide and propylene oxide units in said polyoxyalkylene moiety.

4,514,526
STORAGE-STABLE TRIS(HYDROXYALKYL)ISOCYANURATE POLYOL DISPERSIONS, PROCESS FOR THEIR PREPARATION AND THEIR UTILIZATION

Matthiäs Marx, Bad Durkheim; Helmut Ganss, Ludwigshafen, and Wolfram Frank, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,512

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332251

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—166 **11 Claims**

1. Storage-stable tris(hydroxyalkyl)isocyanurate polyol dispersions containing

(a) from 2 to 70 parts by weight tris(hydroxyalkyl)isocyanurate,

(b) from 98 to 30 parts by weight of at least one polyol having a functionality of from 2 to 8 and a hydroxyl number from 20 to 1800, and

(c) from 0 to 20 parts by weight of a dispersion stabilizer.

4,514,527
METHOD FOR OBTAINING STRONG ADHESIVE BONDING OF COMPOSITES TO DENTIN ENAMEL AND OTHER SUBSTRATES

Rafael L. Bowen, Gaithersberg, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Filed Jan. 10, 1983, Ser. No. 457,029

Int. Cl.³ A10N *1/02*; A65K *5/00*; C09K *3/00*

U.S. Cl. 523—115 **38 Claims**

1. A method for preparing the surface of dentin or enamel for adhesion of composite materials or resins, which method comprises:

(a) contacting with the surface of the dentin or enamel an aqueous solution comprising at least one acidic salt containing a polyvalent cation which is capable of changing valence by unit steps and which can bind to dentin or enamel surface sites, and at least one anion which forms a relatively water-insoluble precipitate or precipitates with calcium and which contains at least one carboxyl group;

(b) contacting with the surface of the dentin or enamel a solution comprising at least one compound selected from the group consisting of (1) the adduct of N(p-tolyl)glycine and glycidyl methacrylate, and (2) the addition reaction product of N-phenylglycine and glycidyl methacrylate; and

(c) contacting with the surface of the dentin or enamel a solution comprising at least one compound selected from the group consisting of (1) the addition reaction product of pyromellitic acid dianhydride and 2-hydroxyethyl methacrylate, (2) the addition reaction product of 3,3′,4,4′-benzophenonetetracarboxylic dianhydride and 2-hydroxyethyl methacrylate, and (3) 4-methacryloxyethyltrimellitic anhydride.

8. A method as in claim 1 wherein the concentration of the solution comprising at least one compound selected from the group consisting of (1) the addition reaction product of pyromellitic acid dianhydride and 2-hydroxyethyl methacrylate, (2) the addition reaction product of 3,3′,4,4′-benzophenonetetracarboxylic dianhydride and 2-hydroxyethyl methacrylate, and (3) 4-methacryloxyethyltrimellitic anhydride is from about 0.1% to a saturated solution.

4,514,528
HYDROPHILIC DENTURE ADHESIVE

Dadi J. Dhabhar, Norwalk, and Nicholas F. Schmidt, Brookfield, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Feb. 16, 1983, Ser. No. 467,095

Int. Cl.³ A61K *5/06*; C08L *1/14*

U.S. Cl. 523—120 **52 Claims**

1. A denture adhesive composition comprising a substantially anhydrous mixture of:

(a) an effective adhesive amount of an adhesive fraction consisting essentially of a mixed, partial salt of AVE/MA copolymer in combination with either or both of sodium carboxymethylcellulose and poly(ethylene oxide) homopolymer; and

(b) a polyethylene glycol fraction comprising one or more polyethylene glycols each having an average molecular weight of from about 200 to about 20,000 and said fraction having an average viscosity of from about 44 to about 25,600 centipoises at about 60° C.

4,514,529
OIL RESISTANT LOW MODULUS SILICONE SEALANT COMPOSITION

Melvin D. Beers, Hudson, and James E. Thompson, Lakewood, both of Ohio, assignors to Loctite Corporation, Newington, Conn.

Filed Mar. 27, 1984, Ser. No. 593,866

Int. Cl.³ C08G *77/26*; C08K *9/04, 3/26*; C08L *83/08*

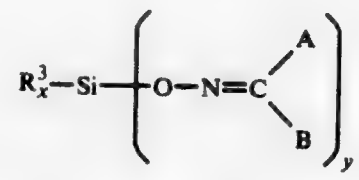
U.S. Cl. 523—200 **19 Claims**

1. A low modulus, one component, room temperature, vulcanizable silicone rubber composition consisting essentially of:

from about 25 to about 90 percent by weight based upon the total weight of the composition of a devolatilized silanol/-terminated diorganosiloxane base polymer having a viscosity from about 2,000 to about 250,000 centipoises at 25° C. where said organo groups can be the same or different and are selected from the groups consisting of alkyl having from 1 to 8 carbon atoms, a cycloalkyl having from 4 to 7 carbon atoms, an alkenyl having from 2 to 8 carbon atoms, an aryl or an alkyl substituted aryl having from 6 to 14 carbon atoms, or a fluoroalkyl having from 1 to 8 carbon atoms;

from about 0 to about 40 percent by weight based upon the total weight of said composition of a plasticizer comprising a devolatilized diorganopolysiloxane fluid plasticizer terminated with triorganosiloxy groups, said organo groups being a monovalent hydrocarbon radical as set forth above with regard to said base polymer, said plasticizer having a viscosity from about 50 to about 100,00 centipoises at 25° C.;

from about 2 to about 15 percent by weight based upon the total weight of said composition of an oxime crosslinking agent of the formula



where y is 2.2 to 3, x is 0.8 to 1.0, where R^3 is selected from the group consisting of an alkyl having from 1 to 8 carbon atoms, an alkenyl having from 2 to 8 carbon atoms, a haloalkyl having from 1 to 8 carbon atoms, and a haloalkenyl having from 2 to 8 carbon atoms, where A and B can be the same or different and wherein A and B are selected from the group consisting of a hydrogen, an alkyl having from 1 to 8 carbon atoms, a haloalkyl having from 1 to 8 carbon atoms, a cycloalkyl having from 4 to 7 carbon atoms, an alkenyl having from 2 to 8 carbon atoms, and a cycloalkenyl having from 4 to 7 carbon atoms;

from about 0.01 to about 0.5 percent by weight based upon the total weight of said composition of an organo tin catalyst and;

from about 5 to 60 percent by weight based upon the total weight of said composition of a hydrophobic calcium carbonate filler having 0.4 percent or less water content therein when the amount of said filler is 15 percent or less, or 0.2 percent or less water content when the amount of said filler ranges from about 15 to about 60 percent by weight.

2. A silicone rubber according to claim 1, wherein said hydrophobic filler is selected from the group consisting of treated ground calcium carbonate.

4,514,530

MODIFIED AMINE CURING AGENTS AND EPOXY RESINS CURED THEREWITH

Kathy B. Sellstrom, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,695
Int. Cl.[3] C08L *63/04*
U.S. Cl. 523—456 22 Claims

1. A composition for use in the curing of a 1,2-epoxy resin comprising an alkylene carbonate solution of a normally solid cured elastomeric polyurethane in admixture with a primary amine curing agent.

4,514,531

MONOLITHIC REFRACTORIES COMPRISING A HYDROCOLLOID

Thomas R. Kleeb, and Linda L. Kleeb, both of Pittsburgh, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 11, 1983, Ser. No. 540,241
Int. Cl.[3] C04B *35/80, 35/78;* C08K *3/34, 7/26*
U.S. Cl. 524—5 10 Claims

1. Refractory monolithic batch consisting essentially of at least one refractory aggregate, a cementatious material and about 0.05 to 2.0% of a hydrocolloid based on the total weight of the batch, said hydrocolloid comprising an organic polymer capable of absorbing substantially at least 50 times its weight in water to form a substantially porous thermally insulating refractory product when the batch is dried.

4,514,532

MODIFIED PHENOL-FORMALDEHYDE RESIN AND THE PRODUCTION THEREOF

Oscar H. H. Hsu, and Milford C. Tassler, both of St. Charles, Ill., assignors to Masonite Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 334,881, Dec. 28, 1981, Pat. No. 4,433,126. This application Feb. 17, 1984, Ser. No. 581,287
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.[3] C08H *5/04;* C08G *83/00*
U.S. Cl. 524—14 20 Claims

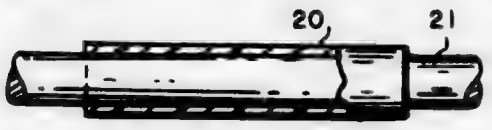
1. A method of manufacturing a sheet material formed from a plurality of discrete members adhered together, including contacting a plurality of drscrete sheet material members with a binding resin; disposing each of said sheet material members in contact with at least one other of said sheet material members and pressing said sheet material members together with sufficient heat and pressure to form a sheet material, the improvement comprising said binding resin, wherein said resin is formed by reacting phenol and formaldehyde with a concentrated wood extract obtained by steam digesting wood chips under alkaline conditions, the weight of concentrated wood extract being from 5% to 50% of the weight of the phenol, calculated on the dry weight basis of each material.

4,514,533

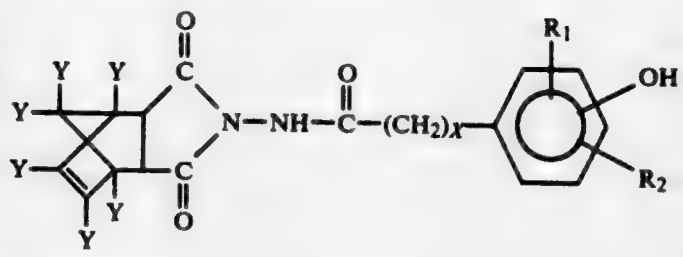
HINDERED PHENOLIC NORBORNANE-2,3-DICARBOXIMIDES AND STABILIZED COMPOSITIONS

Ralph H. Hansen, Lincoln, Mass., assignor to Canusa Coating Systems Limited, Rexdale, Canada

Filed Sep. 27, 1983, Ser. No. 536,182
Int. Cl.[3] C08K *5/34*
U.S. Cl. 524—89 12 Claims



1. The compound of the formula I



(I)

where X is 1, 2 or 3; Y is Cl or Br; R_1 is tert-butyl (t-butyl) and R_2 is H or lower alkyl of 1 to 4 carbons.

4,514,534

MODIFIED POLYPROPYLENE FOR FILM

Victor M. DiNardo, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 13, 1984, Ser. No. 599,880
Int. Cl.[3] C08K *5/05, 5/15*
U.S. Cl. 524—108 14 Claims

1. A modified polypropylene useful for making film comprising propylene homopolymer having a melt flow of about 2.0 to about 5.0 g/10 min.(L) said propylene homopolymer formed by cracking a lower melt flow polypropylene using a peroxide agent selected from the group consisting of dialkyl peroxides in an amount of about 50 pm to about 300 ppm, about 0.10% to about 0.25% bis(alkylbenzylidene) sorbitol nucleating agent wherein the alkyl groups have about 2–18 carbon atoms, and about 0.25% to about 2.0% linear low density polyethylene having a melting point of about 120° C. and comprising ethylene copolymerized with about 0.5% to about 7% olefin monomers having about 4 to about 8 carbon atoms.

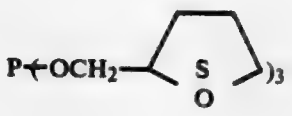
4,514,535

ELECTRICAL TREE AND WATER TREE RESISTANT COMPOUNDS AND POLYMER COMPOSITIONS CONTAINING THE SAME

Harry Braus; Anthony Barlow, and Melvin F. Maringer, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,977
Int. Cl.[3] C08K *5/52*
U.S. Cl. 524—109 19 Claims

1. A polymeric composition having enhanced resistance to water treeing and electrical treeing comprising an intimate admixture of a polymeric component and an effective water treeing and/or electrical treeing inhibitor amount of a compound having the structure:



said polymeric component being other than polyvinyl chloride.

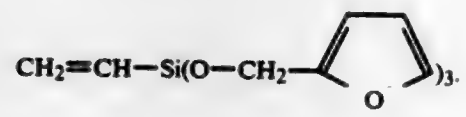
4,514,536

SILANES USEFUL AS ANTI-TREEING ADDITIVES

Harry Braus; Anthony Barlow, and Melvin F. Maringer, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,975
Int. Cl.³ C08K *5/54*
U.S. Cl. 524—261 **3 Claims**

1. A compound having the structure



4,514,537

TETRAFLUOROETHYLENE POLYMER DISPERSIONS

Robert J. Cavanaugh, Vienna, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 9, 1984, Ser. No. 578,656
Int. Cl.³ C08K *5/54*
U.S. Cl. 524—265 **7 Claims**

1. A coating dispersion which imparts resistance to attack by acidic flue gas to glass fabric coated with said dispersion, consisting essentially of

(a) water,

(b) 2–65% by weight tetrafluoroethylene polymer, said weight based on weight of water and polymer, said polymer being of film-forming molecular weight,

(c) 2–60% by weight of a polyhydrolyzable silane of the formula

$$R_1Si—OR)_3$$

wherein R is lower alkyl, preferably alkyl of 1–3 carbon atoms, and R_1 is phenyl or substituted lower alkyl, preferably of 1–3 carbon atoms, in which the substituents are selected from halogen, quaternary ammonium, or —NR′R″ in which R′ and R″ are each H, lower alkyl, lower alkoxyalkyl, amino lower alkyl, hydroxyl lower alkyl, or substituted amino lower alkyl, said weight based on weight of tetrafluoroethylene polymer,

(d) 1–20% by weight of a hydrocarbyl siloxane, said weight based on weight of tetrafluoroethylene polymer,

(e) 1–20% by weight of a polymer of a fluorinated ester of an acrylic acid, said weight based on weight of tetrafluoroethylene polymer, and

(f) 1–12% by weight of $C_9F_{17}O(CH_2CH_2O)_nR$ wherein n is an integer of 1 through 10 and R is hydrogen or alkyl of 1–10 carbon atoms, said weight based on weight of tetrafluoroethylene polymer.

4,514,538

COMPOSITION

Lidia Shvakhman, 236 Montrose Ave., Kenmore, N.Y. 14217; Ignatius T. Agro, 492 West Ave., Buffalo, N.Y. 14213, and Louis L. Chiusolo, 230 Glenwood Crescent, Oshawa, Ontario, Canada

Filed May 26, 1983, Ser. No. 498,482
Int. Cl.³ C08K *5/10*; C08L *1/12, 33/12*
U.S. Cl. 524—315 **7 Claims**

1. A self-sustaining waterproofing composition at least 75% of a substantially unswelled bentonite and the remainder a film forming composition, said film forming composition comprising an organic binder that is solid at room temperature and is substantially unreactive with said bentonite, said bentonite suspended substantially uniformly throughout said film forming composition to form thereby a substantially self-sustaining waterproofing element and wherein said film forming composition contains an alkylphthalate present in from about 0.1 to 5% of said total composition.

4,514,539

STAIN RESISTANT POLYMERIC INSULATING COMPOSITIONS

George A. Hattrich, and Stephen J. Byron, both of Hackettstown, N.J., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Filed May 5, 1983, Ser. No. 491,734
Int. Cl.³ C08K *3/10, 3/20, 3/34, 9/06*
U.S. Cl. 524—436 **14 Claims**

1. A stain resistant flame retardant insulating composition comprising the following components:

Resin Component	Weight % (Based upon 100 parts of resin)
Ethylene-vinyl acetate copolymer	30–70
Polyethylene	30–70

Additives	Parts/100 parts of resin
Filler selected from the group consisting of aluminum trihydrate, hydrated magnesia, and hydrated calcium silicate	80–150
Tetrakis methane	0.5–4
Thiodiethylene hydrocinnamate	0.25–3
Distearothiodipropionate	0.5–4
Vinyl silane	0.5–5
Peroxide selected from the group consisting of butylperoxydiisopropylenebenzene, dicumyl peroxide, t-butylcumyl peroxide, and mixtures thereof.	1–10

4,514,540

WATER REDUCIBLE POLYAMIDES

Michael C. Peck, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Sep. 26, 1983, Ser. No. 535,635
Int. Cl.³ C09D *3/70, 11/10*
U.S. Cl. 524—514 **5 Claims**

1. The copolymer reaction product of:

(A) 20 to 60 equivalent percent of a polymeric fatty acid;

(B) 0 to 60 equivalent percent of a polycarboxylic acid selection from the group consisting of a tricarboxylic acid and a dicarboxylic acid;

(C) 15 to 50 equivalent percent of a monocarboxylic acid; and

(D) 5 to 25 equivalent percent of a synthetic polymeric resin having a crystalline chain structure, said resin having active carboxyl and/or hydroxyl groups capable of reaction with acid/amine groups; with

(E) 50 to 80 equivalent percent of an organic polyamine.

4,514,541

FIBER CONTAINING PARTICULATE ELASTOMERIC COMPOSITION

Arnold Frances, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1984, Ser. No. 612,751
Int. Cl.³ C08K *3/36, 3/04*
U.S. Cl. 524—514 **16 Claims**

1. Process for preparing a particulate elastomeric composition having a density ratio of 0.1 to 0.4 exclusive of any organic solvent which may be present whereby 10 to 60 parts of aramid pulp and 15 to 65 parts of reinforcing filler are thoroughly mixed, a solution of elastomer in an organic solvent is added with continued stirring, the quantity of solution being sufficient to provide 5 to 75 parts elastomer, all parts to add up to

100 parts exclusive of organic solvent, the elastomeric particles are removed.

4,514,542

AROMATIC HYDROCARBON RESINS CONTAINING VINYLKETONE GROUPS AND POLYMERS THEREOF

Hacene Mehalla, Strasbourg, France, assignor to Societe Chimique des Carbonnages S.A., Paris La Defense, France

Division of Ser. No. 382,315, May 26, 1982, Pat. No. 4,465,811.
This application Jun. 6, 1984, Ser. No. 617,870
Claims priority, application France, May 26, 1981, 81 10433
Int. Cl.[3] C08L *25/16, 25/04;* C08F *293/00, 299/00*
U.S. Cl. 525—193 10 Claims

1. A copolymer of an acylated aromatic resin and a living polymer, said acrylated aromatic resin consisting essentially of a polymerizate of a mixture of hydrocarbons comprising 1 to 30 mol % styrene, 9 to 60 mol % vinyl toluene, and 10 to 90 mol % indenes, said polymerizate having a number-average molecular weight of about 500–2,500 and having grafted to the aromatic nuclei thereof vinylketone groups in a proportion of about 0.02 to 0.07 vinylketone groups per aromatic nucleus; said vinylketone groups being of the formula:

RR'C=CR"—CO—

wherein R, R' and R" being identical or different represent hydrogen, methyl, ethyl, n-propyl, isopropyl or halogen.

4,514,543

METHYLMETHACRYLATE/PHENYLMALEIMIDE COPOLYMER AND STYRENE/MALEIC ANHYDRIDE COPOLYMER

Barry D. Dean, Springfield, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 3, 1983, Ser. No. 538,243
Int. Cl.[3] C08L *35/02, 35/04, 39/04*
U.S. Cl. 525—205 13 Claims

1. A polymer alloy comprising a first and a second polymer wherein,

(a) the first polymer is a random copolymer consisting essentially of recurring units of methylmethacrylate and recurring units of N-phenylmaleimide; and

(b) the second polymer is selected from the group consisting essentially of a random copolymer of recurring units of styrene and from about 9.5 to about 12.5 weight percent recurring units of maleic anhydride and a random terpolymer of recurring units of styrene, from about 6 to about 9 weight percent recurring units of maleic anhydride and from about 3 to about 8 weight percent recurring units of N-phenylmaleimide.

4,514,544

PAPER SIZING AGENT COMPRISED OF REACTION PRODUCT OF MALEIC ANHYDRIDE AND PROPYLENE OLIGOMERS

Yoshio Takahashi, and Takeshi Shoji, both of Kanagawa, Japan, assignors to Mitsubishi Oil Company, Limited, Japan

Filed Dec. 5, 1983, Ser. No. 558,238
Int. Cl.[3] C08F *222/04, 8/12*
U.S. Cl. 525—327.4 12 Claims

1. A paper sizing agent, produced by the process comprising the steps of:

reacting a propylene oligomer having an average molecular weight in the range of 175 to 250 with maleic anhydride under heating in the absence of catalyst, the propylene oligomer is comprised such that it does not substantially contain oligomers having 10 or less carbon atoms and wherein the content of oligomers having 11 to 12 carbon atoms is 0 to 30% by volume, the content of oligomers having 13 to 15 carbon atoms is 20 to 95% by volume and the content of oligomers having 16 to 21 carbon atoms is 5 to 50% by volume;

allowing the reaction to proceed in order to obtain a reaction product; and

subjecting the reaction product to alkali saponification.

4,514,545

WATER CURABLE, AZIDE SULFONYL SILANE MODIFIED, ALKYLENE-ALKYL ACRYLATE COPOLYMERS

Austin E. Barnabeo, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 18, 1984, Ser. No. 570,785
Int. Cl.[3] C08F *8/34, 8/00*
U.S. Cl. 525—330.4 17 Claims

1. A water curable polymer of a hydrolyzable azide sulfonyl silane and an alkylene-alkyl acrylate copolymer having about one to about 50 percent by weight combined alkyl acrylate.

4,514,546

COATING POWDER BASED ON SAPONIFIED ETHYLENE/VINYL ACETATE COPOLYMERS AND THE USE THEREOF

Raoul Resz, Bergisch Gladbach; Heiarich Alberts, Odenthal-Blecher; Hans-Heribert Burgdörfer, Cologne, and Aziz El Sayed, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,607
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305353
Int. Cl.[3] C08L *29/04*
U.S. Cl. 525—57 3 Claims

1. A powder coating composition which consists essentially of:

(1) from 99.95 to 80% by weight of one or more saponified ethylene/vinyl acetate copolymers and

(2) from 20 to 0.05%, by weight, of one or more (meth) acrylic acid C_1–C_{24} alkyl ester homo-or co-polymers.

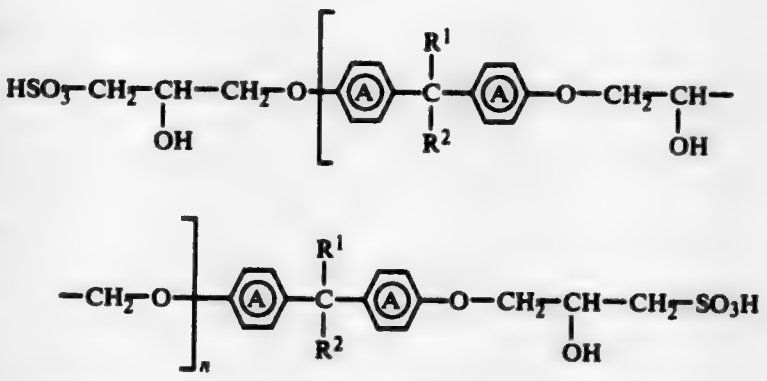
4,514,547

2-HYDROXYPROPANE SULPHONIC ACID DERIVATIVES: THEIR PREPARATION AND CURABLE COMPOSITIONS THEREOF

Arend Noordam, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 28, 1983, Ser. No. 489,435
Claims priority, application United Kingdom, Jul. 6, 1982, 8219521
Int. Cl.[3] C08L *63/02*
U.S. Cl. 525—510 9 Claims

1. A 2-hydroxypropane sulphonic acid derivative of general formula



wherein n is a number having an average value from 0 to 12, Ⓐ denotes saturation of aromatic unsaturation in an associated carbocyclic ring, and each of the R^1 and R^2 groups are independently selected from hydrogen and C_{1-12} alkyl groups provided that each $—C(R^1)(R^2)$-group contains not more than 13 carbon atoms; or a salt thereof.

4,514,548

CROSSLINKABLE COMPOSITION OF MATTER-I

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 5, 1983, Ser. No. 455,678

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.³ C08F *283/00*; C08L *63/00*

U.S. Cl. 525—528 **28 Claims**

1. A crosslinkable composition of matter, which composition comprises:

A. substantially gel-free conjugated diene-functionalized epoxy-amine adduct, comprising the reaction product of (i) first polyhydroxy functional epoxy-amine reactant comprising the reaction product of polyepoxy reactant having an average of at least about 2 epoxy groups per molecule with secondary amine reactant having a total of less than about 20 carbons per amino nitrogen, wherein each hydroxy group, if any, of the secondary amine is removed at least 1 carbon from each amino nitrogen, with (ii) conjugated diene functional mono-isocyanate reactant; and

B. substantially gel-free dieneophile-functionalized epoxy-amine adduct, other than said conjugated diene functionalized epoxy-amine adduct, comprising the reaction product of (i) second polyhydroxy functional epoxy-amine reactant comprising the reaction product of polyepoxy reactant having an average of at least about 2 epoxy groups per molecule with secondary amine reactant having a total of less than about 20 carbons per amino nitrogen, wherein each hydroxy group, if any, of the secondary amine is removed at least 1 carbon from each amino nitrogen, with (ii) dieneophile functional mono-isocyanate reactant.

4,514,549

CROSSLINKABLE COMPOSITION OF MATTER-IV

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 5, 1983, Ser. No. 455,718

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.³ C08F *283/00*; C08G *59/14*

U.S. Cl. 525—528 **28 Claims**

1. A self-crosslinkable substantially gel-free conjugated diene-functionalized dieneophile-functionalized epoxy-amine adduct, preferably of number average molecular weight about 500–8000, comprising the reaction product of (i) polyhydroxy functional epoxy-amine reactant comprising the reaction product of polyepoxy reactant having an average of at least about 2 epoxy groups per molecule with secondary amine reactant having a total of less than about 20 carbons per amino nitrogen, wherein each hydroxy group, if any, of the secondary amine is removed at least 1 carbon from each amino nitrogen, with (ii) conjugated diene functional mono-isocyanate reactant and with (iii) dieneophile functional mono-isocyanate reactant other than said conjugated diene functional mono-isocyanate reactant.

4,514,550

POLYPHOSPHAZENE PROCESS

Harold R. Penton, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 9, 1984, Ser. No. 608,653

Int. Cl.³ C08G *79/04*

U.S. Cl. 525—538 **24 Claims**

1. A process for replacing the chloride substituents on a phosphonitrilic chloride polymer with an aryloxide or alkoxide group in a single liquid reaction medium, said process comprising heating a mixture of said phosphonitrilic chloride polymer and at least 0.9 moles per equivalent of replaceable chloride in said phosphonitrilic chloride, of an alkali metal aryloxide, alkoxide or mixture thereof in a liquid hydrocarbon reaction medium in which said alkali metal aryloxide and alkoxide are substantially insoluble and in which the resultant substituted polymer is soluble, said heating being at a temperature of about 120°–200° C. for a period of time sufficient to obtain a substantial amount of substituted polymer.

4,514,551

PROCESS FOR THE PREPARATION OF CATIONIC POLYMERS

Akihisa Furuno, Yokohama; Kenichi Inukai, Ohtake, and Yasuo Ogawa, Kawasaki, all of Japan, assignors to Nitto Chemical Industry Co., Ltd.; Mitsubishi Rayon Co., Ltd. and Diafloc Co., Ltd., all of Tokyo, Japan

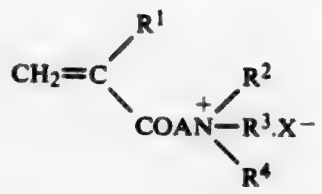
Filed Jan. 23, 1984, Ser. No. 572,753

Claims priority, application Japan, Jan. 24, 1983, 58-8799

Int. Cl.³ C08F *2/38*

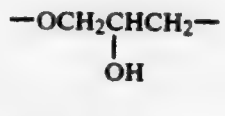
U.S. Cl. 526—233 **10 Claims**

1. In a process for producing a cationic polymer by polymerizing a monomer mixture containing acrylamide and a cationic alkenyl monomer represented by the general formula (I):



(I)

wherein R^1 represents H or CH_3; R^2 and R^3 represent independently CH_3 or C_2H_5; R^4 represents H, CH_3, C_2H_5 or benzyl, A represents $-OC_nH_{2n}-$ (n being 2 or 3),



or $-NC_nH_{2n}-$ (n being 2 or 3), and x− represents Cl^-, Br^-, I^-, $CH_3SO_4^-$, $C_2H_5SO_4^-$, $\frac{1}{2}SO_4^{--}$ or CH_3COO- in the form of a sheet in an aqueous medium, wherein the weight ratio of acrylamide/cationic alkenyl monomer is within the range of 95/5 to 5/95,

the improvement wherein polymerization is conducted in the presence of from 1 to 10,000 ppm based on the monomer of a water-soluble phosphite as a chain transfer agent.

4,514,552

ALKALI SOLUBLE LATEX THICKENERS

Gregory D. Shay, Oak Forest; Emmojean Eldridge, Chicago, and James E. Kail, Arlington Heights, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Aug. 23, 1984, Ser. No. 643,370

Int. Cl.³ C08F *220/34*

U.S. Cl. 526—301 **13 Claims**

1. An alkali soluble thickener which is an aqueous emulsion copolymer of:

(A) about 20–70 weight percent of an alpha, beta-monoethylenically unsaturated carboxylic acid,

(B) about 20–80 weight percent of a monoethylenically unsaturated monomer lacking surfactant capacity;

(C) about 0.5–60 weight percent of a non-ionic urethane monomer which is the urethane reaction product of a nonohydric nonionic surfactant with a monoethylenically unsaturated monoisocyanate; and

(D) from 0 up to about 2 weight percent of a polyethylenically unsaturated monomer.

4,514,553

THERMOSET RESIN PRODUCED FROM ANISOTROPIC HEAT-CURABLE ACRYLIC-TERMINATED MONOMERS

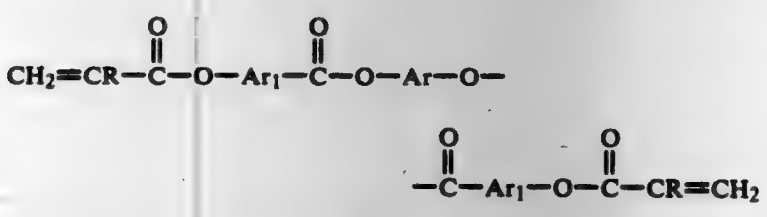
Anthony B. Conciatori, Chatham; Eui W. Choe, Randolph, and Gerald Farrow, New Providence, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 381,598, May 24, 1982, Pat. No. 4,452,993. This application Feb. 3, 1984, Ser. No. 576,554

Int. Cl.³ C08F *20/30*

U.S. Cl. 526—323.1 **16 Claims**

1. A thermoset resin comprised of heat-cured segments derived from acrylic-terminated monomers capable of forming an anisotropic melt phase of the formula:



wherein Ar is a divalent radical comprising at least one aromatic ring, Ar_1 is a divalent radical selected from the group consisting of phenylene, naphthylene, biphenylene and mixtures thereof and R is selected from the group consisting of hydrogen and methyl, with at least some of the hydrogen atoms present upon the aromatic rings in said divalent radicals optionally being replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, substituted phenyl and mixtures thereof.

4,514,554

PETROLEUM RESIN AND PRESSURE SENSITIVE ADHESIVE FORMULATIONS UTILIZING SAME AS TACKIFIER

Vincent L. Hughes, and Francisco M. Benitez, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 23, 1983, Ser. No. 469,097

Int. Cl.³ C08F *210/14*

U.S. Cl. 526—339 **8 Claims**

1. A petroleum resin containing a major proportion of the aluminum halide catalyzed polymer of the combination of pentadiene 1,3 and 2-methyl butenes, a number average molecular weight ($\overline{M}n$) of from 500 to 600, a weight average molecular weight ($\overline{M}w$) of from 800 to 960, a $\overline{M}w/\overline{M}n$ ratio of 1.3 to 1.9 and a softening point ranging from 78° C. to 81° C.

4,514,555

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT ORGANOALUMINUM POLYMERS

Isoji Taniguchi, Kyoto, and Yoshiharu Kimura, Ohmihachiman, both of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

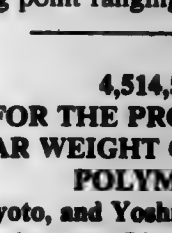
Filed Mar. 5, 1984, Ser. No. 586,074

Claims priority, application Japan, Apr. 16, 1983, 58-67564; Sep. 2, 1983, 58-162321; Nov. 2, 1983, 58-206815

Int. Cl.³ C08G *79/10*

U.S. Cl. 528—9 **13 Claims**

1. A process for producing a high molecular weight organoaluminum polymer comprising reacting an organoaluminum compound with water, the improvement wherein the reactants are (1) water, (2) an organoaluminum compound represented by the general formula (I):



(I)

wherein X, Y and Z are each a hydrogen atom, an alkyl group, an alkoxyl group, or an acyloxyl group, provided that when any one of X, Y and Z is an acyloxyl group, at least one of the others is an acyloxyl group and (3) an organic acid in an amount such that the total amount of the organic acid and the acyloxyl group contained in the organoaluminum compound is from 1.1 to 11 moles per mole of the organoaluminum compound.

4,514,556

4,4'-METHYLENE-BIS-(2-ETHYL-5-METHYL IMIDAZOLE) AND METHODS OF PRODUCING AND USING THE SAME

Natsuo Sawa, Kagawa; Toshihiro Suzuki, Saitama, and Shinji Okazaki, Kagawa, all of Japan, assignors to Shikoku Chemicals Corporation, Japan

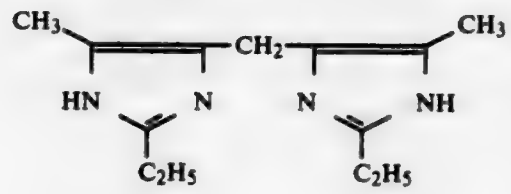
Filed Mar. 29, 1984, Ser. No. 594,902

Claims priority, application Japan, Apr. 14, 1983, 58-66584

Int. Cl.³ C08G *59/50, 59/68;* C07D *233/88*

U.S. Cl. 528—117 **13 Claims**

1. 4,4'-methylene-bis-(2-ethyl-5-methyl imidazole) represented by the structural formula



4,514,557

CHEMICAL CONTROL OF NADIMIDE CURE TEMPERATURE AND RATE

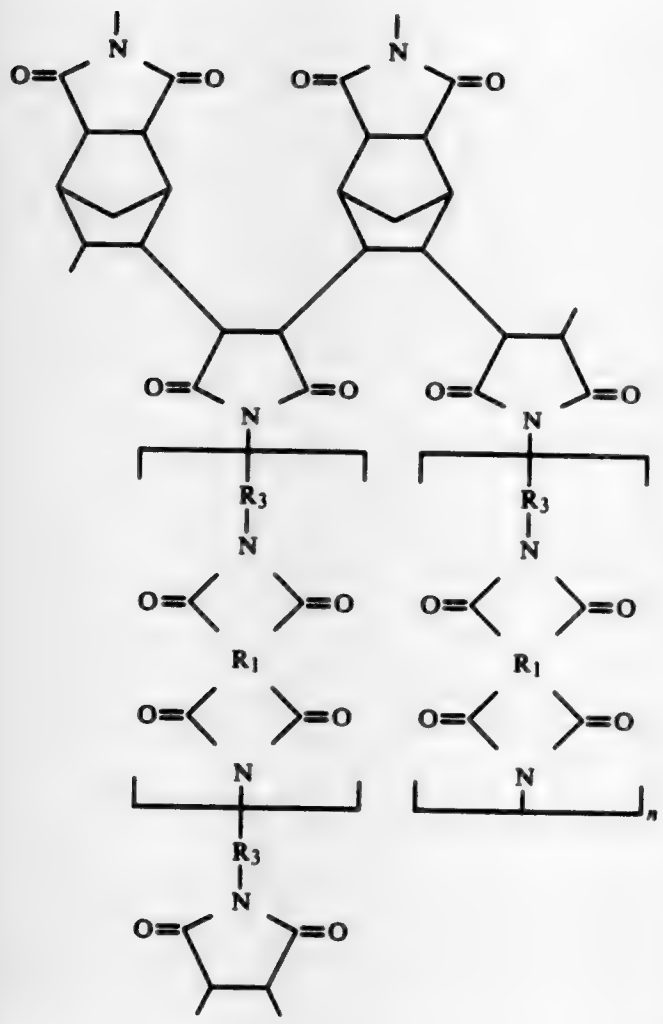
Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 404,809, Aug. 3, 1982, Pat. No. 4,455,418. This application Jul. 22, 1983, Ser. No. 516,217

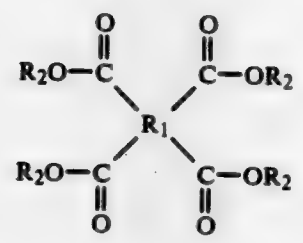
Int. Cl.³ C08G *73/10*

U.S. Cl. 528—342 **6 Claims**

1. A process for the production of a polyimide of the general formula:



wherein R_1 is a tetravalent aromatic radical and R_3 is a divalent aromatic radical, comprising the step of: copolymerizing a reaction mixture comprising a maleimido end capped prepolymer reactant with a stoichiometric amount of norbornenylimido end-capped prepolymer reactant at a temperature below 300° C. and wherein the prepolymer reactancts are generated by heating a solution of solvent and from about 30 percent to about 70 percent by weight of a mixture of compounds of the formulae:

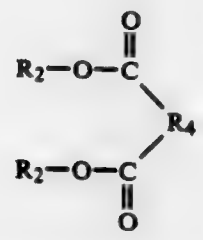


(a)

wherein R_1 is a tetravalent aromatic radical and at least two of R_2 are alkyl with the remainder being hydrogen: and ps

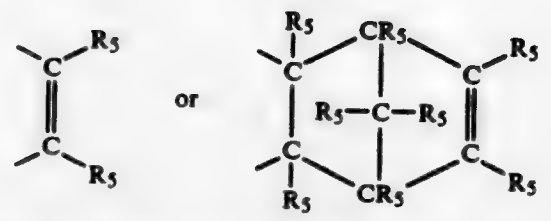
(b) $H_2N—R_3—NH_2$

wherein R_3 is a divalent aromatic radical: and



(c)

wherein R_2 is defined as in (a) and at least one R_2 in (c) being alkyl, and R_4 is



wherein R_5 is hydrogen or lower alkyl of 1–4 carbons and wherein the ratio of (a):(b):(c) is n:(n+1):2, wherein n has a value from 1–20, to obtain curable polyimide prepolymers and including the step of adding an effective amount of maleic end-capped prepolymer reactant to provide an enhanced amount of maleic end-capped prepolymer reactant relative to norbornenyl end-capped prepolymer reactant.

4,514,558

PROCESS FOR PRODUCING AROMATIC SULFIDE POLYMER WITH ANHYDROUS AMORPHOUS VITREOUS COMPLEX DEHALOGENATION AGENT

Zenya Shiiki; Yo Iizuka, and Yukichika Kawakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1983, Ser. No. 560,988
Claims priority, application Japan, Dec. 14, 1982, 57-218784
Int. Cl.³ C08G 75/16
U.S. Cl. 528—388 9 Claims

1. A process for producing a high molecular weight aromatic sulfide polymer which comprises heating, to a temperature of 100° to 270° C. in a composition comprising (1) an organic solvent, (2) a very small amount of water, (3) a dihaloaromatic compound and (4) a substantially anhydrous amorphous vitreous compound that is a solid ionic complex produced by the contact of (i) (a) S^{2-} and (b) inorganic salt-forming anions other than the S^{2-} and (ii) ions of a metal selected from an alkali metal or an alkaline earth metal in an aqueous solution followed by drying, the amount of the dihaloaromatic compound being 0.8 to 1.1 g equivalent with respect to the amount of the amorphous vitreous compound containing 1 g equivalant of S^{2-}.

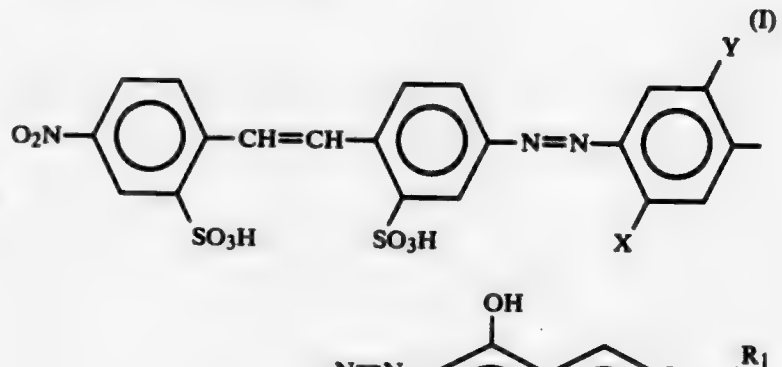
4,514,559

WATER SOLUBLE DISAZO COMPOUND, COPPER SALT THEREOF, AND SHEET OR FILM COLORED THEREWITH

Giichi Sato, Tokyo; Tadashi Matuo, Koonosu, and Tooru Tabei, Kitamoto, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

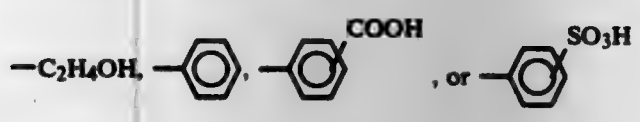
Filed Apr. 27, 1984, Ser. No. 604,475
Int. Cl.³ C09B 45/24
U.S. Cl. 534—690 11 Claims

1. A water soluble disazo compound represented, in the free acid form, by the formula:

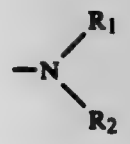


(I)

wherein X represents a hydrogen atom or a methyl, methoxy or ethoxy group; Y represents a methoxy or ethoxy group; R_1 represents a hydrogen atom or a methyl group; R_2 represents a hydrogen atom or a methyl,



group, and the



group is bonded at the 6- or 7-position, or a copper complex salt thereof.

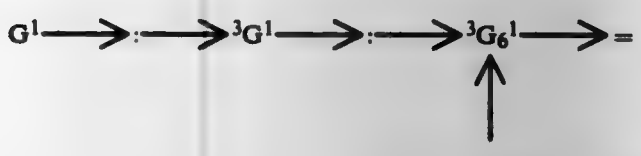
4,514,560

AGGREGATING POLYSACCHARIDE DERIVED FROM AUREOBACIDIUM

Satoru Shinohara, No. 8-14, Takasago-cho, Hyuga-shi, Miyazaki-ken; Noboru Fujii, No. 37 Haramachi 1-chome; Kiyohisa Imada, No. 41-5, Otsukadainishi 3-chome, both of Miyazaki-shi, Miyazaki-ken; Genichi Kadota, No. 6276-83, Tomitaka, Hyuga-shi, Miyazaki-ken, and Hideo Ueno, No. 608, Zaikoji, Hyuga-shi, Miyazaki-ken, all of Japan

Filed Mar. 2, 1982, Ser. No. 353,968
Claims priority, application Japan, Mar. 11, 1981, 56-35001
Int. Cl.³ C12P *19/04*
U.S. Cl. 536—1.1 **7 Claims**

1. A polysaccharide having D-glucose as main constitutive sugar therein as detected by gas chromatography carried out through methylation and hydrolysis and by paper chromatography carried out through acid hydrolysis in accordance with the Hakomori's method; showing



0.38 to 0.43:0.14 to 0.24:0.38 to 0.43

in gas chromatographic mass spectrometry (GC-MS method); having the absorption position of C_1 at 103 ppm as measured from a ^{13}C-nuclear magnetic resonance spectrum; showing characteristic absorption at 1720 cm^{-1}–1760 cm^{-1} and 890 cm^{-1} in an infrared absorption spectrum; having number average molecular weight between 50,000 and 500,000 as measured by the osmotic method; having a specific rotation $[\alpha]_D^{25}$ between +20 and +70; consisting 42.0 to 45.0% of carbon, 5.7 to 6.7% of hydrogen, 0 to 1.0% of nitrogen, 0.2 to 0.8% of ash content and the rest of oxygen according to the results of an elementary analysis; containing 4.0 to 6.0% of phosphoric acid in total therein as measured by a fluorescent X-ray analysis, the Allen's improved method and the Deniges-Atkins method after carbonic acid melting showing a color reaction of saccharides in an α-naphthol-sulfuric acid reaction, an indole-sulfuric acid reaction and a phenol-sulfuric acid reaction; being negative in a ninhydrin reaction, a carbazole-sulfuric acid reaction and an Elson-Morgan's reaction; being soluble in dimethyl sulfoxide (DMSO); swelling well in water though not readily soluble therein; and being insoluble in ethanol, pyridine, chloroform and other organic solvents.

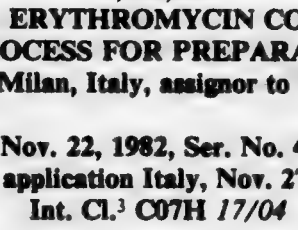
4,514,561

PROCESS FOR PREPARING α-L N-ACETYL DAUNOSAMINIDE

Bertram Fraser-Reid, Silver Spring, Md., and Heinz W. Pauls, Durham, N.C., assignors to Research Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,192
Int. Cl.³ C07H *1/00*
U.S. Cl. 536—18.7 **1 Claim**

1. A method for the synthesis of methyl alpha-L N-acetyl daunosaminide of the formula:



which comprises the steps of:

(a) reacting methyl 2,3-dideoxy-alpha-L-erythrohex-2-enopyranoside with benzoic acid to invert the allylic hydroxy group;

(b) treating the resulting product to obtain the free hydroxyl group from the inverted benzoate ester;

(c) converting the free allylic hydroxy group to the corresponding imidate ester;

(d) cyclizing the resulting imidate ester;

(e) subjecting the cyclized imidate ester to hydrogenolysis to replace the halogen atoms with hydrogen atoms; and

(f) thereafter hydrolyzing the resulting dehalogenated cyclized imidate ester to give methyl alpha-L N-acetyl daunosaminide.

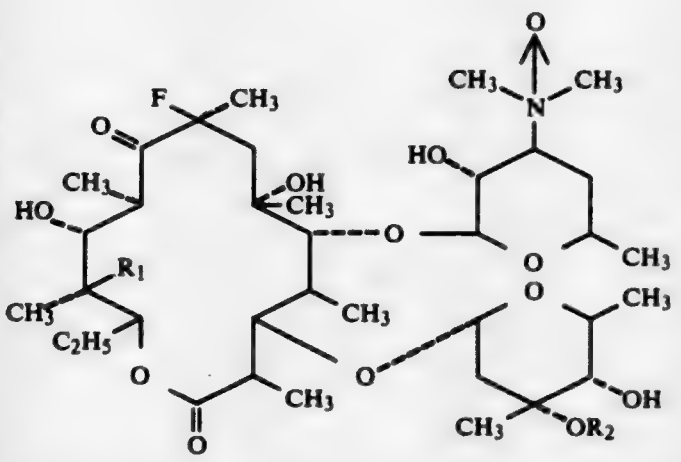
4,514,562

FLUORINATED ERYTHROMYCIN COMPOUNDS AND A PROCESS FOR PREPARATION

Luciano Toscano, Milan, Italy, assignor to Pierrel Spa, Napoli, Italy

Filed Nov. 22, 1982, Ser. No. 443,580
Claims priority, application Italy, Nov. 27, 1981, 25345 A/81
Int. Cl.³ C07H *17/04*
U.S. Cl. 536—7.2 **24 Claims**

19. (8S)-8-fluoroerythromycin N-oxides having the formula:



wherein R_1 is hydrogen or OH, and R_2 is hydrogen or methyl.

4,514,563

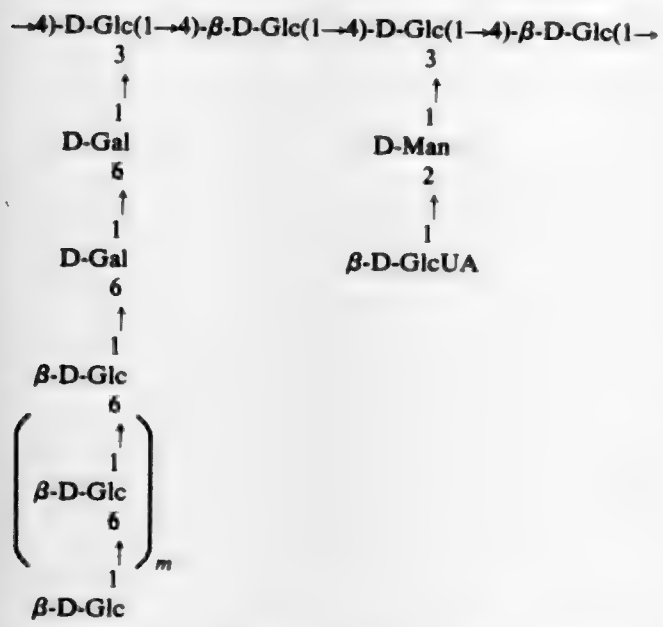
HIGHLY VISCOUS POLYSACCHARIDES

Seiichi Fujiyama; Hiroyuki Minakami, both of Aichi, and Hiroshi Masai, Hanada, all of Japan, assignors to Nakano Vinegar Co., Ltd., Handa, Japan

Continuation-in-part of Ser. No. 436,398, Oct. 25, 1982, abandoned. This application Mar. 29, 1983, Ser. No. 479,919
Claims priority, application Japan, Nov. 5, 1981, 56-176510
Int. Cl.³ C08B *37/00*; C12P *19/06*
U.S. Cl. 536—123 **3 Claims**

1. Highly viscous polysaccharides composed mainly of (a) glucose, (b) galactose, (c) mannose, and (d) glucuronic acid, the molar ratio of (a):(b):(c):(d) being 10:3–6:0.5–2:0.5–2.

3. The polysaccharide of claim 1 wherein the main repeating units of the polysaccharide has the following structure



wherein m is 0 or 1, Glc is glucose, Gal is galactose, Man is mannose, and GlcUA is glucuronic acid.

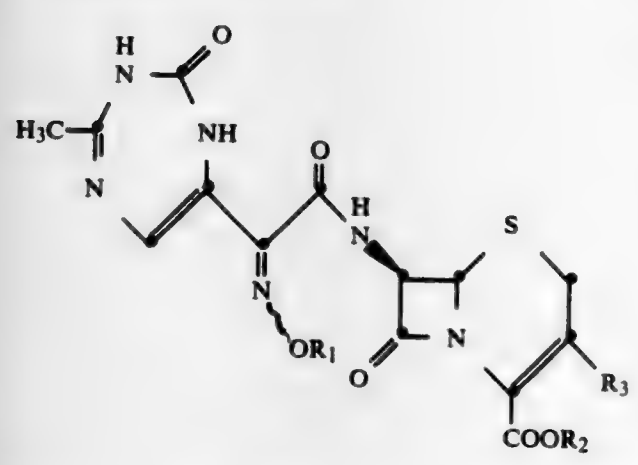
4,514,564

7β-(2'-(1'',3'',5''-TRIAZEPIN-4''-ONE)-2'-(OXIME ETHER)-ACETAMIDO)-3-SUBSTITUTED CEPHALOSPORINS

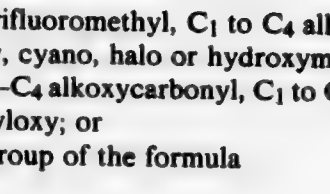
William J. Wheeler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 18, 1983, Ser. No. 486,132
Int. Cl.³ C07D *501/38, 501/36*; A61K *31/545*
U.S. Cl. 544—25 **11 Claims**

1. A compound of the formula



wherein R_1 is C_1 to C_4 alkyl, an amido-substituted alkyl, a carboxy-substituted alkyl, a carboxy-substituted cycloalkyl or an amido-substituted cycloalkyl group represented by the formula

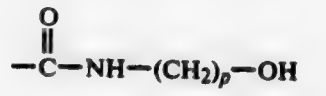


wherein m is 0 to 3, a and b when taken separately are independently hydrogen or C_1 to C_3 alkyl, or when taken together with the carbon to which they are attached form a C_3 to C_7 carbocyclic ring; R' is hydroxy, amino, C_1 to C_4 alkoxy, or —OR'', where R'' is a carboxy protecting group; R_2 is hydrogen, a carboxy protecting group or a pharmaceutically acceptable, non-toxic salt thereof, the hydrates of said salt, or the non-toxic metabolically labile esters thereof, provided that when R_3 is hydroxy, R_2 is other than hydrogen; R_3 is

(a) hydrogen, fluoro, bromo, chloro, hydroxy, methyl, methoxy or hydroxymethyl; or

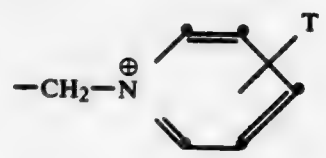
(b) (C_2 to C_4 acyloxy)methyl; or

(c) a methyl carbamate group of the formula



wherein R''' is hydrogen or C_1 to C_4 alkyl;

(d) a pyridinium methyl group of the formula

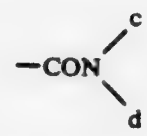


wherein T is

(i) hydrogen, trifluoromethyl, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, hydroxy, cyano, halo or hydroxymethyl; or

(ii) carboxy, C_1–C_4 alkoxycarbonyl, C_1 to C_4 alkanoyl or C_1 to C_4 alkanoyloxy; or

(iii) an amido group of the formula

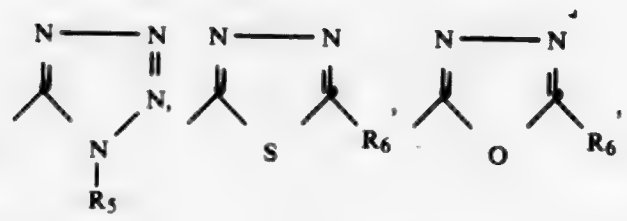


wherein c is hydrogen, methyl, ethyl or cyclopropyl and d is hydrogen, methyl or ethyl; or

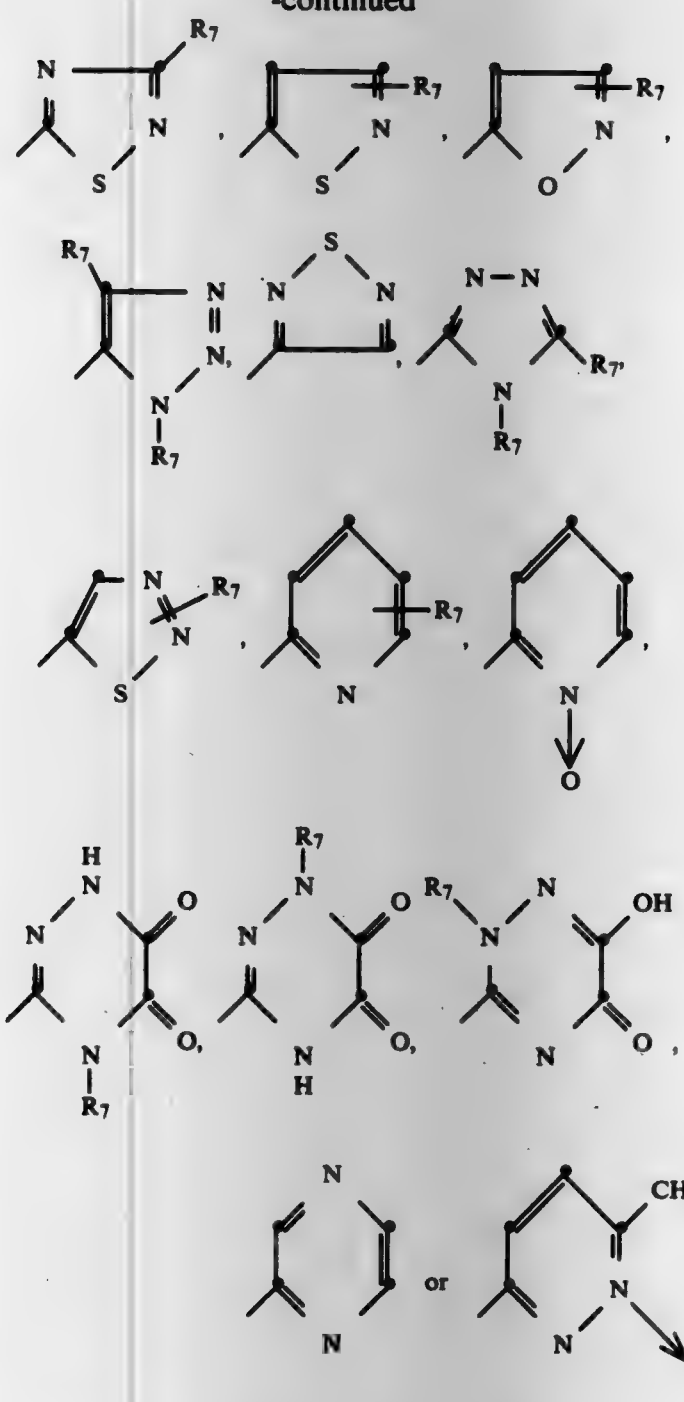
(iv) a group of the formula

wherein p is 1 to 4; provided that (a) when the pyridinium ring is substituted with the above substituents in (iv), the pyridinium ring is additionally substituted with R_4, wherein R_4 is hydrogen or C_1 to C_4 alkyl; and (b) when T is hydroxy or halo, T is only bonded to the 3 position of the pyridinium ring; or

(e) a heterocyclic thiomethyl group of the formula —CH_2—S—Y, wherein Y is



-continued



wherein

R_5 is hydrogen, C_1 to C_4 alkyl, $—CH_2COOH$ or $—CH_2SO_3H$;

R_6 is hydrogen, C_1 to C_4 alkyl, phenyl or amino; and

R_7 is hydrogen or C_1 to C_4 alkyl.

4,514,565

THIAZOLYLACETAMIDO CEPHALOSPHORIN COMPOUNDS

Michihiko Ochiai, Osaka; Taiiti Okada, Kyoto; Osami Aki, Kawanishi; Akira Morimoto; Kenji Kawakita, both of Osaka, and Yoshihiro Matsushita, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 191,934, Sep. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 71,032, Aug. 28, 1979, Pat. No. 4,298,606, which is a division of Ser. No. 900,233, Apr. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 642,356, Dec. 19, 1975, Pat. No. 4,098,888. This application Jun. 24, 1983, Ser. No. 525,663

Claims priority, application Japan, Dec. 19, 1974, 49-146567; United Kingdom, Jun. 9, 1975, 24611/75

Int. Cl.³ C07D *501/38;* A61K *31/545*

U.S. Cl. 544—25 **2 Claims**

1. A compound of the formula

wherein A is a group (a) or (b)



R^1 and R^2 are hydrogen, lower alkyl or cycloalkyl, or together with the carbon atom to which they are attached a 4- to 6-membered, saturated hydrocarbon ring and

R^3 is hydrogen, lower alkyl or cycloalkyl.

4,514,567

PROCESS FOR PREPARING TRIETHYLENEDIAMINE

James E. Wells, Ardmore, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 278,814, Jun. 29, 1981, Pat. No. 4,405,784. This application Apr. 22, 1983, Ser. No. 487,789

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ C07C *295/02*

U.S. Cl. 544—352 **4 Claims**

1. In a method for synthesis of triethylenediamine from nitrogen-containing componds selected from the group consisting of hydroxyethylpiperazine, crude hydroxyethylpipera-

zine, N-aminoethyl piperazine, ethanolamines and substituted ethanolamines by condensation reactions in the presence of acidic catalyst, the improvement which comprises the use as such catalyst of a product selected from the group consisting of $Sr_2P_2O_7$, $Sr(H_2PO_4)_2$, mixtures thereof, and mixtures with $SrHPO_4$.

4,514,568

5-(4-NITROPHENYL)-2(1H)-PYRAZINONES

William J. Coates, Welwyn Garden City, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

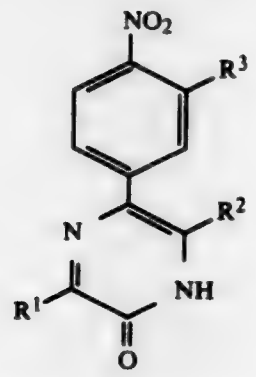
Filed Jun. 2, 1983, Ser. No. 500,484

Claims priority, application United Kingdom, Jun. 5, 1982, 8216437; Jan. 8, 1983, 8300476

Int. Cl.³ C07D *241/18*

U.S. Cl. 544—408 **2 Claims**

1. A compound of the formula (I):



(I)

wherein R^1, R^2 and R^3 are independently hydrogen or C_{1-4} alkyl.

4,514,569

SYNTHESIS OF 1-SUBSTITUTED ISOQUINOLINES

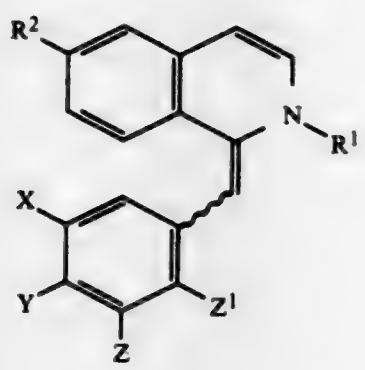
James B. Hendrickson, 9 Acacia St., Cambridge, Mass. 02138, and César Rodriguez, 567 South St., Waltham, Mass. 02154

Filed Jan. 28, 1982, Ser. No. 343,407

Int. Cl.³ C07D *217/20*

U.S. Cl. 546—146 **16 Claims**

1. A method of preparing a morphine intermediate of the following formula (I):



(I)

wherein

R^1 is COR group wherein R is C_{1-6} alkyl, phenyl, or C_{1-6} alkoxy;

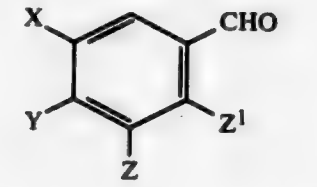
R^2 is hydrogen or C_{1-6} alkoxy;

X and Z, which may be the same or different, are hydrogen, hydroxy, silyloxy, halogen, lower alkoxy, phenoxy, lower alkyl, trimethylsiloxy, phenyl, or benzyloxy;

Y is hydroxy, silyloxy, halogen, lower alkoxy, phenoxy, phenyl, or lower alkyl;

Z^1 hydrogen or halogen, comprising the following steps

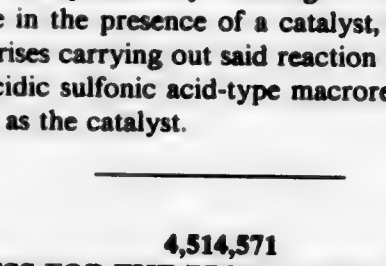
(i) reacting an isoquinoline of the following formula (II):



(II)

wherein R^2 is as defined above, with a compound of the formula LG-R^1, wherein LG is mercapto, hydroxy, halogeno, lower alkoxy, or lower alkylthio and R^1 is as defined above, followed by

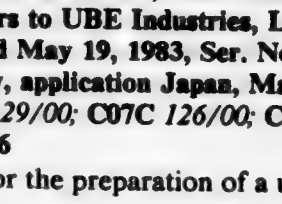
(ii) reacting the N-acylated produce of step (i) with a phosphorus compound capable of being displaced from the compound of the following formula (III) as the Pho moiety by a Wittig reaction using n-butyl lithium and isovanillin, to yield a compound of the following formula (III):



(III)

wherein Pho is a phosphonate $PO(OR)_2$ wherein R is lower alkyl. R^1 and R^2, are as defined above; and

(iii) reacting the compound of formula (III) in a Wittig reaction with the benzaldehyde of the following formula (IV):



(IV)

wherein X, Y, Z, and Z^1 are as defined above, to yield a compound of formula (I).

4,514,570

PROCESS FOR THE PREPARATION OF 2,2,4-TRIMETHYL-1,2-DIHYDROQUINOLINE COMPOUNDS

Joseph S. Bowers, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1984, Ser. No. 585,647

Int. Cl.³ C07D *215/06, 215/14*

U.S. Cl. 546—181 **3 Claims**

1. In a process of producing 2,2,4-trimethyl-1,2-dihydroquinoline compounds by reacting an aniline compound with acetone in the presence of a catalyst, the improvement which comprises carrying out said reaction in the presence of a strongly acidic sulfonic acid-type macroreticular cation exchange resin as the catalyst.

4,514,571

PROCESS FOR THE PREPARATION OF UREA DERIVATIVES

Mamoru Nakai; Fumio Iwata, and Teruhiko Inoue, all of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

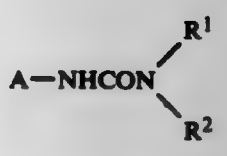
Filed May 19, 1983, Ser. No. 496,179

Claims priority, application Japan, May 25, 1982, 57-87276

Int. Cl.³ C07B *29/00*; C07C *126/00*; C07D *213/89, 263/48*

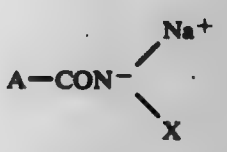
U.S. Cl. 546—306 **7 Claims**

1. A process for the preparation of a urea derivative having the formula:

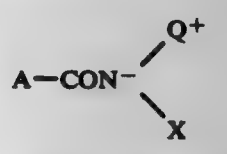


in which A represents a straight- or branched-chain alkyl group having 1–20 carbon atoms, an aryl group, or a heterocyclic group, and each of R^1 and R^2 represents hydrogen, a straight- or branched-chain alkyl group having 1–20 carbon atoms, an alicyclic group, or an aryl groups, which comprises:

reacting sodium salt of an N-halogenamide having the formula:

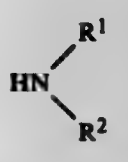


in which A is the same as above, and X represents halogen, with a quaternary ammonium salt to obtain its addition salt having the formula:



in which A and X are the same as above, and Q represents a quaternary ammonium, and then,

reacting said addition salt with an amine derivative having the formula:



in which each of R^1 and R^2 is the same as above, in the absence of a solvent or presence of an organic solvent.

4,514,572

PREPARATION OF FLUOROPHTHALIC ANHYDRIDES

Gerhard Hamprecht, Weinheim; Juergen Varwig, Heidelberg, and Wolfgang Rohr, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

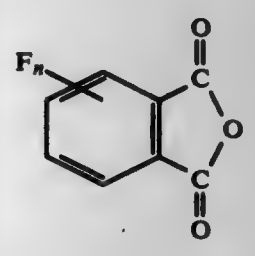
Filed Jan. 23, 1984, Ser. No. 572,949

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1983, 3303378

Int. Cl.³ C07D *307/89*

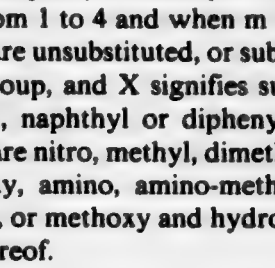
U.S. Cl. 549—246 **2 Claims**

1. A process for the preparation of a fluorophthalic anhydride of the formula



I

where n is 1 or 2, by reacting a chlorophthalic anhydride of the formula



II

where n has the above meanings, with potassium fluoride in the presence of an aliphatic sulfone as a solvent, wherein the chlorophthalic anhydride is treated with an acid chloride of sulfurous acid or of carbonic acid in the presence of the aliphatic sulfone at as high as 150° C., and the reaction mixture is then reacted with potassium fluoride at from 150° to 250° C.

4,514,573

ISOPRENYLAMINE DERIVATIVES

Yoshiyuki Tahara, Saitama; Yasuhiro Komatsu, Niiza; Hiroyasu Koyama, Ageo; Reiko Kubota, Hasuda; Teruhito Yamaguchi, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Saitama, Japan

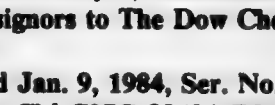
Filed May 12, 1982, Ser. No. 377,579

Claims priority, application Japan, May 18, 1981, 56-76156

Int. Cl.³ C07C *87/28, 101/48*

U.S. Cl. 564—387 **4 Claims**

1. An isoprenylamine derivative represented by the general formula



wherein Y is decaprenyl, solanesyl, or phytyl, m is zero or an integer of from 1 to 4 and when m is not zero the methylene groups are unsubstituted, or substituted by a hydroxyl or phenyl group, and X signifies substituted or unsubstituted phenyl, naphthyl or diphenylmethyl, wherein the substituents are nitro, methyl, dimethyl, chloro, mono-, di- or trimethoxy, amino, amino-methyl, carboxy, carboxy and hydroxy, or methoxy and hydroxy, and the acid addition salts thereof.

4,514,574

PROCESS FOR SEPARATING ISOMERIC MIXTURES

Kimio Inoue; Gale G. Hoyer, and Stanley I. Bates, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 9, 1984, Ser. No. 569,083

Int. Cl.³ C07C *85/26;* B01D *3/34*

U.S. Cl. 564—424 **17 Claims**

1. A process for separating a mixture of isomers of organic compounds comprising:

(a) contacting the mixture with a compressed gas under supercritical conditions such that the gas selectively takes up at least one isomer;

(b) separating the gas, including any of the mixture taken up by the gas in step (a), from the mixture not taken up by the gas in step (a); and

(c) separating at least part of the mixture taken up by the gas from the gas.

4,514,575

PROCESS FOR PREPARING TERTIARY PHOSPHINES

John Y. Lee, and Dennis P. Bauer, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 25, 1983, Ser. No. 554,901

Int. Cl.³ C07F *9/50*

U.S. Cl. 568—17 **8 Claims**

1. A process for converting a tertiary phosphine oxide to the corresponding tertiary phosphine which comprises reacting the tertiary phosphine oxide with a trichlorosilane reducing

agent in the presence of an inert halogenated hydrocarbon solvent at a temperature in the range of about 50°–250° C.

4,514,576

PRODUCTION OF ARYL ALKYL ETHERS FROM METHYLBENZYL ALCOHOL USING RHENIUM HEPTOXIDE CATALYST

Haven S. Kesling, Jr., Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 1, 1983, Ser. No. 510,022

Int. Cl.³ C07C *41/09*

U.S. Cl. 568—659 **11 Claims**

1. An improved process for the catalytic preparation of bis alpha-methylbenzyl ether from alpha-methylbenzyl alcohol in the presence of a catalyst wherein the improvement comprises contacting said alpha-methylbenzyl alcohol with a rhenium heptoxide catalyst.

4,514,577

CHEMICAL PROCESS FOR PREPARING DI-ORTHO BENZYL PHENOLS

Allen H. Filbey; Henry G. Braxton, Jr., both of Baton Rouge, La., and Bernard R. Meltsner, Royal Oak, Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 15, 1982, Ser. No. 434,827

Int. Cl.³ C07C *39/14, 37/16*

U.S. Cl. 568—744 **11 Claims**

1. A process for making benzyl substituted phenols, said process comprising contacting a mixture of a phenol and a benzyl alcohol in the vapor phase with an activated gamma alumina catalyst at a temperature in the range of 225°–450° C., said temperature being high enough to maintain said phenol and benzyl alcohol in the vapor phase at reaction conditions, said phenol having at least one position ortho or para to its phenolic hydroxyl group unsubstituted except for hydrogen.

4,514,578

PROCESS FOR THE PREPARATION OF TRIMETHYLOLPROPANE

Otto Immel; Hans-Helmut Schwarz; Hein Quast, and Eberhard Bandtel, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 466,693, Feb. 15, 1983, abandoned.

This application Jun. 22, 1984, Ser. No. 623,279

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207746

Int. Cl.³ C07C *31/22, 29/38*

U.S. Cl. 568—853 **18 Claims**

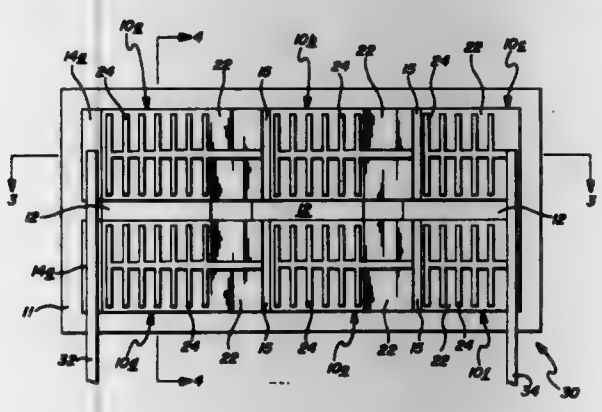
1. In a process for the preparation of trimethylolpropane by reaction of n-butyraldehyde with aqueous formaldehyde in the presence of an alkaline condensing agent, the improvement wherein the n-butyraldehyde is metered into a reaction mixture of water, alkaline condensing agent and formaldehyde, which contains less than 0.1 mol of methanol per mol of formaldehyde, at a temperature from 15° to 50° C. and, after addition of said butyraldehyde, the reaction mixture's temperature is increased to a temperature up to 90° C., the process being carried out in the presence of sufficient water such that the reaction mixture has a content of trimethylolpropane of 5 to 10% by weight after the reaction.

4,514,579

LARGE AREA PHOTOVOLTAIC CELL AND METHOD FOR PRODUCING SAME

Joseph J. Hanak, Lawrenceville, N.J., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jan. 30, 1984, Ser. No. 575,373
Int. Cl.[3] H01L *31/06, 31/18*
U.S. Cl. 136—249 15 Claims



1. A large area photovoltaic cell formed of a plurality of small area photovoltaic segments arranged in a plurality of rows and columns, said small area segments in each of said rows electrically connected in series; said series connected rows of small area segments electrically connected in parallel; the large area cell comprising;

a. a common electrically insulating substrate member;

b. a plurality of discrete first small area electrodes formed on said substrate and electrically isolated from one another so as to form a plurality of rows and columns of small area electrodes; each first electrode having a surface divided into a major portion adapted to have semiconductor material deposited thereupon, and a minor portion adapted to be in electrical contact with a second electrode;

c. a discontinuous layer of semiconductor material adapted to generate an electrical current in response to illumination thereof, said discontinuous layer disposed on said plurality of discrete small area electrodes; said discontinuous layer forming a plurality of semiconductor bridges overlying the major portions of at least two adjacent first electrodes in a column and extending into portions of said substrate exposed between adjacent first electrodes in a row;

d. a plurality of discrete small area second electrodes electrically isolated from one another so as to form a plurality of rows and columns of small area second electrodes, each second electrode generally corresponding to and overlying the major portion of one of the underlying first electrodes; each second electrode electrically contacting (1) one of the semiconductor bridge portions extending onto said substrate between adjacent first electrodes in a row, and (2) the minor portion of the adjacent first electrode so as to series-connect each of said rows of small area photovoltaic segments; and

e. parallel connection means electrically connecting in parallel said rows of small area photovoltaic segments electrically connected in series; whereby a series-parallel connected large area photovoltaic cell exhibiting only proportional performance losses resulting from failures of small area photovoltaic segments thereof is provided.

7. A large area photovoltaic cell as in claim 1, further including:

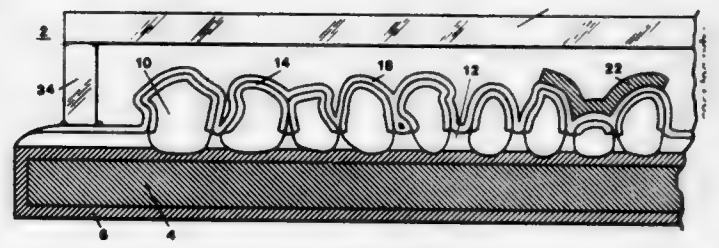
sealing means for electrically and environmentally isolating punctured portions of the large area cell from ambient conditions, whereby said cell is rendered resistant to the effect of puncture damage.

4,514,580

PARTICULATE SILICON PHOTOVOLTAIC DEVICE AND METHOD OF MAKING

Robert W. Bartlett, Tucson, Ariz., assignor to SRI International, Menlo Park, Calif.

Filed Dec. 2, 1983, Ser. No. 557,443
Int. Cl.[3] H01L *31/06, 31/18*
U.S. Cl. 136—250 2 Claims



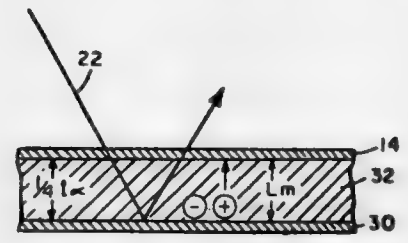
1. A hermetically sealed photovoltaic device comprising a substrate having an aluminum surface thereon with crushed p-type nonspherical silicon particles having a particle size range of 300–1000 micrometers sintered thereto to form an ohmic contact with said aluminum surface, an electrically insulating glass having a melting point of under 660° C. covering said crushed silicon particles and the aluminum surface of the interstices between adjacent particles, and n+ region formed in an exposed upper portion of said silicon particles to form p-n junctions in situ within said silicon particles, a transparent conductive coating comprising a tin oxide layer electrically contacting said n+ region, an electrode in ohmic contact with selective portions of said transparent conductive coating, and a transparent protective layer over said conductive layer providing a hermetic seal for said photovoltaic device.

4,514,581

SOLAR CELLS HAVING ULTRATHIN ACTIVE LAYERS

John C. C. Fan, Chestnut Hill, and Carl O. Bozler, Sudbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 57,874, Jul. 16, 1979, Pat. No. 4,376,228. This application Nov. 8, 1982, Ser. No. 440,090
The portion of the term of this patent subsequent to Mar. 8, 2000, has been disclaimed.
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—255 15 Claims



1. In a solar cell having an active semiconductor layer which has a minority carrier diffusion length, L_m, which is less than the solar spectrum absorption thickness, t_α:

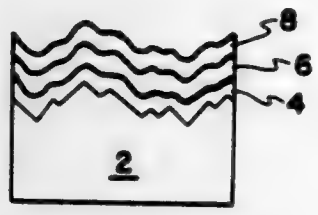
The improvement of limiting said active layer to a thickness of less than L_m and greater than about 0.1 t_α and providing said active layer with a back surface reflector.

4,514,582

OPTICAL ABSORPTION ENHANCEMENT IN AMORPHOUS SILICON DEPOSITED ON ROUGH SUBSTRATE

Thomas Tiedje, Garwood, and Benjamin Abeles, Princeton, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 419,158, Sep. 17, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 585,546
Int. Cl.[3] H01L *31/04, 31/18*
U.S. Cl. 136—256 11 Claims



1. A method for producing a thin film semiconductor device with enhanced absorption properties comprising:

(a) sandblasting one surface of a dielectric substrate such that it randomly scatters incident light, wherein said sandblasted surface includes structures up to 100 μm; and

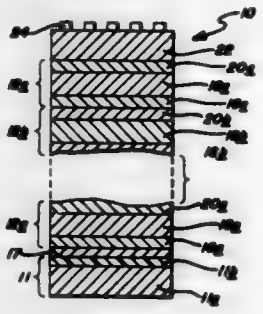
(b) depositing a thin film of semiconductor material on said dielectric sandblasted surface of said substrate, such that said structure is more than 50 times larger than the film thickness.

4,514,583

SUBSTRATE FOR PHOTOVOLTAIC DEVICES

Masatsugu Izu, Birmingham, and Vincent D. Cannella, Detroit, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 7, 1983, Ser. No. 549,055
Int. Cl.[3] H01L *31/04*
U.S. Cl. 136—259 1 Claim



1. In a photovoltaic device of the type comprising: a first electrode; an active semiconductor body electrically communicating with the first electrode, said semiconductor body adapted to generate a flow of electrical current in response to light energy incident thereupon; and a second electrode electrically communicating with the semiconductor body; the improvement comprising:

a composite substrate for said device including (1) a relatively thick support layer having at least one substantially planar surface, and (2) a relatively thin, flexible, substantially defect free, electrically insulating layer formed of a synthetic polymeric material disposed atop the planar surface of the support layer, said electrically insulating layer characterized by a textured surface, the textured surface formed by features sized and shaped so as to substantially enhance the absorption of light by the semiconductor body;

a light reflective body conformally disposed atop the textured surface of the insulating layer, said light reflective body forming the first electrode;

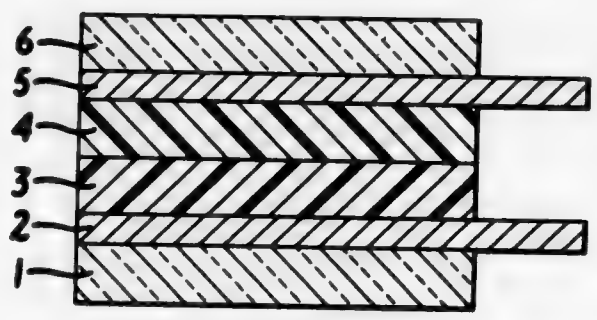
whereby said support layer provides (1) structural support for the electrodes and the semiconductor body of the photovoltaic device, and (2) vertical electrical insulation between the substrate and the first electrode of said photovoltaic device.

4,514,584

ORGANIC PHOTOVOLTAIC DEVICE

Sidney W. Fox, and Aleksander T. Przybylski, both of Miami, Fla., assignors to University of Miami, Coral Gables, Fla.

Filed Dec. 9, 1982, Ser. No. 448,236
Int. Cl.[3] H01L *31/04*
U.S. Cl. 136—263 13 Claims



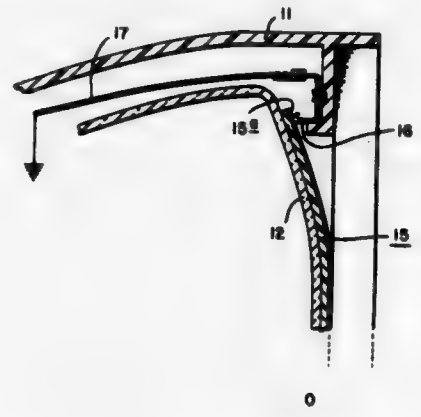
1. A photovoltaic device having as its photoactive electron donor component a thermal condensation polymer of at least one monoaminodicarboxylic acid and having as its photoactive electron acceptor component a thermal condensation polymer of at least one basic amino acid, said polymers containing both photoactive flavin and pterin pigments.

4,514,585

FILTER AND METHOD OF MANUFACTURING

Richard D. Paynton, P.O. Box 889, Doylestown, Pa. 18901

Filed Nov. 18, 1982, Ser. No. 442,633
Int. Cl.[3] H05K *9/00*
U.S. Cl. 174—35 GC 12 Claims



1. A filter for use in transmitting visible light and absorbing other forms of energy, comprising a translucent substrate, a fine mesh of electrically-conductive filaments disposed on said substrate, a thin layer of bonding agent impregnating said mesh and bonding it to said substrate, said layer of bonding agent constituting a surface of said filter having a peripheral margin, and means along at least a portion of said peripheral margin of said filter providing electrical communication to said filaments.

4,514,586

METHOD OF USING A SHIELDING MEANS TO ATTENUATE ELECTROMAGNETIC RADIATION IN THE RADIO FREQUENCY RANGE

John Waggoner, Ft. Wayne, Ind., assignor to Enthone, Inc., New Haven, Conn.

Continuation of Ser. No. 412,916, Aug. 30, 1982, abandoned. This application Jul. 27, 1984, Ser. No. 635,125
Int. Cl.³ H05K 9/00
U.S. Cl. 174—35 MS 4 Claims

1. A method of attenuating electromagnetic radiation in the radio-frequency range comprising:

attenuating such radiation with means comprising an electrically nonconductive material forming an enclosure and having:

an inner and outer surface;

a pore free layer of copper metal of a uniform thickness electrolessly deposited on at least one surface of said enclosure, said layer of copper metal being of a thickness of at least 5 microinches and at least sufficient to render electrically conductive the thus coated surface of said enclosure; and

a second layer, selected from the class consisting of nickel, cobalt, gold and alloys thereof, electrolessly deposited and overlying the copper layer, to provide a combined metal layer, the second layer being of a thickness of at least 5 microinches and at least sufficient to protect the copper layer from oxidation;

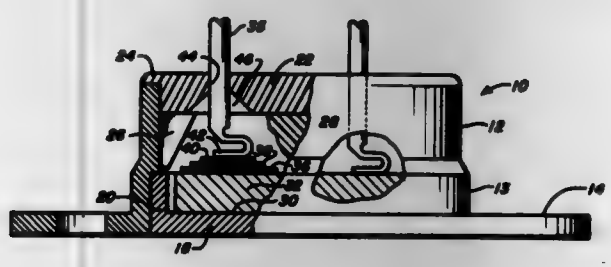
the combined metal layer providing shielding of 20 dB or more against radio-frequency radiation over the range of 10 kilohertz to 1,000 megahertz.

4,514,587

HIGH POWER SEMICONDUCTOR PACKAGE

Herman F. Van Dyk Soerewyn, Peabody, Mass., assignor to Unitrode Corporation, Peabody, Mass.

Filed Dec. 23, 1981, Ser. No. 333,732
Int. Cl.³ H05K 5/04
U.S. Cl. 174—52 H 14 Claims



1. A power semiconductor package comprising:

a metal header having a cylindrical section and a peripheral mounting flange adapted for attachment to a mounting surface, the cylindrical section having an annular portion adjacent the mounting flange;

a thermally conductive metallic disk having spaced-apart surfaces and a peripheral circumferential wall mounted in the annular portion of the cylindrical section with the peripheral circumferential wall of the cnductive disk in frictionally abutting relation with the confronting wall of the annular portion, and with one of said spaced surfaces disposed within said cylindrical section and with the other one of said spaced surfaces substantially coplanar with the mounting surface of the flange;

one or more die assemblies each mounted on said surface of the disk within the cylindrical section;

an electrically insulating cap secured to the cylindrical section and having openings therethrough;

a plurality of electrical terminals, each extending through a respective opening in the cap, accessible from the same side as the mounting surface on which the package will be mounted;

means electrically connecting each die assembly to a respective terminal; and

an encapsulant within the cylindrical section enclosing the die assemblies.

4,514,588

ENCAPSULATED ELECTRONIC COMPONENTS AND ENCAPSULATION COMPOSITIONS

William H. Beever; Robert S. Shue, and Clifford W. Childers, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1982, Ser. No. 453,973
Int. Cl.³ B29C 6/00; C08L 91/00
U.S. Cl. 174—52 PE 51 Claims

1. An article of manufacture comprising an electronic component encapsulated with a composition; wherein said composition comprises

(a) poly(arylene sulfide) and

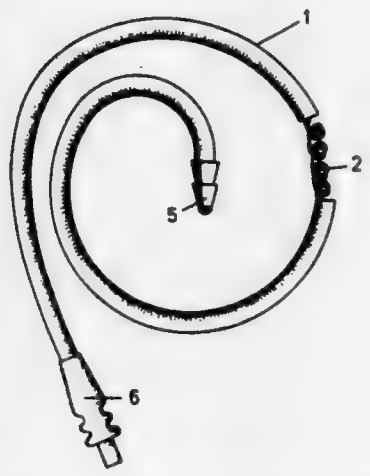
(b) hydrogenated conjugated diene/monovinyl-substituted aromatic copolymer; wherein said copolymer consists essentially of conjugated diene monomer and monovinyl-substituted aromatic monomer.

4,514,589

ELECTRODE CONNECTING CABLE FOR CARDIAC PACEMAKER

Fritz Aldinger, Rodenbach; Albrecht Bischoff, Bruchköbel; Richard Keilberth, Kleinheubach, and Franz Sperner, Hanau am Main, all of Fed. Rep. of Germany, assignors to Heraeus Quarschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,292
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3134896
Int. Cl.³ H01B 7/04, 5/08, 1/02; A61N 1/04
U.S. Cl. 174—119 R 10 Claims



1. Electrode connecting cable for a cardiac pacemaker having a cover tube of elastic electrically insulating material and at least one conductor strand enclosed therein for electric stimulating pulses, said conductor comprising a core of a metal of high electrical conductivity and a cladding of a corrosion resistant, non-toxic metal, further comprising the improvement, according to the invention, wherein:

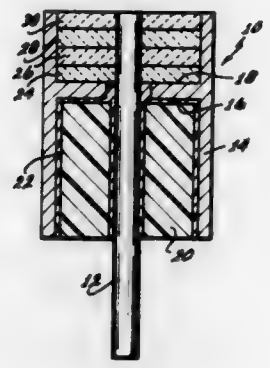
each said conductor strand is a die-drawn clad wire, of which the cladding layer is of a metal selected from the group consisting of tantalum, titanium, zirconium, niobium, titanium-base alloys, platinum, platinum-iridium alloys, platinum-palladium alloys and platinum-rhodium alloys, having a thickness in the range from 0.0025 to 0.035 mm, and

the core of said conductor is cylindrical when the wire is straight and its diameter is in the range from 0.04 to 0.3 mm.

4,514,590
ELECTRICAL TERMINAL ASSEMBLY

James C. Kyle, 610 Woodwillow St., Roseburg, Oreg. 97470

Filed Oct. 8, 1982, Ser. No. 433,528
Int. Cl.[3] H01B *17/26*
U.S. Cl. 174—152 GM 11 Claims



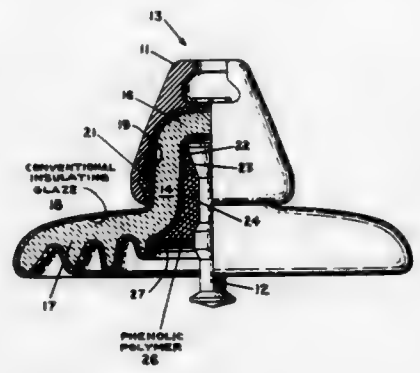
1. In combination,
a member having properties of conducting electricity,
an insulating member made from a hydrocarbon material and providing an electrical insulation in a temperature range between ambient temperature and temperatures of approximately 400° F. and in a pressure range between atmospheric pressure and pressures of at least 60,000 psi, and
a sealing material having electrically insulating properties through the range of temperatures between ambient and approximately 400° F. and through the range of pressures between atmospheric and at least 60,000 psi and hermetically sealing the electrically conductive member and the insulating member and retaining this hermetic seal in the temperature range between ambient temperature and approximately 400° F. and in the pressure range between atmospheric pressure and at least 60,000 psi,
the sealing material being made from an epoxy,
the electrically conductive member being provided with a first flat surface and the insulating member being disposed adjacent the first flat surface and the sealing material being disposed at the first flat surface between the electrically conductive member and the insulating member to seal the electrically conductive member and the insulating member hermetically,
a second flat surface on the electrically conductive member opposite the first flat surface,
the electrically conductive member having a particular coefficient of thermal expansion, and
means disposed on the second flat surface for providing an electrical insulation and hermetically sealed to the second flat surface and having substantially the particular coefficient of thermal expansion.

4,514,591
GLAZE TO PIN CONNECTION FOR A HIGH VOLTAGE DIRECT CURRENT INSULATOR WITH EMBEDDED METAL FITTING

Edward S. Wheeler, Batavia, N.Y., assignor to Interpace Corporation, Purchase, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,885
Int. Cl.[3] H01B *17/08, 17/50*
U.S. Cl. 174—182 5 Claims

1. In an electrical insulator for use on positive polarity direct current transmission lines, comprising in combination:
a suitably contoured porcelain shell with a conventional insulating glaze;
a metal cap and a metal pin each situated at a surface of the insulator shell opposite to the other, the insulator shell forming a pin recess receiving the pin;
capping means securing mechanically the cap to the shell; and
Portland cement in the recess and about the pin securing mechanically to the shell the pin located in the recess;
the improvement comprising a phenolic polymer composition having long term weather resistance and being connected

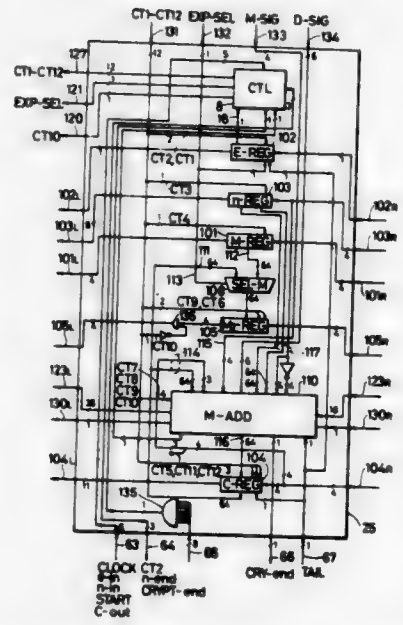


between the pin and the glaze and substantially sealing the Portland cement from contact with moisture in the air, the phenolic polymer composition having a non-ionic electrical conductivity substantially greater than the conductivity of the Portland cement.

4,514,592
CRYPTOSYSTEM

Shoji Miyaguchi, Yokohama, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,016
Claims priority, application Japan, Jul. 27, 1981, 56-117499; Oct. 19, 1981, 56-166777; Jun. 21, 1982, 57-106567
Int. Cl.[3] H04L *9/04*
U.S. Cl. 178—22.11 22 Claims



21. A cryptosystem in which integers M, e and n ($0 \leqq M < n$) are applied to M, e and n registers; variables C and M_2 are stored in C- and M_2-registers; the integer e being represented by

$$e = \sum_{i=0}^{k} \cdot e_i \cdot 2^i$$

($e_i = 0$ or 1); the variable C is initially set to 1; repetitive calculations are performed in accordance with the following Steps (1) and (2) for each value i in the order $i = k, k-1, k-2, \ldots 1, 0$; in Step (1) an operation $C \equiv M_1 \times M_2 \bmod n$ is performed with $M_1 = C$ and $M_2 = C$; in Step (2), the value of e_i is checked and if $e_i = 1$, the operation $C \equiv M_1 \times M_2 \bmod n$ is further performed with $M_1 = C$ and $M_2 = M$; and said repetitive calculations are completed with $i = 0$, producing the last C in the form of $C \equiv M^e \bmod n$;

said cryptosystem comprising a main adding unit including at least an $M_1 \cdot M_{2j}$ calculating section for calculating $M_1 \times M_{2j}$, a $-Q_j \cdot n$ calculating section for calculating $-Q_j'' \times n$, a selector for selecting one of the calculation results $M_1 \cdot M_{2j}$ and $-Q_j'' \cdot n$, an adding register and an adder for adding the content of said adding register and the output of said selector and storing the addition result in said adding register, a controller, and a quotient calculating unit;

wherein a 0 is applied as a variable Z to said adding register, said calculation result $M_1 \cdot M_{2j}$ is selected by said selector, an operation $Z = Z + M_1 \times M_{2j}$ is performed in the order j=1, 2, . . . l to obtain $M_1 \cdot M_2 = Z$, then R_{l+1} of

$$Z = \sum_{j=1}^{2l} \cdot Z_j \cdot 2^{(j-1)\lambda} \text{ (λ being a constant)}$$

$$R_{l+1} = \sum_{i=l+1}^{2l} \cdot Z_j \cdot 2^{(j-l-1)\lambda}$$

is applied to said adding register, said calculation result $-Q_j'' \cdot n$ is selected by said selector, said quotient calculating unit comprises a calculating section for calculating $X_j = [2^{\lambda} \cdot R_j 2^{-m}] + S$ (S being a constant) and a calculating section for calculating

$$v = \left[\frac{2^u}{[n \cdot 2^{-m}]} \right],$$

and said quotient calculating unit is controlled by said controller to calculate

$$Q_j'' = [X_j \times v \times 2^{-u}] + 1$$

when

$$X_j \geqq 0$$

$$Q_j'' = [X_j \times v \times 2^{-u}]$$

when

$$X_j < 0$$

or

$$Q_j'' = [X_j \times v \times 2^{-u}] + 1$$

when

$$X_j > 0$$

$$Q_j'' = [X_j \times v \times 2^{-u}]$$

when

$$X_j \leqq 0$$

and calculate $R_j = 2^{\lambda} \cdot R_j + R_j - Q_j'' \cdot n$ in the order j=l, l−1, . . . 1;

wherein compensation calculation means is included for calculating, when $R_1 \geqq 0$, $R_1 = R_1 + n$ until $R_1 \geqq 0$ is obtained;

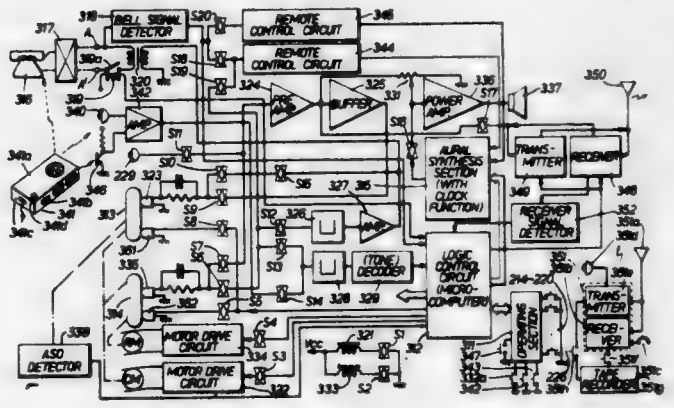
wherein said main adding unit is divided into a plurality of sliced sections of the same function, said M_1 and n are applied to said sliced sections while being sequentially divided for each fixed width of their integers, said M_{2j} and Q'' are applied to said sliced sections in common to them, said sliced sections each perform said operations $Z = Z + M_1 \times M_{2j}$ and $R_j = 2^{\lambda} R_{j+1} + Z_j - Q_j'' \cdot n$ for the M_1, n, Q_j'' and M_{2j} applied to them, said sliced sections are each connected to a higher-order one of them via a first connection signal line for applying thereto one part of the calculation result Z, and said sliced sections are each connected to a lower-order one of them via a second connection signal line for applying thereto the calculation result R_j.

4,514,593

AUTOMATIC TELEPHONE ANSWERING AND RECORDING APPARATUS

Motoichi Hattori, Fujisawa, and Hideyasu Ishigo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 29, 1983, Ser. No. 518,409
Claims priority, application Japan, Jul. 30, 1982, 57-133526
Int. Cl.³ H04M 1/64
U.S. Cl. 179—2 A **2 Claims**



1. An automatic telephone answering and recording apparatus for communicating between calling and called subscriber stations in a telephone system, comprising:

a speaking circuit provided at a called subscriber station;

first means operating in response to a call signal from a calling subscriber station transmitted over a telephone line to connect said speaking circuit to the telephone line associated with the calling subscriber station;

a recording/reproducing means coupled to said speaking circuit for recording an incoming message from the calling subscriber station in its recording mode of operation, and transmitting a previously recorded incoming message to the telephone line through said speaking circuit in its reproducing mode of operation;

selection means for selecting the operation mode of said recording/reproducing means; and

control means connected between said speaking circuit and said selection means for controlling said selection means, said control means including a voice recognition means and a previously registered specific message from a subscriber and being operative to control said selection means to select the recording mode when said voice recognition means receives an incoming message from a calling subscriber station, and to select the reproducing mode when it receives a message corresponding to the previously registered message from the subscriber through the telephone line.

4,514,594

POWER LINE CARRIER TELEPHONE EXTENSION SYSTEM FOR FULL DUPLEX CONFERENCING BETWEEN TELEPHONES AND HAVING TELEPHONE CALL HOLD CAPABILITY

William M. Brown, Acton, and James R. Lindquist, Rowley, both of Mass., assignors to Astech, Inc., Greenwich, Conn.

Filed Sep. 30, 1982, Ser. No. 430,762
Int. Cl.³ H04M 11/00
U.S. Cl. 179—2.51 **19 Claims**

1. A power line RF carrier telephone extension system for signalling between (1) a telephone subscriber's telephone line of a conventional telephone communication system wherein a separate telephone line is provided from a central switching system at one location to each subscriber at the subscriber's

premises and each subscriber's telephone line includes at least two wires, the ring line and the tip line and, (2) each of one or more extension telephones by RF carrier over the available power line at the subscriber's premises, including at the subscriber's premises: a subscriber main station (M) near said subscriber telephone line and having access to said power line and one or more (up to N) subscriber extension stations (E1, E2 ---En--- EN), each having access to said power line, comprising,

(a) at the M station:

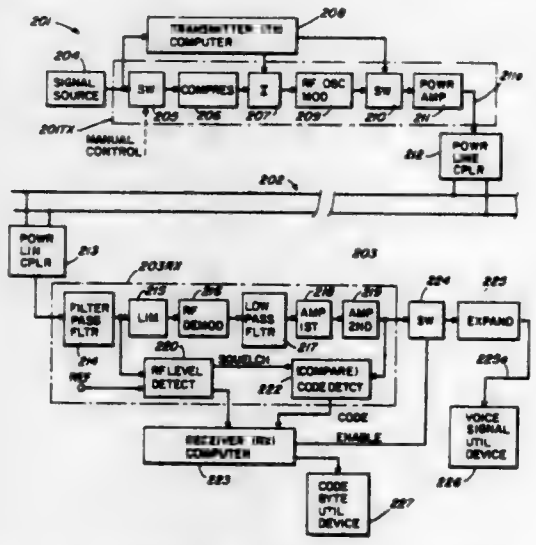
(a1) means connected to the telephone line for detecting audio frequency signals on the telephone line, referred to herein as TL signals,

(a2) an M transmitter including means for producing a main carrier frequency, Fm, and modulating means for modulating Fm,

(a3) N receivers, one for each of the En stations, each receiver for receiving a different one of the En stations transmitted RF carrier frequencies, F_1, F_2--Fn---FN and including an F_n demodulator, and producing modulations of Fn in the output thereof,

(a4) means for combining the outputs of said N receivers, producing a combined receiver output signal, referred to herein as MRXN,

(a5) means for combining the detected TL and MRXN signals and, coupling the combined signals to the input of the transmitter, said transmitter input being referred to herein as MTX, and



(a6) means for coupling the transmitter output to the power line, whereby the power line carries the modulated Fm to the NE stations; and at each E station, denoted generally as En:

(b1) an En telephone,

(b2) a source of power for the En telephone, whereby the En telephone produces audio and dial signals when it is used,

(b3) an En receiver for modulated Fm including an Fm demodulator, and producing the modulations of Fm in the output thereof, referred to herein as EnRX,

(b4) means for coupling modulated Fm from the power line to the input of the receiver and

(b5) means for coupling said EnRX to the En telephone, whereby the En telephone receives the TL and MRXN signals,

(b6) the extension telephone producing information signals, which may include audio and data signals, and dial signal and a telephone line hold signal when it is used by the subscriber,

(b7) an En transmitter including means for producing the En telephone carrier frequency, Fn and modulating means for modulating Fn by the En telephone audio signals and signals representative of the En dial signals and hold signal producing modulated Fn and

(b7) means for coupling the modulated Fn to the power line, whereby the power line carries the modulated Fn to the main station and telephone calls from the telephone line can be answered by any one of the E_1, E_2-- En---EN telephones and any or all of the E_1, E_2 --E_n telephones can conference on a telephone line call, and further, at the main station:

(a7) means coupled to said means for detecting modulations (means (a3) hereof) for detecting said hold signal and

(a8) means responsive to the detected hold signal for connecting a hold impedance across the telephone line,

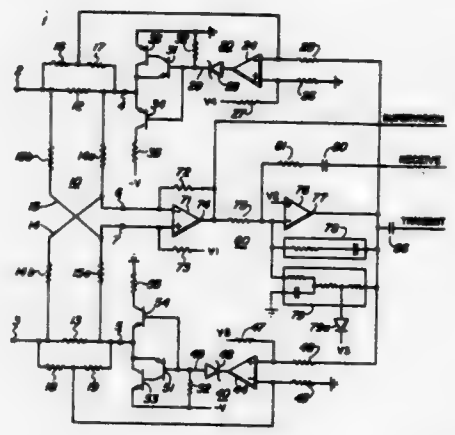
(a9) said hold impedance serving to hold a telephone call so long as it is connected across the telephone line.

4,514,595

ACTIVE IMPEDANCE LINE FEED CIRCUIT

Stanley D. Rosenbaum, Ottawa, and Martin R. Handforth, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 10, 1982, Ser. No. 386,871
Int. Cl.³ H04M *1/74, 1/76, 19/00*
U.S. Cl. 179—16 F **7 Claims**



1. A line circuit for supplying energizing direct current to a pair of leads in a communication line, comprising:

a pair of line terminals for connection to the communication line;

first and second voltage amplifiers having first and second output terminals respectively;

a resistance network including, first and second feed resistors for connection in series between the respective first and second output terminals and respective ones of the pair of line terminals, the first and second resistors being of similar ohmic values, a first voltage divider being connected between the first output terminal and an end of the second feed resistor remote from the second output terminal and including a first voltage tap, and a second voltage divider being connected between the second output terminal and an end of the first feed resistor remote from the first output termial and including a second voltage tap;

a control circuit for causing the first and second voltage amplifiers to provide energizing direct current for the communication line via the first and second feed resistors in accordance with potentials appearing at the first and second voltage taps; and

wherein the resistance network further comprises:

a first network connected across the first feed resistor for providing a negative feedback signal to the first voltage amplifier;

a second network, similar to the first network, connected across the second feed resistor for providing a negative feedback signal to the second voltage amplifier;

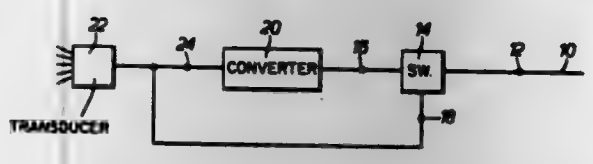
whereby common mode rejection of longitudinally induced a.c. signals on the communication line is enchanced.

4,514,596

TELEPHONE HANDSETS

Geoffrey M. Garner, and Anthony J. Salloway, both of Northampton, England, assignors to Plessey Overseas Limited, Ilford, England

Continuation-in-part of Ser. No. 169,792, Jul. 17, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 384,184
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 T 3 Claims



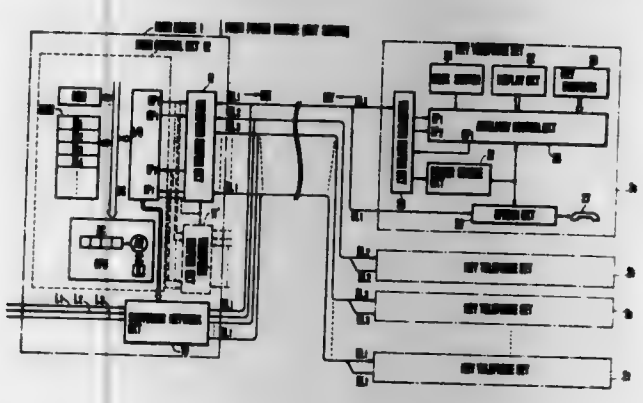
1. A telephone subscriber subset for use in a subscriber's handset, said subset being connected to receive signalling and speech signals from a telephone exchange including a transducer for generating audible signalling tones in response to an input thereto, and a detector circuit having input terminals for connecting with the subscriber's handset to distinguish between signalling and speech signals, the subscriber's handset including conversion means having an input for converting the input signals to substantially non-sinusoidal electrical waveforms, wherein speech signals and signalling signals are received at the input terminals of said detector circuit, said detector circuit including switch means having a first output connected to said transducer for providing said speech signals directly to the transducer so as to allow the transducer to be used as an earpiece, and having a second output connected to the input of said conversion means for providing said signalling signals as input signals to said conversion means for conversion to substantially non-sinusoidal electrical waveforms, said substantially non-sinusoidal waveforms being fed to the transducer to produce a low-frequency tone output signal.

4,514,597

CONTROL OF A KEY TELEPHONE SYSTEM USING A PULSE WIDTH MODULATED SIGNAL

Junzo Kikuchi, Kawasaki; Ryuzo Sugiura, Suginami; Mutsuhiro Yamamoto, and Toshiro Yoshida, both of Yokohama, all of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,189
Claims priority, application Japan, May 17, 1982, 57-82784
Int. Cl.³ H04M *1/72*
U.S. Cl. 179—99 M 4 Claims



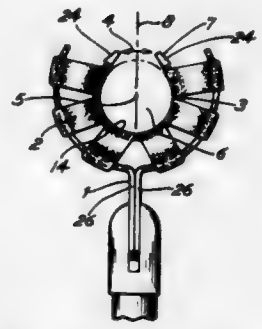
1. In a signal transmission system of a key telephone system of the type comprising a main device connected to office lines which includes a calculating processing unit having an input-/output port for transmitting and receiving signals, and a plurality of key telephone sets connected in parallel to said main device through a pair of signal lines for transmitting and receiving various control signals between said main device and said key telephone sets, the improvement wherein each of said control signals is constituted by a pulse width modulated time series signal of a predetermined number of bits, respective control signals are inputted and outputted in parallel to and from a bit input/output of said input/output port and wherein transmission and reception of said control signals between said main device and respective key telephone sets are simultaneously performed by parallel input/output operations of said calculating processing unit.

4,514,598

MICROPHONE SHOCK-MOUNTING APPARATUS

Gerald W. Plice, Morton Grove, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.

Filed Jul. 20, 1983, Ser. No. 515,614
Int. Cl.³ H04R *1/02;* H04M *1/04*
U.S. Cl. 179—146 R 4 Claims



1. A shock-mounting apparatus for substantially vibrationally isolating a microphone comprising:

means for cradling the microphone, the cradle means defining a microphone cradling channel and a slot into the channel, the cradle means being flexible along the slot;

a mounting bracket; and

means for

(a) interconnecting the cradle means with the mounting bracket; and

(b) substantially isolating the cradle means from environmental vibration transmitted to the mounting bracket;

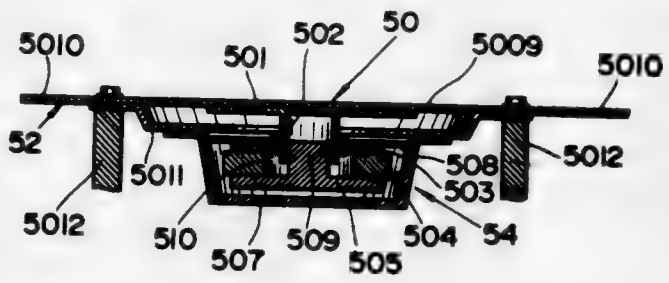
whereby the cradle means flexes for receiving the microphone through the slot, cradles the microphone, and the apparatus substantially vibrationally isolates the microphone.

4,514,599

SPEAKER FOR AUTOMOTIVE VEHICLE AUDIO SYSTEM HAVING A VEHICLE PANEL SERVING AS SOUND-AMPLIFYING MEDIUM

Takayuki Yanagishima, and Junichi Kasai, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 329,875, Dec. 11, 1981, abandoned. This application Feb. 24, 1984, Ser. No. 582,143
Claims priority, application Japan, Dec. 19, 1980, 55-180203; Apr. 18, 1981, 56-59006; Apr. 18, 1981, 56-56390[U]; Apr. 18, 1981, 56-56391[U]; Apr. 23, 1981, 56-58806[U]; Sep. 25, 1981, 56-142189[U]; Sep. 25, 1981, 56-142190[U]
Int. Cl.³ H04R *9/00*
U.S. Cl. 179—181 W 18 Claims



1. A speaker for an automotive vehicle having an audio system comprising:

a vehicle panel which forms a part of a vehicle body and which is sufficiently flexible to oscillate at an audio fre-

quency, said vehicle panel comprising at least a section adapted to oscillate for producing an audio sound,

a housing fixed to said section, and

a driving unit resiliently suspended within said housing, associated with said audio system for receiving an audio signal produced by said audio system, and fixed to said section of said vehicle panel separately from said housing to drive said section for oscillation at an audio frequency for producing the audio sound, said driving unit comprising a support element secured to said vehicle panel, a coil wrapped around said support element, and a driver assembly having a permanent magnet positioned adjacent said coil for causing oscillations of said support element,

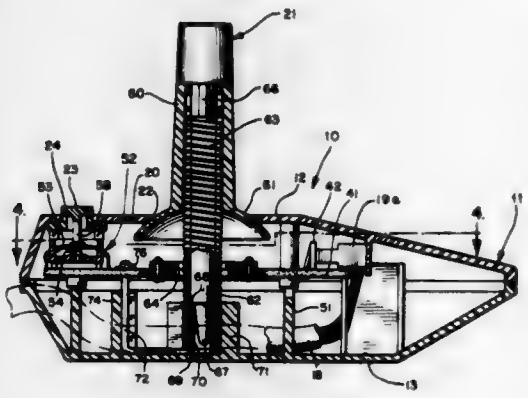
whereby said vehicle panel forms part of said vehicle body and also functions as a diaphragm member of the speaker for producing the audio sound.

4,514,600

VIDEO GAME HAND CONTROLLER

James M. Lentz, Knoxville, Tenn., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,225
Int. Cl.[3] H01H *9/00, 25/00*
U.S. Cl. 200—5 R 9 Claims



1. A hand operable controller for producing an electrical control signal in response to manipulation of the controller by a user comprising,

a housing having an interior and a floor portion within said interior, said housing having a raised support extending upwardly from the floor portion and having a mounting pillar formed on the floor portion, said mounting pillar having a bore recess formed therein, said housing further having an aperture formed in an upper portion thereof,

a mounting board positioned on the raised support of said housing, said mounting board having an aperture in a central portion thereof,

at least four electrical contact pads affixed to said mounting board around the aperture in the mounting board, each of said contact pads having an edge portion extending across the aperture in the mounting board, said edge portions positioned along a rectangle overlying the aperture in the mounting board,

a central contact member of electrically conductive material having a tubular shape, said central contact member forming a radial flexure and being affixed within the bore recess of the mounting pillar in the housing, and extending upwardly through the aperture in the mounting board,

an actuator stem positioned within said central contact member and having a tapered portion formed on an end thereof, said tapered portion of the actuator stem being positioned inside the central contact member within the bore recess of the mounting pillar and forming a pivot for the actuator stem and associated central contact member, and

a joystick member affixed to said actuator stem and extending upwardly through the opening in the upper portion of said housing, said joystick providing means for the user to flex the central contact member radially into electrical contact with the contact pads.

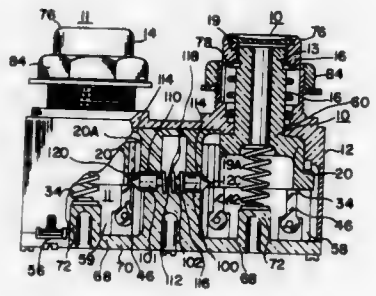
8. A hand operable controller as set forth in claim 1 further comprising a dome switch affixed on said mounting board and an elongated actuator bar positioned adjacent the dome switch, said actuator bar having a projection in the center thereof for engaging said dome switch, said actuator bar extending through a bar shaped opening in the upper portion of the housing, whereby depression of either end of the actuator bar moves the projection of the actuator bar against the dome switch to activate the switch.

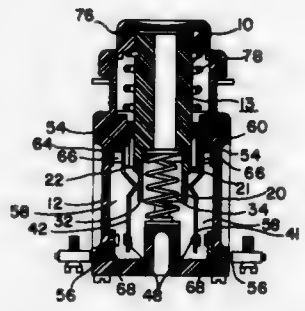
4,514,601

MULTISPEED INTERLOCKED PUSH BUTTON SWITCH MECHANISM

James D. Buchanan, Canton, N.C., assignor to Square D Company, Palatine, Ill.

Filed Nov. 8, 1983, Ser. No. 550,262
Int. Cl.[3] H01H *9/20*
U.S. Cl. 200—5 E 19 Claims





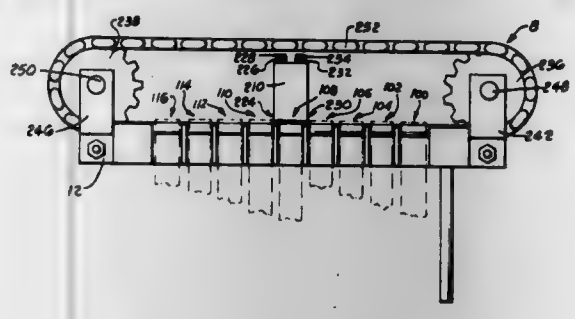
1. A push button switch mechanism including:

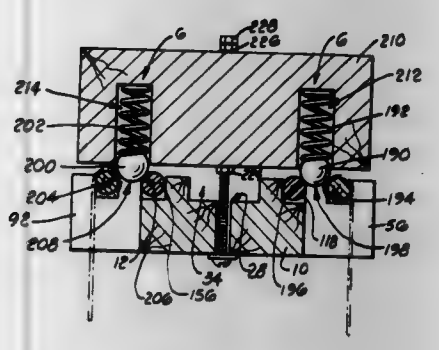
a pair of spaced linearly movable push buttons and an interlock and detent mechanism positioned between the push buttons to prevent simultaneous actuation of the push buttons and provide tactile indications of a plurality of operated positions when one of the push buttons is moved from an at-rest position to the plurality of operated positions, the interlock and detent mechanism comprising: a surface on each push button spaced from and confronting a similar confronting surface on the other push button, a detent surface including a plurality of notches spaced by dwell surfaces on each confronting surface, a pair of spaced movable pawls and a spring positioned in the space between the confronting surfaces with each pawl having a taper at an end that is biased by the spring into engagement with one of the detent surfaces and an abuttable surface on an end of each pawl that is remote from the tapered end, the abuttable surfaces on the pawls being spaced when at least one push button is at its at-rest position and engageable with each other to prevent simultaneous movement of both push buttons from the at-rest position.

4,514,602
SWITCHING APPARATUS

Donald W. Owen, 4619 Ridgeline Dr., Norman, Okla. 73069

Filed Dec. 27, 1982, Ser. No. 453,728
Int. Cl.[3] H01H *15/00, 3/32*
U.S. Cl. 200—16 C
14 Claims





1. A switch, comprising:

support means, including:

a first plurality of connector terminals linearly disposed along a first side of said support means; and

a second plurality of connector terminals, in parallel relationship with said first plurality of connector terminals, linearly disposed along a second side of said support means so that each of said second plurality of connector terminals is aligned with a respective one of said first plurality of connector terminals;

a first common terminal, disposed on said support means and spaced from said first plurality of connector terminals, including a first elongated electrical conductor extending parallel to said first plurality of connector terminals;

a second common terminal, disposed on said support means and spaced from said second plurality of connector terminals, including a second elongated electrical conductor extending parallel to said second plurality of connector terminals;

connector means for electrically connecting a selected one of said first plurality of connector terminals to said first common terminal and for electrically connecting a selected one of said second plurality of connector terminals to said second common terminal; and

movement means for selectively moving said connector means.

4,514,603
DOOR OPERATED SWITCH ASSEMBLY

Paul R. Staples, Cub Run, Ky., assignor to E.M.B. Corporation, Elizabethtown, Ky.

Filed Feb. 21, 1984, Ser. No. 581,708
Int. Cl.[3] H01H *3/16*
U.S. Cl. 200—61.62
9 Claims

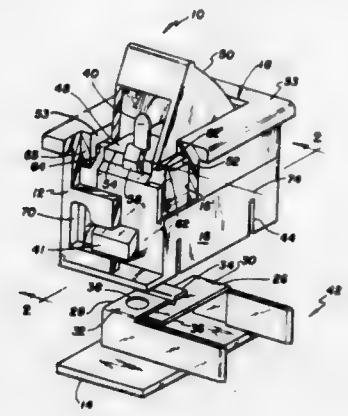
1. A door switch comprising

a housing having sidewalls and an open end,

a post carried in said housing,

a plunger carried by said post and engaging a switch means carried in said housing to open and close same,

a switch button actuating said plunger carried in said open end and trapped between said post and said housing, an edge of said post providing a pivot axis against which said switch button is pivoted to actuate said plunger.



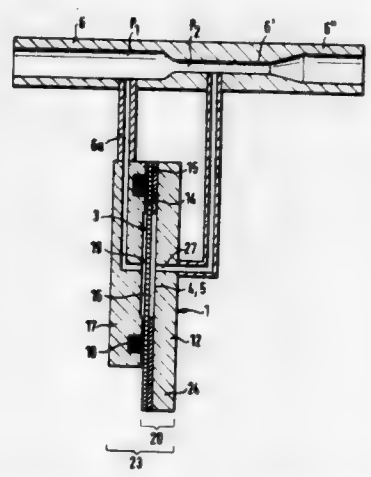
4,514,604
ARRANGEMENT FOR CONVERTING THE PRESSURE OF A MEDIUM INTO AN ELECTRICAL SIGNAL

Hermann Gmeinder, Warthausen-Oberhofen, and Georg Wenger, Schemmerhofen, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Fed. Rep. of Germany

Continuation of Ser. No. 478,526, filed as PCT EP 82/00151, Jul. 14, 1982, published as WO 83/00405 Feb. 3. 1983, § 102(e) date Mar. 16, 1983, abandoned. This application Jul. 17, 1984, Ser. No. 631,012

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128408

Int. Cl.[3] H01H *35/34*
U.S. Cl. 200—83 N
14 Claims

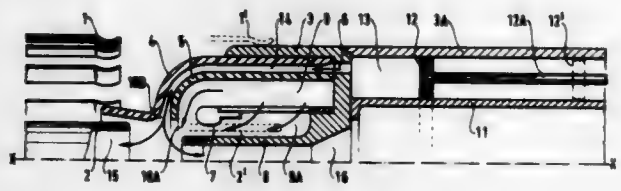


1. A unitary component for converting the pressure of a pressure medium into an electrical signal, said unitary component forming a flat membrane chamber (17) having a plate (12) of electrically non-conductive material with electrical contacts (4,5) arranged on one side of the plate in the chamber, and a pressure responsive membrane (14), reciprocated through the pressure of a pressure medium received from a pressure medium source (2), having an electrically conductive surface facing said electrical contacts for the electrical connection and disconnection of contacts (4,5), and an insulating plate (15) located intermediate said plate and said membrane (14), said insulating plate including a through aperture (16) to allow the membrane (14) to contact the contacts (4,5) of the sensor therethrough under the pressure of the pressure medium.

4,514,605
COMPRESSED GAS CIRCUIT BREAKER

Doan Pham Van, Meyzieu, France, assignor to Alsthom-Atlantique, Paris, France

PCT No. PCT/FR83/00003, § 371 Date Jul. 29, 1983, § 102(e) Date Jul. 29, 1983
PCT Filed Jan. 5, 1983, Ser. No. 522,369
Claims priority, application France, Jan. 5, 1982, 82 00034
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A 7 Claims

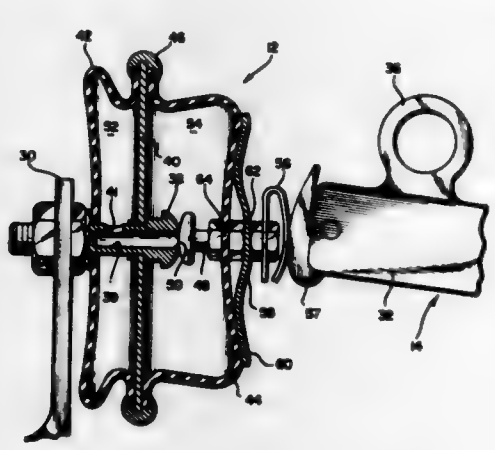


1. In a compressed gas circuit breaker including a first fixed arc contact (2), a second moving arc contact (7), said breaker being provided both with a blast device comprising a piston (12), a cylinder (3A) and means defining a blast orifice (10B) for sending a jet of compressed gas to the zone where an electric arc forms when the arc contacts (2, 7) separate, and means defining a volume (9) containing a gas suitable for being heated by the action of the arc, said means defining said volume including an opening (10A) to enable the hot gas to escape, said means defining said blast orifice (10B) and said opening (10A) being annular and disposed side by side, the improvement wherein said blast orifice (10B) is disposed at one end of an annular volume (4) delimited by a circularly symmetrical blast nozzle (14) and a circularly symmetrical deflector (5), said volume (9) being delimited by said deflector (5) and said second arc contact (7), and the opening (10A) of said volume being situated next to said blast orifice (10B), and said opening and said blast orifice being positioned relative to said first and second arc contacts, such that the opening (10A) of said volume and said blast orifice (10B) are closed by said first arc contact (2) when the circuit breaker is closed, and said opening (10A) and said orifice (10B) are opened in succession by relative displacement of the arc contacts (2, 7).

4,514,606
DISCONNECT SWITCH ASSEMBLY

Edward F. Veverka, Franksville, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed May 6, 1983, Ser. No. 492,360
Int. Cl.³ H01H *33/12*
U.S. Cl. 200—146 R 10 Claims

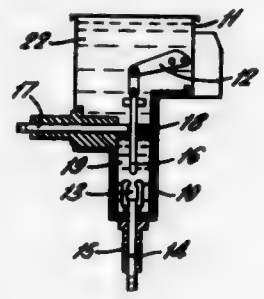


1. A disconnect switch assembly, comprising:
(a) a fixed electrical contact, defining a free end and a fixed end, having hollow bore open to said free end and an opening, communicating with said bore, which is disposed intermediate the ends of said fixed contact;
(b) a two-sided divider plate carried by said fixed contact and disposed intermediate the ends of said fixed contact with said opening on one side of said plate;
(c) wall means, adapted to be filled with an arc extinguishing fluid and in flow communication with said opening, for forming a volume chamber on said one side of said divider plate;
(d) a two-ended movable electrical contact having one end which is adapted to engage and disengage with said free end of said fixed contact so as to plug that end of said bore when said fixed and movable electrical contacts are engaged;
(e) expansion chamber means, carried by the other side of said divider plate and in flow communication with the free end of said fixed contact, for carrying said movable contact relative to said fixed contact and for changing the volume of the fluid on the other side of said divider plate in response to the position of said movable contact relative to said fixed contact;
(f) snap-action means, carried by said movable contact, for rapidly disengaging said movable contact from said fixed contact;
(g) releasable operating means, adapted to engage with and make electrical contact with the other end of said movable contact and to make electrical contact with said fixed electrical contact, for overcoming said snap-action means and forcing said fixed contact and said movable contact together and for shunting said fixed electrical contact and said moving electrical contact; and
(h) camming means, caried by said snap action means and said releasable operating means, for breaking the shunt across said fixed and moving electrical contacts before separating said fixed and moving electrical contacts and for mating said fixed and moving electrical contacts before shunting said contacts,
whereby upon the release of said operating means, said snap-action means quickly separates said fixed and said movable electrical contacts and, in the event that current is passing through said fixed and moving contacts, an electrical arc is formed across said contacts, the arc drawn across said contacts being extinguished by the fluid flowing from said volume chamber into said expansion chamber means through the bore in said fixed contact.

4,514,607
ELECTRICAL CIRCUIT INTERRUPTING DEVICES

Harold Lloyd, Dorset, and David S. L. Slinn, Bristol, both of England, assignors to The Electricity Council, London, England

Filed Apr. 9, 1982, Ser. No. 366,909
Claims priority, application United Kingdom, Apr. 13, 1981, 8111683
Int. Cl.³ H01N *33/75, 33/22*
U.S. Cl. 200—150 A 14 Claims



1. An electrical circuit interrupting device comprising a housing having relatively movable contacts and at least one contact operating mechanism, which housing contains two immiscible fluids in contact with one another, which fluids are both liquid at ambient temperature, one being relatively dense first liquid constituting an arc interruption medium in which the contacts are immersed and the other less dense non-flamm-

able dielectric and coolant second liquid which forms a separate phase with respect to the first liquid, the volume of the second liquid being greater than that of the first liquid, the second liquid forming a cooling medium for condensing vapour produced by the arc.

4,514,608

LOCKING TYPE PUSHBUTTON SWITCH

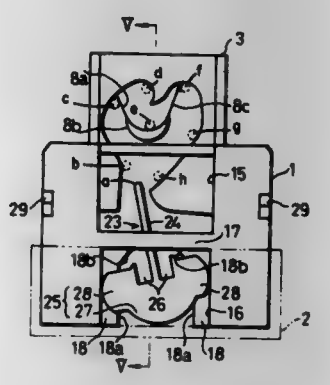
Taneo Murata, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

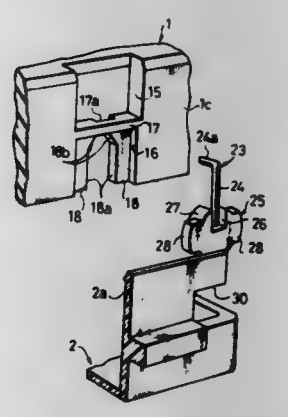
Filed Dec. 5, 1983, Ser. No. 558,326

Claims priority, application Japan, Dec. 3, 1982, 57-182482[U]; Dec. 3, 1982, 57-182483[U]

Int. Cl.³ H01H *13/56*

U.S. Cl. 200—153 J **2 Claims**





1. A locking type pushbutton switch having a casing defined in part by a side wall, a stem portion movable parallel to said side wall for actuating the switch upon movement inwards of said casing and having a cam groove formed on a side surface thereof, and means including a locking pin having an end portion fitting within said cam groove for holding said stem in its position inwardly of said casing, said locking pin including a mounting portion adapted to be held within a recess of said side wall for rotation parallel therewith, an elongate pin part extending outwardly from said mounting portion to a free end and adapted to lie generally along said side wall, and a bent part extending normally from said free end to said end portion so that said elongate portion can be flexed to press said end portion resiliently against said cam groove.

4,514,609

PUSHBUTTON SWITCH HAVING LEAF-SHAPED CONTACT SPRING

Reinhard L. Fricke; Klaus Hinze; Manfred K. O. Huth, and Klaus B. Wisskirchen, all of Berlin, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 425,393

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1981, 3140199

Int. Cl.³ H01H *3/12, 1/18*

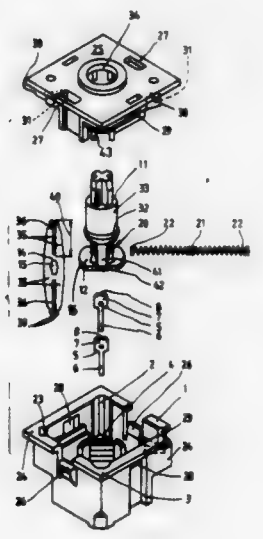
U.S. Cl. 200—159 A **1 Claim**

1. An electrical pushbutton switch comprising, in combination:

a casing having an axis, axially extending wall portions, a base portion and at least two radially spaced stationary contacts mounted to said base and extending axially upwardly

a rod-shaped switch plunger axially movable in said casing and having a pair of arms extending in radially opposite directions from an axially intermediate portion of said plunger, said plunger including an axially inner end portion and an axially outer end portion;

a leaf spring contact mounted at a central portion thereof to the axially inner end portion of said plunger and extending outwardly in radially opposite directions therefrom for engaging said stationary contacts when said plunger is moved toward said base;



a compression spring extending through a transverse through bore in an intermediate portion of said plunger and respectively terminating in radially opposite groove portions of said wall portions of said casing, said compression spring resiliently urging said plunger away from said base; and,

a cover enclosing the axially outer end portion of said casing and having a central opening for receiving said plunger and said cover having a pair of axially extending radially opposite guide grooves for receiving radially outer ends of said arms for guiding and angularly orientating said plunger.

4,514,610

Patent Not Issued For This Number

4,514,611

METHOD OF CONTROLLING ELECTRIC DISCHARGE MACHINE

Mitsuo Matsui, Tokyo, and Teruyuki Matsumura, Hachioji, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Jul. 16, 1982, Ser. No. 398,904

Claims priority, application Japan, Jul. 21, 1981, 56-114057

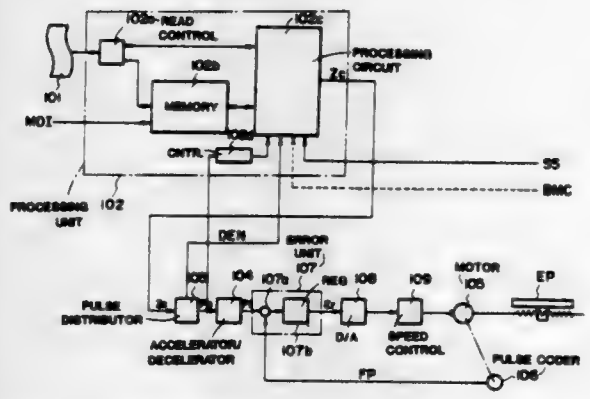
Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **5 Claims**

1. A method of controlling an electric discharge machine having an advance control step for relatively moving and controlling in a forward direction an electrode and a workpiece to which a voltage is applied, thereby to perform electric discharge machining on the workpiece, by the use of an elec-

tric discharge caused between the electrode and the workpiece and a retraction control step of relatively moving and controlling the electrode and the workpiece in a backward direction in accordance with a retraction command, in the method of controlling the electric discharge machine, the retraction control step comprising the steps of:

determining a state of the electric discharge machining in accordance with said retraction command;



selecting a class corresponding to the electric discharge machining state from among a plurality of differing stored classes of retraction control information items indicating retracting control conditions different from one another and each differing class including a different retraction limit and a different retraction speed; and

moving and controlling said electrode and said workpiece relatively in the backward direction on the basis of the selected class of retraction control information items.

4,514,612

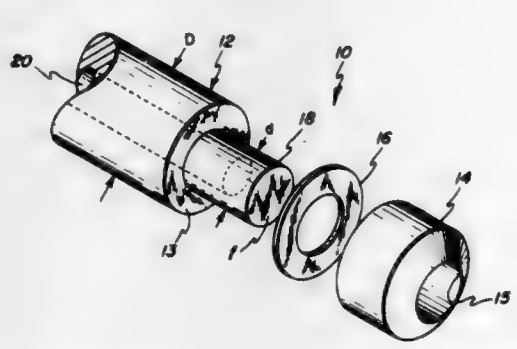
COMPOSITE RESISTANCE SPOT WELDING ELECTRODE

Herman A. Nied, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1983, Ser. No. 473,833

Int. Cl.³ B23K *11/30*

U.S. Cl. 219—119 **2 Claims**



1. A composite resistance spot welding spherical end electrode comprising:

a one-piece cylindrical electrode having a base portion of a first diameter and an axial stem portion of a second reduced diameter providing a shoulder on said base portion, said stem portion terminating in a spherical end face that has a central axis cavity;

a first washer-shaped insulating spacer placed over said stem portion against said shoulder and a second insulating spacer interiorly positioned within said central cavity;

a high strength, high electricl resistivity plug in said central cavity that bears on said second insulating spacer and has an exterior spherical end face;

a high strength, high electrical resistivity annular outer sleeve on said stem portion which has a flat end face positioned against said first insulating spacer and a spherical end face that forms a smooth continuous surface with said stem portion and plug spherical end faces;

said plug absorbing the peak contact pressure built up on the electrode face central region during a weld operation and said second insulating spacer reducing the localized current and joule heating at that location, whereby plastic deformation and deterioration of the electrode end face is substantially mitigated.

4,514,613

METHOD OF AN APPARATUS FOR WELDING TOGETHER METAL COMPONENTS

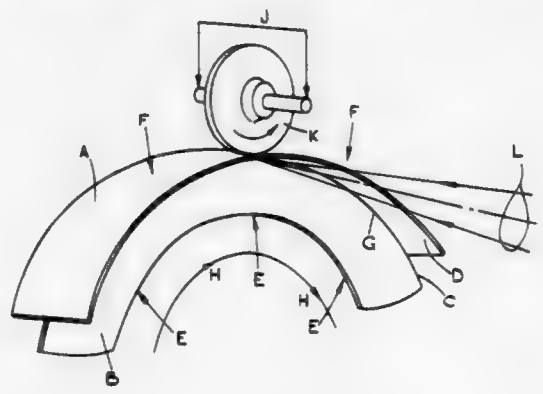
Michael Hill; John H. P. C. Megaw, both of Oxford, England, and Howard Harvey, Caerleon, Wales, assignors to Lucas Industries PLC, Great King St., Birmingham, England

Filed May 11, 1982, Ser. No. 377,157

Claims priority, application United Kingdom, May 21, 1981, 8115638

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 EC **33 Claims**



1. A method of welding together arcuate metal components of high restraint geometry having arcuate surfaces to be joined, comprising: supporting the components with said arcuate surfaces in juxtaposed relationship; applying a first force to the components to urge said surfaces firmly into abutting relationship; directing a high energy density beam at the junction formed between the abutting surfaces to effect welding at a localized region of mutual abutment thereof; and applying an additional force to the components adjacent to the area of impingement of the beam on the component at said localized region sufficient to urge them together at said localized region, in order to compensate for stresses set up therein during welding.

4,514,614

PRESSURE-DIFFERENTIAL METHOD FOR SLEEVE-TO-TUBE JOINING

Israel Stol, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 18, 1982, Ser. No. 409,208

Int. Cl.³ B23K *9/16*

U.S. Cl. 219—125.11 **10 Claims**

1. A method for welding a metal sleeve within a metal tube comprising:

positioning a metal sleeve in a metal tube;

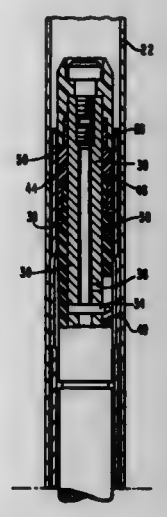
inserting a welding apparatus in said sleeve to position a welding electrode near the portion of said sleeve to be welded;

actuating a sealing mechanism of said welding apparatus thereby defining a sealed chamber between siad sleeve and said welding apparatus near the portion of said sleeve to be welded;

introducing an inert shielding gas through said welding apparatus and into said sealed chamber for pressurizing said sealed chamber to between approximately 5 to 150 psi;

activating said welding apparatus to produce, through said electrode, a current of between approximately 2–150 amps for welding said sleeve to said tube while said shielding gas gently forces the molten weld material outwardly

toward said tube thereby cushioning the weld arc force during the welding process; and



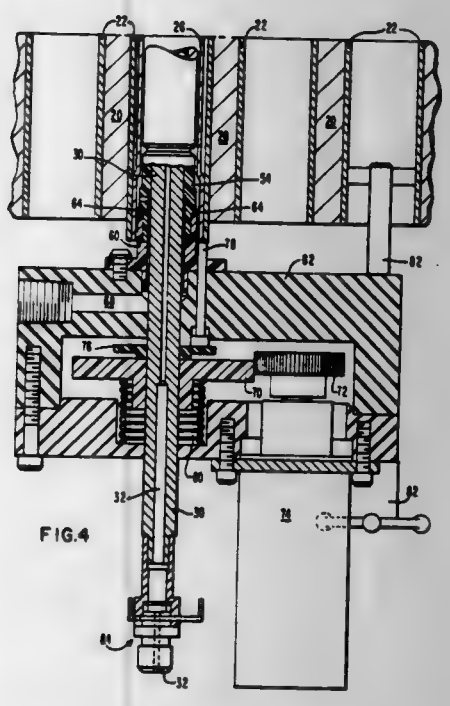


FIG.4

rotating said welding apparatus about its longitudinal axis for completing a weld around the circumference of said sleeve.

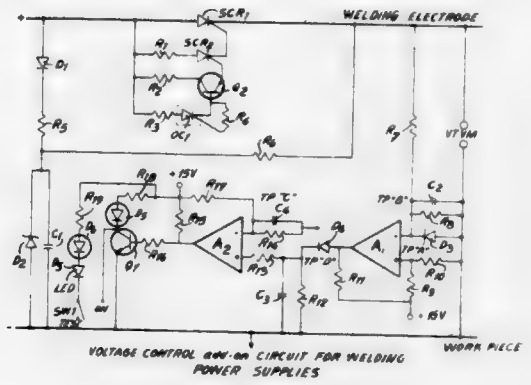
4,514,615

PROTECTION CIRCUIT AGAINST ELECTRIC SHOCKS DURING WELDING

Raynald Simoneau, St. Bruno; Jean-Marc Pelletier, St. Louis de Terrebone; Antonio Di Vincenzo, Ville d'Anjou, and Jean-Paul Boillot, Beloeil, all of Canada, assignors to Hydro-Quebec, Montreal, Canada

Continuation of Ser. No. 360,560, Mar. 22, 1982, abandoned.
This application Apr. 23, 1984, Ser. No. 602,628
Claims priority, application Canada, Dec. 8, 1981, 391754
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—132 **16 Claims**

1. A circuit for controlling the power supply to a shielded electrode of the type used in a shielded metal arc welding process (SMAW) whereby to protect a user from electric shocks, said circuit comprising a measuring circuit for determining the dynamic impedance value between said electrode and a workpiece to be welded; and a power feeding device connected in series with said power supply and said electrode, the power feeding device being controlled by said impedance measuring devie so as to render conductive said power feeding device when the dynamic impedance value detected by said measuring device reaches a level value lower than a predetermined threshold impedance value for delivering power to said electrode, said predetermined threshold impedance value being set at about 500 ohms whereby a wet human body will



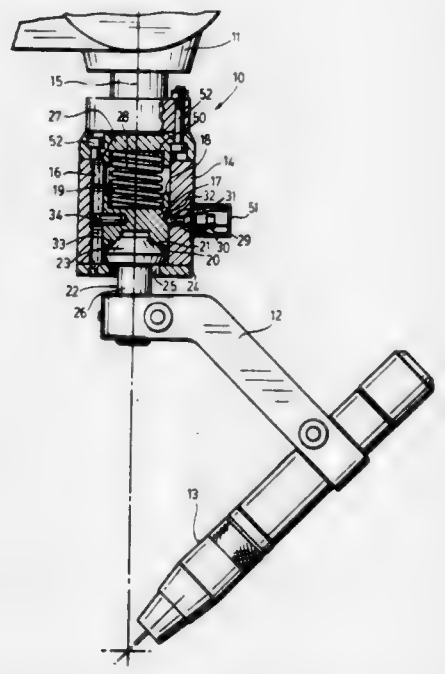
not be subjected to an electrical shock when the body contacts the electrode and the workpiece simultaneously.

4,514,616

SAFETY MOUNTING DEVICE

Michael V. Warner, Brampton, Canada, assignor to Rumble Equipment Limited, Rexdale, Canada

Filed Sep. 11, 1984, Ser. No. 649,529
Int. Cl.³ B23K *9/28*
U.S. Cl. 219—136 **6 Claims**



1. A safety mounting device comprising a housing having a longitudinal axis; a first movable member mounted within said housing for sliding movement along said longitudinal axis; a second movable member mounted within said housing between said first movable member and a stop member, said second movable member being mounted within said housing for sliding movement along said longitudinal axis, for rotation about said longitudinal axis and for tilting movement with respect to said longitudinal axis; biasing means for biasing said first movable member against said second movable member to sandwich said second movable member between said first movable member and a stop member; and switch means having an on position and an off position and operable by said first movable member, in one position of said first movable member along said longitudinal axis said switch means being in one of its two positions, in other positions of said first movable member along said longitudinal axis said switch means being in the other of its two positions; said first and second movable members contacting each other by means of a cam surface and a cam follower surface such that rotation of said second movable member about said longitudinal axis from a home position wherein said first movable member is in its said one position

displaces said first movable member by cam surface-cam follower action to said other positions thereof, said first movable member also being movable from said one position thereof to said other positions thereof by virtue of movement of said second movable member along said longitudinal axis toward said first movable member and by virtue of tilting of said second movable member relative to said longitudinal axis.

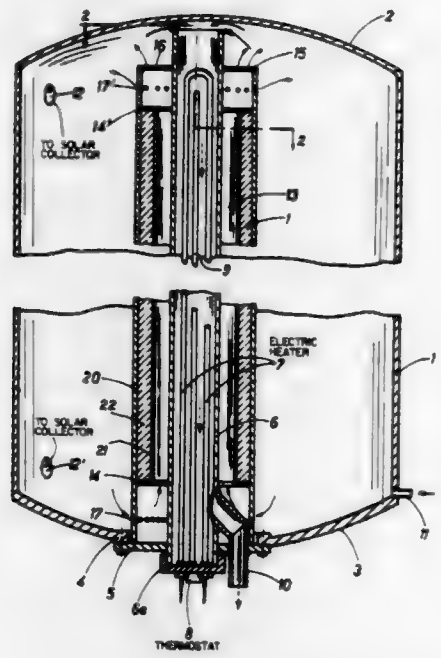
6. A safety mounting device according to claim 1 including a welding torch mounting bracket and means for securing said bracket to said second movable member.

4,514,617

TWO-STAGE ELECTRIC WATER HEATER

Haim Amit, House No. 213/1, Yokneam, Israel

Filed Jan. 19, 1983, Ser. No. 459,109
Int. Cl.³ H05B *1/02, 3/82;* F24H *1/20*
U.S. Cl. 219—314 **8 Claims**



1. A dual-purpose water heater consisting of a storage vessel and a heating unit inserted therein, said heating unit comprising:

an elongated, imperforate heater tube of a heat-conductive material within said storage vessel and having an outer, closed end attached to the wall of said storage vessel, and an inner, open end terminating short off the top of said storage vessel, said heater tube being provided with a water outlet pipe proximate its outer end, said pipe extending to the outside of the vessel;

an elongated resistance-type immersion heating element positioned in said heater tube parallel to the tube axis and extending from its outer end to near the inner end of said tube, said heating element being provided with electric terminals on the outside of said vessel;

a thermostatic switch having its feeler inserted into said heater tube from the outside of said vessel, for energizing said heating element in accordance with the water temperature within said tube;

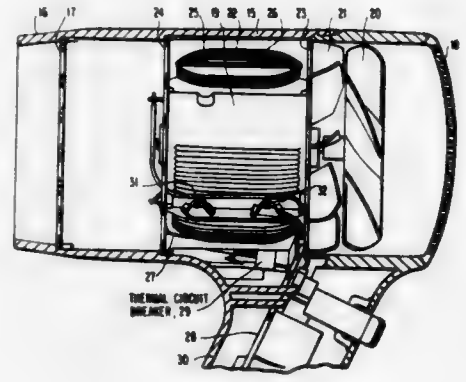
an elongated tubular heat-insulating body in said vessel surrounding a major portion of the length of said heater tube concentrically and distanced therefrom so as to create a water passage of annular cross section between said insulating body and said heater tube, said insulating body being provided with at least one first opening communicating the interior of said vessel with said water passage proximate the outer end of said heater tube and with at least one second opening communicating the interior of said vessel with said water passage proximate the inner end of said heating element, said at least one second opening being positioned at a higher level than said at least one first opening for establishing a convective flow of water through said water passage from said first to said second opening.

4,514,618

COMPACT ELECTRIC HAIR DRYER

Rudolf Majthan, Schwalbach; Rolf Stühler, Wi-Delkenheim, both of Fed. Rep. of Germany; Raymond G. Parsonage, Maidenhead, and Charles C. Packham, Wockingham, both of England, assignors to Braun AG, Kronberg, Fed. Rep. of Germany

Division of Ser. No. 281,624, Jul. 9, 1981, abandoned, which is a division of Ser. No. 133,740, Mar. 25, 1980, Pat. No. 4,300,280.
This application Feb. 3, 1984, Ser. No. 576,772
Int. Cl.³ H05B *3/02;* A45D *20/08*
U.S. Cl. 219—370 **3 Claims**



1. A hairdryer comprising a hollow, elongated housing having air inlet and air outlet means located in opposite ends of said housing, a pair of spaced apart grates secured in said housing perpendicular to the direction of air flow from said air inlet means to said air outlet means, an electric motor extending lengthwise of said housing and supported at opposite ends by said grates in spaced relation to the housing to form annular air flow space between the motor and the housing around the entire motor, a fan wheel driven by said electric motor and disposed intermediate said motor and said air inlet means for creating a flow of air from said air inlet means through said air flow space around the motor and out said air outlet means, a hollow cylindrical body supported at opposite ends by said grates and disposed co-axially about said motor and an electric heating element wound about said cylindrical body and positioned in said air flow space to heat the air flowing therethrough from said air inlet means to said air outlet means.

4,514,619

INDIRECT CURRENT MONITORING VIA VOLTAGE AND IMPEDANCE MONITORING

Michael M. Kugelman, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,951
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—483 **3 Claims**

1. A circuit for monitoring electrical current from a source of power along lead line means to a load means comprising

switch means in said lead line means being sequentially operative from a first mode wherein load current may flow from the source of power to said load means, to a second mode wherein test current may flow along another line means for determining whether the impedance of load is the correct magnitude,

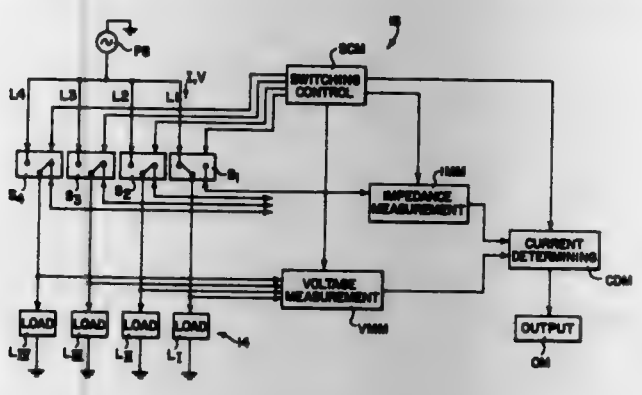
impedance measurement means operatively coupled with said switch means for determining impedance of the load means when said switch means is in the second mode,

voltage measurement means for determining the voltage present at the load means,

current determining means operatively coupled with said impedance measurement means and said voltage measurement means for determining load current being delivered

to the load means as a function of signals received from said impedance measurement means and said voltage measurement means,

switching control means for periodically changing said switch means from the first mode to the second mode and



for periodically rendering operative said impedance measurement means, voltage measurement means and current determining means, and

output means activated from said current determining means for response to whether or not the load means are being operated in a predetermined manner.

4,514,620

CONDUCTIVE POLYMERS EXHIBITING PTC CHARACTERISTICS

Tai C. Cheng, Mountain View, and Bruce A. McKinley, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 22, 1983, Ser. No. 535,449

Int. Cl.³ H05B *3/10*

U.S. Cl. 219—553 **25 Claims**

1. An electrical device which comprises a

(1) a PTC element which is composed of a conductive polymer composition which exhibits PTC behavior and which comprises

(a) a cross-linked polymer component which comprises at least 15% by weight of repeating units derived from a cycloolefin, which has a crystallinity of at least 5% and which has a crystalline melting point in the range of 0° to 80° C., and

(b) a particulate conductive filler which is dispersed in said polymer; and

(2) at least two electrodes which can be connected to a source of electrical power to cause current to flow through the PTC element.

4,514,621

FIRING RANGE

Lindsay C. Knight, Albury, Australia; David A. Cash, Surrey, England; Duncan Stewart, Buckinghamshire, England; Robert A. Cottis, Berkshire, England; William H. Bowyer, Surrey, England; Robert C. Newnham, Berkshire, England; Frederick J. Williams, Bedfordshire, England, and David W. Pardon, Hertfordshire, England, assignors to Australasian Training Aids (PTY.) Limited, Albury, Australia

Continuation of Ser. No. 286,279, Jul. 23, 1981, Pat. No. 4,425,500, which is a continuation of Ser. No. 51,218, Jun. 22, 1979, Pat. No. 4,281,241, which is a continuation of Ser. No. 879,478, Feb. 21, 1978, abandoned. This application Oct. 17, 1983, Ser. No. 542,550

Claims priority, application United Kingdom, Feb. 21, 1977, 7253/77

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ F41J *5/12*; G06F *15/20*

U.S. Cl. 235—400 **21 Claims**

1. Apparatus for determining the location in a predetermined two-dimensional target area adjacent a target member through which the trajectory of a projectile passes, said projectile originating from a firing point and directed toward said target member, the apparatus comprising:

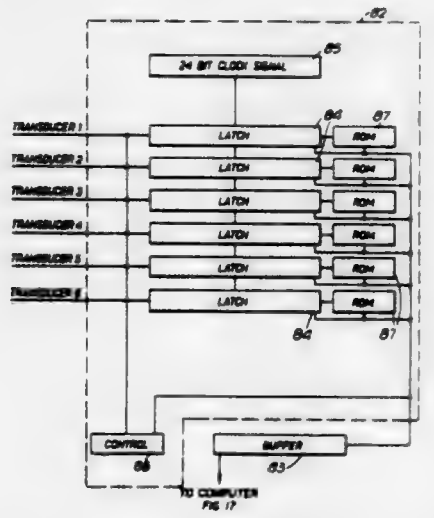
at least three transducers,

means for positioning said at least three transducers in a generally horizontal elongate array adjacent an edge of the predetermined target area,

said transducers positioned spaced apart one from the other at respective predetermined locations,

each said transducer comprising means for providing an output signal in response to an airborne pressure wave generated by the projectile,

individual threshold circuit means coupled to each transducer and responsive to said output signal for providing an indication signal when said output signal exceeds a predetermined threshold, the indication signal represent-



ing a time at which said airborne pressure wave generated by the projectile impinges on the transducer; and

processing means, provided with data representing the respective predetermined locations at which the transducers are positioned and with data representing the speed of sound propagation in air, and operative for

(1) predetermining time differences between the indication signal associated with one of said transducers relative to the indication signal associated with each of the remainder of the transducers;

(2) calculating, from data representing the respective predetermined transducer locations, the speed of sound propagation in air, and said determined time differences, the location in said predetermined target area through which said trajectory passes, and

(3) providing an indication of said calculated location.

4,514,622

METHOD AND APPARATUS FOR IDENTIFICATION OF OBJECTS

Klaus Wevelsiep, Kriftel, and Anton Kastner, Wiesbaden, both of Fed. Rep. of Germany, assignors to Scantron GmbH & Co., Frankfurt-Hoechst, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 140,936, Apr. 16, 1980, abandoned. This application Jan. 5, 1981, Ser. No. 308,713

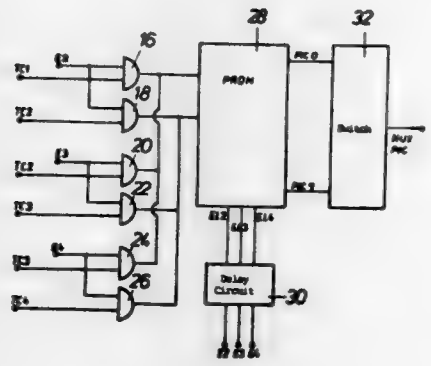
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915732; Oct. 17, 1980, 3039191

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—463 **28 Claims**

14. In an apparatus for identifying objects appearing at random positions in random orientation, and at random times on an image window and having, on a surface facing the image window, an identification in the form of an image field which includes on at least one data track contrasting indicia with at least one contrasting line pattern identifying the position and the orientation of the data track and having a plurality of parallel lines with variable spacing and/or line widths, the image window being scanned line-by-line and a binary video

signal being generated which corresponds to the scanned contrast sequence, the binary video signal including rising and falling slopes defining a first interval from one rising slope to the next rising slope and a second, successive, overlapping interval from one falling slope to the next falling slope, the image window being, in a first step, scanned under varying angles until a contrasting line pattern is detected, the position and alignment of the data field relative to the image window being determined in a second step and, in a third step, a raster scan in the direction of the data track being performed and the signals contained on the data track being read and decoded, the apparatus having an optoelectronic scanning device including a rotatable scanning raster which emits at the output the binary video signal corresponding to the image field which is scanned line-by-line and includes binarily the contrast pattern of the



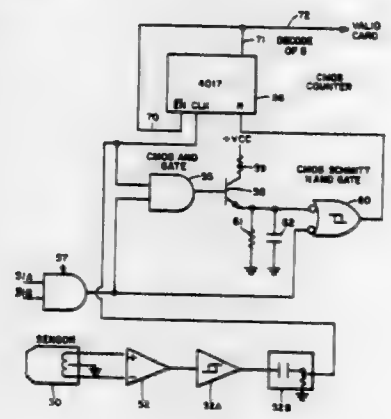
scanned line, a decoder for identifying the contrasting line pattern which identifies the position and orientation of at least one data track of a data field, means for aligning the scanning raster parallel to the data track and for reading the scanned indicia of the data track, the improvement of the decoder comprising a counting circuit which receives the video signal and counts the length of successive overlapping intervals of the video signal, a two-dimensional reference table for receiving successively counted interval lengths in pairs via a gate circuit and for emitting a comparison signal having a first amplitude when the compared interval lengths have a given ratio which corresponds to the ratio of the corresponding interval of the contrasting line pattern, and an evaluation circuit for generating an identification signal during a succession of a given number of comparison signals each having the first amplitude.

4,514,623

AUTOMATIC TELLER MACHINE WITH ENTRANCE ADAPTED TO PREVENT ACCESS BY FOREIGN OBJECTS

Rene Baus, Palos Verdes, and Fred W. Schmidt, Mission Viejo, both of Calif., assignors to American Magnetics Corporation, Carson, Calif.

Filed Jan. 10, 1983, Ser. No. 456,733
Int. Cl.³ G06K *13/00*
U.S. Cl. 235—482 **8 Claims**



1. An apparatus for reading information from a portable information-bearing member, said member having a first dimension and including information at a first location in fixed spatial relationship with respect to said first dimension and being adapted to generate third signals when moved with respect to a detector, said apparatus comprising:

means for receiving said information-bearing member;

a member-receiving input gate assembly, said input gate assembly comprising at least first and second spaced apart slot-defining members for defining at least first and second spaced apart slots, said first and second slots being normally mis-aligned for denying access to said means for receiving of any item introduced to said first slot;

first and second sensor arrangements disposed between said first and second slots in a manner to generate first and second signals only in the presence of an item having said first dimension and having said information at said first location;

means responsive to said first and second signals for enabling said detector to detect a preset number of said third signals; and

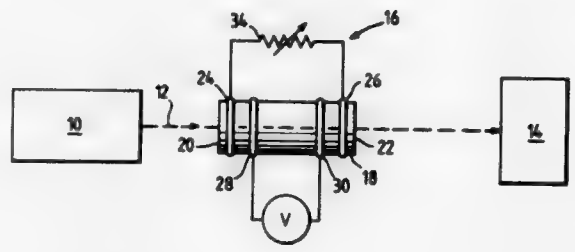
means responsive to said first and second signals and to the occurrence of the preset number of third signals for aligning said first and second slots in a manner to permit said item to pass to said means for receiving.

4,514,624

PHOTON DRAG DETECTORS

Julian G. Edwards, Weybridge, and Alan G. Roddie, Isleworth, both of England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 17, 1982, Ser. No. 408,897
Claims priority, application United Kingdom, Aug. 19, 1981, 8125376
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 R **12 Claims**



1. A photon drag detector comprising:

a bar shaped block of semiconductor material with two opposite faces through one of which a beam of radiation enters and from the other of which it emerges;

spaced end electrodes in contact with said block, one adjacent to each of said opposite faces;

at least two intermediate electrodes in contact with said block, arranged intermediate and spaced from said end electrodes and spaced from each other; and

a suitable impedance connecting said end electrodes;

whereby a change in sensitivity of the detector, with the position of the beam in the said block as measured by a voltage developed between the intermediate electrodes, is made small compared with a detector not provided with said impedance.

4,514,625

ALARM SYSTEM TO SECURE A PASSAGE

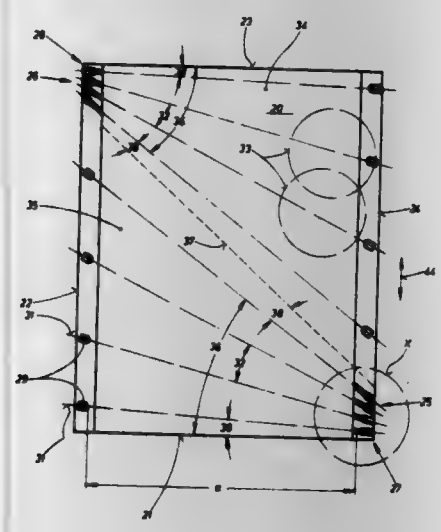
Bernd Heiland, Warendorf, Fed. Rep. of Germany, assignor to (Firma) Aug. Winkhaus, Fed. Rep. of Germany

Filed Jul. 13, 1982, Ser. No. 397,810

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128073

Int. Cl.³ G08B *13/08, 13/18*

U.S. Cl. 250—221 **9 Claims**



1. A security system for an opening such a door or window, said opening being defined to extend within a plane by a pair of linear boundary members located on opposite sides of said opening, said system comprising:

an elongated housing extending longitudinally along each of said linear boundary members, each of said housings comprising

a U-shaped profile strip adapted to be attached to said linear boundary members,

at least one longitudinally extending groove formed in said profile strip,

a cover strip attached to said profile strip,

said cover strip having therein a plurality of longitudinally spaced apart holes each separated from an adjacent hole by an intermediate web,

a filter member made of material permeable to infrared light extending essentially over the entire length of said housing covering each of said holes, and

a pluralityy of mounting plates in each of said housings slidably engagedd within said at least one groove and mounted in said housing to be independently selectively movable along said housing to selected positions;

at least one infrared light transmitting unit mounted in each of said housings, each unit being diagonally offset relative to a transmitting unit in the other of said housings, each of said units including at least one infrared light transmitter with at least a plurality of said infrared light transmitters being provided in each of said housings; said plurality of infrared light transmitters being affixed to said mounting plates with each producing an infrared light beam which is limited in cross-sectional area and which is directed along a light axis extending in the plane of said opening which is offset relative to the axis of a light beam of an adjacent transmitter by an acute angle; and

at least one infrared light receiving unit provided in each of said housings, each of said units having at least one individual infrared light receiver which is affixed to said mounting plate, with said light receivers being arranged in alignment with said light transmitters in the other of said housings to receive the light beams transmitted therefrom.

4,514,626

APPARATUS FOR READING AN ORIGINAL SURFACE BY ILLUMINATING IT WITH A SLIT-LIKE BEAM

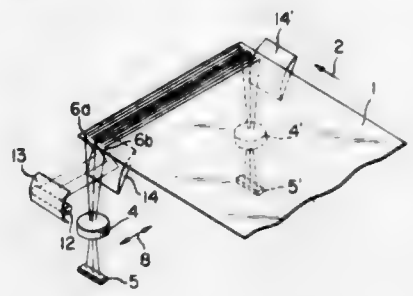
Masamichi Tateoka, Tokyo, and Yukihiko Ogata, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,722

Claims priority, application Japan, Dec. 22, 1980, 55-182465

Int. Cl.³ H01J *5/16*

U.S. Cl. 250—235 **8 Claims**



1. An apparatus for reading an original surface by illuminating it with a slit-like light beam, comprising:

a fixed linear light source;

a cylindrical parabolic mirror fixedly provided so that the focal line position thereof is coincident with said linear light source, the light beam from said linear light source being directed in a predetermined direction by said parabolic mirror;

a cylindrical scanning mirror disposed so that the generating line direction thereof is coincident with the generating line direction of said cylindrical parabolic mirror, said cylindrical scanning mirror condensing the light beam from said cylindrical parabolic mirror in a slit-like form on the original surface and being movable in said predetermined direction along the original surface to thereby illuminate the entire area of the original surface; and

an optical system movable in said predetermined direction with said cylindrical scanning mirror to read the light beam scattered by said original surface, said optical system comprising a line sensor array and imaging optical means for directing said scattered light to said line sensor array.

4,514,627

PETROLEUM STREAM ANALYZER

Albert P. Richter, Jr., Houston; Ronald L. Campsey, Alief; Hans J. Paap, Houston, and Alfred E. Bussian, Spring, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 351,699, Feb. 24, 1982,. This application Feb. 13, 1984, Ser. No. 579,315

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—255 **6 Claims**

1. A petroleum stream analyzer comprising

a test chamber having a petroleum stream, or a portion thereof, flowing through it,

means for bombarding the petroleum stream in the test chamber with fast neutrons, which are slowed down and thereafter engaged in thermal-neutron capture reactions with materials in the petroleum stream,

means for obtaining gamma-ray energy spectra of the materials in response to the capture of the thermal-neutrons by the materials in the petroleum stream,

shielding means for shielding said obtaining means from neutrons provided by said bombarding means,

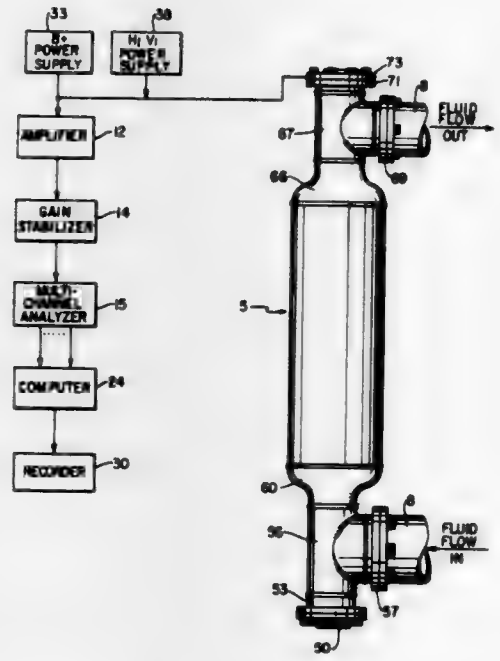
housing means for housing the bombarding means, the shielding means and the obtaining means, said housing means being located in said test chamber in a manner so that a longitudinal axis of said housing means passes through said obtaining means, shielding means and bombarding means, and is substantially aligned with the axial flow of the petroleum stream in said test chamber, and

means for deriving a measure of a characteristic of the petro-

leum stream in accordance with the obtained gamma-ray energy spectra of the materials in the petroleum stream; and

said test chamber includes

a shell,



at least two adaptor means affixed to the shell for passing the petroleum stream, or a portion thereof, into and out of the shell, and

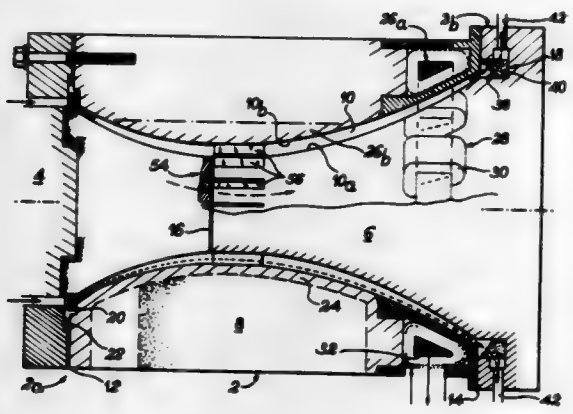
at least two end plates affixed to opposite ends of said shell, with one end plate having the housing means attached thereto.

4,514,628

COAXIAL MINIATURE MAGNETIC SPECTROMETER

Joël Fréhaut, Bruyeres le Chatel, and Michel Roche, Dijon, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 24, 1982, Ser. No. 423,071
Claims priority, application France, Oct. 9, 1981, 81 19029
Int. Cl.[3] B01D *59/44*
U.S. Cl. 250—299
30 Claims



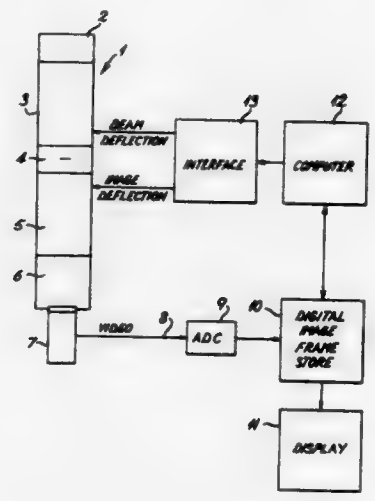
1. A magnetic spectrometer, comprising a body forming a secondary circuit of a transformer for creating a magnetic field for deflecting charged particles, said body being formed by an external conductor provided with a bore and by an internal conductor in short-circuit with said external conductor, said bore and said internal conductor having a diabolo shape around a common axis, said body having two opposite ends in the direction of said axis, said two conductors defining an annular space in which the charged particles can move, said particles being injected at a first of said ends of the body, and means for detecting the deflected particles, said means being located at the second end of the body.

4,514,629

SCANNING TRANSMISSION ELECTRON MICROSCOPES

Kenneth C. A. Smith, Cambridge, England, and Stephen J. Erasmus, Mountain View, Calif., assignors to National Research Development Corporation, London, England

Filed Jun. 29, 1983, Ser. No. 509,054
Claims priority, application United Kingdom, Jul. 7, 1982, 8219647
Int. Cl.[3] G01N *23/00*
U.S. Cl. 250—311
6 Claims



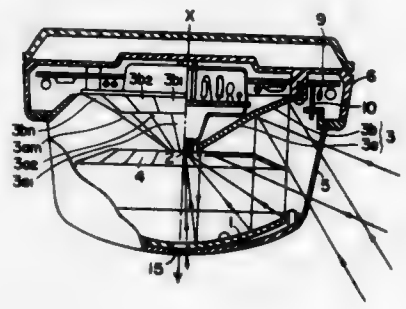
1. A scanning transmission electron microscope including means for obtaining a video signal representing the image of a diffraction pattern derived from electron beam impingement on a point in a specimen, means for converting the video signal into digital form, a digital store for storing a plurality of digital values each representing a picture point in the said image modified by a weighting factor representing a notional pattern overlaying the screen, and means for integrating all the modified values to provide a picture value for the point of impingement of the electron beam.

4,514,630

OPTICAL SYSTEM FOR INTRUDER DETECTING DEVICE

Toshihiko Takahashi, Kyoto, Japan, assignor to Takenaka Engineering Co., Ltd., Kyoto, Japan

PCT No. PCT/JP81/00431, § 371 Date Sep. 14, 1982, § 102(e) Date Sep. 14, 1982, PCT Pub. No. WO82/02609, PCT Pub. Date Aug. 5, 1982
PCT Filed Dec. 28, 1981, Ser. No. 420,222
Claims priority, application Japan, Jan. 19, 1981, 56-6102[U]
Int. Cl.[3] G08B *13/18;* G01J *5/08*
U.S. Cl. 250—342
3 Claims



1. An optical system for an intruder detector device including a parabolic mirror and an infrared detecting element positioned at the focal point of said parabolic mirror for detecting the entry of an intruder and generating an output signal in response to said entry, comprising:

a conical reflecting mirror positioned at the periphery of said infrared detecting element and facing the parabolic surface of said parabolic mirror, the visual field of said re-

flecting mirror covering said parabolic mirror up to its periphery, said reflecting mirror being an assembly comprised of a plurality of divided plane mirrors separated into an inner group and an outer group circularly displaced from said inner group; and

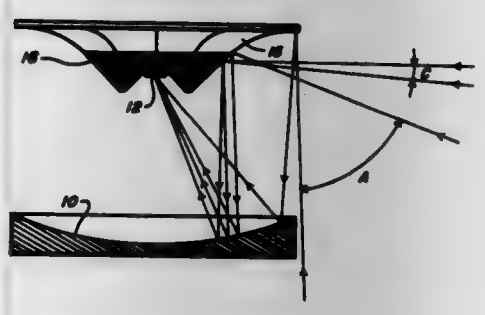
a convex lens disposed at the center of the parabolic mirror, and being perpendicular to the optical axis thereof, said lens having substantially the same diameter as the outer diameter of the detecting element, and focussing infrared rays from immediately below the detector device onto the activation surface of the detecting element.

4,514,631

OPTICAL SYSTEM FOR CEILING MOUNTED PASSIVE INFRARED SENSOR

John K. Guscott, Lynnfield, Mass., assignor to American District Telegraph Company, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,852
Int. Cl.³ G01J *5/08*
U.S. Cl. 250—342 15 Claims



1. A ceiling mountable passive infrared intrusion system having a combination mirror assembly for detecting an intruder both when present on the floor of an area to be protected and when present between the ceiling and the floor of the area to be protected, comprising:

a first mirror having an optical axis for focusing radiation incident thereon at a point focus along its optical axis;

a mirror sub-assembly including a second mirror for providing a curtain-like first field of view that has a nominal range, a comparatively narrow azimuthal extent, and a comparatively wide elevational extent, and cooperative with the first mirror for directing the radiation present in the first field of view onto the point focus;

said mirror sub-assembly including a third mirror for providing a disc-like second field of view that is generally transverse the first field of view that has a nominal range, a comparatively narrow elevational extent, and a comparatively wide azimuthal extent, and cooperative with the first mirror for directing the radiation present in the second field of view onto the point focus; and

an infrared detector positioned at the point focus of the first mirror along the optical axis thereof and operative in response to the radiation focused thereat to provide an electrical signal representative of intruder presence.

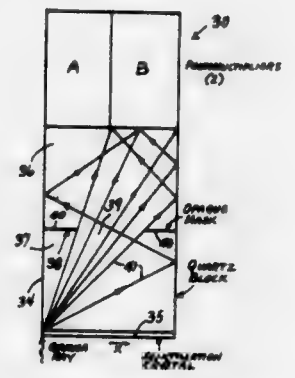
4,514,632

MODULAR SCINTILLATION CAMERA

Harrison H. Barrett, Tucson, Ariz., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Nov. 24, 1981, Ser. No. 324,464
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—368 25 Claims

1. An imaging system for a radioactive object comprising a scintillation camera device and image forming means between said radioactive object and said camera device, said camera device comprising at least one pair of side-by-side photoelectric detection units forming an array extending in a predetermined direction, scintillation crystal means mounted to receive gamma rays from the radioactive object via said image forming means, said detection units being mounted so as to receive optical photons from scintillations in said crystal means corresponding to image coordinates of said object along said predetermined direction, and optical ray-guiding means between said photoelectric detection units and said scintillation crystal means to distribute such optical photons from a scintillation to



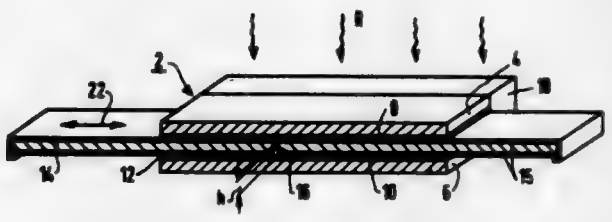
the respective photoelectric detection units so that the respective resultant signals generated by the photoelectric detection units vary substantially linearly with respect to said predetermined direction over a range substantially comprising the width of said array and so that said resultant signals can be utilized to computer image coordinate values over said range.

4,514,633

IONIZATION CHAMBER FOR MEASURING THE PROFILE OF A RADIATION FIELD OF ELECTRON OR X-RAY RADIATION

Jerry E. Chamberlain, Pittsburgh, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Nov. 17, 1983, Ser. No. 552,642
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—374 12 Claims



1. An ionization chamber for measuring the profile of a radiation field, comprising:

(a) a first electrode;

(b) a second electrode arranged parallel to said first electrode, both electrodes forming a gap therebetween;

(c) a shield made of a material opaque to ions produced by the radiation field, said shield being movably arranged in said gap between said electrodes and having an aperture, said aperture between said electrodes forming a measuring volume; and

(d) means for moving said shield together with said aperture along said gap between said electrodes.

4,514,634

ELECTRON BEAM FOCUSSING

Peter J. Lawson, Cambridge, England, assignor to Cambridge Instruments Limited, Cambridge, England

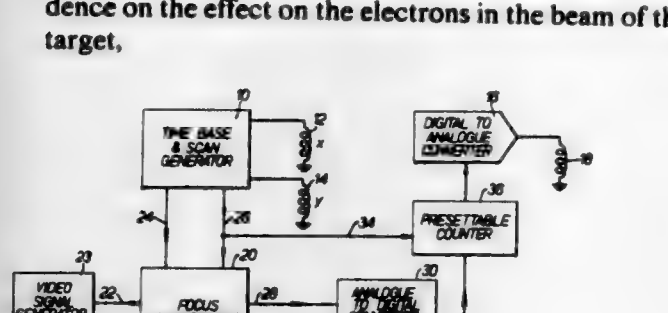
Filed Mar. 1, 1983, Ser. No. 470,950
Claims priority, application United Kingdom, Mar. 2, 1982, 8206018
Int. Cl.³ G21K *1/08*; H01J *3/14, 29/58*
U.S. Cl. 250—397 18 Claims

1. A focussing method for measuring the focus of an electron beam, comprising the steps of

scanning the beam across a predetermined and sharp-edged

target for a plurality of times each at a different level of focus,

producing an output signal during each such scan in dependence on the effect on the electrons in the beam of the said target,



integrating the square of each such signal, and

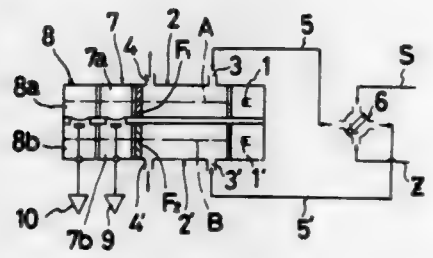
comparing the values of the integrated outputs to determine the value thereof corresponding to optimum focus.

4,514,635

NON-DISPERSIVE INFRARED ANALYZER

Kozo Ishida, and Takao Imaki, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Oct. 29, 1982, Ser. No. 437,885
Claims priority, application Japan, Nov. 26, 1981, 56-191331
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—343 **8 Claims**



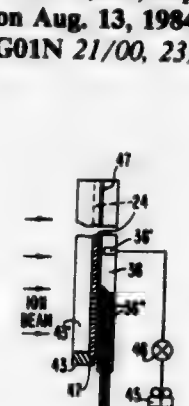
1. A non-dispersive infrared analyzer for determining the concentration of two components, wherein a zero fluid and a sample fluid are alternately supplied to two cells and wherein two pneumatic detectors are respectively optically arranged in series with two light sources, said two cells respectively sandwiched between said two light sources and said two detectors, said pneumatic detectors respectively providing outputs corresponding to the concentration of said components whose concentration is to be determined, said analyzer comprising at least one filter whose passband corresponds to absorption bands of one of said components whose concentration is to be determined, said filter being located directly adjacent to and optically in series with at least one of said two cells; wherein said two pneumatic detectors are each provided with two light receiving chambers corresponding to two independent light passages which are arranged in series optically.

4,514,636

ION TREATMENT APPARATUS

Monroe L. King, Austin, Tex., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 523,908, Aug. 16, 1983, abandoned, and a continuation of Ser. No. 185,075, Sep. 8, 1980, abandoned, which is a division of Ser. No. 75,401, Sep. 14, 1979, Pat. No. 4,261,762. This application Aug. 13, 1984, Ser. No. 640,538
Int. Cl.³ G01N *21/00, 23/00*
U.S. Cl. 250—443.1 **6 Claims**



1. An apparatus for treating substantially flat wafer articles with a focused ion beam comprising:

a high vacuum chamber adapted to be evacuated to a pressure a substantial number of orders of magnitude below 1 torr, sufficient to enable formation and focusing of said ion beam,

a treating station within said high vacuum chamber,

means for producing, focusing and directing said ion beam onto wafer articles at the treating station,

a mounting member having a substantially, flat, temperature-controlled support surface on which each wafer is positioned at the treating station, and

means for controlling the temperature of the wafer comprising

an open clamping member for engageing one flat surface of said wafer at its periphery to clamp the other flat surface of said wafer against said substantially flat support surface of said mounting member,

said focused beam passing through the opening of said clamping member to said one surface of said wafer,

means for introducing, to the interface between the surface of the wafer and the surface of the mounting member, gas under subatmospheric pressure of sufficient value to enable the gas to have substantial heat conductance, said pressure being greater than about 1 torr,

whereby effective heat transfer by conduction is obtained between said surfaces of said wafer and mounting member due to the presence of said conductive gas in the short paths that exist between the urged-together surfaces while leakage of said gas into said high vacuum chamber is substantially inhibited by said clamping of said surfaces against one another, thereby to prevent said gas from influencing said treatment.

4,514,637

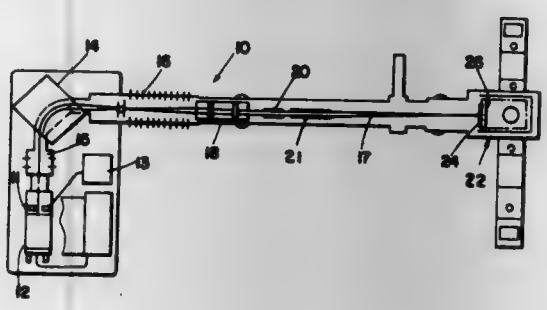
ATOMIC MASS MEASUREMENT SYSTEM

Jerald P. Dykstra, and Brad L. Bellamy, both of Austin, Tex., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 24, 1983, Ser. No. 469,184
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—492.2 **5 Claims**

1. In an ion implanter including an extraction power supply, an ion source, an analyzing magnet operable to select certain ion species emanating from the source for implantation, a rotation coil for generating a first electrical signal proportional to the magnetic field of the analyzing magnet, means for generating a second electrical signal proportional to the beam energy at the analyzing magnet, calculating means performing calculations on the first and second signals to determine the

atomic mass of the selected ion species, and indicating means for providing a visual display of said atomic mass, the improvement wherein: said rotating coil is driven by a synchronous motor powered by A.C. line voltage; and including means converting said first electrical signal to a first frequency signal,



and means for counting said first frequency signal over a time corresponding to the period of the line frequency to provide a first digital count to said calculating means which is proportional to the magnetic field of said analyzing magnet independent of the line frequency.

4,514,638

ELECTRON-OPTICAL SYSTEM WITH VARIABLE-SHAPED BEAM FOR GENERATING AND MEASURING MICROSTRUCTURES

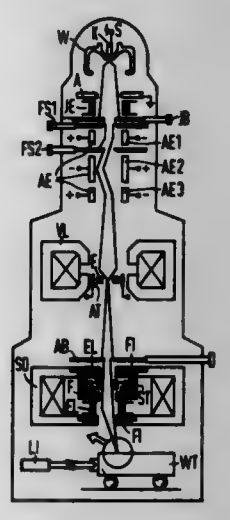
Burkhard Lischke, Munich; Juergen Frosien, Ottobrunn; Klaus Anger, and Erich Plies, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 398,559, Jul. 15, 1982,. This application Aug. 22, 1984, Ser. No. 643,108

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138896

Int. Cl.³ H01J *37/145, 37/30*

U.S. Cl. 250—492.2 **17 Claims**



1. An electron-optical system with a variable-shaped beam for generating and measuring microstructures at a beam target comprising in succession in the direction of beam travel:

an electron source for generating an electron beam;

a first lens means for focusing said electron beam which is a remote focus multipole Wehnelt electrode disposed adjacent to said electron source;

at least one slot diaphragm for shaping the cross-section of said electron beam;

a second lens means for generating an image of the shaped beam cross-section onto an intermediate image plane; and

a third lens means for projecting said intermediate image of said shaped beam cross-section onto said target

said first, second and third lens means and said slot diaphragm operating in combination as a shadow projection imaging means for generating said variable-shaped beam and said electron-optical system having no more that three lenses between said electron source and said target location.

4,514,639

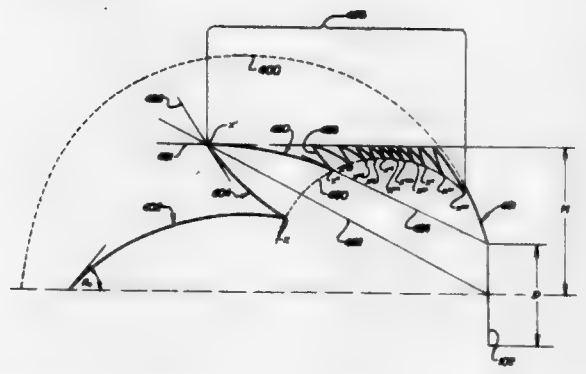
BLACKBODY SIMULATOR WITH UNIFORM EMISSIVITY

Frederick O. Bartell, 2636 W. Calle Puebla, Tucson, Ariz. 85745

Continuation of Ser. No. 340,808, Jan. 19, 1982, abandoned, which is a continuation-in-part of Ser. No. 163,305, Jun. 26, 1980, Pat. No. 4,317,042. This application Jun. 7, 1983, Ser. No. 502,004

Int. Cl.³ G21G *4/00*

U.S. Cl. 250—493.1 **44 Claims**



1. A blackbody simulator, comprising:

a core with a first side;

the core having an aperture on its first side to a cavity, the cavity being rotationally symmetrical about an axis and having a cone-like apex on the axis opposite the aperture with an apex half-angle of less that 60°; the cavity surface being shaped so that the value of the projected solid angle of the aperture with respect to any point on the cavity surface is generally constant;

the cavity having n subsurfaces with the nth subsurface having the shape of a portion of a sphere;

the cavity subsurfaces defining inner and outer limiting curves with each subsurface up to the $(n-1)^{th}$ subsurface arcuately extending from the inner limiting curve to the outer limiting curve;

said outer limiting curve remaining inside the sphere defined by the nth subsurface and the inner limiting curve remaining outside an arch defined by the locations at which a tangent in a plane containing the axis of symmetry intersects the rim of the aperture for each subsurface if extended to the arch.

4,514,640

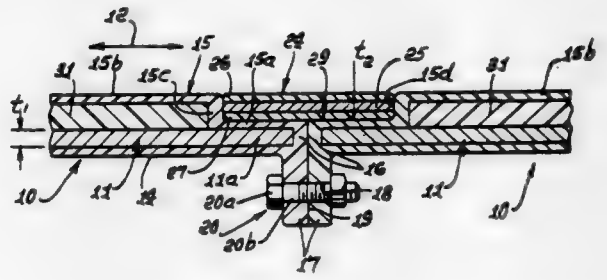
RADIATION SHIELDING STRUCTURES

Michael J. Bagnell, 688 Flaming Star Ave., Thousand Oaks, Calif. 91360, and William R. Ivy, 1908 Singingwood Ave., Pomona, Calif. 91767

Filed Sep. 28, 1982, Ser. No. 425,724

Int. Cl.³ G21F *3/04*

U.S. Cl. 250—517.1 **9 Claims**



1. A radiation shielding structural component, comprising in combination

(a) two longitudinally elongated bodies each having L-

shaped cross-section in lateral planes normal to the longitudinal direction,

(b) each body including a panel shaped core consisting of radiation shielding material, and glass fiber layers surrounding said core and attached thereto in covering relation therewith,

(c) each body including a filler sheet extending in sandwiched relation to the core and the glass fiber layers, and generally parallel to the core,

(d) said bodies forming a recess located edgewise between said filler sheets and overlapping portions of the cores closest to said flanges, the recess adapted to receive an auxiliary panel that incorporates an auxiliary core consisting of radiation shielding material, and glass fiber layers at opposite sides of said auxiliary core,

(e) and including said auxiliary panel in said recess and the auxiliary core of which overlaps said core portions of said bodies, the panel attached to said bodies.

4,514,641

APPARATUS FOR RETRIEVING INFORMATION

Kano Tanaka, Yokohama; Yoshio Ando, Chigasaki, and Hitoshi Yanagawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

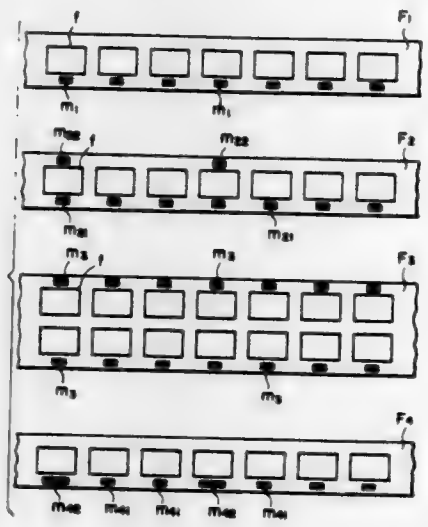
Filed Sep. 27, 1982, Ser. No. 424,635

Claims priority, application Japan, Nov. 9, 1981, 56-179429; Nov. 9, 1981, 56-179430

Int. Cl.³ G06K *7/10*

U.S. Cl. 250—570

4 Claims



1. A retrieving apparatus for retrieving a desired image in a selected film by selecting a film having a first mark on the images or a film having at least two marks including the first mark and a second mark selectively applied to the images, said apparatus comprising:

mark detection means for detecting said first mark or said second mark and, when the first mark is detected, for outputting a first mark signal and, when the second mark is detected, for outputting a second mark signal;

counting means having a first counting part for counting said first mark signals output from said mark detention means and a second counting part for counting said second mark signals output from said mark detection means;

control means for controlling the feeding of the film by comparing the retrieving number of the desired image and counting value of the first counting part or the second counting part;

signal generation means for generating a signal corresponding to the film to be used;

mode selecting means for selecting a first retrieving mode utilizing the first mark or a second retrieving mode utilizing the second mark; and

display means for indicating the possibility of retrieval under the selected retrieving mode using the selected film on the basis of the signal output from said signal generation means and the signal output from said mode selecting means.

4,514,642

UNIT CONTROLLER FOR MULTIPLE-UNIT DISPATCH CONTROL

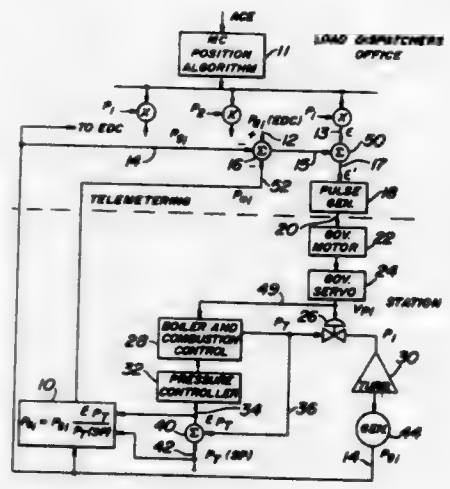
Charles W. Ross, Lansdale, Pa., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 4, 1983, Ser. No. 463,690

Int. Cl.³ F01D *17/04*; F01K *13/00*

U.S. Cl. 290—40 R

10 Claims



1. In a control system for distributing the regulating burden of a power system among a plurality of generators when said plurality of generators includes both fast and slow responding units and control of the regulation is carried out with an integrating unit control having an integrating element responding to a unit error signal which represents a predetermined part of the area control error, the improvement in each of the unit controls for the slow responding unit comprising:

means responsive to a variable of the power system at the unit level for producing an anticipatory feedback signal indicative of the change in generation of the unit that will occur when the unit has responded fully to the integrating control to reduce the unit error signal toward zero; and

means for introducing said anticipatory signal into the control system on the input side of the integrating element to provide the anticipatory response required to prevent improper control action.

4,514,643

PARALLEL VALVE ROTARY MACHINE CONTROL SYSTEM

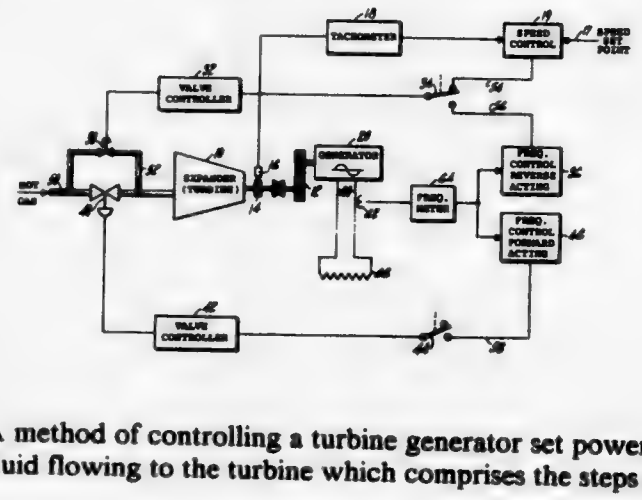
Edward J. Condrac, North Huntingdon, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed May 11, 1984, Ser. No. 609,903

Int. Cl.³ F01D *17/02*

U.S. Cl. 290—40 C

11 Claims



1. A method of controlling a turbine generator set powered by a fluid flowing to the turbine which comprises the steps of:

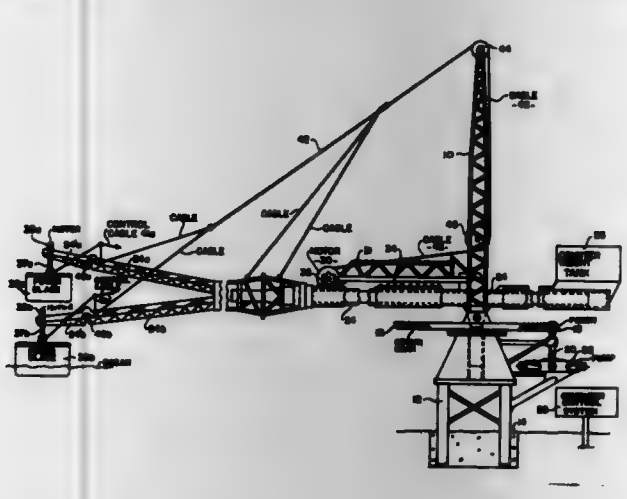
controlling a portion of the fluid flow to the turbine with a first valve having a relatively slow gate movement speed;
regulating a portion of the fluid flow to the turbine with a second valve having a relatively fast gate movement speed;
sensing a condition of the generator portion of the turbine generator set and generating a signal in response to a variance between the sensed condition and a reference condition; and
actuating the steps of controlling and regulating to vary a condition of the motor generator set in response to the signal generated.

4,514,644

OCEAN POWERED PUMP

Wayne A. Westling, 1530 21st St., Manhattan Beach, Calif. 90266

Filed Aug. 12, 1983, Ser. No. 522,506
Int. Cl.³ F03B *13/12*
U.S. Cl. 290—53 **2 Claims**



1. A wave motor comprising:
(a) a first member mounted for rotation;
(b) a generally horizontal boom adapted to rotate about a vertical axis, driving said first member;
(c) a blade means attached to said boom at an end remote from said first member, said blade means movably attached to said boom so as to controllably be extended into a wave affected body of water or be raised from it without moving said boom;
(d) means to extend said blade into said water at a first predetermined location of the boom relative to said body of water to effect a wave driven motion of the boom;
(e) means to raise said blade out of said water after said wave driven motion at a second predetermined location of the boom relative to said body of water; and
(f) means to return said boom to its first predetermined location.

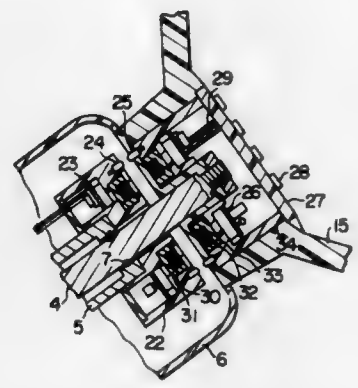
4,514,645

POWER SUPPLY SYSTEM FOR AUTOMOTIVE PARTS HAVING A ROTARY COMPONENT

Akira Endo, Mito; Akira Hasegawa, Katsuta, and Takanori Shibata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,802
Claims priority, application Japan, Feb. 19, 1982, 57-24482
Int. Cl.³ H02G *3/00*
U.S. Cl. 307—10 R **10 Claims**

1. A system for supplying electric power to automotive parts having a rotary component and a stationary component, the system comprising:
a first coil fixed on the stationary component;
a second coil fixed on the rotary component in opposition to said first coil;
means for supplying an AC voltage to said first coil;
means for rectifying the AC voltage induced in said second coil into a DC voltage;
signal generating means connected to said means for rectifying;
first spatial transmission means for transmitting a signal generated by said signal generating means from said rotary component to said stationary component, said first spatial transmission means being connected to said signal generating means;



second spatial transmission means for receiving a signal transmitted by said first transmission means, said second spatial transmission means being fixed on said stationary component; and
means for intensifying an excitation of said first coil for a predetermined length of time immediately following the generation of said signal and weakening said excitation for the remaining time, said means for intensifying being connected between said second spatial transmission means and said first coil, whereby said electric power is changed for said predetermined length of time.

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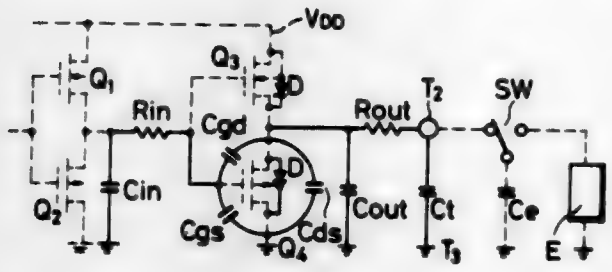
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING A PROTECTIVE RESISTOR ARRANGEMENT FOR OUTPUT TRANSISTORS

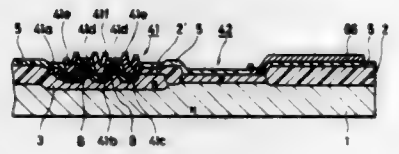
Yoshibumi Ando, Kodaira; Takashi Sakamoto, Tachikawa; Kanji Yoh, Mitaka; Hisahiro Moriuchi, Koganei, and Sumiaki Takei, Fuchu, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,653
Claims priority, application Japan, Aug. 20, 1980, 55-113518
Int. Cl.³ H03K *17/08;* H02H *3/20*
U.S. Cl. 307—200 B **12 Claims**

1. A semiconductor integrated circuit device comprising:
a semiconductor substrate;
an external terminal formed on said semiconductor substrate from which external terminal an output signal from said integrated circuit device can be derived from outside said semiconductor substrate;
an output circuit for receiving a drive signal and for delivering said output signal to said external terminal, said output circuit including an insulated gate field effect transistor formed in said semiconductor substrate and having a first output electrode, a second output electrode coupled to said external terminal, and a gate electrode;
a drive circuit for generating at an output terminal thereof said drive signal to be fed to said gate electrode of said insulated gate field effect transistor, said drive circuit being formed in said semiconductor substrate;
first resistor means having one end coupled to said output terminal of said drive circuit, said first resistor means being formed on an insulating film on said semiconductor substrate such that PN junctions are not formed at said first resistor means; and
connecting means for connecting another end of said first resistor means with said gate electrode of said insulated

gate field effect transistor, said connecting means being formed on an insulating film on said semiconductor sub-







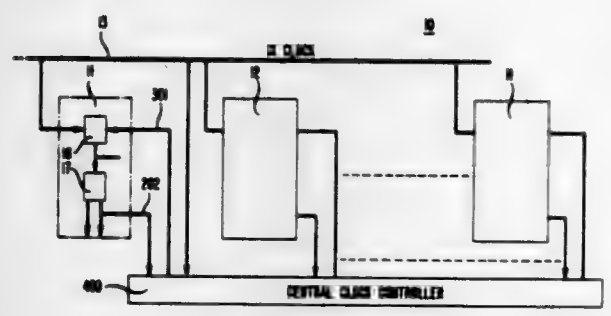
strate such that PN junctions are not formed at said connecting means.

4,514,647

CHIPSET SYNCHRONIZATION ARRANGEMENT

Masakazu Shoji, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 1, 1983, Ser. No. 519,495
Int. Cl.[3] H03K *5/135, 5/14, 5/12, 3/86*
U.S. Cl. 307—269 **9 Claims**



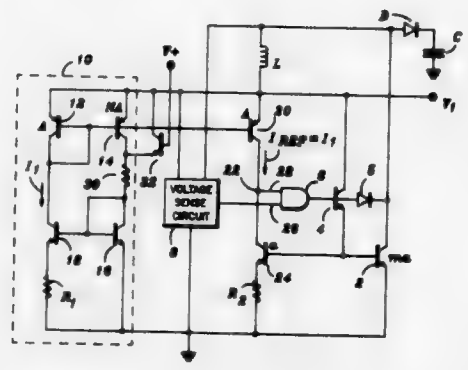
1. A circuit arrangement for synchronizing clock pulses in a chipset, said chipset comprising at least first and second integrated circuit chips in each of which a plurality of components is defined, each of said chips including an arrangement of adjustable delay circuits for providing internal clock pulses in response to a system clock signal and including control means for adjusting the delay of said internal clock pulses in response to a control signal, said circuit arrangement comprising at least first control signal generating circuits for generating individual control signals for said first and second chips respectively, each of said control signal generating circuits being responsive to said system clock signal and one of said internal clock pulses from an associated one of said first and second chips for adjusting the delay of said internal clock pulses during a next clock cycle.

4,514,648

CURRENT SENSE CIRCUIT FOR A BUBBLE MEMORY VOLTAGE BOOSTER

Robert N. Dotson, Mesa; Robert B. Davies, and Ira Miller, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 27, 1982, Ser. No. 412,057
Int. Cl.[3] H03K *5/153, 5/24, 17/08*
U.S. Cl. 307—350 **6 Claims**



1. A circuit for monitoring a first current flowing through a first transistor, comprising:

first means including at least second and third transistors for generating a reference current in the form of $\Delta V_{BE}/R_1$ wherein ΔV_{BE} is a difference in base-emitter voltages between said second and third transistor and R_1 is the value of a first resistor coupled to the emitter of said third transistor; and

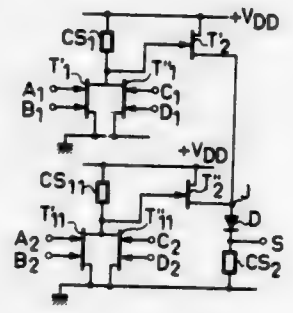
second means coupled to said first transistor and to said first means and including at least a fourth transistor for generating a second current in the form of $\Delta V_{BE}/R_2$ where ΔV_{BE} is the difference in base-emitter voltages between said fourth transistor and said first transistor and R_2 is the value of a second resistor coupled to the emitter of said fourth transistor, which second current is representative of said first current.

4,514,649

HIGH-ENTRANCE HIGH-SPEED LOGIC OPERATOR WHICH HAS A COMPLEX DIGITAL FUNCTION AND UTILIZES AT LEAST ONE QUASI-NORMALLY OFF MESFET

Gérard Nuzillat, and Georges Bert, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 21, 1981, Ser. No. 265,918
Claims priority, application France, May 23, 1980, 80 11550
Int. Cl.[3] H03K *19/017, 19/094, 19/20*
U.S. Cl. 307—450 **4 Claims**



3. A multiple-input high-speed logic operator which performs a plurality of logic functions and which is supplied by a single source of voltage, comprising:

a plurality of input branches with each input branch including a saturable resistive load in series with the parallel connection of a pair of quasi-normally-off MESFET's, with each of said MESFET's having a maximum of two schottky gates, with said MESFET's being connected in

parallel; and wherein each input branch including an output node at the connection of the resistive load to the parallel-connected MESFET's; and

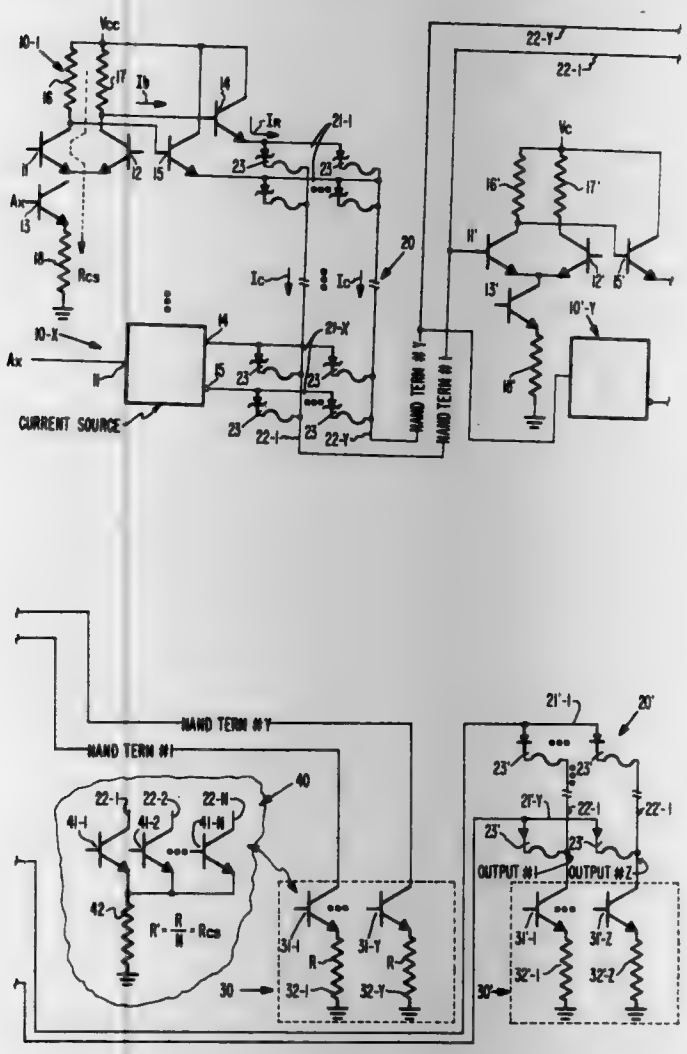
a common output half-branch, operatively connected to said plurality of output nodes, including a diode in series with a second saturable resistive load.

4,514,650

LOW POWER SMALL AREA PLA

Daniel Yum, Poway, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 25, 1982, Ser. No. 436,421
Int. Cl.³ H03K *19/177, 19/086*
U.S. Cl. 307—466 **12 Claims**



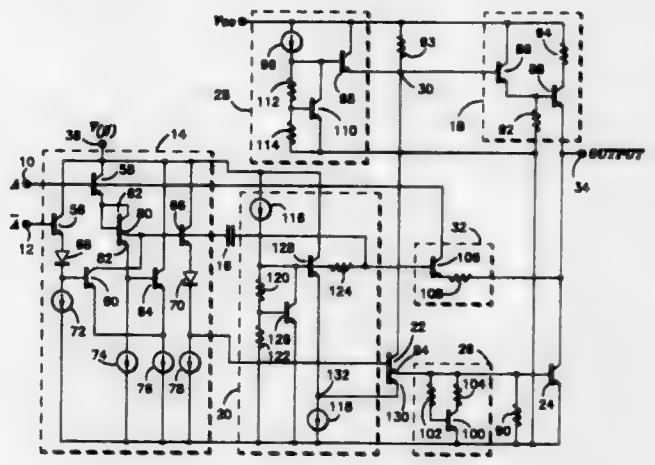
1. A logic array including multiple gated current source means for receiving logic input signals, each of said gated current source means being coupled to a respective pair of row conductors and including means for gating current exclusively to one row conductor or the other of said pair to indicate the state of the received input signal, column conductors which are coupled to selectively received current from any of said row conductors, means for generating respective NAND signals coupled to said column conductors indicating when current is received by each of said column conductors; additional gated current source means respectively coupled to receive said NAND signals and send current respectively to additional row conductors when the NAND signals are in predetermined states, additional column conductors coupled to selectively receive current from said additional row conductors, and output means coupled to said additional column conductors for generating respective output NAND signals indicating when current is received therefrom; the number of said additional gated current source means that receive said NAND signals being Y, the number of said output means that generate said output NAND signals being Z, and the total number of transistors and diodes therein plus said coupling therebetween being no more than 4Y+Z and YZ respectively where Y and Z are integers.

4,514,651

ECL TO TTL OUTPUT STAGE

Ira Miller, Tempe, and Michael W. Null, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 16, 1982, Ser. No. 450,415
Int. Cl.³ H03K *19/092, 19/088, 19/086*
U.S. Cl. 307—475 **9 Claims**



1. A level shifting circuit for receiving first and second input signals each capable of assuming logical high and logical low ECL voltage levels and for generating therefrom an output capable of assuming logical high and logical low TTL voltage levels, comprising:

a first level shifting transistor responsive to said first input signal;

a second level shifting transistor responsive to said first level shifting transistor for producing a drive current;

a third level shifting transistor responsive to said first drive current for rendering said third level shifting transistor conductive;

a level shifting diode having an anode for receiving current from said third level shifting transistor and having a cathode;

a push-pull output stage including source transistor means and sink transistor means for producing said output;

a drive transistor responsive to current at said cathode for rendering said sink transistor means conductive and said source transistor means nonconductive; and

first means responsive to said second input signal for diverting said first drive current so as to render said third level shifting transistor less conductive and said drive transistor nonconductive which in turn renders said source transistor means conductive and said sink transistor means nonconductive.

4,514,652

LIQUID COOLED HIGH SPEED SYNCHRONOUS MACHINE

Raymond N. Olson, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 13, 1983, Ser. No. 513,333
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—54 **10 Claims**

1. In a rotary electric machine, the combination of:

a housing;

a stator within said housing and including an armature provided with windings and a rotor receiving opening;

a rotor journalled within said housing and located within said opening and peripherally spaced from said armature by a first air gap, said rotor carrying windings and having an interior cavity;

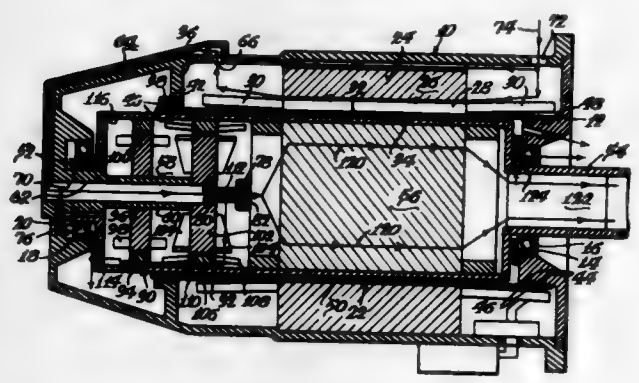
a stationary element affixed to said housing and extending axially into said cavity;

rotor windings energizing means including at least one winding and associated armature carried by said rotor within said cavity and radially outwardly of said stationary ele-

ment and cooperating magnet means mounted on said stationary element within said cavity for generating electrical current for said rotor windings, said rotor windings energizing armature and said magnet means being separated by a second air gap;

first coolant passages in heat exchange relation to said stator windings;

second coolant passages in heat exchange relation to said rotor windings;



barrier means in said first air gap adjacent said stator for providing fluid flow isolation between said stator and said first air gap;

means for providing a liquid coolant to (a) said stator including said first passages, (b) to said rotor cavity including said second passages and said rotor winding energizing means; and

means on said rotor for preventing coolant from entering said second air gap during operation of said machine.

4,514,653

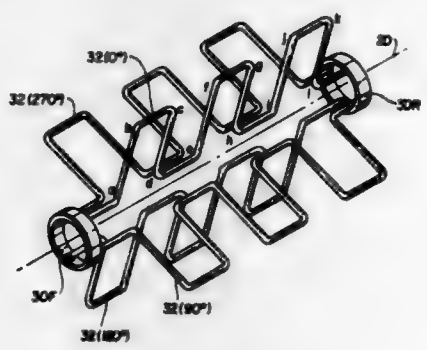
COMMUTATORLESS DIRECT CURRENT MACHINE

Prahlada R. Batni, 700 Butternut St., Washington, D.C. 20012

Continuation-in-part of Ser. No. 370,133, Apr. 20, 1982, abandoned. This application Mar. 27, 1984, Ser. No. 593,199

Int. Cl.³ H02K *31/00*

U.S. Cl. 310—178 **19 Claims**



1. A commutatorless DC machine having an outer housing and a shaft for rotation therein, comprising:

(a) a plurality of axially spaced annular stator disks of magnetic material mounted within said housing;

(b) at least one axially spaced annular rotor disk of magnetic material arranged concentrically along said shaft for rotation therewith;

(c) each of said at least one rotor disk positioned adjacent to at least one stator disk and interleaved therewith to establish axial air gaps between the adjacent surfaces of said interleaved disks;

(d) a plurality of radially disposed electrical conductors affixed to each of said at least one rotor disk so as to be rotatable in said air gaps, and serially interconnected via a serpentine path into a unitary armature winding element having two ends wherein said unitary armature winding element is confined to a portion of a radial plane containing the axis of rotation of the shaft and bounded on one edge by said axis;

(e) each of said ends connected to one of a pair of slip rings mounted on said shaft; and

(f) whereby two of the group consisting of said unitary armature winding element, and said axial air gaps, and said rotatable shaft, may be so energized as to produce electromechanical transducer action.

4,514,654

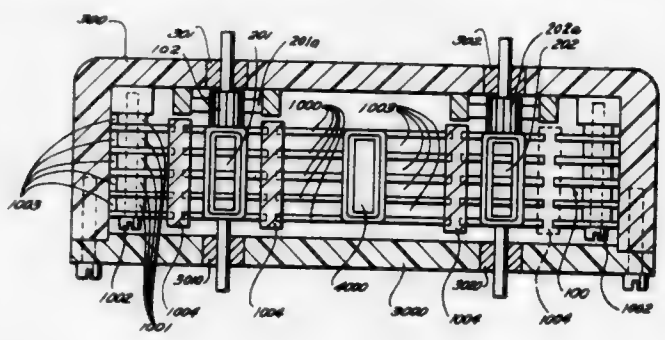
SMALL SIZE ELECTRIC MOTOR

Rolf Müller, Deargen, Fed. Rep. of Germany, assignor to Papst Motoren GmbH & Co KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 440,026, Nov. 8, 1982, abandoned, which is a continuation of Ser. No. 137,988, Apr. 4, 1980, abandoned. This application Mar. 14, 1984, Ser. No. 589,841

Int. Cl.³ H02K *3/48*

U.S. Cl. 310—216 **16 Claims**



1. An electric motor, comprising a stator; at least one wound rotor; commutator means with brushes associated with said rotor; said stator including a plurality of magnetic conductors formed of iron sheets assembled in a superimposed relation into a stator sheet stack, said rotor being inserted into the stator sheet stack and including a rotor shaft and a plurality of magnetic conductors formed of iron sheets mounted on said shaft in superimposed relation to form a rotor sheet stack; permanent magnets, inserted into the stator sheet stack and cooperating with said rotor for excitation of said rotor; first spacing means for holding the iron sheets in said stator in spaced relationship from each other, and second spacing means for holding the iron sheets in said rotor in spaced relationship from each other, the sheets of said stator sheet stack and the sheets of said rotor stack defining in assembly a cross-section of the magnetic conductors, the sheets in the stator sheet stack and the sheets in the rotor sheet stack in assembly being spaced from one another by layers of reduced conductivity extended between the respective spacing means so that said cross-section is reduced causing the reduction of the moment of axial inertia of the electric motor.

4,514,655

COMPACT CAPACITOR MOTOR WITH THIN COIL CORES

Toshiro Hosoya, Tokyo, Japan, assignor to Tobishi Industries Ltd., Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,788

Int. Cl.³ H02K *15/02, 15/04*

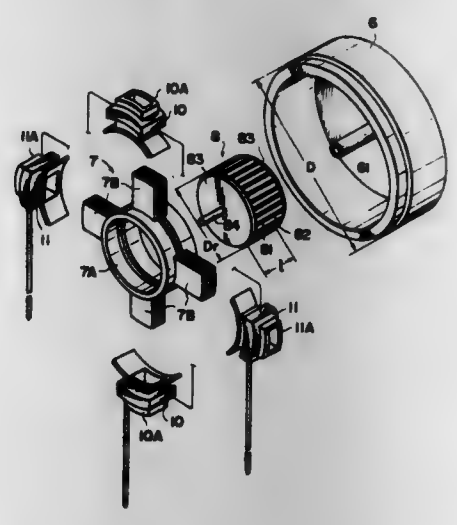
U.S. Cl. 310—218 **3 Claims**

1. A small capacitor motor comprising a rotor, a stator core disposed in concentric relationship with the rotor and stator coils wound on the stator core, wherein said stator core comprises:

a ring-shaped core part surrounding the core of the rotor and having an axial thickness substantially equal to the axial thickness of the core of the rotor and a plurality of coil winding core parts, each radially extending from the periphery of the ring-shaped core part and having an axial thickness less than the axial thickness of the ring-shaped

core part and on which coil winding core parts the stator coils are to be mounted;

said stator core comprising two back to back identically shaped core plates, each having a plurality of radial parts



constituting one half of said plurality of coil winding core parts and a projecting ring part projecting from the inner ends of said radial parts to one side in a direction perpendicular to the radial direction and constituting one half of said ring-shaped core parts.

4,514,656

COMBINATION SPARKPLUG AND COMBUSTION PROCESS SENSOR

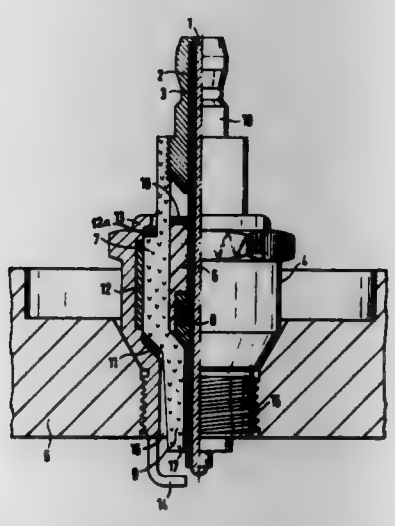
Eckart Damson, Stuttgart; Reinhard Latsch, Vaihingen; Ernst Linder, Mühlacker; Franz Rieger, Aalen, and Rainer Schüssler, Bietigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 428,003

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147291

Int. Cl.³ H01T *1/12, 13/16, 13/48*

U.S. Cl. 313—11.5 **18 Claims**



1. Combination sparkplug and combustion process sensor with a selected heat transfer characteristic, having

a metallic housing (4) including means (15) for securing the housing in an engine block (5) of an internal combustion engine;

an insulating body (7) secured in the housing, and formed with a central opening;

a glass rod (1) forming a light guide, centrally extending through the opening in the insulating body;

metallic means (3,8,10), at least in part surrounding the glass rod, to carry electrical ignition energy through the insulating body;

and comprising, in accordance with the invention,

means for matching the heat transfer characteristic of said combination to operating requirements of said engine by controlling heat transfer between the metal means, the glass rod (1), the insulating body (7) and the housing (4) including

a heat conductive mass (2) located between the glass rod (1) and the metal means (3,8,10) and extending therebetween through a predetermined controlled distance along the length of the glass rod and the metal means; and

at least one electrically conductive heat transfer element (6,19,20,21) located between said metallic means (3,8,10) and said insulating body (7) to provide heat conduction therebetween.

4,514,657

SPARK PLUG HAVING DUAL GAPS FOR INTERNAL COMBUSTION ENGINES

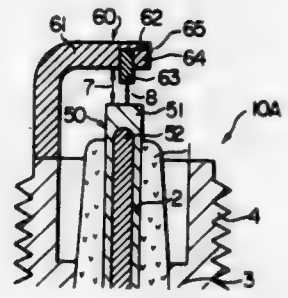
Toshihiko Igashira, Toyokawa, and Toru Yoshinaga, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 24, 1981, Ser. No. 257,135

Claims priority, application Japan, Apr. 28, 1980, 55-56920; Jul. 3, 1980, 55-91448; Nov. 11, 1980, 55-158957; Nov. 11, 1980, 55-158958; Nov. 25, 1980, 55-165460; Dec. 1, 1980, 55-169399

Int. Cl.³ H01T *13/20, 13/32*

U.S. Cl. 313—130 **13 Claims**



1. In a spark plug for spark ignition type internal combustion engines, including an earth electrode formed of a heat-resisting and electrically conductive material and a central electrode, the improvement comprising: a supplementary electrode electrically connected to one of said earth and central electrodes, the tip end of said supplementary electrode extending in facing relationship with the other of said earth and central electrodes, at least the surface portion of said supplementary electrode being formed of an electrically conductive ceramic having a specific resistance in the range of 10^{-3} Ω.cm to 10^{6} Ω.cm, the tip end of said supplementary electrode cooperating with said other electrode to define therebetween a gap of smaller dimension than that of the gap between said earth and central electrodes.

4,514,658

MESH LENS FOCUS MASK FOR A CATHODE-RAY TUBE

Stanley Bloom, Bridgewater, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 31, 1983, Ser. No. 480,762

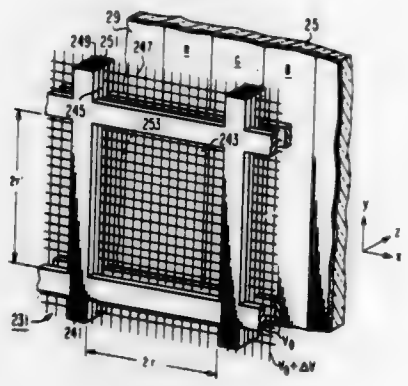
Int. Cl.³ H01J *29/07*

U.S. Cl. 313—402 **17 Claims**

1. In a cathode-ray tube having a target comprising an array of phosphor elements of different emission colors arranged in cyclic order in adjacent color groups, each group including an element of each of said different emission colors, means for producing a plurality of electron beams directed toward said target, and a color selection structure positioned between said target and said beam producing means, said color-selection structure producing a plurality of lenses for passing and focusing portions of electron beams to associated color groups of said target, the improvement wherein

said color-selection structure includes a first electrode having at least one lenticular member, a second electrode

having two opposed major surfaces, one of said surfaces being insulatingly spaced from said first electrode by a longitudinal distance, s, said second electrode comprises a conductive mesh having interstitial dimensions small compared to said phosphor elements, and a third electrode having at least one lenticular member, said third electrode being spaced a longitudinal distance, s, from the other major surface of said conductive mesh, said lenticular



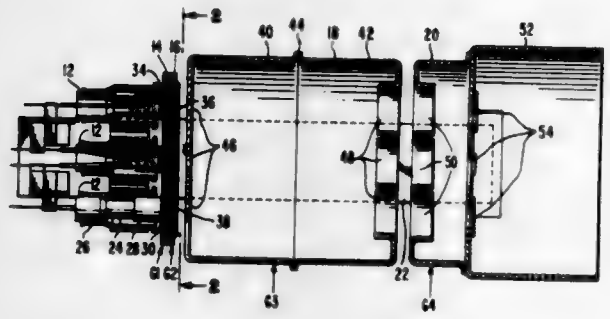
member of said first electrode having therein an array of windows associated with only one color group, each window having a half-width, r, said lenticular member of said first electrode being disposed proximate to said conductive mesh so that the ratio of the longitudinal spacing, s, to the half-width, r, of the window is much less than unity ($s/r << 1$), whereby said electrodes provide a strong lens action.

4,514,659

INLINE ELECTRON GUN FOR HIGH RESOLUTION COLOR DISPLAY TUBE

Hsing-Yao Chen, Landisville, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 4, 1982, Ser. No. 354,655
Int. Cl.³ H01J *29/50, 29/56*
U.S. Cl. 313—412 **4 Claims**



1. An inline electron gun for producing three inline electron beams each having an electron beam current of approximately 200 microamps for use in a high resolution color display tube, comprising

three inline cathode assemblies,

a control grid adjacent to said cathode assemblies, said control grid including three inline apertures aligned with said cathode assemblies, the diameters of the control grid apertures being in the range of 0.43 mm to 0.59 mm,

a screen grid spaced from 0.13 mm to 0.26 mm from said control grid, said screen grid including three inline apertures aligned with the control grid apertures, the diameters of the control grid apertures being in the range of 0.43 mm to 0.56 mm, the thickness of said screen grid at the aperatures being in the range of 0.20 mm to 0.31 mm, said screen grid including a slot at each screen grid aperture longitudinally extending in the inline direction of the three inline screen grid apertures, each slot being on a side of the screen grid facing away from the control grid, the ratio of the depth of the slot to the width of the slot being in the range of 0.13 to 0.23,

a first focusing electrode adjacent to an spaced from said screen grid, said first focusing electrode including three inline apertures fcing said screen grid and three inline apertures facing away from said screen grid, the diameters of the first focusing electrode aperatures facing away from said screen grid being in the range of 4.06 mm to 5.44 mm, the length of said first focusing electrode being in the range of 17.6 mm to 23.5 mm, and

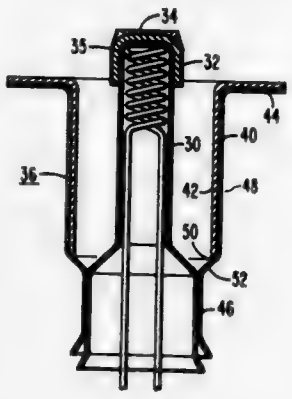
a second focusing electrode adjcent to and spaced from said first focusing electrode, said second focusing electrode including three inline apertures facing said first focusing electrode, the diameter of the second focusing electrode apertures being in the range of 4.06 mm to 5.44 mm.

4,514,660

CATHODE-RAY TUBE HAVING AN ELECTRON GUN ASSEMBLY WITH A BIMETAL CATHODE EYELET STRUCTURE

Stephen T. Opresko, Manor Township, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 29, 1983, Ser. No. 556,185
Int. Cl.³ H01J *29/06, 29/46, 9/02*
U.S. Cl. 313—446 **7 Claims**



1. In a cathode-ray tube having an electron gun including at least one cathode assembly comprising

a cathode sleeve having oppositely disposed ends, said cathode sleeve being open at one end and closed at the other end by a cap having an electron emitting coating thereon,

a heater filament disposed within said sleeve and spaced therefrom, and

a cathode eyelet disposed around at least a portion of said cathode sleeve and attached thereto, the improvement wherein

said cathode eyelet comprises a laminated bimetal member including a support layer and an emissivity modifying layer, said support layer having a distal end, a proximal end and a central portion therebetween, said proximal end being attached to said open end of said cathode sleeve, said emissivity modifying layer being disposed on at least a portion of the interior surface of said central portion of said support layer, said emissivity modifying layer being spaced from said proximal end of said support layer.

4,514,661

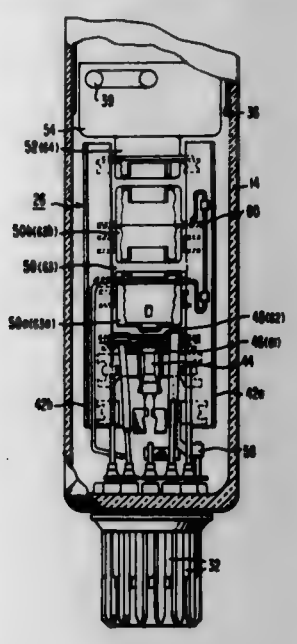
ARC-SUPPRESSION MEANS FOR AN ELECTRON GUN HAVING A SPLIT ELECTRODE

Robert P. Stone, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 27, 1982, Ser. No. 424,136
Int. Cl.³ H01J *29/96*
U.S. Cl. 315—3 **4 Claims**

1. In an electron gun with at least one cathode for generating an electron beam along a beam path and a plurality of electrodes serially disposed along the beam path, at least one accelerating and focusing electrode having two spaced-apart elec-

trode sections adjacent to one another and axially separated along a plane substantially perpendicular to the beam path, wherein the improvement comprises



an arc suppression resistor interconnecting the spaced-apart electrode sections of said electrode, said interconnected electrode sections normally operating at substantially the same voltage, said resistor acting in the event of an arc to limit the arc current.

4,514,662

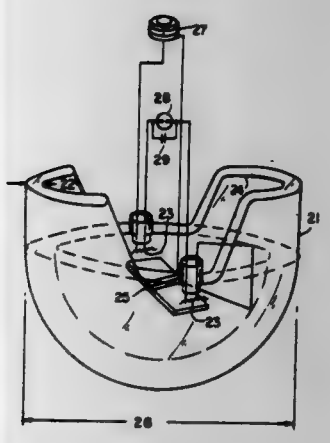
MAGNETIC ARC SPREADING FLUORESCENT LAMPS

S. Merrill Skeist, 1620 Cedar Swamp Rd., Brookville Glen Head, N.Y. 11545, and Leo Gross, 3611 217 St., Bayside, N.Y. 11361

Continuation of Ser. No. 45,589, Jun. 4, 1979, and a continuation of Ser. No. 93,053, Nov. 13, 1979. This application Feb. 17, 1981, Ser. No. 235,306

Int. Cl.³ H01J *7/44, 13/46, 19/78, 29/96;* H01K *1/62*

U.S. Cl. 315—57 **12 Claims**



1. An improved magnetic arc spreading device, such as a fluorescent lamp, comprising a double walled hemispherical lamp envelope without any interior partitions of any kind and forming a hemispherical shell volume for an arc discharge, electrode means for forming said arc discharge in said envelope, a luminescent phosphor coating on all interior walls of said envelope, a circuitry means mounted on and within said envelope and a screw base secured to at least a part of said envelope, and magnetic arcs spreading coil means diffusing, deflecting and spreading said arc discharged throughout the entire volume of said envelope; and magnetic arc spreading coil means comprising a solenoid which is at least a part of the ballast for said arc discharge device; and said coil means being connected in series with said electrode means of said envelope with the other end of said coil means being wired to said screw base; whereby greater light output is achieved due to the hemispherical shell volume in the envelope construction which provides considerable more phosphor surface area.

4,514,663

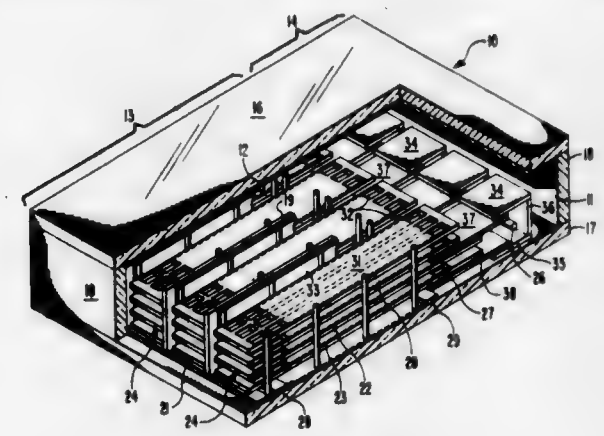
ELECTRON BEAM INJECTION STRUCTURE FOR FLAT PANEL DISPLAY DEVICES

Leon J. Vieland, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 29, 1983, Ser. No. 489,800

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—366 **4 Claims**



1. In a flat panel display device having a display screen and an evacuated envelope divided into a plurality of channels, said channels including an electron gun section, and an electron beam guide section, said electron gun section including cathode means for providing electrons and means for modulating said electrons, said electron guide section including spaced substantially parallel rectangular beam guides for receiving and focusing said electrons into beams in the space between said guides, said beam guides having a plurality of apertures arranged in columns longitudinally along said channels, an improvement comprising:

electron injection means arranged between said cathode means and said electron guide section for injecting electrons to said guide section from said cathode means; said electron injection means including spaced substantially parallel rectangular injection electrodes, one end of said injection electrodes being arranged in the proximity of said cathode, and the other end of said injection electrodes being arranged on opposite sides of said electron guide section whereby a portion of said electron guide section is between a portion of said injection electrodes.

4,514,664

COLOR TELEVISION RECEIVER

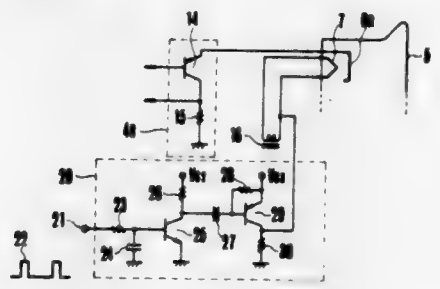
Kunisuke Kasagi, and Machio Kawashima, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,662

Claims priority, application Japan, May 13, 1981, 56-70718

Int. Cl.³ H01J *29/52;* H04N *9/535*

U.S. Cl. 315—383 **3 Claims**



1. A color television receiver comprising:

a color picture tube having electron guns including cathodes and heaters therefor, respectively;

an automatic cutoff adjusting circuit for adding a reference voltage signal substantially at a black level to a luminance signal during an interval beginning substantially at the end of a vertical blanking period and ending prior to the video portion of the vertical deflection period, and for detecting cathode currents flowing toward said cathodes during said interval to control cathode voltages applied to said cathode for keeping said cathode currents at a predetermined level by way of feedback of voltages proportional to said cathode current; and

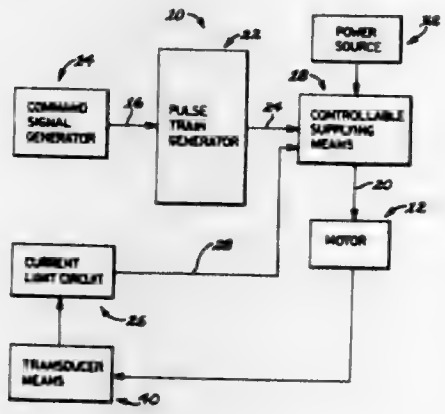
a circuit for applying a positive biasing voltage to each of said heaters during said interval to allow a potential difference between said each heater and a corresponding one of said cathodes to limit at least a current flowing from said cathode to said heater.

4,514,665

CURRENT LIMIT CONTROL CIRCUIT

Grant C. Melocik, Chardon, and William Pickering, University Heights, both of Ohio, assignors to Townmotor Corporation, Mentor, Ohio

Filed Jan. 5, 1983, Ser. No. 455,720
Int. Cl.³ H02P *1/00*; H02H *3/24*
U.S. Cl. 318—139 1 Claim



1. Apparatus (10) for controllably energizing a motor (12), comprising:

a DC electric power source (32) controllably connected to said motor (12);

generating means (14) for producing a predetermined plurality of incremental coded digital motor speed command signals;

first means (22) for receiving said digital motor speed command signals and producing respective predetermined pulse trains in response to each of said received command signals, each of said pulse trains having a predetermined duty factor;

controllable supplying means (18) for receiving said pulse trains and delivering electric current from said power source (32) to said motor (12), said controllable supplying means (18) including a power switching element (88) connected between said power source (32) and said motor (12), and a logic gate (84) having a first input connected to said first means (22), a second input connected to a second means (26), and an output connected to said power switching element (88);

a current shunt connected in series with said motor (12) and said power source (32), and adapted to produce a current signal in response to the magnitude of current delivered to said motor (12);

said second means (26) for receiving said current signal and producing a digital logic blocking signal in response to said current signal exceeding a predetermined magnitude, said second means (22) including a current reference potentiometer (102);

a differential amplifier (92) having a pair of inputs (84) connected across said shunt, and an output;

a first comparator (98) having a first input connected to said differential amplifier (92) output, a second input connected to said reference potentiometer (102), and an output;

a latch (103) having a first input connected to said comparator (98) output, a second input connected to said first means (22) and to said logic gate (84) first input, and an output;

a voltage divider (114); and,

a second comparator (110) having a first input connected to said latch (103) output, a second input connected to said voltage divider (114), and an output connected to said logic gate (84) second input; and,

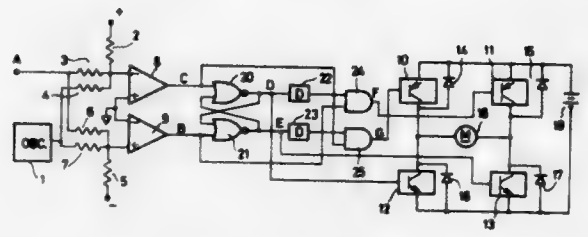
wherein said controllable supplying means (18) is adapted to receive said digital blocking signal and block the delivery of current from said power source (32) to said motor (12) in response to said received blocking signal.

4,514,666

PULSE WIDTH MODULATION D.C. SERVO MOTOR DRIVING CIRCUIT

Hayao Suzuki, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 547,879
Claims priority, application Japan, Nov. 9, 1982, 57-196206
Int. Cl.³ H02P *1/22*
U.S. Cl. 318—293 4 Claims



1. In a pulse width modulation d.c. servo motor driving circuit having a triangular wave oscillator and two voltage comparators for producing a forward direction driving pulse and a reverse direction driving pulse by pulse width modulation according to the driving direction and driving intensity in response to an analog driving command signal whose level varies with the passage of time, the forward direction driving pulse and the reverse direction driving pulse being alternately output when the analog driving command signal is zero, to operate the motor in forward and reverse directions by switching a transistor bridge circuit in accordance with the modulated pulse signals: a flip-flop circuit connected to be reset/set in response to the forward direction driving pulse or the reverse direction driving pulse, two delay circuits connected to the flip-flop circuit for providing a delay time to the forward and reverse direction driving pulses which are output from the flip-flop circuit, the time delay being longer than the pulse width of the forward and reverse direction driving pulses during the time the analog driving command signal is zero, a first AND circuit for carrying out an AND operation between the forward direction driving pulse and the time-delayed forward direction signal output from one of the delay circuits, a second AND circuit for carrying out an AND operation between the reverse direction driving pulse and the time-delayed reverse direction signal output from the other of the delay circuits, means for applying the forward and reverse direction driving pulses to a first set of transistor switches of the transistor bridge circuit which are connected to one terminal of a driving power source for driving the first transistor switches, and means for applying the output signals from the first and second AND circuits to a second set of transistor switches of the transistor bridge circuit which are connected to the other terminal of the driving power source for driving the second transistor switches.

4,514,667

METHOD AND APPARATUS FOR THE CONSTANT SPEED CONTROL OF BRUSHLESS DC MOTORS

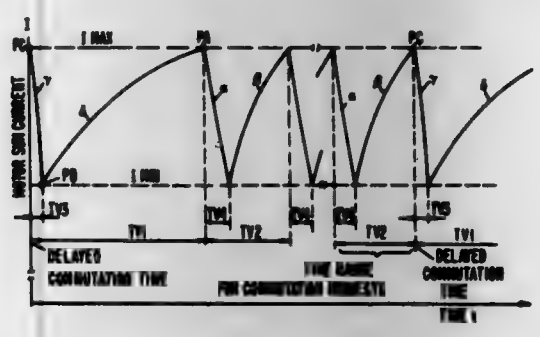
Walter H. Sakmann, Nufringen, and Volker Zimmermann, Sindelfingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1983, Ser. No. 488,843

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 8210367

Int. Cl.³ H02P *6/02*

U.S. Cl. 318—254 10 Claims



1. A method for the constant speed control of a brushless DC motor whereby a pulsed control voltage is applied between commutation points of motor pole windings thereof, comprising the steps of:

calculating the pulse-on times and pulse-off times of the pulsed control voltage according to the speed characteristics of the motor; applying the pulsed control voltage to the motor pole windings so that the motor sum current substantially rises during the pulse-on time and substantially drops during the pulse-off times; and

synchronizing the commutation points with the pulse-off times of the pulsed control voltage;

wherein the speed characteristics used to calculate the pulse-on and pulse-off times include the values of:

the deviation of the motor speed from a desired speed value;

the instantaneous acceleration of the motor;

the time duration of a control voltage pulse period of a preceding commutation period; and

constants characterizing the motor drive system; and

wherein, upon starting the motor, the control voltage pulse period is limited to a predetermined maximum value.

4,514,668

D.C. MOTOR DRIVING CIRCUIT

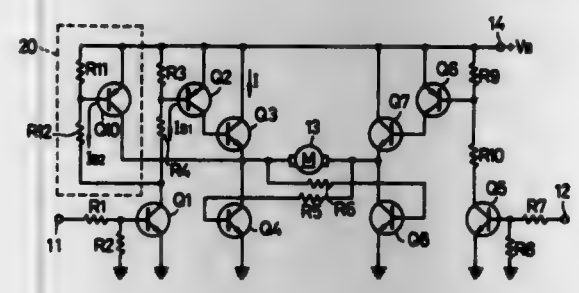
Yoshio Tokuyama, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 13, 1983, Ser. No. 503,630

Claims priority, application Japan, Jun. 15, 1982, 57-88889[U]

Int. Cl.³ H02P *1/22*

U.S. Cl. 318—294 5 Claims



1. A D.C. motor driving circuit comprising:

a first transistor circuit coupled between a D.C. motor and a power source, for supplying a current to said D.C. motor, said first transistor circuit comprising an initial stage transistor and a terminal stage transistor respectively connected in Darlington pair;

a switching transistor respectively coupled to said initial stage transistor of said first transistor circuit, said switching transistor being turned ON when supplied with a driving signal voltage to put said first transistor circuit in an ON state; and

a second transistor circuit including a transistor coupled in parallel to said first transistor circuit, for supplying a current to said D.C. motor,

said current supplied to said D.C. motor decreasing as the rotational speed thereof increases after starting of said D.C. motor,

said first transistor circuit being turned OFF when the rotational speed of said D.C. motor reaches a speed near its constant normal rotational speed,

said D.C. motor being supplied with the current from said second transistor circuit during the constant normal rotation thereof.

4,514,669

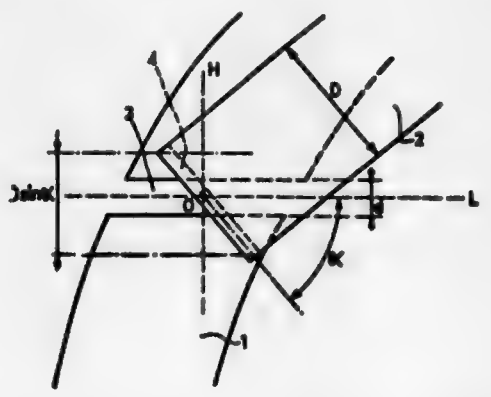
END OF TRAVEL STOP DEVICE FOR AN ELECTRIC MOTOR DRIVE MECHANISM

Auguste L. Ecole, Paris, France, assignor to Equipements Automobiles Marchal, Issy-Les-Moulineaux, France

Continuation of Ser. No. 486,995, Apr. 21, 1983, abandoned, which is a continuation of Ser. No. 258,364, Apr. 28, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 586,346

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—443 12 Claims



11. An end of travel stop device for a mechanism driven by an electric motor, particularly for windscreen wipers of motor vehicles, said device comprising: a connector having at least one circular track, a contact arm displaceable along said track, means for moving said contact arm and said connector relative to each other in response to rotation of the electric motor, said contact arm and connector cooperating to control energization of and de-energization of the motor, during said relative rotation, said track of the connector defining a plane and comprising at least one substantially flat electrically conducting sector having first and second ends extending transversely of the track, and at least one insulated sector substantially coplanar with and between said ends of said electrically conducting sector, said contact arm displaceable along said at least one track having an elongated contact end comprised of an end of the contact arm bent to project toward said track and engaging said track with an elongated end edge thereof, said elongated end edge engaging said first end of said conductive sector along a line forming an angle with said first end, which is greater than zero and less than 90°, and engaging said second end of said conductor along a line forming an angle with said second end which is greater than zero and less than 90°.

4,514,670

ELECTRIC POSITIONING MOTOR CONTROL SYSTEM, PARTICULARLY AUTOMATIC VEHICLE ANTENNA EXTENSION SYSTEM

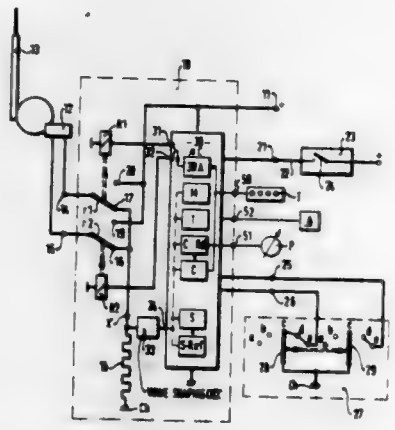
Reinhard Fassel, Oberasbach; Werner Meier, Rednitzhembach; Hans Rauch, Fürth; Jürgen Wesemeyer, Nuremberg, and Hans-Joachim Raddant, Berlin, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,152

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226614

Int. Cl.³ H02P *1/22*

U.S. Cl. 318—467 **26 Claims**



1. Electrical positioning motor control system for automatically de-energizing a commutator-type d-c motor (**12**) coupled to a positioned element (**13**) when the positioned element has reached a predetermined position, said system having

an operator-controlled switch (**24, 27**) for controlling energization of the motor;

motor direction-of-operation control switch means (**R1, r1, R2, r2**) selectively energizing the motor for rotation in either of two directions, or for de-energizing the motor;

a control circuit (**30**) having at least one control input (**21**) coupled to the operator-controlled switch and first and second outputs (**31, 32**) coupled to control the motor direction switch means (**R1, r1, R2, r2**), said system comprising, in accordance with the invention,

a measuring means (**18,33**) coupled to a connection line (X) of the motor (**12**), sensing the rotary speed of operation of the motor, when energized, and including analyzing means (**33,33'**) responsive to a time characteristic of the waviness of undulation of motor current in said connection line to produce a motor operation speed signal;

a motor operation input (**34**) on said control circuit (**30**) and receiving the motor speed signal;

a memory (M) in said control circuit (**30**) storing a representation of the average value of said time characteristic; and

a speed-signal-responsive circuit (S) in said control circuit (**30**), connected to and controlling the electrical energy supplied to the motor and disconnecting said energy supply thereto upon sensing drop-off of speed of operation of the motor below a predetermined limit, regardless of the position of the operator-controlled switch means (**24**).

4,514,671

HEAD SCANNING SERVO SYSTEM IN A RECORDING AND/OR REPRODUCING APPARATUS

Kenneth Louth, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,963

Int. Cl.³ G05B *19/28*

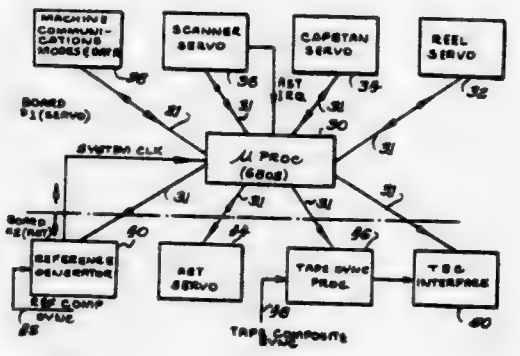
U.S. Cl. 318—603 **18 Claims**

1. A servo control apparatus for controlling the rotational velocity and phase of a rotating mechanism driven by a drive means, said apparatus comprising:

means for providing a signal at a predetermined location during each revolution of said rotating means;

first servo means for controlling the rotational velocity of said rotating mechanism and including a first high resolution counting means for providing a count indicative of the period of rotation of the rotating mechanism, said counting means being reset and triggered by a reset signal;

second servo means for controlling the phase of the rotation of the rotating mechanism and including a second high resolution counting means for providing an output at a predetermined count, said second counting means being triggered by a reference phase signal, a third high resolution counting means for providing a count indicative of



the phase position of said rotating mechanism and triggered by said second counting means output, said third counting means being reset and triggered by said reset signal.

processing means for determining the count of said first and third counting means and for providing said reset signal to the same, said processing means comparing the determined count of said first counting means with a predetermined count and generating a first error signal and applying the same to the drive means, said processing means comparing the determined count of said third counting means and comparing the same with a predetermined count and generating a second error signal and applying the same to the drive means.

4,514,672

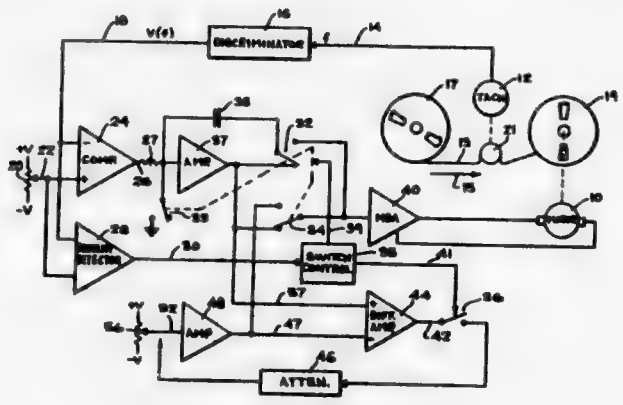
ADAPTIVE APPARATUS AND METHOD FOR CONTROL

David C. O'Gwynn, San Mateo, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 6, 1983, Ser. No. 483,004

Int. Cl.³ G05B *5/01*

U.S. Cl. 318—616 **14 Claims**



1. A method of operating a control system for controlling the value of a parameter produced by a source of energy responsive to a value of a control signal and a desired gain for maintaining a desired value of the parameter, said method comprising the steps of:

measuring the value of the parameter;

comparing the value of the parameter with the desired value; and

adjusting the control signal to effect a change in the parameter toward the desired value when the value of the parameter does not equal the desired value, and setting the control signal equal to a constant value C_n when the value of the parameter is equal to the desired value according to the relation

$$C_n = C_{n-1} + (\Delta C_{m;n-1})(k) \quad m,n = 1,2,3, \ldots$$

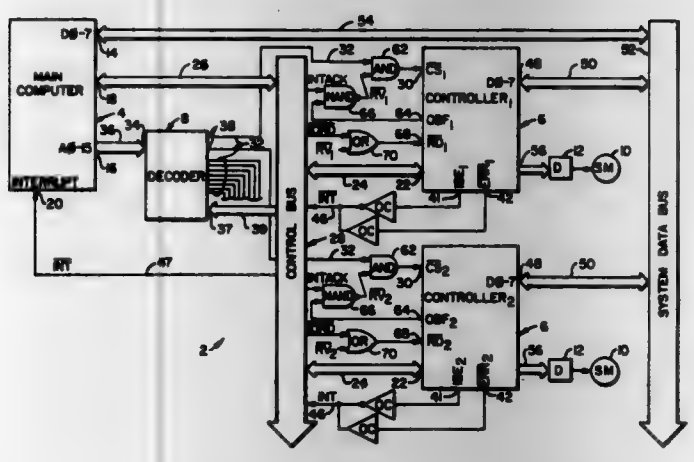
where C_{n-1} is the value of C_n during the preceeding occurrence of the parameter being equal to the desired value, $\Delta C_{m;n-1}$ is the difference between the value of the adjusted control signal when the parameter was equal to the desired value and C_{n-1}, and k is a constant.

4,514,673

STEPPER MOTOR CONTROLLER

Adrian Sfarti, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 23, 1983, Ser. No. 564,979
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—685 **12 Claims**



1. A slave microprocessor stepper motor controller, for use in conjunction with a main computer having vectored interrupt capability and including main address and data terminals, a main interrupt terminal and a main control terminal, the slave microprocessor comprising:

a stepper motor output terminal;

a slave data terminal;

a slave control terminal;

a slave select/enable terminal;

said slave microprocessor arranged and adapted to produce and transmit an accept interrupt signal at an accept interrupt terminal for transmission to said main interrupt terminal to alert the main computer that said slave microprocessor is ready to accept information through said slave data terminal, said slave microprocessor generating a slave microprocessor identifier message at said slave data terminal substantially simultaneously with production of said accept interrupt signal to identify the slave microprocessor that generated said accept interrupt signal, and said slave microprocessor also generating a signal which combines with an interrupt acknowledge signal from said main computer such that said slave microprocessor is selected to send said identifier message to said main computer;

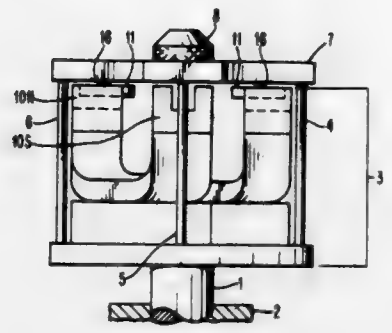
whereby at said substantially simultaneous generation of said identifier message and said accept interrupt signal by said slave microprocessor, said main computer can receive address information identifying the slave microprocessor sending the accept interrupt signal so that polling of a number of slave microprocessors is not required, and so that the use of a separate interrupt controller is not required.

4,514,674

ELECTROMAGNETIC X-Y-THETA PRECISION POSITIONER

Ralph L. Hollis, Jr., Yorktown Heights, and Bela L. Musits, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,630
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—687 **5 Claims**



1. A precision X-Y-Theta positioner characterized by

(a) stator means establishing a reference plane having a beacon reference point;

(b) armature means establishing an armature plane having a reference point, said armature means and said stator means together forming motor means;

(c) armature support means, forming with said armature a spring colonnade basket support of flexure columns establishing said armature in space with freedom of motion in X, Y and Theta directions about the reference point in the armature plane;

(d) armature position and angle sensing means, mounted on said armature and said stator means, for sensing the position and angle of said armature;

(e) control computer means;

(f) feedback means connecting said armature position and angle sensing means to said control computer means;

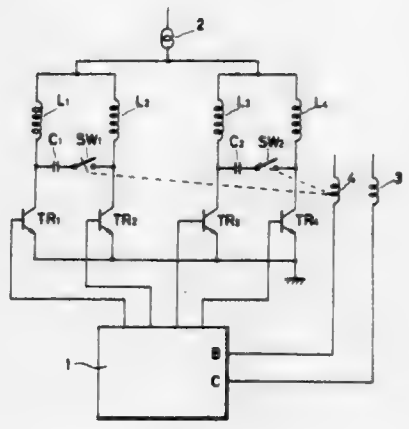
(g) motor control servo means connecting said control computer means and said motor means operatively so as to provide motive power to said armature in response to programmed desired position and angle data and position and angle sensing signals from said position and angle sensing means via said feedback means.

4,514,675

ELECTRONIC DAMPER FOR PULSE MOTOR

Hiroaki Matumoto, and Hiroshi Sekiguchi, both of Tokyo, Japan, assignors to Kanars Data Corporation, Japan

Filed Jan. 14, 1983, Ser. No. 457,890
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **7 Claims**



1. An electronic damper for a single phase excitation type pulse motor having a natural resonance frequency, including

pairs of opposed windings for generating electromotive forces of opposite polarity due to movement of said rotor, comprising capacitor and switch means coupled in series between said pairs of opposed windings, for completing, after termination of an output pulse to said pulse motor, a series resonant circuit comprised of said capacitor and said pairs of windings, wherein said series resonant circuit resonant frequency is selected from the range of one-half to twice said motor resonance frequency.

4,514,676

METHOD AND DEVICE FOR CONTROLLING A BIDIRECTIONAL STEPPING MOTOR

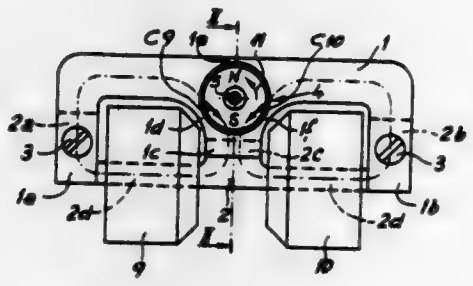
Rémy Grandjean, Fontainemelon, and Yves Guérin, Granges, both of Switzerland, assignors to ETA S.A., Fabriques d'Ebauches, Granges, Switzerland

Filed Feb. 14, 1983, Ser. No. 466,392

Claims priority, application Switzerland, Feb. 15, 1982, 918/82

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **16 Claims**



1. A method for controlling a bi-directional stepping motor including a stator comprising an armature which has first, second and third pole faces defining therebetween a substantially cylindrical space and further comprising first and second magnetic circuits connecting the first pole face to the second pole face and the first pole face respectively, to the third pole face, the stator further comprising first and second windings which are magnetically coupled to the first and second magnetic circuits, respectively, and the motor further including a rotor comprising a permanent magnet mounted rotatably in said space, comprising applying to the first winding first current pulses of alternate directions to cause the rotor to rotate in a first direction, and applying to the second winding second current pulses of alternate directions to cause the rotor to rotate in a second direction, no current being applied to the second winding during the first pulses and no current being applied to the first winding during the second pulses.

4,514,677

TWO STAGE ELECTRICAL BRAKING FOR A VARIABLE SPEED AC INDUCTION MOTOR

George A. Kaufman, III, and Mark J. Kocher, both of Charlottesville, Va., assignors to General Electric Company, Charlottesville, Va.

Filed Jun. 15, 1983, Ser. No. 504,486

Int. Cl.³ H02P *3/24*

U.S. Cl. 318—759 **2 Claims**

1. A two-stage electrical braking system for a variable speed alternating current induction motor powered from a variable voltage, variable frequency power source, the system comprising:

a capacitor;

capacitor connecting means for selectively connecting said capacitor across a primary winding of the motor, said connecting means comprising a first pair of normally closed contact sets and a second pair of normally open contact sets;

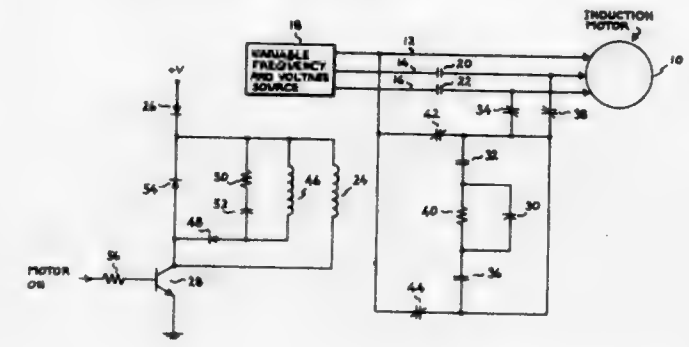
means for connecting one set of said first pair of contact sets in series with one set of said second pair of contact sets between one terminal of said capacitor and a terminal of the motor,

means for connecting another set of said first pair of contact sets in series with another set of said second contact sets between another terminal of said capacitor and another terminal of the motor;

control means including a first actuating means for controlling the operation of said first pair of contact sets and a second actuating means for controlling the operation of said second pair of contact sets, said first actuating means being responsive to the interruption of power thereto for causing said first pair of contact sets to revert to their normally closed state whereby said capacitor is connected in parallel with the motor primary winding, and said second actuating means being responsive to the interruption of power thereto for initiating a predetermined time delay period and for causing, at the expiration of said time delay period, operation of said second pair of contact sets whereby said capacitor is disconnected from the motor;

a third pair of normally open contact sets operable by said first actuating means for connecting the motor to the power source when power is applied thereto, said third contact sets being effective to disconnect the motor from the power source when said capacitor is connected to the motor primary winding; and

a fourth pair of normally closed contact sets, said fourth pair of contact sets being arranged for normally short circuiting the motor primary winding, said second actuating means permitting said fourth contact sets to revert to their normally closed states when said capacitor is disconnected from the motor at the expiration of said time delay period.



4,514,678

DIGITAL CONTROL DEVICE FOR AN INVERSE RECTIFIER

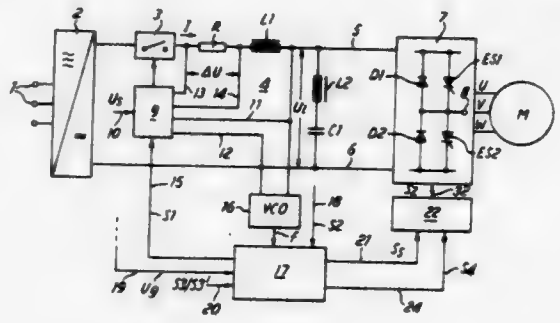
Kjeld Kückelhahn, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 28, 1984, Ser. No. 594,254

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313120

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—807 **14 Claims**



1. A digital control device for an inverse rectifier having controllable switching elements for driving an A.C. motor operable at a variable frequency, comprising, (a) pulse genera-

tor means for producing timing pulses at a multiple of the frequency of said inverse rectifier, said pulse generator means including divider means, a (location) counter controlled by said timing pulses, a control store having at least two storage zones occupied by different control tables having control data for generating periodically changing signal patterns for the ignition and extinction signals for said controllable switching elements, table selecting apparatus responsive to setting and operating parameters for effecting the switching between two control tables of said control store for each one of said parameters, synchronizing means for clocking said table setting apparatus to effect switching of said tables only on the completion of the signal pattern generated by the related table, said table selecting apparatus including a detector of the frequency of said inverse rectifier and operating to deliver a first selecting signal below a predetermined frequency and a second selecting signal above said frequency, said synchronizing means being operative to set the modulo for said divider means depending on said predetermined frequency and being operative to reset said counter every time the locations of an actual control table are run through, said second selecting signal operating to activate a control table having a lower number of memory locations than for the first selecting signal and a corresponding reduction of said timing pulses.

4,514,679

SECONDARY SWITCH CONTROLLER CIRCUIT FOR POWER SUPPLY

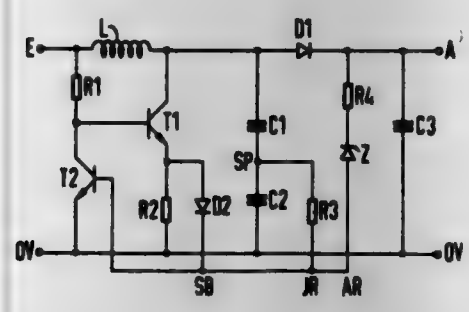
Rudolf Schierjott, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,417

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213869

Int. Cl.³ G05F *1/64*; H02P *13/32*

U.S. Cl. 323—222 **6 Claims**



1. In a seconday switch controller having an input circuit with an inductance and a semiconductor switch element and an output circuit with a rectifier and a smoothing element, the combination comprising; an internal control loop connected to said inductance and responsive to the voltage at said inductance for producing a first signal, an external control loop connected to said output circuit and responsive to the voltage at said rectifier for producing a second signal, and a current limit circuit connected to said input circuit and responsive to the current therethrough for producing a third signal, said internal control loop comprising a capacitive voltage divider including two capacitors in series with a tap there between said current limit circuit having a first semiconductor control element connected to said semiconductor switch element, and including a diode connecting said first semiconductor control element to said semiconductor switch element, means for connecting said first semiconductor control element to said capacitive voltage divider, and means for connecting said semiconductor control element to said external control loop.

4,514,680

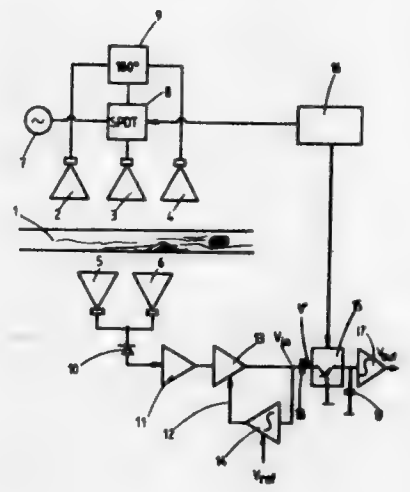
FLAW DETECTION SYSTEM USING MICROWAVES

Sakari Heikkilä, and Martti Tiuri, both of Espoo, Finland, assignors to A.Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Jan. 28, 1983, Ser. No. 461,697

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58.5 A **6 Claims**



1. Apparatus for detecting knots in lumber moving in relation to said apparatus, comprising:

first and second transmitting aerials positioned to transmit microwave radiation with 180° phase shift between them to one side of the lumber,

a third transmitting aerial disposed between and in line with the first and the second transmitting aerials,

a control unit for connecting a microwave generator at regular intervals simultaneously to both of the first and second aerials and to the third transmitting aerial at different intervals with the same regularity and between the transmission intervals to none of said transmitting aerials.

at least one receiving aerial positioned to receive the radiation passed through the lumber,

a detector for measuring the received radiation,

a loop containing an automatic gain control amplifier and an integrator for adjusting the level of the signals from said detector in such a way that the mean value of the signals equals an interval stabilized reference value, and

a zero set and sampling switch controlled by said control unit for causing only the signals originating from the first and second transmitter aerials to pass through and in its zero position when no aerial is radiating to restore the signal level to zero.

4,514,681

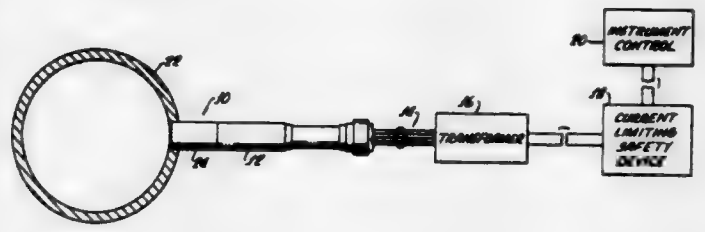
FLUSH ELECTRICAL RESISTANCE CORROSION PROBE

Charles M. Finley, and Clifford G. Moore, both of Arcadia, Calif., assignors to Rohrback Corporation, Santa Fe Springs, Calif.

Continuation-in-part of Ser. No. 447,611, Dec. 7, 1982, abandoned. This application Apr. 18, 1983, Ser. No. 486,108

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—65 CR **16 Claims**



1. A flush electrical resistance corrosion probe comprising

an elongated tubular probe body having an outer wall and an open forward end,

an electrically conductive corrosion test membrane extending across and sealing said open end, said test membrane having a thickness considerably less than the thickness of said probe body wall,

a reference element mounted within said probe body,

means for measuring resistance of said test membrane including first and second electrical conductors connected to first and second points on said test element, and

a thermally conductive and electrically nonconductive support material in said probe body in supportive contact with said test membrane.

4,514,682

SECONDARY ELECTRON SPECTROMETER FOR MEASURING VOLTAGES ON A SAMPLE UTILIZING AN ELECTRON PROBE

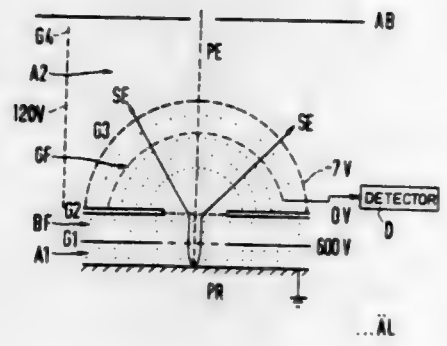
Hans-Peter Feuerbaum, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,542

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138929

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—71.3 **1 Claim**



1. A secondary electron spectrometer for detecting the energy distribution of secondary electrons from a measuring point on a sample independent of the angular distribution of said secondary electrons, said spectrometer inclucing an electron detector and comprising in sequence between said sample and said detector;

an extraction electrode generating an extraction field for accelerating said secondary electrons from said sample;

a deceleration electrode generating a deceleration field for decelerating said secondary electrons after passing through said extraction field;

a hemispherically symmetrical electrode generating another deceleration field for further decelerating said secondary electrons, said hemispherically symmetrical electrode isotropically decelerating said secondary electrons; and

an acceleration electrode generating another extraction field for accelerating said secondary electrons toward said detector.

4,514,683

TAMPER INDICATING AND THEFT PREVENTING ELECTRICAL METER

Richard L. Deibert, 24404 Attwood Ave., Sunnymead, Calif. 92388, and Gary L. Mikeal, 35375 Fir St., Yucaipa, Calif. 92399

Filed Sep. 30, 1982, Ser. No. 431,814

Int. Cl.³ G01R *1/00*

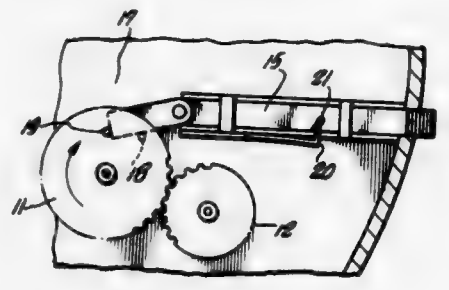
U.S. Cl. 324—110 **15 Claims**

1. A watt-hour meter that measures the flow of electricity in a pair of line conductors, said meter comprising:

(a) means for electrically connecting said meter to said line conductors in an upright position or in an inverted position;

(b) winding means responsive to the flow of electricity in the line conductors;

(c) metering movement responsive to the movement in the winding means, the metering movement rotating in a forward direction when the meter is upright and the metering movement rotating in a reverse direction when the meter is inverted;



(d) flagging means that is actuated by the metering movement rotating in a reverse direction; and

(e) gravity responsive stop element that prevents the reverse rotation of the metering movement, once the flagging means is actuated.

4,514,684

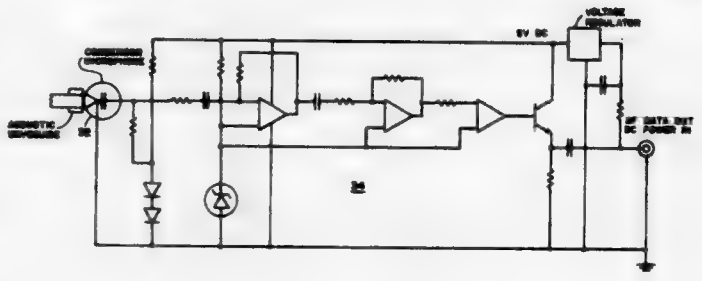
ACOUSTIC WAVEGUIDE VOLTAGE MONITOR

Kenton L. Haynes; William P. Sherer, both of Huntsville; Hugh W. Greene, Somerville; James D. Holder, and Thomas G. Roberts, both of Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 27, 1982, Ser. No. 423,973

Int. Cl.³ G01R *19/18*

U.S. Cl. 324—120 **1 Claim**



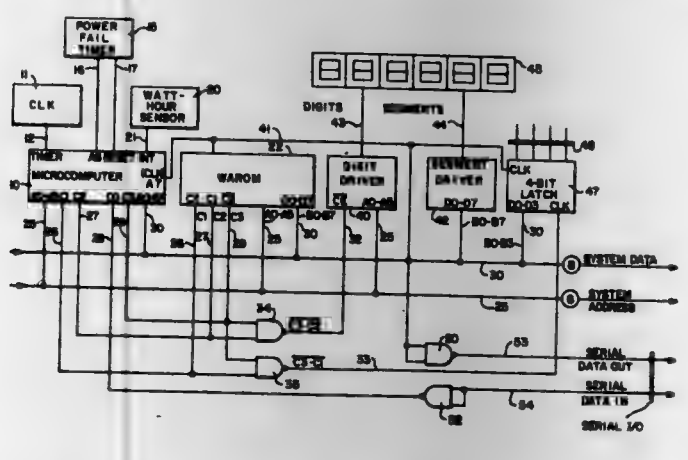
1. A measurement system in which the voltage to be measured may suddenly rise in potential to the multimegavolt level from a relatively low initial voltage level; a voltage controlled oscillator having an input connected to the voltage to be measured; the output of the voltage controlled oscillator being a frequency which is proportional to the voltage to be measured; an acoustical transmitter having an input connected to the output of the oscillator and having an output which has an acoustical signal thereon; an acoustical waveguide connected to the output of said acoustical transmitter **50** as to electrically isolate and transmit the acoustical signal to a remote location; a measuring device connected to said acoustical waveguide so as to convert the acoustical signal back to a representation of the voltage to be measured; a power system connected to the voltage control oscillator; and both the power system and the voltage control oscillator being located in the environment of the voltage to be measured.

4,514,685

INTEGRATING CIRCUIT FOR USE WITH HALL EFFECT SENSORS HAVING OFFSET COMPENSATION MEANS

Clyde Gilker, South Milwaukee, Wis., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 27, 1981, Ser. No. 287,250
Int. Cl.[3] G01R *21/08, 19/16, 1/02*
U.S. Cl. 324—142 5 Claims



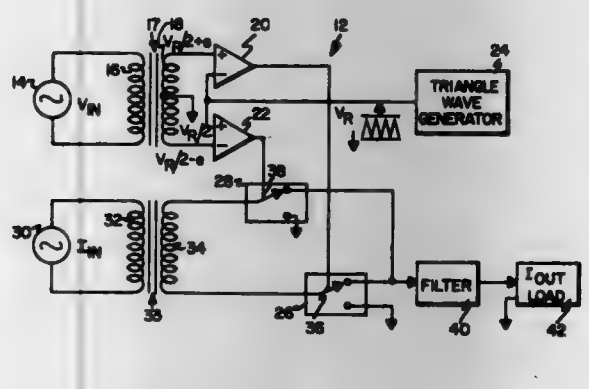
1. In an electronic watt-hour meter, an integrating circuit comprising Hall effect sensor means for sensing watt-hour consumption and for generating a first control signal corresponding to said watt-hour consumption, means for integrating said first control signal, means for generating a second control signal when the integrated signal exceeds a predetermined value, and wherein said Hall effect sensor means include a first and second bridge circuit, said first bridge circuit connected to invert said watt-hour consumption signals for connection to said Hall effect sensor means, said second bridge circuit connected to receive the output of said Hall effect sensor means for inverting said output and for cancelling DC offset voltage signals from said Hall effect sensor means.

4,514,686

POWER TRANSDUCER

Glenn A. Mayfield, West Lafayette, Ind., assignor to Duncan Electric Company, Inc., Lafayette, Ind.

Filed Aug. 31, 1981, Ser. No. 297,559
Int. Cl.[3] G01R *21/06*
U.S. Cl. 324—142 18 Claims



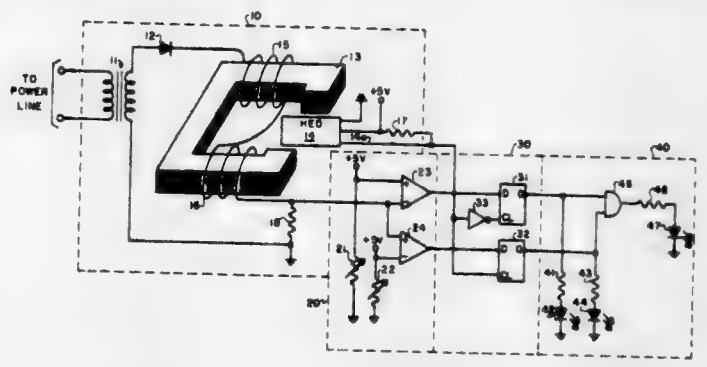
1. A power transducer, comprising:
input means adapted to receive a current input and a voltage input from a power source to be monitored and providing separate outputs one of which is proportional to the instantaneous current of said power source and the other of which is proportional to the instantaneous voltage of said power source;
dual multiplier means having a first portion connected with said input means to receive one of said outputs therefrom, and a second portion connected with said input means to receive the other of said outputs therefrom and responsive thereto providing dual control outputs to said first portion so that said first portion, provides dual pulse width modulated output signals indicative of the instantaneous current and voltage of said monitored power source; and
output means connected with said dual multiplier means to receive said pulse width modulated output signals therefrom and responsive thereto providing an output accurately indicative of the instantaneous power of said monitored power source.

4,514,687

HALL EFFECT DEVICE TEST CIRCUIT

Hendrik W. Van Husen, Glen Ellyn, Ill., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Jul. 7, 1982, Ser. No. 396,177
Int. Cl.[3] G01R *31/00, 33/12*
U.S. Cl. 324—158 R 15 Claims



1. A Hall effect device test circuit for use in a test system including a power signal source, said test circuit comprising:
magnetic field means connected to said power signal source, operated in response to said power signal to periodically provide a magnetic field of varying intensity;
voltage reference means connected to said power source, operated in response to said power signal to periodically provide a sample voltage of varying magnitude and proportional to the intensity of said magnetic field;
a Hall effect device connected in magnetic field proximity to said magnetic field means, operated in response to each magnetic field of a first predetermined intensity to provide an operate signal, and operated in response to each magnetic field of a second predetermined intensity to provide a release signal;
comparison means connected to said voltage reference means operated in response to said sample voltage having a magnitude less than a first predetermined threshold to provide a first comparison signal and further operated in response to said sample voltage having a magnitude greater than a second predetermined threshold to provide a second comparison signal;
storage means connected to said comparison means and said Hall effect device, operated in response to each operate signal and said first comparison signal to provide a first storage signal and further operated in response to each release signal and said second comparison signal to provide a second storage signal; and
signaling means connected to said storage means, operated in response to said first storage signal to provide a first status signal and further operated in response to said second storage signal to provide a second status signal.

4,514,688

DIGITAL TABLET SYSTEM WITH CALIBRATION MEANS

Albert L. Whetstone, Stratford, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.

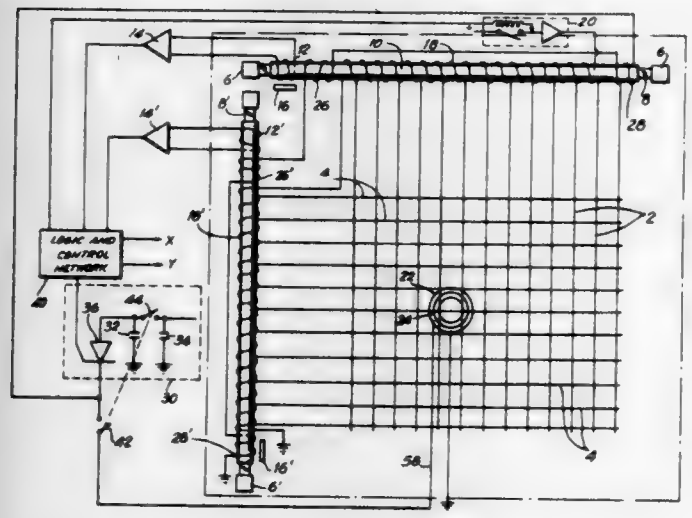
Filed Jun. 23, 1980, Ser. No. 162,311
Int. Cl.[3] G01B *7/14;* G08C *21/00*
U.S. Cl. 324—208 21 Claims

1. An automatic coordinate determining device comprising:
a tablet having a grid of parallel spaced electrical conduc-

tors, and a magnetostrictive element with an axis transverse to said conductors,

a pointer movable over a surface of said tablet and including a flux producing element inductively coupled to at least one of said parallel conductors,

means for energizing said flux producing element to induce an electrical current in said one conductor, said current in turn inducing a first strain wave in said magnetostrictive element at a region adjacent said one conductor, said strain wave being propagated along said axis, and first reference signal generating means for introducing a second strain wave at a first reference position along said axis at a determined time relative to the energizing of said flux producing element, and



a timer responsive to the arrival of said first and second strain waves at a second predetermined reference position along said axis for producing a coordinate output signal having a characteristic indicative of the position of said pointer on said tablet, and

second reference signal generating means inductively coupled to said magnetostrictive element at a third predetermined position therealong for inducing a third strain wave in said magnetostrictive element.

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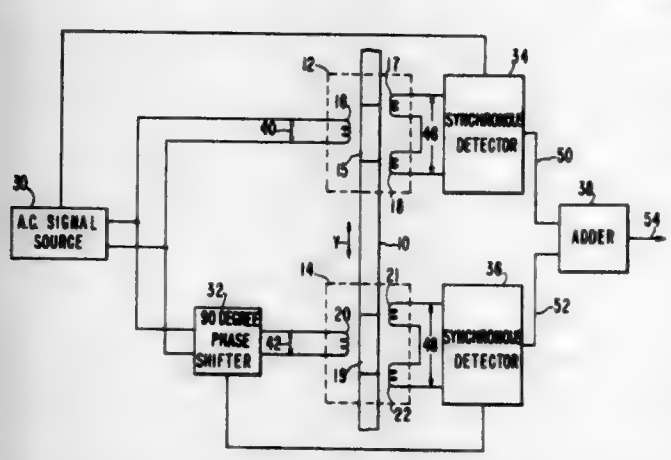
HIGH RESOLUTION POSITION SENSING APPARATUS WITH LINEAR VARIABLE DIFFERENTIAL TRANSFORMERS HAVING PHASE-SHIFTED ENERGIZING SIGNALS

William A. Gerard, Andover, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 27, 1982, Ser. No. 453,418

Int. Cl.³ G01B *7/14;* **H01F** *21/06;* **G08C** *19/08;* **G01R** *33/00*

U.S. Cl. 324—208 **9 Claims**



1. Apparatus for sensing the position of a movable member, comprising:

a plurality of position transducer means each comprising a magnetic core coupled to said movable member, a primary coil and two series-connected secondary coils;

input means for providing an energizing signal to said primary coil of each transducer means, said energizing signals having the same frequency but having differing relative phases and being operative to induce in said secondary coils secondary voltages of differing relative phases; and

output means for detecting the peak value and polarity of each half cycle of said secondary voltages of differing phases and providing a composite output signal representative of said peak values and polarities, said output signal indicating the position of said movable member at a rate of n times the frequency of said energizing signal where n is the number of said transducer means.

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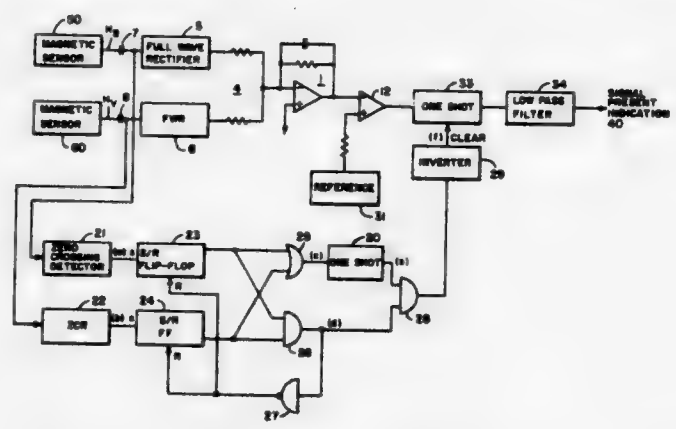
POWER LINE FIELD INTERFERENCE REJECTION FOR MAGNETIC SENSORS

Walter E. Miller, Jr., and James W. McKelvy, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 18, 1981, Ser. No. 303,453

Int. Cl.³ G01R *33/00;* **H03K** *5/00*

U.S. Cl. 324—225 **5 Claims**



1. A target detector system comprising first and second sensors having first and second outputs respectively; first and second output signals appearing respectively on said outputs upon detection of the target; said first and second output signals having a near quadrature time relationship to each other; large unwanted ac interference output signals being periodically generated by said sensors; said interference output signals on the first and second outputs of said first and second sensors being in-phase or 180° out-of-phase with relationship to each other; first and second zero crossing detectors connected respectively to said first and second sensors for producing an output upon detecting a zero crossing of any signal from said sensors; a first circuit connected to the outputs of said first and second zero crossing detector; said first circuit having a first circuit output signal when said first and second zero crossing detectors have outputs which are simultaneous or are in a close time relationship to each other relative to the quadrature time relationship of the first and second output signals produced by the detection of a target; said first circuit not having a first circuit output signal when said zero crossing detectors have outputs which are delayed with respect to each other in a time relationship close to the quadrature time relationship; a non-linear filter connected to the outputs of said first and second sensors such that the interference output signal will be doubled in frequency while reducing the frequency of the first and second output signals having quadrature time relationship; a low pass filter connected to an output of said non-linear filter such that most of the unwanted interference output signals will be blocked from passing through said low pass filter; a second circuit connected to an output of said low pass filter, the output of said first circuit being connected to said second circuit such that said second circuit will not pass any signal from said low

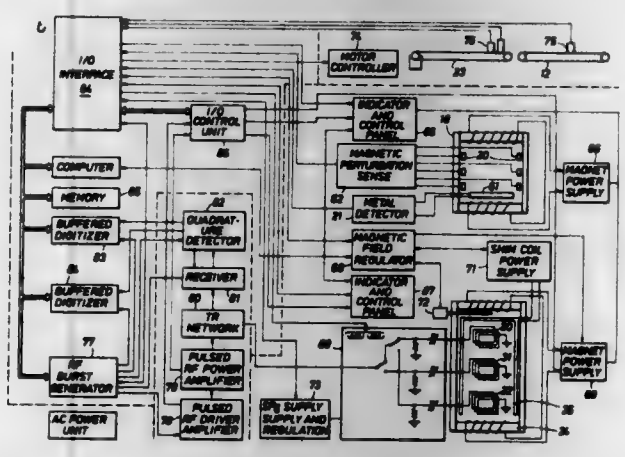
pass filter when said first circuit has an output signal; and said second circuit passing a signal from said low pass filter when said first circuit does not have an output signal; and said output of said second circuit being an indication of a detection of the target.

4,514,691

BAGGAGE INSPECTION APPARATUS AND METHOD FOR DETERMINING PRESENCES OF EXPLOSIVES

Armando De Los Santos; James D. King; William L. Rollwitz; George A. Matzkanin, all of San Antonio, Tex., and Phillip A. Hornung, Fremont, Calif., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 15, 1983, Ser. No. 485,220
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—301 **26 Claims**



1. Apparatus for conducting baggage inspection for explosives characterized by having a relatively long T_1 and relatively short T_2, the apparatus comprising:

(a) a conveyor system for receiving and moving a bag thereon, the bag to be investigated for explosives above a certain quantity therein;

(b) magnet means for forming lines of flux across the path of said conveyor system to intercept baggage thereon for polarizing hydrogen nuclei in the materials of the bag and its contents;

(c) coil means for forming a right angle field to the field formed by said magnet at a selected RF frequency for an interval;

(d) particle resonance detection circuit means connected to said coil means for determining a signal from materials within the baggage;

(e) circuit means connected to said detection means for detecting signals from hydrogen in materials having a long T_1 and short T_2;

(f) wherein said coil means is comprised of serially located separately connected multiple coils, the coils being separate to inspect different volumes of space along said conveyor system;

(g) capacitor means for said coils to form separate tank circuits for each of said coils;

(h) switch means connected to said tank circuits for selectively energizing first one and then a second of said tank circuits;

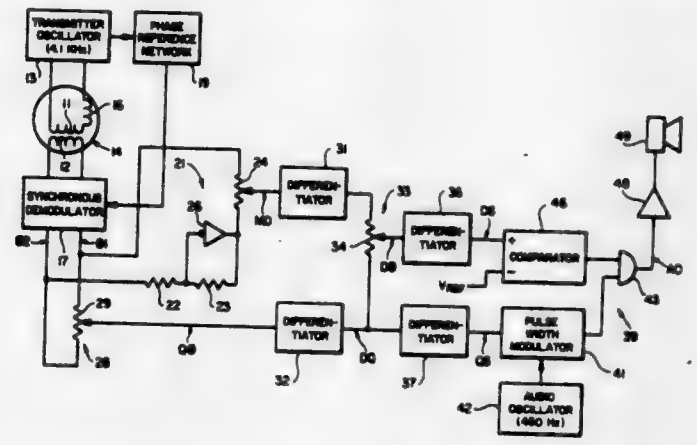
(i) pulsed RF power amplifier means for forming a pulse of specified frequency and duration to be transmitted from said coil means wherein the output thereof is applied through said switch means.

4,514,692

METAL DETECTOR AND DISCRIMINATOR USING DIFFERENTIATION FOR BACKGROUND SIGNAL SUPPRESSION

David E. Johnson, Los Banos, and Richard W. Williams, Dos Palos, both of Calif., assignors to FRL, Inc., Los Banos, Calif.

Filed May 3, 1982, Ser. No. 373,900
Int. Cl.³ G01V *3/11*
U.S. Cl. 324—329 **12 Claims**



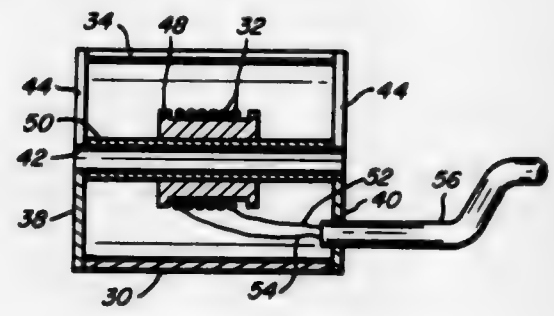
1. In apparatus for locating a metal object: transmitting means and receiving means adapted for movement relative to the metal object, means for energizing the transmitting means to produce a signal in the receiving means which changes as the receiving means is moved in proximity to the metal object, means for demodulating the received signal to provide a signal which varies in accordance with the received signal, differentiator means responsive to the demodulated signal for providing a signal which corresponds to the second derivative of the demodulated signal and has a single peak which occurs while the receiving means is passing over the metal object, and means responsive to the second derivative signal for providing an output indication when the receiving means is positioned directly over the metal object.

4,514,693

DIELECTRIC WELL LOGGING SYSTEM WITH ELECTROSTATICALLY SHIELDED COILS

Richard A. Meador, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 864,351, Dec. 27, 1977, abandoned. This application Oct. 17, 1979, Ser. No. 85,613
Int. Cl.³ G01V *3/28*; H01F *15/04*
U.S. Cl. 324—338 **3 Claims**



1. An electrostatically shielded receiver coil system for a dielectric well logging system, comprising:

(a) a cylindrical metallic shield member;

(b) a radio frequency dielectric well logging receiver comprising a cylindrically wound wire coil wound on a spool member;

(c) said cylindrical metallic shield member having a gap formed along its length for reducing eddy current flow therein;

(d) end metallic shield closure plate members mounted at

opposite ends of said cylindrical shield member for closing the ends of same and enclosing said coil in said cylindrical shield member;

(e) a tubular support rod mounted extending between said end shield members;

(f) said support rod having said spool member mounted thereon;

(g) said support rod further serving as a shield for said coil; and

(h) each of said end metallic shield closure plate members having a slot formed therein extending radially outwardly from a center portion thereof to an outer edge thereof, said slots being formed in alignment with said gap in said cylindrical member.

4,514,694

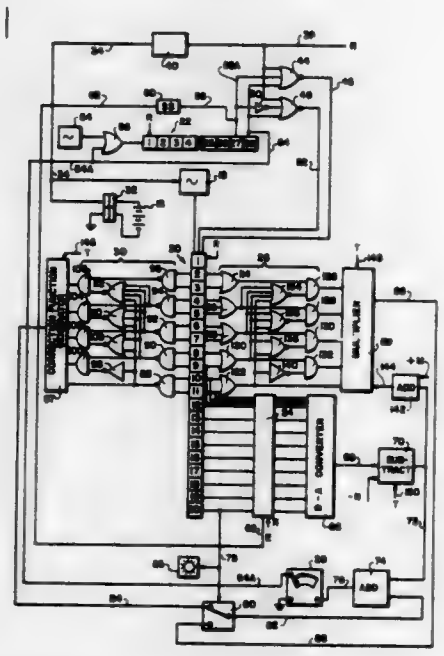
QUIESCENT BATTERY TESTING METHOD AND APPARATUS

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Mt. Kisco, N.Y.

Continuation-in-part of Ser. No. 286,271, Jul. 23, 1981, Pat. No. 4,460,870. This application Jul. 23, 1982, Ser. No. 401,383

Int. Cl.³ G01N *27/46*

U.S. Cl. 324—429 **32 Claims**



19. Apparatus for testing a quiescent battery for determining the state of charge of that battery comprising means for taking battery terminal voltage measurements, means for storing a first battery terminal voltage measurement, means for comparing a second battery terminal voltage measurement taken at a subsequent time with said first battery terminal voltage measurement and operable to determine the direction of voltage change of said second voltage measurement from said stored first voltage measurement and to generate at least one signal indicating the direction of voltage change, and visual indicating means connected to said comparison means to receive said direction of voltage change signal for providing a visual indication of the direction of voltage change as an indication as to whether the battery was last subjected to charge or discharge.

4,514,695

POCKET BATTERY TESTER

Chester P. K. Lau, 1550 Wilder Ave., Apartment - 805-A, Honolulu, Hi. 96822

Filed Sep. 3, 1982, Ser. No. 414,553

Int. Cl.³ G01N *27/46*

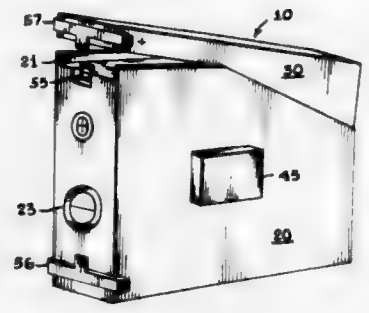
U.S. Cl. 324—437 **2 Claims**

1. An improved battery testing device consisting of:

a two piece housing comprising a upper casing, and a bottom casing, pivotally connected to another,

testing circuitry contained within the housing,

a first and second extensible contact elements, slideably disposed in respective casings, and operatively connected by leads to opposite ends of said testing circuitry; wherein the bottom casing is further provided with a pair of apertures containing third and fourth contact elements, which



are dimensioned to engage the post and receptacle terminals of a battery, and are connected by leads to opposite ends of the testing circuitry, and the bottom casing is further provided with a fifth contact element, connected to one of the said opposite sides of said testing circuitry.

4,514,696

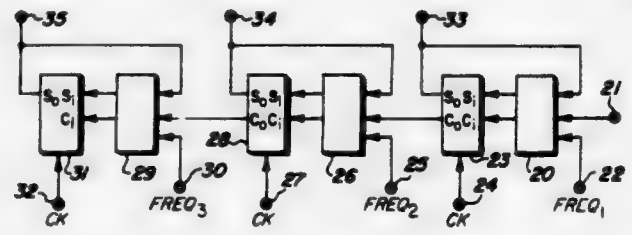
NUMERICALLY CONTROLLED OSCILLATOR

Thad J. Genrich, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,371

Int. Cl.³ H03B *27/00*; H03J *7/06*

U.S. Cl. 328—14 **8 Claims**



1. A numerically controlled oscillator comprising:

means for providing an input indicative of a frequency;

a plurality of adding units, each adding unit comprising a one bit adder having a first input, having a second input, and having a third input, said third input being coupled to said means for providing an input indicative of a frequency, having a sum output, and having a carry output and a register having a clock input, having a first input coupled to said sum output of said adder, having a second input coupled to said carry output of said adder, having a sum output coupled to said first input of said adder and having a carry output;

said adding units being coupled in series with a first unit in said series having said second input of said adder tied to a source of a logic level signal and with each consecutive unit having a second input of an adder coupled to a carry output of a register in a previous unit in said series; and

means for providing an output coupled to each of said sum outputs of each of said registers.

4,514,697

COHERENT PHASE SHIFT KEYED DEMODULATOR WITH IMPROVED SAMPLING APPARATUS AND METHOD

Theodore H. York, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1983, Ser. No. 465,231

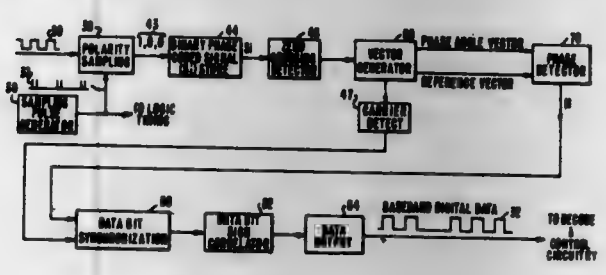
Int. Cl.³ H04L *27/22*

U.S. Cl. 329—104 **11 Claims**

7. A coherent phase demodulator for a carrier signal modulated with digital data by a phase reversal keyed modulation process, comprising:

means for sampling the instantaneous polarity of said carrier

signal, the sampling rate of said sampling means being variable, said sampling means being configured to sample said instantaneous polarity in bursts wherein samples within each of said bursts are separated by a time interval generally equal to 1/m cycles of said carrier signal and the first sample of each of said bursts is separated from the last sample of the previous burst by a time interval equal to N+1/m cycles of said carrier signal, N and m being non-zero integers;



means connected to said sampling means for deriving a phase reference signal representative of the nominal phase of said carrier signal;

means connected to said sampling means for deriving a phase angle signal representative of the present phase of said carrier signal; and

means for comparing said phase reference signal and said phase angle signal to recover said digital data.

4,514,698

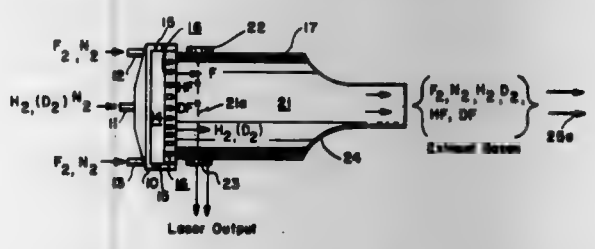
CHEMICAL LASER PUMP INCLUDING CRYOGENIC AND CONDENSING MEANS

Jack L. Blumenthal, Los Angeles County; John R. Ogren, Orange County; Eugene V. Rutkowski, and Marvin Appel, both of Los Angeles County, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 286,246, Sep. 5, 1972,. This application Apr. 11, 1980, Ser. No. 139,494

Int. Cl.³ H01S *3/095, 3/22*

U.S. Cl. 330—4.3 **8 Claims**



1. A chemical laser including a laser cavity, an exhaust, a pump for removing exhaust gases from the laser cavity at a rate and sufficiently low pressure to sustain lasing action and provide a closed system, the pump including a metal selected from the class consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, yttrium, scandium, elements 57–71 of the periodic table, lithium, sodium, potassium, rubidium, cesium, beryllium, palladium, magnesium, strontium, calcium, barium, boron, gallium and mixtures and alloys thereof;

the exhaust gases being selected from the class consisting of hydrogen, deuterium and their halides, the halogens, nitrogen, CO_2, oxygen and water vapor;

cryogenic adsorption means to remove nitrogen and CO_2; and

condensing means to remove the halides of hydrogen and deuterium and water vapor; the metal of said pump being adapted to react with oxygen, hydrogen, deuterium and the halogens to form solid reaction products therewith.

4,514,699

MICROWAVE POWER AMPLIFIER/COMBINER

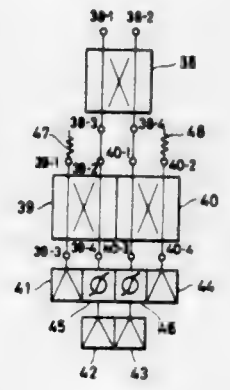
Kelichiro Kariatsumari, Inagi, and Kenji Hirai, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 21, 1982, Ser. No. 451,732

Claims priority, application Japan, Dec. 22, 1981, 56-207311

Int. Cl.³ H03F *3/60*

U.S. Cl. 330—53 **18 Claims**



1. A microwave power amplifier/combiner comprising:

a plurality of reflection type 2-amplifier combiner means each including a $\pi/2$ hybrid coupler, a $\pi/2$ phase shifter, first and second reflection amplifiers and a dummy load, said $\pi/2$ hybrid coupler having a first port to which said dummy load is connnection, a second port which is isolated from said first port and is used as an input/output port, a third port to which said first reflection amplifier is connected, and a fourth port to which said second reflection amplifier is connected via said $\pi/2$ phase shifter; and

combining means for combining the outputs of at least two of said plurality of reflection type 2-amplifier combiner means having an input port and an output port, both ports being isolated from each other, and said means for combining being connected to said respective input/output ports of said at least two reflection type 2-amplifier/combiner means.

4,514,700

OUTPUT AMPLIFIER FOR A TRANSMITTING TUBE

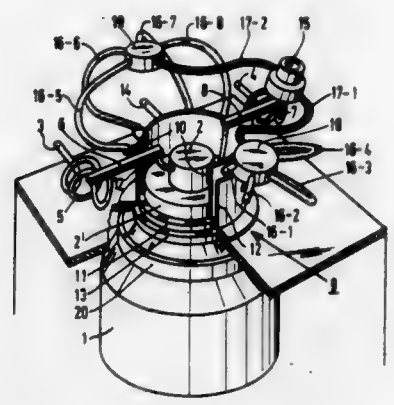
Harry Piepers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,857

Claims priority, application Netherlands, Feb. 18, 1982, 8200633

Int. Cl.³ H03F *3/60*

U.S. Cl. 330—56 **5 Claims**



1. In an output amplifier for a transmitting tube having an operating frequency in the band 40–400 MHz, said output amplifier including impedance transformation means for matching the input impedance of the transmitting tube to a predefined resistive output impedance of an apparatus for

applying to the output amplifier a signal to be amplified, said impedance transformation means comprising:

(a) a first impedance transformer including first and second coaxially-arranged cylindrical conductors, said first impedance transformer having an input end, having an output end electrically-connected to the transmitting tube, and being dimensioned such that the reactive component of its input impedance is substantially equal to zero;

(b) a second impedance transformer including n coaxial cables each having a length of approximately ¼ wavelength at the operating frequency, each cable having an input end and an output end, said output ends being electrically-connected to the input end of the first impedance transformer; and

(c) a third impedance transformer including m coaxial cables each having a length of approximately ¼ wavelength at the operating frequency, each cable having an input end and an output end, n/m being an integer defining a number of groups of the cables in the second impedance transformer, the output end of each cable in the third impedance transformer being electrically-connected to the input ends of a respective group of the cables in the second impedance transformer, and the input ends of the cables in the third impedance transformer being electrically-connected to an input for receiving the signal to be amplified.

4,514,701

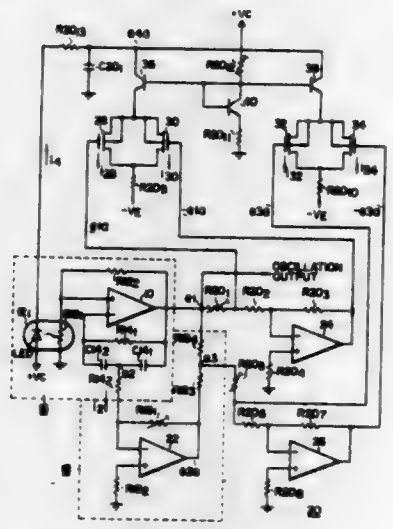
AUTOMATIC LEVEL CONTROL CIRCUIT

Kenji Machida, 3-3, Nishiogiminami 2, Suginami-ku, Tokyo 167, Japan

Division of Ser. No. 212,086 filed as PCT JP 78/00040, Dec. 5, 1978, published as WO 80/01224, Jun. 12, 1980, § 102(e) date Jun. 3, 1980, Pat. No. 4,430,627. This application Apr. 4, 1983, Ser. No. 482,053

Int. Cl.³ H03G *3/20; 3/10*

U.S. Cl. 330—137 **9 Claims**



1. An automatic gain control circuit comprising:

first means (12) responsive to a control signal (e4, I4) for amplifying an imput signal (ei) with a given gain (eo/ei) to generate an output signal (eo) and providing an inner signal (e1) corresponding to said input signal (ei), said given gain (eo/ei) being varied in accordance with the magnitude of said control signal (e4, I4) and said inner signal (e1) having sine function;

second means (140, 18) coupled to said first means (12) for shifting the phase of said inner signal (e1) by a given amount and providing a phase-shifted signal (e3), the phase difference between said inner signal (e1) and said phase-shifted signal (e3) being substantially 90 degrees, and said phase-shifted signal (e3) having cosine functions which correspond to the sine functions of said inner signal (e1);

third means (20) coupled to said first and second means (12, 18) and being responsive to said inner signal (e1) and said phase-shifted signal (e3), for substantially squaring a first signal (±e1a in FIG. 2) corresponding to said inner signal (e1) and a second signal (±e1a in FIG. 2) corresponding to said phase-shifted signal (e3), and providing a sum signal (e4a in FIG. 2) corresponding to the sum of the squared first signal ($e1a^2$) and the squared second signal ($e3a^2$); and

fourth means ($C20_1$, $R20_{13}$ in FIG. 2) coupled to said first and third means (12, 20) for filtering-off the higher harmonic ripples (FIG. 4C) involved in said sum signal (e4a) to provide said control signal (e4, I4).

4,514,702

LOGARITHMIC ELECTRONIC GAIN CONTROL CIRCUIT

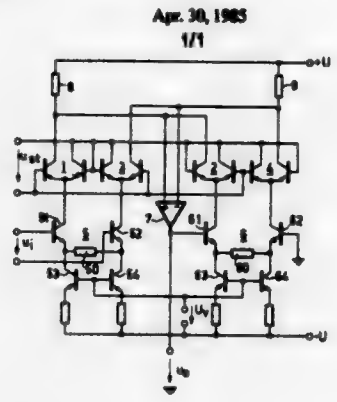
Urs Zogg, Regensdorf, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,345

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204217

Int. Cl.³ H03F *3/45;* H03G *3/30*

U.S. Cl. 330—254 **9 Claims**



4. An electronic gain-control arrangement composed of transistors of only one conductivity type and comprising two current distribution circuits each having first and second outputs, the output current ratio being controllable as an exponential function of the control voltage on their control inputs, a current control circuit, which supplies signal currents which are equal but in phase opposition to the inputs of the current distribution circuits and which controls their amplitude depending on the input signal of the arrangement such that the output currents on each one of the two outputs of the two current distribution circuits are proportional to the input signal and independent of the control voltage, and means for deriving the output signal of the arrangement from at least one of the output currents of the two other outputs of the current distribution circuits, which output currents are controlled in the same sense by the control voltage.

4,514,703

AUTOMATIC LEVEL CONTROL SYSTEM

John W. Maher, Woodstock, and Greg M. Townsend, Palatine, both of Ill., assignors to Motrola, Inc., Schaumburg, Ill.

Filed Dec. 20, 1982, Ser. No. 451,310

Int. Cl.³ H03G *3/30*

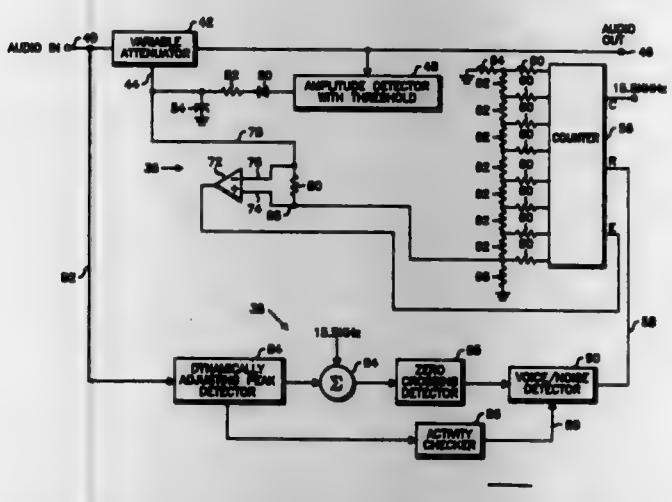
U.S. Cl. 330—279 **14 Claims**

1. In an automatic level control system receiving an input signal comprising voice and noise, having means for developing an AGC control signal, and having a variable gain circuit responsive to the control signal for varying the gain applied to the input signal, the improvement comprising:

peak detecting means for detecting, in the input signal, voice peaks which exceed a predetermined threshold while dynamically ignoring syllabic rate voice lulls which occur subsequent to a detected voice peak;

noise/voice sensing means receiving detected voice peaks from the peak detecting means for determining when voice signals are present and thereupon developing a first signal, and for developing a second signal in the absence of those detected voice peaks which signify the presence of voice; and

gain control means responsive to said first signal for permitting the AGC control voltage to vary to thereby modify the gain applied to incoming voice signals, and responsive to the second signal for preventing the value of the AGC



control signal from changing in a direction which increases the gain applied to the input signal, thereby preventing the generation of high amplitude noise signals or unintelligible voice signals.

4,514,704

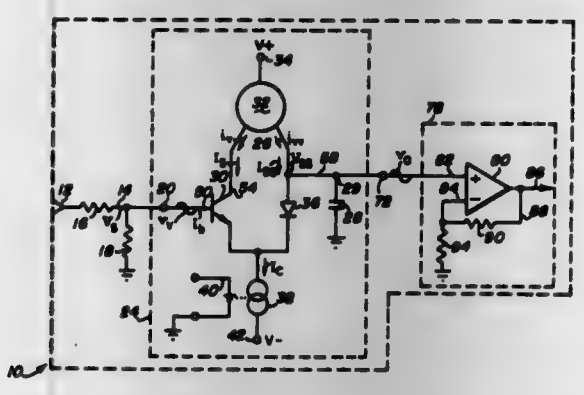
VARIABLE FILTER CIRCUIT

Douglas R. Curtis, 110 Highland Ave., Los Gatos, Calif. 95030

Filed Aug. 26, 1983, Ser. No. 526,911

Int. Cl.³ H03F *3/04*

U.S. Cl. 330-[illegible] Patent Apr. 30, 1985 **4,514,704 Claims**



1. A low-pass variable filter circuit comprising, in combination:

an input terminal means coupled to an input node;

a variable filter stage means connected to said input node for transmitting a time varying input signal below a cutoff frequency to an output of the variable filter stage means, said variable filter stage means comprising a transistor connected to said input node for providing a voltage-to-current conversion and a first static current, a variable dynamic resistance diode for developing an output signal and electrically connected to said transistor and being an element in a resistance diode-capacitance network;

a current mirror electrically connected to said transistor and said variable dynamic resistance diode for providing a second static current for flowing into said resistance diode-capacitance network;

a current source electrically connected to said transistor and said variable dynamic resistance diode for providing a control current dependent upon a control voltage, said control current for controlling the cutoff frequency;

a capacitor connected between said current mirror and said variable dynamic resistance diode of the variable filter stage means and a first external potential, said capacitor being an element in said resistance diode-capacitance network for filtering said output signal; and

an output node connected to said capacitor for receiving said output signal.

4,514,705

LOW-NOISE DIGITALLY TUNABLE PHASE-LOCKED LOOP FREQUENCY GENERATOR

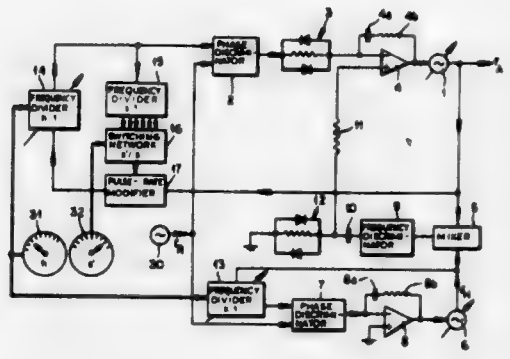
Peter Harzer, Eningen, Fed. Rep. of Germany, assignor to Wandel & Goltermann GmbH & Co. KG, Eningen, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,656

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046486

Int. Cl.³ H03L *7/08, 7/18*

U.S. Cl. 331—2 **13 Claims**



2. A method of suppressing noises in the output of a digitally tunable high-frequency oscillator whose output frequency f_A is controlled via a filter network by a phase discriminator receiving a relatively low comparison frequency from a reference source and a matching feedback frequency stepped down from said output frequency f_A, at least one of the frequencies fed to said phase discriminator being adjustable for varying said output frequency f_A in coarse and fine increments,

comprising the steps of:

generating an auxiliary frequency f_H of the same order of magnitude as said output frequency f_A;

modifying said auxiliary frequency f_H by the same coarse increments as said frequency f_A;

continuously producing a difference frequency $f_D=f_A-f_H$; and

feeding a corrective voltage dependent on said difference frequency f_D to a control input of said high-frequency oscillator over a path bypassing said filter network for suppressing noises due to phase differences occurring at said filter network and varying at frequencies beyond a limiting frequency of said filter network, said difference frequency f_D being used as said feedback frequency.

4,514,706

SECOND OR HIGHER ORDER PLL WITH INCREASED LOW AND MEDIUM FREQUENCY GAIN

William J. Thompson, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1982, Ser. No. 423,361

Int. Cl.³ H03L *7/06*

U.S. Cl. 331—16 **15 Claims**

8. A phase-locked loop providing an increased gain capability, comprising:

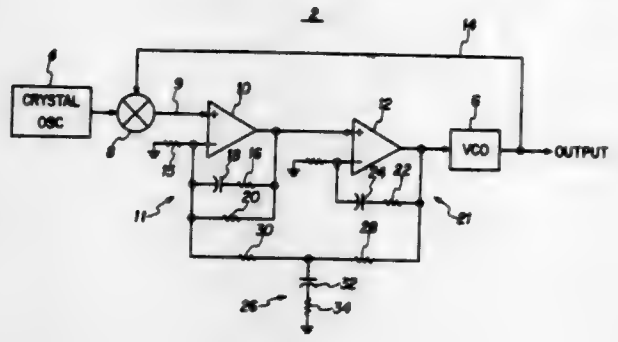
a reference oscillator,

a voltage controlled oscillator (VCO),

a phase detector for comparing the phases of the output signals of said reference oscillator and said VCO,

an amplifier circuit connected to form a signal path, including an amplifier, between the output of said phase detector and the input of the VCO, said amplifier having low

frequency-sensitive feedback means for reducing, at frequencies approaching DC, the gain of said amplifier



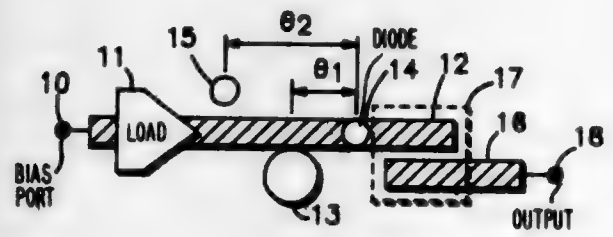
below its maximum gain, so as to prevent saturation of the amplifier at said frequencies approaching DC.

4,514,707

DIELECTRIC RESONATOR CONTROLLED PLANAR IMPATT DIODE OSCILLATOR

Michael Dydyk, Scottsdale, and Herbert W. Iwer, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 15, 1982, Ser. No. 388,762
Int. Cl.³ H03B *7/00*
U.S. Cl. 331—107 SL **17 Claims**



1. An oscillator comprising:
a bias port, being fixedly attached to receive a bias input of the oscillator;
a first transmission line coupled to said bias port;
an IMPATT diode fixedly attached to said first transmission line;
a frequency independent stabilizing load coupled to said first transmission line between said IMPATT diode and said bias port;
a plurality of resonance circuit means electro-magnetically coupled to said first transmission line between said IMPATT diode and said frequency independent stabilizing load; and
means for providing an output coupled to said IMPATT diode.

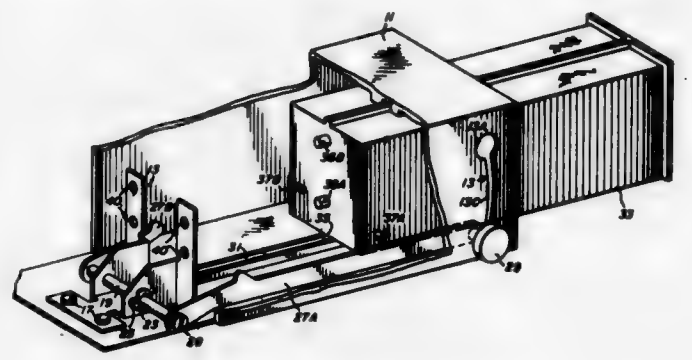
4,514,708

QUICK DISCONNECT WAVEGUIDE LOCKING MECHANISM

Gerald W. Ludtke, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1982, Ser. No. 352,629
Int. Cl.³ H01P *1/00*
U.S. Cl. 333—255 **4 Claims**

1. A mechanism for holding in locked, force multiplied engagement within a housing a communications module assembly and a waveguide assembly, said mechanism comprising:
first and second lever arms having first and second ends,
a mounting bracket secured to the housing and a pivot shaft having first and second ends secured to said mounting bracket,
said first end of said first lever arm mounted on said first end of said pivot shaft,
said first end of said second lever arm mounted on said second end of said pivot shaft,
locking means coupled to said first lever arm second end,
a channel in said housing for slidably retaining said locking means in the housing and allowing said locking means to move between first and second positions,
camming surfaces on said first and said second lever arms that are more proximate to said first end than to said second end of said first and second lever arms, and



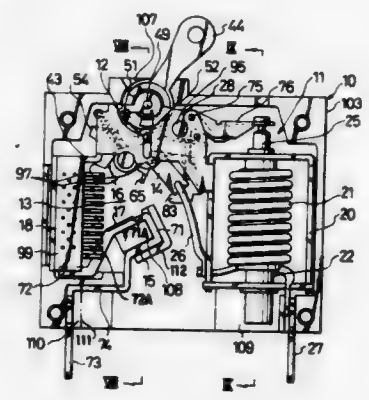
aligning pins mounted on the communications module assembly and engaging said camming surface on said first and said second lever arms when said locking means is moved from said first position to said second position,
whereby movement of said locking means from its first position to its second position causes said aligning pins to force the communications module assembly into a force multiplied engagement with the waveguide assembly.

4,514,709

CIRCUIT BREAKER

Kunimitsu Nakano; Takaaki Chuzawa, and Masaru Ohmuro, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

PCT No. PCT/JP83/00101, § 371 Date Jun. 23, 1983, § 102(e) Date Jun. 23, 1983, PCT Pub. No. WO83/03496, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 31, 1983, Ser. No. 518,300
Claims priority, application Japan, Mar. 31, 1982, 57-50914
Int. Cl.³ H01H *9/30*
U.S. Cl. 335—201 **5 Claims**



1. A circuit breaker comprising:
a casing,
a manually actuable contact opening and closing mechanism including
a handle rotatably mounted within said casing and projecting out of said casing,
a link member operably connected to said handle to be shifted between first and second positions in response to rotation of said handle, said link member being pivotable relative to said handle about a first pivot axis, and
trip means comprising a lever shiftable between:
a normal position in which said lever engages said link member when the latter is in said second position, and

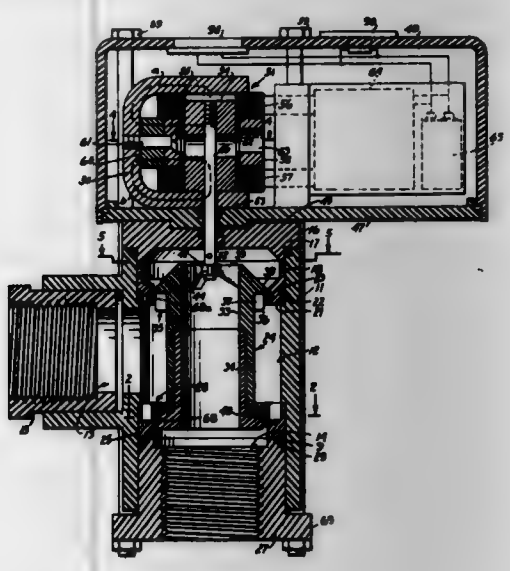
an abnormal position in which said lever is disengaged from said link member,
a movable contactor pivotably carried by said link member and including a movable contact,
a fixed contactor having a fixed contact arranged to be:
disengaged from said movable contact when said link member is in said first position, and
engaged by said movable contact when said link member is in said second position and is engaged by said lever,
an electromagnetic device including a coil which detects an overcurrent and means operably connected to said lever for responding to the sensing of an overcurrent to shift the lever to said abnormal position to release said lever from said link member when the latter is in said second position,
means for rotating said link member about said first pivot axis when said link member is in said second position and is released from said lever, whereby said movable contact is displaced in a path of travel to become disengaged from said fixed contact,
arc suppressing means disposed adjacent said fixed contact and including an interior recess coinciding with said path of travel of said movable contact such that said movable contact enters and moves along the interior of said arc suppressing means when moving in said path of travel,
said fixed contactor including a terminal end connectible to a source of current and a tip end located remotely of said terminal end and adjacent a first longitudinal end of said arc suppressing means, said fixed contactor further including first and second sections located intermediate said terminal end and said tip end, said first section carrying said fixed contact and locating same exteriorly of said arc suppressing means and spaced from a longitudinal axis of the latter at a level situated between the longitudinal ends of said arc suppressing means, said second section extending from said first section toward said tip end so as to extend toward said first longitudinal end of said arc suppressing means in a direction which is oriented diagonally relative to said longitudinal axis of said arc suppressing means.

4,514,710

ELECTROMAGNETIC ACTUATOR

Richard A. Conrad, 1422 Phillips St., Vista, Calif. 92083

**Division of Ser. No. 344,610, Feb. 1, 1982, Pat. No. 4,429,716.
This application Jan. 30, 1984, Ser. No. 575,064
Int. Cl.³ H01F *3/14***
U.S. Cl. 335—230 **3 Claims**



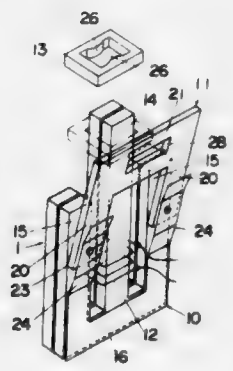
1. A reversible actuator comprising:
a u-shaped structure of magnetic material,
said structure having a pair of spaced legs,
a permanent magnet in magnetic coupling relation with said structure, said magnet extending intermediate said legs,
an armature of magnetic material movable in one direction to a first position in engagement with a first one of said legs whereby to magnetically latch said armature in said first position,
said armature being movable in the opposite direction to a second position in engagement with the second one of said legs whereby to magnetically latch said armature in said second position,
a sleeve of non-magnetic material surrounding said armature and fitting between said legs,
said sleeve guiding said armature for movement between said first and second positions,
an annular member of magnetic material surrounding an intermediate portion of said sleeve,
a first electromagnetic coil surrounding said sleeve intermediate said member and said first leg for driving said armature between said first and second positions thereof,
a second electromagnetic coil surrounding said sleeve intermediate said member and said second leg for driving said armature between said first and second positions thereof,
means for attaching said magnet to said magnetic structure and to said annular member, and
means for energizing said coils in a manner to selectively drive said armature in either of said directions.

4,514,711

AC DRIVE ELECTROMAGNETIC RELAY

Mitsuki Nagamoto, Tsu, and Takuo Kubota, Ise, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

**Filed Jul. 30, 1984, Ser. No. 636,030
Claims priority, application Japan, Jul. 30, 1983, 58-139631
Int. Cl.³ H01F *7/10***
U.S. Cl. 335—243 **7 Claims**



1. An AC current electromagnetic relay comprising;
a yoke formed into a generally E-shaped configuration with an elongated center leg and shortened side legs extending from a common base so that the free end portions of the respective legs define apexes of a triangle;
a coil disposed around the center leg of the yoke;
a shading ring disposed around the center leg;
a generally U-shaped flat armature having a pair of parallel arms connected by a web and being mounted on one surface of the yoke in substantially parallel relationship therewith;
a switching contact assembly including at least one pair of contacts which cooperates with the armature to make and break the contacts;
bearing means by which said U-shaped armature is pivotally supported at the free end edges of the arms on the surface of the yoke with its arms partially overlapping on the side legs of the yoke and with its web confronting the free end portion of the center leg, whereby upon energization of the coil the armature is pulled toward the yoke to be in a set position where the arms and the web of the armature abut respectively with said free end portions of the center and side legs defining the apexes of the triangle so as to establish a three-point contact between the yoke and the armature; and
biasing means for biasing the armature away from the yoke.

4,514,712

IGNITION COIL

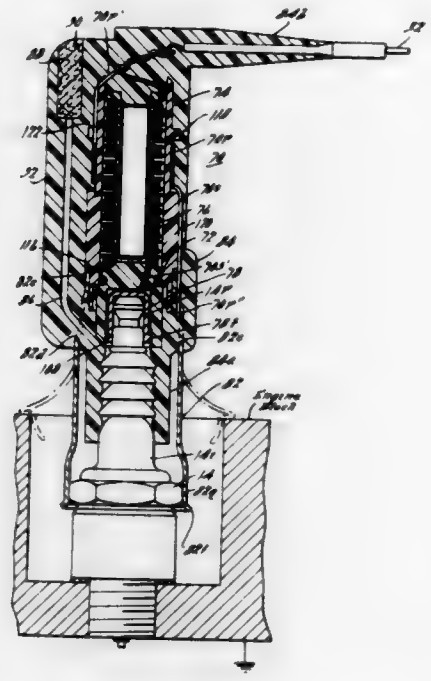
John A. McDougal, 2314 E. Court St., Flint, Mich. 48503

Continuation of Ser. No. 549,717, Feb. 13, 1975, abandoned, and a continuation-in-part of Ser. No. 384,469, Aug. 1, 1973, abandoned. This application Apr. 7, 1978, Ser. No. 894,449

Int. Cl.[3] H01F *27/04, 27/30*

U.S. Cl. 336—96

33 Claims



1. For an ignition system of an engine including a spark plug having a spark plug terminal, a grounded portion and a dielectric portion separating said grounded portion and said spark plug terminal, said spark plug being adapted to ignite an air/fuel mixture in a chamber of the engine when energized by a secondary voltage applied to said spark plug terminal, an ignition coil structure for removable mounting directly on said spark plug comprising:

a primary winding for receiving a primary voltage at an input conductor thereof and a secondary winding for providing said secondary voltage;

secondary terminal means connected to said secondary winding for receiving said secondary voltage and being removably connectable to said spark plug terminal for providing said secondary voltage to said spark plug terminal; and

enclosure means formed of a dielectric material and surrounding said primary winding, said secondary winding and said input conductor of said primary winding to dielectrically seal the entirety of said primary winding, said secondary winding, and said input conductor for said primary winding, said enclosure means also partly surrounding said secondary terminal means and having a sealing portion for removable sealing engagement with said dielectric portion of said spark plug so that said removable sealing engagement at said dielectric portion of said spark plug dielectrically encloses said secondary terminal means whereby no direct path to a grounded structure exists between said removable sealing engagement and said secondary terminal means, said enclosure means being configured so that a space is created intermediate said dielectric portion of said spark plug and said sealing portion of said enclosure means at least upon initial mounting of said ignition coil structure on said spark plug, said enclosure means including a passage means having an entrance communicating with said space between said dielectric portion of said spark plug and said sealing portion of said enclosure means for allowing egress of matter in said space to facilitate mounting of said ignition coil structure on said spark plug and to prevent said ignition coil structure from being lifted off said spark plug upon the heat expansion of said matter in said space, said passage means extending along said enclosure means in a manner so that said passage means length is substantially greater than the thickness of said enclosure means in the vicinity of said entrance and so that said passage means length is sufficiently long to provide an electrically secure path therealong relative to said secondary voltage to prevent flashover along said passage from said secondary terminal means to a grounded structure.

4,514,713

INDUCTIVE BALLAST COATED WITH AN INSULATION LAYER AND METHOD OF COATING THE BALLAST

Jacobus I. M. van Dam, Oss, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1982, Ser. No. 450,313

Claims priority, application Netherlands, Dec. 24, 1981, 8105830

Int. Cl.[3] H01F *27/02, 27/04;* B05D *5/12*

U.S. Cl. 336—96

13 Claims



9. An inductive stabilization ballast comprising a core member formed of laminated magnetic elements and an electric winding mounted thereon, an electrical connection member comprising electric plug-in contact sockets, a cover made of a synthetic material covering said plug-in contact sockets, and a layer of insulating material coating the whole ballast except for the plug-in contact sockets which are accessible via an opening in the cover of synthetic material, said opening being bounded by a surface of fracture in said cover.

4,514,714

NOISE-REDUCTION DEVICE FOR STATIONARY INDUCTION APPARATUS

Minoru Kanoi, Ibaraki; Yasuro Hori, Katsuta, and Yuzuru Kamata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

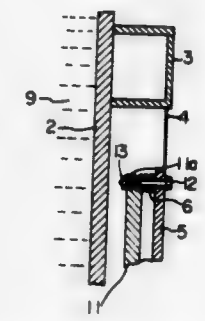
Filed Feb. 15, 1983, Ser. No. 466,485

Claims priority, application Japan, Feb. 20, 1982, 57-25241

Int. Cl.[3] H01F *15/00*

U.S. Cl. 336—100

9 Claims



1. A noise-reduction device and a stationary induction apparatus which includes a tank filled with insulation oil and a substance of said induction apparatus mounted in said tank comprising:

a sound insulation panel provided at each of windows formed by reinforcing channels provided in the form of a latice surrounding the outer periphery of said tank, said

sound insulation panel being supported by said reinforcing channels at each of said windows through a thin plate so as to substantially cover the concerned window;

a weighty body attached to the peripheral edge of said sound insulation panel in the vicinity of the boundary between said sound insulation panel and said thin plate for reducing vibrations of said sound insulation panel; and

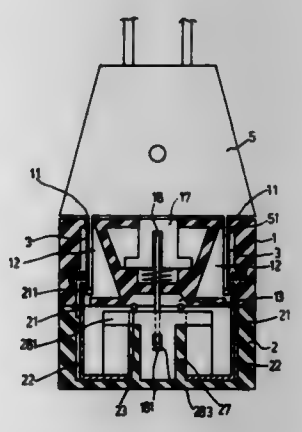
elongated dynamic dampers attached to said weighty body in a manner so that each of said dynamic dampers connects respective two of points of said weighty body at which the amplitude of vibration of said weighty body becomes substantially maximum, each of said dynamic dampers being provided with means for adjusting a natural frequency thereof.

4,514,715

SAFETY RECEPTACLE

Kun S. Chen, No. 3, Alley 3, Lane 418, Hsin-Hsing Rd., Tainan City, Taiwan

Filed May 15, 1984, Ser. No. 610,525
Int. Cl.³ H01H *61/01, 71/08*
U.S. Cl. 337—113 **8 Claims**



1. A safety receptacle, comprising:

a casing having an upper part and a lower part joined to the upper part, said upper part being provided on the top with two slots, a hole disposed between the two slots and two chambers, said lower part being provided with a middle chamber and two side chambers;

a spring-loaded cap disposed into said upper part in such a way that the top of the spring-loaded cap may extend through said hole of said upper part;

two spring-loaded sleeves disposed into said upper part, said spring-loaded sleeve being disposed at an angle into each said chamber of said upper part;

a spring-loaded push rod fixedly attached at the bottom of said cap, said push rod having a hook portion at its lower end;

a T-shaped sliding plate mounted into the middle chamber of said lower part, said sliding plate having two flanges and a hole adapted to said hook portion of said push rod;

two conducting plates respectively disposed into said two side chambers of said lower part; and

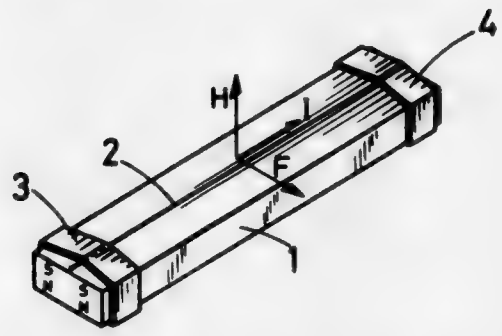
two bimetallic strips respectively welded to said two conducting plates, said two bimetallic strips being positioned behind said two flanges of said T-shaped sliding plate and being capable of pushing said sliding plate to disengage from said push rod when an excessive current flows through said bimetallic strips.

4,514,716

FUSE

Manuel A. Vincent De Araûjo, 73390 Chamoux-sur-Gelon, France

PCT No. PCT/FR81/00152, § 371 Date Jul. 20, 1982, § 102(e) Date Jul. 20, 1982, PCT Pub. No. WO82/01961, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 23, 1981, Ser. No. 403,634
Claims priority, application France, Nov. 25, 1980, 80 24971
Int. Cl.³ H01H *85/42*
U.S. Cl. 337—281 **8 Claims**



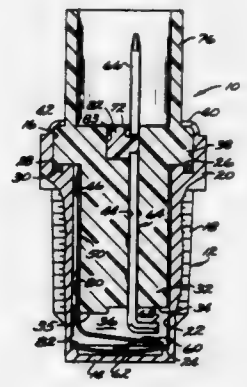
1. A fuse comprising a conducting wire (9) capable of being destroyed by melting in the case of an excess current; at least one elongated support means formed at least partially of ferrite (1) and having a top surface, a bottom surface and a thickness between said top and bottom surfaces, magnetized in the direction of its thickness and on which said conducting wire is disposed between two terminals (3, 4) spaced apart along said support means, said wire being supported along its entire length on one of said surfaces of said support means.

4,514,717

SINGLE TERMINAL SNAP ACTING THERMAL SWITCH

John Doherty, Jr., Assonet, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 25, 1983, Ser. No. 555,246
Int. Cl.³ H01H *37/54*
U.S. Cl. 337—365 **8 Claims**



1. A condition responsive switch comprising a cylindrical metallic housing having two opposite ends, one end being open and the second end having a disc seat formed thereat, an elongated body of electrically insulative material having a longitudinal axis and having at least a portion thereof telescopically received through and closing the open end of the housing, the body having a free distal end spaced a selected distance from the disc seat to form a switch chamber, a slot extending through the body parallel to the longitudinal axis, aterminal member received in the slot and extending from a point outside the housing to a point within the switch chamber, a stationary contact mounted on the terminal member disposed in the switch chamber, a generally flat surface formed on the outer peripheral surface of the body extending parallel to the longitudinal axis over a major portion of the length of the portion of the body received in the housing, a generally "L" shaped

movable contact member of good electrically conductive material having good spring characteristics, the member having a first leg received on the flat surface and attached to the body, the first leg having a free distal end portion bent into "V" shaped converging surfaces, the "V" shaped portion biased into electrical engagement with the internal housing wall, the "L" shaped member having a second leg extending transversely across the switch cavity, a movable contact mounted on the free distal portion of the second leg adapted to move into and out of engagement with the stationary contact, a tongue struck from the second leg and bent downwardly toward the disc seat and a snap acting disc received on the disc seat and movable between concave and convex positions upon the occurrence of selected conditions to cause the movable contact, through the tongue of the movable contact member to move into and out of engagement with the stationary contact.

4,514,718

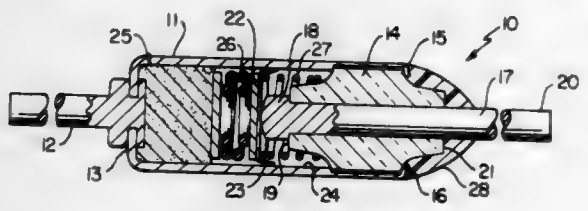
THERMAL CUTOFF CONSTRUCTION, MEMBER THEREFOR AND METHODS OF MAKING THE SAME

Linda B. Birx, Beavercreek, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 2, 1983, Ser. No. 557,238

Int. Cl.³ H01H *37/36*

U.S. Cl. 337—407 **10 Claims**



10. In a thermal cutoff construction having an electrical switching unit that changes its operating condition when a member therein melts by being heated to a certain temperature for the particular material that forms the member being utilized, the improvement wherein said material of said member comprises 4-methylumbelliferone.

4,514,719

DATA TRANSMISSION SYSTEM UTILIZING POWER LINE OF 3-PHASE ALTERNATING CURRENT

Yoshiharu Suzuki; Hitoshi Fukagawa, both of Kadoma; Yoshiyuki Komoda, Osaka, and Osamu Tanaka, Kadoma, all of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Sep. 30, 1982, Ser. No. 429,961

Claims priority, application Japan, Oct. 15, 1981, 56-164973

Int. Cl.³ H04M *11/04*

U.S. Cl. 340—310 R **10 Claims**

1. A data transmission system utilizing a power line of a 3-phase alternating current power supply for supplying a 3-phase alternating current for transmission of data in synchronism with the cycles of said alternating current, said data transmission system comprising:

At least one transmitter, each coupled to any respective one of the phases of said power line; and

at least one receiver, each coupled to any respective one of the phases of said power line;

each said transmitter comprising

lock signal generating means for generating a lock signal for providing a respective synchronization between the transmitter and each of the receivers,

data generating means for generating data to be transmitted to each said receiver, and

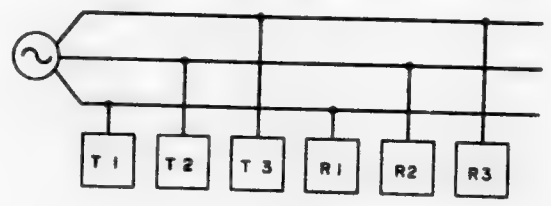
sending timing control means for controlling the sending of said lock signal and said data to have timing so that said data is sent subsequently to said lock signal, in synchronism with the cycles of the phase to which the transmitter is connected, and

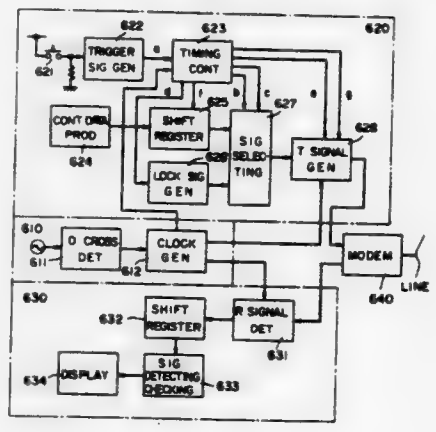
each said receiver comprising

lock signal receiving means for receiving each said lock signal in synchronism with the cycles of the phase to which the receiver is connected,

phase shift detecting means for detecting the phase shift between the phase of each said lock signal as transmitted by the respective transmitter and as received in the receiver, based on the received lock signal,

synchronizing means for providing, in response to an output from said phase shift detecting means, a respective synchronization between each said receiver receiving said





lock signal and the respective transmitter which is sending said received lock signal,

locking means for locking said synchronization means so that synchronization is maintained after said providing of said synchronization,

termination detecting means for detecting termination of said data transmission, and

lock releasing means for releasing said locking means, in response to an output from said termination detecting means, so that said synchronization can be changed.

4,514,720

METHOD AND APPARATUS FOR INCREASING THE RESPONSE SENSITIVITY AND THE INTERFERENCE RESISTANCE IN AN ALARM SYSTEM

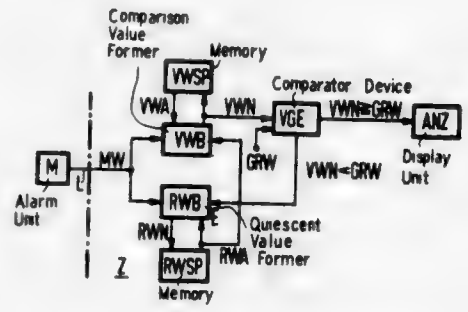
Karla Oberstein, and Peer Thilo, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,316

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127324

Int. Cl.³ G08B *29/00*

U.S. Cl. 340—511 **9 Claims**



1. A method for operating a danger alarm system for increasing the response sensitivity and the interference resistance of

the alarm system, said alarm system having a plurality of alarm units connected via a plurality of alarm lines to a central station, each of said alarm units continuously emitting measured values representing conditions monitored by said alarm units, said measured values being cyclically sampled at said central station, said method comprising for each alarm unit the steps of:

forming an alarm quiescent value from each sampled measured value emitted by an alarm unit;

subtracting a quiescent value formed from a measured value sampled immediately preceding a current measured value from said current measured value;

forming a current comparison value from the difference resulting from said subtraction;

storing said current comparison value;

comparing said current comparison value with a rated limiting value;

activating a display means for displaying an alarm if said current comparison value is greater than or equal to said rated limiting value; and

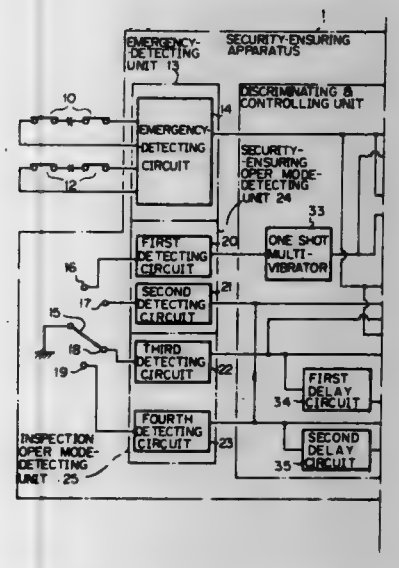
updating a quiescent value memory by replacing said quiescent value formed from said measured value sampled immediately preceding said current measured value with a quiescent value formed from said current measured value if said current comparison value is less than said rated limiting value.

4,514,721

MULTI-OPERATION MODE TYPE OF SECURITY-ENSURING APPARATUS

Toshiyuki Shiraiwa, Ichikawa, and Kaoru Ooba, Higashimurayama, both of Japan, assignors to Secom Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,148
Claims priority, application Japan, Jun. 30, 1982, 57-111444
Int. Cl.³ G08B *23/00*
U.S. Cl. 340—527 **10 Claims**



1. A security-ensuring apparatus for ensuring the security of a predetermined area in association with emergency sensors suitably arranged in the predetermined area and a central monitoring station located distant from the predetermined area, comprising:

means for selectively setting an operation mode of said security-ensuring apparatus in a security-ensuring operation mode including a manned security-ensuring operation mode, an unmanned security-ensuring operation mode, and a management operation mode including at least a maintenance mode or a patrol mode;

an emergency-detecting means connected to said emergency sensors for electrically detecting an emergency or abnormality sensed by said emergency sensors and generating a corresponding electric signal;

a controlling means for discriminating whether or not said electric signal indicating an emergency or abnormality should be transmitted to said central monitoring station on the basis of which operation mode of said security-ensuring and management operation modes is set in said security-ensuring apparatus; and

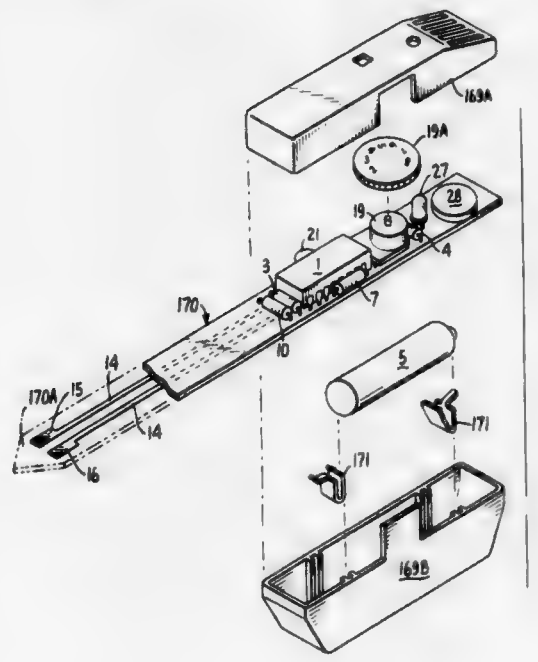
a signal-transmitting means for transmitting said electric signal indicating an emergency or abnormality to said central monitoring station when said discriminating means discriminates that said electric signal should be transmitted to said central monitoring station.

4,514,722

DOMESTIC AUTOMATIC CONTINUOUSLY MONITORING SOIL MOISTURE MONITOR/INDICATOR

Jerry H. Batcheler, 1364 Keoncrest Ave., San Jose, Calif. 95110, and Raymond G. Marek, 1242 Willo Mar Dr., San Jose, Calif. 95125

Filed May 18, 1983, Ser. No. 495,667
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—604 **15 Claims**



1. An automatic continuously monitoring soil moisture monitor/indicator comprising a circuit containing:

a. outputs connected to an internal means for alternately pulsing external probes in equal and opposite voltage polarities,

b. means for pulsing a specific voltage across said probe connection output during either polarity sampling cycle,

c. an output means connected to a capacitor whereby said capacitor integrates for sampling rate and duration time,

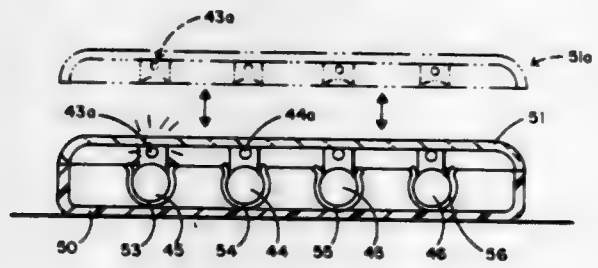
d. means for yielding absolute value of current from said probes to an output connection such that said current from said probes proportionately appears at said output connection for attachment to a user adjustment potentiometer,

e. means for voltage comparison yielding "on" or "off" result from said voltage comparison, where said voltage comparison is a function of the ratio of soil moisture dependent resistance and said user adjustment potentiometer resistance,

f. means for latching and holding "on" or "off" condition at end of sampling period, and

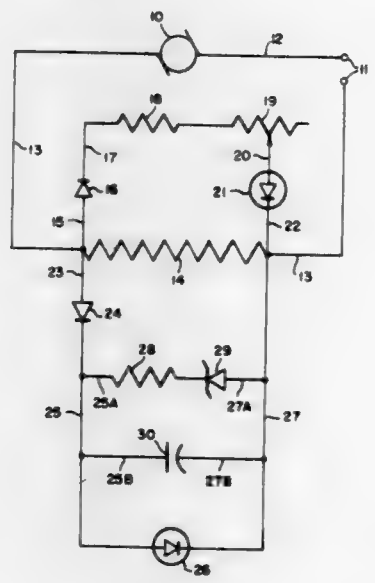
g. means of turning on an output indicating device through output connection if latched condition is "on" during sampling period.

4,514,723
METHOD AND APPARATUS FOR DEPICTING INOPERATIVE ELECTRICAL FUSES
David T. Leal, P.O. Box 14227, South Lake Tahoe, Calif. 95702
Filed Apr. 14, 1983, Ser. No. 484,915
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—638 1 Claim



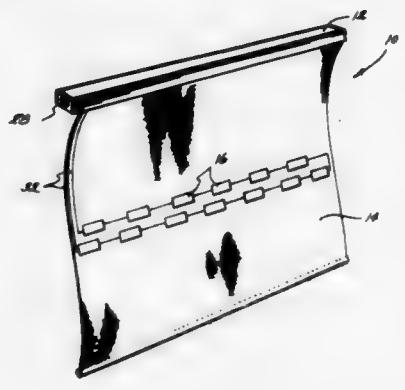
1. An automobile fuse bank holder comprising in combination a base in the form of a box open on its top side, said base containing a plurality of clip type fuse holders wherein each fuse holder comprises two end clips suitable to clip upon the ends of an elongated automotive type fuse; a cover means detachably mounted upon said base, wherein said cover means has a plurality of light emitting diode contact means so positioned therein that in pairs said light emitting diode contact means will contact, in cooperative pairs, the ends of fuses inserted within said pairs of clip means when the same are holding fuses; light emitting diode means inserted in electrical contact configuration between the pairs of light emitting diode contact means; and viewing means associated with each light emitting diode means in said cover means in such manner that each light emitting diode means is visible through said cover.

4,514,724
ELECTRICAL WARNING SYSTEM FOR MALFUNCTIONS IN REFRIGERATION
Walter J. Valentine, Bellmore, N.Y., assignor to Paul W. Garbo, Freeport, N.Y., a part interest
Filed Sep. 28, 1982, Ser. No. 425,874
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—648 8 Claims



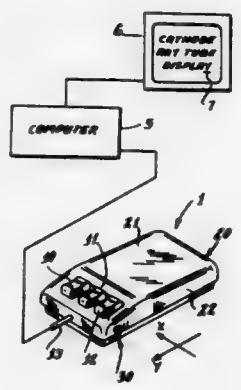
1. An electrical warning system for malfunctions in refrigeration equipment driven by an alternating current motor, which comprises a main resistor connected in series with said motor and selected to cause a voltage drop in the power supplied to said motor not exceeding 5 volts, a high amp shunt connected in parallel to said main resistor comprising a first diode, a first resistor and a first light-emitting diode, all connected in series, and a low amp shunt connected in parallel to said main resistor comprising a second diode and a second light-emitting diode connected in series, with a capacitor connected in parallel to said second light-emitting diode, and with a second resistor and zener diode connected in series to each other and together connected in parallel to said second light-emitting diode.

4,514,725
WINDOW SHADE MOUNTED ALARM SYSTEM
Barbara E. Bristley, 1100 Ball St., Fremont, Ohio 43420
Filed Dec. 20, 1982, Ser. No. 451,013
Int. Cl.[3] G08B *7/00, 23/00*
U.S. Cl. 340—691 16 Claims



1. An alarm system comprising:
a window shade assembly mounted in a window of a structure including a retractable window shade attached to a rotatable shaft;
display means mounted on one side of said window shade and facing outwardly of the structure for selectively producing an illuminated visual alarm signal in response to an activating signal;
emergency condition detector means located within the structure for detecting an emergency condition therein and for generating an audible signal in response thereto; and
means independent of the shade position and responsive to said audible signal for generating said activating signal to cause said display means to produce said illuminated visual alarm signal.

4,514,726
NOISE MOUSE
Albert L. Whetstone, Milford; Kerry L. Shaklee, Fairfield, and Khosrow Modjallal, Killingworth, all of Conn., assignors to Display Interface Corporation, Milford, Conn.
Filed Aug. 19, 1983, Ser. No. 524,924
Int. Cl.[3] G09G *1/00*
U.S. Cl. 340—710 31 Claims



26. A cursor controller for controlling movement of a cursor dot or the like on a computer display in accordance with movement of the cursor controller, the cursor controller comprising:
(A) a housing adapted for sliding motion on a work surface, said sliding motion producing noise;

(B) means for determining the direction of motion of housing;

(C) a microphone mounted in the housing and responsive to the noise generated by sliding motion, said noise output of the microphone being a function of the velocity and therefore also of the distance of motion; whereby control signals corresponding to the distance of motion can be drived from the microphone signal.

4,514,727

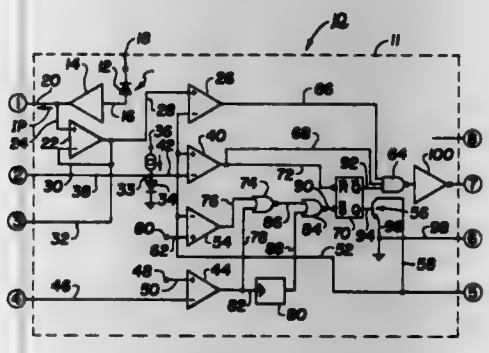
AUTOMATIC BRIGHTNESS CONTROL APPARATUS

Joel C. Van Antwerp, Frisco, Tex., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 28, 1982, Ser. No. 392,675

Int. Cl.³ G09G *3/00*

U.S. Cl. 340—793 **5 Claims**



1. Apparatus for receiving voltage from a power supply and for producing a periodic electrical output signal whose average value is proportional to the ambient light level and independent of fluctuations in the power supply voltage, comprising:

a photosensor circuit for producing an electrical signal proportional to the ambient light level and substantially independent of the power supply voltage;

a ramp oscillator circuit for producing a periodic electrical signal having a ramp waveform whose amplitude is proportional to the power supply voltage; and

an output circuit for comparing the photosensor signal to the ramp signal and producing a periodic output signal whose duty cycle is the portion of time the photosensor signal exceeds the ramp signal.

4,514,728

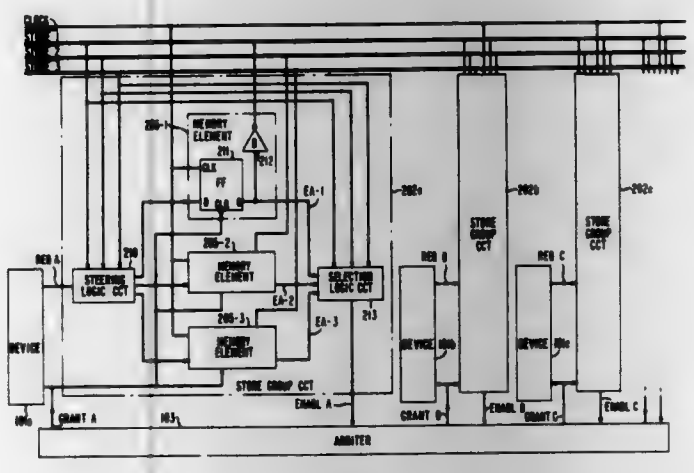
STORE GROUP BUS ALLOCATION SYSTEM

Sudhir R. Ahuja, Aberdeen, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 124,426, Feb. 25, 1980, Pat. No. 4,384,323. This application Dec. 27, 1982, Ser. No. 453,624

Int. Cl.³ G06F *9/46, 9/00*

U.S. Cl. 340—825.5 **1 Claim**



1. A store group resource allocation arrangement distributed among a plurality of devices for systematically controlling access of the devices to a common resource, the arrangement including means (**101*a***), included in each of said devices, for generating a request signal (REQA), store group circuit means (**102**), associated with each of said devices, responsive to the request signal for storing the request signal and for generating an arbitration enabling signal (ENABLA), and an arbiter (**103**) responsive to the arbitration enabling signal for generating a corresponding access grant signal (GRANTA) according to a prescribed criterion, the arrangement characterized by,

a source of a clock signal having first and second states,

the store group circuit means being responsive also to the clock signal for generating the arbitration enabling signal at a particular time instant corresponding to the coincidence of the presence of the request signal and the clock signal changing from the first state to the second state,

means (**110**), associated with each of said devices, responsive to the arbitration enabling signal from the store group circuit means associated with each device of the plurality of said devices for temporarily inhibiting storage of a later generated request signal by each store group circuit means, and

the store group circuit means being responsive to the access grant signal for disabling generation of the corresponding arbitration enabling signal.

4,514,729

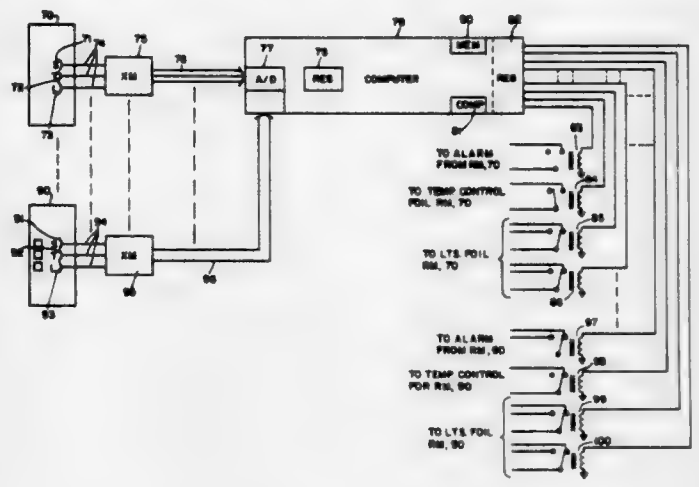
ENVIRONMENTAL CONTROL SYSTEM AND METHOD

Jay R. Szarka, 11 Orchard St., Milford, N.H. 03055

Filed Aug. 16, 1982, Ser. No. 408,255

Int. Cl.³ H04Q *9/00*; G08B *1/08*

U.S. Cl. 340—825.06 **7 Claims**



1. A system for controlling the environment of one or more rooms comprising:

a sensor for each room for sensing the presence or absence of a person in the room;

means for sensing environmental parameters including temperature for each room;

means for transmitting the sensed presence or absence and the parameters as signals;

a digital computer responsive to the transmitted signals, and having a memory;

information stored in the memory establishing upper and lower sensor signal limits for the temperature and time interval signals for said limits and for the authorized and unauthorized presence or absence in the room;

said computer comprising means for comparing the received temperature signals with the stored upper and lower sensor limit signals and with the authorized time interval signal and the presence or absence signals with the time interval signals; and

means for controlling the temperature to one limit during authorized time intervals and to the other limit during unauthorized time intervals in response to the temperature comparisons in each room and for actuating an alarm in

response to a sensed presence of a person during an established unauthorized presence time interval.

4,514,730

PIPELINE MONITORING APPARATUS

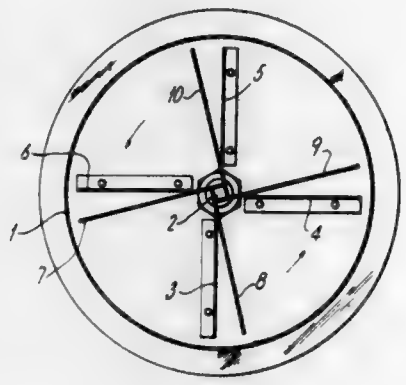
Paul T. Ming, Middlesbrough, England, assignor to Imperial Chemical Industries PLC, Hertfordshire, England

Filed Dec. 20, 1982, Ser. No. 451,594

Claims priority, application United Kingdom, Dec. 23, 1981, 8138834

Int. Cl.³ G08B *5/24*

U.S. Cl. 340—815.26 **7 Claims**



1. Apparatus for displaying the presence or absence of a change from the normal to abnormal in the condition of a pipeline comprising at least two pairs of vanes mounted around and extending outwardly from a substantially upright shaft, wherein

(i) at least one pair of vane members is mounted immovably on opposite sides of said shaft, the angle between said vane members being substantially 180°,

(ii) at least one other pair of vane members is mounted on said shaft, the members of each of said other pair(s) of vanes being mounted on opposite sides of said shaft and being movable relative to said immovably mounted vane members, in such a manner that,

(a) in a first (normal) position the angle between an immovable vane member and an adjacent relatively movable vane member is not greater than about 15° and

(b) said movable vane members are adapted to move from said first (normal) position to a second (abnormal) position so that in said second position said angle is substantially zero.

4,514,731

CODED INFORMATION ARRANGEMENT

John B. Falck, 111 St. George's Dr., London SW1, and David Robson, 8 Conyers Way, Great Barton, Suffolk, IP31 2RL, both of England

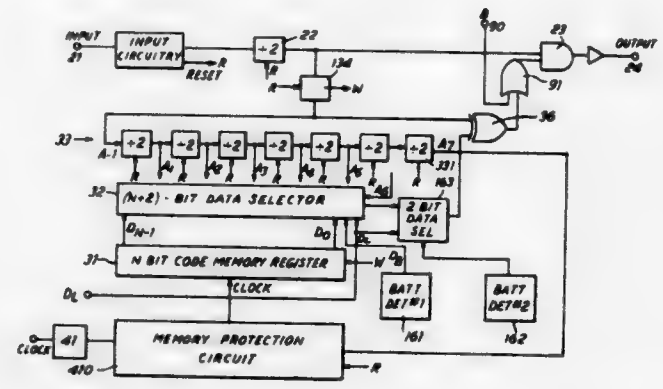
Filed Jul. 14, 1982, Ser. No. 398,276

Claims priority, application United Kingdom, Jul. 14, 1981, 8121640

Int. Cl.³ H04Q *9/00*; G08B *29/00*

U.S. Cl. 340—825.08 **9 Claims**

9. A coded information system comprising an active transponder device having first and second input circuits, a frequency division circuit connected to said first input circuit, a memory for storing and supplying coded information and having a coding input, a clock input and an output, a transmitter, said transmitter having an input, and means for connecting said output of said memory to said input of said transmitter, said transmitter being arranged to transmit an output signal including said coded information, said second input circuit being connected to said clock input of said memory, an output from an intermediate part of said frequency division circuit being connected to said coding input of said memory, and a memory protection circuit for preventing undesired changing of the coded information stored in said memory, said memory protection circuit being connected to said second input circuit and comprising logic means connected to selected points of said frequency division circuit, and said memory protection circuit further comprising means for comparing both the number and the timing of pulses actually applied to aid second input circuit with the number and the timing of a predetermined series of pulses, said predetermined series being determined by said logic means, and a programming unit comprising clock signal supply means and a frequency division means, said frequency division means duplicating said frequency division circuit of said active transponder device and controlling the timing of signals from said clock signal supply means to said second input circuit of said active transponder device.



4,514,732

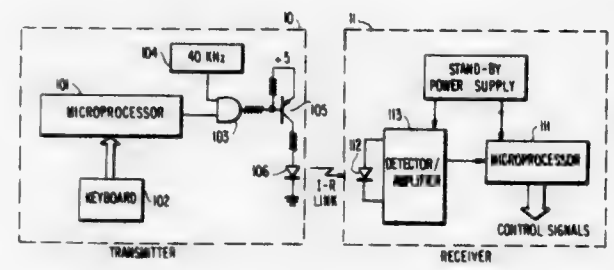
TECHNIQUE FOR INCREASING BATTERY LIFE IN REMOTE CONTROL TRANSMITTERS

John J. Hayes, Jr., Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Aug. 23, 1982, Ser. No. 410,200

Int. Cl.³ H04B *9/00*; H04Q *9/00*

U.S. Cl. 340—825.57 **7 Claims**



1. A remote control system for controlling continuous functions comprising:

a transmitter including at least one continuous function command key, the operation of which causes said continuous function to be adjusted, and code transmitting means responsive to the initial operation of said continuous function command key for transmitting a first code burst and responsive to the cessation of the operation of said continuous function command key for transmitting a second code burst, the transmission of said code transmitting means consisting only of said first code burst and said second code burst, and

a receiver responsive to said first code burst for causing the corresponding continuous function to be adjusted at a predetermined rate and responsive to said second code burst for causing the adjustment of said continuous function to cease.

4,514,733
CONTROL SYSTEM FOR AIRCRAFT

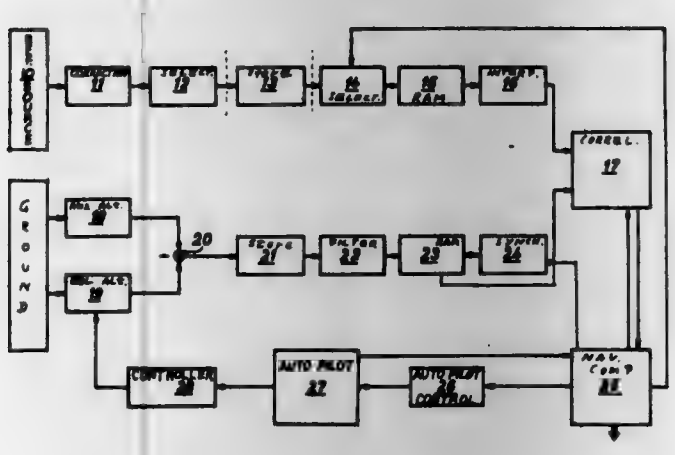
Hubertus Schmidtlein, Achim, and Horst-Dieter Lerche, Stuhr, both of Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke, Bremen, Fed. Rep. of Germany

Continuation of Ser. No. 834,008, Sep. 13, 1977, abandoned. This application Feb. 19, 1982, Ser. No. 350,261

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641447

Int. Cl.³ G01S *13/00*

U.S. Cl. 343—5 MM **1 Claim**



1. A method of automatically navigating an aircraft across a particular territory on the basis of topographical reference data to be compared with actual topographical data acquired by the aircraft during overflight across the particular territory, comprising the steps of:

acquiring prior to said overflight topographic reference data under conditions which include systematic errors introduced by a specific altitute measuring device, the reference data used are regular topographic data, and the systematic errors are introduced by providing terrain-specific corrective data by means of said specific altitude-measuring device;

acquiring the actual topographic position data under utilization of the same type of specific altitude-measuring device which introduces similar errors; and using these reference data together with the topographic position data to obtain said comparison, including correcting the reference data by introducing systematic errors on the basis of the corrective data.

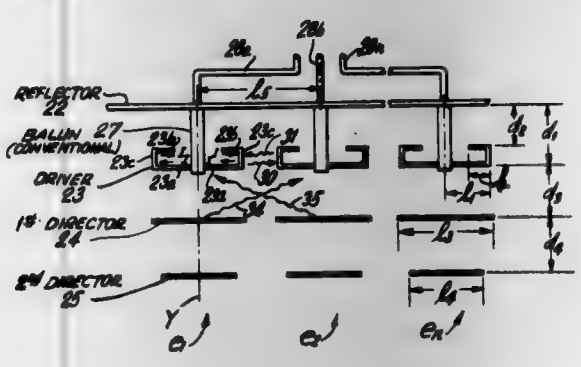
4,514,734
ARRAY ANTENNA SYSTEM WITH LOW COUPLING ELEMENTS

Justine D. Cermignani, Fort Salonga, and Frederick M. Ganz, Nesconset, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 149,019, May 12, 1980, abandoned, which is a continuation of Ser. No. 929,322, Jul. 31, 1978, abandoned. This application Feb. 23, 1983, Ser. No. 468,878

Int. Cl.³ H01Q *1/28, 21/08*

U.S. Cl. 343—708 **25 Claims**



1. In a scannable antenna array for the transmission and/or reception of energy of wavelength λ, having a mutually spaced plurality of endfired Yagi elements each comprising a reflector, a driver and at least one director spaced forwardly therefrom, the improvement wherein:

said driver is a dipole radiator including a pair of radiating conductors each having a forward radiating segment generally perpendicular to the Yagi axis and an inwardly turned end segment behind said forward segment and parallel thereto so that the tips of said pair of radiating conductors are mutually facing, whereby radiation from the tips of said end segments tends to cancel and whereby radiation from said radiating conductors tends to be concentrated near the axis of said driver thereby to reduce radiation coupled from said driver to adjacent elements of the array,

the drivers of said mutually spaced elements being disposed such that the forwardly radiating segments are substantially colinear,

said Yagi elements being spaced and dimensioned to produce an in-array E-plane directional pattern having a half-power beamwidth of at least ±45° and minimum gain at about ±90°, relative to said axis.

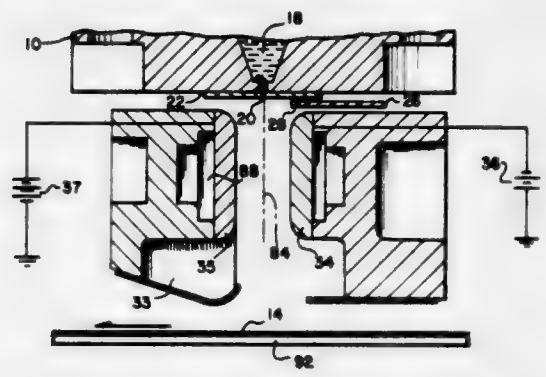
4,514,735
INK JET PRINTER START-UP AND SHUTDOWN

David E. Jones, Richardson, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 12, 1983, Ser. No. 522,954

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **14 Claims**



11. In an ink jet printer including a print head for producing at least one jet drop stream, charge electrode means for inducing electrical charges on the drops formed in said jet drop stream, a catcher positioned to one side of the jet drop stream for catching drops deflected thereto, and deflection field means for producing an electrical deflection field in the region between said print head and said catcher, said field extending in a direction such that drops carrying a charge of a first polarity are deflected toward said catcher means, the method of printer shutdown, comprising:

producing an electrical deflection field having a non-zero potential in the region adjacent said print head, while shielding the jet drop stream with said charge electrode means in the region of drop formation from said deflection field,

charging drops formed in said jet drop stream to a charge level of said first polarity by said charge electrode means,

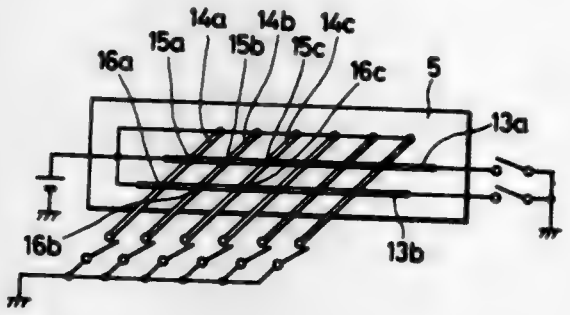
retracting said charge electrode means from its normal operating position to expose the drops then being formed to said electrical deflection field, whereby said drops are charged to a charge of a first polarity by said electrical deflection field and therefore are deflected to said catcher, and

terminating jet drop stream formation.

4,514,736
THERMAL HEAD

Haruhiko Moriguchi, and Toshiharu Inui, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1983, Ser. No. 455,711
Claims priority, application Japan, Jan. 13, 1982, 57-2686
Int. Cl.³ H05B *1/100*
U.S. Cl. 346—76 PH
2 Claims



1. A thermal head comprising,

first bar-shaped heat generating resistors arranged in a first plane in a manner so as to be substantially parallel to one another; and

second bar-shaped heat generating resistors arranged in a second plane parallel to said first plane and disposed in a manner so as to be substantially parallel to one another;

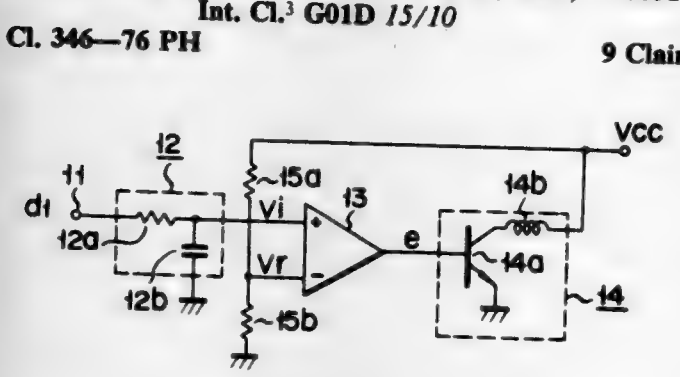
said first bar-shaped heat generating resistors crossing over said second bar-shaped heat generating resistors to provide heat generating dots at the crossing points;

wherein said first and second bar-shaped resistors cross obliquely, such that crossing points of one line are offset from crossing points of an adjacent line.

4,514,737
PRINTING HEAD DRIVING APPARATUS

Kuniaki Suzuki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 10, 1983, Ser. No. 493,275
Claims priority, application Japan, May 13, 1982, 57-80519
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH
9 Claims



1. A printing head driving apparatus comprising:

input voltage signal generating means for generating an input voltage signal having a predetermined rise time or a predetermined fall time in synchronism with a print timing signal generated when a printing head is driven;

reference voltage signal generating means for generating a reference voltage signal of a varying level corresponding to a variation of a power source voltage for driving the printing head;

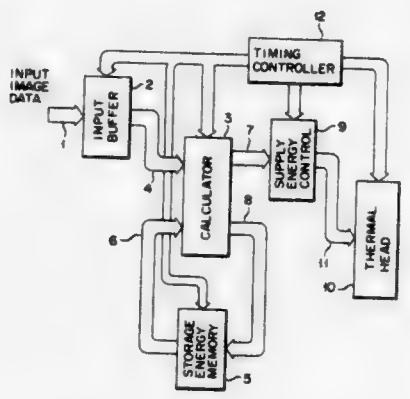
driving pulse signal outputting means for comparing the level of said input voltage signal and the level of said reference voltage signal to produce a driving pulse signal having a pulse generation timing and pulse width corresponding to the variation of the power source voltage; and

driving means for driving the printing head on the basis of the driving pulse signal which is output from the driving pulse signal outputting means.

4,514,738
THERMAL RECORDING SYSTEM

Hitoshi Nagato; Koji Izawa, and Shuzo Hirahara, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 22, 1983, Ser. No. 554,300
Claims priority, application Japan, Nov. 22, 1982, 57-207710
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH
12 Claims



1. A thermal recording system comprising:

a thermal head having a number of thermal heating resistive elements and drive circuit means for selectively energizing said thermal heating resistive elements, with current supply, in accordance with image data to record the image data;

memory means for storing data of a storage energy of each of said thermal heating resistive elements after the image data have been recorded;

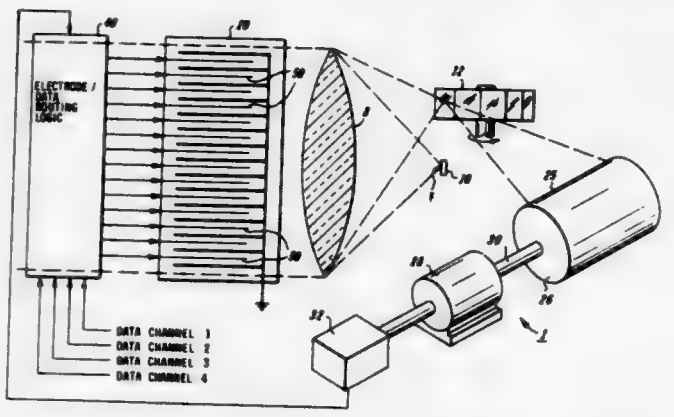
calculating means responsive to storage energy data from said memory means and next image data for calculating supply energy to be supplied to each of said resistive elements to record the next image data and a storage energy stored in each of said thermal heating resistive elements after the next image data have been recorded; and

controlling means responsive to the supply energy data of each of said resistive elements from said calculating means for causing said drive circuit means to control the supply energy to be applied to each of said thermal heating resistive elements.

4,514,739
CROSS SCAN BEAM POSITIONER FOR MULTIPLE CHANNEL LASER ROS

Richard V. Johnson, Pasadena, and William D. Turner, San Marino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1983, Ser. No. 548,061
Int. Cl.³ G01D *9/42*; G02F *1/01*; H04N *3/08*
U.S. Cl. 346—108
3 Claims



1. A light scanning system capable of simultaneously scanning light modulated in accordance with multiple data chan-

nels across multiple lines of a photosensitive surface which surface may have position errors including:

a total internal reflection modulator having a number of addressable electrodes greater than the collective number of addressable electrodes needed to provide the desired pixel resolution for all of the simultaneously scanned lines,

means for developing an error signal indicative of any positional error of said photosensitive surface, and

means responsive to said error signal for applying data channel drive signals to different ones of said electrodes depending upon the value of said error signal.

4,514,740

SHEET GUIDE MECHANISM IN A RECORDING DEVICE

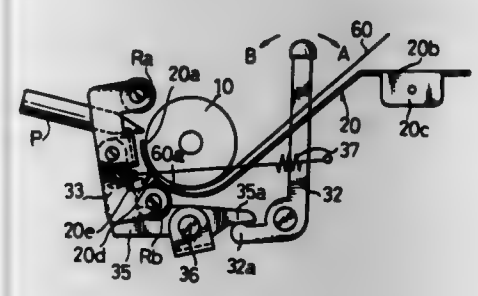
Mitsugu Fujiwara; Yoshinori Sakaue, both of Morioka; Tomio Aso, Kitakami; Koshiro Kurokawa, Hanamaki, and Hideo Obara, Ezuriko, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jun. 17, 1983, Ser. No. 505,202

Claims priority, application Japan, Jun. 19, 1982, 57-91802[U]

Int. Cl.³ G01D *15/16*; B41J *3/04*

U.S. Cl. 346—139 R **4 Claims**



1. A sheet guide mechanism in a recording device including a rotatable platen having an inlet side for a recording sheet, a recording member opposed to a recording side of the platen, and pressure rollers adapted to come into pressure contact with said platen for pressing down a recording sheet, wherein said guide mechanism comprises a guide plate extending from said inlet side to a lower portion of said recording side of said platen below said platen, said guide plate having windows formed therein for bringing said pressure rollers into contact with said platen and recording sheet, and guide pieces formed on forward edges of said windows for guiding the recording sheet around said platen in a sheet inserting direction of said windows, said guide pieces being bent in a direction away from said platen.

4,514,741

THERMAL INK JET PRINTER UTILIZING A PRINTHEAD RESISTOR HAVING A CENTRAL COLD SPOT

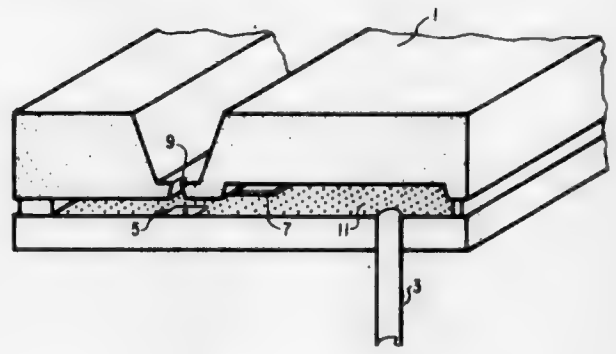
John D. Meyer, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 22, 1982, Ser. No. 443,711

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **16 Claims**

1. A thermal ink jet printer, responsive to a control signal, for ejecting an ink droplet from a capillary region, the thermal ink jet printer comprising a printhead resistor in thermal contact with the capillary region for receiving the control signal, the printhead resistor being composed of a resistive



region and a conductive region located within said resistive region and electrically connected thereto.

4,514,742

PRINTER HEAD FOR AN INK-ON-DEMAND TYPE INK-JET PRINTER

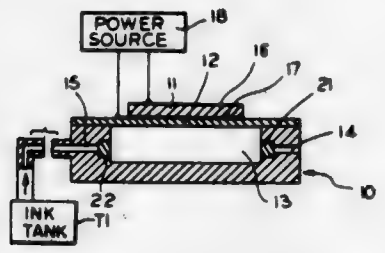
Michihisa Suga, and Mitsuo Tsuzuki, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 274,210, Jun. 16, 1981, abandoned. This application Mar. 30, 1983, Ser. No. 480,088

Claims priority, application Japan, Jun. 16, 1980, 55-81184; Nov. 21, 1980, 55-164343

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **3 Claims**



1. A printer head for an ink-on-demand type ink-jet printer for squirting ink droplets onto a printing medium, said printer head comprising:

an ink chamber filled with ink;

a nozzle for squirting said ink droplets;

an ink supply passageway extending from an ink tank to said ink chamber;

an ink delivery passageway extending from said ink chamber to said nozzle;

ink supplying pressure means responsive to an electrical signal for exerting a pressure on said ink in said ink chamber in order to squirt said ink droplets;

one-way fluid control means disposed in both said supply and delivery passageways and having a peripherally clamped elastic and deformable flat member and a valve seat, said deformable member resting on said valve seat and forming at least one open portion through which ink may flow, said open portion being opened and closed by deformation of said deformable member, said deformable member being deformed solely in response to the on demand ink supplying pressure means responding to sdid electrical signal in order to pass said ink in said one-way therethrough, at least one of said deformable member and said valve seat being a solid central disc connected by spokes to the periphery thereof; and

the other of said deformable member and said valve seat being a solid ring shaped member with a center hole positioned over said central disc, whereby said open portion extends through space between said spokes and said center hole, and further whereby the flow resistance may become low under the action of the pressure of the ink in

response to the ink stream flow in the direction from the supply side toward the nozzle side and the flow resistance may become high in the opposite direction.

4,514,743

INK JET FILTERED-CHAMBER PRINT HEAD

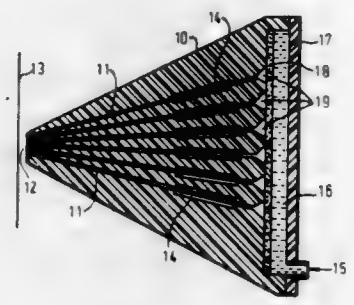
Rolf Röschlein, Paderborn-Elsen, and Heinz Schulte, Paderborn-Sande, both of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,509

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313156

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **6 Claims**



1. Piezoelectrically driven print head for dot matrix ink printers with a plurality of print jets in the form of ink ducts receiving the printing fluid, which ducts are respectively enclosed by a piezoelectric drive element and are connected by way of a filter arrangement with an ink chamber common to them, wherein the ink ducts have a substantially greater length than the drive elements, characterized in that the filter arrangement consists of only a layer (**18**) of a capillary filter material and in that each ink duct (**11**) shows a funnel-shaped enlargement (**19**) bordering directly on this layer (**18**).

4,514,744

ELECTROSTATIC COPYING DEVICE EMPLOYING THERMALLY FLUIDIZABLE MEDIUM ON PHOTOSENSITIVE BELT

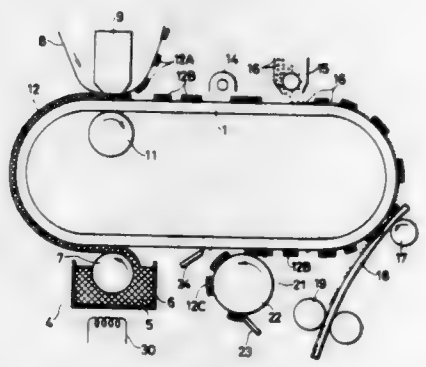
Hiroyuki Saitoh, and Yoshiki Kikuchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,119

Claims priority, application Japan, Sep. 24, 1982, 57-164919; Sep. 24, 1982, 57-164920

Int. Cl.³ G01D *15/06, 15/12*

U.S. Cl. 346—153.1 **12 Claims**



1. A recording device comprising: a photosensitive belt capable of producing electromotive force upon irradiation with light, said photosensitive belt having on one surface thereof a light-shielding layer of a material capable of being fluidized or sublimated by heating; light-shielding image forming means for selectively heating said light-shielding layer and removing heated portions of said light-shielding layer from said photosensitive belt to form a light-shielding image thereon; latent image forming means for exposing said photosensitive belt carrying said light-shielding image to form a latent image on said photosensitive belt; developing means for developing said latent image with toner particles to form a toner image; image transfer means for transferring said toner image to a paper sheet; and fixing means for fixing said toner image to said paper sheet.

4,514,745

HEAT-SENSITIVE RECORDING MATERIAL

Toshitake Suzuki, Hyogo; Naoto Arai, Osaka; Shoji Aoyagi, Hyogo; Toranosuke Saito, Osaka; Masakatsu Kitani, Hyogo, and Takashi Ishibashi, Osaka, all of Japan, assignors to Kanzaki Paper Manufacturing Co. Ltd. and Sanko Kaihatsu Kagaku Kenkyusho Corporation, both of, Japan

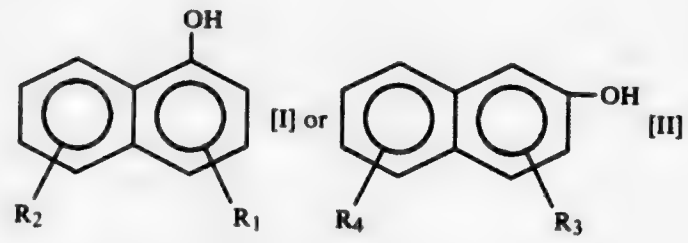
Filed Jul. 30, 1984, Ser. No. 635,580

Claims priority, application Japan, Aug. 23, 1983, 58-154379

Int. Cl.³ B41M *5/18*

U.S. Cl. 346—216 **3 Claims**

1. In a heat-sensitive recording material incorporating a colorless or pale-colored basic dye and a color acceptor which is reactive with the dye to form a color when contacted therewith, the recording material characterized in that the color acceptor comprises at least one compound represented by the formula



wherein R_1, R_2, R_3 and R_4 are each a hydrogen atom, alkyl having 1 to 8 carbon atoms, aryl or aralkyl, provided that R_1 and R_2, as well as R_3 and R_4, are not hydrogen at the same time.

4,514,746

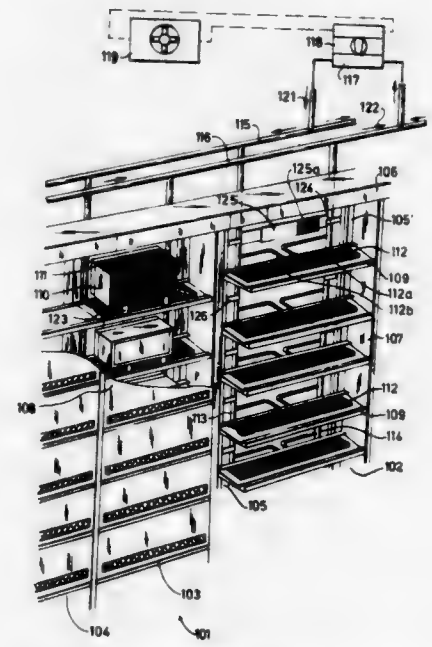
APPARATUS FOR COOLING TELECOMMUNICATIONS EQUIPMENT IN A RACK

Gösta B. Lündqvist, Johanneshov, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

Filed Dec. 1, 1983, Ser. No. 445,983

Int. Cl.³ H05H *7/20*

U.S. Cl. 361—385 **13 Claims**



1. Apparatus in a work space cooling telecommunications equipment consisting of component-carrying printed circuit boards arranged in board magazines, comprising a rack having shelves arranged on top of one another in said rack at least one shelf having an individual heat exchanger which incorporates

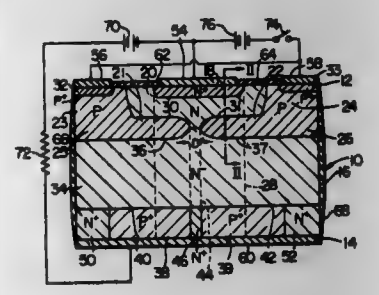
cooling flanges and at least one tubular coil, a cooler having lines connected to the heat exchanger to cause a coolant to run in the tubular coil; the heat exchanger, viewed in the horizontal plane of its shelf extending along at least one half the length of the shelf; and at least one heat-transfer member having extensive heat-conducting metallic contact surfaces arranged to contact the board magazine and mounted in heat-transfer relation to the associated shelf as well as the heat exchanger; at least a part of said heat-transfer member supporting said magazine to assure heat transfer from said magazine to said member, so that said heat exchanger and cooler contribute towards removing the heat given off by the telecommunications equipment by means of heat conduction through said extensive contact surfaces, independent of packing density of the aforesaid telecommunications equipment in the rack and the rate of heat emission.

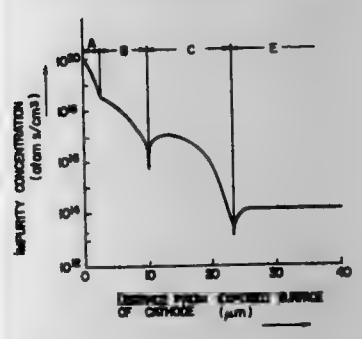
4,514,747

FIELD CONTROLLED THYRISTOR WITH DOUBLE-DIFFUSED SOURCE REGION

Kenji Miyata; Yoshio Terasawa, both of Katsuta; Saburo Oikawa, Hitachi; Susumu Murakami, Hitachi, and Masahiro Okamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 63,476, Aug. 3, 1979, abandoned. This application Mar. 12, 1982, Ser. No. 357,594
Claims priority, application Japan, Aug. 7, 1978, 53-95474
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **12 Claims**





1. A field controlled thrystor comprising:

(a) a semiconductor substrate having a first and a second main surface opposed to each other, said semiconductor substrate including

(a1) a first semiconductor region of one conductivity type exposed in a portion of said first main surface,

(a2) a second semiconductor region of said one conductivity type adjacent to said first semiconductor region and having a lower impurity concentration than said first region,

(a3) gate regions of the other conductivity type adjacent to said second region and forming first P-N junctions with said second region, each of said gate regions including a surface-exposed region exposed in said first main surface and a third semiconductor region laterally extending and connected with said surface-exposed region, and said third region being spaced from the adjacent third region by a spacing D which is located in the area of projection of said first region upon said second main surface,

(a4) a fourth semiconductor region of said one conductivity type adjacent to said third regions and having a lower impurity concentration than said second region, said fourth region forming second P-N junctions with said third regions, and

(a5) fifth semiconductor regions of said other conductivity type adjacent to said fourth region and exposed in said second main surface, said fifth region forming third P-N junctions with said fourth region,

wherein the impurity concentration in said second region has a gradient of decrease from said first region toward said third regions so that the impurity concentration in said second region adjacent to said first region is greater than the impurity concentration in said second region adjacent to said third region and and so that the impurity concentration continuously decreases in the second region from the point of adjacency with the first region to the point of adjacency with the third regions, said third semiconductor region being a diffused region in said fourth semiconductor region diffused from said first main surface, said second semiconductor region being a diffused region in said gate regions and fourth semiconductor region diffused from said first main surface to invert a portion of said gate regions to form said second semiconductor region and to bury said third semiconductor region, said first semiconductor region being a diffused region in said second semiconductor region diffused from said first main surface and said third semiconductor region being sandwiched between said second and fourth semiconductor regions;

(b) a cathode electrode kept in ohmic contact with said first region exposed in said first main surface;

(c) an anode electrode kept in ohmic contact with said fifth regions exposed in said second main surface; and

(d) gate electrodes kept in ohmic contact with said surface-exposed regions exposed in said first main surface,

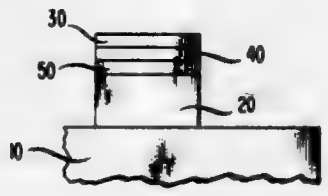
wherein said decreasing net impurity concentration in said second region is set so that said second region will have a low impurity concentration at a portion thereof in contact with said buried third semiconductor region of said gate regions to provide a high reverse blocking voltage for said field controlled thyristor and so that said second region will have a high impurity concentration at a portion thereof in contact with said first semiconductor region to provide a low forward voltage drop for said field controlled thyristor.

4,514,748

GERMANIUM P-I-N PHOTODETECTOR ON SILICON SUBSTRATE

John C. Bean, New Providence; Alexander Kastalsky, North Plainfield, and Sergey Luryi, Millington, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

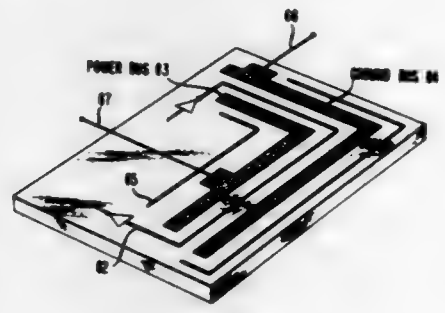
Filed Nov. 21, 1983, Ser. No. 554,061
Int. Cl.³ H01L *29/12*
U.S. Cl. 357—58 **6 Claims**



1. A device comprising (1) a substrate comprising silicon that includes semiconductor devices and (2) a photonic component that produces a current when stimulated by electromagnetic radiation characterized in that

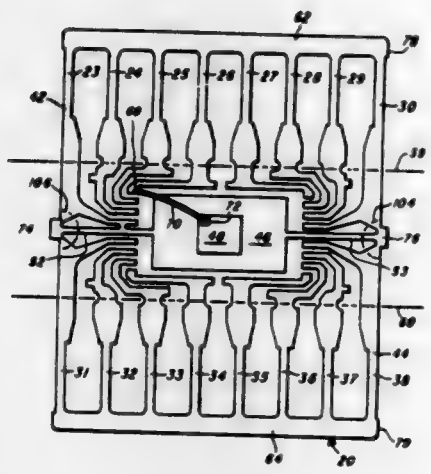
said photonic component comprises a germanium based p-i-n diode, including an intrinsic portion, a p-type portion, and an n-type portion, that is electrically and physically connected to said substrate by an intermediary region, said intermediary region limiting the average spacing of the crystal dislocations propagating through said intrinsic portion to greater than 1000 Angstroms.

4,514,749
VLSI CHIP WITH GROUND SHIELDING
Masakazu Shoji, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 18, 1983, Ser. No. 458,769
Int. Cl.³ H01L *23/48*
U.S. Cl. 357—68 4 Claims



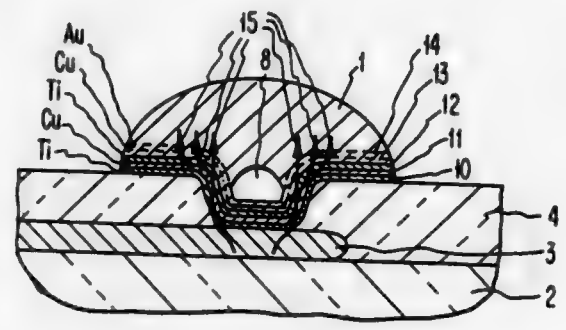
1. An integrated circuit chip having a wiring section including at least one clock distribution line and at least a first signal line, said wiring section including first and second lines adjacent to first and second sides of said clock distribution line, each of said first and second lines being adapted to be maintained at a fixed d-c potential for isolating said clock distribution line from said first signal line.

4,514,750
INTEGRATED CIRCUIT PACKAGE HAVING INTERCONNECTED LEADS ADJACENT THE PACKAGE ENDS
Anthony L. Adams, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 11, 1982, Ser. No. 338,754
Int. Cl.³ H01L *23/48, 23/12*
U.S. Cl. 357—70 2 Claims



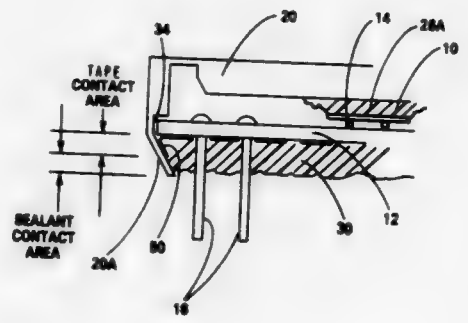
1. A package for containing an integrated circuit device, comprising:
an enclosure having a central cavity for receiving the integrated circuit device, said enclosure having a pair of opposite ends having recesses and a pair of opposite sides; and
a leadframe having a central bar pad for carrying said integrated circuit device and a plurality of leads having first and second ends,
the bond pad and the first ends of the leads being located within the cavity of said enclosure,
the second ends of the leads being located outside of said enclosure, forming first and second lead sets of parallel leads projecting from opposite sides of said enclosure,
the leads of said leadframe having leads closest to said ends of said enclosure which are interconnected within the recesses of the ends of said enclosure.

4,514,751
COMPRESSIVELY STRESSES TITANIUM METALLURGY FOR CONTACTING PASSIVATED SEMICONDUCTOR DEVICES
Somnath Bhattacharya, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1982, Ser. No. 452,542
Int. Cl.³ H01L *23/48, 29/46*
U.S. Cl. 357—71 11 Claims



1. Contact metallurgy for an integrated semiconductor substrate having circuit elements therein, comprising:
a dielectric coating on said substrate having an aperture therethrough for electrical connection to a said element in said substrate;
a contact pad comprising
a first layer of compressively stressed titanium covering said aperture and having peripheral portions extending on and bonded to said coating externally of said aperture, with said titanium having oxygen dispersed therein, and
a second layer of solder bondable contact metallurgy concentrically formed on said first layer.

4,514,752
DISPLACEMENT COMPENSATING MODULE
Peter A. Engel, Binghamton; Douglas H. Strope, Apalachin, and Thomas E. Wray, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 10, 1984, Ser. No. 598,631
Int. Cl.³ H01L *23/10*
U.S. Cl. 357—72 6 Claims



1. An electronic module, comprising:
a substrate including a back surface and an edge;
a cap disposed over the top surface of said substrate, the cap having an inner surface, the boundaries of a gap being defined by the edge of said substrate and said inner surface of said cap;
a sealant disposed over the back surface of said substrate; and
holding means disposed between said sealant on one side and the back surface of said substrate coupled with the inner surface of said cap on the other side for holding said sealant external to said gap and preventing said sealant from being disposed therein.

4. A method of manufacturing an electronic module, said module including a substrate, comprising the steps of:
covering and enclosing said substrate with a cap, a gap

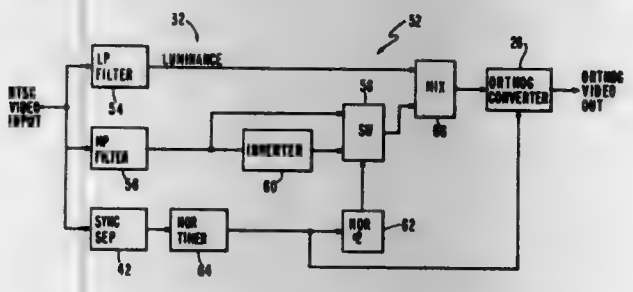
traversing the perimeter of said substrate being defined by the edge of said substrate and the inner surface of said cap;
securing a blocking means to the back side of said substrate and to the inner surface of said cap so as to cover said gap; and
applying a sealant composition to the back side of said substrate until the sealant composition at least partially covers said blocking means.

4,514,753

SPECTRUM CONSERVATION IN ENCODED COLOR TV SIGNALS

Glen R. Southworth, Boulder, and Bruce F. Johnson, Longmont, both of Colo., assignors to Colorado Video, Incorporated, Boulder, Colo.

Filed Nov. 3, 1982, Ser. No. 438,679
Int. Cl.³ H04N 9/493
U.S. Cl. 358—11 **23 Claims**



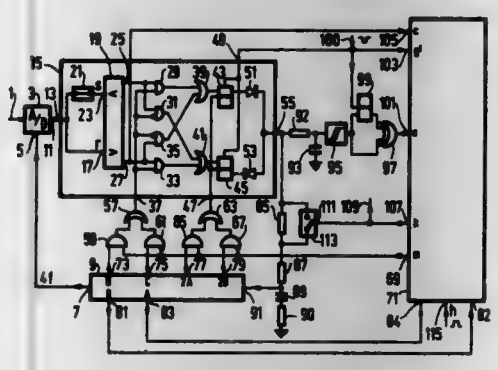
11. A device for spectrum conservation of an encoded color TV signal, said device comprising:
input means for receiving an encoded color TV signal having a high frequency color subcarrier component;
orthogonal encoding means connected with said input means for re-encoding said color TV signal, said orthogonal encoding means including means for eliminating said high frequency color subcarrier component;
transfer means for receiving said re-encoded signal from said orthogonal encoding means and transferring the same by one of transmission and recording; and
orthogonal decoding means connected with said transfer means for receiving said re-encoded signal therefrom, said orthogonal decoding means including means for restoring said high frequency color subcarrier component into said color TV signal.

4,514,754

DIGITAL COLOR TELEVISION SIGNAL PROCESSING CIRCUIT

Antonius H. H. J. Nillesen, and Petrus W. G. Welles, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,545
Claims priority, application Netherlands, Mar. 5, 1982, 8200901
Int. Cl.³ H04N 9/32
U.S. Cl. 358—13 **6 Claims**



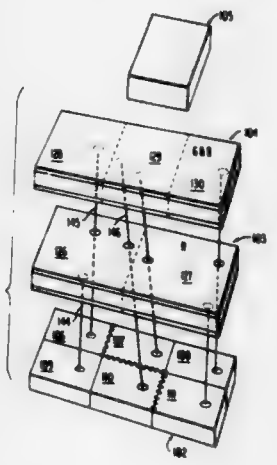
1. A digital colour television signal processing circuit comprising an analogue-to-digital converter which is controlled by a pulse generator producing a pulse signal of four times the chrominance subcarrier frequency, a comparison circuit being coupled to the output of the analogue-to-digital converter for comparing different digital burst samples and for obtaining therefrom a control signal for a phase control loop of the pulse generator, characterised in that the burst samples to be compared are obtained from an input (17) and an output (23) of a delay circuit having such a delay that at a correct pulse generator phase the difference between the burst samples at the input (17) and at the output (23) thereof becomes zero, while the comparison circuit is an inequality detection circuit (15) for detecting independently of the amplitude value of the burst samples inequality of the amplitude value of the burst samples at the input and the output of the delay circuit and converting that inequality, if present, into a control signal (at 91).

4,514,755

SOLID-STATE COLOR IMAGER WITH TWO LAYER THREE STORY STRUCTURE

Masatoshi Tabei, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 512,051, Jul. 8, 1983, Pat. No. 4,443,813, which is a continuation-in-part of Ser. No. 330,921, Dec. 15, 1981, abandoned. This application Mar. 6, 1984, Ser. No. 559,074
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 **12 Claims**

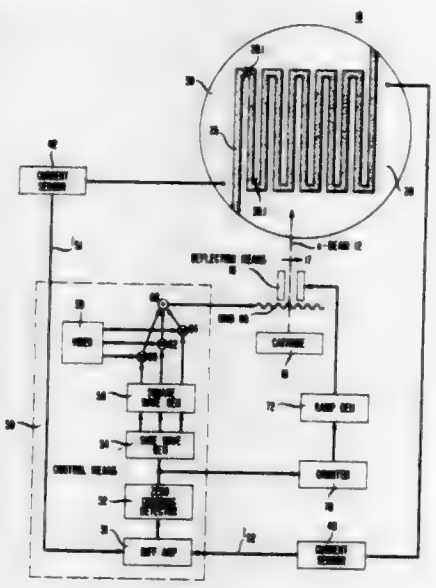


1. A solid state imager, comprising:
a plurality of switching elements;
a first photosensitive layer sensitive to and absorptive of at least a first color and providing a first output;
means for coupling said first output to a first of said switching elements;
a second photosensitive layer receiving light through said first photosensitive layer, said second photosensitive layer having first and second portions and being sensitive to at least second and third colors different from said first color, and providing second and third outputs from said first and second portions, respectively;
means for coupling said second and third outputs to a second and a third of said switching elements respectively; and
a monocolor filter disposed over said second portion of said second photosensitive layer for blocking said second color whereby said third output is responsive to said third color.

4,514,756
SINGLE BEAM COLOR CRT

Stuart L. Blank, Madison, and Eugene I. Gordon, Convent Station, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 22, 1983, Ser. No. 468,502
Int. Cl.[3] H04N 9/22, 9/27
U.S. Cl. 358—66
6 Claims



1. Color CRT apparatus comprising

a target including a plurality of triads each including three adjacent stripes of material for generating primary colors of light when excited by an e-beam, and

means for scanning a single e-beam across the triads to generate said light, characterized by

adjacent stripes of each of said triads having a staircase geometry,

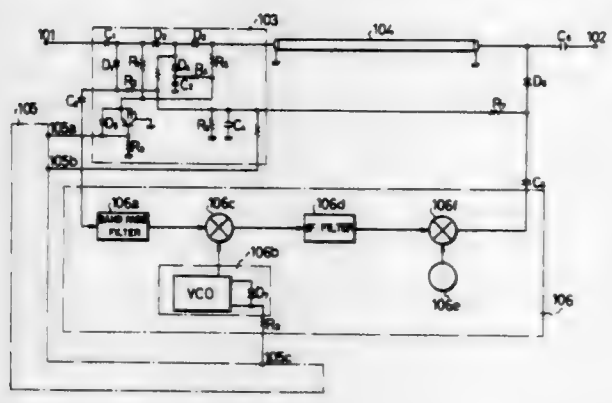
a pair of interdigitated electrodes having fingers each of which overlays and contacts three adjacent stripes of separate ones of said triads, said beam generating trains of current pulses from said electrodes, and

control means responsive to said current pulse trains for modulating said e-beam so as to modulate the intensity of said light.

4,514,757
CATV SELECTION DEVICE

Tasuku Noji, and Katsumi Tobita, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jul. 2, 1981, Ser. No. 279,689
Claims priority, application Japan, Jul. 3, 1980, 55-91033
Int. Cl.[3] H04N 7/16, 5/782
U.S. Cl. 358—86
4 Claims

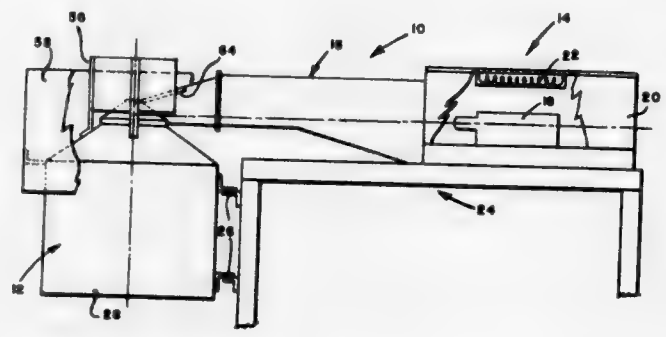


1. A device for delivering either broadcast TV signals or a CATV signal to a TV set having a vacant frequency not used for local TV broadcast signals, said device having means including an input terminal for simultaneously receiving a broadcast TV signal carrying a plurality of TV channel signals and a CATV signal carrying a plurality of CATV channel signals, means for selecting a specific CATV channel signal from said CATV signal, an output terminal adapted to be connected to the TV set, conversion means for receiving said CATV signal to convert the selected CATV channel signal into the frequency of the vacant channel of the TV set, switch means for switching electronically between bypassing signals received by said input terminal to said output terminal and delivery of signals received by said input terminal to said conversion means, said selecting means including selection push buttons for selecting desired CATV broadcasting channels and a bypass button for bypassing the signals received by said input terminal to said output terminal, wherein, for receiving a channel in the CATV signal said selection buttons are selectively operated to make said electronic switching means deliver the signal from said conversion means to said output terminal, whereas, for receiving TV broadcast signals, said bypass push button is operated to make said electronic switch means deliver said signal from said input terminal to said output terminal, said switch means including a first blocking diode connected between said input terminal and said output terminal, a second blocking diode connected between said input terminal and said conversion means, and biasing means for forwardly biasing said first blocking diode while reversely biasing said second blocking diode when broadcast TV signals are selected and reversely biasing said first blocking diode while forwardly biasing said second blocking diode when said CATV signal is selected, further including means including a third blocking diode connected between said conversion means and said output terminal, said biasing means forwardly biasing said third blocking diode when said CATV signal is selected and reversely biasing said third blocking diode when said broadcast TV signals are selected.

4,514,758
FALL VELOCITY INDICATOR/VIEWER

Robert O. Berthel, Windham, N.H.; Vernon G. Plank, Mansfield, Mass.; Stephen H. Jones, Weston, Mass., and Anthony J. Matthews, Salisbury, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 18, 1982, Ser. No. 442,496
Int. Cl.[3] H04N 7/18
U.S. Cl. 358—93
17 Claims



1. A fall velocity indicator/viewer comprising:

a sampling compartment, said sampling compartment having an adjustably-sized port in the top portion thereof for allowing free falling particulate matter to pass therethrough and through a viewing area of preselected dimensions;

means located within said sampling compartment for providing a source of light at predetermined intervals of time, said light providing means being positioned so as to illuminate said free falling particulate matter as it is falling through said viewing area;

means located within said sampling compartment for reflecting said light in order to aid in the illumination of said free falling particulate matter in said viewing area during said predeteremined intervals of time;

means positioned a preselected amount of space from said

viewing area and in optical alignment with said viewing area for directly, continually monitoring said free falling particulate matter and providing signals representative thereof;

means for encasing said preselected space from said viewing area to said monitoring means, said encasing means having reflecting means therein for providing a top view of said particulate matter as said particulate matter passes through said viewing area thereby permitting said monitoring means to indirectly, continually monitor the top view of said particulate matter; and

means operably connected to said monitoring means for receiving said signals therefrom and providing pictorial information sufficient to clearly view said particulate matter at different magnifications as well as enable said fall velocity of said particulate matter to be determined.

4,514,759

DIAGNOSTIC RADIOLOGY SYSTEM FOR ANGIOGRAPHIC X-RAY EXAMINATIONS

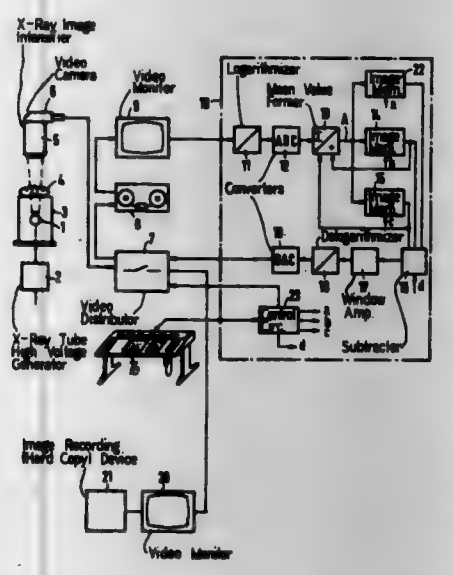
Heribert Amtmann, Langensendelbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,279

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1982, 3202449

Int. Cl.³ H04N *5/32*; A61B *6/00*

U.S. Cl. 358—111 **2 Claims**



1. A diagnostic radiology system for angiographic x-ray examinations, comprising an image intensifier television chain, first and second image memories, control means controlling said memories for effecting storage of image data arriving at different times, subtractor means connected with said image memories for effecting the subtraction of the memory contents, and a reproduction device for registering the subtraction images, a third image memory being present, said control means controlling said first and third image memories to selectively effect storage of a masking image in said first and in said third of said image memories, and controlling said second image memory to effect storage of an image in said second image memory for processing in said subtractor means selectively in conjunction the masking image stored by said third image memory, and selectively in conjunction with the masking image stored by said first image memory.

4,514,760

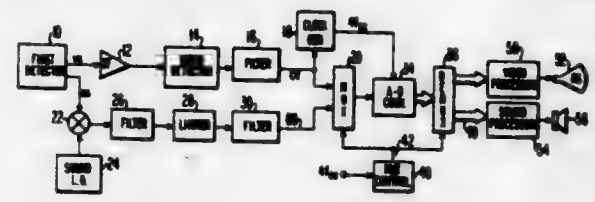
DIGITAL TELEVISION RECEIVER WITH TIME-MULTIPLEXED ANALOG-TO-DIGITAL CONVERTER

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 17, 1983, Ser. No. 467,284

Int. Cl.³ H04N *7/04, 5/60*

U.S. Cl. 358—143 **22 Claims**



11. In a television receiver including a source of analog video signals having a periodic line repetition rate and a period corresponding thereto, a source of analog sound signals, a digital video signal processor and a digital sound signal processor, apparatus comprising:

multiplexing means having inputs for receiving said analog video signals and said analog sound signals, respectively, said multiplexing means being responsive to a control signal for providing at an output thereof a selected one of said analog video signals and said analog sound signals;

an analog-to-digital converter having an input for receiving said selected one of said analog video signals and said analog sound signals, and having an output at which digital samples corresponding thereto are developed;

demultiplexing means having outputs coupled to said digital video signal processor and to said digital sound signal processor, respectively, said demultiplexing means being responsive to said control signal for coupling the digital samples supplied to an input thereof from the output of said analog-to-digital converter to a selected one of its outputs; and

control means for developing said control signal at a periodic rate no less than said line repetition rate of said analog video signals to apply the digital samples corresponding to said analog video signals to said digital video signal processor substantially as they are developed during said line repetition period and to apply digital samples corresponding to said analog sound signals to said digital sound signal processor during said line repetition period.

4,514,761

DATA ENCRYPTION TECHNIQUE FOR SUBSCRIPTION TELEVISION SYSTEM

Richard G. Merrell, Hebron, and Fredreck H. Auld, Glenview, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 23, 1982, Ser. No. 410,801

Int. Cl.³ H04N *7/16*; H04K *1/04*

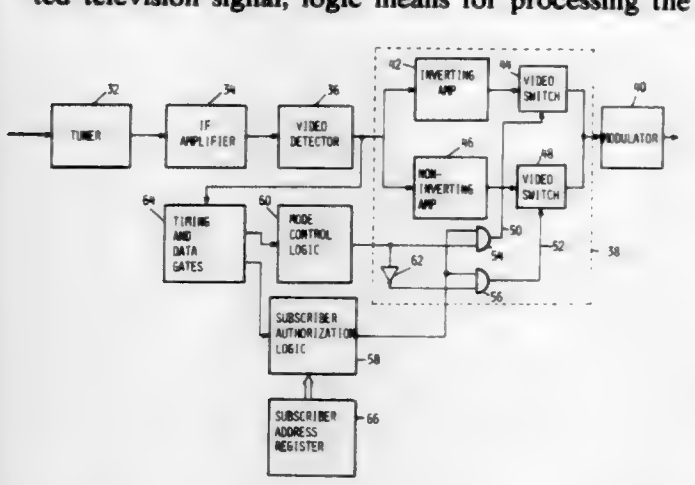
U.S. Cl. 358—122 **8 Claims**

1. A subscription television system comprising:

head-end means including means for transmitting selected fields of a television signal in a scrambled form, means for inserting a plurality of system control data bits in each of a plurality of horizontal lines of the vertical blanking intervals of said transmitted television signal, said system control data bits being variable from horizontal line to horizontal line and from field to field of said transmitted television signal, and means for inserting a plurality of mode control data bits forming a mode control code in a selected horizontal line of the vertical blanking intervals of said transmitted television signal, said mode control data bits being adapted for processing with selected ones of said system data bits according to a selected function for yielding a non-transmitted predetermined control code when the immediately following field of said television

signal is transmitted in said scrambled form and for yielding another code when the immediately following field of said television signal is not transmitted in said scrambled form; and

decoding means including means for receiving said transmitted television signal, logic means for processing the received mode control data bits and the received selected system data bits in accordance with said selected function for deriving said predetermined control code and said other code and means responsive to said derived predetermined control code for enabling unscrambling of the following field of said received television signal.



4,514,762

VIDEO SIGNAL MULTIPLYING CIRCUIT

Henricus J. van Gompel, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

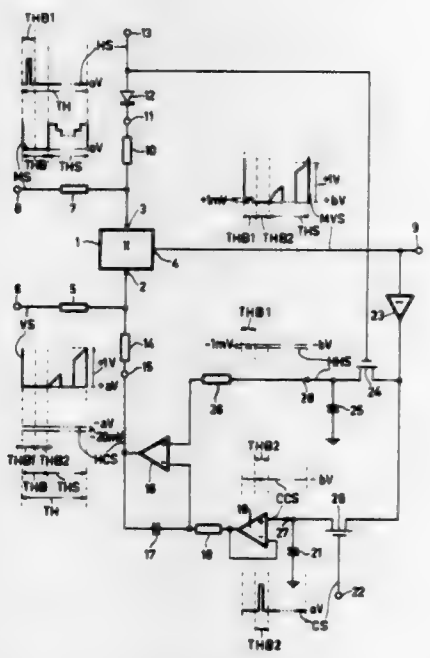
Filed Mar. 3, 1983, Ser. No. 471,932

Claims priority, application Netherlands, Mar. 31, 1982, 8201341

Int. Cl.³ H04N *5/14, 5/34*

U.S. Cl. 358—163

4 Claims



1. A video signal multiplying circuit having a first terminal for receiving a video signal, a second terminal for receiving a multiplying signal and a third terminal for supplying a video signal multiplied by a signal multiplier, which terminals are coupled to respective corresponding terminals of the signal multiplier, the signals occurring with alternate scanning periods and blanking periods, characterized in that a fourth terminal of the signal multiplying circuit which, at the signal multiplier is associated with its second terminal, is coupled to a fifth terminal for receiving a periodically pulse-shaped signal having a pulse in a portion of the blanking period, the third terminal for supplying the multiplied video signal providing feedback via a signal sample-and-hold circuit having two outputs and a subsequent signal comparison-and-integrating circuit, to a sixth terminal which, at the signal multiplier, is associated with its first terminal, the signal sample-and-hold circuit being operative in the blanking period, more specifically in relation to the two respective outputs during the duration of said pulse and outside this pulse duration.

4,514,763

SOUND SIGNAL AND IMPULSE NOISE DETECTOR FOR TELEVISION RECEIVERS

Abraham E. Rindal, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

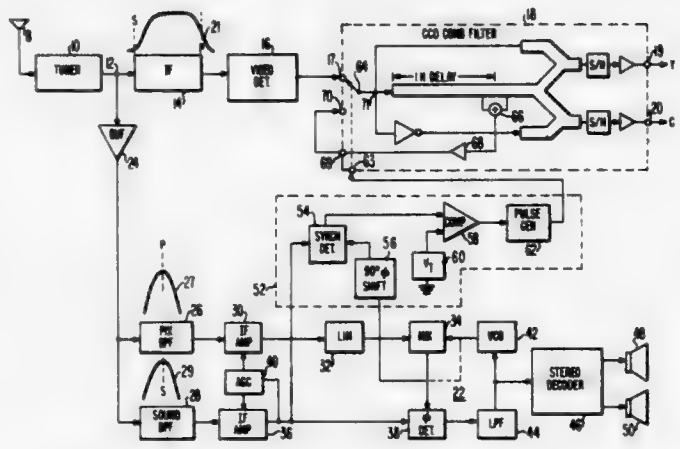
Filed Oct. 29, 1982, Ser. No. 437,826

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167

11 Claims



1. In a television system including a source of an intermediate frequency (IF) signal comprising an IF picture carrier amplitude modulated with video information and an associated IF sound carrier frequency modulated with audio information, having processing circuits for detecting said video information, and having compensation circuitry responsive to a defect control signal for reducing effects of noise in said picture carrier, apparatus for detecting said audio information and for providing said defect control signal comprising:

a controllable oscillator responsive to an oscillator control signal coupled to an oscillator control input and having an output at which is provided a controlled frequency output signal;

a frequency translation circuit having a first input coupled to be responsive to said IF picture carrier, a second input coupled to be responsive to said oscillator output signal, and an output for providing a frequency translated signal;

a phase detector having a first input coupled to be responsive to said IF sound carrier, a second input coupled to be responsive to said frequency translated signal, and an output;

lowpass filter means coupled between the output of said phase detector and the control input of said controllable oscillator for providing said oscillator control signal and for providing said audio information;

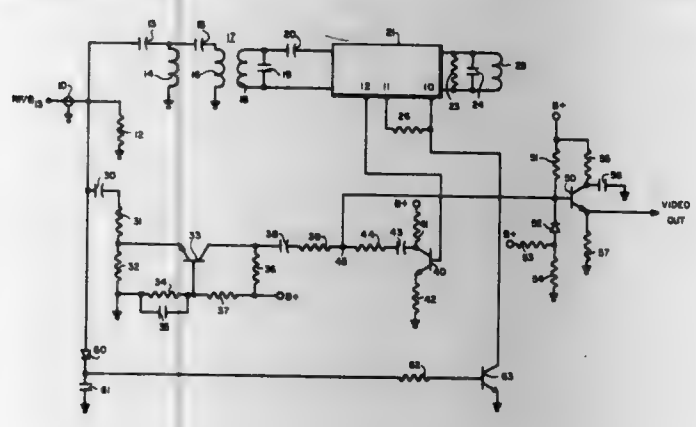
a synchronous detector having a first input coupled to be responsive to said sound carrier, a second input coupled to be responsive to said frequency translated signal, and an output for providing detected amplitude variations of said sound carrier indicative of the presence of noise in the picture carrier; and

control circuitry coupled to the output of said synchronous detector for providing said defect control signal whenever said detected amplitude variations exceed a predetermined threshold.

4,514,764
VIDEO MONITOR WITH AUTOMATIC SWITCHING BETWEEN RF AND BASEBAND VIDEO SIGNALS

Arthur N. Borg, Lake Forest, and William J. Mark, Glenview, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 7, 1983, Ser. No. 472,552
Int. Cl.[3] H04N *5/46*
U.S. Cl. 358—181 6 Claims



1. A video monitor selectively operable with RF input signals and baseband video signals comprising:

a common input terminal;

a first channel including RF amplification means, detection means and video amplification means coupled to said common input terminal;

a second channel including baseband video amplification means coupled to said common input terminal;

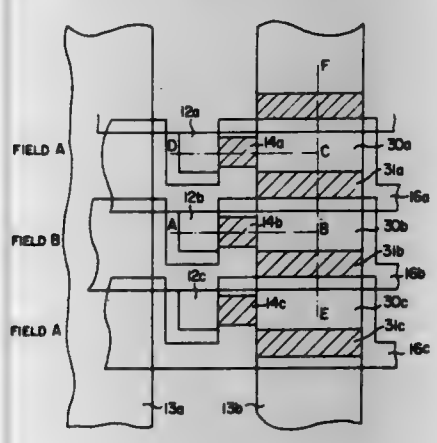
common video signal translation means coupled to the outputs of both said channels to provide selected video output signals; and

means for disabling said first channel responsive to the input of a baseband video signal at said common input terminal.

4,514,765
SOLID-STATE IMAGE SENSOR

Yutaka Miyata, Hirakata; Takao Chikamura, Kyoto, and Shinji Fujiwara, Minoo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 16, 1982, Ser. No. 408,677
Claims priority, application Japan, Aug. 20, 1981, 56-129373
Int. Cl.[3] H04N *3/14*
U.S. Cl. 358—213 10 Claims

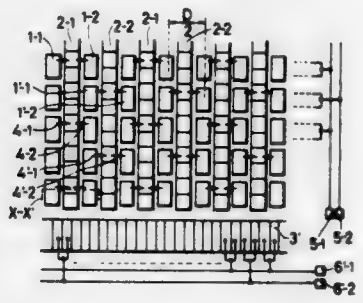


1. A solid-state image sensor comprising a semiconductor substrate having a plurality of groups of picture-element diodes and a signal scanning means for interlaced scanning of said groups of diodes; a photoconductive film formed on said semiconductor substrate and electrically connected to said diodes; a transparent electrode formed on said photoconductive film; and voltage means for differentially applying a voltage to said photoconductive film corresponding to each group of said diodes in order to compensate for possible differences of setting voltages or areas of the photoconductive film for the respective groups of diodes.

4,514,766
SOLID-STATE IMAGING DEVICE

Norio Koike, Tokyo; Iwao Takemoto, Hinode; Shinya Ohba, Shiroyama; Toshiaki Masuhara, Hinode, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,791
Claims priority, application Japan, Apr. 7, 1982, 57-56607; Aug. 16, 1982, 57-141115
Int. Cl.[3] H04N *3/15*
U.S. Cl. 358—213 4 Claims

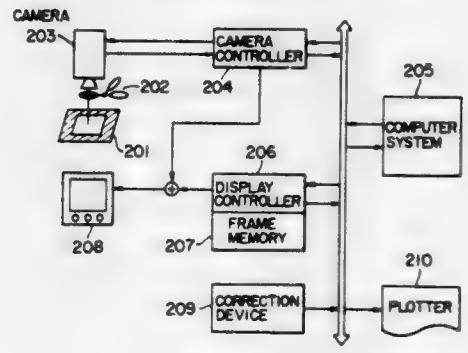


1. In a solid-state imaging device having a plurality of photoelectric elements which are disposed on a semiconductor substrate in rows and columns and which convert optical information into electric signals, and a plurality of vertical CCD shift registers and a horizontal CCD shift register which successively shift the electric signals in vertical and horizontal directions; a solid-state imaging device characterized in that said vertical CCD shift registers are allotted to said photoelectric elements of respective columns, and that the photoelectric elements of each column are alternatively connected to left and right vertical CCD shift registers, whereby said electric signals of said photoelectric elements of even-numbered rows and odd-numbered rows are separately delivered to said vertical CCD shift registers.

4,514,767
APPARATUS FOR MAKING MASKS AND/OR BLOCK COPIES FOR PRINTING

Yasuo Kubota; Kazuhiko Tanaka, and Kazuyuki Kikushima, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,870
Claims priority, application Japan, Dec. 26, 1981, 56-214319
Int. Cl.[3] H04N *1/40, 5/65*
U.S. Cl. 358—280 4 Claims



1. An apparatus for making masks for printing comprising:

(a) a picture input device for deriving through a filter a signal relating to the optical density of a picture of an object to be introduced as input;

(b) a picture processing device for subjecting the resulting picture optical density data from said picture input device

to operational processing thereby to form a line drawing picture including:

(i) a device for obtaining a picture signal relating to an outline specifying sheet, a block copy, or a pattern original from said picture input device to compute an optical density histogram,

(ii) a device for setting an optimum slice value relating to the state of optical density distribution of picture elements on the basis of the resulting output of the computing device; and,

(iii) a device for subjecting, on the basis of said optimum slice value, the output of said picture input device to thresholding; and

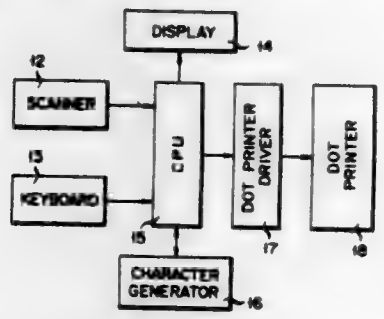
(c) a device for forming a mask or block copy for printing on the basis of the resulting line drawing picture data obtained by means of the picture processing device.

4,514,768

IMAGE FORMING APPARATUS

Toshimichi Ishizawa, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1983, Ser. No. 535,160
Claims priority, application Japan, Sep. 29, 1982, 57-170352
Int. Cl.³ H01N *1/00*
U.S. Cl. 358—296 **7 Claims**



1. An image forming apparatus comprising:

means for picking up document image information from a document through photoelectric conversion;

memory means in which pattern data corresponding to a plurality of different type face patterns are stored;

pattern data specifying means for specifying pattern data corresponding to at least one type face pattern stored in said memory means; and

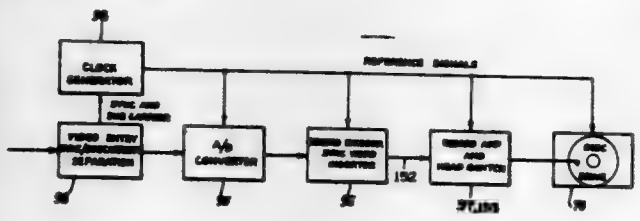
means for reproducing document image information and pattern data with different dot densities, respectively.

4,514,769

METHOD AND APPARATUS FOR PROCESSING COLOR VIDEO SIGNALS FOR RECORDING AND REPRODUCING

Luigi C. Gallo, Woodside, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Division of Ser. No. 763,762, Jan. 28, 1977, Pat. No. 4,181,817. This application Dec. 31, 1979, Ser. No. 108,881
Int. Cl.³ H04N *5/781, 9/491*
U.S. Cl. 358—310 **4 Claims**



1. A method of processing an analog color video information signal for recording on a record medium, the color video information signal having horizontal line synchronizing pulses defining consecutive horizontal lines of color video information and a chrominance component including a subcarrier modulated by the color video information, the subcarrier having a frequency that is an odd multiple of one-half the frequency of the horizontal line synchronizing pulses, comprising the steps of:

sampling the analog color video information signal at times determined by a first clock signal having a predetermined frequency that is an odd multiple of the subcarrier frequency and a phase which is reversed on every consecutive horizontal line whereby a sampled signal is obtained;

converting the sampled signal to at least one digital data stream, said digital data stream having a phase discontinuity at each of the locations in the data stream corresponding to the phase reversal in the first clock signal; and

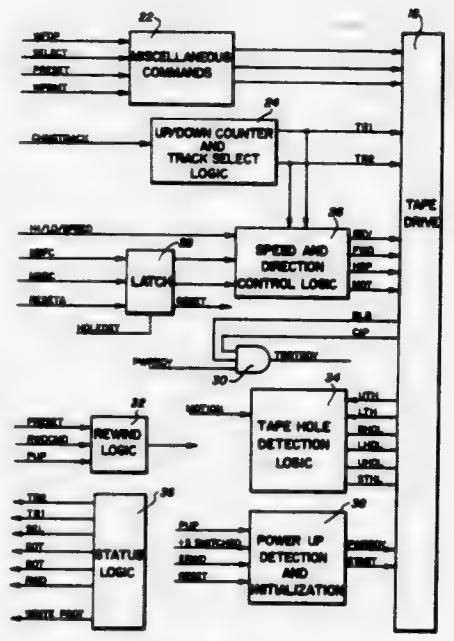
encoding the data stream for recording on the record medium at times determined by a second clock signal having a frequency substantially the same as the predetermined frequency and a continuous phase whereby a phase continuous encoded data stream is obtained.

4,514,770

ELECTRONIC CIRCUIT

Edgar A. Bowden, Arlington, and Robert V. Przybyl, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 8, 1982, Ser. No. 338,174
Int. Cl.³ G11B *25/06*
U.S. Cl. 360—69 **6 Claims**



1. A method for providing recording information of a seismic multi-track tape recorder having first set of equipment receiving continuous power and second set of equipment having its power switched off when not in operation comprising the steps of:

detecting the rotational direction of the drive of the tape recorder;

sensing motion of the tape in the tape recorder;

determining which track is in position for use and producing an information signal in response thereto;

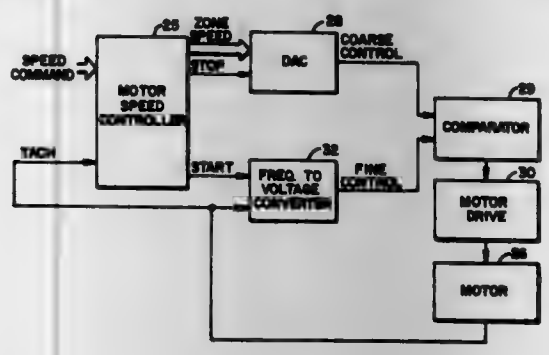
producing a first signal whenever motion is present and drive rotation is in one direction, a second signal whenever motion is present and drive rotation is in another direction, and a third signal whenever motion is absent; and

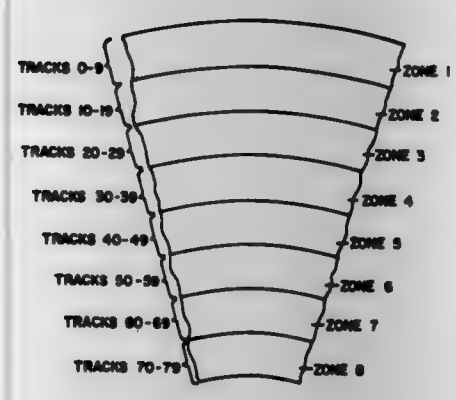
storing said first signal, said second signal and said third signal, and said information signal when said second set of equipment is not in operation.

4,514,771
METHOD AND APPARATUS FOR IMPROVING DISK STORAGE CAPACITY

Glenn Stark, Santa Cruz, and David M. Barton, San Jose, both of Calif., assignors to Victor Technologies Inc., Scotts Valley, Calif.

Filed Oct. 13, 1982, Ser. No. 434,075
Int. Cl.[3] G11B *19/24*
U.S. Cl. 360—73 7 Claims





1. A method of storing information on a rotatable magnetic disk using a movable recording transducer, said method comprising the steps of:

(a) rotating said disk at a first angular speed when said transducer is operating over a first group of adjacent tracks; and

(b) rotating said disk at a second angular speed when said transducer is operating over a second group of adjacent tracks located at different radial distances from the center of said disk from said first group of adjacent tracks;

said first and second angular speeds being selected to provide substantially the same relative linear speed between said transducer and the surface of said disk; and

the number and location of each said group of tracks being selected in accordance with the minimum circumferential length of a track required to accommodate a sector of information.

3. A motor speed controller for a rotatable magnetic disk system, said controller including:

means responsive to a command signal specifying a track zone on the disk recording surface for generating a disk speed reference signal corresponding to said track zone, said means including motor speed controller means for generating zone speed control signals in response to said track zone commands and digital to analog converter means for generating said disk speed reference signal in response to said zone speed control signal;

means for converting said disk speed reference signal to an output signal adapted to be coupled to a disk motor; and

means for generating a variable amplitude motor speed feedback signal from a variable frequency motor speed signal supplied from said disk motor,

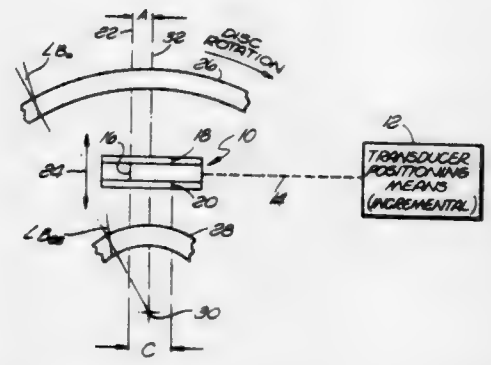
said converting means including first means for comparing said variable amplitude motor speed feedback signal with said disk speed reference signal and for switching said output signal in accordance with excursions in said motor speed feedback signal representing relatively small differences between motor speed and zone speed;

said disk speed reference signal generator further including means responsive to said variable frequency motor speed signal for altering the value of said zone speed control signal when the difference between motor speed and a presently specified zone speed is relatively large.

4,514,772
APPARATUS FOR READING/WRITING DATA ON MAGNETIC DISC

Gill Cantwell, 2434 Purdue Ave. #17, Los Angeles, Calif. 90064

Filed Feb. 9, 1983, Ser. No. 465,139
Int. Cl.[3] G11B *5/55*
U.S. Cl. 360—75 4 Claims



3. Apparatus for reading/writing data on a single flexible rotatable magnetic disc comprising:

(A) first means for magnetically reading/writing along a linear path parallel to a radial disposed in an orthogonal plane extending from the axis of rotation of said disc, said linear path being displaced from said radial by an amount substantially equal to 0.018 inches, said second means positioning said first means in incremental steps along said linear path at a ratio of:

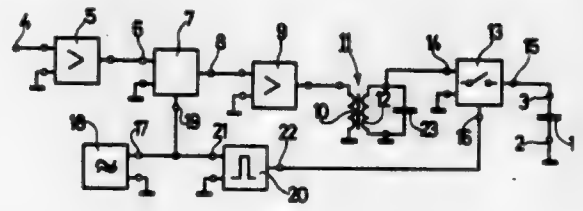
$$\frac{\text{HEAD GAP PITCH}}{\text{DATA RING PITCH}} = \frac{\sqrt{R_{outer}^2 - A^2} - \sqrt{R_{inner}^2 - A^2}}{R_{outer} - R_{inner}}$$

where R = the distance between the axis of rotation of the disc and the center of the data track under consideration, and A = 0.018 inches.

4,514,773
CIRCUIT ARRANGEMENT FOR GENERATING AN ACTUATING SIGNAL FOR A PIEZO-ELECTRIC ELEMENT OF A POSITIONING DEVICE

Dietfried Süsz, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1983, Ser. No. 493,399
Claims priority, application Austria, May 13, 1982, 1887/82
Int. Cl.[3] G11B *21/02*
U.S. Cl. 360—77 16 Claims



1. A circuit arrangement for generating an actuating voltage for a piezo-electric element of a positioning device, said circuit arrangement comprising, means for applying a control signal which is representative of a positional error to a signal conver-

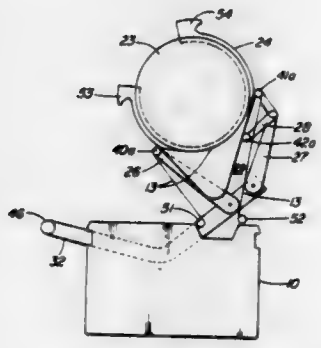
sion stage, means for supplying an output signal of the signal conversion stage to the primary circuit of a transformer, means coupling the piezo-electric element to a secondary circuit of said transformer via a bipolar switching device, means for actuating the bipolar switching device by a switching signal having a specific relation to the output signal of the signal conversion stage, characterized in that the signal conversion stage comprises an amplitude modulator to which the control signal is applied, an oscillator for applying a periodic carrier signal to said amplitude modulator, said carrier signal having a higher frequency than the control signal, and a pulse-shaper stage responsive to said carrier signal for developing a periodic pulse-shaped switching signal for actuating the switching device, said switching signal corresponding in time to only one of two peak amplitude values of the carrier signal and having a pulse width less than half the period of the carrier signal.

4,514,774

METHOD AND AN APPARATUS FOR EXTRACTING TAPE FROM A TAPE CARTRIDGE OF THE INTERNAL BELT-DRIVE TYPE

Dewey M. Sims, Jr., Wayne, Mich., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 30, 1982, Ser. No. 393,598
Int. Cl.³ G11B *15/66, 5/08, 15/32, 23/04*
U.S. Cl. 360—95 **6 Claims**



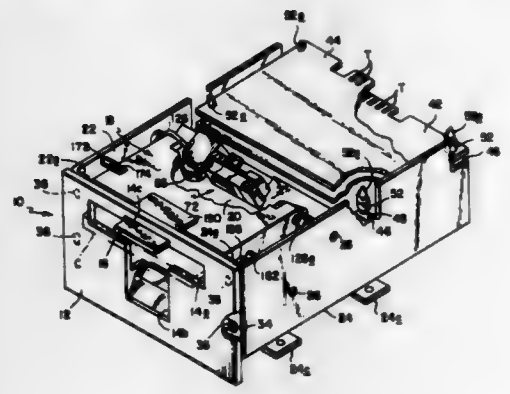
1. A method of withdrawing tape from an internal belt-drive tape carrier, said method comprising the steps of:
(a) applying a force to said tape in a direction so as to bias said tape towards the exterior of said carrier; and
(b) driving the reels of said carrier while performing step (a).

4,514,775

STREAMING CASSETTE TAPE TRANSPORT

George H. Manning, Nashua, and Pasquale R. Riccio, Salem, both of N.H., assignors to MFE Corporation, Salem, N.H.

Filed May 3, 1982, Ser. No. 374,046
Int. Cl.³ G11B *15/66, 21/08, 5/55*
U.S. Cl. 360—96.6 **6 Claims**



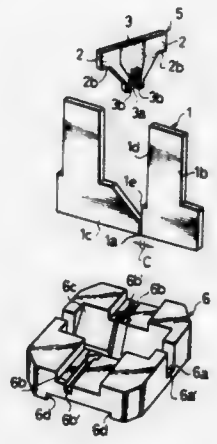
1. A cassette tape transport for a standard cassette comprising
A. a base;
B. a generally vertical front plate, said plate
(1) defining a cassette-receiving slot, and
(2) being attached to the base so that it makes an acute angle with the base;
C. a magnetic read/write head assembly fixedly mounted to the base at a location thereon spaced generally opposite the slot;
D. cassette holding means
(1) pivotally connected to the base so that the holding means can swing between
(a) a loading position wherein they lie away from the base in a plane aligned generally with said slot and said head assembly and, along with the opposing surfaces of the front plate and base, define a right triangle, and
(b) an operating position wherein the holding means lie against the base in line with said head assembly, and
(2) including
(a) a holder swingably connected to the base so as to be swingable between said positions;
(b) a cassette-receiving slider slidably mounted to the holder, said slider being movable by pushing a cassette through the slot when the holder is in its said loading position between
(i) an extended position wherein it resides adjacent to and registers with said slot, and
(ii) a retracted position wherein it is disposed away from said slot nearer said head assembly so as to position the leading edge of the cassette against the head assembly;
(c) means for biasing the slider toward its extended position;
(d) means for releasably retaining the slider in its retracted position; and
(e) means for releasing the retaining means so that the slider slides to its extended position when the holder is moved to said loading position; and
E. means for releasably retaining the holding means in its two positions, said transport defining a spatial volume that is about 3½ by 6 by 8 inches.

4,514,776

MAGNETIC HEAD AND METHOD OF MANUFACTURING THE SAME

Shoichi Koyama, Horinouchi, and Tetsuya Iwata, Niigata, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,117
Claims priority, application Japan, May 8, 1981, 56-69060; Jun. 17, 1981, 56-93532
Int. Cl.³ G11B *5/12, 5/27, 5/251, 5/28*
U.S. Cl. 360—121 **10 Claims**



1. A magnetic head having a recording/reproducing core and an erase core, said erase core being formed as a unitary chip element comprised of two erase core elements joined together by a nonmagnetic binding material, and means including a groove formed in said nonmagnetic binding material prior to assembly of said magnetic head and adapted to receive

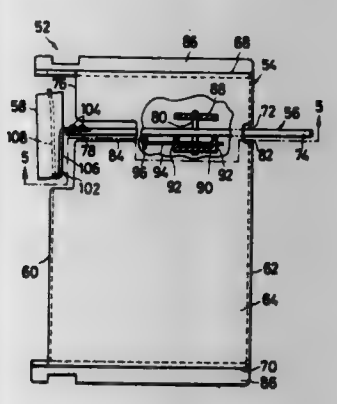
said recording/reproducing core for positioning it relative said erase core.

4,514,777

DEVICE FOR CLEANING THE MAGNETIC HEAD OF A RECORDER/REPRODUCER APPARATUS FOR USE WITH A MAGNETIC TAPE CARTRIDGE OR THE LIKE

Tomio Kudo, Tokorozawa, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 599,947
Claims priority, application Japan, May 9, 1983, 58-68770
Int. Cl.[3] G11B *5/41*
U.S. Cl. 360—128 17 Claims



1. A head cleaner device for a recorder/reproducer apparatus of the type for use with a magnetic tape cartridge, the apparatus having a housing defining a cartridge compartment for receiving the tape cartridge, and a magnetic head within the housing for data transducing contact with the magnetic tape of the tape cartridge, the head cleaner device comprising:

(a) a casing adapted to be slid into and out of the cartridge compartment of the recorder/reproducer apparatus;

(b) a handlebar operatively mounted to the casing and having one end projecting therefrom, the projecting end of the handlebar being capable of manipulation for moving another end thereof relative to the casing when the latter is received in the cartridge compartment; and

(c) a cleaner body mounted to the other end of the handlebar for direct contact with the magnetic head when the casing is received in the cartridge compartment;

(d) whereby the magnetic head can be cleaned by the cleaner body as the handlebar is manipulated while the casing is inserted in the cartridge compartment;

(e) said casing being approximately equal in size and shape to the tape cartridge and having a front side, a rear side opposite the front side, and a pair of opposed main sides joining the front and rear sides in right angular relation thereto, the rear side of the casing having formed therein an aperture for allowing said one end of the handlebar to project out of the casing, the front side of the casing having formed therein another aperture for exposing said other end of the handlebar to which the cleaner body is mounted; and

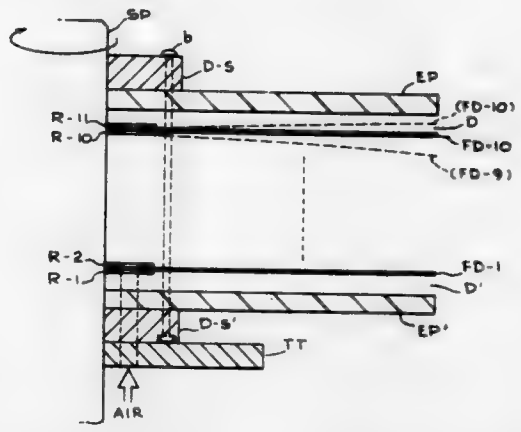
(f) said handlebar being mounted within the casing for pivotal motion about an axis parallel to all of the front, rear and main sides of the casing.

4,514,778

PARTITIONABLE PACK WITH END PLATES

Herbert U. Ragle, Thousand Oaks, and Dean DeMoss, Camarillo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 124,750, Feb. 26, 1980, abandoned, which is a division of Ser. No. 960,267, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 864,011, Dec. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 711,647, Aug. 4, 1976, Pat. No. 4,086,640. This application Oct. 6, 1982, Ser. No. 433,180
Int. Cl.[3] G11B *23/02, 5/012*
U.S. Cl. 360—133 15 Claims



1. In combination with a pack of flexible record disks, the pack being formed and arrayed in concentric stack to be co-rotated at a prescribed rotational velocity,

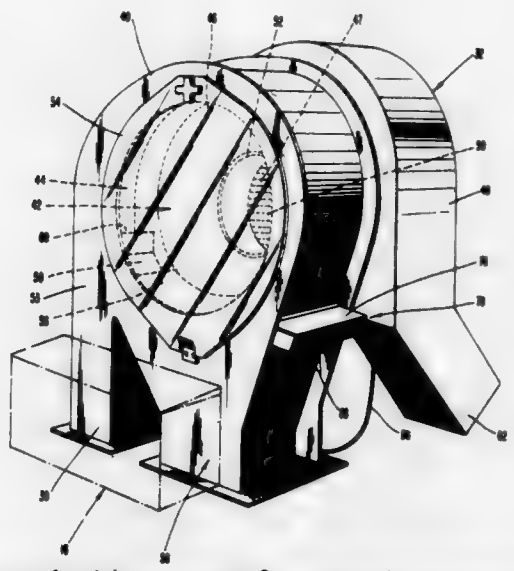
a pair of "floppy-stack" end-plates, each such stack including a number of contiguous unseparated flexible disks, and being disposed at a respective end of the pack and adapted to assume the form of an integral relatively rigid, flat plate when co-rotated with the pack at the said velocity.

4,514,779

METHODS AND APPARATUS FOR NEUTRALIZING A STATIC ELECTRICAL CHARGE ON POWDER PARTICLES

John S. Wilkinson, Venice, Fla., assignor to Therm-O-Type Corporation, Nokomis, Fla.

Filed Jun. 9, 1983, Ser. No. 502,549
Int. Cl.[3] H05F *3/00*
U.S. Cl. 361—213 17 Claims



1. In a powder/air separator for separating powder particles from an air stream in which the powder particles are entrained, said separator comprising:

a casing forming a separation chamber having a powder/air inlet and a powder outlet, said casing including a back wall and a side wall extending outwardly from said back

wall, said side wall including a curved portion which extends from said powder/air inlet and merges with a straight portion of said side wall, the latter extending toward said powder outlet,

an air outlet formed in said back wall,

suction means for creating suction pressure through said air outlet to evacuate said separation chamber,

a curved deflector wall disposed opposite said curved portion of said side wall to form therewith a generally annular space around said air outlet in which the air swirls before passing through said air outlet,

said powder/air inlet being arranged to introduce a powder-/air stream tangentially into said separation chamber under the influence of the suction created therein by said suction means, such that the powder particles are centrifugally urged toward said side wall during travel therealong toward said powder outlet, the improvement comprising:

a static charge eliminator for neutralizing the electrical charge of the powder particles before the particles reach said powder outlet, said static eliminator comprising:

an electrically chargeable means, and

air conducting means extending around said electrically chargeable means and having a gas exit communicating with said separation chamber, and a gas entrance communicating with air located outside of said separation chamber, said air conducting means arranged to conduct flow of air across said electrically chargeable means from said gas inlet under the influence of suction from said separation chamber, with ozone gas being formed as a reaction product during passage of such air across said electrically chargeable means,

said gas exit being arranged to introduce the ozone gas into said separation chamber along a portion of said side wall such that the ozone gas contacts and neutralizes the powder particles traveling therepast,

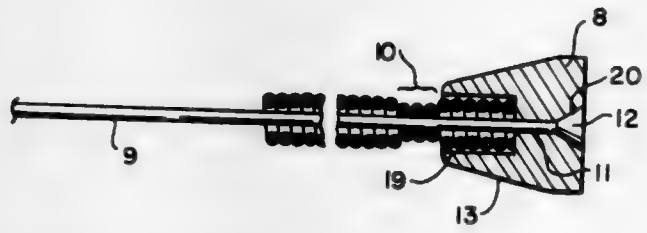
said delector wall and said side wall forming a gap through which the powder travels toward said powder outlet, said gas exit being arranged to introduce ozone gas into said separation chamber downstream of said gap.

4,514,780

DISCHARGE ELECTRODE ASSEMBLY FOR ELECTROSTATIC PRECIPITATORS

Richard C. Brussee, Euclid, and Robert E. Dowd, Jr., Kirtland, both of Ohio, assignors to Wm. Neundorfer & Co., Inc., Cleveland, Ohio

Filed Jan. 7, 1983, Ser. No. 456,482
Int. Cl.³ B03C *3/41*
U.S. Cl. 361—226 **15 Claims**



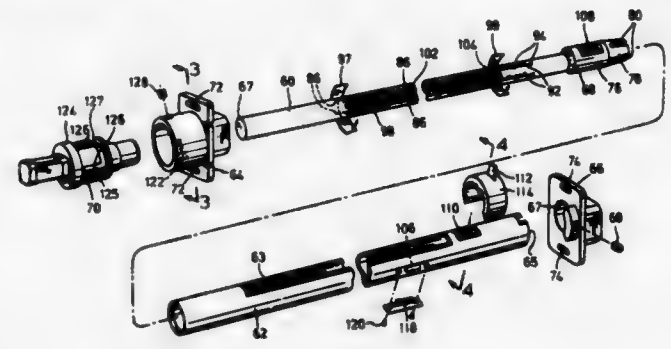
1. A high-voltage discharge electrode assembly for an electrostatic precipitator comprising, in combination, an elongated discharge electrode, an anchoring element, one end of said elongated discharge electrode being secured at said anchoring element, and a flexible shroud as an attachment over said elongated high-voltage discharge electrode which closely surrounds said elongated discharge electrode adjacent said anchoring element, whereby the life of said electrode in said electrostatic precipitator is extended.

4,514,781

CORONA DEVICE

Paul E. Plaschaert, R.R. #1, Limehouse, Ontario L0P 1H0; Dolf Landheer, 49 Melrose Ave., Toronto, Ontario, Canada M5M 1Y6, and Harold W. Cobb, 30 Conant St., Acton, Mass. 01720

Filed Jun. 10, 1983, Ser. No. 503,007
Claims priority, application Canada, Feb. 1, 1983, 420655
Int. Cl.³ H01T *19/00*
U.S. Cl. 361—230 **8 Claims**



1. A corona device for use with a dielectric surface to modify electrostatic charge on the surface, the device comprising:

an elongate dielectric support member;

a plurality of straight corona electrodes mounted on the member in spaced relation about the member, each electrode having an electrically conductive core and an electrically insulating sheath;

an electrically conductive biasing member encasing the support member and electrodes on the support member;

means journalling the support member for rotation and angular location at a number of positions equal to at least the number of electrodes;

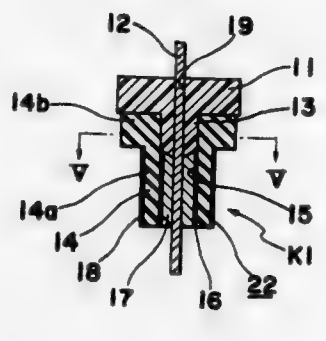
electrical contact means for connecting the device to an electrical source, the contact means being coupled to the journalling means and establishing continuous electrical connection to the biasing member and to a selected one of the electrodes whereby upon rotating the support member into each of said selected positions electrical connection is made to a different one of the electrodes so that the user can select the electrodes to isolate damaged electrodes until all of the electrodes have been used.

4,514,782

MULTIPLE FEEDTHROUGH-CAPACITOR UNIT

Yukio Sakamoto, and Takeshi Tanabe, both of Takefu, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 5, 1983, Ser. No. 557,853
Claims priority, application Japan, Mar. 1, 1983, 58-29946[U]
Int. Cl.³ H01G *1/14*; H01R *9/00*
U.S. Cl. 361—306 **10 Claims**



1. A feedthrough-capacitor unit having a plurality of feedthrough-capacitors, said unit comprising:

a plate made of synthetic resin;

a plurality of projections extending from one face of said plate, a respective first through-hole extending concentrically through each said projection and also extending through a corresponding portion of said plate;

a plurality of terminals, a respective one of said terminals being mounted in each of said first through-holes and extending through its respective through-hole; and

a plurality of capacitor bodies each having a second through-hole extending therethrough, each of said capacitor bodies being mounted on a respective one of said projections with an inner surface of its second through-hole mating with an outer surface of its respective projection.

4,514,783

ENCAPSULATED, COMPRESSED-GAS-INSULATED, HIGH-VOLTAGE SWITCHING INSTALLATION

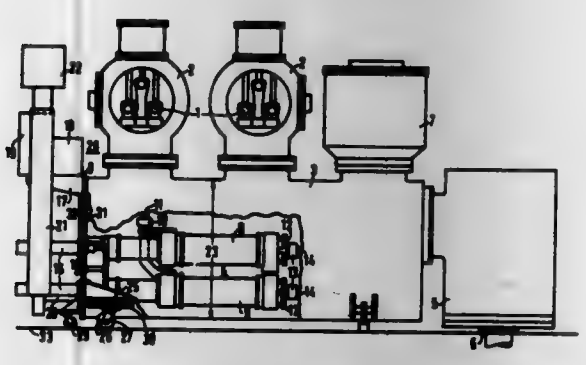
Willi Olsen; Heinz Padderatz; Joachim Palm, and Christian Pircher, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,009

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1982, 8204536[U]

Int. Cl.³ H02B *11/14*

U.S. Cl. 361—336 **5 Claims**



1. In an encapsulated, compressed-gas-insulated, high-voltage switching installation comprising a main pressure vessel of electrically conductive material, a circuit breaker which includes interrupter units with an arc extinguishing device and a hydraulic drive for operating the interrupter units, a vertically extending base plate closing off one end of the pressure vessel, said interrupter units being horizontally disposed in the pressure vessel and fastened to the base plate on the side facing the interior of the pressure vessel and being detachably connected to adjoining conductors and parts of said drive being fastened on the outside of the base plate, the improvement comprising the base plate supporting all parts of the interrupter units, the arc extinguishing device and the drive, including a control unit and a hydraulic accumulator, as a structural movable unit, the base plate including at least three rollers detachably connected thereto for rolling on the ground or a foundation, at least one of said rollers being disposed on one side of said base plate and at least one other of said rollers being disposed on an opposite side of said base plate, thereby defining a wheel base extending from said one side of said base plate horizontally to said opposite side of said base plate, said interrupter units extending horizontally substantially beyond said wheel base on said one side of said base plate, said control unit and said accumulator extending on said opposite side of said base plate beyond said wheel base, said wheel base having an area and said interrupters, said arc extinguishing device and said drive, including said control unit and said accumulator, being so disposed that a vertical line going through the center of gravity of the structural unit is located within the area bounded by the rollers.

4,514,784

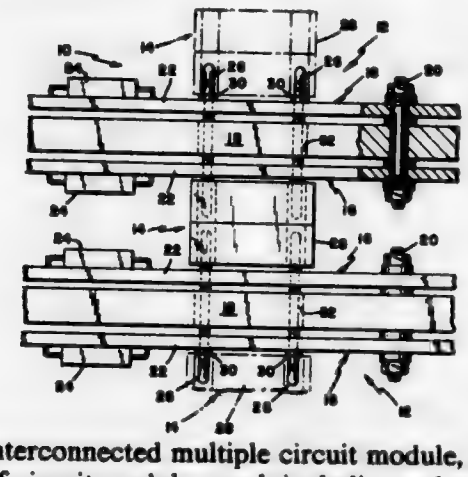
INTERCONNECTED MULTIPLE CIRCUIT MODULE

John T. Williams, and Melvin C. August, both of Chippewa Falls, Wis., assignors to Cray Research, Inc., Minneapolis, Minn.

Filed Apr. 22, 1983, Ser. No. 487,515

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **5 Claims**



1. An interconnected multiple circuit module, comprising:

a pair of circuit modules, each including at least one circuit board therein;

an array of male pins mounted on each circuit module, each array including a plurality of pins located in a predetermined arrangement and extending substantially perpendicular to the associated circuit board such that opposite corresponding ends of the pins are positioned on opposite sides of the associated circuit module:

a free connector block of dielectric material with opposite ends, each end including an array of openings therein receiving the pins on the associated circuit module; and

dual-entry female contact means within said block releasably engaging pins inserted into the openings to effect electrical connection between said circuit modules, said contact means having a structure which provides differential mechanical connecting resistance with the pins of one module versus the pins of the other module to facilitate predictable controlled connection and disconnection of said circuit modules.

4,514,785

METHOD OF MANUFACTURING AN IDENTIFICATION CARD AND AN IDENTIFICATION MANUFACTURED, BY THIS METHOD

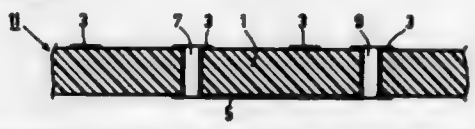
Paul Parmentier, Cailly-sur-Eure, France, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 416,791, Sep. 10, 1982, Pat. No. 4,483,067. This application Apr. 23, 1984, Ser. No. 602,883

Claims priority, application France, Sep. 11, 1981, 81 17231

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—401 **1 Claim**



1. An identication card having an integrated semiconductor circuit which is electrically connected on both sides to conductor patterns on at least one side of a secondary carrier, which secondary carrier is mounted in a primary carrier together with the integrated circuit as one unit, the integrated circuit being enclosed by an electrically insulating material which fills a recess in one of said carriers, characterized in that:

the secondary carrier (11) which is provided with a conductor pattern (3, 5) on both sides comprises at least one plated-through hole (7, 17) in which a recess (15) in the secondary carrier (11) opens, the integrated circuit (13) being arranged in the recess (15) and being electrically connected on one side to the conductor pattern (3) on one side of the secondary carrier (11) and on the other side, by means of an electrically conductive bonding medium (21) and the metal hole plating (18), to the conductor pattern (5) on the other side of the secondary carrier (11).

4,514,786

INTEGRATED-CIRCUIT SUPPORT DEVICE EMPLOYED IN A SYSTEM FOR SELECTING HIGH-RELIABILITY INTEGRATED CIRCUITS

Stephane Charruau, Paris, France, assignor to Thomson-CSF, Paris, France

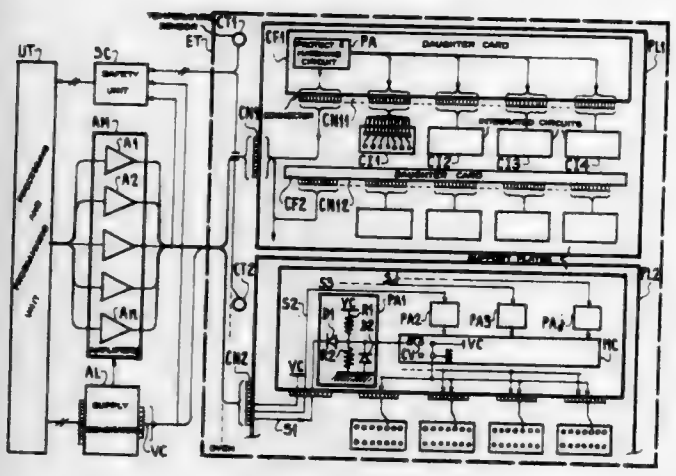
Continuation of Ser. No. 396,451, Jul. 8, 1982, abandoned. This application Jun. 12, 1984, Ser. No. 618,780

Claims priority, application France, Jul. 10, 1981, 81 13681

Int. Cl.³ H02H *3/20;* H05K *1/14*

U.S. Cl. 361—413

10 Claims



1. An integrated-circuit support device employed in a system for selecting high-reliability circuits as a function of predetermined thermal and dynamic stresses, the support device comprising: a plurality of plates for receiving integrated circuits each of said integrated circuits having a plurality of terminal pins with each of said pins having a reference number, wherein said integrated circuit pins are arranged in two rows, and said plurality of plates establishing interface connections to connect in parallel those of said terminal pins of said integrated circuits having the same reference number, each plate being comprised of a parent card and a plurality P of daughter cards, the said interface connections being formed as a multilayer printed circuit on the daughter cards and is in the form of a double-face circuit on the parent card which is provided on one face with a first series of P socket connectors for receiving the said daughter cards and with a second series of NXP socket connectors for receiving said integrated circuits, each daughter card being associated with a plurality N of integrated circuits, the said plates having a similar structure to form only a first, a second and a third version of different plate designs by utilizing only three types of integrated-circuit socket connectors for receiving the different integrated-circuit packages of usual types which correspond respectively to spacing standards of 0.3 inch, 0.4 inch and 0.6 inch between the two rows of terminal pins, said first, second and third versions of plates being each equipped with one type of integrated-circuit socket connector corresponding to one of the spacing standards aforesaid, and the said printed circuits enabling separate and active connection of all the terminal pins of the integrated circuits through the corresponding daughter cards from a single coupling connector located externally of the plate.

4,514,787

ELECTRONIC COMPONENT SERIES

Fumihiko Kaneko, Nagaokakyo; Tetsuya Murakawa; Koichi Nitta, both of Fukui; Noriaki Yamana, Takefu; Masashi Takeda, and Kunio Tachi, both of Fukui, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 5, 1983, Ser. No. 491,885

Claims priority, application Japan, May 13, 1982, 57-82098

Int. Cl.³ H05K *7/02*

U.S. Cl. 361—420

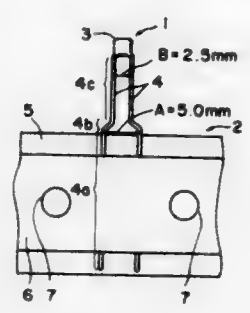
6 Claims

1. An electronic component series wherein a plurality of parallel lead type electronic components each having a body with first and second lead wires extending forward therefrom and being equispaced along a retainer band and distributed along the length of the retainer band with the lead wires extending in the same direction and positioned by the retainer band, whereby the electronic components are retained, said electronic component series being characterized in that

said lead wires being divided into a first region, a second region rearward of said first region and a third region rearward of said second region, said regions having mutually different functions,

said first region performing the function of retaining the electronic component with respect to the retainer band by being positioned along and on the retainer band,

in said first region the lead wires of each electronic component being spaced apart by a first distance equal to a constant dimension serving as a standard,



said third region performing the function of attaching the electronic component to a printed circuit board by being inserted into holes in the printed circuit board,

in said third region said leads being spaced apart by a second distance having a dimension conforming to the distance between the holes of the printed circuit board,

said first and second distances being unequal resulting in a difference in dimension therebetween,

said second region performing the function of absorbing the difference in dimension between said first and second distances,

said retainer band having a rear edge, said second and third regions being disposed to the rear of said rear edge,

said third region being substantially greater than said second region when measured in a direction perpendicular to said rear edge.

4,514,788

COMPOSITE COVER PLATE AND APPLICATION OF THE SAME

Rudolf Klaschka, Tannenweg 9, D-7896 Wutoeschingen 3, and Franz J. Wolf, Sprudelallee 19, D-6483 Bad Soden-Salmuenster, Fed. Rep. of Germany

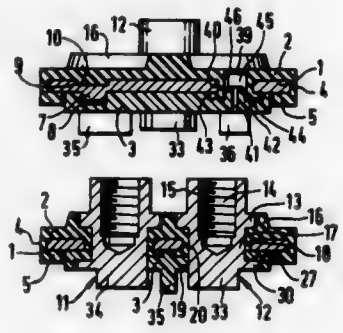
Continuation of Ser. No. 269,295, Jun. 1, 1981, abandoned. This application Mar. 20, 1984, Ser. No. 591,242

Claims priority, application European Pat. Off., May 15, 1981, 31103759.7

Int. Cl.³ H01G *9/00;* H01M *2/08*

U.S. Cl. 361—433

11 Claims



1. Composite cover plate for an electric component comprising an aluminum disc, said aluminum disc having an outer

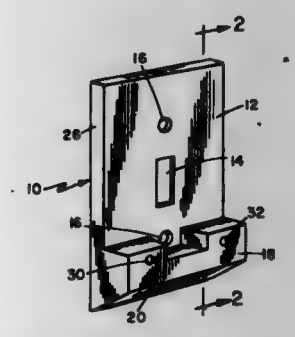
edge, said aluminum disc having a first side and a second side, a rubber covering on said first side of said aluminum disc, said rubber covering having a peripheral portion extending around said outer edge and partially onto said second side of said aluminum disc, an artificial material disc on said second side of said aluminum disc, said artificial material disc being resistant to gas and fluid permeation, at least one lead-through element extending through the composite cover plate, said lead-through element having a first flange means disposed against said rubber covering and a second flange means disposed against said artificial material disc, said artificial material disc, said aluminum disc and said rubber covering each having an opening through which said lead-through element passes such that said lead-through element with said first and second flange means function as a rivet holding said rubber covering, said aluminum disc, and said artificial material disc together, said aluminum disc being provided on said first side with one or more first protrusion-recess means which fit snugly into complementary first recess-protrusion means in the adjoining surface of said rubber covering, said aluminum disc also being provided on said second side with one or more second recess-protrusion means which fit lockingly into engagement with complementary second protrusion-recess means in the adjoining surface of said rubber covering, whereby said first and second protrusion-recess means and said first and second recess-protrusion means prevent torsional displacement between said aluminum disc, said artificial material disc and said artificial material disc, said second flange means comprising one or more first flange segments, and one or more complementary first recess segments in said artificial material disc element for receiving said one or more first flange segments, whereby said one or more first flange segments and said one or more recess segments prevent torsional displacement of said lead-through element.

4,514,789

ILLUMINATED LIGHT SWITCH PLATE WITH LED AND OSCILLATOR CIRCUIT

Michael H. Jester, 11626 Vaca Pl., San Diego, Calif. 92124

Filed Mar. 7, 1984, Ser. No. 587,049
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—95 **10 Claims**



1. An apparatus for aiding a person in locating a conventional wall mounted light switch in the dark, comprising:

a generally planar switch plate configured to be removably secured over the light switch and having an aperture in the medial portion thereof for receiving therethrough an actuator of the light switch;

a housing connected to the switch plate for positioning on the exterior side of the wall when the switch plate is secured over the light switch;

means mounted within the housing for removably holding a battery and for establishing electrical connection with a positive terminal and a negative terminal of the battery when inserted;

an LED mounted in the housing so as to be visible externally of the housing;

a solid state oscillator mounted within the housing;

a capacitor mounted within the housing; and

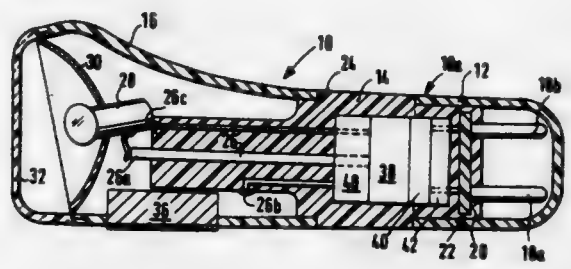
means for electrically interconnecting the LED, the battery holding means, the solid state oscillator and the capacitor independent of the light switch so that when the battery is inserted into the battery holding means the LED will flash to provide an eye catching signal for at least three months before the battery is substantially drained of its stored energy.

4,514,790

RECHARGEABLE POWER PACK AND A POCKET LAMP FOR USE THEREWITH

Elmar Will, Makartstr. 9, D-8000 München 71, Fed. Rep. of Germany

Continuation of Ser. No. 255,271, Apr. 17, 1981, abandoned. This application Dec. 30, 1983, Ser. No. 566,969
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015248
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—183 **7 Claims**



1. A hand-held electrical device comprising a first detachable portion containing a rechargeable power pack and a pair of contact pin means electrically connected to said power pack and for connection to an AC current source to recharge through circuit means said power pack when said first detachable portion is separated from said electrical device, said first detachable portion having a third contact means connected to said power pack for bypassing said circuit means, a second detachable portion having a first section having separate first and second contact means, said first contact means for contacting one of said pin means and said second contact means for contacting said third contact means of said first detachable portion, said second detachable portion having third and fourth contact means each disposed relative to each other to provide, when said first and second portions are attached, a circuit for connection through said third and fourth contact means to a DC current source to recharge said power pack of said first detachable portion,

a housing including spaced first and second contact means which control the operation of said electrical device and which are positioned to engage respectively with said second detachable portion when said second detachable portion is attached to said housing whereby a circuit will be established from said power pack to said electrical device through said second detachable portion.

4,514,791

LAMP RIBBON

Naomitsu Tokieda, 26-12, Shimomeguro 5-chome, Meguro-ku, Tokyo, Japan

Filed Sep. 12, 1983, Ser. No. 531,023
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—249 **5 Claims**

1. A lamp ribbon, comprising:

(a) a thin flexible belt construction, comprising:

(a1) an upper belt layer and a lower belt layer, each generally formed as a strip and made of a flexible electrically insulating material, said upper and lower belt layers being laid against one another, aligned together, and fixed to one another continuously along their respective lengths; and

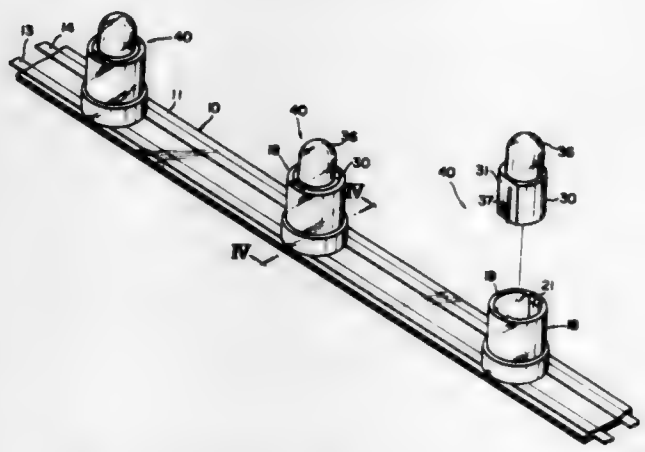
(a2) two conductors, each formed as a strip and made of an electrically conducting material, which are laid between said upper belt layer and said lower belt layer

parallel to one another and separated by a certain distance, and which are held by being sandwiched between said upper belt layer and said lower belt layer;

(a3) parts of said lower belt layer at a plurality of places thereon being absent, so as to expose said two conductors for a certain longitudinal distance at each of said plurality of places, at each such place a pair of apertures being formed through said upper belt layer between said two conductors so as to open to said place; and

(b) a plurality of lamp units, each comprising:

(b1) a bulb socket which is rigidly attached to said belt construction opposed to a one of said plurality of places where said lower belt layer is absent;



(b2) a pair of terminals which protrude from said bulb socket, each of said terminals passing through one of the pair of apertures formed in said upper belt layer opening to said one of said plurality of places and then being bent over and being soldered to one of said conductors; and

(b3) a bulb comprising a pair of terminals and a bulb base into which said bulb is detachably fitted with said terminals of said bulb being bent so as to hold said bulb to said bulb base, said bulb base being slidably fittable into said bulb socket so that each one of said pair of terminals of said bulb is thus electrically connected to one of said terminals of said bulb socket.

4,514,792

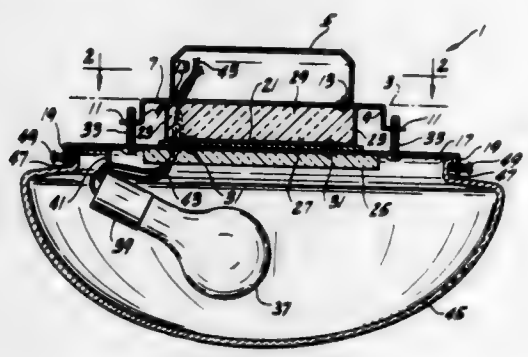
LIGHTING FIXTURE WITH TRIPLE INSULATING MEANS

Dale A. Klaus, Chesterfield, Mo., assignor to International Export Company, St. Louis, Mo.

Filed Jan. 9, 1984, Ser. No. 569,037

Int. Cl.³ F21V *29/00*

U.S. Cl. 362—294 **5 Claims**



1. A lighting fixture adapted to be mounted on a ceiling by attachment to an outlet box in the ceiling, comprising:

a crossbar adapted to be attached to the bottom of the outlet box in a position extending horizontally across the bottom of the box and of such length as to extend at both ends beyond the box, said crossbar having downwardly extending legs and generally horizontally extending feet at the lower ends of the legs, said legs and feet forming an elongate heat path for the reduction of heat transferred to the box;

a plate below the crossbar with thermally insulated spacer means between the plate and the crossbar, said spacer means being positioned inside of said legs such that a gap results between said spacer means and each of said legs for exposing said heat path to the cooler air outside said lighting fixture;

means securing the plate to the crossbar with the spacer means between the plate and the crossbar comprising screws extending up though holes in the plate threaded in holes in the feet;

a light source on the bottom of the plate; and

a diffuser for the light source secured to the plate at the rim of the plate.

4,514,793

REFLECTOR SYSTEM FOR SECURING TO A LIGHT SOURCE

Knud Andreasen, Alfr. Christensens Vej 11, 2850 Naerum, Denmark

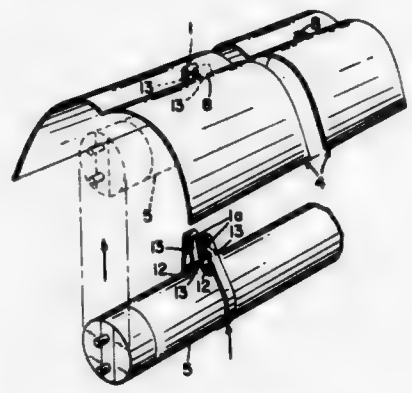
PCT No. PCT/DK82/00111, § 371 Date Aug. 2, 1983, § 102(e) Date Aug. 2, 1983, PCT Pub. No. WO83/02145, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 13, 1981, Ser. No. 531,833

Claims priority, application Denmark, Dec. 15, 1981, 3511/81

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—306 **4 Claims**



1. A reflector system for securement above an elongated light source comprising a reflector having at least one pair of adjacent apertures, at least one mounting clip having a first circular portion adapted to partially encircle that light source including full encirclement of the lower portion of said source, said portion having two ends each extending generally upwardly into said pair of apertures, said clip including means for securely engaging said apertures to maintain said reflector suspended above and spaced from said light source despite gravitational forces.

4,514,794

ATTACHMENT PROVISION FOR EXCHANGEABLE ACCESSORIES AT ILLUMINATION BODIES

Walter Haberthür-Heilig, Hofstettin, Switzerland, assignor to Bron Elektronik AG, Allschwil, Switzerland

Filed Jul. 30, 1983, Ser. No. 515,917

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227167

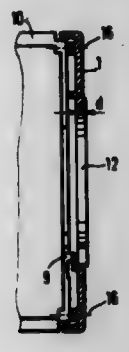
Int. Cl.³ F21S *1/02, 13/02*

U.S. Cl. 362—439 **20 Claims**

1. An attachment provision for exchangeable accessories for illumination bodies comprising an illumination body;

an adapter plate having a receiving opening and which is attached to the illumination body for supporting a accessory having an axis and the adapter plate having at least two recesses for receiving and supporting an adapter flange of an accessory and wherein the recesses are dis-

posed at a distance, but are not disposed such that they would meet the requirements of an n-fold rotation axis with n equal to or larger than 2 for coinciding with said axis; and an accessory having an adapter flange with at least two cam toes to grip through the recesses of the



adapter plate where the cam toes are disposed at a distance, but are not disposed such that they would meet the requirements of an n-fold rotation axis directed vertically to the flange plane with n equal to or larger than 2 for said axis and where the cam toes support the accessory.

4,514,795

HIGH-VOLTAGE GENERATOR, NOTABLY FOR AN X-RAY TUBE

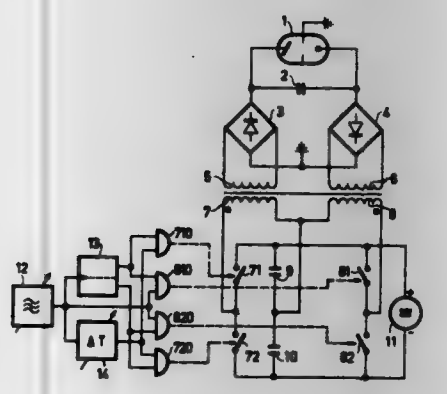
Alfred J. van der Zwart, Norderstedt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 16, 1983, Ser. No. 495,189

Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218535

Int. Cl.³ H02M *3/315*

U.S. Cl. 363—27 **6 Claims**



1. A high voltage generator for use with an X-ray tube comprising:

a resonant direct current/alternating current converter for alternative flow of charge transfer currents from a capacitor device through two primary windings of a high-voltage transformer by means of switches,

wherein said capacitor device conducts said currents through each of said two primary windings of said transformer, and

a controllable delay means for delaying switching pulses to said switches,

so that currents through said primary windings start flowing at different time instants.

4,514,796

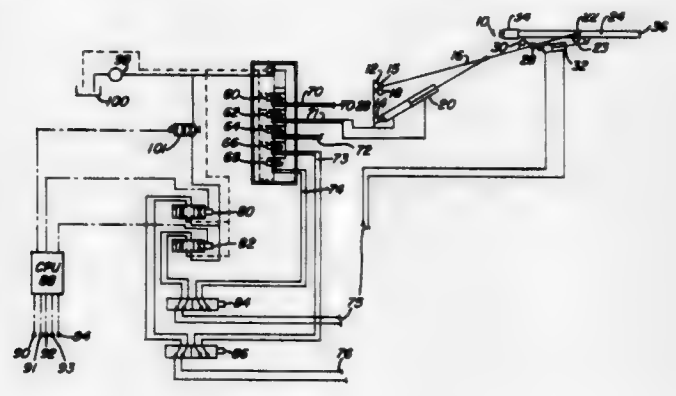
METHOD AND APPARATUS FOR CONTROLLING THE POSITION OF A HYDRAULIC BOOM

John D. Saulters, Cambridge, and Roger H. Scarr, Pickering, both of Canada, assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Sep. 8, 1982, Ser. No. 415,855

Int. Cl.³ E21C *11/00*; F16M *13/00*

U.S. Cl. 364—142 **6 Claims**



1. A method for controlling orientation of an articulated boom of the type having a first portion and a second portion, said first portion capable of moving in a horizontal and vertical direction and capable of rotating about a longitudinal axis thereof;

said second portion of said boom pivotally mounted on said first portion and capable of moving in a vertical and horizontal direction with respect to said first portion, said method comprising the steps of:

sensing and storing in a computer means the actual angles of said first portion with respect to a reference angle in the horizontal, vertical and rotational directions;

sensing and storing in a computer means the actual angle of said second portion with respect to a reference angle in both the horizontal and vertical directions;

inputting the predetermined horizontal and vertical angles of said predetermined position of said second portion into said computer;

calculating in said computer means the equivalent horizontal and vertical angles of said second portion with respect to said horizontal and vertical predetermined angles when said first portion is at said rotational reference angle and storing said calculated equivalent angles;

calculating in said computer means first vertical and horizontal angles each equal to the sum of the actual first portion vertical and horizontal angles and said second portion calculated equivalent horizontal and vertical angles;

moving said end of said second portion of said boom to a predetermined point;

calculating continuously, while said movement is occurring, second vertical and horizontal angles each equal to the sum of the newly sensed actual first and second portion vertical and horizontal angles;

calculating the reference difference between said first calculated vertical and horizontal angles and said second calculated vertical and horizontal angles;

sensing the actual rotational angle of said first portion;

calculating the actual horizontal and vertical difference angles utilizing said actual rotational angle and said calculated reference difference between said first calculated and said second calculated vertical and horizontal angles;

continuously moving said second portion in said vertical and horizontal direction to reduce said actual differences;

continuously comparing the calculated actual horizontal and vertical angular differences with the references differences between the first calculated and second calculated horizontal and vertical angles; and

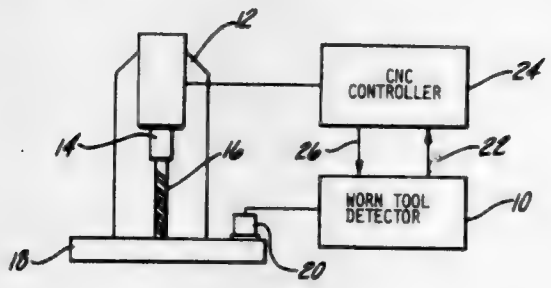
stopping movement when the comparison between said differences shows substantial equality.

4,514,797

WORN TOOL DETECTOR UTILIZING NORMALIZED VIBRATION SIGNALS

John D. Begin, Warren, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Filed Sep. 3, 1982, Ser. No. 414,735
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—148 **17 Claims**



1. In a worn tool detector system for analyzing input signals from a sensor where the signal is in the form of an analog waveform exhibiting periodic impulses exceeding the average amplitude of the waveform as the tool wears, the improvement comprising:

a variable gain amplification network connected to the sensor, said network including at least one digitally controlled component for effecting a change in gain of the network;

reference means supplying a fixed reference voltage;

comparator means having inputs coupled to outputs of the variable gain network and said fixed reference voltage;

digital control means having an input coupled to an output of the comparator and an output coupled to the digitally controlled component, operative to normalize the sensor signal by varying the gain of said network until the average amplitude of the waveform is substantially equal to the reference voltage; and

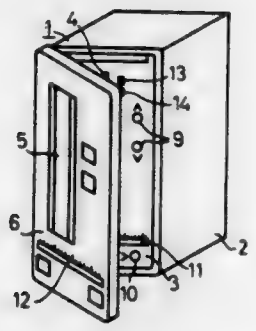
detector means coupled between the gain network and the digital control means for detecting the occurrence of the impulses by sensing voltage levels of the amplified sensor signal exceeding the normalized level.

4,514,798

ELECTRICAL CONTROL APPARATUS

Wolfgang Lesche, and Volker Rindfleisch, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,297
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125779; Apr. 26, 1982, 3216286
Int. Cl.³ G05B *11/01, 11/36*
U.S. Cl. 364—188 **5 Claims**



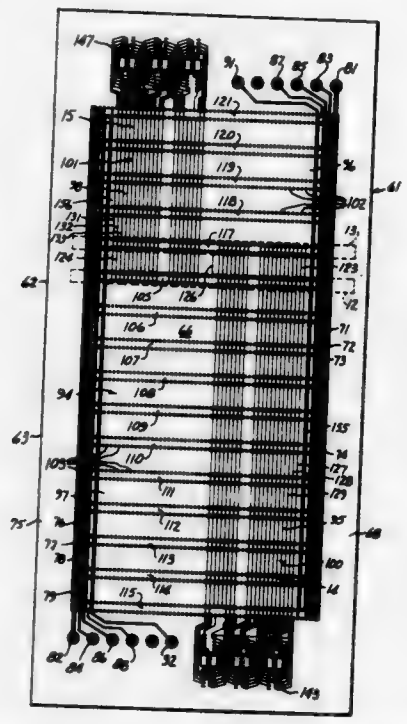
1. In a control apparatus including a control panel and a movable panel which can be moved to overlay or expose at least a portion of the control panel, two indicators disposed on the control panel, control means disposed on the control panel, switch means for conditioning the apparatus to operate in first and second modes and processor means for controlling operations of the apparatus, each indicator indicating a different parameter in the first and the second modes, and the control means being operative in each mode to affect the parameters corresponding to said mode and to affect the indication thereof by the respective indicators, the improvement comprising the switch means being associated with the control panel and the movable panel such that the switch means automatically conditions the apparatus to operate in the first mode while preventing operation of the apparatus in the second mode when the movable panel exposes said portion of the control panel and automatically conditions the apparatus to operate in the second mode while preventing operation of the apparatus in the first mode when the movable panel overlays said portion of the control panel, said control means comprising a first control associated with a first of the two indicators and a second control associated with a second of the two indicators, input-output means responsive to the switch means for coupling the first indicator, the first control and the processor means in the first and second modes so that the first indicator indicates a different parameter in each mode and the first control affects the parameters corresponding to the respective modes and the indication thereof on the first indicator, and for coupling the second indicator, the second control and the processor means in the first and second modes so that the second indicator indicates a different parameter in each mode and the second control affects the parameters corresponding to the respective modes and the indication thereof on the second indicator, a scale on the control panel and a scale on the movable panel associated with the first indicator and a scale on the control panel and a scale on the movable panel associated with the second indicator, the scales on the control panel being overlayed by the movable panel when the movable panel overlays said portion of the control panel.

4,514,799

BUS SYSTEM ARCHITECTURE AND MICROPROCESSOR SYSTEM

William H. Spencer, Monrovia, and Thomas E. Anderberg, Chatsworth, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 24, 1981, Ser. No. 237,804
Int. Cl.³ H05K *1/04;* G06F *3/00*
U.S. Cl. 364—200 **5 Claims**



1. In a method of providing on a substrate a bus line system for first and second circuit boards designed to extend across

said substrate, the improvement comprising in combination the steps of:

providing at a first region of one major plane of said substrate individually dedicated first, second and third bus lines arranged in a first bus line array for coupling to the first circuit boards;

extending a portion of said first bus line array including said first, second and third bus lines over a first part of said substrate;

providing at a distinct second region of the substrate individually dedicated fourth, fifth and sixth bus lines corresponding, respectively, to said first, second and third bus lines, and being arranged in a second bus line array for coupling to the second circuit boards;

extending a portion of said second bus line array including said fourth, fifth and sixth bus lines over a second part of said substrate adjacent said first part;

said portion of the second bus line array including said fourth, fifth and sixth bus lines in said second part of the substrate representing a mirror image of said portion of the first bus line array including said first, second and third bus lines in said first part of the substrate, as seen with respect to a plane between said first and second parts perpendicular to said one major plane;

providing a first microprocessor on one of said first circuit boards;

providing a second microprocessor on one of said second circuit boards;

providing first peripherals for reading data from or recording data on a document;

providing second peripherals for transporting said document among said first peripherals for reading data from or recording data on said document by said first peripherals;

connecting said first peripherals to further ones of said first circuit boards;

connecting said second peripherals to further ones of said second circuit boards;

controlling said second microprocessor and said first peripherals with said first microprocessor via said first bus line array; and

controlling said second peripherals with said second microprocessors via said second bus line array.

4,514,800

DIGITAL COMPUTER SYSTEM INCLUDING APPARATUS FOR RESOLVING NAMES REPRESENTING DATA ITEMS AND CAPABLE OF EXECUTING INSTRUCTIONS BELONGING TO GENERAL INSTRUCTION SETS

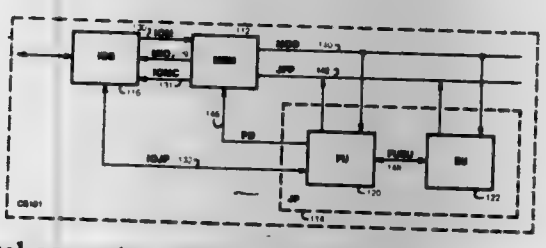
Ronald H. Gruner, Cary, N.C.; Gerald F. Clancy, Saratoga, Calif.; Craig J. Mundie, Cary, N.C.; Steven J. Wallach, Saratoga, Calif.; Stephen I. Schleimer, Chapel Hill; Walter A. Wallach, Jr., Raleigh, both of N.C.; John K. Ahlstrom, Mountain View, Calif.; David H. Bernstein, Ashland, Mass.; Michael S. Richmond, Pittsboro, N.C.; David A. Farber, Durham, N.C.; John F. Pilat, Raleigh, N.C.; Richard A. Belgard, Saratoga, Calif., and Richard G. Bratt, Wayland, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,525

Int. Cl.[3] G06F *9/16, 13/00*

U.S. Cl. 364—200

14 Claims



1. A digital computer system comprising:

(1) memory means for performing memory operations including storing and providing data items in response to memory commands including addresses of said data items, said data items including

(A) instructions, each said instruction containing

(i) an operation code of a plurality of said operation codes, each said operation code specifying an operation of a plurality of operations performed by said digital computer system, and each said operation code belonging to one of a plurality of different operation code sets, the operation codes in a given operation code set being definable solely with reference to said given operation code set, and selected ones of said instructions further containing

(ii) a name representing an item of data to be used in the operation specified by the operation code in said selected instruction, and

(B) sequences of said instructions; and

(2) processor means connected to said memory means for performing the operations performed by said system and providing memory commands to said memory means in response to said instructions, said processor means including

(A) operation code decoding means for decoding the operation code in an instruction received in said processor as required by the operation code set to which the operation code in said received instruction belongs,

(B) name resolution means for receiving the name in said received instruction and for deriving the address for the item of data represented by said received name using a current architectural base address, and

(C) control means responsive to said operation code decoding means and to said name resolution means for controlling the operation of said processor means and for providing said memory command including the address provided by said name resolution means to said memory means,

and wherein

the operation performed by said system include

(A) a call operation which suspends the execution of the current sequence of instructions by said processor means and begins the execution of another sequence of instructions, and

(B) a return operation which terminates the execution of said another sequence of instructions and resumes said suspended execution,

and a currently used architectural base address can only be changed as a result of said call operations and said return operations.

4,514,801

MICROCOMPUTER WITH TABLE-READ AND TABLE-WRITE INSTRUCTIONS

Edward R. Caudel, Houston; Gary L. Swoboda, Austin; Surendar S. Magar, Houston; Kevin C. McDonough, Houston, and Antony W. Leigh, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,954

Int. Cl.[3] G06F *9/30*

U.S. Cl. 364—200

12 Claims

1. A microcomputer device comprising:

an arithmetic/logic unit having data input and an accumulator data output;

a data memory having an address input and having data input/output means;

data bus means coupled to the data input and accumulator data output of the arithmetic/logic unit and coupled to the data input/output means of the data memory;

a program memory having an address input and having an instruction output, the program memory storing instruction words;

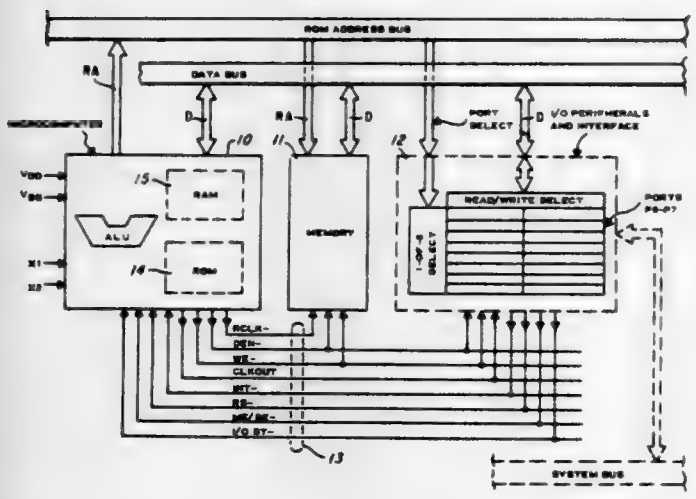
program address means connected to the address input of the program memory means;

control means for generating controls in response to instruction words, the controls defining operation of the arithmetic/logic unit and transfer to and from the bus means;

program bus means coupled to said instruction output, to said control means, and to said program address means;

bus interchange means for transferring the contents of the data bus means to the program bus means, and for transferring the contents of the program bus means to the data bus means,

the control means providing a table-read instruction employ-



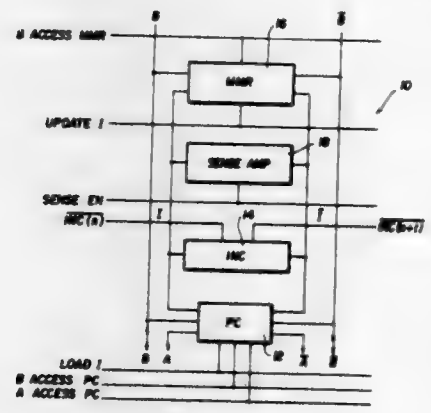
ing said bus interchange means to transfer a table address from the accumulator output of the arithmetic/logic unit via the data bus means and the program bus means to the program address means to thereby address the program memory and in the same operating sequence defined by a table-read instruction word to transfer data from the instruction output of the program memory via the program bus means to the data bus means.

4,514,802

INTEGRATED PROGRAM COUNTER MEMORY MANAGEMENT REGISTER AND INCREMENTER

Paul Cohen, Ashland, Mass., and William R. Young, Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 31, 1982, Ser. No. 363,815
Int. Cl.³ G06F *9/32*
U.S. Cl. 364—200 **13 Claims**



1. An integrated program counter, memory and incrementer cell comprising:

program counter means;

memory storage means;

a first data bus means connected to said program counter means and said memory storage means for providing external access to said program counter means and said memory storage means;

second data bus means connected to said program counter means and said memory storage means for providing access to said program counter means for reading and to said memory storage means for writing;

sense means connected to said second data bus means for sensing a logic value of said program counter means on said second data bus means and maintaining said logic value on said second bus means; and

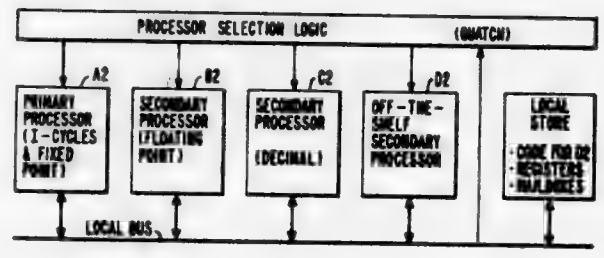
increment means, connected to said second bus means and said program counter means and having an input increment terminal, for reading said logic value on said second data bus means and writing an incremented logic value in said program counter means when said program counter means is disconnected from said second data bus means in response to an increment signal on said increment signal input terminal.

4,514,803

METHODS FOR PARTITIONING MAINFRAME INSTRUCTION SETS TO IMPLEMENT MICROPROCESSOR BASED EMULATION THEREOF

Palmer W. Agnew, Owego; Joseph P. Buonomo, Endicott; Steven R. Houghtalen, Endicott; Anne S. Kellerman, Endicott; Raymond E. Losinger, Endicott, and James W. Valashinas, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,634
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **27 Claims**



1. A method for microprocessor implemented emulation of a mainframe computer, using a plurality of large scale integrated chip microprocessors, said main frame computer having a predefined instruction set and a set of general purpose registers associated therewith, said method comprising the steps of:

(a) partitioning the instruction set of said mainframe computer into a plurality of subsets of enabling microcode, the enabling microcode of at least one of which subsets completely fits on and is entirely executable by and on a single said chip microprocessor;

(b) providing chip based microprocessors on which said instruction set subsets are implemented, thus enabling each of said microprocessors capable of supporting said on-chip microcode;

(c) providing each microprocessor with all of the necessary microcode to allow implementation and control execution of its resident subset instructions entirely on-chip;

(d) providing at least one path between all of said microprocessors via which control can be passed back and forth between said microprocessors; and

(e) providing at least one path between all of said microprocessors via which data can be passed back and forth between said microprocessors.

4,514,804

INFORMATION HANDLING APPARATUS HAVING A HIGH SPEED INSTRUCTION-EXECUTING FUNCTION

Manabu Kimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 324,787
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **2 Claims**

1. Improvement in means for reading memory contents and executing instruction in an information handling apparatus, comprising:

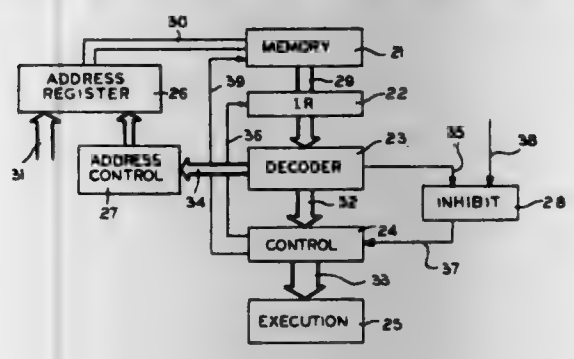
memory means for storing a plurality of instructions, includ-

ing a skip instruction, an instruction following said skip instruction being comprised of a plurality of bytes;

addressing means coupled to said memory means for reading a first single byte of an instruction out of said memory means responsive to sequential byte addresses;

decoding means coupled to said memory means for decoding the instructions which have been read out of said memory means responsive to said addressing means in order to output a plurality of decoded signals;

means coupled to said decoding means for producing at least one control signal in response to said decoded signals, said addressing means receiving the control signal and advancing to a new address where a next single byte is read out following the previously last read out single byte which



was read from said memory in response to said control signal;

generating means coupled to said decoding means and being responsive to said next signal byte for generating a skip signal designating a skip operation when said next single byte is decoded by said decoding means and found to be said skip instruction; and

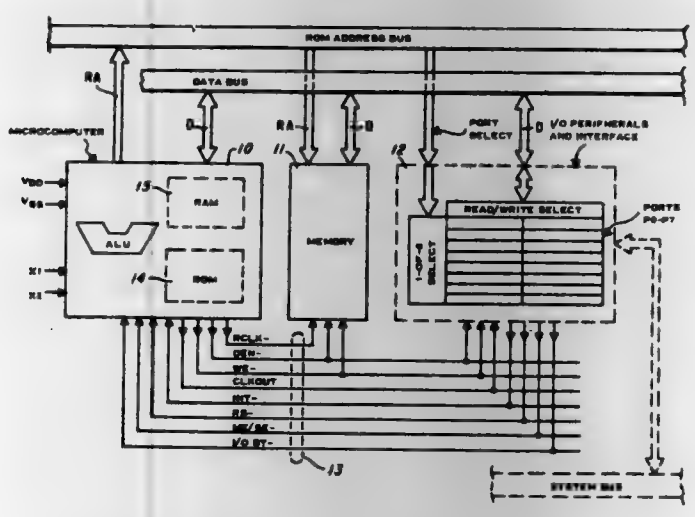
means coupled to said generating means and operated responsive to said skip signal for producing a next address designating a next instruction which is immediately subsequent to said instruction following said skip instruction, said next address being produced by adding the byte address next following said new address, which designates said skip instruction, to the number of bytes of said instruction following said skip instruction.

4,514,805

INTERRUPT OPERATION IN SYSTEMS EMULATOR MODE FOR MICROCOMPUTER

Kevin C. McDonough, Houston; Gary L. Swoboda, Austin, and Surendar S. Magar, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,955
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **4 Claims**



1. A microcomputer system comprising:

a microcomputer device formed in a single integrated circuit and having data input/output terminals, address output terminals, a pair of voltage supply terminals receiving a supply voltage of a given level, and control terminals including a mode control terminal; the microcomputer device having an arithmetic/logic unit, a data memory, an internal program memory, and control means; the microcomputer device being operated by logic voltages on said data input/output terminals and said control terminals of about said given level;

program memory means external to the microcomputer device having an address input operated by address voltages of about said given level and having data output means;

input/output peripheral means for transfer of information to or from external equipment including application of selected voltages to said mode control terminal; said information being voltages of about said given level; said selected voltages being voltages of said given level and also an interrupt voltage at a level substantially above said given level;

external address bus means coupled to the address output terminals of the microcomputer device and to the address input of the external program memory means;

external data bus means coupled to the data input/output terminals of the microcomputer device and to the data output means of the external program memory means;

said data memory having an address input and having data input/output means;

said internal program memory having an address input and having an instruction output, the internal program memory storing instruction words;

program address means within the microcomputer device connected to the address input of said internal program memory;

said control means generating controls in response to instruction words, the controls defining operation of the arithmetic/logic unit and transfer to and from internal bus means;

internal bus means coupled to the data input and data output of the arithmetic/logic unit, to the data input/output means of the data memory, to said instruction output of the internal program memory, to said control means, to said address output terminals, to said data input/output terminals, and to said program address means;

mode switching means within the microcomputer device to apply program addresses either to said program address means of the internal program memory or to said address output terminals for transfer via said external address bus means to the external program memory means, the mode switching means being operated by voltages of said given level and not exceeding said given level on by the mode control terminal, and

interrupt means coupled to the mode switching means and responsive to said interrupt voltage on the mode control terminal at said level substantially above said given level to cause a non-maskable interrupt wherein a fixed vector address is applied to said program address means and an existing program address is saved.

4,514,806

HIGH SPEED LINK CONTROLLER WRAPAROUND TEST LOGIC

Kent H. Hartig, Hudson, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1982, Ser. No. 431,860
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **6 Claims**

1. Apparatus for testing the logic of a high speed link controller comprising:

memory means for storing a microprogram;

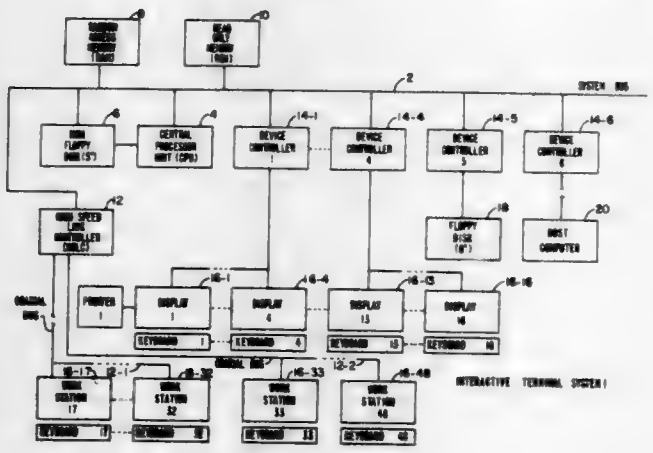
microprocessor means coupled to said memory means and responsive to memory signals indicative of a plurality of microwords of said microprogram for generating a plural-

ity of address signals, a first plurality of data signals, and a plurality of control signals;

wraparound test control means coupled to said microprocessor means and responsive to said plurality of address signals for generating a first wrap test signal;

communications controller means coupled to said microprocessor means and responsive to said plurality of control signals for serializing said first plurality of data signals into a first sequence of serial data signals, said communications controller further generating a cyclic receive clock signal timed in synchronization with said first sequence of serial data signals;

receiving means coupled to said communications controller and responsive to said cyclic receive clock signal and said first sequence of serial data signals for generating a sequence of first signals and a sequence of second signals representative of said first sequence of serial data signals; and



synchronization means coupled to said receiving means and said wraparound test control means and responsive to said first wrap test signal and said first sequence of signals and said second sequence of signals for generating a second sequence of serial data signals;

said communications controller being coupled to said synchronization means and responsive to said second sequence of data signals for generating a second plurality of data signals;

said microprocessor means receiving said second plurality of data signals for verifying that said second plurality of data signals corresponds to said first plurality of data signals.

4,514,807

PARALLEL COMPUTER

Tatsuo Nogi, Mibugawadanchi 129,29-1 Mibugawacho, Chudoji, Shimogyo-ku, Kyoto, Japan

Continuation of Ser. No. 263,603, May 14, 1981,. This application Feb. 13, 1984, Ser. No. 579,545

Claims priority, application Japan, May 21, 1980, 55-68044

Int. Cl.³ G06F *3/04, 15/16*

U.S. Cl. 364—200 **2 Claims**

1. A multiprocessor parallel computer system comprising:

a control computer system;

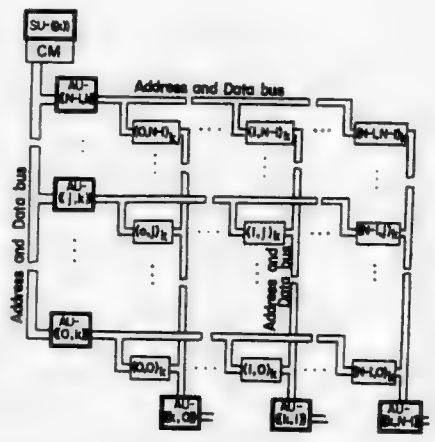
a plurality of identical slave processors arranged in an N by N matrix in the form of

---

AU-((0,0)), AU-((0,1)), . . . , AU-((0,N-1))
AU-((1,0)), Au-((1,1)), . . . , AU-((1,N-1))
. . . AU-((j,k)) . . .
. . . AU-((k,i)) . . .
AU-((N-1,0)), AU-((N-1,1)), . . . , AU-((N-1,N-1))

---

where N is an integer selected to be greater than one, and where AU-((j,k)) is the slave processor located in the jth row and kth column of said N by N matrix, each row of N of said slave processors being connected to said control computer system through a separate bus serving said row of N slave processors; and



a plurality of identical buffer memory units arranged in a three-dimensional array consisting of N matricies, N by N, in the form of

---

$(0,0)_k$; $(0,1)_k$; . . . ; $(0,N\text{-}1)_k$
$(1,0)_k$; $(1,1)_k$; . . . ; $(1,N\text{-}1)_k$
. . . $(i,j)_k$ . . .
. . . $(j,i)_k$ . . .
$(N\text{-}1,0)_k$; $(N\text{-}1,1)_k$; . . . ; $(N\text{-}1,N\text{-}1)_k$

---

where the index k=0, 1, 2, . . . , N−1 is an array number, and where any buffer memory unit $(i,j)_k$ located in the jth column and the ith row of the kth matrix of said N by N memory matricies, and every buffer memory unit on the ith row, $(i,j)_k$ (j=0,1, . . . , N−1) is interconnected to the processor AU-((k,i)) via a corresponding common 'row' bus, while every unit on the jth column, $(i,j)_k$ (i=0,1,2, . . . , N−1) is interconnected to the processor AU-((j,k)) via a corresponding common 'column' bus; and where any two processors with the same index k, said AU-((k,i)) and said AU((j,k)), can transfer data to one another through the buffer memory unit $(i,j)_k$, and any two slave processors, AU-((l,m)) and said AU-((j,k)), not directly interconnected by a corresponding buffer memory unit, transfer data to one another through either of two mediation slave processors, AU-((m,j)) or AU-((k,l)), said slave processors AU-((m,j)) and AU-((k,l)) being interconnected to said slave processor AU-((l,m)) through corresponding buffer memory units (j,l)m and $(m,k)_l$, respectively, and to said processor AU-((j,k)), through corresponding buffer memory units, $(k,m)_j$ and $(l,j)_k$, respectively.

4,514,808

DATA TRANSFER SYSTEM FOR A DATA PROCESSING SYSTEM PROVIDED WITH DIRECT MEMORY ACCESS UNITS

Masaki Murayama, Fussa, and Manjiro Iida, Oume, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 32,880, Apr. 24, 1979, abandoned. This application May 11, 1982, Ser. No. 377,044

Claims priority, application Japan, Apr. 28, 1978, 53-50082; Nov. 8, 1978, 53-136657; Nov. 8, 1978, 53-136658

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—200 **6 Claims**

1. In a data processing system which includes a central processing unit with an n-bit word length, where n is a positive integer having a value greater than 7, a main memory, a plurality of direct memory access units and an n-bit data bus coupling the central processing unit, the main memory and the direct memory access units for transfer of data between the direct memory access units and the main memory, the improvement

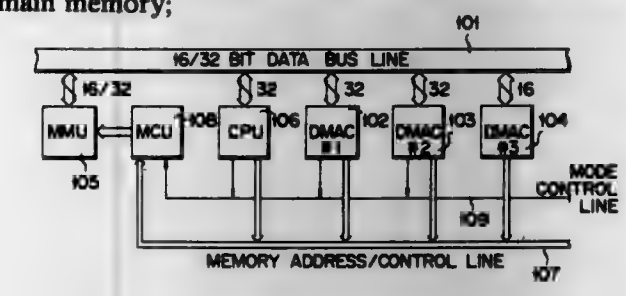
comprising a data transfer system for accessing the main memory, the data transfer system comprising:

(a) said main memory being capable of storing n-bit full-words in byte units, each full-word made up of m bytes where n/m is the number of bits in one byte and said memory having a separate transfer enable input for each of said m bytes;

(b) said direct memory access units comprising at least one first direct memory access unit which can receive and deliver n-bit full-words, and at least one second direct memory access unit which can receive and deliver n/2 bit half-words, since n/2 is an integer;

(c) a plurality of gate circuits coupling the main memory and the data bus line;

(d) first data transfer control means for controlling the gate circuits so that data transfer is achieved between the main memory and the first direct memory access unit, using n bits of the data bus line and an n-bit memory location when the first direct memory access unit has access to the main memory;



(e) zone specifying means having m zone selection inputs from the Central Processing unit, one corresponding to each of said m bytes in said main memory and responsive to said zone selection inputs and a control output from said first data transfer control means indicative of data transfer between the main memory and the first direct memory access unit, for selectively providing at least one signal to said separate transfer enable inputs to enable, transfer of at least one byte of data between an n-bit memory location and said first direct memory access unit using a corresponding part of the n-bit data bus line and the first direct memory access unit whereby through use of said zone specifying means appropriate zones within an n-bit full-word or a half-word may be specified; and

(f) second data transfer control means for controlling the gate circuits so that data transfer is achieved between the main memory and the second direct memory access unit, using n/2 bits of the data bus line and n/2 bits from an n bit memory location when the second direct memory access unit has access to the main memory.

4,514,809

DYNAMIC RANGE CONTROL OF ELECTRODE PAD CURRENT IN WELL LOGGING TOOLS

Wade M. Johnson, Jr., Cypress, Tex., and Jorg A. Angehrn, Brea, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 30, 1982, Ser. No. 373,776

Int. Cl.³ G01V *3/28*

U.S. Cl. 364—422 **30 Claims**

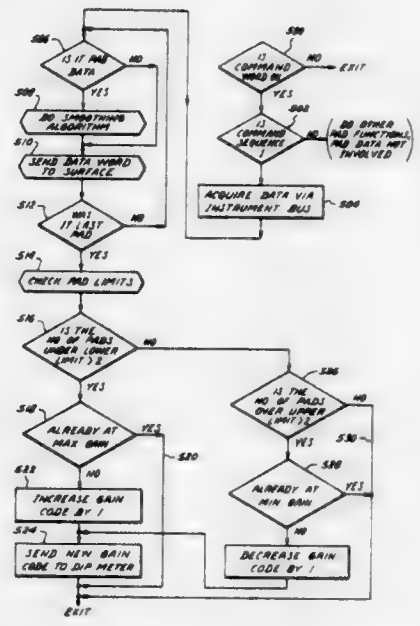
1. Well logging apparatus for investigating an earth formation, including apparatus for controlling the dynamic range of current flows established in the earth formation, comprising:

electrode means in electrical contact with said formation for establishing current flow in said formation,

circuit means in electrical contact with said formation for deriving a signal functionally related to the magnitude of said current flow,

comparator means interconnected with said circuit means for comparing said magnitude of said signal to a selected range of magnitudes; and

correction means interconnected between said electrode means and said comparator means for controlling the dynamic range of said current flow by adjusting said



current flow as a function of said comparison derived by said comparator means.

4,514,810

NAVIGATOR FOR VEHICLES

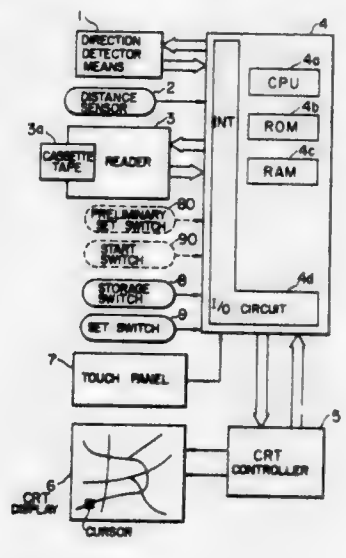
Yoji Ito, Kariya; Yozo Inoue, Chiryu; Kiyoshi Hara, Oobu; Kazuo Muramoto, Ichinomiya, and Kunio Miura, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 15, 1982, Ser. No. 418,530

Claims priority, application Japan, Sep. 17, 1981, 56-147096; Sep. 22, 1981, 56-150189

Int. Cl.³ G06F *15/50*; G09B *29/10*

U.S. Cl. 364—424 **4 Claims**



1. A vehicle navigator for displaying a running track of the vehicle, comprising:

present position detector means for detecting the present position of the vehicle and outputting a present position signal corresponding to the present position of the vehicle;

first memory means for storing a plurality of original road maps indicative of running tracks of the vehicle, said first memory means selectively reading out map data corresponding to one of said plurality of original road maps in response to a control signal;

control means comprising:

first means for receiving said present position signal from said present position detector means, and for outputting said control signal to said first memory means in order to receive said map data, wherein said first means processes said received present position signal and said map

data to generate a display signal for displaying running route data of the vehicle on said map data;

second means for receiving and storing the map data and the running route data, including running track data and the present position of the vehicle, in response to said display signal from said first means and for generating corresponding video and sync signals;

display means for receiving said video and sync signals from said second means in order to display said map data and said running route data;

second memory means for storing as additional running track data a running track formed when the vehicle runs on a new road which is not indicated on the displayed map data; and

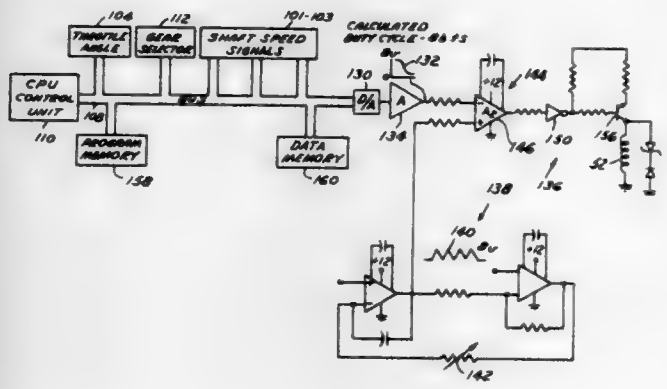
road addition means for allowing said display means to additionally display, as a road, the additional running track data stored by said second memory means on the selected map data, when the selected map data is re-displayed by said display means.

4,514,811

FORWARD DRIVE RELEASE SYSTEM FOR AUTOMATIC TRANSMISSION

John A. Daubenmier, Canton, and Elias T. Boueri, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 28, 1982, Ser. No. 393,208
Int. Cl.[3] **B60K** *41/28;* **G05B** *15/02;* **G05D** *17/02*
U.S. Cl. 364—424.1 **9 Claims**



1. A control system for controlling the magnitude of torque transmitted through a clutch of an automatic transmission comprising:

a throttle sensor which generates a signal that represents the throttle opening of a throttle controlled engine;

an engine speed sensor which detects a value that represents the engine rotational speed, NE;

a gear ratio sensor which generates a signal that represents disposition of the gear selector in a forward drive position;

a shaft speed sensor which generates a signal that represents the speed of the vehicle;

a torque converter having an impeller drivably connected to the engine crankshaft and a turbine driven from the impeller;

a turbine speed sensor which generates a value that represents the turbine speed, NT;

a solenoid operated valve that opens and closes communication between a source of pressurized fluid and the clutch and between atmosphere and the clutch, thereby pressurizing and venting the clutch as the solenoid windings are energized and deenergized;

computing means for repetitively computing the duty cycle of the solenoid provided the gear ratio selector is disposed and in an acceptable forward drive position, the throttle setting is equal to or less than a predetermined setting and the vehicle speed is equal to or less than a predetermined speed, having a data base that includes the values of the proportional gain, KP, the derivative gain, KD, and the desired absolute difference between engine speed and turbine speed, L, adapted to repetitively calculate current instantaneous speed difference values $|NE-NT|_c$, to store in memory and recall from memory previously calculated instantaneous speed difference values $|NE-NT|_p$ and previously calculated duty cycle values, DC_p, and to repetitively calculate the current duty cycle, DC_c, from the relationship

$$DC_c = DC_p - KP(|NE-NT|_c - L) - KD(-|NE-NT|_c - |NE-NT|_p);$$

and

means for converting the binary value of the current duty cycle to an analog current that energizes the solenoid.

6. A method for controlling with the aid of a digital computer the magnitude of torque transmitted between a throttle engine and an output shaft through a clutch of an automatic transmission having a torque converter turbine and a solenoid valve that operates to engage and disengage the clutch comprising:

providing said computer with a data base that includes at least

a predetermined engine throttle angle,

predetermined transmission gear selector positions,

a predetermined vehicle speed,

the proportional gain, KP,

the derivative gain, KD, and

a desired absolute difference between the engine speed and turbine speed, L;

continually determining and providing the computer with the current throttle opening of the engine, the current speeds of the engine, turbine and vehicle, the current setting of the gear selector and the speeds of the engine and turbine that were determined during a previous computing period;

executing the following steps provided the gear selector is set at one of the predetermined gear selector positions and the throttle angle is equal to or less than the predetermined throttle angle and the vehicle speed is equal to or less than the predetermined vehicle speed;

repetively calculating in the computer at frequent periodic intervals the equation:

$$DC_c = DC_p - KP(|NE-NT|_c - L) - KD(-|NE-NT|_c - |NE-NT|_p)$$

where

DC_c and DC_p are the current duty cycle and previous duty cycle calculated during a previous computing period;

converting the calculated current duty cycle to a voltage pulse wave; and

energizing the solenoid valve by applying the voltage pulse wave to the windings of the solenoid.

4,514,812

METHOD AND APPARATUS FOR CONTROLLING THE THICKNESS OF A LAMINA OF A COEXTRUDED LAMINATE

Peter S. Miller, Waterville, and Maclin S. Hall, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 27, 1982, Ser. No. 424,686
Int. Cl.[3] **G06F** *15/46;* **G06G** *7/64;* **B28B** *17/00;* **B28** *00/00*
U.S. Cl. 364—473 **19 Claims**

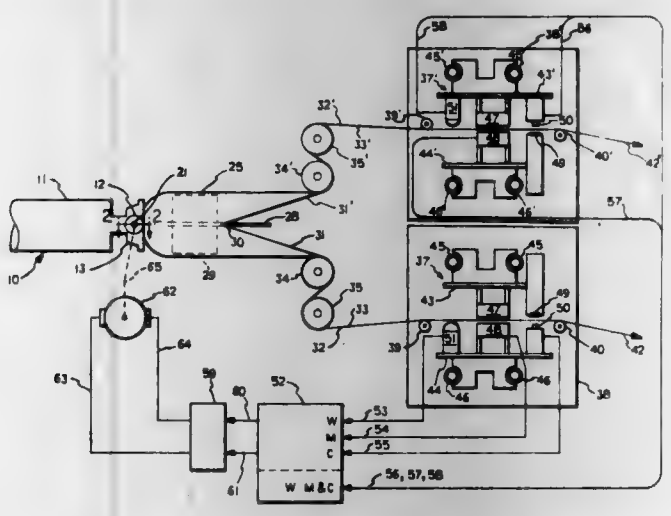
1. Apparatus for controlling the average thickness ($\bar{T}_1$) of a film lamina of thermoplastic material having a known density (D_1) and coextruded at a variable extrusion rate with a foam lamina of similar thermoplastic material having a thickness (T_2) and a density (D_2) to form a thermoplastic laminate comprising:

a first gauge for sensing the thickness of the laminate which is equal to (T_1+T_2) and for providing a caliper signal (C) corresponding to the thickness sensed;

a second gauge for sensing the mass/unit-area of the laminate which is equal to $(T_1)(D_1)+(T_2)(D_2)$ and for provid-

ing a mass signal (M) corresponding to the mass/unit-area sensed;

a third gauge for sensing a response to said thermoplastic material and its distribution in the laminate and for providing a dielectric signal (W) corresponding to the response which is equal to $[(a)(T_1)/(b+\quad)][K-(D_2/D_1)]$ where (K) is a ratio of the dielectric effect of the solid material in each lamina and (a) and (b) are coefficients approximated to best fit empirical data measured by said gauge, said gauge being positioned adjacent the film lamina and the



sensitivity of said gauge decreasing with the distance therefrom;

a computer having a memory containing the value of the density (D_1) of the film lamina, the value of the ratio (K) and the values of the coefficients (a) and (b), said computer being connected to said first, second, and third gauges and being responsive to successive sets of signals comprising the caliper signal (C), the mass signal (M) and the dielectric signal (W) for calculating the thickness (T_1) of the film lamina according to the formula:

$$T_1 = \frac{(b)[aM - WD_1(b + C)]}{WD_1(b + C) + aD_1(b - Kb - KC)}$$

combined from the equalities associated with each signal received, and then for comparing an average thickness ($\bar{T}_1$) of the calculated thicknesses (T_1) to a desired thickness (T_0) and providing a first control signal (DEC) when the average thickness ($\bar{T}_1$) is greater than the desired thickness (T_0) and a second control signal (INC) when the average thickness ($\bar{T}_1$) is less than the desired thickness (T_0); and

means connected to said computer and responsive to the first control signal (DEC) for decreasing the extrusion rate of the film lamina and responsive to the second control signal (INC) for increasing the extrusion rate of the film lamina.

4,514,813

SYSTEM FOR CORRECTING POSITIONAL ERROR IN NUMERICAL CONTROL DEVICES

Ryoichiro Nozawa, Tokyo, and Hideaki Kawamura, Hachioji, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Sep. 25, 1981, Ser. No. 305,785

Int. Cl.³ G06F *15/46, 11/00;* G05B *19/24*

U.S. Cl. 364—474 **8 Claims**

1. A method of correcting a positional error in a numerical control system, with a memory, for controlling a machine tool having a movable member with a commanded position and movable in three dimensional space and having at least two control axes, the movable member being movable along at least two of said control axes and the movement of the member being controlled along at least two of said control axes, said method comprising the steps of:

(a) dividing the three dimensional space, in which the movable member moves, for each of said at least two control axes, into corresponding pluralities of sub-regions;

(b) storing in the memory a position correcting value derived from the position of the movable member along at least one other control axis for each of said sub-regions;

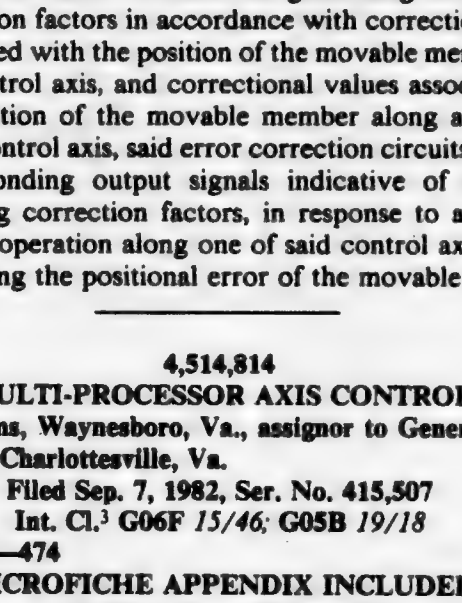
(c) up-dating the commanded position of the movable member each time the movable member moves;

(d) detecting when the current position of the movable member has shifted from one sub-region of space to a second sub-region of space;

(e) storing the position correcting value of said one sub-region of space which the movable member has just moved from;

(f) reading out of the memory the position correcting value corresponding to said second sub-region of space when the current position of the movable member is located in said second sub-region; and

(g) correcting the position of the movable member along said one control axis in accordance with the arithmetic



difference between the position correcting value of the second sub-region of space and the stored position correcting value of the one sub-region of space the movable member has just moved from.

3. A position error correction apparatus in a numerical control system for controlling a machine tool having a movable member movable along at least two axes and whose movement is controlled along at least two control axes, said apparatus including:

error correction circuits, each associated with a corresponding one of said control axes and generating corresponding correction factors in accordance with correctional values associated with the position of the movable member along one control axis, and correctional values associated with the position of the movable member along at least one other control axis, said error correction circuits providing corresponding output signals indicative of the corresponding correction factors, in response to a positional control operation along one of said control axes, and for correcting the positional error of the movable member.

4,514,814

MULTI-PROCESSOR AXIS CONTROL

John T. Evans, Waynesboro, Va., assignor to General Electric Company, Charlottesville, Va.

Filed Sep. 7, 1982, Ser. No. 415,507

Int. Cl.³ G06F *15/46;* G05B *19/18*

U.S. Cl. 364—474 **6 Claims**

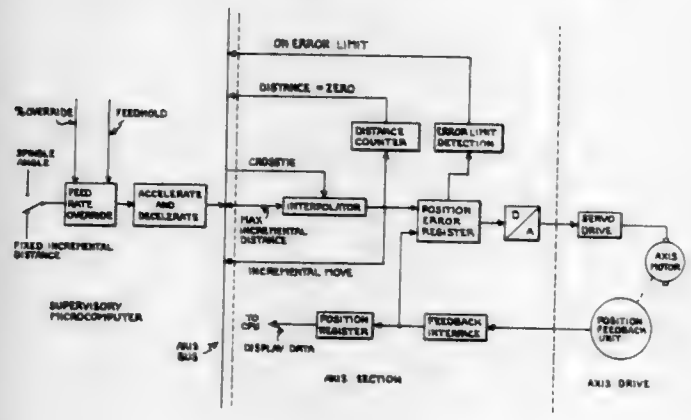
MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 78 Pages)

1. A method for operating a computer numerical control (CNC) system for controlling an industrial machine system having a plurality of controllable axes of motion, the CNC

system including a central processing unit, a plurality of supervisory processing units, a plurality of axis data processing units, input means for providing preliminary set-up data to the CNC system and communication bus means for providing communication between the processing units and the machine system, each of the axis data processing units being assigned to control a predetermined one of the axes of motion said method comprising the steps of:

(a) providing data to each of the supervisory processing units defining a mode of operation for a group of axes of motion of the machine system to be controlled by a corresponding one of the supervisory processing units;



(b) providing from the central processing unit to the axis data processing units instructions defining for each of the axis data processing units a supervisory processing unit controlling processing of data by each of the axis data processing units;

(c) providing from the central processing unit to each of the axis data processing units data corresponding to a desired motion for the axis of motion controlled by a corresponding axis data processing unit; and

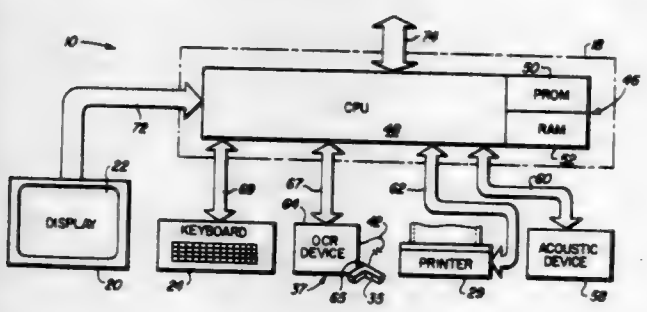
(d) directing the supervisory processing units to force each of the axis data processing units to process the desired motion data whereby signals are provided from the axis data processing units to the machine system to cause the desired motion.

4,514,815

COMPUTERIZED SYSTEM AND METHOD OF MATERIAL CONTROL

Nils A. Anderson, Paradise Valley, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 61,124, Jul. 27, 1979, abandoned. This application Nov. 27, 1981, Ser. No. 325,377
Int. Cl.³ G06F *15/24*
U.S. Cl. 364—478 **8 Claims**



4. A system of material control for a plurality of articles, an initial OCR readable label associated with each article and having an alphanumeric character field disposed thereon representing the nature of the article,

a. a plurality of OCR devices, each OCR device reading alphanumeric characters and producing an electronic representation of each character read, at least one OCR device reading said initial labels;

b. a computer receiving and storing as data said electronic representation from each OCR device, said computer generating a unique identifying indicia for said article in response to said one OCR device reading said associated initial label and for storing said indicia conjunctive with the nature thereof;

c. a printer receiving said indicia from said computer to print said indica in response thereto onto another OCR readable label to be read by at least one OCR device;

d. a keyboard for entering data and instruction to said computer; and

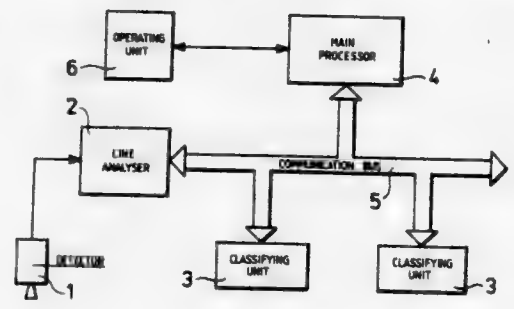
e. a visual display for exhibiting information from said computer.

4,514,816

METHOD AND APPARATUS FOR THE CLASSIFICATION OF PIECE GOODS WHICH ARE IN A STATE OF MOTION

Martin Ollus; Esko Uotila; Björn Wahlström, all of Espoo; Esko Saukkonen, Helsinki; Pekka Malinen, Parainen, and Immo Mäenpää , Littoinen, all of Finland, assignors to Oy Partek AB, Parainen, Finland

Continuation-in-part of Ser. No. 179,780, Aug. 20, 1980, abandoned. This application Aug. 1, 1983, Ser. No. 518,974
Claims priority, application Finland, Aug. 22, 1979, 792621
Int. Cl.³ B07C *5/34*
U.S. Cl. 364—478 **10 Claims**



10. Apparatus for the identification and classification, on the basis of a physical property, of pieces which are randomly distributed without touching one another and in a state of continuous translatory movement on a background having an intensity of the physical property which is sufficiently different from that of the pieces being identified to enable the perimeters of the pieces to be identified, the said apparatus comprising:

a detector scanning transversely the travel path of the pieces and generating a variable electric signal corresponding to the observed physical quantity;

an analyzer for converting the said variable electric signal into a key number group for each piece on the scan line of the detector, each said key number group comprising N key numbers being representative of the marginal positions of that piece on the scan line and other selected characteristics of the piece; a plurality of microprocessors for carrying out the classifying of the pieces on the basis of said N key numbers;

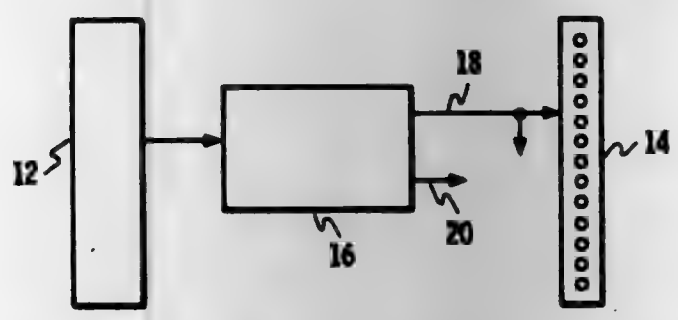
each of which microprocessors is connected for carrying out the classifying operation as a recursive processing of the information on a particular one of the pieces being classified;

and a main processor for receiving data from the said microprocessors and to control said microprocessors in such a manner that, immediately upon having carried out the classification of one said piece, each microprocessor is reset and subsequently assigned for the classification of a further piece arriving at the scan line and situated arbitrarily in the travel path across the scan line.

4,514,817
POSITION SENSING AND INDICATING DEVICE

Robert B. Pepper, 1539 McAllister St., San Francisco, Calif. 94115, and James A. Maples, Palo Alto, Calif., assignors to Robert B. Pepper, San Francisco, Calif.

Continuation-in-part of Ser. No. 18,411, Mar. 7, 1979, Pat. No. 4,270,171. This application Feb. 10, 1981, Ser. No. 233,000
Int. Cl.³ H05B *39/00*
U.S. Cl. 364—480 27 Claims



20. In an automated control system having programmed control means for controlling the level of a utilization device connected thereto, a manual override control comprising:

display means connected to the programmed control means for displaying the current level of the utilization device under control;

an actuating device;

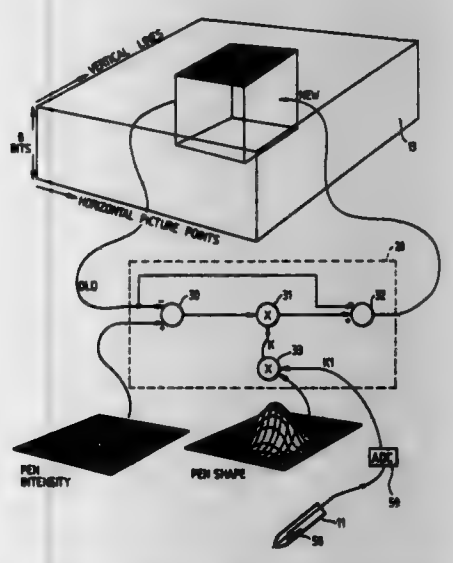
a control panel sensitive to the proximity and position of the actuating device;

circuit means connected to the display means and the control panel for detecting the proximity of the actuating device to the control panel for producing a first signal to cause the program control means to interrupt program control of the level of the utilization device, and for determining the position of the actuating device when it is brought into proximity with the control panel and producing a second signal to establish the level of the utilization device in response to the position of the actuating device.

4,514,818
VIDEO IMAGE CREATION SYSTEM WHICH SIMULATES DRAFTING TOOL

Ian C. Walker, Newbury, England, assignor to Quantel Limited, Berkshire, England

Filed Dec. 1, 1981, Ser. No. 326,293
Claims priority, application United Kingdom, Dec. 4, 1980, 8038887
Int. Cl.³ H04N *1/22;* G09G *1/16*
U.S. Cl. 364—521 19 Claims



1. A video image creation system comprising:

drafting means operable by an operator to designate positions on a desired line in the image;

means for providing shape signals relating to a patch of image points, said shape signals having different values to simulate the distribution of drafting medium produced by a notional drafting tool;

a store for picture point signals having storage locations representing points of the image;

processing means responsive to operation of said drafting means for producing for each designated position of group of image signals which are a function of said shape signals;

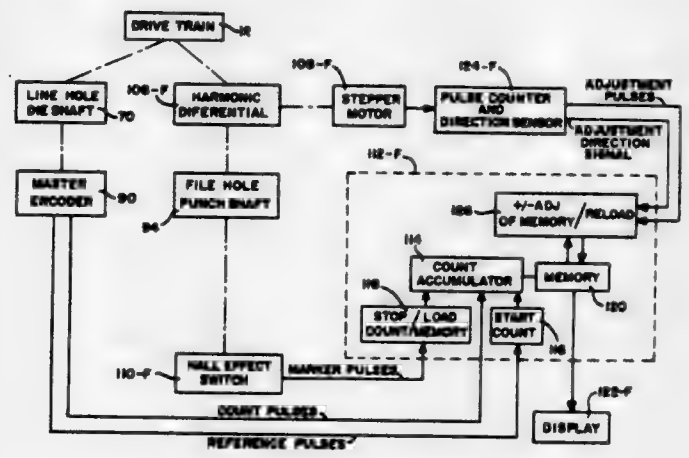
means for storing said image signals at storage locations of said store determined by the designated position and by the position of the image points in said patch; and

means for reading signals from said store to produce a sequence of signals adapted for the reproduction of the image.

4,514,819
APPARATUS AND METHOD FOR MEASURING ROTATIONAL POSITION

Dinesh G. Punater, Dayton, and Donald G. Bastian, Centerville, both of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Jun. 4, 1982, Ser. No. 385,209
Int. Cl.³ G06F *15/46;* G06G *7/64, 7/66*
U.S. Cl. 364—556 14 Claims



1. An apparatus for measuring with respect to a first rotating element the circumferential setting of a second rotating element of a machine for operating on a moving web, said first and second elements being connected to a drive train for selective and simultaneous driving thereby at a common rotational speed, comprising:

means driven in synchronism with said first element for generating an electrical signal including one reference trigger pulse for each revolution of said first element with respect to a fixed point of said machine, and an electric signal including a train of count pulses, one each of said count pulses being generated in response to rotation of said first element through a predetermined increment;

means cooperating with said second rotating element for generating an electric signal including one marker trigger pulse for each revolution of said second element with respect to a fixed point of said machine;

means for receiving said reference pulses, said count pulses and said marker pulses, and for counting the number of said count pulses received subsequent to receipt of one of said trigger pulses and up to and simultaneous with receipt of the first succeeding one of the other of said trigger pulses;

said pulse receiving and counting means including a memory for retaining therein said number of said count pulses until receipt by said receiving and counting means of the second succeeding one of said other trigger pulses;

means for selectively adjusting the circumferential setting of said second rotating element with respect to said first rotating element; and

means for generating an electric signal including adjustment

pulses, a predetermined number of said adjustment pulses being generated in response to adjustment of said second element by said adjustment means through said increment of rotation corresponding to one of said count pulses;

said pulse receiving and counting means receiving said adjustment pulses, and modifying said number of said count pulses retained within said memory by the number of said adjustment pulses, divided by said predetermined number, received subsequent to receipt of said first other trigger pulse and up to and simultaneous with receipt of said second other trigger pulse;

said modifying of said number of said count pulses being made simultaneously with receipt of said adjustment pulses by said pulse receiving and counting means, whereby said number of said count pulses is representative of the current circumferential setting of said second element during times when driving of said first and second elements is stopped.

4,514,820

APPARATUS FOR GENERATING TRAPEZOIDAL SIGNALS OVER A SINGLE CONDUCTOR COAXIAL BUS

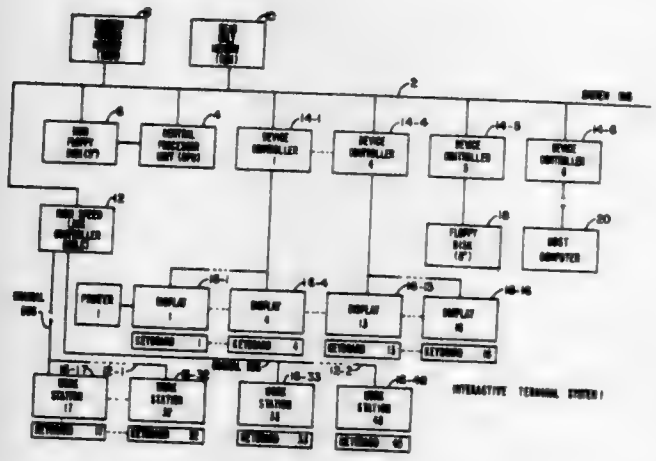
Fred A. Mirow, Westwood, and Matthew M. Quinones, Holliston, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1982, Ser. No. 431,914

Int. Cl.³ G06F *15/16*; H03K *1/00*

U.S. Cl. 364—858

5 Claims



1. An interactive terminal data processing system includes a high speed link controller (HSLC) and a plurality of work stations, all coupled in common to a single conductor coaxial bus for transferring information between said HSLC and said plurality of work stations, said HSLC includes a communications controller for generating serial data signals, data recovery logic for converting each of said serial data signals representative of a ZERO data bit to a sequence of first signals, each first signal having a rectangular waveshape, and a sequence of second signals alternating between a first state and a second state for successive first signals of the sequence of first signals, analog logic responsive to the sequence of first signals and the sequence of second signals in the first and the second states for generating a sequence of third signals alternating between a positive trapezoidal waveshape and a negative trapezoidal waveshape for reducing noise and reflections over said coaxial bus, said analog logic comprising:

first means responsive to the rise of the each first signal for generating a first ramp voltage signal rising to a first predetermined voltage, and responsive to the fall of the each first signal for generating the first ramp voltage signal falling to a second predetermined voltage, the ramp voltage signal having a positive trapezoidal waveshape;

second means responsive to the ramp voltage signal and each of the sequence of second signals in the first state for generating a third signal having a positive trapezoidal waveshape, and responsive to the ramp voltage signal and one of the sequence of second signals in the second state for generating the third having having a negative trapezoidal waveshape;

wherein said first means being responsive to the sequence of first signals for generating a sequence of ramp voltage signals; and

the second means being responsive to the sequence of second signals and the sequence of ramp voltage signals for generating the sequence of third signals.

4,514,821

ELECTRO-OPTICAL CCD TRANSVERSAL FILTER WITH ANALOG REFERENCE WEIGHTS

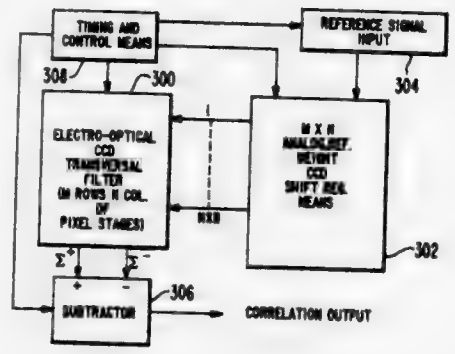
John R. Tower, West Deptford, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 27, 1982, Ser. No. 424,231

Int. Cl.³ G06G *7/19*

U.S. Cl. 364—862

12 Claims



1. In combination:

a monolithic electro-optical charge coupled device (CCD) transversal filter and analog reference weight CCD shift register means for said transversal filter;

said transversal filter being comprised of a predetermined number of pixel stages, each of which includes an imager pixel; and

said shift register means including a separate shift register stage corresponding to each one of said predetermined number of pixel stages, with each separate shift register stage being situated in cooperative relationship with its corresponding pixel stage, so that said shift register means can forward each of respective selected analog reference weight signals to the proper one of the respective pixel stages of said transversal filter, thereby to selectively control the filter characteristics of said transversal filter in accordance with said selected analog reference weight signals.

4,514,822

DEVICE FOR DATA ACQUISITION

Lutz Schneider, Malsch-Völkersbach, and Bruno Guigas, Bruchsal, both of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Rheinstetten-Forchheim, Fed. Rep. of Germany

Filed Oct. 27, 1981, Ser. No. 315,406

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041219

Int. Cl.³ G06F *15/42, 13/00*

U.S. Cl. 364—900

4 Claims

1. A data processing device for digital acquisition, storage and processing of time-dependent data signals, especially for the accumulation of interferograms delivered by spin resonance and infrared spectrometers, said device comprising

an A/D converter for receiving analog signals and converting said analog signals into digital signals including successive data words;

a main memory with random access and having a plurality of address locations for storing blocks of the data words;

a disk storage device affording additional storage for the blocks of the data words;

a first data channel for transmitting the data words between the A/D converter and the main memory;

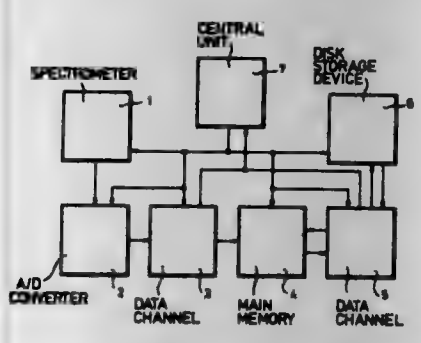
said first data channel including a pointer register for receiving and registering a sequence of address locations and for directing the data words to said sequence of address locations in the main memory;

said pointer register being adapted to be advanced along said sequence upon receiving a first reloading signal;

said first data channel including a word counter for initially receiving a desired word count value as to the number of words to be included in each block and for counting the number of data words transmitted by said first data channel and for producing the first reloading signal upon reaching said word count value and for supplying said first reloading signal to said pointer register for advancing said pointer register along said sequence;

said fist data channel comprising an address register for receiving and storing the sequence of address locations and for initially loading and subsequently reloading the sequence of address locations into said pointer register and for receiving an address reloading signal for causing said reloading of the sequence of address locations;

said first data channel including a block length register for initially receiving and storing the desired word count value as to the number of data words to be included in each data block and for initially loading said word count value into said word counter and for receiving the first



reloading signal from said word counter and for thereupon reloading said word counter with said word count value;

said first data channel including a block counter for initially receiving block count information as to the number of word blocks to be transmitted by said first data channel and for counting the word blocks as they are transmitted by said first data channel and for supplying an address reloading signal to said address register as each block is counted and for producing a terminating signal upon reaching a block count corresponding to said block count information;

a second data channel connected between said main memory and said disk storage device for transmitting data words therebetween;

and a central unit for controlling said second data channel and for initially receiving program information as to said desired word count value and as to said block count information and as to said sequence of address locations and for initially loading said sequence of address locations into said address register and for initially loading said desired word count value into said block length register and for initially loading said block count information into said block counter and for initially starting the operation of said first data channel and for receiving said terminating signal and for terminating the transmission of data words by said first data channel in response to said terminating signal.

4,514,823

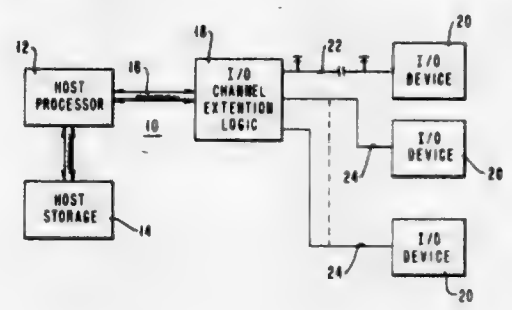
APPARATUS AND METHOD FOR EXTENDING A PARALLEL CHANNEL TO A SERIAL I/O DEVICE

Richard N. Mendelson; Douglas M. O'Neal, and Leo A. Sharp, Jr., all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,525

Int. Cl.³ G06F *9/00*

U.S. Cl. 364—900 **11 Claims**



1. A method of serially extending a parallel channel from a host processor to an I/O device, comprising the steps of:

channel extension logic storing a command generated by the host processor;

said channel extension logic generating a command frame manifesting the stored command and control information identifying the frame as a host command;

said channel extension logic serializing the generated command frame and transmitting said serialized command frame to said device;

said device analyzing said transmitted command frame and said device generating a response frame, including control information, manifesting one of either that data defined by said response frame is to be directly transferred from the main storage of said host processor to the device, that data included in said response frame is to be directly transferred to said main storage of said host processor from said device, or that the execution of the command by the device has been terminated;

said device serializing the generated response frame and transmitting said serialized response frame to said channel extension logic;

in the event that said response frame manifests that data is to be transferred from said host memory to said device, said channel extension logic cycle stealing the data from said host memory, serializing said data, transmitting said serialized data to said device, and repeating from said step of analyzing;

in the event that said response frame from said device manifests that the data included in said response frame is to be stored in said host memory, said channel extension logic cycle stealing the data included in said response frame into said host memory; and

in the event that said response frame from said device manifests that the execution of the command by the device has been terminated, said channel extension logic awaiting another command generated by said host processor.

4,514,824

BYTE-ORIENTED LINE ADAPTER SYSTEM

Richard A. Loskorn; Philip D. Biehl, both of Dana Point, and Robert D. Catiller, Garden Grove, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 5, 1982, Ser. No. 355,135

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—900 **9 Claims**

1. In a line support processor for controlling data transfer operations between a host computer and data terminal equipment connected via data communication lines, wherein said line support processor includes a plurality of line adapters, a data link interface unit and a microprocessor means, said microprocessor means having an I/O bus for data transfers and

output control registers providing control data to each of said line adapters, a byte oriented line adapter system comprising:

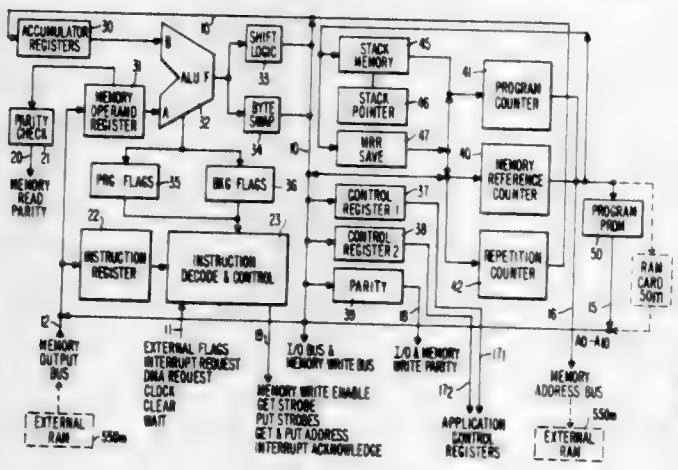
(a) a plurality of input/output circuit means connecting said data terminal equipment to a first driver switching means, and wherein said input/output circuit means can execute instructions from said microprocessor to operate synchronously or asynchronously during data transfer operations, each said input/output circuit means including:

(a1) a USART receiver-transmitter means controlled by said microprocessor means for receiving serial bit data from said data terminal equipment and converting said serial data to parallel character-byte data for transmission to said microprocessor means, and/or receiving character-byte data from said microprocessor means and converting it to serial bit data for transmission to said data terminal equipment, said USART receiver-transmitter means, being connected to respond to control data from said microprocessor means, for selecting the character-byte data size from five bits-per-byte up to eight bits-per-byte;

(a2) timing means, set by the said microprocessor means connected to said input/output circuit means, said timing means including:

(a2a) first timing means for generating the baud rate of data transfer in said USART receiver-transmitter means;

(a2b) second timing means connected to said microprocessor means for establishing programmed time-



out periods and delayed response time for accepting data coming in on said data communication lines to said line adapter;

(b) first driver switching means, controlled by said microprocessor means, for transferring data from said microprocessor means to a selected one of said input/output circuit means, or transferring data from said selected input/output circuit means to a multiplexor means;

(c) multiplexor means, having an output to said I/O bus of said microprocessor means, for conveying data bytes to a buffer memory means or to said microprocessor means for subsequent transfer to a main host computer, said multiplexor means including:

(c1) a group of n multiplexors, each multiplexor connected for conveying data from one bit-line of a data transfer bus means from said first driver switching means, said group of n multiplexors providing for parallel transfer of character bytes of up to eight bits;

(c2) said data transfer bus means connecting said first driver switching means to said multiplexor means;

(c3) a plurality of input information-data means connected to the input of each of said multiplexors, said information-data means being transferrable to said microprocessor means upon control instructions from said microprocessor means;

(c4) input instruction means connected to said multiplexor means from said microprocessor means for selecting which of said information-data means shall be transferred to said microprocessor means;

(d) buffer memory means, connected to said I/O bus, for temporarily buffering data being transferred between said microprocessor means and said data terminal equipment, said buffer memory means including:

(d1) address input lines connected from said microprocessor means to said memory means to receive addresses from said microprocessor means; and

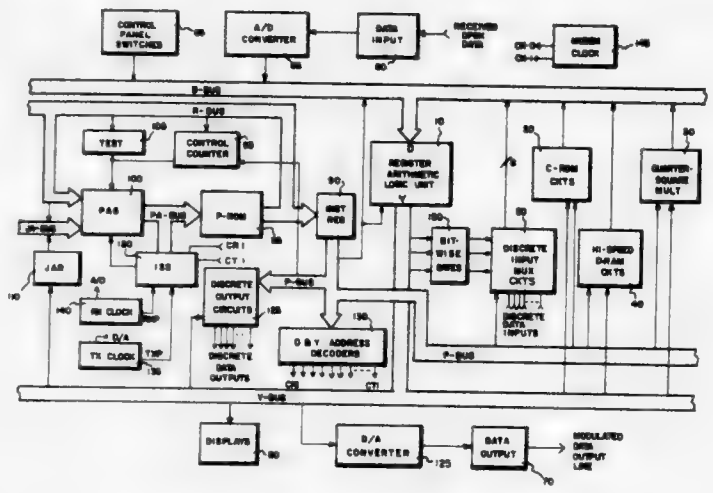
(d2) a memory output bus connected to convey addressed data from said memory means to said microprocessor means.

4,514,825

HIGH SPEED DIGITAL MODEM

Karl I. Nordling, Largo, Fla., assignor to Kinex Corporation, Largo, Fla.

Filed Mar. 9, 1982, Ser. No. 356,466
Int. Cl.[3] G06F 7/44, 7/42
U.S. Cl. 364—900 16 Claims



1. In a modem for communication of digital data over a communications channel, said modem programmed to encode and decode data using 8 phase differential phase shift modulation, the improvement comprising:

(a) a modem processor (10, 90, 95, 100, 120, 20, and 40) including program memory means (95) having a control program stored therein and having a D-bus for input thereto of binary numbers in the form of bytes of digital data and a Y-bus for output therefrom of binary numbers in the form of bytes of digital data, said modem processor for performing logical addition and subtraction operations on such bytes of data;

(b) multiplying means (30) connected to said program memory means for performing high speed multiplication of a first binary number A and a second binary number B, said multiplier having a squares register (38), a squares memory table stored in a squares read only memory (35), an adder (36)/subtractor (39), and an accumulator (37), said squares register connected to said Y-bus for receiving in a first operation the sum A + B and in a second operation the difference A − B from said modem processor, said squares memory table receiving first said sum as address to the stored square thereof, said accumulator receiving said square, and in a second operation, said squares memory receiving said difference as an address to the stored square thereof, said adder/subtractor adding the negative of said square to the square stored in said accumulator, said accumulator thereafter producing a calculation of one-fourth the difference between said squares, said calculation being equal to the product of said first number A and said second number B, and said accumulator outputting said product onto said D-bus to said modem processor;

(c) bitwise logic circuit means (150) having a plurality of data byte inputs from said Y-bus and a single output for each one of said data byte inputs; and

(d) discrete-input multiplexer means (50) connected to said program memory means having a plurality of single-bit inputs connected to said single outputs of said bitwise logic circuit means for receiving individual single data bits therefrom selected by said program memory means, said multiplexer means having a parallel byte output to said D-bus wherein said multiplexer means outputs a parallel data byte for each selected single input data bit in which each bit of the parallel data byte has the same logic level as the selected single input data bit thereby allowing the processor to sense the state of the selected input data bit and any bit of such output data byte;

whereby said modem processor performs logic operations on bits within a byte and on a bit in one location in one byte with a bit in another location in another byte within said processor.

4,514,826

RELATIONAL ALGEBRA ENGINE

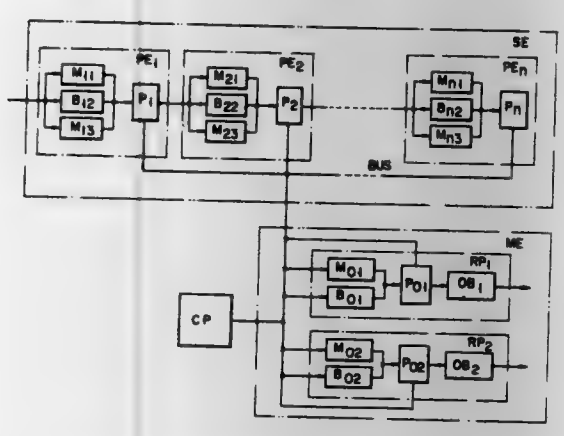
Kazuhide Iwata; Shigeki Shibayama, both of Yokohama; Yutaka Hidai, and Shigeru Oyanagi, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 2, 1982, Ser. No. 364,872

Claims priority, application Japan, May 18, 1981, 56-74564; May 18, 1981, 56-74565

Int. Cl.³ G06F *7/24, 7/02*

U.S. Cl. 364—900 **6 Claims**



1. A relational algebra operator for sorting and merging successively supplied first and second sets of data elements each having key and satellite attributes, the number of data elements of said first set being smaller than that of said second set, comprising:

a sort processor having sort processing elements serially connected in a plurality of stages numbered 1, 2, . . . n, each stage having an input and an output, first and second buffer memories, a third memory having a first-in/first-out (FIFO) function, said first to third memories being connected to receive data elements from said input, and sort processing means connected to said first to third memories for sorting said data elements read out of said memories;

in the k-th stage sort processing means, where k equals any number from 1 to n, said first to third memories being arranged to successively receive from said input groups of data each group consisting of 2^{k-1} data elements, in a predetermined sequence of said first, third, second, third, first, . . . memories, and said sort processing means being arranged to successively carry out comparisons between groups of data read out of said first and third memories and between groups of data read out of said second and third memories with respect to the key attribute and to successively transfer to said output groups of data each consisting of 2^k data elements which have been sorted with respect to the key attribute; and

a merge processor including first and second merge processing elements, connected in parallel, each of said merge processing elements having a fourth buffer memory, a fifth memory having a FIFO function, and merge processing means connected to said fourth and fifth memories for performing a join by merging relational algebra operation on sorted data elements read out of said fourth and fifth memories with respect to the key attribute;

in said first and second merge processing elements said fourth memories being arranged to simultaneously receive the first set of data elements which have been sorted by said sort processor, said fifth memories being arranged to alternately receive first and second subsets of data elements of said second set which have been sorted by said sort processor, and said first and second subsets each having the same number of data elements as said first set.

4,514,827

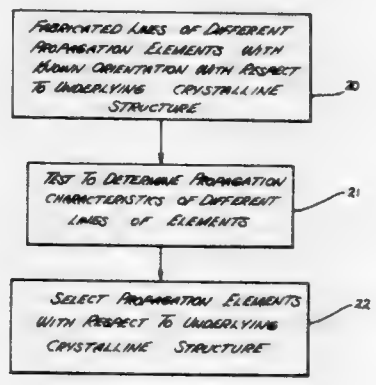
METHOD FOR SELECTING PROPAGATION ELEMENTS FOR MAGNETIC BUBBLE MEMORY

Hudson A. Washburn, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 11, 1983, Ser. No. 483,914

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—1 **9 Claims**



1. In a magnetic bubble memory which includes a layer in which magnetic bubbles are propagated and permalloy propagation elements for propagating said bubbles, a method for selecting propagation elements comprising the steps of:

fabricating parallel lines of at least two different propagation elements;

propagating magnetic bubbles in said layer for each of said lines of different elements to determine the propagation characteristics of each of said lines of different elements;

selecting one of said lines of one of said elements for propagating bubbles in a first direction and one of said lines of the other of said elements for propagating bubbles in a second direction, based on said propagation characteristics so as to optimize bubble propagation in said layer;

whereby bubble propagation in said layer is optimized.

4,514,828

MAGNETIC BUBBLE MEMORY SENSE AMPLIFIER HAVING A PULSED CURRENT MODE OF OPERATION

Thomas A. Closson, Dallas; David B. Oxford, Garland; Stephen R. Schenck, McKinney, and Jerold A. Seitchik, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 90,960, Nov. 5, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,578

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—8 **3 Claims**

1. A magnetic bubble system comprising:

a magnetic bubble device having a plurality of movable magnetic bubbles stored therein, and including a dummy resistor and a detector resistor which alters resistance in response to movement of a magnetic bubble therebeneath;

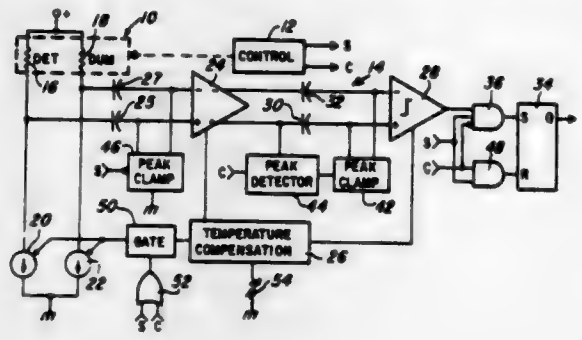
control circuitry connected to said device for periodically removing magnetic bubbles beneath said detector resistor,

wherein said control circuitry produces a first control signal when said bubbles are moved;

a first current source connected to said dummy resistor for supplying current therethrough;

a second current source connected to said detector resistor for supplying current therethrough;

a gate coupled to said first and second current sources and to said control circuitry, wherein said gate is responsive to



said control signal and causes said first and second current sources to supply current to said dummy and second resistors respectively only when said magnetic bubbles are moving beneath said detector resistor; and

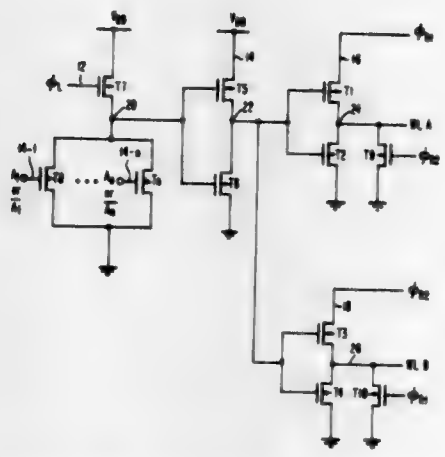
comparison circuitry in electrical communication with said dummy resistor and said detector resistor to determine when the resistance of said detector resistor alters in response to the movement of said bubbles.

4,514,829

WORD LINE DECODER AND DRIVER CIRCUITS FOR HIGH DENSITY SEMICONDUCTOR MEMORY

Hu H. Chao, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,777
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **10 Claims**



1. A narrow pitch CMOS word line decoder and driver circuit configuration for a semiconductor memory device comprising:

a system clock circuit for generating clock pulses;

a system voltage supply;

a decoder circuit including at least one p-type transistor having a source electrode connected to said voltage supply, a gate electrode connected to gating signals and a drain electrode connected to a first node, and a plurality of n-type address switch transistors, each having a drain electrode connected to said first node, a source electrode connected to ground voltage and a gate electrode connected to a separate one of a plurality of input address signals;

an inverter circuit including a pair of transistors, a first one of said pair of transistors having a source electrode connected to said voltage supply, a second one of said pair of transistors having a source electrode connected to ground voltage, said first and second inverter transistors having gate electrodes connected in common to said first node and drain electrodes connected in common to a second node; and

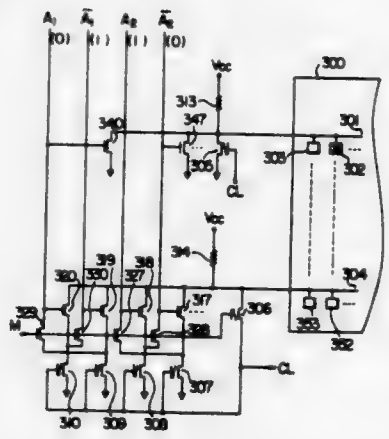
means connecting said second node to word lines of said semiconductor memory device.

4,514,830

DEFECT-REMEDIABLE SEMICONDUCTOR INTEGRATED CIRCUIT MEMORY AND SPARE SUBSTITUTION METHOD IN THE SAME

Takaaki Hagiwara, Kodaira; Masatada Horiuchi, Koganei; Ryuji Kondo, Kodaira; Yuji Yatsuda, Kanagawa, and Shinichi Minami, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1982, Ser. No. 344,974
Claims priority, application Japan, Feb. 6, 1981, 56-15742
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—200 **15 Claims**



1. A semiconductor integrated circuit memory comprising a memory array having a plurality of usual memory cells arranged in a matrix form of columns and rows, usual column (or row) select lines for selecting the columns (or rows) of said memory array, address line means for inputting an address signal, and a usual address transistor circuit connected between said address line means and each of said usual column (or row) select lines for accessing a selected one of said usual column (or row) select lines in accordance with said address signal, wherein said memory further comprises:

a plurality of spare memory cells provided in the form of at least one column (or row) in said memory array;

a spare column (or row) select line for selecting the column (or row) of said spare memory cells;

a spare address transistor circuit connected between said spare column (or row) select line and said address line means;

a first converting circuit connected to said spare address transistor circuit and including first nonvolatile semiconductor memory element means, said first converting circuit being operable upon the written or erased state of said first nonvolatile memory element means for conditioning said spare address transistor circuit into an active state to allow access to said spare column (or row) select line; and

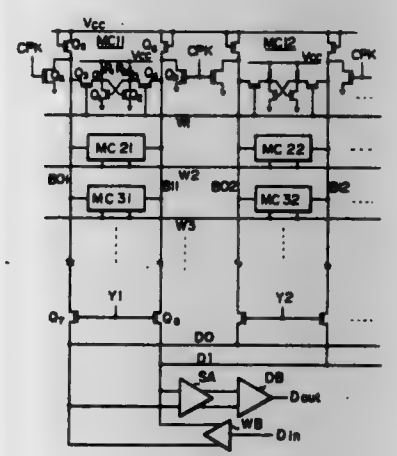
a second converting circuit connected to said spare column (or row) select line and including second nonvolatile semiconductor memory element means, said second converting circuit being operable upon the written or erased state of said second nonvolatile memory element means for setting said spare column (or row) select line to the grounded state.

4,514,831

STATIC-TYPE SEMICONDUCTOR MEMORY DEVICE

Atsushi Oritani, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1982, Ser. No. 393,119
Claims priority, application Japan, Jun. 30, 1981, 56-100526
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 9 Claims



1. A static-type semiconductor memory device operatively connected to receive an input address signal comprising:

a plurality of word lines;

a plurality of bit line pairs intersecting said plurality of word lines;

a plurality of static-type memory cells, respectively, operatively connected at intersections of said plurality of word lines and said plurality of bit line pairs, each of said bit line pairs respectively developing high and low potential levels corresponding to readout data from said static-type memory cells; and

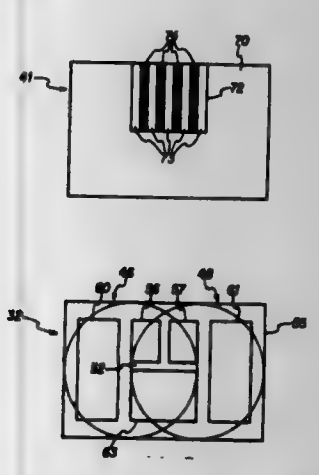
circuit means, operatively connected to said bit line pairs, for discharging the electric charges of said bit line pairs for a predetermined time period, said circuit means comprising means for lowering the potential levels of said bit line pairs to a level lower than said low potential level in response to a change in the input address signal.

4,514,832

SINGLE MIRROR RING LASER GYRO READOUT WITHOUT COMBINING OPTICS

Frederick Vescial, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 23, 1982, Ser. No. 421,762
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 12 Claims



1. A detector structure for use in a ring laser gyroscope of the type having counter rotating light beams having a frequency difference indicating the rate and sense of rotation of the gyroscope about an axis of rotational sensitivity, comprising:

a partially reflective surface for passing a portion of each of the beams therethrough and reflecting a portion of each of the counter rotating beams into a light path of the laser gyroscope,

a detector element spaced with respect to said partially reflective surface to receive the portions of the beams passing the partially reflective surface with patterns formed by the respective beams only partially overlapping,

first detector means on said detector element disposed to receive at least a non-overlapping portion of each of the beam patterns, thereby providing an intensity indication of the respective beams,

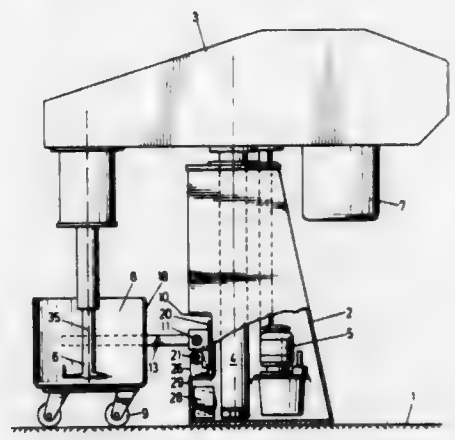
and second detector means on said detector element having at least two side-by-side detectors and a mask, each detector being disposed to receive at least an overlapping portion of the beams, said beams passing through said mask for detecting the motion of interference fringes produced by the respective beams and for providing an indication of at least a frequency difference between said beams.

4,514,833

DISPERSING MACHINE WITH CONTAINER HOLDING DEVICE

Herbert Dürr, Viernheim, Fed. Rep. of Germany, assignor to Draiswerke GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 419,488
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138382
Int. Cl.³ B01F *7/16*
U.S. Cl. 366—207 3 Claims



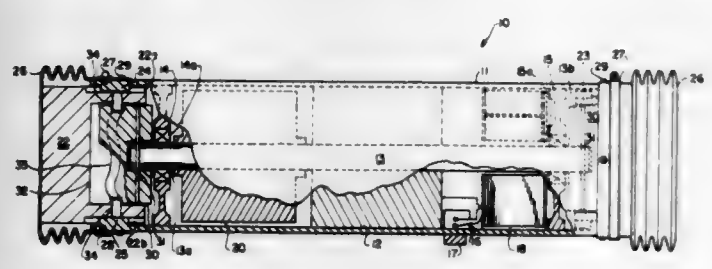
1. A dispersing machine having a machine upright and a cantilevered machine head mounted on said upright for raising and lowering movement by means of a lifting apparatus acted upon by a pressure medium pumping assembly, a rotatably drivable stirring apparatus having a portion mounted in one cantilevered end of said machine head, said stirring apparatus being drivable by means of a drive motor mounted on the dispersing machine and being movable vertically downwardly into a container disposed beside the machine upright, a container holding device mounted on said upright for releasably connecting said container to said upright, said container holding device having at least two clamping members substantially receiving the container therebetween concentrically with said strirring apparatus during processing of material contained therein, at least one of said clamping members being provided with a spindle nut disposed on a rotatably drivable spindle, said spindle being disposed horizontally and coupling said clamping members with a rotatable motor driven by a pressure medium, and means, fluidly connecting said rotatable motor to said pressure medium pumping assembly, for rotatably driving said rotatable motor, and thus rotatably driving said spindle, to cause movement of said at least one clamping member relative to the other of said clamping members.

4,514,834

EXPENDABLE UNDERWATER ACOUSTIC PROJECTOR

Paul A. Hanson, Spring Valley, and James M. Walton, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1983, Ser. No. 504,907
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—141 **2 Claims**



1. An apparatus for projecting acoustic energy through a water medium comprising:

an elongate tube disposed in the water medium for providing a protective enclosure having a pair of openings;

an electric motor secured to the inside of the elongate tube and having a shaft bidirectionally extending therefrom coaxially with the elongate tube for imparting rotary motion;

means mounted on the shaft for providing an inertial mass to improve the projection of acoustic energy;

means circumferentially connected with the inside of the elongate tube on opposite sides of the electric motor for journaling the bidirectionally extending shaft therein;

means contained within the elongate tube for supplying electrical power to drive the electric motor;

means carried on the elongate tube for magnetically coupling the electrical power supplying means to the electrical motor;

means disposed in both of the pair of openings for defining a pair of rigid projection elements;

means interposed between each rigid projection element defining means and the elongate tube for sealing the inside of the elongate tube from the water medium; and

a pair of cylindrically-shaped elements, each shaped with a camming surface and each cylindrically-shaped element being mounted on an opposite end of the bidirectionally extending shaft, and engaging a follower connected to each rigid projection element defining means for camming the rigid projection elements in coincident diverging and coincident converging reciprocal excursions, the elongate tube is provided with at least one projection near each opening that is shaped to engage correspondingly-shaped axially oriented disposed slots in each rigid projection element defining means to prevent them from being rotated, each camming surface of each cylindrically-shaped element of the camming means is an endless groove having a pattern repeated every 180 degrees on the circumference of eacy cylindrically-shaped element and the follower is two spur-shaped follower projections provided and positioned to engage the groove at diametrically opposed locations on each cylindrically-shaped element;

means carried within the elongate tube and communicating with the water medium for pressure compensating the interior of the acoustic projector; and

means provided in the elongate tube for venting excess pressure from the interior of the acoustic projector.

2. An apparatus for projecting acoustic energy through a water medium comprising:

an elongate tube disposed in the water medium for providing a protective enclosure having a pair of openings;

an electric motor secured to the inside of the elongate tube and having a shaft bidirectionally extending therefrom coaxxially with the elongate tube for imparting rotary motion;

means mounted on the shaft for providing an inertial mass to improve the projection of acoustic energy;

means circumferentially connected with the inside of the elongate tube on opposite sides of the electric motor for journaling the bidirectionally extending shaft therein;

means contained within the elongate tube for supplying electrical power to drive the electric motor;

means carried on the elongate tube for magnetically coupling the electrical power supplying means to the electrical motor;

means disposed in both of the pair of openings for defining a pair of rigid projection elements;

means interposed between each rigid projection element defining means and the elongate tube for sealing the inside of the elongate tube from the water medium; and

a pair of cylindrically-shaped elements, each shaped with a camming surface and each cylindrically-shaped element being mounted on an opposite end of the bidirectionally extending shaft, and engaging a follower connected to each rigid projection element defining means for camming the rigid projection elements in coincident diverging and coincident converging reciprocal excursions, the elongate tube is provided with at least one projection near each opening that is shaped to engage correspondingly-shaped axially oriented disposed slots in each rigid projection element defining means to prevent them from being rotated, each camming surface of each cylindrically-shaped element of the camming means is a series of hills and valleys on an axially exposed end having a pattern repeated every 180 two follower portions held abutting on the hills and valleys by ambient water pressure at diametrically opposed locations on the axially exposed ends of each cylindrically-shaped element;

means carried within the elongate tube and communicating with the water medium for pressure compensating the interior of the acoustic projector; and

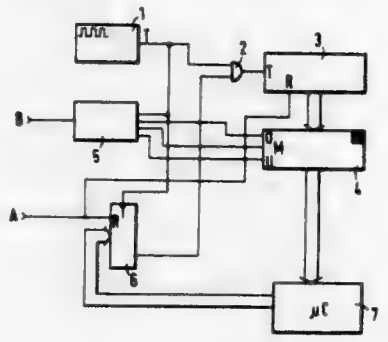
means provided in the elongate tube for venting excess pressure from the interior of the acoustic projector.

4,514,835

DEVICE FOR MEASURING TIME INTERVALS BETWEEN A PLURALITY OF SUCCESSIVE EVENTS

Andreas Röttigheimer, Neuffen; Karl-Heinz Einsele, Weilheim, and Klaus Henig, Tubingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 615,472
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328540
Int. Cl.³ G04F *8/00, 10/00*
U.S. Cl. 368—118 **6 Claims**



1. A device for measuring time intervals between a plurality of events, comprising a clock pulse generator; a pulse counter having a clock input and an output; a gating member connected between said clock pulse generator and the clock pulse input of the counter; a multistage storing device having a data input connected to the output of said counter, a readout input, and an output; a first control circuit for setting an adjustable gating time for said gating member, said first control circuit

having an input connectable to a source of a first or start event signal and an output connected to said gating member to start in response to a first event signal a measuring time cycle of a predetermined length; and a second control circuit having an input connectable to a source of subsequent event signals and an output connected to the readout input of said storing device; and said storing device retrieving in response to the output signals from said second control circuit corresponding to the occurrences of the subsequent event signals, momentary counts from said counter and storing said counts for further processing.

4,514,836

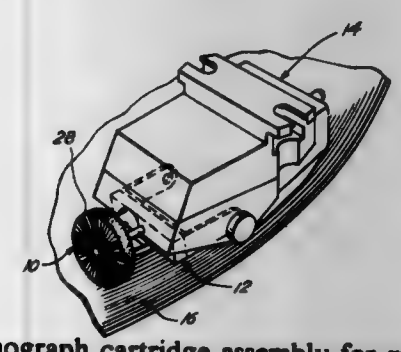
BRUSH CONTACT FOR PHONOGRAPH TONE ARM DYNAMIC STABILIZER

James Kogen, Evanston, and C. Roger Anderson, Wilmette, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.

Filed Jan. 31, 1983, Ser. No. 462,671

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—74 **6 Claims**



1. A phonograph cartridge assembly for playing a phonograph record, the record having a record surface with a record trace, the assembly comprising:

a phonograph cartridge;

a phonograph stylus carried on the phonograph cartridge, the stylus having a longitudinal extent which, while the stylus is on the record, is parallel to a tangent to the record trace, the stylus thereby defining a longitudinal direction in the direction of the longitudinal extent;

a phonograph tone arm dynamic stabilizer mounted on the phonograph cartridge; and

a brush contact for the phonograph tone arm dynamic stabilizer mounted on the stabilizer and including a bristle base, bristles mounted on the base and having free ends fanned in an arc about the base, the arc defining a plane of the arc, and means for mounting the bristle base to the stabilizer (a) for positioning the plane of the arc substantially transverse to the longitiudinal direction of the stylus, with the cartridge, stylus, stabilizer and brush contact being constructed, sized and arranged such that a portion of the bristle free ends may contact the phonograph record surface while the stylus tracks the record trace, and (b) for providing pivoting of the base and the bristles in the plane of the arc in response to some forces applied to the assembly in the plane of the arc such that another portion of the bristle free ends may contact the phonograph record surface while the stylus tracks the record trace.

4,514,837

APPARATUS FOR OPTICALLY READING AND/OR RECORDING INFORMATION

Gerard E. Van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,342

Claims priority, application Netherlands, Oct. 19, 1982, 8204023

Int. Cl.³ G11B *21/08, 7/00, 5/56*

U.S. Cl. 369—219 **3 Claims**

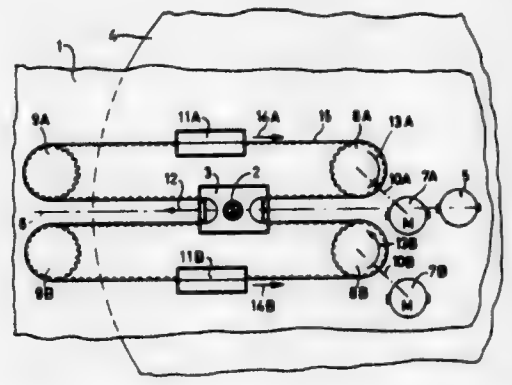
1. An apparatus for optically reading and/or recording information on a rotary optical disc, which apparatus comprises:

a frame,

an objective,

an objective carrier on which the objective is arranged and which is movable over the frame along a radial path relative to the disc, and

a drive unit for driving the objective carrier along said radial path, which unit comprises an electric motor and transmission means between the electric motor and the objective carrier, characterized in that the drive unit further comprises:



two identical electric motors which rotate in opposite directions,

two identical balancing masses which are each arranged on one side of the objective carrier and which move along paths parallel to the path of the objective carrier but in an opposite direction, and in that the two electric motors, the objective carrier and the balancing masses are coupled to each other by the transmission means for synchronizing said movements.

4,514,838

ARRANGEMENT FOR ADJUSTMENT OF THE VERTICAL TRACKING FORCE ON A PHONOGRAPH STYLUS

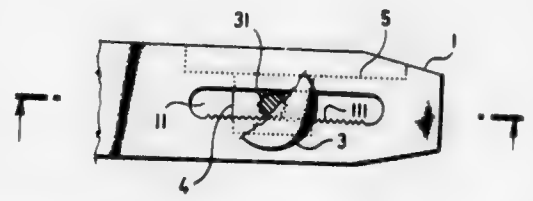
Jiri Janda, and Karel Hrdlicka, both of Prague, Czechoslovakia, assignors to Tesla, koncernovy podnik, Prague, Czechoslovakia

Filed Oct. 29, 1982, Ser. No. 437,621

Claims priority, application Czechoslovakia, Apr. 21, 1982, 2384-82

Int. Cl.³ G11B *21/16*

U.S. Cl. 369—254 **3 Claims**



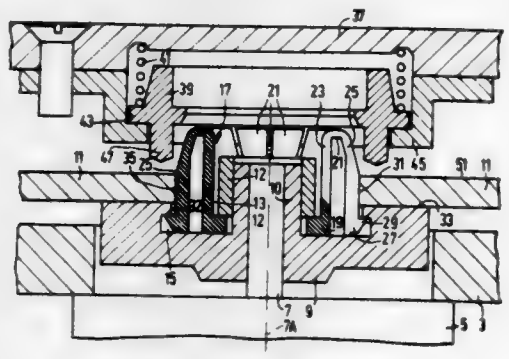
1. An arrangement for the adjustment of the vertical tracking force on a stylus mounted in a phonograph stylus holder disposed on the outer end of a forward longer end portion of a phonograph tone arm, said tone arm being mounted upon and supported by a bearing, the tone arm having a shorter part thereof extending rearwardly from the bearing, said shorter rear part of the tone arm being provided with a slot having a rack gear on one side of the slot and with a rotatable adjustment element with a pinion meshing with said rack gear, a counterweight system situated below the tone arm and connected to said rotatable adjustment element so as to be moved selectively in opposite directions lengthwise of the rear portion of the tone arm, and means for the longitudinal guiding of the counterweight system along the rear part of the tone arm.

4,514,839

DISC PLAYER FOR A RIGID INFORMATION-CARRYING DISC

Kurt Eisemann, Berlin, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,305
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211359; Mar. 27, 1982, 3211360
Int. Cl.[3] G11B *5/16, 25/04*
U.S. Cl. 369—270 5 Claims



1. A disc player for a rigid information-carrying disc, which player comprises a disc holder on which the information-carrying disc rotates during information transfer, which disc holder comprises a turntable and a centering device, which device comprises a plurality of centering elements which are arranged along a circle and which are each resilient in a radial direction so that the centering elements, which act on the wall of the center hole in the disc, keep the disc centered during its rotation, which player further comprises a lid which is movable between an open and a closed position and which carries a disc loader, the disc being resiliently urged onto the centering device and the turntable by means of a disc loader when the lid is moved to the closed position, characterized in that the lid is movable from the open position to the closed position in two stages, the lid being coupled to lifting means which after a first stage of the closing movement of the lid, in which the disc loader resiliently urges the disc onto the centering device and the turntable, lifts the lid in a second stage until the disc loader is again clear of the information-carrying disc which is clamped onto the centering device, the disc being kept in a centered position on the turntable by a radially outward resilient deflection of the resilient centering elements, said centering elements being constructed as U-shaped members, whose inner limbs are connected to each other and whose outer limbs deflect resiliently outwards.

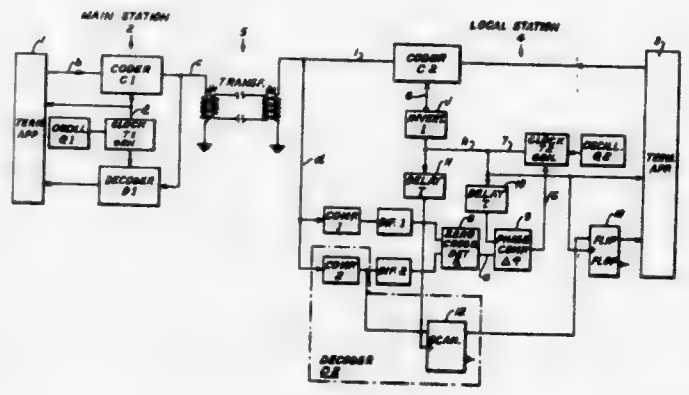
4,514,840

DATA TRANSMISSION SYSTEMS FOR FULL DUPLEX COMMUNICATION

Edgar Bader, Rueckersdorf; Gerd Rohrbach; Jürgen Petersen, both of Nuremberg, and Ludwig Kittel, Heroldsberg, all of Fed. Rep. of Germany, assignors to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Dec. 29, 1982, Ser. No. 454,478
Int. Cl.[3] H04J *3/06*
U.S. Cl. 370—29 3 Claims

1. A data transmission system for a full duplex communication via a two wire link between a main station and a local station, the main station generating a main clock signal whereby during one half period of the main clock signal a coded data signal is transmitted from the main station to the local one and during the other half period the coded data signal is transmitted from the local station to the main station, said local station comprising a separate local clock pulse generator switchable between a mode of operation in which it generates a first local clock signal having a period corresponding to that of the main clock signal, and another mode of operation in which it generates a second local clock signal the period of which differs from that of the main signal by a fixed amount; means for comparing the phase of the received coded data signal with one of the local clock signals and for switching



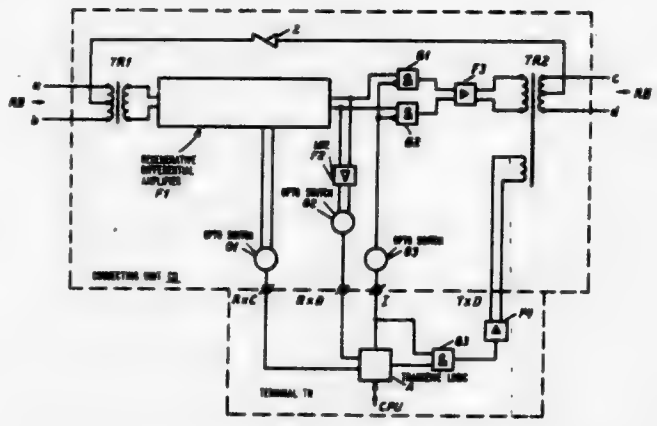
over the operational modes of the local clock pulse generator when the received coded data signal is out of phase with the one local clock signal.

4,514,841

CONNECTING UNIT FOR A RING BUS

Sverre G. Sem-Sandberg, Handen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE82/00229, § 371 Date Mar. 2, 1983, § 102(e) Date Mar. 2, 1983, PCT Pub. No. WO83/00238, PCT Pub. Date Jan. 20, 1983
PCT Filed Jun. 28, 1982, Ser. No. 474,632
Claims priority, application Sweden, Jul. 10, 1981, 8104322
Int. Cl.[3] H04J *3/08*
U.S. Cl. 370—55 2 Claims



1. A telecommunication system comprising a plurality of terminals for accepting or transmitting information;

a plurality of connecting units;

bus means interconnecting the connecting units to form a ring bus so that information flows in a loop;

a plurality of terminals capable of receiving and transmitting information; each of said terminals including emitting means for emitting activity signals to indicate when the terminal is energized and desires access to the information flow of the loop;

means for connecting each terminal to an associated connecting unit whereby information can flow from the connecting unit to the terminal and from the terminal to the connecting unit, said connecting means also connecting the emitting means to the connecting unit to feed the activity signals when present to the connecting means; and

said connecting means having an input means for receiving information from said bus means, output means for transmitting information to said bus means, controlled gating means connecting said input means to said outputs for permitting the transfer of information directly from said

input means to said output means in the absence of the activity signals and

further gating means reponsive to the activity signals for connecting said input means to the associated terminal and said associated terminal to said output means when the activity signals are present whereby information flows from said input means via said associated terminal to said output means instead of directly from said input means to said output means.

4,514,842

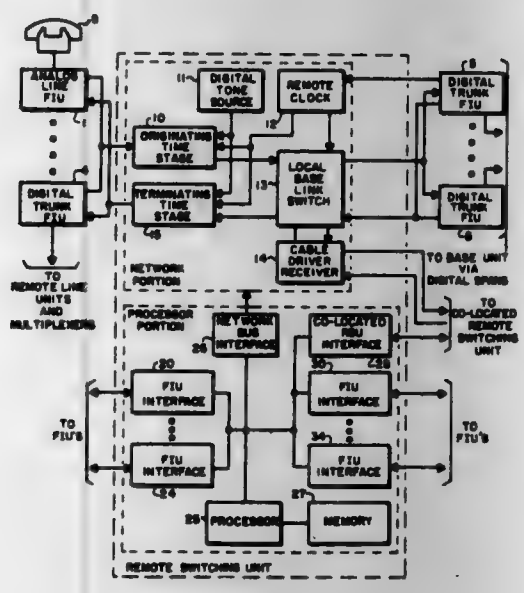
T-S-T-S-T DIGITAL SWITCHING NETWORK

Robert E. Renner, Glendale, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Nov. 3, 1983, Ser. No. 548,484

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—63 **25 Claims**



1. In a telecommunications switching system, a T-S-T-S-T digital switching network for connecting subscribers comprising:

at least two digital switching offices including a base switching unit and a remote switching unit;

digital span means connected to said base switching unit and to said remote switching unit and being operated to transmit PCM data samples between said digital switching offices;

said remote switching unit including:

a clock for generating a plurality of periodic pulses;

a plurality of interface equipment connected to said digital span means and to said subscribers of said remote switching unit;

first and second PCM buses connected to said subscribers via said interface equipment for transmitting a plurality of PCM data samples;

first and second originating time switching means, each of said originating time switching means being operated to switch said PCM samples from said interface equipment, said first and second originating time switching means being connected to said interface equipment via said first and second buses respectively;

first and second space switching means, each including:

first latching means connected to said corresponding first and second originating time switching means and to said clock, said first latching means being operated in response to said subsequently transmitted PCM samples to store said PCM sample during each time slot;

second latching means connected between said first latching means and one of said plurality of interface equipment and connected to said clock, said second latching means being operated in response to a first periodic pulse for all even time slots to store said PCM samples of said first latching means for transmission to said one of said plurality of said interface equipment; and

third latching means connected between said first latching means and a second of said plurality of interface equipment and connected to said clock, said third latching means being operated in response to a second periodic pulse for all odd time slots to store said PCM samples of said first latching means for transmission to said second of said plurality of interface equipment; and

said base switching unit including:

digital control means connected to said digital span means and operated to receive said transmitted PCM samples of said interface equipment of said remote switching unit;

analog control means connected between a plurality of said subscribers of said base switching unit and said base switching unit;

first and second space switching means; first and second PCM buses for transmitting a plurality of PCM data samples, said PCM buses connected to said analog and to digital control means;

first and second originating time switching means, each of said originating time switching means being operated to switch said PCM data samples from said digital control means, said first and second originating time switching means being connected respectively between said first and second space switching means and said digital control means via said first and second buses; and

first and second terminating time switching means being connected respectively between said first and said second space switching means and said analog control means, said first and second terminating time switching means respectively operated to switch said PCM data samples from said first and second space switching means through said analog control means for transmission to one said subscriber of said base switching unit from one said subscriber of said remote switching unit.

4,514,843

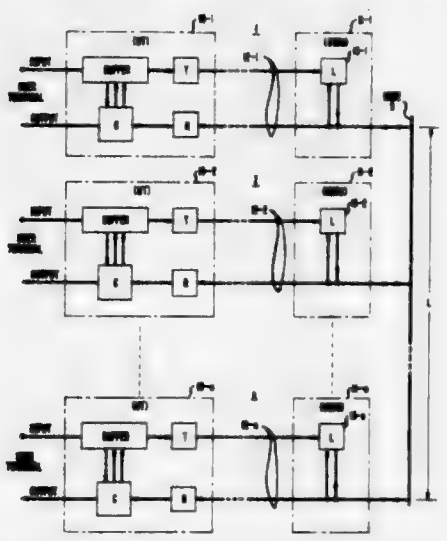
PACKET SWITCHED COMMUNICATION SYSTEM COMPRISING COLLISION AVOIDANCE MEANS

Andres Albanese, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 2, 1982, Ser. No. 446,191

Int. Cl.³ H04J *6/00*; H04Q *11/04*

U.S. Cl. 370—93 **10 Claims**



1. Digital transmission system for controlled transmission of signal packets among a plurality of users, the system comprising a plurality of user links that terminate at a first node, at least one of these user links comprising

(a) a user station comprising signal packet transmitting means;

(b) transmission line means connecting the transmitting

means to a first signal-sensing means having at least a "busy" and an "idle" state, the first signal-sensing means being in the busy state whenever a signal packet is arriving at the first signal-sensing means from the transmitting means, and in the idle state otherwise;

(c) second signal-sensing means, connected to the first node, the second signal-sensing means having at least a "busy" and an "idle" state, being in the busy state if the first node carries a signal packet, and in the idle state otherwise;

(d) third means, responsive to the first signal-sensing means and to the second signal-sensing means, for connecting the transmitting means to the first node if the second signal-sensing means are in the idle state when the state of the first signal-sensing means changes from the idle to the busy state upon arrival of a signal packet at the first signal-sensing means from the transmitting means; and

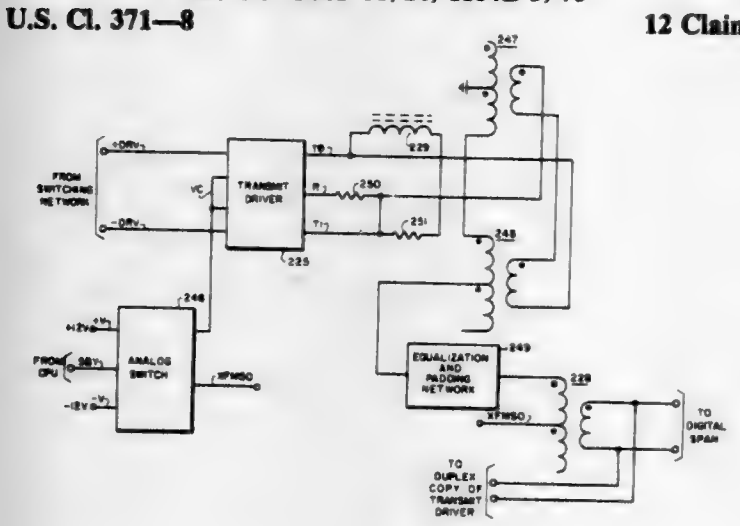
(e) the transmitting means are adapted for transmitting a signal packet to the first signal-sensing means independent of the state of the second signal-sensing means, and for later retransmitting the same signal packet to the first signal-sensing means if the second signal-sensing means were in the busy state when the first signal-sensing means were in the busy state at the time of arrival of the transmitted signal packet at the first signal-sensing means.

4,514,844

DUPLEX DIGITAL SPAN TRANSMISSION CIRCUIT ARRANGEMENT

Thomas J. Perry, Phoenix, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,561
Int. Cl.³ G06F *11/20*; H04B *3/46*
U.S. Cl. 371—8 **12 Claims**



1. In a telecommunications switching system having a CPU, a transmission circuit arrangement is connected to a digital span and to a switching network of said switching for providing a fault tolerant arrangement for converting unipolar switching network data to bipolar digital span data, said transmission circuit arrangement comprising:

said transmission circuit arrangement including first and second transmission circuit copies;

first and second transformer means connected respectively between said first and second transmission circuit copies and said digital span, said first and second transformer means respectively connected to said first and second transmission circuit copies via first and second output lead;

said switching network connected to said first and second transmission circuit copies via corresponding first and second input leads and being operated to alternately transmit first and second input signals of a first value;

each said transmission circuit copy comprising:

first current control means connected to said first input lead and to said first and second output leads, said first current control means being operated to connect said first input lead to said second output lead and being further operated to permit a predetermined current to flow from said first to said second output lead via said corresponding transformer means;

second current control means connected to said second input lead and to said first and second output leads, said second current control means being operated to connect said second input lead to said first output lead and being further operated to permit a predetermined current to flow from said second to said first output lead via said corresponding transformer means;

voltage control means connected to said CPU, to a voltage source and to said first and second current control means, said voltage control means being operated in response to said CPU to enable said first transmission circuit copy and simultaneously to disable said second transmission circuit copy or alternatively being operated in response to said CPU to disable said first transmission circuit copy and simultaneously to enable said second transmission circuit copy;

impedance control means connected to said CPU, to said corresponding transformer means via a terminal lead and to said voltage control means, said impedance control means operated in response to said CPU to connect a high impedance on said terminal lead to disable said corresponding transmission circuit copy or alternatively being operated in response to said CPU to connect a low impedance to said terminal lead to enable said corresponding transmission circuit copy; and

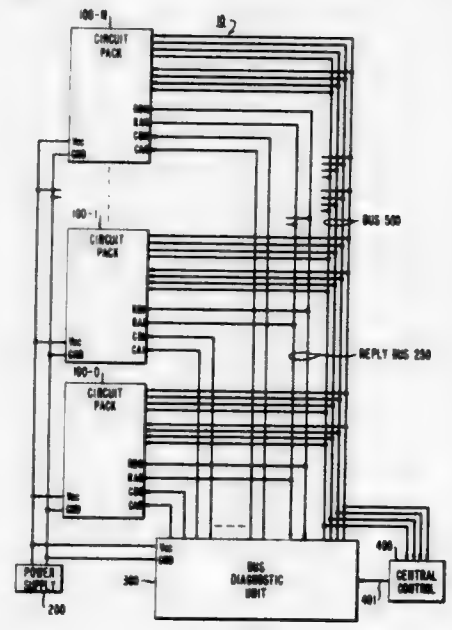
said first and said second current control means of said enabled transmission circuit copy being alternately operated to produce said bipolar data.

4,514,845

METHOD AND APPARATUS FOR BUS FAULT LOCATION

Thomas J. J. Starr, Wheaton, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 23, 1982, Ser. No. 410,269
Int. Cl.³ G06F *11/26, 11/22*
U.S. Cl. 371—15 **15 Claims**



6. A bus fault location arrangement comprising

a bus,

a plurality of devices each having a terminal connected to said bus, first and second power applying terminals and an impedance control terminal,

means for interconnecting the first power applying terminals of said plurality of devices,

means for interconnecting the second power applying terminals of said plurality of devices,

energizing means for energizing said plurality of devices,

means responsive to a fault condition on said bus for generating a fault signal,

means responsive to said fault signal for transmitting a signal to the impedance control terminal of each of said plurality of devices to place each of said plurality of devices in a high impedance state,

means responsive to said fault signal for alternatively transmitting first and second signal levels on said bus,

first current sensing means for sensing current flow between said energizing means and said interconnected first power applying terminals of said plurality of devices,

first error signal generating means for generating a first error signal when the current flow sensed by said first current sensing means exceeds a first predetermined magnitude,

second current sensing means for sensing current flow between said energizing means and said interconnected second power applying terminals of said plurality of devices and

second error signal generating means for generating a second error signal when the current flow sensed by said second current sensing means exceeds a second predetermined magnitude, wherein said first and second predetermined magnitudes may be equal.

4,514,846

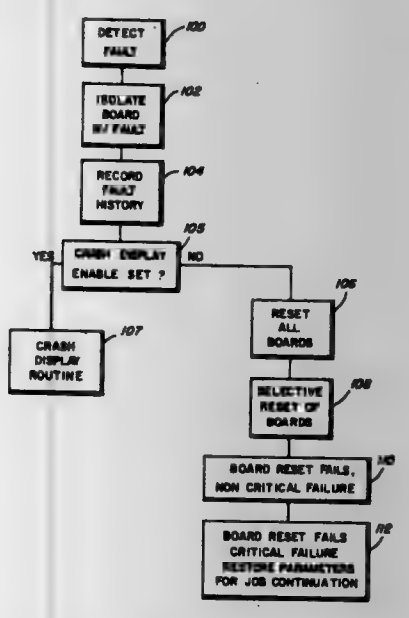
CONTROL FAULT DETECTION FOR MACHINE RECOVERY AND DIAGNOSTICS PRIOR TO MALFUNCTION

Anthony M. Federico, West Webster; Ernest L. Legg, Fairport, and Tuan A. Nguyen, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 421,011

Int. Cl.³ G06F *11/00*; G01R *31/28*

U.S. Cl. 371—16 **15 Claims**



1. In an electronic control having a plurality of control elements for controlling a printing machine having a plurality of operating components including a photoreceptor cooperating with one another to produce images on support material, the electronic control including a hardware portion, a software portion, and suitable memory, the control being subject to software faults, said faults capable of causing machine misoperation, said control element connected to the operating components, a method of software fault detection prior to machine misoperation comprising the steps of:

categorizing the conditions that cause software faults,

storing said conditions in memory,

monitoring the conditions that result in software faults,

recognizing the occurrence of one of the conditions, and relating said one of the conditions to one of the operating components.

4,514,847

KEY STORAGE ERROR PROCESSING SYSTEM

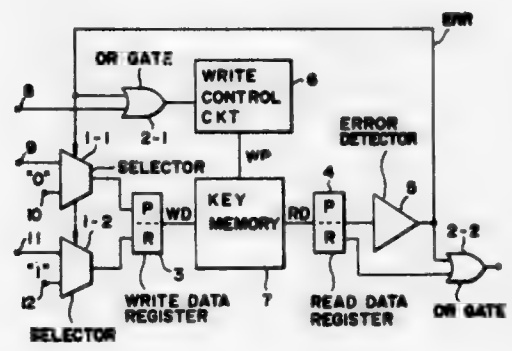
Terutaka Tateishi, Kawasaki, and Kazuyuki Shimizu, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 20, 1982, Ser. No. 419,927

Claims priority, application Japan, Sep. 24, 1981, 56-151046

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—51 **4 Claims**



1. A key storage error processing system for a system which is provided with a key storage having stored therein main storage keys respectively corresponding to pages into which a main storage is split, each main storage key having at least a reference bit indicating whether the corresponding page is being accessed and a change bit indicating whether information has been written into the page, and in which a parity bit is added to each of the reference bit and the change bit to form the main storage key, said system comprising:

detecting means, operatively connected to the key storage, for detecting a parity error in a pair of the reference bit and the parity bit and a pair of the change bit and the parity bit when the main storage key is read out; and

means, operatively connected to the key storage and said detecting means, for rewriting the main storage key after setting the reference bit to a state indicating access to the corresponding page and adding a new parity bit to the reference bit when a parity error is detected by the detecting means in the pair of the reference bit and the parity bit and after setting the change bit to a state indicating the write in the corresponding page and adding a new parity bit to the change bit when a parity error is detected in the pair of the change bit and the parity bit.

4,514,848

METHOD AND APPARATUS FOR THE PRODUCTION OF PRE-PULSE-FREE, SMOOTH LASER RADIATION PULSES OF VARIABLE PULSE DURATION

Klaus J. Witte, Munich; Ernst Fill, Garching, and Walter Scrlac, Maintal, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,078

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111805

Int. Cl.³ H01S *3/091*

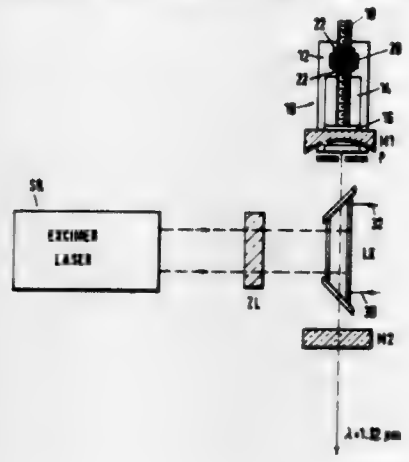
U.S. Cl. 372—25 **2 Claims**

1. A method of producing pre-pulse-free, smooth laser radiation pulses having substantially no temporal sub-structure, whose duration is adjustable between about 400 picoseconds and about 20 nanoseconds, by means of a laser which includes an optical resonator, a stimulatable laser medium arranged in the resonator having an upper and lower level forming a laser transition, and an excitation source for populating the upper level of the laser medium comprising:

(a) adjusting the temperature and pressure conditions of the laser medium so that the condition $\Delta\nu = c/2L$ is fulfilled, in which $\Delta\nu$ represents half the maximum width of the laser transition, c means the velocity of light and L the length of the optical resonator; and

(b) stimulating the laser medium so that the duration of

excitation is shorter than the build up time of the stimulated laser radiation pulse emitted by the exciteed laser medium, the life-time of the upper laser level is greater



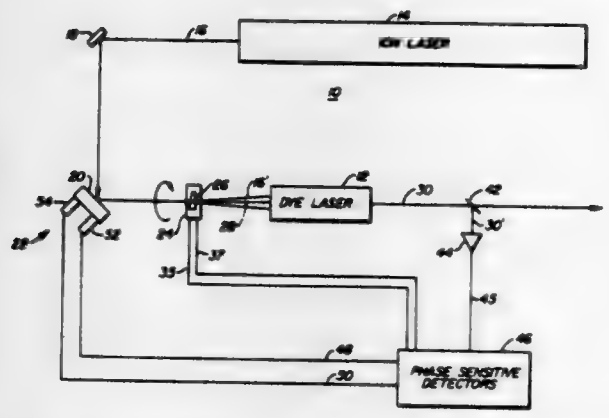
than the duration of about 30 round trips of the radiation in the optical resonator, and so that the life-time of the upper level as a consequence of spontaneous emission is greater than 100 nanoseconds.

4,514,849

DYE LASER WITH ROTATING WEDGE ALIGNMENT SERVO

Kenneth G. Witte, Mountain View, and Thomas F. Johnston, Jr., Sunnyvale, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Sep. 7, 1983, Ser. No. 529,979
Int. Cl.³ H01S 3/13
U.S. Cl. 372—29 **11 Claims**



1. A laser system including an optically pumped laser, a pumping laser for optically exciting the optically pumped laser, and optical means for coupling the output beam from the pump laser with the optically pumped laser and wherein the improvement comprises: means for maintaining relative alignment between the output beam of the pump laser and the optically pumped laser to maximize the output power thereof comprising:

means for positioning the pump laser beam relative to said optically pumped laser cavity;

means for rotating the pump laser beam such that the beam defines the surface of a cone;

means for sensing the output power of the optically pumped laser;

means for resolving modulations in the output power of the optically pumped laser attributable to the orthogonal components of said pump laser beam for determining the misalignment of the two orthogonal components of the pump laser beam, in response to said output power sensing means; and

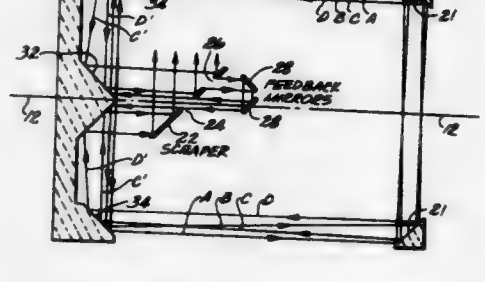
means for activating said pump laser beam positioning means to maximize the optically pumped laser output, in response to said modulations resolving means.

4,514,850

COMMON-PASS DECENTERED ANNULAR RING RESONATOR

Dale A. Holmes, Simi Valley, and Thomas R. Waite, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1983, Ser. No. 494,848
Int. Cl.³ H01S 3/08
U.S. Cl. 372—95 **15 Claims**



1. An optical resonator, for use in a laser having an annular gain region comprising:

a first ring mirror having an annular interior conical reflecting surface, a second ring mirror having an annular interior substantially conical reflecting surface spaced from and facing the reflecting surface of said first ring mirror, the cones which would be formed by extension of the conical surfaces of each ring mirror to an apex being coaxial, a central mirror having an exterior substantially conical reflecting surface coaxial with the conical surfaces of the first and second mirrors, said central mirror located radially inward and on the axis of said first ring mirror, a scraper mirror having a reflecting surface positioned along the axis of the central mirror at an angle to and opposite the central mirror, the scraper mirror having a first opening aligned with said axis and a second opening positioned to one side of the first opening such that light rays passing through the second opening intercept the conical surface of the central mirror, and feedback mirror means for reflecting light rays passing from the central mirror through the second opening in the scraper back through the first opening to the central mirror, the rays passing through the first opening of said scraper mirror impinging on the central mirror in the regin of the apex of the conical reflecting surface, said rays being reflected substantially radially outwardly to the reflecting surface of the first ring mirror and from the reflecting surface of the first mirror in an annular cylinder to the reflecting surface of the second ring mirror, radially across the second ring mirror to the diametrically opposite side of the second ring mirror reflecting surface, back to the first ring mirror surface, radially inwardly to the central mirror, and in an annular space surrounding the rays passing through said first opening to the scraper mirror, a portion of the rays passing through the second opening being reflected by the feedback mirror means through the first opening to form a closed path for some of the light energy.

4,514,851

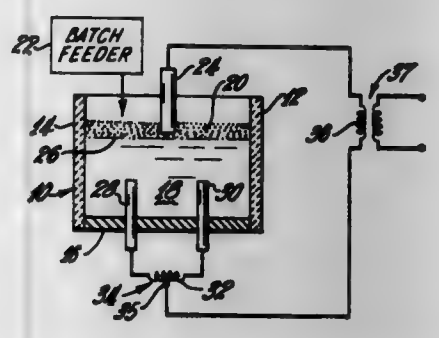
ARC CIRCUIT ELECTRODES FOR ARC GLASS-MELTING FURNACE

Charles S. Dunn, Pataskala, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 26, 1982, Ser. No. 342,852
Int. Cl.³ C03B 5/02
U.S. Cl. 373—27 **6 Claims**

1. An arc glass-melting furnace comprising: a chamber adapted for holding a body of molten glass, said chamber having means for supplying batch thereto and means for withdrawing molten glass therefrom; an arc electrode positioned in said chamber above the upper surface of said body of molten glass for establishing an arc between said arc electrode and said

glass; a plurality of electrodes positioned in the bottom of said chamber; and means for supplying electrical power to said arc electrode and said plurality of bottom electrodes, said power supply means having a first terminal connected to said arc



electrode and a second terminal connected to said plurality of bottom electrodes for establishing current flow in said glass between said arc electrode and said bottom electrodes which current is conducted within said arc electrode and said bottom electrodes.

4,514,852

PROCESS FOR PROTECTED TRANSMISSION OF DIGITAL SIGNALS

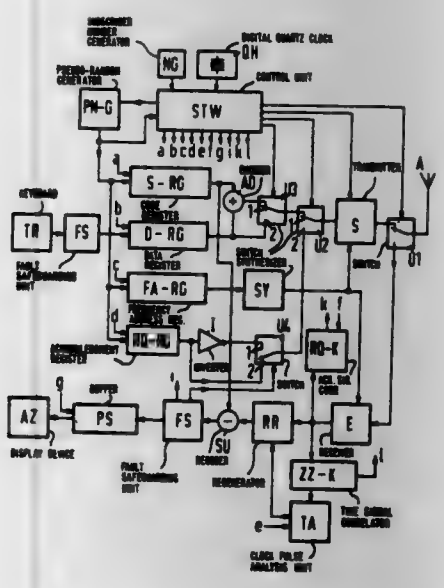
Manfred Hanni, Puchheim, and Josef Brusch, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,687

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136461

Int. Cl.³ H04L *27/30*; H04J *6/00*

U.S. Cl. 375—1 **6 Claims**



1. In a process for protecting transmission of digital signals via short waves between a transmitting station and a receiving station, in which the digital signals are encoded and transmitted as bursts, and in which, prior to transmission of a further burst, the receiving station returns an acknowledge signal to the transmitting station, the improvement therein comprising the steps of:

synchronizing the transmitting and receiving stations with highly accurate quartz crystal clocks by transmitting, at the beginning of the transmission process, at least one time signal which comprises an autocorrelation code sequence, receiving and analyzing the time signal with a time signal correlator, and adjusting the receiving station clock with the correlation result;

transmitting and receiving bursts in a pseudo-random frequency jump pattern of frequencies in a predetermined group of frequencies with each jump interval comprising the burst and acknowledgement signal transmission times;

recalculating the code sequence for each burst on the basis of the time of the transmitting station clock and the subscriber number of the receiving station; decoding each received signal burst and determining if the same is error-free or error-correctable; and applying only an error-free or error-correctable decoded burst to an output device.

4,514,853

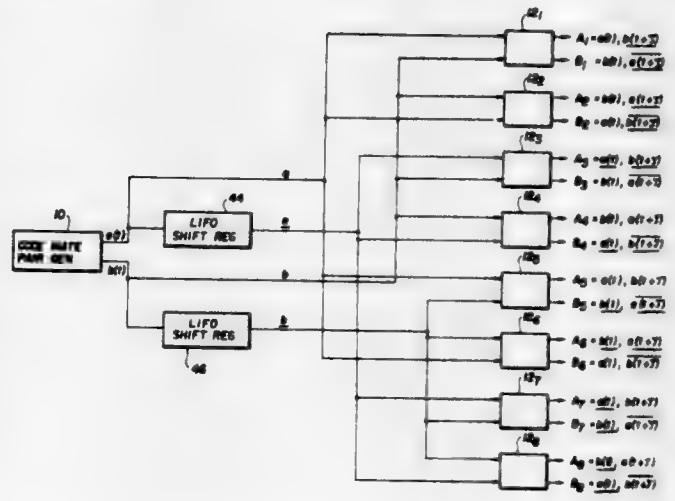
MULTIPLEXED NOISE CODE GENERATOR UTILIZING TRANSPOSED CODES

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 13, 1982, Ser. No. 449,029

Int. Cl.³ H03K *13/24*

U.S. Cl. 375—34 **14 Claims**



1. A method of generating a pair of expanded multi-bit digital noise coded signals from a pair of multi-bit digital noise coded signals comprising the steps of:

generating simultaneously first and second multi-bit digital noise coded signals;

generating the inverse of said second signal;

delaying the inverse of said second signal by a predetermined time delay and combining it with said first signal to form a first expanded multi-bit digital noise coded signal beginning with said first signal;

generating the inverse of said first signal;

generating the complement of the inverse of said first signal; and

delaying the inverse complement of said first signal and combining it with said second signal to form a second expanded multi-bit digital noise coded signal beginning with said second signal.

4,514,854

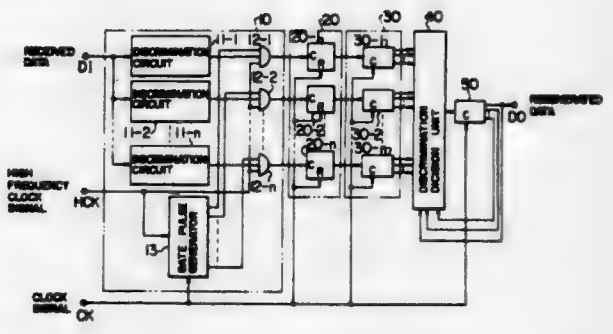
DISCRIMINATION CIRCUIT FOR RECEIVED DATA

Akira Ashida, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1983, Ser. No. 469,402

Int. Cl.³ H04L *1/00*

U.S. Cl. 375—94 **6 Claims**



1. A discrimination circuit for received data comprising:

a multiple-instant discrimination unit including means for discriminating the amplitude of received data with respect to one or more specified discrimination levels, means for providing gate pulses defined by a pattern in the received data, means responsive to the amplitude discrimination result and the gate pulses for passing pulses of a high frequency clock signal for each of said discrimination levels, said high frequency clock signal having a frequency which is higher than that of a clock signal of said received data;

a counter unit including means for counting pulses fed from said passing means said multiple-instant discrimination unit and for sending out values of respective bits of said received data to store the output from said counting means as values representing each data bit to be discriminated, with the capability of storing a specified number of bits by successively shifting said bits;

a memory unit which receives the output from said counter unit and stores a bit to be discriminated as well as a specified number of succeeding bits while successively shifting them;

a discrimination decision unit including means for determining the value of said bit to be discriminated according to the discrimination condition defined by the contents stored in said counter unit and a specified number of bits preceding said bit to be discriminated which have already been discriminated;

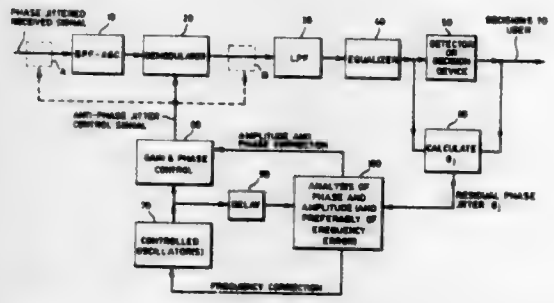
an output unit including means for storing the output of said discrimination decision unit while successively shifting the stored bits, for sending out the leading bit in the stored bits as regenerated data for said received data, and for feeding back all of stored bits to said discrimination decision unit as already discriminated results of a specified number of bits preceding said bit to be discriminated.

4,514,855

MEANS AND METHOD FOR REDUCTION OF PHASE JITTER

Gordon R. Lang, Bolton; Fred M. Longstaff, Islington, and Chi H. Lee, Willowdale, all of Canada, assignors to Ese Limited, Rexdale, Canada

Filed Aug. 2, 1983, Ser. No. 519,753
Claims priority, application Canada, Sep. 3, 1982, 410773
Int. Cl.³ H03D *3/22*; H04L *25/40*
U.S. Cl. 375—97 **8 Claims**



7. Means for reducing a component of phase jitter at a series of transmitted signals at a receiver in a communications channel comprising:

means for providing a first oscillator signal,

means for modifying the phase of the received signal in accord with the phase of said oscillator signal,

means for determining for a modified received signal the probable transmitted signal,

means for providing a signal representing the approximate phase angle between said modified received signal and the probable transmitted signal,

means providing a second oscillator signal corresponding to said first oscillator signal but delayed relative thereto by a delay substantially corresponding to the delay between said modification and said determination,

means providing a signal representative of the phase difference between said phase angle signal and said second oscillator signal,

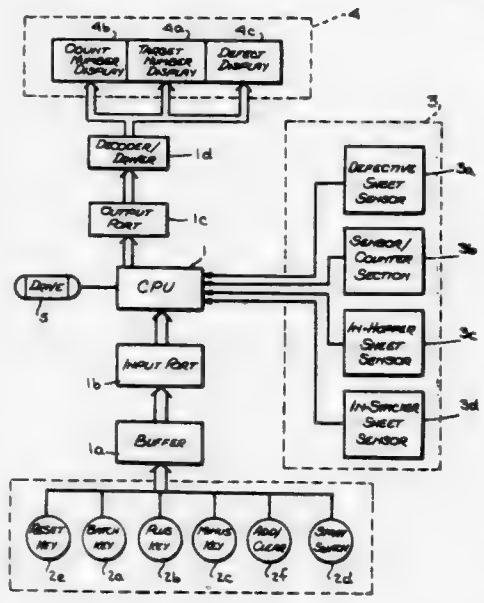
means for modifying said first and second oscillator signals in accord with said representative signal in a sense to reduce said phase angle signal.

4,514,856

APPARATUS FOR SELECTING THE PRECISE NUMBER WITHIN A BATCH OF PAPER SHEETS

Mamoru Asai, Kashiwa; Tsuneyoshi Mitani, Kawasaki, and Hiroyuki Ookawa, Tokyo, all of Japan, assignors to Musashi Engineering Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,284
Claims priority, application Japan, Apr. 17, 1982, 57-64529
Int. Cl.³ G06M *7/06*
U.S. Cl. 377—8 **2 Claims**



1. An apparatus for counting the number of paper sheets wherein a target number entered by an entry unit is stored in a target number memory and displayed in a target number display section, the paper sheet count number supplied from a sensor and counter section since the time of start of the counting operation is displayed in a count number display section and compared to said target number, and wherein the counting operation is discontinued in case of coincidence between said count number and the target number, characterized in that said entry section has a batch key, a plus key and a minus key, said target number memory has stored therein a predetermined number of fixed data that are displayed cyclically during the time said batch key is operated, the cyclical display is discontinued upon termination of the batch key operation and one of said fixed data prevailing at the time of termination of the batch key operation is entered in said target number memory, the fixed data thus entered in said target number memory is incremented or decremented by one each time said plus or minus key is operated, the incremented or decremented data prevailing when the plus or minus key is entered as said target number, and the target number thus entered is compared to the count number from said sensor and counter section.

4,514,857

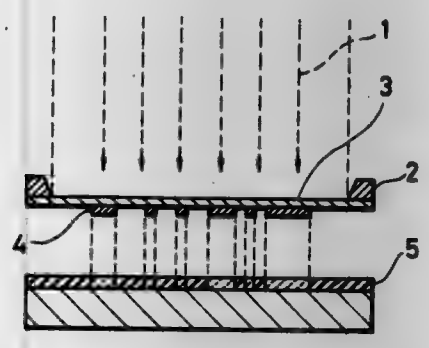
X-RAY LITHOGRAPHIC SYSTEM

Takashi Kimura, Higashimurayama; Kozo Mochiji, Hachioji, and Hidehito Obayashi, Nerima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,447
Claims priority, application Japan, Oct. 15, 1982, 57-179851
Int. Cl.³ G21K *5/00*
U.S. Cl. 378—034 **4 Claims**

1. In an X-ray lithographic system having means to cause a synchrotron radiation flux of desired diameter to be incident on a convex mirror, and means to irradiate a radiation sensitive

resist film with reflected light from the convex mirror, through a mask having a desired pattern; an X-ray lithographic system characterized by comprising means to rotate or rotatingly



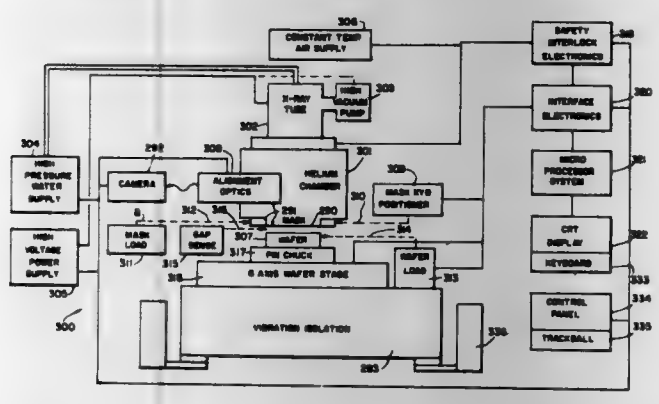
vibrate said convex mirror about a rotational axis which is parallel to a center axis of said convex mirror and which is eccentric to said convex mirror.

4,514,858

LITHOGRAPHY SYSTEM

W. Thomas Novak, San Jose, Calif., assignor to Micronix Partners, Los Gatos, Calif.

Filed Mar. 15, 1983, Ser. No. 475,430
Int. Cl.³ G01N *21/00, 23/00;* G03B *41/16*
U.S. Cl. 378—034 **4 Claims**



1. A lithography system for a substrate printing sequence comprising:

a beam chamber having a gaseous interior environment of high permeability to x-rays;

means for mounting a x-ray beam source adjacent one end of the chamber;

means for adjustably mounting a mask at a position across an opposite end of said chamber;

means for movably mounting a plurality of objective lenses in said chamber above said mask;

means for movably mounting a substrate in parallelism to and at a side of said mask opposite said source to receive a beam image extending through said mask;

means for providing alignment targets on each of said mask and said substrate; and

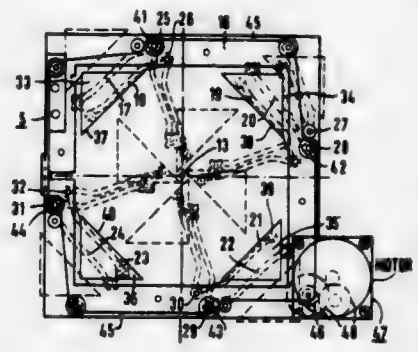
means, including a laser light source, said objective lenses and optics, for aligning said alignment targets on said mask with respect to said alignment targets on said substrate by relative movement of said mask and substrate with respect to each other, said optics being located exteriorly of said beam chamber.

4,514,859

COLLIMATOR FOR AN X-RAY EXAMINATION APPARATUS

Günter Holzermer, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,016
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234410
Int. Cl.³ G21F *5/04*
U.S. Cl. 378—152 **9 Claims**



1. A device for collimating a radiation beam comprising:

a first diaphragm means for acting on said radiation beam for defining a radiation cone having a selected rectangular cross-section;

a rectangular frame;

a second diaphragm means disposed after said first diaphragm means in the direction of propagation of said radiation beam, said second diaphragm means having four triangular diaphragm plates disposed in one plane at the corners of said rectangular radiation cone, each of said triangular diaphragm plates having an edge facing said radiation cone and a prallelogram linkage means connected therewith and connected to said rectangular frame for radially pivoting said plates toward an axis of symmetry of said device parallel to said radiation propagation direction from a standby position wherein said edges of said plates are respectively disposed substantially perpendicularly to each angle bisector of the corners of said frame and wherein said plates substantially do not act on said radiation cone, to selected central positions for defining a substantially circular radiation cone of selected diameter; and

a means for driving said parallelogram linkage means.

4,514,860

FIBER OPTICAL MEASURING DEVICE FOR MEASURING ELECTRICAL AND MAGNETIC QUANTITIES BY LATERALLY CONTROLLED PHOTO-LUMINESCENCE

Morgan Adolfsson; Torgny Brogardh; Bertil Hök, and Christer Ovrén, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweder

Filed May 31, 1983, Ser. No. 499,487
Claims priority, application Sweden, Jun. 2, 1982, 8203391
Int. Cl.³ G01D *5/26*
U.S. Cl. 455—612 **18 Claims**

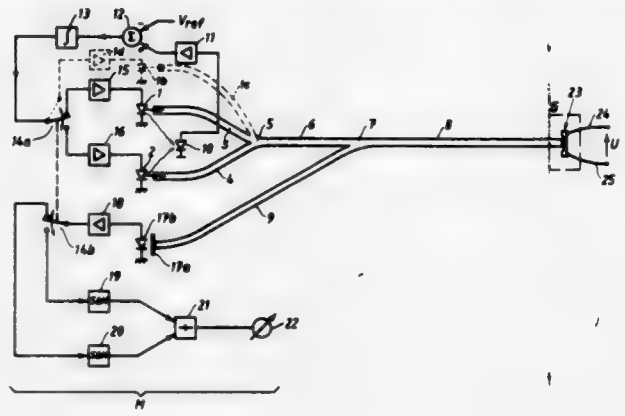
1. In a fiber optical measuring device which includes a transducer having a sensor element; a measuring electronic unit having two light-emitting means and a photodetector means, the first of said light-emitting means being capable of emitting a light ray having an emission spectra which is different from that of the second of said light-emitting means, and said photodetector means being capable of detecting photoluminescence emanating from said sensor element, and an optical fiber means which extends from said measuring electronic unit into said transducer so as to convey light rays from said two light-emitting means to said sensor element and to convey photolumines-

cence emitted from said sensor element to said photodetector means, the improvement wherein

said sensor element includes a luminescent layer which has a front surface and a rear surface, said optical fiber means having an end within said transducer which is directed towards the front surface of said luminescent layer,

an optical filter means is positioned between said end of said optical fiber means and the front surface of said luminescent layer, said optical filter means being oriented so as to be substantially perpendicular to the light rays passing out of said end of said optical fiber means, and having a plurality of zones of different light transmission characteristics, and

two electrodes are connected to said luminescent layer so as to generate a lateral electric field within said luminescent layer and cause charge carriers which have been generated in one portion of said luminescent layer by the light rays passing through said optical filter means and onto the front surface of said luminescent layer to accelerate to another portion of said luminescent layer, the photolumi-



nescence produced by said relocated charge carriers being received by said photodetector.

DESIGN PATENTS

GRANTED APR. 30, 1985

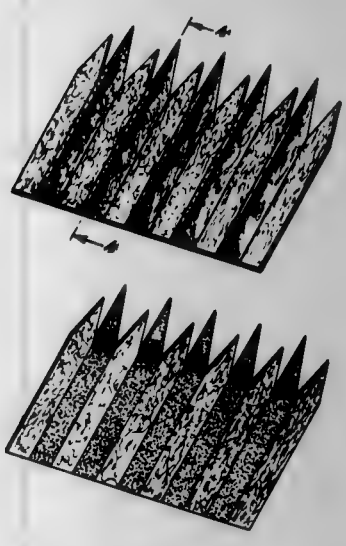
ERRATA

For CLASS	See PATENT NO.
D02–279	278,608

DESIGNS

APRIL 30, 1985

278,565
SEAWEED PLATE GARNISH FOR A SUSHI DISH OR THE LIKE
Chokichi Watanabe, 65, Aza-Kayamachi, Ohaza-Tahara, Tahara-cho, Atsumi-gun, Aichi-ken, Japan
Filed Sep. 10, 1981, Ser. No. 301,011
Claims priority, application Japan, Jul. 15, 1981, 56-30828
Term of patent 14 years
U.S. Cl. D1—123



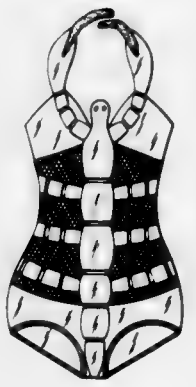
278,566
GARMENT SLEEVE
Linda G. Gustafson, R.R. 1, Box 57, Milan, Minn. 56262
Filed Sep. 24, 1982, Ser. No. 423,238
Term of patent 14 years
U.S. Cl. D2—25



278,567
MARTIAL ARTS LEG AND FOOT PROTECTOR
Ronald Rasmussen, 4430 Olympus Dr. NE., Bremerton, Wash. 98310
Filed Jul. 12, 1982, Ser. No. 397,505
Term of patent 14 years
U.S. Cl. D2—27



278,568
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,334
Term of patent 14 years
U.S. Cl. D2—40



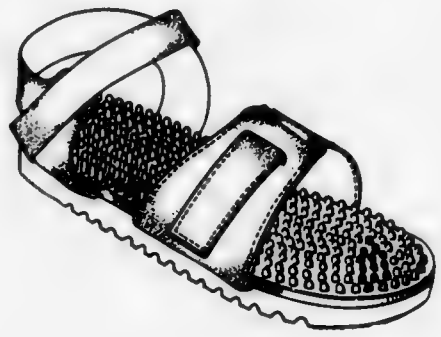
278,569
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,643
Term of patent 14 years
U.S. Cl. D2—40



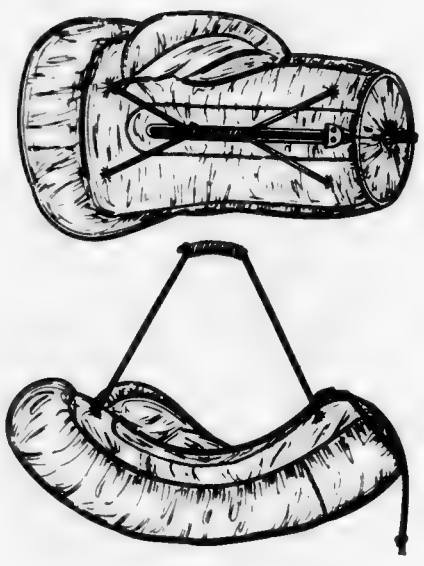
278,570
SKI BOOT
Mariano Sartor, Montebelluna, and Renzo Balbinot, Vittorio Veneto, both of Italy, assignors to Nordica S.p.A, Montebelluna, Italy
Filed Oct. 4, 1982, Ser. No. 432,528
Claims priority, application Italy, Apr. 5, 1982, 21443/82[U]
Term of patent 14 years
U.S. Cl. D2—276



278,571
MASSEUR SANDAL
Gabriel Eber, 80 Borgah St., Carss Park, New South Wales 2221, Australia
Filed Jan. 22, 1982, Ser. No. 341,688
Claims priority, application Australia, Sep. 11, 1981, 85211
Term of patent 14 years
U.S. Cl. D2—293



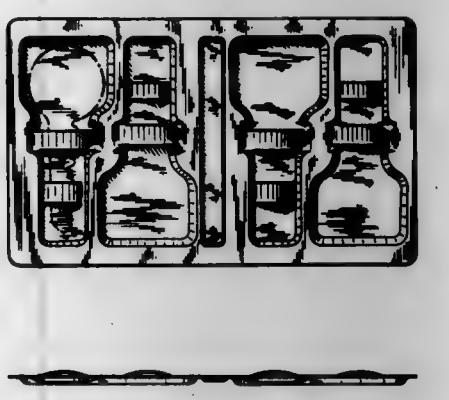
278,572
TOTE BAG
Emilio Gargioni, Strada Castelvecchio 16, Moncalieri, Turin, Italy
Filed Dec. 10, 1982, Ser. No. 448,428
Term of patent 14 years
U.S. Cl. D3—44



278,573
PANELLED BAGGAGE UNIT
Piero Mannato, Bologna, Italy, assignor to Plastimoda Italiana S.r.l., Granarolo dell'Emilia, Italy
Filed Feb. 22, 1982, Ser. No. 350,779
Claims priority, application Italy, Sep. 11, 1981, 4988/81[U]
Term of patent 14 years
U.S. Cl. D3—48



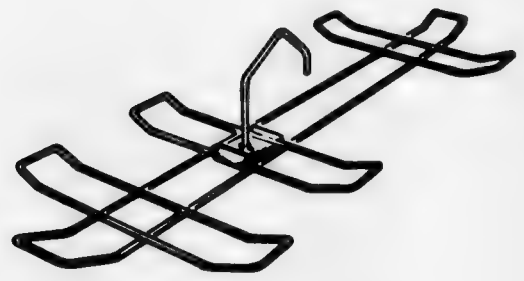
278,574
SPARE KEY HOLDER OR SIMILAR ARTICLE
George N. Kilpatrick, 11859 Edgewater Dr., Lakewood, Ohio 44107
Filed Sep. 27, 1982, Ser. No. 423,686
Term of patent 14 years
U.S. Cl. D3—61



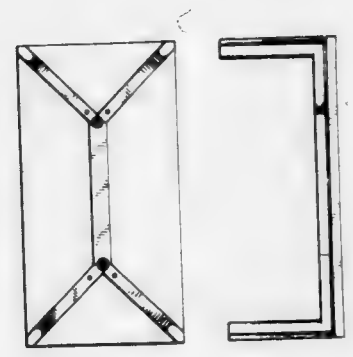
278,575
KEY-HOLDER
Antoine Bassani, 2015 Drummond St., Ste. 912, Montreal, Quebec, Canada H3G 1W7
Filed Nov. 29, 1982, Ser. No. 445,443
Claims priority, application Canada, Jun. 9, 1982, 09-06-82-2
Term of patent 14 years
U.S. Cl. D3—61



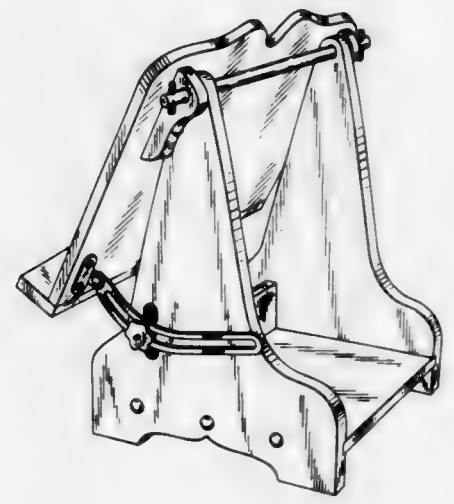
278,576
HANGER
Bernard W. Rivkin, San Diego, and Charles R. Leaf, Escondido, both of Calif., assignors to P.P.M.D., San Diego, Calif.
Filed Mar. 26, 1982, Ser. No. 362,088
Term of patent 14 years
U.S. Cl. D6—317



278,577
TABLE
Charles Gwathmey, New York, and Robert Siegel, Bedford, both of N.Y., assignors to Knoll International, Inc., New York, N.Y.
Filed Jun. 10, 1982, Ser. No. 387,006
Term of patent 14 years
U.S. Cl. D6—484



278,578
BOOK HOLDER
Robert L. Jensen, 10000 NE. 37th St., Vancouver, Wash. 98662
Filed Aug. 2, 1982, Ser. No. 404,624
Term of patent 14 years
U.S. Cl. D6—419

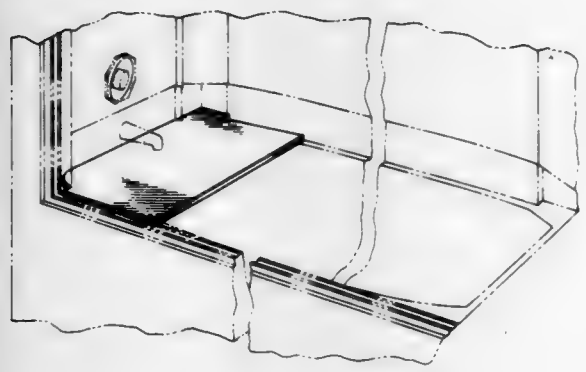


APRIL 30, 1985 U.S. PATENT AND TRADEMARK OFFICE

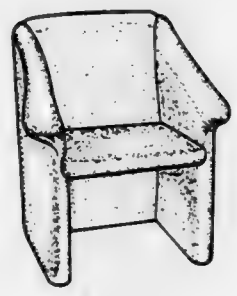
278,579
SEAT
Victor A. Milles, Wil, Switzerland, assignor to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio E Giorgio S.N.C., Besnate, Italy
Filed Sep. 10, 1982, Ser. No. 416,445
Term of patent 14 years
U.S. Cl. D6—334



278,580
REVERSIBLE SEAT FOR A BATHTUB OR THE LIKE
Robert T. Collins, 309 Yorkum Pkwy., Apartment No. 1802, Alexandria, Va. 22304
Filed Jan. 7, 1983, Ser. No. 456,573
Term of patent 14 years
U.S. Cl. D6—349



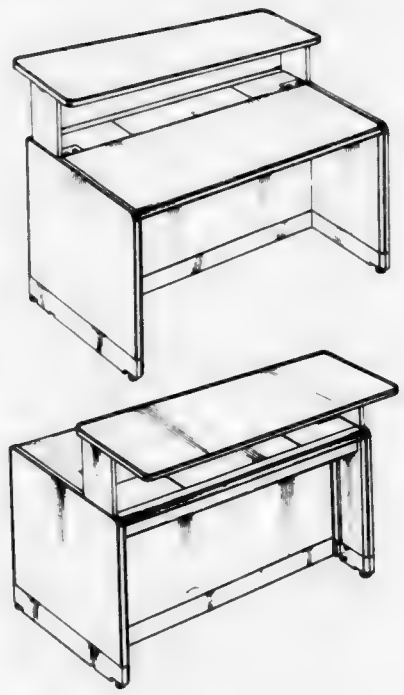
278,581
CHAIR
Merle C. Melchior, 723 Ocean Front Walk, Venice, Calif. 90291
Filed May 12, 1982, Ser. No. 377,297
Term of patent 14 years
U.S. Cl. D6—373



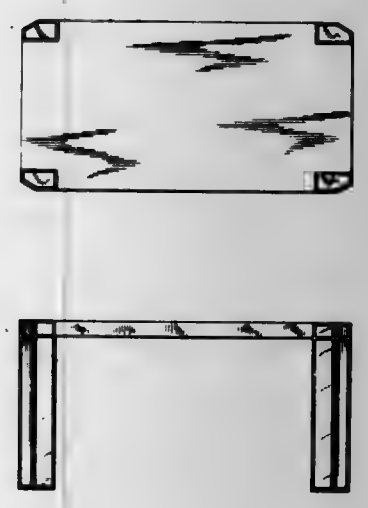
278,582
LOUNGE CHAIR
Joel A. Kramer, Bradenton, Fla., and Alton A. Harper, Tustin, Calif., assignors to Tropitone Furniture Co., Inc., Sarasota, Fla.
Filed Sep. 29, 1982, Ser. No. 432,108
The portion of the term of this patent subsequent to Nov. 27, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—373



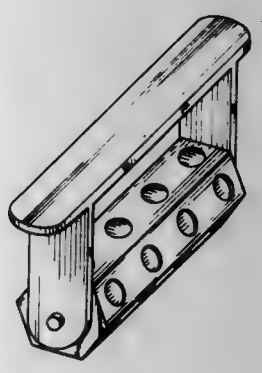
278,583
DESK
Seiji Koguma, Tokyo, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Feb. 3, 1983, Ser. No. 463,390
Term of patent 14 years
U.S. Cl. D6—426



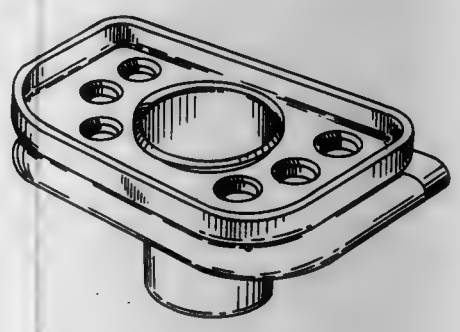
278,584
TABLE
R. Scott Bromley, New York, N.Y., assignor to Cartier Inc., New York, N.Y.
Filed Oct. 7, 1982, Ser. No. 433,354
Term of patent 14 years
U.S. Cl. D6—484



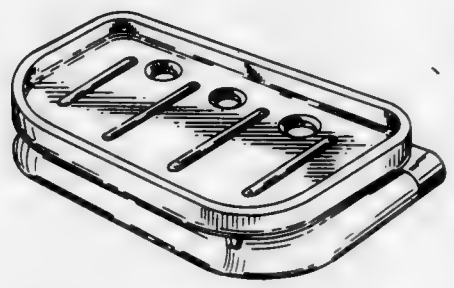
278,585
ROTATABLE STORAGE RACK FOR SPICE JARS AND THE LIKE
Rodnie D. Oldham, 10295 Virginia Swan Pl., Cupertino, Calif. 95014
Filed Sep. 13, 1982, Ser. No. 416,865
Term of patent 14 years
U.S. Cl. D6—513



278,586
COMBINED TOOTHBRUSH AND TUMBLER HOLDER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Dec. 3, 1982, Ser. No. 446,853
Claims priority, application Australia, Oct. 12, 1982, 1818/82
Term of patent 14 years
U.S. Cl. D6—531



278,587
SOAP HOLDER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Dec. 3, 1982, Ser. No. 446,770
Claims priority, application Australia, Oct. 12, 1982, 1817/82
Term of patent 14 years
U.S. Cl. D6—540



278,588
BOWL
Lawrence M. Knutson, Prior Lake, Minn., assignor to Decra-Stone, Inc., Prior Lake, Minn.
Filed Jun. 17, 1982, Ser. No. 389,425
The portion of the term of this patent subsequent to Dec. 6, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—29



278,589
CUP OR SIMILAR ARTICLE
Simone Colquitt, Bronxville, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed May 17, 1982, Ser. No. 379,169
Term of patent 14 years
U.S. Cl. D7—9



278,590
CHAMPAGNE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,987
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



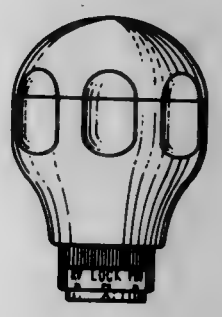
278,591
CHAMPAGNE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 403,143
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



278,592
WINE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 403,145
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



278,593
RATCHET HANDLE FOR HAND TOOL
Francis W. MacGregor, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jun. 28, 1982, Ser. No. 392,807
Term of patent 14 years
U.S. Cl. D8—83

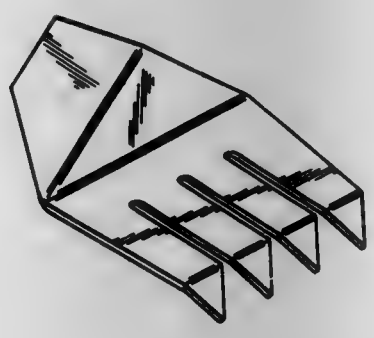


278,594
RATCHET WRENCH SOCKET UNIT NUT EJECTOR SPRING RETAINER
Howard D. Lye, 317 N. 16th East, Riverton, Wyo. 82501
Filed Jul. 30, 1982, Ser. No. 403,558
Term of patent 14 years
U.S. Cl. D8—25

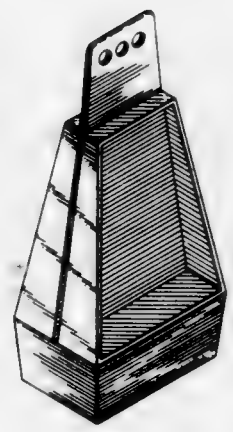




278,595
FASTENER FOR EXHAUST AIR VALVES
Lennart Widerby, Jönköping, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden
Filed Jul. 23, 1982, Ser. No. 401,130
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, URA 78/82
Term of patent 14 years
U.S. Cl. D8—389



278,596
PACKAGING CONTAINER
Salvatore M. Ceraulo, 162 Noel Dr., Amherst, N.Y. 14226
Filed Sep. 29, 1982, Ser. No. 427,638
Term of patent 14 years
U.S. Cl. D9—341



278,597
BOTTLE
Daniel McAlinden, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Nov. 22, 1982, Ser. No. 443,466
Term of patent 14 years
U.S. Cl. D9—349



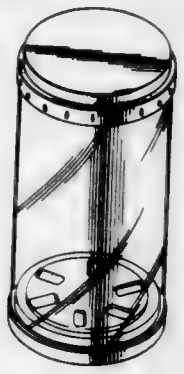
278,598
COMBINED BOTTLE AND CAP
Heinz Weber, 14 Lakeview Blvd., Beaconsfield, Quebec, Canada
Filed Nov. 16, 1982, Ser. No. 442,023
Term of patent 14 years
U.S. Cl. D9—353



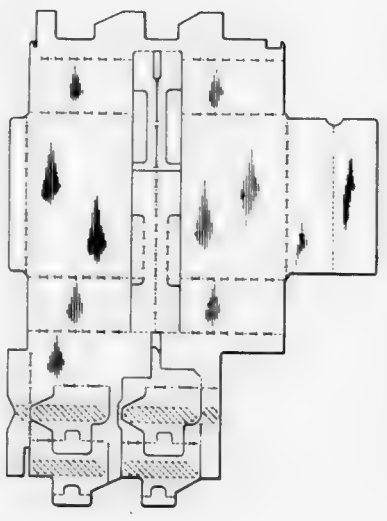
278,599
BOTTLE
James Lane, Unionville, Canada, assignor to The Drackett Company, Cincinnati, Ohio
Filed Mar. 18, 1982, Ser. No. 359,533
Term of patent 14 years
U.S. Cl. D9—377



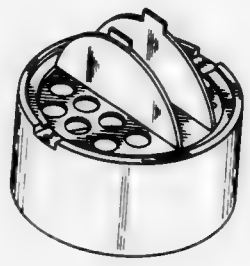
278,600
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Jun. 21, 1982, Ser. No. 390,019
Term of patent 14 years
U.S. Cl. D9—399



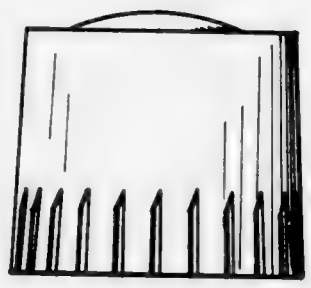
278,601
ARTICLE CARRIER BLANK
Jerry F. Wilson, West Monroe, La., assignor to Manville Service Corporation, Denver, Colo.
Filed Jun. 14, 1982, Ser. No. 387,891
Term of patent 14 years
U.S. Cl. D9—433



278,602
PLASTIC THREADED COVER FOR A CONTAINER
Florence Rosenstein, 67 W. Euclid St., Valley Stream, N.Y. 11580
Filed Nov. 19, 1982, Ser. No. 443,121
Term of patent 14 years
U.S. Cl. D9—449



278,603
CONTAINER CAP
John H. Morgan, Chatham, and John A. Grip, Wayne, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Mar. 18, 1983, Ser. No. 476,903
Term of patent 14 years
U.S. Cl. D9—453

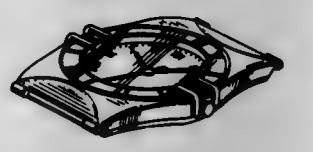


278,604
DISPLAY HOLDER FOR A CONTAINER OF LIPSTICK OR THE LIKE
John M. Van Zandt, 15932 Northfield, Pacific Palisades, Calif. 90272
Filed Jan. 20, 1983, Ser. No. 459,519
Term of patent 14 years
U.S. Cl. D9—457

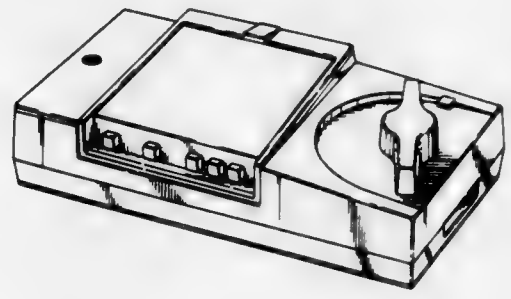


278,605
WATCH CASE
Carol Didisheim, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Switzerland
Filed May 26, 1982, Ser. No. 382,444
Claims priority, application Switzerland, Dec. 23, 1981, 72 034
Term of patent 14 years
U.S. Cl. D10—30

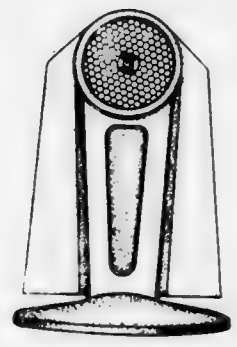


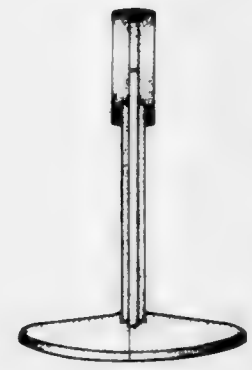


278,606
GRAIN MOISTURE METER
Shigeo Suzuki, 4-1 Yamana-cho, Fukuroi 437, Japan
Filed Sep. 3, 1982, Ser. No. 414,776
Claims priority, application United Kingdom, May 18, 1982, 1006783
Term of patent 14 years
U.S. Cl. D10—56



278,607
ROAD REFLECTOR OR SIMILAR ARTICLE
Heinz Tichy, Vienna, and Franz Mair, Birgitz, both of Austria, assignors to Semperit Aktiengesellschaft, Traiskirchen, Austria
Filed Aug. 16, 1982, Ser. No. 408,272
Claims priority, application Austria, Apr. 22, 1982, 526,335
Term of patent 14 years
U.S. Cl. D10—111

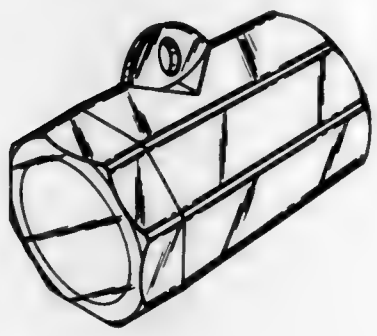




278,608
TOED SHOE
Sara R. Thompson, c/o Kenneth R. Matticks, P.O. Box 773, Wilmington, Ohio 45177
Filed Sep. 13, 1982, Ser. No. 416,873
Term of patent 14 years
U.S. Cl. D2—279



278,609
PENDANT MEDICAL MICROFILM READER
Joanne Satterelli, Jackson, Mich., assignor to National Child Safety Council, Jackson, Mich.
Filed Jun. 13, 1983, Ser. No. 503,714
Term of patent 14 years
U.S. Cl. D11—2



278,610
FINGER RING
Graham R. Gramwell, Birmingham, England, assignor to Steward Smith Investments Limited, Wales
Filed Sep. 16, 1982, Ser. No. 418,617
Term of patent 14 years
U.S. Cl. D11—30



278,611
APPLE-SHAPED BROACH
Barbara S. Sussman, and Sybil Baiman, both of Allentown, Pa., assignors to Jewish Federation of Allentown, Allentown, Pa.
Filed Sep. 2, 1982, Ser. No. 414,221
Term of patent 14 years
U.S. Cl. D11—67

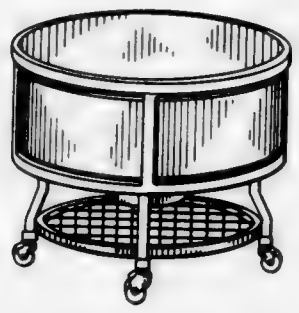




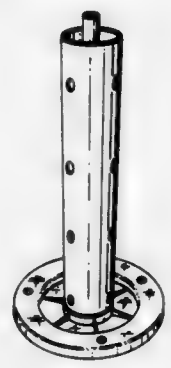
278,612
EMBLEM FOR JEWELRY OR THE LIKE
Sven Tore K. Hjelm, Box 146, S-534 00 Vara, Sweden
Filed Jan. 10, 1983, Ser. No. 456,750
Claims priority, application Sweden, Jul. 13, 1982, 82-1840
Term of patent 14 years
U.S. Cl. D11—107



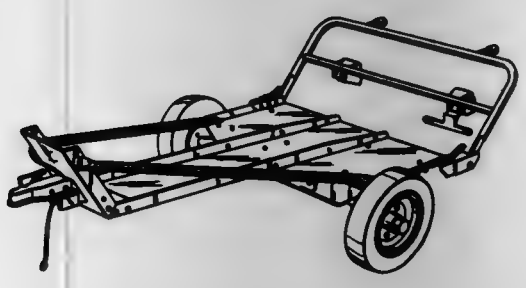
278,613
PLANTER
Kenneth D. Einsel, 903 N. Saint Joseph Ave., Hastings, Nebr. 68901
Continuation-in-part of Ser. No. 239,638, Mar. 2, 1981, abandoned. This application Dec. 10, 1982, Ser. No. 448,596
Term of patent 14 years
U.S. Cl. D11—152



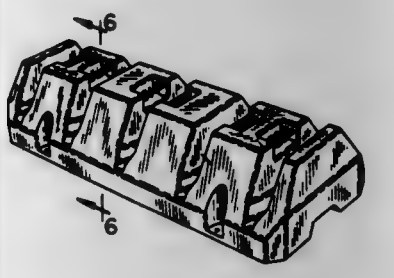
278,614
CONTAINER FOR MULTIPLE PLANT GROWTH
Howard E. Moss, Commerce, Okla., assignor to Howard Enterprises, Inc., Commerce, Okla.
Filed Apr. 20, 1983, Ser. No. 486,932
Term of patent 14 years
U.S. Cl. D11—152



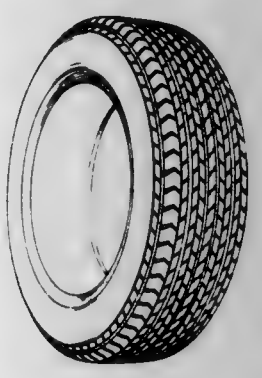
278,615
TRAILER FOR A THREE-WHEEL CYCLE OR THE LIKE
Denny B. Law, San Marcos, and Bernhardt P. Goettker, Escondido, both of Calif., assignors to Unique Functional Products, San Marcos, Calif.
Filed Apr. 19, 1982, Ser. No. 369,518
Term of patent 14 years
U.S. Cl. D12—101



278,616
BICYCLE STAND
Robert M. Collison, 11621 NE. Fargo St., Portland, Oreg. 97220, and John V. Myers, 9950 SW. Riverwood La., Tigard, Oreg. 97223
Filed Aug. 9, 1982, Ser. No. 406,394
Term of patent 14 years
U.S. Cl. D12—115



278,617
VEHICLE TIRE
Hiroshi Kojima; Misao Kawabata, both of Tokyo; Masataka Yamaoka, Saitama, and Masashiro Moriya, Tokyo, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan
Filed Jan. 7, 1983, Ser. No. 456,456
Claims priority, application Japan, Jul. 29, 1982, 57-34004
Term of patent 14 years
U.S. Cl. D12—147



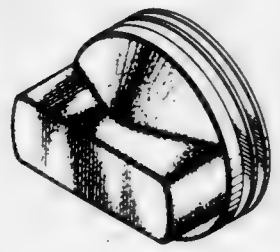
278,618
VEHICLE TIRE
Hiroshi Kojima, Tokyo; Misao Kawabata; Masataka Yamaoka, both of Saitama, and Masashiro Moriya, Tokyo, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan
Filed May 9, 1983, Ser. No. 492,753
Claims priority, application Japan, Nov. 16, 1982, 57-51413
Term of patent 14 years
U.S. Cl. D12—147



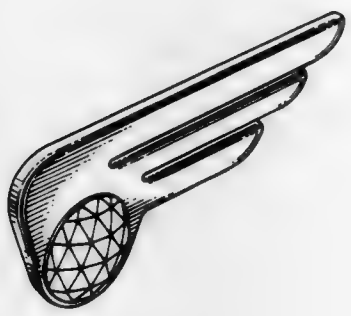
278,619
OIL COOLER
Noriyuki Hoshina, Hatano, Japan, assignor to Toyo Radiator Co., Ltd., Tokyo, Japan
Filed Sep. 3, 1982, Ser. No. 418,100
Claims priority, application Japan, Mar. 13, 1982, 57-10392
Term of patent 14 years
U.S. Cl. D12—166



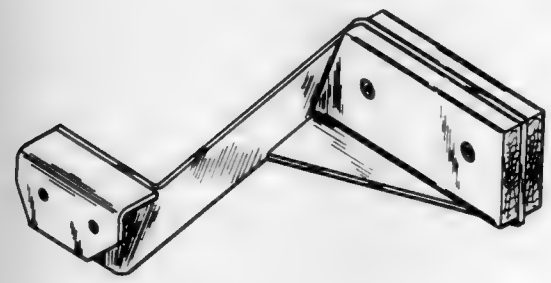
278,620
BICYCLE BRAKE SHOE
Richard C. Everett, West Linn, Oreg., assignor to Kool-Stop International, Inc., Lake Oswego, Oreg.
Filed Aug. 30, 1982, Ser. No. 412,787
Term of patent 14 years
U.S. Cl. D12—180



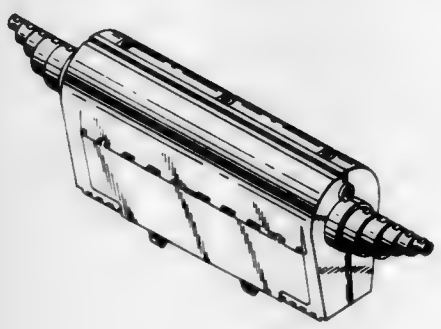
278,621
AUTOMOBILE FENDER SKIRT ORNAMENT
Wesley Scher, 1122 N. Kings Rd., Los Angeles, Calif. 90069
Filed Apr. 25, 1983, Ser. No. 488,053
Term of patent 14 years
U.S. Cl. D12—190



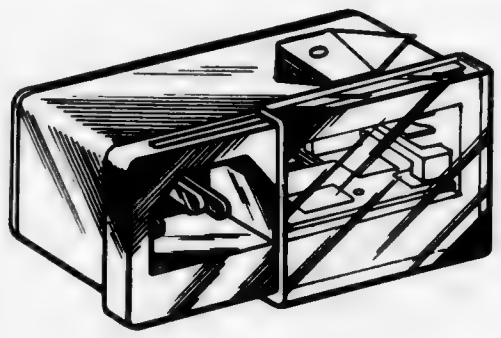
278,622
AUXILIARY ENGINE MOUNT FOR A BOAT TRANSOM
Gary B. Hunnell, 4038 E. University, Des Moines, Iowa 50317
Filed Jul. 6, 1982, Ser. No. 395,318
Term of patent 14 years
U.S. Cl. D12—317



278,623
TELEPHONE WIRE AERIAL ENCLOSURE
Lyle R. Anderson, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 5, 1982, Ser. No. 405,354
Term of patent 14 years
U.S. Cl. D13—24



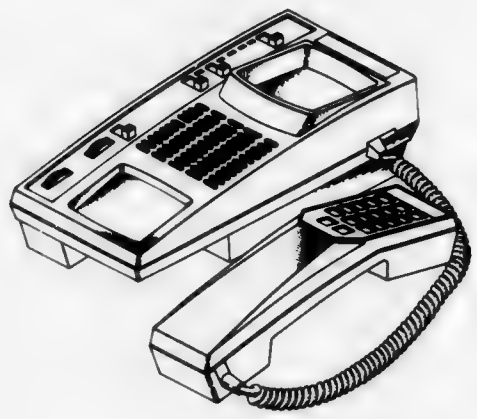
278,624
ELECTRICAL POWER MODULE
Davis P. Stone, Canyon Country, Calif., assignor to Hopkins Engineering Company, Calif.
Filed Jun. 29, 1983, Ser. No. 509,216
Term of patent 14 years
U.S. Cl. D13—24



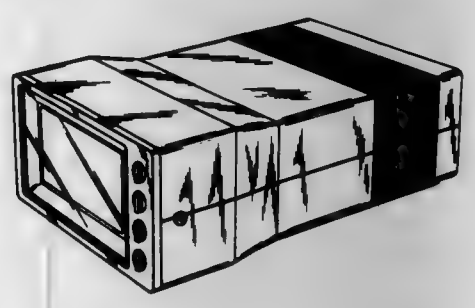
278,625
MICROPHONE
Hilmer Mathiasen, Holte, Denmark, assignor to Bruel & Kjaer A/S, Naerum, Denmark
Filed Jan. 7, 1983, Ser. No. 456,435
Claims priority, application Denmark, Jul. 12, 1982, 667; Jul. 12, 1982, 668
Term of patent 14 years
U.S. Cl. D14—12



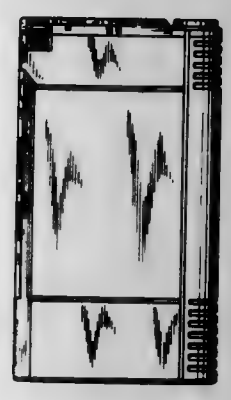
278,626
MOBILE TELEPHONE SET
Hisamitsu Takagi, Inagi; Hiroichi Hashiguchi, Kawasaki, and Tomoyuki Takehara, Fujisawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 29, 1982, Ser. No. 445,047
Claims priority, application Japan, May 31, 1982, 57-23938
Term of patent 14 years
U.S. Cl. D14—53



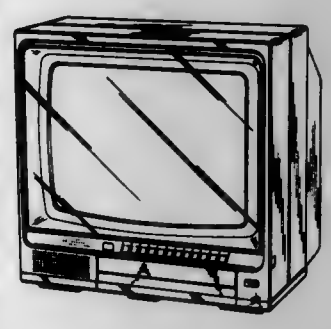
278,627
TELEVISION MONITOR
Taisuke Kashima; Shigeki Gushiken; Yukio Kuroiwa, all of Tokyo; Tohru Kiyota, Tachikowa, and Takashi Fujii, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 26, 1982, Ser. No. 444,708
Claims priority, application Japan, Jul. 2, 1982, 57-29535
Term of patent 14 years
U.S. Cl. D14—77



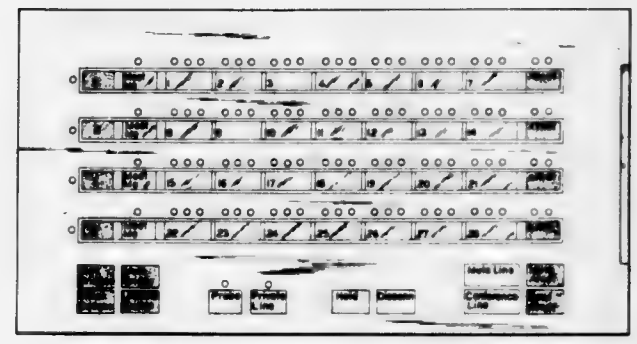
278,628
PORTABLE TELEVISION RECEIVER
Naoto Fukasawa; Susumu Suzuki, and Noritaka Uchihori, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 14, 1982, Ser. No. 449,816
Claims priority, application Japan, Jun. 15, 1982, 57-26706
Term of patent 14 years
U.S. Cl. D14—77



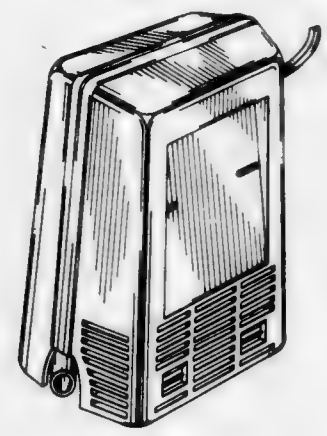
278,629
TELEVISION RECEIVER
Kiyoshi Mitani, Kyoto; Hiroshi Yonekura, Osaka; Kiyoshi Suzuki, Osaka, and Osamu Sugihara, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 18, 1982, Ser. No. 389,795
Claims priority, application Japan, Mar. 8, 1982, 57-9407
Term of patent 14 years
U.S. Cl. D14—80



278,630
CONSOLE FACEPLATE FOR TELECONFERENCING BRIDGE
Alfred R. Ender, West Windsor Township, Mercer County; Robert F. Iacullo, Tenafly; Richard J. Kriete, Little Ferry; Alvin R. Tilley, Middletown, and Leon Weinglass, Edison, all of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.
Filed Dec. 27, 1982, Ser. No. 453,005
Term of patent 14 years
U.S. Cl. D14—115



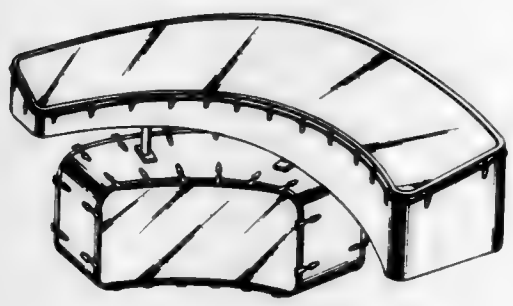
278,631
EVAPORATIVE COOLER PUMP
Frederick A. Major, deceased, late of Tempe, Ariz. (by Clare M. Major, personal representative), assignor to Clare M. Major, Tempe, Ariz.
Filed Jul. 6, 1982, Ser. No. 395,496
Term of patent 14 years
U.S. Cl. D15—7



278,632
GUITAR
Mark Erlewine, 1605 Wethersfield Rd., Austin, Tex. 78703
Filed Sep. 29, 1982, Ser. No. 426,848
Term of patent 14 years
U.S. Cl. D17—14



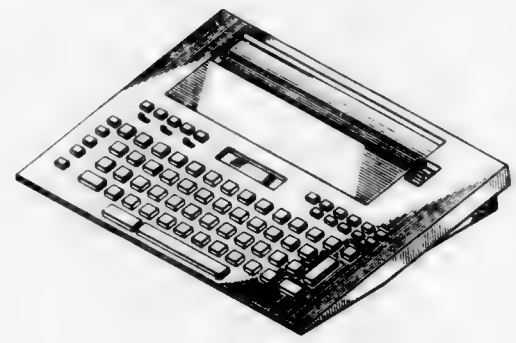
278,633
DRUM SET
Steven J. DeBarbrie, 13558 Moorpark Ave. #8, Sherman Oaks, Calif. 91423
Filed Jun. 3, 1982, Ser. No. 384,643
Term of patent 14 years
U.S. Cl. D17—22



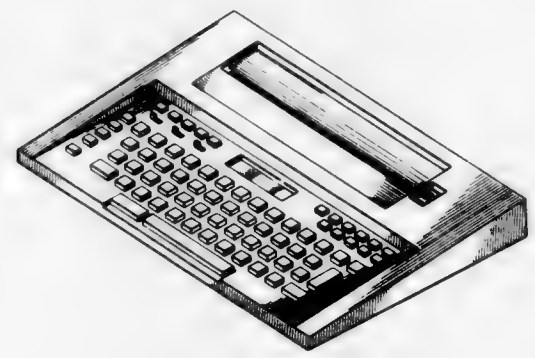
278,634
DOUBLE TIPPED DRUMSTICK
Jim Anderson, 918 Brent Cir., Placentia, Calif. 92670
Filed Sep. 13, 1982, Ser. No. 416,876
Term of patent 14 years
U.S. Cl. D17—22



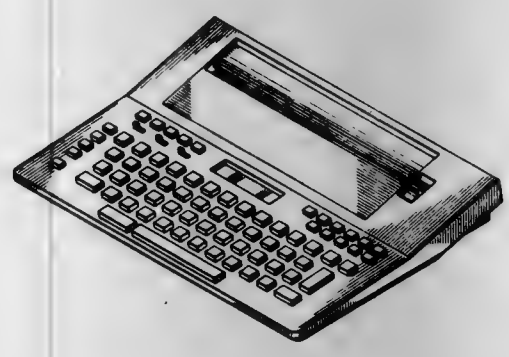
278,635
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of, Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,325
Claims priority, application Japan, Jan. 11, 1983, 58-509
Term of patent 14 years
U.S. Cl. D18—1



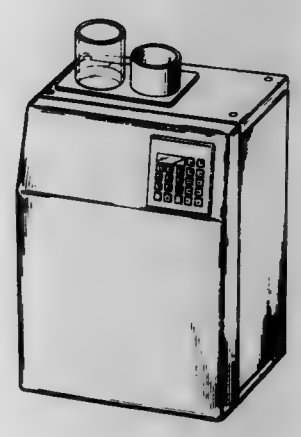
278,636
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of, Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,326
Claims priority, application Japan, Jan. 11, 1983, 58-511
Term of patent 14 years
U.S. Cl. D18—1



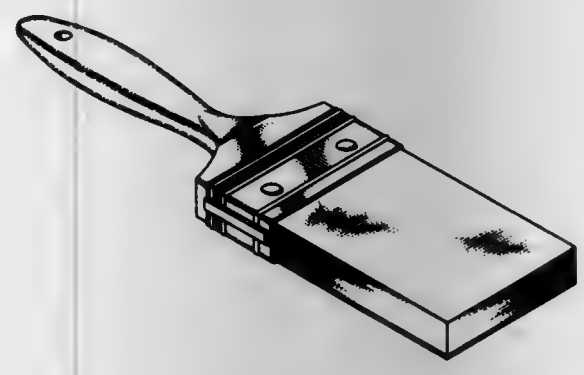
278,637
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,344
Claims priority, application Japan, Jan. 22, 1983, 58-508
Term of patent 14 years
U.S. Cl. D18—1



278,638
PNEUMATIC CONVEYOR TERMINAL
Herbert Kraemer, Fasanenweg 6, 8080 Fuerstenfeldbruck, Fed. Rep. of Germany
Filed Sep. 20, 1982, Ser. No. 420,375
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 12867
Term of patent 14 years
U.S. Cl. D18—35



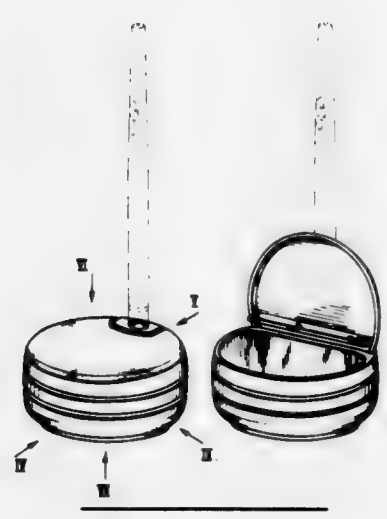
278,639
NOTE PAD HOLDER
Carl G. Cantonis, 2040 Redondo Place, Fullerton, Calif. 92635
Filed Apr. 28, 1982, Ser. No. 372,468
Term of patent 14 years
U.S. Cl. D19—28



278,640
PAD OF PAPER
Gary Multer, 41 Regent St., Cambridge, Mass. 02140
Filed May 24, 1982, Ser. No. 381,141
Term of patent 14 years
U.S. Cl. D19—28



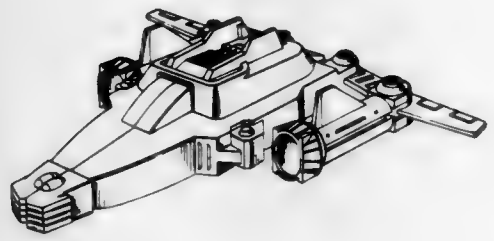
278,641
COMBINED HOLDER FOR A WRITING INSTRUMENT AND COVERED RECEPTACLE
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed Jul. 15, 1982, Ser. No. 398,340
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, MR 141
Term of patent 14 years
U.S. Cl. D19—77

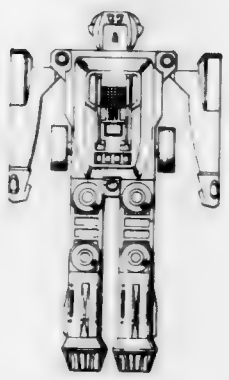


278,642
FOOTBALL CLAPPER
Ernest Martinez, 1009 W. Arlington, Fort Worth, Tex. 76110
Filed Dec. 6, 1982, Ser. No. 447,263
Term of patent 14 years
U.S. Cl. D21—64

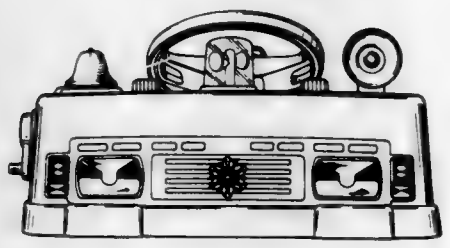


278,643
RECONFIGURABLE TOY
Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jul. 29, 1983, Ser. No. 518,376
Term of patent 14 years
U.S. Cl. D21—128





278,644
DRIVING TOY
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Aug. 2, 1982, Ser. No. 404,061
Claims priority, application Japan, Apr. 15, 1982, 57-16294
Term of patent 14 years
U.S. Cl. D21—142



278,645
TOY POODLE FIGURE
Jacob Nielsen, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Dec. 10, 1982, Ser. No. 448,760
Term of patent 14 years
U.S. Cl. D21—161



278,646
STUFFED NOVELTY MOUSE FIGURE OR THE LIKE
Kenneth H. McCoy, 3107 - 17th St., Santa Monica, Calif. 90405
Filed Sep. 24, 1982, Ser. No. 422,717
Term of patent 14 years
U.S. Cl. D21—188



278,647
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,372
Term of patent 14 years
U.S. Cl. D21—190



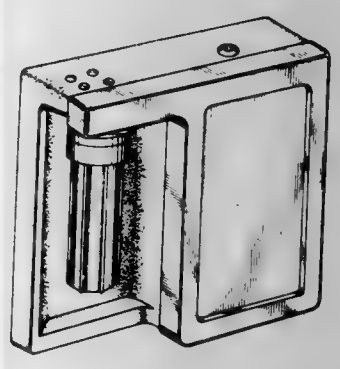
278,648
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,437
Term of patent 14 years
U.S. Cl. D21—190



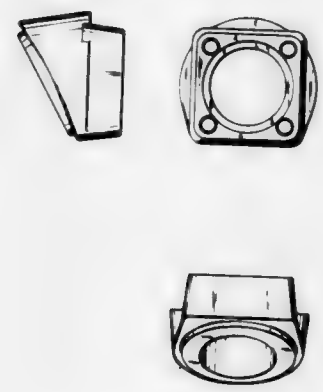
278,649
SKI POLE GRIP
Peter Nordgren, and Hans Sjöholm, both of Stockholm, Sweden, assignors to Formelprodukter, Luleå , Sweden
Filed Mar. 26, 1982, Ser. No. 362,313
Claims priority, application Sweden, Oct. 5, 1981, 81-2184
Term of patent 14 years
U.S. Cl. D21—230



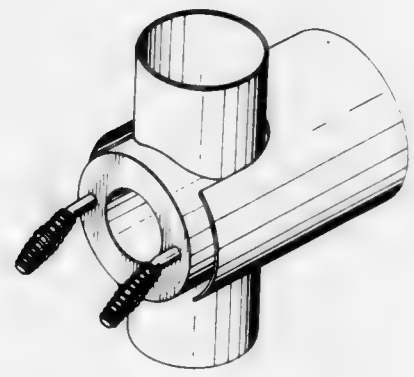
278,650
WATER PURIFIER
Jack P. Slovak, 8952 Sailport, Huntington Beach, Calif. 92646; Robert A. Slovak, 411 E. Edgewater, Newport Beach, Calif. 92660, and Douglas M. Horn, 3731 Bates, Irvine, Calif. 92714
Filed Sep. 30, 1982, Ser. No. 432,153
Term of patent 14 years
U.S. Cl. D23—3



278,651
VALVE ADAPTOR FOR LPG FUEL TANK
Michael A. Hornak, Walnut, Calif., assignor to Calnetics Corporation, Walnut, Calif.
Filed Apr. 26, 1982, Ser. No. 371,544
Term of patent 14 years
U.S. Cl. D23—40



278,652
HEAT SAVING DEVICE
Donald A. Lindsey, Rte. 7, Box 7095-C, Nampa, Id. 83651
Filed Jun. 20, 1983, Ser. No. 505,851
Term of patent 14 years
U.S. Cl. D23—136



278,653
CENTRIFUGE TUBE FOR SEPARATING AND WASHING RED BLOOD CELLS
Steven R. Savitz, Teaneck; Johnna B. Hawk, Rocky Hill; Henry A. Graham, Jr., Annandale, and Rosemary K. Chachowski, Manville, all of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.
Filed Aug. 17, 1982, Ser. No. 408,961
Term of patent 14 years
U.S. Cl. D24—22

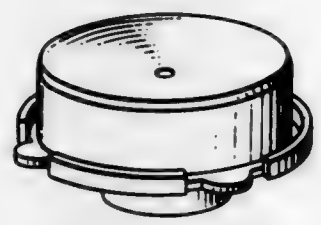


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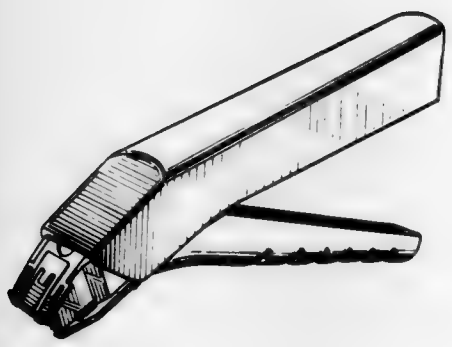
278,654
ANASTOMOSIS FRAME
Timothy M. Scanlan, St. Paul, Minn., assignor to Scanlan International, Inc., St. Paul, Minn.
Filed Sep. 29, 1982, Ser. No. 426,688
Term of patent 14 years
U.S. Cl. D24—27



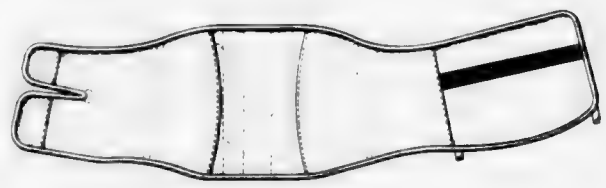
278,655
COMBINED BOTTOM CAP AND DROP FORMER WITH A SENSOR-MOUNTING FLANGE FOR AN I.V. BURETTE CHAMBER
Brian A. Scappaticci, Encinitas, Calif., assignor to IVAC Corporation, San Diego, Calif.
Filed Sep. 13, 1982, Ser. No. 417,125
Term of patent 14 years
U.S. Cl. D24—52



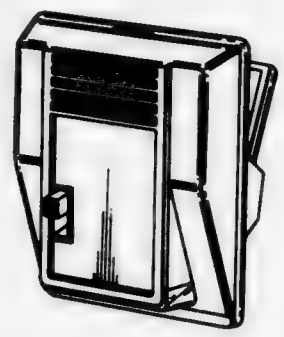
278,656
SURGICAL SKIN STAPLER
David T. Green, Norwalk; Paul O. Rawson, Easton, and Richard H. Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed May 5, 1982, Ser. No. 375,003
Term of patent 14 years
U.S. Cl. D24—26



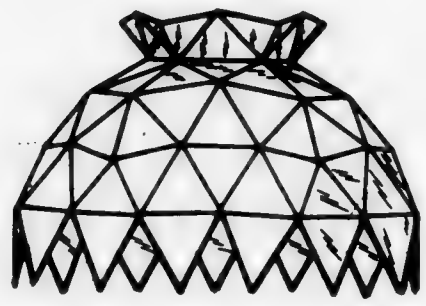
278,657
MEDICAL CORSET
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Kenshun Ishii, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Jul. 9, 1982, Ser. No. 396,988
Claims priority, application Japan, Mar. 3, 1982, 57-8690
Term of patent 14 years
U.S. Cl. D24—64



278,658
CLIP LIGHT FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manufacturing Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1983, Ser. No. 458,855
Claims priority, application Japan, Oct. 8, 1982, 57-36273
Term of patent 14 years
U.S. Cl. D26—60



278,659
LIGHT FIXTURE
Lawrence E. Lodrick, Sr., 2436 Harrison Ave. N., Rochester, Mich. 48063
Filed Sep. 29, 1982, Ser. No. 428,001
Term of patent 14 years
U.S. Cl. D26—85



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF APRIL, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.Ahlstrom Osakeyhtio: *See*—
Heikkila, Sakari; and Tiuri, Martti, 4,514,680, Cl. 324-58.50A.

A. Klebes GmbH & Co. K.G. Kunststoff- und Metallwarenfabrik: *See*—
Luttgens, Werner, 4,513,798, Cl. 144-28.110.

A/S Westad Armaturfabrik: *See*—
Rishovd, Erik; and Sorensen, Sven, 4,513,765, Cl. 137-72.000.

AB ASEA-ATOM: *See*—
Borrman, Bo; Hellman, Erik; Ode, Bengt; and van Santen, Aart, 4,514,358, Cl. 376-362.000.

AB Rollab: *See*—
Nelander, Curt, 4,513,610, Cl. 73-147.000.

AB Volvo: *See*—
Udd, Soren, 4,513,729, Cl. 123-563.000.

Abdelmonem, Nabil: *See*—
Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, 4,514,296, Cl. 210-96.100.

Abe, Hiroshi; Sato, Nobuhiro; Ono, Kimizo; and Hirano, Kazuo, to Sumitomo Electric Industries, Ltd.; Abe, Hiroshi; and Sato, Nobuhiro. Method for measuring oxygen metabolism in internal organ or tissue. 4,513,751, Cl. 128-666.000.

Abe, Masatoshi, to Okamura Corporation. Pivot angle adjusting means for the arm of a material handling device. 4,514,136, Cl. 414-744.00A.

Abeles, Benjamin: *See*—
Tiedje, Thomas; and Abeles, Benjamin, 4,514,582, Cl. 136-256.000.

Abney, Paul A.: *See*—
Martell, Charles R.; Isett, Donald D.; and Abney, Paul A., 4,513,676, Cl. 112-262.100.

Ackerman, Walter T.; and Klimeck, Edward F., to Eyelet Specialty Co., Inc. Cosmetic container construction. 4,514,102, Cl. 401-78.000.

Acme Resin Corporation: *See*—
Laitar, Robert A., 4,514,316, Cl. 252-182.000.

Acrometal Products, Inc.: *See*—
Steinback, Clarence I., 4,513,539, Cl. 51-138.000.

Acrowood Corporation: *See*—
Terrenzio, Gabriel M., 4,513,919, Cl. 241-275.000.

Adams, Anthony L., to Texas Instruments Incorporated. Integrated circuit package having interconnected leads adjacent the package ends. 4,514,750, Cl. 357-70.000.

Adams, George W.; and Banter, C. Bruce, to Emhart Industries, Inc. Mounting means for timer-motor assembly. 4,514,105, Cl. 403-24.000.

Adams, James B., Jr., to Otis Engineering Corporation. Valve with latching means. 4,513,944, Cl. 251-89.000.

Adcock, DL. Method and device for filtering lubricating oil for a dough divider machine. 4,513,614, Cl. 73-169.000.

Addison, Charles: *See*—
Olson, Harold D.; Addison, Charles; and Cagle, J. Douglas, 4,513,476, Cl. 17-44.100.

ADIR: *See*—
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,398, Cl. 514-245.000.
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,399, Cl. 514-241.000.

Adolfsson, Morgan; Brogardh, Iorgny; Hok, Bertil; and Ovren, Christer, to ASEA Aktiebolag. Fiber optical measuring device for measuring electrical and magnetic quantities by laterally controlled photoluminescence. 4,514,860, Cl. 455-612.000.

Adriaensen, Ludo: *See*—
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, 4,514,520, Cl. 502-337.000.

Advanced Micro Devices, Inc.: *See*—
Sfarti, Adrian, 4,514,673, Cl. 318-685.000.

Aero-Safe Technologies Inc.: *See*—
Kenzie, E. Dennis, 4,513,931, Cl. 244-152.000.

Agbay, Anthony J., to Omco Inc. Barrel lock. 4,513,592, Cl. 70-34.000.

Agbay, Anthony J.: *See*—
Carlson, John H.; and Agbay, Anthony J., 4,513,591, Cl. 70-34.000.

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Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.
Wakabayashi, Hajimu; Terai, Ryohei; Yamanaka, Hiroshi; and Hara, Shigeo, 4,514,329, Cl. 252-629.000.

AGFA Gevaert Aktiengesellschaft: *See*—
Koninger, Horst; Lehnert, Klaus; and Schirk, Gunter, 4,514,071, Cl. 354-320.000.

Agfa-Gevaert N.V.: *See*—
Lemahieu, Raymond G.; and Janssens, Wilhelmus, 4,514,494, Cl. 430-376.000.

Agner, Jennings M.: *See*—
Pittman, Luther B.; Agner, Jennings M.; and Hunt, George F., 4,513,756, Cl. 131-111.000.

Agnew, Palmer W.; Buonomo, Joseph P.; Houghtalen, Steven R.; Kellerman, Anne S.; Losinger, Raymond E.; and Valashinas, James W., to International Business Machines Corporation. Methods for partitioning mainframe instruction sets to implement microprocessor based emulation thereof. 4,514,803, Cl. 364-200.000.

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Shvakhman, Lidia; Agro, Ignatius T.; and Chiusolo, Louis L., 4,514,538, Cl. 524-315.000.

Aguirre, Everado M. Nursing bottle support. 4,513,935, Cl. 248-105.000.

Ahlstrom, John K.: *See*—
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.

Ahne, Hellmut; Kruger, Hans; and Rubner, Roland, to Siemens Aktiengesellschaft. Method for the preparation of orientation layers for liquid crystal displays and liquid crystal displays having orientation layers. 4,514,043, Cl. 350-341.000.

Ahuja, Sudhir R., to AT&T Bell Laboratories. Store group bus allocation system. 4,514,728, Cl. 340-825.500.

Aichi Spinning Co., Ltd.: *See*—
Imoda, Kinichiro; Kawai, Toshinori; and Nishitani, Kimio, 4,513,921, Cl. 242-36.000.

Air-O-Lator Corporation: *See*—
Cramer, Barry G.; and Cramer, Roy A., 4,514,343, Cl. 261-37.000.

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Bonney, Glenn E.; and Longsworth, Ralph C., 4,514,204, Cl. 62-41.000.
Wells, James E., 4,514,567, Cl. 544-352.000.

Ajinomoto Co., Inc.: *See*—
Miwa, Kiyoshi; Terabe, Mahito; Ito, Koichi; Ishida, Masaaki; Matsui, Kazuhiko; Makamori, Shigeru; and Sano, Konosuke, 4,514,502, Cl. 435-253.000.

Akashi, Yukimasa, to Showa Seiki Kabushiki Kaisha. Tap holder. 4,514,115, Cl. 408-139.000.

Aki, Osami: *See*—
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,514,565, Cl. 544-25.000.

Akino, Hisashi: *See*—
Taguchi, Toshio; Akino, Hisashi; and Nozawa, Takamitsu, 4,513,877, Cl. 220-335.000.

Aktiebolaget Electrolux: *See*—
Andersson, Karl F.; and Eriksson, Bolik A. G., 4,513,579, Cl. 62-176.200.

Akzo nv: *See*—
Vrouenraets, Cornelius M. F., 4,514,472, Cl. 428-220.000.

Albanese, Andres, to AT&T Bell Laboratories. Packet switched communication system comprising collision avoidance means. 4,514,843, Cl. 370-93.000.

Alberts, Heinrich: *See*—
Resz, Raoul; Alberts, Heinrich; Burgdorfer, Hans-Heribert; and El Sayed, Aziz, 4,514,546, Cl. 525-57.000.

Albrass Enterprises, Inc.: *See*—
Alperin, Marvin; and Brasswer, Joseph L., 4,513,940, Cl. 248-674.000.

Alcan International Limited: *See*—
Sivilotti, Olivo G., 4,514,269, Cl. 204-69.000.

Alcon Laboratories, Inc.: *See*—
Damani, Nalinkant C.; Bhagat, Haresh G.; and McElhaney, Ramon L., 4,514,385, Cl. 424-81.000.

Aldinger, Fritz; Bischoff, Albrecht; Keilberth, Richard; and Sperner, Franz, to Heraeus Quarschmelze GmbH. Electrode connecting cable for cardiac pacemaker. 4,514,589, Cl. 174-119.00R.

Alexander, Garold W.; and Haase, William H., to International Paper Company. Apparatus and method for forming a multi-compartmented tray from a sheet material. 4,514,353, Cl. 264-294.000.

Alexander, John H., to International Standard Electric Corporation. Dielectric materials. 4,514,441, Cl. 427-126.600.

Alexander, William, to American Colloid Company. Hydrogen enriched water swellable clay having reduced acid demand and stable at low pH. 4,514,510, Cl. 501-148.000.

Alexandra Enterpises, Inc.: *See*—
Kuhnsman, Alexandra; and Morey, Marian B., 4,513,692, Cl. 119-109.000.

Alkem GmbH: *See*—
Stoll, Wolfgang; and Ennerst, Karl, 4,514,364, Cl. 423-4.000.

Allegheny Ludlum Steel Corporation: *See*—
Tommaney, Joseph W.; and Bishop, Harry L., Jr., 4,514,220, Cl. 75-60.000.

Allen, Sebree J. Drag reducing device for barges. 4,513,679, Cl. 114-67.00A.

Allied Corporation: *See—*
Justice, Bruce H.; and Aycock, Robert F., 4,514,440, Cl. 427-85.000.
Pez, Guido P., 4,514,337, Cl. 260-429.300.

Allis-Chalmers Corporation: *See—*
Hansen, Kenneth N., 4,513,847, Cl. 192-4.00A.
Patchen, Paul, II, 4,513,695, Cl. 123-41.100.
Plate, John R., 4,513,850, Cl. 192-3.580.

Almqvist, Bert: *See—*
Persbeck, Sven-Eric; and Almqvist, Bert, 4,513,830, Cl. 177-1.000.

Alperin, Marvin; and Brasswer, Joseph L., to Albrass Enterprises, Inc. Means and method for attaching fan and fixture units or the like substantially flush with a ceiling. 4,513,940, Cl. 248-674.000.

Alps Electric Co., Ltd.: *See—*
Fujiwara, Mitsugu; Sakaue, Yoshinori; Aso, Tomio; Kurokawa, Koshiro; and Obara, Hideo, 4,514,740, Cl. 346-139.00R.
Koyama, Shoichi; and Iwata, Tetsuya, 4,514,776, Cl. 360-121.000.
Murata, Taneo, 4,514,608, Cl. 200-153.00J.
Noji, Tasuku; and Tobita, Katsumi, 4,514,757, Cl. 358-86.000.

Alsthom-Atlantique: *See—*
Pham Van, Doan, 4,514,605, Cl. 200-148.00A.

Alteepping, Josef; and Bornemann, Dietrich E., to Standard Oil Company (Indiana). Laminate suitable as sealing liner for liquid containers. 4,514,463, Cl. 428-286.000.

AM International, Inc.: *See—*
Westdale, Virgil W.; Hanrahan, James L.; and Anderson, William C., 4,514,077, Cl. 355-3.0DD.

Ameen, Joseph G.; Hogrogian, Richard H.; and Smey, Samuel L., to International Business Machines Corporation. Process for stripping silicon oil base thermal grease. 4,514,232, Cl. 134-1.000.

Amend, William E., to Union Oil Company of California. Geothermal valve. 4,513,947, Cl. 251-174.000.

American Colloid Company: *See—*
Alexander, William, 4,514,510, Cl. 501-148.000.

American Dental Association Health Foundation: *See—*
Bowen, Rafael L., 4,514,527, Cl. 523-115.000.

American District Telegraph Company: *See—*
Guscott, John K., 4,514,631, Cl. 250-342.000.

American Gaming Industries, Inc.: *See—*
Samsel, J. Edward, Jr., 4,513,969, Cl. 273-149.00R.

American Locker Security Systems, Inc.: *See—*
Stackhouse, Wells F., 4,513,851, Cl. 194-51.000.

American Magnetics Corporation: *See—*
Baus, Rene; and Schmidt, Fred W., 4,514,623, Cl. 235-482.000.

American Microsystems, Incorporated: *See—*
Batra, Tarsaim, 4,513,494, Cl. 29-576.00B.

American Optical Corporation: *See—*
Winthrop, John T., 4,514,061, Cl. 351-169.000.

American Roller Company: *See—*
Brands, George B.; and Hyllberg, Bruce E., 4,513,660, Cl. 101-1.000.

American Standard Inc.: *See—*
Nikolayczik, Hans, 4,513,781, Cl. 137-625.410.

Amerosa Enterprises, Inc.: *See—*
Lo, Ching P., 4,513,848, Cl. 192-18.00R.

Amin, Rajendra K.: *See—*
Cook, William T.; Cristinacce, Michael; and Amin, Rajendra K., 4,514,236, Cl. 148-38.000.

Amit, Haim. Two-stage electric water heater. 4,514,617, Cl. 219-314.000.

Amoils, Selig P. Surgical instruments and methods particularly adapted for intra-ocular cutting and the like. 4,513,745, Cl. 128-305.000.

AMP Incorporated: *See—*
Lawrence, George J., 4,514,032, Cl. 339-278.00C.

Ampex Corporation: *See—*
Gallo, Luigi C., 4,514,769, Cl. 358-310.000.
Louth, Kenneth, 4,514,671, Cl. 318-603.000.
O'Gwynn, David C., 4,514,672, Cl. 318-616.000.

AMSTED Industries Incorporated: *See—*
Parshall, David G., 4,514,301, Cl. 210-400.000.

Amtmann, Heribert, to Siemens Aktiengesellschaft. Diagnostic radiology system for angiographic x-ray examinations. 4,514,759, Cl. 358-111.000.

Anami, Koretake: *See—*
Tashiro, Chiaki; Kawakita, Takeshi; Horii, Ichiro; and Anami, Koretake, 4,514,403, Cl. 514-274.000.

Anderberg, Thomas E.: *See—*
Spencer, William H.; and Anderberg, Thomas E., 4,514,799, Cl. 364-200.000.

Anders, Christian; and Beiersdorfer, Roland. Liquid pulsation dampener device. 4,514,151, Cl. 417-540.000.

Anderson, Alan; and Spector, George, to Anderson, Alan. Zodiac designer jeans. 4,513,454, Cl. 2-246.000.

Anderson, C. Roger: *See—*
Kogen, James; and Anderson, C. Roger, 4,514,836, Cl. 369-74.000.

Anderson, Nils A., to Honeywell Information Systems Inc. Computerized system and method of material control. 4,514,815, Cl. 364-478.000.

Anderson, Paul R.: *See—*
Robson, George E.; and Anderson, Paul R., 4,513,962, Cl. 272-68.000.

Anderson, Richard N., to Hunter Douglas Inc. Venetian blind hanger pivot assembly including a hanger pivot member having a slat engaging surface. 4,513,804, Cl. 160-174.000.

Anderson, William C.: *See—*
Westdale, Virgil W.; Hanrahan, James L.; and Anderson, William C., 4,514,077, Cl. 355-3.0DD.

Andersson, Karl F.; and Eriksson, Bolik A. G., to Aktiebolaget Electrolux. Method and arrangement for maintaining a frost-free freezer. 4,513,579, Cl. 62-176.200.

Ando, Yoshibumi; Sakamoto, Takashi; Yoh, Kanji; Moriuchi, Hisahiro; and Takei, Sumiaki, to Hitachi, Ltd.; and Hitachi Microcumputer Engineering Ltd. Semiconductor integrated circuit device including a protective resistor arrangement for output transistors. 4,514,646, Cl. 307-200.00B.

Ando, Yoshio: *See—*
Tanaka, Kano; Ando, Yoshio; and Yanagawa, Hitoshi, 4,514,641, Cl. 250-570.000.

Andreasen, Knud. Reflector system for securing to a light source. 4,514,793, Cl. 362-306.000.

Andrews, Henry L., to Austenal International, Inc. Nonprecious dental alloy. 4,514,359, Cl. 420-436.000.

Angehrn, Jorg A.: *See—*
Johnson, Wade M., Jr.; and Angehrn, Jorg A., 4,514,809, Cl. 364-422.000.

Angeli, Giovanni T.: *See—*
Lange, Gerhard; and Angeli, Giovanni T., 4,513,924, Cl. 242-67.200.

Anger, Klaus: *See—*
Lischke, Burkhard; Frosien, Juergen; Anger, Klaus; and Plies, Erich, 4,514,638, Cl. 250-492.200.

Aoki, Akio, to Trion Corporation. Baseball catching means. 4,513,450, Cl. 2-19.000.

Aoki, Kozo: *See—*
Seto, Nobuo; Kamio, Takayoshi; and Aoki, Kozo, 4,514,490, Cl. 430-505.000.

Aoki, Takashi: *See—*
Nishikawa, Masao; Hattori, Torao; Aoki, Takashi; and Yoshizawa, Hiroshi, 4,513,638, Cl. 74-866.000.

Aoyagi, Shoji: *See—*
Suzuki, Toshitake; Arai, Naoto; Aoyagi, Shoji; Saito, Toranosuke; Kitani, Masakatsu; and Ishibashi, Takashi, 4,514,745, Cl. 346-216.000.

Aoyama, Yutaka: *See—*
Fukino, Masato; Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; and Aoyama, Yutaka, 4,513,835, Cl. 180-142.000.

Appel, Marvin: *See—*
Blumenthal, Jack L.; Ogren, John R.; Rutkowski, Eugene V.; and Appel, Marvin, 4,514,698, Cl. 330-4.300.

Appels, Johannes A.: *See—*
van Ommen, Alfred H.; Maas, Henricus G. R.; Appels, Johannes A.; and Josquin, Wilhelmus J. M. J., 4,514,251, Cl. 156-628.000.

Applied Power Inc.: *See—*
Stephens, Robert; and Clark, Raymond, 4,513,845, Cl. 188-299.000.

APV International Limited: *See—*
Davy, Philip A., 4,513,770, Cl. 137-315.000.

Arai, Naoto: *See—*
Suzuki, Toshitake; Arai, Naoto; Aoyagi, Shoji; Saito, Toranosuke; Kitani, Masakatsu; and Ishibashi, Takashi, 4,514,745, Cl. 346-216.000.

Arai, Tohru: *See—*
Shimada, Hisashi; Arai, Tohru; and Endo, Junji, 4,514,275, Cl. 204-298.000.

Arakawa, Miyao: *See—*
Takenaka, Akihiko; Arakawa, Miyao; Sato, Masahiro; and Yamaguchi, Toshiyuki, 4,513,609, Cl. 73-116.000.

Aranyi, Ernie; Ihasz, Richard; Gravener, Roy D.; and Tovey, Hugh J., to United States Surgical Corp. Instrument for applying plastic-like surgical fastening devices. 4,513,746, Cl. 128-334.00C.

Archer, Farley J. Motorcycle with outrigger wheels. 4,513,837, Cl. 180-209.000.

Arena, Aldo, to Grumman Aerospace Corporation. Method of fabricating a torque joint. 4,513,488, Cl. 29-516.000.

Arikawa, Junichi: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,513,958, Cl. 271-187.000.

Aritomi, Mitsutoshi: *See—*
Hokamura, Sadakazu; Yamada, Seiji; Aritomi, Mitsutoshi; and Yoshida, Yuji, 4,514,445, Cl. 427-410.000.

Armbruster, Joseph M. Filter for air circulator. 4,514,197, Cl. 55-316.000.

Armco, Inc.: *See—*
Goudy, William E., deceased, 4,513,869, Cl. 212-175.000.

Arnegger, Richard E. Saw blade with aperture. 4,513,742, Cl. 128-317.000.

Aronson, Michael P.: *See—*
Kulkarni, Ravi D.; Goddard, E. Desmond; and Aronson, Michael P., 4,514,319, Cl. 252-321.000.

Arvey Corporation: *See—*
Hirsch, Arthur, 4,514,361, Cl. 422-26.000.

Asahi Glass Company Ltd.: *See—*
Baba, Morimitsu, 4,513,893, Cl. 222-281.000.
Gunjima, Tomoki; and Takei, Ryutaro, 4,514,044, Cl. 350-350.00R.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Negishi, Kiyoshi; Kawasaki, Masahiro; and Tano, Eiichi, 4,514,075, Cl. 354-446.000.

Asai, Mamoru; Mitani, Tsuneyoshi; and Ookawa, Hiroyuki, to Musashi Engineering Kabushiki Kaisha. Apparatus for selecting the precise number within a batch of paper sheets. 4,514,856, Cl. 377-8.000.

Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, to Agency of Industrial Science & Technology; Nitivy Co., Ltd.; and Seimi Chemical Co., Ltd. Method for separating rare earth metals. 4,514,367, Cl. 423-21.500.

Aschermann, Kurt. Baseball bat instruction accessory unit. 4,513,965, Cl. 273-26.00R.

ASEA Aktiebolag: *See—*
Adolfsson, Morgan; Brogardh, Iorgny; Hok, Bertil; and Ovren, Christer, 4,514,860, Cl. 455-612.000.

Ashida, Akira, to Hitachi, Ltd. Discrimination circuit for received data. 4,514,854, Cl. 375-94.000.

Ashida, Kaneyoshi; Ohtani, Masaaki; and Ohkubo, Shoichi, to Mitsubishi Chemical Industries, Limited. Process for preparing smoke-retardant polyisocyanurate foam. 4,514,525, Cl. 521-112.000.

Aso, Tomio: *See—*
Fujiwara, Mitsugu; Sakaue, Yoshinori; Aso, Tomio; Kurokawa, Koshiro; and Obara, Hideo, 4,514,740, Cl. 346-139.00R.

Astech, Inc.: *See—*
Brown, William M.; and Lindquist, James R., 4,514,594, Cl. 179-2.510.

AT&T Bell Laboratories: *See—*
Ahuja, Sudhir R., 4,514,728, Cl. 340-825.500.
Albanese, Andres, 4,514,843, Cl. 370-93.000.
Bean, John C.; Kastalsky, Alexander; and Luryi, Sergey, 4,514,748, Cl. 357-58.000.
Blank, Stuart L.; and Gordon, Eugene I., 4,514,756, Cl. 358-66.000.
Hwang, James C., 4,514,250, Cl. 156-610.000.
Shoji, Masakazu, 4,514,647, Cl. 307-269.000.
Shoji, Masakazu, 4,514,749, Cl. 357-68.000.
Starr, Thomas J. J., 4,514,845, Cl. 371-15.000.

AT&T Technologies, Inc.: *See—*
Fegley, Charles R.; and Tamashasky, Joseph A., 4,513,852, Cl. 198-399.000.
Fletcher, Ivan M.; and Gladish, Gary W., 4,513,855, Cl. 198-473.000.
Gladish, Gary W., 4,514,130, Cl. 414-416.000.
Kent, William C., 4,513,498, Cl. 29-845.000.
Moerschel, Kenneth G., 4,514,436, Cl. 427-10.000.
Seidel, Roland H., 4,514,027, Cl. 339-105.000.

AT&T Teletype Corporation: *See—*
LaSpesa, Richard E., 4,514,100, Cl. 400-55.000.

Atkin, John; and Loustau, Marie-Therese, to Societe Anonyme Dite: SAFT. Method of manufacturing an electrode for an electrochemical cell, and an electrode manufactured by the method. 4,514,473, Cl. 429-10.000.

Atlantic Richfield Company: *See—*
Baillie, Lloyd A., 4,513,603, Cl. 73-37.000.
Dean, Barry D., 4,514,543, Cl. 525-205.000.
Kesling, Haven S., Jr., 4,514,576, Cl. 568-659.000.

Atomic Energy of Canada Limited: *See—*
Symons, Edward A.; Rolston, John H.; Clermont, Michel J.; and Paterson, Linda M., 4,514,377, Cl. 423-648.00A.

Atzet, Jon E. Anti-dieseling device for demand carburetors. 4,513,706, Cl. 123-198.00D.

Audeh, Costandi A., to Mobil Oil Corporation. Process for recovering uranium from spent shale. 4,514,378, Cl. 423-18.000.

August, Melvin C.: *See—*
Williams, John T.; and August, Melvin C., 4,514,784, Cl. 361-386.000.

Augustin, Hubert; and Pirker, Robert, to Voest-Alpine Aktiengesellschaft. Frog, in particular frog point, for rail crossing or rail switches as well as process for producing same. 4,514,235, Cl. 148-37.000.

Auld, Fredreck H.: *See—*
Merrell, Richard G.; and Auld, Fredreck H., 4,514,761, Cl. 358-122.000.

Austenal International, Inc.: *See—*
Andrews, Henry L., 4,514,359, Cl. 420-436.000.

Australasian Training Aids (PTY.) Limited: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,514,621, Cl. 235-400.000.

Autoipari Kutato es Fejleszto Vallalat: *See—*
Cser, Gyula, 4,513,699, Cl. 123-52.0MB.

Automation Industries, Inc.: *See—*
Clark, Thomas A., 4,514,024, Cl. 339-40.000.

Avco Corporation: *See—*
Rosenthal, Dan G.; and Fiedler, Louis J., 4,514,470, Cl. 428-662.000.

Awane, Katunobu: *See—*
Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, 4,514,042, Cl. 350-331.00R.

Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; and Shiokawa, Kozo, to Nihon Tokushu Noyaku Seizo K.K. Herbicidally active methyl-substituted tetrahydro-2-pyrimidinone derivatives. 4,514,210, Cl. 71-92.000.

Aycock, Robert F.: *See—*
Justice, Bruce H.; and Aycock, Robert F., 4,514,440, Cl. 427-85.000.

Ayroldi, Giuseppe. Apparatus for the recovery of oils or other similar pollutants floating on bodies of water, including the open seas. 4,514,299, Cl. 210-242.300.

Azgapetian, Alice M., executrix: *See—*
Azgapetian, Victor, deceased, 4,514,056, Cl. 350-372.000.

Azgapetian, Victor, deceased (by Azgapetian, Alice M., executrix), to United States of America, Air Force. Acoustically tuned optical filter system. 4,514,056, Cl. 350-372.000.

B. F. Goodrich Company, The: *See—*
Heimovics, John F., Jr., 4,513,881, Cl. 222-54.000.
Kugelman, Michael M., 4,514,619, Cl. 219-483.000.
Sarver, Glen E.; and Worstell, Bernard W., 4,513,768, Cl. 137-142.000.

Baba, Morimitsu, to Asahi Glass Company Ltd.; and Baba Seisakusho Co., Ltd. Apparatus for spreading a polyurethane foamable composition. 4,513,893, Cl. 222-281.000.

Baba Seisakusho Co., Ltd.: *See—*
Baba, Morimitsu, 4,513,893, Cl. 222-281.000.

Babcock & Wilcox Company, The: *See—*
Braun, Minel J., 4,513,733, Cl. 126-435.000.
Feldstein, Joel G.; and Gutzwiller, James E., Jr., 4,513,903, Cl. 228-107.000.
Finch, Curtis L., 4,513,497, Cl. 29-727.000.

Badaut, Roger: *See—*
Pere, Gerard; and Badaut, Roger, 4,513,630, Cl. 74-60.000.

Bader, Edgar; Rohrbach, Gerd; Petersen, Jurgen; and Kittel, Ludwig, to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH. Data transmission systems for full duplex communication. 4,514,840, Cl. 370-29.000.

Bagnell, Michael J.; and Ivy, William R. Radiation shielding structures. 4,514,640, Cl. 250-517.100.

Baillie, Lloyd A., to Atlantic Richfield Company. System for measuring crush properties of a catalyst. 4,513,603, Cl. 73-37.000.

Baird, Thomas E., Sr.: *See—*
Ford, Roger S.; Shie, Herman J., III; and Baird, Thomas E., Sr., 4,514,199, Cl. 55-337.000.

Bajulaz, Roger. Method for the transformation of thermal energy into mechanical energy by means of a combustion engine as well as this new engine. 4,513,568, Cl. 60-39.600.

Baker Oil Tools, Inc.: *See—*
Weinberg, Roger A., 4,513,817, Cl. 166-138.000.

Balaban, Alvin R.; and Steckler, Steven A., to RCA Corporation. Digital television receiver with time-multiplexed analog-to-digital converter. 4,514,760, Cl. 358-143.000.

Balcke-Durr Aktiengesellschaft: *See—*
Ruscheweyh, Hans, 4,514,344, Cl. 261-159.000.

Baldwin, David L. Maze and flexible wand game apparatus. 4,513,971, Cl. 273-153.00R.

Balinski, Ryszard; and Sokulski, Marek, to Osrodek Badawczo-Rozwojowy Aparatury Mleczarskiej. Container for activation of microbiophysical properties of substances especially food-stuffs. 4,513,658, Cl. 99-485.000.

Balzer, David J.; Dennison, Thomas M.; Getz, Marvin G.; and Oestmann, Eldon D., to Caterpillar Tractor Co. Integral idler track adjusting and recoil apparatus. 4,514,014, Cl. 305-10.000.

Bandtel, Eberhard: *See—*
Immel, Otto; Schwarz, Hans-Helmut; Quast, Hein; and Bandtel, Eberhard, 4,514,578, Cl. 568-853.000.

Banter, C. Bruce: *See—*
Adams, George W.; and Banter, C. Bruce, 4,514,105, Cl. 403-24.000.

Baram, Martin. Cartridge for chemicals. 4,513,861, Cl. 206-219.000.

Baran, John S.: *See—*
Hansen, Donald W., Jr.; Baran, John S.; and Owens, William H., 4,514,332, Cl. 260-112.50E.

Baranski, Jan A.: *See—*
Sigvardt, Niels H.; and Baranski, Jan A., 4,513,956, Cl. 271-9.000.

Barber, Gerald L.; and Comstock, Wayne P. Undulating amusement ride apparatus. 4,513,960, Cl. 272-44.000.

Barber, James C., to James C. Barber and Associates, Inc. Production of fluid fertilizer from phosphorus furnace waste stream. 4,514,366, Cl. 423-318.000.

Barlow, Anthony: *See—*
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,514,535, Cl. 524-109.000.
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,514,536, Cl. 524-261.000.

Barnabeo, Austin E., to Union Carbide Corporation. Water curable, azide sulfonyl silane modified, alkylene-alkyl acrylate copolymers. 4,514,545, Cl. 525-330.400.

Barnes, John F.: *See—*
Root, Jon C.; Barnes, John F.; and Coovert, Jack E., 4,514,312, Cl. 252-32.500.

Baroni, Bruno, to SASIB S.p.A. Control device for regulating the feeding of cut tobacco to a cigarette making machine. 4,513,755, Cl. 131-84.00C.

Barrett, Harrison H., to United States of America, Health and Human Services. Modular scintillation camera. 4,514,632, Cl. 250-368.000.

Barrett, John S.: *See—*
Nigol, Olaf; and Barrett, John S., 4,514,237, Cl. 148-142.000.

Barry, David J. Hollow core door and method for making. 4,513,553, Cl. 52-456.000.

Bartell, Frederick O. Blackbody simulator with uniform emissivity. 4,514,639, Cl. 250-493.100.

Bartels, James I., to Honeywell Inc. Fuel burner control system with low fire hole. 4,513,909, Cl. 236-26.00R.

Bartels, James I., to Honeywell Inc. Adaptive low fire hold control system. 4,513,910, Cl. 236-26.00R.

Bartlett, Robert W., to SRI International. Particulate silicon photovoltaic device and method of making. 4,514,580, Cl. 136-250.000.

Barton, David M.: *See—*
Stark, Glenn; and Barton, David M., 4,514,771, Cl. 360-73.000.
BASF Aktiengesellschaft: *See—*
Hamprecht, Gerhard; Varwig, Juergen; and Rohr, Wolfgang, 4,514,572, Cl. 549-246.000.
Leoffler, Hermann, 4,514,226, Cl. 106-23.000.
Marx, Matthias; Ganss, Helmut; and Frank, Wolfram, 4,514,526, Cl. 521-166.000.
Ostersehlt, Bernd; Franke, Albrecht; Frickel, Fritz-Frieder; Thyes, Marco; Friedrich, Ludwig; Gries, Josef; and Lenke, Dieter, 4,514,413, Cl. 514-397.000.
Bashirov, Zaur A.: *See—*
Uretsky, Yan S.; Kajumov, Rashid R.; Bashirov, Zaur A.; Bashirova, Alfia G.; and Strelnikov, Alexandr A., 4,513,620, Cl. 73-664.000.
Bashirova, Alfia G.: *See—*
Uretsky, Yan S.; Kajumov, Rashid R.; Bashirov, Zaur A.; Bashirova, Alfia G.; and Strelnikov, Alexandr A., 4,513,620, Cl. 73-664.000.
Bastian, Donald G.: *See—*
Punater, Dinesh G.; and Bastian, Donald G., 4,514,819, Cl. 364-556.000.
Batcheler, Jerry H.; and Marek, Raymond G. Domestic automatic continuously monitoring soil moisture monitor/indicator. 4,514,722, Cl. 340-604.000.
Batchelor, William H.: *See—*
Lagano, Thomas; and Batchelor, William H., 4,513,727, Cl. 123-525.000.
Bates Printing Specialties, Inc.: *See—*
Brown, Lyman J., 4,513,993, Cl. 283-103.000.
Bates, Stanley I.: *See—*
Inoue, Kimio; Hoyer, Gale G.; and Bates, Stanley I., 4,514,574, Cl. 564-424.000.
Batni, Prahlada R. Commutatorless direct current machine. 4,514,653, Cl. 310-178.000.
Batra, Tarsaim, to American Microsystems, Incorporated. Late mask process for programming read only memories. 4,513,494, Cl. 29-576.00B.
Bauer, Dennis P.: *See—*
Lee, John Y.; and Bauer, Dennis P., 4,514,575, Cl. 568-17.000.
Baumann, Marcus: *See—*
Wenk, Paul; Breitenstein, Werner; and Baumann, Marcus, 4,514,415, Cl. 514-470.000.
Baumert, Kenneth L.; Sagues, Alberto A.; Davis, Burtron H.; and Schweighardt, Frank K., to International Coal Refining Company. Corrosion inhibition for distillation apparatus. 4,514,281, Cl. 208-47.000.
Baumgartner, Hans: *See—*
Sudbeck, Rainer; and Baumgartner, Hans, 4,514,153, Cl. 418-69.000.
Baus, Rene; and Schmidt, Fred W., to American Magnetics Corporation. Automatic teller machine with entrance adapted to prevent access by foreign objects. 4,514,623, Cl. 235-482.000.
Baxter Corporation, The: *See—*
Bowen, John C., Jr., deceased; and Bowen, Wiley C., executrix, 4,513,789, Cl. 139-85.000.
Baxter Travenol Laboratories, Inc.: *See—*
Miller, Carl; and Hogan, Lawrence R., 4,513,796, Cl. 141-83.000.
Bayer Aktiengesellschaft: *See—*
Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 4,514,402, Cl. 514-250.000.
Immel, Otto; Schwarz, Hans-Helmut; Quast, Hein; and Bandtel, Eberhard, 4,514,578, Cl. 568-853.000.
Jager, Gerhard; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,514,409, Cl. 514-383.000.
Kuhle, Engelbert; Hagemann, Hermann; Paul, Volker; and Brandes, Wilhelm, 4,514,417, Cl. 514-482.000.
Michna, Martin; and Henk, Hermann, 4,514,188, Cl. 8-641.000.
Resz, Raoul; Alberts, Heinrich; Burgdorfer, Hans-Heribert; and El Sayed, Aziz, 4,514,546, Cl. 525-57.000.
Bayless, John H., Jr.: *See—*
LeStrange, Raymond J.; Bayless, John H., Jr.; and Schoenberg, Allan R., 4,514,492, Cl. 430-600.000.
Baylor College of Medicine: *See—*
Kit, Malon; and Kit, Saul, 4,514,497, Cl. 435-235.000.
BBC Brown, Boveri & Company, Limited: *See—*
Jenny, Ernst; Mayer, Andreas; and Moser, Peter, 4,513,571, Cl. 60-603.000.
Bean, John C.; Kastalsky, Alexander; and Luryi, Sergey, to AT&T Bell Laboratories. Germanium p-i-n photodetector on silicon substrate. 4,514,748, Cl. 357-58.000.
Beard, Walter C. Reclosable valve with removable hermetic external seal means. 4,513,889, Cl. 222-153.000.
Becker, John E.: *See—*
Rose, Douglas N.; and Becker, John E., 4,513,807, Cl. 165-10.000.
Becker, Jurgen: *See—*
Kaspar, Klaus P.; Becker, Jurgen; and Huber, Marion, 4,514,091, Cl. 366-130.000.
Beckman Instruments, Inc.: *See—*
Kaye, Wilbur I., 4,514,085, Cl. 356-71.000.
Becton, Dickinson and Company: *See—*
Johnson, Michael D., 4,514,460, Cl. 428-245.000.
Beduchaud, Michel; and Playe, Patrice, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Indirect electrostatic printer. 4,514,078, Cl. 355-3.0RE.
Beers, Melvin D.; and Thompson, James E., to Loctite Corporation. Oil resistant low modulus silicone sealant composition. 4,514,529, Cl. 523-200.000.
Beever, William H.; Shue, Robert S.; and Childers, Clifford W., to Phillips Petroleum Company. Encapsulated electronic components and encapsulation compositions. 4,514,588, Cl. 174-52.0PE.
Begin, John D., to GTE Valeron Corporation. Worn tool detector utilizing normalized vibration signals. 4,514,797, Cl. 364-148.000.
Behringer, Wolfgang, to Siemens Aktiengesellschaft. Apparatus supporting a plurality of dental instruments. 4,514,172, Cl. 433-126.000.
Beiersdorfer, Roland: *See—*
Anders, Christian; and Beiersdorfer, Roland, 4,514,151, Cl. 417-540.000.
Beitinger, Eberhard: *See—*
Nussbaumer, Manfred; Beitinger, Eberhard; and Mohlenbrink, Wolfgang, 4,513,504, Cl. 33-1.00H.
Belgard, Richard A.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.
Bell & Howell Company: *See—*
Grant, Frederic F., 4,514,055, Cl. 350-6.300.
Spencer, William H.; and Anderberg, Thomas E., 4,514,799, Cl. 364-200.000.
Stites, David G., 4,514,050, Cl. 350-444.000.
Bellamy, Brad L.: *See—*
Dykstra, Jerald P.; and Bellamy, Brad L., 4,514,637, Cl. 250-492.200.
Bendix Automation Company: *See—*
Laskowski, Edward L., 4,513,507, Cl. 33-169.00R.
Benitez, Francisco M.: *See—*
Hughes, Vincent L.; and Benitez, Francisco M., 4,514,554, Cl. 526-339.000.
Bennett, Richard J.: *See—*
Dougherty, Emery W.; Heyde, John B.; Bennett, Richard J.; Smith, Roy L.; Tateosian, Louis H.; and Eden, George T., 4,514,174, Cl. 433-226.000.
Bennett, Simon D.: *See—*
Kino, Gordon S.; Bennett, Simon D.; and Husson, Didier, 4,513,749, Cl. 128-660.000.
Benson, John A.: *See—*
Berry, Paul S.; Benson, John A.; Kettlewell, Peter J.; and Turner, Michael J. B., 4,513,689, Cl. 119-82.000.
Bentley, Gustavus A.; Nash, Stephen E.; and Pichler, Gerald P., to Federal-Mogul Corporation. Rotating-lip grease seal. 4,513,976, Cl. 277-25.000.
Berg, Lloyd. Separation of benzene from non-aromatic hydrocarbons by extractive distillation. 4,514,262, Cl. 203-51.000.
Bergandi Manufacturing Co., Inc.: *See—*
Rohrbacher, Herbert E., 4,513,793, Cl. 140-92.400.
Berger, Paul L.: *See—*
Berger, Richard C.; and Berger, Paul L., 4,513,939, Cl. 248-544.000.
Berger, Richard C.; and Berger, Paul L. Vibration absorption mounting for a rooftop air handling unit. 4,513,939, Cl. 248-544.000.
Berman, James. Teller machine enclosure. 4,513,670, Cl. 109-24.100.
Berman, William A.: *See—*
Wilger, John F.; Nakano, Gregory; and Berman, William A., 4,513,542, Cl. 51-241.00S.
Bernstein, David H.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.
Bernstein, Pierre: *See—*
Gueugnon, Catherine; and Bernstein, Pierre, 4,514,082, Cl. 355-54.000.
Berry, Paul S.; Benson, John A.; Kettlewell, Peter J.; and Turner, Michael J. B., to National Research Development Corporation. Poultry-harvesting assembly. 4,513,689, Cl. 119-82.000.
Bert, Georges: *See—*
Nuzillat, Gerard; and Bert, Georges, 4,514,649, Cl. 307-450.000.
Berthel, Robert O.; Plank, Vernon G.; Jones, Stephen H.; and Matthews, Anthony J., to United States of America, Air Force. Fall velocity indicator/viewer. 4,514,758, Cl. 358-93.000.
Bezard, Jean-Jacques; Jourdain, Charles H.; and Lalanne, Bruno, to J A E G E R. Apparatus for monitoring the level of liquid by resistive wire. 4,513,616, Cl. 73-295.000.
Bhagat, Haresh G.: *See—*
Damani, Nalinkant C.; Bhagat, Haresh G.; and McElhaney, Ramon L., 4,514,385, Cl. 424-81.000.
Bhatia, Chandrakant; Toman, George M.; and Bock, Thomas J., to Union Special Corporation. Mechanism generating elliptical motion. 4,513,674, Cl. 112-220.000.
Bhattacharya, Somnath, to International Business Machines Corporation. Compressively stresses titanium metallurgy for contacting passivated semiconductor devices. 4,514,751, Cl. 357-71.000.
Biehl, Philip D.: *See—*
Loskorn, Richard A.; Biehl, Philip D.; and Catiller, Robert D., 4,514,824, Cl. 364-900.000.
Billington, Richard W.; Blackwell, Gordon B.; and Prodger, Terence E., to Dentsply Limited. Polyethylenically unsaturated monophosphates. 4,514,342, Cl. 260-952.000.

Binder, Michael; Petersen, Eric R.; Walker, Charles W., Jr.; Wade, William L., Jr.; and Gilman, Sol, to United States of America, Army. Method of making a porous carbon cathode, a porous carbon cathode so made, and electrochemical cell including the porous carbon cathode. 4,514,478, Cl. 429-196.000.

Binder, Rolf; Hanselmann, Daniel; and Schlepfer, Walter, to Rieter Machine Works Limited. Apparatus for opening textile fiber bales. 4,513,479, Cl. 19-80.00R.

Binks Manufacturing Company: *See*—
Smith, David H., 4,513,913, Cl. 239-119.000.

Binnie, Kevin D., to K. D. Binnie Engineering Pty. Ltd. Seaming machine for mufflers. 4,513,487, Cl. 29-243.500.

Biond Inc.: *See*—
Hirschfeld, Steven, 4,514,508, Cl. 436-518.000.

Birx, Linda B., to Emerson Electric Co. Thermal cutoff construction, member therefor and methods of making the same. 4,514,718, Cl. 337-407.000.

Bischoff, Albrecht: *See*—
Aldinger, Fritz; Bischoff, Albrecht; Keilberth, Richard; and Sperner, Franz, 4,514,589, Cl. 174-119.00R.

Bishop, Harry L., Jr.: *See*—
Tommaney, Joseph W.; and Bishop, Harry L., Jr., 4,514,220, Cl. 75-60.000.

Bishop, Timothy E.; Stanton, Joseph J.; Pasternack, George; and Cutler, Orvid R., Jr., to DeSoto, Inc. Ultraviolet curable outer coatings for optical fiber. 4,514,037, Cl. 350-96.230.

Bisquolm, Werner; Burki, Jorg; and Teuscher, Othmar, to Graf & Cie AG. Card clothing for carding flats. 4,513,480, Cl. 19-113.000.

Biziere, Kathleen: *See*—
Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, 4,514,397, Cl. 514-247.000.

Bjornberg, Thomas. Method of and apparatus for the heat-treatment of a continuous web. 4,513,516, Cl. 34-41.000.

Black & Decker, Inc.: *See*—
Van Deursen, Gary E., 4,513,761, Cl. 132-41.000.

Blackwell, Gordon B.: *See*—
Billington, Richard W.; Blackwell, Gordon B.; and Prodger, Terence E., 4,514,342, Cl. 260-952.000.

Blank, Stuart L.; and Gordon, Eugene I., to AT&T Bell Laboratories. Single beam color CRT. 4,514,756, Cl. 358-66.000.

Blasko, Michal: *See*—
Rajsigl, Zdenek; Mladek, Milos; Blasko, Michal; and Smatana, Josef, 4,513,566, Cl. 57-406.000.

Blazejczak, Jean: *See*—
Dubreuil, Jean-Pierre; Blazejczak, Jean; and Tramier, Bernard, 4,514,272, Cl. 204-186.000.

Bloom, Stanley, to RCA Corporation. Mesh lens focus mask for a cathode-ray tube. 4,514,658, Cl. 313-402.000.

Blue Circle Industries PLC: *See*—
Inculet, Ion I., 4,514,289, Cl. 209-127.300.

Blumenthal, Jack L.; Ogren, John R.; Rutkowski, Eugene V.; and Appel, Marvin, to TRW Inc. Chemical laser pump including cryogenic and condensing means. 4,514,698, Cl. 330-4.300.

Board of Regents, The University of Texas System, The: *See*—
Kettman, John R.; and Norgard, Michael V., 4,514,498, Cl. 435-240.000.

Bock, Thomas J.: *See*—
Bhatia, Chandrakant; Toman, George M.; and Bock, Thomas J., 4,513,674, Cl. 112-220.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain saturated ketones, organoleptic uses thereof and process for preparing same. 4,513,757, Cl. 131-276.000.

Boehringer Mannheim GmbH: *See*—
Kaspar, Klaus P.; Becker, Jurgen; and Huber, Marion, 4,514,091, Cl. 366-130.000.

Bohlin, Leif R. Apparatus for measuring the swelling or shrinkage of a specimen in a fluid. 4,513,611, Cl. 73-150.00R.

Bohnenkamp, Heinrich, to SMS Schloemann-Siemag Aktiengesellschaft. Method of rolling wide strip starting material. 4,513,491, Cl. 29-527.700.

Boillot, Jean-Paul: *See*—
Simoneau, Raynald; Pelletier, Jean-Marc; Di Vincenzo, Antonio; and Boillot, Jean-Paul, 4,514,615, Cl. 219-132.000.

Boliden Aktiebolag: *See*—
Petersson, Stig A., 4,514,217, Cl. 75-10.00R.

Bondinell, William E.; Lafferty, John J.; and Zirkle, Charles L., to Smithkline Beckman Corporation. N-Substituted pyrrolidineacetic acids and their esters. 4,514,414, Cl. 514-422.000.

Bonnaud, Pierre L., to Societe d'Etudes de Machines Thermiques, S.E.M.T. Method of recovering energy in a power generator and power generator for carrying out the said method. 4,513,572, Cl. 60-618.000.

Bonney, Glenn E.; and Longsworth, Ralph C., to Air Products and Chemicals, Inc. Bakeable cryopump. 4,514,204, Cl. 62-41.000.

Booth, Donald S., to Donaldson Company, Inc. Self-cleaning air cleaner assembly with rotating filter element and inertial pre-cleaner. 4,514,193, Cl. 55-290.000.

Borden, Inc.: *See*—
Maxwell, John W.; and Vyse, Brian, 4,514,255, Cl. 162-9.000.

Borg, Arthur N.; and Mark, William J., to Zenith Electronics Corporation. Video monitor with automatic switching between RF and baseband video signals. 4,514,764, Cl. 358-181.000.

Borman, August H.; and Koivunen, Erkki A., to General Motors Corporation. Controlled valving for a dual pump system. 4,514,147, Cl. 417-288.000.

Bornemann, Dietrich E.: *See*—
Alteepping, Josef; and Bornemann, Dietrich E., 4,514,463, Cl. 428-286.000.

Borrelli, Nicholas F.; Morse, David L.; and Sachenik, Paul A., to Corning Glass Works. Integral photosensitive optical device and method. 4,514,053, Cl. 350-162.200.

Borrman, Bo; Hellman, Erik; Ode, Bengt; and van Santen, Aart, to AB ASEA-ATOM. Fuel assembly. 4,514,358, Cl. 376-362.000.

Boston University, Trustees of: *See*—
Sengupta, Sisir K., 4,514,330, Cl. 260-112.50R.

Bottigheimer, Andreas; Einsele, Karl-Heinz; and Henig, Klaus, to Robert Bosch GmbH. Device for measuring time intervals between a plurality of successive events. 4,514,835, Cl. 368-118.000.

Boueri, Elias T.: *See*—
Daubenmier, John A.; and Boueri, Elias T., 4,514,811, Cl. 364-424.100.

Bournonville, Jean-Paul: *See*—
Travers, Christine; Chan, Trinh D.; Snappe, Roger; and Bournonville, Jean-Paul, 4,514,515, Cl. 502-154.000.

Bourns, Inc.: *See*—
Creasman, Edwin A., 4,513,942, Cl. 249-95.000.

Bouwknegt, Thys: *See*—
Schutz, Hans U.; Raisin, Helmut; and Bouwknegt, Thys, 4,514,187, Cl. 8-531.000.

Boveri, Sergio: *See*—
Nisato, Dino; and Boveri, Sergio, 4,514,408, Cl. 514-212.000.

Bowden, Edgar A.; and Przybyl, Robert V., to Mobil Oil Corporation. Electronic circuit. 4,514,770, Cl. 360-69.000.

Bowen, John C., Jr., deceased; and by Bowen, Wiley C., executrix, to Baxter Corporation, The. Jacquard harness attachment mechanism. 4,513,789, Cl. 139-85.000.

Bowen, Rafael L., to American Dental Association Health Foundation. Method for obtaining strong adhesive bonding of composites to dentin enamel and other substrates. 4,514,527, Cl. 523-115.000.

Bowen, Wiley C., executrix: *See*—
Bowen, John C., Jr., deceased; and Bowen, Wiley C., executrix, 4,513,789, Cl. 139-85.000.

Bowers, Joseph S., Jr., to Eastman Kodak Company. Process for the preparation of 2,2,4-trimethyl-1,2-dihydroquinoline compounds. 4,514,570, Cl. 546-181.000.

Bowles, Robert W.: *See*—
Frantz, Virgil L.; and Bowles, Robert W., 4,513,604, Cl. 73-39.000.

Bowyer, William H.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,514,621, Cl. 235-400.000.

Boxmeyer, James G. Inflatable structural column. 4,514,447, Cl. 428-36.000.

Boyer, Don S.; and Freeborn, John C., to Honeywell Inc. Automatic teaching apparatus and method. 4,514,176, Cl. 434-224.000.

Boyle, Joseph P.: *See*—
Wairegi, Tom; Boyle, Joseph P.; and Gilbert, John B., 4,514,284, Cl. 208-140.000.

Bozler, Carl O.: *See*—
Fan, John C. C.; and Bozler, Carl O., 4,514,581, Cl. 136-255.000.

Braatz, James A.; McIntire, Kenneth R.; and Princler, Gerald L., to United States of America, Health and Human Services. Method for the identification and purification of human lung tumor-associated antigens (hLTAA) and clinical detection and determination of these antigens. 4,514,506, Cl. 436-518.000.

Brandenburger, Gary H.: *See*—
Heyman, Joseph S.; and Brandenburger, Gary H., 4,513,750, Cl. 128-660.000.

Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, to Bayer Aktiengesellschaft. Mixture of fungicidal agents. 4,514,402, Cl. 514-250.000.

Brandes, Wilhelm: *See*—
Jager, Gerhard; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,514,409, Cl. 514-383.000.
Kuhle, Engelbert; Hagemann, Hermann; Paul, Volker; and Brandes, Wilhelm, 4,514,417, Cl. 514-482.000.

Brands, George B.; and Hyllberg, Bruce E., to American Roller Company. Impression roller for limiting charge distribution. 4,513,660, Cl. 101-1.000.

Brasswer, Joseph L.: *See*—
Alperin, Marvin; and Brasswer, Joseph L., 4,513,940, Cl. 248-674.000.

Bratt, Richard G.: *See*—
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.

Braun AG: *See*—
Majthan, Rudolf; Stuhler, Rolf; Parsonage, Raymond G.; and Packham, Charles C., 4,514,618, Cl. 219-370.000.

Braun, Gunter; Kratt, Alfred; and Schleicher, Rolf, to Robert Bosch GmbH. Apparatus for regulating the idling speed of internal combustion engines. 4,513,711, Cl. 123-339.000.

Braun, Minel J., to Babcock & Wilcox Company, The. Oil field steam production and use. 4,513,733, Cl. 126-435.000.

Braun, Oskar, to Josef Willmes GmbH. Press for the expression of liquid from liquid-containing substances. 4,513,659, Cl. 100-117.000.

Braun, Wolfgang; Konrath, Karl; and Schwarz, Manfred, to Robert Bosch GmbH. Distributor injection pump for internal combustion engines. 4,513,715, Cl. 123-383.000.

Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., to National Distillers and Chemical Corporation. Electrical tree and water tree resistant compounds and polymer compositions containing the same. 4,514,535, Cl. 524-109.000.

Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., to National Distillers and Chemical Corporation. Silanes useful as anti-treeing additives. 4,514,536, Cl. 524-261.000.

Braxton, Henry G., Jr.: *See—*
Filbey, Allen H.; Braxton, Henry G., Jr.; and Meltsner, Bernard R., 4,514,577, Cl. 568-744.000.

Breitenstein, Werner: *See—*
Wenk, Paul; Breitenstein, Werner; and Baumann, Marcus, 4,514,415, Cl. 514-470.000.

Breithaupt, Albert, to Trube & Kings Kommanditgesellschaft. Sheet aluminum fireproof construction element. 4,513,552, Cl. 52-400.000.

Bresson, Clarence R.; and Mark, Harold W. Ore flotation and flotation agents for use therein. 4,514,293, Cl. 209-167.000.

Bridgestone Tire Company Limited: *See—*
Togashi, Minoru; Kato, Kenshiro; and Furuya, Shin-ichi, 4,513,802, Cl. 152-353.00R.

Bridon Limited: *See—*
Walton, John M., 4,514,058, Cl. 350-96.230.

Briefer, Dennis K.: *See—*
Lee, Shih-Ying; and Briefer, Dennis K., 4,513,831, Cl. 177-189.000.

Briones, Robert A.: *See—*
Haskal, Haim M.; and Briones, Robert A., 4,514,047, Cl. 350-394.000.

Bristley, Barbara E. Window shade mounted alarm system. 4,514,725, Cl. 340-691.000.

British Aerospace Public Limited Company: *See—*
Widdall, John A., 4,513,619, Cl. 73-455.000.

British Gas Corporation: *See—*
Reid, Donald J., 4,513,774, Cl. 137-392.000.

British Nuclear Fuels Limited: *See—*
Powell, Stanley, 4,514,110, Cl. 405-104.000.

British Steel Corporation: *See—*
Cook, William T.; Cristinacce, Michael; and Amin, Rajendra K., 4,514,236, Cl. 148-38.000.

Brogardh, Iorgny: *See—*
Adolfsson, Morgan; Brogardh, Iorgny; Hok, Bertil; and Ovren, Christer, 4,514,860, Cl. 455-612.000.

Bron Elektronik AG: *See—*
Haberthur-Heilig, Walter, 4,514,794, Cl. 362-439.000.

Brooker, Lenon G., to Westinghouse Electric Corp. Warp resistant laminates having a core impregnated with a mixture of phenolix resin and alkyl substituted phenol. 4,514,462, Cl. 428-285.000.

Brown, Duane G. Air intake anti-fouling stack. 4,514,201, Cl. 55-385.00B.

Brown, Harvey A.: *See—*
Huffman, William A.; and Brown, Harvey A., 4,514,045, Cl. 350-351.000.

Brown, Lyman J., to Bates Printing Specialties, Inc. Tear open tamper resistant game ticket assembly. 4,513,993, Cl. 283-103.000.

Brown, Michael A. Variable ventilation system for garments. 4,513,451, Cl. 2-69.000.

Brown, Sand T.: *See—*
Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., 4,514,427, Cl. 426-271.000.

Brown, William M.; and Lindquist, James R., to Astech, Inc. Power line carrier telephone extension system for full duplex conferencing between telephones and having telephone call hold capability. 4,514,594, Cl. 179-2.510.

Brown & Williamson Tobacco Corporation: *See—*
Manecke, Kurt A., 4,514,180, Cl. 493-41.000.
Reed, Steven P., 4,514,249, Cl. 156-553.000.

Bruch, Helmut, to Siemens Aktiengesellschaft. Method for manufacturing a waveguide switch including the formation of beads or crimps to align a pair of optical fibers. 4,514,034, Cl. 350-96.200.

Bruker Analytische Messtechnik GmbH: *See—*
Schneider, Lutz; and Guigas, Bruno, 4,514,822, Cl. 364-900.000.

Brusasca, Gianfranco; and Garzulano, Franco, to Rockwell-Rimoldi S.p.A. Stitch interrupting device for sewing machines. 4,513,673, Cl. 112-166.000.

Brusch, Josef: *See—*
Hanni, Manfred; and Brusch, Josef, 4,514,852, Cl. 375-1.000.

Brussee, Richard C.; and Dowd, Robert E., Jr., to Wm. Neundorfer & Co., Inc. Discharge electrode assembly for electrostatic precipitators. 4,514,780, Cl. 361-226.000.

Buchanan, Bob B.: *See—*
Buchanan, Frank L., Jr.; and Buchanan, Bob B., 4,514,362, Cl. 422-99.000.

Buchanan, Frank L., Jr.; and Buchanan, Bob B. Breath specimen mixer. 4,514,362, Cl. 422-99.000.

Buchanan, James D., to Square D Company. Multispeed interlocked push button switch mechanism. 4,514,601, Cl. 200-5.00E.

Buchel, Karl H.: *See—*
Jager, Gerhard; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,514,409, Cl. 514-383.000.

Buchner, Norbert, to Robert Bosch GmbH. Container lid with an opener device. 4,513,876, Cl. 220-270.000.

Buckholz, Lawrence, Jr.; Wilson, Richard A.; and Kleinberg, Roger, to International Flavors & Fragrances Inc. Mixed seasoning. 4,514,094, Cl. 366-160.000.

Buckholz, Lawrence, Jr.; Wilson, Richard A.; and Kleinberg, Roger, to International Flavors & Fragrances Inc. Enhancing the taste of a meat-flavored foodstuff. 4,514,431, Cl. 426-641.000.

Buckley, Arthur B. X-Ray film holder apparatus. 4,514,072, Cl. 354-337.000.

Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, to Dynamit Nobel Aktiengesellschaft. Profile strip, especially for the production of window or door frames. 4,514,449, Cl. 428-76.000.

Buehler Ltd.: *See—*
Doyle, Ralph R.; and Zimmer, Robert E., 4,513,894, Cl. 222-644.000.

Bull, Cyril A., to Metal Box, PLC. Containers. 4,513,872, Cl. 220-74.000.

Bunn, Dorrance P., Jr.: *See—*
Niccum, Phillip K.; and Bunn, Dorrance P., Jr., 4,514,285, Cl. 208-148.000.

Buonomo, Joseph P.: *See—*
Agnew, Palmer W.; Buonomo, Joseph P.; Houghtalen, Steven R.; Kellerman, Anne S.; Losinger, Raymond E.; and Valashinas, James W., 4,514,803, Cl. 364-200.000.

Burdett, Joseph W.: *See—*
Poynor, Paul C.; and Burdett, Joseph W., 4,514,282, Cl. 208-56.000.

Burdick, Charles L., to Hercules Incorporated. Froth flotation process. 4,514,292, Cl. 209-167.000.

Burgdorfer, Hans-Heribert: *See—*
Resz, Raoul; Alberts, Heinrich; Burgdorfer, Hans-Heribert; and El Sayed, Aziz, 4,514,546, Cl. 525-57.000.

Burki, Jorg: *See—*
Bisquolm, Werner; Burki, Jorg; and Teuscher, Othmar, 4,513,480, Cl. 19-113.000.

Burks, Gary E.: *See—*
Chezem, Jimmie A.; and Burks, Gary E., 4,514,000, Cl. 292-338.000.

Burlington Industries, Inc.: *See—*
Dillon, Douglas M., 4,513,791, Cl. 139-194.000.
Pritchard, Frederick D.; and Pittard, John E., 4,514,092, Cl. 366-136.000.

Burroughs Corporation: *See—*
Loskorn, Richard A.; Biehl, Philip D.; and Catiller, Robert D., 4,514,824, Cl. 364-900.000.
Ragle, Herbert U.; and DeMoss, Dean, 4,514,778, Cl. 360-133.000.
Rice, Rex, 4,514,023, Cl. 339-17.0CF.
Yum, Daniel, 4,514,650, Cl. 307-466.000.

Burton, Thomas M.; and Kucharska, Helena Z., to Fiberglas Canada Inc. Method of producing polyester foams using borohydride dispersions. 4,514,523, Cl. 521-85.000.

Bussey, Harry, Jr. Apparatus for making billowed filling elements for packaging. 4,514,165, Cl. 425-311.000.

Bussey, Harry, Jr. Loose fill packing element of hooked configuration. 4,514,453, Cl. 428-159.000.

Bussian, Alfred E.: *See—*
Richter, Albert P., Jr.; Campsey, Ronald L.; Paap, Hans J.; and Bussian, Alfred E., 4,514,627, Cl. 250-255.000.

Butler, Robert F. High efficiency flat plate solar energy collector. 4,513,734, Cl. 126-439.000.

Byerley, Thomas J.: *See—*
Chappelow, Cecil C., Jr.; and Byerley, Thomas J., 4,513,828, Cl. 173-139.000.

Byron, Stephen J.: *See—*
Hattrich, George A.; and Byron, Stephen J., 4,514,539, Cl. 524-436.000.

C-I-L Inc.: *See—*
Rodriguez, Philip A. B., 4,514,318, Cl. 252-315.300.

Cabi-Akman, Robert, to Nestec, S.A. Continuous transport method and apparatus. 4,513,882, Cl. 222-56.000.

Cade, J. Weldon; and Stein, Stanley I., to United States of America, Army. Apparatus for transporting and articulating an article. 4,514,135, Cl. 414-682.000.

Cagle, J. Douglas: *See—*
Olson, Harold D.; Addison, Charles; and Cagle, J. Douglas, 4,513,476, Cl. 17-44.100.

Cagle's, Inc.: *See—*
Olson, Harold D.; Addison, Charles; and Cagle, J. Douglas, 4,513,476, Cl. 17-44.100.

Calder, Robert E. Point-of-purchase advertising for shopping carts. 4,513,983, Cl. 280-33.99A.

Cambridge Instruments Limited: *See—*
Lawson, Peter J., 4,514,634, Cl. 250-397.000.

Campbell, Henry F., to William H. Rorer, Inc. Cardiotonic 5-heteroaryl-pyridone. 4,514,400, Cl. 514-252.000.

Campbell, James H. Pressure foot for machine tool. 4,514,122, Cl. 409-190.000.

Campbell, Thomas G., to United States of America, National Aeronautics and Space Administration. Aircraft rotor blade with passive tuned tab. 4,514,143, Cl. 416-23.000.

Campbell, Willis R. Solar heat collector. 4,513,731, Cl. 126-432.000.

Campman, Keith S.; and Ernst, William B., to Dow Chemical Company, The. Flow meter and densitometer apparatus and method of operation. 4,513,625, Cl. 73-861.720.

Campsey, Ronald L.: *See—*
Richter, Albert P., Jr.; Campsey, Ronald L.; Paap, Hans J.; and Bussian, Alfred E., 4,514,627, Cl. 250-255.000.

Canadian Patents and Development Limited: *See—*
Szabo, Ervin I., 4,514,227, Cl. 106-38.200.

Canfield, Robert E.; Ehrlich, Paul H.; and Moyle, William R., to Columbia University in the City of New York, The Trustees of. Monoclonal antibody mixtures and use thereof for enhanced sensitivity immunoassays. 4,514,505, Cl. 436-500.000.

Cannella, Vincent D.: *See—*
Izu, Masatsugu; and Cannella, Vincent D., 4,514,583, Cl. 136-259.000.
Cannondale Corporation: *See—*
Graham, David R., 4,513,985, Cl. 280-281.00R.
Canon Kabushiki Kaisha: *See—*
Kawai, Tohru, 4,514,039, Cl. 350-255.000.
Tamura, Yasuyuki, 4,514,081, Cl. 355-14.00R.
Tanaka, Kano; Ando, Yoshio; and Yanagawa, Hitoshi, 4,514,641, Cl. 250-570.000.
Tateoka, Masamichi; and Ogata, Yukihiko, 4,514,626, Cl. 250-235.000.
Ushiyama, Hisayuki; Ochi, Hisayuki; Miyamae, Tatsuo; and Wakamiya, Katsutoshi, 4,514,485, Cl. 430-106.600.
Cantamessa, Lorenzo, to DAMP S.p.A. Damping core articulated joint for mechanical articulated arm systems subject to vibrations. 4,513,954, Cl. 267-141.300.
Cantwell, Gill. Apparatus for reading/writing data on magnetic disc. 4,514,772, Cl. 360-75.000.
Canusa Coating Systems Limited: *See—*
Hansen, Ralph H., 4,514,533, Cl. 524-89.000.
Caprino, Joseph C.: *See—*
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Carl Still G.m.b.H. & Co. KG, Firma: *See—*
Laufhutte, Dieter, 4,514,375, Cl. 423-573.00G.
Carlfors Bruk E Bjorlund & Co.: *See—*
Danieli, Sten H., 4,513,843, Cl. 188-62.000.
Carlsen, W. John; and Melman, Paul, to GTE Laboratories Incorporated. Polarization-insensitive optical switch and multiplexing apparatus. 4,514,046, Cl. 350-385.000.
Carlson, John H.; and Agbay, Anthony J., to Omco Inc. Spring security lock. 4,513,591, Cl. 70-34.000.
Carrera, Jacinto P., to Polaroid Corporation. Thin blade members having magnetic repelling forces therebetween. 4,514,065, Cl. 354-235.100.
Carrier Corporation: *See—*
Jennings, William B.; Shelton, Edward B.; and Hayes, Richmond S., Jr., 4,513,586, Cl. 62-263.000.
Carter Controls, Inc.: *See—*
Topinka, George F., 4,514,148, Cl. 417-403.000.
Caruso, Anthony M. Hand grenade safety device. 4,513,667, Cl. 102-487.000.
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Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,514,621, Cl. 235-400.000.
Castagnola, Virginio; Frigerio, Giuliano E.; and Pellicciari, Roberto, to Lehner AG. New derivatives of biliary acids, process for the production thereof and pharmaceutical compositions containing the same. 4,514,393, Cl. 260-397.100.
Castner, John F., Sr.; and Sheps, Martin I. Automatic return variable adjustable wrench. 4,513,642, Cl. 81-53.00R.
Caterpillar Tractor Co.: *See—*
Balzer, David J.; Dennison, Thomas M.; Getz, Marvin G.; and Oestmann, Eldon D., 4,514,014, Cl. 305-10.000.
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Loskorn, Richard A.; Biehl, Philip D.; and Catiller, Robert D., 4,514,824, Cl. 364-900.000.
Caudel, Edward R.; Swoboda, Gary L.; Magar, Surendar S.; McDonough, Kevin C.; and Leigh, Antony W., to Texas Instruments Incorporated. Microcomputer with table-read and table-write instructions. 4,514,801, Cl. 364-200.000.
Cavanaugh, Robert J., to Du Pont de Nemours, E. I., and Company. Tetrafluoroethylene polymer dispersions. 4,514,537, Cl. 524-265.000.
CBS Inc.: *See—*
Mucaro, Salvatore A.; and Tilbor, Neil, 4,513,966, Cl. 273-68.00B.
Celanese Corporation: *See—*
Conciatori, Anthony B.; Choe, Eui W.; and Farrow, Gerald, 4,514,553, Cl. 526-323.100.
Gillberg-LaForce, Gunilla E., 4,514,438, Cl. 427-54.100.
Roth, Douglas D.; and Ethridge, Fredrick A., 4,514,350, Cl. 264-176.00F.
Cengel, John A.: *See—*
Cousineau, Thomas J.; and Cengel, John A., 4,514,190, Cl. 44-70.000.
Centrifugal Piston Expander, Inc.: *See—*
Dibrell, Edwin W., 4,513,575, Cl. 62-86.000.
Dibrell, Edwin W.; and Wood, Charles D., 4,513,576, Cl. 62-87.000.
Centronics Data Computer Corp.: *See—*
Spitsbergen, Merlin D., 4,513,898, Cl. 226-44.000.
Wang, Cheng-hua, 4,513,496, Cl. 29-606.000.
Centrum Mechanizacji Gornictwa "Komag" : *See—*
Szczesny, Adolf; Kleinert, Reiner; Jedo, Antoni; and Gutorski, Zygmunt, 4,514,300, Cl. 210-342.000.
Cerenzia, Walter S.: *See—*
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Cermignani, Justine D.; and Ganz, Frederick M., to Grumman Aerospace Corporation. Array antenna system with low coupling elements. 4,514,734, Cl. 343-708.000.
Chabrier, Gilbert, to Spie-Batignolles; and Coflexip. Method for reinforcing a hollow body made by winding a profiled section. 4,514,245, Cl. 156-161.000.
Chamberlain, Jerry E., to Siemens Medical Laboratories, Inc. Ionization chamber for measuring the profile of a radiation field of electron or X-ray radiation. 4,514,633, Cl. 250-374.000.
Chamberlain, John C.: *See—*
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Chambers, Allan K.: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Chambers, Allan K., 4,514,096, Cl. 374-27.000.
Chambers, Pamela A.; and Weinstock, Joseph, to Smithkline Beckman Corporation. Anti-hypertensive use of 1-(4'-branched alkylsulfonylphenyl)-6-chloro-7,8-dihydroxy-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,514,394, Cl. 514-213.000.
Champion International Corporation: *See—*
Cooley, James, 4,514,454, Cl. 428-195.000.
Schillinger, Joseph F., 4,513,863, Cl. 206-264.000.
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Travers, Christine; Chan, Trinh D.; Snappe, Roger; and Bournonville, Jean-Paul, 4,514,515, Cl. 502-154.000.
Chang, Yi M.; and Fenwick, James R. Liquid tank weld cavitation protection. 4,513,906, Cl. 228-184.000.
Chankov, Dyanko V.: *See—*
Tzvetanov, Plamen V.; Chankov, Dyanko V.; Nikolov, Orlin A.; and Ivanov, Alexander L., 4,513,902, Cl. 228-25.000.
Chao, Hu H., to International Business Machines Corporation. Word line decoder and driver circuits for high density semiconductor memory. 4,514,829, Cl. 365-189.000.
Chappelow, Cecil C., Jr.; and Byerley, Thomas J., to Conmaco, Inc. Pile driving cap block cushion assembly. 4,513,828, Cl. 173-139.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Coccoli, Joseph D., 4,514,088, Cl. 356-350.000.
Charruau, Stephane, to Thomson-CSF. Integrated-circuit support device employed in a system for selecting high-reliability integrated circuits. 4,514,786, Cl. 361-413.000.
Chemische Werke Huels, AG: *See—*
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Scozzafava, Michael; Chen, Chin H.; Reynolds, George A.; and Perlstein, Jerome H., 4,514,481, Cl. 430-58.000.
Chen, Ching H.: *See—*
Chen, Jiann; J.; and Chen, Ching H., 4,513,453, Cl. 2-150.000.
Chen, Hsing-Yao, to RCA Corporation. Inline electron gun for high resolution color display tube. 4,514,659, Cl. 313-412.000.
Chen, Jiann; J.; and Chen, Ching H. Pre-tied necktie. 4,513,453, Cl. 2-150.000.
Chen, Keith A., to Wisconsin Gas Company. Automatic gas shutoff valve. 4,513,776, Cl. 137-498.000.
Chen, Kun S. Safety receptacle. 4,514,715, Cl. 337-113.000.
Cheng, Tai C.; and McKinley, Bruce A., to Raychem Corporation. Conductive polymers exhibiting PTC characteristics. 4,514,620, Cl. 219-553.000.
Chestnut, Raymond; Colussi, John J.; Frost, Donald J.; Keen, William E., Jr.; and Raduta, Margaret C., to Conversion Systems, Inc. Method of stabilizing organic waste. 4,514,307, Cl. 210-751.000.
Chevron Research Company: *See—*
Hubred, Gale L., 4,514,368, Cl. 423-54.000.
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,514,369, Cl. 423-54.000.
Chezem, Jimmie A.; and Burks, Gary E., to Plateau Products Corporation. Spring biased door stop having a vertically movable tension member. 4,514,000, Cl. 292-338.000.
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Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,513,958, Cl. 271-187.000.
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Chisso Corporation: *See—*
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Chiusolo, Louis L.: *See—*
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Choe, Eui W.: *See—*
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Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., to Garrett Corporation, The. Supercharged diesel engine air inflow control system. 4,513,730, Cl. 123-564.000.
Chugai Denki Kogyo K.K.: *See—*
Shibata, Akira, 4,514,238, Cl. 148-431.000.
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Meyer, Willy; and Fory, Werner, 4,514,212, Cl. 71-93.000.
Schutz, Hans U.; Raisin, Helmut; and Bouwknegt, Thys, 4,514,187, Cl. 8-531.000.
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Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.
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Clarke, Peter J.: *See—*
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Cliff, John O.; and Edwards, James, to Pittsburgh-Des Moines Corporation. Multi-purpose elevated water storage facilities. 4,513,547, Cl. 52-194.000.
Closmann, Philip J.; Waxman, Monroe H.; and Deeds, Charles T., to Shell Oil Company. Process for separating and converting heavy oil asphaltenes in a field location. 4,514,283, Cl. 208-86.000.
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., to Texas Instruments Incorporated. Magnetic bubble memory sense amplifier having a pulsed current mode of operation. 4,514,828, Cl. 365-8.000.
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Coates, J. Randall, to Smith International, Inc. Chip relief for rock bits. 4,513,829, Cl. 175-339.000.
Coates, William J., to Smith Kline & French Laboratories Limited. 5-(4-Nitrophenyl)-2(1H)-pyrazinones. 4,514,568, Cl. 544-408.000.
Cobb, Harold W.: *See—*
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Coccoli, Joseph D., to Charles Stark Draper Laboratory, Inc., The. Single-coupler guided-wave passive resonant-ring optical-gyro instrument. 4,514,088, Cl. 356-350.000.
Coch, Lester; and Rauch, Kurt, to Waldes Kohinoor, Inc. Method and apparatus for delivery of a powder. 4,514,093, Cl. 366-138.000.
Coe, Everett L., Jr., to Joy Manufacturing Company. Discharge electrode. 4,514,195, Cl. 55-152.000.
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Coker, Melvin D.; and Wegner, John W., to Koppl Company Inc. Flange system for pipeline plugging. 4,513,788, Cl. 138-89.000.
Cole, Frank J.; and Hahn, Henry N., to Republic Steel Corporation. Method and apparatus for electroplating. 4,514,266, Cl. 204-28.000.
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Compagnie Internationale Pour L'Informatique Cii/Honeywell Bull (Societe Anonyme): *See—*
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Barber, Gerald L.; and Comstock, Wayne P., 4,513,960, Cl. 272-44.000.
Conciatori, Anthony B.; Choe, Eui W.; and Farrow, Gerald, to Celanese Corporation. Thermoset resin produced from anisotropic heat-curable acrylic-terminated monomers. 4,514,553, Cl. 526-323.100.
Condrac, Edward J., to Elliott Turbomachinery Co., Inc. Parallel valve rotary machine control system. 4,514,643, Cl. 290-40.00C.
Conley, Richard W.: *See—*
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Poynor, Paul C.; and Burdett, Joseph W., 4,514,282, Cl. 208-56.000.
Conrad, Richard A. Electromagnetic actuator. 4,514,710, Cl. 335-230.000.
Contartese, Giulio; and Dietz, Joachim, to Thomson-CSF; and Moog S.A.R.L. Electrohydraulic servovalve device. 4,513,782, Cl. 137-625.630.
Continental Gummi-Werke Aktiengesellschaft: *See—*
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Cook, Norman, to Lever Brothers Company. Inserts for squeeze bottles. 4,513,914, Cl. 239-121.000.
Cook, William T.; Cristinacce, Michael; and Amin, Rajendra K., to British Steel Corporation. Method of manufacturing an article of non-magnetic austenitic alloy steel for a drill collar. 4,514,236, Cl. 148-38.000.
Cooley, James, to Champion International Corporation. Heat dissipating decorative laminate. 4,514,454, Cl. 428-195.000.
Cooper, Donald C. Combined refrigeration and heating circuits. 4,513,580, Cl. 62-183.000.
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Cousineau, Thomas J.; and Cengel, John A., to Standard Oil Company (Indiana). Synthetic fuel composition. 4,514,190, Cl. 44-70.000.
Covington, Arthur K.; and Sibbald, Alastair, to Corning Glass Works. Microelectronic sensor assembly. 4,514,276, Cl. 204-415.000.
Cramer, Barry G.; and Cramer, Roy A., to Air-O-Lator Corporation. Aspirating horizontal mixer. 4,514,343, Cl. 261-37.000.
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Crepeau, Allen E., to Uniroyal, Inc. Method of protecting a roof. 4,514,442, Cl. 427-140.000.
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Cruickshank, Philip A.; DiSanzo, Carmine P.; Kondo, Kiyosi; and Kono, Hiromichi, to FMC Corporation; and Kanagawa Chemical Laboratory, Ltd. Nematicidal use of hydrazinecarboxamides and carbothioamides. 4,514,419, Cl. 514-521.000.

Crum, Glen F., to El Paso Products Company. Refining of tertiary butylstyrene. 4,514,261, Cl. 203-9.000.

Cser, Gyula, to Autoipari Kutato es Fejleszto Vallalat. Intake gas resonance system for internal combustion engines. 4,513,699, Cl. 123-52.0MB.

Culling, Michael J.; and Deefholts, Benedict M. M., to Gunson's Sortex Limited. Sorting machine. 4,513,868, Cl. 209-581.000.

Cuming, Kenneth J. Moisture sensing and control device. 4,513,608, Cl. 73-73.000.

Cummings, Robert, to U.S. Clinical Products, Inc. Method of making a flexible sterile closure system for containers. 4,514,248, Cl. 156-268.000.

Curry, John J. Dispensing cap. 4,513,888, Cl. 222-153.000.

Curtis, Douglas R. Variable filter circuit. 4,514,704, Cl. 330-305.000.

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Bishop, Timothy E.; Stanton, Joseph J.; Pasternack, George; and Cutler, Orvid R., Jr., 4,514,037, Cl. 350-96.230.

Cutts, William H.; and Seydel, Scott O. Method for splitting textile warp yarn sheets. 4,513,485, Cl. 28-181.000.

Cvacho, Daniel S. Methods of necking-in and flanging tubular can bodies. 4,513,595, Cl. 72-43.000.

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Czajkowski, Norman. Golf cart. 4,513,989, Cl. 280-645.000.

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Dai Nippon Insatsu Kabushiki Kaisha: *See—*
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Dai Nippon Toryo Co., Ltd.: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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Daiwa Seiko Co., Ltd.: *See—*
Yamaguchi, Nobuyuki, 4,513,925, Cl. 242-84.50A.

Dale, Jim E., to United States of America, Agriculture. Rope wick applicator. 4,513,528, Cl. 47-1.500.

Daly, Jeffery E., to Reed Rock Bit Company. Friction bearing assembly having a series of rings constituting a bushing therefor. 4,514,097, Cl. 384-93.000.

Damani, Nalinkant C.; Bhagat, Haresh G.; and McElhaney, Ramon L., to Alcon Laboratories, Inc. Anti-acne compositions. 4,514,385, Cl. 424-81.000.

DAMP S.p.A.: *See—*
Cantamessa, Lorenzo, 4,513,954, Cl. 267-141.300.

Damson, Eckart; Latsch, Reinhard; Linder, Ernst; Rieger, Franz; and Schussler, Rainer, to Robert Bosch GmbH. Combination sparkplug and combustion process sensor. 4,514,656, Cl. 313-11.500.

Dan T. Moore Co.: *See—*
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Dana Corporation: *See—*
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Danfoss A/S: *See—*
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Dany, Franz-Josef: *See—*
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Darcangelo, Charles M.; Montierth, Max R.; and Ni, Yang-Chou M., to Corning Glass Works. Fiber cooling apparatus. 4,514,205, Cl. 65-12.000.

Darves-Bornoz, Yves; Melvin, George E.; Ryan, Michael G.; and Saylor, Dennis L., to International Business Machines Corporation. Particle detection system. 4,513,613, Cl. 73-159.000.

Data General Corporation: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.

Daubenmier, John A.; and Boueri, Elias T., to Ford Motor Company. Forward drive release system for automatic transmission. 4,514,811, Cl. 364-424.100.

Daubon, Charles E. Level clamp apparatus. 4,513,955, Cl. 269-41.000.

Davi, Horace: *See—*
Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, 4,514,397, Cl. 514-247.000.

Davich, Luke J.; Erickson, Jack A.; and Proulx, Richard W., to Federal Cartridge Corporation. Shotshell casing with partially telescoped basewad. 4,514,352, Cl. 264-230.000.

Davidsmeyer, Walter F. Injection nozzle with direct electric heating. 4,514,160, Cl. 425-143.000.

Davies, Robert B.: *See—*
Dotson, Robert N.; Davies, Robert B.; and Miller, Ira, 4,514,648, Cl. 307-350.000.

Davis, Burton I.: *See—*
Spurling, Robert A.; Davis, Burton I.; and Taylor, Norman G., 4,513,537, Cl. 51-71.000.

Davis, Burtron H.: *See—*
Baumert, Kenneth L.; Sagues, Alberto A.; Davis, Burtron H.; and Schweighardt, Frank K., 4,514,281, Cl. 208-47.000.

Davis, Calvin B.: *See—*
Gaffar, Abdul; Davis, Calvin B.; and Vasers, Margita L., 4,514,382, Cl. 424-54.000.

Davis, Edward L.; and Mowatt-Larssen, Erling, to General American Transportation Corporation. Tank with selectively variable automatic outage. 4,513,795, Cl. 141-35.000.

Davis, Roland O., to Santa Barbara Research Center. Low friction pivot. 4,514,016, Cl. 308-2.00A.

Davy, Philip A., to APV International Limited. Flow control valve. 4,513,770, Cl. 137-315.000.

Dayus, Lloyd G. Damper and blade therefor. 4,513,655, Cl. 98-121.200.

Deal, Samuel B.; and Cushman, Barry M., to RCA Corporation. Method of making a coded marking in a glass workpiece employing a trisilicate coating and product thereof. 4,514,456, Cl. 428-204.000.

Dean, Barry D., to Atlantic Richfield Company. Methylmethacrylate/-phenylmaleimide copolymer and styrene/maleic anhydride copolymer. 4,514,543, Cl. 525-205.000.

Dean, Raymond H.: *See—*
Humphreys, Norman G.; and Dean, Raymond H., 4,513,574, Cl. 62-59.000.

DeAngelis, Thomas P., to Corning Glass Works. Electrolytic Al production with reaction sintered cermet component. 4,514,268, Cl. 204-67.000.

Deeds, Charles T.: *See—*
Closmann, Philip J.; Waxman, Monroe H.; and Deeds, Charles T., 4,514,283, Cl. 208-86.000.

Deefholts, Benedict M. M.: *See—*
Culling, Michael J.; and Deefholts, Benedict M. M., 4,513,868, Cl. 209-581.000.

DeGraaff, Robert; and Langeiri, Michael. Ride-on toy vehicle with front wheel drive and outboard front wheels. 4,513,981, Cl. 280-1.11R.

Degussa Aktiengesellschaft: *See—*
Kerner, Dieter; Kleinschmit, Peter; Parkhouse, Alan; and Wolff, Siegfried, 4,514,231, Cl. 106-309.000.

Deibert, Richard L.; and Mikeal, Gary L. Tamper indicating and theft preventing electrical meter. 4,514,683, Cl. 324-110.000.

Deisenroth, Werner: *See—*
Starp, Franz; and Deisenroth, Werner, 4,514,066, Cl. 354-273.000.

De Jong, Walter J. Method and apparatus for feeding livestock. 4,513,687, Cl. 119-27.000.

Delepine, Jean C. Flow spout for liquid. 4,513,458, Cl. 4-192.000.

De Los Santos, Armando; King, James D.; Rollwitz, William L.; Matzkanin, George A.; and Hornung, Phillip A., to Southwest Research Institute. Baggage inspection apparatus and method for determining presences of explosives. 4,514,691, Cl. 324-301.000.

Demi, Roy C. Apparatus adaptable for treating animals. 4,513,741, Cl. 128-205.250.

Demko, David J. Pigeon cage assembly. 4,513,686, Cl. 119-15.600.

DeMoss, Dean: *See—*
Ragle, Herbert U.; and DeMoss, Dean, 4,514,778, Cl. 360-133.000.

Denholm, William T.; Floyd, John M.; Errington, William J.; and Parry, Anthony N., to Mount Isa Mines Limited. High intensity lead smelting process. 4,514,222, Cl. 75-77.000.

Dennison, Thomas M.: *See—*
Balzer, David J.; Dennison, Thomas M.; Getz, Marvin G.; and Oestmann, Eldon D., 4,514,014, Cl. 305-10.000.

Dentsply Limited: *See—*
Billington, Richard W.; Blackwell, Gordon B.; and Prodger, Terence E., 4,514,342, Cl. 260-952.000.

Dentsply Research & Development Corp.: *See—*
Dougherty, Emery W.; Heyde, John B.; Bennett, Richard J.; Smith, Roy L.; Tateosian, Louis H.; and Eden, George T., 4,514,174, Cl. 433-226.000.

de Saint Martin, Lucien, to Institut de Recherches de la Siderurgie Francaise. Method of producing molten metal. 4,514,219, Cl. 75-43.000.

DeSoto, Inc.: *See—*
Bishop, Timothy E.; Stanton, Joseph J.; Pasternack, George; and Cutler, Orvid R., Jr., 4,514,037, Cl. 350-96.230.
Shay, Gregory D.; Eldridge, Emmojean; and Kail, James E., 4,514,552, Cl. 526-301.000.

Deutsch, Leslie J.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,513,651, Cl. 84-1.220.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Generation of anharmonic overtones in a musical instrument by additive synthesis. 4,513,651, Cl. 84-1.220.

Deutsche Solvay Werke GmbH: *See—*
Kaeufer, Helmut; Rautenberg, Lutz; and Pahl, Joachim, 4,514,351, Cl. 264-210.200.

Deveau, Paul J.; Greenberg, Paul B.; and Paolillo, Roger E., to United Technologies Corporation. Gas turbine engine active clearance control. 4,513,567, Cl. 60-39.020.

Develle, Guy; and Martin, Gerard, to Sofiltra Poelman. Apparatus for pressurization and filtration of contaminated air. 4,514,198, Cl. 55-337.000.

Devuyst, Eric A.; and Ettel, Victor A., to INCO Limited. Process of producing cobalt-containing solutions and salts. 4,514,372, Cl. 423-493.000.

Dhabhar, Dadi J.; and Schmidt, Nicholas F., to Richardson-Vicks Inc. Hydrophilic denture adhesive. 4,514,528, Cl. 523-120.000.

Dhainaut, Alain: *See—*
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,398, Cl. 514-245.000.
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,399, Cl. 514-241.000.

Diafloc Co., Ltd.: *See—*
Furuno, Akihisa; Inukai, Kenichi; and Ogawa, Yasuo, 4,514,551, Cl. 526-233.000.

Diamond, Craig J.: *See—*
Tegeler, John J.; and Diamond, Craig J., 4,514,410, Cl. 514-221.000.

Diamond Shamrock Chemicals Company: *See—*
Papalos, John G.; and Sinka, Joseph V., 4,514,189, Cl. 44-51.000.

Dias, Francisco J.: *See—*
Luhleich, Hartmut; and Dias, Francisco J., 4,514,346, Cl. 264-29.500.

Dibrell, Edwin W., to Centrifugal Piston Expander, Inc. Centrifugal piston expander. 4,513,575, Cl. 62-86.000.

Dibrell, Edwin W.; and Wood, Charles D., to Centrifugal Piston Expander, Inc. Gas pressure operated power source. 4,513,576, Cl. 62-87.000.

Diesel Kiki Company, Ltd.: *See—*
Nakamura, Teruo; and Fukuda, Shoichi, 4,514,157, Cl. 418-259.000.

Dietz, Joachim: *See—*
Contartese, Giulio; and Dietz, Joachim, 4,513,782, Cl. 137-625.630.

Dillon, Douglas M., to Burlington Industries, Inc. Leno selvaging and stretch nozzle system. 4,513,791, Cl. 139-194.000.

DiNardo, Victor M., to United States Steel Corporation. Modified polypropylene for film. 4,514,534, Cl. 524-108.000.

DiSanzo, Carmine P.: *See—*
Cruickshank, Philip A.; DiSanzo, Carmine P.; Kondo, Kiyosi; and Kono, Hiromichi, 4,514,419, Cl. 514-521.000.

Display Interface Corporation: *See—*
Whetstone, Albert L.; Shaklee, Kerry L.; and Modjallal, Khosrow, 4,514,726, Cl. 340-710.000.

Di Vincenzo, Antonio: *See—*
Simoneau, Raynald; Pelletier, Jean-Marc; Di Vincenzo, Antonio; and Boillot, Jean-Paul, 4,514,615, Cl. 219-132.000.

Doherty, John, Jr., to Texas Instruments Incorporated. Single terminal snap acting thermal switch. 4,514,717, Cl. 337-365.000.

Dolenc, Anton; and Rollenitz, Leopold, to Steyr-Daimler-Puch Aktiengesellschaft. Method of adjusting a plurality of fuel injection units associated with respective cylinders of a multi-cylinder diesel engine. 4,513,714, Cl. 123-357.000.

Domain, Inc.: *See—*
Rebhan, Herbert J., 4,514,425, Cl. 426-93.000.

Dominion Engineering Works Limited: *See—*
Harris, Thomas E., 4,513,599, Cl. 72-238.000.

Domtar Inc.: *See—*
Grignon, Jacques, 4,514,448, Cl. 428-68.000.

Donaldson Company, Inc.: *See—*
Booth, Donald S., 4,514,193, Cl. 55-290.000.

Donat Flamanc Inc.: *See—*
Giguere, Jean-Paul, 4,513,536, Cl. 49-470.000.

Donzis, Byron A. Shock absorbing athletic equipment. 4,513,449, Cl. 2-2.000.

Dotson, Robert N.; Davies, Robert B.; and Miller, Ira, to Motorola, Inc. Current sense circuit for a bubble memory voltage booster. 4,514,648, Cl. 307-350.000.

Dotson, Ronald L.: *See—*
Woodard, Kenneth E., Jr.; and Dotson, Ronald L., 4,513,904, Cl. 228-116.000.

Dougherty, Emery W.; Heyde, John B.; Bennett, Richard J.; Smith, Roy L.; Tateosian, Louis H.; and Eden, George T., to Dentsply Research & Development Corp. Methods for posterior dental restoration employing light curable packable compositions. 4,514,174, Cl. 433-226.000.

Doughty, Elexsis D., to Procter & Gamble Company, The. Bleach cake in an improved bleach resistant particle retaining means. 4,513,459, Cl. 4-222.000.

Dover, Donald L.; and Leitch, William J., to Robbins & Myers, Inc. Ceiling fan and outlet box support. 4,513,994, Cl. 248-544.000.

Dow Chemical Company, The: *See—*
Campman, Keith S.; and Ernst, William B., 4,513,625, Cl. 73-861.720.
Henslee, Walter W.; and Foster, Stephen I., 4,514,518, Cl. 502-229.000.
Hunter, Douglas L., 4,514,380, Cl. 423-417.000.
Inoue, Kimio; Hoyer, Gale G.; and Bates, Stanley I., 4,514,574, Cl. 564-424.000.

Dowd, Robert E., Jr.: *See—*
Brussee, Richard C.; and Dowd, Robert E., Jr., 4,514,780, Cl. 361-226.000.

Dowzall, Martin E.; and Houssian, Vazgen J., to Esselte Pendaflex Corporation. Layout boards. 4,513,511, Cl. 33-447.000.

Doyle, Ralph R.; and Zimmer, Robert E., to Buehler Ltd. Abrasive slurry supply system for use in metallographic sample preparation. 4,513,894, Cl. 222-644.000.

Draiswerke GmbH: *See—*
Durr, Herbert, 4,514,833, Cl. 366-207.000.

Dravnieks, Konstantins: *See—*
Schneider, Steven L.; and Dravnieks, Konstantins, 4,513,809, Cl. 165-54.000.

Dresser Industries, Inc.: *See—*
Ippolito, Rodolfo M., 4,514,098, Cl. 384-95.000.
Johnson, Wade M., Jr.; and Angehrn, Jorg A., 4,514,809, Cl. 364-422.000.
Kleeb, Thomas R.; and Kleeb, Linda L., 4,514,531, Cl. 524-5.000.

Dricot, Jean-Marie, to Mirodan, Ets. Louis D'Haene & Sons. Cutting vitrous sheet corners. 4,513,649, Cl. 83-883.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Pesticidal aryl N-(alkylthio-phosphorothio)acyl-N-alkylcarbamates. 4,514,392, Cl. 514-148.000.

Dual Filtrex, Inc.: *See—*
Fine, Max, 4,513,590, Cl. 68-18.00C.

Dubiel, Oswald, to Wagner, Paul-Heinz. Rotary tool. 4,513,827, Cl. 173-12.000.

Dubreuil, Jean-Pierre; Blazejczak, Jean; and Tramier, Bernard, to Societe Nationale Elf Aquitaine (Production). Process and device for breaking stabilized emulsions, especially oil-water emulsions. 4,514,272, Cl. 204-186.000.

Dubrin, James W., to United States of America, Energy. Method for isotope enrichment by photoinduced chemiionization. 4,514,363, Cl. 423-3.000.

Dufour, Jacques. Automatic machine for coiling down cable. 4,513,922, Cl. 242-54.00R.

Duhault, Jacques: *See—*
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,398, Cl. 514-245.000.
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,399, Cl. 514-241.000.

Duncan Electric Company, Inc.: *See—*
Mayfield, Glenn A., 4,514,686, Cl. 324-142.000.

Dunn, Charles S., to Owens-Corning Fiberglas Corporation. Arc circuit electrodes for arc glass-melting furnace. 4,514,851, Cl. 373-27.000.

Dupin, Thierry: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
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Eckelt, Peter; and Taylor, James A., Jr., 4,513,647, Cl. 83-203.000.
Frances, Arnold, 4,514,541, Cl. 524-514.000.
Hwang, Sang-Hak, 4,514,455, Cl. 428-198.000.
LeStrange, Raymond J.; Bayless, John H., Jr.; and Schoenberg, Allan R., 4,514,492, Cl. 430-600.000.
Rorer, Morris P., 4,514,211, Cl. 71-92.000.
Rorer, Morris P., 4,514,214, Cl. 71-93.000.
Siuta, Vincent P., 4,514,321, Cl. 252-512.000.
Swoboda, Thomas J., 4,514,322, Cl. 252-518.000.
Zimmerman, William T., 4,514,213, Cl. 71-93.000.

Durr, Herbert, to Draiswerke GmbH. Dispersing machine with container holding device. 4,514,833, Cl. 366-207.000.

Duval Corporation: *See—*
Long, Wallace H.; and Ruggiero, Ralph, 4,513,859, Cl. 198-842.000.

Du Vernet, Richard B., to Westvaco Corporation. C_{21}-Dicarboxylic acid isethionates as primary anionic surfactants. 4,514,335, Cl. 260-400.000.

Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Herbst, Thomas, 4,513,556, Cl. 52-698.000.
Schambeck, Herbert, 4,513,465, Cl. 14-17.000.

Dydyk, Michael; and Iwer, Herbert W., to Motorola, Inc. Dielectric resonator controlled planar IMPATT diode oscillator. 4,514,707, Cl. 331-107.0SL.

Dykstra, Jerald P.; and Bellamy, Brad L., to Eaton Corporation. Atomic mass measurement system. 4,514,637, Cl. 250-492.200.

Dynamit Nobel Aktiengesellschaft: *See—*
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,514,449, Cl. 428-76.000.

Dzewaltowski, Victor F.; and Hobbs, Robert N., to Ex-Cell-O Corporation. Grinding machine with CNC pivotable workhead. 4,513,540, Cl. 51-165.710.

Dzewaltowski, Victor F.: *See—*
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E.M.B. Corporation: *See—*
Staples, Paul R., 4,514,603, Cl. 200-61.620.

E. R. Squibb & Sons, Inc.: *See—*
Gordon, Eric M.; Godfrey, Jollie D., Jr.; and Natarajan, Sesha I., 4,514,391, Cl. 514-2.000.

Eagle Precision Tool Ltd.: *See—*
Usher, George R., 4,513,596, Cl. 72-51.000.

Eastman Kodak Company: *See—*
Bowers, Joseph S., Jr., 4,514,570, Cl. 546-181.000.
Kindt, Robert J., 4,513,959, Cl. 271-270.000.
Passmore, David T.; and Windibank, Brian P., 4,514,230, Cl. 106-243.000.
Scozzafava, Michael; Chen, Chin H.; Reynolds, George A.; and Perlstein, Jerome H., 4,514,481, Cl. 430-58.000.

Eaton Corporation: *See—*
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Kenny, Andrew A., 4,513,785, Cl. 137-881.000.
King, Monroe L., 4,514,636, Cl. 250-443.100.
Treadwell, William A., 4,513,836, Cl. 180-177.000.

Ebihara, Hideyuki: *See*—
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,513,958, Cl. 271-187.000.
Eckelt, Peter; and Taylor, James A., Jr., to Du Pont de Nemours, E. I., and Company. Portable pneumatic wire cutter. 4,513,647, Cl. 83-203.000.
Eckert, Rolf, to Klockner-Humboldt-Deutz Aktiengesellschaft. Reciprocating piston internal combustion engine. 4,513,703, Cl. 123-193.0CH.
Ecole, Auguste L., to Equipements Automobilies Marchal. End of travel stop device for an electric motor drive mechanism. 4,514,669, Cl. 318-443.000.
Ed. Zublin Aktiengesellschaft: *See*—
Nussbaumer, Manfred; Beitinger, Eberhard; and Mohlenbrink, Wolfgang, 4,513,504, Cl. 33-1.00H.
Eden, George T.: *See*—
Dougherty, Emery W.; Heyde, John B.; Bennett, Richard J.; Smith, Roy L.; Tateosian, Louis H.; and Eden, George T., 4,514,174, Cl. 433-226.000.
Edmonds, David A., to United States of America, Navy. Impact switch for guided projectiles. 4,513,664, Cl. 102-216.000.
Edo, Teruo, to Kabushiki Kaisha Komatsu Seisakusho. Fuel injector. 4,513,719, Cl. 123-447.000.
Edwards, James: *See*—
Cliff, John O.; and Edwards, James, 4,513,547, Cl. 52-194.000.
Edwards, Julian G.; and Roddie, Alan G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Photon drag detectors. 4,514,624, Cl. 250-211.00R.
Eggengoor, Hilbert: *See*—
van Zon, Cornelis; Jonkeren, Gerrit J.; and Eggengoor, Hilbert, 4,514,302, Cl. 210-433.200.
Ehrfeld, Wolfgang; and Krieg, Gunther, to Kernforschungszentrum Karlsruhe GmbH. Motionless mixer. 4,514,095, Cl. 366-340.000.
Ehrler, Arthur J.: *See*—
Roser, Carl A.; and Ehrler, Arthur J., 4,513,563, Cl. 56-295.000.
Ehrlich, Paul H.: *See*—
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Einsele, Karl-Heinz: *See*—
Bottigheimer, Andreas; Einsele, Karl-Heinz; and Henig, Klaus, 4,514,835, Cl. 368-118.000.
Eisai Ci., Ltd.: *See*—
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Eisemann, Kurt, to U.S. Philips Corporation. Disc player for a rigid information-carrying disc. 4,514,839, Cl. 369-270.000.
Eko Video Limited: *See*—
Hackett, Joseph, 4,513,928, Cl. 242-198.000.
El Paso Products Company: *See*—
Crum, Glen F., 4,514,261, Cl. 203-9.000.
el Din Nasser, Gamal, to D.V.T. Buro fur Anwendung Deutscher Verfahrenstechnik H. Morsy. Apparatus for the desalination of sea water. 4,514,260, Cl. 202-270.000.
Eldridge, Emmojean: *See*—
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Electric Power Research Institute, Inc.: *See*—
Gilker, Clyde, 4,514,685, Cl. 324-142.000.
Electricity Council, The: *See*—
Lloyd, Harold; and Slinn, David S. L., 4,514,607, Cl. 200-150.00A.
Eli Lilly and Company: *See*—
Wheeler, William J., 4,514,564, Cl. 544-25.000.
Elliott, David G., to United States of America, National Aeronautics and Space Administration. Method for driving two-phase turbines with enhanced efficiency. 4,514,137, Cl. 415-1.000.
Elliott Turbomachinery Co., Inc.: *See*—
Condrac, Edward J., 4,514,643, Cl. 290-40.00C.
Ellis, J. Scott: *See*—
Lax, Ronald G.; Johnson, Robert G.; Henningsen, Charles G.; and Ellis, J. Scott, 4,514,029, Cl. 339-143.00R.
El Sayed, Aziz: *See*—
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Emerson Electric Co.: *See*—
Birx, Linda B., 4,514,718, Cl. 337-407.000.
Wicke, Charles A.; and Riley, Wayne C., 4,513,887, Cl. 222-146.500.
Emhart Industries, Inc.: *See*—
Adams, George W.; and Banter, C. Bruce, 4,514,105, Cl. 403-24.000.
Empie, John E. Golfer's head movement restraining device. 4,513,972, Cl. 273-190.00R.
Endo, Akira; Hasegawa, Akira; and Shibata, Takanori, to Hitachi, Ltd. Power supply system for automotive parts having a rotary component. 4,514,645, Cl. 307-10.00R.
Endo, Hirohide: *See*—
Okada, Kunihiro; Endo, Hirohide; Saito, Susumu; and Kataoka, Kenji, 4,514,079, Cl. 355-8.000.
Endo, Junji: *See*—
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Energy Conversion Devices, Inc.: *See*—
Hanak, Joseph J., 4,514,579, Cl. 136-249.000.
Izu, Masatsugu; and Cannella, Vincent D., 4,514,583, Cl. 136-259.000.
Nath, Prem; and Izu, Masatsugu, 4,513,684, Cl. 118-718.000.
Nath, Prem, 4,514,437, Cl. 427-39.000.
Engel, Peter A.; Strope, Douglas H.; and Wray, Thomas E., to International Business Machines Corporation. Displacement compensating module. 4,514,752, Cl. 357-72.000.
English Clays Lovering Pochin & Company, Ltd.: *See*—
Wall, George W.; and Jones, Glyn T., 4,514,298, Cl. 210-232.000.
Engman, Bo H. S., to Permobil AB. Wheeled chassis. 4,513,832, Cl. 180-6.500.
Enichimica S.p.A.: *See*—
Romano, Ugo; Rivetti, Franco; and Sasselli, Giacomo, 4,514,339, Cl. 260-453.00P.
Ennerst, Karl: *See*—
Stoll, Wolfgang; and Ennerst, Karl, 4,514,364, Cl. 423-4.000.
Enqvist, Johan R., to Osakeyhtio, A. Ahlstrom. Bioreactor. 4,514,297, Cl. 210-194.000.
Enthone, Inc.: *See*—
Waggoner, John, 4,514,586, Cl. 174-35.0MS.
Enviro-Spray Systems, Inc.: *See*—
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Equipements Automobilies Marchal: *See*—
Ecole, Auguste L., 4,514,669, Cl. 318-443.000.
Erasmus, Stephen J.: *See*—
Smith, Kenneth C. A.; and Erasmus, Stephen J., 4,514,629, Cl. 250-311.000.
Erickson, Jack A.: *See*—
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Eriksson, Bolik A. G.: *See*—
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Ernst Leitz Wetzler GmbH: *See*—
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Ernst, William B.: *See*—
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Errington, William J.: *See*—
Denholm, William T.; Floyd, John M.; Errington, William J.; and Parry, Anthony N., 4,514,222, Cl. 75-77.000.
Escher, Sina D.; and Morris, Anthony F., to Firmenich SA. Utilization of 2-hydroxy-3,4,4-trimethyl-cyclopent-2-en-1-one as perfuming ingredient. 4,514,323, Cl. 252-522.00R.
Ese Limited: *See*—
Lang, Gordon R.; Longstaff, Fred M.; and Lee, Chi H., 4,514,855, Cl. 375-97.000.
Eshland Enterprises, Inc.: *See*—
Eshleman, Roger D., 4,513,671, Cl. 110-101.0CF.
Eshleman, Roger D., to Eshland Enterprises, Inc. Particle fuel delivery control device. 4,513,671, Cl. 110-101.0CF.
Esselte Pendaflex Corporation: *See*—
Dowzall, Martin E.; and Houssian, Vazgen J., 4,513,511, Cl. 33-447.000.
ETA S.A., Fabriques d'Ebauches: *See*—
Grandjean, Remy; and Guerin, Yves, 4,514,676, Cl. 318-696.000.
Ethicon, Inc.: *See*—
Smith, Daniel J., 4,513,747, Cl. 128-339.000.
Ethridge, Fredrick A.: *See*—
Roth, Douglas D.; and Ethridge, Fredrick A., 4,514,350, Cl. 264-176.00F.
Ethyl Corporation: *See*—
Filbey, Allen H.; Braxton, Henry G., Jr.; and Meltsner, Bernard R., 4,514,577, Cl. 568-744.000.
Kirsch, Warren B., 4,514,374, Cl. 423-497.000.
Lee, John Y.; and Bauer, Dennis P., 4,514,575, Cl. 568-17.000.
Penton, Harold R., 4,514,550, Cl. 525-538.000.
Ettel, Victor A.: *See*—
Devuyst, Eric A.; and Ettel, Victor A., 4,514,372, Cl. 423-493.000.
Evans, David G., to General Motors Corporation. Solenoid valve. 4,513,780, Cl. 137-625.650.
Evans, John T., to General Electric Company. Multi-processor axis control. 4,514,814, Cl. 364-474.000.
Evans, John W. Pressurized lubrication assembly for machinery having a flow restrictor device. 4,513,704, Cl. 123-196.00S.
Evans, John W. Pressurized lubrication assembly for the center bearing of a turbocharger. 4,513,705, Cl. 123-196.00S.
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. 1,2,3,3,5,6-Hexamethyl-bicyclo[2.2.2]oct-5-en-2-ol, and organoleptic uses of same. 4,514,324, Cl. 252-522.00R.
Ex-Cell-O Corporation: *See*—
Dzewaltowski, Victor F.; and Hobbs, Robert N., 4,513,540, Cl. 51-165.710.
Lesniak, Thomas A., 4,513,811, Cl. 165-79.000.
Millay, Lawrence I.; and Dzewaltowski, Victor F., 4,513,541, Cl. 51-237.00R.
Exxon Research and Engineering Co.: *See*—
Ho, Teh C.; and Pan, Wie-Hin, 4,514,517, Cl. 502-220.000.
Hughes, Vincent L.; and Benitez, Francisco M., 4,514,554, Cl. 526-339.000.
McMath, Henry G.; and Stenerson, Gary K., 4,514,168, Cl. 432-14.000.
Rossi, Albert, 4,514,314, Cl. 252-56.00D.
Shaw, David H.; and Hall, Ralph R., 4,514,280, Cl. 208-33.000.
Tiedje, Thomas; and Abeles, Benjamin, 4,514,582, Cl. 136-256.000.
Wairegi, Tom; Boyle, Joseph P.; and Gilbert, John B., 4,514,284, Cl. 208-140.000.

Eyelet Specialty Co., Inc.: *See*—
Ackerman, Walter T.; and Klimeck, Edward F., 4,514,102, Cl. 401-78.000.
Falck, John B.; and Robson, David. Coded information arrangement. 4,514,731, Cl. 340-825.080.
Fallon, David E., to Harvey Hubbell Incorporated. Fiber optic cable grip. 4,514,005, Cl. 294-86.420.
Fan, John C. C.; and Bozler, Carl O., to Massachusetts Institute of Technology. Solar cells having ultrathin active layers. 4,514,581, Cl. 136-255.000.
Fanuc Ltd.: *See*—
Matsui, Mitsuo; and Matsumura, Teruyuki, 4,514,611, Cl. 219-69.00M.
Nozawa, Ryoichiro; and Kawamura, Hideaki, 4,514,813, Cl. 364-474.000.
Farber, David A.: *See*—
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Mongelli, Nicola; and Gandolfi, Carmelo, 4,514,396, Cl. 514-222.000.
Farmos Yhtyma Oy: *See*—
Karjalainen, Arto J.; and Kurkela, Kauko O. A., 4,514,412, Cl. 514-397.000.
Farrand, Robert M.; and Puzio, Daniel, to General Motors Corporation. Check valve assembly. 4,513,784, Cl. 137-854.000.
Farrow, Gerald: *See*—
Conciatori, Anthony B.; Choe, Eui W.; and Farrow, Gerald, 4,514,553, Cl. 526-323.100.
Fassauer, Arthur L. Pelletized material feeder. 4,513,688, Cl. 119-52.00A.
Fassel, Reinhard; Meier, Werner; Rauch, Hans; Wesemeyer, Jurgen; and Raddant, Hans-Joachim, to Robert Bosch GmbH. Electric positioning motor control system, particularly automatic vehicle antenna extension system. 4,514,670, Cl. 318-467.000.
Fay, Rudolph J. Sandwich machine. 4,513,656, Cl. 99-450.400.
Federal Cartridge Corporation: *See*—
Davich, Luke J.; Erickson, Jack A.; and Proulx, Richard W., 4,514,352, Cl. 264-230.000.
Federal-Mogul Corporation: *See*—
Bentley, Gustavus A.; Nash, Stephen E.; and Pichler, Gerald P., 4,513,976, Cl. 277-25.000.
Federico, Anthony M.; Legg, Ernest L.; and Nguyen, Tuan A., to Xerox Corporation. Control fault detection for machine recovery and diagnostics prior to malfunction. 4,514,846, Cl. 371-16.000.
Fegley, Charles R.; and Tamashasky, Joseph A., to AT&T Technologies, Inc. Orienting asymmetrically shaped articles. 4,513,852, Cl. 198-399.000.
Feldman, Karl T., Jr. Passive integral solar heat collector system. 4,513,732, Cl. 126-433.000.
Feldstein, Joel G.; and Gutzwiller, James E., Jr., to Babcock & Wilcox Company, The. Method of repairing leaks in steam generator tubes. 4,513,903, Cl. 228-107.000.
Fellner, Theodore F.; and Talo, Leslie C., to Mapatent, N.V. Horizontal accumulator. 4,513,858, Cl. 198-812.000.
Fenton, Geoffrey J., to Magnetic Engineering Pty. Ltd. Hinges and hinged articles. 4,513,475, Cl. 16-360.000.
Fenwick, James R.: *See*—
Chang, Yi M.; and Fenwick, James R., 4,513,906, Cl. 228-184.000.
Ferrante, Ronald A., to United States of America, Navy. Method of making near infrared polarizers. 4,514,479, Cl. 430-2.000.
Fesman, Gerald, to Stauffer Chemical Company. Intumescent flexible polyurethane foam. 4,514,524, Cl. 521-107.000.
Feuerbaum, Hans-Peter, to Siemens Aktiengesellschaft. Secondary electron spectrometer for measuring voltages on a sample utilizing an electron probe. 4,514,682, Cl. 324-71.300.
Fiberglas Canada Inc.: *See*—
Burton, Thomas M.; and Kucharska, Helena Z., 4,514,523, Cl. 521-85.000.
Fiedler, Louis J.: *See*—
Rosenthal, Dan G.; and Fiedler, Louis J., 4,514,470, Cl. 428-662.000.
Filbey, Allen H.; Braxton, Henry G., Jr.; and Meltsner, Bernard R., to Ethyl Corporation. Chemical process for preparing di-ortho benzyl phenols. 4,514,577, Cl. 568-744.000.
Filby, John E., to Petro-Canada Exploration, Inc. Azeotropic dehydration process for treating bituminous froth. 4,514,305, Cl. 210-703.000.
Fill, Ernst: *See*—
Witte, Klaus J.; Fill, Ernst; and Scrlac, Walter, 4,514,848, Cl. 372-25.000.
Finch, Curtis L., to Babcock & Wilcox Company, The. Tube expanding system. 4,513,497, Cl. 29-727.000.
Fine, Max, to Dual Filtrex, Inc. Combination filter apparatus for use with a dry cleaning machine. 4,513,590, Cl. 68-18.00C.
Finger, Eugene P., to Curtis Instruments. Quiescent battery testing method and apparatus. 4,514,694, Cl. 324-429.000.
Finley, Charles M.; and Moore, Clifford G., to Rohrback Corporation. Flush electrical resistance corrosion probe. 4,514,681, Cl. 324-65.0CR.
(Firma) Aug. Winkhaus: *See*—
Heiland, Bernd, 4,514,625, Cl. 250-221.000.
Firmenich SA: *See*—
Escher, Sina D.; and Morris, Anthony F., 4,514,323, Cl. 252-522.00R.
Fischer, Michael F.: *See*—
Moore, Dan T., III; and Fischer, Michael F., 4,514,243, Cl. 156-113.000.
Fischer, Walter, to Nestle & Fischer. Angle-measuring instrument having an indicator for the degree of angle. 4,513,512, Cl. 33-471.000.
Fisher, Richard. Automatic hose reel. 4,513,772, Cl. 137-355.220.
Fistner, David C., Sr.: *See*—
McGarry, Phillip E.; Herman, David E.; Treakot, Robert A.; and Fistner, David C., Sr., 4,514,291, Cl. 209-166.000.
Fitzgerald, James L. Instrument for indirect ophthalmoscopy and electrical energy producing means therefor. 4,514,062, Cl. 351-205.000.
Fitzgerald, James L. Instrument for indirect ophthalmoscopy and electrical energy producing means therefor. 4,514,476, Cl. 429-94.000.
Flakt Aktiebolag: *See*—
Herrlander, Bo, 4,514,196, Cl. 55-223.000.
Lundqvist, Gosta B., 4,514,746, Cl. 361-385.000.
Fletcher, Ivan M.; and Gladish, Gary W., to AT&T Technologies, Inc. Substrate elevator mechanisms. 4,513,855, Cl. 198-473.000.
Floyd, John M.: *See*—
Denholm, William T.; Floyd, John M.; Errington, William J.; and Parry, Anthony N., 4,514,222, Cl. 75-77.000.
FMC Corporation: *See*—
Cruickshank, Philip A.; DiSanzo, Carmine P.; Kondo, Kiyosi; and Kono, Hiromichi, 4,514,419, Cl. 514-521.000.
Sethi, Dalbir S., 4,514,376, Cl. 423-588.000.
Ford, Donald F. Flexible horseshoe. 4,513,824, Cl. 168-4.000.
Ford Motor Company: *See*—
Daubenmier, John A.; and Boueri, Elias T., 4,514,811, Cl. 364-424.100.
Hayden, William L., 4,513,468, Cl. 15-250.360.
Holubka, Joseph W., 4,514,548, Cl. 525-528.000.
Holubka, Joseph W., 4,514,549, Cl. 525-528.000.
Sagady, Daniel V., 4,514,108, Cl. 403-359.000.
Stace, Richard J. L., 4,513,709, Cl. 123-306.000.
Ford, Roger S.; Shie, Herman J., III; and Baird, Thomas E., Sr., to Scott & Fetzer Company, The. Vacuum cleaner dirt box. 4,514,199, Cl. 55-337.000.
Forrer, Robert E.; and Postier, Robert A., to Gerber Garment Technology, Inc. Method of cutting and labeling sheet material. 4,514,246, Cl. 156-264.000.
Fortuna, Vincent E.: *See*—
MacLaughlin, Donald N.; and Fortuna, Vincent E., 4,514,242, Cl. 156-73.500.
Fory, Werner: *See*—
Meyer, Willy; and Fory, Werner, 4,514,212, Cl. 71-93.000.
Fossi, Mario: *See*—
Manservisi, Renato; and Fossi, Mario, 4,513,908, Cl. 229-87.00C.
Foster, Stephen I.: *See*—
Henslee, Walter W.; and Foster, Stephen I., 4,514,518, Cl. 502-229.000.
Fox, Sidney W.; and Przybylski, Aleksander T., to University of Miami. Organic photovoltaic device. 4,514,584, Cl. 136-263.000.
Foxboro Company, The: *See*—
McHale, Edward J.; Hussain, Yousif A.; Sanderson, Michael L.; and Hemp, John, 4,513,624, Cl. 73-861.120.
Frances, Arnold, to Du Pont de Nemours, E. I., and Company. Fiber containing particulate elastomeric composition. 4,514,541, Cl. 524-514.000.
Frank, Wolfram: *See*—
Marx, Matthias; Ganss, Helmut; and Frank, Wolfram, 4,514,526, Cl. 521-166.000.
Franke, Albrecht: *See*—
Ostersehlt, Bernd; Franke, Albrecht; Frickel, Fritz-Frieder; Thyes, Marco; Friedrich, Ludwig; Gries, Josef; and Lenke, Dieter, 4,514,413, Cl. 514-397.000.
Frantz, Virgil L.; and Bowles, Robert W. Method and apparatus for indicating leakage in compressed air line. 4,513,604, Cl. 73-39.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,514,124, Cl. 409-295.000.
Fraser-Reid, Bertram; and Pauls, Heinz W., to Research Corporation. Process for preparing α-L N-acetyl daunosaminide. 4,514,561, Cl. 536-18.700.
Freeborn, John C.: *See*—
Boyer, Don S.; and Freeborn, John C., 4,514,176, Cl. 434-224.000.
Frehaut, Joel; and Roche, Michel, to Commissariat a l'Energie Atomique. Coaxial miniature magnetic spectrometer. 4,514,628, Cl. 250-299.000.
Fresenius AG: *See*—
Mathieu, Bernd; and Polaschegg, Hans-Dietrich, 4,514,295, Cl. 210-90.000.
Fricke, Reinhard L.; Hinze, Klaus; Huth, Manfred K. O.; and Wisskirchen, Klaus B., to ITT Industries, Inc. Pushbutton switch having leaf-shaped contact spring. 4,514,609, Cl. 200-159.00A.
Frickel, Fritz-Frieder: *See*—
Ostersehlt, Bernd; Franke, Albrecht; Frickel, Fritz-Frieder; Thyes, Marco; Friedrich, Ludwig; Gries, Josef; and Lenke, Dieter, 4,514,413, Cl. 514-397.000.
Friedheim, Ernst A. H., to Rockefeller University, The. Melaminylthioarsenites. 4,514,390, Cl. 514-184.000.

Friedrich, Ludwig: *See*—
Ostersehlt, Bernd; Franke, Albrecht; Frickel, Fritz-Frieder; Thyes, Marco; Friedrich, Ludwig; Gries, Josef; and Lenke, Dieter, 4,514,413, Cl. 514-397.000.

Friedson, Belvin F.; Thaler, Arnold; and Saud, Ivan, to Windmere Corporation. Apparatus for treating the feet. 4,513,735, Cl. 128-24.200.

Friehe, Werner: *See*—
Niehaus, Norbert; Friehe, Werner; and Schwenk, Wilhelm, 4,513,995, Cl. 285-55.000.

Frigerio, Giuliano E.: *See*—
Castagnola, Virginio; Frigerio, Giuliano E.; and Pellicciari, Roberto, 4,514,393, Cl. 260-397.100.

Frijters, Petrus J. G.; and van Es, Antonie F. Method and device for raising worms, method of raising worms in nutrition limited by inhibiting means, method of producing worm castings, and holder for raising worms. 4,513,685, Cl. 119-1.000.

Frito-Lay, Inc.: *See*—
Glass, Richard W.; and Koerner, Dennis W., 4,514,428, Cl. 426-321.000.
Hartman, Kenneth T., 4,514,430, Cl. 426-549.000.

FRL, Inc.: *See*—
Johnson, David E.; and Williams, Richard W., 4,514,692, Cl. 324-329.000.

Frohberger, Paul-Ernst: *See*—
Jager, Gerhard; Jautelat, Manfred; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,514,409, Cl. 514-383.000.

Frosien, Juergen: *See*—
Lischke, Burkhard; Frosien, Juergen; Anger, Klaus; and Plies, Erich, 4,514,638, Cl. 250-492.200.

Frost, Donald J.: *See*—
Chestnut, Raymond; Colussi, John J.; Frost, Donald J.; Keen, William E., Jr.; and Raduta, Margaret C., 4,514,307, Cl. 210-751.000.

Frye, Samuel M.; and Singleton, James O., to Milliken Research Corporation. Double sidewinder. 4,514,134, Cl. 414-659.000.

Fuchs, Francis J., Jr. Chamfering apparatus. 4,514,121, Cl. 409-138.000.

Fuji Electric Company, Ltd.: *See*—
Yokomori, Shinji; and Nakajima, Yoshihisa, 4,513,762, Cl. 133-3.00R.

Fuji Photo Film Co., Ltd.: *See*—
Hirai, Hiroyuki; Sato, Kozo; and Kawata, Ken, 4,514,493, Cl. 430-617.000.
Idota, Yoshio; and Inoue, Noriyuki, 4,514,488, Cl. 430-234.000.
Oishi, Kengo; and Suzuki, Osamu, 4,513,929, Cl. 242-198.000.
Seto, Nobuo; Kamio, Takayoshi; and Aoki, Kozo, 4,514,490, Cl. 430-505.000.
Tabei, Masatoshi, 4,514,755, Cl. 358-44.000.

Fuji Photo Optical Co., Ltd.: *See*—
Hirano, Nagayoshi, 4,514,049, Cl. 350-425.000.

Fuji Xerox Co., Ltd.: *See*—
Matsuzawa, Kiyoshi; and Inoue, Noriyuki, 4,514,080, Cl. 355-14.00C.
Moriguchi, Haruhiko; and Inui, Toshiharu, 4,514,736, Cl. 346-76.0PH.
Saitoh, Hiroyuki; and Kikuchi, Yoshiki, 4,514,744, Cl. 346-153.100.

Fujii, Hiroshi; and Sakamoto, Toshiharu, to Toyo Kogyo Co., Ltd. Apparatus for charging cooling liquid to engine cooling system. 4,513,696, Cl. 123-41.020.

Fujii, Noboru: *See*—
Shinohara, Satoru; Fujii, Noboru; Imada, Kiyohisa; Kadota, Genichi; and Ueno, Hideo, 4,514,560, Cl. 536-1.100.

Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, to Torii & Co. Ltd. Amidine compound, process for producing same and anti-complement agent comprising same. 4,514,416, Cl. 549-442.000.

Fujimoto, Teruo: *See*—
Miyaki, Yoshiyuki; Fujita, Yoshitaka; Se, Kazunori; and Fujimoto, Teruo, 4,514,304, Cl. 210-638.000.

Fujita, Takashi: *See*—
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; Fujita, Takashi; and Kawase, Shigeki, 4,514,451, Cl. 428-141.000.

Fujita, Yoshitaka: *See*—
Miyaki, Yoshiyuki; Fujita, Yoshitaka; Se, Kazunori; and Fujimoto, Teruo, 4,514,304, Cl. 210-638.000.
Sainen, Tsutomu; Sakano, Toshiyuki; Fujita, Yoshitaka; and Imai, Toshiki, 4,513,790, Cl. 139-110.000.

Fujitsu Limited: *See*—
Oritani, Atsushi, 4,514,831, Cl. 365-203.000.
Tateishi, Terutaka; and Shimizu, Kazuyuki, 4,514,847, Cl. 371-51.000.

Fujiwara, Mitsugu; Sakaue, Yoshinori; Aso, Tomio; Kurokawa, Koshiro; and Obara, Hideo, to Alps Electric Co., Ltd. Sheet guide mechanism in a recording device. 4,514,740, Cl. 346-139.00R.

Fujiwara, Shinji: *See*—
Miyata, Yutaka; Chikamura, Takao; and Fujiwara, Shinji, 4,514,765, Cl. 358-213.000.

Fujiwara, Yuji: *See*—
Muramatsu, Shigeru; Fujiwara, Yuji; Hayashida, Hazime; and Yamamoto, Jun, 4,513,652, Cl. 84-20.000.

Fujiyama, Seiichi; Minakami, Hiroyuki; and Masai, Hiroshi, to Nakano Vinegar Co., Ltd. Highly viscous polysaccharides. 4,514,563, Cl. 536-123.000.

Fukagawa, Hitoshi: *See*—
Suzuki, Yoshiharu; Fukagawa, Hitoshi; Komoda, Yoshiyuki; and Tanaka, Osamu, 4,514,719, Cl. 340-310.00R.

Fukasawa, Yoshiharu; Matsumoto, Tatsuhiko; Kawai, Mituo; Ueda, Shigeru; Koizumi, Hideo; and Saitou, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Molybdenum board and process of manufacturing the same. 4,514,234, Cl. 148-11.50P.

Fukino, Masato; Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; and Aoyama, Yutaka, to Nissan Motor Company, Limited. Steering control apparatus. 4,513,835, Cl. 180-142.000.

Fukuda, Osamu: *See*—
Yoshizumi, Hajime; Matsumoto, Nobuya; Fukuda, Osamu; and Fukushi, Osamu, 4,514,496, Cl. 435-162.000.

Fukuda, Shoichi: *See*—
Nakamura, Teruo; and Fukuda, Shoichi, 4,514,157, Cl. 418-259.000.

Fukuoka, Kenji, to Olympus Optical Company Ltd. Distance measuring apparatus. 4,514,083, Cl. 356-1.000.

Fukuroi, Takeo, to Yoshida Kogyo K. K. Fluid-tight slide fastener stringer. 4,513,482, Cl. 24-384.000.

Fukushi, Osamu: *See*—
Yoshizumi, Hajime; Matsumoto, Nobuya; Fukuda, Osamu; and Fukushi, Osamu, 4,514,496, Cl. 435-162.000.

Fuller, Peter W. W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Wear reducing projectile. 4,513,668, Cl. 102-511.000.

Funk, Harald F. System for treating and recovering energy from exhaust gases. 4,513,573, Cl. 60-648.000.

Furukawa, Keiji: *See*—
Mizobuchi, Norihiro; Furukawa, Keiji; and Motoyama, Takeshi, 4,513,581, Cl. 62-197.000.

Furuno, Akihisa; Inukai, Kenichi; and Ogawa, Yasuo, to Nitto Chemical Industry Co., Ltd.; Mitsubishi Rayon Co., Ltd.; and Diafloc Co., Ltd. Process for the preparation of cationic polymers. 4,514,551, Cl. 526-233.000.

Furutani, Toshinobu: *See*—
Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; Kimura, Shirou; Torisu, Yoshio; and Okazaki, Mari, 4,514,277, Cl. 204-424.000.

Furutani, Yasumasa; Hira, Yasuo; Hasegawa, Takashi; Minato, Akira; Sumita, Osao; and Itow, Hisao, to Hitachi, Ltd. Process for regenerating cleaning fluid. 4,514,270, Cl. 204-151.000.

Furuya, Shin-ichi: *See*—
Togashi, Minoru; Kato, Kenshiro; and Furuya, Shin-ichi, 4,513,802, Cl. 152-353.00R.

Fuss, Albert K.; Fuss, Eric W.; Fuss, Jarvis R.; and Fuss, Roy M. Seed and/or fertilizer distributor. 4,514,114, Cl. 406-65.000.

Fuss, Eric W.: *See*—
Fuss, Albert K.; Fuss, Eric W.; Fuss, Jarvis R.; and Fuss, Roy M., 4,514,114, Cl. 406-65.000.

Fuss, Jarvis R.: *See*—
Fuss, Albert K.; Fuss, Eric W.; Fuss, Jarvis R.; and Fuss, Roy M., 4,514,114, Cl. 406-65.000.

Fuss, Roy M.: *See*—
Fuss, Albert K.; Fuss, Eric W.; Fuss, Jarvis R.; and Fuss, Roy M., 4,514,114, Cl. 406-65.000.

G. D. Searle & Co.: *See*—
Hansen, Donald W., Jr.; Baran, John S.; and Owens, William H., 4,514,332, Cl. 260-112.50E.

Gacek, John J. Beverage lid cutter. 4,513,502, Cl. 30-229.000.

GAF Corporation: *See*—
Williams, Earl P.; and Wood, Lindley S., 4,514,271, Cl. 204-159.150.

Gaffar, Abdul; Davis, Calvin B.; and Vasers, Margita L., to Colgate-Palmolive Company. Oral product for controlling gingivitis. 4,514,382, Cl. 424-54.000.

Gage, Clifford H., to Kowalczyk, Annette. Machine for manufacturing tackless strips. 4,513,901, Cl. 227-49.000.

Gal, Uzi, to Uzia R&D Associates. Grip and stock assembly for facilitating use of a compact gun. 4,513,523, Cl. 42-72.000.

Galcenski, Anthony P., Jr.: *See*—
Jalbert, Robert A.; Galcenski, Anthony P., Jr.; and Urmson, Charles C., 4,513,518, Cl. 36-44.000.

Gallas, Gunter A., to Slater Electric, Inc. Apparatus for forming cable entry port. 4,513,492, Cl. 29-564.700.

Gallegos, John C. Twin camera, shoulder carry, rotary, stabilization pod. 4,514,067, Cl. 354-293.000.

Gallina, Damian J. Hemorrhoid treatment method. 4,514,384, Cl. 424-80.000.

Gallo, Luigi C., to Ampex Corporation. Method and apparatus for processing color video signals for recording and reproducing. 4,514,769, Cl. 358-310.000.

Gandolfi, Carmelo: *See*—
Mongelli, Nicola; and Gandolfi, Carmelo, 4,514,396, Cl. 514-222.000.

Ganss, Helmut: *See*—
Marx, Matthias; Ganss, Helmut; and Frank, Wolfram, 4,514,526, Cl. 521-166.000.

Gantz, Jack L.: *See*—
Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., 4,513,730, Cl. 123-564.000.

Ganz, Frederick M.: *See*—
Cermignani, Justine D.; and Ganz, Frederick M., 4,514,734, Cl. 343-708.000.

GAO Gesellschaft fur Automation and Organisation mbH: *See*—
May, Stefan; and Muller, Hans, 4,513,992, Cl. 283-94.000.

Garan, Inc.: *See*—
Noto, Peter; and Reid, Michael, 4,514,178, Cl. 434-395.000.

Garbo, Paul W.: *See—*
Valentine, Walter J., 4,514,724, Cl. 340-648.000.
Garcia, Antonio D., to Segutronica, S.A. Electro-mechanical lock. 4,514,001, Cl. 292-341.160.
Garcia, Carlos N.; Rigg, Bryan C.; and Tanner, Sally A., to Motorola, Inc. Photolithography process. 4,514,489, Cl. 430-327.000.
Garlapaty, Venkat R., to Greenco Corporation. Fitting for an inflatable tube. 4,513,997, Cl. 285-242.000.
Garner, Geoffrey M.; and Salloway, Anthony J., to Plessey Overseas Limited. Telephone handsets. 4,514,596, Cl. 179-84.00T.
Garratt, John N.: *See—*
Wise, Thomas J.; and Garratt, John N., 4,514,103, Cl. 138-106.000.
Garrett Corporation, The: *See—*
Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., 4,513,730, Cl. 123-564.000.
Garside, David, to 128980 Canada Inc. Expendable refrigeration control. 4,513,582, Cl. 62-222.000.
Garzulano, Franco: *See—*
Brusasca, Gianfranco; and Garzulano, Franco, 4,513,673, Cl. 112-166.000.
Gas Spring Company, Division of Fichtel & Sachs Industries, Inc.: *See—*
Molders, Werner; Langanke, Rolf; Sentinger, Egon; and Reuschenbach, Hermann, 4,513,953, Cl. 267-121.000.
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Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,514,449, Cl. 428-76.000.
Gassler, Hermann; and Kosak, Wolfgang, to Robert Bosch GmbH. Apparatus for regulating the idling rpm in an internal combustion engine. 4,513,712, Cl. 123-339.000.
Gauffin, Ulf; and Hellsten, Mikael. Structural support. 4,513,551, Cl. 52-364.000.
Gazzi, Luigi; Cotone, Giancarlo; Soldati, Gianfraco; Ginnasi, Alessandro; Vetere, Alessandro; and Rescalli, Carlo, to Snamprogetti, S.p.A. Cryogenic process for removing acidic gases from gas mixtures. 4,514,203, Cl. 62-17.000.
Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Lodwig, Klaus; and Schefers, Friedhelm, 4,514,011, Cl. 299-42.000.
Geerts, Jan: *See—*
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, 4,514,520, Cl. 502-337.000.
General American Transportation Corporation: *See—*
Davis, Edward L.; and Mowatt-Larssen, Erling, 4,513,795, Cl. 141-35.000.
General Dynamics Pomona Division: *See—*
Palmer, John P.; and Ward, Phillip B., Jr., 4,514,057, Cl. 350-96.150.
General Electric Company: *See—*
Evans, John T., 4,514,814, Cl. 364-474.000.
Giaever, Ivar; and Keese, Richard C., 4,514,500, Cl. 435-241.000.
Hauser, Ambrose A.; Hetico, Rolf R.; and Wakeman, Thomas G., 4,513,975, Cl. 277-22.000.
Hayes, John J., Jr., 4,514,732, Cl. 340-825.570.
Kaufman, George A., III; and Kocher, Mark J., 4,514,677, Cl. 318-759.000.
Kimberlin, Dan W., 4,513,495, Cl. 29-597.000.
Lee, Ching-Pang, 4,514,144, Cl. 416-96.00R.
Leon, Joseph A., Jr.; and Caprino, Joseph C., 4,514,466, Cl. 428-383.000.
Mark, Victor, 4,514,334, Cl. 260-395.000.
Nied, Herman A., 4,514,612, Cl. 219-119.000.
General Motors Corporation: *See—*
Borman, August H.; and Koivunen, Erkki A., 4,514,147, Cl. 417-288.000.
Evans, David G., 4,513,780, Cl. 137-625.650.
Farrand, Robert M.; and Puzio, Daniel, 4,513,784, Cl. 137-854.000.
Hoffman, Charles T., Jr., 4,513,844, Cl. 188-71.600.
Koivunen, Erkki A., 4,513,631, Cl. 74-360.000.
Langmesser, Otto J., Jr.; and Rees, Richard W. A., 4,513,937, Cl. 248-394.000.
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Stevenson, Paul D., 4,513,640, Cl. 74-870.000.
Stoltman, Donald D., 4,513,775, Cl. 137-491.000.
Thomas, Michael J.; and McDonald, David B., 4,513,771, Cl. 137-315.000.
Vercruysse, Oscar D., 4,514,133, Cl. 414-512.000.
Wright, Dolph D., 4,513,777, Cl. 137-501.000.
General Signal Corporation: *See—*
Ross, Charles W., 4,514,642, Cl. 290-40.00R.
Genrich, Thad J., to Motorola, Inc. Numerically controlled oscillator. 4,514,696, Cl. 328-14.000.
Gerard, William A., to Varian Associates, Inc. High resolution position sensing apparatus with linear variable differential transformers having phase-shifted energizing signals. 4,514,689, Cl. 324-208.000.
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Forrer, Robert E.; and Postier, Robert A., 4,514,246, Cl. 156-264.000.
Gerhardt, Gilbert C. Vertically stacked double pocket. 4,513,455, Cl. 2-253.000.
Gething, Frank; and Glenn, Edward P., to Kraft, Inc. Method and apparatus for hydroponic farming. 4,513,533, Cl. 47-63.000.
Getz, Marvin G.: *See—*
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Giaever, Ivar; and Keese, Richard C., to General Electric Company. Cell growth on liquid-liquid interfaces. 4,514,500, Cl. 435-241.000.
Giamei, Anthony F.; and Kear, Bernard H., to United Technologies Corporation. Wrought single crystal nickel base superalloy. 4,514,360, Cl. 420-454.000.
Giegler, Mike Charles: *See—*
McIntosh, Donald S., 4,514,002, Cl. 293-118.000.
Giguere, Jean-Paul, to Donat Flamanc Inc. Weather tight seal for the sill of a household door. 4,513,536, Cl. 49-470.000.
Gilbert, Bruce, to Hughes Tool Company. Anchor seal assembly. 4,513,822, Cl. 166-382.000.
Gilbert, John B.: *See—*
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Gilewicz, Stanley E.: *See—*
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Gilker, Clyde, to Electric Power Research Institute, Inc. Integrating circuit for use with Hall effect sensors having offset compensation means. 4,514,685, Cl. 324-142.000.
Gillberg-LaForce, Gunilla E., to Celanese Corporation. Use of radiation-curable acrylates to surface modify polyethylene terephthalate to improve adhesion to standard rubber adhesives and thereby to rubber-based materials. 4,514,438, Cl. 427-54.100.
Gillis, John N.: *See—*
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Gilman, Sol: *See—*
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Ginzburg, Vladimir B.; and Snitkin, Sidney R., to Tippins Machinery Company, Inc. Method and apparatus for combining automatic gauge control and strip profile control. 4,513,594, Cl. 72-8.000.
Glabiszewski, Richard, to Otto Bock Orthopadische Industrie KG. Articulated hip-joint for an artificial leg. 4,513,457, Cl. 3-15.000.
Gladish, Gary W., to AT&T Technologies, Inc. Substrate elevator mechanisms. 4,514,130, Cl. 414-416.000.
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Gmeinder, Hermann; and Wenger, Georg, to Kaltenbach & Voigt GmbH & Co. Arrangement for converting the pressure of a medium into an electrical signal. 4,514,604, Cl. 200-83.00N.
Goddard, E. Desmond: *See—*
Kulkarni, Ravi D.; Goddard, E. Desmond; and Aronson, Michael P., 4,514,319, Cl. 252-321.000.
Godfrey, James O.; and Godfrey, Robert E. Radio controlled vacuum cleaner. 4,513,469, Cl. 15-319.000.
Godfrey, Jollie D., Jr.: *See—*
Gordon, Eric M.; Godfrey, Jollie D., Jr.; and Natarajan, Sesha I., 4,514,391, Cl. 514-2.000.
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Godwin, James P., Sr. Automatic self-locking roll back carrier for a vehicle. 4,514,131, Cl. 414-480.000.
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Goldberger, Robert D.; and Stower, James F., to Goldberger Foods Inc. Meat patty and process for forming the same. 4,514,434, Cl. 426-646.000.
Gollwitzer, Reiner, to Regogollwitzer GmbH and Co. KG. Cassette fastening structure. 4,513,999, Cl. 292-161.000.
Gomez, I. Luis, to Monsanto Company. Laminates of polycarbonate or acrylate and plasticized polyvinyl butyral. 4,514,464, Cl. 428-332.000.
Goncalves, Antonin L., to L'Oreal. Cap for a pressurized container and the corresponding unit. 4,513,890, Cl. 222-153.000.
Goodall Rubber Company: *See—*
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Gordon, Eric M.; Godfrey, Jollie D., Jr.; and Natarajan, Sesha I., to E. R. Squibb & Sons, Inc. Hydroxy substituted peptide compounds. 4,514,391, Cl. 514-2.000.
Gordon, Eugene I.: *See—*
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Goto, Sakichi, to Japan Mining Promotive Foundation, The. Method of smelting zinc by injection smelting. 4,514,221, Cl. 75-63.000.

Goudy, Ruth, administrator: *See*—
Goudy, William E., deceased, 4,513,869, Cl. 212-175.000.
Goudy, William E., deceased (by Goudy, Ruth, administrator), to Armco, Inc. Pedestal crane mounting system. 4,513,869, Cl. 212-175.000.
Gould Inc.: *See*—
Stowe, David W., 4,514,054, Cl. 350-96.150.
Goulter, Victor H. Adjustable support for cooking pots and the like. 4,513,936, Cl. 248-122.000.
Gouvenot, Daniel, to Soletanche. Composition for making impermeable walls and other underground structures. 4,514,228, Cl. 106-98.000.
Gow, Robert J., to Norton Company. Corner key for window spacer element. 4,513,546, Cl. 52-172.000.
Graber, John W., to Graber Products, Inc. Vehicle attached carrier. 4,513,897, Cl. 224-314.000.
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Graber, John W., 4,513,897, Cl. 224-314.000.
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Grace, Jerry E.: *See*—
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Grace, Virgil; and Grace, Jerry E. Fishing tackle organizer. 4,513,526, Cl. 43-57.200.
Graf & Cie AG: *See*—
Bisquolm, Werner; Burki, Jorg; and Teuscher, Othmar, 4,513,480, Cl. 19-113.000.
Graham, David R., to Cannondale Corporation. Bicycle frame seat stays. 4,513,985, Cl. 280-281.00R.
Grandjean, Remy; and Guerin, Yves, to ETA S.A., Fabriques d'Ebauches. Method and device for controlling a bidirectional stepping motor. 4,514,676, Cl. 318-696.000.
Grant, Frederic F., to Bell & Howell Company. Information transferring systems operating on a recording medium. 4,514,055, Cl. 350-6.300.
Gravener, Roy D.: *See*—
Aranyi, Ernie; Ihasz, Richard; Gravener, Roy D.; and Tovey, Hugh J., 4,513,746, Cl. 128-334.00C.
Gravity Guidance, Inc.: *See*—
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Deveau, Paul J.; Greenberg, Paul B.; and Paolillo, Roger E., 4,513,567, Cl. 60-39.020.
Greenco Corporation: *See*—
Garlapaty, Venkat R., 4,513,997, Cl. 285-242.000.
Greene, Hugh W.: *See*—
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Maier, Otto H.; Seifert, James F.; Ryder, John C.; and Grisez, William F., 4,513,853, Cl. 198-410.000.
Gross, Leo: *See*—
Skeist, S. Merrill; and Gross, Leo, 4,514,662, Cl. 315-57.000.
Grossauer, Alfred. Connecting nipple for circumferentially ribbed insulating tubes. 4,513,998, Cl. 285-308.000.
Grosshuesch, Lee V., to Weyerhaeuser Company. Ventilated fruit fly proof produce shipper. 4,513,907, Cl. 229-23.00R.
Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., to Minster Machine Company, The. Cam actuated ejector for a shell press. 4,513,600, Cl. 72-345.000.
Grumman Aerospace Corporation: *See*—
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Cermignani, Justine D.; and Ganz, Frederick M., 4,514,734, Cl. 343-708.000.
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Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., to Data General Corporation. Digital computer system including apparatus for resolving names representing data items and capable of executing instructions belonging to general instruction sets. 4,514,800, Cl. 364-200.000.
Grzinia, Michael, to Milei GmbH. Hen-egg albumen substitute and method for its manufacture. 4,514,432, Cl. 426-656.000.
GTE Automatic Electric Inc.: *See*—
Perry, Thomas J., 4,514,844, Cl. 371-8.000.
Renner, Robert E., 4,514,842, Cl. 370-63.000.
Van Husen, Hendrik W., 4,514,687, Cl. 324-158.00R.
GTE Laboratories Incorporated: *See*—
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GTE Valeron Corporation: *See*—
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Gueugnon, Catherine; and Bernstein, Pierre, to Cii Honeywell Bull (Societe Anonyme). Pattern generator for integrated circuits and process of generating patterns by means of said generator. 4,514,082, Cl. 355-54.000.
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Gunderson, Arthur S. Portable shuffleboard court. 4,513,964, Cl. 273-126.00R.
Gunjima, Tomoki; and Takei, Ryutaro, to Asahi Glass Company Ltd. 1-(Trans-4-alkylcyclohexyl)-2-(trans-4'-(p-substituted phenyl) cyclohexyl)ethane and liquid crystal mixture. 4,514,044, Cl. 350-350.00R.
Gunson's Sortex Limited: *See*—
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Gunzi, Kouichi: *See*—
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Guscott, John K., to American District Telegraph Company. Optical system for ceiling mounted passive infrared sensor. 4,514,631, Cl. 250-342.000.
Guthrie, Jesse: *See*—
Murray, Joseph; and Guthrie, Jesse, 4,513,641, Cl. 81-486.000.
Gutleber, Frank S., to United States of America, Army. Multiplexed noise code generator utilizing transposed codes. 4,514,853, Cl. 375-34.000.
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Szczesny, Adolf; Kleinert, Reiner; Jedo, Antoni; and Gutorski, Zygmunt, 4,514,300, Cl. 210-342.000.
Gutzwiller, James E., Jr.: *See*—
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Guy, Robert R., to LOF Plastics Inc. Mounting of automobile trim strips. 4,514,003, Cl. 293-128.000.
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Haberthur-Heilig, Walter, to Bron Elektronik AG. Attachment provision for exchangeable accessories at illumination bodies. 4,514,794, Cl. 362-439.000.
Hackett, Joseph, to Eko Video Limited. Magnetic tape cassette. 4,513,928, Cl. 242-198.000.
Hadtke, Frederick B.: *See*—
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Hagiwara, Takaaki; Horiuchi, Masatada; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, to Hitachi, Ltd. Defect-remediable semiconductor integrated circuit memory and spare substitution method in the same. 4,514,830, Cl. 365-200.000.
Hahn, Henry N.: *See*—
Cole, Frank J.; and Hahn, Henry N., 4,514,266, Cl. 204-28.000.
Hain, Robert W.; Hadtke, Frederick B.; and Paikoff, Myron, to Sterling Drug Inc. Spray dispensing container and valve therefor. 4,513,891, Cl. 222-213.000.
Hales, James W.: *See*—
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Halford, Wayne R.; and Nakano, Walter S., to Mattel, Inc. Toy vehicle game with launcher and return means. 4,513,967, Cl. 273-108.000.
Hall, Maclin S.: *See*—
Miller, Peter S.; and Hall, Maclin S., 4,514,812, Cl. 364-473.000.
Hall, Ralph R.: *See*—
Shaw, David H.; and Hall, Ralph R., 4,514,280, Cl. 208-33.000.
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Shalek, Walter F., 4,513,612, Cl. 73-155.000.
Hamanishi, Yoshinari, to Nippon Kogaku K. K. Rear conversion lens. 4,514,051, Cl. 350-465.000.
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Hammarberg, Lars. Reinforced wood particle board and a method of producing it. 4,514,258, Cl. 162-107.000.
Hamprecht, Gerhard; Varwig, Juergen; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Preparation of fluorophthalic anhydrides. 4,514,572, Cl. 549-246.000.
Hanak, Joseph J., to Energy Conversion Devices, Inc. Large area photovoltaic cell and method for producing same. 4,514,579, Cl. 136-249.000.
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Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,514,513, Cl. 502-112.000.
Hanck, Alfred; and Pauling, Horst, to Hoffmann-La Roche Inc. Panthenol derivatives. 4,514,338, Cl. 260-429.900.
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Hanni, Manfred; and Brusch, Josef, to Siemens Aktiengesellschaft. Process for protected transmission of digital signals. 4,514,852, Cl. 375-1.000.

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Hanselmann, Daniel: *See—*
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Hansen, Donald W., Jr.; Baran, John S.; and Owens, William H., to G. D. Searle & Co. Tetrapeptide adamantyl amides. 4,514,332, Cl. 260-112.50E.

Hansen, Kenneth N., to Allis-Chalmers Corporation. Range shift and park lock control. 4,513,847, Cl. 192-4.00A.

Hansen, Ralph H., to Canusa Coating Systems Limited. Hindered phenolic norbornane-2,3-dicarboximides and stabilized compositions. 4,514,533, Cl. 524-89.000.

Hanson, Paul A.; and Walton, James M., to United States of America, Navy. Expendable underwater acoustic projector. 4,514,834, Cl. 367-141.000.

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Harada, Denzaburo, to Kubota, Ltd. Gearing transmission. 4,513,636, Cl. 74-761.000.

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Haraguchi, Hiroshi; Narita, Ko; and Iwata, Toshiharu, to Nippondenso Co., Ltd. Ignition timing control system with knock control for internal combustion engines. 4,513,716, Cl. 123-425.000.

Hardiman, Brendon J., Jr. Valve guard. 4,513,773, Cl. 137-382.000.

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Harris Graphics Corporation: *See—*
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Harris, Thomas E., to Dominion Engineering Works Limited. Steel mill edger drive system. 4,513,599, Cl. 72-238.000.

Harrison, David E. Method of molding a plastic toilet seat hinge connectable bed plate. 4,514,356, Cl. 264-328.120.

Hartig, Kent H., to Honeywell Information Systems Inc. High speed link controller wraparound test logic. 4,514,806, Cl. 364-200.000.

Hartman, Kenneth T., to Frito-Lay, Inc. Process for preparing baked goods with improved flavor and flavor chip texture. 4,514,430, Cl. 426-549.000.

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Hill, Michael; Megaw, John H. P. C.; and Harvey, Howard, 4,514,613, Cl. 219-121.0EC.

Harvey Hubbell Incorporated: *See—*
Fallon, David E., 4,514,005, Cl. 294-86.420.

Harzer, Peter, to Wandel & Goltermann GmbH & Co. KG. Low-noise digitally tunable phase-locked loop frequency generator. 4,514,705, Cl. 331-2.000.

Hasegawa, Akira: *See—*
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Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling fuel supply to internal combustion engines at acceleration in cold conditions. 4,513,722, Cl. 123-492.000.

Hasegawa, Takashi: *See—*
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Haskal, Haim M.; and Briones, Robert A., to Magnetic Peripherals Inc. On-axis achromatic quarterwave retarder prism. 4,514,047, Cl. 350-394.000.

Hatakoshi, Makoto: *See—*
Ohsumi, Tadashi; Hatakoshi, Makoto; and Kisida, Hirosi, 4,514,406, Cl. 514-352.000.

Hattori, Motoichi; and Ishigo, Hideyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic telephone answering and recording apparatus. 4,514,593, Cl. 179-2.00A.

Hattori, Torao: *See—*
Nishikawa, Masao; Hattori, Torao; Aoki, Takashi; and Yoshizawa, Hiroshi, 4,513,638, Cl. 74-866.000.

Hattrich, George A.; and Byron, Stephen J., to Reichhold Chemicals, Inc. Stain resistant polymeric insulating compositions. 4,514,539, Cl. 524-436.000.

Hauni-Werke Korber & Co. KG: *See—*
Henzelin, Bernard; and Courbat-Chavanne, Bernard, 4,513,758, Cl. 131-291.000.
Wochnowski, Waldemar; Hohm, Reinhard; Liebe, Reinhard; and Muss, Manfred, 4,513,759, Cl. 131-303.000.

Hauser, Ambrose A.; Hetico, Rolf R.; and Wakeman, Thomas G., to General Electric Company. Thermally responsive labyrinth seal. 4,513,975, Cl. 277-22.000.

Hawerkamp, Manfred. Method and device for testing welds of thermoplastic parts. 4,513,605, Cl. 73-40.000.

Hawrylo, Frank Z.: *See—*
Rao, Srinivas T.; and Hawrylo, Frank Z., 4,514,265, Cl. 204-15.000.

Hayashi, Tetsuaki; Kabu, Masahiro; and Yamashita, Nobuyuki, to Kubota, Ltd. Agricultural tractor. 4,513,834, Cl. 180-70.100.

Hayashida, Hazime: *See—*
Muramatsu, Shigeru; Fujiwara, Yuji; Hayashida, Hazime; and Yamamoto, Jun, 4,513,652, Cl. 84-20.000.

Hayashida, Takanori, to Yamaha Hatsudoki Kabushiki Kaisha. Induction system for spark ignition engine of fuel injection type. 4,513,700, Cl. 123-179.00L.

Hayden, William L., to Ford Motor Company. Windshield wiper element. 4,513,468, Cl. 15-250.360.

Hayes, John J., Jr., to General Electric Company. Technique for increasing battery life in remote control transmitters. 4,514,732, Cl. 340-825.570.

Hayes, Richmond S., Jr.: *See—*
Jennings, William B.; Shelton, Edward B.; and Hayes, Richmond S., Jr., 4,513,586, Cl. 62-263.000.

Hayes, Terry S., to Mitch's Self Service Gas, Inc. Storage tank gauging measuring apparatus. 4,513,617, Cl. 73-313.000.

Haynes, Kenton L.; Sherer, William P.; Greene, Hugh W.; Holder, James D.; and Roberts, Thomas G., to United States of America, Army. Acoustic waveguide voltage monitor. 4,514,684, Cl. 324-120.000.

Health Care Concepts, Inc.: *See—*
Meierhoefer, Eugene J., 4,513,871, Cl. 215-32.000.

Heather, James B.; and Kanne, David B., to Stauffer Chemical Company. 4-(2,6-Dialkylphenylamino)-3-alkoxy-2-butenoic acid and their use as herbicides. 4,514,215, Cl. 71-107.000.

Hedin, Jan-Erik: *See—*
Lindblom, Thore; Hedin, Jan-Erik; and Wickstrom, Sven, 4,513,799, Cl. 144-379.000.

Hedrick, George. Adjustable shoe tap. 4,513,519, Cl. 36-113.000.

Hedrick, Robert, to Mailroom Systems, Inc. Signature stacker including improved intercept means. 4,514,128, Cl. 414-49.000.

Hegler, Ralph-Peter: *See—*
Hegler, Wilhelm; and Hegler, Ralph-Peter, 4,513,787, Cl. 138-166.000.

Hegler, Wilhelm; and Hegler, Ralph-Peter, to Hegler, Wilhelm. Corrugated sheathing hose. 4,513,787, Cl. 138-166.000.

Heierling of Switzerland, Ltd.: *See—*
Koch, Albin G., 4,513,520, Cl. 36-119.000.

Heikkila, Sakari; and Tiuri, Martti, to A.Ahlstrom Osakeyhtio. Flaw detection system using microwaves. 4,514,680, Cl. 324-58.50A.

Heiland, Bernd, to (Firma) Aug. Winkhaus. Alarm system to secure a passage. 4,514,625, Cl. 250-221.000.

Heilweil, Israel J., to Mobil Oil Corporation. High temperature stable fluids for wellbore treatment containing non-aqueous solvents. 4,514,310, Cl. 252-8.55R.

Heimovics, John F., Jr., to B. F. Goodrich Company, The. Temperature compensator for pressure regulator. 4,513,881, Cl. 222-54.000.

Hellman, Erik: *See—*
Borrman, Bo; Hellman, Erik; Ode, Bengt; and van Santen, Aart, 4,514,358, Cl. 376-362.000.

Hellsten, Mikael: *See—*
Gauffin, Ulf; and Hellsten, Mikael, 4,513,551, Cl. 52-364.000.

Helstrom, John J.: *See—*
Mahoney, John A.; Helstrom, John J.; and Tait, A. Martin, 4,514,279, Cl. 208-10.000.

Hemp, John: *See—*
McHale, Edward J.; Hussain, Yousif A.; Sanderson, Michael L.; and Hemp, John, 4,513,624, Cl. 73-861.120.

Hempe Manufacturing Co.: *See—*
Keddie, David P.; and Shaw, Richard J., 4,513,466, Cl. 15-29.000.

Hendrickson, James B.; and Rodriguez, Cesar. Synthesis of 1-substituted isoquinolines. 4,514,569, Cl. 546-146.000.

Henig, Klaus: *See—*
Bottigheimer, Andreas; Einsele, Karl-Heinz; and Henig, Klaus, 4,514,835, Cl. 368-118.000.

Henk, Hermann: *See—*
Michna, Martin; and Henk, Hermann, 4,514,188, Cl. 8-641.000.

Henkel Corporation: *See—*
Thompson, John A., 4,514,184, Cl. 8-94.210.

Henningsen, Charles G.: *See—*
Lax, Ronald G.; Johnson, Robert G.; Henningsen, Charles G.; and Ellis, J. Scott, 4,514,029, Cl. 339-143.00R.

Henslee, Walter W.; and Foster, Stephen I., to Dow Chemical Company, The. Fluoride-substituted cobalt spinels. 4,514,518, Cl. 502-229.000.

Henzelin, Bernard; and Courbat-Chavanne, Bernard, to Hauni-Werke Korber & Co. KG. Method and apparatus for increasing the volume of tobacco. 4,513,758, Cl. 131-291.000.

Heraeus Quarschmelze GmbH: *See—*
Aldinger, Fritz; Bischoff, Albrecht; Keilberth, Richard; and Sperner, Franz, 4,514,589, Cl. 174-119.00R.

Heraud, Louis, to Societe Europeenne De Propulsion. Method for adhesively bonding parts made of refractory materials. 4,514,240, Cl. 156-89.000.
Herbert, Phil. Plug locking device. 4,514,026, Cl. 339-75.00P.
Herbst, Thomas, to Dyckerhoff & Widmann Aktiengesellschaft. Removable tension member for a grout anchor. 4,513,556, Cl. 52-698.000.
Herbulot, Alain, to Cycles Peugeot. Method for locally deforming a round tube into a tube comprising planar surfaces and a forming punch for carrying out said method. 4,513,601, Cl. 72-398.000.
Hercules Incorporated: *See*—
Burdick, Charles L., 4,514,292, Cl. 209-167.000.
Herman, David E.: *See*—
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,514,291, Cl. 209-166.000.
Hermann Hirsch Leder- und Kunststoffwarenfabrik: *See*—
Hirsch, Hermann, 4,513,896, Cl. 224-178.000.
Herrington, Fox J., Jr., to Mobil Oil Corporation. Bag transporter, folder and loader and method for operation. 4,513,559, Cl. 53-429.000.
Herrlander, Bo, to Flakt Aktiebolag. Absorption tower for gas washing. 4,514,196, Cl. 55-223.000.
Herschler, Robert J. Dietary and pharmaceutical uses of methylsulfonylmethane and compositions comprising it. 4,514,421, Cl. 514-711.000.
Hesketh, Bernard; and Pumphrey, Nicholas W. J., to Imperial Chemical Industries PLC. Electrode for electrochemical processes. 4,514,274, Cl. 204-290.00F.
Hester, Jackson B., Jr.; and Ludens, James H., to Upjohn Company, The. 1-Ethanamine-triazolo-benzodiazepines as diuretics. 4,514,407, Cl. 514-220.000.
Hetico, Rolf R.: *See*—
Hauser, Ambrose A.; Hetico, Rolf R.; and Wakeman, Thomas G., 4,513,975, Cl. 277-22.000.
Hewlett-Packard Company: *See*—
Meyer, John D., 4,514,741, Cl. 346-140.00R.
Roland, James P., 4,514,252, Cl. 156-643.000.
Heyde, John B.: *See*—
Dougherty, Emery W.; Heyde, John B.; Bennett, Richard J.; Smith, Roy L.; Tateosian, Louis H.; and Eden, George T., 4,514,174, Cl. 433-226.000.
Heyman, Joseph S.; and Brandenburger, Gary H., to United States of America, National Aeronautics and Space Administration. Method for thermal monitoring subcutaneous tissue. 4,513,750, Cl. 128-660.000.
Hidai, Yutaka: *See*—
Iwata, Kazuhide; Shibayama, Shigeki; Hidai, Yutaka; and Oyanagi, Shigeru, 4,514,826, Cl. 364-900.000.
Hidaka, Yoshiaki: *See*—
Senga, Akihisa; Hidaka, Yoshiaki; and Tsuchiyama, Tadashi, 4,513,698, Cl. 123-52.0MV.
Higuchi, Masaru: *See*—
Makino, Hiroshi; Higuchi, Masaru; and Murata, Kazuou, 4,514,084, Cl. 356-4.000.
Hill, Michael; Megaw, John H. P. C.; and Harvey, Howard, to Lucas Industries PLC, Great King St. Method of an apparatus for welding together metal components. 4,514,613, Cl. 219-121.0EC.
Hinde, Walter R.: *See*—
Nieminski, Robert A.; and Hinde, Walter R., 4,513,839, Cl. 180-253.000.
Hinson, Virgil H.: *See*—
Jarman, Davis R.; and Hinson, Virgil H., 4,513,508, Cl. 33-288.000.
Hinze, Klaus: *See*—
Fricke, Reinhard L.; Hinze, Klaus; Huth, Manfred K. O.; and Wisskirchen, Klaus B., 4,514,609, Cl. 200-159.00A.
Hira, Yasuo: *See*—
Furutani, Yasumasa; Hira, Yasuo; Hasegawa, Takashi; Minato, Akira; Sumita, Osao; and Itow, Hisao, 4,514,270, Cl. 204-151.000.
Hiraga, Masaharu; Mabe, Atsushi; and Yoshii, Yuji, to Sanden Corporation. Scroll type compressor with displacement adjusting mechanism. 4,514,150, Cl. 417-440.000.
Hirahara, Shuzo: *See*—
Nagato, Hitoshi; Izawa, Koji; and Hirahara, Shuzo, 4,514,738, Cl. 346-76.0PH.
Hirai, Hiroyuki; Sato, Kozo; and Kawata, Ken, to Fuji Photo Film Co., Ltd. Heat-developable light-sensitive material with base precursor particles. 4,514,493, Cl. 430-617.000.
Hirai, Kenji: *See*—
Kariatsumari, Keiichiro; and Hirai, Kenji, 4,514,699, Cl. 330-53.000.
Hirakawa, Kiyoshi: *See*—
Nakagawa, Junyo; Yamaguchi, Shinji; Hirakawa, Kiyoshi; Tokunaga, Isao; and Ito, Masaaki, 4,514,459, Cl. 428-229.000.
Hiramatsu, Takeo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Creeping preventing apparatus in automatic transmission for vehicle. 4,513,639, Cl. 74-866.000.
Hirano, Kazuo: *See*—
Abe, Hiroshi; Sato, Nobuhiro; Ono, Kimizo; and Hirano, Kazuo, 4,513,751, Cl. 128-666.000.
Hirano, Nagayoshi, to Fuji Photo Optical Co., Ltd. Zoom lens system for finite conjugate distances. 4,514,049, Cl. 350-425.000.
Hiraoka, Takeshi: *See*—
Umeha, Genkichi; and Hiraoka, Takeshi, 4,513,977, Cl. 277-96.200.
Hirata, Toshiyuki: *See*—
Takeda, Keisou; and Hirata, Toshiyuki, 4,513,720, Cl. 123-470.000.
Hirose, Noriyasu; Kuriyama, Shizuo; Yamatsu, Kiyomi; Kitahara, Akifumi; and Uzuo, Takeshi, to Eisai Ci., Ltd. Phenothiazine derivatives and anti-psychotic drugs containing the same. 4,514,395, Cl. 514-224.000.
Hirsch, Arthur, to Arvey Corporation. Steam sterilization indicator. 4,514,361, Cl. 422-26.000.
Hirsch, Hermann, to Hermann Hirsch Leder- und Kunststoffwarenfabrik. Belt or strap. 4,513,896, Cl. 224-178.000.
Hirschfeld, Steven, to Biond Inc. Assaying for a multiplicity of antigens or antibodies with a detection compound. 4,514,508, Cl. 436-518.000.
Hirt, Manfred, to Zahnraderfabrik Renk A.G. Gearing assembly. 4,513,637, Cl. 74-801.000.
Hisatomi, Yasukiro: *See*—
Kanebako, Hiromu; and Hisatomi, Yasukiro, 4,514,149, Cl. 417-403.000.
Hitachi Koki Co., Ltd.: *See*—
Okada, Kunihiro; Endo, Hirohide; Saito, Susumu; and Kataoka, Kenji, 4,514,079, Cl. 355-8.000.
Hitachi, Ltd.: *See*—
Ando, Yoshibumi; Sakamoto, Takashi; Yoh, Kanji; Moriuchi, Hisahiro; and Takei, Sumiaki, 4,514,646, Cl. 307-200.00B.
Ashida, Akira, 4,514,854, Cl. 375-94.000.
Endo, Akira; Hasegawa, Akira; and Shibata, Takanori, 4,514,645, Cl. 307-10.00R.
Furutani, Yasumasa; Hira, Yasuo; Hasegawa, Takashi; Minato, Akira; Sumita, Osao; and Itow, Hisao, 4,514,270, Cl. 204-151.000.
Hagiwara, Takaaki; Horiuchi, Masatada; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, 4,514,830, Cl. 365-200.000.
Ishii, Toshio; and Sugiura, Noboru, 4,513,718, Cl. 123-425.000.
Ito, Tosikazu; and Takahashi, Reijiro, 4,513,808, Cl. 165-43.000.
Kanoi, Minoru; Hori, Yasuro; and Kamata, Yuzuru, 4,514,714, Cl. 336-100.000.
Kasagi, Kunisuke; and Kawashima, Machio, 4,514,664, Cl. 315-383.000.
Kimura, Takashi; Mochiji, Kozo; and Obayashi, Hidehito, 4,514,857, Cl. 378-034.000.
Koike, Norio; Takemoto, Iwao; Ohba, Shinya; Masuhara, Toshiaki; and Kubo, Masaharu, 4,514,766, Cl. 358-213.000.
Miyata, Kenji; Terasawa, Yoshio; Oikawa, Saburo; Murakami, Susumu; and Okamura, Masahiro, 4,514,747, Cl. 357-38.000.
Okada, Kunihiro; Endo, Hirohide; Saito, Susumu; and Kataoka, Kenji, 4,514,079, Cl. 355-8.000.
Sato, Kanemasa; and Ueno, Sadayasu, 4,513,615, Cl. 73-204.000.
Hitachi Microcumputer Engineering Ltd.: *See*—
Ando, Yoshibumi; Sakamoto, Takashi; Yoh, Kanji; Moriuchi, Hisahiro; and Takei, Sumiaki, 4,514,646, Cl. 307-200.00B.
Hiyoshi, Takanori: *See*—
Sasaki, Masafumi; Kashiwagi, Susumu; and Hiyoshi, Takanori, 4,513,569, Cl. 60-39.310.
Ho, Teh C.; and Pan, Wie-Hin, to Exxon Research and Engineering Co. Supported, self-promoted molybdenum and tungsten sulfide catalysts formed from bis(tetrathiometallate) precursors, and their preparation. 4,514,517, Cl. 502-220.000.
Hobart Corporation: *See*—
Treiber, Fritz F., 4,513,558, Cl. 53-77.000.
Hobas-Engineering AG: *See*—
Jost, Ralph, 4,513,996, Cl. 285-110.000.
Hobbs, Arthur G., Jr.: *See*—
Proctor, Robert H.; and Hobbs, Arthur G., Jr., 4,513,578, Cl. 62-149.000.
Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,514,519, Cl. 502-243.000.
Hobbs, Robert N.: *See*—
Dzewaltowski, Victor F.; and Hobbs, Robert N., 4,513,540, Cl. 51-165.710.
Hoechst Aktiengesellschaft: *See*—
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,514,328, Cl. 252-609.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Martin, Lawrence L.; and Setescak, Linda L., 4,514,411, Cl. 514-215.000.
Tegeler, John J.; and Diamond, Craig J., 4,514,410, Cl. 514-221.000.
Hoffman, Charles T., Jr., to General Motors Corporation. Disc brake shoe retainer assembly with insulation. 4,513,844, Cl. 188-71.600.
Hoffmann-La Roche Inc.: *See*—
Hanck, Alfred; and Pauling, Horst, 4,514,338, Cl. 260-429.900.
Luthy, Christoph; and Winternitz, Paul, 4,514,566, Cl. 544-56.000.
Hogan, Lawrence R., to Cole-Parmer Instrument Company. Dispenser having a flexible fluid container and a rotor compressible fluid discharge tube. 4,513,885, Cl. 222-95.000.
Hogan, Lawrence R.: *See*—
Miller, Carl; and Hogan, Lawrence R., 4,513,796, Cl. 141-83.000.
Hogrogian, Richard H.: *See*—
Ameen, Joseph G.; Hogrogian, Richard H.; and Smey, Samuel L., 4,514,232, Cl. 134-1.000.
Hohm, Reinhard: *See*—
Wochnowski, Waldemar; Hohm, Reinhard; Liebe, Reinhard; and Muss, Manfred, 4,513,759, Cl. 131-303.000.
Hok, Bertil: *See*—
Adolfsson, Morgan; Brogardh, Iorgny; Hok, Bertil; and Ovren, Christer, 4,514,860, Cl. 455-612.000.
Hokamura, Sadakazu; Yamada, Seiji; Aritomi, Mitsutoshi; and Yoshida, Yuji, to Dai Nippon Toryo Co., Ltd.; and Mitsubishi Yuka Fine Chemicals Co., Ltd. Process for forming a corrosion resistant coating. 4,514,445, Cl. 427-410.000.
Holder, James D.: *See*—
Haynes, Kenton L.; Sherer, William P.; Greene, Hugh W.; Holder, James D.; and Roberts, Thomas G., 4,514,684, Cl. 324-120.000.

Hollingsworth, Alexander, to Nordson Corporation. Skin packaging machine with inclined oven. 4,513,560, Cl. 53-509.000.

Hollis, Ralph L., Jr.; and Musits, Bela L., to International Business Machines Corporation. Electromagnetic X-Y-Theta precision positioner. 4,514,674, Cl. 318-687.000.

Holmberg, Joyce D.: *See*—
Kinney, Ohler L., Jr.; and Holmberg, Joyce D., 4,514,202, Cl. 55-440.000.

Holmes, Dale A.; and Waite, Thomas R., to Rockwell International Corporation. Common-pass decentered annular ring resonator. 4,514,850, Cl. 372-95.000.

Holubka, Joseph W., to Ford Motor Company. Crosslinkable composition of matter-I. 4,514,548, Cl. 525-528.000.

Holubka, Joseph W., to Ford Motor Company. Crosslinkable composition of matter-IV. 4,514,549, Cl. 525-528.000.

Holzermer, Gunter, to Siemens Aktiengesellschaft. Collimator for an X-ray examination apparatus. 4,514,859, Cl. 378-152.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hasegawa, Shumpei, 4,513,722, Cl. 123-492.000.
Ishikawa, Yoshikazu; and Hashiguchi, Makoto, 4,513,723, Cl. 123-492.000.
Koga, Noritaka; Suzuki, Takanori; Nakamura, Kenji; Suzuki, Hitoshi; and Ogano, Takeo, 4,513,702, Cl. 123-193.00H.
Koumura, Takashi; and Nakajima, Toyohei, 4,513,713, Cl. 123-339.000.
Nishikawa, Masao; Hattori, Torao; Aoki, Takashi; and Yoshizawa, Hiroshi, 4,513,638, Cl. 74-866.000.
Senga, Akihisa; Hidaka, Yoshiaki; and Tsuchiyama, Tadashi, 4,513,698, Cl. 123-52.0MV.
Tsuboi, Masaharu, 4,513,838, Cl. 180-219.000.

Honda Motor Co., Ltd.: *See*—
Maruoka, Sigehiro, 4,514,006, Cl. 296-78.100.

Honeywell Inc.: *See*—
Bartels, James I., 4,513,909, Cl. 236-26.00R.
Bartels, James I., 4,513,910, Cl. 236-26.00R.
Boyer, Don S.; and Freeborn, John C., 4,514,176, Cl. 434-224.000.

Honeywell Information Systems Inc.: *See*—
Anderson, Nils A., 4,514,815, Cl. 364-478.000.
Hartig, Kent H., 4,514,806, Cl. 364-200.000.
Mirow, Fred A.; and Quinones, Matthew M., 4,514,820, Cl. 364-858.000.

Honzyo, Isao: *See*—
Ikematsu, Masaki; Honzyo, Isao; and Sakai, Kazuo, 4,514,287, Cl. 208-309.000.

Hopkins, George D., Jr. Apparatus for and method of constructing, transporting and erecting a structure of two or more stories comprised of a plurality of prefabricated core modules and panelized room elements. 4,513,545, Cl. 52-79.100.

Hori, Yasuro: *See*—
Kanoi, Minoru; Hori, Yasuro; and Kamata, Yuzuru, 4,514,714, Cl. 336-100.000.

Horiba, Ltd.: *See*—
Ishida, Kozo; and Imaki, Takao, 4,514,635, Cl. 250-343.000.

Horii, Ichiro: *See*—
Tashiro, Chiaki; Kawakita, Takeshi; Horii, Ichiro; and Anami, Koretake, 4,514,403, Cl. 514-274.000.

Horiko, Kouki: *See*—
Kita, Yukio; Koide, Kazuo; and Horiko, Kouki, 4,514,501, Cl. 435-251.000.

Horikoshi, Yukio: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,514,156, Cl. 418-173.000.

Horiuchi, Masatada: *See*—
Hagiwara, Takaaki; Horiuchi, Masatada; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, 4,514,830, Cl. 365-200.000.

Hornung, Phillip A.: *See*—
De Los Santos, Armando; King, James D.; Rollwitz, William L.; Matzkanin, George A.; and Hornung, Phillip A., 4,514,691, Cl. 324-301.000.

Hosomizu, Hiroshi: *See*—
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Inoue, Toru; Nakai, Masaaki; Omaki, Takanobu; Niwa, Masatake; and Sekida, Minoru, 4,514,073, Cl. 354-414.000.

Hosoya, Toshiro, to Tobishi Industries Ltd. Compact capacitor motor with thin coil cores. 4,514,655, Cl. 310-218.000.

Hotta, Yuji: *See*—
Koitabashi, Takeo; Matsuzaka, Syoji; Hotta, Yuji; and Iwata, Masatoshi, 4,514,491, Cl. 430-567.000.

Hougen, Everett D. Chip breaker for annular hole cutting tools. 4,514,120, Cl. 409-137.000.

Houghtalen, Steven R.: *See*—
Agnew, Palmer W.; Buonomo, Joseph P.; Houghtalen, Steven R.; Kellerman, Anne S.; Losinger, Raymond E.; and Valashinas, James W., 4,514,803, Cl. 364-200.000.

Houssian, Vazgen J.: *See*—
Dowzall, Martin E.; and Houssian, Vazgen J., 4,513,511, Cl. 33-447.000.

Howat, Robert J.: *See*—
Shannon, Michael A.; and Howat, Robert J., 4,514,435, Cl. 427-8.000.

Howmedica, Inc.: *See*—
Johns, Owen L., 4,513,739, Cl. 128-156.000.

Hoyer, Gale G.: *See*—
Inoue, Kimio; Hoyer, Gale G.; and Bates, Stanley I., 4,514,574, Cl. 564-424.000.

Hrdlicka, Karel: *See*—
Janda, Jiri; and Hrdlicka, Karel, 4,514,838, Cl. 369-254.000.

Hsiao, Cheng-Kuo: *See*—
Loutfy, Rafik O.; and Hsiao, Cheng-Kuo, 4,514,482, Cl. 430-78.000.

Hsu, Oscar H. H.; and Tassler, Milford C., to Masonite Corporation. Modified phenol-formaldehyde resin and the production thereof. 4,514,532, Cl. 524-14.000.

Huber, Marion: *See*—
Kaspar, Klaus P.; Becker, Jurgen; and Huber, Marion, 4,514,091, Cl. 366-130.000.

Hubert, Miffre, to Societe Nationale Elf Aquitaine (Production). Sealing system for a well bore in which a hot fluid is circulated. 4,513,816, Cl. 166-75.00R.

Hubred, Gale L., to Chevron Research Company. Leaching nickel, cobalt, molybdenum, tungsten, and vanadium from spent hydroprocessing catalysts. 4,514,368, Cl. 423-54.000.

Hubred, Gale L.; and Van Leirsburg, Dean A., to Chevron Research Company. Recovery of cobalt, molybdenum, nickel, tungsten and vanadium from an aqueous ammonia and ammonium salt solution by coextracting molybdenum, tungsten and vanadium and sequential extraction of nickel and cobalt. 4,514,369, Cl. 423-54.000.

Huffman, William A.; and Brown, Harvey A., to Minnesota Mining and Manufacturing Company. Helichromic-amectic liquid crystal compositions and display cells. 4,514,045, Cl. 350-351.000.

Hughes, Charles C., to R. A. Jones & Co. Inc. Apparatus for forming a flip top carton. 4,514,181, Cl. 493-131.000.

Hughes Tool Company: *See*—
Gilbert, Bruce, 4,513,822, Cl. 166-382.000.
Wadhwa, Suresh K., 4,514,309, Cl. 252-8.55R.

Hughes, Vincent L.; and Benitez, Francisco M., to Exxon Research and Engineering Co. Petroleum resin and pressure sensitive adhesive formulations utilizing same as tackifier. 4,514,554, Cl. 526-339.000.

Huignard, Jean P.: *See*—
Pichon, Laurence; and Huignard, Jean P., 4,514,038, Cl. 350-162.130.

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Humphreys, Norman G.; and Dean, Raymond H., to Tempmaster Corporation. Low Temperature air conditioning system and method. 4,513,574, Cl. 62-59.000.

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Barber, James C., 4,514,366, Cl. 423-318.000.

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Lemahieu, Raymond G.; and Janssens, Wilhelmus, 4,514,494, Cl. 430-376.000.

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Wall, George W.; and Jones, Glyn T., 4,514,298, Cl. 210-232.000.

Jones, Stephen H.: *See*—
Berthel, Robert O.; Plank, Vernon G.; Jones, Stephen H.; and Matthews, Anthony J., 4,514,758, Cl. 358-93.000.

Jonkeren, Gerrit J.: *See*—
van Zon, Cornelis; Jonkeren, Gerrit J.; and Eggengoor, Hilbert, 4,514,302, Cl. 210-433.200.

Jordan, J. Kirk; and Scherling, Sandra L., to Martha White Foods, Inc. Package and method for the automatic control of the degree of cooking of a cereal. 4,514,426, Cl. 426-113.000.

Josef Willmes GmbH: *See*—
Braun, Oskar, 4,513,659, Cl. 100-117.000.

Josquin, Wilhelmus J. M. J.: *See*—
van Ommen, Alfred H.; Maas, Henricus G. R.; Appels, Johannes A.; and Josquin, Wilhelmus J. M. J., 4,514,251, Cl. 156-628.000.

Jost, Ralph, to Hobas-Engineering AG. Tube coupling. 4,513,996, Cl. 285-110.000.

Jourdain, Charles H.: *See*—
Bezard, Jean-Jacques; Jourdain, Charles H.; and Lalanne, Bruno, 4,513,616, Cl. 73-295.000.

Joy Manufacturing Company: *See*—
Coe, Everett L., Jr., 4,514,195, Cl. 55-152.000.
Saulters, John D.; and Scarr, Roger H., 4,514,796, Cl. 364-142.000.

Justice, Bruce H.; and Aycock, Robert F., to Allied Corporation. Spin-on dopant method. 4,514,440, Cl. 427-85.000.

K. D. Binnie Engineering Pty. Ltd.: *See*—
Binnie, Kevin D., 4,513,487, Cl. 29-243.500.

Kabu, Masahiro: *See*—
Hayashi, Tetsuaki; Kabu, Masahiro; and Yamashita, Nobuyuki, 4,513,834, Cl. 180-70.100.

Kabushiki Kaisha Daini Seikosha: *See*—
Nagasaka, Nobuyuki; and Momoshima, Yukichi, 4,513,650, Cl. 84-1.030.
Tabata, Junichi; Torii, Masahiro; Oikawa, Hiroshi; Sawada, Minoru; and Masui, Yasuyuki, 4,513,753, Cl. 128-706.000.

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Iida, Shinzo; Ie, Katsuji; and Miyazaki, Jun, 4,513,806, Cl. 164-413.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Edo, Teruo, 4,513,719, Cl. 123-447.000.

Kabushiki Kaisha Nippon Coinco.: *See*—
Mori, Yoshikazu; Kojima, Susumu; and Kobayashi, Osamu, 4,513,880, Cl. 221-260.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Suzuki, Yoshihisa; Yasui, Yoshiharu; Seiki, Kazuo; and Takasu, Shigeru, 4,513,481, Cl. 19-244.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Shimada, Hisashi; Arai, Tohru; and Endo, Junji, 4,514,275, Cl. 204-298.000.

Kabushiki Kaisha Universal: *See*—
Okada, Tomoo, 4,513,968, Cl. 273-143.00R.

Kadomatsu, Yasuo: *See*—
Matsuura, Tadashi; and Kadomatsu, Yasuo, 4,514,483, Cl. 430-84.000.

Kadono, Motoaki; and Tamura, Shingo, to Toray Silicone Company, Ltd. Water impermeable package for room temperature-moisture curing one-part sealants. 4,514,446, Cl. 428-35.000.

Kadota, Genichi: *See*—
Shinohara, Satoru; Fujii, Noboru; Imada, Kiyohisa; Kadota, Genichi; and Ueno, Hideo, 4,514,560, Cl. 536-1.100.

Kaeufer, Helmut; Rautenberg, Lutz; and Pahl, Joachim, to Deutsche Solvay Werke GmbH. Process for the manufacture of articles of high mechanical strength from thermoplastic synthetic resins. 4,514,351, Cl. 264-210.200.

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Saito, Junichi; and Kagabu, Shinzo, 4,514,418, Cl. 514-508.000.

Kail, James E.: *See*—
Shay, Gregory D.; Eldridge, Emmojean; and Kail, James E., 4,514,552, Cl. 526-301.000.

Kaiser, Emil T.; and Moe, Gregory, to University Patents, Inc. Peptide hormones with calcitonin-like activity. 4,514,331, Cl. 260-112.50T.

Kajumov, Rashid R.: *See*—
Uretsky, Yan S.; Kajumov, Rashid R.; Bashirov, Zaur A.; Bashirova, Alfia G.; and Strelnikov, Alexandr A., 4,513,620, Cl. 73-664.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Gmeinder, Hermann; and Wenger, Georg, 4,514,604, Cl. 200-83.00N.
Strohmaier, Ernst, 4,514,169, Cl. 433-29.000.

Kamata, Yuzuru: *See*—
Kanoi, Minoru; Hori, Yasuro; and Kamata, Yuzuru, 4,514,714, Cl. 336-100.000.

Kaminsky, Theo, to Santrade Ltd. Drive mechanism for radial adjustment of a drilling tool. 4,514,116, Cl. 408-161.000.

Kamio, Takayoshi: *See*—
Seto, Nobuo; Kamio, Takayoshi; and Aoki, Kozo, 4,514,490, Cl. 430-505.000.

Kamleitner, Ewald, to MTU Motoren und Turbinen-Union Friedrichshafen GmbH. Fuel injection timer. 4,513,724, Cl. 123-500.000.

Kamo, Takashi: *See*—
Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; Kimura, Shirou; Torisu, Yoshio; and Okazaki, Mari, 4,514,277, Cl. 204-424.000.

Kamyr AB: *See*—
Richter, Johan C. F. C.; and Richter, Ole J., 4,513,515, Cl. 34-33.000.

Kanagawa Chemical Laboratory, Ltd.: *See*—
Cruickshank, Philip A.; DiSanzo, Carmine P.; Kondo, Kiyosi; and Kono, Hiromichi, 4,514,419, Cl. 514-521.000.

Kanars Data Corporation: *See*—
Matumoto, Hiroaki; and Sekiguchi, Hiroshi, 4,514,675, Cl. 318-696.000.

Kandler, Joachim: *See*—
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,514,328, Cl. 252-609.000.

Kanebako, Hiromu; and Hisatomi, Yasukiro, to Kuroda Precision Industries Ltd. Cutting fluid supply apparatus. 4,514,149, Cl. 417-403.000.

Kaneko, Fumihiko; Murakawa, Tetsuya; Nitta, Koichi; Yamana, Noriaki; Takeda, Masashi; and Tachi, Kunio, to Murata Manufacturing Co., Ltd. Electronic component series. 4,514,787, Cl. 361-420.000.

Kanne, David B.: *See*—
Heather, James B.; and Kanne, David B., 4,514,215, Cl. 71-107.000.

Kanoi, Minoru; Hori, Yasuro; and Kamata, Yuzuru, to Hitachi, Ltd. Noise-reduction device for stationary induction apparatus. 4,514,714, Cl. 336-100.000.

Kansai Paint Co., Ltd.: *See*—
Sugimoto, Kenji; and Isozaki, Osamu, 4,514,471, Cl. 428-703.000.

Kanzaki Paper Manufacturing Co. Ltd.: *See*—
Suzuki, Toshitake; Arai, Naoto; Aoyagi, Shoji; Saito, Toranosuke; Kitani, Masakatsu; and Ishibashi, Takashi, 4,514,745, Cl. 346-216.000.

Kariatsumari, Keiichiro; and Hirai, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Microwave power amplifier/combiner. 4,514,699, Cl. 330-53.000.

Karjalainen, Arto J.; and Kurkela, Kauko O. A., to Farmos Yhtyma Oy. Substituted imidazole derivatives and their use as anti-thrombosis agents. 4,514,412, Cl. 514-397.000.

Karlsberg, Jerry J. Credit card hair comb. 4,513,842, Cl. 132-11.00R.

Karlsson, Hakan I.; and Pettersson, Jan G. T., to Svenska Traforskningsinstitutet. Method of measuring fines in pulp suspensions. 4,514,257, Cl. 162-49.000.

Kasagi, Kunisuke; and Kawashima, Machio, to Hitachi, Ltd. Color television receiver. 4,514,664, Cl. 315-383.000.

Kasai, Junichi: *See*—
Yanagishima, Takayuki; and Kasai, Junichi, 4,514,599, Cl. 179-181.00W.

Kasai, Kazumi, to Yoshida Kogyo K. K. Slide fastener stringer. 4,513,483, Cl. 24-409.000.

Kashiwagi, Susumu: *See*—
Sasaki, Masafumi; Kashiwagi, Susumu; and Hiyoshi, Takanori, 4,513,569, Cl. 60-39.310.

Kaspar, Klaus P.; Becker, Jurgen; and Huber, Marion, to Boehringer Mannheim GmbH. Container assembly for viscous test specimen materials. 4,514,091, Cl. 366-130.000.

Kaspers, Helmut: *See*—
Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 4,514,402, Cl. 514-250.000.

Kastalsky, Alexander: *See*—
Bean, John C.; Kastalsky, Alexander; and Luryi, Sergey, 4,514,748, Cl. 357-58.000.

Kastner, Anton: *See*—
Wevelsiep, Klaus; and Kastner, Anton, 4,514,622, Cl. 235-463.000.

Kasuya, Takahira; Morita, Hideaki; Takagiwa, Hiroyuki; and Yamakawa, Goichi, to Konishiroku Photo Industry Co., Ltd. Method for manufacturing toner for electrophotography. 4,514,487, Cl. 430-137.000.

Kataoka, Kenji: *See*—
Okada, Kunihiro; Endo, Hirohide; Saito, Susumu; and Kataoka, Kenji, 4,514,079, Cl. 355-8.000.

Kato, Kenshiro: *See*—
Togashi, Minoru; Kato, Kenshiro; and Furuya, Shin-ichi, 4,513,802, Cl. 152-353.00R.

Kaufman, George A., III; and Kocher, Mark J., to General Electric Company. Two stage electrical braking for a variable speed AC induction motor. 4,514,677, Cl. 318-759.000.

Kawabuchi, Katsuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of making improved aluminum metallization in self-aligned polysilicon gate technology. 4,514,233, Cl. 148-1.500.

Kawaguchi, Yoshikazu; Maruyama, Seiichro; and Kawasaki, Hiroyuki, to Mitsubishi Chemical Industries, Limited. Production of molded articles having excellent optical characteristics. 4,514,357, Cl. 264-328.160.

Kawai, Hisasi: *See*—
Ina, Toshikazu; Obayashi, Hideki; Kawai, Hisasi; Kohama, Tokio; Sawada, Daisaku; and Shigematsu, Takashi, 4,513,721, Cl. 123-478.000.
Obayashi, Hideki; Kohama, Tokio; Saito, Kimitaka; Kawai, Hisasi; and Ina, Toshikazu, 4,513,626, Cl. 73-862.340.

Kawai, Mituo: *See*—
Fukasawa, Yoshiharu; Matsumoto, Tatsuhiko; Kawai, Mituo; Ueda, Shigeru; Koizumi, Hideo; and Saitou, Hiroyuki, 4,514,234, Cl. 148-11.50P.

Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,513,651, Cl. 84-1.220.

Kawai, Tohru, to Canon Kabushiki Kaisha. Lens mounting. 4,514,039, Cl. 350-255.000.

Kawai, Toshinori: *See*—
Imoda, Kinichiro; Kawai, Toshinori; and Nishitani, Kimio, 4,513,921, Cl. 242-36.000.

Kawakami, Ken-ichi: *See*—
Tanaka, Kazuhiro; Kawakami, Ken-ichi; and Yoshii, Toshiya, 4,514,452, Cl. 428-141.000.

Kawakami, Yukichika: *See*—
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,514,558, Cl. 528-388.000.

Kawakita, Kenji: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,514,565, Cl. 544-25.000.
Kawakita, Shizuo; Shibazaki, Takeyoshi; and Mochida, Hiromi, to Mitsubishi Kinzoku Kabushiki Kaisha. Continuous direct process of lead smelting. 4,514,223, Cl. 75-77.000.
Kawakita, Takeshi: *See—*
Tashiro, Chiaki; Kawakita, Takeshi; Horii, Ichiro; and Anami, Koretake, 4,514,403, Cl. 514-274.000.
Kawamura, Hideaki: *See—*
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Kawasaki, Hiroyuki: *See—*
Kawaguchi, Yoshikazu; Maruyama, Seiichro; and Kawasaki, Hiroyuki, 4,514,357, Cl. 264-328.160.
Kawasaki, Masahiro: *See—*
Negishi, Kiyoshi; Kawasaki, Masahiro; and Tano, Eiichi, 4,514,075, Cl. 354-446.000.
Kawase, Shigeki: *See—*
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; Fujita, Takashi; and Kawase, Shigeki, 4,514,451, Cl. 428-141.000.
Kawase, Yozo: *See—*
Inagaki, Taizo; Ichikawa, Kentaro; Kido, Hitoshi; and Kawase, Yozo, 4,514,138, Cl. 415-1.000.
Kawashima, Machio: *See—*
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Kawata, Ken: *See—*
Hirai, Hiroyuki; Sato, Kozo; and Kawata, Ken, 4,514,493, Cl. 430-617.000.
Kaye, Wilbur I., to Beckman Instruments, Inc. Marking and authenticating documents with liquid crystal materials. 4,514,085, Cl. 356-71.000.
Kazansky Aviatsionny Institut Imeni A. N. Tupoleva: *See—*
Uretsky, Yan S.; Kajumov, Rashid R.; Bashirov, Zaur A.; Bashirova, Alfia G.; and Strelnikov, Alexandr A., 4,513,620, Cl. 73-664.000.
Uretsky, Yan S., 4,513,622, Cl. 73-664.000.
KB Cold Isostatic Press Systems CIPS: *See—*
Pettersson, Ola, 4,514,158, Cl. 425-78.000.
Kear, Bernard H.: *See—*
Giamei, Anthony F.; and Kear, Bernard H., 4,514,360, Cl. 420-454.000.
Kearney & Trecker Corporation: *See—*
Johnstone, Richard; and Kirkham, Edward E., 4,514,123, Cl. 409-231.000.
Kearns, Chester L., to Montgomery Hosiery Mill, Inc. Sock with simulated lace edge and method. 4,513,589, Cl. 66-180.000.
Keddie, David P.; and Shaw, Richard J., to Hempe Manufacturing Co. Water-powered brush. 4,513,466, Cl. 15-29.000.
Keen, William E., Jr.: *See—*
Chestnut, Raymond; Colussi, John J.; Frost, Donald J.; Keen, William E., Jr.; and Raduta, Margaret C., 4,514,307, Cl. 210-751.000.
Keese, Richard C.: *See—*
Giaever, Ivar; and Keese, Richard C., 4,514,500, Cl. 435-241.000.
Keilberth, Richard: *See—*
Aldinger, Fritz; Bischoff, Albrecht; Keilberth, Richard; and Sperner, Franz, 4,514,589, Cl. 174-119.00R.
Keller, William F.; and Sibley, Richard D., to Koso International, Inc. Shock responsive device. 4,513,629, Cl. 74-2.000.
Kellerman, Anne S.: *See—*
Agnew, Palmer W.; Buonomo, Joseph P.; Houghtalen, Steven R.; Kellerman, Anne S.; Losinger, Raymond E.; and Valashinas, James W., 4,514,803, Cl. 364-200.000.
Kelly, Stephen M.: *See—*
Tuong, Huynh-Ba; Kelly, Stephen M.; and Osman, Maged A., 4,514,317, Cl. 252-299.620.
Kemp, Linwood B.: *See—*
Layman, Robert G.; and Kemp, Linwood B., 4,514,294, Cl. 210-87.000.
Kendall Company, The: *See—*
Westlake, Betsy C., 4,513,740, Cl. 128-165.000.
Kenny, Andrew A., to Eaton Corporation. Controlling engine idle. 4,513,785, Cl. 137-881.000.
KenoGard AB: *See—*
Swiatkowski, Piotr; and Wiklund, Thomas, 4,514,290, Cl. 209-166.000.
Kent, William C., to AT&T Technologies, Inc. Methods and apparatus for simultaneously inserting an array of flexible pins into a work piece. 4,513,498, Cl. 29-845.000.
Kenzie, E. Dennis, to Aero-Safe Technologies Inc. Dereefing cutter. 4,513,931, Cl. 244-152.000.
Kerner, Dieter; Kleinschmit, Peter; Parkhouse, Alan; and Wolff, Siegfried, to Degussa Aktiengesellschaft. Natural oxidic or silicate filler modified on the surface, a process for its production. 4,514,231, Cl. 106-309.000.
Kernforschungsanlage Julich Gesellschaft Mit Beschrankter Haftung: *See—*
Luhleich, Hartmut; and Dias, Francisco J., 4,514,346, Cl. 264-29.500.
Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, 4,514,296, Cl. 210-96.100.
Kernforschungszentrum Karlsruhe GmbH: *See—*
Ehrfeld, Wolfgang; and Krieg, Gunther, 4,514,095, Cl. 366-340.000.
Kerotest Manufacturing Corp.: *See—*
Owoc, James R.; Thomas, John H.; and Conley, Richard W., 4,513,779, Cl. 137-556.000.
Kesling, Haven S., Jr., to Atlantic Richfield Company. Production of aryl alkyl ethers from methylbenzyl alcohol using rhenium heptoxide catalyst. 4,514,576, Cl. 568-659.000.
Ketels, Gerardus H. J., to Procom, B.V. Method for removing solid particles from a pasty mass. 4,513,477, Cl. 17-46.000.
Kettlewell, Peter J.: *See—*
Berry, Paul S.; Benson, John A.; Kettlewell, Peter J.; and Turner, Michael J. B., 4,513,689, Cl. 119-82.000.
Kettman, John R.; and Norgard, Michael V., to Board of Regents, The University of Texas System, The. Hybrid cell lines producing monoclonal antibodies directed against Treponema. 4,514,498, Cl. 435-240.000.
Kido, Hitoshi: *See—*
Inagaki, Taizo; Ichikawa, Kentaro; Kido, Hitoshi; and Kawase, Yozo, 4,514,138, Cl. 415-1.000.
Kikkoman Corporation: *See—*
Matsuura, Masaru, 4,514,433, Cl. 426-634.000.
Kikuchi, Junzo; Sugiura, Ryuzo; Yamamoto, Mutsuhiro; and Yoshida, Toshiro, to Tamura Electric Works, Ltd. Control of a key telephone system using a pulse width modulated signal. 4,514,597, Cl. 179-99.00M.
Kikuchi, Yoshiki: *See—*
Saitoh, Hiroyuki; and Kikuchi, Yoshiki, 4,514,744, Cl. 346-153.100.
Kikushima, Kazuyuki: *See—*
Kubota, Yasuo; Tanaka, Kazuhiko; and Kikushima, Kazuyuki, 4,514,767, Cl. 358-280.000.
Kikuta, Kazutsune: *See—*
Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,514,513, Cl. 502-112.000.
Killen, Robert H., to Gravity Guidance, Inc. Toggle bar for exercise and health purposes. 4,513,961, Cl. 272-62.000.
Kim, George A.: *See—*
Verma, Surendra K.; and Kim, George A., 4,514,192, Cl. 51-295.000.
Kimberlin, Dan W., to General Electric Company. Contact and terminal assembly for a brush wear indicator. 4,513,495, Cl. 29-597.000.
Kimoto, Manabu, to Nippon Electric Co., Ltd. Information handling apparatus having a high speed instruction-executing function. 4,514,804, Cl. 364-200.000.
Kimoto, Tetsuo; and Orita, Kiyoshi, to Nippon Steel Corporation. Apparatus for reducing the watt loss of a grain-oriented electromagnetic steel sheet. 4,513,597, Cl. 72-53.000.
Kimura, Hiroshi: *See—*
Minami, Shunji; and Kimura, Hiroshi, 4,513,725, Cl. 123-511.000.
Kimura, Shirou: *See—*
Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; Kimura, Shirou; Torisu, Yoshio; and Okazaki, Mari, 4,514,277, Cl. 204-424.000.
Kimura, Takashi; Mochiji, Kozo; and Obayashi, Hidehito, to Hitachi, Ltd. X-Ray lithographic system. 4,514,857, Cl. 378-034.000.
Kimura, Yoshiharu: *See—*
Taniguchi, Isoji; and Kimura, Yoshiharu, 4,514,555, Cl. 528-9.000.
Kindt, Robert J., to Eastman Kodak Company. Sheet deceleration apparatus. 4,513,959, Cl. 271-270.000.
Kinex Corporation: *See—*
Nordling, Karl I., 4,514,825, Cl. 364-900.000.
King, James D.: *See—*
De Los Santos, Armando; King, James D.; Rollwitz, William L.; Matzkanin, George A.; and Hornung, Phillip A., 4,514,691, Cl. 324-301.000.
King, Monroe L., to Eaton Corporation. Ion treatment apparatus. 4,514,636, Cl. 250-443.100.
Kinney, Ohler L., Jr.; and Holmberg, Joyce D., to Marley Cooling Tower Company, The. Air stream entrained water eliminator for cross flow cooling tower. 4,514,202, Cl. 55-440.000.
Kino, Gordon S.; Bennett, Simon D.; and Husson, Didier, to Leland Stanford University, Board of Trustees of. Three-dimensional temperature probe. 4,513,749, Cl. 128-660.000.
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., to Polaroid Corporation. Photographic sheet processor having large diameter rolling surfaces. 4,514,069, Cl. 354-304.000.
Kirkham, Edward E.: *See—*
Johnstone, Richard; and Kirkham, Edward E., 4,514,123, Cl. 409-231.000.
Kirsch, Warren B., to Ethyl Corporation. Metal bromide preparation. 4,514,374, Cl. 423-497.000.
Kisida, Hirosi: *See—*
Ohsumi, Tadashi; Hatakoshi, Makoto; and Kisida, Hirosi, 4,514,406, Cl. 514-352.000.
Kisler, Semyon, to Polaroid Corporation. Coating uniformity improvement apparatus. 4,513,683, Cl. 118-620.000.
Kit, Malon; and Kit, Saul, to Novagene, Ltd.; and Baylor College of Medicine. Modified live pseudorabies viruses. 4,514,497, Cl. 435-235.000.
Kit, Saul: *See—*
Kit, Malon; and Kit, Saul, 4,514,497, Cl. 435-235.000.
Kita, Yukio; Koide, Kazuo; and Horiko, Kouki, to Oji Paper Company, Ltd. Method for cultivation of microorganism. 4,514,501, Cl. 435-251.000.
Kitahara, Akifumi: *See—*
Hirose, Noriyasu; Kuriyama, Shizuo; Yamatsu, Kiyomi; Kitahara, Akifumi; and Uzuo, Takeshi, 4,514,395, Cl. 514-224.000.

Kitajima, Hisashi: *See*—
Sano, Sakae; Kitajima, Hisashi; Iimori, Hiroshi; and Nishio, Tadashi, 4,514,112, Cl. 405-269.000.

Kitani, Masakatsu: *See*—
Suzuki, Toshitake; Arai, Naoto; Aoyagi, Shoji; Saito, Toranosuke; Kitani, Masakatsu; and Ishibashi, Takashi, 4,514,745, Cl. 346-216.000.

Kittel, Ludwig: *See*—
Bader, Edgar; Rohrbach, Gerd; Petersen, Jurgen; and Kittel, Ludwig, 4,514,840, Cl. 370-29.000.

Klaschka, Rudolf. Capacitor can housing, process and apparatus for its manufacture. 4,513,873, Cl. 220-89.00A.

Klaschka, Rudolf; and Wolf, Franz J. Composite cover plate and application of the same. 4,514,788, Cl. 361-433.000.

Klaue, Kaj, to Synthes AG. Surgical compression plate. 4,513,744, Cl. 128-92.00D.

Klaus, Dale A., to International Export Company. Lighting fixture with triple insulating means. 4,514,792, Cl. 362-294.000.

Kleeb, Linda L.: *See*—
Kleeb, Thomas R.; and Kleeb, Linda L., 4,514,531, Cl. 524-5.000.

Kleeb, Thomas R.; and Kleeb, Linda L., to Dresser Industries, Inc. Monolithic refractories comprising a hydrocolloid. 4,514,531, Cl. 524-5.000.

Kleinberg, Roger: *See*—
Buckholz, Lawrence, Jr.; Wilson, Richard A.; and Kleinberg, Roger, 4,514,094, Cl. 366-160.000.
Buckholz, Lawrence, Jr.; Wilson, Richard A.; and Kleinberg, Roger, 4,514,431, Cl. 426-641.000.

Kleinert, Reiner: *See*—
Szczesny, Adolf; Kleinert, Reiner; Jedo, Antoni; and Gutorski, Zygmunt, 4,514,300, Cl. 210-342.000.

Kleinschmit, Peter: *See*—
Kerner, Dieter; Kleinschmit, Peter; Parkhouse, Alan; and Wolff, Siegfried, 4,514,231, Cl. 106-309.000.

Klepner, Stephen P., to International Business Machines Corporation. Groundplane post-etch anodization. 4,514,254, Cl. 156-656.000.

Klimeck, Edward F.: *See*—
Ackerman, Walter T.; and Klimeck, Edward F., 4,514,102, Cl. 401-78.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Eckert, Rolf, 4,513,703, Cl. 123-193.0CH.

KMK Karl Magerle Lizenz AG: *See*—
Magerle, Karl, 4,514,159, Cl. 425-125.000.

Knapp, Caroline M.: *See*—
Knapp, Frank W.; and Knapp, Caroline M., 4,513,500, Cl. 29-885.000.

Knapp, Frank W.; and Knapp, Caroline M. Method of forming a wire splice. 4,513,500, Cl. 29-885.000.

Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., to Australasian Training Aids (PTY.) Limited. Firing range. 4,514,621, Cl. 235-400.000.

Knopf, Franz, to List, Hans. Axial fan. 4,514,140, Cl. 415-119.000.

Knowles, James. Corrugated staple. 4,514,126, Cl. 411-477.000.

Kobayashi, Masao, to Shinsei Kogyo Co., Ltd. Cassette-type power unit for a motor toy. 4,514,477, Cl. 429-98.000.

Kobayashi, Nobuyuki; Ito, Hiroshi; and Ohkawa, Nobuhisa, to Toyota Jidosha Kabushiki Kaisha. Engine idling rotational speed control device. 4,513,710, Cl. 123-339.000.

Kobayashi, Osamu: *See*—
Mori, Yoshikazu; Kojima, Susumu; and Kobayashi, Osamu, 4,513,880, Cl. 221-260.000.

Kobayashi, Takehiro: *See*—
Tsunoda, Kikuo; and Kobayashi, Takehiro, 4,513,926, Cl. 242-84.20G.

Kobayashi, Tatsuo, to Toyota Jidosha Kabushiki Kaisha. Ignition timing control device of an internal combustion engine. 4,513,717, Cl. 123-425.000.

Kober, Alfred E.; and Gilewicz, Stanley E. Method of minimizing slagging in the burning of black liquid. 4,514,256, Cl. 162-30.110.

Koch Adler AG: *See*—
Scholl, Hans, 4,513,677, Cl. 112-262.300.

Koch, Albin G., to Heierling of Switzerland, Ltd. Ski boot with inner boot tightening mechanism. 4,513,520, Cl. 36-119.000.

Kocher, Mark J.: *See*—
Kaufman, George A., III; and Kocher, Mark J., 4,514,677, Cl. 318-759.000.

Kochs Adler AG: *See*—
Meyer, Horst; and Landwehr, Gunter, 4,513,675, Cl. 112-236.000.

Koci, Zdenek: *See*—
Lauton, Alain; and Koci, Zdenek, 4,514,186, Cl. 8-527.000.

Koeneman, Robert M.; Miller, Benjamin D.; Jablonski, Thaddeus M.; and Schafer, Albert L., to Remcor Products Company. Flaked ice dispenser. 4,513,892, Cl. 222-235.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Schneider, Georg, 4,513,662, Cl. 101-207.000.

Koerner, Dennis W.: *See*—
Glass, Richard W.; and Koerner, Dennis W., 4,514,428, Cl. 426-321.000.

Koga, Noritaka; Suzuki, Takanori; Nakamura, Kenji; Suzuki, Hitoshi; and Ogano, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine. 4,513,702, Cl. 123-193.00H.

Kogen, James; and Anderson, C. Roger, to Shure Brothers, Inc. Brush contact for phonograph tone arm dynamic stabilizer. 4,514,836, Cl. 369-74.000.

Kohama, Tokio; Obayashi, Hideki; Saito, Kimitaka; Ina, Toshikazu; and Narita, Seiichi, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Torque detector. 4,513,627, Cl. 73-862.340.

Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, to Nippon Soken, Inc.; and Nippondenso Co., Inc. Torque detector. 4,513,628, Cl. 73-862.340.

Kohama, Tokio: *See*—
Ina, Toshikazu; Obayashi, Hideki; Kawai, Hisasi; Kohama, Tokio; Sawada, Daisaku; and Shigematsu, Takashi, 4,513,721, Cl. 123-478.000.
Obayashi, Hideki; Kohama, Tokio; Saito, Kimitaka; Kawai, Hisasi; and Ina, Toshikazu, 4,513,626, Cl. 73-862.340.

Kohler Coating Machinery Corporation, The: *See*—
Kohler, Gordon A. E.; Kohler, John B.; and Kohler, Herbert B., 4,513,915, Cl. 239-455.000.

Kohler, Gordon A. E.; Kohler, John B.; and Kohler, Herbert B., to Kohler Coating Machinery Corporation, The. Nozzle construction for coating equipment. 4,513,915, Cl. 239-455.000.

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Kohler, Gordon A. E.; Kohler, John B.; and Kohler, Herbert B., 4,513,915, Cl. 239-455.000.

Kohler, John B.: *See*—
Kohler, Gordon A. E.; Kohler, John B.; and Kohler, Herbert B., 4,513,915, Cl. 239-455.000.

Kohler, Richard B.; and White, Arthur C., to Indiana University Foundation. Method for the diagnosis of Legionnaires' disease. 4,514,509, Cl. 436-518.000.

Kohlstette, Werner, to Westfalia Separator AG. Centrifuge with self-emptying drum. 4,514,183, Cl. 494-27.000.

Koide, Kazunari: *See*—
Inoue, Hiroshi; Komeya, Katsutoshi; Tsuge, Akihiko; Koide, Kazunari; Mori, Masaaki; and Urakawa, Tetsuro, 4,514,370, Cl. 423-344.000.

Koide, Kazuo: *See*—
Kita, Yukio; Koide, Kazuo; and Horiko, Kouki, 4,514,501, Cl. 435-251.000.

Koike, Norio; Takemoto, Iwao; Ohba, Shinya; Masuhara, Toshiaki; and Kubo, Masaharu, to Hitachi, Ltd. Solid-state imaging device. 4,514,766, Cl. 358-213.000.

Koitabashi, Takeo; Matsuzaka, Syoji; Hotta, Yuji; and Iwata, Masatoshi, to Konishiroku Photo Industry Co., Ltd. Photosensitive silver halide emulsion. 4,514,491, Cl. 430-567.000.

Koivunen, Erkki A., to General Motors Corporation. Dual input clutch transmission. 4,513,631, Cl. 74-360.000.

Koivunen, Erkki A.: *See*—
Borman, August H.; and Koivunen, Erkki A., 4,514,147, Cl. 417-288.000.

Koizumi, Hideo: *See*—
Fukasawa, Yoshiharu; Matsumoto, Tatsuhiko; Kawai, Mituo; Ueda, Shigeru; Koizumi, Hideo; and Saitou, Hiroyuki, 4,514,234, Cl. 148-11.50P.

Kojima, Junpei: *See*—
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; Yoshioka, Hiroshi; and Nunose, Akira, 4,514,512, Cl. 502-107.000.

Kojima, Susumu: *See*—
Mori, Yoshikazu; Kojima, Susumu; and Kobayashi, Osamu, 4,513,880, Cl. 221-260.000.

Kojima, Teiryo: *See*—
Negishi, Takao; and Kojima, Teiryo, 4,513,565, Cl. 57-236.000.

Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, to Laurel Bank Machine Co., Ltd. Device for swinging accumulating wheel for use in automatic money depositing and disbursing machine. 4,513,958, Cl. 271-187.000.

Koletzki, Ulrich: *See*—
Papst, Georg; Wrobel, Guenter; and Koletzki, Ulrich, 4,513,812, Cl. 165-80.00B.

Komatsu, Yasuhiro: *See*—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,514,573, Cl. 564-387.000.

Komeya, Katsutoshi: *See*—
Inoue, Hiroshi; Komeya, Katsutoshi; Tsuge, Akihiko; Koide, Kazunari; Mori, Masaaki; and Urakawa, Tetsuro, 4,514,370, Cl. 423-344.000.

Komoda, Yoshiyuki: *See*—
Suzuki, Yoshiharu; Fukagawa, Hitoshi; Komoda, Yoshiyuki; and Tanaka, Osamu, 4,514,719, Cl. 340-310.00R.

Kondo, Kiyosi: *See*—
Cruickshank, Philip A.; DiSanzo, Carmine P.; Kondo, Kiyosi; and Kono, Hiromichi, 4,514,419, Cl. 514-521.000.

Kondo, Ryuji: *See*—
Hagiwara, Takaaki; Horiuchi, Masatada; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, 4,514,830, Cl. 365-200.000.

Kondo, Takashi: *See*—
Otsuki, Hiromi; Kondo, Takashi; Kondo, Yoshiaki; Obata, Haruyuki; Tate, Takao; and Ishikawa, Norikatu, 4,513,945, Cl. 251-129.000.

Kondo, Yoshiaki: *See*—
Otsuki, Hiromi; Kondo, Takashi; Kondo, Yoshiaki; Obata, Haruyuki; Tate, Takao; and Ishikawa, Norikatu, 4,513,945, Cl. 251-129.000.

Konig, Reinhard. Diaphragm regulating valve. 4,513,948, Cl. 251-212.000.

Koninger, Horst; Lehnert, Klaus; and Schirk, Gunter, to AGFA Gevaert Aktiengesellschaft. Device for coupling the shafts of transporting units in developing machines or the like. 4,514,071, Cl. 354-320.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kasuya, Takahira; Morita, Hideaki; Takagiwa, Hiroyuki; and Yamakawa, Goichi, 4,514,487, Cl. 430-137.000.
Koitabashi, Takeo; Matsuzaka, Syoji; Hotta, Yuji; and Iwata, Masatoshi, 4,514,491, Cl. 430-567.000.
Shirose, Meizo; Ito, Kunio; Takagiwa, Hiroyuki; Takahashi, Jiro; and Gunzi, Kouichi, 4,514,486, Cl. 430-124.000.

Kono, Hiromichi: *See*—
Cruickshank, Philip A.; DiSanzo, Carmine P.; Kondo, Kiyosi; and Kono, Hiromichi, 4,514,419, Cl. 514-521.000.

Konrath, Karl: *See*—
Braun, Wolfgang; Konrath, Karl; and Schwarz, Manfred, 4,513,715, Cl. 123-383.000.

Koppl Company Inc.: *See*—
Coker, Melvin D.; and Wegner, John W., 4,513,788, Cl. 138-89.000.

Kosak, Wolfgang: *See*—
Gassler, Hermann; and Kosak, Wolfgang, 4,513,712, Cl. 123-339.000.

Koski, Erkki, to Valmet Oy. Headbox for a paper machine. 4,514,259, Cl. 162-343.000.

Koso International, Inc.: *See*—
Keller, William F.; and Sibley, Richard D., 4,513,629, Cl. 74-2.000.

Kostecki, Gene. Coating internal surfaces of curved conduits. 4,514,443, Cl. 427-230.000.

Kotcharian, Michel, to Technigaz. Method of building a reservoir for storing a liquid at low temperature. 4,513,550, Cl. 52-249.000.

Kotthaus, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method for fabricating gears. 4,514,118, Cl. 409-26.000.

Koumura, Takashi; and Nakajima, Toyohei, to Honda Giken Kogyo Kabushiki Kaisha. Method of controlling operating amounts of operation control means for an internal combustion engine. 4,513,713, Cl. 123-339.000.

Kowalczyk, Annette: *See*—
Gage, Clifford H., 4,513,901, Cl. 227-49.000.

Koyama, Hiroyasu: *See*—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,514,573, Cl. 564-387.000.

Koyama, Shoichi; and Iwata, Tetsuya, to Alps Electric Co., Ltd. Magnetic head and method of manufacturing the same. 4,514,776, Cl. 360-121.000.

Kraft, Inc.: *See*—
Gething, Frank; and Glenn, Edward P., 4,513,533, Cl. 47-63.000.

Kramer, Wolfgang: *See*—
Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 4,514,402, Cl. 514-250.000.

Kratt, Alfred: *See*—
Braun, Gunter; Kratt, Alfred; and Schleicher, Rolf, 4,513,711, Cl. 123-339.000.

Krautkramer-Branson, Inc.: *See*—
Renzel, Peter; and Kroesen, Klaus, 4,513,621, Cl. 73-631.000.

Kremer, Ross A.; and Saunders, Stephen W., to Mobil Oil Corporation. Ore beneficiation process. 4,514,288, Cl. 209-5.000.

Krieg, Gunther: *See*—
Ehrfeld, Wolfgang; and Krieg, Gunther, 4,514,095, Cl. 366-340.000.

Kroesen, Klaus: *See*—
Renzel, Peter; and Kroesen, Klaus, 4,513,621, Cl. 73-631.000.

Kruger, Hans: *See*—
Ahne, Hellmut; Kruger, Hans; and Rubner, Roland, 4,514,043, Cl. 350-341.000.

Krupp Polysius AG: *See*—
Kupper, Detlev, 4,514,170, Cl. 432-106.000.

Kruse, William C. Chuck collet. 4,513,980, Cl. 279-51.000.

Kubo, Masaharu: *See*—
Koike, Norio; Takemoto, Iwao; Ohba, Shinya; Masuhara, Toshiaki; and Kubo, Masaharu, 4,514,766, Cl. 358-213.000.

Kubota, Ltd.: *See*—
Harada, Denzaburo, 4,513,636, Cl. 74-761.000.
Hayashi, Tetsuaki; Kabu, Masahiro; and Yamashita, Nobuyuki, 4,513,834, Cl. 180-70.100.

Kubota, Reiko: *See*—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,514,573, Cl. 564-387.000.

Kubota, Takuo: *See*—
Nagamoto, Mitsuki; and Kubota, Takuo, 4,514,711, Cl. 335-243.000.

Kubota, Yasuo; Tanaka, Kazuhiko; and Kikushima, Kazuyuki, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus for making masks and/or block copies for printing. 4,514,767, Cl. 358-280.000.

Kucharska, Helena Z.: *See*—
Burton, Thomas M.; and Kucharska, Helena Z., 4,514,523, Cl. 521-85.000.

Kuckelhahn, Kjeld, to Danfoss A/S. Digital control device for an inverse rectifier. 4,514,678, Cl. 318-807.000.

Kudo, Tomio, to Teac Corporation. Device for cleaning the magnetic head of a recorder/reproducer apparatus for use with a magnetic tape cartridge or the like. 4,514,777, Cl. 360-128.000.

Kuehn, Jack W., Sr. Flowable substance container and dispenser. 4,513,875, Cl. 220-214.000.

Kugelman, Michael M., to B. F. Goodrich Company, The. Indirect current monitoring via voltage and impedance monitoring. 4,514,619, Cl. 219-483.000.

Kuhle, Engelbert; Hagemann, Hermann; Paul, Volker; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with new N-sulphenylated allophanates. 4,514,417, Cl. 514-482.000.

Kuhnsman, Alexandra; and Morey, Marian B., to Alexandra Enterpises, Inc. Illuminatable pet leash. 4,513,692, Cl. 119-109.000.

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; and Mallon, Joseph R., Jr., 4,513,623, Cl. 73-721.000.

Kulkarni, Ravi D.; Goddard, E. Desmond; and Aronson, Michael P., to Union Carbide Corporation. Antifoam composition containing hydrocarbon-silicon copolymer, hydrophobic filler and hydrocarbon oil. 4,514,319, Cl. 252-321.000.

Kuna, Wayne A.: *See*—
Zaruba, John V.; Hanson, Steven P.; Luecke, Beth E.; and Kuna, Wayne A., 4,514,175, Cl. 434-82.000.

Kunkel, Fred: *See*—
Hummel, Peter; and Kunkel, Fred, 4,513,663, Cl. 101-349.000.

Kuo, Wei H. CRT updated method and apparatus for identifying integrated circuit pins. 4,514,028, Cl. 339-113.00R.

Kupper, Detlev, to Krupp Polysius AG. Apparatus for the heat treatment of fine-grained material. 4,514,170, Cl. 432-106.000.

Kuraray Co., Ltd.: *See*—
Nakagawa, Junyo; Yamaguchi, Shinji; Hirakawa, Kiyoshi; Tokunaga, Isao; and Ito, Masaaki, 4,514,459, Cl. 428-229.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,514,558, Cl. 528-388.000.

Kuriyama, Shizuo: *See*—
Hirose, Noriyasu; Kuriyama, Shizuo; Yamatsu, Kiyomi; Kitahara, Akifumi; and Uzuo, Takeshi, 4,514,395, Cl. 514-224.000.

Kurkela, Kauko O. A.: *See*—
Karjalainen, Arto J.; and Kurkela, Kauko O. A., 4,514,412, Cl. 514-397.000.

Kuroda Precision Industries Ltd.: *See*—
Kanebako, Hiromu; and Hisatomi, Yasukiro, 4,514,149, Cl. 417-403.000.

Kurokawa, Koshiro: *See*—
Fujiwara, Mitsugu; Sakaue, Yoshinori; Aso, Tomio; Kurokawa, Koshiro; and Obara, Hideo, 4,514,740, Cl. 346-139.00R.

Kurosu, Tomio; and Yoshikawa, Yukio, to Copal Company Limited. Electromagnetic shutter. 4,514,064, Cl. 354-234.100.

Kurth, Josef: *See*—
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,514,449, Cl. 428-76.000.

Kurtz, Anthony D.; and Mallon, Joseph R., Jr., to Kulite Semiconductor Products, Inc. Transducer housing employing crimped leads. 4,513,623, Cl. 73-721.000.

Kurz, Craven H. Orthodontic tool. 4,514,171, Cl. 433-4.000.

Kyle, James C., to Kyle, James C. Method for making terminal assembly for heart pacemaker. 4,514,207, Cl. 65-21.100.

Kyle, James C. Electrical terminal assembly. 4,514,590, Cl. 174-152.0GM.

Kyowa Chemical Industry Co. Ltd.: *See*—
Miyata, Shigeo, 4,514,389, Cl. 424-128.000.

Lafferty, John J.: *See*—
Bondinell, William E.; Lafferty, John J.; and Zirkle, Charles L., 4,514,414, Cl. 514-422.000.

Lagano, Thomas; and Batchelor, William H., to Propane Carburetion Systems, Inc. Process for controlling secondary gas fuel to normally liquid fueled I.C. engine. 4,513,727, Cl. 123-525.000.

Laing, Gordon E.: *See*—
Sumerau, William R.; and Laing, Gordon E., 4,514,200, Cl. 55-368.000.

Laitar, Robert A., to Acme Resin Corporation. Polyisocyanate compositions useful for polyurethane binders. 4,514,316, Cl. 252-182.000.

Lalanne, Bruno: *See*—
Bezard, Jean-Jacques; Jourdain, Charles H.; and Lalanne, Bruno, 4,513,616, Cl. 73-295.000.

Lambert, Ronald F.: *See*—
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., 4,514,069, Cl. 354-304.000.

Landheer, Dolf: *See*—
Plasschaert, Paul E.; Landheer, Dolf; and Cobb, Harold W., 4,514,781, Cl. 361-230.000.

Landsiedel, Horst; and Plum, Hans, to Schering Aktiengesellschaft. Triorganotin acetylsalicylates and biocides containing the same. 4,514,225, Cl. 106-15.050.

Landwehr, Gunter: *See*—
Meyer, Horst; and Landwehr, Gunter, 4,513,675, Cl. 112-236.000.

Lang, Gordon R.; Longstaff, Fred M.; and Lee, Chi H., to Ese Limited. Means and method for reduction of phase jitter. 4,514,855, Cl. 375-97.000.

Langanke, Rolf: *See*—
Molders, Werner; Langanke, Rolf; Sentinger, Egon; and Reuschenbach, Hermann, 4,513,953, Cl. 267-121.000.

Langbein & Engelbracht GmbH & Co. KG: *See*—
Wallstein, Dieter, 4,513,814, Cl. 165-134.00R.

Lange, Gerhard; and Angeli, Giovanni T. Process and apparatus for producing rolls of wire netting. 4,513,924, Cl. 242-67.200.

Langeiri, Michael: *See*—
DeGraaff, Robert; and Langeiri, Michael, 4,513,981, Cl. 280-1.11R.

Langhoff, Josef; and Seipenbusch, Jurgen, to Ruhrkohle AG. Slag removal apparatus. 4,514,191, Cl. 48-77.000.

Langmesser, Otto J., Jr.; and Rees, Richard W. A., to General Motors Corporation. Vertical seat adjuster arrangement for vehicle seats. 4,513,937, Cl. 248-394.000.

Lash, Ronald J., to OMI International Corporation. Zinc electroplating additive concentrate. 4,514,267, Cl. 204-44.200.

Laskowski, Edward L., to Bendix Automation Company. Contact sensing probe for a measuring apparatus. 4,513,507, Cl. 33-169.00R.

LaSpesa, Richard E., to AT&T Teletype Corporation. Mounting apparatus for dot matrix print head. 4,514,100, Cl. 400-55.000.

Latsch, Reinhard; Schlembach, Hans; and Scherenberg, Dieter, to Robert Bosch GmbH. Method for igniting lean fuel-air mixtures and an apparatus to perform the method. 4,513,708, Cl. 123-263.000.

Latsch, Reinhard: *See*—
Damson, Eckart; Latsch, Reinhard; Linder, Ernst; Rieger, Franz; and Schussler, Rainer, 4,514,656, Cl. 313-11.500.

Lau, Chester P. K. Pocket battery tester. 4,514,695, Cl. 324-437.000.

Laubie, Michel: *See*—
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,398, Cl. 514-245.000.
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, 4,514,399, Cl. 514-241.000.

Laue, Eric G.: *See*—
Stephens, James B.; Yang, Mary M.; and Laue, Eric G., 4,514,278, Cl. 204-430.000.

Laufhutte, Dieter, to Carl Still G.m.b.H. & Co. KG, Firma. Method of recovering sulfur from the hydrogen sulfide contained in coke oven gases. 4,514,375, Cl. 423-573.00G.

Laurel Bank Machine Co., Ltd.: *See*—
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,513,958, Cl. 271-187.000.

Lauton, Alain; and Koci, Zdenek, to Ciba Geigy Corporation. Aqueous formulations of water-insoluble or sparingly water-soluble dyes and hypophosphite/unsaturated acid teldmer. 4,514,186, Cl. 8-527.000.

Lautzenhiser, Theodore V., to Standard Oil Company (Indiana). Gravity gradiometer and method. 4,513,618, Cl. 73-382.00G.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical control of nadimide cure temperature and rate. 4,514,557, Cl. 528-342.000.

Law, Denny B.; and Goettker, Bernhardt P., to Unique Functional Products. Trailer with ramp. 4,514,132, Cl. 414-537.000.

Lawrence Brothers, Inc.: *See*—
Johnson, Larry; and Uphoff, Billie J., 4,513,554, Cl. 52-657.000.
Johnson, Larry, 4,513,555, Cl. 52-657.000.
Uphoff, Billie J., 4,513,535, Cl. 49-409.000.

Lawrence, George J., to AMP Incorporated. Contact element. 4,514,032, Cl. 339-278.00C.

Lawrenson, Jack; and Murphy, Kevin M., to Pilkington Brothers P.L.C. Treatment of coated glass. 4,513,543, Cl. 51-283.00R.

Lawson, Peter J., to Cambridge Instruments Limited. Electron beam focussing. 4,514,634, Cl. 250-397.000.

Lax, Ronald G.; Johnson, Robert G.; Henningsen, Charles G.; and Ellis, J. Scott, to Quintec Interconnect Systems. Shielded connector and method of forming same. 4,514,029, Cl. 339-143.00R.

Layman, Robert G.; and Kemp, Linwood B., to Layman, Robert G.; and Kemp, Linwood B. Apparatus for decontaminating hydrocarbons containing PCB. 4,514,294, Cl. 210-87.000.

Leach, John M. Conveyor linkage. 4,513,857, Cl. 198-716.000.

Leal, David T. Method and apparatus for depicting inoperative electrical fuses. 4,514,723, Cl. 340-638.000.

Le Coent, Jean-Louis, to Orogil. High alkalinity sulfurized alkylphenates of alkaline earth metals and method of making same. 4,514,313, Cl. 252-42.700.

Ledgerwood, Harry J., to Plessey Incorporated. Stock feeder with adjustable width feed path. 4,513,899, Cl. 226-141.000.

Lee, Chi H.: *See*—
Lang, Gordon R.; Longstaff, Fred M.; and Lee, Chi H., 4,514,855, Cl. 375-97.000.

Lee, Ching-Pang, to General Electric Company. Angled turbulence promoter. 4,514,144, Cl. 416-96.00R.

Lee, John Y.; and Bauer, Dennis P., to Ethyl Corporation. Process for preparing tertiary phosphines. 4,514,575, Cl. 568-17.000.

Lee, Jong S. Combined storing and slicing device for a stick of butter or margarine or the like. 4,513,501, Cl. 30-115.000.

Lee, Peter F., to Southland Instruments, Inc. Biopsy and aspiration unit with a replaceable cannula. 4,513,754, Cl. 128-753.000.

Lee, Robert S.; and Scowen, Reginald V., to Lever Brothers Company. Fabric washing process and detergent composition for use therein. 4,514,185, Cl. 8-137.000.

Lee, Shih-Ying; and Briefer, Dennis K., to Setra Systems, Inc. Weighing system. 4,513,831, Cl. 177-189.000.

Legg, Ernest L.: *See*—
Federico, Anthony M.; Legg, Ernest L.; and Nguyen, Tuan A., 4,514,846, Cl. 371-16.000.

Leggett & Platt, Incorporated: *See*—
McIntire, Darrell L., 4,513,460, Cl. 5-13.000.

Legille, Edouard; Mailliet, Pierre; and Lonardi, Emile, to Paul Wurth S.A. Furnace charging installation. 4,514,129, Cl. 414-200.000.

Lehner AG: *See*—
Castagnola, Virginio; Frigerio, Giuliano E.; and Pellicciari, Roberto, 4,514,393, Cl. 260-397.100.

Lehnert, Klaus: *See*—
Koninger, Horst; Lehnert, Klaus; and Schirk, Gunter, 4,514,071, Cl. 354-320.000.

Leigh, Antony W.: *See*—
Caudel, Edward R.; Swoboda, Gary L.; Magar, Surendar S.; McDonough, Kevin C.; and Leigh, Antony W., 4,514,801, Cl. 364-200.000.

Leitch, William J.: *See*—
Dover, Donald L.; and Leitch, William J., 4,513,994, Cl. 248-544.000.

Leland Stanford University, Board of Trustees of: *See*—
Kino, Gordon S.; Bennett, Simon D.; and Husson, Didier, 4,513,749, Cl. 128-660.000.

Lemahieu, Raymond G.; and Janssens, Wilhelmus, to Agfa-Gevaert N.V. Photographic color material incorporating developing agents for color development. 4,514,494, Cl. 430-376.000.

Lenke, Dieter: *See*—
Ostersehlt, Bernd; Franke, Albrecht; Frickel, Fritz-Frieder; Thyes, Marco; Friedrich, Ludwig; Gries, Josef; and Lenke, Dieter, 4,514,413, Cl. 514-397.000.

Lenkoff, Leon G., to Stry-Lenkoff Co. Invisible ink quiz game. 4,514,177, Cl. 434-328.000.

Lentz, James M., to North American Philips Corporation. Video game hand controller. 4,514,600, Cl. 200-5.00R.

Leoffler, Hermann, to BASF Aktiengesellschaft. Monoazo pyridone colorants. 4,514,226, Cl. 106-23.000.

Leon, Joseph A., Jr.; and Caprino, Joseph C., to General Electric Company. Fire-resistant plenum cable and method for making same. 4,514,466, Cl. 428-383.000.

Le Pennec, Claude: *See*—
Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,514,371, Cl. 423-449.000.

Lerche, Horst-Dieter: *See*—
Schmidtlein, Hubertus; and Lerche, Horst-Dieter, 4,514,733, Cl. 343-5.0MM.

Lesche, Wolfgang; and Rindfleisch, Volker, to Siemens Aktiengesellschaft. Electrical control apparatus. 4,514,798, Cl. 364-188.000.

Leslie, Peter C. Flexible insulative carrier. 4,513,895, Cl. 224-151.000.

Lesniak, Thomas A., to Ex-Cell-O Corporation. Heat exchanger. 4,513,811, Cl. 165-79.000.

Lestraden, Jacobus W., to Schulte & Lestraden B.V. Method and device for growing products. 4,513,531, Cl. 47-39.000.

LeStrange, Raymond J.; Bayless, John H., Jr.; and Schoenberg, Allan R., to Du Pont de Nemours, E. I., and Company. Elimination of defects in cysteine-sensitized emulsions. 4,514,492, Cl. 430-600.000.

Lever Brothers Company: *See*—
Cook, Norman, 4,513,914, Cl. 239-121.000.
Lee, Robert S.; and Scowen, Reginald V., 4,514,185, Cl. 8-137.000.

Liebe, Reinhard: *See*—
Wochnowski, Waldemar; Hohm, Reinhard; Liebe, Reinhard; and Muss, Manfred, 4,513,759, Cl. 131-303.000.

Liebel, Henry L., to Signode Paper Products Company. Interior core protector. 4,513,864, Cl. 206-396.000.

Lin, Hong-Pei. Chess box. 4,513,974, Cl. 273-239.000.

Lincke, Paul, to Sulzer Brothers Limited. Weft yarn tensioning device. 4,513,792, Cl. 139-439.000.

Lindblom, Thore; Hedin, Jan-Erik; and Wickstrom; Sven, to Ostbergs Fabriks AB. Method of cutting substantially horizontal cantilevered objects such as logs, and apparatus for carrying out the method. 4,513,799, Cl. 144-379.000.

Linder, Ernst: *See*—
Damson, Eckart; Latsch, Reinhard; Linder, Ernst; Rieger, Franz; and Schussler, Rainer, 4,514,656, Cl. 313-11.500.

Lindquist, James R.: *See*—
Brown, William M.; and Lindquist, James R., 4,514,594, Cl. 179-2.510.

Lionnet, Richard, to Raychem Pontoise, S. A. Recoverable article. 4,514,031, Cl. 339-205.000.

Lipschitz, Barry. Method and means for producing yarn. 4,514,349, Cl. 264-103.000.

Lischke, Burkhard; Frosien, Juergen; Anger, Klaus; and Plies, Erich, to Siemens Aktiengesellschaft. Electron-optical system with variable-shaped beam for generating and measuring microstructures. 4,514,638, Cl. 250-492.200.

List, Hans: *See*—
Knopf, Franz, 4,514,140, Cl. 415-119.000.

Littauer, Ernest L.: *See*—
Momyer, William R.; and Littauer, Ernest L., 4,514,474, Cl. 429-27.000.

Lloyd, Harold; and Slinn, David S. L., to Electricity Council, The. Electrical circuit interrupting devices. 4,514,607, Cl. 200-150.00A.

Lo, Ching P., to Amerosa Enterprises, Inc. Clutch brake assembly for rotary lawnmower. 4,513,848, Cl. 192-18.00R.

Lockheed Missiles & Space Company, Inc.: *See*—
Momyer, William R.; and Littauer, Ernest L., 4,514,474, Cl. 429-27.000.

Loctite Corporation: *See*—
Beers, Melvin D.; and Thompson, James E., 4,514,529, Cl. 523-200.000.

Lodwig, Klaus; and Schefers, Friedhelm, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Power and liquid supply system for mining machines. 4,514,011, Cl. 299-42.000.

Loersch, Joseph F.; and Neal, James W., to United Technologies Corporation. Peened overlay coatings. 4,514,469, Cl. 428-553.000.

LOF Plastics Inc.: *See*—
Guy, Robert R., 4,514,003, Cl. 293-128.000.

Lonardi, Emile: *See*—
Legille, Edouard; Mailliet, Pierre; and Lonardi, Emile, 4,514,129, Cl. 414-200.000.

Long, Wallace H.; and Ruggiero, Ralph, to Duval Corporation. Conveyor with readily replaceable roller. 4,513,859, Cl. 198-842.000.

Longstaff, Fred M.: *See—*
Lang, Gordon R.; Longstaff, Fred M.; and Lee, Chi H., 4,514,855, Cl. 375-97.000.
Longsworth, Ralph C.: *See—*
Bonney, Glenn E.; and Longsworth, Ralph C., 4,514,204, Cl. 62-41.000.
Lord Corporation: *See—*
Thorn, Richard P.; and Gupta, Bhagwati P., 4,514,458, Cl. 428-222.000.
L'Oreal: *See—*
Goncalves, Antonin L., 4,513,890, Cl. 222-153.000.
Loseries, Peter, to Ernst Leitz Wetzler GmbH. Photographic camera. 4,514,076, Cl. 354-481.000.
Losinger, Raymond E.: *See—*
Agnew, Palmer W.; Buonomo, Joseph P.; Houghtalen, Steven R.; Kellerman, Anne S.; Losinger, Raymond E.; and Valashinas, James W., 4,514,803, Cl. 364-200.000.
Loskorn, Richard A.; Biehl, Philip D.; and Catiller, Robert D., to Burroughs Corporation. Byte-oriented line adapter system. 4,514,824, Cl. 364-900.000.
Losal, Gunter; Zauhar, Helmut; and Stock, Horst, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Method of sawing crystalline rods, and multiple-blade internal-hole saw for carrying out the method. 4,513,544, Cl. 51-283.00R.
Lotte Co., Ltd.: *See—*
Tezuka, Shichigoro; Sato, Yoshinori; Shibata, Masaki; and Harikae, Nobuyuki, 4,514,423, Cl. 426-3.000.
Loustau, Marie-Therese: *See—*
Atkin, John; and Loustau, Marie-Therese, 4,514,473, Cl. 429-10.000.
Loutfy, Rafik O.; and Hsiao, Cheng-Kuo, to Xerox Corporation. Photoconductive devices containing perylene dye compositions. 4,514,482, Cl. 430-78.000.
Louth, Kenneth, to Ampex Corporation. Head scanning servo system in a recording and/or reproducing apparatus. 4,514,671, Cl. 318-603.000.
Lowrance, Thomas F.; and Sharp, James B., to Lowrance, Thomas F. Stick transport apparatus. 4,513,856, Cl. 198-695.000.
Lu-Dai Sung, Rodney; Sweeney, William M.; and Zoleski, Benjamin H., to Texaco Inc. Wear-resistant aircraft engine lubricating oil. 4,514,311, Cl. 252-32.500.
Lucan, Andre: *See—*
Pon, Francois; Voirin, Jean-Philippe; and Lucan, Andre, 4,514,484, Cl. 430-106.600.
Lucas Industries: *See—*
Skinner, Robert T. J., 4,513,916, Cl. 239-453.000.
Lucas Industries PLC, Great King St.: *See—*
Hill, Michael; Megaw, John H. P. C.; and Harvey, Howard, 4,514,613, Cl. 219-121.0EC.
Lucey, Michael F., to Sprague Electric Company. Electronic component with UV-cured coating. 4,514,468, Cl. 428-418.000.
Ludens, James H.: *See—*
Hester, Jackson B., Jr.; and Ludens, James H., 4,514,407, Cl. 514-220.000.
Ludtke, Gerald W., to Motorola, Inc. Quick disconnect waveguide locking mechanism. 4,514,708, Cl. 333-255.000.
Luecke, Beth E.: *See—*
Zaruba, John V.; Hanson, Steven P.; Luecke, Beth E.; and Kuna, Wayne A., 4,514,175, Cl. 434-82.000.
Lueders, Willi H., to General Motors Corporation. Transducer clamping device. 4,513,933, Cl. 248-27.100.
Luhleich, Hartmut; and Dias, Francisco J., to Kernforschungsanlage Julich Gesellschaft Mit Beschrankter Haftung. Method of making thermal-shock resistant molded articles on the basis of silicon carbide. 4,514,346, Cl. 264-29.500.
LuK Lamellen und Kupplungsbau GmbH: *See—*
Reik, Wolfgang, 4,513,849, Cl. 192-70.270.
Lukenbach, Elvin R.: *See—*
Murray, William V.; Clum, Charles E.; and Lukenbach, Elvin R., 4,514,383, Cl. 424-59.000.
Lundqvist, Gosta B., to Flakt Aktiebolag. Apparatus for cooling telecommunications equipment in a rack. 4,514,746, Cl. 361-385.000.
Luryi, Sergey: *See—*
Bean, John C.; Kastalsky, Alexander; and Luryi, Sergey, 4,514,748, Cl. 357-58.000.
Luthy, Christoph; and Winternitz, Paul, to Hoffmann-La Roche Inc. 5-Oxo-3-thiazoline oxime and 2-oxo-5,6-dihydro-2H-1,4-thiazine oxime derivatives. 4,514,566, Cl. 544-56.000.
Luttgens, Werner, to A. Klebes GmbH & Co. K.G. Kunststoff- und Metallwarenfabrik. Sharpener, specifically for cosmetic sticks. 4,513,798, Cl. 144-28.110.
Lutz, Albert, to Universal Maschinenfabrik. Flat knitting machine for the production of knitted pieces with intarsia. 4,513,588, Cl. 66-126.00R.
Lyon Metal Products, Incorporated: *See—*
Steinke, Mark H., 4,513,669, Cl. 108-111.000.
M.A.N. Roland Druckmaschinen Aktiengesellschaft: *See—*
Hummel, Peter; and Kunkel, Fred, 4,513,663, Cl. 101-349.000.
Maas, Henricus G. R.: *See—*
van Ommen, Alfred H.; Maas, Henricus G. R.; Appels, Johannes A.; and Josquin, Wilhelmus J. M. J., 4,514,251, Cl. 156-628.000.
Mabe, Atsushi: *See—*
Hiraga, Masaharu; Mabe, Atsushi; and Yoshii, Yuji, 4,514,150, Cl. 417-440.000.
Mabuchi, Kenichi, to Mabuchi, Kenichi. Beauty treatment device. 4,513,737, Cl. 128-52.000.
Machida, Kenji. Automatic level control circuit. 4,514,701, Cl. 330-137.000.
Macht, Jon A., to Owatonna Manufacturing Company, Inc. Vehicle frame. 4,514,007, Cl. 296-183.000.
MacLaughlin, Donald N.; and Fortuna, Vincent E., to Vercon Inc. Methods for oscillatory bonding of dissimilar thermoplastic materials. 4,514,242, Cl. 156-73.500.
Maddox, Jim, Jr., to Texaco Inc. Method of extracting and reutilizing surfactants from emulsions. 4,513,820, Cl. 166-266.000.
Madill, Michael J.: *See—*
Ives, Donald T.; Madill, Michael J.; and Sliva, Philip G., 4,514,444, Cl. 427-242.000.
Maenpaa , Immo: *See—*
Ollus, Martin; Uotila, Esko; Wahlstrom, Bjorn; Saukkonen, Esko; Malinen, Pekka; and Maenpaa , Immo, 4,514,816, Cl. 364-478.000.
Magar, Surendar S.: *See—*
Caudel, Edward R.; Swoboda, Gary L.; Magar, Surendar S.; McDonough, Kevin C.; and Leigh, Antony W., 4,514,801, Cl. 364-200.000.
McDonough, Kevin C.; Swoboda, Gary L.; and Magar, Surendar S., 4,514,805, Cl. 364-200.000.
Magerle, Karl, to KMK Karl Magerle Lizenz AG. Apparatus for producing molded plastic articles such as packaging tubes. 4,514,159, Cl. 425-125.000.
Magid, David J., to Enviro-Spray Systems, Inc. Dispensing system and a refill pouch. 4,513,884, Cl. 222-94.000.
Magnetic Engineering Pty. Ltd.: *See—*
Fenton, Geoffrey J., 4,513,475, Cl. 16-360.000.
Magnetic Peripherals Inc.: *See—*
Haskal, Haim M.; and Briones, Robert A., 4,514,047, Cl. 350-394.000.
Maher, John W.; and Townsend, Greg M., to Motrola, Inc. Automatic level control system. 4,514,703, Cl. 330-279.000.
Mahoney, John A.; Helstrom, John J.; and Tait, A. Martin, to Standard Oil Company (Indiana). Solid hydrocarbon liquefaction with a catalyst having chromium and molybdenum. 4,514,279, Cl. 208-10.000.
Maier Enterprises, Inc.: *See—*
Maier, Otto H.; Seifert, James F.; Ryder, John C.; and Grisez, William F., 4,513,853, Cl. 198-410.000.
Maier, Joseph W. Round bale unroller. 4,514,127, Cl. 414-24.600.
Maier, Otto H.; Seifert, James F.; Ryder, John C.; and Grisez, William F., to Maier Enterprises, Inc. Cooling bed construction. 4,513,853, Cl. 198-410.000.
Mailliet, Pierre: *See—*
Legille, Edouard; Mailliet, Pierre; and Lonardi, Emile, 4,514,129, Cl. 414-200.000.
Mailroom Systems, Inc.: *See—*
Hedrick, Robert, 4,514,128, Cl. 414-49.000.
Maintel Pty. Limited: *See—*
Wallace, John L., 4,514,012, Cl. 299-57.000.
Maisonneuve, Richard Z., to Manoir International, Inc. Hot water system using a compressor. 4,513,585, Cl. 62-238.600.
Majthan, Rudolf; Stuhler, Rolf; Parsonage, Raymond G.; and Packham, Charles C., to Braun AG. Compact electric hair dryer. 4,514,618, Cl. 219-370.000.
Makamori, Shigeru: *See—*
Miwa, Kiyoshi; Terabe, Mahito; Ito, Koichi; Ishida, Masaaki; Matsui, Kazuhiko; Makamori, Shigeru; and Sano, Konosuke, 4,514,502, Cl. 435-253.000.
Makino, Hiroshi; Higuchi, Masaru; and Murata, Kazuou, to West Electric Company, Ltd. Distance measuring apparatus. 4,514,084, Cl. 356-4.000.
Malinen, Pekka: *See—*
Ollus, Martin; Uotila, Esko; Wahlstrom, Bjorn; Saukkonen, Esko; Malinen, Pekka; and Maenpaa , Immo, 4,514,816, Cl. 364-478.000.
Mallon, Joseph R., Jr.: *See—*
Kurtz, Anthony D.; and Mallon, Joseph R., Jr., 4,513,623, Cl. 73-721.000.
Mallow, Peter. Scented tissue-dispensing container. 4,513,862, Cl. 206-233.000.
Manecke, Kurt A., to Brown & Williamson Tobacco Corporation. Method of making filter for a cigarette product. 4,514,180, Cl. 493-41.000.
Mannesmann Aktiengesellschaft: *See—*
Niehaus, Norbert; Friehe, Werner; and Schwenk, Wilhelm, 4,513,995, Cl. 285-55.000.
Manning, George H.; and Riccio, Pasquale R., to MFE Corporation. Streaming cassette tape transport. 4,514,775, Cl. 360-96.600.
Manoir International, Inc.: *See—*
Maisonneuve, Richard Z., 4,513,585, Cl. 62-238.600.
Manservisi, Renato; and Fossi, Mario, to Sasib S.p.A. Wrapper sheet for cigarette packs, and method for obtaining same. 4,513,908, Cl. 229-87.00C.
Mapatent, N.V.: *See—*
Fellner, Theodore F.; and Talo, Leslie C., 4,513,858, Cl. 198-812.000.
Maples, James A.: *See—*
Pepper, Robert B.; and Maples, James A., 4,514,817, Cl. 364-480.000.
Marek, Raymond G.: *See—*
Batcheler, Jerry H.; and Marek, Raymond G., 4,514,722, Cl. 340-604.000.
Marey, Daniel J., to S.N.E.C.M.A. Safety stop for a variable setting stator blade pivot. 4,514,141, Cl. 415-160.000.

Marinesco, Jon D.: *See*—
Opresco, Ovidiu; and Marinesco, Jon D., 4,513,970, Cl. 273-153.00S.

Maringer, Melvin F.: *See*—
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,514,535, Cl. 524-109.000.
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,514,536, Cl. 524-261.000.

Mark, Harold W.: *See*—
Bresson, Clarence R.; and Mark, Harold W., 4,514,293, Cl. 209-167.000.

Mark, Victor, to General Electric Company. Polyphenolic compounds. 4,514,334, Cl. 260-395.000.

Mark, William J.: *See*—
Borg, Arthur N.; and Mark, William J., 4,514,764, Cl. 358-181.000.

Marley Cooling Tower Company, The: *See*—
Kinney, Ohler L., Jr.; and Holmberg, Joyce D., 4,514,202, Cl. 55-440.000.

Marriage, David J.: *See*—
Ullman, Thomas J.; Shadbolt, Colin F.; Pagdin, Brian C.; Marriage, David J.; Clarke, Peter J.; and Sheppard, Ian J., 4,513,728, Cl. 123-527.000.

Martell, Charles R.; Isett, Donald D.; and Abney, Paul A., to Microdynamics, Inc. Method and apparatus for automatically decelerating and stopping a sewing machine motor. 4,513,676, Cl. 112-262.100.

Martha White Foods, Inc.: *See*—
Jordan, J. Kirk; and Scherling, Sandra L., 4,514,426, Cl. 426-113.000.

Martin, Gerard: *See*—
Develle, Guy; and Martin, Gerard, 4,514,198, Cl. 55-337.000.

Martin, Joel L., to Phillips Petroleum Company. Process and vanadium catalyst for olefin polymerization. 4,514,514, Cl. 502-121.000.

Martin, Lawrence L.; and Setescak, Linda L., to Hoechst-Roussel Pharmaceuticals Inc. Substituted 4,10-dihydro-10-oxothieno benzoxepins. 4,514,411, Cl. 514-215.000.

Martinowich, John N.: *See*—
Triner, Irvin R.; and Martinowich, John N., 4,514,030, Cl. 339-176.0MP.

Maruoka, Sigehiro, to Honda Motor Co., Ltd. Synthetic resin windscreen for motorcycles, motor tricycles, etc. 4,514,006, Cl. 296-78.100.

Maruyama, Seiichro: *See*—
Kawaguchi, Yoshikazu; Maruyama, Seiichro; and Kawasaki, Hiroyuki, 4,514,357, Cl. 264-328.160.

Marvin Glass & Associates: *See*—
Zaruba, John V.; Hanson, Steven P.; Luecke, Beth E.; and Kuna, Wayne A., 4,514,175, Cl. 434-82.000.

Marx, Matthias; Ganss, Helmut; and Frank, Wolfram, to BASF Aktiengesellschaft. Storage-stable tris(hydroxyalkyl)isocyanurate polyol dispersions, process for their preparation and their utilization. 4,514,526, Cl. 521-166.000.

Masai, Hiroshi: *See*—
Fujiyama, Seiichi; Minakami, Hiroyuki; and Masai, Hiroshi, 4,514,563, Cl. 536-123.000.

Maschinenfabrik Ernst Thielenhaus GmbH: *See*—
Wolters, Martin; and Meuer, Gerd R., 4,513,538, Cl. 51-131.300.

Masco Corporation of Indiana: *See*—
Purcell, Glenn T., 4,513,769, Cl. 137-315.000.

Mase, Ryoichi, to Toso Kabushiki Kaisha. Decelerator for use in roller blinds. 4,513,805, Cl. 160-299.000.

Masonite Corporation: *See*—
Hsu, Oscar H. H.; and Tassler, Milford C., 4,514,532, Cl. 524-14.000.

Massachusetts Institute of Technology: *See*—
Fan, John C. C.; and Bozler, Carl O., 4,514,581, Cl. 136-255.000.

Masuhara, Toshiaki: *See*—
Koike, Norio; Takemoto, Iwao; Ohba, Shinya; Masuhara, Toshiaki; and Kubo, Masaharu, 4,514,766, Cl. 358-213.000.

Masui, Yasuyuki: *See*—
Tabata, Junichi; Torii, Masahiro; Oikawa, Hiroshi; Sawada, Minoru; and Masui, Yasuyuki, 4,513,753, Cl. 128-706.000.

Mathieu, Bernd; and Polaschegg, Hans-Dietrich, to Fresenius AG. Dialysis apparatus. 4,514,295, Cl. 210-90.000.

Matlock, Gordon E. Wood cross-tie end plating machine. 4,513,900, Cl. 227-42.000.

Matlock, Paul L.: *See*—
Matulewicz, William N.; Mohr, Paul H.; and Matlock, Paul L., 4,514,315, Cl. 252-75.000.

Matsuda, Ikuo: *See*—
Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, 4,513,707, Cl. 123-242.000.

Matsuda, Kenji: *See*—
Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,514,513, Cl. 502-112.000.

Matsui, Kazuhiko: *See*—
Miwa, Kiyoshi; Terabe, Mahito; Ito, Koichi; Ishida, Masaaki; Matsui, Kazuhiko; Makamori, Shigeru; and Sano, Konosuke, 4,514,502, Cl. 435-253.000.

Matsui, Mitsuo; and Matsumura, Teruyuki, to Fanuc Ltd. Method of controlling electric discharge machine. 4,514,611, Cl. 219-69.00M.

Matsumoto, Nobuya: *See*—
Yoshizumi, Hajime; Matsumoto, Nobuya; Fukuda, Osamu; and Fukushi, Osamu, 4,514,496, Cl. 435-162.000.

Matsumoto, Tatsuhiko: *See*—
Fukasawa, Yoshiharu; Matsumoto, Tatsuhiko; Kawai, Mituo; Ueda, Shigeru; Koizumi, Hideo; and Saitou, Hiroyuki, 4,514,234, Cl. 148-11.50P.

Matsumura, Teruyuki: *See*—
Matsui, Mitsuo; and Matsumura, Teruyuki, 4,514,611, Cl. 219-69.00M.

Matsusaka, Chikako: *See*—
Yamahira, Yoshiya; Shima, Katsuhiko; Matsusaka, Chikako; and Noguchi, Tetsuo, 4,514,386, Cl. 424-81.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Miyata, Yutaka; Chikamura, Takao; and Fujiwara, Shinji, 4,514,765, Cl. 358-213.000.
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; Fujita, Takashi; and Kawase, Shigeki, 4,514,451, Cl. 428-141.000.

Matsushita Electric Works, Ltd.: *See*—
Nagamoto, Mitsuki; and Kubota, Takuo, 4,514,711, Cl. 335-243.000.
Nakano, Kunimitsu; Chuzawa, Takaaki; and Ohmuro, Masaru, 4,514,709, Cl. 335-201.000.
Suzuki, Yoshiharu; Fukagawa, Hitoshi; Komoda, Yoshiyuki; and Tanaka, Osamu, 4,514,719, Cl. 340-310.00R.

Matsushita, Yoshihiro: *See*—
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,514,565, Cl. 544-25.000.

Matsuura, Masaru, to Kikkoman Corporation. Process for producing an aseptic packed tofu. 4,514,433, Cl. 426-634.000.

Matsuura, Tadashi; and Kadomatsu, Yasuo, to Ricoh Co., Ltd. Method for preparation of selenium type electrophotographic element in which the substrate is superfinished by vibrating and sliding a grindstone. 4,514,483, Cl. 430-84.000.

Matsuzaka, Syoji: *See*—
Koitabashi, Takeo; Matsuzaka, Syoji; Hotta, Yuji; and Iwata, Masatoshi, 4,514,491, Cl. 430-567.000.

Matsuzawa, Kiyoshi; and Inoue, Noriyuki, to Fuji Xerox Co., Ltd. Apparatus for controlling optical system for copying machine. 4,514,080, Cl. 355-14.00C.

Mattel, Inc.: *See*—
Halford, Wayne R.; and Nakano, Walter S., 4,513,967, Cl. 273-108.000.

Matthews, Anthony J.: *See*—
Berthel, Robert O.; Plank, Vernon G.; Jones, Stephen H.; and Matthews, Anthony J., 4,514,758, Cl. 358-93.000.

Matthews, Charles G. Arc welding clamp. 4,514,033, Cl. 339-255.00P.

Matthews, Kenneth J.: *See*—
Shaefer, Robert R.; and Matthews, Kenneth J., 4,514,244, Cl. 156-158.000.

Matulewicz, William N.; Mohr, Paul H.; and Matlock, Paul L., to Union Carbide Corporation. Aluminum corrosion inhibitor comprising alkylene-silane graft copolymer. 4,514,315, Cl. 252-75.000.

Matumoto, Hiroaki; and Sekiguchi, Hiroshi, to Kanars Data Corporation. Electronic damper for pulse motor. 4,514,675, Cl. 318-696.000.

Matuo, Tadashi: *See*—
Sato, Giichi; Matuo, Tadashi; and Tabei, Tooru, 4,514,559, Cl. 534-690.000.

Matzkanin, George A.: *See*—
De Los Santos, Armando; King, James D.; Rollwitz, William L.; Matzkanin, George A.; and Hornung, Phillip A., 4,514,691, Cl. 324-301.000.

Maukola, Pekka J., to N. V. Raychem S.A. Reinsulation of pipe joints. 4,514,241, Cl. 156-79.000.

Maulandi, Aymon A., to Square D Company. Low resistance electrical connector. 4,514,025, Cl. 339-64.00M.

Maurer, Klemens: *See*—
Taylor, Frank; and Maurer, Klemens, 4,514,104, Cl. 403-14.000.

Mauthner, Thomas: *See*—
Russo, Anthony; and Mauthner, Thomas, 4,514,325, Cl. 252-557.000.

Mawhinney, Daniel D.: *See*—
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McKenna, James J. Circular locking device. 4,514,109, Cl. 403-370.000.

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Jones, David E., 4,514,735, Cl. 346-1.100.

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Nyboer, Duane A., 4,513,530, Cl. 47-9.000.

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Piepers, Harry C., 4,514,264, Cl. 204-15.000.

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Meierhoefer, Eugene J., to Health Care Concepts, Inc. Container with integrally formed non-coring and non-leaking piercing site. 4,513,871, Cl. 215-32.000.

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Carlsen, W. John; and Melman, Paul, 4,514,046, Cl. 350-385.000.

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Tuong, Huynh-Ba; Kelly, Stephen M.; and Osman, Maged A., 4,514,317, Cl. 252-299.620.

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Bull, Cyril A., 4,513,872, Cl. 220-74.000.

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Manning, George H.; and Riccio, Pasquale R., 4,514,775, Cl. 360-96.600.

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Martell, Charles R.; Isett, Donald D.; and Abney, Paul A., 4,513,676, Cl. 112-262.100.

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Raccach, Moshe, 4,514,424, Cl. 426-56.000.

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Novak, W. Thomas, 4,514,858, Cl. 378-034.000.

Mientek, Anthony P., to United States of America, Energy. Fuel cell separator with compressible sealing flanges. 4,514,475, Cl. 429-35.000.

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Miller, Ira: *See—*
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Frye, Samuel M.; and Singleton, James O., 4,514,134, Cl. 414-659.000.

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Fujiyama, Seiichi; Minakami, Hiroyuki; and Masai, Hiroshi, 4,514,563, Cl. 536-123.000.

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Minami, Shunji; and Kimura, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Device for supplying fuel to a pressure carburetor. 4,513,725, Cl. 123-511.000.

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Minezaki, Shigehiro, to Sharp Kabushiki Kaisha. Manufacture of thin film transistor. 4,514,253, Cl. 156-659.100.

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Huffman, William A.; and Brown, Harvey A., 4,514,045, Cl. 350-351.000.
Sasaki, Makoto, 4,514,457, Cl. 428-204.000.

Minolta Camera Kabushiki Kaisha: *See—*
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Inoue, Toru; Nakai, Masaaki; Omaki, Takanobu; Niwa, Masatake; and Sekida, Minoru, 4,514,073, Cl. 354-414.000.
Wada, Kenichi; Oka, Tateki; and Tabuchi, Kenji, 4,514,480, Cl. 430-30.000.
Yamaguchi, Tamikazu, 4,514,052, Cl. 350-466.000.

Minster Machine Company, The: *See—*
Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., 4,513,600, Cl. 72-345.000.

Mioche, Robert, to Compagnie Generale des Etablissements Michelin. Method and apparatus for obtaining sheets from a flexible material, particularly a latex coagulum. 4,513,648, Cl. 83-871.000.

Miro Industries, Inc.: *See—*
Pruyne, Jerry R., 4,513,934, Cl. 248-49.000.

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Dricot, Jean-Marie, 4,513,649, Cl. 83-883.000.

Mirow, Fred A.; and Quinones, Matthew M., to Honeywell Information Systems Inc. Apparatus for generating trapezoïdal signals over a single conductor coaxial bus. 4,514,820, Cl. 364-858.000.

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Misty Vapor, Inc.: *See—*
Webb, Richard, 4,513,726, Cl. 123-523.000.

Mitani, Tsuneyoshi: *See—*
Asai, Mamoru; Mitani, Tsuneyoshi; and Ookawa, Hiroyuki, 4,514,856, Cl. 377-8.000.

Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., to Mitco Water Laboratories Inc. Removal of bitter naringin and limonin from citrus juices containing the same. 4,514,427, Cl. 426-271.000.

Mitch's Self Service Gas, Inc.: *See—*
Hayes, Terry S., 4,513,617, Cl. 73-313.000.

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Mitsubishi Chemical Industries, Limited: *See—*
Ashida, Kaneyoshi; Ohtani, Masaaki; and Ohkubo, Shoichi, 4,514,525, Cl. 521-112.000.
Kawaguchi, Yoshikazu; Maruyama, Seiichro; and Kawasaki, Hiroyuki, 4,514,357, Cl. 264-328.160.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ogawa, Hitoshi, 4,514,155, Cl. 418-149.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Hiramatsu, Takeo, 4,513,639, Cl. 74-866.000.

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Izumo, Masatoshi, 4,514,119, Cl. 409-60.000.

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Kawakita, Shizuo; Shibazaki, Takeyoshi; and Mochida, Hiromi, 4,514,223, Cl. 75-77.000.
Nishigaki, Kenichi, 4,514,224, Cl. 75-238.000.

Mitsubishi Oil Company, Limited: *See—*
Takahashi, Yoshio; and Shoji, Takeshi, 4,514,544, Cl. 525-327.400.

Mitsubishi Rayon Co., Ltd.: *See—*
Furuno, Akihisa; Inukai, Kenichi; and Ogawa, Yasuo, 4,514,551, Cl. 526-233.000.

Mitsubishi Yuka Fine Chemicals Co., Ltd.: *See—*
Hokamura, Sadakazu; Yamada, Seiji; Aritomi, Mitsutoshi; and Yoshida, Yuji, 4,514,445, Cl. 427-410.000.

Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Nojiri, Takeo; and Irie, Yasuo, 4,514,146, Cl. 416-200.00R.

Mitsui Toatsu Chemicals, Inc.: *See—*
Sano, Sakae; Kitajima, Hisashi; Iimori, Hiroshi; and Nishio, Tadashi, 4,514,112, Cl. 405-269.000.

Mittelhauser, Bernhard. External rear view mirror for motor vehicles which folds. 4,514,060, Cl. 350-632.000.

Miura, Kunio: *See—*
Ito, Yoji; Inoue, Yozo; Hara, Kiyoshi; Muramoto, Kazuo; and Miura, Kunio, 4,514,810, Cl. 364-424.000.

Miwa, Kiyoshi; Terabe, Mahito; Ito, Koichi; Ishida, Masaaki; Matsui, Kazuhiko; Makamori, Shigeru; and Sano, Konosuke, to Ajinomoto Co., Inc. Composite plasmid. 4,514,502, Cl. 435-253.000.

Miyaguchi, Shoji, to Nippon Telegraph & Telephone Public Corporation. Cryptosystem. 4,514,592, Cl. 178-22.110.

Miyaki, Yoshiyuki; Fujita, Yoshitaka; Se, Kazunori; and Fujimoto, Teruo, to Toyo Soda Manufacturing Ltd. Method for purifying and concentrating organic matters. 4,514,304, Cl. 210-638.000.

Miyamae, Tatsuo: *See—*
Ushiyama, Hisayuki; Ochi, Hisayuki; Miyamae, Tatsuo; and Wakamiya, Katsutoshi, 4,514,485, Cl. 430-106.600.

Miyata, Kenji; Terasawa, Yoshio; Oikawa, Saburo; Murakami, Susumu; and Okamura, Masahiro, to Hitachi, Ltd. Field controlled thyristor with double-diffused source region. 4,514,747, Cl. 357-38.000.

Miyata, Shigeo, to Kyowa Chemical Industry Co. Ltd. Gastric antacid and method for controlling pH of gastric juice. 4,514,389, Cl. 424-128.000.

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Iida, Shinzo; Ie, Katsuji; and Miyazaki, Jun, 4,513,806, Cl. 164-413.000.

Miyazaki, Takeshi: *See—*
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Mizobuchi, Norihiro; Furukawa, Keiji; and Motoyama, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Refrigerator cooling and freezing system. 4,513,581, Cl. 62-197.000.

Mizokami, Kazunori, to Olympus Optical Company Ltd. Exposure control circuit for TTL automatic electronic flash. 4,514,074, Cl. 354-416.000.

Mladek, Milos: *See—*
Rajsigl, Zdenek; Mladek, Milos; Blasko, Michal; and Smatana, Josef, 4,513,566, Cl. 57-406.000.

Mobil Oil Corporation: *See—*
Audeh, Costandi A., 4,514,378, Cl. 423-18.000.
Bowden, Edgar A.; and Przybyl, Robert V., 4,514,770, Cl. 360-69.000.
Heilweil, Israel J., 4,514,310, Cl. 252-8.55R.
Herrington, Fox J., Jr., 4,513,559, Cl. 53-429.000.
Islip, Philip N.; and Shu, Winston R., 4,513,819, Cl. 166-263.000.
Kremer, Ross A.; and Saunders, Stephen W., 4,514,288, Cl. 209-5.000.
Rhynard, Donald L., 4,513,606, Cl. 73-61.00R.
Shu, Winston R., 4,513,821, Cl. 166-273.000.

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Moore, Peter E., 4,514,019, Cl. 312-209.000.

Mochida, Hiromi: *See—*
Kawakita, Shizuo; Shibazaki, Takeyoshi; and Mochida, Hiromi, 4,514,223, Cl. 75-77.000.

Mochiji, Kozo: *See—*
Kimura, Takashi; Mochiji, Kozo; and Obayashi, Hidehito, 4,514,857, Cl. 378-034.000.

Mochizuki, Kanji: *See—*
Sato, Atsushi; Murai, Yoshikazu; Goto, Masahito; and Mochizuki, Kanji, 4,514,229, Cl. 106-135.000.

Modjallal, Khosrow: *See—*
Whetstone, Albert L.; Shaklee, Kerry L.; and Modjallal, Khosrow, 4,514,726, Cl. 340-710.000.

Moe, Gregory: *See—*
Kaiser, Emil T.; and Moe, Gregory, 4,514,331, Cl. 260-112.50T.

Moerschel, Kenneth G., to AT&T Technologies, Inc. Methods of highlighting pinholes in a surface layer of an article. 4,514,436, Cl. 427-10.000.

Mohlenbrink, Wolfgang: *See—*
Nussbaumer, Manfred; Beitinger, Eberhard; and Mohlenbrink, Wolfgang, 4,513,504, Cl. 33-1.00H.

Mohr, Paul H.: *See—*
Matulewicz, William N.; Mohr, Paul H.; and Matlock, Paul L., 4,514,315, Cl. 252-75.000.

Moiroux, Auguste, to Societe Civile Styled: BMB. Piston for internal combustion engine. 4,513,697, Cl. 123-41.350.

Molders, Werner; Langanke, Rolf; Sentinger, Egon; and Reuschenbach, Hermann, to Gas Spring Company, Division of Fichtel & Sachs Industries, Inc. Gas spring with extension force controlled as a function of temperature. 4,513,953, Cl. 267-121.000.

Momoshima, Yukichi: *See—*
Nagasaka, Nobuyuki; and Momoshima, Yukichi, 4,513,650, Cl. 84-1.030.

Momyer, William R.; and Littauer, Ernest L., to Lockheed Missiles & Space Company, Inc. Air cathode structure manufacture. 4,514,474, Cl. 429-27.000.

Monarch Wine Co., Inc.: *See—*
Pato, Carlos M., 4,514,306, Cl. 210-740.000.
Zaltsman, Efim, 4,513,870, Cl. 215-31.000.

Mongelli, Nicola; and Gandolfi, Carmelo, to Farmitalia Carlo Erba S.p.A. 15-Cycloaliphatic derivatives of 13,14-didehydro-carboprostacyclins and process for their preparation. 4,514,396, Cl. 514-222.000.

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Monsanto Company: *See—*
Gomez, I. Luis, 4,514,464, Cl. 428-332.000.
Hobbs, Charles F., 4,514,519, Cl. 502-243.000.
Tou, Jacob S.; and Schleppnik, Alfred A., 4,514,340, Cl. 260-465.00D.

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Kearns, Chester L., 4,513,589, Cl. 66-180.000.

Montgomery, Lionel C., to Union Carbide Corporation. Process for improving the high temperature flexural strength of titanium diboride-boron nitride. 4,514,355, Cl. 264-332.000.

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Darcangelo, Charles M.; Montierth, Max R.; and Ni, Yang-Chou M., 4,514,205, Cl. 65-12.000.

Moog S.A.R.L.: *See—*
Contartese, Giulio; and Dietz, Joachim, 4,513,782, Cl. 137-625.630.

Mookherjee, Braja D.: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,514,324, Cl. 252-522.00R.

Moore, Clifford G.: *See—*
Finley, Charles M.; and Moore, Clifford G., 4,514,681, Cl. 324-65.0CR.

Moore, Dan T., III; and Fischer, Michael F., to Dan T. Moore Co. Tire for wheelchairs and the like. 4,514,243, Cl. 156-113.000.

Moore, Peter E., to Mobile Dental Equipment Corporation. Portable dental operatory. 4,514,019, Cl. 312-209.000.

Moore, Richard P. Sludge traction and desludging system. 4,514,303, Cl. 210-519.000.

Morehouse Industries, Inc.: *See—*
Szkaradek, Edward J., 4,513,917, Cl. 241-46.110.

Moreno, Gil G. Device for joining tubular members. 4,514,107, Cl. 403-230.000.

Morey, Marian B.: *See—*
Kuhnsman, Alexandra; and Morey, Marian B., 4,513,692, Cl. 119-109.000.
Morgan, John M. Wire-routing device. 4,514,004, Cl. 294-19.100.
Mori, Masaaki: *See—*
Inoue, Hiroshi; Komeya, Katsutoshi; Tsuge, Akihiko; Koide, Kazunari; Mori, Masaaki; and Urakawa, Tetsuro, 4,514,370, Cl. 423-344.000.
Mori, Yoshikazu; Kojima, Susumu; and Kobayashi, Osamu, to Kabushiki Kaisha Nippon Coinco. Bill retention device. 4,513,880, Cl. 221-260.000.
Moriguchi, Haruhiko; and Inui, Toshiharu, to Fuji Xerox Co., Ltd. Thermal head. 4,514,736, Cl. 346-76.0PH.
Morimoto, Akira: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,514,565, Cl. 544-25.000.
Morita, Hideaki: *See—*
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Morita, Yasuhiro; and Tsukamoto, Yoshikazu, to Toyota Kidosha Kabushi Kaisha; and Tokai Rubber Industries, Ltd. Bushing structure in a vehicle suspension system. 4,513,990, Cl. 280-725.000.
Moriuchi, Hisahiro: *See—*
Ando, Yoshibumi; Sakamoto, Takashi; Yoh, Kanji; Moriuchi, Hisahiro; and Takei, Sumiaki, 4,514,646, Cl. 307-200.00B.
Morrill, Charles D.: *See—*
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Escher, Sina D.; and Morris, Anthony F., 4,514,323, Cl. 252-522.00R.
Morrison, David A.: *See—*
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., 4,514,069, Cl. 354-304.000.
Morse, David L.: *See—*
Borrelli, Nicholas F.; Morse, David L.; and Sachenik, Paul A., 4,514,053, Cl. 350-162.200.
Morton Norwich Products: *See—*
Orelup, Richard B., 4,514,503, Cl. 436-60.000.
Moser, Peter: *See—*
Jenny, Ernst; Mayer, Andreas; and Moser, Peter, 4,513,571, Cl. 60-603.000.
Motor Wheel Corporation: *See—*
Woelfel, James A.; and Smith, Richard W., 4,514,013, Cl. 301-63.0PW.
Motorola, Inc.: *See—*
Dotson, Robert N.; Davies, Robert B.; and Miller, Ira, 4,514,648, Cl. 307-350.000.
Dydyk, Michael; and Iwer, Herbert W., 4,514,707, Cl. 331-107.0SL.
Garcia, Carlos N.; Rigg, Bryan C.; and Tanner, Sally A., 4,514,489, Cl. 430-327.000.
Genrich, Thad J., 4,514,696, Cl. 328-14.000.
Ludtke, Gerald W., 4,514,708, Cl. 333-255.000.
Miller, Ira; and Null, Michael W., 4,514,651, Cl. 307-475.000.
Motoyama, Takeshi: *See—*
Mizobuchi, Norihiro; Furukawa, Keiji; and Motoyama, Takeshi, 4,513,581, Cl. 62-197.000.
Motrola, Inc.: *See—*
Maher, John W.; and Townsend, Greg M., 4,514,703, Cl. 330-279.000.
Moulder, John F.: *See—*
Nowicki, Ronald S.; and Moulder, John F., 4,513,905, Cl. 228-123.000.
Mount Isa Mines Limited: *See—*
Denholm, William T.; Floyd, John M.; Errington, William J.; and Parry, Anthony N., 4,514,222, Cl. 75-77.000.
Mowatt-Larssen, Erling: *See—*
Davis, Edward L.; and Mowatt-Larssen, Erling, 4,513,795, Cl. 141-35.000.
Moyle, William R.: *See—*
Canfield, Robert E.; Ehrlich, Paul H.; and Moyle, William R., 4,514,505, Cl. 436-500.000.
MTU Motoren und Turbinen-Union Friedrichshafen GmbH: *See—*
Kamleitner, Ewald, 4,513,724, Cl. 123-500.000.
Mucaro, Salvatore A.; and Tilbor, Neil, to CBS Inc. Vehicle jump for a toy vehicle game. 4,513,966, Cl. 273-68.00B.
Muirhead, Robert C., Jr.; and Shaver, Donald L., to Cornnuts Hybrids, Inc. Genetic factor capable of altering leaf number and distribution in maize. 4,513,532, Cl. 47-58.000.
Mukaizaka, Akira: *See—*
Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,514,216, Cl. 75-0.5AA.
Mulawski, Walter J., to Sexton Can Company, Inc. Pressure relief device for internally pressurized fluid container. 4,513,874, Cl. 220-89.00A.
Muller, Hans: *See—*
May, Stefan; and Muller, Hans, 4,513,992, Cl. 283-94.000.
Muller, Rolf, to Papst Motoren GmbH & Co KG. Small size electric motor. 4,514,654, Cl. 310-216.000.
Mumford, Eustace H., to Owens-Illinois, Inc. Glass feeder tube support. 4,514,209, Cl. 65-328.000.
Mundie, Craig J.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.
Murai, Yoshikazu: *See—*
Sato, Atsushi; Murai, Yoshikazu; Goto, Masahito; and Mochizuki, Kanji, 4,514,229, Cl. 106-135.000.
Murakami, Susumu: *See—*
Miyata, Kenji; Terasawa, Yoshio; Oikawa, Saburo; Murakami, Susumu; and Okamura, Masahiro, 4,514,747, Cl. 357-38.000.
Murakawa, Tetsuya: *See—*
Kaneko, Fumihiko; Murakawa, Tetsuya; Nitta, Koichi; Yamana, Noriaki; Takeda, Masashi; and Tachi, Kunio, 4,514,787, Cl. 361-420.000.
Muralidhara, Ranya: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,514,429, Cl. 426-535.000.
Muramatsu, Shigeru; Fujiwara, Yuji; Hayashida, Hazime; and Yamamoto, Jun, to Nippon Gakki Seizo Kabushiki Kaisha. Solenoid actuator for use in automatic performance piano. 4,513,652, Cl. 84-20.000.
Muramoto, Kazuo: *See—*
Ito, Yoji; Inoue, Yozo; Hara, Kiyoshi; Muramoto, Kazuo; and Miura, Kunio, 4,514,810, Cl. 364-424.000.
Murata, Kazuou: *See—*
Makino, Hiroshi; Higuchi, Masaru; and Murata, Kazuou, 4,514,084, Cl. 356-4.000.
Murata Manufacturing Co., Ltd.: *See—*
Kaneko, Fumihiko; Murakawa, Tetsuya; Nitta, Koichi; Yamana, Noriaki; Takeda, Masashi; and Tachi, Kunio, 4,514,787, Cl. 361-420.000.
Sakamoto, Yukio; and Tanabe, Takeshi, 4,514,782, Cl. 361-306.000.
Murata, Taneo, to Alps Electric Co., Ltd. Locking type pushbutton switch. 4,514,608, Cl. 200-153.00J.
Murayama, Masaki; and Iida, Manjiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Data transfer system for a data processing system provided with direct memory access units. 4,514,808, Cl. 364-200.000.
Murphy, Francis X.: *See—*
Voigt, H. William; and Murphy, Francis X., 4,514,239, Cl. 149-18.000.
Murphy, Kevin M.: *See—*
Lawrenson, Jack; and Murphy, Kevin M., 4,513,543, Cl. 51-283.00R.
Murphy, William. Horseshoe full pad. 4,513,825, Cl. 168-12.000.
Murray Corporation: *See—*
Proctor, Robert H.; and Hobbs, Arthur G., Jr., 4,513,578, Cl. 62-149.000.
Murray, Joseph; and Guthrie, Jesse. Climbing aid retriever. 4,513,641, Cl. 81-486.000.
Murray, William V.; Clum, Charles E.; and Lukenbach, Elvin R., to Johnson & Johnson Baby Products Company. Sunscreen compositions containing vinylogous amides. 4,514,383, Cl. 424-59.000.
Musashi Engineering Kabushiki Kaisha: *See—*
Asai, Mamoru; Mitani, Tsuneyoshi; and Ookawa, Hiroyuki, 4,514,856, Cl. 377-8.000.
Musits, Bela L.: *See—*
Hollis, Ralph L., Jr.; and Musits, Bela L., 4,514,674, Cl. 318-687.000.
Muss, Manfred: *See—*
Wochnowski, Waldemar; Hohm, Reinhard; Liebe, Reinhard; and Muss, Manfred, 4,513,759, Cl. 131-303.000.
Mutzberg, Friedhelm: *See—*
Riemer, Heinz; Weiss, Joern-Volker; and Mutzberg, Friedhelm, 4,514,467, Cl. 428-413.000.
N P K "Zavarachna Technika": *See—*
Tzvetanov, Plamen V.; Chankov, Dyanko V.; Nikolov, Orlin A.; and Ivanov, Alexander L., 4,513,902, Cl. 228-25.000.
N. V. Raychem S.A.: *See—*
Maukola, Pekka J., 4,514,241, Cl. 156-79.000.
Nagamoto, Mitsuki; and Kubota, Takuo, to Matsushita Electric Works, Ltd. AC Drive electromagnetic relay. 4,514,711, Cl. 335-243.000.
Nagasaka, Nobuyuki; and Momoshima, Yukichi, to Kabushiki Kaisha Daini Seikosha. Electronic musical instrument. 4,513,650, Cl. 84-1.030.
Nagato, Hitoshi; Izawa, Koji; and Hirahara, Shuzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal recording system. 4,514,738, Cl. 346-76.0PH.
Naito, Yukio: *See—*
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; Yoshioka, Hiroshi; and Nunose, Akira, 4,514,512, Cl. 502-107.000.
Nakabu, Shigeo: *See—*
Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, 4,514,042, Cl. 350-331.00R.
Nakagawa, Junyo; Yamaguchi, Shinji; Hirakawa, Kiyoshi; Tokunaga, Isao; and Ito, Masaaki, to Kuraray Co., Ltd. Woven fabric having a velvety appearance. 4,514,459, Cl. 428-229.000.
Nakagawa, Kazuyuki: *See—*
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,514,401, Cl. 514-253.000.
Nakai, Mamoru; Iwata, Fumio; and Inoue, Teruhiko, to UBE Industries, Ltd. Process for the preparation of urea derivatives. 4,514,571, Cl. 546-306.000.
Nakai, Masaaki: *See—*
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Inoue, Toru; Nakai, Masaaki; Omaki, Takanobu; Niwa, Masatake; and Sekida, Minoru, 4,514,073, Cl. 354-414.000.

Nakajima, Toyohei: *See—*
Koumura, Takashi; and Nakajima, Toyohei, 4,513,713, Cl. 123-339.000.
Nakajima, Yoshihisa: *See—*
Yokomori, Shinji; and Nakajima, Yoshihisa, 4,513,762, Cl. 133-3.00R.
Nakamura, Kenji: *See—*
Koga, Noritaka; Suzuki, Takanori; Nakamura, Kenji; Suzuki, Hitoshi; and Ogano, Takeo, 4,513,702, Cl. 123-193.00H.
Nakamura, Kensaku. Synthetic resin extruding means. 4,514,163, Cl. 425-204.000.
Nakamura, Teruo; and Fukuda, Shoichi, to Diesel Kiki Company, Ltd. Rotary vane compressor. 4,514,157, Cl. 418-259.000.
Nakano, Gregory: *See—*
Wilger, John F.; Nakano, Gregory; and Berman, William A., 4,513,542, Cl. 51-241.00S.
Nakano, Kunimitsu; Chuzawa, Takaaki; and Ohmuro, Masaru, to Matsushita Electric Works, Ltd. Circuit breaker. 4,514,709, Cl. 335-201.000.
Nakano Vinegar Co., Ltd.: *See—*
Fujiyama, Seiichi; Minakami, Hiroyuki; and Masai, Hiroshi, 4,514,563, Cl. 536-123.000.
Nakano, Walter S.: *See—*
Halford, Wayne R.; and Nakano, Walter S., 4,513,967, Cl. 273-108.000.
Nakayama, Toyoo: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,514,416, Cl. 549-442.000.
Nalco Chemical Company: *See—*
Wang, Sophia; Roof, Glenn L.; and Porlier, Beth W., 4,514,286, Cl. 208-196.000.
Nancarrow, James N.: *See—*
Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., 4,513,730, Cl. 123-564.000.
Narita, Ko: *See—*
Haraguchi, Hiroshi; Narita, Ko; and Iwata, Toshiharu, 4,513,716, Cl. 123-425.000.
Narita, Seiichi: *See—*
Kohama, Tokio; Obayashi, Hideki; Saito, Kimitaka; Ina, Toshikazu; and Narita, Seiichi, 4,513,627, Cl. 73-862.340.
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,513,628, Cl. 73-862.340.
Nash, Stephen E.: *See—*
Bentley, Gustavus A.; Nash, Stephen E.; and Pichler, Gerald P., 4,513,976, Cl. 277-25.000.
Natarajan, Sesha I.: *See—*
Gordon, Eric M.; Godfrey, Jollie D., Jr.; and Natarajan, Sesha I., 4,514,391, Cl. 514-2.000.
Nath, Prem; and Izu, Masatsugu, to Energy Conversion Devices, Inc. Upstream cathode assembly. 4,513,684, Cl. 118-718.000.
Nath, Prem, to Energy Conversion Devices, Inc. Apparatus for plasma assisted evaporation of thin films and corresponding method of deposition. 4,514,437, Cl. 427-39.000.
National Distillers and Chemical Corporation: *See—*
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,514,535, Cl. 524-109.000.
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,514,536, Cl. 524-261.000.
Smith, David W., 4,514,521, Cl. 518-700.000.
National Research Development Corporation: *See—*
Berry, Paul S.; Benson, John A.; Kettlewell, Peter J.; and Turner, Michael J. B., 4,513,689, Cl. 119-82.000.
Smith, Kenneth C. A.; and Erasmus, Stephen J., 4,514,629, Cl. 250-311.000.
NCR Corporation: *See—*
Schaefer, William J., Jr., 4,513,957, Cl. 271-90.000.
Neal, James W.: *See—*
Loersch, Joseph F.; and Neal, James W., 4,514,469, Cl. 428-553.000.
Negishi, Kiyoshi; Kawasaki, Masahiro; and Tano, Eiichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic control apparatus for photographic camera. 4,514,075, Cl. 354-446.000.
Negishi, Takao; and Kojima, Teiryo, to Toray Industries, Inc. Sewing thread. 4,513,565, Cl. 57-236.000.
Nelander, Curt, to AB Rollab. Method and device for attaining a gas flow in a wind tunnel. 4,513,610, Cl. 73-147.000.
Nelson, Bradley B.; and Nelson, Gregory T. Weighted exercising device. 4,513,963, Cl. 272-128.000.
Nelson, Gregory T.: *See—*
Nelson, Bradley B.; and Nelson, Gregory T., 4,513,963, Cl. 272-128.000.
Nestec, S.A.: *See—*
Cabi-Akman, Robert, 4,513,882, Cl. 222-56.000.
Nestle & Fischer: *See—*
Fischer, Walter, 4,513,512, Cl. 33-471.000.
Neubauer, Wilhelm; and Werner, Hans, to Werner and Pfleiderer. Apparatus for processing viscous substances or substances which become viscous through processing. 4,514,090, Cl. 366-91.000.
Neumann, Albert. Earth retaining wall system. 4,514,113, Cl. 405-286.000.
Newnham, Robert C.: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,514,621, Cl. 235-400.000.
Nguyen, Tuan A.: *See—*
Federico, Anthony M.; Legg, Ernest L.; and Nguyen, Tuan A., 4,514,846, Cl. 371-16.000.
NHK Spring Co., Ltd.: *See—*
Yajima, Toshio, 4,513,846, Cl. 188-380.000.
Ni, Yang-Chou M.: *See—*
Darcangelo, Charles M.; Montierth, Max R.; and Ni, Yang-Chou M., 4,514,205, Cl. 65-12.000.
Nibco Inc.: *See—*
Shaefer, Robert R.; and Matthews, Kenneth J., 4,514,244, Cl. 156-158.000.
Niccum, Phillip K.; and Bunn, Dorrance P., Jr., to Texaco Inc. Catalytic cracking system. 4,514,285, Cl. 208-148.000.
Nicholson, Terence P. Cylinder head gasket. 4,513,978, Cl. 277-235.00B.
Nied, Herman A., to General Electric Company. Composite resistance spot welding electrode. 4,514,612, Cl. 219-119.000.
Niehaus, Norbert; Friehe, Werner; and Schwenk, Wilhelm, to Mannesmann Aktiengesellschaft. Method for electrolytically tin plating articles. 4,513,995, Cl. 285-55.000.
Niemela , Pekka. Sledge or equivalent transporting base. 4,513,982, Cl. 280-26.000.
Nieminski, Robert A.; and Hinde, Walter R., to Yale Materials Handling Corporation. Disc brake arrangement for steering and traction unit. 4,513,839, Cl. 180-253.000.
Niessen, Carl O. Massage unit. 4,513,738, Cl. 128-57.000.
Nifco Inc.: *See—*
Omata, Nobuaki, 4,513,473, Cl. 16-82.000.
Nigol, Olaf; and Barrett, John S. Method of heat treating steel wire. 4,514,237, Cl. 148-142.000.
Nihon Tokushu Noyaku Seizo K.K.: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; and Shiokawa, Kozo, 4,514,210, Cl. 71-92.000.
Saito, Junichi; and Kagabu, Shinzo, 4,514,418, Cl. 514-508.000.
Nikolayczik, Hans, to American Standard Inc. Sanitary single-control mixer fitting. 4,513,781, Cl. 137-625.410.
Nikolov, Orlin A.: *See—*
Tzvetanov, Plamen V.; Chankov, Dyanko V.; Nikolov, Orlin A.; and Ivanov, Alexander L., 4,513,902, Cl. 228-25.000.
Nillesen, Antonius H. H. J.; and Welles, Petrus W. G., to U.S. Philips Corporation. Digital color television signal processing circuit. 4,514,754, Cl. 358-13.000.
Nippon Cable System, Inc.: *See—*
Teraura, Makoto, 4,513,680, Cl. 114-159.000.
Nippon Electric Co., Ltd.: *See—*
Kimoto, Manabu, 4,514,804, Cl. 364-200.000.
Suga, Michihisa; and Tsuzuki, Mitsuo, 4,514,742, Cl. 346-140.00R.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Muramatsu, Shigeru; Fujiwara, Yuji; Hayashida, Hazime; and Yamamoto, Jun, 4,513,652, Cl. 84-20.000.
Nippon GT Corporation: *See—*
Yoshida, Yasuhisa; and Ohi, Toshio, 4,513,570, Cl. 60-529.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Sato, Giichi; Matuo, Tadashi; and Tabei, Tooru, 4,514,559, Cl. 534-690.000.
Nippon Kogaku K. K.: *See—*
Hamanishi, Yoshinari, 4,514,051, Cl. 350-465.000.
Nippon Oil Co., Ltd.: *See—*
Ikematsu, Masaki; Honzyo, Isao; and Sakai, Kazuo, 4,514,287, Cl. 208-309.000.
Nippon Petrochemicals Company, Limited: *See—*
Sato, Atsushi; Murai, Yoshikazu; Goto, Masahito; and Mochizuki, Kanji, 4,514,229, Cl. 106-135.000.
Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,514,156, Cl. 418-173.000.
Umeha, Genkichi; and Hiraoka, Takeshi, 4,513,977, Cl. 277-96.200.
Nippon Soken, Inc.: *See—*
Igashira, Toshihiko; and Yoshinaga, Toru, 4,514,657, Cl. 313-130.000.
Ina, Toshikazu; Obayashi, Hideki; Kawai, Hisasi; Kohama, Tokio; Sawada, Daisaku; and Shigematsu, Takashi, 4,513,721, Cl. 123-478.000.
Kohama, Tokio; Obayashi, Hideki; Saito, Kimitaka; Ina, Toshikazu; and Narita, Seiichi, 4,513,627, Cl. 73-862.340.
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,513,628, Cl. 73-862.340.
Obayashi, Hideki; Kohama, Tokio; Saito, Kimitaka; Kawai, Hisasi; and Ina, Toshikazu, 4,513,626, Cl. 73-862.340.
Nippon Steel Corporation: *See—*
Kimoto, Tetsuo; and Orita, Kiyoshi, 4,513,597, Cl. 72-53.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Miyaguchi, Shoji, 4,514,592, Cl. 178-22.110.
Nippondenso Co., Inc.: *See—*
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,513,628, Cl. 73-862.340.
Nippondenso Co., Ltd.: *See—*
Haraguchi, Hiroshi; Narita, Ko; and Iwata, Toshiharu, 4,513,716, Cl. 123-425.000.
Ito, Yoji; Inoue, Yozo; Hara, Kiyoshi; Muramoto, Kazuo; and Miura, Kunio, 4,514,810, Cl. 364-424.000.
Kohama, Tokio; Obayashi, Hideki; Saito, Kimitaka; Ina, Toshikazu; and Narita, Seiichi, 4,513,627, Cl. 73-862.340.
Otsuki, Hiromi; Kondo, Takashi; Kondo, Yoshiaki; Obata, Haruyuki; Tate, Takao; and Ishikawa, Norikatu, 4,513,945, Cl. 251-129.000.

Takenaka, Akihiko; Arakawa, Miyao; Sato, Masahiro; and Yamaguchi, Toshiyuki, 4,513,609, Cl. 73-116.000.

Nisato, Dino; and Boveri, Sergio, to Sanofi. N-substituted nicotinamide 1-oxide as histamine H_2 receptor blockers. 4,514,408, Cl. 514-212.000.

Nishigaki, Kenichi, to Mitsubishi Kinzoku Kabushiki Kaisha. Tough carbide base cermet. 4,514,224, Cl. 75-238.000.

Nishikawa, Masao; Hattori, Torao; Aoki, Takashi; and Yoshizawa, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Control mechanism for selective creep of an automatic transmission. 4,513,638, Cl. 74-866.000.

Nishio, Tadashi: *See*—
Sano, Sakae; Kitajima, Hisashi; Iimori, Hiroshi; and Nishio, Tadashi, 4,514,112, Cl. 405-269.000.

Nishitani, Kimio: *See*—
Imoda, Kinichiro; Kawai, Toshinori; and Nishitani, Kimio, 4,513,921, Cl. 242-36.000.

Nissan Motor Company, Limited: *See*—
Fukino, Masato; Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; and Aoyama, Yutaka, 4,513,835, Cl. 180-142.000.
Ohtsuka, Kunio, 4,513,634, Cl. 74-688.000.
Sasaki, Masafumi; Kashiwagi, Susumu; and Hiyoshi, Takanori, 4,513,569, Cl. 60-39.310.
Yanagishima, Takayuki; and Kasai, Junichi, 4,514,599, Cl. 179-181.00W.

Nisshin Flour Milling Co., Ltd.: *See*—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,514,573, Cl. 564-387.000.

Nitivy Co., Ltd.: *See*—
Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.

Nitschke, Dean M., to Glasstech, Inc. Apparatus for bending glass sheets. 4,514,208, Cl. 65-273.000.

Nitta, Koichi: *See*—
Kaneko, Fumihiko; Murakawa, Tetsuya; Nitta, Koichi; Yamana, Noriaki; Takeda, Masashi; and Tachi, Kunio, 4,514,787, Cl. 361-420.000.

Nitto Chemical Industry Co., Ltd.: *See*—
Furuno, Akihisa; Inukai, Kenichi; and Ogawa, Yasuo, 4,514,551, Cl. 526-233.000.

Niwa, Masatake: *See*—
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Inoue, Toru; Nakai, Masaaki; Omaki, Takanobu; Niwa, Masatake; and Sekida, Minoru, 4,514,073, Cl. 354-414.000.

Nixdorf Computer AG: *See*—
Roschlein, Rolf; and Schulte, Heinz, 4,514,743, Cl. 346-140.00R.

Nogi, Tatsuo. Parallel computer. 4,514,807, Cl. 364-200.000.

Noguchi, Tetsuo: *See*—
Yamahira, Yoshiya; Shima, Katsuhiko; Matsusaka, Chikako; and Noguchi, Tetsuo, 4,514,386, Cl. 424-81.000.

Noji, Tasuku; and Tobita, Katsumi, to Alps Electric Co., Ltd. CATV selection device. 4,514,757, Cl. 358-86.000.

Nojiri, Takeo; and Irie, Yasuo, to Mitsui Engineering & Shipbuilding Co., Ltd. Propeller for ship. 4,514,146, Cl. 416-200.00R.

Noll, Lee A., to Corning Glass Works. Cell culture using a monolithic support. 4,514,499, Cl. 435-240.000.

Nolte, Lothar: *See*—
Roselt, Udo; Nolte, Lothar; and Pohler, Manfred, 4,514,206, Cl. 65-108.000.

Nomoto, Tsugio: *See*—
Ichizawa, Yoshiyuki; Nomoto, Tsugio; and Oshida, Mamoru, 4,514,166, Cl. 425-436.00R.

Noordam, Arend, to Shell Oil Company. 2-Hydroxypropane sulphonic acid derivatives: their preparation and curable compositions thereof. 4,514,547, Cl. 525-510.000.

Nordling, Karl I., to Kinex Corporation. High speed digital modem. 4,514,825, Cl. 364-900.000.

Nordson Corporation: *See*—
Hollingsworth, Alexander, 4,513,560, Cl. 53-509.000.

Nordstrom, Lennart, to Saab-Scania Aktiebolag. Attitude director indicator. 4,513,509, Cl. 33-330.000.

Norgard, Michael V.: *See*—
Kettman, John R.; and Norgard, Michael V., 4,514,498, Cl. 435-240.000.

Norris, Philip R., to Polaroid Corporation. Film assemblage including a cannister for housing a film cassette during processing of film. 4,514,070, Cl. 354-313.000.

North American Philips Corporation: *See*—
Lentz, James M., 4,514,600, Cl. 200-5.00R.
Zola, John, 4,514,247, Cl. 156-250.000.

Northern Telecom Limited: *See*—
Rosenbaum, Stanley D.; and Handforth, Martin R., 4,514,595, Cl. 179-16.00F.
Shannon, Michael A.; and Howat, Robert J., 4,514,435, Cl. 427-8.000.
Sims, Dewey M., Jr., 4,514,774, Cl. 360-95.000.

Norton Company: *See*—
Gow, Robert J., 4,513,546, Cl. 52-172.000.

Noto, Peter; and Reid, Michael, to Garan, Inc. Method and apparatus for coordination of garments. 4,514,178, Cl. 434-395.000.

Novagene, Ltd.: *See*—
Kit, Malon; and Kit, Saul, 4,514,497, Cl. 435-235.000.

Novak, W. Thomas, to Micronix Partners. Lithography system. 4,514,858, Cl. 378-034.000.

Nowicki, Ronald S.; and Moulder, John F., to Perkin-Elmer Corporation, The. Integrated circuit metallization technique. 4,513,905, Cl. 228-123.000.

Nowobilski, Jeffert J.; and Owens, William J., to Union Carbide Corporation. Peg supported thermal insulation panel. 4,514,450, Cl. 428-120.000.

Nowogrodzki, Markus; and Mawhinney, Daniel D., to RCA Corporation. Dual frequency heart rate monitor utilizing doppler radar. 4,513,748, Cl. 128-653.000.

Nozawa, Ryoichiro; and Kawamura, Hideaki, to Fanuc Ltd. System for correcting positional error in numerical control devices. 4,514,813, Cl. 364-474.000.

Nozawa, Takamitsu: *See*—
Taguchi, Toshio; Akino, Hisashi; and Nozawa, Takamitsu, 4,513,877, Cl. 220-335.000.

Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, to Sharp Kabushiki Kaisha. Thin structure of display panel. 4,514,042, Cl. 350-331.00R.

Nuil, Michael W.: *See*—
Miller, Ira; and Null, Michael W., 4,514,651, Cl. 307-475.000.

Nunomura, Shigeki: *See*—
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,514,416, Cl. 549-442.000.

Nunose, Akira: *See*—
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; Yoshioka, Hiroshi; and Nunose, Akira, 4,514,512, Cl. 502-107.000.

Nuovo Pignone S.p.A.: *See*—
Zanobini, Alessandro, 4,513,813, Cl. 165-111.000.

Nussbaumer, Manfred; Beitinger, Eberhard; and Mohlenbrink, Wolfgang, to Ed. Zublin Aktiengesellschaft. Method for determining the position of a pressed-ahead hollow-section line, and apparatus for implementing the method. 4,513,504, Cl. 33-1.00H.

Nuzillat, Gerard; and Bert, Georges, to Thomson-CSF. High-entrance high-speed logic operator which has a complex digital function and utilizes at least one quasi-normally off MESFET. 4,514,649, Cl. 307-450.000.

N.V. Bekaert S.A.: *See*—
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, 4,514,520, Cl. 502-337.000.

Nyboer, Duane A., to Mechanical Transplanter Company. Machine for laying film material. 4,513,530, Cl. 47-9.000.

Obara, Hideo: *See*—
Fujiwara, Mitsugu; Sakaue, Yoshinori; Aso, Tomio; Kurokawa, Koshiro; and Obara, Hideo, 4,514,740, Cl. 346-139.00R.

Obata, Haruyuki: *See*—
Otsuki, Hiromi; Kondo, Takashi; Kondo, Yoshiaki; Obata, Haruyuki; Tate, Takao; and Ishikawa, Norikatu, 4,513,945, Cl. 251-129.000.

Obayashi, Hidehito: *See*—
Kimura, Takashi; Mochiji, Kozo; and Obayashi, Hidehito, 4,514,857, Cl. 378-034.000.

Obayashi, Hideki; Kohama, Tokio; Saito, Kimitaka; Kawai, Hisasi; and Ina, Toshikazu, to Nippon Soken, Inc. Torque detector. 4,513,626, Cl. 73-862.340.

Obayashi, Hideki: *See*—
Ina, Toshikazu; Obayashi, Hideki; Kawai, Hisasi; Kohama, Tokio; Sawada, Daisaku; and Shigematsu, Takashi, 4,513,721, Cl. 123-478.000.
Kohama, Tokio; Obayashi, Hideki; Saito, Kimitaka; Ina, Toshikazu; and Narita, Seiichi, 4,513,627, Cl. 73-862.340.
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,513,628, Cl. 73-862.340.

Oberstein, Karla; and Thilo, Peer, to Siemens Aktiengesellschaft. Method and apparatus for increasing the response sensitivity and the interference resistance in an alarm system. 4,514,720, Cl. 340-511.000.

Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E.; and Shaler, John E., 4,513,665, Cl. 102-312.000.

Oce-Helioprint AS: *See*—
Sigvardt, Niels H.; and Baranski, Jan A., 4,513,956, Cl. 271-9.000.

Ochi, Hisayuki: *See*—
Ushiyama, Hisayuki; Ochi, Hisayuki; Miyamae, Tatsuo; and Wakamiya, Katsutoshi, 4,514,485, Cl. 430-106.600.

Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, to Takeda Chemical Industries, Ltd. Thiazolylacetamido cephalosphorin compounds. 4,514,565, Cl. 544-25.000.

Odagiri, Masaru: *See*—
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; Fujita, Takashi; and Kawase, Shigeki, 4,514,451, Cl. 428-141.000.

Ode, Bengt: *See*—
Borrman, Bo; Hellman, Erik; Ode, Bengt; and van Santen, Aart, 4,514,358, Cl. 376-362.000.

Oestmann, Eldon D.: *See*—
Balzer, David J.; Dennison, Thomas M.; Getz, Marvin G.; and Oestmann, Eldon D., 4,514,014, Cl. 305-10.000.

Office National d'Etudes et de Recherche Aerospatiales (ONERA): *See*—
Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,514,371, Cl. 423-449.000.

Oficina Technica HGB: *See*—
Vadasz, Amnon F., 4,513,778, Cl. 137-533.110.

Ogano, Takeo: *See*—
Koga, Noritaka; Suzuki, Takanori; Nakamura, Kenji; Suzuki, Hitoshi; and Ogano, Takeo, 4,513,702, Cl. 123-193.00H.
Ogata, Yukihiko: *See*—
Tateoka, Masamichi; and Ogata, Yukihiko, 4,514,626, Cl. 250-235.000.
Ogawa, Hidenori: *See*—
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,514,401, Cl. 514-253.000.
Ogawa, Hirotoshi: *See*—
Ueda, Tomoyuki; and Ogawa, Hirotoshi, 4,513,949, Cl. 251-266.000.
Ogawa, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Rotary vane pump with packing means for the housing components. 4,514,155, Cl. 418-149.000.
Ogawa, Shigeo: *See*—
Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.
Ogawa, Yasuo: *See*—
Furuno, Akihisa; Inukai, Kenichi; and Ogawa, Yasuo, 4,514,551, Cl. 526-233.000.
Ogren, John R.: *See*—
Blumenthal, Jack L.; Ogren, John R.; Rutkowski, Eugene V.; and Appel, Marvin, 4,514,698, Cl. 330-4.300.
O'Gwynn, David C., to Ampex Corporation. Adaptive apparatus and method for control. 4,514,672, Cl. 318-616.000.
Ohba, Shinya: *See*—
Koike, Norio; Takemoto, Iwao; Ohba, Shinya; Masuhara, Toshiaki; and Kubo, Masaharu, 4,514,766, Cl. 358-213.000.
Ohi, Toshio: *See*—
Yoshida, Yasuhisa; and Ohi, Toshio, 4,513,570, Cl. 60-529.000.
Ohkawa, Nobuhisa: *See*—
Kobayashi, Nobuyuki; Ito, Hiroshi; and Ohkawa, Nobuhisa, 4,513,710, Cl. 123-339.000.
Ohkubo, Shoichi: *See*—
Ashida, Kaneyoshi; Ohtani, Masaaki; and Ohkubo, Shoichi, 4,514,525, Cl. 521-112.000.
Ohmuro, Masaru: *See*—
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Ohnuki, Tetsuo: *See*—
Takamatsu, Takashi; and Ohnuki, Tetsuo, 4,514,152, Cl. 418-61.00B.
Ohsumi, Tadashi; Hatakoshi, Makoto; and Kisida, Hiroai, to Sumitomo Chemical Company, Limited. Oxime ethers and their use. 4,514,406, Cl. 514-352.000.
Ohtani, Masaaki: *See*—
Ashida, Kaneyoshi; Ohtani, Masaaki; and Ohkubo, Shoichi, 4,514,525, Cl. 521-112.000.
Ohtsuka, Kunio, to Nissan Motor Company, Limited. Change-speed transmission with selective bypass of hydrokinetic unit. 4,513,634, Cl. 74-688.000.
Oikawa, Hiroshi: *See*—
Tabata, Junichi; Torii, Masahiro; Oikawa, Hiroshi; Sawada, Minoru; and Masui, Yasuyuki, 4,513,753, Cl. 128-706.000.
Oikawa, Saburo: *See*—
Miyata, Kenji; Terasawa, Yoshio; Oikawa, Saburo; Murakami, Susumu; and Okamura, Masahiro, 4,514,747, Cl. 357-38.000.
Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 4,513,929, Cl. 242-198.000.
Oji Paper Company, Ltd.: *See*—
Kita, Yukio; Koide, Kazuo; and Horiko, Kouki, 4,514,501, Cl. 435-251.000.
Oka, Tateki: *See*—
Wada, Kenichi; Oka, Tateki; and Tabuchi, Kenji, 4,514,480, Cl. 430-30.000.
Okada, Kunihiro; Endo, Hirohide; Saito, Susumu; and Kataoka, Kenji, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Optical input and output scanning system. 4,514,079, Cl. 355-8.000.
Okada, Taiiti: *See*—
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,514,565, Cl. 544-25.000.
Okada, Tomoo, to Kabushiki Kaisha Universal. Device for holding display plate for game machine. 4,513,968, Cl. 273-143.00R.
Okamura Corporation: *See*—
Abe, Masatoshi, 4,514,136, Cl. 414-744.00A.
Okamura, Masahiro: *See*—
Miyata, Kenji; Terasawa, Yoshio; Oikawa, Saburo; Murakami, Susumu; and Okamura, Masahiro, 4,514,747, Cl. 357-38.000.
Okazaki, Mari: *See*—
Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; Kimura, Shirou; Torisu, Yoshio; and Okazaki, Mari, 4,514,277, Cl. 204-424.000.
Okazaki, Shinji: *See*—
Sawa, Natsuo; Suzuki, Toshihiro; and Okazaki, Shinji, 4,514,556, Cl. 528-117.000.
Okimoto, Haruo: *See*—
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Okuda, Yoshiro: *See*—
Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,514,216, Cl. 75-0.5AA.

Okutome, Toshiyuki: *See*—
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,514,416, Cl. 549-442.000.
Olin Corporation: *See*—
Woodard, Kenneth E., Jr.; and Dotson, Ronald L., 4,513,904, Cl. 228-116.000.
Ollus, Martin; Uotila, Esko; Wahlstrom, Bjorn; Saukkonen, Esko; Malinen, Pekka; and Maenpaa , Immo, to Oy Partek AB. Method and apparatus for the classification of piece goods which are in a state of motion. 4,514,816, Cl. 364-478.000.
Olsen, Willi; Padderatz, Heinz; Palm, Joachim; and Pircher, Christian, to Siemens Aktiengesellschaft. Encapsulated, compressed-gas-insulated, high-voltage switching installation. 4,514,783, Cl. 361-336.000.
Olson, Harold D.; Addison, Charles; and Cagle, J. Douglas, to Cagle's, Inc. Apparatus for processing poultry. 4,513,476, Cl. 17-44.100.
Olson, Raymond N., to Sundstrand Corporation. Liquid cooled high speed synchronous machine. 4,514,652, Cl. 310-54.000.
Olympus Optical Company Ltd.: *See*—
Fukuoka, Kenji, 4,514,083, Cl. 356-1.000.
Mizokami, Kazunori, 4,514,074, Cl. 354-416.000.
Omaki, Takanobu: *See*—
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Inoue, Toru; Nakai, Masaaki; Omaki, Takanobu; Niwa, Masatake; and Sekida, Minoru, 4,514,073, Cl. 354-414.000.
Omata, Nobuaki, to Nifco Inc. Sealed rotary motion damper. 4,513,473, Cl. 16-82.000.
Omco Inc.: *See*—
Agbay, Anthony J., 4,513,592, Cl. 70-34.000.
Carlson, John H.; and Agbay, Anthony J., 4,513,591, Cl. 70-34.000.
OMI International Corporation: *See*—
Lash, Ronald J., 4,514,267, Cl. 204-44.200.
Omnes, Jacqueline: *See*—
Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,514,371, Cl. 423-449.000.
O'Neal, Douglas M.: *See*—
Mendelson, Richard N.; O'Neal, Douglas M.; and Sharp, Leo A., Jr., 4,514,823, Cl. 364-900.000.
Ono, Kimizo: *See*—
Abe, Hiroshi; Sato, Nobuhiro; Ono, Kimizo; and Hirano, Kazuo, 4,513,751, Cl. 128-666.000.
Ooba, Kaoru: *See*—
Shiraiwa, Toshiyuki; and Ooba, Kaoru, 4,514,721, Cl. 340-527.000.
Ookawa, Hiroyuki: *See*—
Asai, Mamoru; Mitani, Tsuneyoshi; and Ookawa, Hiroyuki, 4,514,856, Cl. 377-8.000.
Opresco, Ovidiu; and Marinesco, Jon D. Polymorphic twist puzzle. 4,513,970, Cl. 273-153.00S.
Opresko, Stephen T., to RCA Corporation. Cathode-ray tube having an electron gun assembly with a bimetal cathode eyelet structure. 4,514,660, Cl. 313-446.000.
Orelup, Richard B., to Morton Norwich Products. Reagent and process for detecting furfural in petroleum products. 4,514,503, Cl. 436-60.000.
Orita, Kiyoshi: *See*—
Kimoto, Tetsuo; and Orita, Kiyoshi, 4,513,597, Cl. 72-53.000.
Oritani, Atsushi, to Fujitsu Limited. Static-type semiconductor memory device. 4,514,831, Cl. 365-203.000.
Orogil: *See*—
Le Coent, Jean-Louis, 4,514,313, Cl. 252-42.700.
Osakeyhtio, A. Ahlstrom: *See*—
Enqvist, Johan R., 4,514,297, Cl. 210-194.000.
Oshida, Mamoru: *See*—
Ichizawa, Yoshiyuki; Nomoto, Tsugio; and Oshida, Mamoru, 4,514,166, Cl. 425-436.00R.
Osman, Maged A.: *See*—
Tuong, Huynh-Ba; Kelly, Stephen M.; and Osman, Maged A., 4,514,317, Cl. 252-299.620.
Osrodek Badawczo-Rozwojowy Aparatury Mleczarskiej: *See*—
Balinski, Ryszard; and Sokulski, Marek, 4,513,658, Cl. 99-485.000.
Ostbergs Fabriks AB: *See*—
Lindblom, Thore; Hedin, Jan-Erik; and Wickstrom, Sven, 4,513,799, Cl. 144-379.000.
Ostersehlt, Bernd; Franke, Albrecht; Frickel, Fritz-Frieder; Thyes, Marco; Friedrich, Ludwig; Gries, Josef; and Lenke, Dieter, to BASF Aktiengesellschaft. Gastric acid secretion inhibiting N-(imidazol-1-ylalkyl)thiourea derivatives. 4,514,413, Cl. 514-397.000.
Otis Engineering Corporation: *See*—
Adams, James B., Jr., 4,513,944, Cl. 251-89.000.
Yonker, John H., 4,513,764, Cl. 137-68.00R.
Otocki, Tadeusz S., to Protectaire Systems Co. Positive drive rotator. 4,513,682, Cl. 118-322.000.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,514,401, Cl. 514-253.000.
Otsuki, Hiromi; Kondo, Takashi; Kondo, Yoshiaki; Obata, Haruyuki; Tate, Takao; and Ishikawa, Norikatu, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Electromagnetic reed valve. 4,513,945, Cl. 251-129.000.
Otto Bock Orthopadische Industrie KG: *See*—
Glabiszewski, Richard, 4,513,457, Cl. 3-15.000.
Ovren, Christer: *See*—
Adolfsson, Morgan; Brogardh, Iorgny; Hok, Bertil; and Ovren, Christer, 4,514,860, Cl. 455-612.000.

Owatonna Manufacturing Company, Inc.: *See—*
Macht, Jon A., 4,514,007, Cl. 296-183.000.
Owen, Donald W. Switching apparatus. 4,514,602, Cl. 200-16.00C.
Owens-Corning Fiberglas Corporation: *See—*
Dunn, Charles S., 4,514,851, Cl. 373-27.000.
Owens-Illinois, Inc.: *See—*
Miller, Peter S.; and Hall, Maclin S., 4,514,812, Cl. 364-473.000.
Mumford, Eustace H., 4,514,209, Cl. 65-328.000.
Rhoads, Roger R., 4,513,860, Cl. 206-150.000.
Owens, William H.: *See—*
Hansen, Donald W., Jr.; Baran, John S.; and Owens, William H., 4,514,332, Cl. 260-112.50E.
Owens, William J.: *See—*
Nowobilski, Jeffert J.; and Owens, William J., 4,514,450, Cl. 428-120.000.
Owoc, James R.; Thomas, John H.; and Conley, Richard W., to Kerotest Manufacturing Corp. Metering valve. 4,513,779, Cl. 137-556.000.
Oxford, David B.: *See—*
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., 4,514,828, Cl. 365-8.000.
Oy Partek AB: *See—*
Ollus, Martin; Uotila, Esko; Wahlstrom, Bjorn; Saukkonen, Esko; Malinen, Pekka; and Maenpaa , Immo, 4,514,816, Cl. 364-478.000.
Oy Tampella AB: *See—*
Issakainen, Onni, 4,514,111, Cl. 405-260.000.
Oyanagi, Shigeru: *See—*
Iwata, Kazuhide; Shibayama, Shigeki; Hidai, Yutaka; and Oyanagi, Shigeru, 4,514,826, Cl. 364-900.000.
Paap, Hans J.: *See—*
Richter, Albert P., Jr.; Campsey, Ronald L.; Paap, Hans J.; and Bussian, Alfred E., 4,514,627, Cl. 250-255.000.
Pacesetter Systems, Inc.: *See—*
Weyant, Robert R., 4,513,752, Cl. 128-696.000.
Packham, Charles C.: *See—*
Majthan, Rudolf; Stuhler, Rolf; Parsonage, Raymond G.; and Packham, Charles C., 4,514,618, Cl. 219-370.000.
Padderatz, Heinz: *See—*
Olsen, Willi; Padderatz, Heinz; Palm, Joachim; and Pircher, Christian, 4,514,783, Cl. 361-336.000.
Pagdin, Brian C.: *See—*
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Pahl, Joachim: *See—*
Kaeufer, Helmut; Rautenberg, Lutz; and Pahl, Joachim, 4,514,351, Cl. 264-210.200.
Paikoff, Myron: *See—*
Hain, Robert W.; Hadtke, Frederick B.; and Paikoff, Myron, 4,513,891, Cl. 222-213.000.
Palm, Joachim: *See—*
Olsen, Willi; Padderatz, Heinz; Palm, Joachim; and Pircher, Christian, 4,514,783, Cl. 361-336.000.
Palmer, John P.; and Ward, Phillip B., Jr., to General Dynamics Pomona Division. Fiber optic coupler array and fabrication method. 4,514,057, Cl. 350-96.150.
Pan, Wie-Hin: *See—*
Ho, Teh C.; and Pan, Wie-Hin, 4,514,517, Cl. 502-220.000.
Pandrol Ltd.: *See—*
Schumaker, Jon S., 4,513,912, Cl. 238-349.000.
Paolillo, Roger E.: *See—*
Deveau, Paul J.; Greenberg, Paul B.; and Paolillo, Roger E., 4,513,567, Cl. 60-39.020.
Papalos, John G.; and Sinka, Joseph V., to Diamond Shamrock Chemicals Company. Carbonaceous materials water mixtures. 4,514,189, Cl. 44-51.000.
Papst, Georg; Wrobel, Guenter; and Koletzki, Ulrich, to Papst-Motoren GmbH & Co. KG. Heat sink for electronic devices. 4,513,812, Cl. 165-80.00B.
Papst Motoren GmbH & Co KG: *See—*
Muller, Rolf, 4,514,654, Cl. 310-216.000.
Papst-Motoren GmbH & Co. KG: *See—*
Papst, Georg; Wrobel, Guenter; and Koletzki, Ulrich, 4,513,812, Cl. 165-80.00B.
Pardon, David W.: *See—*
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Parker, Gregory H. Insulated window cover apparatus. 4,513,548, Cl. 52-202.000.
Parker, Paul: *See—*
Vanderminden, Robert D.; and Parker, Paul, 4,514,009, Cl. 297-27.000.
Parkhouse, Alan: *See—*
Kerner, Dieter; Kleinschmit, Peter; Parkhouse, Alan; and Wolff, Siegfried, 4,514,231, Cl. 106-309.000.
Parmentier, Paul, to U.S. Philips Corporation. Method of manufacturing an identification card and an identification manufactured, by this method. 4,514,785, Cl. 361-401.000.
Parry, Anthony N.: *See—*
Denholm, William T.; Floyd, John M.; Errington, William J.; and Parry, Anthony N., 4,514,222, Cl. 75-77.000.
Parshall, David G., to AMSTED Industries Incorporated. Continuous media filter. 4,514,301, Cl. 210-400.000.
Parson, Roger F.; Rosenquist, Kenneth G.; and Schmit, Justin M., to Jeno's, Inc. Dispensing apparatus. 4,513,918, Cl. 241-101.400.
Parsonage, Raymond G.: *See—*
Majthan, Rudolf; Stuhler, Rolf; Parsonage, Raymond G.; and Packham, Charles C., 4,514,618, Cl. 219-370.000.
Passmore, David T.; and Windibank, Brian P., to Eastman Kodak Company. Alkyd composition for high solids coatings. 4,514,230, Cl. 106-243.000.
Pasternack, George: *See—*
Bishop, Timothy E.; Stanton, Joseph J.; Pasternack, George; and Cutler, Orvid R., Jr., 4,514,037, Cl. 350-96.230.
Patchen, Paul, II, to Allis-Chalmers Corporation. Intercooler bypass return in an internal combustion engine. 4,513,695, Cl. 123-41.100.
Paterson, Linda M.: *See—*
Symons, Edward A.; Rolston, John H.; Clermont, Michel J.; and Paterson, Linda M., 4,514,377, Cl. 423-648.00A.
Pato, Carlos M., to Monarch Wine Co., Inc. Method of and apparatus for controlling the quantity of filter aid fed to a sediment filter so as to maintain virtually constant a preselected optimum specific cake resistance. 4,514,306, Cl. 210-740.000.
Paul Hettich & Co.: *See—*
Sundermeier, Gunter; and Waltemate, Dieter, 4,514,021, Cl. 312-291.000.
Paul, Volker: *See—*
Kuhle, Engelbert; Hagemann, Hermann; Paul, Volker; and Brandes, Wilhelm, 4,514,417, Cl. 514-482.000.
Paul Wurth S.A.: *See—*
Legille, Edouard; Mailliet, Pierre; and Lonardi, Emile, 4,514,129, Cl. 414-200.000.
Pauling, Horst: *See—*
Hanck, Alfred; and Pauling, Horst, 4,514,338, Cl. 260-429.900.
Pauls, Heinz W.: *See—*
Fraser-Reid, Bertram; and Pauls, Heinz W., 4,514,561, Cl. 536-18.700.
Payne, David G., to Tektronix, Inc. Probe cable assemblies. 4,514,022, Cl. 339-17.00F.
Paynton, Richard D. Filter and method of manufacturing. 4,514,585, Cl. 174-35.0GC.
Pearce, Richard M.: *See—*
Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., 4,514,427, Cl. 426-271.000.
Peck, Michael C., to Union Camp Corporation. Water reducible polyamides. 4,514,540, Cl. 524-514.000.
Pedersen, Jan B., to Tortrix A/S. Winding machine for winding elongate members or cores. 4,513,920, Cl. 242-4.00B.
Pedrick, Joseph F.; and Spector, George. Band grips. 4,513,801, Cl. 152-213.00R.
Pelletier, Jean-Marc: *See—*
Simoneau, Raynald; Pelletier, Jean-Marc; Di Vincenzo, Antonio; and Boillot, Jean-Paul, 4,514,615, Cl. 219-132.000.
Pellicciari, Roberto: *See—*
Castagnola, Virginio; Frigerio, Giuliano E.; and Pellicciari, Roberto, 4,514,393, Cl. 260-397.100.
Penton, Harold R., to Ethyl Corporation. Polyphosphazene process. 4,514,550, Cl. 525-538.000.
Pepper, Robert B.; and Maples, James A., to Pepper, Robert B. Position sensing and indicating device. 4,514,817, Cl. 364-480.000.
Pere, Gerard; and Badaut, Roger, to Creusot-Loire. Motion conversion mechanism. 4,513,630, Cl. 74-60.000.
Perkin-Elmer Corporation, The: *See—*
Nowicki, Ronald S.; and Moulder, John F., 4,513,905, Cl. 228-123.000.
Perlstein, Jerome H.: *See—*
Scozzafava, Michael; Chen, Chin H.; Reynolds, George A.; and Perlstein, Jerome H., 4,514,481, Cl. 430-58.000.
Permobil AB: *See—*
Engman, Bo H. S., 4,513,832, Cl. 180-6.500.
Perry, Thomas J., to GTE Automatic Electric Inc. Duplex digital span transmission circuit arrangement. 4,514,844, Cl. 371-8.000.
Persbeck, Sven-Eric; and Almqvist, Bert, to Utvecklingsaktiebolaget Teccon. Method and arrangement for determination of values relating to the mass of a flow of material. 4,513,830, Cl. 177-1.000.
Petersen, Eric R.: *See—*
Binder, Michael; Petersen, Eric R.; Walker, Charles W., Jr.; Wade, William L., Jr.; and Gilman, Sol, 4,514,478, Cl. 429-196.000.
Petersen, Jurgen: *See—*
Bader, Edgar; Rohrbach, Gerd; Petersen, Jurgen; and Kittel, Ludwig, 4,514,840, Cl. 370-29.000.
Petersson, Stig A., to Boliden Aktiebolag. Method of producing lead from sulphidic lead raw-material. 4,514,217, Cl. 75-10.00R.
Petro-Canada Exploration, Inc.: *See—*
Filby, John E., 4,514,305, Cl. 210-703.000.
Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,514,320, Cl. 252-392.000.
Pettersson, Jan G. T.: *See—*
Karlsson, Hakan I.; and Pettersson, Jan G. T., 4,514,257, Cl. 162-49.000.
Pettersson, Ola, to KB Cold Isostatic Press Systems CIPS. Plant for cold isostatic pressing. 4,514,158, Cl. 425-78.000.
Pez, Guido P., to Allied Corporation. Group IVa metal hydride catalysts and preparation thereof. 4,514,337, Cl. 260-429.300.
Pham Van, Doan, to Alsthom-Atlantique. Compressed gas circuit breaker. 4,514,605, Cl. 200-148.00A.
Phillips Petroleum Company: *See—*
Beever, William H.; Shue, Robert S.; and Childers, Clifford W., 4,514,588, Cl. 174-52.0PE.
Martin, Joel L., 4,514,514, Cl. 502-121.000.

Pichler, Gerald P.: *See—*
Bentley, Gustavus A.; Nash, Stephen E.; and Pichler, Gerald P., 4,513,976, Cl. 277-25.000.

Pichon, Laurence; and Huignard, Jean P., to Thomson-CSF. Optical Fourier transformer device and optical correlator incorporating the said device. 4,514,038, Cl. 350-162.130.

Pickering, William: *See—*
Melocik, Grant C.; and Pickering, William, 4,514,665, Cl. 318-139.000.

Piepers, Harry, to U.S. Philips Corporation. Output amplifier for a transmitting tube. 4,514,700, Cl. 330-56.000.

Piepers, Harry C., to Meco Equipment Engineers B.V. Method and device for galvanically applying a metal coating on metal objects. 4,514,264, Cl. 204-15.000.

Pierburg GmbH & Co. KG.: *See—*
Sudbeck, Rainer; and Baumgartner, Hans, 4,514,153, Cl. 418-69.000.

Pierrel Spa: *See—*
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Pilat, John F.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.

Pilkington Brothers P.L.C.: *See—*
Lawrenson, Jack; and Murphy, Kevin M., 4,513,543, Cl. 51-283.00R.

Pinelli, Tazio; and Sebastiano, Francesco, to Societa' Italiana Vetro-Siv-S.p.A. Prismatic refractor for concentrating solar energy on a suitable collecting surface, of fixed position with respect to time. 4,514,040, Cl. 350-286.000.

Pinkerton Tobacco Company, The: *See—*
Pittman, Luther B.; Agner, Jennings M.; and Hunt, George F., 4,513,756, Cl. 131-111.000.

Pircher, Christian: *See—*
Olsen, Willi; Padderatz, Heinz; Palm, Joachim; and Pircher, Christian, 4,514,783, Cl. 361-336.000.

Pirker, Robert: *See—*
Augustin, Hubert; and Pirker, Robert, 4,514,235, Cl. 148-37.000.

Pittard, John E.: *See—*
Pritchard, Frederick D.; and Pittard, John E., 4,514,092, Cl. 366-136.000.

Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Flavoring with furfuryl mercaptals. 4,514,429, Cl. 426-535.000.

Pittman, Luther B.; Agner, Jennings M.; and Hunt, George F., to Pinkerton Tobacco Company, The. Process of making tobacco pellets. 4,513,756, Cl. 131-111.000.

Pittsburgh-Des Moines Corporation: *See—*
Cliff, John O.; and Edwards, James, 4,513,547, Cl. 52-194.000.

Plank, Vernon G.: *See—*
Berthel, Robert O.; Plank, Vernon G.; Jones, Stephen H.; and Matthews, Anthony J., 4,514,758, Cl. 358-93.000.

Plasschaert, Paul E.; Landheer, Dolf; and Cobb, Harold W. Corona device. 4,514,781, Cl. 361-230.000.

Plate, John R., to Allis-Chalmers Corporation. Electrohydraulic power shift transmission system. 4,513,850, Cl. 192-3.580.

Plateau Products Corporation: *See—*
Chezem, Jimmie A.; and Burks, Gary E., 4,514,000, Cl. 292-338.000.

Playe, Patrice: *See—*
Beduchaud, Michel; and Playe, Patrice, 4,514,078, Cl. 355-3.0BE.

Plessey Incorporated: *See—*
Ledgerwood, Harry J., 4,513,899, Cl. 226-141.000.

Plessey Overseas Limited: *See—*
Garner, Geoffrey M.; and Salloway, Anthony J., 4,514,596, Cl. 179-84.00T.

Plice, Gerald W., to Shure Brothers, Inc. Microphone shock-mounting apparatus. 4,514,598, Cl. 179-146.00R.

Plies, Erich: *See—*
Lischke, Burkhard; Frosien, Juergen; Anger, Klaus; and Plies, Erich, 4,514,638, Cl. 250-492.200.

Plum, Hans: *See—*
Landsiedel, Horst; and Plum, Hans, 4,514,225, Cl. 106-15.050.

Plummer, Walter Allen, III: *See—*
Iblings, Jackson R., 4,513,484, Cl. 24-437.000.

Pohler, Manfred: *See—*
Roselt, Udo; Nolte, Lothar; and Pohler, Manfred, 4,514,206, Cl. 65-108.000.

Polaroid Corporation: *See—*
Carrera, Jacinto P., 4,514,065, Cl. 354-235.100.
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., 4,514,069, Cl. 354-304.000.
Kisler, Semyon, 4,513,683, Cl. 118-620.000.
Norris, Philip R., 4,514,070, Cl. 354-313.000.
Rogers, Howard G., 4,514,048, Cl. 350-423.000.

Polaschegg, Hans-Dietrich: *See—*
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Pollak-Banda, Erich: *See—*
John, Erich; and Pollak-Banda, Erich, 4,514,099, Cl. 384-100.000.

Pon, Francois; Voirin, Jean-Philippe; and Lucan, Andre, to Compagnie Internationale Pour L'Informatique Cii/Honeywell Bull (Societe Anonyme). Powder for developing latent images and a method of producing the powder. 4,514,484, Cl. 430-106.600.

Poorman, Richard M., to United States of America, National Aeronautics and Space Administration. Low gravity exothermic heating-/cooling apparatus. 4,513,810, Cl. 165-61.000.

Porlier, Beth W.: *See—*
Wang, Sophia; Roof, Glenn L.; and Porlier, Beth W., 4,514,286, Cl. 208-196.000.

Postier, Robert A.: *See—*
Forrer, Robert E.; and Postier, Robert A., 4,514,246, Cl. 156-264.000.

Poulin, Jean L., to Societe dite: USINES BEYER FRERES. Reduction gear system for twin screw extruding system. 4,514,164, Cl. 425-208.000.

Poupeau, Jean-Jacques: *See—*
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Powell, Stanley, to British Nuclear Fuels Limited. Gate assembly for ponds. 4,514,110, Cl. 405-104.000.

Poynor, Paul C.; and Burdett, Joseph W., to Conoca Inc. Hydrogen donor diluent cracking process. 4,514,282, Cl. 208-56.000.

Price, Frank C., to USM Corporation. Apparatus for feeding adhesive in rod form. 4,513,886, Cl. 222-146.500.

Priese, Werner K., to Rockwell International Corporation. Valve and valve sealing member. 4,513,946, Cl. 251-173.000.

Princler, Gerald L.: *See—*
Braatz, James A.; McIntire, Kenneth R.; and Princler, Gerald L., 4,514,506, Cl. 436-518.000.

Pritchard, Frederick D.; and Pittard, John E., to Burlington Industries, Inc. Automated sizing system controlling. 4,514,092, Cl. 366-136.000.

Procom, B.V.: *See—*
Ketels, Gerardus H. J., 4,513,477, Cl. 17-46.000.

Procter & Gamble Company, The: *See—*
Doughty, Elexsis D., 4,513,459, Cl. 4-222.000.
Ives, Donald T.; Madill, Michael J.; and Sliva, Philip G., 4,514,444, Cl. 427-242.000.
Johnson, Bruce A.; and Wnuk, Andrew J., 4,514,345, Cl. 264-22.000.

Proctor, Robert H.; and Hobbs, Arthur G., Jr., to Murray Corporation. Weight-monitored air-conditioner charging station. 4,513,578, Cl. 62-149.000.

Prodel, Jacques: *See—*
Prodel, Maurice; and Prodel, Jacques, 4,513,854, Cl. 198-472.000.

Prodel, Maurice; and Prodel, Jacques. Machines for assembling or for machining parts. 4,513,854, Cl. 198-472.000.

Prodes, S.A.: *See—*
Veit, Dagmar V., 4,514,404, Cl. 514-265.000.

Prodger, Terence E.: *See—*
Billington, Richard W.; Blackwell, Gordon B.; and Prodger, Terence E., 4,514,342, Cl. 260-952.000.

Propane Carburetion Systems, Inc.: *See—*
Lagano, Thomas; and Batchelor, William H., 4,513,727, Cl. 123-525.000.

Protectaire Systems Co.: *See—*
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Proulx, Richard W.: *See—*
Davich, Luke J.; Erickson, Jack A.; and Proulx, Richard W., 4,514,352, Cl. 264-230.000.

Pruyne, Jerry R., to Miro Industries, Inc. Pipe-supporting device. 4,513,934, Cl. 248-49.000.

Przybyl, Robert V.: *See—*
Bowden, Edgar A.; and Przybyl, Robert V., 4,514,770, Cl. 360-69.000.

Przybylski, Aleksander T.: *See—*
Fox, Sidney W.; and Przybylski, Aleksander T., 4,514,584, Cl. 136-263.000.

Psaledakis, Nicholas G. Proteolytic enzymes in the zymogen form to treat sarcoma cells. 4,514,388, Cl. 424-94.000.

Pumphrey, Nicholas W. J.: *See—*
Hesketh, Bernard; and Pumphrey, Nicholas W. J., 4,514,274, Cl. 204-290.00F.

Punater, Dinesh G.; and Bastian, Donald G., to Harris Graphics Corporation. Apparatus and method for measuring rotational position. 4,514,819, Cl. 364-556.000.

Purcell, Glenn T., to Masco Corporation of Indiana. Method of manufacturing faucets and spouts, faucet inserts, and faucets and spouts manufactured by the method. 4,513,769, Cl. 137-315.000.

Puskas, Imre, to Standard Oil Company (Indiana). Method for manufacture of AMS-1B crystalline borosilicate molecular sieve with low sodium content. 4,514,516, Cl. 502-202.000.

Puzio, Daniel: *See—*
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Quantel Limited: *See—*
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Quast, Hein: *See—*
Immel, Otto; Schwarz, Hans-Helmut; Quast, Hein; and Bandtel, Eberhard, 4,514,578, Cl. 568-853.000.

Queen's University at Kingston: *See—*
Wolfe, Saul; and Shaw, Chia-Cheng, 4,514,333, Cl. 260-239.00A.

Quinlan, Patrick M., to Petrolite Corporation. Halide free corrosion inhibitors. 4,514,320, Cl. 252-392.000.

Quinones, Matthew M.: *See—*
Mirow, Fred A.; and Quinones, Matthew M., 4,514,820, Cl. 364-858.000.

Quintec Interconnect Systems: *See—*
Lax, Ronald G.; Johnson, Robert G.; Henningsen, Charles G.; and Ellis, J. Scott, 4,514,029, Cl. 339-143.00R.

R. A. Jones & Co. Inc.: *See—*
Hughes, Charles C., 4,514,181, Cl. 493-131.000.
Raccach, Moshe, to Microlife Technics, Inc. Fermentation composition using a selected lactobacillus. 4,514,424, Cl. 426-56.000.
Raczek, Mieczyslaw J. Valve retainer for automotive valve repair. 4,513,486, Cl. 29-220.000.
Raddant, Hans-Joachim: *See—*
Fassel, Reinhard; Meier, Werner; Rauch, Hans; Wesemeyer, Jurgen; and Raddant, Hans-Joachim, 4,514,670, Cl. 318-467.000.
Raduta, Margaret C.: *See—*
Chestnut, Raymond; Colussi, John J.; Frost, Donald J.; Keen, William E., Jr.; and Raduta, Margaret C., 4,514,307, Cl. 210-751.000.
Ragle, Herbert U.; and DeMoss, Dean, to Burroughs Corporation. Partitionable pack with end plates. 4,514,778, Cl. 360-133.000.
Rahn, Raymond A. Sweeper blower device. 4,513,471, Cl. 15-340.000.
Raisin, Helmut: *See—*
Schutz, Hans U.; Raisin, Helmut; and Bouwknegt, Thys, 4,514,187, Cl. 8-531.000.
Rajsigl, Zdenek; Mladek, Milos; Blasko, Michal; and Smatana, Josef, to ZVL Vyzkumny ustav pro valiva loziska Brno koncernova ucelova organizace. Resilient support for a high-speed rotor. 4,513,566, Cl. 57-406.000.
Rankin, Jacky P.: *See—*
Rankin, P. Phillip, Sr.; Rankin, R. Dewon; and Rankin, Jacky P., 4,513,452, Cl. 2-81.000.
Rankin, P. Phillip, Sr.; Rankin, R. Dewon; and Rankin, Jacky P. Heat resistant suit for use in boiler repair. 4,513,452, Cl. 2-81.000.
Rankin, R. Dewon: *See—*
Rankin, P. Phillip, Sr.; Rankin, R. Dewon; and Rankin, Jacky P., 4,513,452, Cl. 2-81.000.
Rao, Srinivas T.; and Hawrylo, Frank Z., to RCA Corporation. Bonding pads for semiconductor devices. 4,514,265, Cl. 204-15.000.
Rauch, Hans: *See—*
Fassel, Reinhard; Meier, Werner; Rauch, Hans; Wesemeyer, Jurgen; and Raddant, Hans-Joachim, 4,514,670, Cl. 318-467.000.
Rauch, Kurt: *See—*
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Rautenberg, Lutz: *See—*
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Raychem Corporation: *See—*
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Raydex International Limited: *See—*
McDonald, Neil, 4,514,036, Cl. 350-96.230.
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RCA Corporation: *See—*
Balaban, Alvin R.; and Steckler, Steven A., 4,514,760, Cl. 358-143.000.
Bloom, Stanley, 4,514,658, Cl. 313-402.000.
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Deal, Samuel B.; and Cushman, Barry M., 4,514,456, Cl. 428-204.000.
Nowogrodzki, Markus; and Mawhinney, Daniel D., 4,513,748, Cl. 128-653.000.
Opresko, Stephen T., 4,514,660, Cl. 313-446.000.
Rao, Srinivas T.; and Hawrylo, Frank Z., 4,514,265, Cl. 204-15.000.
Rindal, Abraham E., 4,514,763, Cl. 358-167.000.
Stone, Robert P., 4,514,661, Cl. 315-3.000.
Tower, John R., 4,514,821, Cl. 364-862.000.
Verma, Surendra K.; and Kim, George A., 4,514,192, Cl. 51-295.000.
Vieland, Leon J., 4,514,663, Cl. 315-366.000.
Whitley, George J.; and Rayl, Martin, 4,513,493, Cl. 29-566.300.
Young, William C., 4,513,505, Cl. 33-1.0MP.
Re, Eugene L. Denture coupling. 4,514,173, Cl. 433-178.000.
Rebhan, Herbert J., to Domain, Inc. Mold growth inhibitor and method. 4,514,425, Cl. 426-93.000.
Reed, John T., to Singer Company, The. Spherical projection-type screen for use in a vehicle simulator. 4,514,347, Cl. 264-32.000.
Reed Rock Bit Company: *See—*
Daly, Jeffery E., 4,514,097, Cl. 384-93.000.
Reed, Steven P., to Brown & Williamson Tobacco Corporation. Device for making grooves in cigarette filters. 4,514,249, Cl. 156-553.000.
Rees, Richard W. A.: *See—*
Langmesser, Otto J., Jr.; and Rees, Richard W. A., 4,513,937, Cl. 248-394.000.
Reese, Thorsten, to Continental Gummi-Werke Aktiengesellschaft. Inflating gas for tires. 4,513,803, Cl. 152-427.000.
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, to ADIR. Disubstituted polymethylene imines. 4,514,398, Cl. 514-245.000.
Regnier, Gilbert; Dhainaut, Alain; Laubie, Michel; and Duhault, Jacques, to Adir. N-N'substituted polymethylene diamines. 4,514,399, Cl. 514-241.000.
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Gollwitzer, Reiner, 4,513,999, Cl. 292-161.000.
Reich, Douglas R. Method and means for preventing frost damage to crops. 4,513,529, Cl. 47-2.000.
Reichhold Chemicals, Inc.: *See—*
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Reid, Donald J., to British Gas Corporation. Apparatus for minimizing the amount of fluid leaked from a component in a hydraulic power system when the system has failed. 4,513,774, Cl. 137-392.000.
Reid, Michael: *See—*
Noto, Peter; and Reid, Michael, 4,514,178, Cl. 434-395.000.
Reik, Wolfgang, to LuK Lamellen und Kupplungsbau GmbH. Friction clutch. 4,513,849, Cl. 192-70.270.
Reinecke, Paul: *See—*
Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 4,514,402, Cl. 514-250.000.
Reiss, Linda. Hot/cold food dispensing machine. 4,513,879, Cl. 221-150.0HC.
Reith, Walter: *See—*
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Remcor Products Company: *See—*
Koeneman, Robert M.; Miller, Benjamin D.; Jablonski, Thaddeus M.; and Schafer, Albert L., 4,513,892, Cl. 222-235.000.
Renaud, Bruce J. Convertible design surface, and method for forming the design. 4,513,991, Cl. 283-1.00R.
Renishaw Electrical Limited: *See—*
McMurtry, David R., 4,513,646, Cl. 82-1.00C.
Renner, Robert E., to GTE Automatic Electric Inc. T-S-T-S-T Digital switching network. 4,514,842, Cl. 370-63.000.
Renzel, Peter; and Kroesen, Klaus, to Krautkramer-Branson, Inc. Ultrasonic test instrument with controllable amplifier. 4,513,621, Cl. 73-631.000.
Republic Geothermal, Inc.: *See—*
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Republic Steel Corporation: *See—*
Cole, Frank J.; and Hahn, Henry N., 4,514,266, Cl. 204-28.000.
Rescalli, Carlo: *See—*
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Research Corporation: *See—*
Fraser-Reid, Bertram; and Pauls, Heinz W., 4,514,561, Cl. 536-18.700.
Resz, Raoul; Alberts, Heinrich; Burgdorfer, Hans-Heribert; and El Sayed, Aziz, to Bayer Aktiengesellschaft. Coating powder based on saponified ethylene/vinyl acetate copolymers and the use thereof. 4,514,546, Cl. 525-57.000.
Rettich, Jakob; and Spiewok, Leonhard, to Sulzer-Escher Wyss Ltd. Method for controlling the acceleration of a centrifuging device. 4,513,464, Cl. 8-159.000.
Reuschenbach, Hermann: *See—*
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Reynolds, George A.: *See—*
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Rhoads, Roger R., to Owens-Illinois, Inc. Bottle carrier. 4,513,860, Cl. 206-150.000.
Rhodes, Edward: *See—*
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Rhone-Poulenc Specialites Chimiques: *See—*
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Rhynard, Donald L., to Mobil Oil Corporation. Surfactant monitor for aviation fuel filter/separators. 4,513,606, Cl. 73-61.00R.
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Rice, Rex, to Burroughs Corporation. Integrated circuit package connector. 4,514,023, Cl. 339-17.0CF.
Richardson-Vicks Inc.: *See—*
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Richmond, Michael S.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.
Richter, Albert P., Jr.; Campsey, Ronald L.; Paap, Hans J.; and Bussian, Alfred E., to Texaco Inc. Petroleum stream analyzer. 4,514,627, Cl. 250-255.000.
Richter, Johan C. F. C.; and Richter, Ole J., to Kamyr AB. Gas treatment of particulate materials in storage containers. 4,513,515, Cl. 34-33.000.
Richter, Ole J.: *See—*
Richter, Johan C. F. C.; and Richter, Ole J., 4,513,515, Cl. 34-33.000.
Ricketts, Thomas E.; and Shaler, John E., to Occidental Oil Shale, Inc. Method for loading explosive charges into blastholes formed in a subterranean formation. 4,513,665, Cl. 102-312.000.
Ricoh Co., Ltd.: *See—*
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Rieger, Franz: *See—*
Damson, Eckart; Latsch, Reinhard; Linder, Ernst; Rieger, Franz; and Schussler, Rainer, 4,514,656, Cl. 313-11.500.
Rieger, Martin M.: *See—*
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Riemer, Heinz; Weiss, Joern-Volker; and Mutzberg, Friedhelm, to Chemische Werke Huels, AG. Method of obtaining a positive bond between painted articles and concrete. 4,514,467, Cl. 428-413.000.

Rieter Machine Works Limited: *See—*
Binder, Rolf; Hanselmann, Daniel; and Schlepfer, Walter, 4,513,479, Cl. 19-80.00R.
Rigg, Bryan C.: *See—*
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Riley, Wayne C.: *See—*
Wicke, Charles A.; and Riley, Wayne C., 4,513,887, Cl. 222-146.500.
Rindal, Abraham E., to RCA Corporation. Sound signal and impulse noise detector for television receivers. 4,514,763, Cl. 358-167.000.
Rindfleisch, Volker: *See—*
Lesche, Wolfgang; and Rindfleisch, Volker, 4,514,798, Cl. 364-188.000.
Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Apparatus for producing ion exchange particles charged with uranyl ions. 4,514,296, Cl. 210-96.100.
Rishovd, Erik; and Sorensen, Sven, to A/S Westad Armaturfabrik. Arrangement on a butterfly valve. 4,513,765, Cl. 137-72.000.
Rivetti, Franco: *See—*
Romano, Ugo; Rivetti, Franco; and Sasselli, Giacomo, 4,514,339, Cl. 260-453.00P.
Robbins & Myers, Inc.: *See—*
Dover, Donald L.; and Leitch, William J., 4,513,994, Cl. 248-544.000.
Robert Bosch GmbH: *See—*
Bottigheimer, Andreas; Einsele, Karl-Heinz; and Henig, Klaus, 4,514,835, Cl. 368-118.000.
Braun, Gunter; Kratt, Alfred; and Schleicher, Rolf, 4,513,711, Cl. 123-339.000.
Braun, Wolfgang; Konrath, Karl; and Schwarz, Manfred, 4,513,715, Cl. 123-383.000.
Buchner, Norbert, 4,513,876, Cl. 220-270.000.
Damson, Eckart; Latsch, Reinhard; Linder, Ernst; Rieger, Franz; and Schussler, Rainer, 4,514,656, Cl. 313-11.500.
Fassel, Reinhard; Meier, Werner; Rauch, Hans; Wesemeyer, Jurgen; and Raddant, Hans-Joachim, 4,514,670, Cl. 318-467.000.
Gassler, Hermann; and Kosak, Wolfgang, 4,513,712, Cl. 123-339.000.
Latsch, Reinhard; Schlembach, Hans; and Scherenberg, Dieter, 4,513,708, Cl. 123-263.000.
Steprath, Werner; and Weigle, Dieter, 4,513,826, Cl. 172-7.000.
Roberts, Thomas G.: *See—*
Haynes, Kenton L.; Sherer, William P.; Greene, Hugh W.; Holder, James D.; and Roberts, Thomas G., 4,514,684, Cl. 324-120.000.
Robson, David: *See—*
Falck, John B.; and Robson, David, 4,514,731, Cl. 340-825.080.
Robson, George E.; and Anderson, Paul R. Spring type hand grip exerciser. 4,513,962, Cl. 272-68.000.
Roche, Michel: *See—*
Frehaut, Joel; and Roche, Michel, 4,514,628, Cl. 250-299.000.
Rock, James E. Fire retardant means and method. 4,514,327, Cl. 252-607.000.
Rockefeller University, The: *See—*
Friedheim, Ernst A. H., 4,514,390, Cl. 514-184.000.
Rockwell International Corporation: *See—*
Holmes, Dale A.; and Waite, Thomas R., 4,514,850, Cl. 372-95.000.
Priese, Werner K., 4,513,946, Cl. 251-173.000.
Spurling, Robert A.; Davis, Burton I.; and Taylor, Norman G., 4,513,537, Cl. 51-71.000.
Thompson, William J., 4,514,706, Cl. 331-16.000.
Vescial, Frederick, 4,514,087, Cl. 356-350.000.
Vescial, Frederick, 4,514,832, Cl. 356-350.000.
Rockwell-Rimoldi S.p.A.: *See—*
Brusasca, Gianfranco; and Garzulano, Franco, 4,513,673, Cl. 112-166.000.
Roddie, Alan G.: *See—*
Edwards, Julian G.; and Roddie, Alan G., 4,514,624, Cl. 250-211.00R.
Rodriguez, Cesar: *See—*
Hendrickson, James B.; and Rodriguez, Cesar, 4,514,569, Cl. 546-146.000.
Rodriguez, Philip A. B., to C-I-L Inc. Stabilizing polysaccharide-thickened aqueous medium and stable aqueous gel. 4,514,318, Cl. 252-315.300.
Rogers, E. Mark. Staple remover. 4,513,951, Cl. 254-28.000.
Rogers Foam Corporation: *See—*
Jalbert, Robert A.; Galcenski, Anthony P., Jr.; and Urmson, Charles C., 4,513,518, Cl. 36-44.000.
Rogers, Howard G., to Polaroid Corporation. Variable focus elastomeric lens system. 4,514,048, Cl. 350-423.000.
Rohm and Haas Company: *See—*
Rothman, Alan M., 4,514,504, Cl. 436-85.000.
Rounds, Nicholas A., 4,514,439, Cl. 427-54.100.
Rohr, Wolfgang: *See—*
Hamprecht, Gerhard; Varwig, Juergen; and Rohr, Wolfgang, 4,514,572, Cl. 549-246.000.
Rohrbach, Gerd: *See—*
Bader, Edgar; Rohrbach, Gerd; Petersen, Jurgen; and Kittel, Ludwig, 4,514,840, Cl. 370-29.000.
Rohrbacher, Herbert E., to Bergandi Manufacturing Co., Inc. Security wire fabric and apparatus and method for making same. 4,513,793, Cl. 140-92.400.
Rohrback Corporation: *See—*
Finley, Charles M.; and Moore, Clifford G., 4,514,681, Cl. 324-65.0CR.
Roland, James P., to Hewlett-Packard Company. Technique of producing tapered features in integrated circuits. 4,514,252, Cl. 156-643.000.
Roldan, Frank. Method of making compliant pins. 4,513,499, Cl. 29-874.000.
Rollenitz, Leopold: *See—*
Dolenc, Anton; and Rollenitz, Leopold, 4,513,714, Cl. 123-357.000.
Rollwitz, William L.: *See—*
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Rolston, John H.: *See—*
Symons, Edward A.; Rolston, John H.; Clermont, Michel J.; and Paterson, Linda M., 4,514,377, Cl. 423-648.00A.
Romano, Ugo; Rivetti, Franco; and Sasselli, Giacomo, to Enichimica S.p.A. Process for preparing alkyl isocyanates. 4,514,339, Cl. 260-453.00P.
Roncaglione, James W. Vehicle washing apparatus having a yieldable brush shaft coupling. 4,513,467, Cl. 15-53.0AB.
Roof, Glenn L.: *See—*
Wang, Sophia; Roof, Glenn L.; and Porlier, Beth W., 4,514,286, Cl. 208-196.000.
Root, Jon C.; Barnes, John F.; and Coovert, Jack E., to Witco Chemical Corporation. Lubricant compositions comprising a phosphate additive system. 4,514,312, Cl. 252-32.500.
Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Benzofuran and benzothiophene sulfonamides. 4,514,211, Cl. 71-92.000.
Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfamates. 4,514,214, Cl. 71-93.000.
Roschlein, Rolf; and Schulte, Heinz, to Nixdorf Computer AG. Ink jet filtered-chamber print head. 4,514,743, Cl. 346-140.00R.
Rose, Douglas N.; and Becker, John E., to United States of America, Army. Method for making a radial flow ceramic rotor for rotary type regenerator heat exchange apparatus: and attendant ceramic rotor constructions. 4,513,807, Cl. 165-10.000.
Roselt, Udo; Nolte, Lothar; and Pohler, Manfred, to VEB Kombinat Feinmechanische Werke Halle. Method for the production of a transverse corrugated or serrated interior pipe of a double-walled special gas discharge pipe with high angle selectivity. 4,514,206, Cl. 65-108.000.
Rosenbaum, Stanley D.; and Handforth, Martin R., to Northern Telecom Limited. Active impedance line feed circuit. 4,514,595, Cl. 179-16.00F.
Rosenquist, Kenneth G.: *See—*
Parson, Roger F.; Rosenquist, Kenneth G.; and Schmit, Justin M., 4,513,918, Cl. 241-101.400.
Rosenthal, Dan G.; and Fiedler, Louis J., to Avco Corporation. Diffusion bonding between titanium base alloys and steels. 4,514,470, Cl. 428-662.000.
Roser, Carl A.; and Ehrler, Arthur J., to Roser, Carl A. Lawn mower rotary assembly. 4,513,563, Cl. 56-295.000.
Ross, Charles W., to General Signal Corporation. Unit controller for multiple-unit dispatch control. 4,514,642, Cl. 290-40.00R.
Rossi, Albert, to Exxon Research and Engineering Co. Oil soluble ester pour point depressant additive for lubricants. 4,514,314, Cl. 252-56.00D.
Roth, Douglas D.; and Ethridge, Fredrick A., to Celanese Corporation. Method for melt spinning polyester filaments. 4,514,350, Cl. 264-176.00F.
Rothman, Alan M., to Rohm and Haas Company. Monitoring method for polyacrylic acids in aqueous systems. 4,514,504, Cl. 436-85.000.
Rounds, Nicholas A., to Rohm and Haas Company. Dust cover. 4,514,439, Cl. 427-54.100.
Royer, Wayne H., to Santrade Ltd. Oven heating system. 4,514,167, Cl. 432-11.000.
Rubner, Roland: *See—*
Ahne, Hellmut; Kruger, Hans; and Rubner, Roland, 4,514,043, Cl. 350-341.000.
Ruggiero, Ralph: *See—*
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Ruhrkohle AG: *See—*
Langhoff, Josef; and Seipenbusch, Jurgen, 4,514,191, Cl. 48-77.000.
Rumble Equipment Limited: *See—*
Warner, Michael V., 4,514,616, Cl. 219-136.000.
Rundell, Herbert A.; and Savage, Kerry D., to Texaco Inc. System for providing RF energy into a hydrocarbon stratum. 4,513,815, Cl. 166-57.000.
Ruscheweyh, Hans, to Balcke-Durr Aktiengesellschaft. Apparatus for the mixing of different streams of air in a cooling tower. 4,514,344, Cl. 261-159.000.
Russak, Steffen P., to Sulzer Brothers Limited. Pressure medium actuated servo-motor system. 4,513,943, Cl. 251-31.000.
Russell, Jeffrey A.: *See—*
Clampitt, Richard L.; and Russell, Jeffrey A., 4,514,308, Cl. 252-8.50C.
Russo, Anthony; and Mauthner, Thomas, to J. Hall Company. Aqueous metal treating compositions and method of use. 4,514,325, Cl. 252-557.000.
Rutkowski, Eugene V.: *See—*
Blumenthal, Jack L.; Ogren, John R.; Rutkowski, Eugene V.; and Appel, Marvin, 4,514,698, Cl. 330-4.300.
Ryan, Michael G.: *See—*
Darves-Bornoz, Yves; Melvin, George E.; Ryan, Michael G.; and Saylor, Dennis L., 4,513,613, Cl. 73-159.000.

Ryan, Robert C.; and Slaugh, Lynn H., to Shell Oil Company. Homologous carboxylic acids production. 4,514,336, Cl. 260-413.000.

Ryder, John C.: *See—*
Maier, Otto H.; Seifert, James F.; Ryder, John C.; and Grisez, William F., 4,513,853, Cl. 198-410.000.

Ryobi Ltd.: *See—*
Tsunoda, Kikuo; and Kobayashi, Takehiro, 4,513,926, Cl. 242-84.20G.

S.N.E.C.M.A.: *See—*
Marey, Daniel J., 4,514,141, Cl. 415-160.000.

Saab-Scania Aktiebolag: *See—*
Nordstrom, Lennart, 4,513,509, Cl. 33-330.000.

Sabater Gonzalez, Buenaventura. Arrangement for the distribution of pressurized fluid to a seat unit having a backrest. 4,514,010, Cl. 297-284.000.

Sachenik, Paul A.: *See—*
Borrelli, Nicholas F.; Morse, David L.; and Sachenik, Paul A., 4,514,053, Cl. 350-162.200.

Sagady, Daniel V., to Ford Motor Company. Retention ring for splined joint. 4,514,108, Cl. 403-359.000.

Sagues, Alberto A.: *See—*
Baumert, Kenneth L.; Sagues, Alberto A.; Davis, Burtron H.; and Schweighardt, Frank K., 4,514,281, Cl. 208-47.000.

Sainen, Tsutomu; Sakano, Toshiyuki; Fujita, Yoshitaka; and Imai, Toshiki, to Tsudakoma Corp. Method and apparatus for controlling motor-driven let-off motion for looms. 4,513,790, Cl. 139-110.000.

Saito, Junichi; and Kagabu, Shinzo, to Nihon Tokushu Noyaku Seizo K.K. 2,2-Dihalogeno-3,3-dimethylcyclopropane derivative fungicides. 4,514,418, Cl. 514-508.000.

Saito, Junichi: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; and Shiokawa, Kozo, 4,514,210, Cl. 71-92.000.

Saito, Kimitaka: *See—*
Kohama, Tokio; Obayashi, Hideki; Saito, Kimitaka; Ina, Toshikazu; and Narita, Seiichi, 4,513,627, Cl. 73-862.340.
Obayashi, Hideki; Kohama, Tokio; Saito, Kimitaka; Kawai, Hisasi; and Ina, Toshikazu, 4,513,626, Cl. 73-862.340.

Saito, Susumu: *See—*
Okada, Kunihiro; Endo, Hirohide; Saito, Susumu; and Kataoka, Kenji, 4,514,079, Cl. 355-8.000.

Saito, Toranosuke: *See—*
Suzuki, Toshitake; Arai, Naoto; Aoyagi, Shoji; Saito, Toranosuke; Kitani, Masakatsu; and Ishibashi, Takashi, 4,514,745, Cl. 346-216.000.

Saitoh, Hiroyuki; and Kikuchi, Yoshiki, to Fuji Xerox Co., Ltd. Electrostatic copying device employing thermally fluidizable medium on photosensitive belt. 4,514,744, Cl. 346-153.100.

Saitou, Hiroyuki: *See—*
Fukasawa, Yoshiharu; Matsumoto, Tatsuhiko; Kawai, Mituo; Ueda, Shigeru; Koizumi, Hideo; and Saitou, Hiroyuki, 4,514,234, Cl. 148-11.50P.

Sakai, Kazuo: *See—*
Ikematsu, Masaki; Honzyo, Isao; and Sakai, Kazuo, 4,514,287, Cl. 208-309.000.

Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, to Nippon Piston Ring Co., Ltd. Rotary-sleeve bearing apparatus for rotary compressor. 4,514,156, Cl. 418-173.000.

Sakamoto, Takashi: *See—*
Ando, Yoshibumi; Sakamoto, Takashi; Yoh, Kanji; Moriuchi, Hisahiro; and Takei, Sumiaki, 4,514,646, Cl. 307-200.00B.

Sakamoto, Toshiharu: *See—*
Fujii, Hiroshi; and Sakamoto, Toshiharu, 4,513,696, Cl. 123-41.020.

Sakamoto, Yukio; and Tanabe, Takeshi, to Murata Manufacturing Co., Ltd. Multiple feedthrough-capacitor unit. 4,514,782, Cl. 361-306.000.

Sakano, Toshiyuki: *See—*
Sainen, Tsutomu; Sakano, Toshiyuki; Fujita, Yoshitaka; and Imai, Toshiki, 4,513,790, Cl. 139-110.000.

Sakaue, Yoshinori: *See—*
Fujiwara, Mitsugu; Sakaue, Yoshinori; Aso, Tomio; Kurokawa, Koshiro; and Obara, Hideo, 4,514,740, Cl. 346-139.00R.

Sakmann, Walter H.; and Zimmermann, Volker, to International Business Machines Corporation. Method and apparatus for the constant speed control of brushless DC motors. 4,514,667, Cl. 318-254.000.

Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; Kimura, Shirou; Torisu, Yoshio; and Okazaki, Mari, to Toyota Jidosha Kabushiki Kaisha. Oxygen sensor element. 4,514,277, Cl. 204-424.000.

Sakurai, Yojiro: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,514,416, Cl. 549-442.000.

Sallay, Stephen I. Permanent flame retardant and anti-smoldering compositions. 4,514,326, Cl. 252-602.000.

Salloway, Anthony J.: *See—*
Garner, Geoffrey M.; and Salloway, Anthony J., 4,514,596, Cl. 179-84.00T.

Samsel, J. Edward, Jr., to American Gaming Industries, Inc. Automatic card shuffler. 4,513,969, Cl. 273-149.00R.

Sanchez, Francis F. Auxiliary vehicle space heater. 4,513,911, Cl. 237-12.30C.

Sanden Corporation: *See—*
Hiraga, Masaharu; Mabe, Atsushi; and Yoshii, Yuji, 4,514,150, Cl. 417-440.000.

Sanderson, Michael L.: *See—*
McHale, Edward J.; Hussain, Yousif A.; Sanderson, Michael L.; and Hemp, John, 4,513,624, Cl. 73-861.120.

Sanko Kaihatsu Kagaku Kenkyusho Corporation: *See—*
Suzuki, Toshitake; Arai, Naoto; Aoyagi, Shoji; Saito, Toranosuke; Kitani, Masakatsu; and Ishibashi, Takashi, 4,514,745, Cl. 346-216.000.

Sano, Konosuke: *See—*
Miwa, Kiyoshi; Terabe, Mahito; Ito, Koichi; Ishida, Masaaki; Matsui, Kazuhiko; Makamori, Shigeru; and Sano, Konosuke, 4,514,502, Cl. 435-253.000.

Sano, Sakae; Kitajima, Hisashi; Iimori, Hiroshi; and Nishio, Tadashi, to Toa Grout Kogyo Co., Ltd.; Mitsui Toatsu Chemicals, Inc.; and Tonan Kaihatsu/Kogyo Co., Ltd. Method for injecting grouting agent and apparatus for conducting the method. 4,514,112, Cl. 405-269.000.

Sanofi: *See—*
Nisato, Dino; and Boveri, Sergio, 4,514,408, Cl. 514-212.000.
Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, 4,514,397, Cl. 514-247.000.

Santa Barbara Research Center: *See—*
Davis, Roland O., 4,514,016, Cl. 308-2.00A.

Santo Industries Co., Ltd.: *See—*
Watabe, Takaharu, 4,513,474, Cl. 16-243.000.

Santo, Philip J. Floatation sleep system. 4,513,463, Cl. 5-452.000.

Santrade Ltd.: *See—*
Kaminsky, Theo, 4,514,116, Cl. 408-161.000.
Royer, Wayne H., 4,514,167, Cl. 432-11.000.

Sanyo Electric Co., Ltd.: *See—*
Toya, Syouichi, 4,513,470, Cl. 15-328.000.

Sarver, Glen E.; and Worstell, Bernard W., to B. F. Goodrich Company, The. Solar actuated drain system. 4,513,768, Cl. 137-142.000.

Sasaki, Makoto, to Minnesota Mining and Manufacturing Company. Low-profile transfer article. 4,514,457, Cl. 428-204.000.

Sasaki, Masafumi; Kashiwagi, Susumu; and Hiyoshi, Takanori, to Nissan Motor Company, Limited. Combustion liner support for combustion apparatus. 4,513,569, Cl. 60-39.310.

Sasaki, Toshio: *See—*
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; Yoshioka, Hiroshi; and Nunose, Akira, 4,514,512, Cl. 502-107.000.

SASIB S.p.A.: *See—*
Baroni, Bruno, 4,513,755, Cl. 131-84.00C.
Manservisi, Renato; and Fossi, Mario, 4,513,908, Cl. 229-87.00C.

Sasselli, Giacomo: *See—*
Romano, Ugo; Rivetti, Franco; and Sasselli, Giacomo, 4,514,339, Cl. 260-453.00P.

Satake Engineering Co., Ltd.: *See—*
Satake, Toshihiko, 4,513,867, Cl. 209-44.200.

Satake, Toshihiko, to Satake Engineering Co., Ltd. Sorter for grains, pulses and the like. 4,513,867, Cl. 209-44.200.

Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, to Chisso Corporation. Preactivated catalyst for producing α-olefin polymers. 4,514,513, Cl. 502-112.000.

Sato, Atsushi; Murai, Yoshikazu; Goto, Masahito; and Mochizuki, Kanji, to Nippon Petrochemicals Company, Limited. Paper sizing composition. 4,514,229, Cl. 106-135.000.

Sato, Giichi; Matuo, Tadashi; and Tabei, Tooru, to Nippon Kayaku Kabushiki Kaisha. Water soluble disazo compound, copper salt thereof, and sheet or film colored therewith. 4,514,559, Cl. 534-690.000.

Sato, Jun, to Shimano Industrial Company Limited. Fishing reel. 4,513,930, Cl. 242-218.000.

Sato, Kanemasa; and Ueno, Sadayasu, to Hitachi, Ltd. Thermal air flow meter. 4,513,615, Cl. 73-204.000.

Sato, Kozo: *See—*
Hirai, Hiroyuki; Sato, Kozo; and Kawata, Ken, 4,514,493, Cl. 430-617.000.

Sato, Masahiro: *See—*
Takenaka, Akihiko; Arakawa, Miyao; Sato, Masahiro; and Yamaguchi, Toshiyuki, 4,513,609, Cl. 73-116.000.

Sato, Nobuhiro: *See—*
Abe, Hiroshi; Sato, Nobuhiro; Ono, Kimizo; and Hirano, Kazuo, 4,513,751, Cl. 128-666.000.

Sato, Yoshinori: *See—*
Tezuka, Shichigoro; Sato, Yoshinori; Shibata, Masaki; and Harikae, Nobuyuki, 4,514,423, Cl. 426-3.000.

Saud, Ivan: *See—*
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Saukkonen, Esko: *See—*
Ollus, Martin; Uotila, Esko; Wahlstrom, Bjorn; Saukkonen, Esko; Malinen, Pekka; and Maenpaa , Immo, 4,514,816, Cl. 364-478.000.

Saulters, John D.; and Scarr, Roger H., to Joy Manufacturing Company. Method and apparatus for controlling the position of a hydraulic boom. 4,514,796, Cl. 364-142.000.

Saunders, Stephen W.: *See—*
Kremer, Ross A.; and Saunders, Stephen W., 4,514,288, Cl. 209-5.000.

Savage, Kerry D.: *See—*
Rundell, Herbert A.; and Savage, Kerry D., 4,513,815, Cl. 166-57.000.

Sawa, Natsuo; Suzuki, Toshihiro; and Okazaki, Shinji, to Shikoku Chemicals Corporation. 4,4'-Methylene-bis-(2-ethyl-5-methyl imidazole) and methods of producing and using the same. 4,514,556, Cl. 528-117.000.

Sawada, Daisaku: *See*—
Ina, Toshikazu; Obayashi, Hideki; Kawai, Hisasi; Kohama, Tokio; Sawada, Daisaku; and Shigematsu, Takashi, 4,513,721, Cl. 123-478.000.
Sawada, Minoru: *See*—
Tabata, Junichi; Torii, Masahiro; Oikawa, Hiroshi; Sawada, Minoru; and Masui, Yasuyuki, 4,513,753, Cl. 128-706.000.
Sayles, David C., to United States of America, Army. Microwave drying of ammonium perchlorate grinding spheres. 4,513,513, Cl. 34-1.000.
Saylor, Dennis L.: *See*—
Darves-Bornoz, Yves; Melvin, George E.; Ryan, Michael G.; and Saylor, Dennis L., 4,513,613, Cl. 73-159.000.
Scale Free Systems, Inc.: *See*—
Vollman, Leonard L., 4,514,273, Cl. 204-196.000.
Scantron GmbH & Co.: *See*—
Wevelsiep, Klaus; and Kastner, Anton, 4,514,622, Cl. 235-463.000.
Scarr, Roger H.: *See*—
Saulters, John D.; and Scarr, Roger H., 4,514,796, Cl. 364-142.000.
Schaefer, William J., Jr., to NCR Corporation. Item dispensing system. 4,513,957, Cl. 271-90.000.
Schafer, Albert L.: *See*—
Koeneman, Robert M.; Miller, Benjamin D.; Jablonski, Thaddeus M.; and Schafer, Albert L., 4,513,892, Cl. 222-235.000.
Schalkowsky, Ellen R.: *See*—
Schalkowsky, Samuel; and Schalkowsky, Ellen R., 4,514,495, Cl. 435-32.000.
Schalkowsky, Samuel; and Schalkowsky, Ellen R., to Spiral Systems Instruments, Inc. Method for testing microbial interaction with growth affecting substances. 4,514,495, Cl. 435-32.000.
Schambeck, Herbert, to Dyckerhoff & Widmann Aktiengesellschaft. Stiffening girder for a stayed cable bridge. 4,513,465, Cl. 14-17.000.
Scharf, Karl-Gunter: *See*—
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,514,449, Cl. 428-76.000.
Schefers, Friedhelm: *See*—
Lodwig, Klaus; and Schefers, Friedhelm, 4,514,011, Cl. 299-42.000.
Scheinpflug, Hans: *See*—
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Schenck, Stephen R.: *See*—
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., 4,514,828, Cl. 365-8.000.
Scherenberg, Dieter: *See*—
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Schering Aktiengesellschaft: *See*—
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Scherling, Sandra L.: *See*—
Jordan, J. Kirk; and Scherling, Sandra L., 4,514,426, Cl. 426-113.000.
Schierjott, Rudolf, to Siemens Aktiengesellschaft. Secondary switch controller circuit for power supply. 4,514,679, Cl. 323-222.000.
Schillinger, Joseph F., to Champion International Corporation. Flip top dispenser carton. 4,513,863, Cl. 206-264.000.
Schirk, Gunter: *See*—
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Schleicher, Rolf: *See*—
Braun, Gunter; Kratt, Alfred; and Schleicher, Rolf, 4,513,711, Cl. 123-339.000.
Schleimer, Stephen I.: *See*—
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.
Schlembach, Hans: *See*—
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Schlepfer, Walter: *See*—
Binder, Rolf; Hanselmann, Daniel; and Schlepfer, Walter, 4,513,479, Cl. 19-80.00R.
Schleppnik, Alfred A.: *See*—
Tou, Jacob S.; and Schleppnik, Alfred A., 4,514,340, Cl. 260-465.00D.
Schlesinger, Sheldon I.; Cerenzia, Walter S.; and Wilson, Thomas D., to James River-Norwalk, Inc. Manufacture of molded paperboard articles. 4,514,354, Cl. 264-324.000.
Schmidt, Fred W.: *See*—
Baus, Rene; and Schmidt, Fred W., 4,514,623, Cl. 235-482.000.
Schmidt, Nicholas F.: *See*—
Dhabhar, Dadi J.; and Schmidt, Nicholas F., 4,514,528, Cl. 523-120.000.
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Schmit, Justin M.: *See*—
Parson, Roger F.; Rosenquist, Kenneth G.; and Schmit, Justin M., 4,513,918, Cl. 241-101.400.
Schnapper, Martin: *See*—
Sternberg, Rudolf; and Schnapper, Martin, 4,513,701, Cl. 123-188.0AA.
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Schneider, Lutz; and Guigas, Bruno, to Bruker Analytische Messtechnik GmbH. Device for data acquisition. 4,514,822, Cl. 364-900.000.
Schneider, Steven L.; and Dravnieks, Konstantins, to Wehr Corporation. Energy recovery ventilator. 4,513,809, Cl. 165-54.000.
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LeStrange, Raymond J.; Bayless, John H., Jr.; and Schoenberg, Allan R., 4,514,492, Cl. 430-600.000.
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Scholl, Hans, to Koch Adler AG. Method and device for safe operation of an automatic sewing machine. 4,513,677, Cl. 112-262.300.
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Roschlein, Rolf; and Schulte, Heinz, 4,514,743, Cl. 346-140.00R.
Schulte & Lestraden B.V.: *See*—
Lestraden, Jacobus W., 4,513,531, Cl. 47-39.000.
Schulz, Eckhard, to Sicowa Verfahrenstechnik fur Baustoffee GmbH & Co. KG. Appliance for heating an electroconductive material in the form of a continuous strand. 4,514,162, Cl. 425-174.80R.
Schumaker, Jon S., to Pandrol Ltd. Holding a railway rail down on a support member. 4,513,912, Cl. 238-349.000.
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Schutz, Hans U.; Raisin, Helmut; and Bouwknegt, Thys, to Ciba-Geigy Corporation. Process for dyeing differential-dyeing polyamide fibres. 4,514,187, Cl. 8-531.000.
Schwarz, Hans-Helmut: *See*—
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Schwenk, Wilhelm: *See*—
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Scott & Fetzer Company, The: *See*—
Ford, Roger S.; Shie, Herman J., III; and Baird, Thomas E., Sr., 4,514,199, Cl. 55-337.000.
Scott, Larry. Quick-change tool holder and tool. 4,514,117, Cl. 408-239.00R.
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Scozzafava, Michael; Chen, Chin H.; Reynolds, George A.; and Perlstein, Jerome H., to Eastman Kodak Company. 4H-Thiopyran-1,1-dioxide and electrophotographic layers and elements comprising same. 4,514,481, Cl. 430-58.000.
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Se, Kazunori: *See*—
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Seaborne, Thomas L. Vacuum pulsator valves. 4,513,766, Cl. 137-103.000.
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Secher, David S. Assay for interferon. 4,514,507, Cl. 436-518.000.
Secom Co., Ltd.: *See*—
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Seehawer, Magda. Yarn. 4,513,564, Cl. 57-206.000.
Segletes, Steven B., to United States of America, Army. Confinement fabrication technique for asymmetrically confined shaped-charge warheads. 4,513,666, Cl. 102-476.000.
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Garcia, Antonio D., 4,514,001, Cl. 292-341.160.
Seidel, Roland H., to AT&T Technologies, Inc. Connectorized cable and methods of making. 4,514,027, Cl. 339-105.000.
Seifert, James F.: *See*—
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Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.
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Sekida, Minoru: *See*—
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Selenke, William M. Label with particular application to laboratory specimen container identification. 4,513,522, Cl. 40-2.00R.
Sellstrom, Kathy B.; and Speranza, George P., to Texaco Inc. Modified amine curing agents and epoxy resins cured therewith. 4,514,530, Cl. 523-456.000.
Sem-Sandberg, Sverre G., to Telefonaktiebolaget LM Ericsson. Connecting unit for a ring bus. 4,514,841, Cl. 370-55.000.
Sendzimir, Tadeusz. Intermediate accumulating system in processing strip material. 4,513,490, Cl. 29-527.600.
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Sengupta, Sisir K., to Boston University, Trustees of. Carbon-7-substituted atinomycin D analogue. 4,514,330, Cl. 260-112.50R.
Sentinger, Egon: *See*—
Molders, Werner; Langanke, Rolf; Sentinger, Egon; and Reuschenbach, Hermann, 4,513,953, Cl. 267-121.000.
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Sethi, Dalbir S., to FMC Corporation. Pregeneration of tetrahydroanthraquinones in a make-up solution to be added to a hydrogen peroxide working solution. 4,514,376, Cl. 423-588.000.
Seto, Nobuo; Kamio, Takayoshi; and Aoki, Kozo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,514,490, Cl. 430-505.000.
Setra Systems, Inc.: *See*—
Lee, Shih-Ying; and Briefer, Dennis K., 4,513,831, Cl. 177-189.000.
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Mulawski, Walter J., 4,513,874, Cl. 220-89.00A.
Seydel, Scott O.: *See*—
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Seyfried, Donald N.: *See*—
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Seymour, Charles M. Retracting refuse can support. 4,513,938, Cl. 248-507.000.
Sfarti, Adrian, to Advanced Micro Devices, Inc. Stepper motor controller. 4,514,673, Cl. 318-685.000.
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Shaler, John E.: *See*—
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Shannon, Michael A.; and Howat, Robert J., to Northern Telecom Limited. Method for production of dielectric insulation layers upon electrical conductors. 4,514,435, Cl. 427-8.000.
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Shaw, David H.; and Hall, Ralph R., to Exxon Research and Engineering Co. Dewaxing waxy oil by dilution chilling employing static mixing means. 4,514,280, Cl. 208-33.000.
Shaw, Richard J.: *See*—
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Shay, Gregory D.; Eldridge, Emmojean; and Kail, James E., to DeSoto, Inc. Alkali soluble latex thickeners. 4,514,552, Cl. 526-301.000.
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Sheppard, Peter H. Power steering gear with balanced valve. 4,513,654, Cl. 91-378.000.
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Castner, John F., Sr.; and Sheps, Martin I., 4,513,642, Cl. 81-53.00R.
Sherer, William P.: *See*—
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Shibata, Akira, to Chugai Denki Kogyo K.K. Internally oxidized Ag-Sn-Bi alloy electrical contact materials. 4,514,238, Cl. 148-431.000.
Shibata, Masaki: *See*—
Tezuka, Shichigoro; Sato, Yoshinori; Shibata, Masaki; and Harikae, Nobuyuki, 4,514,423, Cl. 426-3.000.
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Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; Yoshioka, Hiroshi; and Nunose, Akira, to Sumitomo Chemical Company, Limited. Method for the production of solid titanium trichloride catalyst. 4,514,512, Cl. 502-107.000.
Shigematsu, Takashi: *See*—
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Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing aromatic sulfide polymer with anhydrous amorphous vitreous complex dehalogenation agent. 4,514,558, Cl. 528-388.000.
Shikoku Chemicals Corporation: *See*—
Sawa, Natsuo; Suzuki, Toshihiro; and Okazaki, Shinji, 4,514,556, Cl. 528-117.000.
Shima, Katsuhiko: *See*—
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Shimada, Hisashi; Arai, Tohru; and Endo, Junji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Apparatus for physical vapor deposition. 4,514,275, Cl. 204-298.000.
Shimano Industrial Company Limited: *See*—
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Shimoji, Koji; Hangeisi, Suekiti; and Itou, Keiji, to Toyota Jidosha Kabushiki Kaisha. Muffler for internal combustion engines. 4,513,841, Cl. 181-252.000.
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Shinsei Kogyo Co., Ltd.: *See*—
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Shiraiwa, Toshiyuki; and Ooba, Kaoru, to Secom Co., Ltd. Multi-operation mode type of security-ensuring apparatus. 4,514,721, Cl. 340-527.000.
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Shiseido Co., Ltd.: *See*—
Taguchi, Toshio; Akino, Hisashi; and Nozawa, Takamitsu, 4,513,877, Cl. 220-335.000.
Shoji, Masakazu, to AT&T Bell Laboratories. Chipset synchronization arrangement. 4,514,647, Cl. 307-269.000.
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Shu, Winston R., to Mobil Oil Corporation. Lowering CO_2 MMP and recovering oil using carbon dioxide. 4,513,821, Cl. 166-273.000.
Shu, Winston R.: *See*—
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Shue, Robert S.: *See*—
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Shure Brothers, Inc.: *See*—
Kogen, James; and Anderson, C. Roger, 4,514,836, Cl. 369-74.000.
Plice, Gerald W., 4,514,598, Cl. 179-146.00R.

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Schulz, Eckhard, 4,514,162, Cl. 425-174.80R.
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Ahne, Hellmut; Kruger, Hans; and Rubner, Roland, 4,514,043, Cl. 350-341.000.
Amtmann, Heribert, 4,514,759, Cl. 358-111.000.
Behringer, Wolfgang, 4,514,172, Cl. 433-126.000.
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Hanni, Manfred; and Brusch, Josef, 4,514,852, Cl. 375-1.000.
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Lesche, Wolfgang; and Rindfleisch, Volker, 4,514,798, Cl. 364-188.000.
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Oberstein, Karla; and Thilo, Peer, 4,514,720, Cl. 340-511.000.
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Chamberlain, Jerry E., 4,514,633, Cl. 250-374.000.
Sievers, Robert E.; and Gillis, John N., to University Patents, Inc. Oxygen sorbent. 4,514,522, Cl. 521-53.000.
Signode Paper Products Company: *See*—
Liebel, Henry L., 4,513,864, Cl. 206-396.000.
Sigvardt, Niels H.; and Baranski, Jan A., to Oce-Helioprint AS. Conveying device for sheets. 4,513,956, Cl. 271-9.000.
Silverman, Martin L., to Warner & Swasey Company, The. Machine tool with chucking controls. 4,513,979, Cl. 279-4.000.
Simoneau, Raynald; Pelletier, Jean-Marc; Di Vincenzo, Antonio; and Boillot, Jean-Paul, to Hydro-Quebec. Protection circuit against electric shocks during welding. 4,514,615, Cl. 219-132.000.
Sims, Dewey M., Jr., to Northern Telecom Limited. Method and an apparatus for extracting tape from a tape cartridge of the internal belt-drive type. 4,514,774, Cl. 360-95.000.
Sinclair, Iain. Electronic completing the square game. 4,513,973, Cl. 273-237.000.
Singer Company, The: *See*—
Reed, John T., 4,514,347, Cl. 264-32.000.
Sumerau, William R.; and Laing, Gordon E., 4,514,200, Cl. 55-368.000.
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Sinha, Betty B. Rigid multi-cone kite. 4,513,932, Cl. 244-153.00R.
Sinka, Joseph V.: *See*—
Papalos, John G.; and Sinka, Joseph V., 4,514,189, Cl. 44-51.000.
Siuta, Vincent P., to Du Pont de Nemours, E. I., and Company. Thick film conductor compositions. 4,514,321, Cl. 252-512.000.
Sivilotti, Olivo G., to Alcan International Limited. Metal production by electrolysis of a molten electrolyte. 4,514,269, Cl. 204-69.000.
Skeist, S. Merrill; and Gross, Leo. Magnetic arc spreading fluorescent lamps. 4,514,662, Cl. 315-57.000.
SKF Kugellagerfabriken GmbH: *See*—
Walter, Lothar; and Reith, Walter, 4,514,017, Cl. 308-6.00C.
Skinner, Robert T. J., to Lucas Industries. Fuel injection nozzle. 4,513,916, Cl. 239-453.000.
Skogward, Kenneth O. E., to Husqvarna Aktiebolag. Cloth feeder. 4,513,678, Cl. 112-323.000.
Skura, William A., to Uniroyal, Inc. Power transmission belt with fabric cover. 4,514,179, Cl. 474-204.000.
Slager, Mark T. Table upright connector member and process for making the same. 4,514,106, Cl. 403-190.000.
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Gallas, Gunter A., 4,513,492, Cl. 29-564.700.
Slaugh, Lynn H.: *See*—
Ryan, Robert C.; and Slaugh, Lynn H., 4,514,336, Cl. 260-413.000.
Slinn, David S. L.: *See*—
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Smatana, Josef: *See*—
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Smey, Samuel L.: *See*—
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Smith, C. Byron: *See*—
Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., 4,514,427, Cl. 426-271.000.
Smith, Daniel J., to Ethicon, Inc. Hard tissue surgical needle. 4,513,747, Cl. 128-339.000.
Smith, David H., to Binks Manufacturing Company. Reversible airless spray nozzle. 4,513,913, Cl. 239-119.000.
Smith, David W., to National Distillers and Chemical Corporation. Manufacture of oxygenated compounds. 4,514,521, Cl. 518-700.000.
Smith, Henry E., to Xerox Corporation. Paper thickness adjusting mechanism for impact printer. 4,514,101, Cl. 400-59.000.
Smith International, Inc.: *See*—
Coates, J. Randall, 4,513,829, Cl. 175-339.000.
Smith, Kenneth C. A.; and Erasmus, Stephen J., to National Research Development Corporation. Scanning transmission electron microscopes. 4,514,629, Cl. 250-311.000.
Smith Kline & French Laboratories Limited: *See*—
Coates, William J., 4,514,568, Cl. 544-408.000.
Smith, Richard W.: *See*—
Woelfel, James A.; and Smith, Richard W., 4,514,013, Cl. 301-63.0PW.
Smith, Roy L.: *See*—
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Chambers, Pamela A.; and Weinstock, Joseph, 4,514,394, Cl. 514-213.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
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Snitkin, Sidney R.: *See*—
Ginzburg, Vladimir B.; and Snitkin, Sidney R., 4,513,594, Cl. 72-8.000.
Societa' Italiana Vetro-Siv-S.p.A.: *See*—
Pinelli, Tazio; and Sebastiano, Francesco, 4,514,040, Cl. 350-286.000.
Societe Anonyme Dite: SAFT: *See*—
Atkin, John; and Loustau, Marie-Therese, 4,514,473, Cl. 429-10.000.
Societe Chimique des Carbonnages S.A.: *See*—
Mehalla, Hacene, 4,514,542, Cl. 525-193.000.
Societe Civile Styled: BMB: *See*—
Moiroux, Auguste, 4,513,697, Cl. 123-41.350.
Societe d'Etudes de Machines Thermiques, S.E.M.T.: *See*—
Bonnaud, Pierre L., 4,513,572, Cl. 60-618.000.
Societe dite: USINES BEYER FRERES: *See*—
Poulin, Jean L., 4,514,164, Cl. 425-208.000.
Societe Europeenne De Propulsion: *See*—
Heraud, Louis, 4,514,240, Cl. 156-89.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Dubreuil, Jean-Pierre; Blazejczak, Jean; and Tramier, Bernard, 4,514,272, Cl. 204-186.000.
Hubert, Miffre, 4,513,816, Cl. 166-75.00R.
Sodergren, Jan H.; and Hales, James W., to Combustion Engineering, Inc. Mechanical tube plub. 4,513,786, Cl. 138-89.000.
Soederhuyzen, Eduard. Fluid distribution system. 4,513,767, Cl. 137-119.000.
Sofiltra Poelman: *See*—
Develle, Guy; and Martin, Gerard, 4,514,198, Cl. 55-337.000.
Sofy, Hugh M. Transfer device. 4,513,602, Cl. 72-405.000.
Sokulski, Marek: *See*—
Balinski, Ryszard; and Sokulski, Marek, 4,513,658, Cl. 99-485.000.
Soldati, Gianfraco: *See*—
Gazzi, Luigi; Cotone, Giancarlo; Soldati, Gianfraco; Ginnasi, Alessandro; Vetere, Alessandro; and Rescalli, Carlo, 4,514,203, Cl. 62-17.000.
Soletanche: *See*—
Gouvenot, Daniel, 4,514,228, Cl. 106-98.000.
Solex (U.K.) Limited: *See*—
Ullman, Thomas J.; Shadbolt, Colin F.; Pagdin, Brian C.; Marriage, David J.; Clarke, Peter J.; and Sheppard, Ian J., 4,513,728, Cl. 123-527.000.
Sorensen, Sven: *See*—
Rishovd, Erik; and Sorensen, Sven, 4,513,765, Cl. 137-72.000.
Southland Instruments, Inc.: *See*—
Lee, Peter F., 4,513,754, Cl. 128-753.000.
Southwest Research Institute: *See*—
De Los Santos, Armando; King, James D.; Rollwitz, William L.; Matzkanin, George A.; and Hornung, Phillip A., 4,514,691, Cl. 324-301.000.
Southworth, Glen R.; and Johnson, Bruce F., to Colorado Video, Incorporated. Spectrum conservation in encoded color TV signals. 4,514,753, Cl. 358-11.000.
Spector, George: *See*—
Anderson, Alan; and Spector, George, 4,513,454, Cl. 2-246.000.
Pedrick, Joseph F.; and Spector, George, 4,513,801, Cl. 152-213.00R.
Spencer, William H.; and Anderberg, Thomas E., to Bell & Howell Company. Bus system architecture and microprocessor system. 4,514,799, Cl. 364-200.000.
Speranza, George P.: *See*—
Sellstrom, Kathy B.; and Speranza, George P., 4,514,530, Cl. 523-456.000.

Sperner, Franz: *See—*
Aldinger, Fritz; Bischoff, Albrecht; Keilberth, Richard; and Sperner, Franz, 4,514,589, Cl. 174-119.00R.
Sperry Corporation: *See—*
Strubbe, Gilbert J. I., 4,513,562, Cl. 56-10.200.
Spie-Batignolles: *See—*
Chabrier, Gilbert, 4,514,245, Cl. 156-161.000.
Spiewok, Leonhard: *See—*
Rettich, Jakob; and Spiewok, Leonhard, 4,513,464, Cl. 8-159.000.
Spiral Systems Instruments, Inc.: *See—*
Schalkowsky, Samuel; and Schalkowsky, Ellen R., 4,514,495, Cl. 435-32.000.
Spitsbergen, Merlin D., to Centronics Data Computer Corp. Web loop control apparatus and method. 4,513,898, Cl. 226-44.000.
Sprague Electric Company: *See—*
Lucey, Michael F., 4,514,468, Cl. 428-418.000.
Spurling, Robert A.; Davis, Burton I.; and Taylor, Norman G., to Rockwell International Corporation. Device for preparing thin specimens. 4,513,537, Cl. 51-71.000.
Square D Company: *See—*
Buchanan, James D., 4,514,601, Cl. 200-5.00E.
Maulandi, Aymon A., 4,514,025, Cl. 339-64.00M.
SRI International: *See—*
Bartlett, Robert W., 4,514,580, Cl. 136-250.000.
Stace, Richard J. L., to Ford Motor Company. Internal combustion engine and cylinder head therefor. 4,513,709, Cl. 123-306.000.
Stackhouse, Wells F., to American Locker Security Systems, Inc. Coin counting and release mechanism. 4,513,851, Cl. 194-51.000.
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Particulate material reducing the ignitability of combustible substances. 4,514,328, Cl. 252-609.000.
Staffa, Karl-Heinz: *See—*
Humpolik, Bohumil; and Staffa, Karl-Heinz, 4,513,587, Cl. 62-515.000.
Stamicarbon B.V.: *See—*
Weterings, Cornelis A. M.; and Janssen, Johannes A., 4,514,365, Cl. 423-15.000.
Standard Oil Company, The; *See—*
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,514,291, Cl. 209-166.000.
Standard Oil Company (Indiana): *See—*
Alteepping, Josef; and Bornemann, Dietrich E., 4,514,463, Cl. 428-286.000.
Cousineau, Thomas J.; and Cengel, John A., 4,514,190, Cl. 44-70.000.
Lautzenhiser, Theodore V., 4,513,618, Cl. 73-382.00G.
Mahoney, John A.; Helstrom, John J.; and Tait, A. Martin, 4,514,279, Cl. 208-10.000.
Puskas, Imre, 4,514,516, Cl. 502-202.000.
Stanton, Joseph J.: *See—*
Bishop, Timothy E.; Stanton, Joseph J.; Pasternack, George; and Cutler, Orvid R., Jr., 4,514,037, Cl. 350-96.230.
Staples, Paul R., to E.M.B. Corporation. Door operated switch assembly. 4,514,603, Cl. 200-61.620.
Stark, Glenn; and Barton, David M., to Victor Technologies Inc. Method and apparatus for improving disk storage capacity. 4,514,771, Cl. 360-73.000.
Starp, Franz; and Deisenroth, Werner. Mechanism for indicating and setting the parameters of exposure aperture and/or exposure time for photographic cameras. 4,514,066, Cl. 354-273.000.
Starr, Thomas J. J., to AT&T Bell Laboratories. Method and apparatus for bus fault location. 4,514,845, Cl. 371-15.000.
Stauffer Chemical Company: *See—*
Fesman, Gerald, 4,514,524, Cl. 521-107.000.
Heather, James B.; and Kanne, David B., 4,514,215, Cl. 71-107.000.
Steckler, Steven A.: *See—*
Balaban, Alvin R.; and Steckler, Steven A., 4,514,760, Cl. 358-143.000.
Stein, Stanley I.: *See—*
Cade, J. Weldon; and Stein, Stanley I., 4,514,135, Cl. 414-682.000.
Steinback, Clarence I., to Acrometal Products, Inc. Position setting device for abrasive belt grinding machine. 4,513,539, Cl. 51-138.000.
Steiner, Erwin, to Technology Consulting Corporation. Apparatus and method for the heat treatment of yarn. 4,513,514, Cl. 34-24.000.
Steinke, Mark H., to Lyon Metal Products, Incorporated. Shelving structure and clip used therein. 4,513,669, Cl. 108-111.000.
Steinmann, Peter; and Sutor, Norbert, to Siemens Aktiengesellschaft. Cable with an outer jacket of gnaw resistant material. 4,514,035, Cl. 350-96.230.
Stenerson, Gary K.: *See—*
McMath, Henry G.; and Stenerson, Gary K., 4,514,168, Cl. 432-14.000.
Stephens, James B.; Yang, Mary M.; and Laue, Eric G., to United States of America, National Aeronautics and Space Administration. Trace water sensor. 4,514,278, Cl. 204-430.000.
Stephens, Robert; and Clark, Raymond, to Applied Power Inc. Suspension system for a tilt cab truck. 4,513,845, Cl. 188-299.000.
Steprath, Werner; and Weigle, Dieter, to Robert Bosch GmbH. Hydraulic control arrangement for actuating lifting mechanism of an agricultural machine. 4,513,826, Cl. 172-7.000.
Sterling Drug Inc.: *See—*
Hain, Robert W.; Hadtke, Frederick B.; and Paikoff, Myron, 4,513,891, Cl. 222-213.000.
Sternberg, Rudolf; and Schnapper, Martin, to Daimler-Benz Aktiengesellschaft. Valve for an internal combustion engine. 4,513,701, Cl. 123-188.0AA.
Stevenson, Paul D., to General Motors Corporation. Transmission shift control. 4,513,640, Cl. 74-870.000.
Stewart, Duncan: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,514,621, Cl. 235-400.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Dolenc, Anton; and Rollenitz, Leopold, 4,513,714, Cl. 123-357.000.
Stine, Edward V. Apparatus for measuring refractive properties of lenses and other transmissive devices. 4,514,086, Cl. 356-124.000.
Stites, David G., to Bell & Howell Company. Dove prism for convergent light paths. 4,514,050, Cl. 350-444.000.
Stock, Horst: *See—*
Lossl, Gunter; Zauhar, Helmut; and Stock, Horst, 4,513,544, Cl. 51-283.00R.
Stol, Israel, to Invocas, Inc. Fastener improvement including introduction of selected capsule of adhesive into porous basket hung in bore for activation by fastener installation. 4,514,125, Cl. 411-82.000.
Stol, Israel, to Westinghouse Electric Corp. Pressure-differential method for sleeve-to-tube joining. 4,514,614, Cl. 219-125.110.
Stoll, Wolfgang; and Ennerst, Karl, to Alkem GmbH. Method for reprocessing a nuclear reactor fuel rod. 4,514,364, Cl. 423-4.000.
Stoltman, Donald D., to General Motors Corporation. Pressure regulator. 4,513,775, Cl. 137-491.000.
Stone, Robert P., to RCA Corporation. Arc-suppression means for an electron gun having a split electrode. 4,514,661, Cl. 315-3.000.
Stowe, David W., to Gould Inc. Quadrature fiber-optic interferometer matrix. 4,514,054, Cl. 350-96.150.
Stower, James F.: *See—*
Goldberger, Robert D.; and Stower, James F., 4,514,434, Cl. 426-646.000.
Strasser, Thomas. Desk lock system. 4,514,020, Cl. 312-220.000.
Strelnikov, Alexandr A.: *See—*
Uretsky, Yan S.; Kajumov, Rashid R.; Bashirov, Zaur A.; Bashirova, Alfia G.; and Strelnikov, Alexandr A., 4,513,620, Cl. 73-664.000.
Strohmaier, Ernst, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,514,169, Cl. 433-29.000.
Strope, Douglas H.: *See—*
Engel, Peter A.; Strope, Douglas H.; and Wray, Thomas E., 4,514,752, Cl. 357-72.000.
Strubbe, Gilbert J. I., to Sperry Corporation. Combine ground speed control system. 4,513,562, Cl. 56-10.200.
Stry-Lenkoff Co.: *See—*
Lenkoff, Leon G., 4,514,177, Cl. 434-328.000.
Stuhler, Rolf: *See—*
Majthan, Rudolf; Stuhler, Rolf; Parsonage, Raymond G.; and Packham, Charles C., 4,514,618, Cl. 219-370.000.
Sudbeck, Rainer; and Baumgartner, Hans, to Pierburg GmbH & Co. KG. Rotary vane pump with clutch. 4,514,153, Cl. 418-69.000.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co., KG: *See—*
Humpolik, Bohumil; and Staffa, Karl-Heinz, 4,513,587, Cl. 62-515.000.
Suehiro, Tetsuro: *See—*
Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.
Suga, Michihisa; and Tsuzuki, Mitsuo, to Nippon Electric Co., Ltd. Printer head for an ink-on-demand type ink-jet printer. 4,514,742, Cl. 346-140.00R.
Sugimoto, Kenji; and Isozaki, Osamu, to Taisei Corporation; and Kansai Paint Co., Ltd. Process for the preparation of electron beam curing gypsum panel. 4,514,471, Cl. 428-703.000.
Sugiura, Noboru: *See—*
Ishii, Toshio; and Sugiura, Noboru, 4,513,718, Cl. 123-425.000.
Sugiura, Ryuzo: *See—*
Kikuchi, Junzo; Sugiura, Ryuzo; Yamamoto, Mutsuhiro; and Yoshida, Toshiro, 4,514,597, Cl. 179-99.00M.
Sugiyama, Kenji; and Miyazaki, Takeshi, to Toyoda Gosei Co., Ltd. Process for manufacturing a hose mouthpiece. 4,513,489, Cl. 29-520.000.
Sullivan, Jack W. Ball and socket linkage and bearing assembly. 4,514,015, Cl. 308-2.00R.
Sulzer Brothers Limited: *See—*
Lincke, Paul, 4,513,792, Cl. 139-439.000.
Russak, Steffen P., 4,513,943, Cl. 251-31.000.
Sulzer-Escher Wyss Ltd.: *See—*
Rettich, Jakob; and Spiewok, Leonhard, 4,513,464, Cl. 8-159.000.
Sumerau, William R.; and Laing, Gordon E., to Singer Company, The. Filter bag for floor care appliance. 4,514,200, Cl. 55-368.000.
Sumita, Osao: *See—*
Furutani, Yasumasa; Hira, Yasuo; Hasegawa, Takashi; Minato, Akira; Sumita, Osao; and Itow, Hisao, 4,514,270, Cl. 204-151.000.
Sumitomo Chemical Company, Limited: *See—*
Ohsumi, Tadashi; Hatakoshi, Makoto; and Kisida, Hirosi, 4,514,406, Cl. 514-352.000.
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; Yoshioka, Hiroshi; and Nunose, Akira, 4,514,512, Cl. 502-107.000.
Yamahira, Yoshiya; Shima, Katsuhiko; Matsusaka, Chikako; and Noguchi, Tetsuo, 4,514,386, Cl. 424-81.000.
Sumitomo Electric Industries, Ltd.: *See—*
Abe, Hiroshi; Sato, Nobuhiro; Ono, Kimizo; and Hirano, Kazuo, 4,513,751, Cl. 128-666.000.
Summagraphics Corporation: *See—*
Whetstone, Albert L., 4,514,688, Cl. 324-208.000.

Sundermeier, Gunter; and Waltemate, Dieter, to Paul Hettich & Co. Cabinet with double door consisting of an inner door and an outer door. 4,514,021, Cl. 312-291.000.

Sundstrand Corporation: *See*—
Olson, Raymond N., 4,514,652, Cl. 310-54.000.

Suntory Limited: *See*—
Yoshizumi, Hajime; Matsumoto, Nobuya; Fukuda, Osamu; and Fukushi, Osamu, 4,514,496, Cl. 435-162.000.

Susz, Dietfried, to U.S. Philips Corporation. Circuit arrangement for generating an actuating signal for a piezo-electric element of a positioning device. 4,514,773, Cl. 360-77.000.

Sutor, Norbert: *See*—
Steinmann, Peter; and Sutor, Norbert, 4,514,035, Cl. 350-96.230.

Suzuki, Hayao, to Seiko Instruments & Electronics Ltd. Pulse width modulation d.c. servo motor driving circuit. 4,514,666, Cl. 318-293.000.

Suzuki, Hitoshi: *See*—
Koga, Noritaka; Suzuki, Takanori; Nakamura, Kenji; Suzuki, Hitoshi; and Ogano, Takeo, 4,513,702, Cl. 123-193.00H.

Suzuki, Kuniaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Printing head driving apparatus. 4,514,737, Cl. 346-76.0PH.

Suzuki, Mitsuo: *See*—
Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.

Suzuki, Osamu: *See*—
Oishi, Kengo; and Suzuki, Osamu, 4,513,929, Cl. 242-198.000.

Suzuki, Takanori: *See*—
Koga, Noritaka; Suzuki, Takanori; Nakamura, Kenji; Suzuki, Hitoshi; and Ogano, Takeo, 4,513,702, Cl. 123-193.00H.

Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; Fujita, Takashi; and Kawase, Shigeki, to Matsushita Electric Industrial Co., Ltd. Polyester substrate for magnetic recording medium having oligomer protrusions thereon. 4,514,451, Cl. 428-141.000.

Suzuki, Toshihiro: *See*—
Sawa, Natsuo; Suzuki, Toshihiro; and Okazaki, Shinji, 4,514,556, Cl. 528-117.000.

Suzuki, Toshitake; Arai, Naoto; Aoyagi, Shoji; Saito, Toranosuke; Kitani, Masakatsu; and Ishibashi, Takashi, to Kanzaki Paper Manufacturing Co. Ltd.; and Sanko Kaihatsu Kagaku Kenkyusho Corporation. Heat-sensitive recording material. 4,514,745, Cl. 346-216.000.

Suzuki, Yoshiharu; Fukagawa, Hitoshi; Komoda, Yoshiyuki; and Tanaka, Osamu, to Matsushita Electric Works, Ltd. Data transmission system utilizing power line of 3-phase alternating current. 4,514,719, Cl. 340-310.00R.

Suzuki, Yoshihisa; Yasui, Yoshiharu; Seiki, Kazuo; and Takasu, Shigeru, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Easily displaceable bottom tenser. 4,513,481, Cl. 19-244.000.

Svenska Traforskningsinstitutet: *See*—
Karlsson, Hakan I.; and Pettersson, Jan G. T., 4,514,257, Cl. 162-49.000.

Svoboda, Josef, to TMC Corporation. Device for cross-country skiing. 4,513,988, Cl. 280-615.000.

Swanson, Ronald C. Measuring tool. 4,513,510, Cl. 33-419.000.

Sweeney, William M.: *See*—
Lu-Dai Sung, Rodney; Sweeney, William M.; and Zoleski, Benjamin H., 4,514,311, Cl. 252-32.500.

Swiatkowski, Piotr; and Wiklund, Thomas, to KenoGard AB. Flotation collector composition and its use. 4,514,290, Cl. 209-166.000.

Swing Stage Limited: *See*—
Vandelinde, Henry, 4,513,952, Cl. 254-285.000.

Swoboda, Gary L.: *See*—
Caudel, Edward R.; Swoboda, Gary L.; Magar, Surendar S.; McDonough, Kevin C.; and Leigh, Antony W., 4,514,801, Cl. 364-200.000.
McDonough, Kevin C.; Swoboda, Gary L.; and Magar, Surendar S., 4,514,805, Cl. 364-200.000.

Swoboda, Thomas J., to Du Pont de Nemours, E. I., and Company. Phosphorous-doped tin oxide powder. 4,514,322, Cl. 252-518.000.

Swoveland, Jack E., to Dana Corporation. Mounting bracket for a steering column control stalk. 4,513,632, Cl. 74-484.00R.

Symons, Edward A.; Rolston, John H.; Clermont, Michel J.; and Paterson, Linda M., to Atomic Energy of Canada Limited. Process for the exchange of hydrogen isotopes between streams of liquid water and gaseous halohydrocarbon and an apparatus therefor. 4,514,377, Cl. 423-648.00A.

Synthes AG: *See*—
Klaue, Kaj, 4,513,744, Cl. 128-92.00D.

Szabo, Ervin I., to Canadian Patents and Development Limited. Method of manufacturing a foundry mould mix containing a mould binder. 4,514,227, Cl. 106-38.200.

Szarka, Jay R. Environmental control system and method. 4,514,729, Cl. 340-825.060.

Szczesny, Adolf; Kleinert, Reiner; Jedo, Antoni; and Gutorski, Zygmunt, to Centrum Mechanizacji Gornictwa "Komag". Dehydrating centrifugal sieve. 4,514,300, Cl. 210-342.000.

Szkaradek, Edward J., to Morehouse Industries, Inc. Sand mill rotor discs. 4,513,917, Cl. 241-46.110.

Tabata, Junichi; Torii, Masahiro; Oikawa, Hiroshi; Sawada, Minoru; and Masui, Yasuyuki, to Kabushiki Kaisha Daini Seikosha. Heartbeat rate indicator. 4,513,753, Cl. 128-706.000.

Tabei, Masatoshi, to Fuji Photo Film Co., Ltd. Solid-state color imager with two layer three story structure. 4,514,755, Cl. 358-44.000.

Tabei, Tooru: *See*—
Sato, Giichi; Matuo, Tadashi; and Tabei, Tooru, 4,514,559, Cl. 534-690.000.

Tabuchi, Kenji: *See*—
Wada, Kenichi; Oka, Tateki; and Tabuchi, Kenji, 4,514,480, Cl. 430-30.000.

Tachi, Kunio: *See*—
Kaneko, Fumihiko; Murakawa, Tetsuya; Nitta, Koichi; Yamana, Noriaki; Takeda, Masashi; and Tachi, Kunio, 4,514,787, Cl. 361-420.000.

Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, to Toyo Kogyo Co., Ltd. Multiple port intake means for rotary piston engines. 4,513,707, Cl. 123-242.000.

Taguchi, Toshio; Akino, Hisashi; and Nozawa, Takamitsu, to Shiseido Co., Ltd.; and Yoshino Kogyosho Co., Ltd. Container having spring biased hinge. 4,513,877, Cl. 220-335.000.

Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, to Nisshin Flour Milling Co., Ltd. Isoprenylamine derivatives. 4,514,573, Cl. 564-387.000.

Taisei Corporation: *See*—
Sugimoto, Kenji; and Isozaki, Osamu, 4,514,471, Cl. 428-703.000.

Tait, A. Martin: *See*—
Mahoney, John A.; Helstrom, John J.; and Tait, A. Martin, 4,514,279, Cl. 208-10.000.

Tajima, Ikuo, to Tokai Industrial Sewing Machine Co., Ltd. Embroidery sewing machine. 4,513,672, Cl. 112-100.000.

Takagiwa, Hiroyuki: *See*—
Kasuya, Takahira; Morita, Hideaki; Takagiwa, Hiroyuki; and Yamakawa, Goichi, 4,514,487, Cl. 430-137.000.
Shirose, Meizo; Ito, Kunio; Takagiwa, Hiroyuki; Takahashi, Jiro; and Gunzi, Kouichi, 4,514,486, Cl. 430-124.000.

Takahashi, Jiro: *See*—
Shirose, Meizo; Ito, Kunio; Takagiwa, Hiroyuki; Takahashi, Jiro; and Gunzi, Kouichi, 4,514,486, Cl. 430-124.000.

Takahashi, Reijiro: *See*—
Ito, Tosikazu; and Takahashi, Reijiro, 4,513,808, Cl. 165-43.000.

Takahashi, Toshihiko, to Takenaka Engineering Co., Ltd. Optical system for intruder detecting device. 4,514,630, Cl. 250-342.000.

Takahashi, Toshihiro: *See*—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,514,573, Cl. 564-387.000.

Takahashi, Yoshio; and Shoji, Takeshi, to Mitsubishi Oil Company, Limited. Paper sizing agent comprised of reaction product of maleic anhydride and propylene oligomers. 4,514,544, Cl. 525-327.400.

Takamatsu, Takashi; and Ohnuki, Tetsuo, to Tokyo Keiki Company, Ltd. Gerotor power steering apparatus with driven rotary sleeve valve. 4,514,152, Cl. 418-61.00B.

Takasu, Shigeru: *See*—
Suzuki, Yoshihisa; Yasui, Yoshiharu; Seiki, Kazuo; and Takasu, Shigeru, 4,513,481, Cl. 19-244.000.

Takeda Chemical Industries, Ltd.: *See*—
Imada, Isuke; and Watanabe, Masazumi, 4,514,420, Cl. 514-689.000.
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,514,565, Cl. 544-25.000.

Takeda, Keisou; and Hirata, Toshiyuki, to Toyota Jidosha Kabushiki Kaisha. Fuel injection device for motor vehicle. 4,513,720, Cl. 123-470.000.

Takeda, Masashi: *See*—
Kaneko, Fumihiko; Murakawa, Tetsuya; Nitta, Koichi; Yamana, Noriaki; Takeda, Masashi; and Tachi, Kunio, 4,514,787, Cl. 361-420.000.

Takei, Ryutaro: *See*—
Gunjima, Tomoki; and Takei, Ryutaro, 4,514,044, Cl. 350-350.00R.

Takei, Sumiaki: *See*—
Ando, Yoshibumi; Sakamoto, Takashi; Yoh, Kanji; Moriuchi, Hisahiro; and Takei, Sumiaki, 4,514,646, Cl. 307-200.00B.

Takemoto, Iwao: *See*—
Koike, Norio; Takemoto, Iwao; Ohba, Shinya; Masuhara, Toshiaki; and Kubo, Masaharu, 4,514,766, Cl. 358-213.000.

Takenaka, Akihiko; Arakawa, Miyao; Sato, Masahiro; and Yamaguchi, Toshiyuki, to Nippondenso Co., Ltd. Electromagnetic rotation detecting apparatus. 4,513,609, Cl. 73-116.000.

Takenaka Engineering Co., Ltd.: *See*—
Takahashi, Toshihiko, 4,514,630, Cl. 250-342.000.

Takimura, Keisuke; and Hamano, Hideo, to Toyota Jidosha Kabushiki Kaisha. Differential gear for automotive vehicles. 4,513,635, Cl. 74-713.000.

Talo, Leslie C.: *See*—
Fellner, Theodore F.; and Talo, Leslie C., 4,513,858, Cl. 198-812.000.

Tamashasky, Joseph A.: *See*—
Fegley, Charles R.; and Tamashasky, Joseph A., 4,513,852, Cl. 198-399.000.

Tamura Electric Works, Ltd.: *See*—
Kikuchi, Junzo; Sugiura, Ryuzo; Yamamoto, Mutsuhiro; and Yoshida, Toshiro, 4,514,597, Cl. 179-99.00M.

Tamura, Shingo: *See*—
Kadono, Motoaki; and Tamura, Shingo, 4,514,446, Cl. 428-35.000.

Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Image making system and apparatus therefor. 4,514,081, Cl. 355-14.00R.

Tanabe, Takeshi: *See*—
Sakamoto, Yukio; and Tanabe, Takeshi, 4,514,782, Cl. 361-306.000.

Tanaka, Hiroaki, to Sharp Kabushiki Kaisha. Polarizer with electrode thereon in a liquid crystal display. 4,514,041, Cl. 350-337.000.

Tanaka, Kano; Ando, Yoshio; and Yanagawa, Hitoshi, to Canon Kabushiki Kaisha. Apparatus for retrieving information. 4,514,641, Cl. 250-570.000.
Tanaka, Kazuhiko: *See*—
Kubota, Yasuo; Tanaka, Kazuhiko; and Kikushima, Kazuyuki, 4,514,767, Cl. 358-280.000.
Tanaka, Kazuhiro; Kawakami, Ken-ichi; and Yoshii, Toshiya, to Toray Industries, Inc. Magnetic recording disk. 4,514,452, Cl. 428-141.000.
Tanaka, Osamu: *See*—
Suzuki, Yoshiharu; Fukagawa, Hitoshi; Komoda, Yoshiyuki; and Tanaka, Osamu, 4,514,719, Cl. 340-310.00R.
Tanaka, Yasushi: *See*—
Watanabe, Hiroyuki; and Tanaka, Yasushi, 4,514,008, Cl. 296-204.000.
Taniguchi, Isoji; and Kimura, Yoshiharu, to Idemitsu Kosan Company Limited. Process for the production of high molecular weight organoaluminum polymers. 4,514,555, Cl. 528-9.000.
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Inoue, Toru; Nakai, Masaaki; Omaki, Takanobu; Niwa, Masatake; and Sekida, Minoru, to Minolta Camera Kabushiki Kaisha. Automatic exposure control camera. 4,514,073, Cl. 354-414.000.
Tanner, Sally A.: *See*—
Garcia, Carlos N.; Rigg, Bryan C.; and Tanner, Sally A., 4,514,489, Cl. 430-327.000.
Tano, Eiichi: *See*—
Negishi, Kiyoshi; Kawasaki, Masahiro; and Tano, Eiichi, 4,514,075, Cl. 354-446.000.
Tardivel, Georges M.: *See*—
Tardivel, Monique M., 4,513,461, Cl. 5-413.000.
Tardivel, Monique M., to Tardivel, Georges M. Sleeping bag with removable sheet. 4,513,461, Cl. 5-413.000.
Tashiro, Chiaki; Kawakita, Takeshi; Horii, Ichiro; and Anami, Koretake, to Yoshitomi Pharmaceutical Industries Ltd. Hydrouracil compounds. 4,514,403, Cl. 514-274.000.
Tassler, Milford C.: *See*—
Hsu, Oscar H. H.; and Tassler, Milford C., 4,514,532, Cl. 524-14.000.
Tate, Takao: *See*—
Otsuki, Hiromi; Kondo, Takashi; Kondo, Yoshiaki; Obata, Haruyuki; Tate, Takao; and Ishikawa, Norikatu, 4,513,945, Cl. 251-129.000.
Tateishi, Terutaka; and Shimizu, Kazuyuki, to Fujitsu Limited. Key storage error processing system. 4,514,847, Cl. 371-51.000.
Tateoka, Masamichi; and Ogata, Yukihiko, to Canon Kabushiki Kaisha. Apparatus for reading an original surface by illuminating it with a slit-like beam. 4,514,626, Cl. 250-235.000.
Tateosian, Louis H.: *See*—
Dougherty, Emery W.; Heyde, John B.; Bennett, Richard J.; Smith, Roy L.; Tateosian, Louis H.; and Eden, George T., 4,514,174, Cl. 433-226.000.
Taylor, Frank; and Maurer, Klemens, to Monitronik Ltee. Self-supporting element for mosaic display panel. 4,514,104, Cl. 403-14.000.
Taylor, James A., Jr.: *See*—
Eckelt, Peter; and Taylor, James A., Jr., 4,513,647, Cl. 83-203.000.
Taylor, Norman G.: *See*—
Spurling, Robert A.; Davis, Burton I.; and Taylor, Norman G., 4,513,537, Cl. 51-71.000.
Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Bader, Edgar; Rohrbach, Gerd; Petersen, Jurgen; and Kittel, Ludwig, 4,514,840, Cl. 370-29.000.
Teac Corporation: *See*—
Kudo, Tomio, 4,514,777, Cl. 360-128.000.
Technigaz: *See*—
Kotcharian, Michel, 4,513,550, Cl. 52-249.000.
Technology Consulting Corporation: *See*—
Steiner, Erwin, 4,513,514, Cl. 34-24.000.
Tegeler, John J.; and Diamond, Craig J., to Hoechst-Roussel Pharmaceuticals Inc. Substituted 8-phenylisoxazolo[4,3-e][1,4]diazepin-5-ones. 4,514,410, Cl. 514-221.000.
Tekna Limited: *See*—
Tremblay, Paul, 4,513,503, Cl. 30-289.000.
Tektronix, Inc.: *See*—
Payne, David G., 4,514,022, Cl. 339-17.00F.
Telefonaktiebolaget LM Ericsson: *See*—
Sem-Sandberg, Sverre G., 4,514,841, Cl. 370-55.000.
Telescope Folding Furniture Co. Inc., The: *See*—
Vanderminden, Robert D.; and Parker, Paul, 4,514,009, Cl. 297-27.000.
Tempmaster Corporation: *See*—
Humphreys, Norman G.; and Dean, Raymond H., 4,513,574, Cl. 62-59.000.
Terabe, Mahito: *See*—
Miwa, Kiyoshi; Terabe, Mahito; Ito, Koichi; Ishida, Masaaki; Matsui, Kazuhiko; Makamori, Shigeru; and Sano, Konosuke, 4,514,502, Cl. 435-253.000.
Terai, Ryohei: *See*—
Wakabayashi, Hajimu; Terai, Ryohei; Yamanaka, Hiroshi; and Hara, Shigeo, 4,514,329, Cl. 252-629.000.
Teramachi, Hiroshi. Linear slide bearing and linear slide table unit employing the same. 4,514,018, Cl. 308-6.00C.
Terasawa, Yoshio: *See*—
Miyata, Kenji; Terasawa, Yoshio; Oikawa, Saburo; Murakami, Susumu; and Okamura, Masahiro, 4,514,747, Cl. 357-38.000.
Terasura, Makoto, to Nippon Cable System, Inc. Boat steering mechanism. 4,513,680, Cl. 114-159.000.
Terrenzio, Gabriel M., to Acrowood Corporation. Feed arrangement for a centrifugal rock crusher. 4,513,919, Cl. 241-275.000.
Tesla, koncernovy podnik: *See*—
Janda, Jiri; and Hrdlicka, Karel, 4,514,838, Cl. 369-254.000.
Teuscher, Othmar: *See*—
Bisquolm, Werner; Burki, Jorg; and Teuscher, Othmar, 4,513,480, Cl. 19-113.000.
Texaco Inc.: *See*—
Lu-Dai Sung, Rodney; Sweeney, William M.; and Zoleski, Benjamin H., 4,514,311, Cl. 252-32.500.
Maddox, Jim, Jr., 4,513,820, Cl. 166-266.000.
Meador, Richard A., 4,514,693, Cl. 324-338.000.
Niccum, Phillip K.; and Bunn, Dorrance P., Jr., 4,514,285, Cl. 208-148.000.
Richter, Albert P., Jr.; Campsey, Ronald L.; Paap, Hans J.; and Bussian, Alfred E., 4,514,627, Cl. 250-255.000.
Rundell, Herbert A.; and Savage, Kerry D., 4,513,815, Cl. 166-57.000.
Sellstrom, Kathy B.; and Speranza, George P., 4,514,530, Cl. 523-456.000.
Texas Instruments Incorporated: *See*—
Adams, Anthony L., 4,514,750, Cl. 357-70.000.
Caudel, Edward R.; Swoboda, Gary L.; Magar, Surendar S.; McDonough, Kevin C.; and Leigh, Antony W., 4,514,801, Cl. 364-200.000.
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., 4,514,828, Cl. 365-8.000.
Doherty, John, Jr., 4,514,717, Cl. 337-365.000.
McDonough, Kevin C.; Swoboda, Gary L.; and Magar, Surendar S., 4,514,805, Cl. 364-200.000.
Tezuka, Shichigoro; Sato, Yoshinori; Shibata, Masaki; and Harikae, Nobuyuki, to Lotte Co., Ltd. Process of preparing an improved bubble chewing gum. 4,514,423, Cl. 426-3.000.
Thaler, Arnold: *See*—
Friedson, Belvin F.; Thaler, Arnold; and Saud, Ivan, 4,513,735, Cl. 128-24.200.
Therm-O-Type Corporation: *See*—
Wilkinson, John S., 4,514,779, Cl. 361-213.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile machine for removing surface irregularities from a rail head of a railroad track. 4,514,124, Cl. 409-295.000.
Thilo, Peer: *See*—
Oberstein, Karla; and Thilo, Peer, 4,514,720, Cl. 340-511.000.
Thomas, Charles R. Therapeutic pillow. 4,513,462, Cl. 5-442.000.
Thomas, Frank O. Emergency medical pack. 4,513,866, Cl. 206-570.000.
Thomas, John H.: *See*—
Owoc, James R.; Thomas, John H.; and Conley, Richard W., 4,513,779, Cl. 137-556.000.
Thomas, Michael J.; and McDonald, David B., to General Motors Corporation. Air valve. 4,513,771, Cl. 137-315.000.
Thompson, James E.: *See*—
Beers, Melvin D.; and Thompson, James E., 4,514,529, Cl. 523-200.000.
Thompson, John A., to Henkel Corporation. Leather treatment composition and leather treating. 4,514,184, Cl. 8-94.210.
Thompson, William J., to Rockwell International Corporation. Second or higher order PLL with increased low and medium frequency gain. 4,514,706, Cl. 331-16.000.
Thomson-CSF: *See*—
Charruau, Stephane, 4,514,786, Cl. 361-413.000.
Contartese, Giulio; and Dietz, Joachim, 4,513,782, Cl. 137-625.630.
Nuzillat, Gerard; and Bert, Georges, 4,514,649, Cl. 307-450.000.
Pichon, Laurence; and Huignard, Jean P., 4,514,038, Cl. 350-162.130.
Thorn, Richard P.; and Gupta, Bhagwati P., to Lord Corporation. Spring-like material formed of compressed metallic wire. 4,514,458, Cl. 428-222.000.
Thurber, Robert J., to Wahl Clipper Corporation. Cushioned massager. 4,513,736, Cl. 128-41.000.
Thyes, Marco: *See*—
Ostersehlt, Bernd; Franke, Albrecht; Frickel, Fritz-Frieder; Thyes, Marco; Friedrich, Ludwig; Gries, Josef; and Lenke, Dieter, 4,514,413, Cl. 514-397.000.
Tiedje, Thomas; and Abeles, Benjamin, to Exxon Research and Engineering Co. Optical absorption enhancement in amorphous silicon deposited on rough substrate. 4,514,582, Cl. 136-256.000.
Tihonovich, Walter. Hinged hair curling roller. 4,513,760, Cl. 132-40.000.
Tilbor, Neil: *See*—
Mucaro, Salvatore A.; and Tilbor, Neil, 4,513,966, Cl. 273-68.00B.
Tippins Machinery Company, Inc.: *See*—
Ginzburg, Vladimir B.; and Snitkin, Sidney R., 4,513,594, Cl. 72-8.000.
Titan Tool Company: *See*—
McKean, John A., 4,513,643, Cl. 81-53.200.
Tiuri, Martti: *See*—
Heikkila, Sakari; and Tiuri, Martti, 4,514,680, Cl. 324-58.50A.
TMC Corporation: *See*—
Svoboda, Josef, 4,513,988, Cl. 280-615.000.
Toa Grout Kogyo Co., Ltd.: *See*—
Sano, Sakae; Kitajima, Hisashi; Iimori, Hiroshi; and Nishio, Tadashi, 4,514,112, Cl. 405-269.000.
Tobishi Industries Ltd.: *See*—
Hosoya, Toshiro, 4,514,655, Cl. 310-218.000.
Tobita, Katsumi: *See*—
Noji, Tasuku; and Tobita, Katsumi, 4,514,757, Cl. 358-86.000.

Toda Kogyo Corp.: *See*—
Mishima, Akio; Okuda, Yoshiro; Harada, Toshiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,514,216, Cl. 75-0.5AA.
Togashi, Minoru; Kato, Kenshiro; and Furuya, Shin-ichi, to Bridgestone Tire Company Limited. Reduced rolling resistance pneumatic radial tire and method of manufacturing the same. 4,513,802, Cl. 152-353.00R.
Tokai Industrial Sewing Machine Co., Ltd.: *See*—
Tajima, Ikuo, 4,513,672, Cl. 112-100.000.
Tokai Rubber Industries, Ltd.: *See*—
Morita, Yasuhiro; and Tsukamoto, Yoshikazu, 4,513,990, Cl. 280-725.000.
Tokieda, Naomitsu. Lamp ribbon. 4,514,791, Cl. 362-249.000.
Tokunaga, Isao: *See*—
Nakagawa, Junyo; Yamaguchi, Shinji; Hirakawa, Kiyoshi; Tokunaga, Isao; and Ito, Masaaki, 4,514,459, Cl. 428-229.000.
Tokuyama, Yoshio, to Victor Company of Japan, Ltd. D.C. Motor driving circuit. 4,514,668, Cl. 318-294.000.
Tokyo Keiki Company, Ltd.: *See*—
Takamatsu, Takashi; and Ohnuki, Tetsuo, 4,514,152, Cl. 418-61.00B.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fukasawa, Yoshiharu; Matsumoto, Tatsuhiko; Kawai, Mituo; Ueda, Shigeru; Koizumi, Hideo; and Saitou, Hiroyuki, 4,514,234, Cl. 148-11.50P.
Hattori, Motoichi; and Ishigo, Hideyasu, 4,514,593, Cl. 179-2.00A.
Inagaki, Taizo; Ichikawa, Kentaro; Kido, Hitoshi; and Kawase, Yozo, 4,514,138, Cl. 415-1.000.
Inoue, Hiroshi; Komeya, Katsutoshi; Tsuge, Akihiko; Koide, Kazunari; Mori, Masaaki; and Urakawa, Tetsuro, 4,514,370, Cl. 423-344.000.
Ishizawa, Toshimichi, 4,514,768, Cl. 358-296.000.
Iwata, Kazuhide; Shibayama, Shigeki; Hidai, Yutaka; and Oyanagi, Shigeru, 4,514,826, Cl. 364-900.000.
Kariatsumari, Keiichiro; and Hirai, Kenji, 4,514,699, Cl. 330-53.000.
Kawabuchi, Katsuhiro, 4,514,233, Cl. 148-1.500.
Mizobuchi, Norihiro; Furukawa, Keiji; and Motoyama, Takeshi, 4,513,581, Cl. 62-197.000.
Murayama, Masaki; and Iida, Manjiro, 4,514,808, Cl. 364-200.000.
Nagato, Hitoshi; Izawa, Koji; and Hirahara, Shuzo, 4,514,738, Cl. 346-76.0PH.
Suzuki, Kuniaki, 4,514,737, Cl. 346-76.0PH.
Toman, George M.: *See*—
Bhatia, Chandrakant; Toman, George M.; and Bock, Thomas J., 4,513,674, Cl. 112-220.000.
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives. 4,514,401, Cl. 514-253.000.
Tomkins Co., The: *See*—
Tompkins, Roy J., Jr., 4,513,797, Cl. 141-198.000.
Tommaney, Joseph W.; and Bishop, Harry L., Jr., to Allegheny Ludlum Steel Corporation. Method for producing steel in a top-blown vessel. 4,514,220, Cl. 75-60.000.
Tompkins, Roy J., Jr., to Tomkins Co., The. One-piece liquid filler tube. 4,513,797, Cl. 141-198.000.
Tonan Kaihatsu/Kogyo Co., Ltd.: *See*—
Sano, Sakae; Kitajima, Hisashi; Iimori, Hiroshi; and Nishio, Tadashi, 4,514,112, Cl. 405-269.000.
Topinka, George F., to Carter Controls, Inc. Hydraulically actuated pump. 4,514,148, Cl. 417-403.000.
Toray Industries, Inc.: *See*—
Negishi, Takao; and Kojima, Teiryo, 4,513,565, Cl. 57-236.000.
Tanaka, Kazuhiro; Kawakami, Ken-ichi; and Yoshii, Toshiya, 4,514,452, Cl. 428-141.000.
Toray Silicone Company, Ltd.: *See*—
Kadono, Motoaki; and Tamura, Shingo, 4,514,446, Cl. 428-35.000.
Torii & Co. Ltd.: *See*—
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,514,416, Cl. 549-442.000.
Torii, Masahiro: *See*—
Tabata, Junichi; Torii, Masahiro; Oikawa, Hiroshi; Sawada, Minoru; and Masui, Yasuyuki, 4,513,753, Cl. 128-706.000.
Torisu, Yoshio: *See*—
Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; Kimura, Shirou; Torisu, Yoshio; and Okazaki, Mari, 4,514,277, Cl. 204-424.000.
Tortrix A/S: *See*—
Pedersen, Jan B., 4,513,920, Cl. 242-4.00B.
Toscano, Luciano, to Pierrel Spa. Fluorinated erythromycin compounds and a process for preparation. 4,514,562, Cl. 536-7.200.
Toshiba Ceramics Co., Ltd: *See*—
Inoue, Hiroshi; Komeya, Katsutoshi; Tsuge, Akihiko; Koide, Kazunari; Mori, Masaaki; and Urakawa, Tetsuro, 4,514,370, Cl. 423-344.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Iguchi, Katsuhiko; Wada, Hidemi; and Wakita, Ryuichi, 4,514,348, Cl. 264-40.100.
Toso Kabushiki Kaisha: *See*—
Mase, Ryoichi, 4,513,805, Cl. 160-299.000.
Toth Aluminum Corporation: *See*—
Wyndham, Ronald, 4,514,373, Cl. 423-495.000.
Tou, Jacob S.; and Schleppnik, Alfred A., to Monsanto Company. Cyano-polycarboxylates. 4,514,340, Cl. 260-465.00D.
Tovey, Hugh J.: *See*—
Aranyi, Ernie; Ihasz, Richard; Gravener, Roy D.; and Tovey, Hugh J., 4,513,746, Cl. 128-334.00C.
Tower, John R., to RCA Corporation. Electro-optical CCD transversal filter with analog reference weights. 4,514,821, Cl. 364-862.000.
Towmotor Corporation: *See*—
Melocik, Grant C.; and Pickering, William, 4,514,665, Cl. 318-139.000.
Townsend, Greg M.: *See*—
Maher, John W.; and Townsend, Greg M., 4,514,703, Cl. 330-279.000.
Toya, Syouichi, to Sanyo Electric Co., Ltd. Combined structure of hand-held cordless vacuum cleaner and flashlight. 4,513,470, Cl. 15-328.000.
Toyo Kogyo Co., Ltd.: *See*—
Fujii, Hiroshi; and Sakamoto, Toshiharu, 4,513,696, Cl. 123-41.020.
Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, 4,513,707, Cl. 123-242.000.
Toyo Soda Manufacturing Ltd.: *See*—
Miyaki, Yoshiyuki; Fujita, Yoshitaka; Se, Kazunori; and Fujimoto, Teruo, 4,514,304, Cl. 210-638.000.
Toyoda Gosei Co., Ltd.: *See*—
Sugiyama, Kenji; and Miyazaki, Takeshi, 4,513,489, Cl. 29-520.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Ina, Toshikazu; Obayashi, Hideki; Kawai, Hisasi; Kohama, Tokio; Sawada, Daisaku; and Shigematsu, Takashi, 4,513,721, Cl. 123-478.000.
Kobayashi, Nobuyuki; Ito, Hiroshi; and Ohkawa, Nobuhisa, 4,513,710, Cl. 123-339.000.
Kobayashi, Tatsuo, 4,513,717, Cl. 123-425.000.
Otsuki, Hiromi; Kondo, Takashi; Kondo, Yoshiaki; Obata, Haruyuki; Tate, Takao; and Ishikawa, Norikatu, 4,513,945, Cl. 251-129.000.
Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; Kimura, Shirou; Torisu, Yoshio; and Okazaki, Mari, 4,514,277, Cl. 204-424.000.
Shimoji, Koji; Hangeisi, Suekiti; and Itou, Keiji, 4,513,841, Cl. 181-252.000.
Takeda, Keisou; and Hirata, Toshiyuki, 4,513,720, Cl. 123-470.000.
Takimura, Keisuke; and Hamano, Hideo, 4,513,635, Cl. 74-713.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Watanabe, Hiroyuki; and Tanaka, Yasushi, 4,514,008, Cl. 296-204.000.
Toyota Kidosha Kabushi Kaisha: *See*—
Morita, Yasuhiro; and Tsukamoto, Yoshikazu, 4,513,990, Cl. 280-725.000.
Trahan, Fred. Crab meat extracting device. 4,513,478, Cl. 17-71.000.
Tramier, Bernard: *See*—
Dubreuil, Jean-Pierre; Blazejczak, Jean; and Tramier, Bernard, 4,514,272, Cl. 204-186.000.
Travers, Christine; Chan, Trinh D.; Snappe, Roger; and Bournonville, Jean-Paul, to Institut Francais du Petrole. Process for manufacturing a catalyst comprising rhodium and at least one metal selected from the group consisting of tin, germanium and lead and the catalyst produced by the process. 4,514,515, Cl. 502-154.000.
Treadwell, William A., to Eaton Corporation. Vehicle speed control. 4,513,836, Cl. 180-177.000.
Treiber, Fritz F., to Hobart Corporation. Jam detection and removal for wrapping machine. 4,513,558, Cl. 53-77.000.
Tremblay, Paul, to Tekna Limited. Wire cutting tool. 4,513,503, Cl. 30-289.000.
Treskot, Robert A.: *See*—
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,514,291, Cl. 209-166.000.
Trilog, Inc.: *See*—
Melissa, Raymond F.; Grummett, Lorne H.; and Chamberlain, John C., 4,513,661, Cl. 101-93.040.
Trimble, James L. Bicycle frame. 4,513,986, Cl. 280-281.00R.
Triner, Irvin R.; and Martinowich, John N., to Methode Electronics, Inc. Shorting edge connector. 4,514,030, Cl. 339-176.0MP.
Trion Corporation: *See*—
Aoki, Akio, 4,513,450, Cl. 2-19.000.
Trube & Kings Kommanditgesellschaft: *See*—
Breithaupt, Albert, 4,513,552, Cl. 52-400.000.
TRW Inc.: *See*—
Blumenthal, Jack L.; Ogren, John R.; Rutkowski, Eugene V.; and Appel, Marvin, 4,514,698, Cl. 330-4.300.
Van Antwerp, Joel C., 4,514,727, Cl. 340-793.000.
Tsai, Yeh C. Rewinding apparatus for video cassette. 4,513,927, Cl. 242-191.000.
Tsuboi, Masaharu, to Honda Giken Kogyo Kabushiki Kaisha. Motorized two-wheeled vehicle. 4,513,838, Cl. 180-219.000.
Tsuchiyama, Tadashi: *See*—
Senga, Akihisa; Hidaka, Yoshiaki; and Tsuchiyama, Tadashi, 4,513,698, Cl. 123-52.0MV.
Tsudakoma Corp.: *See*—
Sainen, Tsutomu; Sakano, Toshiyuki; Fujita, Yoshitaka; and Imai, Toshiki, 4,513,790, Cl. 139-110.000.
Tsuge, Akihiko: *See*—
Inoue, Hiroshi; Komeya, Katsutoshi; Tsuge, Akihiko; Koide, Kazunari; Mori, Masaaki; and Urakawa, Tetsuro, 4,514,370, Cl. 423-344.000.
Tsukamoto, Yoshikazu: *See*—
Morita, Yasuhiro; and Tsukamoto, Yoshikazu, 4,513,990, Cl. 280-725.000.

Tsunoda, Kikuo; and Kobayashi, Takehiro, to Ryobi Ltd. Bail arm control device for a spinning reel. 4,513,926, Cl. 242-84.20G.
Tsuzuki, Mitsuo: *See*—
Suga, Michihisa; and Tsuzuki, Mitsuo, 4,514,742, Cl. 346-140.00R.
Tuong, Huynh-Ba; Kelly, Stephen M.; and Osman, Maged A., to Merck Patent Gesellschaft mit beschrankter Haftung. Anisotropic compounds and liquid crystal mixtures. 4,514,317, Cl. 252-299.620.
Turner, Michael J. B.: *See*—
Berry, Paul S.; Benson, John A.; Kettlewell, Peter J.; and Turner, Michael J. B., 4,513,689, Cl. 119-82.000.
Turner, William D.: *See*—
Johnson, Richard V.; and Turner, William D., 4,514,739, Cl. 346-108.000.
Tzvetanov, Plamen V.; Chankov, Dyanko V.; Nikolov, Orlin A.; and Ivanov, Alexander L., to N P K "Zavarachna Technika". Apparatus for the automatic welding of complex shapes. 4,513,902, Cl. 228-25.000.
UBE Industries, Ltd.: *See*—
Nakai, Mamoru; Iwata, Fumio; and Inoue, Teruhiko, 4,514,571, Cl. 546-306.000.
Udd, Soren, to AB Volvo. System for supplying combustion air to a supercharged internal combustion engine with charge air cooling. 4,513,729, Cl. 123-563.000.
Ueda, Shigeru: *See*—
Fukasawa, Yoshiharu; Matsumoto, Tatsuhiko; Kawai, Mituo; Ueda, Shigeru; Koizumi, Hideo; and Saitou, Hiroyuki, 4,514,234, Cl. 148-11.50P.
Ueda, Tomoyuki; and Ogawa, Hirotoshi. Valve assembly. 4,513,949, Cl. 251-266.000.
Ueno, Hideo: *See*—
Shinohara, Satoru; Fujii, Noboru; Imada, Kiyohisa; Kadota, Genichi; and Ueno, Hideo, 4,514,560, Cl. 536-1.100.
Ueno, Sadayasu: *See*—
Sato, Kanemasa; and Ueno, Sadayasu, 4,513,615, Cl. 73-204.000.
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Ullman, Thomas J.; Shadbolt, Colin F.; Pagdin, Brian C.; Marriage, David J.; Clarke, Peter J.; and Sheppard, Ian J., to Solex (U.K.) Limited. Air/fuel induction system for spark ignition internal combustion engines, and electromagnetic valves. 4,513,728, Cl. 123-527.000.
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Peck, Michael C., 4,514,540, Cl. 524-514.000.
Union Carbide Corporation: *See*—
Barnabeo, Austin E., 4,514,545, Cl. 525-330.400.
D'Silva, Themistocles D. J., 4,514,392, Cl. 514-148.000.
Kulkarni, Ravi D.; Goddard, E. Desmond; and Aronson, Michael P., 4,514,319, Cl. 252-321.000.
Matulewicz, William N.; Mohr, Paul H.; and Matlock, Paul L., 4,514,315, Cl. 252-75.000.
Montgomery, Lionel C., 4,514,355, Cl. 264-332.000.
Nowobilski, Jeffert J.; and Owens, William J., 4,514,450, Cl. 428-120.000.
Union Oil Company of California: *See*—
Amend, William E., 4,513,947, Cl. 251-174.000.
Miller, Alex E., 4,514,379, Cl. 423-228.000.
Union Special Corporation: *See*—
Bhatia, Chandrakant; Toman, George M.; and Bock, Thomas J., 4,513,674, Cl. 112-220.000.
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Law, Denny B.; and Goettker, Bernhardt P., 4,514,132, Cl. 414-537.000.
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Crepeau, Allen E., 4,514,442, Cl. 427-140.000.
Skura, William A., 4,514,179, Cl. 474-204.000.
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Fuller, Peter W. W., 4,513,668, Cl. 102-511.000.
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Edwards, Julian G.; and Roddie, Alan G., 4,514,624, Cl. 250-211.00R.
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Cummings, Robert, 4,514,248, Cl. 156-268.000.
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Wendt, Alan C., 4,513,549, Cl. 52-211.000.
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Agriculture: *See*—
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Azgapetian, Victor, deceased, 4,514,056, Cl. 350-372.000.
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Binder, Michael; Petersen, Eric R.; Walker, Charles W., Jr.; Wade, William L., Jr.; and Gilman, Sol, 4,514,478, Cl. 429-196.000.
Cade, J. Weldon; and Stein, Stanley I., 4,514,135, Cl. 414-682.000.
Gutleber, Frank S., 4,514,853, Cl. 375-34.000.
Haynes, Kenton L.; Sherer, William P.; Greene, Hugh W.; Holder, James D.; and Roberts, Thomas G., 4,514,684, Cl. 324-120.000.
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Miller, Walter E., Jr.; and McKelvy, James W., 4,514,690, Cl. 324-225.000.
Rose, Douglas N.; and Becker, John E., 4,513,807, Cl. 165-10.000.
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Voigt, H. William; and Murphy, Francis X., 4,514,239, Cl. 149-18.000.
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Young, Harvey R., 4,514,142, Cl. 416-1.000.
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Mientek, Anthony P., 4,514,475, Cl. 429-35.000.
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Campbell, Thomas G., 4,514,143, Cl. 416-23.000.
Elliott, David G., 4,514,137, Cl. 415-1.000.
Heyman, Joseph S.; and Brandenburger, Gary H., 4,513,750, Cl. 128-660.000.
Lauver, Richard W., 4,514,557, Cl. 528-342.000.
Poorman, Richard M., 4,513,810, Cl. 165-61.000.
Stephens, James B.; Yang, Mary M.; and Laue, Eric G., 4,514,278, Cl. 204-430.000.
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Hanson, Paul A.; and Walton, James M., 4,514,834, Cl. 367-141.000.
Wilger, John F.; Nakano, Gregory; and Berman, William A., 4,513,542, Cl. 51-241.00S.
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Eisemann, Kurt, 4,514,839, Cl. 369-270.000.
Nillesen, Antonius H. H. J.; and Welles, Petrus W. G., 4,514,754, Cl. 358-13.000.
Parmentier, Paul, 4,514,785, Cl. 361-401.000.
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van der Zwart, Alfred J., 4,514,795, Cl. 363-27.000.
van Gompel, Henricus J., 4,514,762, Cl. 358-163.000.
van Ommen, Alfred H.; Maas, Henricus G. R.; Appels, Johannes A.; and Josquin, Wilhelmus J. M. J., 4,514,251, Cl. 156-628.000.
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Giamei, Anthony F.; and Kear, Bernard H., 4,514,360, Cl. 420-454.000.
Loersch, Joseph F.; and Neal, James W., 4,514,469, Cl. 428-553.000.
Unitrode Corporation: *See*—
Van Dyk Soerewyn, Herman F., 4,514,587, Cl. 174-52.00H.
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Lutz, Albert, 4,513,588, Cl. 66-126.00R.
University of Miami: *See*—
Fox, Sidney W.; and Przybylski, Aleksander T., 4,514,584, Cl. 136-263.000.
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Wynnyckyj, John R.; Rhodes, Edward; and Chambers, Allan K., 4,514,096, Cl. 374-27.000.
University Patents, Inc.: *See*—
Kaiser, Emil T.; and Moe, Gregory, 4,514,331, Cl. 260-112.50T.
Sievers, Robert E.; and Gillis, John N., 4,514,522, Cl. 521-53.000.
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Uphoff, Billie J.: *See*—
Johnson, Larry; and Uphoff, Billie J., 4,513,554, Cl. 52-657.000.
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Urakawa, Tetsuro: *See*—
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Uretsky, Yan S.; Kajumov, Rashid R.; Bashirov, Zaur A.; Bashirova, Alfia G.; and Strelnikov, Alexandr A., to Kazansky Aviatsionny

Institut Imeni A. N. Tupoleva. System for testing articles with random and harmonic vibrations. 4,513,620, Cl. 73-664.000.

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Urmson, Charles C.: *See—*
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Urquhart, Kevin G. Camera mounting system. 4,514,068, Cl. 354-293.000.

Usher, George R., to Eagle Precision Tool Ltd. Apparatus and method for forming seamed tube. 4,513,596, Cl. 72-51.000.

Ushiyama, Hisayuki; Ochi, Hisayuki; Miyamae, Tatsuo; and Wakamiya, Katsutoshi, to Canon Kabushiki Kaisha. Developer for electrophotography having carrier particles, toner particles and electroconductive fine powders. 4,514,485, Cl. 430-106.600.

USM Corporation: *See—*
Price, Frank C., 4,513,886, Cl. 222-146.500.
Winter, William J., 4,514,161, Cl. 425-154.000.

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Persbeck, Sven-Eric; and Almqvist, Bert, 4,513,830, Cl. 177-1.000.

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Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, to N.V. Bekaert S.A. Catalyst and method of its preparation. 4,514,520, Cl. 502-337.000.

Uzia R&D Associates: *See—*
Gal, Uzi, 4,513,523, Cl. 42-72.000.

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Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.

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Vadasz, Amnon F., to Intevep, S.A.; Vereinigte Edelstahlwerke A.G.; and Oficina Technica HGB. Check valve. 4,513,778, Cl. 137-533.110.

Valashinas, James W.: *See—*
Agnew, Palmer W.; Buonomo, Joseph P.; Houghtalen, Steven R.; Kellerman, Anne S.; Losinger, Raymond E.; and Valashinas, James W., 4,514,803, Cl. 364-200.000.

Valentine, Walter J., to Garbo, Paul W., a part interest. Electrical warning system for malfunctions in refrigeration. 4,514,724, Cl. 340-648.000.

Valmet Oy: *See—*
Koski, Erkki, 4,514,259, Cl. 162-343.000.
Vedenpaa, Timo, 4,513,517, Cl. 34-114.000.

Van Antwerp, Joel C., to TRW Inc. Automatic brightness control apparatus. 4,514,727, Cl. 340-793.000.

van Arragon, Gerrit W.; Mensink, Kornelis A.; and Wittkampf, Frederik H. M., to Vitatron Medical B.V. Physiological devices such as pacemakers and method for providing histogram data. 4,513,743, Cl. 128-419.0PG.

van Dam, Jacobus I. M., to U.S. Philips Corporation. Inductive ballast coated with an insulation layer and method of coating the ballast. 4,514,713, Cl. 336-96.000.

Vandekeybus, Christiaan A. C. Device for tying-up an animal. 4,513,693, Cl. 119-147.00R.

Vandelinde, Henry, to Swing Stage Limited. Drive mechanism for cable drums. 4,513,952, Cl. 254-285.000.

Vanderminden, Robert D.; and Parker, Paul, to Telescope Folding Furniture Co. Inc., The. Collapsible lounge chair. 4,514,009, Cl. 297-27.000.

van der Zwart, Alfred J., to U.S. Philips Corporation. High-voltage generator, notably for an X-ray tube. 4,514,795, Cl. 363-27.000.

Van Deursen, Gary E., to Black & Decker, Inc. Hair roller clip. 4,513,761, Cl. 132-41.000.

Van Dyk Soerewyn, Herman F., to Unitrode Corporation. High power semiconductor package. 4,514,587, Cl. 174-52.00H.

van Es, Antonie F.: *See—*
Frijters, Petrus J. G.; and van Es, Antonie F., 4,513,685, Cl. 119-1.000.

van Gompel, Henricus J., to U.S. Philips Corporation. Video signal multiplying circuit. 4,514,762, Cl. 358-163.000.

Van Husen, Hendrik W., to GTE Automatic Electric Incorporated. Hall effect device test circuit. 4,514,687, Cl. 324-158.00R.

Van Leirsburg, Dean A.: *See—*
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,514,369, Cl. 423-54.000.

Van Loveren, Augustinus G.: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,514,324, Cl. 252-522.00R.

van Ommen, Alfred H.; Maas, Henricus G. R.; Appels, Johannes A.; and Josquin, Wilhelmus J. M. J., to U.S. Philips Corporation. Method of manufacturing a semiconductor device, in which patterns are formed in a layer of silicon nitride by means of ion implantation. 4,514,251, Cl. 156-628.000.

Van Ouwerkerk, Anton: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,514,324, Cl. 252-522.00R.

Van Rosmalen, Gerard E., to U.S. Philips Corporation. Apparatus for optically reading and/or recording information. 4,514,837, Cl. 369-219.000.

van Santen, Aart: *See—*
Borrman, Bo; Hellman, Erik; Ode, Bengt; and van Santen, Aart, 4,514,358, Cl. 376-362.000.

Van Scoyk, Pershing R.: *See—*
Welton, Charles L.; and Van Scoyk, Pershing R., 4,513,561, Cl. 54-83.00R.

van Zon, Cornelis; Jonkeren, Gerrit J.; and Eggengoor, Hilbert, to Wafilin B.V. Non-woven tube for membrane filtration. 4,514,302, Cl. 210-433.200.

Varian Associates, Inc.: *See—*
Gerard, William A., 4,514,689, Cl. 324-208.000.

Varlemann, Kurt. Automatic hydraulic reversing valve for a double-action working cylinder. 4,513,653, Cl. 91-239.000.

Varwig, Juergen: *See—*
Hamprecht, Gerhard; Varwig, Juergen; and Rohr, Wolfgang, 4,514,572, Cl. 549-246.000.

Vasers, Margita L.: *See—*
Gaffar, Abdul; Davis, Calvin B.; and Vasers, Margita L., 4,514,382, Cl. 424-54.000.

VEB Kombinat Feinmechanische Werke Halle: *See—*
Roselt, Udo; Nolte, Lothar; and Pohler, Manfred, 4,514,206, Cl. 65-108.000.

Vedenpaa, Timo, to Valmet Oy. Cylinder dryer for paper machine or equivalent. 4,513,517, Cl. 34-114.000.

Veit, Dagmar V., to Prodes, S.A. Process for obtaining complex of 3-methoxy-N-methylmorphinan with 7-theophyllineacetic acid (1:2). 4,514,404, Cl. 514-265.000.

Vercon Inc.: *See—*
MacLaughlin, Donald N.; and Fortuna, Vincent E., 4,514,242, Cl. 156-73.500.

Vercruysse, Oscar D., to General Motors Corporation. Die engaging block for a die change truck. 4,514,133, Cl. 414-512.000.

Vereinigte Edelstahlwerke A.G.: *See—*
Vadasz, Amnon F., 4,513,778, Cl. 137-533.110.

Vereinigte Flugtechnische Werke: *See—*
Schmidtlein, Hubertus; and Lerche, Horst-Dieter, 4,514,733, Cl. 343-5.0MM.

Verma, Surendra K.; and Kim, George A., to RCA Corporation. Silicon oxide lapping coatings. 4,514,192, Cl. 51-295.000.

VerMehren, H. Richard. Method of affixing envelopes and letterheads to a carrier sheet and assembly formed thereby. 4,514,182, Cl. 493-216.000.

Vescial, Frederick, to Rockwell International Corporation. Ring laser gyroscope readout for partially overlapping beams. 4,514,087, Cl. 356-350.000.

Vescial, Frederick, to Rockwell International Corporation. Single mirror ring laser gyro readout without combining optics. 4,514,832, Cl. 356-350.000.

Vetere, Alessandro: *See—*
Gazzi, Luigi; Cotone, Giancarlo; Soldati, Gianfraco; Ginnasi, Alessandro; Vetere, Alessandro; and Rescalli, Carlo, 4,514,203, Cl. 62-17.000.

Veverka, Edward F., to McGraw-Edison Company. Disconnect switch assembly. 4,514,606, Cl. 200-146.00R.

Victor Company of Japan, Ltd.: *See—*
Tokuyama, Yoshio, 4,514,668, Cl. 318-294.000.

Victor Technologies Inc.: *See—*
Stark, Glenn; and Barton, David M., 4,514,771, Cl. 360-73.000.

Vieland, Leon J., to RCA Corporation. Electron beam injection structure for flat panel display devices. 4,514,663, Cl. 315-366.000.

Vincent De Araujo, Manuel A. Fuse. 4,514,716, Cl. 337-281.000.

Vitatron Medical B.V.: *See—*
van Arragon, Gerrit W.; Mensink, Kornelis A.; and Wittkampf, Frederik H. M., 4,513,743, Cl. 128-419.0PG.

Voest-Alpine Aktiengesellschaft: *See—*
Augustin, Hubert; and Pirker, Robert, 4,514,235, Cl. 148-37.000.

Vogeleer, John P., to Westinghouse Electric Corp. Measuring of tube expansion. 4,513,506, Cl. 33-147.00K.

Voigt, H. William; and Murphy, Francis X., to United States of America, Army. Production of fine crystalline TNT compositions. 4,514,239, Cl. 149-18.000.

Voigt, H. William, to United States of America, Army. Storage stable nitroglycerin. 4,514,341, Cl. 260-467.000.

Voirin, Jean-Philippe: *See—*
Pon, Francois; Voirin, Jean-Philippe; and Lucan, Andre, 4,514,484, Cl. 430-106.600.

Vollman, Leonard L., to Scale Free Systems, Inc. Apparatus for stimulating removal of electrolytic energy from fluids. 4,514,273, Cl. 204-196.000.

Vossenkemper, Earl H. Tire chain mounting device. 4,513,800, Cl. 152-213.00A.

Vrouenraets, Cornelius M. F., to Akzo nv. Packaging film permeable to smoke constituents and packaged smoked foodstuff. 4,514,472, Cl. 428-220.000.

Vuceta, Ivan N.: *See—*
Grabovac, Bosko; and Vuceta, Ivan N., 4,513,645, Cl. 81-57.390.

Vyse, Brian: *See—*
Maxwell, John W.; and Vyse, Brian, 4,514,255, Cl. 162-9.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Schoenberg, Julian H., 4,514,465, Cl. 428-339.000.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Lossl, Gunter; Zauhar, Helmut; and Stock, Horst, 4,513,544, Cl. 51-283.00R.

Wada, Hidemi: *See*—
Iguchi, Katsuhiko; Wada, Hidemi; and Wakita, Ryuichi, 4,514,348, Cl. 264-40.100.

Wada, Kenichi; Oka, Tateki; and Tabuchi, Kenji, to Minolta Camera Kabushiki Kaisha. Method of controlling toner concentration for electrophotographic copying apparatus. 4,514,480, Cl. 430-30.000.

Wade, William L., Jr.: *See*—
Binder, Michael; Petersen, Eric R.; Walker, Charles W., Jr.; Wade, William L., Jr.; and Gilman, Sol, 4,514,478, Cl. 429-196.000.

Wadhwa, Suresh K., to Hughes Tool Company. Cross-linking system for water based well fracturing fluids. 4,514,309, Cl. 252-8.55R.

Wafilin B.V.: *See*—
van Zon, Cornelis; Jonkeren, Gerrit J.; and Eggengoor, Hilbert, 4,514,302, Cl. 210-433.200.

Waggoner, John, to Enthone, Inc. Method of using a shielding means to attenuate electromagnetic radiation in the radio frequency range. 4,514,586, Cl. 174-35.0MS.

Wagner, Paul-Heinz: *See*—
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Wahl Clipper Corporation: *See*—
Thurber, Robert J., 4,513,736, Cl. 128-41.000.

Wahlstrom, Bjorn: *See*—
Ollus, Martin; Uotila, Esko; Wahlstrom, Bjorn; Saukkonen, Esko; Malinen, Pekka; and Maenpaa , Immo, 4,514,816, Cl. 364-478.000.

Wairegi, Tom; Boyle, Joseph P.; and Gilbert, John B., to Exxon Research and Engineering Co. Reactivation of iridium-containing catalysts. 4,514,284, Cl. 208-140.000.

Waite, Thomas R.: *See*—
Holmes, Dale A.; and Waite, Thomas R., 4,514,850, Cl. 372-95.000.

Wakabayashi, Hajimu; Terai, Ryohei; Yamanaka, Hiroshi; and Hara, Shigeo, to Agency of Industrial Science & Technology. Process for vitrifying liquid radioactive waste. 4,514,329, Cl. 252-629.000.

Wakamiya, Katsutoshi: *See*—
Ushiyama, Hisayuki; Ochi, Hisayuki; Miyamae, Tatsuo; and Wakamiya, Katsutoshi, 4,514,485, Cl. 430-106.600.

Wakeman, Thomas G.: *See*—
Hauser, Ambrose A.; Hetico, Rolf R.; and Wakeman, Thomas G., 4,513,975, Cl. 277-22.000.

Wakita, Ryuichi: *See*—
Iguchi, Katsuhiko; Wada, Hidemi; and Wakita, Ryuichi, 4,514,348, Cl. 264-40.100.

Waldes Kohinoor, Inc.: *See*—
Coch, Lester; and Rauch, Kurt, 4,514,093, Cl. 366-138.000.

Waldron, Curtis R. Animal mugger. 4,513,690, Cl. 119-99.000.

Walker, Charles W., Jr.: *See*—
Binder, Michael; Petersen, Eric R.; Walker, Charles W., Jr.; Wade, William L., Jr.; and Gilman, Sol, 4,514,478, Cl. 429-196.000.

Walker, Ian C., to Quantel Limited. Video image creation system which simulates drafting tool. 4,514,818, Cl. 364-521.000.

Wall, George W.; and Jones, Glyn T., to English Clays Lovering Pochin & Company, Ltd. Tube pressure filter. 4,514,298, Cl. 210-232.000.

Wallace, John L., to Maintel Pty. Limited. Excavatory machine for use in coal and other mining opertions. 4,514,012, Cl. 299-57.000.

Wallach, Steven J.: *See*—
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.

Wallach, Walter A., Jr.: *See*—
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Bernstein, David H.; Richmond, Michael S.; Farber, David A.; Pilat, John F.; Belgard, Richard A.; and Bratt, Richard G., 4,514,800, Cl. 364-200.000.

Wallstein, Dieter, to Langbein & Engelbracht GmbH & Co. KG. Glass pipe heat exchanger. 4,513,814, Cl. 165-134.00R.

Waltemate, Dieter: *See*—
Sundermeier, Gunter; and Waltemate, Dieter, 4,514,021, Cl. 312-291.000.

Walter, Lothar; and Reith, Walter, to SKF Kugellagerfabriken GmbH. Rolling bearing for lengthwise movement. 4,514,017, Cl. 308-6.00C.

Walton, James M.: *See*—
Hanson, Paul A.; and Walton, James M., 4,514,834, Cl. 367-141.000.

Walton, John M., to Bridon Limited. Transmission cable with helical support elements of curvilinear profile. 4,514,058, Cl. 350-96.230.

Wandel & Goltermann GmbH & Co. KG: *See*—
Harzer, Peter, 4,514,705, Cl. 331-2.000.

Wang, An; and McConchie, Burton G., to Wang Laboratories, Inc. Scanner document positioning device. 4,514,063, Cl. 353-28.000.

Wang, Cheng-hua, to Centronics Data Computer Corp. Method of making a print pin actuator. 4,513,496, Cl. 29-606.000.

Wang Laboratories, Inc.: *See*—
Wang, An; and McConchie, Burton G., 4,514,063, Cl. 353-28.000.

Wang, Sophia; Roof, Glenn L.; and Porlier, Beth W., to Nalco Chemical Company. Fuel sweetening with organic peroxides. 4,514,286, Cl. 208-196.000.

Ward, Carmen: *See*—
Ward, Mai; and Ward, Carmen, 4,513,525, Cl. 43-55.000.

Ward, Mai; and Ward, Carmen. Fishing bucket. 4,513,525, Cl. 43-55.000.

Ward, Phillip B., Jr.: *See*—
Palmer, John P.; and Ward, Phillip B., Jr., 4,514,057, Cl. 350-96.150.

Ware, Ray L. Inertial valve apparatus. 4,513,763, Cl. 137-38.000.

Warner-Lambert Company: *See*—
Yang, Robert; and Rieger, Martin M., 4,514,422, Cl. 426-3.000.

Warner, Michael V., to Rumble Equipment Limited. Safety mounting device. 4,514,616, Cl. 219-136.000.

Warner & Swasey Company, The: *See*—
Silverman, Martin L., 4,513,979, Cl. 279-4.000.

Washburn, Hudson A., to Intel Corporation. Method for selecting propagation elements for magnetic bubble memory. 4,514,827, Cl. 365-1.000.

Watabe, Takaharu, to Santo Industries Co., Ltd. Wedge hinge having an axially movable pivot. 4,513,474, Cl. 16-243.000.

Watanabe, Hiroyuki; and Tanaka, Yasushi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle body floor construction of motor vehicle. 4,514,008, Cl. 296-204.000.

Watanabe, Masazumi: *See*—
Imada, Isuke; and Watanabe, Masazumi, 4,514,420, Cl. 514-689.000.

Watt, Allan E. Air cooled ice rink construction. 4,513,583, Cl. 62-235.000.

Waxman, Monroe H.: *See*—
Closmann, Philip J.; Waxman, Monroe H.; and Deeds, Charles T., 4,514,283, Cl. 208-86.000.

Waymatic, Inc.: *See*—
Wright, Clem B., 4,513,984, Cl. 280-43.230.

Webb, Richard, to Misty Vapor, Inc. Fuel saving system for a gasoline engine. 4,513,726, Cl. 123-523.000.

Wegner, John W.: *See*—
Coker, Melvin D.; and Wegner, John W., 4,513,788, Cl. 138-89.000.

Wehr Corporation: *See*—
Schneider, Steven L.; and Dravnieks, Konstantins, 4,513,809, Cl. 165-54.000.

Weigle, Dieter: *See*—
Steprath, Werner; and Weigle, Dieter, 4,513,826, Cl. 172-7.000.

Weinberg, Roger A., to Baker Oil Tools, Inc. Casing bore receptacle. 4,513,817, Cl. 166-138.000.

Weinstock, Joseph: *See*—
Chambers, Pamela A.; and Weinstock, Joseph, 4,514,394, Cl. 514-213.000.

Weiss, Joern-Volker: *See*—
Riemer, Heinz; Weiss, Joern-Volker; and Mutzberg, Friedhelm, 4,514,467, Cl. 428-413.000.

Welles, Petrus W. G.: *See*—
Nillesen, Antonius H. H. J.; and Welles, Petrus W. G., 4,514,754, Cl. 358-13.000.

Wells, James E., to Air Products and Chemicals, Inc. Process for preparing triethylenediamine. 4,514,567, Cl. 544-352.000.

Wells, R. Leon. Height adjustment mechanism. 4,513,472, Cl. 15-354.000.

Welton, Charles L.; and Van Scoyk, Pershing R. Flexible spur holders and spurs. 4,513,561, Cl. 54-83.00R.

Wendt, Alan C., to United States Gypsum Company. Pre-mitered doorframe assembly for partition wall construction. 4,513,549, Cl. 52-211.000.

Wendt, Alan C., to United States Gypsum Company. Clip for use with runner and runner assembly including the clip. 4,513,557, Cl. 52-735.000.

Wenger, Georg: *See*—
Gmeinder, Hermann; and Wenger, Georg, 4,514,604, Cl. 200-83.00N.

Wenk, Paul; Breitenstein, Werner; and Baumann, Marcus, to Ciba Geigy Corporation. Benzofuran-2(3H)-ones used as anti-inflammatory agents. 4,514,415, Cl. 514-470.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Kotthaus, Erich, 4,514,118, Cl. 409-26.000.

Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, to Sanofi. Derivatives of 4-methyl 6-phenyl pyridazine active on the central nervous system. 4,514,397, Cl. 514-247.000.

Werner, Hans: *See*—
Neubauer, Wilhelm; and Werner, Hans, 4,514,090, Cl. 366-91.000.

Werner and Pfleiderer: *See*—
Neubauer, Wilhelm; and Werner, Hans, 4,514,090, Cl. 366-91.000.

Wesemeyer, Jurgen: *See*—
Fassel, Reinhard; Meier, Werner; Rauch, Hans; Wesemeyer, Jurgen; and Raddant, Hans-Joachim, 4,514,670, Cl. 318-467.000.

West Electric Company, Ltd.: *See*—
Makino, Hiroshi; Higuchi, Masaru; and Murata, Kazuou, 4,514,084, Cl. 356-4.000.

Westdale, Virgil W.; Hanrahan, James L.; and Anderson, William C., to AM International, Inc. Magnetic toner developing device. 4,514,077, Cl. 355-3.0DD.

Westfalia Separator AG: *See*—
Kohlstette, Werner, 4,514,183, Cl. 494-27.000.

Westinghouse Electric Corp.: *See*—
Brooker, Lenon G., 4,514,462, Cl. 428-285.000.
Stol, Israel, 4,514,614, Cl. 219-125.110.
Vogeleer, John P., 4,513,506, Cl. 33-147.00K.
York, Theodore H., 4,514,697, Cl. 329-104.000.

Westlake, Betsy C., to Kendall Company, The. Therapeutic stocking and method of placement. 4,513,740, Cl. 128-165.000.

Westling, Wayne A. Ocean powered pump. 4,514,644, Cl. 290-53.000.

Westvaco Corporation: *See*—
Du Vernet, Richard B., 4,514,335, Cl. 260-400.000.

Weterings, Cornelis A. M.; and Janssen, Johannes A., to Stamicarbon B.V. Process for recovering a uranium-containing concentrate and purified phosphoric acid from a wet process phosphoric acid containing uranium. 4,514,365, Cl. 423-15.000.

Wevelsiep, Klaus; and Kastner, Anton, to Scantron GmbH & Co. Method and apparatus for identification of objects. 4,514,622, Cl. 235-463.000.
Weyant, Robert R., to Pacesetter Systems, Inc. Bipolar sensing system. 4,513,752, Cl. 128-696.000.
Weyer, Paul P. Fluid powered torque wrench. 4,513,644, Cl. 81-57.390.
Weyerhaeuser Company: *See*—
Grosshuesch, Lee V., 4,513,907, Cl. 229-23.00R.
Wheeler, Edward S., to Interpace Corporation. Glaze to pin connection for a high voltage direct current insulator with embedded metal fitting. 4,514,591, Cl. 174-182.000.
Wheeler, William J., to Eli Lilly and Company. 7β-(2'-(1",3",5"-Triazepin-4"-one)-2'-(oxime ether)-acetamido)-3-substituted cephalosporins. 4,514,564, Cl. 544-25.000.
Whetstone, Albert L., to Summagraphics Corporation. Digital tablet system with calibration means. 4,514,688, Cl. 324-208.000.
Whetstone, Albert L.; Shaklee, Kerry L.; and Modjallal, Khosrow, to Display Interface Corporation. Noise mouse. 4,514,726, Cl. 340-710.000.
Whitaker, Gene C., to Whitlog, Inc. Self-contained lifting apparatus for low-boy trailers. 4,513,987, Cl. 280-423.00B.
White, Arthur C.: *See*—
Kohler, Richard B.; and White, Arthur C., 4,514,509, Cl. 436-518.000.
White, Thomas C. Intraocular lens. 4,513,456, Cl. 3-13.000.
Whitley, George J.; and Rayl, Martin, to RCA Corporation. Component lead processing device. 4,513,493, Cl. 29-566.300.
Whitlog, Inc.: *See*—
Whitaker, Gene C., 4,513,987, Cl. 280-423.00B.
Wicke, Charles A.; and Riley, Wayne C., to Emerson Electric Co. Instant hot water dispenser. 4,513,887, Cl. 222-146.500.
Wicklund, Dale L. Animal trap. 4,513,527, Cl. 43-87.000.
Wickstrom, Sven: *See*—
Lindblom, Thore; Hedin, Jan-Erik; and Wickstrom, Sven, 4,513,799, Cl. 144-379.000.
Widdall, John A., to British Aerospace Public Limited Company. Testing the balance of a rotatable member. 4,513,619, Cl. 73-455.000.
Wiemer, Willem. Vertical radiation tank. 4,513,694, Cl. 122-7.00R.
Wiklund, Thomas: *See*—
Swiatkowski, Piotr; and Wiklund, Thomas, 4,514,290, Cl. 209-166.000.
Wilger, John F.; Nakano, Gregory; and Berman, William A., to United States of America, Navy. Portable surfacing machine for boiler manhole. 4,513,542, Cl. 51-241.00S.
Wilkinson, John S., to Therm-O-Type Corporation. Methods and apparatus for neutralizing a static electrical charge on powder particles. 4,514,779, Cl. 361-213.000.
Will, Elmar. Rechargeable power pack and a pocket lamp for use therewith. 4,514,790, Cl. 362-183.000.
William H. Rorer, Inc.: *See*—
Campbell, Henry F., 4,514,400, Cl. 514-252.000.
Wm. Neundorfer & Co., Inc.: *See*—
Brussee, Richard C.; and Dowd, Robert E., Jr., 4,514,780, Cl. 361-226.000.
Williams, Earl P.; and Wood, Lindley S., to GAF Corporation. Stable dispersion of alkylated polyvinylpyrrolidone and vinyl pyrrolidone. 4,514,271, Cl. 204-159.150.
Williams, Frederick J.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,514,621, Cl. 235-400.000.
Williams, John T.; and August, Melvin C., to Cray Research, Inc. Interconnected multiple circuit module. 4,514,784, Cl. 361-386.000.
Williams, Richard W.: *See*—
Johnson, David E.; and Williams, Richard W., 4,514,692, Cl. 324-329.000.
Wilson, Neill R.; and Wilson, Susan E. Evaporator and method of operation. 4,513,577, Cl. 62-91.000.
Wilson, Norman H. Lock arrangement. 4,513,593, Cl. 70-114.000.
Wilson, Richard A.: *See*—
Buckholz, Lawrence, Jr.; Wilson, Richard A.; and Kleinberg, Roger, 4,514,094, Cl. 366-160.000.
Buckholz, Lawrence, Jr.; Wilson, Richard A.; and Kleinberg, Roger, 4,514,431, Cl. 426-641.000.
Wilson, Susan E.: *See*—
Wilson, Neill R.; and Wilson, Susan E., 4,513,577, Cl. 62-91.000.
Wilson, Thomas D.: *See*—
Schlesinger, Sheldon I.; Cerenzia, Walter S.; and Wilson, Thomas D., 4,514,354, Cl. 264-324.000.
Windibank, Brian P.: *See*—
Passmore, David T.; and Windibank, Brian P., 4,514,230, Cl. 106-243.000.
Windmere Corporation: *See*—
Friedson, Belvin F.; Thaler, Arnold; and Saud, Ivan, 4,513,735, Cl. 128-24.200.
Winter, William J., to USM Corporation. Hydraulic roll protection system. 4,514,161, Cl. 425-154.000.
Winternitz, Paul: *See*—
Luthy, Christoph; and Winternitz, Paul, 4,514,566, Cl. 544-56.000.
Winthrop, John T., to American Optical Corporation. Progressive power ophthalmic lenses. 4,514,061, Cl. 351-169.000.
Wisconsin Gas Company: *See*—
Chen, Keith A., 4,513,776, Cl. 137-498.000.
Wise, Thomas J.; and Garratt, John N., to Goodall Rubber Company. Safety guides for use with a rotary hose and kelly spinner hoses and the combination thereof. 4,514,103, Cl. 138-106.000.
Wissinger, Waldemar: *See*—
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,514,449, Cl. 428-76.000.
Wisskirchen, Klaus B.: *See*—
Fricke, Reinhard L.; Hinze, Klaus; Huth, Manfred K. O.; and Wisskirchen, Klaus B., 4,514,609, Cl. 200-159.00A.
Wissler, Josef H., to Max-Planck-Gesellschaft zur Forderung der Wissenschaften. Chemokinesins and chemotaxins of leukocytes and inflamed tissues. 4,514,387, Cl. 424-85.000.
Witco Chemical Corporation: *See*—
Root, Jon C.; Barnes, John F.; and Coovert, Jack E., 4,514,312, Cl. 252-32.500.
Witte, Fritz, to Womako Maschinenkonstruktionen GmbH. Wire forming machine. 4,513,794, Cl. 140-105.000.
Witte, Kenneth G.; and Johnston, Thomas F., Jr., to Coherent, Inc. Dye laser with rotating wedge alignment servo. 4,514,849, Cl. 372-29.000.
Witte, Klaus J.; Fill, Ernst; and Scrlac, Walter, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Method and apparatus for the production of pre-pulse-free, smooth laser radiation pulses of variable pulse duration. 4,514,848, Cl. 372-25.000.
Wittkampf, Frederik H. M.: *See*—
van Arragon, Gerrit W.; Mensink, Kornelis A.; and Wittkampf, Frederik H. M., 4,513,743, Cl. 128-419.0PG.
Wnuk, Andrew J.: *See*—
Johnson, Bruce A.; and Wnuk, Andrew J., 4,514,345, Cl. 264-22.000.
Wochnowski, Waldemar; Hohm, Reinhard; Liebe, Reinhard; and Muss, Manfred, to Hauni-Werke Korber & Co. KG. Apparatus for expelling moisture from tobacco or the like. 4,513,759, Cl. 131-303.000.
Woelfel, James A.; and Smith, Richard W., to Motor Wheel Corporation. Fiber-reinforced composite wheel construction. 4,514,013, Cl. 301-63.0PW.
Wolf, Franz J.: *See*—
Klaschka, Rudolf; and Wolf, Franz J., 4,514,788, Cl. 361-433.000.
Wolfe, Saul; and Shaw, Chia-Cheng, to Queen's University at Kingston. Intermediates for process for 1-oxacephem derivatives. 4,514,333, Cl. 260-239.00A.
Wolff, Siegfried: *See*—
Kerner, Dieter; Kleinschmit, Peter; Parkhouse, Alan; and Wolff, Siegfried, 4,514,231, Cl. 106-309.000.
Wolters, Martin; and Meuer, Gerd R., to Maschinenfabrik Ernst Thielenhaus GmbH. Method of and apparatus for the superfinishing of a thin-wall metal workpiece. 4,513,538, Cl. 51-131.300.
Womako Maschinenkonstruktionen GmbH: *See*—
Witte, Fritz, 4,513,794, Cl. 140-105.000.
Woo, Yen-Kong. Fragrance impregnated fabric. 4,514,461, Cl. 428-240.000.
Wood, Charles D.: *See*—
Dibrell, Edwin W.; and Wood, Charles D., 4,513,576, Cl. 62-87.000.
Wood, Charles F. Gear box assembly. 4,514,145, Cl. 416-170.00R.
Wood, Kenneth E. Animal pens. 4,513,691, Cl. 119-99.000.
Wood, Lindley S.: *See*—
Williams, Earl P.; and Wood, Lindley S., 4,514,271, Cl. 204-159.150.
Woodard, Kenneth E., Jr.; and Dotson, Ronald L., to Olin Corporation. Method to reduce electrical contact resistance between contact surfaces in an electrode. 4,513,904, Cl. 228-116.000.
Worstell, Bernard W.: *See*—
Sarver, Glen E.; and Worstell, Bernard W., 4,513,768, Cl. 137-142.000.
Woyke, John F. Method and apparatus for absorption refrigeration. 4,513,584, Cl. 62-235.100.
Wray, Thomas E.: *See*—
Engel, Peter A.; Strope, Douglas H.; and Wray, Thomas E., 4,514,752, Cl. 357-72.000.
Wright, Clem B., to Waymatic, Inc. Wheel gear for trailers. 4,513,984, Cl. 280-43.230.
Wright, Dolph D., to General Motors Corporation. Pressure compensated flow control valve assembly for fluids containing finely divided solids. 4,513,777, Cl. 137-501.000.
Wrobel, Guenter: *See*—
Papst, Georg; Wrobel, Guenter; and Koletzki, Ulrich, 4,513,812, Cl. 165-80.00B.
Wyndham, Ronald, to Toth Aluminum Corporation. Purification of aluminum chloride. 4,514,373, Cl. 423-495.000.
Wynnyckyj, John R.; Rhodes, Edward; and Chambers, Allan K., to University of Waterloo. Furnace wall ash deposit fluent phase change monitoring system. 4,514,096, Cl. 374-27.000.
Xerox Corporation: *See*—
Federico, Anthony M.; Legg, Ernest L.; and Nguyen, Tuan A., 4,514,846, Cl. 371-16.000.
Johnson, Richard V.; and Turner, William D., 4,514,739, Cl. 346-108.000.
Loutfy, Rafik O.; and Hsiao, Cheng-Kuo, 4,514,482, Cl. 430-78.000.
Smith, Henry E., 4,514,101, Cl. 400-59.000.
Yaegashi, Takashi: *See*—
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Yajima, Toshio, to NHK Spring Co., Ltd. Motion snubbing device. 4,513,846, Cl. 188-380.000.
Yale Materials Handling Corporation: *See*—
Nieminski, Robert A.; and Hinde, Walter R., 4,513,839, Cl. 180-253.000.

Yamada, Seiji: *See*—
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Yamagishi, Takeshi, to Yasui Sangyo Co., Ltd. Garage jack for lifting an automobile. 4,513,950, Cl. 254-8.00B.
Yamaguchi, Hirotsugu: *See*—
Fukino, Masato; Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; and Aoyama, Yutaka, 4,513,835, Cl. 180-142.000.
Yamaguchi, Masaharu, to Iwao Jiki Kogyo Kabushiki Kaisha. Tile holding device for presetting tiles. 4,513,941, Cl. 249-91.000.
Yamaguchi, Nobuyuki, to Daiwa Seiko Co., Ltd. Drag brake device for spinning reel. 4,513,925, Cl. 242-84.50A.
Yamaguchi, Shinji: *See*—
Nakagawa, Junyo; Yamaguchi, Shinji; Hirakawa, Kiyoshi; Tokunaga, Isao; and Ito, Masaaki, 4,514,459, Cl. 428-229.000.
Yamaguchi, Tamikazu, to Minolta Camera Kabushiki Kaisha. High speed objective lens system with an aspheric surface. 4,514,052, Cl. 350-466.000.
Yamaguchi, Teruhito: *See*—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,514,573, Cl. 564-387.000.
Yamaguchi, Toshiyuki: *See*—
Takenaka, Akihiko; Arakawa, Miyao; Sato, Masahiro; and Yamaguchi, Toshiyuki, 4,513,609, Cl. 73-116.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Hayashida, Takanori, 4,513,700, Cl. 123-179.00L.
Minami, Shunji; and Kimura, Hiroshi, 4,513,725, Cl. 123-511.000.
Yamahira, Yoshiya; Shima, Katsuhiko; Matsusaka, Chikako; and Noguchi, Tetsuo, to Sumitomo Chemical Company, Limited. Cream Preparation. 4,514,386, Cl. 424-81.000.
Yamakawa, Goichi: *See*—
Kasuya, Takahira; Morita, Hideaki; Takagiwa, Hiroyuki; and Yamakawa, Goichi, 4,514,487, Cl. 430-137.000.
Yamamoto, Jun: *See*—
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Yamana, Noriaki: *See*—
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Yamashita, Nobuyuki: *See*—
Hayashi, Tetsuaki; Kabu, Masahiro; and Yamashita, Nobuyuki, 4,513,834, Cl. 180-70.100.
Yamatsu, Kiyomi: *See*—
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Asami, Tadao; Suehiro, Tetsuro; Ichijo, Hisao; Yamauchi, Aizo; Ogawa, Shigeo; Suzuki, Mitsuo; and Uzumaki, Mitsutaka, 4,514,367, Cl. 423-21.500.
Yanagawa, Hitoshi: *See*—
Tanaka, Kano; Ando, Yoshio; and Yanagawa, Hitoshi, 4,514,641, Cl. 250-570.000.
Yanagihashi, Kikuji: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,514,156, Cl. 418-173.000.
Yanagishima, Takayuki; and Kasai, Junichi, to Nissan Motor Company, Limited. Speaker for automotive vehicle audio system having a vehicle panel serving as sound-amplifying medium. 4,514,599, Cl. 179-181.00W.
Yanai, Tokiyoshi: *See*—
Fukino, Masato; Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; and Aoyama, Yutaka, 4,513,835, Cl. 180-142.000.
Yang, Mary M.: *See*—
Stephens, James B.; Yang, Mary M.; and Laue, Eric G., 4,514,278, Cl. 204-430.000.
Yang, Robert; and Rieger, Martin M., to Warner-Lambert Company. Non-staling gum composition and method of preparation. 4,514,422, Cl. 426-3.000.
Yang, Yung-hsiung: *See*—
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,514,401, Cl. 514-253.000.
Yasui, Kazuomi: *See*—
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Yasui Sangyo Co., Ltd.: *See*—
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Yatsuda, Yuji: *See*—
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Yokomori, Shinji; and Nakajima, Yoshihisa, to Fuji Electric Company, Ltd. Coin sorter with time-sharing circuit. 4,513,762, Cl. 133-3.00R.
Yonker, John H., to Otis Engineering Corporation. Valve. 4,513,764, Cl. 137-68.00R.
York, Theodore H., to Westinghouse Electric Corp. Coherent phase shift keyed demodulator with improved sampling apparatus and method. 4,514,697, Cl. 329-104.000.
Yoshida Kogyo K. K.: *See*—
Fukuroi, Takeo, 4,513,482, Cl. 24-384.000.
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Yoshida, Toshiro: *See*—
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Yoshida, Yasuhisa; and Ohi, Toshio, to Nippon GT Corporation. Manual reset type bimetal thermostat. 4,513,570, Cl. 60-529.000.
Yoshida, Yuji: *See*—
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Yoshii, Toshiya: *See*—
Tanaka, Kazuhiro; Kawakami, Ken-ichi; and Yoshii, Toshiya, 4,514,452, Cl. 428-141.000.
Yoshii, Yuji: *See*—
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Yoshikawa, Yukio: *See*—
Kurosu, Tomio; and Yoshikawa, Yukio, 4,514,064, Cl. 354-234.100.
Yoshinaga, Toru: *See*—
Igashira, Toshihiko; and Yoshinaga, Toru, 4,514,657, Cl. 313-130.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Ichizawa, Yoshiyuki; Nomoto, Tsugio; and Oshida, Mamoru, 4,514,166, Cl. 425-436.00R.
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Yoshioka, Hiroshi: *See*—
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Yoshitomi Pharmaceutical Industries Ltd.: *See*—
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Yoshizawa, Hiroshi: *See*—
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Yoshizumi, Hajime; Matsumoto, Nobuya; Fukuda, Osamu; and Fukushi, Osamu, to Suntory Limited. Process for producing alcohol by fermentation without cooking. 4,514,496, Cl. 435-162.000.
Young, Harvey R., to United States of America, Army. Power management process. 4,514,142, Cl. 416-1.000.
Young, William C., to RCA Corporation. Device for indicating the polar coordinate position of a given point anywhere within a circular area. 4,513,505, Cl. 33-1.0MP.
Young, William R.: *See*—
Cohen, Paul; and Young, William R., 4,514,802, Cl. 364-200.000.
Yum, Daniel, to Burroughs Corporation. Low power small area PLA. 4,514,650, Cl. 307-466.000.
Zahnraderfabrik Renk AG: *See*—
John, Erich; and Pollak-Banda, Erich, 4,514,099, Cl. 384-100.000.
Zahnraderfabrik Renk A.G.: *See*—
Hirt, Manfred, 4,513,637, Cl. 74-801.000.
Zaltsman, Efim, to Monarch Wine Co., Inc. Bottle with a one-piece corking means. 4,513,870, Cl. 215-31.000.
Zanobini, Alessandro, to Nuovo Pignone S.p.A. Air-cooled steam condenser. 4,513,813, Cl. 165-111.000.
Zaruba, John V.; Hanson, Steven P.; Luecke, Beth E.; and Kuna, Wayne A., to Marvin Glass & Associates. Children's stuffed-art craft set. 4,514,175, Cl. 434-82.000.
Zauhar, Helmut: *See*—
Lossl, Gunter; Zauhar, Helmut; and Stock, Horst, 4,513,544, Cl. 51-283.00R.
Zenith Electronics Corporation: *See*—
Borg, Arthur N.; and Mark, William J., 4,514,764, Cl. 358-181.000.
Merrell, Richard G.; and Auld, Fredreck H., 4,514,761, Cl. 358-122.000.
Zimmer, Erich: *See*—
Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, 4,514,296, Cl. 210-96.100.
Zimmer, Robert E.: *See*—
Doyle, Ralph R.; and Zimmer, Robert E., 4,513,894, Cl. 222-644.000.
Zimmerman, William T., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,514,213, Cl. 71-93.000.
Zimmermann, Volker: *See*—
Sakmann, Walter H.; and Zimmermann, Volker, 4,514,667, Cl. 318-254.000.
Zirkle, Charles L.: *See*—
Bondinell, William E.; Lafferty, John J.; and Zirkle, Charles L., 4,514,414, Cl. 514-422.000.
Zogg, Urs, to U.S. Philips Corporation. Logarithmic electronic gain control circuit. 4,514,702, Cl. 330-254.000.
Zola, John, to North American Philips Corporation. Method for fabricating composite transducers. 4,514,247, Cl. 156-250.000.
Zoleski, Benjamin H.: *See*—
Lu-Dai Sung, Rodney; Sweeney, William M.; and Zoleski, Benjamin H., 4,514,311, Cl. 252-32.500.
ZVL Vyzkumny ustav pro valiva loziska Brno koncernova ucelova organizace: *See*—
Rajsigl, Zdenek; Mladek, Milos; Blasko, Michal; and Smatana, Josef, 4,513,566, Cl. 57-406.000.
128980 Canada Inc.: *See*—
Garside, David, 4,513,582, Cl. 62-222.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF APRIL, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Beasley, John K.; and Urban, Edward J., to Du Pont de Nemours, E. I., and Company. Tree-resistant ethylene polymer compositions. Re. 31,874, Cl. 524-298.000.

Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr., Lupkas, Raymond R.; and McFiggans, Robert B., to Pitney Bowes Inc. Computer responsive postage meter. Re. 31,875, Cl. 364-900.000.

Du Pont de Nemours, E. I., and Company: *See*—
Beasley, John K.; and Urban, Edward J., Re. 31,874, Cl. 524-298.000.

Eckert, Alton B., Jr.: *See*—
Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr.; Lupkas, Raymond R.; and McFiggans, Robert B., Re. 31,875, Cl. 364-900.000.

Hinman, Bruce E.: *See*—
Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr.; Lupkas, Raymond R.; and McFiggans, Robert B., Re. 31,875, Cl. 364-900.000.

Howes, Randolph M. Venous catheter device. Re. 31,873, Cl. 128-674.000.

Jones, Howell A., Jr.: *See*—
Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr.; Lupkas, Raymond R.; and McFiggans, Robert B., Re. 31,875, Cl. 364-900.000.

Lupkas, Raymond R.: *See*—
Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr.; Lupkas, Raymond R.; and McFiggans, Robert B., Re. 31,875, Cl. 364-900.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, Re. 31,876, Cl. 315-366.000.

McFiggans, Robert B.: *See*—
Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr.; Lupkas, Raymond R.; and McFiggans, Robert B., Re. 31,875, Cl. 364-900.000.

Nonomura, Kinzo: *See*—
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, Re. 31,876, Cl. 315-366.000.

Pitney Bowes Inc.: *See*—
Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr.; Lupkas, Raymond R.; and McFiggans, Robert B., Re. 31,875, Cl. 364-900.000.

Takesako, Yoshinobu: *See*—
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, Re. 31,876, Cl. 315-366.000.

Urban, Edward J.: *See*—
Beasley, John K.; and Urban, Edward J., Re. 31,874, Cl. 524-298.000.

Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Picture display device. Re. 31,876, Cl. 315-366.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Creyf, Hubert S., to PRB N.V. Method of preparing polyurea foam materials. B1 4,334,944, 4-30-85, Cl. 156-308.200.

Das Gupta, Sankar; Jacobs, James K.; and Mohanta, Samaresh, to HSA Reactors Limited. Planar carbon fiber electrode structure. B1 4,326,938, 4-30-85, Cl. 204-228.000.

HSA Reactors Limited: *See*—
Das Gupta, Sankar; Jacobs, James K.; and Mohanta, Samaresh, B1 4,326,938, Cl. 204-228.000.

Jacobs, James K.: *See*—
Das Gupta, Sankar; Jacobs, James K.; and Mohanta, Samaresh, B1 4,326,938, Cl. 204-228.000.

McNeight, David L.; and Morris, William J., to Rieter-Scragg Ltd. Yarn processing. B1 4,033,105, 4-30-85, Cl. 57-339.000.

Mohanta, Samaresh: *See*—
Das Gupta, Sankar; Jacobs, James K.; and Mohanta, Samaresh, B1 4,326,938, Cl. 204-228.000.

Morris, William J.: *See*—
McNeight, David L.; and Morris, William J., B1 4,033,105, Cl. 57-339.000.

PRB N.V.: *See*—
Creyf, Hubert S., B1 4,334,944, Cl. 156-308.200.

Rieter-Scragg Ltd.: *See*—
McNeight, David L.; and Morris, William J., B1 4,033,105, Cl. 57-339.000.

LIST OF DESIGN PATENTEES

American Commercial Incorporated: *See*—
Seibel, Ben, 278,590, Cl. D7-13.000.
Seibel, Ben, 278,591, Cl. D7-13.000.
Seibel, Ben, 278,592, Cl. D7-13.000.

American Cyanamid Company: *See*—
Morgan, John H.; and Grip, John A., 278,603, Cl. D9-453.000.

Anderson, Jim. Double tipped drumstick. 278,634, 4-30-85, Cl. D17-22.000.

Anderson, Lyle R., to Minnesota Mining and Manufacturing Company. Telephone wire aerial enclosure. 278,623, 4-30-85, Cl. D13-24.000.

AT&T Technologies, Inc.: *See*—
Ender, Alfred R.; Iacullo, Robert F.; Kriete, Richard J.; Tilley, Alvin R.; and Weinglass, Leon, 278,630, Cl. D14-115.000.

Baiman, Sybil: *See*—
Sussman, Barbara S.; and Baiman, Sybil, 278,611, Cl. D11-67.000.

Balbinot, Renzo: *See*—
Sartor, Mariano; and Balbinot, Renzo, 278,570, Cl. D2-276.000.

Bassani, Antoine. Key-holder. 278,575, 4-30-85, Cl. D3-61.000.

Bridgestone Tire Co., Ltd.: *See*—
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,617, Cl. D12-147.000.
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,618, Cl. D12-147.000.

Briggery Myles, Jacquelyn A. Swimwear. 278,568, 4-30-85, Cl. D2-40.000.

Briggery Myles, Jacquelyn A. Swimwear. 278,569, 4-30-85, Cl. D2-40.000.

Bromley, R. Scott, to Cartier Inc. Table. 278,584, 4-30-85, Cl. D6-484.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,635, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,636, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,637, Cl. D18-1.000.

Bruel & Kjaer A/S: *See*—
Mathiasen, Hilmer, 278,625, Cl. D14-12.000.

Calnetics Corporation: *See*—
Hornak, Michael A., 278,651, Cl. D23-40.000.

Cantonis, Carl G. Note pad holder. 278,639, 4-30-85, Cl. D19-28.000.

Cartier Inc.: *See*—
Bromley, R. Scott, 278,584, Cl. D6-484.000.

Ceraulo, Salvatore M. Packaging container. 278,596, 4-30-85, Cl. D9-341.000.

Chachowski, Rosemary K.: *See*—
Savitz, Steven R.; Hawk, Johnna B.; Graham, Henry A., Jr.; and Chachowski, Rosemary K., 278,653, Cl. D24-22.000.

Collins, Robert T. Reversible seat for a bathtub or the like. 278,580, 4-30-85, Cl. D6-349.000.

Collison, Robert M.; and Myers, John V. Bicycle stand. 278,616, 4-30-85, Cl. D12-115.000.

Colquitt, Simone, to Syracuse China Corporation. Cup or similar article. 278,589, 4-30-85, Cl. D7-9.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 278,644, Cl. D21-142.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 278,657, Cl. D24-64.000.

Cosden Technology, Inc.: *See*—
Fortuna, Vincent E., 278,600, Cl. D9-399.000.

DeBarbrie, Steven J. Drum set. 278,633, 4-30-85, Cl. D17-22.000.

Decra-Stone, Inc.: *See*—
Knutson, Lawrence M., 278,588, Cl. D7-29.000.

Didisheim, Carol, to Omega Louis Brandt & Frere S.A. Watch case. 278,605, 4-30-85, Cl. D10-30.000.

Drackett Company, The: *See*—
Lane, James, 278,599, Cl. D9-377.000.

Eber, Gabriel. Masseur sandal. 278,571, 4-30-85, Cl. D2-293.000.

Einsel, Kenneth D. Planter. 278,613, 4-30-85, Cl. D11-152.000.

Ender, Alfred R.; Iacullo; Robert F.; Kriete, Richard J.; Tilley, Alvin R.; and Weinglass, Leon, to AT&T Technologies, Inc. Console faceplate for teleconferencing bridge. 278,630, 4-30-85, Cl. D14-115.000.

Erlewine, Mark. Guitar. 278,632, 4-30-85, Cl. D17-14.000.

Everett, Richard C., to Kool-Stop International, Inc. Bicycle brake shoe. 278,620, 4-30-85, Cl. D12-180.000.

Flakt Aktiebolag: *See*—
Widerby, Lennart, 278,595, Cl. D8-389.000.

Formelprodukter: *See*—
Nordgren, Peter; and Sjoholm, Hans, 278,649, Cl. D21-230.000.

Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 278,600, 4-30-85, Cl. D9-399.000.

Fratelli Saporiti Industria Arredamenti di Saporiti Sergio E Giorgio S.N.C.: *See*—
Milles, Victor A., 278,579, Cl. D6-334.000.

Fujii, Takashi: *See*—
Kashima, Taisuke; Gushiken, Shigeki; Kuroiwa, Yukio; Kiyota, Tohru; and Fujii, Takashi, 278,627, Cl. D14-77.000.

Fujitsu Limited: *See*—
Takagi, Hisamitsu; Hashiguchi, Hiroichi; and Takehara, Tomoyuki, 278,626, Cl. D14-53.000.

Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, to Kabushiki Kaisha Suwa Seikosha. Portable television receiver. 278,628, 4-30-85, Cl. D14-77.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,635, 4-30-85, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,636, 4-30-85, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,637, 4-30-85, Cl. D18-1.000.

Gargioni, Emilio. Tote bag. 278,572, 4-30-85, Cl. D3-44.000.

Goettker, Bernhardt P.: *See*—
Law, Denny B.; and Goettker, Bernhardt P., 278,615, Cl. D12-101.000.

Graham, Henry A., Jr.: *See*—
Savitz, Steven R.; Hawk, Johnna B.; Graham, Henry A., Jr.; and Chachowski, Rosemary K., 278,653, Cl. D24-22.000.

Gramwell, Graham R., to Steward Smith Investments Limited. Finger ring. 278,610, 4-30-85, Cl. D11-30.000.

Green, David T.; Rawson, Paul O.; and Yagami, Richard H., to United States Surgical Corporation. Surgical skin stapler. 278,656, 4-30-85, Cl. D24-26.000.

Grip, John A.: *See*—
Morgan, John H.; and Grip, John A., 278,603, Cl. D9-453.000.

Gushiken, Shigeki: *See*—
Kashima, Taisuke; Gushiken, Shigeki; Kuroiwa, Yukio; Kiyota, Tohru; and Fujii, Takashi, 278,627, Cl. D14-77.000.

Gustafson, Linda G. Garment sleeve. 278,566, 4-30-85, Cl. D2-25.000.

Gwathmey, Charles; and Siegel, Robert, to Knoll International, Inc. Table. 278,577, 4-30-85, Cl. D6-484.000.

Harper, Alton A.: *See*—
Kramer, Joel A.; and Harper, Alton A., 278,582, Cl. D6-373.000.

Hashiguchi, Hiroichi: *See*—
Takagi, Hisamitsu; Hashiguchi, Hiroichi; and Takehara, Tomoyuki, 278,626, Cl. D14-53.000.

Hawk, Johnna B.: *See*—
Savitz, Steven R.; Hawk, Johnna B.; Graham, Henry A., Jr.; and Chachowski, Rosemary K., 278,653, Cl. D24-22.000.

Henkels, Walter. Combined holder for a writing instrument and covered receptacle. 278,641, 4-30-85, Cl. D19-77.000.

Hitachi, Ltd.: *See*—
Kashima, Taisuke; Gushiken, Shigeki; Kuroiwa, Yukio; Kiyota, Tohru; and Fujii, Takashi, 278,627, Cl. D14-77.000.

Hjelm, Sven Tore K. Emblem for jewelry or the like. 278,612, 4-30-85, Cl. D11-107.000.

Hopkins Engineering Company: *See*—
Stone, Davis P., 278,624, Cl. D13-24.000.

Horn, Douglas M.: *See*—
Slovak, Jack P.; Slovak, Robert A.; and Horn, Douglas M., 278,650, Cl. D23-3.000.

Hornak, Michael A., to Calnetics Corporation. Valve adaptor for LPG fuel tank. 278,651, 4-30-85, Cl. D23-40.000.

Hoshina, Noriyuki, to Toyo Radiator Co., Ltd. Oil cooler. 278,619, 4-30-85, Cl. D12-166.000.

Howard Enterprises, Inc.: *See*—
Moss, Howard E., 278,614, Cl. D11-152.000.

Hunnell, Gary B. Auxiliary engine mount for a boat transom. 278,622, 4-30-85, Cl. D12-317.000.

Iacullo, Robert F.: *See*—
Ender, Alfred R.; Iacullo, Robert F.; Kriete, Richard J.; Tilley, Alvin R.; and Weinglass, Leon, 278,630, Cl. D14-115.000.

Interlego A.G.: *See*—
Nielsen, Jacob, 278,645, Cl. D21-161.000.

Ishii, Kenshun: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 278,657, Cl. D24-64.000.

Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 278,644, Cl. D21-142.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 278,657, Cl. D24-64.000.

Itoh, Masafumi: *See*—
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,635, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,636, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,637, Cl. D18-1.000.

IVAC Corporation: *See*—
Scappaticci, Brian A., 278,655, Cl. D24-52.000.

Jensen, Robert L. Book holder. 278,578, 4-30-85, Cl. D6-419.000.

Jewish Federation of Allentown: *See*—
Sussman, Barbara S.; and Baiman, Sybil, 278,611, Cl. D11-67.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, 278,628, Cl. D14-77.000.

Kashima, Taisuke; Gushiken, Shigeki; Kuroiwa, Yukio; Kiyota, Tohru; and Fujii, Takashi, to Hitachi, Ltd. Television monitor. 278,627, 4-30-85, Cl. D14-77.000.

Kawabata, Misao: *See*—
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,617, Cl. D12-147.000.
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,618, Cl. D12-147.000.

Kilpatrick, George N. Spare key holder or similar article. 278,574, 4-30-85, Cl. D3-61.000.

Kiyota, Tohru: *See*—
Kashima, Taisuke; Gushiken, Shigeki; Kuroiwa, Yukio; Kiyota, Tohru; and Fujii, Takashi, 278,627, Cl. D14-77.000.

Knoll International, Inc.: *See*—
Gwathmey, Charles; and Siegel, Robert, 278,577, Cl. D6-484.000.

Knutson, Lawrence M., to Decra-Stone, Inc. Bowl. 278,588, 4-30-85, Cl. D7-29.000.

Koguma, Seiji, to Okamura Corporation. Desk. 278,583, 4-30-85, Cl. D6-426.000.

Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, to Bridgestone Tire Co., Ltd. Vehicle tire. 278,617, 4-30-85, Cl. D12-147.000.

Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, to Bridgestone Tire Co., Ltd. Vehicle tire. 278,618, 4-30-85, Cl. D12-147.000.

Kool-Stop International, Inc.: *See*—
Everett, Richard C., 278,620, Cl. D12-180.000.

Koper, Barry R. Facial appliance for makeup. 278,647, 4-30-85, Cl. D21-190.000.

Koper, Barry R. Facial appliance for makeup. 278,648, 4-30-85, Cl. D21-190.000.

Kraemer, Herbert. Pneumatic conveyor terminal. 278,638, 4-30-85, Cl. D18-35.000.

Kramer, Joel A.; and Harper, Alton A., to Tropitone Furniture Co., Inc. Lounge chair. 278,582, 4-30-85, Cl. D6-373.000.

Kriete, Richard J.: *See*—
Ender, Alfred R.; Iacullo, Robert F.; Kriete, Richard J.; Tilley, Alvin R.; and Weinglass, Leon, 278,630, Cl. D14-115.000.

Kuroiwa, Yukio: *See*—
Kashima, Taisuke; Gushiken, Shigeki; Kuroiwa, Yukio; Kiyota, Tohru; and Fujii, Takashi, 278,627, Cl. D14-77.000.

Lane, James, to Drackett Company, The. Bottle. 278,599, 4-30-85, Cl. D9-377.000.

Law, Denny B.; and Goettker, Bernhardt P., to Unique Functional Products. Trailer for a three-wheel cycle or the like. 278,615, 4-30-85, Cl. D12-101.000.

Leaf, Charles R.: *See*—
Rivkin, Bernard W.; and Leaf, Charles R., 278,576, Cl. D6-317.000.

Lindsey, Donald A. Heat saving device. 278,652, 4-30-85, Cl. D23-136.000.

Lodrick, Lawrence E., Sr. Light fixture. 278,659, 4-30-85, Cl. D26-85.000.

Lye, Howard D. Ratchet wrench socket unit nut ejector spring retainer. 278,594, 4-30-85, Cl. D8-25.000.

MacGregor, Francis W., to Stanley Works, The. Ratchet handle for hand tool. 278,593, 4-30-85, Cl. D8-83.000.

Mair, Franz: *See*—
Tichy, Heinz; and Mair, Franz, 278,607, Cl. D10-111.000.

Major, Clare M.: *See*—
Major, Frederick A., deceased, 278,631, Cl. D15-7.000.

Major, Clare M., personal representative: *See*—
Major, Frederick A., deceased, 278,631, Cl. D15-7.000.

Major, Frederick A., deceased (by Major, Clare M., personal representative), to Major, Clare M. Evaporative cooler pump. 278,631, 4-30-85, Cl. D15-7.000.

Mannato, Piero, to Plastimoda Italiana S.r.l. Panelled baggage unit. 278,573, 4-30-85, Cl. D3-48.000.

Manville Service Corporation: *See*—
Wilson, Jerry F., 278,601, Cl. D9-433.000.

Martinez, Ernest. Football clapper. 278,642, 4-30-85, Cl. D21-64.000.

Mathiasen, Hilmer, to Bruel & Kjaer A/S. Microphone. 278,625, 4-30-85, Cl. D14-12.000.

Matsumoto, Susumu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 278,644, Cl. D21-142.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Mitani, Kiyoshi; Yonekura, Hiroshi; Suzuki, Kiyoshi; and Sugihara, Osamu, 278,629, Cl. D14-80.000.

McAlinden, Daniel, to Sunbeam Plastics Corporation. Bottle. 278,597, 4-30-85, Cl. D9-349.000.

McCoy, Kenneth H. Stuffed novelty mouse figure or the like. 278,646, 4-30-85, Cl. D21-188.000.

Melchior, Merle C. Chair. 278,581, 4-30-85, Cl. D6-373.000.

Milles, Victor A., to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio E Giorgio S.N.C. Seat. 278,579, 4-30-85, Cl. D6-334.000.

Minnesota Mining and Manufacturing Company: *See*—
Anderson, Lyle R., 278,623, Cl. D13-24.000.

Mitani, Kiyoshi; Yonekura, Hiroshi; Suzuki, Kiyoshi; and Sugihara, Osamu, to Matsushita Electric Industrial Co., Ltd. Television receiver. 278,629, 4-30-85, Cl. D14-80.000.

Morgan, John H.; and Grip, John A., to American Cyanamid Company. Container cap. 278,603, 4-30-85, Cl. D9-453.000.

Morishita, Masayuki: *See*—
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,635, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,636, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,637, Cl. D18-1.000.

Moriya, Masashiro: *See*—
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,617, Cl. D12-147.000.
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,618, Cl. D12-147.000.

Moss, Howard E., to Howard Enterprises, Inc. Container for multiple plant growth. 278,614, 4-30-85, Cl. D11-152.000.

Multer, Gary. Pad of paper. 278,640, 4-30-85, Cl. D19-28.000.

Myers, John V.: *See*—
Collison, Robert M.; and Myers, John V., 278,616, Cl. D12-115.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, to Combi Co., Ltd. Driving toy. 278,644, 4-30-85, Cl. D21-142.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, to Combi Co., Ltd. Medical corset. 278,657, 4-30-85, Cl. D24-64.000.

National Child Safety Council: *See*—
Satterelli, Joanne, 278,609, Cl. D11-2.000.

Nielsen, Jacob, to Interlego A.G. Toy poodle figure. 278,645, 4-30-85, Cl. D21-161.000.

Nordgren, Peter; and Sjoholm, Hans, to Formelprodukter. Ski pole grip. 278,649, 4-30-85, Cl. D21-230.000.

Nordica S.p.A: *See*—
Sartor, Mariano; and Balbinot, Renzo, 278,570, Cl. D2-276.000.

Ogawa, Iwakichi, to Takara Co., Ltd. Reconfigurable toy. 278,643, 4-30-85, Cl. D21-128.000.

Okamura Corporation: *See*—
Koguma, Seiji, 278,583, Cl. D6-426.000.

Oldham, Rodnie D. Rotatable storage rack for spice jars and the like. 278,585, 4-30-85, Cl. D6-513.000.

Omega Louis Brandt & Frere S.A.: *See*—
Didisheim, Carol, 278,605, Cl. D10-30.000.

Ortho Diagnostic Systems Inc.: *See*—
Savitz, Steven R.; Hawk, Johnna B.; Graham, Henry A., Jr.; and Chachowski, Rosemary K., 278,653, Cl. D24-22.000.

P.P.M.D.: *See*—
Rivkin, Bernard W.; and Leaf, Charles R., 278,576, Cl. D6-317.000.

Plastimoda Italiana S.r.l.: *See*—
Mannato, Piero, 278,573, Cl. D3-48.000.

Rasmussen, Ronald. Martial arts leg and foot protector. 278,567, 4-30-85, Cl. D2-27.000.

Rawson, Paul O.: *See*—
Green, David T.; Rawson, Paul O.; and Yagami, Richard H., 278,656, Cl. D24-26.000.

Rivkin, Bernard W.; and Leaf, Charles R., to P.P.M.D. Hanger. 278,576, 4-30-85, Cl. D6-317.000.

Rosenstein, Florence. Plastic threaded cover for a container. 278,602, 4-30-85, Cl. D9-449.000.

Sartor, Mariano; and Balbinot, Renzo, to Nordica S.p.A. Ski boot. 278,570, 4-30-85, Cl. D2-276.000.

Satterelli, Joanne, to National Child Safety Council. Pendant medical microfilm reader. 278,609, 4-30-85, Cl. D11-2.000.

Savitz, Steven R.; Hawk, Johnna B.; Graham, Henry A., Jr.; and Chachowski, Rosemary K., to Ortho Diagnostic Systems Inc. Centrifuge tube for separating and washing red blood cells. 278,653, 4-30-85, Cl. D24-22.000.

Scanlan International, Inc.: *See*—
Scanlan, Timothy M., 278,654, Cl. D24-27.000.

Scanlan, Timothy M., to Scanlan International, Inc. Anastomosis frame. 278,654, 4-30-85, Cl. D24-27.000.

Scappaticci, Brian A., to IVAC Corporation. Combined bottom cap and drop former with a sensor-mounting flange for an I.V. burette chamber. 278,655, 4-30-85, Cl. D24-52.000.

Scher, Wesley. Automobile fender skirt ornament. 278,621, 4-30-85, Cl. D12-190.000.

Seibel, Ben, to American Commercial Incorporated. Champagne glass. 278,590, 4-30-85, Cl. D7-13.000.

Seibel, Ben, to American Commercial Incorporated. Champagne glass. 278,591, 4-30-85, Cl. D7-13.000.

Seibel, Ben, to American Commercial Incorporated. Wine glass. 278,592, 4-30-85, Cl. D7-13.000.

Semperit Aktiengesellschaft: *See*—
Tichy, Heinz; and Mair, Franz, 278,607, Cl. D10-111.000.

Siegel, Robert: *See*—
Gwathmey, Charles; and Siegel, Robert, 278,577, Cl. D6-484.000.

Sjoholm, Hans: *See*—
Nordgren, Peter; and Sjoholm, Hans, 278,649, Cl. D21-230.000.

Slovak, Jack P.; Slovak, Robert A.; and Horn, Douglas M. Water purifier. 278,650, 4-30-85, Cl. D23-3.000.

Slovak, Robert A.: *See*—
Slovak, Jack P.; Slovak, Robert A.; and Horn, Douglas M., 278,650, Cl. D23-3.000.

Stanley Works, The: *See*—
MacGregor, Francis W., 278,593, Cl. D8-83.000.

Steward Smith Investments Limited: *See*—
Gramwell, Graham R., 278,610, Cl. D11-30.000.

Stone, Davis P., to Hopkins Engineering Company. Electrical power module. 278,624, 4-30-85, Cl. D13-24.000.

Sugihara, Osamu: *See*—
Mitani, Kiyoshi; Yonekura, Hiroshi; Suzuki, Kiyoshi; and Sugihara, Osamu, 278,629, Cl. D14-80.000.

Sunbeam Plastics Corporation: *See*—
McAlinden, Daniel, 278,597, Cl. D9-349.000.

Sussman, Barbara S.; and Baiman, Sybil, to Jewish Federation of Allentown. Apple-shaped broach. 278,611, 4-30-85, Cl. D11-67.000.

Suzuki, Kiyoshi: *See*—
Mitani, Kiyoshi; Yonekura, Hiroshi; Suzuki, Kiyoshi; and Sugihara, Osamu, 278,629, Cl. D14-80.000.

Suzuki, Shigeo. Grain moisture meter. 278,606, 4-30-85, Cl. D10-56.000.

Suzuki, Susumu: *See*—
Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, 278,628, Cl. D14-77.000.

Syracuse China Corporation: *See*—
Colquitt, Simone, 278,589, Cl. D7-9.000.

Takagi, Hisamitsu; Hashiguchi, Hiroichi; and Takehara, Tomoyuki, to Fujitsu Limited. Mobile telephone set. 278,626, 4-30-85, Cl. D14-53.000.

Takara Co., Ltd.: *See*—
Ogawa, Iwakichi, 278,643, Cl. D21-128.000.

Takehara, Tomoyuki: *See*—
Takagi, Hisamitsu; Hashiguchi, Hiroichi; and Takehara, Tomoyuki, 278,626, Cl. D14-53.000.

Tanaka Manufacturing Co., Ltd.: *See*—
Tanaka, Yoshihisa, 278,658, Cl. D26-60.000.

Tanaka, Yoshihisa, to Tanaka Manufacturing Co., Ltd. Clip light for vehicles. 278,658, 4-30-85, Cl. D26-60.000.

Thompson, Bruce R. Combined toothbrush and tumbler holder. 278,586, 4-30-85, Cl. D6-531.000.

Thompson, Bruce R. Soap holder. 278,587, 4-30-85, Cl. D6-540.000.

Thompson, Sara R. Toed shoe. 278,608, 4-30-85, Cl. D2-279.000.

Tichy, Heinz; and Mair, Franz, to Semperit Aktiengesellschaft. Road reflector or similar article. 278,607, 4-30-85, Cl. D10-111.000.

Tilley, Alvin R.: *See*—
Ender, Alfred R.; Iacullo, Robert F.; Kriete, Richard J.; Tilley, Alvin R.; and Weinglass, Leon, 278,630, Cl. D14-115.000.

Toyo Radiator Co., Ltd.: *See*—
Hoshina, Noriyuki, 278,619, Cl. D12-166.000.

Tropitone Furniture Co., Inc.: *See*—
Kramer, Joel A.; and Harper, Alton A., 278,582, Cl. D6-373.000.

Uchihori, Noritaka: *See*—
Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, 278,628, Cl. D14-77.000.

Unique Functional Products: *See*—
Law, Denny B.; and Goettker, Bernhardt P., 278,615, Cl. D12-101.000.

United States Surgical Corporation: *See*—
Green, David T.; Rawson, Paul O.; and Yagami, Richard H., 278,656, Cl. D24-26.000.

Van Zandt, John M. Display holder for a container of lipstick or the like. 278,604, 4-30-85, Cl. D9-457.000.

Watanabe, Chokichi. Seaweed plate garnish for a sushi dish or the like. 278,565, 4-30-85, Cl. D1-123.000.

Weber, Heinz. Combined bottle and cap. 278,598, 4-30-85, Cl. D9-353.000.

Weinglass, Leon: *See*—
Ender, Alfred R.; Iacullo, Robert F.; Kriete, Richard J.; Tilley, Alvin R.; and Weinglass, Leon, 278,630, Cl. D14-115.000.

Widerby, Lennart, to Flakt Aktiebolag. Fastener for exhaust air valves. 278,595, 4-30-85, Cl. D8-389.000.

Wilson, Jerry F., to Manville Service Corporation. Article carrier blank. 278,601, 4-30-85, Cl. D9-433.000.

Yagami, Richard H.: *See*—
Green, David T.; Rawson, Paul O.; and Yagami, Richard H., 278,656, Cl. D24-26.000.

Yamaoka, Masataka: *See*—
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,617, Cl. D12-147.000.
Kojima, Hiroshi; Kawabata, Misao; Yamaoka, Masataka; and Moriya, Masashiro, 278,618, Cl. D12-147.000.

Yonekura, Hiroshi: *See*—
Mitani, Kiyoshi; Yonekura, Hiroshi; Suzuki, Kiyoshi; and Sugihara, Osamu, 278,629, Cl. D14-80.000.

LIST OF PLANT PATENTEES

Blazey, Daniel, to Nor'East Miniature Roses, Inc. Rose plant—Blabee. 5,448, 4-30-85, Cl. 7.000.

Bradford, Norman G. Nectarine tree (May Diamond). 5,454, 4-30-85, Cl. 41.000.

Bradford, Norman G. Nectarine tree (Spring Diamond). 5,455, 4-30-85, Cl. 41.000.

Bradford, Norman G. Nectarine tree (Sun Diamond). 5,456, 4-30-85, Cl. 41.000.

Garabedian, John M. Plum tree, "Early Gar Rosa". 5,453, 4-30-85, Cl. 38.000.

Holden, Verl L. Blue spruce tree "Baby Blueyes" variety. 5,457, 4-30-85, Cl. 50.000.

Nor'East Miniature Roses, Inc.: *See*—
Blazey, Daniel, 5,448, Cl. 7.000.
Saville, F. Harmon, 5,449, Cl. 10.000.
Saville, F. Harmon, 5,450, Cl. 10.000.

Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Rose plant—Savanhour. 5,449, 4-30-85, Cl. 10.000.

Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Rose plant—Savaspir. 5,450, 4-30-85, Cl. 10.000.

Weeks, O. L. Rose plant. 5,451, 4-30-85, Cl. 14.000.

Weeks, O. L. Rose plant. 5,452, 4-30-85, Cl. 18.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 30, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2	4,513,449
19	4,513,450
69	4,513,451
81	4,513,452
150	4,513,453
246	4,513,454
253	4,513,455

CLASS 3

13	4,513,456
15	4,513,457

CLASS 4

192	4,513,458
222	4,513,459

CLASS 5

13	4,513,460
413	4,513,461
442	4,513,462
452	4,513,463

CLASS 8

94.21	4,514,184
137	4,514,185
159	4,513,464
527	4,514,186
531	4,514,187
641	4,514,188

CLASS 14

17	4,513,465

CLASS 15

29	4,513,466
53 AB	4,513,467
250.36	4,513,468
319	4,513,469
328	4,513,470
340	4,513,471
354	4,513,472

CLASS 16

82	4,513,473
243	4,513,474
360	4,513,475

CLASS 17

44.1	4,513,476
46	4,513,477
71	4,513,478

CLASS 19

80 R	4,513,479
113	4,513,480
244	4,513,481

CLASS 24

384	4,513,482
409	4,513,483
437	4,513,484

CLASS 28

181	4,513,485

CLASS 29

220	4,513,486
243.5	4,513,487
516	4,513,488
520	4,513,489
527.6	4,513,490
527.7	4,513,491
564.7	4,513,492
566.3	4,513,493
576 B	4,513,494
597	4,513,495
606	4,513,496
727	4,513,497
845	4,513,498
874	4,513,499
885	4,513,500

CLASS 30

115	4,513,501
229	4,513,502
289	4,513,503

CLASS 33

1 H	4,513,504
1 MP	4,513,505
147 K	4,513,506
169 R	4,513,507
288	4,513,508
330	4,513,509
419	4,513,510
447	4,513,511
471	4,513,512

CLASS 34

1	4,513,513
24	4,513,514
33	4,513,515
41	4,513,516
114	4,513,517

CLASS 36

44	4,513,518
113	4,513,519
119	4,513,520

CLASS 37

193	4,513,521

CLASS 40

2 R	4,513,522

CLASS 42

72	4,513,523

CLASS 43

43.12	4,513,524
55	4,513,525
57.2	4,513,526
87	4,513,527

CLASS 44

51	4,514,189
70	4,514,190

CLASS 47

1.5	4,513,528
2	4,513,529
9	4,513,530
39	4,513,531
58	4,513,532
63	4,513,533

CLASS 48

77	4,514,191

CLASS 49

91	4,513,534
409	4,513,535
470	4,513,536

CLASS 51

71	4,513,537
131.3	4,513,538
138	4,513,539
165.71	4,513,540
237 R	4,513,541
241 S	4,513,542
283 R	4,513,543
	4,513,544
295	4,514,192

CLASS 52

79.1	4,513,545
172	4,513,546
194	4,513,547
202	4,513,548
211	4,513,549
249	4,513,550
364	4,513,551
400	4,513,552
456	4,513,553
657	4,513,554
	4,513,555
698	4,513,556
735	4,513,557

CLASS 53

77	4,513,558
429	4,513,559
509	4,513,560

CLASS 54

83 R	4,513,561

CLASS 55

91	4,514,194
152	4,514,195
223	4,514,196
290	4,514,193
316	4,514,197
337	4,514,198
	4,514,199
368	4,514,200
385 B	4,514,201
440	4,514,202

CLASS 56

10.2	4,513,562
295	4,513,563

CLASS 57

206	4,513,564
236	4,513,565
339	B1 4,033,105
406	4,513,566

CLASS 60

39.02	4,513,567
39.31	4,513,569
39.6	4,513,568
529	4,513,570
603	4,513,571
618	4,513,572
648	4,513,573

CLASS 62

17	4,514,203
41	4,514,204
59	4,513,574
86	4,513,575
87	4,513,576
91	4,513,577
149	4,513,578
176.2	4,513,579
183	4,513,580
197	4,513,581
222	4,513,582
235	4,513,583
235.1	4,513,584
238.6	4,513,585
263	4,513,586
515	4,513,587

CLASS 65

12	4,514,205
21.1	4,514,207
108	4,514,206
273	4,514,208
328	4,514,209

CLASS 66

126 R	4,513,588
180	4,513,589

CLASS 68

18 C	4,513,590

CLASS 70

34	4,513,591
	4,513,592
114	4,513,593

CLASS 71

92	4,514,210
	4,514,211
93	4,514,212
	4,514,213
	4,514,214
107	4,514,215

CLASS 72

8	4,513,594
43	4,513,595
51	4,513,596
53	4,513,597
62	4,513,598
238	4,513,599
345	4,513,600
398	4,513,601
405	4,513,602

CLASS 73

37	4,513,603
39	4,513,604
40	4,513,605
61 R	4,513,606
61.4	4,513,607
73	4,513,608
116	4,513,609
147	4,513,610
150 R	4,513,611
155	4,513,612
159	4,513,613
169	4,513,614
204	4,513,615
295	4,513,616
313	4,513,617
382 G	4,513,618
455	4,513,619
631	4,513,621
664	4,513,620
	4,513,622
721	4,513,623
861.12	4,513,624
861.72	4,513,625
862.34	4,513,626
	4,513,627
	4,513,628

CLASS 74

2	4,513,629
60	4,513,630
360	4,513,631
484 R	4,513,632
650	4,513,633
688	4,513,634
713	4,513,635
761	4,513,636
801	4,513,637
866	4,513,638
	4,513,639
870	4,513,640

CLASS 75

0.5 AA	4,514,216
10 R	4,514,217
12	4,514,218
43	4,514,219
60	4,514,220
63	4,514,221
77	4,514,222
	4,514,223
238	4,514,224

CLASS 81

53 R	4,513,642
53.2	4,513,643
57.39	4,513,644
	4,513,645
486	4,513,641

CLASS 82

1 C	4,513,646

CLASS 83

203	4,513,647
871	4,513,648
883	4,513,649

CLASS 84

1.03	4,513,650
1.22	4,513,651
20	4,513,652

CLASS 91

239	4,513,653
378	4,513,654

CLASS 98

121.2	4,513,655

CLASS 99

450.4	4,513,656
472	4,513,657
485	4,513,658

CLASS 100

117	4,513,659

CLASS 101

1	4,513,660
93.04	4,513,661
207	4,513,662
349	4,513,663

CLASS 102

216	4,513,664
312	4,513,665
476	4,513,666
487	4,513,667
511	4,513,668

CLASS 106

15.05	4,514,225
23	4,514,226
38.2	4,514,227
98	4,514,228
135	4,514,229
243	4,514,230
309	4,514,231

CLASS 108

111	4,513,669

CLASS 109

24.1	4,513,670

CLASS 110

101 CF	4,513,671

CLASS 112

100	4,513,672
166	4,513,673
220	4,513,674
236	4,513,675
262.1	4,513,676
262.3	4,513,677
323	4,513,678

CLASS 114

67 A	4,513,679
159	4,513,680
293	4,513,681

CLASS 118

322	4,513,682
620	4,513,683
718	4,513,684

CLASS 119

1	4,513,685
15.6	4,513,686
27	4,513,687
52 A	4,513,688
82	4,513,689
99	4,513,690
	4,513,691
109	4,513,692
147 R	4,513,693

CLASS 122

7 R	4,513,694

CLASS 123

41.02	4,513,696
41.1	4,513,695
41.35	4,513,697
52 MB	4,513,699
52 MV	4,513,698
179 L	4,513,700
188 AA	4,513,701
193 CH	4,513,703
193 H	4,513,702
196 S	4,513,704
	4,513,705
198 D	4,513,706
242	4,513,707
263	4,513,708
306	4,513,709
339	4,513,710
	4,513,711
	4,513,712
	4,513,713
357	4,513,714
383	4,513,715
425	4,513,716
	4,513,717
	4,513,718
447	4,513,719
470	4,513,720
478	4,513,721
492	4,513,722
	4,513,723
500	4,513,724
511	4,513,725
523	4,513,726
525	4,513,727
527	4,513,728
563	4,513,729
564	4,513,730

CLASS 126

432	4,513,731
433	4,513,732
435	4,513,733
439	4,513,734

CLASS 128

24.2	4,513,735
41	4,513,736
52	4,513,737
57	4,513,738
92 D	4,513,744
156	4,513,739
165	4,513,740
205.25	4,513,741
305	4,513,745
317	4,513,742
334 C	4,513,746
339	4,513,747
419 PG	4,513,743
653	4,513,748
660	4,513,749
	4,513,750
666	4,513,751
674	Re.31,873
696	4,513,752
706	4,513,753
753	4,513,754

CLASS 131

84 C	4,513,755
111	4,513,756
276	4,513,757
291	4,513,758
303	4,513,759

CLASS 132

11 R	4,513,842
40	4,513,760
41	4,513,761

CLASS 133

3 R	4,513,762

CLASS 134

1	4,514,232

CLASS 136

249	4,514,579
250	4,514,580
255	4,514,581
256	4,514,582
259	4,514,583
263	4,514,584

CLASS 137

38	4,513,763
68 R	4,513,764
72	4,513,765
103	4,513,766
119	4,513,767
142	4,513,768
315	4,513,769
	4,513,770
	4,513,771
355.22	4,513,772
382	4,513,773
392	4,513,774
491	4,513,775
498	4,513,776
501	4,513,777
533.11	4,513,778
556	4,513,779
625.41	4,513,781
625.63	4,513,782
625.65	4,513,780
625.68	4,513,783
854	4,513,784
881	4,513,785

CLASS 138

89	4,513,786
	4,513,788
106	4,514,103
166	4,513,787

CLASS 139

85	4,513,789
110	4,513,790
194	4,513,791
439	4,513,792

CLASS 140

92.4	4,513,793
105	4,513,794

CLASS 141

35	4,513,795
83	4,513,796
198	4,513,797

CLASS 144

28.11	4,513,798
379	4,513,799

CLASS 148

1.5	4,514,233
11.5 P	4,514,234

37 4,514,235
38 4,514,236
142 4,514,237
431 4,514,238

CLASS 149

18 4,514,239

CLASS 152

213 A 4,513,800
213 R 4,513,801
353 R 4,513,802
427 4,513,803

CLASS 156

73.5 4,514,242
79 4,514,241
89 4,514,240
113 4,514,243
158 4,514,244
161 4,514,245
250 4,514,247
264 4,514,246
268 4,514,248
308.2 B1 4,334,944
553 4,514,249
610 4,514,250
628 4,514,251
643 4,514,252
656 4,514,254
659.1 4,514,253

CLASS 160

174 4,513,804
299 4,513,805

CLASS 162

9 4,514,255
30.11 4,514,256
49 4,514,257
107 4,514,258
343 4,514,259

CLASS 164

413 4,513,806

CLASS 165

10 4,513,807
43 4,513,808
54 4,513,809
61 4,513,810
79 4,513,811
80 B 4,513,812
111 4,513,813
134 R 4,513,814

CLASS 166

57 4,513,815
75 R 4,513,816
138 4,513,817
244 C 4,513,818
263 4,513,819
266 4,513,820
273 4,513,821
382 4,513,822
386 4,513,823

CLASS 168

4 4,513,824
12 4,513,825

CLASS 172

7 4,513,826

CLASS 173

12 4,513,827
139 4,513,828

CLASS 174

35 GC 4,514,585
35 MS 4,514,586
52 H 4,514,587
52 PE 4,514,588
119 R 4,514,589
152 GM 4,514,590
182 4,514,591

CLASS 175

339 4,513,829

CLASS 177

1 4,513,830
189 4,513,831

CLASS 178

22.11 4,514,592

CLASS 179

2 A 4,514,593
2.51 4,514,594
16 F 4,514,595
84 T 4,514,596
99 M 4,514,597
146 R 4,514,598
181 W 4,514,599

CLASS 180

6.5 4,513,832
9.1 4,513,833
70.1 4,513,834
142 4,513,835
177 4,513,836
209 4,513,837
219 4,513,838
253 4,513,839

CLASS 181

210 4,513,840
252 4,513,841

CLASS 188

62 4,513,843
71.6 4,513,844
299 4,513,845
380 4,513,846

CLASS 192

3.58 4,513,850
4 A 4,513,847
18 R 4,513,848
70.27 4,513,849

CLASS 194

51 4,513,851

CLASS 198

399 4,513,852
410 4,513,853
472 4,513,854
473 4,513,855
695 4,513,856
716 4,513,857
812 4,513,858
842 4,513,859

CLASS 200

5 E 4,514,601
5 R 4,514,600
16 C 4,514,602
61.62 4,514,603
83 N 4,514,604
146 R 4,514,606
148 A 4,514,605
150 A 4,514,607
153 J 4,514,608
159 A 4,514,609

CLASS 202

270 4,514,260

CLASS 203

9 4,514,261
51 4,514,262

CLASS 204

1 T 4,514,263
15 4,514,264
4,514,265
28 4,514,266
44.2 4,514,267
67 4,514,268
69 4,514,269
151 4,514,270
159.15 4,514,271
186 4,514,272
196 4,514,273
228 B1 4,326,938
290 F 4,514,274
298 4,514,275
415 4,514,276
424 4,514,277
430 4,514,278

CLASS 206

150 4,513,860
219 4,513,861
233 4,513,862
264 4,513,863
396 4,513,864
508 4,513,865
570 4,513,866

CLASS 208

10 4,514,279
33 4,514,280
47 4,514,281
56 4,514,282
86 4,514,283
140 4,514,284
148 4,514,285
196 4,514,286
309 4,514,287

CLASS 209

5 4,514,288
44.2 4,513,867
127.3 4,514,289
166 4,514,290
4,514,291
167 4,514,292
4,514,293
581 4,513,868

CLASS 210

87 4,514,294
90 4,514,295
96.1 4,514,296
194 4,514,297
232 4,514,298
242.3 4,514,299
342 4,514,300
400 4,514,301
433.2 4,514,302
519 4,514,303
638 4,514,304
703 4,514,305
740 4,514,306
751 4,514,307

CLASS 212

175 4,513,869

CLASS 215

31 4,513,870
32 4,513,871

CLASS 219

69 M 4,514,611
119 4,514,612
121 EC 4,514,613
125.11 4,514,614
132 4,514,615
136 4,514,616
314 4,514,617
370 4,514,618
483 4,514,619
553 4,514,620

CLASS 220

74 4,513,872
89 A 4,513,873
4,513,874
214 4,513,875
270 4,513,876
335 4,513,877

CLASS 221

40 4,513,878
150 HC 4,513,879
260 4,513,880

CLASS 222

54 4,513,881
56 4,513,882
83 4,513,883
94 4,513,884
95 4,513,885
146.5 4,513,886
4,513,887
153 4,513,888
4,513,889
4,513,890
213 4,513,891
235 4,513,892
281 4,513,893
644 4,513,894

CLASS 224

151 4,513,895
178 4,513,896
314 4,513,897

CLASS 226

44 4,513,898
141 4,513,899

CLASS 227

42 4,513,900
49 4,513,901

CLASS 228

25 4,513,902
107 4,513,903
116 4,513,904
123 4,513,905
184 4,513,906

CLASS 229

23 R 4,513,907
87 C 4,513,908

CLASS 235

400 4,514,621
463 4,514,622
482 4,514,623

CLASS 236

26 R 4,513,909
4,513,910

CLASS 237

12.3 C 4,513,911

CLASS 238

349 4,513,912

CLASS 239

119 4,513,913
121 4,513,914
453 4,513,916
455 4,513,915

CLASS 241

46.11 4,513,917
101.4 4,513,918
275 4,513,919

CLASS 242

4 B 4,513,920
36 4,513,921
54 R 4,513,922
55.2 4,513,923
67.2 4,513,924
84.2 G 4,513,926
84.5 A 4,513,925
191 4,513,927
198 4,513,928
4,513,929
218 4,513,930

CLASS 244

152 4,513,931
153 R 4,513,932

CLASS 248

27.1 4,513,933
49 4,513,934
105 4,513,935
122 4,513,936
394 4,513,937
507 4,513,938
544 4,513,939
4,513,994
674 4,513,940

CLASS 249

91 4,513,941
95 4,513,942

CLASS 250

211 R 4,514,624
221 4,514,625
235 4,514,626
255 4,514,627
299 4,514,628
311 4,514,629
342 4,514,630
4,514,631
343 4,514,635
368 4,514,632
374 4,514,633
397 4,514,634
443.1 4,514,636
492.2 4,514,637
4,514,638
493.1 4,514,639
517.1 4,514,640
570 4,514,641

CLASS 251

31 4,513,943
89 4,513,944
129 4,513,945
173 4,513,946
174 4,513,947
212 4,513,948
266 4,513,949

CLASS 252

8.5 C 4,514,308
8.55 R 4,514,309
4,514,310
32.5 4,514,311
4,514,312
42.7 4,514,313
56 D 4,514,314
75 4,514,315
182 4,514,316
299.62 4,514,317
315.3 4,514,318
321 4,514,319
392 4,514,320
512 4,514,321
518 4,514,322
522 R 4,514,323
4,514,324
557 4,514,325
602 4,514,326
607 4,514,327
609 4,514,328
629 4,514,329

CLASS 254

8 B 4,513,950
28 4,513,951
285 4,513,952

CLASS 260

112.5 E 4,514,332
112.5 R 4,514,330
112.5 T 4,514,331
239 A 4,514,333
395 4,514,334
397.1 4,514,393
400 4,514,335
413 4,514,336
429.3 4,514,337
429.9 4,514,338
453 P 4,514,339
465 D 4,514,340
467 4,514,341
952 4,514,342

CLASS 261

37 4,514,343
159 4,514,344

CLASS 264

22 4,514,345
29.5 4,514,346
32 4,514,347
40.1 4,514,348
103 4,514,349
176 F 4,514,350
210.2 4,514,351
230 4,514,352
294 4,514,353
324 4,514,354
328.12 4,514,356
328.16 4,514,357
332 4,514,355

CLASS 267

121 4,513,953
141.3 4,513,954

CLASS 269

41 4,513,955

CLASS 271

9 4,513,956
90 4,513,957
187 4,513,958
270 4,513,959

CLASS 272

44 4,513,960
62 4,513,961
68 4,513,962
128 4,513,963

CLASS 273

26 R 4,513,965
68 B 4,513,966
108 4,513,967
126 R 4,513,964
143 R 4,513,968
149 R 4,513,969
153 R 4,513,971
153 S 4,513,970
190 R 4,513,972
237 4,513,973
239 4,513,974

CLASS 277

22 4,513,975
25 4,513,976
96.2 4,513,977
235 B 4,513,978

CLASS 279

4 4,513,979
51 4,513,980

CLASS 280

1.11 R 4,513,981
26 4,513,982
33.99 A 4,513,983
43.23 4,513,984
281 R 4,513,985
4,513,986
423 B 4,513,987
615 4,513,988
645 4,513,989
725 4,513,990

CLASS 283

1 R 4,513,991
94 4,513,992
103 4,513,993

CLASS 285

55 4,513,995
110 4,513,996
242 4,513,997
308 4,513,998

CLASS 290

40 C 4,514,643
40 R 4,514,642
53 4,514,644

CLASS 292

161 4,513,999
338 4,514,000
341.16 4,514,001

CLASS 293

118 4,514,002
128 4,514,003

CLASS 294

19.1 4,514,004
86.42 4,514,005

CLASS 296

78.1 4,514,006
183 4,514,007
204 4,514,008

CLASS 297

27 4,514,009
284 4,514,010

CLASS 299

42 4,514,011
57 4,514,012

CLASS 301

63 PW 4,514,013

CLASS 305

10 4,514,014

CLASS 307

10 R 4,514,645
200 B 4,514,646
269 4,514,647
350 4,514,648
450 4,514,649
466 4,514,650
475 4,514,651

CLASS 308

2 A 4,514,016
2 R 4,514,015
6 C 4,514,017
4,514,018

CLASS 310

54 4,514,652
178 4,514,653
216 4,514,654
218 4,514,655

CLASS 312

209 4,514,019
220 4,514,020
291 4,514,021

CLASS 313

11.5 4,514,656
130 4,514,657
402 4,514,658
412 4,514,659
446 4,514,660

CLASS 315

3 4,514,661
57 4,514,662
366 Re.31,876
4,514,663
383 4,514,664

CLASS 318

139 4,514,665
254 4,514,667
293 4,514,666
294 4,514,668
443 4,514,669
467 4,514,670
603 4,514,671
616 4,514,672
685 4,514,673
687 4,514,674
696 4,514,675
4,514,676
759 4,514,677
807 4,514,678

CLASS 323

222 4,514,679

CLASS 324

58.5 A 4,514,680
65 CR 4,514,681
71.3 4,514,682
110 4,514,683
120 4,514,684
142 4,514,685
4,514,686
158 R 4,514,687
208 4,514,688
4,514,689
225 4,514,690
301 4,514,691
329 4,514,692
338 4,514,693
429 4,514,694
437 4,514,695

CLASS 328

14 4,514,696

CLASS 329

104 4,514,697

CLASS 330

4.3 4,514,698
53 4,514,699
56 4,514,700
137 4,514,701
254 4,514,702
279 4,514,703
305 4,514,704

CLASS 331

2 4,514,705
16 4,514,706

107 SL 4,514,707

CLASS 333

255 4,514,708

CLASS 335

201 4,514,709
230 4,514,710
243 4,514,711

CLASS 336

96 4,514,712
4,514,713
100 4,514,714

CLASS 337

113 4,514,715
281 4,514,716
365 4,514,717
407 4,514,718

CLASS 339

17 CF 4,514,023
17 F 4,514,022
40 4,514,024
64 M 4,514,025
75 P 4,514,026
105 4,514,027
113 R 4,514,028
143 R 4,514,029
176 MP 4,514,030
205 4,514,031
255 P 4,514,033
278 C 4,514,032

CLASS 340

310 R 4,514,719
511 4,514,720
527 4,514,721
604 4,514,722
638 4,514,723
648 4,514,724
691 4,514,725
710 4,514,726
793 4,514,727
815.26 4,514,730
825.06 4,514,729
825.08 4,514,731
825.5 4,514,728
825.57 4,514,732

CLASS 343

5 MM 4,514,733
708 4,514,734

CLASS 346

1.1 4,514,735
76 PH 4,514,736
4,514,737
4,514,738
108 4,514,739
139 R 4,514,740
140 R 4,514,741
4,514,742
4,514,743
153.1 4,514,744
216 4,514,745

CLASS 350

6.3 4,514,055
96.15 4,514,054
4,514,057
96.20 4,514,034
96.23 4,514,035
4,514,036
4,514,037
4,514,058
162.13 4,514,038
162.16 4,514,059
162.2 4,514,053
255 4,514,039
286 4,514,040
331 R 4,514,042
337 4,514,041
341 4,514,043
350 R 4,514,044
351 4,514,045
372 4,514,056
385 4,514,046
394 4,514,047
423 4,514,048
425 4,514,049
444 4,514,050
465 4,514,051
466 4,514,052
632 4,514,060

CLASS 351

169 4,514,061
205 4,514,062

CLASS 353

28 4,514,063

CLASS 354

234.1 4,514,064
235.1 4,514,065
273 4,514,066
293 4,514,067
4,514,068
304 4,514,069
313 4,514,070
320 4,514,071
337 4,514,072
414 4,514,073
416 4,514,074
446 4,514,075
481 4,514,076

CLASS 355

3 BE 4,514,078
3 DD 4,514,077
8 4,514,079
14 C 4,514,080
14 R 4,514,081
54 4,514,082

CLASS 356

1 4,514,083
4 4,514,084
71 4,514,085
124 4,514,086
350 4,514,087
4,514,088
4,514,832

CLASS 357

38 4,514,747
58 4,514,748
68 4,514,749
70 4,514,750
71 4,514,751
72 4,514,752

CLASS 358

11 4,514,753
13 4,514,754
44 4,514,755
66 4,514,756
86 4,514,757
93 4,514,758
111 4,514,759
122 4,514,761
143 4,514,760
163 4,514,762
167 4,514,763
181 4,514,764
213 4,514,765
4,514,766
280 4,514,767
296 4,514,768
310 4,514,769

CLASS 360

69 4,514,770
73 4,514,771
75 4,514,772
77 4,514,773
95 4,514,774
96.6 4,514,775
121 4,514,776
128 4,514,777
133 4,514,778

CLASS 361

213 4,514,779
226 4,514,780
230 4,514,781
306 4,514,782
336 4,514,783
385 4,514,746
386 4,514,784
401 4,514,785
413 4,514,786
420 4,514,787
433 4,514,788

CLASS 362

95 4,514,789
183 4,514,790
249 4,514,791
294 4,514,792
306 4,514,793
439 4,514,794

CLASS 363

27 4,514,795

CLASS 364

142 4,514,796
148 4,514,797
188 4,514,798
200 4,514,799
4,514,800
4,514,801
4,514,802
4,514,803
4,514,804
4,514,805
4,514,806
4,514,807
4,514,808
422 4,514,809
424 4,514,810
424.1 4,514,811
473 4,514,812
474 4,514,813
4,514,814
478 4,514,815
4,514,816
480 4,514,817
521 4,514,818
556 4,514,819
858 4,514,820
862 4,514,821
900 Re.31,875
4,514,822
4,514,823
4,514,824
4,514,825
4,514,826

CLASS 365

1 4,514,827
8 4,514,828
189 4,514,829
200 4,514,830
203 4,514,831

CLASS 366

69 4,514,089
91 4,514,090
130 4,514,091
136 4,514,092
138 4,514,093
160 4,514,094
207 4,514,833
340 4,514,095

CLASS 367

141 4,514,834

CLASS 368

118 4,514,835

CLASS 369

74 4,514,836
219 4,514,837
254 4,514,838
270 4,514,839

CLASS 370

29 4,514,840
55 4,514,841
63 4,514,842
93 4,514,843

CLASS 371

8 4,514,844
15 4,514,845
16 4,514,846
51 4,514,847

CLASS 372

25 4,514,848
29 4,514,849
95 4,514,850

CLASS 373

27 4,514,851

CLASS 374

4,514,096

CLASS 375

1 4,514,852
34 4,514,853
94 4,514,854
97 4,514,855

CLASS 376

362 4,514,358

CLASS 377

8 4,514,856

CLASS 378

034 4,514,857
4,514,858
152 4,514,859

CLASS 384

93 4,514,097
95 4,514,098
100 4,514,099

CLASS 400

55 4,514,100
59 4,514,101

CLASS 401

78 4,514,102

CLASS 403

14 4,514,104
24 4,514,105
190 4,514,106
230 4,514,107
359 4,514,108
370 4,514,109

CLASS 405

104 4,514,110
260 4,514,111
269 4,514,112
286 4,514,113

CLASS 406

65 4,514,114

CLASS 408

139 4,514,115
161 4,514,116
239 R 4,514,117

CLASS 409

26 4,514,118
60 4,514,119
137 4,514,120
138 4,514,121
190 4,514,122
231 4,514,123
295 4,514,124

CLASS 411

82 4,514,125
477 4,514,126

CLASS 414

24.6 4,514,127
49 4,514,128
200 4,514,129
416 4,514,130
480 4,514,131
512 4,514,133
537 4,514,132
659 4,514,134
682 4,514,135
744 A 4,514,136

CLASS 415

1 4,514,137
4,514,138
90 4,514,139
119 4,514,140
160 4,514,141

CLASS 416

1 4,514,142
23 4,514,143
96 R 4,514,144
170 R 4,514,145
200 R 4,514,146

CLASS 417

288 4,514,147
403 4,514,148
4,514,149
440 4,514,150
540 4,514,151

CLASS 418

61 B 4,514,152
69 4,514,153
129 4,514,154
149 4,514,155
173 4,514,156
259 4,514,157

CLASS 420

436 4,514,359
454 4,514,360

CLASS 422

26 4,514,361
99 4,514,362

CLASS 423

3 4,514,363
4 4,514,364
15 4,514,365
18 4,514,378
21.5 4,514,367
54 4,514,368
4,514,369
228 4,514,379
318 4,514,366
344 4,514,370
417 4,514,380
449 4,514,371
493 4,514,372
495 4,514,373
497 4,514,374
573 G 4,514,375
588 4,514,376
648 A 4,514,377

CLASS 424

54 4,514,382
59 4,514,383
80 4,514,384
81 4,514,385
4,514,386
85 4,514,387
94 4,514,388
128 4,514,389

CLASS 425

78 4,514,158
125 4,514,159
143 4,514,160
154 4,514,161
174.8 R 4,514,162
204 4,514,163
208 4,514,164
311 4,514,165
436 R 4,514,166

CLASS 426

3 4,514,422
4,514,423
56 4,514,424
93 4,514,425
113 4,514,426
271 4,514,427
321 4,514,428
535 4,514,429
549 4,514,430
634 4,514,433
641 4,514,431
646 4,514,434
656 4,514,432

CLASS 427

8 4,514,435
10 4,514,436
39 4,514,437
54.1 4,514,438
4,514,439
85 4,514,440
126.6 4,514,441
140 4,514,442
230 4,514,443
242 4,514,444
410 4,514,445

CLASS 428

35 4,514,446
36 4,514,447
68 4,514,448
76 4,514,449
120 4,514,450
141 4,514,451
4,514,452
159 4,514,453
195 4,514,454
198 4,514,455
204 4,514,456
4,514,457
220 4,514,472
222 4,514,458
229 4,514,459
240 4,514,461
245 4,514,460
285 4,514,462
286 4,514,463
332 4,514,464
339 4,514,465
383 4,514,466
413 4,514,467
418 4,514,468
553 4,514,469
662 4,514,470
703 4,514,471

CLASS 429

10 4,514,473
27 4,514,474
35 4,514,475
94 4,514,476
98 4,514,477
196 4,514,478

CLASS 430

2 4,514,479
30 4,514,480
58 4,514,481
78 4,514,482
84 4,514,483
106.6 4,514,484
4,514,485
124 4,514,486
137 4,514,487
234 4,514,488
327 4,514,489
376 4,514,494
505 4,514,490
567 4,514,491
600 4,514,492
617 4,514,493

CLASS 432

11 4,514,167
14 4,514,168
106 4,514,170

CLASS 433

4 4,514,171
29 4,514,169
126 4,514,172
178 4,514,173
226 4,514,174

CLASS 434

82 4,514,175
224 4,514,176
328 4,514,177
395 4,514,178

CLASS 435

32 4,514,495
162 4,514,496
235 4,514,497
240 4,514,498
4,514,499
241 4,514,500
251 4,514,501
253 4,514,502

CLASS 436

60 4,514,503
85 4,514,504
500 4,514,505
518 4,514,506
4,514,507
4,514,508
4,514,509

CLASS 455

612 4,514,860

CLASS 474

204 4,514,179

CLASS 493

41 4,514,180
131 4,514,181
216 4,514,182

CLASS 494

27 4,514,183

CLASS 501

148 4,514,510

CLASS 502

8 4,514,511
107 4,514,512
112 4,514,513
121 4,514,514
154 4,514,515
202 4,514,516
220 4,514,517
229 4,514,518
243 4,514,519
337 4,514,520

CLASS 514

2 4,514,391
46 4,514,405
148 4,514,392
184 4,514,390
212 4,514,408
213 4,514,394
215 4,514,411
220 4,514,407
221 4,514,410
222 4,514,396
224 4,514,395
241 4,514,399
245 4,514,398
247 4,514,397
250 4,514,402
252 4,514,400
253 4,514,401
265 4,514,404
274 4,514,403
352 4,514,406
383 4,514,409
397 4,514,412
4,514,413
422 4,514,414
470 4,514,415
482 4,514,417
508 4,514,418
521 4,514,419
689 4,514,420
711 4,514,421

CLASS 518

700 4,514,521

CLASS 521

53 4,514,522
85 4,514,523
107 4,514,524
112 4,514,525
166 4,514,526

CLASS 523

115 4,514,527
120 4,514,528
200 4,514,529
456 4,514,530

CLASS 524

5 4,514,531
14 4,514,532
89 4,514,533
108 4,514,534
109 4,514,535
261 4,514,536
265 4,514,537
298 Re.31,874
315 4,514,538
436 4,514,539
514 4,514,540
4,514,541

CLASSIFICATION OF PATENTS

CLASS 525		CLASS 526		CLASS 528		CLASS 534		CLASS 536		CLASS 544		CLASS 546		CLASS 549		CLASS 564		CLASS 568	
57	4,514,546	233	4,514,551	9	4,514,555	690	4,514,559	1.1	4,514,560	25	4,514,564	146	4,514,569	246	4,514,572	387	4,514,573	17	4,514,575
193	4,514,542	301	4,514,552					7.2	4,514,562		4,514,565	181	4,514,570	442	4,514,416	424	4,514,574	659	4,514,576
205	4,514,543	323.1	4,514,553							56	4,514,566	306	4,514,571					744	4,514,577
327.4	4,514,544	339	4,514,554							352	4,514,567							853	4,514,578
330.4	4,514,545									408	4,514,568								
510	4,514,547																		
528	4,514,548																		
	4,514,549																		
		538	4,514,550			117	4,514,556			18.7	4,514,561								
						342	4,514,557			123	4,514,563								
						388	4,514,558												

CLASSIFICATION OF DESIGNS

D1—	123	278,565			278,582	D9—	341	278,596		152	278,613		80	278,629		161	278,645
D2—	25	278,566		419	278,578		349	278,597			278,614		115	278,630		188	278,646
	27	278,567		426	278,583		353	278,598	D12—	101	278,615	D15—	7	278,631		190	278,647
	40	278,568		484	278,577		377	278,599		115	278,616	D17—	14	278,632			278,648
		278,569			278,584		399	278,600		147	278,617		22	278,633		230	278,649
	276	278,570		513	278,585		433	278,601			278,618			278,634	D23—	3	278,650
	279	278,608		531	278,586		449	278,602		166	278,619	D18—	1	278,635		40	278,651
	293	278,571		540	278,587		453	278,603		180	278,620			278,636		136	278,652
D3—	44	278,572	D7—	9	278,589		457	278,604		190	278,621			278,637	D24—	22	278,653
	48	278,573		13	278,590	D10—	30	278,605		317	278,622		35	278,638		26	278,656
	61	278,574			278,591		56	278,606	D13—	24	278,623	D19—	28	278,639		27	278,654
		278,575			278,592		111	278,607			278,624			278,640		52	278,655
D6—	317	278,576		29	278,588	D11—	2	278,609	D14—	12	278,625		77	278,641		64	278,657
	334	278,579	D8—	25	278,594		30	278,610		53	278,626	D21—	64	278,642	D26—	60	278,658
	349	278,580		83	278,593		67	278,611		77	278,627		128	278,643		85	278,659
	373	278,581		389	278,595		107	278,612			278,628		142	278,644			

CLASSIFICATION OF PLANTS

P.—	7	5,448		5,450		18	5,452		41	5,454				
	10	5,449	14	5,451		38	5,453			5,455	5,456		50	5,457

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,513,513		4,513,936		4,514,710		4,513,895		4,513,796		4,513,837
	4,513,810		4,513,938		4,514,722		4,514,211		4,513,863		4,514,202
	4,514,366		4,513,940		4,514,723		4,514,214		4,513,885		4,514,312
	4,514,684		4,513,942		4,514,739		4,514,292		4,513,888	21 :	4,513,607
	4,514,690		4,513,947		4,514,741		4,514,455		4,513,892		4,513,679
02 :	4,513,986		4,513,961		4,514,769		4,514,541		4,513,894		4,513,756
04 :	4,513,461		4,513,962		4,514,771	11 :	4,514,653		4,513,946		4,513,797
	4,513,533		4,513,967		4,514,772	12 :	4,513,469		4,513,964		4,513,804
	4,513,548		4,514,004		4,514,778		4,513,529		4,513,993		4,514,177
	4,513,598		4,514,016		4,514,789		4,513,563		4,514,014		4,514,180
	4,513,772		4,514,023		4,514,799		4,513,590		4,514,030		4,514,181
	4,513,859		4,514,024		4,514,817		4,513,690		4,514,037		4,514,244
	4,514,122		4,514,029		4,514,824		4,513,727		4,514,050		4,514,444
	4,514,424		4,514,055		4,514,827		4,513,735		4,514,054		4,514,603
	4,514,489		4,514,056		4,514,832		4,513,739		4,514,072	22 :	4,513,545
	4,514,580		4,514,057		4,514,834		4,513,851		4,514,077		4,513,657
	4,514,632		4,514,085		4,514,849		4,513,971		4,514,100		4,514,373
	4,514,639		4,514,087		4,514,850		4,514,020		4,514,148		4,514,374
	4,514,648		4,514,101		4,514,858		4,514,107		4,514,175		4,514,550
	4,514,651		4,514,132	08 :	4,513,561		4,514,121		4,514,190		4,514,554
	4,514,696		4,514,135		4,513,665		4,514,173		4,514,279		4,514,575
	4,514,707		4,514,137		4,513,667		4,514,197		4,514,316	24 :	4,513,578
	4,514,815		4,514,139		4,513,760		4,514,427		4,514,332		4,513,989
	4,514,842		4,514,171		4,514,047		4,514,584		4,514,510		4,514,086
	4,514,844		4,514,176		4,514,117		4,514,779		4,514,516		4,514,113
06 :	4,513,472		4,514,195		4,514,252		4,514,823		4,514,532		4,514,495
	4,513,484		4,514,215		4,514,522		4,514,825		4,514,552		4,514,506
	4,513,486		4,514,246		4,514,753	13 :	4,513,476		4,514,598		4,514,527
	4,513,494		4,514,249	09 :	Re.31,875		4,513,508		4,514,652		4,514,561
	4,513,499		4,514,278		4,513,490		4,513,553		4,514,687	25 :	4,513,518
	4,513,537		4,514,319		4,513,567		4,513,951		4,514,703		4,513,591
	4,513,568		4,514,362		4,513,584		4,514,027		4,514,708		4,513,592
	4,513,629		4,514,363		4,513,704		4,514,540		4,514,761		4,513,624
	4,513,642		4,514,368		4,513,705	15 :	4,513,542		4,514,764		4,513,683
	4,513,645		4,514,369		4,513,746		4,513,907		4,514,836		4,513,773
	4,513,651		4,514,379		4,513,889		4,514,695		4,514,845		4,513,831
	4,513,661		4,514,461		4,513,985	17 :	4,513,510	18 :	4,513,585		4,513,874
	4,513,726		4,514,474		4,514,005		4,513,532		4,513,811		4,513,879
	4,513,730		4,514,479		4,514,102		4,513,535		4,513,855		4,514,046
	4,513,734		4,514,620		4,514,143		4,513,549		4,514,105		4,514,048
	4,513,749		4,514,623		4,514,161		4,513,554		4,514,106		4,514,061
	4,513,752		4,514,633		4,514,179		4,513,555		4,514,130		4,514,062
	4,513,763		4,514,640		4,514,255		4,513,557		4,514,192		4,514,063
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	4,513,793		4,514,650		4,514,360		4,513,660		4,514,334		4,514,069
	4,513,800		4,514,671		4,514,442		4,513,669		4,514,509		4,514,070
	4,513,818		4,514,672		4,514,469		4,513,674		4,514,564		4,514,088
	4,513,824		4,514,673		4,514,470		4,513,682		4,514,586		4,514,330
	4,513,848		4,514,681		4,514,475		4,513,695		4,514,686		4,514,388
	4,513,905		4,514,683		4,514,528		4,513,736		4,514,763		4,514,464
	4,513,906		4,514,692		4,514,688		4,513,740	19 :	4,514,025		4,514,468
	4,513,913		4,514,698		4,514,726		4,513,769	20 :	4,513,617		4,514,476
	4,513,917		4,514,704	10 :	Re.31,874		4,513,785		4,513,828		4,514,533

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PLANT PATENTS

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